

**THE STATURE OF THE COLOMBIAN ELITE BEFORE THE ONSET OF  
INDUSTRIALIZATION, 1870 - 1919**

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## THE STATURE OF COLOMBIANS ELITE BEFORE THE ONSET OF INDUSTRIALIZATION, 1870-1919

### Abstract

The average height of Colombian women increased 8.95 cm between 1905 and 1985 and of men 8.96 cm in the same time period. Thus the country was a success story according to international standards in this respect. The information for the adult height of Colombians born between 1905 and 1985 was obtained from a database with more than 9 million observations constructed with the national ID cards. This implies that the results are indicative of what happened to the overall population.

For the pre-industrial era in Colombia, which is before the 20<sup>th</sup> century, information on height is only available from 1870. The source in this case is the records of the passports issued to Colombian citizens, for which we have obtained about 17.000 observations.

The analysis of those records for the period 1870-1919 reveals some striking results. In the first place, the long run behavior of height was stable, unlike what is observed with the national ID card records, beginning in 1905, in which case heights were increasing. The group included in the passport records is much taller than those from the ID card. For the period 1905-1909 the average passport height for men was 168.7 cm compared with 162 cm for national ID cards. In the case of women the former had an average height of 158 cm and the later 150 cm.

Another characteristic found in the passport sample is that there were almost no regional differences, unlike what is observed in the case of the national ID cards. The reason why the behavior of the height of Colombians obtained in the passports differs from the one recorded in the national ID cards is that in the 19<sup>th</sup> century and early 20<sup>th</sup> century Colombians who traveled abroad, mainly to Europe and the US, belonged to the elite. Thus, they seemed to have good levels of nutrition and living conditions which made them relatively tall even by the standards of European countries at that time.

However, although tall by the standards of the 19<sup>th</sup> century these Colombians had an average height which was below Colombians born in 1985. While the average height for men in this group in 1900 was 168.2 cms, Colombians born in 1985 grew to an average height of 170.6 cm. Thus, the health conditions under which the elite found itself was holding their height down. Only until the late 1920's, when the earliest the international advances in modern medical technology would have been felt, could many of the health impediments for advances in height would have begun to be eliminated.

## I. INTRODUCTION

The 19<sup>th</sup> century was a period of economic decline and civil wars in many Latin American countries. Colombia experienced both economic decline, until around 1850, and numerous civil wars, of which the War of the Thousand Days (1899-1902), with an estimated 100.000 casualties, was the bloodiest.<sup>1</sup> The study of the standard of living in this time of turmoil is very important since the impact of economic and political events on people's lives can be better understood.

The difficulty with the study of the standard of living in this period is that the relevant information is often not available. There are no estimates of per-capita Gross Domestic Product (GDP) and the available records for wages and salaries are very fragmentary. Additionally, there are no reliable price indexes for the 19<sup>th</sup> century, so that it is quite difficult to know the evolution in the purchasing power of various groups. For this reason the advances of anthropometric history in the last 30 years are very helpful for a better understand of the behavior of the material standard of living, at least during a sub-period of the 19<sup>th</sup> century.

Since the pioneering work of Robert W. Fogel and his associates in the late 1970's on anthropometric history, economic historians have increasingly resorted to height as a measure of the biological standard of living, since adult stature reflects both the net nutritional status during the years of growth (0-18 years old) and the genetic potential.<sup>2</sup>

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<sup>1</sup> The best introduction to the history of Colombia in the 19<sup>th</sup> century is Marco Palacios and Frank Safford, *Colombia: Fragmented Land, Divided Society*, Oxford University Press, USA, 2002.

<sup>2</sup> For an introduction to the field of anthropometric history see Richard Steckel, "Stature and the Standard of Living", in *Journal of Economic Literature*, vol. XXXIII, December, 1995.

The passports issued in Colombia to people born from 1870 to 1919 are a very important source to trace the evolution in the biological standard of living since they contain anthropometric information.

In this paper we study the behavior of height for a group of more than 16.000 Colombians, mostly from the elite, born between 1870 and 1919. The quality of the information is very good, especially since it is available for a relatively long time period, for both men and women, and contains additional data, such as destination, reason for travelling, and place where the passport was issued.

The database, and the results obtained in this paper, complements a previous study done by the authors for the period 1905-1985 using a larger sample from the national ID cards<sup>3</sup>. The advantage of using the passport records for the period 1870-1919 is that it allows us to know something of what was happening with the standard of living for one group of Colombians born in the last thirty years of the 19<sup>th</sup> century and the first two decades of the 20<sup>th</sup>.

## II. THE DATA

The information on height used in this paper was obtained from the passport records of the Colombian Ministry of Foreign Relations.<sup>4</sup> Passports originated in different types of documents that were issued by rulers which requested safe passage through foreign lands for their subject, with the promise that no subject of the king would injure or rob a foreigner who carried a Safe Conduct.<sup>5</sup>

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<sup>3</sup> Adolfo Meisel and Margarita Vega, “La estatura de los colombianos: un ensayo de antropometría histórica, 1910-2003”, in *Revista del Banco de la República*, Bogotá, vol. LXXVII, num. 922, August, 2004.

<sup>4</sup> The records for the passports issued by the Colombian government in the period 1870-1919 are found in the Archivo General de la Nación and in the archives of the Foreign Ministry (see Table 1).

<sup>5</sup> [www.ukpa.gov.uk/\\_history/history\\_00.asp](http://www.ukpa.gov.uk/_history/history_00.asp)

During the reign of Louis XIV of France these “letters of request” became popular.<sup>6</sup> They were called “passé port”, since at the time most long distance travel was undertaken in sailing ships.<sup>7</sup> Through the 18<sup>th</sup> century and the early part of the 19<sup>th</sup> century most European countries established a system for issuing passports, which were generally single-sheet certificates stamped with an official seal. In the second half of the 19<sup>th</sup> century photographs were added to those documents.

**Table 1. Sources of Passports Records in Colombia**

City	Year of issue	Source
Bogotá	1927-1940	Archivo General de la Nación
Bucaramanga	1920-1940	Ministry of Foreign Relations
Cartagena	1918-1940	Ministry of Foreign Relations
Cúcuta	1928-1940	Ministry of Foreign Relations
Ibagué	1925-1938	Ministry of Foreign Relations
Manizales	1931	Archivo General de la Nación
Manizales	1932-1940	Ministry of Foreign Relations
Medellín	1926-1940	Archivo General de la Nación
Medellín	1918-1925	Ministry of Foreign Relations
Neiva	1924-1940	Ministry of Foreign Relations
Pasto	1929-1940	Ministry of Foreign Relations
Popayán	1918-1939	Ministry of Foreign Relations
San Andrés	1939	Ministry of Foreign Relations
Santa Marta	1918-1940	Ministry of Foreign Relations

With the extraordinary increase in long-distance travel brought about by the spread of railroads in Europe and especially by the introduction of steam navigation, the passport issuing systems were abolished, since the authorities could not keep up with the increasing demand for this document. For example, in 1861 France abolished passports and visa requirements.<sup>8</sup>

<sup>6</sup> [www.ppt.gc.ca/passport\\_office/history\\_e.asp](http://www.ppt.gc.ca/passport_office/history_e.asp)

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

After World War I, the League of Nations International Conference on Passports recommended a book form passport, similar to the ones still in use today in most countries.<sup>9</sup>

In the Spanish Empire during the 18<sup>th</sup> and 19<sup>th</sup> century the colonial authorities issued passports for travel from one place to another. For example, in 1800 Martin Jose Amador, who was later to be shot by the Spaniards because he fought for the independence of what is now Colombia, was issued a passport by the Spanish Consulate in Baltimore, USA, so that he could travel to his native Cartagena in the Viceroyalty of New Granada.<sup>10</sup> The passport contained a physical description of Martin Jose Amador, including his height (5 feet 5 inches), the color of his hair (black), and the color of his eyes (black).

The history of passports in Colombia begins in 1824 when the recently created republic issued a law authorizing the granting of passports to those Colombians who found themselves abroad.<sup>11</sup>

The database used in the present study was constructed by the authors from the records for passports issued in the period 1870-1919 by the Colombian Ministry of Foreign Relations.<sup>12</sup> This information has never been used up to now by social scientists, although it is in excellent conditions. These records contain valuable information, not only for anthropometric history, but also for social history.

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<sup>9</sup> [www.ukpa.gov.uk/\\_history/history\\_00.asp](http://www.ukpa.gov.uk/_history/history_00.asp)

<sup>10</sup> Archivo General de la Nación, Colonia, Fondo Policía, Legajo 7, folio 523.

<sup>11</sup> Banco de la República, Biblioteca Luis Ángel Arango, Biblioteca Virtual, <http://www.lablaa.org/>, Luis Humberto Salamanca, *Manual para el servicio exterior de Colombia*, Bogotá: Publicación del Ministerio de Relaciones Exteriores, 1959, pp. 208-222.

<sup>12</sup> Although there is some information for passports issued in the period 1859-1869 the number of observations is so limited that the results are not significant. For this reason we have used only the data that begins in 1870. For the period before 1859 no information on passports is available at the archives of the Ministry of Foreign Relations.

