

# The E-Biking in Switzerland (EBIS) study: Methods and dataset

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# Summary

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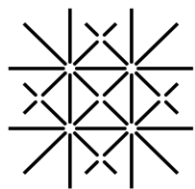
1. What is the EBIS study? Overview, recruitment, engagement
2. EBIS participants: sociodemographic comparison to MZMV
3. Travel behavior: overview and trip definition methodology

# Section 1: EBIS overview

# What is the E-biking in Switzerland (EBIS) study?

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- What:** GPS-tracking, randomized controlled trial of mobility behavior
- Who:** 3,000+ e-bikers and cyclists; researchers at ETHZ & Uni Basel
- When:** 4-9 weeks per participant; September 2022 to present
- Where:** Switzerland nationwide
- Why:** Investigate carbon savings in the transport sector from e-biking



Universität  
Basel

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# Recruitment pipeline

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## 1. Participants recruited through cycling-specific channels:

Zurich Cycle Week, Integration into ProVelo's "Prix Survey", Invitations sent through post to owners of registered e-bikes

## 2. Participants qualify for tracking study :

Own or regularly ride a bike; are at least 14 years old; live in Switzerland; use a smartphone; agree to be tracked

## 3. Participants divided into groups :

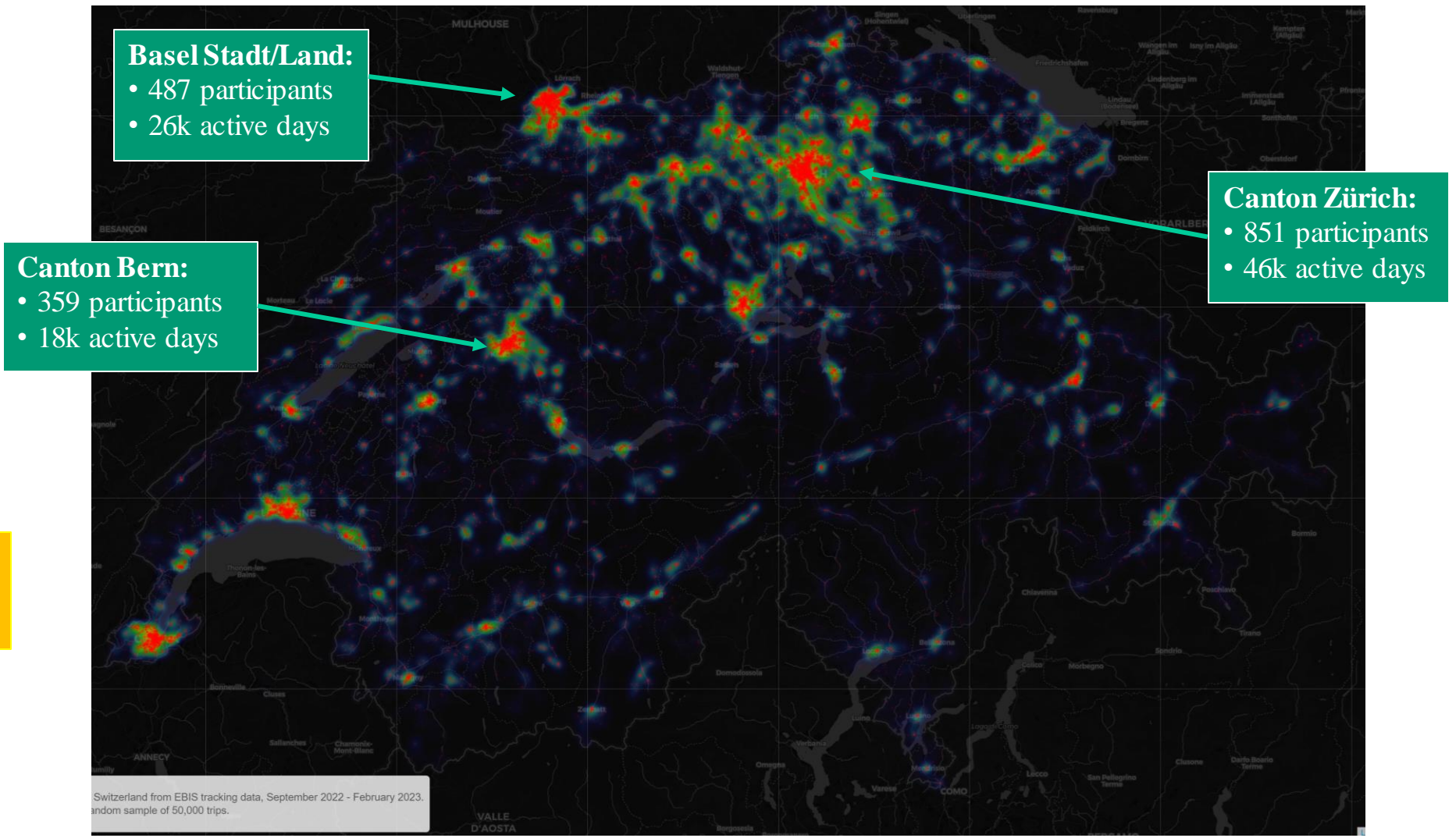
- Group A : E-bikers who regularly use a car
- Group B : E-bikers who do not regularly use a car
- Group C : Cyclists

RCT study on substituting e-bike trips

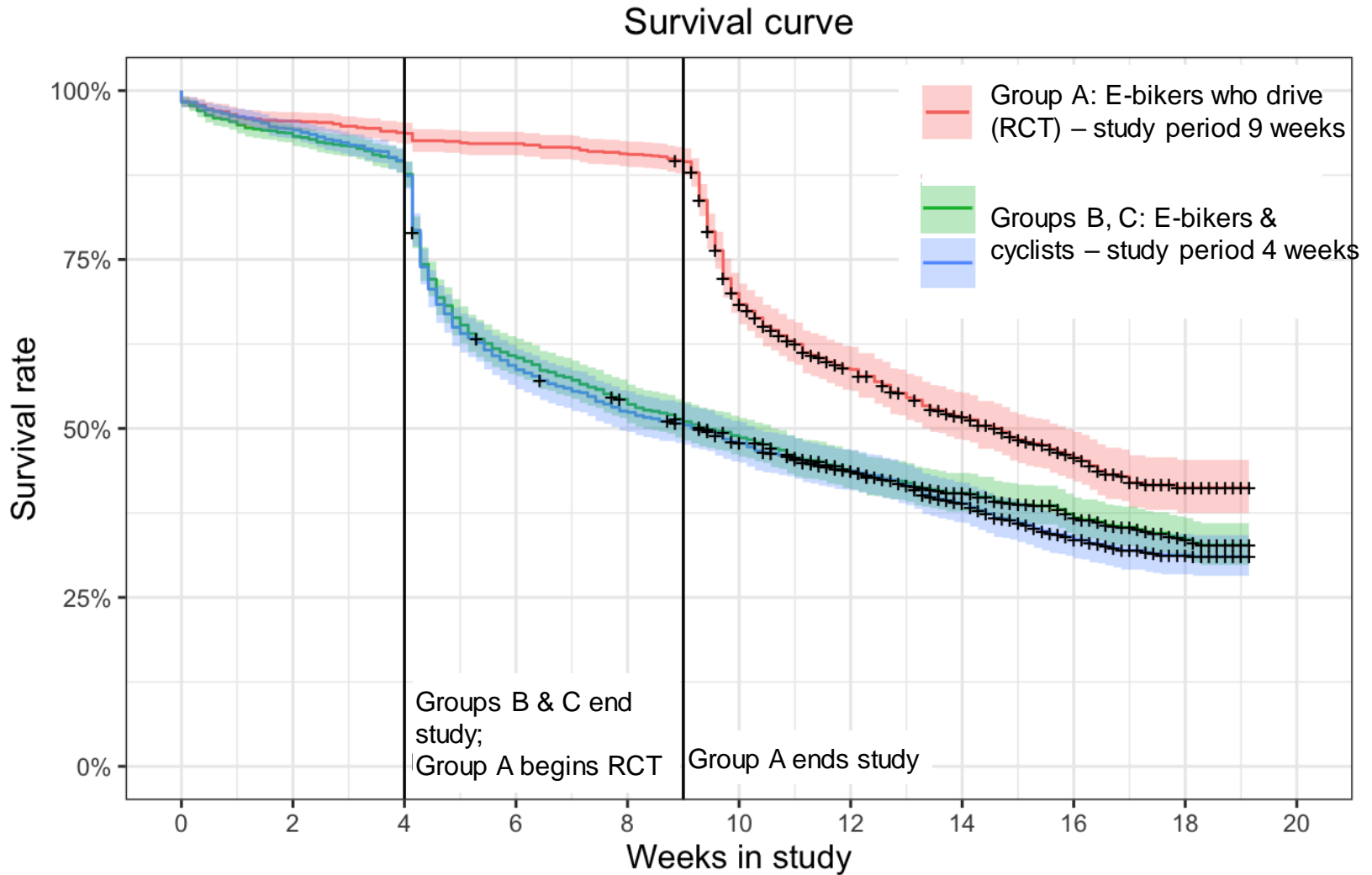
GPS tracking for route & mode choice modeling

