



Trends in mental healthcare use

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Work package aims

Healthcare planning and decision-making face several challenges

- Substantial data requirements
- Regional variation in healthcare services use
- Lack of coordination between public and private healthcare provision
- Intersectionality and cross-sectoral coordination (social care sector, justice system, etc.)

STREAMLINE aims to support policy efforts with direct policy-relevant analyses

- Novel combination of administrative data, synthesized public information and survey data
- Comprehensive picture of recent trends and determinants of mental healthcare use

Data

STREAMLINE combines administrative data, synthesized public information and survey data

- **Frequency and granularity**

Annual district-level data

- **Observation period**

2018 to 2023; 2024 (mapping)

- **Target populations**

Children and adolescents aged 0-19 years

Adults aged 20-65 years

- **Data providers**

Gesundheit Österreich GmbH, Dachverband der Österreichischen Sozialversicherungsträger, Statistik Austria

Mental healthcare use outcomes

- **Outpatient mental healthcare use**

Patients with at least one psychotropic prescription (ATC: N05A-N06C, N07B) filled at outpatient pharmacies per 1 000 inhabitants

- **Inpatient mental healthcare use**

Hospital discharges with psychiatric main diagnosis (ICD-10 F00-F99) per 100 000 inhabitants

Contextual variables

- **Mental healthcare supply and other care institutions**

Public hospitals, private hospitals, general practitioners, psychiatrists, elderly care institutions, correctional facilities, disability care institutions, homeless shelters, refugee shelters

- **Socioeconomic and demographic factors**

Population shares: females, age groups, single households, primarily homeless, conflict background, care benefit receivers, unemployed, compulsory schooling,

District characteristics: urbanicity, average household income

Methods

Visualization of recent trends and regional patterns

- Time series plots and spatial maps
- Comparison of available outpatient providers with prescription patients in Vienna

Analysis of regional healthcare use clusters

- Local Indicators of Spatial Association (LISA)
- Algorithmic identification of low- and high-healthcare use clusters on the district level
- Identifies areas with higher or lower healthcare use rates as statistically expected based on neighboring districts

Spatial panel econometric analyses for determinants of healthcare use

- Coefficient estimation accounting for spatial dependencies and spill-over effects
- Spatial autoregressive combined (SAC/SARAR) models

Prescription trends

Divergent trends of overall psychotropic medication use between age groups from 2018 to 2023

- Downward trend among adult patients
- Upward trend among child/adolescent patients

Trends driven by specific medication groups

- Decreasing prescription rates of *anxiolytics* among adult patients
- Increasing prescription rates of *psychostimulants* and *antidepressants* for child and adolescent patients

Stable trends across states, but difference in levels

- State ranking differs by age group
- Similar patterns for psychiatric hospital discharges

