1 HEALTH AND LABOUR FORCE STATUS IN HUNGARY AND EUROPE

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In this subchapter, we provide an overview on how the population health in Hungary compares to the European Union average and how strong the relation is between labour force status and health in Hungary and in other European countries. We base the analysis both on survey and administrative data. The topics discussed in this subchapter are covered in more details in later subchapters of the volume.

Health status in Hungary in a European comparison

The average health status of the Hungarian population is not good in a European comparison. In terms of life expectancy at birth, only Latvian, Lithuanian, Bulgarian and Romanian men are in a worse state than Hungarian men, and only Romanian and Bulgarian women than Hungarian women. Hungarian men lag 8.5 years behind Italy, the EU member state with the highest LE, while Hungarian women lag 6.5 years behind the best performing Spanish women.[1] The situation is somewhat better in terms of healthy life expectancy: Hungarian men are ahead of one third of the European countries, and women are in the middle of the range. However, on average, Hungarian men can expect good health only until the age of 60, and Hungarian women until the age of 62, both before the retirement age, as opposed to, for example, the Irish, Maltese and Swedish populations, where on average both men and women can enjoy good health till the age of 70 or even more.

> Differences in total and healthy life expectancy between countries draw attention to the methodological characteristics of the measure of healthy life years. This indicator is based on subjective self-assessment and can therefore be influenced by a number of external factors, such as the health status of reference groups, or knowledge about health itself. This may explain the quite large differences between countries in terms of the "non-healthy" life years, which is only 7–8 in Sweden and Bulgaria, and more than 22 in Austria. These differences may be rooted in objective differences in health status but can also be caused by differences in the perception and evaluation of health.

The population-level health status indicators (such as average life expectancy for all males and females), however, mask the inequal distribution of health status across different groups in a society, although there are significant differences between European countries in this respect. In Hungary, as in all Visegrad countries, there are enormous differences between the health status of different social groups, while in the Scandinavian or Mediterranean countries

1 Life expectancy at birth data are based on the Eurostat [demo_mlexpec] data set, healthy life expectancy data are based on the Eurostat [hlth_hlye] data set. Both refer to 2018 (downloaded: July 2020).