## 4. Participants begin tracking using 'catch my day' app

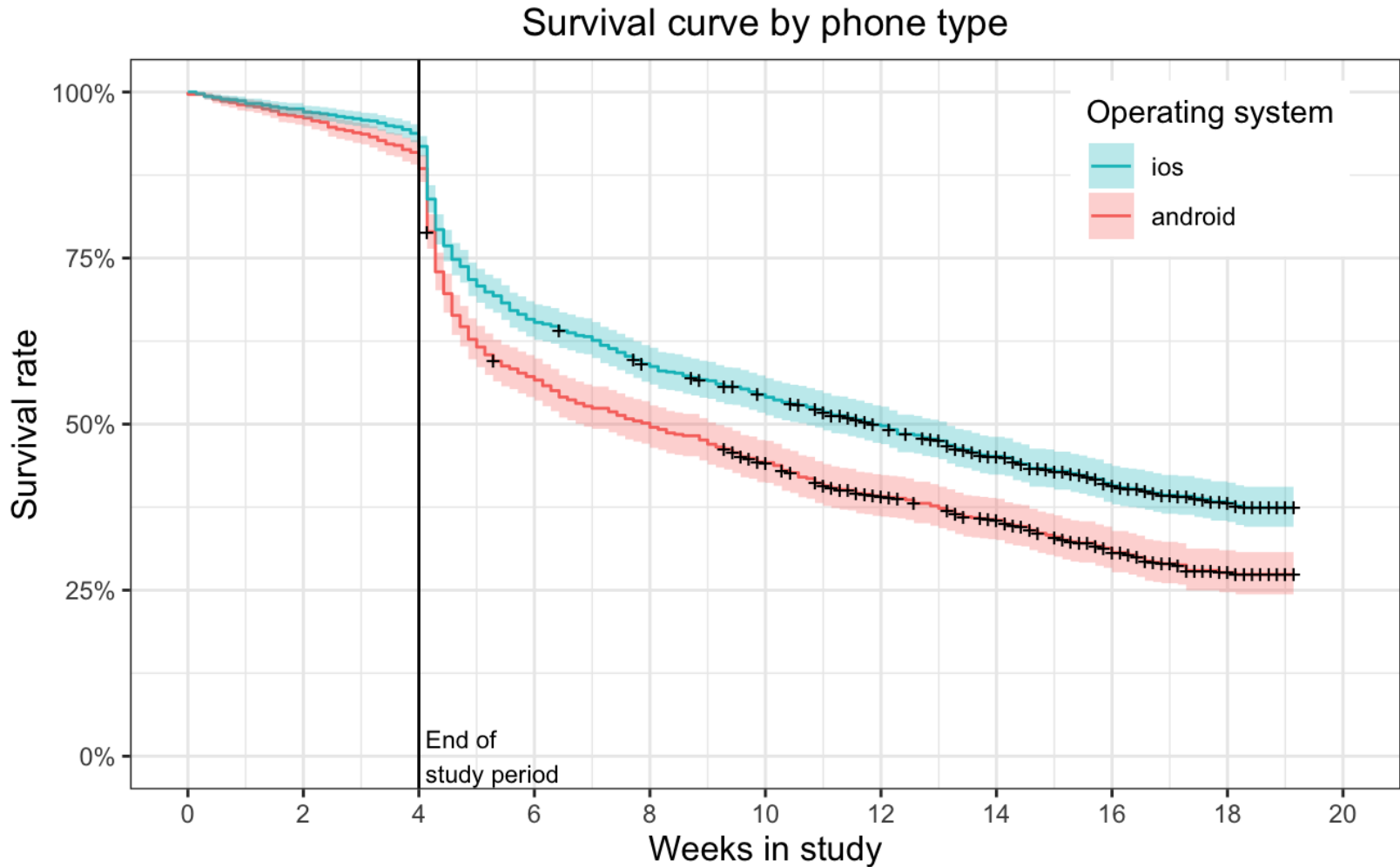
# Data includes trips from >3k participants and >174k active tracking days, spread across all cantons



# > 90% of participants who began tracking completed the study



Android users appeared to have more trouble with the tracking app, and dropped out at significantly higher rates\*

