

Taxi Fare Monitoring Annual Report 2016-17

Regional and Country taxi zones

11 December 2017

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Summary

We monitor regional and country taxi fares

The Essential Services Commission is responsible for publishing an annual report on regional and country taxi fares and costs to identify and highlight potential areas of misuse of market power.¹ This is our third monitoring report. This report builds on the knowledge of trends in fares and costs in the regional and country zones we developed in preparing our previous reports.

We compare trends in taxi fares and costs

We compare trends in taxi fares to trends in taxi costs to identify fare increases above costs. Such increases may be a sign of market power being exercised.

We collect data from the Taxi Services Commission to analyse changes in taxi fares. We use the regulated fares that applied in 2014 and the fares set by taxi operators since then as benchmarks for our analysis of changes in fares.

Our taxi cost index was established through a survey of taxi operators in 2015 that identified the major costs involved in operating taxis. These costs have been indexed to estimate the change in taxi operators' costs over time.

This year we found no clear evidence of misuse of market power

The notified fare increases for 2016-17 were, in general, above the observed changes in the taxi cost index. Although this could be a sign of market power, most notified fare increases were from operators who notified for the first time. This makes it difficult to determine if these fare increases represent misuses of market power or the standard business practice of making periodic increases in prices to avoid costs associated with changing prices.

In addition, competition appears to be increasing in some regional and country areas. This suggests that to the extent that operators possess market power, this market power may be temporary.

As a result we do not consider that further investigation is required at this time, but we will continue to monitor taxi operators' fares and costs for potential misuses of market power.

¹ *Transport (Compliance and Miscellaneous) Act 1983, S162ED*

Our findings for 2016-17

The Essential Services Commission must report annually on the economic performance of the regional and country taxi industry and identify potential misuses of market power that warrant further investigation.

Our analysis of notified taxi fares and taxi costs shows average notified fares have increased by more than costs. But most fare increases were first time notifications and there are signs of increasing competition in some areas.

At this stage, we do not consider that any of the fare notifications for this year represent potential misuses of market power that warrant further investigation.

We monitor the taxi industry to identify misuses of market power

Under the *Transport (Compliance and Miscellaneous) Act 1983*, we must monitor regional and country taxi operators to inform the government and public of the economic performance of the industry and identify potential misuses of market power that warrant further investigation. This report contains our analysis on trends in regional and country taxi fares and costs between July 2016 and June 2017.

What is market power?

Market power involves the ability to raise and maintain prices above the level that would prevail in a competitive market. To identify where this may potentially be occurring in the regional and country taxi zones, our approach is to compare changes in taxi operators' notified maximum fares against the estimated changes in the cost of providing taxi services.

The average increase in taxi fares for 2016-17 was higher than costs

Over the past year 91 taxis, just under 20 per cent of the regional and country taxi fleet, had their fares changed. Taxi operators notified fare increases of between four and 16 per cent while others notified fare decreases between 0.2 and 2.3 per cent. The average change notified was an increase of 3.3 per cent. This is the lowest average increase by operators that have notified changes in fares since regional and country taxi operators began to set their own fares in 2014 (see Table 1).

Table 1: Average of notified fare increases – 2014-15 to 2016-17

Average change in fares notified	
2014 – 2015	14%
2015 – 2016	11%
2016 – 2017	3%

Our taxi cost index indicates the cost of operating a conventional taxi in the regional zone has decreased by 2.2 per cent since 2014. In a competitive market when costs decrease we would expect fares to also decrease. Although the average change in fares for 2016-17 is lower than in previous years, it is still higher than the decrease in costs of 2.2 per cent observed since 2014.

We found no evidence of sustained misuse of market power

Although there were some fare increases notified this year that were greater than observed changes in costs, we have not identified any potential misuses of market power that warrant further investigation at this stage.

Most of the operators that notified fare increases this year had not notified previously. Although increasing fares while costs are decreasing could be evidence of market power, the notified changes for 2016-17 could also reflect cost movements that differ from the state-wide average or behaviour aimed at avoiding changeover costs. For example, taxi operators have expressed a reluctance to increase their fares frequently due to the costs associated with changing fares, such as updating fare schedules, taximeters and signage. To minimise these costs, taxi operators may avoid making minor fare changes on a regular basis and instead choose to make less frequent fare changes of a larger magnitude. This may lead to a divergence in fares and costs in the short term.

In addition to this, there is increasing evidence of competition between taxi operators in the regional and country zones. In last year's report, we noted fares from Colac and Kyneton were among the highest in the state following consecutive fare increases between 2014 -15 and 2015 -16. In 2016 -17, new competitors began offering their services in both of these areas. Also in 2016 -17, operators in the neighbouring areas of Bairnsdale and Lakes Entrance notified fare decreases. These fare decreases may represent price competition.

These market outcomes suggest that to the extent that taxi operators in the regional and country zones possess market power, this market power may be temporary.

Changes in taxi fares

Assessing taxi fares helps us identify misuses of market power.

Analysing notified fare data, overall the average notified change in fares was lower than in previous years (See Table 1). We also observed some notified fare decreases.

The most notable increases in fares took place in Mildura (16 per cent) and Horsham (four per cent on top of a previous 12 per cent increase), but neither increase warrants further investigation at this stage.

Changes in fares can help identify misuse of market power

Assessing taxi fare trends against trends in taxi costs allows us to identify potential divergences in fares relative to costs. Such divergences can be a sign that market power is being exercised.

To enable a simple analysis of trends in taxi fares for the purposes of our monitoring role, we calculate a weighted average fare. The weighted average fare calculation accounts for all the components in a taxi operator's fare structure and estimates a single average fare for that operator. This approach avoids unnecessarily complex analysis of many different fare structures applying at different times of the day and week, across hundreds of regional and country taxi operators. More detail on how we calculate the weighted average fare can be found in appendix C.

