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How Tall Were the Jews?

Anthropometric Data on Income Inequality between the Jews and Non-Jews in Hungary from the Mid-Nineteenth Century until World War I

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Abstract. The widespread belief that the Jews were far more affluent than the non-Jews in Hungary in the decades before the Holocaust lacks sufficient empirical corroboration. The present study aims to present the income disparity between Jews and non-Jews in the light of anthropometric data. A review of the physical anthropological literature concerning height and menarcheal age of Jews from the 1850s until World War I, together with an analysis of height data from the 1913 conscription and measurements of physical fitness involving schoolchildren between 1886 and 1916, suggest that the Jews' biological standard of living was higher than that of non-Jews, although the inverse was true in the upper stratum of society.

Keywords: Jews, height, income, inequality, anthropometric history

Introduction

There is a widely held view that Jews in Hungary were far wealthier than non-Jews in the period between the emancipation of the Jews (in 1867) and the Holocaust. According to the historical and social scientific literature, the Jewish share of national wealth and income was 20–25 percent before the Holocaust on the country's post-1920 and pre-1938 territory,[1] while Jewry made up roughly 5 percent of the total population. Previous research by the author of this paper, however, has revealed

1 Kádár and Vági, *Self-Financing Genocide*, 13–33; Ungváry, *A Horthy-rendszer mérlege*, 20–59; Ungváry, *A Horthy-rendszer és antiszemitizmusának mérlege,* 32–82. See also Deák, "Jews and Communism," 58; Dean, *Robbing the Jews*, 343; Janos, *The Politics of Backwardness in Hungary*, 225–26; Karády, "The Ashkenaz of the South," 90, 116; Klacsmann, "Abandoned, Confiscated, and Stolen Property," 135.

recently that this claim is actually a fantasy of the radical anti-Semites of the interwar period about the richness of the expected loot,[2] and that it was (and still is) completely unsubstantiated.[3] Research so far has been able to prove systematically only that Jews were heavily overrepresented in Hungary among the very rich (e.g. the highest tax payers, owners of factories and mines, and great landowners).[4] Nevertheless, this finding does not prove that Jews were more well-off than non-Jews because the exclusive investigation of the affluents does not provide information on the average standard of living of the entire Jewish and non-Jewish population.[5] All in all, the stereotype of rich Jews versus poor Gentiles is not sufficiently supported by previous research. The aim of the present study[6] is to present the conclusions that can be drawn using methods of anthropometric history[7] concerning the extent of the disparity in income between Jews and non-Jews in Hungary from the middle of the nineteenth century until World War I.[8]

Anthropometric historiography analyses available records of measurements of human body size, and above all, measurements of height, in order to assess the extent to which the environment was of benefit to the human body in past societies—that is, to measure the biological standard of living, meaning the biologically utilized element of wealth.[9] Individual differences in height do not provide a great deal of information in this respect, as individual differences are, to a significant

2 For example, Bosnyák, *Magyarország elzsidósodása*, 117–18; Kovács, *A csonkamagyarországi zsidóság*, 56; Bosnyák, "Nincs más út," 210–15.

3 Bolgár, "Mítoszok a zsidó jólétről," 129–55; Bolgár, "Újabb mítoszok a zsidó jólétről"; Bolgár, "Viszonválasz Ungváry Krisztiánnak," 1–17.

4 Kovács, *A csonkamagyarországi zsidóság*, passim. Bolgár, "Mítoszok a zsidó jólétről", 115–21; Bolgár, "Újabb mítoszok a zsidó jólétről"; Bolgár, *Zsidók és nem zsidók számokban*.

5 Bolgár, "Mítoszok a zsidó jólétről," 121–22; Komlos, "The Standard of Living of Jews," 127–28, 133.

6 For the partial results of this research, see Bolgár, "Wealthier Jews, Taller Gentiles."

7 For the few historical studies in Hungary that used anthropometric methods and arguments, see Szántay, "Testmagasság és ipari forradalom"; Szilágyi, *A kékek és a zöldek*; Káli, "Antropometrikus történetírás"; Káli and Magyarosi, "Kutatócsoport alakítása," 7–18; Halmos, "A dualizmuskori társadalom," 263–64.

8 The data collected for the purposes of this study refer to the pre-1920 period projected onto the post-1920 and pre-1938 territory of Hungary, where allegedly 20–25 percent of the national wealth and income belonged to the Jews. Needless to say, it would be useful to take into account areas outside the country's 1920 borders as well, but conducting research in foreign archives was not possible for technical reasons. Consequently, the supposedly indigent Jewish population of the north-eastern counties of pre-Trianon Hungary are not included in the analysed datasets.

9 Komlos, "Hol tart az antropometrikus történetírás," 269.

extent, genetically determined.[10] The average stature of a larger population, however, can be regarded as an indicator of biological well-being, since at the level of the population genetic differences tend to cancel one another out.[11] We know very little about the genetic differences that determine the variation in height between individual ethnic groups.[12] However, various studies have found that the members of most peoples living in identical socioeconomic circumstances will reach the same average height, the ethnic differences that cannot be explained by environmental factors being relatively insignificant.[13] Moreover, the evolution over time of the average height of a population that remains fundamentally unchanged in terms of its genetic composition certainly is the product of environmental factors—namely, of the balance between nutrient intake and energy consumption.[14]

The mean stature of a bigger population, and changes to it, are thus related to the cumulative net nutrition in that population—that is, the extent to which the quantity and quality of the food consumed from the foetal stage until the age of twenty to twenty-three meets nutritional needs—while this in itself is related to income level.[15]

Human stature is nevertheless an imperfect indicator of income status, for net nutrition is affected, for instance, by diseases, work intensity, and so on. One of the factors that can influence the average height of a population, besides level of income, is income distribution, since, with respect to nutrition, the law of diminishing marginal utility applies.[16] This means that, with an incremental increase in the number of food portions consumed, height will increase according to a steadily declining scale, and, after a certain time, will not increase at all—that is, improvements in nutrition due to the addition of further and further units will lead to steadily decreasing

10 Silventoinen, "Determinants of Variation in Adult Body Height," 271, 275.

11 Tanner, "Introduction: Growth in Height," 1; Baten and Blum, "Growing Tall but Unequal," 68; Steckel, "Biological Measures of Economic History," 407.

12 McEvoy and Visscher, "Genetics of Human Height," 300–1; Harris, "Anthropometric History and the Measurement of Wellbeing," 18–20, 23.

13 Eksmyr, "Anthropometry in Privileged Ethiopian Preschool Children"; Habicht et al., "Height and Weight Standard for Preschool Children"; Graitcer and Gentry, "Measuring Children"; Fogel, *Without Consent or Contract*, 138–39; Floud, "The Heights of Europeans since 1750," 12–13; Baten and Blum, "Growing Tall but Unequal," 68–69; Steckel, "Biological Measures of Economic History," 407; Steckel, "Biological Measures of Well-Being," 211–12.

