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Faculty of Social Sciences

School of Economic, Social and Political Sciences

**Liberty, Harm, and Health: Political and Ethical Considerations in Implementing
Air Pollution Policies**

by

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Thesis for the degree of Doctor in Philosophy

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Abstract

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Doctor of Philosophy

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This thesis is concerned with exploring the political and ethical considerations in implementing air pollution policies in liberal democracies, like the United Kingdom. Poor air quality is a serious harm to public health, and this has been overlooked in the political and philosophical literature on pollution, which has focused on the threat of climate change. My aim in this thesis is to bring attention to the harm of air pollution to public health, but also to consider the justifications for state intervention and the ethical challenges related to public health policies. I present this discussion over five chapters.

In Chapter One, I will begin by providing a brief definition and explanation of air pollution, followed by an overview of its key sources and the main factors that contribute to poor air quality. I will also outline the severe impacts of air pollution on public health. I conclude Chapter One by arguing that the state should bear the primary responsibility for addressing poor air quality.

In Chapter Two, I turn to considering when state intervention that attempts to address air pollution is justified. Chapter Two will also explain my methodological approach. Put briefly, I offer a plausible reading of John Stuart Mill's harm principle and the arguments of *On Liberty* (1859), but not a definitive interpretation and I diverge from Mill's own thoughts. In this Chapter, I will show the harm principle holds that coercive interference is only permitted to prevent harm to others. My ambition here is

to show Mill's arguments serve as a basis for contemporary discussions on how the state should address air pollution. I also argue that harm should be defined as any direct negative consequence. Importantly, I show that justifying state interference requires satisfying a two-stage process. The first stage is that the interference must be permitted by Mill's harm principle. The second-stage is that benefits and costs of the interference must make it worthwhile.

In Chapter Three, I illuminate significant ambiguity in *On Liberty* (1859). The ambiguity is whether the harm principle permits interference only with conduct that is harmful, or also with conduct that contributes to harm, or more generally to prevent harm. I conclude that the harm principle permits interference more generally to prevent harm. This conclusion provides a more plausible normative principle and permits the state to interfere to enforce positive acts that prevent harm, like compelling witness testimony, enforcing duty to rescue laws, and positive acts that can prevent air pollution.

The previous chapters establish that the state can interfere to address air pollution. In Chapter Four, I turn to considering *how* the state should interfere. I suggest improvements to the prominent Nuffield Council on Bioethics 'intervention ladder' (2007) and show that policymakers should be concerned with how intrusive a public health intervention is. I offer my own intervention ladder which can serve as a guide for policymakers.

However, intrusion is not the only concern policymakers introducing public health interventions should be aware of. In Chapter Five, I offer an ethical evaluation of the public health interventions on my intervention ladder. I also propose some policies that the state should adopt to protect public health from air pollution.

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Research Thesis: Declaration of Authorship

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Title of Thesis: Liberty, Harm, and Health: Political and Ethical Considerations in Implementing Air Pollution Policies

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
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Definitions and Abbreviations

Ammonia (NH ₃)	A colourless gas that is both a natural and industrial by-product, often from agricultural sources.
Nitrogen Dioxide (NO ₂)	A prominent air pollutant produced by combustion processes.
Nitrogen Oxides (NO _x)	A group of highly reactive gases composed of nitrogen and oxygen.
Particulate Matter (PM)	Things in the air that are not a gas. PM is categorised by size, with PM2.5 (particles with diameters of 2.5 micrometres or smaller) and PM10 (particles with diameters of 10 micrometres or smaller).
PLIM	Principle of least intrusive means
PLRM	Principle of least restrictive means
Sulphur Dioxide (SO ₂)	SO ₂ is released primarily from fossil fuel combustion and industrial processes.
Volatile Organic Compounds (VOCs)	VOCs are a very large and diverse group of organic compounds, often used as ingredients in paints, air fresheners, perfumes, and cleaning products.
World Health Organisation (WHO)	A specialised United Nations agency focused on international public health, the WHO sets health standards and guidelines, including those for air quality

Chapter One - Air pollution and public health

Introduction

This chapter will explain the public health¹ issue of air pollution. I will briefly define and explain air pollution. I will also outline some key sources of air pollution and detail some of the key factors that determine poor air quality. I then discuss the severe impacts of air pollution on public health. I will conclude the chapter by explaining why the state should have the primary responsibility to improve poor air quality.

1.1 - Context

The United Kingdom has imposed regulations on sources of air pollution since at least 1285 when King Edward I created perhaps the world's first air pollution commission and banned the burning of sea coal (Brimblecombe, 1975). Despite the severe harm to health, politicians and policymakers have often neglected to take sufficient action on air pollution (Holgate, 2017). The lack of serious action could also be explained by the fact that the pollutants that harm us are largely invisible and have many diffuse causes (Moore, 2012, p. 6). A lack of scientific understanding of the dangers of pollution from road vehicles also contributed to an absence of government intervention (Holgate, 2017, p. 8). Additionally, identifying the source(s) of pollution that led to harm can be very difficult. The temporal gap between a source of pollution and the resulting harm means that introducing policies to reduce sources of emissions is also a challenge. I will discuss this problem further in Chapter Three.

Despite such challenges, large improvements to air quality have been made after regulations were imposed following extreme events, where the consequences of air pollution were impossible to ignore. For example, in 1952, smog descended on London after cold weather led to extensive domestic burning and a lack of wind caused smoke to sit under fog. The 'Great Smog' killed up to 12,000 people (Polivka, 2018). The Government took action and Parliament introduced the Clean Air Act to control industrial and domestic smoke sources (Polivka, 2018). Today, states impose a range of interventions to reduce air pollution and whilst air pollution has largely improved, we are a long way from breathing "safe" air (Witty, 2022).

Across Europe, urgent action on air pollution is still required as 98% of people live in areas where air quality fails to meet the World Health Organisation's (WHO) guidelines. Almost two-thirds of people suffer levels of pollutants twice the WHO standard (Taylor, Duncan and Niranjana, 2023). Maria Neira, the director of WHO's Department of Environment, Climate Change and Health, has stated that it would not be

¹ Public health is sometimes referred to as population health. I opt for public health to align with the more widely used term.

acceptable for 98% of Europeans to drink dangerously polluted water and we should treat the air we breathe the same way (Taylor, Duncan and Niranjana, 2023). Unfortunately, improving air quality is difficult and will require widespread state intervention.

1.2 - The science of air pollution

Air pollution can be broadly defined as the presence of pollutants in the air in large quantities for long periods (Manisalidis et al., 2020). Air pollutants are any substances in the air that may harm humans, animals, vegetation or material (Kampa and Castanas, 2008). These compounds can be biological or natural, sometimes resulting from sources like volcanoes, dust storms, and fires. These natural pollutants usually have a slight effect on our environment. However, most air pollution is caused by anthropogenic activity and polluted air is a major harm to public health (Almetwally, Bin-Juman and Allam, 2020). A large range of harmful pollutants are produced by human behaviour.

Some of the pollutants of key concern are nitrogen oxide, volatile organic compounds, sulphur dioxide, ammonia, and particulate matter. Nitrogen oxides (NO_x) are gases that are predominantly formed during combustion. NO_x can react in the air to form nitrogen dioxide (NO₂), which is especially harmful to health (Vries, 2021). Volatile organic compounds (VOCs) are a very large and diverse group of organic compounds. VOCs are regularly found in the home and workplace as ingredients in paints, air fresheners, cleaning products, and perfumes (Tsai, 2018). Sulphur dioxide (SO₂) is often caused by burning fuels containing sulphur impurities, for example, through the combustion of coal or petrol (Orellano, Reynoso and Quaranta, 2021). Most emissions of ammonia (NH₃) come from agriculture, such as the spreading of manures, slurries and fertilisers (Van Damme et al., 2018). Particulate matter (PM) refers to the things in the air that are not a gas. So, PM includes a huge variety of chemical compounds and materials. Types of PM differ by size. Common classifications are PM₁₀ and PM_{2.5}. PM_{2.5} particles are fine particles with diameters that are 2.5 micrometres and smaller. PM₁₀ are larger particulates with diameters of 10 micrometres and smaller (Kim, Kabir and Kabir, 2015). These pollutants are harmful to human health in significant and different ways.

1.2.1 - What are the common sources of air pollution?

Many sources of anthropogenic activity create harmful pollutants. Historically, the major cause of air pollution was smoke and sulphur dioxide emitted by burning fuels like coal (Clay, Lewis and Severini, 2024). In more recent years, the major source of air pollution is transport. Road vehicles, trains, aviation, and marine vehicles all contribute to the presence of dangerous pollutants that cause harm to individuals (Arminzadegan et al., 2022). Road vehicles contribute to air pollution through engine emissions, brake dust, and tyre decay (Bessagnet et al., 2022). Even all-electric vehicles, which have zero tailpipe emissions, contribute to air pollution as non-exhaust pollutants, like PM_{2.5}, are

released into the air by a vehicle's tyres and brake pads degrading (Bloss, 2021). These non-exhaust pollutants are actually often higher for electric cars than internal combustion engine vehicles because electric cars are significantly heavier (Woo et al., 2022).

The threat to health from road vehicles is particularly serious in densely populated areas, such as towns and cities, where there is a high concentration of vehicles. A high concentration of road vehicles can adversely affect the air quality and individuals in these areas are often exposed to high levels of harmful pollutants (Apte et al., 2017). Reducing pollution from road vehicles represents a particular challenge for policymakers, as cars are now ubiquitous and offer major economic and social benefits.

Two other significant sources of emissions are heating and cooling systems. Systems that require the combustion of fossil fuels or the burning of wood contribute to poor air quality (Ozgen, Cernuschi and Caserini, 2021). Both industrial and domestic combustion make notable contributions to harmful emissions (Department for Environment, Food and Rural Affairs, 2019). Air conditioning systems also contribute significant emissions (Dong, Coleman and Miller, 2021). Consumers and businesses rely on heating and cooling but the common practices of using fossil fuels are detrimental to air quality.

Agriculture also produces a significant amount of air pollution. Farming produces significant emissions from cultivating and producing animals and crops. The use of fertilisers and the burning of agricultural waste also create harmful air pollutants (Giannadaki et al., 2018). The increasing human population is driving a need for more food production, which will lead to more intensive farming worldwide and a subsequent reduction in air quality (Reay et al., 2012).

1.2.2 - What factors determine air quality?

The sources of air pollutants discussed in Section 1.2.1 are detrimental to air quality, but how safe the air is can be affected by many factors. The relationship between the sources of air pollution and the factors that also determine air quality is complicated and involves human activity, the atmospheric chemistry of pollutants, and meteorology (Mouatt, Ghalaieny and Martell, 2022, p. 41). Human activity is of particular interest to the thesis, as I will explore what the state should do to address air pollution. Of course, it is easier for policymakers to address the human activities that contribute to poor air quality, rather than the atmospheric or meteorological conditions.

Daily variations in human behaviour influence air quality, as human activity can either raise or lower pollutant levels in the air. The morning and evening 'rush hour', where more road vehicles are driven in busy areas, causes the typical peak of certain pollutants (Agnew, Clewlow and Hort, 2022, p. 240). Large-scale events, like sports matches and concerts, contribute to worse air quality in particular areas as more people use road vehicles to visit the area than usual (Connolly, Dupras and Séguin, 2016,

Watanabe, Yan and McLeod, 2023). The increase in people driving in the winter, due to colder temperatures, also causes the production of more pollutants (Agnew, Clewlow and Hort, 2022, p. 238)

I do not mean to suggest that policymakers should not be interested in factors other than human activity. Given that air quality is further determined by the interaction between different factors, policymakers should be aware of the relationships between different factors and air quality. For example, high levels of road vehicles *and* meteorological conditions affect the concentrations of pollutants (Fraser and Sapsford, 2022, p. 72). Local, regional, and international weather conditions can affect air quality. Stable weather conditions can prevent the dispersion of pollutants like particulate matter (Mouatt, Ghalaieny and Martell, 2022, p. 41). The aforementioned 'Great Smog' that covered London in 1952 was, in part, caused by cold stagnant air and very low winds (Brimblecombe, 2006). Similarly, very high summer temperatures can contribute to the increase of the pollutant ozone (Mouatt, Ghalaieny and Martell, 2022, p. 41). Other seasonal variations of meteorological conditions affect air quality. Generally, hot days with lots of sunshine contribute to higher pollution levels. In the spring and autumn, light south and southeasterly winds over Southern England draw in pollutants from continental Europe. In the winter, days with light wind are often days of worse air quality (Agnew, Clewlow and Hort, 2022, p. 238).

There are also significant regional variations in air quality. Typically, urban areas have less safe air quality and rural areas have better air quality. However, the socioeconomic deprivation of the area is also key in determining its air quality (Blake and Wentworth, 2023). Deprived rural areas have worse air quality than non-deprived rural areas. An important determinant is the region-specific emissions sources. Essentially, polluting industries have a greater impact in areas of greater socioeconomic deprivation (Gray, Lewis and Moller, 2023).

1.2.3 - Individual vs collective air pollution

It is important to be clear at the start of this thesis that air pollution, in the context of public health, is largely *not* a collective action issue. Whereas air pollution, in the context of *climate change*, is generally a collective action issue because the cumulative emissions of pollutants by many individuals aggregate to cause harm (Rosen, 2021). The threat of air pollution to public health operates differently. Many pollutants, such as PM_{2.5}, 1,3-butadiene, and benzene cause harm at any level (World Health Organisation, 2021). By this, I mean that there is no safe threshold for these pollutants and any amount of one person's emissions risks harm to others. This means that each individual's emissions, such as those from road vehicles emitting PM_{2.5} (Wei et al., 2024), contribute to harmful air quality, and every car journey risks harm to others. Therefore, much of this thesis focuses on how individuals harm each other through their individual contributions to air pollution and the role the state should play in regulating these contributions.

However, some pollutants, like nitrogen dioxide and polycyclic aromatic hydrocarbons, only become harmful when aggregated with other concentrations and cross a safe threshold. So, in Chapter Three, I will also discuss the role of the state in regulating air pollution as an essentially aggregative harm. Essentially aggregative harms are harms that arise from the result of emergent properties that only appear when the actions in question combine (Kahn, 2023, p. 4). I will also explore cases where the emissions of groups, like corporations, cause harm to public health.

As well as harming others through their pollutants, individuals also risk harm to themselves. For example, the individual who is driving a road vehicle is exposed to VOCs, PM, and other pollutants from their own exhaust (Zulaf et al., 2019). However, the harms of one individual's emissions are largely borne by other individuals. When a person emits pollution, the pollution harms them but its effects are distributed across the population sharing that air. So, the harm caused by the person's emissions does not primarily harm themselves, but rather the population. So, I largely focus on how our emissions harm others.

1.3 - Indoor air pollution

The fact that outdoor air pollution is harmful is well-established in the scientific literature. More recently, attention is turning to the fact that indoor air pollution can cause harm to an individual's health (Lenox, 2021). Indoor air quality is particularly important as many people spend most of their time indoors at home, work, educational institutes, et cetera (Saini, Dutta and Marques 2020). Indoor air pollution has a range of causes, such as people's activities and the location and conditions of the building. Outdoor air pollution can also penetrate indoor spaces (Exley et al., 2022, p. 13). A common cause of indoor air pollution is cleaning products that contain VOCs (Tsai, 2018). Addressing the issues of indoor air pollution is especially pressing in low-income countries where more than three billion people burn unclean fuels for heating and cooking with inadequate ventilation. This practice especially harms women and children who are more exposed to toxic indoor smoke as they (on average) spend more time in the home (Anenberg et al., 2013).

1.4 - The effects of air pollution

1.4.1 - Health

Many of the harmful effects of air pollution on people's health are well established. For example, exposure to air pollution over a long period of time reduces life expectancy. Air pollution contributes to the initiation and development of lung cancer and respiratory and cardiovascular diseases (Exley et al., 2022, p. 1). Less well-established evidence suggests air pollution is linked to worse foetal development, birth outcomes, poor early life organ development, obesity, type 2 diabetes, skin ageing, reduced cognitive performance, impaired cognition, and increased dementia risk (Holgate, 2017).

The harms of air pollution can occur across an individual's whole lifetime, as early as the first weeks in the womb. Gestation, infancy, and early childhood are particularly vulnerable as children's bodies are developing rapidly. In this period, the harms of air pollutants are more severe and the body's organs are less able to recover (Royal College of Physicians, 2016, p. 38). Older people are also more vulnerable to the impacts of air pollution and have the highest number of air pollution-related deaths (Dajnak et al., 2021).

Estimating the number of deaths related to air pollution is a significant challenge, due to the complexities of calculating all pollutants, both indoor and outdoor, and individual exposure to pollutants (Pozzer et al., 2023). Recent work estimated that the annual number of excess deaths worldwide due to only fine particulate and ozone air pollution is 8.34 million (Lelieveld et al., 2023). This work likely underestimates the actual number of deaths as the study did not account for exposure to other pollutants associated with enhanced mortality risk (Lelieveld et al., 2023, p. 7). In the United Kingdom alone, the annual mortality of anthropogenic air pollution is estimated to be between 28,000 and 36,000. The number of deaths makes air pollution the largest environmental risk to public health (Office for Health Improvement and Disparities, 2022). The severe harms to public health associated with air pollution demonstrate the need for action to improve air quality.

1.4.2 - The social and economic effects of air pollution

This thesis will largely focus on the harms of air pollution to public health. Here, I will briefly outline two of the social and economic impacts of air pollution to provide a broader picture of the task at hand for policymakers attempting to address the impacts of air pollution.

First, the fact that air pollution harms the health of individuals impacts the economy. Productivity is affected when individuals are suffering from adverse health effects and output per worker decreases (Department for Environment, Food and Rural Affairs, 2023, p. 12). Across Europe, air pollution-related illnesses reduce efficiency as more individuals are absent from work (Dechezleprêtre, Rivers and Stadler, 2019, p. 44). Air pollution was estimated to be responsible for total productivity losses of up to £2.7 billion in the United Kingdom in 2012 alone as individuals whose health is harmed by poor air quality are less able to work effectively and are more likely to take days off (Birchby et al., 2014).

Second, air pollution places a large cost on public health resources. Poor air quality increases societal medical and social costs (Department for Environment, Food and Rural Affairs, 2023, p. 12). One study found that over 18 years, the total cumulative cost to the United Kingdom's National Health Service and social care system is estimated at £5.37 billion for PM2.5 and NO2 combined. The estimate rises to £18.57 billion when costs for diseases for which there is less robust evidence are included (Pimpin et al., 2018, p. 1). More generally, air pollution affects the economy by reducing tourism,

reducing investment, increasing energy costs and maintenance costs of infrastructure (as pollution damages machinery), and increasing farming costs as crops and livestock are harmed (OECD, 2016).

The costs of reducing air pollution in Europe are smaller than the benefits that are gained through polluting activities. For example, reducing emissions of fine particulates by 25% across Europe would cost a relatively small €1.2 billion, but the benefits of the emissions reductions would be significantly larger. So, there is an economic incentive to improve poor air quality (Dechezleprêtre, Rivers and Stadler, 2019, p. 8). This point suggests that air pollution regulations can be justified purely on economic grounds, even ignoring the severe suffering, illness, and death caused by poor air quality.

Whilst the social and economic impacts of poor air quality are generally adverse and some evidence suggests improving air quality would have economic benefits, the picture is complicated by the fact that many economies depend on polluting activities. A complicated trade-off exists in low- and middle-income countries where economic growth that results from polluting activity is improving living standards, but also harming public health (Banister, 2011, p. 1540). Even in relatively wealthy cities in high-income countries, many jobs can depend on industries that cause significant amounts of air pollution. Southampton, a port city in the United Kingdom, is home to the country's largest cruise terminal and second-largest container port. The port produces four times more NO_x than cars in the city and cruise ships are responsible for over half of the city's PM_{2.5} pollution (Transport and Environment, 2024, p. 2). Southampton City Council has stated the continued success of the port is "vital" to the city's economy (Southampton City Council, n.d, p. 3). This point demonstrates the difficult challenge of both protecting public health and local economies.

1.5 - Air pollution and climate change

In recent years, much ink has been spilt on the contribution of air pollution to climate change. Significant contributions have been made in the philosophical and political literature about who should bear what burdens for addressing climate change (Caney, 2021), environmental ethics (Brennan and Lo, 2021), responsibilities for emissions (Broome, 2019, Walter Sinnott-Armstrong, 2005), what we owe to future generations (Rendall, 2011), how to understand the risk and uncertainty regarding climate projections (Broome, 2012, pp. 120-132), and many other topics. These works are especially valuable and interesting given the existential threat of climate change.

However, this thesis solely focuses on the relatively direct harms of air pollution to public health² as this topic has generally been overlooked in the philosophical and political discussions of air pollution. It is important to consider how air pollution is harming public health, given the significance of health to determine life outcomes and the responsibilities of the state to protect public health. Additionally, I think a focus on public health is especially valuable given that some people incorrectly believe the harms of climate change are a future problem and use this as a justification for delaying action (Smith, 2019). If people gain a greater understanding of how air pollution is currently harming their health and their family's health, then perhaps people will be more motivated to tackle the sources of air pollution. The fact that air pollution is seriously harming people's health today might encourage people to take actions that will alleviate air pollution, and consequently improve the damage to the climate.

1.6 - Why is air pollution an issue for the state?

In this section, I will argue the state has the primary responsibility for addressing the harms of air pollution to public health. By primary responsibility, I mean that the state has the most responsibility to reduce air pollution, but the state is not exclusively responsible. Just as parents and guardians have the primary responsibility to care for their children, society as a whole also has some responsibility to protect children from harm. As I will outline, other actors like civil society, corporations, and individuals also have some responsibility to take action to reduce air pollution. However, I will show the state is the most *effective* actor to reduce air pollution and that its ability to exercise its *authority* makes it best-placed to prevent polluting behaviours.

1.6.1 – Is air pollution a public health issue?

I will now outline the concept of public health and demonstrate air pollution is a public health issue. By “public health” I am referring to the promotion and protection of the health of populations, broadly understood (Faden, Bernstein and Shebaya, 2022).

Air pollution is a distinctly public problem, in that it involves individuals harming each other, rather than merely themselves. This fact partly explains why air pollution is a public health issue, but also what kinds of issues might count as *public* health issues. The italicisation of ‘public’ in the previous line is intended demonstrate my point. Certain activities are designated as public problems, and those that cause harm to health are candidates to be recognised as public health problems. Some obvious activities for public health problems are infectious disease, smoking, and inadequate sanitation (Dawson and Verweij, 2007, p. 14). Other suggestions include drug abuse (Sindelar and

² It is worth noting that climate change will likely cause public health problems too, but this discussion is beyond the scope of this thesis.

Fiellin, 2001), domestic violence (Ramsay et al., 2002), teenage pregnancy (Scally, 2002) and gambling (Korn and Shaffner, 1999). I do not take a stance on whether these latter issues are public health issues, but they illustrate some of the activities that have been claimed to be public health problems.

Defining what activities count as public health problems is the subject of debate, but the activities have some shared characteristics that seem relevant. These characteristics are not mutually exclusive or fully define public health, but they illuminate the kinds of problems relevant to what counts as public health (Dawson and Verweij, 2007, p. 14). The characteristics are merely paradigmatic examples of what is considered to be public health, rather than necessary and sufficient conditions. Once I have explained the characteristics of the activities that fall under the category of public health, we will see that air pollution shares those characteristics and so is also a public health issue.

The clearest characteristic of what counts as public health is that when the state addresses and prevents the activity, populations, not just individuals, benefit. Public health is a public good, where the benefits to one person of improved health cannot easily be separated from the benefits to others (Faden, Shebaya and Siegel, 2019, pp. 12-13). Individuals benefit from a healthy public. Preventing widespread infectious diseases benefits populations as a whole. Relatedly, reducing pollution prevents harm to everyone that breathes poor quality air. Additionally, healthy populations are more likely to be productive, which strengthens the economy (Reiss, 2021).

Another characteristic might be that these activities are not solely clinical health problems that medical professionals can solve. Education is also often key (Moon, 2019). For example, teenage pregnancy requires other professionals, like social workers and teachers, to participate in educating young people about the risks of unprotected sexual intercourse. Improving air quality similarly requires multiple actors to inform the public, motivate action, and regulate certain practices. Medical professionals cannot make these changes alone.

A third characteristic is that the activities of the agents are influenced by their socio-economic conditions (Ashton, 2008). An individual's ability to reduce their air pollution by purchasing an expensive electric vehicle is dependent on their socio-economic conditions. A fourth paradigmatic characteristic is that the activity is a collective issue, meaning that nearly everyone contributes to it and addressing it requires near-universal participation (Faden and Shebaya, 2019, p. 24). I will discuss how air pollution is a collective issue in Chapter Three, where I discuss how some air pollution is an essentially aggregated harm. From these points, it seems that air pollution is a public health issue.

1.6.2 - Which non-state actors can address air pollution?

Now we can see air pollution is a public health issue, I will turn to explaining why the state is the best candidate to improve air quality. However, I will begin by explaining how some other actors can play an important role too. These different actors can interact to reduce air pollution and coordination between the actors is important.

First, civil society can play a role in reducing air pollution by influencing policy, monitoring air quality and sources of emissions, and raising awareness amongst individuals. Civil society is broadly defined to include, but is not limited to, organised and organic groups like non-governmental organisations (NGOs), trade unions, charities, social movements and protest groups (Cooper, 2018). These groups can range from large-scale international organisations like Greenpeace and Oxfam to small protest groups. Civil society can play an important role in combatting air pollution by increasing awareness of polluting industries and the frequent lack of regulation imposed on these industries by the state. Civil society can also inform and motivate the general public about the threat of air pollution to public health. Once the public is aware, individuals often seek to influence politicians and corporations. A vocal public means it is harder for both the state and polluting industries to ignore the consequences of air pollution, although the state often takes insufficient action after hearing these demands. Additionally, such organisations frequently protest and challenge both the state and polluting industries in court. A recent example is Greenpeace Norway and Young Friends of the Earth Norway's legal victory to require the Norwegian state to take into account the emissions caused by burning oil and gas reserves before approving new oil and gas fields (Khan, 2024).

Second, market actors, like corporations, can innovate new commercial technologies and set greener industry standards. Increasing the availability of electric vehicles is one way that some vehicle manufacturers are reducing air pollution. Such businesses typically respond to consumer demand and pressure from civil society to both create greener products and improve their polluting practices through innovating new technologies. Fossil fuel companies, like Shell, also make some investments in renewable energy. However, such companies are widely accused of 'greenwashing' and overstating their green practices, whilst understating the harm the industry causes (Milman, 2023).

Third, individuals can reduce their contribution to emissions by making lifestyle choices and engaging in advocacy. Individuals can reduce their road vehicle usage, purchase energy-efficient appliances and reduce electricity consumption. Consumer boycotts can also successfully pressure corporations into less polluting practices (Alyahya et al., 2023). Furthermore, greener purchases incentivise corporations to produce less polluting products. Additionally, the populace can put pressure on politicians by campaigning and voting for parties with commitments to reducing air pollution. It is unlikely that mainstream political parties will take action on air pollution without popular support, given that the actions often reduce and remove individual choice. Additionally, individuals can join, donate to, and support civil society

organisations. To summarise, these diverse actors can coordinate to improve air quality and reduce air pollution. However, I will now argue that the state should be primarily responsible for reducing air pollution.

1.6.3 - Effectiveness

One explanation of why the state has the primary responsibility for reducing air pollution is purely consequential. I claim that the state has the primary responsibility as it has the greatest ability to reduce pollution. Adequately addressing air pollution will be incredibly complicated and resource-intensive. The practical solutions for improving air quality often require expertise and significant resources, due to their technical and complex nature. Air pollution also has many sources, as discussed above, so improving air quality will require extensive coordination amongst many actors. Due to this, it is plausible that nation-states are best positioned to achieve significant improvements in air quality. Historically, we have seen that states have reduced levels of air pollution through regulation. Legislation introduced in the United Kingdom in 1956 (Polivka, 2018) and the Clean Air Act of 1970 in the United States (Ross, Chmiel and Ferkol, 2012) successfully improved air quality. A caveat is that this is plausibly only the case for functioning states. I accept that failed or fragile states (Saeed, 2020) may not be best positioned to address air pollution.

Another reason the state is well-positioned to improve air quality is that progress to clean air will require international cooperation, as pollution does not respect borders. As mentioned in Section 1.2, Southern England is affected by pollutants from continental Europe. Therefore, states should cooperate to facilitate international agreements to reduce air pollution. The United Kingdom is committed to international agreements with the European Union (which have been retained since the country's exit from the Union) and these agreements also inform the national policy framework for addressing air pollution (Smith and Bolton, 2024, p. 16). States that commit to such frameworks can hold other states accountable and encourage them to improve their legislation, perhaps more effectively than non-state actors. However, the effectiveness of these agreements is not clear and there are few formal mechanisms for states to require other states to abide by such international agreements (Tso and Mehling, 2021).

To further argue the state should be responsible, I will now explain why the other actors are not as effective in addressing air pollution. As mentioned above, a supplementary option could be for campaign groups and civil society organisations to encourage individuals to make less polluting choices. For example, a popular consumer boycott of air polluting activity and goods whose production contributes to air pollution could plausibly also address air pollution. The Swedish concept of Flygskam or "flight shame" is an example of such a movement. This movement discourages people from flying, intending to reduce air pollution (Bhowmik, 2020). However, a consumer boycott is likely to be less successful than the state in achieving the necessary reductions in air polluting behaviour. I argue this is the case because the number of people needed to

participate in such a movement for it to achieve sufficient effects is unlikely to be sustained, given that the costs to people's lifestyles will likely not be popular. The Flygskam movement only achieved a 4% reduction in flights within a year (Bhowmik, 2020). Different tactics from activists might have more success in addressing air pollution, but given the urgent need to protect public health, we should prefer the state to impose regulations that individuals cannot simply ignore. These requirements are more likely to sufficiently protect public health than mere activism, which is primarily a fringe movement at the moment.

However, civil society can play a role in pressuring the state to take action. Whilst Flygskam was largely unsuccessful, activist groups which aim to pressure the state, rather than individuals, might be more effective in implementing change. Greenpeace has had several notable victories in forcing the state to take action (Erdős, 2019, pp. 159-163). On the other hand, some states have found it easy to ignore campaign groups, especially when they are unpopular. For example, Insulate Britain, a campaign group in the United Kingdom, blocked motorways to demand the state improve insulation in all homes in Britain, which would reduce domestic combustion. The group's actions were opposed by 72% of the public and only supported by 18% (Conner, 2021). The state has not met the group's demands. Ultimately, activists can play a useful role in raising awareness, swaying public opinion and prompting the public to pressure their political representatives to take action. The latter point is vital, as politicians are unlikely to take serious action without widespread public pressure. However, the state imposing requirements that people cannot ignore is likely the best approach to protect public health from air pollution, as I will show.

Another potential avenue for addressing poor air quality could be to favour market solutions and hope private companies will create the solutions to air pollution, as mentioned above. This position has been argued for as a solution to mitigating climate change. Proponents of this position argue that market strategies favour efficiency, equity, and environmental protections (Nijkamp and Ursem, 1998, Sandor, Bettelheim and Swingland, 2002, Cruetzig, 2021). Some have also argued that healthcare issues are best resolved by allowing the market to allocate resources, as governments fail to do this efficiently (Enthoven, 2003). If these claims are correct, then perhaps the public health problem of air pollution could also be addressed by the state not intruding and instead opting for market strategies. A full exploration of this is beyond the scope of this thesis, but I think the market is unlikely to adequately address air pollution for the following reasons.

First, air pollution is a negative externality, meaning that the costs of pollution are suffered by society in general, rather than merely by polluters (Zhao, Liang and Zhang, 2020). Polluters, such as large corporations, have minimal incentive to reduce emissions as they do not bear the full economic and environmental costs of their polluting activities. Second, clean air is a public good, which means that it is non-excludable and non-rivalrous. Non-excludable goods are ones that it is impossible to prevent individuals from consuming (Reiss, 2021). It is legally possible to prevent

individuals from consuming a cake that I have made, but not from breathing clean air. Non-rivalrous goods do not diminish when other individuals consume them (Reiss, 2021). My enjoyment of a piece of music does not diminish someone else's ability to enjoy the music. The fact that clean air is both non-excludable and non-rivalrous means that the market is unlikely to take action to reduce emissions, because actors may opt to wait for others to do so and benefit from their efforts (Parenteau, 2023). Again, there is little motivation for the market to improve poor air quality.

Third, market actors are often incentivised to focus on short-term profits, rather than long-term sustainability. Reducing emissions and investing in environmentally friendly business practices has very little short-term payback. Therefore, most market actors have little incentive to reduce their emissions (Doorasamy and Baldavaloo, 2016). However, this limitation also applies to the state as democratic governments tend to adopt a short-term perspective because of the pressures of winning elections (Ogami, 2024). This problem is one limitation of the state having the primary responsibility for addressing air pollution. Other actors, like individuals and civil society, should pressure both market actors and states to avoid short-termism. Short-termism can also be avoided by states establishing institutions and committees of politicians specifically to consider long-term goals.

Ultimately, these reasons suggest that the state will be more effective than the market in ensuring effective solutions to the public health problem of air pollution. I do not wish to imply that market actors should not play a role in addressing air pollution. Businesses can innovate new technologies, such as air quality monitoring stations and particulate filters for road vehicles to detect and reduce emissions. Still, ultimately the state must impose regulations to reduce air polluting activity.

1.6.4 - Authority

In this section, I will provide my second reason that explains why the state should have the primary responsibility for some public health problems. Along with effectiveness, one reason that some public health issues should be the responsibility of the state is that the state can exercise its authority to change behaviour.

I previously said that by "public health" I am referring to the promotion and protection of the health of populations, broadly understood (Faden, Bernstein and Shebaya, 2022). Promoting and protecting health requires some form of intervention when something (e.g., disease, activity, environmental factor) or some actor threatens public health. As already established, public health is significantly threatened by air pollution. Therefore, some form of intervention is required to continue promoting and protecting the health of populations. However, this definition doesn't explain why the intervention should come from the state. As well as being effective in intervening to protect public health, the state should intervene as it has the political authority to enforce participation in reducing air pollution and, on grounds of fairness, the state can distribute burdens. By

political authority, I mean that the state is morally justified in utilising coercion over its populace (Christiano, 2020).

Protecting health against the harms of air pollution will require coercion as reducing air pollution risks a collective action problem. Whilst some people may voluntarily take steps to reduce their emissions, many others will be unwilling to do so given that the steps often involve lifestyle costs or are difficult to achieve. For example, only 40% of Britons would be willing to walk, cycle, or use public transport rather than driving to reduce emissions and only 26% would never fly for leisure (Morris, 2022). The opposition to London's low-emission zones and traffic reduction measures in other areas also suggests that many people will not voluntarily reduce their contributions to air pollution (Smith, 2023). Therefore, sufficiently reducing air pollution will require the state to use coercion that restricts people's liberty to participate in air-polluting activities.

Where people are willing to reduce their polluting activities but are unable, the state can facilitate behaviour change. The state can facilitate behaviour change by building bicycle lanes or reducing the cost of public transport to encourage people to adopt active travel or public transport over driving. However, the state can also coercively interfere with individuals and groups to enforce reductions in pollution. For example, requiring polluting industries to upgrade to less-polluting technologies or banning individuals from driving high-polluting road vehicles.

This point explains why the state should have the primary responsibility for reducing air pollution. Non-state actors can play a role in reducing air-polluting behaviours. For example, NGOs can educate, encourage, or incentivise people to reduce their contributions to pollution. However, these non-state actors cannot legitimately use coercion to do so. To legitimately deploy coercion, an actor must have some form of morally justified power (Buchanan, 2002, pp. 690-691). Democratically elected governments have this rightful power as they have legitimate political authority. This explains why it is appropriate for the state to enforce air pollution policy. It is wrong for me to use coercion to penalise my neighbour's unsafe driving, but not wrong for the state to impose penalties on unsafe driving. The difference is that the state has the political authority to use coercion to enforce behaviour change and shape choice. Whilst the focus of this thesis is on liberal democracies, it is worth briefly noting here that non-democratically elected states, like dictatorships, also have a responsibility to protect the populace from air pollution. These states also have a moral duty to move towards democracy. Until democracy is achieved, I contend that such states are justified in using coercion to reduce air pollution, given the severity of the threat to public health.

In recent years, there has been much debate regarding the state's authority to impose mandatory vaccination for infectious diseases, such as measles or COVID-19 (Pierik, 2018, Saunders, 2022, Williams, 2022). An important, but often opposed, function of the state is to protect public health by imposing policies like mandatory vaccination. Whilst some oppose mandatory vaccination, the only kind of actor that could impose mandatory vaccination is a state, precisely because states have the

political authority to utilise coercion. Other actors, like NGOs, can incentivise people to be vaccinated, but these actors cannot legitimately mandate vaccination, as they do not have the political authority.

In contrast, the state can incentivise *and* mandate actions that will protect public health. The key feature of the state here is that it has the authority to use coercion to reduce and eliminate threats to the public's health, like infectious diseases. Similar to how imposing vaccine mandates could be necessary for effectively addressing some infectious diseases, tackling air pollution will also require coercive measures to reduce or eliminate certain behaviours, such as restricting driving or mandating particulate filters on road vehicles. If we think it is acceptable for the state to address threats to public health like infectious diseases, and to use coercion to do so, we should treat air pollution the same way. Therefore, air pollution is a public health issue and the state should be responsible for taking action to address air pollution.

Additionally, the state can use its authority to distribute the burdens of improving air quality, on the grounds of fairness. As shown, some people are willing to take steps to reduce their contributions to emissions whilst others are less willing. So, if improving air quality is left to the willingness of the populace, some will take on more burdens than others. This distribution of the burdens would be unfair. The state can use its authority to distribute the burdens of addressing air pollution to avoid unfairness. For example, it would be wrong for the burdens to fall on poorer individuals, as they contribute fewer emissions (Barnes, Chatterton and Longhurst, 2019). The distribution of burdens need not be equal. For example, those who contribute higher emissions or have a greater ability to take on the burdens could be required to do more.

Also, the state can use its authority to ensure the benefits of improved air quality are fairly distributed. Socioeconomically disadvantaged groups suffer greater harm from poor air quality, as the groups are both more exposed and more vulnerable to air pollution. These groups are more exposed to air pollution as they are more likely to live near major roads, have less access to green spaces, live in densely populated areas, and reside in lower-quality housing (Department for Environment, Food and Rural Affairs, 2019, p. 23, Blake and Wentworth, 2023, p. 5). These groups are more vulnerable to the harms of air pollution as they are more likely to have pre-existing medical conditions and higher baseline disease rates, which can be adversely affected by pollutants (Dimitroulopoulou et al., 2022, p. 26). As I have argued elsewhere (Meylan-Stevenson and Boswell, 2025), the fact that socioeconomically disadvantaged groups contribute fewer emissions but are more harmed by air pollution is also an injustice. The state should ensure the benefits of improved air quality are mostly directed towards these groups, given that they suffer greater harm from air pollution. Especially when this injustice exacerbates other social injustices, such as wealth, housing, and life opportunities.

Importantly, however, the fact that the state has a responsibility to address air pollution and can use coercion to do so does not mean the state's power should go unchecked. Minimising harm should be a priority for the state, but other values, like

liberty, should not be overlooked (White, 2024, p. 3). A central theme of this thesis is to discuss what justifies the state restricting air polluting activity but also what limits should be placed on the state. With no limits, the state could ban all polluting activity overnight and impose lengthy prison sentences on those who produce any emissions. This policy would significantly reduce air pollution and greatly protect the public health, but this policy would be an overreach of state power. Therefore, some principles for defining the limits of state power are required. In Chapters Two and Three, I will argue that John Stuart Mill's harm principle and wider arguments from *On Liberty* (1859) partly provide policymakers this guidance. Chapters Four and Five will provide further guidance.

Conclusion

This chapter has demonstrated that air pollution is a severe harm to public health. I have briefly explained air pollution, common sources of emissions, and the factors that determine poor air quality. I also illuminated some of the social and economic harms of air pollution. I explained the concept of public health and then illustrated some of the different actors who can work to improve air quality. I concluded by arguing that the state should have the primary responsibility for addressing air pollution due its effectiveness and authority.

Chapter Two – A two-stage approach to justifying interference: Mill’s harm principle and a cost/benefit assessment

Part One - Explaining Mill’s harm principle

Introduction

This chapter will explain John Stuart Mill’s³ harm principle and his wider arguments in *On Liberty* (1859). I will show the harm principle and Mill’s wider arguments provide a guide for when the state can permissibly restrict liberty. Part one will illuminate the important characteristics of Mill’s harm principle to demonstrate how the principle limits the state to only coercively interfering to prevent harm. Part two explains that the justification for coercive interference is usually seen as a two-stage process. The first stage is that the coercive interference must satisfy the harm principle and the second-stage holds that the interference must be worth the costs.

I will illuminate a plausible reading of Mill’s argument. I do not attempt to offer a definitive interpretation of Mill’s harm principle. Instead, I claim my interpretation provides a plausible account of Mill’s argument that serves as a basis for contemporary reflections on how the state should address the public health problem of air pollution. I begin with Mill because I think the general thrust of his arguments are largely correct and are widely endorsed in the public health and bioethics canon. At times, I divert from Mill’s thoughts and offer alternative views. Hence, my approach is Millian in nature but does not represent Mill’s own view in every way. For similar approaches, see Nuffield Council on Bioethics (2007), Coggon (2008), Jennings, (2009), Powers, Faden and Saghai (2012), Rainey and Giubilini (2020).

