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UNDERSTANDING AIRPORT EMPLOYEES' MOBILITY NEEDS AND BEHAVIOURS

Milan Airports: employees' landside mobility needs & behaviours	**Version 2** **09 2018**

Written by SEA

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1. Introduction

This report focuses on the analysis of employees' mobility behaviours at Milan Airports. The report relies on primary data collected by SEA Milan Airports via an on-line survey to employees.

The report aims at:

- analysing current mobility behaviours;
- informing the LAirA pilot project on car-pooling.

The report structured as it follows:

- Chapter 2 (Employee survey methodology) presents the survey methodology and the questions to employees;
- Chapter 3 (Employee mobility behaviour analysis) includes the sample and results analysis, and in particular the description of the analysis preparation activities, the analysis of respondents' profiles and trip geographic origins, the analysis of respondents' travel behaviours and of their availability to join a car-pool scheme;
- Chapter 4 (Conclusions) summarizes the main evidences.
- Appendix 1 includes the survey questionnaire.

2. Employee survey methodology

SEA Milan Airports (SEA) prepared and delivered an on-line survey to the employees at Linate and Malpensa Airports to collect information on their travel behaviours to commute to work; the survey addressed both SEA staff and other employers' staff in the airports' systems.

SEA chose the "*EU survey tool*", sponsored by the European Commission, as the survey platform[1].

The main means to promote the survey were:

- SEA Intranet;
- dedicated staff at SEA canteens in Linate and Malpensa[2];
- communications to employers at the Airports (other than SEA); and
- personal contacts.

The questionnaire (see Appendix 1) was on-line from 9 July 2018 for about two weeks. The following Table provides details on the number of survey answers.

Table 1. Number of survey answers by Airport

Airport	Questionnaires received
Malpensa	396
Linate	309
Total	705

Source: SEA Milan Airports

The survey was structured around three pillars:

- **Employee profile and trip origin**; this included:
  - o town from which the trip to work starts;
  - o demographic data - age;
  - o job type (executive, managers, office workers/clerk, operators/blue collars);
  - o reference Airport (Malpensa or Linate);
  - o employer (SEA or other employers).
- **Travel behaviours**, in particular:
  - o work start and end time;
  - o variability of working time;
  - o average duration of the home-to-work trip;
  - o transport modes (in chronological order on the home-to-work trip);
  - o eventual car ride sharing with other employees (in case the employee is the driver) and number of passengers;
  - o eventual detours along the trip;
  - o usage of Apps/software for travel planning.
- **Availability to join a car-pool scheme** and reasons to join or not to join (including reasons priority ranking).

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[1] Please see: https://ec.europa.eu/eusurvey/home/welcome

[2] The staff at canteens directly collected employees' answers with Tablets.

3. Employee mobility behaviour analysis

This Chapter presents the analysis of Linate and Malpensa Airports employees' mobility behaviour, based on the questionnaire answers.

3.1. Analysis preparation

The analysis started by checking in detail the survey answers' completeness and quality level to ensure the analysis outcomes are technically sound. In particular, we cleaned the source database by eliminating those answers referring to situations (travel and work behaviours) which were not realistic. The main examples concern:

- working times (such as start at 00 h and end at 24 h);
- use of more transport modes (e.g. bus and train) for the same leg of the home-work journey (the questionnaire asked employees to indicate the transport modes used to commute to work in chronological order)[3].

We understand that incorrect answers may be due to:

- questions misunderstanding;
- errors in filling in the questionnaire.

Based on the database check, we used the data of 605 filled-in questionnaire in the subsequent analysis. The following Table reports the number of questionnaire received and the ones used in the analysis.

Table 2. Number of questionnaires for the analysis

Airport	Questionnaires received n.	Not included n. (%)	Questionnaires for analysis n.
Malpensa	396	41 (10%)	355
Linate	309	59 (19%)	250
Total	**705**	**100 (14%)**	**605**

Source: Steer

The analysis in the following sections presents the results for Linate and Malpensa Airports separately because:

- the Airports' locations are different in terms of proximity to Milan urban area and this may influence travel behaviours (available transport services also differ);
- the first data analysis that we undertook indicated that respondents' profiles are partially different at the two Airports (please see next section for more details);
- SEA mobility management policies may better benefit of more detailed information on employees' mobility behaviours at each of the two Airports (e.g. to develop car-pool schemes).

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[3] The chosen platform did not allow excluding multiple answers. Employees may have answered by indicating transport modes for home-work trips in different days (assuming there may be variability in the transport modes used) or for trips in different times of the year.
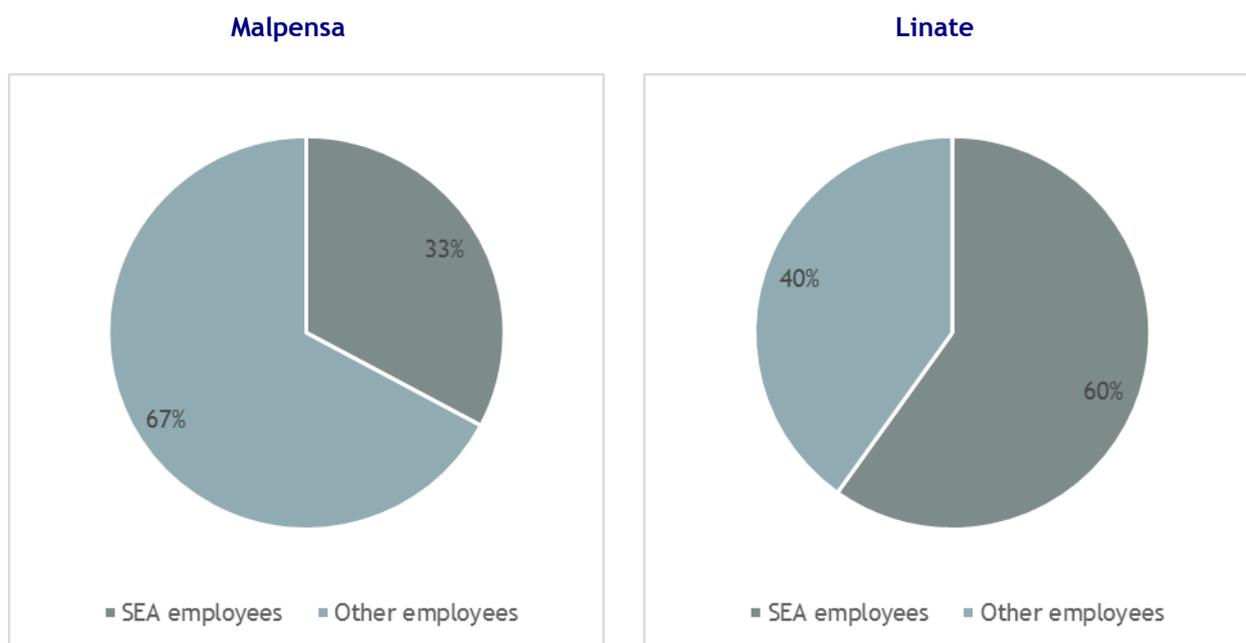
3.2. Respondents' profile

EMPLOYER

The following Figure shows the percentage of SEA and non-SEA (Other) employees on the total of respondents. In Malpensa most respondents are non-SEA employees, while in Linate most respondents work at SEA Milan Airports.

Figure 1. Respondents by employer

Malpensa **Linate**

Source: Steer

This may depend on:

- different levels of engagement of employers (other than SEA) in the survey at the two Airports;
- the presence of more non-SEA employees at Malpensa;
- the fact that SEA have its head quarter in Linate.

AGE

The following graphs present the number of respondents by age classes (both for Linate and Malpensa) and more details on respondents by age and employer at each Airport.

Most respondents are in the 46-55 age class.

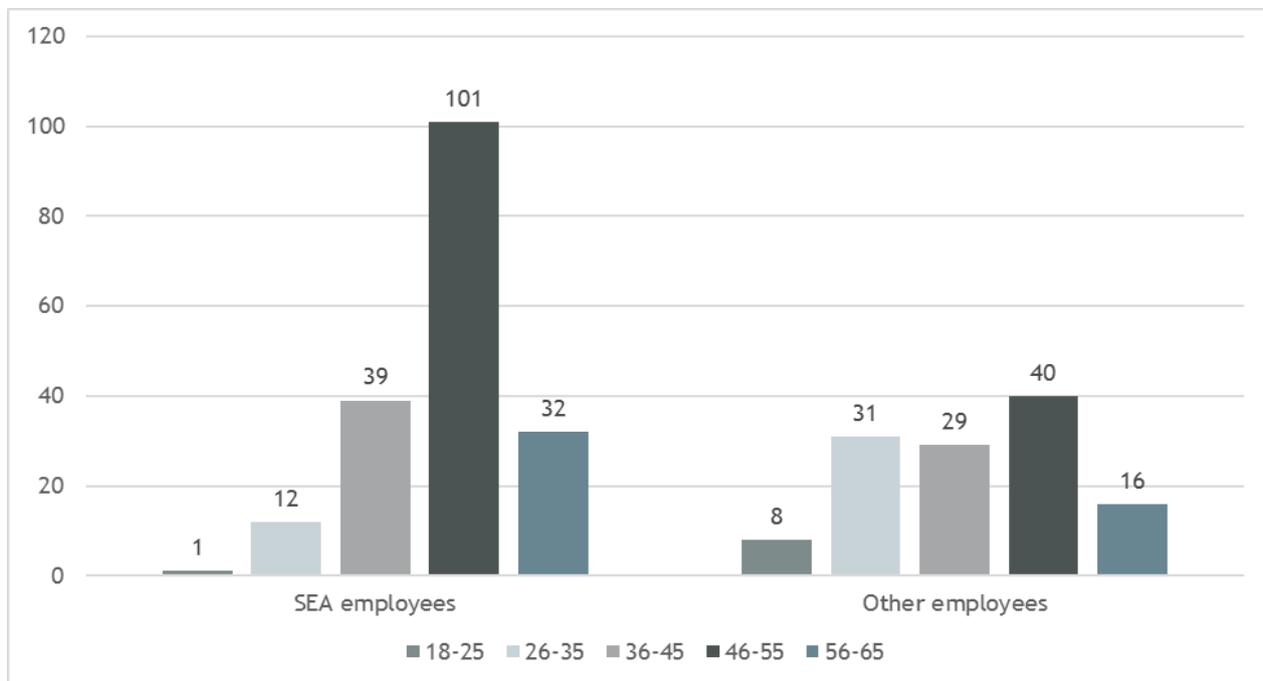**Figure 2. Respondents by age**
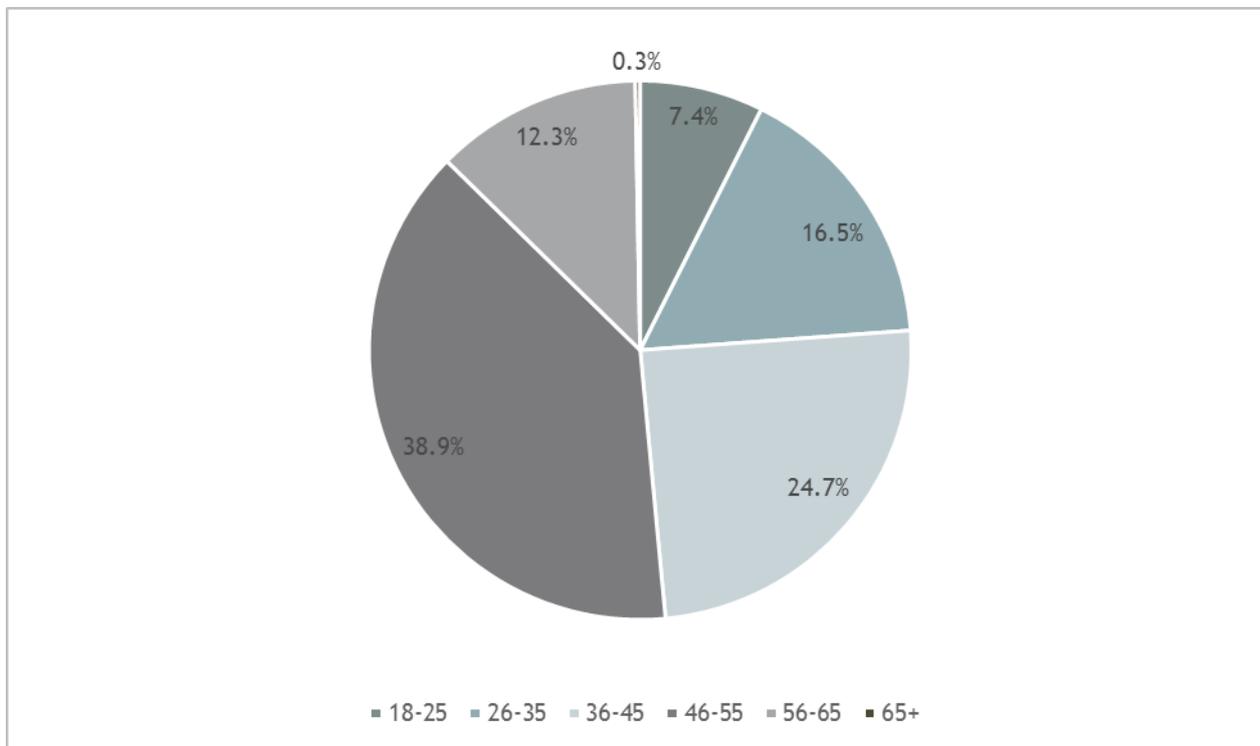
Source: Steer

