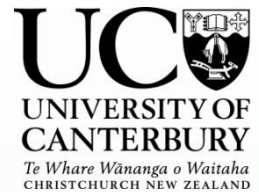




Annual Meeting 2013 – Washington DC, USA



# ASSESSING THE ENVIRONMENTAL CAPACITY OF LOCAL RESIDENTIAL STREETS

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# Presentation Outline



- Background Studies
- New Zealand Context
- Study Method
- Some Results & Conclusions

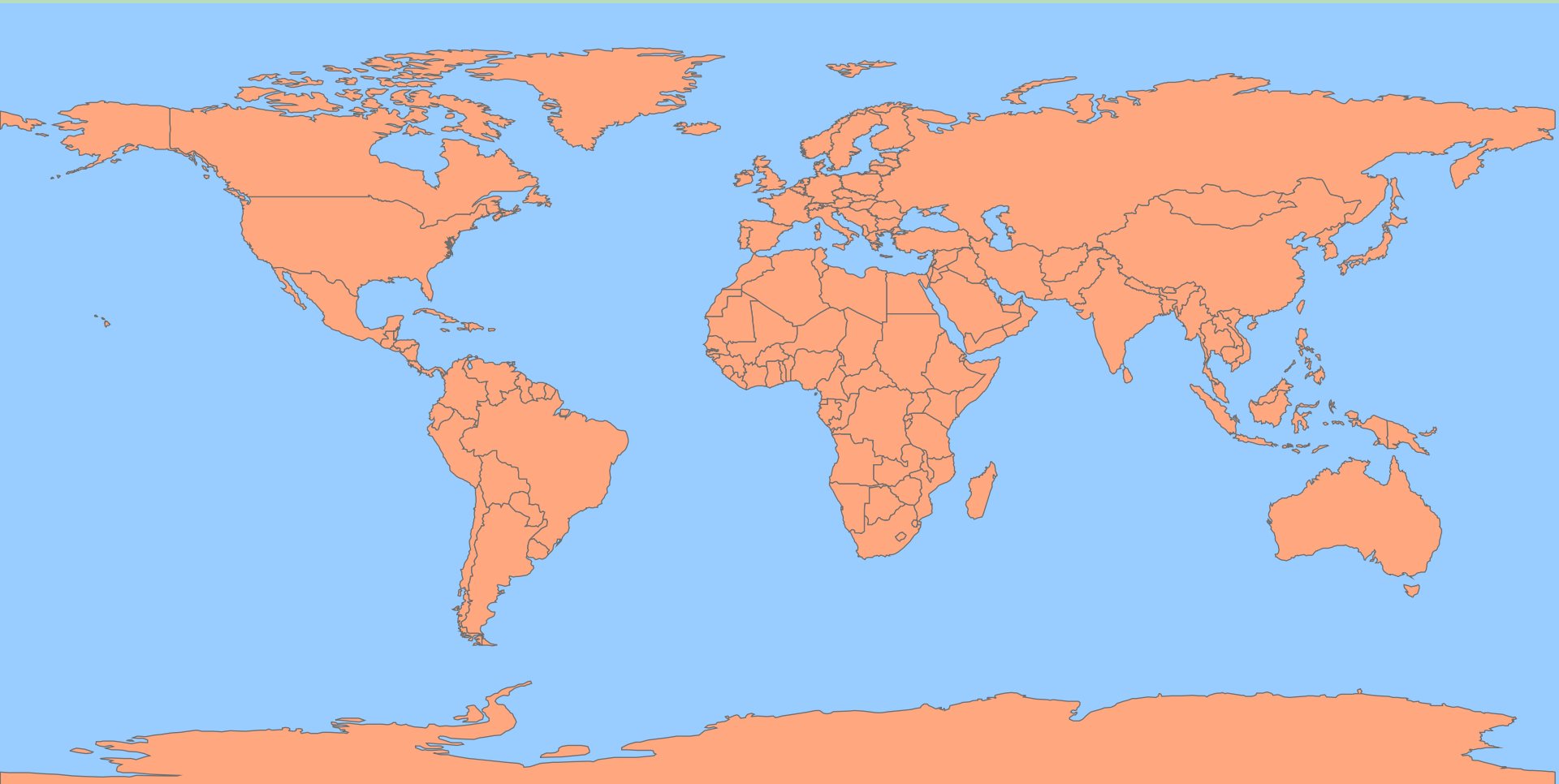


*Andrew*



*Rhys*

# So where is Noo Zeeland anyway?



# Famous for our Walkable Environments...



# ...and for Introducing Bicycling to New York...



# Background



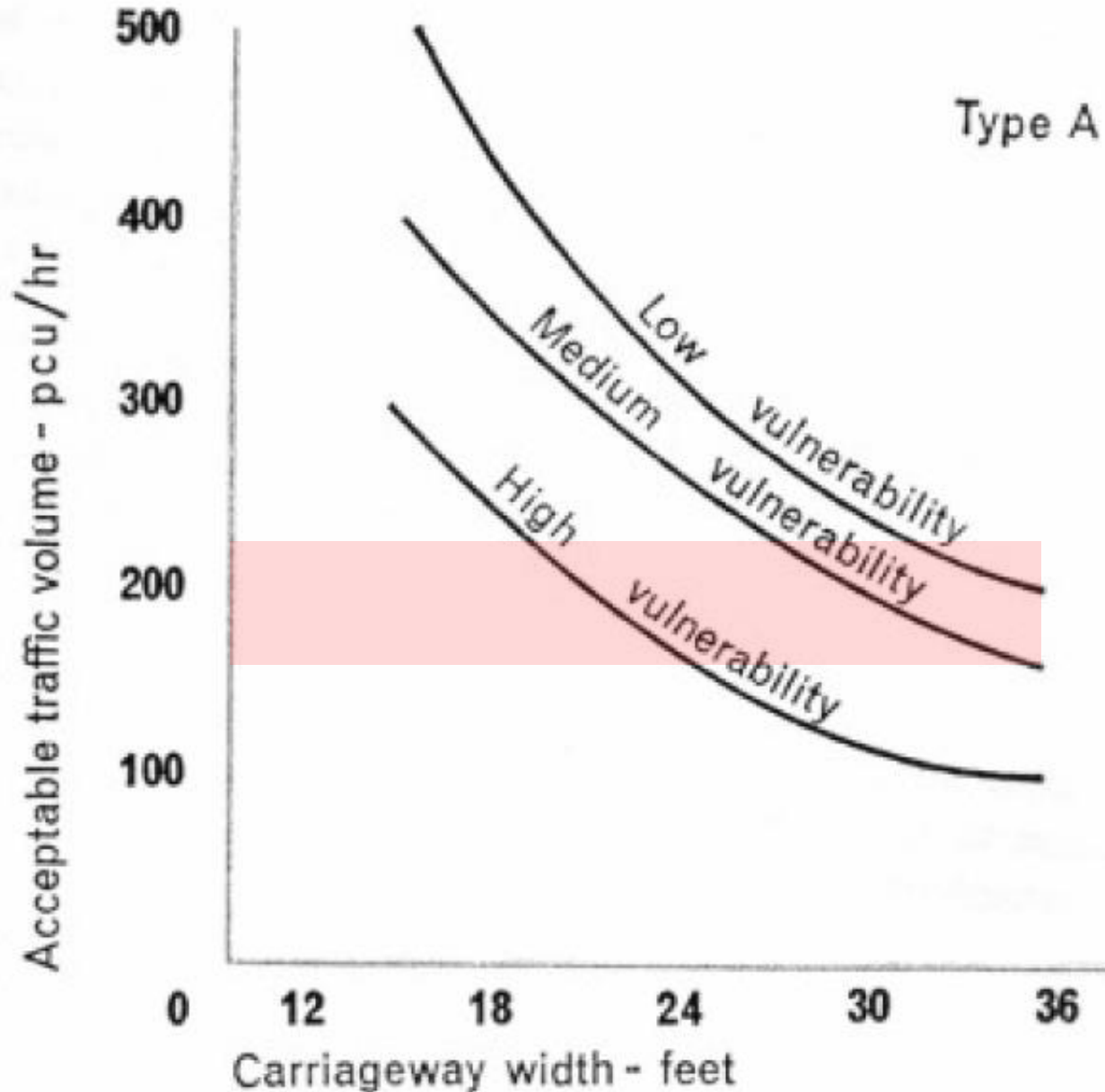
- Widely used rule of thumb in traffic planning and engineering:

