


MOVING TOWARDS PROSPERITY
IPENZ TRANSPORTATION
GROUP CONFERENCE 2011

**Traffic Crashes and Traffic Flow Conditions
On Auckland's Southern Motorway
(State Highway-1)**

Presenter: Rabia Zafar



INTRODUCTION

- Motorways are considered to be the safest road based travel facilities
- Motorways are rated 4 stars out of 5 by the KiwiRAP assessment programme
- Total length of motorways across New Zealand is 365 kilometres only from a total of 94,000kms of roads
- Social crash cost risk on motorway facilities is still 3.4 cents per vehicle kilometre travelled


AUCKLAND'S SOUTHERN MOTORWAY



- Busiest and most congested motorway on New Zealand's road network
- High traffic volumes
- Crashes are frequent
- Rear end crashes are in highest proportions

PREVIOUS RESEARCH


Strong relationship between crashes and traffic flow conditions (Ceder & Livneh, 1982; Hall & Pendleton, 1989; Zhou & Sisiopiku, 1997; Martin, 2002; Golob and Recker, 2003,2004; etc.)



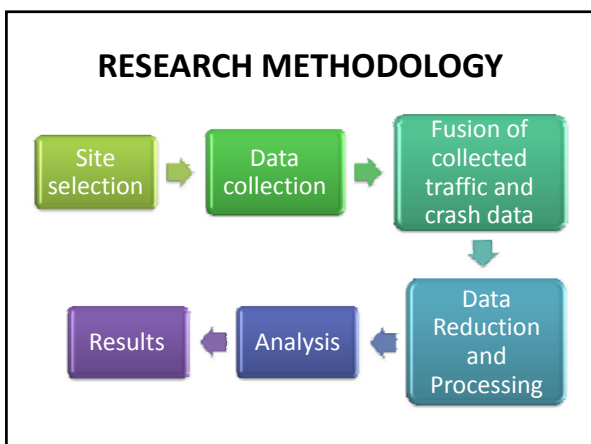
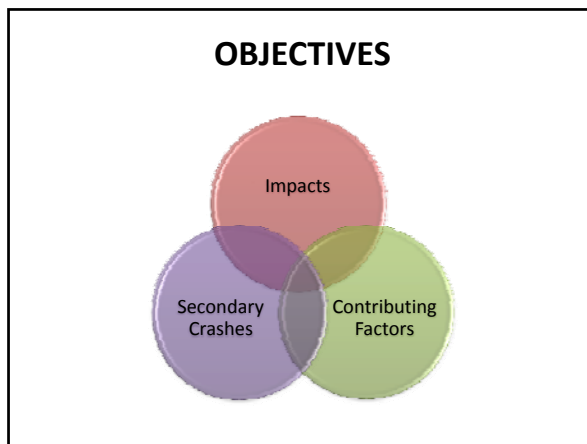
WHAT DOES LITERATURE SAY ABOUT CRASHES?

Crash severity and frequency can be effected by:

- Week days/week ends
- Time periods of the day & varying traffic flow conditions
- Lighting conditions
- Weather conditions
- Number of lanes
- Volume to capacity (v/c) ratios
- levels of service (LOS)



Secondary crashes may occur after a primary crash




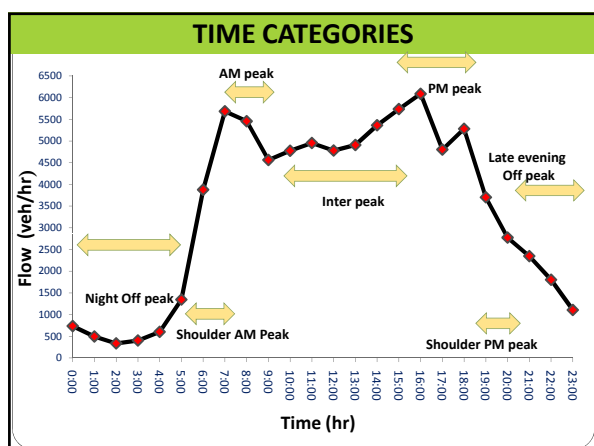
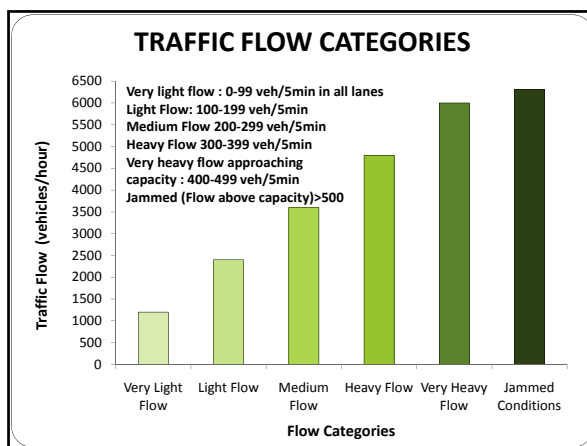
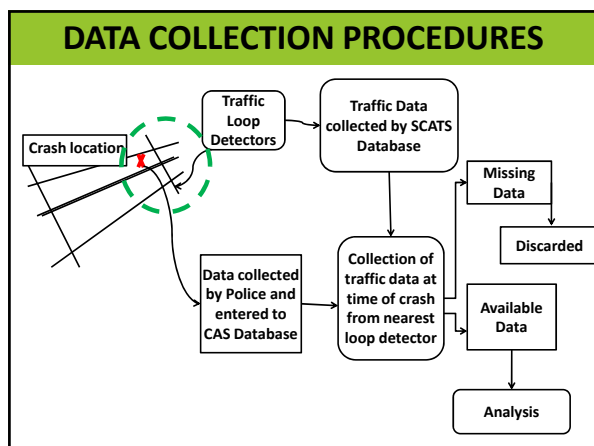
SITE SELECTION

