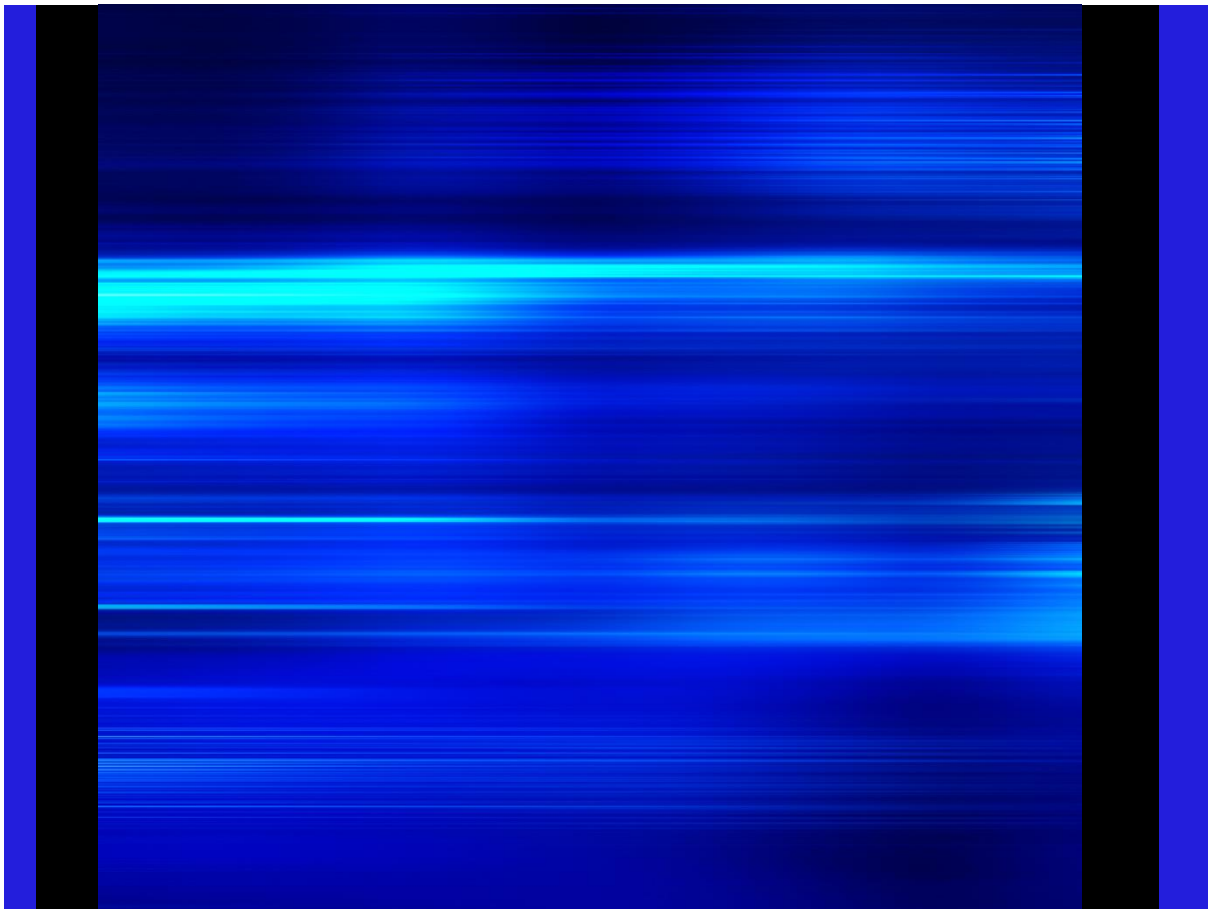


Final Report

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Taxi Demand Study
17 August 2023



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1. General

This study has been conducted by Jacobs on behalf of Dundee City Council (DCC). The overall objective is to provide a full survey of demand for taxis in Dundee and to determine whether significant unmet demand for taxis exists in terms of section 10 (3) of the Civic Government (Scotland) Act 1982. Specific objectives of the study are to determine:

- Whether there is any significant unmet demand for taxi services in Dundee; and
- If significant unmet demand is found, recommend how many licences would be required to meet this.

In 2007 the Scottish Government issued Best Practice Guidance for Taxi and Private Hire licensing. The Scottish Government reissued this guidance in April 2012 in recognition of a number of legislative changes and stated that the present legal position on quantity restrictions for taxis is set out in section 10 (3) of the 1982 Act. The Scottish Government takes the view that decisions as to the case for limiting taxi licences should remain a matter for licensing authorities in light of local circumstances. The Guidance also provides local authorities with assistance in local decision making when they are determining the licensing policies for their local area. Guidance is provided on a range of issues including flexible taxi services, vehicle licensing, driver licensing and training.

The Equality Act 2010 provided a new cross-cutting legislative framework to protect the rights of individuals and advance equality of opportunity for all; to update, simplify and strengthen the previous legislation; and to deliver a simple, modern and accessible framework of discrimination law which protects individuals from unfair treatment and promotes a fair and more equal society.

Sections 165, 166 and 167 of the Equality Act 2010 are concerned with the provision of wheelchair accessible vehicles and place obligations on drivers of registered vehicles to carry out certain duties unless granted an exemption by the licensing authority on the grounds of medical or physical condition. Section 166 allows taxi drivers to apply to their licensing authority for an exemption from Section 165 of the Equality Act 2010. The UK Government are still considering the commencement strategy for Section 165. This section imposes a duty on taxi and private hire car drivers with wheelchair accessible vehicles to provide assistance to disabled passengers.

2. Background

This section of the report provides a general background to the taxi market in Dundee and the relevant legislation governing the market.

2.1 Background

Dundee is a city and council area located in eastern Scotland, with a resident population of 147,720 (2021 mid-year estimate, National Records of Scotland). The city has recently been announced as a UNESCO City of Design and has received significant recent investment especially around its waterfront (some £1 billion) creating the potential for 7,000 jobs and significant increases in visitor numbers.

In terms of the licensing of taxis and private hire vehicles, DCC operated a derestricted market until 2013 when the Licensing Committee reinstated the numerical limit at 611. An unmet demand study was undertaken in 2015 and the limit was then reduced to 605. In 2016, following a further unmet demand study, the limit was reduced further to 575. Another unmet demand study was undertaken in 2017 and the authority resolved that no new licences would be issued until the number of licences fell below 555. The last unmet demand study was undertaken in 2019 and the Council decided to reduce the numerical limit down to 505.

As of 31st May 2023, there were 495 licensed taxis operating in Dundee, of which 161 (32%) were saloon vehicles and (68%) were wheelchair accessible vehicles. Some 21% of the fleet is fully electric.

The private hire fleet consists of 176 vehicles. In view of the size of this fleet relative to the taxi fleet, it is evident that taxis are the dominant force in the Dundee market.

2.2 Provision of Taxi Stands

There are currently 22 official taxi stances located throughout the Dundee licensing area; the locations and times of operation of each of the stances are provided in Appendix 1.

2.3 Taxi Fares and Licence Premiums

Taxi fares are regulated by the Local Authority. There are four tariffs across the following periods:

- Daytime – Monday to Sunday, 6am until 10pm
- Weekday evenings – Monday to Thursday, 10pm until 6am
- Weekend evenings – Friday to Sunday, 10pm until 6am
- Festive period – 24th December from 6pm until 6am 27th December, and 31st January from 6pm until 6am 3rd January

The standard daytime charge tariff is made up of two elements; an initial fee (or 'drop') of £3.75 for entering the vehicle and a fixed price addition of 19p per 0.1 mile, dependent on the tariff in place, or uncompleted part thereof travelled, plus fixed additions for waiting time. Fixed additional charges are also in place for extra passengers or luggage. A standard two-mile daytime fare undertaken by one individual would therefore be £6.79. The tariffs are outlined in detail in the fare card in Figure 2.1 below.