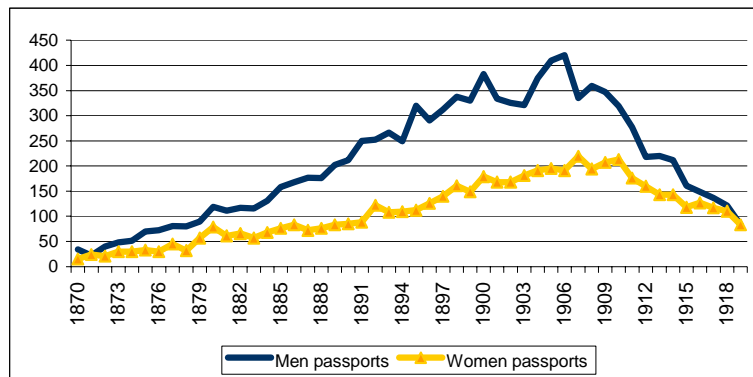
For the period 1870-1919 a total of 15.911 observations were obtained from the passport archives (see Table 2).<sup>13</sup> A growing number of observations per year were obtained until 1906, when 420 records for men and 219 for women were found. Then, the sample drops to 83 observations per year for both men and women (see Graph 1). All passports that reported the exact height were included, while those with no height or only a general description such as tall, average height, or short, were discarded. In most of our analysis we have used only information for those Colombians who obtained their passport when they were between 18 and 60 years old. The reason for using this range is that adult height is achieved by about 18 years of age and at more advanced ages, such as the 60's, height may decrease.

**Table 2. Average Height Obtained from Passport Records, 1870-1919**

Date of birth	Average Male Height	Average Female Height	Increase in Height for Men (%)	Increase in Height for Women (%)	Number of observations (Men)	Number of observations (Women)	Coefficient of Variation (Men)	Coefficient of Variation (Women)	Centimeters increased (Men)	Centimeters increased (Women)
1870-1874	167,4	158,1			195	120	0,0497	0,0393		
1875-1879	168,2	157,5	0,5%	-0,4%	393	197	0,0415	0,0395	0,79	-0,62
1880-1884	168,7	158,2	0,3%	0,5%	594	331	0,0407	0,0483	0,51	0,73
1885-1889	168,8	158,9	0,1%	0,4%	881	390	0,0428	0,0486	0,18	0,68
1890-1894	168,5	158,7	-0,2%	-0,1%	1.229	512	0,0432	0,0477	-0,31	-0,22
1895-1899	168,5	158,3	0,0%	-0,3%	1.591	688	0,0423	0,0488	-0,01	-0,42
1900-1904	168,3	158,2	-0,1%	0,0%	1.739	887	0,0398	0,0472	-0,24	-0,06
1905-1909	168,7	158,1	0,3%	-0,1%	1.871	1.006	0,0401	0,0444	0,44	-0,09
1910-1914	168,3	158,6	-0,3%	0,3%	1.246	835	0,0424	0,0433	-0,43	0,46
1915-1919	168,6	158,7	0,2%	0,1%	651	555	0,0407	0,0415	0,33	0,14
<b>TOTAL</b>	<b>168,39</b>	<b>158,33</b>	<b>0,7%</b>	<b>0,4%</b>	<b>10.390</b>	<b>5.521</b>			<b>1,24</b>	<b>0,59</b>

Note: Includes only persons whose age was between 18 and 60 years.

**Graph 1. Number of Observations of Passport Records, by Year of Birth (1870-1919)**



<sup>13</sup> These passports were issued from 1918 to 1940.

The passport data also contain 924 observations for those who were under 18 years old when they obtained that document. We have used that information to show the age-growth profile for both males and females.

The information in the Colombian passports for those born in the period 1870-1919 included name, city where it was issued, date of issue, age, height, color of eyes and hair, destination, reasons for trip abroad and occupation. It also included a photograph. The place of birth was not reported. All the above information is available in the database we have constructed, except the eye and hair color, which we did not consider useful for our purposes.

The data included in the passport records can be very valuable for multiple purposes. For all of the entries the name of the person is available. This allows researchers to look up specific individuals for which there is information on date of birth, anthropometric characteristics, and social characteristics (occupation, reason for travelling), as well as the year and country where the person travelled.

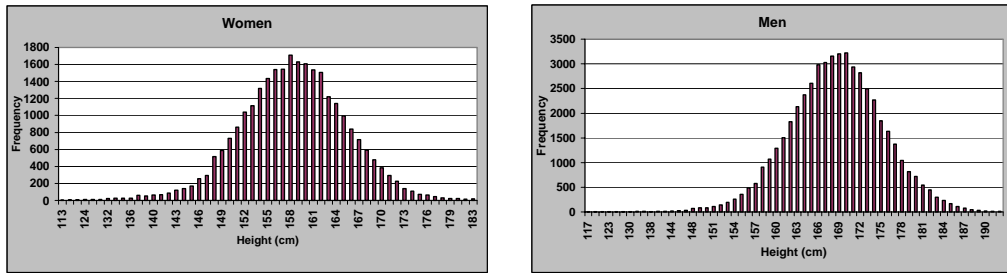
The quality of these data was tested by applying the Lilliefors and Jarque-Bera normality tests to the observations of each year. In both tests, and for almost every year, at the 3% level of significance the null hypothesis of normality was accepted.<sup>14</sup> Graph 2 shows the frequency distribution for this sample for both men and women, using the data for the period as a whole

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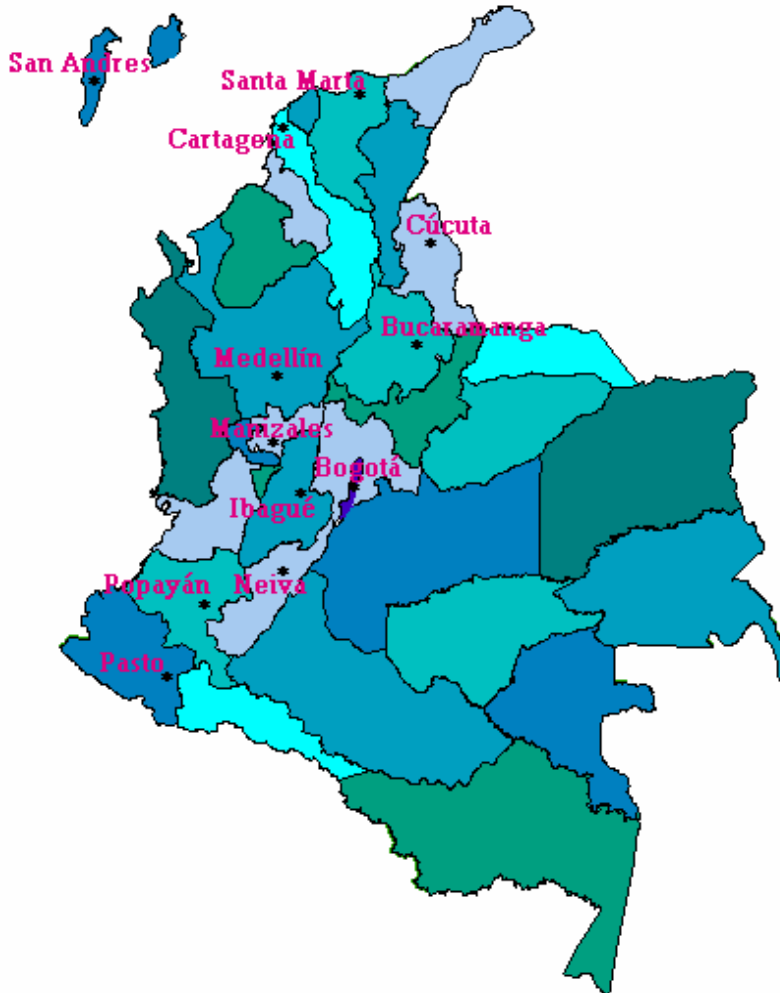
<sup>14</sup> The t-statistics for men under the Lilliefors test was between 0.05 to 0.14.



.Graph 2. Frequency Distribution of Height

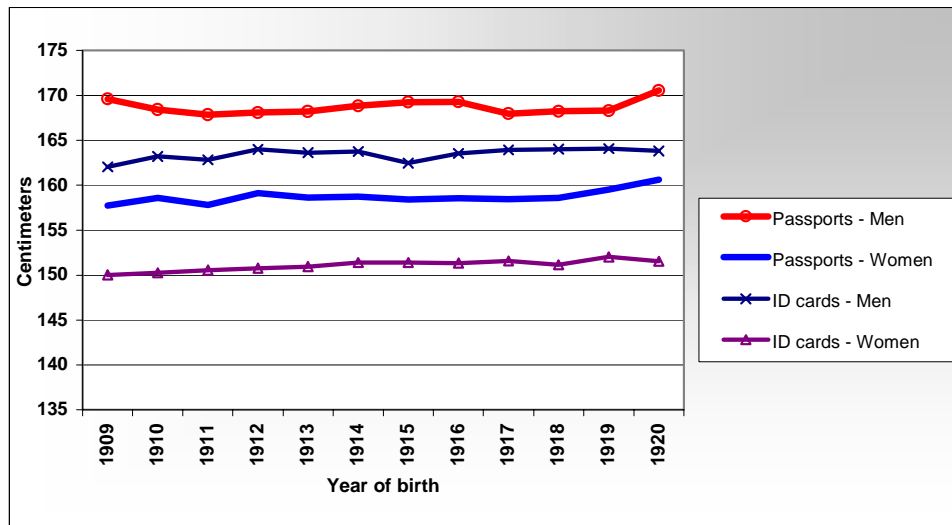


Map 1. Colombian Cities where Passports were Issued



The reason for examining the period 1870-1919 is that in the aforementioned study we had obtained information for the height of Colombians from national ID cards beginning in 1905. However, it is important to have some knowledge about the evolution of height before 1905, especially since after 1905 the growth of coffee exports allowed Colombia to make the transition from a stagnant to a rapidly growing economy.<sup>15</sup> The data on height obtained from passports was extended until 1919 so that we could compare the results obtained from this source with those from the ID cards. When the heights from these two sources are compared (see Graph 3) it is evident that the average height obtained from passports is above that obtained from the ID cards: about 8 cm. for women and about 5 cm. for men.

