

A Report on

Estimating the Impact of Free Parking

Arrangements on Perceptions of Local Economic

Activity: Evidence from the Town of Victoria Park

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Foreword

In collaboration with the Town of Victoria Park, we investigated the impact of extended free parking arrangements on local perceptions of economic activity in the town. The Town of Victoria Park has extended its free parking facility from 30 to 60 minutes to support local businesses during the Christmas period (i.e., 1 Dec - 31 Jan) since 2018. We examine how this extended free parking arrangement affects subjective perceptions of activity in the local community using experimental settings. We also explore time-series administrative data, including pedestrian counters, ticket machine data, and infringements data, to examine plausible effects of extended free parking arrangements on objective economic activity. In the subjective analyses, we conducted a "Business Perceptions Survey" and a "Visitor Perceptions Survey" to reveal the sentiments of local businesses and their customers on free parking arrangements. Our findings indicate that the extended free parking intervention positively impacts several subjective perceptions of businesses and visitors concerning town activity. The administrative data provide valuable information about trends over time. Still, it does not offer any conclusive evidence that the extended parking policy has influenced the number of pedestrians, the day or time of their visit, the value or number of infringements, or ticket purchasing behaviour. Overall, this report provides the Town of Victoria Park with research-based evidence to help inform the policy decision-making process regarding the future of the extended free parking initiative.

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CAR G

Note: These keywords come from the mission, vision and values of the Town of Victoria Park.

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Executive Summary

This research aims to identify the efficacy of extending the initial free parking period offered to visitors to the Town of Victoria Park over December and January. The Town Council has implemented this extension from 2018 to boost local business activity. To explore the effects on the beliefs of the local community, we conducted two perceptions surveys, one for businesses and one for visitors. We conducted the surveys in areas affected by the free parking extension and those unaffected by the change, both during the extension period and after it had finished.

We established the perceptions research in a natural experiment setting. We employed a difference-in-differences (DID) strategy to infer the causal relationship between extended free parking and a range of impact indicators. The perceptions data analysis provides evidence that business and visitor respondents believe free parking increases or would increase local economic activity. Business respondents believe that free parking benefits their business. More occasional visitors are coming to the Town. Visitors spend longer, visit more shops, and unexpectedly report having less difficulty finding parking. Despite the numerous perceived benefits, adequate economic data in a panel format that could be compared with the perceptions and analysed in an equivalent strategy was unavailable. A relatively small number of survey respondents were aware of the policy, leading to several muted findings by a lack of conclusive policy influence.

We explored descriptive statistics associated with administrative data provided by the Town of Victoria Park, including pedestrian counter, ticket machine and infringement data. We can give conclusions on trends over time, but owing to the lack of a control area, we can only discuss plausible effects and not draw firm causal conclusions from the administrative data.

We conclude in this report that businesses and visitors generally believe that extended free parking has or would have positively impacted categories of town activity, including more visitors, spending more time, visiting more businesses, and generating higher revenue. However, the administrative data do not provide clear evidence that the policy encourages more pedestrians or increases ticket purchases. We also suggest that for future research efficacy, the Town of Victoria Park might consider more active advertisement of such policies to contribute to their impact and the strength of any subsequent research into their effectiveness.

Abbreviations

DIDDifference-in-DifferencesToVPTown of Victoria Park

About 1 in 5 businesses and 1 in 8 visitors were aware of the extended free parking

Roughly



believe free parking benefits their business





Extended free parking doesn't appear to make it harder for visitors to find parking.



Businesses and visitors would

somewhat prefer cheaper parking

even if it is more difficult to find.

More than



visitors drove their car to the ToVP



Nearly 2 in 3 visitors

More than 8 in 10 businesses

to the treatment area came forin the Treatment Area say their customersrestaurants, dining, and socialising.complain at least 'sometimes' about parking.





More than 3 in 5 visitors

to the treatment area were occasional or one-time visitors during extended free parking, **up 22%** when compared with the regular parking period.

SECTION 1. Summary of Findings

1.1 Primary Findings

In consideration of the analysis of the perceptions surveys and administrative data in Sections 5 and 6, this report concludes there is suitable evidence to provide the following primary findings:

TABLE 1:

PRIMARY RESEARCH FINDINGS

Primary Finding	Detail
Finding 1: Businesses and visitors generally believe free parking benefits local activity	 Supporting Information Businesses believe free parking results in more customers spending more time, visiting more businesses and higher revenue. Visitors believe free parking results in visitors spending more time and visiting more shops in the ToVP. Extended free parking does not appear to make parking more difficult to find. Other Considerations Only 4% of visitors believe free parking affected their choice to visit the ToVP on the survey day. This is influenced by the general lack of awareness of the policy.
Finding 2:	Supporting Information
Businesses and visitors both want more free parking	 Of average, both businesses and visitors indicated they would somewhat prefer cheaper parking, even if it made parking more difficult to find. The most common business suggestions for the ToVP were that they need more parking bays, longer free parking, and the introduction of short-term bays. The most common visitor suggestions for the ToVP were that they want more parking spaces and longer free parking.
Finding 3: Consider additional actions based on business and customer feedback	 Supporting Information The survey finds that only 1 in 5 businesses and 1 in 8 visitors were aware of the extended free parking. Greater awareness amongst businesses is related to an increased belief that free parking drives visitor traffic and that free parking benefits businesses. Other Considerations Greater awareness of extended free parking appears to reduce visitors' belief that free parking incentivises positive changes to visitor activity. Greater awareness also appears to increase the perceived number of customer parking complaints businesses receive. Low visitor awareness of the policy is correlated to visitors who live outside the ToVP. Effective advertisement to incentivise these visitors to change their behaviour may be more challenging and costly.
Finding 4: Businesses and visitors both want more free parking	 Supporting Information The administrative data does not appear to provide any clear evidence to suggest that extended parking has substantially influenced the number of pedestrians, number or value of infringements, or the number or value of ticket purchases. Other Considerations
	• The administrative data should be interpreted cautiously without a control area to contrast. There could be an effect of the extended free parking policy that is tempered by other influencing factors with an opposite effect.

1.2 Findings by Data Segment

In Table 2, we present a complete summary of the key findings from each subsequent section of the detailed research analysis provided in Sections 5 and 6, incorporating the business and visitors surveys and administrative data.

TABLE 2:

FINDINGS BY DATA SEGMENT

Data Segment	Key Finding
Business Survey 5.1.B: Perceived Factors Driving Increases in Visitor Activity	We find that more businesses in the Control Area believe 'Free Parking' drives visitor traffic during Extended Parking, while the opposite is true in the Treatment Area. We also find a lack of awareness of the policy may contribute to a reduction in the perceived value of free parking in driving visitor traffic.
Business Survey 5.1.C: Belief that Free Parking Has a Positive Impact on the Respondent's Business	While most business respondents believe there is a positive impact of free parking, there is a reduction in the number of businesses who report this belief when Extended Parking is in place, specifically in the affected area. We also find that a lack of awareness of the policy may contribute to a reduction in the perceived value of free parking to businesses that would be affected by the policy.
Business Survey 5.1.D: Knowledge of ToVP Holiday Initiatives	Only 22% of business respondents were aware of extended free parking. We also find that fewer businesses in both the Treatment and Control Area report awareness of the extended free parking policy when it is in place.
Business Survey 5.1.E: Belief that Free Parking Influences Visitor Behaviour	During Extended Parking, business respondents in the Treatment Area believe more firmly that free parking contributes to more customers visiting the area, customers spending more time in the area, customers visiting more shops, and higher revenue.
Business Survey 5.1.F: Free Parking Versus its Availability: A Trade-Off	We find that, on average, business respondents have a moderate preference for relatively cheaper parking even if it made parking more difficult to find. This preference is more pronounced in the Control Area than the Treatment Area.
Business Survey 5.1.G: Perceived Busiest Time of Day	Businesses in both Control and Treatment areas report lunchtime as their busiest period during Regular Parking, but during Extended Parking, more businesses in the Treatment Area believe dinner time is the busiest. This shift is not noted in pedestrian data explored in Section 6.1.
Business Survey 5.1.H: Perceived Changes to Customer Base	While businesses report changes to their customer types (regular or new visitors) during Extended Parking, we find no statistical significance to this change, so we conclude it is not likely to be an influence of the policy.
Business Survey 5.1.I: Customer Complaints Regarding Parking	We find that the extended free parking policy appears to increase the number of parking complaints observed by businesses from their customers and that greater awareness of the policy amongst businesses contributes to more businesses reporting that they receive complaints.
Business Survey 5.1.J: Discussing Free Parking with Customers	We find that about half of businesses tell their customers about free parking arrangements, whereas almost 3 in 4 of those aware of the extended free parking policy report telling their customers about it.
Business Survey 5.1.K: Recommendations Regarding Parking Conditions	We find that the most prominent theme from business recommendations was a request for more parking bays. Some business respondents also suggested the need for two-hour free parking and 15-minute quick-stop bays.

TABLE 2: (CONTINUED) FINDINGS BY DATA SEGMENT

Data Segment	Key Finding
Visitor Survey 5.2.B: Knowledge of ToVP Holiday Initiatives	Only 13% of visitors reported that they knew about extended free parking. We also find that a high number of visitors living outside the ToVP could partly explain the relatively small number.
Visitor Survey 5.2.C: Mode of Transportation	We find that most visitors surveyed drove their cars to the ToVP, and the extended parking policy appears to have little to no impact on this choice.
Visitor Survey 5.2.D: Parking Facility Used	We find that fewer visitors who drove to the Treatment Area parked in ticketed bays during Extended Parking. Among other hypotheses, we postulate that the policy may not be prominently advertised, or perhaps the duration of free parking offered is not of sufficient concern to visitors to merit attention.
Visitor Survey 5.2.E: Purpose of Visit	We find most visitors were in the Control Area for shopping and the Treatment Area for dining. We do not conclude any effect of extended free parking on the reported purposes of visitors to be in the area.
Visitor Survey 5.2.F: Reason for Choosing the ToVP	We find that most visitors choose the ToVP over other destinations because it is close to home. We find that extended free parking has factored into the choice to visit the ToVP of approximately 4% of visitors in the Treatment Area.
Visitor Survey 5.2.G: Frequency of Visits to the ToVP	We find more occasional or rare visitors in both areas during Extended Parking, but the shift is more prominent in the Treatment Area.
Visitor Survey 5.2.H: Length of Visit to the ToVP	While we find that visitors spend longer in the treatment area during Extended Parking, the extended free parking policy may not influence visitors to spend longer in the town, as more of those who report longer visits report parking in bays that do not require a ticket.
Visitor Survey 5.2.I: Visitors' Challenges Finding Parking	We find that extended free parking does not appear to have a significant impact on difficulty accessing parking. Overall, 7-15% more visitors to the Treatment Area report difficulty finding parking than in the Control Area, depending on the time of year.
Visitor Survey 5.2.J: Distance Visitors are Willing to Walk	We find that visitors in the Treatment Area are generally willing to walk longer distances than visitors to the Control Area. Only 9% of visitors say they will walk more than 250 metres from their parking location to their destination.
Visitor Survey 5.2.K: Free Parking Versus its Availability: A Trade-Off	We find that, on average, visitors have a modest preference for relatively cheaper parking even if it made parking more difficult to find.
Visitor Survey 5.2.L: Knowledge of Extended Free Parking	When we asked visitors directly if they were aware of the extended free parking policy, we found that more reported awareness than at 5.2.B (20%), but we perceive there may be some bias in this response.
Visitor Survey 5.2.M: Belief that Free Parking Influences Visitor Behaviour	We find that while the average visitor believes that free parking influences them to spend more time and visit more shops, those aware of the policy and who would be affected by it believe moderately that it does not affect their choices.
Visitor Survey 5.2.N: Recommendations Regarding Parking Conditions	We find that the most common feedback was that visitors desired more parking spaces (including requests for more motorcycle parking). Visitors would also like more opportunities for free parking, including extended free parking hours in the evening, longer initial free periods, and free parking throughout the year. There were also a few visitors who indicated the need for wider spaces.

