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20's Plenty for the
2020's Conference,
31st October 2019

The Bristol Twenty Limit Evaluation (BRITE) Study

A public health evaluation of the introduction of 20mph speed limits across the city of
Bristol, UK.

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Summary

1. Background
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3. Vehicle speeds
4. Road traffic casualties
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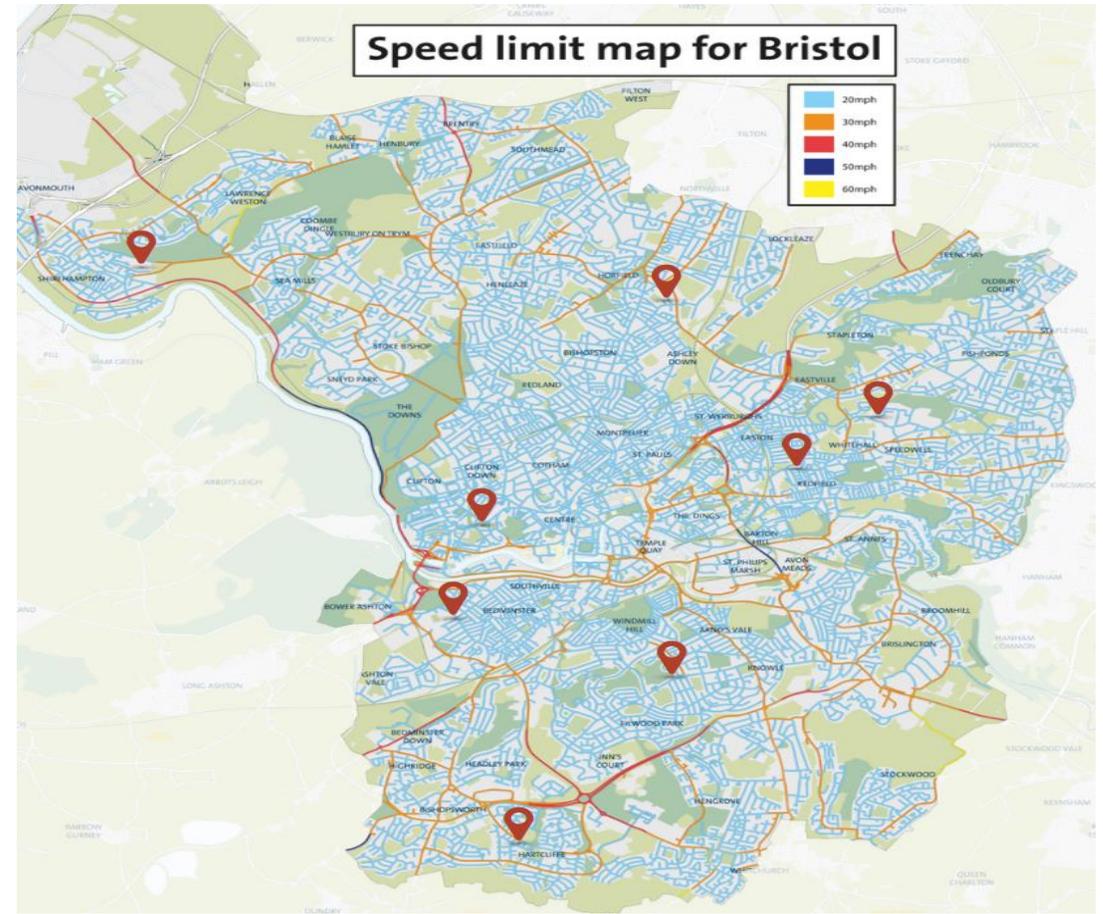
Background

- 20mph speed limits are increasingly used as part of a safer systems approach.
- In the UK, more than 400 urban roads became 20 mph roads between 1991 and 1999 (ROSPA, 2017).
- First UK city-wide implementation was in Portsmouth in 2007.
- Slower traffic speeds are associated with a variety of public health benefits.



Background

- In 2010, 2 pilot schemes introduced by Bristol City Council
- In 2012, the 20mph speed limit was introduced across the city
- Six phases/geographical areas on a rolling basis
- Completed September 2015
- Sign-only policy



Aim

To evaluate the impact of the roll-out of 20mph speed limits across the city of Bristol.

Holistic public health approach utilizing a range of data sources

First rigorous city-wide evaluation

Commissioned by Bristol City Council to feed into the review of 20mph limits in Bristol

October-December 2017

Data Sources

Vehicle speeds:

Automatic Traffic Counters (n=106)
TrafficMaster

Collisions and casualties:

Stats 19 (2008-2016)

Neighbourhood Surveys

YouGov Surveys

Walking and cycling data

Why evaluate?

