

Chicago Taxi Trip Case Study

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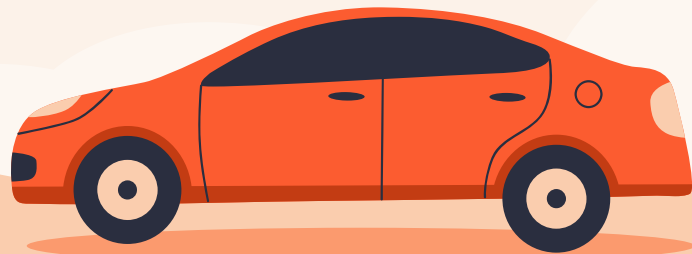


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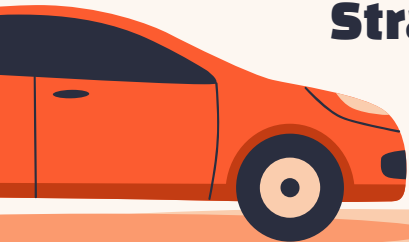
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An illustration of a light-skinned hand holding a dark blue car key with a silver blade. The background is a warm, orange-toned landscape with stylized clouds, trees, and a central white square containing the number '01'.

01

Introduction

Introduction

- Chicago Taxicab Consortium (CHICABS) is an initiative by the City of Chicago aimed at ensuring safe, reliable, and positive transportation experiences for residents and visitors.
- **Oversight:** CHICABS empowers businesses and protects consumers by overseeing Chicago's public vehicles, including taxicabs.
- **Information and Resources:** It provides passengers with information and resources to safely and smartly use licensed taxicabs in Chicago.



Dataset Overview

- The dataset comprises **taxi trips from 2013 to 2023**, reported to the City of Chicago as part of its regulatory oversight.
- Notably, **there is a gap in data collection, with no data available from the May of year 2019 to year 2022 due to the adjustment to COVID-19 with changes in behavior and lockdowns enforced in several areas.**
- To ensure privacy while enabling aggregate analyses, certain data elements are anonymized or rounded.
- While not all trips may be reported due to the data reporting process, the City estimates that the majority are captured.



Objectives



Objective 1

To optimize the efficiency and effectiveness of taxi services in Chicago



Objective 2

To address pain points and enhance the overall experience for both passengers and drivers.



Objective 3

To identify opportunities for improvement and strategic interventions in Chicago's local taxi industry.



An illustration of a light-skinned hand holding a dark blue car key with a silver blade. The hand is positioned on the left side of the frame.

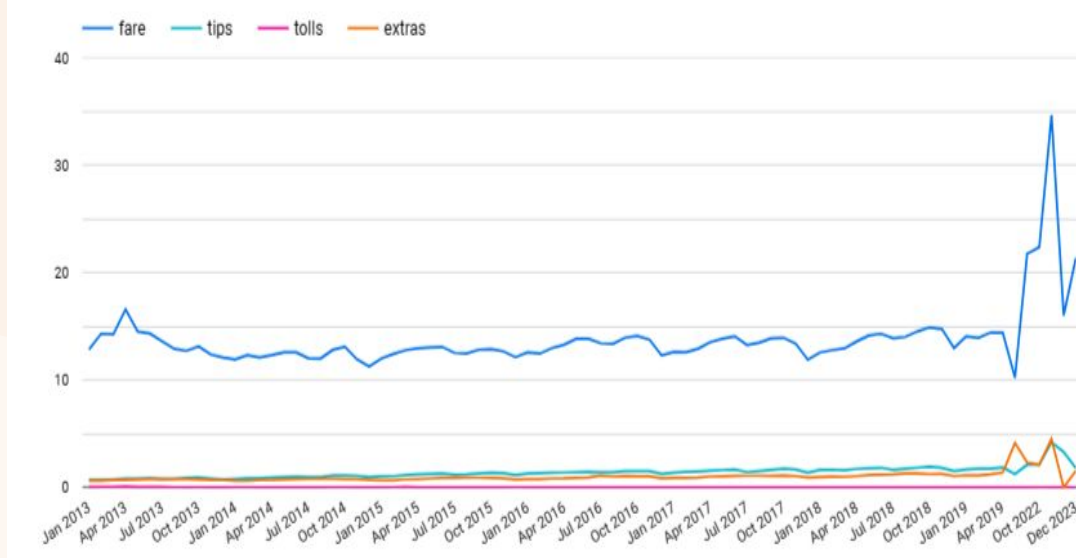
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An illustration of a dark-skinned hand reaching out from the right side of the frame, palm facing up.

