



Sund≡Bælt
Sund≡Bælt

ØRESUNDSBRON

PASSENGER SURVEY THE STOREBÆLT BRIDGE

April 2024

OVERVIEW

1. Introduction
2. Survey recruitment
3. Response statistics
4. Trip & travel characteristics
5. Personal characteristics



1. INTRODUCTION

This data report on the Storebælt Bridge is an addition to the main data report for the passenger transport survey prepared by Significance.

While the main data report is based on approx. 16,000 survey respondents, this data report is based on the approx. 6,000 respondents who crossed the Storebælt Bridge during their trip.

The survey was carried out by Significance, COWI and Accent on behalf of Sund & Bælt and Øresundsbro Konsortiet in collaboration with Vejdirektoratet.

Data from the survey is intended to be used to develop a new transport model covering the current, future and potential fixed links in Denmark.

The survey consisted of questions related to trips made, transport modes used and personal characteristics. Respondents were asked to participate in a set of experiments to determine their travel preferences.

Find out more information about the Fixed Links Transport Model (FLITMO), the main data report for the passenger survey and a similar data report on the Øresund Bridge here:

<https://sundogbaelt.dk/projekter/transportmodel/>

TRANSPORT MODES AND LINKS

- Transport modes:



- Fixed links

1. Storebælt Bridge
2. Øresund Bridge

- Future links

3. Fehmarnbelt tunnel

- Potential fixed links

4. Helsingborg-Helsingør connection
5. Kattegat connection
6. Als-Fyn connection

- Relevant ferry lines



TERMINOLOGY

SP	Stated preference	The respondents are shown multiple choice task experiments, where they need to choose between different options. These experiments are used to learn about people's travel preferences (see example in Appendix in the main data report)
RP	Revealed preference	The respondents are asked to describe their trips in detail, so that their preferred route/mode is revealed. It also aids to estimate the number of people travelling along important connections and links
OD	Origin-destination	The combination of the origin location and the destination location of a one-way trip
	Screenlines	Imaginary geographical border to count traffic from one side to the other. Important screenlines for this study are: • Denmark ↔ Scandinavia • Denmark ↔ Germany • West-Denmark ↔ East-Denmark

INFORMATION CATEGORIES



Survey recruitment: where and how were respondents recruited for the study?



Response statistics: what was the response rate of the survey?



Trip and travel characteristics: what kind of trips were made?



Personal characteristics: what did our sample look like?

2. SURVEY RECRUITMENT

This section is about the overall survey recruitment, and it is therefore not specific to respondents who have crossed the Storebælt Bridge. This information can also be found in the main data report.

The following will be presented in this section:

- Recruitment of passengers
- Type of recruitment and purpose of data collection
- Postcard handout locations



RECRUITMENT OF PASSENGERS

- The recruitment of passengers consisted of three phases:
 - Pilot (testing): June 10th – June 20th
 - Summer wave: July 24th – August 31st
 - Autumn wave: September 12th – November 1st
- Recruitment of passengers was performed in three major categories:
 - Intercept at location (postcard handouts, see example in Appendix in the main data report)
 - E-mail to customers of Øresund and Storebælt Bridge (see example in Appendix in the main data report)
 - Internet panels (Denmark, Sweden, Germany)
 - Regular internet panels
 - Dedicated internet panels for routes where observations proved difficult to obtain
- Expected survey duration: 15-20 minutes
- Survey was provided in six different languages: 

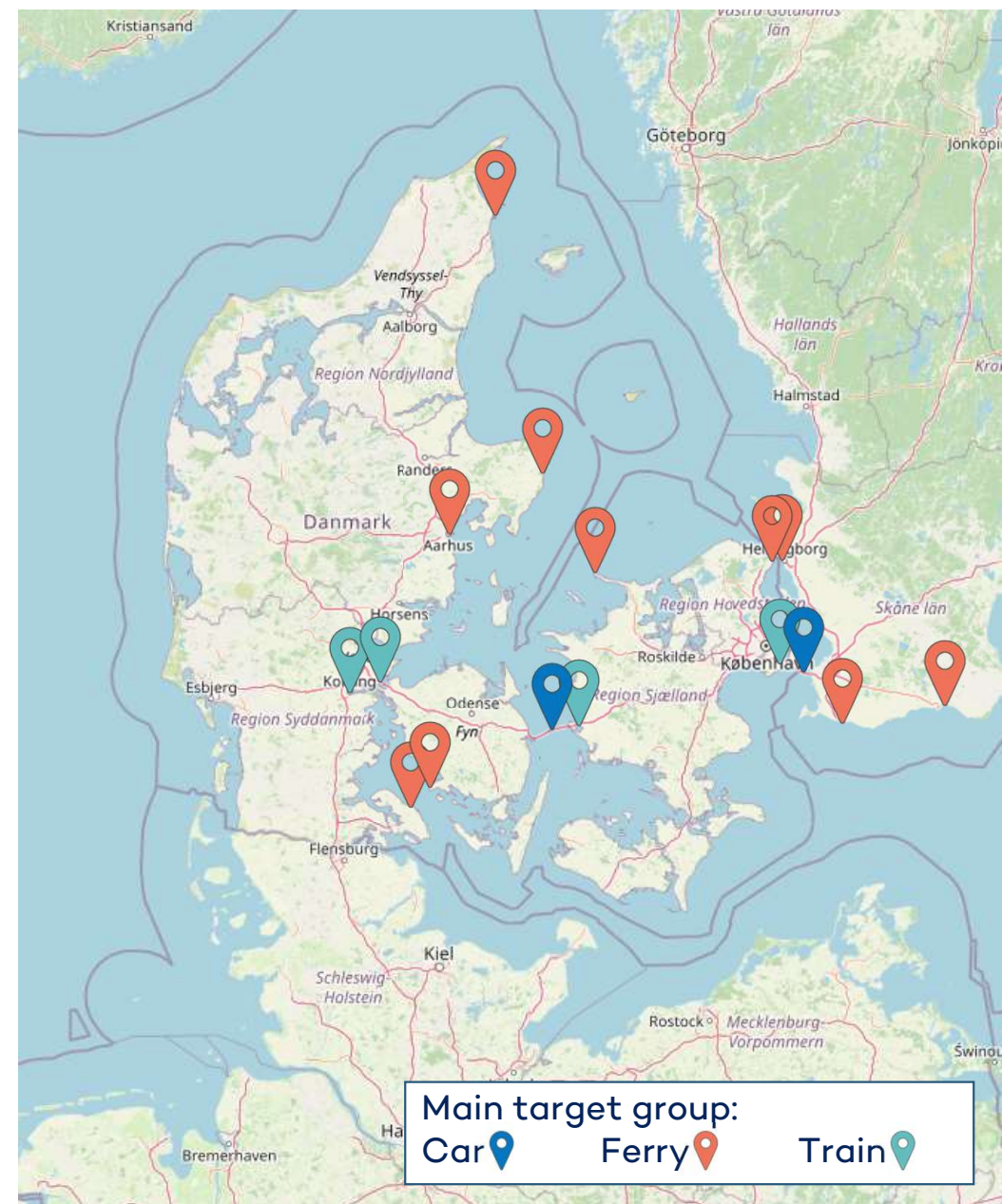
TYPE OF RECRUITMENT AND PURPOSE OF DATA COLLECTION

Targeted population	Type of recruitment	Purpose
Random population	Internet panel data for Denmark, South Sweden and North Germany	Gather insight on the long-distance travel behaviour (frequency, travel purpose) Collect more detailed RP and SP data for people recently crossing the screenlines
Population crossing screenlines	Intercept data – postcard handouts on fixed links, ferries and trains	Collect RP data of the trip, personal characteristics and perform SP experiments
	Intercept data – e-mails sent to customers of Øresund and Storebælt	Efficient way to collect similar data as for the postcards (on Øresund and Storebælt both e-mail and postcard/intercept data has been collected)
	Dedicated internet panel	For routes where postcard data collection was not feasible or insufficient additional respondents have been recruited – similar data have been collected as for postcards

POSTCARD HANDOUT LOCATIONS

Number of postcard handed out:

Main target	Location	Summer wave	Autumn wave
Car 📍	Øresund Bridge	1,433	3,050
Car 📍	Storebælt Bridge	4,780	5,970
Ferry 📍	Helsingborg	1,383	1,520
Ferry 📍	Helsingør	4,023	3,319
Ferry 📍	Ystad	1,108	1,681
Ferry 📍	Bøjden	1,294	1,914
Ferry 📍	Fynshav	1,266	
Ferry 📍	Trelleborg	827	2,478
Ferry 📍	Odden	1,333	3,780
Ferry 📍	Aarhus	2,496	2,168
Ferry 📍	Grenå	106	
Ferry 📍	Frederikshavn	523	
Train 📍	Copenhagen Airport	4,519	6,259
Train 📍	Fredericia	1,273	1,976
Train 📍	Kolding	745	1,177
	Total	27,109	35,292



3. RESPONSE STATISTICS

The remainder of this data report only reports on passengers who have both:

- a) Crossed the Storebælt Bridge during their trip, and
- b) Completed the survey

The following will be presented in this section:

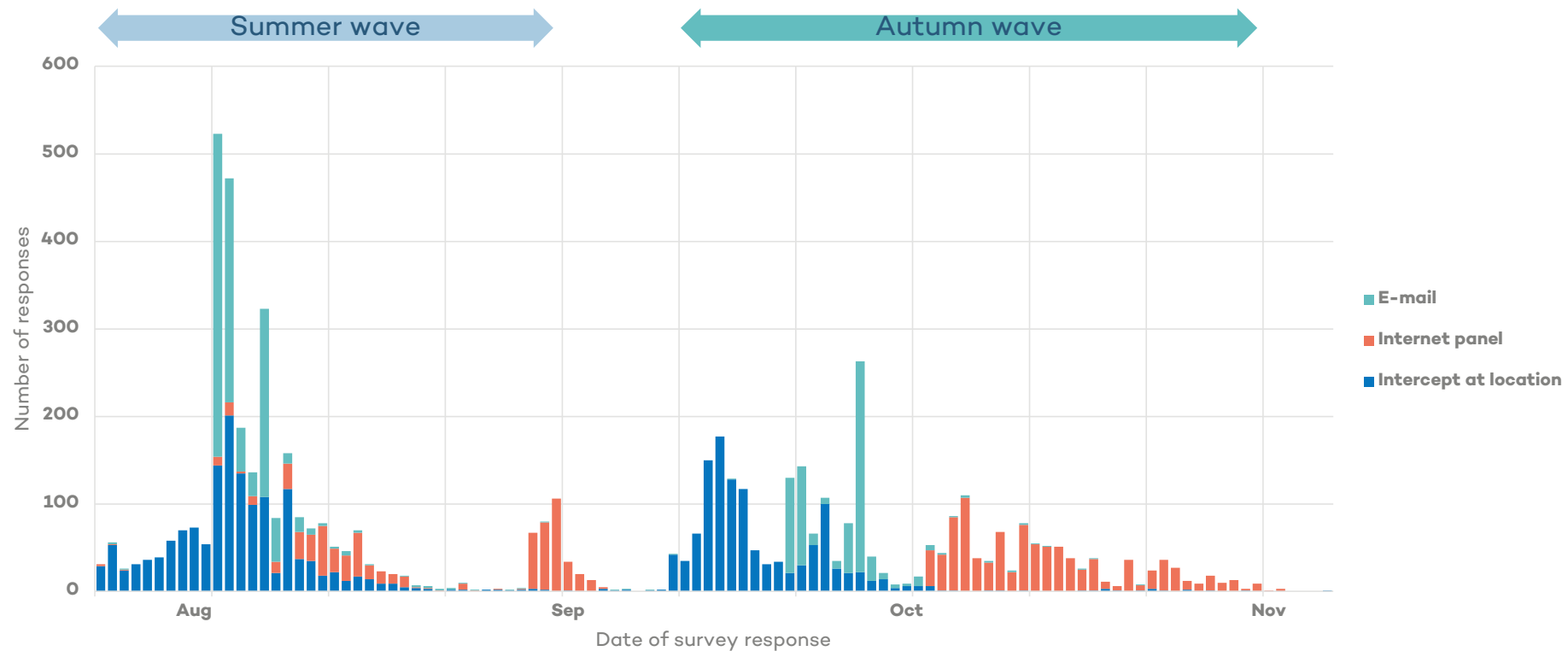
- Key metrics on respondents
- Number of responses per day



KEY METRICS ON RESPONDENTS

Recruitment type	Location					Total
Postcard	Train over Storebælt	150	982	22	1	1155
	The Storebælt Bridge	406	51	55	29	541
	Bøjden-Fynshav	8	1	179	0	188
	Other locations	225	342	205	28	800
	Total	789	1,376	461	58	2,684
E-mail	The Storebælt Bridge	1,394	2	84	4	1,484
	The Øresund Bridge	130	1	27	28	186
	Total	1,524	3	111	32	1,670
Internet panel	Denmark	853	237	192	9	1,291
	Sweden	58	26	78	2	164
	Germany	50	17	136	3	206
	Total	961	280	406	15	1,661
Total		3,274	1,659	978	104	6,015

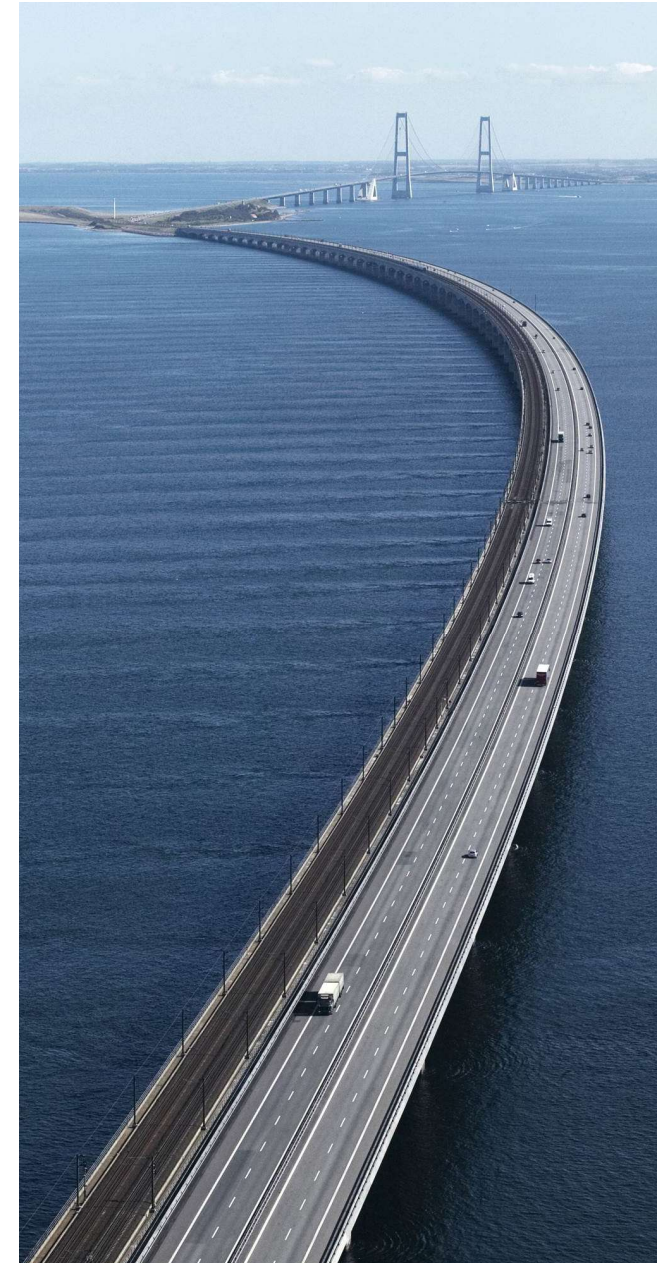
NUMBER OF RESPONSES PER DAY



Number of responses per day follow survey deployment for recruitment types, which indicates that people generally responded quickly to the survey invitation. The distribution shows good separation between respondents recruited in the summer and in the autumn period.

