Available online at www.sciencedirect.com

ScienceDirect

Transportation Research Procedia 86 (2025) 556–563

Transportation Research Procedia

www.elsevier.com/locate/procedia

26th Euro Working Group on Transportation Meeting (EWGT 2024)

Assessing Mobility as a Service bundles potential for university students and employees

Luca Pastorelli [a*], Fulvio Silvestri [a], Pierluigi Coppola [a]

[a]*Politecnico di Milano, Department of Mechanical Engineering, Via La Masa 1, 20156 Milan, Italy*

Abstract

This paper explores individuals' Willingness to Pay (WTP) for MaaS bundles of different integrated mobility services, discussing the factors that affect behavioral intentions towards MaaS solutions adoption. The study involves a large-scale survey campaign carried out within the university community of Politecnico di Milano (Italy), comprising 1873 interviews among faculty members, technical-administrative staff, and students, and uses aggregate statistics and discrete choice models to analyze the WTP of different user profiles. Results highlight that the WTP of current public transport pass holders is significantly higher than the WTP of non-holders, as well as individuals living far from the city center (and the university campuses) are willing to pay more than those who reside in the inner urban area. In particular, the MaaS bundles that combine public transport with car-sharing or reserved car parking have the highest WTP. Moreover, age has a high influence on the WTP, as well as private vehicle availability, or current travel habits, such as the integration of public and private transport. The outcomes of this study suggest that MaaS bundles constitute a solution to orient university members towards sustainable transport modes. Anyway, for an effective implementation, MaaS should have a user-tailored design to answer the needs of disparate user categories, and this research could support this process and provide a base for future research on MaaS in university communities.

Keywords: stated preference survey; discrete choice analysis; travel behavior; Willingness to Pay.

* Corresponding author
E-mail address: luca.pastorelli@polimi.it

10.1016/j.trpro.2025.04.070

1. Introduction

The widespread deployment of shared, on demand, and smart mobility services in cities, even competing with public transport, poses a challenge for future urban mobility. Innovative solutions are emerging to improve accessibility and livability in urban and metropolitan areas. Within this context, Mobility as a Service (MaaS) can play a key role by providing the integration of different transport modes and services, offered by various mobility operators, on a single smartphone application, through which users can plan door-to-door journeys, book desired vehicles or seats, and pay travel expenses with a single transaction (Jittrapirom et al., 2017).

Even if MaaS has been widely assessed in the macro context of cities, its implications in micro contexts, such as universities, is still to be explored. Some studies focused on the acceptance and perception of MaaS in universities (Coppola et al., 2025) (Le Pira et al., 2023) (Kriswardhana and Esztergár-Kiss, 2023a) (Kriswardhana and Esztergár-Kiss, 2024) (Gandia et al., 2021), but the Willingness to Pay (WTP) for MaaS solutions for home-university commuting has not been tested yet, or it focused only on students, without considering the diversity of individuals that populate universities, from technical-administrative staff to faculty members. This research aims at examining whether university communities, due to their unique characteristics and needs, given the presence of young people and early adopters, have the potential to act as catalysts for the advancement of MaaS within cities. Additionally, it also aims at investigating whether MaaS could provide benefits to all university members making it a compelling proposition, through the supply of mobility services in bundle schemes. These aspects will be investigated through modeling evidence on an extended surveyed sample of students and employees of Politecnico di Milano, to understand whether and how multimodal bundles can be designed to align with social policies and incentivize the adoption of sustainable transport modes beyond car. This implies investigating how bundles can be structured, priced, and promoted, to provide practical travel solutions and to encourage users to opt for more eco-friendly and cost-effective modes.

2. State of the Art

In the current literature, many researchers analyzed multimodal MaaS bundles and the associated consumers' WTP in urban areas. The work conducted by (Ho et al., 2018) revealed that people tend to replicate their travel habits when given the possibility of customizing their own mobility bundles. For pre-designed bundles, as (Hensher et al., 2021) analyzed, the acceptance is highly variable according to the included transport modes and their level of service. These outcomes underline the importance of the design phase of MaaS bundles, to satisfy people's diverse needs.