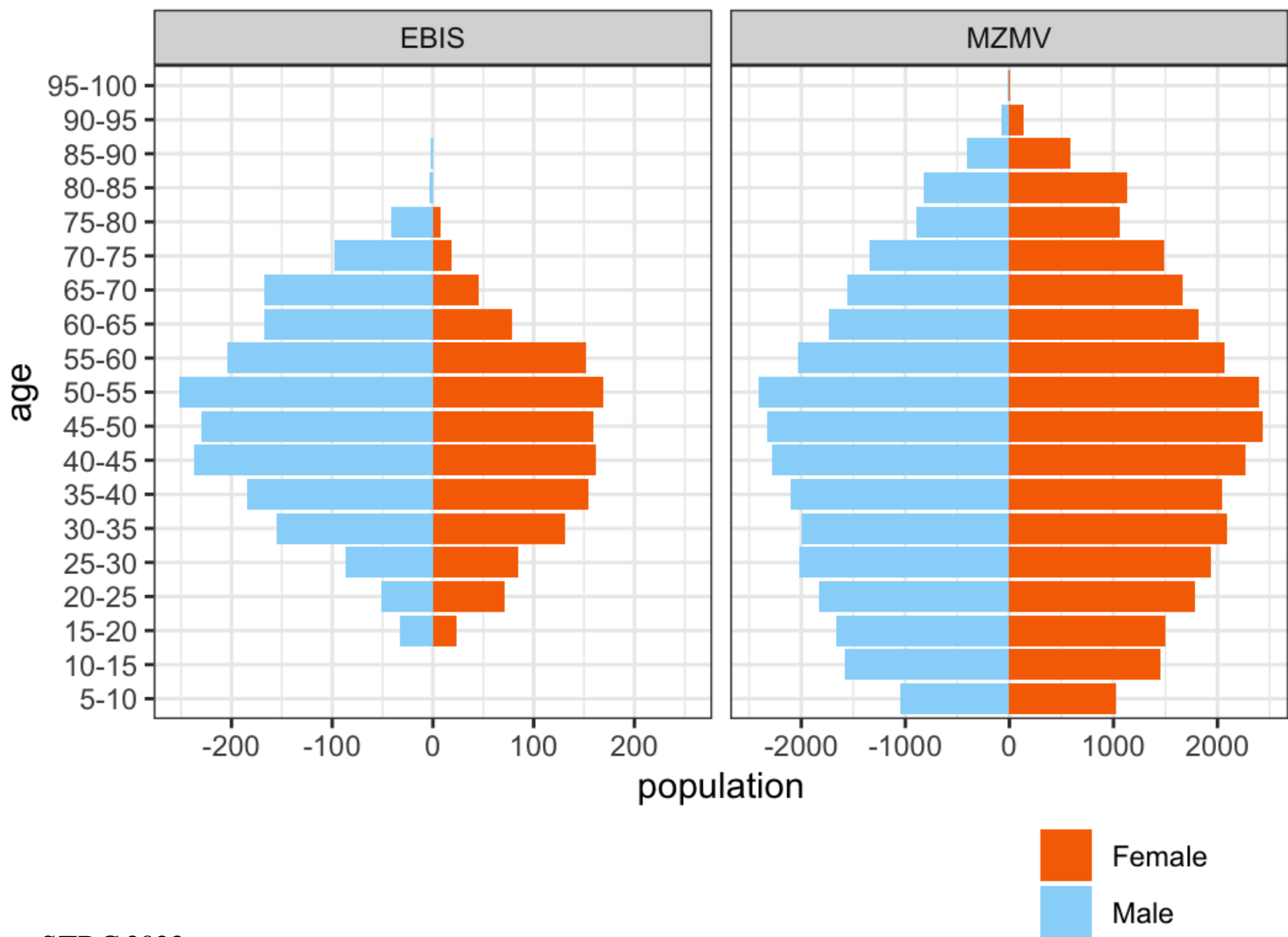


Groups B & C only to control for study period length



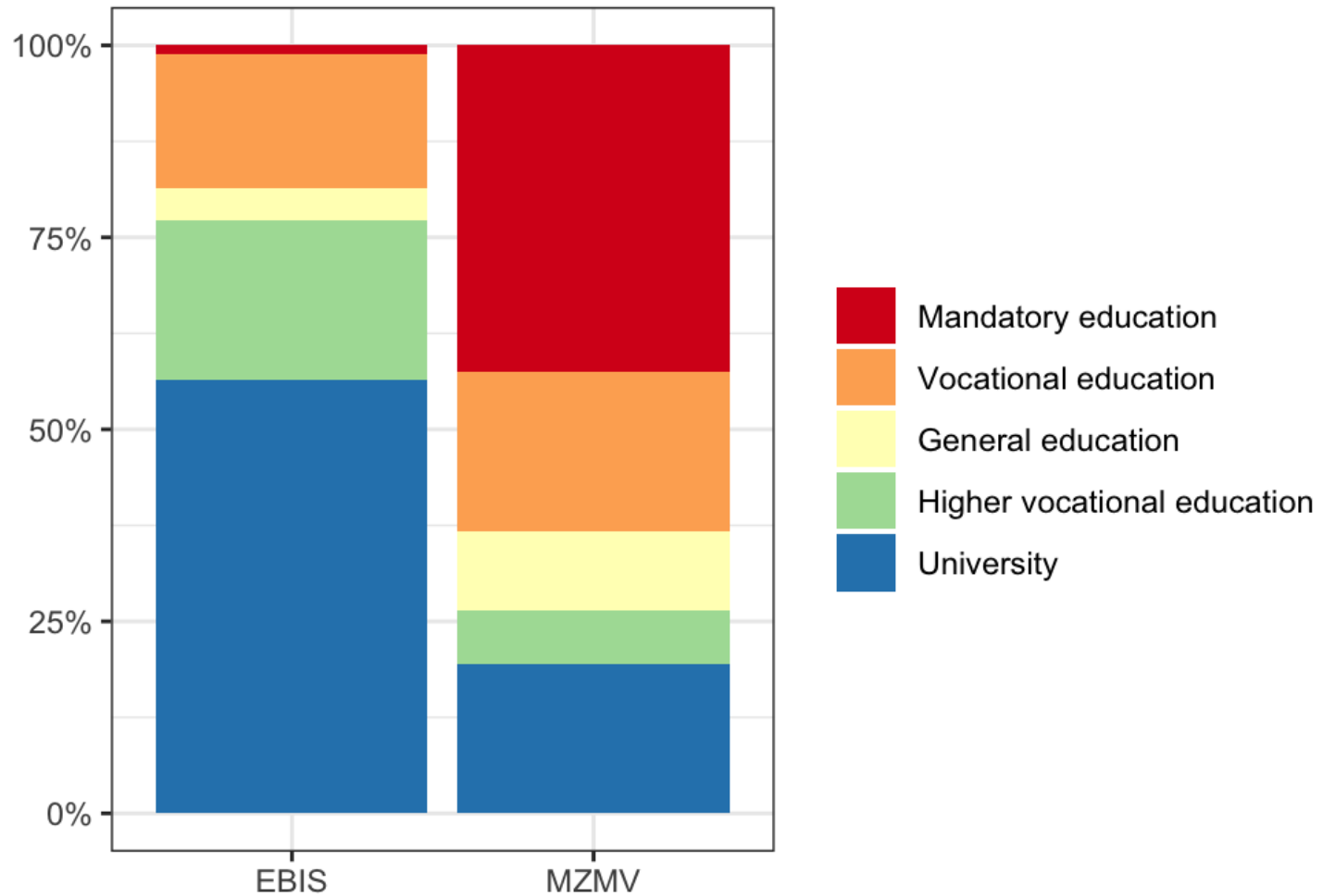
## Section 2: EBIS participants

# EBIS study population skews male and