



# The biological standard of living in Suriname, c. 1870–1975



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## ABSTRACT

The physical stature of Surinamese soldiers is estimated to have increased by more than 3 cm between 1870 and 1909. In the subsequent four decades, the increase in adult male and female height amounted to 0.3–0.5 cm and 0.9–1.0 cm per decade, respectively. This increase in height continued and accelerated during the second half of the twentieth century. Height increase among African and Hindustani Surinamese males and females was similar. Height differences between African and Hindustani Surinamese were therefore fairly constant over time, at 4–5 cm. Other indicators of nutritional and health status, such as infant mortality, showed continuous improvement, whereas per capita calorie and protein availability improved in the twentieth century.

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## 1. Introduction

To date, the literature has provided a fragmented and inconclusive picture of changes in the standard of living in Suriname, notably before 1945. Several scholars (Panday, 1959; Van Lier, 1971; Willemsen, 1980; Heilbron, 1982; Chin and Buddingh', 1987; Gowricharn, 1990; Hoefte, 2014) investigated socio-economic conditions in Suriname in the nineteenth and twentieth centuries. Few of them discussed the long-term development of the standard of living. According to Gowricharn (1990: 139), "[...] the people of Suriname probably experienced an absolute increase in welfare after World War II. The lower echelons of the population, too, profited from this increase. It was made possible by increased consumption levels, financed mainly by the state, which became the country's main employer."<sup>1</sup> Chin and Buddingh' (1987: 31) concluded that "the average welfare level rose considerably during this period [from the early 1950s to the mid-1970s], yet the lowest income groups scarcely profited from this development." Hoefte (2014: 1) concluded that the standard of living deteriorated in the 1930s. Because of the lack of data on purchasing power, she used the decreasing number of tax returns

as an indicator of the standard of living; their number decreased by 30% between 1928 and 1933.<sup>2</sup> She further argued that the postwar standard of living in Paramaribo, where 36% of the Surinamese population lived in 1952, increased until 1968. She used Engels's law to underpin her conclusion.<sup>3</sup> Between 1953 and 1969 the proportion of income spent on food decreased from 56% to 40%. (Hoefte, 2014: 178). Van Lier (1971: 219–221) discussed health indicators such as gross mortality and concluded that from 1861–1870 onwards mortality decreased, indicating a rapid improvement in the health status of the Surinamese in the late nineteenth to the twentieth century. He noted that the health situation nevertheless remained unsatisfactory, and pointed to the prevalence of infectious diseases such as syphilis, malaria, anchylostomiasis, leprosy, and tuberculosis.

None of the authors mentioned so far provided more than fragmentary evidence regarding changes in the standard of living from the late nineteenth century onwards. Studying physical stature – an "important proxy for the quality of people's bodily health and nutrition, in particular during childhood" (Van Zanden et al., 2014: 27) – could provide a long-run perspective on the

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<sup>1</sup> Translated from the Dutch by the present author.

<sup>2</sup> Hoefte (2014), p. 71, and note 7 in Chapter 3.

<sup>3</sup> Engels's law states that the proportion of income spent on food falls as income rises.

biological standard of living.<sup>4</sup> Admittedly, several scholars, for instance the Dutch physical anthropologist [Droogleever Fortuyn \(1952\)](#), did study physical stature in different adult age groups in Suriname, but, as the well-known physical anthropologist Mildred Trotter remarked, he did not take note of “the possibility of a trend in stature between successive generations ( . . . )” ([Trotter, 1954: 521](#)). The same applies to the nutrition survey conducted by [Van der Kuyp \(1967\)](#), which also included height measurements of different adult age groups.

This article aims to offer a long-run perspective on both the female and male physical stature of two main ethnic groups, African Surinamese and Hindustani Surinamese, and to compare evidence on physical stature with infant mortality rates and nutrition.

## 2. Context

Suriname lies on the north-eastern Atlantic coast of South America. It is bordered by French Guiana to the east, Guyana to the west, and Brazil to the south. Paramaribo is Suriname’s capital and largest city. In 1880 46% of the population lived in Paramaribo. By 1938 this figure had fallen to 34% ([Van Lier, 1971: 189](#)). Between 1938 and 1980 the proportion of people living in Paramaribo increased from 34% to 55% ([Hoefte, 2014: 162](#)). Suriname has a multi-ethnic population with roots in Africa, Europe, Asia, and the Americas; it was a Dutch colony for 300 years. Between the late seventeenth century and the beginning of the nineteenth century African slaves were imported as plantation laborers. After the abolition of slavery in 1863 most of the freed slaves left the plantations. To keep the plantations running, between 1873 and 1916 about 34,000 workers were recruited from the eastern part of Uttar Pradesh and Bihar as indentured labor ([Hoefte, 2014; Report of the High Level Committee on the Indian Diaspora, 2001](#)). Between 1890 and 1939 about 33,000 Javanese were recruited as contract laborers ([Hoefte, 2014](#)). Around 1880, Suriname had about 50,000 inhabitants. Sixty years later its population had grown to 160,000.<sup>5</sup> In 1954 Suriname was granted far-reaching autonomy and self-rule. By 1975, the year Suriname gained independence, its population was 364,000.<sup>6</sup> The ethnic composition of Suriname changed dramatically in the course of time. Around 1910 the population comprised Creoles (60%), Hindustanis (21%), Javanese (9%), and others (10%)—Bush Negroes, Europeans, Amerindians, Jews, and Chinese ([Van Lier, 1971: 190](#)). Sixty years later the corresponding percentages were 36, 41, 17, and 7 ([Bruijning and Voorhoeve, 1977: 145, 281](#)). Notwithstanding these changes, Creoles, Hindustanis, and Javanese remained the largest ethnic groups.