**Graph 3. Average Height from Passports and ID Cards, 1909-1919**



The reason for the difference in average height between passport and ID card holders is probably related to the fact that while the information based on the later source is a representative sample for the Colombian population as a

<sup>15</sup> The average annual increase of per capita GDP for the period 1905-1924 was 3.4% and for 1925-1950, 2.16%. See GRECO, *El crecimiento económico colombiano en el siglo XX*, Banco de la República, Fondo de Cultura Económica, Bogotá, 2002, p. 4.

whole, the former represents the universe of a small segment of the population, since most of the persons included belonged to the social, economic, and cultural elite.

In the case of Mexico, Lopez-Alonso<sup>16</sup> used information from passports issued between 1910 and 1935, with people born from the 1870's to the 1910's (3.970 observations). Even though her sample includes all passports ever issued, it does not include all permits to travel, which were also used in Mexico. Local governments of areas that were too distant from Mexico City were authorized to issue travel permits. Thus that sample undercounts people from, for example, the frontier states.

Lopez-Alonso found that the height of males from the passport sample, composed mainly of skilled manual workers, white-collar workers, and members of the elite, remained fairly stable up to the last three decades of the 19<sup>th</sup> century. She also found a recovery for the cohorts who grew up during the years of the Revolution (1910-1917). Her results show that, for males, the tallest category of the elite was 4.4 cm. taller than the unskilled workers. For the 20<sup>th</sup> century there is no sign of an upward trend in average height until the 1940's.

In the case of the United States, Marco Sunder used a database with 19.722 observations for males born in the period 1800-1900, and 5.992 for females, born in the period 1820-1900, constructed from passport applications. Also in

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<sup>16</sup> Moramay Lopez-Alonso, "An Anthropometric Approach to the Measurement of Living Standards, Mexico (1870-1950)", in National Bureau of Economic Research, *NBER Working Paper Series*, Department of History, Stanford University, 2000, and Moramay Lopez-Alonso and Raúl Porras, "The Ups and Downs of Mexican Economic Growth: The Biological Standard of Living and Inequality, 1870-1950", in the *Journal of Economics and Human Biology*, vol. 1, num. 2, 2003.

that country passport applications reflect the height of the wealthier segments of the population.<sup>17</sup>

Sunder shows that for the first half of the 19<sup>th</sup> century the height of passport applicants remained fairly stable, unlike the majority of the population which experienced a significant fall in average height during the half century before the US Civil War, the so-called “Antebellum Puzzle”. Additionally, beginning about the middle of the century the height of passport applicants increased rapidly and by 1900 they had an average height that was reached by the rest of the population only four decades later.<sup>18</sup>

Illustration 1.



<sup>17</sup> Marco Sunder, “On the Biological Standard of Living of the Wealthy in 19<sup>th</sup> Century America”, World Cliometric Congress, 2004, Venice, Italy, July 9, 2004.

<sup>18</sup> Ibid., p. 9.

### III. TRENDS IN AVERAGE HEIGHT

During the first decades after independence the territory of what is now Colombia, like most of Latin America, experienced a drop in its per capita GDP.<sup>19</sup> Between 1802-1804 and 1846-1850, per capita exports in real terms fell by 42%.<sup>20</sup> However, exports recovered in the following two decades as a result of a short lived boom in tobacco exports. After 1880, and until 1910, export growth again stagnated, although experiencing short term fluctuations.<sup>21</sup> As a result, in 1913, among the Latin America countries, only Haiti and Honduras had fewer exports per capita than Colombia (see Table 3).<sup>22</sup>

**Table 3. Latin America Exports and Foreign Investment, 1913  
(Latin America = 100)**

Country	Per Capita Exports	Per Capita Foreign Investment
Argentina	343	306
Cuba	337	188
Uruguay	287	225
Chile	192	104
Costa Rica	130	121
Bolivia	90	16
Nicaragua	73	20
Brazil	65	78
Panama	60	13
Republica Dominicana	53	4
Venezuela	51	20
Paraguay	48	33
Mexico	47	131
Guatemala	46	48
Peru	46	37
Ecuador	44	15
El Salvador	40	15
<b>Colombia</b>	<b>34</b>	<b>8</b>
Haiti	31	14
Honduras	27	34

Source: José Antonio Ocampo, *Colombia y la economía mundial 1830-1910*, Tercer Mundo Editores, Colciencias-Fedesarrollo, 1998, p. 53.

<sup>19</sup> See John H. Coatsworth, "Economic and Institutional Trajectories in Nineteenth Century - Latin America", in John H. Coatsworth and Alan M. Taylor, *Latin America and the World Economy Since 1800*, DRCLAS, Harvard University, USA, 1998.

<sup>20</sup> Jose Antonio Ocampo, *Colombia y la economía mundial, 1830-1910*, Tercer Mundo Editores, 1998, p. 87.

<sup>21</sup> *Ibíd.*, p. 89.

<sup>22</sup> *Ibíd.*, p. 53.

The fall in exports in the final decades of the 19<sup>th</sup> century and first decade of the 20<sup>th</sup> century seems to have led to a reduction in real wages. According to William P. McGreevey, real salaries in coffee production areas were falling from the early 1880's to the first decade of the 20<sup>th</sup> century.<sup>23</sup>

However, McGreevey argues that somewhere between 1905 and 1915 there occurred a transition from a period of virtual stagnation or decline to one of rapid economic growth.<sup>24</sup> That expansion does not seem to have increased real salaries or the standard of living for the majority of the population, at least until the 1910's. Thus, for the purposes of this study it is important to highlight that the standard of living in Colombia in the period 1870-1905 seems to have been basically stagnant. As we shall see, the anthropometric evidence that we have gathered using passports corroborates this.

**Table 4. Index of Colombian Real Exports Per Capita, 1871-1910  
(1871-75=100)**

Period	Index
1871-75	100
1879-81	110
1888-91	97
1898	135
1905-10	116

Source: José Antonio Ocampo, *Colombia y la economía mundial 1830-1910*, Tercer Mundo Editores, Colciencias-Fedesarrollo, 1998, p. 89.

## 1. Trends in height

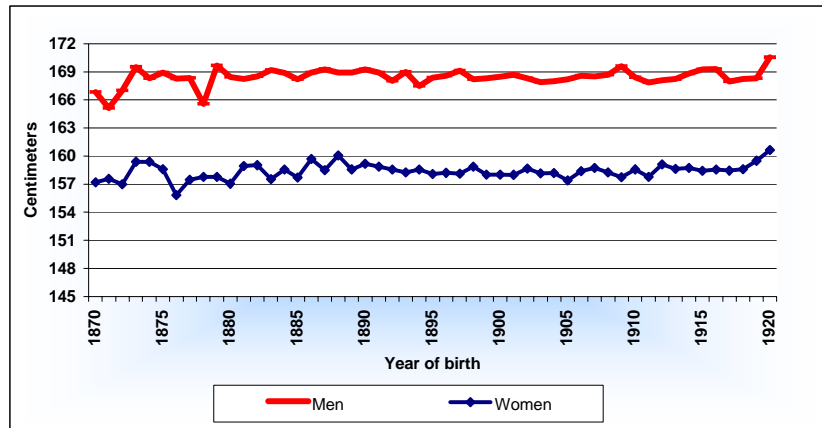
For the period 1870-1919 the records for the passports include the heights of 10.390 men and 5.521 women 18 to 60 years old. As shown in Table 2, the increase in height for men between 1870-1874 and 1915-1919 was only 1.24 cm., less than 0.25 cm. per decade. In the case of women the rate of increase

<sup>23</sup> William P. McGreevey, "The Transition to Economic Growth in Colombia", in Roberto Cortés Conde and Shane Hunt, editors, *The Latin American Economies, Growth and the Export Sector, 1880-1930*, Holmer and Meir, USA, 1985, p. 45.

<sup>24</sup> Ibid., p. 44.

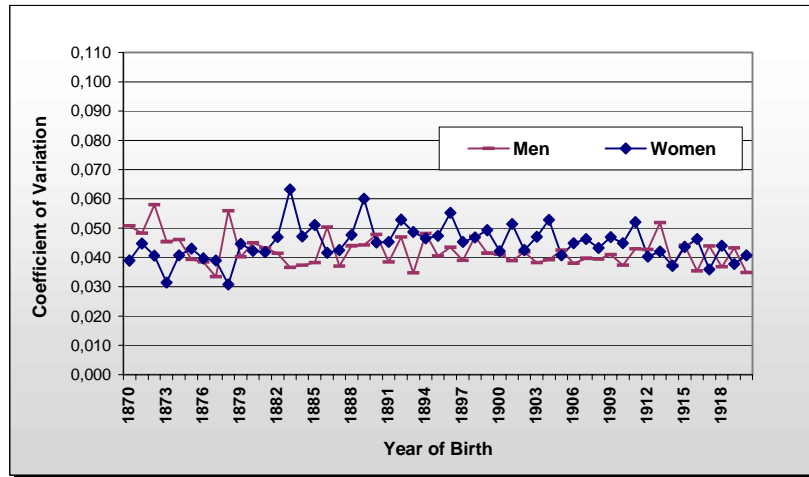
was even lower, 0.12 cm. per decade. Furthermore, the trend for the heights of men and women in the period 1870-1919 is not statistically significant, thus implying that height was stagnant, as can be seen in Graph 4.

