



Routledge Explorations in Economic History

HEALTH, NUTRITION AND INEQUALITY IN LATIN AMERICA

AN ANTHROPOMETRIC HISTORY

Edited by

Manuel Llorca-Jaña, José Miguel Martínez-Carrión,
and Ricardo Salvatore



“This book makes a fundamental contribution to the study of anthropometric history in Latin America and is essential reading for those researching economic history and the Social-Economic-Political-Emotional (SEPE) Factors that impact biological well-being in the region.”

—**Barry Bogin** (Loughborough University), author of *Patterns of Human Growth*, 3rd edition www.cambridge.org/9781108434485

“This fine collection of essays, covering nine countries, and written by leading Latin American economic historians, provides readers with a valuable ‘state of the art’ of anthropometric history in the región. It shows well how the study of human stature can provide insights on the long-term evolution of welfare and inequality, while offering particularly new perspectives on both the colonial period and the second half of the twentieth century as well as the better-researched late nineteenth and early twentieth century. Its wide coverage, including innovative essays on previously neglected countries like Cuba, Ecuador, and Bolivia, is extremely welcome”.

—**Rory M. Miller** (University of Liverpool)

“The study of human height as a welfare indicator is particularly promising in Latin America with its rich archival tradition: this book makes full use of these available sources and generates completely new insights”.

—**Joerg Baten** (Tübingen University)



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Health, Nutrition and Inequality in Latin America

Drawing on anthropometric data, this book examines the evolution of biological living standards of Latin American populations and evaluates the inequality of nutrition and health in the region in the modern era.

Utilising data from the 19th and 20th centuries, and providing broad coverage of Latin America, the chapters analyse the following topics: the evolution of stature before and after independence; the effects of economic modernisation since the 1870s and 1880s, that were accompanied by profound political, demographic, epidemiological and environmental changes that affected biological well-being of the population; the trend and evolution of anthropometric measures associated with nutritional, demographic and epidemiological transitions; the prevalence of malnutrition associated with stunting and obesity in traditional and modern societies, both rural and urban; the reduction or expansion of regional, social, income and educational differences in biological living standards as measured by mean heights; and the evolution of stature sexual dimorphism and the comparative importance of nutritional inequality by race and gender. The book highlights, on the one hand, the importance of anthropometric indicators to analyse living standards and human well-being in historical perspective and, on the other hand, the value of an interdisciplinary approach in examining questions of human growth and biological well-being.

The book will be of great interest to readers in economic history, Latin American history and studies and the history of inequality and living standards.

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An Anthropometric History

Edited by Manuel Llorca-Jaña, José Miguel Martínez-Carrión and Ricardo Salvatore

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Health, Nutrition and Inequality in Latin America

An Anthropometric History

**Edited by Manuel Llorca-Jaña, José Miguel
Martínez-Carrión, and Ricardo Salvatore**

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The Editors

1 Introduction to an anthropometric history of Latin America

*Manuel Llorca-Jaña, Ricardo Salvatore, and
José Miguel Martínez-Carrión*

This book deals with several dimensions of the *biological welfare*¹ of selected Latin American countries. Biological welfare is usually synthesised by a key indicator: adult height of the population.² It is now firmly rooted in the literature that adult stature is mainly a direct result of both nutrition and health during infancy and adolescence (as well as to the extent and intensity of child labour), and that unequal access to nutrients and health services is detrimental to the biological standard of living of any nation. In turn, health and nutrition are more often than not impacted by economic and epidemiological cycles, thus affecting our biological welfare, while institutional settings also shape the equal (unequal) distribution of income (therefore of food and health services) across and within societies.³ That is, there are close bonds between economic growth, quality of institutions, physical environment and human stature. Likewise, height is positively and strongly correlated with other key welfare variables such as life expectancy and personal income. Finally, nowadays there is strong awareness of the fact that well-being is a multidimensional concept: monetary income captures only part of our welfare. Many other dimensions must be considered, including non-monetary variables such as mortality, life expectancy and height.⁴ Linked to this, when assessing living standards' inequality, it is not enough to scrutinise the GINI of disposable income: inequality is a multidimensional concept too. We must pay attention to biological welfare inequality, as well as to the inequality of many other dimensions. No wonder anthropometric studies have gained so much popularity within the last few decades: there is even growing awareness among policymakers, authorities and academics on the need to have sound anthropometric data at hand.