- 11.28 km section with good geometry
- St Mark's Road over bridge to Highbrook interchange.

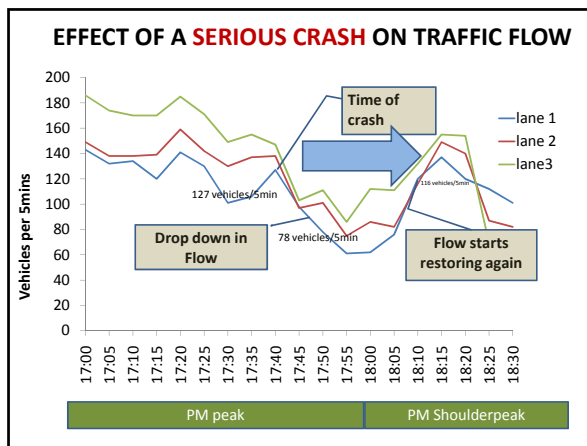
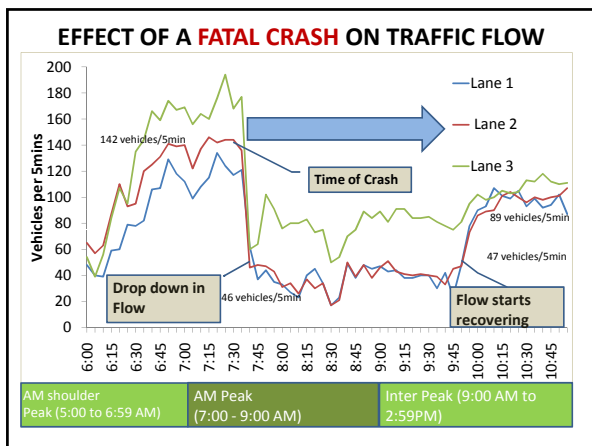
STUDY PERIOD

