



# Trends in mental healthcare use

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STREAMLINE Symposium

23.01.2026

# 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

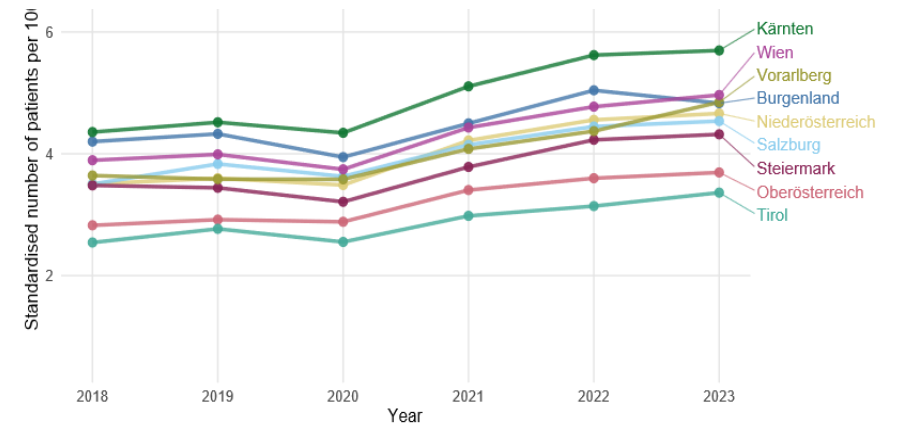
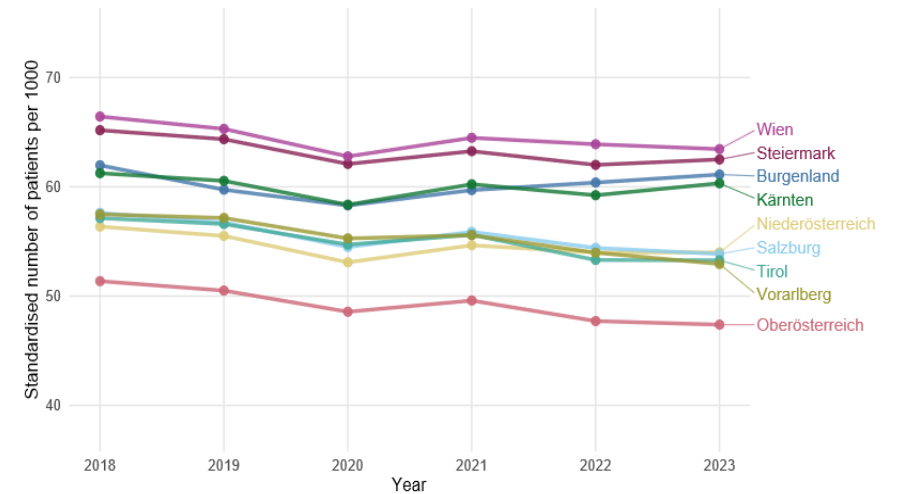
- Downward trend among adult patients
- Upward trend among child/adolescent patients

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

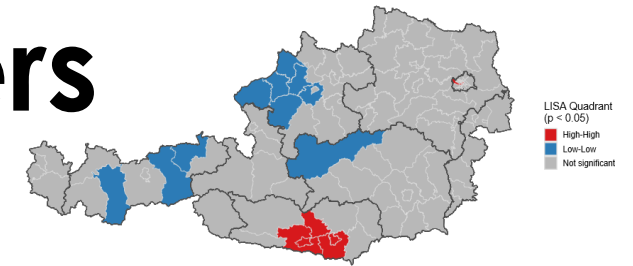
## Regional clustering differs by care sector

### Outpatient care

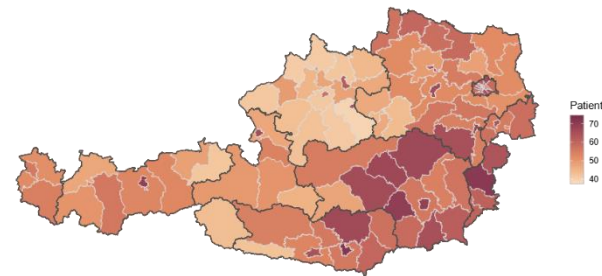
- Discernable high-use and low-use areas
- State-level patterns, e.g. low prescription rates in Upper Austria
- Noticeable urban-rural divide
- Spatial patterns differ between age groups