Thus, during the last few decades, there has been a proliferation of studies in Latin America's anthropometric history, in particular for selected countries such as Argentina,⁵ Brazil,⁶ Chile,⁷ Colombia,⁸ and Mexico,⁹ whose coverage has nothing to envy that of developed nations.¹⁰ We do not have the space here to describe the main findings of the studies devoted to these countries, or those relating to the region as a whole,¹¹ but a detailed list of their main works is included in the bibliography of this introduction. In any case, we now have a good understanding of the long-run trends of adult heights in these countries, of the key determinants of adult heights, as well as of the breakdown of mean

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heights within these countries per region, ethnicity, and socioeconomic indicators, in particular for male populations. Furthermore, for several periods of the past (the colonial and post-independence periods), height is the only available living standard indicator for many Latin American countries; together with real wages, these two indicators can provide invaluable evidence of economic growth in the long run.¹² All in all, the Latin American historiography on biological well-being has made a substantial contribution to the economic development literature of our region, not only by better documenting the path followed by biological living standards as a whole, but also for identifying periods in which economic growth did not translate into improvements in biological welfare (i.e. periods hence better known as puzzles).¹³

As far as the main previously published Latin American anthropometric history's edited collections are concerned, and dealing with adult height, the following volumes deserve special mention: Salvatore et al. (2010), a truly pioneer book on this area; the same year's the leading journal in the field (*Economics and Human Biology*) – published an special issue edited by Baten & Carson (2010); in 2019 came out another special issue published by the prestigious journal *Revista de Historia Económica* (Martínez-Carrión & Salvatore, 2019); and in 2021 the *International Journal of Environmental Research and Public Health* published an special issue edited by Martínez-Carrión, Salvatore & Varea (2021). Finally, Ubelaker & Colantonio (2019) edited a collection of essays dealing with Biological Anthropology in the region. Why then a new edited collection on Latin American anthropometric history?

There are many reasons for this. First, the biological welfare's history of many countries of the region remained under-researched, including that of Bolivia, Ecuador, Uruguay, and Cuba. For all of them, we have included a chapter here. That is, there were severe gaps in our basic knowledge on the biological living standard of these countries, persisting serious gaps for many others.¹⁴ Second, even for those Latin American countries well-covered by the historiography, there were many issues and data worth exploring-, through the discovery of new primary sources (e.g. health surveys of the latest decades), focusing research on specific topics (e.g. the existence of direct synergies between nutritional status and height), or even to explore new methodologies (see López-Alonso, 2024). For example, despite the plethora of recent studies for Chile, we knew very little about the evolution of height inequality for that country, a gap we are filling with a chapter of this book. Likewise, due to the lack of height data, several periods were unattended for some of the larger countries, such as Colombia during the colonial era or Argentina during the second half of the twentieth century.¹⁵ Indeed, the second half of the twentieth century has been rather neglected for the whole region (except perhaps for Challú & Silva-Castañeda (2016), who dealt only with women's heights).

Third, Latin America is a remarkably heterogeneous region, whose economic performance and social development vary significantly from one country to the other. Latin America is also one of the most unequal regions of the world. Hence, by enriching the literature on the biological welfare of particular

countries, we are contributing to our understanding of why the living standard of this region's countries continues to be so dissimilar (Baten & Carson, 2010). Fourth, many chapters endeavour to assess the correlation, or lack of it, between economic growth and biological well-being in the long run, distinguishing the classic sub-periods with the region's economic history (e.g. export-led growth, industrialisation led by the state, neoliberal reforms, and debt-dependent growth), and/or the impact of specific economic and/or political crisis (the debt-crisis of the 1980s, the commercial and financial opening of the 1990s, and the increasing political instability of the 2010s).