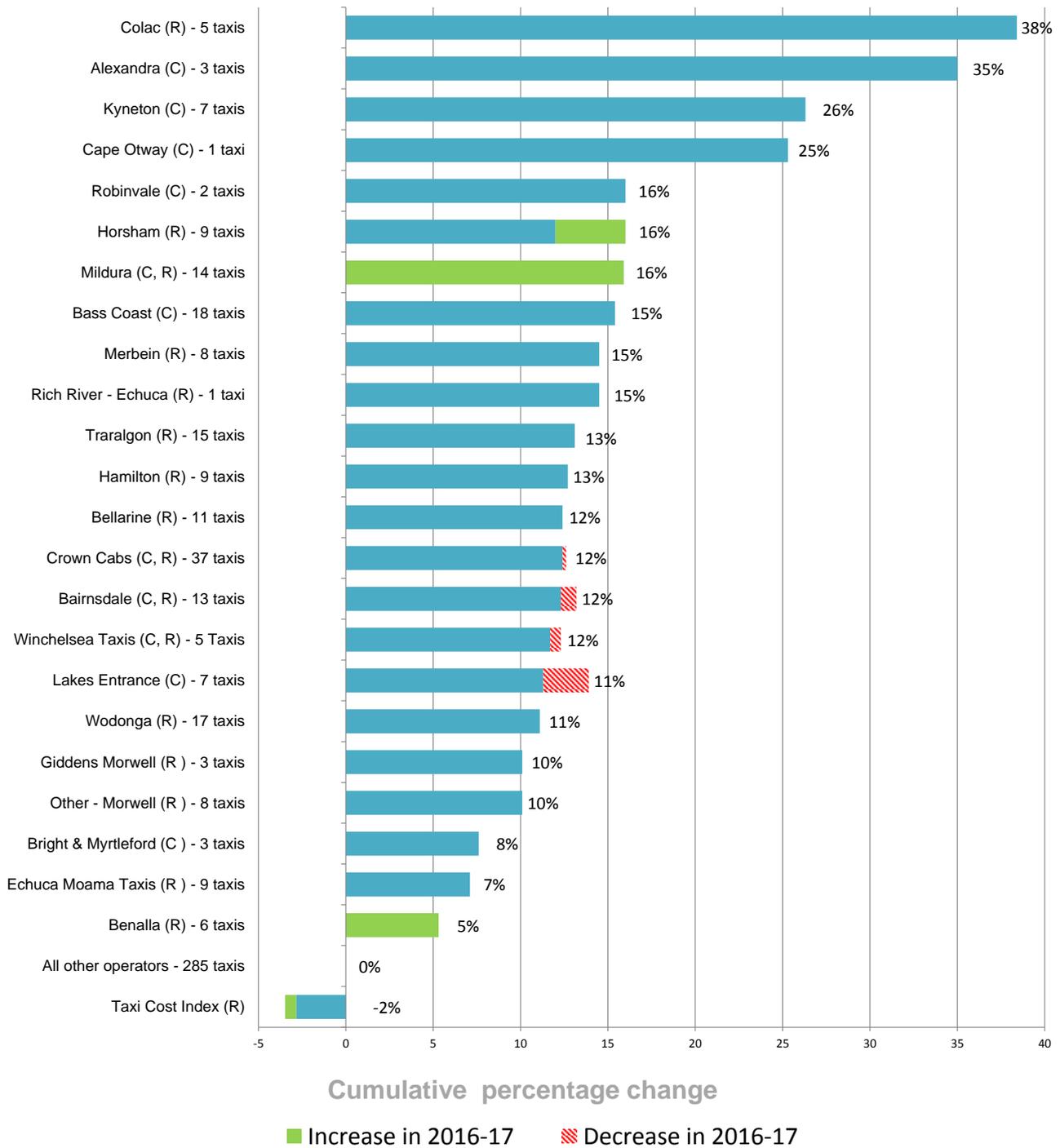
Notified fares for 2016-17 are lower than previous years

Taxi operators in several areas notified fare changes in 2016-17. Fare increases were notified by operators based in Benalla, Horsham, and Mildura. Operators in Anglesea², Bairnsdale and Lakes Entrance notified fare decreases. In addition to fare changes in those areas, Crown Cabs, which operates across large parts of regional and country Victoria, made small changes to its fares. Figure 1 shows these changes in fares, and our cost index, for conventional taxis since 2014.

On average the fare changes notified for 2016-17 are lower than for previous years. Of the 496 taxis operating in regional and country Victoria 57 per cent still charge the regulated fares that applied in 2014 before operators could set their own fares. Although not shown in Figure 1, the fare changes notified for high occupancy vehicles have been similar to those for conventional taxis.

² Winchelsea Taxis operates in Anglesea, Bannockburn, Colac and Winchelsea. Winchelsea Taxis had previously notified fares in Anglesea, but not in the other areas. The newly notified fares for all of Winchelsea Taxis' operating areas are lower than those previously notified for Anglesea, but higher than the previously regulated maximums.

Figure 1 Fare and cost changes from July 2014 to June 2017
Listed by taxi network or operator in recorded operating area



Notes: Taxi operators marked C operate in the country zones. Taxi operators marked R operate in the regional zone. We have not listed the previously notified fare change for Drummond in this report. The notification for this operator was for a single taxi now operated by Crown Cabs.

There were notable fare increases in Mildura and Horsham

The highest average fare increase notified in 2016 -17 was 16 per cent in Mildura. This was the first time operators affiliated with Mildura Taxis notified fare increases. Though the increase is well in excess of the changes in costs we observed, we note that competition from operators in neighbouring Merbein may prevent operators in Mildura from misusing their market power. We also note the fare increase in Mildura could be a periodic fare increase to avoid changeover costs as discussed in the section above on our findings for 2016 -17.

The other notable fare increase was in Horsham. Although Horsham Taxis' notified change in fares for 2016 -17 was four per cent, which is lower than Mildura Taxis' change, Horsham Taxis previously notified a fare increase in 2014-15. Multiple fare increases within a relatively short period of time could potentially be evidence of a misuse of market power. However, the cumulative fare increase in Horsham is not much higher than the average cumulative change in fares for operators that have notified. As a result we do not consider that Horsham's fare increases warrant further investigation at this time.

We have not highlighted the fare increase, of five per cent, in Benalla. This was the first time Benalla Taxis increased its fares and its cumulative fare increase since 2014 is the lowest of all operators that have notified.

Update on the behaviour of operators highlighted in previous reports

In last year's report we noted that fares in Colac and Kyneton were among the highest in the state following consecutive fare increases in 2014 -15 and 2015 -16. At the time we consulted with operators in Colac and Kyneton and were satisfied that no further investigation was warranted. Colac and Kyneton have not notified fare changes in 2016 -17. In addition, we note that Crown Cabs and Winchelsea taxis began operating in Colac in 2016 -17. Also, in its most recent price notification, Crown Cabs added Kyneton to its listed service areas.

In our last report, we also noted that operators in Lakes Entrance and Bairnsdale both notified fare increases in 2014 -15 and 2015 -16. However, in 2016 -17 operators in Bairnsdale and Lakes Entrance notified fare decreases. This could be evidence of price competition in that area or a response to the Commission's 2015 -16 fare monitoring report.

Our conclusion is that no further investigation is warranted at this time

Of the three operators that notified increases in 2016 -17, two did so for the first time. Although those operators increased their fares by more than the increase we observed in our taxi cost index, they may be making periodic fare increases to avoid costs associated with frequently changing fares rather than exercising market power.

Also, we note that to the extent that taxi operators in the regional and country zones possess market power, this market power may be temporary. In Kyneton and Colac, where there have been large consecutive increases to fares, new entrants have begun providing taxi services at lower prices.

Therefore, we do not consider that the fare increases notified in 2016 -17 warrant further investigation for the moment. However, given the nature of fare increases notified in Horsham and Mildura, those areas will need to be monitored closely for any further fare increases.

Changes in taxi costs

Trends in taxi costs help us identify potential misuses of market power.

We measure taxi costs using a taxi cost index we established in 2015.