excludes the very young and very old

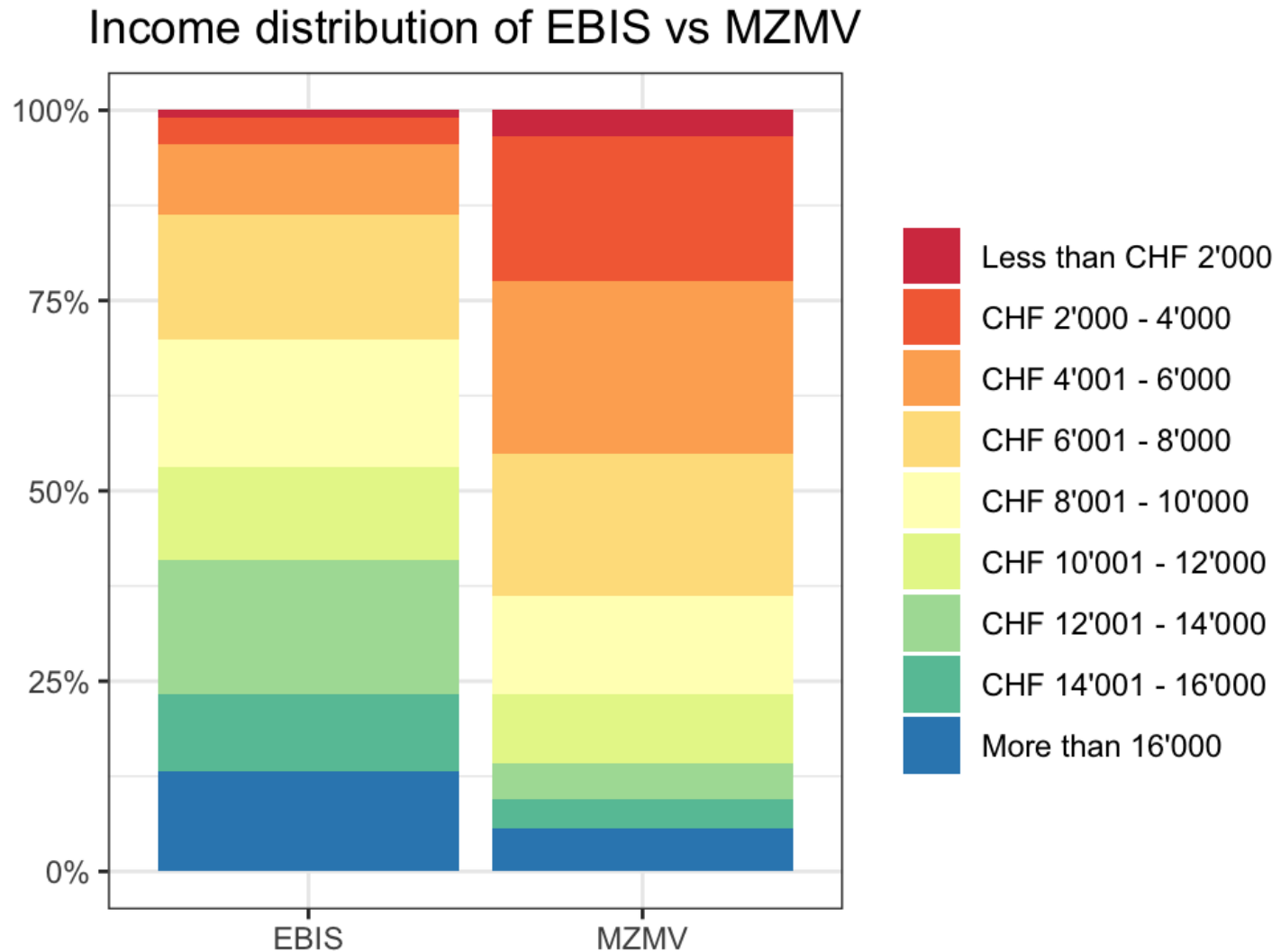


# EBIS population overrepresents the well educated

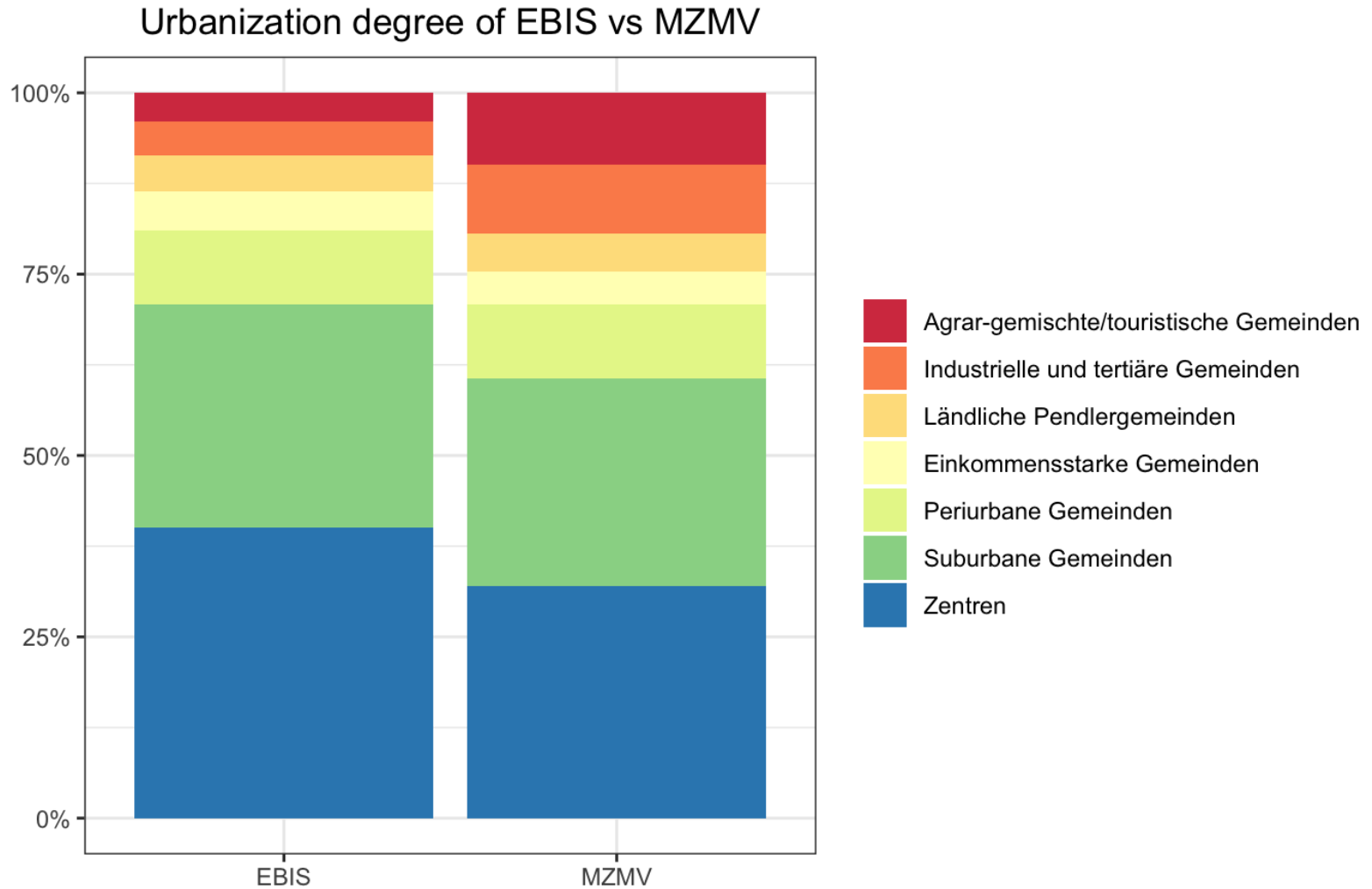
## Education distribution of EBIS vs MZMV