Finally, anthropometric studies are almost inexhaustible: even for the best covered countries, there are always new research veins to exploit, as shown by two chapters of both Brazil and Mexico, and new bridges to be built with sister disciplines (e.g. biological anthropology and bioarchaeology), as shown by the chapter on Cartagena, Colombia, based on osteological evidence. In this vein, several chapters, for the first time, link height with epidemics, infectious diseases, nutritional status, social assistance programs, and the like. None of the chapters included in this volume has been published elsewhere. The chapters deal with novel aspects such as indigenous people's height, regional inequalities, female's heights, paternal and family influences, and osteological research. In anthropometric history, "the more is the better", and the more is never enough.

Content of this book

Apart from this brief introduction, this book consists of 11 other chapters (covering 9 countries). Chapter 2 is titled "Growing Up in Turbulent Times: Economic Growth and Biological Wellbeing in Argentina, 1966–2000", written by Ricardo Salvatore (Universidad Torcuato Di Tella) and Guillermo Bozzoli (Fundación Bunge y Born). The chapter covers a rather unexplored period for that country: the second half of the twentieth century, based on data from the 2018 National Health Risk Factors Survey. This is an important contribution for a well-covered country, but with an important lacuna for this period. Thus, the chapter examines the evolution of adult height in Argentina (for both males and females) in relation to the performance of the economy, in a period of high inflation, political instability, and pronounced cycles in production and employment. The authors endeavour to assess the extent to which the average height of Argentines did, or did not, follow the fluctuations of several variables such as per capita income, real wages, and employment. Amongst the main results of the chapter we should mention that: adult height growth was lower than expected; only in the periods called "military dictatorship" (1975–1982) and "convertibility" (1992–2000) there was growth in height compared to the previous period; and in the most inflationary period (1983–1991) there was an absolute fall in average adult height.

Also, for the Southern Cone, Chapter 3 deals with "Height Inequality in Chile: an Empirical Analysis for the Nineteenth and Twentieth Centuries"; it was written by Manuel Llorca-Jaña and Martina Allende, both from Universidad

Adolfo Ibáñez. The authors provide the first detailed analysis of height inequality in Chile for the adult male population born during the last two centuries, in particular resorting to the coefficient of variation (CV). Never before has height inequality been so deeply analysed for Chile. In addition, the authors provide mean heights according to several variables: region of birth, socioeconomic group, and educational level. Amongst the main findings, the following are worth highlighting: during the 1830s–1860s the CV was high, while during some of these decades the country registered the lowest average height; thereafter, the CV stabilised at lower levels during the 1870s–1900s, and continued falling during the 1910s–1920s; during the 1930s–1960s the CV reached its lowest level, increasing during the 1970s but decreasing again during the 1980s–1990s. Likewise, despite the increase in the 1970s, the CV never again reached the levels registered up to the 1870s. More importantly, most decades with low or declining CV rates coincide with the decades of sustained growth of average height. In the long run, in Chile, mean heights increased when net-nutrition inequality either stagnated or declined. Chile's evidence also suggests that there was no “rural penalty” during the Early Republic or during the Nitrate Era, but that this situation changed later: there was a mild “rural penalty” in the last two periods analysed (ISI and Neoliberal Era). Finally, there were important differences in average height per socioeconomic group: there was a clear socio-anthropometric stratification according to socioeconomic variables.