In designing MaaS bundles, public transport seems to be the pivotal component, while adding services like bike sharing or car sharing could have positive or negative impacts on the overall appeal of the bundle, as observed by (Matyas and Kamargianni, 2019). For instance, (Kriswardhana and Esztergár-Kiss, 2023b) highlighted that public transport and car sharing should always be included in mobility packages, while services like taxi or bike sharing are not deemed as important as those. Moreover, (Guidon et al., 2020) suggest that bundles that integrate public transport, car sharing, or park and ride have a higher WTP, while those integrating bike sharing or taxi resulted in a lower WTP.

Furthermore, current travel habits influence the predisposition towards MaaS, particularly when dealing with private vehicle users. As noted by (Ho et al., 2018) and (Coppola et al., 2025), in-frequent car users are the most likely to adopt MaaS, while frequent car users are the least. Additionally, current public transport users are not attracted by MaaS bundles, since public transport alone seems to satisfy their mobility needs. Instead, individuals that integrate public and private transport are more prone to adopt a MaaS bundle, as (Alonso-González et al., 2020) and (Smith et al., 2023) confirmed, highlighting how people that already perform multimodal trips are more attracted by MaaS.

Finally, the researches of (Ho et al., 2020) and (Polydoropoulou et al., 2020) stressed the importance of demographic characteristics in the aptitude towards MaaS, having young and educated individuals a positive predisposition towards it. These findings were confirmed by (Tsouros et al., 2021), with education level, employment status, and age influencing the interest towards MaaS, and older individuals having a lower WTP with respect to younger segments. The research work of (Liljamo et al., 2020) showed that 43% of respondents are willing to adopt MaaS, but the WTP is highly variable among different user groups: residents in densely populated urban areas have a higher WTP compared to sparsely populated urban areas, as confirmed by the study of (Zijlstra et al., 2020).

The cited studies mainly deal with MaaS in wide contexts of urban areas or cities, but its impact should also be analyzed in limited context as universities. In these terms, (Kriswardhana and Esztergár-Kiss, 2024) highlighted that

university students that already make use of shared mobility services, perhaps in integration with public transport, exhibit greater interest in MaaS that those merely relying on public transport. Moreover, (Kraus et al., 2023) showed how the perceived utility of students increases when mobility services are organized in MaaS bundles on monthly basis, and highlight that these bundles should be supplied specifically according to the preferences of the different demand segments. Finally, (Kriswardhana and Esztergár-Kiss, 2023a) suggests that technological readiness is connected with the interest in MaaS, and students who are confident with technological innovation would be willing to adopt MaaS solutions only if advanced functionalities are provided to enhance travel experience.

3. Survey Structure and Sample Statistics

The methodological approach of this research involves data collection through a large-scale survey, comprising 1873 interviews among faculty members, technical-administrative staff, and students of Politecnico di Milano (Italy). The survey was submitted between May and June 2023, inviting the entire population and therefore obtaining a random sample of it, through a Computer-Assisted Web Interviewing (CAWI) approach. The survey had two main sections, one dedicated to collect individuals' sociodemographic characteristic and travel habits, and a *Stated Preference* (SP) section. In the first section, individuals were asked about their role in the university, gender, age, and employment status (Table 1). They were investigated on the origin of the journey to get to university, the transport mode, if they are satisfied with it, and how many times during a normal week they perform it. In addition, they were questioned on the availability of a private vehicle, and whether they hold a public transport pass or not (Table 2).

Table 1 - Socioeconomic characteristics of the sample

	Variable	Number of respondents	Sample (%)	Italy* (%)
Gender	Female	730	39.0%	48.9%
	Male	1079	57.6%	51.1%
	Not declared	63	3.4%	
Age group	Less than 26	838	44.8%	22.9%
	26 to 35	392	20.9%	10.6%
	36 to 45	177	9.5%	13.2%
	46 to 55	267	14.3%	15.6%
	56 to 65	162	8.7%	15.0%
	More than 65	36	1.9%	22.8%
Employment status	Student	958	51.2%	11.8%
	Full-time worker	877	46.8%	58.1%
	Other	38	2.0%	40.1%

*Source: ISTAT (Census of Italian population).

