LAirA
Landside Airport Accessibility

Report no. 4: Analysis of Employee Travel Patterns, Mobility Needs and Behaviours

February, 2018.

CLIENT	**Zračna luka Dubrovnik d.o.o.,** Dobrota 24, Močići, 20213 Čilipi, Croatia	
CONSULTANT	**Mobilita Evolva d.o.o. –** Froudeova 5, 10 020 Zagreb, Croatia	
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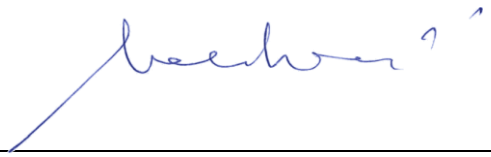
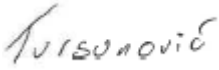
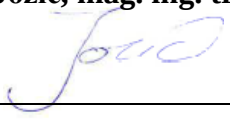
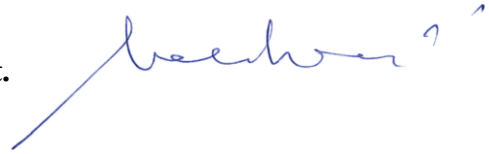
STUDY DIRECTOR	**Una Vidović, mag. ing. arch.**	
EXPERT TEAM LEADER	**Una Vidović, mag. ing. arch.** 	Expert Team Leader – architect
PARTICIPATED IN STUDY DEVELOPMENT	**Božo Cicvarić, mag. ing. traff.** 	Expert Team Member - traffic engineer
	Klara Mahmić, mag. geogr. 	Expert Team Member - Masters degree in geography (GIS expert)
	Tomislav Vešligaj, mag. ing. traff. 	Expert Team Member - traffic engineer
	Alen Tursunović, mag. ing. traff. 	Expert Team Member - traffic engineer
	Viktor Jozić, mag. ing. traff. 	Expert Team Member - traffic engineer
DIRECTOR	**Una Vidović, PhD. Architect.** 	

Content

1. Employee Survey Questionnaire

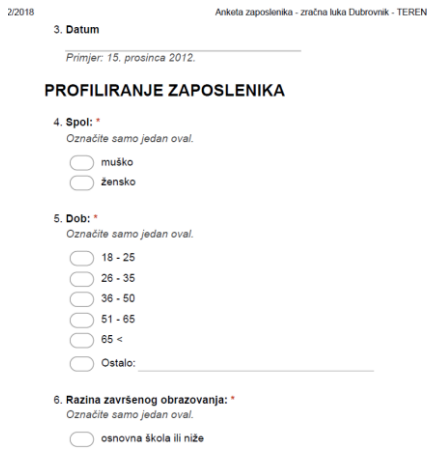
Purpose of Employee Survey was to get to know commute travel characteristics of employees working in Airport Dubrovnik, their mobility perception, travel demands and needs.

Employee surveys were also made in accordance to given Methodology (recommendations) from PP-s. Survey includes recommended standardised questions to simplify data analysis from each PP and also for future comparisons. Personalised questions considering specific situations of Airport Dubrovnik (e.g. seasonality problem) were added as well in order to collect specific parameters concluded in Activity 1.

Employee Survey was made in Google Forms which also simplifies collected data structure.

Two types of Surveys were made for employees:

- Physical Employee Survey – Interviewers surveying employees in person at the airport
- Online Employee Survey – Airport employees participating in Survey via Google Forms interface


2/2018 Anketa zaposlenika - zračna luka Dubrovnik - TEREN

3. **Datum**

Primjer: 15. prosinca 2012.

PROFILIRANJE ZAPOSLENIKA

4. **Spol:** *
Označite samo jedan oval.
muško
žensko

5. **Dob:** *
Označite samo jedan oval.
18 - 25
26 - 35
36 - 50
51 - 65
65 <
Ostalo:

6. **Razina završenog obrazovanja:** *
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osnovna škola ili niže

Figure 1: Questionnaire for passengers - paper

Izvor: Mobilita Evolva

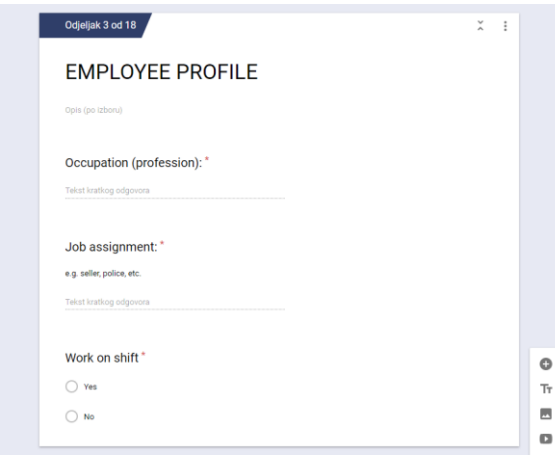


Figure 2: Online questionnaire for passengers

Source: Mobilita Evolva

2. Employee Surveying

Employee surveys were done in parallel with passenger surveys,from 22nd of January to 17th of February 2018.

Some employees were surveyed in person and some online.

Table 1: Period of Employee Survey – first two weeks out of three

JANUARY 2018						
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	PASSENGER SURVEY 23	24	25	26	27
28	29	30	31			

Employees surveyed were:

- police
- exchange officers
- travel agents
- sellers
- etc.

Locations of employee surveying:

- Check-in
- Duty Free shop
- Sweets store
- Cafes
- etc.

Figure 3:Location of Duty-Free shop in Airport Dubrovnik (place of survey)
Source: www.airport-dubrovnik.hr, 30.01.2018.

Figure 4: Location of Sweets shop in Airport Dubrovnik (place of survey)
Source: www.airport-dubrovnik.hr, 30.01.2018.

Figure 5:Location of Check-in (employee survey)
Source: Mobilita Evolva, 23.01.2018.

Figure 6: Location of Currency Exchange office in Airport Dubrovnik (place of survey)
Source: www.airport-dubrovnik.hr, 30.01.2018.

Figure 7: Location of Cafe in Airport Dubrovnik (place of survey)
Source: Mobilita www.airport-dubrovnik.hr, 30.01.2018.

Survey was conducted in Croatian language since employees come from native area near Airport Dubrovnik.

In coordination with Zračna luka Dubrovnik d.o.o. employee survey was also put online for employees to fill it through link and data is being collected.

At listed locations employees were surveyed in order to get information about their profile (sex, age, occupation, city of residence, etc.), about their travel patterns to the airport (mobility characterisation, indication of main mobility problems, etc.

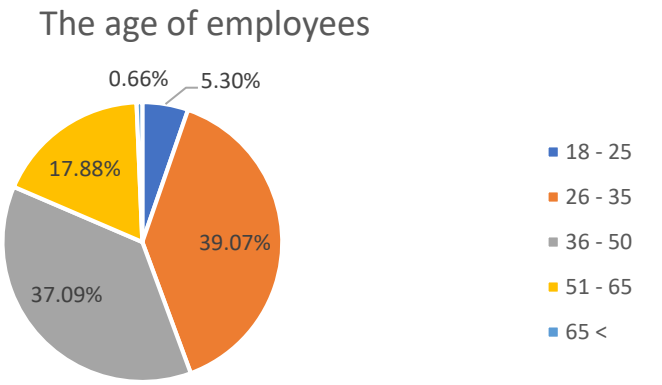
The survey consisted of following fields:

- Survey specifications (place of interview, meteorological conditions, etc.)
- Employee profile
- Mobility behaviour characterization
- Mobility characterization
- Mobility perception

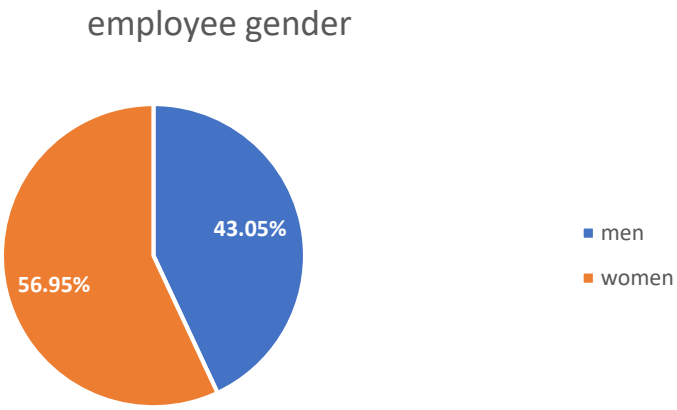
More than 150 employees in total were surveyed during period of three weeks. First week 22.01. pilot survey has taken place. During analysis it was concluded that no further changes need to be made. Survey lasted from 22.01.-17.02.2018.

