

# 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 in New Zealand has been questioned both in terms of their safety and their effectiveness in attracting more people to take up cycling. While both questions have been previously researched locally, the findings have been rather inconclusive.

A recent Engineering Masters research project 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 analysed, together with some control sites. 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 relative changes in volumes and controls, the study also found notable reductions in cycle crashes following installation, typically with a 23% average reduction in crash rates.

## 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 in New Zealand 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

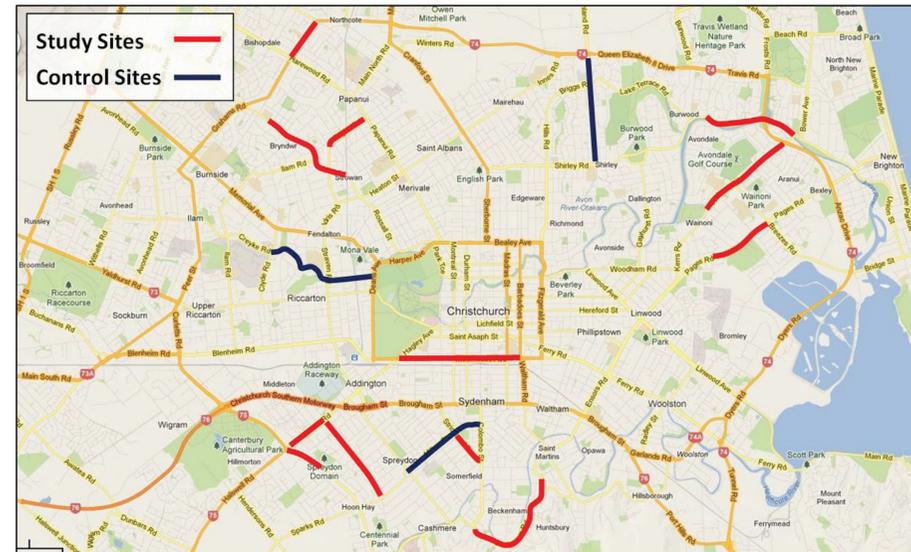
## Sites Investigated (all in Christchurch)

### Study Sites (12 Corridors)

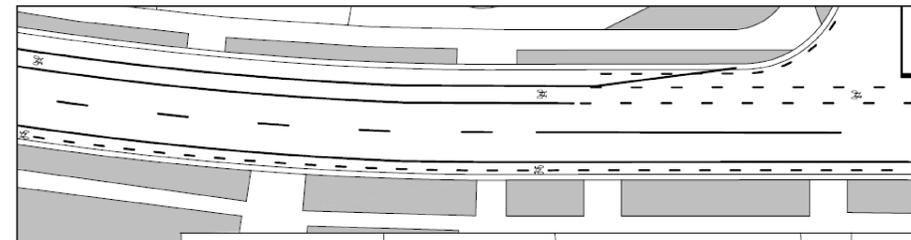
- Cycle lanes installed between 2003-07

### 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

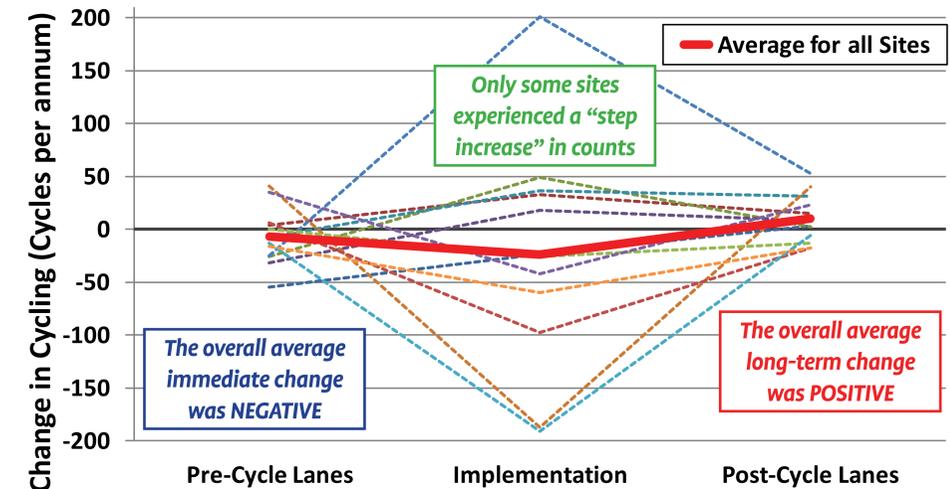
### Cycle count data (Chch City Council surveys)

- 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

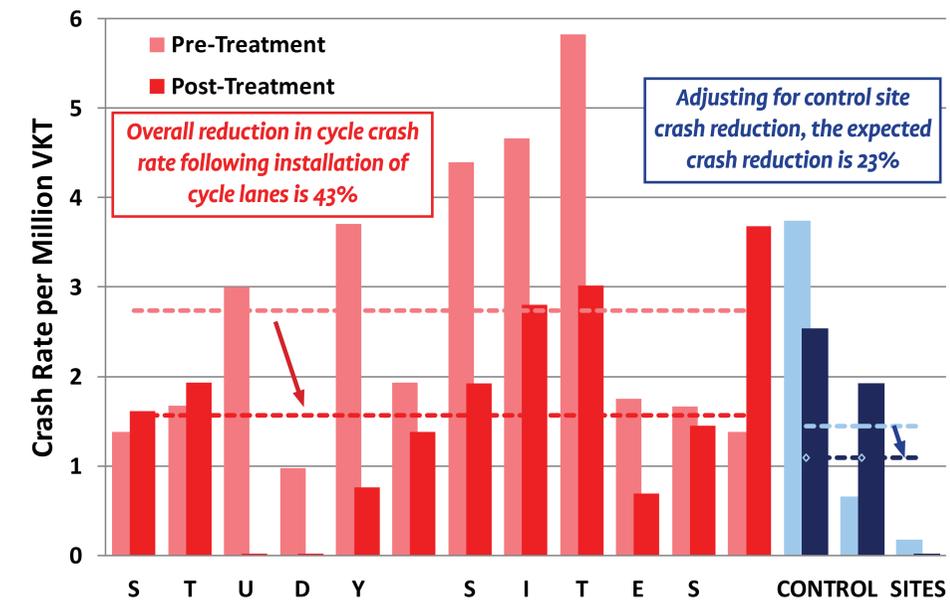
### Cycle crash data (NZTA Crash Analysis System)

- 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 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.