Table 2 - Travel habits of the sample

	Variable	Number of respondents	Sample (%)
Origin zone	Municipality of Milan	898	48.0%
	Province of Milan	324	17.3%
	Other provinces	716	34.7%
Transport mode	Public transport	1026	54.9%
	Public and private transport	344	18.4%
	Private transport	211	11.3%
	Other modes	289	15.4%
Satisfaction for the used transfer mode	Yes	915	48.9%
	No	947	51.1%
Number of days per week in university	Twice or less	150	8.0%
	Three times or more	1723	92.0%
Availability of a private vehicle	Yes	538	28.7%
	Sometimes, shared with family	231	12.3%
	No	1104	58.9%

Ownership of public transport pass	Yes	1434	76.6%
	No	439	23.4%

In the *Stated Preference* (SP) section, respondents were asked to participate in choice situations regarding possible MaaS bundles that integrates public transport (PT) with other mobility services, in a pass subscription scheme on yearly basis. Firstly, respondents were asked about their interest in specific bundles: PT + bike sharing (Bundle 1), PT + car sharing (Bundle 2), and PT + reserved car parking (Bundle 3); then, if they showed interest, they were further investigated through a tree-structured game aimed at identifying the annual price range of the MaaS bundle they would be willing to pay. Respondents with a public transport pass were asked about the additional percentage with respect to the price they currently pay for the subscription, while respondents without a pass were directly proposed a price (Figure 1). In total, 5619 stated preferences were obtained, 3 for each of the 1873 respondents.

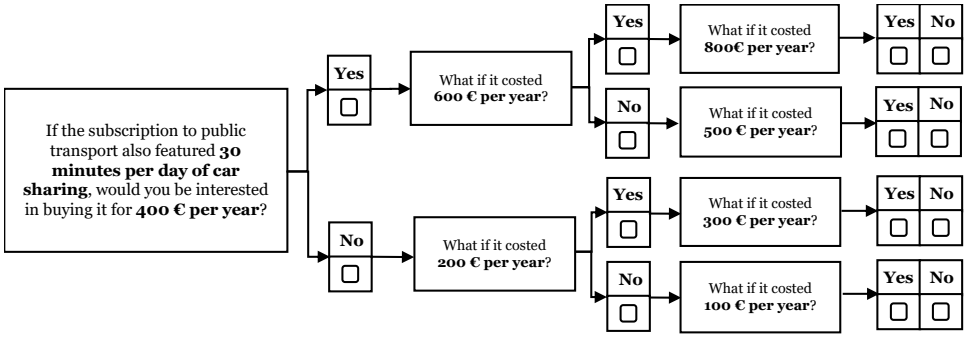

Figure 1 - A tree-structured game referred to respondent without a public transport pass to investigate their WTP for a MaaS bundle

Respondents were split into two groups for each bundle: interested and not interested. The percentages of each subsample are reported in Table 3, with PT + bike sharing bundle generating the highest interest.

Table 3 - Interest rate for the three MaaS bundles

	PT + bike sharing	PT + car sharing	PT + reserved car parking
Interested	39.2%	23.9%	24.8%
Not interested	60.8%	76.1%	75.2%

The analysis of the WTP has been carried out differentiating respondents that hold a public transport pass and those without a public transport pass. Concerning the first, the WTP refers to the additional percentage that they are willing to pay for an annual subscription to the selected bundle with respect to their current pass cost, that has been further elaborated considering the mean yearly pass cost to trace it back to absolute value (i.e. in Euros). Regarding the latter, the WTP refers to the price that individuals are willing to pay for an annual subscription to the selected bundle.

The first evidence of the WTP analysis, whose results are reported in Table 4, is the substantial difference between public transport pass non-holders and holders, the latter having a significantly higher WTP.

Analyzing public transport pass holders and non-holders separately, starting from the first group, PT + reserved car parking bundle has the highest WTP, attested at +21.2%, followed by PT + car sharing and PT + bike sharing bundles. The split of the full sample according to different segments of respondents highlights a distinction between students and employees: the first have a higher WTP for PT + reserved car parking and PT + car sharing bundles, the second have a higher WTP for PT + bike sharing bundle. A further distinction can be made according to the origin zone of the home-university journey. People living in Milan have a higher WTP in percentage terms in comparison to those commuting from the province of Milan, and from other provinces outside that of Milan. In addition, residents in Milan tend to prefer the PT + reserved car parking bundle (WTP of +24.8%), while residents in provinces outside the city of Milan are more likely to pay for the PT + car sharing bundle (WTP of +20.7% for province of Milan, +19.0% for other provinces). Anyway, the higher WTP in percentage terms for residents in Milan, translates to a higher WTP in absolute values for residents in provinces, due to the higher cost of public transport pass currently sustained. In fact, the WTP for the PT + car sharing bundle, the preferred bundle in the provinces, amount to 1102€

