

Effect of 'fake' police officers on vehicle speeds on residential streets in Kirkton, Dundee

Stephen Cragg, former Secretary of Kirkton Community and Safety Partnership

1 Introduction

Kirkton is a community in the north of Dundee, part of a wider area known as Strathmartine. The Kirkton Community and Safety Partnership (KCSP) is similar to a Community Council and in Dundee is known as a Neighbourhood Representative Structure.

The local community police team work with the KCSP to help improve the community for all the residents. A common complaint to Police Scotland, local Councillors and the Partnership was speeding drivers on residential streets. Our local community Sergeant had read reports of an initiative in Fife where a local officer got a life-size 'cardboard' cut-out of himself holding a speed gun made which could be 'popped up' at the side of the road with the intention of reducing speeding.

It was agreed to try this out in Strathmartine with the KCSP supporting Police Scotland in securing funding for the purchase of the 'cardboard' cut-out using funding from the Dundee Partnership Community Regeneration Fund. In reality, the 'cardboard' cut-out is high density rigid plastic with fastenings to allow the image to be chained to street furniture. The name of the officer whose image was used is PC James (Jim) Graham, which had led the equipment to be dubbed 'Pop-Up Jim'.

2 Identification of Problem

2.1 Concerns about Vehicle Speeds

The Kirkton Community and Safety Partnership (KCSP) have monthly committee meetings. In addition to members, local councillors and representatives from police, community safety, etc. also attend.

The area is part of Police Scotland's Strathmartine Community team and part of the Strathmartine ward which has four councillors.

Police Scotland's Community Sergeant, Lesley Mann, reported to the partnership in Autumn 2017 that she was receiving regular complaints from residents about speeding traffic. Councillors also reported that they regularly received correspondence on the issue too.

At this stage, no evidence on actual speeds in the area was analysed.

3 Identification of Solution

Sgt Mann had read a story in the Daily Record (Figure 1) of an initiative by a Community Police Officer in Cowdenbeath. PC James (Jim) Graham was photographed holding a speedgun and a life-size replica of him was made using high density rigid plastic, although it is regularly reported as a 'cardboard cut-out'. The idea is that the police can pop-up the replica at speeding hotspots leading the replica to be dubbed as "Pop-Up Jim".



Figure 1: Extract from Daily Record

The partnership was asked by Sgt Mann to support a bid through Dundee City Council's Community Regeneration Fund to purchase two of these replicas at a cost of just under £500.

A pre-requisite of getting funding was to state the problem, outcome sought and indicator to be used to monitor the outcome.

These were set as:

- Problem: Car drivers exceeding the speed limit on residential streets in Kirkton
- Output: 2 life-size replica Police Officers holding speedguns
- Outcome sought: Reduced speeding in the area with improved community safety
- Indicator: Numbers of vehicles speeding

4 Evaluation – Site Selection

To understand the impact that using Pop-up Jim has on vehicle speeds (the indicator), the KCSP contacted Dundee City Council to ask if they had done any surveys of vehicle speeds to enable suitable sites to be selected for the evaluation of Pop-up Jim.

4.1 Historic Speed Surveys

Fortunately, Dundee City Council undertake regular speed surveys across the city. The data comes either from permanent Automatic Traffic Counters (ATC) or from ad-hoc speed surveys. The ad-hoc speed surveys are done using a remote [Black Cat Speed Detection Radar](#) (SDR) system.

A number of streets in Kirkton had been monitored over the previous few years (Table 1). The data was analysed to identify which streets had a speeding problem. This data is also available on Dundee City Council's [Open Data](#) site.

Table 1: Historic Speed Surveys in Kirkton

| Location | Date | Type |
|--|----------------|------|
| Strathmartine Road (Sidlaw Avenue) | January 2011 | SDR |
| Strathmartine Road (South of Brackens Road) | February 2011 | SDR |
| Baldovan Road (North of Loftus Road) | January 2012 | SDR |
| Gillburn Road (East of Derwent Ave) | August 2012 | SDR |
| Harestane Road (West of Whitburn Place) | September 2012 | SDR |
| Sherbrook Gardens | December 2013 | SDR |
| Craigmore Street | February 2015 | SDR |
| Mains Loan in Caird Park | February 2016 | SDR |
| Burn Street (East of Baldovan Road) | May 2016 | SDR |
| Burn Street (South of Harestane Road) | May 2016 | SDR |
| Harestane Road (West of Baldovan Road) | February 2017 | SDR |
| Harestane Road at Sidlaw View | February 2017 | SDR |
| Claverhouse Road (East of Caird Park) | April 2017 | ATC |
| Gillburn Road (St Pauls Academy) | April 2017 | SDR |
| Strathmartine Road (South of East School Rd) | May 2017 | ATC |
| Old Glamis Road (North of Kingsway) | September 2017 | ATC |

