WORKING PAPER

ITLS-WP-26-06

Establishing Evidence of Initiatives undertaken by Non-Mobility Service Providers that are aligned with Sustainable Travel Behaviour Change as a next generation focus of MaaS as MaaF

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TITLE: Establishing Evidence of Initiatives undertaken by Non-Mobility Service Providers that are aligned with Sustainable Travel Behaviour Change as a next generation focus of MaaS as MaaF

ABSTRACT: Mobility as a Service (MaaS) has garnered a significant amount of interest over the last 15 years and yet we have very little to show in Western nations in terms of its influence on travel behaviour aligned with sustainability goals, as well as an encouraging business case with or without an injection of significant government subsidy or private venture capital. While we see claimed success in Japan and China, this is the result of a government led and controlled initiative with extensive subsidy, something which appears to be beyond possibility in most countries. Certainly, to date, there are examples of Governments (e.g., across Europe) claiming interest and commitment but no financial support beyond existing subsidy to public transport available to all users. In researching MaaS over the last 10 years, we have come to the position that its future may reside in a greater involvement of non-mobility service providers (NMSPs) in recognition that a multi-service focus may offer up some real prospects of not only delivering desirable travel behaviour change but in facilitating a scalable outcome. Mobility as a Feature (MaaF) is one interpretation of this revised eco-system and has informed us of the potential opportunities that can be invoked through participation of NMSPs. To understand whether this has prospects, a survey in six countries in 2024 was undertaken to identify initiatives that are already in place within private enterprise and government agencies that align well with contributing to sustainable travel behaviour goals. The results suggest that much is already happening, but it has not been recognised as a MaaS/MaaF-like initiative. This paper presents the evidence and suggests a re-interpretation of what a future MaaS portfolio may look like, noting that this scalable future does not have to depend on the transport service providers working together other than their presence in providing services in the market to anyone wishing to use them. The focus historically on transport service providers appears to have been a major roadblock in progressing MaaS.

KEY WORDS: ***Mobility as a service, mobility as a feature, non-mobility service providers, incentives and rewards, digital badging, challenges***

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1. Introduction

In a recent talk (Fiskepiren, Stavanger, 31 October 2024[1]), Sampo Heitenan, the founder of MaaS Global, raised a question about MaaS: "Are we winning the battle but losing the war?" This rhetoric summarises the journey of MaaS, recognising that we have come a long way but achieved far less than we had hoped (Hensher, et al., 2021a), and that much of the hype that has accompanied MaaS suggests that we may have been overly focussing in the wrong places to deliver the aspiration of MaaS as a claimed integrated multi-modal ecosystem that can change travel behaviour in ways that align with both societal and business objectives. Indeed, the dominance of trip planning apps that emerged from the advent of the digital age might have done more harm than good in diverting attention away from the real objectives of MaaS and the many components of the ecosystem that are necessary to be able to deliver a scalable and impactful MaaS outcome (Herlin, 2021).

The search for a more positive alignment of MaaS with societal[2] and commercial objectives (or a business case with or without subsidy from any source) has resulted in us suggesting a complete reset of what MaaS needs to be in order to ensure a future that is value adding to the already extensive toolkit of initiatives designed to promulgate desirable sustainable travel behaviour change. In writing on this challenge, a number of papers by Hensher et al. (2021a, b, 2023, 2024) and Hensher and Heitenan (2023), among others, have highlighted the challenges that exist and, in particular, the problem associated with an over-emphasis on relying on transport service providers (often with competing commercial interests and lack of trust) as a dominant source in delivering a multi-modal MaaS solution. Even the heavy focus on encouraging switching to public transport, or more shared transport, has been a significant blockage in thinking more laterally about ways to change travel behaviour and open up the possibility of a scalable MaaS solution.

The journey of introspection has consistently failed to find a solution that was embodied essentially in finding ways through pay as you go (PAYG) or subscription that could ensure cooperation amongst transport service providers (excluding the private car) under the spirit of multi-modalism (Heikkilä, 2014; Hensher, et al., 2020; Ho et al., 2021; Mladenović, 2021). An important breakthrough came with Mobility as a Feature (MaaF) that was introduced by Hensher and Heitanan (2023) and which has been subsequently promoted by a growing number of commentators as illustrated in recent quotes from a Frost and Sullivan report[3] (Figure 1),

[1] https://www.gronnby.no/aktiviteter/mobilitetskonferansen-2024/

[2] While the alignment of MaaS and societal goals has been proposed previously (e.g., Sochor et al., 2018) we have not yet seen the breakthrough that we believe is required.

[3] Examples are integration of electric mobility hubs in upcoming real estate projects in Australia Ohmie GO Envoy - Electric Car Share. Lidl stores across Ireland now have 100 GoCar Ireland for car sharing through a partnership. Over 6,000 people have already used this service in the first year of operation 2023. Together with the Munich-based start-up RideBee, German football club SSV Jahn Regensburg GmbH & Co. KGaA launched a carpooling option. They also offer a free public transport ticket integrated into the admission ticket, free shuttle service from the main train station to the stadium and free e-bike sharing offer on match day. In the Netherlands, Lage Weide business park in Utrecht has offered free access to e-bikes from TIER Mobility. They have also partnered with Gaiyo - One key for all mobility and have made 18 mobility hubs available for employees. In the USA Mississippi has allocated up to $1 million annually to Uber Health, the state aims to reduce missed appointments and improve healthcare accessibility for its residents.

and other industry commentators who state that "MaaF describes the provision of mobility services on platforms that do not necessarily have to be related to mobility, or the further development of mobility platforms into providers of a wide range of services - including those not related to mobility."[4, 5]

In expanding on what MaaF represents, recognising that transport and travel are derived demand constructs, mobility offers should be seen as an *input* into a larger activity-based paradigm of service delivery. This service-delivery-paradigm includes a wide range of non-transport mobility services that are appealing to customers, and we argue that it is in this service delivery setting that transport integration as the mobility input might flourish. MaaF is a way of moving away from a dominating multi-modal perspective (that has not delivered desirable travel behaviour change at scale) to a multi-service perspective. But there is a twist – we suggest that the future of MaaF in terms of an appealing business case, and even commercial success, should be driven by organisations who do not have a direct vested interest in transport supply ownership, but who have an extensive customer base to enable them to focus on the delivery of a broad-based fully integrated activity solution that inputs a range of appropriate transport solutions. This next generation interpretation of MaaS will require some time to be fully tested, but its appeal is the result of learning from the first 10-year (or generation 1) period.

Independently, developments with rural MaaS in Japan identified small businesses and local event organisers as critical actors for the success of MaaS in rural and regional settings (World Economic Forum, 2021). This is relevant, since extending MaaS stakeholders (already well documented, see for example Polydoropoulou et al., 2020) to include non-mobility service providers such as small businesses and event organisers is in essence moving MaaS from a multi-modal to a multi-services framework. Appendix B provides a summary of key differences between MaaS and MaaF.

Figure 1. Comments on MaaF (29 August 2024).

[4] https://emagazin.bayern-innovativ.de/emagazin/detail/de/seite/interview-mobility-as-a-feature/

[5] We acknowledge work in the area of MaaS and tourism which is initiated discussion on the bundling of other services into a MaaS offer (Leung et al, 2023).

Source: https://www.linkedin.com/posts/geraldine-priya-806aba25_maaf-embedding-nascent-activity-7234809473716871168-xuaL/?utm_source=share&utm_medium=member_ios

Building on the MaaF perspective, in this paper we identify the role that non-mobility service providers (NMSPs) might play in contributing to a multi-service eco-system that embeds one or multiple mobility services (Kandanaarachchi et al., 2024). Importantly, the starting position is not with transport service providers but with organisations that, through existing or new initiatives associated with stakeholders, can offer up benefits (financial or non-financial rewards) that align with the sustainable outcome of changing traveller behaviour towards greener choices. We postulate that many organisations are already doing a range of things that align with the aspirations of a MaaS/MaaF ecosystem and yet these actions or strategies have not been recognised and translated through to a cataloguing of what this means for MaaS. This means there is a considerable untapped potential (and reporting) in terms of what they might be able to achieve in future with appropriate recognition and support.

Hensher and Nelson (2024) and Kandanaarachchi et al. (2024) have proposed a governance framework, given in Figure 2, which sets out a number of ways that promotes the already significant role and future potential roles that NMSPs might play in contributing to a scalable MaaF ecosystem.

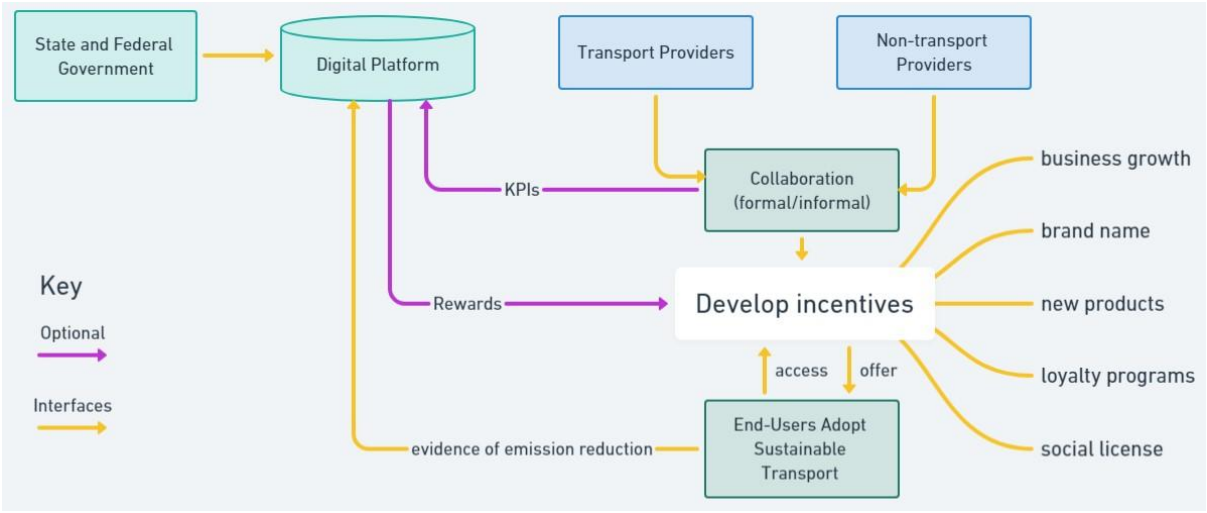


Figure 2. The Testable Governance Framework.

In promoting the governance framework in Figure 2 to the NMSPs, the aim is to find ways, for example, to reduce greenhouse gas emissions (GGE) and traffic congestion in metropolitan areas while also improving mobility (hence social inclusion) across regional and rural locations. We are interested in seeing whether transport and other types of services/product providers might work together, in whatever ways work best for them, to motivate their stakeholders (who might be staff, clients, visitors, suppliers etc. of NMSPs) to switch travel behaviour to sustainable methods of transport through rewarding sustainable travel with discounts and other rewards. This can result in a NMSP building their client base to gain financial and/or non-financial benefit. In addition to building benefits with a business's stakeholders, the NMSP can

also opt to participate in a common framework (digital platform) that facilitates access to additional financial rewards and/or public recognition for evidence of contributing to environmental and/or societal goals (Figure 2). These additional benefit sources, supported by government, requires a business to share enough evidence into a common digital platform on how their initiatives have resulted in delivering on government defined Key Performance Indicators (KPIs). This benefit source can include recognition for demonstrating commitment to sustainability/societal benefits via a digital badge, and/or financial rewards. NMSPs can participate in this initiative in a number of ways:

- Independently, e.g., a major supermarket chain does something that successfully influences their employees to commute to work in a more sustainable way such as switching from a petrol- or diesel-fuelled car to an EV, or moving some travel to public transport, or

- In partnership / consortia (formally/informally), e.g., a ride-share provider works with a credit card provider to encourage increased use of ride share at off-peak travel times.