Next, Chapter 4, “Biological Standards of Living in Bolivia, 1880s–1990s”, by José Alejandro Peres-Cajias (Universitat de Barcelona), Boris Branisa (Universidad Católica Boliviana) and Nigel Caspa (Universidad Mayor de San Andrés), offers a significant contribution to the anthropometric history of this country, given the dearth of prior research aside from the authors' own works (Branisa et al., 2020) and Godoy et al. (2006). This chapter provides a good account of the evolution of height in Bolivia from the late nineteenth to the late twentieth century, examining the impact of economic and demographic factors on physical development. For this, the authors resort to different samples with national coverage, revealing two distinct periods. The first one is characterised by height stagnation until the mid-twentieth century, while the second one shows gradual improvements in biological welfare, but at a slower pace than most Latin American countries. The evidence provided shows that environmental conditions, public health infrastructure, and agrarian productivity played a significant role in shaping height evolution in Bolivia. But the authors go beyond the general averages, highlighting the presence of persistent disparities in biological welfare, particularly among indigenous populations, rural residents, and those with limited education.

Chapter 5, which is devoted to a Colombian region, is titled “Height and Health in Cartagena de Indias: Skeletal Evidence from the 16th to the 19th Century”, written by Javier Rivera-Sandoval (Universidad del Norte), Sergio Andrés Castro-Méndez (Universidad de Santander), Andrés Acevedo-Ruíz (Universidad del Norte), and Adolfo Meisel-Roca (Universidad del Norte). It is perhaps the most original of all articles, since it is the product of a multi-disciplinary collaboration, and is the only chapter based on evidence from

skeletal remains. The chapter deals with a period usually unattended by the Latin American anthropometric historiography. All in all, the study examined the variation in height within a bioarchaeological population from the colonial period excavated at the Convent of San Francisco in Cartagena de Indias (1550–1900), in northern Colombia. The chapter explored the correlation between height and various skeletal stress indicators. The researchers conducted macroscopic analyses on 160 individuals. The adult stature was estimated based on the lengths of the bones in the upper and lower limbs and categorised by sex. Likewise, the frequency and prevalence of bone lesions associated with infectious diseases and metabolic and nutritional diseases were evaluated to determine whether significant differences existed in relation to stature, while also performing statistical tests to verify differences between subgroups within the sample. The main results can be summarised as follow: there was relatively tall statures for both male and female individuals, possibly associated with the favourable socioeconomic conditions of the population buried in the church; the stature of males exhibited much greater variability compared to females; and that there is higher prevalence of infectious periosteal lesions, porotic hyperostosis, and linear enamel hypoplasia in males, while the prevalence of these lesions tends to increase with age.

Next, we have two chapters devoted to Mexico (given the size of the population, being the second most populated country, after Brazil, for which we also have two chapters). In the first of them, Chapter 6, “Feeding Mexico’s Growth: Nutrition and Living Standards in Twentieth Century Mexico”, Moramay López-Alonso (Rice University) shows that the stature of the Mexican adult population has improved modestly since the mid-nineteenth century despite profound social, demographic, economic, political, and epidemiological transformations. This apparent stability was the result of a significant decline in stature from the 1850s to the 1890s, followed by an important recovery from the 1910s to the 1950s. To address part of this paradox, this chapter deals with the role of nutrition in biological welfare, utilising data from the National Nutritional Surveys (ENSA, ENSANUT) as well as to reports prepared by CONEVAL (National Council for the Evaluation of Social Development Policy), which offer an overview of the evolution in stature and nutritional status at the national level for the last three decades. López-Alonso shows that differences in stature were linked to insufficient protein intake among several population groups, further adding that there were no subsistence crises, and that the nutritional transition included processed foods, sugar, and carbohydrates that did not substantially improve the health or stature of the population.

Chapter 7, the second chapter on Mexico, contributed by Amilcar Challú (Bowling Green State University), is titled “Bodies of the Revolution: The Biological Wellbeing of Families in Central and Northern Mexico, 1880s–1940s”. It is a highly original chapter that explores how height varied across individuals according to the height of their parents, year of birth, birth order, and gender. The estimates use 1943 Marcus Goldstein’s dataset of anthropometric measurements in Northern Mexico, a study that contains data on family structure and intergenerational linkages, and also allows for comparisons between

Mexican-Americans in Texas with Mexicans residing in northern Mexico. Challú's chapter focuses on how pre-existing conditions, family size, and potentially social norms (namely patriarchy) influenced the attainment of biological welfare. The most original findings of this study refer to important intergenerational (father to son) variations in stature. Challú presents several regression models in which the dependent variables are the height and weight of children and young adults, while the explanatory variables are parental height, birth order, sex, and family size. The unique family information of the Goldstein's database allows the author to address issues that are rarely dealt with in the anthropometric history of Latin America.