**Graph 4. Average Height of Men and Women Born between 1870-1919.**



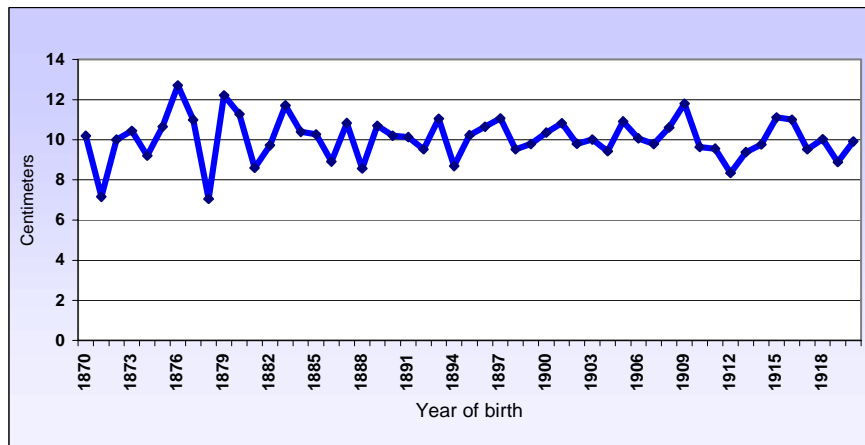
The dispersion in the heights of Colombians who obtained passports in the period 1918-1940, as measured by coefficient of variation, was relatively constant, with a coefficient for the trend that is not statistically significant. The coefficient of variation for height fluctuated around 0.04, for both men and women (see Graph 5). Thus the dispersion is less than what was observed in the period 1910-1919 with the heights obtained from the national ID card, which was around 0.044 for men and 0.050 for women. Only towards 1980 the dispersion of height obtained from the data of the ID card approaches a level similar to that observed for passports in the period 1870-1919. Thus, it can be concluded that the group in the passport sample was relatively homogeneous in social and economic terms.

**Graph 5. Coefficient of Variation of Average Height, 1870-1919**



The difference between the height of men and women born in the period 1870-1919 remained almost unchanged, with men’s height exceeding that of women by about 10 cm. (see Graph 6). This is a much smaller gap than was observed for the height between men and women in the period 1910-1985 using the ID card information. In this later case the difference was above 11 cm. and was as high as 13 cm. in some sub-periods. This indicates that there was a greater equality between genders in the biological of standard of living among the elite.

**Graph 6. Average Height Differences between Men and Women.**



Although the height of Colombians who obtained a passport in the period 1918-1940 was stagnant, international comparisons show that this group was



relatively tall in relation with what had been achieved by other countries. Table 5 shows the height of men for a group of countries in 1900. The height of Colombian men was above that of Great Britain, France, Italy, and Indonesia. Only the tallest countries in the world at the time were above the height of Colombian men in our sample: the United States, Sweden, Norway, and Holland. However, it is important to keep in mind that while the information on height for most countries included in Table 5 is based on the height of military recruits, that of Colombia was obtained from passport records, which at the time included mostly people from the elite and some skilled workers.

**Table 5. International Comparisons of Men's Height**

Country	1900
Sweden <sup>a</sup>	172,5
United States <sup>a</sup>	171,0
Norway <sup>a</sup>	171,0
Netherlands <sup>b</sup>	169,0
<b>Colombia <sup>c</sup></b>	<b>168,2</b>
Great Britain <sup>a</sup>	167,0
France <sup>d</sup>	165,5
Mexico <sup>e</sup>	165,2
Italy <sup>f</sup>	164,5
Spain <sup>g</sup>	163,6
Indonesia <sup>h</sup>	160,8

Sources:

<sup>a</sup> Richard Steckel, "Stature and the Standard of Living", in *Journal of Economic Literature*, Vol.33, Issue 4, Dec.1995, Table 6, p. 1919.

<sup>b, d</sup> Drukker and Van Meerten, "Beyond Villermé and Quetelet: The Quantitative Relation Between Sex and Age-specific Height and Real Per Capita Income", in John Komlos, editor, *The Biological Standard of Living in Three Continents, Further Explorations in Anthropometric History*. Westview Press, USA, 1995. For Netherlands: Appendix 2.1, p. 41. For France: Appendix 2.2, p. 46.

<sup>c</sup> Archivo General de la Nación, Colombia, and calculations by the authors.

<sup>e</sup> Moramay Lopez-Alonso and Raúl Porras, "The Ups and Downs of Mexican Economic Growth: The Biological Standard of Living and Inequality, 1870-1950", in *Journal of Economics and Human Biology*, vol. 1, num. 2, 2003, p. 179.

<sup>f</sup> Giovanni Federico, "Heights, Calories and Welfare: A New Perspective on Italian Industrialization, 1854-1913", in *Journal of Economics and Human Biology*, num. 1 (289-308), 2003, p. 291.

<sup>g</sup> José Martínez-Carrión, "Estatura, salud y bienestar en las primeras etapas del crecimiento económico español. Una perspectiva comparada de los niveles de vida", in *Documentos de trabajo de la AHE*, No. 0102, 2001, pp. 32-41.

<sup>h</sup> Height for 1901. Pierre Van der Eng, "An Inventory of Secular Changes in Human Growth in Indonesia", in John Komlos editor, *The Biological Standard of Living on Three Continents, Further Explorations in Anthropometric History*, Westview Press, USA, 1995, Table 10.1, p. 177.

## 2. Possible biases in the sample

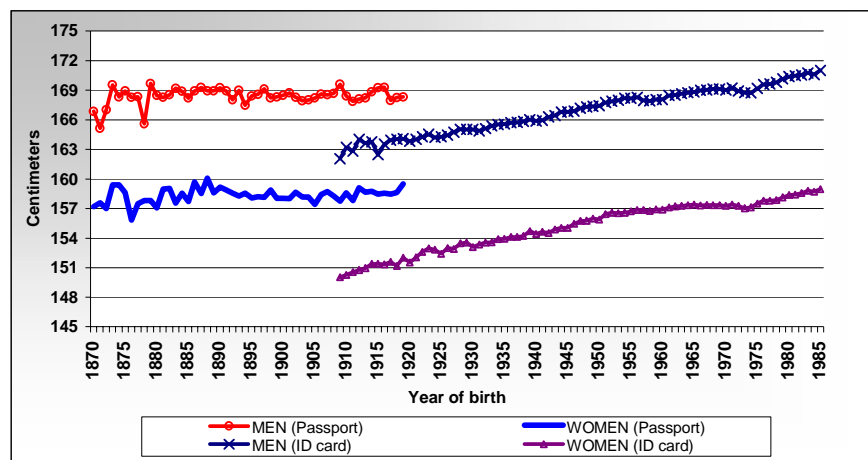
That the sample obtained from passports is not representative of the total Colombian population is evident when comparing the average height obtained from passports and ID cards. Table 6 shows that in the period 1910-1914 the height of women obtained from passports was 7.8 cm. above the height obtained from ID cards. In the case of men the gap is smaller but significant: 4.8 cm. in 1910-1914 and 5.0 cm. in 1915-1919.

**Table 6. Differences in Height between Passports and ID Cards**

Period	Men Passports	Men ID card	Difference Men	Women Passports	Women ID card	Difference Women
1905-1909	168,7	162,0	6,7	158,1	150,0	8,1
1910-1914	168,3	163,5	4,8	158,6	150,8	7,8
1915-1919	168,6	163,6	5,0	158,7	151,5	7,2

Another important difference between the heights observed in the passport records with respect to the ID card is that in the former the long term trend is constant, while in the later there is a clear positive trend in height, as can be seen in Graph 7.

**Graph 7. Average Height of Men and Women by Source, 1870 - 1985**



The height of Colombians derived from ID cards converges to the height obtained from passports in 1919 around 1960-1964, in the case of men, and around 1980-1984 in the case of women.

A significant finding is that the height achieved by the members of the Colombian elite in the late 19<sup>th</sup> century and early 20<sup>th</sup> century is below the average for the total Colombian population which was born in 1985. While in 1915-1919 the average height for men from the passport records was 168.6 cm., for the Colombian population born in 1980-1985 the average was 170.6 cm. Since there are currently large differences in the average height of Colombians according to the socio-economic stratification, it is evident that the contemporary elite must have a height which is above the current average for the overall population. For example, in the sample obtained by Ordoñez, Polania, and Ramirez, for the early 1990's the height of men from the highest socio-economic strata was 9.5 cm. above that of those from the lowest strata.<sup>25</sup> This implies that at some point between 1919 and the 1980's the average height of the elite must have grown in order to exceed that of the average population.

Furthermore, these results indicate that in the early 20<sup>th</sup> century the Colombian elite was not achieving its potential height. Even if at that level of development its purchasing power allowed it to have a proper nutrition, perhaps because of health reasons it was not achieving its genetically determined maximum height.

The research of the epidemiologist Thomas McKeown would suggest that the reason why the members of the Colombian were not achieving their potential

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<sup>25</sup>Antonio Ordoñez, Doris Polania y Gustavo Ramirez, "La estatura como indicador de desarrollo económico y social en Colombia", Informe Final, Fedesarrollo, septiembre, 1992, Cuadro 4.

height, even if they had a good diet and adequate personal hygiene, was because the medical advances that improved life expectancy and height were available only in the late 1920's and 1930's, at the earliest.<sup>26</sup>

Until the mid 1950's the remarkable improvements in health and the decline in mortality observed in the developed countries since the 18<sup>th</sup> century were mostly attributed to advances in medical technology.<sup>27</sup> However, Thomas McKeown, challenged that consensus, showing that until the late 1920's, at the earliest, the effect of the advances in medical technology on overall mortality were minimal, even in the developed countries. In his view the main reason for the almost continuous decline in mortality which began in the early 18<sup>th</sup> century in countries like England was better nutrition due to the rise in agricultural productivity, advances in transportation, and expansion of international trade. Better nutrition had such a large impact in mortality because there is a synergy between nutrition and the ability to resist infectious disease: when a person is well fed the possibility of surviving certain infectious diseases, such as tuberculosis, increases.<sup>28</sup>

After the 1870's, the advances in public health observed in the more advanced countries, such as England, also contributed to the drop in mortality. These advances in public health were mainly the result of the improvements and extensions of water supply and sewage systems.<sup>29</sup>

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<sup>26</sup> Thomas McKeown, *The Origins of Human Disease*, Basil Blackwell, Great Britain, 1988.