The objective of this paper is to explore what is already in place with many organisations in different regions of the world, as a way of resetting the MaaS agenda in recognition of scalable progress that does not rely on having to bring (sometimes reluctant) transport service providers together to cooperate through a broker, as has been the tradition of promoting MaaS.

To understand whether this has prospects, we undertook a survey in six countries in 2024, Australia, USA, UK, Singapore, Finland and Sweden, to identify initiatives that are already in place within private enterprise and government agencies that align well with contributing to sustainable travel behaviour goals, and in so doing have been able to conclude that much is already happening but that it has not been recognised as a MaaS/MaaF-like initiative. This paper presents the evidence and suggests a re-interpretation of what a future MaaS may look like, noting that this scalable future does not depend on the transport service providers other than their presence in providing services in the market to anyone wishing to use them. The focus historically on transport service providers appears to have been a major roadblock in progressing MaaS.

2. The Empirical Inquiry

A quota sample of 1,200 respondents from business organisations was obtained, with the following allocation: 350 each for Australia, USA and UK, and 50 each for Finland, Sweden and Singapore. The countries chosen were those where English is the common working language. The interest in choosing six countries was based on investigating if there were any cultural differences, but we also identified what countries respondents' organisations have interests in. We are particularly interested in the degree of influence each respondent feels they currently have in supporting and promoting the types of initiatives we investigate in the organisation in which they operate, identified on a 0-10 scale ranging from 'no influence at all'

to ‘full decision-making power’. The initiatives[6] were identified in the context of an organisation (considering) providing various services to help fulfill the daily needs of their stakeholders (e.g., staff, clients / customers, visitors, and suppliers). The aim is to determine which initiatives translated into a contribution to supporting sustainable travel behaviour for each class of stakeholder.

The survey was designed to collect information on an organisation's interest in supporting their stakeholders (e.g., staff, clients / customers, suppliers, and visitors) in fulfilling their day-to-day requirements in their interactions with your organisation. The survey instrument is structured as follows with the empirical evidence on each question in the Figures. We begin by identifying the characteristics of each sample respondent as shown in Figure 3 and accompanying text which also determined their eligibility to participate (if they were not in a decision making role associated with their organisations strategic priorities they exited the survey), followed by a question reproduced below associated with Figure 4 to identify services that are provided by their organisation, with the response scale shown in Figure 4. This is followed by a question that delves into the type of stakeholder/s (e.g., staff, clients, providers, visitors or other) from the list of services that are provided or is being considered by the organisation. For the services that they decided not to go ahead with or would not implement, they are asked to indicate the stakeholder group(s) that were considered (as shown in Figure 5). Respondents were then asked how they would rate their organisation’s experience with the services that have been implemented (as shown in Figure 6), followed by how they rate their organisation’s experience with the services that they ceased to provide followed by would not implement. We then seek information on services that their organisation thought about but decided not to do. The survey concludes with a question on whether they or their organisation might want to explore a business opportunity further, which of the following issues would be of primary concern (Figure 10).

2.1 Descriptive analysis of the respondents

The majority of respondents are decision-makers in their organisation. The sample includes a good mix of organisations from different industries, mainly in the private sector; however, government and for non-profit organisations (NPO) are also present in the sample. The organisations split nearly evenly in terms of size, where small has 1 to 19 employees, medium has 20-199 employees, and large has more than 200 employees. These key descriptive profiles by respondent role, industry, and sector type are shown in Figure 3.

[6] The list of candidate initiatives (see Figure 3) was informed, in part, by a series of in-depth interviews earlier in 2024 with key players with NMSP organisations within Australia (Hensher and Nelson, 2024).

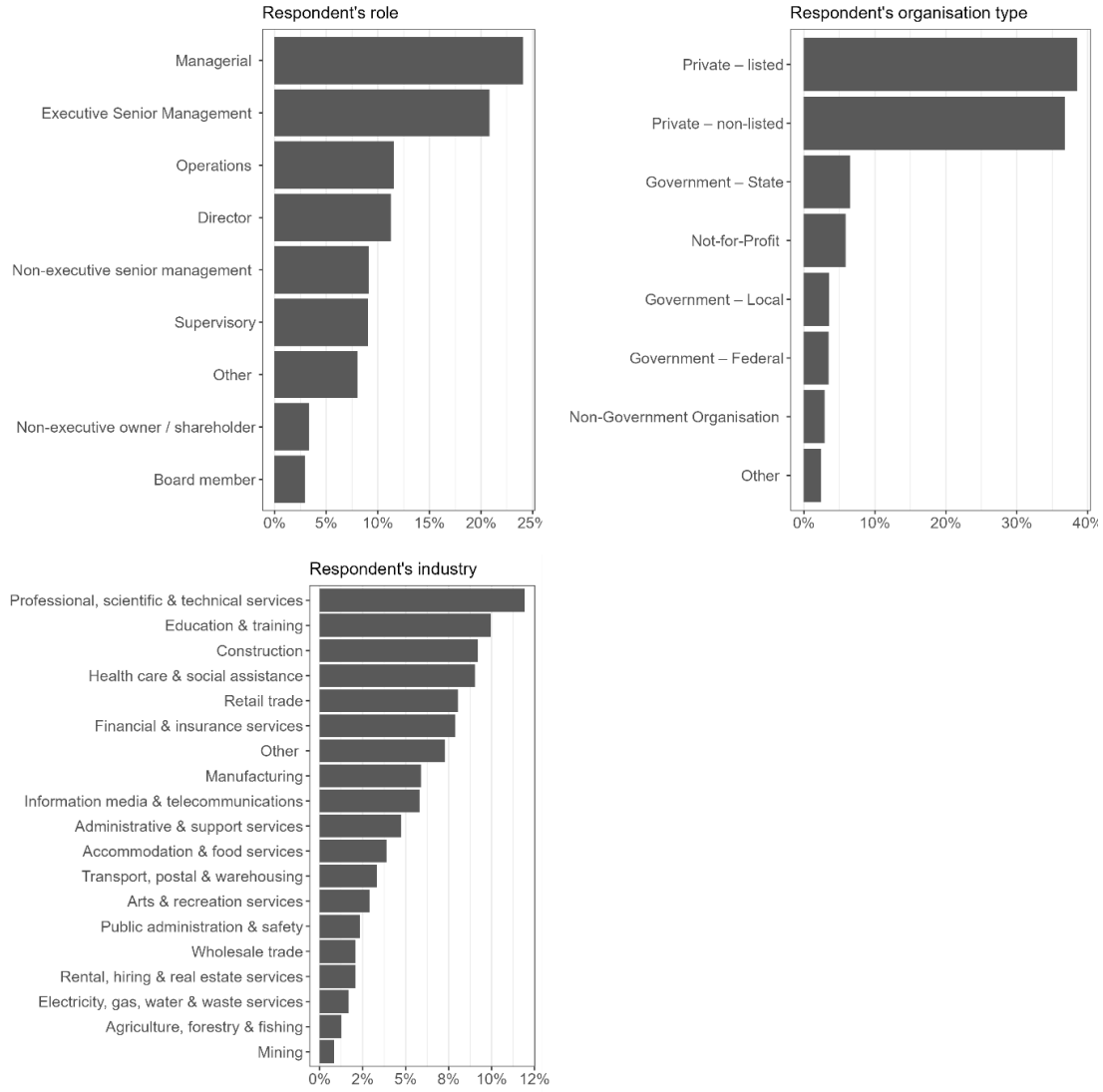


Figure 3. Respondent profile by occupation, sector, and industry.

2.2 Services provided by organisations

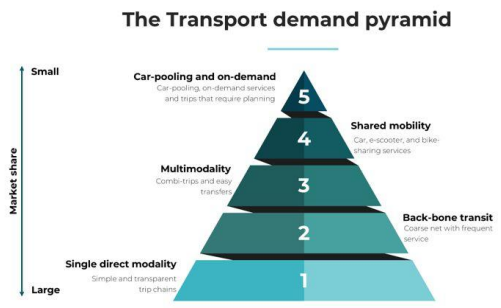
A total of 14 types of services provided by a respondent's organisation were identified from a literature review and a series of in-depth interviews, as reported by Hensher and Nelson (2024). Among the services (Figure 4), flexible working arrangements (including working from home (WFH) and flexible working hours), onsite events, and onsite parking, are the most frequently provided services by the sampled organisation. By contrast, green initiatives like rewarding the use of green modes of transport, providing electric vehicle (EV) charging facilities, and subsidising the cost of using greener transport modes are least provided despite these initiatives generating increased interest from the respondents. Earlier research identified that many organisations had not thought about specific initiatives as contributing to sustainable behaviour until they were made aware of them[7]. The survey also provides evidence of initiatives that they would not implement.

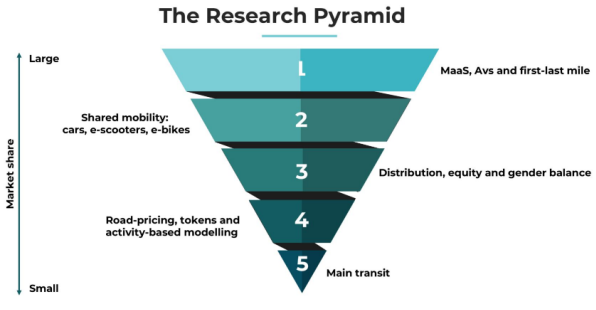
[7] During the in-depth interviews reported in Hensher and Nelson (2024), a number of interviews involved an informal meeting where feasible in Sydney. Initially it was clear that transport initiatives per se were either very low or had no place in their agendas. However, after an hour of discussion, this often changed with an enlightened response that some good initiatives linked to resolving various transport related challenges were worth working

In asking what services the respondent's organisation provided for stakeholders, the question was framed as follows with the results presented in Figure 4:

"An increasing number of organisations are providing / considering providing various services to help fulfill the daily needs of their stakeholders (e.g., staff, clients / customers, visitors, and suppliers). A list of such services is provided in the table below. Please place a tick beside each service to indicate their status in your organisation. Please note that 'on-site' includes services within the same building, workplace, or within walking distance of the building."

through. One example is the introduction of a shared private car scheme for parishioners attending regular Sunday church services, where as a community of known and trusted individuals and families, the church could use an App-based booking system to arrange for a rotated parishioner driving their car and sharing with other members of the congregation. This enabled the church to manage better its parking infrastructure needs into the future (significantly reducing costs where expansion may have been needed) as well as reducing the amount of parking and hence traffic around the church on the street. This is a win-win for the NMSP as well as the environment and is scalable across the many hundreds of churches, and indeed all religious outlets. This particular example is derived from earlier work by the authors which developed the idea of a car community club for rural residents in the context of rethinking the role of the car in a MaaS framework (Hensher et al., 2024). Jeppe Rich recently suggested that researchers focus on less impactful issues, overlooking what truly matters. In the transport pyramid (below), the majority of focus should be at the base, but it seems like the research priorities are often inverted. https://www.linkedin.com/feed/update/urn:li:activity:7249792412548554754/