## 3. Data and methods

The evidence on physical stature relates to different types of datasets: military height data (late nineteenth century), data from a nutrition survey (1964), and data from a medical survey (2003). We decided not to combine these datasets, because different selection biases might play a role.

<sup>4</sup> The concept of the biological standard of living, introduced by [Komlos \(1989, 2001\)](#), has been criticized by several researchers. [Harris \(2009: 60\)](#) proposed to regard height “as a biological measure of the standard of living” rather than a measure of “the biological standard of living”. He argued that the “biological standard of living” implies that there is more than “one standard of living”, even though one of the key claims made by anthropometric historians is that height provides a more complete measure of living standards than that provided by wages alone.

<sup>5</sup> [Koloniaal verslag \(1881\)](#) and [Surinaamsch verslag \(1943\)](#).

<sup>6</sup> FAO data, <http://faostat.fao.org/site/368/default.aspx#ancor>.

**Table 1**

Soldiers born 1870–1909, by ethnic group, birth region, and whether fathers were known.

	Born in Paramaribo			Born elsewhere in Suriname		
	Father			Father		
	Known	Unknown	Total	Known	Unknown	Total
Creoles	59	48	107	31	28	59
Other	3	0	3	2	0	2
Total	62	48	110	33	28	61

Note: age range is 21–34.

Source: [Nationaal Archief. Inventaris van het archief van het Ministerie van Koloniën: Stamboeken en pensioenregisters van Militairen Oost-Indië en West-Indië, 1815–1949. Toegangsnummer 2.10.50, Inventarisnummers 611–612.](#)

Data relating to the nineteenth century were derived from the military records of men recruited in Suriname who served voluntarily in the Royal Dutch Indian Army.<sup>7</sup> This kind of data usually has limitations, due to self-selection bias and height-based selection ([Bodenhorn et al., 2013](#)). Self-selected samples might not be representative of the general population. That height-based selection did occur is clearly visible in the sample of military volunteers. As can be observed (see [Fig. A1 in Appendix A](#)), between 1892 and 1919 volunteers shorter than 156 cm were disqualified from enlisting. From 1920 onwards the minimum height standard seems to have been 159 cm. Apparently there was no maximum height limit. A Shapiro–Wilk’s test ( $p > 0.05$ ) and visual inspection of the histogram and Q–Q plot showed that height was approximately normally distributed (see [Fig. A2 in Appendix A](#)). Sample sizes by ethnic group, region, and whether or not the soldiers had unknown fathers are given in [Table 1](#).

Data relating to the first half of the twentieth century were collected in the 1960s by [Van der Kuyp](#) in a nutrition survey among the general population of Suriname ([Van der Kuyp, 1967](#)) as part of which the heights of 71,712 inhabitants, mainly infants, children, and adolescents, were collected.<sup>8</sup> Adult heights were collected by visiting “government services, factories, industries etc.” ([Van der Kuyp, 1967: 437](#)). [Van der Kuyp](#) did not report the details of his sampling method. Nor did he report the type and frequency of problems people encountered in reporting administrative data, such as birth dates. He noted that people who could not provide the data needed were excluded, but he did not report how many individuals were excluded because of this. It is therefore hard to assess the representativeness of the adult survey data. On the other hand, the details he reported on how heights were measured allow one to conclude that height data were measured reliably. [Van der Kuyp](#) did not report national average heights, instead reporting heights of different ethnic groups in urban and rural areas.<sup>9</sup>

<sup>7</sup> Source: [Nationaal Archief. Inventaris van het archief van het Ministerie van Koloniën: Stamboeken en pensioenregisters van Militairen Oost-Indië en West-Indië, 1815–1949. Toegangsnummer 2.10.50, Inventarisnummers 611–612.](#)

<sup>8</sup> We decided not to use the military height data collected by [Droogleever Fortuyn \(1952\)](#) and copied from the records relating to the physical examinations of conscripts conducted during World War II because a flexible minimum height standard had been applied by the military recruiters. Since these data cover roughly the same period as the *population-based* data published by [Van der Kuyp](#), we preferred to use [Van der Kuyp](#)’s data. Further, we decided not to use data from a medical survey conducted by [Luyken et al. \(1965\)](#). [Luyken et al.](#) did not specify their sampling method. It was definitely not a nationwide representative sample. The Creoles included lived in Paramaribo, while the Hindustanis came from the New Nickerie district. Furthermore, and most importantly, heights were reported as adult heights and not as heights per age group (21–29, 30–39, etc.). In 1967 and 1968 another nutrition survey was carried out by [Van Staveren and Luijken \(1971\)](#). Their target group were pre-school children, not adolescents or adults.

<sup>9</sup> Heights were reported by ten-year age groups.

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