Costs of Health Care across the Austrian Federal States
Methodology of Estimation

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In this report, we describe the methodology used to estimate the expenditures on health care across the Austrian federal states for the project *Fact Book Leistungskraft regionaler Gesundheitssysteme*.[1] Surprisingly, up to now, a comprehensive dataset describing the health care expenditures across the federal states in Austria has been missing. These made the comparison of efficiency of the health care systems across the federal states as such impossible.

Although the health care system in Austria is considered to perform well, its financing is organized in a very complicated way. The financing responsibilities are shared by many actors (private households, private insurance providers, providers of compulsory social insurance, all levels of government, etc.). Therefore, identifying the health care expenditures on the level of federal states is a complicated task. As precise data are not accessible for many expenditure categories, we used simple and comprehensible methods to to approximate the expenditures.

We do realize many caveats of our simple approach. However, we view our work as the first step in closing the gap in the data availability to researchers and policy makers. We hope that in the future, relevant institutions will take over this task (Statistik Austria, BMG, HVSV).

The data used in the estimation procedure were mostly collected during the second half of 2017 and has generally not been updated since. Due to this fact, the availability of the indicators could have increased covering more recent years in the meantime or the values might have changed slightly due to data revisions by the issuing institutions.

The Database information is provided in English, with German formulations used occasionally for higher precision.

[1] Hofmarcher, M.M., Z. Molnárová (2018). Fact Book Leistungskraft regionaler Gesundheitssysteme. HS&I Projektbericht. Projekt mit Unterstützung von Philips Austria. Wien August 2018. http://www.HealthSystemIntelligence.eu/RegionalFactBook

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General approach

The starting point for our estimates are the expenditures on national level according to the System of Health Accounts (SHA), reported by Statistik Austria. The SHA tables are available at annual frequency and provide the health expenditures disaggregated along three dimensions: functions, providers and financing schemes. In the ideal case, the corresponding expenditures by category would be available at the level of federal states. As this is typically not the case, we use approximation methods to split the national-level expenditures between the federal states.

For each expenditure category, we use available expenditure data (or related) to construct a *distribution key*. The distribution key gives the share of the national expenditure that corresponds to the population of each federal state.

$$Expenditure_{State} = Share_{State} \cdot Expenditure_{National}$$

Ideally, the expenditure data used to construct the distribution key sum roughly to the national level expenditure according to the SHA – so that the distribution is close to exact. Because our focus is on the health system as a whole, and due to the lack of available data, our expenditure categories are considerably less detailed in comparison to the national-level SHA tables. Although we do distinguish between the financing schemes, we typically do not construct the estimates separately according to providers and we scale down the number of categories according to function.

As an example we look at category *Home health care: households as providers of health care services*. Roughly 92% of expenditures in this category are public. We use public expenditures on care subsidies (Pflegegeld) to construct the distribution key for the public expenditures. The remaining 8% of expenditures are private. As we do not have any source of information about the private expenditures in this category at the level of federal states, we divide them proportionally to the population size. We do not further distinguish between SHA categories by function: curative, rehabilitative and long-term care.

Our aim is to understand the health system available to the population living in each federal state, and the differences between these systems. Therefore, we assign the health costs to the federal states based on the residence principle – the estimate for each state features the health-related costs for goods and services consumed by the state's inhabitants.

In this spirit, we make two adjustments of the state-level expenditure estimates. First, we adjust the expenditures on hospital care, to account for patient flows between the federal states. Second, in order to get per capita values that are comparable across the federal states, we take into account the different demographic risks across the federal states.

Aggregate vs. bottom-up approach

We use two different approaches to build the data estimates, according to the required level of detail of the resulting data series. The *bottom-up* approach is used to build estimates for each of the main function categories (inpatient care, outpatient care, long-term care, home health care, medical goods,

others). The *aggregate* approach is used to build the estimates of total expenditures across all functional categories.

It is possible to aggregate the bottom-up estimates and obtain the total expenditures across all categories. In theory, these should be equal to the total expenditures estimated using the aggregate approach. However, in practice, there are often data missing at the more detailed level, forcing us to make yielding approximations. For example, we have no good information about household out-of-pocket spending on inpatient care and long-term care. Therefore, we prefer the aggregate approach to construct the total expenditures across all functions and we use the bottom-up approach to inform the composition of the expenditures.

Detailed report: aggregate approach

Expenditure areas

Total health expenditures consist of private and public expenditures.

$$TotalExp_{State} = PublicExp_{State} + PrivateExp_{State}$$

Private expenditures consist of four financing categories: Out-of-pocket payments of private households, private health insurance, non-profit institutions providing health care financing and enterprise financing schemes. The latter two categories are relatively small, and we omit them from our estimates. Public expenditures consist of two financing categories: general government and compulsory insurance schemes. Thus, in our estimates, we can decompose the total health expenditures in state *S* to

$$TotalExp_S = PrivOOP_S + PrivIns_S + Gov_S + CompIns_S$$

Also in the aggregate estimates, we differentiate the expenditures by big categories. We separately consider government expenditures on Fond hospitals[2], long term care and other expenditures. Compulsory insurance expenditures are also differentiated to expenditures on Fond hospitals and other expenditures. Thus, we can decompose the total health expenditures to

$$\begin{aligned} TotalExp_S = {} & PrivOOP_S + PrivIns_S \\ & + GHosp_S + GLongTC_S + GOther_S + CIHosp_S + CIOther_S \end{aligned}$$

Private expenditures: out-of-pocket expenditures of private households

The corresponding SHA category is *HF.3 Household out-of-pocket payment, Total current expenditure on health care* (all functions, all providers). The distribution key is constructed based on the information from consumer survey, Konsumerhebung 2014/2015 and 2009/2010 from Statistik Austria.

[2] Fond hospitals are largely public hospitals which have a market share of 70 percent of total bed capacity in Austria (BMG/KAZ 2017).

The total amount spent by private households (out-of-pocket) was 6.3 billion euro in 2015, the annual growth rate between 2011 and 2015 was 3.6%. Average per capita expenditures by federal states are plotted in Figure 1 (without age-standardization).

Variable name	HC_cons
Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 – 2015) Konsumerhebung 2014/2015, 2009/2010 Population statistics, Statistik AT
Distribution key	Monthly expenditures per household (KE) are first converted to yearly expenditures per capita. Distribution key: share in total national expenditures is computed as $$Share_S = \frac{Population_S \cdot ExpPerCapita_S}{\sum_i (Population_i \cdot ExpPerCapita_i)}$$ KE only available for 2014/2015 and 2009/2010. For years 2011 - 2013, the distribution key is linearly interpolated.
Caveats	Imperfections in subjective answers in survey-based data. KE 2014/2015 matches values from the National Accounts better than KE 2009/2010, but discrepancies still remain. Due to higher differences between KE 2009/2010 and the National Accounts, historical time series before 2014 should be considered with caution. Long-term care is only included in in-patient, resp. Ambulatory care services. Home health care and a big part of inpatient care expenditures are missing, probably included in COICOP category 'Social' or not reported.
Notes	Robustness tested by using alternative approaches: considering selected KE categories separately (COICOP classification), resp. using information on prescription fees (from social insurance) to approximate the private expenditures on pharmaceuticals. Quantitative differences were not big. The alternative approaches also bear additional risks: KE data by detailed category are less significant, minor discrepancies between SHA and COICOP categories.

COICOP: Classification of individual consumption by purpose

Private expenditures: private insurance

The corresponding SHA category is *HF.2.1 Private Insurance Schemes, Total current expenditure on health care* (all functions, all providers). The distribution key is constructed based on the information about persons with private insurance coverage of hospital costs, available from Versicherungsverband Österreich (VVO).

The total amount spent by private households (out-of-pocket) was 1.7 billion euro in 2015, the annual growth rate between 2011 and 2015 was 4.9%. Average per capita expenditures by federal states are plotted in Figure 2 (without age-standardization).

The relative differences between federal states in this category are big. The state with the highest estimated per capita expenditure is Salzburg, with almost 300 euro per inhabitant spent annually. In comparison, Lower Austria has the lowest per capita expenditure, a bit less than 100 euro per inhabitant.

Variable name	HC_pins
Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 – 2015) VVO Jahresbericht (2011 – 2016) Population statistics, Statistik AT
Distribution key	Persons with full private insurance coverage of the hospital costs (Krankenhauskosten - Versicherte, Vollkostendeckung) according to VVO Data Reports. Distribution key: state's share in total number of persons $Share_S = \frac{PersonsFullCoverage_S}{\sum_i PersonsFullCoverage_i}$
Caveats	Number of persons with full insurance coverage of the hospital costs is a rough proxy for the costs covered by private insurance in total. Unexplained large differences between federal states.
Notes	Robustness tested by using alternative approaches: Persons with any coverage instead of full coverage. Quantitative differences are minor.

