# Divergence and Reconvergence:
# Health Disparities Before and After German Reunification

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*"From Stettin in the Baltic to Trieste in the Adriatic, an iron curtain has descended across the Continent. Behind that line lie all the capitals of the ancient states of Central and Eastern Europe. Warsaw, Berlin, Prague, Vienna, Budapest, Belgrade, Bucharest and Sofia, all these famous cities and the populations around them lie in what I must call the Soviet sphere…."*

*Winston Churchill*
*March 5, 1946*

## Introduction

It is generally accepted that, all else equal, economic development and prosperity lead to better health and longer lifespans in modern societies.[1] At no other point in recorded history have humans enjoyed lives that are longer or less burdened by threats such as infectious disease than in today's post-industrial revolution period. Over the 20th century—a period defined by rapid advancement in these areas—average life expectancy at birth in the United States increased from 47.3 years in 1900 to 78.1 years in 2008, an unprecedented 65 percent gain representing 30.8 additional years of life per person. In short, we know that, as expressed by one of the field's leading experts speaking about Western societies, "Richer, better-educated people live longer than poorer, less-educated people."[2]

We also know that there have been times throughout history in which entire societies have been abruptly cut off or isolated from this march toward prosperity. A case in point—and the subject of this paper—is the division of post-war Germany into the separate and distinct countries of East Germany and West Germany. During this division, East Germany descended into gradual economic and social decay.[3] Declining living standards and stagnant labor productivity rendered the East German economy unattractive for investment and uncompetitive

on the world stage.[3] At its comparative low point in 1989, right before reunification, East Germany's GDP was at just 13 percent of that of its Western counterpart.[4]

While the economic disparities between East and West Germany have been studied at length, what we do not know as much about is how these differences translated into measurable health disparities. We are still learning, for instance, how much divergence there was in health and life expectancy. We are still learning who was affected most. Likewise, since we are now in a post-reunification period, we have the opportunity to examine who benefits the most from reunification. We can also begin to ask what policies might be called for, either for modern Germany or for the world's next two-country reunification, wherever it may occur. This analysis looks at the available data and literature and suggests some answers to these questions.

**Background & Historical Context**

In the aftermath of World War II, Germany was divided by the two main global blocs of power. The Western Allies assumed general direction over the government, economy, and society of West Germany, while the Eastern Soviets directed the same over East Germany. The capital city of Berlin, located in the Soviet-controlled Eastern zone, was also split several years later, with the Soviets taking control of the eastern part of the city and the Allies controlling the western half. Thus for the forty years following World War II—essentially the span of the Cold War—Germany and its people remained divided.

The West German and East German approaches to government, social order, and economic development differed greatly during this period. West Germany more closely embraced democratic institutions, the "achievement principle" of the market economy, and a moderate role for the government in society.[5] By contrast, East Germany was established with formal mechanisms for central planning and control, higher expectations for the role of

government in society, and Soviet-aligned socialist political institutions.[5] With stark political—and in some cases military—boundaries in place, these two societies had little ability to intermix, balance each other, or trade influences the way neighboring countries generally do.

As the 1950s and 1960s carried on, it became apparent that the conditions and experiences of East and West were starting to diverge.[6,7] In the early years of the division, West Germany received American aid through the European Recovery Program (also known as the Marshall Plan), leading to what was called at the time the "Economic Miracle."[8-10] In the 1970s and 1980s, West Germany also enjoyed high industrial productivity from open trade policy and domestically cultivated technological advancements.[8-10] By the late the 1980s, life expectancy for West Germans had strongly risen from 71 in the mid-1950s to about 79 for women, and from 66 to about 72.5 for men. West Germany, by most accounts, thrived.