14 Komlos, *Nutrition and Economic Development*, 28; Tanner, "Introduction: Growth in Height," 2; Komlos, "Az antropometrikus történetírás jelentőségéről," 6; Komlos, "Hol tart az antropometrikus történetírás," 271.

15 Steckel, "Biological Measures of Well-Being," 37–41; Steckel, "Biological Measures of Economic History," 405–9; Komlos, "Hol tart az antropometrikus történetírás," 268–71; Komlos, "Az antropometrikus történetírás jelentőségéről," 5–7.

16 Gossen, "Entwickelung der Gesetze des menschlichen Verkehrs," 4–5.

returns in terms of stature.[17] As a result, the wealthy, who enjoy better nutrition, will on average be taller than the poor, although their superiority in terms of height will not be equal in measure to their financial superiority.[18] Thus one (more) reason why physical height is an inaccurate indicator of income level is that it underrepresents the wealth of the affluent. This means that, in the context of a given average income level, the bigger the disparity in income within a population, the smaller the average stature will be, and the lower the biological standard of living. In other words, in a society in which the same amount of goods are distributed more unequally than in another, there will be more people whose daily nutritional needs are not fully met, and who are thus short in stature. This will not be compensated by the fact that the wealthy in that society are wealthier than in the other, since, however stuffed their wallets may be, they will still never grow so tall that their heads touch the sky. If we compare the height of Jews and non-Jews in Hungary, it is possible to gauge the differences in income levels without the data becoming heavily influenced by the well-known fact that amongst those with the greatest fortunes Jews were represented to a far greater extent than Christians were. This uncovers whether Jews enjoyed, on the whole, higher levels of wealth among the masses with smaller incomes or whether any previous measures of Jewish affluence have reflected merely the impact of the relatively high number of Jews among the extremely rich.

But who in fact were taller, the Jews or the non-Jews? In the nineteenth century, Péter Schwarz, who came from the Hungarian town of Nagykőrös, was a giant who gained fame throughout Europe. We know his precise measurements at the age of nineteen only: at 186.5 cm he was tall according to contemporary standards and weighed 225 kg.[19] What is interesting about the Nagykőrös giant is that it was considered important to make mention of the fact that he was Jewish,[20] as if the fact that he was a Jew made his huge stature even more surprising—as if Jews were expected to be diminutive. But do the measurements in fact support this assumption?

A review of studies concerning Jewish height in Hungary

If we look at general anthropological works concerning humanity as a whole, the European population, or the Jewish population, from the end of the nineteenth century to the Holocaust, we find that they promulgated the idea—as formulated

17 Komlos, "Hol tart az antropometrikus történetírás," 271.

18 Blum, "Inequality and Heights," 182–83; Steckel "Biological Measures of Economic History," 409–11; Steckel, "Stature and Standard of Living," 1912.

19 Hamary, "Rendkívüli termet," 44–45.

20 Hamary, "Rendkívüli termet," 44; "A »legfontos«-abb magyar zsidó," 6.

by Hans Günther,[21] the leading racial theorist of the Third Reich—that "the Jews are on average of short stature".[22] However, writers of Jewish anthropology believed that the Jews nevertheless did appear to be taller than certain peoples, and in many cases their claims referred precisely to the Magyars (i.e., ethnic Hungarians). Joseph Jacobs reported that the Jews were the shortest people in Europe "excepting, perhaps, Magyars".[23] Maurice Fishberg concluded from his research that there were many individuals of short stature among the Jews, and that, besides them, "only the Magyars, Lapps, and Sardinians can show such a large proportion of short persons".[24] This notion even gained a certain popularity outside the realms of anthropological literature: in 1902, in the journal *Jüdische Turnzeitung*, Max Nordau, one of the founding figures of the Zionist movement, included the Magyars in his list of peoples that were certainly not taller than the Jews.[25] Might it be the case that in Hungary the Jews were not in fact shorter than average height?

1) As far as is known, the earliest data on the anthropometry of Hungarian Jewry were published in a paper that tried to explore racial differences in the population of Pest-Pilis County, written by Eduard Glatter, head of the Statistical Office of Vienna and the former chief medical officer of Pest-Pilis County. Glatter's study[26] on the one hand reported that the average height of the twenty-year-old Jewish potential recruits in Pest-Pilis County was 164.5 cm in eight unspecified years of the 1850s according to the conscription registers (Table 1). This means that the Jewish young men were taller than the Magyars, but shorter than the Slovaks, and exactly as tall as the Germans. (The average stature of the total population reaching conscription age is unknown.) On the other hand, Glatter collected data on the menarcheal age of few hundred

21 Günther, *Rassenkunde des jüdischen Volkes*, 210.

22 See also Weisbach, *Körpermessungen verschiedener Menschenrassen*, 213; Andree, *Zur Volkskunde der Juden*, 32; Jacobs, "The Racial Characteristics of the Modern Jews," XI; Ripley, *The Races of Europe*, 349, 377; Hutchinson, Gregory, and Lydekker, *The Living Races of Mankind,* 250; Jacobs and Fishberg, "Stature," 536–39; Fishberg, *The Jews,* 27–46; Deniker, *The Races of Man*, 425; Frigyes, *A zsidók természetrajza*, 16; Dixon, *The Racial History of Man*, 164–65; Coon, *The Races of Europe*, 643; Szilágyi, *A zsidó népegyéniség*, 29. For the findings of current research on Jewish body height, see Komlos, "The Standard of Living of Jews"; Aschoff, and Hiermeyer, "The Physical Stature of Jewish Men," 111; Kopczyński, "The Physical Stature of Jewish Men"; Hermanussen et al., "Adolescent Growth," 345; Blum and Rei, "Escaping the Holocaust"; Tassenaar and Karel, "The Power of Kashrut," 668; Beekink and Kok, "Temporary and Lasting Effects of Childhood Deprivation," 206–8; Kopczyński and Sobechowicz, "The Impact of Urbanization," 365–66; Blum and Rei, "Escaping Europe."

23 Jacobs, "The Racial Characteristics of the Modern Jews," XI.

24 Fishberg, *The Jews,* 31. See also Fishberg, "Materials for the Physical Anthropology of the Eastern European Jews," 181.