3. Employee profile

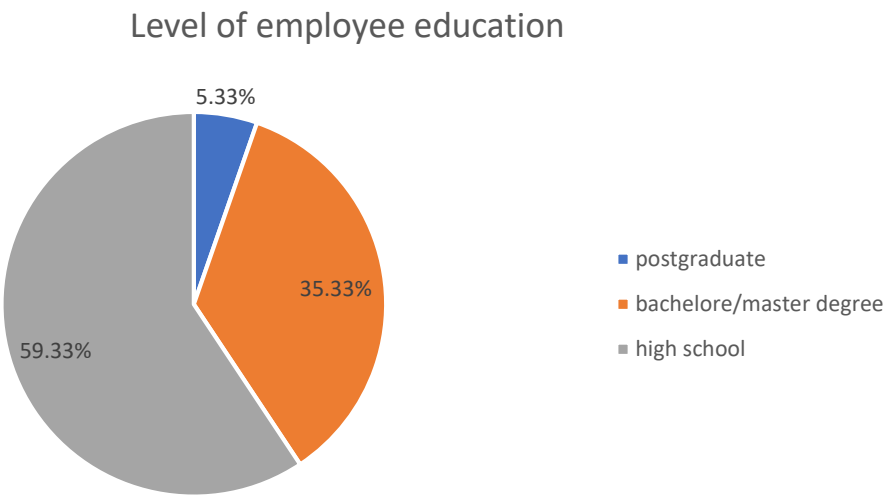
Graph 1: Age of employees



Graph 2: Employee gender



Graph 2 Level of education



The survey included respondents of both sexes, most often aged 26 to 50 years. The primary level of education is secondary school. Employees mostly work in shifts (91.1%).

4. Settlements where employees come to work

Table 2: Ratio of employee origin to Airport Dubrovnik

Area	Surveyed employees
Cavtat	11,30%
Čilipi	18,26%
Dubrovnik	21,74%
Gruda	14,78%
Konavle	10,43%
Mlini	3,48%
Mokošica	6,09%
Popovići	4,35%
Zvekovica	4,35%
Župa Dubrovačka	5,22%
Ukupni zbroj	**100,00%**

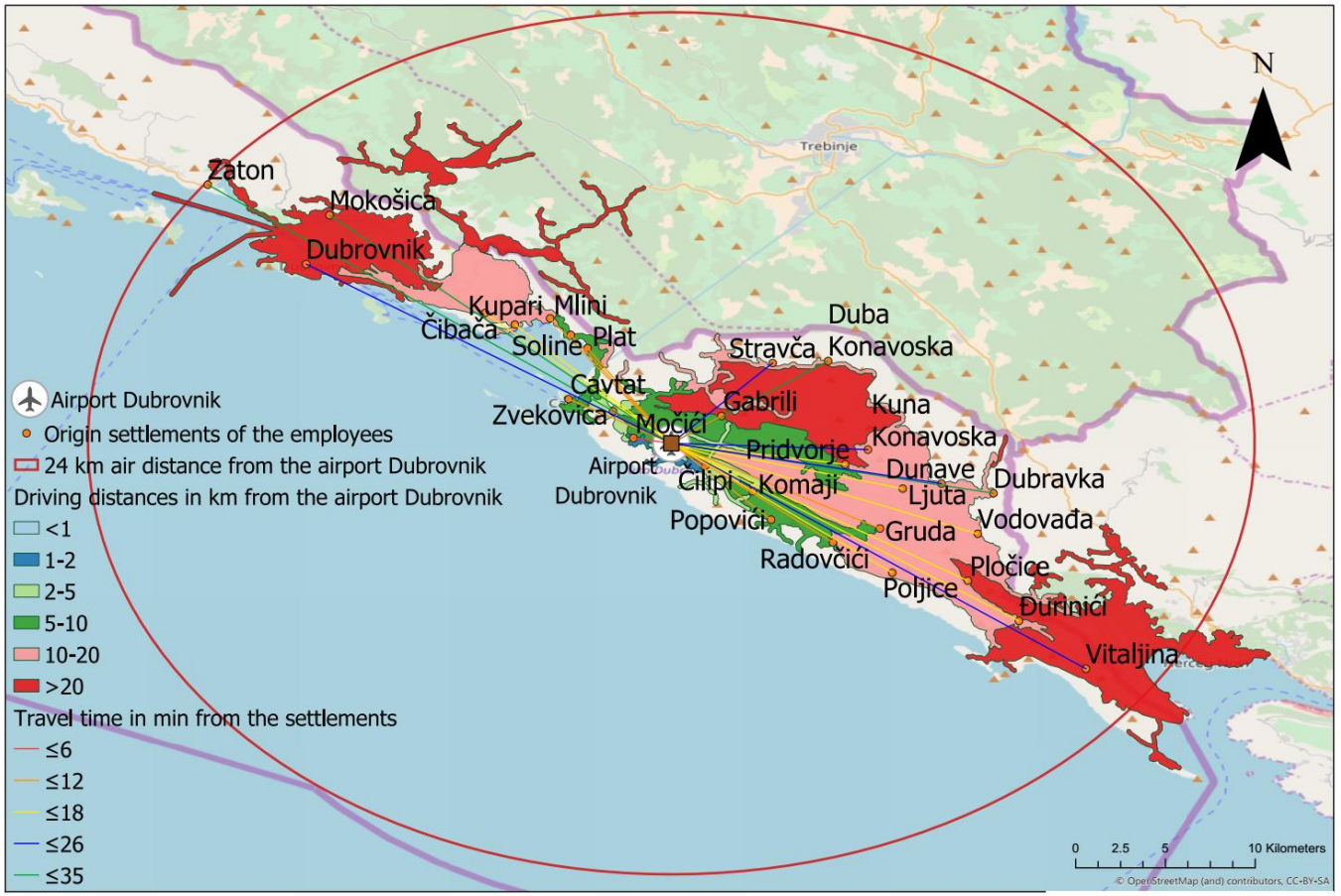
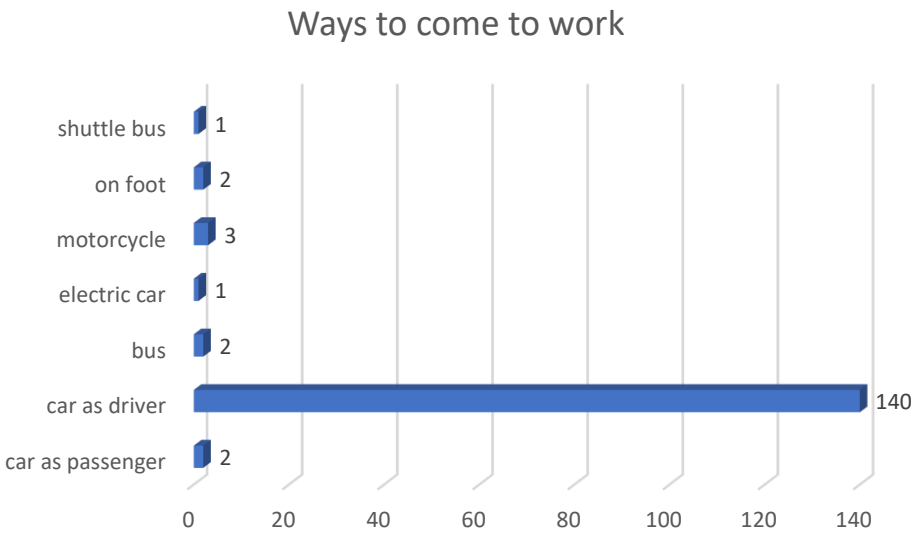


