

**Gábor Demeter, Róbert Bagdi**

TRACING THE TRANSFORMING URBAN ELITE – METHODS TO  
ANALYZE SPATIAL PATTERNS, SOCIAL COMPOSITION AND WEALTH  
BASED ON CENSUS DATA (NORTHEASTERN HUNGARY, 1870)

**Annotation.** Using the census data from 1870 this contribution attempts to work out new methods to trace the composition and wealth of transforming urban elites during the era of industrialization. The Hungarian census of 1870 collected data at household level and the original sheets survived in many places. Thus, beyond containing the name, age, address, birth place, occupation and religion of the head of family, and repeating these data for the wife, children, co-workers, servants and housemaids, it also provided the number of rooms, kitchens, economic buildings (stores, stables, cellars) for each household, which served as a basis for the classification of groups regarding their wealth. The chosen town and the timing represents the transition period well, with its existing traditional structures (guilds, segregation) and modern patterns (railway, multi-ethnicity). We attempted to (1) investigate spatial patterns on socio-demographic phenomena by mapping them using GIS; (2) to carry out a thorough multivariate statistical analysis of each strata and sub-groups (including correlation, correspondence-analysis, etc. based on a systematically built database); (3) and to work out several methods in order to select the members of the elite from the 10 000 inhabitants (2200 households), including cluster-analysis, wealth estimation comparing these with the traditional classifications.

**Keywords:** urban elites, industrialization, wealth, population census, GIS, social stratification, Austria-Hungary

**I. Aims**

This contribution attempts to (1) outline methods that can help identify the elite in urban societies, as well as (2) to analyze its spatial pattern and (3) social composition and welfare in the 19th c. Our research was based on the census data of 1870.

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Габор Деметер – д-р, науч. сътр., Институт по история – Унгарска академия на науките; е-поща: demetergg@gmail.com

Роберт Багди – д-р, доц., Университет Палас Атина, Солнок, Унгария; е.поща: bagdir@szolf.hu

Gábor Demeter – Dr, fellow researcher, Institute of History – Hungarian Academy of Sciences; e-mail: demetergg@gmail.com

Róbert Bagdi – Dr, Assoc. Prof., Pallas Athena University, Szolnok, Hungary; e-mail: bagdir@szolf.hu

## II. Data

The census of 1870 was a specific one in the sense that the original household-level data sheets (*figure 1*) survived in some of the towns and villages, making it possible to carry out a more detailed inquiry compared to the officially published material, which aggregated data at settlement-level. Furthermore, the forthcoming censuses used personal datasheets instead of household-level inquiries, making it more difficult to carry out similar investigations to those published in this study. The original census sheets in 1870 contained the name, age, address, birth place, occupation and religion of the head of family, repeating these data for the wife, children, co-workers, servants and housemaids. It also provided the number of rooms, kitchens, economic buildings (stores, stables, cellars) for each household. As the census did not contain income data, the mentioned variables had to be used as proxies of wealth in order to classify population into social layers and to identify the elite. Beyond wealth general socio-demographic phenomena – either with or without spatial pattern (like the average children number of different occupation groups, average children number of different religions, migration patterns, mixed marriages, territorial aspects of marriage patterns, territorial distribution of religions etc.) – were also possible to trace using the mentioned variables.<sup>1</sup> The data also offered possibility to create new variables beyond those given in the census, like population density (room/person), which was also used up as a proxy variable to measure welfare.

Household No.	Name	Age	Sex	Occupation	Rooms	Kitchens	Economic Buildings
1	Lina Andras	1805	Ref. nit	bielches	1	1	1
2	Andras Andras	1818	st. fig	kisacsa	1	1	1
3	Lina Eliza	1822	st. fig	st.	1	1	1
4	Lina Katalin	1828	st. fig	megy. konyv.	1	1	1
5	Lina Andras	1832	st. fig	st.	1	1	1
6	Lina Maria	1837	st. fig	kisacsa	1	1	1
7	Lina Katalin	1842	st. fig	st.	1	1	1
8	Lina Lina	1847	st. fig	st.	1	1	1
9	Lina Lina	1852	st. fig	st.	1	1	1
10	Lina Lina	1858	st. fig	st.	1	1	1
11	Belovicsa	1859	Ref. nit	Belovicsa	1	1	1
12	Belovicsa	1860	Ref. nit	Belovicsa	1	1	1
13	Belovicsa	1862	Ref. nit	Belovicsa	1	1	1

Figure 1. Pages from the census, Nagy Piac str., nr. 9. Source: MNL-BAZML SFL (Hungarian National Archives, County Archives of Borsod-Abaúj-Zemplén, Archives at Sátoraljaújhely) XV. 83. box 77-79

<sup>1</sup> Demeter, G., Bagdi, R. A társadalom differenciáltságának és térbeli szerveződésének vizsgálata Sátoraljaújhelyen 1870-ben. (A GIS lehetőségei a történelmi kutatásokban). Debrecen, 2016 (Investigating the Social Differentiation and Spatial Pattern of Society in Sátoraljaújhely, 1870. Applying GIS in Historical researches – in Hungarian).

### III. The Place

The selection of Sátoraljaújhely town (the county seat of Zemplén County) as a sample area was ideal from several aspects. Not only the original census sheets were available for 2150 households (10 000 inhabitants) offering substantial material for quantitative statistical analysis, but the timing of the census itself (1870) was also fortunate for our investigations.

The town was located along the market line, where the products of the plains and mountains were exchanged. The physical geographical conditions allowed a N-S migration from the peripheries of Zemplén County to the county seat, while in the southern part of the county an E-W migration route developed towards the capital. Although in 1775 the county seat was unable to extend its attraction zone even to its own administrative district (*figure 2*), between 1810–70 its population tripled, and this increase was among the greatest regarding their neighboring towns (*table 1*). The nearby Eger, with similar size and function showed only a +40% increase. By 1900 in Sátoraljaújhely 50% of the inhabitants had been born in a different locality (it is a high value compared to neighboring towns and towns with similar size and function),<sup>2</sup> confirming the great role of horizontal mobility, migration. As the average number of children per household was only 1.8 in the county seat (1870), without migration the population would not have increased. The acceleration of urbanization processes population increase was only 50-50% between 1784–1825 and 1825–1870, then it doubled in the next 40 years exceeding the country average) made a melting pot from the town. This was wellreflected in its religious diversity: 35% of the population was of Jewish ancestry, Roman Catholics reached also 30%, Calvinist protestants 12-14%, Greek Catholics approximately 20% and there were some Orthodox inhabitants too. As a basic step towards industrialization the railway was opened in 1870, while guilds were dissolved only in 1872, thus the parallel coexistence both of traditional and modern social patterns and social layers could be observed owing to the lucky date of conscription.

*Table 1. Population increase referring to the rate of urbanization (1825–1900) in Sátoraljaújhely compared to the surrounding significant towns*

Town	Population increase	Population in 1000 (1825)	Population in 1000 (1900)
Eger	40%	17.5	24.5
Kassa (Košice)	180%	13	38
Miskolc	80%	22	40
Sátoraljaújhely	200%	4 (1784), 6.3 (1825)	10 (1870), 19.9 (1910)

*Beluszky P.: Magyarország településföldrajza. Általános rész. Bp. – Pécs, 1999.*

<sup>2</sup> In Mukačeve (Munkács) it was only 45%.

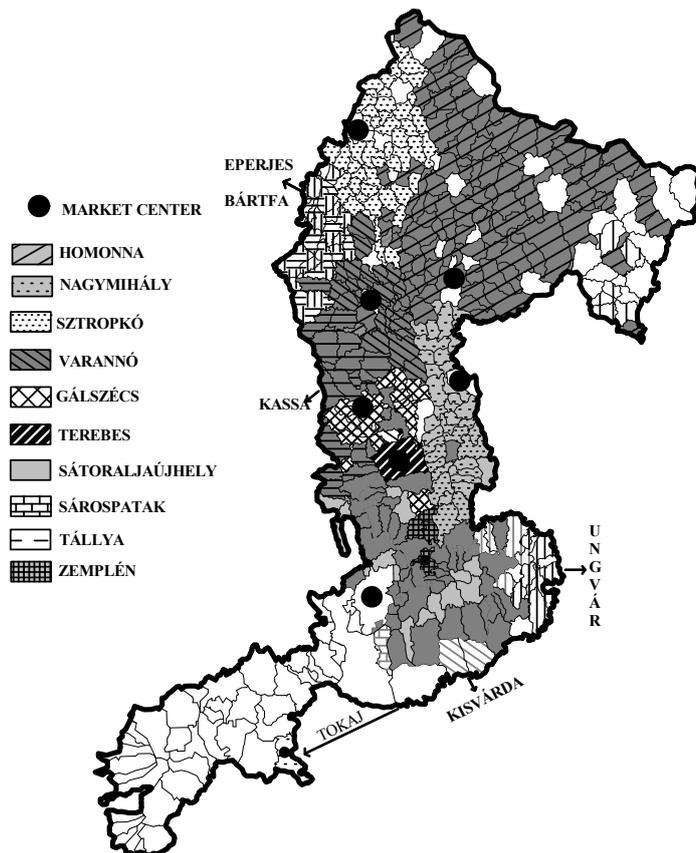


Figure 2. Attraction zones based on market centers in Zemplén County in 1773

#### IV. Methods

In order to carry out the investigations, raw census data were organized into a database containing the above mentioned variables (columns), where each household represented an entity (row). Phenomena with spatial pattern were analysed using GIS (ArcGIS 10.1),<sup>3</sup> while phenomena with no spatial relevance (within- and intergroup differences, like religious distribution within/between occupation groups, differences in welfare of religious groups and occupations, aging, differences infertility rate, etc.) were evaluated using SPSS. The application of GIS required a map from the same era (1865) containing the same identifiers for households as in the census data-sheets (topographical numbers) (figure 3).<sup>4</sup>

<sup>3</sup> A similar project led by *János Mazsu*: OTKA 81 488, The reconstruction of social and spatial pattern of Debrecen, 1870–72 was considered the predecessor of this, but it remained mostly unevaluated.