25 Nordau, "Was bedeutet das Turnen für uns Juden," 385.

26 Glatter, "Das Racenmoment."

married women. (The method of data collection is unknown.) Age at first menstruation—like height—is dependent on nutritional status, while this in turn is related to income level: poor nutrition tends to delay sexual maturity.[27] Glatter's observations show that in Pest-Pilis County sexual maturation occurred at a younger age among Jewish females than in the case of women of any other ethnicity.[28]

Table 1 Height of men reaching conscription age (20 years old) and the menarcheal age of females in Pest-Pilis County (1850s)

Religion/ethnicity		20-year-old males		Married females	
		N	Average height (cm)	N	Average age at menarche (year)
Jewish		n/a	164.5	n/a	15.61
Non-Jewish	Slovak		168.9		16.97
	German		164.5		16.89
	Magyar		162.6		16.99
	Serb		161.4		15.64
	Total		n/a		n/a

Source: Glatter, "Das Racenmoment in seinem Einfluß auf biotische Zustände."

2) The foreign anthropologists took the idea that the Magyars were even shorter than the Jews from the same source as they obtained practically all their information concerning Hungary: they referred consistently to Sámuel Henrik Scheiber, who had initiated large-scale measurements of height in preparation for the 1876 International Congress of Anthropology in Budapest. Scheiber obtained conscription registers[29] from three military augmentation commands, from which he compiled the heights, recorded at the time of conscription examination, of all twenty-year-old men for the years 1866, 1867, and 1868 in the entire territory of Veszprém, Fejér (including Székesfehérvár) and Győr (including the city of Győr) counties, as well as various municipalities in Tolna and Pest-Pilis-Solt-Kiskun counties (including Buda and Pest).

27 Eiben and Mascie-Taylor, "The Age at Menarche."

28 Wilhelm Joachim, a physician from the city of Pest, reported in 1853 that in Hungary the age at the onset of menstruation was 13–14 among Serb girls, 14–15 among Jewish females, 15–16 among the daughters of Magyar peasants, and 16–17 among Slovaks. However, Joachim did not substantiate his claims (Joachim, "Zur Aetiologie einiger Frauenkrankheiten," 105).

29 Scheiber, "Magyarország lakóinak középtermetéről."

In the territory of the five counties, at the time of the Austro–Hungarian Compromise (1867), twenty-year-old Jewish potential recruits were on average 163.3 cm tall, which corresponds to the average height of all men of conscription age who were measured. The Germans and Slavs, whose results were tied, were taller than the Jews. The Magyars proved to be 1.4 cm shorter than the Jews, which, according to Scheiber, meant that the Magyars were the shortest not only in Hungary, but on the continent as a whole (Table 2).[30]

Table 2 Height of men reaching conscription age in five counties of the Kingdom of Hungary (20 years old, 1866–1868)

1			2	3
Religion/ethnicity			N	Average height (cm)
Jewish			810	163.3
Non-Jewish	German		4926	164.6
	Slavic[31]		1487	164.6
	Magyar		8884	161.9
	Total	calculated	15 297	163.0
		reported by Scheiber		163.3

Sources: for the second column see Scheiber "Recherches sur la taille moyenne des hommes en Hongrie," for the third column see Scheiber, "Magyarország lakóinak középtermetéről"; "Untersuchungen über den mittleren Wuchs."

However, Scheiber's findings were not based on established scientific methods. The conscription registers did not mention the potential recruits' ethnicity, mother tongue, or even spoken language, on the basis of which it would have been possible to decide who was a Magyar and who was a Slav, etc. Scheiber undertook name analysis, deciding merely on the basis of the sound of a person's family name whether they belonged under the heading Slav, German, or Magyar.[32] However, this method is extremely questionable bearing in mind the fact that while people generally have one family name, they have two parents, from both of whom they can inherit their ethnic identity. Even so, Scheiber was able to determine accurately from his source who were Jews and who were not because the conscription registers do record denomination. Scheiber's observation that young Jewish men at around the time of the 1867 Compromise were the same height, to the millimetre, as the non-Jews in the investigated area, is therefore credible.

30 Scheiber, "Magyarország lakóinak középtermetéről," 244–45.

31 Serbs, Slovaks, and Slavs whose ancestors came from Bohemia, Moravia, or Poland.

32 Scheiber, "Untersuchungen über den mittleren Wuchs," 257–59.

3) In 1875, József Lenhossék, a professor of anatomy at the Budapest University, investigated the skull size and head shape of the various ethnic groups in Hungary. In order to calculate the so-called head quotient, he also needed height measurements. The data show that the Jews had the smallest stature of all the ethnic groups in the research, at 2 to 3 cm shorter than the non-Jewish average (Table 3).

Table 3 Height of ethnic groups in the Kingdom of Hungary (1875)

Religion/ethnicity		N	Average height (cm)
Jewish		15	167.8
Non-Jewish	Serb	16	171.7
	Croat	12	170.7
	Magyar	50	170.3
	Romanian	20	170.2
	Slovak	9	169.6
	German	21	168.5
	Total	128	170.2

Source: Lenhossék, *Az emberi koponyaisme*.

However, Lenhossék's research leaves much to be desired: he was working with very small and arbitrarily assembled ethnic samples;[33] in the case of certain ethnicities, he selected his research subjects from among soldiers who had already met the height criterion for military service; not every measured individual had reached maturity; and everyone was wearing shoes while the measurements were taken.[34]

4) József Kőrösi, the founder and director of the Budapest Office of Statistics, undertook measurements of height with respect to ethnicity during 1878 and 1879, although the results of his research were never published in detail. Nevertheless, three different summaries of his research are available.[35]

These summaries give us only an approximate picture of the conditions of the research. What is certain is that Kőrösi measured the heights of newly drafted soldiers (aged between nineteen and twenty-two) with the cooperation of the military authorities—that is, of those young men who were obliged to present themselves for draft, the research included only those who had already been deemed suitable for military

33 On Lenhossék's unusual techniques of ethnic classification, see Bolgár, "A méret a lényeg," 120–21.

34 Lenhossék, *Az emberi koponyaisme*, 28, 62.

35 Kőrösi, "Sur l'anthropométrie des races de Hongrie"; Kőrösi, "Az országos régészeti és embertani társulat"; Hunfalvy, *Die Ungern oder Magyaren*.

service and who, as a result, also met the minimum height requirement of 155.4 cm.[36] Kőrösi made no attempt to ensure that his research subjects represented a random sample of Hungary's population, or of individual ethnic groups. In other words, he designed his measurements on the assumption that the average height of individual peoples was a racial attribute, thus it was of no importance who participated in the investigation. All that was important was for the ethnic subsamples to be 'purebred'. As far as we know, he attempted to ensure this in the case of non-Jews by selecting his subsamples from purely Magyar, Slovak etc. villages.[37] This inevitably meant that while the Jews who participated in the measurements also included city dwellers, those who were selected to represent other ethnic groups in the sample were from rural villages without exception.

