

TAXIMETER SURVEY 2015

May 2016

TABLE OF CONTENTS

Content	Slide Nos.
Introduction, Methodology and Analysis	3 - 9
Summary Driver and Distribution Profiles	10 - 21
Dublin: Detailed Analysis	22 - 52
Cork: Detailed Analysis	53 - 75
Athlone: Detailed Analysis	76 - 97
Summary and Conclusions	98

INTRODUCTION

The Taxi Regulation Review Report published by the Government in January 2012 included an "Economic Analysis of the Taxi Market" carried out by Indecon International Economic Consultants. Their analysis set out eight recommendations which were included in the adopted Review Report.

Within the Review Report, Indecon recommendation 3 states:

"Initiatives to produce credible market information on the extent of low incomes and low taxi utilisation in the sector should be implemented and highlighted to discourage uninformed new entrants to the sector. In providing increased market information, it would be beneficial to ensure that potential entrants have accurate information about possible earnings in the sector. Information on utilisation rates and earnings with dispatch firms might also be beneficial for existing as well as potential entrants."

This report provides details of an analysis of over 50,000 trips in 2015 ³ recorded in 85 taxi vehicles over a three month period for each vehicle.

APPROACH TAKEN

- A download of a sample of taximeters was undertaken in March and April 2015
- 98 drivers agreed to have data from their taximeter downloaded.
- Each of the taximeters contained all records of the previous three months use of the taximeter.
- Data on over 50,000 trips was obtained and analysed, accounting for €700,000 in metered revenue for 85 drivers operating in Dublin, Cork and Athlone.
- A further 13 drivers participated who operated in other areas, but a decision was taken to focus on the above three operational areas.
- All taximeters related to an owner / driver vehicle with only one driver
- All data was anonymised

METHODOLOGY 1

The surveys were conducted entirely using data from one model of taximeter, which is unique from other models found in Ireland, in that by default it automatically retains a detailed historical record of the trips undertaken. Typically, a record is retained of the most recent 600 trips (approximately); when the memory is full, the oldest trip is erased to make room for the most recent trip. The data analysed was downloaded in March and April 2015, and typically equated to the previous three months of activity. The small amount of records relating to the Christmas holiday period were excluded from the analysis so as to reflect the more typical market conditions of the industry.

In the surveys of 2015, data on over 50,000 trips was analysed, accounting for €700,000 in metered revenue as recorded in 85 taximeters i.e. 588 trips per meter. Although some taxis are driven by more than one driver, this was not the case in the 85 vehicles whose meters were analysed - and so the dataset for each taximeter reflects the working habits of one driver. Examining and analysing the data for each taximeter reveals the work habits of these drivers, how they each choose to organise their working week, and the level of metered revenue that they then win.

Methodology 2

A cleansing exercise was undertaken on each dataset to remove any false registers of the meter: a false register typically occurs where a driver engages the meter for a very short period of a minute or two or for a distance of only one or two hundred meters. The records of some drivers contain no false registers, but others contain several such records. False registers are usually due, as explained by drivers, to testing the meter when a new roll of receipt paper is fitted. To include such registers would exaggerate earnings and activity.

Each trip is recorded in chronological order. The record of each individual trip includes the start time and end time of each trip (to the nearest minute), and the date upon which the trip occurred. Data is also included on the distance hired, the distance covered since the beginning of the last trip and the maximum speed reached at any time in the journey. Self evidently, the time that elapses between each trip can be readily calculated as the difference between the start time of a trip and the end time of the previous trip.

The critical issue is to determine whether the time that elapses between two given trips represents a period during which the driver was working but not hired; or whether the taxi was actually off duty or taking a break. In Ireland, where not all drivers work in the traditional shift-like pattern found in other jurisdictions, certain assumptions need to be made to determine the actual hours worked by some drivers.

Methodology 3

After extensive assessment it was decided to analyse the data on the basis that any gaps longer than 70 minutes between hirings occurred because the driver was off-duty. Some of the supporting reasons for this are:

- Most drivers tend to work in a structured manner most of the time, although the shifts that they work may vary by day of week. Where a driver works in a structured way (for example, four hours in the morning and four hours in the evening) the records of activity reveal a shift-like pattern, with a gap of several hours between the last trip of the morning shift and the first trip of the evening shift. In such instances, the hours worked by the driver are self-evident.
- Very few gaps between activity were close to the cut off point of 70 minutes most amounted to several hours. Therefore, the analysis is not sensitive to extending this gap to, say, 80 or 90 minutes.

OTHER ASSUMPTIONS

- An allowance needs to be added for the time on-duty that is likely to have elapsed before the first hiring on each shift. To allow for this a time allowance equivalent to the average waiting time between all other trips incurred by the driver was used as the wait time prior to the first hiring.
- In the chronological record of many drivers, a record of one or two trips is all that is revealed for a given day. Drivers explain that this is usually a day when they had not intended to work but where they found themselves available for one or two hours, or when they had simply been flagged down during their leisure time. Given that they still provided a taxi service, these trips still constitute hours worked, and an allowance is made for the time on-duty that is likely to have elapsed before this hiring. This is assumed to be the average time between all other trips incurred by the driver, (just as it is at the beginning of a shift).