for residents in provinces outside that of Milan, and to 671€ for those living in the province of Milan, while the WTP for the preferred bundle for residents in the city of Milan, PT + reserved car parking bundle, stops at 329€ only.

Shifting to public transport pass non-holders, the PT + reserved car parking bundle has, in this case too, the highest WTP, equal to 282€, followed again by the PT + car sharing and the PT + bike sharing bundles. Also in this case, the split of the full sample generates some distinctions according to different characteristics. Students have a higher WTP compared to employees for all bundles, being the first more attracted by PT + car sharing bundle, and the latter by PT + reserved car parking. The origin zone of the travel to university determines generally a lower WTP for residents in Milan, that are willing to pay 255€ for the PT + reserved car parking bundle, and a higher one for residents in provinces. Residents in the province of Milan prefer the PT + car sharing bundle, with a WTP of 286€, while those residing in other provinces are more attracted by the PT + reserved car parking bundle, with a WTP of 310€.

Table 4 - Willingness to Pay for the three MaaS bundles, for respondents holding public transport pass, reporting in brackets the additional percentage with respect to the current pass price, and not holding public transport pass

	PT + bike sharing		PT + car sharing		PT + reserved car parking	
Subsample	**PT pass holders**	**PT pass non-holders**	**PT pass holders**	**PT pass non-holders**	**PT pass holders**	**PT pass non-holders**
Full subsample	597 € (**+17.7%**)	242 €	560 € (**+20.8%**)	258 €	725 € (**+21.2%**)	282 €
Origin zone						
Milan (city)	315 € (**+20.4%**)	218 €	313 € (**+21.6%**)	236 €	329 € (**+24.8%**)	255 €
Milan (province)	653 € (**+15.7%**)	238 €	671 € (**+20.7%**)	286 €	666 € (**+20.1%**)	278 €
Other provinces	1086 € (**+13.7%**)	299 €	1102 € (**+19.0%**)	279 €	1088 € (**+18.6%**)	310 €
Role in university						
Students	531 € (**+17.4%**)	261 €	523 € (**+21.6%**)	345 €	729 € (**+21.4%**)	315 €
Employees	668 € (**+18.0%**)	239 €	608 € (**+19.8%**)	248 €	718 € (**+20.9%**)	277 €

4. Model Estimation

4.1. Model's Methodology

The structure of the choice situations in the SP section of the survey, for each MaaS bundle, allowed the classification of respondent's WTP within a price range, representing it as a discrete outcome. For this reason, an ordered choice model specification was chosen, as it adhered to the way the WTP was obtained, to investigate the determinants of behavioral intentions towards MaaS solutions adoption and individuals' WTP for MaaS bundles.

The model is based on a random utility function y_i^* (1), that provides a measure of the observed discrete outcomes $y_i = 1, \dots, J$, and on a censoring mechanism (2), for each observation $i = 1, \dots, n$:

$$y_i^* = \alpha + \beta x_i + \varepsilon_i \,, \tag{1}$$

where x_i is the vector of variables that influence the choice (i.e. individuals' socioeconomic characteristics, or travel habits, such as age, employment status, origin zone, or transfer mode), and β is the vector of parameters to be estimated associated to these variables, α is the interceptor, and ε_i is the continuous random disturbance with cumulative distribution function $F(\varepsilon_i|x_i) = F(\varepsilon_i)$, being independent from the variables x_i:

$$\begin{cases} y_i = 1 \;\; if \;\; \mu_{-1} < \; y_i^* \leq \mu_0, \\ y_i = 2 \;\; if \;\; \mu_0 \; < y_i^* \leq \mu_1, \\ y_i = 3 \;\; if \;\; \mu_1 \; < y_i^* \leq \mu_2, \\ \qquad \dots \\ y_i = J \;\; if \;\; \mu_{J-1} < y_i^* \leq \mu_J \end{cases} \tag{2}$$

where $\mu_j = \mu_{j-1} + \delta_j$, being $j = 1, \dots, J$, are threshold parameters defined by δ_j, to be estimated from the n observations.

