

**Changes of the city health profile  
of the city of Pécs  
between 1994. and 2012.**

Doctoral (PhD) thesis

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## **1. INTRODUCTION**

The City of Pécs, a founding member, has participated in the World Health Organization European Healthy Cities Network since 1986. The goals of this initiation are to promote the physical, mental, social and environmental well-being of the people living and working in the area as well as to support the promotion of health protection tasks in the city's policy making activities. In accordance with these goals one of the conditions the city has undertaken while joining to the Movement in order to implement the local health protection activities is to prepare the city's health profile and based on this profile is to elaborate a local health development plan.

The health profile of a city is the description of people's health conditions, living in the given city, as well as the description of conditions, that influence their health, with qualitative and quantitative methods. This tool is appropriate for creating such a complex situation report from several pieces of information available in different places that cannot be found at any data owner. It is a snapshot that gives a comprehensive picture about the local situation in which the life circumstances and by that the state of health of the citizens are potentially influenced.

Using the data and information of the health profile initiation creates a potential on one hand to initiate activities concerning the problem areas revealed, on the other it can generate further research inevitable for effective intervention. Even the process of elaboration can support the implementation of the final goal that is to call the decision makers' attention to those problems, which, in case of solving them, can positively influence the state of health of the

community members. By that the health profile can be a base for elaborating the priorities of the health development plan, for appointing the directions of actions as well as for allocating necessary resources and for defining the circle of services.

The first health profile of the city of Pécs '*City Health Profil of the City of Pécs*' was published in 1996. Almost two decades have passed and the city's health profile has not been updated. Realising this deficit I have updated the health profile of the city using the research which is the base of my thesis. For the sake of displaying the changes happened in the observed period I have made a comparative research using the earlier available information and data.

## **2. GOALS**

More than fifteen years have passed since the elaboration of the first health profile of Pécs. During this period the urban environment as well as the socio economic conditions have undergone a significant transformation, however the health profile has not been updated. In the view of this the aims of my research were the following:

1. Based on the structure and data of the city's health profile published in 1996, with the help of the WHO Healthy Cities Movement indicators and with special attention to its methodological recommendations my aim was to adapt the methodology of health profile preparation to the local needs

and possibilities, followed by the elaboration of the up-to-date health profile of the city of Pécs.

2. Applying comparative examination, my aim was to explore whether there were any changes concerning the influencing elements of the citizen's health between 1994 and 2012 in Pécs, and if there were, to what extent and in direction.

Health profile can be an important information source itself when preparing decisions about influencing the life circumstances of the local community members. If conclusions are drawn from that, recommendations are based on explored and organised data, the application of the health profile can be intensified. Thus my aim was also to:

3. draw recommendations for the elaboration of a health development plan based on the data and the conclusions of the health profile.

### **3. METHODS**

The city health profile results from the Healthy City indicators and the survey parts as an empirical tool to inform the decision makers of health policy and planning and to strengthen the public health agenda.

According to the recommendation of the experts of the Healthy City movement I used the Healthy City indicators as it follows:

*1. Mortality/morbidity indicators*

- 1.1. Mortality
- 1.2. Main causes of mortality
- 1.3. Low birth weight

*2. Health services indicators*

- 2.1. City health education programs
- 2.2. Children's immunization rates
- 2.3. Inhabitants per primary health care practitioner
- 2.4. Inhabitants per nurse
- 2.5. Percentage of population covered by health insurance
- 2.6. Availability of services in foreign languages
- 2.7. Health debates in city council

*3. Environmental indicators*

- 3.1. Air pollution
- 3.2. Water quality
- 3.3. Sewage collection
- 3.4. Household waste collection
- 3.5. Household waste treatment
- 3.6. Relative surface area of green spaces
- 3.7. Public access to green space
- 3.8. Derelict industrial sites
- 3.9. Sport and leisure facilities
- 3.10. Pedestrianization
- 3.11. Cycle routes
- 3.12. Public transport access
- 3.13. Public transport range
- 3.14. Living space

*4. Socioeconomic indicators*

- 4.1. Percentage of population in inadequate housing
- 4.2. Homelessness
- 4.3. Unemployment
- 4.4. Poverty
- 4.5. Availability of child care
- 4.6. Age of mothers at time of birth
- 4.7. Abortion rate
- 4.8. Employment of disabled people

In the course of implementing the city health profile, the data required to update the Healthy City Indicators were obtained partly from the Hungarian Central Statistical Office and partly from open access online data bases (e.g. TEIR<sup>1</sup>) as well as from Pécs municipality's own data bases.