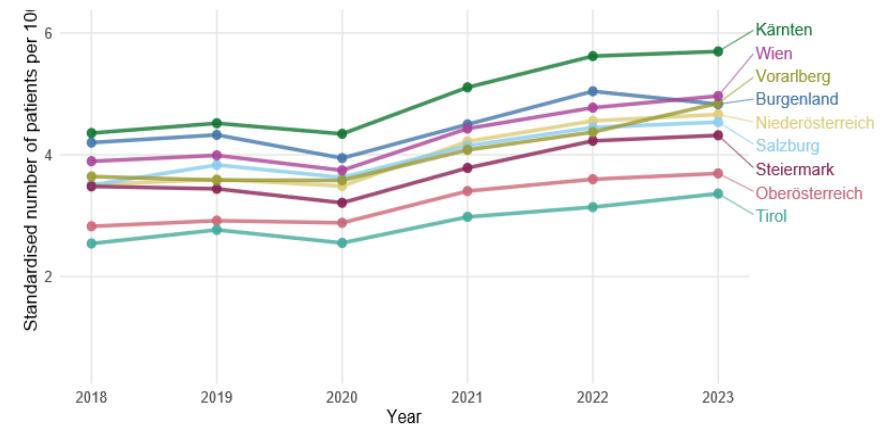
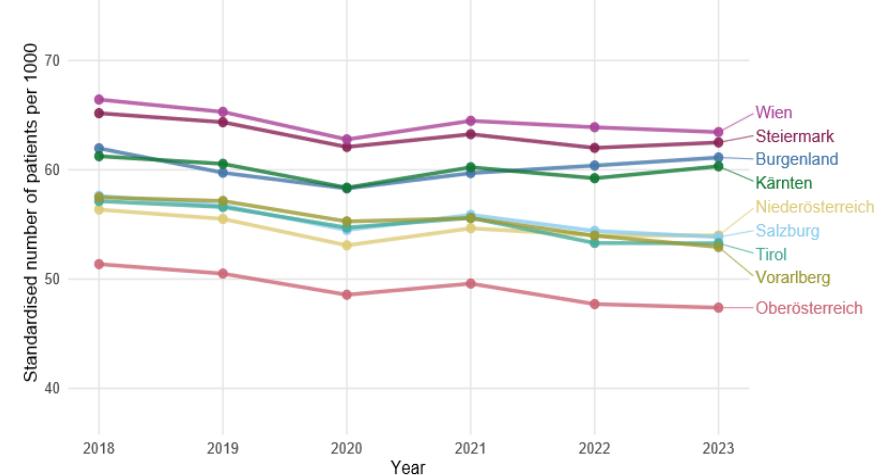
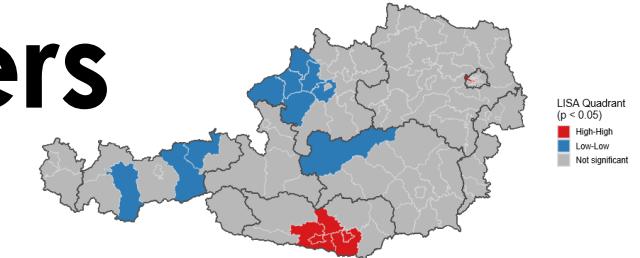


Figure (above): Standardised prescription rates per 1000 population for adult patients (20-65 years)

Figure (below): Standardised prescription rates per 1000 population for child and adolescent patients (0-19 years)

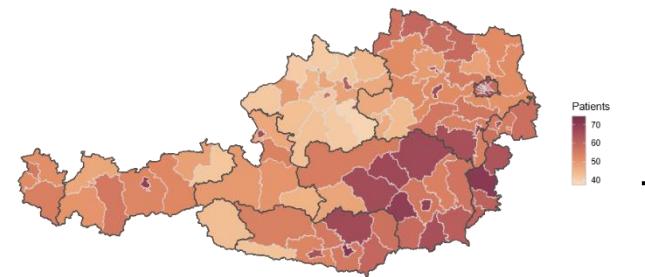
Regional variation and clusters



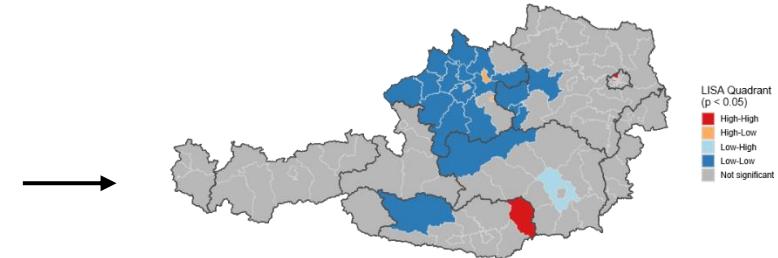
Regional clustering differs by care sector

Outpatient care

- Discernable high-use and low-use areas
- State-level patterns, e.g. low prescription rates in Upper Austria
- Noticeable urban-rural divide
- Spatial patterns differ between age groups



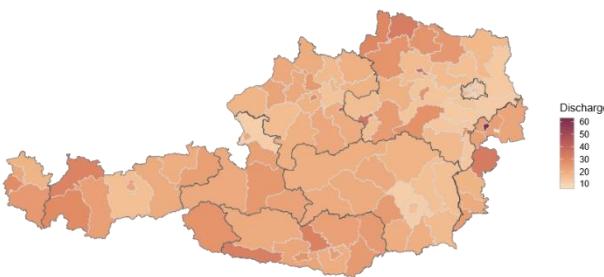
Standardized adult (20-65 years) prescription patients



Clustering of adult (20-65 years) prescription patients

Inpatient care

- State-level patterns, but no substantial district-level patterns
- Only one small low-use cluster south of Vienna
- Minor urban-rural divide



