

The Effect of Cycle Lanes on Cycle Numbers and Safety

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Summary

Marked on-road cycle lanes are a relatively inexpensive means of providing for cycling; however, their use has been questioned in terms of both their safety and their effectiveness in attracting more people to take up cycling. While both questions have been previously researched, the findings were rather inconclusive.

A recent research project in Christchurch, New Zealand investigated the relative effects on cycle count and crash numbers of installing a series of cycle lanes. Twelve routes installed in Christchurch during the mid-2000s were analyzed, together with some control routes that already had cycle lanes. Cycle count data from a series of route locations and dates were used to establish cycling trends before and after installation. These were also compared against cycle crash numbers along these routes during the same periods.

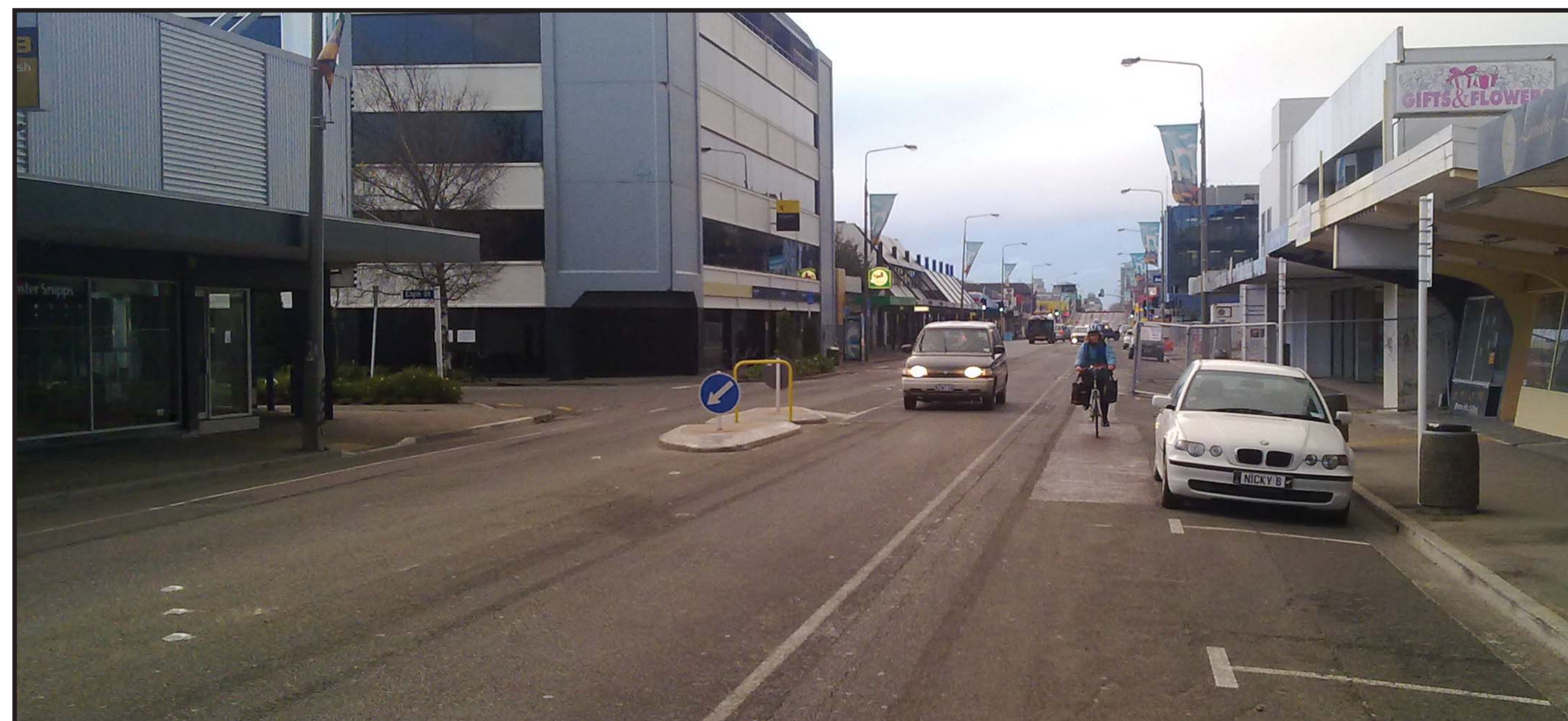
The results generally show no consistent “step” increase in cycling numbers immediately following installation of cycle lanes, with some increasing and decreasing. Changes on cycling growth rates were more positive, although it is clear that other wider trends such as motor traffic growth are having an effect. Taking into account the control routes and relative changes in volumes, the study also found notable reductions in cycle crashes following installation, typically with a 23% average reduction in crash rates. However, this reduction was not statistically significant at the 95% level.