Kőrösi presented data for around 10,000 soldiers at a session of the Society of Anthropology of Paris, held on 18 July 1878.[38] From among the twelve ethnic groups, the Jews were ranked in sixth place, although even then they were 0.8 cm taller on average than those who were identified as Magyar. We cannot know whether the Jews were taller than average, since Kőrösi did not include average height in his presentation, nor is it possible to calculate an average height using his tables (Table 4). In a presentation given on 30 December 1879 in Budapest, Kőrösi reported on the more advanced stage of his investigations. A brief summary of this presentation was published.[39] By this time, he was able to present height data for over 20,000 recruits. The Jews continued to prove to be taller than the Magyars (by 1.1 cm), and in fact slightly taller (by 0.4 cm) than the average for the country as well. Finally, Pál Hunfalvy published partial data from the total survey, which he may have obtained from Kőrösi, according to which the Jews were taller than the Magyars by 1.1 cm on average, and taller than the countrywide average by 0.3 cm.[40] All in all, Kőrösi's research, which was scarcely representative of Hungary as a whole, yielded the conclusion that in 1878/1879 Jewish men declared fit for military service were somewhat taller than the rest.

5) Thus far, our overview has focused on investigations carried out exclusively among men with one exception. This gender imbalance can be redressed if, instead of height, we focus on the available data for the female population concerning menarcheal age as an indicator of net nutrition.

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36 Act XL of 1868 § 16, Decree of the Minister of Defense No. 49841/1875, quoted in *A véderőről szóló törvény*, 603; Komlos, "A Habsburg-hadsereg újoncozási módszerei," 738.

37 Hunfalvy, *Die Ungern oder Magyaren*, 253.

38 Kőrösi, "Sur l'anthropométrie des races de Hongrie," 308–9.

39 "Az országos régészeti és embertani társulat," 17–18.

40 Hunfalvy, *Die Ungern oder Magyaren,* 253–54.

Table 4 Height of newly recruited men in Hungary[41] (19–22-years-old, 1878–1879)

Findings of the research								
18 July 1878			30 December 1879			Published by Hunfalvy in 1881		
19–22 years old						Presumably 19–22 years old (according to Hunfalvy 19 years old)		
Ethnicity	Average height (cm)	N	Ethnicity	Average height (cm)	N	Ethnicity	Average height (cm)	N
Slovenian	164.7	n/a	Slovenian	164.7	n/a	German	164.2	1900
French	164.4		German	164.2		Serb	163.8	600
Croat	163.9		Croat	164.1		Slovak	163.8	1100
Serb	163.8		French	163.8		Jewish	163.6	1790
Slovak	163.7		Slovak and Serb	163.8		Romanian	163.1	880
Jewish	163.4		Jassic	163.5		Magyar[42]	162.5	2400
Jassic	163.0		Jewish	163.5		Ruthenian	161.9	500
Romanian	162.9		Romanian	163.0				
Magyar	162.6		Magyar	162.4				
German	162.4		Ruthenian	161.8				
Ruthenian	162.1		Cuman	161.5				
Cuman	160.9							
Average/ total	n/a	nearly 10 000	Average/ total	163.1	20 667	Average/ total	163.3	9170

Sources: Kőrösi "Sur l'anthropométrie des races de Hongrie"; "Az országos régészeti és embertani társulat…"; Hunfalvy, *Die Ungern oder Magyaren.*

In Hungary, the only statistics except for those from Glatter's early survey that can tell us anything about age at menarche among Jewish females are those that were compiled in 1891 by Dr. Sándor Doktor, a teaching assistant at Budapest University. The medical records of women who were treated at the university's department of gynaecology, or who gave birth there, routinely included a record of how old they were, as far as they remembered, when they had their first monthly period (retrospective method). Although Doktor stated that such records had been taken "for a long time", we do not know precisely to which years his calculations refer. Patients attending the clinic came from the lower classes.[43]

41 Without Transylvania.

42 It is not known whether the Jassics and the Cumans are included in the data for Magyars.

43 Doktor, "A hószámról," 478–79.

With respect to age at sexual maturity among Jewish and non-Jewish females, Doktor observed that the average age at menarche among 1,410 Jewish patients was fourteen years and nine months, while among the 8,190 Gentiles the menarcheal age was fifteen years and six months.[44] Jewish females thus reached sexual maturity nine months earlier than their non-Jewish counterparts.

6) In 1910, Lajos Bartucz, an anthropologist at Budapest University, analysed the height data for men of conscription age from Arad County in 1907, 1908, and 1909 (aged between twenty-one and twenty-three), broken down by ethnicity.[45] Bartucz aimed to create subsamples that were as homogeneous as possible in terms of race/ethnicity, thus among the Christians who spoke Hungarian as their mother tongue he selected only those with Hungarian family names for the research, and—with the exception of the Jews—he presumably proceeded in a similar way with other ethnic groups as well. As a result, it is quite possible that his findings do not accurately represent the height of the inhabitants of Arad County.

In Bartucz's study of Arad County, only the Germans proved to be taller than the Jews (Table 5). The Jews were 0.9 cm taller than the average height of men of conscription age in Arad County. However, we should bear in mind that a total of just twenty-two young Jewish men took part in the measurements.

Table 5 Height of men of conscription age in Arad County (21–23 years old, 1907–1909)

Religion/ethnicity		N	Average height (cm)
Jewish		22	165.6
Non-Jewish	German	843	166.4
	Magyar	1536	165.2
	Romanian	6538	164.4
	Slovak	14	162.6
	Total/average	8931	164.7

Source: Bartucz, "Arad megye népének anthropologiai vázlata."

7) Lajos Bartucz also analysed height data recorded during conscription examinations[46] in the Balaton region. He does not report the year in which his data collection was undertaken, although we do know that he completed his research in part of this region in 1911.[47] The 19,642 men reaching conscription age (twenty-one years old) who

44 Doktor, "A hószámról," 479–80. Cp. Komlos, "The Age at Menarche in Vienna," 133; B. Bodzsár, "Studies on Sexual Maturation of Hungarian Children," 157–58.

45 Bartucz, "Arad megye népének anthropologiai vázlata," 113, 130–53.

46 Bartucz, "Dunántúl népének antropológiai vizsgálata," 110–11.

47 Bartucz, "Göcsej és Hetés népének anthropologiájáról," 11.

were considered by Bartucz to be Magyar were on average 165.4 cm tall. However, the 830 Jewish potential recruits who were twenty-one years old had an average height of 165.6 cm.[48] Thus, on this occasion, too, Bartucz found the Jews to be slightly taller (by 0.2 cm) than the non-Jews.

