3 EMPLOYEE HEALTH

3.1 LABOR INCOME, HEALTH STATUS, AND HEALTHCARE SPENDING

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Introduction

Hungary, like other developed countries gives nominally equal access to necessary healthcare and prescription drugs to everyone. Patients can use inpatient and outpatient care free of charge, while prescription drugs are subsidized to varying degrees. At the same time, the literature documents substantial barriers to access (*Lucevic et al*., 2019), as well as regional differences in spending (*Orosz*, 1990, *Nagy* 2010, *Fadgyas-Freyler–Korponai*, 2016, as well as *Subchapter 2.1* in this book). In this subchapter, we examine geographic and income-related inequalities and the relationship between these two dimensions of inequality using the "admin3" database of the Centre for Economic and Regional Studies Databank.[1]

The database contains monthly employment and income data for the period 2003–2017 and healthcare spending data for the period 2009–2017 for a quasi-random 50% sample of the Hungarian population.[2] Our sample includes 18–60-year-olds with full-year, full-time employment. We link year t income with year $t + 1$ healthcare spending (and 3-year mortality rates measured in year $t + 1$) in order to limit the influence of health on income. We adjust healthcare indicators and mortality for age, gender, and calendar year. The outcomes examined include mortality rates, inpatient spending, specialty outpatient spending, and prescription drug spending. In the latter category, we use the sum of social security spending and patient spending. We examine healthcare spending inequality by region[3] and the relationship between spending and income dividing income into ventiles (20 equal-sized groups).

We document four patterns: 1) substantial heterogeneity in healthcare spending across regions; 2) positive association between labor income and public healthcare spending; 3) geographic variation in the strength of the association between labor income and healthcare spending; and 4) negative association between labor income and mortality. Based on these, we conclude that in Hungary higher-income workers are healthier than lower-income workers, while social security spending on higher-income workers is also higher than spending on lower-income workers.

Geographic inequality in healthcare spending

Figure 3.1.1 shows inpatient spending, specialist outpatient spending, and prescription drug spending by region. In line with the previous literature, there

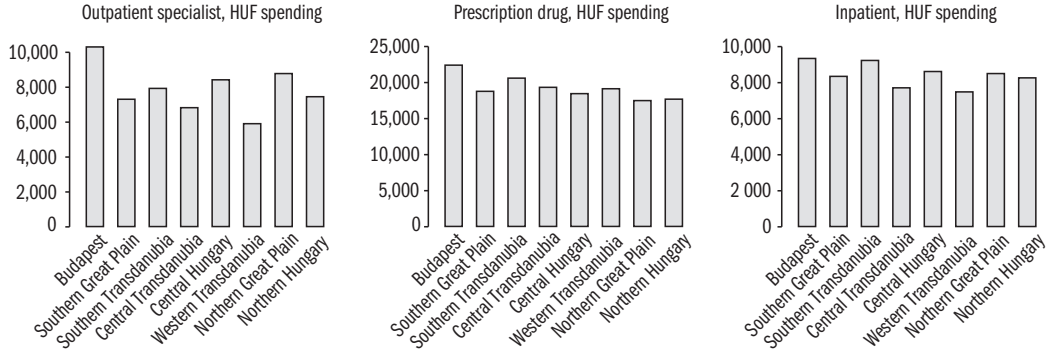
1 For a short description of the database, see the Appendix of the *In Focus* section. For more details, see *Sebők* (2019).

2 *Bíró–Prinz* (2020) examined healthcare spending inequality for the 2003–2011 period using an earlier version of the administrative database.

3 Budapest, Central Hungary outside Budapest, Central Transdanubia, Western Transdanubia, Southern Transdanubia, Northern Hungary, Northern Great Plain, Southern Great Plain.

are substantial inequalities across regions which are not explained by demographic differences (e.g., age structure). Differences are the largest for specialist outpatient care and prescription drug spending. Outpatient spending is highest in Budapest, 74% higher than in the lowest-spending region (Western Transdanubia). We also find the highest prescription drug spending in Budapest, 28% higher than in the lowest-spending region (Northern Great Plain). Differences are somewhat smaller for inpatient spending, which are 25% higher in Budapest than in the lowest-spending region (Western Transdanubia).

Figure 3.1.1: Regional differences in annual healthcare spending (adjusted for age, gender, and calendar year)



Source: Authors' calculation based on "admin3" data for 2009–2017.

