



# Effective Travel Time Data Measures for Network Performance

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# Overview

- Our Journey
- Our Key Indicators
- What do we do about it

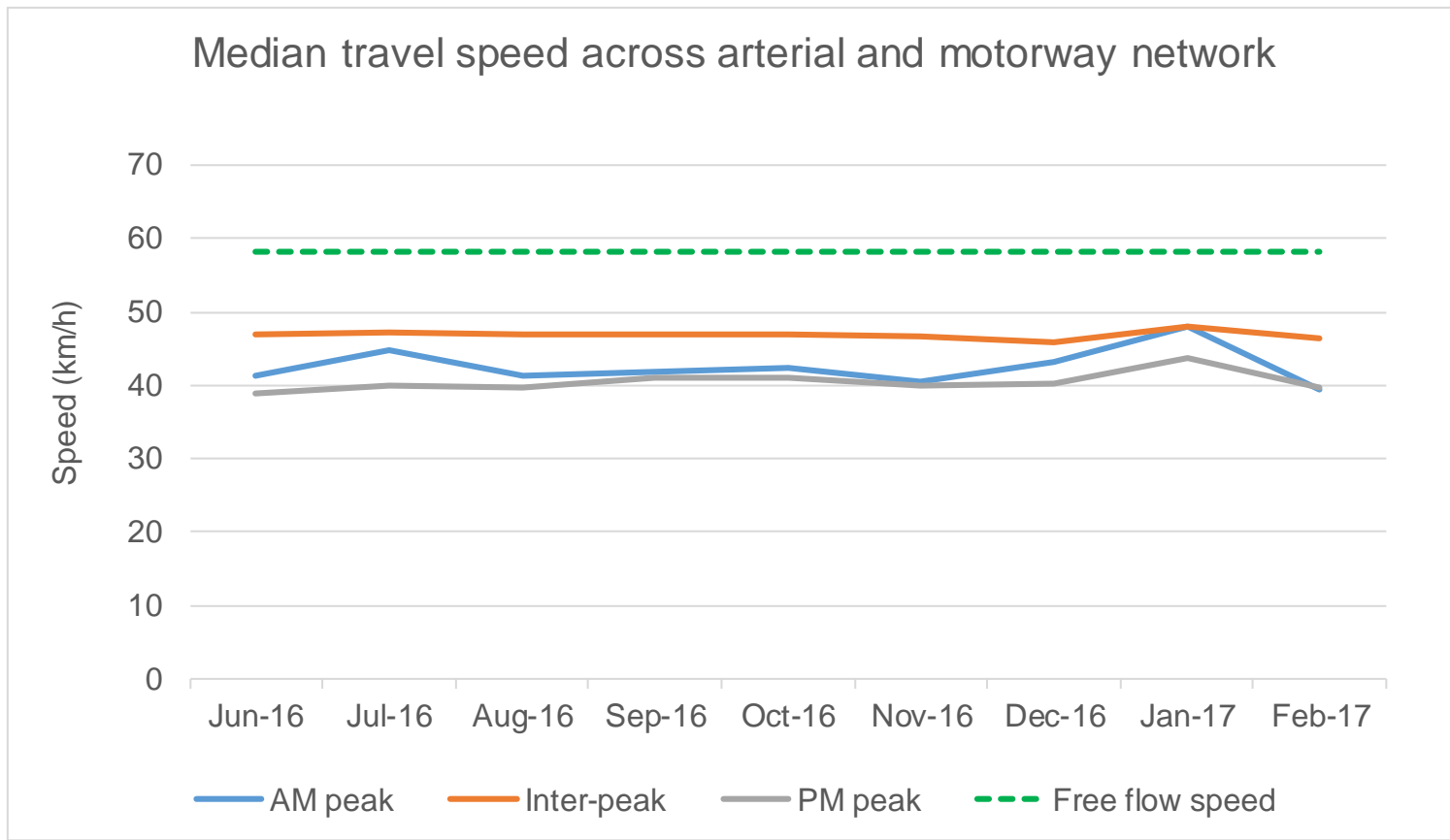
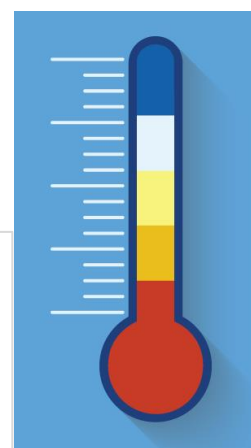
# Our Journey

- Track over time to establish a trend
- Easy to explain and be understood by the public
- Technically sound
- One network approach (i.e. State Highway and arterials)
- Focus on key issues on the network
- Consistent with international measures