East Germany, by contrast, stagnated. Enforced collectivization of farming resulted in lower food production, which in turn led to civil unrest and factory protests.[11] Price controls hampered the efficient sale of goods and allocation of production resources.[12] Individuals who could afford to flee the country did so, voluntarily accepting refugee status elsewhere in Europe. By the late the 1980s, life expectancy for East Germans had only risen from 71 in the mid-1950s to about 76 for women, and from 66 to about 70 for men. Although the country did relatively well in comparison to other eastern European countries—the "brightest star … in a dim socialist economic universe" according to one expert—East Germans were losing ground against their main economic referent, which was West Germany.[3]

Ultimately, after years of decline, growing discontent, and with a crumbling Soviet Union as its progenitor and protector, in the late 1980s prospects for a reunified Germany began to emerge. In 1989, distrust with the political system among East German voters led to demonstrations and calls for change. A failed diplomatic visit in October of that year by the Soviet leader Mikhail Gorbachev turned the popular focus to the city of Berlin and its divisive wall. A short time later, in November 1989, the Berlin Wall fell and the city was reunified. This

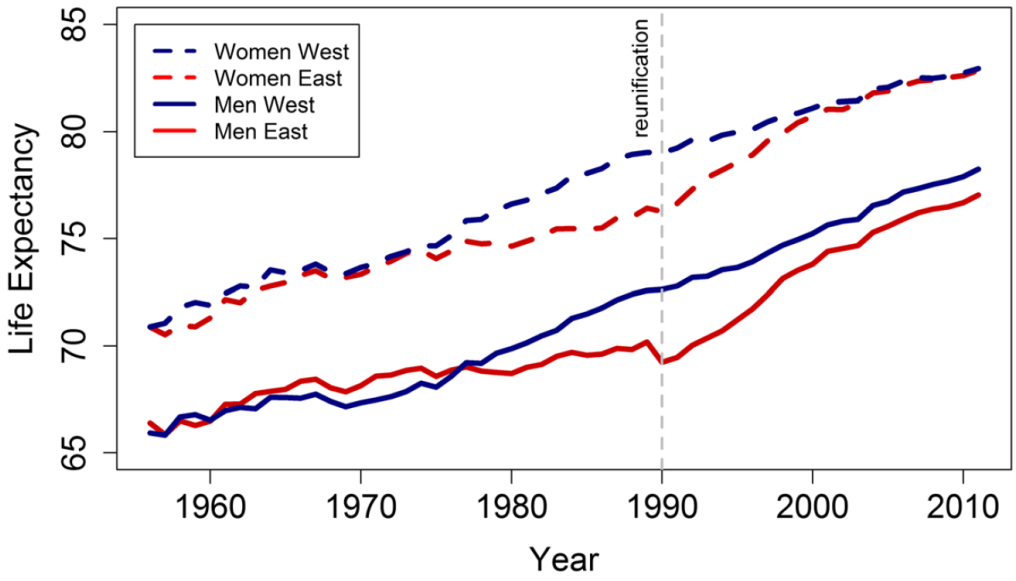
rapid turn of events made the full reunification of Germany a *fait accompli*, and the union was made official on July 1, 1990.

## Results

Researchers recently have begun to uncover the extent to which health-related disparities developed between the two Germanys during the separation (i.e., from the late 1940s to 1990). These range from basic measures such as life expectancy and general morbidity from cardiovascular disease, to specific discrepancies, such as cancer survival rates. In addition, now that we are a full 25 years after reunification, enough time has passed to observe whether many of the health measures that had diverged during the cold war have reconverged.

Perhaps the most all-encompassing health measure to look at is life expectancy. In 1950, at the start of the political diversion, life expectancies for East and West Germans were identical: 66 years for East and West men, and 71 years for East and West women.[13] (Notably, these are identical with U.S. life expectancies for males and females at the same point in time.) During the Cold War, life expectancies for all groups (i.e., men and women, East and West) increased, but at different rates. As pointed out, by the late 1980s, life expectancies were 70 and 72.5 for East and West men, respectively, and 76 and 79 for East and West women.[9] After reunification, this measure fortunately start to reconverge. The trend for men and women of the West continued on its upward trajectory, while the East “caught up” (notwithstanding a very brief drop for men in the initial months of reunification, which soon turned positive). By around 2008, all of the gap in life expectancy for women had been closed, along with most of the gap for men (see Figure 1).