# EBIS population overrepresents high earners

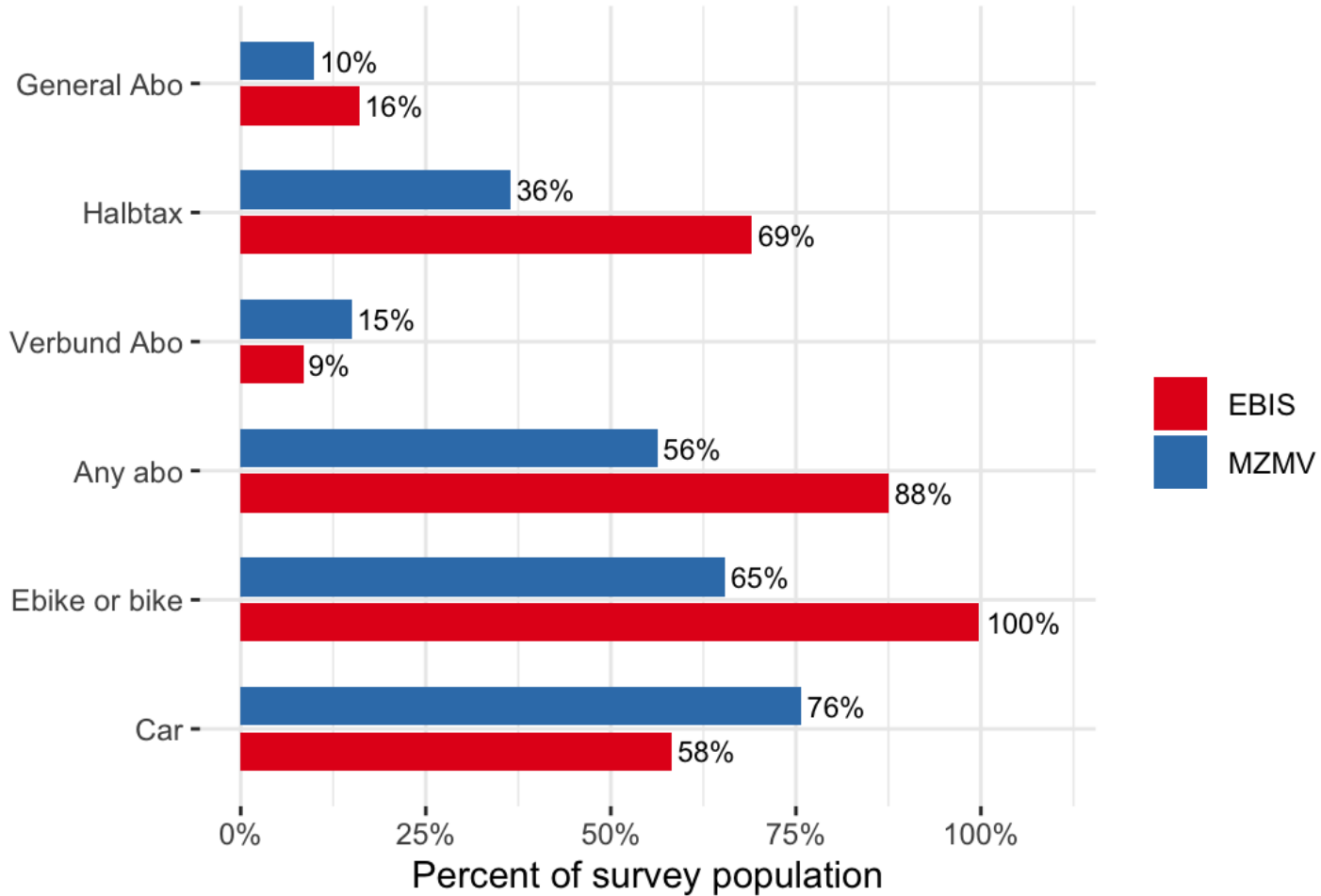


# EBIS population overrepresents those from urban areas



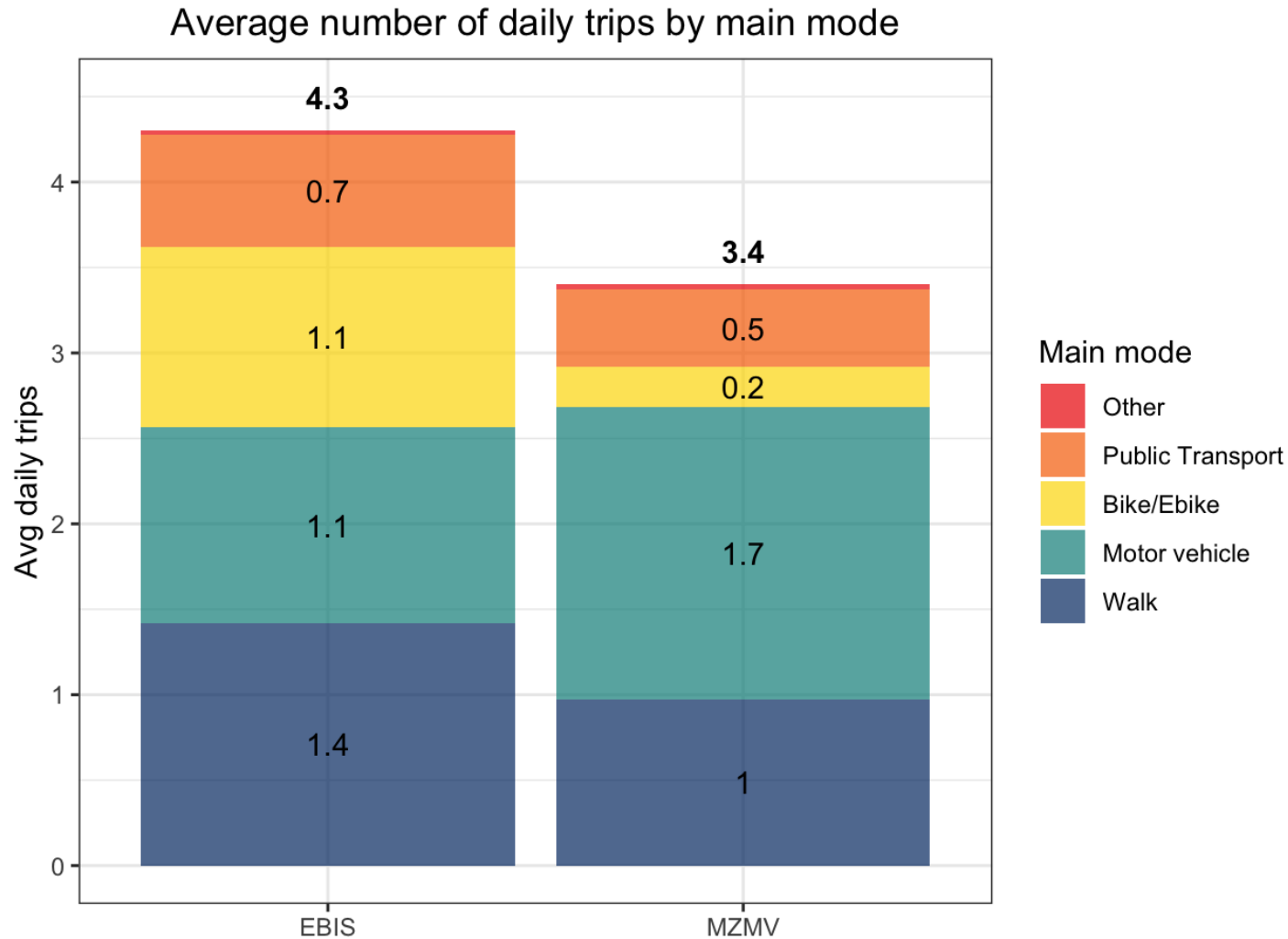
# EBIS participants are less likely than MZMV population to own regional travel card or car

### Mobility tool ownership in EBIS vs MZMV population



## Section 3: Travel behavior

# EBIS has higher average daily trips than expected: more active population or methodological error in trip definition?



**Catch my day does not aggregate stages into trips.  
We had to decide on a methodology to define trips**



## Slide on deciding methodology of aggregating trips from stages – In progress

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- Pure time cut-off (ex: 10 minutes between stages) vs incorporating public transport mode into methodology

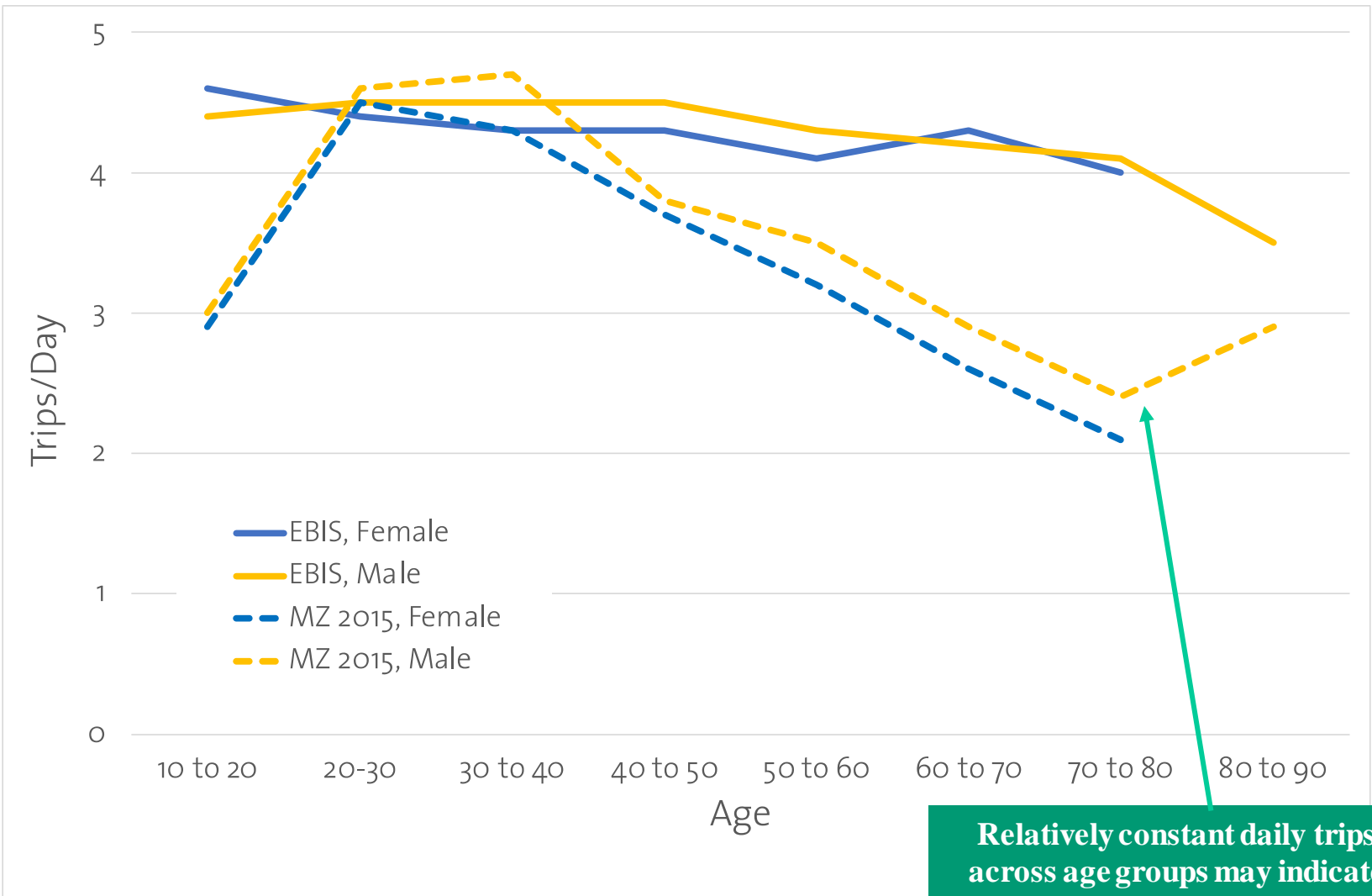
Given the difference in average daily stages, it is likely the EBIS population is truly more active than MZMV

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Daily average	EBIS	MZMV
Trips	4.3	3.4
Stages	7.9	4.9
Travel distance (km)	44	36.8
Travel time (hr:min)	1:44	1:30

60% more daily stages in EBIS than MZMV : GPS tracking likely better at capturing short stages and trips that go underreported in travel diaries

# EBIS participants experience less decline in travel as they age compared to MZMV



**Relatively constant daily trips across age groups may indicate that EBIS cyclists are also systematically more active than the general MZMV population**

## What's next for the EBIS data?

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- RCT study on the effect of pricing on substitution of e-bike for car trips
- Over 208,000 trips by bike/ebike for route choice modeling
- Over 1.7 million stages for mode choice modeling