Public costs of Fond Hospitals

Fond hospitals generate roughly 85% of public expenditures on hospitals in Austria. Although they do not have a separate SHA category, the public expenditures on Fond hospitals are reported within SHA on the level of federal states. Therefore, we use this high quality data source in our estimates. The expenditures are reported separately for government and compulsory insurance financing schemes.

The total public spending on Fond hospitals was almost 11 billion euro in 2016. Out of these, about 6 billion are financed by the government financing schemes, while about 5 billion is financed through the compulsory insurance. Annual growth rate in total public spending on Fond hospitals between 2011 and 2016 was 3.3%.

In order to compare the expenditures on hospitals across the federal states, it is important to take into account that there is substantial migration of patients between the federals states. We correct for the patient flows using information provided by the BMG (publication 'Hospitals in Numbers', Krankenanstalten in Zahlen). The procedure is described in detail in the Appendix 1.

Average per capita expenditures by federal states before and after the adjustment for the patient flows are plotted in Figure 3.

Variable name	PC_fhosp
Source data & Availability	2004 – 2016 SHA tables, Statistik AT (2004 - 2016)

	Patient flows of hospitalized patients by LKF points, Krankenanstalten in Zahlen Population statistics, Statistik AT
Distribution key	Distribution key is not necessary, as the data are available at the level of federal states.
Caveats	The data are only covering expenditures for Fond hospitals.
Notes	

Public expenditures: compulsory insurance

The corresponding SHA category is *HF.1.2 Compulsory contributory health insurance schemes - Social health insurance schemes, Total current expenditure on health care* (all functions, all providers). The distribution key is constructed based on financial data from social insurance providers, reported by the HVSV. To prevent double counting, we later subtract expenditures on Fond hospitals that are counted separately.

The total amount spent by compulsory insurance schemes was 15.7 billion euro in 2015. Out of these, about 5 billion was used to finance the Fond hospitals, the annual growth rate of total spending in compulsory insurance schemes between 2011 and 2015 was 3.7%. Our estimates for average per capita expenditures by federal states are plotted in Figure 4.

Variable name	PC_pins
Source data & Availability	2011* – 2015 SHA tables, Statistik AT (2011 – 2015) Expenditures, Finanzstatistik HVSV (2001 - 2016) Residence of insurees: Statistisches Handbuch der öst. SV (2012 - 2016) Population statistics, Statistik AT
Distribution key	First, relevant health-related expenditures from the financial reports of social insurance providers are counted separately for each provider of health insurance and pension insurance (*ProviderExp*$_{Pr}$). Second, the expenditures are distributed across federal states using the information about the residence of the insured persons. *ShareInsured*$_{Pr,S}$ denotes the share of insured with provider *Pr* that are residents of federal state *S*: $$CIExp_S = \sum_{Pr} ProviderExp_{Pr} \cdot ShareInsured_{Pr,S}$$ Distribution key: share in total national expenditures is computed as $$Share_S = \frac{CIExp_S}{\sum_i CIExp_i}$$

	*The information about the residence of the insured persons is only available starting from 2012. These shares vary little over time, therefore we used 2012 to approximate the values in 2011.
Caveats	In comparison with the SHA tables, we do not analyse the individual expenditure areas and our data per insurance provider are much less precise. We omit the health-related expenditures from compulsory accident insurance providers (relatively small, around 300 million euro), because there is no regionally differentiated information available to split these expenditures. The distribution of health expenditures based on the share of residence is an approximation. The underlying assumption is that on average, costs per insured person within one insurance company are independent on the residence.
Notes	We included expenditures from health insurance (majority, around 14.4 billion euro in 2015) and pension insurance (around 1 billion euro), but omitted accident insurance (around 300 million euro). From pension insurance, only the biggest category *Gesundheitsvorsorge und Rehabilitation* is included, although parts of other categories are also counted in SHA (Transportkosten, Verwaltungsaufwand). From health insurance, we included: Total *Versicherungsleistungen* plus *Verwaltungs- und Verrechnungsaufwand* minus total *Gebühren, Kostenbeteiligungen und Behandlungsbeiträge* minus *Krankengeld, Rehabilitationsgeld, Wochengeld* minus *Vorsorge(Gesunden)untersuchungen* minus *Bestattungskostenzuschuss*

Public expenditures: long term care and home health care

The corresponding SHA categories are *HF.1.1 Government schemes and compulsory contributory health care financing schemes,* functions *HC.3.1-3.3 Long term care* and *HC.1.4-3.4 Home health care*. The distribution key for the category *HC.3.1-3.3 Long term care* is constructed based on the data on expenditures for care services (Pflegedienstleistungsstatistik, Statistik AT). The distribution key for the category *HC.1.4-3.4 Home health care* is constructed separately depending on the provider category: the key for *HP.8.1 Households as providers of home health care* is based on the data on care subsidies (Pflegegeldstatistik) provided by BMASK. The key for *HP.3.5 Providers of home health care services* is constructed using the data on expenditures for care services (Pflegedienstleistungsstatistik, Statistik AT).

The total amount spend in these categories was 4.1 billion euro in 2015, the annual growth rate of government spending on long term care between 2011 and 2015 was 2.9%. Our estimates for average per capita expenditures by federal states are plotted in Figure 5 (without age-standardization).

Variable name	PC_gov_ltc

Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 - 2015) Pflegedienstleistungsstatistik, Statistik AT (2011-2015) Pflegegeldstatistik, BMASK (2011 - 2015) Population statistics, Statistik AT
Distribution key	Distribution key: *HC.3.1-3.3 Long term care.* Share of expenditures on in-patient care, semi-in-patient care and short-term care in in-patient care institutions in the national expenditures (Pflegedienstleistungsstatistik). $$Share_S = \frac{CareExp_S}{\sum_i CareExp_i}$$ Distribution key: *HC.1.4-3.4 Home health care, HP.3.5 Providers of home health care services.* Share of expenditures on mobile care services in the national expenditures (Pflegedienstleistungsstatistik). $$Share_S = \frac{MobileCareExp_S}{\sum_i MobileCareExp_i}$$ Distribution key: *HC.1.4-3.4 Home health care, HP.8.1 Households as providers of home health care.* Share of care subsidies (Pflegegeld) in the total national expenditures on care subsidies. $$Share_S = \frac{CareSubsidies_S}{\sum_i CareSubsidies_i}$$
Caveats	According to a recent study of Fiskalrat[3], there are inconsistencies in data reporting on long-term care. Moreover, the classification in SHA might have minor inconsistencies with the Pflegedienstleistungsstatistik.
Notes	

Public expenditures: other government expenditures

The corresponding SHA category is *HF.1.1 Government schemes and compulsory contributory health care financing schemes, Total current expenditure on health care* net of government expenditures on Fond hospitals and long-term care. For the lack of other information, the distribution key is constructed based on population size.

[3] Grossmann B., Schuster P. (2017): Langzeitpflege in Österreich: Determinanten der staatlichen Kostenentwicklung. Fiskalrat, Wien, Juni

The total amount remaining in this category is comparatively smaller, only about 1 billion euro in 2015 (9% of government health expenditures). These were distributed according to the population size, therefore per capita expenditures are equal across the federal states.

Variable name	PC_gov_rest
Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 - 2015) Population statistics, Statistik AT
Distribution key	Distribution key: population share in the total Austrian population $$Share_S = \frac{Population_S}{Total\ Population}$$
Caveats	Proxy division key does not reflect differences in spending across federal states.
Notes	

Detailed report: bottom-up approach

Expenditure areas

Total health expenditures in federal state *S* can be categorized by function (according to SHA categories):

$$TotalExp_S = Inpatient_S + Outpatient_S + LongTerm_S + Home_S + MedGoods_S + Other_S$$

We take into account four financing schemes, two public and two private. Private financing schemes consist of household out-of-pocket payments and private insurance schemes. Public financing schemes consist of general government and compulsory public health insurance schemes.

$$Exp_S = PrivOOP_S + PrivIns_S + Gov_S + CompIns_S$$

In principle, each of the financing schemes contributes to each of the health care functions. In what follows we describe how we construct approximate distribution keys for each combination of function category and financing scheme.

Costs of outpatient care

The corresponding SHA categories are *HC.1.3-HC.2.3 Outpatient curative and rehabilitative care*. The distribution keys are constructed based on the information from consumer survey, Konsumerhebung 2014/2015 (household OOP expenditures), shares of population with private insurance (private insurance expenditures), SHA tables for Fond hospitals, and Finanzstatistik HVSV.

The total amount spent on outpatient care was 8.8 billion euro in 2015, the annual growth rate between 2011 and 2015 was 4%. Average per-capita expenditures by federal states are plotted in Figure 7.