Study Aims

Both local and central governments have been working to encourage and improve the safety of cycling in urban centres. As part of this move, dedicated on-road cycle facilities (“cycle lanes”) have been installed on local and arterial roading networks. However, there has been limited research conducted internationally as to whether these treatments have induced or increased cycle trips to these routes and whether safety has improved for cyclists on these routes.

The main objectives of the research were:

- To determine whether cycle lane treatments have impacted on **cycle numbers**
- To determine whether cycle lane treatments have impacted on **cycle crash rates**
- To test the assumption of a “**step change**” in cycle counts following installation



Typical Cycle Lanes in Christchurch

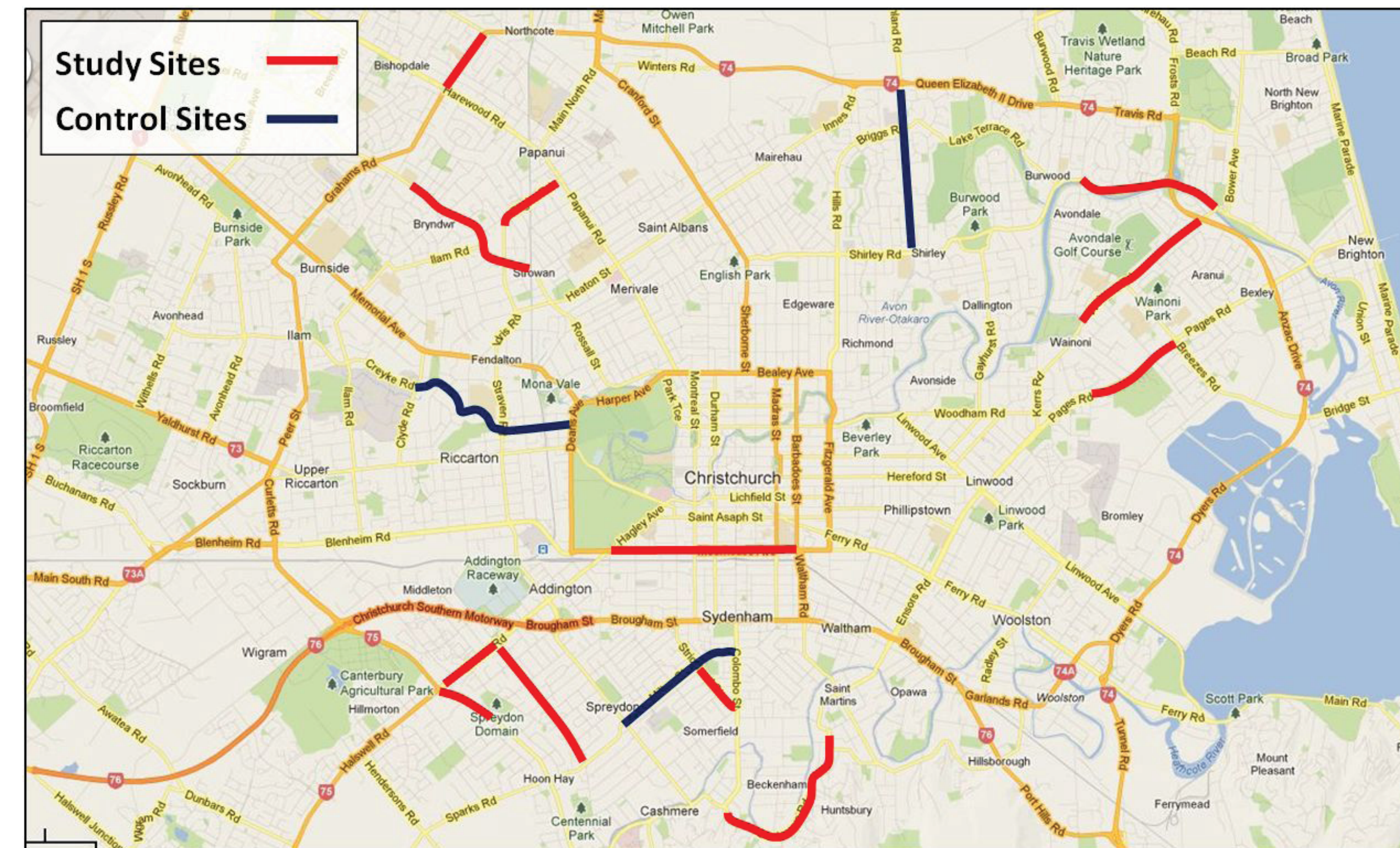
Sites Investigated (all in Christchurch, New Zealand)

