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Geographical height variation among Ohio Caucasian male convicts born 1780–1849

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Abstract

To more completely answer questions regarding health in the past, social scientists are utilizing previously underutilized data sources. This study focuses on one such source: penitentiary records, in order to examine geographical variation in height from a sample of 2554 male Caucasian convicts aged 23–45 years. Data collected include height, age, ancestry, nationality, and year and place of birth. Birth places were divided into five geographical areas corresponding roughly to the United States census geography divisions. Average stature for this sample was 68.4 ± 2.5 in. (173.7 ± 6.4 cm). Regression analyses on height, birth cohort, ancestry, nationality, and place of birth indicate significant but small differences in height across geographical areas. No significant differences were found due to birth cohort.

JEL classification: I10; I31; I32; J13; N0; N31

Keywords: Anthropometric history; Physical stature; Height; USA; Convicts

1. Introduction

With a specific focus on determining and explaining diachronic changes in the health trends of populations, anthropometric history grew out of efforts to understand the standard of living in populations around the world (Komlos, 1994b). Theory and methods in anthropometric history have been drawn from anthropology, biology, history and economics (Floud and Wachter, 1982; Fogel et al., 1983; Komlos, 1994a, 1995; Steckel, 1994, 1995; Riley, 1994). Height is the primary target of analysis, though other data such as weight and height/weight indices have also been examined (Cuff, 1995). These data are combined with economic and social data to provide

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explanations of trends in mean heights in populations and variation over time, with particular attention to the ways in which stature is related to occupational status and urbanization (Costa and Steckel, 1997; Dick, 1995; Sokoloff, 1995; Tanner, 1994).

Penitentiary and criminal/convict records represent a largely untapped source for anthropometric history with only a few studies analyzing such data (Nicholas and Steckel, 1991; Komlos and Coclanis, 1997; Johnson and Nicholas, 1997; Riggs, 1994; Baten and Murray, 2000; Sunder, 2004; Carson, 2005). Data for anthropometric research is usually gleaned from a variety of historical sources, such as military muster rolls. Records from military sources are usually subject to minimum height requirements and focus on a specific segment of a population. Convict records represent an important aspect of anthropometric history as they are not subject to the same height requirements and focus on slightly different groups. Penitentiary records often contain extensive physical and social information and are frequently preserved, because of their legal nature.

This study focuses on data drawn from records at the Ohio Penitentiary in the early 1800s (1834–1865) representing birth years 1780–1849. Data from very early time periods in American history is sometimes difficult to come by and sparse in nature. Thus, the early years of the Ohio Penitentiary data provide a window into the biological welfare of the population in the early national period. Though by 1848 America was made up of 30 states, much of the country's population was still concentrated in the east and central regions of North America. The central question addressed in this paper focuses on these geographical areas to determine the extent to which any height differences in this sample can be attributed to place of birth. A second question focuses on changes in stature over time. Additionally, this paper addresses the feasibility of utilizing penitentiary data for anthropometric analysis and discusses the comparability between penitentiary inmates and other sample populations (Sunder, 2004).

2. Anthropometric history

A basic characteristic universal to all studies in anthropometric history is the usage of height data to understand changes in the standard of living from an economic perspective (Komlos, 1994b). Height is referred to as a 'net' measure of childhood growth, a result of a complex interaction between genetics and the environment (Sokoloff, 1995). Environment, when utilized in this sense, refers to the physical environ, as well as caloric demands on the human body such as growth, body maintenance, physical activity and work, immune response, health, stress and availability of resources (Cuff, 1995; Steckel, 1992; Tanner, 1990, 1994). All of these factors come into play in individuals' cultural backgrounds, as different responses to environmental stresses may be produced by cultural differences and vice versa. For example, a region where swine do well may be more exposed to porcine diseases than another region where pigs do not thrive as well. Subtle differences in disease loads can produce differences in growth patterns. Thus, when considering final adult stature as a measure of health, cultural background should be aligned with the environmental factors discussed above. Anthropometric history research has expanded to include examinations of total health in a population (Steckel and Floud, 1997). Defined by Floud in 1993, nutritional status is the ''interplay in the human body between intakes of nutrients and expenditure of energy, whether for body maintenance, work, growth, or conquest of illness (Floud et al., 1993, p. 146).

These assumptions form the platform for the 'biological standard of living', a concept introduced by Komlos in 1987. The biological standard of living utilizes height as a measure of biological well-being because it correlates positively with life expectancy and fecundity and negatively with mortality (Komlos, 1987, 1989). A general indicator of public health and