One might ask why the harm principle ought to be a test for state interference at all. Mill’s ideas from *On Liberty* (1859) are an exemplar of one notable strand of the liberal tradition. So, it is worth considering the harm principle and Mill’s work to understand a notable liberal position when considering the legitimacy of state intervention. We may choose to reject Mill’s account, but critics of this liberal account need to answer his arguments (Saunders, 2013, p. 72). The harm principle has also influenced much public policy debate, particularly in public health policy (Faden et al., 2022). In a liberal democracy, where individual liberty has some weight, the harm

³ I observe the established practice of referring to the harm principle and *On Liberty* as if it were the sole work of John Stuart Mill. I do not intend to play down Harriet Taylor’s role as an author. For a discussion on the composition of *On Liberty*, see Schmidt-Petri, Schefczyk and Osburg (2021).

principle can be viewed as a test for the legitimacy of a proposed intervention⁴. Put simply, the test is that an intervention that coercively interferes with an individual's liberty must prevent harm to others to be permissible. If a proposed policy fails to satisfy the criteria set out by the harm principle, then we may conclude that the policy unduly infringes upon individual liberty and so ought to be rejected. I will outline this decision-making process in the subsequent sections.

2.1 - Harm to others

In this section, I will outline Mill's renowned defence of liberty and his restriction on coercive interference by the state or society from *On Liberty* (1859). Mill's project comes from his concern that all states, even democratic ones, social institutions, the customs of society, and the patriarchal structure of the family have the power to limit people's liberty (Mill, 1859, pp. 219-220). States, of course, exercise their power through punishment and legal penalties and enforcing laws and regulations, among other measures, to limit the liberty of others. Mill also points out that society and the family are able to exercise power over others. In his own words (Mill, 1859, p. 220):

Society can and does execute its own mandates: and if it issues wrong mandates instead of right, or any mandates at all in things with which it ought not to meddle, it practices a social tyranny more formidable than many kinds of political oppression, since, though not usually upheld by such extreme penalties, it leaves fewer means of escape, penetrating much more deeply into the details of life, and enslaving the soul itself.

Mill's concern is that both the state, the majority in society, and individuals with power over others (like husbands over wives) are liable to abuse their power and determine how people ought to behave (Mill, 1859, pp. 221-222).⁵ His objection to such abuses of power is not based on the idea that people have abstract rights, understood "independently of utility", which ought not to be violated, as he "forego[es] any advantage to his argument" from non-utilitarian sources (Mill, 1859, p. 224). Rather, Mill's objection to abuses of power that restrict the liberty of individuals is based on "utility in the largest sense, grounded on the permanent interests of man as a progressive being" (Mill, 1859, p. 224). Mill claims that the abuses of power of the state and society fail to promote utility. For Mill, utility is increased by allowing individuals to have free choice. Free choice supports social, and individual, progress by allowing the

⁴ Such considerations may not be as relevant for addressing air pollution in non-liberal democratic states, where different political priorities and constraints may have greater influence. However, the scope of this thesis is air pollution policy in liberal democracies.

⁵ This thesis focuses on the role that the state can play in reducing air pollution. So, most of my discussion will focus on the application of the harm principle to state power, rather than societal power.

individuals that make up society to develop themselves through their own choices (West, 2009, p. 38).

Due to this worry, Mill argues that the state and society ought to have some limit to their powers (Mill, 1859, pp. 219-220). The limit Mill proposes has two separate parts that restrict exercises of power over others. The first part is a principle, often called the harm principle and sometimes the liberty principle. I will explain the second part in Part Two of this chapter. The canonical harm principle states that:

the only purpose for which power can be rightfully exercised over any member of a civilised community, against his will, is to prevent harm to others. His own good, either physical or moral, is not sufficient warrant (Mill, 1859, p. 223).

However, the above formulation of the harm principle is not the only one Mill offers. A second formulation of the harm principle states:

Whenever, in short, there is a definite damage, or a definite risk of damage, either to an individual or to the public, the case is taken out of the province of liberty, and placed in that of morality or law (Mill, 1859, p. 282).

A third formulation is:

the conduct from which it is desired to deter him must be calculated to produce evil to some one else. The only part of the conduct of anyone, for which he is amenable to society, is that which concerns others. In the part which merely concerns himself, his independence is, of right, absolute (Mill, 1859, p. 224).

A fourth formulation reads:

As soon as any part of a person's conduct affects prejudicially the interests of others, society has jurisdiction over it, and the question whether the general welfare will or will not be promoted by interfering with it, becomes open to discussion. But there is no room for entertaining any such question when a person's conduct affects the interests of no persons besides himself, or needs not affect them unless they like (all the persons concerned being of full age, and the ordinary amount of understanding). In all such cases there should be perfect freedom, legal and social, to do the action and stand the consequences (Mill, 1859, p. 276).

A fifth formulation holds:

The principle requires liberty...of doing as we like, subject to such consequences as may follow: without impediment from our fellow creatures, so long as what we do does not harm them (Mill, 1859, p. 226).

These formulations of the harm principle are not identical and place different restrictions on the state and society's power. The formulations suggest a different trigger for when an individual's liberty can be restricted: *harm* to others for formulation one and five, *damage* to others for formulation two, conduct that *concerns* others for

formulation three, and conduct that concerns the *interests* of others for formulation four. This lack of clarity has a significant implication for determining when the harm principle permits the state or society to interfere.

Formulation two also asserts that damage to the public, rather than a specific individual, provides a reason for restricting liberty. Formulation four introduces the condition that the state cannot interfere when people consent to be harmed, provided they are adults who are competent decision-makers. I will explore this in Section 2.2.2. Furthermore, formulations one and three make the principle ambiguous as to whether it permits the state to only regulate harmful conduct, or whether it permits the state to regulate behaviour more generally to prevent harm. I will discuss this in full in Chapter Three. It is not the purpose of this thesis to offer a definitive interpretation of Mill's harm principle. Given the contradictions in the formulations, I will focus on the role the formulations play in Mill's overall argument.

The different formulations of the harm principle all play a role in demonstrating that Mill's harm principle restricts the state and society's use of *power* over others to cases where harm, in some form or other, will be prevented to others. The question of what power means arises. Mill understands power widely and recognises that the state, society, and familial relations can all diminish the liberty of individuals (Mill, 1859, pp. 219-220). As this thesis is concerned with the political and ethical justifications for air pollution policy, I will generally discuss state power and leave aside the other institutions.

One way state power can be understood is as an interference with an individual's liberty of action (Jacobson, 2000, p. 288). This suggestion is in keeping with Mill's claim that the purpose of his principle is to rule out "interfering with the liberty of action" of others except when to prevent harm (Mill, 1859, p. 223). However, it is important to be clear that not all state power is an interference with someone's liberty of action. Daniel Jacobson points out that exercises of power extend beyond merely interfering with someone's liberty of action (Jacobson, 2000, p. 289). Mill is also concerned with how state power can affect an individual's liberties of conscience, expression, life plans, tastes, pursuits, and association (Mill, 1859, pp. 225-226). This scope of liberties, and others not included, can be referred to generally as 'liberty'. From this, we can see that Mill recognises the ability of state power to interfere very widely into an individual's liberty.

However, the key feature of Mill's harm principle is that it does not necessarily prevent the state from interfering with any of these liberties. Rather, the harm principle restricts when and by what means the state can interfere. We can distinguish two kinds of power, namely non-coercive power and coercive power (which I will call non-coercive interference and coercive interference respectively). In short, the harm principle restricts coercive state interference merely to the prevention of harm. I will now show the harm principle is concerned with restricting coercive interference. I will then define some terms that are also relevant to understanding how the state exercises power.

To understand the harm principle's restriction on state power, consider the United Kingdom's ban on smoking in nearly all enclosed workplaces and public places, introduced in 2007. Banning smoking in indoor public spaces interferes with someone's liberty of action to smoke in certain places. This type of state power does interfere with someone's freedom, namely their liberty of action. The freedom of an individual to choose where they smoke is removed. The state enforces this type of measure through legal penalties and punishments. Being required to pay a fine for smoking in a no-smoking area is state power that is interference, as it restricts people's liberty with the threat of punishment. This state power is a type of interference that is coercive, as it attempts to control an individual's choice about how they act by threat or force of punishment. A full account of coercion is beyond the scope of this thesis, but this discussion roughly captures that coercive interference restricts liberty by removing choice. Hence, I refer to such state actions as coercive interference.

Now consider the traffic-light style labelling on food products that indicates to consumers whether a food is high in calories, fat, salt, and sugar. In some countries, like Chile, it is mandatory for producers to include these labels on their packaging (Smithers, 2020). In this case, the state uses its power in an effort to make consumers aware of the relevant information. Unlike the smoking ban, though, this state power is not coercive over consumers (though it does coerce the manufacturer into including this information). This power does not limit any consumer's freedom, as individuals remain free to choose to eat unhealthy food. So, this state power is not coercive interference, as it does not limit a consumer's liberty of action. However, it is a form of non-coercive interference from the state towards consumers as it aims to make them aware and able to make decisions based on the information. Regardless, the consumers are not threatened or forced to choose healthier foods in response to the information. Consumers can merely reject or ignore the information. I will further discuss such exercises of state power in Chapters Four and Five.

These two cases demonstrate some of the exercises of power that Mill is concerned with and explain what *power over others* means. The cases demonstrate that the state has a range of powers to interfere with the lives of individuals. We can also identify state power that does *not interfere* with the lives of individuals. Imagine a state's health department that secretly placed undetectable cameras in peoples' kitchens to monitor their eating habits. This form of state power would not *interfere* with the lives of individuals, as the covert nature of the cameras would do nothing to affect people's eating habits. However, this practice would still be state power and would *intrude* into people's lives. So, we can see that state power can be both interference and intrusion.⁶

⁶ In Chapters Four and Five, I will discuss how state power that is not coercive interference, but rather is *intrusive*, should be used appropriately by the state, even if it is not subject to the restriction of the harm principle.

To summarise, the hypothetical state which places cameras into household kitchens provides an example of a state exercising power that is *not interference* (but is *intrusive*). On the other hand, the smoking ban is also state power, but this case is interference. Specifically, the smoking ban is *coercive interference*. Food labels that provide nutritional information to make consumers aware of whether their food is unhealthy is also state power, namely *non-coercive interference*. Making consumers aware of information is a form of non-coercive state power, as consumers are not coerced into any action. Consumers have the freedom to ignore or reject the information. From this, we can see that all interference involves power (which can be both coercive and non-coercive), but not all power involves interference.

This explanation identifies the key feature of Mill's harm principle. The principle restricts coercive interference to cases where the interference will prevent harm to others. For example, a state can coercively interfere with people's liberty to smoke in certain public places because the coercive interference will prevent harm to others. The harm principle does not restrict the state's ability to interfere non-coercively, regardless of whether the interference will prevent harm to others.⁷ Consistently with the harm principle, power that is non-coercive is always permitted because it does not restrict your liberty. On the other hand, coercive interference is restricted because it limits your liberty. So coercive interference must prevent harm to others to be permitted consistently with the harm principle.

Whilst the harm principle rules out using coercive interference to control others when their action does not harm anyone else, Mill accepts it may be appropriate to reason with or persuade the individual in question (Mill, 1859, p. 224). So, attempting to change the behaviour of an individual, when their action only harms themselves, is indeed consistent with the harm principle, but the use of coercive interference to achieve this is not. Ultimately, the purpose of the harm principle is to restrict the use of coercive interference over others. The previous discussion has outlined interference and introduced intrusion, but there are other important terms that describe how the state exercises power. I will now outline these terms. These definitions are stipulations, rather than points of conceptual analysis. Nothing substantive depends on the definitions I provide; they are merely to explain how I describe particular forms of state power and are generally in keeping with our ordinary usage of the words.

Mill uses a variety of words to describe state power in *On Liberty*, including: interfere/interference, restrict/restriction, limit/limitation, regulate/regulation, and coercion (Mill, 1859). Following Mill, much of the traditional and modern literature on the harm principle usually refers to both coercive and non-coercive state power as interference (Ritchie, 1891, Rees, 1960, Wollheim, 1973, Brink, 2013, Turner, 2014, Riley, 2015, Saunders, 2016, Bell, 2021). Aligning with this tradition, I use

⁷ The fact that the state can always interfere non-coercively does not mean that the state *should* always interfere, as I will show.

interfere/interference to generally refer to the wide range of ways the state can control liberty. Interference generally has negative connotations and suggests the state power is unwelcome. So, the term is both descriptive and normative. By this, I mean it describes the phenomenon but also implies that interference should be *prima facie* avoided, at least without good reason.

I previously explained that interference can be both coercive and non-coercive. I use the term coercive interference to explain how the state can control, shape, affect, or limit one's liberty by *threat or force*, often by using the threat of legal sanction and penalties. I use the term non-coercive interference to explain how the state can shape or affect one's liberty *without* threat or force (Anderson, 2021). I will later discuss how public health interventions, like public information campaigns or building bicycle lanes, can affect liberty. Similarly, I use require/required in sentences that outline when an individual is coerced into doing X. For example, the state requires individuals to pay income tax.

I use the terms restrict/restriction and limit/limitation to describe state power. The definitions of these concepts are closely linked. Generally, I use both concepts to describe constraints on liberty. For example, the state might limit or restrict how many hours people may work in a day, the size of alcoholic drinks being sold in public venues, and the driving of more polluting vehicles in certain areas.

I use the terms regulate/regulation in a similar vein. However, I also use regulate/regulation to discuss how the state can oversee and control groups, like the corporations that make up an industry. These terms are highly relevant to discussions of addressing air quality as the state can regulate/impose regulations on polluting groups to prevent harm. For example, the state can regulate the quality of fuel sold to reduce the pollutants released by road vehicles.

In *On Liberty* (1859), Mill did not use the terms intrusion/intrusive to refer to state power⁸. Similarly to interference, intrusion has negative connotations and suggests the state power is unwelcome. Intrusion describes the phenomenon but also implies that the form of state power should be *prima facie* avoided, at least without good reason. However, intrusion more adequately captures the range of ways the state exercises power than interference, and the other aforementioned terms. Consider again the state that covertly placed cameras into every household's kitchen to monitor eating habits. This form of state power would not *interfere with, regulate to change, limit, or restrict* anyone's liberty to eat what they please, but it would be *intrusive*. The covert cameras do

⁸ Mill uses the phrase "intrusively pious" to describe the attempts of the Puritan movement to ban "amusements" like dancing, music, and theatre (Mill, 1859, p. 286). His use of the phrase seems more in keeping with terms like interfere or restrict, as the context is prohibiting popular activities. Regardless, my stipulations are not dependent on how Mill himself used certain words.

not affect anyone's eating habits, but it is clear the government is still encroaching where it is not welcome. This point marks an important difference between the concepts of intrusion and the aforementioned descriptions of state power. The terms interfere, limit, and restrict describe how the state affects liberty. The term intrusion is broader and includes this dimension of affecting liberty, but also covers how the state can encroach where it is not welcome in other ways.

As well as covering how the state can affect privacy, the concept of intrusion may also more adequately cover how the state can affect some of the liberties I previously noted that Mill is concerned with; liberties of conscience, expression, life plans, tastes, pursuits, and association (Mill, 1859, pp. 225-226). For example, imagine a state that does not restrict, limit, or interfere with some life plans and tastes, but rather uses propaganda to make such life plans and tastes widely stigmatised. Individuals are free to adopt the life plans and tastes as there is no restriction, limitation, or interference that blocks them from doing so. However, the state's ability to stigmatise the life plans and tastes makes it very hard for individuals to do as they please. So, it seems accurate to say the state is *intruding* upon the liberty to exercise such life plans and tastes. The concept of intrusion describes how the state can negatively affect this conception of liberty, whereas the aforementioned concepts would not as clearly cover this.

Another reason that I describe some state power as intrusion/intrusive is that the term captures how a state that bombarded its populace with constant public health messaging on television adverts, billboards, and banners would clearly intrude into the lives of individuals, even if the messaging did not interfere with one's liberty (Conly, 2014). So, intrusion/intrusive more accurately describes some forms of state power than the other terms I outline here. Generally, intrusion/intrusive is intended to be a catch-all term that describes the many ways state interventions can intrude.

Mill also did not use the terms intervene/intervention in *On Liberty* (1859)⁹. The previous terms generally have negative connotations and suggest the state power is unwelcome. So, the aforementioned terms are both descriptive and normative. By this, I mean that they describe the phenomenon but also imply that the forms of state power should be *prima facie* avoided, at least without good reason. Whilst it also seems accurate that our normal usage of 'interfere' and 'intrude' suggest the state's action would be unwelcome, we often use intervene to mean roughly the same thing without the negative connotations. For example, state intervention in the public health sphere to create a national health service is state power that is often welcome, at least compared to state power that interferes or intrudes. So, I use the terms intervene/intervention

⁹ Mill's essay *A Few Words on Non-Intervention* (1859), where he discusses the circumstances that justify state intervention in the sovereign affairs of another country, was published in the same year as *On Liberty* (1859). This point suggests Mill could have used the terms intervene/intervention to describe some kinds of state power in *On Liberty* (1859) but chose not to.

generally to describe how the state can take action to influence the outcome, but not necessarily with the same negative connotations.

2.2 - What was Mill's view of harm?

I will now provide a rough and ready reading of what Mill meant by “harm”. This debate matters because what counts as “harm” delimits what the state can coercively interfere with. However, there will inevitably be disagreement about what counts as harm. Some critics have argued this makes the harm principle useless (Holtug, 2002, Petersen, 2014 Jonas, 2016). Anna Folland has responded that it is unreasonably demanding for proponents of the harm principle to have a perfect account of harm, and other theories involving harm are workable without a perfect account (Folland, 2022, p. 151). For example, in her work on the Doctrine of Doing and Allowing¹⁰, Fiona Woollard does not commit to an account of harm and claims being able to identify paradigm cases of harm “is enough” (Woollard, 2015, p. 18). I agree with Folland (2022) and Woollard (2015). I provide a plausible, or rough and ready, account of what Mill probably meant by harm, but this thesis is not concerned with ascertaining exactly what Mill meant. I conclude that a plausible reading of Mill's argument is provided by Piers Norris Turner (2014), and harm is any direct negative consequence for others. After showing what Mill probably meant by harm, I turn to the more important work of attempting to show that we should accept this account of harm.

There is considerable debate about what Mill meant by “harm” (van Mill, 2021) and how it ought to be defined. As already stated, Mill formulates the harm principle as “the only purpose for which power can rightfully be exercised over any member of a civilised community, against his will, is to prevent *harm* to others” (Mill, 1859, p. 223, emphasis added). However, he does not explicitly specify what he means by harm.

Without a specification of what counts as ‘harm’, the harm principle is not fully determinate as a principle to protect liberty. A proper specification of harm determines what the state can interfere with. We have pre-theoretical intuitions about what counts as harm, but a full specification prevents a state whose decision-makers’ intuitions of what counts as harm are overly permissive. An overly permissive understanding of harm may permit the state to interfere with nearly any action. Hence, an accurate specification is needed.

2.2.1 - Harm as rights-violation

This problem has led some to propose that we should read ‘harm’ as a very restricted concept, to prevent the state from interfering with many actions. David O. Brink (1992, 2013) and Alan Fuchs (2006) both read Mill as holding that an action that harms

¹⁰ I will discuss the Doctrine of Doing and Allowing at length in Chapter Five.

someone must violate or threaten one of their rights. I will refer to this reading as the rights-violation reading. So, the rights-violation reading of the harm principle would only permit the state to coercively interfere in cases where A violates or threatens one or more of B's rights. In cases where A's actions fall short of violating or threatening B's rights, coercive interference is not permitted consistently with the harm principle.

Brink (1992, pp. 84-85) and Fuchs (2006, pp. 147-150) both base their reading on Mill's statement that harm is "injuring...certain interests, which, either by express legal provision or by tacit understanding, ought to be considered as rights" (Mill, 1859, p. 276). Brink holds that to harm someone is to set back one or more of their rights. He argues this conception of harm can be understood as contrasted with mere offence. For Brink, a person might be offended by tasteless jokes, but they are not harmed by the joke (Brink, 2013, p. 143). Brink bases his argument on the aforementioned quote and Mill's statements that when a person "fails in the consideration" of another's rights (Mill, 1859, p. 281) or fails in their "duty to others" in which they have a right (Mill, 1859, p. 283), they harm the other person (Brink, 1992, p. 85).

Fuchs bases his understanding of what Mill meant by harm on Mill's account of justice, rights, and punishment in Chapter Five of Mill's *Utilitarianism* (Mill, 1863). Fuchs focuses on Mill's argument that external sanctions, or legal or social punishments, are restricted to where someone violates the right(s) of another (Fuchs, 2006, pp. 147-150). Fuchs distinguishes between Mill's "perfect duties of justice" associated with correlative rights and imperfect duties, which have no correlative rights. Perfect duties of justice are duties "in virtue of which a correlative right resides" in people. Fuchs reads Mill as asserting that the state can only interfere with perfect duties of justice. As rights are guaranteed to a right-holder, violating a perfect duty can sanction external coercion. So, to harm someone, on Fuchs' reading, is to violate another's right(s) (Fuchs, 2006, pp. 149-150). From Fuchs' and Brink's arguments, we can see there is some textual basis for the view that a harm is a violation of someone's rights.

However, as Piers Norris Turner (2014, p. 305) points out, whilst Mill rejects *legal* interference for harms that fall short of rights violations, he only rejects legal interference in such cases. Shortly after his statement suggesting that harm is "injuring...certain interests, which, either by express legal provision or by tacit understanding, ought to be considered as rights", Mill states that some acts may be "hurtful to others" but not violate their rights. In these cases, the offender may "be justly punished by opinion, though not by law" (Mill, 1859, p. 276).

Here, Mill tells us that he recognises that harms are not limited to violations of an individual's rights, and people can be harmed in ways that do not violate their rights. Both Brink's and Fuchs' arguments claim that Mill limits the grounds for interference to restrictions on violations of rights. However, there are cases where Mill accepts people can be harmed in ways that do not involve a violation of their rights. In such cases, the harm principle does not sanction legal interference. However, the harm principle is not limited to restricting legal sanctions and coercive interference can include the coercive force of public opinion. Mill believes that public opinion, as social disapprobation, can be

a legitimate means of punishment for harm (Mill, 1859, p. 276). Brink's and Fuchs' arguments overlook this. Due to this, I think the above quotes show that Mill is merely distinguishing between the types of harms that can be sanctioned with legal penalties (those that violate a right) and harms that can be sanctioned with opinion (those that do not violate a right). So, regardless of what means Mill thinks are best suited to interference in such cases, we can see that Mill claims that these cases are harms and are still part of society's jurisdiction. Due to this, I think we ought to reject the rights-violation reading of Brink (1992, 2013) and Fuchs (2006) that reads to harm someone is to violate their rights.

2.2.2 - Harm as affecting interests

Another account of how Mill understands harm is proposed by John C. Rees (1960). Rees' influential account of harm is less restrictive than the rights-violation view and holds that Mill understands harm as actions that negatively affect the *interests* of others (Rees, 1960). Traditional critics of Mill (Stephen, 1874, p. x, Ritchie, 1891, pp. 96-97, Barker, 1951, p. 217) claimed that the harm principle fails to protect liberty as nearly every action we perform affects others. So, the harm principle would permit the state to coercively interfere with nearly all behaviour. Rees' article was an attempt to demonstrate the problems with the traditional view and provide an improved reading of Mill (Rees, 1960, pp. 115-116).

Rees' interpretation is that Mill is saying interference is permitted only with actions that negatively affect the interests of others. Nearly anything that Person A does will causally affect another person. However, a person being causally affected by the behaviour of A does not mean that A affects their interests. Rees' view is that Mill would separate the claims that A's interests have been affected and A has been affected into "quite different categories" (Rees, 1960, p. 123). So, on Rees' reading of Mill, a person may be merely affected by another's behaviour, but they are not harmed until their interests are affected (Rees, 1960, p. 118). What counts as an individual's interests is hard to provide a definitive account of. Mill bases his account of individual interests on his utilitarianism and forgoes any conception of interests based on the idea of abstract rights (Mill, 1859, p. 224). Rees stresses that interests are not identified by legal rights. Instead, he emphasises that interests are connected to the norms of society. In his words, interests "depend for their existence on social recognition and are closely connected with prevailing standards about the sort of behaviour a man can legitimately expect from others" (Rees, 1960, p. 119). We recognise that people have an interest in physical well-being and health. On this view, this interest might include access to adequate nutrition, even if this isn't recognised as a legal right. I only suggest nutrition as a possible example, and accept some might reject that it ought to count as an example of things we have an interest in.

A correct understanding of what counts as our interests may show that there are some things we wish to avoid, but have no legitimate interest in avoiding (Saunders,

2016, p. 1007). Jeremy Waldron (1987) developed this interest-based reading. Waldron claims that Mill's account of interests would not include an interest in avoiding "moral distress" or offence. Witnessing a same-sex couple kissing may cause distress to another person's deeply held ethical or religious beliefs. However, witnessing the couple does not negatively affect the other person's interests because they have no interest in avoiding seeing things that challenge their beliefs (Waldron, 1987, pp. 417-418).

Rees' (1960) reading seems to be initially appealing as a reading of Mill's work. It avoids the previously outlined problem of the rights-violation reading because it is consistent with Mill's idea that harms that fall short of violating someone else's rights can be interfered with (Mill, 1859, p. 276). However, this reading also faces hermeneutical challenges. Richard Wollheim (1973) argues that Mill does use "interests" and "affected" interchangeably. For Wollheim, Mill's view was that to say A's interests have been affected and A has been affected do not belong to different categories, pace Rees (Wollheim, 1973, p. 23). Wollheim appeals to Mill's statement that the harm principle is based on "utility in the largest sense, grounded on the permanent interests of a man as a progressive being" (Mill, 1859, p. 224). Wollheim states that this passage is where Mill gets closest to showing how he intends the term "interests" to be understood (Wollheim, 1973, p. 23).

Mill's use of "utility" here, on Wollheim's reading, shows that Mill must have been referring to something that is the proper object of an empirical calculation. Wollheim argues from this that because utility was something empirical for Mill, and interests are those things in terms of which the utilitarian calculation ought to be made, it follows that "interests" itself cannot involve a reference to the "prevailing standards" that we can expect from others. (Wollheim, 1973, pp. 23-24) So, interests and effects must actually be in the same category and Rees is wrong in claiming that Mill separates the two (Wollheim, 1973, p. 24). Therefore, Wollheim holds that Rees' understanding of interests being dependent on the prevailing standards that we expect from others must be mistaken. So, Wollheim (1973) rejects Rees' (1960) argument that Mill understands harms as actions that affect the interests of others.

I think Wollheim's (1973) argument provides a reason for us to reject Rees' (1960) reading of Mill. It seems implausible that Mill based his account of harm on interests that require social recognition, particularly as Mill is concerned with the power of custom. In the early pages of *On Liberty*, Mill criticises "the magical influence of custom" as causing the status quo to be taken for granted (Mill, 1859, p. 220). Here, Mill is explicitly rejecting the belief that the existing rules of conduct are always correct and that we should base our principles on such custom. Due to this, it cannot reflect Mill's argument for harm to be based on interests that are dependent on social recognition, because this basis would be subject to the influence of custom. Therefore, I think Rees' (1960) reading that Mill argues harms are actions that affect the interests of others ought to be rejected.

2.2.3 - Harm as any negative consequence

A third reading of what Mill meant by harm is suggested by Turner (2014), and endorsed by Hansson (2015) and Cowen (2016), who offers an expansive conception of harm. Turner holds that Mill argues harm is any direct negative consequence for others (Turner, 2014, p. 314). I will first briefly define “direct” before explaining Turner’s reading of Mill’s conception of harm. Turner illuminates the difference between direct and indirect by showing that if Person A drinks alcohol and then performs some further action that directly harms Person B, the drinking itself only indirectly harms others. In contrast, the further action is itself a direct harm (Turner, 2014, p. 319). So, direct negative consequences are those that happen “in the first instance” (Mill, 1859, p. 225), and Mill limits “harm to others” only to direct negative consequences, not ones that are indirect (Turner, 2014, p. 317).

Part of Turner’s argument for Mill’s account of harm recognises that Mill’s failure to explicitly define harm is instructive of how he actually understood harm. Turner states that Mill does not define harm because he uses it as a general term for bad consequences, which requires no further specification (Turner, 2014, pp. 300-301). This claim raises the question of how the harm principle can protect liberty. Many actions we perform risk a direct negative consequence to others and so the state would be permitted to coercively interfere with a huge range of liberties.

However, Turner notes that Mill understands justifying interference as a two-stage process. The first stage is the harm principle and this stage is merely intended to rule out coercive interference on solely paternalistic, moralist, and religious grounds. Liberty is first protected by removing these reasons for interference. Liberty is further defended by the second-stage of justifying interference. At the second-stage, the state goes beyond the harm principle and considers the social costs and benefits of interfering (Turner, 2014, pp. 300-301).

Given that harm is defined here as any direct negative consequence, and offence is plausibly a direct negative consequence, a surprising implication of this account is that the harm principle permits the state to coercively interfere with actions that offend others. So, Turner’s reading holds that Mill would accept a homophobe who is merely offended by witnessing a same-sex couple kissing may genuinely be harmed and the state is permitted to coercively interfere consistently with the harm principle. However, the person being harmed in this sense does not mean that the state *ought* to interfere to prevent such consensual, private relations, even if the interference is permissible consistently with the harm principle. Turner states that the harm principle would rule out any paternalistic reasons for interfering in such cases and the second-stage would show that regulation would not be worth the costs to society (Turner, 2014 p. 301). I will discuss this point further in the next section, where I argue we should accept this account of harm. I will also explain the second-stage of justifying interference fully in Part Two.

My defence of Turner's reading, to be discussed in the next section, does not depend on textual evidence. The following points will show that Mill probably meant harm as any direct negative consequence, but do not give us a reason to accept this account of harm. Turner's reading is more consistent with the textual evidence of *On Liberty* (Mill, 1859) and other texts where Mill referred to harm than the previously mentioned readings (Turner, 2014, p. 320). Mill regularly used an expansive conception of harm in other texts, which seems to show he understood the concept as a general term for a negative consequence (Turner, 2014, p. 320). The clearest examples of Mill using harm expansively in other texts include *Sedgwick's Discourse* (Mill, 1835, p. 59) and a letter to Henry Brandreth, (Mill, 1867, p. 1234), where Mill uses "harm" as an antonym to "good". This point shows that Mill frequently wrote of harm in an expansive sense and plausibly he would have continued this within *On Liberty* (Mill, 1859).

Furthermore, the expansive conception of harm seems consistent with Mill's formulations of the harm principle that declare the fact that an act is public brings it into the state's domain (Turner, 2014, p. 320). In his statements of when an action becomes part of the state's domain, Mill writes "he must not make himself a nuisance to other people" (Mill, 1859, p. 260), "[w]henver...there is a definite damage, or a definite risk of damage...the case is taken out of the province of liberty" (Mill, 1859, p. 282), that there "are many acts which...if done publicly...may rightfully be prohibited" (Mill, 1859, p. 295), and that interference is permitted when an individual's action is "calculated to produce evil to some one else" (Mill, 1859, p. 224).

These actions fall outside of the narrower previous interpretations of the harm principle. This point provides a reason for us to doubt the accuracy of the narrower previous interpretations and provide evidence for Turner's reading. Mill does seem to include emotional distress in some of his formulations of the harm principle. This point shows that the claim that the only actions that can be interfered with are ones that threaten rights or interests is not accurate (Turner, 2014, p. 308). These formulations of the harm principle undermine the previous readings and show that Turner's (2014) reading is the most plausible. Turner's reading can account for an understanding of harm as any direct negative consequence, rather than restricting harm to rights or interests. Therefore, I think Mill's definition of harm can be most plausibly read as any direct negative consequence.

2.2.4 - Should we accept Mill's account of harm?

We now have a plausible reading of what Mill meant by harm. My attention now turns to whether we should accept any direct negative consequence as an account of harm. Ben Bradley (2012) provides desiderata for accounts of harm. I will discuss some of these here and show that Mill's account of harm, as any direct negative consequence, is plausible. So, we should accept any direct negative consequence as our account of harm.

First, the account of harm should be extensionally adequate. Put simply, this means that "the analysis must fit the data" (Bradley, 2012, p. 394). To be a plausible

account of harm, Mill's account of harm must cover states of affairs that are clearly harmful, but also not identify states of affairs that are clearly not harms. Harm as any direct negative consequence does cover the former. Our pre-theoretical understanding of harm holds that harmful states of affairs are negative, meaning they are unfortunate and we usually want to avoid such experiences. So, states of affairs that are clearly harmful are captured by the *negative* consequence condition and the first half of the extensionally adequate desideratum is satisfied.

However, one might suggest the wide scope of any direct negative consequence captures states of affairs that are clearly *not* harmful. One instance of such a state of affairs could be the aforementioned offence a homophobe feels at seeing a same-sex couple kissing in public. There are some cases of offence that may be genuinely harmful, such as hate speech (Bell, 2020, Tirrell, 2021, pp. 128-29, Lang, 2024, p. 23). However, the experience of the homophobe who is offended merely at witnessing a same-sex couple kissing is qualitatively very different to the experience of being a victim of hate speech, even if both cases are plausibly cases of offence. Gerald Lang argues that appealing to offence to regulate hate speech is a mistake because the state should have to give the offence a timid or easily shocked person feels the same weight as the offence a minority feels hearing hate speech (Lang, 2024, p. 24). So, concluding that the homophobe is genuinely harmed in this instance might seem to make the account of harm implausible, because the state would be permitted to interfere with the same-sex couple consistently with the harm principle.

However, I am willing to accept that the homophobe is genuinely harmed. Despite conceding this point, I still hold that a same-sex couple kissing is not the sort of behaviour the state should interfere with. Interference in such a case would clearly violate the liberty of action and association everyone should be entitled to in a liberal democracy. The state can rule out interfering in such cases by comparing the value of people being able to live freely and the disvalue of mere offence the homophobe experiences. In Mill's terminology, there is "no parity" (Mill, 1859, p. 283) between the former and latter. The liberty of the same-sex couple matters far more than the harm suffered by the homophobe, to the extent that there is no equivalence. So, the homophobe's offence is not the sort of harm that should be taken seriously in the state's second-stage calculation about whether or not to interfere, which I will discuss in the next section.

Second, the account of harm should be axiologically neutral. Here, Bradley means that the account should be compatible with different accounts of welfare. An account of harm which understands harm as only frustrating someone else's desires presupposes a desire-based theory of well-being (Bradley, 2012, p. 394). Rees' interest-based account of harm is also not axiologically neutral. Rees' account of harm presupposes an interest-based theory of well-being. So, his account of harm can be rejected by those who do not share his theory of well-being. By defining harm at a more abstract level, as any direct negative consequence, proponents of different theories of well-being can agree, at least

at some level of abstraction, what harm is, even if they disagree about whether anything else is required for harm.

Third, the account of harm “should explain what all harms have in common” (Bradley, 2012, p. 395). This desideratum is important as the states of affairs we usually think of as harms can be very different. For example, suffering an asthma attack caused by fumes from a nearby factory is qualitatively different to someone committing identity fraud against you and emptying your bank account, but both are intuitively types of harm. A convincing account of harm should encompass these kinds of different states of affairs. What these kinds of harms have in common is that they are both direct negative consequences. So, one advantage of the any direct negative consequence account is that both kinds are unified as harm, which is in keeping with our usual understanding of harm. No extra conditions are required to explain how the asthma attack and identity fraud are harms.

Finally, if we accept that having an account of harm is useful¹¹, then the account should have normative importance (Bradley, 2012, p. 396). By this, Bradley means that the account should make sense in accordance with normative theories that appeal to the concept of harm. So, the account of harm should fit with theories like Mill’s harm principle, the Doctrine of Double Effect, which attempts to explain the permissibility of an action that causes a serious harm as a side effect of promoting some good end (McIntyre, 2023), or the Doctrine of Doing and Allowing, which holds that there is a moral distinction between doing and allowing harm (Woollard, 2015). The account of harm as any direct negative consequence can be ‘plugged in’ to these other normative theories as the account provides an intuitively plausible definition of harm, even if not everyone would accept it. A mistaken account of harm would make the normative theories absurd. For example, if the account of harm showed that Mill’s harm principle would *never* permit the state to coercively interfere, then the account of harm must be normatively implausible and should be rejected.

2.3 - Some clarifications

I will now clarify some additional features of Mill’s (1859) argument. I will first explain that the harm principle restricts the *reasons* for which the state can interfere. Second, I will show that the harm principle permits interference when the harm being interfered with is non-consensual. Third, I argue that the harm principle does not commit the state to a libertarian-style minimal state.

¹¹ See Norcross (2012, pp. 171-172) for an opposing view.

2.3.1 - Restriction on reasons for interference

As previously introduced, Mill's harm principle restricts coercive interference by the state to cases where harm to others will be prevented. The important constraint on state interference is that the state's justificatory reason for interfering must be the prevention of harm to others (Ten, 1980, pp. 40-41). If a state fails to have this justificatory reason for coercively interfering, then the interference is not permitted by the harm principle.

This stipulation allows Mill to rule out much interference. Mill declares that a person's "own good, either physical or moral, is not a sufficient warrant" (Mill, 1859, p. 223). Additionally, this stipulation excludes interference based on moralist and religious grounds, which have historically served as a prominent justification for coercive interference (and continue to do so in some states). So, a state could not claim it was criminalising pornography on religious, moral, or solely¹² paternalistic grounds as these reasons are unrelated to preventing harm to others. The state may consider prohibiting pornography on the grounds that it causes harm to others, but only for this reason.

However, a state which is not motivated by the prevention of harm to others might be permitted to coercively interfere if it also has the proper justificatory reason of preventing harm to others. Consider a so-called nanny state that has the motivating reason of preventing people from harming *themselves* through actively smoking cigarettes and wishes to introduce a smoking ban to reduce such harm. Consider also a state that views smoking cigarettes to be deeply immoral or sacrilegious and is motivated to ban cigarettes on these grounds. Neither state could coercively restrict cigarette smoking on such religious, moral or solely paternalistic grounds consistently with Mill's harm principle for this motivating reason. However, if the state also had the justificatory reason of restricting cigarette smoking to prevent the harms of second-hand smoke, which would prevent harm to others, then coercive interference to restrict cigarette smoking would be consistent with the harm principle. So, a state which is not motivated by the prevention of harm may enact coercive interference if and only if its justificatory reason is the prevention of harm to others, consistently with Mill's harm principle.

It is important to be clear, however, that Mill understands the harm principle as a principle that can be applied prospectively to prevent a future action that will plausibly lead to harm (Mill, 1859, p. 224). Mill accepts that the risk of harm is enough to justify coercive interference. So, the state's justificatory reason for interfering must be the prevention of harm, but this reason can also be preventing an action that risks harm, even if does not genuinely end up being harmful.

¹² Note that solely is used here as I endorse Jonathan Riley's (2015) argument that paternalism when coupled with the prevention of harm can justify interference in Section 2.3.

It is frequently the case that we cannot know for certain if an action will cause harm, but we often plausibly understand that the action risks harm. Reckless driving that does not actually result in a car crash or harm to anyone is an example of such an action. The state can prospectively forbid this action to thwart the risk of future drivers deciding to drive recklessly. In these cases, Mill states that the action can be regulated if the action risks harm (Mill, 1859, p. 224). Additionally, if a person drives recklessly but no one is harmed, the state can still act retrospectively to punish this driver consistently with the harm principle (Mill, 1859, p. 280).

2.3.2 - Consent

A condition for the harm principle to permit coercive interference is that the harm being interfered with must be non-consensual (Saunders, 2016). Mill holds that “over himself, over his own body and mind, the individual is sovereign” (Mill, 1859, p. 224). So, for Mill, the state should not prevent people from being involved in actions that risk consensual harm, like boxing matches (Saunders, 2016, p. 1011). However, the state can interfere to both protect people who would not consent to harm themselves if they were aware of the danger and also to protect people who cannot consent to be harmed by others or themselves.

The harm principle permits interference to protect people who are unaware of a possible danger because the people do not consent to the potential harm, as they are unaware of it (Saunders, 2016, p. 1015). Mill outlines a case where a man intends to cross a risky bridge and is at risk of falling. Mill holds it is permissible to restrain the man and explain the danger until he is aware of the risk. Once a person is aware and can consent to such risk, the harm principle does not permit coercive interference to prevent the person from undertaking such actions (Mill, 1859, p. 294).

The state can also interfere to protect people unable to provide informed consent. The harm principle does not protect the liberty of agents who cannot give “their free, voluntary, and undeceived consent” (Mill, 1859, p. 225). For the purposes of this thesis, I take *informed* consent to be where a person can make use of access to the accurate and relevant information that one would need to reach a decision (O’Neill, 2003, p. 6). The implication of this is that the harm principle does not protect the liberty of people who are unable to consent to potential harm. In these cases, the protection of the harm principle to act as you wish (provided you do not harm others) does not apply. For example, the actions of children can be restrained by the state, their families, and the relevant parts of society (Mill, 1859, p. 224). A child may wish to do something harmful to themselves, but they can be prevented consistently with the harm principle. Additionally, the actions of adults with a learning disability or mental health condition that prevents informed consent can be regulated. Inebriated people who are “delirious, or in some state of excitement or absorption incompatible with the full use of the reflecting faculty” (Mill, 1859, p. 294) can also face regulation. Inebriated people may

wish to allow someone else to do something potentially harmful to them but their inability to consent means their liberty may be restricted.

The inability to give informed consent presents very real dangers and the state can coercively intervene in relevant cases to prevent actions that would ordinarily not be the state's business. For example, it would ordinarily be wrong to prevent people from undertaking paid work, but the state can restrict young children from doing so to protect them from others harming them. Another example is that someone undergoing a mental health crisis may be coercively interfered with by the state if their impaired ability to make "full use of the reflecting faculty" (Mill, 1859, p. 294) means they are at risk of being harmed by others, and cannot consent to such risk.