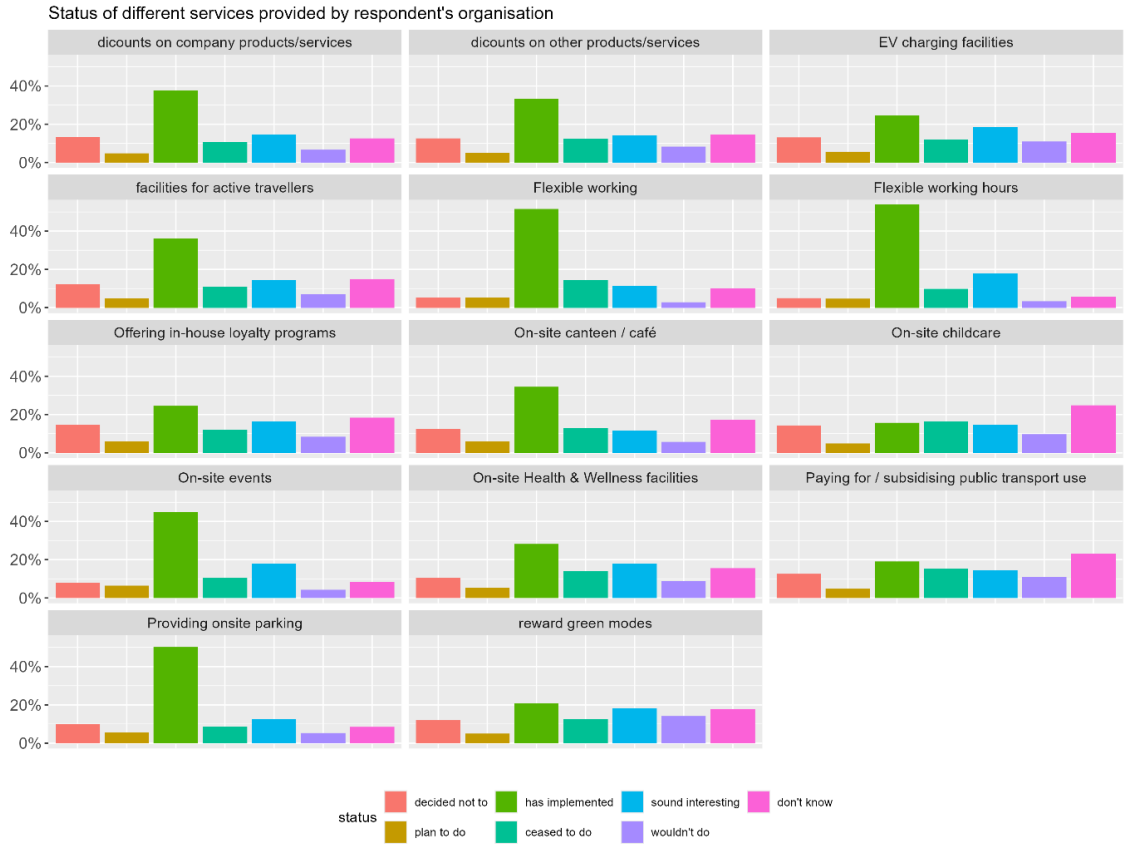


Figure 4. Non-mobility services provided by respondent's organisation.

Figure 5 shows that their own staff are the main stakeholder group that an organisation considered when they provided each of the services. The exceptions are onsite cafe, onsite parking, and EV charging facilities, where the need of other stakeholders such as visitors and clients collectively accounted for more than 50% of the considered stakeholders. The degree of success or otherwise of these service provisions as indicated by respondents' is summarised in Figure 6, with 'quite successful' and 'very successful' dominating the responses for all initiatives.

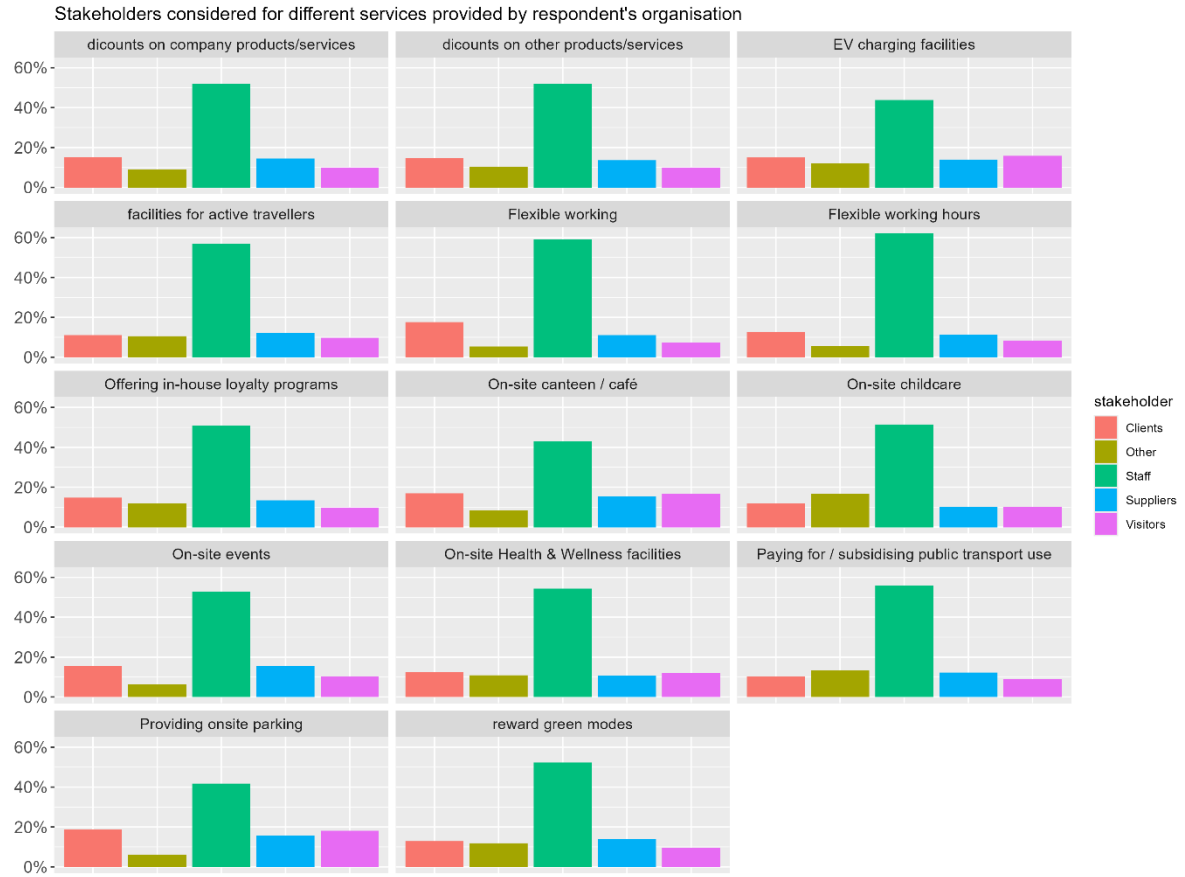


Figure 5. Services provided by NMSPs for various stakeholder categories.

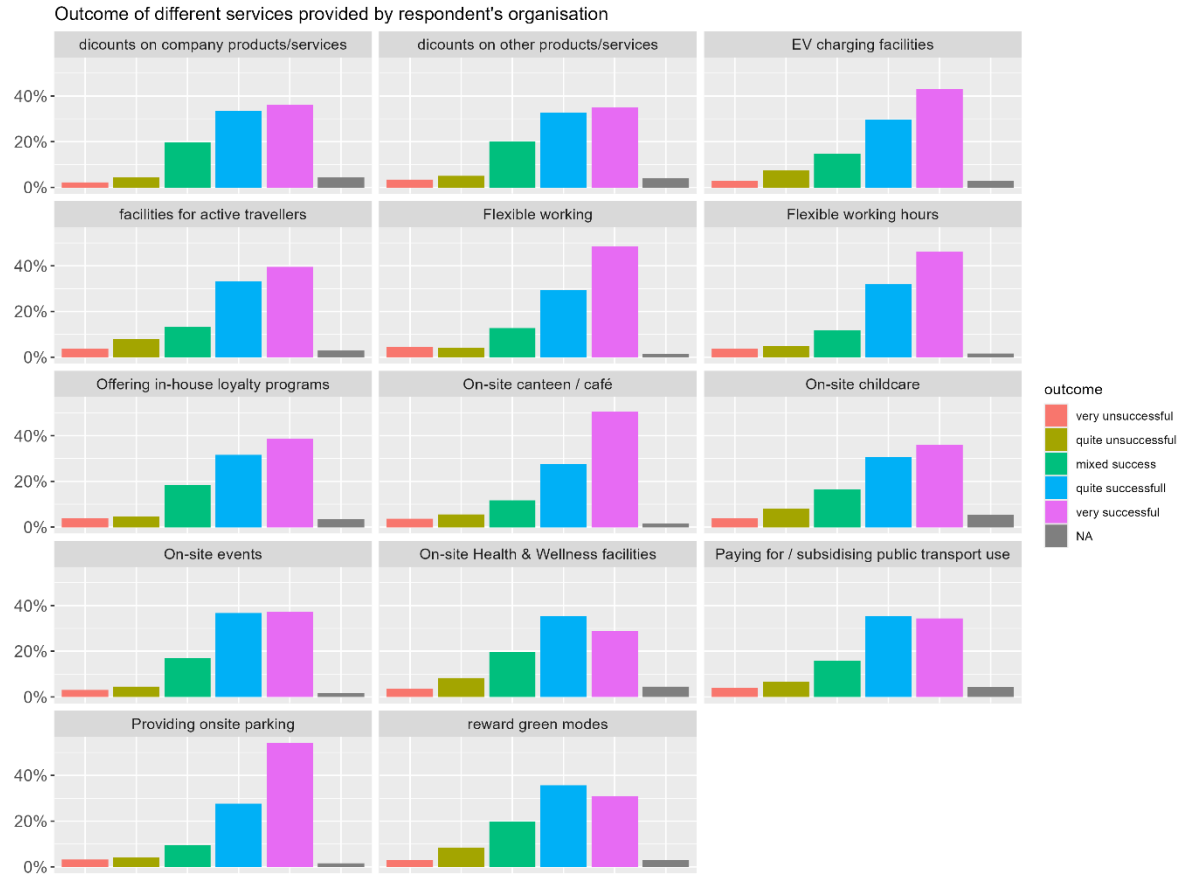


Figure 6. Degree of success associated with services provided by NMSPs.

2.3 Reasons for not providing or ceasing services

The main reasons that organisations decided not to provide specific services (Figure 7) relate to resource constraints (i.e., space or funding) and the lack of interest. Staff constraints also contributed to the decision of not providing the service, but this reason generally accounts for a small percentage. In addition, as summarised in Figure 8, the lack of resources, interest, and staff constraints are the key reasons for ceasing to provide specific services. EV charging and lack of interest have the highest incidence of reasoning for not providing many of the 14 initiatives. Some initiatives that were initially introduced were stopped for the same three reasons (i.e., lack of resources, interest, and staff constraints) dominating this decision. For initiatives that organisations would not consider providing from the outset, the reasons vary by services (Figure 9)[8]. While most of these still link to resource constraints, other factors account for a much larger percentage.

[8] For the 1200+ respondents, those who chose "Other" range from 2% (25 respondents) to 5.5% (i.e., 67 respondents). Given that the survey we conducted is a short 10-minute survey, we did not allow a further specification for each respondent who answered "other" in this question (i.e., not considering the services), as well as other questions we presented in Figure 7 and Figure 8 (e.g., cease to implement).

Figure 7. Reasons that NMSPs decided not to provide a specific service.

Figure 8. Reasons for NMSPs ceasing to provide a specific service after an initial application.

Figure 9. Reasons that NMSPs never considered providing a specific service.