# Our Key Indicators

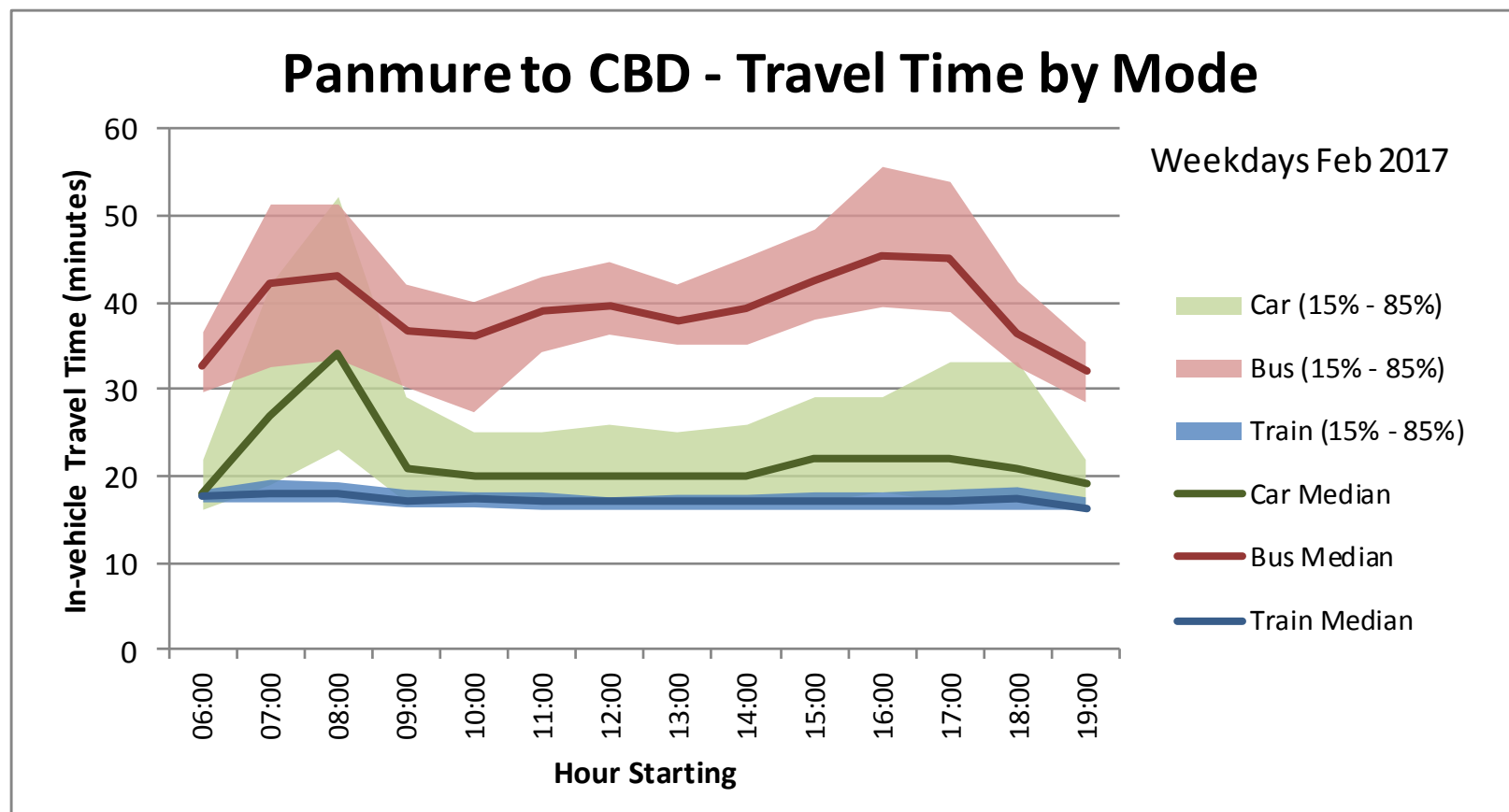
1. Traffic Speed
2. Travel Time on key routes
3. Level of Service/Congestion
4. Delay
5. Reliability
6. People Productivity