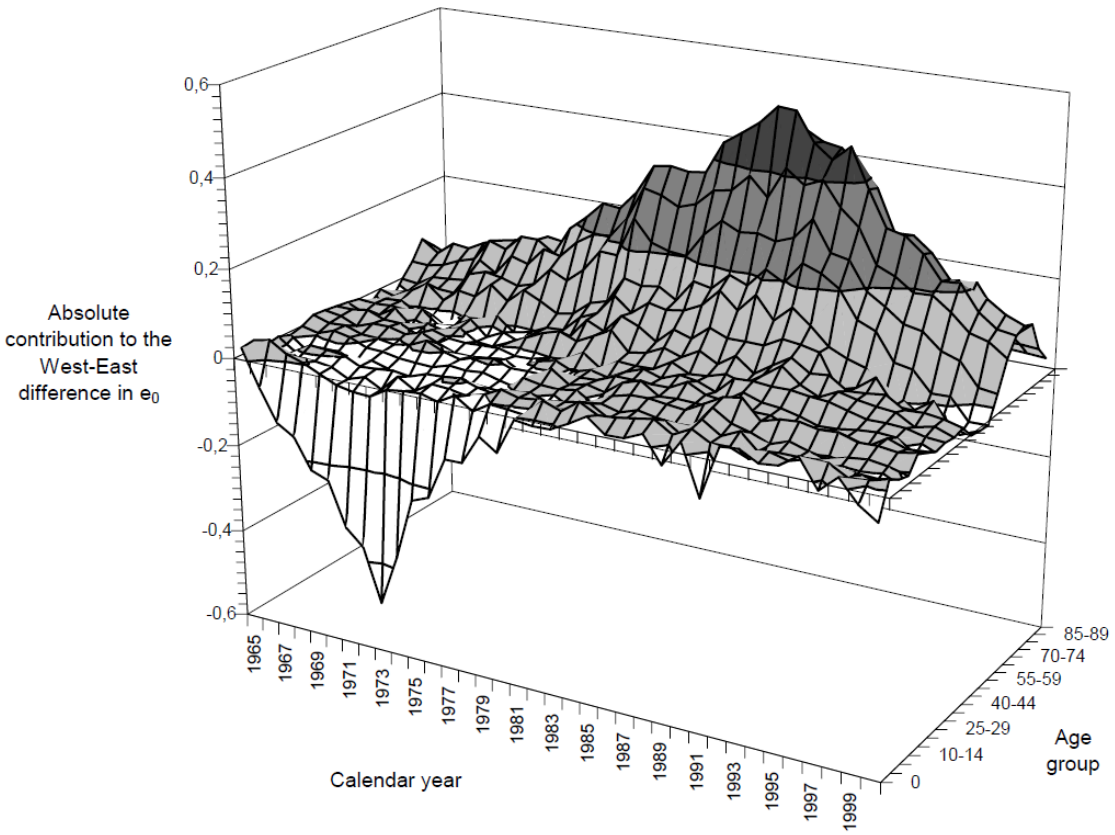
**Figure 1.** Life expectancy at birth for East and West Germany, before and after German reunification in 1990. Graph as presented in Vogt and Vaupel (2015); based on data from the Human Mortality Database




Morbidity—the quality of being in a state of disease—is another area in which disparities arose between East and West Germany. Cardiovascular disease, the leading cause of death not just in Europe but also in the United States and most of the western world, is one of the most important diseases in explaining the East-West difference. Of the four major risk factors for cardiovascular disease, East Germany generally fared worse on all counts. East German males were more likely to smoke cigarettes, more likely to have hypertension, more likely to have high cholesterol, and more likely to be obese.[14] When stratified by educational attainment, the only exception to this pattern among men was that highly educated East German men were slightly less likely to smoke than highly educated West German. Similarly, East German women were less likely to smoke than their Western counterparts (at all levels of educational attainment), but they were more likely to have hypertension, more likely to have high cholesterol, and more likely to be obese.[14] The inability of East Germany to reduce cardiovascular and circulatory disease,

particularly among the elderly (see Figure 2), was a main driver in the disparity in life expectancy, although some of this lost ground has been regained post-1990.[8,9]

**Figure 2.** Age-specific contributions to the difference in life expectancy at birth between women in East Germany and West Germany. Graph as presented in Luy (2004)