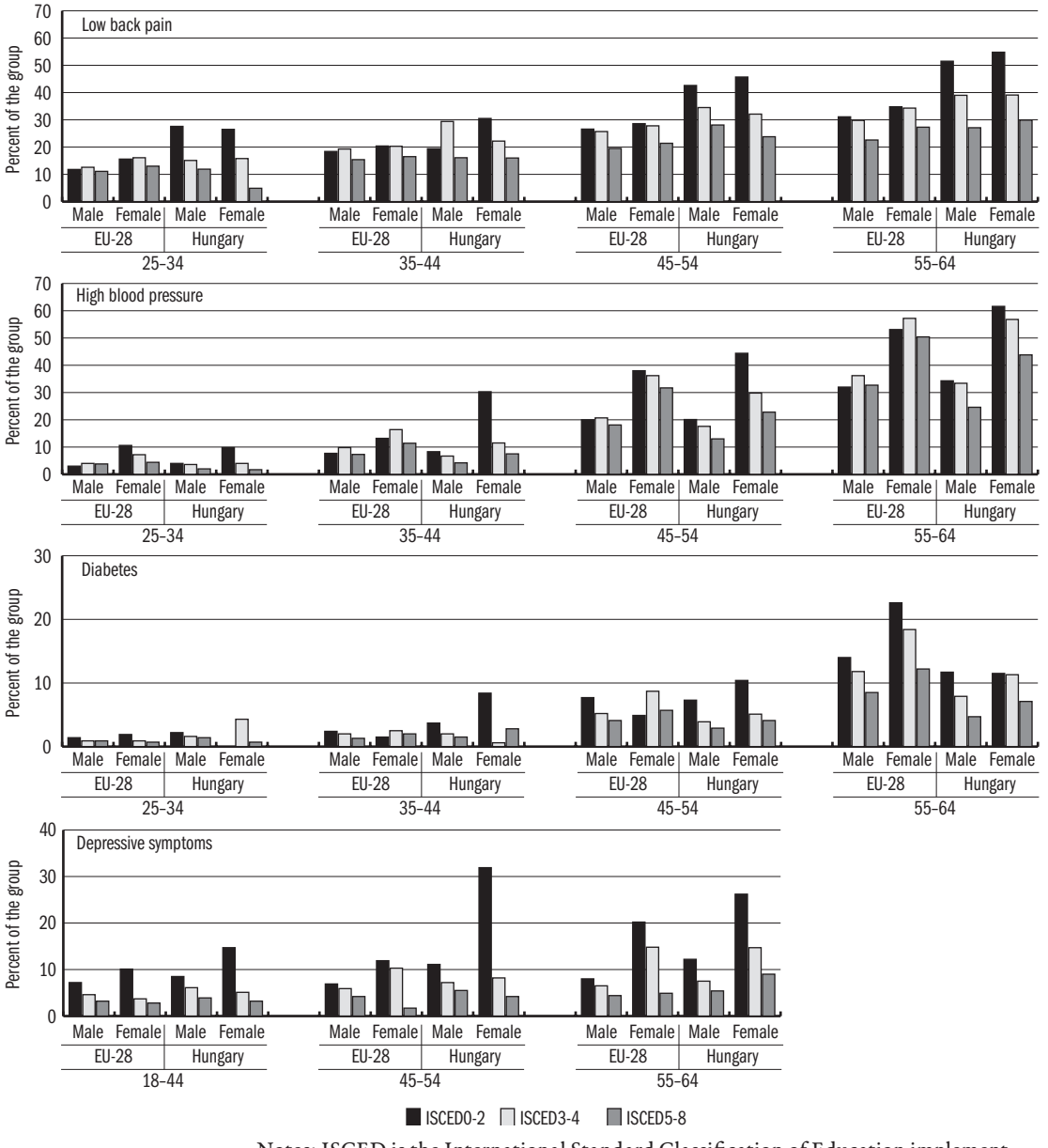
these differences are particularly low (*Orosz–Kollányi*, 2016). This means that Hungary's disadvantage in terms of average health status presented above does not stem from an overall poorer health of everyone in the society, but specifically from the severe disadvantages of those with lower socioeconomic status (SES). While Hungarian men with tertiary education as the highest level of educational attainment are, for example, only 4–5 years behind Swedish or Italian men with the same educational attainment; in the case of poorly educated Hungarian men (with lower-secondary education at most) this disadvantage is twofold, 11–12 years. Accordingly, in Hungary, the difference between those with low and high educational attainment is much larger. In Italy, a man with tertiary education can expect 4, in Sweden, 4.5 years longer life than a man with lower-secondary education at most: in Hungary, this difference is 11 years.[2]

Below, we present the incidence of three chronic physical health problems (low back pain, diabetes, hypertension) and one mental condition (depressive symptoms) by education and age, based on data from the 2014 wave of the European Health Interview Survey (EHIS) for the adult population. Diabetes and hypertension are the most common non-communicable diseases, and are major risk factors for or closely related to leading causes of death; low back pain, on the other hand, does not appear directly in mortality data, but can significantly impair quality of life and one's labor supply. All these measures are based on self-reported indicators. In the case of physical illnesses, respondents were asked directly if they have the illness/symptoms in question, while in the case of depressive symptoms, they were asked various indirect questions regarding their mood and well-being. This makes a significant difference between the two types of indicators: a person to be able to report a pronounced chronic illness either has to have a medical diagnosis, or has to have sufficient information and knowledge regarding both their own health and the condition in question. Because those with higher socioeconomic status are typically in a better position in terms of both access to health care and knowledge about health (*White et al*, 2009), we can assume that regarding diabetes and high blood pressure the indicator is more accurate among those with higher social status, and underestimates the frequency of actual illness in those with lower SES. In the case of low back pain and depressive symptoms, we should expect less of such a distortion.

Figure 1.1 clearly shows that for both sexes, in all three educational groups and in all age groups, almost without exception, these diseases are more common in Hungary than in the EU28 average. This means not only that more people fall ill, but also that these diseases appear in Hungary at a typically younger age. For example, in the EU28, prevalence of high blood pressure in men in all three education groups reaches a frequency of 30% only among those aged 55–64 years, while in Hungary a 30% prevalence appears ten years earlier, in the age group of 45–54 years.