# 1. Traffic Speed





## 2. Travel Time on key routes



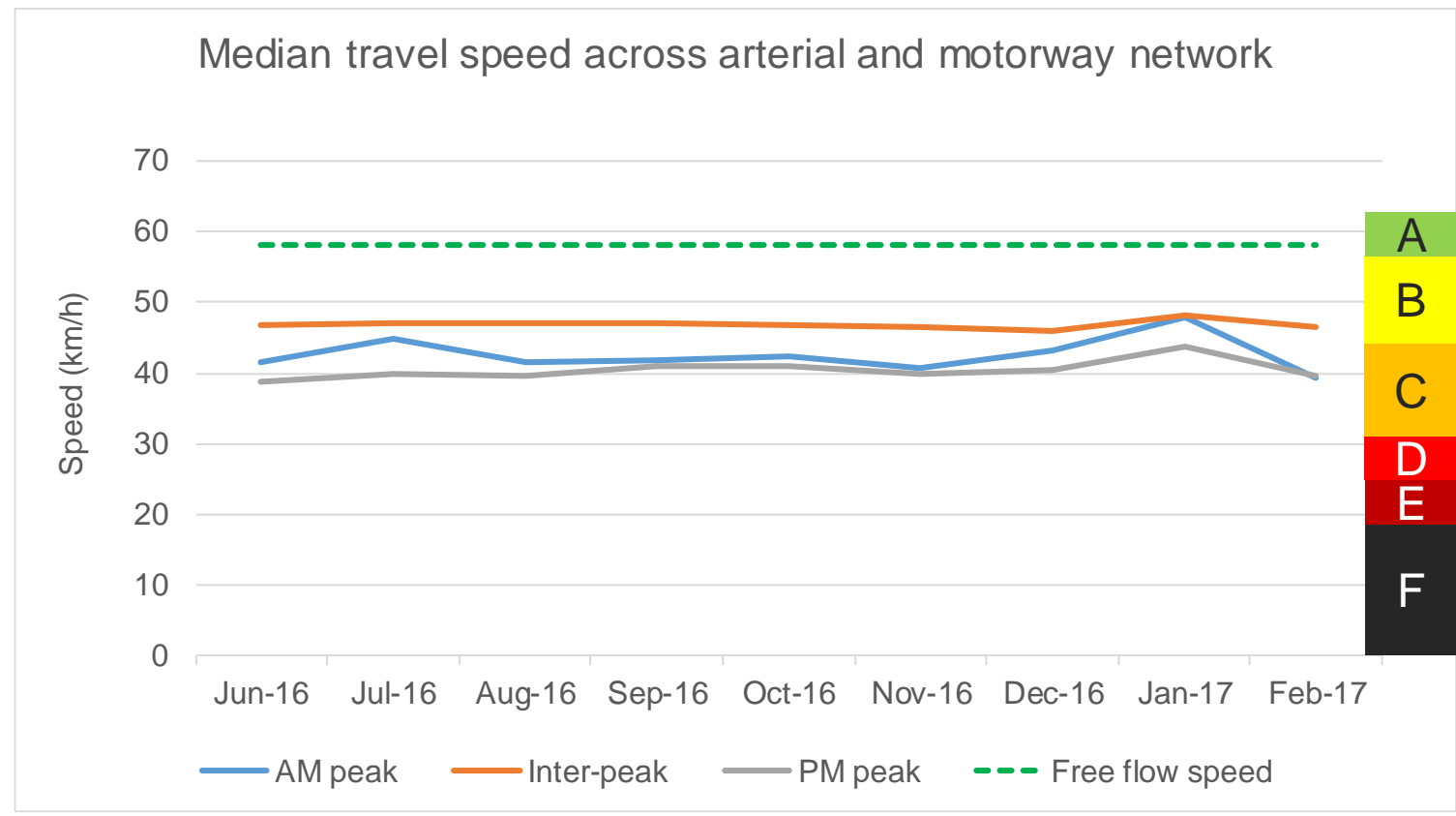
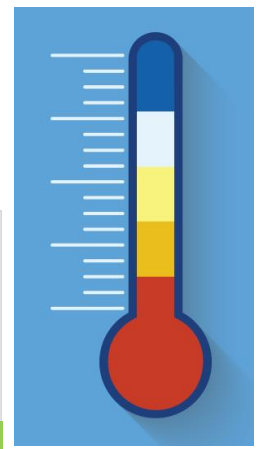
## 3. Level of Service

- Median speed as a percentage of posted speed

LOS	% of posted speed	Congested or not?
A	90% +	Not congested
B	70-90%	Not congested
C	50-70%	Not congested
D	40-50%	Congested
E	30-40%	Congested
F	< 30%	Congested

