

# ECON 272: Economic History of North America to 1913

## Health, Institutions and the Antebellum Puzzle

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## 1 Malthusian Economy

- Malthusian (non?) growth
- Malthus in the New World
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## 2 Why heights?

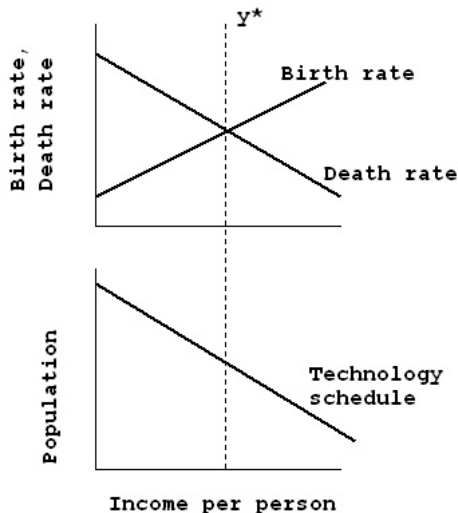
- Why Heights?
- The Very-Long Run
- Heights since 1800
- The Antebellum puzzle in the USA
- Antebellum puzzle in Canada
- The Preston Curve
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## 3 Conclusion

# Malthusian (non?) growth

- If we are to speak of health and growth, we must speak of demography and that means a necessity to discuss Malthusian economics.
- The Malthusian model is more sophisticated than generally presented but not that different (most people cling to the exposition in the 1st edition of Malthus' *Essay on Population* but the latter addendum are better).
- Technology sets the income and the population which, on the "market" for population, also sets death and birth rates. The returns from technology are bounded by the constraint of land ( $A*K$ ).
- It is an equilibrium mechanism (associated with a steady-state point)
- All deviations come from short-term shocks and there are two forces that restore equilibrium: preventive check (more dead people) and positive check (fewer babies born)

# Malthusian (non?) growth



## The Malthusian Model

# Malthusian (non?) growth

- This is clearly broken when you see population rise while income *at least* do not fall.
- This was the case in the American colonies where incomes were high but recent scholarship suggests no growth (Mancall and Weiss, 1999; Lindert and Williamson, 2016).
- The same applies to Canada at the same time where incomes were lower (but quite high by world standards) and stagnant despite a rapidly increasing population (Geloso, 2018).
- There is however a *weak* form model of the Malthusian economy where only one of the two checks might be operating. For example, there is evidence for Canada that the positive check was present up to 1760 (Geloso and Kufenko, 2015)

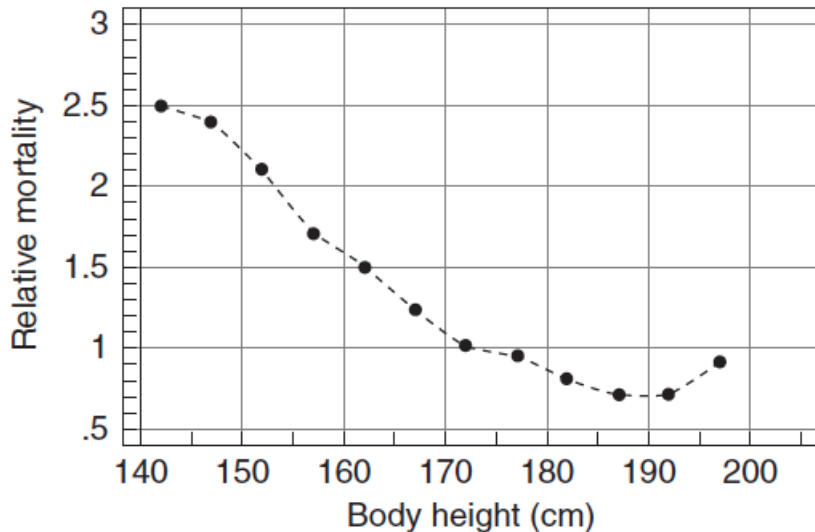
# Model Limitations

- However, the Malthusian is sometimes overblown as an explanation.
- For example, Ireland pre-Great famine is often considered the textbook example of a Malthusian economy. However, Joel Mokyr (1984) threw into contention showing that Ireland was not a Malthusian economy or at least that even this extreme case may fall under the heading of the *weak* version of the model (McGregor, 1989).
- There are also returns from greater population which either fall under the heading of "Smithian" counter-effects and increasing returns to scale. Smithian = more people (larger markets) = more scope for specialization = more income. Returns to scale = more people = falling marginal costs = more output/income. These two forces can work absent any important changes in technology.