It is usually wrong for the state to deprive someone of their freedom, but sectioning someone in such cases is permitted by the harm principle. The relevant point in such cases is that the person cannot give informed consent to a harm. So, if a person is unable to make their own choices and poses a risk of harm to themselves, say through being at risk of suicide or committing serious self-harm, the harm principle permits interference. In cases where an adult can consent to harm themselves, say by eating very unhealthy food, the state is not permitted to act paternalistically and prevent this consistently with Mill's harm principle.

2.3.3 - A minimal state?

The restriction on coercive state action as permitted to only prevent harm has erroneously led some to interpret Mill's project in *On Liberty* (1859) as endorsing a libertarian-style minimal state (Capaldi, 1983, Posner, 2003).

This brief section will show that the harm principle permits state power far beyond the claims of a minimal state and we should reject readings of *On Liberty* (1859) that conclude Mill argues for a minimal state. This section is relevant to my wider project in the thesis as I will argue for a reading of Mill's harm principle that permits expansive state interference. One example of this point is that Mill (1859, p. 293) argues that the state should have responsibility for services that would be more efficiently run with government resources and expertise rather than left to individuals or the market, which is antithetical to most libertarian thinking. Additionally, the harm principle permits the state to compel individuals to provide witness testimony, adhere to duty to rescue laws, and cooperate with other positive acts that prevent harm (these examples of state power will be discussed in Chapter Three). This section will discuss some other legitimate uses of state power argued for in *On Liberty*, namely taxation, free public education for children (Mill, 1859, pp. 302-303) and enforcing labour laws to protect workers (Mill, 1859, p. 162). The significance of concluding that Mill's arguments do not advocate for a minimal state is that his arguments can be used to support a wider scope of state action to address air pollution.

Whilst the aforementioned points undermine the claims that Mill's project commits him to a libertarian-style minimal state, Mill's claims that coercive interference is only permitted to prevent harm but that the state can provide public goods (like education) is confusing. The compatibility of these aspects of Mill's argument and the central statement of the harm principle appear at odds for two reasons. First, free public education, the *enforcement* of labour laws, and public services are usually paid for by taxation. Second, compulsory education and labour laws seem to restrict liberty. Given that the harm principle holds that state intervention is limited to preventing harm, whether or not the state can offer public goods and enforce labour laws seems to depend on whether these things prevent harm. However, the connection between harm prevention and these state activities, especially enforcing labour laws, is unclear. I will now demonstrate how labour laws and public education are legitimate uses of state power that are not restricted by Mill's harm principle. So, the state is free to enact such power without restriction. I will then discuss the relationship between taxation and the harm principle.

Labour laws

The state can enforce labour laws that restrict the liberty of workers to work for highly-extended periods of time or in unsafe conditions. How the state can legitimately enforce such a restriction consistently with the harm principle needs to be clarified. The clarification is that such a restriction is not contrary to the will of the workers. Arneson points out that Mill's harm principle restricts regulations that violate the will of individuals (Arneson, 1980, p. 471). Mill's restriction on state interference is limited to when "power [can] be rightfully exercised over any member of a civilised community, *against his will*" (Mill, 1859, p. 223, emphasis added). So, if a regulation does not violate the will of individuals then the state can interfere (Arneson, 1980, p. 471). Due to the unequal power imbalance between workers and employers (at least for non-unionised workers), workers are in a poor bargaining position to negotiate for safe working conditions and reasonable hours. Rational workers will welcome labour laws that strengthen their bargaining position. Very few workers would consent (with the conditions of being informed, free to refuse, and with other alternatives available being met) to choose to work for highly-extended periods of time or in unsafe conditions. So, enforcing labour laws to prevent workers from undertaking such work restricts their liberty, but not their will. Rather, the workers would will for the state to restrict this liberty. Therefore, these labour laws are not the kind of state intervention that is restricted by the harm principle.

Of course, a few workers may genuinely desire to work for highly-extended periods of time or in unsafe conditions. Such cases present an issue for enforcing labour laws. A few workers being willing to undertake work for highly-extended periods or in unsafe conditions undermines the limits that protect the majority of workers. The harm principle permits the state to interfere in these cases to prevent the few workers from undertaking such work. Here, coercive interference is permitted as the few workers risk harm to other workers by undermining the collective bargaining that has achieved

labour laws, and risk an overall erosion of labour standards. If labour laws were reduced or removed then the subsequent unsafe and unhealthy working conditions would lead to accidents and injuries.

Public education

The state can compel children to attend school (Mill, 1859, pp. 301-302). Enforcing that children attend school is not relevant to the harm principle, as the principle does not protect the liberty of children to refuse to be educated, or in general (Mill, 1859, p. 224). The state is also permitted to require parents to provide a suitable education for children, which can involve home-schooling or sending their children to state schools (Mill, 1859, p. 302). The justification for coercing parents to ensure their child receives an education is that the harm principle only protects the liberty of parents in matters that concern themselves. As the education of their children concerns others (namely, their children), the parents do not have the liberty to refuse to educate their children. The fact that public education and labour laws are part of Mill's project of defending liberty should dispel the notion that his argument favours the minimal state. However, as previously mentioned, the provision of state schools and enforcement of labour laws is usually paid for by taxation. So, I will now explain the relationship between taxation and the harm principle.

Taxation

A full discussion of the relationship between taxation and Mill's harm principle is beyond the scope of this thesis, but I will provide a brief discussion here given the significance of taxation in addressing air pollution. Taxation is often the most direct way in which the government coercively interferes in the everyday lives of individuals. So, a brief explanation of how the government is permitted to interfere is required.

The state can raise revenue through taxing income, property, inheritance, goods and services, et cetera. The state can also introduce Pigouvian taxes, or what we might more simply refer to as compensation taxes. Named after the economist Arthur Pigou, such taxes raise revenue to pay for the harms caused by people or groups, e.g., corporations, through their activities (Barry, 2018). Pigouvian taxes are relevant to air pollution as the state can impose taxes on polluting activities, like factories burning unclean fuels, to raise revenue to fund prevention, mitigation, or adaptation for the resulting harms. Pigouvian taxes can also act as a deterrent to encourage polluters to adopt cleaner practices¹³. One example of a Pigouvian tax is the carbon tax imposed by states, which aims to deter agents, usually businesses and corporations, from polluting excessive quantities of carbon emissions (Pearce, 1991).

¹³ I will further discuss how the state can impose disincentives as a form of public health intervention in Chapters Four and Five.

All of the aforementioned taxes are a form of coercive interference as individuals are legally required to pay the tax and do not have the liberty to refuse. Whilst a tax like income tax is coercive as individuals cannot refuse paying it, Pigouvian taxes are additionally coercive in a different way. The additional coercion is that the state attempts to deter certain types of harmful action by imposing a penalty. Income tax does not aim to deter individuals from acting in harmful ways, whereas Pigouvian taxes do.

So, given all these taxes are coercive, the imposition of the taxes is consistent with the harm principle if, and only if, the justificatory reason for the state imposing such taxes is to prevent harm, as per Ten's argument from Section 2.2.1 (Ten, 1980). This point explains why carbon taxes are permitted by the harm principle, but sin taxes, defined as taxes to punish conduct that the state deems immoral, such as drinking alcohol, are not permitted by the harm principle (Mill, 1859, p. 298, see Saunders, 2013 for a discussion). If policymakers wanted to impose a carbon tax with the justificatory reason that they believed polluting was immoral, such a tax would not be consistent with the harm principle, as the justificatory reason is not preventing harm. This point relates to the earlier discussion as taxes used to fund state education and the provision of labour laws can be justified on the grounds that both forms of state power prevent harm, by decreasing child poverty and reducing harms in the workplace respectively.

The condition that taxes must have the justificatory reason of preventing harm rules out the state imposing taxation used to fund state activities that are irrelevant to the prevention of harm. In modern liberal democracies, taxation also often funds the state provision of goods unrelated to harm prevention, such as parks, public art, museums, and sports. So, Mill's harm principle rules out the state raising taxes to fund the aforementioned goods (unless the goods can be shown to prevent harm). This conclusion does not mean that the state cannot provide such goods though. The provision of the goods must be funded by non-coercive means. For example, sovereign wealth funds, national lotteries, tourism, commercialising natural resources, public bonds, et cetera.

2.4 - Is paternalism permitted by the harm principle?¹⁴

In Section 2.3.2, I stated Mill's harm principle rules out interference where informed adults that are competent decision-makers consent to harm as Mill holds that individuals are sovereign over themselves (Mill, 1859, p. 223). However, Jonathan Riley (2015) has suggested that paternalistic reasons may play a role in permitting interference, but only if there is also harm done to others. I will explain Riley's (2015)

¹⁴ Some have also argued that paternalism is also permitted by the harm principle to prevent individuals selling themselves into slavery (see Dworkin, 1972, Archard, 1991, Brown, 1998, Fuchs, 2001). I do not discuss this question in this thesis as it is irrelevant to air pollution policy.

argument and consider how it might apply to air pollution policy. I then conclude it does not weaken the harm principle as a liberty-defending principle.

In discussing whether Mill's harm principle permits paternalism, Riley distinguishes two accounts of paternalism. First, when discussing Mill's account of paternalism in *On Liberty* (1859), Riley explicitly claims that paternalism "must be understood in this context to mean coercive interference with a competent person's conduct solely for his own good" (Riley, 2015, p. 309). Riley, correctly, claims that this account of paternalism is ruled out by the harm principle. The state cannot coercively interfere with a competent adult decision maker's behaviour for the reason of improving his personal good consistently with the harm principle (Riley, 2015, p. 310).

Riley's second account of paternalism is "defined loosely" to include coercive interference with the individual's behaviour that harms others for his own good (Riley, 2015, p. 310). Riley argues that Mill's harm principle does permit the state to enact paternalistic policies on this account. Riley points out that the harm principle holds that a competent adult's own good is not *sufficient* to permit coercive interference with their behaviour (Riley, 2015, p. 311). Preventing harm is what is necessary for the interference to be permitted by the harm principle (Mill, 1859, p. 223).

However, as I will discuss later, Mill holds that the prevention of harm is not always sufficient to justify interference. For example, the interference may be not expedient if the costs of the interference are very high and the effect of the harm done is very small. Riley states this leaves open the possibility that a person's own good can provide a supplementary reason, along with the prevention of harm, to justify interference. So, a person's own good might make the costs of interference worthwhile. In such a case, Riley claims that paternalism and the prevention of harm would justify interference (Riley, 2015, pp. 311-312). If an individual's emissions harm both himself and others, but the harm to others is too small to justify interference while the harm to himself is severe enough to warrant interfering, the state may be justified in intervening consistently with the harm principle.

So, this rules out policies that are solely paternalistic, but not policies that protect both the individual being interfered with and others. I will compare some policies to illuminate this further. Here are three examples that would *not* be consistent with the harm principle. First, the state mandates that populations vulnerable to poor air quality, e.g., the elderly or those with respiratory conditions, stay indoors on days with high levels of pollution. Second, the state prohibits outdoor sports on such days, as strenuous activity increases exposure to pollutants (Giles and Koehle, 2014). Third, the state compels all individuals to wear protective masks outdoors during periods of poor air quality. These policies would not be consistent with the harm principle as Riley (2015) has shown that the individual being interfered with must be harming others as well as themselves. The above examples focus on protecting the health of the individual and the policies do not target individuals who are acting in ways that harm others.

On the other hand, here are three examples that would be consistent with the harm principle. First, the state prohibits idling a road vehicle, as this exposes drivers and others to harmful pollutants (Surico, 2021). Second, the state prohibits the use of fuel-powered gardening equipment, like lawn mowers, due to the harmful emissions (Priest, Williams and Bridgman, 2000). Third, the state enforces rules to restrict domestic outdoor burning (e.g., of garden waste) to prevent exposure to pollutants (Estrellan and Iino, 2010). These policies plausibly protect the driver of the idling car, the gardener using their lawn mower and burning their waste, but importantly, also the broader community.

Whilst Riley's conclusion that the harm principle can permit paternalism is a deviation from common interpretations (Dworkin, 1972, Brown, 1989, Fuchs, 2001) and Mill's own anti-paternalism statements (Mill, 1859, pp. 223-224 and p. 276), I do not think this conclusion threatens the harm principle's defence of liberty. It is not the purpose of this thesis to offer a defence of paternalism, but the harm principle seems more plausible if it allows for the possibility that some paternalism, along with the prevention of harm, is permitted. It is now well established that individuals suffer from many flaws in instrumental reasoning that affect our ability to make effective decisions. This fact explains why people continue to smoke cigarettes and eat unhealthy food, even if they would prefer not to. Sarah Conly has used this argument to provide a defence of paternalism and has shown that significant harm can be prevented by coercively interfering to limit eating options and banning cigarettes (Conly, 2012). A similar argument could be made to justify interfering to prevent the harms of air pollution. I do not endorse Conly's (2012) defence of solely paternalistic interference in these cases or argue that solely paternalistic interference is justified to prevent the harms of air pollution. However, I am open to the view that paternalistic interference *and* the prevention of harm to others provides a plausible rationale for preventing serious harm to individuals, as our instrumental reasoning defects make it hard to avoid polluting. The benefit of this conclusion is that solely paternalistic interventions are still ruled out by the harm principle and liberty is well protected, but harm is prevented in cases where an individual harms themselves and others.

So, there are cases where the justification for interference may be strengthened when paternalistic reasons, coupled with the prevention of harm to others, make the costs and benefits of the interference worthwhile. To be clear though, the harm principle permitting the state to consider paternalistic reasons when deciding whether to interfere does not mandate paternalistic intervention. As introduced above, the second-stage of justifying interference can rule out the paternalistic reason for interference, if the reason is not deemed justifiable. The state ought to consider the balance of harm prevented, the good ends of the paternalism, and the loss of liberty before interfering. If the paternalistic reason for interference is not deemed to be weighty enough, then the interference cannot be justified by appeal to that reason. So, even though the harm principle does permit the state to appeal to paternalism, a meaningful protection of liberty is still ensured by the second-stage of justifying interference.

Part Two - The second-stage of justifying interference: a cost/benefit assessment

2.5.1 - Justifying interference

Part One outlined when the state can coercively interfere with the behaviour of an individual consistently with the harm principle. This section will illustrate that Mill's rationale for interference is usually seen as a two-stage process. The first stage is the harm principle, as outlined in Part One, and this informs the state of when coercive interference is permitted. The harm principle is the first important step in defending liberty, but the harm principle alone does not dictate whether the state should interfere. The second-stage goes beyond the harm principle and informs the state of whether interference is justified. For Mill, this stage requires the state to consider when interference is justified in terms of whether it will be effective and whether the benefits will be worth the costs (Mill, 1859, pp. 292-293). However, I diverge from Mill here and argue that some other factors must also be considered for interference to be justified.

Mill's view is that preventing harm is a necessary condition, but that it is not sufficient to justify coercive interference. Mill argues:

it must by no means be supposed, because damage, or probability of damage, to the interests of others, can alone justify the interference of society, that therefore it always does justify such interference (Mill, 1859, p. 292).

There are some reasons for which the state may decide not to interfere and allow a harmful action. I will outline some reasons here after further explaining how the second-stage of justifying interference protects liberty.

2.5.2 - The second-stage and protecting the liberty to pollute

As outlined, Turner's (2014) expansive conception of harm means the state is permitted to interfere with any direct negative consequence to others. Additionally, I will argue in the next chapter that the state can enforce 'positive acts' that require people to prevent harm to others, even if they have not caused harm themselves. On the face of these two proposals, it seems that liberty is not well protected by the harm principle and the state is permitted to interfere. However, interference that does not aim to prevent harm (e.g., interference on moralist, religious, or solely paternalistic grounds) is still not permitted so liberty is protected against interference on grounds many people would reject in a liberal democracy.

The expansive conception of harm means there is wide scope of permitted interference, posing a significant threat to the liberty to pollute. Many air polluting actions risk a direct negative consequence to others because very small amounts of air pollution, especially PM2.5, can harm health (Wei et al., 2024). For example, wearing perfume risks harm to the respiratory system of others (Elberling, 2007). Also, zero tailpipe emissions electric cars produce air pollution from brake dust and tyre decay

(Bloss, 2021). Additionally, the air pollution from one neighbour cooking inside their own flat can spread to other flats in a building and risk harm to others (Cheung and Jim, 2019). These actions all risk harm to others, so the harm principle permits the state to interfere. This conclusion seems concerning. If the state is permitted to coercively interfere with such actions then it seems the harm principle protects very little liberty related to air pollution.

However, the key to more fully defending liberty is the second-stage of justifying interference. This stage requires policymakers to consider whether or not the interference is worthwhile. This section will outline some of the reasons for which policymakers could decide not to interfere, even when the interference would be permitted consistently with the harm principle. In Chapter Four, I return to the question of *how* policymakers should interfere.

2.5.3- Economic benefits

One reason that Mill accepts it is socially beneficial to permit some harmful actions is when the economic consequences are worthwhile. He writes:

Whoever succeeds in an overcrowded profession, or in a competitive examination; whoever is preferred to another in any contest for an object which both desire, reaps benefit from the loss of others, from their wasted exertion and their disappointment. But it is, by common admission, better for the general interest of mankind, that persons should pursue their objects undeterred by this sort of consequences (Mill, 1859, pp. 292-293).

We see here that Mill posits that competitions can have winners and losers, and the state ought not to interfere to dictate the winners of such contests or to forbid the competition, even though it inevitably harms. An obvious example of such a contest is in economic matters, but examples also include sporting competitions, literary contests, political elections, and the awarding of academic funding. However, the competition must have been conducted without “force...and fraud” (Mill, 1859, p. 293). One competitor cannot use undue coercive interference to gain an advantage or unfairly deceive another. In cases where force and/or fraud are involved, the state, or relevant authority, can interfere consistently with the harm principle.

There are cases where the benefits of fair competition explain why the state ought not to interfere with the harm done to the loser. One example of a harmful action that may be justified is competitive job applications, where some individuals are inevitably harmed by being unsuccessful in their pursuits. Mill's reason for ruling out coercive interference for this type of harm is that free competition is better for the “general interest of mankind” (Mill, 1859, pp. 292-293). Presumably, he means that the economic benefit of competition outweighs any harm to the “disappointed competitors” who are unsuccessful in their applications (Mill, 1859, pp. 292-293).

However, whilst he endorses general competition, Mill argued for a *limited* laissez-faire position. Mill thinks laissez-faire is preferable when market controls “do not really produce the results which it is desired to produce by them” (Mill, 1859, p. 293), but when the controls do produce expedient results then the state ought to introduce such controls. So, economic competition can in general be left open to competition, but this laissez-faire position is limited. Mill’s argument for free trade is not based on his harm principle and is beyond the scope of this thesis. I mention it here to illuminate the restriction on trade, which is based on the harm principle.

Mill’s argument on free trade is unrelated to his restriction on trade involving selling goods, which I will now explain. Immediately after stating that competition is in the general interest of mankind, Mill makes it clear that the state can restrict trade, as it risks harm to consumers. The justification for restricting trade is that some business practices are harmful:

trade is a social act. Whoever undertakes to sell any description of goods to the public, does what affects the interest of other persons, and of society in general; and thus his conduct, in principle, comes within the jurisdiction of society (Mill, 1859, p. 293).

So, Mill does argue that some harms ought to be permitted due to the economic benefit, but his principle permits the state to regulate what goods can be sold and competition in general to prevent harm. One reason for such restrictions is if the practices cause harm that is not worth the costs. Restricting the sale, purchasing, gifting, and possession of nuclear weapons does limit people’s freedom, but the costs of free trade in this case would be too great for the state to freely permit.

Mill’s position here is relevant for policymakers working on air pollution. As outlined in Chapter One, air polluting activity does offer economic benefits. For example, millions of people across Europe work in high-polluting jobs (Causa et al., 2024). Following Mill’s reasoning, we could conclude that if the economic benefits of air polluting industrial activity are worthwhile then the state should not interfere. However, Mill neglects other important considerations that might provide reasons for the state to interfere with air polluting activity.

The economic benefits of air pollution might be outweighed by considerations of justice. If air polluting activity is economically beneficial for one group but perpetuates or exacerbates unjust inequalities then the state could have a reason to interfere. Policymakers should also consider whether the benefits of this economic activity are distributed fairly. If a very small group is making huge benefits from air polluting activity, like fossil fuel extraction, but the benefits for a very large group are small then the harms of air pollution may not be worthwhile. I will explain similar considerations further in Chapter Five, Section Seven. For now, I will discuss two other considerations in the rest of this section, before concluding with an explanation of how the second-stage protects liberty.

2.5.4 - Disproportionality

A second reason the state may decide not to interfere is if the coercive interference would be disproportionate. The interference may be disproportionate in several ways. One is that the risk of harm occurring from the action is very low and the costs of the regulation are large, so the coercive interference is not warranted. In these cases, the costs of the regulation may be considered disproportionate compared to the risk and the state may decide not to interfere (Miller, 2021, p. 206). So, the state ought to consider the likelihood of the action being interfered with actually resulting in harm to others. The smoking ban could have been extended to include banning smoking in any public outdoor space, but the likelihood of harm to others occurring from smoking outdoors is so low that coercive interference would be disproportionate to the risk.

A second way the interference may be disproportionate is if the likelihood of the harm occurring is very high, but the severity of the harm is very low. The likelihood of passing on a cold to someone else can be very high, as colds are highly contagious. However, the severity of harm from being infected with a cold is usually just a mild illness (assuming the infected person does not suffer from a weakened immune system or has a certain underlying health condition). Due to this, coercive interference to prevent the risk of people passing on colds may be unjustified, at least in normal non-pandemic circumstances.

2.5.5 - Disadvantaging the disadvantaged

A third ground on which interference may be deemed unjustified by the state when deciding whether to interfere is if the interference increases the possibility of making worse off those populations that are already disadvantaged (Silva, 2011, p. 145). The state may decide not to interfere if the consequences of a regulation cause harm to a particular minority group (Silva, 2011). The 'ban the box' policy, which encourages or requires employers not to ask about a job applicant's criminal background, has led to discrimination in the United States as employers eliminate applicants they think are more likely to have a criminal record. This discrimination happens along age, racial, and educational grounds as young, low-skilled, African-American and Hispanic men become less likely to be employed (Doleac and Hansen, 2020).

Another example of why the consequences of interference ought to be carefully considered is the fact that the enforcement of social policies may happen in a disparate manner and particular minority groups may suffer the costs. Mill warns that the "[t]he preventive function of government...is far more liable to be abused, to the prejudice of liberty, than the punitory function" (Mill, 1859, p. 294). An example of such abuse of authority is evident in the number of stop and searches carried out by police in the United Kingdom. The (supposed) justificatory reason for the policy is that it is intended to prevent harm by detecting and preventing crime, though it fails to achieve this (Tiratelli et al., 2018) and its enforcement has disparate consequences. The Home Office's statistics state that black people were nine times more likely to be stopped than

white people in a single year (Home Office, 2022) and the police have failed to justify this disparate treatment (Dodd, 2021). The state should carefully consider the risk that abuse of enforcement of a policy brings to see if the benefits are justified.

2.5.6 - Two guiding questions

A plausible starting point for justifying state interference is to ask two questions, which are consistent with Mill's argument from *On Liberty* (Mill, 1859). These questions can help guide policy responses with the aim of protecting liberty whilst also protecting society from harm.

Question one

The first question asks whether coercive interference is necessary to achieve the policy's objective of preventing harm, and if non-coercive interference could achieve the same end. If the harm could be prevented without coercive interference, and the non-coercive interference doesn't give rise to other large costs, then coercive interference is not justified (Brennan and Hill, 2014, p. 35). So, if these conditions are met, policymakers ought to opt for non-coercive interference, as coercion should *prima facie* be avoided.

A second reason policymakers should opt for non-coercive means for preventing harm, when possible, is that adding to the government's power makes it more liable to abuse of authority, as previously noted. As Mill points out, adding to the state's power gives it a greater ability to limit the freedom of its members (Mill, 1859, p. 294). For example, Hungary's Prime Minister, Viktor Orbán, introduced seemingly justified public health measures to address the spread of COVID-19, before passing a law granting him power to rule by decree indefinitely (Ádám and Csaba, 2022). Similarly, it seems likely that the state's means of addressing air pollution will impose very high costs on individuals and great restrictions on liberty, which could then be further abused. Coercive means may be necessary to address air pollution, but as Mill points out, these means are more likely to be abused by the state than non-coercive means (Mill, 1859, p. 294).

However, non-coercive interference still is still intrusive and poses ethical challenges, some of which will be discussed in Chapters Four and Five. One example is that there are cases where non-coercive intrusion can influence the decision-making of individuals to prevent harm, without the need for state coercion. For example, the state may use its expressive capacities rather than its coercive capacities to criticise hate speech without censoring it (Brettschneider, 2010, pp. 1006-1008). Whilst states should use their expressive capacities, which are non-coercive (but are intrusive), to prevent harm if the harm can be successfully prevented without using coercion, the intrusion should still be appropriate. A state may abuse its non-coercive capacities just as it may abuse its coercive capacities. For example, we ought to be concerned with the distinction between the state's expressive speech and its authoritarian speech. Both forms of speech are non-coercive, but this does not mean authoritarian speech is inherently

acceptable. Authoritarian speech, i.e., state speech that aims to tell individuals *what* to think, is an illegitimate abuse of power.

An example of this may be the proclamation by the former President of the United States, George W. Bush, that “You’re either with us, or against us” about the Government’s anti-terrorism campaign (Dunn, 2005). The implication that those who did not support the Government’s campaign were indirectly supporting terrorism discouraged dissent and deliberation. This example is intended to demonstrate that the state’s use of non-coercive capacities can still be problematic, even if coercion is not involved. Such use of power aims to limit the capacity of individuals to deliberate. Deliberation is a crucial component of democratic governance. Individuals ought to be active participants in informing the policies of their political representatives through discussion and exchanging ideas.

A state that uses its authoritarian capacities to tell its members what to think about its policies violates this component of democratic governance. Whilst authoritarian speech by a state’s leader does not restrict liberty, it seems to be intrusive. Compare the authoritarian state to a non-authoritarian state that uses its capacities to conduct expressive state speech, i.e., state speech that puts forward a claim to represent the state’s values. A state that uses its expressive capacities rather than its authoritarian capacities allows space for its members to continue to deliberate. The use of a state’s expressive capacities is a legitimate use of power because it does not instruct its members and allows space for deliberation about whether the speech is legitimate. So, the point here is that the state ought to use its non-coercive capacities, to prevent the harm if possible, provided this means does not give rise to other large costs. However, the state’s use of its non-coercive capacities can still be inappropriately intrusive. Ultimately, the state should opt for non-coercive means when coercion is not needed to prevent the harm. However, the non-coercive means should still be appropriate and avoid authoritarian tendencies.

Question two

The second question considers how intrusive the intervention ought to be to achieve its aim of preventing harm. One proposal comes from Franklin G. Miller, who suggests that, if it is the case that coercive interference is necessary to achieve harm prevention, then the least restrictive¹⁵ option to achieve the goal must be used (Miller, 2021, p. 206). This strict position of using the least intrusive means seems mistaken. It would be odd to insist that the state cannot enact a very slightly more intrusive intervention if it prevented a lot more harm, for example. An exceptionally intrusive but effective means of preventing the harms associated with second-hand smoke would be to prohibit the

¹⁵ My focus is how intrusive an intervention is, rather than how restrictive. Intrusion better describes how an intervention can affect individuals, as previously explained.

sale of all cigarettes, cigars, and other similar products. However, this intrusion may not be proportionate to the risk of harm.

The obvious question of what makes intrusion *proportionate* arises. In the case of preventing the harms of second-hand smoke, the state prohibiting smoking inside public places seems more to be a proportionate measure. This answer is not satisfying as some cases will be less clear. In Chapter Four, I will return to this topic and propose the *Principle of Least Intrusive Means* as a guiding principle to determine how much intrusion is appropriate.

These two questions provide guidance to policymakers on when coercive interference is justified. However, these questions only cover a range of the considerations that policymakers should consider before intervening. Policymakers evaluating whether to coercively interfere should consider the three aforementioned considerations (economic benefits, disproportionality, and disadvantaging the disadvantaged) and then a range of further considerations I will discuss further in Chapters Four and Five. To summarise, Mill's argument is clear that the state should not interfere in cases where someone is non-consensually harmed if the coercive interference would be inexpedient. Part of the state's role is to assess whether to coercively interfere, or whether to permit the harm.

Conclusion

This chapter outlined Mill's harm principle. Part One illuminated the key features of the harm principle, defined "harm" as any direct negative consequence, and clarified important parts of Mill's argument. Part Two showed that justifying coercive interference, on Millian grounds, is a two-stage process that involves a cost/benefit assessment. I explained the considerations, beyond harm prevention, that the state needs to take into account when justifying interference.

Chapter Three - Harm prevention, not conduct prevention

Introduction

The previous sections have outlined the scope and structure of the harm principle and the considerations the state should bear in mind when deciding whether to interfere. However, one particular ambiguity in *On Liberty* (1859) still requires clarification and I will now provide that. I wish to point out here again that I am not claiming that my interpretation is exactly Mill's view. I only claim that my interpretation provides a plausible account of his argument, from which we can develop our understanding of how to address air pollution. In short, the ambiguity of Mill's formulations of the harm principle raises the question of whether the harm principle permits interference with conduct that is harmful, conduct that contributes to harm, or more generally to prevent harm.

If the harm principle only permits the state to interfere in cases where the conduct is itself harmful or contributes to harm, then Mill's harm principle does not permit coercive interference in some cases of compelling witness testimony, duty to rescue laws, essentially aggregative harms, or 'positive acts' that prevent harm. I will now explain Mill's ambiguity and its significance. I will outline three readings of the harm principle. I conclude we should accept David Lyons' (1979) reading of Mill's harm principle, which holds that the harm principle permits the state to coercively interfere to prevent harm to others.

3.1 - The harm principle's ambiguity explained

What kinds of behaviour the harm principle permits the state to coercively interfere with is unclear due to a significant ambiguity in *On Liberty* (1859), which I mentioned in Chapter Two, Section 2.2. Mill is inconsistent in his formulations of the harm principle. In one place, he writes that the state can only restrict an individual from performing conduct that is harmful to others:

the *conduct* from which it is desired to deter him must be calculated to produce evil to some one else (Mill, 1859, p. 224, emphasis added).

In another place, he writes that the state can coercively interfere if the interference will prevent harm in general:

the only purpose for which power can be rightfully exercised over any member of a civilised community, against his will, is to *prevent harm* to others (Mill, 1859, p. 224, emphasis added).

These two formulations are not equivalent. The first formulation of the harm principle seems to show Mill arguing that the conduct itself that an individual performs must be harmful to others for the state to coercively interfere consistently with the harm

principle. By “conduct itself”, I mean that the conduct being interfered with is solely sufficient for harm. If Person A assaults Person B, A’s conduct is harmful ‘itself’ to B and this formulation of the harm principle would permit interference. I will explain this further shortly.

The second formulation seems to show Mill arguing that the state can coercively interfere if the interference will “prevent harm to others” (Mill, 1859, p. 223). On this reading, the state can coercively interfere with Person A even if A did not perform any harmful conduct on the grounds that the interference will prevent harm to others. To further explain the distinction at hand, I will outline the family of views that can be categorised as the conduct-prevention view, as explained by D.G. Brown (1972), Andrew Kernohan (1993, 1998), and Augustin Fragnière (2014) and the harm-prevention view, developed by David Lyons (1979).

3.2 - The conduct-prevention readings and the harm-prevention reading

In this section, I consider two *conduct-prevention* versions and a *harm-prevention* version of Mill’s harm principle. The family of conduct-prevention views offer an interpretation of Mill’s (1859) argument that hold the harm principle only allows coercive interference if the behaviour that is prevented is itself harmful to others or contributes to harming others (Brown, 1972, Kernohan, 1993, 1998, Fragnière, 2014). Drawing on Lyons’ phrasing, I call this the “conduct-prevention” view (Lyons, 1972, p. 5). I identify two versions of the conduction-prevention view, which I call the narrow and contributory views.

The third version is the harm-prevention view, which holds that the state can coercively interfere to prevent harm, regardless of the individual’s or group’s connection to harm. I will demonstrate that the harm-prevention reading provides a more normatively plausible reading of the harm principle than the conduct-prevention readings. I will outline the three versions of the harm principle. I will then turn to some implications of the views that will fully illuminate the differences between the principles.

The narrow conduct-prevention harm principle

The narrow conduct-prevention harm principle holds that the *conduct itself* an individual performs must be harmful to another person(s) for the state to coercively interfere with the individual’s liberty consistently with the harm principle. By “conduct itself”, I mean that the conduct being interfered with is sufficient to harm another person(s). Fully outlining the criteria for how an action causes harm to another person(s) in a sufficient way goes beyond the scope of this thesis (see Moore, 2024 for a discussion). In brief, this formulation of the harm principle holds that the state is permitted to coercively interfere when one person’s actions are the sufficient cause of harm to another and the harm would still have occurred from the person’s actions in a possible world that is similar to ours (Moore, 2024). Essentially, this harm principle

rules out coercive interference in cases where the harm results from a combination of several people's actions, where no single individual's conduct is, on its own, sufficient to cause harm.

The contributory conduct-prevention harm principle

The contributory version of the conduct-prevention harm principle also requires an individual's conduct to be harmful to others to permit interference. I call this the contributory conduct-prevention harm principle. The contributory version differs from the narrow conduct-prevention harm principle as it allows that one individual's actions can aggregate with others to cause harm. So, the contributory conduct-prevention harm principle does not require that the conduct *itself* be harmful to others. Instead, the harm principle permits interference when an individual's action *contributes* to a harm. Claiming to build on Mill's original harm principle, Andrew Kernohan offers this version of the harm principle (Kernohan, 1993, p. 52). Kernohan's harm principle reads:

The activity of an individual may be regulated only if either (1) it is, by itself, causing harm to others or (2) it is part of an accumulative activity which brings about harm to others (Kernohan, 1993, p. 56).

The contributory conduct-prevention harm principle permits the state to interfere with a wider range of actions than the narrow conduct-prevention harm principle, as will become clear soon.

The harm-prevention harm principle

Lyons offers a different interpretation of the harm principle, which I call the harm-prevention harm principle (Lyons, 1979). The harm-prevention harm principle asserts that freedom may be limited to prevent harm, but the conduct that is interfered with need not itself be harmful to others (Lyons, 1979, p. 4). This view interprets Mill's ambiguity differently from the narrow and contributory conduct-prevention harm principles and holds that the harm principle permits the state to exercise power over individuals to "prevent harm to others" (Mill, 1859, p. 223). The harm-prevention interpretation is that the harm principle ought to be read as: the prevention of harm to another person is a good reason, and the only reason, for restricting behaviour (Lyons, 1979, p. 6). The difference between the harm-prevention reading and the conduct-prevention readings is that for the former, an individual's liberty can be interfered with even if their conduct is not harmful to others.

3.3 - The differences explained

There are at least four important implications of the differences between the three harm principles. I will now outline the differences and show that we should accept the harm-prevention version of Mill's harm principle.

Essentially aggregative harm

Kernohan (1993, 1998) and Fragnière (2014) correctly argue that the narrow conduct-prevention harm principle does not permit the state to coercively interfere with essentially aggregative air pollution. As previously mentioned, essentially aggregative harms are ones that arise from the result of emergent properties that only appear when the actions in question combine (Kahn, 2023, p. 4). Essentially aggregative harm differs from mere aggregative harm as the contributors of essentially aggregative harms are both not a collective agent and do not share a “we” intention, as groups capable of intentional decision-making do (Kahn, 2023, pp. 4-5).

As outlined in Chapter One, air pollution is generally not a collective action issue and individual actions alone cause harm to others. However, some harm to the public health is caused by the emissions of multiple people combined, hence some air pollution is an essentially aggregative harm. Some pollutants are harmful at any level, for example PM2.5, 1,3-butadiene, and benzene, but some low concentrations of pollutants, like nitrogen dioxide and polycyclic aromatic hydrocarbons, only become harmful when aggregated with other concentrations and cross a safe threshold (World Health Organisation, 2021). So, sometimes individuals can make up an informal group and the polluting actions of the individuals in this informal group can aggregate to cause harm to others¹⁶. Individuals who produce these emissions are contributing to an essentially aggregative harm and worsening the health of others. Therefore, a plausible harm principle should also permit the state to coercively interfere to prevent such harms.

Kernohan claims the narrow conduct-prevention harm principle does not permit the state to coercively interfere with essentially aggregative harm because this harm principle requires that the individual conduct being interfered with is the cause of harm to others itself (Kernohan, 1993, pp. 51-52). This means that the conduct of people which is not harmful itself, e.g., polluting low levels of nitrogen dioxide, cannot be interfered with on the conduct-prevention harm principle.

Kernohan points out that the narrow conduct-prevention harm principle fits naturally with the legal system of liberal democracies where the assignment of blame and responsibility typically focus on individual behaviour (Kernohan, 1998, p. 72). Fragnière similarly points out that the narrow conduct-prevention harm principle is initially appealing because it fits well with our usual liberal atomistic ontology (Fragnière, 2014, pp. 86-87). Liberal atomism is the view that individuals are self-sufficient and constitute the fundamental reality on which political and legal principles must be based (Taylor, 1985, pp. 187-90). The narrow conduct-prevention harm principle fits with this view as it holds that an individual’s conduct must be harmful itself to permit interference. It is not enough that other individuals are also emitting low levels of nitrogen dioxide, which are not harmful themselves, to permit interference. On the narrow conduct-prevention harm principle, one person’s emissions must cause

¹⁶ In Sections 3.6 and 3.7, I will discuss how formal groups can be regulated consistently with the harm principle.

harm to others, without aggregating with other emissions, to permit interference with that person.

So, the narrow conduct-prevention harm principle does not permit the state to interfere on the grounds that the individual's action aggregates with unrelated and uncoordinated individuals to cause harm to others on this view. Essentially aggregative air pollution is only produced when the actions of unrelated and uncoordinated individuals combine. So, the narrow conduct-prevention harm principle does not permit the state to interfere with air pollution that arises in this way.

On the other hand, the contributory conduct-prevention harm principle does permit the state to interfere in such cases. Recall that this version of the harm principle permits the state to interfere when an action "is part of an accumulative activity which brings about harm to others" (Kernohan, 1993, p. 51). This view allows the state to identify a set of actions that aggregate with others to contribute to harm. These actions make up essentially aggregative harm, like some forms of air pollution. So, the contributory conduct-prevention harm principle differs from the narrow conduct-prevention harm principle. The contributory version permits the state to interfere with individual polluting conduct that is not harmful itself but aggregates to contribute to harm.

The harm-prevention version of Mill's harm principle also permits interference with essentially aggregative harm. However, this version provides a different rationale for interference. The reason that permits the state to interfere on the harm-prevention harm principle is that harm will be prevented. It is irrelevant whether or not the conduct of the person being interfered with is harmful or has contributed to an essentially aggregative harm. The state is permitted to interfere merely if the interference will prevent harm consistently with this reading of the harm principle. So, the harm-prevention view permits interference with a wider scope. The harm-prevention view permits interference 1) with conduct that is itself harmful, e.g., emitting PM2.5, 2) with conduct that is itself not harmful but contributes to an essentially aggregative harm, e.g., emitting low levels of polycyclic aromatic hydrocarbons, 3) to prevent harm, e.g., through positive acts.

This third type of interference identifies the clearest difference between both conduct-prevention views and the harm-prevention view. The difference is that the harm-prevention view permits the state to coercively interfere to require individuals to perform "positive acts" (Mill, 1859, pp. 224-225) that will prevent harm. This point further explains why the harm-prevention harm principle is the most plausible version of Mill's harm principle. The harm-prevention harm principle permits the state to compel individuals to perform actions (positive acts) that will prevent harm, even if they have no causal connection to the harm, as I will show now.

Witness testimony

The harm-prevention harm principle permits the state to compel individuals to give witness testimony in court. The narrow and contributory conduct-prevention harm

principles only permit the state to do so in certain cases (to be discussed shortly), as failing to give testimony is not usually harmful conduct (Lyons, 1982, p. 51). The harm-prevention harm principle permits the state to compel a witness to a crime to give evidence on the grounds that the testimony will prevent harm, even though the witness did not do anything harmful themselves. The state compelling individuals to provide witness testimony or produce evidence may be the only way to ensure a fair trial if the individuals have information that can determine the truth. The compulsion of individuals can protect society and maintain public order by preventing dangerous people from committing harm. Therefore, harm can be prevented by the state compelling individuals to provide witness testimony or evidence. A legal system would be ineffective if the state could not compel witnesses to provide testimony or evidence. The fact that both conduct-prevention harm principles only permit the state to compel witnesses in certain cases undermines its plausibility.

The narrow and contributory conduct-prevention harm principle do permit the compulsion of a witness, but only when the witness' refusal is harmful conduct or contributes to an essentially aggregative harm respectively. On the former, Mark Tunick (2024, p. 12) has argued that failing to provide testimony might be harmful conduct by causing distress to victims or other third-parties. In such cases, the narrow conduct-prevention harm principle would permit interference. Still, Tunick's (2024) argument is limited to cases where an individual is harmed (by being distressed) by the decision of the witness not to testify. So interference is still ruled out in all cases where no individual is harmed by the witness not testifying on the narrow conduct-prevention harm principle. The contributory conduct-prevention harm principle would also permit the state to compel witnesses in cases where the refusal to testify causes distress or is part of accumulative activity where other witnesses refuse to testify, and this leads to harm. We can imagine a case where no individual witness' refusal to testify is sufficient to cause harm to a victim, but many witnesses refusing to testify might distress a victim. So, there are cases where the narrow and contributory conduct-prevention harm principles permit the state to compel witnesses to testify.