Variable name	OutC

Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 – 2015) Konsumerhebung 2014/2015 VVO Jahresbericht (2011 – 2016) Expenditures, Finanzstatistik HVSV (2001 - 2016) Residence of insurees: Statistisches Handbuch der öst. SV (2012 - 2016) Population statistics, Statistik AT
Distribution keys	HF.1 ambulatory care in Fond hospitals is available from SHA directly. We control for the patient migration. HF.1.1 general government (w/o Fond hospitals): simple population shares. HF.1.2 compulsory insurance (w/o Fond hospitals): key constructed from financial reports of compulsory insurance, same methodology as variable *PC_pins*, but considering only expenditures in categories: 20 *Krankenbehandlung: a) Ärztliche Hilfe u. gleichgest. Leistungen* *23 Zahnbehandlung und Zahnersatz, a) Zahnbehandlung* HF.2.1 private insurance: using shares of population participating in private insurance, same as variable *HC_pins*. HF.3 out-of-pocket: Konsumerhebung 2014/2015, expenditures on outpatient care.
Caveats	Fond hospitals: patient migration in hospital ambulatory care is controlled for using the patient flows matrix (same as in inpatient care, outpatient care separately not available). No information for the rest of government expenditures (460 million eur). Public insurance: discrepancies in classification, PV, UV omitted. KE: Imperfections in subjective answers in survey-based data. KE also available for 2009/2010. However, there has been discussion about the accuracy of 2009/2010 results, especially for the detailed categories. Therefore we use KE 2014/2015 for all years. KE 2014/2015 matches values from the National Accounts better than KE 2009/2010, but discrepancies still remain. Private insurance: Number of persons with full insurance coverage of the hospital costs is a rough proxy for the costs covered by private insurance. This category is small, thus the key does not have a very strong effect.
Notes	

Costs of inpatient care

The corresponding SHA categories are *HC.1.1, HC.1.2, HC.2.1, HC.2.2 Inpatient curative and rehabilitative care, including day cases*. The distribution keys are constructed based on the information from private insurance, SHA tables for Fond hospitals, and Finanzstatistik HVSV.

The total amount spent on inpatient care (excluding long-term care) was 12 billion euro in 2015, the annual growth rate between 2011 and 2015 was 2.8%. Average per-capita expenditures by federal states are plotted in Figure 8, resp. 10 (without age-standardization).

Variable name	InpC
Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 – 2015) VVO Jahresbericht (2011 – 2016) Population statistics, Statistik AT
Distribution keys	HF.1, ambulatory care in Fond hospitals is available from SHA directly. We control for the patient migration. HF.1 public financing schemes (w/o Fond hospitals): simple population shares. HF.2.1 private insurance: using shares of population participating in private insurance, same as variable *HC_pins*. HF.3 out-of-pocket: simple population shares.
Caveats	No information for the public expenditures outside Fond hospitals (1.7 billion). Konsumerhebung information for expenditures on inpatient care cannot be used to construct the key for private oop expenditures. First, the inpatient and parts of long-term care are pooled together in KE. Second, parts of long-term care seems to be included within different category, 'social'. For these reasons, expenditures in KE are not consistent with the aggregate values. Private insurance: Number of persons with full insurance coverage of the hospital costs is a rough proxy for the costs covered by private insurance.
Notes	

Costs of long-term care (inpatient, day, outpatient)

The corresponding SHA categories are *HC.3.1 - HC.3.3 Long-term care (inpatient, day, outpatient)*. The distribution is constructed based on the data on government expenditures for care services (Pflegedienstleistungsstatistik, Statistik AT). According to SHA, there are zero reported outpatient care costs and very small day care costs on long-term care. Thus, we treat the long-term care as inpatient care expenditures.

The total amount spent on long-term care (inpatient, day) was approximately 2.7 billion euro in 2015, the annual growth rate between 2011 and 2015 was 5.4%. Average per-capita expenditures by federal states are plotted in Figure 9, resp.10 (without age-standardization).

Variable name	LtC
Source data & Availability	2011 – 2015 Pflegedienstleistungsstatistik, Statistik AT (2011-2015) Population statistics, Statistik AT

Distribution keys	HF.1.1: same as variable *PC_gov_ltc,* part *HC.3.1-3.3 Long term care* HF.1.2 no reported costs. HF.2.1 no reported costs. HF.3 out-of-pocket: simple population shares.
Caveats	Konsumerhebung information for expenditures on long-term care cannot be used to construct the key for private oop expenditures. First, the inpatient and parts of long-term care are pooled together in KE. Second, parts of long-term care seems to be included within different category, 'social'. For these reasons, expenditures in KE are not consistent with the aggregate values. According to a recent study of Fiskalrat, there are inconsistencies in data reporting on long-term care. Moreover, the classification in SHA might have minor inconsistencies with the Pflegedienstleistungsstatistik.
Notes	

Costs of home health care

The corresponding SHA categories are *HC.1.4 - HC.3.4 Home health care*. The distribution keys are constructed based on the information on government expenditures on long-term care from various sources.

The total amount spent on home health care was approximately 2.6 billion euro in 2015, the annual growth rate between 2011 and 2015 was 1.7%. Average per-capita expenditures by federal states are plotted in Figure 11 (without age-standardization).

Variable name	HomeC
Source data & Availability	2011 – 2015 Pflegedienstleistungsstatistik, Statistik AT (2011-2015) Pflegegeldstatistik, BMASK (2011 - 2015) Population statistics, Statistik AT
Distribution keys	HF.1.1: same as variable *PC_gov_ltc,* part *HC.1.4-3.4 Home health care* HF.1.2 small reported costs. HF.2.1 no reported costs. HF.3 household oop: simple population shares (although expenditures are small, 180 million euro, only HP.3.5).
Caveats	According to a recent study of Fiskalrat, there are inconsistencies in data reporting on long-term care. Moreover, the classification in SHA might have minor inconsistencies with the Pflegedienstleistungsstatistik.
Notes	

Costs of medical goods (dispensed to outpatients)

The corresponding SHA category is *HC.5 Medical goods dispensed to outpatients*. The distribution keys are constructed based on the information from consumer survey, Konsumerhebung 2014/2015, shares of population with private insurance, and Finanzstatistik HVSV (public insurance).

The total amount spent on medical goods was ca. 6 billion euro in 2015, the annual growth rate between 2011 and 2015 was 3.5%. Average per-capita expenditures by federal states are plotted in Figure 12 (without age-standardization).

Variable name	MedC
Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 – 2015) Konsumerhebung 2014/2015 VVO Jahresbericht (2011 – 2016) Expenditures, Finanzstatistik HVSV (2001 - 2016) Residence of insurees: Statistisches Handbuch der öst. SV (2012 - 2016) Population statistics, Statistik AT
Distribution keys	HF.1.1 no reported costs. HF.1.2 compulsory insurance: key constructed from financial reports of compulsory insurance, same methodology as variable *PC_pins*, but considering only expenditures in categories 21 - *b) Heilmittel (Arzneien)* and *22 - c) Heilbehelfe und Hilfsmittel* HF.2.1 private insurance: using shares of population participating in private insurance, same as variable *HC_pins*. HF.3 out-of-pocket: Konsumerhebung 2014/2015, expenditures on medical goods.
Caveats	Public insurance: discrepancies in classification, PV, UV omitted. KE: Imperfections in subjective answers in survey-based data. KE also available for 2009/2010. However, there has been discussion about the accuracy of 2009/2010 results, especially for the detailed categories. Therefore we use KE 2014/2015 for all years. KE 2014/2015 matches values from the National Accounts better than KE 2009/2010, but discrepancies still remain. Private insurance: Number of persons with full insurance coverage of the hospital costs is a rough proxy for the costs covered by private insurance. This category is small, thus the key does not have a very strong effect.
Notes	

Other costs

The corresponding SHA categories are *HC.4 Ancillary services, HC.6 Preventive care,* and HC.7 *Governance, and health system and financing*. The distribution keys are constructed based on Finanzstatistik HVSV (public administration costs insurance), shares of population with private insurance, and simple population shares.

The total amount spent in this category was ca. 2.9 billion euro in 2015, the annual growth rate between 2011 and 2015 was 4.5%.