*A local residential street has an environmental capacity of **2,000-3,000 vehicles per day***

- Sources:
  - Colin Buchanan "Traffic in Towns" (1963)
  - Donald Appleyard "Livable Streets" (1972-1981)
- Other studies since then appear to refer back to these – *still valid?*

# "Traffic in Towns"

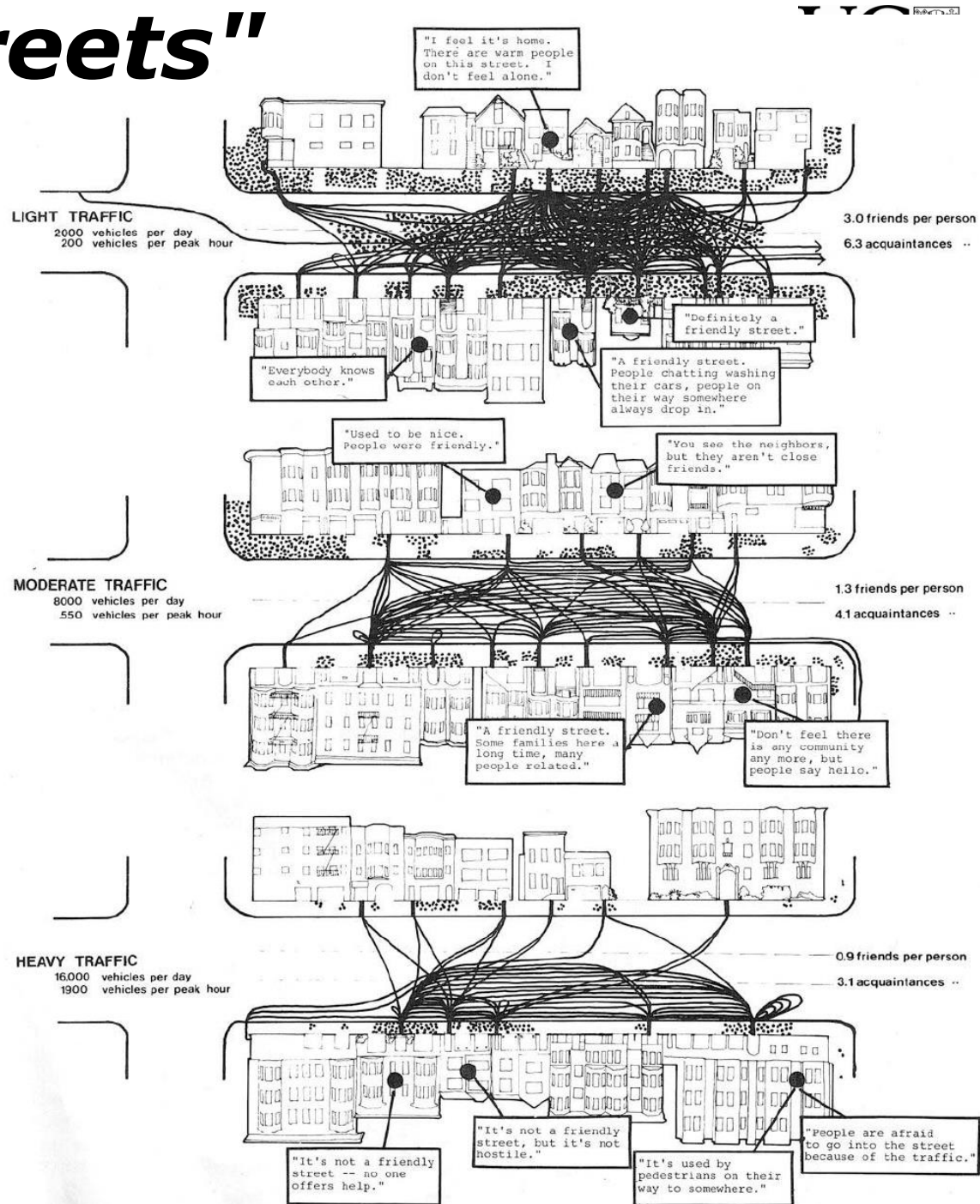
- NZ Streets typically >10m wide (33ft)