- 1st June 2009 - 31st May, 2010



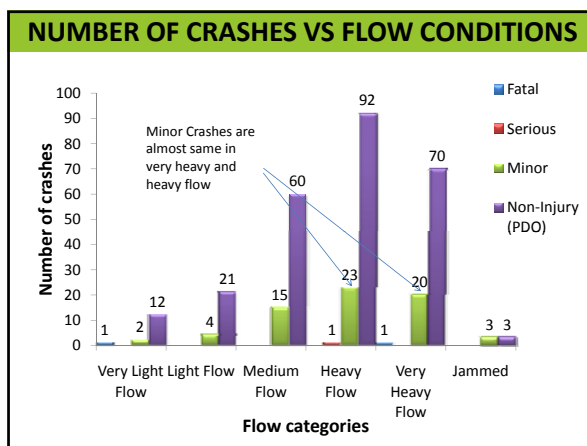


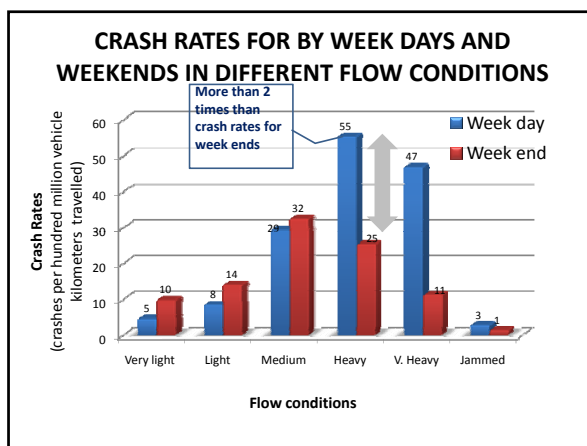
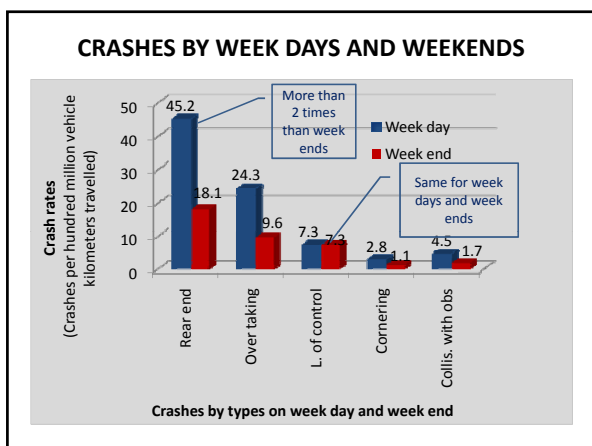
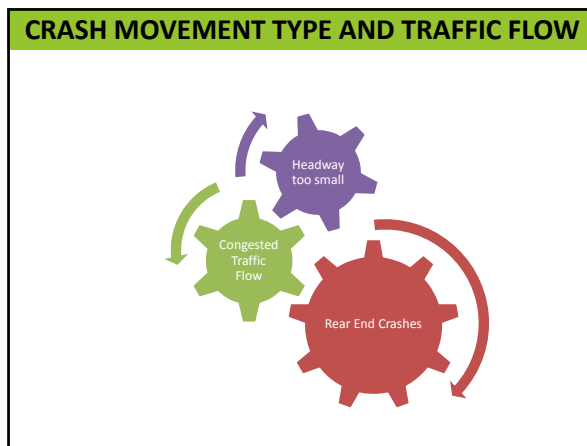
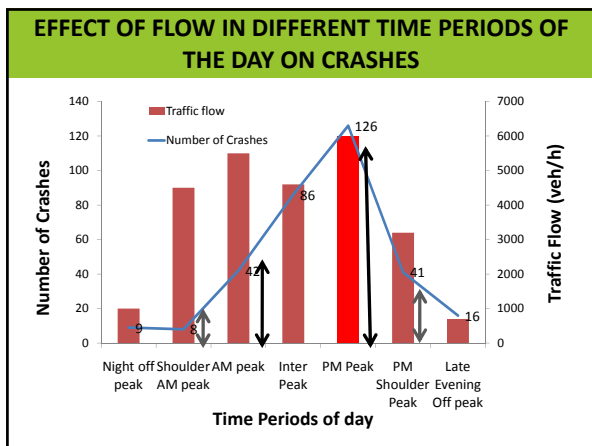
- ### EXPLORATORY ANALYSIS AND RESULTS
- ✓ Effect of Flow on Crash Severity
 - ✓ Crashes and their relationship between:
 - ❖ Time Periods of a day
 - ❖ Week Day and Weekend
 - ❖ Weather Conditions
 - ❖ Lighting Conditions
 - ❖ Traffic Regimes
 - ❖ V/C Ratio
 - ❖ Levels of Service
 - ✓ Identification of Secondary Crashes