Variable name	RestC

Source data & Availability	2011 – 2015 SHA tables, Statistik AT (2011 – 2015) VVO Jahresbericht (2011 – 2016) Expenditures, Finanzstatistik HVSV (2001 - 2016) Residence of insurees: Statistisches Handbuch der öst. SV (2012 - 2016) Population statistics, Statistik AT
Distribution keys	HF.1.1 simple population shares. HF.1.2 compulsory insurance: administrative costs: key constructed from financial reports of compulsory insurance, same methodology as variable *PC_pins*, but considering only expenditures in category 43 - *Verwaltungs- und Verrechnungsaufwand* HF.1.2 compulsory insurance: other except of administrative costs: simple population shares. HF.2.1 private insurance: using shares of population participating in private insurance, same as variable *HC_pins*. HF.3 out-of-pocket: simple population shares.
Caveats	Public insurance: discrepancies in classification, PV, UV omitted. Private households oop: Information in Konsumerhebung either missing, or values no statistically significant. Private insurance: Number of persons with full insurance coverage of the hospital costs is a rough proxy for the costs covered by private insurance.
Notes	

Data Sources

BMG

Krankenanstalten in Zahlen (bis 2016). http://www.kaz.bmgf.gv.at/

BMASK

Pflegevorsorgeberichte (2011 - 2016), https://www.sozialministerium.at/site/Service_Medien/Infomaterial/Downloads/Oesterreichischer_Pflegevorsorgebericht_2016

Eurostat

General and regional statistics. http://ec.europa.eu/eurostat/data/database

Fiskalrat

Grossmann B., Schuster P. (2017): Langzeitpflege in Österreich: Determinanten der staatlichen Kostenentwicklung. Fiskalrat, Wien, Juni 2017.

HVSV

Finanzstatistik der österreichischen Sozialversicherung, 2010 - 2016.

Leistungsstatistik 2012 – 2016

Statistische Handbücher der österreichischen Sozialversicherung, 2010 - 2016.
http://www.sozialversicherung.at/cdscontent/?contentid=10007.683681&viewmode=content

VVÖ

Versicherungsverband Österreich: Jahresberichte (2011 - 2016).
https://www.vvo.at/vvo/vvo.nsf/sysPages/jahresbericht.html

Statistik Austria

Bevölkerungsstatistik
https://www.statistik.at/web_de/statistiken/menschen_und_gesellschaft/bevoelkerung/index.html

Das System der volkswirtschaftlichen Gesamtrechnungen (VGR)
https://www.statistik.at/web_de/statistiken/wirtschaft/volkswirtschaftliche_gesamtrechnungen/index.html

Konsumerhebung 2014/2015, 2009/2010.
https://www.statistik.at/web_de/statistiken/menschen_und_gesellschaft/soziales/verbrauchsausgaver/index.html

System of Health Accounts (2011 - 2016).
https://www.statistik.at/web_de/statistiken/menschen_und_gesellschaft/gesundheit/gesundheitsausgaben/index.html

Sozialleistungen auf Landesebene, Landes-Pflegegeldstatistik, Pflegedienstleistungsstatistik
https://www.statistik.at/web_de/statistiken/menschen_und_gesellschaft/soziales/sozialleistungen_auf_landesebene/index.html

List of Abbreviations

BMASK	Bundesministerium für Soziales, Arbeit und Konsumentenschutz
BMG	Bundesministerium für Arbeit, Soziales, Gesundheit und Konsumentenschutz, früher Bundesministerium für Gesundheit und Frauen
HS&I	HealthSystemIntelligence e.U.
HVSV	Hauptverband der österreichischen Sozialversicherungsträger

PP/p.p.	Prozentpunkte/percentage points.
SHA	System of Health Accounts
VVÖ	Versicherungsverband Österreich

Figures

Figure 1

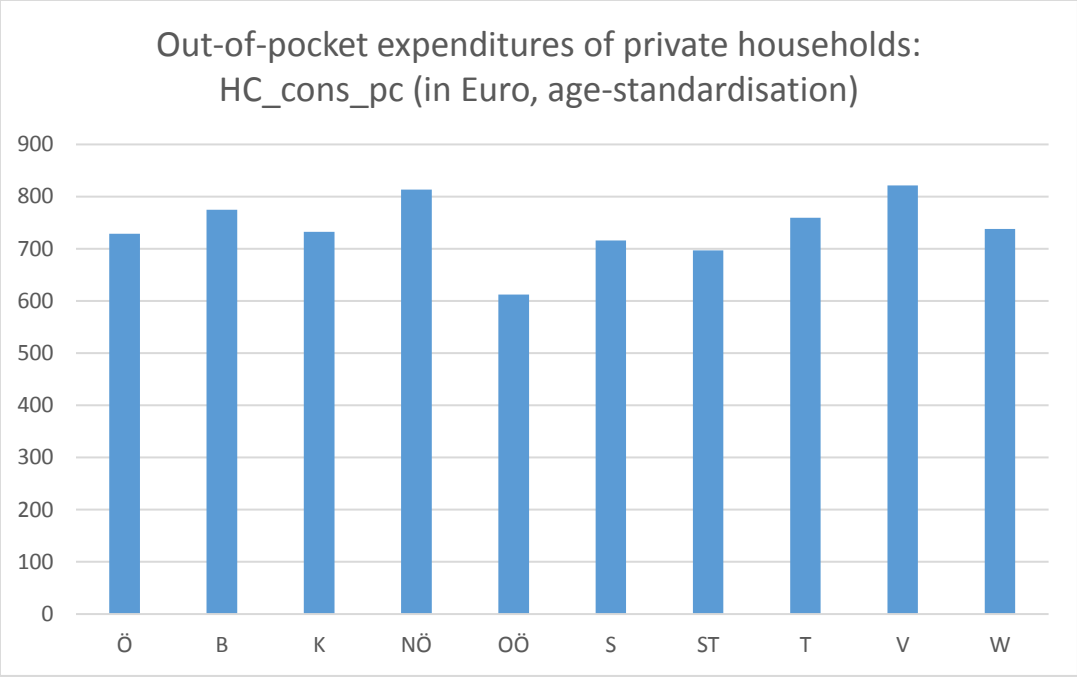
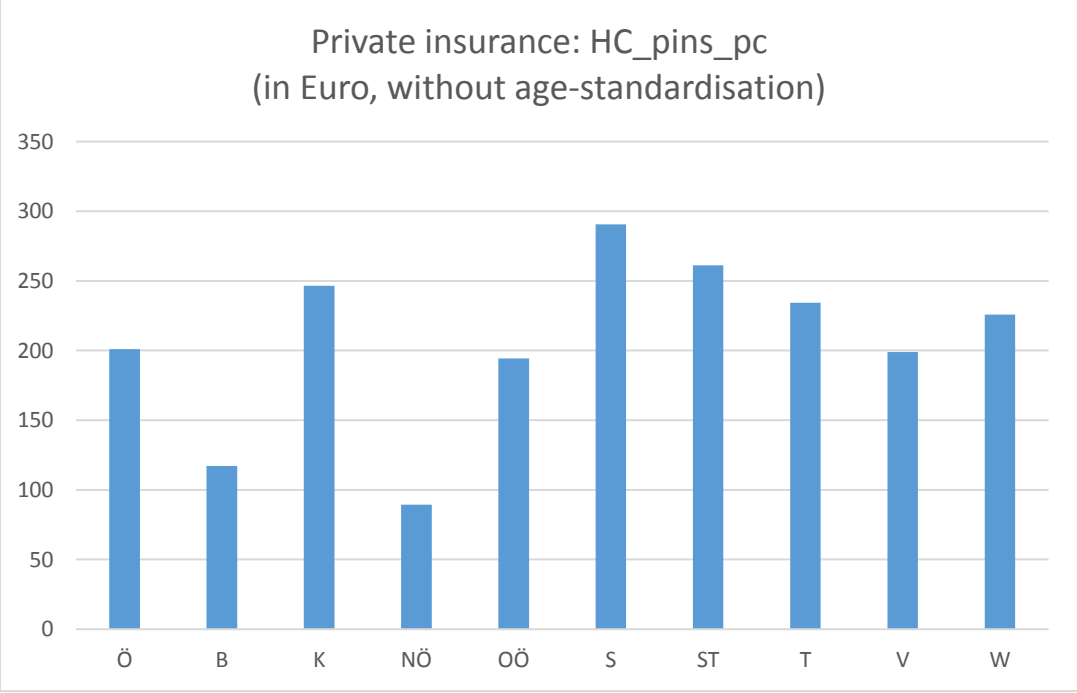


