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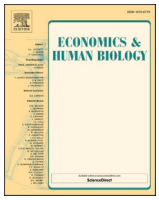

Height and standard of living in Puerto Rico from the Spanish enlightenment to annexation by the United States, 1770–1924

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ABSTRACT

This preliminary work presents a first series of heights of male adults in Puerto Rico. The sample, made up of 6000 prisoner records. the estimates were systematically assessed for selectivity, and we find that selectivity is quite negligible for the main results. The text studies the extreme dependence of the standard of living on the evolution of the price of sugar, a dependence which caused the progressive deterioration of material well-being in the country. Only between 1860 and 1880 did Puerto Ricans enjoy some improvement and a higher level of height. We measures the negative short-term effects of the 1898 annexation Puerto Rico by the United States.

1. introduction

This paper presents a new series of height measurements for Puerto Rican males that are longer over time than those available up to now. The suitability of height as an instrument for measuring living standards and inequality has been exemplarily contrasted (Steckel and Floud; 1997; Steckel, 1995; Komlos, 1985; Komlos and Baten, 2004). Its use as an indicator in agrarian and slave economies is quite appropriate insomuch as the peculiarities of their labour meant that cash wages was less widespread, so that real wages lose explanatory power. The fact that this island was the only Spanish colony in America which, instead of becoming independent, passed to the sovereignty of the United States in 1898, offers special interest to the study of the standard of living in the long term.

Geographical conditions and climatic adversities (it suffered frequent hurricanes during the period studied) greatly limited Puerto Rico's progress and, presumably, the material well-being of its population. Some 60% of its slightly more than 9000 square kilometres of surface area is mountainous. The arable soil (just over 25% and very steep) is clayey or volcanic, but with abundant water resources. The island is located in an area of high seismic risk. Deficiencies in the supply of public goods (especially education and health) was also a determining factor.

However, in this first approach, we will try to interpret the evolution of the size of the island's sugar industry by focusing primarily on the trajectory of the export and price of sugar, in the production of which the island specialised. In other words, an effort is made to measure the impact on welfare of changes in the world market in a mono-exporting and, until 1873, slave-owning colonial economy.

This paper puts forward two hypotheses: The first is that the standard of living improved substantially in Puerto Rico between 1860 and 1880 thanks to the increase in the price of sugar, together with changes in the labour market. In contrast however, welfare declined after annexation by the United States -following the pattern of the evolution of prices- since its government was unable to improve social benefits for Puerto Ricans in the short term.

2. Sample and results

Inmates' records between the ages of 19 and 52 have been used for the sample, who had been jailed between 1800 and 1950 in all Puerto Rican prisons, excluding those with a height lower than 1400 millimetres. The doctor in each prison accurately measured height (in feet, inches and French lines up to 1860 and in centimetres thereafter) in the physical check-up required to determine a prisoner's suitability for work on public works, an occupation used by both Spanish and American

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authorities. Just over 6000 valid records were obtained from the nearly 20,000 prisoner files. The data have no rounding problems at 0 and 5 centimetres as well as 5', 5',5'' and 6' feet, according to Whipple's index (104.2 and 84.0 respectively and 87.3 for the total).

The value of the centrality statistics allows us to affirm the normality of the sample, which all the contrasts used confirm (W value for Shapiro-Wilk 0.97; Dornik-Hansen contrast 533.76; Lilliefors contrast 0.08; Jarque-Bera contrast 1630.6, with a zero probability for each). The same is the case for the frequency distribution (the chi-square statistic equals 257.243 with $p = 0.000$). According to the postulates of the central limit theorem, the measurements obtained in all periods are significant. The Fig. 1 shows the results in five-year averages by racial groups with reference to the year of birth.

Despite its statistical strength, the sample and therefore the results obtained from it, have the biases inherent to prison records. For this reason, and although the usefulness of this source for the evolution of living standards has already been confirmed in other Latin American countries (Frank, 2006; Salvatore, 2019), given the uniqueness of the sample, it is convenient to verify its degree of adaptation to the socio-demographic reality of the male population in the period, taking into account the filters suggested by Baten (2015). Unfortunately, this exercise can only be carried out with greater rigour from 1860 onwards, when the results of the censuses were published (Table 1).