Study Sites (12 Corridors)

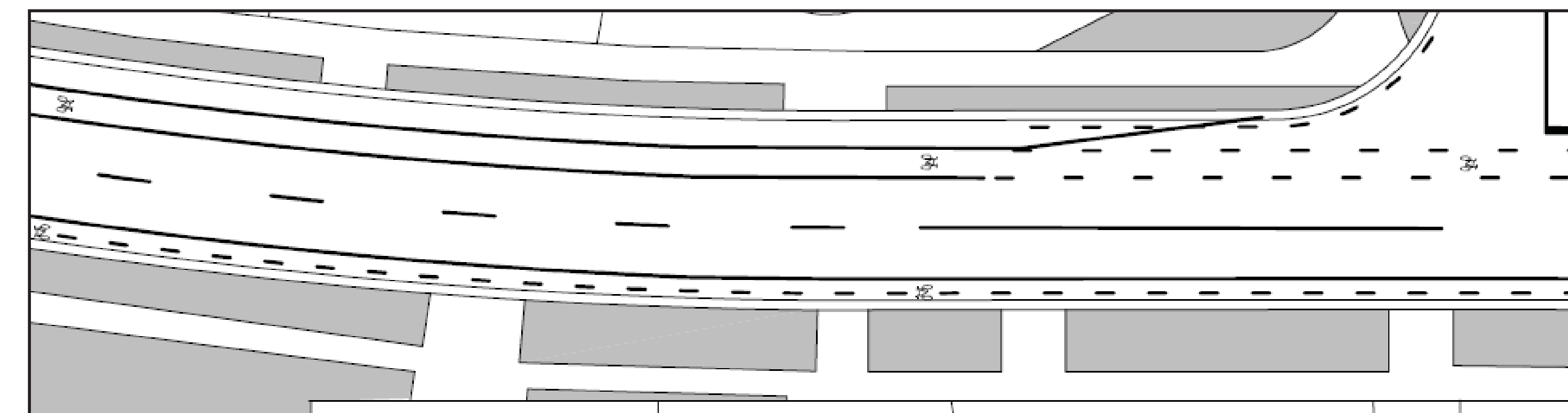
- Cycle lanes installed between 2003-07

Control Sites (3 Corridors)

- Cycle lanes installed prior to 2000



Typical Mid-Block Cycle Lanes Investigated



- Car Parking on at least one side of each Corridor studied
- Corridor Study Lengths: 800m - 3100m
- Motor vehicle AADT: 5000 - 39,000 vehicles / day (mostly Major/Minor Arterials)