“Transparent and consistent reporting is required to determine the most in/effective components of 20mph zones and limits”

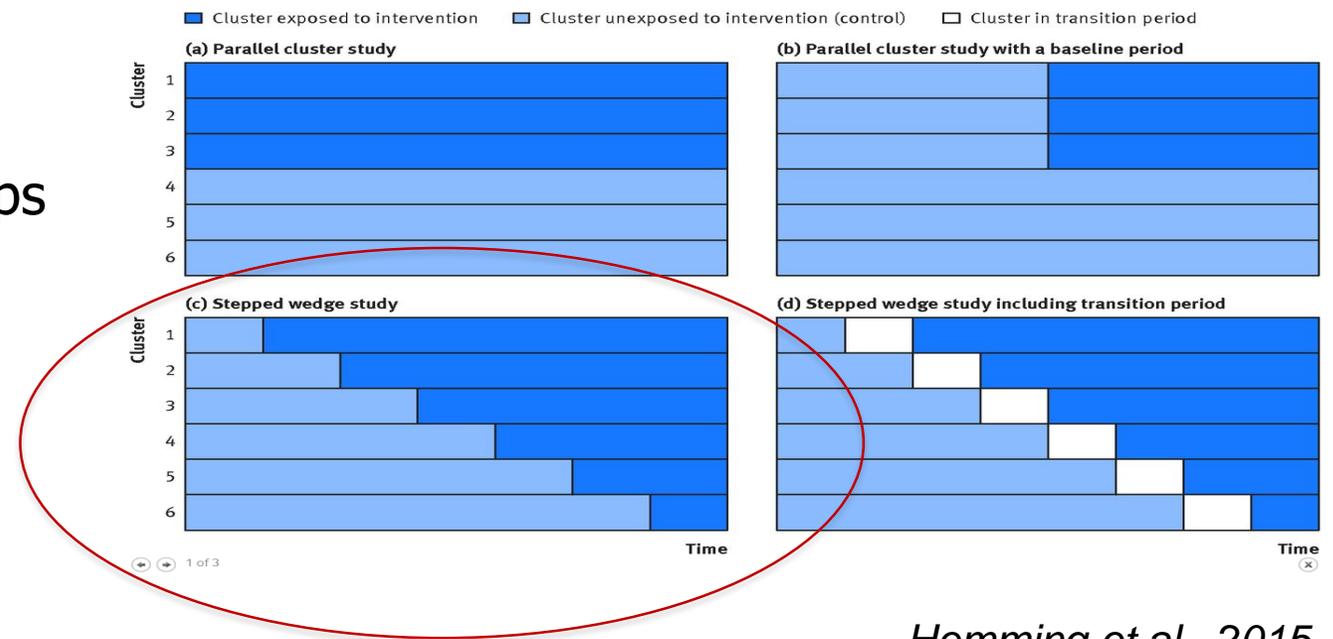
Cleland et al, 2019



Vehicle Speeds

Stepped wedged study design

- Pragmatic study design (robust evaluation despite political or logistical constraints);
- Several clusters (areas) and steps (phases) of implementation;
- Initial period: no clusters are exposed to the intervention;
- Regular, randomized clusters receive the intervention;
- Each cluster contributes observations under both control and intervention observation periods (Hemming et al., 2015).



Hemming et al., 2015

Methods

Cluster	1-Pilot	[Light grey]									[Dark grey]						
	2	[Light grey]									[Dark grey]						
	3	[Light grey]									[Dark grey]						
	4	[Light grey]									[Light grey]		[Dark grey]				
	5	[Light grey]									[Light grey]		[Dark grey]				
	6	[Light grey]									[Light grey]				[Dark grey]		
	7	[Light grey]									[Light grey]				[Dark grey]		
Data	<i>Not collected</i>										<i>Unavailable</i>	<i>Available to research team</i>					
Season	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	
Year	2009		2010		2011		2012		2013		2014		2015		2016		2017
Note: S = summer W = winter Light grey = Pre-intervention data (all roads 30 mph) Dark grey = post-intervention data (mixture of 20 mph and 30 mph)																	

- Quasi stepped-wedge design:
 - Clusters not randomized; Steps not regular; Initial step missing
 - In each area there was control group (30mph)
- Individual vehicle speed: 36,973,090 single observations
- General Linear Mixed Model

Results

City-wide pre-intervention mean speed was 27.1mph

- Unadjusted city-wide change in speed after the intervention was a reduction of 4.7mph (20mph streets)
- Adjusted speed reduction of 2.66mph (95%CI -2.67, -2.65, $p < 0.001$)
- Speed reductions varied by area
- Speed reduction was larger during:
 - Weekends (-2.9mph vs -2.5mph)
 - Summer months (-2.9mph vs -2.5mph)
- Day and night speed reductions were equivalent
- Possible spill-over effect on 30mph roads; 1.3mph reduction
- City-wide post-intervention mean speed was 23.7mph

Road traffic casualties

Results

- Descriptive analyses showed that annual post-intervention rates of injuries in each Bristol area tended to be lower than the respective injury rate before the limits were introduced.
- Study design limited ability to assess causality
- Follow on analysis has found a statistically significant reduction in fatal injuries across the city, and a general trend in reduction of overall injuries.



Attitudes and behaviour

Attitudes and behaviour

- Clear majority support remains in Bristol for 20mph speed limits, with 62% supporting such limits on residential roads and 72% on busy streets.
- However, there is cynicism in Bristol about lack of enforcement of 20mph limits, a lack of compliance from “other drivers” and an increased readiness to report that it is sometimes okay to drive above the posted speed limit on residential roads.
- Walking and cycling to work in Bristol has increased between 2010 and 2015.
- Increase in children in Bristol walking or cycling to school during the period under study.



The way ahead...2020 onwards



Acknowledgements

We would like to thank members of the project advisory group based at the University of the West of England (UWE), Bristol.

The study was commissioned by Bristol City Council.

This work was conducted on behalf of the Centre for Public Health and Wellbeing at the University of the West of England, Bristol (UWE Bristol).



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