ATLAS A.I.

What do we do?

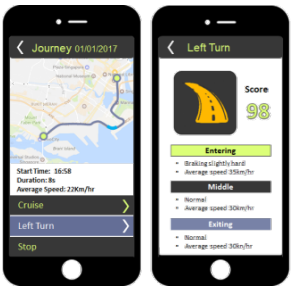
- SaaS + mobility & business consulting
- Data analytics solutions
- MaaS design, pilot, evaluation and implementation

Problem and Solution

Government's Concerns about E-hailing Industry:

1. High operation risks of new industry;
2. Deviation from sharing economy;
3. Unfair competition dynamics;
4. Lack of self-regulating mechanism; and
5. Disconnection from urban planning.

Solution



API to Regulate:

Data Sharing Tools

– facilitate data sharing mechanism;

Behaviour Analysis

– ensure service qualities among players;

Reporting

– offer reports to support economic assessment and planning.

Case Study

Which One is Better? Taxi, Grab or Uber

Basic Information

When: 20–24 February, 2017 (AM, Interpeak, and PM)

Where: 140 Routes in Singapore

How: Sensor data collection; Economic analysis; Behaviour analysis.

Study Subjects

1. ComfortDelGro, CityCab, Comfort, SBS Transit
2. Grab
3. Uber

Conclusions

- **Best value for money – Taxi**
- **Safest transportation – Taxi**
- **Best option under surge – Uber**

Note: The conclusions of this document are preliminary, which may suffer from bias due to low sample size.

Economics (AM peak)

	Grab	Uber	Taxi	
Waiting Time AM 90%C.I.	4'47"	6'00"	7'45"	min
	Taxi	Uber	Grab	
Journey Time AM 95%C.I.	13'47"	15'26"	15'51"	min
	Taxi	Grab	Uber	
Distance AM 85%C.I.	5.48	5.57	6.56	km
	Uber	Grab	Taxi	
Value for Money AM 85%C.I.	0.47	0.49	0.55	$/min

Under demand surge, Grab tend to have higher price than Uber.

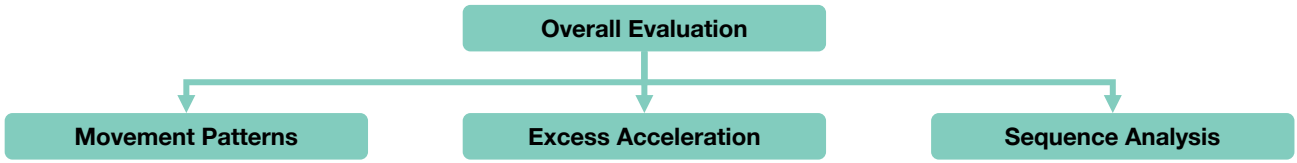
Reasons:
1) **Price rounded up to integers;**
2) **Not enough supply of drivers.**

Conclusions:

- **Best value for money – Taxi**

Value for Money Definition: monetary value that consumers get for each minute spent on a journey.

Drivers' Behaviours



Overall Evaluation

ComfortDelGro, CityCab, Comfort, SBS Transit

Taxi drivers have the best overall driving behaviours. (99%C.I.)

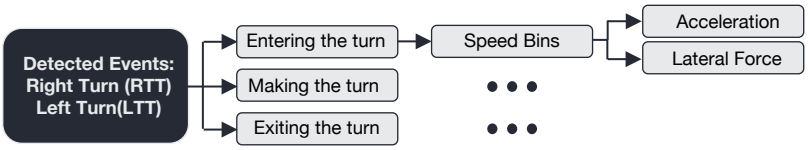
No statistical evidence indicates difference between Grab and Uber drivers.

Movement Patterns – Anomaly detection analysis for turns and lane changes

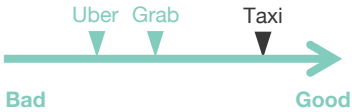
Sample Size:

- 457 Left Turns
- 434 Right Turns
- 240 Lane Change to Left
- 122 Lane Change to Right

Example of Model Architecture for Turns:



Left Turns



Taxi is better than Grab and Uber within 80% C.I.

Right Turns

No statistical evidence indicates difference among the three players.

Lane Changes

No statistical evidence indicates difference among the three players.

Excess Acceleration/Deceleration – Anomaly detection analysis for sudden speed-up and brake.

Average Number of Excess Acceleration/Deceleration Detected for Each Journey

- On average, Taxi seems to have few numbers of excess acceleration or deceleration detected.
- There is NO statistical evidence indicates difference among the three players.

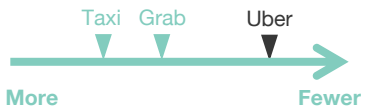
Sequence Analysis – A time series analysis of acceleration and deceleration.

Volume

Volume Definition:

- Number of excess acceleration followed by deceleration
- Number of excess deceleration followed by acceleration

Uber is better than Grab and Taxi within 80% C.I.



Intensity

Intensity Definition:

- Scale and variation of excess acceleration and deceleration

No statistical evidence indicates difference among the three players.