

# Joint Trips and Activities within Households: Methods and Evidence from Three German Surveys

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## Motivation and objective

In transportation research, mobility behavior is typically analyzed on a person level. Joint household trips and activities play an important role for activity-trip-scheduling within households, but there are few studies that systematically analyze them across all population groups. The aim of our work is to:

- Develop a method for the identification of joint trips and activities in household travel surveys.
- Derive a typology of joint household travel.
- Quantify the prevalence of different types of joint household trips for the population of Germany.

## Data and methods

- Data from 3 German travel surveys: Mobility in Cities (SrV)<sup>a</sup>, Mobility in Germany (MiD)<sup>b</sup> and Cities in Motion (StiB)<sup>c</sup>
- Matching of joint household trips by time, location, mode and number of persons, finding more than 90% of all joint household trips
- Household-level calibration weights based on gender, age, household size, urban-rural municipality type and day of the week for population estimates
- Explorative data analysis and visualization

**Table 1:** Comparison of the data sources

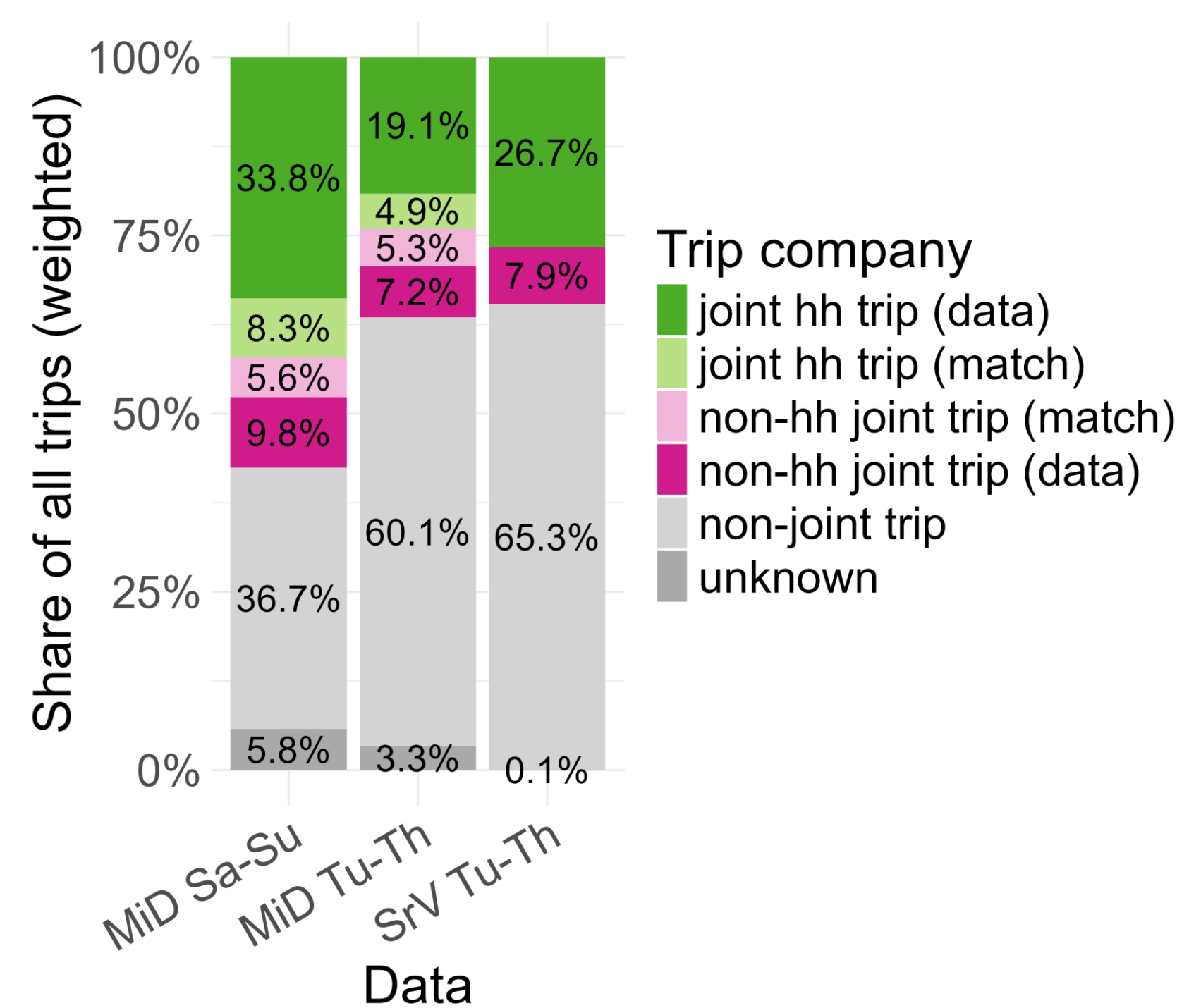
Coverage	SrV 2023 <sup>a</sup> (trip diary)	MiD 2023 <sup>b</sup> (trip diary)	StiB 2025 <sup>c</sup> (smartphone-based)
Temporal	School days Tu-Th	All days	All days
Longitudinal	1 day per person	1 day per person	median of 37 days per pers.
Household	Entire households	71.9% entire households	Few 2 pers. households
Age	All ages	All ages	Ages 16 to 75
	Joint (household) trips known	Joint trips known	Households mostly known
Spatial	about 500 municipalities	all of Germany	Dresden and Berlin
Sample size (persons)	283,314	420,979	3,755

