# Playing Musical Chairs: Evaluating the Christchurch City Council's Central City Parking Policy

Ethan McLeish, Freya Barlow, Jack Halliday, Lennart Wegener and Portia Bishop

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## Executive Summary

Through the analysis of parking occupancy and compliance rates within the Central City, this report investigates the effectiveness of the Christchurch City Council's Central City Parking Policy, in respect to the 85% optimal occupancy target outlined in Policy 4.

Using quantitative observational methods, data collection was conducted over a 10-day period on randomly selected streets with varying restrictions, land uses and during peak periods between 10am–1pm. Occupancy and compliance data were both collected using this method, and multiple analyses were then conducted.

The results demonstrate that the policy is not effective at meeting the 85% occupancy target, with a median street occupancy of 89.5%. The mean compliance rate of 32.5% also indicates limited compliance. Unrestricted parking consistently exceeded the 85% threshold, whereas time restricted and metered parking had greater variances. Metered parking experienced significantly greater compliance of 67.8% in comparison to unpaid time restricted zones (22.1%), demonstrating clear issues with policy and enforcement.

These results demonstrate that current policy is not operating efficiently therefore redevelopment of the policy is required, in alignment with the New Zealand Transport Agency's Parking Management Guidance document. Implementing new strategies, including parking benefit districts, have potential to support sustainable development and increase acceptability of new restrictions. Developing a parking strategy which aligns with the region's transport plans as well as implementing tailored Parking Management Plans addressing land use types and specific areas will also be critical. These measures will enable the Central City Parking Policy to effectively manage parking demand and compliance as well as integrate with wider development and support equitable access to the CBD.

The limited seasonal and temporal variability of the data limits the generalisability of the results, especially as land use and spillover effects of current parking restrictions were not considered. However, this still provides an accurate snapshot of parking occupancy and compliance.

# 1. Introduction

Parking policy is integral in travel demand management, influencing how people access and move through urban areas. Within Central Business Districts (CBDs), the way parking is managed directly affects economic activity, transport efficiency and the overall accessibility of the city centre. In Christchurch, the redevelopment of the city centre following the 2011 earthquakes, alongside limited space and high demand, has further escalated competition for curb-side space. This highlights the importance of a well-designed parking policy to balance the needs of businesses, residents, and visitors.

The Christchurch City Council's (CCC) Central City Parking Policy (CCPP) looks to find this balance through a data-led, demand-responsive approach. The policy shows an optimal occupancy rate of 85%, representing a balance between convenient availability and efficient use of existing supply. Maintaining occupancy around this target ensures parking remains accessible for new arrivals, and high utilisation is present. Occupancy rates above or below the target range could suggest different factors, such as excess demand and inefficiency or underutilisation.

There must be an effective approach to parking policy to maintain accessibility, economic performance, and promote more sustainable travel behaviours within the city. However, parking remains a politically sensitive issue as public perception is often negative regarding restrictive parking measures and price adjustments. This reinforces the need for transparent communication and equitable policy design.

# 2. Aim

This project aims to evaluate whether the CCPP is effective in reaching its target of 85% occupancy during peak periods, as outlined by Policy 4. It also aims to assess whether existing restrictions are complied with by motorists. Policy recommendations guided by these findings, alongside relevant literature and examples of effective parking policies in New Zealand, will be given to help improve policy effectiveness.

# 3. Literature Review

## 3.1. Setting the right price for parking

Incorrect pricing encourages unwanted behaviours, including cruising and illegal parking (Piccioni et al., 2019), and free or heavily subsidised parking still incurs costs through increased land consumption, emissions, and increased inefficiency (Shoup, 2005). Dynamic and differentiated pricing strategies are shown to be more appropriate in mitigating these issues than flat rates due to greater effectiveness in maximising parking usage, increasing turnover and reducing cruising (Bayih & Tilahun, 2024; Mackowski et al., 2015; Millard-Ball et al., 2014; Wilson & Irish, 2016). Combining pricing with time limits performs better than either intervention used separately, particularly for short-stay parking and in regions with higher parking demand (Mingardo et al., 2022). Furthermore, the level of enforcement effort, land use, and parking technologies are also significant in influencing motorists' behaviour; thus, local pricing and time limit adjustments may be required (Lehner & Peer, 2019; Mackowski et al., 2015).

Implementing parking price strategy is not an issue of technical fixes, but one of social legitimacy; political acceptance is often put ahead of evidence to prevent backlash (Kong et al., 2024). Resistance to pricing strategy implementation arises due to perspectives of parking as a right (Eliason & Börjesson, 2018; Mackowski et al., 2015). Thus, effective pricing must also consider political framing and public acceptance; stakeholder engagement; transparency; and equity (Eliasson & Börjesson, 2018; Kong et al., 2024; Piccioni et al., 2019).