TABLE 2: (CONTINUED) FINDINGS BY DATA SEGMENT

Data Segment	Key Finding			
Administrative Data 6.1: Pedestrian Activity	We suspect the extended parking policy is not the primary cause of observed pedestrian number fluctuations during December and January.			
	We find a clear trend in the time of day visitors come to the Treatment Area, and there is no evidence that the extended free parking policy influences visitors' choices regarding the time of day they choose to visit.			
	There is no clear evidence to suggest that extended free parking influences visitor activity on particular days of the week.			
Administrative Data 6.2: Ticket Purchases	We find that the ticket machine data does not provide any conclusive findings on the influence of the extended parking policy on ticket purchasing behaviour or town revenues. There is some consideration that the policy may increase the duration of time spent by visitors in the town. Two different approaches to estimating the cost incurred by the Town for the extended free parking policy find annual costs to be \$1128 and \$3568. These estimates come with cautions, as explored in the detailed analysis and for the reasons described in Section 4.3. The ticket data combined with pedestrian activity findings indicate that more visitors are driving and parking in ticketed bays over time compared with other transportation options.			
Administrative Data 6.3: Parking Infringements	We find a clear trend in the time of day parking infringements are issued. We also find a slight decline in the age of parking offenders over time. There does not appear to be any significant association between the extended parking policy and ToVP parking infringement revenues, the number of offences, the time of violations, or offender age.			



SECTION 2. Introduction

2.1 About the Town of Victoria Park

The Town of Victoria Park (ToVP) is a short stroll south of Perth's central business district. Stretching south from the banks of the Swan River, the town comprises a series of suburbs, including Victoria Park, East Victoria Park, Lathlain, Carlisle and Burswood, and parts of Bentley, St James, and Welshpool. While there are several centres and important venues, including the Crown Perth complex, Optus Stadium, and Curtin University, the heart of the town stretches along Albany Highway, where visitors can indulge in the many diverse dining, leisure, business, and shopping options.

As a multicultural destination in Perth, the ToVP is a growing area with 35,000 residents and is projected to surpass 50,000 by 2031. To meet the increasing needs of residents and visitors, the ToVP needs to scale up its service activities effectively. To that end, parking facility constraints and associated policy have been identified as meriting review.

2.2 Rationale for the Study

Parking infrastructure in urban growth centres (e.g., cities and towns) facilitates the engine of local business activity. Paul Krugman, the winner of the 2008 Nobel Memorial Prize in Economic Sciences, argued that an efficient transportation system reduces transportation and trade costs, increases business activity, and eventually triggers agglomeration. This argument holds local government bodies responsible for designing parking management systems to boost local communities' productivity rather than maximising their revenues from parking fees. The provision of free parking can effectively reduce transaction costs to help businesses grow. On the contrary, while businesses would advocate for free parking for their customers, such measures may not always be effective in increasing local business activity. For instance, the free parking space may incentivise some potential visitors; however, on the other hand, visitors may come to the businesses irrespective of any parking fee implications.

The work of Professor Donald Shoup of UCLA was also an important motivating consideration for the ToVP. His work in the High Cost of Free Parking uncovers a number of important considerations in planning parking facilities, particularly regarding offering free parking. These considerations include the effect on appropriate land use, the regressive nature of the 'hidden' costs of free parking, and the equal cost imposition on those who do not choose to drive. He demonstrates that free parking incentivises people to drive to their destination instead of other more environmentally friendly options. He suggests that market pricing for parking is a fairer and more appropriate avenue for development.

The Council of Victoria Park in Australia introduced a dynamic pricing model in 2020, emphasising local business communities' welfare and potential clients. This pioneering parking system allows the Town to alter parking conditions and pricing in response to demand levels. In addition, the council has been offering an hour of free parking (instead of 30 minutes) over the Christmas period (1 December - 31 January) since 2018. However, a detailed assessment to measure the policy's effectiveness had not yet been undertaken. If the approach generates a positive impact, continuation may be desirable. The proposed research delves into answering the question: to what extent does the extended free parking during the Christmas period encourage changes to visitor behaviours that benefit the local business community?

The remainder of this report proceeds as follows. Section 3 outlines the research objectives. Section 4 introduces the methodology, research design, considerations, and limitations. Section 5 presents the results of the perceptions surveys. Section 6 gives the results of the administrative data, followed by a conclusion in Section 7.

SECTION 3. Research Objectives

This research aims to measure the effectiveness of the extended free parking arrangements offered by the Town of Victoria Park in an effort to bolster local business activity. The research employs a mixed-methods approach with *qualitative* and *quantitative* components. Under the qualitative component, we endeavour to understand the perceptions of the business owners and visitors of the effect of free parking arrangements. Under the quantitative component, we estimate the impact of free parking arrangements on the number of pedestrians visiting the businesses. Overall, the project intends to provide a piece of evidence-based "policy brief" on optimising the parking management system during the Christmas period for the ToVP.



SECTION 4. Methodology

4.1. Perceptions: Natural Experiment using Difference-in-Differences

This research employs a natural experimental setting by considering the one-hour free parking policy as a treatment for the local communities. To estimate the perceived economic impact, we compare how the perceived gains of local communities change during the extended free parking period in December and January (hereafter referred to as **Extended Parking**) relative to its post-implementation period in February (referred to in this report as **Regular Parking**).

To account for other factors during the Extended Parking phase (i.e., seasonality and Christmas holidays), we implemented a causal DID strategy for estimating customer and business perceptions of free parking arrangements. In this approach, we identified areas outside the jurisdiction of parking fees within the ToVP as our control group. Figure 1 shows the delineation of the **Treatment Area** and

Control Area. We have listed further details on the nature and potential limitations of the Control and Treatment Area identification under Section 4.3. We conducted two small-scale surveys, "Visitor Perceptions Survey" and "Business Perceptions Survey", with a targeted sample size of 200 for each category in two waves, during Extended Parking in Dec 2022 and January 2023 and during Regular Parking after the policy had ended in Feb 2022. The respondents were limited to 35 control businesses in each survey period, owing to a lack of available or willing staff to answer questions. We excluded some survey responses from the final analysis due to incomplete or unassessable answers to questions. Details of the total number of survey respondents collected, with the final assessed number in brackets, are shown in Table 3.



FIGURE 1: TREATMENT AND CONTROL AREAS OF TOVP

Both surveys used the questionnaire-based primary survey technique. We designed the "Business Owners Perceptions Survey" with questions for the business owners or their staff representatives to gather their perceptions around the impact of free parking affecting the number of customers visiting their shops. We designed the Visitor Perceptions Survey to understand visitors' perceptions of the role of free parking as a driving force behind their visits to the areas. The questionnaires included binary and multiple-choice questions, open-ended questions, and questions using rankings on a 5-point Likert scale with "1" for Strongly Disagree, "2" for Somewhat Disagree, "3" for Not Sure, "4" for Somewhat Agree, and "5" for Strongly Agree.

We analysed the survey data using descriptive statistics and compared them across group dimensions (i.e., Treatment versus Control) and time dimensions (during and after the free parking policy).

Area Surveyed	Extended Parking Phase	Paid Parking Phase	Total Respondents				
	(Dec-Jan)	(Nov & Feb)					
	Business	s Owners					
Control	35 (35)	35 (34)	70 (69)				
Treatment	50 (42)	50 (43)	100 (85)				
Total	85 (77)	85 (77)	170 (154)				
Visitors							
Control	52 (49)	50 (48)	102 (97)				
Treatment	53 (52)	50 (45)	103 (97)				
Total	105 (101)	100 (93)	205 (194)				

TABLE 3:PERCEPTIONS SURVEYS SAMPLE SIZE

4.2. Administrative Data: Time-Series Analysis

We have also employed the available time-series administrative data of ToVP for the last seven years (2015-2021) to measure how local economic activity has been affected during the policy intervention period (2018-2021) compared to the period before the intervention (2015-2017). This data includes pedestrian movement and ticket machine information for the Treatment Area only, and parking infringement information across the town without distinction between Treatment and Control Areas. Given the lack of available or identifiable data in these categories related to the Control Area, the causal inference difference-in-differences strategy we undertook to explore the effect of the Extended Parking period on perceptions cannot be applied to the administrative data. As such, attempts to draw conclusions from the administrative data regarding the effectiveness of the policy should be approached with high levels of caution. Refer to Section 4.3 for further considerations and limitations of the findings.

4.3. Limitations, Challenges and Considerations

As with any research project, there are considerations, data limitations, and general challenges faced in the design and implementation of this project. As noted in Section 4.2, the administrative data lacks a control area element, so we are limited to time-series evaluation only. While we can draw some interesting analysis based on a comparison over time between the holiday and non-holiday period, we cannot generally draw firm conclusions that the extended free parking policy is causing any of the observed changes.