Only in prisoners' race is there any notable difference between the two registers. During the colonial period, there was a predominance of white prisoners due, among other factors, to the fact that slaves were frequently gambled on at the *haciendas* (ranchs) where they paid their sentences. After the US occupation in 1898 the ratio was substantially reversed with the subjection of the black population to the same regulatory regime as the white population. Likewise, the weight of the urban population is slightly higher in the sample for reasons that have to do precisely with the degree of implementation of justice in the inland areas of the country.

The social profile of the members of the sample, in terms of their professional dedication, is quite similar to the real one. The minor differences are due to purely random factors and to the progressive institutionalisation of justice and public order in the rural inland areas. They are not due to legal changes or the appearance of new crimes, except for the creation of crimes against nature and seduction, abolished in Spain and its colonies in 1823 but re-established by the United States in Puerto Rico in 1902. Most of those convicted were for robbery (39.0%), murder and manslaughter (31.8), assault and battery (9.0) and sexual offences (12.1).

On the other hand, there were no significant changes in the social strata of the prisoner, apart from those created by the small diversification of the Puerto Rican economy during the period studied (Table 2). Highly unskilled workers, both in rural areas and in the city, made up the bulk of the prison population.

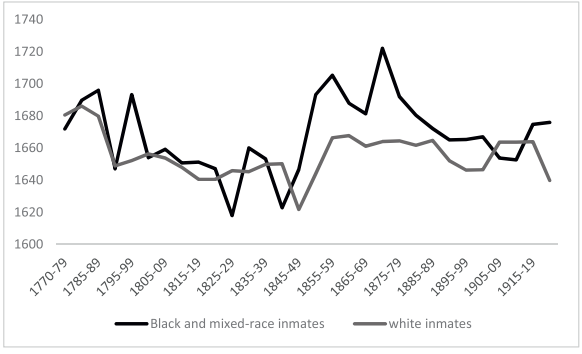

Fig. 1. Evolution of the height of prisoners in Puerto Rico according to race and year of birth (in five-year averages and millimetres).
Source: *Puerto Rico General Archives*, Prisons, prisoner records and own elaboration.

It is also important to be precise in differences in levels of education. For literacy in simple and census, we observe that in the late 1850 (we used last birth years of the 1850 s to compare with the census in 1860), the prisoners were 16.9 points more literate than the whole population. In contrast, in 1899, 1910, 1920 and 1930 the prisoners are constantly slightly less literate than the census population (around 10 points), without major changes. Only in 1940 we observe jump towards a much stronger literacy gap. In conclusion, looking at he changing selectivity, between 1860 and 1899, we expect a very modest downward pressure on heights caused by selectivity on literacy observations between 1860 and 1899. Perhaps the height level in 1860 might have been marginally lower and the one in 1899 and thereafter marginally higher, if the prisoners would have been selected more similarly to the population in terms of literacy.

However, literacy is a problematic indicator. They do not deserve much credit because the census and prison figures are flawed by the lack of effective verification of the real ability to read and write. Therefore, the ABCC numeracy index has been used to ascertain the reliability and true nature of the sample, whose suitability both for assessing the reliability of samples and in the study of living standards is well known (A'Hearn et al., 2009; De Moor and van Zanden, 2009; Humphries and Leunig, 2009; Baten et al., 2002; Crayen and Baten, 2010; Tollnek and Baten, 2017). That is, to estimate the individual's numeracy based on his ability to remember his year of birth. In addition, the numeracy representativeness analysis provides a second important source of information.

Given the usefulness of the ABCC index as an additional indicator of well-being, has also been calculated in the age ranges more appropriate for this according to the young age of the prisoners (28 on average) (Baten, 2015). For this purpose a second sample has been drawn up for this study, made up of 7000 men whose records were obtained by using random numbers from the censuses carried out between 1838 and 1942 (Table 3). The numeracy by birth decade suggests that prisoners and the overall population had quite similar numeracy levels. Only for the birth decade of the 1840 s and 1850 s, the sample was substantially more numerate (at least before the 20th century, when age-heaping-based numeracy reaches 100 and therefore stops to be informative). In particular, we observe in Table 3 that numeracy of those born 1860–69 is 84.4 in the census and 84.3 in the prison sample (age group 19–32), so that is very helpful in confirming that the 1860 s boom is not driven by selectivity on observables.