CONCLUSION OF RESPONSE STATISTICS

- Over 6,000 respondents crossed the Storebælt Bridge during their trip
- Almost 38% of all respondents (16,000) thus crossed the Storebælt Bridge during their trip
- Most respondents were recruited via an e-mail that was sent directly to customers of the Storebælt Bridge (25% of all respondents on the Storebælt Bridge)
- The postcard handout location with the most recruited respondents was the train over Storebælt (19%) followed by the Storebælt Bridge (9%)
- Number of responses per day generally aligns well with the recruitment waves

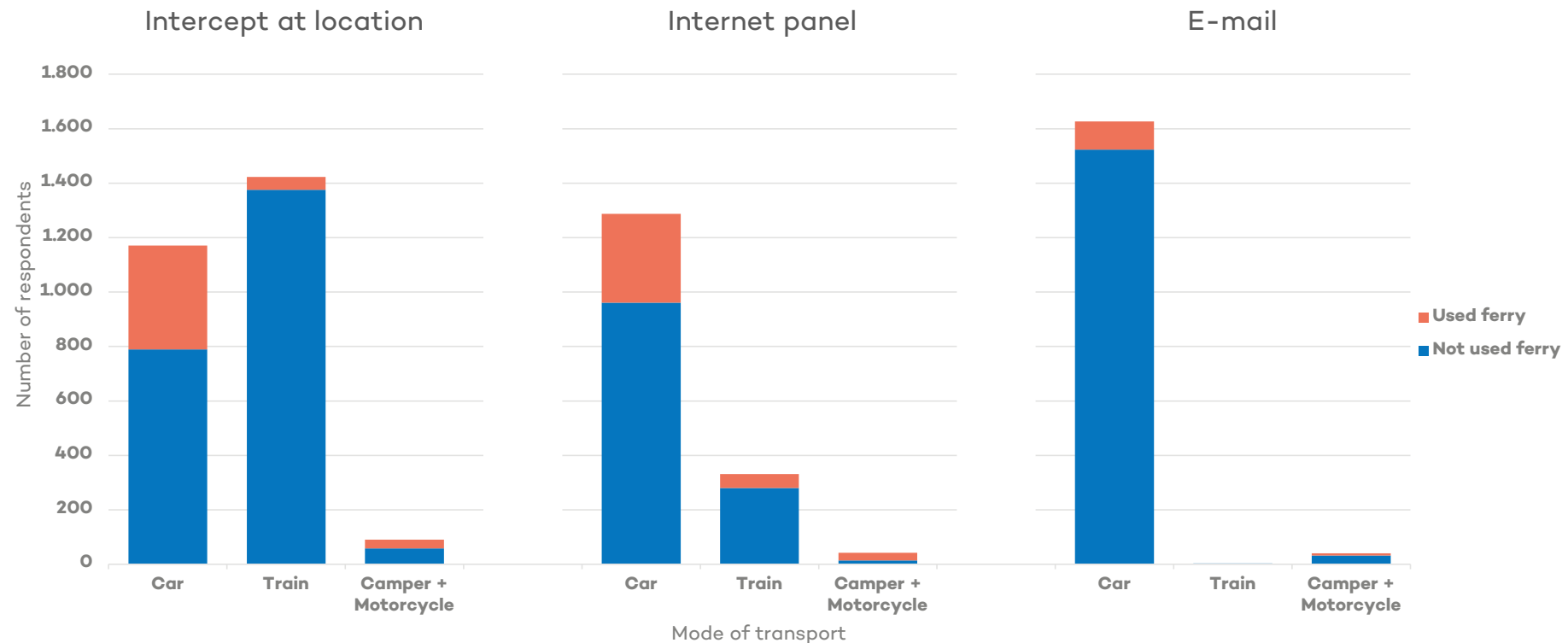


4. TRIP & TRAVEL CHARACTERISTICS

- Modes of transport per recruitment type
- OD location zones
- Travel time and distance
- Average travel time and distance by trip purpose
- Travel day
- Travel party size



MODES OF TRANSPORT PER RECRUITMENT TYPE

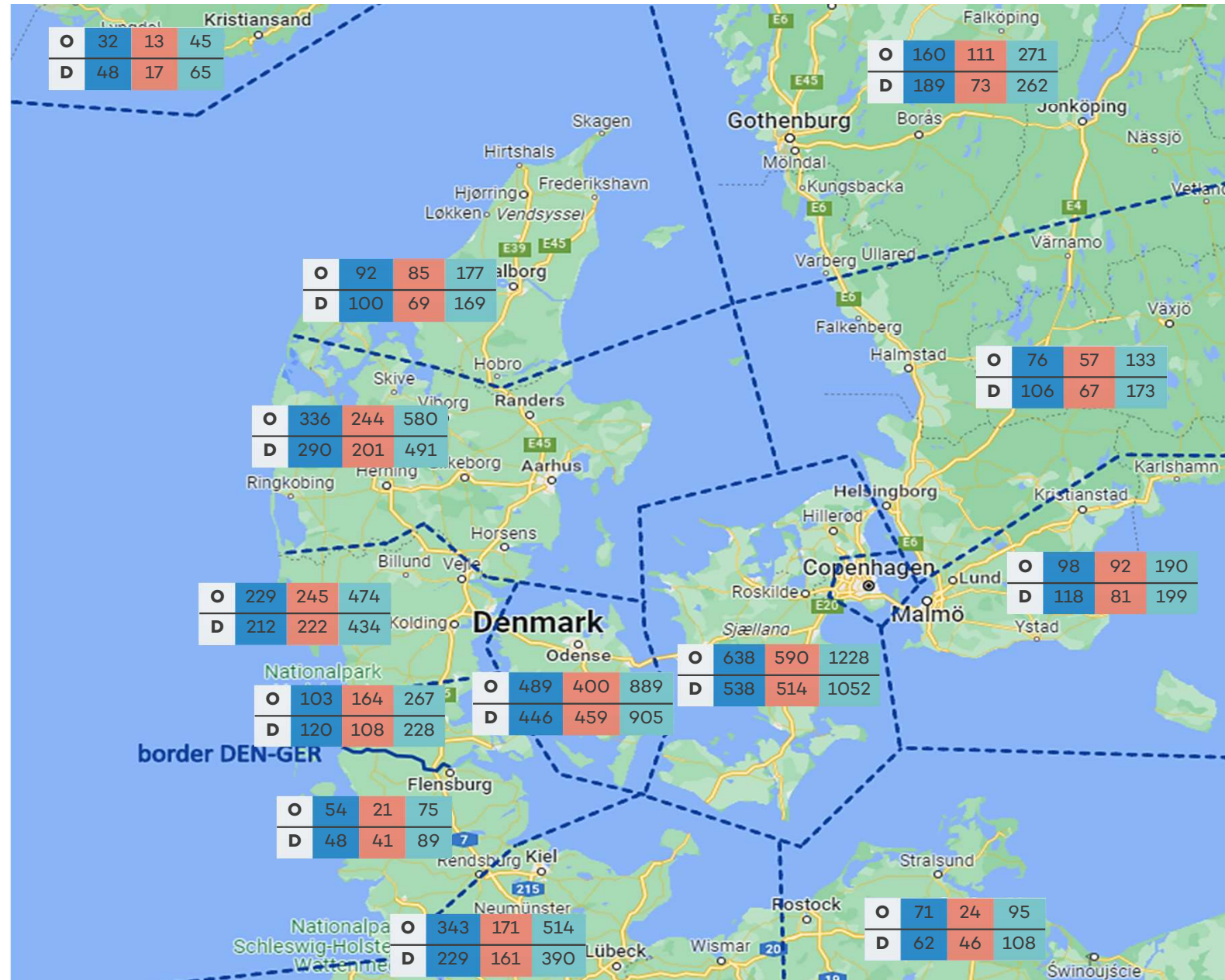
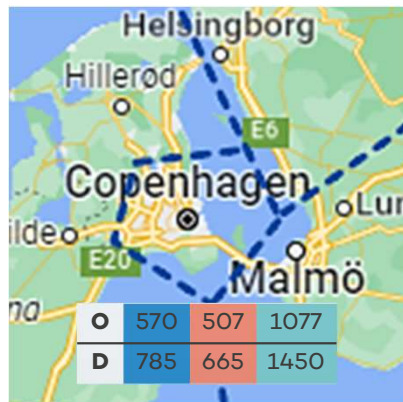


Good distribution of transport modes and ferry usage. Intercept at location particularly successful at recruiting train passengers. Results for e-mail are in line with expectations as only customers who crossed the Øresund or Storebælt Bridge in a vehicle were recruited via e-mail.