## 3.2. Parking benefit districts

Setting the right price for parking is a key lever for equitable, sustainable, and efficient urban curb space distribution, though policymakers often feel they lack public mandate. Parking benefit districts (PBDs) address this by spending meter revenue locally, creating visible amenity improvements such as street furniture and trees, fostering a virtuous cycle of urban enrichment (Shoup, 2024). Several cities have successfully implemented PBDs, with districts showing improvements in both economic and parking outcomes after recycling parking revenue (Irshad, 2018; Kolozsvari & Shoup, 2018; Reséndiz & Gavaldón, 2018; Shoup et al., 2017).

Concerns include limits on financial flexibility and potential inequitable distribution, as high-demand, high-value areas may disproportionately benefit. Allocation keys have been proposed as a solution to direct more revenue to marginalised areas (Johansson et al., 2017). PBD implementation can also be complex, depending on local governance and legislation. A research gap to note is that literature focusses on large metropolitan areas; mid-sized cities like Christchurch face smaller economies of scale and additional governance barriers, though trials suggest a feasible starting point.

## 3.3. Monitoring, enforcement and smart cities

Effective parking policy relies on credible enforcement. Without consistent monitoring, nonpayment and overstaying undermine compliance, reducing turnover, and inhibiting broader aims of reduced congestion and supporting sustainable transport (Manville & Pinski, 2021; Zimmerman et al., 2014). Vehicle-mounted license plate recognition combined with payment transaction data allows councils to calculate block-level compliance, dwell distributions, and violation mixes with much greater accuracy than manual patrols alone (Diehl et al., 2021). Modern automatic licence plate recognition systems routinely achieve recognition rates above 95% in controlled conditions, though accuracy drops significantly with poor lighting, angled plates, or occlusion (Tang et al., 2022). Smart city research also points to the potential of integrated sensor and data platforms for improving monitoring. Real-time smart parking systems using IoT sensors and licence plate recognition can accurately monitor occupancy and vehicle allocation, highlighting the technological potential for integrating data streams into city parking management (Elfaki et al., 2023). These findings highlight the need for quality assurance measures such as repeat sweeps, manual ground-truthing, and transparent appeals processes to manage error rates and protect legitimacy. Increased compliance improved ease of parking and reduced average search time and distance (Zimmerman et al., 2014). This reinforces how monitoring data can be tied directly to policy goals and how monitoring not only secures compliance but also generates the data necessary to evaluate broader transport impacts.

## 3.4. Parking policy and sustainable mode shift

Parking policies influence mode choice through measures such as parking fees, restricting availability, and implementing stricter time limits. Parking fees are one tool that influence travel choices, with some evidence indicating that increasing fees decreases the likelihood of driving while increasing likelihood of choosing an alternative mode (Hess, 2001; Simićević, 2013). Other findings suggest that mode shift does not occur; rather, spillover of parking demand occurs in nearby areas (Simićević, 2013; Yan et al., 2019). Restrictive policies were most effective in dense areas such as the CBD due to viable transit alternatives. Conversely, areas with poor transport alternatives observed higher levels of illegal parking and cruising (Piccioni et al., 2019).

Though the effectiveness of influencing mode choice through individual measures is varied in evidence, combining measures as a complementary 'policy bundle' (Yan et al., 2019) to existing transport planning policy provides the best approach for reducing car use and increasing alternative mode uptake (Christiansen et al., 2017; Johansson et al., 2017). However, the benefit of "push" measures in promoting modal shift is dependent on the effectiveness of "pull" measures, such as transit coverage and infrastructure (Johansson et al., 2017; Yan et al., 2019).

## 3.5. Parking policy and socioeconomic inequity

Some evidence suggests higher-income commuters show relatively inelastic demand for driving when parking fees are raised, whereas lower-income commuters are more likely to shift modes

(Hess, 2001; Christiansen et al., 2017). Lower-income commuters driving by car were less likely to shift modes due to their distance from the study area, likely attributed to increased travel distance and decreased transit accessibility. Despite this contrast, both findings suggest that restrictive “push” policies should be complemented by improvements to transport alternatives that reduce perpetuating transport inequities among low-income commuters, either to support low-income commuters who already rely on them or to make alternative modes more accessible. When reviewing and determining ‘effective’ parking policy, careful consideration must be given to its impacts on inequality, and whether any observed ‘successes’ in car use reduction may be the unsuccessful result of an overall ineffective transport system.

# 4. Methodology

Our research adopted a quantitative observational method to measure occupancy and compliance rates in areas where the CCPP is relevant. This research approach provides empirical evidence to evaluate whether the current CCPP is effective in practice; occupancy data will demonstrate whether the objective of 85% occupancy at peak times is being achieved, and compliance data will suggest the level at which restrictions are enforced to support demand management.