A final major area in which East-West health disparities existed is cancer. In the 1970s and 1980s, cancer survival rates were lower in East Germany than in West Germany. East German five-year survival rates around this time were approximately 28% for colon cancer, 46% for prostate cancer, and 52% for breast cancer. West German five-year survival rates for a similar time period were 44% for colon cancer, 68% for prostate cancer, and 68% for breast cancer. Again, these differences persisted until reunification, when five-year cancer survival rates for

East Germany began to reconverge with those of the West. By the early 2000s, studies had found that the relative cancer survival between East and West were similar for most cancers. In 20 out of 25 types of cancer, the survival gap is now less than 3%.[15] Large differences only persist for a small number of cancer types, such as esophageal cancer, gallbladder cancer, and skin melanoma.[16]

Other differences also exist in health and well-being measures such as fertility, the frequency of caesarian section births, and variation in treatment of specialized diseases such as hemophilia. The influence of these, however, is comparatively small.[8,17-19] In some cases, such as fertility, their meaning is equivocal, as the average number of children that women give birth to is not a strong indicator of standard of living (though one could potentially extract some insights about perceptions of prosperity, security, and opportunity cost).[8,17-19] Finally, some disparities based on apparent data have been proffered but are not broadly accepted. An example of this is infant mortality, in which original data suggest that infant mortality was far lower in East Germany. Researchers examining this area have all but concluded that the difference is a statistical aberration having to do with the definitions used in tabulating live births.[8]

## Discussion

The postwar German experience has been described as a grand and unique natural experiment.[20-22] East and West Germany, with nearly identical demographic compositions, were placed under different political and socio-economic structures, causing vastly different health-related and demographic conditions to emerge.[8] The differences in how their respective governments shaped their societies were not trivial, and the period of division was long enough that genuine, large-scale societal effects to take hold. What is more, the two countries were

peacefully reunified without war or military coup, preserving the chance to investigate whether divergences reconverge after the “intervention” is ended. Having such a perspective is rare.

Interestingly, most of the divergence in health disparities came not immediately in what was initially a socially tumultuous phase but in the last fifteen years of the duration of the split. From the mid-1950s to the mid-1970s, East-West disparities in life expectancy were small. In fact, for part of that time, life expectancy was *higher* for East German men than for West German men.[13] It has been proposed that this was due to East Germany being able to achieve a very low mortality among a subset of the population: working-age men. Because healthy workers were critical to the Soviet-inspired view of the labor force as central to society, the priorities of the East German government included advancing occupational medicine and creating special incentive programs for workers deemed most economically valuable.[8] Among other things, factory workers were given subsidies for participating in sports, and breaks throughout their work day during which they were expected to exercise.[23]

The special benefits in East Germany, however, tended only to apply to workers. This created a different kind of favored social class—one that differentially helped laborers at the expense (or at least the neglect) of certain other individuals, such as the elderly. Workers were kept healthy, but few resources and little priority were given to the elderly in East Germany.[13,24] These were the older individuals who tended to stay behind when the young and the skilled migrated West. Retired from the work force and in need of care, this disfavored group was seen as a burden on East Germany’s economy and social pension system.[24] Not until about four years after reunification did average East German pensions converge with that of the West. Mortality among individuals 65 years and older eventually converged as well, although that took approximately six years.[9]

For all the differences between West Germany and East Germany, they both had their own internal social gradients. For instance, with regard to the distribution of risk factors for cardiovascular disease, the two societies followed similar patterns. Research has shown that

social class gradients were strongest for obesity and cigarette smoking, and weakest for high cholesterol and hypertension.[14] The literature in this area, however, is quite limited. In the previously referenced study, educational attainment alone was used as the indicator of social class. It would be useful to know if and to what extent a similar gradient might exist for an income-based class indicator—or better still, a class indicator composed of multiple variables, thus perhaps capturing more accurately a measure of true socioeconomic status (SES).

Factors of race and ethnic prejudice were largely absent in the German experience, likely due to Germany's relative lack of diversity during this time. In Central and Eastern Europe, the Cold War was a time of political strife more than cultural or racial strife. Researchers did find ethnic prejudice present in East Germany against foreigners, but these reported experiences primarily entailed school-aged students.[25]

By and large the research on East and West Germany show that the splitting of the two countries led to a divergence across a number of health-related measures. In the early 1990s, before sufficient data were available, a number of potential explanations were put forth for the overall gap in life expectancy.[8] They included:

- Deteriorating environmental conditions in Germany;
- Health consequences of uranium mining and storage;
- Adverse East-West migration;
- Unfavorable working conditions in East Germany; and
- Psychological reactions to political oppression.