Figure 8: Employees settlements, buffer and distances
Source: Autho

4. Arrivals by transport mode

Graph 3: Mode of transport chosen by emploeey in commute



92% of surveyed emploees go to work to Airport Dubrovnik every day by car. This is not good since their origin is mosly less than 10 km away from Airport Dubrovnik. Mostly they park in parking for employees and have free parking. Other modes of transport are minor.

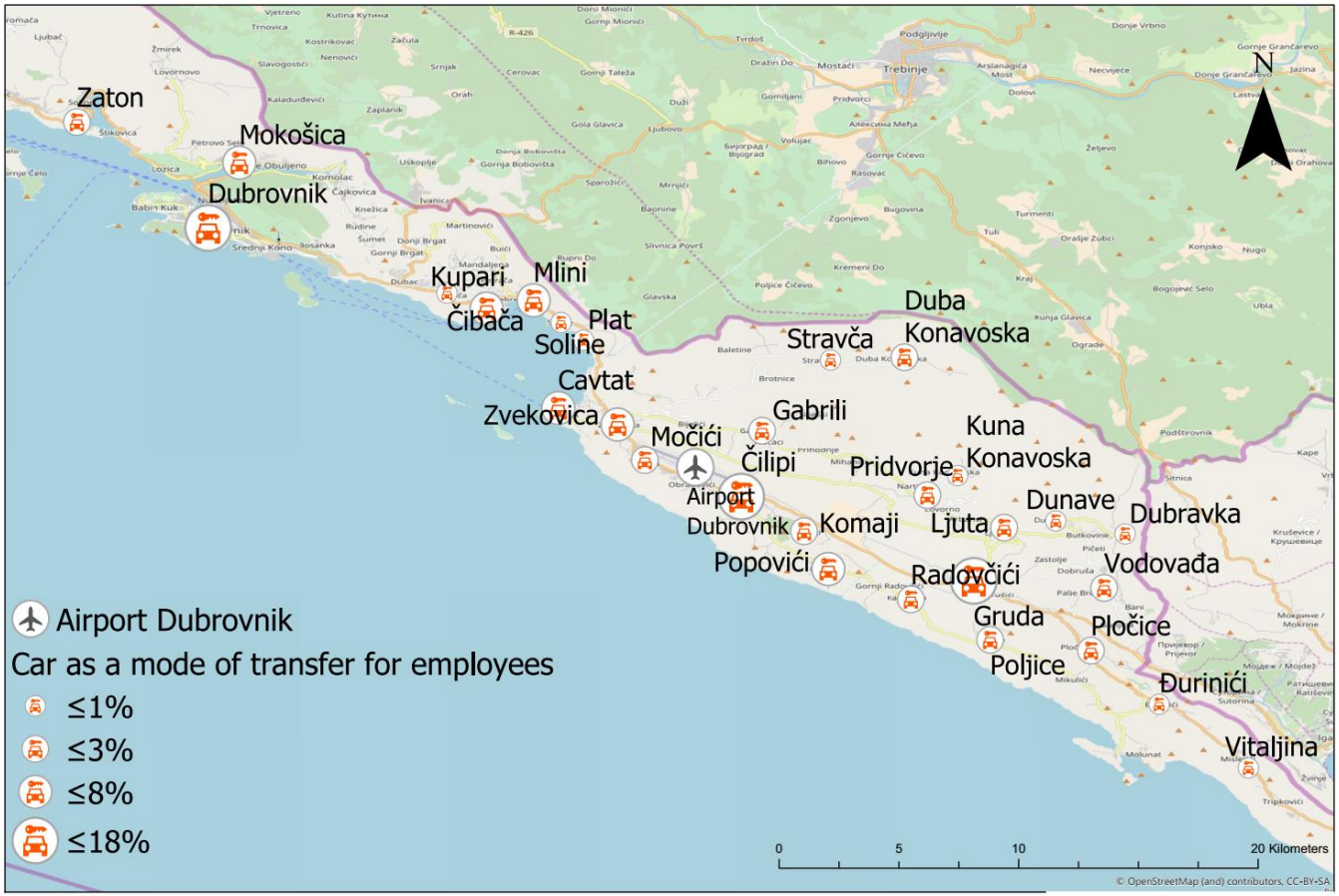


Figure 9:Car as a mode of transfer for employees
Source: Author

Figure 10: Bus line as a mode of transfer
Source: Author

Figure 11: Walking to work
Source: Author

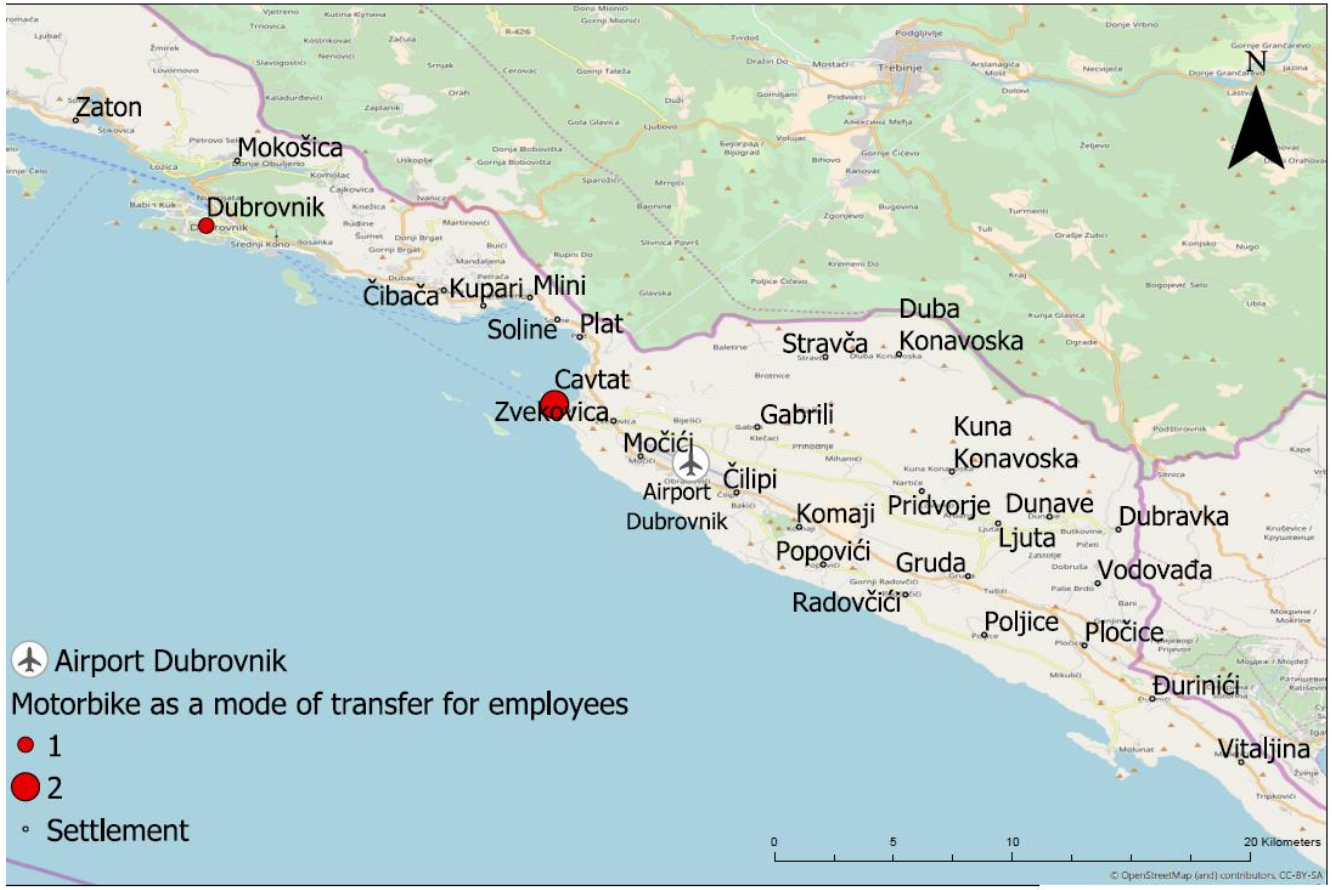
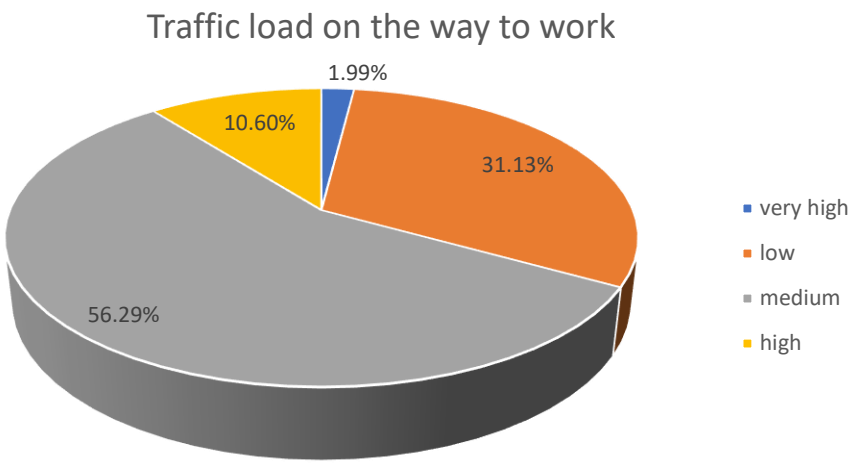


Figure 12: Motorbike as a mode of transfer for employees

Source: Author

5. Traffic load on the way to the work

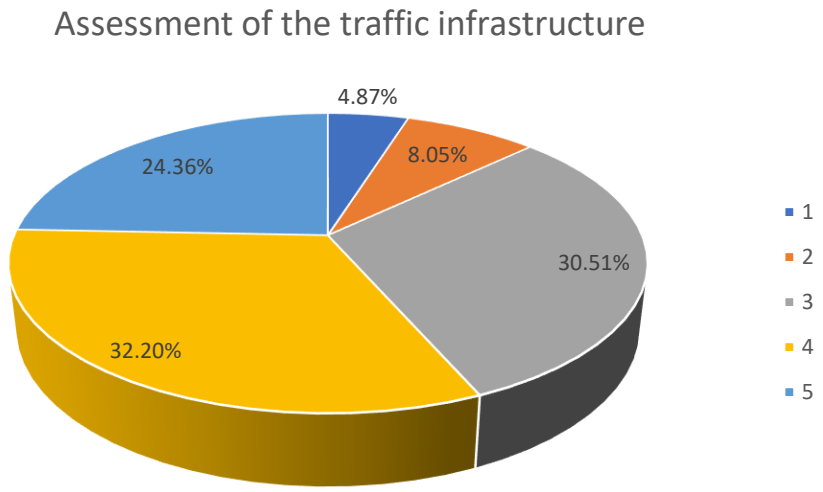
Graph 5: Traffic load



According to the data obtained, the traffic load on the road to work in the survey period, respectively outside the summer season, varies from low to medium loads. High and very high traffic loads occur to a lesser extent.

6. Assessment of the traffic infrastructure