However, it seems plausible that a witness' refusal to provide testimony would not cause distress to individuals in many cases, especially for minor crimes or non-violent crimes. A harm-principle that requires an individual to be distressed by the possibility of a witness refusing to testify to permit the state to compel testimony is not plausible. A better principle would allow the state to compel witnesses to provide evidence due to the value of ascertaining the truth, regardless of whether an individual was distressed by the prospect of the witness's refusal. The harm-prevention harm principle does not face this problem and the state can compel witnesses, regardless of whether any third-party is harmed by the witness' desire not to testify. This point provides one reason as to why we should prefer the harm-prevention harm principle.

Duty to rescue laws

Neither the narrow nor contributory conduct-prevention harm principles permit the state to impose a duty to rescue law. Duty to rescue laws impose a requirement on

bystanders to assist people in distress (Lee, 2014). The United Kingdom is an exception as it does not impose some legal duty to rescue. In contrast, many countries in the Global North, and parts of East Asia have implemented some form of duty to rescue law (Lee, 2014). The state cannot enforce a duty to rescue requirement on either conduct-prevention harm principle because a failure to rescue is not harmful conduct and is not part of an essentially aggregative harm, as I will now explain.

One possibly illustrative example of a duty to rescue case could be a person passing a close-by EpiPen to someone in anaphylactic shock if they cannot reach the EpiPen themselves. The key feature of such cases is that the person can prevent harm to another at very little cost to themselves. The narrow conduct-prevention harm principle would not hold that a person who failed to pass the EpiPen could be punished consistently with the harm principle. Brown argues that failure to prevent a harm from occurring to someone cannot be regulated consistently with the narrow conduct-prevention harm principle (Brown, 1972, pp. 145-146). Only conduct that is harmful itself can be regulated consistently with the harm principle on the narrow reading (Brown, 1972, pp. 145-146). For example, force-feeding a cashew to a person who is allergic to nuts is harmful conduct¹⁷. Similarly, the contributory conduct-prevention harm principle would hold that engaging in an aggregative activity, e.g., where multiple people force-feed a tiny part of a cashew to an allergic person until an allergic reaction is triggered, would permit the state to interfere. Still, however, the contributory conduct-prevention harm principle would not punish the individual who failed to pass the EpiPen because the failure to act is not part of an essentially aggregative harm.

On the other hand, in the case I describe, the person's failure to pass the close-by EpiPen is not harmful conduct and does not contribute to an essentially aggregative harm. The person's failure to pass the EpiPen is inaction, which is not harmful conduct nor a contribution to an essentially aggregative harm. The failure to act might be immoral, but the inactivity does not permit the state to intervene on either conduct-prevention harm principle. A person must perform harmful conduct or contribute to an essentially aggregative harm to permit the state to interfere on these versions of the harm principle. So, on the narrow and contributory conduct-prevention harm principles, the person's failure to pass the EpiPen cannot be regulated consistently with the harm principle, as the view rules out duty to rescue laws.

The harm-prevention harm principle treats this case differently. This harm principle allows the state to regulate the actions of an individual consistently with the harm principle if it will prevent harm to others, even if the individual's conduct is entirely irrelevant to the harm (Lyons, 1979). This formulation of Mill's harm principle is predicated on preventing harm, regardless of whether or not the person whose liberty

¹⁷ Of course, force-feeding a cashew to anyone regardless of their allergies is harmful conduct. I use the idea of causing an allergic reaction to explain the significance of the EpiPen.

is restricted has caused or contributed to the harm (Lyons, 1979). So, the harm-prevention harm principle would hold that the person who failed to pass the close-by EpiPen can be punished consistently with the harm principle. This threat of punishment prevents harm by making it more likely people will take action in situations that require rescue. So, the harm-prevention reading can require the person to pass the EpiPen on the grounds that it will prevent harm to another. The fact that they did not perform any harmful conduct or contribute to an essentially aggregative harm is irrelevant. The relevant matter is that passing the EpiPen can prevent harm to another.

The question of whether or not a state should have a duty to rescue law goes beyond the scope of this thesis. However, I wish to briefly argue that a plausible harm principle should at least permit the state to enforce such a law. A duty to rescue law might reduce the frequency of non-rescue and prevent serious, but easily preventable, harm from occurring. The balance of moral reasoning holds that we should prevent serious harm to others when we can do so without bearing any significant costs or violating anyone's rights (Frowe, 2018, p. 456). The EpiPen case satisfies these conditions. The person who fails to pass the nearby EpiPen in the above example or a strong swimmer who watches a small child drown in a shallow pool violates this standard moral thinking.

So, it seems wrong that people who fail to rescue should escape any liability by claiming that they have no duty to rescue. A legal requirement might encourage action in such cases by the threat of punishment. So, the person who fails to pass the nearby EpiPen and the strong swimmer may be more likely to act. A distinctive consequentialist argument holds that the welfare of all is increased when everyone knows that societal resources will be expended to rescue them if they are imperilled in a duty to rescue style case (McKie and Richardson, 2003). Neither conduct-prevention harm principles, however, can permit the state to impose a duty to rescue law so these reasons must be discarded on these views. The harm-prevention harm principle does permit the state to impose a duty to rescue law, so the state could deter inaction by the threat of punishment.

On the other hand, duty to rescue laws have some risk. A common problem is that the risk to the potential rescuer is heightened or that the rescuer's incompetence might do more harm than good (Hyman, 2006). These risks can be minimised by the duty to rescue law being designed so that only reasonable actions that do not endanger anyone's safety are all that is required. Such laws might only require 'easy rescue' (Tomlinson, 2000). For example, rescuers might be required merely to raise the alarm, call the emergency services or provide very basic first aid, rather than perform complex medical procedures or undertake risky actions. Regardless, these questions are irrelevant to the harm principle. The harm-principle merely should permit the state to impose a duty to rescue law to prevent serious, but easily preventable, harm. The second-stage of justifying interference addresses the issues of when someone should be prosecuted for failure to rescue and what the law specifically requires.

Other positive acts - cooperation requirements

I have shown that the harm-prevention version of Mill's harm principle permits the state to compel individuals to perform positive acts that prevent harm, like providing witness testimony and rescue. Other positive acts that Mill suggests could be required are for an individual "to bear his fair share in the common defence, or in any other joint work necessary to the interest of the society" (Mill, 1859, pp. 224-225). I will discuss this at length in the following sections. Neither the narrow nor contributory conduct-prevention harm principles permit the state to enact cooperation requirements, as each version of the harm principle requires that an individual's conduct is either harmful or contributes to harm respectively to permit the state to coercively interfere.

On the other hand, the harm-prevention harm principle permits the state to enact policies that aim to redirect the behaviour of large numbers of individuals, even if their behaviour is not harmful nor even related to the cause of the harm. I follow Lyons in labelling these policies as cooperation requirements (Lyons, 1979, p. 7). Lyons explains cooperation requirements as rules that attempt to redirect behaviour to help create a social practice that will help prevent harm (Lyons, 1979, p. 7).

The purpose of a cooperation requirement is to require people to behave in a way that will prevent harm, even if the individual is not causing harm to others. The state may seek to change the behaviour of a large number of individuals by imposing a rule aimed at preventing harm. The state can establish cooperation requirements that aim to target a large population. By targeting a large population, the state can compel a large number of people to take actions to improve air quality. My argument for how cooperation requirements are consistent with the harm principle requires a number of clarifications that I will address in the next section. First, I will provide some examples of cooperation requirements and explain their value. I will show that my argument also applies to formal groups in Section 3.7.

Cooperation requirements could be implemented by the state to improve air quality. One such example of a cooperation requirement is the state requiring individuals or groups, such as wealthy corporations, to plant trees and engage in other urban greening initiatives in cities and towns. Singapore, often called a 'garden city,' has greatly increased its green urban design by adding many more green spaces, trees, and plants. The additional trees and vegetation absorb carbon dioxide and filter other pollutants (Han, 2016). This expansion can be a successful model for other cities to improve their air quality. The intervention should focus on green urban design to improve air quality and not mere aesthetic benefits. A similar cooperation requirement could mandate that individuals who own large properties, like residential apartments or office blocks, maintain a certain percentage of their land as green space and have roof gardens, with specific types of vegetation required. Green infrastructure, like simply planting hedges next to roads, efficiently reduces exposure to particulate matter (Sheikh et al., 2023). These first two cooperation requirements could filter pollutants and thus improve air quality. A third cooperation requirement could be a mandate to participate in air quality monitoring programs. Individuals and groups could be required to provide data from localised air quality monitoring stations to improve the state's data on air

quality. This requirement would provide the state with greater data on air quality, allowing for targeted interventions and improvements.

The value of the harm principle permitting the state to impose cooperation requirements is that the state has a far greater means of preventing harm, such as restorative actions and coordinating cooperation. Cooperation requirements can be restorative and address the lingering effects of past pollution. For example, tree planting and installing green infrastructure can help remove existing pollutants from the air (Han, 2016). Even if the state prevented future harm by requiring individuals to stop polluting today, previous pollutants would still be harmful. Additionally, cooperation requirements can provide a large-scale, coordinated response to further address air pollution. Simply forcing individuals and groups to reduce their emissions would improve air quality, but requiring them to also contribute to green infrastructure or air quality monitoring can help the state improve air quality.

Lyons also suggests that homelessness, malnutrition, and disease could not be prevented on the narrow or contributory conduct-prevention harm principles, but could be on the harm-prevention reading as positive acts to address these issues could be implemented (Lyons, 1979, p. 7). It is beyond the scope of this thesis to fully explore whether such issues could be addressed by the state on the conduct-prevention reading of the harm principle. I simply claim that air pollution is best addressed on the harm-prevention reading.

I have established that Lyons' (1979) harm-prevention reading of the harm principle permits the state to interfere with a far greater range of actions than the conduct-prevention reading. However, we should not be troubled that this means the harm principle is toothless as a liberty-defending principle. Coercion on moralist, religious, or solely paternalistic grounds is not permitted. Additionally, as Mill points out, the state should not be in the business of compelling individuals to perform harm-preventing actions, like positive acts or duty to rescue cases, without good justification:

To make any one answerable for doing evil to others is the rule; to make him answerable for not preventing evil is, comparatively speaking, the exception (Mill, 1859, p. 225).

So, the state is permitted to enact policies on the grounds of harm-prevention, but the state should implement these policies with more caution than policies which confront harmful conduct. Cooperation requirements should be a last resort that policymakers should only opt for if there is no other way to prevent the harm. On grounds of fairness, the state should aim to prevent harm by targeting those who cause or contribute to harm first, and opt for cooperation requirements when the former measures have been tried. The second-stage of justifying interference requires the state to rule out undue interference, as I explained in Chapter Two, Part Two. So, liberty is well defended by the second-stage of justifying interference, and undue coercive interference should be ruled out at this stage. Policymakers ought to consider second-stage factors like fairness, cost,

efficiency, and the distribution of benefits and burdens when implementing such policies. I will discuss such considerations further in the final chapter.

I have outlined some differences between the narrow and contributory conduct-prevention and harm-prevention versions of Mill's harm principle. The table below illustrates the differences.

Figure 1: A table distinguishing different readings of Mill's harm principle.

Is interference permitted?	Type of action		
	Conduct that is harmful in itself	Conduct that contributes to an essentially aggregative harm	Positive acts that prevent harm
Narrow conduct-prevention view	Yes	No	No
Contributory conduct-prevention view	Yes	Yes	No
Harm-prevention view	Yes	Yes	Yes

To summarise, Mill's harm principle can be interpreted as permitting the state to interfere to prevent conduct that is harmful itself, conduct that contributes to harm, or to prevent harm. I argue we should accept the harm-prevention harm principle as Mill's harm principle. The harm-prevention harm principle provides a normatively plausible harm principle that permits the state to compel witness testimony, impose duty to rescue laws, impose policies to address air pollution that results from essentially aggregative behaviour, and enact cooperation requirements. The narrow and contributory conduct-prevention harm principles fail on these grounds and should be rejected.

3.4 - On what grounds can a person be coerced to do positive acts?

As shown, the justification for coercive interference to prevent harmful behaviour and behaviour that contributes to essentially aggregative harms is fairly straightforward. This kind of interference can be justified on the grounds of harm prevention and conduct prevention. I also have shown that coercive interference to compel individuals to participate in positive acts can also be justified by appealing to the reason of preventing harm. However, state compulsion to require individuals to do positive acts seems to need greater justification, given that the individuals being compelled are not doing or contributing to harm. An individual might have a stronger objection to being required to do a positive act, as opposed to being coerced to stop doing or contributing

to harm. I think this objection can be answered by turning to an overlooked argument Mill provides in *On Liberty* (1859).

I interpret Mill as offering a two-part justification for why the state is entitled to coerce individuals to adhere to positive acts. I will now explain and assess the legitimacy of Mill's two-part justification. In brief, Mill's justification for positive acts is: part one establishes the state must prevent harm to protect the interest of society, and part two holds that individuals can be coerced to adhere to positive acts to prevent harm as they owe a return for the benefits being a member of the state provides. I conclude we ought to accept the two-part justification.

Part one

The first part is that Mill recognises *something* must be done about harm (when the conditions of justifying interference are met). As Mill points out, people can be coerced consistently with the harm principle to contribute to shared tasks necessary for the common good:

there are also many positive acts for the benefit¹⁸ of others, which he may rightfully be compelled to perform; such as, to give evidence in a court of justice; to bear his fair share in the common defence, or in any other joint work necessary to the interest of the society of which he enjoys the protection (Mill, 1859, pp. 224-225).

I read Mill as asserting here that the state can coerce its members when something must be done to prevent harm. Mill's argument here is that the state is permitted, consistently with the harm principle, to coerce individuals to adhere to positive acts on the grounds that the relevant acts will, in all likelihood, prevent harm, as this is in the "interest of society".

Mill does not define the "interest of society", and this requires elucidation (Mill, 1859, pp. 224-225). In keeping with the general argument of *On Liberty* (Mill, 1859), we can plausibly take Mill's meaning here to be that the state can coerce individuals to contribute to the things necessary for ensuring the functioning of the state's ability to prevent harm. Such things might include contributing to the provision of public education (Mill, 1859, pp. 302-303), security (Mill, 1859, pp. 224-225), and the facilities and processes that realise the interests that individuals in a society share relevant to preventing harm.

In the case at hand (air pollution policy), preventing harm and realising the 'interest of society' would include ensuring clean air (e.g., air that meets the WHO's air

¹⁸ Mill's use of the word "benefit" here suggests people can be coerced merely for the benefit of others. If this is the case, then the harm principle is somewhat weakened as a liberty-protecting principle. I will return to this point in the next section and properly define benefits to avoid this objection.

quality guidelines (World Health Organisation, 2021)). Air pollution policy is relevant to Mill's point here that people can be coerced when something must be done to prevent harm. Part of being free from harm would include being free from the effects of air pollution, due to its injurious consequences. To prevent such harm, Mill's harm principle permits positive acts to ensure this part of the interest of society is achieved.

So, I argue, the first part of Mill's reasoning for which states can coerce individuals to adhere to positive acts consistently with the harm principle is based on preventing harm. This ground is legitimate. Anyone who accepts the legitimacy of the harm-prevention reading of the harm principle would accept that coercion that prevents harm is a permissible use of state power. If we are prepared to accept state power over individuals who cause or contribute to harm to others, it makes sense to accept state power to enforce positive acts to prevent serious harms, if there is no other way to prevent such harm (Lyons, 1979, p. 5). Accepting that positive acts are permissible consistently with the harm principle is based on the fact that they may be the only process by which the state can prevent some severe and complex harms (Lyons, 1979, p. 7). As previously argued, improving air quality will be better achieved through a harm principle that permits positive acts, such as cooperation requirements. Positive acts give the state greater capacity to prevent harm, such as with restorative actions and coordinated efforts.

Part two

The second part of my reading of Mill's justification for positive acts is to explain why people ought to adhere to the state's enforcement of positive acts. Mill claims that the populace has a duty to each other and to the state. This claim requires elucidation, which I will provide:

every one who receives the protection of society owes a return for the benefit, and the fact of living in society renders it indispensable that each should be bound to observe a certain line of conduct towards the rest (Mill, 1859, p. 276).

Mill then explains what the return the members of the state owe is:

this conduct consists of...each person's bearing his share (to be fixed on some equitable principle) of the labours and sacrifices incurred for defending the society or its members from injury and molestation. These conditions society is justified in enforcing, at all costs to those who endeavour to withhold fulfilment (Mill, 1859, p. 276).

The second part of my argument establishes that the state can coerce individuals to perform positive acts, like adhering to cooperation requirements. Mill provides two reasons that explain why members of a society have an enforceable political obligation to adhere to positive acts. One is that society provides "protection", so members "owe a return". The second is that the "fact of living in society" means that we have an enforceable obligation to others as we "should be bound to observe a certain line of conduct" (Mill, 1859, pp. 276). These two reasons explain why members of a society are

obligated to adhere to positive acts. In short, receiving the protection of society and being part of that society generates an obligation to perform positive acts. The existence of such obligations is in keeping with other obligations that Mill argues for, such as the duties of parents to their children (Mill, 1859, pp. 301-302) and the duties of public officials to prevent harm (Mill, 1859, p. 294).

The return that is owed is an obligation to follow “a certain line of conduct” (Mill, 1859, p. 276). The line of conduct is first to not harm others, but it is not limited to refraining from doing harmful conduct to others. Members of a functioning society are also entitled to protection from harm. To achieve this end, the state should work to realise the interest of society (protection from harm). The state can require its members to do positive acts, including cooperation requirements, with the goal of preventing harm. The state ought to provide goods like security, order, and clean air as these are necessary for realising the interest of society and protecting individuals from harm. If the state provides such goods, then its members are obligated to provide “a return for the benefit” (Mill, 1859, pp. 276). So, from Mill’s argument we can see that the fact that we share a society that also provides protection generates an enforceable obligation for individuals to do their share to help protect the society and its members from harm.

I think we ought to accept this two-part justification, but some clarity is needed. One important point is that the obligation members of the state owe exists because adhering to positive acts is often the only means to prevent harm. If it were possible that air pollution could be prevented without positive acts and coordinating our efforts through state-enforced schemes, then the obligation would not exist. A second clarification is that the state cannot impose overly demanding positive acts, or unfairly target some groups with the burdens of participation. Individuals are only obligated to bear an “equitable” share of the burdens that arise from cooperating to prevent harm (Mill, 1859, p. 276). It is beyond the scope of this thesis to define what an equitable share is, but policymakers should consider efficiency and also fairness when distributing burdens.

A third relevant point is that the obligation must be limited to not causing harm to others. A state that tried to enforce a positive act that did not prevent harm to others would not be consistent with Mill’s (1859) harm principle. For example, a cooperation requirement solely aimed to provide greater conveniences for people, rather than preventing harm, would not be consistent with the harm principle and no one would have an obligation to adhere to it. Of course, the state could enact such a policy without coercion. A state which created schemes for individuals to *voluntarily* provide greater conveniences would be irrelevant to the harm principle. I will discuss whether the harm principle permits the state to utilise coercion to implement benefits at length in Section 3.5.

To sum up, Mill’s (1859) harm principle can permit the state to enforce positive acts because something must be done about harm, and individuals owe a return to their society. The important feature of positive acts is that the state can regulate the behaviour of *all* its members to prevent harm, not just those whose behaviour is harmful

itself. So, as argued in the previous section via Lyons (1979), even the behaviour of individuals who make no contribution to air pollution that harms others can be coercively interfered with. A causal contribution to a harm is irrelevant when addressing “the joint work necessary to the interest of society” (Mill, 1859, pp. 224-225). The state may place a greater requirement on certain people to reduce air pollution due to their causal contribution, but the point here is that every member of the populace can be required to adhere to positive acts to prevent harm.

3.5 - Prevent harm or promote benefits?

In this section, I will consider whether the state can compel individuals to do positive acts that produce benefits for others consistently with Mill’s harm principle. As previously mentioned, Mill writes that the state can require people to take part in “positive acts for the benefit of others” (Mill, 1859, pp. 224-225). This statement implies that the harm principle permits the state to restrict liberty not to prevent harm, but rather to provide benefits. If the harm principle permits the state to compel individuals to promote benefits then it is somewhat weakened as a liberty-protecting principle, as I will explain shortly. So, this problem requires clarification. The solution lies in the two-part justification I provide in the previous section.

Lyons (1979) claims that the state could only compel individuals in ways that prevent harm. He argues for this answer in two steps (Lyons, 1979, p. 14). First, he points to Mill’s assertion:

the fact of living in society renders it indispensable that each should be bound to observe a certain line of conduct towards the rest”, which includes “bearing his share (to be fixed on some equitable principle) of the labours and sacrifices incurred for defending the society or its members from injury and molestation (Mill, 1859, p. 276).

Second, Lyons (1979, p. 14) offers Mill’s examples of possible cooperative actions, which include participating in your fair share of the common defence, giving evidence in court, and the joint work necessary for the interest of society (Mill, 1859, pp. 224-225). Lyons concludes that these examples show Mill is arguing the state can compel individuals with the aim of preventing harm rather than promoting benefits.

However, David O. Brink interprets the above examples as state compulsion to provide benefits to others, rather than preventing harm to others (Brink, 2013, pp. 180-182). Brink claims that Mill understands the above assertion and examples as preventing harm by alleging that the failure to supply the benefits results in harm. If the state can promote benefits then Mill’s assertion and his examples are at odds with his original formulation of the harm principle (Mill, 1859, p. 223), which claims the state can only coercively interfere to prevent harm (Brink, 2013, pp. 180-182). The original formulation rules out promoting benefits. This ambiguity is a problem. Mill’s assertion (Mill, 1859, p. 276) and examples (Mill, 1859, pp. 224-225) are plausibly intended to act

as a guide for how we understand the harm principle. So, we ought to take this ambiguity seriously when assessing the validity of the harm principle.

If the state can compel individuals in ways aimed at promoting benefits consistently with the harm principle then the harm principle is somewhat weakened. If the state actually compelled individuals merely to benefit others then our liberty would be diminished. The harm principle would fail to protect liberty because the state could obligate its members to promote *anything* that benefits others. For example, the state could require one set of neighbours to mow the lawns of another set of neighbours. This type of convenience may be desirable and beneficial for one set of neighbours, but the state exercising such power consistently with the harm principle would mean the harm principle is failing to protect liberty. So, if we are to accept Mill's harm principle then we need to address this problem. I think this problem can be solved by distinguishing between benefits and non-discretionary benefits and showing that the state can compel people to produce non-discretionary benefits with the same two-part justification used for permitting positive acts discussed in the previous section. I will conclude that the state can compel individuals to promote non-discretionary benefits consistently with a harm principle that still provides meaningful protection of individual liberty.

Nozickian-style objection

An argument from Robert Nozick (1974) will help illuminate the complication. Nozick similarly argues against the existence of any political obligation to cooperate in schemes that benefit others in his objection to H.L.A. Hart's (1955) principle of fair play (Nozick, 1974, pp. 120-125). The principle of fair play holds, "when a number of persons conduct any joint enterprise according to rules and thus restrict their liberty, those who have submitted to these restrictions when required have a right to a similar submission from those who have benefited by their submission" (Hart, 1955, p. 185). Nozick's worry is that anyone can impose an obligation on another by conferring a benefit to them. He asks us to imagine a group of neighbours who decide to create a radio channel on a public address system. The group assigns every adult in the area a day where they are responsible for planning and broadcasting a show. Say you live in the neighbourhood and occasionally listen to and enjoy the programs but did not voluntarily consent to take part. Your enjoyment is meant to imply that you have benefitted from the efforts of others who took their turn running the radio show. When your assigned day arrives, the principle of fair play, according to Nozick, means you are obligated to take your turn on the radio show. For Nozick, this obligation cannot be legitimate and the principle of fair play must be mistaken (Nozick, 1974, pp. 120-125).

If my Nozickian-style objection is successful, then the harm principle is weakened as a principle to defend liberty. The problem is that the objection implies the state can compel individuals merely to promote benefits, as I will explain shortly. The Nozickian-style objection to a political obligation to benefit others is not identical to Brink's objection (2013), which criticises Mill's examples of possible actions that the state can compel; providing evidence in court, participating in your fair share of the common defence and the joint work necessary to the interest of society (Mill, 1859, pp. 224-225).

One difference between how I apply Nozick's objection and his original objection is that the original objection is concerned with whether individuals have an obligation that is owed to other individuals. In contrast, I adapt Nozick's objection to consider whether the state can compel individuals to cooperate with the shared tasks Mill provides in his list of examples (Mill, 1859, pp. 224-225).

Regardless, Nozick's case is only intended to illustrate why we might be concerned with the state being able to compel individuals to produce benefits consistently with the harm principle. In the same way that Nozick worries the principle of fair play imposes an obligation of reciprocity on us if we receive benefits from others, the state would be permitted to compel individuals merely to benefit others if Brink (2013) is correct that Mill's examples do show the state can limit liberty to provide benefits to others. There are consequences of good air quality that only seem to be beneficial and do not prevent harm. For example, clean air is correlated with greater overall happiness (Levinson, 2012), a reduction in wrinkles due to there being fewer toxins in the air (Parrado et al., 2019), and better athletic performance (Pierson, 1989). Some might object that these examples are not benefits. I merely provide these examples to illustrate some possible benefits that might justify interference.

A Nozickian might claim that if the state can compel individuals to promote benefits consistently with the harm principle then the state can require individuals to continually do things for the sole purpose of benefitting others. If the state can do this, then we have no liberty to refuse. If this is the case, the state could compel individuals to produce clean air for the mere benefit of clean air, rather than to prevent harm, which might be undue coercion just as being required to take a turn on the radio show is. As a result, the harm principle would be somewhat weakened as a liberty-protecting principle. However, coercion on moralist, religious, or solely paternalistic grounds would still be ruled out by the harm principle. Whilst a harm principle that permits coercion to promote benefits is weakened, it is not completely toothless.

Benefits that are different in kind

This concern can be overcome and the harm principle need not permit states to compel individuals to provide benefits of the kind Nozick outlines. George Klosko points out that Nozick's (1974) example concerns a good of relatively little value and one that is not indispensable for an acceptable life (Klosko, 2004, p. 39). Klosko distinguishes between presumptively beneficial goods and discretionary goods. However, I think Klosko's naming of 'presumptively beneficial goods' is unclear, and I use 'non-discretionary benefits' and 'discretionary benefits' instead as these terms are more clearly directly opposed.

Non-discretionary benefits are goods that it is supposed that all members of the state want and are indispensable for an acceptable life (Klosko, 2004, p. 39). One example of a non-discretionary benefit may be national security (Klosko, 2004, p. 43). Clean air and law and order may also be non-discretionary benefits. Determining what counts as a non-discretionary benefit depends on the empirical background conditions,

e.g., the economic circumstances and social development of the state (Bieber and de Jongh, 2023, p. 9). Access to the internet may now be indispensable for an acceptable life in many societies today (Reglitz, 2023), but this was not the case 30 years ago and still may not be in some states today.

Discretionary benefits, however, are things that are *not* indispensable for an acceptable life and are not assumed to be wanted by all members of the state. Discretionary benefits satisfy interests, preferences, or desires (Bieber and de Jongh, 2023, p. 5). These benefits may be valuable, but are not the right kind of good to generate an obligation. In the case of discretionary benefits, one can claim they have no need for the benefit and so should not be obligated to participate in providing it (Klosko, 2004, pp. 43-44). Klosko's distinction allows us to see why Nozick's argument fails and why Mill can claim the state can impose some benefits without violating the harm principle. The public radio channel is merely a discretionary benefit (Klosko, 2004, p. 44). Public radio channels have some benefit, but they are not indispensable for an acceptable life. Therefore, it is not the right kind of good to produce obligations.

Nozick's argument fails because there is something inherently dubious about placing an individual under an obligation to provide the wrong kind of goods, namely goods that are merely discretionary benefits. Nozick's (1974) argument is only convincing because the obligation imposed is not for a public good indispensable to an acceptable life. A radio channel is a mere benefit that no one really needs. Similarly, if the state were to restrict an individual's liberty to provide discretionary benefits that do not contribute to the prevention of harm, then the interference would not be an appropriate use of state power. This power would violate the harm principle as it is wrong to use coercion to produce benefits of this kind.

Non-discretionary benefits are clearly different in kind to a radio channel, which is discretionary. The key feature of non-discretionary benefits is that their enforcement is consistent with the two-part justification for compelling individuals to do the positive acts discussed in the previous section. Recall part one, the state must prevent harm to protect the interest of society. Part two, individuals can be coerced to do positive acts to prevent harm as they owe a return for the benefit being a member of the state provides. If we accept the state can compel individuals to do positive acts, for the reasons discussed in the previous section, then it also makes sense to accept the state can compel individuals to play their share in producing non-discretionary benefits. Non-discretionary benefits are limited to things like national defence, physical security provided by law and order, and protection from a hostile environment (Klosko, 2004, pp. 39-40).

Consider Mill's examples of positive acts that the state can compel individuals to adhere to (Mill, 1859, pp. 224-225). These examples are non-discretionary benefits. First, consider Mill's example of compelling individuals to give evidence in court as part of the non-discretionary benefit of physical security provided by law and order. Having a legal system where people are required to provide witness testimony or evidence is

essential to ensure effective physical security, which allows people to live safely and peacefully, as discussed previously.

Second, consider Mill's example of the state enforcing participation in the common defence. This example is again different in kind to Nozick's radio channel (1974) as security against threats from hostile actors is vital to protect the interests of a state and to keep its members safe.

Third, Mill's other example is that the state can require people to partake in the joint work necessary for the interest of society. Mill does not define the interest of society (Mill, 1859, p. 225), but, as I explained in Section 3.4, I take his meaning to be that the state can coerce individuals to contribute to the things necessary for ensuring the functioning of the state's ability to prevent harm, including the state's ability to reduce air pollution. Very few rational people, at least amongst those who believe states can have political legitimacy, could reasonably deny that the state must have *some* capacity to prevent harm. Whilst we might reasonably disagree over the appropriate amount of this state power and the state's means to achieve such harm prevention, even those typically associated with the minimal state, would not reject this.

So, the state compelling individuals to achieve non-discretionary benefits is consistent with the two-part justification as the benefits can prevent harm and individuals should bear the reasonable associated costs for producing the benefits as they owe a return for the benefit of being a member of society. So, the state can enforce such non-discretionary benefits consistently with the harm principle. Of course, however, the state ought to ensure the benefits and burdens of the enforcement are fairly distributed.

3.6 - Air pollution caused by groups

In Section 3.3, I showed that informal groups can be coerced consistently with the harm-prevention harm principle. The following sections now turn to explaining how both conduct-prevention views and the harm-prevention harm principle can permit states to interfere with formal groups to prevent air pollution. I will first outline what I mean by 'group'.

We can identify both informal and formal groups. One key relevant difference between such groups is their structure and whether the group can be assigned notions of responsibility and rights. Informal groups are a mere collection of individuals. For example, people in line at a bus stop, a crowd of people in a shopping centre, and commuters driving to work. An informal group can also be a statistical category, e.g., low-income earners (French, 1984, pp. 5-18). We cannot ascribe either moral responsibility or rights to an informal group as the notions are reducible, without remainder, to the responsibility and rights of the individuals who make up the group (Jones, 2022).

On the other hand, a formal group has a “unified being” and is constituted as an organisation with a formalised internal structure, rules, and decision-procedures (French, 1985, pp. 5-18). Formal groups also have “defined roles by which individuals can exercise certain powers” (French, 1984, pp. 13-14). This structural coordination means a formal group is capable of acting intentionally and making decisions. Peter French also notes that the identity of a formal group is not exhausted by the combination of the identities of the persons in the organisation. A formal group’s existence is compatible with a varying membership and change in the specific persons associated with the group does not entail a corresponding change in the identity of the group (French, 1984, pp. 5-13). Formal groups include Google, Northampton Town Football Club, the University of Southampton, and the World Health Organisation. Formal groups, such as corporations, often cause significant air pollution that harms public health.

French’s distinction suggests the categories are neatly distinct (French, 1984). However, I wish to briefly suggest that the distinction between informal group and formal group might be less clear than French suggests. Consider a crowd at a football match. Such crowds sing in unison and respond to events on the pitch as groups, rather than mere individuals. This point suggests that a crowd at a football match is capable of acting intentionally and can make decisions. The crowd is also compatible with varying memberships. However, crowds at football matches do not have formalised internal structures, rules, and decision-procedures. Crowds at football matches certainly have norms, but these norms are not formalised internal structures, rules, and decision-procedures that function in the same way they would at a corporation, e.g., Google. It seems a mistake to claim that a crowd at a football match is a formal group, but the crowd is also distinct from a crowd that forms when people merely walk around a busy shopping centre. A crowd at a shopping centre seems to be a collection of individuals behaving in similar ways in the same place at the same time. The shopping centre crowd is also distinct from a crowd at a football match. From the above, it seems that the distinction is less clear than French (1984) presents and we should accept that the boundaries between formal group and informal group are blurry.

My focus is on air pollution and its harm to public health. So, the kind of groups relevant here are those that produce harmful pollutants. These formal groups are often corporations or large businesses. Lorries are very high polluters and their emissions contribute harmful pollutants (Machado et al., 2021). So, corporations that operate haulage and heavy goods vehicles (HGV) are a key example. Whilst I have in mind formal groups relevant to air pollution, like corporations and businesses that are high polluters, the argument would apply to other formal groups like the church or clubs.

Due to the harms posed by such formal groups, it is important to ask if the state can impose coercive regulations on formal groups qua formal groups (as distinct from the aggregates of individual members of such groups) consistently with the harm principle. If such regulation is permitted by the harm principle then a significant amount of harm can be prevented because the state can reduce the capacity of formal groups to

produce emissions that cause severe harm. I will make two arguments. First, the state can regulate formal groups that cause harm through air pollution. Second, the state can regulate formal groups regardless of whether they cause harm on the same grounds for which people can be required to adhere to positive acts.

3.7.1 - Regulating formal groups that *cause* harm

I argue that the harm principle permits the state to regulate a formal group for the harm the group itself does. The state can identify formal groups in the same way it can identify an individual that has caused or risked harm and legitimately coercively interfere with their behaviour.

The harm principle permits the state to identify and regulate individuals. If Person A harms Person B without B's consent, the state can interfere and regulate A's behaviour. Equally, if A harms multiple people without their consent, the state can interfere. It is consistent with Mill's argument (1859) for the harm principle to extend to permit the state to regulate formal groups in the same way. The state can identify a formal group and regulate it the same way it regulates Person A. If formal group A harms Person B, multiple people, or a group, without their consent then the state can interfere consistently with the harm principle.

All three versions of Mill's harm principle that I presented permit the state to interfere with groups, although the same conditions apply. First, the narrow conduct-prevention reading only permits the state to regulate groups whose conduct is harmful itself. For example, Volkswagen was found guilty of criminal charges for their emissions scandal, where the company cheated on vehicle emissions testing regulations (Associated Press, 2017). In such cases, the state recognises that the formal group itself has caused harm and interferes to prevent or punish harm. Second, the contributory harm principle permits the state to coercively interfere with groups whose actions are harmful themselves and are "part of an accumulative activity which brings about harm to others" (Kernohan, 1993, p. 51)¹⁹. The emissions of one small business might not produce harm. However, the emissions of multiple small businesses may aggregate to cause essentially aggregative harm to individuals. Third, the harm-prevention view permits the state to regulate businesses whose actions are harmful themselves, are part of an essentially aggregative harm, and also to prevent harm regardless of the group's connection to harm. I will discuss the last point next.

¹⁹ Kernohan's (1993) written formulation of the harm principle discusses the contribution of individuals to essentially aggregative harm. This harm principle could be extended to include the contribution of formal groups to essentially aggregative harm without negating the principle.

An obvious advantage of the harm principle permitting the state to regulate formal groups that cause or contribute to poor air quality is the scale of impact. Large businesses and industries are often major sources of pollution and frequently cause severe harm, some of which they can prevent (Jiménez-Parra, Alonso-Martínez and Godos-Díez, 2018). State power targeting these entities can motivate businesses to change their harmful practices if that means avoiding costs imposed by the state. This use of state power can encourage corporate reform. If formal groups know they will face a penalty for not meeting regulations, or they will receive a benefit for meeting the regulation, then they are incentivised to change their practices. This state power may yield greater reductions in air pollution, with fewer regulatory efforts, than attempting to change the behaviour of millions of individuals.

3.7.2 - Regulating formal groups to *prevent* harm

In this section, I argue that a formal group can be regulated consistently with the harm principle merely because of the group's capacity to prevent harm, even if the group has done no harm.

I previously demonstrated that the state can require individuals to perform positive acts to prevent harm consistently with the harm principle. On the harm-prevention reading, a person can be required to perform a positive act if the interference will prevent harm. I argue that, for the same reasons, formal groups can be required to undertake positive acts to prevent harm consistently with the harm principle. As outlined in Section 3.4, the grounds for the harm principle to permit the state to require people to prevent harm are, 1) something must be done about harm (Mill, 1859, pp. 224-225), and 2) they receive the protection of society (Mill, 1859, p. 276).

There is no compelling reason to think these grounds for coercive interference do not extend to formal groups as such groups have a capacity to prevent harm, in the same way individuals do. Mill's harm principle permits the state to coerce people to prevent harm because redirecting the actions of people can prevent harm. Consistently then, Mill's harm principle permits the state to coerce formal groups because redirecting the actions of formal groups can prevent harm. In fact, the organisational structure of formal groups and the political acceptability of regulating corporations means it may be practically easier for the state to regulate formal groups. The state regulating a few large corporations through a single regulatory intervention may have a more immediate and widespread impact in reducing air pollution than attempting to regulate the actions of thousands or millions of individuals. Corporations also often have greater financial resources and a larger capacity to absorb or adapt to regulatory changes than individuals.

The second ground is that receiving the protection of society generates a reason for the state to require individuals to participate in actions that prevent harm. Formal groups operating within the state (a functioning state, at least) also receive the protection of society. State apparatuses, such as the police and courts, routinely defend

the interests of formal groups (often at the expense of individuals) and this generates a reason for the state to require such groups to prevent harm. Just as the harm principle permits the state to coerce individuals to perform positive acts because they receive this benefit, it is consistent with the harm principle to permit the state to coerce formal groups who receive this benefit too. To summarise, the harm principle permits the state to interfere with formal groups both when the group itself causes harm and when the interference will prevent harm.

One advantage of the state coercing formal groups is that some of the concerns around requiring individuals to perform positive acts do not apply to formal groups. The objections to the state coercing individuals to adhere to cooperation requirements often do not apply to formal groups as formal groups have no 'life to live'. An individual might object that coerced participation in a positive act restricts their liberty of choice and imposes burdens. These are legitimate complaints, though they can be rejected on the second-stage of justifying interference (discussed in Chapter Two). However, these complaints do not apply to formal groups. A formal group can be subjected to costs, but, unlike an individual, formal groups have no liberty of choice and do not experience the costs. It might be objected that the individuals working at a formal group do experience the costs but I will address that in the next section. The fact that formal groups cannot experience the costs of coercion provides a reason that we should be less concerned about the state requiring formal groups to perform positive acts. To summarise, it is consistent with the harm principle for the state to coercively interfere with formal groups and require them to participate in positive acts that will prevent harm.

3.8 - Clarifications

I will now consider three clarifications to my claim that the state can coercively interfere with formal groups to merely prevent harm.

The first clarification is that I do not argue that the state should simply replace *causal* responsibility with *capacity* for preventing or remedying a harm as a basis for justifying interference. The capacity to resolve a harm is not the only value we might hold relevant. The value of fairness and principles, like the Polluter Pays Principle (PPP) or Beneficiary Pays Principle (BPP), should play a part in the state regulating formal groups to prevent harm. The Polluter Pays Principle holds that burdens of responsibility should be distributed in proportion to emissions that an agent has emitted (Caney, 2020). The Beneficiary Pays Principle holds that responsibility is grounded in the extent that an agent has benefitted from polluting activity (Page, 2012).

However, such values and principles are irrelevant to the harm principle. My claim here is not that the state should replace causal responsibility with capacity when deciding whether to interfere. My claim is only that the harm principle permits the state to interfere. The question of how to incorporate the relevant values and principles, like PPP or BPP, for deciding how to interfere is covered by the second-stage of justifying interference. So, these values and principles become relevant when the state is

considering how best to interfere and whether the intervention will be worth the costs. These values will be relevant when I discuss the kinds of public health interventions policymakers can implement to address air pollution in Chapters Four and Five.

A similar, but distinct, objection that one could make is that state intervention with formal groups does not punish the group per se, as the group has no life to live, and the punishment falls on innocent parties. Punishing innocent parties violates our intuition that it is wrong to punish the innocent. I will use an argument from John Hasnas (2012) to illuminate this objection in full. Hasnas (2012) claims that we should not punish corporations because our blame and punishment inevitably land on the innocent. He argues that a corporation cannot experience harm or pain, as there is no definite object present to absorb the punishment. Attempting to punish a formal group means that the punishment is experienced by some other relevant people instead. Corporations usually deal with the costs of their punishments, when it is monetary, by raising prices and harming consumers and/or by making redundancies and harming staff. These consequences mean innocent people suffer the costs of the punishment. So, Hasnas concludes that punishing corporations is unjust (Hasnas, 2012, p. 191). We might similarly be concerned that state intervention with a formal group will lead to innocent people suffering the costs of the punishment and one might claim this makes such intervention unfair. So, the objector can conclude that it is wrong to punish formal groups.

The obvious way to address this concern is again to point out that the harm principle is not concerned with fairness. The harm principle certainly permits the state to intervene against corporations and other formal groups that cause harm. Whether or not the corporation deals with the costs of its punishment by raising prices and/or by making redundancies is irrelevant. The state does not decide how the group covers the costs of the fine. For clarification, consider a case where an individual receives a fine from the state. The individual may decide to cut back on some expenditures or by selling some possessions to cover the costs. None of this is relevant to the harm principle permitting the state to intervene. The second-stage of justifying interference may lead officials to take into account whether or not the individual can afford the fine, but this is not relevant to the harm principle.