Figure 3. Respondents by age and employer
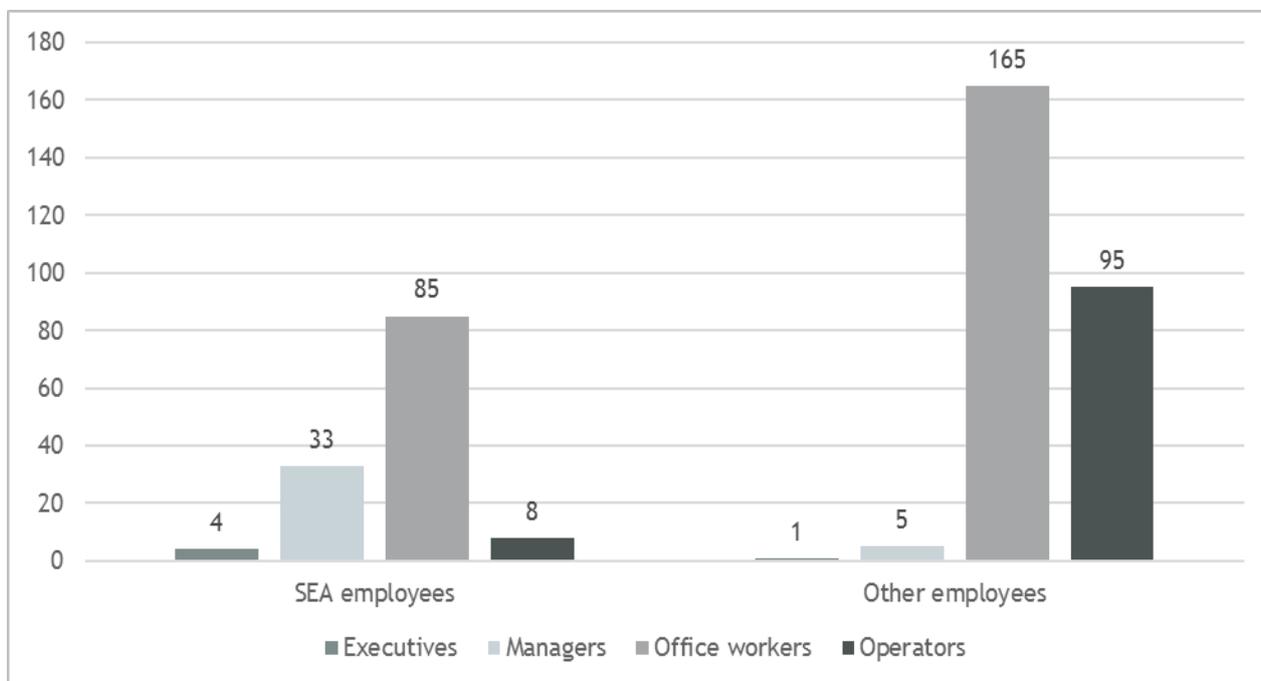
Malpensa
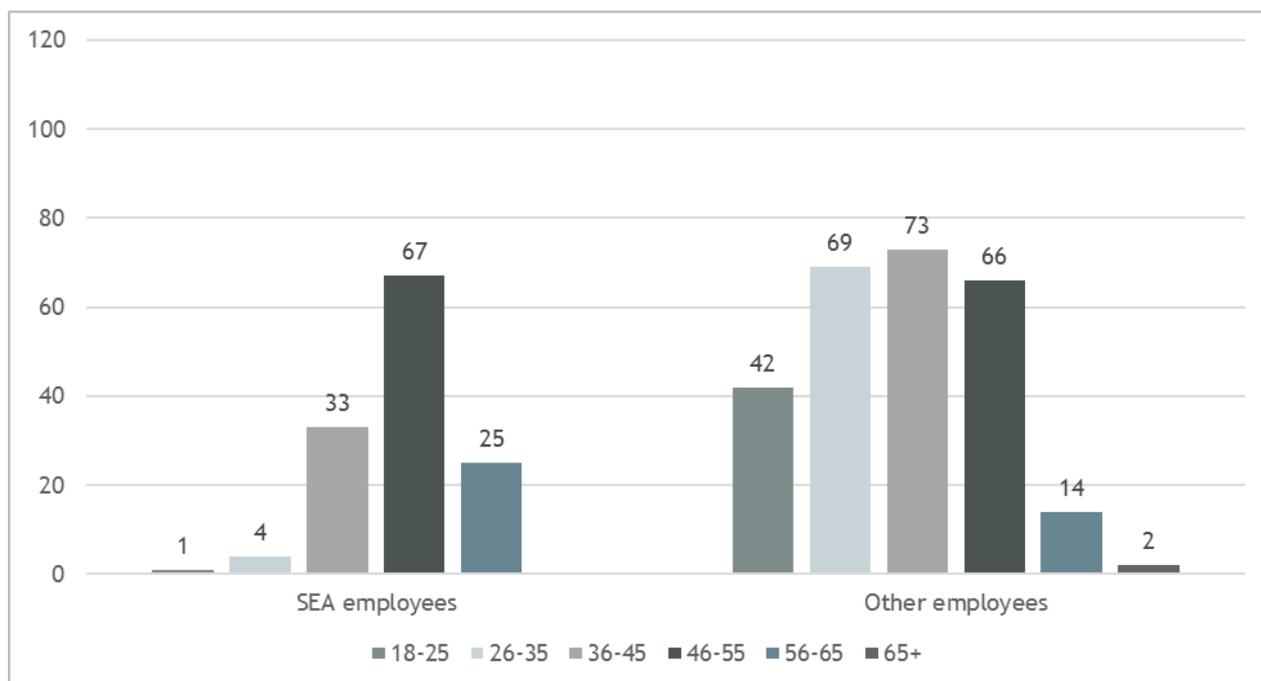
Linate

Source: Steer

JOB TYPE

Concerning the job type (role in the company) the higher number of answers came from office workers, both at Linate and Malpensa (with prevalence of non-SEA office workers at Malpensa and of SEA ones at Linate), as shown in the following Figure.
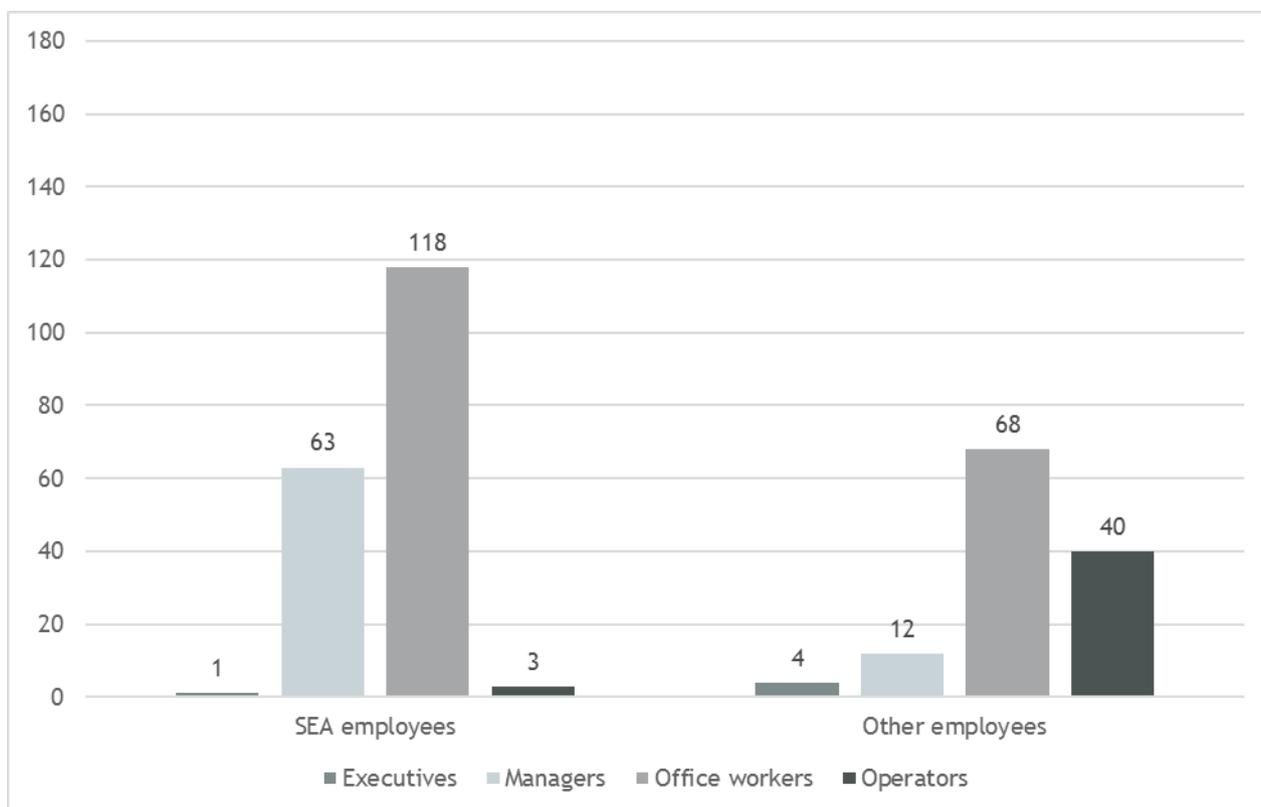
Figure 4. Respondents by job type and employer
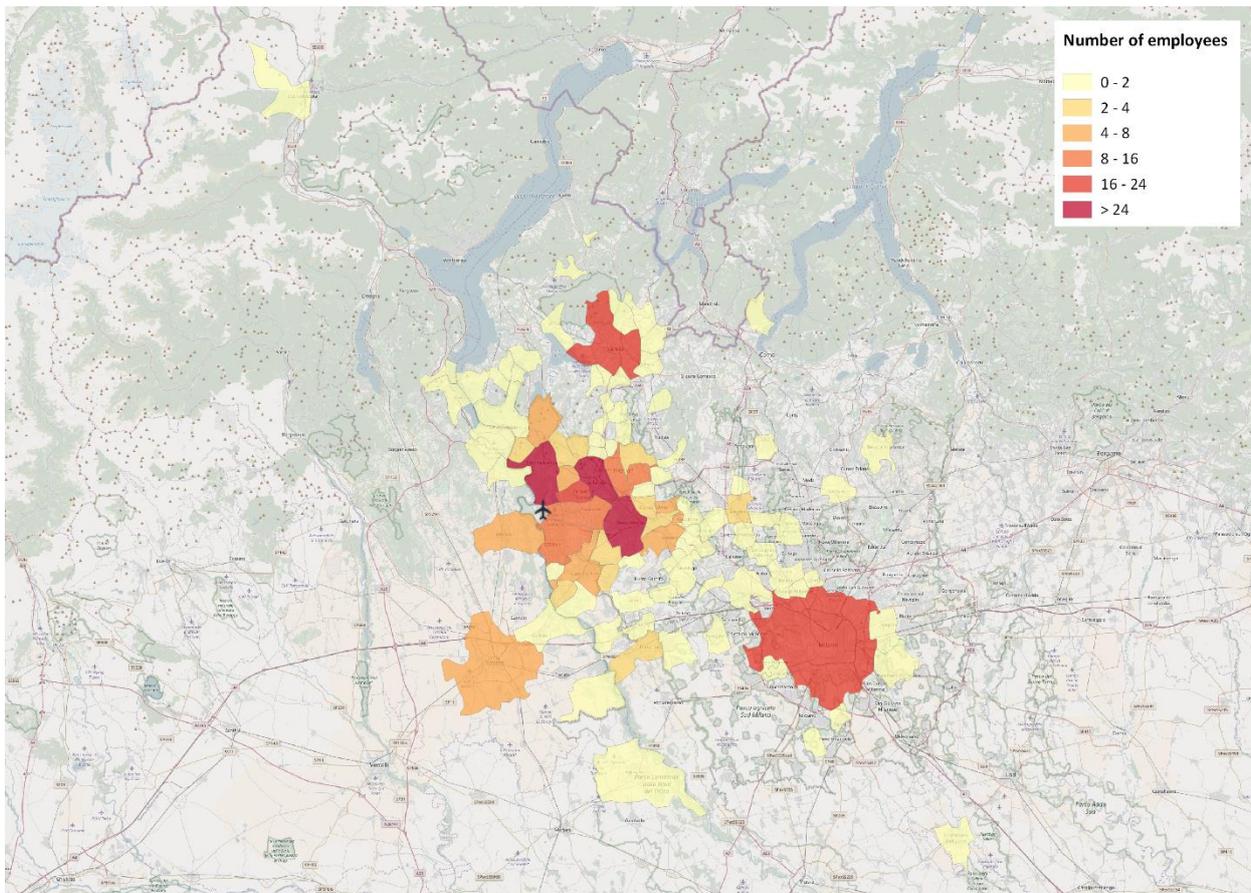
Malpensa


Linate

Source: Steer

TRIP ORIGIN

The following maps show the geographic origins of trips to work. Most of Malpensa employees answering the survey commute from many small-medium urban centres around the Airport (mainly in Varese and Milan provinces), while Linate employees' journeys mostly originate from the Municipality of Milan (the small cities around the airport have a smaller weight).

