

20 mph trial in Scottish Borders: Evaluation



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Quantitative Evaluation

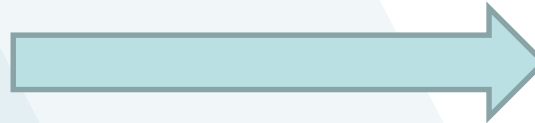
- *Before-after* analysis of vehicle speeds
- **Main objective:** To identify whether and how the 20mph speed limit trial affected vehicle speeds
- **Main outcome:** Reduction of mean speeds by **3 mph** (approx.) 8 months after the introduction of the 20mph limit

Mean speed:

>25 mph



Before



Mean speed:

>22 mph

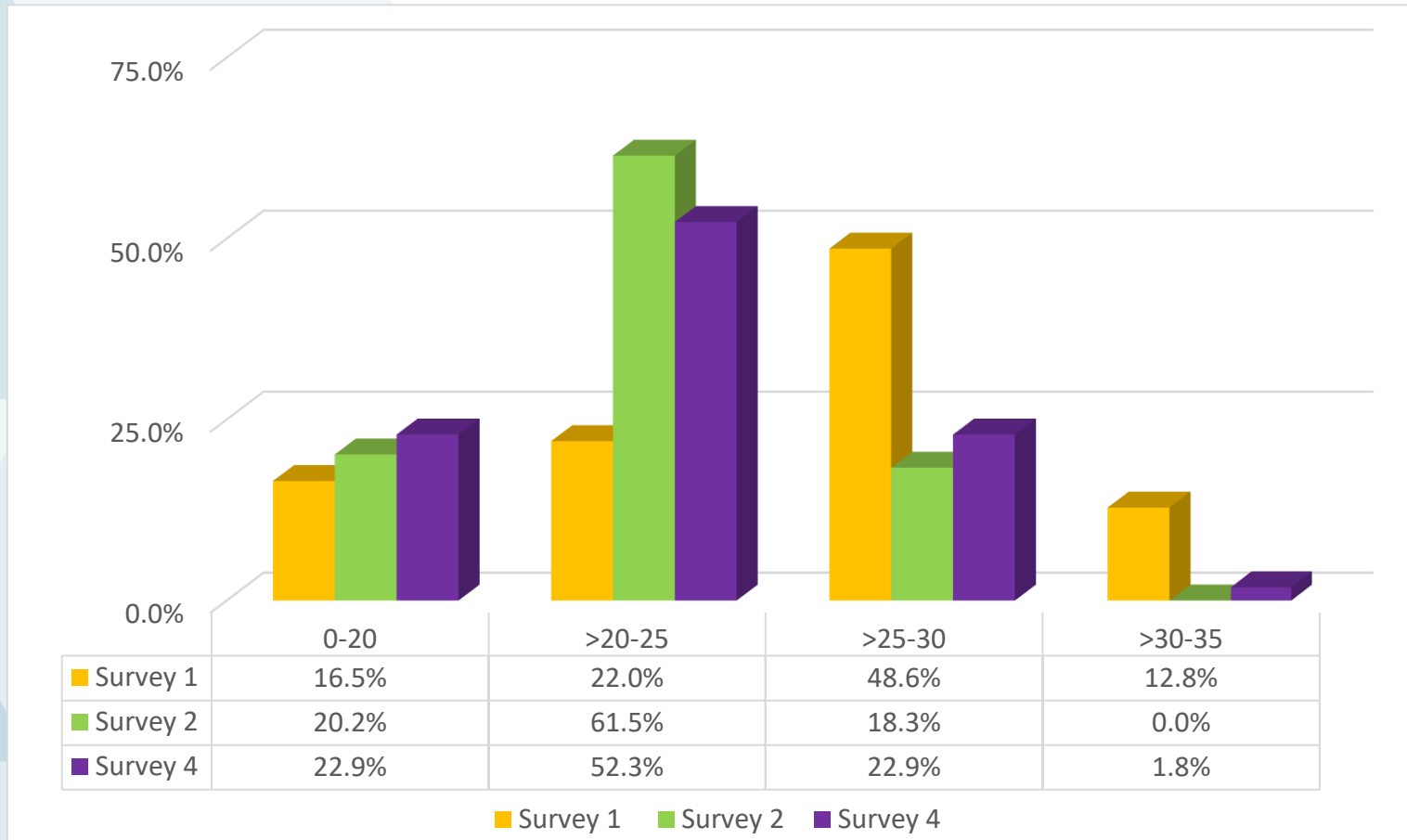


After

Data Sources & Processing

- Several sets of speed surveys have been carried out:
 - “**Before**” survey (in August – September 2020) – **Survey 1**
 - “**After I**” survey (November – December 2020 & early 2021) – **Survey 2**
 - “**After II**” survey (April – May 2021) – **Survey 3**
 - “**After III**” survey (June 2021) – **Survey 4**
- Descriptive & statistical analysis of speed data for varying numbers of locations :
 - Survey 1 vs Survey 2: 115 locations
 - Survey 1 vs Survey 2 vs Survey 3: 55 locations