However, the discrepancies detected in this exercise of assessing the suitability of the sample do not conclusively question its strength; rather, an effort has been made in these pages to demonstrate that it is much more reliable than others used for the same purposes. In any case, it is worth emphasising what the calculations measure, as similar ones also do (Baten, Pelger and Twrdek, 2009): the evolution of the biological standard of living, not of the population of Puerto Rico as a whole, but of the more modest young population, but with a higher relative weight of educated white males of urban residence. In other words, the well-being of the most fortunate among the excluded is measured.

3. Height evolution and its interpretation

The data shown in Fig. 2 reveal the relationship between inmates' heights and the evolution of the price of sugar in the United States (its main customer). The following interpretations of the evolution of height are based on this dependence and on what happened in the world market for this product.

In the early 1770 s the standard of living of the Puerto Rican population, still largely made up of merchants and Crown officials and beneficiaries of the Enlightenment policies applied in *Ultramar* (overseas territories), was comparable to that of the inhabitants of Western Europe, as well as that of other Spanish territories (Dobado and García, 2014; Challú, 2010; Llorca-Jana et al., 2018; Salvatore, 2007). However,

Table 1
Differences between prisoners' data and census data by population cohort, 1860–1940[1].

	1860		1899		1910		1920		1930		1940	
	Census	Sample	Census	Sample	Census	Sample	Census	Sample	Census	Sample	Census	Sample
RACE[2]												
White	52.2	65.6	61.8	79.8	65.5	53.4	73.0	61.8	74.3	47.9	76.5	63.1
Black	47.8	34.4	38.2	20.2	34.5	46.6	27.0	38.2	25.7	52.1	24.5	36.9
RESIDENCE[3]												
Urban	11.6	26.4	14.4	12.0	19.8	16.6	21.7	14.3	27.7	14.3	30.0	12.2
Rural	88.4	73.6	85.6	88	84.5	83.4	79.9	85.7	72.3	85.7	69.7	87.8
EDUCATION[4]												
Literate	13.1	30	27.4	19.2	37.7	21.1	49.3	40.3	63	52.8	72.2	54.6
Illiterate	86.9	70	72.6	80.8	62.3	78.9	50.7	59.7	37	47.2	23.7	45.4
OCCUPATION												
Agriculture, forestry, animal husbandry and fishing	54.3	79.4	52.6	78.8	72.5	73.6	61	58.6	66.3	63.9	63.0	74.2
Manufacturing and mechanical industries	28.3	16.5	17.2	13	10.7	14.8	13.4	21.8	11.6	14.5	7.0	12.6
Trade and transportation	3.4	1.9	14.7	0.1	3.0	0.1	3	6.2	14.4	5.2	15.6	11
Public, social, domestic and professional services	14.0	2.2	14.2	8.1	4.7	11.5	14.4	13.4	7.7	16.4	8.0	2.2
AGE RANGE												
21–30	21.3	52.3	19.4	49.7	18.1	55.1	16.7	55.2	15.8	51.6	19.3	50.3
31–40	11.7	25.1	10.3	1.1	10.1	15.2	11.2	21.8	12.1	13.3	10.9	27
41–50	6.0	8.6	6.5	22.2	8.2	1.2	9.2	5.8	8.3	4.6	8.6	6.1

1: For the sample, the data corresponds to the number of persons in prison in the year of the census and in the four years immediately preceding that.
2: Excluding the Chinese, whose numbers are statistically insignificant.
3: Inhabitants of the cities of Caguas, Ponce, Mayagüez and San Juan according to the criteria used by the U.S. Department of Census.
4: Exclusively for those aged 10 and above. Spanish census figures have been adjusted to this criterion.
Source: Population censuses for the years indicated

Table 2
Distribution of varied Puerto Rican inmates by occupation prior to prison entry, 1770–1920 (in percentages and sorted by date of birth).