The data from SDR sites is available in 15 minute intervals and the data from ATC sites is available in hourly intervals by direction. Within each time period, the number of vehicles within speed bins in increments of 5mph is recorded (Figure 2).

| Site No. 0000524 | | | | | | | | | | | | | | | | | Lat/Lng. | 56.49 | -2.98 | | |
|-----------------------------------|--------------|-----------|-----------|-----------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|-------------|-------|-------|----------|-----------|
| Gillburn Road (St Pauls Acad) | | | | | | | | | | | | | | | | | | | | | |
| Speed Report (Speed Limit 30 Mph) | | | | | | | | | | | | | | | | | 06 May 2017 | | | Channel: | Westbound |
| | Total Volume | 85th %ile | Mean Ave. | Std. Dev. | Bin 1 <5MPH | Bin 2 5-<10 | Bin 3 10-<15 | Bin 4 15-<20 | Bin 5 20-<25 | Bin 6 25-<30 | Bin 7 30-<35 | Bin 8 35-<40 | Bin 9 40-<45 | Bin 10 45-<50 | Bin 11 50-<55 | Bin 12 55-<60 | Bin 13 =>60 | | | | |
| 08:00 | 13 | 34 | 33 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 08:15 | 12 | 37 | 33 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | | | |
| 08:30 | 19 | 37 | 32 | 6 | 0 | 0 | 0 | 1 | 1 | 4 | 8 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | | | |
| 08:45 | 21 | 37 | 33 | 5 | 0 | 0 | 0 | 0 | 0 | 6 | 11 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | | | |

Figure 2: Example of Speed Data

4.2 Analysis of Speed Data

Each site has approximately a week's worth of speed data available [for the SDR sites, this is approximately how long the battery lasts]. Initial analyses demonstrated that weekend data was generally different to weekday data, so only weekday data was included to maximise available data.

For each site, a short description of any characteristics of the road which may impact on vehicle speeds was written (Figure 3) along with a map of the location.

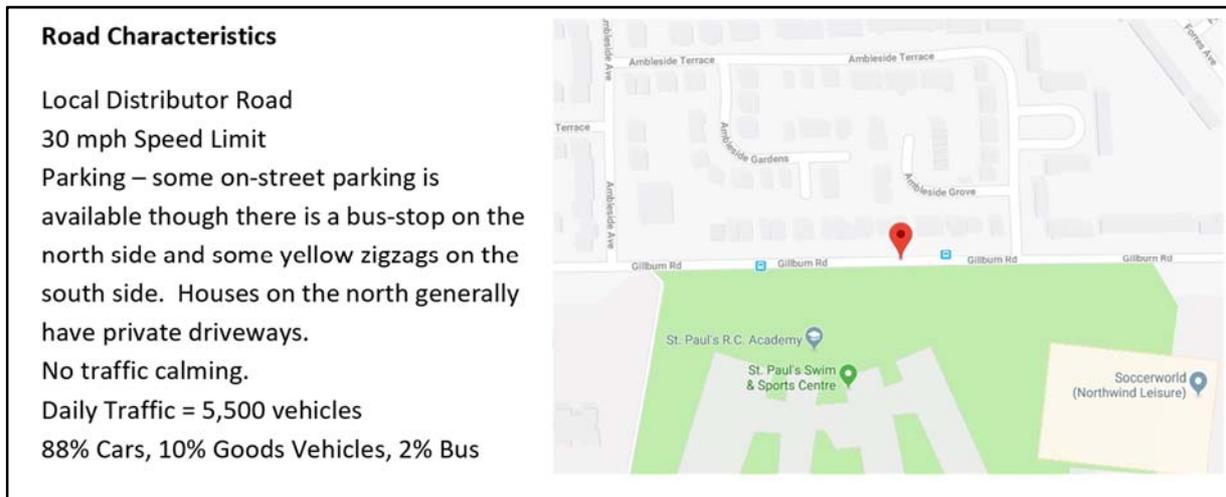


Figure 3: Site Description – Gillburn Road at St Pauls Academy

The weekday data was aggregated to provide the following results:

- Speed (mph) by time of day
- 85th percentile (mph) speed by time of day
- Approximate maximum speed (mph) by time of day.
- Frequency of excessive speed in increments of >Speed Limit + 5mph, +10 mph and +15mph by time of day.

Examples of the graphs generated by this analysis are shown in Figure 4 and Figure 5.