<sup>4</sup> Source: MNL-BAZML SFL XV. 83. box. 77–79. Now [www.hungaricana.hu](http://www.hungaricana.hu) and [www.mapire.eu](http://www.mapire.eu) (containing settlement level cadastral maps) offers a new instrument to find detailed maps like this. The

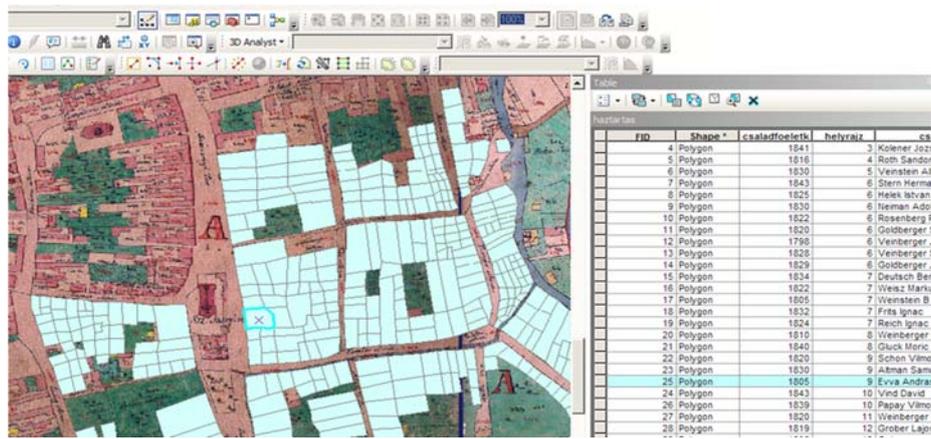


Figure 3. The basemap, the database containing the digitized census data, and the households-entities organized in GIS: Nagy Piac str. nr. 9. Evva-household (nobleman)

In case of *welfare* both spatial approach and an analysis of within- and inter-group differences has relevance, thus both GIS and SPSS have been utilized. The first step was to quantify welfare. As retrospective social classifications are often not objective (the census sheets did not contain data on social stratification beyond occupations), we used 3 different methods to overcome social prejudices. Beside the traditional classification based on the prestige of occupation multivariate statistics (SPSS) have been used for classification too, based on the quantified raw data of the census.

(1) In order to analyze the patterns of traditional and modern layers of society we relied on Ferenc Erdei's model of 'accumulated society', when classifying the separate cases into different social layers. This theory claims, that besides the traditional elite, middle and lower classes also capitalistic formations evolved in each layer, and these were slowly fusing by the 1910s.

(2) The second method to classify the inhabitants was based on an *equation* containing the number of rooms per household, number of economic buildings, number of co-workers, number of servants and housemaids living together with the family, and the total number of household members as input variables. Thus, this classification focused on the *per capita welfare*, while the third one represented a classification, where the economic power of the household as an entity was cumulated. Calculations resulted in a dimensionless number representing the relative wealth of individuals within a household, who were then classified into groups. The intervals were set according to natural breaks, thus the created groups were not equal.

(3) The third method was based on an automatic *cluster analysis* executed in SPSS containing the same variables except the number of family members. Classification results were checked by discriminance analysis. After numerous attempts the number of clusters was finally set to 6, as above this value the proportion of

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data sheets from Ung and Saros County are also left almost intact in county archives, thus there are plenty of options to repeat such investigations and make comparisons.

successfully reclassified data began to drop, and the forming new groups remained small. Neither this classification produced groups of similar size.

It is not surprising that the three classifications did not give identical results as shown by the cross-tabulation of the correspondence-analysis (although there was strong correlation measured between the 3 classifications – over  $r=0.7$  – and there was also strong correlation between the wealth categories and room numbers; wealth and population density/room), which is confirmed by cross-tabulations, correspondence analysis (*table 2*).

*Table 2. Correspondence between complex wealth categories based on the equation and automatic clusterization*

Clusters	Complex wealth categories based on the equation													Room numbers							
	1	2	3	4	5	6	7	8	9	10	11	12	13	0	1	2	3	4	5	above 6	Total
1	0	1	6	6	8	11	13	8	16	22	14	11	56	0	59	57	19	20	10	7	172
2	0	0	0	0	0	1	2	4	17	21	18	31	66	0	1	9	74	40	19	17	160
3	1	0	20	28	41	46	63	23	46	40	30	37	28	10	222	131	32	6	2	0	403
4	0	1	15	34	44	61	92	47	70	56	16	19	11	3	146	289	25	3	0	0	466
5	24	86	153	180	55	79	90	18	13	11	4	0	0	60	656	0	0	0	0	0	716
6	74	49	39	8	10	4	2	1	2	1	0	0	0	97	93	0	0	0	0	0	190
Total	99	137	233	256	158	202	262	101	164	151	82	98	161	170	1177	486	150	69	31	24	2107

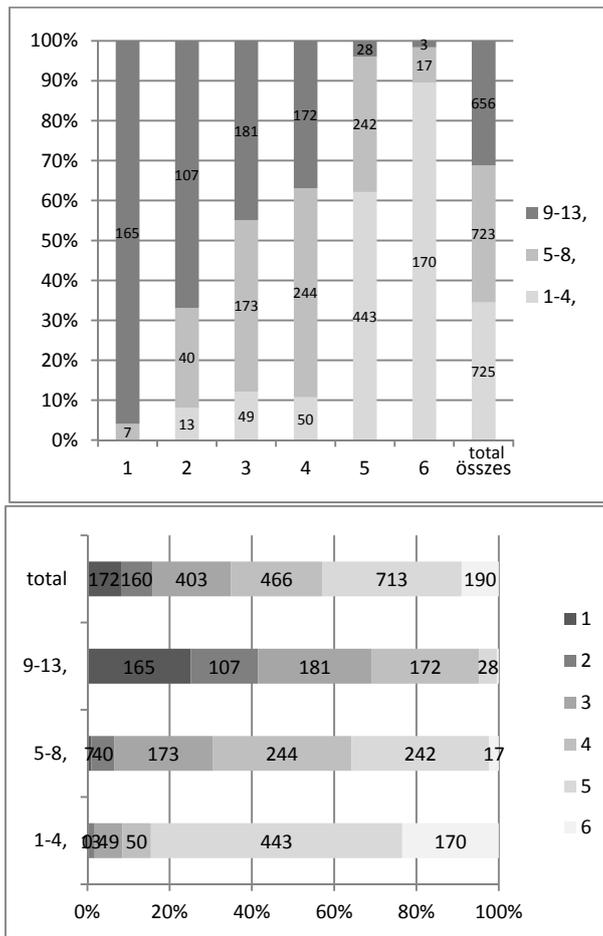


Figure 4. Correspondence of the 2 statistical evaluation (6 clusters, 13 groups based on equation)

The richest three groups (9-11) comprised 341 families (15%) in case of the 2nd method (equation referring to per capita economic power), while the richest 2 clusters comprised 332 family heads using the 3rd classification method, but only 192 of the cases were common (60%) (confirmed by figure 4). They could be considered as the 'core elite' followed by a buffer-transition group of 100-100 families.

## V. Tracing the Elite(s)

### (1) Groups based on the traditional classification

The traditional (manual) classification based on the model of Ferenc Erdei and Max Weber resulted in more than 10 categories with uneven size (table 3-4). Free civil professions and state clerks were underrepresented in Sátoraljaújhely compared to other towns with similar functions. The layer of merchants was quite strong possibly

as the result of Jewish abundance and the geographical location. The proportion of craftsmen was high, but not remarkably – the same % was measured in the larger Debrecen. Widows were treated separately as we had no information about their profession and incomes.

The elite was composed of the ‘f’, ‘e’ and ‘p’ categories, although as we will see, the wealth and economic power of the latter (civil professions) group was significantly weaker (teachers), than the other two according to data on room numbers, population density and the other two classification methods. Nonetheless, these categories do not strictly refer to welfare or social status: in category ‘f’ smallholders and large estate owners are also included. But since they tended to live in the centre of the town, while agrarian wage-labourers (‘s’) resided in the periphery, they were considered as part of the traditional (declining) elite.

