

Secular trend and regional differences in the stature of Italians, 1854–1980

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Abstract

We present 127 years of data on the physical stature of military conscripts born in Italy during 1854–1980, as well as an analysis of regional variations in height (for birth cohorts born during 1927–1980). The height of young men has increased in all regions of Italy. The secular trend and the regional changes in stature are correlated with economic growth and a general improvement of living conditions. This is suggested by the relationship between height and various socio-economic indicators. A comparison of the 1927 birth cohort with the 1980 birth cohort shows that the mean heights for populations in Italy's southern areas, which were shorter than the national average in 1927, underwent the largest increases. In recent years, mean height has been gradually approaching an upper bound for all regions in Italy, with the exception of some central and southern regions. A multiple regression analysis evaluates the impact of living conditions on the convergence of regional heights.

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1. Introduction

Secular changes in stature have been well documented in populations around the globe (Eveleth and Tanner, 1990). In Italy, anthropometric studies were conducted for the first

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time in the 1870s, more than 40 years after Belgian and French investigators performed their pioneering studies (Villermé, 1829; Quételet, 1832). Initially, Italian studies of anthropometric traits were local in nature; the secular height trend had not been recognised. Instead, attention was focused on the various factors that could influence height, such as climate, altitude, nutrition and ethnic origin (Lombroso, 1877; Perozzo, 1878; Pagliani, 1879; Riccardi, 1887; Livi, 1896a,b, 1898, 1905). The increasing height of Italians was first recognised at the beginning of the 20th century (De Rossi, 1903) and was attributed to improvements in the country's economic and health conditions.

Costanzo (1948) was the first to collect data on stature of Italian conscripts, beginning with the 1854 birth cohort until the 1920 birth cohort, on the basis of original military archives. These data were published by the Istituto Nazionale di Statistica (ISTAT, 1958) in the *Sommario di Statistiche Storiche*, the official collection of Italian historical statistics, and have been updated in subsequent editions. Since 1949 (the 1927 birth cohort), in fact, the Ministry of Defence has been providing ISTAT with semi-aggregated data every year and the mean stature is calculated and published in ISTAT's (1949–2003) *Annuario Statistico Italiano*.

Since the 1980s, analysis of the stature of Italians has focused on conscription data, often in collaboration with the Ministry of Defence (Distaso et al., 1984; Terrenato and Ulizzi, 1983; Golini et al., 1985; Ulizzi and Terrenato, 1985). More recently, the emphasis is on the additional information available in the military records of conscripts, such as profession, education, region of birth, family name and blood group (Corsini, 2004).

2. Data quality

National compulsory recruitment of young men for military service was established in 1863 (birth cohort 1842) but abolished in 2005, having been replaced by a voluntary enrolment program. Consequently, medical examination of all young men is no longer performed. Although the 1985 birth cohort was the last to experience compulsory recruitment, data for the 1980 birth cohort were the last to have been released by the Ministry of Defence. Therefore, the present article analyses data for male Italian conscripts born during 1854–1980. Recruitment was compulsory for these cohorts, and medical examinations were performed on all young men of conscription age to check their physical fitness for military service. Several other data were also recorded during the examination, including health status and anthropometric and socio-economic characteristics. ISTAT data on stature used in this study pertain to all of the conscripts whose height was measured, even if they did not meet the minimum height required for military service.

Although recruitment was compulsory, for several reasons, the height of many young men was not measured. In the second half of the 19th century, information about height was lacking for up to 30–35% of young men nationwide and for up to 60% in particular districts, notably areas in southern Italy (Ilari, 1989–1990). In the first period of the Italian conscription history, in fact, there was a large percentage of draft dodging in the Italian army, mainly because of the high rate of emigration to other countries among young men from southern Italy (for example, the draft-dodging rate for the 1842 birth cohort, the first cohort that underwent compulsory recruitment, was 11.5% nationally but 57% in Naples,

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