# "Livable Streets"

- Similar study also done in Bristol, UK (Hart 2008)

*Aim was to replicate these questions in New Zealand*



# New Zealand



- 268,000 km<sup>2</sup>
  - Similar to Great Britain
- 4 million people
  - Low population density
  - Very urbanised
- Study Location
  - Christchurch
  - Pop: 350,000



# Christchurch: Capacity of Some Streets = Zero...



# ...But Great Walking Environments...



# Original Study Sites (2009)

**Murdoch Street**



**LIGHT (560vpd)**

**Aorangi Road (NE)**



**MEDIUM (2120vpd)**

**Jennifer Street**



**LOW (1090vpd)**

**Aorangi Road (SW)**



**HIGH (3530vpd)**

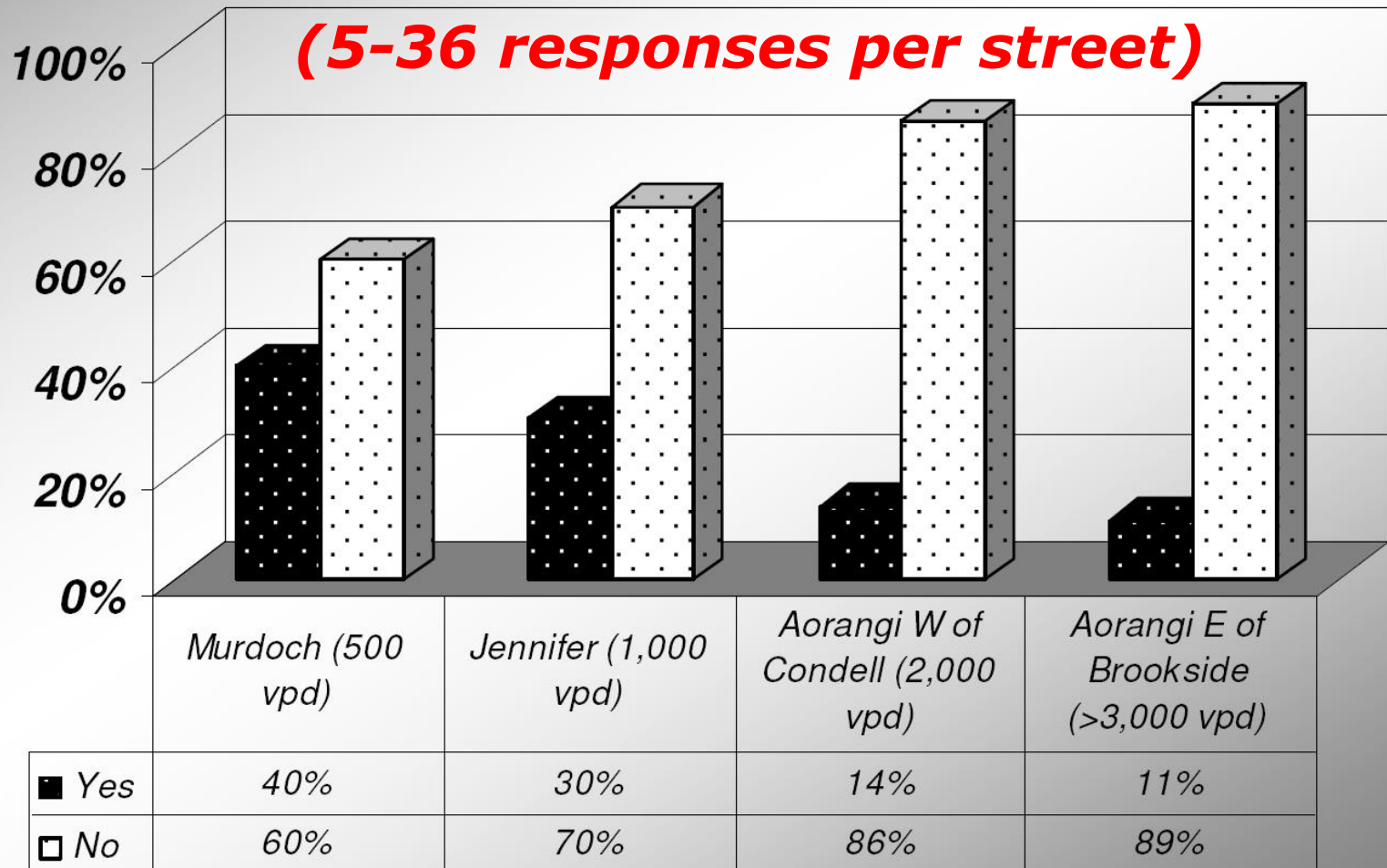
# Survey Questions Asked (based on Appleyard)