	Labourer[1]	Blue collar[2]	Qualified professionals[3]
1770–79	88.6	11.4	2.9
1780–89	82.1	17.9	5.4
1790–99	80.5	19.5	1.7
1800–09	75.7	24.3	3.4
1810–19	82.2	17.8	1.3
1820–29	86.5	13.5	2.1
1830–09	86,5	13.5	1.4
1840–49	78.6	21.4	2.6
1850–59	75.5	24.5	3.4
1860–69	83.3	16.7	7.0
1870–79	82.6	17.4	10.1
1880–89	76.9	23.1	5.8
1890–99	72.3	27.7	11.4
1900–09	76.4	23.6	6.9
1910–20	77.1	22.9	5.1

1 Unskilled employees.
2. Wage earners with some skill or qualification. Includes shop assistants and low-ranking civil servants.
3. University graduates, army officers, clergymen, businessmen in agriculture, industry and commerce, and annuitants.
Source: Same as Fig. 1.

Table 3
Numeracy index of Puerto Ricans inmates and male adults, 1800–1924 (by year of birth).

	Census sample			Prisoners' records
Period	aged 19–32	aged 23–42	Observations	aged 19–32
1800–09	74.4	68.1	380	85.9
1810–19	69.3	79.9	655	78.9
1820–29	65.6	71.8	355	80.1
1830–39	79.3	68.4	544	87.5
1840–49	82.8	79.0	685	97.0
1850–59	80.0	71.7	698	100.0
1860–09	84.4	77.2	687	84.3
1870–79	87.4	74.0	479	85.0
1880–89	89.8	81.6	384	98.7
1890–99	98.0	85.2	686	87.3
1900–09	97.3	100.0	626	100.0
1910–19	100.0	100.0	821	100.0
1800–1919	86.3	76.8	7000	86.3

Source: National Archives of Puerto Rico and Spain (*Ultramar),* census reports, and the same as in Fig. 1.

the full insertion of Puerto Rico into the world market that followed the progressive liberalisation of colonial traffic from 1778 onwards caused a severe decline in welfare, that was especially acute and prolonged after 1813.

In fact, thanks to the measures taken in that year by the Madrid government to encourage emigration to the island from the metropolis and to stimulate sugar production, the population of Puerto Rico had risen from 85,000 to 300,000 inhabitants by 1860 (Flinter, 1834, pp.4–5; Brau, 1889, pp. 17–18). That population growth could also put downward pressure on height, as per capita, less food is produced locally.

However, due to its mountainous terrain Puerto Rico was not a very suitable place for sugar production, unlike coffee owing to its low land productivity. Only the island's *hacendados* (landowners) were able to compete in the US market with Cuban sugar and sugar from other Caribbean countries by reducing labour costs through wage cuts (Cordero, 1951, p.27), which led to a decline in the height. Moreover, they paid day labourers in *macuquinas* (cobs), coarse non-convertible currencies that were legal tender only on the island and whose purchasing power decreased (Santiago, 1989).

Nonetheless, wage devaluation was not enough to ensure the continuity of exports. The *hacendados* had to employ extraordinarily harmful exploitation and loyalty measures in the labour factor, which were tolerated by the colonial government. And not only for the slave population, whose hardships are well known. The *Hacienda* owners forced labourers to repay the loans contracted by them during periods of inactivity in the fields by working on their farms (including their wives and children) at an imposed wage rate. Since most of them were illiterate, they signed abusive clauses. Thus, the figure of the *agregado*

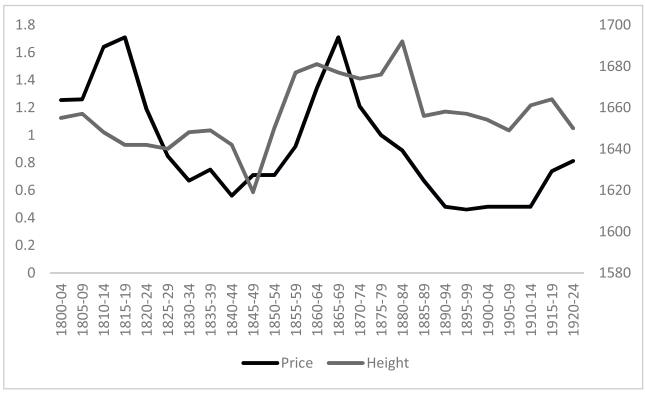

Fig. 2. The height of Puerto Rican inmates and the price of sugar in New York, 1800–1924 (in five-year averages, centimetres and dollars per pound)
Source: The same as Fig. 1 and US Department of Commerce (1975), pp. 206–207.