Figure 2.1 – Farecard for Dundee. The values were set 1st December 2022



**DUNDEE CITY COUNCIL - FARES FOR THE HIRE OF TAXIS
FARES 1ST DECEMBER 2022**

For the first passenger carried:-

CHARGES	TARIFF 1 DAYTIME	TARIFF 2 WEEKDAY EVENINGS	TARIFF 3 WEEKEND EVENINGS	TARIFF 4 FESTIVE PERIOD
Initial hire not exceeding 4/10th of a mile (704 yards) or 189 seconds of waiting time or a combination of both time and distance	Monday to Sunday 6am to 10pm £3.75	Monday to Thursday 10pm to 6am £4.09	Friday to Sunday 10pm to 6am £4.43	Throughout period £5.11
Each additional 1/10th of a mile (176 yards) or part thereof, or 42 seconds of waiting time or part thereof, or a combination of both time and distance	19p	21p	23p	26p
EXTRAS - ALL TARIFFS	For each passenger in excess of the first passenger			50p
	For each parcel carried in the luggage compartment, boot or rack			50p
FESTIVE PERIOD	Between 6pm on 24th December until 6am on 27th December and between 6pm on 31st December until 6am on 3rd January			

NB No charge shall be made for a child's perambulator or carriage, any items designed to assist the mobility of users such as wheelchairs or walkers, a bag or bags containing loose groceries or shopping carried in a taxi, whether in the luggage compartment or inside the taxi.

SOILING CHARGE (which results in the vehicle being taken off service for any period of time) Minimum - £25, Maximum - £50

1st December 2022

The Private Hire and Taxi Monthly magazine publish monthly league tables of the fares for 365 authorities over a two-mile journey. Each journey is ranked with one being the most expensive. The May 2023 table shows Dundee rated 198^h in the table, indicating that Dundee has lower than average fares. Table 2.1 provides a comparison of where a selection of other authorities in Scotland, based on population figures and the presence of a large city or town, rank in terms of fares. This table shows that fares in Dundee are mid-range in comparison to other similar authorities.

Table 2.1 - Comparison of neighbouring authorities in terms of fares (Source Private Hire and Taxi Monthly, May 2023)

Local Authority	Rank
Glasgow City	28
Fife	73
City of Edinburgh	151
South Lanarkshire – Cambuslang	187
West Lothian	194
Dundee	198
Renfrewshire	271
Aberdeen City	277
South Lanarkshire – E Kilbride	294
South Lanarkshire – Clydesdale	310
North Lanarkshire	319
South Lanarkshire – Hamilton	320

3. Definition, Measurement and Removal of Significant Unmet Demand

3.1 Introduction

Section 3 provides a definition of significant unmet demand derived from experience of over 100 unmet demand studies since 1987. This leads to an objective measure of significant unmet demand that allows clear conclusions regarding the presence or absence of this phenomenon to be drawn. Following this, a description is provided of the SUDSIM model which is a tool developed to determine the number of taxi licences required to eliminate significant unmet demand, where such unmet demand is found to exist. This method has been applied to numerous local authorities and has been tested in the courts as a way of determining if there is unmet demand for taxis.

3.2 Overview

Significant Unmet Demand (SUD) has two components:

- Patent demand – that which is directly observable; and
- ‘Suppressed’ demand – that which is released by additional supply.

Patent demand is measured using stance observation data. Suppressed (or latent) demand is assessed using data from the stance observations and public attitude interview survey. Both are brought together in a single measure of unmet demand, ISUD (Index of Significant Unmet Demand).

3.3 Defining Significant Unmet Demand

The provision of evidence to aid licensing authorities in making decisions about taxi provision requires that surveys of demand be carried out. Results based on observations of activity at taxi stances have become the generally accepted minimum requirement.

The definition of significant unmet demand is informed by two Court of Appeal judgements:

- R v Great Yarmouth Borough Council ex p Sawyer (1987); and
- R v Great Castle Point Borough Council ex p Maude (2002).

The Sawyer case provides an indication of the way in which an Authority may interpret the findings of survey work. In the case of Sawyer v Yarmouth City Council, 16 June 1987, Lord Justice Woolf ruled that an Authority is entitled to consider the situation from a temporal point of view as a whole. It does not have to condescend into a detailed consideration as to what may be the position in every limited part of the Authority in relation to the particular time of day. The authority is required to give effect to the language used by the Section (Section 16) and can ask itself with regard to the area as a whole whether or not it is satisfied that there is no significant unmet demand.

The term ‘suppressed’ or ‘latent’ demand has caused some confusion over the years. It should be pointed out that following Maude v Castle Point Borough Council, heard in the Court of Appeal in October 2002, the term is now interpreted to relate purely to that demand that is measurable. Following Maude, there are two components to what Lord Justice Keene prefers to refer to as ‘suppressed demand’:

- What can be determined inappropriately met demand. This is current observable demand that is being met by, for example, private hire cars illegally ranking up; and
- That which arises if people are forced to use some less satisfactory method of travel due to the unavailability of a taxi.

If demand remained at a constant level throughout the day and week, the identification and treatment of significant unmet demand would be more straight-forward. If there were more cabs than required to meet the existing demand there would be queues of cabs on stances throughout the day and night and passenger waiting times would be zero. Conversely, if too few cabs were available there would tend to be queues of passengers throughout the day. In such a case it would, in principle, be a simple matter to estimate the increase in supply of cabs necessary to just eliminate passenger queues.

Demand for taxis varies throughout the day and on different days. The problem, introduced by variable demand, becomes clear when driver earnings are considered. If demand is much higher late at night than it is during the day, an increase in cab supply large enough to eliminate peak delays will have a disproportionate effect on the occupation rate of cabs at all other times. Earnings will fall, and fares might have to be increased sharply to sustain the supply of cabs at or near its new level.

The main implication of the present discussion is that it is necessary, when considering whether significant unmet demand exists, to take account of the practicability of improving the standard of service through increasing supply.

3.4 Measuring Patent Significant Unmet Demand

Taking into account the economic, administrative and legal considerations, the identification of this important aspect of significant unmet demand should be treated as a three stage process as follows:

- Identify the demand profile;
- Estimate the passenger and cab delays; and
- Compare estimated delays to the demand profile.

The broad interpretation to be given to the results of this comparison is summarised in Table 3.1.

Table 3.1 – Existing of SUD determined by comparing demand and delay profiles

Demand is:	Delays during peak only	Delays during peak and other times
Highly peaked	No SUD	Possibly a SUD
Not highly peaked	Possibly a SUD	Possibly a SUD

It is clear from the content of the table that the simple descriptive approach fails to provide the necessary degree of clarity to support the decision making process in cases where the unambiguous conclusion is not achievable. However, it does provide the basis of a robust assessment of the principal component of significant unmet demand. The analysis is therefore extended to provide a more formal numerical measure of significant unmet demand. This is based on the principles contained in the descriptive approach but provides greater clarity. A description follows.

The measure feeds directly off the results of observations of activity at the stances. In particular, it takes account of:

- Case law that suggests an authority should take a broad view of the market;
- The effect of different levels of supply during different periods at the stance on service quality; and

- The need for consistent treatment of different authorities, and the same authority over time.

The Index of Significant Unmet Demand (ISUD) was developed in the early 1990's and is based on the following formula. The SF element was introduced in 2003 and the LDF element was introduced in 2006 to reflect the increased emphasis on latent demand in DfT Guidance.

$$\text{ISUD} = \text{APD} \times \text{PF} \times \text{GID} \times \text{SSP} \times \text{SF} \times \text{LDF}$$

Where:

APD = Average Passenger Delay calculated across the entire week in minutes.

PF = Peaking Factor. If passenger demand is highly peaked at night, the factor takes the value of 0.5. If it is not peaked the value is 1. Following case law this provides dispensation for the effects of peaked demand on the ability of the Trade to meet that demand. To identify high peaking we are generally looking for demand at night (at weekends) to be substantially higher than demand at other times.

GID = General Incidence of Delay. This is measured as the proportion of passengers who travel in hours where the delay exceeds one minute.