The sectoral distribution of these categories is given in *table 4*. 35% of the family heads were involved in industry, but modern industrial branches were represented only by some 10% of the total family heads involved in industry – guilds still dominated referring to a transitional period. The private tertiary reached 30% reflecting the transformations (urbanization), while agriculture has already lost its dominant position (25%). Those, who did not own or rent separate flats (or were not family heads), were omitted from the analysis (they *ab ovo* cannot be considered as members of elite), thus this table did not contain data on 1100 workers and 700 servants.<sup>5</sup> In other words, only half of the wage-earners was included, thus percentage data on the elite below should be halved (7.5 percent instead of 15%)!

*Table 3. Social groups according to the model of ‘accumulated’ society (method 1; prs and %)*

e	town and county elite	lawyers, chief clerks (state servants)	47	2.2%
f	landowners	mainly middle estate owners	116	5.4%
p	free civil professions	teachers, doctors, railway engineers, photographers, clockmaker	91	4.2
h	clerks	state (lower class compared to ‘e’) and private (in banking and finances)	108	5%
g	agrarian experts	not independent, but skilled agrarian wage-earners	34	1.6%
n		policemen	29	1.5%
kk	merchants	mason owners, railway entrepreneurs, merchants	216	10.1%
k, ka		lower officials: postmen, poor merchants	151	7.0%
m	craftsmen	guild members: tailors, potters etc.	677	31.5%
q	lower tertiary	transportation: cartsmen, waiters	60	2.8%
s	poor	daily wage earners in agriculture, beggars, bakers (women), washerwomen, peripatetic, scrap-iron collector	508	23.7%
ö	widows		101	4.7 %

Layers wealthier than the city average are indicated by grey.

<sup>5</sup> There were altogether more than 4000 persons conscripted with occupation, but only 2150 was family head.

Table 4. Hypothetic-preconceptional social stratification based on the prestige of occupation (family heads; %)

Group	Agrarian	Industrial	Tertiary	Private tertiary	Altogether	%	
Upper	f (116)		e (47)	p (91)	kb. 250	12%* (7%)	
Middle	g (34)	m (677)	kk (30)	h (108)	kk (190), h	kb. 550	25% (25%)
Lower middle				n (30)	k (132)	kb. 500	23% (25%)
Lower	s (343)			s (160), q (60)	570 + some craftsmen = 800	38% (43%)	
Total	cca. 500	cca. 700	cca. 200	cca. 600	cca. 2100	+101 widow households	
%	25%	35%	10%	30%	100%		

\*Servants or co-workers not conscripted as family heads were omitted. See corrected values including these layers in brackets.

## (2) Groups based on the welfare-equation

The family heads were classified into 13 groups based on the natural breaks in welfare values calculated by the equation. Groups 9-13 were definitely richer than the average. Rely in gon the results in *figure 5* the aggregation of wealth categories 11-13 (comprising 15% of households) may be reasonable. These constituted the real elite, followed by group 9-10 including another 15% of the cases referring to the upper middle class. The richest 15% of families owned only 20% of the economic potential (it could reach 40% in Ottoman towns during the 18th c.).<sup>6</sup> The next 20% owned 25% (*figure 5*), thus there were not significant differences between the elite and the upper middle class. The poorest 20% owned only 13%. In other words, the richer 50% of the population was 3 times richer, than the poorer half owning only 25% of the economic potential. This inequality is not considered great measured to other regions.<sup>7</sup> (The reason of the small differences between these two groups might be, that members of the real elite had larger households, which decreased the per capita economic potential. It is also true that within the 300 households there is a layer comprising 100 households with extremely high values).

The classification results confirm, that categories (based on the prestige of occupation) 'e', 'f', 'kk', 'h' are considered to be the richest, followed by 'p', thus our preconception was not flawed (*figure 6*). The minor differences between the cluster-

<sup>6</sup> Canbakal, H., Filiztekin, A. Wealth and Inequality in Ottoman Lands in the Early Modern Period. Working Paper, <[http://aalims.org/uploads/Rice\\_v1.pdf](http://aalims.org/uploads/Rice_v1.pdf)>.

<sup>7</sup> The richest 2% owned 25% in China, in New-Spain in 1790, the richest 10% owned 55% of the wealth, in Bihar (India) in 1804 the richest 20% owned 50%, and in Naples in 1811 it was 10 and 33% respectively. Milanovic, B., Lindert, P. H., Williamson, J. G. Measuring Ancient Inequality. Working Paper 13550. NBER. Cambridge, MA, 2007. <<http://www.nber.org/papers/w13550>>.

based and equation based classification (*table 7*) is due to the fact, that the latter measures total wealth of a family regardless of family size. Group 'f' is considered poorer, if per capita wealth is calculated (instead of household wealth), because agriculture was a labour-force intensive sector traditionally characterized by larger family size.

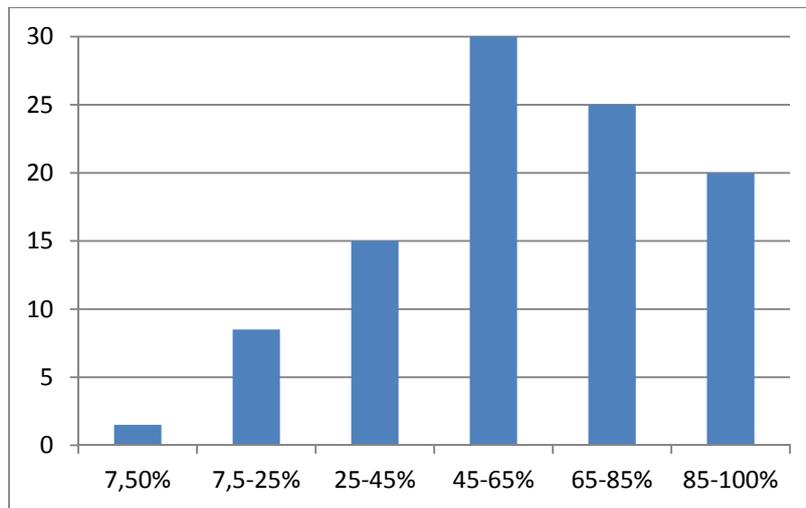


Figure 5. The distribution of economic potential (vertical axis) between groups of families (horizontal axis in %)

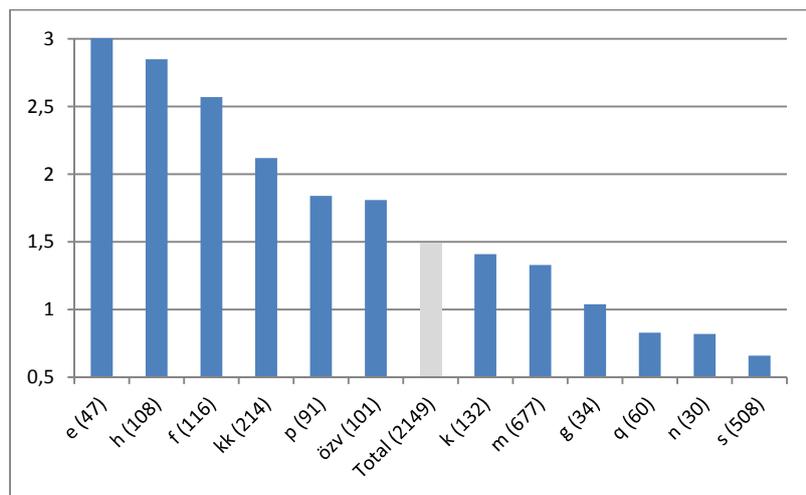


Figure 6. Differences in per capita economic potential between social groups based on prestige and occupation

Surprisingly, the average room number/family was not higher than in rural areas (although the average household size – 4.66 prs – was bit smaller): the 1.5 room/family is not greater value than measured in Belgrade after 1900.<sup>8</sup> Multi-storey buildings were abundant only in the town centre, but even houses only with ground floor were usually divided between families (often not relatives). Only 12% of the households (not houses!) had more than 2 rooms – this can be identified as another feature of the real elite – there was a strong correlation between room numbers and the calculated wealth based on the equation (*table 5*). Further 22% had 2 rooms. Population density – calculated from room number and household size – can also be an index of welfare (*table 6*). In 25% of households there were 4 or more than 4 inhabitants per room, while only 10% of families were characterized by density smaller than 1.5 person/room.