Figure 5. Trip origins – number of respondents by Municipality

Malpensa

Linate
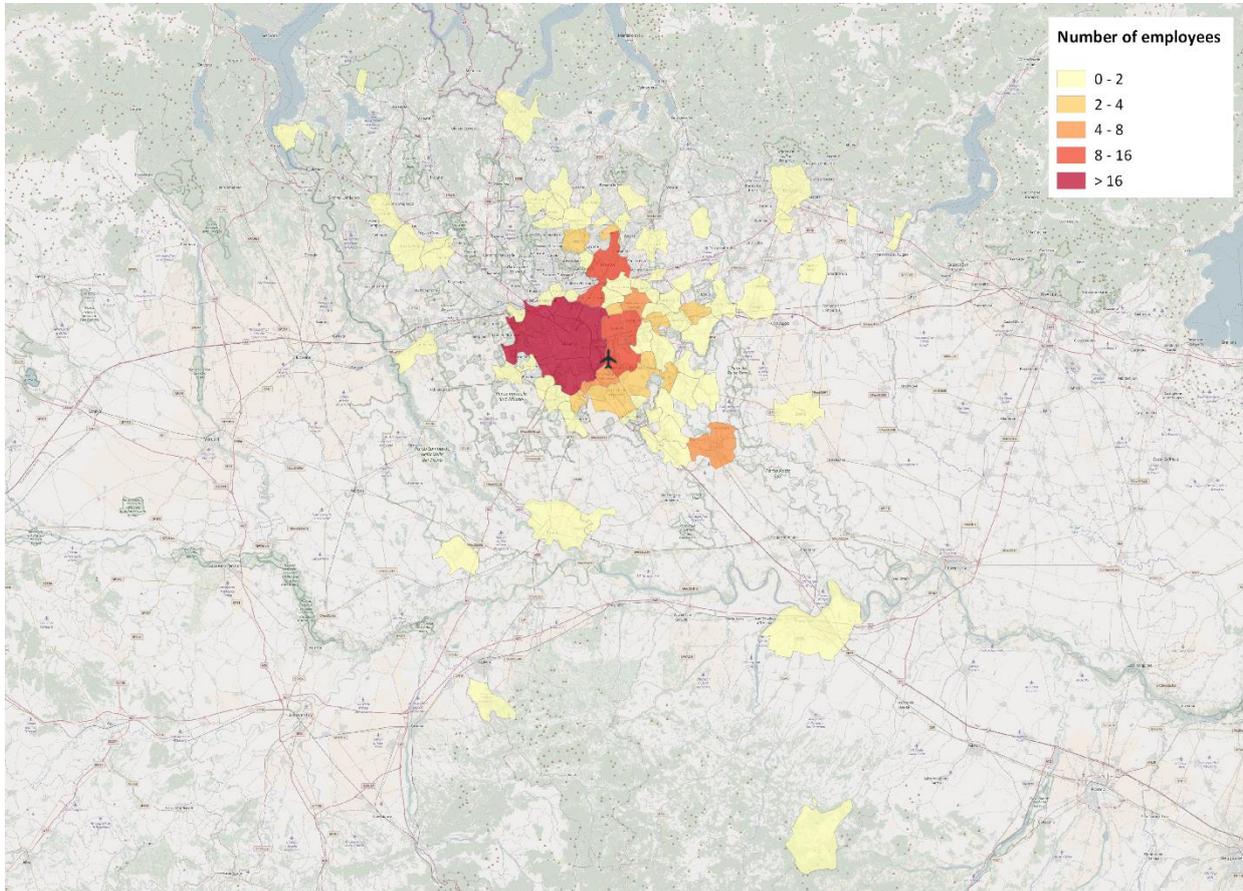
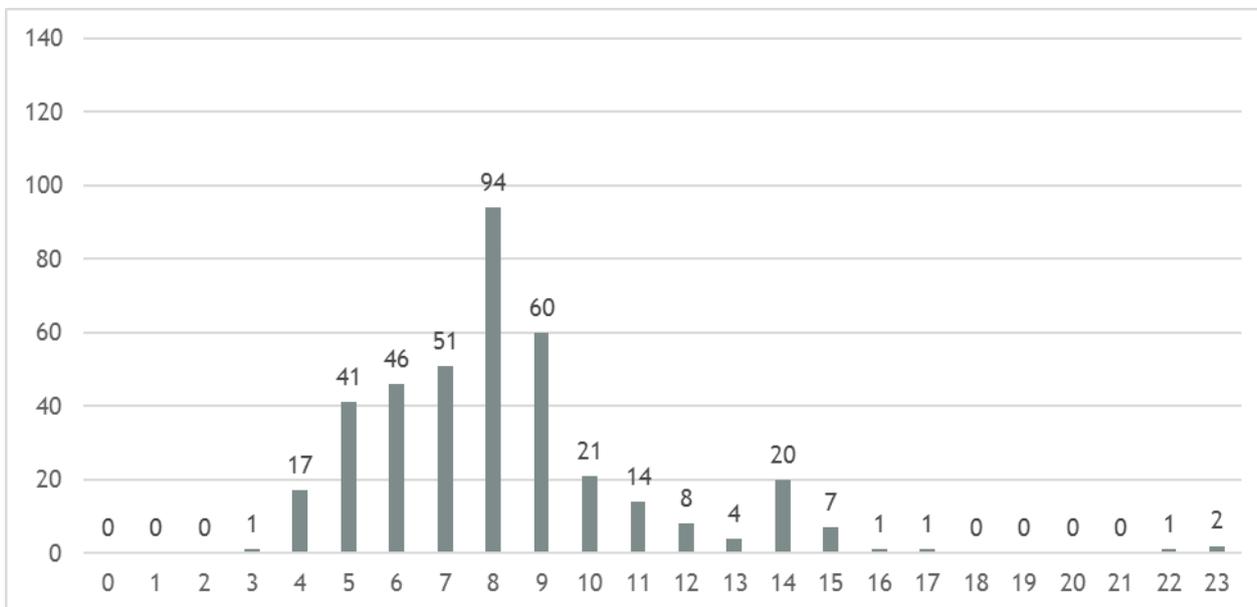
Source: Steer

3.3. Travel behaviours

WORK TIME

The following Figures show the survey results concerning work start and end times. Malpensa presents a "flatter profile" which indicates the presence of employees with work shift. On the other hand, Linate shows peaks between 8 am and 9 am (work start) and 16 pm and 18 pm (work end), which is typical of office hours.
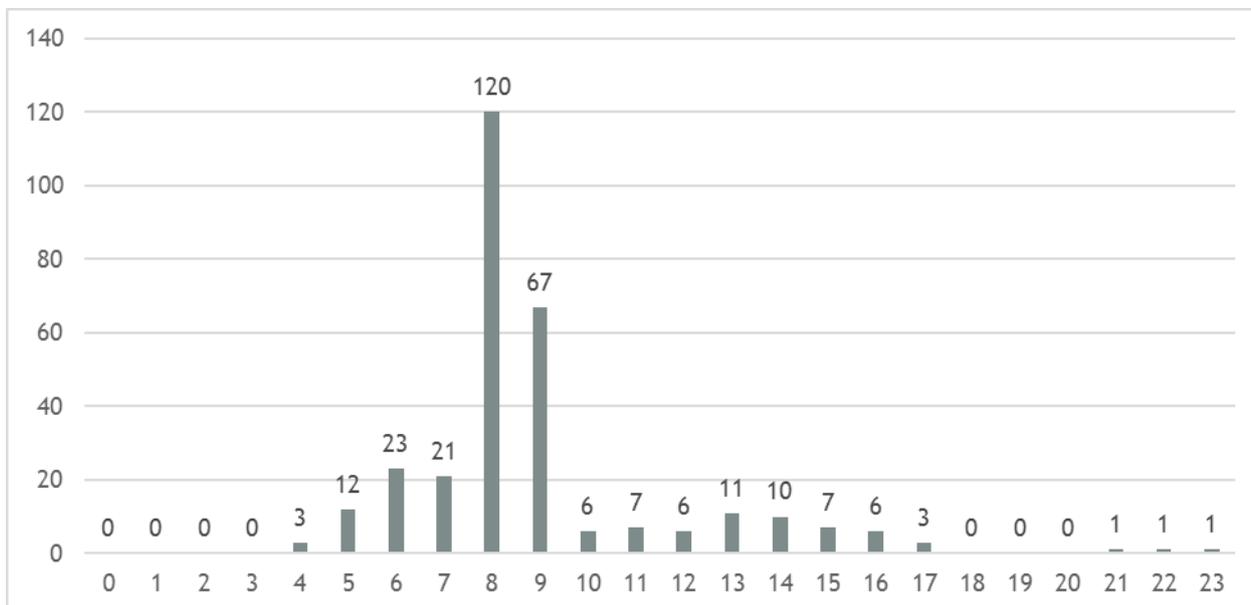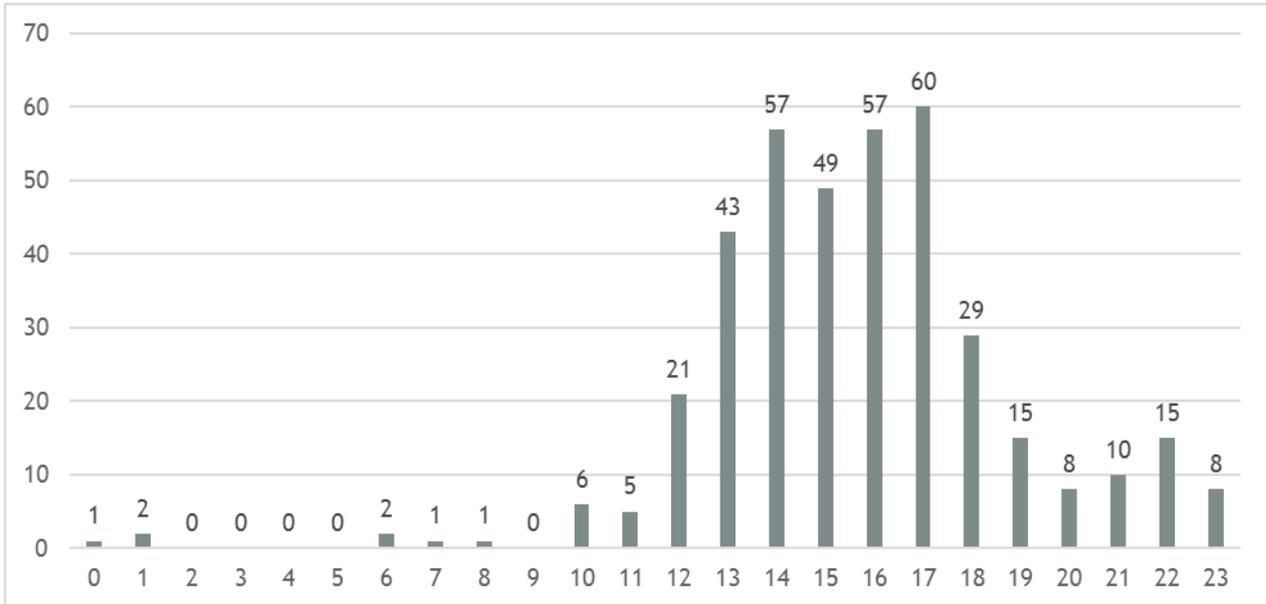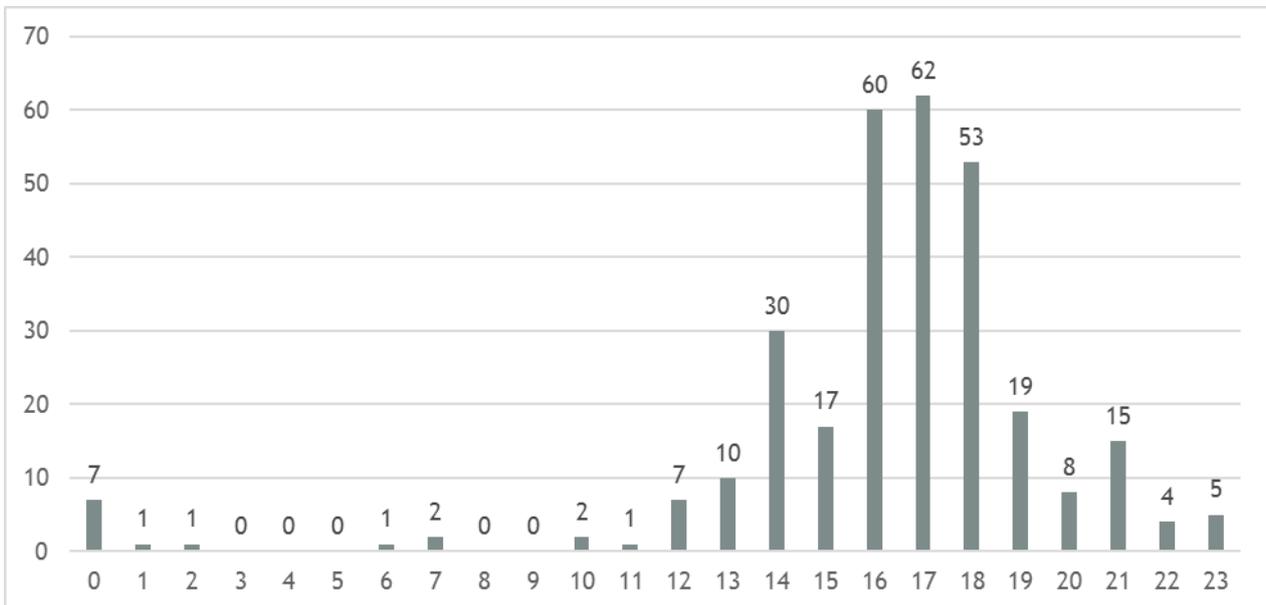
Figure 6. Work start time