 - Survey 1 vs Survey 2 vs Survey 4: 109 locations

Distribution of sites per mean speed range



- *Shift towards the left side of the distribution:* most of the sites (>75%) have **low mean speeds** 8 months after the trial
- The trial almost **doubled** the proportion of locations with speeds lower than 25 mph

Mean & 85th percentile speeds

For all sites (with **30mph speed limit** “before”):

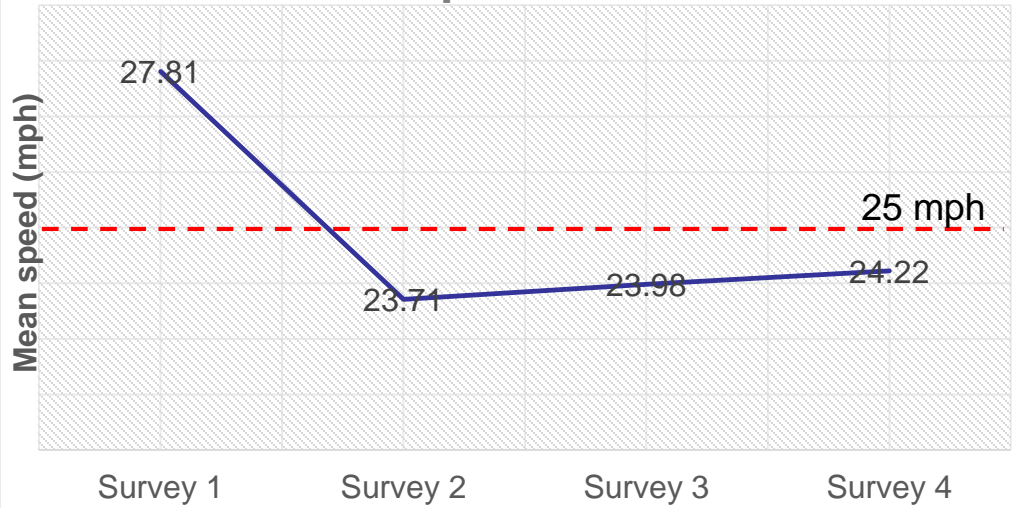
Mean speed (mph)	N	Average	Std. Deviation
Survey 1 (“Before”)	109	25.33	4.56
Survey 2 (“After I”)	109	22.22	3.02
Survey 4 (“After III”)	109	22.64	3.27

85th percentile speed (mph)	N	Average	Std. Deviation
Survey 1 (“Before”)	109	30.21	4.90
Survey 2 (“After I”)	109	27.03	3.75
Survey 4 (“After III”)	109	27.59	3.93

- Speed reductions were observed across all survey waves for both metrics
 - **Reduction** in mean speed “after III” compared to “before”: **2.7 mph**
- Reductions in standard deviations of speeds were also observed
 - Lower standard deviations suggest more homogeneous speed patterns across the settlements