Similarly, the formal group can choose whether to make redundancies, raise prices, or reduce shareholder profits. It may seem unfair that whilst the formal group is subjected to the costs, it does not experience the costs *and* is able to pass the costs onto its staff or customers, but this perceived unfairness is irrelevant to the harm principle. The second-stage may take such considerations into account when interfering with a formal group, but the harm principle does not inform this decision. A full discussion of whether interference is justified here goes beyond the scope of this thesis. For now, I only intend to show whether the harm principle permits the state to interfere with formal groups.

A third clarification is to consider the claim that only moral agents can be morally responsible for harm and the implication of this point for my argument. It is frequently

assumed that only moral agents can be responsible for harm. This point raises the question of whether formal groups can be morally responsible, which depends on whether or not they are moral agents (Rönnegard, 2015, Sepinwall 2016, Hess, 2018). Extrapolating from this argument, we might think the harm principle only permits the state to interfere with moral agents. However, I want to resist the assumption that the harm principle only permits interference with moral agents.

My argument is that the harm principle does not need to assign moral responsibility. For Mill's argument (1859), what is relevant for permitting interference is preventing harm, not assigning moral responsibility. The fact of whether formal groups are moral agents or not tells us nothing about whether the state can interfere consistently with the harm principle. Mill is clear that harm, or the risk of harm, is what permits interference, he writes:

Whenever, in short, there is a definite damage, or a definite risk of damage, either to an individual or to the public, the case is taken out of the province of liberty, and placed in that of morality or law (Mill, 1859, p. 282).

Mill asserts that harm, or the risk of harm, is what permits the state to enact its legal force. Mill makes no reference to assigning moral responsibility. So, permitting intervention is predicated on preventing harms, which is distinct from the question of whether the agent whose behaviour will be interfered with is a moral agent or not. To ask whether a formal group is a moral agent we might ask if it can act, form intentions, be autonomous, or exhibit value sensitivity (Hasnas, 2012, p. 188). However, these questions are irrelevant to Mill's argument.

This point may be illuminated by an example. Consider a scenario where a cement production company is attempting to comply with emissions regulations. However, a defect in their machinery means they are actually producing more emissions than the regulations permit, unbeknownst to anyone. The group attempts to adhere to industry standards, implements rigorous quality control measures, and conducts extensive testing, but a small percentage of its machinery malfunctions, which leads to individuals being harmed through an increase in pollution. The harm principle permits the state to interfere with the group as soon as those responsible for measuring emissions become aware of a defect and take the necessary steps to correct the problem. It is irrelevant here whether the formal group is culpable for the harm, or even if the group is a moral agent. What is relevant to Mill's harm principle is that the state's interference with the group will prevent harm. The debate around whether the formal group is a moral agent or not has no application in whether or not the harm principle permits the state to intervene. The practical consequence of identifying the group that does harm and regulating it is the prevention of harm, and this is what permits interference.

To summarise, I argue that the state can interfere with formal groups that cause harm to others consistently with the harm principle. I also conclude that the state can require formal groups to prevent harm.

3.9 - Concluding remarks and the value of Mill's argument

I have outlined Mill's (1859) harm principle and explained that it permits the state to take coercive action to address the harms of air pollution. I will briefly summarise Mill's argument before explaining its value. In the following chapters, I will discuss the public health interventions the state can introduce and some ethical implications of doing so.

Chapter Two explained that Mill is wary of the power of coercion from the state and society and how this limits people's freedom. The rationale of his harm principle is to protect individuals from such powerful institutions and from the coercive force of society as a whole. However, Mill accepts some coercion is necessary to prevent harm, but only if the harm is non-consensual. Once the state has established the harm is non-consensual, coercion is permitted. Nevertheless, the state should opt for non-coercive means of intervention where possible. If non-coercive means are not effective, coercive means might be justified. Coercion by the state must also be proportionate to the harm to be prevented.

The state may choose not to intervene if the interference is not expedient. These considerations were outlined in Chapter Two, Part Two. Chapter Three argued that the harm prevention reading of the harm principle is correct. The implication of this conclusion is that the state can interfere to prevent harm, even if the behaviour being interfered with is not itself harmful. I have argued that the state can coercively interfere in cases of harm caused by air pollution from the actions of individuals, the essentially aggregative behaviour of individuals, and formal groups. Even when such actors do not cause harm, the state can interfere to prevent harm by requiring the actors to perform positive acts.

The value of Mill's (1859) argument, as I read it, lies in its staunch defence of individual liberty. His harm principle serves as a litmus test for states and policymakers who aim to address the harmful effects of air pollution. While coercive interference is permissible under the harm principle, Mill's argument ensures that liberty remains protected unless there is a compelling reason, namely the prevention of harm to others, to permit interference. So, the harm principle can serve as a test for the state's proposed policies to assess if the policy overreaches the limits of justified coercive interference. A policy that interferes with conduct but does not prevent harm to others may not be consistent with the harm principle. Such a policy should therefore be criticised on the grounds of government overreach.

Air pollution policy ought to have a high bar for permitting coercive interference as such policies may inevitably require restrictions on individual freedom. Many of the behaviours we typically think should be free from state interference, like the liberty to own a diesel car, are likely to be limited by a state serious about reducing the harms of air pollution. So, the justification for these kinds of restrictions ought to be convincing.

Nevertheless, Mill's (1859) argument, as I present it, permits the state to enact these liberty-limiting restrictions. The state is permitted to enact positive acts and policies that coerce individuals and formal groups to change their behaviour in order to prevent harm. The state can enact a number of policies, both non-coercive and coercive, to interfere with people and formal groups to reduce air pollution.

Chapter Four - Improving the intervention ladder

Introduction

In the previous chapters, I explored whether the state is permitted to interfere with air polluting activity consistently with Mill's harm principle. I concluded that Mill's harm principle does permit the state to intervene in cases of harm caused by air pollution from the actions of individuals, the essentially aggregative behaviour of individuals, and formal groups. This chapter will consider the public health interventions that the state can take and how intrusive each intervention is. This discussion is important as establishing *whether* the state can interfere to prevent air polluting behaviour is only half of the issue. This chapter and the next will provide guidance on *how* the state should intervene.

To achieve this, I reformulate the Nuffield Council on Bioethics' (2007) 'intervention ladder' to offer a tool for policymakers to assess how much intrusion a proposed public health intervention imposes. I use 'public health intervention' to refer to the wide set of actions or strategies the state can take to prevent harm to the general public or a targeted community. I will show that policymakers ought to use intrusive interventions appropriately. However, intrusion is not the only ethical value at stake²⁰ and Chapter Five will consider other ethical considerations relevant to these interventions.

4.1 - Nuffield Council on Bioethics proposed intervention ladder

The Nuffield Council on Bioethics has proposed an 'intervention ladder' (2007). The intervention ladder is intended to provide practical guidance to policymakers working on public health (Nuffield Council on Bioethics, 2007, p. 41). The interventions the state could use to address a public health issue are represented as rungs on a ladder. Each rung represents a type of public health intervention, rather than a specific policy. By type of intervention, I mean that the rungs correspond to things like 'eliminate choice', which describes a way in which the state can act, rather than a specific policy the state can introduce. For example, a specific policy might be 'quarantining individuals suffering from a communicable disease', but the type of intervention listed as a public health intervention as a rung on the ladder would be 'eliminate choice'. Another example could be a specific policy of 'create a campaign informing people of the benefits of eating five

²⁰ Nuffield Council on Bioethics (2007) do recognise that intrusion is not the only value at stake and other sections of the report discuss other ethical concerns. However, the focus of the intervention ladder is on intrusion.

fruits and vegetables a day', which would provide an example of the type of intervention referred to as 'provide information.'

The Council's ladder aims to rank public health interventions "according to their degree of intrusiveness" (Nuffield Council on Bioethics, 2007, p. 9). By ranking public health interventions this way, policymakers are encouraged to consider whether the amount of intrusion associated with a particular intervention is justified. The ladder, and the wider debate in the report in which it features, have sparked much debate (Dawson and Verweij, 2008, Griffiths and West, 2015, Byskov, 2019, Giubilini, 2019, Faden, Bernstein and Shebaya, 2022, Paetkau, 2024). The Council's ladder serves as a useful tool for policymakers and those interested in liberty to explain how intrusive a particular public health intervention is. The vertical structure of the ladder seems to suggest that the state ought to start with the least intrusive public health intervention at the bottom of the ladder and progressively move up each rung to tackle a health issue.

Figure 2: Nuffield Council on Bioethics intervention ladder (Nuffield Council on Bioethics, 2007)

Intervention	Brief Description
Eliminate choice	Regulate in such a way as to entirely eliminate choice, for example through compulsory isolation of patients with infectious diseases.
Restrict choice	Regulate in such a way as to restrict the options available to people with the aim of protecting them, for example removing unhealthy ingredients from foods, or unhealthy foods from shops or restaurants.
Guide choice by disincentives	Fiscal and other disincentives can be put in place to influence people not to pursue certain activities, for example through taxes on cigarettes, or by discouraging the use of cars in inner cities through charging schemes or limitations of parking spaces.
Guide choices through incentives	Regulations can be offered that guide choices by fiscal and other incentives, for example offering tax-breaks for the purchase of bicycles that are used as a means of travelling to work.
Guide choices through changing the default policy	For example, in a restaurant, instead of providing chips as a standard side dish (with healthier options available), menus could be changed to provide a more healthy option as standard (with chips as an option available).
Enable choice	Enable individuals to change their behaviours, for example by offering participation in an NHS 'stop smoking' programme, building cycle lanes, or providing free fruit in schools.
Provide information	Inform and educate the public, for example as part of campaigns to encourage people to walk more or eat five portions of fruit and vegetables per day.
Do nothing or simply monitor the situation	-

The Council's intervention ladder poses at least three conceptual problems that I will discuss and resolve. The first issue is which public health interventions have been included. The second concern is the order of the interventions. The third problem is illustrating the fact that different health interventions may involve more or less intrusion depending on how they are enforced, hence the rungs ought to overlap. I will reformulate the Council's ladder and present my own intervention ladder that escapes these issues.

I provide a preliminary version of my ladder (see Figure 3). My ladder offers different types of public health intervention and lists the interventions in a different order. The final version of the ladder I propose is shaped like a staircase (see Figure 4).

The purpose of presenting the ladder this way is that each rung is intended to represent how the degree of intrusiveness posed by different interventions may overlap. I will explain this in full in Section 4.4. Given that the subject of this thesis is air pollution, my “brief descriptions” are focused on air pollution policy, whereas the Council’s ladder focuses on a range of health policies. My ladder is not intended to be limited to air pollution policy and it may serve as a tool for policymakers in public health more generally, but air pollution is my focus.

Figure 3: My preliminary ladder.

Intervention	Brief explanation
Eliminate choice	A limiting case. Regulate to entirely remove choice from individuals. For example, imposing a ‘lockdown’ to prevent air polluting behaviour.
Restrict choice	Regulate to limit the option set available, but leave individuals with some choice. For example, consumers may be limited to purchasing cleaning products with low levels of volatile organic compounds.
Disincentives	Impose disincentives on action to discourage people from pursuing X. For example, imposing a tax on high-polluting vehicles.
Incentives	Provide incentives to encourage people to pursue X. For example, subsidising the cost of bicycles for commuting to work.
Nudging	Guide choices by changing the choice architecture. For example, making low-polluting electricity the default option from energy companies.
Provide information	Make information available to the public, perhaps through education or persuasion.
Enable choice	Implement features that make it easier for people to choose X. For example, building bicycle lanes makes it easier for people to choose to cycle.
Surveillance	Collect and analyse the relevant health data.
Do nothing	Undertake no action

4.2 - Which public health interventions to include?

The first issue with the Council's intervention ladder (Nuffield Council on Bioethics, 2007) is the choice of public health interventions included. Here, I will explain how the categorisation of public health interventions included on the Council's ladder is improved upon by my proposed ladder. My proposed ladder more accurately reflects the options available to the state when conducting public health interventions.

One way I improve upon the Council's ladder (Nuffield Council on Bioethics, 2007) is by separating 'do nothing or simply monitor the situation', as these interventions are not equivalent. Doing nothing and monitoring a public health issue are not alike in terms of intrusion. Doing nothing involves the state deciding not to intrude, but this decision is still a type of public health intervention. Policymakers actively deciding to 'do nothing' about a threat to public health is different from being unaware of the threat. Policymakers might decide to 'do nothing' if the threat to public health is minimal or the intrusion is not worth the costs. Policymakers might also opt for 'do nothing' after previously intruding and learning the intervention was unsuccessful or unnecessary. The state might also opt to 'do nothing' at the early stages of a public health threat if the severity of the threat is unclear or perceived to be minimal.

Monitoring the situation is different to doing nothing. For the state's public health agencies to monitor a situation requires the state and its officials to engage in surveillance. Public health surveillance refers to the "ongoing, systematic collection, analysis, and interpretation of health-related data with the a priori purpose of preventing or controlling disease or injury, or of identifying unusual events of public health importance" (Lee and Thacker, 2011, p. 637). Lee and Thacker also include "the dissemination and use of information for public health action" in their definition of surveillance (Lee and Thacker, 2011, p. 637). I exclude this clause in my definition of surveillance as disseminating data goes beyond mere surveillance and counts as 'provide information', which is a separate type of intervention.

Data collection is a form of surveillance that frequently involves intrusion with individuals for public health purposes (Allen, 2021), a recent example being contact tracing of people infected with COVID-19 during the pandemic (Bengio et al., 2020). Depending on the means involved, surveillance as a public health intervention can be minimally or very greatly intrusive. Both overt and covert surveillance can be intrusive. Overt surveillance, or just the threat of surveillance, does not restrict anyone's liberty as people are free to ignore the means of surveillance and continue to act as they please. However, individuals feel pressured to modify their behaviour whilst under state surveillance. The existence of a 'chilling effect' is a well-established phenomenon that arises when individuals or groups modify their behaviour due to their behaviour being observed (Reiman, 1995, p. 35, Murray et al., 2023). Equally, covert surveillance can be intrusive in ways unrelated to liberty, as previously mentioned. If a state's health department secretly placed cameras in people's kitchens to monitor their eating habits the state would be intruding, even if the secret cameras were never found and did nothing to affect people's eating habits. This point will be discussed further in Section

4.3 when I provide a further account of intrusion. My point here is that monitoring the situation is distinct from doing nothing and is a form of public health intervention. Due to this, the ladder I propose puts 'do nothing' into its own rung as a public health intervention and 'surveillance' into the above rung.

The Council's ladder (Nuffield Council on Bioethics, 2007) also fails to include the public health intervention of 'nudging', which I add to my ladder. Richard H. Thaler and Cass R. Sunstein introduced this concept as follows; "a nudge...is any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any option or significantly changing their economic incentives" (Thaler and Sunstein, 2008, p. 6). This definition specifies that the key characteristic of a nudge is that it alters the choice architecture. By choice architecture, I refer to the arrangement of choices to make it more likely that people will pick X (Dworkin, 2020). Those who engage in nudging typically alter the presentation of the choices available to people by exploiting certain decision biases and automatic cognitive processes in order to encourage certain choices (Li and Chapman, 2013, p. 188). The key feature of 'nudging' is that it does not restrict or rule out any choices, or alter the costs of choosing X. People remain free to choose whatever is on offer and are not penalised for doing so. The choice architecture is merely arranged to encourage individuals to pick X. Due to this, Thaler and Sunstein, somewhat oxymoronically, refer to 'nudging' as 'libertarian paternalism' (Thaler and Sunstein, 2008, pp. 5-6).

Confusingly, Thaler and Sunstein provide examples of nudges that do not seem to fit this description. Their examples of nudges include information campaigns, reminders, and warnings (Thaler and Sunstein, 2008, pp. 12-13). Some have critics have attempted to distinguish whether these examples should count as nudges, as they do not seem relevant to the design of choice architecture, but are instead information campaigns (Dworkin, 2020). Sending a reminder to attend a doctor's appointment does not alter the environment in which people choose between multiple options. To avoid confusion, I do not include such examples in my argument and I follow the definition Li and Chapman (2013) provide, which specifies that a nudge involves changing the choice architecture by exploiting decision biases and our automatic cognitive processes. This definition rules out informational nudges, like warnings or a reminder for a doctor's appointment.

So, one example of a nudge is a restaurant menu providing a salad as the default side, which requires people to actively request an unhealthier option, such as chips. A second example is a social media platform setting the accounts of its users to have more restrictive privacy settings as the default, and requiring users to actively choose to share more information. A third example is a car rental website displaying the electric cars first, and requiring people to visit the second page to find more polluting cars. These nudges play on people's cognitive preferences to choose an option they can already see. A fourth example plays on people's susceptibility to framing effects. For example, medical patients in need of surgery are far more likely to accept the surgery when the information is framed in a risk-averse way. So, framing the likely outcomes of surgery as

“90% of people survive” rather than “10% of people die” means patients are more likely to choose to have the surgery (Tversky and Kahneman, 1981).

In their report, the Council recognises that choice architecture and specific environments can affect people’s “abilities and capacities to make decisions” (Nuffield Council on Bioethics, 2007, p. 24). One related public health intervention the report includes is “guide choice through changing the default policy”, and the brief description provided is a type of nudge. By “default policy”, the Council means the “normal practice” of the establishment (Nuffield Council on Bioethics, 2007, p. 24). So, the Council seems to include a public intervention that is related to nudging. However, the public health intervention the Council provides is unclear and seemingly too narrow to fully capture how the state may use nudging to influence behaviour.

First, presenting information in a way that exploits a framing effect, as explained above, does not seem to count as “changing the default policy”. Second, this definition does not account for cases where the supposed nudge was already the default policy. Restricting this definition to *changing* the default policy seems to assume that policymakers must change a default policy for a new policy to count as a nudge. Third, where policymakers are considering multiple options for choice architecture they might not have a ‘default’ policy. So, the Council’s focus on changing the default policy fails to capture a wider range of nudges that change the choice architecture, but are unrelated to changing the default policy. A classic example of a nudge is for a cafeteria to place healthy food at eye level and less healthy foods higher or lower to encourage school students to choose healthier options (Thaler and Sunstein, 2008, pp. 1-4). This example demonstrates that a nudge might have nothing to do with changing the default policy if the cafeteria never had a default policy, or the default policy was always to place healthy food at eye level. So, ‘nudging’ ought to be included as a distinct rung on the ladder, and changing the default policy falls within this.

Finally, I will distinguish between ‘restrict choice’ and ‘eliminate choice’. Angus J Dawson (2016) has argued that some of the interventions on the ladder cannot clearly be separated. If the rungs cannot be separated, then the ladder is unclear for policymakers and they might not know where an intervention fails (Dawson, 2016, pp. 511-512). Tyler Paetkau agrees with Dawson and claims that the policy of mandatory vaccination for healthcare workers could either count as ‘restrict choice’ or ‘eliminate choice’ (Paetkau, 2024, p. 685). I accept that the difference between the two interventions is somewhat blurry. However, I think we can understand the two types of intervention as distinct and that ‘eliminate choice’ serves as a limiting case.

In my ladder (figure 3), I explain ‘restrict choice’ as ‘regulate to limit the option set available’. This intervention aims to prevent harm by restricting choices that individuals can make, whilst leaving suitable options available. Conversely, ‘eliminate choice’ aims to prevent harm by entirely removing choices that individuals can make, without leaving suitable options available. ‘Eliminate choice’ is a limiting case and is reserved for the policies that present the absolute most intrusion that the state should

be willing to impose on people to protect the public health. Due to this, more policies will count as 'restrict choice'.

There are some examples of each intervention that demonstrate the difference. An example of 'restrict choice' is the state restricting the choice of consumers to only purchasing cleaning products with low levels of volatile organic compounds (VOCs), as these products are less polluting. In this case, individuals retain some choice about the type and brand of cleaning product they purchase, but the choice is restricted to a limited set of options. On the other hand, the compulsory quarantining of individuals with highly dangerous communicable diseases is a case of 'eliminate choice'. In this case, the patient is not given any choice about whether or not they quarantine. A second example is that a 'lockdown', like many states imposed during the COVID-19 pandemic, could be introduced to prevent air polluting behaviour, as the lockdown during COVID-19 improved air quality (Venter et al., 2020). 'Eliminate choice' imposes the most intrusion and removes the relevant choice entirely from the individual in question, hence it is a limiting case. Both interventions should be used especially carefully, as I will discuss in Chapter Five when I provide an ethical evaluation of each intervention.

However, some cases are less clear, e.g., mandatory vaccination for healthcare workers as Paetkau suggests (Paetkau, 2024, p. 685). To establish the difference we need to see the details of the policy at hand. Once the details are established, we can see whether a particular policy is 'restrict choice' or 'eliminate choice'. On the face of it, Paetkau (2024) is correct that mandatory vaccination, described abstractly without a formulated policy plan in place, may appear to fall into either 'restrict choice' or 'eliminate choice'. We can ascertain the correct intervention once the detail is formulated. For example, if the state mandates that hospital staff must be vaccinated to work on particular hospital wards and the activities of unvaccinated staff will be limited to avoid exposure to at-risk people, the policy is a case of 'restrict choice'. Under this intervention, individuals maintain a choice of being vaccinated and working anywhere in the hospital or not being vaccinated and only working in some areas. So, individuals maintain a limited option set to choose from.

On the other hand, if the state mandates that hospital staff are vaccinated or their employment will be terminated, then the policy is a form of 'eliminate choice'. This example is a limiting case, as non-compliance results in the termination of employment, which is an extremely rigid policy. It is not literally the case that the individual's choice about whether to be vaccinated is eliminated, as the hospital staff can choose the termination of their employment. However, the extremely rigid nature of the policy and the consequences of not choosing to be vaccinated demonstrates how 'eliminate choice' is the limiting case and imposes the most intrusion we could expect a mature liberal democracy to impose on people. Therefore, 'eliminate choice' is distinct from 'restrict choice'.

To summarise, my ladder distinguishes 'do nothing' and 'monitor the situation', and hence includes 'surveillance' as a public health intervention. I include 'nudging' as a rung on my proposed ladder and remove 'guide choices through changing the default

policy.’ Finally, I outline the difference between ‘eliminate choice’ and ‘restrict choice’, namely that the former is a limiting case.

4.3 - The basis of my ladder’s order

In this section, I will discuss the principle that guides the basis of my ladder’s order. This principle is the *principle of least intrusive* means. I will first discuss why this principle is more plausible than the *principle of least restrictive* means.

The Council does not offer a measure of the degree of intrusion from their public health interventions on their ladder or any explanatory rationale for the position of the rungs. The report states that the first step (at the bottom) is the least intrusive and the highest step (at the top) is the most intrusive intervention. The Council writes that the “higher the rung on the ladder at which the policy maker intervenes, the stronger the justification has to be” (Nuffield Council on Bioethics, 2007, pp. 41-42). The argument here seems to be that each sequential rung on the ladder requires greater justification, moving from bottom to top.

Nuffield also states that policymakers looking to introduce more intrusive public health interventions ought to consider whether the general public is likely to accept and participate in the proposed intervention. A more intrusive public health intervention is likely to be publicly acceptable only if it is clear that it will produce the desired effect and that the restriction of liberty is proportionate to the harm prevented (Nuffield Council on Bioethics, 2007, p. 42). It is prudential for policymakers to be concerned with the public acceptability of an intervention. However, policymakers should also work to shift what counts as publicly acceptable by providing information and educating the public. In the earlier stages of the COVID-19 pandemic, it was assumed that the general public of the United Kingdom would not accept a lockdown, yet this attitude changed (Loria-Rebolledo et al., 2022).

The order of the ladder I propose is intended to reflect the degree of intrusion that a public health intervention imposes upon the public. I follow the Council in basing my ladder on the *intrusion* that results from the state imposing a particular public health intervention. The Council does not define intrusion or specify what it is that a public health intervention intrudes into or with. Given that the ladder is intended to provide ethical guidance to policymakers, I propose that “intrusion” is both a descriptive and normative concept, as outlined in Chapter Two. Intrusion describes how public health interventions can affect people’s lives. I take it that state intrusion *prima facie* ought to be avoided unless there are strong reasons to utilise intrusion, as an intrusive intervention may restrict liberty or individuality, invade privacy, or be unduly burdensome and the state *ought* to avoid this. Of course, intrusions that restrict liberty are permitted to prevent harm consistently with Mill’s harm principle (as discussed in Chapter Three) and where intrusions do not restrict liberty, the state has good ethical reasons to ensure the intrusion is proportionate, as I will show in Chapter Five. So, for

my discussion, I use intrusion as a catch-all term that encompasses the many ways a public health intervention intrudes upon individuals.

A more narrow suggestion would be to solely focus on how public health interventions intrude upon liberty. However, for reasons already outlined, the public health intervention of surveillance ought to be included as a rung on the ladder. Surveillance does not always intrude into an individual's liberty. Whilst surveillance raises important ethical issues, which will be discussed in Chapter Five, the wrong of surveillance is not merely that it intrudes with liberty. Surveillance can be intrusive into an individual's life in ways that do not affect their liberty, as the aforementioned example of a state's health department secretly putting cameras in people's kitchens to monitor their eating habits demonstrated. Equally, the wrong of surveillance may be that intrusion into one's private life is an affront to their personal dignity (Floridi, 2016). Additionally, public health information campaigns could be very intrusive without intruding on one's liberty. If the state bombarded its populace with constant public health messaging on television adverts, billboards, and banners it would clearly intrude into the lives of individuals, even if the messaging did not intrude with one's liberty (Conly, 2014). Public health information campaigns could also be intrusive in the sense of being particularly gruesome or vivid, without intruding on one's liberty. Therefore, as previously outlined, intrusion ought to be understood widely to cover the many ways that a public health intervention might intrude.

Some further explanation is needed before I turn to illuminating the rationale for the order of my ladder. Here, I will explain how the order is guided by the principle of least intrusion. In Chapter Two, I considered two guiding questions for justifying coercive state interference. The first question asks whether the intervention is necessary to achieve the policy's objective of preventing harm. As previously outlined, the question is intended to ascertain if the intervention is necessary to prevent harm and so, whether the coercion is permitted consistently with Mill's harm principle. If a coercive intervention is not necessary to prevent harm, then coercion is not permitted and other means must be used. If coercion is necessary, then the intervention must satisfy the harm principle and prevent harm to others. When the first question is satisfied and it is the case that coercion is necessary to prevent harm, the second question considers how intrusive the intervention ought to be. I answered that the coercive interference must be proportionate to the harm it is trying to prevent. Here, I will explain how policymakers can determine when intrusion is proportionate.

My ladder introduces another principle to guide policymakers. This principle is the principle of least intrusive means (PLIM). The principle holds that: *more intrusive means, including coercive means, are justified when means involving less intrusion are less likely to achieve the appropriate ends, relative to the amount of intrusion*. All the public health interventions on the ladder (except 'do nothing') involve intrusion to varying degrees. However, only the top three (disincentives, restrict choice, eliminate choice) are both intrusive and coercive. I will return to this point in Section 4.4 when I explain the order of the ladder. The PLIM is intended to show that policymakers should consider

if the non-coercive interventions can be utilised before the coercive interventions are. As previously stated, policymakers *prima facie* ought to avoid state intrusion and this involves minimising coercion. As Jason Brennan points out, "coercion is presumed unjustified unless there is a compelling case for it. And one of the easiest ways to kill a case for coercion is to show that you can generate the supposed benefits of coercion through noncoercive means" (Brennan and Hill, 2014, p. 35).

The final clause of the PLIM is intended to demonstrate that decision-makers should be concerned with both the likelihood that an intervention will be successful to a satisfactory degree and the amount of intrusion it poses. If an intervention is likely to achieve a slightly less satisfactory degree of success but involves much less intrusion, then the PLIM holds that policymakers should prefer the less intrusive option.

I base my PLIM on the principle of least restrictive means (PLRM), which has been influential in the fields of public health and bioethics (Richmond et al., 1996, Coker, 2001, p. 349, Gostin, 2002, Upshur, 2002, p. 102, Lin, 2003, Gostin, Friedman and Wetter, 2020, Giubilini et al., 2023, p. 213). The PLRM also features in the 1984 Siracusa Principles, which are a set of international guidelines that provide guidance on when states can lawfully restrict rights guaranteed by the 1966 International Covenant on Civil and Political Rights (Coker, 2001, p. 349). The PLRM is also sometimes called the principle of least restrictive *alternative*. The PLRM holds that "more coercive methods should be employed only when less coercive methods have failed" (Upshur, 2002, p. 102). Spelt out in full, the principle of least restrictive means is: *coercive means are justified, but only when means involving less restrictive interference have failed to achieve the appropriate ends*.

The principle of least *intrusive* means is an improvement on the principle of least *restrictive* means in two respects. First, the requirement to only use a more coercive intervention *after* a less coercive intervention has failed is wasteful, unnecessary, and potentially dangerous if it is likely that the less coercive intervention will fail. Consider the case of the national lockdowns during the COVID-19 pandemic. PLRM suggests that the state ought to have tried all the less coercive interventions before the policy of lockdown could be implemented. Given the immediate and widespread harm of COVID-19, this idea would have led to unnecessary illnesses and deaths before the most appropriate policy could have been implemented. Therefore, a more plausible principle ought to focus on how *likely* a public health intervention is to succeed, as my proposed principle does. The question of what kind of intervention is more or less likely to achieve its ends arises. I suggest that policymakers ought to consider the appropriate empirical data to see what means are necessary to achieve the intervention's desired goal. Of course, there are cases where such relevant data does not exist or is limited. For example, COVID-19 presented a series of new problems, even if historical comparisons did exist. In such cases, I hold that it is appropriate for policymakers to make a judgement based on what evidence is available and to swiftly collate new evidence to inform decision-making.

However, this problem is not inherent to the PLRM. An improved PLRM could be outlined as: *coercive means are justified, but only when means involving less restrictive interference are less likely to achieve the appropriate ends, relative to the amount of intrusion*. Reformulating the PLRM in this way accounts for how decision-makers should be concerned with both the likelihood that an intervention will be successful to a satisfactory degree and the amount of intrusion it poses, just as my proposed PLIM does. This revised PLRM addresses the first problem. However, I will now show that the PLRM is still not satisfactory.

The second reason PLRM is unsatisfactory is that the principle is too narrow. PLRM informs policymakers that they should only be concerned with restraining interventions that *restrict* liberty. The problem is that PLRM focuses on how restrictive an intervention is. This problem is inherent to the PLRM and explains why it is not satisfactory as a principle to guide public health decision-making. An appropriate principle ought to consider how *intrusive* a public health intervention is, rather than how *restrictive* it is. If we are concerned about state interference that restricts the liberty of individuals then we ought to also be concerned about state interventions that are intrusive, even if they don't restrict liberty, as mentioned in Chapter Two. There are at least two reasons for this.

First, a concern about public information campaigns is that they might be highly unwelcome and unavoidable. The United Kingdom's Government has recently introduced mandatory calorie labelling on restaurant menus in an effort to increase consumer awareness and tackle obesity, which some critics view as intrusive (Jeacle and Carter, 2023, p. 13). Also, a scenario where public information campaigns are seemingly omnipresent would undoubtedly feel very intrusive, perhaps even more so than some restrictive interventions (Conly, 2014). So, focusing on whether an intervention is merely restrictive fails to capture how such an intervention may be intrusive. Second, public health interventions that are merely surveillance to gather and analyse data may not restrict anyone's liberty but may be intrusive if they violate an individual's privacy. An ethical evaluation of such means and whether or not the state should adopt them will be discussed in Chapter Five. Here, I only aim to demonstrate that public health interventions can be intrusive.

For these two reasons, I argue that we should be concerned with the intrusion from public health interventions, not merely whether the intervention restricts liberty. The PLRM is a plausible principle in how it captures the public health interventions that are coercive and restrict liberty, but the PLIM also captures these interventions, and interventions that are intrusive in other ways. So, the PLIM better captures the effects that a range of public health interventions might have on individuals.

The significance of the PLIM is that it provides an additional tool, along with the harm principle, for policymakers. The harm principle is useful for developing appropriate policies, but it only places a restriction on the top three interventions of my ladder. The PLIM, on the other hand, applies to all interventions, regardless of whether they are coercive. The harm principle does not rule out the state using extremely

intrusive, but non-coercive interventions, which may be unjustified. I do not mean to suggest the harm principle should be replaced by PLIM. The harm principle is still vital in explaining the significance of when coercion is justified. Ultimately, whilst the harm principle is an important tool for policymaking, the PLIM provides greater guidance to policymakers.

4.4 - The order of my ladder

Now that I have demonstrated that we ought to accept the PLIM, I will explain and justify the order of my ladder. Justifying the order of the ladder allows us to understand which intervention belongs where based on the degree of intrusiveness it poses. From this, we can see how intrusive a public health intervention is. This consideration provides some rationale for whether or not the intervention ought to be implemented. However, the other ethical concerns raised by the intervention (to be discussed in Chapter Five), its effectiveness, and its cost also ought to be considered by policymakers.

The PLIM exemplifies how my ladder is intended to work. When implementing a public health intervention, the state ought to start at the bottom (with the least intrusion) and only move up a rung, i.e., undertake an intervention that involves more intrusion, when it is likely the previous means will fail to the degree that they ought to be abandoned. Of course, failure comes in degrees, and public health interventions may fail to some degree and be successful in others. The point where the lower intervention is not likely to achieve the degree of success necessary to make it worthwhile is the point at which a more intrusive intervention can be implemented. I am not trying to suggest here the state ought to entirely abandon previously attempted policies when it moves up the ladder and implements a more intrusive policy. Of course, no single intervention can be expected to address a public health issue. Adequately addressing such issues often requires multiple policies with modest effects to make progress (Beshears and Kosowsky, 2020, p. 24). I only mean to suggest that policymakers implementing a more intrusive policy ought to consider the ladder before abandoning old policies *or* adding additional policies.

Returning to the order of the ladder, I base my argument in part on which interventions involve coercion. As previously mentioned, the lower interventions are surveillance, enable choice, provide information, nudging, and incentives. These interventions can be intrusive but do not involve coercive interference. The higher interventions (disincentives, restrict choice, eliminate choice) are both intrusive and involve coercive interference. So, for the state to implement the higher interventions its reason for doing so must be consistent with Mill's harm principle, whereas Mill's harm principle is irrelevant to the lower interventions.

It is instructive that the higher interventions must pass the test of the harm principle for the state to implement them. If we hold that part of the harm principle is to determine which state actions require the most justification, then it makes sense to recognise interventions that require passing the test of the harm principle as the

interventions that typically involve the most intrusion. The fact that the lower interventions do not need to pass the test of the harm principle to be implemented indicates such interventions typically involve less intrusion. This distinction allows us to ascertain the interventions that belong in the top and bottom parts of the ladder. I will now discuss each public health intervention in turn and provide its plausible position on the ladder. However, as I will discuss in Section 4.5, an intervention might be more or less intrusive than ones above or below it, depending on the means used to implement it. Hence, the higher interventions *typically* involve more intrusion and the lower interventions *typically* involve less intrusion. So, the ladder's ranking of how intrusive each public health intervention is ends up being somewhat blurry.

The positions of the highest and lowest rung are the easiest to ascertain. The public health intervention that involves the least intrusion is 'do nothing.' The state opting not to implement any public health intervention involves no intrusion. The state's decision to do nothing about a particular public health issue might still require justification if it is widespread or poses significant harm, which will be discussed in Chapter Five. Regardless, this intervention clearly involves the least intrusion.

The top rung, or the public health intervention that involves the most intrusion, is 'eliminate choice', which, as previously explained, is a limiting case. Eliminating choice involves the most intrusion as it *forbids* permissible choices, as the previously provided examples illustrated. In these cases, the state can impose a punishment on those who choose to do X. All of the other rungs allow freedom of choice, even if the interventions attempt to shape or reduce it. This intervention intrudes in such a way that individuals are intended to be left with no liberty to choose. To be clear, it is still the case that individuals are free to choose an option that has supposedly been eliminated, but the fact they risk suffering a punishment means that the intervention has removed a permissible choice (Saunders, 2022).

The second highest rung is 'restrict choice.' This public health intervention involves limiting the option set, whilst leaving suitable options available. Consider the state restricting consumer choice to only purchasing cleaning products with low levels of volatile organic compounds, due to health risks (Lin et al., 2022). This public health intervention permits consumers the choice of some cleaning products, but the choice is restricted to a particular type (i.e., ones deemed to be safer). So, this intervention involves less interference than 'eliminate choice' as some suitable choice remains. There will inevitably be some debate about what ought to count as a 'suitable' option. Policymakers ought to look at the evidence for which options prevent harm and make a judgement based on the available evidence and a consideration of what counts as suitable.

The third most intrusive type of public health intervention is 'disincentives.' Here, I am referring to interventions that impose costs on a particular behaviour. Such costs might include taxes, charges, and the withholding of benefits. Non-monetary disincentives could also be implemented by the state. I will discuss one in Chapter Five. These interventions aim to reduce the number of people doing X or make it more likely

that people will act in Y way due to a cost. London's Ultra-Low Emission Zone exemplifies this type of intervention. Individuals are permitted to drive through the designated area, but doing so involves paying a charge (Beshir and Fichera, 2022). This intervention involves less interference than 'eliminate choice' and 'restrict choice', as individuals are permitted to choose X. Such interventions are similar but distinct from imposing penalties, as they set a rule which removes a choice.

Compare here the Crit'Air sticker scheme of France, which does not count as a 'disincentive' and instead fits in the category of 'restrict choice'. All cars and motorbikes must bear a sticker that identifies the vehicle's emissions standards. The state then imposes penalties (fines of up to €750) on drivers who drive a non-compliant vehicle in certain cities (Brignall, 2023), so the choice of drivers is restricted to particular roads or having a compliant vehicle. On the other hand, ULEZ allows individuals a permissible choice to drive within the designated area if they pay the charge. Crit'Air restricts the permissible choice. In short, ULEZ requires drivers to pay a charge, whereas Crit'Air imposes penalties. From this, we can see that the distinction seems to be that ULEZ merely discourages drivers from driving in the zone whilst Crit'Air penalises and condemns drivers (of non-compliant vehicles) for driving in the zone. So, interventions that are classed as 'disincentive' (like ULEZ), involve less intrusion than the previous two rungs as individuals maintain a permissible choice, but face disincentives that attempt to shape that choice.

The intervention that involves the fourth most intrusion is 'incentives'. This intervention plausibly involves less intrusion than 'disincentives' as the former does not involve coercion. As outlined in Chapter Two, I take coercive interference to involve threat or force. As discussed above, a disincentive aims to change behaviour by threatening or forcing an individual to do X by imposing a cost on doing X. By contrast, an incentive aims to encourage a person to do Y by rewarding them for doing Y. Providing a reward is intuitively less intrusive than imposing a cost. However, these costs may still be intrusive. For example, the state's incentive may be too good for some individuals to refuse. Onora O'Neill has argued that some offers might genuinely be coercive if they are too good to refuse. Such an offer *imposes* a certain choice to which an individual is unable to say no (O'Neill, 1991, pp. 181-190). My argument is not committed to O'Neill's view that offers from the state might be coercive, but her argument is useful in showing how 'incentives' involves more intrusion than 'nudging'. The difference is that 'incentives' aims to shape an individual's choice through pressure. By contrast, 'nudging' only changes how the choices are presented without imposing any pressure on an individual to pick Y.

Consider the Greater London Authority's scrappage scheme, which allows individuals to scrap a polluting car that is not compliant with ULEZ for £2000 (Rufo and Low, 2024). Such an incentive might be intrusive for a poor individual who desperately wants to keep a treasured classic sports car, which is not compliant with ULEZ. The scrappage scheme enables the individual to avoid paying the ULEZ charge by trading their car for £2000, but the pressure the offer poses suggests that this type of

intervention is more intrusive than ‘nudging’, which only changes the presentation of options.

It might be noted here that my concern with the intrusion faced by the sports car enthusiast is different to some of the other interventions that I’ve considered so far because it focuses on what an individual is *able* to do, rather than what they are *permitted* to do. The sports car enthusiast is permitted to accept or decline the scrappage offer, but might not be able to, which is different from the other interventions where the concern is whether individuals are not permitted to act as they please. This concern is also relevant to the health interventions of ‘nudging’ and ‘disincentive’, where individuals are permitted to ignore the nudge or not pursue X to avoid the disincentive, but the concern is really whether the individuals are able to ignore the nudge or accept the terms of the disincentive. The concern around whether an individual is able to do something is indeed different to whether they are permitted to (e.g., in the health interventions of ‘restrict choice’ and ‘eliminate choice’). In the case of whether the individual is permitted, the concern is about the liberty of the individual. In the case of whether the individual is able, the concern is whether it is possible for the individual to. These cases operate in somewhat different ways.

However, I think my argument accounts for this difference because of how I use ‘intrusion’. As previously explained, I use ‘intrusion’ (following the Council) as a catch-all term to describe the many ways a public health intervention intrudes upon individuals. Given that ‘intrusion’ here is intended to encompass all the ways public health interventions intrude upon individuals, my argument is intended to be concerned with both what an individual is permitted to do and what they are able to do. Intrusion that affects what people are able to do and are permitted may operate in different ways, but both are forms of intrusion, at least on my account of intrusion (following the Council). So, this point does not negate my argument.

The fifth highest rung is ‘nudging’. As previously outlined, nudging aims to increase the number of people who choose an option by changing the choice architecture. Similarly to ‘incentives’, nudging aims to increase the number of people who will choose X over Y. However, nudging merely aims to change the presentation of options to make it more likely for people to choose some option(s). Still, influencing individuals by altering the design of the option set to exploit certain decision biases and automatic cognitive processes is intrusive, especially in cases where individuals are not supposed to realise the choice architecture has been affected. Altering the option set to nudge individuals to choose X can be done by exploiting people’s susceptibility to status quo bias, that is, people’s a priori preference for the status quo over possible alternatives (Thaler and Sunstein, 2008, pp. 34-35). Status quo bias gives rise to a “default effect”, that is, “the tendency for decision makers to stick with the default, or the option that takes effect if one does not make an explicit choice” (Li and Chapman, 2013, p. 190). Influencing individuals in this way is intrusive because it harnesses the flaws in our instrumental reasoning. So, a state that uses nudging takes advantage of individuals’ biases and intrudes into their ability to make their own choices without interference.