*Table 5. Distribution of households based on room numbers in 1870 (prs and %)*

No data	0.5 room and under	1	2	3	4	5 rooms and above	Total
40	170	1175	488	150	69	55	2147 (average: 1.5)
1.9	7.9	54.7	22.7	7.0	3.3	2.6	100 %

*Table 6. Population density (prs/room) in Sátoraljajúhely in 1870 (prs and %)*

under 1	1	1-1,5	1,6-2	2-2,5	2,5-3	3-4	above 4	Total
47	167	125	375	120	352	391	529	2147 (average: 2.85)
2.2	7.8	5.8	17.5	5.6	16.4	18.2	24.6	100 %

*Table 7. The rankings of the pre-defined layers based on prestige of occupation using the two different statistical classification (cluster-based; equation-based)*

	e (47)	h (108)	f (116)	kk (214)	p (91)	ö (101)	Total (2149)	k (132)	m (677)	g (34)	q (60)	n (30)	s (508)
average cluster membership	2.45	2.8	3.2	3.06	3.71	3.85	3.93	3.91	3.97	4.21	4.49	4.48	4.75
ranking	1	2	4	3	5	6	8	7	9	10	12	11	13
average equation-based wealth	4.52	2.85	2.57	2.12	1.84	1.81	1.49	1.41	1.33	1.04	0.83	0.82	0.66
ranking	1	2	3	4	5	6	7	8	9	10	11	12	13

<sup>8</sup> In Belgrade in 1907 60% of the *houses* had only one room (as in case of *households* in Sátoraljajúhely), but the density was 3.5 prs/house, while in the Hungarian town it was 9 prs (2 households/house). **Vuksanović-Anić, D.** Urbanistički razvitak Beograda u periodu između dva svetska rata (1919–1941). In: Istorija XX. veka. Zbornik radova IX. Beograd, 1968. 458-465. In 1926 an official or merchant family in Belgrade had 2.5 rooms, artisans had 1.9, workers had 1.5. The former values are similar to the Hungarian, while the latter is higher. **Calic, M.-J.** Sozialgeschichte Serbiens 1815–1941. Der aufhaltsame Fortschritt während der Industrialisierung. München, 1994. 323-325.

Table 8. Socio-demographic characteristics of the layers defined by the equation (the average represents intergroup differences, standard deviation represents within-group differences)

Social group based on equation		Average children number	Average number of servants	Household size	Proportion of earners	Average room number	Average inhabitants per room
1 (127, 6%)	Mean	<b>2.09</b>	0.01	4.07	0.29	0.51	<b>7.84</b>
	St. Dev.	1.60	0.09	1.73	0.20	0.39	3.61
2 (140, 6.5%)	Mean	<b>2.24</b>	0.01	4.32	0.28	0.81	<b>5.31</b>
	St. Dev.	1.75	0.12	1.90	0.19	0.30	1.63
3 (233, 11%)	Mean	<b>2.26</b>	0.03	4.37	0.24	0.99	<b>4.70</b>
	St. Dev.	1.50	0.20	1.60	0.10	0.29	2.43
4 (258, 12%)	Mean	1.65	0.04	3.81	0.33	1.06	<b>3.60</b>
	St. Dev.	1.62	0.20	1.91	0.19	0.37	1.51
5 (158, 7.5%)	Mean	<b>2.36</b>	0.11	<b>4.63</b>	0.28	1.20	<b>4.10</b>
	St. Dev.	1.77	0.32	1.92	0.16	0.49	1.65
6 (203, 9.5%)	Mean	1.87	0.11	4.17	0.33	1.22	3.52
	St. Dev.	1.89	0.33	2.19	0.15	0.49	1.62
7 (264, 12%)	Mean	1.43	0.18	3.64	<b>0.45</b>	1.36	2.75
	St. Dev.	1.73	0.40	2.24	0.30	0.58	1.64
8 (104, 5%)	Mean	<b>1.94</b>	0.36	<b>4.55</b>	0.35	<b>1.60</b>	2.91
	St. Dev.	2.00	0.59	2.55	0.20	0.77	1.50
9 (164, 7.5%)	Mean	1.63	0.37	4.37	<b>0.39</b>	<b>1.78</b>	2.64
	St. Dev.	1.62	0.59	2.42	0.25	0.83	1.58
10 (151, 7%)	Mean	1.28	<b>0.49</b>	3.90	<b>0.43</b>	<b>1.95</b>	2.10
	St. Dev.	1.61	0.70	2.33	0.27	0.77	1.39
11 (83, 4%)	Mean	1.51	<b>0.70</b>	<b>5.01</b>	<b>0.42</b>	<b>2.17</b>	2.52
	St. Dev.	1.69	0.79	2.95	0.30	1.07	1.65
12 (99, 4.5%)	Mean	1.60	<b>0.88</b>	<b>5.14</b>	<b>0.41</b>	<b>2.59</b>	2.18
	St. Dev.	1.70	0.97	2.99	0.29	1.28	1.45
13 (162, 7.5%)	Mean	1.69	<b>1.87</b>	<b>6.57</b>	0.37	<b>3.73</b>	2.04
	St. Dev.	1.89	1.62	3.87	0.26	1.66	1.64
Total (2149)	Mean	1.81	0.34	4.39	0.35	1.53	3.50
	St. Dev.	1.74	0.80	2.45	0.23	1.09	2.28

The narrow elite (group 11-13) was characterized by low children number, but had larger family owing to the auxiliary workforce (table 8). The proportion of earners was higher than the city average, room number was over 2 (as in group 9-10). The average population density (prs/room) of the elite was similar to that of group 9-10, because of the high number of servants (group 9-10 was characterized by smaller household sizes). Since the room number of the real elite was also similar to that of

the middle class, it was the available auxiliary workforce that made real difference between them.

(3) *Groups based on clusterization*

Though the 3rd method to identify social strata was based on automatic classification, thus it lacked any preconception, unlike *method 1* (prestige of occupation), this classification resulted in groups that could be described by well-defined social characteristics (*table 10*), although the boundaries of some of the groups created were unconsolidated (group 2-3) as proved by the discriminace analysis (*table 9*). Better classification results could not be achieved even when using more or less clusters.

*Table 9. Discriminace analysis: successfully reclassified cases measured to total*

Original cluster	Reclassified into						Total case number
	1	2	3	4	5	6	
1	<b>123</b>	8	0	40	1	0	172
2	21	<b>10</b>	30	53	34	12	160
3	0	11	<b>270</b>	17	94	11	403
4	1	1	16	<b>353</b>	95	1	467
5	0	0	0	0	<b>716</b>	0	716
6	0	0	2	6	71	<b>111</b>	190

*Table 10. Socio-demographic characteristics of groups created by automatic clusterization*

Cluster 6:	the poor, high children ratio, low proportion of earners, room number under 1
Cluster 5:	the poor, no servants, small household size (3 prs!), room number around 1
Cluster 1:	the rich, servant number over 2, low proportion of earners (0.2 – contrary to groups defined by the previous method, where it was over 0.4 – revealing that the two methods of defining the elite are not equivalent!), room number around 4
Cluster 2–3–4:	average values, unconsolidated boundaries, fuzzy
Cluster 2:	the proportion of Jews within the group is over 50%: ' <i>par excellence</i> Jewish middle-class'

The classification based on cluster memberships was also appropriate to define groups based on their wealth as revealed by its combination with the classification based on *method 2* (*figure 7*), although the relation is not one-to-one. The average cluster membership of cases classified into equation-based groups 11-13 was under 3, while in case of equation-based groups 1-6 it was above 5.

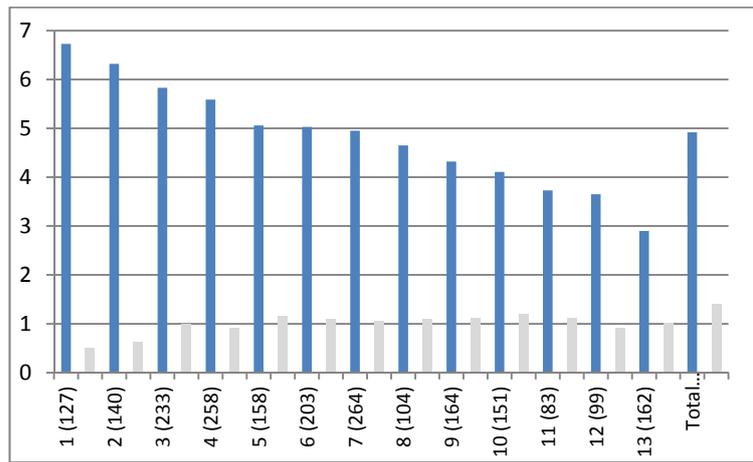


Figure 7. The average cluster membership of classes based on the equation

### V.1. Socio-Demographic Features of the Elite

Using the classification based on clusterization the cca. 170 households of the elite was characterized by higher children number (over 2) contrary to the previous classification (with great standard deviation), but similarly to the upper middle class (cluster 2, 160 households) (compare *table 8 and 11*). The average number of servants was also around 2, while in cluster 2 it was under 1. The average household size exceeded 6.5 (with great standard deviation), which was remarkably higher than in cluster 2 or cluster 3-5, but similar to that measured in group 13. The proportion of earners was lower than in any other clusters (0.2 with low standard deviation), except cluster 6, and lower than in group 13. Room number was cca. 4, while it was only 2 in cluster 2 and only 1 in cluster 5. The rich were averagely 5 years older (over 42 yrs), than family heads in other clusters. Population density was below 2 prs/room with low deviation (like in group 13), while it was above 3 in cluster 2 and over 7 in cluster 6. The average group membership in cluster 1 was above 11, while households classified into cluster 2 had a value over 9. Clusters 3-4 had average wealth-based on the equation too, while in cluster 5-6 comprising the poor, the average group membership was only 4 and 2.

