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Television, health, and happiness: A natural experiment in West Germany

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ABSTRACT

While watching television is one of the most time-consuming human activities, its potential negative effects on well-being are discussed in the literature as a prime example of irrational behavior. We are the first to comprehensively address this possible paradox by exploiting a novel setting in the research on the effects of television for society: a natural experiment in the late 1980s where people in a few geographically restricted areas of West Germany received commercial TV via terrestrial frequencies. Rich panel data combined with precisely calculated frequency signals allow us to determine how regional availability of commercial TV affects time-use, before investigating the implications for individual well-being over time. Contrary to previous research, we find no evidence of negative health impacts when TV consumption increases. For life satisfaction, we even find a positive effect, which is robust across various sensitivity analyses and subgroups of TV viewers. By also considering evidence from expenditure data and from our own separately conducted surveys, we discuss the external validity of our findings as well as possible mechanisms and conclude that correlational evidence on the well-being effects of TV viewing could be driven by negative self-selection.

1. Introduction

> *"We know today that television makes you fat, stupid, sad, and violent."*
> (Ursula von der Leyen)

Television consumption is one of the most time-consuming and popular activities worldwide.[1] From a public policy perspective, there could be socially desirable consequences of television, as discussed in research on educational outcomes and gender (Gentzkow and Shapiro 2008, Jensen and Oster 2009), while other well-documented effects could be seen as undesirable, such as reduced political involvement, destruction of social capital, higher separation rates, increased household debt, and reductions in cognitive ability (Gentzkow 2006, Olken 2009, Chong and La Ferrara 2009, Baker and George 2010, Hernæs et al. 2019). This raises the question of why people watch so much television. A simple revealed preference argument suggests that this activity should enhance their well-being. Conversely, there is a widespread belief that television is individually harmful. This is echoed in public discourse, as epitomized by our introductory quote, and reflected in previous research, which suggests TV consumption is a threat to both individual health and happiness (Dietz and Gortmaker 1985, Hu et al. 2003, Hancox et al. 2004, Frey et al. 2007, Bruni and Stanca 2008, Benesch et al. 2010, Cuñado and de Gracia 2012).

The idea of media consumption being detrimental to well-being has recently received further support thanks to the emerging body of work on the effects of social media (e.g. Allcott et al. 2020, Mosquera et al. 2020, Braghieri et al. 2022). While there is an overlap between different forms of media consumption today, as many people watch television via the internet or share TV clips using a social media platform, there are

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[1] Under plausible assumptions, the time spent watching TV even exceeds the time spent doing paid work when considering the entire lifespan: Assume that an average individual works 40 years, 250 workdays per year, and 8 h per day. Further assume that the same person watches 3 h of TV per day, which is below the official numbers in many countries, including the United States. To surpass our lifetime work estimate of 80,000 h (=40 x 250 x 8), this fictitious person must watch TV for 74 years; or less if the person watches more hours each day. Millions of United States citizens born in the 1940s easily exceed that number.

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also some differences, like the possibility of interacting with others, which makes TV consumption somewhat distinct. Nevertheless, researchers of social media discuss similar problems, such as 'digital addiction' (Allcott et al. 2022), which refers to the larger literature in behavioral economics on self-control problems and related phenomena (e.g. Laibson et al. 1998, Frederick et al. 2002).

As a contribution to this discussion, researchers in the field of happiness portray TV viewing as an example for lacking self-control and irrational human behavior (Frey 2008, 2018).[2] However, there is reason to question this notion and the validity of the available evidence. On the one hand, some of the studies describing potentially negative effects of TV on well-being focus on children, which raises the question of external validity and how these results generalize to a broader and representative population. On the other hand, internal validity is an issue as the determination of the causal effect of watching TV is not trivial. Arguably, unhappy or unhealthy individuals may sort themselves into higher levels of TV consumption, making it difficult for researchers to determine the impacts of television using non-experimental data.[3]

In this paper, we investigate for the first time the consequences of television consumption on happiness and health by exploiting nationally representative data from a natural experiment. We use a setting in West Germany at the end of the 1980s in conjunction with detailed longitudinal information on television provision, individual time-use, and well-being measures obtained from multiple data sources, thereby providing credible evidence on the individual implications of TV through an instrumental variable approach. By discovering a natural experiment with unique historical facets, we add a novel research setting to a number of studies using regional heterogeneity in media provision during periods of implementation or expansion.[4] In contrast to research in economics which exploits variation in terrestrial public TV signals from West Germany reaching into East Germany (Hyll and Schneider 2013, Hennighausen 2015, Bursztyn and Cantoni 2016, Friehe et al. 2018, 2020, Slavtchev and Wyrwich 2023, Hornuf et al. 2023, Laudenbach et al. forthcoming), we exploit regional variation in terrestrial signals of private TV in West Germany, thereby studying individual behavior within a fully developed country at the center of Europe. Due to an overlap of nationwide surveys in West Germany with our historical incidence, we can comprehensively analyze whether TV consumption actually increases after signal reception before we turn to its consequences for health and happiness.

The historic natural experiment on television in West Germany starts with a de facto ban on commercial TV, which lasted until the early 1980s and was only lifted by a Supreme Court decision.[5] Despite new technological opportunities such as cable and satellite, most citizens initially could not watch any of the new programs due to delays in the roll out of private TV. In consequence, there were several years during which many potential viewers could only watch commercial TV via terrestrial frequencies on public media stations that were, by chance, still available. Since most powerful frequencies were used by public broadcasts in the late 1980s, for which the stations were originally built decades earlier, this opportunity for commercial broadcasters was limited. Only a few stations still had open frequencies with the potential to send out terrestrial signals to millions of households. Due to an earlier Supreme Court ruling, there was no opportunity for commercial TV to expand upon pre-existing terrestrial frequencies via new stations since transmitter stations in West Germany could only be built for public media. In consequence, a technically limited transmitter reach created naturally emerging borders that split citizens into receivers and non-receivers of private TV via antenna.

We obtained technical data on all terrestrial stations transmitting commercial TV in West Germany, which allows for the precise identification of the broadcast signals throughout the country. Thanks to software based on the Longley-Rice signal propagation model, it is possible to identify regions with and without reception by considering both technical data, such as station power, and geographical information. For our empirical analyses, we exploit the fact that two large household studies of the German population were ongoing during our investigation period. First, the German Socio-Economic Panel (SOEP) provides us with detailed survey data on the situation of adult individuals at the time of the signal introduction. We merge our TV signal data with the SOEP data at the regional level to study the implications of TV access on a set of daily individual time-use activities, including TV consumption, as well as on our main outcome variables of health and life satisfaction. By exploiting the data's panel structure, we employ an individual fixed-effects approach to examine if people change TV consumption due to commercial TV reception and how their well-being is affected as a result of watching more television, without any influence from time-invariant individual or regional characteristics. Second, we merge the signal calculations with data from the German Income and Expenditure Sample (EVS). The EVS provides us with household expenses on components relevant to individual health, enabling us to study the consequences of TV on health-related purchases.

We find that TV consumption increases significantly when individuals receive private TV on a high-power frequency. This effect is the strongest in a large area in Germany's federal state of North Rhine-Westphalia, for which our technical dataset reveals the most powerful frequency available to private TV in our investigation period. In line

[2] For example, in one of the studies based on survey measures of both happiness and TV viewing, Bruni and Stanca (2008) ask: "Why do rational people allocate their time and resources without maximizing their well-being?" Note that we treat the terms happiness and life satisfaction synonymously, in line with many contributions in the field of happiness research. Moreover, we consider well-being to be a broader term that also incorporates health.

[3] Most of the studies on health and happiness do point out that the identification of the causal effect of TV watching is difficult and practically impossible with the empirical approaches used so far. For example, Frey et al. (2007) mention in their study a lack of a "natural experiment" to study causality. In this context, see Kataria and Regner (2011) for a comment on identification issues in the research on TV and happiness. Similarly, studies on well-being that investigate the role of television via proxies, such as TV ownership, provide ambiguous evidence (Kavetsos and Koutroumpis 2011, Graham and Nikolova 2013). For health, DellaVigna and La Ferrara (2015) point out that studies from outside economics typically "lack a convincing design" to credibly determine the effects of TV. They conclude: "Surprisingly given the interest in health economics, the evidence is limited" (p. 744).

[4] An example of a setting used to study the effects of television is the case of broadcast TV in the United States (Gentzkow 2006, Baker and George 2010, Campante and Hojman 2013, Angelucci et al. 2024, Fenton and Koenig 2025). For a review of settings used in research on television, see DellaVigna and La Ferrara (2015) who emphasize the significant methodological developments and list influential papers published in major economics journals. Apart from TV, economists have done further work on the impacts of media, such as radio. See Strömberg (2004), DellaVigna et al. (2014), Yanagizawa-Drott (2014), Adena et al. (2015) and Armand et al. (2020) who use, similar to recent research on television, the Longley-Rice signal propagation model to identify regions with radio access via broadcast signals. Adding to the above-mentioned studies on the effects of social media for well-being, there is recent work on the health effects of internet access (Donati et al. 2025), as part of the broader literature on the impact of the internet (Bauernschuster et al. 2014, Falck et al. 2014 DeStefano et al. 2023) and digitization (Waldfogel 2017, Nagaraj and Reimers 2023). Finally, there is research about the effects of movies, focusing, for example, on violence (Dahl and DellaVigna 2009) and educational outcomes (Riley 2024).

[5] Note that we use the terms private and commercial television interchangeably, and we understand television as a combination of TV programs (shows, movies, etc.) and advertising, as an inherent part of television. While this also applies to public TV in Germany, which is partly financed through mandatory fees, private TV channels are dependent on advertising revenues and are privately owned. For example, during our investigation period, media tycoon and later prime minister of Italy, Silvio Berlusconi was one of the owners of private TV channel Tele5.

with the notion of a natural experiment, we also obtain evidence of balanced pre-treatment variables when we compare the characteristics of people in this area with those in the rest of West Germany. For our main outcomes, we first focus on this regional comparison before examining the robustness of our results in various checks, in which, for example, we extend the treatment definition to regions where households were potentially able to receive private TV via less powerful frequencies.

Our key findings regarding the role of increased TV consumption in individual well-being are that people benefit in terms of life satisfaction without experiencing any health impairments. This does not change when we inspect long-run effects for a treatment period of several years. We conclude from analyzing survey and expenditure data that improved mood as well as health awareness could be relevant mechanisms underlying the positive effects of TV on well-being.