(attaché) was created, in practice a white slave. In fact, they were not included among the group of free citizens in the censuses (Brau, 1882, p. 37, García, 1989, Gómez, 1970, Picó, 1982). The intensification of competition provoked an increase in the exploitation of the labour force. In fact, in 1848 the government tightened punishments and working conditions for slaves (Carlo, 2009, Negrón and Mayo, 2007). A year later it issued the so-called *Régimen de la Libreta* (a rationing-booklet system). All day labourers, both men and women, were obliged, once they had been compulsorily registered, to work in the *hacienda* determined by the authorities and to bring with them a notebook detailing their work in order to guarantee their performance and their permanence in the *hacienda* (Picó, 1982; Brau, 1882; pp.51–53; García, 1989).

The shortage of wages affected the diet of day labourers, which consisted of products they gathered or grew near their homes (maize, plantain, rice), bread made with cassava flour and, occasionally, *tasajo* (salted meat) (Valle, 1885, p.28; Brau, 1889, p.48). Day labourers lived in huts known as *bohíos* with palm roofs and no latrines, far from the villages to which they could not walk. Slaves slept in overcrowded barracks next to the sugar mills (Flinter, 1834, 77–78; Córdoba, 1832, p. 2). They lacked hygiene and cleanliness due to the lack of a decent education and apart from the traditional epidemics, the more modest suffered from uncinariasis, a variety of anaemia, caused by hookworm due to walking barefoot or drinking contaminated water (Valle, 1885, p. 22). It is also important to highlight the climate conditions, which are very relevant in the definition of height (Baten, 2001), although they were omitted in the retrospective study on the standard of living in Puerto Rico. The frequent hurricanes suffered by the island caused greater distress due to the death, loss of crops and disease they brought with them (Ramírez, 1932). For all these reasons, the fall in height was such that it alarmed the very leaders of the Catholic Church on the island (Alonso, 1849, p. 148).

The colonial government tried to put an end to these calamities of the poorer population from 1823 onwards with improvements in health, education and urban sanitation, leading to an improvement in height (Acosta, 1866; Flinter, 1834, p.40; Fernández, 1923, pp. 186–90) (Figs. 1 and 2). But in 1837 they ceased, following the establishment of the so-called "*r é gimen de la desconfianza*" (distrust regime), which abjured all concessions to the citizens of Puerto Rico for fear of insurrection and loss of markets (Gómez and Sendrás, 1891, pp. 53–58).

The Spanish administration only intervened effectively in the so-called 'social question' from the early 1860 s thanks to the sharp increase in the price of sugar caused by the Civil War in the United States (1861–65) (Fig. 2). Between 1862 and 1865, orders and provisions came from Madrid to increase the wages of day labourers, build schools and organise the urban water supply (Valle, 1885; Fernández, 1923, p. 311; Sardá, 1889, p. 15). By then the population of the island amounted to some 583,000 inhabitants.

But the most far-reaching measures came after the 1867 hurricane, which had devastating effects, and the 1868 independence uprising. Madrid feared that a war like the one in Cuba (1868–78) would break out in Puerto Rico for the same reason. The time had come to establish liberal capitalist labour relations. In 1873, slavery and its variant for the white population (the *r é gimen de la libreta*) were abolished. In addition, Puerto Ricans, whose rights were equated with those of Spaniards in 1876, enjoyed greater provision of public goods (Fernández, 1923, p. 311; Sardá, 1889, p. 15). All this led to a growth in height of around two centimetres between 1860 and 1884, an increase from which the coloured population especially benefited, unlike what happened in the same period in the United States (Maloney and Carson, 2008, p.243). Average height not only caught up with the world average (Valle, 1887, p.18), but also with that of the most developed countries in Latin America (Baten, Pelger and Twrdek, 2009; Llorca-Jana et al., 2018. 2019 and 2021; Frank, K, 2006; Monasterio, 2013; Challú, 2010; López-Alonso, 2010; Salvatore, 2007 and 2019; Salvatore and Baten, 1998; Maisel and Vega, 2010). The height of white prisoners exceeded that of Spanish recruits by five centimetres (Cámara et al., 2019), a figure that could be used, in terms of well-being and its physical manifestation, to evaluate the stimulus to emigrate from the metropolis to Puerto Rico.