ANALYSING THE DATA

The data obtained from the taximeter provides information for each taxi trip in terms of date, time, distance, and fare. Inter-trip indicators are also available. The data can then be analysed from several perspectives:

- Statistics on Hours Worked: Taxi drivers are generally under no obligation to work in any defined timepattern. The taximeters downloaded were in vehicles operated by one driver and so the dataset for each meter reflects the working habits of one driver. This allows analysis of working hours per day and per week from the driver sample analysed.
- Fare Revenue: The records downloaded provide three months of data in relation to taxi journeys recorded on each taximeter, allowing calculation of fare revenue per day and per month. In addition, utilising the working time information obtained from the meters, fare revenue per hour can be calculated for the sample of drivers whose meters were analysed. (Note: Fares figures and fare revenue per hour calculations represent gross revenues they do not represent net earnings which would require the deduction of operating costs such as vehicle costs, insurance, fuel and regulatory costs.)
- **Working Times:** While overall hours working can be analysed, the time periods and distributions can be analysed, allowing an understanding of how the sampled drivers each choose to organise their working week.
- **Distribution Statistics:** The demand for taxi travel in the market, as well as the times and places that taxi drivers choose to operate, determines how trips are distributed with regard to distance and fare.
- **Supply:** The dataset for each of taxi can be examined to see what time of day and day of week the vehicle is in operation. This provides a measure of what proportion of the fleet surveyed are in operation at a given time i.e. how they are supplying the market. In Dublin, where the largest sample of drivers was obtained, an analysis was undertaken to see what times the sampled fleet was supplying the market.

SUMMARY DRIVER PROFILES

Summary and Comparison of Driver work habits in Athlone, Cork and Dublin

DRIVER WORK PROFILE

The charts below represent the average days worked per week, and the average hours in service on each day that is worked, of the sample of drivers analysed in each of Dublin, Cork and Athlone.

7 6 5.45.35.3**Days per Week** c p c $\mathbf{2}$ 1 0 Athlone Dublin Cork

Days Worked per Week

Hours in Service per Day that is worked



PRODUCTIVITY: PROPORTION HIRED WHILE IN SERVICE

The charts below represent the proportion of time / distance that the driver is hired while in service, in each of Dublin, Cork and Athlone, for the sample of drivers analysed.



(For example: the drivers sampled in Dublin were hired for 42% of the time they were available for hire.)

Driver Productivity Comparison

Indicator	Athlone	Cork	Dublin
No. of Drivers Sampled	8	19	58
Proportion of Days Worked	76 %	78 %	76 %
Equivalent in days per week	5.3 days	5.4 days	5.3 days
Hours In Service during a day that is worked (excl. Breaks)	3.7 hrs.	5.4 hrs.	4.8 hrs.
Proportion of Time Hired while in service	26 %	32 %	42 %
Proportion of Distance Driven hired while in service	33 %	43 %	46 %

The average driver sampled worked approximately 25 hours/week.

On average, the 85 drivers examined work just over 5 days a week, with little difference between the cities and town examined. The hours in service on a day that is worked does vary: drivers in Athlone are in service for under 4 hours while those in Cork and Dublin are in operation for 5 hours.

Athlone taxis are hired for only 26% of the time that they are in-service; this is lower than both Cork (36%) and Dublin (42%), and is the key determinant of revenue. Dublin and Cork drivers have far less dead mileage than those in Athlone.

DRIVER: AVERAGE METERED FARE

The charts below report the average fare per hire and the average revenue per hour worked, of the sample of drivers analysed in each of Dublin, Cork and Athlone.



TOTAL METERED REVENUE PER DAY & WEEK

The charts below report the average revenue per day and the average revenue per week, of the sample of drivers analysed in each of Dublin, Cork and Athlone.

Metered Revenue per Day



Metered Revenue Per Week



Driver: Metered Revenue Per Taxi

ltem	Athlone	Cork	Dublin
Average Metered Fare per Taxi	€ 10.72	€ 12.96	€ 14.97
Metered Revenue Per Hour In-Service per Taxi	€ 19.58 € 22.20		€ 24.80
Metered Revenue Per Day Worked	€ 73	€ 115	€ 117
Average Metered Revenue Per Week in time spanned by the sample - working or not	€ 382	€ 650	€ 635

The average fare collected by the sampled drivers in Athlone was $\notin 10.72$, but Cork was 21% higher at $\notin 12.96$, and Dublin 40% higher at $\notin 14.97$.

Metered Revenue per Hour is dependent upon the average fare and the time it takes to earn these fares. It is \notin 19.58 in Athlone, and 13% higher at \notin 22.20 in Cork and 27% higher at \notin 24.80 in Dublin.

The metered revenue per day depends upon the hourly revenue and the hours worked: both of these result in significantly lower earnings in Athlone compared to the cities.

The total revenue collected per week over the time spanned in the survey data is $\in 382$ in Athlone, $\notin 650$ in Cork and $\notin 635$ in Dublin. Some drivers did no work at all on certain weeks and so this yield is largely dependent upon their work habits.

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SUMMARY DISTRIBUTION PATTERNS

Summary and Comparison of the distribution of trips in Athlone, Cork and Dublin

DISTANCE HIRED COMPARISON AT STANDARD TIME: ATHLONE, CORK & DUBLIN

(Standard Time is 8am to 8pm Monday to Saturday (excluding Bank Holidays). Premium Time is 8pm to 8am Monday to Saturday plus Sundays and Bank Holidays.)



The distribution of the distance driven while hired is far shorter in Athlone, compared to Cork and Dublin. Furthermore, Dublin has comparatively more longer journeys than Cork.