Table 6 Height of schoolboys in Arad County and in the Balaton region (1910–1920)

Age (years)	Jewish		Non-Jewish		Advantage (+) or disadvantage (–) of Jews in cm
	N	Average height (cm)	N	Average height (cm)	
6	14	111.4	876	111.9	-0.5
7	47	116.0	2755	114.9	+1.1
8	48	120.2	2933	119.8	+0.4
9	60	125.0	3030	124.2	+0.8
10	68	129.8	3085	129.0	+0.8
11	48	133.5	2915	133.3	+0.2
12	45	138.8	1991	137.4	+1.4
13	35	144.3	546	144.3	0.0
14	25	152.5	315	151.3	+1.2
15	16	162.7	157	157.4	+5.3
16	20	168.0	113	165.4	+2.6
17	12	165.7	86	167.0	-1.3
18	5	167.8	54	167.4	+0.4
19	6	169.0	60	169.1	–
20	–	–			

Sources: Bartucz, "Über die Anthropologie der Ungaren"; Bartucz, "Az iskolás gyermekek termete nemzetiség szerint I"; Bartucz, "Az iskolás gyermekek termete nemzetiség szerint II"; Bartucz, *A magyar ember. A magyarság antropológiája*; Bartucz, "Die körperlichen Merkmale des heutigen Ungartums"; Bartucz, "A magyarság antropológiája."

8) Lajos Bartucz analysed not only the height of men of conscription age, but the heights of male and female children as well. In 1910 in Arad County, and in 1911 and sometime between 1915 and 1920[49] in the Balaton region, teachers measured the heights of a total of 36,762 students in elementary and higher-grade schools. Bartucz classified his research subjects by ethnicity—in the case of the non-Jews presumably according to name analysis methods—then investigated which ethnic group's children had grown the tallest in each age group.[50]

48 Bartucz, "Über die Anthropologie der Ungaren," 65–66. See also Lóczy, *A Balaton földrajzi és társadalmi állapotainak leírása*, 130–31.

49 See Bartucz, "Die Körpergrösse der heutigen Magyaren"; Lóczy, *A Balaton földrajzi és társadalmi állapotainak leírása,* 132.

50 Bartucz, "A mai magyarság termetéről," 284; Bartucz, "Arad megye népének anthropologiai

As far as we can judge from the data published by Bartucz (Tables 6 and 7), Jewish schoolchildren grew the tallest, overtaking the Magyars, Germans, Romanians, and Slavs. The data for schoolchildren are of particular interest with respect to the under-twelve age group, since until this age school was compulsory for all children—that is, at this age there is at least some chance that Bartucz's data accurately reflect the general average difference in height between Jews and non-Jews. Within this age bracket, Jewish children were unequivocally taller than Christian pupils of the same age.

Table 7 Height of schoolgirls in Arad County and in the Balaton region (1910–1920)

Age (years)	Jewish		Non-Jewish		Advantage (+) or disadvantage (–) of Jews in cm
	N	Average height (cm)	N	Average height (cm)	
6	16	109.0	761	111.2	-2.2
7	36	114.0	2500	114.1	-0.1
8	49	119.6	2683	118.9	+0.7
9	60	125.0	2955	123.5	+1.5
10	62	129.0	3076	128.6	+0.4
11	54	134.9	2687	133.4	+1.5
12	53	142.6	1503	138.8	+3.8
13	38	147.6	327	148.4	-0.8
14	26	150.1	193	150.0	+0.1
15	16	155.3	73	154.1	+1.2
16	7	154.1	28	156.1	-2.0
17	1	157.0	29	152.9	+4.1
18	1	152.0	38	155.1	-3.1
19	5	155.4	79	157.3	–
20	1	157.0			

Sources: Bartucz, "Über die Anthropologie der Ungaren"; Bartucz, "Az iskolás gyermekek termete nemzetiség szerint I"; Bartucz, "Az iskolás gyermekek termete nemzetiség szerint II"; Bartucz, *A magyar ember. A magyarság antropológiája*; Bartucz, "Die körperlichen Merkmale des heutigen Ungartums"; Bartucz, "A magyarság antropológiája."

9) In the 1911/1912 academic year, Elemér Szőke, a sports teacher at a secondary school in Győr, measured the height of children in every class in his school, from which he concluded that the Christian pupils were taller than the Jews.[51] However, the claim was substantiated not by reporting the average height of individuals in the

vázlata," 112, 153; Bartucz, "Az iskolás gyermekek termetbeli növekedése," 89–90.

51 Szőke, "Adatok ifjúságunk fejlődéséről és egészségéről," 78–82.

two groups, but by reporting the religious affiliation of the tallest and shortest boys in each individual class in the course of the measurements performed at the beginning and end of the year. He found that in just three cases out of twenty-six (12 percent), a Jewish boy was the tallest in the line-up, and in two of these cases it was a dead heat, even though 48 percent of the pupils as a whole were Jewish. By contrast, the Jews were overrepresented among the shortest pupils, since in eighteen cases out of twenty-six classes a Jewish pupil was the smallest (69 percent). Although this is deserving of attention, it merely makes it likely that the Jews were shorter than the non-Jews among the schoolchildren in Győr, while not providing any convincing proof.

We have identified a total of eight anthropological studies in Hungary before the Treaty of Trianon in which the height of Jews was compared to that of others.[52] The findings of those studies in which it is at least feasible that a representative sample of the Jewish and non-Jewish populations was studied can be summarised as follows: at around the time of emancipation, the Jews and non-Jews were still of around the same height, after which the Jews were taller than the Christians. (The findings also show a Jewish advantage in those two studies that investigated the age at menarche instead of height.) However, in the single study that investigated differences in height among the elite—secondary-school pupils and university students—the Jews were reported to be shorter.[53]

In order to establish the validity of the picture that emerges from the contemporary investigations, which can be regarded as rudimentary in terms of research design, I carried out two studies on a wider scale than the earlier ones (covering more people and/or a wider geographical area). The goal of the first study was to examine whether the Jews could indeed have been taller than others in terms of the population as a whole. The second study attempted to ascertain whether the Jews were indeed shorter than the non-Jews among students attending higher-level schools.

The height of men reaching conscription age in 1913

Materials and methods

The only source from which it is theoretically possible to ascertain the height of all Jewish and Christian men are the conscription registers in which the individual

52 The only person to investigate Jewish stature after 1920 in the Horthy era was the racial anthropologist László Apor of Budapest University, who took measurements of first-year and third-year university students in the 1937/38 and 1938/9 academic years. He published the findings for Jews and non-Jews separately, without making any comparisons between the two groups. However, from his tabulated results it is possible to calculate that, in the years leading up to the Holocaust, non-Jewish university students in the capital city were taller.

53 The same is true for the sole known survey of the post-1920 period.

results of medical examinations were recorded.[54] I analysed all extant conscription registers from 1913, the last year of peacetime before World War I, relating to the post-1920 territory of the country. On reaching conscription age—that is, in the calendar year in which they turned twenty-one—men were obliged to appear before the conscription commission of the settlement of which they were registered citizens so that a decision could be made as to whether they were physically fit for military service.[55] One element of the medical examination was the measurement of the height of potential recruits, without their shoes, by a military doctor with the assistance of a sergeant.[56] In 1913, men born in 1892 reached military age, thus the individual height data in the examined conscription registers provide information on nutritional conditions roughly from the decade either side of the turn of the century.