- Main living area faces away from street?
- Any front fence that blocks street views?
- OK with children playing on/near the street?
- Do you know any neighbours personally?
- Rate the amount of traffic on this street?
- Overall speed of traffic on this street too fast?
- Has traffic got worse over past few years?
- Do you consider this road to be noisy?
- Does traffic bother you during activities?
- Have to wait for traffic before crossing street?

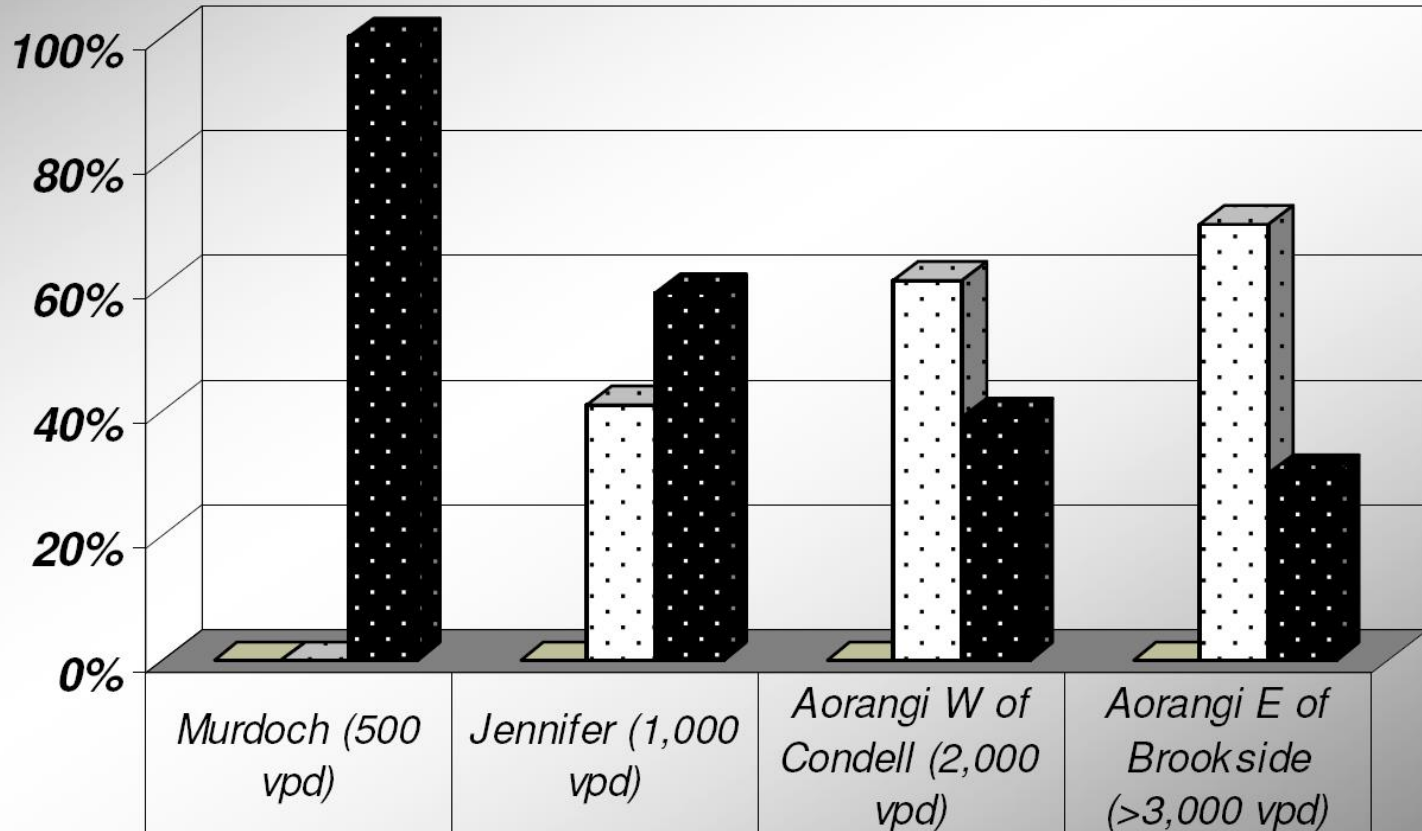
# Some Results

If you have children (or have had children or were to have children) would you feel comfortable with them playing unsupervised on or near the street?