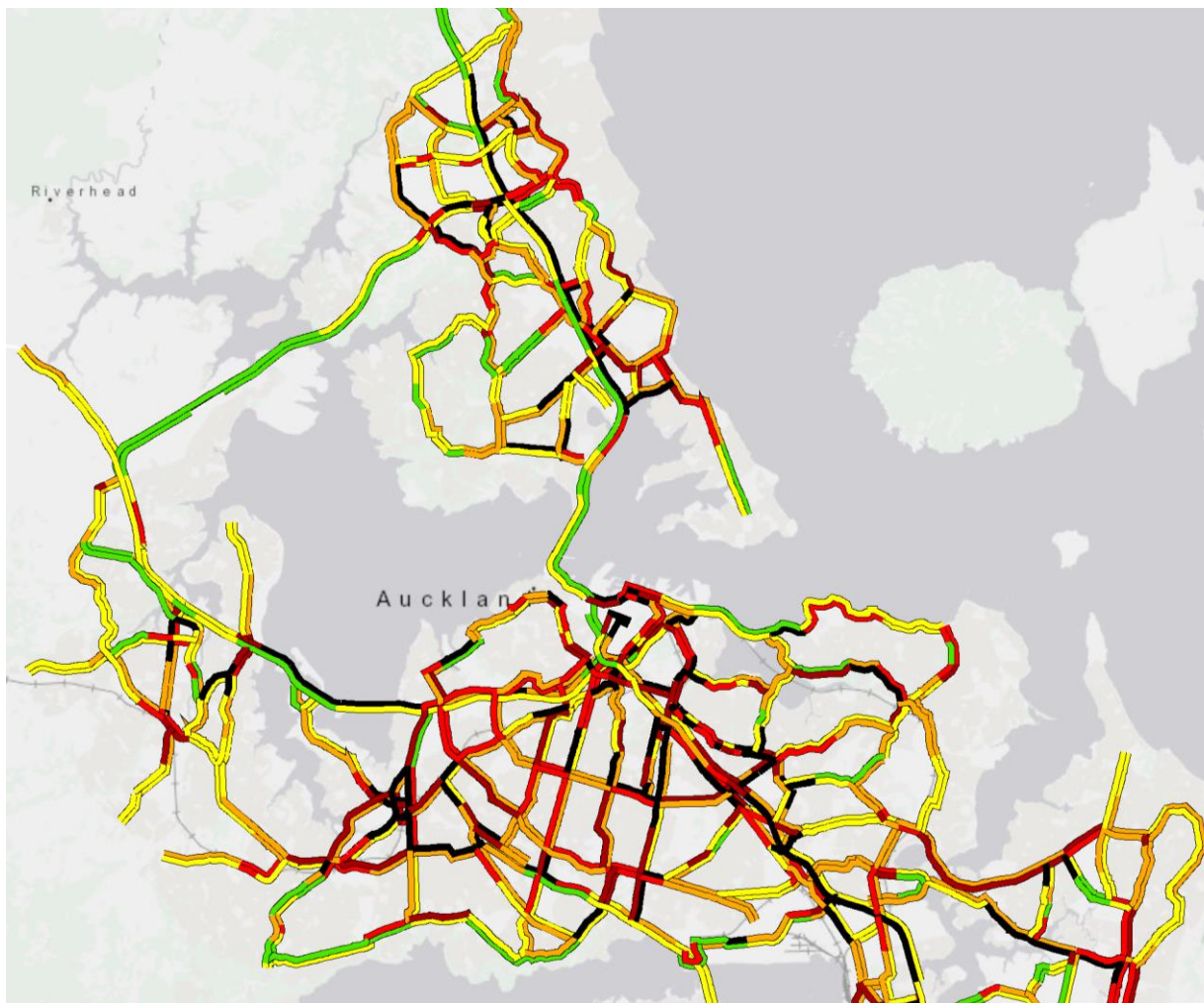
- Congestion = less than 50% of the posted speed
- Congestion = LOS D-F