However, nudging leaves individuals free to reject any choice and opt for their preferred choice. All of the choices remain available and no choice imposes any costs. Ultimately, it seems that maintaining the liberty to reject any choice/accept any choice without facing a cost involves less intrusion than suffering a cost (through the means of a disincentive) for choosing X. So, 'nudging' ought to be lower on the ladder than 'disincentives', which does impose a cost on individuals for choosing X. Whilst nudging does not require individuals to choose X, it is worth noting that the state could *require* formal groups, e.g., corporations, to nudge people to choose X. This case would involve corporations being required to implement a nudge, but no individuals would be coerced.

The intervention that involves the sixth most intrusion is 'provide information.' The intervention can take two forms and we can roughly distinguish 'education' and 'persuasion' (Saunders, 2022). First, education involves the state merely presenting facts as neutrally as possible. Second, providing information can involve the state actively attempting to persuade individuals to choose X. Due to this, persuasion seems to involve more intrusion than education. However, the distinction here is blurry, as drawing the line of what counts as either form will be hard to distinguish (Saunders, 2022). Given that education involves the presentation of information as neutrally as possible, it seems to involve less intrusion than persuasion. However, if important facts are omitted then education might seem more like persuasion through deceptive means. Of course, the state cannot present *all* the facts regarding a public health issue, and some biases will come into play when the state selects the facts it deems relevant. So, I argue the two forms belong at different ends of the same category. In Chapter Five, I will further outline the differences and the ethical implications of each intervention further. For now, I merely want to demonstrate that providing information involves less intrusion than the previous rungs.

This public health intervention does not influence individuals by exploiting certain decision biases and automatic cognitive processes or shaping of choice (as 'nudging', 'incentives', disincentives' do), or by restricting or eliminating their choice. Individuals are free to ignore the information. Individuals may close their eyes when they see a billboard containing a public health message and change the radio channel if a public health advert is played. Equally, individuals may opt to listen attentively and consider the information but reject it. The point is that providing information maintains freedom of choice. Still, if citizens were to be bombarded by public health information this would be intrusive (Conly, 2014). Public health information that aims to be persuasive by being particularly shocking or unpleasant may also be intrusive in the sense it is manipulative. The United Kingdom's 'Don't Die of Ignorance' AIDS public health information campaign of the 1980s may be a relevant example (Burgess, 2017). The ethical implications of this public health intervention will be discussed further in Chapter Five. Due to such considerations, 'provide information' involves more intrusion than 'enable choice.'

The seventh highest rung is 'enable choice.' This type of public health intervention aims to benefit individuals by making it easier for them to choose X. This

intervention assumes some people would genuinely prefer to choose X over Y, and so aims to increase the number of people choosing X. An example of 'enable choice' is the state building bicycle lanes to increase the number of people who cycle around an area rather than drive. This form of intervention does not aim to manipulate, use pressure to shape, restrict or eliminate choice. The 'enabling' of choice is plausibly different and less intrusive. 'Enable choice' functions by making it easier for people to choose to do something, e.g., to cycle to work. Making it easier for people to choose to do something is qualitatively different to most of the other rungs, which aim to make it harder for people to choose something, e.g., to drive to work. The difference is that the state benefits individuals if they act in a particular way. Hence, this type of intervention is less intrusive than the previous rungs.

However, the intervention is more intrusive than 'surveillance.' I argue it is more intrusive because the state will subtly shape choice by enabling a particular choice. The rationale behind 'enable choice' is that most individuals genuinely want to do X, but currently cannot. For example, the state might assume that many individuals would cycle, but a lack of bicycle lanes means they choose not to. So, the state enables these individuals to do so by building bicycle lanes. Here, the state still permits people to drive without imposing any costs on doing so; it merely enables cycling. In such a case, the state risks intruding upon individuals by inadvertently creating social pressure to conform to cycling. The increased visibility of cyclists and bicycle lanes may lead to the perception that not cycling (e.g., driving) is less socially acceptable, thereby subtly shaping choice, rather than merely enabling a choice. This risks the intervention going beyond its rationale of making it easier for people to choose to do things they already want to do, and instead actually shaping their choices. Ultimately, 'enable choice', at least in the case of air pollution, is certainly less intrusive than the higher interventions, but plausibly more intrusive than 'surveillance', which typically does not affect individual choice.

The intervention that involves the eighth most intrusion is 'surveillance.' Overt surveillance might affect individual behaviour, but public health surveillance typically does not aim to affect individual choice in any way. The purpose of this public health intervention is merely to gather and analyse data which can inform future policy decisions. However, surveillance may risk privacy violations, particularly if it occurs in the home or workplace, hence it is not free of intrusion. Therefore, 'surveillance' belongs above 'do nothing', which is the ladder's bottom rung.

4.4 - A staircase of intervention

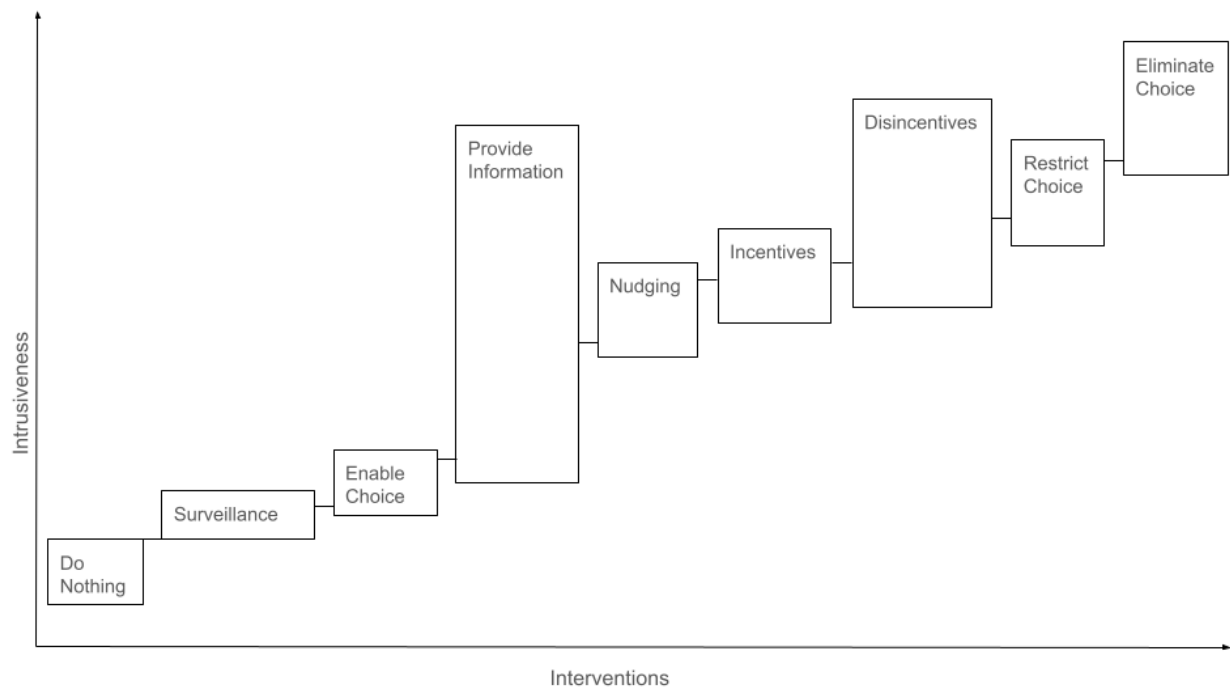
So far, I have argued that the public health interventions on the ladder ought to be placed by how intrusive they are and I have attempted to order them. However, the ladder is still not satisfactory. As I have argued elsewhere (Meylan-Stevenson and Saunders, 2024), the range of ways that a public health intervention can be delivered means that a particular intervention might be more or less intrusive. For example, an

intervention of 'restrict choice' could restrict a very large number of choices or a much smaller number of choices. My point here is that there can be a large variation in how intrusive an intervention is depending on how it is enforced. So, the ladder is further complicated by the fact that the means used in one type of intervention might involve more interference than the means in a higher rung.

For example, a disincentive that involves a very low cost could be, in practice, less intrusive than providing information in a very intrusive way. Consider a financial disincentive that imposes a £1 cost for owning a high-polluting vehicle. Now consider a public information campaign that aims to raise awareness and inform the public of the relevant facts of the health risks of owning a high-polluting vehicle by interrupting every TV and radio show and is on every other page of every newspaper. In this case, the disincentive would plausibly involve less intrusion than the means of providing information. On the other hand, consider if the disincentive made driving high-polluting vehicles cost £10,000,000 a year. This financial disincentive would be incredibly intrusive. Now consider if the intervention of 'restrict choice' only restricted individuals from choosing to own high-polluting vehicles in the colour red. This would restrict choice by limiting the option of purchasing many cars. But, this time, it seems that the disincentive involves more intrusion than the supposedly more intrusive intervention of 'restrict choice.' The disincentive is more intrusive because it effectively removes the ability of people (who aren't extremely wealthy) to purchase a high-polluting vehicle, even if the choice is not restricted. Whereas, the intervention of 'restrict choice' only restricts individuals from owning a high-polluting car in one colour.

These examples are extreme and no sensible government would adopt them. However, the point remains that the particular means used to implement a public health intervention might make the intervention more or less intrusive. Therefore, the rungs should overlap to account for the fact that how much intrusion each type of intervention involves is sensitive to the means used to conduct the intervention. Due to this, my proposed ladder is better visualised as a staircase (see Figure 4). My proposed ladder improves on the Council's ladder by demonstrating that the ladder ought to account for the possible overlap of intrusion between interventions. However, the ladder I offer is only illustrative and is not intended to be precise. The boxes, which represent intrusiveness, can change in size depending on how the intrusive the intervention is.

Figure 4: My proposed ladder.



Presenting the ladder as a staircase accounts for the fact that the means used to undertake a public health intervention can make different interventions more or less intrusive. The rungs (or steps) show the order of the ladder by how intrusive each public health intervention is. The fact that ‘provide information’ and ‘disincentives’ are larger than the more intrusive higher rung on their right is intended to demonstrate how some interventions, like the ones noted in the above paragraph, might actually involve more intrusion than the supposedly more intrusive intervention.

Conclusion

This chapter reformulated the Nuffield Council on Bioethics’ ‘ladder of intervention’ (2007). I explained that the Council’s ladder’s delineation of public health interventions can be improved upon. I then provided a revised order of the ladder, based on my principle of least intrusive means. I also explained that the PLIM provides more guidance to policymakers than the harm principle does. I concluded by explaining that the ladder should be sensitive to the fact that the means used to implement an intervention could make it more or less intrusive. Due to this, I showed that the ladder is more clearly formulated as a staircase of intervention.

Chapter Five - An ethical evaluation of my ladder's interventions

Introduction

This chapter will provide an ethical evaluation of the public health interventions included on my intervention ladder: do nothing, surveillance, enable choice, provide information, nudging, incentives, disincentives, restrict choice, and eliminate choice. The purpose of the chapter is to outline some of the key ethical considerations policymakers should be aware of when deciding whether to implement an intervention. To do this, I will also further explain some of the interventions. I will also propose some practical policy suggestions that policymakers should adopt to reduce air pollution.

The significance of this chapter is demonstrating that policymakers should not merely focus on how intrusive public health interventions are. Intrusion is a key ethical concern and intrusive policies ought to be used appropriately, e.g., in accordance with the PLIM. However, policymakers should also be concerned with other ethical issues. So, I will illuminate and attempt to settle key ethical issues for each of the public health interventions on my ladder. I cannot address all of the relevant ethical concerns in this chapter. Additionally, determining whether some ethical concerns are justified requires empirical evidence. For example, determining whether the use of antibiotics in farming is ethically justified might depend on empirical evidence to ascertain how well-resourced a state's healthcare system is (Johnson, 2024). I do not provide empirical evidence for my claims in this chapter and rely on theoretical discussion. Additionally, factors like efficiency and value for money should be considered by policymakers (Estermann, Kupriyanova and Casey, 2018), but these considerations are also beyond the scope of this thesis.

Section One

5.1 - Do nothing

The first public health intervention I will provide an ethical evaluation of is for the state opting to 'do nothing' about air pollution. The state might opt for 'do nothing' if the second-stage considerations (discussed in Chapter Two) of whether the interference is worth the costs suggest any intervention will not be worthwhile. A state that wants to minimise intrusion might also opt to 'do nothing' for public health issues where individuals only directly harm themselves (e.g., eating trans fat). However, 'do nothing' is far harder to justify when people's behaviour risks harm to others. For the state to opt for 'do nothing' requires justification in the face of air pollution, given that the lack of state action will have harmful consequences that are not borne by the polluters alone. In fact, I argue that it is sometimes hard for the state to justify doing nothing about air pollution because the state does harm (at least in two cases) if it enacts this public health intervention.

I will discuss two cases where the state does harm by choosing to ‘do nothing’ about air pollution with reference to the Doctrine of Doing and Allowing. The crux of the Doctrine of Doing and Allowing is that there is a moral difference between doing harm and merely allowing harm. The Doctrine has produced much debate (Woollard and Howard-Snyder, 2022). I will not settle the debate here, but I think the Doctrine illuminates something interesting about why it is wrong for the state to opt to do nothing about air pollution. If the state doing nothing about air pollution *does* harm, rather than merely *allows* harm, it is harder for the state to justify doing nothing. We intuitively think that a state intervention that does harm to the populace requires greater justification than a state intervention that allows harm. This conclusion makes the claim that the state should prevent the harms of air pollution stronger. It does not follow that the state is required to prevent all harms or that ‘doing nothing’ is always wrong. I only make this claim about two specific cases of air pollution policy, but as I will suggest in Section 5.1.5 it could apply to further cases. My conclusion that the state does harm by choosing ‘do nothing’ is surprising. On the face of it, doing nothing sounds like merely allowing harm. My argument will demonstrate that this is not the case for some state harms related to air pollution.

Before introducing two cases where the state opts to ‘do nothing’ about air pollution that are cases of doing harm, I will outline one simple case to explain the issue. Consider a state that opted not to do any maintenance on its state-owned water supply infrastructure to cut costs. This inaction would lead to insufficient water treatment and corrosion control measures. Eventually, the water supply would be harmfully contaminated and people who drank from taps supplied by this source would be harmed. This case is intended to illuminate one way the state doing nothing can be an instance of the state doing harm.

5.1.1 - Trump’s Repeal

One way the state might choose to ‘do nothing’ about air pollution is by repealing existing air pollution laws. Repealing air pollution laws is a form of the intervention ‘do nothing’ as the state opts not to address future emissions and allows air polluting behaviour to continue without state intervention. Donald Trump’s administration repealed twenty-eight air pollution and emissions regulations and was in the process of repealing two more before his presidency ended (Popovich, Albeck-Ripka and Pierre-Louis, 2020). The increase in pollutants from repealing these major air pollution policies that governed clean air is predicted to cause hundreds of thousands of more illnesses and deaths every year (The State Energy and Environmental Impact Centre, 2019). The previous administrations were doing *something* about emissions with their regulations, whereas Trump’s administration repealed the regulations to do *nothing*. I call this case

‘Trump’s Repeal’²¹. I will argue that repealing these regulations counts as doing, not allowing, harm. If repealing these regulations counts as doing harm then the claim that the Trump administration was wrong to ‘do nothing’ about air pollution is strengthened.

The literature on Safety Net Cases may illuminate whether Trump’s Repeal is doing or allowing harm. Safety Net Cases are different to standard cases of doing harm. In a standard case of *doing* harm, we can usually identify someone who has performed an action that sets off a sequence that causes harm. For example, Person A throws a piano off the top of a building and crushes Person B to death. Person A clearly does harm to Person B. Safety Net Cases are also different to standard cases of *allowing* harm where someone does *not* perform some action and refuses to interfere in a harmful sequence (Woollard and Howard-Snyder, 2022). For example, Person A sees a child stuck in a shallow pond but does not intervene, allowing the child to drown. Compare the standard cases of doing and allowing harm to a Safety Net Case, where an agent removes some barrier to a harmful sequence but does not act on the victim directly (Woollard and Howard-Snyder, 2022). For example, a piano is safely falling off the top of a building into a net far above Person A. Person B removes the net and the piano crushes Person A to death.

I will shortly explain why Trump’s Repeal is a case of doing harm. To introduce this discussion, I will first outline and explain two canonical Safety Net Cases in the literature:

Hospital: In a hospital, a doctor has just plugged one person into the only available respirator. If the doctor either moves the one or unplugs him from the respirator, he will die. Five persons then arrive at the hospital and can be saved if and only if they are all plugged into the respirator at once. As it happens, the five will not survive being moved to the room with the respirator. But the respirator is movable. In Hospital, it seems that the doctor should unplug the respirator from the first person to save the five (Rickless, 2011, pp. 68-69).

Burning Building (Enemy): A person trapped atop a high building that is on fire leaps off. Seeing this, a firefighter quickly stations a self-standing net underneath and then dashes off to assist with other work. The imperilled person’s enemy is, however, also present and, seeing his opportunity, swiftly removes the net so that the person hits the ground and dies (McMahan, 1993, p. 254).

‘Hospital’ seems like a case of allowing harm, whereas ‘Burning Building (Enemy)’ seems like a case of doing harm (Woollard and Howard-Snyder, 2022). Jeff McMahan provides

²¹ I refer to the case as ‘Trump’s Repeal’. This label is for brevity and I do not mean that Trump, as an individual, is acting separately from his administration and the state as a whole.

the following argument that explains why (McMahan, 1993, pp. 254-258). McMahan claims removing a safety net counts as allowing harm if, and only if, the agent who removes the safety net is the agent who has provided it and the safety net was either not self-sustaining or not yet operative. This point captures the intuition that removing a non-self-sustaining safety net which is protecting someone is merely allowing harm to the person, not doing harm. So, if an agent is providing a safety net that is blocking a threat, but then removes the safety net and simply allows the threat to continue, then the agent *allows* the harm to occur (McMahan, 1993, p. 256). In Hospital, the doctor provides the respirator that is blocking the threat, and the doctor must continually maintain and monitor the respirator so the person stays alive. Therefore, removing the respirator is merely a case of allowing harm (the person to die). In Burning Building (Enemy), the agent moves the firefighter's net, which was not provided by the agent themselves and was self-sustaining, so it's a case of doing harm.

Fiona Woollard (2015) refines this account to add that the removal of a safety net counts as doing harm when the absence of the barrier is a relatively substantial fact. A fact is *substantial* if it is significant, i.e., is informative and tells us about some change to the world (Woollard, 2015, p. 29). Substantial facts are by nature "suitable to be part of the sequence leading to an upshot rather than simply a background condition for the completion of the sequence" (Woollard, 2015, p. 80). Put simply, a substantial fact has a feature that makes it more than a mere background condition (Woollard, 2015, p. 36).

Compare this to a *relatively* substantial fact, which is a fact that is normally non-substantial, but is substantial relative to some given outcome. Certain features of a situation can make a non-substantial fact relatively substantial, as I will explain. The fact that a potential barrier to harm was removed is usually non-substantial, and so counts as merely allowing harm. However, when the non-substantial fact that a barrier is removed is relatively substantial, removing the barrier counts as doing harm. So, a substantial fact counts as part of the sequence to any outcome to which they are appropriately relevant, but relatively substantial facts are only part of the sequence for the given outcome (Woollard, 2015, pp. 63-64).

The absence of a safety net (a barrier) is a relatively substantial fact when: a) the safety net does not require the continued use of resources belonging to the agent and b) either the safety net is owned by the victim or by a third party who has given, or who would give, valid authorisation for the victim to use the safety net *or* the victim has a non-need based claim to the use of the safety net that is stronger than any non-need based claim the agent has to the safety net (Woollard, 2015, p. 81). By non-need based claim, Woollard means the victim has a claim to the net that is not dependent on need. The victim could have previously been using the net for protection, meaning they have a non-need based claim based on their pre-existing relationship to the barrier. So, Woollard's account explains the intuition that Hospital is allowing harm, because the doctor has valid authorisation to use the respirator, and it requires his continual monitoring and maintenance to keep the patient alive. So, removing the safety net simply allows the harm to happen. Woollard's account also explains the intuition that

the agent in Burning Building (Enemy) *did harm* by moving the net (as they did not own the net or have authorisation to move it out of the falling person's way). So, Woollard's account represents a plausible account of Safety Net Cases.

5.1.2 - Is Trump's Repeal doing harm?

I will now explore whether Trump's Repeal meets Woollard's (2015) conditions of a Safety Net Case. If it does then the administration's decision to 'do nothing' about air pollution is a case of the state doing harm, which makes the repeal of the air pollution regulations much harder to justify. Before I consider the conditions, I want to make it explicit that I claim the air pollution regulations repealed by Trump are analogous to a safety net (like the net used by the firefighter to save the falling person in Burning Building (Enemy)). I argue the regulations operate as a safety net as the regulations were already in place and were successfully protecting people from harm by bringing harmful sequences of events to a halt. Consider the following sequence that explains why:

Polluting Business: Before Trump's administration, a business used a highly polluting manufacturing process that causes harm to people. The state introduced air pollution regulations that penalised such processes. The businesses switched to a process that is compliant with the regulations and harm was prevented.

When Trump's administration repealed the regulations it removed the safety net that was preventing harm. Businesses were no longer constrained by the previous regulations and started highly polluting business practices again. Given that the previous regulations successfully prevented deaths (Popovich, Albeck-Ripka and Pierre-Louis, 2020), the regulations can be understood as a safety net. However, as they operate in the real world, they are not guaranteed to save individuals as the firefighter's net is in the hypothetical case. I note that the regulations are different kinds of safety nets to the ones usually considered in the literature where the safety nets are things like firefighter's nets or doctor's respirators, but this difference is a contribution to the literature as I identify an overlooked kind of safety net.

The first condition asks whether the safety net requires the continued use of resources that the agent owns. If Trump *owned* the regulations then he would be entitled to remove them, but the repealed air pollution regulations are not owned by Trump's administration. I do not make a positive claim about who does 'own' the law or regulations (perhaps it is a common good or something that cannot be owned), but I think it is clear that Trump's administration does not. If Trump did own the law, then he would be entitled to do as he pleased with it, just as individuals can do with property they own (like sell or destroy it). The checks and balances any administration faces suggests this is not the case. Additionally, I do not think it is clear that the populace who may be harmed by the additional increase in air pollution 'own' the law, but I do not need to make this claim for my argument to succeed, as will become clear during the

discussion of the second condition. So, the first condition for doing harm is satisfied. The agent (Trump) does not own the resources that make up the safety net.

The second condition asks if the safety net is owned by the victim or a third party that can give valid authorisation to use the net *or* if the victim has a non-need based claim to the use of the net. I have claimed that the populace does not own the regulations. So the first part of condition two is not satisfied. However, the second part, which asks if the victim has a non-need based claim, can be satisfied. Woollard points out that in cases where the safety net does not belong to the agent, the victim, or a third party who would give permission, it is harder to identify whether the case is doing or allowing. The solution is to identify if the relevant agent has a non-need based claim to use the net. One non-need based claim could be that the safety net is already being used to protect the agent from harm (Woollard, 2015, p. 64). Woollard provides a case that demonstrates this point, namely:

Useful Log: Victor needed some rest, but was aware that there are frequent rock slides in this area. He thus chose a spot that was protected by a large log several yards up the hillside. He planned that any boulders rolling towards him would be stopped by this log. He placed a sign on the log, saying 'Log in use—do not move.' To get to hospital and receive treatment for his snakebite, Bob needs to cross a ravine. He can drag the log away and use it as a bridge. Bob takes away the log and a boulder hits Victor and crushes him to death (Woollard, 2015, p. 72).

It seems that Bob removing the log counts as him doing harm to Victor, even though Victor does not own the log. This intuition is explained by the fact that Victor has a prior relationship with the log, unlike Bob, as the log is protecting him from harm and its removal risks his death. The fact that Victor has a prior relationship with the log is the reason why his claim is non-need based (Woollard, 2015, p. 72). It seems that the populace has a similar relationship to air pollution regulations to Victor and the log. The air pollution regulations have been keeping members of the populace alive, so they have a prior relationship with the safety net, and removing the regulations risks their death. So, the second condition is met and the populace has a non-need based claim to the safety net. Therefore, Trump's Repeal is a Safety-Net Case and Trump's Repeal is a case of doing harm.

5.1.3 - An objection

To make an opposing argument, Trump could plausibly argue that the regulations are actually a source of economic harm (Popovich, Albeck-Ripka and Pierre-Louis, 2020). If correct, it seems the regulations are both a safety net against one harm *and* the source of another harm. If the regulations are harmful then Trump's Repeal may actually be a case of harm prevention. We should doubt repealing air pollution regulations is good for the long-term economic benefits of a state, but let's take this claim seriously. The claim is significant because if the barrier is harming others then this might undermine the population's non-need based claim to it. Compare:

Useful but Toxic Log: As in Useful Log, but this time the log is releasing a toxic gas drifting towards Bob, which has effects very similar to a snake bite. Bob is unable to move away from the log's vicinity and can only avoid being killed by the gas by throwing it into the river (where it will react with the water and be neutralised).²²

Useful but Toxic Log demonstrates that a safety net can both be a barrier against one harm and a source of another harm. This problem might undermine Victor's non-need based claim to the log. If the regulations turn out both to be a barrier against harm and a source of harm, then the populace's non-need based claim to the log might also be undermined. If so, it may not be the case that Trump's administration is doing harm by repealing the regulations, though I ultimately reject this conclusion.

So, we are faced with two competing claims. Claim One is: the populace is protected by the safety net against air pollution (they have a non-need based claim) and its removal will cause severe negative health consequences. Claim Two is: removing the safety net will reduce economic harm. However, the strength of either claim does not dictate whether or not Trump's Repeal is a case of doing or allowing harm. Assuming it is true, Claim Two does not undermine the fact that Trump's Repeal is a case of doing harm. The Trump administration is still doing harm by repealing the regulations, even if Claim Two is correct and the regulations do cause harm. It is *also* the case that the Trump administration is preventing harm by repealing the regulations. Both claims can be true and, if so, Trump is both doing and preventing harm. So, I identify an interesting case where the safety net both causes and prevents harm. The fact that removing the regulations will prevent harm does not change the status of the action to a case of *allowing* harm, it remains a case of *doing* harm. A separate question arises of whether or not Trump's action is morally justified, but I will not settle that here. That question would be settled by the second-stage considerations for justifying interference. Here, I merely maintain that Trump's Repeal remains a case of doing harm.

5.1.4 - Denial of Escape Cases

The second case I discuss is similar to a Safety Net Case but with a key difference. In Safety Net Cases, a pre-existing safety net that prevents harm to individuals is removed. In this second case, an agent implements an obstacle to prevent people from escaping harm. Bradley Hillier-Smith introduces this concept as a Denial of Escape Case (Hillier-Smith, 2020). In Denial of Escape Cases, people are being harmed but there is an 'escape' (i.e., a means of preventing the harm), but an agent implements an obstacle that prevents the escape. The conditions of a Denial of Escape Case are: a) there is a pre-

²² I'm grateful to Professor Fiona Woollard for suggesting this case and pressing me on these issues.

existing, potentially harmful sequence of events in motion that threatens a victim, and b) there is a pre-existing means of escaping that sequence for the victim to avoid harm c) an agent acts to place, introduce, or create an obstacle to block that means of escape such that d) the placing, introducing, or creating of the obstacle makes it the case that the potentially harmful sequence of events does in fact harm the victim (Hillier-Smith, 2020, p. 309).

Mayor's Veto

I suggest one example of a Denial of Escape Case where the state opts to 'do nothing' about air pollution, I call this 'Mayor's Veto':

Mayor's Veto: Local residents are currently at risk of harm from a busy road of traffic causing high air pollution levels. The local council has passed legislation to introduce traffic calming measures that will significantly reduce the air pollution level. These measures offer a means of 'escape' for the residents²³. The elected local Mayor vetoes the traffic calming measures, as per their campaign promises, preventing the 'escape' (let us assume the Mayor has a legitimate veto power to exercise here). The veto introduces an obstacle that makes it the case that the potentially harmful sequence of events does harm the residents.

I believe this is a case of *doing* harm. For my case to succeed as doing harm, I need to show two things. First, Denial of Escape Cases are cases of doing harm. Second, Mayor's Veto is a Denial of Escape Case. I deal with the points in turn. Hillier-Smith (2020) provides a case involving an individual denying escape to another individual by trapping them on a train track to understand whether states that deny escape do harm. Hillier-Smith's case might be unhelpful as it is plausible we have different intuitions about individual action and state action. So, I provide a case of state action that seems to demonstrate Denial of Escape Cases are cases of doing harm:

Siege: There exists a city where a severe industrial accident has occurred, resulting in the release of toxic chemicals into the environment. The government, fearing the spread of panic and unrest, imposes strict control over the city and seals the exits out of the city. The civilians cannot escape and some die due to the toxic chemicals.

Following Hillier-Smith's definition (Hillier-Smith, 2020, p. 309), Siege is a denial of escape case. A potentially harmful sequence of events is in motion, but there is a pre-

²³ This example differs from the sorts of contrived cases often present in the literature where an individual may 'escape' by breaking free of literal confinement. In Mayor's Veto, an example intended to reflect the real world, the residents 'escape' harm in the sense that the measures prevent them from being harmed, rather than breaking free of confinement. This point does not affect the outcome of the case.

existing means of escaping the sequence for the victims to avoid harm. The agent creates an obstacle to block the means of escape so that the potentially harmful sequence of events does harm the victims. The case intuitively seems to be a case of doing harm. By sealing the exits, the city's government causes the citizens to be trapped. Entrapping the civilians makes it the case that people are harmed when they otherwise might not have been. Even though the state does not act upon the civilians directly, it acts to interfere in the sequence of events so that the people are harmed when they otherwise might have escaped the harm. This case shows that Denial of Escape cases are instances of doing harm.

Is 'Mayor's Veto' a Denial of Escape Case?

Hillier-Smith (2020) applies Woollard's account (2015) to a Denial of Escape Case. I formulate the account to see if Mayor's Veto is a Denial of Escape case. I summarise Woollard's framework so that an agent counts as doing harm if, and only if, (1) a fact about the agent's behaviour is part of the sequence leading to the harm (2) the behaviour is relevant to that sequence through a complete series of substantial or relatively substantial facts (3) a fact about his behaviour is positive²⁴ (Woollard, 2015, p. 35). Note that in Denial of Escape Cases, the relevant feature is whether the agent brings about a *substantial fact*, which differs from the relatively substantial facts considered in Safety Net Cases.

I will now apply Woollard's framework to Mayor's Veto to show that it is a case of doing harm. The first condition requires that the agent's behaviour is part of the sequence leading to harm, as it is a necessary component of that sequence. This condition considers whether the placing of the obstacle is necessarily part of the sequence leading to harm. Whether the Mayor's veto is part of the sequence is less clear than Siege or some of the other more contrived cases in the literature, as it is intended to represent a more real-world case and inform us about how the state might opt to 'do nothing' when faced with harmful air pollution. The sequence is: Local residents are at risk of harm from air pollution. Thankfully, the local council has passed legislation to introduce air pollution regulations in the form of traffic calming measures. These traffic calming measures offer an escape, as the exits to the city do in Siege. The legislation is available and ready to be put into action, so it offers an escape. So, Condition One is satisfied.

Condition Two establishes if the obstacle being placed there is a substantial fact, i.e., it is informative and so it is actually part of the sequence leading to an outcome, rather than merely a background condition for the completion of the sequence. The

²⁴ Woollard explains that for a fact about behaviour to count as positive, the fact tells us something was the case. For example, the "dog is in the garden" tells us a fairly definite piece of information about how something is (Woollard, 2015, p. 39).

Mayor's veto is a substantial fact and is relevant to the fact that the air quality will not be improved and people will continue to be harmed.

The third condition establishes if the agent placing/creating/introducing the obstacle is a positive fact, i.e., is part of a small subset of possible behaviours. As Hillier-Smith puts it, does the agent go out of their way to place the obstacle there? (Hillier-Smith, 2020, p. 314). Mayor's Veto meets this criterion. The Mayor actively chooses to introduce the obstacle and goes out of their way to do so. Therefore, the Mayor vetoing the legislation seems to deny escape in the same way as blocking the exits in Siege.

I will now show that Mayor's Veto is a Denial of Escape Case. Hillier-Smith's (2020) first condition is that there is a pre-existing, potentially harmful sequence of events in motion that threatens some victim(s). This condition is met as pollution from a busy road is harming local residents. The second condition is that there is a pre-existing means of escaping that sequence for the victim(s) to avoid harm. Again, this condition is met as the traffic calming measures offer an escape for the residents to avoid harm. The third condition is that an agent introduces an obstacle that blocks the means of escape. This condition is satisfied as the Mayor vetoing the legislation is then introducing an obstacle that blocks a means of escape. The final condition is that the introduction of the obstacle makes it the case that the harmful sequence of events does happen. This condition is met as the traffic calming measures are not introduced and the residents are harmed by air pollution. It seems that the conditions are met and Mayor's Veto is a Denial of Escape Case. So, Mayor's Veto is a case of doing harm. This case helps explain why it is hard for the state to be justified in doing nothing about air pollution.

5.1.5 - Does remoteness apply to states?

In this final section, I want to say something further about how the status of the agent in question, e.g., a state not an individual, might change our classifications for whether state behaviour is doing or allowing. We might think differently about whether the state and its officials do or allow harm because their relationship to harm is different to agents without the same power. The different relationship can be explained by reference to how 'remote' the agent is from a harm. For standard agents (not the state), we think the remoteness of the connection between agent and outcome can sometimes explain why an agent can be relevant to a harm through a chain of substantial facts but the action does not seem to count as doing harm (Woollard, 2015, p. 209). As Woollard points out, "I do not kill Victor if I innocently leave a knife on my kitchen table which Bob then uses to stab Victor. I am relevant to Victor's death in a doing way rather than in an allowing way, but I do not seem to have harmed Victor" (Woollard, 2015, p. 209). It seems true that the agent who innocently leaves the knife is too remote from the sequence (Bob stabbing Victor) to count as doing harm.

I think this is different for the state. It is less clear the state could have a remote connection to many harms that arise from air pollution. In the case where you innocently leave a knife that Bob uses to stab Victor, it seems that you are remote from

the harm for the following reasons. First, you do not have authoritative power over Bob. Second, you could not foresee Bob doing harm. In a case where you know Bob has a history of violence and has a vendetta against Victor, this would be different, but you cannot foresee the danger in the case at hand. Third, and relatedly, whilst you have some general duty to stop Bob from doing harm, the duty is limited and doesn't apply in cases where you cannot foresee him doing harm. Fourth, you do not have any responsibility for Bob's actions, at least in this specific instance. These reasons seem to explain why you are remote from the harm and your action does not count as harming.

These reasons explain why the state is *not* too remote for many harms related to large-scale instances of air pollution, and so why these cases could count as doing harm. The state might be remote from many small instances of air-polluting behaviour, like individuals driving cars, using aerosols, or having barbecues. In many cases where formal groups cause significant emissions through high-polluting business practices it seems that the state won't be too remote. In some of these cases, I think the state is connected to the harm in a doing way. Consider this case:

Power Plant: A state grants a licence to a private company to run a coal-fired power plant. The licence requires the plant to have adequate pollution control technologies. The state does not monitor the company's activities nor enforce the conditions of the licence. The company burns coal without the required controls, resulting in emissions that cause respiratory illnesses to local people.

This case is roughly analogous to the case of Bob stabbing Victor. One could claim the state doesn't do harm here due to its remoteness, as you don't harm Victor, and the harm is done by the only private company. I think this claim would fail and the state also does harm to the local people by its failure to prevent the company from burning coal without the required controls.

The claim would fail because we expect the state to act differently from individual agents. The reasons (mentioned above) that you do not harm Victor when Bob stabs him do not apply to the state. First, the state does have authoritative power over industries that cause pollution and the state should use these powers to ensure harm is not done in cases like Power Plant. Second, the state can reasonably foresee that the company would use inadequate pollution controls, as companies frequently lie about their unsafe business practices. The state should use its enforcement mechanisms to deter and punish companies for such actions. Third, the state has a greater general duty to prevent harm than your duty to stop Bob doing harm. The state is expected to take further action than you could be expected to do to stop Bob from stabbing Victor. In fact, your duty to stop Bob once you are aware of his plan or actions plausibly ends at phoning the emergency services (i.e., the state), whereas the state's duty extends far beyond that. Fourth, the state does have a responsibility to protect public health. These points show that the remoteness of a case, like your remoteness to Bob's action, does not apply to many cases involving the state.

Ultimately, due to the power of the state, its wide-ranging apparatuses that can prevent harm, and the fact it ought to intervene to protect public health, it seems that the state will often not be too remote from harms to count as doing. In large-scale cases of formal groups doing air polluting behaviours, like Power Plant, the state actually does harm, even if the relationship between the agent and outcome initially seems remote.

Section Two

5.2 - Surveillance

In Chapter Four, I outlined public health surveillance as the “ongoing, systematic collection, analysis, and interpretation of health-related data with the a priori purpose of preventing or controlling disease or injury, or of identifying unusual events of public health importance” (Lee and Thacker, 2011, p. 637). In this section, I will provide an ethical evaluation of surveillance and conclude air quality surveillance is unobjectionable.

Public health surveillance is essential to the prevention of harm. Put simply, surveillance allows public health professionals to gather evidence for action (Lee, 2019, p. 320). Effective surveillance can provide timely detection of infectious disease outbreaks, environmental and occupational exposures, injuries, and other health threats. Officials can also identify and track the social determinants of health, which include poverty, inequity, lack of education and affordable healthcare. Identifying these factors allows for the prevention of ill health, which reduces fiscal and social costs and improves the health of individuals and communities (Maciosek et al., 2010). In the case of air pollution, an increasing number of agencies are developing air quality monitoring techniques that provide data on pollutants (Cromar et al., 2019). Air quality data is often gathered by satellites and low-cost sensor systems and networks (Cromar et al., 2019). Useful data can enable a state’s limited resources to be used most effectively to prevent harm (Gostin and Wiley, 2016, p. 306).

Ultimately, the purpose of surveillance is to allow policymakers to move to another rung on the intervention ladder. Conducting effective surveillance provides policymakers with the necessary data to plan other public health interventions. For example, ‘restrict choice’ should take place after policymakers know which choices are the most effective to tackle. A policy that restricts the most severe polluting behaviour will be more successful in reducing air pollution than one that targets less polluting behaviours. Surveillance can identify the right types of behaviour for such a policy. Surveillance, in general, poses several ethical issues, but I will show these are not of real concern for surveillance aimed at detecting air pollution. Beforehand, I will quickly distinguish between mere surveillance and public health surveillance. Mere surveillance is an agent observing another individual(s). Public health surveillance is data collection, analysis, and interpretation with the purpose of protecting the public health (Lee and Thacker, 2011, p. 637). Both forms of surveillance raise ethical issues that may be relevant to either, but my focus is on public health surveillance.

One issue is that public health surveillance risks privacy violations. Individuals typically place a high value on health-related privacy due to the value of controlling the disclosure of one’s personal medical information, and keeping one’s health-related actions secret (Roessler and DeCew, 2023). Privacy’s value is especially apparent in matters regarding ill health, and healthcare professionals have legal and ethical duties to keep medical information private (Allen, 2021). The systematic acquisition of personal

health data can reveal intimate details that may adversely affect an individual's employment, child custody, immigration status, insurance, or public benefits. The increasing quantity of public health surveillance also risks the ability of individuals to control access to their personal information (Gostin and Wiley, 2016, p. 306). Surveillance on sexual health issues may also threaten dignity as many people take the matter at hand to be deeply personal. Additionally, surveillance of infectious diseases may reduce privacy as people may desire to keep their infected status secret, but cannot for the benefit of tracing infected people. So, surveillance that poses a risk to privacy is concerning.

Aside from privacy concerns, surveillance is intrusive. I have already outlined a case where a state covertly places cameras in the kitchens of its populace to monitor their eating habits. Even if these cameras were never detected, the invasion of privacy is a form of intrusion. Overt surveillance is also intrusive, for at least two reasons. First, public health surveillance may be an affront to dignity (Bloustein, 1984, p. 188). A paparazzo who takes unwanted revealing photographs of celebrities likely violates their dignity. Data collection, even when done for legitimate public health reasons, could raise similar issues.

A medical professional who photographs consenting patients to discuss their condition with colleagues in an attempt to identify a new disease, may infringe on their dignity. Of course, receiving the patient's consent means the action is permissible. Still, some patients who willingly consent to be photographed may feel some intrusion into their personal intimacy. I do not mean to suggest that the medical professional should not take the photographs, but merely that we should be aware of the possible intrusions of surveillance into personal intimacy and the potential effects on dignity, and work to avoid these issues.

Secondly, overt surveillance, even though it does not restrict liberty, can make people act as they otherwise would not, as previously mentioned. Jeffrey H. Reiman argues that (the possibility of) surveillance and scrutiny of our behaviour can affect how we behave. He argues observation can have a "chilling effect" that constrains how people behave (Reiman, 1995, p. 35). It is easy to see how these issues can arise in some areas of public health. For example, surveillance on obesity may have a chilling effect, as people may be deterred from their usual eating habits. So, public health surveillance poses privacy issues, may be an affront to dignity, and can have a chilling effect. Given these concerns, the surveillance system used to collect public health data should collect the minimum information necessary to achieve the public health goal and work within stringent privacy and security standards (Lee, 2019).