Table 11. Socio-demographic features based on automatic clusterization (average represents inter-group differences, standard deviation reveals within group differences)

Cluster (Ward-method)		Number of children	Number of servants	Household size	Proportion of earners	Average room number	Aging	Prs/room	Group membership based on the equation
1 Elite (172)	Mean	<b>2.30</b>	<b>1.97</b>	<b>6.61</b>	0.22	<b>3.97</b>	<b>1828</b>	1.79	11.62
	St. Dev.	2.07	1.48	3.33	0.15	1.46	12.62	0.97	1.64
	Mean	<b>2.34</b>	<b>0.71</b>	<b>5.74</b>	0.35	<b>2.11</b>	1832	3.29	9.54

2 (160)	St. Dev.	2.02	0.96	2.73	0.25	1.17	10.77	2.16	3.11
3 (403)	Mean	<b>2.26</b>	0.21	<b>5.51</b>	<b>0.43</b>	1.54	<b>1828.5</b>	<b>4.03</b>	8.02
	St. Dev.	1.70	0.46	2.39	0.22	0.76	11.21	1.82	2.90
4 (467)	Mean	1.90	0.31	4.28	0.31	<b>1.75</b>	<b>1829.6</b>	2.71	7.58
	St. Dev.	1.89	0.50	2.16	0.21	0.59	11.74	1.53	2.38
5 (716)	Mean	1.06	0.00	2.91	0.38	0.96	1833	3.07	4.44
	St. Dev.	1.07	0.00	1.21	0.24	0.14	12.00	1.19	2.04
6 (190)	Mean	<b>2.77</b>	0.22	<b>5.05</b>	0.23	0.70	1833	<b>7.84</b>	2.34
	St. Dev.	1.79	0.49	2.02	0.14	0.30	10.27	3.23	1.67
Total (2108)	Mean	<i>1.83</i>	<i>0.34</i>	<i>4.42</i>	<i>0.35</i>	<i>1.55</i>	<i>1831</i>	<i>3.51</i>	<i>6.61</i>
	St. Dev.	<i>1.74</i>	<i>0.80</i>	<i>2.45</i>	<i>0.23</i>	<i>1.08</i>	<i>11.77</i>	<i>2.28</i>	<i>3.46</i>

As for the categories based on traditional classification (the Weberian prestige of occupation), group ‘e’ was characterized by more than 3 rooms, in case of group ‘f’, ‘h’ and ‘kk’ it exceeded 2. (Either owned or rented, room number represents economic power, *figure 8*).

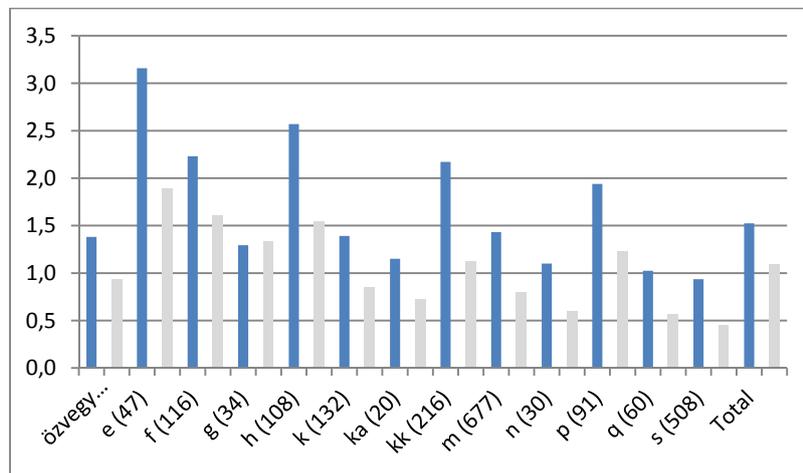


Figure 8. Average room numbers for groups based on prestige of occupation

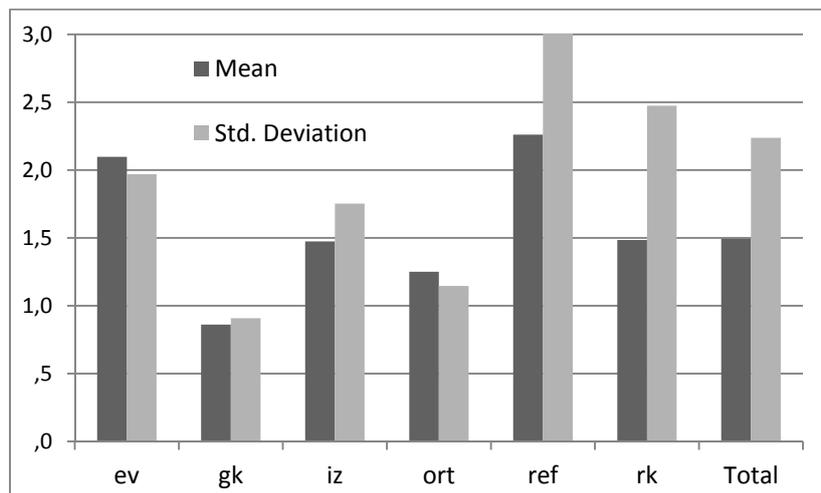


Figure 9. The connection between economic potential (based on the equation) and religion

As for religious differences it was the Protestants (both Calvinists and Lutherans), whose economic potential proved to be the greatest, followed by Jews (figure 9). Greek Catholics were poorer than the average. Although Calvinists constituted only 12% of the population they held traditionally most of the leading offices. Differentiation within religious groups also progressed by 1870: standard deviation was high (there were poor artisans among Protestants, and beggars, scrap-metal collectors among Jews).

#### *Internal differentiation*

After analyzing the *inter-group differences* it is time to take a closer look on *within-group differences* earlier marked by standard deviation values. Cluster 1 comprising the elite was dominated by profession-groups 'e', 'kk', 'h' and 'f' ('h' and 'f' constituted 20-20% of this group respectively referring to the predominance of old bureaucratic-agrarian classes, the new layer of merchants also reached 20% within cluster 1, but their proportion was still over 40% in the upper middle-class, cluster 2). Since these traditional categories based on the prestige of occupation can be found in other clusters as well, this also confirms that the 2 classification methods are not equivalent (figure 10). Only 50% of members in group 'e' were classified into cluster 1, the chance to be part of the elite was also 50% among 'h' (officials), but only 15-15% in group 'kk' and 'p', while in group 'f' 30% belonged to the elite. Almost 30% of group 'kk' were classified into cluster 2 (representing merchant bourgeoisie). Thus it was category 'e' and 'h' that is considered dominantly the elite (they were officials, which refers to the fact that capitalist transformation was one-sided and unfinished as new layers were not yet members of the high society in Sátoraljajhely).

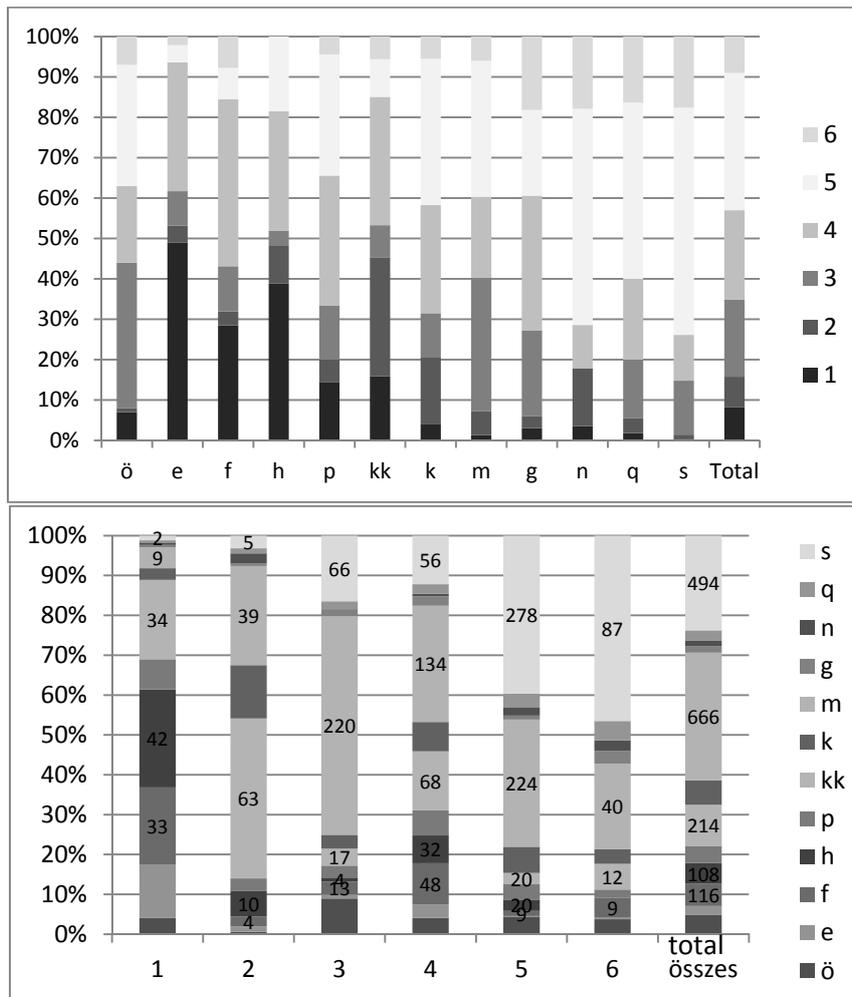


Figure 10. The classification of traditional groups into clusters: within-group differences

Surprisingly category ‘p’ (civil free professions) cannot be unequivocally considered as a component of the elite (only 10% of the elite stemmed from this category, though it is still higher, than their proportion from the total households, which is 5%). Only 15% of group ‘p’ was classified into cluster 1 as ‘elite’. This also refers to defects in the modernization process of towns compared to the western models.