# 3. Level of Service

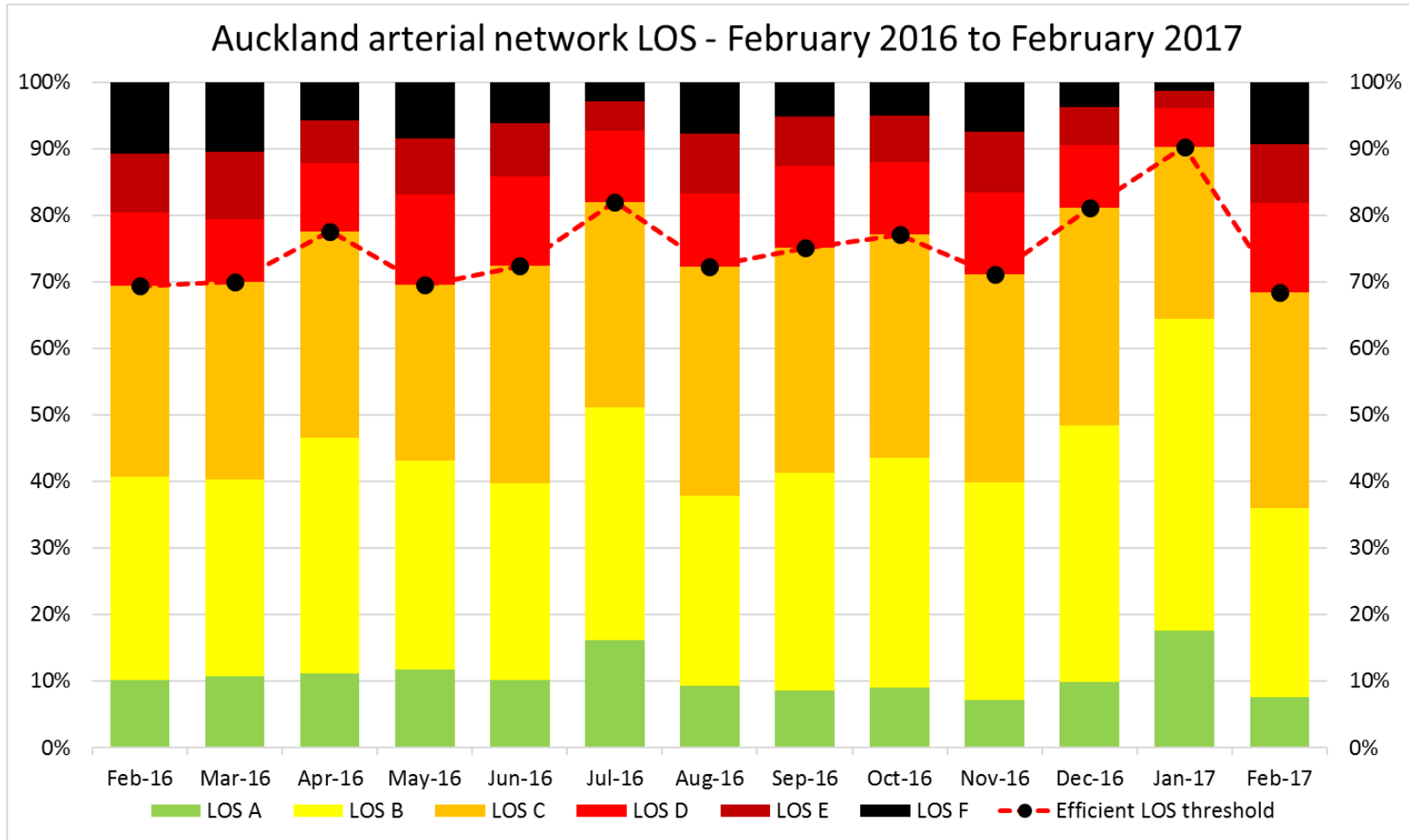




## 3. Level of Service



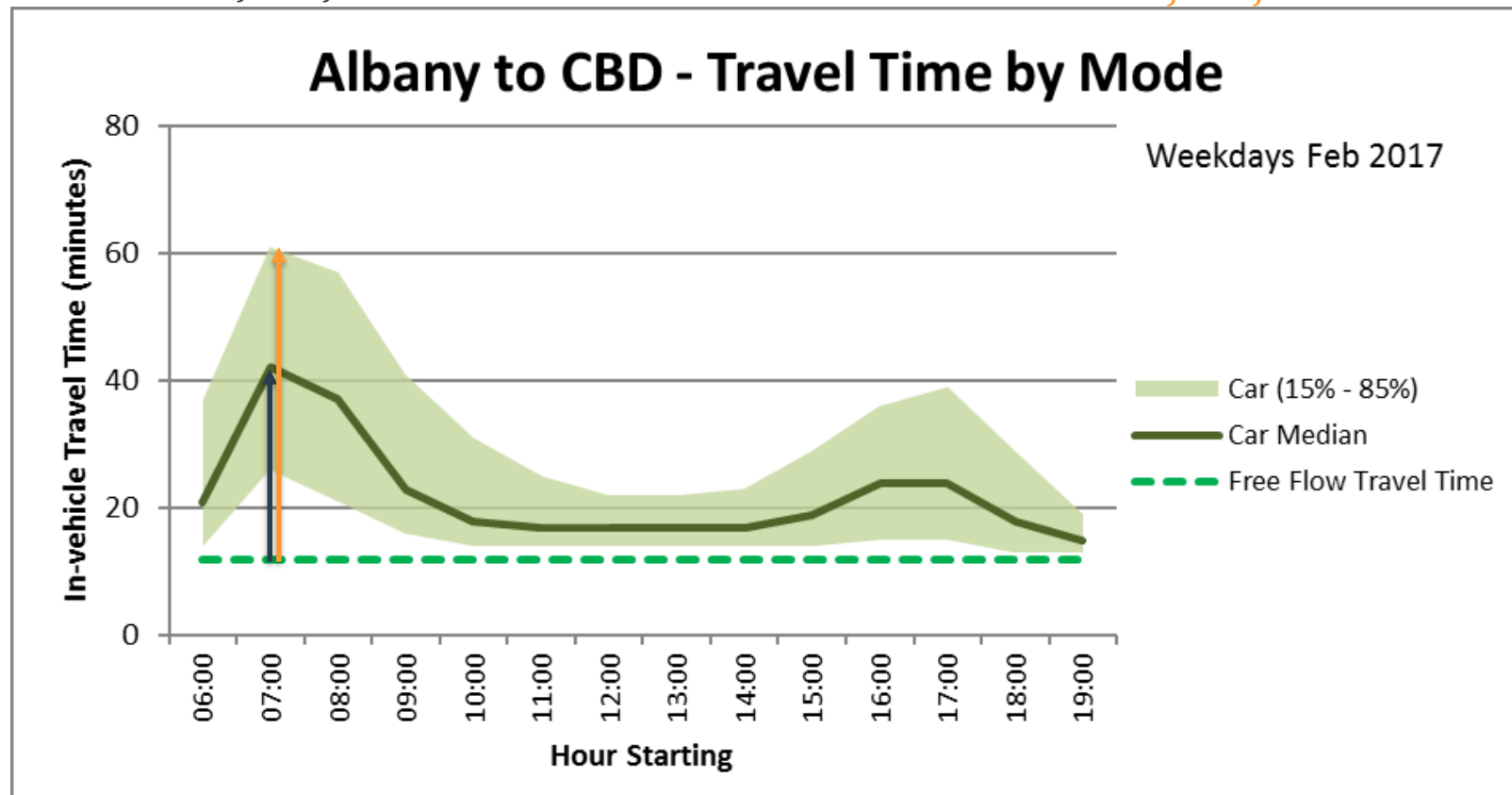
# 3. Level of Service



## 4. Delay - Additional travel time needed relative to Free Flow


$$\text{Delay (\%)} = \frac{TT_{\text{median}} - TT_{\text{free flow}}}{TT_{\text{free flow}}}$$

$$\text{Delay } 85^{\text{th}} (\%) = \frac{TT_{85^{\text{th}}} - TT_{\text{free flow}}}{TT_{\text{free flow}}}$$



