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UberPOOL Services – Approaches from Transport Operators and Policy makers in London

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Abstract

Ridesourcing services such as Uber provide a segment of the total daily trips in Urban cities, for instance its reported that Taxi and Private Hire Vehicle (PHV) mode share were 1.3% of total daily trips in London in 2014 (GLA, 2016) - which includes Ridesourcing - however the adoption of Ridesourcing services is growing rapidly – with Uber reporting 3.5 million users of its services in London – thereby disrupting traditional travel habits in urban areas. The number of PHVs in London has increased by 58% since 2008/09 to over 77,000 in 2016, meanwhile the number of licensed PHV drivers has increased by 81% over the same period, (TFL, 2017) - these include Uber drivers. However, it is not well known, how much of recent changes in people's travel habits, is attributed to Ridesourcing or other tech driven habits.

Conventional transport systems have a limited capacity and are becoming increasingly overloaded in urban areas, creating increasing disruption, congestion and emissions in cities around the world. However, new technology driven, on-demand Ridesourcing business models, that provide low-cost alternative transport to car ownership and public transport - such as those provided by Uber and Lyft – are causing unprecedented disruption to the way urban mobility services are provided and used in urban cities around the world. Ridesourcing is part of the wider phenomenon of the 'sharing economy' that is making people re-think, how they avail services from different sectors such as the Transport (i.e. Uber) and Hotel (i.e. Airbnb) industries. As a result, new types of on-demand shared mobility services (i.e. UberPOOL), which use advanced mobile technologies and Information & Communication Technologies (ICTs) are becoming popular in cities such as London, UK. Shared Ridesourcing services have the potential to increase positive transport behaviors, including reduced single car occupancy and decreased car ownership. this has triggered debate among policy makers, transport planners and transport authorities; however, the impacts for and consequences of these services on conventional public transport are not well understood.

This research provides insights about shared ridesourcing services (i.e. UberPOOL) and potential implications on traditional transport services in an urban context, using Uber operations in London (U.K) as the case study. This paper discusses the current literature on this topic and the key findings from the first phase of a multi-phased research that investigates impacts of shared Ridesourcing services on transport policy and operations. Extensive qualitative interview data was collected from policy makers and operators and key findings from the analyzed data is discussed in this paper. The results help to answer key research questions and provide a broad appreciation of these new disruptive mobility services.

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1. Introduction

Uber services in London received significant press coverage in September 2017 when Transport for London – who regulate private hire vehicles in Greater London – decided not to renew the operating licence for Uber in London, this was followed by a court case and a wider debate on impacts of ridesourcing services on a city's transport network. In June 2018 Uber was given a 15-month temporary licence to continue to operate in London. However, policy makers and regulators have not yet made it clear how such services will be regulated and or managed going forward, except for demanding service providers fulfil the requirements of the current private hire vehicle regulations.

Ridesourcing services such as Uber provide mobility services for a segment of the total daily trips in Urban cities, for instance its reported that Taxi and Private Hire Vehicle (PHV) mode share were only 1.3% of total daily trips in London in 2014 (GLA, 2016) - which includes ridesourcing - however the adoption of ridesourcing services is growing rapidly – with Uber reporting 3.5 million users of its services in London – thereby disrupting traditional travel habits in urban areas. The number of PHVs has increased by 58% since 2008/09 to over 77,000 in 2016, meanwhile the number of licensed PHV drivers has increased by 81% over the same period, (TFL, 2017). However, it is not well known, how much of recent changes in people's travel habits, is attributed to ridesourcing or other tech driven habits.
What is known is, that in many urban areas conventional transport systems have a limited capacity and are becoming increasingly overloaded, creating increasing disruption, congestion and emissions in cities around the world. However, new technology driven, on-demand Ridesourcing business models, that provide low-cost alternative transport to car ownership and public transport - such as those provided by Uber and Lyft – are causing unprecedented disruption to the way urban mobility services are provided and used in urban cities around the world.

