

Health and Development

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Like development, economic history is a field with a discipline-wide remit. Although the work in these fields reaches into all corners of broader economic inquiry, both development and economic history are fundamentally concerned with understanding how to raise living standards and foster economic growth. Naturally, then, the two fields share many common themes—chief among them, the causes and consequences of human capital accumulation.²

Issues related to human capital formation are of particular importance because interventions on this front can have a direct impact on living standards and individual wellbeing, while also contributing to wider patterns of growth, for instance, through changes in labour productivity and family size. Here, historical evidence can be especially valuable to understanding how human capital is formed, and how it contributes to development. This is because by turning to history, we can often exploit setting-specific features that may not always be available in a modern empirical context—for instance, long time horizons over which to examine long-run and intergenerational effects; large-scale, public-access matched microdata with which to study individuals and cohorts over time; or even specific natural experiments to aid in identification. In this chapter, the focus is on what economic history can tell us about one dimension of human capital in particular: health.

Development priorities, history, and health capital formation

The United Nations' Sustainable Development Goals (SDGs), adopted in 2015, sets out 17 development priorities to guide the efforts of the international development community in the coming decades. At least four of these—namely those focused on health promotion, hunger eradication, poverty alleviation, and access to clean water—are directly linked to issues of

² Broadly defined, this encompasses both education and health.

individual-level and population health. Yet others, such as those concerning climate change, clean energy, and gender equity, also have implications for global health. On these contemporary policy questions, and the academic debates underlying them, new work in economic history has much to offer.

A recent and extensive review by Cutler et al. (2006) makes these parallels explicit. In it, the authors outline the relative importance of nutrition, public health measures, medical care, and other key factors in the historical decline of mortality over the nineteenth century, and compare these patterns with the factors that have been crucial to raising life expectancy and reducing mortality in modern developing countries. In both settings, they suggest that the bulk of the credit for these improvements lies with macro public health interventions (i.e., large-scale public works projects, including sanitation infrastructure, mass vaccination, and milk pasteurization). These in turn require state capacity and political will, ‘neither of which is an automatic consequence of rising incomes’ (p. 116).

It is a problem, then, that many low-income settings lack a robust public health infrastructure, and that access to quality health care can be highly unequal. In these settings, measures that implement known health technologies—and those that extend access to underserved populations—can have a large and beneficial impact on health. Here, evidence on specific historical public health interventions can be especially illustrative. Below, I provide a brief discussion of this evidence as it relates to three key areas of contemporary policy focus.

Water, sanitation, and hygiene

Systematically improving water, sanitation, and hygiene is an objective which requires considerable political will to achieve, but in which coordinated efforts can yield especially high returns. For instance, Cutler and Miller (2005), emphasize the importance of disinfection and sanitation efforts alongside investments in water supply infrastructure in the US in the twentieth century. Extending this finding, Alsan and Goldin (Forthcoming) document complementarities between clean water and sewerage infrastructure in late nineteenth and early twentieth century Boston, and suggest that piecemeal sanitation interventions will be less successful than multidimensional ones in reducing infant and child mortality. What is more, interventions on this front can have positive consequences not only for survival in the short term, but also for long-term health and human capital acquisition (Beach et al., 2016). This is because the eradication of waterborne disease raises the returns to human capital investment, not only by raising life expectancy, but also by reducing the chronic disease burden—the latter of which is important both because childhood health and education are thought to be complements in the

production of adult human capital (Bleakley, 2007), and because early-childhood diarrhea is associated with poorer cognitive function.

Maternal and child health

Because waterborne diseases are a major cause of both infant mortality and ill health in children under five years of age, sanitation measures such as those discussed above go a long way to addressing children's wellbeing. However, there are a number of other interventions that have been shown to improve children's short- and long-run health outcomes.³ Chief among these are large-scale vaccination campaigns and other medical innovations to fight infectious disease.

For instance, following the advent of the smallpox vaccine in the early 1800s, Ager et al. (forthcoming) find evidence that infant mortality in Sweden fell, and that these mortality reductions were accompanied by a decline in gross fertility attributable to changes in the relative costs of child quality versus quantity. Apart from immediate changes in infant survival and childhood morbidity, these findings are important to questions of human capital formation and economic development because both net reductions in fertility and higher stocks of health capital would likely serve to raise subsequent investments in health and other forms of human capital. Illustrating this point, tuberculosis vaccination campaigns in 1940s Norway raised educational attainment in adulthood by narrowing early-life health inequalities (Bütikofer and Salvanes, 2015).

Similarly, the introduction of cost-effective medicines such as sulfa drugs in the 1930s, used in the treatment of infectious diseases including pneumonia, spurred human capital acquisition. Consistent with the growing literature on the importance of early-life health to long-term health and labour market outcomes, Bhalotra and Venkataramani (2015) find that the drug's introduction in the US had a positive impact on the later-life wellbeing of cohorts exposed to the intervention *in utero*. These effects were driven by reductions in maternal morbidity and mortality, factors which can also serve to raise the educational attainment of women. This is because a reduction in women's mortality risk serves to increase their longevity, and so, raise the returns to other investments in human capital (Jayachandran and Lleras-Muney, 2009).

Because of large disparities in access to pre- and peri-natal care—for instance, along race, class, and rural-urban lines—interventions that extend access to underserved populations

³ Although the focus here is on large-scale public health interventions, there is also a robust historical literature on child nutrition and stunting. See, e.g., Steckel (1995) on stature, and Feyrer et al. (2017) on micronutrient supplementation.

can also have high returns.⁴ For instance, with the introduction in the 1960s of the public insurance programme, Medicaid, low-income Americans gained access to more and better medical care. This resulted in sharp reductions in infant mortality rates, concentrated amongst non-whites and attributable to improved care in the first few hours after birth (Goodman-Bacon, forthcoming). Moehling and Thomasson (2014) document a similar effect of 1920s-era programs offering postnatal home nurse visits.