2.4 Key considerations for exploring business opportunities

We investigated some of the key considerations that are taken into account when exploring business opportunities since this signals a greater appreciation of what we need to be mindful of when promoting opportunities that can contribute to changing travel behaviour of stakeholders that align with sustainability goals, and the potential to be rewarded financially when satisfying KPIs delineated by government as well as receiving recognition through a social or environmental license digital badge. The findings, summarised in Figure 10, highlight the importance of reputation of the other party(ies), financial reward sharing (which we know from the Sydney Trial (Hensher et al., 2021, Ho et al., 2021) has been a major issue when a MaaS consortia involved public transport and a ride share organisation), and financial incentives including tax deductions and subsidies. These findings are important in suggesting the governance model that needs to put in place to attract interest from NMSPs in introducing initiatives aligned with the aspirations of a MaaS/MaaF ecosystem.

It should be noted that a NMSP often participates in initiatives that they see beneficial to their stakeholders, without realising the broader implications beyond the enterprise for sustainable travel behaviour. This is because a contribution to sustainable travel behaviour has not been recognised as potentially significant in delivering MaaS/MaaF without having to form any partnerships with other organisations including opening the opportunity to obtain recognition and reward from government (Hensher and Nelson, 2024). The consequence of this is the possibility of a true multi-or uni-service governance model aligned with behavioural responses associated with a uni-modal or multi-modal setting, as detailed in Kandanaarachchi et al. (2024). As suggested above, what we are seeing is a disguised MaaS/MaaF initiative that should be revealed in promotion of MaaS.

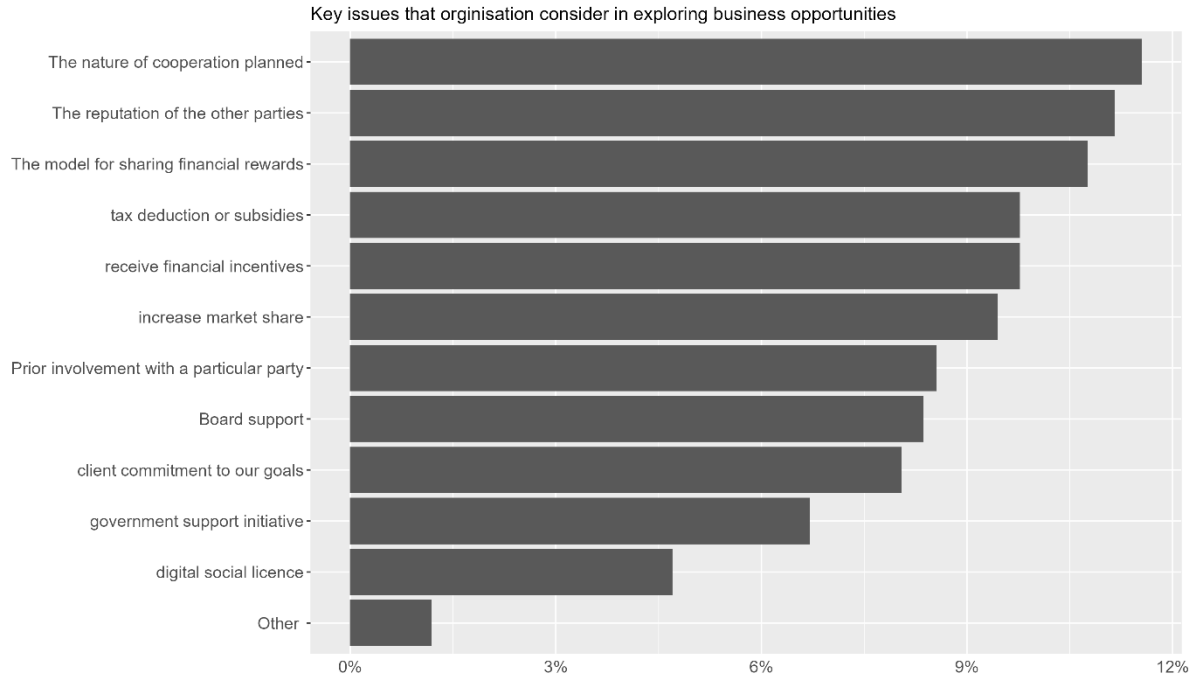


Figure 10. Key criteria associated with NMSPs business opportunities.

Finally, we recognise that responses from a sample of 'representatives' of NMSP organisations, while of interest, may not carry enough weight to garner confidence in the evidence as reflective of real opportunities. We identified the degree of influence, on a scale from 0 to 10, through the following question: *"Now that you have completed the survey, please use the scale below to indicate the degree of influence you feel you currently have in supporting and promoting these types of initiatives in the organisation in which you operate?"*. This degree of confidence expressed by the respondents is shown in Figure 11 broken down by role in the organisation. CEOs and Directors have higher confidence than supervisory and board members as expected. The great majority of the respondents claim a high level of influence (being in the 7-10 range), although the formal statistical analysis in the next section investigates this matter further.

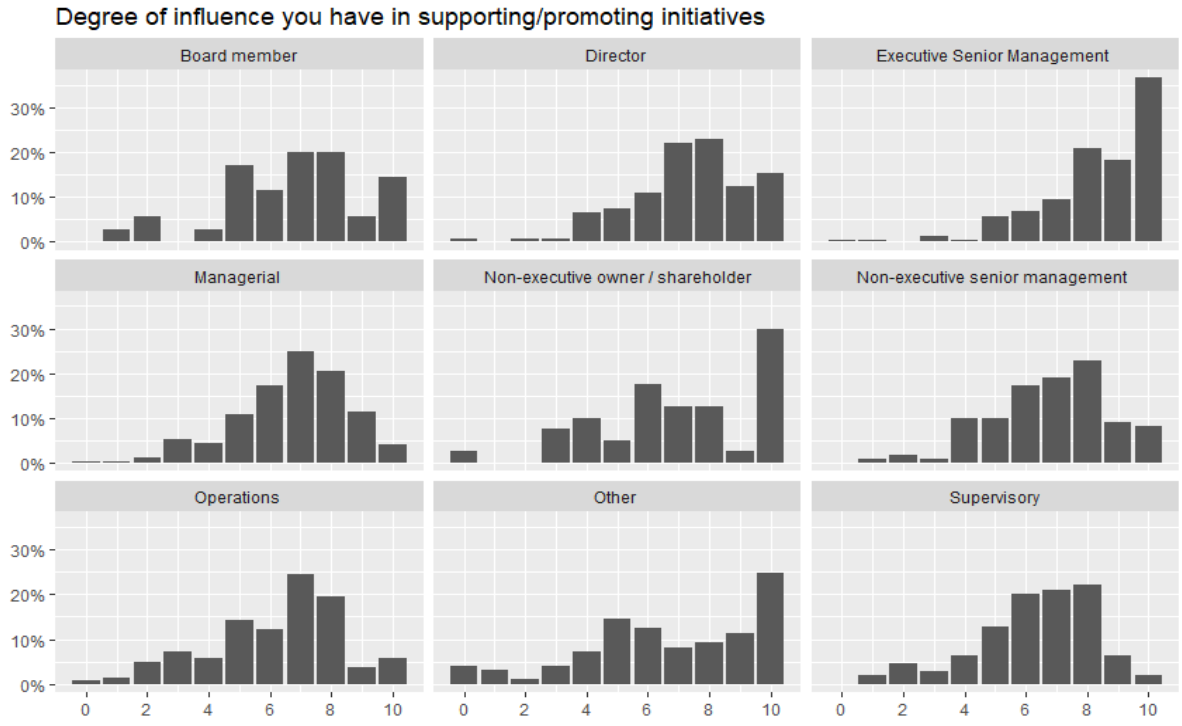


Figure. 11 Degree of influence by role in organisation in influencing the assessed initiatives.

3. Business location and structure influences associated with non-mobility providers considering/adopting green travel initiatives

Given the interest in identifying initiatives of NMSPs that align with the desire to move the dial on traveller behaviour that accord with sustainable travel outcomes, we estimated four discrete choice models describing the status of a non-mobility service provider in considering/adopting the following 'green transport initiatives' (see Figure 4):

- Paying for / subsidising public transport use (**PT subsidy**)
- Rewarding environmentally friendly methods of work-related travel (including commuting), e.g., perks for those who use public transport, carpool, cycle, e-scooter (**Rewarding green transport**)
- EV charging facilities (**EV charging**)
- Showers / changing rooms for those who run / cycle to work (**Change room**)

The choice set associated with each of the four initiatives has seven alternative responses:

- Something we would not implement (NotDo)
- My organisation has thought about it but decided not to (DecideNot)
- My organisation has ceased to do it (Ceased)
- Something we have not thought about but sounds interesting (Interesting)
- My organisation plans to do it (Plan)
- My organisation has implemented it (Implement)
- Don't know / Not applicable (NA)

Multinomial logit (MNL) models[9] were estimated with the results presented in Table A.1 of the Appendix, where all parameter estimates are statistically significant with a 90% confidence level. The base alternative is 'DecideNot', i.e., 'my organisation thought about it but decided not to pursue the initiative'. The estimates reported in Table A.1 represent the final model estimation, in which only the variables with statistically significant parameters were obtained in the previously estimated models, while those with non-significant parameters were excluded.

There are many statistically significant influences associated with each of the four green initiatives. An organisation's plan to undertake one or more of the initiatives appears to be unrelated to public transport subsidy but is associated with rewarding green transport, being positive in the construction sector, medium and large organisations with an office in Europe (that aligns with the generally greater green interest in Europe), but negative for the UK and private non-listed businesses. This evidence suggests gaps and opportunities in the market to promote such rewards. In contrast, for the plan to provide a change room (mainly for active travel employees), the only significant influence is associated with the private non-listed sector, but it is negative. A plan to provide EV charging facilities is statistically significant and positive for executive senior management (who we know are more likely to have an EV), notably in medium-sized firms with a European office, although there is a negative significant effect for the UK. A similar assessment can be made for the influences associated with actual implementation, don't know/not applicable, has ceased to do it, thought about and interesting, and would not implement. One additional result of interest is the statistically significant negative parameters associated with the EV charging alternative for private listed and non-listed), not-for-profit, and non-government organisations, and positive parameters for medium-sized enterprises and an office located in Europe. Again, this highlights the relatively stronger commitments in Europe (excluding the UK) to decarbonisation of the car fleet where the uptake of EVs is greater than for any other part of the world.

Given that the parameter estimates of discrete choice models are behaviourally not informative by themselves, elasticities are computed to assist model interpretation. All the explanatory variables in the choice models are binary, so it is necessary to calculate arc elasticities to allow for non-marginal changes from one to zero. Equation 1 shows an example formula used to compute the arc elasticity of organisation size when they switch from large to small (base level):

$$Elas_{Alt_i, SzLarge} = \Pr(Alt_i \mid SzLarge = 1, SzMed = 0) - \Pr(Alt_i \mid SzLarge = 0, SzMed = 0) \quad (1)$$

where $\Pr(Alt_i|Size)$ is the probability of choosing alternative *i* (out of the seven alternatives shown above) given the organisation size. The mean and standard deviations of the elasticities were averaged across the sample relative to the probability of choosing each alternative, i.e., these elasticity estimates represent weighted averages. The computed elasticities for all variables are presented in Table A.2 which includes the 5 and 95 percentiles of the sample. All elasticities are relatively inelastic. Taking the Change Room initiative and organisation size as

[9] Normally distributed error components were tested in the models to analyse if there was a statistically significant variation when choosing each of the alternatives, but the standard deviations were not statistically significant at a 90% confidence level for any of them. Therefore, the results include only fixed parameter estimates.

an example, the estimated elasticity shows, *ceteris paribus*, that large businesses, on average, are 32.3% more likely to implement this initiative than small businesses (the base) while medium businesses are 12.5% more likely relative to small businesses. Large businesses are 15.7% and 19.6% more likely to have implemented green transport reward systems and EV charging facilities, respectively, relative to small businesses. Medium businesses are 7.3% and 10.4% more likely to have implemented these, relative to small businesses. As an organisation grows from small to medium size, the probability of subsidising or paying for public transport use increases by 7.3%, and by 6.6% from small to large businesses.