However, the labour improvements and wage measures could not be sustained over time due to the fall in sugar prices caused by the end of the war in Cuba, the special tariff treatment on imports from Haiti from 1879 and the competition from beet sugar. This product traded in New York in the 1880 s and 1890 s at around $0.5 per quintal, half the threshold at which Puerto Rico could compete. Given the low productivity of capital due to the scarce implementation of the new mechanised production in centralised plants and the low productivity of the land due to the singularities of the terrain, the planters could only maintain a minimal market share by reducing wages. The daily wage remained at 40 cents, equivalent to 40% of the food expenditure of a family of six members (Valle, 1885, p.87). The fall in the price of sugar also impoverished the small landowners and tenants, known as *colonos* (Alemán, 2018). They and day labourers experienced an appreciable deterioration in their diet and hygiene which aggravated the problems of anaemia and hookworm disease. Hurricanes worsened things. Natural disasters and labour exploitation, whose effects on height are very noticeable, frustrated the authorities' attempts to stamp out epidemic diseases (Corchado, 1985).

When US troops took Puerto Rico by force in April 1898, they found a cyclone-ravaged island with a population of about 900,000 that was starving and sick. But things got worse under their rule in the short term, according to the evolution of height (Figs. 1 and 2). The one centimetre drop in such a short period of time is evidence of the magnitude of the impoverishment suffered by the Puerto Ricans.

This conclusion, which is confirmed by the mortality rate after 1898 (Vázquez, 1964), coincides with those of Godoy et al. (2007) but differs completely from that of Marein (2020), although he bases his assessments on very weak statistical grounds. The sample size of the Spanish colonial period he uses is tiny. It is not possible to quantify living standards with 13 observations in the five-year period 1886–90, 14 in 1891–95 and one in 1886–90 in the three samples used. His lack of statistical plausibility is evident and incontrovertible. Indeed, his own estimates reveal that pre-annexation living standards were not exceeded, at best, until 1911–15 and in 1940 according to the Baltimore Longitudinal Study in Aging (1984) estimations of age-related variations in height in the US population.

However, we must be cautious in assessing the evolution of height from 1898 onwards, given the size and nature of the sample. We can infer from the data obtained that, after annexation by the United States and during the first two decades of the 20th century, the standard of living in Puerto Rico, according to anthropometric indicators, stagnated. That is, the data set reflects stagnation in height in a period when most of

the height trends were going upwards (Baten and Blum 2014).

There are several reasons for this evolution of the height so peculiar. The US administration did not know how to adapt to the peculiarities of a territory they were completely unfamiliar with, and its leaders were overwhelmed by the effects of the 1899 hurricane. They even acknowledged that they underestimated the effectiveness of the Spanish administration (Sanger, 1899, 114; Governor, 1909, p. 23). Their initial aims, set out in the Puerto Rico Relief Program (Von R. Hoff, 1901; Carroll, 1899), were good intentions without tangible material results. This was the case with Colonel Bailey Kelly Ashford's commendable plan to combat anaemia, which was abandoned in 1907, so that the problem worsened (Crosby, 1987; Gutiérrez, King and Ashford, 1906). The devaluation of the *peso*,(hitherto at par) by 20% following the adoption of the dollar as the currency, bankrupted the colonists (Crist, 1948). Day labourers' wages were reduced to a meagre 35 cents a day because of this and the steady decline in the price of sugar. Payments in non-convertible currency (*tokens*) returned, the exchange rate of which was fixed at the whim of the sugar mill (*centrales*) owners (Crist, 1948). Coffee producers and their employees also suffered terrible adversity, as their products were excluded from the Spanish and US markets. In such circumstances, the problems of food poverty, anaemia, epidemics, lack of housing, health and education, child labour, and the vulnerability of the population to the severe weather that all caused the fall in height were exacerbated.