# Appendix

## Number of average daily stages & trips

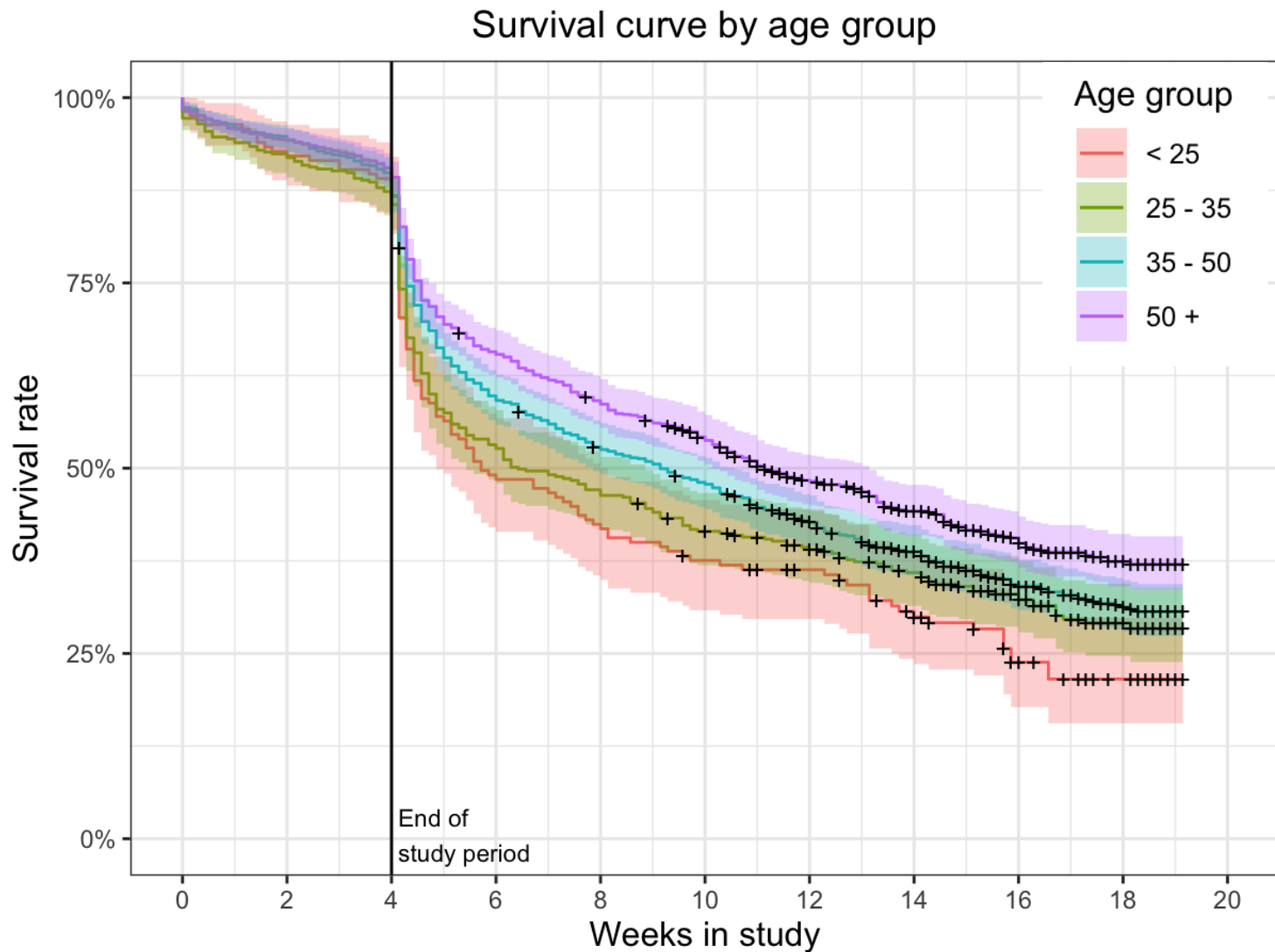
Ownership	EBIS			MZ 2015		
	Daily trips	Daily stages	Stages/ Trip	Daily trips	Daily stages	Stages/ Trip
GA	4.2	9.6	2.3	3.6	7.6	2.1
Halbtax	4.3	7.6	1.8	3.5	5.2	1.5
Regional travelcard	4.3	9.2	2.1	3.7	7.6	2.1
Car owner	4.3	7.6	1.8	3.5	4.5	1.3
Bicycle owner	4.3	8	1.9	3.5	5.1	1.5
Ebike25 owner	4.3	7.6	1.8	3.1	4.3	1.4
Ebike45 owner	4.3	7.6	1.8	3.5	5	1.4
<b>All</b>	<b>4.3</b>	<b>7.9</b>	<b>1.8</b>	<b>3.4</b>	<b>4.9</b>	<b>1.4</b>

**EBIS: unweighted values; MZ 2015 weighted values**

# Recruitment channels: EBIS 2023

Source	Wave	Con- tacted	Started survey	Con- sented	Started tracking	Finished study	Finished/S tarted survey	Finished/S tarted tracking	Tracked days( finisher)
cycleweek	1	435	103	55	45	40	38.8%	88.9%	3'219
provelo	1	7'827	3'445	1'776	1'282	1'154	33.5%	90.0%	102'221
veloplus	1	180'000	278	103	82	78	28.1%	95.1%	6'389
website	1	NA	1'007	382	258	232	23.0%	89.9%	19'261
BS	1	1'800	249	90	61	53	21.3%	86.9%	4'552
Social network	1	NA	1'116	335	238	219	19.6%	92.0%	18'317
VCS	1	NA	441	125	89	83	18.8%	93.3%	7'494
weblink	1	NA	382	125	82	67	17.5%	81.7%	7'147
other	1	NA	855	254	173	144	16.8%	83.2%	11'533
Flyer	1	NA	48	9	9	8	16.7%	88.9%	829
provelo	2	6'153	919	293	172	152	16.5%	88.4%	13'159
AG	1	2'000	392	130	80	64	16.3%	80.0%	5'935
Link	1	NA	4'892	1'198	634	576	11.8%	90.9%	54'693
Website	2	NA	335	109	66	1	0.3%	1.5%	7
ZH	2	10'000	1'591	548	367	0	0.0%	0.0%	NA
Weblink	2	NA	1'032	333	230	0	0.0%	0.0%	NA
ego_movement	1	NA	6	1	0	0	0.0%	NA	NA
Miloo	1	NA	1	0	NA	NA	NA	NA	NA
Total			17'112	5'869	3'871	2'871	16.8%	74.2%	254'756