Figures 12-15 profile the average arc elasticities in a behaviourally richer way of visualising the status of non-mobility service providers in (considering) implementing the four green transport initiatives. While all statuses except "Don't know, not applicable" were visualised in Figures 12-15, the 'has implemented' (Implement) and 'plan to implement' (Plan) are worth highlighting. We see a significant amount of response in the ±10% range for most variables, with the greatest sensitivity associated with the size of the organisation, the location of headquarters, whether it has an office in Europe, the industry sector, and the type of an organisation (private listed company, NPO, NGO). There is, therefore, clear evidence of both noticeable behavioural support and lack of support for these initiatives. These results can give guidance on opportunities that align well with any plans to promote particular initiatives to a broad set of businesses that can deliver desirable sustainability outcomes recognised beyond the enterprise, and what can be claimed as a contribution to a MaaS/MaaF ecosystem. We believe that many businesses have not thought through these opportunities.

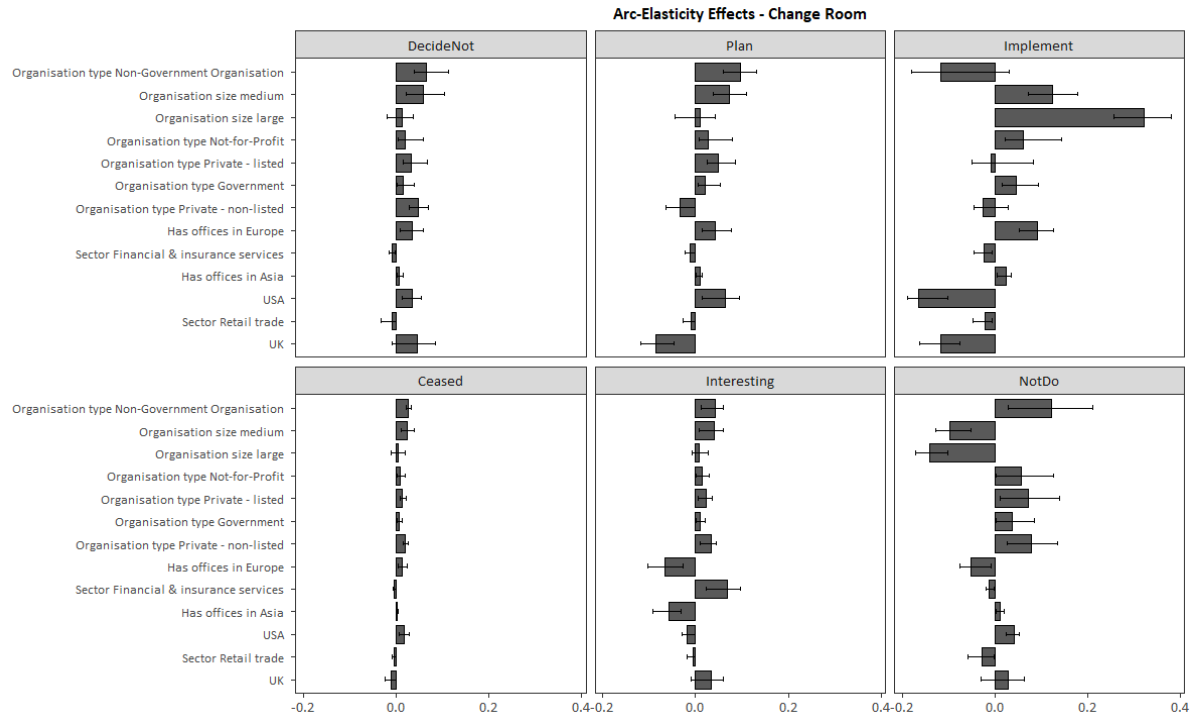


Figure 12. Elasticities of non-mobility service providers adopting the initiative of providing showers/changing rooms for those who run / cycle to work.

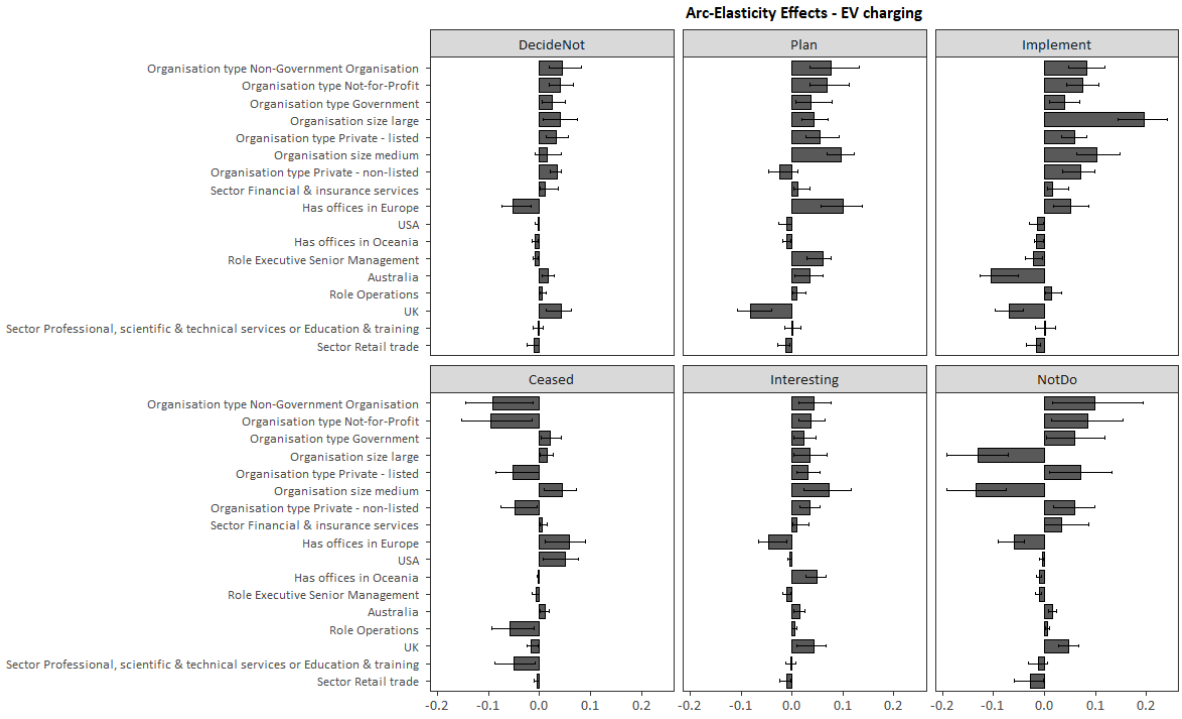


Figure 13. Elasticities of non-mobility service providers adopting the initiative of providing EV charging facilities.

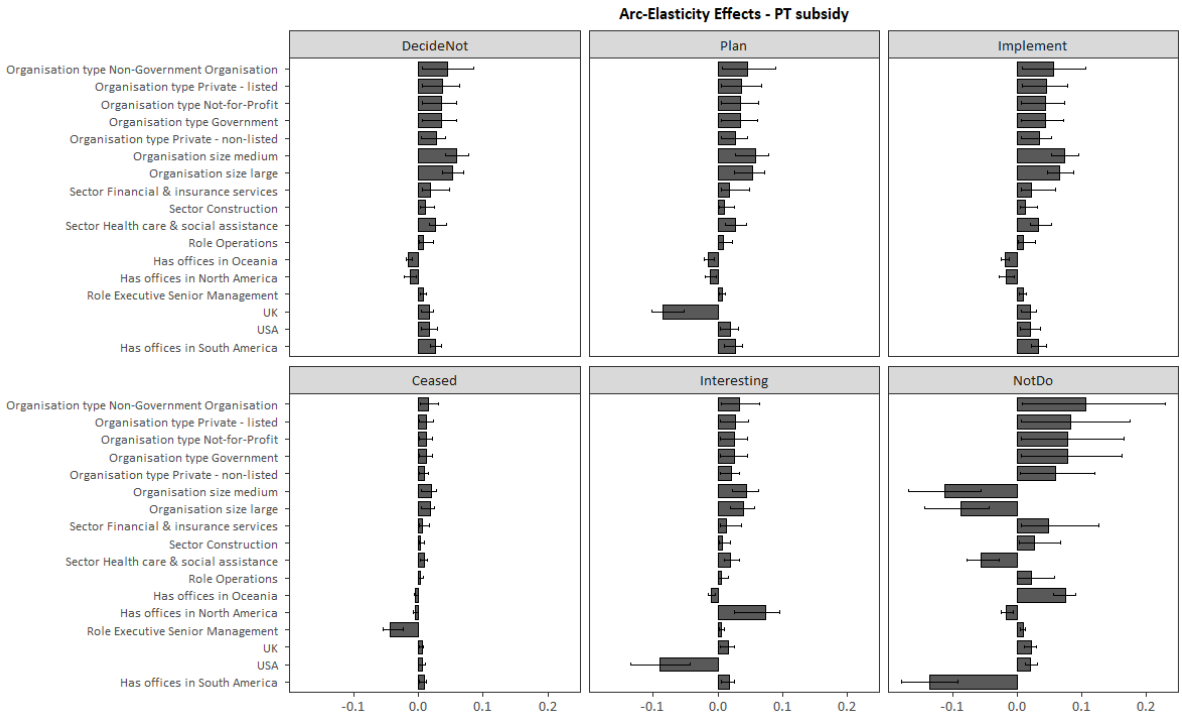


Figure 14. Elasticities of non-mobility service providers adopting the initiative of paying for/subsidising public transport use.

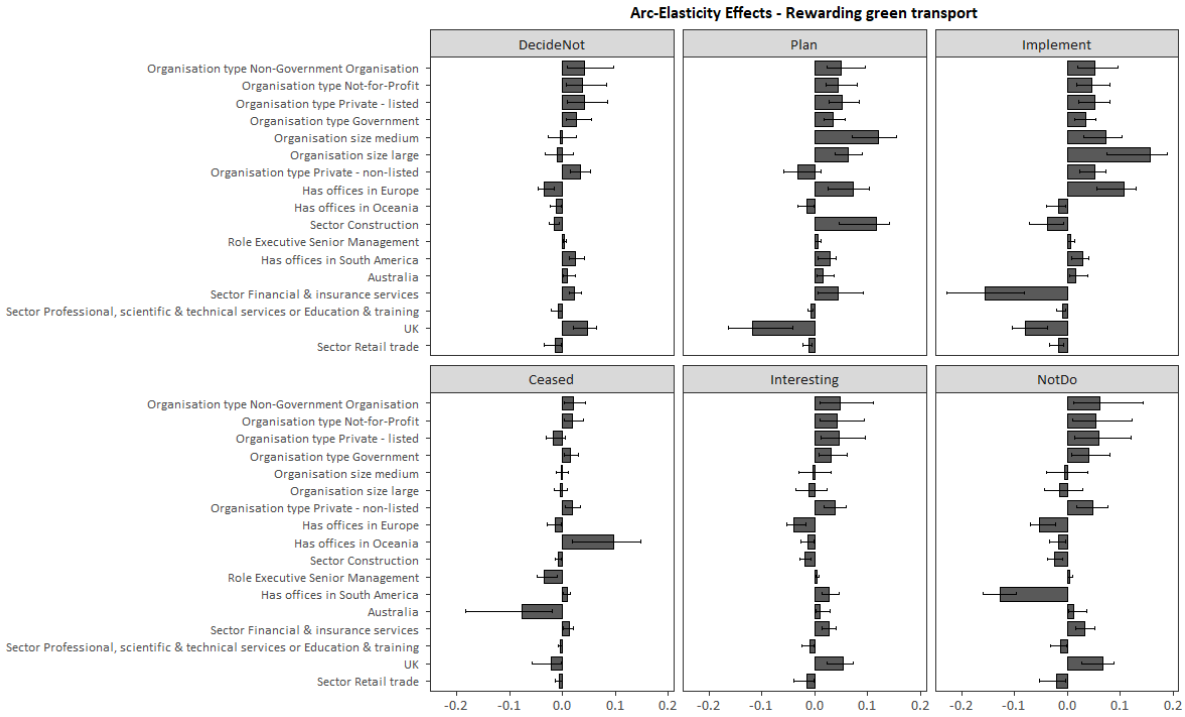


Figure 15. Elasticities of non-mobility service providers adopting the initiative of rewarding environmentally friendly methods of work-related travel.