But do the height data contained in the conscription registers really give an accurate picture, at least in terms of a specific age group of men in its entirety, of the difference in stature between Jews and non-Jews? According to the 1912 Defence Act, the conscription was general; i.e., on reaching the age of twenty-one all men were obliged to report for military service. However, the small number of young men who already belonged to military units at the time of reaching conscription age as volunteers or as students at military schools did not have to present themselves for medical examination, nor did those who were deemed clearly unfit for service: amputees, those who were deaf and mute, those who were blind in both eyes, etc.[57] In other words, it can be argued that a conscription register presents the heights of almost the entire given age group of men in a certain region.

The conscription registers were compiled according to conscription district. Each administrative district and town corresponded to one conscription district.[58] The registers are available from 1913 for 38 conscription districts. Fifteen of these were made up of towns, and the remainder villages. An analysis of this material provides information on the height of around 16,100 men of identical age, along with their religion, 12.2 percent of whom were Jews.

Results and discussion

The findings show that Jewish potential recruits, while they would not be considered at all stalwart by today's standards, were decidedly tall compared to the contemporary average (Table 8). In the fragment of Hungary for which conscription registers

54 For a Europe-wide history of the conscription examination, see Hartmann, *The Body Populace*, 69–92.

55 Act XXX of 1912 § 16–17.

56 *A véderőről szóló törvény,* 216, 218, 587.

57 *A véderőről szóló törvény,* 160, 177, 179–81, 190, 196, 215–18, 229.

58 *A véderőről szóló törvény,* 157–58, 493–516, 565–83.

Table 8 Height of men of conscription age in 1913 in Hungary (21 years old, post-1920 territory)

County	Conscription district	Jewish		Non-Jewish														Advantage (+) or disadvantage (–) of Jews in cm
				Roman Catholic		Calvinist		Lutheran		Greek Catholic		Eastern Orthodox		Other		Total		
		N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	
Baranya	Pécs tjv.	27	167.7	245	168.0	10	168.7	6	169.7	–	–	–	–	–	–	261	168.1	-0.4
Bács-Bodrog	Baja tjv.	20	168.2	125	168.0	1	159.0	–	–	–	–	3	165.7	–	–	129	167.9	+0.3
Borsod	Miskolci j.	21	166.7	225	165.1	139	164.0	16	165.8	47	164.7	–	–	–	–	427	164.7	+1.0
	Miskolc tjv.	67	166.5	86	167.8	71	165.8	15	170.7	2	170.5	–	–	–	–	174	167.3	
Csanád	Battonyai j.	4	165.3	205	165.8	26	163.9	7	167.4	2	172.0	57	167.0	–	–	297	166.0	+0.6
	Makó rtv.	24	166.7	105	164.8	170	165.1	3	163.3	18	163.1	1	168.0	–	–	297	164.8	
	Mező-kovácsházai j.	5	163.2	186	165.4	17	166.8	30	165.4	–	–	1	176.0	–	–	234	165.6	
	Nagylaki j.	6	167.7	109	166.4	5	166.6	76	166.0	23	165.9	55	165.5	–	–	268	166.1	
Csongrád	Hódmező-vásárhely tjv.	14	169.9	159	166.3	389	165.2	9	166.8	1	164	6	162.3	4	166.3	568	165.5	+4.5
Győr	Győr tjv.	40	167.7	202	167.9	8	166.9	27	166.2	–	–	–	–	–	–	237	167.7	+1.6
	Pusztai j.	6	168.0	273	165.8	48	163.3	21	167.7	–	–	–	–	–	–	342	165.5	
	Tósziget-csilizközi j.	8	168.0	343	165.4	12	165.6	19	167.1	–	–	–	–	–	–	374	165.5	
Hajdú	Debrecen tjv.	47	166.9	72	166.8	379	164.1	4	166.5	–	–	–	–	–	–	455	164.5	+2.4
Jász-Nagykun-Szolnok	Túrkeve rtv.	2	162.5	13	163.5	131	163.7	–	–	–	–	–	–	–	–	144	163.7	-1.2

County	Conscription district	Jewish		Non-Jewish														Advantage (+) or disadvantage (–) of Jews in cm
				Roman Catholic		Calvinist		Lutheran		Greek Catholic		Eastern Orthodox		Other		Total		
		N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	
Pest-Pilis-Solt-Kiskun	Biai j.	15	165.9	360	165.7	59	164.9	3	163.7	–	–	–	–	–	–	422	165.5	+1.1
	Budapest szfv.	1341	168.0	2334	168.7	245	167.6	201	168.4	4	163.3	9	171.3	13	166.6	2806	168.5	
	Gödöllői j.	21	166.7	302	165.3	75	163.8	53	165.3	1	172.0	–	–	1	167.0	432	165.0	
	Kiskun-félegyházi j.	4	163.3	369	164.4	31	163.2	–	–	–	–	–	–	–	–	400	164.3	
	Kiskunhalas rtv.	9	167.8	74	165.1	75	165.1	1	173	–	–	–	–	1	153.0	108	165.1	
	Kispesti j.	30	167.3	368	166.4	47	166.5	18	168.8	–	–	–	–	2	164.5	435	166.5	
	Monori j.	16	167.0	318	166.0	110	164.9	147	165.7	–	–	–	–	–	–	575	165.7	
	Nagykátai j.	1	168.0	53	164.3	12	165.4	5	166.8	–	–	–	–	–	–	70	164.6	
	Nagykőrös rtv.	8	170.4	85	164.9	172	166.4	–	–	–	–	–	–	–	–	257	165.9	
	Pomázi j.	6	164.0	321	166.1	41	166.2	2	169.5	1	171.0	5	164.0	–	–	370	166.1	
	Váci j.	19	168.7	221	165.3	63	163.5	47	165.5	–	–	–	–	1	162.0	332	164.9	
Sopron	Csornai j.	19	166.0	327	165.1	1	154.0	39	166.0	–	–	–	–	–	–	367	165.1	+0.8
	Kapuvári j.	15	167.7	411	166.0	1	168.0	26	165.2	–	–	–	–	–	–	438	166.0	
	Sopron tjv.	21	167.2	127	168.0	–	–	91	167.4	–	–	–	–	–	–	218	167.8	
Tolna	Völgységi j.	11	166.5	214	166.9	24	167.5	74	166.6	–	–	–	–	–	–	312	166.9	-0.4
Vas	Kőszegi j.	5	171.6	199	165.8	–	–	41	165.8	–	–	–	–	–	–	240	165.8	+2.6
	Sárvári j.	16	167.1	348	166.1	–	–	51	166.7	–	–	–	–	–	–	399	166.2	
	Szombathely rtv.	27	169.7	150	167.8	2	161.5	7	163.7	–	–	–	–	–	–	159	167.5	
	Vasvári j.	7	164.3	369	164.7	1	167	10	166.7	–	–	–	–	–	–	380	164.7	