Figure 2



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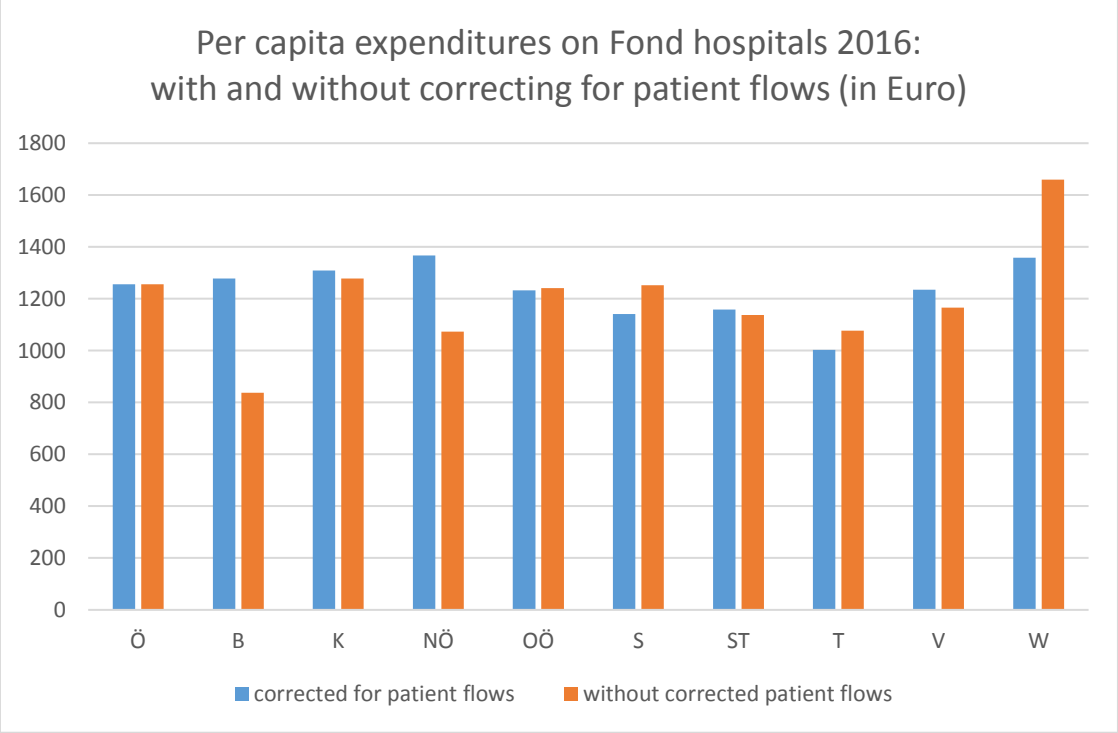

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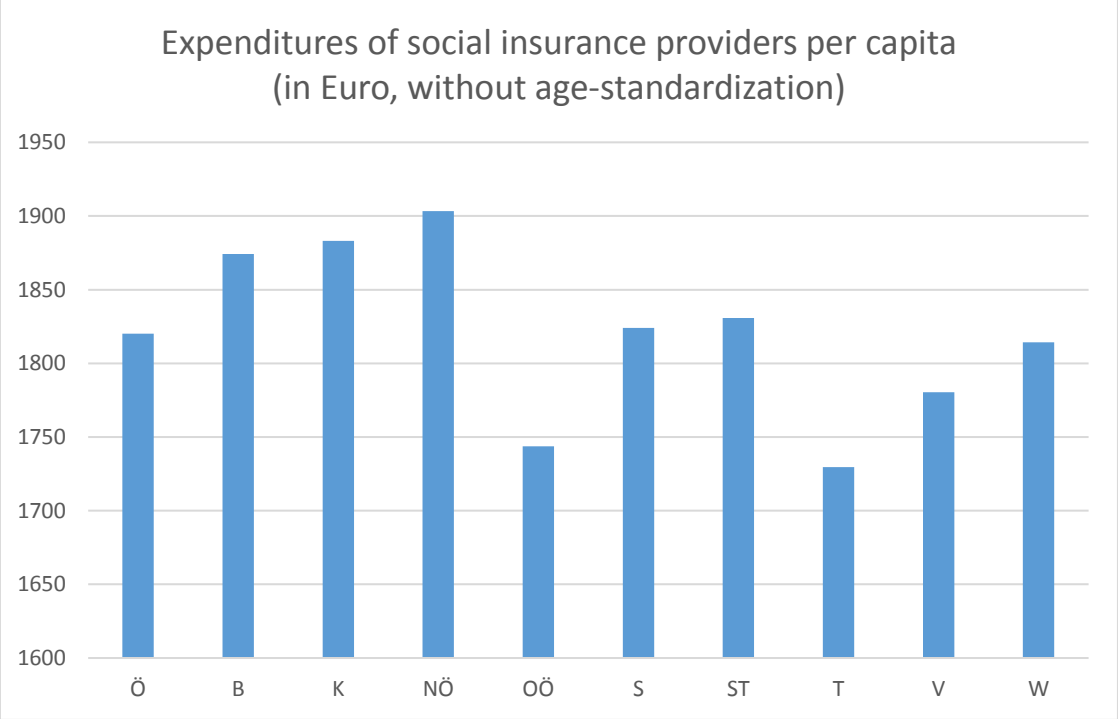

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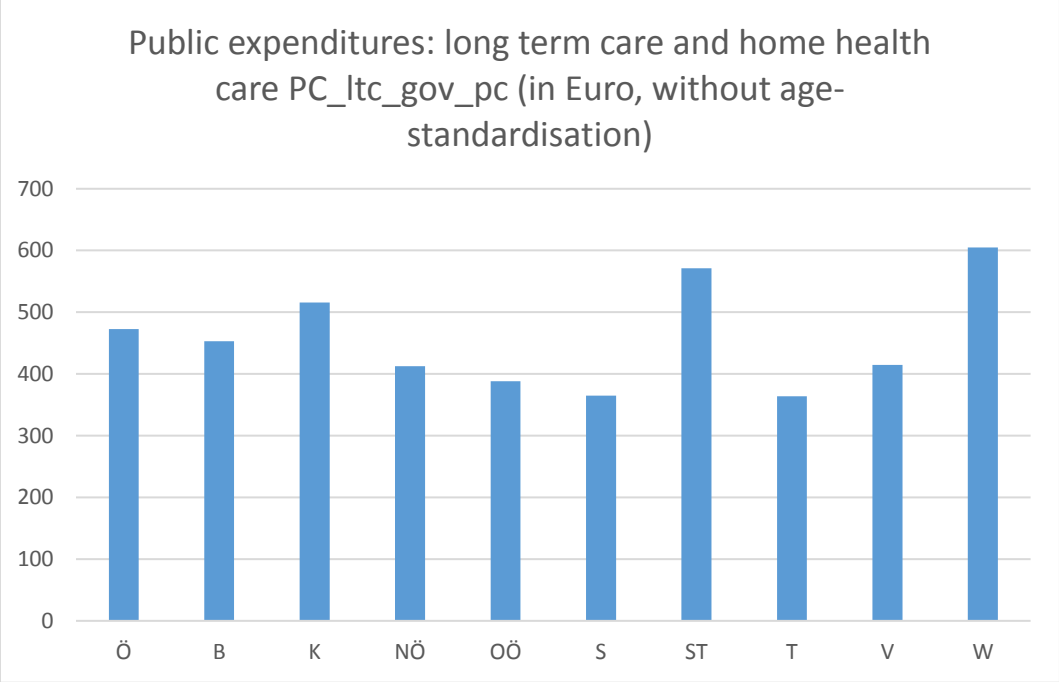