The probability associated with the observed outcomes are:

$$Prob[y_i = j|x_i] = Prob[\varepsilon_i \leq \mu_j - \beta x_i] - Prob[\varepsilon_i \leq \mu_{j-1} - \beta x_i] = [F(\mu_j - \beta x_i)] - [F(\mu_{j-1} - \beta x_i)] \tag{3}$$

For the estimation of parameters, some normalizations are needed: $\mu_j > \mu_{j-1}$ to guarantee the positivity of all probabilities; $\mu_{-1} = -\infty$, $\mu_0 = 0$, and $\mu_J = +\infty$; $Var[\varepsilon_i|x_i] = \pi^2/3$, as it is done for a Binary Logit model.

4.2. Modeling Results

For the estimation, two subsamples of individuals interested in bundles with PT pass and without were considered separately. For each subsample, two Ordered Logit Models were estimated: with fixed parameters (Model 1 and Model 3), and with random parameters and panel effect (Model 2 and Model 4), to consider the non-independence of choices made by the same individual among different bundles. The estimates of parameters are reported in Table 5.

Table 5 - Estimated parameters for the two subsamples of individuals with a public transport pass and individuals without a public transport pass

Ordered Logit Model	**Model 1: Fixed parameters**		**Model 2: Random parameters**		**Model 3: Fixed parameters**		**Model 4: Random parameters**	
Subsample	**PT pass holders**		**PT pass holders**		**PT pass non-holders**		**PT pass non-holders**	
Number of observations	1292		1292		355		355	
Null-Log Likelihood	-2963		-2963		-1110		-1110	
Final-Log Likelihood	-2144		-2004		-637		-563	
Rho-square	0.28		0.32		0.43		0.49	
Akaike Information Criterion	4328		4049		1315		1168	
Parameter	**Value**	**t-Test**	**Value**	**t-Test**	**Value**	**t-Test**	**Value**	**t-Test**
α (mean)	2.5479	10.48 ***	4.4073	8.13 ***	1.3641	3.75 ***	4.0660	3.43 ***
α (deviation)			2.6579	15.49 ***			-4.5041	-8.85 ***
PT pass cost (Continuous variable)	-0.0008	-4.93 ***	-0.0017	-4.54 ***				
Origin zone distance (Continuous variable)					0.0210	3.65 ***	0.0323	1.68 *
Age (> 35 y.o. = 1, ≤ 35 y.o. = 0)	0.4794	2.02 **	0.9660	1.78 *	-0.1787	-0.58	-1.6965	-1.84 *
Gender (Female = 1, Male = 0)	-0.0407	-0.38	-0.1968	-0.85	-0.5686	-2.71 ***	-1.1572	-1.72 *
Travel frequency (> 2 days = 1, ≤ 2 days = 0)	-0.5476	-2.53 **	-0.6199	-1.30	1.0748	3.61 ***	2.3022	2.33 **
Interactions	**Value**	**t-Test**	**Value**	**t-Test**	**Value**	**t-Test**	**Value**	**t-Test**
Vehicle availability (Yes = 1, No = 0)								
Vehicle availability * Bundle 1	0.0569	0.33	0.1094	0.35	-0.3022	-0.91	-0.3651	-0.38
Vehicle availability * Bundle 2	-0.0636	-0.27	-0.2636	-0.71	-0.3310	-0.80	0.7328	0.71
Vehicle availability * Bundle 3	0.2659	1.27	0.6525	1.84 *	-0.1973	-0.51	-0.3819	-0.38
PT and PrT transfer mode (Yes = 1, No = 0)								
PT and PrT transfer mode * Bundle 1	-0.5290	-2.46 **	-0.8123	-2.11 **	-0.2067	-0.29	-0.2197	-0.12
PT and PrT transfer mode * Bundle 2	0.4386	1.54	0.4095	0.89	-0.4926	-0.54	-2.9465	-1.40
PT and PrT transfer mode * Bundle 3	-0.1194	-0.52	-0.1316	-0.33	-0.8080	-1.02	-1.0149	-0.56
PrT transfer mode (Yes = 1, No = 0)								
PrT transfer mode * Bundle 1	-1.0582	-2.07 **	-1.7906	-2.11 **	0.3919	1.04	1.6947	1.82 *
PrT transfer mode * Bundle 2	-0.7276	-1.35	-1.2467	-1.46	0.6401	1.42	0.5017	0.51
PrT transfer mode * Bundle 3	-0.9784	-1.88 *	-1.7326	-2.06 **	0.5535	1.33	1.5587	1.62
Threshold parameters	**Value**	**t-Test**	**Value**	**t-Test**	**Value**	**t-Test**	**Value**	**t-Test**
δ_1	1.5846	22.56 ***	3.0095	17.64 ***	1.8452	10.20 ***	4.3815	8.65 ***
δ_2	1.2333	20.39 ***	2.3918	16.56 ***	0.9791	9.71 ***	2.9864	7.83 ***
δ_3	0.4354	9.55 ***	0.8124	9.18 ***	0.5242	6.56 ***	1.6285	5.92 ***
δ_4	0.9994	11.26 ***	1.7377	10.92 ***	1.1461	8.33 ***	3.1985	7.19 ***
δ_5	0.6920	6.48 ***	1.0970	6.59 ***	0.6571	4.58 ***	1.6791	4.43 ***
δ_6	0.4779	4.12 ***	0.7415	4.19 ***	1.4563	4.31 ***	2.8349	4.65 ***

