

# GERMANY APARTMENT RENTAL OFFER DATA BY PROPERTIES AND STATES

## Data Source

This is open-source [data](#) extracted from [Immoscout24](#), the biggest real estate platform in Germany, but was downloaded on [Kaggle](#) for this project.

I have chosen the "Apartment rental offers in Germany" dataset because it presents a valuable opportunity to explore and analyze the trends and patterns/dynamics in the German rental market. Through data analysis and visualization, the dataset aims to answer critical questions about rent trends over time, the most expensive areas in the country, and areas with significant rent increases or decreases. This comprehensive analysis will offer valuable insights to tenants, investors, and policymakers, aiding in informed decision-making and a better understanding of the rental market in Germany.

## Data Collection

This is administrative data collected through web scrapping as a measure of apartments' rental offers from Immoscout24; which has listings for both rental properties and homes for sale, however, this data set only contains offers for rental properties from the dates 2018-09-22, 2019-02-10, 2019-05-10, and 2019-10-08.

## Data Content

The data contains variables that are most of the important properties of rental apartments, such as living area size, the rent, base rent as well as total rent, the location (street and house number, if available, ZIP code and state), type of energy, balcony, etc. The data set contains a total of 268850 rows and 49 columns.

## Limitations

The dataset's temporal scope is limited, which may not provide a comprehensive and up-to-date representation of the rental market's dynamics over time, The dataset's reliability is contingent on the quality and consistency of data available on Immoscout24 during the scraping dates, which could be subject to variability and inaccuracies over time. Furthermore, the absence of data from other sources or periods may hinder a holistic understanding of broader trends and variations in the German rental market. Data has lots of missing values.

## Data Ethics

This data is made available for analysis by the website. Data does not contain any personal information so there will not be a need for personal level agreement before use.

## Data Profile

### ➤ Consistency and Wrangling

The dataset has 268850 rows and 49 columns. During the data quality checks, 3414 duplicates were found. These duplicates were addressed by removing them and so the number of rows remains 265436. I removed 15 columns that were irrelevant to this analysis, leaving us with 34 columns. Some ambiguous column names were renamed to adhere to consistent naming conventions. Most of the columns have lots of missing values which might have been due to the collection process or human error.

Variable	Description	<i>Qualitative/ Quantitative</i>	<i>Structured/ Unstructured</i>	<i>Time-variant/ invariant</i>	<i>Nominal/ordinal/ Discrete/continuous</i>
State	German States	Qualitative	Structured	Time-invariant	Nominal
Service Charge	Auxiliary costs such as electricity or internet provided by landlords (euro)	Quantitative	Structured	Time-invariant	Continuous
Heating type	Type of heating	Qualitative	Structured	Time-invariant	Nominal
Telekom tv offer	Tv offer included or not	Qualitative	Structured	Time-invariant	Nominal
Telekom hybrid upload speed	How fast is the hybrid inter upload speed?	Quantitative	Structured	Time-invariant	Continuous
Newly constructed	Is the Building newly constructed or not?	Qualitative	Structured	Time-variant	Nominal
Balcony	Does an apartment have a balcony or not?	Qualitative	Structured	Time-invariant	Nominal
Picture count	Number of pictures uploaded to the listing	Quantitative	Structured	Time-invariant	Discrete
Telekom upload speed	How fast is the internet upload speed	Quantitative	Structured	Time-invariant	Discrete
Total rent	Total rent which includes a sum of base rent, service charge, and heating cost)	Quantitative	Structured	Time-invariant	Continuous
Year Constructed	Year apartment was constructed	Quantitative	Structured	Time-variant	Discrete
Parking spaces	If apartment has parking spaces or not	Quantitative	Structured	Time-invariant	Discrete
FiringTypes	Apartment's main energy sources	Qualitative	Structured	Time-invariant	Nominal
Kitchen	Has a kitchen or not	Qualitative	Structured	Time-invariant	Nominal
Cellar	Has cellar or not	Qualitative	Structured	Time-invariant	Nominal
Base rent	Apartment rent without service charge	Quantitative	Structured	Time-invariant	Continuous

Living space	Living space in sqm	Quantitative	Structured	Time-invariant	Continuous
Geo_krs	District above postal code	Qualitative	Structured	Time-invariant	Continuous
Condition of flat	Condition of the flat	Qualitative	Structured	Time-invariant	Nominal
Interior qual	Quality of apartment interior	Qualitative	Structured	Time-invariant	Nominal
Pets allowed	Are pets allowed or not	Qualitative	Structured	Time-invariant	Nominal
Type of flat	Type of flat	Qualitative	Structured	Time-invariant	Nominal
Postal code	Zip code	Quantitative	Structured	Time-invariant	Nominal
Lift	Is elevator available or not	Qualitative	Structured	Time-invariant	Nominal
Number of rooms	Number of rooms in the building	Quantitative	Structured	Time-invariant	Discrete
ThermalChar	Energy need of apartment	Quantitative	Structured	Time-invariant	Continuous
Floor	Which floor is the flat on	Quantitative	Structured	Time-invariant	Discrete
Garden	Has a garden or not	Qualitative	Structured	Time-invariant	Nominal
City/town	city/town of apartment	Qualitative	Structured	Time-invariant	Nominal
LastRefurbish	Last time apartment was refurbished	Qualitative	Structured	Time-variant	Continuous
ElectricityBasePrice	Is elevator available or not	Quantitative	Structured	Time-invariant	Continuous
ElectricityKwhPrice	Electricity price per kWh	Quantitative	Structured	Time-invariant	Continuous

Analysis Questions

- How stable is the rental market in Germany?
- What are the major factors that determine the rental offer of apartments in Germany?
- How have rental prices in Germany evolved over time on the selected dates?
- Which states/cities in Germany offer more expensive rents than the others?
- Is there a correlation between the size of the city or urban center and rental prices in Germany?
- Can external factors, such as inflation or population growth be correlated with the observed rental market trends during the selected time frames?

Hypotheses

- Rental prices have consistently increased across Germany during the selected dates.
- Major cities and urban centers will exhibit the highest rental prices compared to smaller towns and rural regions.
- As the size of living space increases, The total rental offer increases