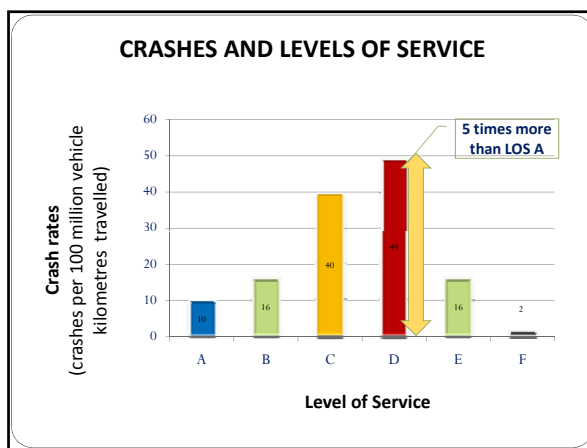
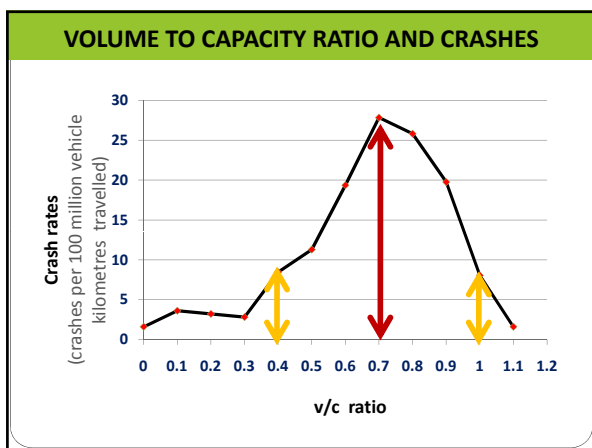
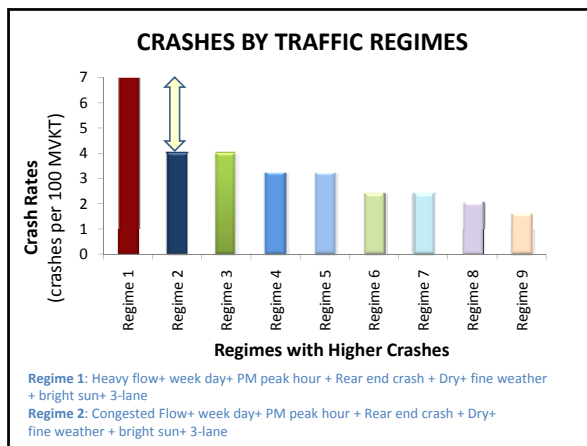
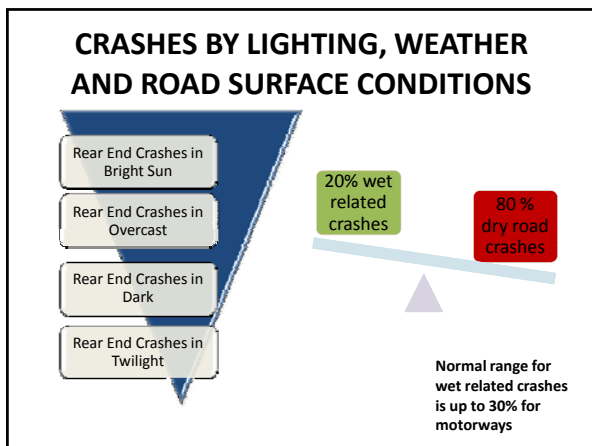


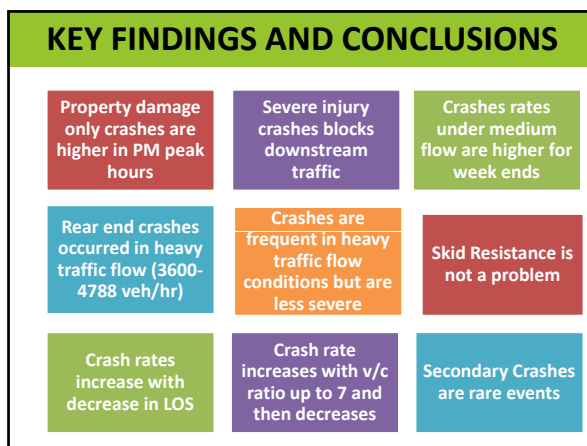
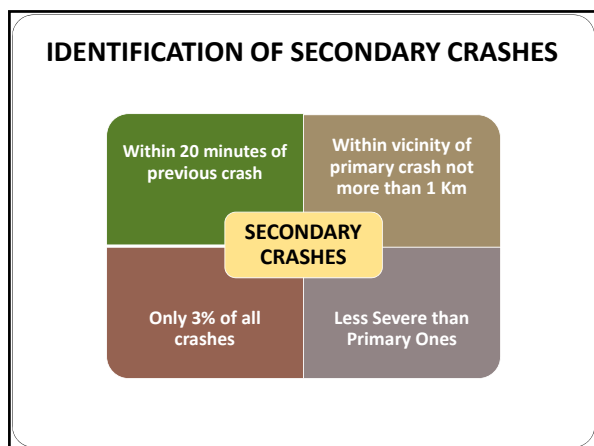
EFFECT OF CRASH ON TRAFFIC FLOW

Crashes by severity	Time of crashes	Time when flow restored	Time difference (Time required by flow to restore minus time of a crash)
Fatal	7:20	9:50	2 hours and 30 minutes
Serious	17:40	18:10	30 minutes
Minor	10:40	10:55	15 minutes
Non-injury (PDO)	15:55	16:03	8 minutes









THANK YOU

Acknowledgments:
 Auckland Motorways Alliance (AMA)
 Traffic Management Unit (TMU)

NZ TRANSPORT AGENCY
WAKA KOTAHU