Ridesourcing is part of the wider phenomenon of the 'sharing economy' that is making people re-think, how they avail services from different sectors such as the Transport (i.e. Uber) and Hotel (i.e. Airbnb) industries. As a result, new types of on-demand shared mobility services (i.e. UberPOOL), which use advanced mobile technologies and Information & Communication Technologies (ICTs) are becoming popular in urban cities such as London, UK. Ridesourcing services have the potential to drive a number of positive transport behaviours (Laybourn-Langton, 2017), which has triggered debates among policy makers, transport planners and transport authorities; however, the impacts for and consequences of these services on conventional public transport are not well understood.

This paper is a part of a wider research, which aims to provide insights and understandings about impacts of shared ridesourcing services on traditional transport services in an urban context, using Uber's operations in London (U.K) as the case study. This paper discusses the current literature on this topic and the key findings from the first phase of a multi-phased research that investigates impacts of shared ridesourcing services on transport policy. Interview data was collected from 30 different experts, policy and transport operators. this qualitative data was analysed and key findings presented. The findings help answer some key research questions and provide a broad appreciation of UberPOOL operations and how such services are impacting transport policy and operations in Greater London.

UberPOOL is categorized as 'on-demand, app based, shared ridesourcing service' which, is offered via a smartphone app (Uber App) to provide shared rides using traditional UberX vehicle. UberPOOL began in the San Francisco, USA but has been operational in London since December 2015.

2. Literature review

Ridesourcing is first defined as a new type of ridesharing which can provide services that use Geographic Information Systems (GIS) and global positioning systems (GPS) technologies on Internet-enabled "smartphones" to organize ridesharing in real time, just minutes before the trip takes place (Chan & Shaheen, 2012). Furthermore (Henao & Marshall, 2017), define ridesourcing as 'the sourcing of rides from a for-fare driver pool accessible through an app-based platform'. Principally, it is an emerging business model that is providing an efficient alternative to car ownership. Ridesourcing platforms allow individuals to use their personal car to transport others for a fee. Customers use a smart phone application to request a ride and to track the location of the requested vehicle. After the ride, payment is processed automatically via the app, and the customer rates the quality of service provided by the driver. The largest ridesourcing company to date is Uber (Shared-use Mobility Centre,, 2015). Lyft is another major player in the USA market. According to (TCRP, 2016), Ridesourcing has become one of the most ubiquitous forms of shared mobility. The term "Shared-Ridesourcing" has been introduced to describe pooled ridesourcing services (i.e. Ridesourcing service that combines more than 1 trip).

Ridesourcing services are similar to those offered by taxis. However, Taxis have not been a viable alternative to owning a car because they are relatively expensive and less convenient than owning a car. Ridesourcing, on the other hand, is beginning to rival ownership on both price and convenience. Since ridesourcing is generally cheaper than taking a taxi (Uber, 2014). In terms of convenience, a survey conducted in San Francisco, where Ridesourcing was first introduced, estimated an average wait time of 2.5 minutes in comparison to 15 minutes for taxis (Rayle, et al., 2014).

Ridesourcing has some unique user and service characteristics as depicted in figure.1, but also shares some similarities with other modes such as ridesharing and taxi. Research by (Chen, 2015) in U.S.A indicates that social and recreational trips are the predominant type of trips used for ridesourcing followed by work trips; trips lengths are shorter and more frequent with a higher occupancy rates. This research shows that ridesourcing users tend to be younger (18 - 24 and 25-34); better educated and higher earning than the average USA population. Highest percentage (51%) of those surveyed as part of the study, reported their trip purposes were to avoid driving while intoxicated, whilst 46% stated it was for social/leisure purposes (e.g. bar, restaurant, concert, visiting friends and family), and 40% were getting to or from the airport. Only 3% of respondents indicated they use ridesourcing for getting somewhere faster than public transport (Chen, 2015). The main reasons why people chose to use ridesourcing was due to its Convenience, Speed, Cost (cheaper), Safety, Modern (trendy) and friends use it. Furthermore, 74% of respondents in another study stated they use ridesourcing services because it is more accessible then public transport (Zhao & Dawes, 2016).

