



ANALYSIS OF PUBLIC PARKING PROBLEM IN HAMILTON

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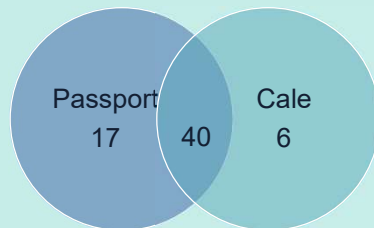
BACKGROUND

In recent years, the city of Hamilton has witnessed great changes in public parking brought about by the development and application of intelligent equipment. In the following analysis, we explore and describe the current situation in a visualized way based on parking transaction data from over 4,000 public parking spaces.

DATA OVERVIEW

Data Sources

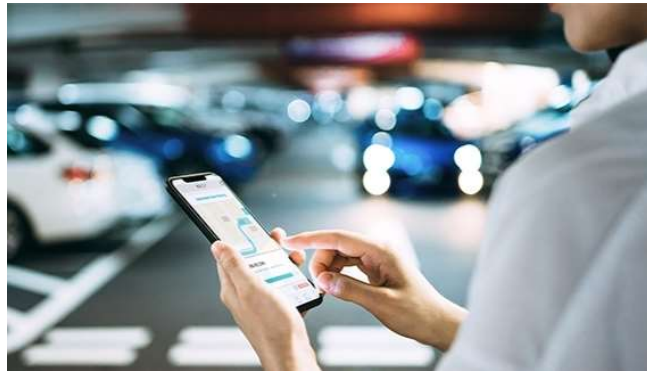
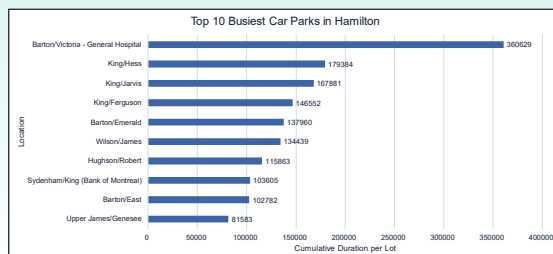
Two mainstream approaches to make payment are via **Passport Parking App** and **Cale Web Terminals** set up in parking lots. Up to now they have covered **63** public parks in Hamilton, among which **40** are dual applicable.



Number of parks that available for each payment method.

Busiest Car Parks

We can calculate average parking duration per space for each park by grouping and summing the duration of each payment record, which is a convictive indicator of degree of occupation. According to the bar chart, the busiest parking lot in Hamilton is the **General Hospital** Parking located at the intersection of Victoria Ave N and Barton St E, which is more than twice as busy as the second place.

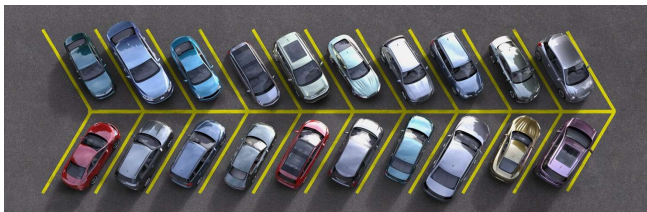


IMPACT OF COVID-19

In early 2020, with the outbreak of COVID-19, the number of transactions decreased significantly in March and April, and gradually recovered after May.



It can be seen from the chart that from June to November, the hottest months of the year, the value in 2021 is even lower than that in 2020, which is obviously because people's travel habits has been changed by the pandemic, even after the vaccine has been put into use. The impact of the pandemic on public parking industry can be seen from the data comparison in February. In February 2021, sub-total duration **decreased by 79.60%** year-on-year.

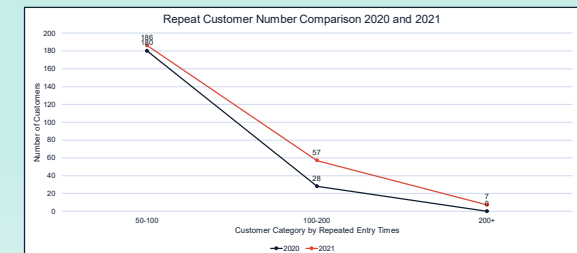


HYPOTHESIS

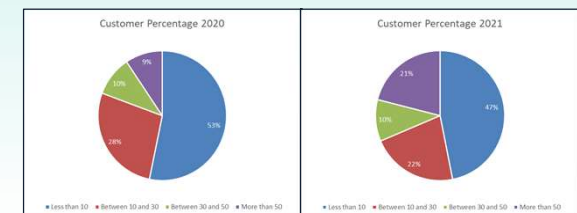
Through observation, we find that there are many repeat customers in the payment records. Since people's travel habits are regular, the main purpose of our research is to find out the statistical characteristics of repeat customers' behavior.

ANALYSIS & VALIDATION

We firstly group and count the duplicate vehicle plates in all transaction records. It was found that in 2020, there were **180** customers entering 50 to 100 times and **28** customers entering 100 to 200 times. By 2021, the numbers increased to **186** and **57** respectively. There are even 7 customers enter more than 200 times. This result shows that the customer viscosity has improved. We believe this behavior can be encouraged by offering positive feedback.



In terms of the revenue contribution, from 2020 to 2021, the percentage of customers entering less than 10 times dropped from **54%** to **47%**. The fastest growing group is those who have entered more than 50 times, going up from **9%** to **21%**.



CONCL. & RECOMMENDATION

We believe that the operator can attract more customers and increase revenue by offering discounts to repeat customers, such as monthly or quarterly parking packages.