### Inpatient care

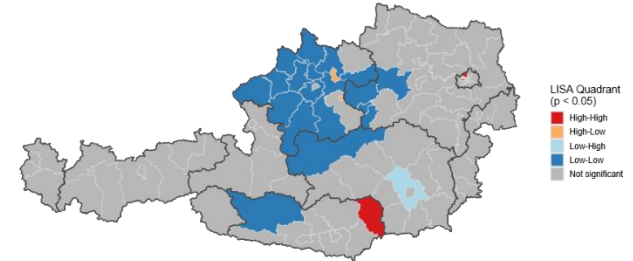
- State-level patterns, but no substantial district-level patterns
- Only one small low-use cluster south of Vienna
- Minor urban-rural divide



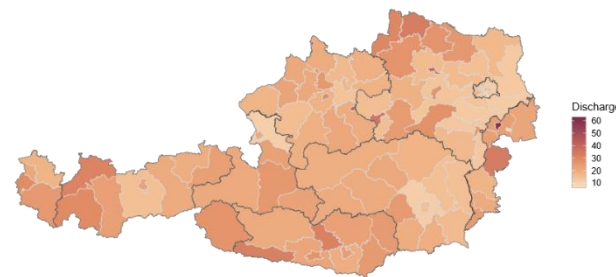
Clustering of child and adolescent (0-19 years) prescription patients



Standardized adult (20-65 years) prescription patients



Clustering of adult (20-65 years) prescription patients



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

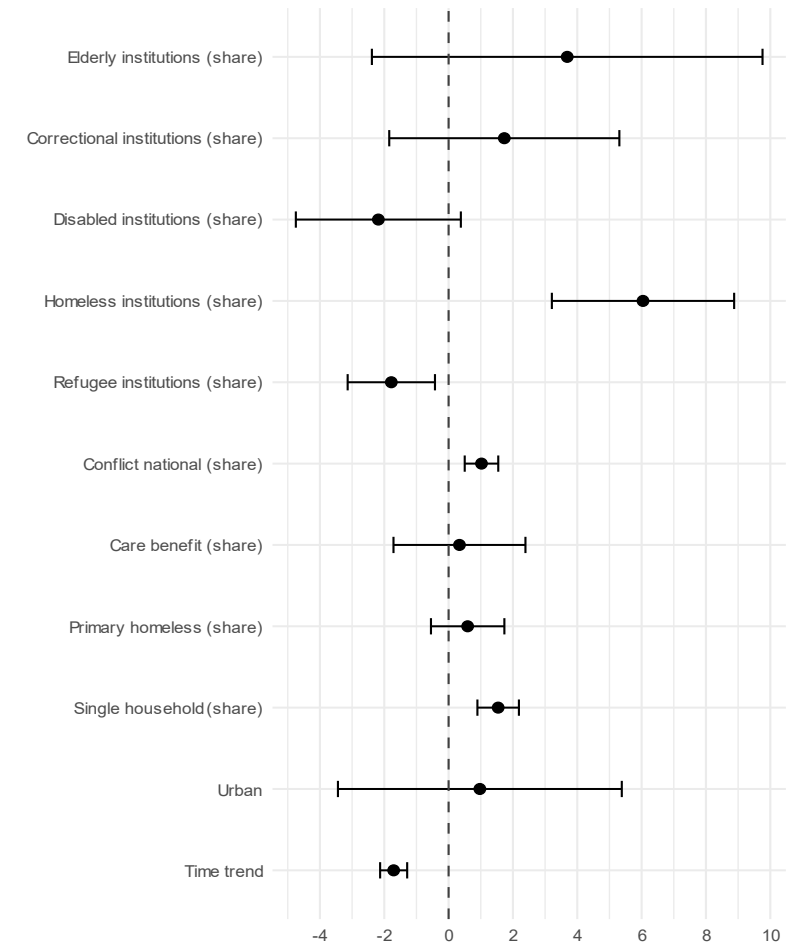
We identify several contextual factors associated with district-level healthcare use