Taxi costs have increased for the first time since operators began setting their own fares in 2014-15, but are still below 2014-15 levels.

Trends in taxi costs can help identify misuse of market power

Assessing trends in taxi costs against trends in taxi fares allows us to identify potential divergences in fares relative to costs. Where an operator consistently increases their fares by more than the increases in their costs it could be a sign that they are misusing their market power.

We measure changes in costs using our taxi cost index

In 2015, we conducted a survey of taxi operators in the regional and country zones to understand their costs. Using the information from this survey we were able to identify taxi operators' key cost categories and the share of total costs they account for. To measure how these costs change over time, we used publically available price indexes for each cost category. Our taxi cost index is composed of an index and cost share for each cost category.

For each cost category, we measure the change in the relevant index every year and make corresponding adjustments to their cost shares. With this information we are able to estimate the total change in taxi costs in the regional and country zones.

Costs marginally increased in 2016-17

Table 2 shows the cost of operating conventional taxis in the regional zone increased slightly between July 2016 and June 2017. Although taxi costs marginally increased in 2016 -17, cost decreases in 2014 -15 and 2015 -16 mean that the cost of operating a conventional regional taxi is still 2.2 per cent lower than in July 2014. We estimate similar cost trends for high occupancy taxis and conventional taxis in the country zone.

The increase in costs for 2016-17 was mainly driven by small increases in fuel and administration costs of just under two per cent. The biggest cost decrease was driven by network fees which

dropped by almost six per cent.³ Overall, the increase in cost of operating a conventional taxi in the regional zone was 0.5 per cent.

Further details about our taxi cost index calculations and component indexes are available in appendix B.

Table 2 Change in taxi cost index for conventional regional taxis in 2016-17

Cost Components	Change for cost component	Cost share	Contribution to overall change in index
Vehicle	-1.9%	8.6%	-0.2%
Licence	1.4%	16.7%	0.2%
Network fees	-5.9%	10.7%	-0.6%
CTP insurance	1.9%	1.9%	0.0%
Comprehensive insurance	3.8%	3.3%	0.1%
Workers compensation	1.9%	2.6%	0.0%
Maintenance and repairs	0.6%	15.7%	0.1%
Fuel	1.8%	19.3%	0.3%
Wash/cleaning	1.9%	1.8%	0.0%
Administration	1.9%	19.3%	0.4%
Total*		100%	0.5%
Total cumulative change since July 2014			-2.20%

*Note: Due to rounding, the totals do not equal the sum of the rows

³ The cost indexes we use to estimate changes in network fees may not necessarily reflect an individual operator's circumstances. We use the ABS's Melbourne telecommunications equipment and services index to estimate the change in taxi operator's network costs. So, while telecommunications equipment and services costs have generally decreased over the last year in Melbourne, this may not be the case with network costs for operators.

Appendix A: Price monitoring regime background

Following reforms to the taxi industry implemented in June 2014, taxi operators in the regional and country tax zones were given the ability to set their own fares.

We were given a role monitoring the fares set by taxi operators in order to identify potential misuses of market power.

To fulfil our responsibility to monitor fares in the regional and country tax zones, each year we publish a report with our analysis of changes in taxi fares over the previous financial year.

Victorian taxi zones

Taxis in Victoria are currently licensed to operate in one of four taxi zones: the metropolitan zone (metro zone), the urban and large regional zone (urban zone); the regional zone; or the country zone (see Figure A.1).

Figure A.1: Victorian taxi zones



The regional and country zones cover areas outside metropolitan Melbourne and the regional centres of Geelong, Ballarat and Bendigo. The regional zone is comprised of towns typically with population sizes of 10,000 to 20,000, while the country zone covers the remainder of Victoria.

On 30 June 2017 the number of taxis operating in regional and country Victoria was 496 (see Table A.1).

Table A.1: Number of taxis operating in regional and country Victoria in 2016-17

Taxi zone	Number of taxis
Country	158
Regional	348
Total	496

Price deregulation in the taxi industry

Under taxi industry reforms implemented in June 2014, taxi operators in the regional and country taxi zones may set their own fares under a fare notification regime.

The Transport (Compliance and Miscellaneous) Act 1983 (The Transport Act) sets out the requirements for the price notification regime. Fares set by regional and country taxi operators must be notified to the Taxi Services Commission (TSC) and published on the TSC website. Operators who have not notified fares to the TSC are deemed by legislation to have notified the regulated maximum fares from May 2014.⁴

Our role is to monitor the regional and country taxi industry

For the first five years of the fare notification regime, we have a role to:

- monitor and report on trends in prices, costs and return on assets for regional and country taxi operators
- identify and highlight potential areas of misuse of market power that warrant further investigation.

⁴ Transport (Compliance and Miscellaneous) Act 1983, s. 162EA(4)

Our role is to keep Victorian consumers and the government informed about the taxi industry's economic performance and support its efficient operation.⁵ We do this through publishing annual reports.

Our approach to monitoring the country and regional taxi industry

In order to identify potential misuses of market power, we must first identify whether a taxi operator has market power. One aspect of market power is the ability to raise and maintain prices above the level that would prevail in a competitive market. To identify if this may be occurring in the regional and country taxi zones, we compare changes in taxi operators' notified maximum fares against the indexed cost of providing taxi services.

We aim to minimise the information burden on taxi operators by making use of publicly available data where possible. We also adopt an approach that favours simplicity over complexity.

Assessing taxi fares

To assess taxi fares we compare fares notified by taxi operators, and changes in taxi operators' notified fares over time. Assessing these taxi fare trends against trends in taxi costs allows us to identify potential divergences in fares relative to costs, which may be a sign of market power being used.

Assessing taxi costs

We use a taxi cost index (TCI) to estimate the changes in the costs of providing taxi services in the regional and country taxi zones. The TCI measures the overall changes across key cost components incurred in providing taxi services. While the costs of individual taxi operators will vary, the TCI provides a representative measure of overall movements in typical taxi costs to inform our assessment.

Consultation with taxi operators

Where our fare and cost analysis raise concerns, we consult with the relevant taxi operators to better understand their individual circumstances. This is an important part of our approach given local markets across regional and country Victoria inevitably have unique characteristics, which our initial analysis may not capture.

⁵ *Transport (Compliance and Miscellaneous) Act 1983*, s.162ED(1)

Return on assets

The Transport Act includes monitoring return on assets as part of our role. Return on assets is a measure of profitability calculated as net revenue divided by total assets.

Reporting on return on assets would impose a significant regulatory burden on the industry. The valuation of assets would require taxi operators to provide a large amount of detailed information on their assets. We consider the cost of monitoring return on assets would not justify its use for the purposes of our monitoring role. For this reason we have not included return on assets as a measure in our monitoring activities to date.

Appendix B: Figures underlying our taxi cost analysis

For the purposes of transparency we publish the figures underlying our taxi cost analysis.