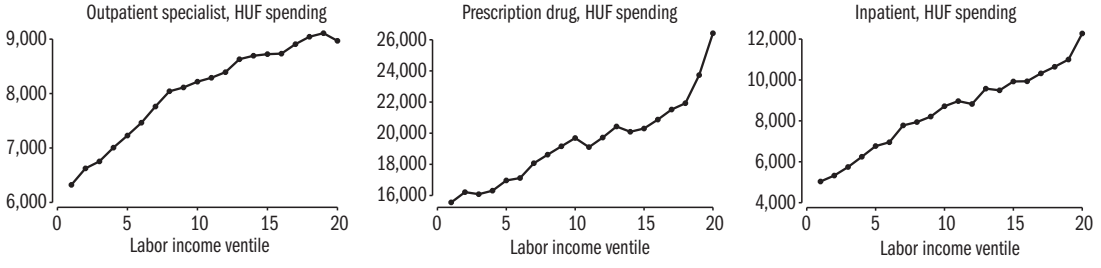
Association of healthcare spending and labor income

Figure 3.1.2 shows the relationship between labor income and healthcare spending. In each category, there is a positive relationship between spending and labor income. In the top ventile (workers with the highest 5% of annual labor income), outpatient spending is 42%, prescription drug spending is 70%, and inpatient spending is more than 100% higher than in the bottom ventile (workers with the lowest 5% of annual labor income).

Figure 3.1.3 shows the inequality by labor income separately for prescription drug spending categories (ATC – Anatomical Therapeutic Chemical). It is apparent that higher-income workers have higher spending in each category, but the strength of the spending-income relationship varies across categories. Inequality is largest in both absolute and relative terms for Antiinfectives for systemic use (ATC J, e.g., antibiotics) and for Antineoplastic and immunomodulating agents (ATC L). We find substantial inequality for Alimentary tract and metabolism (ATC A, mostly prescription drugs used to treat diabetes) and for Cardiovascular system medications (ATC C, mostly anti-hypertension and cholesterol medications). We find moderate inequality in both absolute and relative terms for Musculo-skeletal system (ATC M), Nervous

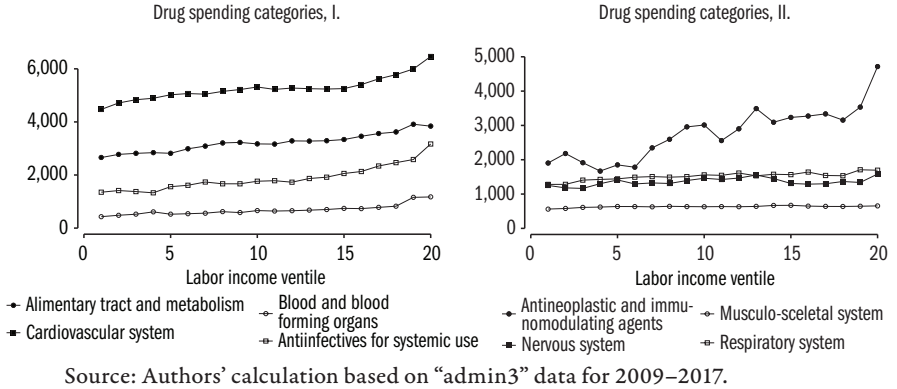
system (ATC N, including antidepressants and anxioliytics) and respiratory system (ATC R) drugs. Spending on Blood and blood forming organs medications (ATC B) is relatively low but the difference between the bottom and top ventiles is more than two-fold.

Figure 3.1.2: Annual indicators by ventile of labor income (adjusted for age, gender, and calendar year)



Source: Authors' calculation based on "admin3" data for 2009–2017.

Figure 3.1.3: Annual prescription drug spending by labor income ventile and therapeutic group (adjusted for age, gender, and calendar year)