<sup>27</sup> Robert W. Fogel, "Nutrition and the Decline in Mortality Since 1700: Some Preliminary Findings", in Stanley L. Engerman and Robert E. Gallman, *Long-Term Factors in American Economic Growth*, University of Chicago Press, USA, 1986, p. 440.

<sup>28</sup> Robert W. Fogel, "Nutrition and the Decline in Mortality Since 1700: Some Preliminary Findings", en Stanley L. Engerman and Robert E. Gallman, *Long-Term Factors in American Economic Growth*, University of Chicago Press, USA, 1986, p. 481.

<sup>29</sup> Thomas McKeown, *An Introduction to Social Medicine*, Blackwell, Great Britain, 1974.

According to McKeown, it was probably not until 1935, with the introduction of sulphamids, that changes in medical technology significantly contributed to the reduction in mortality.

In the case of Colombia, until the beginning of the 20<sup>th</sup> century there were almost no advances in public health, so that any fall in mortality until then would have been the result of gains in nutrition. It was only until 1938 that Bogotá, Colombia's capital and largest city, had for the first time in its history a modern aqueduct which carried good quality water to most of its inhabitants.<sup>30</sup>

Until 1888, the distribution of water in Bogotá was similar to what it had been during the colonial period. Water was conducted through clay pipes to public fountains spread out through the city. There the liquid was loaded in clay pots which were sold from house to house by women who carried the pots in their heads or in burros, the so called *aguateras*, which were an important part of urban life until the late 19<sup>th</sup> century.<sup>31</sup>

In 1888, the first aqueduct was inaugurated in Bogotá, but the water it carried was not treated at all. It was only until 1921 that water was chlorinated. As a result there was a significant drop in the incidence of typhoid fever.<sup>32</sup>

In Medellín, Colombia's second city, the situation was not much different from that of Bogotá with respect to public health. During the colonial period and through the 19<sup>th</sup> century the main source of drinking water was a creek which traversed the city, Santa Elena. During the 19<sup>th</sup> century there were many complaints about its contamination. For example, it was then prohibited that clothes, donkeys, and mules be washed before 8:00 a.m., to allow the

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<sup>30</sup> Empresa de Acueducto y Alcantarillado de Bogota, *Historia del agua en Bogota, De la colonia al año 2000*, Empresa de Acueducto y Alcantarillado de Bogota, Bogota, 1968, p. 67.

<sup>31</sup> *Ibid.*, p. 59.

<sup>32</sup> *Ibid.*, p. 62.

inhabitants to provide themselves with the drinking water they needed for the day before the water was affected by those activities.<sup>33</sup>

Obviously, the situation of the rest of Colombia with respect to public health was even worse than in the two main cities. Thus, it is not until the 1920's, at the earliest, when it can be expected that the average height of the Colombian elite would have begun to show an upward trend that would allow it to maintain a height above the rest of the population.

The trend in the average height of the employees of the Colombian Central Bank<sup>34</sup> perhaps shows what happened to the elite during the 20<sup>th</sup> century, since it represents urban dwellers with formal education, which exceeds the national average height by about 4 cm. during the whole period<sup>35</sup> (see Graphs 8 and 9).

Thus, the average stature of men from the elite could have moved upward from 168.6 cm. in 1915-19 to 172 cm. in 1984, as represented by men of the Central Bank. For women, it would have increased from 158.7 cm. in 1915-19 to 163 cm. in 1984.

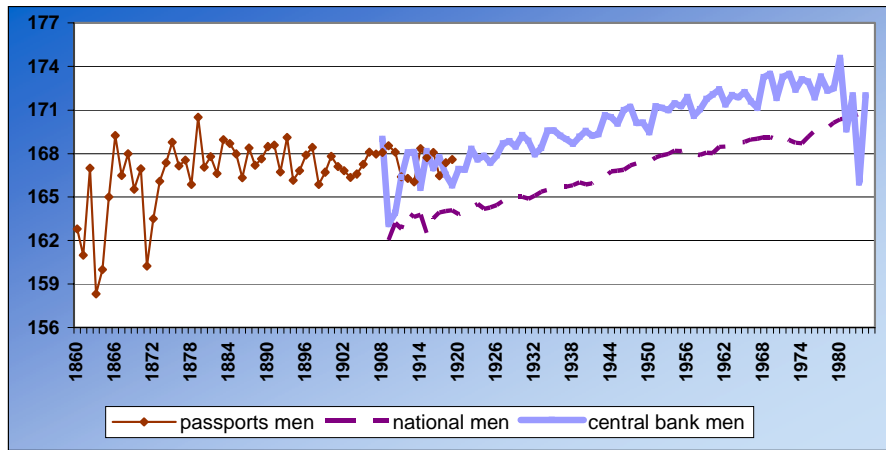
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<sup>33</sup> Empresas Publicas de Medellín, *Una mirada al pasado, una visión de futuro*, EPM, Medellín, 2000, p. 8.

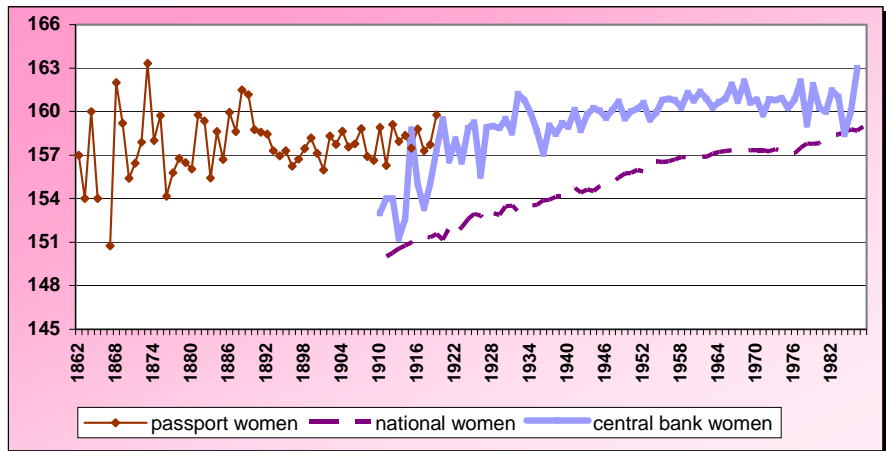
<sup>34</sup> The Central Bank sample was constructed by the authors with 16.909 observations from the archives of the Colombian Central Bank (Banco de la República).

<sup>35</sup> As was seen in Graphs 8 and 9, the average height of the employees of the Colombian Central Bank shows an upward trend since the 1920's and seems to have been stagnant before that date. It is very probable that something similar might have happened with the height of the elite.

**Graph 8. Average Height by Source**



**Graph 9. Average Height by Source**

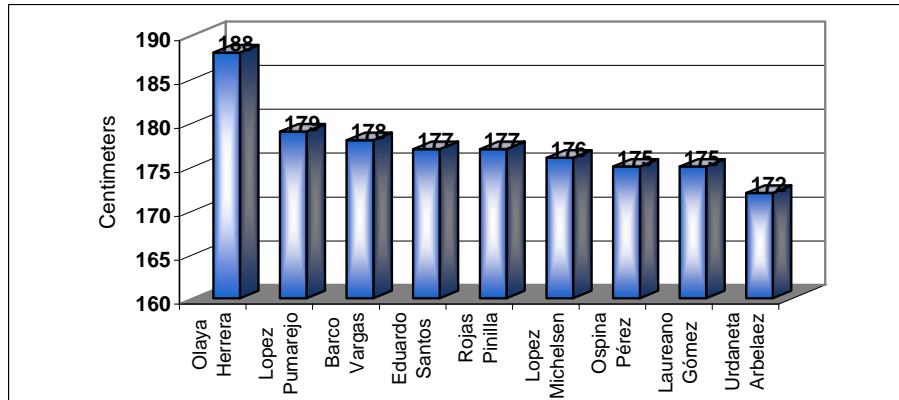


### 3. Tall presidents

Among the passports issued to Colombians born between 1870 and 1919 a total of nine belonged to men who were presidents in the 20<sup>th</sup> century. The average height for this group is 177.4 cm., which was tall by international standards at the time. It was also 8.7 cm. above the average for passports and 15.4 cm. above the average for ID cards for those born between 1905 and

1909.<sup>36</sup> The presidents in this period belonged to the elite, in most cases, were mainly white and from affluent families.<sup>37</sup>

**Graph 10. Height of Colombian Presidents Included in the Passports Records, 1870-1919**



Among the nine presidents in our sample the tallest was Enrique Olaya Herrera, who served from 1930 to 1934. Olaya's height was 188 cm., which was outstandingly tall in Colombia at the time. Therefore it is understandable that cartoonist sometimes made allusions to his height.<sup>38</sup>

In contrast to the above group, the passport of Jorge Eliécer Gaitán, one of the most successful Colombian politicians in the first half of the 20<sup>th</sup> century, shows that he was 164 cm. tall. Thus he was close to the national average. Gaitán was the leading presidential prospect in 1948, when he was assassinated.<sup>39</sup>

<sup>36</sup> In the United States only five of forty three presidents have been shorter than average, Burkhard Bilger, "The Height Gap", *The New Yorker*, April 5, 2004.

<sup>37</sup> From affluent families were Alfonso Lopez Pumarejo, Virgilio Barco, Eduardo Santos, Alfonso Lopez Michelsen, and Mariano Ospina Perez.

