Group 13: Migration Flows in Vienna

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Challenge

Two main guiding questions:
- What migration trends can be idenitfed in Vienna accross time and space?
- What is the relationship between migration in a given district and the election results in the Austrian national elections of 2024

Dataset

In addition to the original dataset, three other datasets were mainly used:
1. **Migration Statistics**: source: data.gv.at. Per district yearly net migration. The data is aggregated by gender, nationality (Austrian or non-Austrian), and migration target/source: abroad, Austria, or within Vienna. 2007 - 2023
2. **Election results:** 2024 national election results for each district in Vienna from the Vienna government agency www.wien.gv.at.
3. **Rent Prices**: The average rent prices per square meter in each district from the website www.immopreise.at, with the original source being *Der Standard*.
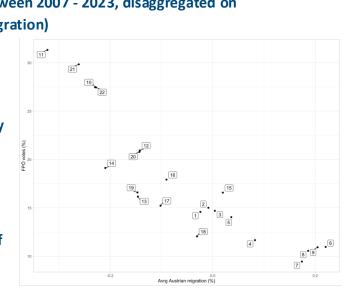
Data preparation

- **Adding population data to transform migration into a percent of current population → accounts for difference in size of district**
- **Adding Sociodemographic data for 2023**
- **Adding rent prices for 2023**
- **Adding geo data to create maps**
- **Adding election results data per district for 2024**

Data Sources: https://www.data.gv.at/; https://www.immopreise.at/; https://www.wien.gv.at/wahlergebnis/de/NR241/index.html

Data understanding

- **Migration based population increase driven by international migration with peaks in 2015 (refugee crisis) and 2022 (war in Ukraine)**
- **Outer Districts see large negative Migration of Austrians**
- **Districts 5-9 see largest positive migration of Austrians**
- **Migration from outside Vienna is targeting central districts**
- **Migration within Vienna flows from central districts to outer districts**

Modeling

- **Multivariate linear regression**
- **Controlling for demographic variables: age, income and gender .**
- **One model for each political party.**
  Dependent variable: percentage of votes (per district)
  Independent variables (average per district):
  - Sex, age, income (2023)
  - External migration, between district migration, within district migration (average between 2007 - 2023, disaggregated on austrian and foreign migration)

- **Full model, improve by removing terms to:**
  - minimize AIC
  - avoid multicollinearity (VIF < 10)
- **Evaluation:**
  - R-squared
  - Root Mean Squared Error
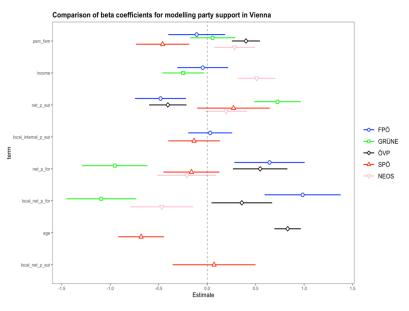 - Normal distribution of residuals

Results

- **Results are analysed by z-transforming variables and comparing the Beta coefficients in the final models**
- **All models perform well with large R-squared and small RMSE. The FPÖ-model performs relatively worse**
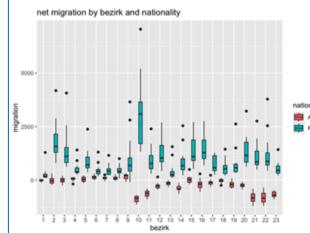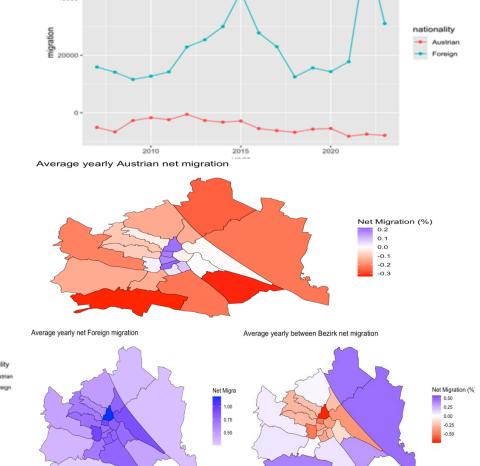- **Increased Austrian migration is associated with worse results for FPÖ and ÖVP, and better results for Die Grüne. The inverse applies for foreign migration**
- **Within Vienna migration of foreign nationals is most strongly associated with increased support for FPÖ**

Model	R2	AIC	RMSE
FPÖ	0.943	96.423	1.505
GRÜNE	0.947	79.083	1.062
ÖVP	0.966	69.696	0.858
SPÖ	0.935	80.974	1.059
NEOS	0.957	64.222	0.758

Conclusion

Rent prices: A positive correlation between net migration of Austrians and rent prices was found, indicating that Austrians tend to prefer more expensive districts. In contrast, foreign nationals exhibit a different behavior: there is a negative correlation between their net migration and rent prices, suggesting they favor more affordable districts.
Election results: Increased migration of Austrian nationals is linked to poorer election outcomes for FPÖ and ÖVP, while benefiting Die Grüne. In contrast, increased migration of foreign nationals shows the opposite trend. Within Vienna, migration of foreign nationals is most strongly associated with higher support for FPÖ.

KNIME-Workflow