

STATURE AND IMMIGRATION IN SOUTHERN BRAZIL (1889-1914)*

ESTATURA E INMIGRACIÓN EN EL SUR DE BRASIL (1889-1914)

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Abstract. This paper assesses the heights of residents in the southern state of Rio Grande do Sul (Brazil) born between 1889 and 1914 in order to evaluate their biological standard of living. Regression analysis and other tools were applied to a database of more than thirteen thousand observations of male statures and individual characteristics. The principal conclusions are: *a*) Population had relatively tall statures for the period (about 166.7 cm); *b*) European immigrants had heights close to those observed among those born in Rio Grande do Sul. *c*) Heights stagnated for those born during the period and even reduced in the last years of the sample. Lesley, three hypotheses for these height reductions are discussed.

Key words: anthropometric history; Brazil; biological standard of living.

Resumen. Este artículo evalúa la estatura de los residentes en el estado de Rio Grande do Sul (Brasil), nacidos entre 1889 y 1914, para evaluar sus condiciones biológicas de vida. Análisis de regresión y otras herramientas han sido aplicados a una base de datos con más de 13 000 observaciones/casos de la estatura y otras características de individuos del sexo masculino. Las conclusiones principales son: *a*) la población del estado era lo suficientemente alta para el periodo (unos 166.7 cm); *b*) los europeos inmigrantes tenían una estatura cercana a la de los nacidos en Rio Grande do Sul; *c*) la estatura permaneció estancada durante el periodo e incluso descendió en los últimos años. Finalmente, se discuten tres hipótesis para tales reducciones en altura.

Palabras clave: antropometría histórica; Brasil; nivel de vida biológico.

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INTRODUCTION

There are currently approximately 10 million inhabitants of Rio Grande do Sul (RS, henceforth), and its social indicators place it as one of the most developed states in Brazil. Life expectancy at birth is 75 years, and infant mortality is thirteen per one thousand live births (almost half the national average). In anthropometric terms, the average stature of men living in the state in 2003 was 172 cm, almost three centimeters taller than the national average and approximately six centimeters taller than people living in the Northeast region of Brazil.¹

These welfare indicators are understood by many Brazilians to be the result of the subsidized immigration of Germans and Italians to the state. However, the question must be raised as to whether people born in RS had different living conditions from immigrants at the time of the immigrants' arrival. If it were found that standards of living were relatively high even before the arrival of the immigrants, then it would be necessary to seek other explanations for the high standards of living in RS.

The state of Rio Grande do Sul received large waves of European immigrants (non-Iberians) during the early twentieth century. The hypothesis of the present study is that the living conditions in the state were relatively good even before the arrival of these foreigners. To test this hypothesis, the study examines the evolution of living conditions in the state over a relevant period of its economic development: 1889-1914.

No reliable income data are available for the period in question. Therefore, it was necessary to turn to anthropometric history to gain a broad vision of the biological standard of living, inequality and the variation in inequality throughout the period.

At least since 1829, when Villermé identified an empirical link between height and social class in Paris, it has been known that there is a relationship between living conditions and stature.² Today, the use of anthropometric data has been established as a proxy for biological standards of living. As a new survey by Steckel has shown, there is no longer a need to provide a defense for this methodology.³

There is a "prehistory" in Brazil of anthropometric studies, which were concerned with the distinctions between "races" and considered height an immutable and innate characteristic of ethnic groups.⁴ However, scholars linked to public health and epidemiology were the first to approach the

¹ Monasterio, Noguéról and Shikida, "Growth", 2010.

² Tanner, *History*, 1981, p. 26.

³ Steckel, "Heights", 2009.

⁴ For details see Sá *et al.*, "Crânios", 2008.

question of height in a contemporary manner. Monteiro *et al.* are in this category.⁵ Kac studied the heights of Brazilian Navy recruits born between 1940 and 1965.⁶ There are even more recent anthropometric history studies of Brazil by economic historians. The height data of prisoners in Rio de Janeiro in the 19th century were gathered and analyzed by Frank and by Baten *et al.*⁷ Finally, Monasterio *et al.* studied the stature of Brazilians born between 1939 and 1981 based on data from Family Budget Research.⁸