County	Conscription district	Jewish		Non-Jewish														Advantage (+) or disadvantage (–) of Jews in cm
				Roman Catholic		Calvinist		Lutheran		Greek Catholic		Eastern Orthodox		Other		Total		
		N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	N	cm	
Veszprém	Devecseri j.	7	167.6	309	165.0	43	165.8	45	164.6	–	–	–	–	1	166.0	379	165.0	+2.6
Zala	Keszthelyi j.	8	166.6	247	165.6	1	168.0	1	180.0	–	–	–	–	–	–	249	165.7	+1.1
	Nagykanizsa rtv.	45	168.3	152	166.3	–	–	3	171.7	–	–	–	–	–	–	155	166.4	
	Pacsai j.	7	167.6	301	165.4	–	–	1	172.0	–	–	–	–	–	–	302	165.4	
	Zalaegerszeg rtv.	13	163.8	69	169.4	2	175.3	1	166.0	–	–	–	–	–	–	72	169.5	
Total	Villages	257	166.9	6341	165.6	756	164.7	732	166.0	74	165.4	118	166.2	5	164.8	8026	165.5	+1.4
	Towns with a council	128	167.8	678	166.3	552	165.2	15	166.0	18	163.1	1	168.0	2	159.5	1266	165.8	+2.0
	Towns with municipal rights	236	167.3	1016	167.6	857	164.8	152	167.6	3	168.3	9	163.4	4	166.3	2041	166.4	+0.9
	Budapest	1341	168.0	2334	168.7	245	167.6	201	168.4	4	163.3	9	171.3	13	166.6	2806	168.5	-0.5
	Hungary	1962	167.8	10369	166.5	2410	165.1	1100	166.7	99	165.0	137	166.4	24	165.6	14139	166.3	+1.5

Notes: j. = *járás* (administrative district, which consists exclusively of villages), rtv. = *rendezett tanácsú város* (town with a council), szfv. = *székesfőváros* (capital city), tjv. = *törvényhatósági jogú város* (town with municipal rights)

Sources: MNL OL X4304. B 920. 95. Baja város; MNL OL X4296. B 688. 55. Battonyai járás; MNL OL X4285. B 438. 38. Biai járás; MNL OL X4284. B 329. 108–109. Budapest város; MNL OL X4305. B 948. 42. Csornai járás; MNL OL X4299. B34/2. 43. Debrecen város; MNL OL X4302. B 830. 11. Devecseri járás; MNL OL X4285. B 449. 46. Gödöllői járás; MNL OL X4301. B 799. 44. Győr város; MNL OL X4295. B 635. 45. Hódmezővásárhely város; MNL OL X4305. B 943. 45. Kapuvári járás; MNL OL X4303. B 845. 42. Keszthelyi járás; MNL OL X4297. B 702. 16. Kiskunfélegyházi járás; MNL OL X4297. B 706. 38. Kiskunhalas város; MNL OL X4285. B 450. 4. Kispesti járás; MNL OL X4294. B 592. 45. Kőszegi járás; MNL OL X4296. B 681. 47. Makó város; MNL OL X4296. B 693. 38-39. Mezőkovácsházi járás; MNL OL X4300. B 766. 148. Miskolci járás; MNL OL X4300. B 749. 57. Miskolc város; MNL OL X4285. B 457. 35. Monori járás; MNL OL X4303. B 833. 7. Nagykanizsa város; MNL OL X4285. B 461. 27. Nagykátai járás; MNL PML NF V. 276. f. 51. Nagykőrös város; MNL OL X4296. B 666. 20. Nagylaki járás; MNL OL X4303. B 838. 30. Pacsai járás; MNL OL X4304. B 854. 65. Pécs város; MNL OL X4285. B 471. 44. Pomázi járás; MNL OL X4301. B 807. 52. Pusztai járás; MNL OL X4294. B 595. 15. Sárvári járás; MNL OL X4305. B 927. 92. Sopron város; MNL OL X4294. B 601. 38. Szombathely város; MNL OL X4301. B 814. 33. Tószigetcsilizközi járás; MNL OL X4288. B 538. 45. Túrkeve város; MNL OL X4285. B 480. 48. Váci járás; MNL OL X4294. B 599. 5. Vasvári járás; MNL TML IV. 417. d. 63. Völgységi járás 1913; MNL OL X4303. B 846. 28. köt. Zalaegerszeg város.

from the 1913 draft are available, twenty-one-year-old Jewish men grew to 167.8 cm, making them taller than the young men of any other religion.[59] The non-Jews were on average 1.5 cm shorter than the Jews. Among the Christians, the Lutherans were the tallest, although even they were over 1 cm shorter than the Jews.

But just how universal was this observed pattern? Was the Jewish height advantage based merely on exceptional results or a larger population of one or two specific regions? The finding that the Jews were taller than the Christians was widespread. We have data from at least one conscription district in a total of fourteen different counties, and in just three counties were the Jews reported as being shorter than the other candidates. In two of these three cases, the difference was minimal. And from each of these three counties, only a single conscription register is available—in other words, the Jewish average in the three counties is based on measurements of an extremely small number of young men (Table 8).

However, the extent of the height difference between the Jews and Christians varied according to the type of settlement (Table 8). As a general rule, the bigger the settlement the taller were both the Jews and the non-Jews living there,[60] while at the same time the superiority of the Jews in terms of height was smaller. The Jews were the furthest ahead in villages and small towns (so-called towns with a council). The difference did not even reach 1 cm in the bigger provincial towns (towns with municipal rights). The conscription registers for the capital city, however, show the Jewish men reaching military age to be half a centimetre shorter than the others.[61] Since data for Budapest are by chance strongly overrepresented in our database—that is, in Hungary as a whole the proportion of the population not living in the capital was bigger[62] than in the fraction of Hungary for which the 1913 conscription registers are available—the height advantage of the Jews may well have been bigger in the whole of Hungary than that suggested by our data.

59 For data for the whole country undifferentiated by religion, see Nemeskéri et al., *A 18* éves *sorköteles fiatalok*, 84–86.

60 Cp. Scheiber, "Untersuchungen über den mittleren Wuchs," 257; B. Bodzsár, "A Review of Hungarian Studies on Growth and Physique," 144.

61 The fact that according to the conscription register for the capital city the Jews were slightly shorter does not necessarily mean that the Jews were shorter within Budapest society. Those who were obliged to present themselves before the Budapest conscription committee were not those who were living in Budapest, but those who had legal residence in the municipality of Budapest (Act XXX of 1912 § 17; *A véderőről szóló törvény…*, 180–81, 186–88, 193–94). There is a good chance that the more peripheral segments of Budapest society, comprising new arrivals and those staying in the city temporarily (e. g. domestic servants, students and casual labourers) did not have legal residence in the capital. The conscription registers thus bring to light only the fact that, within the part of Budapest society with permanent residence, the Jews were shorter than the non-Jews.