## 4.1. Study area selection

Each of the streets sampled met the Christchurch City Council’s (CCC) Central City Parking Policy by falling within the catchment area of the Four Avenues. Streets were randomly selected also to achieve a combination of residential, business, and industrial space to represent a range of parking activities and requirements.

These locations also varied across unrestricted and restricted parking, those being P5, P10, P15, P30, P60, P$60, P120 and P$120. This variety meant that a comparison was easier across levels of occupancy based on different types of restrictions that reflected whether the current parking policy is maximised under other types of uses and levels of restrictions.

## 4.2. Data collection

Data was collected between the 9$^{th}$ and 19$^{th}$ of September, and during peak hours in Christchurch. We used a CCC parking meter dashboard to determine the peak hours, which was between 10am and 1pm on both weekdays and weekends.

However, we did also collect data as early as 9:22 am and as late as 3:25 pm to allow for variation. The weather during these days was ideal, and we understand that poorer weather (e.g. rain) can increase the occupancy and decrease compliance rates in the city.

We identified two approaches to gathering data in the field: camera-mounted cycling and walking surveys. They were both planned to achieve high-quality coverage and verification of parking status for every target street.

The following variables were recorded for each street segment:

- Total available parking spaces
- Total parking spaces occupied
- Number of obstructing or unauthorised parked automobiles (e.g. on footpaths and driveways)
- Number of inaccessible or obstructed parking spaces

Every street block face was used as the analysis space base unit, allowing for comparison and grouping.

We also monitored compliance recording, using street camera footage that we were granted access to by the CCC, against time limits in specially targeted localities. A timer was used based on the displayed time limit (e.g., P30 or P60), with the same route back on expiration of the limit. The cars breaking time limits were then classified as:

- 0 – Non-compliant (Vehicle not adhering to posted time limits)
- 1 – Compliant (Vehicle adhering to posted time limits)

This generated further compliance behaviour data, enabling us to assess whether the time limits were proper for the chosen roads.

## 4.3. Data analysis

### 4.3.1. GIS analysis

We coded each observation with a street block identification code for spatial referencing. Observations for each street segment were aggregated by block, and the mean occupancy rate was calculated to provide a representative value, mean occupancy data were geo-referenced to a streets layer and mapped (ArcGIS Pro) to identify regions of occupancy above and below the 85% service occupancy.

#### 4.3.2. Descriptive and statistical analyses

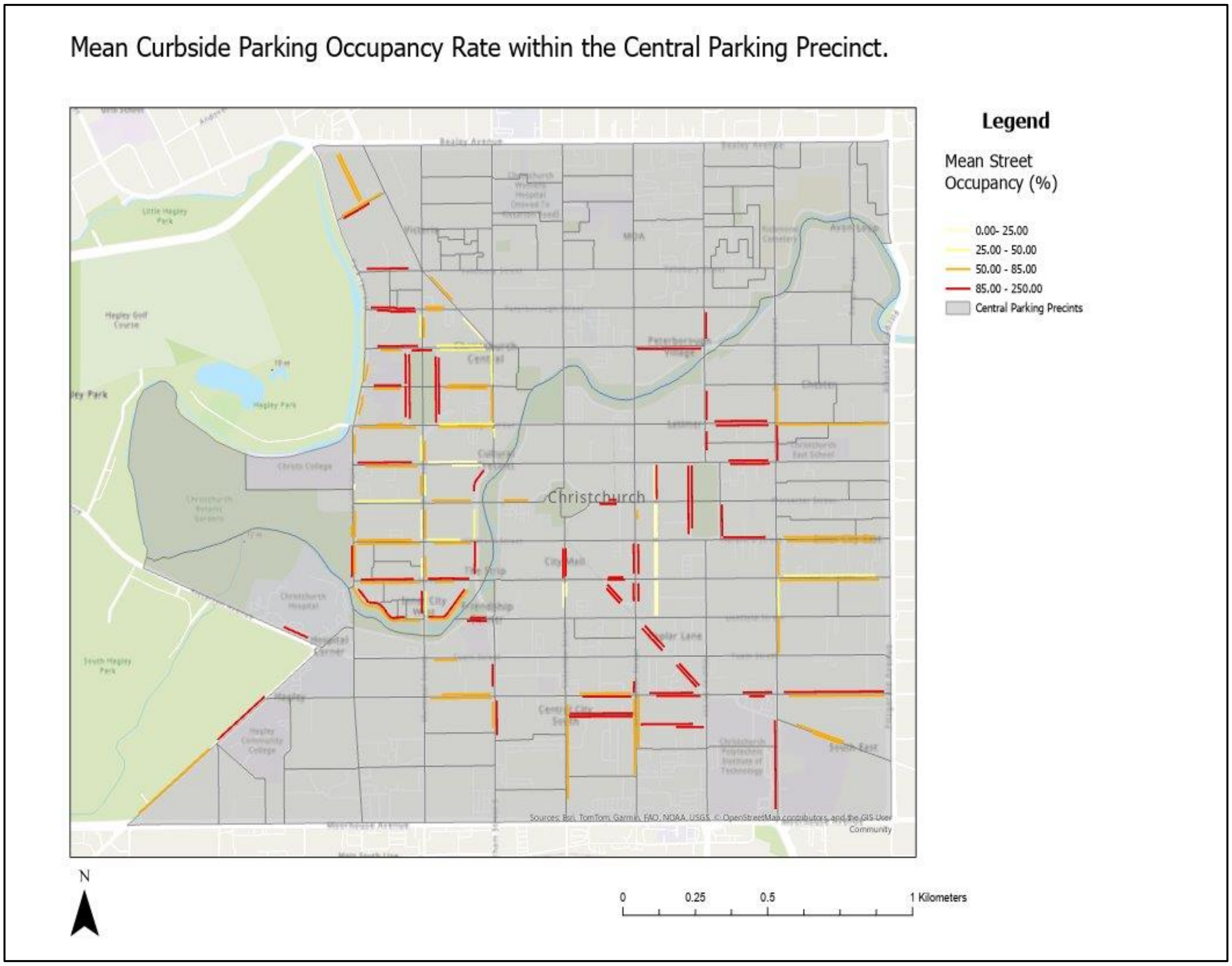
Due to small sample sizes, time-restricted categories ≤P30 were combined for analysis using Python. Bar charts and box plots were created to calculate and visualise descriptive statistics of occupancy (n = 309) and compliance (n = 123) rates. For further analysis, non-parametric statistical tests were used due to the non-normal distribution of occupancy data. First, Kruskal-Wallis tests were performed to identify differences in occupancy between P$60 and P60, and P$120 and P120 restrictions. A Mann-Whitney test was used to identify whether occupancy was different across all restriction types and Dunn's post-hoc test was run to identify which restrictions differed in average occupancy.