(Rayle, et al., 2016), argues that ridesourcing service characteristics differ in terms of user types, wait times, and trips served compared to conventional taxi and habitual public transport users mainly rely on ridesourcing in certain situations (e.g. during bad weather etc.), therefore allowing for a car free lifestyle. 43% of respondents indicated, they did not own a car and 47% of trips started somewhere other than home (i.e. gym, bar etc.) whilst 40% were home-based. However previous research has not covered the perspectives of the drivers who provide the service.
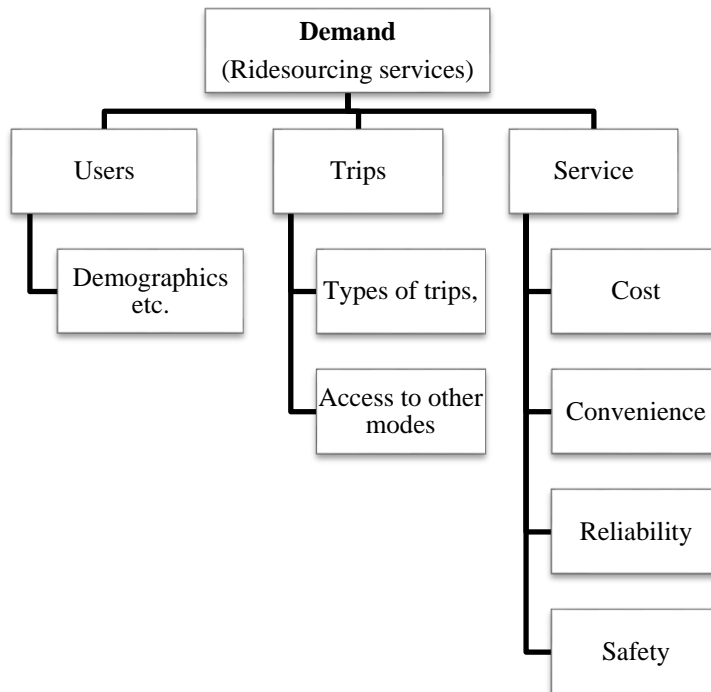
Figure 1: Ridesourcing service characteristics (source: Author's own).

The research objectives are to: (a) Improve understanding of new technology-enabled Ridesourcing mobility services such as UberPOOL and (b) Understand implications for transport policy makers and operators in urban cities.

3. Methodology

3.1. Case study

London and Uber services were used as a case study for this research because London provides a comprehensive case to understand impacts of shared and non-shared ridesourcing services; it has a single transport authority – Transport for London – with a well-integrated public transport system and major problems with congestion and emissions from cars. Additionally, Uber is the largest Ridesourcing operator in Greater London and UK.

Furthermore, London has one of the most developed urban public transport networks in Europe (TfL 2017) and both UberPOOL and UberX are available in London, which has seen one of the largest growth areas for Uber in terms of registered Uber drivers and number of trips.

3.2. Methods

There are primarily two broad methods that are undertaken in an empirical research – quantitative methods and qualitative methods. While the actual research (data collection and data analysis) may involve a variety of individual methods for both qualitative and quantitative approaches, there are basic differences inherent in the two. Quantitative method is most suited in cases where a positivistic approach is undertaken (Moser & Kalton, 2017); (Patriksson, 2015), while qualitative methods are more conducive to a phenomenological research approach (Lewis, 2015).

Positivistic approach is required when the aim of the research is to obtain data from controlled settings, as in the case of experiments, or when the inputs are to be obtained in a substantially structured manner, as in the case of multiple-choice surveys. Phenomenological approach is more suited in cases where the need is to obtain rich and contextual, often subjective inputs from the participants. This is appropriate when the research participants are an authority over the subject manner, or where it is important to consider the context and subjectivity of the situation to understand the dynamics of the variables (Lewis, 2015). Both the methods have certain advantages as well as suffer from limitations. For example, qualitative methods require interacting with each research participant in a relatively larger time framework – than what may be needed for conducting a survey to collect quantitative data (Moser & Kalton, 2017).