However, these issues will very rarely be realised specifically for air pollution surveillance. The various methods used to measure pollutants and the types of data collected do not pose privacy issues, threaten dignity, nor are they likely to have a chilling effect. Air quality researchers typically use methods that measure concentrations of pollutants. The research is often done via fixed air quality monitoring stations, mobile vehicles, handheld sensors, and satellites that use remote sensors

(Tiwary, Williams and Colls, 2018). The data collected is measurements of pollutants, pollution levels across different locations, and pollution levels in the atmosphere. These methods and technologies commonly collect quantitative measurements of pollutant concentrations, like particulate matter, nitrogen oxide, sulphur oxide, et cetera, and aggregate these data over time and spatially to assess air quality trends (Tiwary, Williams and Colls, 2018). So, air pollution monitoring primarily focuses on collecting environmental data and does not involve the collection of personal data.

Therefore, privacy issues are very unlikely to arise. Individual dignity will also not be threatened by air quality data as no personal information will be collected. It also seems unlikely that this form of data collection could have a chilling effect. Chilling effects arise when people are being observed. Air quality measurements do not aim to observe people. However, measurements of pollutants involving individual behaviour could have a chilling effect, like measurements at the roadside could affect drivers. However, this chilling effect is unlikely as pollutants in the air are the target, rather than individuals and their behaviour. If some drivers did feel they had to change their behaviour due to the observation, we should conclude that this effect is worthwhile given that their behaviour is harmful to others.

However, air pollution surveillance should still follow the ethical principles of public health. For example, a commitment to justice in collecting data is key to ethical surveillance. A growing evidence base underscores the unequal distribution of exposure to and impact of air pollution both, where there are disparities within countries as poor communities are often worst affected and internationally, where low-and middle-income countries are often worst affected (Jbaily et al., 2022, Rentschler and Leonova, 2023). Due to this, surveillance should be population-based, so that the data collected addresses the needs of all affected individuals and communities (Lee 2019). So-called 'hard to reach' communities should not be excluded from data collection, and failing to gather data on these groups may perpetuate injustices in that the utility of the data will be reduced and the research may risk failing the second-stage commitment of justifying state intervention to not disadvantage the disadvantaged (discussed in Chapter Two). Additionally, persistent surveillance of a particular individual or group could be intimidating (Macnish, 2024). So, the burdens of data collection should be well spread out and no single group should be persistently targeted without very good reason.

Section Three

5.3 - Enable choice

This section will explore the ethical challenges around the intervention of ‘enable choice’. One view of health is that individuals make choices that make them unhealthy. A highly influential green paper (a policy paper that invites discussion) entitled ‘*A New Perspective on the Health of Canadians*’ published by Canada’s Department of National Health and Welfare (Lalonde, 1974) has been credited with advancing this view (Foth and Holmes, 2018). The paper is widely known as the Lalonde Report, after the Canadian Health Minister at the time. The paper argued that an individual’s “lifestyle”, and their individual behaviours, are what mainly dictates their health outcomes (Lalonde, 1974). The paper argues that health is created through personal choice and can be improved by taking responsibility for one’s behaviour. The paper largely ignores the social and economic determinants of health (Glouberman, 2001, p. 13). For example, obesity is influenced not only by personal choices, but also by an individual’s social environment (Suglia et al., 2016). The paper was widely criticised upon release, but also received high praise and is still the subject of debate now (Terris, 1984, Laframboise, 1990, Foth and Holmes, 2018).

5.3.1 - Enabling choice for air pollution

If we take the report’s view that public health is about encouraging individuals to make healthy choices seriously, we might think that addressing air pollution can be achieved by enabling individuals to make choices that reduce the harmful effects of air pollution. A common example of how the state can enable choice is to increase access to healthy food options in ‘food deserts’, which are areas where there is limited access to affordable healthy food (Smith, Butterfass and Richards, 2009, Howlett, Davis and Burton, 2015). In such cases, the state can implement the intervention of ‘enable choice’ by implementing land use policies that encourage the development of supermarkets and health food shops and improve public transport access to such retailers.

Similarly to this type of intervention, the state could implement the intervention of ‘enable choice’ for air pollution by enabling people to avoid sources of air pollution. A major source of air pollution in low- and middle-income countries is using unclean fuels as a primary cooking fuel and for heating. The health effects of using unclean fuels in these ways include acute respiratory infections, lung disease, heart disease, stroke, blindness, and adverse pregnancy outcomes (Kaplan, 2010). Approximately 3.8 billion people use unclean fuels for cooking and heating (Younger et al., 2022). Governments could make some gains in addressing air pollution by enabling individuals to choose more expensive, but cleaner cooking fuels. The state could achieve this by subsidising the cost of cleaner fuels or by providing the fuels for free in a ration system. This public health intervention would likely prevent significant harm.

5.3.2 - Problems with enabling choice for air pollution

A problem with the state opting to 'enable choice' is that in many cases of air pollution, individuals cannot simply choose to make healthier choices due to the nature of air pollution. Given the current levels of air pollution, it is nearly impossible for individuals to choose to avoid air pollution. 99% of the global population breathes air that exceeds the World Health Organisation's air quality limits (World Health Organisation, 2022). Due to this, it seems that 'enable choice' is a poor public health intervention for states to implement.

Enabling choice merely aims to make it easier for people to choose healthier options, but it does not restrict or eliminate any choices. So, individuals who want to opt for healthy choices can still be harmed by those who fail to opt for healthy choices. This is a structural problem with addressing air pollution. Whilst the state enabling people to choose healthy food can go some way in dealing with obesity, this type of intervention is ineffective for air pollution. Addressing obesity can be somewhat addressed by enabling people to make healthy choices, as obesity is at least in part related to diet, so the state can make some gains here by making healthy food and exercise more accessible.

A state that chooses to address air pollution merely by enabling individuals to make healthy choices will probably prevent less harm because other people's activity can still harm them. Consider the state aiming to enable choice by subsidising a cycle-to-work scheme to encourage a reduction in air pollution from unnecessary driving. If Person A opts to cycle to work to reduce their exposure to their own car's emissions, they can still be harmed by Person B's emissions on their journey to work. This problem points to the complex nature of designing policies to reduce air pollution. The problem is further complicated by the fact that cyclists are less exposed to emissions than drivers (Rojas-Rueda, Nazelle and Tainio, 2011, p. 4). So, enabling Person A to cycle reduces their risk of emissions compared to when they were driving, but still leaves them at risk of being harmed by Person B's emissions. Ultimately, the state must ensure interventions to 'enable choice' are carefully targeted, as this can help people avoid some of the risks of air pollution.

In general, 'enable choice' is a complex health intervention for addressing air pollution as individuals alone cannot make healthy choices to avoid the harms of air pollution because of the behaviour of others. States that opt to 'enable choice' must carefully target the choices they are trying to change. For example, subsidising the cost of clean cooking fuels (discussed in the previous section) should be implemented where feasible. However, my main point is that while these interventions will help improve air quality, they will not be sufficient on their own. I will now discuss how the state can enable people to choose to reduce their exposure to other people's air pollution before briefly discussing how the state can enable the harmers to do less harm.

The state could enable people to choose to reduce their exposure to others' air pollution by providing or subsidising face coverings (similar to the masks widely worn during the COVID-19 pandemic) or respirators, which are larger and more efficient

masks that protect wearers from pollutants. This proposal raises five immediate issues. First, good quality, well-fitted face masks do offer some effectiveness in reducing exposure to air pollutants. However, this effectiveness is limited and individuals are still harmed by pollutants when wearing facemasks (He et al., 2013, Kodros et al., 2021). So, the state opting for this choice still leaves individuals exposed to harmful pollutants.

Second, and more fundamentally, it is not appropriate for the state to address air pollution by reducing people's exposure by enabling them to choose to wear facemasks. One reason this intervention, when enacted without other interventions, is not appropriate is that the state opting to reduce individual exposure by providing facemasks fails to reduce the overall level of air pollution. Focusing on providing facemasks allows individuals to continue polluting. Allowing the already severe levels of air pollution to increase will likely cause harms that wearing a facemask cannot prevent, as well as worsening climate change and harm to non-human animals from air pollution. A second reason is that the state providing face masks might communicate the message that the masks are sufficient to protect health and there is no need for individuals to reduce their emissions. So, this measure might undermine individual efforts to take action to reduce air pollution.

A third reason why this intervention is problematic is that some individuals cannot safely wear facemasks. These individuals may be very young children or people who are disabled or experiencing a chronic health condition (Thomas and White, 2023). So, this policy may present a justice issue. If the state opts for addressing air pollution by enabling some people to wear face masks but not by mitigating the overall levels of air pollution then those who cannot wear masks, and are already disadvantaged, will be made worse off when air pollution inevitably increases. However, those who can wear a mask still perhaps should be enabled to do so. My point is merely that enabling people to wear masks but not mitigating air pollution would be unjust to those who cannot wear a mask.

A fourth issue with this strategy is that mask-wearing does involve some negative social impacts. The COVID-19 pandemic demonstrated that mask-wearing had negative impacts on social interaction (Ramdani, Ogier and Coutrot, 2022) and that the feeling of wearing a mask was generally unpleasant (Cribier et al., 2021), even if it was worthwhile to protect the public health. Additionally, mask-wearing became politicised during the pandemic and an individual's willingness to wear a mask was correlated with political affiliation (Young et al., 2022). These issues would likely reemerge if the state implemented a policy to enable people to choose to reduce their exposure to emissions by providing or subsidising mask wearing. So, the policy would likely have a low take-up rate and ultimately be unsuccessful. Policymakers would need to ascertain the likely effectiveness of this policy (and any policy) before implementing it.

A final problem with this policy suggestion is that it unfairly shifts the burden of responsibility. Rather than requiring polluting individuals to reduce their emissions, the responsibility to avoid the harms of air pollution is placed on potential victims to wear a facemask. Shifting the responsibility here seems to make the wrong party responsible

for avoiding harm. On grounds of fairness, it seems more appropriate that those who contribute to air pollution should be enabled, encouraged, or required to change their behaviour, rather than enabling individuals to wear facemasks to prevent harm to their health. Whilst the burden of responsibility here is unfairly shifted, I do not mean that people should not take personal responsibility for their health. We expect cyclists to protect their health by wearing helmets. Perhaps we should similarly expect individuals to wear masks if they are particularly at risk or in a highly polluted city, especially if the state enables this by subsidising the cost of masks.

To avoid shifting the burden of responsibility unfairly, a state opting for 'enable choice' should enable actors who cause harm through air polluting activity to do less harm. Drivers should be enabled to cause less pollution by the state subsidising the costs of public transport and improving access. The state should also subsidise new technology, infrastructure, and training to allow polluting industries to decarbonise and reduce their emissions. Ultimately, policymakers using 'enable choice' need to carefully target the most efficient gains to make whilst also considering fairness. The issues discussed suggest that 'enable choice' is less valuable and appropriate than some of the other public health interventions. However, as previously stated, satisfactorily addressing air pollution will require multiple policies with differing levels of effects to make progress.

Section 4

5.4 - Provide information

In Chapter Three, I outlined how the public health intervention of ‘provide information’ can take two forms. We can distinguish between ‘education’ and ‘persuasion’ (Saunders, 2022). Education is the state merely outlining facts as neutrally as possible. This form of ‘provide information’ differs from persuasion, which involves the state actively attempting to change the minds of individuals. Persuasion is, roughly, “the activity of offering reasons, evidence, or arguments” (Tsai, 2014, p. 78). I will provide an ethical evaluation of each in turn. I also suggest a practical policy that the state should implement, namely to require manufacturers to provide health warning labels with vehicles.

First, I will further distinguish between ‘education’ and ‘persuasion’. In Chapter Four, I mentioned that the line between the two forms of ‘provide information’ is blurry, but an analogy might help illuminate the difference further. Consider two doctors informing a patient about their health.

Doctor A merely outlines the facts about the person’s health and uses some graphics to help the patient understand the complicated medical information. The doctor uses a traffic-light style option list that explains the likely health consequences of the patient making three choices. The option for the patient to have surgery now is coloured green, the option to postpone surgery is amber, and to not have surgery is red. Doctor A uses the traffic-lights merely to allow the patient to compare the likely health consequences of each option. Importantly, the doctor never actively attempts to reason with the patient to make a particular choice. The doctor merely provides the information and allows the patient to choose.

On the other hand, doctor B attempts to persuade the patient to have the surgery. Doctor B actively attempts to change the patient's mind towards the option they believe best. When the patient leans towards not having the surgery, the doctor reasons with them in the hope they change their mind. Doctor A seems to be a case of education and doctor B seems to be a case of persuasion.

In the case of air pollution, it seems that ‘education’ is attempting to make people aware of its harmful effects and ‘persuasion’ is asking, encouraging, and/or convincing people to reduce pollution by explaining the harms. The line between the two is blurry and there will be some overlap. Still, there is some distinction between the categories as doctor B’s methods seem to be more intrusive. Someone actively trying to convince you to do X intrudes more than someone who just informs you about X. The active attempt to shape your action intrudes into your liberty to make your own choices. The persistence disregards boundaries and reinforces the sense that the persuader is trying to override the individual’s decision-making process. Of course, persuasion does not limit, restrict, or interfere with liberty, but there is still some intrusion into your freedom to make up your own mind. This difference is particularly clear if the person says no to doing X, and the persuader then continues to attempt to change their mind. This active attempt at

persuasion seems to impose a more intrusive pressure than ‘education’ can do. So, ‘persuasion’ seems more intrusive to just making someone aware of X, which is what ‘education’ attempts to do.

5.4.1 - Education

‘Education’ has a clear value as a public health intervention. States should publish daily or weekly air quality reports and explain the associated health risks with the level of pollution, as the Department for Environment Food and Rural Affairs does in the United Kingdom (Wall, 2023). The public having access to this information allows people to make more informed decisions regarding their, and their family’s, exposure to air pollution. Given the complexities of pollution’s effects on the body and that daily air quality can fluctuate significantly depending on the temperature, wind speed, traffic, and humidity (Dominick et al., 2012), individuals may struggle to make informed decisions without such information. The state making information widely accessible may protect the health of those at particular risk of air pollution if they decide to avoid instances of high exposure. The complicated nature of the harms of air pollution means individuals will only make informed decisions in the sense that they have access to some of the relevant information. However, this intervention is still an improvement on a scenario where less or no information is provided.

Warning labels

One practical ‘education’ intervention the state should implement is to require manufacturers to place a health warning label on polluting road vehicles (like non-electric cars and vans). These labels could function similarly to health warning labels often found on unhealthy foods, cleaning products, and tobacco products. The labels on vehicles would inform drivers that their vehicles cause harm to them, their passengers, and those around them. People are generally aware of the harmful effects of pollution on their health, but people are often unaware of the high levels of pollution *inside* their cars. A range of pollutants are commonly found inside cars, including VOCs, carbon oxides, particulate matter, and nitrogen oxides. Other pollutants may be present from flame retardants or if anyone smokes cigarettes/e-cigarettes in the car (Zulaf et al., 2019). These pollutants can be very harmful. VOCs irritate the respiratory system, causing reduced lung capacity and can contribute to neurological system damage, lung cancer and leukaemia. When inhaled, carbon oxides block oxygen from the brain, heart, and other vital organs. Particulate matter risks respiratory issues, cancer and cardiovascular diseases. Nitrogen oxides can cause lung irritation and weaken the body’s defences against respiratory infections such as pneumonia and influenza (Schraufnagel et al., 2018, Schraufnagel et al., 2019).

Due to these health risks and people’s lack of awareness about air pollution *inside* their vehicles, I argue the state should mandate vehicle manufacturers to provide warning labels on their products. The labels should take a form similar to the traffic-light style labels on food products that indicate to consumers the basic nutritional value

of the item. This form of label is preferable to the labels found on tobacco products that state things like “smoking kills” as a traffic-light style system allows consumers to compare different products more easily. To achieve this, the state should develop a standardised rating system that quantifies the health risks of the air pollution generated by different types of vehicles. The purpose of having a standardised rating system is to allow consumers to easily compare the pollution ratings of different vehicles and to increase their understanding of the health risks.

The state should work to introduce these labels on all road vehicles. Vehicles sold in dealerships should come with a leaflet that includes the traffic-light style label and the relevant information. Labels for all vehicles could be made accessible via a website and smartphone app that allows users to search for a vehicle’s make and model, so information about second-hand vehicles sold by private individuals is accessible. The online tools should also allow users, should they wish, to input whether they have any health issues that might make them more vulnerable to pollution. The tools could provide recommendations of vehicles based on this information.

The United Kingdom’s Government already mandates that tobacco packages have warning labels. Warning labels on food products are not mandatory in the United Kingdom but are widely present on supermarket items. Similarly, large restaurant chains must now provide the calorie content of their food and drinks in England (Frances, O’Neill and Newman, 2023). Warning labels on tobacco products are effective in producing a positive behavioural impact among smokers (Agaku, Filippidis and Vardavas, 2014) and food warning labels effectively enable consumers to make informed food choices (Ares et al., 2023). So, applying traffic-light style health warning labels to vehicles can educate consumers about the health risks of the product and enable them to make an informed decision about whether to purchase it. Just as a consumer might be deterred from purchasing unhealthy food products by a traffic-light style warning label, a person considering which car to purchase by a similar warning label could opt for a greener car. Having access to this kind of comparative information can help the purchaser make an informed decision about the amount of risk they are willing to accept. These kinds of warning labels should be preferred by those who want to minimise intrusion as individuals remain free to purchase high-polluting products, they are merely informed of the health dangers.

An issue arises in that some individuals find health warning labels for tobacco and food products distressing and upsetting (Ratneswaran et al., 2016, Frances, O’Neill and Newman, 2023). Equally, the label may cause the individual to lose their enjoyment of the product. We can assume that providing traffic-light style labels on vehicles may have the same effect, even if the labels are non-judgemental and merely provide facts. A parent who has to drive to take their children to school may be upset at learning the health implications on themselves and their children. A classic car enthusiast may lose their enjoyment in a leisurely drive upon learning about its health risks. Due to this, it might be objected that people should have a ‘right *not* to know’ about the health risks of certain products.

Matteo Bonotti considers this claim with regard to food labelling and concludes that the salient factor is how direct and unavoidable the information on the label is (Bonotti, 2014, p. 311). He argues that individuals have a legitimate interest in being able to avoid distressing or upsetting labels, but recognises the value in informing consumers. He concludes that labels should be underneath a peel-off flap to allow consumers to decide whether to read the information or not (Bonotti, 2014, p. 316). I will consider a similar argument for vehicles and conclude that Bonotti's conclusion does not apply.

One reason we might think that people *do* have a legitimate interest in avoiding traffic-light style warning labels on vehicles is that many people genuinely need cars to travel. Many areas are underserved with public transport and people have little choice (without severely limiting their options) but to use a car to travel to work, take their children to school, purchase groceries, et cetera. Exposing people who currently have little choice but to drive to labels they find distressing or upsetting seems unfair and a case of victim-blaming. The labels may be victim-blaming if the labels imply that people are at fault for the harm that is happening to them, which may be wrong if people cannot avoid undertaking actions that lead to such harm. We can see the difference here between vehicle labels and food or tobacco labels. Many people need to use a vehicle to travel, but very few people genuinely need to consume tobacco or unhealthy food. So, we might conclude that it is wrong for the state to expose people to upsetting or distressing information when they have no choice but to use the product.

This point has some value but it can be overcome by a stronger claim. This claim is that the vehicles we drive cause harm to others, both people in the local area, people further away, and our passengers (which often includes the driver's children). We have no legitimate interest in avoiding information about how our behaviour harms *others*. Bonotti's (2014) argument is convincing because it is concerned with food, which only directly harms the person who eats it. Whilst we might think that individuals can legitimately avoid being distressed by information about a harm they do to themselves (eating unhealthy food), they should not legitimately avoid being distressed by information about how their behaviour harms others (driving polluting vehicles). So, the state should require manufacturers to provide traffic-light style warning labels with vehicles as informing people can allow them to make less harmful choices that affect others.

Still, the state should aim to minimise distress by ensuring the traffic-light style labels aim to be non-judgemental and only provide the facts. Ensuring the labels are non-judgemental is, of course, a matter of perception. Some individuals will feel judged by any attempt to make them aware of health information. This problem is indicative of the general difficulty of distinguishing between education and persuasion. As already outlined, education is merely outlining facts, and persuasion is the state actively trying to change people's minds. So, I maintain that the labels are a form of education, not persuasion.

5.4.2 - Persuasion

Persuasion is also valuable as a public health intervention. Some persuasion campaigns have been effective in producing positive change or preventing negative changes in health-related behaviours across large populations (Wakefield, Loken and Hornik, 2014). Whilst these interventions are often effective and are not coercive, they risk the state failing to do legitimate persuasion. This section will explain why public health messaging that attempts to persuade but does not actually provide reasons is inappropriate state intrusion. This risk is significant because individuals may be unable to easily detect the difference and the state might abuse this.

The key point is that the state tries to persuade by explaining why individuals should do X. Some states might attempt persuasion, but fail to actually provide an explanation. Compare persuasive public health messaging and non-persuasive public health messaging. The latter does not attempt reasoning but rather commands individuals to act in X way. An example could be the state saying “The state instructs you to reduce your air pollution.”

On the other hand, persuasive public health messaging aims to induce people to do X but provides reasons and leaves individuals room to deliberate. Such a public health message could look like “Reducing your contribution to air pollution protects your health and the health of those around you.” This type of messaging legitimately involves persuasion as it tries to convince through facts and reasoning. In essence, persuasion *explains* to individuals why they should do X. Legitimate persuasion allows the individual to consider whether the message is legitimate and prevents the state from pressuring its populace into doing X if X is not justified.

This position gives the state plenty of room to convince people to do X. The information shared just has to involve reasons that explain why people should do X. Those with a preference for minimising intrusion should prefer this tactic to the interventions higher on the ladder. Proponents of this position might say that people should be free to make unhealthy choices. So, persuasion may be preferable as it merely involves the state reasoning with individuals to not X, but the individual remains free to make whatever choice they please if they reject the explanation. Additionally, if someone has a genuinely strong preference to make an unhealthy choice (X) they will continue to do so. State persuasion probably won’t be enough to convince them not to X. This point does not mean that persuasion is not effective. I just claim that someone with a very strong preference probably won’t be persuaded, but a person with an average preference might be.

I will now explain why public health messaging that attempts to persuade but does not offer reasons that explain why individuals should do X (i.e., is not legitimate persuasion) is inappropriate state intrusion. One suggestion might be that public health messages that aim to make people act in X way by being *vivid*, rather than involving explanatory reasons, is undue intrusion. The effectiveness of such messaging often depends on how vivid the argument is, and emotional appeals and images work better

than mere text (Dubov, 2015, p. 499). Vivid campaigns are frequently criticised for being inappropriate, unpleasant, or risking stigma (Brewis and Wutich, 2019). So, more vivid campaigns (but those with less facts and reasons that do not explain X) might be an effective way to make people to X, but might count as undue intrusion. Instead, I argue that vividness should not be our key concern. Instead, whether public health persuasion involves authoritarian speech (state speech that tells the populace what to think and do) or expressive speech²⁵ (speech that represents the state's values and explains why individuals should choose X through facts and reasoning) should be our primary concern. This distinction explains why public health messaging that does not utilise facts and reasons is inappropriate state intrusion.

To explain, consider the United Kingdom's Department for Health's "graphic" and "gruesome" posters showing a cigarette which contained flesh accompanied by the tagline, "Every 15 cigarettes you smoke cause a mutation that can become cancer" (Sherwin, 2016). Compare these posters to an advert from the Australian Heart Foundation²⁶ that featured a scene where a mother puts her child to bed and says: "Every time I told you I loved you I was lying — you are not my priority", which implied that parents who fail to look after their health do not love their children (Cheik-Hussein, 2019). Both adverts are especially vivid but I argue that the former is acceptable but the latter is not. The Department for Health's posters attempted to persuade smokers to quit by providing a fact and reasoning that individuals should not smoke because it risks cancer. The Heart Foundation's advert attempts to convince people to be healthy through vividness, but without offering facts and reasoning.

The difference is that the former is vivid but expressive, whereas the latter is vivid and authoritarian. It is appropriate for the state to attempt to *persuade* parents and children by *explaining* that smoking is harmful and giving a reason as to why (the subsequent mutations risk cancer). Using vivid graphics to help achieve this may be unpleasant and is intrusive, but coupling this with facts and reasoning means the advert is a legitimate form of persuasion that allows deliberation. By contrast, the Heart Foundation's campaign merely implies that parents who do not look after their health are bad parents. This campaign does not offer any clear reasons why people should protect their health or explain how certain behaviours can worsen health. The Heart Foundation does give some sort of reason that people can infer (ill-health may adversely affect one's ability to parent their children), but the campaign fails to provide clear facts and reasoning to explain why ill-health is dangerous. Consequently, the advert does not invite deliberation and should be rejected. If the Heart Foundation's advert had been so vivid but had attempted to explain its message via reasons, facts, and arguments for parents to maintain their health it would have been unpleasant, but the advert would

²⁵ I outlined this distinction in Chapter Two.

²⁶ The Heart Foundation is a charity and not a state department. This example is only intended to illustrate the wider point.

have been a proper form of persuasion. Parents would likely be upset by the advert and it may be objected to on other grounds, but the fact it would count as legitimate persuasion and left room to deliberate would mean parents would at least be given the opportunity to consider an argument, rather than merely being shamed. Due to this point, the state ought to consider the authoritarian vs expressive distinction I make and ensure its public health messaging is expressive.

Section 5

5.5 - Nudging

The public health intervention of ‘nudging’ aims to increase the number of people who choose an option by changing the choice architecture (Thaler and Sunstein, 2008, p. 6), as outlined in Chapter Three. I will consider the ethical implications of ‘nudging’, focusing on the specific dangers of the *state* utilising the intervention. I conclude ‘nudging’ is ethically acceptable but some nudges should be transparent to the people being nudged.

5.5.1 - Benefits of nudging

Proponents of ‘nudging’ favour it to more intrusive interventions as it maintains freedom of choice. The intervention is premised on the idea that intrusion is minimised because, unlike coercive interventions, ‘nudging’ does not change the number of alternatives in a given individual’s option set. The only difference between a nudged option set and standard option set is how the options are displayed. Thaler and Sunstein point out that the option set (e.g., the food in a school cafeteria) has to be designed in some way, so it might as well be to the best interests of individuals, in terms of protecting harm to the public health. Arranging it any other way would be suboptimal to the best interests of the individuals at hand and this seems wrong (Thaler and Sunstein, 2008, pp. 6-8). For example, the food in a school cafeteria has to be displayed in some way, so it may as well be arranged in a way that promotes public health.

One advantage of ‘nudging’ is that nudges could be arranged to help combat manipulation from advertisers, peer pressure, and other manipulative forces. These forces can shape our choice and make individuals choose unhealthy options when they might have not (Holland, 2015, pp. 293-294). For example, individuals exposed to food advertising choose more unhealthy snacks (Zimmerman and Shimoga, 2014). The state could utilise ‘nudging’ to overcome these forces and promote healthier choices. Similarly, peer pressure can increase unhealthy choices, such as drug and alcohol abuse in adolescents (Watts et al., 2023). ‘Nudging’ could plausibly be used to counter these social pressures. Sunstein and Thaler also suggest that ‘nudging’ could be used to increase socially beneficial actions, like donating to charity (Sunstein and Thaler, 2003, p. 1185).

‘Nudging’ could be utilised to address air pollution in several ways. People could be nudged to use ‘active travel’ for their commutes. Energy companies could only display green energy on the first web page of their website and require individuals to actively search for non-green energy. Or the default settings on thermostats or appliances could be altered to reduce energy consumption and consequently air pollution. Individuals would be required to manually change the settings to more energy intensive settings.

5.5.2 - Two ethical concerns of nudging

I will now discuss two ethical concerns related to ‘nudging’, namely that the state utilising ‘nudging’ avoids accountability and risks the tyranny of the majority. I then discuss a tentative solution, namely that state nudges should be transparent. I am interested here in the fact that the agent doing the nudging is the state. Thaler and Sunstein’s (2008) canonical example of the cafeteria is interesting but arguably less controversial because the agent doing the nudging (a school cafeteria) is not in a significant position of power. The state is a very different agent given its authority and far wider influence. The power and resources of the state mean it could implement nudges with very high stakes. These stakes could be far more consequential than the nudges used to encourage health eating in a cafeteria. These concerns are not merely abstract. The United Kingdom’s government established the Behavioural Insights Team (colloquially known as the “nudge unit”) in 2010, which is now also partly privatised, and the United States followed suit with its Social and Behavioral Sciences Team in 2015 (Congdon and Shankar, 2015). The state’s ability to implement nudges should be carefully monitored.

Accountability

One reason the state nudging its populace is concerning is a lack of accountability over the intrusion. Nudging is, by design, often non-transparent. Nudges aim to bypass deliberation and exploit certain decision biases and automatic cognitive processes in order to encourage particular choices (Li and Chapman, 2013, p. 188, Saghai, 2013). I will conclude that this concern can be overcome by ensuring transparency.

Given that nudging aims to bypass deliberation, the effectiveness of ‘nudging’ usually relies on individuals not deliberating about the options available to them. The nudger aims to influence choice without inviting the individual to consider their options. It seems the state utilising ‘nudging’ wants its populace to make choices ‘blindly’. This point might be less concerning for non-state actors that utilise ‘nudging’. However, for nudges done by the state, the fact that ‘nudging’ aims to remove deliberation is problematic because deliberation is a crucial component of democratic governance, as previously argued. Deliberation allows the populace to consider state activity and the effects of the intrusion. When the deliberative process is deliberately obscured it is harder for individuals to recognise the presence of state intrusion and subsequently to hold the state accountable. When non-state actors utilise nudging (e.g., supermarkets attempting to upsell more expensive products) these precise concerns are not realised. On the other hand, Neil Levy has argued that at least some forms of nudges could be implemented that encourage us to deliberate (Levy, 2017). My objection does not apply to this form of nudging.

My concern with state ‘nudging’ is that it is more difficult to monitor attempts to shape choices than it would be to monitor openly coercive policies (Hausman and Welch, 2010). Consider the example of a doctor framing surgery from Chapter Four, where a doctor tells their patients that the likely outcomes of surgery are “90% of

people survive” rather than “10% of people die”. Most patients will not realise that the facts have been framed in a particular way, and the patients’ ignorance is intentional. If the doctor explained that they had deliberately nudged the patient by framing the surgery information in this way it is possible that the patient would reject the influence of the nudge. The patient might still choose to have the surgery, but they would more likely choose it for rational reasons after some deliberation. Choosing surgery for rational reasons after deliberation seems more appropriate. Adults should make choices for things like surgery (or more generally about serious health issues) based on reason. We should monitor how actors are trying to convince us to do X, which many forms of ‘nudging’ do not allow, because they avoid reasoning and deliberation. Rather, an actor utilising ‘nudging’ aims for the individual to accept option X blindly.

The example of the doctor discussing surgery with a patient is concerning but this problem is more pronounced when the state utilises ‘nudging’. I will compare a nudge to another state action to explain why. Consider London’s Ultra Low Emission Zone (ULEZ), which is a ‘disincentive’ and aims to protect the public health by disincentivising people to drive through pollution hotspots. ULEZ is unpopular amongst significant parts of the population (Smith, 2023), despite its effectiveness in reducing air pollution (Beshir and Fichera, 2022, p. 30). My concern is that people who would object to nudges may be unable to do so due to the fact individuals are not meant to know they are being nudged. It seems wrong for the state to shape behaviour in an opaque way, as people cannot object to the intrusion. For ULEZ, the state’s attempt at influencing behaviour is transparent and it allows deliberation and opposition. People can consider whether or not they are happy to pay the charge. Unhappy individuals can avoid driving or even protest (as is their right in a liberal democracy). When the state non-transparently nudges people to choose X, the state aims to make people unaware of the nudge. So, if the nudge successfully goes undetected, people cannot deliberate about X and have no opportunity to voice their concerns.

A second concern is that if the state successfully nudged a significant number of people into a particular action, and the individuals later realised they were nudged into accepting a health decision they might have otherwise rejected, this could undermine trust between the public and the state’s public health officials. It is easy to imagine this scenario arising if vaccine-hesitant people were nudged into being vaccinated. The risk here is that individuals may be deterred from further interaction with the public health sector. Public health practices, like vaccination roll outs, might be negatively affected in the long run. So, the state’s public health officials should carefully consider these risks when deciding whether to nudge. Despite the gains that could be made in protecting the public health by nudging individuals, individuals should be made aware of the behaviour change the state is attempting to motivate and be able to deliberate about the option. I will shortly argue this can be achieved by using a condition of transparency.

Tyranny of the majority

A related concern is that because nudging removes deliberation it especially risks the tyranny of the majority. Given the widespread influence of the state, nudging could allow

the state to motivate the actions of a very large number of people. This point is concerning as ‘nudging’ could be implemented to shape ideas about vulnerable minorities. A state could exploit people’s suspicions and hostilities about one group for its own political ends. This concern isn’t unique to ‘nudging’, as other public health interventions, like ‘provide information’, could also utilise this tactic. However, a state using ‘nudging’ to achieve this is especially concerning given that ‘nudging’ aims to bypass deliberation and exploit certain decision biases and automatic cognitive processes (Li and Chapman, 2013, p. 188, Saghai, 2013).

A state that aims to stoke fears through propaganda is clearly objectionable, but people can, at least in theory, recognise the state’s objective, deliberate, and then reject the message. This tactic would be more overt. A speech from a statesperson exploiting people’s suspicions and hostilities can be condemned by opposing voices in politics and in the media. On the other hand, nudging is often covert. If people are unaware that nudges are being used to stoke suspicions and hostilities then there may be no effective mechanism to counter this. Thankfully, nudging does not seem to be effective enough to achieve this currently (Mertens et al., 2021). Still, the ineffectiveness of the intervention is not a good safeguard against its abuse. New techniques could be developed that are more effective or nudgers could learn to use the current techniques more effectively. So, we need a stronger safeguard against the potential abuses of nudges.

5.5.3 - Transparency

I do not want to conclude that nudging is impermissible given that it could help reduce air pollution and counter intrusion from actors in the social environment that lead people to adopt unhealthy choices. I suggest that making nudges transparent is key to addressing my concern about the problematic nature of their opaqueness, which removes deliberation. Without transparency, it becomes difficult to monitor how ‘nudging’ might be inappropriate state intrusion.

One suggestion for making ‘nudging’ less problematic is that the moral costs of the nudge matter (Chwang, 2016). Eric Chwang suggests that it is permissible for an actor to use ‘nudging’ to sell them a bicycle, but not to influence a healthcare decision. His argument is roughly that healthcare decisions require valid consent and a patient’s consent to undergo surgery might be invalid if the doctor nudged them. Relatively insignificant decisions, like purchasing a bicycle, do not require the same standard of informed consent so nudges of this kind do not invalidate informed consent (Chwang, 2016, pp. 272-273).

Chwang’s (2016) argument is interesting but I think his concern about nudging can be overcome. I will argue that it is permissible to nudge people for healthcare decisions if the nudge is transparent. I conclude the state should be transparent about *some* nudges. By transparent, I mean the state should openly disclose that they are using ‘nudging’ to motivate behaviour and explain the process they are using to achieve this. The condition of transparency could be realised by the state publishing detailed

explanations of nudging techniques used, the rationale of why the nudges were used, and what specific behaviours they aimed to change.

This information should be easily accessible to the public, perhaps on dedicated websites, in published reports, and discussed at public forums. If the nudge is transparent then people can deliberate about the behaviour that the state is attempting to change. This condition of transparency aims to maintain accountability for a state that uses nudges. If the state is required to disclose that it is using 'nudging' then people are more likely to be aware of the nudge and maintain the ability to object and protest. The condition of transparency should also be supported by standard professional practices. For example, government departments utilising nudges should follow ethical guidelines to ensure the intervention is not abused, and this should be monitored by independent oversight.

I think transparency should only apply to some nudges though. I agree with Chwang (2016) that it is permissible for agents to nudge to sell bicycles. This kind of nudge is fairly trivial, as the decision at hand does not require informed consent. Nudges similar to the nudge to buy a bicycle need not be transparent. There may be blurry cases where it is not clear how trivial the nudge is, given that the difference is a matter of degree. In such cases, the state should err on the side of caution and be transparent. My view differs from Chwang in that I think nudges for less trivial issues, like healthcare decisions, are permissible, if and only if, they are transparent. If the nudge is transparent then the standard of informed consent is not removed. People can rationally decide whether or not they consent to the healthcare decision if the nudge is transparent as the attempt to bypass their deliberative capacity is offset by being informed of the nudge.

However, I do not conclude that any state nudge is permissible if it is transparent. My concern about the state using 'nudging' to whip up hatred against a minority through a tyranny of the majority style case remains. In these cases, nudging is never permissible and transparency is not enough to overcome the danger. This state action would always be impermissible, regardless of the intervention used to conduct it. Ultimately, I conclude nudges by the state for issues that are seemingly trivial, similar to purchasing a bicycle, do not require transparency. Nudges by the state for more serious issues, similar to healthcare decisions, do require transparency. In blurry cases where it is not clear if the nudge has seemingly trivial or serious consequences, the nudge should be transparent.

One objection to this might be to claim that nudging transparently might make nudges ineffective and people will become immune to the attempts to exploit their decision biases. This objection can be rejected as there is empirical evidence to suggest that transparency does not lower the effectiveness of nudges (Loewenstein et al., 2015, Wansink, 2007, pp. 60–70). Additionally, Andreas T. Schmidt (2017, p. 409) also argues that when a person discovers they are being nudged, they are likely to act accordingly to the nudge, because the person considers and accepts the reasons behind the nudge. For example, a person might reflect upon the reasons for a nudge to reduce air pollution, conclude they want to avoid the harms of pollution, and then accept the nudge.

Regardless, even if the transparency condition does make nudging somewhat less effective, this trade-off is worthwhile to avoid the aforementioned risks of nudging.

Section 6

5.6 – Incentives

This section will explore the public health intervention of ‘incentives’. This intervention aims to encourage people to do X, when X will protect public health, by rewarding them for doing X. For example, the state might reduce air pollution from road vehicle emissions by subsidising the cost of bicycles for commuting to work, which reduces the number of polluting vehicles on the road. This rationale of this intervention generally assumes that people may not otherwise want to X but can be incentivised to do so by some kind of reward. In practice, these rewards are often, but not always, financial.

Financial incentives to reduce air pollution might include providing tax credits, vouchers, cash, or points in a reward scheme for people who reduce their household emissions, use public transportation, or switch to an electric vehicle. Non-financial incentives could include offering electric vehicles preferential parking and access to bypass lanes that avoid congestion (as are often used for vehicles with multiple passengers). Badges that provide public recognition may also incentivise people to participate in programmes to grow green infrastructure. Similarly, to increase vaccination rates amongst healthcare workers, staff in hospitals have been offered free meals (Bradfield and Giubilini, 2021, p. 470). A variety of schemes could be set up to incentivise people to reduce their contributions to air pollution.

A benefit of ‘incentives’ is that the intervention can be effective in public health settings. Incentives have been successfully used to promote vaccination uptake (Chandir et al., 2010, Wigham et al., 2014) and encouraging people in low- and -middle-income countries to engage with preventive healthcare services (Lagarde, Haines and Palmer, 2007). However, there are cases where offering incentives can have ineffective outcomes by changing the meaning of a social practice and “crowding out” the nonmarket norms that usually lead to effective outcomes (Sandel, 2013, pp. 132-33). A classic example demonstrates this point well. Sociologist Richard Titmuss (1971) compared the systems of blood collection for transfusions in the United Kingdom, where blood is donated for free by volunteers, and the United States, where some blood is commercialised and sold by people for money. Titmuss demonstrated that the United Kingdom’s system was more effective and the United States’ system led to chronic shortages, wasted blood, higher costs, and a greater risk of blood contaminated by hepatitis (Titmuss, 1971, pp. 231-232). The question of whether incentives are effective for reducing air pollution is ultimately an empirical one that policymakers should investigate to ascertain how useful the intervention is.

Incentives are often cost-efficient compared to the costs of the harm they try to prevent. For example, incentivising people to eat healthier foods could generate substantial health gains and be highly cost-effective by preventing the healthcare costs associated with poor diet (Lee et al., 2019). The intervention can also be designed in novel ways to help realise the desired outcome. For example, people in Malawi were offered an incentive worth approximately one-tenth of a day’s wage if they picked up

their HIV test results. As a result, the rate of people picking their results doubled (Blumenthal-Barby and Burroughs, 2012). In the United States, an intervention was set up to pay teenagers who already had a baby one dollar a day for each day that they were not pregnant. The incentive was remarkably effective and very cost-efficient, compared to the costs to the taxpayer of teenage pregnancy (Thaler and Sunstein, 2008, p. 115). Policymakers working on air pollution could similarly design creative schemes to reduce emissions.

However, these interventions must be carefully designed to be successful in achieving the desired outcome. If the intervention fails to account for excessive barriers to participation, then people will not accept the incentive (Krubiner and Merritt, 2017). For example, an 'incentive' that offered tax breaks for individuals who purchase electric road vehicles will likely have little success. The high initial cost and running costs of an electric vehicle will deter many people from purchasing one, even if the tax break is generous. A more successful scheme might offer vouchers or cash to reduce the initial cost of an electric vehicle. However, a medium or even large cash incentive to purchase an electric vehicle will still make the electric car too expensive for poorer individuals to purchase. To avoid this, incentives could be sensitive to the income of individuals.

5.6.1 - Are incentives appropriate to address air pollution?

One of the most interesting, but challenging, problems of air pollution policymaking is that unlike many other public health issues, an individual's behaviour not only harms themselves but also harms others. In this section, I will discuss whether this makes 'incentives' an inappropriate intervention and suggest it may be unfair.