Our contributions are multifaceted, as we provide a new and economically important insight: watching television, as one of the most significant daily activities, provides consumers with a clear benefit of increased happiness, contrary to common beliefs and previous research. While, from a policy perspective, externalities for societies could be either positive or negative, we can explain why TV consumption is one of the most popular activities. From a scientific perspective, this paper contributes to various fields, including the large interdisciplinary research on well-being, where scholars discuss a paradox that our results suggest may not exist.[6]

By juxtaposing different pieces of evidence, we provide an example of how a correlational result, as discussed in the literature and confirmed in two datasets by us, is reversed within a credible empirical setting, pointing to a self-selection of unhealthy or unhappy types of individuals among the group of intense TV viewers. We thereby provide a new setting for research on the effects of TV based on a natural experiment that took place in a fully developed Western country, allowing analyses of long-term effects over a time window of several years.[7]

Moreover, the available datasets for our historical setting inform about behavioral changes and mechanisms, as we can analyze expenditure data to study consumption choices and time-use data to reveal how people re-adjust activities to have more time for TV. As people reduce time spent on housework, we shed light on whether such a crowding-out may explain increased well-being. Our heterogeneity analyses show that all types of viewers, including relatively heavy TV viewers, become happier in our setting with a baseline of a few hours of TV viewing per day, where individuals may not have reached their optimal level of TV consumption yet.

Finally, we contribute to the larger research about the role of media in society, including the debate on the effects of social media. Given that there is evidence of substitution between social media use and TV viewing (Allcott et al. 2020), our paper provides an alternative explanation for lower well-being caused by social media, based on the idea that television has the potential to make people happier, at least relative to the use of other media during leisure time.

The remainder of our paper is structured as follows. Section 2 illustrates the early phase of private TV in West Germany and describes the natural experiment (with more details in Appendix A). Section 3 explains the different datasets, including technical calculations of local TV signal reach (Appendix B provides supplementary information on technical details and checks). Section 4 contains the main results, including extensions and further analyses (with more information on the EVS data in Appendix C). Section 5 discusses the findings to learn more about external validity based on additional survey evidence (with more details on our own surveys in Appendix D). Section 6 concludes by discussing the implications for public policy.

2. Background

The historical development of commercial TV in West Germany involves a variety of different actors, such as media tycoons, politicians, some transmitter stations with limited reach, a TV superstar with a speaking car and Germany's Supreme Court. We provide details (including sources for excerpts from historical media reports) in Appendix A1 and focus here on the most relevant historical aspects to understand the occurrence of an original natural experiment.[8]

Traditionally, Germans were very skeptical of television as a technology, which could explain why the legal ban of private TV was in place for many decades. TV existed in form of a few public channels and played a minor role in West German citizens' daily lives until the television landscape changed dramatically in the 1980s (for a timeline of events, see Fig. A1). Given that the ban on commercial TV was based on the notion that terrestrial broadcasting via frequencies only allowed a limited number of media offers, the emergence of cable and satellite as alternative transmission avenues promised to dissolve this technical bottleneck. This led to a landmark decision by Germany's Supreme Court in 1981, which paved the way to roll out private TV. A new federal government subsequently decided to proliferate private TV in the years to come, which contrasted starkly with the policies of the former government.

When the first commercial TV channels debuted in Germany in 1984, only a few thousand households were able to watch the new programs. To change this, the government tasked a public institution (the *Deutsche Bundespost*), which, however, failed to provide new TV channels to German households in a timely manner and was ultimately dismantled in 1994 after having invested heavily in what critics called a "billion-dollar grave." In the late 1980s, only a minority of Germans watched private TV via cable, and satellite TV was not an option yet. Consequently, for several years the focus shifted to an alternative way of reaching German households: terrestrial frequencies on public-media transmitter stations that were not yet in use.

It was apparent, however, that powerful frequencies were extremely rare, since most of those frequencies were in use by public media broadcasts for which the stations were built. The stations that could be used for private TV in the late 1980s were mainly constructed in the 1960s to provide the country with a second public TV channel following

[6] Notably, economists have used happiness data to examine irrational choices not only in the context of television but also for other behaviors, such as smoking, where cigarette taxes and bans have been shown to serve as self-control devices, making smokers happier (e.g. Gruber and Mullainathan 2005, Odermatt and Stutzer 2015). This example shows how happiness research can enrich discussions in public economics that address, among other topics, policies (Dolan and Metcalfe 2012), externalities (Metcalfe et al. 2011), public goods (Levinson 2012), nuclear catastrophes (Danzer and Danzer 2016), natural disasters (Luechinger and Raschky 2009), and sport events (Dolan et al. 2019). Related research strands discuss how to establish well-being indicators for policy-making (Benjamin et al. 2014) and the extent to which happiness can influence economic choices and behavior, such as work effort (Oswald et al. 2015), time preferences (Ifcher and Zarghamee 2011), and voting (Liberini et al. 2017).

[7] The rise of Germany's No.1 private TV channel RTL ended in 1993, when market shares reached a historic peak (see Fig. A1), suggesting that the channel could not substantially benefit from further growth in viewership as a result of increasing proliferation of cable and satellite. This was roughly four years after receiving private TV via terrestrial frequencies became relevant for millions of Germans throughout the second half of 1988.

[8] Harrison and List (2004) provide a nice and not-so-serious definition: "Natural experiments arise when the experimenter simply observes naturally occurring, controlled comparisons of one or more treatments with a baseline. The common feature of these experiments is serendipity: policy makers, nature, or television game-show producers conspire to generate these comparisons." As we document in our comprehensive discussion of the research setting, the history of commercial TV in West Germany appears to contain all three of these ingredients.

a 1961 Supreme Court decision. Due to the ban of private TV, it was unforeseeable during the construction phase that there would be a strong commercial desire for more frequencies decades later. Therefore, almost all of the powerful terrestrial frequencies with significant reach were in use by public media broadcasts in the late 1980s. There were only a few stations that coincidentally happened to still have an open slot in the form of a frequency with significant power.

Apart from the technical limitation of the availability of powerful frequencies, there was also a legal constraint on the expansion of terrestrial broadcasting. According to the Supreme Court, the management of Germany's network of transmitter stations was seen as a politically sensitive issue, and hence the building of new stations was a public task that should be organized independently of political influences. In consequence, no commercial TV provider had a legal option to expand on the existing network of transmitter stations.

Powerful frequencies ensured that all TV viewers could watch the program, independent of technical equipment, which was not necessarily the case with low-power frequencies.[9] At the state level, German politicians, recognizing the importance of these frequencies, allowed the remaining public-media frequencies to be used for non-public TV. To illustrate, consider the densely populated federal state of North Rhine-Westphalia (NRW), where available frequencies were called "juicy" by the media due to their extraordinary desirability. Following the allocation of frequencies to TV companies by the state government in 1988, millions of citizens in some western regions of NRW were suddenly able to watch commercial TV via antenna because they lived close enough to a transmitting station. At the same time, other citizens – including those in the eastern parts of NRW – were unable to receive the terrestrial signal.[10]

Fig. 1 shows the complete picture of private TV signal reach across West Germany based on calculations for all potentially relevant transmitter stations in 1989.[11] As can be seen, naturally emerging borders split the country into potential receiver (colored) and non-receiver (not colored) areas. In addition to the NRW frequencies in the west, there were frequencies in the north and in some smaller areas throughout the country. While our map displays the raw data, it is an empirical question that we address below (see Section 4) to what extent these signals had a significant impact on individual TV viewing. In this context, one could also ask whether the distribution of areas with possible access to commercial television via antenna was random. Although it seems that low-power frequency TV signals were more likely to occur in large urban centers, this is not the case when we consider high-power frequency signals only. In particular, individuals who received private TV via the most powerful frequency in western NRW lived in counties covering the entire spectrum from very rural to metropolitan regions.

1989 was pivotal in the proliferation of private TV in Germany. Among various competitors, RTLplus became the country's number one private TV channel that year and remained at the top for decades. The channel's market share reached 10% (KEK 1998), which was very high considering that only a minority of households could watch it.[12] The program organizers behind RTLplus were able to establish their own superstar, David Hasselhoff, with a popular TV show called *Knight Rider* about a crime fighter assisted by an artificially intelligent car that can talk (see Appendix A2 for more details on the content of private TV with a focus on RTLplus).[13]

Given the importance of terrestrial frequencies, it is not surprising that media companies demanded more frequencies and even new transmitter stations to reach German households. However, the legal framework was clear: the construction of stations was only allowed for public media broadcasts. Given that the Supreme Court justified the revision of the ban on private TV based on new technical developments that made it possible to go beyond terrestrial broadcasting, commercial TV channels could only receive slots on public-media transmitters that were still open. Attempts by these commercial TV providers to expand terrestrial TV in Germany were thus doomed to fail, and they did. In particular, Silvio Berlusconi exerted enormous efforts to expand terrestrial television in Germany for his channel Tele5 but ultimately failed. He sold his shares during the 1990s when he exited the German TV market.[14]

3. Data

3.1. TV signals

We obtained original documents about terrestrial frequencies for West German television and radio from the NDR (*Norddeutscher Rundfunk*). We use the so-called Wittsmoor lists as the first source of information. These annual overviews of all active frequencies in West Germany are available for the late 1980s and early 1990s and include basic facts such as the effective radiated power (ERP) in kilowatts (kW). While related studies rely on the 1989 Wittsmoor list to identify TV signals from Western stations in East Germany (Crabtree et al. 2015, Bursztyn and Cantoni 2016), we consider for the first time information on private TV channels in West Germany by constructing a longitudinal dataset on signal reach. We benefit from additional information since we could obtain official records of the terrestrial frequencies on which private TV was broadcasted. These records contain detailed information

[9] Fig. A2 depicts a 1980s TV set with an indoor antenna. Such devices allowed individuals in West Germany to watch television broadcasts via powerful terrestrial signals at the time.

[10] Similar to other empirical TV settings, such as in Brazil (see La Ferrara et al. 2012), favoritism played a role in our context. However, as we describe in Appendix A1, favoritism only influenced *which* commercial TV provider received a powerful frequency, not *whether* and *when* such a "juicy" frequency was technically available or not. This was determined by ex-ante predetermined factors and the coincidence of still available capacities at transmitter stations built many years earlier for the sole purpose of public TV and radio broadcasts.

[11] This graphical illustration was done by a graphic designer who received the complete raw data from us based on the calculations that we describe in detail below (see Section 3). Patterns in this illustration align with those in ad hoc maps for single frequencies drawn by technical experts and shown to us. Through personal communications with leading experts on the topic of terrestrial frequencies in Germany, we discovered that there is no exact calculation of access patterns describing the reach of private TV in Germany so far. Thanks to the help of numerous research assistants with expertise in this area, we could complete this laborious task of determining the signal reach for terrestrial frequencies, which were used to broadcast private TV in the late 1980s and early 1990s. Table A1 provides details on the most powerful active private TV frequencies in the spring of 1989 (with at least a power of 10kW). In addition to the powerful frequencies, we collected data on over sixty minor frequencies (with a power of less than 10kW). While many low-power frequencies started broadcasting in the years after 1989, there was little change in terms of powerful frequencies, underlining the importance of 1989 for private TV in Germany.

