

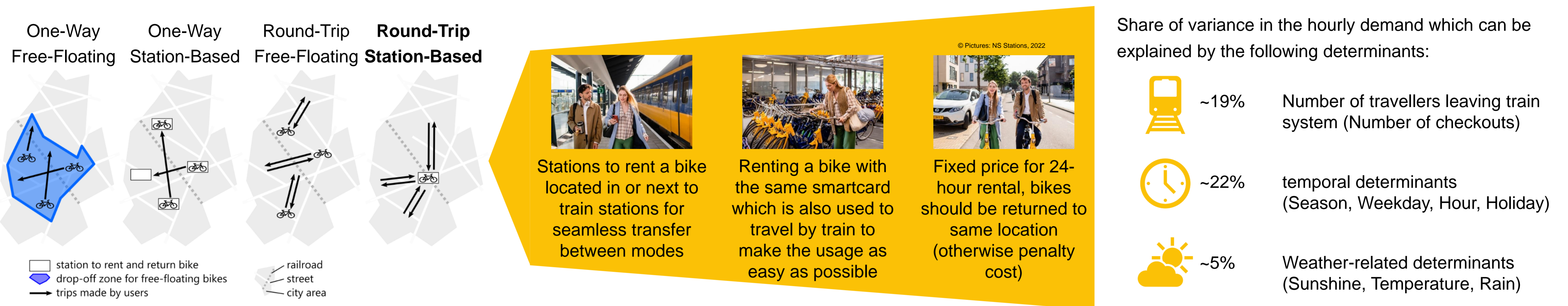
# Determinants of Station-Based Round-Trip Bikesharing

## A case study of OV-fiets in The Netherlands

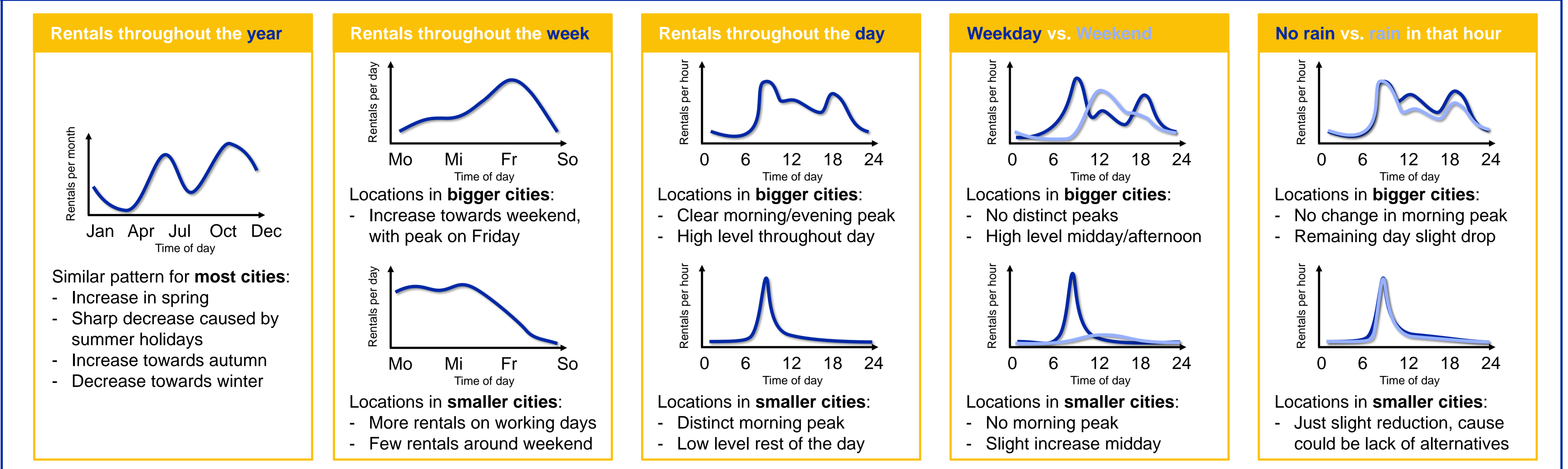
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**Aim of this research is to identify pre-COVID usage patterns within the train-system integrated bikesharing system OV-fiets**



### Descriptive analysis of eight exemplary stations – different patterns are unravelled



### Methodology

#### Data sources:

- NS Stations: OV-fiets, station information, checkouts
- National weather institute KNMI: Weather data
- Public calendars: school holidays

#### Data processing:

- Aggregation on hourly level for year 2018
- Combination of datasets
- Filtering for coherent data

#### Determinant identification:

- Multiple linear regression (MLR) including all stations in one dataset combined with backward search algorithm to identify most significant determinants
- Additional MLRs performed per station to further assess station-specific performance, see thesis for further insights (Wilkesmann, 2022)

#### Descriptive analysis:

- Aggregation and filtering of data to investigate potential patterns within the data
- Visualisation for appealing comparison