To undertake a DID analysis of the perceptions data, an underlying assumption is made that the trend between treatment and control area would follow a similar trend if the treatment action (extended free parking policy) were not in place. While we have agreed on a control area, as noted in Section 4.1, we did not have access to any data on the control area beyond the scope of the two surveys to confirm parallel trend assumptions. There are a few circumstances identified where the potential exists for the treatment action to affect control in a nontrivial way. Where we feel this is a possibility, we have refrained from the DID approach to infer causation and relied instead on descriptive statistics to suggest likely impacts of the policy.

There were some challenges in collecting consistent business survey data over both periods. While collecting responses from precisely the same businesses during Regular and Extended Parking would have narrowed the possibility of other effects interfering with results, numerous business respondents were either unwilling or unable to respond during both periods. This challenge caused notable differences in the percentage of each type of business (i.e., Restaurant) surveyed across the two periods. We were, however, able to undertake a robustness check as per Section 5.1.A, and we find that this noted challenge does not appear to influence any of the business perceptions findings to any significant level.

A general lack of awareness of the extended free parking policy amongst surveyed business and visitor respondents leads to gathering perceptions (for those unaware) of hypothetical situations. We explore the relationship between knowledge of parking change and survey responses in our analysis to clarify this effect. For example, for those who were unaware of the policy, it cannot be said that the policy incentivised them to change behaviour, but rather that they perceived that such a policy would or would not affect their decisions in the future.

As an effect of time and budget constraints (as is the case with many projects), the survey sample size could introduce nontrivial bias into the findings. Therefore, we regularly identify that the perceptions surveys' conclusions are representative of the respondents surveyed. We conclude that the findings suggest that the results may represent visitors overall where it appears suitable to do so. We also explore the interaction between the perceptions findings with the administrative data, which adds a considerable number of additional data observations to our conclusions.

4.4. Project Timeline

The following timeline outlines the main phases of overall project implementation:

Project Starts	First Survey Collection	Second Survey Collection	Analysis	Draft Report	Final Report ►
Ļ	Ļ	Ļ	Ļ	Ļ	Ļ
NOV 2021	DEC 2021	FEB 2022	MAR 2022	APR 2022	JUL 2022

FIGURE 2:

SECTION 5. Results: Perceptions

It is vital in assessing the policy effectiveness to evaluate the economic impact on businesses and the perceptions of those impacted by the change to gauge their belief whether the ToVP is actively adding value to their lives. In this section, we analyse the perceptions formed by businesses and visitors in the ToVP in areas where extended parking is in place (Treatment Area) and where parking arrangements are unchanged (Control Area). We also explore the perceptions in both these areas during the policy implementation period (Extended Parking) and the period after the extended parking had ended (Regular Parking). First, we explore the perceptions formed by business owners and their staff, followed by an analysis of the observations and opinions of visitors to the area.¹

5.1 Business Perceptions Analysis

Key Findings: Business Perceptions

- Most businesses believe free parking results in:
 - businesses having more customers;
 - customers spending more time in the ToVP;
 - customers visiting more businesses; and
 - businesses earning higher revenue.
 - 81% of businesses in the Treatment Area report that their customers complain at least 'sometimes' about parking.
- On average, businesses would somewhat prefer that parking is cheaper even if it becomes more difficult for visitors to find.
- 22% of businesses surveyed were aware of the extended parking policy.
- Greater awareness of the policy amongst businesses appears to:
 - . Increase the perceived value of free parking in driving visitor traffic;
 - . Increase the perceived value of free parking in positively affecting businesses;
 - Increased number of businesses telling customers about the policy;
 - Increase the perceived number of parking complaints visitors make to businesses.
- Businesses suggest there need to be more available parking bays, more extended free parking, and the introduction of short-term bays.

A. Sample of Businesses

We selected businesses for the survey via a random sample to capture representative findings. In the Control Area, we find the makeup of businesses surveyed to be consistent between the Regular and Extended Parking periods. In the Treatment Area, the percentage of businesses surveyed that fall into the "Restaurant" category was 20% higher in the Extended Parking period than in the Regular Parking period. This change is primarily linked with a 16% reduction in businesses surveyed in the "Other" category. Some business respondents who agreed to complete the survey in the first period were unwilling to contribute in the second period, and some businesses were closed during one survey period. The change in weight associated with different business types could introduce a nontrivial bias to the DID estimation. To test the robustness of our findings in Section 5, we revisited each question with an alternate data specification. We found the average response by business type in the Treatment Area during Extended Parking. We then multiplied it by the percentage of businesses check in each relevant subsequent section. As also discussed under Sections 4.1 and 4.3, the makeup of the Treatment and Control areas doesn't need to be equal, provided a parallel trend can be expected regarding change over time in the variables of interest (for example that the number of visitors increases or decreases in both areas to a similar extent during Christmas holidays).

¹ Note the analysis is presented in the order that the questions were posed on the surveys, except for visitor demographics, which were asked last on the visitor's survey, but presented first in the analysis for context. The order of questions is noted in the effect of awareness of the extended parking policy in some of the responses.





B. Perceived Factors Driving Increases in Visitor Activity

Key Finding

Overall, when focusing on the perception that 'Free Parking' drives visitor traffic, we find that the trend in the Control Area is to value it more during Extended Parking. In the Treatment Area, fewer businesses believe free parking is the strongest factor driving activity during Extended Parking. These findings are robust to the potential business type bias as per the alternate approach described in Section 5.1.A. We also find a lack of awareness of the policy may contribute to a reduction in the perceived value of free parking in driving visitor traffic.

Detailed Analysis

Our survey team asked businesses, "which of the following is the strongest driving factor to increase overall activities in this area?" In the Control Area, 'Events', 'Time of Year', and 'Ease of Access' were the top three factors businesses believe drive activity in the area. During Extended Parking, the number of businesses choosing 'Ease of Access' as important in the Control Area rises by 13%. In the Treatment Area, 'Time of Year', 'Free Parking', and 'Events' are the top three factors identified by businesses. During Extended parking, 'Free Parking' sees a decline in the number of businesses who believe this is one of the strongest driving factors by 13%. Instead, an



FIGURE 4.

² Note the analysis is presented in the order that the questions were posed on the surveys, except for visitor demographics, which were asked last on the visitor's survey, but presented first in the analysis for context. The order of questions is noted in the effect of awareness of the extended parking policy in some of the responses.

We also consider the effect of awareness (or lack of awareness) of Extended Parking, on the changes in perceptions, as a large share of businesses did not report any awareness of Extended Parking (covered in Section 5.1.D.). In the Treatment Area, of those aware of extended free parking, approximately one-third of businesses believe free parking is an important factor in driving visitors. There is an insignificant change amongst the 'aware' group in the Treatment Area over time. Of those unaware of the extension in the Treatment Area, 17% fewer businesses note this as important during Extended Parking. This indicates that a lack of awareness of the policy may contribute to a reduction in the perceived value of free parking in driving visitor traffic. While only 14% and 17% of the unaware businesses surveyed in the Control Area (during Regular and Extended Parking, respectively) believe free parking is significant, 60% of the 'aware'-Control businesses believe it is important to drive traffic when asked during Extended Parking, up from 17% during Regular Parking. We hypothesise that this shift in perception could be caused by control business perceptions that Extended Free Parking is attracting more customers to the Treatment Area than to the Control Area. It is also potentially a function of the small sample size of businesses who fit into the "aware" group in the Control Area.

FIGURE 5:





C. Belief that Free Parking Has a Positive Impact on the Respondent's Business

Key Finding

Overall, we find that while most business respondents believe there is a positive impact of free parking, there is a reduction in the number of businesses who report this belief when Extended Parking is in place, specifically in the affected area. We also find that a lack of awareness of the policy may contribute to a reduction in the perceived value of free parking to businesses that would be affected by the policy.

Detailed Analysis

We asked business respondents, "Do you think free parking has a positive impact on your business?" During regular parking, about 80% of businesses in both Treatment and Control Areas believe free parking has a positive impact. During Extended Parking, we saw a 17% reduction in the number of businesses who report the belief in a positive impact, with no such decline in the Control Area. When considering the potential business type bias, our alternate specification shows the results to be robust.

FIGURE 6:

BELIEF THAT FREE PARKING HAS A POSITIVE IMPACT ON RESPONDENT'S BUSINESS



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Awareness of the extended parking policy affects the Treatment Area similarly to what was found in Section 5.1.B, as shown in Figure 7. Respondents in the Treatment Area who are aware of the Extended Parking policy maintain their belief that free parking positively impacts their business. Conversely, 22% fewer of those who are unaware of the policy in the Treatment Area believe free parking has a positive impact on their business when the policy is in place. This evidence suggests that a lack of awareness of the policy may contribute to a reduction in the perceived value of free parking to businesses that would be affected by the policy. In the Control Area, the number of businesses that believe free parking positively impacts their business remains constant across aware and unaware groups in both survey periods.

FIGURE 7:

AWARENESS OF EXTENDED PARKING AND BELIEF THAT FREE PARKING HAS A POSITIVE IMPACT ON RESPONDENT'S BUSINESS



D. Knowledge of ToVP Holiday Initiatives

Key Finding

Only 22% of business respondents were aware of extended free parking. We also find that fewer businesses in both the Treatment and Control Area report awareness of the extended free parking policy when it is in place.

Detailed Analysis

We asked business respondents, to the best of their knowledge, which of the initiatives listed in the survey were offered by the ToVP. Across both areas and both dates, on average, business respondents were most aware of "Lighting/Decorations" (42%), followed by "Events" (32%), then "Extended Free Parking" (22%) and finally "Holiday Campaign (Promotion)" (17%). This critical finding, as it relates to a relatively substantial lack of reported knowledge of Extended Parking among businesses is a key finding of this report. We consider the effect of this level of awareness in each section as relevant. The results considering the levels of reported knowledge by category are displayed in Figure 8. Focusing on "Extended Free Parking", in the Treatment Area, 18% reported knowledge of Extended Parking during Regular Parking and 14% during Extended Parking. In the Treatment Area, 33% of businesses reported knowledge during Regular Parking, and 21% reported this knowledge during Extended Parking. This is an unexpected result that fewer businesses in both the Treatment and Control Area report awareness of the extended free parking policy when it is in place. We explore the potential for the noted sample change to affect these results using the approach detailed in Section 5.1.A and find the results to be consistent under this alternate specification. Additionally, no overarching themes appear to correlate knowledge of extended free parking with knowledge of the other initiatives, indicating that those aware of the extended parking may not simply be those respondents who are more informed in general.

FIGURE 8:



KNOWLEDGE OF TOVP INITIATIVES

E. Belief that Free Parking Influences Visitor Behaviour

Key Finding

During Extended Parking, business respondents in the Treatment Area believe more firmly that free parking contributes to more customers visiting the area, customers spending more time in the area, customers visiting more shops, and higher revenue.