The abovementioned is also true, if we use the equation-determined categories instead of automatic clusterization (figure 11). The proportion of cases classified into group 9-13 was over 70% in case of group ‘e’ and ‘h’, 50% in case of ‘kk’ and ‘f’, while 40% in group ‘p’. This confirms, that the agrarian elite was weakening, but the merchant elite was not yet strong to take over the positions of the bureaucrats – the agrarian elite transformed their power into political. As group 9-13 (used in chart 11) is a broader interval composed of more than 600 hundred families, while cluster 1 represented only 7.5% of the households (and cluster 2 gave further 7.5%), it is not surprising that some artisans were also included into these aggregated groups.

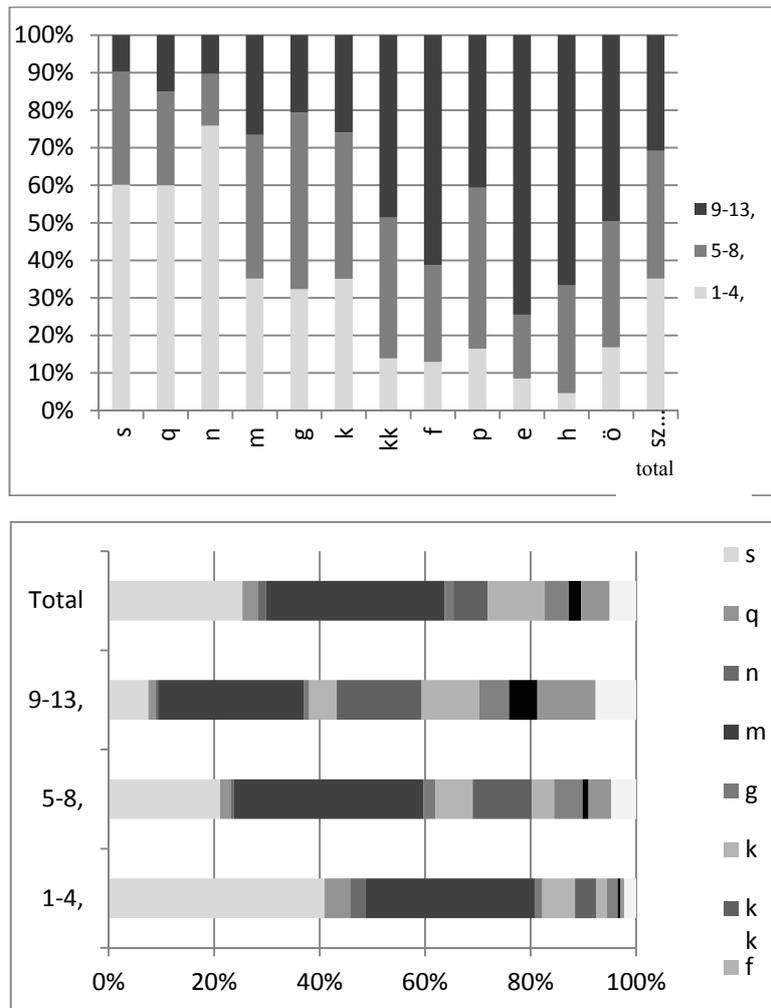


Figure 11. Internal differentiation (based on economic potential) within traditional occupation groups

As for the religious distribution within the ‘elite categories’ we may conclude, that protestants were overrepresented within category ‘h’, while Jews among members of group ‘kk’ (both constituting the part of the elite). Within group ‘e’ or group ‘f’ no similar trends could be observed (*figure 12*); the share of different religions in the latter categories was similar to their representation in the total sample. (The same phenomena can be observed, if we apply the other two classifications).

Going down into a deeper level we have also tried to identify the proper occupations of the elite. Lawyers, doctors, engineers, landowners determined this group either we used average room number, the equation to determine wealth (method 2) or cluster analysis (*table 12*). 90% of family heads had 2, or more than 2 rooms in group ‘e’, 60% in group ‘f’, 70% in group ‘kk’ and ‘h’, while it was only 40% among

households classified into category 'p' (figure 13). In cluster 1 each family had 2 or more than 2 rooms (90% had more than 3), while it was only 60% in cluster 2.

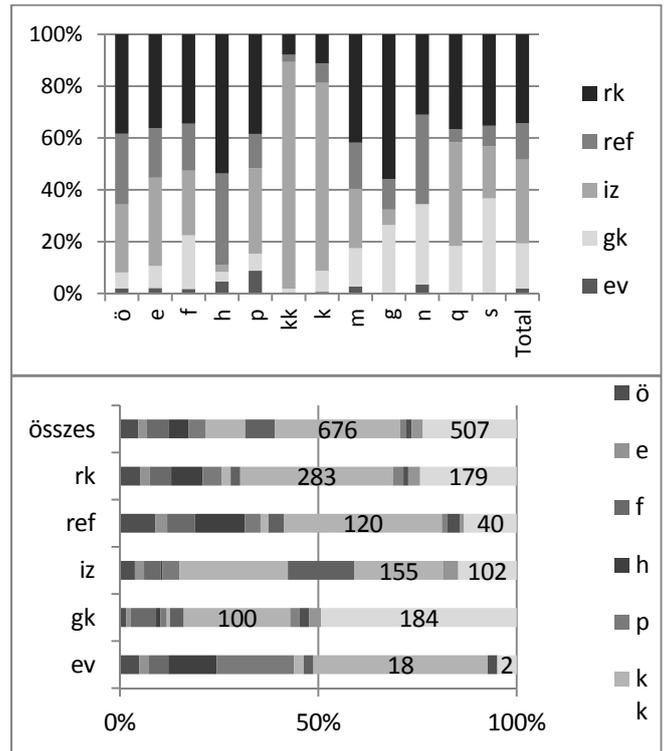


Figure 12. The frequency of different denominations among and within social groups based on prestige of occupation

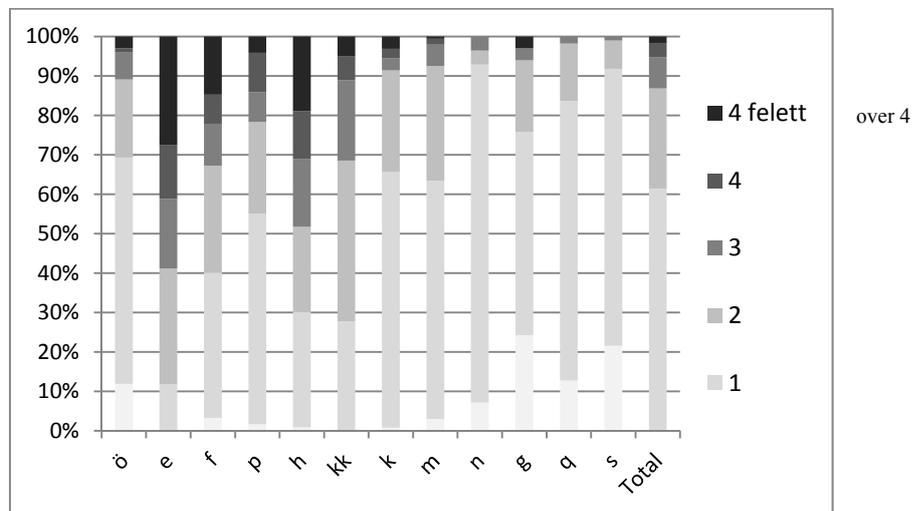


Figure 13. The connection between room number and occupation

Table 12. Rankings of different occupations based on their economic potential

Occupation of the family head	Average (category) based on equation (14)	Ranking	Cluster(6)	Ranking	Average room number	Ranking
Lawyers and doctors (33)	11.24	1	2.03	1	3.64	1
mason owners (60)	8.70	5	2.69	2	2.32	3
skinner-weaver (10)	9.40	2	3.10	3	2.9	2
landowners (106)	9.08	3	3.17	4	2.3	4
wheat, flour merchants (21)	6.76	14	3.33	5	1.81	9
engineers (18)	8.83	4	3.35	6		
other merchants (38)	7.61	8	3.46	7	1.87	7
grocers (11)	6.82	12	3.55	8	1.55	12
joiner (35)	7.66	7	3.65	9	1.84	8
entrepreneurs, railway entrepreneurs (13)	7.31	9	3.69	10	2.08	5
butchers (27)	6.89	11	3.74	11	1.56	11
small merchants (10)	6.10	18	3.78	12	1.00	26
textile merchants (15)	8.40	6	3.87	13	2.0	6
tanner-skinner (37)	6.57	15	3.89	14	1.27	18
woolen coat maker (aba) (46)	6.04	21	3.91	15	1.34	15
bootmakers (144)	6.11	17	3.92	16	1.33	16
total sample (2144)	6.53	16	3.93	17	1.52	13
shopkeepers (27)	5.52	23	3.96	18	1.19	21
shoemakers (16)	6.00	22	4.00	19	1.13	22
teachers (15)	6.80	13	4.07	20	1.77	10
tailors (103)	6.10	19	4.23	21	1.33	17
washers, sewers, bakers (37)	7.27	10 <sup>9</sup>	4.24	23	1.20	20
cartsmen (52)	4.83	25	4.55	24	1.00	24
carpenter (33)	4.61	26	4.73	25	1.11	23
personal servants (55)	5.00	24	4.73	26	1.00	25
agrarian daily wage earners (343)	3.89	27	4.88	27	0.87	27
policemen (15) <sup>10</sup>	3.73	28	5.00	28	0.86	28