Standardized adult (20-65 years) hospital discharges



Clustering of adult (20-65 years) hospital discharges

Figure: District-level spatial patterns for outpatient (prescription rates) and inpatient (hospital discharge rates) mental healthcare service use in Austria in 2023

Determinants of healthcare use

We identify several contextual factors associated with district-level healthcare use

Institutions and populations at higher risk

- Increased prescription rate in districts with homeless institutions and higher single households
- Increased discharge rates in districts with correctional facilities

Healthcare service mix, availability and accessibility

- More outpatient psychiatrists per capita was associated with
 - ↑ Higher number of prescription patients
 - ↓ Lower average length of stay in hospital

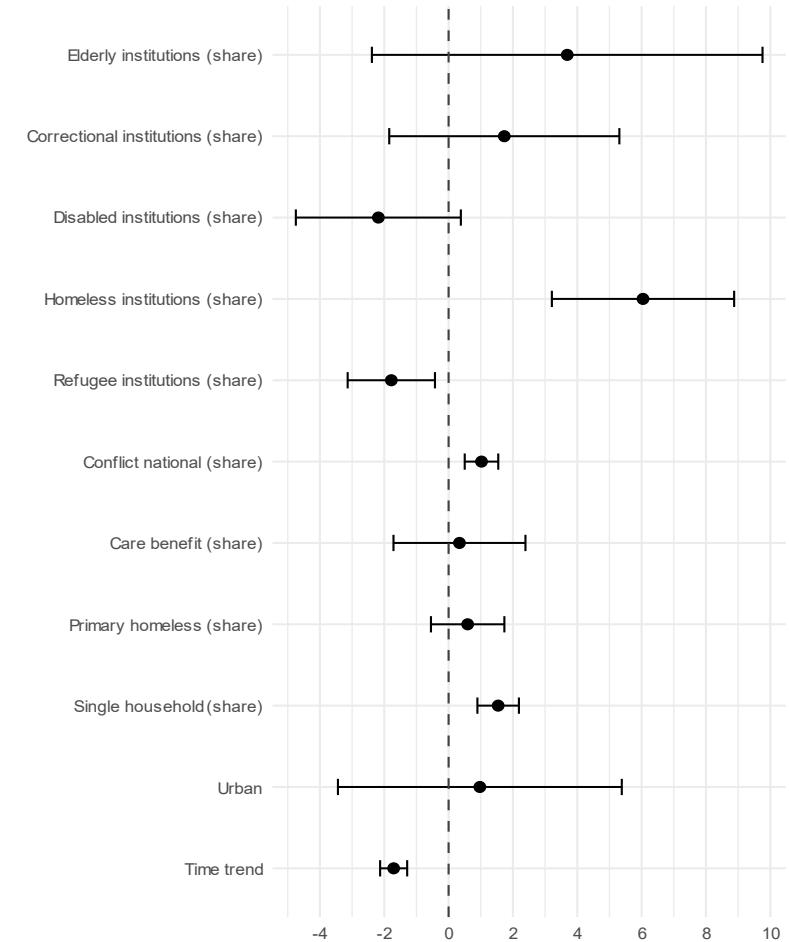


Figure: Coefficient plot of the SAC/SARAR regression model on prescription patients per 1000 population; only selected coefficients capturing healthcare supply factors are displayed

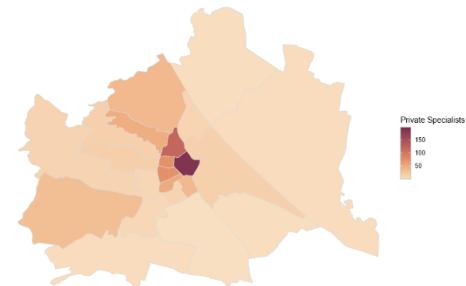
Mental healthcare in Vienna

Accessibility imbalances reflect socioeconomic disadvantages

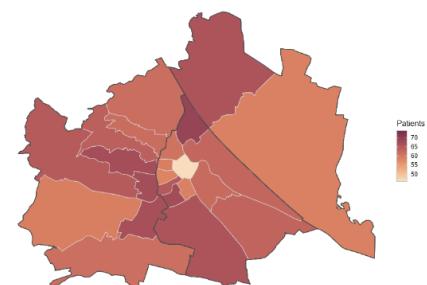
- Mental healthcare service use is evenly spread across districts, while service provision is concentrated
- Access barriers for patients in peripheral and less affluent districts
- Similar patterns for other outpatient treatments (psychotherapy, clinical psychology)