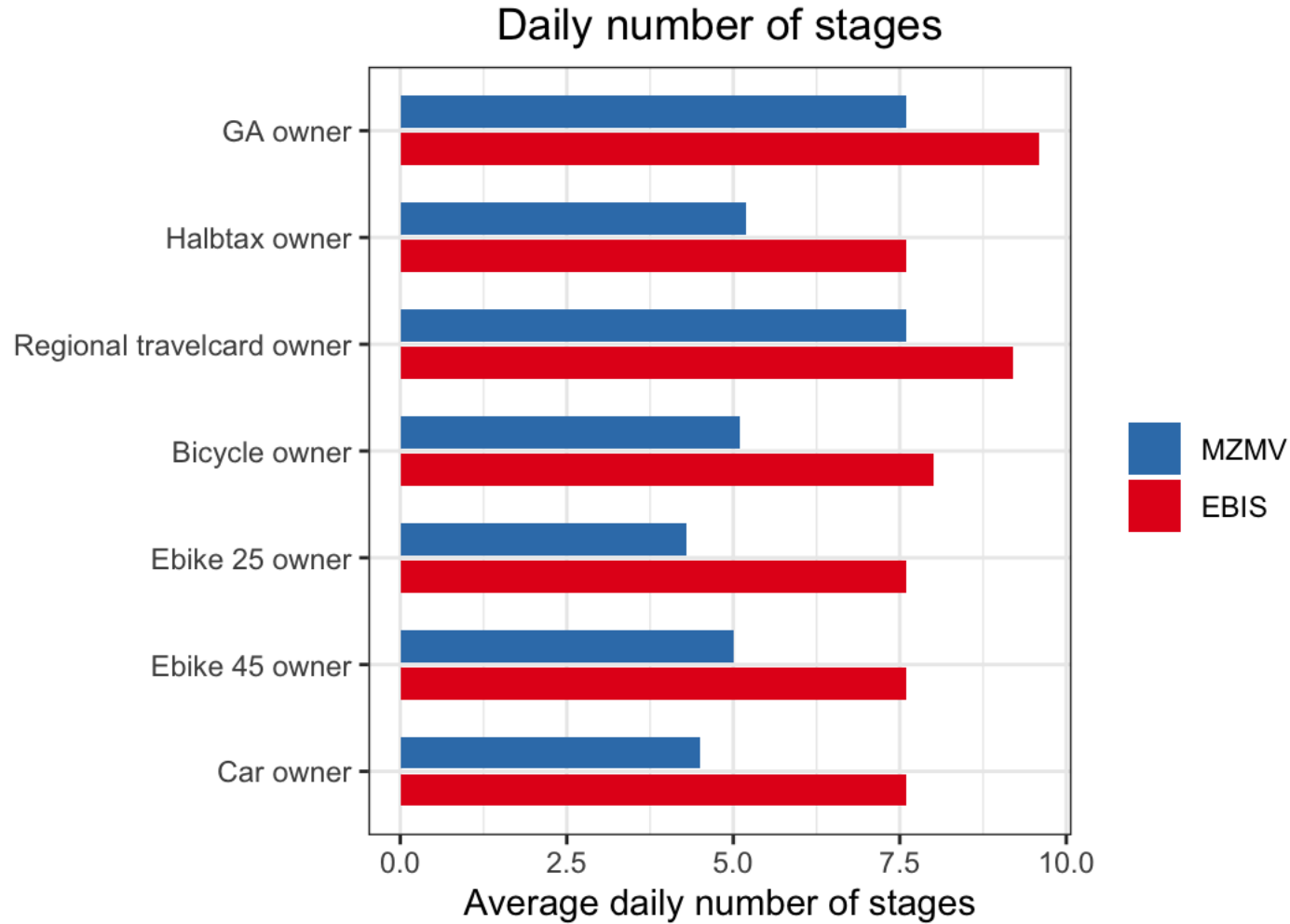
# Survival rates by age group



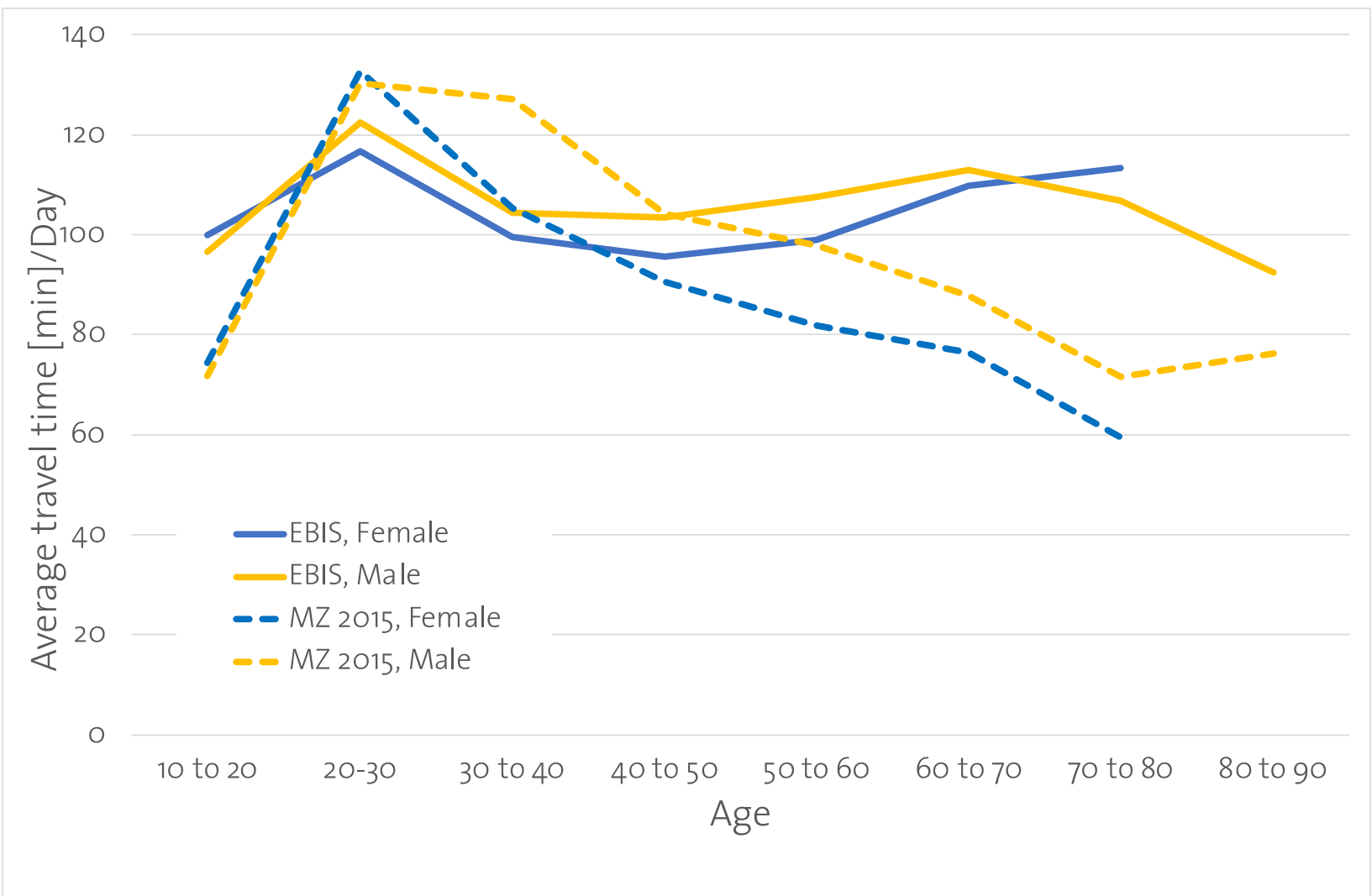
Groups B & C only to control for study period length



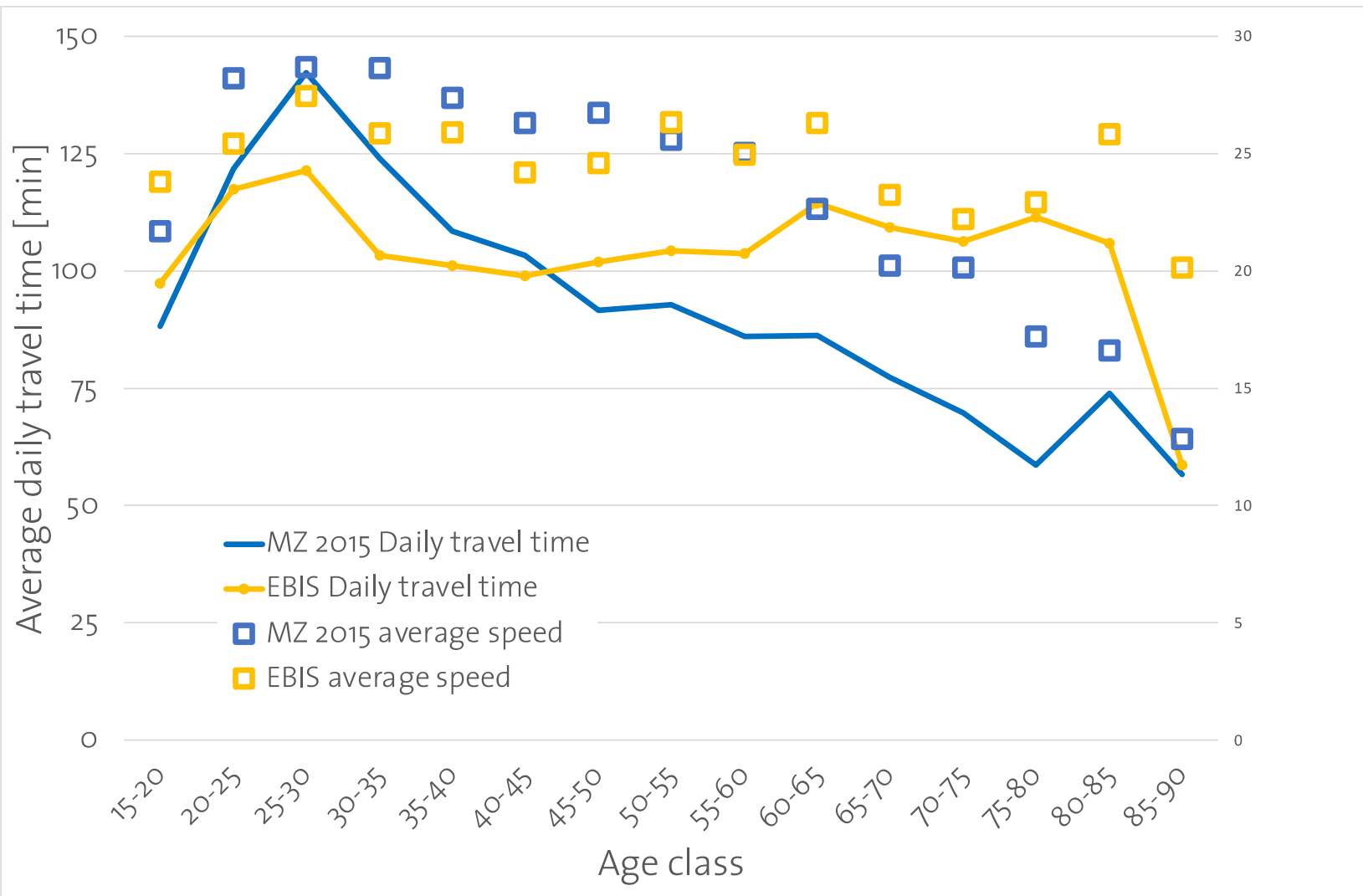
# Daily average number of stages by mobility tool ownership