<sup>38</sup> See Gustavo Humberto Rodriguez, *Olaya Herrera, Politico, estadista y caudillo*, Banco de la Republica, Bogota, 1981, p. 249. The nickname many of his contemporaries used to refer to Olaya was 12:05, since supposedly he tilted his head slightly to the left when talking to people (information based on a conversation with the historian Roberto Luis Jaramillo, March 3, 2005).

<sup>39</sup> Jorge Eliécer Gaitán was a *mestizo* (had both Amerindian and Hispanic ancestors) and came from a humble background.



#### 4. Destinations and reasons for travelling

The analysis of height according to the place people travelled reveals interesting patterns. People who travelled to the United States, Canada, and Europe were the tallest. In contrast those who went to Central America and the islands of the Caribbean were 1.5 cm. shorter than the former, for both men and women (see Table 7 and Graphs 11 and 12). Obviously those who travelled farthest tended to be from more privileged backgrounds, and thus tended to be taller, as there is a correlation between social class and height, especially in the first stages of economic growth.

**Table 7. Height by Destination of Travel**

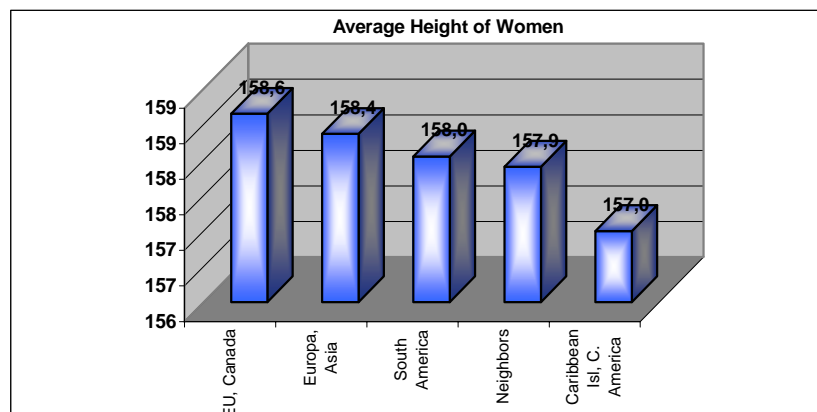
Destiny	Women's Height	Observations
EU, Canada	158,6	882
Europa, Asia	158,4	864
South America	158,0	131
Neighbors	157,9	1098
Caribbean Isl, C. America	157,0	311

Neighbors = Ecuador, Panamá y Venezuela.

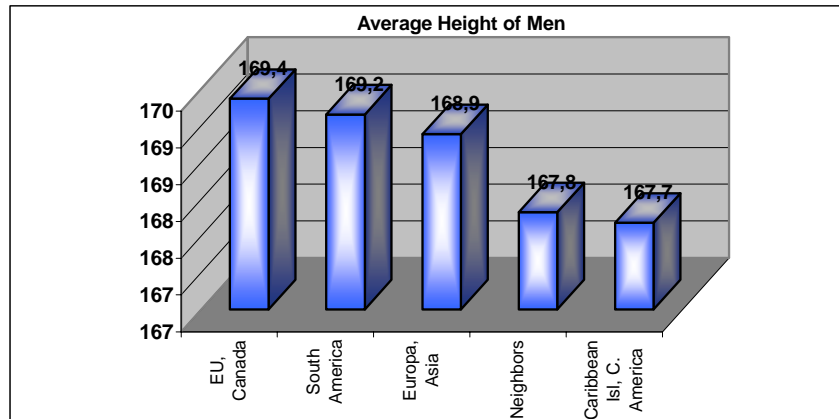
Destiny	Men's Height	Observations
EU, Canada	169,4	1597
South America	169,2	403
Europa, Asia	168,9	1560
Neighbors	167,8	2308
Caribbean Isl, C. America	167,7	479

Neighbors = Ecuador, Panamá y Venezuela.

**Graph 11. Women's Height by Destination**



**Graph 12. Men's Height by Destination**

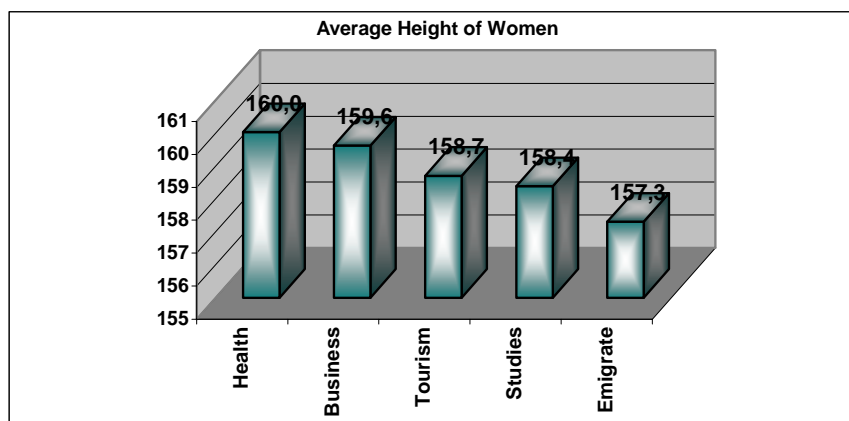


There also seems to be a correlation between the reason for travelling abroad and height. The tallest people were those who went to foreign countries for medical reasons. Since health treatments in Europe or the United States, the most often chosen places for this effect, were costly, only the richest Colombians could afford this type of travel. The largest gap observed in height according to the motive for travelling is found in the case of women. For example, those who went abroad as emigrants were 3.0 cm. shorter than those who did it for health reasons (see Table 8 and Graphs 13 and 14).

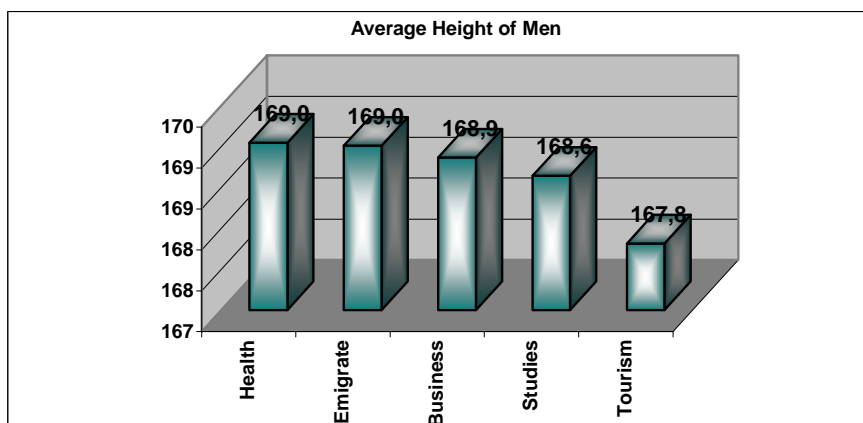
**Table 8. Average Height and Reason for Travelling**

Reason	Women's Height	Observations
Health	160,0	165
Business	159,6	57
Tourism	158,7	339
Studies	158,4	195
Emigrate	157,3	59
Reason	Men's Height	Observations
Health	169,0	256
Emigrate	169,0	75
Business	168,9	756
Studies	168,6	1041
Tourism	167,8	496

**Graph 13. Women's Height by Reason for Travelling**



**Graph 14. Men's Height by Reason for Travelling**



## 5. Regional aspects

The passport records for the period under discussion do not include information on the place of birth. However, we do know the city where the passport was issued. Passports could be obtained by Colombian citizens at the time in 12 cities, mostly departmental capitals. More than half were issued in Bogotá (see Table 9). Although the city reported is not the same one as the place of birth, there was probably a relatively close relation between them, or at least between the city of issue and its hinterland.

**Table 9. Observations on Height by Place of Issue**

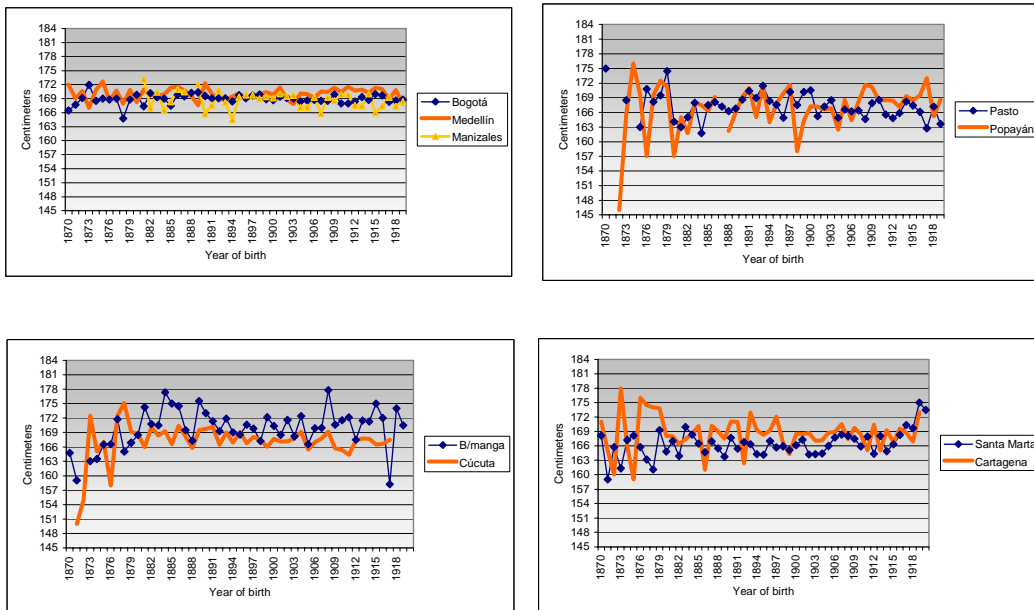
City	Men	Women
BOGOTÁ	4820	2546
BUCARAMANGA	330	179
CARTAGENA	751	698
CUCUTA	791	265
IBAGUE	87	29
MANIZALES	316	184
MEDELLÍN	1251	638
NEIVA	26	19
PASTO	448	117
POPAYAN	228	121
SAN ANDRES	12	23
SANTA MARTA	1330	702
<b>TOTAL</b>	<b>10390</b>	<b>5521</b>

The information on the place in which the passport was obtained shows an interesting correspondence with average height. The shortest persons were those issued passports in the cities close to the frontier (Pasto, Popayán, Cúcuta) or that were seaports (Santa Marta, Cartagena) (see Table 10 and Graphs 15 and 16). A reason for this pattern could be that to travel abroad from a city in the interior, like Bogotá or Medellín, was much more costly than doing so from a city close to the border. Thus people from interior cities who travelled to foreign countries were probably better off than those in the seaports and frontier cities. In contrast, in the latter cities workers who were not especially prosperous could afford foreign travel because distances, at least to neighboring countries, such as Ecuador, Venezuela, and Panama, was relatively cheap.