2 The data are from Eurostat's "Life expectancy by age, sex and educational attainment level" [demo_mlexpecedu] data set and refer to 2017.

Figure 1.1: Prevalence of certain physical conditions and depressive symptoms by country group, sex, age group and educational attainment level, 2014



Notes: ISCED is the International Standard Classification of Education implemented by Eurostat. ISCED0–2 level refers to those with lower-secondary education at most (eg. vocational training with no high school diploma); ISCED3–4 level refers to those with upper-secondary and post-secondary non-tertiary education; while ISCED 3–5 level refers to different levels of tertiary education.

Data sources: *Eurostat* [hlth_ehis_cd1e] and [hlth_ehis_mh1e] datasets; aggregated data from *European Health Interview Survey*.

At the same time, significant social inequalities can be detected in Hungary, for example, in relation to diabetes and low back pain. Among lowly-educated men, the proportion of those living with diabetes in the age group of 55–64 is almost twice as high as among those with tertiary education in the same age group, while there is no such difference detectable in the EU28 average: the prevalence of diabetes in these two educational groups is almost the same. The pattern of low back pain in the EU28 average is very similar in all education groups, with some gender differences; in Hungary, this complaint appears in a much younger age, and is more widespread among the uneducated (30% of 25–34 year old, female and male, report low back pain, while this proportion is only 5–10% among graduates in this age group). However, in terms of high blood pressure no such difference can be detected in the youngest examined age group in Hungary either.

The pattern of depressive symptoms among those under 45 and those aged 55–64 is similar in the two country groups, except that differences in education and gender are much more pronounced in Hungary. At the same time, the outstanding values of low-skilled Hungarian women in general, and especially in the age groups of 45–54 years deserve closer attention. In this group, the incidence of depressive symptoms is three times as prevalent as either among EU28 women with similar educational attainment, or as among low-skilled Hungarian men. When speaking of health status, we mostly think of physical rather than mental health, which is sadly consistent both with the perception and attitudes of the Hungarian population towards mental illness (*Sztancsik*, 2017) and with the quality of the Hungarian health care system's capacity to treat mental illness (*Turnpenny et al*, 2017). However, as can be clearly seen on *Figure 1.1,* and as will be outlined later in this subchapter, mental health is a crucial element of the complex system surrounding health status, both in terms of the socioeconomic determinants and the socioeconomic effects of health.

Employment and health among older adults in a European comparison

The SHARE[3] (*Survey of Health, Ageing and Retirement in Europe*) is a rich data source about the health and labour market participation of people above age 50. SHARE provides internationally harmonized, multidisciplinary panel data about the health, employment, and socio-economic status of the European Union's member states' population above age 50, which are collected bi-annually and are available free of charge. We compare the health of working and non-working older adults using SHARE data.

Hungary joined the SHARE project in 2011 (wave 4) and the next data collection took place in 2017 (wave 7), when from the 3000 original respondents approximately 1500 once again participated.[4] As the Hungarian sample

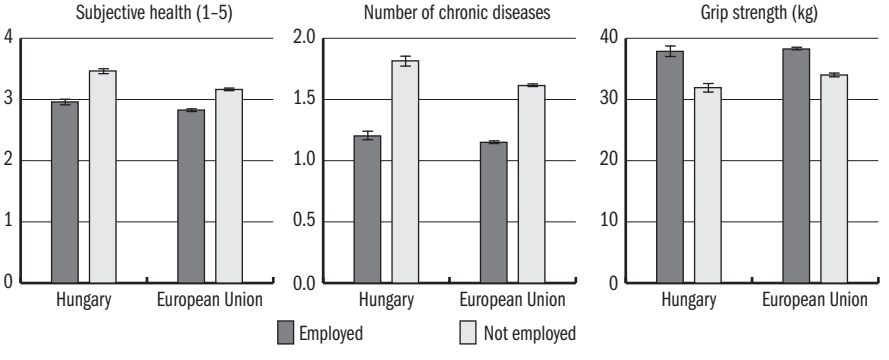
3 We use data from SHARE waves 1, 2, 3, 4, 5, 6 and 7, see *Börsch-Supan et al* (2013) for methodological details. The SHARE data collection has been primarily funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARE-LIFE: CIT4-CT-2006-028812) and FP7 (SHARE-PREP: N°211909, SHARE-LEAP: N°227822, SHARE M4: N°261982). Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