Data Collection / Analysis

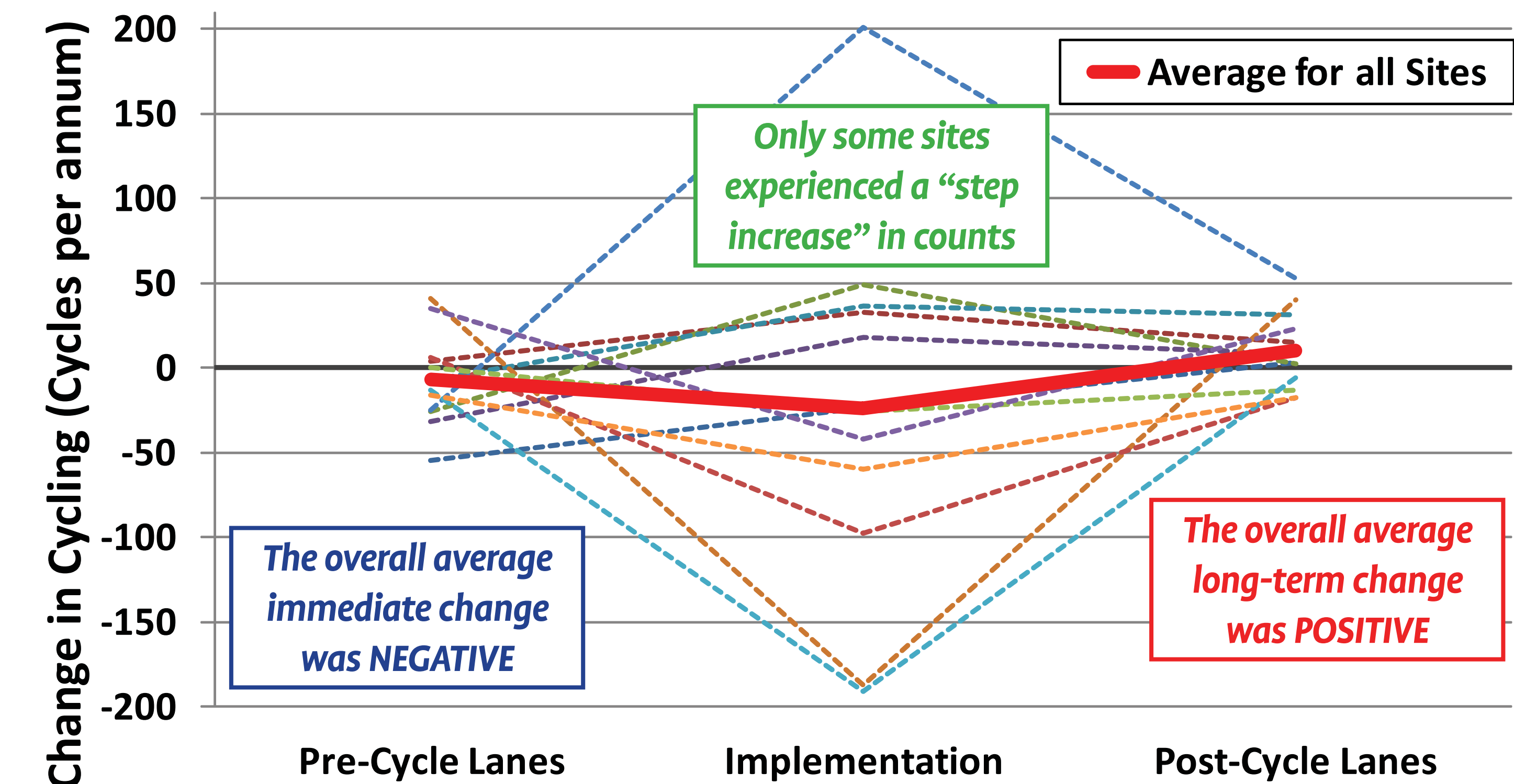
Cycle count data (Christchurch City Council surveys)

- 1999 - present day
- Manual Intersection counts along each route
- Typically morning and afternoon peak periods scaled up to AADT
- Linear regression of Before / Implementation / After periods for each site