[12] Regarding the reach of RTLplus via terrestrial frequencies, we refer to our calculations using SOEP data (see Section 3). As can be seen in Appendix A1, we provide a discussion on the role of cable and satellite TV in our historical context. While concrete numbers on households with access at the time are rare, the available information implies that both cable and satellite TV only played a minor, if any, role in our investigation period.

[13] Other private TV channels like Sat.1, Germany's number two commercial TV channel, did not do as well as RTLplus. While the owner of Sat.1, Leo Kirch, received some frequencies in northern Germany, he had less success in the state of NRW. The situation in 1989 was even worse for Tele5, the third private TV broadcast owned by Italian media tycoon Silvio Berlusconi. Tele5 did not receive any of the major frequencies (see Table A1).

[14] As part of our historical documentation (Appendix A1), several media reports covered Berlusconi's role in the German TV market. He first tried to convince officials in NRW to get the available frequencies, and then offered to expand Germany's terrestrial frequency network; yet, both attempts were unsuccessful.

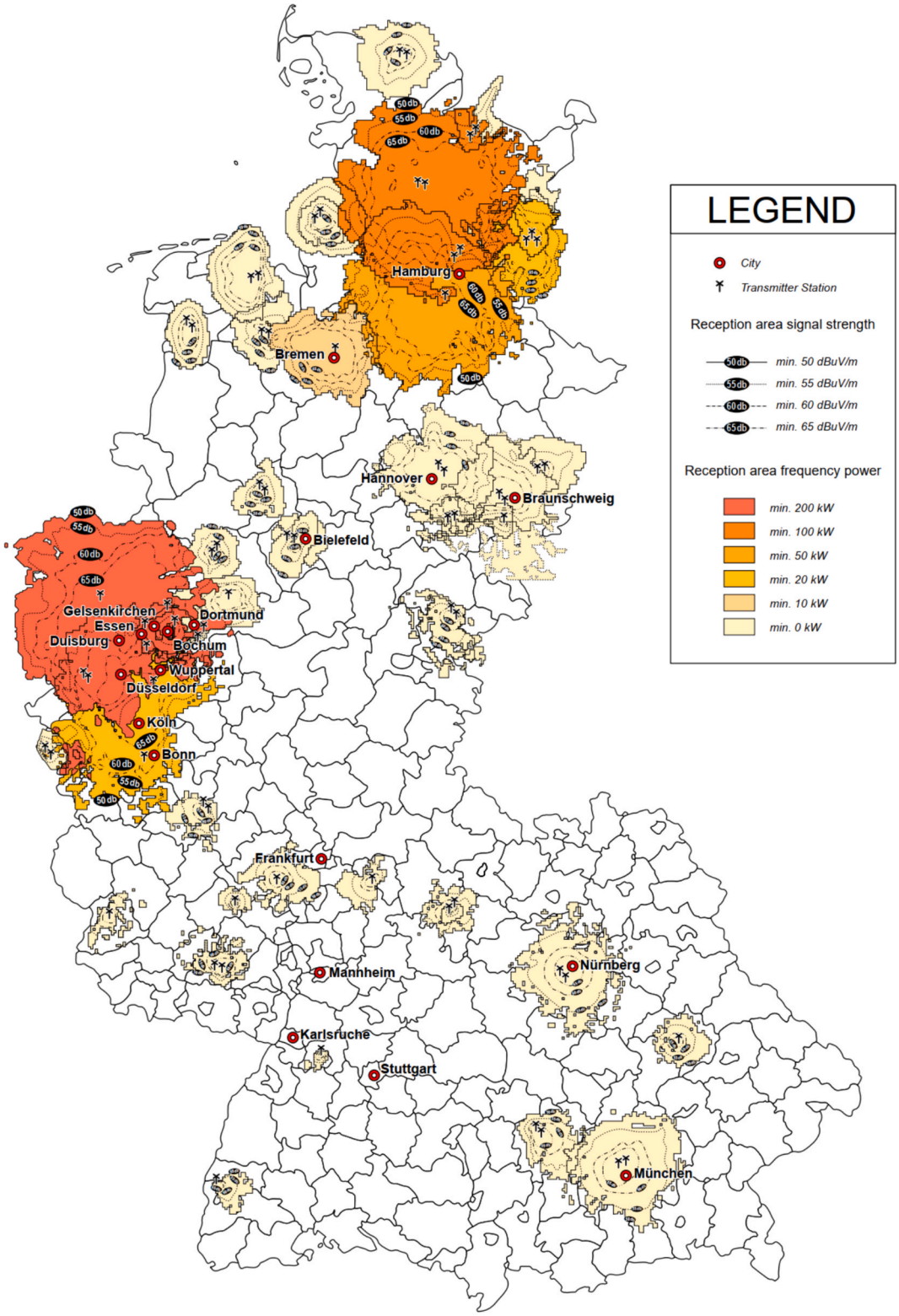

Fig. 1. Private TV via Terrestrial Frequencies in West Germany of 1989. *Notes*: The map illustrates private TV terrestrial transmitter signals across West German counties in the spring of 1989, based on the Longley-Rice propagation model. In line with Table 2, the terrestrial frequency signals are colored according to the effective radiated power (ERP) in kW of the frequency using six intervals (maroon: min 200 kW, red: 100–200 kW, red–orange: 50–100 kW, orange: 20–50 kW, gold: 10–20 kW, yellow: 0–10 kW). The map also shows an onion structure of dbuV/m. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

on the frequency, including the month when the broadcast started, and on the transmitting station, including height and geographic position. Finally, we use antenna patterns of the terrestrial frequencies that we received from Germany's Federal Network Agency. This improves precision when calculating TV signal reach, given that signals are in some cases oriented in specific directions (for an example, see Fig. A3), so that patterns can differ substantially across stations.

To determine TV signal reach, we employ the Communication System Planning Tool (CSPT). As an add-on to the geographic analysis software ArcGIS, the CSPT calculates signal reach using the Longley-Rice signal propagation model. To consider geographical information for the entire country of West Germany, we rely on digital maps incorporated in ArcGis version 9.3 with a resolution of 1,000 m. Thereby, our TV signal calculation takes topographic aspects of the terrain into account, such as mountains, even if this may not play a major role in our study, as suggested by the location of treatment areas displayed in Fig. 1.

The signal calculation procedure aims to determine whether or not a TV signal from a transmitter reached a region in West Germany. To identify the borders of both counties and municipalities in West Germany, we obtained the oldest available digital maps from the German Federal Agency for Cartography and Geodesy. After determining the signal strength for each square kilometer, we aggregate this information at the regional level to obtain a mean value for each region, be it a municipality or a county. This average signal strength value allows us to determine whether people in a given region could watch a certain TV channel on their TV set. To illustrate this, Figs. A4 and A5 depict maps for the signal reach of the most powerful RTLplus frequency (on the transmitter station Wesel) at the county and municipality levels.[15]

Two technical thresholds are relevant to distinguish regions with and without access to terrestrial private TV. The first parameter is the minimum signal strength (dBuV/m) at which a region is considered to be capable of receiving a TV signal. In our analysis, the default value is 50 dBuV/m (see Appendix B for checks). The second parameter is the frequency's underlying kW power. Based on the historical records, 20 kW of ERP could be a suitable threshold for defining a powerful and thus relevant frequency, in line with the media attention paid to NRW's "juicy" frequencies (see Section 2). According to the technical documents available to us, the media coverage on the case of NRW referred to transmitting stations in Wesel (200 kW) and Düsseldorf (20 kW). Given that the power of the latter frequency was below usual ERP levels of public TV broadcasts, we inspect how results change as the ERP threshold increases. In our first-stage analysis below, we therefore initially consider all areas potentially reached by signals, as displayed in Fig. 1, before gradually excluding comparatively weaker frequencies to ascertain which signals actually affected TV consumption. Note in this context that the scarcity of powerful frequencies, as described in our discussion of the historic setting above, is evident in our technical data as well, as can be seen in Table A1.

Finally, we consider information on the start dates of all private TV channels broadcasting over terrestrial frequencies to establish a longitudinal dataset on TV signal reach. This dataset includes binary variables for each region and year in our investigation period from 1987 to 1992, indicating whether private TV was available or not. Since most of the relevant private TV channels with significant power began broadcasting in 1988, we focus on 1989 as the first treatment year in most of our analyses. The reason lies in the usual timing of interviews carried out by the SOEP, which is our primary source of data that we describe in more detail below. As SOEP fieldwork mainly takes place in the first months of each year, there are only a few cases of respondents who were interviewed extremely late and therefore might have already been 'treated' in 1988. As discussed in Appendix B, we verify our findings using a month-based treatment assignment by assigning these latecomers as treated in both 1988 and 1989.

3.2. The German socio-economic panel (SOEP)

The main data source is Germany's largest ongoing panel survey: the German Socio-Economic Panel (Wagner et al. 2007). Based on random draws covering the whole population, starting with samples A (Germans) and B (migrants) in 1984, the organizers of the SOEP have since then investigated the lives of thousands of people each year to provide representative data for Germany's adult population. Given our focus on the late 1980s, we rely on these two samples A and B to establish the main dataset used in our analysis. Notably, we focus solely on West Germany, which in our definition always excludes (West) Berlin. Prior to the reunification, West Germany had over 300 counties, each with varying numbers of SOEP participants. To identify the impact of television on individual outcomes, we merge the SOEP data with our longitudinal data on private TV signal reach at the county-year level.[16]

The SOEP provides researchers with subjective self-assessments of the respondents who report their health ("How satisfied are you with your health?") and life satisfaction ("How satisfied are you with your life, all things considered?"). We pay particular attention to these two variables, which are routinely asked in each questionnaire with the same question wording and answer categories. Respondents always assess their satisfaction on a scale ranging from 0 ("completely dissatisfied") to 10 ("completely satisfied"). To learn more about health, the SOEP contains information about visits to the doctor in the three months before the interview.[17]

To investigate individual time-use changes due to private TV reception, we exploit the SOEP time-use battery. This survey module contains information about the number of hours an individual engages per day (workdays and Sundays) in different activities, such as child care (see Table B1). In contrast to recent SOEP waves, the time-use battery contained an item called "Watching TV, Video" until 1989. We use the responses from this item to establish a manipulation variable called "TV consumption" based on a broad understanding of television that includes watching videos.[18] Given our two-stage approach to analyzing the consequences of increased TV consumption on well-being, we focus on the years 1987 (prior to the start of private TV on high-power frequencies) to 1989 (the last year with data on TV consumption).

Another possible limitation of the time-use data is its hour-based measurement. Changes of half an hour, for instance, may go

[15] We follow Bursztyn and Cantoni (2016) by averaging all square kilometer values within a region. As discussed in Appendix B, we also consider the median of all values and other alternative measures in our sensitivity analyses.