Malpensa

Bar chart showing work start time distribution at Malpensa. Hours (x-axis) and counts: 0:0, 1:0, 2:0, 3:1, 4:17, 5:41, 6:46, 7:51, 8:94, 9:60, 10:21, 11:14, 12:8, 13:4, 14:20, 15:7, 16:1, 17:1, 18:0, 19:0, 20:0, 21:0, 22:1, 23:2.

Linate

Bar chart showing work start time distribution at Linate. Hours (x-axis) and counts: 0:0, 1:0, 2:0, 3:0, 4:3, 5:12, 6:23, 7:21, 8:120, 9:67, 10:6, 11:7, 12:6, 13:11, 14:10, 15:7, 16:6, 17:3, 18:0, 19:0, 20:0, 21:1, 22:1, 23:1.

Source: Steer

Figure 7. Work end time

Malpensa

Linate

Interreg
CENTRAL EUROPE
European Union
European Regional
Development Fund
LAirA
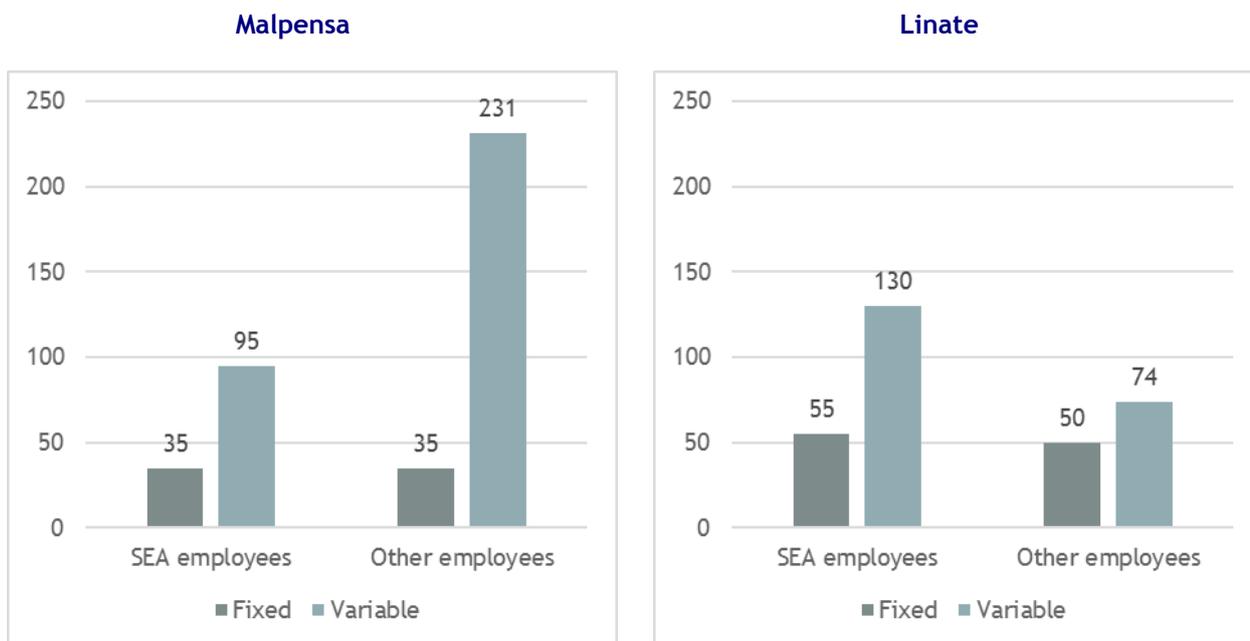
VARIABILITY OF WORK TIME

The following Figure shows the number of employees with a flexible or fixed work time. Most employees at the two Airports have variable work times.

Figure 8. Respondents by fixed or variable work time
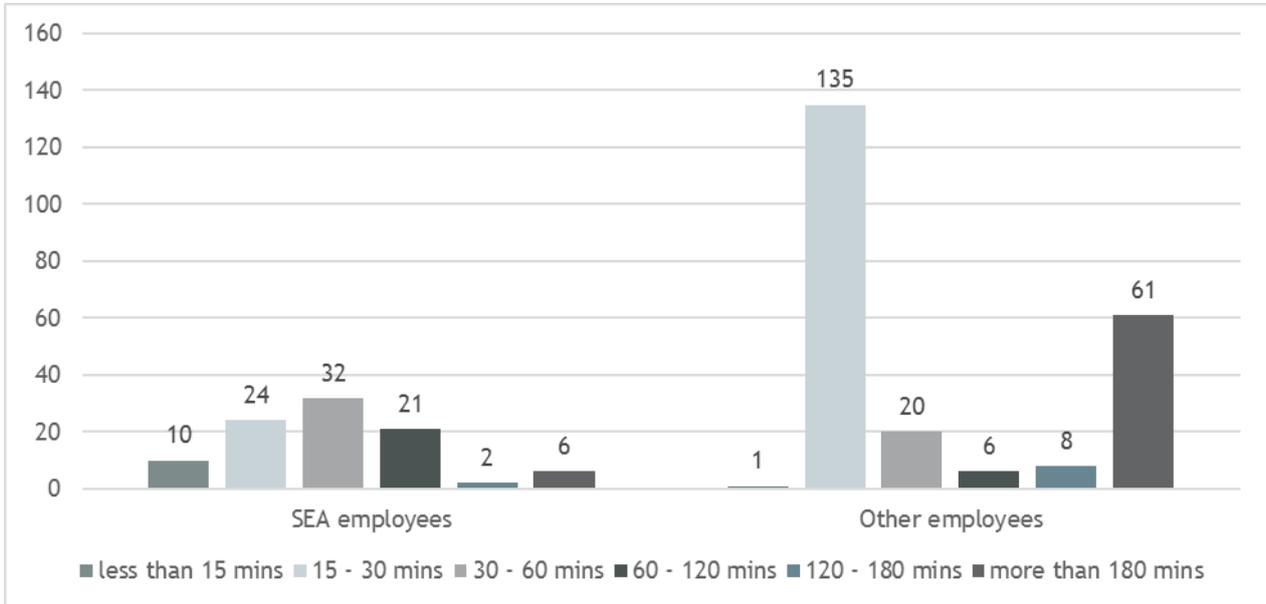
Malpensa

Linate

Source: Steer

However, the answers concerning the extent to which working time is variable indicate that most employees have variability in the classes 15-30 and 30-60 minutes, as shown in the following Figure. We understand that this refers to work time flexibility as a welfare benefit rather than work shifts. Work time high variability suggests that work shifts occur at Malpensa for non-SEA employees.
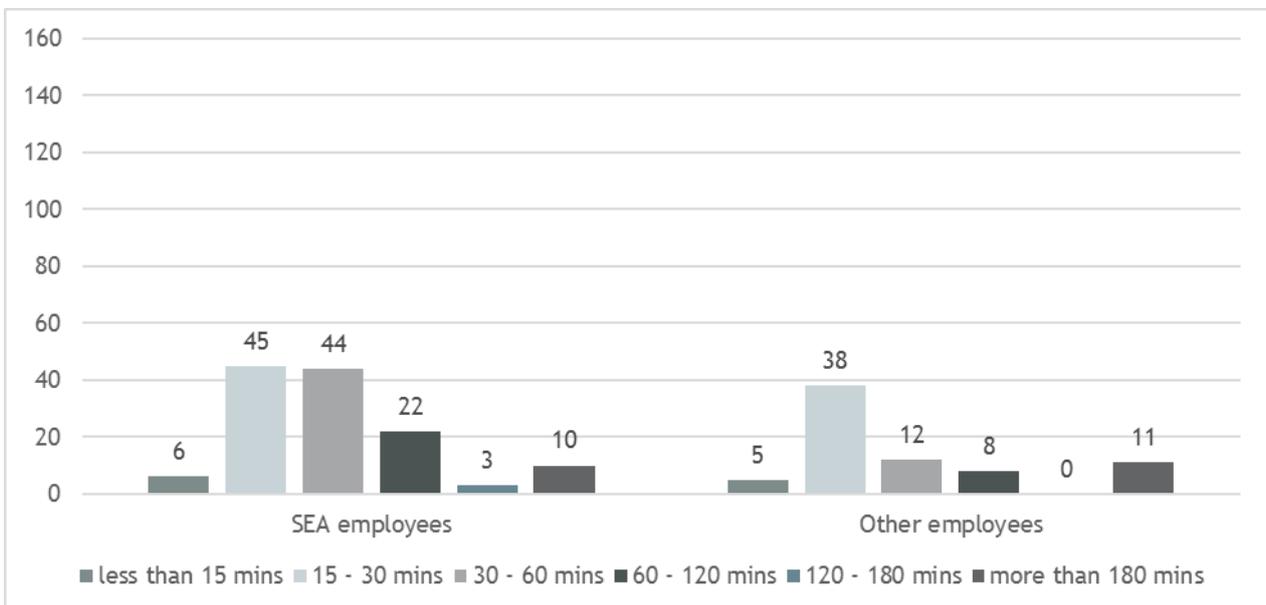
Figure 9. Work time variability

Malpensa

Bar chart for Malpensa showing work time variability by travel time category for SEA employees and Other employees.

SEA employees: less than 15 mins = 10, 15 - 30 mins = 24, 30 - 60 mins = 32, 60 - 120 mins = 21, 120 - 180 mins = 2, more than 180 mins = 6

Other employees: less than 15 mins = 1, 15 - 30 mins = 135, 30 - 60 mins = 20, 60 - 120 mins = 6, 120 - 180 mins = 8, more than 180 mins = 61

Legend: ■ less than 15 mins ■ 15 - 30 mins ■ 30 - 60 mins ■ 60 - 120 mins ■ 120 - 180 mins ■ more than 180 mins

Linate

Bar chart for Linate showing work time variability by travel time category for SEA employees and Other employees.