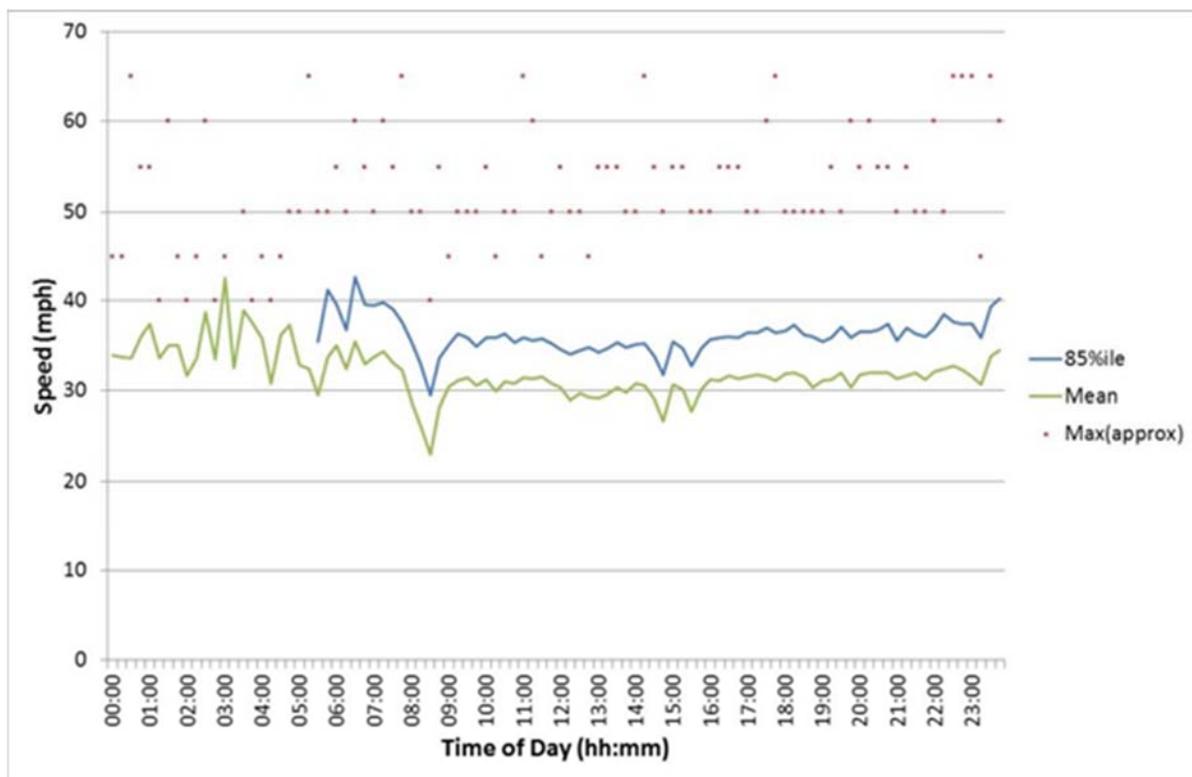


Figure 4: Speeds by Time of Day – Gillburn Road at St Pauls Academy – May 2017

Data in the early hours of the morning is generally highly variable due to the small numbers of vehicles on the road settling down after about 07:00.

In the example provided, there are noticeable dips in the average and 85th percentile speeds at around 08:30 and 15:30. This site is adjacent to a secondary school and is associated with the start and end of the school day.

Despite the presence of large numbers of school children on the footways along with the presence of a school crossing patrol, there appears to be little effect on the maximum speeds which were recorded through the day and night.