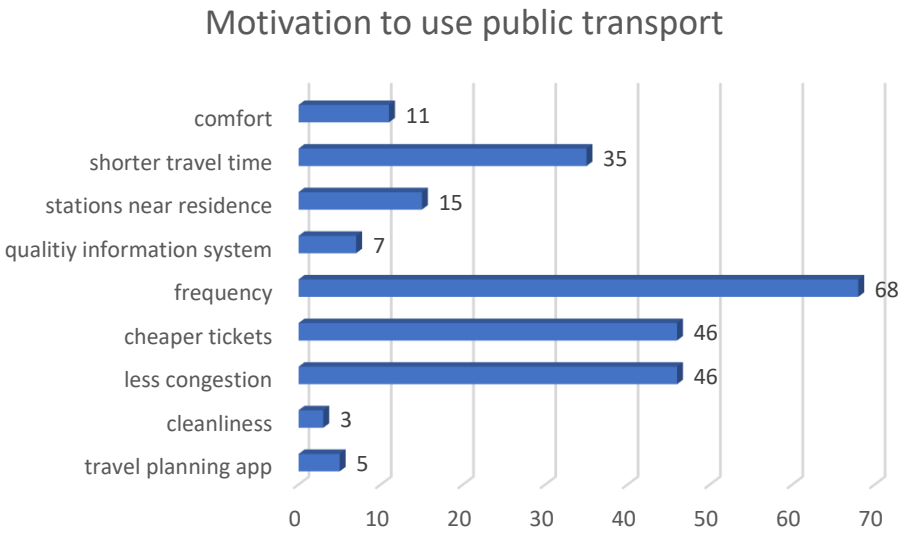
Graph 1: Assessment of the traffic infrastructure



How the employees are satisfied with the traffic infrastructure, they are shown in Graph 6. The rating range for traffic infrastructure was 1-5 (very bad - excellent). As can be seen, a smaller number of employees (4.87%) think that the transport infrastructure is very bad. The vast majority of people think that the traffic infrastructure is rated 3-5, respectively that it is good, very good and excellent.

7. Motivation to use public transport

Graph 2: Motivation to use public transport

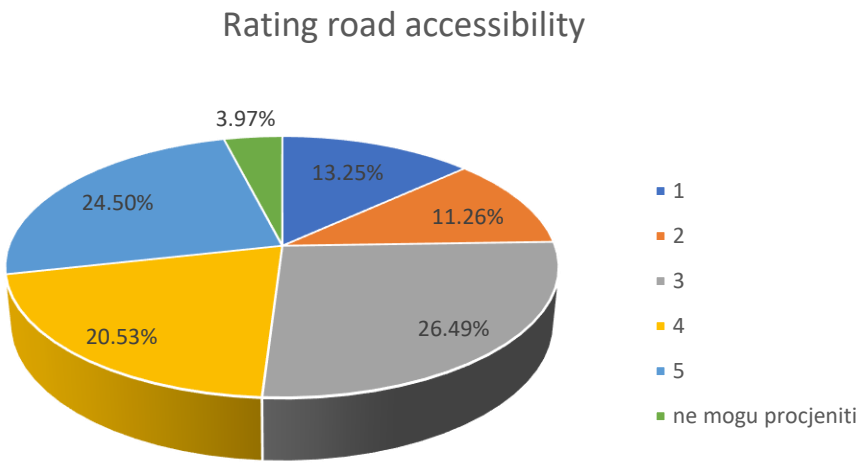


Given that the vast majority of employees use the car as a mean of transport and the way to get to work, the chart above shows the information about motivation for using public transport. Most employees highlighted the frequency of PT departures as the biggest motivation for using it. The next two most reputable answers are cheaper transport tickets and smaller crowds. Also shorter travel time is one of the more common responses that motivate employees to use PT instead of cars as a means and a way to get to work.