Detailed Analysis

We surveyed businesses using the Likert Scale, asking them to indicate how much they agree with given statements on a scale from 1-5, where 1 denotes "strongly disagree" and 5 signifies "strongly agree". The four questions concerned business beliefs about whether free parking results in i) businesses having more customers, ii) customers spending more time, iii) customers visiting more businesses, and iv) businesses earning higher revenue. There was a moderately positive response to all four questions across both the Control and Treatment Areas, with roughly 60% of business respondents selecting "Agree" or "Strongly Agree" to each question, as seen in Figure 9.

FIGURE 9:

PERCENTAGE OF BUSINESSES THAT BELIEVE FREE PARKING RESULTS IN CHANGES TO VISITOR BEHAVIOUR



In the Control Area, there were small changes in the average positivity between Regular Parking and Extended Parking periods (between 2% and 8% change as per Figure 10). Conversely, in the Treatment Area, the sentiment is markedly higher during the policy period for each of the four questions, with 19-25% increases in average positivity. This indicates that during Extended Parking, business respondents in the affected area believe more firmly that free parking contributes to more customers visiting the area, customers spending more time in the area, customers visiting more shops, and higher revenue. These findings are robust to the alternate business-type specifications as per Section 5.1.A, and we find no substantial effects of knowledge of Extended Parking on these beliefs.



FIGURE 10:



AVERAGE POSITIVITY IN BELIEF THAT FREE PARKING INFLUENCES VISITOR BEHAVIOUR³

Table 4 examines the statistical significance of the relationship between Extended Parking and business perception changes concerning the impact of free parking on visitor activity and revenue generation. The findings show statistically significant associations between the extended parking policy in the Treatment Area and business respondents' belief that free parking results in more visitors, spending more time, going to more shops, and higher revenue. For clarity, this finding does not confirm that these outcomes are factual events, but it strengthens the conclusion that the business belief results are not due to chance.

TABLE 4:

PERCEIVED IMPACT ON VISITOR BEHAVIOUR

Variables	More Customer Visits	Spend More Time	Higher Number of Shop Visits	Higher Revenue
	(1)	(2)	(3)	(4)
Free Parking Areas	-1.1101***	-0.8824***	-0.6375**	-1.1580***
	(-4.0060)	(-3.3196)	(-2.4492)	(-4.4500)
Free Parking Phase	-0.0277	0.0891	-0.1664	-0.3168
	(-0.1212)	(0.4366)	(-0.8289)	(-1.5454)
Free Parking Areas × Free Parking Phase	1.0006***	0.9109**	0.9327***	1.0771***
	(2.6098)	(2.5279)	(2.7097)	(2.9837)
Observations	154	154	154	154

Note: The estimation method is least squares; the robust standard errors are in parentheses. *Significant at 10%; ** Significant at 5%; *** Significant at 1%.

³ To assess levels of positivity on an ordinal scale, responses were re-categorised where "Strongly Disagree" was re-classed as 0%, "Disagree" 25%, "Not Sure" 50%, "Agree" 75%, and "Strongly Agree" 100%.

F. Free Parking Versus its Availability: A Trade-Off

Key Finding

We find that, on average, business respondents have a moderate preference for relatively cheaper parking even if it made parking more difficult to find. This preference is more pronounced in the Control Area than the Treatment Area.

Detailed Analysis

We asked business respondents to choose their preference on a scale of 1 to 5, considering a trade-off between parking availability and cost. 1 signifies a preference for "Expensive but easy to find parking", while 5 denotes a preference for "Cheap but difficult to find parking", and 3 is the mid-way point, indicating no preference towards either option. This trade-off was explained to respondents that if parking were cheaper, more people might choose to use available parking, making it more difficult to find. Whereas, if parking were more expensive, it might be easier to find vacant parking spaces.

Across all business respondents, as seen in Figure 11, 45% selected 4 or 5, indicating a preference towards "Cheap but difficult to find parking", 12% chose 1 or 2, showing a preference for "Expensive but easy to find parking", and 43% indicated a neutral preference. The average preference is an 11% lean towards the "Cheap but difficult to find parking" option.

FIGURE 11:

TRADE-OFF PREFERENCE PARKING AVAILABILITY VS PRICE



We present the results between Treatment and Control Areas during Regular and Extended Parking in Figure 12. In this figure, 100% would indicate that all respondents selected a 5, meaning a preference of "Cheap but difficult to find parking", 0% would mean all respondents selected "Expensive but easy to find parking", and 50% would be a neutral preference as an average of all responses. Based on the approach to generating average preferences on a percentage scale⁴, respondents in the Control Area have a preference towards "Cheap but difficult to find parking", and respondents in the Treatment Area have a "Neutral" response, though their responses are very near to the "Cheap but difficult to find parking" preference category. There were insignificant changes in reported preference in both areas during Regular and Extended Parking. These findings are robust to the alternate specification described in Section 5.1.A. There is a 13% swing in preference towards "Cheap but difficult to find Parking compared with the 'aware'-Control group during Regular Parking (as well as compared with the 'unaware'-Treatment group). However, we conclude that this is not likely an influence of the policy but is more likely owing to the small sample size of those in the Control Area reporting awareness of the policy during the Extended Parking period. We find no significant effects of awareness on parking preference in the Treatment Area. Anecdotally, several survey respondents informed our team that they were not exactly happy with either option on the extremes and would prefer that parking was both cheap and available. This apparent lack of commitment to a preference in consideration of its potential drawbacks is reflected in the moderate results.

FIGURE 12:



TRADE-OFF PREFERENCE PARKING AVAILABILITY VS PRICE

4 The same strategy as noted at Figure 10 has been applied here to convert the responses into a percentage preference scale. We categorise preferences from 0-19% as a strong preference for "Expensive but easy to find parking", 20-39% as a preference for "Expensive but easy to find parking", 40-60% as "Neutral", 61-80% as a preference for "Cheap but difficult to find parking", and 81-100% as a strong preference for "Cheap but difficult to find parking", and 81-100% as a strong preference for "Cheap but difficult to find parking".



G. Perceived Busiest Time of Day

Key Finding

Businesses in both Control and Treatment areas report lunchtime as their busiest period during Regular Parking, but during Extended Parking, more businesses in the Treatment Area believe dinner time is the busiest. This shift is not noted in pedestrian data explored in Section 6.1.

Detailed Analysis

We asked business respondents what time of day they believed held their highest visitor activity. Respondents were permitted to select more than one period if they felt the visitors were equally high during the selected times. Thus, the values presented in Figure 13 do not add to 100% across the periods. In the Control Area, most businesses report that they believe the period between 8.00 am - 1.00 pm is the busiest time of day. During Extended Parking, there is an increase in the number of businesses reporting the 11.00 am - 1.00 pm period as the most active, and reports for other periods decrease, indicating a perceived shift in visitor activity to lunchtime during Extended Parking. In the Treatment Area, while 49% of businesses report the same 11.00 am - 1.00 pm period as the busiest during

FIGURE 13:



PERCEIVED TIME OF DAY WITH GREATEST NUMBER OF VISITORS

H. Perceived Changes to Customer Base

Key Finding

While businesses do report changes to their customer types (regular or new visitors) during Extended Parking, we find no statistical significance to this change, so we conclude it is not likely to be an influence of the policy.

Detailed Analysis

We asked business respondents to indicate whether they perceived that their customers were generally "regulars" or "new/walkins". As shown in Figure 14, in the Control Area, 35% believed their customers were "regulars", 3% thought the majority were "new/ walk-ins", and 62% were unsure, selecting both or neither category. During Extended Parking, there was a roughly 10% increase in the belief that "regulars" were the leading group of customers, a 3% increase in the view that "new/walk-ins" made up most of their customers, and the proportion of those unsure reduced by 13% in the Control Area. This indicates that more businesses in the Control Area were confident that "regulars" made up a more significant part of their customers during Extended Parking. In the Treatment Area, 79% believed their customers were "regulars" when free parking was not extended, compared with 14% believing their customers were primarily "new/walk-ins" and 7% were unsure. During Extended Parking, the belief that regulars made up the bulk of customers reduced by 12%, and the number of businesses reporting a majority of "new/walk-in customers" grew by 15%, with the percentage of unsure businesses reducing by 2%. The perception of more businesses in the Treatment Area that most of their customers were "new/ walk-ins" is primarily driven by the reduction in businesses that believed "regulars" made up most of their customers.

FIGURE 14:

PERCEIVED CUSTOMER BASE REGULAR VS NEW VISITORS





Following a statistical approach to reviewing this data, Table 5 presents the relationship between Extended Parking and perceived changes in the type of customers visiting businesses. The results show no statistically significant relationship between perceived customer type and Extended Parking in the Treatment Area. As such, there does not appear to be evidence to suggest that the changes to the perceived types of customers result from the extended free parking policy.

TABLE 5:

CUSTOMER BASE

Variables	Regular Customer	New/walk-in Customers	Unsure
	(1)	(2)	(3)
Free Parking Areas	1.9353***	1.6773	-3.0698***
	-3.7171	-1.5112	(-4.4034)
Free Parking Phase	0.4343	0.6931	-0.5367
	-0.8765	-0.553	(-1.0945)
Free Parking Areas × Free Parking Phase	-1.0703	0.2097	0.1313
	(-1.5215)	-0.1528	-0.1235
Observations	154	154	154

Note: The estimation method is logistic model using the maximum-likelihood estimator; the robust standard errors are in parentheses. To convert coefficients into odds ratios [i.e., log(p/1-p)] in percentage forms, we use {exp(coefficient)-1]×100 for positive coefficients and {1-exp(coefficient))×100 for negative coefficients. *Significant at 10%; ** Significant at 5%; *** Significant at 1%.

I. Customer Complaints Regarding Parking

Key Finding

We find that the extended free parking policy appears to increase the number of parking complaints observed by businesses from their customers and that greater awareness of the policy amongst businesses contributes to more businesses reporting that they receive complaints.

Detailed Analysis

We asked businesses how often their customers complain about inconvenient parking facilities in the area. As one may expect, businesses in the Treatment Area report a higher frequency of complaints on average (81% at least 'sometimes'), though perhaps surprisingly, 59% of businesses in the Control Area report that their customers complain at least some of the time about parking in the area. This is despite parking in the Control Area being generally free of charge. We perceive that these complaints are likely concerning parking availability, as our survey team was anecdotally advised of this issue by visitors during survey collection, as explored in Section 5.2.