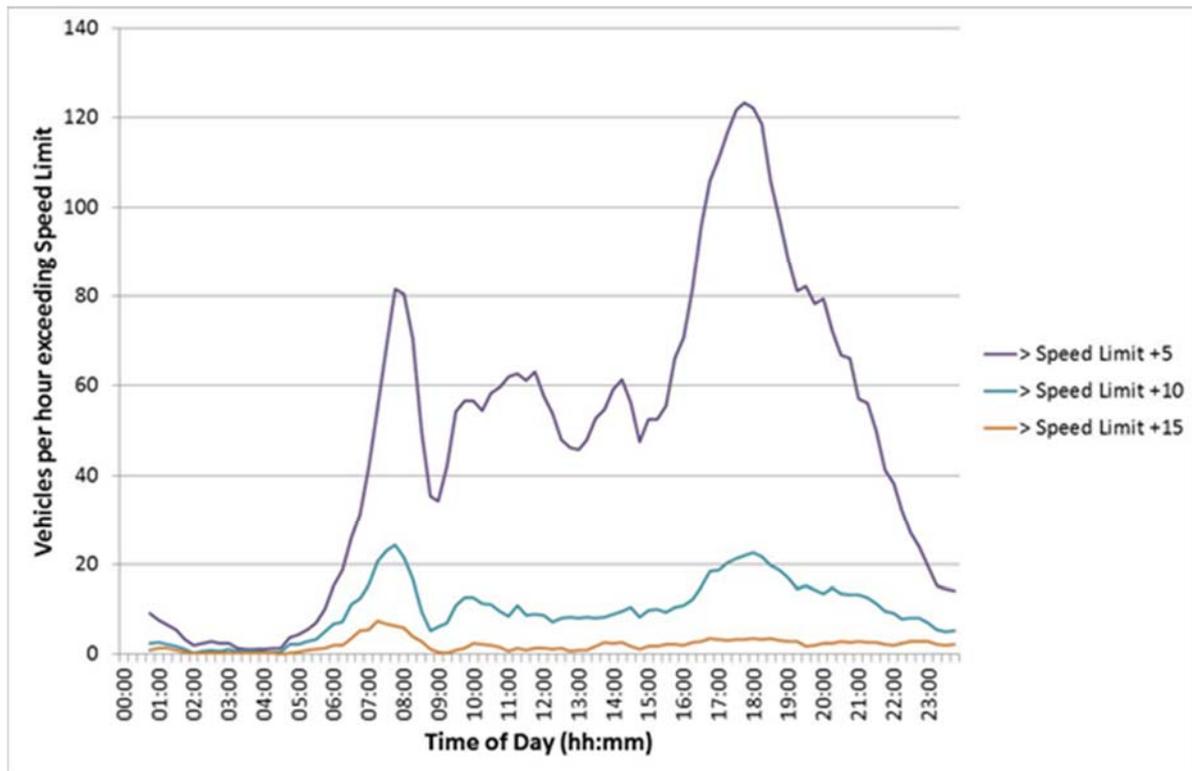


Figure 5: Frequency of Excessive Speed by Time of Day – Gillburn Road at St Pauls Academy – May 2017

Whilst Figure 4 shows that speeds in excess of the speed limit occur during the early hours of the morning, Figure 5 illustrates how low the traffic flows are at that time of the day. Whilst average and 85th percentile speeds are lower during the day and in particular when pupils are entering and leaving the schools, the number of vehicles exceeding the speed limit is much higher in these periods. In the PM peak hour, approximately one vehicle every 30 seconds is going past the school in excess of 35 mph and one vehicle every 3 minutes in excess of 40 mph.

4.3 Site Selection

From the initial analysis, four sites which have considerable numbers of vehicles exceeding the speed limit with recent data were selected to understand the impact of using Pop-up Jim on vehicle speeds. These sites ([Figure 6](#)) are:

- Gillburn Road at St Pauls Academy
- Harestane Road at Sidlaw View
- Old Glamis Road (North of Kingsway)
- Strathmartine Road (South of East School Road).



Figure 6: Locations of Sites for impact assessment

The sites on Harestane Road and Gillburn Road were also of particular interest as these have schools present. Harestane Road has Sidlaw View Primary School and Baldragon High School. Gillburn Road has St Paul's Academy.

5 Evaluation - Deployment of Pop-up Jim

Two Pop-Up Jim's were purchased in December 2017 and deployment commenced immediately. The local newspaper (Evening Telegraph) ran an article on 15 December 2017: "[‘Scarecrow’ cops to be placed on Dundee streets.](#)" Figure 7 shows Pop-Up Jim photographed next to a human officer and Pop-Up Jim out 'on patrol'



Figure 7: Pop-Up Jim and Human Officer / Pop-Up Jim 'on patrol'

Anecdotal evidence from locals is that when driving along the road it is not immediately obvious whether it is a real or a fake officer present at the side of the road.

The Pop-Up Jim is attached to appropriately sited street furniture such as a street-lamp using heavy duty chains and padlocks.

Whilst one of the Pop-up Jim's was stolen in [February 2018](#), it was fortunately returned largely undamaged albeit without the chains and padlocks. As they are deployed in urban areas, they are subject to some light levels of vandalism largely involving spitting, throwing food or drawing graffiti on them but after 18 months of intensive use, the wear and tear is mainly to the attachments for chaining the unit to street furniture.

5.1 Associated Enforcement

During the period of initial deployment, the speedguns available to the community Police Scotland team were out of action. As such, the only action being undertaken to tackle speeding on local roads in the area was the deployment of Pop-Up Jim.

5.2 Impact on Vehicle Speeds

Working with Dundee City Council's Transportation team and Police Scotland, it was agreed to co-ordinate the deployment of Pop-Up Jim with speed data collection using a combination of Speed Detection Radar (SDR) and Automatic Traffic Counters (ATC). At the time, the ATC on Strathmartine Road was out of action so SDR was used.

The 'After' surveys were all undertaken in mid April 2018. All days were typical weekdays. 'Pop-Up Jim' was deployed at the four sites on the following dates:

- 17th April 2018 - Old Glamis Road (North of the Kingsway)
- 19th April 2018 - Gillburn Road at St Pauls
- 20th April 2018 - Strathmartine Road near East School Road
- 23rd April 2018 - Harestane Road at Sidlaw View

Unfortunately the side of the road, and thus the direction that 'Pop-Up Jim' was facing was not recorded. Neither was the time of day that Pop-Up Jim was deployed and then removed from site. At the time this work was on-going I was busy and didn't notice this omission in information.

Whilst this is indeed an unfortunate omission, it does provide an opportunity to see if the data tells me the answer! From discussions in general with Police Scotland, Pop-Up Jim is generally put out and brought in by the day shift and is likely to be deployed for a number of hours between approximately 07:30 and 16:30.