Qualitative research can be undertaken by employing several research methods, ranging from document analysis, participant observations, focus group and one-to-one interviews to accompanied interviews, paired interviews, triads, or brain storming and mini groups. Interviews were selected as the most suitable qualitative method for this research because interviews provide for a closer interaction with the participants and provide greater freedom and privacy to them to give their opinions. However, these are time consuming and require the skills of an effective interviewer who can elicit maximum information. Interviews are used in transportation studies as they provide a chance to obtain information from people who are either experts or stakeholders in the system (Browne & Ryan, 2011).

Accordingly, a number of key research questions were developed to address knowledge gaps identified in the literature review including:

* *Do transport authorities, and the conventional public transport understand the impact of Shared Ridesourcing, if so what are they doing about it?*

To achieve the research objectives, a qualitative approach was adopted, which entailed interview data from policy makers, experts and transport operators. An interview questionnaire was developed based on principle research questions. The interviews were undertaken using a semi-structured format, either face to face, via Skype or by Telephone. The recruitment of interviewees was done in different ways, mainly through industry contacts, local transport agencies and operators were all happy to connect the researcher with the correct person. All interviewees were emailed the interview questionnaire template, research brief and consent form in advance and interviews were scheduled. Some 30 different transport policy makers, transport operators, innovators and industry experts were interviewed to understand what policy makers and the public transport industry is doing about the emergence of Ridesourcing services. Table.1 shows list of different organisations that interviewees represented. Representatives from 4 different departments were interviewed for Transport for London (TfL).

Table 1: Keys organizations Represented by Interviewees

Organization	Role of Interviewee	Organization	Role of Interviewee
Transport for London (TfL)	Policy Makers, Regulator and Experts	National Express	Operator
Department for Transport (DfT)	Policy Maker and Expert	Stagecoach	Operator
Transport Systems Catapult	Innovator and Expert	Lothian Buses	Operator
Urban Transport Group	Policy Maker and Expert	First Group	Operator
Transport For Edinburgh	Policy Makers and Regulator	Tower Transit	Operator
International Association of Public Transport (UITP)	NGO, Experts, sustainable transport advocates	UC Berkeley	Subject Matter Expert / Researcher
Confederation of Passenger Transport (CPT)	NGO, Experts, UK bus industry advocates	University College London (UCL)	Subject Matter Expert / Researcher
Milton Keynes Council	Policy Maker, Regulator and Experts	Imperial College London	Subject Matter Expert / Researcher
Uber (UK)	Ridesourcing service provider / TNC	Transport Studies Unit (TSU), Oxford	Subject Matter Expert / Researcher
Hertz	Innovator / service provider	Keolis	Operator

The collected interview data was transcribed and analyzed using qualitative data analysis software NVIVO 11. This software was chosen because it is designed to help researchers organize, analyze and find insights in unstructured, or qualitative data such as interviews (qsr international, 2017). NVIVO is considered useful in qualitative data analysis; it can help improve the rigor of the analysis process by validating (or not) some of the researcher's own impressions of the data, because it's designed to carry out administrative tasks of organizing the data more efficiently (Welsh, 2002). Figure.2, demonstrates key steps that were followed in developing and executing the methodology for this research.
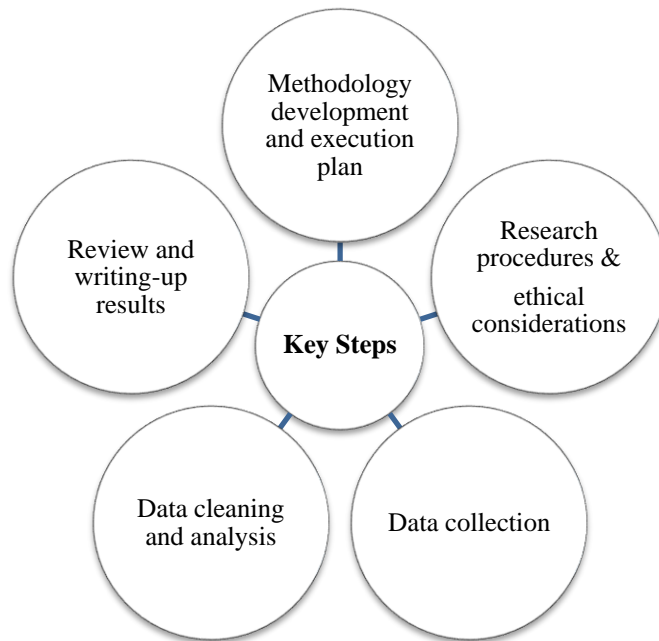