A Chi-square test of independence was used to analyse whether the occupancy across combined paid and unpaid time-restricted categories is associated with vehicle compliance. Cramér's V was calculated to assess the strength of this association. Two Fisher's exact tests, selected due to handling smaller sample sizes, were performed for P$60 vs. P60 (n = 28) and P$120 vs. P120 (n = 56) to determine whether associations with compliance differed between time restrictions.

A contingency table and descriptive analysis were conducted to assess occupancy trends across restriction types. The contingency table was used to classify observations by restriction category and occupancy range based on the CCC's 85% target, allowing for a clear visual comparison of parking utilisation across the city. A descriptive analysis was then used to summarise average occupancy levels within each restriction type. This analysis was chosen as the contingency table contained several cells with expected counts below five, preventing the use of a Chi-square test, and the number of cells was too large for a Fisher's exact test. The descriptive analysis became an appropriate alternative for identifying general patterns of overuse and underuse across restriction types and evaluating how effectively each category met the CCPP's optimal occupancy target.

# 5. Results

## 5.1. GIS results




The mean curbside occupancy displays clear spatial variation throughout the CBD; streets surrounding the dense retail and commercial core of the CBD experienced greater occupancy levels (Fig. 1). Prominent street segments exceeding 85% occupancy are Colombo Street, Tuam Street and Cashel Street. Demand is concentrated within the inner CBD, especially in highly active regions, and occupancy levels tend to decline when moving outwards from the core, indicating reduced demand in these regions. In particular, the East and West regions of the CBD show less parking demand with lower occupancy rates of between 20-50%. This suggests that parking occupancy has variability within the CBD with distinct clusters of high and low demand.

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Fig. 1. This map displays the average mean occupancy rates for each surveyed street within the Central city. Darker red shades indicate high curbside occupancy levels (> 85%), orange represent moderate occupancy (50%-85%) and yellow demonstrate low occupancy levels (< 50%). Regions with above 100% occupancy experienced illegal parking when surveyed.

## 5.2. Descriptive statistics

The median occupancy rate across all restriction types was 89.5%, showing more than half of the data exceeded the 85% occupancy target (Fig. 2). The right whisker extends beyond 100% occupancy, showing some streets exceeded capacity due to illegal parking. The median occupancy rate varied by restriction type, with P60, P$60 and unrestricted categories having medians above the target 85% occupancy rate (Fig. 3). The P60 and unrestricted plots are narrowly distributed, indicating less variability in occupancy rates compared to the wider distributions of ≤P30, P$60, P120 and P$120 restrictions. The whiskers of P120 suggest variability at both high (≥100%) and low (0%) extremes of occupancy rates. Similarly, the large interquartile range observed for ≤P30 shows that the middle 50% of data is widely spread around the median, indicating inconsistent occupancy rates between streets.