SSP = Steady State Performance. The corollary of providing dispensation during the peaks in demand is that it is necessary to focus on performance during "normal" hours. This is measured by the proportion of hours during weekday daytimes when the market exhibits excess demand conditions (i.e. passenger queues form at stances).

SF = Seasonality Factor. Due to the nature of these surveys it is not possible to collect information throughout an entire year to assess the effects of seasonality. Experience has suggested that taxi demand does exhibit a degree of seasonality and this is allowed for by the inclusion of a seasonality factor. The factor is set at a level to ensure that a marginal decision either way obtained in an "untypical" month will be reversed. This factor takes a value of 1 for surveys conducted in September to November and March to June, i.e. "typical" months. It takes a value of 1.2 for surveys conducted in January and February and the longer school holidays, where low demand the absence of contract work will bias the results in favour of the taxi trade, and a value of 0.8 for surveys conducted in December during the pre-Christmas rush of activity. Generally, surveys in these atypical months, and in school holidays, should be avoided.

LDF = Latent Demand Factor. This is derived from the public attitude survey results and provides a measure of the proportion of the public who have given up trying to obtain a taxi at either a stance or by flagdown during the previous three months. It is measured as 1+ proportion giving up waiting. The inclusion of this factor is a tactical response to the latest guidance.

The product of these six measures provides an index value. The index is exponential and values above the 80 mark have been found to indicate significant unmet demand. This benchmark was defined by applying the factor to the 25 or so studies that had been conducted at the point it was developed. These earlier studies had used the same principles but in a less structured manner. The highest ISUD value for a study where a conclusion of no significant unmet demand had been found was 72. The threshold was therefore set at 80. The ISUD factor has been applied to over 80 studies by Jacobs and has been adopted by others working in the field. It has proved to be a robust, intuitively appealing and reliable measure.

Suppressed/latent demand is explicitly included in the above analysis by the inclusion of the LDF factor and because any known illegal plying for hire by the private hire trade is included in the stance observation data. This covers both elements of suppressed/latent demand resulting from the Maude case referred to above and is intended to provide a 'belt and braces' approach. A consideration of latent demand is also included where there is a need to increase the number of taxi licences following a finding of significant unmet demand. This is discussed in the next section.

3.5 Determining the Number of New Licences Required to Eliminate Significant Unmet Demand

To provide advice on the increase in licences required to eliminate significant unmet demand, Jacobs has developed a predictive model. SUDSIM is a product of 20 years experience of analysing taxi demand. It is a mathematical model, which predicts the number of additional licences required to eliminate significant unmet demand as a function of key market characteristics.

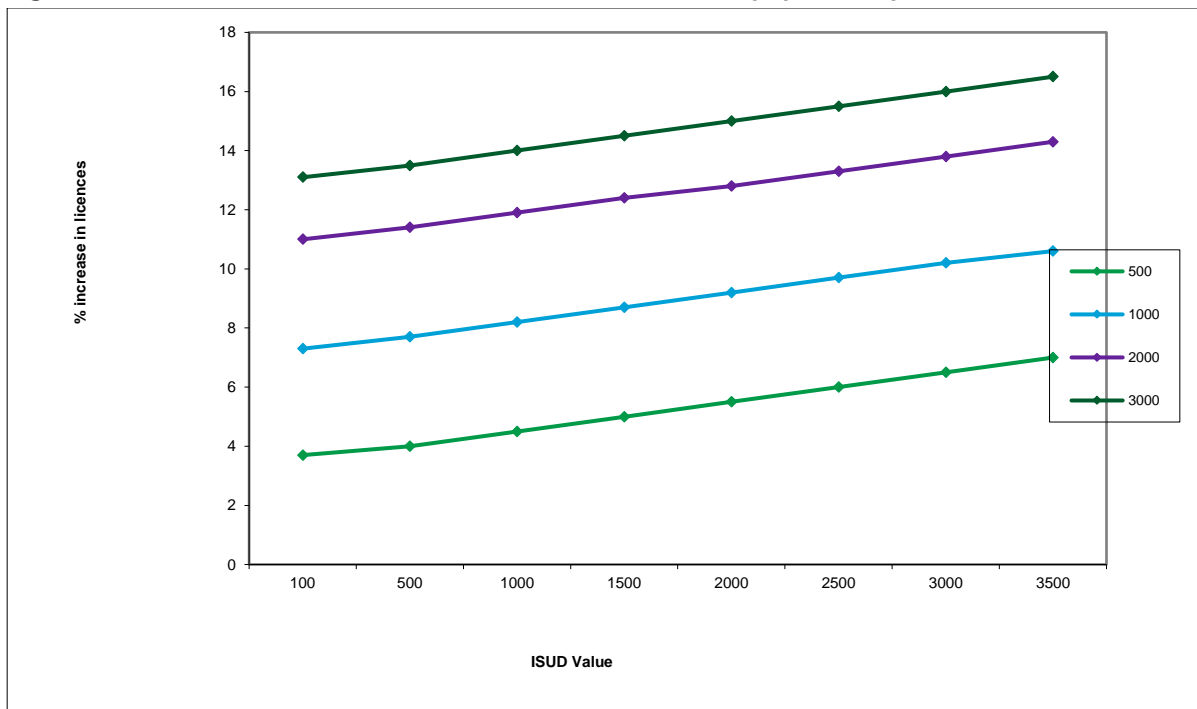
SUDSIM represents a synthesis of a queue simulation work that was previously used (1989 to 2002) to predict the alleviation of significant unmet demand and the ISUD factor described above (hence the term SUDSIM). The benefit of this approach is that it provides a direct relationship between the scale of the ISUD factor and the number of new hackney licences required.

SUDSIM was developed taking the recommendations from 14 previous studies that resulted in an increase in licences and using these data to calibrate an econometric model. The model provides a relationship between the recommended increase in licences and three key market indicators:

- The population of the licensing authority;
- The number of taxis already licensed by the licensing authority; and
- The size of the SUD factor.

The main implications of the model are illustrated in Figure 3.1 below. The figure shows that the percentage increase in a taxi fleet required to eliminate significant unmet demand is positively related to the population per taxi (PPT) and the value of the ISUD factor over the expected range of these two variables.

Figure 3.1 – Forecast increase in taxi fleet size as a function of population per taxi (PPT) and the ISUD value



Where significant unmet demand is identified, the recommended increase in licences is therefore determined by the following formula:

$$\text{New Licences} = \text{SUDSIM} \times \text{Latent Demand Factor}$$

Where:

Latent Demand Factor = (1 + proportion giving up waiting for a taxi at either a stance or via flagdown).

3.6 Note on Scope of Assessing Significant Unmet Demand

It is useful to note the extent to which a licensing authority is required to consider peripheral matters when establishing the existence or otherwise of significant unmet demand. This issue is informed by *R v Brighton Borough Council, ex p Bunch* 1989¹. This case set the precedent that it is only those services that are exclusive to taxis that need concern a licensing authority when considering significant unmet demand. Telephone booked trips, trips booked in advance or indeed the provision of bus type services are not exclusive to taxis and have therefore been excluded from consideration.

¹ See Button JH 'Taxis – Licensing Law and Practice' 2nd edition Tottel 2006 P226-7

4. Evidence of Patent Unmet Demand – Stance Observation Results

4.1 Introduction

This section of the report highlights the results of the stance observation survey. The stance observation program covered a period of 193 hours during March 2023. Some 10,725 passengers and 8,553 departures were recorded across eight selected stances. A summary of the stance observation programme is provided in Appendix 2.

The results presented in this section summarise the information and draw out its implications. This is achieved by using five indicators:

- The Balance of Supply and Demand – this indicates the proportion of the time that the market exhibits excess demand, equilibrium and excess supply.
- Average Delays and Total Demand – this indicates the overall level of passengers and cab delays and provides estimates of total demand.
- The Demand/Delay Profile – this provides the key information required to determine the existence or otherwise of significant unmet demand.
- The Proportions of Passengers Experiencing Given Levels of Delay – this provides a guide to the generality of passenger delay.