The following data presents the percentage of vehicles speeding by more than 5 mph greater than the speed limit on a number of weekdays. The day of deployment of Pop-Up Jim is shown as a thicker line.

5.3 Old Glamis Road (North of Kingsway)

Figure 8 presents the percentage of vehicles exceeding the speed limit by more than 5 mph for a number of weekdays in April 2018 on Old Glamis Road (North of Kingsway) heading Southbound. Figure 9 shows the results for vehicles heading Northbound. Pop-Up Jim was deployed on Tuesday 17 April 2018. This data is represented by the thick orange line.

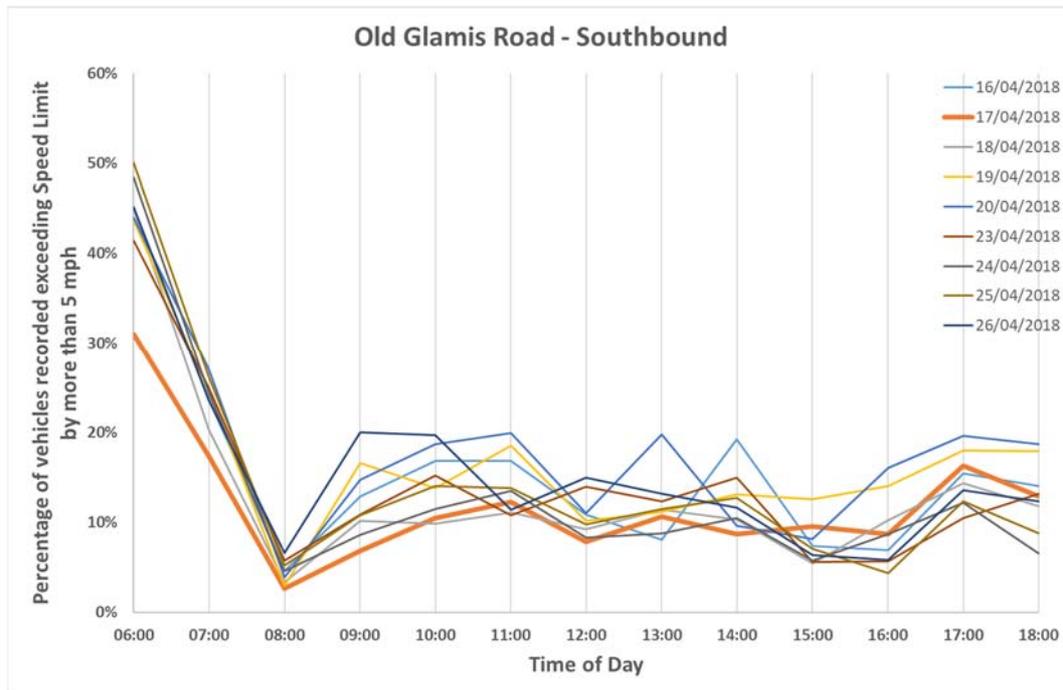


Figure 8: Old Glamis Road (North of Kingsway) Southbound

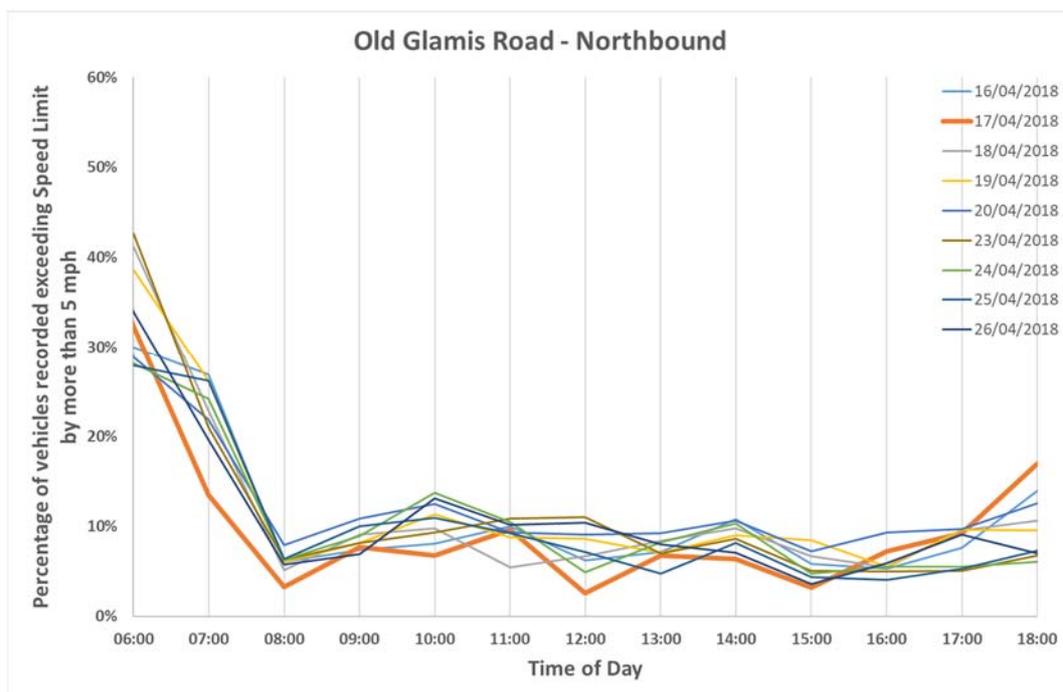


Figure 9: Old Glamis Road (North of Kingsway) Northbound

Both directions show the lowest or near lowest percentage of vehicles exceeding the speed limit by more than 5 mph on the days that Pop-Up Jim was deployed from 07:00 to 14:00. Whilst the times seem sensible, is it plausible that Pop-Up Jim would be equally effective in both directions?

5.4 Gillburn Road

Figure 10 presents the percentage of vehicles exceeding the speed limit by more than 5 mph for a number of weekdays in April 2018 on Gillburn Road heading Westbound. Figure 11 shows the results

for vehicles heading Eastbound. Pop-Up Jim was deployed on Thursday 19 April 2018. This data is represented by the thick yellow line.