[16] Regional identifiers are available for data users after signing a special agreement with the SOEP organizers. Regional data analyses are possible via remote access using SOEPremote and on-site at the DIW Berlin. While geolocation data are available for more recent waves of the SOEP, the lowest level of analysis is the county level during our investigation period. Hence, our SOEP-based analysis has the highest possible precision. Note that we use SOEP version 29 (https://doi.org/10.5684/soep.v29). Our results are robust when employing a more recent SOEP version.

[17] In 1988, the question on doctor visits in the SOEP was altered. Before 1988, participants could respond that they had visited no doctors or different types of doctors (dentist, etc.). Since 1988, the SOEP has aggregated all doctor visits without distinction between the types of doctors: "Have you visited doctors in the last 3 months? If yes, please indicate how often." For the pre-1988 data, we aggregate all cases of different types of doctor visits to generate a variable that represents the total number of doctor visits. Due to 11 different doctor categories, this exercise leads to a relatively large number of missing values. Using year fixed-effects, ameliorates this issue. Note that we also use the binary indicator for having visited any doctor that is not subject to this missing-value issue.

[18] At the time, Germans mainly used video recorders to watch self-recorded TV content (see Oltmanns 1993). According to EVS data, however, the majority did not own such a device in 1988 (ca. 70% of households), which is consistent with other statistics (see Oltmanns 1993) and suggests that video played a minor role back then.

Table 1
Individual Characteristics in Private TV Regions and Control Regions in 1987.

	20 kW Private TV			200 kW Private TV		
	No Signal	Signal	p-value	No Signal	Signal	p-value
Female	0.50	0.51	0.271	0.50	0.51	0.554
Age	42.24	41.78	0.349	42.24	41.35	0.182
German nationality	0.74	0.77	0.016	0.75	0.73	0.175
Household size	3.30	3.09	0.000	3.26	3.22	0.609
Household with children	0.45	0.43	0.213	0.44	0.47	0.244
Married	0.68	0.64	0.016	0.67	0.67	0.925
Divorced	0.03	0.05	0.000	0.03	0.04	0.394
Widowed	0.05	0.06	0.187	0.05	0.06	0.316
Education	10.53	10.74	0.003	10.58	10.55	0.736
Apprenticeship	0.04	0.04	0.941	0.04	0.04	0.901
Income	7.42	7.38	0.028	7.41	7.41	0.767
N	16,175	4,103		18,230	2,048	

Notes: The table shows mean characteristics and p-values from *t*-test comparisons of individuals who lived in counties with or without private TV signals from the late 1980s onwards. The minimum power of the frequencies considered in the table's left-side (right-side) columns is 20 kW (200 kW).
Source: SOEP data are from 1987.

unreported. Given the negative views and social stigma attached to television in Germany, especially during our investigation period (Appendix A1), it is conceivable that respondents did not report an increase in TV viewing compared to the previous interview even if they watched more due to the sudden availability of commercial TV. We believe that merging the workday and Sunday time-use information mitigates this issue somewhat, because reporting on having watched TV on a weekend rather than during the week may be less stigmatizing; yet, we still expect changes in TV consumption to be underreported.[19]

Note in this context that self-reported time-use data generally reveal lower estimates of TV consumption in comparison to electronic measures for the same population. As pointed out by Frey et al. (2007), multi-tasking could play a role in this context, since electronic measuring instruments capture TV consumption even if individuals are pursuing other activities simultaneously. This is also reflected in the available statistics for West Germany, such as those by Oltmanns (1993). Accordingly, TV sets were used for an average of around four hours per day in 1987, while people reportedly watched television for only 131 min. The latter is closer to the mean value of ca. 20 h of weekly TV consumption in the SOEP time-use data, as depicted in Table B1, which shows descriptive statistics for the main sample from 1987 to 1989.[20] The table also provides information on survey-related factors, such as how many years people remain in the panel, showing that respondents take part on average more than ten times.

For each dataset used in our SOEP-based analyses, we consider two sample restrictions: In addition to missing covariate values, we also exclude observations due to relocations between regions. This allows us to cluster standard errors at the regional level in our individual fixed-effects analysis. Therefore, we require that individuals were observed in the same county throughout the investigation period, namely the one in which they lived in the key treatment year of 1989. In Appendix B, we discuss this sample restriction based on robustness checks.

Table 1 shows the characteristics of SOEP respondents across treatment and control regions in 1987, as the last year without private TV on terrestrial frequencies for the relevant stations shown in Table A1. In light of the background (see Section 2), we define the treatment in two different ways by focusing on the minimum thresholds of 20 kW respectively 200 kW frequency power. Notably, the latter includes only the most powerful station in the west (see Fig. 1).

For private TV signals with 20 kW power or higher, there are a few significant differences. For example, we observe that individuals living in treatment regions appear to be more educated on average than those in control regions (see left-side columns of Table 1). One could argue that differences of about 0.2 education years are small and only reach statistical significance due to large sample sizes. In any event, comparing the results for TV signals with at least 20 kW versus 200 kW (see right-side columns of Table 1) indicates that it is more plausible to assume a random treatment when focusing on access to private TV on a more powerful frequency. While we acknowledge minor sensitivity in the results of our balance checks concerning the variable definition and test method, we conclude that our setting provides us with an instrument based on the 200 kW threshold that can be seen as good as random.[21]

This empirical insight dovetails with the historical circumstances documented in Section 2 (with more details in Appendix A1) where we discuss differences between low-power and high-power terrestrial frequencies, and conclude that, because of the latter, large numbers of West Germans could either watch private TV in some regions of the country by chance or not. Note that we lower the threshold in additional analyses below to exploit larger areas of the map in Fig. 1. Even in this case, we have confidence in the results, which cannot be affected by time-invariant differences in characteristics between people living in treatment and control regions, as we exploit the panel structure of the SOEP data to implement individual fixed-effects models.

3.3. German income and expenditure sample and own surveys

In addition to the SOEP, we use the German Income and Expenditure Sample (*Einkommens- und Verbrauchsstichprobe* [EVS]) from the late 1980s and early 1990s.[22] Every five years, the German Federal Statistical Office requests detailed income and consumption data from tens of thousands of representative German households for various purposes, such as informing public policy. The data contain a variety of different

[19] Respondents report the number of hours spent on each activity during a typical workday (including Saturday) and Sundays. We cumulate the hours reported for the workday multiplied by six and add the reported hours for Sunday to obtain weekly time-use measures for all activities. See Appendix B for further analyses regarding the variable definition, showing that TV viewing is indeed more heavily affected on Sunday than during the workweek.

[20] Note that the average TV consumption of around 20 h per week in the SOEP data remains quite stable over the years in our investigation period and is consistently higher than the values reported by Oltmanns (1993). This could be due to differences in measurement, as, for example, the potential role of video is emphasized in the SOEP.

[21] Since there are no children in most of the households (see Table B1), we prefer using a dummy variable for having or not having children in the household in our empirical analysis rather than considering the number of children. Replacing the former with the latter would yield a statistically significant difference in the last column of Table 1 for 1987, but only when employing a *t*-test, not when using a Kruskal-Wallis test as an alternative that is less susceptible to outlier values. Notably, for the variables in Table 1, the Kruskal-Wallis test generally produces p-values that are rather similar to those from t-tests, especially for the 200kW instrument. We come to the same conclusions if we use data from 1988, when most respondents did not yet have access to private TV. Table B2 confirms the pattern of Table 1 when we again compare individual characteristics in treatment and control regions.

[22] We rely on data from the 1988 EVS wave (*Grundfile* 1) and the 1993 EVS wave (*Grundfile* 7). The Research Data Center of Germany's Federal Statistical Office prepared the 1988 dataset specifically for this project to allow for analyses at the municipality level. As we discuss in Appendix C, it was possible to infer the municipality where EVS participants lived in 1988 from interviewer records for most but not all areas of West Germany. The 1993 wave, by contrast, was already prepared and used in the EVS-based study by Bursztyn and Cantoni (2016) on the effect of TV on expenditures in eastern areas of Germany. Notably, the EVS also is the basis for related research on savings and consumption with a focus on East Germany (e.g. Fuchs-Schündeln 2008, Friehe and Mechtel 2014).

expenditure items, including health-related products and services. To investigate differences in behavior due to private TV access, we merge the EVS data with TV signal information at the municipality level. In Appendix C, we describe the process in detail, including limitations, and discuss the results of a complementary TV signal check, for which we use information on the number of TV sets in the household.

Finally, we conducted two surveys ourselves (for details, see Appendix D). First, in 2015, we ran a representative telephone survey of the German public on the topic of television to inform our discussion on external validity (see Section 5) and provide fresh evidence on the link between watching television and well-being, as discussed in the next section. Second, in 2025, we conceived an online survey to further complement the discussion in Section 5 about the external validity of our main findings based on the natural experiment in the late 1980s.

4. Empirical analysis

4.1. Correlational evidence

In a first analysis, we use data from our 2015 telephone survey and the SOEP for a preliminary correlational inspection. This allows us to juxtapose the evidence based on SOEP data from the 1980s with more recent evidence on the association between well-being and TV consumption. Based on representative data from our 2015 survey (see Table D1 for sample statistics), we can assess the generalizability of the negative correlation observed in previous research over time.

In our analyses, we employ ordinary least squares (OLS) regressions to link TV consumption to outcomes that reflect individual well-being (i.e. health and life satisfaction) and interpret these measures as continuous. This is commonly done by happiness researchers who consider individual fixed effects as most important for identification (Ferrer-i-Carbonell and Frijters 2004). Note that we follow this practice below and use the SOEP's longitudinal structure, as we transition to fixed-effects models to control for individual time-invariant characteristics.

Table D2 shows the relationship between TV watching and satisfaction outcomes from our 2015 survey. Consistent with the literature, we find that higher TV consumption is linked to lower health and life satisfaction scores on average. The results imply that zero TV consumption is connected to the highest satisfaction scores. Adding covariates does not qualitatively change this finding. For a comparison, the same table also shows the empirical relationships between TV watching and well-being in the SOEP data from the 1980s. Similar to the results from our 2015 survey, more TV watching hours correlate with reduced life satisfaction and health satisfaction. Furthermore, this aligns with evidence of increased health problems as captured by doctor visit data. When we add covariates, the results do not change substantially. Since the endogeneity between TV watching and well-being cannot be addressed by an even more comprehensive set of covariates, we turn to the private TV signal from the natural experiment.

4.2. Main analysis

4.2.1. Model

To identify the causal effect of TV on well-being, we exploit the panel structure of the SOEP data to identify within-individual variation in the occurrence of regional TV signals across survey years. Thanks to having information on the number of TV hours watched, we can move beyond reduced-form analyses and consider TV watching as the endogenous variable in our main analysis based on the following instrumental variable (IV) fixed-effects model:

Table 2
Effect of Private TV Signal on TV Consumption.