DISTANCE HIRED COMPARISON AT PREMIUM TIME: ATHLONE, CORK & DUBLIN

(Standard Time is 8am to 8pm Monday to Saturday (excluding Bank Holidays). Premium Time is 8pm to 8am Monday to Saturday plus Sundays and Bank Holidays.)



The pattern at Premium Time is similar to that at Standard Time: the distances driven in Dublin are longer than in Cork, and both cities are considerably longer than Athlone.

19

FARE COMPARISON AT STANDARD TIME: ATHLONE, CORK & DUBLIN



The relative fares in Athlone are far less than in the cities. Almost all journeys are short in distance and value. On the other hand, Dublin and to a lesser extent Cork, have a significant number of longer trips valued at more than &15.00

20

FARE COMPARISON AT PREMIUM TIME: ATHLONE, CORK & DUBLIN



Dublin's greater proportion of high value trips at Premium Time is even more pronounced than at Standard Time.

DUBLIN: DETAILED ANALYSIS

Driver Profiles, Distribution Patterns and Market Characteristics in Dublin

DUBLIN SAMPLE SIZE



- Data from 58 taxis downloaded: 35 (61%) Non-Dispatch: 17 (29%) Dispatch; and 6 (10%) with Taxi-App but not aligned to any other Dispatch Centre
- Data relates to trips undertaken between September 2014 to April 2015 – but vast majority were in first three months of 2015. Data covered, an average of 77 working days per taxi.
- Characteristics on 32,500 trips in terms of time, distance and fare: an average of 565 trips/taxi.
- A total of €480,000 in metered revenue analysed: €8,300 per vehicle

DUBLIN DRIVER STATISTICS

• Purpose

- To determine the work habits of these drivers, how they each choose to organise their working week, and the level of metered revenue that they then earn.
- The taximeters downloaded were in vehicles operated by one driver: and so the dataset for each taximeter reflects the working habits of one driver. Examining the data for each taximeter reveals the work habits of these drivers, how they each choose to organise their working week, and the level of metered revenue that they then win.

DUBLIN SAMPLE – PROPORTION OF TRIPS IN PREMIUM VS STANDARD TIME



Of the 168 hours in the week, 72 hours (43%) are metered at Standard Time and 96 hours (57%) are metered at Premium Time. In Dublin, the sampled drivers show a bias in favour of working Standard Time, as the proportion of trips undertaken is split evenly between Standard and Premium Time at exactly 50% in each. Few individual drivers follow the average trend, with many showing a bias towards working mainly in either Standard Time or mainly in Premium Time.

25

DUBLIN DRIVER PREFERENCE – PROPORTION OF TRIPS IN PREMIUM VS STANDARD TIME



Standard Time applies for 72 hours (43%) of the week, and Premium Time applies for the other 96 hours (57%). 26 However, the proportion of trips undertaken is split evenly between Standard and Premium Time at exactly 50% in each. Both Dispatch and Non-Dispatch drivers closely follow this pattern on average, although there is great variation from driver to driver. The six drivers who use a Taxi App show a greater inclination to undertake trips in Premium Time.

DUBLIN DRIVERS – DAYS WORKED PER WEEK



The periods of operation varied greatly, but the average taxi sampled was in service on 5.3 days per week. 22 taxis operate less than 5 days per week and only 2 always operate every day.

DUBLIN DRIVERS – HOURS IN SERVICE ON DAYS WORKED (EXCLUDING BREAKS)



Taxis ranked from left to right in order of increasing days worked

As the graph shows, taxis that operate on most days of the week do not necessarily work a shorter day. Overall, the average taxi operated for 4.8 hours on a day that it is in service, and this varied from 1.2 to 8.0 hours.

DUBLIN DRIVERS – HOURS IN SERVICE ON A DAY WORKED VS. PROPORTION OF DAYS WORKED



The periods of operation varied greatly, but the average taxi sampled was in service for an average of 4.8 hours for 76% of days (i.e.5.3 days per week) that fell within the dates spanned. As the scatter graph shows, taxis that operate on most days of the week do not necessarily work a shorter day. Overall, the average cab operated for 26 hours per week, and this varied from 4 to 52 hours. However, if the least active 25% of taxis are excluded, all other taxis work for 30 hours a week.

Dublin Drivers – Time per Hiring Cycle



□ Time Pre-Hired ■ Trip Time

A hiring cycle comprise the non-hired time in advance of the hire and the actual time hired.

For the Dublin drivers sampled, the typical time elapsed in a hiring cycle is 36.6 mins; this consists of 21.3 mins pre-hired followed by 15.3 minutes hired: meaning that the taxis are occupied 42% of the time that they are in service. There is a wide variation from driver to driver – with hiring cycles varying from 20 mins to 59 mins.

DUBLIN DRIVERS – PROPORTION OF TIME HIRED



□ Time Pre-Hired ■ Trip Time

The proportion of time that a taxi is hired, as well as the actual length of time hired are both key determinants of earnings. Dublin taxis in the sample were hired for an average of 42% of the time, but this varies from 24% to 53% from driver to driver.

DUBLIN DRIVERS – DISTANCE PER HIRING CYCLE





The typical distance travelled in a hiring cycle is 14.9 km: this consists of 8.0 kms pre-hired followed by 6.9 kms hired: meaning that the taxis are occupied for 46% of the distance they drive while in service. All but five of the taxis sampled cover no more than 20 km in each hiring cycle. The remaining five drivers cover very lengthy distances between hirings, and also cover greater than average distances while hired: this suggests that they are likely to be operating in the outer suburbs.