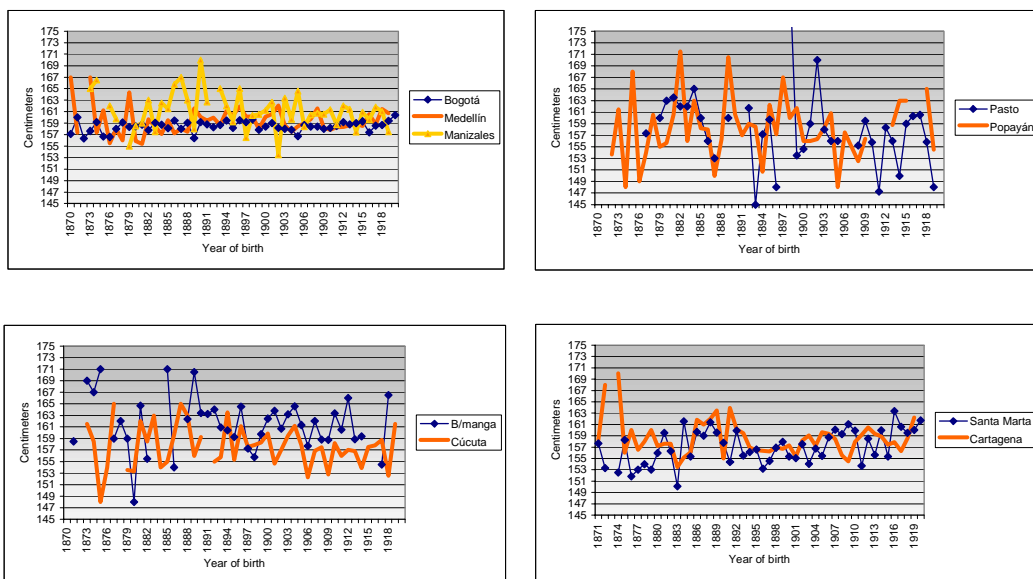
**Table 10. Average Height for Men and Women by City of Passport Issue, 1870-1919**

City	Men	City	Women
Bucaramanga	170,16	Bucaramanga	161,03
Medellín	170,01	Manizales	160,83
Neiva	169,85	Medellín	159,18
Bogotá	168,98	Neiva	159,16
Manizales	168,76	Bogotá	158,71
Cartagena	168,40	Popayán	158,42
Cúcuta	167,65	Cartagena	158,03
Pasto	167,18	Pasto	157,59
Popayán	167,14	Santa Marta	157,09
Santa Marta	166,02	Cúcuta	157,08

**Graph 15. Average Height for Men by City where the Passport was Issued, 1870-1919**



**Graph 16. Average Height for Women by City where the Passport was Issued, 1870-1919**

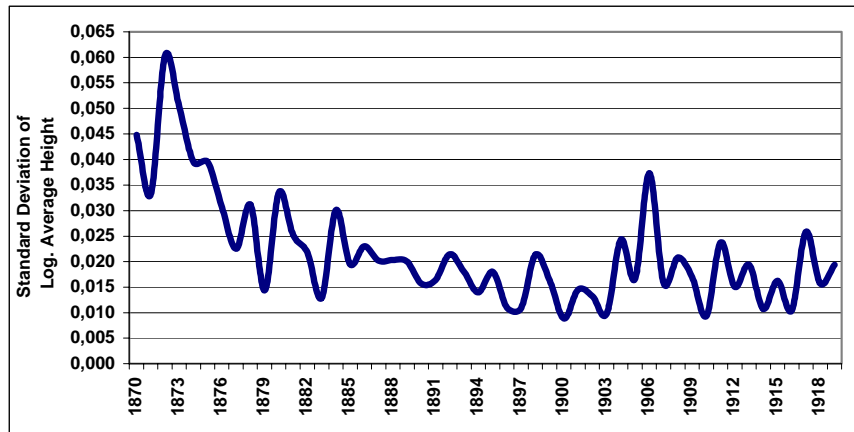


The evolution of the standard deviation of the logarithm of average height for the cities where passports were issued shows that the differences in height did not converge over time (sigma convergence). This was probably the result of the stagnant average height we have mentioned and because the group's composition did not change over time (see Table 11 and Graphs 17 and 18).

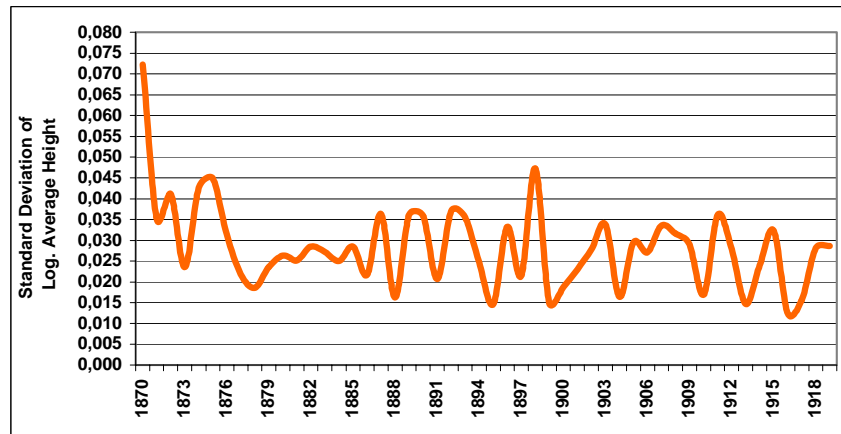
**Table 11. Sigma Convergence  
(Standard Deviation of the Logarithm of the Average Height)**

PERIOD	Sigma MEN	Sigma WOMEN
1870-1874	0,0456	0,0429
1875-1879	0,0276	0,0281
1880-1884	0,0247	0,0264
1885-1889	0,0206	0,0278
1890-1894	0,0171	0,0307
1895-1899	0,0155	0,0263
1900-1904	0,0141	0,0240
1905-1909	0,0215	0,0302
1910-1914	0,0156	0,0239
1915-1919	0,0175	0,0234

**Graph 17. Sigma Convergence for Men**



**Graph 18. Sigma Convergence for Women**



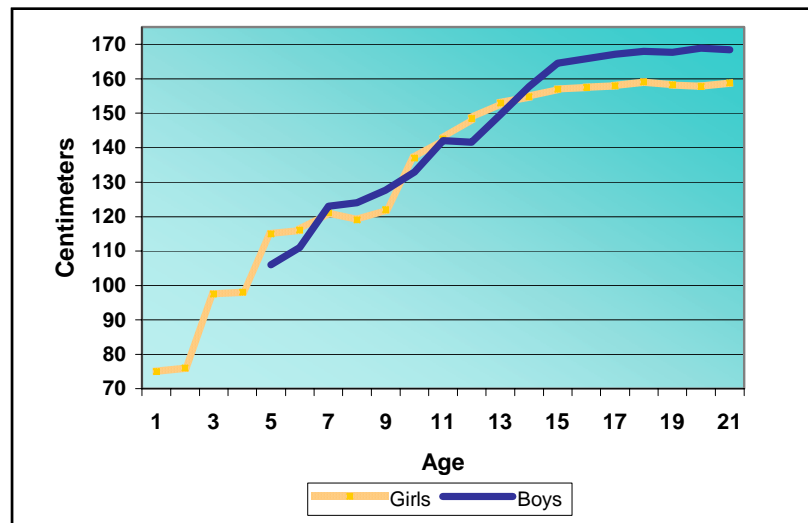
## 6. Growth-height profile

In the database we constructed, with the information of the passports issued between 1918 and 1940, there were a total of 924 individuals between 0 and 17 years old, 392 females and 532 males. The analysis of this 0-17 year-old cohort shows a pattern of growth in accordance with medical evidence.<sup>40</sup> Most of the

<sup>40</sup> According to Robert W. Fogel, “The average annual increase in height is greatest during infancy, falls sharply up to age 3, and then falls more slowly throughout the remaining preadolescent years. During adolescence velocity rises sharply to a peak that is approximately one half of the velocity achieved during infancy, then falls sharply and reaches 0 at maturity. In girls the adolescent growth spurt begins about two years earlier, and the magnitude of the spurt is slightly smaller than in boys”, Robert W. Fogel, “Nutrition and the Decline in Mortality Since 1700: Some Preliminary Findings”, in Stanley L. Engerman and

increase in height occurs in the first years of life. For example, up to year seven a total of 120 cm. are gained, for men and women, while from 8 to 18 only 40 cm. are gained by women and 44 by men (see Graph 19).