Figure 2: Key steps taken (source: Author's own)

Interview data is analyzed in several ways which may include manual content analysis (coding and theme development manually) or thematic content analysis using tools like SPSS (Statistical Package for the Social Sciences) or NVIVO. Conducting analysis using software tools such as NVIVO provides several advantages over doing it manually. For example, software provides more accurate and thorough coding and interpretation of the data, reduces time used for the process, and also enables better management of the data and the analysis (Eboli & Mazzulla, 2007). Qualitative data analysis requires providing for any subjective bias (which might enter in the case of manual analysis) and using software can eliminate such limitations. Qualitative analysis software has been successfully employed by researchers in transport studies. For example (Carr, 2008) used software to analyze data collected from interviews in a case-study based research to assess employee interest in public transport for commuting to work.

4. Findings and discussions

The views and approaches from policy makers and transport operators varied widely, but all of those interviewed where unsure about how to deal with Ridesourcing services and had no immediate plans for how they would deal with or manage such services. Some of the public transport operators interviewed indicated they are looking at the impacts of these new mobility services and some operators stated they are developing concepts that include on-demand services or collaborating with other Mobility as a Service (MaaS) initiatives. Data from public bus operator in London indicates the way public transport bus services contracts are managed influences how quickly operators innovate and develop innovative shared-mobility solution. Overall, the policy makers and transport operators in London can be seen as somewhat lagging behind in responding to new Ridesourcing services.

Key findings from interview data with policy makers, transport operators, experts and transport authority representatives shows that the public transport sector has not caught up with the disruptions caused by new technology driven mobility services such as UberPOOL both from a policymaking and operational perspectives.

Key findings include:

- **There are currently no mechanisms in place in London to monitor the impacts** of services like UberPOOL, or Uber in general and none of the policy makers, transport authorities or operators interviewed had short term plans to undertake any monitoring. Therefore, the specific impacts of Ridesourcing are unknown and not quantifiable at present. However, this may change if TfL makes arrangements with Uber to provide usage and impact data as part of any new licensing regime

- **Transport authorities and Operators are unprepared for regulating or managing such disruptive services.** There have been no new regulations or guidelines developed for Ridesourcing services in London, and these services currently operate under the private hire vehicle licensing system which was developed in 1998 and 2000. These regulations are deemed generally outdated for Ridesourcing services, because the way Ridesourcing services such as Uber operate, is technically not a typical black taxi service - which can be hailed or stopped on the street without prior booking - or a traditional minicab, which requires a pre-booking. Also Ridesourcing operators do not consider themselves as taxi companies, but rather a technology company and drivers as self-employed. Therefore, the issues of regulation needs to be addressed if Ridesourcing is to become a mainstream transport option. A key policy maker in London stated *"there are no regulatory changes planned, at the moment".* And then added "*there comes a time where there is a whole proliferation of services which are completely unmanaged, unregulated, we then have to start thinking what powers do we need to actually deal with this. You got to have some control. they are carrying passengers, offering transport for hire, people are paying fares, so it kind of fits into that whole public transport network and we really need to have management of that".* Where another policy maker stated *"it's not really carved out as a niche in the regulations whereas perhaps it should because it's almost treated the same way as just Uber standard, kind of like minicabs and it probably does need a slightly different set of criteria especially when you've got different fares being made. I think that then adds another layer of regulation".*