# 4. Delay - Additional travel time needed relative to Free Flow

## AUCKLAND

 New Zealand

Compare AT Sep 2016: AM = 64% extra travel time





Traffic congestion statistics for Auckland b

### CONGESTION LEVEL

 **38%**

EXTRA TRAVEL TIME

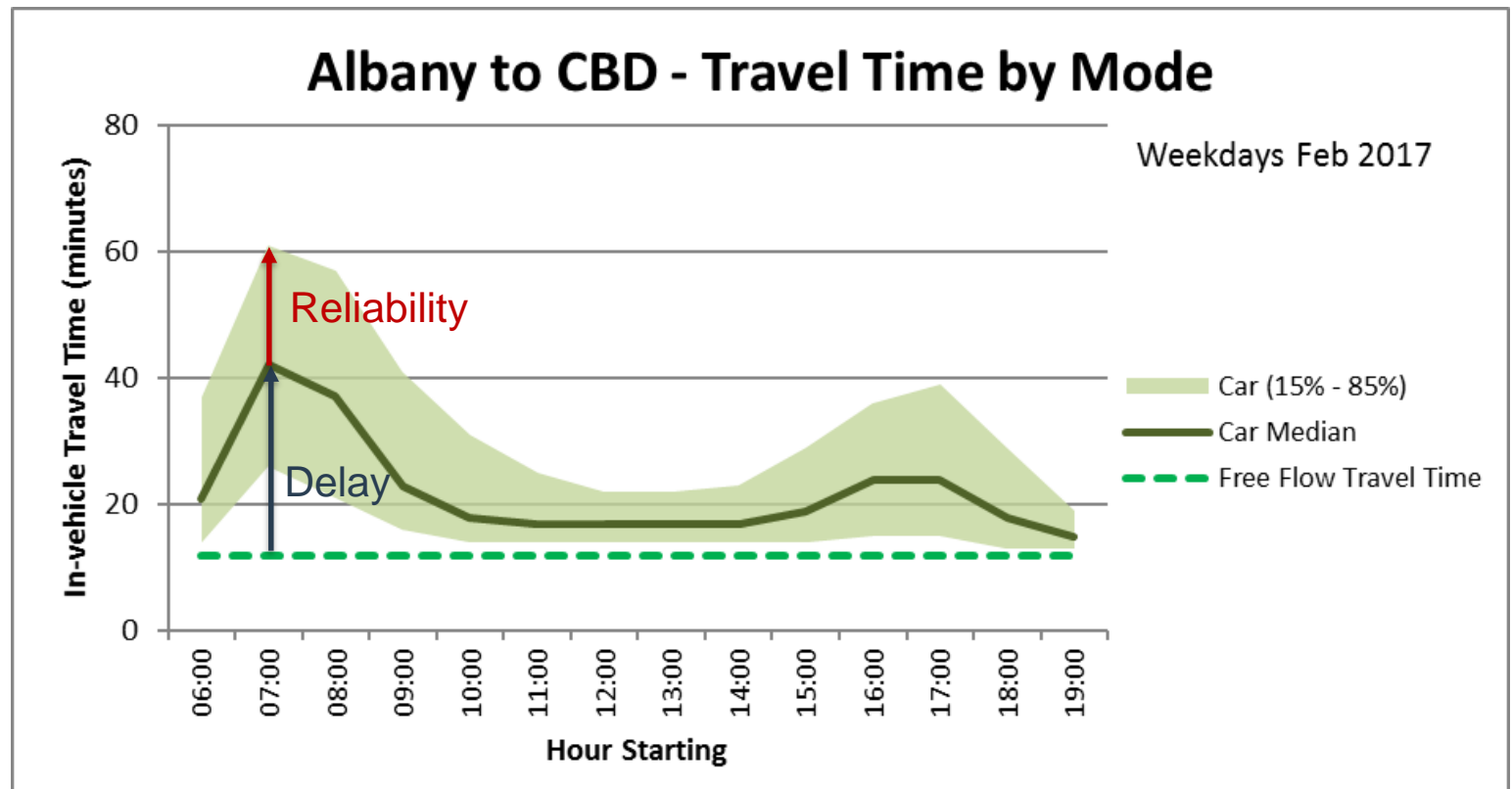
 5% increase since last year

Morning Peak 	<b>68%</b>
Evening Peak 	81%
Highways 	32%
Non-highways 	40%

# 5. Reliability - Additional travel time needed relative to Peak Travel

$$\text{Reliability (\%)} = \frac{TT_{85th} - TT_{median}}{TT_{median}}$$

$$\text{Delay (\%)} = \frac{TT_{median} - TT_{free\ flow}}{TT_{free\ flow}}$$



## 6. People Productivity

- Efficiency of the corridor in moving people during the commuting peaks
- Product of the number of people and journey speed compared to the AUSTROADS corridor people movement capacity

$$\text{People Productivity (\%)} = \frac{\text{Speed} \times \text{People}}{\text{Corridor Capacity in People Movement}}$$