The mean compliance rate across all restriction types was 32.5%. Compliance was higher in metred parking compared to non-metred parking, with mean rates being 67.8% and 22.1%, respectively (Fig. 4).

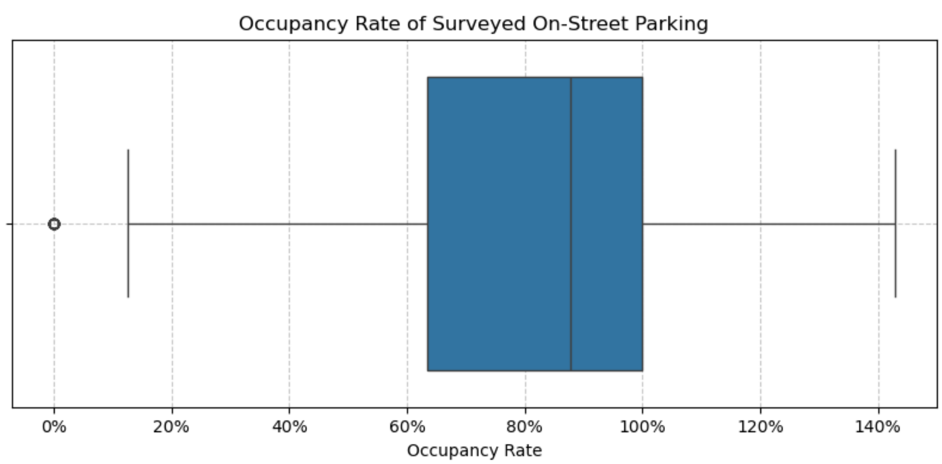


Fig. 2. A box plot showing the distribution of surveyed on-street parking occupancy across all restriction types.

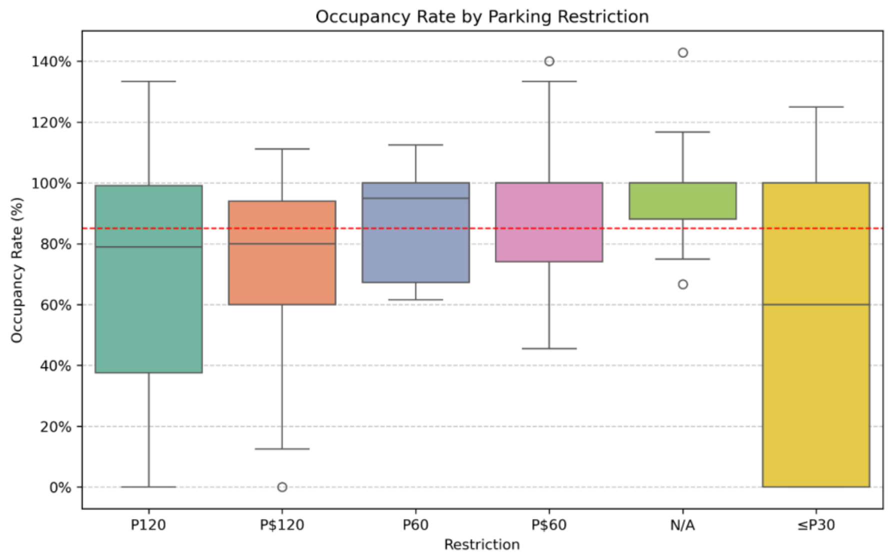


Fig. 3. Box plots of occupancy rates of surveyed on-street parking divided by restriction type. The red line indicates the 85% target set by the CCC 2021 CCPP.


Fig. 4. A bar chart showing the mean compliance rates of divided restriction types.

Table 1 shows that unrestricted and metered areas had the highest proportions of overused and severely over-used spaces, indicating consistent excess demand. Time-restricted spaces were generally near or above the 85% target, while short-stay categories were more often underused.

Table 1. Contingency table of study area occupancy levels by restriction type.

| Restriction Type | Optimal (60-85%) | Overused (85-100%) | Severely Overused (>100%) | Under-used (<60%) |
|---|---|---|---|---|
| **Metered** | 40 | 52 | 7 | 26 |
| **Other** | 17 | 15 | 6 | 9 |
| **Time restricted** | 6 | 26 | 1 | 31 |
| **Unrestricted** | 13 | 52 | 7 | 0 |

*Note.* Metered = P$60 & P$120, Time Restricted = P60 & P120, Other = P5, P30, P90.

*Note.* Categories are based on the CCC's 85% optimal occupancy threshold as outlined in the Central City Parking Policy (2021).