    In general transport authorities are unsure of how to deal with Ridesourcing services. representatives from transport authorities, stated *The taxi and private hire vehicles were working amenably alongside each other until Uber came along, "we just didn't foresee it was going to take off the way it did".* He added *"I think there has been a bit of a defensive approach because Uber has come along and we kind of got our fingers burned a bit, because we suddenly got this massive number of drivers, Uber challenges everything we do, because they don't like regulatory barriers".* Another policy maker added *"this is covered within the mayor's draft transport strategy; however, it doesn't sort of set clear plan for that specific element. Generally shared occupancy is a good thing, all be it, it's still by road transport, and as you are probably aware the main thrust of the mayor's transport strategy is to achieve that 80% sustainable mode target, which is enormously demanding so everything has to be seen in that context.",* which further illustrates the need for both sides (transport agencies, Ridesourcing service providers) to collaborate and work together to better develop and regulate and manage these new mobility solutions.

- **Transport authorities have concerns about passenger safety**, mainly due to apprehension following media reports about passenger assaults including some convictions. Policy makers stated "*we have concerns but we are not aware of any incidents where people's safety has been compromised by the use of UberPOOL*". Another policy maker added *"The safety and security risk has merit. There are some driver concerns. There isn't the same level of driver controls as we have on black cab drivers who have undergone "the knowledge" and have gone through a lot of driver training. It's not quite the same in the private hire sphere in general and so I think that those are probably some concerns*". This is in contrast to the views from drivers who reported high levels of customer satisfaction due to having the ability to monitor the entire Uber trip, know details of the vehicle, driver and journey route via the Uber application, which can be shared with friend or relatives if needed.

However, there is still the question of who is responsible when there is an issue between two UberPOOL passengers, which is an issue the drivers are struggling with, since there is no guidance from regulators or Uber. This was also raised by one of the policy makers who stated *"I think probably the biggest thing is probably safety. It has to be safety. If you're possibly a lone woman maybe in a car, then the driver almost becomes the person responsible for making sure that they arbitrate between passengers who are arguing or if someone does something inappropriate to a woman".* This important point is further complicated by the recent issues with the decision by TfL to not renew the operating license for Uber and the ongoing court case, highly politicized media coverage and various lobby groups such as the black cab association

- **Policy makers indicate support for innovation but are struggling to keep up with the pace of change**. This partly due to the time it takes to develop policies and regulations and get it approved through the considerable layers of bureaucracy in central and local government but also the pace at which these new mobility services are being developed and introduced in cities is unprecedented. So not only is there capacity issues but also administrative and political constrains. Policy makers stated that *"we are working on this as a team and hope to get answers"* and added *"I think ridesharing and being able to take what would be a journey in a single car and kind of pooling them into one car, say multiple cars into single cars is definitely helpful. We've set out a very clear vision that by 2041 we want 80% of journeys to be undertaken by public transport, walking or cycling within Central London as part of the mayor's transport strategy and the only way to achieve that is to start pushing people away from private car ownership so anything that can help with that is really helpful but it will entirely depend on where it is".* Another policy maker stated "*Thinking about how we can get evidences is one of the things. I think there's a bit of difficulty as well because the pace at which these disruptive things come along they can get a user base very quickly*"

- **Experts view ridesourcing as key part of future transport system.** Most of the experts interviewed felt that ridesourcing would be a key part of future transport system, specifically in urban context as it combines convenience, innovation and efficiency. An expert stated *"... the digitization of private hire transport, which Uber's done and smartphones enabled, definitely offers a new opportunity to change how we manage public transport and public transport subsidy".* Another expert added "*I think that ridesourcing services are much developed to offer flexible on-demand solutions that are more personalized and corresponding better to the way future generations travel and we can already see now trends of multimodality*" whilst further adding *"... looking towards the future, I think these kind of services will be much more integrated into public transport system. I think what could be optimized in those cities that have a very good cooperation with taxis or with other on-demand services, is the public transport system with shared ridesourcing and potentially shared autonomous vehicles".*