# Some More Results

What about traffic on this street over the past few years? Has it -  
Improved, Got worse, or Stayed pretty much the same?



■ Improved

■ Got worse

■ Stayed pretty much the same

0%

0%

0%

0%

0%

41%

61%

70%

100%

59%

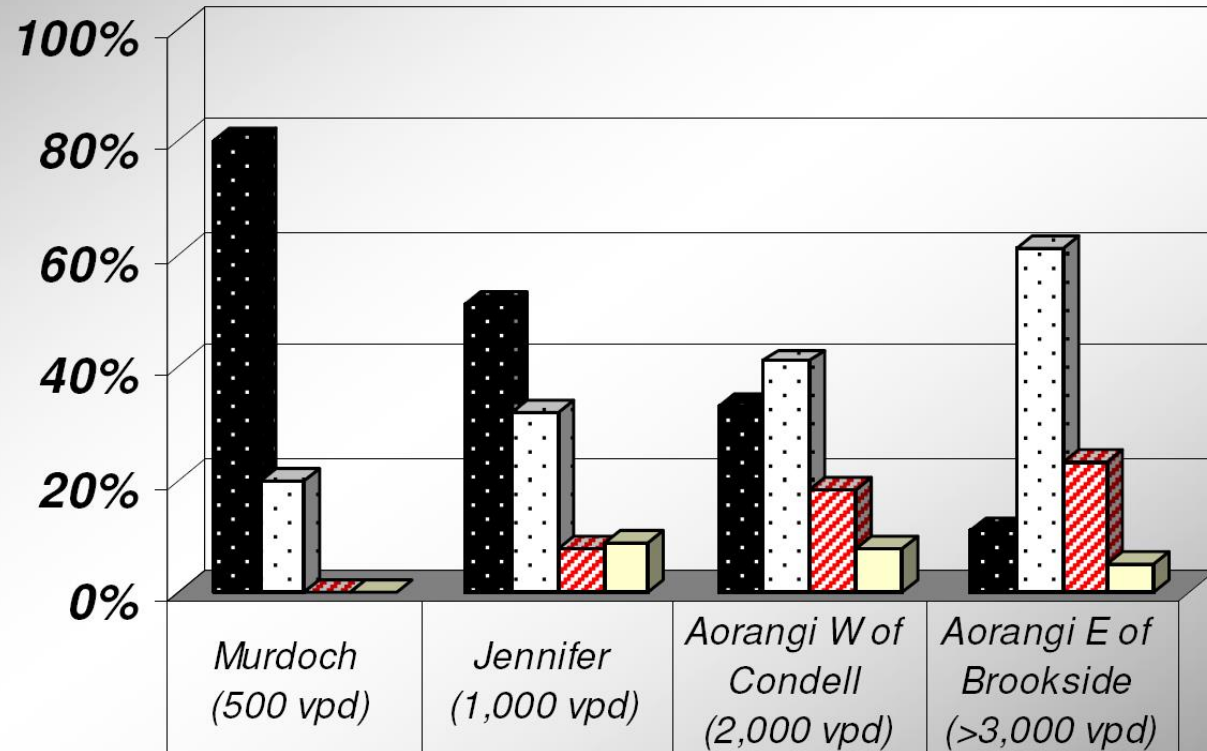
39%

30%

# Some More Results

How long do you usually have to wait for traffic before crossing the street?