32

$DUBLIN \ TAXIS - MAXIMUM \ SPEEDS$



The maximum speed reached while in service, across all of the trips undertaken by each driver, was on average 66 km/hr. Some drivers reached a maximum of 90 km/hr on average across their trips, suggesting that they must work exclusively in uncongested areas on the perimeter of the city, by night.

DUBLIN TAXIS – AVERAGE SPEED



The average speed traversed by a Dublin taxi was 27 km/hr. However, there is considerable variation. This is likely to be due to the proportion of trips undertaken at night that each driver undertakes.

Dublin – Work Profile

Indicator	Average of all taxis	Range in the average for each taxi
Proportion of Days Worked	76 %	33 % - 100 %
Equivalent in days per week	5.3 days	2.3 – 7.0 days
Hours In Service during a day that is worked (excl. Breaks)	4.8 hrs.	1.2 – 8.0 hrs
Proportion of Time Hired while in service	42 %	24 % - 53 %
Proportion of Distance Driven hired while in service	46 %	15 % - 68 %

58 taxis, of which 35 (61%) are Non-Dispatch: 17 (29%) are Dispatch; and 6 (10%) use a Taxi-App.

On average 559 trips were obtained from each driver, spanning 109 days (3.5 months)

Driver work habits vary widely: some work long hours but on only a few days per week. Others work every day – but usually for only a few hours. On average, a driver works for 4.8 hours a day on 5.3 days/week

While in-service, a taxi is occupied 42% of the tim35 and for 46% of the distance it is driven.

DUBLIN DRIVERS – AVERAGE METERED FARE



The average metered fare across all 58 Dublin drivers was $\notin 14.97$. Two drivers average a fare of less than $\notin 10$. Nine drivers have an average fare of more than $\notin 20$.
DUBLIN DRIVERS – AVERAGE METERED REVENUE PER HOUR



The average metered revenue per hour across all 58 Dublin drivers was €24.54/hr. Six drivers have an average metered revenue per hour of more than €30/hr.

37

Dublin Drivers – Metered Revenue Per Taxi

ltem	Average of all taxis	Range in the average for each taxi
Average Metered Fare	€ 14.97	€ 9.37 - €23.12
Metered Revenue Per Hour In- Service	€ 24.80	€ 14.90 - € 40.54
Metered Revenue Per Day Worked	€ 117	€ 37 - € 219
Average Metered Revenue Per Week in Sample Period - working or not	€ 635	€ 98 - € 1,189

Metered Revenue varies widely as a result of the volume of hours worked, and the yield available at a given period of the week. The statistics shown are those achieved by drivers and have not been weighted by the time or day worked.

The average fare a driver earns is $\notin 14.97$. The average metered revenue in an hour is $\notin 24.80$, but some drivers who work for a short number of hours at the time of highest demand can average $\notin 40.54$

The average taxi records €117 for each day in service. The Average Metered Revenue Per Week in the sample period - which may include some weeks of no activity - is €635/week. Seven cabs accumulated average revenues of over €1,000 per week. 38

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DUBLIN DISTRIBUTION STATISTICS

- Purpose: To determine the distribution of all the trips undertaken by drivers in Dublin
- In the examples shown all trips have been pooled into either Standard and Premium Time, and the distribution patterns in each of these two categories are shown. So as to keep the sample large, trips were not further categorised into any sub-periods of Standard or Premium Time. The analysis therefore contains the inherent assumption that distribution patterns do not vary within sub-periods of Standard Time or Premium Time.
- The distances covered in Dublin are significantly longer than in Athlone and Cork.
- The distance driven while hired in Dublin is on average only slightly longer at Premium Time. There are less journeys below 6 km at Premium Time and more above 6km i.e. medium and longer journeys make up a greater proportion of all trips during Premium Time
- Half of journeys are below 4.2 km at Standard Time, and below 4.5 km at Premium time
- The top quartile are over 9.5 km. at both Standard and Premium Time
- The average fare in all of the sampled data was €14.12 at Standard Time and €15.30 at Premium Time. Fares at Premium Time are only 6% higher on average than those at Standard Time. This is because distances are distributed equally, and the faster speeds achieved at Premium Time offset the increased meter rate.
- The top 25% of fares are above €17.30 at Standard Time and above €19.05 at Premium Time.

DUBLIN – DISTANCE HIRED @ STANDARD TIME



The distance driven while hired in Standard Time is on average 6.7 km within Standard Time. 25% of journeys are above 9.6 km.

40

DUBLIN – DISTANCE HIRED @ PREMIUM TIME



$DUBLIN-DISTANCE\ HIRED\ COMPARISON$



The distance driven while hired is on average longer at Premium Time. There are less journeys below 6 km at Premium Time and more above 6km i.e. medium and longer journeys make up a greater proportion of all trips

$DUBLIN-METERED\ FARE @\ STANDARD\ TIME$



DUBLIN – METERED FARE @ PREMIUM TIME



exceed €19.05

DUBLIN – FARE DISTRIBUTION COMPARISON



Fares at Premium Time are higher on average than those at Standard Time. This is due to a combination of longer distances and the increased metered rate at Premium Time.