4.2 The Balance of Supply and Demand

The results of the analysis are presented in Table 4.1 below. The predominant market state is one of equilibrium. Excess supply (queues of cabs) was experienced during 10% of the hours observed while excess demand (queues of passengers) was experienced 15% of the hours observed. Conditions are generally favourable to customers at all times of the day.

Table 4.1 – The balance of supply and demand in the Dundee stance-based taxi market (percentage of hours observed)

Period		Excess Demand (Max Passenger Queue ≥ 3)	Equilibrium	Excess Supply (Min Cab Queue ≥ 3)
Weekday	Day	4	77	19
	Night	21	76	3
Weekend	Day	6	79	15
	Night	42	55	3
Sunday	Day	0	92	8
Total 2023		15	75	10
<i>Total 2019</i>		<i>11</i>	<i>53</i>	<i>37</i>
<i>Total 2018</i>		<i>8</i>	<i>71</i>	<i>21</i>

Period	Excess Demand (Max Passenger Queue ≥ 3)	Equilibrium	Excess Supply (Min Cab Queue ≥ 3)
Total 2016	8	64	28
Total 2015	8	46	46
Total 2013	6	60	34

NB – Excess Demand = Maximum passenger queue ≥ 3 . Excess Supply = Minimum Cab Queue ≥ 3 – values derived over 12 time periods within an hour.

As detailed in Table 4.1 conditions have remained similar for passengers since the previous study in 2019. The number of hours where excess demand was observed have increased to 15% while the hours the market is in equilibrium has increased from 53 to 75%.

4.3 Average Delays and Total Demand

The following estimates of average delays and throughput were produced for each selected stance in Dundee (Table 4.2).

The survey suggests some 10,725 passenger departures occur per week from stances in Dundee involving some 8,553 cab departures. The taxi trade is concentrated at the stance at Nethergate (Steeple Church) accounting for 55% of the total passenger departures. On average cabs wait 10.36 minutes for a passenger. On average passengers wait 0.77minutes for a cab.

Since the previous study in 2019, passenger demand has decreased and passenger delay has increased slightly. However, the number of cab departures has remained relatively constant suggesting that fewer groups are sharing vehicles.

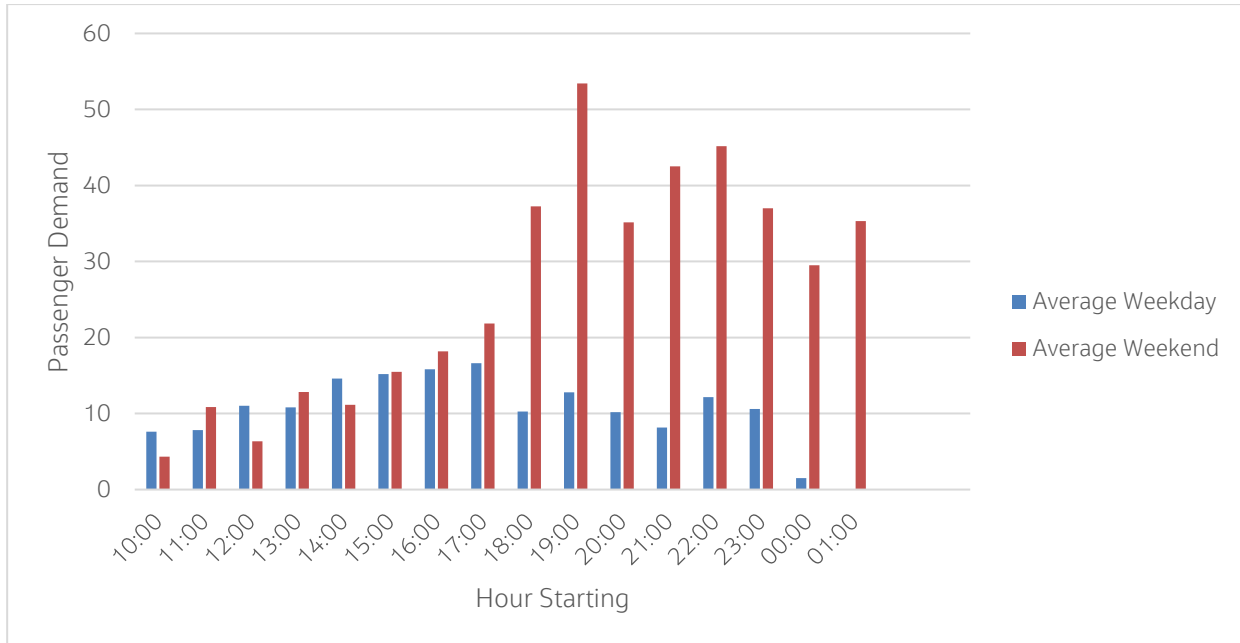
Table 4.2 Average Delays and Total Demand (Delays in Minutes)

Stance	Passenger Departures	Cab Departures	Average Passenger Delay in Minutes	Average Cab Delay in Minutes
Dundee Rail Station	1,445	1,026	1.41	13.28
Nethergate (Steeple Church)	5,917	3,859	0.66	10.60
Market Gait	0	0	0.00	0.00
Meadowside	145	135	0.58	0.79
Nethergate DCA	369	267	0.78	3.10
Lochee High Street	414	961	0.01	5.69
Brook Street, Broughty Ferry	1,594	1,270	1.21	7.04
Nine Wells Hospital	841	1,037	0.00	18.10
Total 2023	10,725	8,553	0.77	10.36
<i>Total 2019</i>	<i>12,824</i>	<i>8,630</i>	<i>0.54</i>	<i>20.28</i>
<i>Total 2018</i>	<i>14,017</i>	<i>10,196</i>	<i>0.25</i>	<i>12.51</i>
<i>Total 2016</i>	<i>19,456</i>	<i>13,302</i>	<i>0.21</i>	<i>11.42</i>
<i>Total 2015</i>	<i>15,081</i>	<i>9,296</i>	<i>0.09</i>	<i>18.54</i>
<i>Total 2013</i>	<i>10,492</i>	<i>7,230</i>	<i>0.28</i>	<i>20.31</i>

4.4 The Delay/Demand Profile

Figure 4.1 provides a graphical illustration of passenger demand for the Monday to Saturday period between the hours of 10:00 and 01:00.

Figure 4.1 Passenger Demand by Time of Day in 2023 (Monday to Saturday)



The profile of demand shows a peak in demand between 1900 and 2000 on a weekend. Demand is much higher on a weekend.

Figure 4.2 Passenger Delay by Time of Day in 2023 (Monday to Saturday)