Descriptive analysis was used to summarise average occupancy rates across restriction types and identify general usage patterns (Table 2). This analysis provides a clear overview of how effectively each restriction type met the CCC's 85% target.

Table 2. Descriptive analysis of mean occupancy rates by restriction type.

| Restriction Type | Mean occupancy rate |
|---|---|
| Metered | 79.9% |
| Unrestricted | 95.2% |
| Time restricted | 87.9% |
| Other | 56.3% |

## 5.3. Statistical analyses

### 5.3.1. Occupancy

Unrestricted parking is the only restriction category with significantly different occupancy rates ($H = 31.50$, $p < 0.001$); significant differences were found between unrestricted parking and all other restriction types (Table 3). The Mann-Whitney U test results indicated no difference in mean occupancy between paid and unpaid 120-minute restrictions (U = 1199.50, p = 0.867) and paid and unpaid 60-minute restrictions (U=376.00, p=0.755).

Table 3. Dunn's post-hoc results for mean occupancy rates between restriction types

| | Unrestricted | Paid | Unpaid (P30<) | Unpaid (P30≥) |
|---|---|---|---|---|
| Unrestricted | | *** | * | *** |
| Paid | *** | | | |
| Unpaid (P30<) | * | | | |
| Unpaid (P30≥) | *** | | | |

*Note*: * $p < 0.05$, ***$p < 0.001$

### 5.3.2. Compliance

The Chi-square test showed a significant association between vehicle compliance and whether time-restricted parking is paid or unpaid ($\chi^2 = 9.24$, $p = 0.002$), and Cramér's V indicates this association is moderate ($\varphi_c = 0.36$).

Comparing P$60 vs. P60 indicated no significant association between vehicle compliance and whether 60-minute time-restricted parking is paid or unpaid (Table 4). However, results for P$120 vs. P120 indicated a significant association between vehicle compliance and whether a 120-minute time-restricted parking is paid or unpaid, shown in Table 4 below.

Table 4. Results on Fisher's exact tests for separate time restrictions and vehicle compliance.

| | **P60 vs. P$60** | **P120 vs P$120** |
|---|---|---|
| **p-value** | 1.000 | 0.003 |
| **Odds ratio** | 0.974 | 0.143 |
| **95% Conf. Interval** | 0.243 – 3.897 | 0.038 – 0.534 |

# 6. Discussion

## 6.1. Key findings and interpretation

This study sought to evaluate the effectiveness of the Christchurch City Council's 2021 Central City Parking Policy. The median street occupancy of 89.5% indicates that the policy's objective of 85% occupancy during peak times is not being achieved, which suggests that current policy is not effectively managing parking demand. Unrestricted parking, the only category with significantly different occupancy levels, consistently exceeds 85% occupancy rates, suggesting stable but excessive demand for this category. On the contrary, the wide distributions of ≤P30, P$60, P120 and P$120 restrictions indicate inconsistent parking demand, with some streets underutilised and others overutilised (Fig.3). This suggests that these restrictions are not uniformly managing demand, and some existing restrictions may not appropriately respond to factors such as local land-use contexts (Lehner & Peer, 2019; Mackowski et al., 2015). Non-compliance is an issue, with motorists being significantly more likely to be non-compliant in an unpaid parking space than paid parking. As incorrect restrictions have been associated with illegal parking behaviour such as illegal parking, these results further indicate current restrictions are ineffective in reaching the CCPP's objectives. However, these results also raise the question of whether high occupancy stems from unsuitable restrictions, and thus ineffective policy, or insufficient monitoring and enforcement of on-street parking.

## 6.2. Welles Street case study

The Welles Street Enliven Places project was presented to the CCC in September 2025. This project aimed to improve street amenity through installing tree planters, cycle parking and outdoor seating. With Welles Street being a popular, mixed-use area with residential, commercial and retail businesses, parking was a key issue. As such, the project involved a parking survey, monitoring occupancy over two days (Fig. 5) and parking provision in the nearby area. Surveys found that peak occupancy was 100% on both weekdays and weekends, and over 90% for most of the day. Despite this, the CCPP was not referenced in the report, and the policy prescription to manage streets that exceed 85% peak parking occupancy was not followed. The existing P120 parking restrictions remain P120; however, there is a reduction in the number of parking spaces to make room for the new amenities. Greater amenity is likely to attract greater demand which, with oversubscribed parking, can result in greater congestion through cruising for a park, reduced turn-over, and tension between stakeholders, which all counteract the intended increase in amenity. This case suggests that regardless of the contents of the Central City Parking Policy, it is ineffective if it fails to be realised in practice, and further suggests that any future policy should require greater influence and prescriptions, and less discretion in policy and decision making.