4 Countries covered by wave 7 of SHARE: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Netherlands, Croatia, Ireland, Poland, Latvia, Lithuania, Luxembourg, Hungary, Malta, Germany, Italy, Portugal, Romania, Spain, Switzerland, Sweden, Slovakia, Slovenia. (Israel also participated, however it is not included in our analysis as it is outside Europe.)

from 2017 only includes panel respondents from 2011, we cover the population above age 57; there are 453 respondents who are active-aged, that is below 65, 267 women and 186 men. In the following paragraphs we compare the health of the older but active-aged group between age 57 and 64, based on their employment status. Employed people were defined as those who reported to be working (as an employee or self-employed), while the category 'not employed' included old-age pensioners, the unemployed and homemakers. The long-term sick and the disabled were not included in our analysis. Our Hungarian sample contains 170 employed individuals and 230 individuals who are not employed.[5]

The SHARE database includes several health-related indicators: self-reported general health of respondents, number of chronic diseases, and occurrence of various diseases. Results from a grip strength test are also available, which are related to the general physical condition of older adults. *Figures 1.2* and *1.3* show the average value of these indicators among the old yet active-aged population in Hungary and in the other European countries, separately for the employed and not employed groups. We see that older adults who are employed are healthier on average both in Europe and in Hungary. We also observe that Hungarians' health tends to be worse than the European average, especially among the non-employed.

Figure 1.2: Subjective health, number of chronic diseases and grip strength by employment status



Note: Average self-reported subjective health ranging from 1 (excellent) to 5 (poor), average number of chronic diseases, and average grip strength (kilogram) among the population aged 57–64. For each indicator, the 95 percent confidence interval of the mean is presented.
Source: *SHARE* Wave 7.

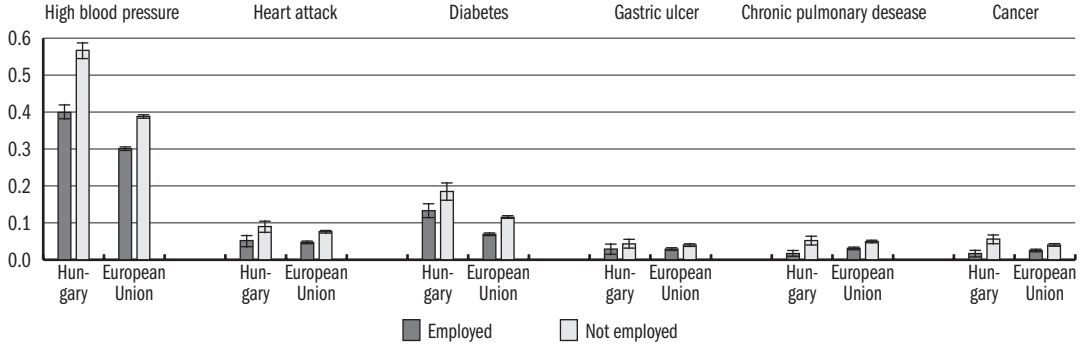
Figure 1.2 indicates that in Hungary the older middle aged who are employed perceive their health as good on average, while subjective health is only between good and fair among the non-employed. The European averages are higher by only a one-tenth of a category in the case of the employed and ap-

5 In a similar study *Bíró et al.* (2019) analyzed women aged 50–59. Here the reported indicators are similar but the results are based on the more recent data of 2017 and refer to the older age group of 57–64, including both men and women.

proximately by a third of a category among the non-employed. In Hungary, the non-employed suffer from close to two chronic diseases on average, while the employed fight only around one disease. The European average is similar to the Hungarian for the employed group, but it is significantly lower among the non-employed. The grip strength test shows that – in line with our expectations – the grip is weaker of the non-employed. We also see that the gap between the Hungarian and European working elderly is negligible, while our lag from the European average is significant, when comparing the non-working groups.

According to *Figure 1.3* a strikingly high share (57%) of the non-working older middle-aged population suffer from high blood pressure in Hungary (compared to the European average of 39%), and in this case the difference is also notable between the non-working groups in Hungary and Europe (40% vs. 30%). The prevalence of heart attack, diabetes and chronic lung disease is higher among the non-employed than among the employed, though the difference is significant only on the larger European sample and not in Hungary. Except for chronic lung disease and cancer, which are exceedingly rare (and significantly rarer) among the working group, in Hungary as well (*Figure 1.3*).