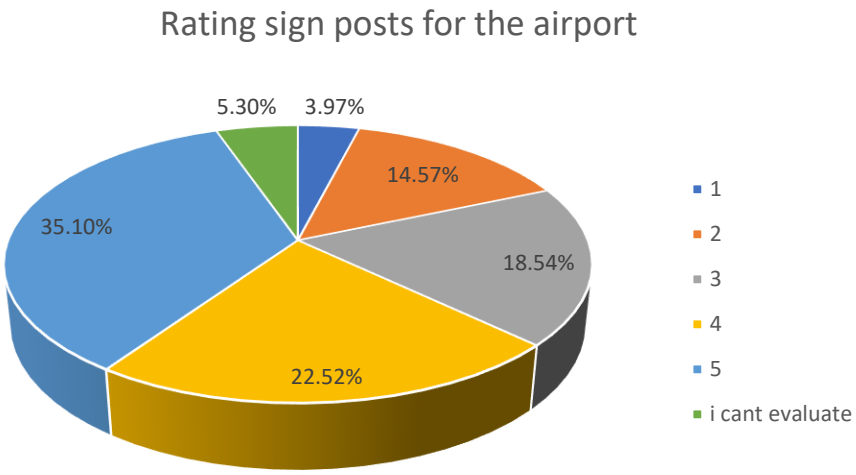
8. The level of satisfaction of employees with the existing mobility system and the perception of accessibility

The following graphs show the ratings of employees regarding road accessibility, airport signs, buses frequencies, shuttle bus rates, taxi service availability, bus accuracy, shuttle bus accuracy, taxi service accuracy, bus pricing, taxi pay-per-view, passenger information system during transportation and bicycle accessibility to the airport. Ratings ranged from 1 to 5 and can not be estimated (1 - very bad, 2 - satisfactory, 3 - good, 4 - very good, 5 - excellent).