SUPPLY ANALYSIS

• Purpose

- To determine what proportion of taxis are in operation at a given time
- To see if different fleet types (e.g. dispatch, non-dispatch) show a preference for operating at certain times
- Methodology
 - The supply of taxis over a given period necessitates data for each taxi that covers a common time span. Out of 58 taxis surveyed in Dublin, 45 taximeters had readings that both preceded and succeeded the month of March, as well as showing readings for the month itself. i.e. 45 taxis had readings that spanned the full month. Any periods of inactivity revealed in the readings from these 45 taximeters during March were due to the taxi not operating (i.e. not supplying the market), as opposed to any potential data being absent because the weeks over which data was collected did not cover that date.
 - Therefore, measuring the activity of these 45 taxis for the month of March allows the amount and pattern of supply to be determined.
 - 14 of the 45 taxis (31%) were aligned to a dispatch firm and had an average of 215 trips per vehicle in March. 3 of the 45 taxis (7%) used a taxi app and had an average of 226 trips per vehicle in March. 28 of the 45 taxis (62%) were not aligned to any form of dispatch and had 178 trips per taxi during the period in question
 - Two dates Monday 16th March and Tuesday 17th March (St.Patrick's Day) were excluded from the sample dates as they were regarded as atypical. The results are intended to reflect what could be expected in a typical week.
- Caution
 - The number of trips provided in the sample is very large, but the number of vehicles (45) cannot be assumed to exactly reflect the pattern of supply amongst the fleet of taxis in Dublin.

DUBLIN SUPPLY OF DISPATCH TAXIS



The supply of the 14 Dispatch Taxis in the sample averages 35% across all time periods, but it is concentrated in Standard Time on Monday to Friday; and activity after midnight is notably low.

DUBLIN SUPPLY OF NON-DISPATCH TAXIS



The supply of the 28 Non-Dispatch Taxis is 28% across all time periods, and is more equally distributed than that of Dispatch Taxis. A Non-Dispatch taxi is equally as likely to work by night as by day.

DUBLIN SUPPLY BY ALL FLEET TYPES



The graph shows how the combined sample of 45 taxis, of all fleet types (Dispatch, Non-Dispatch and Taxi-App) supplied the market in March 2015. Dispatch taxis made up 31% of the sample but accounted for disproportionately more of the supply by day. The reverse was the case at Premium Time. There were only three 49 taxis that used a Taxi-App in the sample, and their hours of operation showed no clear pattern; they do however show the highest overall supply rate with an average 37% of the three active during a four hour period.

SHARE OF TAXI SUPPLY BY FLEET TYPES



Dispatch taxis made up 31% of the sample but accounted for disproportionately more of the supply by day. The reverse was the case at Premium Time.

DUBLIN OVERALL SUPPLY BY TIME & DAY



The graph shows how 45 taxis in the sample supplied the market in March 2015. On average, 31% of the 45 taxis were active for some or all of each 4-hour time band*. Supply varied widely, sometimes it was as low as 12%, and as high as 47%, but a pattern is evident. During the working week, most taxis tend to operate by day during Standard Time Fare Bands, with relatively few operating by night. The supply of taxis between 8 pm and 4 am increases on Friday and Saturday evenings compared to the rest of the week. Daytime supply on Saturday and Sunday is below that from Monday to Friday.

* Although 31% of the 45 taxis were active for some or all of a 4-hour time band, this does <u>not</u> imply that the average taxi works 31% x 7days x 24 hours= 52 hours. This would be an exaggeration as a given taxi need only show activity for any portion of the 4 hour period

DUBLIN OVERALL SUPPLY BY TIME PERIOD



The graph above offers an alternative view of supply. It does not place four hour time periods in chronological order; rather it places each time period together for every day of the week. For example, supply can be seen for the period 00:00-04:00 for every day of the week. Supply is very low except for Saturday and Sunday morning. The period from 04:00-08:00 is better supplied during the week, but this is because taxi drivers are supplying the morning business market after 7.am. Daytime supply is notably less on Saturday and Sunday. Evening supply from 20:00-24:00 gradually rises from Monday to Saturday.

CORK: DETAILED ANALYSIS

Driver Profiles, Distribution Patterns and Market Characteristics in Cork

CORK SAMPLE SIZE



- Data from 19 taxis downloaded: 5 Non-Dispatch (26%) and 14 aligned to a Dispatch Centre (74%). None used a Taxi-App
- Data relates to trips undertaken between September 2014 to April 2015 – but most were in the first three months of 2015. Data covered an average of 86 working days per taxi.
- Characteristics on 14,600 trips in terms of time, distance and fare: an average of 772 trips/taxi.
- Dispatch ¹⁴ _{74%} • A total of €183,000 in metered revenue analysed: €9,641 per vehicle

CORK DRIVER STATISTICS

• Purpose

- To determine the work habits of these drivers, how they each choose to organise their working week, and the level of metered revenue that they then earn.
- The taximeters downloaded were in vehicles operated by one driver: and so the dataset for each taximeter reflects the working habits of one driver. Examining the data for each taximeter reveals the work habits of these drivers, how they each choose to organise their working week, and the level of metered revenue that they then win.

CORK DRIVERS – PROPORTION OF TRIPS IN PREMIUM VS STANDARD TIME



Of the 168 hours in the week, 72 hours (43%) are metered at Standard Time and 96 hours (57%) are metered at Premium Time. The proportion of trips undertaken by drivers shows a bias towards unsocial hours with 65% of trips undertaken in Premium Time. Amongst Dispatch Drivers the weighting is 73%, with five of the fourteen dispatch drivers working exclusively at Premium Time. By contrast, only 41% of trips undertaken by Non-Dispatch drivers were in Premium Time.