FIGURE 15:

PERCEIVED FREQUENCY THAT CUSTOMERS COMPLAIN ABOUT PARKING

■ Always ■ Most of the time ■ Sometimes ■ Never



We consider the differences between the areas over the two survey periods, as shown in Figure 16. In the Control Area, 53% of businesses report that their customers complain during regular parking at least some of the time. This number increases to 66% during extended parking, primarily due to a 13% reduction in those reporting their customers "never" complain and an 11% increase in those reporting their customers "sometimes" complain. This change is consistent with our belief that customer complaints in the Control Area are driven by parking availability, which may be reduced during the time of year that the Extended Parking survey was conducted. In the Treatment Area during Regular Parking, 98% of businesses report that their customers complain at least sometimes about parking conditions. During Extended Parking, the number of businesses who say that their customers complain about parking at least sometimes reduces to 64%. While all complaint frequency categories are reduced, the most substantial decline is in the number of businesses that report their customers 'always' complain. We find parking tickets are, on average, down 5% in the Treatment Area during Extended Parking 5, so the perception of fewer complaints could be a result of better parking availability. Given the significant differences-in-differences trend of 46% fewer businesses reporting customers complaining about parking in the Treatment Area during Extended Parking, we feel it is reasonable to conclude that the extended free parking policy is also affecting visitor parking complaints observed by businesses. The complaints findings are robust to the alternative business-type data specification as per Section 5.1.A.

FIGURE 16:



PERCEIVED FREQUENCY THAT CUSTOMERS COMPLAIN ABOUT PARKING

We find an interesting interaction between awareness of the extended free parking policy and perceptions that customers complain about parking. In the Control Area, reported awareness of the extended parking policy is associated with 17% more businesses reporting that their customers complain about parking (compared with those unaware of the policy). This finding is consistent during Regular and Extended Parking periods. In the Treatment Area, awareness is also associated with a greater perception of complaints, but only in the Extended Parking period, when 31% more businesses who were aware of the policy reported that their customers complain about parking, compared with the businesses who were not aware. Of the businesses in the Treatment Area unaware of the policy, 39% fewer report that their customers complain during Extended Parking compared with Regular Parking. It is difficult to pinpoint the exact reason for this finding. Still, we hypothesise that when businesses are aware of the extended free parking policy, their awareness is drawn to customer complaints about parking when it is in place. With this in mind, the overall trend of businesses reporting fewer customer complaints during Extended Parking in the Treatment Area may be reversed if the policy were more widely known amongst business respondents.

J. Discussing Free Parking with Customers

Key Finding

We find that about half of businesses tell their customers about free parking arrangements, whereas almost 3 in 4 of those aware of the extended free parking policy report telling their customers about it.

Detailed Analysis

We asked business respondents in the Treatment Area if they tell their customers about free parking arrangements⁶. As shown in Figure 17, 56% of respondents say they tell customers at least "sometimes", but this number declines by 18% during Extended Parking (to 38%). These findings are robust to the alternate business type data specification as per Section 5.1.A.

⁵ Data covering parking tickets being issued is covered further in Section 6.2.

⁶ We did not record this question for businesses in the Control Area as parking is consistently free in this area.

²⁸ A Report on Estimating the Impact of Free Parking Arrangements on Perceptions of Local Economic Activity: Evidence from the Town of Victoria Park

FIGURE 17: BUSINESSES THAT TELL CUSTOMERS ABOUT FREE PARKING ARRANGEMENTS



We explore the effect of knowledge of the extended parking policy in Figure 18. Among the business respondents who were aware of the policy, 71% advised that they tell their customers about parking arrangements at least "sometimes" during Regular Parking, which increased to 78% during Extended Parking. For those unaware of the policy, those discussing Free Parking arrangements with their customers decreased by 21% from 48% to 27%. This finding indicates that the overall trend identified in Figure 17 for businesses not to discuss free parking arrangements with their customers, and to a greater extent during the Extended Parking period, is a result of a large portion of the businesses being unaware of the policy. Greater promotion of the extended free parking policy would therefore be more likely to influence businesses to tell their customers about the change.

FIGURE 18:





K. Recommendations Regarding Parking Conditions

In an open-ended question, we asked business respondents for suggestions if there was any other practical way the ToVP could support their business. A few respondents identified areas outside of parking conditions (homelessness, cleanliness, and street-lighting), but as one might expect, most responses related to parking conditions (given the survey content). The most prominent theme was a call for more parking bays. Several respondents suggested that free parking should be extended to a two-hour window. Finally, a group of respondents also suggested the need for short-term bays, such as 15 minutes, given the prevalence of food-delivery drivers and customers who make quick transactions but struggle to find parking near their destination.

5.2 Visitor Perceptions Analysis

Key Findings: Visitor Perceptions

- Most visitors believe free parking results in spending more time and visiting more shops in the ToVP.
- 91% of visitors say they won't park more than 250 metres from their destination.
- On average, visitors would somewhat prefer that parking is cheaper even if it becomes more difficult to find.
- 13% of visitors indicated they were aware of extended free parking.
- 4% of visitors believe free parking affected their choice to visit the ToVP.
- Low awareness of the policy correlates with customers who live outside the ToVP.
- Greater awareness of the policy amongst visitors appears to reduce belief in free parking's positive effects on visitor behaviour.
- Most visitors choose to drive their car to both areas of ToVP, and extended parking does not appear to affect this choice.
- Most visitors to the control area were there for shopping, while most visitors to the treatment area were there for dining and socialising.
- Most visitors choose the ToVP because it is close to home.
- Most visitors to the treatment area spend longer than 1 hour.
- The extended free parking does not appear to impact visitors reporting difficulty finding parking.
- Visitors want more parking spaces and more extended free parking.

A. Visitor Demographics

We asked visitors demographic questions, as shown in Figure 19. In the Control Area, close to 50% of visitors identified as male and female, with a 4% swing towards 'Male' during Regular Parking and 1% swing towards 'Female' during Extended Parking. Again, in the Treatment Area, there were roughly 50% male respondents, followed by 44% and 42% female, and 4% and 6% non-binary respondents during Regular and Extended Parking, respectively. The largest age category of respondents was "51 and older" in both survey areas during Regular Parking. While the portion of older respondents increased in the Control Area during Extended Parking, there was a significant increase in the proportion of visitors in the Treatment Area who were "18-24" during Extended Parking. Most visitors surveyed in the Control Area live within the ToVP, though there was a 26% swing to those living outside the ToVP during Extended Parking. In the Treatment Area, most visitors surveyed reported living outside the ToVP (about 4 in 5 visitors), and we see no significant shift in visitor residence demographics during Extended Parking in the Control Area between Regular and Extended Parking, with people being employed in a business as the largest single category (around 40% in both periods)⁷. In the Treatment Area, those visitors who report being employed generally are again the most significant single demographics identified in Figure 19 with survey response findings in relevant subsequent sections.

FIGURE 19:



7 Please note, these demographic categories of occupation are not indicative of visitors' place of occupation. As such, "employees" are not necessarily employees of a business in the ToVP, but rather simply people who report their occupation as being an employee of a business in general. All survey respondents in the Visitor Survey were simply visiting the ToVP at the time of being surveyed, and where it was not clear respondents were asked to confirm that they were not at their place of work before being able to proceed with the survey.

B. Knowledge of ToVP Holiday Initiatives

Key Finding

Only 13% of visitors reported that they knew about extended free parking. We also find that a high number of visitors living outside the ToVP could partly explain the relatively small number.

Detailed Analysis

We asked visitors to identify which holiday initiatives they were aware of from a list of four items. Across all visitors surveyed, nearly half indicated they were aware of decorations and lighting, close to one-third knew about events, about 1 in 10 were aware of holiday promotions, and about 1 in 8 visitors indicated they were aware of extended free parking (13%). We revisit visitor knowledge of the extended free parking in Section 5.2.G, where we asked visitors directly if they were aware of the extended free parking.

FIGURE 20: KNOWLEDGE OF TOVP INITIATIVES **Extended Free Parking** 13% Holiday campaign (promotion) 11% **Events** 29% Lighting/decorations 48% 0% 20% 40% 60% 80% 100%

The percentage of visitors who were aware of the policy during Extended Parking in the Control Area increased, and those in the Treatment Area decreased over the same period. The net effect during the policy period was a 13% reduction in reported awareness. While there were similar reductions in reported knowledge of 'Lighting/Decorations' and 'Events', the trends in the Treatment and Control Areas were more similar, as shown in Figure 21.

FIGURE 21:



Considering the difference in visitor demographics between Control and Treatment Areas noted in Section 5.2.A, we explore the relationship between reported residence and knowledge of the initiative. In Figure 22, we find a strong relationship between residence within the ToVP and awareness of the policy during Extended Parking in the Treatment Area. 42% of visitors in the Treatment Area who live in the ToVP were aware of the extended parking policy when it was in place, compared with 10% of those who did not live in the town (35% difference). The difference is considerably smaller in the Control Area (5%). Given the demographic differences in residence in the Treatment and Control Areas, we can reasonably summarise that living outside the ToVP has a negative correlation with knowledge of the extended parking policy and could partly explain the relatively small number of visitors who report knowledge of the policy.

FIGURE 22:



AWARENESS OF EXTENDED PARKING BY RESIDENCE

C. Mode of Transportation

Key Finding

We find that most visitors surveyed drove their cars to the ToVP, and the extended parking policy appears to have little to no impact on this choice.

Detailed Analysis

83% of visitors in the Control Area and 69% in the Treatment Area drove to their destination during Regular Parking. The percentage of self-driven visitors to the Treatment Area during Extended Parking decreased by 4%, while the rate stayed essentially the same in the Control Area (+0.4%). Changes to other modes of transport were also relatively small (between 0 and 8% change). There does not appear to be any noteworthy effect of the extended free parking policy on visitors' choice of transportation.

FIGURE 23:

VISITOR MODE OF TRANSPORTATION



D. Parking Facility Used

Key Finding

We find that fewer visitors who drove to the Treatment Area parked in ticketed bays during Extended Parking. Among other hypotheses, we postulate that the policy may not be prominently advertised, or perhaps the duration of free parking offered is not of sufficient concern to visitors to merit attention.