Given the geographical context, together with the size of an organisation, its corporate status and the role in the business of a respondent, we find in Figures 12-15 that change rooms are an appealing initiative already implemented for large firms (more than 200 employees), with varying interest (plan or decided not to do) for non-government and medium sized business (20-199 employees); in contrast EV charging has been implanted in many organisations (especially large ones), although there are quite a few who thought about it but decided not to do it (again large and medium sized firms). The commitment to implementing / rewarding green transport is very strong (especially large firms with a European office) with the exception of financial and insurance services where there is on average a strong negative elasticity response, but we note that those business with offices in South America have a strong negative response after thinking about it but deciding not to do it. Finally, there is significant heterogeneity in support for an organisation providing public transport subsidy (one might call this the 'good citizen effect'); however, the strength of the impact while being very strong as an implemented initiative in some businesses, is negated by a greater positive stronger response after thinking about it but deciding not to do it. The findings also suggest that the response to 'interesting', and 'plan to do it' is encouraging for all four green travel initiatives, adding to an overall conclusion that there is a real opportunity to promote the considered initiatives to a widening set or NMSPs, given the relative support and success to date.

4. What is the important message from the engagement for NSMPs?

The results show that organisations in the UK are less likely to plan to adopt any of these green initiatives. Private business which are not listed are less likely to adopt any of these except for public transport subsidy which was not significant. Medium businesses are more likely to adopt

strategies to reward sustainable travel and install EV charging stations, and large businesses are more likely to adopt strategies to reward sustainable travel relative to small business, but less likely relative to medium businesses. If the organisation has offices in Europe, they are more likely to adopt sustainable travel rewards system and EV charging stations.

Focusing on the alternative referring to organisations that have implemented the different services, results show that businesses in the UK are less likely to have implemented any of the services, except for changing rooms - whereas organisations in the USA are less likely to have implemented them. In Australia, organisations are less likely to have implemented EV charging stations – although they are more likely to than organisations located in the UK. Businesses that are private or NGO's are less likely to have implemented changing room facilities. Large businesses are more likely to have implemented all strategies, except for public transport subsidies, where business size was not significant. Medium businesses are more likely to have implemented sustainable travel rewards and EV charging stations than small businesses (but less than large businesses). Organisations that have offices in Europe are more likely to have implemented sustainable travel rewards and EV charging stations.

For services that have ceased to be offered, results show that organisations in the UK are less likely to have ceased to offer all except subsidies for public transport, and in Australia less likely to have ceased to offer sustainable travel rewards. Medium businesses are more likely to have ceased to offer EV charging stations, also organisations that have offices in Europe.

Organisations in the USA are less likely to not have thought of public transport subsidies and changing rooms facilities. Medium businesses are more likely to not have thought of offering EV charging stations. If the organisation has offices in Asia or Europe, they are less likely to no have thought of changing room facilities. Organisations with offices in North America are more likely to not have thought of public transport subsidies, and in Oceania more likely to not have thought of EV charging stations.

Organisations in the sector of health care and social assistance are less likely to be in the "we would not implement" category for public transport subsidies. Medium and large businesses seem to be more willing to implement all strategies except for sustainable travel rewards (which was not statistically significant). If the organisation has offices in Europe, they are less likely to be opposed to implementing changing rooms, with offices in Oceania more likely to not implement public transport subsidies, and with offices in South America, less likely to be opposed to public transport subsidies and sustainable travel rewards.

5. Conclusions

Mobility as a Feature (MaaF) is one interpretation of a revised eco-system for MaaS and has informed us of the potential opportunities that can be invoked through participation of NMSPs in a multi-service eco-system that embeds a multi-modal or uni-modal transport service delivery plan. To understand whether this has prospects, we undertook a survey of decision-makers within businesses in six countries across four world regions to identify initiatives that are already in place, and that align well with contributing to sustainable travel behaviour goals. This paper has presented the evidence from the empirical inquiry.

Given the evidence from in-depth interviewers that preceded the online survey, together with the online survey, there is evidence that many NMSPs are committed to actions that are seen as

contributing not only to the businesses social licence, but that it also adds a difference to the sustainability outcomes of employees and other stakeholders in respect of the broad societal gaols often cited such as reduced emissions and the wellbeing of stakeholders.

Although the focus of the detailed analysis is on the four green initiatives, the in-depth interviews that informed the online survey together with the 14 initiatives assessed and reported in Figures 4-9, can be extended to include the following identified NMSPs opportunities that if introduced may motivate end-users, staff and/or suppliers to use more sustainable modes of transport:

- Rewards for commuting via sustainable modes of transport, e.g., discounts for workplace cafeteria etc.
- Free parking for car-poolers
- Free charging for EVs and hybrid vehicles
- Free shuttle buses between transport hubs and workplaces / venues and shopping centres
- Discounts (minimum 10%) / free gifts at shopping centres
- Discount on ticket price at event
- Free drink/side dish etc at restaurant if travel outside peak hour
- Rewards, e.g. discounts for delivery to central location rather than door to door
- Upgrade in seating at venues / backstage pass / discount on merchandise / free refreshments
- Loyalty programs which accumulate points
- Special experiences / products to reward behaviour change that goes above and beyond

We note that up to 6.7% of respondents indicated "other" as the reason to explain why their organisation never considered providing the services, which is something to be investigated in future research.

The modelling evidence supports the *a priori* view that European countries have led a program of initiatives provided by NMSPs that align with green initiatives that translate directly through to traveller behaviour activity increasingly aligned with greater use of public transport and active modes, and where the private car continues to be used, the incentive to have free charging if the car is an EV[10]. We can conclude from the modelling exercise that NMSPs have the capability to influence traveller behaviour in ways that align with societal objectives and that there is increased scope to work with NMSPs to achieve non-marginal and scalable gains without having to form complex partnerships with transport service providers. Hensher and Nelson (2024) document 15 case studies to illustrate very specific initiatives that align with the aspirations of MaaS/MaaF.

[10] This is interesting also in the context of European countries, particularly those in the north, having established leadership in the development of MaaS solutions (see for example, Eckhardt and Aapaoja, (2016) for Finland; Hult et al. (2021) and Karlsson et al. (2016) for Sweden and Berretta (2022) for Milan).

What will be important is the role that government can and should play in supporting the role that NMSPs can have, and this will, as a minimum, take an information procurement role to share evidence of NMSPs success in achieving benefits to their stakeholders that at the same time are aligned with sustainable development goals (SDG), and hence good citizenry outcomes. This will be critical given that poor governance has hampered many MaaS initiatives to date (Mulley and Nelson, 2020; Akse et al, 2023). Ideally, we would like to see government extend beyond this role to provide, through clearly defined KPIs, some financial rewards and a digital badge in recognition of how a NMSP has contributed through travel behaviour change to government-defined social and environmental objectives.

If the efforts of government and NMSPs are progressed, there appears to be no reason why scalability should not become possible, even without the need for transport service providers to form a MaaS consortium, since the modes already exist or could be provided to the market as separate modal services. This is an important finding that does not depend on the transport service providers other than their presence in providing services in the market to anyone wishing to use them.

Our findings suggest a re-interpretation of what a future MaaS portfolio may look like, noting that much is already happening, but that it has never been recognised as MaaS/MaaF-like initiatives. If we can accumulate all of the evidence across the many thousands of businesses, then we suggest that we have identified a significant amount of MaaS/MaaF like activity. Crucially, this scalable future does not depend on transport service providers working together. As we noted earlier, the focus historically on transport service providers appears to have been a major roadblock in progressing MaaS.

The future we have outlined might be better described as ‘Sustainable Mobility Initiatives of Business’ (SMIB). With hundreds of thousands of businesses, even small contributions to changing traveller behaviour through a range of green and other initiatives, can translate into significant sustainability-related outcomes, something that appears to be a challenge in most countries that are relying on a MaaS PAYG and subscription program focussed mainly on transport service incentives. While the latter should not be discouraged, it appears to lack the scalability needed to significantly impact the criteria that define positive changes to sustainable mobility. Also, given the stronger “green commitments” by organisations Europe identified in this study, future work could look at transferability of ideas / experiences within organisations based in Europe to their offices in other continents.

The ongoing challenge, however, is to find an efficient mechanism to capture and report the green and non-green initiatives offered by the many organisations that are taken up by stakeholders, be they employees or others. This is required to capture the evidence to account for the contribution to sustainable traveller activity as well as to assess compliance with government-determined KPIs so that stakeholders, and even the organisation, can receive financial rewards, and the organisation can be recognised through a social and environmental digital badge. Through this capture and sharing, organisations may see value in initiatives that have been giving their competitors an advantage in hiring in a marketplace that is exhibiting

more flexible working arrangements. Government may have to consider tax concessions since these often ensure that industry hears and acts.

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Appendix A

Table A.1. MNL results for the four green initiatives.

Description	Alternative	PT subsidy	Rewarding green transport	Change Room	EV charging
		Mean (t-value)	Mean (t-value)	Mean (t-value)	Mean (t-value)
Alternative specific constant	My organisation plans to do it	0.126 (1.11)	-0.032 (-0.15)	0.800 (5.50)	0.144 (0.82)
Alternative specific constant	My organisation has implemented it	0.218 (2.20)	-0.052 (-0.28)	1.646 (8.44)	0.359 (1.71)
Alternative specific constant	Don't know / Not applicable	2.349 (5.75)	1.822 (4.45)	2.541 (5.81)	2.098 (5.02)
Alternative specific constant	My organisation has ceased to do it	-1.016 (-6.54)	-0.300 (-1.30)	-0.633 (-3.43)	-0.590 (-1.50)
Alternative specific constant	Something we have not thought about but sounds interesting	-0.277 (-2.11)	0.119 (1.06)	0.208 (0.97)	-0.419 (-2.43)
Alternative specific constant	Something we would not implement	0.936 (6.47)	0.393 (3.66)	1.279 (7.35)	0.854 (5.30)
UK (1,0)	My organisation plans to do it	-0.804 (-3.73)	-1.113 (-4.44)	-1.148 (-4.55)	-0.830 (-3.34)
Role Executive Senior Management (1,0)	My organisation plans to do it	-	-	-	0.360 (1.91)
Sector Construction (1,0)	My organisation plans to do it	-	0.634 (2.69)	-	-
Organisation type Private - non-listed (1,0)	My organisation plans to do it	-	-0.423 (-2.41)	-0.686 (-3.37)	-0.451 (-2.60)
Organisation size medium (1,0)	My organisation plans to do it	-	0.719 (3.38)	-	0.424 (1.90)
Organisation size large (1,0)	My organisation plans to do it	-	0.525 (2.32)	-	-
Has offices in Europe (1,0)	My organisation plans to do it	-	0.689 (3.19)	-	0.962 (4.23)
Australia (1,0)	My organisation has implemented it	-	-	-	-0.540 (-2.92)
UK (1,0)	My organisation has implemented it	-	-0.815 (-3.58)	-0.751 (-3.90)	-0.628 (-2.71)
USA (1,0)	My organisation has implemented it	-	-	-0.802 (-4.89)	-
Sector Financial & insurance services (1,0)	My organisation has implemented it	-	-1.155 (-3.32)	-	-
Organisation type Private - listed (1,0)	My organisation has implemented it	-	-	-0.306 (-1.77)	-
Organisation type Private - non-listed (1,0)	My organisation has implemented it	-	-	-0.499 (-2.66)	-
Organisation type Non-Government Organisation (1,0)	My organisation has implemented it	-	-	-0.866 (-2.06)	-