## 6. People Productivity

Bus Lane



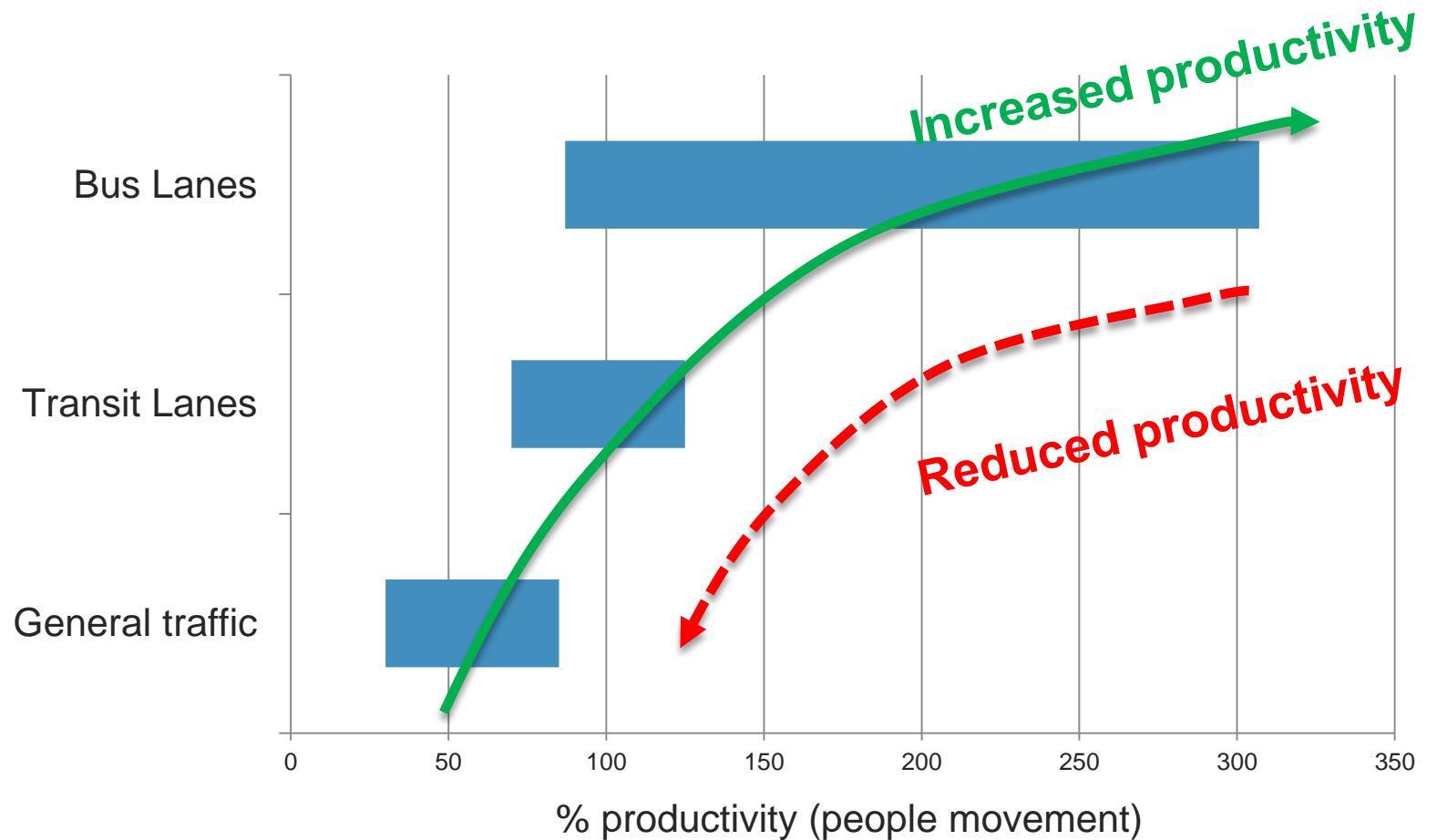
Fanshawe Street  
1 lane Bus lane  
5000 people



Nelson Street  
4 traffic lanes  
3000 people



# 6. People Productivity



# Dashboards

## Freight route performance

August 2016

Travel speed



Major freight locations are highlighted on the adjacent map.

### Hot Spots

The listed routes below are the hotspots. Freight hot spots are highlighted on the adjacent map.

LOS	Hot Spot
F	Inner I
F	Central I
F	Linco
F	Neilsa
F	Roseba
F	Upper Harb
F	Northweste
F	Puhin
E	Univen
E	Albany

\* Segments longer than 0.5km

**18 km/h**  
is the average speed observed at the locations highlighted on the map.

## Bus Network Performance

### Travel speeds

**28 km/h**  
is the average bus travel speed on the bus network. The free flow condition on the network is 39 km/h.



### Hotspots

The listed segments below are the hotspots in LOS F, with the lowest travel speed. See those hotspot locations refer to the map.