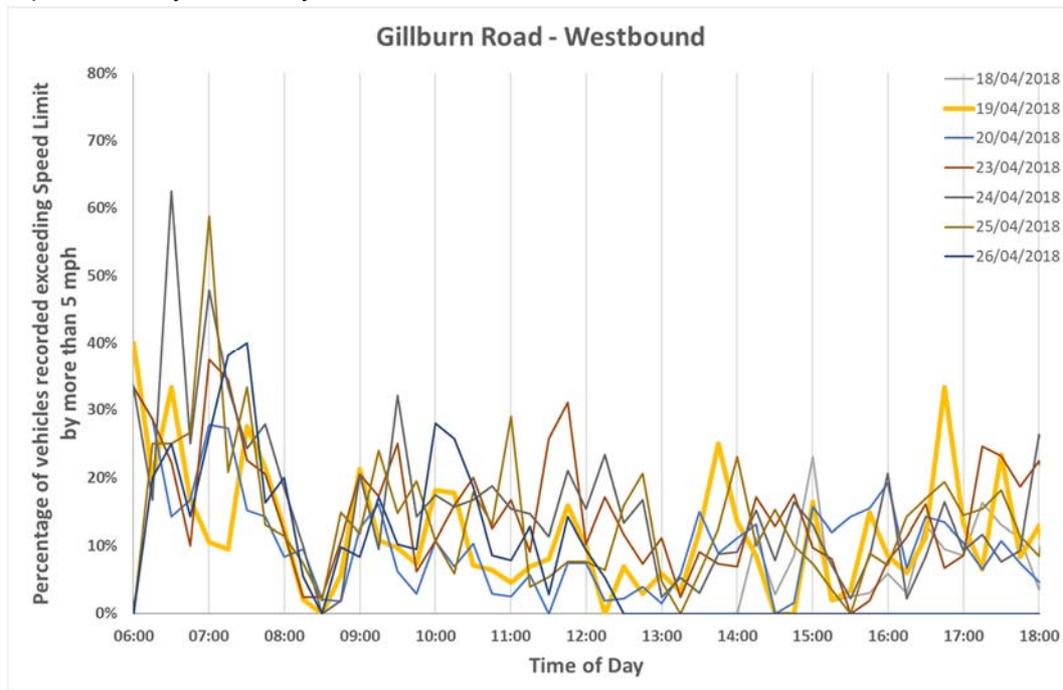


Figure 10: Gillburn Road Westbound

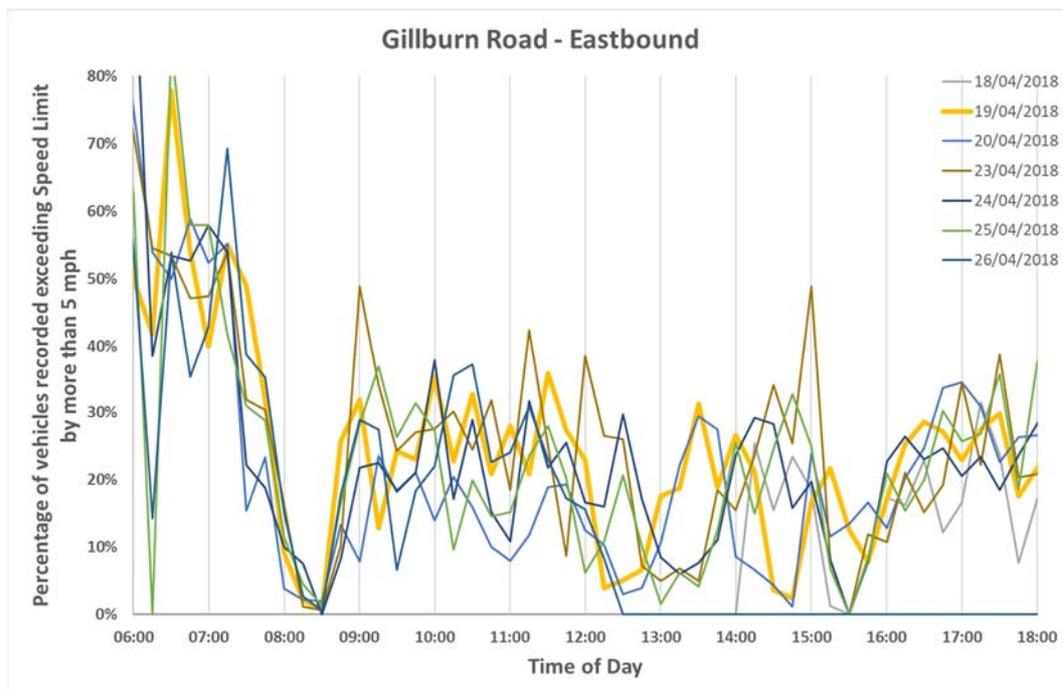


Figure 11: Gillburn Road Eastbound

It is difficult to see any difference between the days with Pop-Up Jim in place compared to the other weekdays.

5.5 Strathmartine Road

Figure 12 presents the percentage of vehicles exceeding the speed limit by more than 5 mph for a number of weekdays in April 2018 on Strathmartine Road heading Southbound. Figure 13 shows the

results for vehicles heading Northbound. Pop-Up Jim was deployed on Friday 20 April 2018. This data is represented by the thick blue line.