This appendix provides all of the figures necessary to replicate the changes in our taxi cost index for conventional and high occupancy taxis in both the regional and country zones.

These include the changes in the component indexes, cost shares, and the total cost index.

Keeping our analysis transparent

This appendix provides all of the figures necessary to replicate the changes in our taxi cost index for conventional and high occupancy taxis in both the regional and country zones. These include the changes observed in the component indexes and cost shares that make up our taxi cost indexes. We provide this information to help stakeholders understand and have confidence in our analysis.

Calculating the taxi cost indexes

Key taxi cost components

In May 2015 we commissioned a survey of regional and country taxi operators to understand the typical costs of operating taxis. From the survey we identified eight key cost components that were typically representative of taxi operators' overall cost profiles. These key components are summarised in Table B.1 below.

From the survey results, we estimated the total costs associated with operating a typical regional and country taxi. We also estimated the cost share of each component – that is the share of total costs each component makes up.

Table B.1: Key cost components for taxi operators

Cost component	Description
Vehicle	Includes costs associated with purchasing or leasing a vehicle, including fit-out.
Licence	Costs associated with purchasing or leasing a licence.
Network fees	Costs associated with network affiliation. Operators receive access to services such as centralised booking, dispatch and networked security alarms.
Insurance	Includes compulsory third party insurance (Transport Accident Charge), comprehensive insurance and workers' compensation insurance.
Maintenance and repairs	Includes the cost of operators' own time, staff costs and costs paid to other businesses for maintenance and repairs.
Fuel	Total fuel costs incurred by a taxi.
Wash/cleaning	Costs associated with washing/cleaning a taxi.
Administration	Includes the cost of operators' own time, staff costs and costs paid to other businesses for administration (e.g. accountant).

Taxi cost index

To measure changes in taxi costs over time we used the survey results to make a taxi cost index. There are two basic parts of our taxi cost index: the component indexes and the weighting of those indexes. Each component index measures the change in one of the key cost components we identified in our survey of taxi operators. For example, we measure changes in the 'maintenance and repairs' cost component according to changes in the 'Melbourne CPI maintenance and repairs of motor vehicles' index, available from the Australian Bureau of Statistics (ABS). The component indexes are each assigned a cost share based on their percentage share of total costs. By multiplying the change in each component index over time by its share of total costs, we can estimate the change in the total costs over time.

Component indexes

With the exception of the fuel index (which we obtain from FUELtrac) all indexes come from publicly available sources including: the ABS, the Reserve Bank of Australia, the Transport Accident Commission and the Insurance Council of Australia. Our monitoring of changes in key cost components therefore avoids imposing a significant burden on taxi operators to regularly report their costs to us. Details on the indexes we use can be found below in Table B.2.

Table B.2 Taxi cost index - Component indexes

Cost component	Cost component index
Vehicle	Composite index based on ABS motor vehicle CPI (ABS series A2328556K) and RBA small business 3 year fixed rate lending series (RBA series FILRSB3YF)
Licence	Melbourne all groups CPI less 0.5 percentage points
Network fees	Melbourne CPI telecommunications equipment and services (ABS series A2328511F)
Compulsory third party insurance	Determined as the percentage change in TAC Compulsory third party charges
Comprehensive insurance	Insurance Council of Australia's comprehensive motor vehicle insurance (national) average premium index
Workers compensation	Wages price index for hourly rates of pay in Victoria excluding bonuses (ABS series A2608359V)
Maintenance and repairs	Melbourne CPI maintenance & repairs of motor vehicles (ABS series A2328736V)
Fuel	FUELtrac LPG pump price indexes averaged for 20 regional centres
Wash/cleaning	Melbourne all groups CPI (ABS series A2325811C)
Administration	Wage Price Index for hourly rates of pay in Victoria excluding bonuses (ABS series A2608359V)

Cost shares

The cost shares we assign to each component index are based on the cost profile from our survey of regional and country taxi operators' costs in May 2015. We periodically update the cost shares by multiplying them by the change in the corresponding component index. This ensures the share of total costs each component represents is updated when different costs change by different amounts over time.

Tables B.3 to B.6 below present the old and new cost shares for conventional and high occupancy taxis in regional and country Victoria.

TABLE B.3: Cost shares - conventional taxis in the regional zone

Cost item	Share of total costs June 2016	Change in component index 2016-17	Share of total cost June 2017
Formula	a	b	$c = a (1 + b) \div \sum a (1 + b)$
Vehicle	8.8%	-1.9%	8.6%
Licence	16.5%	1.4%	16.7%
Network fees	11.5%	-5.9%	10.7%
CTP insurance	1.9%	1.9%	1.9%
Comprehensive insurance	3.2%	3.8%	3.3%
Workers compensation	2.6%	1.9%	2.6%
Maintenance and repairs	15.7%	0.6%	15.7%
Fuel	19.1%	1.8%	19.3%
Wash/cleaning	1.8%	1.9%	1.8%
Administration	19.1%	1.9%	19.3%

TABLE B.4: Cost shares - high occupancy taxis in the regional zone

Cost item	Share of total costs June 2016	Change in component index 2016-17	Share of total cost June 2017
Formula	a	b	$c = a (1 + b) \div \sum a (1 + b)$
Vehicle	13.1%	-1.9%	12.9%
Licence	15.4%	1.4%	15.6%
Network fees	10.0%	-5.9%	9.4%
CTP insurance	2.3%	1.9%	2.3%
Comprehensive insurance	3.4%	3.8%	3.5%
Workers compensation	4.1%	1.9%	4.1%
Maintenance and repairs	14.1%	0.6%	14.2%
Fuel	17.9%	1.8%	18.2%
Wash/cleaning	1.7%	1.9%	1.7%
Administration	17.9%	1.9%	18.1%

Appendix B: Figures underlying our taxi cost analysis

Table B.5: Cost shares - conventional taxis in the country zone

Cost item	Share of total costs June 2016	Change in component index 2016-17	Share of total cost June 2017
Formula	a	b	$c = a (1 + b) \div \sum a (1 + b)$
Vehicle	9.9%	-1.9%	9.7%
Licence	5.8%	1.4%	5.8%
Network fees	12.9%	-5.9%	12.1%
CTP insurance	2.1%	1.9%	2.1%
Comprehensive insurance	3.6%	3.8%	3.7%
Workers compensation	2.9%	1.9%	2.9%
Maintenance and repairs	17.7%	0.6%	17.8%
Fuel	21.5%	1.8%	21.8%
Wash/cleaning	2.0%	1.9%	2.0%
Administration	21.5%	1.9%	21.9%

Table B.6: high occupancy taxis in the country zone

Cost item	Share of total costs June 2016	Change in component index 2016-17	Share of total cost June 2017
Formula	a	b	$c = a (1 + b) \div \sum a (1 + b)$
Vehicle	14.7%	-1.9%	14.4%
Licence	5.3%	1.4%	5.4%
Network fees	11.2%	-5.9%	10.5%
CTP insurance	2.6%	1.9%	2.6%
Comprehensive insurance	3.8%	3.8%	3.8%
Workers compensation	4.5%	1.9%	4.6%
Maintenance and repairs	15.8%	0.6%	15.9%
Fuel	20.1%	1.8%	20.4%
Wash/cleaning	1.9%	1.9%	2.0%
Administration	20.0%	1.9%	20.3%

Appendix C: Weighted average fare calculation

We use weighted average fares to simplify comparison of different fare structures that vary depending on distance, duration and across time of the week.