Figure 1.3: Prevalence of diseases by employment status



Note: The average rate of prevalence of diseases among the population aged 57–64. The 95 percent confidence interval of the mean is presented.
Source: *SHARE* Wave 7.

Based on the earlier SHARE sample from 2011, *Kézdi–Divényi* (2012) found that the employability of individuals with the best health and cognitive skills in the 50–59 age group in Hungary is similar to the European average, while the employability of those in a worse condition is lagging behind. They showed that the gap between the Hungarian and German employment rate decreases once we control for cognitive skills and health next to demographic indicators. Partly reproducing these linear models (where the dependent variable is employment of the individual) on the same data, we found that the 20 percentage points difference between the employment of women aged 50–59 in

Hungary and Germany would decrease to 12 percentage points if both the demographic composition and the health of the population were to correspond to the German average (*Bíró et al*, 2018). Using the more recent data from 2017 and studying both men and women of age 57–64, we again find that the Hungarian employment is 20 percentage points lower than the German, and in this case the difference would be 15 percentage points if the two groups' demographics and health status were to be similar (*Table 1.1*).

Table 1.1: Differences in employment rates between countries, controlling for age, qualification, and the distribution of health, among individuals aged 57–64

	(1)	(2)	(3)
Hungary	−0.200***	−0.165***	−0.152***
	(0.0258)	(0.0254)	(0.0249)
Country dummies (reference: Germany)	yes	yes	yes
Sex and age variables	yes	yes	yes
Educational attainment	–	yes	yes
Indicators of health status	–	–	yes
Number of observations	17,003	17,003	17,003

Note: Robust standard errors in parentheses.
Age variables: age in years and age squared, educational attainment based on ISCED, indicators of health status: number of chronic diseases, grip strength, subjective health.
*** $p < 0{,}01$, ** $p < 0{,}05$, * $p < 0{,}1$.
Source: Authors' compilation based on data from *SHARE* Wave 7.

Employment and health based on administrative data from Hungary

We analyse the relationship between labour force status and health in Hungary, using the administrative dataset (Admin3) of the Centre for Economic and Regional Studies (CERS). The Admin3 includes labour and health related indicators for a 50 percentage element of the Hungarian population. The data was processed by the Databank of CERS and is available for research purposes.[6] We use monthly data between years 2009–2016 and restrict the sample to people aged 20–60. We capture the health status with the help of quarterly indicators of the consumption of drug categories (did the individual purchase any drugs in the given category), where the categories are defined based on the *Anatomical Therapeutical Category* (*ATC*) system. We focus on seven drug categories, capturing various physical and mental health problems: 1) antidiabetics (ATC A10); 2) antihypertensives (ATC C02-09); 3) antibiotics (ATC J01); 4) musculo-skeletal system (ATC M); 5) psycholeptics (including tranquillizers, ATC N05); 6) psychoanaleptics (including antidepressants, ATC N06); 7) drugs for obstructive airway diseases (ATC R03). We also analyse three-year mortality rate. Using linear regressions, we net out gender specific age effects and calendar year effects.

6 A brief overview of the data is provided in the Appendix, a longer description is given by *Sebők* (2019).

It is important to note the following. Firstly, drug consumption has limitations in capturing health status due to differences in health behaviours, in access to care and the imperfections of drug consumption as a health measure.[7] Secondly, our analysis is of descriptive and not causal nature because there are two-way causal relations. Labour force status affects health, while health might also have an impact on labour force status. Further subchapters of this volume provide results related to the mechanisms underlying our findings.

Employment and health

We first analyse, what is the relation between employment and the consumption of the selected drug categories.[8]

The results reported in *Table 1.2* indicate that the relation between employment and health is stronger for mental health than for physical health. Looking at the physical health indicators, diabetes and obstructive airway diseases as indicated by drug consumption imply 6–9 percentage points lower employment rate. We do not see such differences in the case of the consumption of antihypertensives, drugs of the musculo-skeletal system and antibiotics. As for antibiotics, the observed relation is the opposite, the employment rate is 9 percentage points among those who take antibiotics, which might be because those who are employed are more willing to visit a physician so as to maintain their working capacities (and thus take antibiotics).