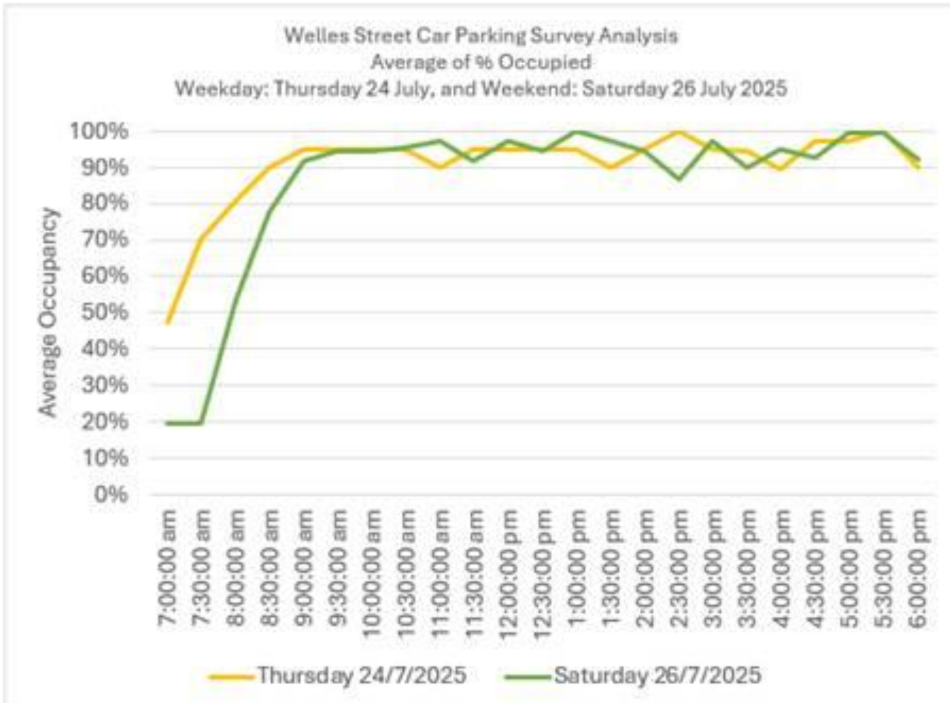


Fig. 5. On-street parking surveying conducted on Welles St. prior

Furthermore, this project also demonstrates that improvements in parking policy can enable better outcomes. During the consultation period, both residents and businesses asked for this project to be more ambitious, asking for security cameras for Welles Street's 'Atlas Quarter' apartment complex for the street, art on the street, traffic calming measures and rubbish bins. With a limited budget of $170,000, this was not feasible. However, should the Central City Parking Policy have had provisions for Parking Benefit Districts, this would have been the perfect opportunity for that. This would have introduced paid parking at the same time as introducing amenity enhancements; the latter gaining political support for the former. In a comparable street with high occupancy, such as Cashel Street, parking revenue can be ~$300,000 per annum, which could nearly double the project budget, and raise even more in the medium- to long-term. Furthermore, this enables a virtuous cycle for Welles Street, where excess demand is solved with paid parking, paid parking funds amenity enhancements, amenity enhancements increase demand, which results in the price, and therefore revenue, of the paid parking increasing, which can be further used to enhance amenity. With this approach, those who drive can always find a park for the 'right price', those who use other modes are not losing out on a subsidy, and benefit from lower congestion, more people can access Welles Street with less friction, the residents and businesses benefit from a nicer street and more business.

## 6.3. Policy recommendations

Considering the framework in Figure 7, all parking restrictions, or lack thereof, in high-demand areas involves trade-offs. Unrestricted parks are free and convenient, though not available to be used in high demand areas. Time restrictions are available and free; however, they add inherent inconvenience to varying degrees as they require the user to give up on flexibility. Paid (assuming a market-price is charged) is available and convenient, though is not free. Our literature review and findings indicate the CCPP largely provides sound policy advice, aside from a few key areas, where the policy's outcomes have not been met (i.e., exceeding occupancy targets and the Welles Street case study) and is therefore ineffective. Looking to existing national evidence and guidance, we have found that the New Zealand Transport Agency's Parking Management Guidance document (NZTA, 2021) provides a good framework to create future policy. This document aligns with the literature we have discussed and presents a best practice that is aligned with New Zealand legislation, and local context that outlines methods for good public parking management, creation of parking strategies and guidance on parking technology and public engagement.

The guidance recommends creating a parking strategy, and below that, parking management plans. Firstly, the strategy outlines how parking will be managed, consistent with overarching policies such as the Greater Christchurch Spatial Plan and the Ōtautahi Christchurch Future Transport Plan. Second are the Parking Management Plans (PMP) which are prepared for specific areas/land-use, such as the central city, town centres and others. A key part of PMPs is collecting data to inform actions, such as whether to favour long-term commuter parking or short-stay visitor parking.