SEA employees: less than 15 mins = 6, 15 - 30 mins = 45, 30 - 60 mins = 44, 60 - 120 mins = 22, 120 - 180 mins = 3, more than 180 mins = 10

Other employees: less than 15 mins = 5, 15 - 30 mins = 38, 30 - 60 mins = 12, 60 - 120 mins = 8, 120 - 180 mins = 0, more than 180 mins = 11

Legend: ■ less than 15 mins ■ 15 - 30 mins ■ 30 - 60 mins ■ 60 - 120 mins ■ 120 - 180 mins ■ more than 180 mins

Source: Steer

TRAVEL TIME

There is a marked difference between Malpensa and Linate concerning the travel time to commute. In particular, Malpensa employees' travel times are generally lower than those of Linate: about 75% of Malpensa and 50% of Linate employees travel to the reference airport in less than 30 minutes.
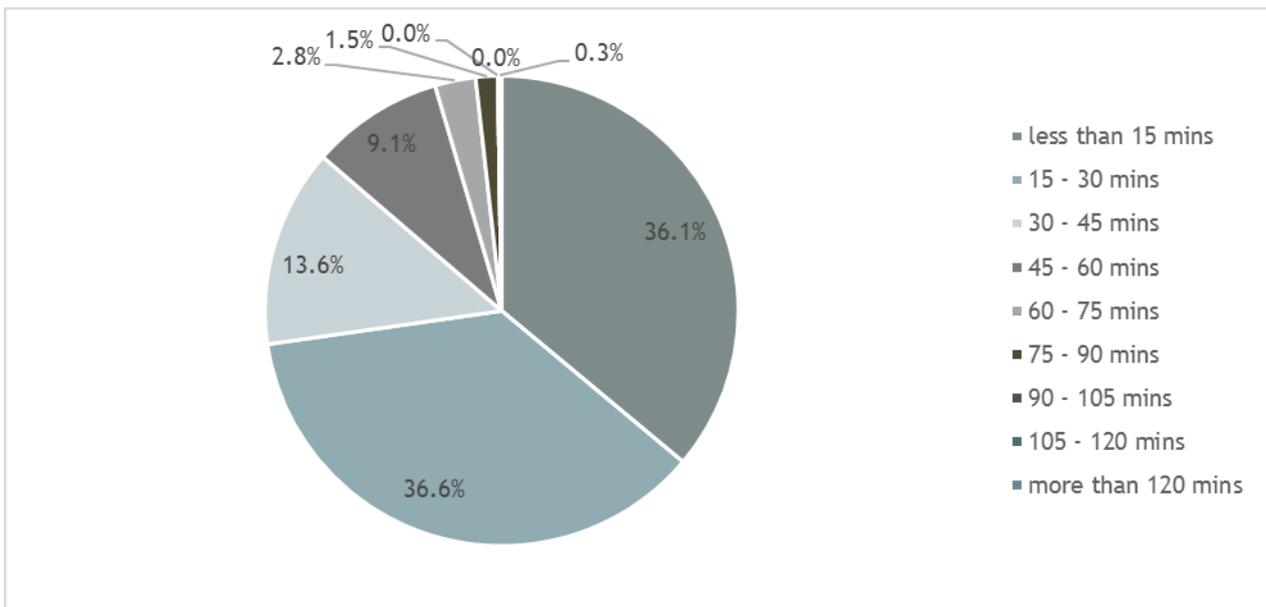
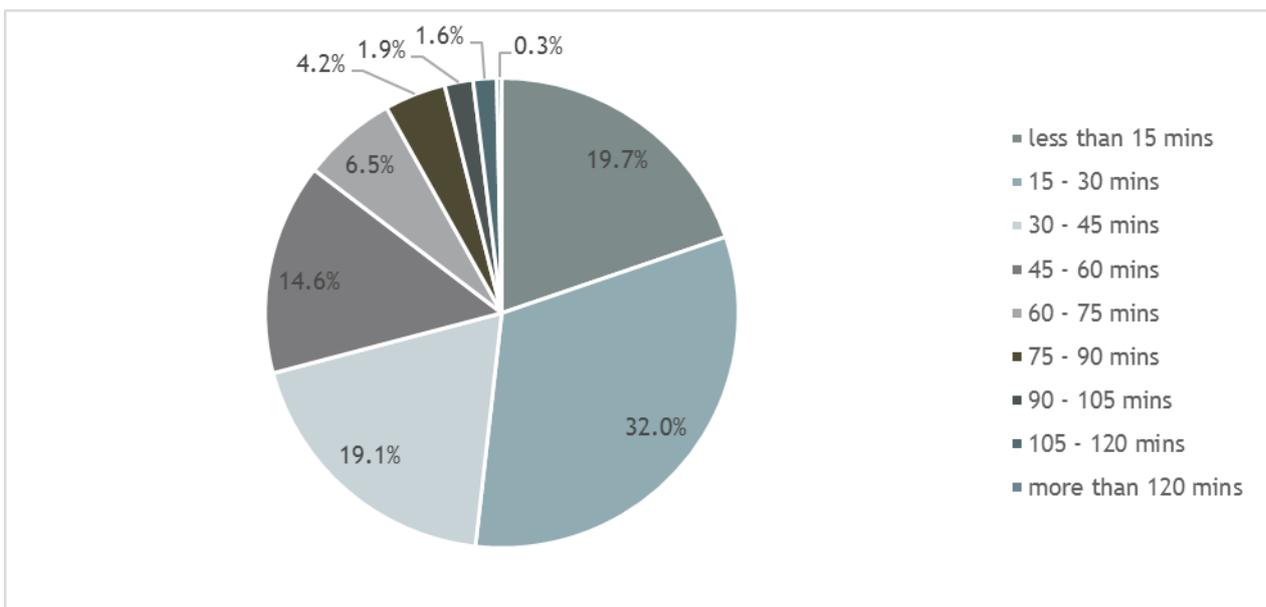This may be due to the combination of two factors:

- the trip origin for Linate is mostly in Milan urban area which has higher levels of road congestion;

- the use of car as main transport mode (please see the following part of the report for more details).

Figure 10. Respondents by travel time

Malpensa

Linate

Source: Steer
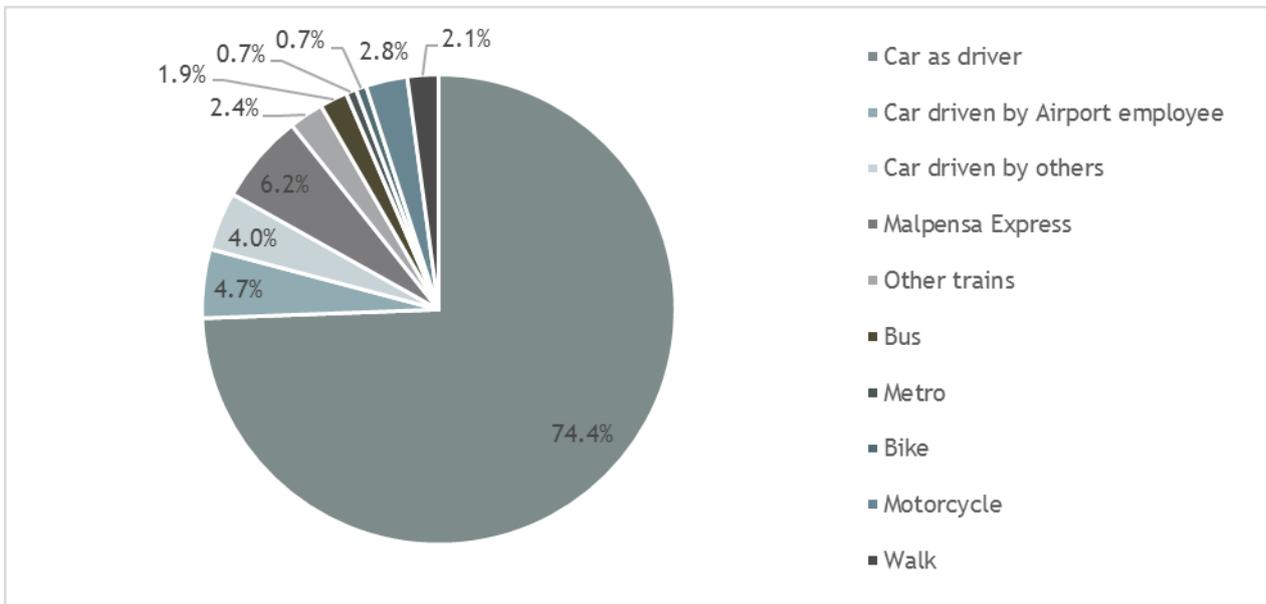
TRANSPORT MODES

Employees were asked how many and which transport modes they use (and in which chronological order) in their trip to work.

We summed the number of employees' answers indicating the use of each transport mode (as sole mode or in combination with other modes) and calculated the respective % share, as reported in the following Figure.

Car has a share (in terms of frequency of answers) of over 80% in Malpensa (car as driver and car as passenger), while in Linate, which is located in an urban context, the use of public transport is more frequent (about 28%, referring to train, bus and metro).

Figure 11. Transport modes - frequency of answers % share
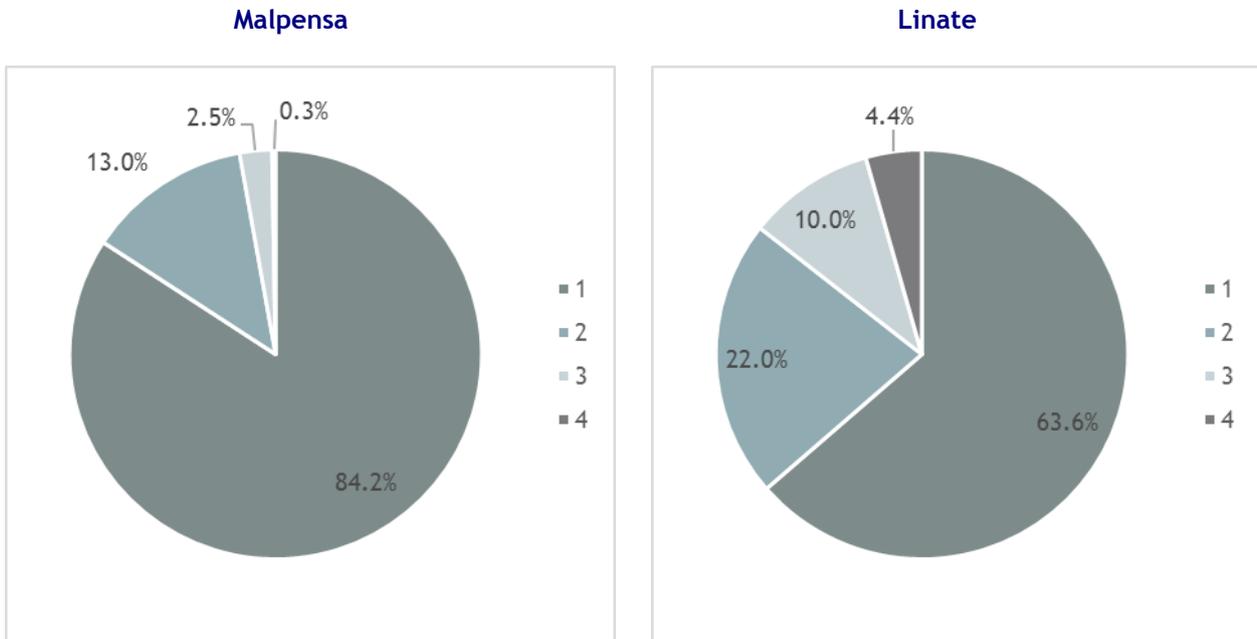
Malpensa

Linate

Source: Steer
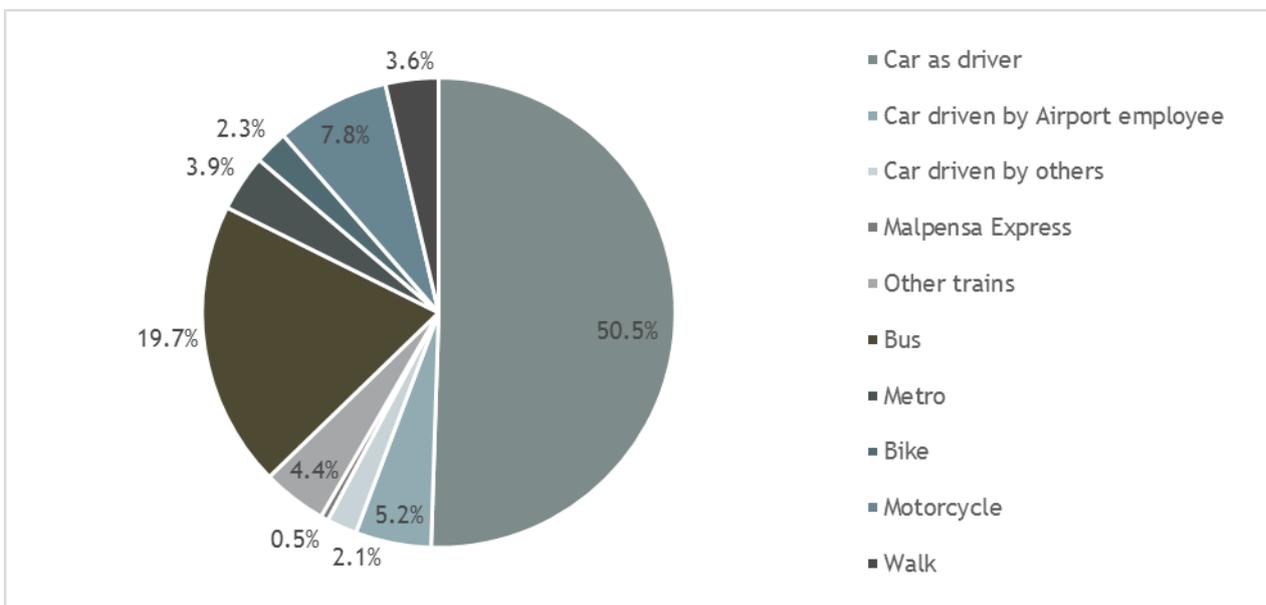
Linate location in Milan urban context may also explain the greater number of transport modes used by employees on their journey to work, as shown in the following Figure.