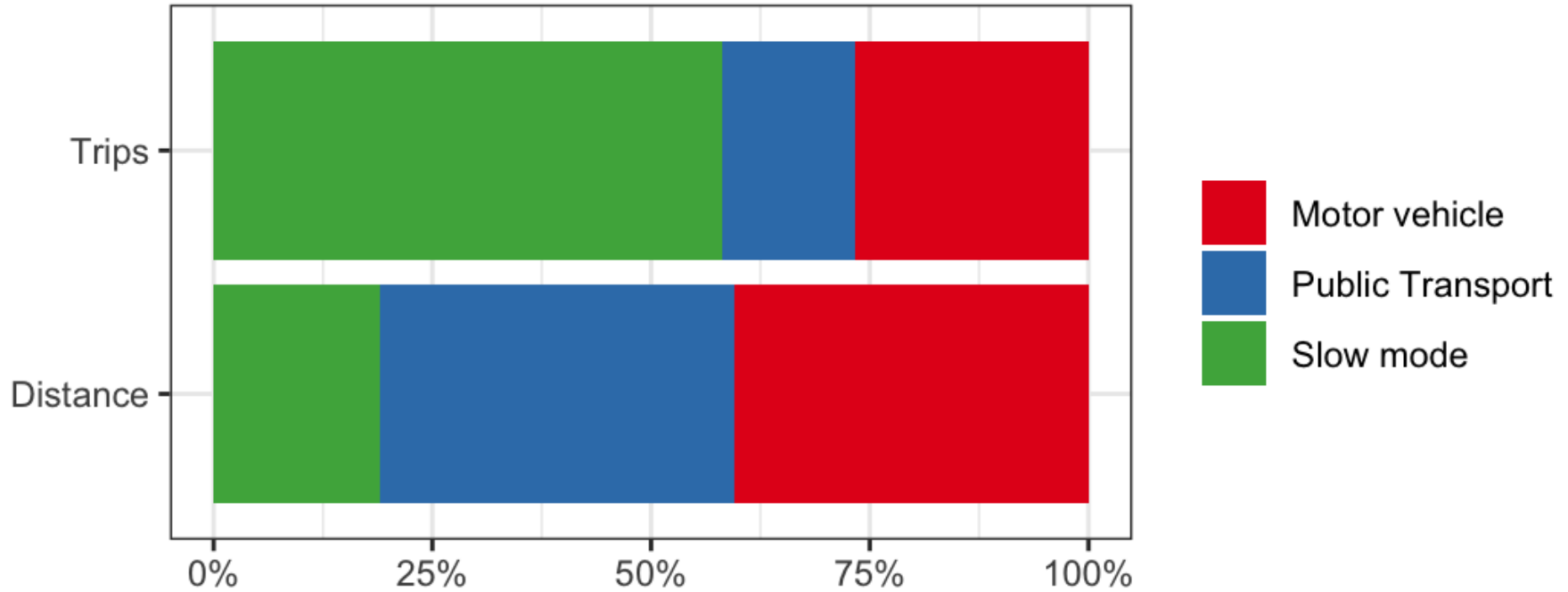
# Average daily travel time by age group



# Average daily travel time and speed by age group

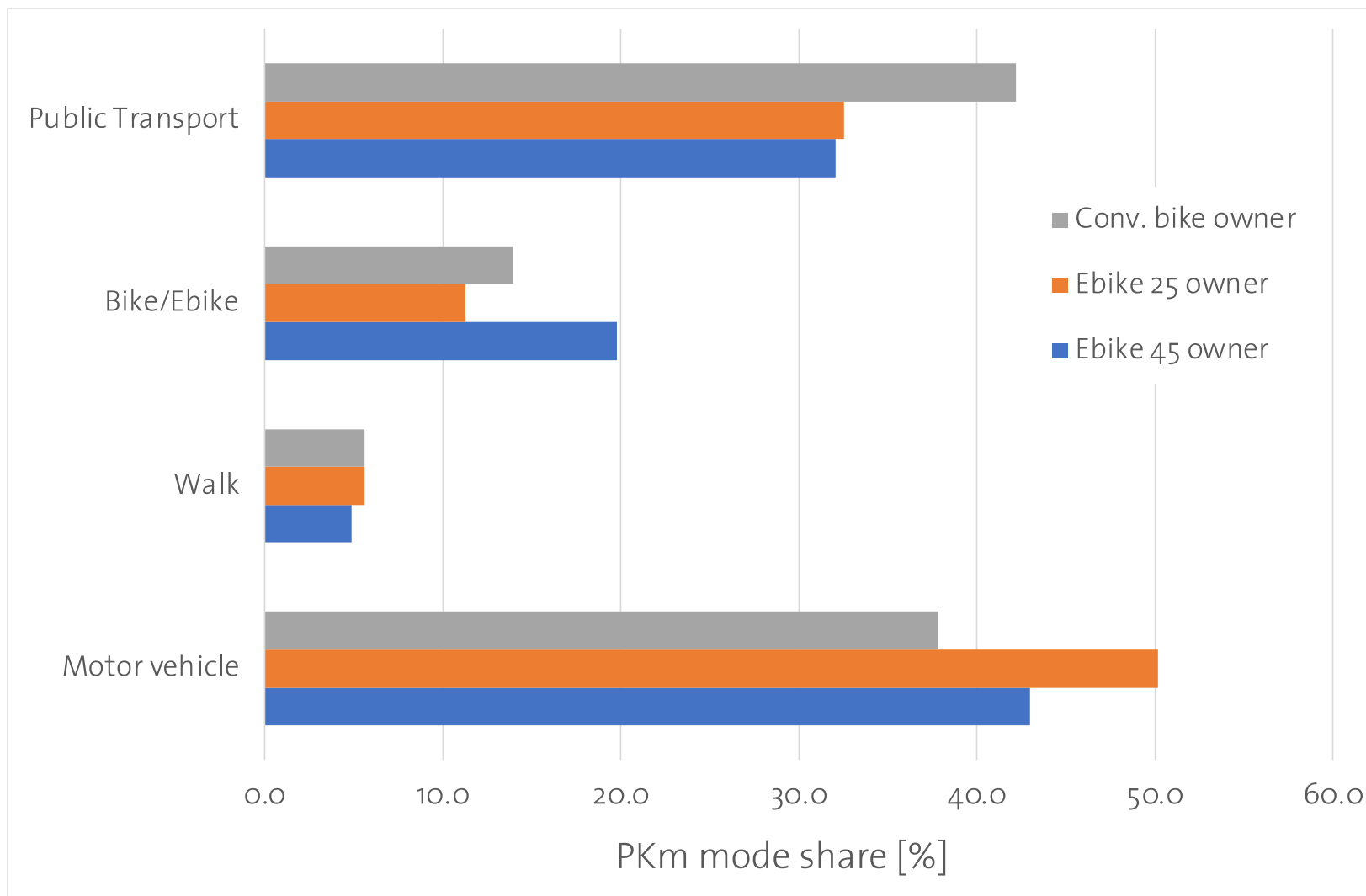


# Modal split



**EBIS: ungewichtete Zahlen;**

# Modal split by mobility tool ownership



**EBIS: ungewichtete Zahlen;**

## Further resources

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- [www.ivt.ethz.ch](http://www.ivt.ethz.ch)
- <https://ebikecity.baug.ethz.ch/>
- <https://ebis.ethz.ch/>