<sup>a</sup>tud.de/srv

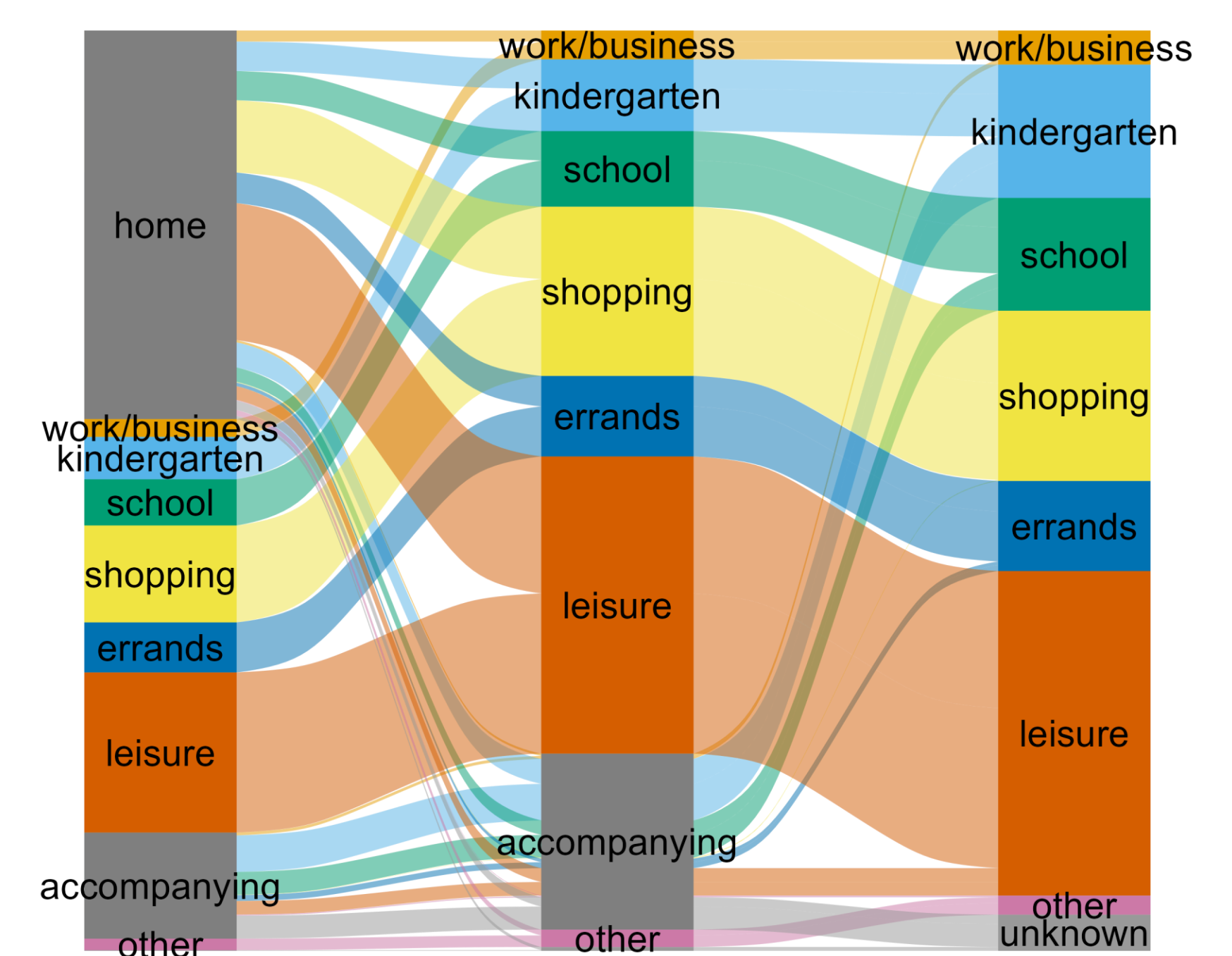
<sup>c</sup>tud.de/in-bewegung

<sup>b</sup>mobilitaet-in-deutschland.de

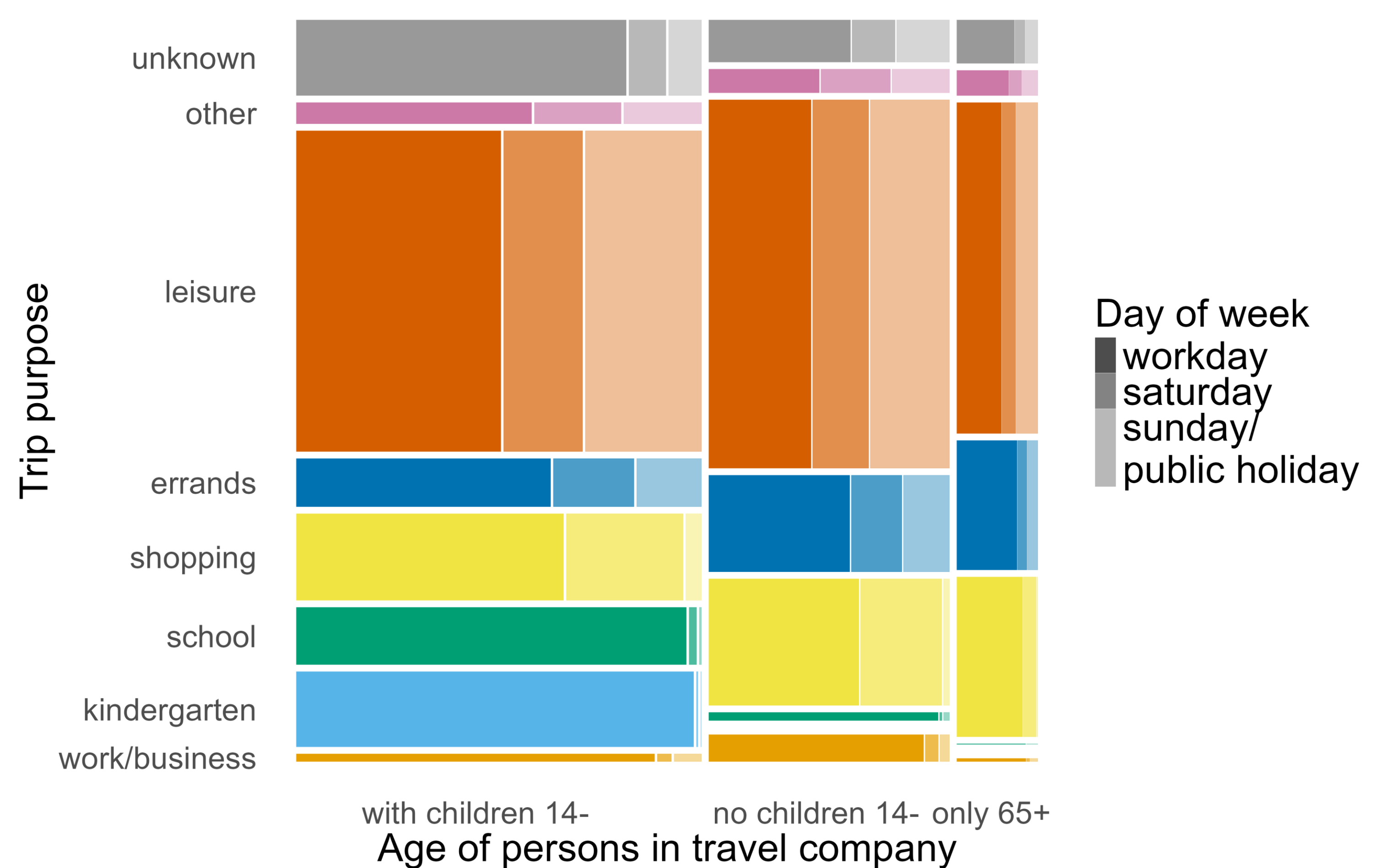
## Results



**Figure 1:** Share of joint trips among all trips (weighted)



**Figure 2:** Recoding of purposes: home to previous purpose and accompanying to the other persons' purpose (weighted SrV data)



**Figure 3:** Segmentation of joint household trips by age combinations, trip purpose and day of week (weighted MiD data)

## Conclusions

- More than 1 in 4 trips are joint household trips
- Leisure trips and trips with children dominate joint household trips
- Work trips are rarely joint
- Models and analysis of mobility behavior need to consider household interactions to understand decisions
- Matched data of joint trips provide valuable opportunities for modeling household decision making