**Graph 19. Growth Height Profile from Passports Issued in the Period 1918-1940**



Note: For females 392 observations and for males 532. These individuals were born in the period 1900-1940.

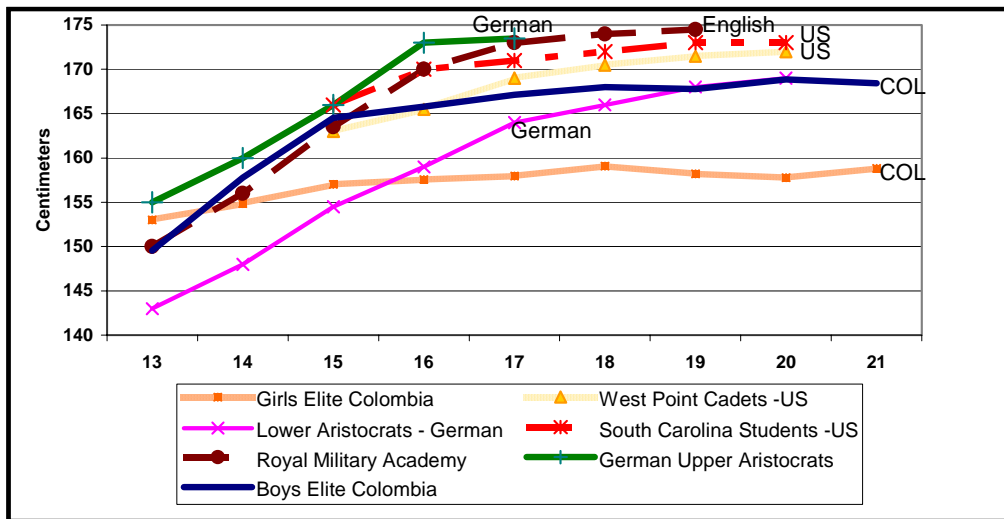
Graph 20 shows the age-height growth profile of Colombia in the period under discussion in comparison with several other countries. It is interesting to point out that although the final height of the children of the Colombian elite was similar to that of the lower German aristocracy, up to the age of 18 the Colombians were always taller. Only because they continued to grow past 18 years of age did the lower German aristocrats achieve a final height similar to that of the Colombian elite. Thus, this is an indication that the Colombian children of the elite were relatively well fed and did not need to catch up.

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Robert E. Gallman, *Long-Term Factors in American Economic Growth*, University of Chicago Press, USA, 1986, p. 456.



**Graph 20. Growth-Height Profiles of Elite Youth, International Comparisons**



Source: John Komlos, "On British Pygmies and Giants: The Physical Stature of British Youth in the 18th and 19th Centuries", in *Discussion Paper in Economics*, University of Munich, Department of Economics, Num. 573, 2004. For Colombia, database constructed by the authors using passport records.

#### IV. CONCLUSIONS

This study has examined the evolution of stature in Colombia, using a database with more than 16.835 observations from the passport records for persons born in the period 1870-1919.

The main conclusion from the above analysis is that, for Colombians born between 1870 and 1919 and who obtained a passport, the average height was stagnant throughout this period. The fact that per capita GDP was also probably stagnant at the time is perhaps not the main the reason for this result. Since the majority of those included in this sample belonged to the elite, it is likely that they were relatively well fed and had a life style characterized by good personal hygiene. As a result, these Colombians were taller than the French and British workers of the time.

A second conclusion is that they were significantly taller than Colombians who did not belong to the elite (by almost 5 cm.).

The third conclusion, and somewhat surprisingly, is that by present Colombian standards this group was short. While the average height for men in this group in 1900 was 168.2 cm., Colombians born in 1985 grew to an average height of 170.6 cm. Even if the Colombian elite was well fed at the beginning of the 20<sup>th</sup> century, the health conditions under which it lived were probably holding back its physical growth. Only until the late 1920's, when at the earliest the international advances in modern medical technology would have been felt, could many of the health impediments for advances in height have begun to be eliminated. Additionally, only until the 1930's were there modern water supply systems in the main cities, a lack that severely hindered the possibility of eliminating water borne infectious diseases, such as typhoid fever and cholera. This would have allowed for growth in the average height of the elite with respect to what it had achieved in the late 19<sup>th</sup> century.

## PRIMARY SOURCES

Archivo General de la Nación, Registro de Pasaportes entregados en las ciudades de Bogotá, Medellín y Manizales, entre 1918 y 1940.

Archivo General de la Nación, Colonia, Fondo Policía, Legajo 7, folio 523.

Archivo del Ministerio de Relaciones Exteriores, Registro de Pasaportes entregados en Bucaramanga, Cartagena, Cúcuta, Ibagué, Neiva, Pasto, Popayán, San Andrés y Santa Marta, entre 1918-1940.

Archivos del Departamento de Recursos Humanos, Banco de la República, Colombia, 1923-2004.

## BIBLIOGRAPHY

Burkhard Bilger, "The Height Gap", *The New Yorker*, April 5, 2004.

Coatsworth, John H., "Economic and Institutional Trajectories in Nineteenth Century - Latin America", in John H. Coatsworth and Alan M. Taylor, *Latin America and the World Economy Since 1800*, DRCLAS, Harvard University, USA, 1998.

Drukker and Van Meerten, "Beyond Villermé and Quetelet: The Quantitative Relation Between Sex and Age-specific Height and Real Per Capita Income", in John Komlos, editor, *The Biological Standard of Living in Three Continents, Further Explorations in Anthropometric History*. Westview Press, USA, 1995.

Empresa de Acueducto y Alcantarillado de Bogotá, *Historia del agua en Bogotá, de la colonia al año 2000*, Empresa de Acueducto y Alcantarillado de Bogotá, Bogotá, 1968.

Empresas Públicas de Medellín, *Una mirada al pasado, una visión de futuro*, EPM, Medellín, 2000.

Federico, Giovanni, "Heights, Calories and Welfare: A New Perspective on Italian Industrialization, 1854–1913", in *Journal of Economics and Human Biology*, num. 1 (289-308), 2003.

Fogel, Robert W., "Nutrition and the Decline in Mortality Since 1700: Some Preliminary Findings", in Stanley L. Engerman and Robert E. Gallman, *Long-Term Factors in American Economic Growth*, University of Chicago Press, USA, 1986.

GRECO, *El crecimiento económico colombiano en el siglo XX*, Banco de la República, Fondo de Cultura Económica, Bogotá, 2002.

Komlos, John, "On British Pygmies and Giants: The Physical Stature of British Youth in the 18th and 19th Centuries." in *Discussion Paper in Economics*, University of Munich, Department of Economics, Num. 573, 2004.

Lopez-Alonso, Moramay, "An Anthropometric Approach to the Measurement of Living Standards, Mexico (1870-1950)", in *National Bureau of Economic Research Working Paper Series*, Department of History, Stanford University, 2000.

Lopez-Alonso, Moramay and Raúl Porras, "The Ups and Downs of Mexican Economic Growth: The Biological Standard of Living and Inequality, 1870-1950", in *Journal of Economics and Human Biology*, Vol. 1, Num. 2, 2003.

McGreevey, William P., "The Transition to Economic Growth in Colombia", in Roberto Cortés Conde and Shane Hunt, editors, *The Latin American Economies, Growth and the Export Sector, 1880-1930*, Holmer and Meir, USA, 1985.

McKeown, Thomas, *The Origins of Human Disease*, Basil Blackwell, Great Britain, 1988.

\_\_\_\_\_, *An Introduction to Social Medicine*, Blackwell, Great Britain, 1974.

Martínez-Carrión, José, "Estatura, salud y bienestar en las primeras etapas del crecimiento económico español. Una perspectiva comparada de los niveles de vida", in *Documentos de trabajo de la AHE*, No. 0102, 2001.

Ocampo, José A., *Colombia y la economía mundial 1830-1910*, Tercer Mundo Editores, Colciencias-Fedesarrollo, 1998.

Ordoñez, Antonio, Polania, Doris and Gustavo Ramírez, "La estatura como indicador de desarrollo económico y social en Colombia", Informe Final, Fedesarrollo, September, 1992.

Palacios, Marco and Frank Safford, *Colombia: Fragmented Land, Divided Society*, Oxford University Press, USA, 2002.

Rodríguez, Gustavo Humberto, *Olaya Herrera: Político, estadista y caudillo*, Banco de la Republica, 2ª edición, Bogotá, 1981.

Salamanca, Luis Humberto, *Manual para el servicio exterior de Colombia*, Ministerio de Relaciones Exteriores, Bogotá, 1959.

Steckel, Richard, "Stature and the Standard of Living", in *Journal of Economic Literature*, Vol.33, Issue 4, Dec.1995.

Sunder, Marco, "On the Biological Standard of Living of the Wealthy in 19<sup>th</sup> Century America", World Cliometric Congress, Venice, Italy, July 9, 2004.

Van der Eng, Pierre, "An Inventory of Secular Changes in Human Growth in Indonesia", in John Komlos editor, *The Biological Standard of Living on Three Continents, Further Explorations in Anthropometric History*, Westview Press, USA, 1995.

Steckel, Richard, "Stature and the Standard of Living", in *Journal of Economic Literature*, Vol. 33, Issue 4, December, 1995.

### **WEB PAGES**

[www.ukpa.gov.uk/\\_history/history\\_00.asp](http://www.ukpa.gov.uk/_history/history_00.asp)

[www.ppt.gc.ca/passport\\_office/history\\_e.asp](http://www.ppt.gc.ca/passport_office/history_e.asp)

[www.ukpa.gov.uk/\\_history/history\\_00.asp](http://www.ukpa.gov.uk/_history/history_00.asp)

[www.lablaa.org/](http://www.lablaa.org/)