Chapter 8, in turn, is devoted to a, so far, rather neglected country: Ecuador. In "The Biological Welfare in Ecuador Over the Second Half of the 20th Century: an Analysis of Sociodemographic Determinants of Cohort Adult Height", by Antonio D. Cámara (Universidad de Jaén), Amand Blanes (Universitat Autònoma de Barcelona) and Eva María Mera Intriago (Escuela Superior Politécnica del Litoral), it is explored the evolution of adult height in Ecuador for cohorts born between 1953 and 1992, a period largely free from extreme environmental stress. For this, the authors resorted to the National Survey on Health and Nutrition (ENSANUT), conducted between 2011 and 2012. Among the main findings, it is worth highlighting the following ones: Ecuador's height is rather low, at least if compared to other Latin American countries, but there is a positive secular trend in height among the generations born during the second half of the twentieth century, particularly among women. Despite starting from a lower baseline, this notable increase in female stature stands out in the regional context. Nonetheless, significant inequalities persist within the population, particularly along ethnic and socioeconomic lines, revealing the enduring impact of structural inequities on biological welfare.

Also, for another relatively unexplored country, the next chapter, "Height of Uruguayan men in 19th and 20th Centuries. A Story of Growth and Stagnation (1870–2000)" (Chapter 9), by Daniel Ferrari (Universidad de la República, Uruguay) and Henry Willebald (Universidad de la República, Uruguay), it is analysed a database on the heights of Uruguayan military recruits for cohorts born during the nineteenth and twentieth centuries. The study reveals long-term growth patterns, but also suggests that in some periods, such as the second half of the twentieth century, there were prolonged periods of height stagnation. The authors found that there was an eight cm increase in average male adult height between the 1870s and the early 2000s, passing from 165 cm to 173 cm. The evolution of Uruguay's biological welfare, according to the authors, is in line with the evolution of Uruguay's economic history in terms of both growth and development. The long-run performance of Uruguayans' mean heights was better than the Latin American average, but diverged from the core economies of Europe and North America.

Nearby Uruguay, we have two chapters for Brazil, the most populated nation of the region. The first of them, Chapter 10, is titled "Parental Socioeconomic Status and Inequality of Opportunity in Body Height of Brazilians: Evidence

from Cohorts Born between 1940 and 1975”, authored by Victor Hugo de Oliveira (Instituto de Pesquisa e Estratégia Econômica do Ceará), using data from the Pesquisa sobre Padrões de Vida (Living Standards Survey), carried out by the Instituto Brasileiro de Geografia e Estatística jointly with the World Bank in 1996–1997. This chapter deals with the relationship between adult height, parental socioeconomic status, and other socioeconomic variables in childhood and adolescence among Brazilians born between 1940 and 1975. It also estimates inequality in adult height and the contributions of socioeconomic inequality to individuals’ height. The main results would be these: father’s occupational status, parental literacy, and living exclusively in urban areas before being 15 years of age are positively correlated with adult height; socioeconomic circumstances are responsible for between 10% and 12% of all variance in adult height; and parental socioeconomic status, parental literacy, and household environment during childhood and adolescence account for more than 50% of all inequality in adult height. The study also demonstrates that respondents of Southern origin were generally taller than those born in the Northeast.