#### Forecasting (not covered in this poster, see thesis for further insights):

- Usage of created insights to perform comparative application of multiple forecasting methods to assess suitability of hourly forecasting for station-based round-trip bikesharing

### (Future) Relevance & Applicability

#### For current operators

- Information about determinants for systems' demand
- More efficient planning of shifts for employees and bike maintenance

#### For future operators

- Insights into usage of station-based round-trip bikesharing
- Identification of potential of the system to enhance multimodal transportation

#### For (potential) users

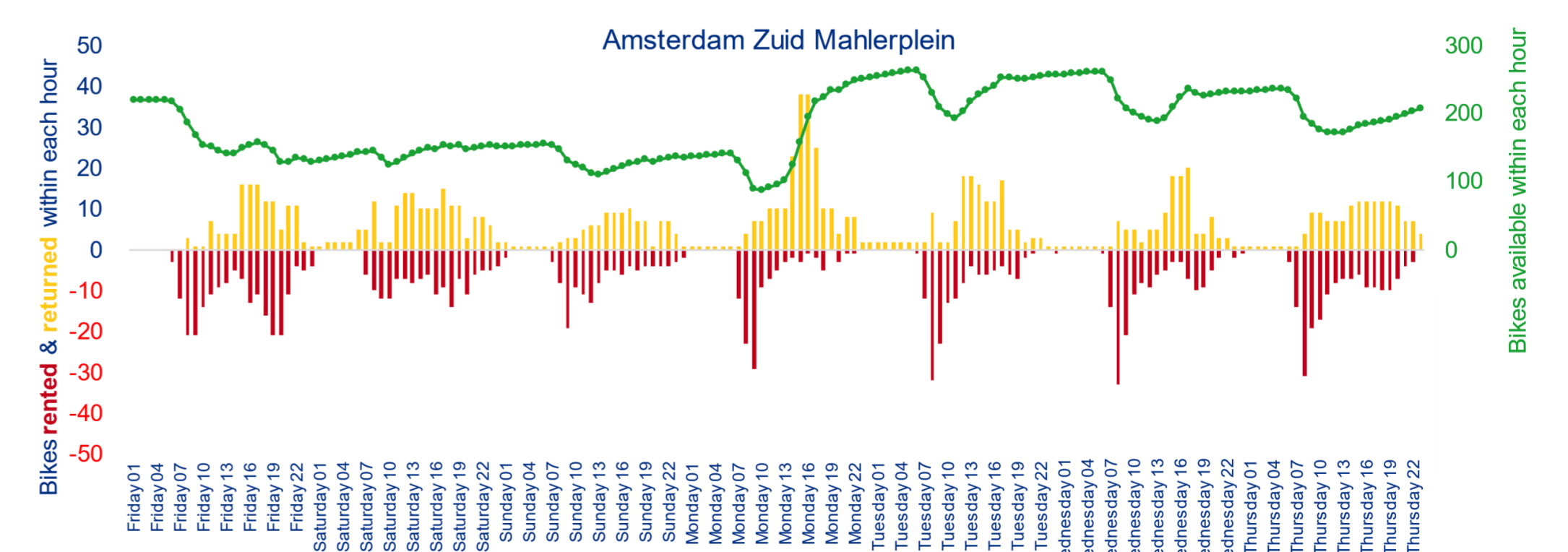
- Improved matching of supply and demand increases availability
- Increased availability increases attractiveness of system

#### For local stakeholders

- Increase in multimodal trips, potential decrease in car usage
- Possible reduction of public transport usage in peak hours (for egress of train trips)

#### Outlook:

Application of hourly forecasting for following seven days using historical data to support operators' decision-making to improve service quality (use case on the right)



### Main literature

- Eren, E., Uz, V.E., 2020. A review on bike-sharing: The factors affecting bike-sharing demand. Sustainable Cities and Society 54, 101882. doi.org/10.1016/j.scs.2019.101882
- Jonkeren, O., Kager, R., Harms, L., Te Brömmelstroet, M., 2021. The bicycle-train travellers in the Netherlands: personal profiles and travel choices. Transportation 48, 455–476.
- Schakenbos, R., Ton, D., 2021. De Fietsende Treinreiziger: Spits of Dal Reiziger? Presented at the Colloquium Vervoersplanologisch Speurwerk, Utrecht.
- Todd, J., O'Brien, O., Cheshire, J., 2021. A global comparison of bicycle sharing systems. Journal of Transport Geography 94. doi.org/10.1016/j.jtrangeo.2021.103119
- Wilkesmann, F., 2022. Short-Term Forecast of Demand for Train Station-Based Round-Trip Bikesharing: A Case Study of OV-fiets in The Netherlands. resolver.tudelft.nl/uuid:bfc3224-d5e5-4c12-babc-5f5e64cfe6d8

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