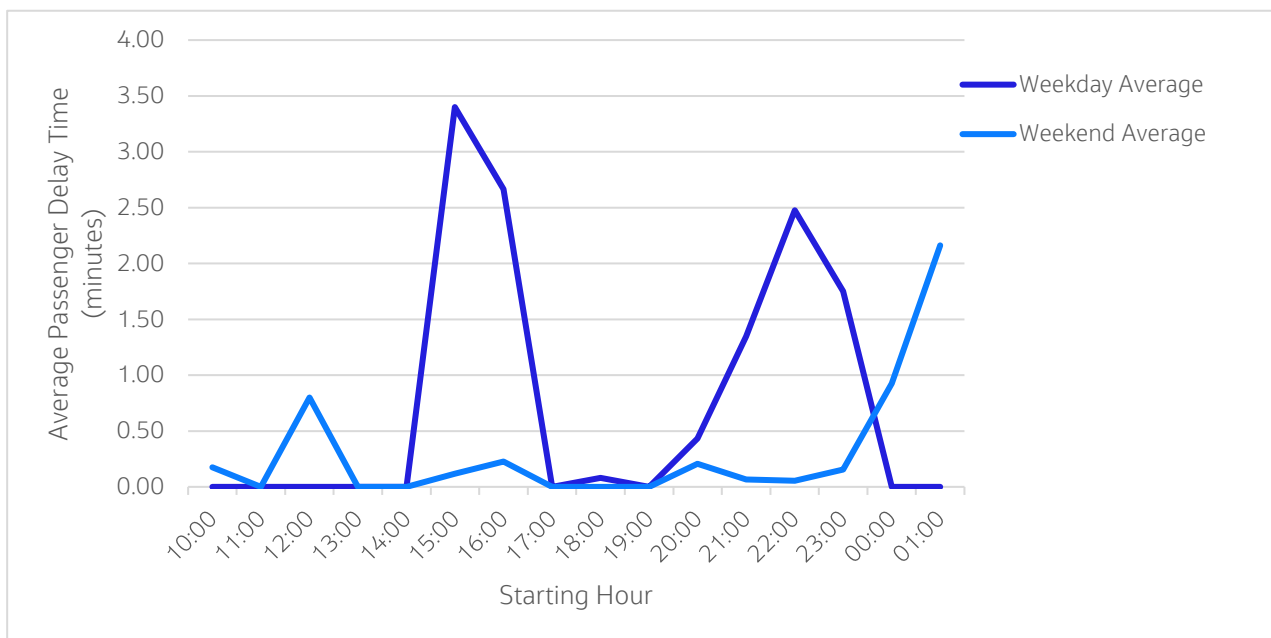


Figure 4.2 provides an illustration of passenger delay by the time of day for the weekday and weekend periods. It shows that delay peaks on weekdays between 1500 and 1700 and approximately 2200. It peaks at 0100 on weekends.

The rank observations highlighted an average delay at Nethergate DCA on a weekend of 7.22 minutes between 2000 and 2100.

4.5 The General Incidence of Passenger Delay

The stance observations data can be used to provide a simple assessment of the likelihood of passengers encountering delay at stances. The results are presented in Table 4.3 below.

Table 4.3 – General incidence of passenger delay (percentage of passengers travelling in hours where delay exceeds one minute)

Year	Delay > 0	Delay > 1 min	Delay > 5 min
2023	14.88	7.52	0.24
2019	7.10	3.31	0.51
2018	3.98	2.11	0.14
2016	8.29	1.73	0.00
2015	5.03	1.98	0.22
2013	9.28	2.93	0.81

In 2023, 7.52% of passengers are likely to experience more than a minute of delay. It is this proportion that is used within the ISUD as the 'Generality of Passenger Delay'. This is higher than in 2019.

5. Public Consultation

5.1 Introduction

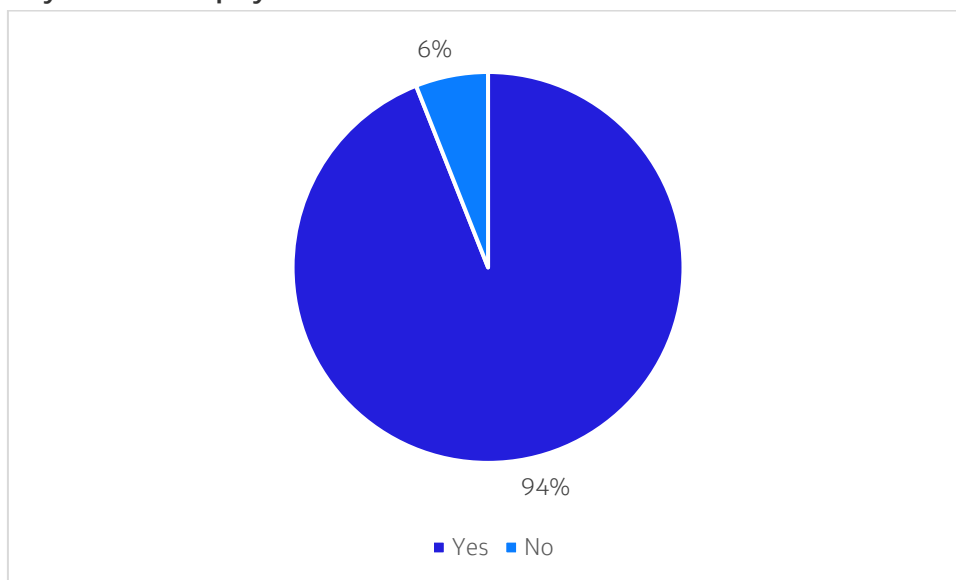
A public attitude survey was designed with the aim of collecting information regarding opinions on the taxi market in Dundee.

The survey was hosted online and promoted via DCC's website and the link was emailed to a range of stakeholders. In total, 468 people responded to the survey. It should be noted that in the tables and figures that follow the totals do not always add up to the same amount which is due to one of two reasons. First, not all respondents were required to answer all questions; and second, a number of respondents failed to answer some questions that were asked.

5.2 General Information

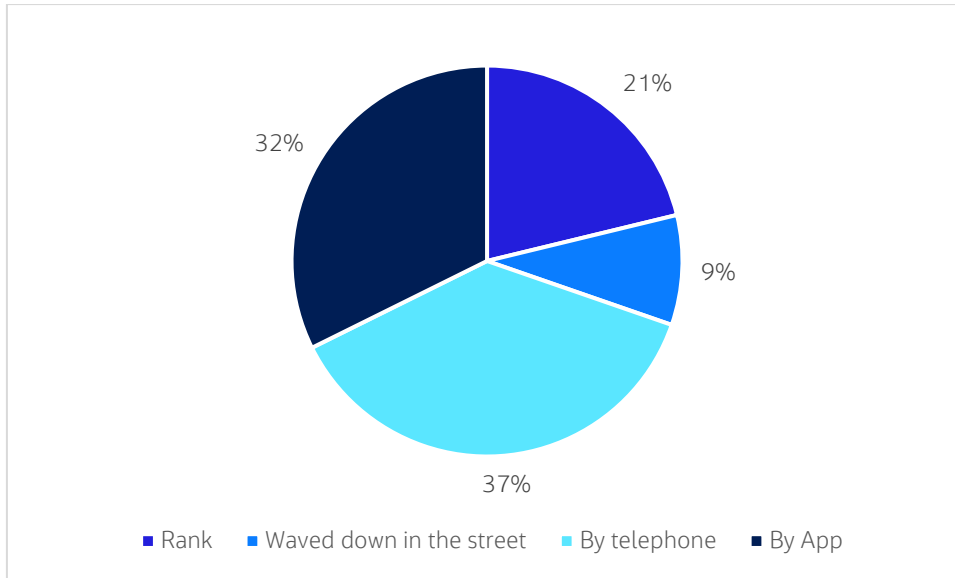
Respondents were asked whether they had made a trip by taxi in the past three months. Figure 5.1 shows that 94% of the survey population had made a trip by taxi in the last three months and only 6% (30) had not.

Figure 5.1 – Have you made a trip by taxi in the last three months?



Respondents that had identified themselves as trip makers were asked how they obtained their taxi or private hire vehicle. Of the responses, the most common answer (37%) stated that they obtained their taxi by telephone. Approximately 21% hired their taxi at a rank whereas obtaining it via an app accounted for 32%, as shown in Figure 5.2.