By making some assumptions about the characteristics of the average trip in the country and regional zones, we can develop a weighted average fare for each taxi operator.

This appendix contains detailed information on how we calculate weighted average fares.

The weighted average fare is how we compare fares

To enable a simple analysis of trends in taxi fares for our monitoring role, we calculate a weighted average fare for each notified fare structure. The weighted average fare calculation takes account of all components in a fare structure and estimates a single average fare. This approach avoids unnecessarily complex analysis of many different fare structures applying at different times of the day and week, across hundreds of regional and country taxi operators.

Assumptions underlying the weighted average fare calculations

In calculating a weighted average fare from a fare schedule with multiple components there are a number of assumptions we have to make. Certain trip characteristics affect how much a fare will be – for example, the distances of trips occurring and the proportion of booked trips (that attract a booking fee). To inform these assumptions, we have analysed a sample of regional and country trip data obtained from the Taxi Services Commission (TSC). From the trip data sample, we have estimated a representative profile of trips and their characteristics that we can use to calculate the weighted average fare.

Process for calculating the weighted average fare

The weighted average fare calculation is a three step process.

Step 1: average trip characteristics for each hour of the week

We base our assumptions on a sample of regional and country taxi trip data from the TSC. The data includes the details of each characteristic that affects the taxi fare for that trip – these include the trip distance, the length of time the trip took, whether or not it was booked (and therefore

attracted a booking fee) and whether or not the passenger was a multi purpose taxi program⁶ (MPTP) member.

The trip data sample covers the year from October 2013 to September 2014. It includes trip data submitted to the TSC by taxi networks including: Morwell Taxis, Riviera Taxis & Hire Cars, Swan Hill City Taxis, Warrnambool Radio Taxis, Warrnambool 13CABS, and Wodonga Taxis.⁷

From the data we can calculate a trip profile for each hour of the week including:

- the average trip distance
- the average trip duration
- the percentage of booked trips
- the percentage of trips taken by MPTP members.

The trip profile given by these characteristics is used to calculate average fares for each hour of the week in step 2. The profiles for each characteristic across each hour of the week are shown in Figures C.2 to C.5 at the end of this appendix.

Step 2: calculate average fares for each hour of the week

Using the average trip profile calculated in step 1, and taxi operators' fare structures published on the TSC's website, we then estimate each taxi operator's average fare for each hour block of the week.

Step 3: calculate weighted average fares

From the trip data described in step 1, we can also calculate the percentage of trips that occur in each hour block of the week (see Figure C.1 at the end of this appendix). This provides the 'weights' in our weighted average fare calculation.

We can then calculate the weighted average fare for each taxi operator by multiplying:

- a) their average fares for each hour across the week (from step 2); by
- b) the percentage of trips that occur during each hour (based on the trip data).

⁶ The MPTP is a state government program that subsidises taxi fares for people with severe and permanent disabilities. Most MPTP members receive a 50 per cent subsidy on taxi fares up to a maximum of \$60 per trip and \$2180 per year. Some taxi operators charge MPTP members lower fares.

⁷ Data from other taxi networks or operators in the regional and country zones was either not available or incomplete over the sample period. We have used the year October 2013 to September 2014 as this was the year for which the dataset was most complete.

Note on the fare estimation formula

The trip data sample we have obtained from the TSC does not include the fare for each trip. We therefore estimate fares as described in step 2 based on trip distance and trip time.

Estimating fares based on trip distance and time involves some uncertainty because most taxi operators' fare structures incorporate speed-dependent charges. Typical fare structures apply a per kilometre charge (distance rate) only when travelling above 21 kilometres per hour, and a per minute charge (waiting time rate) when travelling below 21 kilometres per hour.

We have developed the following formula to estimate fares based on total trip distance and time.

$$Total\ fare = FF + DR(DT) + WR(0.665(TD) - 0.441(DT) - 1.315) + BF$$

where:

- *FF* is the flagfall
- *DR* is the distance rate in dollars
- *DT* is the distance travelled in kilometres
- *WR* is the waiting rate in dollars
- *TD* is the trip duration in minutes
- *BF* is the booking fee (if it applies).

The coefficients in the equation were estimated by doing a multiple regression of total fares on distance travelled and trip duration. The data used for the regression is a sample of MPTP trip records obtained from the TSC. The MPTP trip data includes taxi trips taken by MPTP members including trip distance, trip time and actual fare.

