

# Birth weight and physical stature in St. Petersburg: Living standards of women in Russia, 1980–2005

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## Abstract

We analyze data on the height and weight of mothers and newborn babies between 1980 and 2005 in St. Petersburg, Russia. We find that women's living standards, as measured by their height, improved steadily from the end of World War II through those born in 1972, hence reached adulthood in 1990. Thereafter, heights declined. Evidence on both the length and weight of babies corroborates this pattern. Their values trace a "U" shaped curve with troughs near the mid-1990s. Thus, the anthropometric results on newborn as well as for their mother point to the strains and challenges to living standards experienced during the restructuring of the post-Soviet economy. This is a general result that has become a recurring pattern: economic transitions are almost always accompanied by biological strains.

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## 1. Introduction

We estimate trends in the biological standard of living of women and their newborn babies in St. Petersburg, Russia between 1980 and 2005. The data consist of the height and weight of mothers and the weight and length newborn, which are robust indicator of living conditions (Ward, 1993; p. 12). Since 1976 the World Health Organization has used the birth weight of babies as a standard indicator of women's quality of life (Ward, 1993; p. 5). Sensitive to its

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mother's living conditions throughout her pregnancy, the size of a fetus is also affected to some degree by the mother's general living standards prior to conception. Despite gender inequality, women's living conditions reflect larger forces affecting the entire society.

The paper draws on the recumbent length and birth weight of 64,087 babies born in St. Petersburg between 1980 and 2005. In addition, we have data on the physical stature and weight of 15,819 mothers born between 1929 and 1989. The data consists of information on women whose delivery lasted a normal length of time and culminated in the birth of a singleton baby. The information originates mainly from birth records and from archived annual accounts of maternity wards of hospitals.<sup>1</sup> Seventy-four percent of the women were from St. Petersburg, 26% were from the surrounding region, with a handful from other regions of Russia.

During the period under study, the mothers' average age increased from 25.3 to 26.8 years. Their average educational attainment was 11.8 years. About 93% of the women were Russian and the rest were divided among 57 other ethnic groups. The social profile of the women in the sample underwent major changes. The share of skilled blue-collar workers decreased from 37.3 to 13.3%, and the share of professionals decreased from 20.8 to 9.3%, while the share of housewives increased dramatically from 4.2 to 51.1%. While we have no information on the profession and education of housewives, they probably belonged to the well-to-do stratum of the population. Thus, our sample consists mainly of relatively young, recently married women of Russian nationality, who, by their educational level, material position and social status, belonged to the middle stratum of St. Petersburg's population (the general characteristics of the sample: age structure, education, social profile, family status and ethnicity are presented in [Tables A1–A3](#); histograms and other characteristics of the distribution of newborns and their mothers by stature and weight are found in [Tables A4–A6](#) and [Figs. A1–A4](#)).

## **2. Basic trends in the biological status of women and their babies**

There is a close relationship between the recumbent length and the weight of the newborn (correlation coefficient is 0.879).<sup>2</sup> On the eve of perestroika, in 1982–1985, the average length of singleton, full-term (born 9 months after conception) newborns (both boys and girls) was 51.4 cm and weighed 3476 g ([Fig. 1](#)). The following decade, which included both Perestroika and the last years of communism, saw a considerable decrease in both anthropometric attributes: newborns' length reached a minimum of 50.8 cm in 1995 and a weight of 3379 g in 1993. Then an upward trend began. However, the increase in weight stalled between 1996 and 2002 only to resume in 2003. By the end of the period under consideration, both length and weight were approximately back to where they were in the early 1980s in the pre-Perestroika era: about 51.4 cm and 3450 g.

Moreover, we find that the height of mothers increased by nearly 6 cm between the end of World War II and early 1970s; thereafter the stature of those born in 1976–1978 decreased by about 0.4 cm and then increased again to 164.4 cm ([Table 1](#)). The trough was reached in 1978 ([Fig. 2](#)), i.e., among those who reached their final height at age 18 around 1996. Thus, the data indicate that living standards declined among women who reached adulthood in the early 1990s. Although there was a considerable reduction in average weight – by nearly 12 kg – this was not entirely due to a decrease in living standards because the average age decreased as well, and

<sup>1</sup> The Maternity Hospital's archives in St. Petersburg: no. 1 Hospital, 49/51 Bol'shoi Prospect, Vasil'evsky Ostrov, 199178 St. Petersburg; no. 6 Hospital, 5 Maiakovskaia St., 191014 St. Petersburg; no. 15 Hospital, 12/2 Vavilovskaya St., 195257 St. Petersburg.

<sup>2</sup> Calculated by the author on the basis of 64,087 records of newborn.

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