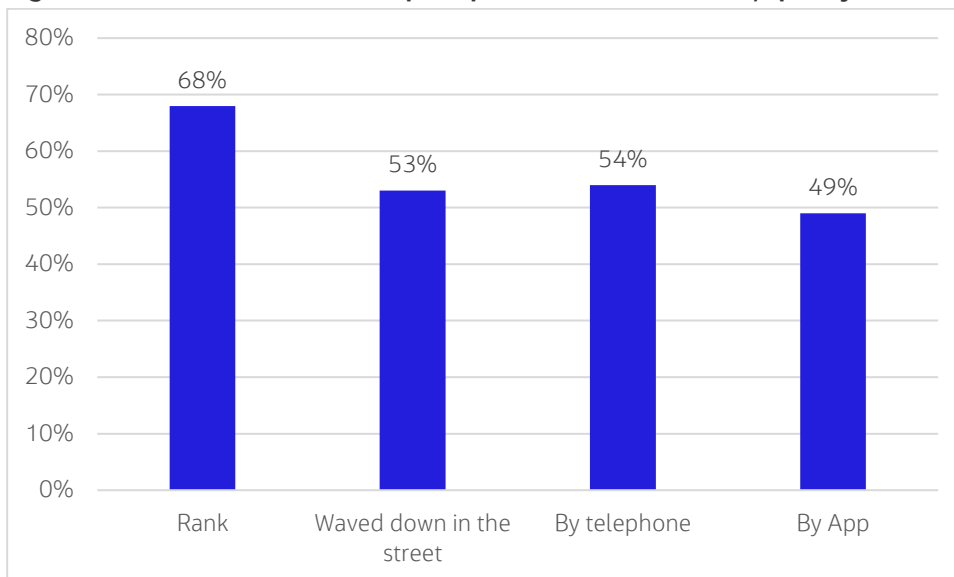
Figure 5.2 – Method of hire for last trip



Respondents were asked what type of vehicle they had obtained on their last trip. Some 78% were saloons, and 18% were wheelchair accessible – the remaining 5% were categorised as other and varied from electric cars to mini buses.

Trip makers were then asked if they were satisfied with the time taken and the promptness of the vehicle's arrival. When considering all hirings, just over half (55%) were satisfied with their last taxi journey. Figure 5.3 looks at the individual methods of hire and how that transpires to the satisfaction (presented as a percentage) with the time taken and promptness of its arrival. Obtaining your taxi at a rank presented the most satisfied respondents (68%) and the least satisfied were those who ordered by app (49%).

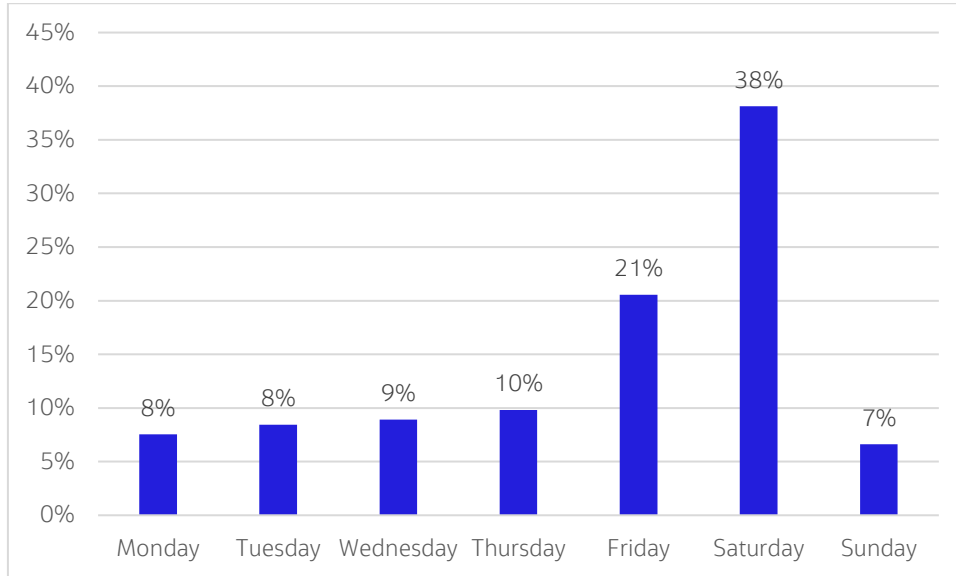
Figure 5.3 – Satisfaction with the promptness of vehicle arrival, split by method of hire



Respondents were also asked at what time of the day they obtained their taxi and on what day of the week it was. The results indicate that 34% took a taxi in the day time (before 6pm), followed by 35% in the evening (6pm-10pm) and 31% at night time (after 10pm). Figure 5.4 shows what day of the week respondents obtained

a taxi. Saturday was the most popular, with 38% of respondents journeys occurring on this day, followed by 21% happening on a Friday. Sunday was the least popular day, with only 7% of journeys occurring; generally, as it got later into the week, the days got busier.

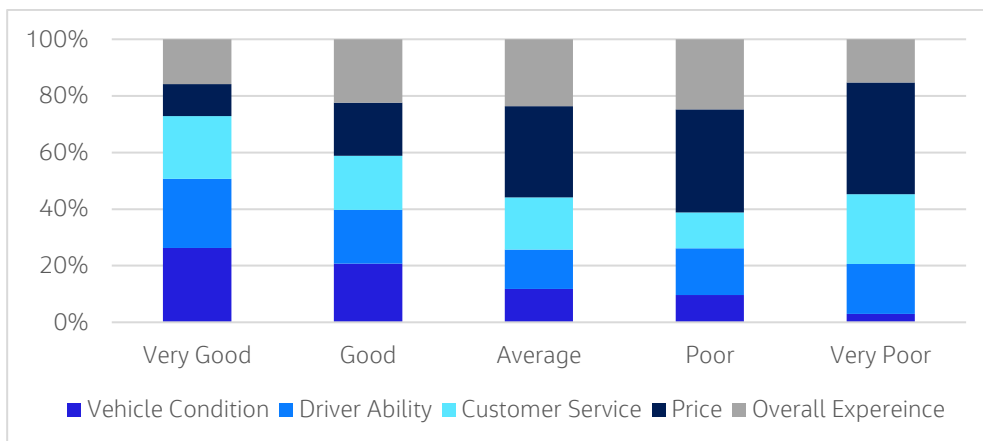
Figure 5.4 – Day of the week respondents obtained a taxi



Respondents were asked to rate five elements from their last taxi journey in Dundee from very poor to very good. The results in Figure 5.5 show that most elements were generally good, apart from price which was average. When poor ratings were given, respondents were asked to provide a reason for their rating. Negative ratings included reasons such as:

- Driver rudeness
- Drivers only wanting to be paid in cash
- Not enough taxis since the pandemic
- Prices too high/expensive
- Dirty vehicle

Figure 5.5 – Rating of last journey

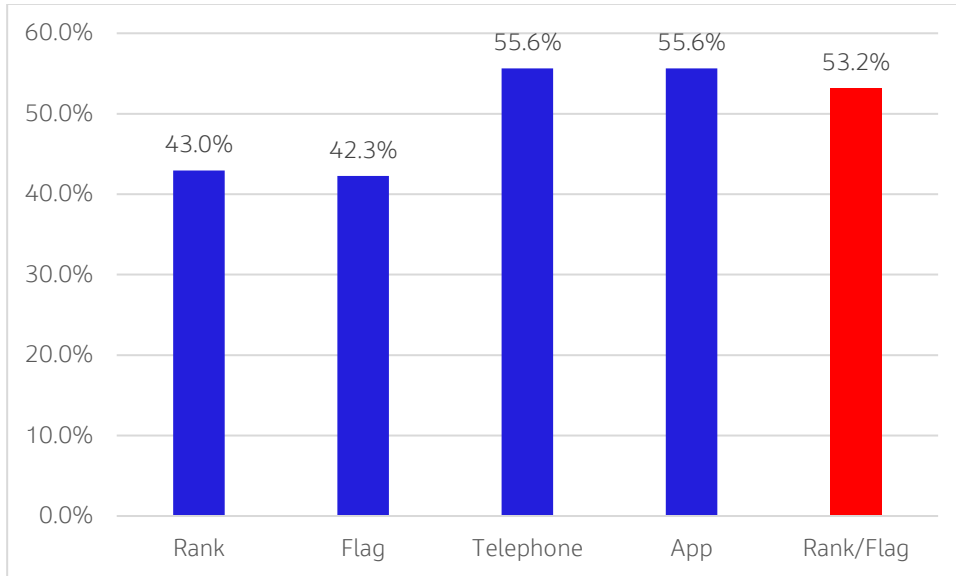


Those respondents rating aspects as poor were asked if additional driver training was required. Some 59% felt that this was not necessary.