Detailed Analysis

5% of visitors who drove to the Control Area reported parking in a ticketed bay. There was no change between Regular and Extended Parking. Comparatively, 44% of visitors who drove to the Treatment Area advised that they parked in a ticketed bay during Regular Parking, which dropped to 25% during Extended Parking. We do not believe this results from a lack of parking availability, given ticket purchases are lower during Extended Parking than during Regular Parking (as explored in Section 6.2). We believe it would be unlikely

FIGURE 24:

PERCENTAGE OF DRIVING VISITORS PARKING IN TICKETED BAYS



Considering awareness of the policy, of those who drove to the Treatment Area and parked in a ticketed bay, 30% reported that they were aware of the policy. This low value would suggest that at the ticket machine, visitors are not identifying that there is a change to the free parking duration. This finding could indicate that either the policy change is not prominently advertised, or perhaps the duration of free parking offered is not of sufficient concern to visitors to merit attention.





E. Purpose of Visit

Key Finding

We find most visitors were in the Control Area for shopping and the Treatment Area for dining. We do not conclude any effect of extended free parking on the reported purposes of visitors to be in the area.

Detailed Analysis

We surveyed visitors to determine their reason for visiting the ToVP. In the Control Area, the most reported purpose was 'Shopping' during both periods, and in the Treatment Area, it was 'Dining'. Between the standard and extended free parking conditions, we observe shifts in both areas where fewer visitors are 'Shopping' in the Control Area and more are 'Socialising' in the Treatment Area. We do not conclude that this is an influence of extended parking conditions but more intuitively representative of a shift in visitors' priorities during the holiday period. For noting: this question permitted visitors to respond with multiple purposes, so the values across categories do not add to 100%.

Using the Likert Scale to indicate agreement from 1 to 5, we asked visitors a series of questions to determine the impact free parking would have on their visit to the ToVP. In the control area, customers moderately agree that they would visit more frequently, spend more time, and visit more businesses due to free parking arrangements. In the treatment area, after controlling for changes common to both survey areas, we find that **extended free parking correlates to a 26% increase in visitor agreement that they would spend more time and 22% increased belief that they would visit more businesses.** There is also a comparable 21% reduction in the belief that extended parking has no impact on their choices. These findings indicate a moderate improvement in visitor estimation of the value of extended free parking when the policy is in place.



FIGURE 25:

PURPOSE OF VISIT

F. Reason for Choosing the ToVP

Key Finding

We find that most visitors choose the ToVP over other destinations because it is close to home. We find that extended free parking has factored into the choice to visit the ToVP of approximately 4% of visitors in the Treatment Area.

Detailed Analysis

In addition to learning the purpose of their visit, we also asked visitors why they chose the ToVP instead of other locations that may meet their desired purpose. Most visitors in both areas and during both periods said they chose the ToVP because it was close to home. 'Time of Year' was only a factor for 13% of people in the Treatment Area during Extended Parking, suggesting that while more people come to the ToVP because of the Christmas holidays, a relatively small percentage of visitors appear to view the ToVP as a holiday destination. 4% of Visitors to the Treatment Area during Extended Parking mentioned the extended free parking arrangements as a primary reason for choosing the ToVP. The visitors in this category reported knowledge of the policy in Question 1, so it can be understood that they knew about it and decided to visit the ToVP, at least partly due to the policy. Therefore, the evidence suggests that extended free parking has factored into the choice to visit the ToVP of approximately 4% of the target visitors.

FIGURE 26:



REASON FOR CHOOSING THE TOVP





G. Frequency of Visits to the ToVP

Key Finding

We find more occasional or rare visitors in both areas during Extended Parking, but the shift is more prominent in the Treatment Area.

Detailed Analysis

We asked visitors how frequently they visit the ToVP, and we consolidated their responses into two binary categories: Daily/Frequently, or Occasionally/Rarely. During Regular Parking, we found that 77% of visitors to the Control Area were daily or frequent visitors, and 23% were occasional or rare visitors. In the Treatment Area, the daily/frequent visitors made up 60% of respondents and occasional/ rare were 40%. There was a shift in both areas towards participants who visit occasionally or rarely, but the magnitude of change was higher in the Treatment Area. When we compare these findings to the perceptions of businesses concerning changes to their customer base in Section 5.1.G, we find that businesses in the Treatment Area accurately perceive the shift to more occasional visitors, though they appear to underestimate the change. Businesses in the Control Area seem to believe the opposite effect is happening to what visitors are reporting.



FIGURE 27:

H. Length of Visit to the ToVP

Key Finding

While we find that visitors spend longer in the treatment area during Extended Parking, the extended free parking policy may not influence visitors to spend longer in the town, as more of those who report longer visits report parking in bays that do not require a ticket.

Detailed Analysis

We asked visitors, "When you visit ToVP, how long do you generally stay?" On average, 54% of visitors say they spend more than 1 hour in the ToVP, 33% say they spend between 30 minutes and 1 hour, and 12% say they spend less than 1 hour. From Regular to Extended Parking, there is a decrease in the number of visitors reporting that they are spending "30 minutes to 1 hour" in the Treatment Area (down 6%), which runs opposite to the trend in the Control Area (up 18%). Instead, we see an increase in the number of visitors spending longer than 1 hour, and the net change is 6% higher than the trend in the Control Area. When we consider the reported length of usual visits by those that parked in ticketed bays vs those that did not, we find that those that did not park in ticketed bays in the Treatment Area report spending longer in the ToVP than those that did park in a ticketed bay. This ratio also increases during Extended Parking. This indicates that the extended free parking policy may not influence visitors to spend longer in the town, as more of those who report longer visits appear to park in bays that do not require a ticket.



I. Visitors' Challenges Finding Parking

Key Finding

We find that extended free parking does not appear to have a significant impact on difficulty accessing parking. Overall, 7-15% more visitors to the Treatment Area report difficulty finding parking than in the Control Area, depending on the time of year.

Detailed Analysis

We asked visitors how regularly they experience challenges finding parking in the ToVP. Most visitors across the town said 'sometimes' or 'rarely' (66%). There are some notable differences when exploring areas and times of the year. More visitors in the Control Area during Extended Parking reported difficulty 'always', 'most times', and 'sometimes' than during Regular Parking, indicating a shift in difficulty. In the Treatment Area, more visitors reported difficulty 'always' and 'rarely' with reductions in the more moderate categories. If we combine 'always' and 'most times' to be 'relatively more difficult' and 'sometimes' and 'rarely' as 'relatively less difficult', we find a net balance in the difficulty of finding parking in the Treatment Area across periods (40%).



J. Distance Visitors are Willing to Walk

Key Finding

We find that visitors in the Treatment Area are generally willing to walk longer distances than visitors to the Control Area. Only 9% of visitors say they will walk more than 250 metres from their parking location to their destination.

Detailed Analysis

We asked visitors, "How far from your destination are you willing to park your car provided a bay is not available near your destination?" Overall, the distance that the largest percentage of visitors selected was 250 metres (38%). Only 9% indicated they were willing to walk further than this. Comparing the trends between areas over time in Figure 30, we find that visitors in the Treatment Area are generally willing to walk longer distances than visitors to the Control Area. This difference becomes more pronounced during Extended Parking.

FIGURE 30:



K. Free Parking Versus its Availability: A Trade-Off

Key Finding

We find that, on average, visitors have a modest preference for relatively cheaper parking even if it made parking more difficult to find.

Detailed Analysis

In line with the question, we asked business respondents in Section 5.1.F, we asked visitors to share their preferences on a scale of 1 to 5, considering a trade-off between parking availability and cost. 1 signifies a preference for "Expensive but easy to find parking", while 5 denotes a preference for "Cheap but difficult to find parking", and 3 is the midway point, indicating a neutral preference. This trade-off was explained to respondents that if parking were cheaper, more people might choose to use available parking, making it more difficult to find. In contrast, if parking were more expensive, it may be easier to find vacant parking spaces.

For all visitors surveyed (as shown in Figure 31), 42% selected 4 or 5, indicating a preference towards "Cheap but difficult to find parking", 19% selected 1 or 2, indicating a preference for "Expensive but easy to find parking", and 39% indicated a neutral preference. The average preference is an 8.5% lean towards the "Cheap but difficult to find parking" option. These results show that visitors have a similar preference and distribution to the business respondent preferences in Section 5.1.F.

FIGURE 31:

TRADE-OFF PREFERENCE PARKING AVAILABILITY VS PRICE

Expensive but Easy to Find		Somewhat More Expensive Neutral		Somewhat Cheaper		Chea	neap but Difficult to Find				
	7%	12%			39%			25%		17%	
0	%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

We display the differences in visitor preference between Treatment and Control Areas during Regular and Extended Parking in Figure 32. In this figure, 100% would indicate that all respondents selected a 5, meaning a preference of "Cheap but difficult to find parking", 0% would mean all respondents selected "Expensive but easy to find parking", and 50% would be a neutral preference as an average of all responses. The approach to generating these percentages and classifying those preferences into descriptive categories is the same as Section 5.1.F. Visitors in the Control Area have a 'Neutral' preference during Regular Parking⁸ but move into the "Cheap but difficult to find parking" preference category during Extended Parking. Visitors to the Treatment Area have a "Neutral" preference in both periods; however, their responses lean very slightly towards the "Cheap but difficult to find parking" preference category from the midway point. These results are also generally consistent with business respondent preferences. Awareness of the extended free parking is not correlated to any significant change in preferences.

FIGURE 32:





L. Knowledge of Extended Free Parking

Key Finding

When we asked visitors directly if they were aware of the extended free parking policy, we found that more reported awareness than at 5.2.B (20%), but we perceive there may be some bias in this response.

Detailed Analysis

In contrast to Question 1 (Section 5.2.B), where we presented visitors with a list of initiatives to choose from, we specifically asked visitors to advise if they were aware of the extended free parking offered in the Treatment Area during December and January. Overall, 20% of visitors indicated they were aware of the initiative. We asked visitors who advised at Question 11 that they were aware of the policy how they knew about it. The most common responses were that they learned it from a friend (24%) or that they learned about it from the ticket machine (24%).

A few unexpected results in this section cause us to interpret the results with caution. Firstly, we note that the net increase in the number of visitors reporting awareness compared with question 1 is not necessarily unusual, as more visitors may pay closer attention to the direct question. While we intentionally included this question after other perception questions to avoid bias in their responses by directly telling them about the policy before asking what impact they believe it has, for the 7% of visitors who did not indicate knowledge at Question 1 but did so at Question 11, their change in response may also be a result of survey bias. We now feel that visitors would generally be aware that we are interested in parking conditions at this point in the survey. It is also unexpected that 6 percent of visitors who reported knowledge of the policy in Question 1 said they were unaware in Question 11. For these reasons, we tend to suspect that the results of Question 1 are a more accurate representation of knowledge of the extended free parking policy.