The aim of this paper is to analyze the evolution of the height of individuals in RS between 1889 and 1914, with special attention to the height of immigrants. The data were provided by the Pelotas Federal University Historic Documentation Centre (Núcleo de Documentação Histórica-Universidade Federal de Pelotas), which holds the historic files from the Regional Labor Department (Delegacia Regional do Trabalho) and digitizes information from the Ministry of Labor's individual employment record books. This source facilitates the appraisal of the heights of cohorts from 1889 to 1914, which is a first step in examining the evolution of height and its relationship to other economic variables. Because the employment record books contain data about individual characteristics in addition to anthropometric information, the study goes much further than a mere description of the temporal trajectory of stature in the population of the state.⁹

To understand the background of the changes in the biological living conditions, the paper's first section presents an overview of gaúcho demographics and related economic factors between 1889 and 1914. In the second section, the descriptive aspects of the database are presented. In the following section, an econometric analysis using individual data is performed to decompose the sources of the height variation. The fourth section discusses the reasons for the height stagnation during the study period. The paper concludes with final remarks.

AN OVERVIEW OF THE POPULATION AND ECONOMY OF RIO GRANDE DO SUL, 1889-1914

The objective of this section is to present the structure and the changes in the state of Rio Grande do Sul during the decades under study. The period is marked by the arrival of European immigrants and the state's economic modernization. Changes in the biological living conditions, as represented

⁵ Monteiro, Benício and Cruz, "Secular", 1994.

⁶ Kac, "Tendência", 1998.

⁷ Frank, "Stature", 2006, and Baten, Pelger and Twrdek, "Anthropometric", 2009.

⁸ Monasterio, Nogueroł and Shikida, "Growth", 2010, and Instituto, "Pesquisa", 2005.

⁹ "Population" and the "workers in the sample" will be used as synonyms in this paper.

by the height of the population, should be understood in the light of these economic and social processes.

The population of the state grew from approximately 0.9 million inhabitants to 2.2 million between 1890 and 1920,¹⁰ an increase of 3% per year (the population of Brazil as a whole grew at a rate of 2.56% per year). There was also a change in the economic axis of the state with the consolidation of colonial areas and of the capital (Porto Alegre), to the detriment of the extreme southern areas of RS. This region, which supplies livestock products (particularly dried meat, lard, and leather) to the rest of the country, lost its dynamism in the republican period. The agricultural activity in the state diversified with the integration of the Mountain Range and Upland regions of the colonial areas, which produced multiple food products for the internal market. Occupations related to manufacturing activity increased in the areas colonized by Italy and Germany. These processes were based on small businesses initially focused on the production of perishable consumer goods intended for the state's internal market.

Politically, this was a hegemonic period of the Rio-Grandense Republican Party (Partido Republicano Riograndense), which is seen in contemporary literature as having had a modernizing influence and an interest in the well-being of the citizens through investments in education and health.¹¹ Other authors highlight the modernizing character (authoritarian, of course) of the Rio-Grandense Republican Party political project.¹² The party moved away from the positivist ideology that supposedly guided its policies by widening the government's scope and fostering the diversification of the state's economy.

The population of RS is heterogeneous and composed of the same groups that are present in the Brazilian population: Amerindians, Europeans, and Africans. In addition to the Amerindian populations and internal migrations, the state became home to families from the Azores beginning in 1752, and the first migrations of German and Italian immigrants began in the 19th century, in 1824 and 1875, respectively.¹³ Celso Furtado asserts in his influential "The Economic Formation of Brazil" that slavery – an institution that is ever-present in Brazilian history – was almost unknown in RS.¹⁴ This view is incorrect. African slave labor was utilized in all sectors of the economy, particularly for the production of dried meat. In 1872, 15%

¹⁰ Instituto, *Estatísticas*, 2003.

¹¹ Targa, "Elites", 1998, and Herrlein, "Peculiaridade", 2002.

¹² Fonseca, *Rio*, 1983.

¹³ See Carvalho and Monasterio, "Immigration", 2012 for the long-term economic consequences of sponsored immigration to RS.

¹⁴ Furtado, *Formação*, 1976, p. 237.

of the population of the state was enslaved, a figure virtually identical to that in Brazil as a whole.¹⁵

The non-Iberian Europeans had a larger share in the population of RS than in other states of Brazil. The state stands out because it absorbed an enormous contingent of subsidized Europeans in proportion to the resident population. More than 2.7 million immigrants entered Brazil in the 1889-1919 period.¹⁶ The majority of immigrants went to the state of São Paulo (as a substitute for slave labor on coffee plantations), but a considerable number settled in RS. Table 1 below shows the population of the state by origin. In 1890, 3.9% of RS's population was foreign compared with 2.45% in the entire Brazilian territory.