5.3 Attempted method of hire

To measure demand suppression, all respondents were asked to identify whether they had given up waiting for a taxi at a rank, on the street, by telephone or through their app in Dundee in the last three months. The results are summarised in Figure 5.6. This indicates that most people gave up waiting for a taxi by telephone or app.

Figure 5.6 – Latent demand by method of hire – Given up trying to get a taxi?

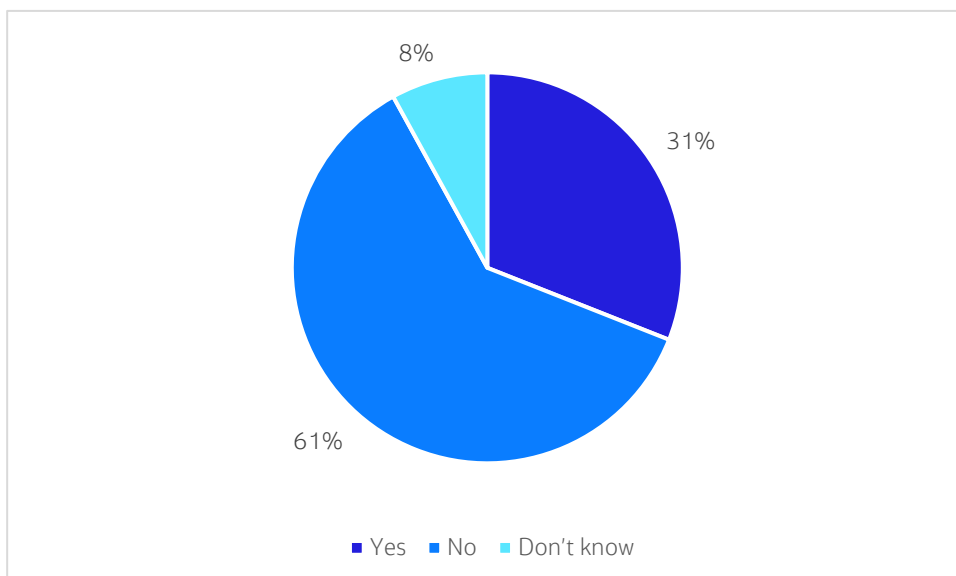


This analysis has implications for the interpretation of the results (see Chapter 8 below).

5.4 Service Provision

Participants were subsequently asked whether they feel there are enough taxis in Dundee at the current time for their personal needs. Some 61% commented that there are insufficient taxis in Dundee (see Figure 5.7).

Figure 5.7 – Do you think there are enough taxis in Dundee to suit your needs?



The survey then asked respondents whether taxi services in Dundee could be improved. Some 78% of the respondents believed they could be whilst only 14% felt that no improvement was needed. The remainder (8%) did not know at the time. Those that believed improvements could be made were asked how they could be improved. Some common suggestions were:

- Card machines in taxis
- More taxis
- Taxi fares are too high
- Better street knowledge
- More taxis at busy times

5.5 Ranks and licencing

Respondents were asked if they felt there was enough provision of taxi ranks in Dundee. Some 46% of respondents felt that there are currently enough ranks in Dundee. Suggested improvements from respondents who answered 'no' are listed in Table 5.1.

Table 5.1 – Suggested improvements for taxi ranks in Dundee

Suggested Improvement	No. of Responses
Provide information on location of existing	35
Provide new ranks	97
Improve signage of existing ranks	31
Other	33

A number of other suggested improvements included:

- Train station rank has very limited vehicles;
- Allow Uber; and
- Provide shelters at ranks.

Respondents were asked if there were any locations in Dundee where new ranks were needed. A total of 44% did not know but 23% felt new ranks were needed. The most common locations cited included:

- Kingsway Retail Park
- Perth road
- Reform Street

- Cleppington Road

Respondents were informed that DCC set a numerical limit on the number of taxis (that can legally wait and pick up at a rank or be flagged). Some 53% did not support this policy.

5.6 Summary

Key points from the public attitude survey can be summarised as:

- 94% of the respondents have used a taxi in Dundee in the last 3 months.
- 37% of taxis have been obtained by prebooking by telephone.
- 55% of the respondents agreed that they were overall satisfied with the promptness of taxi arrival in Dundee.
- Saturday was the most popular day for a taxi service to be used.
- The journey was rated on various factors of satisfaction where price was remarked as the least satisfying aspect of a trip and vehicle condition was the most satisfying.
- 53.2% of respondents had given up trying to obtain a taxi by rank or flag down.
- 61% of respondents believe there are not enough Taxis in Dundee.

6. Consultation

6.1 Introduction

Guidelines issued by the Scottish Government state that consultation should be undertaken with the following organisations and stakeholders:

- All those working in the market;
- Consumer and passenger (including disabled) groups;
- Groups which represent those passengers with special needs;
- The Police;
- Local interest groups such as hospitals or visitor attractions; and
- A wide range of transport stakeholders such as rail/bus/coach providers and transport managers.

To consult with relevant stakeholders across Dundee, written consultation was undertaken.

6.2 Trade Consultation

A virtual focus group was held with representatives of the taxi and PH trade.

Current restriction policy and availability of Taxis

Attendees considered that demand for vehicles had started to increase since the pandemic but it wasn't yet back to pre-pandemic levels. Attendees also wanted to maintain the current limitation policy. It was noted that drivers were struggling financially, and it was difficult to encourage drivers into the trade. The trade felt that drivers were put off working at night due to the anti social behaviour in existence in Dundee and a slow response to incidents from the Police.

Attendees considered there to be more than enough taxis in Dundee at the moment and that there was no need for any more vehicles.

Attendees suggested that the public were used to short wait times in Dundee and currently they were having to wait slightly more than normal but this was still not a long time.

Ranks

Ranks were considered to be in the correct locations but not big enough for the size of the fleet. Nethergate was thought to be too short and as a result taxis have to double park. Attendees felt that the highways department of DCC didn't listen to their requests for amendments to ranks and signage. Enforcement was also felt to be lacking with regard to cars being parked in ranks.

Attendees wanted to see better signing of ranks – they needed to be directionally signed rather than just at the rank.

Vehicles

It was felt that there was the right balance of saloon vehicles and wheelchair accessible vehicles. Attendees considered that there were not enough EV chargers in Dundee and on occasion drivers were having to turn down longer journeys. This causes conflict with customers.

PH overprovision

Attendees considered that PHCs should be numerically limited. It was noted that in Dundee, PHCs work for taxi operators and there is little distinguishing between the two.

It was also suggested that some PHCs pick up illegally from ranks and the lack of enforcement exacerbates this.

The trade also requested a face-to-face meeting with DCC.

6.3 Indirect (Written) Consultation

A number of stakeholders were contacted by letter and email. This assured that Scottish Government guidelines were fulfilled and all relevant organisations and bodies were provided with an opportunity to comment.

In accordance with advice issued by the Scottish Government, the following organisations were contacted:

- Dundee City Council;
- Trade representatives;
- User/disability groups representing those passengers with special needs;
- Local interest groups including hospitals, visitor attractions, entertainment outlets and education establishments; and
- Rail bus and coach operators.

A summary of the responses received are provided below.

Dundee Taxi Association

Dundee Taxi Association (DTA) provided the following response:

"The Dundee Taxi Association (DTA) would not want to see any more Taxis or Private Hire in Dundee. Taxis are sitting on ranks for long periods most of the time. Even Private Hire are sitting about the streets waiting for the office to give out a job. I know some people may have to wait for a little while on weekend nights late on. But this is normal in every major city. There are also less Taxi drivers want to work late at weekends due to people who drink too much & even drug taking. Drivers can't make a living on a couple of hours at the weekend. If more Taxis or Private Hire were to come on the age of the vehicles would increase."

Dundee Access Group

The Access group considered there not to be enough taxis in Dundee. They also suggested that taxi services could be improved. Some operators only allow you to prebook a taxi using an automated service which does not give the user any confidence that its booked.