Despite the differences in responses, several critical findings remain constant across the two answers to questions on knowledge of extended free parking. A small percentage of visitors are aware of the extended parking policy (the results suggest between 13 and 20%), and fewer visitors in the Treatment Area report knowledge of the policy during Extended Parking than during Regular Parking. This analysis suggests that there may not have been sufficient knowledge of the policy to substantially influence average visitor behaviour.

8 Though the result is right on the border of the category indicating a preference for 'Cheap by difficult to find' parking.

FIGURE 33:



M. Belief that Free Parking Influences Visitor Behaviour

Key Finding

We find that while the average visitor believes that free parking influences them to spend more time and visit more shops, those aware of the policy and who would be affected by it believe moderately that it does not affect their choices.

Detailed Analysis

Using the Likert Scale, we asked visitors to indicate how much they agree with given statements on a scale from 1-5, where 1 denotes "strongly disagree" and 5 signifies "strongly agree". The questions posed concern visitor beliefs about whether free parking influences their personal decision to i) visit the ToVP more often, ii) spend more time in the area, and iii) visit more businesses. Given that we have advised visitors of the extended free parking policy at this point, those who had indicated they were not aware are providing answers that they believe free parking would have the following influences. We explore the difference between aware and unaware visitors. There was moderate agreement on average across all visitors that free parking influences their decisions to visit more shops (6.6% lean towards agreement) and spend more time in the ToVP (6.2% lean towards agreement). Visitors leaned towards disagreement that free parking influences their decision to visit the ToVP more often (4.6% lean towards disagreement), as seen in Figure 34.

FIGURE 34:



BELIEF FREE PARKING INFLUENCES PERSONAL DECISIONS

Following the same approach found in Section 5.2.K, we explore the differences between Control and Treatment Areas and between Regular and Extended Parking. In the Control Area during Regular Parking, visitors 'Somewhat Agree' that free parking influences their choice to spend more time and visit more shops. These same visitors are 'Not Sure' if there is any influence on how often they visit the area, with the average leaning slightly towards disagreement. During Extended Parking, visitors in the Control Area indicate they are 'Not Sure' if free parking influences any of the three behaviours, but still lean slightly towards agreement on average. In the Treatment Area, visitors are 'Not Sure' about the influence of free parking on any of the three behaviours during both periods. However, considering the belief that free parking affects the decisions to spend more time or visit more shops, the average point changes from leaning towards disagreement to agreement during Extended Parking, with an 11% and 16% change respectively.

FIGURE 35:

BELIEF FREE PARKING INFLUENCES PERSONAL DECISIONS



We also considered the effect of awareness of the extended parking policy on the beliefs of free parking impact. We find in both the Treatment and Control Areas, during Regular parking, that awareness of the policy is positively associated with an average of 20% greater confidence that the policy influences each of the three visitor decisions. While this finding holds during Extended Parking in the Control Area, during Extended Parking in the Treatment Area, 13% fewer of those aware of the policy believe it impacts any of the three behaviours.

N. Recommendations Regarding Parking Conditions

In an open-ended question, we asked visitors if they had any other comments or concerns about parking in the ToVP. While most visitors provided no additional comments, the most common feedback was that visitors desired more parking spaces (including requests for more motorcycle parking). Visitors would also like more opportunities for free parking, including extended free parking hours in the evening, longer initial free periods, and free parking throughout the year. There were also a few visitors who indicated the need for wider spaces.



SECTION 6. Results: Administrative Data

It is relevant to analyse available administrative data to complement and contrast the findings from Section 5 based on the perceptions of visitors and businesses. This section explores quantitative administrative data made available by the ToVP, including pedestrian counters, ticket machine purchases, and parking infringements.

Key Findings: Administrative Data

None of the administrative data provides clear evidence that the extended parking policy has influenced:

- . The number of pedestrians visiting the area, or their choice of day or time to visit
- The value or number of infringements, the time of day they are issued, or the average age of offenders
- . The ticket purchasing behaviour of visitors or town revenues
- We find reasonably conclusively that from October to March:
 - The percentage of paid tickets is increasing, even during Extended Parking
 - The busiest time of day for pedestrian activity is consistently 11 am to 1 pm
 - The busiest time of day for parking infringements is consistently 1 pm to 5 pm
 - The busiest day of the week for paid parking is generally Friday, but visitors, on average, buy the longest parking tickets on Tuesday
 - . The ticket data and pedestrian activity findings indicate that more visitors are driving and parking in ticketed bays over time than other transportation options.

6.1. Pedestrian Activity Analysis

Key Findings

We suspect the extended parking policy is not the primary cause of observed pedestrian number fluctuations during December and January.

We find a clear trend in the time of day visitors come to the Treatment Area, and there is no evidence that the extended free parking policy is influencing visitors' choices in terms of the time of day they choose to visit.

There is no clear evidence to suggest that extended free parking influences visitor activity on particular days of the week.

Detailed Analysis

We examine pedestrian activity in the Treatment Area using data provided by the ToVP. Pedestrian numbers were collected using automated counters located at three points along Albany Highway, each outside the businesses Kabuki Japanese, City Farmers, and Cinnamon (all located in the Treatment Area). The Kabuki Japanese and City Farmers counters provided hourly data from their installation in 2013, and the Cinnamon counter provided data from its installation in December 2020. Despite the availability of the third counter for the more recent period, a review of the available data reveals 3313 "0" observations recorded out of 12385 hourly observations (26.7%). This compares with 4.3% and 7.8% hourly observations of "0" at Kabuki Japanese and City Farmers, respectively. Many of the nil values listed by the Cinnamon counter are during times when visitors would be expected to be recorded, and pedestrian values are noted at the other two counters (one of which is roughly 250 metres away). We, therefore, perceive these values to be a malfunction of the counter or otherwise missing data. Given this lack of data completeness and the perceived potential for pedestrian averages to be influenced by counting the same pedestrians more than once due to the proximity of the Cinnamon and City Farmers counters, we have opted not to include the Cinnamon count data in our analysis.

As shown in Figure 36, we investigate the change in average monthly pedestrian numbers during December and January, compared with the October, November, February, and March period. From 2018 onwards, the December/January period is the Extended Parking period of interest. While there is a notable increase in average monthly pedestrians during the Dec/Jan period as compared with Oct/ Nov/Feb/Mar from 2019 onwards (which could demonstrate a lagged effect of the introduction of the extended free parking policy), the values vary substantially from one year to the next in total count and ratio to the pre-and post-holiday period. Without pedestrian data in a Control Area, it is difficult to deduce any causal effect of the policy. Given the change did not occur in 2018 when the policy was first implemented, the general fluctuation in the ratio between the two periods noted in the five most recent years, and the reported lack of knowledge of the policy indicated by visitors in Section 5, we suspect that the extended parking policy is not the primary cause of observed pedestrian number fluctuations during the December and January period.

FIGURE 36:

AVERAGE MONTHLY PEDESTRIANS



One noted effect on pedestrian values during the period of interest is the annual Summer Street Party. This event caused substantial spikes on the individual days in question, being 30 November 2014, 29 November 2015, 27 November 2016, 19 November 2017, 9 December 2018, and 24 November 2019. The event does not appear to have been held in 2013, 2021, or 2022. The variable nature of this event (i.e., not being held each year and being held one year during the December period) could hypothetically cloud other effects such as the extended parking policy. To investigate this, we explored the trend by replacing each affected day with the average hourly counts per location for the period seven days before and seven days after the event. We find the overall effect of the summer Street Party to be unsubstantial to our results.

We also explore the pedestrian data for trends in the time of day that pedestrians are recorded and whether any plausible impact of the extended parking policy can be observed in changing pedestrian activity by time of day. The trend seen in Figure 37 is substantially consistent from year to year. We note no observable changes between the December/January Holiday period and the October/ November/February/March pre-and post-holiday periods. This serves as evidence that it is unlikely the extended free parking policy is influencing visitors' choices in terms of the time of day they choose to visit.



FIGURE 37:

MONTHLY AVERAGE PERCENTAGE OF PEDESTRIANS BY TIME OF DAY

We take the same approach to visualise any relationship between pedestrian activity by day of the week and the holiday period. As seen in Figure 38, while there is a loose relationship between the percentage of visitors and the day of the week, which is somewhat similar over time, any effect of the holiday period or changes across years is more difficult to see. Given the lack of intuitive support for the extended free parking influencing the pedestrian choice of day to visit the area (given that the extension is not specific to a particular day), we conclude that no further analysis is merited to explore any statistically significant relationships which may otherwise provide misleading conclusions.



MONTHLY AVERAGE PERCENTAGE OF PEDESTRIANS BY DAY OF WEEK

FIGURE 38:

In summary, we explored pedestrian activity data in the Treatment Area. While we cannot draw concrete conclusions, we do not conclude that there is any evidence to suggest that the extended free parking policy has influenced the number of pedestrians visiting the area or their choice of time or day to visit.



6.2. Ticket Purchases Analysis

Key Findings

We find that the ticket machine data does not provide any conclusive findings on the influence of the extended parking policy on ticket purchasing behaviour or town revenues. There is some consideration that the policy may increase the duration of time spent by visitors in the town. Two different approaches to estimating the cost incurred by the Town for the extended free parking policy find annual costs to be \$1128 and \$3568. These estimates come with cautions, as explored in the detailed analysis and for the reasons described in Section 4.3. The ticket data combined with pedestrian activity findings indicate that more visitors are driving and parking in ticketed bays over time compared with other transportation options.

Detailed Analysis

Using data provided by the ToVP, we examine the relationship between the extended free parking period and ticket purchase behaviour over time. We attempt to explore the cost of providing the extended free parking policy in this section, to be weighed against its benefits. In Figure 39, we present the average monthly ticket revenue each year, comparing the December/January holiday period with the October/November/February/March pre-and post-holiday period. We find a generally consistent trend, with the holiday revenue being less than pre- and post-revenue, both during and before the extended free parking policy. There is a noted divergence in 2021-22 which we suspect can be primarily ascribed to COVID-19 restrictions during the holiday period this past year. Excluding that period, if we take the average difference between the holiday periods and pre/post-holiday periods from 2014-15 to 2017-18 and compare it to the average difference between these periods from 2018-19 to 2020-21, we find an average 4% decline in revenues. If the average difference remained constant from the period before the policy implementation, this would result in an average annual additional revenue of \$3,568. We cannot conclude with any certainty that this revenue shortfall is caused primarily by the extended parking policy as we do not have a Control Area variable to undertake DID analysis. In subsequent figures, we explore the data further to determine other indicators that may suggest the policy's financial effect. While it may seem intuitive that revenues should decline by offering an additional 30 minutes free on every ticket, there could be balancing effects such as the extended time encouraging visitors to stay longer and thus spend an equivalent amount as if there had been no extended free parking.