****, **, * Significance at 1%, 5%, 10% level*

In all four models, the interceptor α is positive and significant, in mean in Model 1 and Model 3, and in both mean and deviation in Model 2 and Model 4, informing of an unobserved portion of utility through the investigated variables. The deviations have relevant entities, in particular in Model 4, informing of a substantial difference among individuals.

Shifting to the age parameter, for pass holders it is significant and positive in Model 1 and Model 2, meaning that the higher the age, the higher the WTP for MaaS bundles, while for non-holders it is significant and negative only in Model 3, testifying an opposite trend. Regarding gender, the parameter is significant and negative only in models for PT pass non-holders, meaning that males are generally willing to pay more for MaaS bundles.

The parameter related to travel frequency is significant in Model 1 and close to significance in Model 2, with a negative sign, and significant and positive in both Model 3 and Model 4. This means that a higher WTP is associated to individuals without a public transport pass that travel to university more than two days per week, while the opposite trend is observed for those with a PT pass.

The parameter associated with PT pass cost is significant and negative in both Model 1 and Model 2, referring to PT pass holders, meaning that the higher the price paid for the current pass, the lower the additional percentage that individuals are willing to pay for bundles. The corresponding parameter in PT pass non-holders' models, associated to the distance of the origin zone from the center of Milan, is significant and positive in both Model 3 and Model 4, meaning that the more the kilometers from the origin to the city of Milan are, the higher the WTP is.

Regarding vehicle availability, the estimated parameter for PT pass holders is significant only in Model 2 for Bundle 3, with a positive sign, which is reasonable since this bundle offers reserved car parking and is highly attractive for individuals that own a private vehicle. In all other cases, vehicle availability does not influence the WTP.

Shifting to current transport modes, the parameter associated with public and private transport for PT pass holders' models is significant and negative in both Model 1 and Model 2 for Bundle 1, highlighting that individuals that currently use PT in combination with a private vehicle do not value bike sharing as a valid alternative to it. Furthermore, it is close to significance and positive in Model 1 for Bundle 2, highlighting that car sharing may be perceived, instead as an alternative to private vehicle. For PT pass non-holders' models, instead, the public and private transport parameter is only close to significance and negative in Model 4 for Bundle 2, highlighting that car sharing is not seen as an alternative to private vehicle for individuals that integrate it with PT. The last parameter, related to private transport, in PT pass holders' models is significant for Bundle 1 and Bundle 3, and very close to significance for Bundle 2, in both models, with negative sign everywhere and higher entity for Bundle 1, followed by Bundle 3 and Bundle 2. This evidence suggests that individuals that currently use private transport do not have a high WTP for MaaS bundles.