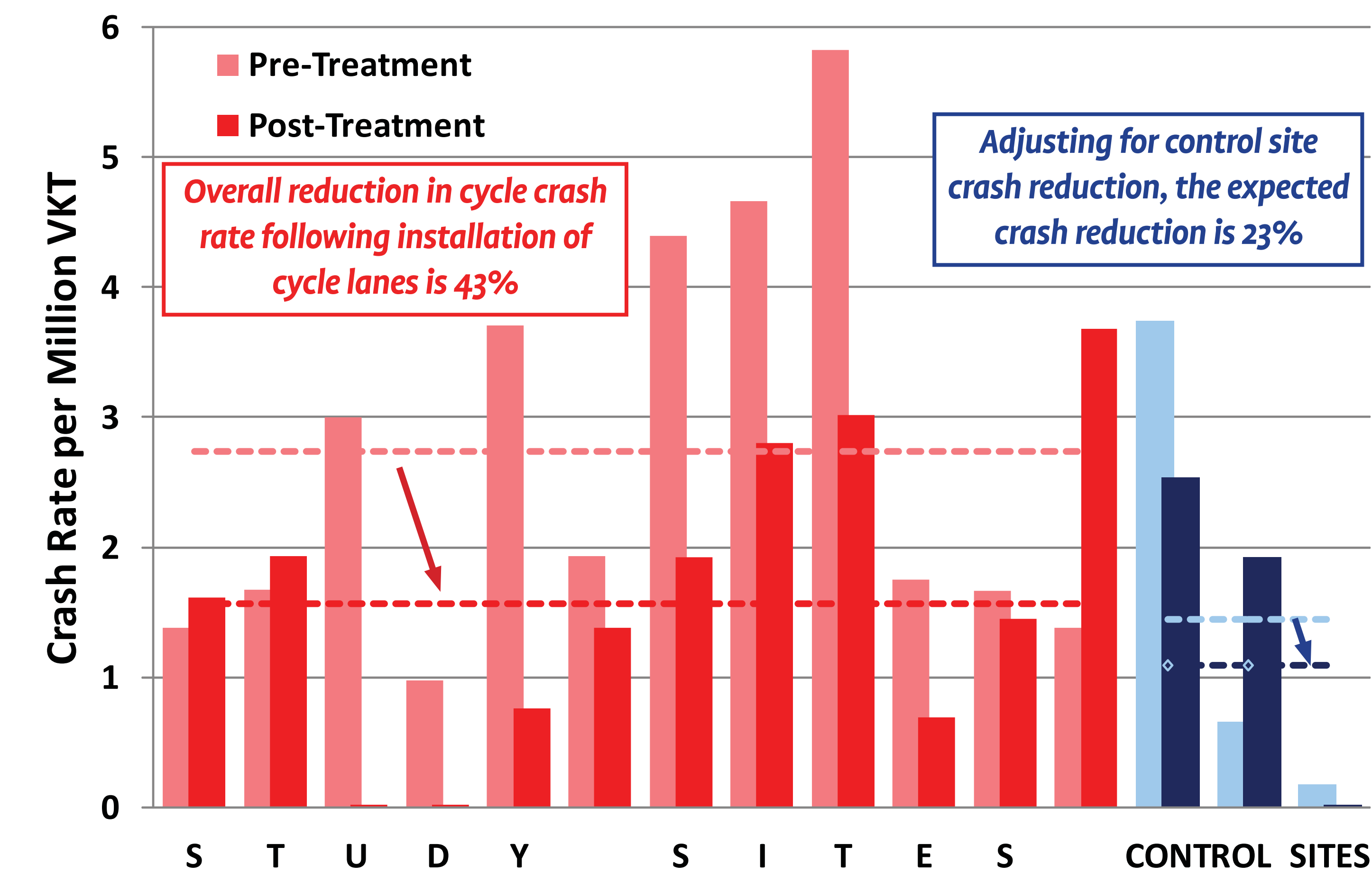
Cycle crash data (NZ Transport Agency Crash Analysis System)

- All reported cycle crashes 1999 - 2009
- Crash rates calculated per million vehicle-km travelled (VKT)

Results: Effect on Cycle Numbers



Results: Effect on Reported Cycle Crash Rate



Key Recommendations for Further Research

- Conduct further analysis of pre/post-treatment count numbers and rates at a variety of sites across NZ to assess whether the assumption of a step change is valid on a national scale.
- Undertake further long term research as to the impact of the 2010-11 Christchurch Earthquakes on cycle growth rates.
- Conduct research into the influence of traffic conditions and types of traffic on counts.

Research Report for Details:

PARSONS J. (2012). Assessing the impacts of on-road cycling facilities on cycle participation rates and user safety in Christchurch. ENCI682 Research Project Report, Department of Civil & Natural Resources Engineering, University of Canterbury, Christchurch, New Zealand.