The data for the health and lifestyle survey were collected in June 2012. The sample represented the adult inhabitants of the city according to gender and age and comprised 800 individuals. The design was a quota sampling based on the demographic structure of Pécs for the year 2011. Reference data were borrowed from the T-STAR HCSO database, which is based on the annual demographic report of Hungarian settlements<sup>2</sup>. There is no statistically significant difference between the sample's distribution and the reference data.

The residents were contacted by using the Computer Assisted Telephone Interviewing System (CATI), calling landline phone numbers of permanent residents of Pécs. Matching the quota, a two-step selection method was applied: firstly, in order to select a reasonable number of potential respondents, a random digit dialing method was applied to reach both listed and unlisted numbers. Secondly, within each reached household, the respondent was chosen by age and gender quota. Trained interviewers were made a total of 12,028 calls (6,702 non-contact; 3,361 refused; 71 broke off;

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<sup>1</sup> National Spatial Development Information System [www.teir.hu](http://www.teir.hu)

<sup>2</sup> In the case of the first CHP survey, face-to-face interviews were employed. The sample represented the adult inhabitants of the city according to gender and age and comprised 1200 individuals. The design was a quota sampling based on the demographic structure of Pécs for the year 1990. Reference data were borrowed from the National Census 1990 database of the HCSO.

1,094 out of quota/not eligible) that resulted in the final 800 completed interviews. According to the AAPOR 'Response Rate 6' definition this result represents a 7.96% response rate. The sample was corrected by weighting; the weight values of the sample were between 0.78 and 1.43.

In order to conduct a comparative analysis, the questions were exactly the same in both the first and the second city health profile survey where the comparison between data from 1995 and 2012 is published. However, some supplementary questions were added which had not been asked in the earlier questionnaire.

Data were analyzed by SPSS for Windows v.21 software using contingency tables correspondence analysis and ANOVA tests. In order to check stochastic dominance, the chi-square test and t-test were applied. The relation was considered as significant when  $p \leq 0.05$ . The main control variables were gender, age (based on the quota), and the self-reported education level.

#### **4. CHANGES OF THE HEALTH PROFILE OF THE CITY OF PÉCS BETWEEN 1994 AND 2012**

First I detail the changes of the health profile along the main indicator types of the Healthy Cities' indicators and then along the results of a questionnaire aiming at data collection regarding the life-style effects influencing the health among the citizens of Pécs.

#### 4.1. The Healthy Cities' indicators

##### Demographic features of the population of Pécs

The population has diminished gradually for about ten years as a result of a natural decrease and the negative migration values, while the aging index has increased radically. The sex ratio shows continuous increase among women above 55. Accelerating aging is one of the features of the city's population. The ratio of single households is continuously growing in the city. The growing number of single households – especially among the older age groups – highlights the problem of loneliness, and the task of increased attention regarding the effect of loneliness on health.

##### Mortality and morbidity indicators

Mortality data of the population of Pécs has changed favourably during the examined period. Estimated life expectancy at birth has increased in case of both sexes, but in case of the population finishing 13 or more classes the mortality number per 1000 people has exceeded the national average by one. The five leading causes of death are the same in Pécs as the national. At the same time diseases of the respiratory system and malignant tumours show higher ratio than the national average, and this figure has not improved during the examined period. The number of abortions compared to the number of live birth is also significantly above the national average.

##### Health services indicators

The indexes of the examined health care types have improved during the given period and in the last year the number of available health care types were more favourable compared to the national data. Except for some special and rare problems, professional health care is available for the citizens fast.

### Environmental indicators

The indexes of the environmental health features of the city of Pécs show a varied picture. The cleanness of the air improved during the examined period, but still – compared to earlier periods or compared to other cities – it is unfavourable. This inevitably increases the possibility of respiratory and circulatory system's illnesses. The pollution of the surface water has decreased and the favourable state of the ground water has not changed compared to previous data. Piped water system is available for every household to join. Solid waste management service is continuously growing by different types of selective waste collection, the sewage disposal system is also available for every household. Thus the city's public services supporting the decrease of public health risks are available entirely. The proportion of green areas is outstandingly good, while the number and length of the pedestrian zone is average compared to national figures. On the other hand, the circumstances of bicycle traffic are rather unfavourable in the city.

### Socioeconomic indicators

Among the observed socioeconomic features of health, the dwelling circumstances have improved but the living conditions of the people in the segregated areas have become a separate problem. During the examined period, the unemployment rate – exceeding the national average – increased, the unemployment rate per 1000 people among the 26-36 age group is the highest. The members of this age group are easily migrate and as a result the value of the aging index may increase and the number of single households may also increase. The number and the proportion of people using the social provision system increased radically during the examined period.