The major change occurred between 1890 and 1900: while the Brazilian population in RS grew by 18%, the population of foreigners grew by 289%. Although the Rio-Grandense Republican Party's rhetoric did not support the policy on federal subsidies for immigrants, in practice, the state government supplied transport from the arrival point in Brazil to the colonies and provided land and infrastructure to the settlers.¹⁷ The share of foreigners reached 11.8%, the second highest value for states that received influxes of non-Iberian immigration.¹⁸ Eventually, in 1920, the percentage of foreigners in the state fell to 7.1% compared with 5.1% in the rest of the country.

It should be noted that there were not large differences in literacy levels between RS and the rest of Brazil. In 1890, 51.2% of the state's residents knew how to read; the rate was 50.5% for Brazilians as a whole. In 1920, the literacy rate in the population was 50%. These facts cast doubt on the assertion that the Rio-Grandense Republican Party prioritized public education. As for the distinctions between Brazilians and foreigners, there is a small difference with regard to the literacy of people over the age of fifteen in 1920: 55% of Brazilians knew how to read, compared with 62% of foreigners.¹⁹

¹⁵ DGE, *Recenseamento*, 1876. Fernando Henrique Cardoso demonstrated the importance of the slave labor of the Africans and their descendants in the state. He also worked to combat the myth that slavery in Rio Grande do Sul was of a benign nature. In addition, slavery existed in all municipalities in the state. In 1872, 23% of the population in the capital, Porto Alegre, were slaves, and even in the municipality with the smallest slave participation, the Germanic Colony of São Leopoldo, the percentage was 5%. See Cardoso, *Capitalismo*, 1977, and DGE, *Recenseamento*, 1876.

¹⁶ Levy, "Papél", 1974.

¹⁷ Roche, *Colonização*, 1969.

¹⁸ Foreigners were 5.4% of the population of São Paulo in 1890. They reached impressive 21% in 1900. By 1920, that share fell to 18.1 per cent.

¹⁹ DGE, *Recenseamento*, 1876, and MAIC, *Recenseamento*, 1923. See Stolz, Baten and Botelho "Growth", 2013, for estimates the impact of the human capital of immigrants to Brazil on contemporary GDP per capita.

TABLE 1. POPULATION OF RIO GRANDE DO SUL BY ORIGIN

<i>Year</i>	<i>Brazilians</i>	<i>Foreigners</i>	<i>Foreigners (percentages)</i>
1872	405 237	41 725	9.3
1890	862 690	34 765	3.9
1900	1 013 971	135 099	11.8
1920	1 981 688	151 025	7.1

Source: Levy, "Papel", 1974.

EVOLUTION OF STATURE IN RIO GRANDE DO SUL

Data source

This study is based on data taken from the individual employment record books of residents in RS issued between 1933 and 1940. There were initially 26 677 observations. The records use the metric system, and there is no information about the technique of measurement. After cleaning the data, the following restrictions were imposed: *a)* the study was limited to people born between 1889 and 1914 who were between 23 and 50 years old, and *b)* only men were considered to preserve comparability with other international studies. These criteria resulted in a sample that included 9 439 observations.

Some selection bias may have contaminated the sample because the workers in the formal labor market may not have been a representative sample of the population. In fact, the two extremes of income distribution are most likely excluded: informal workers and the upper levels of society. Because these two groups are underrepresented, it is hoped that one bias will cancel out the other with regard to the assessment of the average stature of the population. Furthermore, because other individual data, such as color and schooling, are available, this bias can be filtered in the econometric analysis that follows.

The fact that some of the data were obtained during World War II may raise doubts about the accuracy of the information on nationality. Some may assume that Italians and Germans identified themselves as Brazilians to avoid possible retaliation. This is highly improbable in the dataset because the most recent employment record book was issued at the end of 1940, and Brazil did not declare war against the Axis powers until the middle of 1942. Until then, the Vargas government remained neutral. It is

also worth noting that the data refer to the place of birth of the individuals and not to their nationality. Therefore, the distinction between foreigners and Brazilians in the data must be reasonably accurate.