Findings

Fare Amount Variability

Distribution of Average Trip Cost Amount Across Time



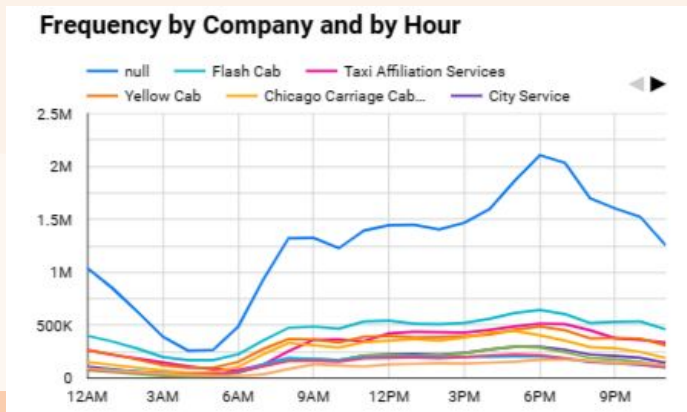
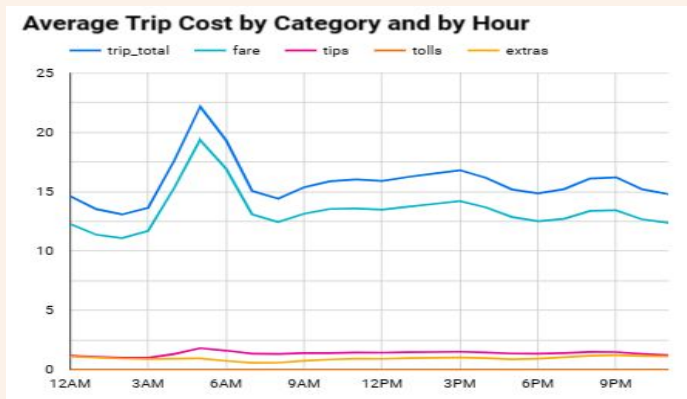
Finding:

Fare amounts fluctuate between \$10 to \$17, with spikes observed in 2022, potentially due to lifted COVID-19 movement restrictions.

Pain Point:

Inconsistency in fare amounts leads to unpredictability for drivers and passengers.

Peak Hour Driver Availability



Finding:

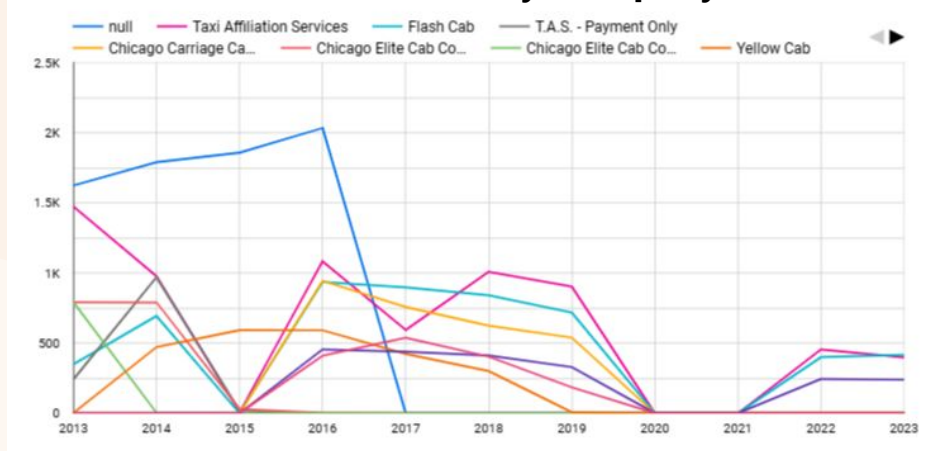
Limited availability of taxis during non-peak hours, particularly at 5am.

Pain Point:

Long wait times for passengers and missed revenue opportunities for drivers during non-peak hours.

Regulatory Changes and External Factor

Distribution of Taxi Drivers by Company Across Time



Finding:

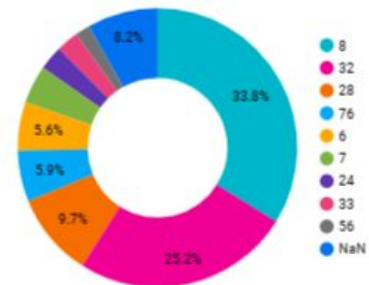
Drastic decrease in the number of individual taxi drivers and decrease in overall taxi drivers from 2016.

Pain Point:

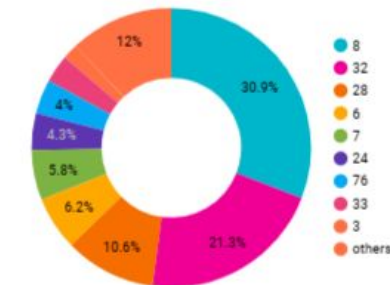
Impact of regulatory changes or external factors, such as COVID-19 pandemic and rise of ride-hailing services, on driver participation in the industry.