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 51

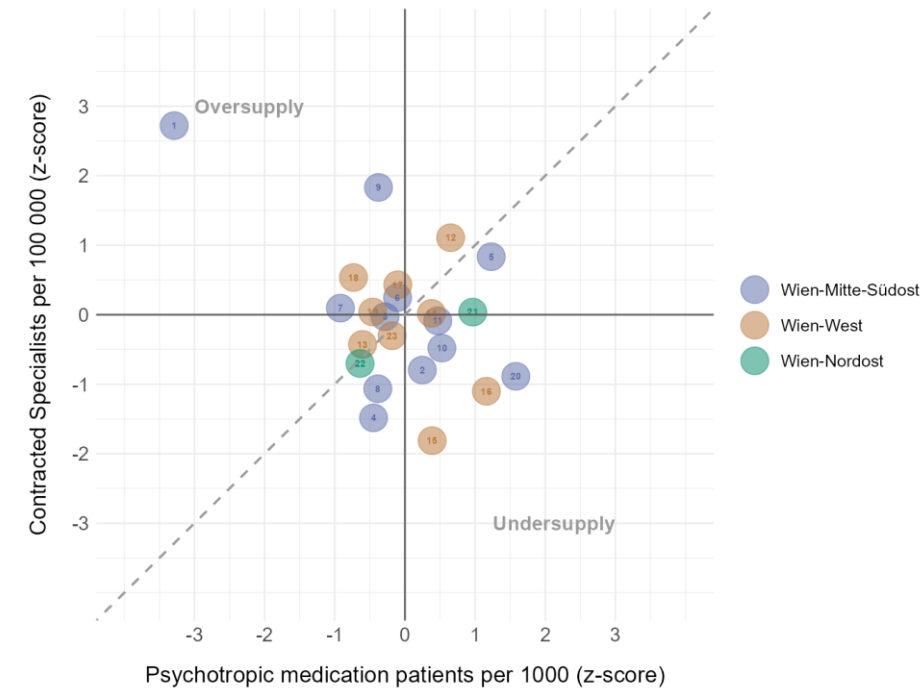
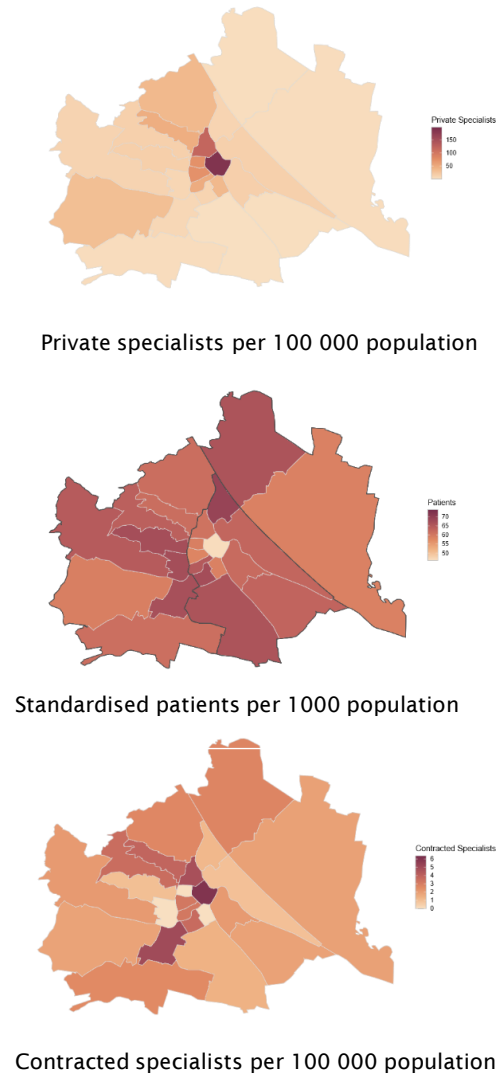
# Mental healthcare in Vienna

## 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 1<sup>st</sup> district likely due to high number of private patients who are not reflected in our data



**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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