	TV consumption	
Private TV: NRW frequencies	1.210***	1.237***
	(0.384)	(0.377)
Private TV: all frequencies	0.854***	0.881***
	(0.296)	(0.294)
Private TV: min 10 kW	0.946***	0.971***
	(0.325)	(0.322)
Private TV: min 20 kW	0.983***	1.022***
	(0.337)	(0.332)
Private TV: min 50 kW	1.232***	1.282***
	(0.341)	(0.335)
Private TV: min 100 kW	1.267***	1.301***
	(0.388)	(0.383)
Private TV: min 200 kW	1.587***	1.628***
	(0.368)	(0.361)
N	20,278	20,278
Covariates		YES

Notes: The table shows the results of linear regressions with individual fixed-effects. The dependent variable is weekly TV consumption in hours. The explanatory variable is living in a county with private TV signals based on different definitions across rows. NRW frequencies include Düsseldorf and Wesel (see Table A1). The remaining frequency categories across rows correspond to the kW-based intervals displayed in Fig. 1. Each specification includes year fixed-effects. The set of covariates includes quadratic age, German nationality, household size, household with children, married, divorced, widowed, education, apprenticeship, income, and interview month. County-level clustered standard errors are in parentheses. Levels of significance are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: SOEP data are from 1987 to 1989.

$$TVWatching_{it} = \rho_0 + \rho_i + \rho_t + \rho_1 PrivateTV_{it} + \epsilon_{it} \quad (1)$$

$$Well-Being_{it} = \gamma_0 + \gamma_i + \gamma_t + \gamma_1 PrivateTV_{it} + \eta_{it} \quad (2)$$

In the first stage of our model, we regress TV watching on the private TV signal (1), and in the reduced form, we use health and happiness indicators as dependent variables (2). To calculate the local average treatment effect of TV watching on well-being, we only use the exogenous variation of $\widehat{TVWatching}_{it}$ from the private TV signal, assuming that the TV signal only affects well-being through TV watching:

$$Well-Being_{it} = \beta_0 + \beta_i + \beta_t + \beta_1 \widehat{TVWatching}_{it} + u_{it} \quad (3)$$

By employing individual fixed-effects (ρ_i, γ_i, β_i), we exploit individual changes in private TV reception, resulting in individuals watching more or less TV. We routinely control for any time trend in well-being or TV watching using time fixed-effects (ρ_t, γ_t, β_t). As a further step, adding covariates to the model allows for a separate check of the results across different specifications.

In the following, we conduct first-stage regressions to examine how different definitions of our instrument affect time-use, before turning to reduced-form and IV results for our main outcomes. We then discuss the exclusion restriction underlying the IV analysis and the results of several sensitivity analyses, before we conclude Section 4.2 with a heterogeneity analysis.

4.2.2. Time-Use

Table 2 shows the manipulation of TV consumption through potential instruments of access to private TV. In line with market shares of German TV channels in the late 1980s (see Section 2), having the opportunity to watch terrestrial private TV increases the time spent

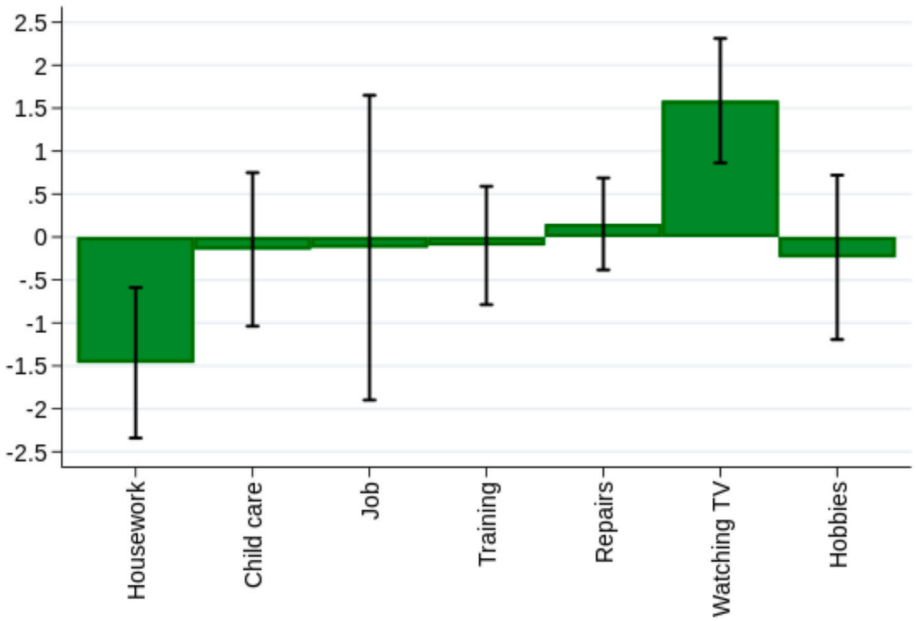

Fig. 2. Private TV Signal and Time-Use. *Notes*: The figure shows the results of separate linear regressions with individual fixed-effects. The dependent variables reflect time in hours per week that a person spends on various activities taken from the SOEP time-use battery. The explanatory variable is living in a county with 200 kW-powered private TV signals. Each specification includes year fixed-effects. Standard errors are clustered at the county level. 95 percent confidence interval levels are displayed. *Source*: SOEP data are from 1987 to 1989, N = 20,278.

watching TV.

The first definition of our private TV instrument in row one of Table 2 includes the two big NRW frequencies (see Section 3.1). Row two shows the results based on all private TV frequencies, including those with very low power. Regions with lower kW receptions are excluded from the definition of the instrument in the rows below. While considering all frequencies shows a significant effect, varying the kW threshold of frequency power sequentially reveals that more power generally increases the hours watched from below 0.9 h per week for all frequencies to more than 1.5 h per week for the most powerful frequency of 200 kW. In a separate column, Table 2 shows our findings are robust when adding covariates. Also, the results are similar when we employ the aforementioned month-based treatment identification by redefining the treatment status for individuals who lived in treatment counties and were interviewed late in 1988 after the annual SOEP fieldwork phase.

Accordingly, in line with our insights from examining balancedness (see Section 3.2), our preferred instrument is based on the 200 kW threshold, which allows for the strongest manipulation of TV consumption. We come to the same conclusion when we exploit TV ownership as a manipulation variable in our analysis of the EVS data (Appendix C).

In Fig. 2, we expand our time-use analysis to include other activities. For comparison, we include TV consumption as part of the seven time-use items. We find no changes for child care, work, training, repairs, and hobbies. This suggests that respondents differentiate between hobbies and TV watching since the latter increases significantly. Furthermore, access to private TV leads to a reduction of time spent on housework. Given that TV signals are unlikely to affect this activity other than through the effect of watching TV, we conclude that housework could be a possible substitute. This interpretation is supported further by the observation of a similar effect size for housework compared to the increase in TV hours.[23]

4.2.3. Main results

We now present the results of our main analyses on the role of TV consumption in people's well-being. These are based on four different outcome variables from the SOEP: life satisfaction and three health indicators. For comparison, we show the results across methods, always using the models without covariates (see Table B3 for the corresponding analyses with covariates).

Based on OLS regressions without consideration of exogenous variation in TV viewing, the first row of Table 3 shows an important finding, in comparison to the negative correlations in Table D2. Only the association with health satisfaction remains weakly significant, once we consider individual fixed-effects, whereas all other results are inconsistent with the idea that TV viewing has negative effects on well-being. While this demonstrates the importance of considering time-invariant characteristics when analyzing differences in health and happiness, our findings also indicate a self-selection phenomenon. Accordingly, unhappy and unhealthy types of individuals are overrepresented among more intense TV viewers.

The second row presents the findings from our reduced-form analysis where we regress well-being indicators on private TV receipt across columns. The results show no evidence of any health impairments from the health satisfaction measure due to the opportunity to watch more TV. Similarly, getting a terrestrial private TV signal has no effect on both visiting the doctor and the number of doctoral visits. For life satisfaction, we obtain a significantly positive effect, which is in contrast to previous research findings and our initial correlates (Section 4.1).

The remainder of Table 3 displays the first-stage and second-stage IV fixed-effects estimates where we use the occurrence of private TV signals via terrestrial frequencies as an instrument for changes in endogenous TV consumption. Across all three health indicators, we find no effect on individual health from watching more TV. As indicated by the F statistics, this zero result is not due to weak manipulation of TV watching. The life satisfaction result supports the idea that exogenously manipulated increases in TV viewing improve individual happiness. Accordingly, an additional hour of TV consumption per week increases the score by more

[23] Furthermore, we analyze the time remaining after subtracting the sum of all reported hours spent on all activities from a 24-hour day, as a proxy for sleep time. However, we find no effect of access to private TV on this residual.

Table 3
Effect of Private TV on Well-Being.

	(1)	(2)	(3)	(4)
Dependent variable:	**Health satisfaction**	**Life satisfaction**	**Visited a doctor**	**Doctor visits**
OLS	−0.004*	0.003	0.000	0.005
	(0.002)	(0.002)	(0.001)	(0.007)
Reduced form	0.101	0.291***	−0.011	0.152
	(0.104)	(0.078)	(0.017)	(0.286)
First stage	1.584***	1.586***	1.619***	1.887***
	(0.368)	(0.368)	(0.373)	(0.373)
IV analysis	0.064	0.184***	−0.007	0.080
	(0.063)	(0.065)	(0.011)	(0.155)
F	18.515	18.584	18.818	25.560
N	20,252	20, 234	20,259	16,619

Notes: Rows one to three show the results of linear regressions with individual fixed-effects. Row four shows the results of instrumental-variable regressions with individual fixed-effects. The dependent variables are health and life satisfaction on a 0-to-10 scale as well as visited a doctor and the number of doctor visits in the last three months across columns. The explanatory variable in row one is weekly TV consumption in hours. The explanatory variable in rows two and three is living in a county with 200 kW-powered private TV signals. The instrumented explanatory variable in row four is weekly TV consumption in hours and the instrument is living in a county with 200 kW-powered TV signals. The F-statistic result indicates the instrument's first stage power. Each specification includes year fixed-effects. In row one, robust standard errors are in parentheses. In rows two to four, county-level clustered standard errors are in parentheses. Levels of significance are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: SOEP data are from 1987 to 1989.

than 0.18 points.[24]

4.2.4. *Discussion of exclusion restriction and sensitivity analyses*

In this subsection, we discuss the credibility of our evidence, which seems to be at odds with some of the previous work on TV and well-being. While first and foremost this could be due to differences in the identification strategy, there is also a literature strand that helps us to explain our findings. According to the research on hedonic measures of momentary well-being during the day, watching TV is seen as a relatively joyful activity (Kahneman et al. 2004, Knabe et al. 2010, Bryson and MacKerron 2017). If individuals feel good while watching TV, then increased TV consumption implies more time spent in a good mood, which could explain the positive effect on life satisfaction observed in our study. Another question worthy of discussion is the assumption underlying our instrumental variable analyses. In fact, our IV results are valid if TV consumption is the only channel through which the television signal affects well-being. We discuss possible violations of this exclusion restriction now, before we conclude this subsection by providing a short summary of our extensive sensitivity analyses for our main results.