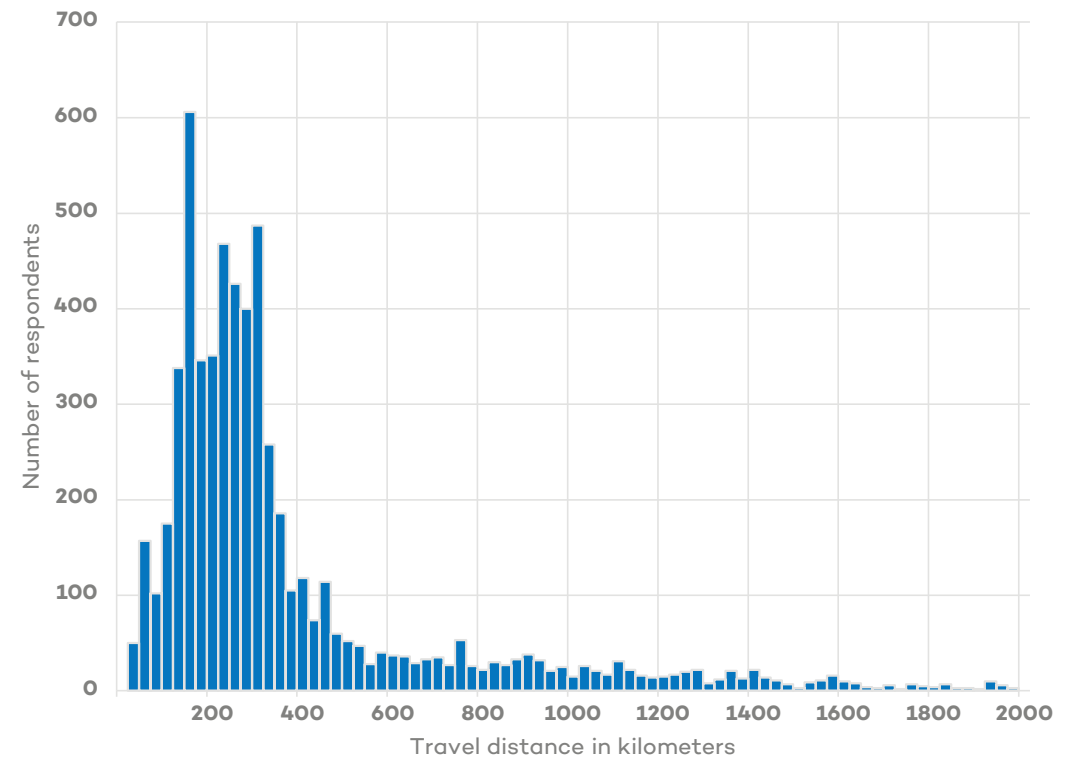
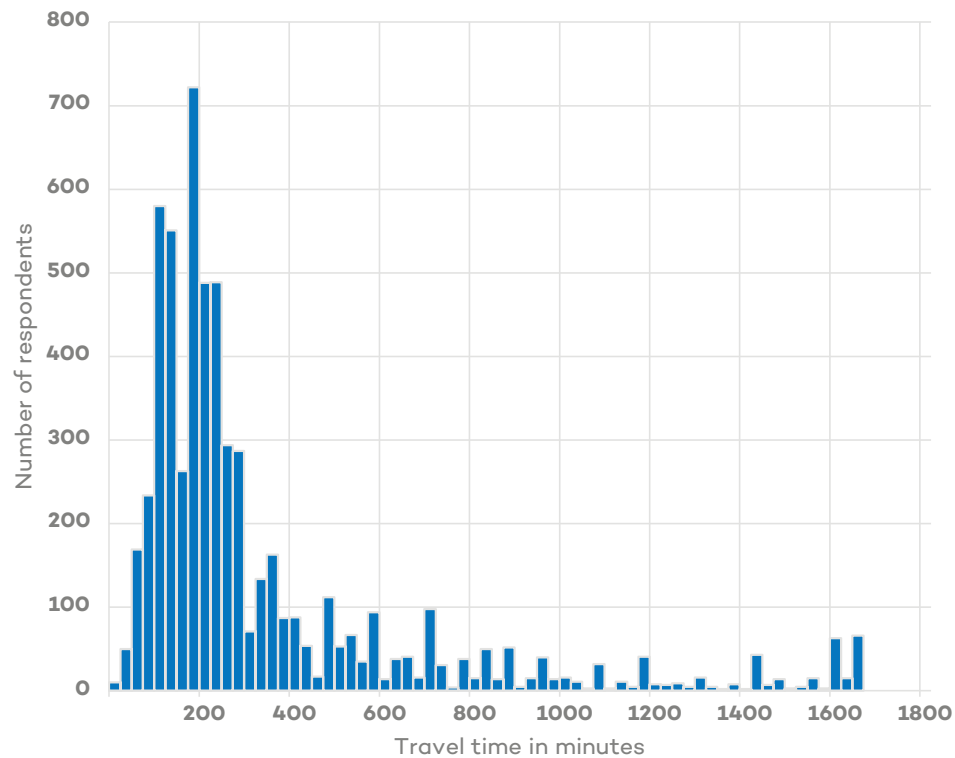
OD-LOCATION ZONES

- O** Origin location zone
- D** Destination location zone
- Summer recruitment wave
- Autumn recruitment wave
- Summer + Autumn wave

Copenhagen region:



TRAVEL TIME AND DISTANCE DISTRIBUTIONS



Travel time and distance distributions confirm good variation of trip length. Travel time is more grouped together than distance which may be due to some respondents stating the travel time in whole hours. The most frequent travel distance is 150-175 km., which corresponds to the distance from Copenhagen to Odense.

AVERAGE TRAVEL TIME BY TRIP PURPOSE

Trip purpose				Total
Commute	198 min.	186 min.	542 min.	226 min.
Business	227 min.	277 min.	374 min.	266 min.
Holiday/break	406 min.	519 min.	618 min.	495 min.
Family/friends	226 min.	297 min.	380 min.	264 min.
Leisure	297 min.	382 min.	546 min.	364 min.
Other	264 min.	308 min.	611 min.	316 min.
Total average	298 min.	334 min.	539 min.	355 min.

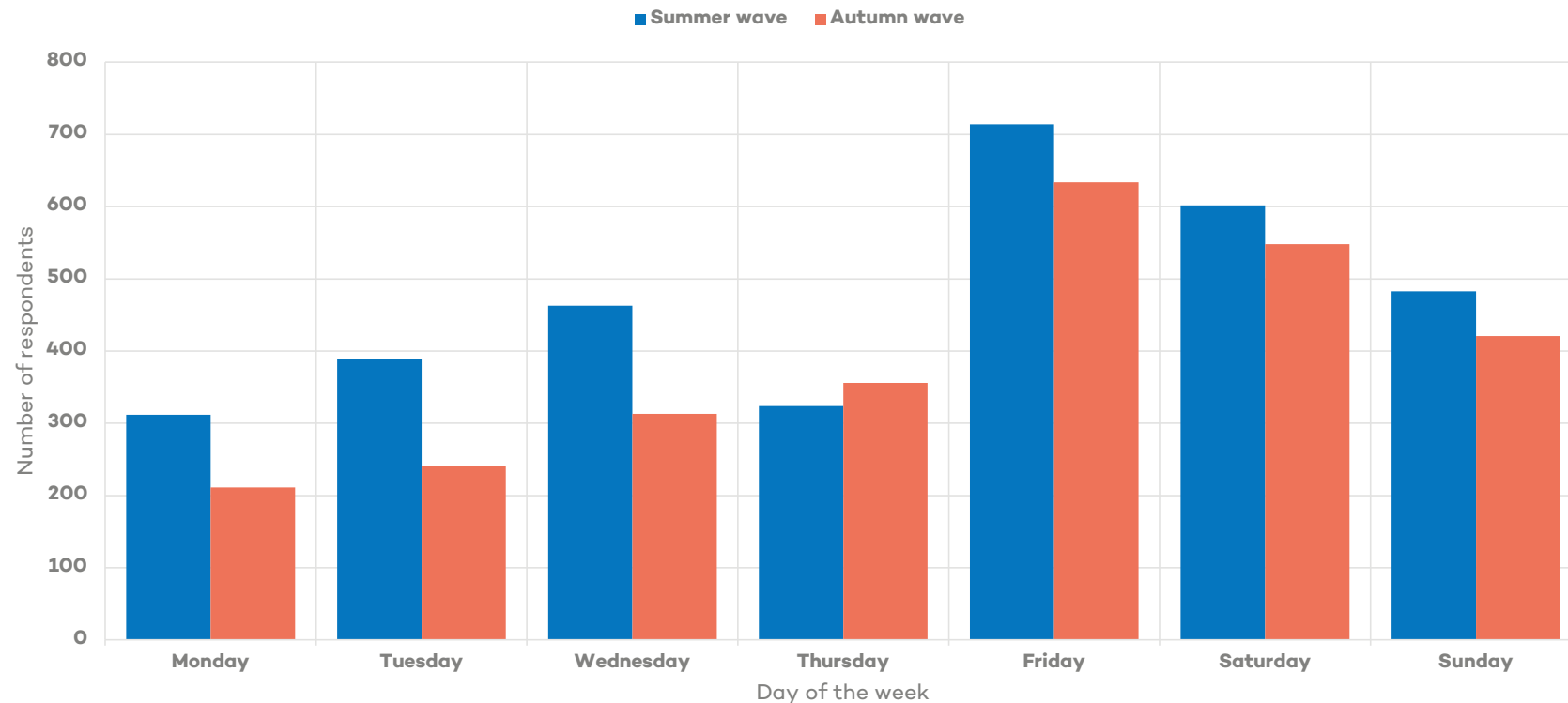
The average travel time differs a lot by trip purpose. Respondents commuting for work or study have the shortest average travel time while respondents travelling to holiday/break have the longest average travel time. The average travel time also differs a lot by mode of transport. Trips that include the use of a ferry in combination with the Storebælt Bridge generally takes much more time than trips without the use of a ferry.