Figure 12. Respondents by number of transport modes to commute

Malpensa

Linate

Employees who use car were asked how many other passengers travel with them. More than 90% of employees using car to commute are solo-travellers, as shown in the following Figure. This could be a factor suggesting room to develop car-pool schemes (we analyse the car-pool topic in the following sections).

Figure 13. Car users - number of passengers
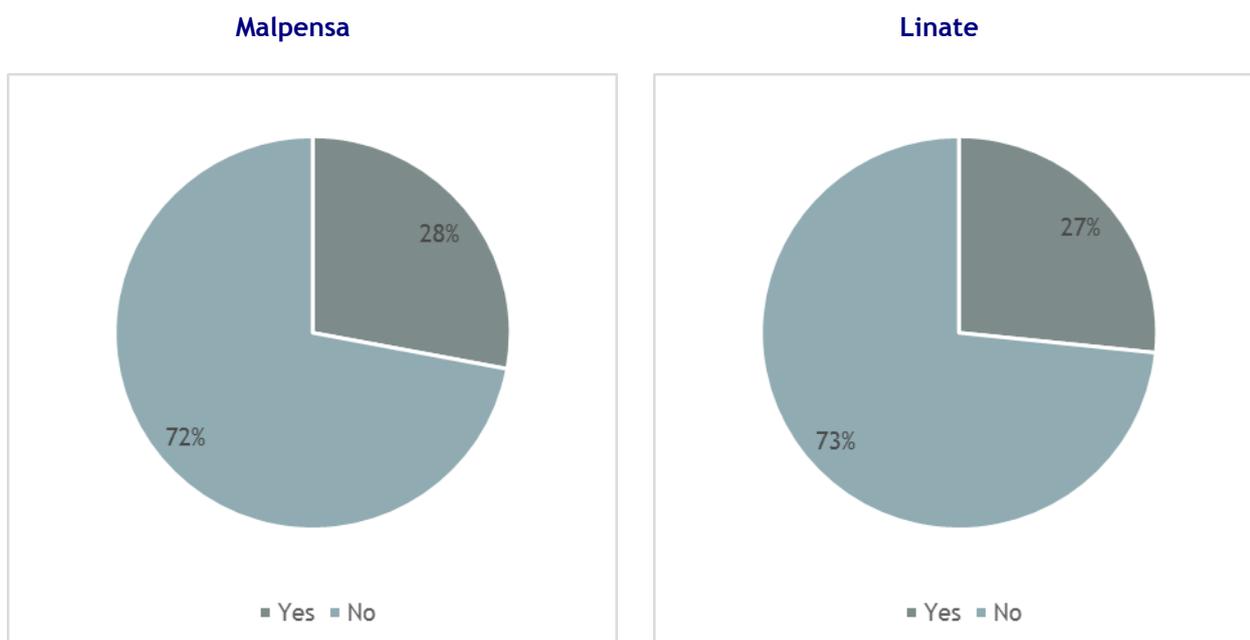
Malpensa

Linate

Employees who use their own car were also asked if they detour or stop on their journey to the airport. Approximately one sixth of respondents (15% and 18% respectively in Malpensa and Linate) declare to detour or to make intermediate stops; if we focus the analysis only on trips during peak hours (8-10 am), this percentage rises to almost 30%. This is a factor which in principle limits the development of car-pool schemes.

Figure 14. Respondents % with detours or stops
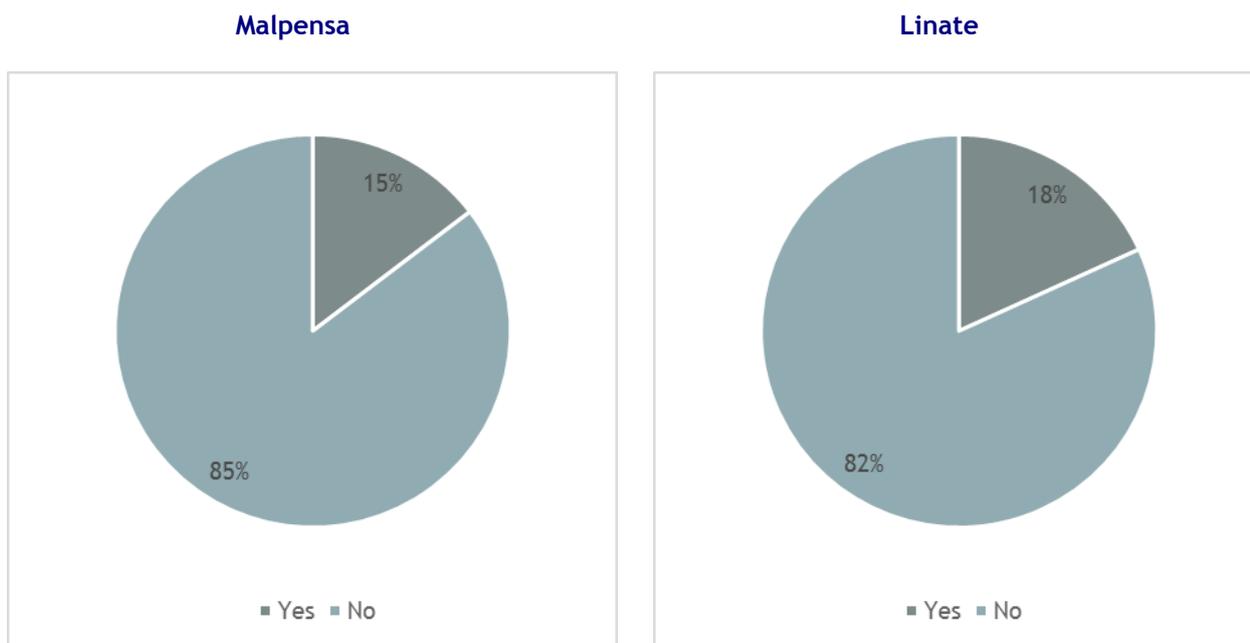
Source: Steer

**Figure 15. Respondents % with detours or stops – peak hours (8-10 am)**

Source: Steer

TRANSPORT PLANNING SOFTWARE USE

The following Figure shows the % answers concerning the use of travel planning software in commuting. Linate has a higher share than Malpensa (14% *versus* 3%). We understand this is due to Linate location within Milan urban area and to the wider public transport offer (and use) to commute to Linate. The software or mobile Apps used by employees are those of public transport companies (Trenord, ATM), as well as free platforms such as Waze, Moovit, Mappy and Google Maps.

Figure 16. Respondents using software/Apps for travel planning
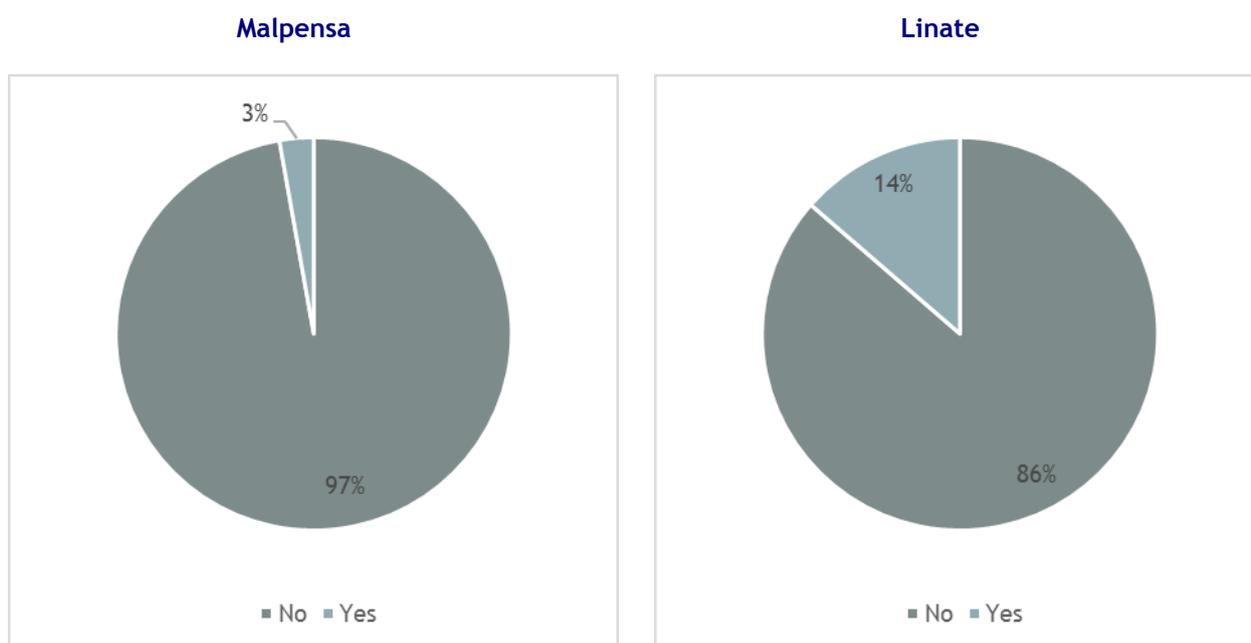
Source: Steer

3.4. Travel behaviours: 2016-2018 comparison

SEA Milan Airports delivered an employee mobility survey in 2016 and collected 696 answers (a similar number compared to the LAirA survey in 2018). The survey outcomes in 2016 were aggregated for the two Airports and the survey concerned travel time and modes.

The following Table shows the comparison between travel time to work in 2016 and in the LAirA survey. Travel time intervals were aggregated in 4 classes.

The % number of respondents travelling to work within 30 minutes has increased by 18%; all other classes decreased. It is nevertheless difficult understanding the reasons beyond the data, which could relate to different trip origins, transport service supply, or simply by the fact that respondent samples are different.

Table 3. Employee travel time comparison 2016-2018

| Time intervals	2016	2018	DELTA
0-30 minutes	54.0%	63.5%	+18%
30 minutes-60 minutes	34.3%	27.5%	-20%
1-2 hours	11.2%	8.7%	-23%
>2 hours	0.4%	0.3%	-34%

Source: Steer

Concerning the use of transport modes, comparisons were not possible because the 2016 survey asked employees to indicate the main transport mode to commute, while the LAirA survey asked to indicate all the transport modes used (and the LAirA analysis relied on the sum of answers per transport mode).

3.5. Availability to car-pool

The following Figure shows the percentage of respondents available to join a car-pool scheme, which is about 40% both in Malpensa (162 on 388) and Linate (116 on a total of 303 answers). Despite the absolute values are not high, the data show a high potential (in particular for the LAirA pilot project on car-pooling planned in the test Work Package) because Malpensa and Linate airport systems host over 20,000 employees.

Figure 17. Availability to car-pool
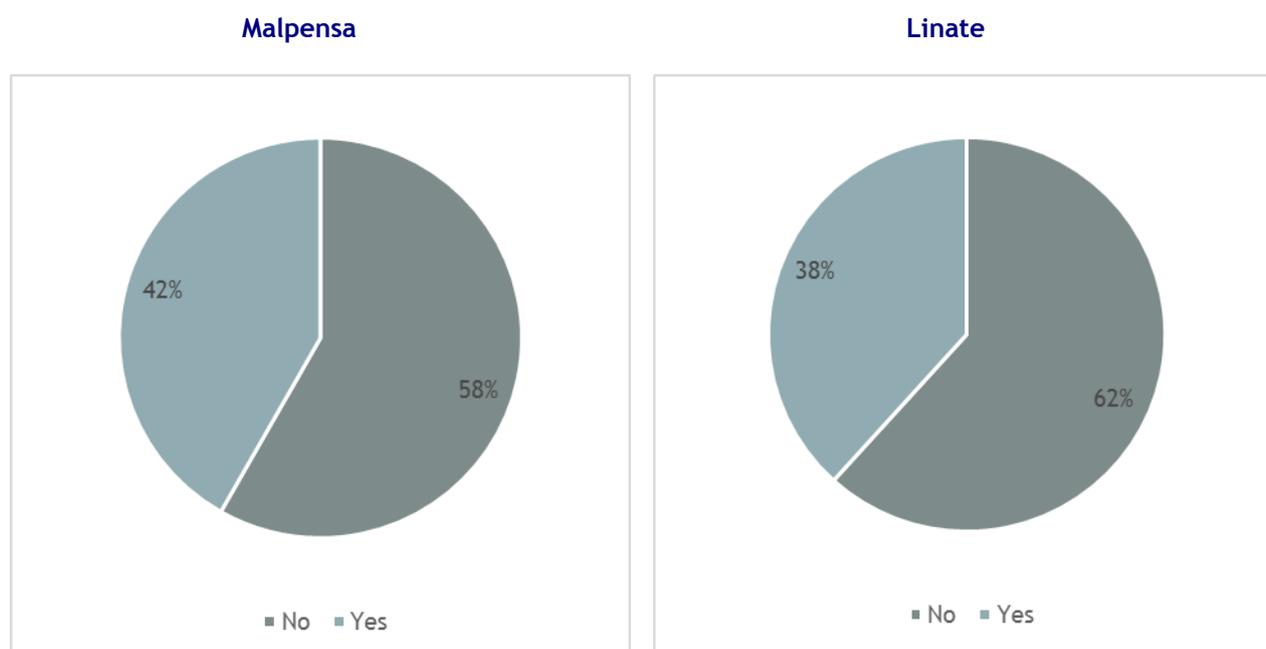
Source: Steer

3.5.1. Correlation analysis

We analysed how current mobility behaviours and respondent profiles relate to the availability to car-pool.