# Why Heights?

- Human height is determined by a combination of genetics and environmental factors making it an active area of research in both the sciences and social sciences. Recent breakthroughs in sequencing the human genome have allowed identification of 697 genetic variants that influence the height of an individual (Wood et al., 2014). Although genetics plays an important role in understanding variation within a given population, human growth can be limited by poor childhood nutrition and illness. This makes height strongly correlated with living standards and hence a good proxy for them. Changes to heights over time and within countries paints a picture of economic development. One major advantage of using height as a proxy is the availability of data in the pre-statistical period.
  - Definition taken from OurWorldInData.Org
- At the very least, it is a *great* indicator of the *biological* dimension of living standards (health, nutrition, mortality etc.)

# Why Heights?



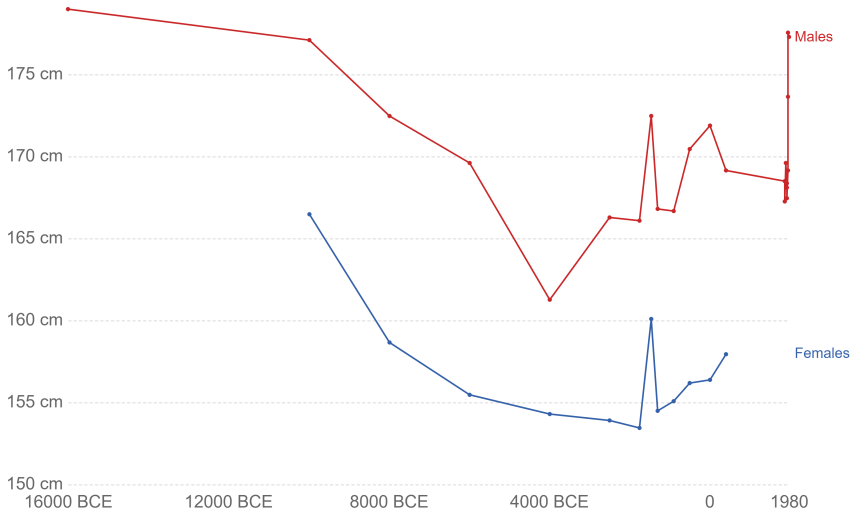


# Heights since before the Neolithic Revolution

## Human heights over the long-run

Average human height in the Eastern Mediterranean from the Upper Paleolithic (before 16,000 BC) period, through to 1980.

Our World  
in Data



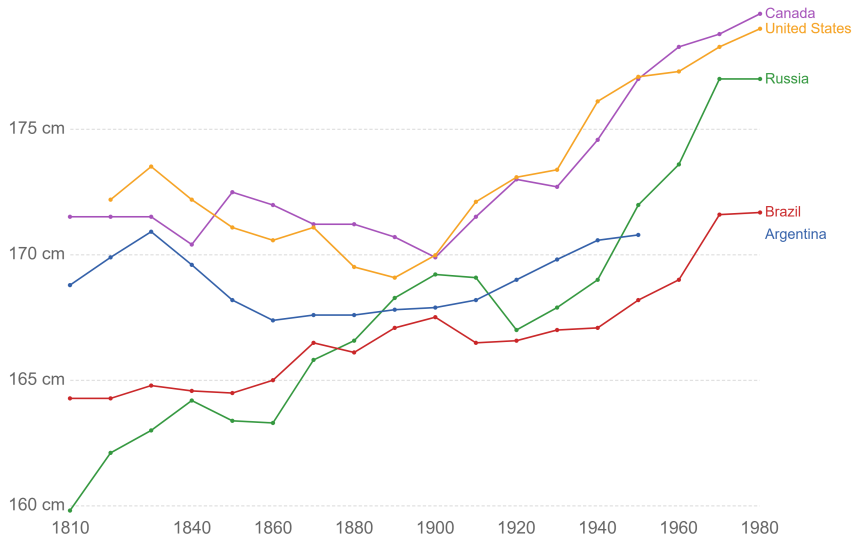
# Heights before the Neolithic Revolution