Graphs 1 and 2 shows histograms of the sample data according to birthplace. The Annex provides details of the sample of Brazilians and foreigners for a period of five years. In addition, a description of the distribution of foreigners by country of origin is included.

It should be mentioned that the method used in the measurement of height is not known, and graphs 1 and 2 suggest that there are signs –as is customary with height data– that numbers were rounded up.

The Whipple's index value for the total sample is 136.9, whereas for Brazilians, the value is 137.4 and for Europeans, 123.7. If there were no heaping of digits ending in zero and five, the index would be equal to 100, and if there were heights ending in such digits, then the value would be equal to 500.²⁰ The index of 138.8 in this study indicates that there is a preference for heights ending in zero and five. Nevertheless, as Komlos stresses, symmetric rounding up is not a serious problem because it only marginally alters the results and, as a rule, can be ignored.²¹

The evolution of stature (1889-1914)

The average height measurements of residents born in RS were 167.7 cm between 1889 and 1909, and 167.0 cm (in 1909-1900), and 166.7 cm (for those born between 1910-1914). Comparing these numbers with data from Steckel, one can note that the native-born residents of RS were taller than the French (165 cm) and were close to the same height as the English (167 cm) at the beginning of the 20th century.²² However, they were shorter than North Americans and Norwegians, whose heights averaged 171 and 169 cm, respectively, in the same period.

The data up to 1910 place the population of Rio Grande do Sul close to the Argentinians in terms of stature.²³ The residents of the Brazilian state almost reached the height of passport bearers in Colombia (168.2 cm), who were approximately five centimeters taller than the population in general.²⁴ Compared with Mexican military personnel in the same

²⁰ For studies that use Whipple's index as a proxy for numeracy and human capital, see Crayen and Baten, "Global", 2010.

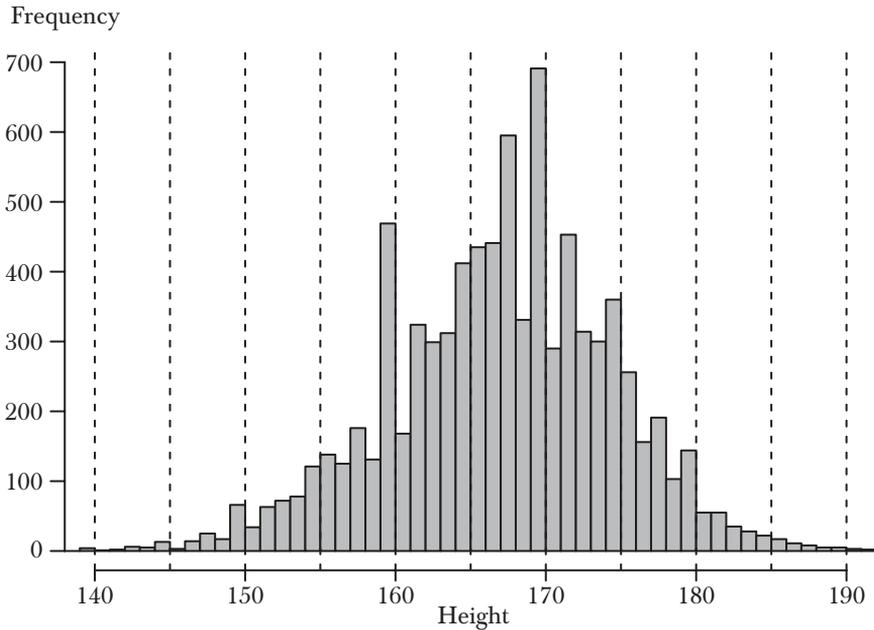
²¹ Komlos, "How", 2004.

²² Steckel, "Stature", 1995.

²³ Salvatore, "Stature", 2004, p. 240.

²⁴ Meisel and Vega, *Calidad*, 2007.