56

CORK DRIVERS – PROPORTION OF DAYS WORKED



Proportion of Days Worked

The graph above shows that the average percentage of days in each taximeter's data, during which the taxi was active, was 78% (5.4 days/week). There are periods of over a month in the data of two taximeters for which no activity whatsoever is recorded: this is the reason that they show activity on less than 50% of the days examined. The remaining drivers work most days of the week; and 68% of taxis worked at least 5 days per week.

CORK DRIVERS – HOURS IN SERVICE ON DAYS WORKED



Taxis ranked from left to right in order of increasing days worked

The graph above shows the hours that each taxi is in service on those days that they are operating. It ranks the 19 taxis, from left to right, in increasing number of days worked. Clearly, some drivers work few hours on few days; others work long hours on most days. On average a taxi goes into service for 5.4 hours on a day that it works.

CORK DRIVERS – HOURS IN SERVICE ON A DAY WORKED VS. PROPORTION OF DAYS WORKED



The periods of operation varied greatly, but the average taxi sampled was in service for an average of 5.4 hours for 78% of days (i.e.5.4 days per week). As the scatter graph shows, taxis that operate on most days of the week do not necessarily work a shorter day. Overall, the average cab operated for approximately 30 hours per week, and this varied from 3 to 60 hours. However, if the least active 25% of taxis are excluded, all other taxis work for 37 hours a week.

$CORK \ DRIVERS - TIME \ PER \ HIRING \ CYCLE$



A hiring cycle comprise the non-hired time in advance of the hire and the actual time hired.

For the Cork drivers in the sample, the typical time elapsed in a hiring cycle is 36 mins; this consists of 25 mins pre-hired followed by 11 minutes hired: meaning that the taxis are occupied 32% of the time that they are in service. There is a wide variation from driver to driver – with hiring cycles varying from 25 mins to 50 mins.

CORK DRIVERS – DISTANCE PER HIRING CYCLE



■ Distance Pre-Hired ■ Distance Hired

The typical distance travelled in a hiring cycle is 13.7 km: this consists of 7.8 kms pre-hired followed by 5.9 kms hired: meaning that the taxis are occupied for 43% of the distance they drive while in service. All but three of the taxis sampled cover no more than 15 km in each hiring cycle. One dispatch taxi drives 34 kms between each hiring, but this is atypical.

CORK DRIVERS – AVERAGE SPEED



The average speed traversed by a Cork driver was 32 km/hr. All but two travel less than 40 km/hr on average, while two have average speeds in excess of 58 km/hr.

$CORK \ DRIVERS - MAXIMUM \ SPEEDS$



The maximum speed reached while in service, across all of the trips undertaken by each driver, was on average 68 km/hr.

Cork Drivers – Productivity

Indicator	Average of all taxis	Range in the average for each taxi
Proportion of Days Worked	78 %	30 % - 100 %
Equivalent in days per week	5.4 days	2.1 – 7.0 days
Hours In Service during a day that is worked (excl. Breaks)	5.4 hrs.	1.5 – 9.1 hrs
Proportion of Time Hired while in service	32%	25 % - 50 %
Proportion of Distance Driven hired while in service	43 %	23 % - 69 %

Nineteen Drivers, of whom fourteen are with a Dispatch Centre

On average 772 trips were obtained from each driver, spanning 119 days (four months)

Driver work habits vary widely: some work long hours but on only a few days per week. Others work every day – but usually for only a few hours. On average, a driver works for 5.4 hours a day on 5.4 days/week i.e approximately 30 hours

While in-service, a taxi is occupied 32% of the time and for 43% of the distance it is driven.

CORK DRIVERS – AVERAGE METERED FARE



The average metered fare across all 19 drivers was $\in 12.96$. Five drivers average a fare of more than $\in 15$.

CORK DRIVERS- METERED REVENUE PER WEEK



The total metered revenue collected, along with the number of weeks over which this was collected, can be calculated from the data stored within each taximeter. Dividing one by the other provides the weekly revenue yielded per vehicle over the period, regardless of what proportion of a given week (if any) that it was active. The metered revenue per week varies from &80 to &1,153, and averages &650. It depends primarily upon the hours worked.

CORK DRIVERS – AVERAGE METERED FARE PER HOUR IN SERVICE



Average of 19 Taxis

The average metered fares per hour in service is much more consistent than the metered revenue per week, because it controls for the variability in the hours worked per week. The average across all 19 drivers was &22.20/hr. Two drivers have an average fare of more than &30. The average metered fare is heavily dependent upon whether a taxi is in operation during the hours of peak demand or not.

Cork Drivers – Metered Revenue

ltem	Average of all taxis	Range in the average for each taxi
Average Metered Fare	€ 12.96	€ 8.90 - €19.31
Metered Revenue Per Hour In- Service	€ 22.20	€ 13.23 - € 33.51
Metered Revenue Per Day Worked	€ 115	€ 38 - € 183
Average Metered Revenue Per Week in time spanned by the sample - working or not	€ 650	€ 80 - € 1,152

Metered Revenue varies widely as a result of the volume of hours worked, and the yield available at a given period of the week. The statistics shown are those achieved by taxis and have not been weighted by time.

The average fare a Cork driver earned was €12.96. The average metered revenue in an hour was €22.20, but some drivers who work for a short number of hours at the time of highest demand averaged €33.51.