- Before proceeding with the shorter horizon (since late 18th century), notice that the Neolithic Revolution is associated with a big drop.
- Yet the Neolithic Revolution is a crucial moment in economic history (Pryor, 2004; Weisdorf, 2005) - it is associated with improvements in living standards. Yet this is not the case. Why the big fall?
- You can already see that the relation health/wealth is not perfectly straightforward.
- One of the possible explanations for the Neolithic height drop is that we switched from meat-heavy diets to grain-heavy but that while less nutritious, grain diets were more stable (because fewer variations) and storage was easier (Matranga, 2017)
- Notice the similarities between such an explanation and that of McCloskey (1976) on scattered farming : given their constraints people make trade-off and they prefer stability and lower returns to variability and greater returns

# Heights since *circa* 1800

Average height of men by year of birth

Our World  
in Data



# Heights since *circa* 1800

- Again, notice that the pattern in the graph above seems accurate with those on GDP per capita that we discussed in the previous theme. However, there are some oddities like the USA falling in heights from 1810 to 1890.
- Thus, as Deaton said, the relation might not as mechanic as some earlier historians have emphasized (my favorite example is that of Mabel Buer (1926))

# Heights since *circa* 1800

- So why is the relation not perfect?
- Certain mortality sources may fall with increased incomes (e.g. tuberculosis, yellow fever) as they are poverty diseases. Thus, development may improve health.
  - Greater incomes allow individuals to be better nourished and fight off diseases more easily while also investing in personal hygiene. Richer societies can also invest more easily in clean water (e.g. fluoridation).
- Certain mortality sources may increase with increased incomes (e.g. infectious diseases). Thus, development may hinder health.
  - Development is associated with urbanization which means greater density and thus greater exposure to infectious diseases (e.g. smallpox).
- Notice however that while we have cases of income  $\uparrow$  and heights (or other health metrics)  $\downarrow$ , we have very very very few cases of income  $\downarrow$  and heights  $\uparrow$ .

# The antebellum puzzle in the USA

- Urbanization creates important problems because a) more people live in them and thus infectious diseases affect a greater share of the population; b) infectious can spread more easily (thus, both the level and the pace of infections are heightened) (see the class readings of Carson and Haines et al.).
- Also creates problems in terms of the provision of public goods such as public health regulation of meat markets (Baics, 2016).

# The antebellum puzzle in the USA

- The other issue is the change in relative prices:

*In the more obvious case, some farmers moved into nonfood cash crops expecting to come out ahead, but may not have always done so. Transport costs would likely have raised the price of some basic foodstuffs to these commercial farmers; and, even worse, the relative prices of the commercial crop vis-a-vis the price of food products may have changed unfavorably. In other cases, farmers, who were producing food products, may have chosen to export those that had a higher value to weight ratio, and retained for consumption those with a lower ratio. This likely meant the export of products high in protein and increased consumption of carbohydrates (Haines et al., 2003)*

# The antebellum puzzle in the USA

- A complement to the relative prices point is the presence of a substitution effect between manufactures and food resulting from a change in their relative prices (Osell et al., 2018)