Figure C.1: Percentage share of total trips in each hour of the week

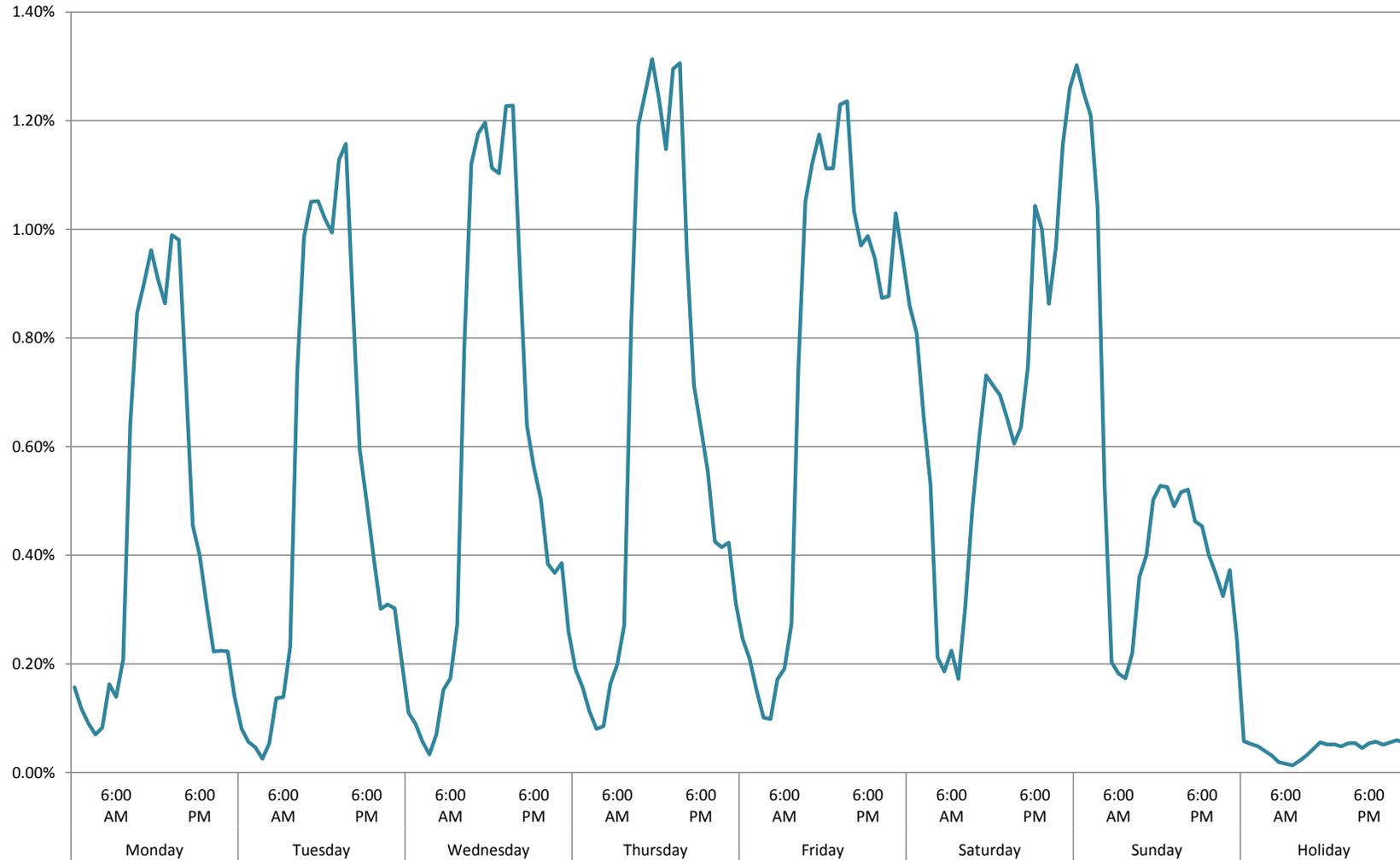


Figure C.2 :

Trip profile: Percentage of booked trips for each hour of the week

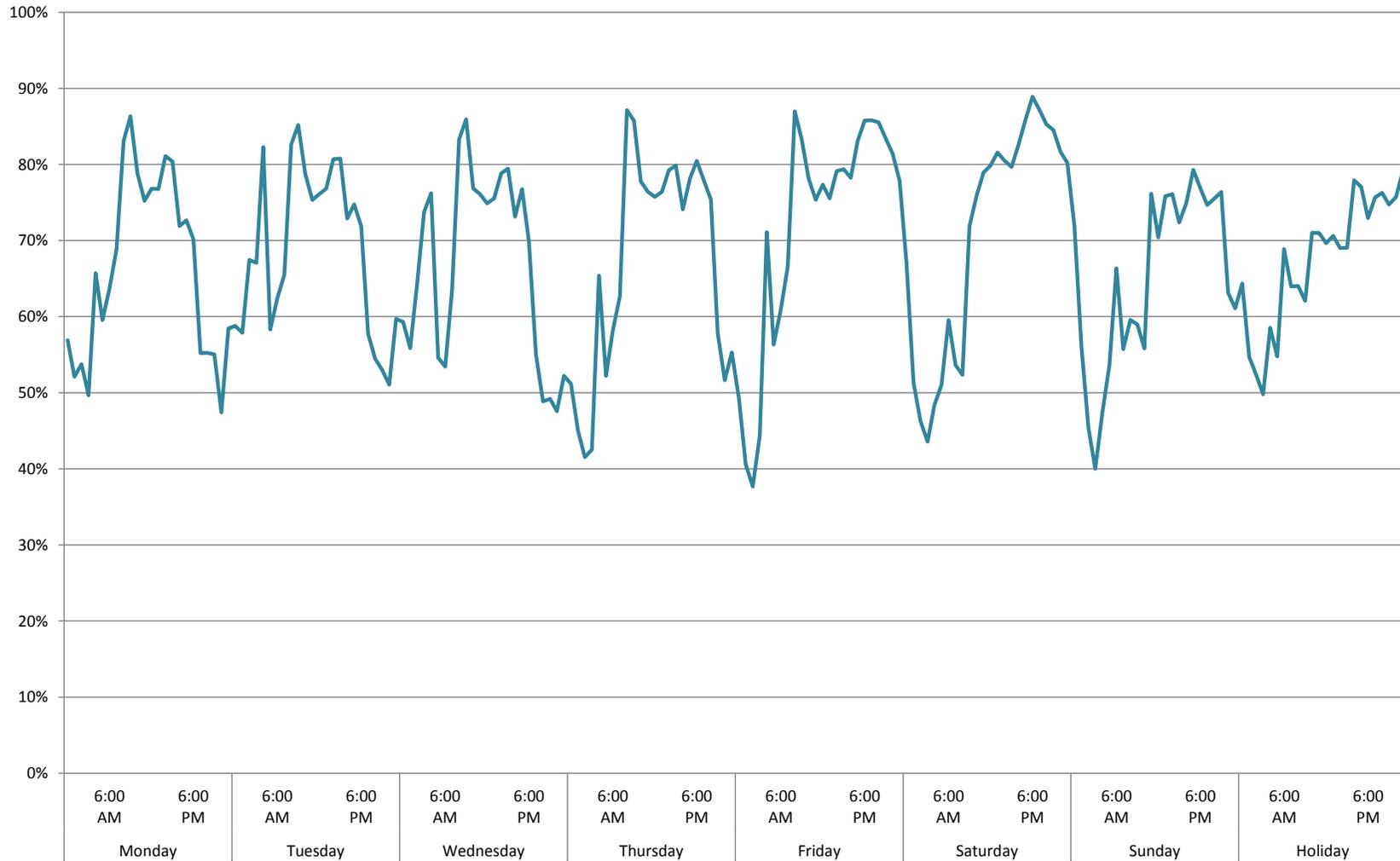


Figure C.3:

Trip profile: Percentage of MPTP trips for each hour of the week

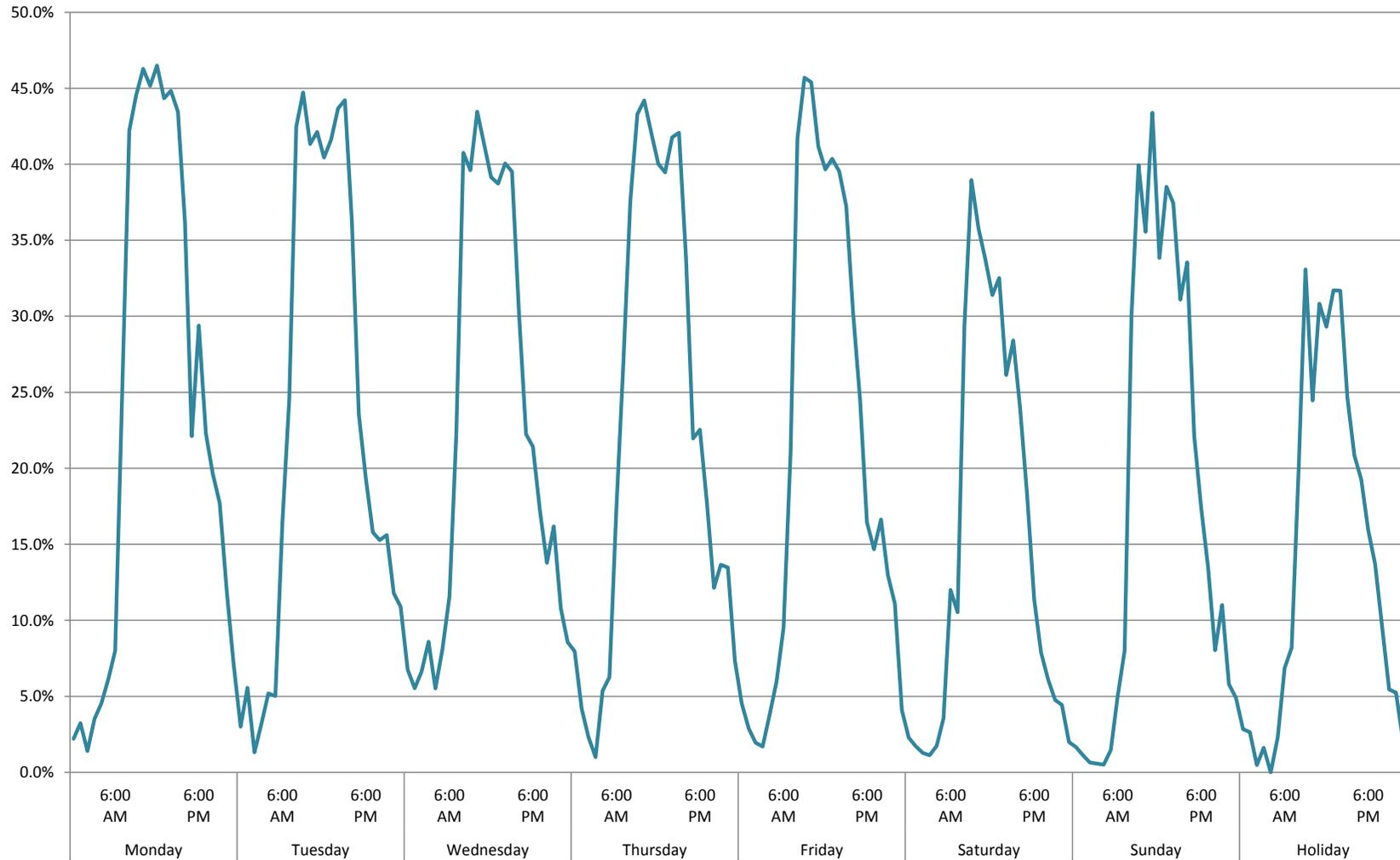


Figure C.4: Trip profile: Average trip length in kilometres for each hour of the week

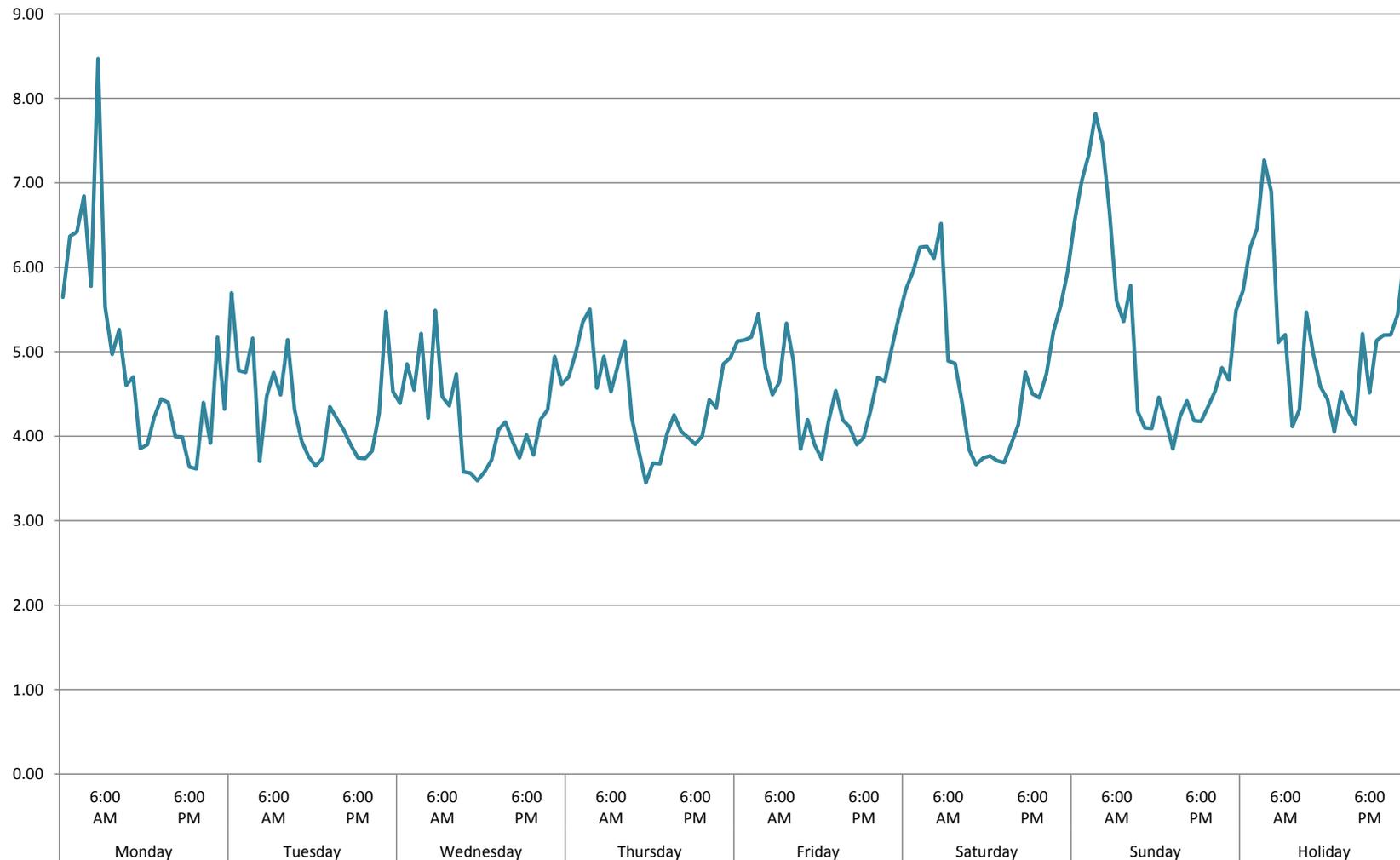
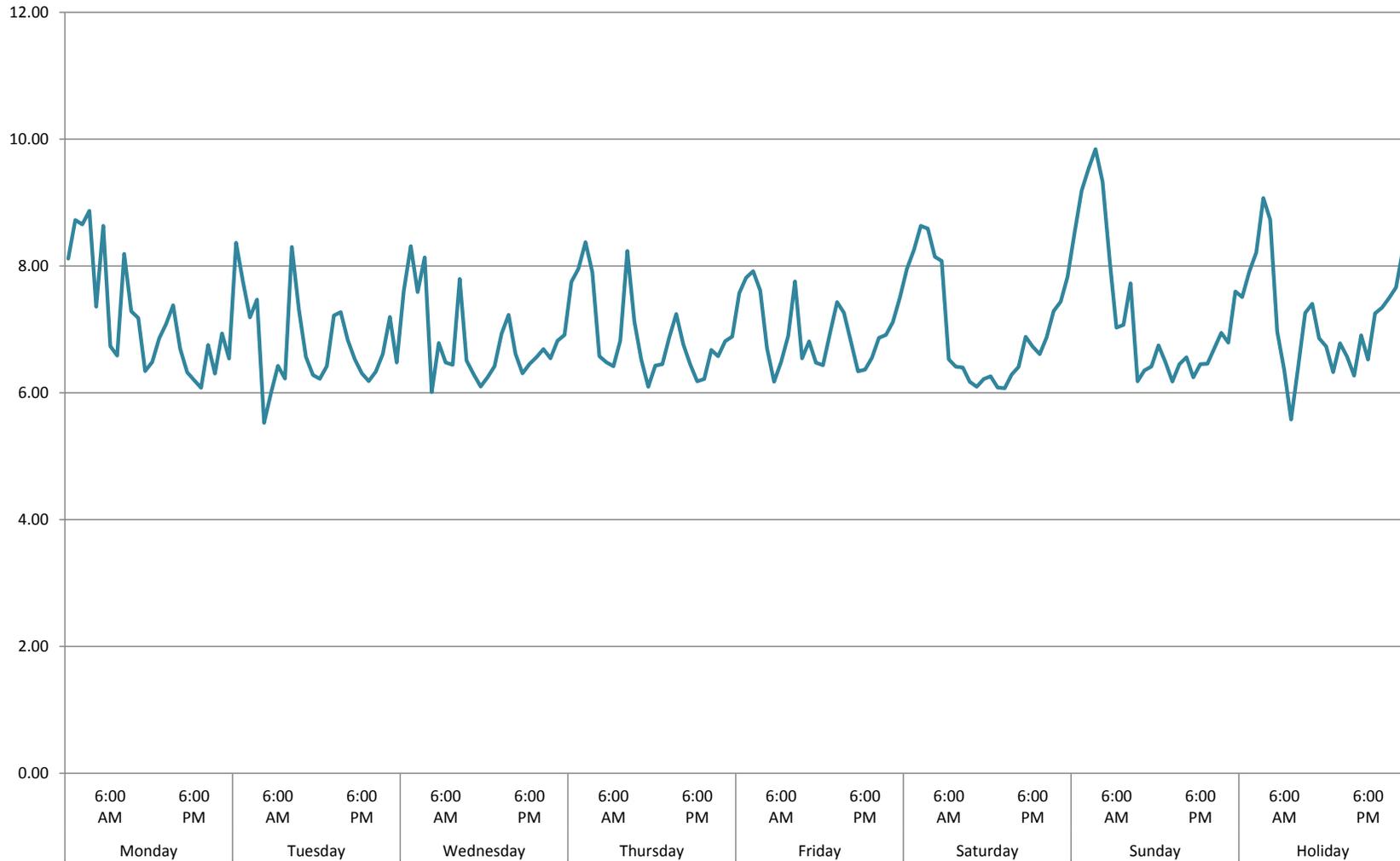