7. Deriving the Significant Unmet Demand Index Value

7.1 Introduction

The data provided in the previous chapters can be summarised using Jacobs ISUD factor as described in Chapter 3.

The component parts of the index, their source and their values are given below:

Average Passenger Delay (Table 4.2)	0.77
Peak Factor (Figure 4.2)	1
General Incidence of Delay (Table 4.3)	7.52
Steady State Performance (Table 4.1)	4
Seasonality Factor (Section 3)	1
Latent Demand Factor (Section 5)	1.53
ISUD (0.77*1*7.52*4*1*1.53)	36

The cut off level for a significant unmet demand is 80. It is clear that Dundee is well below this cut off point as the ISUD is 36, indicating that there is **NO significant unmet demand**. This conclusion covers both patent and latent/suppressed demand.

8. Supply of Taxis

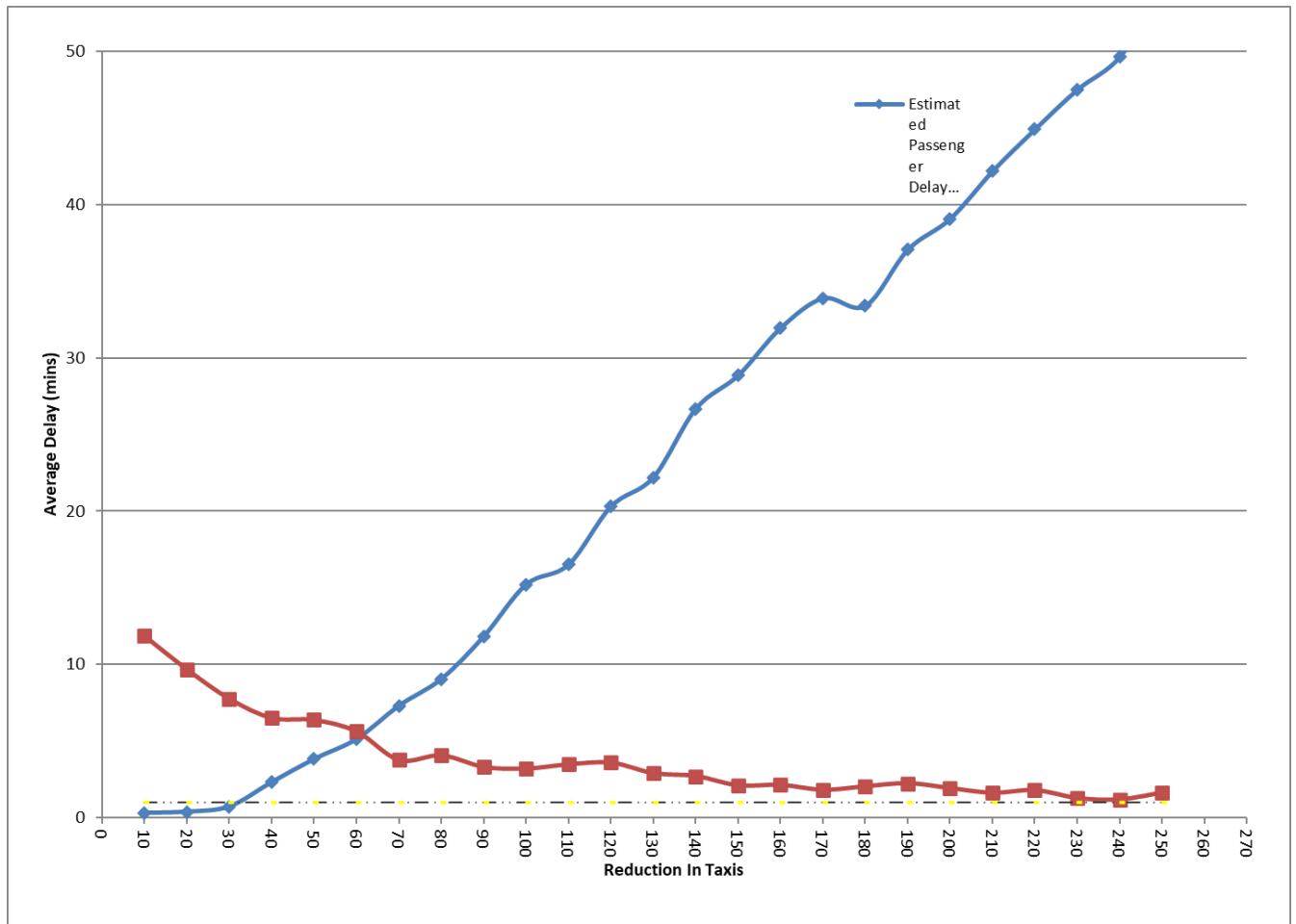
8.1 Introduction

To examine the extent to which there may be an excess supply of vehicles, relative to demand in Dundee, a simulation exercise has been conducted. The exercise used Jacob’s STAR4 simulation model (Simulation of Taxis at Ranks). The simulation takes a typical daytime observation period (in this case Nethergate stance between 10am and 6pm on 24th March 2023) and estimates the impact of reducing the number of vehicles serving the stance on cab and passenger queues and delays. The analysis is intended to be indicative of the general impact of reduced supply and should not be interpreted as a recommendation for any given reduction in the size of the fleet. The results of the analysis are presented in Figure 8.1 below.

8.2 Analysis

The analysis shows that the removal of around 20 licences from circulation on the day in question would have been unlikely to have resulted in any passenger delay at the stance. On the other hand, cabs at the stance would have experienced significantly faster turn-around times. A reduction in the fleet beyond this would result in the introduction of passenger delay at the stance, with the level of passenger delay generally increasing as the fleet is reduced in size. Average passenger delay would reach 1 minute if the fleet were to be reduced by 32 vehicles. This exercise was designed to show the effect of removing licences during typical day time conditions however during non-typical conditions i.e. at a busy night time stance the effect may differ.

Figure 8.1 – Assessment of Supply – Simulation Results



9. Summary and Conclusions

9.1 Introduction

Jacobs has conducted a study of the taxi market on behalf of Dundee City Council. The present study has been conducted in pursuit of the following objectives. To determine:

- Whether or not there is a significant unmet demand for taxi services within Dundee as defined in Section 16 of the Transport Act 1985; and
- How many additional taxis are required to eliminate any significant unmet demand.

This section provides a brief description of the work undertaken and summarises the conclusions.

9.2 Significant Unmet Demand

The 2023 study has identified that there is **NO evidence** of significant unmet demand for taxis in Dundee. This conclusion is based on an assessment of the implications of case law that has emerged since 2000, and the results of Jacobs's analysis.

It is clear from the results that **demand for taxi services has decreased in Dundee** since the last survey in 2019 (with it being back to 2013 levels) but that people are well served by the trade given that passenger delay has only marginally increased since the last survey. However, there were some instances of longer delays especially at night.

9.3 Public Perception

Public perception of the service was obtained through the undertaking of an online survey. Overall the public were generally satisfied with the service. Key points included:

- 94% of the respondents have used a taxi in Dundee in the last 3 months.
- 37% of taxis have been obtained by prebooking by telephone.
- 55% of the respondents agreed that they were overall satisfied with the promptness of taxi arrival in Dundee.
- Saturday was the most popular day for a taxi service to be used.
- The journey was rated on various factors of satisfaction where price was remarked as the least satisfying aspect of a trip and vehicle condition was the most satisfying.
- 53.2% of respondents had given up trying to obtain a taxi by rank or flag down.
- 61% of respondents believe there are not enough Taxis in Dundee.

9.4 Recommendations

Our 2023 study has identified that there is NO evidence of significant demand in Dundee. This conclusion covers both patent and latent/suppressed demand and is based on an assessment of the implications of case law that has emerged since 2000, and the results of our analysis.

On this basis, the authority has the discretion in its taxi licensing policy and may either:

- Maintain the current limit of 505 taxi licences;
- Issue any number of additional plates as it sees fit, either in one allocation or a series of allocations;
or
- Reduce the numerical limit to 475.