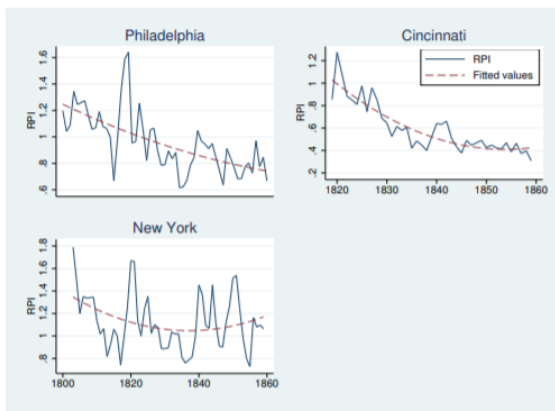


Figure 1: Relative price index by city



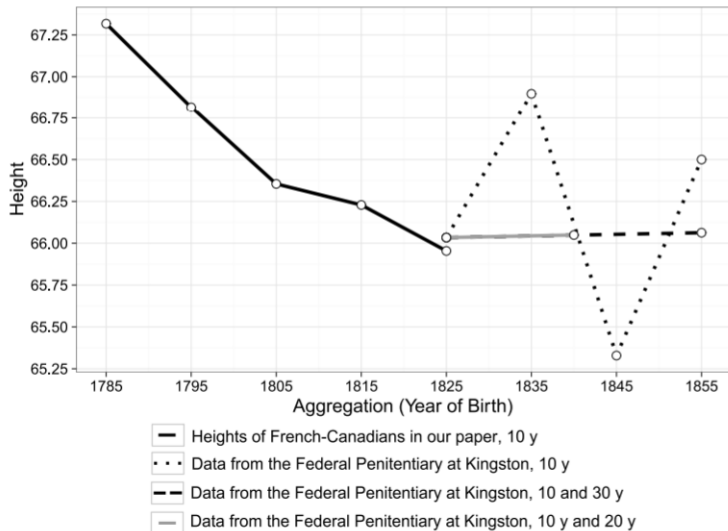
- The other issue is the possibility that this is just a measuring error because of selection bias:

## *Sample-Selection Biases and the Industrialization Puzzle*

HOWARD BODENHORN, TIMOTHY W. GUINNANE,  
AND THOMAS A. MROZ

Understanding long-term changes in human well-being is central to understanding the consequences of economic development. An extensive anthropometric literature purports to show that heights in the United States declined between the 1830s and the 1890s, which is when the U.S. economy modernized. Most anthropometric research contends that declining heights reflect the negative health consequences of industrialization and urbanization. This interpretation, however, relies on sources subject to selection bias. Our meta-analysis shows that the declining height during industrialization emerges primarily in selected samples. We also develop a parsimonious diagnostic test that reveals, but does not correct for, selection bias in height samples. When applied to four representative height samples, the diagnostic provides compelling evidence of selection.

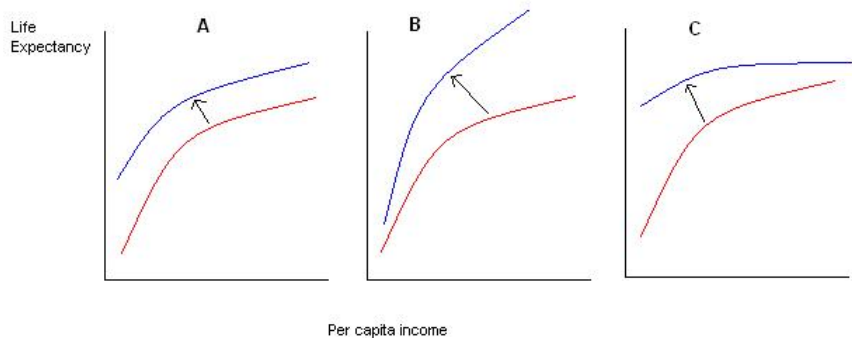
# Antebellum puzzle in Canada



# The antebellum puzzle in Canada

- Little evidence that it happened in Canada at the same time as USA (Arsenault Morin et al., 2017). It happened between 1780 and 1820.
- However, this suggests that the proposed role of international trade in changing relative prices is relevant and important.
  - Prices for wheat in Canada were above those of the US but still lower than those in England but they were converging from 1780 to 1846 (before the abolition of the corn laws). As Canada was a small open economy, changes British demand had a stronger effect on prices of wheat in Canada. Thus the fact that prices were higher. This is because Canada remained in the British Empire and enjoyed preferential access to British markets.
  - Imagine counter-factual USA which stays in the Empire in 1776 (i.e. the US decides to not be traitorous to the crown). The US keeps access to British markets - which showed early signs of integration according to Sharp and Weisdorf (2013) - and prices converge gradually much earlier than 1820. Thus, the antebellum puzzle happens at the same time as Canada.