## V.2. Reproducing the Elite

It is evident that in urban environment natural reproduction was subordinated compared to migration in the reproduction of population as well as in the reproduction of the elite. Even in the introverted Eger, showing only a 40% population increase between 1825–1900 (while Sátorajújhely tripled its population during this period), more than 75% of this increase were a result of the migration processes, as the net reproduction rate

<sup>9</sup> The differences in rankings using different classification methods are due to the fact, that the equation calculates with per capita potential contrary to the other two indices, thus a poor, but small family shows better performance when the equation (*method 2*) is used as classification method.

<sup>10</sup> Only heads of families were included.

until 1873 was critically low (high mortality beside the high birth rate). The demographic transition in Hungary began only after the last cholera epidemics (1873).

### *External sources*

As we mentioned, by 1900 55% of the urban dwellers in Sátoraljaújhely had been born outside the administrative area of the town, which thus functioned as a 'sink'. The social distribution of the immigrant and indigenous society showed remarkable differences. High-class and upper classes were overrepresented among migrants compared to indigenous or total population, while the middle class was overrepresented in case of the indigenous population. Lower classes were also overrepresented among newcomers, especially regarding industrial-tertiary occupations, which clearly shows the changing workforce-demand of the transforming economy (table 13).

*Table 13. Differences in social status of immigrant and indigenous society in Sátoraljaújhely (based on family heads)*

<b>Layers</b>	<b>Total number</b>	<b>%</b>	<b>Indigenous</b>	<b>%</b>	<b>Immigrant %</b>	<b>Immigrants from the total layer in %</b>	<b>Examples</b>
High class	50	2	13	1.5	2.1	74	priests, lawyers, doctors, engineers
<i>High class and upper middle class</i>	90	3.4	22	2.5	3.8	75	<i>teachers, tax-collectors, railway engineers, local and county high-officials</i>
<i>Middle class</i>	1080	41	435	50	36	60	<i>merchants, craftsmen, mason owners</i>
<i>Lower middle class</i>	96	3.5	36	4.1	3.3	62	<i>low-commission officers, grocers, tailors, waiters</i>
<i>Lower classes</i>	1390	52.5	341	39	58	75	<i>nurses, servants, scrap-metal and textile collectors</i>
Agrarian from lower classes	558	21	183	21	21	67	peasants, daily labourers
Industrial-tertiary from lower classes	735	28	124	14	34	83	bricklayers, servants, cartsmen, cooks
<b><i>Altogether</i></b>	<b>2656</b>	<b>100</b>	<b>873</b>	<b>100</b>	<b>100</b>	<b>67</b>	

A regional comparison can also be useful to identify common and specific patterns. We have analyzed the small Varannó *oppid* (Vranov, SK), a district center in the same county with only 2000 inhabitants, and the traditional, but introverted center, Eger (over 20 000 dwellers), the county seat of Heves County (table 14). Not surprisingly, the elite was mainly recruited from newcomers even in the small Varannó, as it had no school to educate its own elite. In the case of Eger, with its *Lyceum* the elite was stronger regarding its percentage value compared to the other two settlements (20% vs. 3.5-7%) (although we used a different source type, the birth and marriage registers from 1883 containing only 870 persons and not the census data), while the middle class was thinner. In Eger, the local elite was also stronger compared to the immigrant elite society (22 vs. 12%).

Table 14. A comparison of social stratification of immigrant and indigenous societies in urban and semi-urban environment

Layer	Varannó total (%)	S.újhely, total (%)	Eger* total (%)	Varannó migrant (%)	S.újhely migrant (%)	Eger* migrant (%)	Varannó, indigenous (%)	S.újhely, indigenous (%)	Eger* indigenous (%)
Elite	7.1	3.4	20.0	8.1	3.8	12.0	5.8	2.5	22.0
Middle	48.3	41.0	33.0	40.8	36.0	49.0	58.2	50.0	25.0
Lower middle	6.1	3.5	24.0	8.6	3.3	12.0	2.9	5.0	28.0
Lower	38.5	52.0	22.0	42.5	58.0	25.0	33.1	39.0	20.0
Total prs	720	2656	800*	409 (57%)	1783 (67%)	*	311 (43%)	873 (33%)	

\*Eger is based on birth registers from 1883, while the other two were based on census data from 1870.

Group	Migrants from the given layer in S.újhely (%)	Migrants from the given layer in Varannó (Vranov, SK) (%)
Elite	74	65
Middle class	60	48
Lower middle	62	80
Lower class	75	63
Total	67 (1783 prs)	57 (409 prs)

#### Internal sources

In order to analyze the chances of passing down or inheriting social positions, we use the sample of 100 persons (cca. 1% of the total population) between 1896 and 1906 collected from the birth registers of Sátoraljaújhely (a narrow time interval was needed to identify father-son relations). In case of the elite both upward migration and the inheritance of social position was observable, but the sample was statistically irrelevant (table 15). The sum of cases predicts, that upward movements were a bit more characteristic for this urbanising community than declassation (12 vs. 5 cases in 1896 out of 43; and 8 vs. 5 cases out of 40 in 1906, while stability of social status

characterized more than 50% of cases). As at least the examined sons were considered indigenious, the general improvement in their social status reveals the *role of towns in ameliorating livelihood*, while it is also evident, that in *the society of (especially rural) immigrants lower classes dominated*.

Table 15. Investigating social mobility in Sátoraljaújhely between 1896–1906 (father-son relations)

1896	Cases investigated	Inherited position	%	Upward movement	%	Declassation	%
Upper classes	2	1	50%	1	50%	0	0%
Middle class	34	17	50%	11	33%	3	9%
Lower classes	7	5	71%	0	0%	2	28%
1906	Cases investigated	Inherited position	%	Upward movement	%	Declassation	%
Upper classes	0	0	0%	0	0%	0	0%
Middle class	23	11	48%	8	34%	2	9%
Lower classes	17	9	53%	0	0%	3	18%

MNL-BAZML SFL, XXXIII-2. marriage registers from 1896, birth registers from 1906

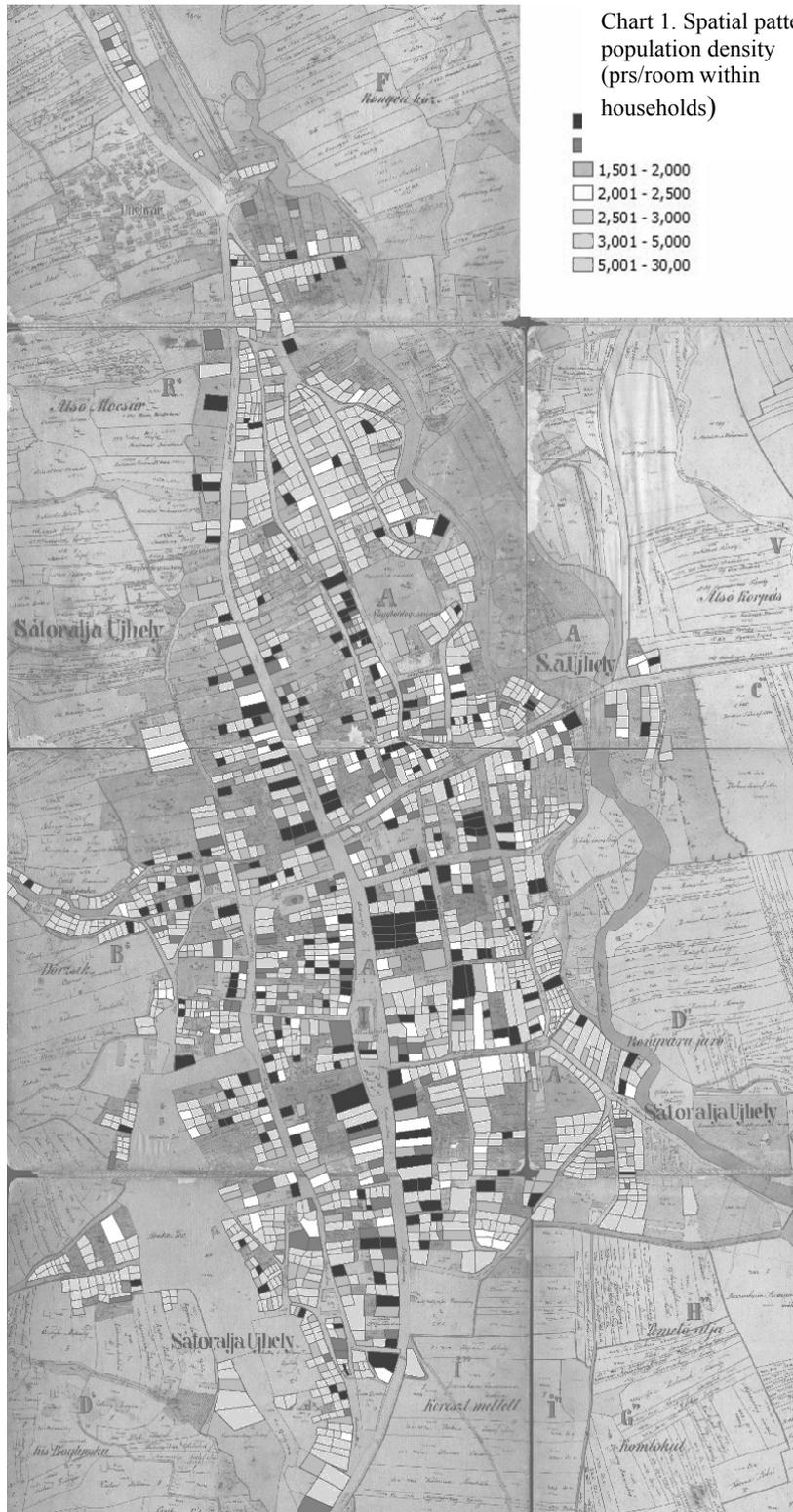
### V.3. Spatial Pattern of the Elite in Different Dimensions