The second chapter on Brazil (Chapter 11), “Socioeconomic Characteristics and the Nutrition Transition in Brazil: an Analysis of the Main National Surveys from 1974 to 2019”, focuses on dietary information and the nutritional transition. Produced by a team of eight colleagues, using data from the main national surveys from 1974 to 2019, the study shows that Brazil has been experiencing a nutritional transition characterised by changes in the population’s dietary patterns associated with diverse socioecological factors, resulting in a double burden of malnutrition nationwide (undernutrition and obesity). The chapter presents an overview of the main nutrition transition trends, with a focus on anthropometric indicators and social determinants of health. Two groups of people, children up to five years of age and adults, are analysed to provide a broad picture of the achievements and challenges for physical growth and health. During the period 1974–2019, obesity increased among adults, while there was a sustained reduction of undernutrition among children; yet important social disparities remain. Quilombola communities, indigenous peoples, and the extremely poor show worse indicators of both undernutrition and obesity. The authors argue that the Brazilian Unified Health System (SUS), established in 1988, have played a crucial role in addressing social inequalities by responding to epidemiological and nutritional transitions.

The last chapter of the book (Chapter 12), “The Height of Prisoners in Early 20th-Century Cuba: An Approach to the Biological Well-being of the Working Poor”, by Javier Moreno-Lázaro (Universidad de Valladolid) and José Miguel Martínez-Carrión (Universidad de Murcia), examines a Caribbean country that has received little attention in anthropometric studies. As the authors emphasise, the lack of anthropometric research on Cuba is particularly striking given its role as the leading economy in the Caribbean during the early twentieth century. Drawing on male height data collected in the 1920s, primarily from prison records across the island, this chapter provides a unique perspective on

the biological well-being of Cuba's working poor. The findings reveal that the average adult height for the 1896–1905 cohorts was approximately 166 cm, very close to that of the cohorts born between 1876 and 1895. Additionally, black individuals were significantly taller than their white counterparts, and geographical disparities were notable, with higher average heights recorded in western provinces such as Matanzas, Villa Clara, and Cienfuegos, and lower heights observed in eastern provinces, particularly Santiago de Cuba. These results underscore the significant racial and regional inequalities in biological well-being during this period, highlighting the importance of integrating anthropometric data into the broader socioeconomic history of the region.

Future research agenda

Given the fact that the bulk of the studies for Latin American countries rely on male military samples or male prison records, it is quite evident that further studies on trends of female heights are needed, as well as on the evolution of sex dimorphism. Likewise, more evidence is needed for those born during the last 50–70 years (both men and women), including general trends in average height, but also new topics such as the emergence of obesity as a new pandemic, and the impact of maternal obesity on children's stunting (López-Alonso, 2016; Martínez-Carrión & Salvatore, 2019). Although it is true that the increasing use of recent health surveys has partly remedied these two gaps, there is room for further research in these two areas since the samples related to these surveys are rather small and the period remains unexplored for many countries. Likewise, some Latin American countries call desperately for anthropometric studies, including many unexplored Central American republics such as El Salvador and Nicaragua, as well as some countries in South America (e.g. Paraguay), the Antilles and the Caribbean.

For the entire region, several dimensions of height inequality remain to be thoroughly investigated. One promising avenue for research lies in intergenerational inequalities in biological well-being, focusing on the transmission of nutritional health across generations and the role of chronic malnutrition and shifting access to food in shaping the physical development of current generations. At the national level, while studies have addressed urban and rural penalties, a deeper analysis of specific periods is still needed. Investigating living conditions and nutritional levels in urban slums, which expanded significantly in Latin America during the twentieth century, would be particularly valuable. Indigenous populations also warrant special attention, given the region's vast diversity of indigenous groups, in particular in selected countries such as Bolivia, Ecuador, Paraguay and the Central American republics. Examining their biological well-being would shed light on height disparities and on the impact of discrimination and segregation on the nutritional status of the most impoverished and marginalised communities. Measuring the stature disadvantage of indigenous groups, the rural population, and residents of urban slums can significantly enhance the policy implications of Anthropometric History,

particularly if these disadvantages are closely linked to studies of inequalities in access to water, sanitation, and hygiene – a critical factor in childhood growth and development. Finally, even for those countries for which we have sound information, recapitulations summarising the main results so far obtained are also needed (in particular intended to reach non-specialised audiences), as well as in depth studies on the social, economic and political context shaping net nutrition environments (on this, see López-Alonso, 2024).