Finally, private transport parameter is significant for Bundle 1 in Model 4, and close to significance in Model 3 for Bundle 2 and Bundle 3, and in Model 4 for Bundle 3, assuming always positive sign, meaning that individuals that currently use private vehicle are willing to pay more than others for MaaS bundles, in particular for these integrating PT with bike sharing and reserved car parking.

5. Discussion and Conclusions

Mobility as a Service bundles could provide an alternative to car usage incentivizing sustainable transport solution, through the enhancement of multimodal schemes, for university members for their home-university travel routine. In this research, the potential of MaaS in the university environment has been analyzed through a survey, performing both aggregate statistics and discrete model estimation to understand the Willingness to Pay of different user categories.

One of the main characteristics that influences the WTP for bundling schemes is the subscription to a public transport pass. Individuals that hold a public transport pass have a considerably higher WTP compared to those who do not hold one. This evidence suggests that who already use public transport frequently, through a pass scheme in fact, are more willing to pay an additional percentage with respect to their current pass price to benefit from the integration of an additional service, as highlighted also in (Ho et al., 2018). Moreover, current travel habits are found to be influencing the MaaS bundles adoption. (Alonso-González et al., 2020), (Smith et al., 2023) and (Coppola et al., 2025) discussed the higher attractiveness of bundles for individuals already integrating public transport with private vehicle; in our study, we found that, apart from the natural predisposition towards intermodality that this typology of users undoubtedly has, this category does not have in reality a higher WTP compared to others. Another important aspect, discussed by (Liljamo et al., 2020) and (Zijlstra et al., 2020), is the living place, so the origin zone of the transfer: in fact, living in densely populated urban areas, such as big cities, is associated to a higher WTP, compared to sparsely populated urban areas, such as provinces. The outcome of our research is in accordance with this evidence,

as individuals living farther from the city of Milan, in less populates zones, were found to have a higher WTP compared to residents in Milan. As noted by (Polydoropoulou et al., 2020) and (Tsouros et al., 2021), age highly influences the WTP for MaaS bundles, being younger individuals willing to pay more for MaaS bundles. In our study, the same result is observed for individuals that do not hold a public transport pass; on the contrary, older individuals with a public transport pass have a higher WTP compared to younger ones, and this may be related to their higher economic availability. Finally, (Guidon et al., 2020) analyzed the attractiveness of bundles integrating public transport with other services, noticing that car sharing and park and ride are the most attractive ones. Our study is concordant to this evidence, having bundles including car sharing and reserved car parking higher values of WTP.

In conclusion, our research highlights the potential impact that MaaS could have within university communities in promoting sustainable transport behavior, in particular for some selected groups of users that adhere to specific socio-economic characteristics and travel habits. Notably, frequent public transport users with pass subscription are certainly a potential target, especially if they live in provinces rather than in the city of Milan, suggesting their desire to include additional integrated services. Overall, these insights provide valuable information for an effective implementation of MaaS solutions among university members, tailored to their diverse mobility needs.

References

Alonso-González, M.J., Hoogendoorn-Lanser, S., van Oort, N., Cats, O., Hoogendoorn, S., 2020. Drivers and barriers in adopting Mobility as a Service (MaaS) – A latent class cluster analysis of attitudes. Transportation Research Part A: Policy and Practice 132, 378–401. https://doi.org/10.1016/j.tra.2019.11.022

Coppola, P., Silvestri, F., Pastorelli, L., 2025. Mobility as a Service (MaaS) for university communities: Modeling preferences for integrated public transport bundles. Travel Behaviour and Society 38, 100890. https://doi.org/10.1016/j.tbs.2024.100890

Gandia, R.M., Antonialli, F., Oliveira, J.R., Sugano, J.Y., Nicolai, I., Cardoso Oliveira, I.R., 2021. Willingness To Use Maas In A Developing Country. International Journal of Transport Development and Integration Volume 5, 57–68. https://doi.org/10.2495/TDI-V5-N1-57-68

Guidon, S., Wicki, M., Bernauer, T., Axhausen, K., 2020. Transportation service bundling – For whose benefit? Consumer valuation of pure bundling in the passenger transportation market. Transportation Research Part A: Policy and Practice, Developments in Mobility as a Service (MaaS) and Intelligent Mobility 131, 91–106. https://doi.org/10.1016/j.tra.2019.09.023