Besides the increasing number of people receiving regular social allowance the number of protected young people increased

significantly thus they need special attention since the health is principally defined by social advantages and disadvantages. Concerning public security during the examined period, most of the people are afraid of becoming victims of burglary and pickpocketing. There are changes regarding the level of public security in different districts of the city: based on the data collection Kertváros and Meszes have the lowest level of public security. Regarding traffic safety the significantly decreasing number of fatal road accidents, which is the most common type among accidental deaths all over the world, is a positive change.

Non-governmental organisations (NGOs) with the profile of promoting healthy lifestyle and creating healthy urban area are almost invisible for the local community. Concerning their activity the statements of the first health profile is still valid, namely that the actual activities in the NGOs do not serve the participation of city-level decision making processes, as well as they do not represent or mediate the interests of the groups of citizens they wish to represent. The effects of local health policy initiations regardless the activities and initiations of the Healthy Cities Foundation cannot be seen at present. The statements of the first health profile are still valid concerning the fact that the citizens do not feel that they had the possibility to give their opinion during the strategic decision making processes of the city council. However the attention and the interest of the citizens has not changed significantly, since it is still true that people do not attend public hearings and citizens' forums, or if they do they do not want to deal with those problems that the public hearing or forum aims at. Thus regarding the local health policy making neither the actors of the political life nor the civil sphere play active role.

#### 4.2. Life-style effects influencing health among the citizens

The health takes as a value within the individual value preference is significant from the viewpoint of examining health influencing lifestyle effects. The respondents evaluated eight value factors based on where the given value is positioned among the values of their everyday lifestyle.

*Table 1: The change in evaluating the order of values regarding everyday life 1995, 2012*

<i>How important value is for you the ...</i>	<i>rank in 1995</i>	<i>rank in 2012</i>	<i>change</i>	<i>t-test</i>
proper health	1	1	0	$p \leq 0.001$
harmonious family life	2	2	0	$p \leq 0.001$
peace of mind	6	3	3	$p \leq 0.001$
clean environment	7	4	3	$p \leq 0.001$
good human relations	8	5	3	$p \leq 0.001$
stable workplace	4	6	-2	$p \leq 0.001$
prosperity	3	7	-4	$p \leq 0.001$
professional success	8	8	0	$p \leq 0.001$

Comparing the results of the two data collections it can be seen that the adult citizens of Pécs still value good health the most. Harmonic family life is also stayed important, while the importance of spiritual peace, clean environment and quality relationship with others has increased. The importance of secure jobs, financial well-being weakened, while the position of professional success has not changed.

As well as determining values, questions focused on what people feared the most in their everyday life. Every third adult

citizen (30.3%) feared periods of ill-health the most. This fear is significantly higher among people with a higher education level than among people with a lower education level. Concerning everyday life, the importance of health was less visible since the average of the answers, when applying a five-point scale to the question ‘*How healthily do you live*’, was 3.49.

The evaluation of someone’s own health condition in the researched time frame had improved since earlier, 38.7% of the respondents had considered it ‘good’ or ‘excellent’. By the time of the second survey this figure had increased to 50.2%. The tendency regarding contentment with their own life had also increased: 13.0% of the citizens were explicitly discontent with their lives in 1995, and by 2012 this figure had decreased to 9.4%.

Among the potential risk factors in connection with individual health behavior, respondents considered their own ‘*diet*’ as the most dangerous risk to their health. Special attention has to be paid to the fact that the respondents considered ‘*alcohol consumption*’ and ‘*smoking*’ to be less harmful to their health than for example ‘*bad public security*’, ‘*environmental damage*’ or ‘*emotional problems or problems in their relationship*’.