Firstly, we found that the travelling hour (in the morning peak or at other timing), the fixed or variable working times and the use or not of public transport do not affect the availability to car-pool (the % of available respondents remains the same).

Secondly, we delivered a more detailed analysis considering age classes, number of transport modes, travel time to commute and job type/role.

The following Figure correlates the availability to car-pool and age classes. It shows that:

- the youngest age class is less available;
- in Malpensa the availability tends to increase for older classes;
- in Linate it decreases for respondents over 45.

Figure 18. Car-pool availability by age classes
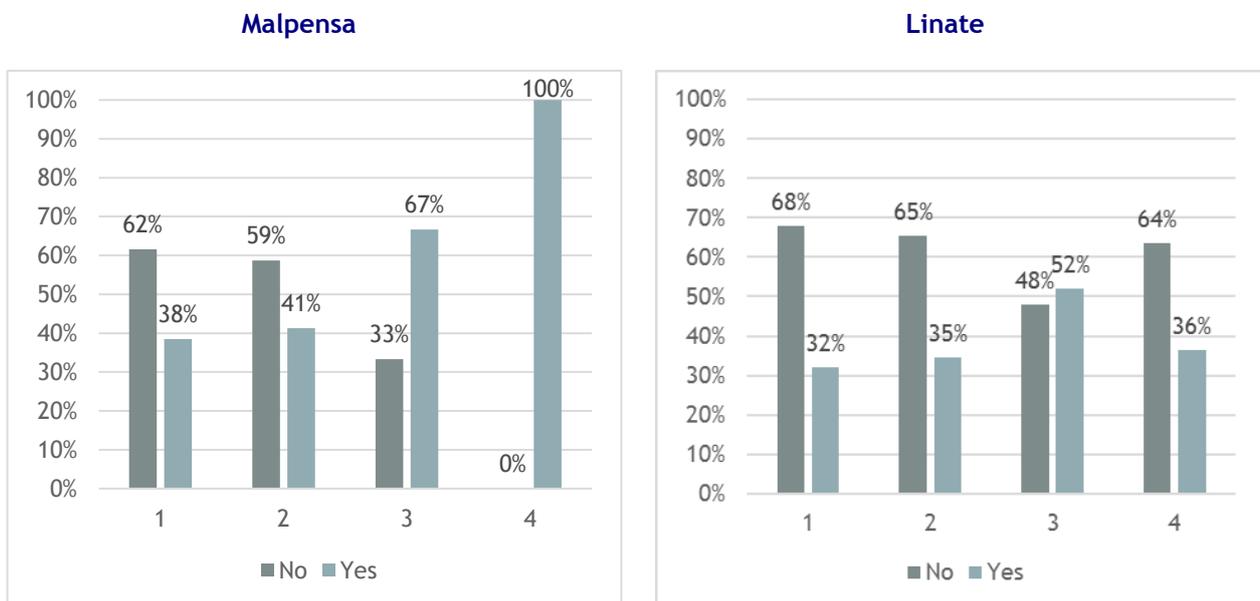
Malpensa

Linate
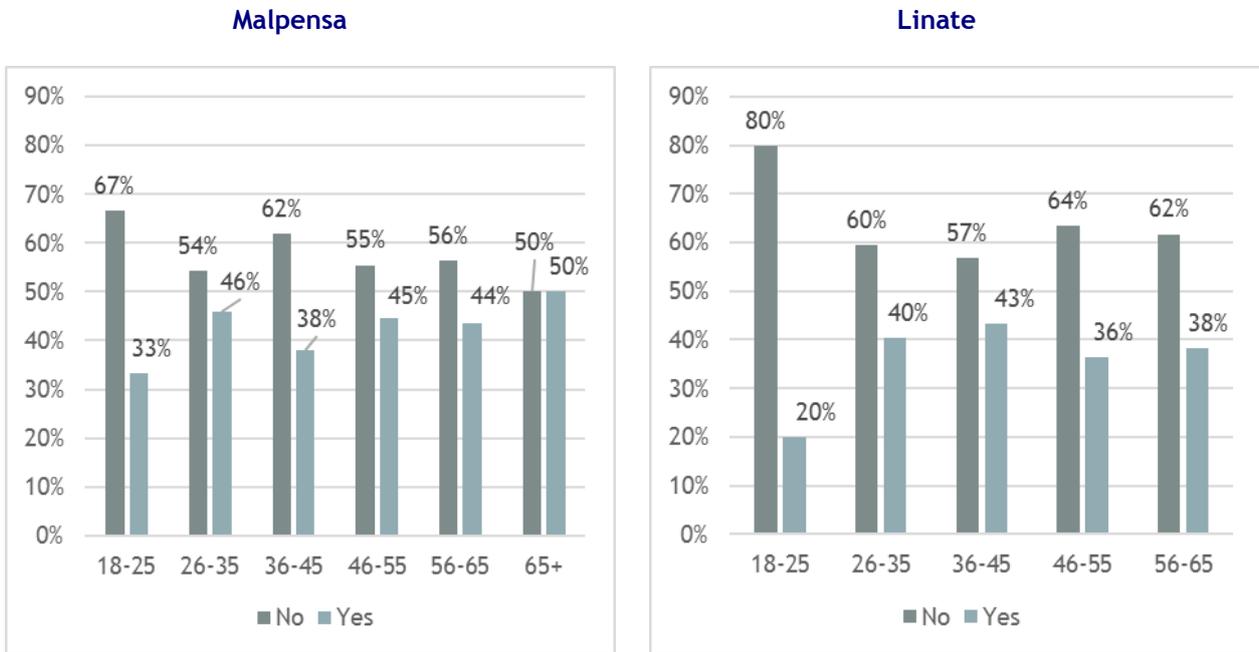
Source: Steer

The following Figure correlates the availability to car-pool and the number of transport modes to commute to work. It shows that:

- in Malpensa there is a direct correlation between the number of transport modes and availability to car-pool;

- in Linate, there is the same direct correlation up to 3 transport modes (and a decrease for 4 modes);

It is nevertheless worth noting that the absolute number of respondents using more than three modes is limited.

Figure 19. Car-pool availability by number of transport modes

Malpensa

Linate

Source: Steer

The following Figure shows the correlation between the availability to car-pool and travel time to commute to work. We note that:

- in Malpensa availability increases up to journeys of 45-60 minutes (which is the peak in availability), and then it decreases; we pinpoint that employees who take more than 60 minutes for the door-to-door journey are mostly Malpensa Express rail users.

- in Linate there is a more direct correlation between travel time and availability to car-pool.

Figure 20. Car-pool availability by travel times (minutes)
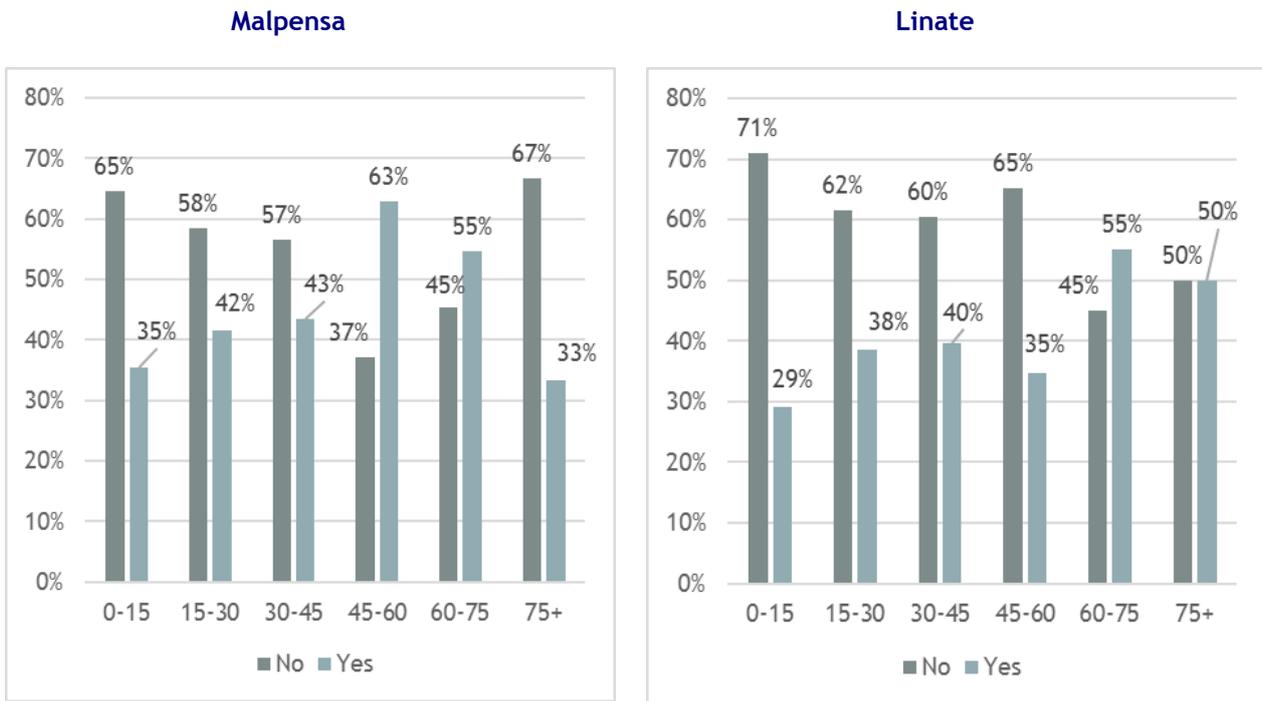
Source: Steer

The following Figure shows the correlation between availability to car-pool and the job type/role.

As we could expect, the job types with higher availability to car-pool are those are those which typically have less variability in working times (managers and office workers). We nevertheless note that about one third of operators / blue collars have interest in a car-pool scheme.