Table 1.2: Employment rate by drug consumption and three-year mortality (net out gender, age and calendar year effects, percentage)

	Employment rate		Consumption rate in the sample
	consumes	does not consume	
By consumption of antidiabetics (ATC A10)	45.0	51.2	3.1
By consumption of antihypertensives (ATC C02–09)	53.5	50.5	17.0
By consumption of antibiotics (ATC J01)	58.6	50.1	10.9
By consumption of musculo-skeletal system drugs (ATC M)	49.9	51.1	8.3
By consumption of psycholeptics (ATC N05)	20.7	52.0	3.2
By consumption of psychoanaleptics (ATC N06)	35.2	51.5	3.4
By consumption of obstructive airway diseases drugs (ATC R03)	42.6	51.2	2.4
	Employment rate		Three-year mortality rate in the sample
	deceased (3 years)	alive (3 years)	
By three-year mortality	20.6	51.7	1.40

Source: Own calculations based on Admin3 data (2009–2016).

7 For instance, the diagnosis of diabetes varies across groups within the society. Also, the consumption of antidiabetics is not a perfect indicator of diabetes, since antidiabetics can be prescribed for other diseases, as well (such as PCOS).

8 We measure employment with a binary indicator which equals 1 in the case of any kind of employment (including self-employment), conditional on non-zero recorded earnings in the given quarter of the year.

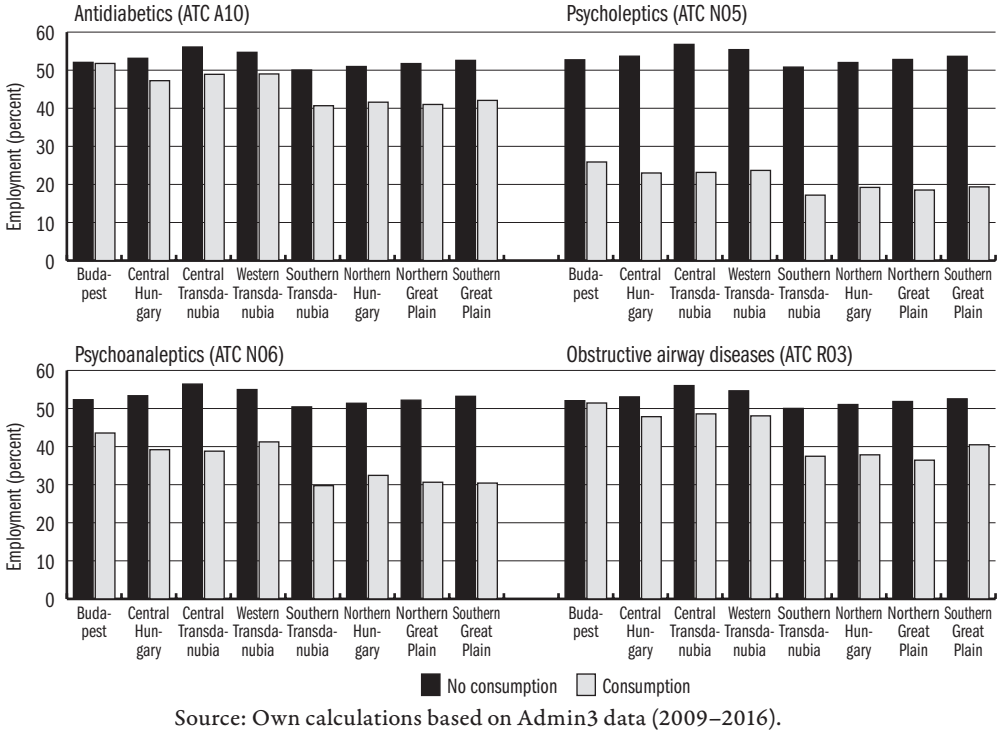
We also see that employment rate is more than 30 percentage points lower among those who died within three years; thus those whose health is the worst.

Heterogeneity by regions

Next, we analyse, if there are regional differences in the relation between employment and drug consumption. We focus on the consumption of those four categories of drugs for which we observed non-negligible differences by employment on the country level.