*Table 2: Averages of evaluation on exposition to impacts influencing health 2012*

<b><i>How much do the following impacts influence your health?</i></b>	<b><i>averages of scales</i></b>
worrying about everyday problems	3.20
own financial circumstances	3.07
environmental damages	3.02
<i>diet</i>	2.73
bad public security	2.71

already existing illnesses	2.66
<i>lack of sports or active exercises</i>	2.50
unemployment or the possibility of it	2.16
living conditions	2.02
workplace conditions	1.99
emotional problems or problems in your relationship	1.79
<i>smoking</i>	1.63
<i>alcohol consumption</i>	1.50

### Smoking

Fifth of the city's adult citizens (21.2%) smokes, but the ratio of daily smokers is 11.5 %. It is a significant improvement compared to the figure of 1995 which was 32.0 %. Two thirds of adults have never smoked (65.4%) and 13.0% have quit smoking. The ratio of habitual smokers among the young generation is significantly lower (10.8%) than among any other age groups. Most daily smokers in Pécs belong to the age group between 30 and 39 (16.1%). There is no statistically significant difference in smoking concerning different education levels. Half of the regular smokers of Pécs smoke less than 10 cigarettes daily. Cigarettes between 11 and 20 are smoked daily by 40.3% of smokers. 9.6% smoke over 20 cigarettes daily. The correspondence analyzes showed that social smokers evaluated their own smoking habits as a great health risk, while regular smokers considered it to be only a medium risk

### Alcohol consumption

Regarding present alcohol consumption habits, 4.7 per cent of the inhabitants of Pécs are considered binge drinkers<sup>3</sup>. They are males

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<sup>3</sup>Binge drinkers are those women and men who consumed in the week preceding the survey more than 7 and 14 units of alcohol, respectively. One unit of alcohol is equivalent to one pint of beer, 200 ml wine or 50 ml liquor.

between the ages of 40 and 49 (7.4%). On the other hand, 60.5% of the respondents consume alcohol less than weekly or none at all. The most of abstainers are among the female inhabitants between the ages of 50 and 59 (54.2%). According to the amount and type of consumed alcohol, the ratio of wine consumers were significantly grown in the period of the survey, however the weekly wine consumption per capita decreased. The ratio of beer consumers also increased, but the weekly beer consumption per capita almost did not change. The rate of spirit consumers is fifty per cent less however the weekly consumed amount did not change significantly.

*Table 3. Changes of alcohol consumption in Pécs between 1995 and 2012*

	<b>proportion of alcohol consumers according to the type of consumed alcohol (%)</b>			<b>weekly average alcohol consumption (liter/person)</b>		
	1995	2012	<i>change</i>	1995	2012	<i>change</i>
wine	40.0	60.3	20.3	2.1	1.53	-0.57
beer	32.0	42.4	10.4	3.2	3.1	-0.1
liquor	17.0	8.7	-8.3	0.29	0.25	-0.04

When asked about the health risks of alcohol consumption, the respondents did not consider their own rate of alcohol consumption to be harmful. In the case of heavy drinkers, the feeling that their own drinking habits may harm their health does appear, but the scale of harm is ambiguous. Moderate drinkers clearly do not find the amount of alcohol they consume to be harmful to their health.

#### Daily sleeping duration

As regards daily sleep duration, the formerly non-optimal situation has become even less optimal in Pécs. In 1995, 54.0% of the adult citizens of the city slept less than eight hours a day. By 2012, this

figure had increased to 61.3%. Regarding the daily sleep duration the explanatory variables did not show statistically significant differences.

### Physical activity

Concerning physical activity, it can be stated that almost fifty per cent of the citizens (42.3%) do not do regular physical exercises. This has not changed since the former survey. The rate of those who do sporting activities more than once a week increases with higher education level: 29.5% of people with less than 12 completed grades and 43.2% with more than 13 completed grades do physical exercises more than once a week. When observed according to age group the correspondence is the other way around: as age advances, the rate of people who do physical exercise weekly decreases. In the age group of 18 to 29 47.5%, while in the age group over 60, 36.6% of people do physical exercises more than once a week. The correspondence analyses showed that the lack of sport and active physical exercise were not considered a health risk by those who do sports weekly, while those who do not do sports at all considered their lifestyle as a risk to their health, but they did not believe it is a serious danger.

### Body Mass Index

The BMI of the respondents was calculated<sup>4</sup> on the basis of the respondents' self-reported height and weight as one of the possible indicators of a healthy lifestyle. According to the present situation, less than 50% of the adult citizens of Pécs have optimal weight.