Figure 6

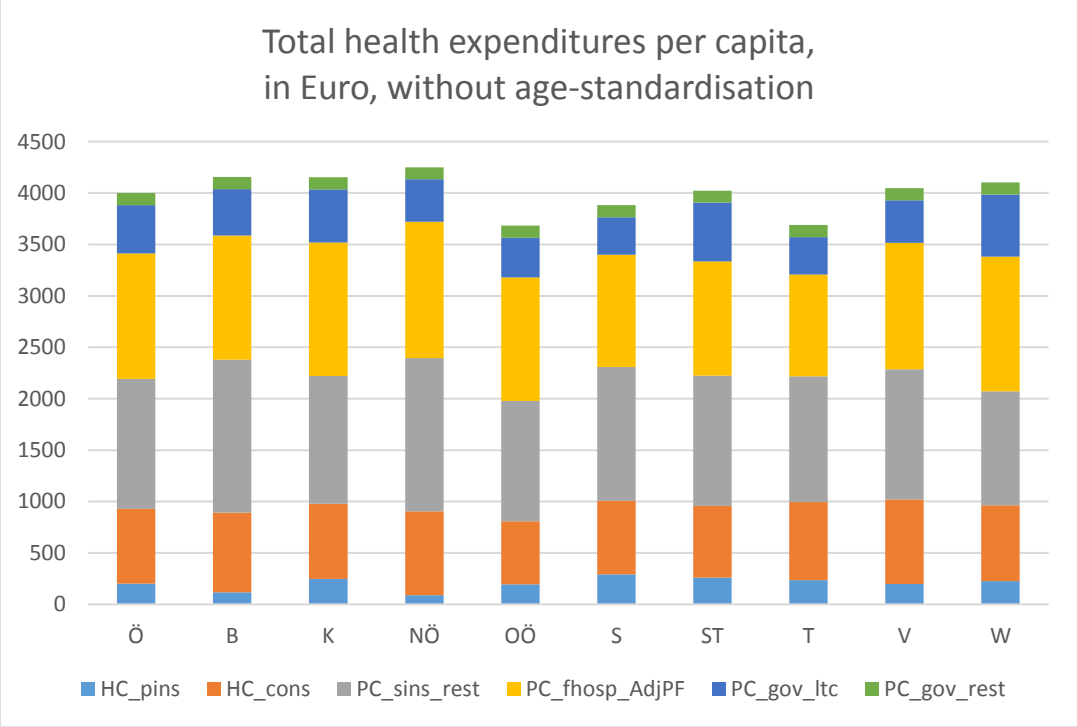


Figure 7

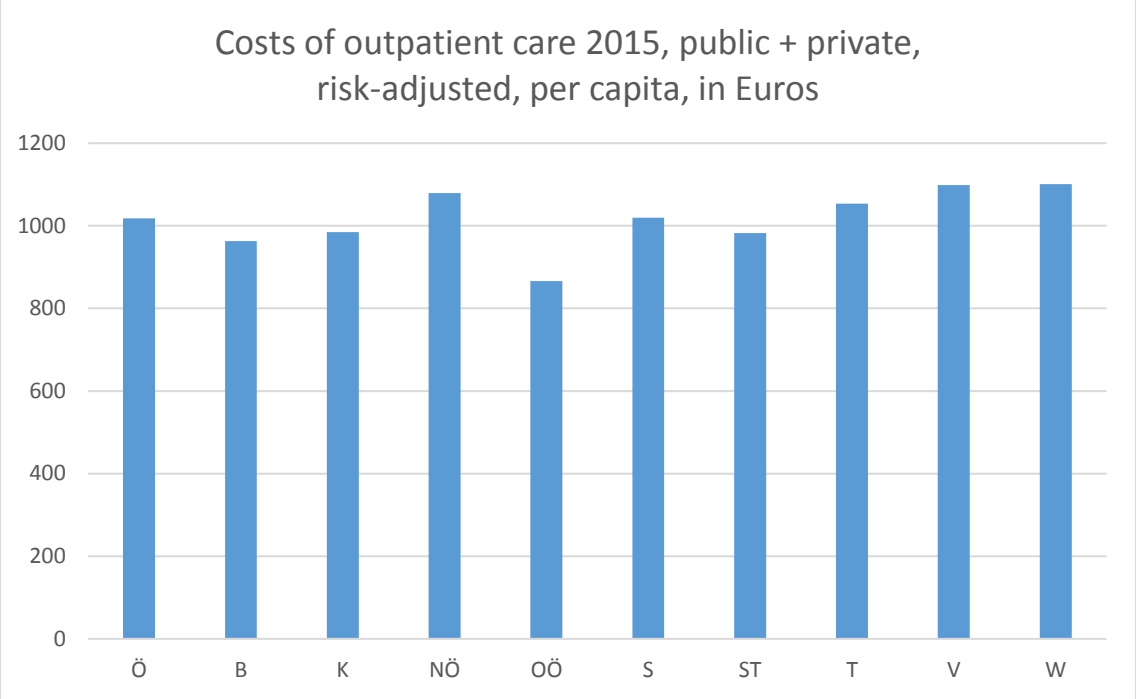


Figure 8

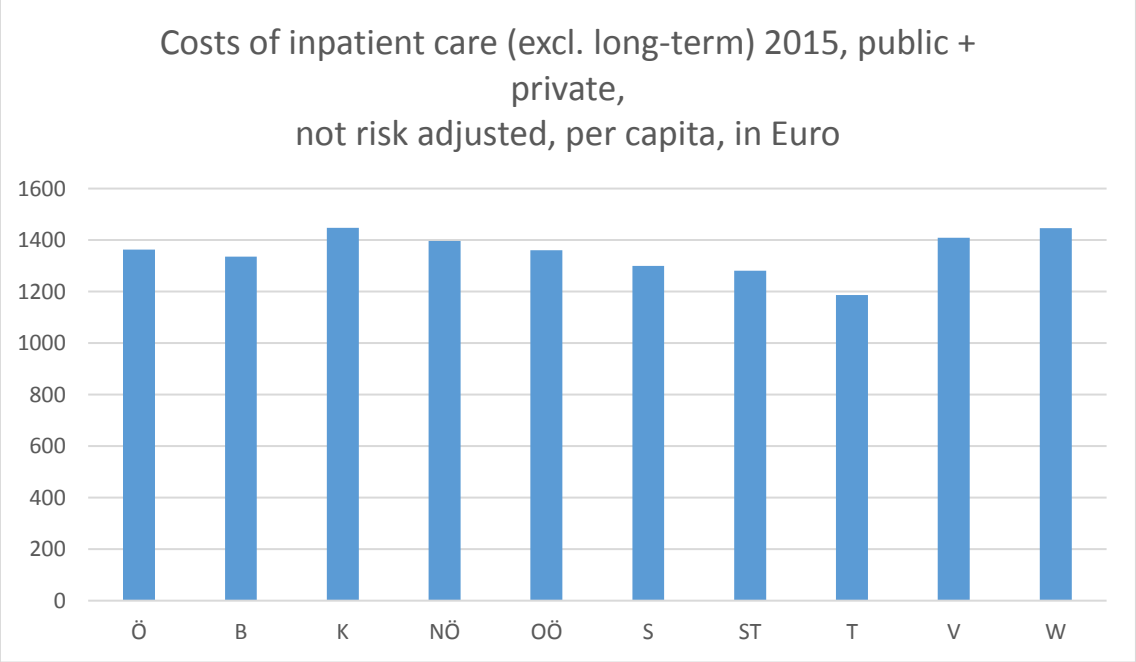


Figure 9

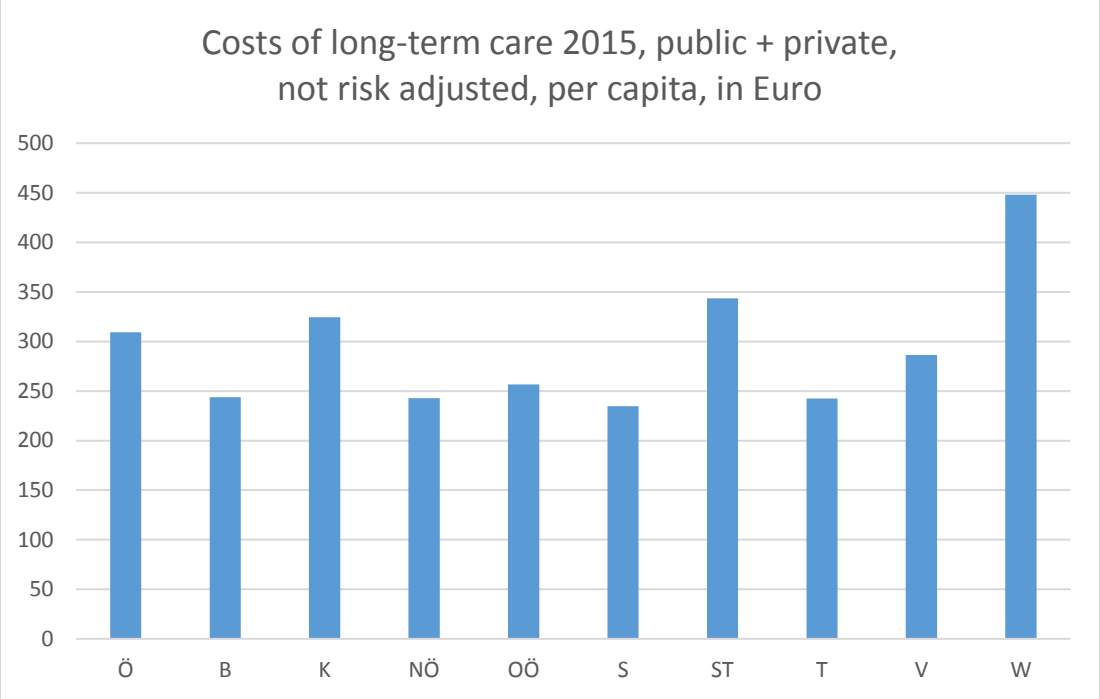


Figure 10

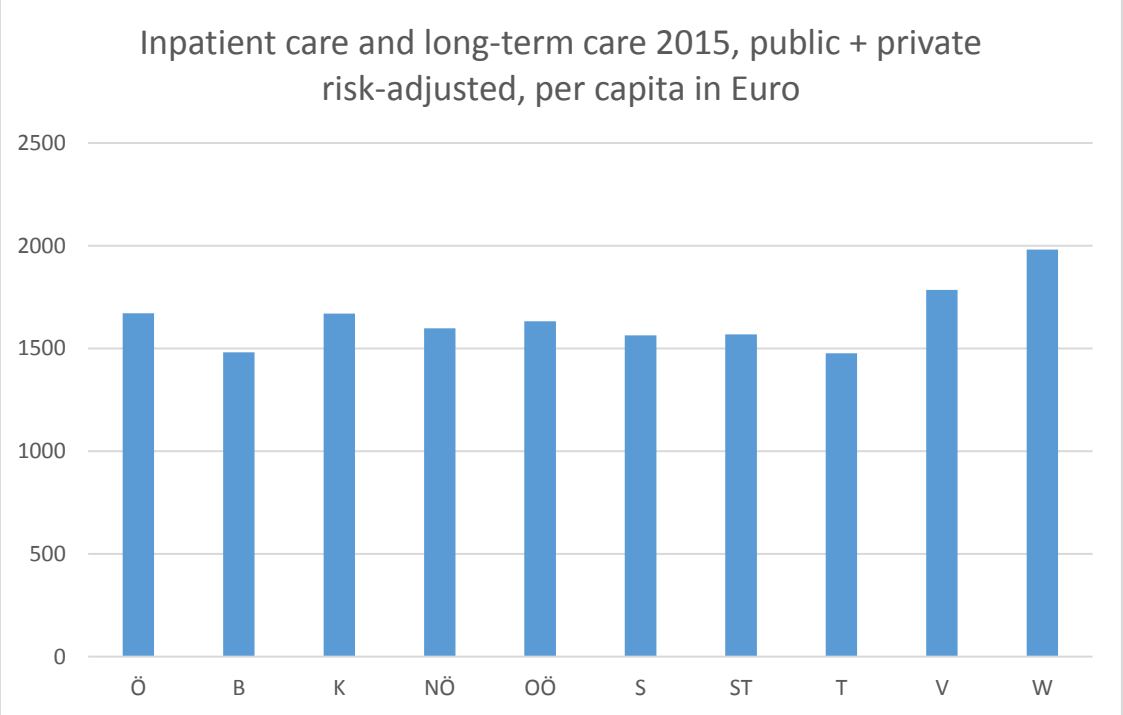


Figure 11

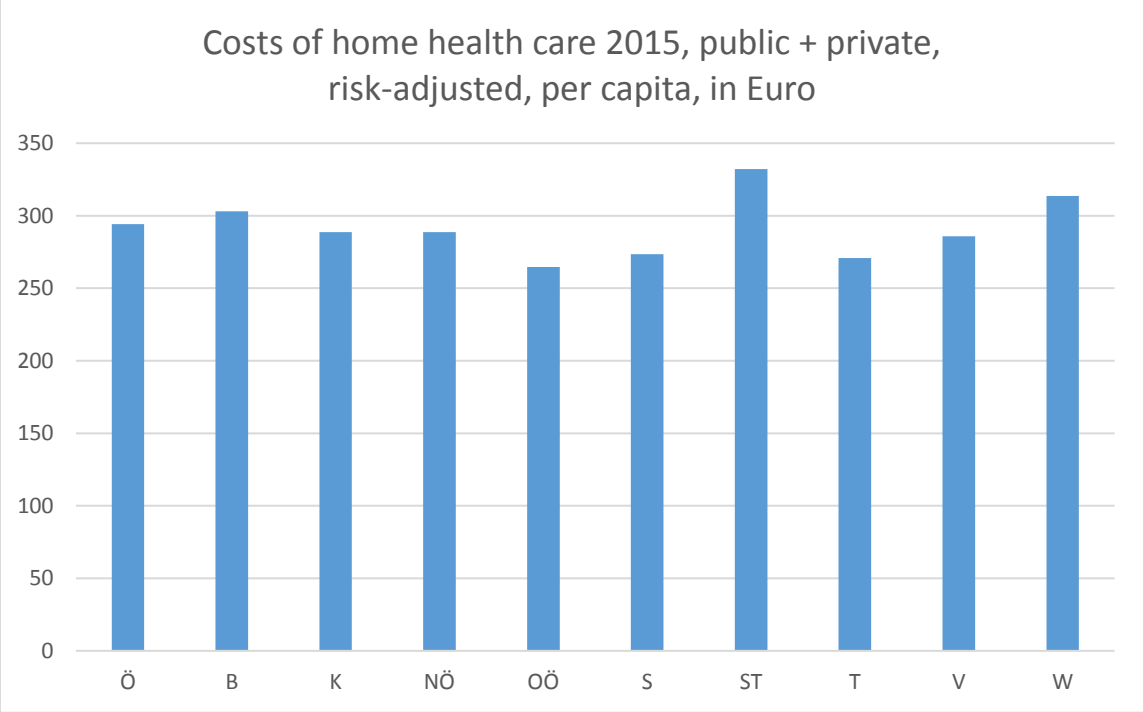


Figure 12

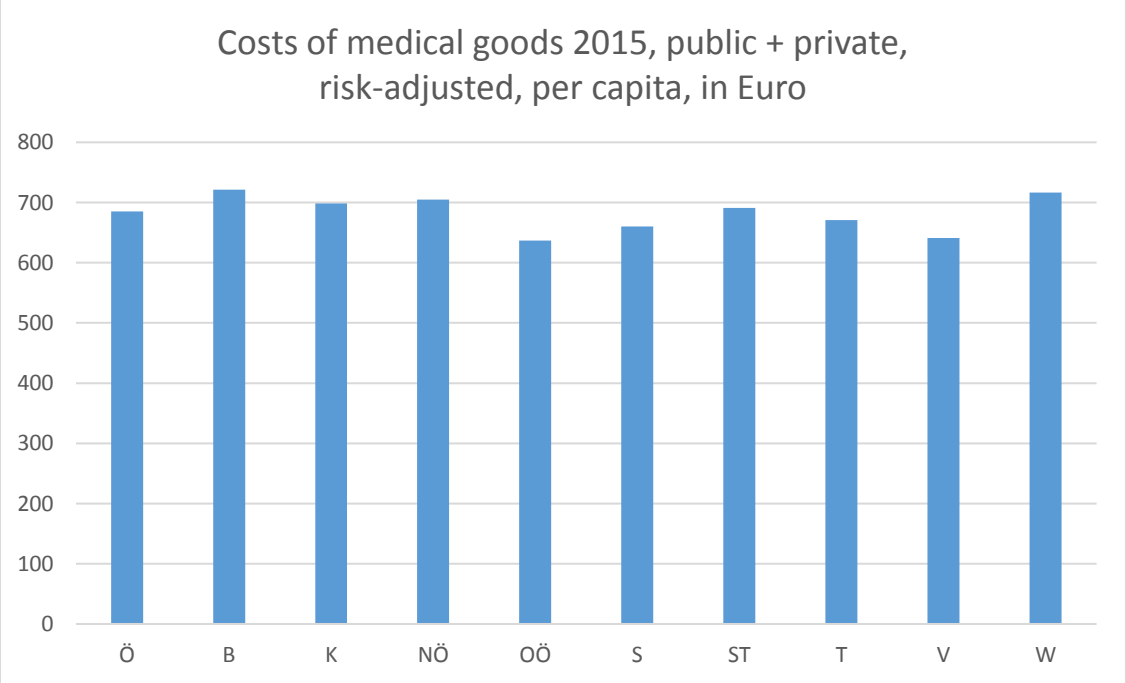


Figure 13

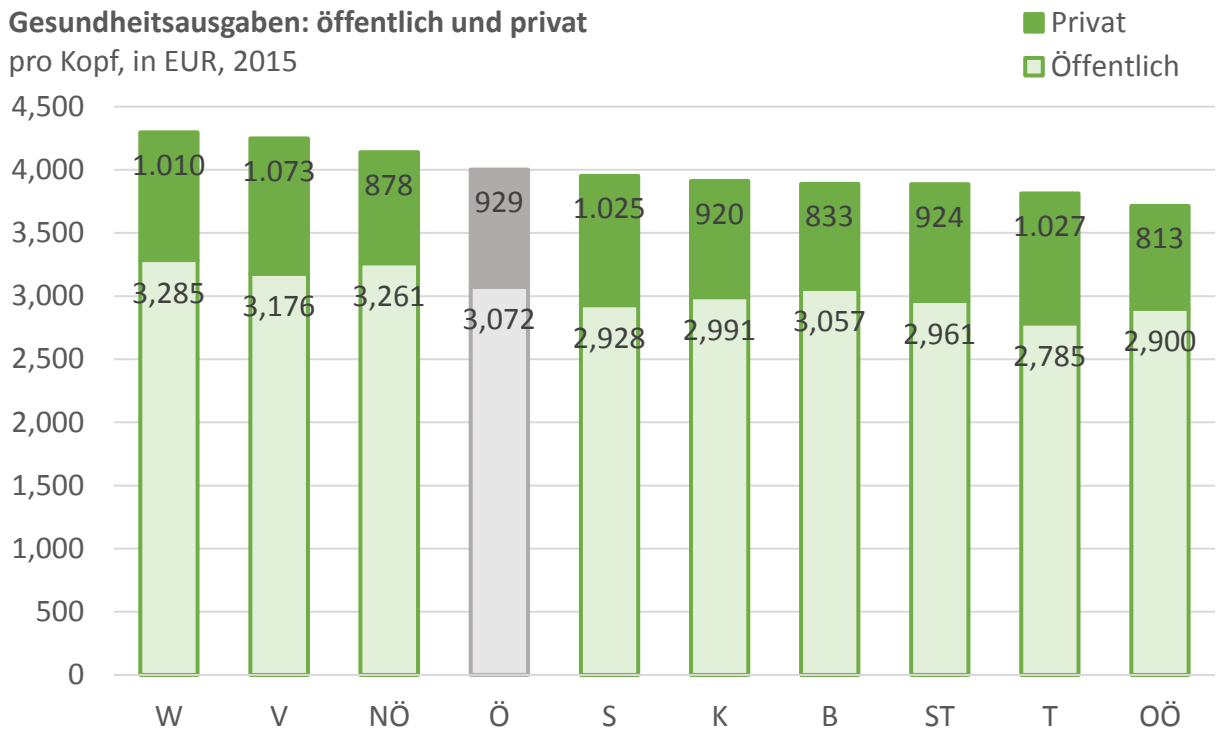
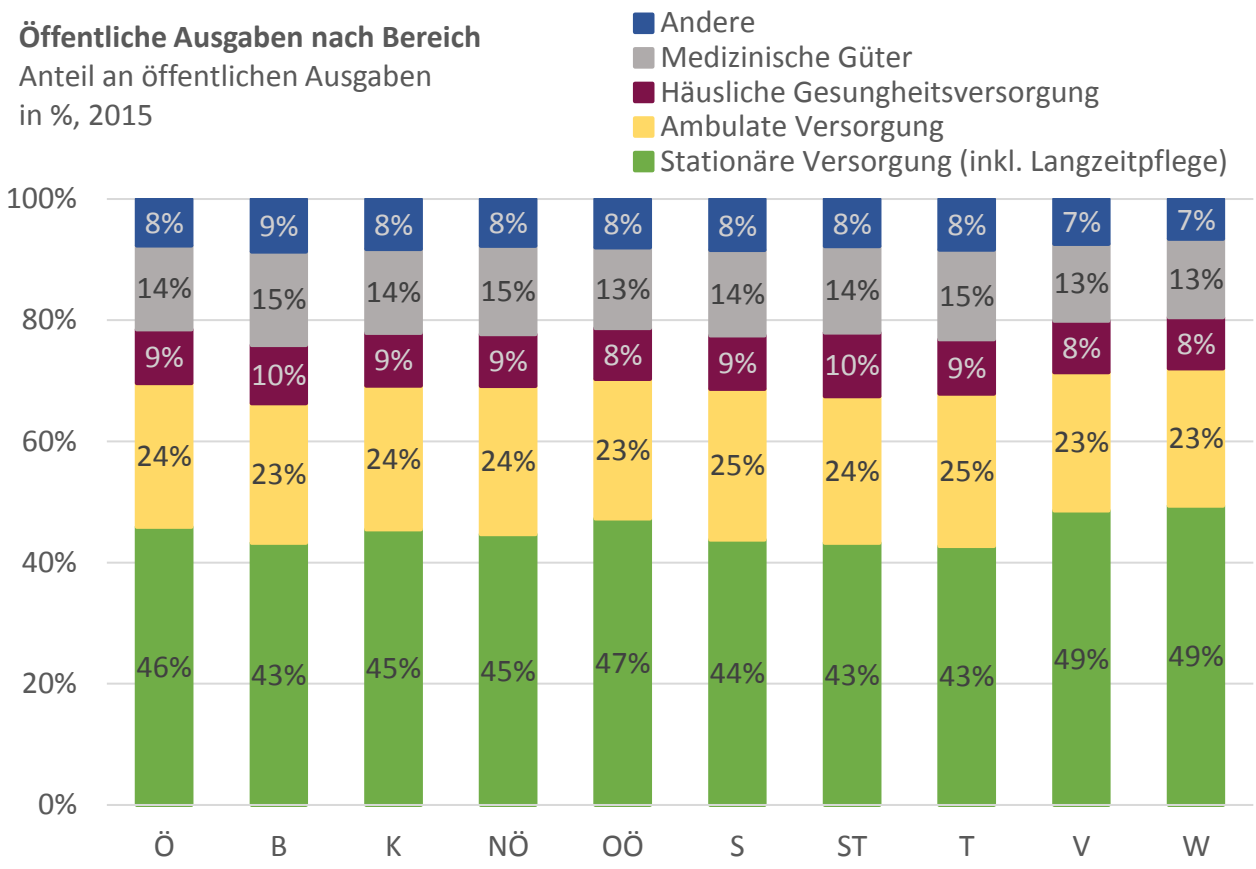

Gesundheitsausgaben: öffentlich und privat
pro Kopf, in EUR, 2015
Privat
Öffentlich
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1.010
1.073
878
929
1.025
920
833
924
1.027
813
3,285
3,176
3,261
3,072
2,928
2,991
3,057
2,961
2,785
2,900
W
V
NÖ
Ö
S
K
B
ST
T
OÖ

Figure 14


Öffentliche Ausgaben nach Bereich
Anteil an öffentlichen Ausgaben
in %, 2015
Andere
Medizinische Güter
Häusliche Gesungheitsversorgung
Ambulate Versorgung
Stationäre Versorgung (inkl. Langzeitpflege)
100%
80%
60%
40%
20%
0%
Ö: 8% 14% 9% 24% 46%
B: 9% 15% 10% 23% 43%
K: 8% 14% 9% 24% 45%
NÖ: 8% 15% 9% 24% 45%
OÖ: 8% 13% 8% 23% 47%
S: 8% 14% 9% 25% 44%
ST: 8% 14% 10% 24% 43%
T: 8% 15% 9% 25% 43%
V: 7% 13% 8% 23% 49%
W: 7% 13% 8% 23% 49%

Appendix

Patient flows

Due to significant patient migration between the federal states in Austria, expenditures on hospital care might be biased when only the costs of Fond hospitals are used as approximation. We corrected the expenditures of Fond hospitals for the patient flows. We used the information from BMG, Krankenanstalten in Zahlen 2016, to construct the shares of in-patient services from state *X* consumed by inhabitants of state *S* ($ShareLKF_{S,X}$). We use the information on share of LKF points, which reflects costs closer than share of hospitalized patients. The total costs of Fond hospital treatements corresponding to the residents of state *S* is then