**Very consistent trends across all questions**



■ No Wait	80%	51%	33%	11%
□ A Few Seconds	20%	32%	41%	61%
▨ Around 10-15 Seconds	0%	8%	18%	23%
□ Around 30 Seconds	0%	9%	8%	5%

# Typical Untreated "Local Street" near my House



# Treated "Local Street" near my House



# Second Study (2012)

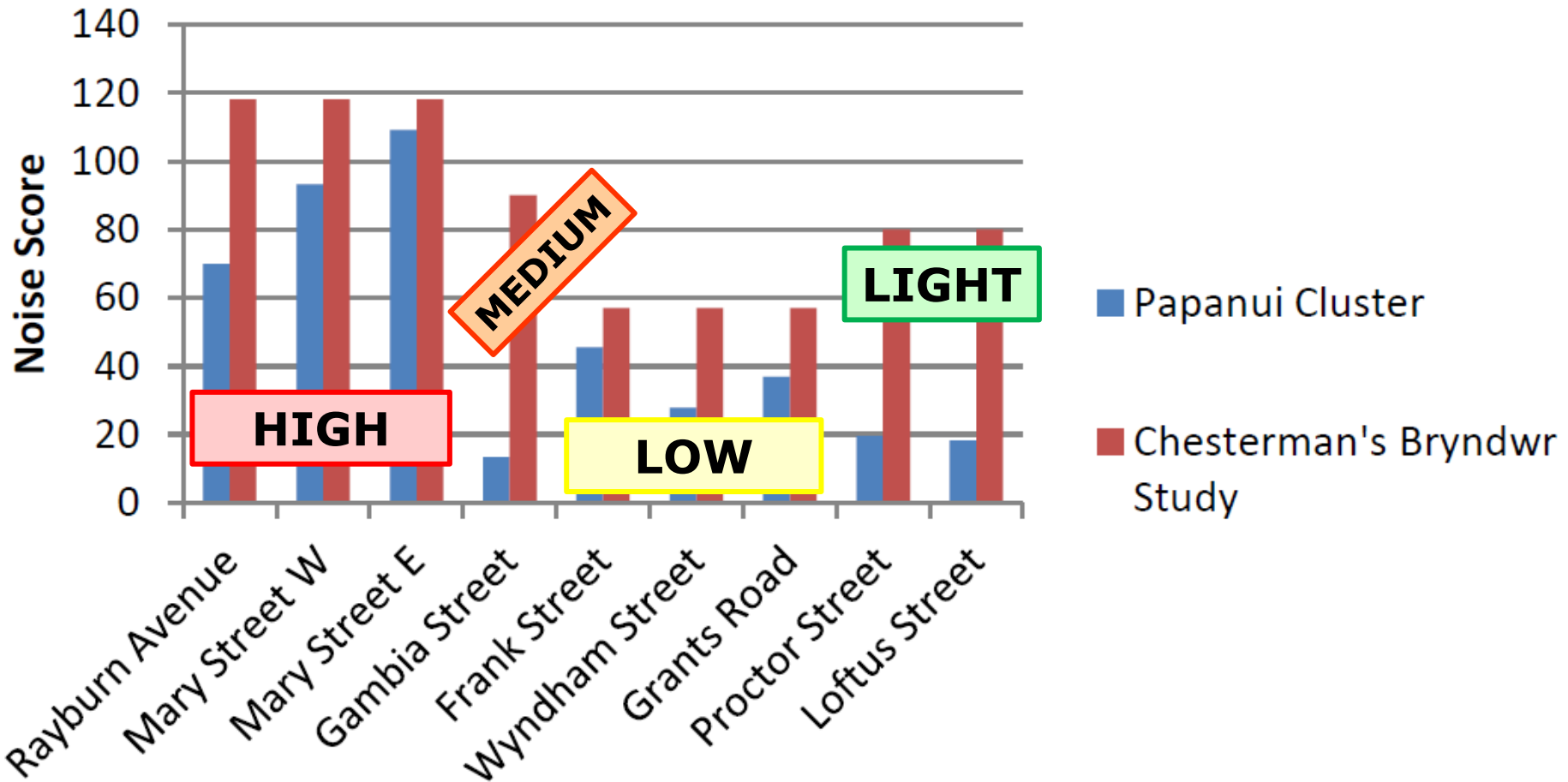


- *What about effects of street treatments?*



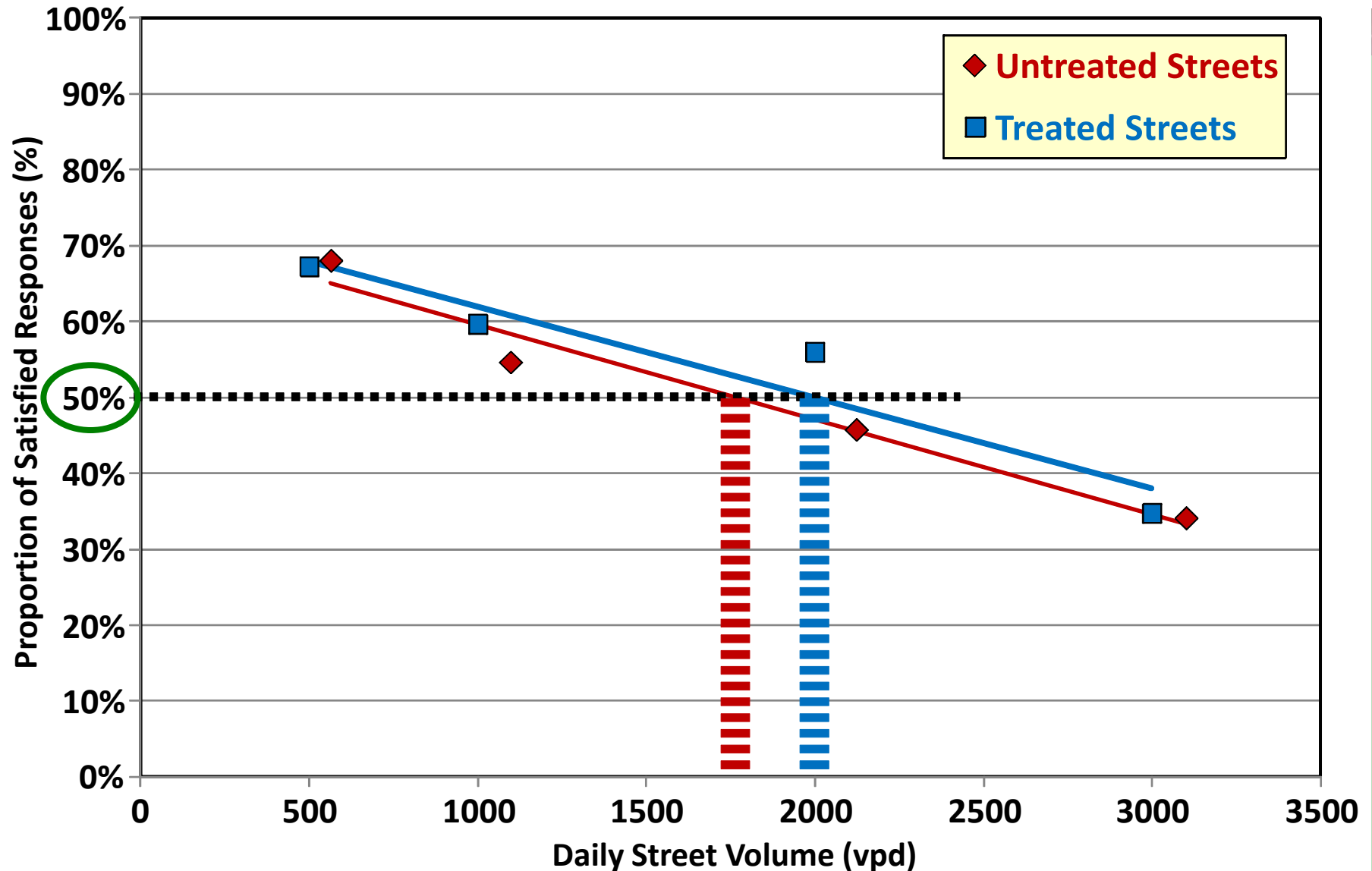
# Some Results

## Noise Concerns on Streets



- More distinct difference with HIGH streets

# Environmental Capacity Trendlines



# Conclusions



- Buchanan & Appleyard estimated broad-brush local traffic thresholds of 2000-3000 vehs/day
  - Other work since heavily relies on original findings
- Christchurch surveys of four local streets:
  - Environmental amenity down as traffic goes up
  - Clearly being used as through-streets as well
  - Suggest that a more appropriate value would appear to be ~**1500-2000 vehs/day**
- Further surveys of nine treated streets:
  - Environmental capacity improves a little

# Thank You!



Any Questions?

More Info:

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