# The Preston Curve



# The Preston Curve

- Income growth contributes to mortality reduction but at a diminishing rate (all the red lines), and that other forces alter the relationship between income and mortality in important ways and hence influence life expectancy (parallel shift in A that conserves the elasticity, shifts that alter both levels and elasticities in B and C) (Preston, 1975)

# The Paradox of Coercion

- There is another paradox that creates a weird impression. That is that coercion, if cheap, is well-suited to combating certain types of diseases (Troesken, 2015).
  - Smallpox is a good example of this: vaccination is efficient at reducing death rates from the disease but because there are free-riders, compelling vaccination is quite efficient. If you do not compel and a large enough minority refuses to get vaccinated, the disease gets to mutate and adapt to the vaccines meaning that the cost has been incurred for no reasons.
  - That form of coercion is quite "cheap" and thus likely to generate great returns.
  - The United States were, because of the constitution, limited in their ability to mandate vaccination in the period studied in this class (up to 1914). This was not the case in Prussia, Italy, Norway and Canada.

# The Paradox of Coercion

- The downside is that institutions that can use coercion are also those that can restrict economic activity and give in to rent-seekers.
  - Take the United States again with smallpox. The fact that the constitution of the USA protected property rights and had strong federal features (allowing competition of policy between states which is known as "market-preserving federalism") meant that Americans were richer.
  - In other words, it was a package deal with institutions: you either get bundle A where you are richer and likelier to be infected with smallpox or you get bundle B where you are poorer but less likely to be infected with smallpox.
- There was another effect: the institutions that permit growth also permit the long-run palliative effects of growth. Relying on coercion implies a trade-off between gains now and gains later.
  - Cuba is a more extreme example: extreme coercive measures generate high health outcomes but the coercive measures affect other outcomes of development (i.e. Cuba is poor) and health (i.e. Cuba does worse on other health metrics than those frequently discussed) (Berdine et al., 2018).

# The Paradox of Coercion

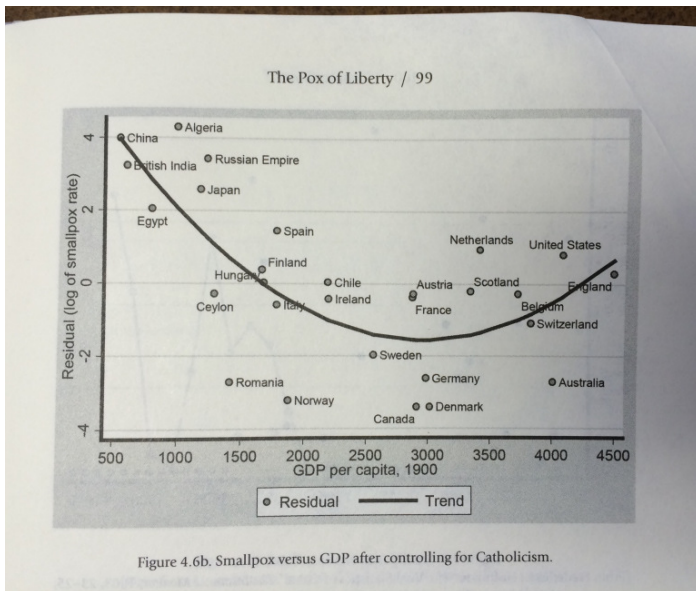



Figure 4.6b. Smallpox versus GDP after controlling for Catholicism.



# The Preston Curve

- There is a relation between health and wealth
- The improvement of health and wealth simultaneously is a post-Malthusian development
- The relation is not mechanistic - it has some weird features that depend on the context in which development occurs
- Institutions are a big deal in this story
- There are episodes of paradoxes (such as the Antebellum puzzle)
- But, in the very long-run, the relation is clear.

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