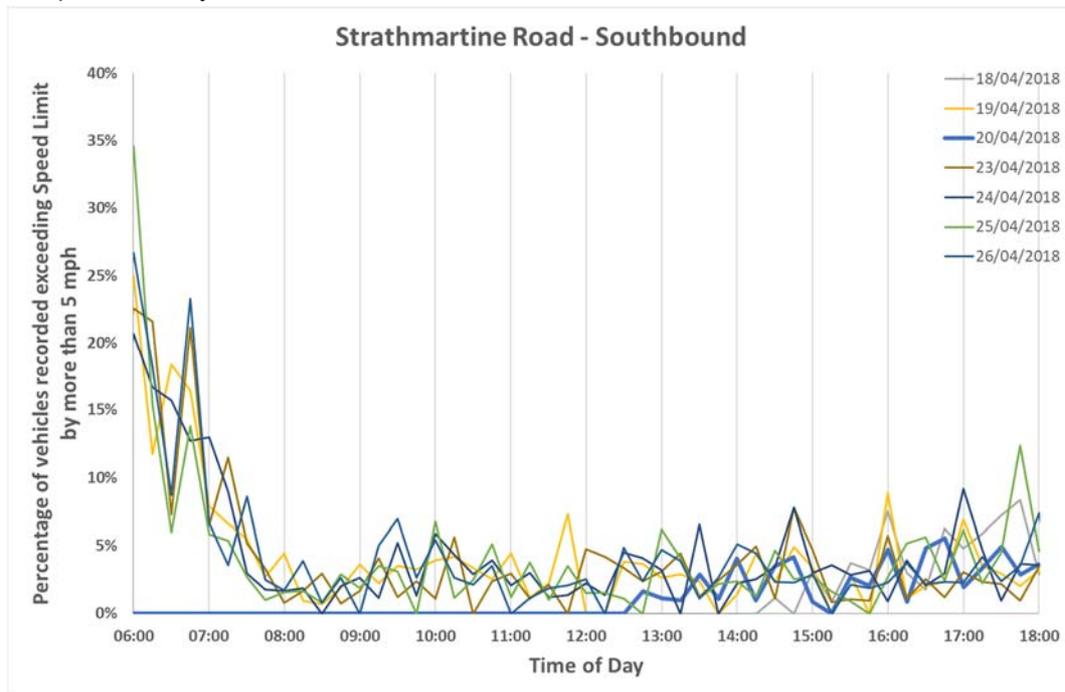


Figure 12: Strathmartine Road Southbound

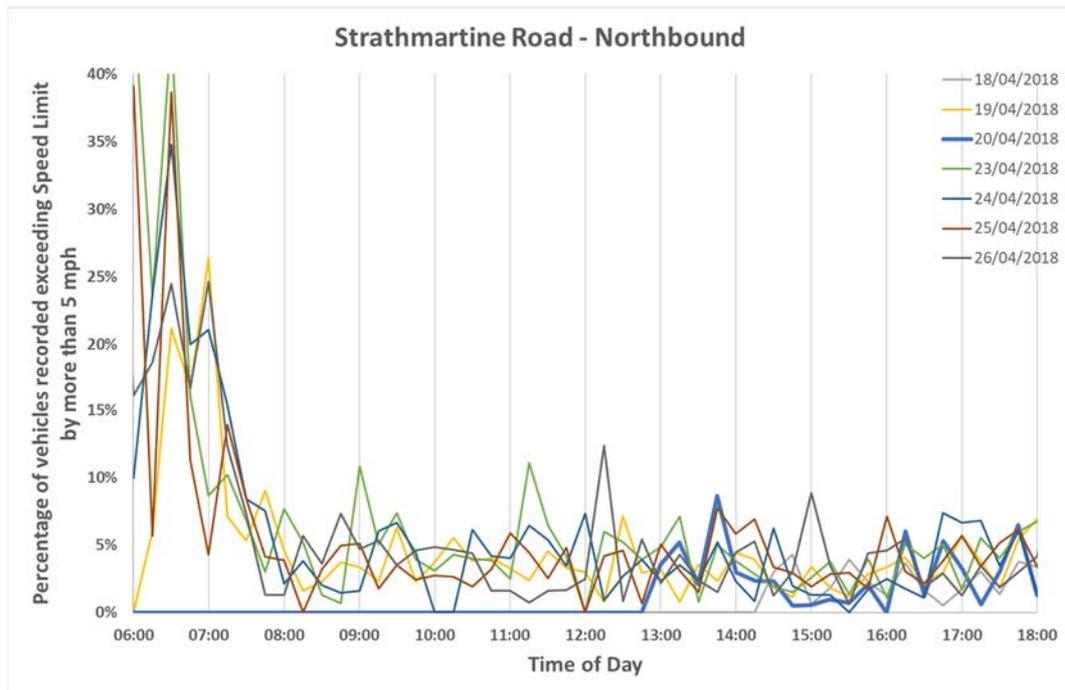


Figure 13: Strathmartine Road Northbound

Unfortunately on the day of deployment the speed detector was malfunctioning till 12:30. If Pop-Up Jim was still deployed after 12:30, once again it is difficult to see any marked difference in speeding behaviour compared to other days.