'Incentives' are frequently used by public health professionals to incentivise individuals to stop acting in ways that harm themselves, such as drinking excessive amounts of alcohol, smoking, or abusing drugs. If these interventions are successful, they will also reduce burdens on the community as a whole, but these interventions may primarily aim to prevent the individual at hand from harming themselves. As seen throughout this thesis, the harms of one individual's emissions are largely borne by other individuals. So, if the state introduces incentives for people to reduce their emissions by subsidising the cost of an electric car, some harm will be prevented to the individual who purchases the car, but harm will largely be prevented to others. This raises the question of whether it is appropriate for the state to incentivise people to not harm others.

It seems inappropriate for the state to reward individuals or groups for refraining from harming others, which is usually a moral and legal obligation. For example, the state does not typically reward people for not committing theft or assault. Refraining from these activities are basic expectations in a functioning society. Of course, there are cases where it may be appropriate to reward an individual for harming another. For example, if Person A is violently attacking the defenceless Person B, and Person C intervenes by proportionately harming Person A to save the life of Person B,

we may wish to reward Person C for their heroism. I think this case suggests that the appropriateness of the state using ‘incentives’ is in the detail of how the intervention is delivered.

Consider two options for incentives to reduce air pollution. Option One is incentivising individuals to opt to travel by bus rather than car to work. Option Two is incentivising a large corporation to reduce their highly toxic manufacturing processes. I think Option One is an appropriate use of incentives and Option Two is inappropriate. The appropriateness of Option One is that individuals have limited capacities and capabilities to reduce their emissions. There are actions we can all take to reduce our contribution to pollution, but these actions are sometimes hard to adopt given that our society is built around polluting activities, such as driving to work. Individuals often also have limited knowledge of how polluting their everyday behaviours are, such as driving to work, and also how to reduce their emissions (Schleich et al., 2024). Incentivising them to travel by bus can help individuals to overcome these hurdles and prevent harm to others. By contrast, Option Two is inappropriate given large corporations have significant capacities and capabilities to reduce their manufacturing processes, as well as the knowledge of how to do so.

Another reason to think that incentives might not be appropriate in the above case is related to the relative wealth that these groups have. For now though, I will discuss rich and poor individuals, rather than individuals and corporations. I want to suggest that incentivising rich individuals to reduce their emissions might be inappropriate. Consider that incentivising the wealthy, who are the biggest polluters (Barnes, Chatterton and Longhurst, 2019, p. 65), may be the most efficient and cost-effective way to reduce air pollution using this intervention.²⁷ Purely on the grounds of efficiency, it may make sense to incentivise the biggest polluters to reduce their emissions. This could be achieved by giving wealthy individuals incentives to purchase electric vehicles, or stop using private jets and yachts.

This policy proposal seems intuitively unfair. The policy seemingly ‘rewards’ the rich for reducing a harmful behaviour, while the poor, who contribute less to pollution, are not rewarded. This unfairness of this policy is exacerbated by the fact that the rich are rewarded for polluting less, but only after disproportionately harming the poor who suffer more from air pollution (as outlined in Chapter One). An opponent of the policy might reasonably claim that the wealthy, who have been actively harming the poor, should not be rewarded through incentives to change their behaviour on the grounds of fairness. This point gives policymakers a reason to carefully target who they incentivise.

²⁷ In practice, incentivising many poorer individuals with cheaper incentives may be more cost-efficient, especially as wealthy individuals and corporations will likely only be responsive to large incentives. This is ultimately an empirical calculation beyond the scope of this thesis.

On the grounds of fairness, it seems more appropriate to give incentives to the poor to reduce their emissions and perhaps *disincentivise* the rich from polluting. Disincentivising the wealthy for their emissions (e.g., through progressive pollution taxes or luxury consumption levies) aligns with the principle that those who cause harm should bear the cost of mitigating it. This approach avoids the moral hazard of “rewarding” harmful behaviour and creates a financial disincentive for high-polluting activities. Incentivising the non-wealthy to reduce their emissions can still successfully reduce pollution and prevent harm, without risking the aforementioned issues. As well as being unfair, policies that disproportionately benefit the advantaged could exacerbate public resentment and reduce trust in policymakers.

However, I do not wish to conclude that incentivising the wealthy to reduce their emissions is always wrong. If incentivising the rich is a significantly more effective way to prevent a considerable amount of harm compared to disincentivising the rich, then policymakers should consider this option. Policymakers should consider how much harm will be prevented and whether there are other interventions that could achieve similar results to ascertain when ‘incentives’ are justified. The fact that ‘incentives’ are less intrusive than ‘disincentives’ and policymakers should use intrusion in line with the *PLIM* should also weigh into this calculation. Finally, I also do not conclude that disincentivising or penalising the non-wealthy is wrong. Individuals in this group still do harm through their emissions and so can rightly be disincentivised for doing so. I merely wish to suggest policymakers should consider the issues raised here.

Section 7

5.7 - Disincentives

The public health intervention of ‘disincentives’ aims to change behaviour by discouraging people from pursuing X by imposing a range of costs on the action. As outlined in Chapter Four, this intervention can take different forms. The state can disincentivise air polluting behaviour through both financial and non-financial disincentives.

Financial disincentives might include taxing high-polluting vehicles and imposing charges for driving certain cars on particular roads (e.g., ULEZ). As outlined in Chapter Two, taxation is permitted by the harm principle only when the justificatory reason for implementing the tax is to prevent harm to others. Justifications for taxation irrelevant to the prevention of harm to others, such as attaching penalties to conduct deemed immoral, like purchasing alcohol, would not be permitted consistently with Mill’s harm principle (Saunders, 2012, pp. 80-81). Behaviours that contribute to air pollution typically cause harm to others, like driving a vehicle or using a wood-burning stove. So, taxes aimed to disincentivise these kinds of polluting behaviours will likely prevent harm to others.

One example of a non-financial disincentive aimed at reducing air pollution that the state should implement is requiring vehicle manufacturers to paint high-polluting vehicles with a large graphic reading “high-polluting vehicle” on the sides and bonnet. I will refer to this intervention as ‘Labelling’ and argue the state should implement this policy. This ‘disincentive’ raises an interesting issue, namely whether the stigma and shame Labelling aims to introduce to drivers of the vehicles is appropriate. In this section, I will discuss the benefits of ‘disincentives’ as an intervention before discussing Labelling. I defend Labelling against the objection that it is wrong for the state to invoke shame and stigma to address air pollution from high-polluting vehicles.

Before continuing, I wish to stress the difference between Labelling and the proposed policy of road vehicles coming with health warning labels discussed in Section Four. The graphic in Labelling is on the outside of vehicles and is intended to be seen by people looking at the vehicle. The intention behind the policy is that people will be deterred from purchasing the vehicle. The health warning labels discussed in Section Four are inside the vehicle and are available online. The motivation of the policy is to allow consumers to make an informed choice about how polluting different vehicles are. On the other hand, the labels in Labelling are for everyone to see and aim to invoke stigma and shame.

5.7.1 - Benefits and risks of ‘disincentives’

One benefit of ‘disincentives’ is that they are often effective in reducing harmful behaviour, though some ‘disincentives’ have backfired and actually increased the behaviour the policy was aiming to reduce (Gneezy and Rustichini, 2000). In the case of

air pollution, research shows that ‘disincentives’ that aim to address air pollution by reducing car use in cities are more effective than other interventions (Kuss and Nicholas, 2022). London’s LEZ and ULEZ have significantly reduced various pollutants in the air. LEZ “has significantly reduced” PM10 by 12%. Due to its stricter nature, ULEZ reduced pollutants to a greater degree. ULEZ successfully reduced both NO2 by 12.4% and PM10 by 27%. Both schemes have successfully reduced health problems associated with air pollution (Beshir and Fichera, 2022, p. 30). The efficacy of ‘disincentives’ suggests that policymakers should prefer this form of intervention, especially compared to more intrusive interventions that are less effective, or only slightly more effective.

The implementation of policies aimed at disincentivising air polluting behaviours is less objectionable than ‘disincentives’ aimed at other behaviours, especially behaviours where the individual only harms themselves in the first instance. One notable example of a controversial disincentive is the United Kingdom’s Soft Drinks Industry Levy, better known as the ‘sugar tax’. The levy came into effect in 2018 and taxes beverage manufacturers who produce or import sugar-sweetened drinks (Triggle, 2018). Advocates of the sugar tax claim it will help reduce obesity (Tedstone, Targett and Allen, 2015). Some object to this form of ‘disincentive’ as the tax targets behaviour that only, in the first instance, harms the person choosing to consume the drink. So, objectors accuse the state of paternalism or appealing to a conception of the good that not everyone accepts (Veliz et al., 2019, Faden, Benstein and Shebaya, 2022).

The objections are centred around the point that the state interfering with an individual’s liberty to make an unhealthy choice is undue interference when the unhealthy choice only directly harms the individual, and no one else. Objections of this kind do not apply for ‘disincentives’ aimed at air polluting behaviour because the nature of air pollution means that an individual’s choice does risk harm to others. However, autonomy-related considerations are still relevant and individual liberty is still an important value.

Whilst objections on the above grounds can be avoided, other objectives to ‘disincentives’ that address air polluting behaviours apply. For example, such ‘disincentives’ are objectionable if the costs are disproportionately borne by those who are already disadvantaged. Low-income households are disproportionately more affected by carbon taxation than more affluent households (Tovar Reaños, 2020). Such interventions violate one of the guiding points for policymakers laid out in Chapter Two; policymakers should not disadvantage the disadvantaged.

One way to avoid disadvantaging the disadvantaged, thus making the tax less objectionable, is to tax *and* subsidise. This strategy involves the state imposing a tax on a harm, and then using the revenue raised by the tax to subsidise something that addresses the harm (Dowding and Oprea, 2022). The benefits of this strategy are two-fold. First, the taxation discourages people from harmful behaviours (like purchasing high-polluting vehicles). So, the taxation aims to prevent harm to the public health by reducing the number of vehicles on the road. Second, the revenue raised by the levy can be used for multiple state projects. One set of projects could aim to ensure the

disadvantaged are not made worse off by the tax. This aim could be achieved by government spending to make public transport or electric vehicles cheaper. In this case, the state works to assist individuals whose options are made more expensive and less accessible by the intervention.

A different set of state projects could use the revenue raised by the tax to offset the harms related to the behaviour. For example, the state should invest in roadside 'green screen' infrastructure, as mentioned in Chapter Three. Essentially, planting hedges between roadsides and school playgrounds can significantly reduce children's exposure to traffic-related particle pollution as the vegetation absorbs pollutants (Sheikh et al., 2023).

To ensure the policy of tax and subsidise actually helps the disadvantaged, policymakers should ascertain whether the subsidy raised by the revenue is sufficient to offset the disadvantage that the tax causes. For example, a tax on diesel cars might make would-be affordable vehicles unaffordable to the disadvantaged. Whilst using the revenue to subsidise electric vehicles might help, if the size of the subsidy is insufficient to make electric vehicles affordable then the disadvantaged, who may only be able to afford cheap petrol or diesel vehicles, are made worse off by having to pay tax on their vehicles but are still unable to afford an electric alternative.

5.7.2 - Non-financial disincentives

In this section, I will advocate for a non-financial 'disincentive' intervention. My suggestion is that vehicle manufacturers should be required to paint high-polluting vehicles with a large graphic reading "high-polluting vehicle" on the sides, bonnet, and rear. Labelling should be accompanied by a public health information campaign explaining the graphic and that high-polluting vehicles cause harm to others through air pollution. The purpose of the information campaign is to make the public more aware of the link between a vehicle's emissions and the harm to the public health. This policy suggestion is unique because the 'disincentives' often used by states to reduce driving usually involve imposing charges, limiting access by time or day, and limiting parking (Kuss and Nicholas, 2022). Labelling does not actually restrict driving a high-polluting vehicle but rather aims to make it less appealing.

As well as raising awareness of which vehicles are polluting, the purpose of Labelling is to disincentivise manufacturers from producing high polluting vehicles, as people would presumably be disincentivised from purchasing such vehicles. My idea here assumes that labelling high polluting vehicles will impose a stigma on drivers and the social pressure will deter people from purchasing them, as well as making the vehicles less aesthetically pleasing (though this aesthetic cost also falls on the public, not merely the drivers). The argument is that making some vehicles unappealing will shift the market as consumers will be more likely to purchase greener vehicles without the graphics. So, manufacturers will be incentivised to produce fewer high-polluting vehicles and will instead focus their efforts on producing greener vehicles. Determining

the actual efficacy of this policy requires empirical investigation that is beyond the scope of this thesis. For now, I will assume Labelling would have its desired effects and offer some theoretical evidence for this conclusion. The aesthetic costs posed to the owners of the vehicles and wider public raise interesting ethical questions, but I do not explore these here for space reasons.

One issue that requires immediate clarification is that not everyone who drives a high-polluting vehicle can afford to purchase a low-polluting vehicle, due to the cost. Many high-polluting vehicles are old and are driven by poorer individuals, though not exclusively. Regardless, the key factor here is whether or not the vehicle is high-polluting, not the cost. Labelling is aimed at new vehicles, which are typically purchased by the wealthy, but a similar policy could exist so that all high-polluting used vehicles have the same graphic painted on them. Some might claim that it would be fairer to also target used high-polluting vehicles and not just new ones, as they are large contributors to pollution. As Labelling aims to motivate behaviour change by invoking shame and stigma, the policy would also stigmatise people who have little choice but to purchase cheaper, high-polluting vehicles. This seems to make Labelling unjust.

There are some policy solutions that would help avoid this scenario. One solution is that the policy could first give high-polluting vehicle owners one year to purchase a heavily subsidised greener vehicle in a trade-in scheme that takes their old vehicle off the road, without making them significantly worse-off. In practice this policy could be prohibitively expensive, but the gravely large economic harms of air pollution (like healthcare costs, agricultural harms, reduced tourism, et cetera) might mean it is value for money. Those who decide not to participate in the trade-in scheme could have their vehicles marked with the 'high-polluting vehicle' graphics. Stigmatising those who choose not to take advantage of this offer would be less objectionable as individuals would be given a fair opportunity to purchase a less-polluting vehicle. In this case, the stigmatisation would focus on non-compliance with a scheme intended to prevent harm to others. If individuals choose to continue doing harm by driving their high-polluting vehicle after being given a genuine opportunity not to, then stigmatising them is less unjust than a scenario where they had little choice but to keep driving the high-polluting vehicle.

A similar issue is that it might become popular to purchase high-polluting vehicles from the time before Labelling is introduced, as these vehicles won't be marked with the graphic. The state could impose Labelling on new vehicles and when second-hand high-polluting vehicles change hands, so that individuals who bought a high-polluting vehicle before Labelling is introduced do not suffer the costs, but individuals who aim to buy an older vehicle to avoid having their vehicle labelled cannot escape the policy. This solution does mean the non-wealthy, who typically have to buy used cars, will have their vehicles marked with the label. This issue might be justified, given the harms of the vehicles.

Either way, an additional solution might resolve this. Namely, the state should introduce Labelling whilst simultaneously investing in increasing the accessibility and

affordability of public transport and electric vehicles. If this solution was successful then people who are stigmatised for driving high-polluting vehicles would have the option to use alternative means of transport, and merely be making the choice to continue using their high-polluting vehicle. Whilst modern states are largely dependent on individuals having their own high-polluting vehicles, a future with far fewer cars is certainly possible (Gössling, 2020). Policymakers would have to consider the cost and deliverability of these schemes, but the general point remains that stigmatising those who willingly and knowingly do harm to others by driving high-polluting vehicles may be acceptable to discourage this behaviour.

5.7.3 - Ethical evaluation of Labelling - stigma and shame

Labelling may be effective in reducing driving of such vehicles by aiming to invoke shame and stigmatise drivers of high-polluting vehicles. This 'disincentive' could prevent harm as shaming is often effective in motivating behaviour change (Gee and Copeland, 2023). Consumers have successfully shamed businesses into adopting greener practices (Taebi and Safari, 2017, pp. 1298-1299). The shame that could arise from Labelling may also motivate people who realise their behaviour is harmful to reflect on other harmful behaviours of theirs. The feeling of shame can motivate people to mitigate the negative consequences of past actions and also adopt greener practices (Fredericks, 2021, p. 160).

To this end, the feeling of shame can encourage individuals to reflect on their whole worldview (Aaltola, 2021). If individuals do reflect on their polluting behaviours, then this policy can prevent harm more widely than its intended target of disincentivising the purchase of polluting vehicles. However, the effectiveness of shame as a means of motivating behaviour change is contingent on the behaviour at hand (Hooge, Zeelenberg and Breugelmans, 2010). As mentioned in Chapter One, the Flygskam (flight-shame) movement in Sweden to shame people to avoid flying only achieved a 4% reduction in flights within a year (Bhowmik, 2020).

Contrary to the above evidence, the presence of the graphic on vehicles might not motivate people to change their behaviour. Shamed individuals often become defensive and refuse to conform to the shamer's ideal (Gee and Copeland, 2023). Additionally, shame is only effective when the shamee respects the authority of the shamer (Fredericks, 2021, p. 152). A state that engages in or even encourages high-polluting activities (like committing to fossil fuels) may fail to convincingly shame individuals for driving their personal vehicles. Furthermore, widespread shame that successfully results in conformity to a norm can stagnate social progress and prevent new ideas, as Mill is keen to point out in *On Liberty* (Mill, 1859, p. 220). However, creating a norm of reducing pollution seems more likely to be socially beneficial by reducing serious harm to public health and unlikely to stagnate social progress. Social progress may even be attained through the improvement and creation of green technologies.

Another issue is that Labelling may fail to disincentivise people from purchasing and driving vehicles marked with the graphic. The graphic could become a 'badge of honour' and make its associated vehicles more desirable to drive. Or, people might be apathetic to the graphics and purchase the vehicles with little regard for it. It might be more effective to motivate people with a message that they have the power to reduce air pollution, rather than chastising them for polluting. These questions are empirical and cannot be answered here. Policymakers should explore such questions before instigating this kind of policy.

Whilst Labelling intends to disincentivise the purchase of high-polluting vehicles, it serves a secondary purpose. One function of Labelling is that it allows the state to condemn actions that harm the public health, though the primary purpose remains to deter the purchase of high-polluting vehicles. Labelling allows the state to condemn drivers by enforcing the printing of symbols onto their vehicles that express censure for all to see. The public nature of Labelling is intended to demonstrate to the community that causing harm in this way ought to be condemned. Other disincentives, like fines, aim to motivate behaviour change in a less public way. Imposing a visible graphic onto vehicles intended for the public to see expresses condemnation of driving these vehicles to a greater degree than merely imposing a financial charge on driving.

The question of whether it is appropriate for the state to publicly condemn high-polluting vehicles arises. It seems that there is a justificatory relationship between causing harm to others through driving a high-polluting vehicle, especially when less polluting vehicles exist, and public condemnation. It is legitimate for the state to condemn those who harm others, and Labelling signals this condemnation. However, the policy is intended to stigmatise and shame individuals who drive vehicles with the graphic printed on them, not merely condemn the individuals. Labelling raises the fundamental question of whether it is appropriate for the state to invoke stigma and shame on certain members of its populace, which I will consider. I will defend the claim that this is appropriate when it prevents harm to others.

One reason to think the state should not publicly shame people to disincentivise an action is that public shaming of individuals may lead to the individuals being stigmatised. This is concerning as people that are publicly stigmatised can be disadvantaged in terms of income, education, and housing (Mahajan et al., 2010) and even be at risk of social isolation and violence (Fothergill-Misbah, 2023). A public health intervention that risks these harms to people is problematic. Even if the intervention is successful in its goal of reducing pollution, it could produce more harm than it prevents by leading to harms against the group it is associating as high-polluters. However, this seems unlikely given how harmful air pollution is to the public health. This problem is more apparent in other interventions that risk stigma in public health ethics. For example, information campaigns that stigmatise obese people may fail to motivate people to address their diets but also risk making their mental health worse (Puhl, Peterson and Luedicke, 2013). Similar issues may arise from Labelling if people are upset by having a labelled vehicle.

A second important consideration is whether or not it is appropriate for the *state* to engage in stigmatising, as this presents a social justice issue. Different agents using stigma to motivate behaviour change will have different consequences. The power and authority of the agent at hand is fundamental. Powers and Faden argue that powerful agents, like the state, invoking stigma can reinforce structural patterns of disadvantage and unfair power relations (Powers and Faden, 2019, pp. 35–36). A stigmatised group may be harmed by discriminatory stereotypes, which can perpetuate the disadvantage one social group has over another. The state identifying and stigmatising certain groups can play a role in creating and maintaining inequalities and domination between groups. These effects of stigma are concerning, especially when the stigmatised groups are already disadvantaged. A state intervention that invokes stigma aimed at obesity seems especially unjust as it focuses on the medical condition of a group who are already stigmatised in many social contexts (Courtwright, 2013).

I think concerns about social justice are less relevant for Labelling. One reason that the stigma that may arise from Labelling is less concerning than for other interventions, like obesity, is that driving is a behaviour, rather than a medical condition. Stigmatising medical conditions may be unjust when the medical condition arises from unjust social conditions, such as poverty. Additionally, stigmatising medical conditions that arise from genetics may be unjust. In both cases, it seems that the stigma punishes people for a medical condition that is, at least in part, beyond their control. These concerns do not arise as simply for driving high-polluting vehicles. Driving a high-polluting vehicle is typically a choice, rather than a condition and it is often within the individual's control. If an individual has control over the vehicle they drive, then stigmatising them for driving a high-polluting vehicle does not present the same social justice concerns as stigmatising someone for a medical condition beyond their control.

In fact, stigmatising the driving of high-polluting vehicles may actually reduce one form of social injustice. Much of the harm that arises from air pollution is an injustice because the poorest households produce lower emissions, whereas the least poor areas emit the highest vehicle emissions (by owning more vehicles, more diesel vehicles, and driving further). Despite this difference in producing emissions, the poor are most exposed to emissions and consequently suffer worse harms to their health (Barnes, Chatterton and Longhurst, 2019, Dimitroulopoulou et al., 2022, p. 26). Additionally, the children of disadvantaged parents are more likely to be exposed to harmful levels of air pollution, which can contribute to the population's worse health outcomes compared to the children of high-income parents (Currie, 2009). An advantaged group actively causing harm to the health of a disadvantaged group in this way is clearly an injustice. Given that air pollution is an injustice, stigmatising the wealthy whose high-polluting vehicles contribute the most emissions may do some redress towards justice if it motivates them to adopt greener practices. Stigmatising wealthy, high-emitters may invoke shame and social disapprobation that encourages the individuals to adopt less polluting behaviours. If this is the case, then Labelling may promote social justice. Of course, adequately reducing the social injustices that arise from air pollution would require more interventions, and more transformative ones,

than Labelling. Additionally, if Labelling failed to target the wealthy and stigmatised the poor for purchasing the only vehicle they could afford, as discussed earlier, the policy could perpetuate social injustice. Ultimately, Labelling is a complicated policy suggestion and determining its efficacy would require empirical research. Regardless, it is plausible that Labelling would prevent significant air pollution.

Section 8

5.8 - Restrict choice and eliminate choice

In this section, I will explore the ethical concerns around the interventions of ‘restrict choice’ and ‘eliminate choice’. The former aims to prevent harm by removing certain choices available to individuals, whilst leaving suitable options available. As mentioned in Chapter Four, one example of this type of intervention could be the state restricting the sale of cleaning products with high levels of volatile organic compounds (VOCs). The latter prevents harm by removing choice entirely, for example by quarantining individuals infected with highly dangerous communicable diseases. In this section, I explain that both interventions require some principles to justify their use specifically for air pollution.

5.8.1 - The complexities of ‘restrict choice’ and ‘eliminate choice’ for air pollution

Both interventions are more intrusive than the previous interventions, hence their higher positions on the ladder. As outlined in Chapter Four, both interventions are coercive as the interference imposed on individuals is a restriction of liberty. Due to this, the state’s reason for either intervention must be that the intervention will prevent harm to others to be consistent with Mill’s harm principle.

On the face of it, requiring that ‘restrict choice’ prevents harm to others might appear to rule out some policies that restrict consumer choice in liberal democracies. For example, Denmark, Switzerland, Iceland, Canada, Norway, and Sweden have banned artificial trans fat (trans-unsaturated fatty acids) as an ingredient in food (Amico et al., 2021). This policy restricts individual choice about the food we can consume. Given that *eating* trans fat does not directly harm others (though there are some in-direct effects, like costs to public health services), one might claim that this restriction on choice is not consistent with the harm principle. This claim would be a mistake as trade is a social act so the *sale* of foods containing trans fats can be regulated. The seller of any product risks harm to others and so can be interfered with by the state consistently with the harm principle (Mill, 1859, p. 293). Additionally, some who support the restriction could argue that individual choice is so warped by food marketing and the social environment that individuals do not actually consent to be harmed by trans fat (Gostin, 2010, Kirkwood, 2010). If this is the case, restricting the sale of trans fat is consistent with Mill’s harm principle.

A further complexity arises that choices that contribute to or cause air pollution nearly always risk harm to others. So, choices that we typically think should not be interfered with may be restricted or eliminated as the behaviour harms others. For example, restricting the purchase of vehicles is permitted by the harm principle as the emissions cause harm to others. For road vehicles, this restriction may be less objectionable. However, given that riding a bicycle also causes pollution through tyre decay (Kim et al., 2022), consumer choice to purchase a bicycle could be restricted to prevent harm to others consistently with the harm principle. Additionally, the choice to

purchase a cooker and cook in one's own home could be restricted as the emissions of one's cooker can cause harm to neighbours (Lenz et al., 2023). We typically think that these choices should not be restricted. Purchasing a bicycle is a significantly less polluting choice than purchasing a car. If state intervention is justified to restrict such choices then very little consumer liberty remains as even products that cause very low levels of pollution can be restricted.

Nevertheless, as discussed in Chapter Two, Part Two, the harm principle does permit interference in these cases, but the second-stage considerations of justifying interference are key to defending liberty (Mill, 1859, p. 292). What counts in our considerations of "justified interference" is key here to finding the correct balance of defending liberty and preventing harm. For Mill, the answer involves performing a utilitarian calculation of the costs and benefits of the intervention (Turner, 2014, pp. 321-322). If the benefits outweigh the costs, then, for Mill, the restriction on choice is justified. This method of deciding whether an intervention is justified is plausibly valid as public health policymakers should be concerned with preventing as much harm to the public health as possible with the resources available to ensure efficiency. Ensuring public health interventions use the limited resources available efficiently is clearly important, especially when the resources are public resources. This consideration of efficiency is relevant to much air pollution policy as the health impacts of pollution impose large costs on individuals, populations, and the state's resources (Landrigan et al., 2018).

However, merely focusing on utilitarian concerns to justify 'restrict choice' and 'eliminate choice' can risk perpetuating and exacerbating injustices and neglect other key ethical concerns. For example, a merely utilitarian approach to restricting choice could be unfairly costly to disabled people if the choice being restricted was especially important to disabled people's well-being. This concern is especially true for 'eliminate choice'. If the state plans to impose the most intrusion on the ladder on individuals then its justification for doing so must be especially strong, and give sufficient weight to important ethical considerations. Ultimately, Mill's approach is too crude and fails to give sufficient weight to the other important considerations I discuss next. I will now discuss some of the key second-stage considerations for justifying interference and outline some key principles to guide policymakers.

5.8.2 - Considerations for justifying 'restrict choice' and 'eliminate choice'

As outlined in Chapter Four, the principle of least intrusive means (PLIM) informs policymakers of when it is appropriate to use 'restrict choice' and 'eliminate choice'. The interventions should only be used when interventions involving less intrusion are less likely to achieve the appropriate ends, relative to the amount of intrusion. The PLIM is a starting point for policymakers. However, policymakers should also consider how 'restrict choice' and 'eliminate choice' should be implemented to strengthen liberty and reduce undue intrusion. These kinds of considerations are relevant to most of the

interventions on the ladder, but given that ‘restrict choice’ and ‘eliminate choice’ are especially intrusive, the considerations should be given extra thought by policymakers opting for these interventions. These suggestions of considerations are also not exhaustive and policymakers should consider further ethical issues.

5.8.3 - Justice concerns

The basic concern here is that the interventions ‘restrict choice’ and ‘eliminate choice’ should not perpetuate or exacerbate existing unjust inequalities. This outcome could happen in a number of ways. One way is that restricting a choice that the disadvantaged make more frequently than the advantaged might be unfair because it could impose unnecessary costs. A policy that implements restrictions on choices to purchase cheap sugary drinks or cheap alcohol, but does not restrict the purchase of expensive sugary drinks (like takeaway coffees containing syrup) or expensive alcohol would be unfair. If the goal is to restrict individual choice to consume unhealthy sugary drinks, then all unhealthy sugary drinks should be targeted, not merely ones the disadvantaged are more likely to consume. Whilst harm might be prevented by such a policy, the burdens are unfairly distributed towards the disadvantaged and this is unjust.

However, this point is complicated by the fact that an intervention targeted towards a certain disadvantaged group could be more efficient if the health problem occurs disproportionately in this group. In this case, policymakers may be justified in restricting choice in a way that targets a disadvantaged group. However, the intervention of ‘enable choice’ should be tried first, when consistent with the PLIM, to make it easier for people to make a healthy choice rather than a harmful choice. As outlined in Chapter Four, if a much less intrusive intervention can achieve an adequate amount of harm prevention then that intervention should be preferred to a more intrusive intervention, even if the more intrusive version can prevent a bit more harm. So, if the intervention of ‘enable choice’ can prevent enough harm to adequately address the public health issue, then ‘restrict choice’ is not justified. If ‘enable choice’ is unsuccessful, then policymakers might be justified in opting for ‘restrict choice’, even if this targets the disadvantaged.

In the case of air pollution, restricting and eliminating choices to prevent air polluting activity could more likely affect the very advantaged. Therefore, such justice issues need not arise. The poorest households produce lower emissions whereas the least poor areas emit the highest vehicle emissions (by owning more vehicles, more diesel vehicles, and driving further) (Barnes, Chatterton and Longhurst, 2019, p. 65). Despite their small share of emissions, the poor are also most exposed to emissions (Barnes, Chatterton and Longhurst, 2019, pp. 62-63). Restricting and eliminating the choice of those who contribute the most emissions will not involve targeting the disadvantaged. Therefore, the interventions could operate in ways that do not perpetuate or exacerbate existing unjust inequalities.

5.8.4 - Do suitable options remain?

A key consideration for justifying ‘restrict choice’ is to ensure suitable options remain available to individuals. These concerns are not relevant to ‘eliminate choice’ as the purpose of the intervention is to entirely remove choice, without leaving any suitable options available. A policy that restricts important choices is more intrusive than a policy that restricts unimportant choices. The key is what choice is restricted and what suitable options remain available to individuals. For example, Lawrence O. Gostin points out that removing trans fats from food still leaves consumers with numerous food choices, and most consumers will not even realise the difference between food that contains trans fat and food that does not (Gostin, 2010). So, restricting the choice to eat trans fat because the ingredient is unhealthy leaves many suitable options available to consumers. The restriction has a relatively limited impact on individual choice. A policy that went further and restricted the choice to purchase all unhealthy food would limit the option set too much. Given the value individuals attribute to eating unhealthy foods, removing their choice to do so would be an excessive intrusion. To be clear, I recognise that individuals do not attach value to eating unhealthy foods *because* they are unhealthy. Rather, they attach value to foods they enjoy, which often happen to be unhealthy.

Restricting choice to reduce air polluting activity could limit the option set to an insignificant or significant amount, where no suitable options remain. Consider a policy to restrict people’s choice on the kinds of fuel they can purchase. If fuel stations were only permitted to sell a choice of green fuel blends (fuels with lower levels of pollutants), then consumers would not be able to purchase higher-polluting fuel options, but harm would be prevented as green fuels are cleaner (Mwangi et al., 2015). This policy would not significantly limit the option set as suitable options remain available to consumers (assuming the green fuels are widely accessible at fuel stations and are not prohibitively expensive). Individuals could continue to drive their vehicles but choose from a limited range of fuels. There may be cases where restricting the option set to a greater degree is justified. Given that air pollution is such a serious public health issue, limiting the option set of polluting products to the point where consumers have little choice to make may be worthwhile given the harm that will be prevented. The point remains that policymakers ought to carefully consider the evidence when restricting choice and aim to leave suitable options available where possible.

5.8.5 - Reciprocity principle

Another key consideration is ensuring that people are able to comply with policies that restrict and eliminate choice without being made significantly worse off. This principle relates to the justice concerns raised in 5.7.3. John Harris and Søren Holme (1995) discuss a “reciprocity thesis” and argue that individuals should be compensated for any loss of income when complying with the duty to stay at home from work when infected with a communicable disease to avoid harming others. Their argument is that we cannot

reasonably expect people to discharge this duty if they suffer the burdens involved, for example, loss of income (Harris and Holme, 1995).

This argument is relevant to ‘restrict choice’ as some restrictions on choice will impose costs, like loss of income. A restriction on a tradesperson’s choice to purchase a van for work could cause them to suffer the burden of loss of income if they cannot afford a non-restricted van. Additionally, if a state opted to ‘eliminate choice’ by implementing a ‘lockdown’ like many states implemented during COVID-19 then people who cannot work from home would be made badly off. Following Harris and Holme (1995), policymakers should consider how to reciprocate the burdens that both interventions may impose. Of course, not all burdens can be compensated as this would be too costly, nor do they need to be if the burden is insignificant. Still, some reciprocity of a burden, like loss of income, should be offset.

There are at least three reasons to accept the reciprocity principle. The first is that it is unfair to ‘restrict choice’ or ‘eliminate choice’ in a way that makes people badly off for choices they need to make. It would be unreasonable to expect most tradespeople to purchase electric vans, given the current high cost of the vehicles. This policy would risk a significant loss of income to many people. Therefore, restricting the choice of vans available to individuals, without making an alternative affordable, is unfair. The second reason the state should offer some reciprocity is to increase compliance. The state risks inadvertently creating a black market if the option set available to consumers only contains products that are unreasonably expensive. If people cannot afford to choose from the option set then the chances they will make a choice outside of the permissible option set is increased. Compensating individuals where the option set is unreasonably expensive or reducing the cost of alternatives will likely increase compliance.

A third reason the state should adopt a policy of reciprocity is to avoid resentment. If the state’s policy to restrict choice imposes large costs on individuals, e.g., restricting high polluting vans forces tradespeople to purchase electric vans, the state risks fostering attitudes of resentment. Resentment arises when individuals perceive policies as unfair or overly burdensome, especially if they feel that their sacrifices are not acknowledged or compensated.

Resentment can undermine social cohesion and trust in public institutions. So, a policy that fosters resentment may also make it harder for policymakers to introduce other policies that attempt to improve air quality. Fostering resentment is also likely to decrease people’s willingness to engage in mainstream politics, and risks people turning to more extreme political alternatives. If individuals are resentful towards politicians and policymakers for imposing these costs, the officials themselves may even become targets of the individuals’ resentment. This not only places undue pressure on public officials but can also discourage talented individuals from entering or remaining working in this sphere. Adopting the reciprocity principle and providing individuals with compensation can mitigate these risks. Adopting the reciprocity principle may increase compliance and strengthen the relationship between individuals and the state.

5.8.6 - Transparency principle

Given that ‘restrict choice’ and ‘eliminate choice’ are especially intrusive, the decision-making process that decides which choices will be restricted or eliminated should be transparent. By transparent, I follow Upshur in stating “all legitimate stakeholders should be involved in the decision-making process, have equal input into deliberations, and the manner in which decision-making is made should be as clear and accountable as possible” (Upshur, 2002). Presumably, Upshur doesn’t actually mean *all* stakeholders should be involved in the decision-making, but a representative sample of those who will be affected should be.

In the case of ‘restrict choice’, both individuals whose choices will be restricted and the manufacturers whose products will be restricted should be involved as stakeholders. This process can inform policymakers of the feasibility of restricting choices and also inform manufacturers as to how they can alter their products to avoid them being restricted from the market. For ‘eliminate choice’, a sample of individuals whose choice will be eliminated should also be consulted and an independent body should be involved in the decision-making process. The processes and conclusions should be made publicly available so that all stakeholders, and anyone else, can assess the validity of the policy and challenge it if they deem necessary. The advantage of requiring transparency is increasing accountability. If the state plans to restrict or eliminate choice, then it ought to be able to justify why. To be clear, I do not mean that this intervention should be *justified* to every stakeholder. Rather, I mean that any restriction or elimination of choice should be reasonably *justifiable* to the stakeholders. Policymakers should ensure a standard where any reasonable person whose choice is restricted or eliminated can be provided with a reasonable justification for the intrusion that they can accept.

5.8.7 - Precautionary principle

One might object to restrictions or eliminations of their choice on the grounds that it is unfair to restrict or eliminate their choice whilst the science is not settled on whether the choice is actually harmful. Despite the overwhelming evidence of the harms of pollution, some commentators maintain that the “science isn’t settled” and more research should be done before people’s liberty is interfered with. The argument here may be that intrusions on liberty are only permissible when policymakers are sure that the policy will prevent harm.

This argument is unconvincing and would prevent almost all public policy. Science, by its very nature, is never settled. Policymakers can only work on the best available evidence (Gostin, 2010). In the case of air pollution, the available evidence is strong and demonstrates that certain individual behaviours cause harm. So, restricting and eliminating choice can be justified based on this evidence. However, there may be cases where the evidence is not strong enough to demonstrate conclusively that

restricting or eliminating a particular choice will prevent enough harm to be worthwhile. In such cases, the precautionary principle says we should prioritise avoiding very bad outcomes by endorsing a policy of precaution (Manson, 2002, pp. 265-267). In essence, policymakers should err on the side of caution and opt for 'restrict choice' or 'eliminate choice' if it is likely to prevent serious harm. Still, where evidence is lacking, policymakers should consider if less intrusive interventions are likely to achieve a sufficient degree of harm prevention and opt for those if so.

5.9 - Conclusion

This chapter explored a range of ethical considerations for each public health intervention from my ladder intervention. I identified that the state opting to 'do nothing' can actually harm individuals by creating 'Denial of Escape Cases' or by removing a safety net. I considered how public health surveillance can be ethically problematic, but concluded that air quality surveillance is unobjectionable. I also explained that 'enable choice' might be an inappropriate intervention for addressing air pollution, as individuals cannot make many choices that avoid unsafe air and the intervention alone does not do enough to improve air quality. I then discussed 'provide information'. I distinguished between 'education' and 'persuasion' and considered ethical concerns for both. I argued that high-polluting vehicles should come with warning stickers and defended this policy against the objection that it might cause distress. I also discussed how the state utilising 'nudging' is ethically problematic. I concluded that 'nudging' is permissible but some nudges must be transparent. I also examined the ethical concerns of 'incentives' and concluded incentives pose difficult ethical challenges around which groups are incentivised. I discussed 'disincentives' and presented Labelling as a policy the state should implement. I considered the threat of stigma and shame but concluded this threat is acceptable. Finally, I suggested some considerations that policymakers should be aware of when implementing 'restrict choice' and 'eliminate choice'.

Conclusion

In this section, I will offer a brief summary of the thesis and note some of its contributions. This thesis aimed to consider some key political and ethical considerations in implementing air pollution policies. I examined some tensions between individual liberty and public health and some important ethical challenges policymakers should consider.

I showed that air pollution causes serious harm to public health, but that state interference to address polluting activity requires a strong justification. I argued for a reading of Mill's (1859) harm principle that permits the state to interfere to prevent harm, even if the behaviour being interfered with is not harmful. This reading permits coercive interference with conduct that is harmful in itself, conduct that contributes to an essentially aggregative harm, and to compel positive acts that prevent harm. This view differs from traditional readings of the harm principle as the emphasis on protecting liberty is not only on the harm principle, but it is also placed on the second-stage of justifying interference. Due to this, the question of *how* the state should interfere with a public health harm is key to ensuring state interference is ethical.

To explore such issues, I suggested some important improvements to the Nuffield Council on Bioethics' intervention ladder (2007). I argued that some different public health interventions should be on the ladder. I provided a rationale for the order of the interventions, namely the Principle of Least Intrusive Means, and suggested a different order. This principle provides greater guidance to policymakers, as opposed to merely relying on the harm principle because it covers any intervention that is intrusive, not merely coercive interventions. Importantly, I presented the ladder as a staircase to account for the fact that the means used to undertake a public health intervention can make different interventions more or less intrusive.

I then provided an ethical evaluation of the public health interventions on my intervention ladder. This discussion is intended to draw attention to the complex ethical challenges of air pollution policy and provide some practical guidance to policymakers. I argued that road vehicles should come with warning labels and that high-polluting vehicles should have graphics that read "high-polluting vehicle."

The thesis contributes to the fields of political theory and public health ethics. One contribution is exploring the complexities of Mill's harm principle and applying it to air pollution, which demonstrates its relevance to modern policy challenges. I demonstrated that Mill's harm principle can provide a useful test for policymakers to assess whether a proposed intervention is justified. I also formulate the principle in a way that permits policymakers to interfere with a wide scope that includes enforcing positive acts that prevent harm. This wide scope is valuable to address serious public health harms, like air pollution. Additionally, improving upon the Nuffield Council on Bioethics' (2007) intervention ladder offers a more useful guide to policymakers and shows that the ladder is a valuable tool for evaluating policy options. The ethical

evaluation of public health interventions also explored a different set of issues, beyond intrusion, which are ethically significant in the sphere of addressing air pollution.

One limitation of the thesis is its focus on liberal democratic societies, where individual rights carry some weight and Mill's harm principle has been influential. The conclusions drawn may not be as applicable to authoritarian or developing nations, where different political priorities and constraints may shape air pollution policies. Future research could explore political and ethical considerations in these kinds of states.

In conclusion, this thesis underscores the enduring relevance of Mill's harm principle and the intervention ladder in addressing contemporary public health challenges. By carefully considering the political and ethical challenges of addressing air pollution, policymakers can craft more just and effective air pollution policies.

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