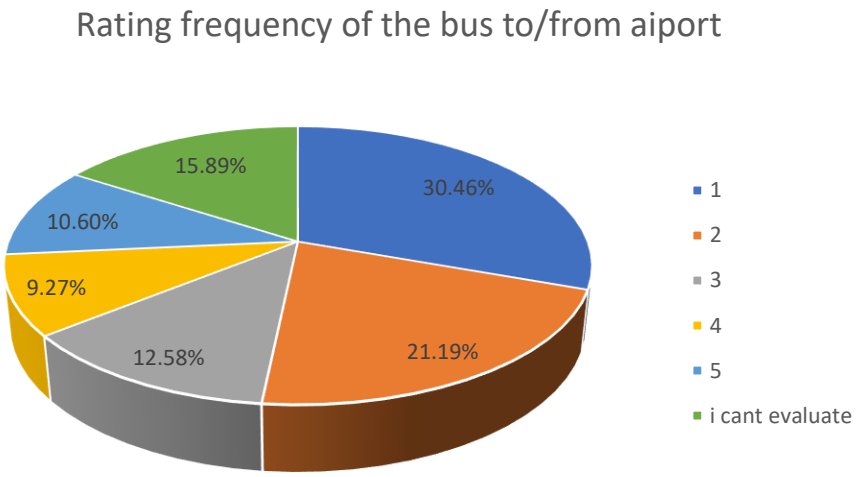
Graph 3: Road accessibility



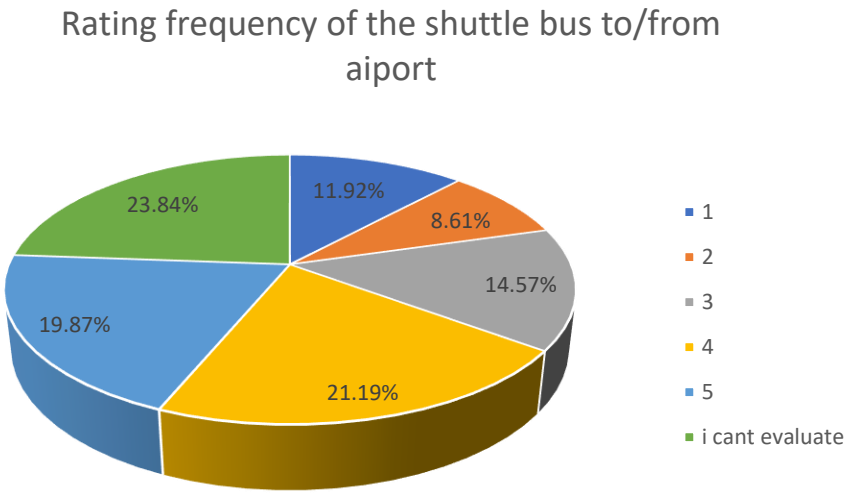
Graph 4: Sign posts at the airport



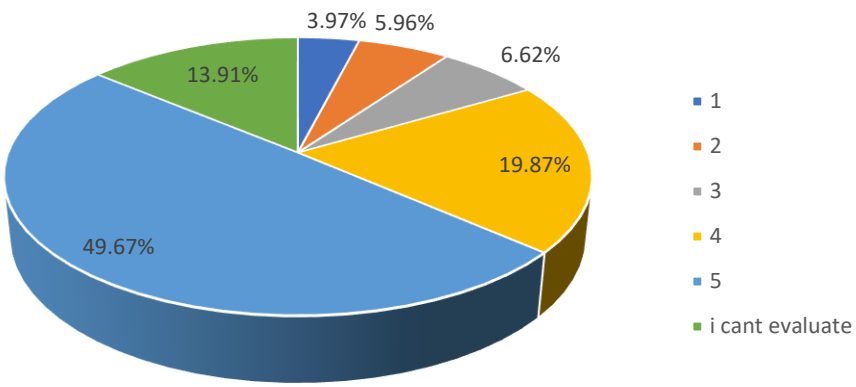
Graph 5: Frequency of the bus



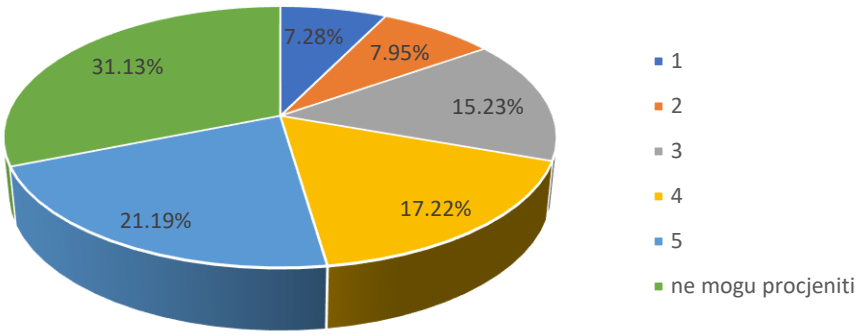
Graph 6: Frequency of the shuttle bus



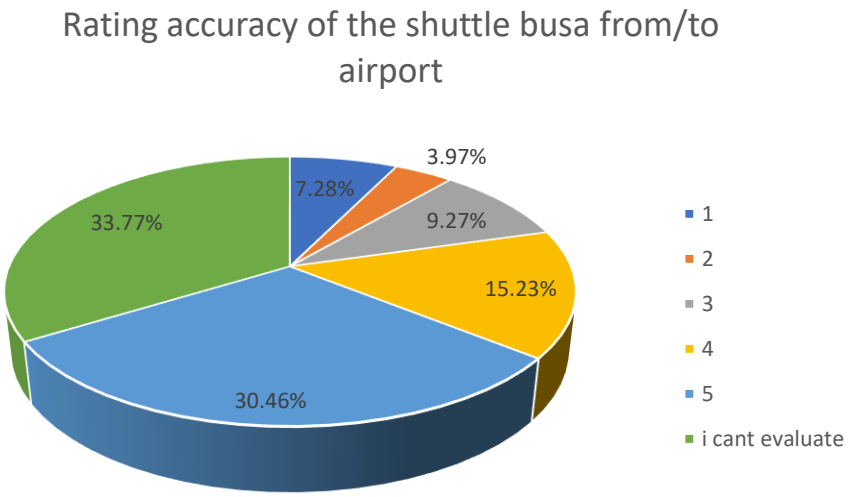
Graph 7: Taxi



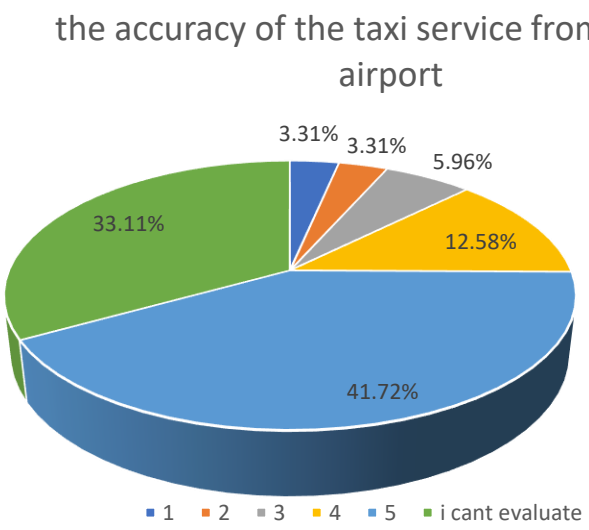
Graph 8: Bus accuracy



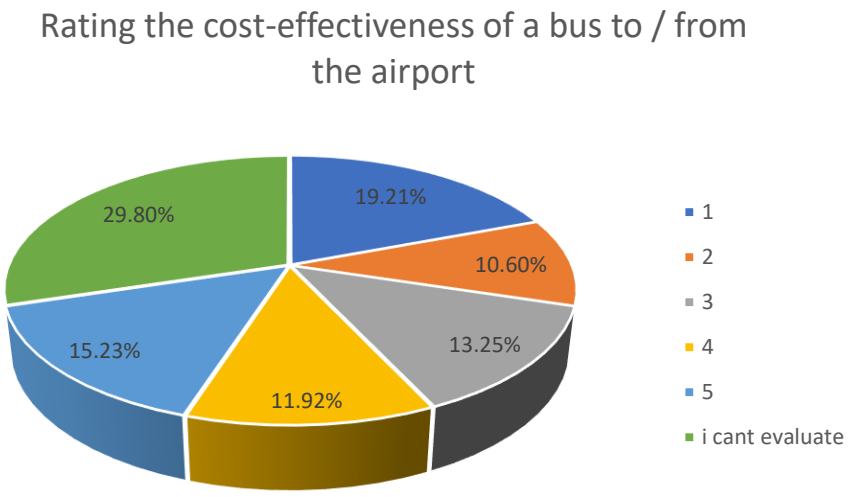
Graph 9: Shuttle bus accuracy



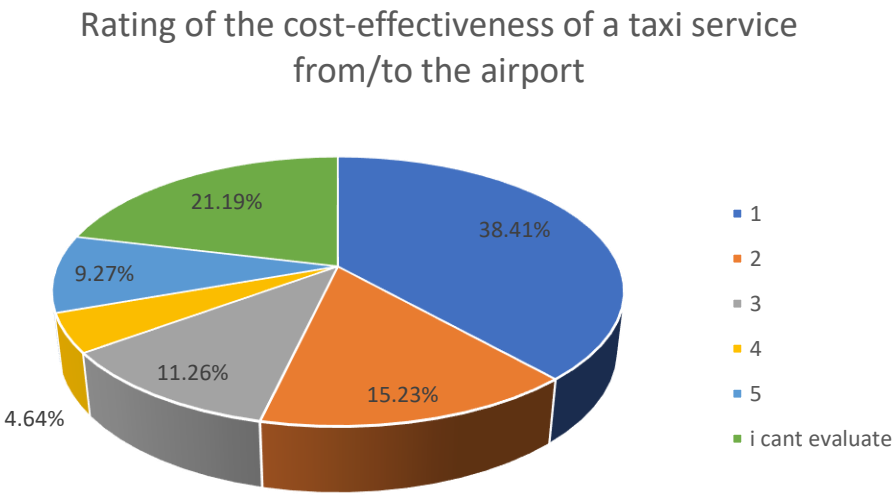
Graph 10: Taxi accuracy



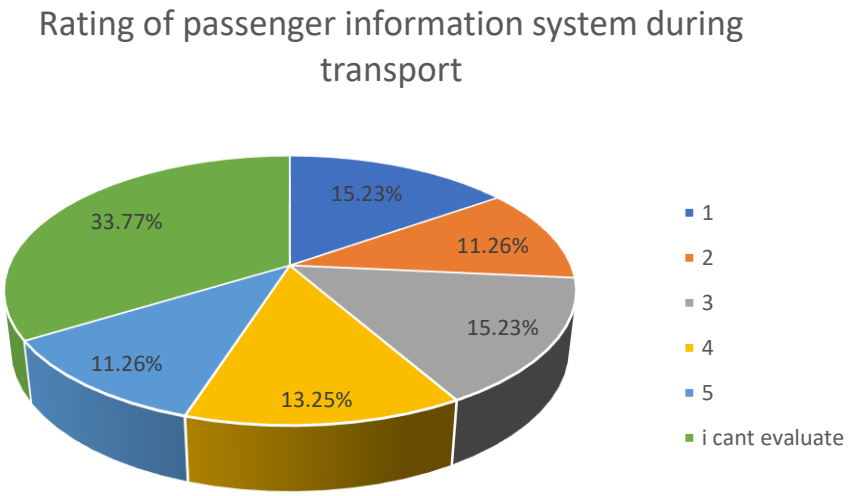
Graph 11: Cost – effectiveness of a bus



Graph 12: Cost – effectiveness of taxi



Graph 13: Passenger info system



Graph 14: Bycicle accessibility

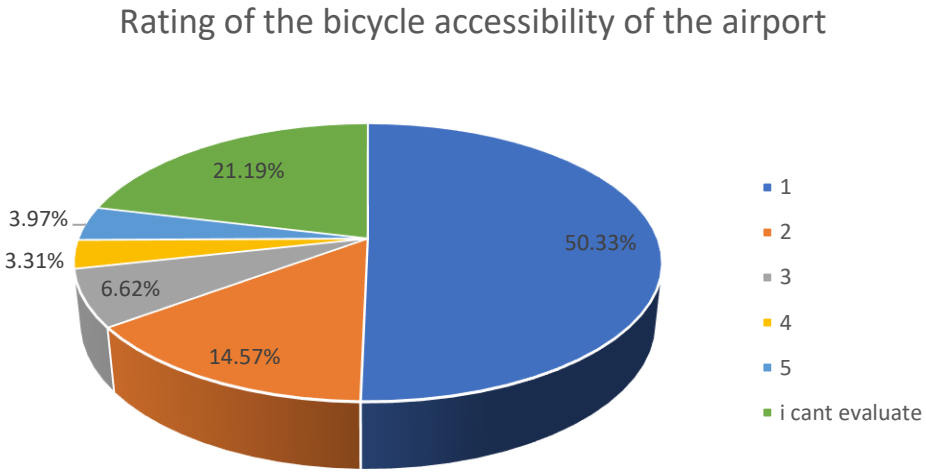


Table 2 shows some employee suggestions for improving mobility.
Table 3 shows the reasons why employees use certain means of transport from home to work. As can be seen, employees use automobiles to the workplace for the most reason because the conditions are not favourable for other means of transportation.