First, there could be a separate well-being effect linked to receiving more TV programs, based on the idea that having more options improves happiness per se. In our view this is not very likely. In fact, according to previous research on TV and life satisfaction, more variety in form of more TV channels does not necessarily make people happier (Benesch et al. 2010).[25]

Second, the exclusion restriction could be violated if programs on private TV were politically biased in favor of those receiving a certain channel. One might speculate that treated individuals became happier due to political favoritism if they had more politically convenient news coverage in their region. However, politics was certainly not the focus of commercial TV organizers; rather, entertainment offers predominated in their programs (see Appendix A2).[26]

Third, there could be negative externalities related to changes in the local infrastructure, similar to examples like wind turbines lowering real estate prices in the surrounding area (Dröes and Koster 2016, Andersen and Hener 2025). In case of terrestrial TV signals, one could even think of a direct health effect linked to electro-magnetic radiation (Zamanian and Hardiman 2005). However, even if those concerns were justified, such externalities cannot play a role in our investigation period, as no transmitter was built. Instead, people received additional signals from stations that already existed to broadcast public media programs on even more powerful frequencies.[27] Furthermore, the results of our study consistently show no evidence of negative effects on the well-being of people in regions with access to private TV via terrestrial signals.

Fourth, one might conjecture that the probability of receiving TV signals on powerful frequencies was higher in areas far from East Germany, whereas people living near the border experienced uncertainty surrounding the situation in the neighboring country. However, this cannot affect the results during our investigation period prior to the fall of the Berlin Wall (for more on this, see Section 5). Also, excluding regions at the border does not lead to different findings (see Appendix B), increasing our confidence that the exclusion restriction holds.

We further conduct a series of checks to discuss the robustness of our main findings in Appendix B. As shown in Table B4, we expand the number of treatment regions by lowering the kW threshold from 200 kW to 20 kW, thereby including more regions in western and northern Germany (see Fig. 1) where households were potentially able to receive private TV via less powerful frequencies. In Table B5, we employ several methods to calculate TV signals as alternatives to averaging square-kilometer raster values at the county level, and we increase the signal

[24] To put our evidence into perspective, we consider findings from previous happiness research based on SOEP data. With respect to the reduction in life satisfaction when individuals become unemployed, studies show effect sizes varying roughly between 0.5 and 1 on the 11-point scale (Clark et al. 2008, Kassenboehmer and Haisken-DeNew 2009, Chadi 2010). Accordingly, our results suggest that increasing TV consumption by about one or two weekly hours could compensate the unemployed for roughly a third or even more of their satisfaction loss. However, it should be added at this point that this applies to a setting with a certain baseline level of TV viewing (see Section 3.2) and a specific context, which we discuss in more detail in Section 5 concerning external validity.

[25] Our empirical setup allows us to shed some light on the idea that having more options to watch per se increases life satisfaction. If so, we would expect stronger happiness effects when receiving two private TV channels, instead of one. We can check this empirically by exploiting an overlap of two private TV channels (RTLplus and Sat.1) broadcasting on major frequencies in northern Germany. We are a bit cautious with conclusions from this analysis, for which we lower the signal power threshold from 200kW to 100kW, as only a few SOEP respondents were living in a county with this two-channel overlap. Nevertheless, the analysis shows that adding another private TV option does not additionally increase life satisfaction, which suggests that more choice does not matter per se.

[26] Regarding political bias on private television, the historical context in Germany in the late 1980s differs significantly from other settings, such as the media landscape in Italy where political tendencies were recognized and investigated (see e.g. Durante and Knight 2012, Barone et al. 2015), despite the involvement of Silvio Berlusconi in our context (see Appendix A1). Nonetheless, we can conduct an empirical test by identifying SOEP respondents who either have self-reported preferences for political parties or not, which serves as a proxy for lacking interest in politics. Subgroup analyses (in the vein of those conducted in Section 4.2.5) reveal no evidence of effect heterogeneity, which contradicts the idea that political bias could play a strong role in our findings.

[27] Consider the case of the Wesel transmitter station, which was built during the 1960s. The Wesel station had more powerful frequencies than the frequency, on which RTLplus was broadcast in the late 1980s. In line with our historical documentation (Appendix A1), public media programs had priority, whereas RTLplus received a remaining but still quite powerful 200kW frequency. Given the station's historical relevance, the Wesel transmitter (*Sender Wesel*) is covered on Wikipedia, where additional information can be found.

threshold for counties defined as treatment regions in four steps, from 50 dBuV/m to 65 dBuV/m in Table B6. In Table B7, we examine our decision to use signal strength thresholds for a binary distinction between treatment and control regions by employing a linear signal strength variable. We also replace our year-based treatment assignment with a month-based identification in Table B8, allowing us to consider particular late interviewees in 1988 as treated by private TV. In Table B9, we vary the sample to minimize the likelihood of households in control regions receiving private TV through alternative ways, for example by excluding counties that potentially received signals on low-power frequencies for a check with 'clean' control regions. In Table B10, we inspect our procedure concerning individuals who moved between regions during our investigation period. In Table B11, we expand our model by adding control variables such as survey-related factors, including day-of-the-week fixed effects and weather conditions. In Table B12, we add covariates reflecting local circumstances, including county-level population numbers and labor market figures. Finally, we check the definition of key variables by performing quantile-based analyses for TV consumption and both satisfaction variables in Table B13.[28] We conclude that these additional analyses confirm our main findings.

4.2.5. *Effect heterogeneity across socio-demographics and time-use patterns*

We further investigate the finding of a positive happiness effect of TV by examining groups that may be affected differentially by the treatment. Previous research on well-being considers females and young adults as particular interesting subgroups of TV viewers, since commercial broadcasters target viewers who may be more susceptible to advertisements (Benesch et al. 2010).[29] As shown in Table B14, a comparison of the point estimates by gender indicates that the happiness effect of private TV access may be stronger among females. Yet, a direct test using interaction terms yields no statistically significant difference. Similarly, it appears that our main finding is not driven by one specific age group. Motivated by the research of Durante et al. (2019), we also examine differences between low and high educated individuals, testing the idea of private TV as light entertainment for the uneducated. Higher-educated individuals indeed respond less positively to private TV than lower educated, but the effect is still significant for this subgroup, countering the notion that TV as light entertainment is only for the poorly educated. This is interesting in light of research on children's cognitive development that shows negative effects of private TV in more educated families (Hernæs et al. 2019). In another subgroup comparison, the happiness effect seems to be especially strong for those living in a household with children. Yet, the effect is also significant for households without children, so ideas like improved child-care cannot explain the positive effect of TV on life satisfaction.

To learn more about the role of television from the perspective of public policy, we can also use data on people's economic backgrounds to study possible heterogeneities between different income quartiles. Thereby, we aim to link our research with the debate on inequality in public economics, for which researchers also use SOEP data on subjective well-being (e.g. Ferrer-i-Carbonell 2005, Perez-Truglia 2020). Our analysis in Table B15 shows a robust pattern with no clear effect heterogeneity, similar to the results for educational background (Table B14). If anything, we find a less positive effect of TV on happiness among households in the highest income quartile, which may suggest that TV serves as an effective and cheap leisure opportunity especially for less wealthy people. However, given that the interaction terms reject the idea of significant effect heterogeneity in each case, we conclude that the happiness-increasing effect of TV is quite robust and rather independent of the individual socio-economic background.

Finally, we inspect subgroups across time-use activities, as the extent to which television makes people happier may depend on other activities that could be crowded out. In principle, TV might increase life satisfaction because the activity that was crowded out makes people relatively unhappy in comparison. According to Fig. 2, a possible candidate for this would be housework. By conducting median-splits, distinguishing between respondents with high versus low levels of pre-treatment time-use across all the activities, we can check if individuals who may benefit in particular ways from crowding-out respond more strongly than others when exposed to the private TV treatment. However, Fig. B1 shows a remarkable robustness of increased happiness across subgroups.[30] Accordingly, the adults in our setting generally benefit from TV, regardless of other activities. It appears that individuals are not yet at the optimal level of TV consumption, as an explanation for the increase in life satisfaction. This conclusion is re-enforced by the evidence on pre-treatment TV consumption, which reveals that even relatively heavy viewers can experience increases in happiness through watching more TV. For our setting where strong consumption means watching a few hours per day, we can confirm this finding in a quartile-based analysis where we find a significant TV treatment effect even among those individuals in the highest quartile of TV consumption prior to the treatment phase.

4.3. *Extension of time period*

4.3.1. *Long-run effects using SOEP data*

An interesting question is whether the happiness effect is short- or long-term in nature. As the SOEP time-use battery does not include information on TV consumption beyond 1989, we are restricted in our efforts to inspect the long-term effects via IV analyses, but we can expand the data for reduced-form analyses using private TV access as the independent variable without considering a manipulation variable. By

[28] The results from our quantile analyses of TV consumption provide empirical support for the linearity assumption underlying the effects on well-being. It is clear that increasing TV consumption to 24 h does not make people happier; yet, such extreme cases do not necessarily play a role empirically. Given that we do not observe significant changes in responses at the extremes but rather in the middle quantiles, the effects are driven by TV viewers with average levels of consumption rather than outliers with very high (or very low) amounts of hours watched. These results also alleviate concerns related to the use of scales for analyses of satisfaction. In this context, Odermatt and Stutzer (2019) discuss a phenomenon called rescaling, which means that respondents could be triggered to re-adjust their interpretation of the response scale. This might play a role in our analysis if this was occurring due to the TV treatment. A similar issue is that the perception of happiness might change over time due to TV. For more on this, see Appendix B where we also provide an empirical assessment of possible concerns regarding the use of satisfaction scales, motivated by the idea of Chen et al. (2022). Accordingly, we conclude that issues related to how respondents report satisfaction scores on the scale are not of concern for our findings. For recent research on the usefulness of response scales in the analyses of people's happiness, see Kaiser and Vendrik (2020).

[29] In Appendix A2, we discuss the potential role of advertising in our study. From this discussion, we conclude that there are no relevant differences in the content of commercials between private and public television.