The average taxi recorded €115 for each day in service. The Average Metered Revenue Per Week in Sample Period which may include some weeks of no activity - was €650/week

CORK DISTRIBUTION STATISTICS

- To determine the distribution of all the trips undertaken by drivers in Cork
- In the examples shown all trips have been pooled into either Standard and Premium Time, and the distribution patterns in each of these two categories are shown.
- Half of journeys are below 5.5 km, but the top quartile are over 7km.
- The distribution of the trips by distance is the same by day and night.
- The average fare in all of the sampled data was €12.01 at Standard Time and €12.70 at Premium Time. Fares at Premium Time are only 5% higher on average than those at Standard Time. This is because distances are distributed equally by day and night, and the faster speeds achieved at Premium Time offset the increased meter rate.
- The top 25% of fares are above €14.05 at Standard Time and above €14.85 at Premium Time.

$CORK-DISTANCE\ HIRED\ @\ STANDARD\ TIME$



Time. 25% of journeys are above 7 km.

CORK – DISTANCE HIRED @ PREMIUM TIME



At Premium Time, journeys average 5.5 km, and half are below 4.1 km

CORK – DISTANCE HIRED COMPARISON



The distribution of the distance driven while hired is approximately the same by day and night.
CORK – METERED FARE @ STANDARD TIME



The distribution of metered fares is distributed around a median fare of €10.30 – but 25% of fares exceed €14.05

CORK – FARE @ PREMIUM TIME



CORK – FARE DISTRIBUTION COMPARISON



Fares at Premium Time are only slightly higher on average than those at Standard Time. This is because although there are more long-distance trips at Premium Time, the faster speeds achieved at Premium Time partially offsets the increased meter rate.

ATHLONE: DETAILED ANALYSIS

Driver Profiles, Distribution Patterns and Market Characteristics in Athlone

ATHLONE SAMPLE SIZE



- Data from 8 taxis downloaded: 1 Non-Dispatch (13%) : and 7 were aligned to a Dispatch Centre (87%). None used a Taxi-App
- Data relates to trips undertaken between September 2014 to April 2015 – but most were in the first three months of 2015. Data covered an average of 92 working days per taxi.
- Characteristics on 4,150 trips in terms of time, distance and fare: an average of 519 trips/taxi.
- A total of €39,000 in metered revenue analysed: €4,875 per vehicle

ATHLONE DRIVER STATISTICS

- To determine the work habits of these drivers, how they each choose to organise their working week, and the level of metered revenue that they then earn.
- The taximeters downloaded were in vehicles operated by one driver: and so the dataset for each taximeter reflects the working habits of one driver. Examining the data for each taximeter reveals the work habits of these drivers, how they each choose to organise their working week, and the level of metered revenue that they then win.

ATHLONE SAMPLE– PROPORTION OF TRIPS IN PREMIUM VS STANDARD TIME



Of the 168 hours in the week, 72 hours (43%) are metered at Standard Timer and 96 hours (57%) are metered at Premium Time. The proportion of trips undertaken is Athlone is disproportionately weighted towards unsocial hours with 65% of trips undertaken in Premium Time. Amongst the seven Dispatch Drivers the weighting is 60%. The one Non-Dispatch driver only works during Premium Time.

79

ATHLONE DRIVERS – PROPORTION OF DAYS WORKED



The graph above shows the percentage of days in each taximeter's data, during which the taxi was active. All taxis are operational on most days. The average vehicle is in operation for 76% of days, which equates to 5.3 days per week.

ATHLONE DRIVERS – HOURS IN SERVICE ON DAYS WORKED



Taxis ranked from left to right in order of increasing days worked

The graph above shows the hours that each taxi is in operation on a day where there is at least some time spent in service. It ranks the 8 taxis, from left to right in increasing number of days worked. Clearly, some drivers work few hours on few days; others work long hours on most days. On average, drivers work 3.7 hours per day.

ATHLONE DRIVERS – HOURS IN SERVICE ON A DAY WORKED VS. PROPORTION OF DAYS WORKED



The periods of operation varied greatly, but the average taxi sampled was in service for an average of 3.7 hours for 76% of days (i.e.5.3 days per week). As the scatter graph shows, most taxis operate on most days of the week. Overall, the average cab operated for 20 hours per week, and this varied from 10 to 45 hours.

Athlone Drivers – Time per Hiring Cycle



■ Time Pre-Hired ■ Trip Time

A hiring cycle comprise the non-hired time in advance of the hire and the actual time hired.

For the Athlone drivers sampled, the typical time elapsed in a hiring cycle is 34 mins; this consists of 25 mins pre-hired followed by 9 minutes hired. Therefore, the taxis are occupied 26% of the time that they are in service. There is some variation from driver to driver – with hiring cycles varying from 27 mins to 40 mins.

ATHLONE DRIVERS – DISTANCE PER HIRING CYCLE



■ Distance Pre-Hired ■ Distance Hired

The typical distance travelled in a hiring cycle is 14.8 km: this consists of 10.0 kms pre-hired followed by 4.8 kms hired. Therefore, the taxis are occupied for 33% of the distance they drive while in service.

ATHLONE TAXI DRIVERS – AVERAGE SPEED



The average speed traversed by a taxi in Athlone was 34 km/hr. All but two travel less than 40 km/hr on average, while two have average speeds below 25 km/hr.

85

ATHLONE TAXI DRIVERS – MAXIMUM SPEEDS



The maximum speed reached while in service, across all of the trips undertaken by each driver, was on average 69 km/hr.