In light of additional research, as well as with the benefit of observing more than two decades of reunification play out, the answer to the question of what factors led to the reconvergence of health between East and West appears to be threefold: 1) dissemination of medical technology, 2) introduction of increased public spending, and 3) changes in the rates of smoking.[6,8,9,13,22,26]

After reunification, the new and innovative medical technology that had been in use in the West was imported into the East and adopted by their facilities. Hospitals were able to offer their patients advanced diagnostics, as well as modern treatments including pharmaceuticals that were previously difficult to procure.[8] The healthcare sector of the East, which had previously been almost entirely state-owned and underfunded, was slowly privatized and modernized, which eliminated shortages and attracted new, highly-trained personnel from the West and other countries. In time, the gap in cardiovascular disease—the most important contributor of the health inequity between East and West—was closed as East Germans gained access to cardiac catheterizations, Percutaneous Transluminal Coronary Angioplasties (PTCA), and heart operations.[13]

Supporting the idea of medical technology as responsible in part for the reconvergence of health measures is the fact that health improved earlier in the East German regions that received the new technologies earliest. Working from the assumption that medical technologies reached cities with academic medical universities earlier than rural areas, one study found that East German life expectancy caught up with the West faster in the former regions than in the latter.[13] Thus even though the life expectancy increased for all East Germans after reunification, those living farther away from areas with access to new medical technology lagged by about one half year.[13]

Public spending also grew substantially during reunification. Some of the spending went toward the aforementioned investments in medical technology, but much of it went toward general welfare. Elderly East Germans benefited perhaps the most, as a portion of the excessive public spending that had been distributed to laborers was shifted back to retirees.[22] This increased their independence, their view of self-worth, and their ability to participate in society—all of which are important social determinants of health.[27] As the quality of life in these older age groups rose, so did the general mortality statistics for the East. Over 75% of the increase in life expectancy in East German women (post-reunification) came from women over

the age of 60, while 64% of the similar increase in men came from improvements in the same age level.[22]

Finally, perhaps the newest component to gain recognition in the German experience as a key post-reunification reconvergence factor is the change in the rates of smoking. Cigarette smoking is a well-known risk factor for cardiovascular disease, as already discussed, but it is a behavior that is so strongly correlated with lower life expectancy both across and within national populations that it merits separate mention. New research has shown that for some subgroups (e.g., women ages 50-64), smoking behavior explains a third of the mortality rate ratio between East and West Germany.[26] Moreover, when smoking-related deaths are removed, the mortality difference becomes less pronounced, confirming its relevance and suggesting that smoking may be more important to the German experience than previously thought.[24,28]

## Conclusion

Previous authors have examined very narrow and specific disparities, such as with life expectancy or one particular disease. This paper helps bring those scattered insights together to present a unified view of health under the now-unified Germany. The evidence shows that Germany experienced a clear divergence when it was divided into East and West Germany in the middle of the twentieth century. It also now shows that the East-West gap has in many respects closed, or is in the process of closing. Large differences in living standards, wealth, and infrastructure persist, but increasingly these are resembling the types of inequality common in successful democracies, as opposed to the much more stark and severe form of East-West inequality that had been accumulating during the Cold War.

Looking to the future, many questions remain. Where will Germany go from here? How long will it take the final few residual disparities to disappear, if they ever do? And what will the

reunification experience mean for the new generation of Germans, who are so young that they do not even remember their country ever being split in the first place? These are questions for which there are not yet answers, but we can listen to their story with care.