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<sup>4</sup> BMI categories: < 16 = severe underweight; 16,1 – 18,49 = underweight; 18,5 – 24,99 = optimal weight; 25,0 – 29,99 = overweight; 30,0 – 34,99 = obese; 35,0 < = morbid obese

Optimal weight is typical in women under 40 with at least 13 completed grades. Overweight is mostly typical in men between 40 and 49 with maximum 12 finished classes. The problem of morbid obesity only affects a small group of people. They are typically men under 50 with maximum 12 finished classes. According to the results of the correspondence analyses, both severely underweight and morbidly obese individuals considered their own eating habits as a serious risk to their health. Underweight and obese respondents believed that their diet was not healthy; however, they did not consider it to be a risk

#### *Awareness of health repercussions*

Health behaviour is obviously influenced by awareness and experience related to the health repercussions of different lifestyles. The health risks of which most citizens of Pécs are aware are smoking, alcohol consumption and hypertension. On the other hand, there is less awareness of risks such as drug consumption and diet. Although the respondents were entirely content with their own awareness and information about this topic, 38.6% of them required a fuller awareness of what contributes to a healthy life style and health promotion. In order to obtain information on health protection every seventh adult turns to their family doctors. Thus, besides the healer activity which is the prior activity of family doctors, there is an explicit expectation coming from the citizens towards them concerning the area of prevention. Besides the health professionals the evaluation of the role of broadcasted and printed media is positive, and it is mentioned several times as a significant source of information.

## 5. NEW RESULTS

During the research I made in order to prepare my thesis I had the following results:

1. Based on the structure of the city's health profile published in 1996, and by applying the indicators and the methodological recommendations of WHO Healthy Cities Movement, as well as by using the new results of the international research concerning health profile preparation I elaborated the adaptation of the health profile method for the local needs and possibilities. Within the framework of this I defined those indicators which case valid data could not be gained:
  - 'percentage of population covered by health insurance'
  - 'availability of services in foreign languages'
  - 'poverty'
  - 'age of mothers at time of birth'
  - 'employment of disabled people'

I introduced two supplementary indicators, which can be applied while describing the general picture concerning the city: the indexes of the changes in the number of population (*natural increase, migration balance*) and also the *personal income tax* data as a symbolic indicator of the local economic situation. Over and above that in case of the environment-health indicators I enlarged the earlier prepared situation reports with quantitative data since they were mainly based on qualitative information. Beyond that in case of every indicator I defined the context serving the evaluation of local environment (*national data, data of cities over the population of 100,000*) and instead of using the raw data of the previous profile I used derived values which helped the comparison.

When up-to-dating the health profile I complemented the earlier used tools and techniques with the newly available tools and I also optimized the applied solutions:

- Instead face-to-face questioning I applied telephone survey based on CATI system, thus I reduced the necessary questioning time using a surveyor by 50% while the costs were reduced by 20-40%.
- Further advantage of the telephone survey, is that the received data is immediately available and there is no need for further data clearing. Controlling the answers is incorporated into the process of inquiring, the validity of the data collection is checked 100%, and the data base does not have logical mistakes.
- I completed the applied questionnaire with questions which helped to understand citizens' opinions and evaluations concerning the situations that were described with the application of indicators.
- I enlarged the data analysis technique with the method of correspondence analysis.

2. Following the collection and analysis of the necessary data I elaborated the up-to-date version of the health profile of the city of Pécs.

3. Based on the data of the health profile and on the statements concerning these data I draw the following recommendations for the elaboration of the city's health development plan:

- Measures should be taken to keep students from secondary schools and universities and young adults at home, and an

‘ageing-strategy’ should be prepared and implemented in order to decrease the city’s demographic problems.

- In order to improve the situation of mortality research should be aimed at revealing the reasons behind causes of death within the different population groups since the number of deaths exceeds the national average. During the decision making process special attention has to be paid to the results of health-effect research in order to decrease the risks possibly causing the illnesses of the respiratory system and malignant tumours. For the sake of decreasing the number of abortions, a general program should be started in order to change attitudes and provide information.
- Family doctors for adults and for children as well as district dentists has to be made interested in joining the health prevention activity with increased capacity compared to present activity and to mediate knowledge on how to lead a healthy life.
- For the sake of decreasing environmental-health risks, measures aiming at improving air quality have to appear as a priority in the urban development plan and in different strategic documents.
- Planning and implementing general urban district rehabilitation programmes are necessary in order to improve the life circumstances and health conditions of the people living in segregated areas. Measures and strategic aims improving public safety and traffic safety have to appear in

the different development plans and strategic documents of the city as a priority.

- When planning city events supporting health conscious life, the integration of program elements concerning the different health risks and the possibility of active sport has to be a priority. When planning the program structure of the urban media, knowledge, results and recommendations about healthy lifestyle has to be made a priority.

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## 7. NEW PUBLICATIONS

### Publications connected with the thesis

Girán, J., Kiss, I., De Blasio, A. (2014) *Then and now – revision of city health profile of city of Pécs, Hungary*. Health Promotion International (IF=1,33) DOI: 10.1093/heapro/dau067.

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