GRAPH 1. HEIGHT OF BRAZILIANS: HISTOGRAM



Note: dashed lines indicate heights finished in zero or five.
Source: see text.

period, the southern Brazilians were approximately three centimeters.²⁵ The Brazilian male population only reached 168 cm for those born in the 1940s.²⁶

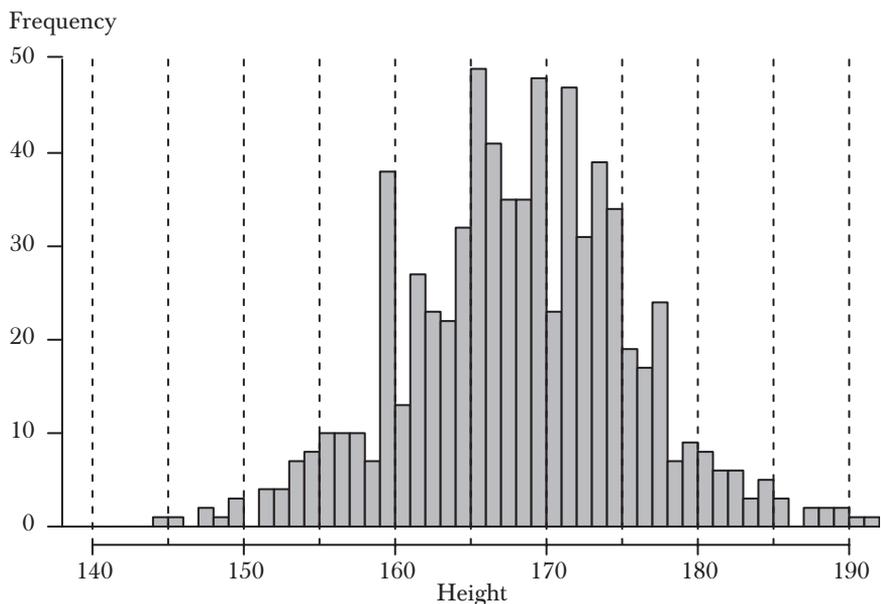
These results may point to the role played by natural resources in the biological well-being of the population. The climate of RS is humid subtropical and it is located in the temperate zone. Despite occasional droughts, rainfall is well distributed throughout the year. In 1900, the population density of the state was comparable with that of current-day Canada and all land mass of RS is habitable.²⁷ The state always had a trade-balance surplus with the rest of the world (including Brazil) during this

²⁵ López-Alonso, "Growth", 2007.

²⁶ Monasterio, Nogueurol and Shikida, "Growth", 2010.

²⁷ Canadian recruits at the beginning of the twentieth century were a bit taller than men born in RS. See Cranfield and Inwood, "Great", 2007.

GRAPH 2. HEIGHT OF EUROPEANS (NON-IBERIAN): HISTOGRAM



Note: dashed lines indicate heights finished in zero or five.
 Source: see text.

period based on the export of livestock products. Dried meat, leather, and beans, in that order, were the principal export products in the first decade of the 20th century and together were responsible for more than half of all exports.²⁸ Clearly, the state had a comparative advantage based on the relative abundance of natural resources.

There is anecdotal evidence that the consumption of animal protein was remarkably high throughout the nineteenth century. There are reports that the provisions of soldiers and drovers from the state consisted primarily of meat, either that of cattle or game.²⁹ In 1893, a basic worker's diet included two kilograms of meat per day for a family of four people.³⁰ The high consumption of meat must have been partially responsible for the high relative heights of the state inhabitants.

²⁸ Dalmazo, *Relações*, 2004. "Exports" in this paper refers to all sales to out-of-state destinations.

²⁹ Witter, "Males", 2007, p. 247.

³⁰ Lisboa and Monasterio, "Novo", 2006.

Rio Grande do Sul's good biological living conditions are attested by contemporary observers. In a study on health in the nineteenth century, Witter notes that the province was considered to be Brazil's healthiest.³¹ Foreign travelers perceived similarities between the region and the healthiest regions of Europe. Even if somewhat idealized, praise for the state's salubrious environment at the time was perhaps credible.

The evolution of the average height of Brazilians and European immigrants is shown in graph 3. Europeans started with a remarkable average height of 168.6 cm, which increased to 169 cm at the turn of the century, and decreased to 168.1 cm at the end of the time series. The reason for this decrease is not obvious. It results from either the decline in the living conditions of immigrants or a change in the country of origin of the groups. However, it is possible that an increasing number of Europeans in RS arrived in the state as children and therefore were subject to the local biological living conditions. (The present study does not attempt to provide a definitive explanation for the increase in the heights of Europeans.)

Back to the Brazilian sample: what is the explanation for the reduction of statures? Before seeking the most deeply rooted possible causes, it is necessary to ascertain whether this reduction is the result of changes in the composition of the sample. With this in mind, an econometric analysis was conducted on individual data.