AVERAGE TRAVEL DISTANCE BY TRIP PURPOSE

Trip purpose				Total
Commute	274 km.	209 km.	408 km.	248 km.
Business	297 km.	321 km.	324 km.	308 km.
Holiday/break	520 km.	599 km.	521 km.	549 km.
Family/friends	305 km.	334 km.	352 km.	319 km.
Leisure	356 km.	427 km.	499 km.	405 km.
Other	325 km.	344 km.	506 km.	353 km.
Total average	385 km.	383 km.	466 km.	406 km.

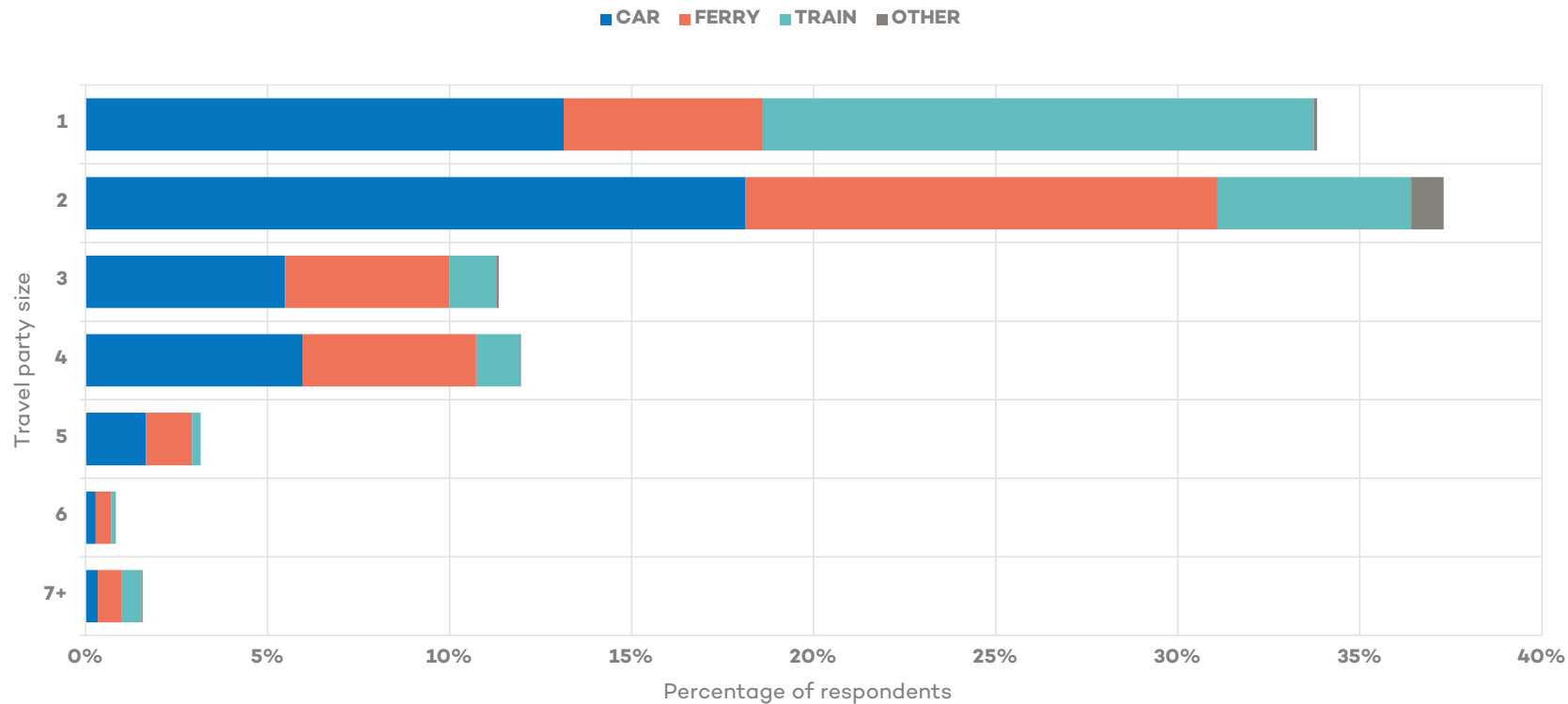
The average travel distance differs a lot by trip purpose and mode of transport. Overall, the results are pretty similar to the results on the previous slide for average travel time. Trips that include the use of a ferry in combination with the Storebælt Bridge are generally much longer than trips without the use of a ferry.

TRAVEL DAY DISTRIBUTION



The most frequent travel days are Friday and Saturday, which makes sense since the data collection has focused more on leisure and holiday trips compared to commuting. We would have expected Sunday to be a bit more frequent travel day as well as a more uniform representation of travel days Monday-Thursday.

TRAVEL PARTY SIZE DISTRIBUTION



Good distribution of travel party size with many different travel party sizes. The average travel party size is 2.3 for all modes, 2.3 for car, 2.6 for ferry and 1.9 for train. Train is more frequent for solo travellers whereas ferry is relatively more frequent for larger travel groups.

CONCLUSION OF TRIP & TRAVEL CHARACTERISTICS

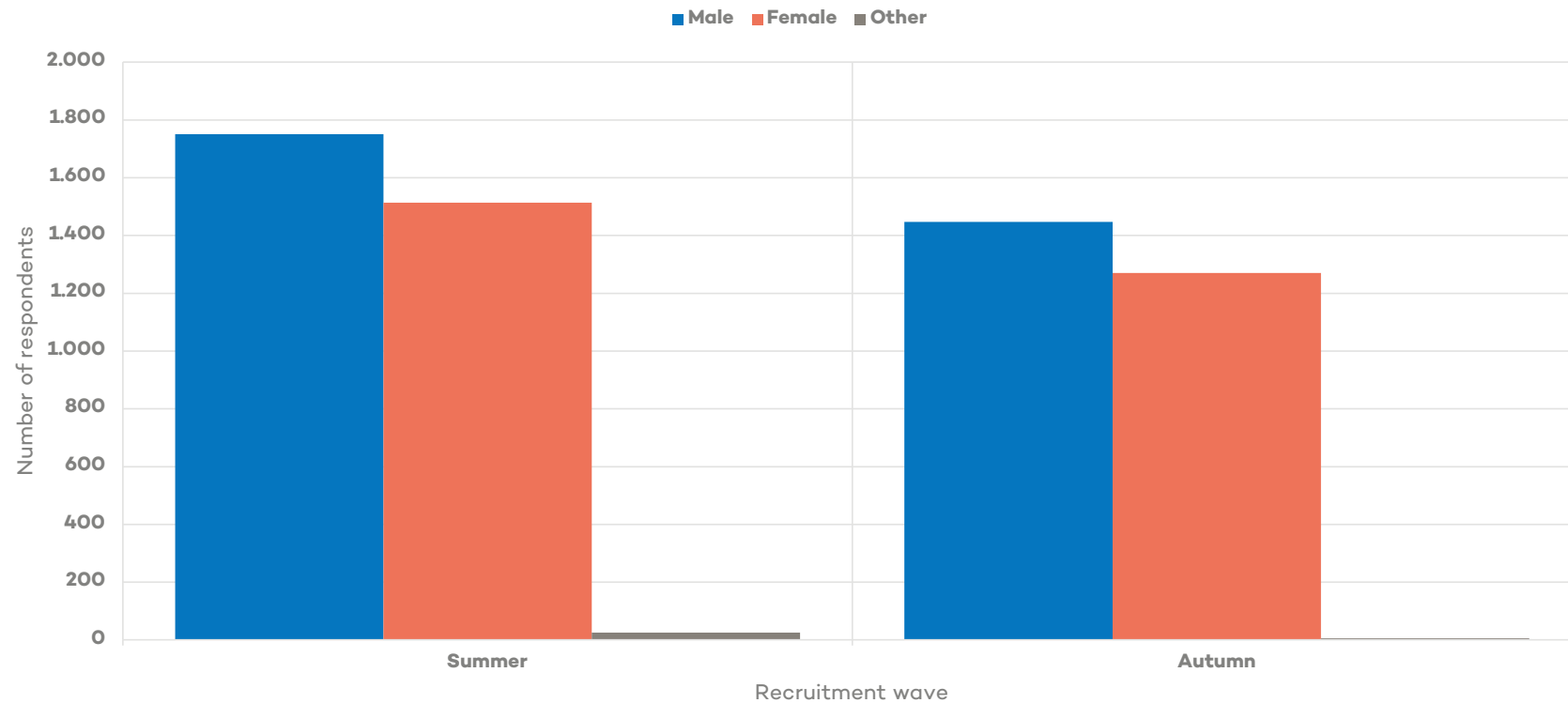
- The data shows a good distribution of trip and travel characteristics in terms of:
 - Transport modes used
 - Origin-destination location zones
 - Travel time and distance
 - Travel day
 - Travel party size
- The map of origin-destination location zones shows that many respondents crossing the Storebælt Bridge travels to and from East- and West Denmark. Germany, Sweden and Norway are less common origin-destination locations.
- The average travel time and distance is relatively high which is expected for the data survey as only trips crossing a relevant screenline are within scope.