$$FHospExp_S = \sum_X FHospCosts_X \cdot ShareLKF_{S,X}$$

In this way, we assign the hospital costs according to the residence principle: we count costs of the treated inhabitants instead of costs of local hospitals.

In principle, the expenditures of social insurance on the hospital care should be assigned according to the patient, not hospital. However, as there are caps on hospital expenditures of the health insurance providers, they do not reflect the volume of services. Instead, the government financing is used to adjust according to the volume of services and makes up for the differences. For this reason, we adjust the total public expenditures on Fond hospitals, not only the part financed by the government. For the same reason, when computing the expenditures of social insurance without expenditures on Fond hospitals, we subtract the original unadjusted number.

Demographic risk

We use the information about the health expenditures by age and gender (SHA 2014 Tables) to construct the age standardized per capita costs that are comparable across federal states. We first use the SHA tables to construct the implied theoretical costs of health care for each of the federal states, based on the demographic profile of the region. Comparing the implied values to the Austrian average we get the risk adjustment rates. We then use these risk rates reversely to convert the actual expenditures per state into a the risk-adjusted expenditures.

The SHA expenditures by age and gender are available for several functional categories, where the age profiles of costs differ substantially across the categories. Whenever possible, we use these risk rates differentiated by category in the bottom-up approach. The categories are not consistent with the aggregate approach, therefore we only adjust the final total costs. This means, in the aggregate approach, we cannot compare the risk adjusted components of the total costs separately.

Correcting for risk in the bottom-up approach has several issues:

- Most importantly, the SHA tables by age and gender put long-term care into the corresponding categories inpatient/outpatient/day care (home health care is separately). Out of these three, the vast majority of long-term care is inpatient. Therefore, we can apply the risk rate together on

inpatient (without long-term) + long-term care, but not separately on the two (age expenditure profiles unknown separately).

- Other discrepancies coming from approximation of variables described above are possible.

We apply the risk rates for each federal state to adjust the actual expenditures from the data. The adjusted expenditures can be interpreted as *hypotetical expenditures of a federal state, if the age structure of its population was equal to the age structure of Austria*. For expenditure categories for which we find no regional-level information we assume that per capita costs of the risk-adjusted population are equal across federal states.

Data files

Data files are available from HS&I on request.