While the CCC currently has a Central City Parking Policy and Suburban Parking Policy, like NZTA's guidance, we see no need for the differentiation. On-street parking issues and solutions are the same whether they're in, or out, of the central city. Any variances in land-use can be covered by a PMP. In the present case of the central city, our findings show that there is an abundance of overcapacity unrestricted on-street parking, though the restrictions that do exist are often poorly complied with, and/or are over-occupied. These findings suggest that a PMP for the central city should be created, outlining the need for data collection, improved enforcement and planning for more restrictions — especially paid. Considering that most parking restrictions in the central city are time-based, restricting the time limit further may not be appropriate in mixed-use areas, where a long-stay hairdresser and a pop-in convenience store may be next to each other. In this case, it is best to implement paid restrictions. However, for businesses that rely on 'pop-in' customers such as convenience stores, paid restrictions can result in a friction cost in the payment method, and the inflexible time periods for purchase result in a disproportionate barrier that can result in adverse effects on these businesses. One method of solving this issue has been successfully tried by Auckland Transport. They implemented a 10-minute grace period on all paid parking, which can reduce the need for loading zones, pick-up/drop-off zones and P5-P10's, whilst enabling the flexibility of paid parking.

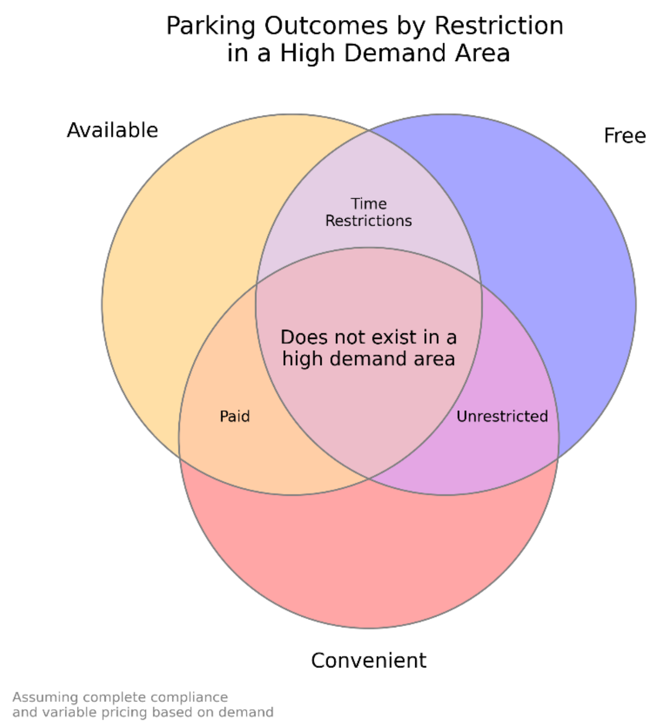


Fig. 7. Venn diagram framework showing parking outcomes by restrictions in a high demand area.

## 6.4. Limitations

Data collection was conducted over a limited number of streets within the central city over ten days during fine weather conditions. This reduces the temporal and spatial coverage of the analysis as seasonal and geographical variations have not been fully captured. Land use within the CBD and spatial considerations have also not been considered within the analysis. This is critical to consider when assessing the generalisability of results. Although these findings do provide a snapshot of occupancy and compliance, caution is required when generalising these results for the whole central city area, as not all variances would have been captured.

# 7. Conclusion

This study set out to evaluate the effectiveness of the CCPP in achieving its target of maintaining on-street parking occupancy at approximately 85% during peak periods. Through a combination of GIS mapping, statistical testing, and contingency analysis, the results indicate that this objective is not currently being met. Median occupancy across all surveyed streets was 89.5%, with 64% of street segments exceeding the optimal threshold. Unrestricted and time-restricted parking categories showed the highest levels of overuse, while short-stay restrictions such as P30 were often under-utilised.

Paid parking performed most effectively, with average occupancies closer to the desired target and significantly higher compliance rates. This suggests that pricing mechanisms encourage turnover and better align usage with policy goals. Conversely, persistent over-occupancy in unrestricted areas demonstrates a need for greater spatial differentiation in restriction types and enforcement, particularly in high-demand streets close to hospitality and retail blocks.

These findings highlight a wider issue of inconsistent policy implementation and communication. The case of Welles Street demonstrated that even when occupancy exceeds policy thresholds, prescribed enforcement actions are not taken. Occupancy breaches being more reliably followed by enforcement would increase compliance to parking restrictions.

Moving forward, introducing or adjusting pricing and time limits should be informed by occupancy data. Embedding clearer decision rules, implementing a PMP, and ongoing parking data collection would help ensure that Christchurch's parking system supports the Council's strategic aims.

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