5. PERSONAL CHARACTERISTICS

- Demographic descriptives:
 - Gender
 - Age
 - Household income
 - Employment
 - Home country
- Trip purpose
 - Activity at the origin location
 - Activity at the destination location

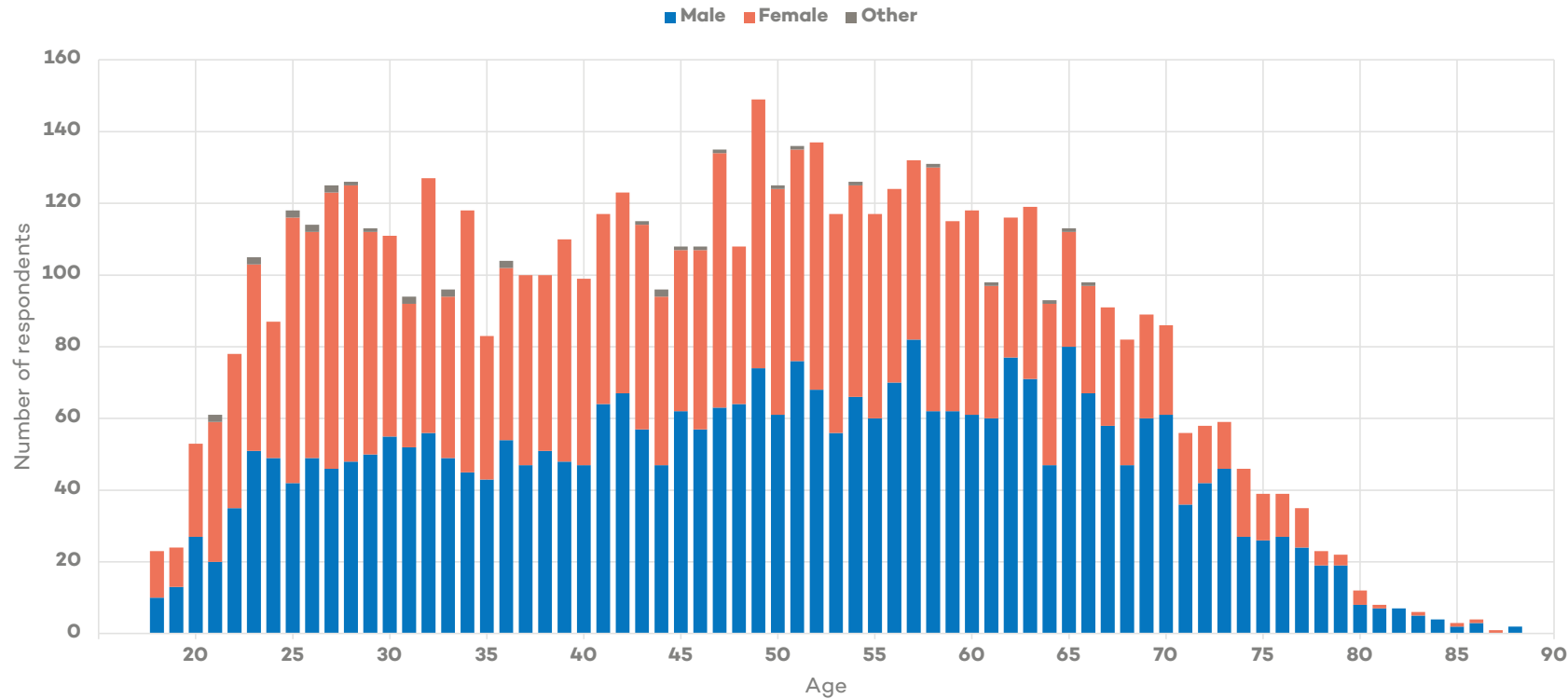


GENDER DISTRIBUTION



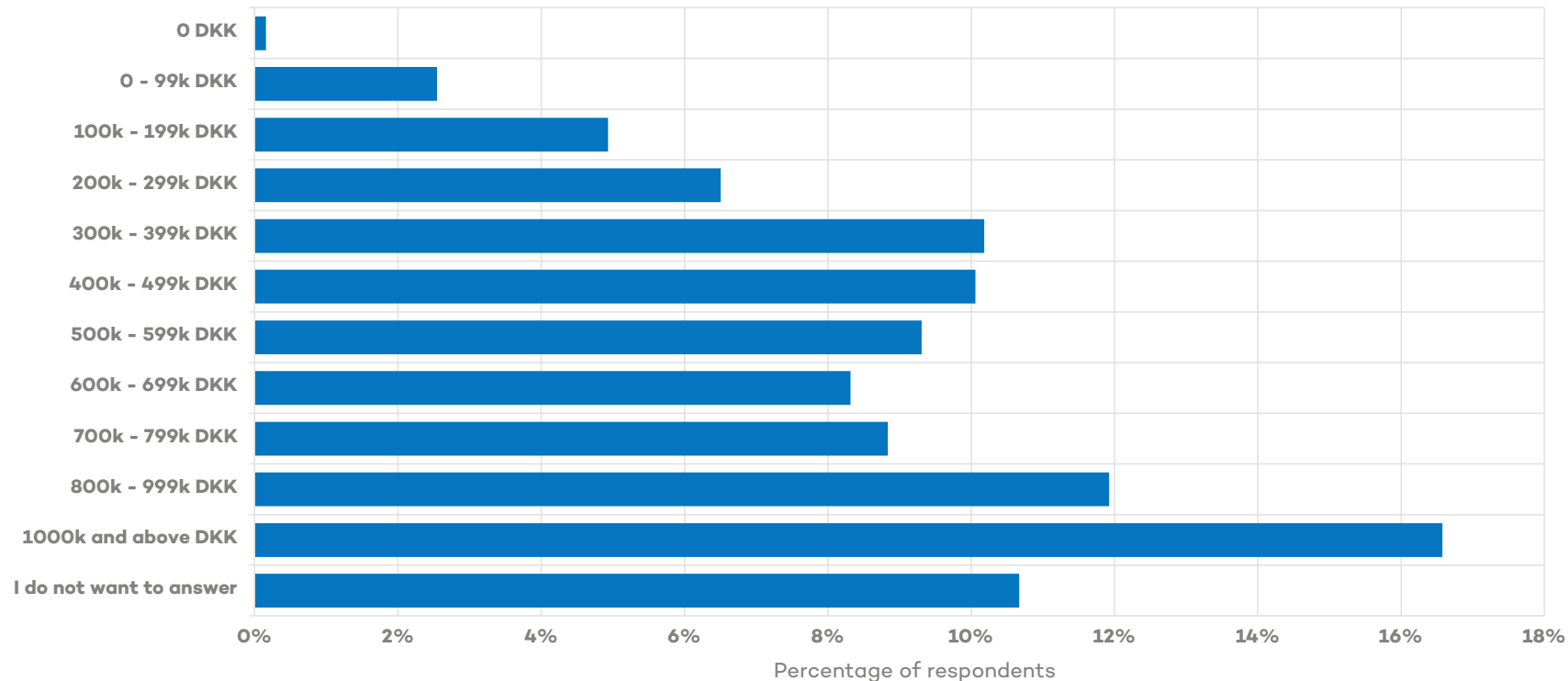
More male than female respondents in both the summer and autumn recruitment wave.