After visualizing our data on maps, where each household was represented by an entity, we managed to locate the elite, which was generally characterized by a center-periphery accommodation pattern (*Chart 1-5*). Wealthy people were located along the main road in N-S direction (also representing the general route of migration), then in the city center, and the road leading towards the River Ronyva (to the East), perpendicular to the main road. The members of the elite often rented their houses in the city center to Jewish merchants, who there claimed the majority by 1870. As we used a *multidimensional approach*, it is evident that the category of ‘elite’ does not coincide after overlying the numerous maps (wealth based on equation, clusterization, traditional classification, room numbers, density of dwellers).

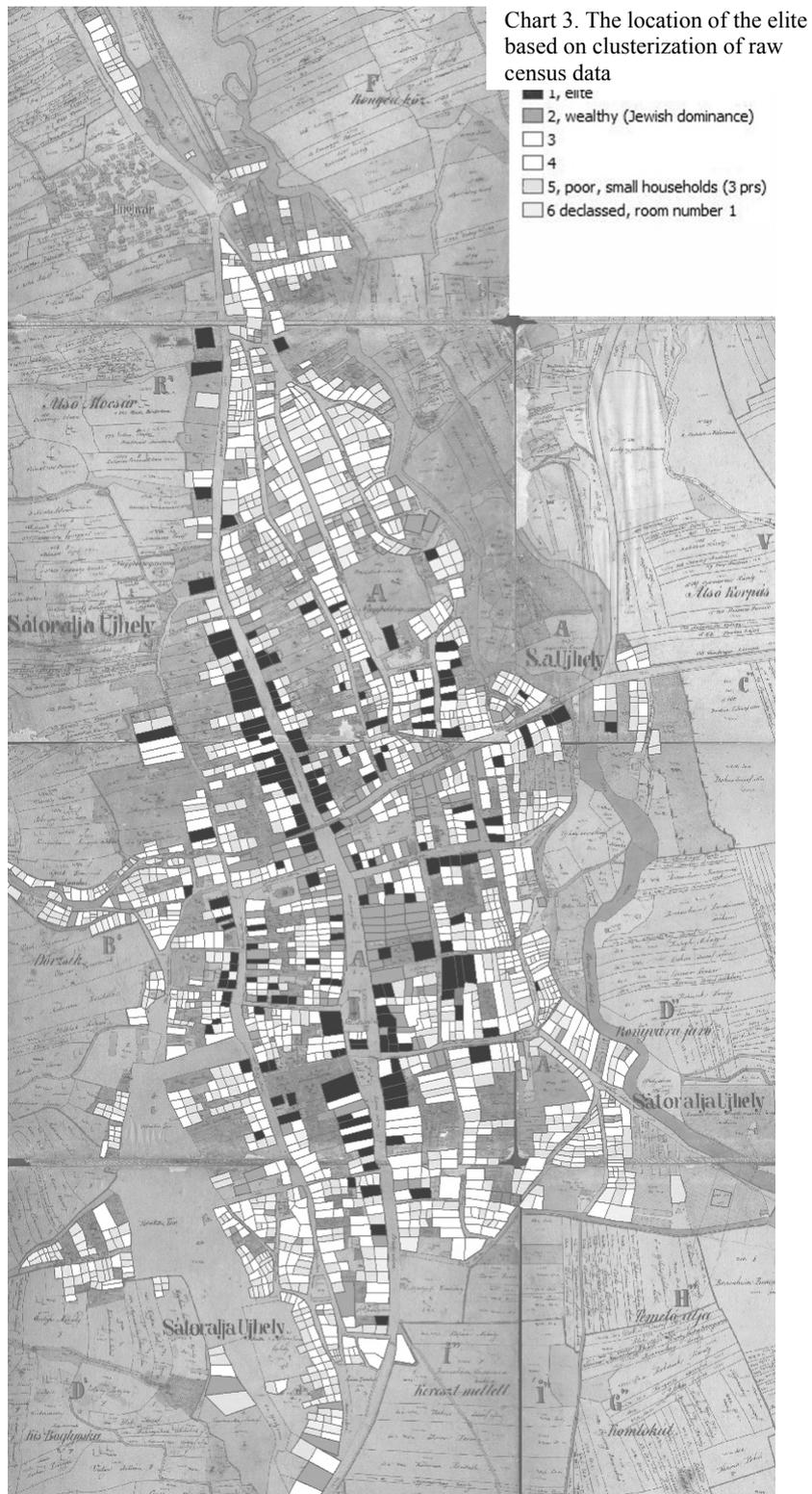
## VI. Summary

To sum up our results we managed to trace the elite of a transforming local urban center with different independent methods. The great correlation between the results of these classification methods and raw variables referring to welfare (room number/household, population density) shows, that our methods seem to be reliable. There was at least 50% correspondence between the cases classified into the wealthiest category using the 3 different methods. Thus, the core of the elite can be described as the common set of these methods. This means some 190-200 families and further 200 constituted the upper middle class. Altogether the elite ranges maximum to 15% of the population. People with 3 rooms or more and 2 servants/co-

workers or more can be considered as members of the elite. Protestants were over-represented among them, however their positions were fading and they were bound to the traditional official-bureaucratic elite. The new capitalist elite was weak in 1870, constituted by Jewish merchants, engineers and entrepreneurs, the traditional spatial patterns of occupations prevailed (tanners lived near water, bootmakers were concentrated in one street in the southern quartier). The homes of the elite concentrated along the main street (both the new elite including Jewish rentiers and the traditional one including the landlords living far away from their fields).











TRACING THE TRANSFORMING URBAN ELITE – METHODS TO  
ANALYZE SPATIAL PATTERNS, SOCIAL COMPOSITION AND WEALTH  
BASED ON CENSUS DATA (NORTHEASTERN HUNGARY, 1870)

(Summary)

This contribution attempts to outline methods that (1) can help identify the elite in urban societies, as well as it aims at (2) analyzing the spatial pattern, (3) social composition and welfare of the elite in the late 19th c.

Our research was based on the census data of 1870 which is a specific one in the sense, that the original household-level data sheets survived in some of the towns and villages, making it possible to carry out a more detailed inquiry (*figure 1*) compared to the material published officially, which aggregated data at settlement-level. The original census sheets contained the name, age, address, birth place, occupation and religion of the head of family, repeating these data for the wife, children, co-workers, servants and housemaids. It also provided the number of rooms, kitchens, economic buildings (stores, stables, cellars) for each household. As the census did not contain income data, the mentioned variables also served as a basis for the classification of groups regarding their wealth. These data were used in order to identify the elite and classify population into social layers.

The selection of Sátoraljaújhely (the county seat of Zemplén County) as a sample area was ideal from several aspects. The 2150 households (10 000 inhabitants) offered substantial material for quantitative statistical analysis, and the timing itself was also fortunate. The railway was just opened in 1870, while guilds were dissolved in 1872, thus the parallel coexistence of traditional and modern social patterns and structures could be observed owing to the date of conscription. The acceleration of urbanization process turned the town into a melting pot which reflected its religious diversity: 35% of the population was of Jewish ancestry, Roman Catholics reached also 30%, Calvinist Protestants 12–14%, Greek Catholics approximately 20%.

We used 3 different methods to trace the elite(s). Beside the traditional classification based on the prestige of occupation (Weber, Erdei) to identify groups, multivariate statistics (SPSS) were used for the other two classifications (cluster analysis, equation). Beyond socio-demographic features (including inter-group and within-group differences), the spatial pattern of the elite's location was also investigated using GIS (ArcGIS 10.1).