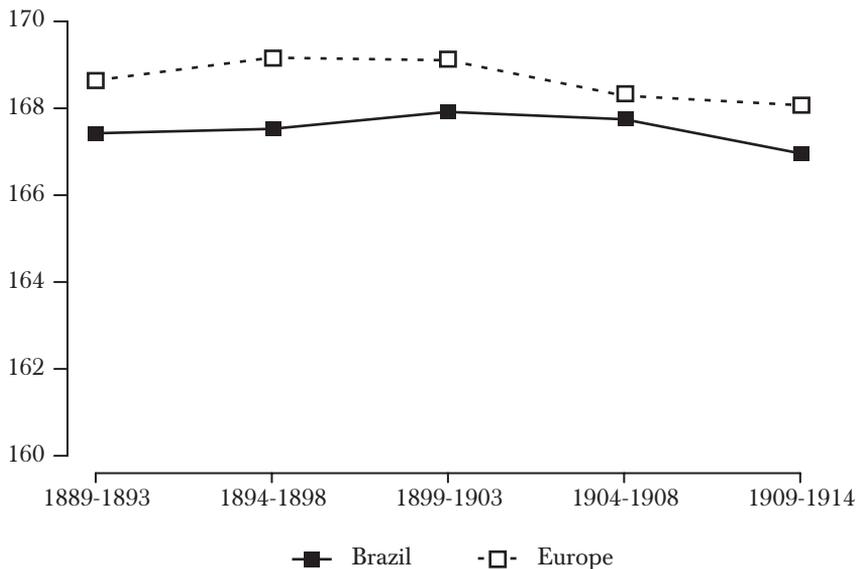
ECONOMETRIC ANALYSIS OF INDIVIDUAL HEIGHT DETERMINANTS

To analyze individual height determinants, individual heights were assessed using ordinary least squares and all available information in the employment record book registers, including variables that capture the effects of the different cohorts and individuals' ages. Dummies were created for color, place of birth, level of education and five year cohorts. The reference individual was a person born in Brazil, illiterate, white, and born between 1889 and 1893.

The results for all the variables are illustrated in graph 4. The non-white dummy showed that these individuals were approximately 0.91 cm shorter than the reference individuals. Because the literature asserts that there is no relevant genetic difference in terms of potential stature, it is probable that this variable captures the effect of the poorer socioeconomic condition of non-white residents in the state. Even in the post-abolition era, low food

³¹ Witter, "Males", 2007, pp. 236-239.

GRAPH 3. AVERAGE HEIGHTS BY COHORT (FIVE YEAR PERIOD) AND PLACE OF BIRTH IN CENTIMETERS



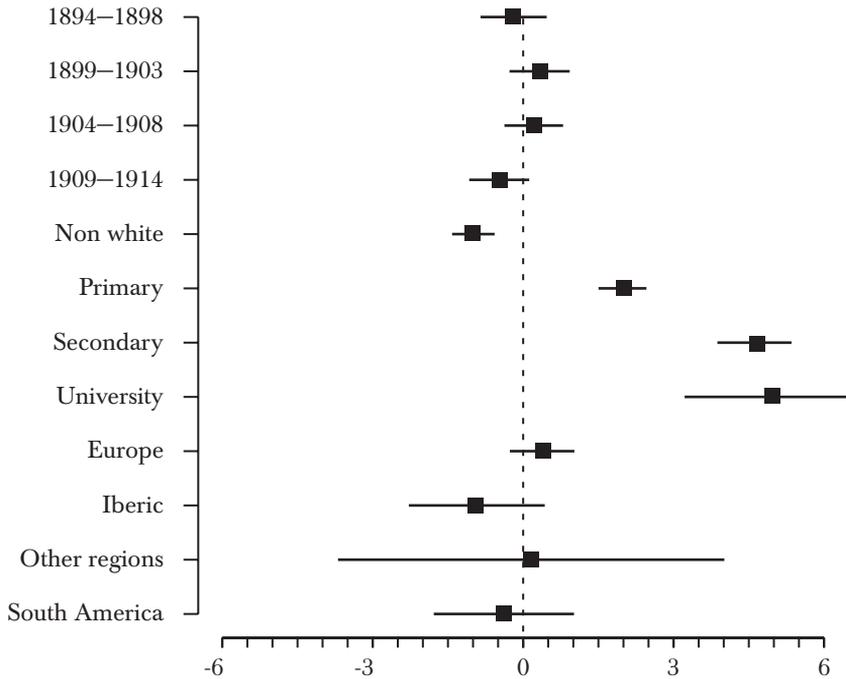
Note: Rio Grande do Sul, 1889-1914.
Source: see text.

quality, the physical intensity of work, and limited access to public health had detrimental effects on the height of non-white individuals.