Table 3: Table of comments/sugesstions

SUGGESTIONS OF THE EMPLOYEES
bicycle path
bus for employees
the bus every full hour
more parking places
separate parking plces for emloyees
better marked parking space
more frequent city lines
electric car or bicycles
100% electric car sharing
car sharing
shuttle bus for emloyees
cycling and hiking trails
smart parking

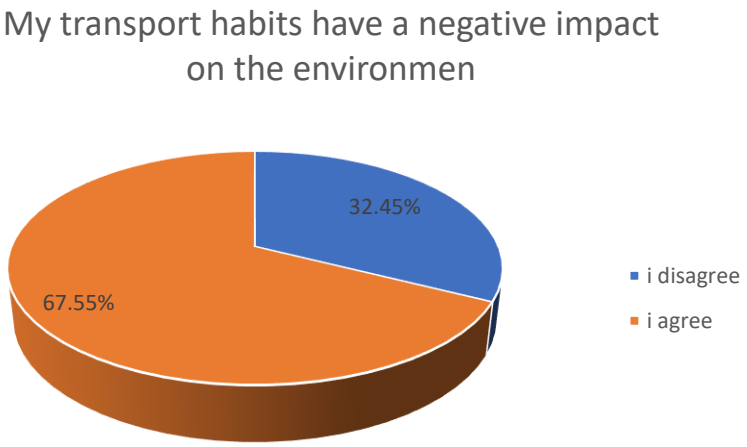
Table 4: Reasons for chosen modes of transport

Reason/mod of transport	Car as passenger	Car as a driver	Bus	On foot	Motorcycle	Electric car
comfort		47		1		
Other means of transport are not favourable	2	84	1		1	
Because of distance		21		1		
Time saving		20				
financijska isplativost		2				
because I do not have a car/driver's license			1			
due to the lack of parking spaces					1	
because i want to contribute to the environment						1
For healt				1		
Habit		6			1	

9. Assessment of the use of transport mode on the environment

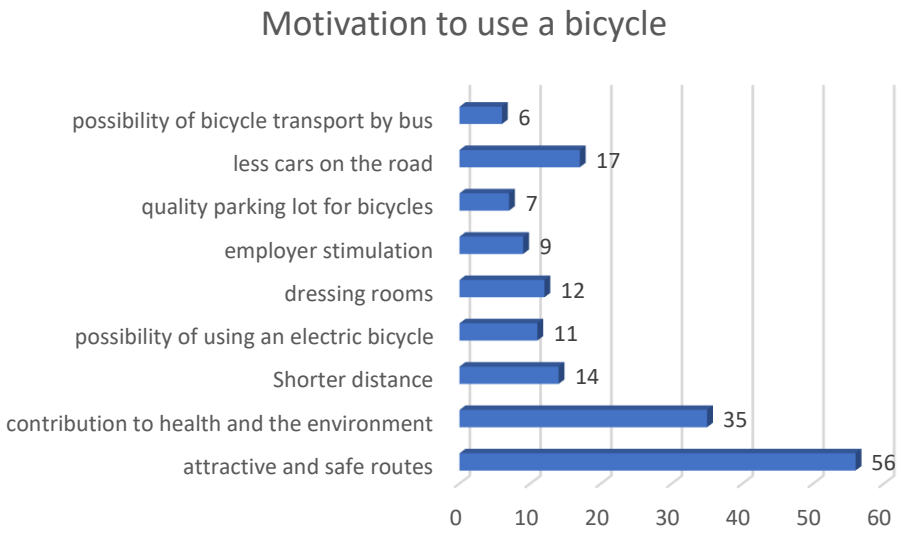
According to the data obtained through employee surveys, Chart 21 shows an estimate of the impact of the use of transport equipment on the environment, or whether their habit of using the means of transport has a negative impact on the environment. As can be seen from the graph, most employees (67.55%) are aware that their habits, or the impact of the means of transport, have a negative impact on the environment.

Graph 15: Negative impact



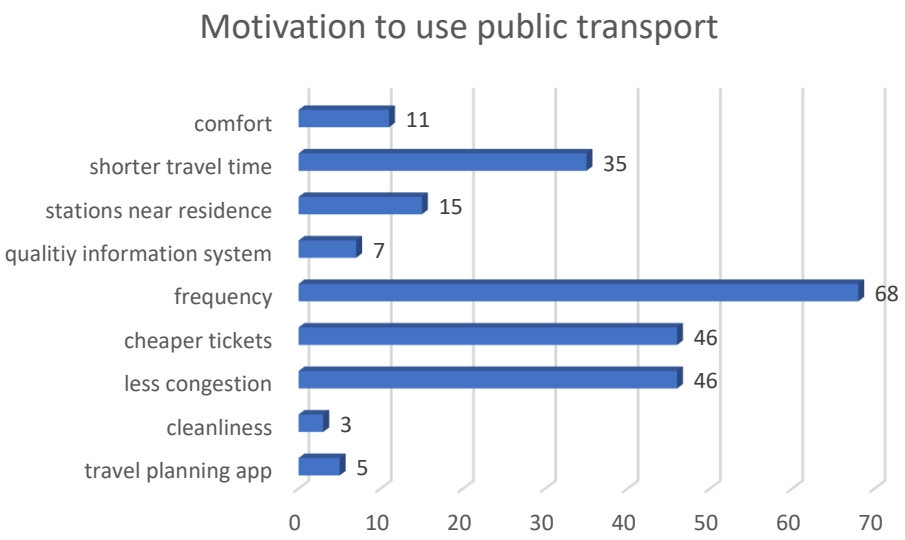
10. Motivation for the use of bicycles as a transport mode to work

Graph 16: Motivation for bycicle

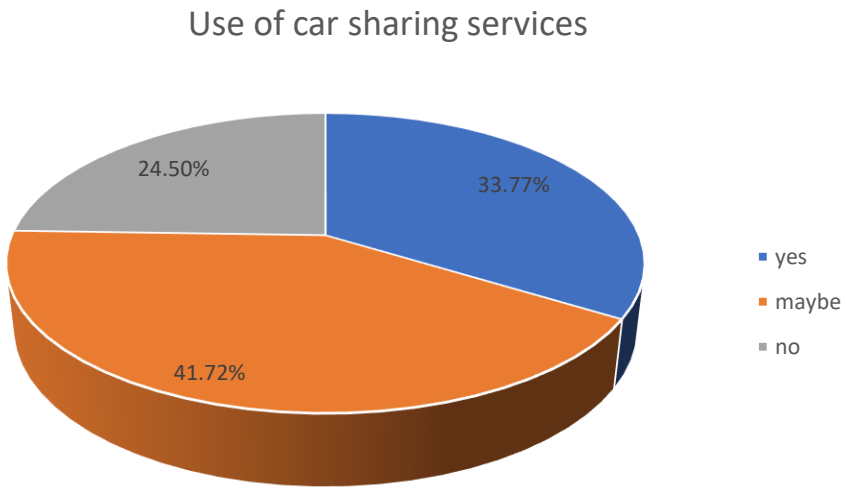


Given that the vast majority of employees use the car as a means of transport and a way to get to work, the chart above shows the information about motivation for using bicycles. As can be seen, most employees highlighted attractive and safe routes and routes as the greatest motivation for using bicycles as a means of transportation to the workplace. The next most responsive answer is contributing to health and the environment.