AGE DISTRIBUTION BY GENDER



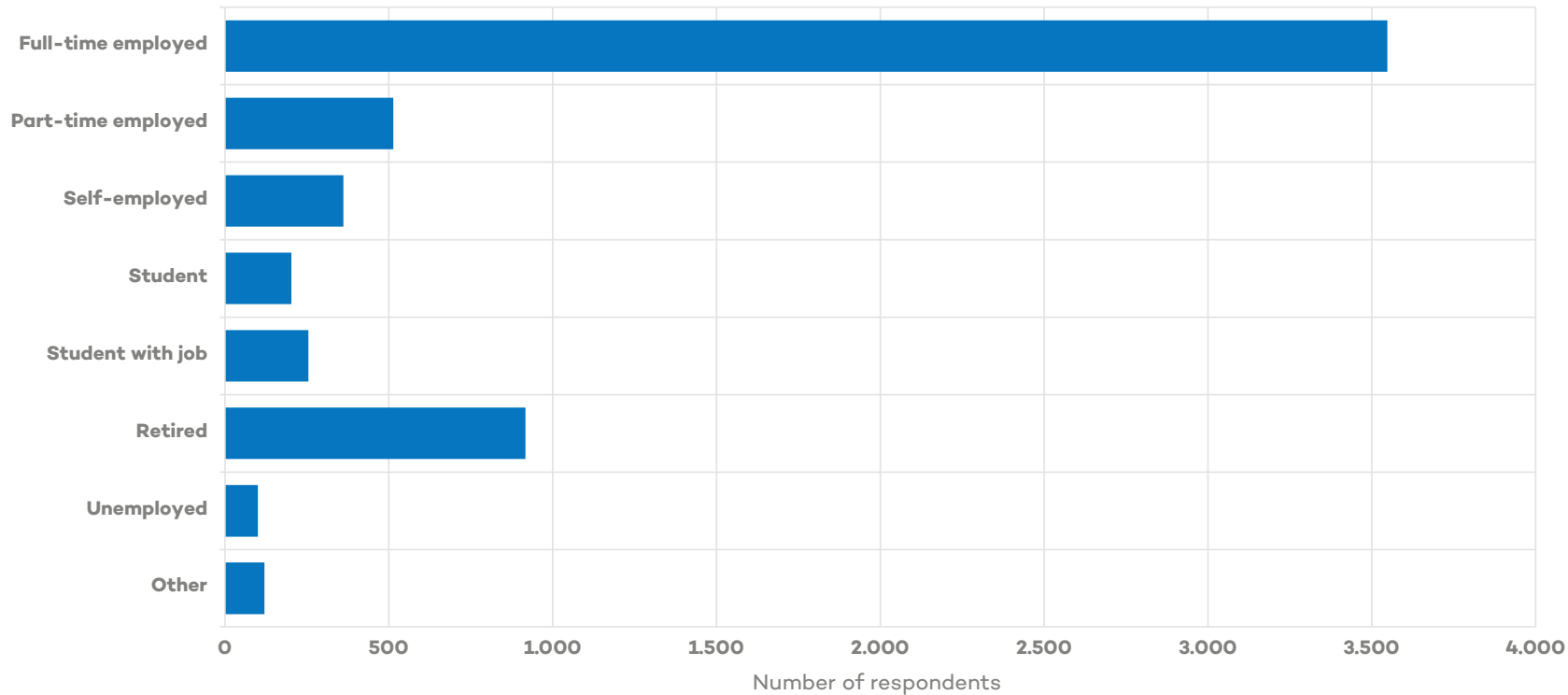
The age of respondents is well distributed, also when one considers the age distribution split by gender. However, we observe very few female respondents above the age of 70.

HOUSEHOLD INCOME LEVEL DISTRIBUTION



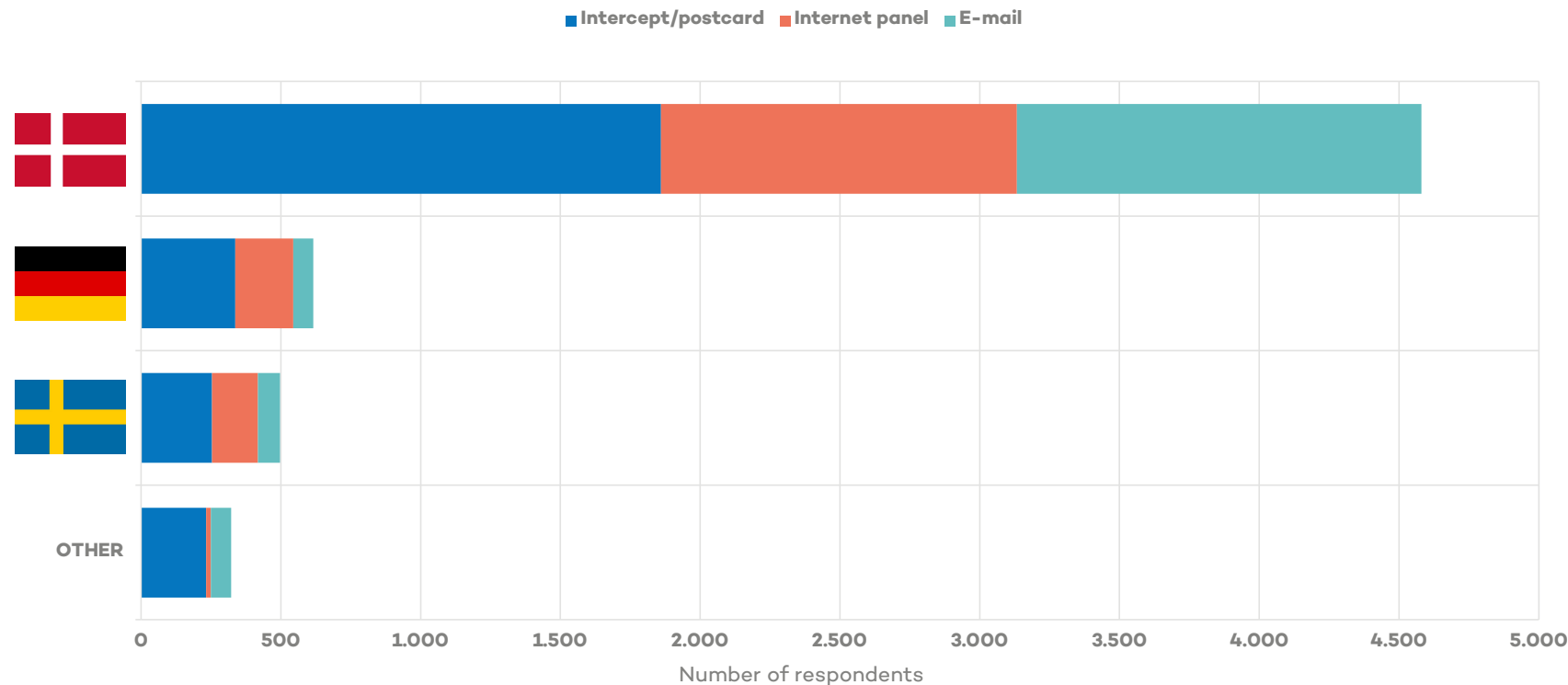
Good distribution of household income with a household income level above 1 million DKK being the most frequent. Some of the differences in income levels can be explained by the fact that the number of people per household varies. In total, 11% of respondents did not want to answer this question.