Evolution of speed over time

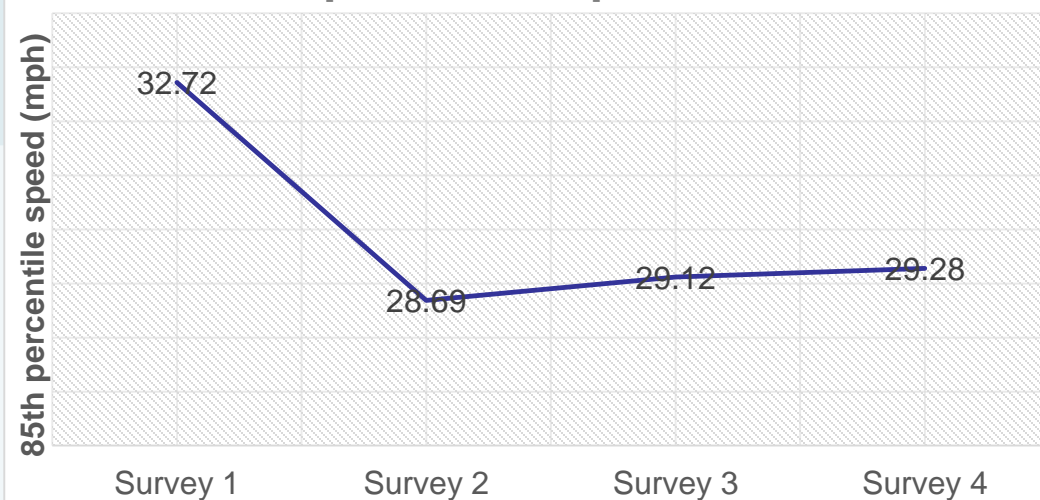
Mean speed over time*



- Reductions in **mean speed** are largely **maintained** even 8 months after the introduction of the 20mph limit

- Reductions in **85th percentile speed** are largely **maintained** even 8 months after the introduction of the 20mph limit

85th percentile speed over time*



* From the analysis of **55 sites** with available data across all 4 survey waves

Differences per mean speed range 8 months after the trial

- **Speed differences** between “Before” & “After III”

Mean speed range (mph)	“Before” speeds	“After III” speeds	“Before” – “After III” difference
0-20	18.06	18.01	-0.05
>20-25	22.58	21.12	-1.46
>25-30	27.94	24.17	-3.77
>30-35	31.17	26.45	-4.72

- Speed reductions are more pronounced for locations with “before” mean speeds **greater than 25 mph**.

Traffic volumes & speed differences

	N	Average traffic (vehicles/day)	% Difference with “Before”
Survey 1 (“Before”)	109	2383	
Survey 2 (“After I”)	109	1820	-31%
Survey 4 (“After III”)	109	2506	+5%

	N	Mean speed (mph)	% Difference with “Before”
Survey 1 (“Before”)	109	25.33	
Survey 2 (“After I”)	109	22.22	-12%
Survey 4 (“After III”)	109	22.64	-11%

- Despite the fluctuations in traffic volumes, speed reductions **are significantly maintained 8 months after the trial.**
- Statistical analysis revealed:
 - The impact of traffic volume fluctuations (due to COVID-19) on speeds is observable, but **minimal**
 - The speed differences are mainly attributed to the **impact of the 20mph speed limit**