The results of *Figure 1.4* show that the differences in employment by drug consumption are much higher in Eastern Hungary than in North-West and Central Hungary. The patterns are strikingly different between Budapest and the Eastern regions. Among the healthy individuals (those who do not consume a specific drug), the differences in employment rates among regions are around 1–4 percentage points. On the other hand, among the sick individuals (those who do consume a specific drug), these differences are much higher, comparing Budapest and the Northern Great Plain, the differences are between 7–15 percentage points.

Figure 1.4: Employment rate by drug consumption and regions



Source: Own calculations based on Admin3 data (2009–2016).

Conclusions

In this subchapter, we found, based on European comparisons, that the health of the population of Hungary lags behind the European Union average especially among the less educated and those who are not working. We also found that among the 57–64 year old individuals, the lower employment rate as compared to Germany can be explained only to a small extent by worse health status, while among the 50–59 year-old individuals (based on earlier data), the role of worse health status was much higher in explaining employment differences.

Using administrative data from Hungary, we showed that among those who have physical diseases or mental illnesses (as captured by drug consumption), the rate of employment is substantially lower. These differences are stronger in the case of mental diseases than physical diseases. Finally, we found that in the poorer regions of Hungary, there are stronger differences in employment by health status (as captured by drug consumption).

Overall, it is essential to improve the health of the individuals who are in a worse socio-economic status, in order to decrease the health gap compared to Western Europe, and also to increase the rate of employment.

References

BERGMANN, M.–SCHERPENZEEL, A.–BÖRSCH-SUPAN, A. (eds.) (2019): SHARE Wave 7 Methodology: Panel Innovations and Life Histories. Munich Center for the Economics of Aging (MEA), München.

BÍRÓ, A.–BRANYICZKI, R.–ELEK, P. (2019): Human capital, part IV. Health and labour market participation among women. In: *Fazekas, K.–Szabó-Morvai, Á.* (eds.) (2019) The Hungarian Labour Market, 2018. Centre for Economic and Regional Studies, Budapest.

BÖRSCH-SUPAN, A. (2019): Survey of Health, Ageing and Retirement in Europe (SHARE), Wave 7. Release version: 7.1.0. SHARE-ERIC. Data set.

BÖRSCH-SUPAN, A.–BRANDT, M.–HUNKLER, C.–KNEIP, T–KORBMACHER, J.–MALTER, F.–SCHAAN, B.–STUCK, S.–ZUBER, S. (2013): Data Resource Profile: The Survey of Health, Ageing and Retirement in Europe (SHARE). International Journal of Epidemiology, Vol. 42, No. 4, pp. 992–1001.

DIVÉNYI, J.–KÉZDI, G. (2013): Low employment among the 50+ population in Hungary: the role of incentives, health and cognitive capacities. In: *Börsch-Supan, A.–Brandt, M.–Litwin, H.–Weber, G.* (eds.): Active ageing and solidarity between generations in Europe: First results from SHARE after the economic crisis. Gruyter, Berlin, pp. 77–90.

OROSZ, É.–KOLLÁNYI, ZS. (2016): Health status, health inequalities in international comparison. In: *Kolosi, T.–Tóth I. Gy.* (eds.): Social Report, 2016. Tárki, Budapest, pp. 237–257.

SEBŐK, A. (2019): The Panel of Linked Administrative Data of KRTK Databank. Working Papers on the Labour Market (BWP) 2019/2. Institute of Economics, Centre for Economic and Regional Studies, Budapest.

SZTANCSIK, V. (2017): A skizofrénia betegség reprezentációja és a megbélyegzés. [Representation pf schizophrenia and stigma.] Debreceni Egyetem Bölcsészettudományi Kar, Humán Tudományok Doktori Iskola, Pszichológiai Program, Debrecen.

TURNPENNY, Á.–PETRI, G.–FINN, A.–BEADLE-BROWN, J.–NYMAN, M. (2017): Mapping and understanding exclusion: Institutional, coercive and community-based services and practices across Europe. Mental Health Europe–Tizard Centre, Brussels.

WHITE, M.–ADAMS, J.–HEYWOOD, P. (2009): How and why do interventions that increase health overall widen inequalities within populations? In: *Babones, S.* (ed.): Social Inequality and Public Health. The Policy Press, Bristol, pp. 65–82.