EMPLOYMENT DISTRIBUTION



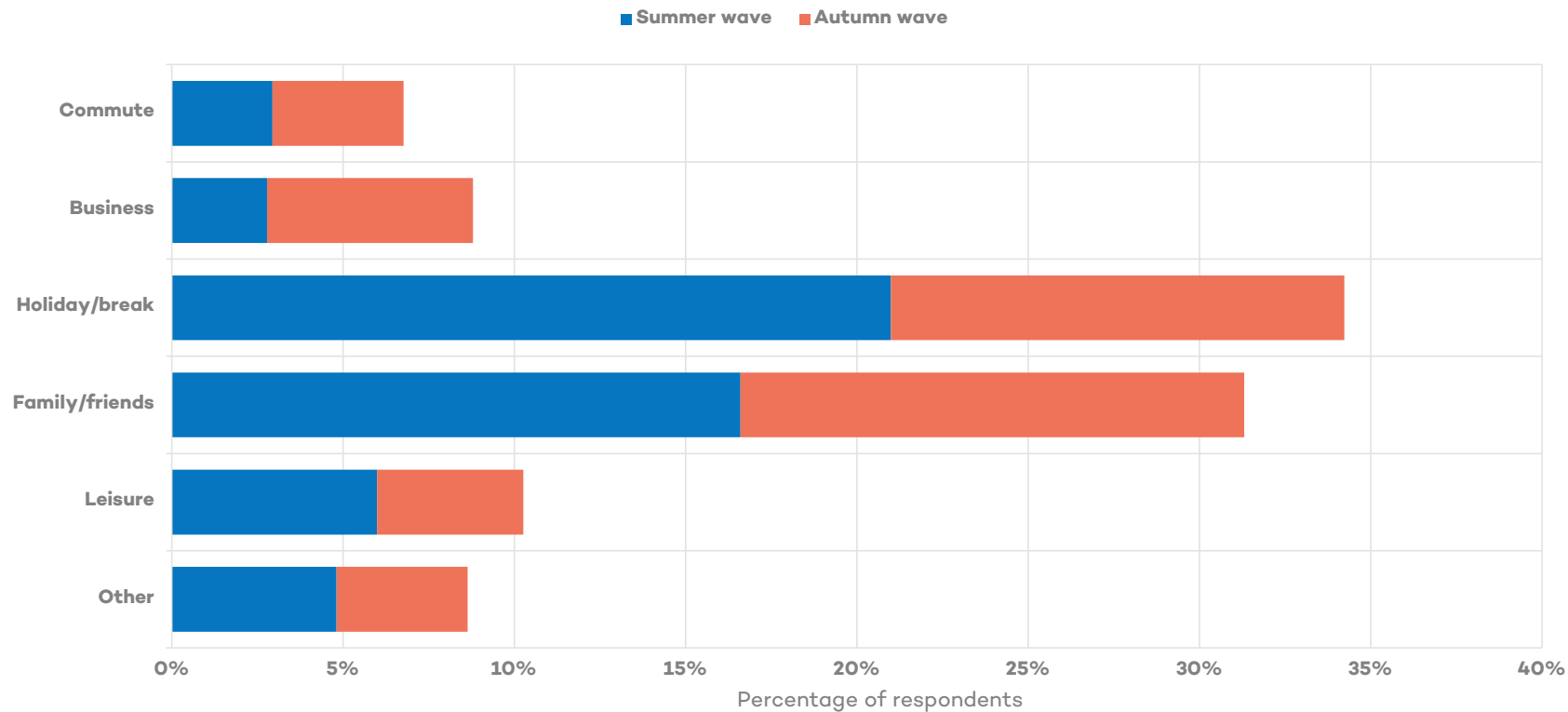
Good distribution of employment status. Full-time employment is clearly the most prevalent, but there is also a reasonable number of respondents with a different employment status.

HOME COUNTRY DISTRIBUTION BY RECRUITMENT TYPE



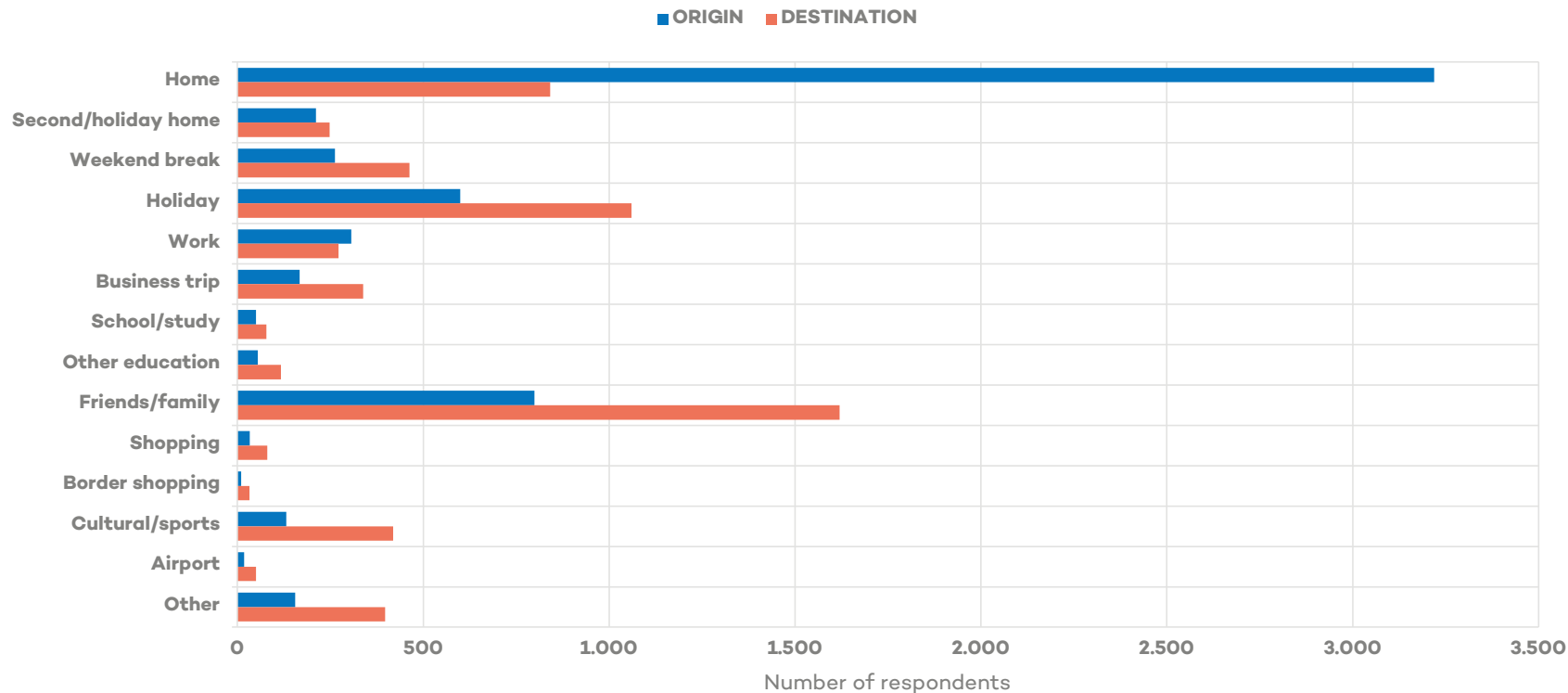
Denmark is clearly the most common home country, but also some respondents from especially Germany and Sweden. This is consistent with the map of origin-destination location zones which shows that most respondents travel to and from East- and West Denmark.

TRIP PURPOSE DISTRIBUTION



Holiday/break and visiting family/friends are the most frequent trip purposes, both during the summer and autumn recruitment wave. Commute and business are clearly more frequent outside the summer period.

TRIP PURPOSE BY ORIGIN AND DESTINATION LOCATION



Activities at the origin and destination location show that the recruitment was successful in attracting respondents with various trip purposes. Home is the most predominant origin location activity, whereas visiting family/friends is the most predominant destination location activity.

CONCLUSION OF PERSONAL CHARACTERISTICS

- The data shows a good distribution of personal characteristics in terms of:
 - Gender
 - Household income
 - Employment
- The age distribution is reasonable, but we observe very few females above the age of 70
- The home country of respondents shows that the observed traffic is primarily from Denmark
- “Holiday/break” and “Family/friends” are by far the most widespread travel purposes
- Activities at origin and destination location indicate that the recruitment was successful in attracting respondents with various trip purposes
- Home is the most predominant origin location activity while visiting family/friends is the most predominant destination location activity