Private healthcare service provision exacerbates this problem

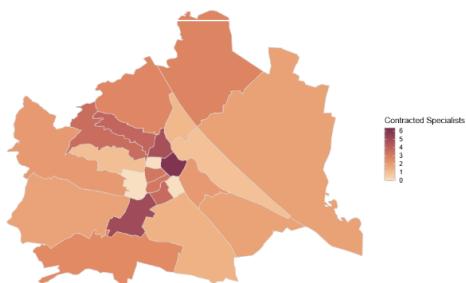
- Most outpatient psychiatrists in Vienna without social health insurance contract
- Low prescription rate in 1st district likely due to high number of private patients who are not reflected in our data



Private specialists per 100 000 population



Standardised patients per 1000 population



Contracted specialists per 100 000 population

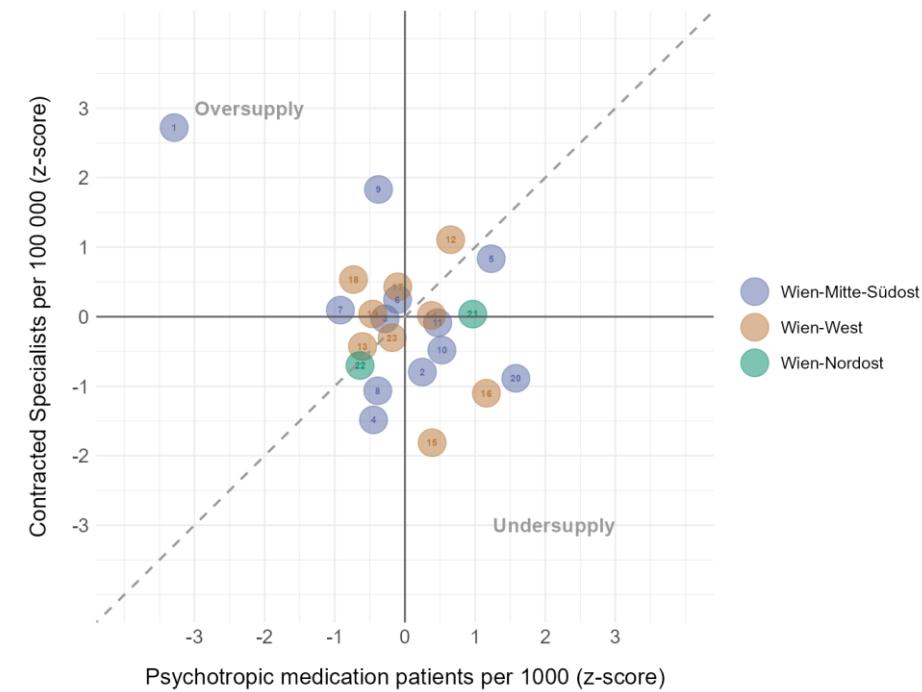


Figure (left): Distributions of mental health care patients (2023) and provider density (2024)

Figure (right): Two-way scatter plot of deviations from citywide mean in contracted specialists and outpatient patients

Policy implications & challenges

Substantial regional variation in outpatient and inpatient mental healthcare use

- Spatial patterns are not explained by epidemiology, but various other district characteristics
- Regional patterns tend to follow state borders hinting at system level differences and medical practice variation

The type and intensity of mental healthcare use is linked with the local availability of specific services

- Availability and accessibility of services (financial, geographical, etc.) influence patients' treatment paths
- Institutions housing populations at higher risk for mental ill health, such as homeless shelters or prisons, tend to increase the local demand for mental healthcare services in the surrounding area
- Potential misalignment between need for outpatient services and their availability in Vienna, pointing at access barriers in peripheral districts

Private healthcare provision is a challenge for healthcare planning

- **Data blind spot:** No regular reporting of healthcare contacts to statistical or data sharing (e-card system)
- **Service location:** (Economic) incentives for private providers to locate in central and/or affluent areas
- **Equity:** Reliance on the private healthcare sector to cover mental health care service provision creates equity issues and requires substantial coordination effort to maintain socioeconomic balance

Thank you! | Vielen Dank!

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