4. Conclusions

The results obtained in this study invite us to reflect on the living standards in the Hispanic American "plantation economies" and the effects of mono-export cultivation on their welfare. In the case of Puerto Rico, independence from what happened in the world sugar market led to a decline in size after its full incorporation into it around 1820. In other words, the adoption of tropical agrarian capitalism as a growth model led to an immediate deterioration of welfare that was more intense and prolonged than that caused by industrial capitalism (Margo and Steckel, 1983, Komlos, 1996). Specialisation forced wage moderation in order to maintain competitiveness at the expense of feeding the wage earners. The model generated an endless cycle of welfare deterioration. The worsening of the diet would cause the worker's physical deterioration and thus a decline in their productivity, which in turn would force an even greater decline in wages, which would have repercussions on their children's food. Frequent hurricanes brought more misfortune for Puerto Ricans. Only technical change could break this sequence. But Puerto Rico did not embrace it. As a result, it was only when, in exceptional wartime circumstances, sugar appreciated that material welfare improved. Only then could the Madrid government abolish slavery and dispense with pre-capitalist labour relations.

The US administration did not break this endless loop, this poisoned dependence between welfare and sugar exports, at least not in the short and medium terms. The needs of Puerto Rico's impoverished population outstripped the new rulers, who were at best as negligent as the Spanish. With sugar prices and wages stagnant, hunger, disease, poor sanitation and squalid housing continued for at least two decades. Having lost heart after the disasters caused the 1899 hurricane (Ramírez, 1932), the US Administration turned a blind eye to the pitiful economic and social condition of workers in Puerto Rico until the granting of citizenship in 1917 by the Jones Act when thousands of young men from the island were fighting on European battlefields in the US Army. But by then Puerto Ricans had lost two decades in their longing for the greater welfare promised to them by the new colonising power. It is true that the debate on this issue is far from closed with a conclusive answer (Ayala and Begard, 2000), as the flatting and small increase of the black and mixed-race prisoners during the IWW suggests. But this anthropometric approach offers enlightening results, at least for the poorest population in the early years of US sovereignty.

CRediT authorship contribution statement

Javier Moreno Lázaro: Investigation, Conceptualization, Methodology statistical treatment, writing and revision.

Data Availability

I will act the figures and data in an apendix in case the article is published.

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Appendix

Average height of Puerto Ricans prisoners 1770–1924 (by year of birth).

	Black and Mixed-race inmates		Withe inmates		Total inmates	
Period	Number	Average	Number	Average	Number	Average
1770–79	20	1671.8	32	1680.6	52	1677.2
1780–84	24	1689.7	36	1686,0	60	1687.5
1785–89	17	1696,0	19	1679.8	36	1687.5
1790–94	23	1647.1	44	1648.8	67	1648.2
1795–99	21	1693.2	109	1652.2	130	1658.8
1800–04	30	1654	174	1656.3	204	1656.0
1805–09	49	1659.2	195	1653.7	244	1654.8
1810–14	48	1650.8	189	1647.9	237	1648.5
1815–19	48	1651.2	178	1640.5	226	1642.8
1820–24	37	1647.1	120	1640.5	157	1642.1
1825–29	26	1618,0	108	1645.9	134	1640.5
1830–34	23	1660,0	89	1645.2	112	1648.2
1835–39	25	1653.3	86	1649.8	111	1650.6
1840–44	27	1622.8	84	1650.2	111	1643.5
1845–49	24	1646.7	92	1621.8	116	1627.0
1850–54	20	1693.2	58	1643.9	78	1656.5
1855–59	25	1705.3	61	1666.4	86	1677.7

(*continued on next page*)

(*continued*)

	Black and Mixed-race inmates		Withe inmates			Total inmates
1860–64	38	1687.8	73	1667.7	111	1674.6
1865–69	57	1681.3	135	1661.1	192	1667.1
1870–74	28	1722.1	218	1664,0	256	1605.4
1875–79	80	1692.1	263	1664.5	343	1670.9
1880–84	189	1680.4	307	1661.7	496	1668.8
1885–89	158	1672.1	246	1664.7	404	1667.6
1890–94	142	1665.1	260	1652	402	1656.6
1895–99	189	1665.3	279	1646.2	468	1653.9
1900–04	193	1667,0	314	1646.5	507	1654.3
1905–09	154	1653.7	194	1663.6	348	1659.2
1910–14	52	1652.7	93	1663.6	145	1659.7
1915–19	27	1674.7	79	1663.9	106	1666.7
1920–24	25	1675.9	36	1639.8	61	1654.6
TOTAL	1819		4171		6000	

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