Notes

- 1 The concept of *biological welfare* (or biological living standard) was first introduced by John Komlos (1985), one of the greatest scholars in the field of anthropometric history.
- 2 Although height is the star anthropometric indicator, other important anthropometric variables are weight, body mass index, birth at weight, prevalence of low birth weight, amongst many others.
- 3 For some essential studies on anthropometric history, including height inequality, see Baten & Blum (2014), Baten & Komlos (1998), Blum (2013), Floud et al. (2011), Komlos (1985), Steckel (1995), Steckel and Rose (2002). Amongst the most influential scholars in the field are John Komlos, Robert Fogel, Richard Steckel, Roderick Floud, Barry Bogin, Joerg Baten, amongst many others.
- 4 Even more, height is by itself multidimensional, since it is (at least) a result of net nutrition, health, education and income (Steckel, 1995; López-Alonso, 2016).
- 5 See in particular Baten et al. (2009), Cesani et al. (2025), Martínez et al. (2022), Salvatore (2004a, 2004b, 2007, 2009a, 2009b, 2019a, 2019b, 2020), and Salvatore & Baten 1998.
- 6 Amongst the most important are: Baten et al. (2009), de Oliveira & Quintana-Domeque (2014), Frank (2006), Franken (2019, 2024), Monasterio (2013), and Monasterio et al. (2010).
- 7 Of these clearly favoured countries, Chile was the last one to join the train, with these studies: Borrescio-Higa et al. (2019), Castellucci et al. (2021), Llorca-Jaña et al. (2018, 2019, 2020a, 2020b, 2021a, 2021b, 2022), and Núñez & Pérez (2015, 2021); amongst others.
- 8 Colombia is perhaps the best documented country of the region, at least as far as the size of the samples is concerned. See Acosta & Meisel (2013), Jaramillo-Echeverri et al. (2018), Meisel & Granger (2021), Meisel et al. (2019, 2023), Meisel & Vega (2005, 2007a, 2007b, 2010).
- 9 For Mexico, see Carson (2005, 2007, 2008, 2009), Challú (2009, 2010), Delajara & Rodríguez-Segura (2010), Dobado & García-Hiernaux (2017), Grajales-Porras & López-Alonso (2011), López-Alonso (2007, 2010, 2012, 2021), López-Alonso & Condey (2003), López-Alonso & Vélez-Grajales (2015, 2017, 2019), Sánchez-Alonso & Santiago Caballero (2022, 2023), Santiago-Caballero (2021), amongst others.
- 10 Beyond adult height, Guatemala should be mentioned as a country well researched, in particular as far as children height is concerned, mainly thanks to the works of Barry Bogin (e.g. Bogin, 2022) and associates, and other authors too, such as Challú & Silva-Castañeda (2016). Thanks to this information, Guatemala is, indeed, regarded as one of the shortest populations of the region.
- 11 For studies comprising more than a Latin American country, see Challú & Silva-Castañeda (2016), Baltzer & Baten (2008), Baten & Carson (2010), Baten et al. (2009), and Dobado & García Montero (2014).
- 12 For many countries of the region, the first estimates of such as basic indicator such as GDP per capita is available from 1900 only (Baten & Carson, 2010).

- 13 And indeed, periods in which height evolution does not follow the same trend of either GDP per capita or any other(s) important indicator(s) of living standard (López-Alonso, 2016).
- 14 Some countries have not been attended at all, such as Paraguay, while for others there is a handful of studies only, albeit, worth mentioning. See for example Persaud (2023) for Trinidad; Moreno-Lázaro (2023) and Godoy et al. (2007) for Puerto Rico; and for Peru, Ruiz Zevallos (2023) and Twrdek and Manzel (2010).
- 15 For several and excellent literature reviews on Latin America's anthropometric history, see Salvatore et al. (2010), López-Alonso (2016, 2024), Martínez-Carrión & Salvatore (2019), and Challú & Silva-Castañeda (2016).

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