The dummy for immigrants contradicts what the graphic analysis in the previous section suggests: there is no statistical effect of birth abroad on height. That is, the small difference between the average height of those born in Europe and those born in Brazil, as noted above, does not prevail when control variables are included. This possibility supports the study's hypothesis that RS's biological living conditions were already good when the immigrants arrived.

The dummies for the schooling levels capture the effects of the social status of workers. In relation to the illiterate individuals, those who had reached a primary school level of education were two centimeters taller, and those with a secondary school education were 4.6 cm taller. Individuals with a university degree –only 51 individuals in the sample– were 5.1 cm taller, on average, than illiterate individuals. This is a clear sign that socioeconomic differences had an impact on biological standards of living.

GRAPH 4. ECONOMETRIC RESULTS-DEPENDENT VARIABLE: HEIGHT (IN CENTIMETERS)



Note: 95% confidence intervals. See Appendix for full econometric results.

Sources: graph was generated using R Development Core Team, *R*, 2009, and code based on Kastlelec and Leoni, "Using", 2007.

None of the cohort dummy variables were statistically significant. That is, when measurable individual factors were controlled for, there was no trend in the change in heights over the analyzed period. Despite being relatively good, the biological living conditions remained as such during the analyzed period.

HEIGHT AND DEVELOPMENT IN RIO GRANDE DO SUL

The complexity of the relationship between modernization and biological living conditions has been recognized in the historical anthropometry

literature. Both in theory and in empirical analysis, there are many explanations for this complexity. Steckel and Floud claim that the relationship depends on three factors: “(1) the timing of industrialization relative to the rise of the germ theory of disease and public health, (2) the extent of urbanization, and (3) diets”.³²

In the gaucho case, since the mid-1850s, the authorities were concerned about the unsanitary conditions of cities despite the prevailing view that diseases were caused by miasmas.³³ Nevertheless, smallpox vaccination campaigns were frequent beginning in the second half of the nineteenth century. Additionally, by the determination of the Provincial Government, commissions and regulations for the improvement of the sanitary conditions in the cities were established.³⁴ Regarding industrialization, even in 1920, only 14.2% of the state’s workers were employed in the manufacturing industry. This fact suggests that, as in Mexico,³⁵ the heights of the population did not follow the same trend observed in several countries during the so-called first Industrial Revolution when the germ theory was unknown.

Perhaps the best way to understand the case of RS is to compare it with two well-studied cases in South America: Colombia and Argentina. Meisel Roca and Vega Acevedo identified a secular trend associated with increased height in Colombia that accompanied the country’s economic development, whereas Salvatore found an inverse relationship between income and height for Argentinians. He shows that, despite the economic development boom in the country between 1900 and 1914, nutritional conditions and health deteriorated, leading to a stagnation and even reduction in height. Salvatore concludes, “Paradoxically, a food-rich economy during an export bonanza generated a situation of health and nutritional stress”.³⁶

As for the Argentine Belle Époque issue, it makes sense to imagine that the relative price of animal proteins increased, reducing the consumption of meat and restricting height. However, in Colombia, where coffee does not have the same nutritional relevance, height would not have been directly impacted by variations in the price and consumption of the primary export.

The experience of change in the biological living conditions in RS resembled to a certain extent the case of Argentina. Similar to RS, Argentina possessed an abundance of natural resources and experienced a large population increase during the period 1889 to 1914. As stated previously, the

³² Steckel and Floud, “Conclusion”, 1997, p. 431.

³³ Witter, “Males”, 2007, p. 252.

³⁴ *Ibid.*, p. 257.

³⁵ López-Alonso, *Measuring*, 2012.

³⁶ Salvatore, “Stature”, 2004.

diet of the RS population was rich in animal protein. Therefore, an increase in meat prices and export (associated with the population increase) would have contributed to the height decrease.