Figure 21. Car-pool availability by job type / role

Malpensa

Linate
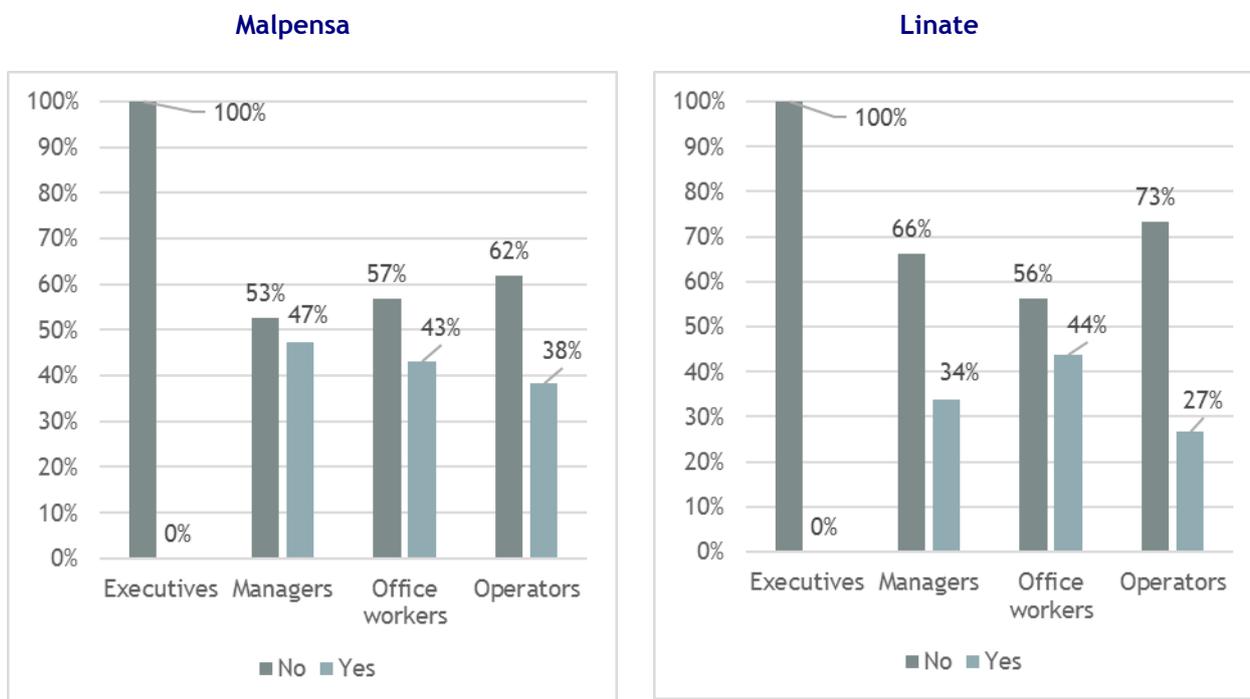
Source: Steer

3.5.2. Reasons for car-pool availability

Employees were asked to give priority (from 1 to 5) to five suggested reasons to justify their choice regarding the availability or not to car-pool.
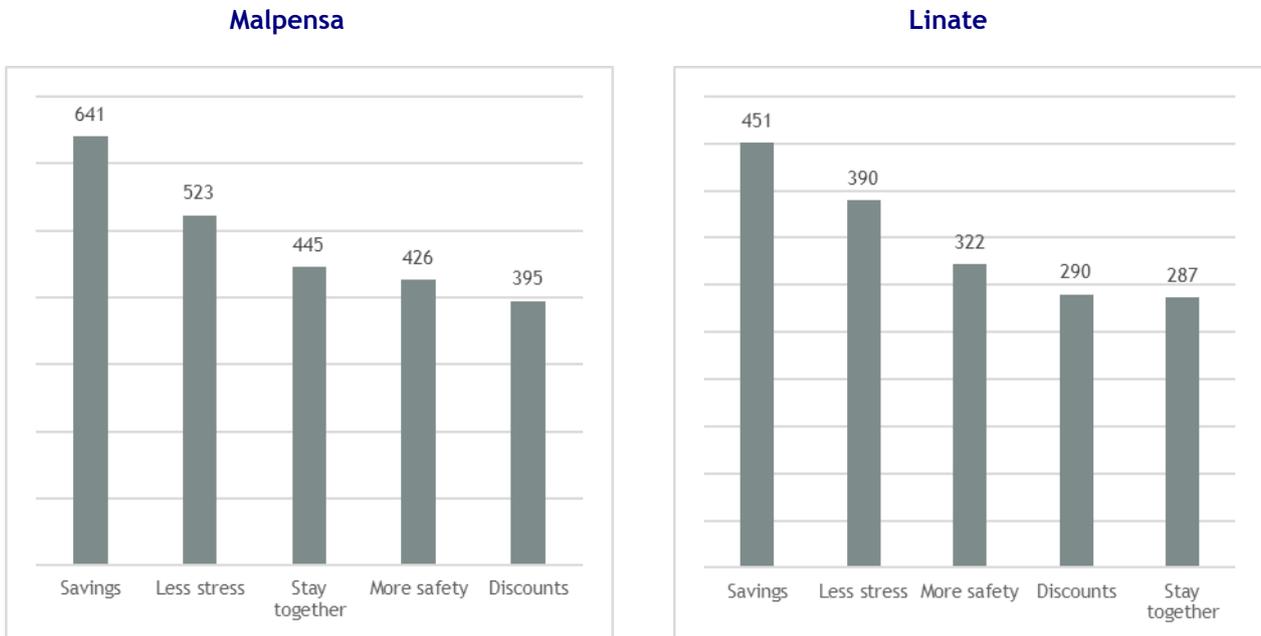
The following Figure shows the employees' answers on the reasons to car-pool. We used the following method to simply show the reasons' priority ranking:

- we assigned a score from 5 to 1 to each answer, based on an inverse relationship with the employees' stated ranking (e.g. if priority 1 was assigned 5 points, if priority 5 was assigned 1 point);

- we summed the score obtained by each reason to car-pool.

There are not significant differences between Malpensa and Linate: saving and less stress are the most important reasons to car-pool. Differences concern discounts and safety, which are more important to Linate employees.

Figure 22. Reasons for availability to car-pool

Malpensa

Linate

The following Figure shows the analysis of the reasons not to car-pool (following the same method indicated above). We note that at both Airports the most important reasons are:

- the need to be independent and have detours/stops along the journey;
- working time flexibility.

Figure 23. Reasons for unavailability to car-pool
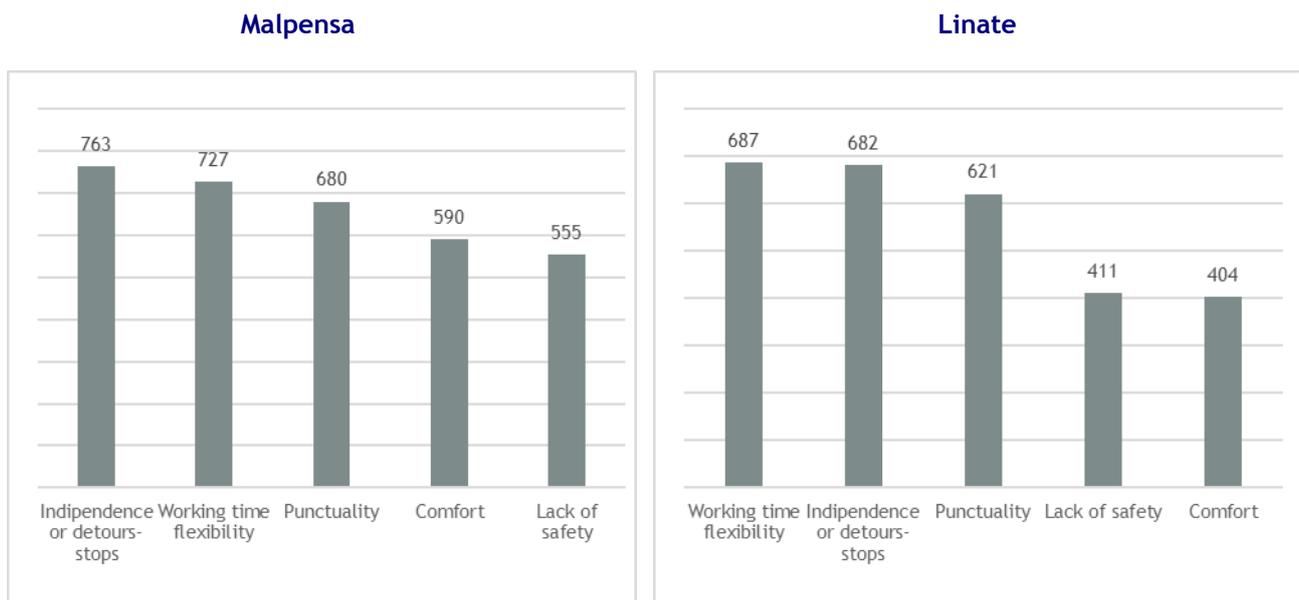
Malpensa

Linate

4. Conclusions

The LAirA employee mobility survey focussed on 605 SEA and other employers' staff at Linate and Malpensa Airports. The survey focused on:

- employee profile and trip origin;

- travel behaviours; and

- availability to join a car-pool scheme.

Most of Malpensa employees answering the survey commute from many small-medium urban centres around the Airport (mainly in Varese and Milan provinces), while most of Linate employees start their journey from the Municipality of Milan.

Most employees at the two airports have variable work times. Work time flexibility seems to relate more to a welfare benefit rather than to work shifts; in fact most employees have variability in the classes 15-30 and 30-60 minutes. We observed a higher presence of work shifts at Malpensa, in particular for non-SEA employees. On the other hand, Linate shows peaks between 8 am and 9 am for work start and between 16 pm and 18 pm for work end, which is typical of office hours.

There is a marked difference between Malpensa and Linate concerning the travel time to commute. In particular, Malpensa employees' travel times are generally lower than those of Linate: about 75% of Malpensa and 50% of Linate employees travel to the reference airport in less than 30 minutes. This may be due to the combination of two factors:

- the trip origin for Linate is mostly in Milan urban area which has higher levels of road congestion;

- the use of car as main transport mode.

Concerning the frequency of answers on transport modes to commute to work, car has a share (in terms of frequency of answers) of over 80% in Malpensa (car as driver and car as passenger), while in Linate, which is located in an urban context, the use of public transport is more frequent (about 28%, referring to train, bus and metro).

Concerning the availability to join car-pool schemes, about 40% of respondents in Malpensa (162 on 388) and Linate (116 on a total of 303 answers) are available. Despite the absolute values are not high, the data show a high potential because:

- Malpensa and Linate airport systems host over 20,000 employees;

- Car has a share (in terms of frequency of answers) of over 80% in Malpensa and of about 60% in Linate;

- about 90% of employees driving to work are solo-travellers.

The survey shows that:

- the youngest age class is less available to car-pool;

- there is an overall direct correlation between the number of transport modes to commute to work and the availability to car-pool.

The mains reasons to join a car-pool scheme are budget saving and less stress related to driving. On the other hand, the main reasons not to join are the need to be independent in commuting / need to detour or stop along the trip, and work time flexibility.

A critical success factor for the LAirA pilot will be the development of a sound employee engagement campaign to promote car-pool benefits and develop confidence in the system.

Appendix 1 – On-line questionnaire

We report hereafter the survey questionnaire. The questionnaire was in Italian.

_____

DOMANDE	RISPOSTE
Comune da cui parte per venire al lavoro	
Età	☐ 14-17 ☐ 18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ 65+
Qualifica professionale	☐ Dirigente ☐ Quadro ☐ Impiegato ☐ Operatore
Aeroporto in cui lavora	☐ Linate ☐ Malpensa

DOMANDE	RISPOSTE
Addetto SEA?	□ Sì □ No
Se non addetto SEA indichi il datore di lavoro	
In riferimento alla giornata odierna, indichi l'orario di ingresso/uscita dal lavoro	*hh:mm* (Ingresso) *hh:mm* (Uscita)
Generalmente il suo orario di ingresso/uscita dal lavoro è:	□ Fisso □ Variabile
Di quanto varia l'orario?	*Minuti*
Quanto tempo impiega mediamente per arrivare da casa al lavoro? (Consideri solo il tragitto di andata)	□ fino a 15 minuti □ 16-30 minuti □ 31-45 minuti □ 46-60 minuti □ 1 ora - 1 ora e 15 minuti □ 1 ora e 15 minuti - 1 ora e 30 minuti □ 1 ora e 30 minuti - 1 ora e 45 minuti □ 1 ora e 45 minuti - 2 ore □ più di 2 ore
Con quale mezzo raggiunge il posto di lavoro? (Possibile utilizzo di più mezzi - nel caso indichi l'ordine cronologico lungo il tragitto casa-lavoro)	□ Auto propria □ Auto accompagnato da altri che lavorano in aeroporto □ Auto accompagnato da altri che NON lavorano in aeroporto □ Treno Malpensa Express □ Treno TRENORD □ Treno TRENITALIA □ Autobus urbano □ Navetta dalla stazione centrale di Milano □ Autobus extraurbano □ Bici □ Moto □ Piedi □ Metro
Se raggiunge l'aeroporto in auto propria, quanti altri passeggeri che lavorano presso l'aeroporto hanno viaggiato con lei?	□ 0 □ 1 □ 2 □ 3 □ 4 □ >4
Se raggiunge l'aeroporto in auto propria, durante il tragitto compie abitualmente deviazioni o fermate intermedie?	□ No □ Si (all'andata o al ritorno) □ Si (all'andata e al ritorno)

DOMANDE	RISPOSTE
Utilizza una *App* per programmare gli spostamenti da/per il posto di lavoro?	☐ Sì ☐ No
Se sì indichi quale:	
Sarebbe interessato ad un servizio di car pooling per coprire il tragitto casa-aeroporto-casa?	☐ Sì ☐ No
Se sì, quali sarebbero gli aspetti più rilevanti che la farebbero propendere per tale servizio? (ordinare da 1-il più importante, 5-il meno importante)	☐ Risparmio ☐ Minore stress ☐ Sicurezza ☐ Stare in compagnia ☐ Promozioni/sconti
Se no, Per quale motivo non è interessato al servizio? (ordinare da 1-il più importante, a 5-il meno importante)	☐ Flessibilità orario di lavoro ☐ Senso di sicurezza ☐ Puntualità ☐ Senso di indipendenza o altre attività svolte durante il tragitto ☐ Comfort

Grazie per il suo contributo. Per completare il questionario prema "Invia".