62 *Az 1920. évi népszámlálás*, 10.

Table 9 Height of male students in nine secondary school (1886/1887–1915/1916, post-1920 territory of Hungary)

Age (years)	Jewish		Non-Jewish		Advantage (+) or disadvantage (–) of Jews in cm
	N	Average height (cm)	N	Average height (cm)	
10 or younger	57	131.6	150	136.2	-4.6
11	128	133.8	373	136.4	-2.6
12	118	138.0	459	140.2	-2.2
13	151	145.9	529	146.2	-0.3
14	219	153.6	768	155.3	-1.7
15	278	160.7	894	161.6	-0.9
16	301	164.7	895	166.5	-1.8
17	254	167.4	748	168.9	-1.6
18	114	169.3	416	169.7	-0.4
19 or older	32	166.6	261	169.3	-2.7

Sources: see the references of Bolgár, "Az erőmérési táblák: keletkezéstörténet, forráskritika, leírás."

The height of secondary-school children (1886–1916)

What form did the difference in stature between Jews and Christians take in that sphere to which a great many Jews had succeeded in gaining access—that is, in the upper strata of society? Were the Jews in Hungary taller in this environment as well, or precisely the opposite, as suggested by the contemporary examinations of secondary-school pupils and university students?

Materials and methods

Large amounts of data are available regarding the height of secondary-school male pupils from the so-called physical fitness assessment tables. In the one-and-a-half decades or so either side of the turn of the century, typically over the course of several years, individual secondary schools published anthropometric data and data related to sporting achievements in tabular format in their annual reports, based on measurements carried out by physical education teachers at the beginning and end of the academic year. The contents of the tables varied, although they generally included the height, and in an ideal case also the age, of each individual pupil, while the pupils' religious affiliation can be identified from the lists of the students and their grades published in the annual reports.

Results and discussion

Having analysed all the secondary-school physical aptitude assessment tables that contained both the body height and religious affiliation of pupils in the post-1920 territory of the country, I found that in only two schools were Christian pupils not taller on average than their Jewish counterparts.[63] Nine schools,[64] from more than 7,100 cases, also reported the age of pupils: in these cases, the Jewish pupils were generally around 2 cm shorter than the non-Jewish pupils of the same age (Table 9).[65] In these schools and in eight others[66] the age of approximately 3,400 more pupils was not recorded, only the school year to which they belonged. If we assume that all of these pupils belonged to the school year appropriate for their age, and, with this assumption in mind, examine the height of children in all seventeen schools, we still find that the Jews were shorter: in fact, the difference is now even bigger, at 2.5 cm (Table 10). If we calculate the heights of the members of the different Christian denominations separately, we find that the tallest secondary-school pupils were generally the Lutherans, while the shortest were the Jews.

Why might Jewish secondary-school pupils have been shorter than non-Jews, if the Jews were taller outside the walls of the schools? One possibility is that the Jewish pupils were less well-off than the Christians, since the less affluent among the Jews sent their children to school as well. The other possibility is that the Jewish pupils were shorter than the non-Jewish pupils because, although on average their income was higher, income inequalities were more pronounced in this context. In this case there were many Jewish pupils who attained their maximum height due to their parents' comfortable financial circumstances, and a significant proportion of the family's wealth was not 'embodied' in their children, thus these Jewish boys were not taller than their Christian counterparts to the same extent as they were richer. However, many Jewish secondary-school pupils lived in less affluent circumstances than the Christian pupils, which meant difficulties in meeting their nutritional needs.

63 For the BMI of one part of this population, broken down by religion, see Bolgár, "Puhány zsidók vagy részrehajló tornatanárok," 196–97.

64 The following secondary schools were studied: Békés, Budapest (8th district), Debrecen (Piarist), Gyöngyös, Kecskemét (Calvinist), Magyaróvár, Makó, Szolnok, and Zalaegerszeg.

65 Where the reports give the age of the pupils to the precise half-year, I have rounded the age up to the nearest whole year.

66 The following secondary schools are included: Budapest (1st district), Budapest (2nd district), Jászberény, Kecskemét (Piarist), Miskolc (royal Catholic), Szekszárd, Vác, Eger (public).

Table 10 Height of male students in seventeen secondary school (1886/1887–1915/1916, post-1920 territory of Hungary)

Age (years)	Jewish		Non-Jewish		Advantage (+) or disadvantage (–) of Jews in cm
	N	Average height (cm)	N	Average height (cm)	
10 or younger	57	131.6	150	136.2	-4.6
11	160	134.1	560	137.4	-3.3
12	139	138.3	528	140.6	-2.3
13	176	145.7	599	146.6	-0.9
14	455	151.7	1015	155.1	-3.4
15	399	159.2	1310	161.4	-2.2
16	437	163.7	1337	166.4	-2.7
17	350	167.1	1038	168.8	-1.7
18	370	168.1	1216	170.3	-2.2
19 or older	32	166.6	261	169.3	-2.7

Note: The age of 3,444 students is estimated on the basis of the school year to which they belonged.
Sources: see the references of Bolgár, "Az erőmérési táblák: keletkezéstörténet, forráskritika, leírás."

Conclusion

Based on what we know, the Jews, at least at the turn of the nineteenth and twentieth century, were on average taller than the non-Jews. If this was not caused by some hitherto entirely unknown genetic difference between the Jewish and non-Jewish populations, then it must have been owing to differences in cumulative net nutrition between the two groups. Such an advantage in terms of childhood nutrition, however, suggests that the Jews were on average wealthier than the non-Jews.[67]

Nevertheless, if the average income of the Jews was higher, it cannot simply have been caused by the fact that there were a large number of Jews among the few who were super rich. Instead, we should conclude that the Jews en masse enjoyed more favourable financial circumstances than the Christians en masse, since the Jews proved to be taller despite the fact that the significant proportion of the wealth of the very rich that is not capable of being converted into height has no impact on the average height of a group.

67 The high church taxes in the Jewish communities may also have contributed to the height difference between Jews and non-Jews, since these taxes were largely borne by wealthy Jews, and predominantly used to support poor Jews, thus a proportion of the wealth of the rich that could not be converted into height went towards improving the nutrition of those in need. At the same time, the difference may have been reduced by the production cost of kosher meat, as a consequence of which at least the practising Jews paid an additional charge for their protein.

The higher average stature of the Jews, however, was not necessarily an everyday experience, thus it is not certain that they were also the tallest among the people with whom they were in regular contact. Indeed, the secondary-school studies suggest that Jewish students—that is, the tallest and most successful among the Jews—were shorter than their non-Jewish peers.

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