However, in contrast to the Argentinian case, heights were apparently stagnant in RS during the study period. Without a thorough analysis, it would be hasty to conclude which factors prevented a significant decrease in heights. One possibility is that RS was a less specialized economy and would have modernized more slowly than Argentina. Thus, the diet may have been adapted to other sources of non-tradable animal protein and the “hidden cost of development”,³⁷ *i. e.*, the cost associated with economic modernization, was relatively low in Rio Grande do Sul.

FINAL REMARKS

High biological standards of living have been associated with several important factors, including a low labor/land ratio (which guarantees an abundance of natural resources), low demographic density, and a healthy environment. These facts describe the case of North America at the beginning of the 19th century. In contrast, in developed societies such as modern-day Holland, high income provides for nutritional abundance and health services that reduce nutritional stress and produce the tallest individuals in the world.

Data suggest that individuals from Rio Grande do Sul in the period of 1889 to 1914 were in a natural resource-abundant environment. Their height was comparable to that of individuals in industrialized countries at the time, even though RS had an underdeveloped economy. In fact, RS had biological standards of living analog to frontier, low density, regions of the world such as Argentina or Canada.

Econometric results show that people born in Rio Grande do Sul were as tall as the immigrants, indicating a similarity in biological standards of living between the origin and destination regions. The econometric analysis also emphasizes the inequality of height: in statistical terms, a non-white and illiterate individual was more than seven centimeters shorter than a white individual with a college degree.

Many questions remain open in the anthropometric history of Rio Grande do Sul. Most likely, it will be necessary to go beyond the analy-

³⁷ Cuff, *Hidden*, 2005. The inverse relationship between monetary salaries and stature was observed in the United States during the nineteenth century and in English cities during the Industrial Revolution in the mid-nineteenth century. See Fogel, *Escape*, 2004, p. 17, and Komlos, “Shrinking”, 1998.

sis of anthropometric databases and conduct further historical studies on public health, diets and urbanization to improve our understanding of the state's biological living conditions.

APPENDIX

TABLE A. 1. NUMBER OF OBSERVATIONS IN THE SAMPLE BY PLACE OF BIRTH

<i>Country</i>	<i>Number</i>
Italy	269
Germany	189
Poland	119
Uruguay	115
Portugal	96
Russia	50
Spain	44
Austria	25
Argentine	20
Romania	15
Lithuania	14
Other	56

TABLE A. 2. DESCRIPTIVE STATISTICS OF THE SAMPLE, BORN IN BRAZIL

<i>Years</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Median</i>	<i>Number of observations</i>
1889-1893	167.4	7.5	168	941
1894-1898	167.5	7.3	168	1 110
1899-1903	167.9	7.9	168	1 787
1904-1908	167.7	7.3	168	2 162
1909-1914	167.0	7.5	168	2 392

TABLE A. 3. DESCRIPTIVE STATISTICS OF THE SAMPLE, BORN IN EUROPE (NON-IBERIC COUNTRIES)

<i>Years</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Median</i>	<i>Number of observations</i>
1889-1893	168.6	7.6	170	132
1894-1898	169.2	7.8	168	127
1899-1903	169.1	7.9	169	189
1904-1908	168.3	7.1	169	190
1909-1914	168.1	8.3	168	84

TABLE A. 4. ECONOMETRIC RESULTS-DEPENDENT VARIABLE: HEIGHT (IN CENTIMETERS)

	<i>Estimate</i>	<i>Standard error</i>	<i>t value</i>	<i>Pr (> t)</i>
<i>Intercept</i>	166.257	0.328	507.42	<2e=16
1894-1898	-0.191	0.337	-0.57	0.57
1899-1903	0.328	0.306	1.07	0.28
1904-1908	0.211	0.298	0.71	0.48
1909-1914	-0.478	0.305	-1.57	0.12
Non-white	-0.993	0.216	-4.60	4.3e-06
Primary	1.981	0.244	8.12	5.7e-16
Secondary	4.612	0.377	12.23	<2e-16
University	5.288	1.055	5.01	5.5e-07
Europe	0.378	0.328	1.15	0.25
Iberic	-0.925	0.692	-1.34	0.18
Other	0.160	1.966	0.08	0.94
South America	-0.384	0.713	-0.54	0.59

Multiple R-squared: 0.0354. Adjusted R-squared: 0.0338.

F-statistic: 21.2 on 12 and 6 933 Degrees of Freedom, p-value: <2e-16.

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