Service Disparities Across Areas

Frequency of Pick Up
Community Area in Percentage



Frequency of Drop Off
Community Area in Percentage



Frequency and Average Trip Cost of Pick Up Census Tract and
Drop Off Census Tract

	Pick Up Cens...	Drop Off Cen...	Count	Average Total...	Average Fare
1.	17,031,839,100	17,031,839,100	1,651,271	7	6
2.	17,031,320,100	17,031,839,100	1,047,601	8	7
3.	17,031,839,100	17,031,320,100	915,965	8	7
4.	17,031,839,100	17,031,281,900	710,930	7	6
5.	17,031,081,500	17,031,839,100	701,380	9	7
6.	17,031,281,900	17,031,839,100	670,913	7	6
7.	17,031,980,000	17,031,980,000	599,007	16	13
8.	17,031,839,100	17,031,081,500	590,847	9	7
9.	17,031,839,100	17,031,081,700	587,590	8	7

Finding:

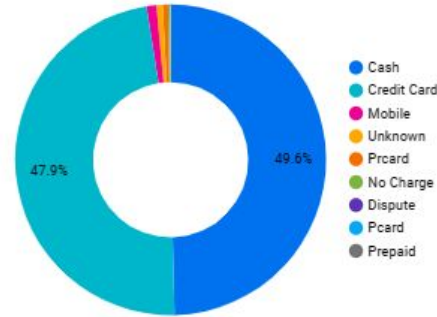
Unequal distribution of taxi services across community areas.

Pain Point:

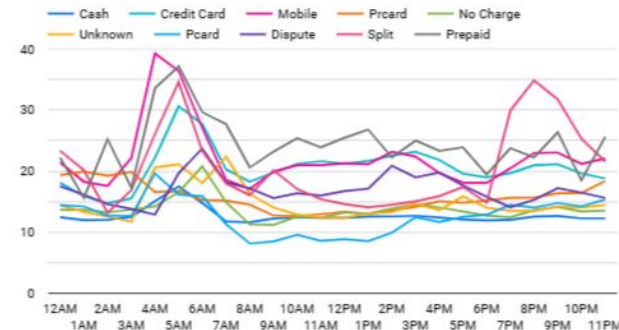
Disparities in service availability and quality may lead to customer dissatisfaction.

Payment Method Preferences

Percentage of Trip by Payment Type



Average Trip Cost by Payment Type and by Hour



Finding:

49.6% of payments made in cash, only 47.9% via credit card.

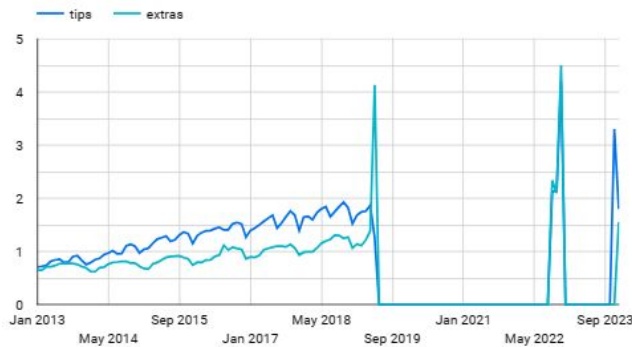
Pain Point:

Reliance on cash payments poses operational inefficiencies and security risks.

Limited acceptance of cashless payments may result in missed revenue opportunities.

Anomalies in Extras Payments

Distribution of Average Tips and Extras Across Time



Finding

Spike in extras payments observed in May 2019, Sep to Nov 2022.



Pain Points

Potential anomalies or discrepancies in payment processing.



03

Pain Points

Identified Pain Points

- **Unpredictable fare amounts** leading to dissatisfaction among passengers.
- **Limited availability of taxis during non-peak demand hours.**
- Impact of **regulatory changes and external factors** on **driver participation** in the industry.
- **Disparities in service availability** and quality across community areas.
- **Reliance on cash payments** posing operational challenges.
- Potential **anomalies or discrepancies** in **payment processing**.



An illustration of a light-skinned hand holding a dark blue car key with a silver blade. The hand is positioned on the left side of the frame.

04

An illustration of a dark-skinned hand reaching out from the right side of the frame, palm facing up.

Strategy

Proposed Strategies

- Inconsistent Fare Amounts
 - Implement **dynamic pricing algorithms** for fare stabilization.
- Low Driver Availability during Non-Peak Demand Hours
 - **Incentivize drivers** to operate during **non-peak demand hours**.
- Decline in Taxi Drivers
 - **Investigate and address factors** contributing to the **decline in driver participation**.
- Unequal Distribution of Taxi Services
 - **Optimize dispatching algorithms** to ensure **equitable service distribution**.
- Reliance on Cash Payments
 - **Promote cashless payment options** and **provide training to drivers**.
- Irregularities in Extras Payments
 - **Implement fraud detection measures** to **identify irregularities in payment processing** to tackle the problem of paying extras.

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Conclusion

Conclusion

- The analysis of the Chicago Taxi Business dataset revealed several key insights and pain points affecting the industry.
- By understanding these challenges, we can devise strategies to improve service quality, operational efficiency, and overall customer satisfaction.
- The identified pain points highlight areas where interventions are needed to address operational inefficiencies, regulatory concerns, and customer preferences.

NEXT STEPS

- **Collaborate with stakeholders**, including taxi operators, regulatory agencies, and technology providers, to implement these solutions effectively.
- Establish **monitoring and evaluation metrics** to track the progress and impact of the implemented strategies.
- **Continuously review and refine the initiatives** based on **feedback**.
- **Look into more metrics** like fare per mile distribution and tip rate based on day of week for comprehensive analysis.

Thanks!

Do you have any questions?

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