Figure C.5

Trip profile: Average trip duration in minutes for each hour of the week



Glossary

Term	Definition
Australian Bureau of Statistics (ABS)	The statistical agency of the Government of Australia.
Consumer Price Index (CPI)	An Australian Bureau of Statistics measure of changes in the prices of a basket of goods and services representative of consumption expenditure in Australian metropolitan areas.
Component index	A measure used to estimate the change in a specific cost component over time (for example the wage price index).
Cost share	The share of total cost of providing taxi services that a specific cost component represents.
Country zone	The taxi zone comprised of all areas not included in the metropolitan, urban and regional zones.
Distance rate	A fare component that is charged per kilometer travelled. In most taxi operators' fare structures the distance rate applies when travelling over 21 kilometers per hour.
Fare notification regime	The regime in which operators and networks in the regional and country taxi zones are able to set their own maximum fares, and are required to notify the Taxi Services Commission and passengers of their fares.
Flagfall	A fare component that is a fixed fee charged regardless of the distance travelled or journey time.
High occupancy vehicle	A class of taxi that can carry up to 11 passengers. Higher taxi fares usually apply to high occupancy vehicles if carrying at least five passengers or if the hirer requests a high occupancy vehicle (except for wheelchair passengers).
Market Power	The ability to increase prices above the level that would occur in a competitive market without losing market share.
Metropolitan zone	Referred to in legislation as the 'Melbourne metropolitan zone', the taxi zone comprising key areas of metropolitan Melbourne (see Taxi Services Commission website for zone maps).
Multi Purpose Taxi Program (MPTP)	A government program that subsidises taxi fares for people with severe and permanent disabilities. MPTP members receive a 50 per cent subsidy on taxi fares up to a maximum of \$60 per trip and \$2180 per year. Some MPTP members are exempt from the annual cap.
Regional zone	The taxi zone comprised of service areas of population sizes around 10 000 to 50 000, such as Traralgon, Shepparton, Swan Hill, Echuca, Horsham, Colac, Ocean Grove and Warrnambool.
Return on assets	A measure of profitability calculated as revenue divided by total assets.
Taxi cost index	Consists of cost components incurred in providing taxi services and is used to

(TCI)	measure changes in the costs of providing taxi services over time.
Taxi operator	A person who owns, maintains and operates a taxi vehicle. A taxi operator must source a taxi licence in order to be permitted to operate a taxi. A taxi operator may engage a taxi driver for their vehicle or they may drive the taxi themselves.
Taxi Services Commission (TSC)	The TSC is responsible for regulation of the commercial passenger vehicle industry.
Taximeter	A device required in all taxis to calculate and display taxi fares. The Taxi Services Commission is responsible for specifying the functional requirements of taximeters.
The Commission	The Essential Services Commission — Victoria’s independent economic regulator of certain prescribed services. The Commission is responsible for monitoring taxi fares in the regional and country zones.
Urban zone	Referred to in legislation as ‘the urban and large regional zone’, the taxi zone comprising of Geelong, Ballarat, Bendigo, Frankston, Dandenong and the Mornington Peninsula (see Taxi Services Commission website for zone maps).
Wage Price Index	An ABS measure of changes over time in wages and salaries for employee jobs.
Waiting time rate	A fare component that is a minimum charge per minute. In most taxi operators’ fare structures the waiting time rate applies when travelling at 21 kilometers per hour or slower.