86

Athlone Drivers – Productivity

Indicator	Average of all taxis	Range in the average for each taxi
Proportion of Days Worked	76 %	53 % - 100 %
Equivalent in days per week	5.3 days	3.7 – 7.0 days
Hours In Service during a day that is worked (excl. Breaks)	3.7 hrs.	2.1 – 8.0 hrs
Proportion of Time Hired while in service	26 %	22 % - 32 %
Proportion of Distance Driven hired while in service	33 %	21 % - 53 %

Eight Drivers, all but one with a Dispatch Centre

On average 519 trips were obtained from each driver, spanning 129 days (four months)

Driver work habits vary widely: some work long hours but on only a few days per week. Others work every day – but usually for only a few hours. On average, a driver works for 3.7 hours a day on 5.3 days/week i.e. 20 hours

While in-service, a taxi is occupied 26% of the time and for 33% of the distance it is driven.

& Limatel

ATHLONE DRIVERS —AVERAGE METERED FARE



The average metered fare across all 8 drivers was $\notin 10.72$. Two drivers average a fare of less than $\notin 10.00$.

ATHLONE DRIVERS – METERED REVENUE PER HOUR



The average metered revenue collected per hour in Athlone is €19.58, but two drivers fare considerably worse with less than €14 per hour in revenue.

89

Athlone Drivers – Metered Revenue Per Taxi

ltem	Average of all taxis	Range in the average for each taxi
Average Metered Fare	€ 10.72	€ 8.77 - €14.48
Metered Revenue Per Hour In- Service	€ 19.58	€ 13.41 - € 32.68
Metered Revenue Per Day Worked	€ 73	€ 30 - € 145
Average Metered Revenue Per Week in Sample Period - working or not	€ 382	€ 147 - € 808

Metered Revenue varies widely as a result of the volume of hours worked, and the yield available at a given period of the week. The statistics shown are those actually achieved by taxis. They have not been adjusted to account for the different time periods that the drivers work.

The average fare a taxi earns is $\notin 10.72$. The average metered revenue in an hour is $\notin 19.58$, but some drivers who work for a short number of hours at the time of highest demand can average $\notin 32.68$.

The average taxi records metered revenue of €73 for each day in service. The Average Metered Revenue Per Week in the sampled period - which may include some weeks of no activity - is €382/week

ATHLONE DISTRIBUTION STATISTICS

- Purpose: To determine the distribution of all the trips undertaken by drivers in Athlone
- In the examples shown all trips have been pooled into either Standard and Premium Time, and the distribution patterns in each of these two categories are shown. So as to keep the sample large, trips were not further categorised into any sub-periods of Standard or Premium Time. The analysis therefore contains the inherent assumption that distribution patterns do not vary within sub-periods of Standard Time or Premium Time.
- Half of journeys are below 3.2 km, but the top quartile are over 4.7 km at Standard Time, and over 5.4 km at Premium Time.
- The distribution of the trips by distance is not the same by day and night. The distribution of short and medium trips is similar at all times, but journeys above the median tend to be longer at Premium Time. This is the reason that the average distance driven while hired is longer at Premium Time.
- The average fare in all of the sampled data was €9.61 at Standard Time and €11.28 at Premium Time. Fares at Premium Time are higher on average than those at Standard Time, but the faster speeds achieved at Premium Time partially offset the increased meter rate.
- The top 25% of fares are above €9.70 at Standard Time and above €11.65 at Premium Time.

$\label{eq:athlone-distance Hired @ Standard Time} Athlone-Distance Hired @ Standard Time$



above and below 3.2 km.

$\label{eq:athlone-distance Hired @ Premium Time} Athlone-Distance Hired @ Premium Time$



At Premium Time, journeys average 5km, and half are below 3.2 km

93

ATHLONE – DISTANCE HIRED COMPARISON



The distance driven while hired is on average longer at Premium Time. The distribution of short and medium trips is similar, but journeys above the median tend to be longer at night.

ATHLONE – METERED FARE @ STANDARD TIME



The distribution of metered fares is concentrated over short distances, and so 75% of all trips cost less than \notin 9.70.

ATHLONE – FARE @ PREMIUM TIME



ATHLONE – FARE DISTRIBUTION COMPARISON



Fares at Premium Time are higher on average than those at Standard Time. This is due to a combination of longer distances and the increased metered rate at Premium Time.

SUMMARY AND CONCLUSIONS

- The information in this report is derived from a download of a sample of one type of taximeter, which was undertaken in March and April 2015
- 98 drivers agreed to have data from their taximeter downloaded with each of the taximeters containing all records of the previous three months use of the taximeter.
- Of the 98 drivers, 85 operate in Dublin, Cork and Athlone. The remaining 13 drivers operate in other areas, but a decision was taken to focus on the above three operational areas.
- Data on over 50,000 trips was obtained and analysed, accounting for €700,000 in metered revenue for 85 drivers operating in Dublin, Cork and Athlone.
- All taximeters related to an owner / driver vehicle with only one driver associated with the vehicle . All data was anonymised.
- The average hours worked per driver in the sample was 25 hours per week some drivers worked more hours and others worked less hours.
- The average number of days worked each week was either 5.3 or 5.4 days per week in the three areas.
- The average number of hours worked each day in service was 5.4 hours in Cork, 4.8 hours in Dublin and 3.7 hours in Athlone.
- The average fare recorded was €14.97 in Dublin, €12.96 in Cork and €10.72 in Athlone.
- For the drivers in the sample, the average metered revenue per week was €650 in Cork, €635 in Dublin and €382 in Athlone. Among the sample of drivers, average metered revenue per week ranged between €98 and €1,189.