No.	Hot Spots
1	Greenlane (Wheturangi - Great South Road)
2	Albert Street (Customs - Quay Street)
3	Wellesley Street (Hobson - Nelson Street)
4	New Windsor Road (Tiverton - Maoro Street)
5	Albert Street (Wellesley - Victoria Street)
6	Te Atatu Road
7	Wellesley Street (Hobson - Albert Street)
8	Queen Street (Rutland - Wellesley Street)
9	Wellesley Street
10	Birkenhead Avenue (Mokola - Onewa Road)

**6 km/h**  
or slower is the average speed observed at the locations highlighted on the map.

## Arterial network performance

### Travel speeds

**34 km/h**  
is the average traffic flow speed on the network. The average weighted speed limit on the network is 49 km/h.



### Hotspots

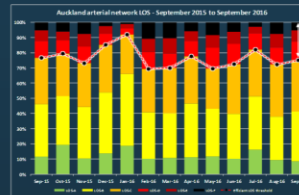
The listed segments below are the hotspots in LOS F, with the lowest travel speed. See those hotspot locations refer to the map.

No.	Hot Spots
1	Onewa Road (Birkenhead Ave to Lake Rd)
2	Mt Eden Road (Balmoral Rd to Shook Rd)
3	Maoro Street (New Windsor Rd to SH20)
4	Lake Road (Franklin Rd to Onewa Rd)
5	Manukau Road (Giles Ave to SH1)
6	Wairau Road (Franklin Rd to Whetu Rd)
7	Richardson Road (Owaraka Ave to New North Rd)
8	Great North Road (Park St to Beckwith Bay Rd)
9	Barrys Point Road (Barrys Point Rd to Gordon Rd)
10	Manukau Road (Park Rd to Green Lane)

\*The above segments are consistently performing at LOS F (Speed < 15km/h) through out the year. It results in about 5min delay or more in per kilometre travel compared to free flow condition.

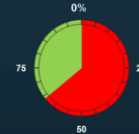
**40%**  
is the difference in travel time between a typically bad journey and the average.

### Level of service



**25%**  
of the network is considered congested in September 2016.

### Delay

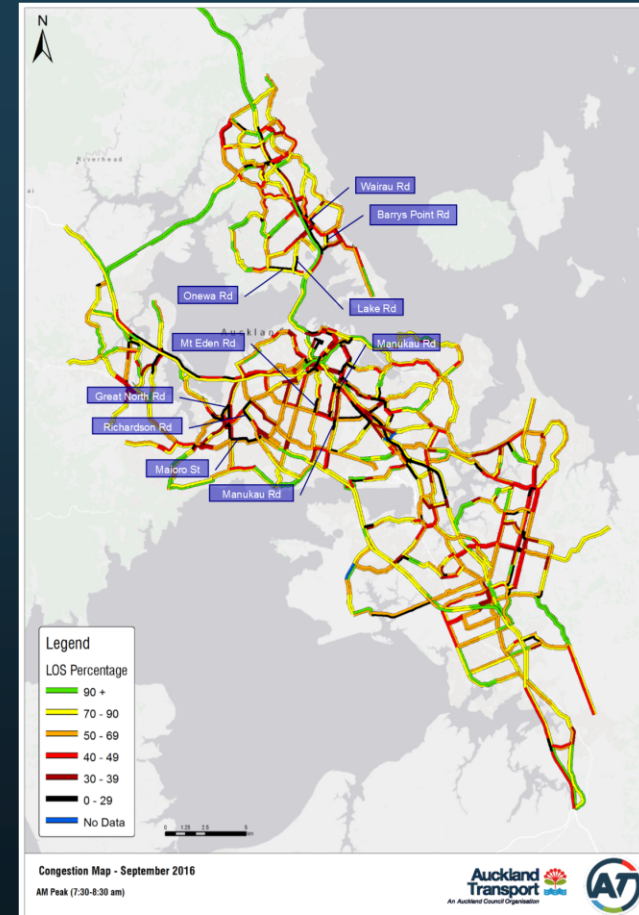


**64%**  
extra time is added to each journey due to congestion and signal phasing, compared with free flow conditions.

### Reliability



**D**  
is the LOS score for reliability. A reliable journey time is when additional time needed relative to typical peak travel time is less than 50%.

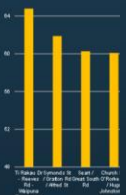


Congestion Map - September 2016  
AM Peak (7:30-8:30 am)



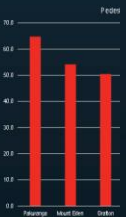
## Pedestrian

**Worst in Town**  
Ti Rakau Dr/ is the worst in town for pedestrians on the network.



## Town Centre

**64.8 seconds**  
is the average pedestrian travel time in the town centre.



# What do we do about it?

# Signal Optimisation Programme



# Network Improvement Programme