- **Transport operators view ridesourcing both as an opportunity and a challenge.** Transport operators both within Greater London and outside highlighted the potential opportunities that on-demand mobility services can offer as part of a wider transport services offering, but also the challenges which the likes of Uber bring in terms of impacting bus patronage and service profitability. Several operators explained that they have already started to think about what ridesourcing would mean for their business models and how they can work with service providers or develop their own shared ridesourcing solutions, for example Arriva group, who are developing an on-demand shared ridesourcing service called Arriva-click, initially as a pilot, but with a view to future rollout. An operator stated "… we *would look to collaborate with such services in the future, maybe as part of a wider integrated transport services"* and further added "*when a new competitor arises, you up the game, you compete better, get your own product better, make your own product of buses more attractive. There is potentially some scope for being complementary, probably less so with buses than with trains".* None of the transport operators (which included some that operate across the UK and internationally), knew actual impact of services such as Uber as they did not collect any data related to ridesourcing and whether or not public transport passengers were switching to ridesourcing.

Interviewees were given a set of *'what if'* scenarios, including what interviewees thought should be done, *"if the introduction of Uber is adding more cars to the road and as a result creating more congestion and emission"?* And *"if Uber is reducing car ownership but taking customers away from public transport"*. Key responses included.

- This should be managed using a combination of taxation and regulation. This could include congestion charge type levies
- The number of private hire vehicles should be capped. Currently it's not possible to distinguish how many of the registered private hire vehicles in London are operating under Ridesourcing services such as Uber.
- Uber type services should be encouraged where they complement public transport services and reduce single car occupancy and car ownership, such as key first/last mile trips and areas where bus ridership is low or has limited services. Policy maker stated *"Where I think we probably want to put more thought in the future and which might start to be incorporated more, is guidelines to local authorities to try to encourage these services to be complimentary to public transport"*. and a public transport operator stated "*I think the reason for smaller more agile vehicles are not in direct competition to the big buses, I think they should be in places the big buses don't go at all, so I would say the latest CM2 from City-mapper (*an on demand bus service provider*) saying we've actually studied this as a whole and people want to go from this place and that place and nobody served it or do it on the edges in the middle of the night or on the outskirts that's where the transport network companies (i.e. Uber) should support"*.
- The efficiency and attractiveness of public transport services should be enhanced, especially bus services where ridership has been decreasing in recent years. Most operators and local transport authority interviewees hope that shared Ridesourcing supports public transport usage in the longer term, although they are not sure how this will happen in reality. Focusing on first/last mile trips and areas with limited access to public transport or where ridership is low on existing services was mentioned by both policy makers and operators. However, this is rather opposite of areas where Uber currently focuses and is suited to, which are high density, high demand areas, that are also the locations with the highest public transport accessibility levels i.e. zone 1 in London. Accordingly, if Uber is to support the provision of shared transport services in low-dense areas where public transport is limited then policy makers need to recognise the need to work with public transport operators and shared Ridesourcing service providers to establish a model that works for all parties involved and benefits the public users.
- Collecting data specific to Ridesourcing and its impact and undertaking pilot initiatives with the private sector and innovators was highlighted as important part of the learning and developmental stage of shared mobility solutions.

It was noted by transport operators and transport authority representatives that ridesourcing is providing efficient mobility options in most cases and it has the potential to considerably support mass transit, during large events, when there are Train / Tube strikes or cancelations and late at nights. Moreover, the responses indicated the need for a joint approach on driver welfare (i.e. working hours, unions etc.), service regulations (i.e. number of drivers, taxation etc.) and the need to collect impact data to support any new policy measures.

4.1. Research limitations

This research yielded valuable data, information and insights to contribute to the body of knowledge available on ridesourcing. However as with other research topics of this type, there were limitations as highlighted below.