FIGURE 39:

In Figure 40, we demonstrate the interaction between the average monthly number of tickets issued during the holiday and pre- and post-holiday periods. The series pairs from bottom to top show the average monthly number of paid tickets, free tickets, and a total of all paid and free tickets. There is a general trend in holiday and pre/post-holiday periods of more tickets being issued each year. This is interesting given that in Figure 36, the trend of pedestrian activity is down in the pre/post-holiday period and flat during the holiday period. This combined evidence suggests that a more significant percentage of visitors are choosing to drive their vehicles and park in ticketed parking bays over time, compared with other transportation options. The trend of paid parking tickets is increasing during the Extended Parking period, where it might otherwise be expected to decline (if one were to hypothesise that more visitors would choose not to purchase tickets and instead take a free ticket due to the extended free duration). Free tickets during Extended Parking stay relatively flat from 2018 onwards, but during Regular Parking, the number of free tickets trends downwards from 2018. We explore this relationship further in Figure 41.

FIGURE 40:

AVERAGE MONTHLY NUMBER OF TICKETS ISSUED



To better examine the trend associated with the change in the percentage of free tickets issued over time, we compare the average monthly percentage of free tickets between the December/January period and the October/November/February/March period in Figure 41. While in both periods, the percentage of free tickets has been in decline since 2018-19, the average percentage difference between free tickets in the holiday period and the pre-and post-holiday period has been greater in recent years than in the past. The difference in the percentage of free tickets between holiday and pre/post-holiday periods 2014-15 to 2017-18 was 1.52%, versus the four periods 2018-19 to 2021-22, which was 2.94%. We cannot conclude with certainty that the extended free parking policy is the cause of this shift, but it is a plausible effect of the policy since more visitors during Extended Parking would have an option to take a free tickets remained consistent over the four periods of Extended Parking with the 1.52% average of the previous comparison period, this would have generated an additional average annual revenue of \$1,128, assuming the same total volume of tickets and no change to the average duration of tickets.

FIGURE 41:

AVERAGE MONTHLY PERCENTAGE OF FREE TICKETS



As seen in Figure 42, average total ticket durations across ticket types remain reasonably consistent in the holiday period, around 85 minutes from 2018 to 2022⁹. The Extended Parking policy shifts the average total ticket duration in Dec/Jan above the average ticket duration in Oct/Nov/Feb/Mar, suggesting that if visitors use the entire time available, the policy positively influences the time visitors spend in the area. On the other hand, paid ticket durations are declining over time in both the holiday and pre/post-holiday periods. When considering the trends noted in the Visitor Survey about the reported length of their visit at Section 5.2.H, we find the evidence is not clear to suggest that the Extended Parking policy is having any influence on the length of time visitors spend in the ToVP.

FIGURE 42:



MONTHLY AVERAGE TICKET DURATION

Finally, we consider the trend of ticket purchases across days of the week. To note, information on a daily scale was only available for paid tickets, and only for the period from 2018 onwards. Figure 43 shows that daily average ticket revenue tends to be roughly flat across weekdays, with a peak on most Friday periods and a noted decline on Saturday and Sunday. The Dec/Jan period results in consistently lower revenue than the average daily values in Oct/Nov/Feb/Mar, as already noted in Figure 39.

FIGURE 43:

DAILY AVERAGE TICKET REVENUE



⁹ Ticket duration data was not available for previous periods so we cannot explore any plausible effects of the extended free parking policy.

Figure 44 shows that the number of tickets issued per day between October and March also generally peaks on Friday, following a similar trend to revenue.



Figure 45 shows that the relationship between the day of the week and average paid ticket duration follows a somewhat similar trend to the previous two figures. There is a slight overall dominance of Tuesday as the day with the average longest paid tickets, with Friday consistently being the shortest average ticket duration of the weekdays. This shows that there are more visitors on Friday, parking for shorter durations than on other weekdays.



DAILY AVERAGE PAID TICKET DURATION

6.3. Parking Infringements Analysis

Key Findings

We find a clear trend in the time of day parking infringements are issued. We also find a slight decline in the age of parking offenders over time.

There does not appear to be any significant association between the extended parking policy and ToVP parking infringement revenues, the number of offences, the time of violations, or offender age.

Detailed Analysis

We review parking infringements data provided by the ToVP to identify any time series trends associated with the volume and value of penalties issued by the Town. The infringements data covers the entire town area, including both Control and Treatment Areas and areas not covered by the perceptions survey. While the parking data provided identifies a street location, more than two thousand individual location markers exist. No readily available means have been identified to determine if the infringement was issued in a paid parking zone or was within the Treatment and Control Areas. As such, we have not been able to analyse the infringements data using a DID strategy, as noted in Section 5.2.

In Figure 46, we display the average monthly value of infringement penalties issued by the ToVP, comparing the average across Extended Parking with the 6-monthly average from December to May.¹⁰ We find that there is no discernible trend associated with the introduction of the extended parking policy on the value or number of infringements as in Figure 47, which follows a substantially similar path to the value averages over time. There is a noticeable decline in infringements in the December 2020 - January 2021 period, which is surprising as the pedestrian numbers were noticeably higher during this period than in the preceding and subsequent years, and higher than the pre and post-holiday period average, as seen at Figure 36 in Section 6.1. Overall, we deduce from this information that there does not appear to be any significant association between the extended parking policy and ToVP parking infringement revenues; however, without a control variable, we cannot conclude this finding with certainty.



FIGURE 46:

Penalty Value



10



We have selected a 6 monthly average for comparison based on data availability, given that we do not have October and November data for 2017. We also explore alternate specifications of annual average (noting in the final year we only have 6 months of observations) and monthly average of February and March. Neither hold any discernible relationship with the introduction of extended parking.

We also explore potential associations between the Extended Parking period and the time of day infringements are issued. We find a strong pattern in the time of day infringements are issued, as shown in Figure 48, which holds across years and when comparing the December-January period to the 6-monthly average. This finding suggests that there may not be any significant impact of the policy on the behaviour of offenders as it relates to the time of day.

FIGURE 48:



MONTHLY PERCENTAGE OF INFRINGEMENTS BY TIME OF DAY





Finally, we consider any relevance of Extended Parking to the age of offenders, as shown in Figure 49. There again is no significant pattern between the average age of offenders in December/January as compared with the 6 monthly average. There is a general trendline in both periods towards a slight reduction in the average age of offenders across years, which may be consistent with a general trend of visitor demographics over time in the ToVP.





SECTION 7. Conclusion

This research set out to measure the effectiveness of the extended free parking arrangements of the Town of Victoria Park in boosting local business activity. We undertook the research in two complementary parts, two perceptions surveys and administrative data analysis. Through the surveys, we endeavoured to understand how visitors and business respondents perceive extended free parking arrangements affect local activity. Using the administrative data, we explored pedestrian count, ticket issuing, and parking infringement data over time in the Treatment Area. We interacted the administrative data with the perceptions data to suggest plausible trends over time.

The survey data revealed many interesting and valuable perceptions. Business owners feel that free parking has a positive impact on their business. Most businesses surveyed believe free parking results in more customers spending longer, visiting more shops, and increasing business revenue. Businesses also suggest there need to be more available parking bays, longer free parking, and the introduction of short-term bays. On average they also want cheaper parking even if it makes it more difficult to find. Despite all of this, very few businesses were aware of the policy. The data indicate that increased awareness would likely increase the perceived impact of the policy, including an increase in the belief that free parking benefits businesses; however, it may also increase the perceived number of complaints that businesses receive. Visitors generally believe that free parking positively impacts visitor activity, but those aware of extended parking are less convinced of its effectiveness. Visitors would also somewhat prefer cheaper parking even if it makes it more difficult to find. Like businesses, few visitors were aware of the extended free parking. Low awareness comes partly from the number of visitors living outside the ToVP. Despite most visitors driving to the town, only 4% of visitors believe free parking affects their choice to visit.

The administrative data generally could not provide evidence that the extended parking policy has affected the number of pedestrians, infringements, or parking tickets being purchased. We did, however, determine strong patterns in visitor activity which could be helpful to the town if not previously identified.

Profile of Project Leads



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Habib Rahman is the Director of the Centre for Research in Applied Economics (CRAE), and a Senior Lecturer in Economics in the School of Accounting, Economics and Finance at Curtin University. He is an internationally recognised economist conducting research on the crossroad of environment, climate change, natural disasters, and sustainable social policies. He has over 15 years of experience providing technical assistance to governments, international development partners and non-government organisations. His research has informed public policies of the governments of Australia, Bangladesh, Cambodia, Nepal, Thailand, and Sri Lanka.



Professor Ruhul Salim

Ruhul Salim is a Professor of Economics in the School of Accounting, Economics & Finance. He is also an associate editor of the Journal of Economic Development, the oldest economics journal in the Asia-Pacific region. Professor Salim's publications appear in the Journal of Industrial Economics, Energy Economics, Journal of Development Studies, World Development, Economic Modelling, Journal of Policy Modeling, Economic Record, Energy Policy and many other applied economics journals. His current research includes human capital and potential energy-saving in China and OECD countries and Climate Change mitigation strategies in developing countries.



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Sherry Bawa is a Senior Lecturer in Economics and is the Co-Director, Learning and Teaching, School of Accounting, Economics and Finance. Sherry is a Fellow of the Higher Education Academy (FHEA) and an Associate Fellow of Curtin Academy. She is an EQUIS Champion and a Curtin's Sustainability in Business Council and Gender Equity Group member. Her research interest areas are higher education, STEM and women, labour economics, employability, gender differentials and wealth, gender issues, labour economics and wellbeing.



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Muammer Wali is a Fellow of the Higher Education Academy (FHEA) and Lecturer in the School of Accounting, Economics, and Finance, Curtin University. He is the Course Coordinator (Finance) for both undergraduate and postgraduate courses. His wide-ranging teaching includes Corporate Finance, International Finance, Financial Instruments and Markets, Strategic Finance and Financial Technology.



Mr Keegan Robertson

Keegan Robertson is a Research Officer in the Centre for Research in Applied Economics (CRAE), and a Sessional Academic and PhD Candidate in the School of Accounting, Economics and Finance at Curtin University. He is conducting research on climate change and natural disasters, and their impact on people's political behaviour, as well as coordinating research to support effective climate mitigation and adaptation actions at an international level.

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