Graph 17: Motivation for PT



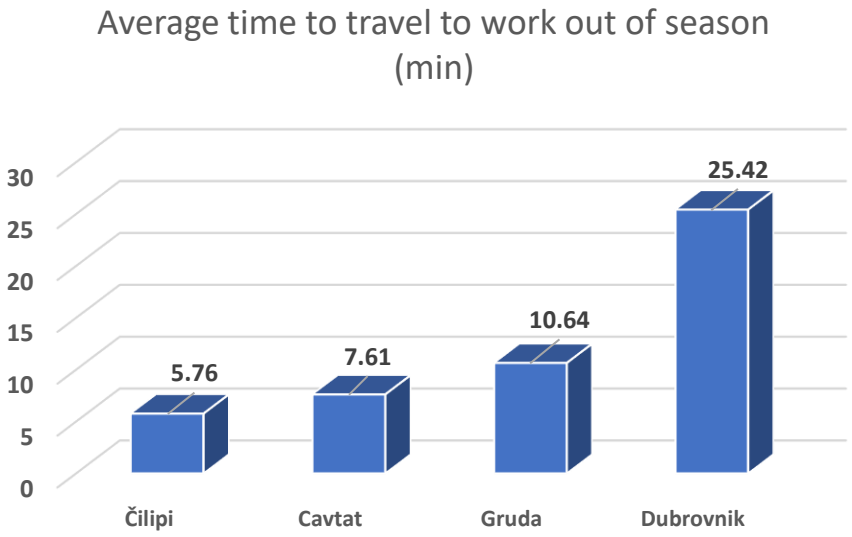
Graph 18: Car sharing service



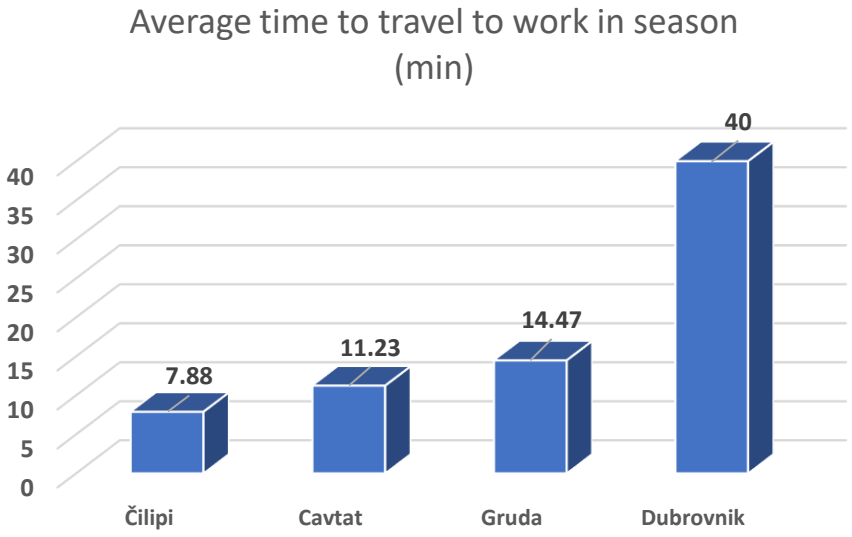
The data shown in chart 24 shows the results of the survey regarding the use of car sharing services. It is visible that 33.77% of employees would agree to use the car sharing service as a way of getting to work, while 24.50% of employees would not use this service as. Other employees, 41.72%, said they might have used this service as a way of getting to work.

11. Average time of traveling to work from area where is coming most employees

Graph 19: Average time travel - out of season



Graph 26: Average time travel - season

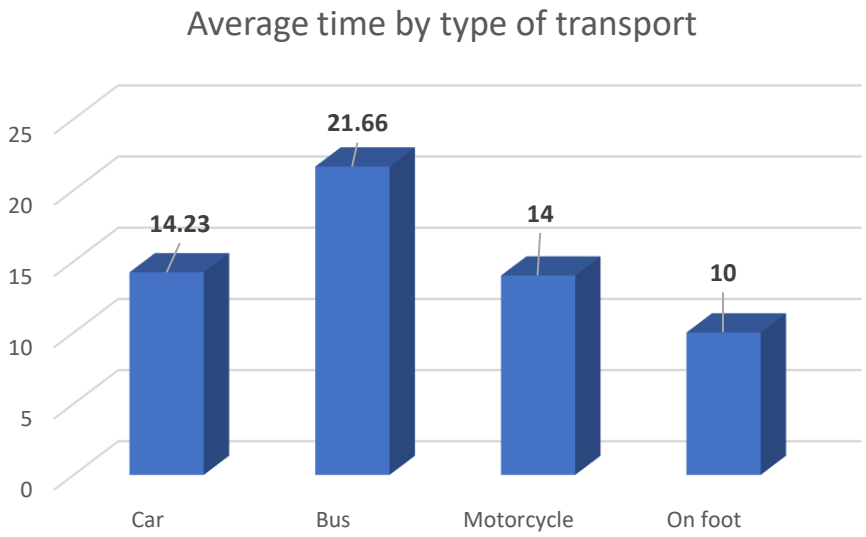


Graph 25 shows the analyzed data on average travel time to work by settlements outside the summer season. As can be seen, the average travel time from Chile is 5.76 min, while the average time of travel from Dubrovnik is 25.42 min.

Also, in Chart 26, you can see the average time of traveling to work from the settlements in the summer season. The average travel time for Čilipe, Cavtat and Grude is a little longer, while the average time of traveling from Dubrovnik to the outside of the season is 15 minutes longer

12. Average time of travel by type of transport

Graph 27: Average time by mode



The average time of travel by type of transport is shown in graph 27. As you can see, the bus trip takes the longest (21.66 min) while the motorcycle trip is the fastest and is 14 min. Walking as one of the ways to get to work is not a very relevant sample for the reason that employees hiking to the workplace are staying closest to the airport.

Table 4 shows the relationship between the mode of transport and the degree of education. In accordance with the foregoing, most employees use cars to get to work. It can only be noted that all employees with a postgraduate study are coming with a personal car.

Table 1

	Car as a driver	Car as a passenger	Electric car	Motorcycle	Bus	Shuttle bus	On foot
High school	**83**			**1**	**2**	**1**	**2**
Bacchelor/master degree	**48**	**2**	**1**	**2**			
Postgraduate degree	**8**						
Total	**139**	**2**	**1**	**3**	**2**	**1**	**2**

13. Conclusion

It is necessary to introduce lines for employees who are working on a shift that starts at 5:00 in the morning. From Zaton (the furthest western settlement where employees come from) and settlements towards the east (the easternmost settlement is Vitaljina). Ideally, if the line went from Zaton to the airport and stopped in every settlement from which employees come from the west to the airport. And from east two lines: one that connects Vitalljina and Donje Konavle to the airport, and the other one that goes from Đurinići to Upper Konavle to the airport. Solutions like electric autonomous minibuses (with no drivers) can make employee mobility better since they live mostly in radius less than 10 km from Airport Dubrovnik. They also impact ecology. MaaS (Mobility as a Service) can make public transport integrated without high cost of implementing public transport.

In order to minimize the use of personal car it is recommended to make public transport more attractive by making more connections (new lines) to settlements and more frequencies of buses. Also, employee parking could become expensive in order to prevent employees to use cars.

14. List of Figures

14. List of Tables