Climate and the environment

In light of growing concerns over environmental pollution in rapidly-developing economies, and the impact of climate change on health and food security more broadly, a long-run perspective drawing on the experience of early industrial economies is especially valuable.

Extreme weather can have direct effects on health, as well as indirect ones—for instance, through poor agricultural yields. These effects can be immediate, as in the mortality documented as a result of high-temperature days in the early twentieth century US (Barreca et al., 2016), or longer-term, as in the later-life disability outcomes found as a result of early-life exposure to the droughts and dust storms of the 1930s US (Arthi, 2018). However, this adverse relationship has not been static. Barreca et al. (2016) show that the widespread diffusion of residential cooling technologies explains much of the precipitous decline in hot-weather mortality in the US from the 1960s onward. Meanwhile, Burgess and Donaldson (2010) find that by promoting openness to trade and market integration, the expansion of railway infrastructure in colonial India served to mute the mortality response to weather-related agricultural shocks. These findings have particular modern resonance in the face of both globalization and climate change.

Although industrialization helped to mitigate some of the impact of the environment on health, in many cases it introduced new environmental hazards. A feature of many early urban settings, lead-contaminated drinking water has been implicated in a range of adverse outcomes including higher rates of infant mortality (Clay et al., 2014) and the perpetuation of socioeconomic inequality through the subversion of cognitive skill-formation in already disadvantaged populations (Ferrie et al., 2015). Meanwhile, air pollution due to industrial activity has been linked to infant mortality, although at low levels of baseline development, this effect may be partially offset by the economic gains due to increased industrial activity (Clay et al., 2016). Of relevance to today's developing-country cities, Hanlon (2018) offers the hopeful

⁴ Conversely, social exclusion and discrimination in access to health care can lead to mistrust in the medical establishment, discouraging patients to seek treatment, and reinforcing existing health inequalities (Alsan and Wanamaker, 2018).

view that because pollution exacerbates respiratory illness, public health measures to address infectious disease can also help reduce the health impact of air pollution, and vice-versa.

Health and economic development

This chapter would be remiss without at least a brief discussion of the role of health in economic development. Here, we can see the impact of many of the health interventions discussed above made manifest in broader patterns of growth, through changes in human capital investment behavior, labour supply, worker productivity, and demographic change. At the intersection of these issues, for instance, studies on the diffusion of oral contraceptives show how access to new medical technology allowed women the reproductive freedom to defer childbearing, reduce marital fertility, invest in human capital, and remain in the workforce (Bailey, 2010; Goldin and Katz, 2002). Such micro-level changes can have large macro consequences, with human capital acquisition accelerating a process of fertility transition that itself can also impact living standards and growth (Fernihough, 2017).

Similarly, reductions in the human disease burden can raise labour productivity and returns to schooling (Bleakley, 2007), and lower the costs of child quality (Bleakley and Lange, 2009).⁶ Although the accompanying rises in longevity can spur further human capital investment (Jayachandran and Lleras-Muney, 2009), these longevity changes may have relatively little impact on welfare through the lifetime “horizon” channel (Bleakley, 2018), and can also lead to net population growth that attenuates any per capita income gains from reduced fertility and increased productivity (Acemoglu and Johnson, 2007). Nevertheless, these findings should not be ‘construed to minimize the value of health through other mechanisms’ (Bleakley, 2018, p. 40) or to ‘imply that improved health has not been a great benefit to less developed nations’ (Acemoglu and Johnson, 2007, p. 929). Rather, they emphasize that development is multidimensional, encompassing questions of economic performance and growth as well as of wellbeing and human development, and that it is a complex process where general equilibrium effects are an important part of the story.

What can a historical perspective contribute?

One important area for future research in the area of health and human development is to build

⁶ Reductions in the disease burden may also raise household labor supply in rural settings where intra-household labor complementarities, common in agriculture, amplify the income losses resulting from individual illness shocks (Arthi and Fenske, 2016).

up evidence on the health production function. This agenda, discussed in greater detail in works such as Almond and Currie (2011), is one to which economic history is especially well positioned to contribute, in large part because of the long-run view that historical settings and data afford. Indeed, recent historical work in this vein has provided some of the first empirical evidence on the capacity for remediating adverse early-life health shocks (Arthi, 2018).

Likewise, with the rising availability of comprehensive, individually-identified, and privacy-unrestricted historical microdatasets, historical work is well placed to address another theme of growing relevance to development economists: the causes and consequences of inequalities in health.⁷ Here, new initiatives such as the University of Michigan's Longitudinal, Intergenerational Family Electronic Micro-Database (LIFE-M) project, which links individual-level vital records to census and other administrative data for the nineteenth and twentieth century US, will enable an unprecedented scale and richness in the data available to study patterns in health and demography.⁸

Finally, another emerging area for further study concerns mental health, substance abuse, obesity, and other non-communicable diseases that are prominent in the latter stages of the epidemiological transition. Here again, historical natural experiments can be an asset, providing laboratories to study the evolution of health over the development process.¹⁰

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⁷ See, e.g., Ferrie et al. (2015), Aizer et al. (2016), Eriksson et al. (2017), and Arthi et al. (2018), which use linking to generate large-scale historical panel microdata for the study of spatial, socioeconomic, and racial disparities in health.

⁸ Other important historical microdata sources include the Integrated Census Microdata (I-CeM) project and the Integrated Public Use Microdata Series (IPUMS).

¹⁰ See, e.g., Bhattacharya et al. (2013), who question the role of economic transition in Russia's early 1990s spike in alcohol-related mortality.

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