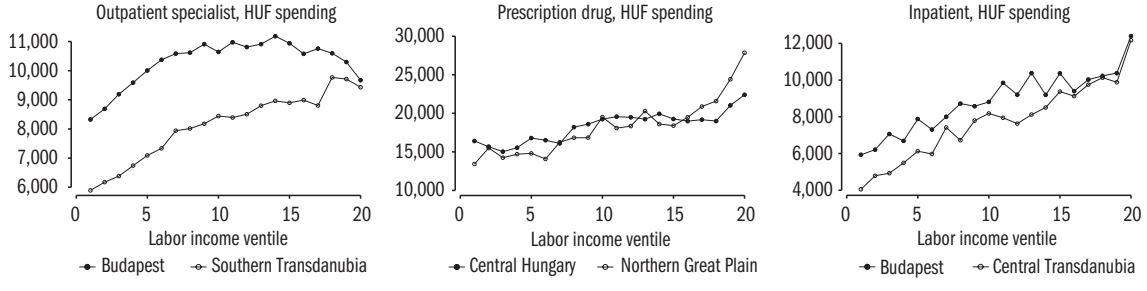
Source: Authors' calculation based on "admin3" data for 2009–2017.

Further calculations also show that inequality by income is not only present for prescription drug spending but also for the likelihood of having any spending, though this inequality also varies across therapeutic groups. When examining the likelihood of taking any prescriptions, we use a binary indicator for whether individuals falling in a particular income ventile used any drug in a therapeutic group (yes/no). For example, for cardiovascular drugs there is a 3% (0.1 percentage point) difference in the likelihood of taking any drugs between the bottom and top income ventile, while for alimentary tract and metabolism medications the difference is 18% (2.6 percentage points), and for respiratory system drugs it is 60% (6.2 percentage points). Overall, we find a positive relationship between income and both the likelihood of taking any drugs and drug spending.

Geographic dimensions of healthcare spending inequality

So far we have demonstrated that among workers, there is substantial geographic and income-related inequality in healthcare spending. One can also examine whether inequality by income is different across different geographic regions. *Figure 3.1.4* shows the relationship between healthcare spending and labor income in different regions. In each figure we show the most and least equal region for the particular indicator, defining income ventiles at the national level. The figure suggests that there is substantial within-region inequality in healthcare spending by labor income and that the degree of inequality varies across regions. For specialist outpatient care, the national difference is 42% between the lowest and highest income ventiles; in the most equal – Budapest –, the difference is 16%, while in the least equal – Southern Transdanubia –, it is 60%. For prescription drugs, the national difference is 70%; in the most equal – Central Hungary –, the difference is 36%, while in the least equal – Northern Great Plain –, it is 107%. For inpatient spending, the national difference is 244%; in the most equal – Budapest – the difference is two-fold, while in the least equal – Central Transdanubia –, it is three-fold.

Figure 3.1.4: Inequality by labor income in different regions (adjusted for age, gender, and calendar year)



Source: Authors' calculation based on "admin3" data for 2009–2017.

Association of health status and labor income

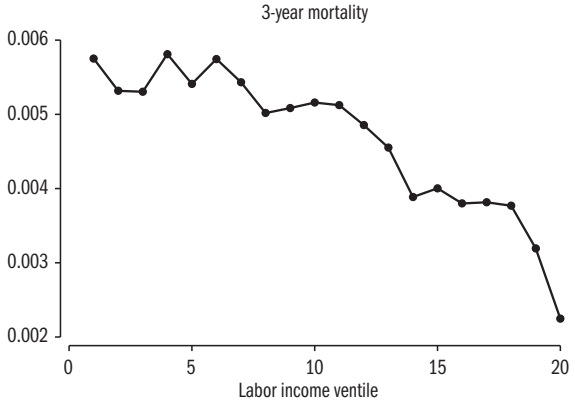
It is difficult to analyze the true health status of workers using our administrative data. Perhaps the easiest-to-examine and most reliable measure is mortality. *Figure 3.1.5* shows 3-year mortality by ventile of labor income. It suggests that higher-income individuals have lower mortality, and consequently they are likely to be healthier – the difference between the top and the bottom ventiles is almost three-fold.

Conclusion

Our analysis suggests that although in Hungary everyone has nominal access to social security-funded healthcare, regardless of income or geographic location, there are substantial inequalities in healthcare use between geographic regions and income groups. Among the working population, higher-income

groups use more care: they have higher inpatient spending, specialist outpatient spending, and prescription drug spending. The degree of inequality by income differs across regions. We also find that that while higher-income individuals use more care they are also healthier; for example, their mortality is lower. In this subchapter, we did not directly examine access to care, though it is likely that inequalities in healthcare spending are related to inequalities in access to care, as *Subchapter 2.1* discusses in more detail.

Figure 3.1.5: 3-year mortality by labor income ventile



Source: Authors' calculation based on "admin3" data for 2009–2017.

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