Hensher, D.A., Ho, C.Q., Reck, D.J., 2021. Mobility as a service and private car use: Evidence from the Sydney MaaS trial. Transportation Research Part A: Policy and Practice 145, 17–33. https://doi.org/10.1016/j.tra.2020.12.015

Ho, C.Q., Hensher, D.A., Mulley, C., Wong, Y.Z., 2018. Potential uptake and willingness-to-pay for Mobility as a Service (MaaS): A stated choice study. Transportation Research Part A: Policy and Practice 117, 302–318. https://doi.org/10.1016/j.tra.2018.08.025

Ho, C.Q., Mulley, C., Hensher, D.A., 2020. Public preferences for mobility as a service: Insights from stated preference surveys. Transportation Research Part A: Policy and Practice, Developments in Mobility as a Service (MaaS) and Intelligent Mobility 131, 70–90. https://doi.org/10.1016/j.tra.2019.09.031

Jittrapirom, P., Caiati, V., Feneri, A.-M., Ebrahimigharehbaghi, S., González, M.J.A., Narayan, J., 2017. Mobility as a Service: A Critical Review of Definitions, Assessments of Schemes, and Key Challenges. Urban Planning 2, 13–25. https://doi.org/10.17645/up.v2i2.931

Kraus, L., Proff, H., Giesing, C., 2023. Composition of a mobility as a service offer for university students based on willingness to pay and its determinants. International Journal of Automotive Technology and Management 23, 227–256. https://doi.org/10.1504/IJATM.2023.133351

Kriswardhana, W., Esztergár-Kiss, D., 2024. University students' adoption of mobility as a service with respect to user preferences and group differences. Journal of Public Transportation 26, 100079. https://doi.org/10.1016/j.jpubtr.2023.100079

Kriswardhana, W., Esztergár-Kiss, D., 2023a. Exploring the aspects of MaaS adoption based on college students' preferences. Transport Policy 136, 113–125. https://doi.org/10.1016/j.tranpol.2023.03.018

Kriswardhana, W., Esztergár-Kiss, D., 2023b. A systematic literature review of Mobility as a Service: Examining the socio-technical factors in MaaS adoption and bundling packages. Travel Behaviour and Society 31, 232–243. https://doi.org/10.1016/j.tbs.2022.12.007

Le Pira, M., Fazio, M., Giuffrida, N., Calabrò, G., Inturri, G., Ignaccolo, M., 2023. UaaS App – University as a Service App: exploring the acceptability of a MaaS-like concept for a University community. European Transport/Trasporti Europei 1–10. https://doi.org/10.48295/ET.2023.90.2

Liljamo, T., Liimatainen, H., Pöllänen, M., Utriainen, R., 2020. People's current mobility costs and willingness to pay for Mobility as a Service offerings. Transportation Research Part A: Policy and Practice 136, 99–119. https://doi.org/10.1016/j.tra.2020.03.034

Matyas, M., Kamargianni, M., 2019. The potential of mobility as a service bundles as a mobility management tool. Transportation 46, 1951–1968. https://doi.org/10.1007/s11116-018-9913-4

Polydoropoulou, A., Tsouros, I., Pagoni, I., Tsirimpa, A., 2020. Exploring Individual Preferences and Willingness to Pay for Mobility as a Service. Transportation Research Record 2674, 152–164. https://doi.org/10.1177/0361198120938054

Smith, G., Hensher, D.A., Ho, C., Balbontin, C., 2023. Mobility-as-a-Service users: insights from a trial in Sydney. European Transport Research Review 15, 40. https://doi.org/10.1186/s12544-023-00612-2

Tsouros, I., Tsirimpa, A., Pagoni, I., Polydoropoulou, A., 2021. MaaS users: Who they are and how much they are willing-to-pay. Transportation Research Part A: Policy and Practice 148, 470–480. https://doi.org/10.1016/j.tra.2021.04.016

Zijlstra, T., Durand, A., Hoogendoorn-Lanser, S., Harms, L., 2020. Early adopters of Mobility-as-a-Service in the Netherlands. Transport Policy 97, 197–209. https://doi.org/10.1016/j.tranpol.2020.07.019