[30] In line with our analysis of effect heterogeneity across socio-demographics, we do not find any significant interactions for the time-use subgroups analyzed in Fig. B1 when we interact the effect of private TV with high pre-treatment time-use based on median-splits. When we adjust the subgroup definition by assigning individuals that are equal to the median to the low pre-treatment activity subgroup, our results remain the same, aside from two minor exceptions. First, for housework, we find a weakly significant interaction effect. Multi-tasking could play a role here, so that people are happier than before because they watch more enjoyable television while doing household chores. However, the life satisfaction effect remains significantly positive for both subgroups. Second, for the subgroup with high pre-treatment hours spent on repairs, we cannot rule out that the life satisfaction coefficient is zero. However, we also cannot rule out that the effect is similarly positive to the coefficient of the low pre-treatment subgroup, which is reflected in an insignificant interaction effect.

extending the investigation until 1992, we add several treatment years until private TV became increasingly accessible across Germany. We then add the survey waves of 1985 and 1986 to raise the number of treatment-free years without private TV signals, allowing for a balanced number of treatment and control years.[31] In line with our short-run analysis, we also exclude cases of individuals moving between counties within the investigation period to allow for clustered standard errors when we use the following model:

$$Well-Being_{it} = \gamma_0 + \gamma_i + \gamma_t + (T_t \times PrivateTV_i)'\delta + \eta_{it} \quad (4)$$

For a dynamic reduced-form regression analysis, we consider individual fixed-effects (γ_i) and time fixed-effects (γ_t) as before in model (2), but we add a vector of interactions representing the effect of living in a private TV region for each year. We thereby determine the evolution of hypothetical (pre-treatment) and actual TV effects for the well-being measures that are continuously available in the SOEP across years (which is not the case for information on doctor visits). To allow for an investigation into possible pre-trends as well as long-run effects of TV, we therefore define the independent variable ($PrivateTV_i$) as living in a treatment region with a private TV signal starting in the late 1980s, but independently of the survey year, which differs from the $PrivateTV_{it}$ variable used in the models above for our short-run analysis (Section 4.2).

We visualize the interactions between the years and the time-invariant treatment region dummy in Fig. 3 for health satisfaction and life satisfaction across panels. As a first insight, both illustrations show no pre-trends prior to treatment. Panel A confirms that private TV has no negative effect on health satisfaction across all four treatment years in comparison to the 1988 baseline. The illustration even suggests minor positive effects that are not instantaneous but seem to grow slowly and reach statistical significance in the final year of the investigation period. In contrast, Panel B shows that the positive life-satisfaction effect of private TV sets in immediately in 1989, which is in line with our short-run results. Except for 1991, the happiness effect is continuously strong and positive, with no evidence for a fading-out, despite the increased availability of private TV via cable and satellite in the control regions.[32]

The results in Fig. 3 indicate that the happiness effect of TV is not a short-term phenomenon. Individuals did not appear to just watch private TV simply because it was initially a novel and exciting experience for them. Concerning health, the results contradict the idea that television is harmful for adults. Despite a year-long TV treatment effect in our setting, this did not seem to be the case. Conversely, our evidence on health satisfaction raises the question whether television may even improve health. One interpretation is that increases in life satisfaction could have a positive spillover impact on health, as individuals in a positive mood may be more immune to psychological issues such as depression.[33] This interpretation is amplified by the visual evidence in Fig. 3, which shows that the positive life-satisfaction effect happens first, and positive health-satisfaction effects trail behind.

We discuss additional analyses that are specific to the long-run investigation period in Appendix B, where we pay special attention to role of regions potentially receiving private TV on low-power frequencies for the robustness of our findings (Table B17) and use further health indicators based on hospital and doctor visits (Table B18). While this does not reveal any effects of TV, it is important to note that going to the hospital is usually a consequence of severe health problems, so that minor variation in health due to mood changes might not be reflected in such an indicator. Considering that the evidence against detrimental long-run health effects is now well-grounded on a variety of indicators and approaches, we discuss the possibility of positive (or negative) health effects due to television by turning to a different dataset in the following.

4.3.2. *Using EVS data to study health-related expenditures*

We proceed by investigating the effects of private TV on health-related consumer activities in the EVS data. Particularly in light of the recent work on how TV could affect health behavior (Principe and Carrieri forthcoming), this may promise insights into the underlying mechanisms to understand the possible effects of TV on individual health. Accordingly, we analyze changes in household expenditures on various health-related products and services, such as doctor services. Using the EVS waves of 1988 and 1993, we compare people in municipalities receiving private TV on a powerful terrestrial frequency that began broadcasting in the late 1980s with people in municipalities that did not receive such a signal at that time. Our main outcomes are informative about health-related behaviors and are examined using the following difference-in-differences model, which is similar to model (4) for our long-run SOEP sample:

$$Expenditures_{it} = \delta_0 + \delta_1 PrivateTV_i + \delta_2 1(1993)_t + \delta_3 PrivateTV_i \times 1(1993)_t + \zeta_{it} \quad (5)$$

We deviate from the models used in our SOEP analysis since we cannot consider individual fixed-effects when analyzing two waves of the EVS due to its repeated cross-sectional nature. Nevertheless, we examine possible pre-treatment differences between individuals living in different regions (treatment versus control), as revealed in the regression analysis by the $PrivateTV_i$ effect for 1988. Furthermore, we check the robustness of our findings for only 'clean' control regions by excluding municipalities that received signals from transmitters on less powerful frequencies.[34] Note that we reaffirm the power and signal strength definition of the private TV signal by using information from the EVS on TV set ownership as an alternative indicator for changes in TV consumption in additional analyses (see Tables C1 and C2).

Column 1 in Table 4 demonstrates that annual expenditures for doctor services were significantly higher in 1993 compared to five years earlier (row one). In 1988, there were no visible differences in such expenditures between treatment and control regions of private TV (row

[31] The SOEP provides no regional indicators for the respondents' county in 1984, which is why we cannot include this wave in our analysis. Given that the item on TV consumption was removed from the SOEP time-use module after 1989, the maximum period for additional first-stage analyses extends from 1985 to 1989, as the only treatment year. We present such analyses based on model (4) in Table B16, which may inform about possible pre-trends.

[32] Historical circumstances may be relevant in understanding the life-satisfaction effect of private TV in 1991, a year marked by major conflicts. While tensions in Yugoslavia increased severely, setting the stage for war and, ultimately, the country's disintegration, the Gulf War in Iraq was another major conflict that drew considerable attention in Germany. Given its focus on entertainment (see Appendix A2), it is possible that the potential of private TV to make people happier was limited during a time when hundreds of thousands of Germans marched in protest, while the SOEP fieldwork phase of 1991 was taking place.

[33] In this context it is noteworthy that our quantile analysis shows that private TV especially reduces the likelihood of very low levels of happiness (Table B13). For a study on the idea of happiness as a cause of health, see Argyle (1997) who highlights the role of positive moods.

[34] Excluding low-power frequency regions may be important in the EVS analysis due to the increased geographical precision of TV signal identification. In our SOEP-based analysis, a low-power signal may be insufficient to affect outcomes countywide, but within counties, at the municipality level, such local frequencies may have an impact. Note that in our clean control regions analysis, we also remove a few rather unpopulated areas where people could receive private TV on a 200kW-powered frequency after 1989. As discussed in Appendix B, where we check our results based on the long-run data, this refers to the case of the transmitter Kassel close to the East German border.

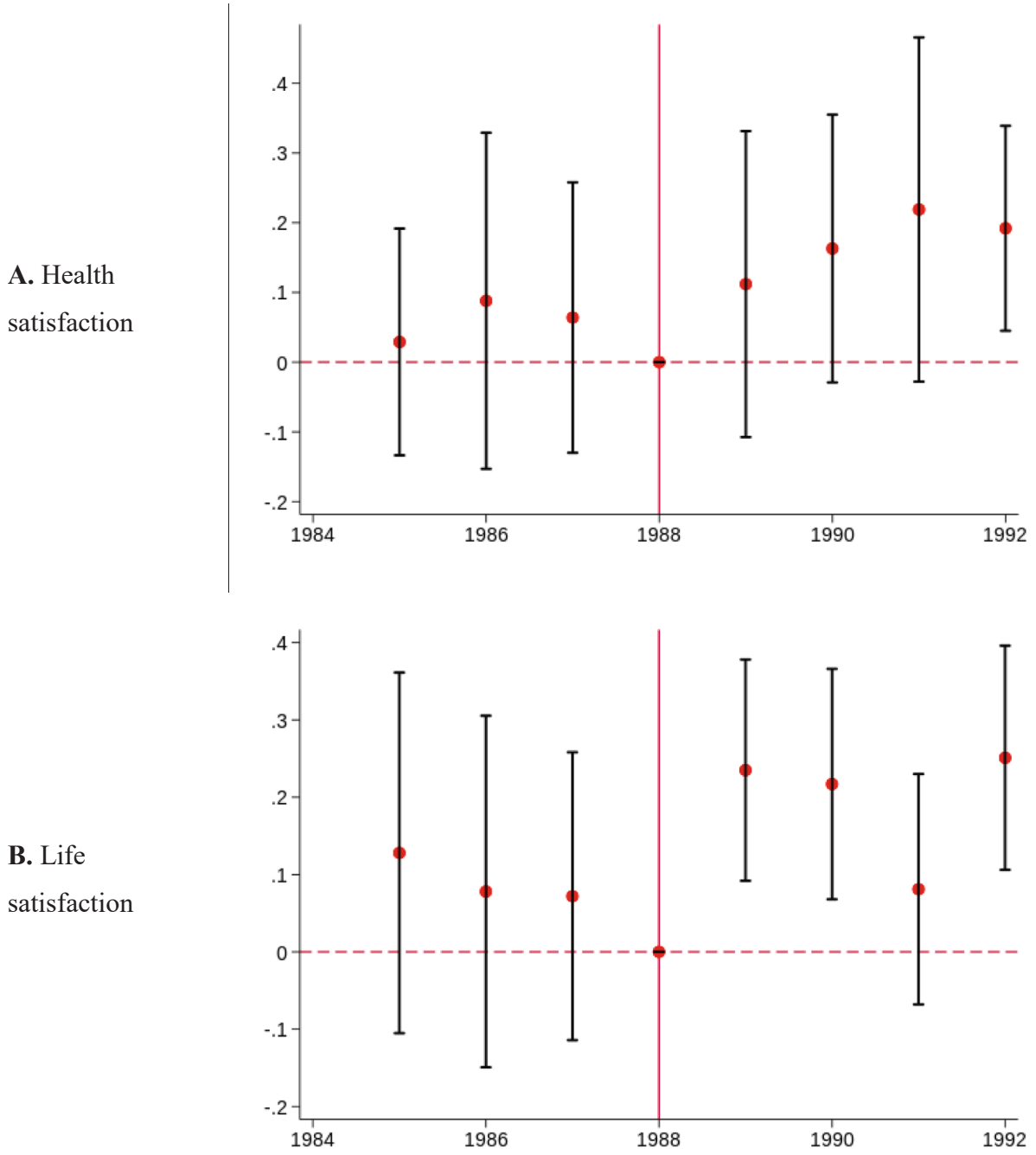

Fig. 3. Dynamic Analysis of Private TV Signal Effects on Well-Being. *Notes*: The illustrations are based on a dynamic effects reduced form model (with individual and year fixed-effects) and show coefficients for interactions between a time-invariant variable defined as living in a county where households could receive the 200 kW private TV signal from the late 1980s onwards and each survey year from 1985 to 1992 (with 1988 as the baseline year). Life and health satisfaction are both measured on a scale ranging from 0 ("completely dissatisfied") to 10 ("completely satisfied"). Standard errors are clustered at the county level. 95 percent confidence intervals are shown.
Source: SOEP data are from 1985 to 1992, N=58,813 in Panel A and N=58,734 in Panel B