## References


1. Marmot M. The influence of income on health: views of an epidemiologist. *Health affairs (Project Hope).* 2002;21(2):31-46.
2. Deaton A. Income, health, and well-being around the world: evidence from the Gallup World Poll. *The journal of economic perspectives : a journal of the American Economic Association.* 2008;22(2):53-72.
3. Kopstein J. The politics of economic decline in East Germany, 1945-1989. 1997.
4. Blejer MI, Skreb M. Transition: The First Decade. 2001.
5. Roller E. Ideological basis of the market economy: Attitudes toward distribution principles and the role of government in Western and Eastern Germany. *European Sociological Review.* 1994;10(2):105-117.
6. Lemaître F. East-West German split still lingers on 22 years after reunification. *The Guardian.* 10/9/2012, 2012.
7. CIA. The World Factbook. 1990.
8. Luy M. Mortality differences between Western and Eastern Germany before and after Reunification A macro and micro level analysis of developments and responsible factors. *Genus.* 2004;60(3/4):99-141.
9. Vogt TC. How many years of life did the fall of the Berlin Wall add? A projection of East German life expectancy. *Gerontology.* 2013;59(3):276-282.
10. Van Hook JC. Translating Economics into Politics in Cold War Germany. *German Politics & Society.* 2007;25(2 (83)):104-116.
11. Hagedorn K, Swinnen JFM. The politics and policies of privatization and nationalized land in Eastern Germany. *Political economy of agrarian reform in Central and Eastern Europe.* 1997:197-235.
12. Sachs JD. Crossing the valley of tears in East European reform. *Challenge.* 1991:26-34.
13. Vogt TC, Vaupel JW. The importance of regional availability of health care for old age survival - Findings from German reunification. *Population health metrics.* 2015;13:26.
14. Helmert U, Mielck A, Classen E. Social inequities in cardiovascular disease risk factors in East and West Germany. *Social Science & Medicine.* 1992;35(10):1283-1292.
15. Jansen L, Gondos A, Eberle A, et al. Cancer survival in Eastern and Western Germany after the fall of the iron curtain. *European journal of epidemiology.* 2012;27(9):689-693.
16. Stang A, Lampert T, Uhlemann T, Trocchi P. Skin cancer mortality in Germany before and after the post-communist transition. *International journal of dermatology.* 2009;48(4):363-370.
17. Grech V. Declining male births in Germany before and after reunification. *The Turkish journal of pediatrics.* 2013;55(3):300-303.
18. Katikireddi SV, Gorman DR, Leyland AH. A comparison of trends in caesarean section rates in former communist (transition) countries and other European countries. *European journal of public health.* 2013;23(3):381-383.

19. Lenk H. Treatment of haemophilia patients in East Germany prior to and after reunification in 1990. *Thrombosis research.* 2014;134 Suppl 1:S57-60.
20. Goldstein JR, Kreyenfeld M. Has East Germany overtaken West Germany? Recent trends in order-specific fertility. *Population and development review.* 2011;37(3):453-472.
21. Schnettler S, Klusener S. Economic stress or random variation? Revisiting German reunification as a natural experiment to investigate the effect of economic contraction on sex ratios at birth. *Environmental health : a global access science source.* 2014;13:117.
22. Vogt TC, Kluge FA. Can public spending reduce mortality disparities? Findings from East Germany after reunification. *The Journal of the Economics of Ageing.* 2015;5:7-13.
23. Nehrlich HH. A tale of two Germanys: Some patients in former East Germany were more equal than others. *Bmj.* 2005;331(7510):234.
24. Razum O, Altenhoner T, Breckenkamp J, Voigtlander S. Social epidemiology after the German reunification: East vs. West or poor vs. rich? *International journal of public health.* 2008;53(1):13-22.
25. Wagner U, Van Dick R, Pettigrew TF, Christ O. Ethnic prejudice in East and West Germany: The explanatory power of intergroup contact. *Group Processes & Intergroup Relations.* 2003;6(1):22-36.
26. Myrskyla M, Scholz R. Reversing East-West mortality difference among German women, and the role of smoking. *International journal of epidemiology.* 2013;42(2):549-558.
27. Neckerman KM, Torche F. Inequality: Causes and consequences. *Annu. Rev. Sociol.* 2007;33:335-357.
28. Kramer U, Schmitz R, Ring J, Behrendt H. What can reunification of East and West Germany tell us about the cause of the allergy epidemic? *Clinical and experimental allergy : journal of the British Society for Allergy and Clinical Immunology.* 2015;45(1):94-107.