Other safety interventions

- Mean speeds at sites **with** electronic signs

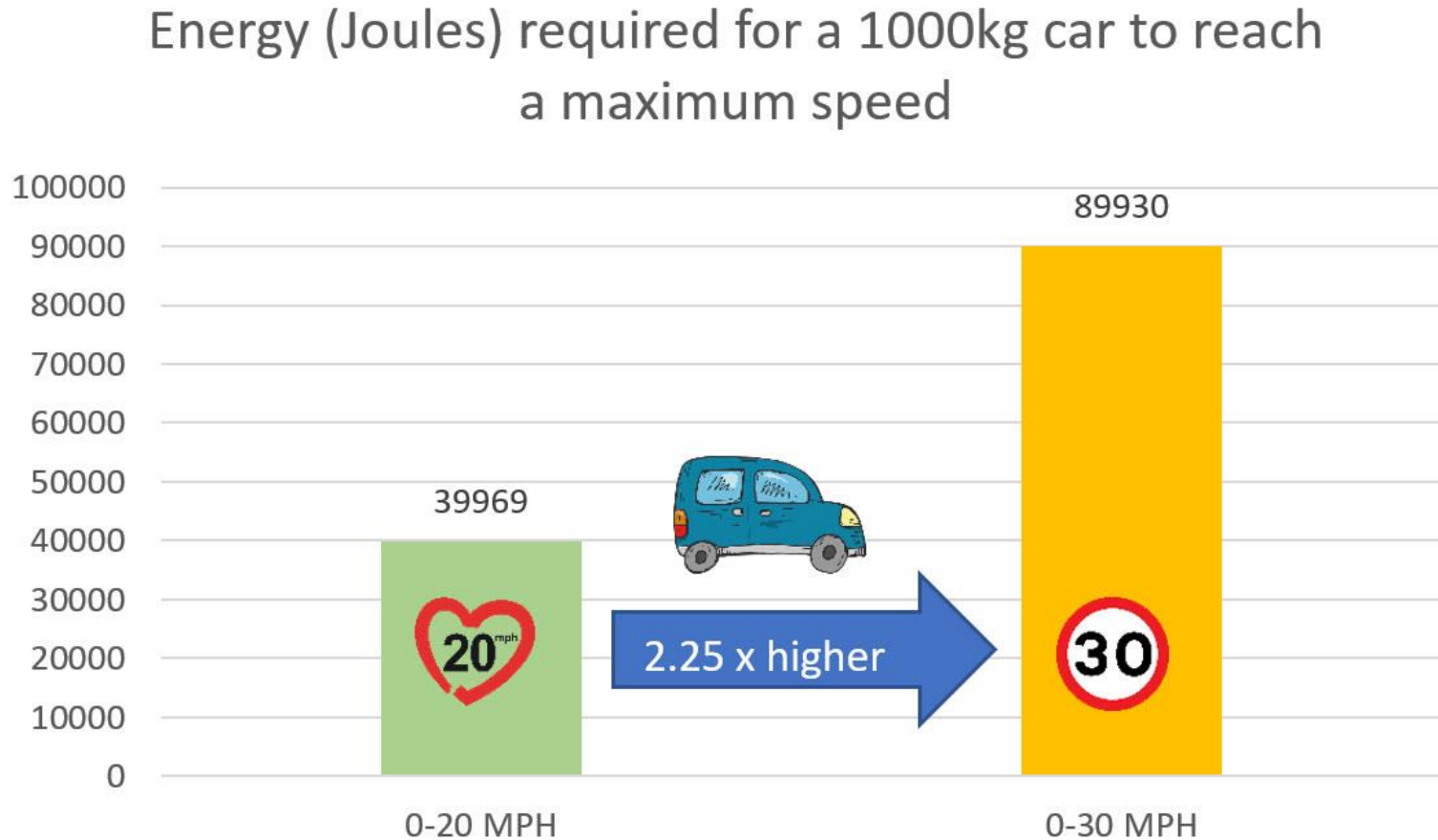
Mean speed (mph)	N	Average	Std. Deviation
Survey 3	23	24.64	2.20
Survey 4	23	24.33	2.12

- Mean speeds at sites **without** electronic signs

Mean speed (mph)	N	Average	Std. Deviation
Survey 3	46	24.04	2.35
Survey 4	46	24.80	2.77

- Marginal **speed reductions** (<0.5 mph) at sites **with electronic signs**
- Marginal **speed increases** (<0.8 mph) at sites **without electronic signs**
- No observable impact of other interventions (such as buffer zones and speed limit repeater signs) on vehicle speeds

20mph and energy required



Source: [20's Plenty for Us](#)

Overall findings

- Significant **speed reductions** after the introduction of the 20mph speed limit
- Shift from mean speeds **greater than 25 mph “before”** to **above 22mph “after”**
 - Proportions of locations with mean speeds **lower than 25mph doubled** post-intervention.
- Speed reductions seem to be maintained over time
 - Speeds are reduced by 3 mph (approx.) even 8 months after the beginning of the trial
- The extent of reductions is observed to be **greater** in locations having higher mean speeds “before”
- Traffic fluctuations are found to have a small impact on speed changes
- Other safety interventions were found to have mixed effects on vehicle speeds

What does this mean?

- Science-base has previously reported internationally of a 1mph average speed reduction resulting in a 5% casualty reduction
- From this study we report circa 3 mph mean speed reduction
- Significant findings which help fill the ‘rural settlements’ evidence gap on 20mph speed limits
- Few studies with funding to explore longer term behaviour change although these suggest a lag between intervention and behaviour change starting 1 year + after intervention
- SNP/Green Party Agreement means more such 20mph schemes likely and can learn from SBC