- *Lack of prior research studies on the topic and availability of data.* There is a major lack of reliable published research data on ridesourcing and its impact on transport policy and operations. Furthermore, transport authorities and operators currently do not collect data on any ridesourcing services in London (i.e. Uber) and service providers such as Uber do not share data, which makes difficult to understand what impact these services are having in cities like London. This underlines the importance of this type of research in understanding these types of disruptive mobility services.
- *Interview data.* This research heavily relied on interview data, which has its limitations in terms independent verification (i.e. you have to take what the interviewees say) and potential for biases such as selective memory, self-attribution and exaggeration.

- *Access to interviewees.* It is worth noting, the principle researcher was only able to interview those who accepted the invitation for the research interview. Although interviews were held with representatives from all key stakeholders in London, there were several senior management staff who could not participate.

5. Conclusion

The potentials of shared ridesourcing services are many, be it the potential to reduce single car occupancy or complement public transport. however, we need to understand the real impact of services such as UberPOOL, which are providing disruptive new mobility options that transport authorities and policy makers are yet to keep up with.

This research set out to investigate key research questions, using data from interviews with policy makers, experts, innovators and public transport operators and the following important inferences have been made:

Research question: Do transport authorities, and the conventional public transport sector understand the impact of Shared Ridesourcing, if so what are they doing about it?

There are currently no mechanisms in place to monitor or assess the impacts from Ridesourcing services in London, which results in a genuine lack of understanding from policy makers and transport authorities thereby not getting to grips, of how to approach these services, in terms of regulations, operational guidelines, integration with other modes and future transport systems. Public transport bus operators appear to be more proactive in terms of looking at on-demand shared solutions that may complement some bus services or fill gaps in the network – such as Tower Transit with the CM2 – night rider – service *(an on-demand night bus service from City Mapper and operated by Tower Transit (with the Impact Group) that operates between Aldgate East and Highbury & Islington via Shoreditch and Dalston. This service relies on user data, where City Mapper uses analysis software tool to identify gaps in cities' transport networks, based on the demand, they pick up through their app.)* and Arriva with its ArrivaClick service *(This is an on-demand and flexible luxury minibus service that takes multiple passengers heading in the same direction and books them into a shared vehicle using an app).* In Greater London most of the public bus operators indicated the lack of innovation and integration with new mobility solutions was mainly due to how public transport bus services are setup in Greater London, which is a fixed term and fixed route contract regardless of number of users for each route. As such operators are looking to TfL to provide guidance and changes in how services are planned and provided, taking into account new shared mobility solutions. Subsequent to the data collection stage for this research, there has been high profile case involving Uber and the non-renewal of its license in London, which has been highly politicized and received global media coverage. As a result, TfL recently issued a draft policy paper on Ridesourcing, which indicates that policy makers and regulators will be taking steps to address some of the policy and regulatory gaps that currently exist.

Throughout the interviews, it was widely acknowledged that these disruptive services are popular with users and are providing a convenient and cost-effective mobility to users, but lack of data, pace of change, understanding of its specific impacts and (to some extent) political-will, have all contributed to inactivity amongst policy makers, public transport operators and regulatory bodies.

As a result of the findings from this research, the following key recommendations are made;

- **Development of specific Transport Policy** for Ridesourcing services and more specifically for Shared Ridesourcing services. This should take into account input from important stakeholders (i.e. service providers, transport operators, users and drivers).
- **Development of new regulations** for Ridesourcing services. This should cover companies providing new mobility solutions, the type of service provided, the drivers and provide clear responsibilities without constraining innovation and future development of Ridesourcing
- **Development of monitoring mechanisms** for Ridesourcing services. This could involve agreements with service providers to provide regular data to transport authorities as part of the licencing agreements, or transport authorities could establish a periodical data collection as part of the existing national travel surveys.

It is evident the impacts of ridesourcing services is under researched and findings from this research provide a basis to build on. Further qualitative and quantitative data will be collected and analyzed during the next phases of this research. This will help shed light on the implications of these new disruptive mobility services on public transport using empirical evidence. Moreover, the findings from this research can be used to develop a framework, which transport authorities can use, in order to collaborate service providers and maximize the benefits from these new technologically driven and on-demand mobility options.

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