Organisation size medium (1,0)	My organisation has implemented it	-	0.479 (2.33)	-	0.422 (1.67)
Organisation size large (1,0)	My organisation has implemented it	-	0.865 (4.26)	0.847 (5.77)	0.547 (2.73)
Has offices in Europe (1,0)	My organisation has implemented it	-	0.807 (3.87)	-	0.667 (3.04)
UK (1,0)	Don't know / Not applicable	-	-	0.772 (1.77)	-
Role Operations (1,0)	Don't know / Not applicable	-0.729 (-1.78)	-	-	-
Sector Professional, scientific & technical services or Education & training (1,0)	Don't know / Not applicable	-	0.537 (2.43)	-	0.406 (1.88)
Sector Construction (1,0)	Don't know / Not applicable	-0.831 (-2.11)	-	-	-
Sector Health care & social assistance (1,0)	Don't know / Not applicable	-0.852 (-1.89)	-	-	-
Sector Retail trade (1,0)	Don't know / Not applicable	-	0.824 (2.70)	0.696 (2.33)	0.691 (2.33)
Sector Financial & insurance services (1,0)	Don't know / Not applicable	-2.460 (-2.42)	-	-	-1.493 (-2.02)
Organisation type Private - listed (1,0)	Don't know / Not applicable	-1.783 (-4.06)	-1.989 (-4.44)	-1.665 (-3.60)	-1.629 (-3.67)
Organisation type Private - non-listed (1,0)	Don't know / Not applicable	-1.111 (-2.67)	-1.143 (-2.73)	-1.161 (-2.64)	-0.996 (-2.35)
Organisation type Not-for-Profit (1,0)	Don't know / Not applicable	-1.648 (-2.96)	-2.077 (-3.35)	-1.708 (-2.82)	-1.933 (-3.25)
Organisation type Non-Government Organisation (1,0)	Don't know / Not applicable	-3.006 (-2.73)	-2.732 (-2.46)	-2.817 (-2.49)	-2.779 (-2.50)
Organisation type Government (1,0)	Don't know / Not applicable	-1.610 (-3.15)	-1.264 (-2.50)	-1.025 (-1.91)	-1.516 (-2.86)
Organisation size medium (1,0)	Don't know / Not applicable	-1.623 (-6.57)	-1.443 (-5.42)	-2.241 (-8.01)	-1.494 (-5.13)
Organisation size large (1,0)	Don't know / Not applicable	-1.554 (-5.80)	-1.408 (-4.95)	-1.986 (-6.32)	-1.923 (-6.50)
Has offices in Europe (1,0)	Don't know / Not applicable	-	-	-1.002 (-2.39)	-
Australia (1,0)	My organisation has ceased to do it	-	-1.671 (-3.06)	-	-
UK (1,0)	My organisation has ceased to do it	-	-0.614 (-1.88)	-0.642 (-1.88)	-0.675 (-1.73)
USA (1,0)	My organisation has ceased to do it	-	-	-	0.601 (1.90)
Role Executive Senior Management (1,0)	My organisation has ceased to do it	-1.463 (-2.45)	-0.752 (-1.83)	-	-
Role Operations (1,0)	My organisation has ceased to do it	-	-	-	-1.112 (-1.85)
Sector Professional, scientific & technical services or Education & training (1,0)	My organisation has ceased to do it	-	-	-	-0.823 (-2.07)
Organisation type Private - listed (1,0)	My organisation has ceased to do it	-	-0.682 (-2.23)	-	-0.842 (-2.60)
Organisation type Private - non-listed (1,0)	My organisation has ceased to do it	-	-	-	-0.846 (-2.47)
Organisation type Not-for-Profit (1,0)	My organisation has ceased to do it	-	-	-	-2.037 (-1.96)

Organisation type Non-Government Organisation (1,0)	My organisation has ceased to do it	-	-	-	-1.819 (-1.73)
Organisation size medium (1,0)	My organisation has ceased to do it	-	-	-	0.509 (1.66)
Has offices in Europe (1,0)	My organisation has ceased to do it	-	-	-	1.220 (3.47)
Has offices in Oceania (1,0)	My organisation has ceased to do it	-	1.129 (2.34)	-	-
USA (1,0)	Something we have not thought about but sounds interesting	-1.062 (-3.34)	-	-0.538 (-1.93)	-
Sector Financial & insurance services (1,0)	Something we have not thought about but sounds interesting	-	-	0.716 (2.04)	-
Organisation size medium (1,0)	Something we have not thought about but sounds interesting	-	-	-	0.464 (1.88)
Has offices in Asia (1,0)	Something we have not thought about but sounds interesting	-	-	-0.777 (-1.87)	-
Has offices in Europe (1,0)	Something we have not thought about but sounds interesting	-	-	-1.157 (-4.05)	-
Has offices in North America (1,0)	Something we have not thought about but sounds interesting	0.612 (2.21)	-	-	-
Has offices in Oceania (1,0)	Something we have not thought about but sounds interesting	-	-	-	0.399 (2.01)
Sector Health care & social assistance (1,0)	Something we would not implement	-0.480 (-1.74)	-	-	-
Organisation size medium (1,0)	Something we would not implement	-0.875 (-5.04)	-	-1.026 (-5.27)	-0.915 (-3.55)
Organisation size large (1,0)	Something we would not implement	-0.720 (-4.07)	-	-1.052 (-4.45)	-1.067 (-4.91)
Has offices in Europe (1,0)	Something we would not implement	-	-	-0.712 (-3.50)	-
Has offices in Oceania (1,0)	Something we would not implement	0.389 (2.56)	-	-	-
Has offices in South America (1,0)	Something we would not implement	-1.040 (-2.54)	-1.072 (-2.27)	-	-
	Number of parameters estimated	***26***	***32***	***32***	***40***
	Number of organisations	***1207***	***1207***	***1207***	***1207***
	Log-likelihood only constant (observed shares)	***-2252.86***	***-2268.5***	***-2119.56***	***-2254.66***
	Log-likelihood at convergence	***-2138.64***	***-2138.64***	***-1937.85***	***-2093.35***
	Rho-squared vs equal shares	***0.0894***	***0.0894***	***0.1749***	***0.1087***

AIC/n	***3.59***	***3.60***	***3.26***	***3.53***

Table A.2. Direct and Cross Elasticity results – mean (standard deviation).

	DecidedNot	Plan	Implement	Ceased	Interesting	NA	NotDo
PT subsidy							
UK (1,0)	0.016 (0.01)	-0.085 (0.01)	0.020 (0.01)	0.006 (0.00)	0.016 (0.01)	0.015 (0.01)	0.022 (0.01)
USA (1,0)	0.017 (0.01)	0.019 (0.01)	0.021 (0.01)	0.006 (0.00)	-0.089 (0.03)	0.014 (0.01)	0.021 (0.01)
Role Executive Senior Management (1,0)	0.008 (0.00)	0.008 (0.00)	0.010 (0.00)	-0.044 (0.01)	0.006 (0.00)	0.007 (0.00)	0.010 (0.00)
Role Operations (1,0)	0.008 (0.01)	0.008 (0.01)	0.010 (0.01)	0.003 (0.00)	0.006 (0.00)	-0.099 (0.05)	0.021 (0.02)
Sector Construction (1,0)	0.010 (0.01)	0.010 (0.01)	0.013 (0.01)	0.003 (0.00)	0.008 (0.00)	-0.113 (0.05)	0.027 (0.02)
Sector Health care & social assistance (1,0)	0.027 (0.01)	0.026 (0.01)	0.033 (0.01)	0.009 (0.00)	0.020 (0.01)	-0.098 (0.04)	-0.056 (0.02)
Sector Financial & insurance services (1,0)	0.018 (0.01)	0.017 (0.01)	0.022 (0.02)	0.006 (0.00)	0.013 (0.01)	-0.216 (0.12)	0.049 (0.05)
Organisation type Private - listed (1,0)	0.037 (0.02)	0.037 (0.02)	0.046 (0.02)	0.012 (0.01)	0.027 (0.01)	-0.325 (0.10)	0.083 (0.06)
Organisation type Private - non-listed (1,0)	0.027 (0.01)	0.027 (0.01)	0.034 (0.01)	0.009 (0.00)	0.020 (0.01)	-0.226 (0.06)	0.059 (0.04)
Organisation type Not-for-Profit (1,0)	0.035 (0.02)	0.035 (0.02)	0.044 (0.02)	0.012 (0.01)	0.026 (0.01)	-0.308 (0.09)	0.079 (0.06)
Organisation type Non-Government Organisation (1,0)	0.045 (0.02)	0.045 (0.02)	0.056 (0.03)	0.015 (0.01)	0.034 (0.02)	-0.422 (0.14)	0.105 (0.08)
Organisation type Government (1,0)	0.035 (0.01)	0.035 (0.02)	0.043 (0.02)	0.012 (0.01)	0.026 (0.01)	-0.303 (0.09)	0.077 (0.05)
Organisation size medium (1,0)	0.059 (0.01)	0.059 (0.02)	0.073 (0.01)	0.020 (0.01)	0.045 (0.01)	-0.191 (0.06)	-0.112 (0.03)
Organisation size large (1,0)	0.053 (0.01)	0.053 (0.01)	0.066 (0.01)	0.018 (0.00)	0.040 (0.01)	-0.188 (0.06)	-0.087 (0.03)
Has offices in North America (1,0)	-0.013 (0.01)	-0.012 (0.01)	-0.016 (0.01)	-0.005 (0.00)	0.073 (0.02)	-0.012 (0.01)	-0.017 (0.01)
Has offices in Oceania (1,0)	-0.015 (0.00)	-0.015 (0.00)	-0.019 (0.00)	-0.005 (0.00)	-0.010 (0.00)	-0.025 (0.01)	0.075 (0.01)
Has offices in South America (1,0)	0.027 (0.01)	0.027 (0.01)	0.033 (0.01)	0.009 (0.00)	0.017 (0.01)	0.045 (0.03)	-0.136 (0.03)
Rewarding green transport							
Australia (1,0)	0.009 (0.01)	0.016 (0.01)	0.017 (0.01)	-0.077 (0.05)	0.010 (0.01)	0.017 (0.02)	0.013 (0.01)
UK (1,0)	0.047 (0.01)	-0.117 (0.04)	-0.080 (0.02)	-0.022 (0.02)	0.053 (0.02)	0.052 (0.02)	0.067 (0.02)
Role Executive Senior Management (1,0)	0.004 (0.00)	0.006 (0.00)	0.007 (0.00)	-0.035 (0.02)	0.004 (0.00)	0.007 (0.00)	0.005 (0.00)
Sector Professional, scientific & technical services or Education & training (1,0)	-0.008 (0.01)	-0.007 (0.00)	-0.009 (0.01)	-0.004 (0.00)	-0.009 (0.01)	0.086 (0.04)	-0.012 (0.01)
Sector Construction (1,0)	-0.016 (0.01)	0.116 (0.03)	-0.038 (0.02)	-0.008 (0.00)	-0.018 (0.01)	-0.014 (0.01)	-0.023 (0.01)
Sector Retail trade (1,0)	-0.014 (0.01)	-0.011 (0.01)	-0.016 (0.01)	-0.006 (0.01)	-0.015 (0.01)	0.139 (0.06)	-0.020 (0.02)