two). For the main effect of private TV on services by doctors, we observe a weakly significant effect (row three), which becomes slightly stronger and significant at the 5% level for the smaller dataset with only clean control regions in column 2. While this seems to contradict the zero result for doctor visits in the SOEP (Table 3), the effect size is small, as 60 Deutsche Mark (DM), the currency back then, translates into roughly 45 Euro in 2020, when accounting for inflation. Also, the effect is not robust. Using additional household information from the EVS as covariates in our regression model renders the effect insignificant, and the same is true when we add region fixed-effects using dummy variables for all municipalities. Finally, it is important to note that most Germans are covered by the social healthcare system and do not pay directly for most doctor services. Hence, instead of increased use of common doctor services, the effect could be due to a change in the type of services requested, as a possible result of higher awareness for specific health concerns as displayed on TV.

Further evidence from employing the same approach on other EVS variables in Table 4 supports the notion of increased health awareness rather than health problems, as a consequence of watching private TV. On the one hand, if treated individuals went to the doctor because of

Table 4
Health-Related Expenditures.

	Doctor services		Pharmaceutical products	
1993	158.128**	145.554**	−5.591	6.838
	(11.673)	(14.814)	(7.162)	(8.894)
Private TV	−7.107	17.123	−5.482	6.145
	(22.861)	(22.373)	(11.338)	(11.512)
1993 × Private TV	61.942*	74.516**	−21.229	−33.657**
	(32.521)	(33.778)	(15.670)	(16.534)
N	65,587	38,294	65,587	38,294
	Skin and body care products		**Private health insurance**	
1993	120.851**	115.600**	527.469**	508.630**
	(3.799)	(5.351)	(22.613)	(23.844)
Private TV	−12.124	−6.253	−43.378	−5.681
	(8.298)	(8.505)	(39.875)	(39.054)
1993 × Private TV	49.071**	54.322**	134.160**	152.999**
	(9.083)	(9.834)	(61.760)	(62.225)
N	65,587	38,294	65,587	38,294
Clean control regions		YES		YES

Notes: The table shows the results of difference-in-differences regression analyses. The dependent variables are annual expenditures (in DM): doctor services, pharmaceutical products, skin and body care products, and private health insurance contributions (including full insurance and additional insurance contributions). Private TV is a time-invariant variable defined as living in a municipality with 200 kW-powered private TV signals from the late 1980s onwards. Clean control regions is a sample restriction that excludes from the set of control regions all municipalities with access to private TV on frequencies lower than 200 kW or with access to private TV on 200 kW-powered private TV signals that began broadcasting in the early 1990s. Municipality-level clustered standard errors are in parentheses. Levels of significance are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: EVS data are from 1988 and 1993.

severe health issues, we would have expected to see similar evidence for pharmaceutical products. However, the results do not support this. If at all, there seems to be a reduction in expenditures on pharmaceuticals, which even becomes statistically significant when clean control regions are used. On the other hand, individuals in treatment regions spent more on skin and body care products as well as on private health insurance. Both could be influenced by what people see on private TV and indicate higher health awareness.

Regarding the evidence on pharmaceutical products, it is worth noting that our starting hypothesis was that TV reduces health. The EVS data analysis does not support this premise, which is in line with our SOEP-based analysis. Given our results, another interpretation is that TV increases individual health. In our interpretation of the evidence, there are two possible mechanisms that could explain such a positive health effect: First, watching TV may prevent psychological distress by improving mood. Second, watching TV may improve health-related behaviors by raising health awareness. In the absence of further evidence, we conclude that positive health impacts of TV are possible.

5. Discussion

Across several approaches, we find overall positive effects of TV watching on well-being in a Western population of adults, which raises the question of external validity. To learn more about the generalizability of our results, we discuss several potentially relevant aspects.

Television content. One may argue that commercial TV in West Germany differs from other types of television, such as television in the United States. If so, this could be relevant for our discussion of external validity, as previous studies (see e.g. Kirkorian et al. 2008, Durante et al. 2019) consider the quality of the program as a factor determining whether TV has positive or negative effects on individuals. However, as discussed in Appendix A2, there is a strong similarity in content to U.S. television. In this context, we also discuss possible differences between public and commercial TV in West Germany. Accordingly, we conclude that commercial TV in Germany shares some characteristics with public TV and differs mainly in that it is even more similar to the entertainment television offerings that people watch in the United States. Finally, we discuss the changes in TV programs over time. Experimental results from our 2025 survey show that people react differently to the programs (Table D3), as today's TV is perceived more negatively compared to TV shows from our investigation period, but we find no evidence of possible effects on psychological measures (for details, see Appendix D).

Novelty effect. Another question is whether the increase in life satisfaction that we observe is due to a novelty effect. Despite the German peoples' low expectations and negative attitudes toward television (Appendix A1), one may suspect that being among the first to receive a novel TV program with a different style and format may explain our positive result. However, our data from the 2025 survey do not support this (see Appendix D). Also, the results from our long-run analysis (in Section 4.3.1) are inconsistent with the idea of such a novelty effect.

Historical context. Similarly, one could argue that the events surrounding Germany's re-unification in 1990, as another historical incidence of possible relevance in our research context, represent an aspect of our setting that influences the generalizability of our results. Although our time fixed-effects control for the overall impacts of such events, this could nevertheless have undermined the positive effects of private TV in a situation of widespread happiness. However, as we discuss in Appendix D, the fall of the Berlin Wall unlikely plays a role for the results in our paper for a variety of reasons, including the diversity in opinions and perceptions regarding the events surrounding the re-unification process as well as the fact that private TV was not particularly relevant in this context. Given the timing of SOEP interviews at the beginning of the year, it is important to note that the unexpected events surrounding the fall of the Berlin Wall in late 1989 have no bearing in our main analysis from 1987 to 1989 (for a review of the large literature exploiting the surprise effect of Germany's re-unification, see Becker et al. 2020). Since our long-run analysis confirms a positive effect on life satisfaction, we conclude that the fall of the Berlin Wall does not play a major role in our study.

Life-cycle perspective. As we find evidence of positive well-being effects for a time window of several years, one may wonder to what extent there could be more negative effects that come to light in an even longer time window. With respect to TV consumption, one could ask whether people's 'later selves' may feel unhappy about the decisions of their earlier selves, despite the initial gains in well-being through television. Thus, in our 2025 survey, we examine a cohort of individuals who were exposed to private TV decades ago and ask them about their time-use back then in relation to various leisure activities (Fig. D1). As detailed in Appendix D, we then ask them whether they would change their earlier selves' decisions if they could. A considerable number of respondents confirm this, but almost exclusively in relation to the leisure activity of watching TV (Fig. D2). Having said this, the application of several measurement instruments consistently shows that the majority rejects the notion of such 'late regret' and offers various explanations, such as informational and educational benefits of TV, to justify past behavior. Further research is needed to investigate this behavioral phenomenon and the heterogeneity of people's views on earlier time-use decisions, as revealed by our survey.

6. Conclusion

Despite extensive research on the economic and social impacts of television, evidence is lacking to answer the question of why watching TV is one of the most popular activities. In contrast to other research in this area, our study shows that individuals do not incur health impairments from watching TV, and they certainly do not experience unhappiness as a result. Quite the contrary, our evidence from a natural

experiment in West Germany suggests that the answer to the question "Does watching TV make us happy?" (Frey et al. 2007) could be "Yes.".

In terms of policy implications, the results of our study seem to indicate that the proliferation of television is a success story. First, we reject claims that watching TV is necessarily bad for health and hence a major public-policy concern. While we want to be clear that our study does not inform about the lifelong consequences of excessive TV viewing, including possible addiction, we argue that increases in TV consumption of one or two hours per week, even for longer periods, do not threaten health in an adult population. As shown by recent studies on television (Nieto and Suhrcke 2021, Oberlander 2021), this can be different when it comes to the health of children. Second, our study is the first to provide evidence on a happiness-increasing effect of television, which is good news if one considers maximizing national happiness as a public policy goal. Third, from the perspective of the inequality debate, television has interesting features, as it seems to be an inexpensive leisure activity that makes both wealthier and poorer people happy regardless of their economic circumstances and does not exacerbate existing health disparities. Fourth, television can serve as an effective policy instrument, thanks to its appeal to the public, and could be used to influence views and behavior, as is implicitly or explicitly suggested in research on edutainment offers (Kearney and Levine 2019) and development policies (La Ferrara 2016). While the reactions to TV may be different in other countries, there is reason to also expect positive impacts elsewhere when television improves happiness even in a rather TV-skeptical population of West Germany (Appendix A1).

Having said this, one could also draw very different policy conclusions. In fact, given the manipulative nature of TV, as demonstrated in research on political bias (DellaVigna and Kaplan 2007, Enikolopov et al. 2011, Durante et al. 2019), our findings explain why individuals struggle to resist the TV set since it makes them happy without inducing any apparent and immediate costs linked to ill-health. Hence, another interpretation of our findings is that individuals maximize their own well-being, while TV consumption leads to potentially negative externalities. This narrative is reinforced by the findings on TV affecting social outcomes, as listed in the introduction, such as the destruction of social capital. Moreover, the effects of TV on the family in the form of higher separation rates and even lower fertility (Bönisch and Hyll 2023) may be particularly important in developed countries such as Germany, facing demographic and economic challenges as a result of historically low birth rates. Intriguingly, many examples of negative externalities were pointed out as drawbacks of television by those attempting to defend West Germany's national ban on private TV, such as Germany's former Chancellor Helmut Schmidt, who once described television as "dangerous" (Appendix A1). While the failure of the proponents of the ban led to a unique and fascinating natural experiment, one may wonder now whether the proliferation of television has made people happier at the expense of the very consequences that TV skeptics warned about long ago.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpubeco.2026.105600.

Data availability

The authors do not have permission to share data.

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