Sector Financial & insurance services (1,0)	0.023 (0.01)	0.044 (0.03)	-0.156 (0.04)	0.012 (0.01)	0.026 (0.01)	0.020 (0.01)	0.033 (0.01)
Organisation type Private - listed (1,0)	0.041 (0.02)	0.051 (0.02)	0.053 (0.02)	-0.018 (0.02)	0.046 (0.03)	-0.340 (0.12)	0.060 (0.04)
Organisation type Private - non-listed (1,0)	0.033 (0.01)	-0.032 (0.02)	0.052 (0.01)	0.018 (0.01)	0.038 (0.01)	-0.217 (0.06)	0.049 (0.02)
Organisation type Not-for-Profit (1,0)	0.037 (0.02)	0.045 (0.02)	0.046 (0.02)	0.019 (0.01)	0.042 (0.03)	-0.352 (0.12)	0.055 (0.04)
Organisation type Non-Government Organisation (1,0)	0.042 (0.03)	0.049 (0.02)	0.051 (0.02)	0.021 (0.02)	0.047 (0.03)	-0.404 (0.15)	0.062 (0.04)
Organisation type Government (1,0)	0.027 (0.02)	0.034 (0.01)	0.035 (0.01)	0.014 (0.01)	0.031 (0.02)	-0.247 (0.07)	0.040 (0.02)
Organisation size medium (1,0)	-0.003 (0.02)	0.119 (0.02)	0.073 (0.02)	-0.001 (0.01)	-0.004 (0.02)	-0.220 (0.08)	-0.004 (0.02)
Organisation size large (1,0)	-0.010 (0.02)	0.063 (0.02)	0.157 (0.03)	-0.005 (0.01)	-0.012 (0.02)	-0.222 (0.08)	-0.014 (0.02)
Has offices in Europe (1,0)	-0.035 (0.01)	0.072 (0.02)	0.107 (0.02)	-0.014 (0.01)	-0.040 (0.01)	-0.040 (0.02)	-0.052 (0.01)
Has offices in Oceania (1,0)	-0.012 (0.01)	-0.015 (0.01)	-0.016 (0.01)	0.096 (0.04)	-0.013 (0.01)	-0.019 (0.02)	-0.017 (0.01)
Has offices in South America (1,0)	0.024 (0.01)	0.029 (0.01)	0.029 (0.01)	0.009 (0.00)	0.027 (0.01)	0.035 (0.02)	-0.127 (0.02)
Change Room							
UK (1,0)	0.045 (0.03)	-0.087 (0.02)	-0.116 (0.03)	-0.011 (0.01)	0.034 (0.03)	0.196 (0.08)	0.028 (0.03)
USA (1,0)	0.035 (0.01)	0.064 (0.02)	-0.165 (0.02)	0.018 (0.01)	-0.018 (0.01)	0.038 (0.02)	0.042 (0.01)
Sector Retail trade (1,0)	-0.009 (0.01)	-0.009 (0.01)	-0.021 (0.01)	-0.003 (0.00)	-0.006 (0.00)	0.129 (0.05)	-0.027 (0.02)
Sector Financial & insurance services (1,0)	-0.008 (0.00)	-0.012 (0.01)	-0.024 (0.01)	-0.004 (0.00)	0.069 (0.02)	-0.013 (0.01)	-0.012 (0.01)
Organisation type Private - listed (1,0)	0.033 (0.02)	0.049 (0.02)	-0.008 (0.04)	0.013 (0.00)	0.022 (0.01)	-0.290 (0.11)	0.071 (0.05)
Organisation type Private - non-listed (1,0)	0.048 (0.01)	-0.034 (0.02)	-0.026 (0.02)	0.020 (0.00)	0.034 (0.01)	-0.186 (0.06)	0.079 (0.04)
Organisation type Not-for-Profit (1,0)	0.020 (0.02)	0.028 (0.02)	0.062 (0.04)	0.007 (0.01)	0.013 (0.01)	-0.308 (0.11)	0.057 (0.05)
Organisation type Non-Government Organisation (1,0)	0.065 (0.03)	0.096 (0.02)	-0.117 (0.06)	0.025 (0.00)	0.043 (0.02)	-0.393 (0.16)	0.121 (0.07)
Organisation type Government (1,0)	0.014 (0.01)	0.020 (0.01)	0.045 (0.02)	0.005 (0.00)	0.009 (0.01)	-0.204 (0.07)	0.038 (0.03)
Organisation size medium (1,0)	0.059 (0.03)	0.072 (0.02)	0.125 (0.03)	0.023 (0.01)	0.041 (0.02)	-0.259 (0.08)	-0.097 (0.03)
Organisation size large (1,0)	0.012 (0.02)	0.009 (0.03)	0.323 (0.04)	0.004 (0.01)	0.009 (0.01)	-0.265 (0.09)	-0.141 (0.03)
Has offices in Asia (1,0)	0.007 (0.00)	0.010 (0.01)	0.024 (0.01)	0.003 (0.00)	-0.058 (0.02)	0.013 (0.01)	0.010 (0.00)
Has offices in Europe (1,0)	0.034 (0.02)	0.042 (0.02)	0.091 (0.03)	0.014 (0.01)	-0.067 (0.03)	-0.111 (0.05)	-0.052 (0.02)
EV charging							
Australia (1,0)	0.016 (0.01)	0.035 (0.02)	-0.103 (0.02)	0.011 (0.01)	0.016 (0.01)	0.018 (0.01)	0.017 (0.00)
UK (1,0)	0.043 (0.02)	-0.081 (0.02)	-0.068 (0.02)	-0.016 (0.01)	0.043 (0.02)	0.049 (0.02)	0.047 (0.01)
USA (1,0)	-0.004 (0.00)	-0.011 (0.01)	-0.014 (0.01)	0.051 (0.03)	-0.004 (0.00)	-0.006 (0.00)	-0.005 (0.00)
Role Executive Senior Management (1,0)	-0.009 (0.00)	0.061 (0.01)	-0.022 (0.01)	-0.007 (0.01)	-0.010 (0.01)	-0.011 (0.00)	-0.010 (0.00)
Role Operations (1,0)	0.005 (0.00)	0.010 (0.01)	0.015 (0.01)	-0.057 (0.03)	0.005 (0.00)	0.006 (0.00)	0.006 (0.00)

Sector Professional, scientific & technical services or Education & training (1,0)	-0.002 (0.01)	0.002 (0.01)	0.003 (0.01)	-0.050 (0.03)	-0.001 (0.01)	0.076 (0.03)	-0.011 (0.01)
Sector Retail trade (1,0)	-0.010 (0.01)	-0.012 (0.01)	-0.016 (0.01)	-0.005 (0.00)	-0.010 (0.01)	0.124 (0.05)	-0.027 (0.02)
Sector Financial & insurance services (1,0)	0.011 (0.01)	0.012 (0.01)	0.015 (0.01)	0.005 (0.01)	0.010 (0.01)	-0.160 (0.09)	0.034 (0.03)
Organisation type Private - listed (1,0)	0.032 (0.01)	0.055 (0.02)	0.060 (0.02)	-0.052 (0.03)	0.031 (0.01)	-0.293 (0.10)	0.071 (0.05)
Organisation type Private - non-listed (1,0)	0.034 (0.01)	-0.024 (0.02)	0.072 (0.02)	-0.049 (0.03)	0.034 (0.01)	-0.177 (0.05)	0.060 (0.03)
Organisation type Not-for-Profit (1,0)	0.040 (0.01)	0.070 (0.03)	0.076 (0.02)	-0.096 (0.05)	0.038 (0.02)	-0.327 (0.11)	0.085 (0.06)
Organisation type Non-Government Organisation (1,0)	0.044 (0.02)	0.076 (0.03)	0.082 (0.02)	-0.091 (0.05)	0.042 (0.02)	-0.400 (0.15)	0.100 (0.07)
Organisation type Government (1,0)	0.024 (0.01)	0.037 (0.02)	0.039 (0.02)	0.020 (0.01)	0.023 (0.01)	-0.284 (0.09)	0.059 (0.05)
Organisation size medium (1,0)	0.016 (0.02)	0.096 (0.02)	0.104 (0.02)	0.044 (0.02)	0.072 (0.03)	-0.229 (0.07)	-0.134 (0.03)
Organisation size large (1,0)	0.041 (0.02)	0.043 (0.02)	0.196 (0.03)	0.016 (0.01)	0.035 (0.02)	-0.249 (0.08)	-0.130 (0.03)
Has offices in Europe (1,0)	-0.053 (0.02)	0.101 (0.02)	0.052 (0.02)	0.058 (0.03)	-0.046 (0.02)	-0.065 (0.03)	-0.060 (0.02)
Has offices in Oceania (1,0)	-0.009 (0.00)	-0.010 (0.00)	-0.015 (0.01)	-0.003 (0.00)	0.050 (0.01)	-0.010 (0.00)	-0.009 (0.00)

Note: The green cells in Table A.2 represent average direct arc-elasticities (explanatory variable included in that alternative's utility function), and the other cells represent cross arc-elasticities (explanatory variable not in that alternative's utility function). This means that if one level of a category of explanatory variables is included in any utility function, then all the levels of that category will have an indirect influence on the probabilities. For example, if the construction sector is included in the utility function of the NA (not applicable) alternative (as is in the PT subsidy model), then that variable will influence the probability of choosing all alternatives (cross-elasticities), but also other variables in that category, such as the retail trade sector will influence the probabilities (because if everyone works in retail, then the variable construction is assumed equal to 0).

As all variables are dummy, the estimated elasticities (cross or direct) could be summed up for each alternative for interpretation. Taking organisation size as an example, if an organisation grows from small to medium, that will influence their probability across the board (how they respond to each initiative), regardless of which alternative utility the size variable appears. While this is valid interpretation, it is useful to highlight the differences, to recognise, for example, why medium size influences 'implement of PT subsidy' when that dummy was not statistically significant in the model.

Appendix B

A summary of key differences between MaaS and MaaF

Conceptual Overview

- Mobility as a Service (MaaS): A standalone platform that integrates multiple transport modes into a single app or subscription.
- Mobility as a Feature (MaaF): Embeds mobility into broader digital ecosystems (e.g., health, retail, insurance), making transport a seamless part of other services.

Why MaaF May Be Preferable

- Higher adoption: Users engage with mobility through platforms they already use.
- Policy reach: Enables transport access in health, education, and welfare contexts.
- Behavioral realism: Reflects bounded rationality and process heuristics better than MaaS.
- Equity potential: Can be tailored to vulnerable populations (e.g., patients needing hospital access).

Modelling Implications

- MaaF may require nested or hybrid choice models to capture embedded decision-making.
- Process heuristics and contextual triggers (e.g., appointment reminders) become key variables.
- Opportunity to integrate transport access modeling with digital service usage patterns.

Case Studies & Emerging Examples (see also footnote 3)

- Uber Health in Mississippi: Embedded in public health workflows to reduce missed appointments.
- Mobility features in hotel apps: Offering airport transfers or local rides as part of booking.
- Retail platforms: Bundling delivery, parking, or rideshare credits with purchases.