5.6 Harestane Road

Figure 14 presents the percentage of vehicles exceeding the speed limit by more than 5 mph for a number of weekdays in April 2018 on Harestane Road heading Westbound. Figure 15 shows the results for vehicles heading Eastbound. Pop-Up Jim was deployed on Monday 23 April 2018. This data is represented by the thick green line.

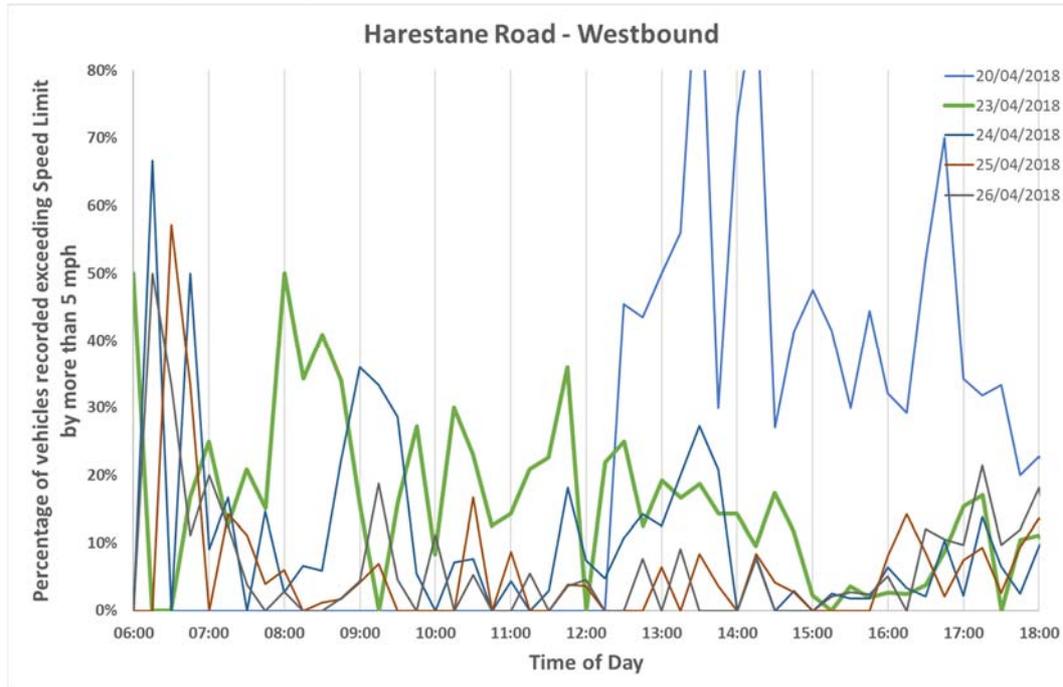


Figure 14: Harestane Road Westbound

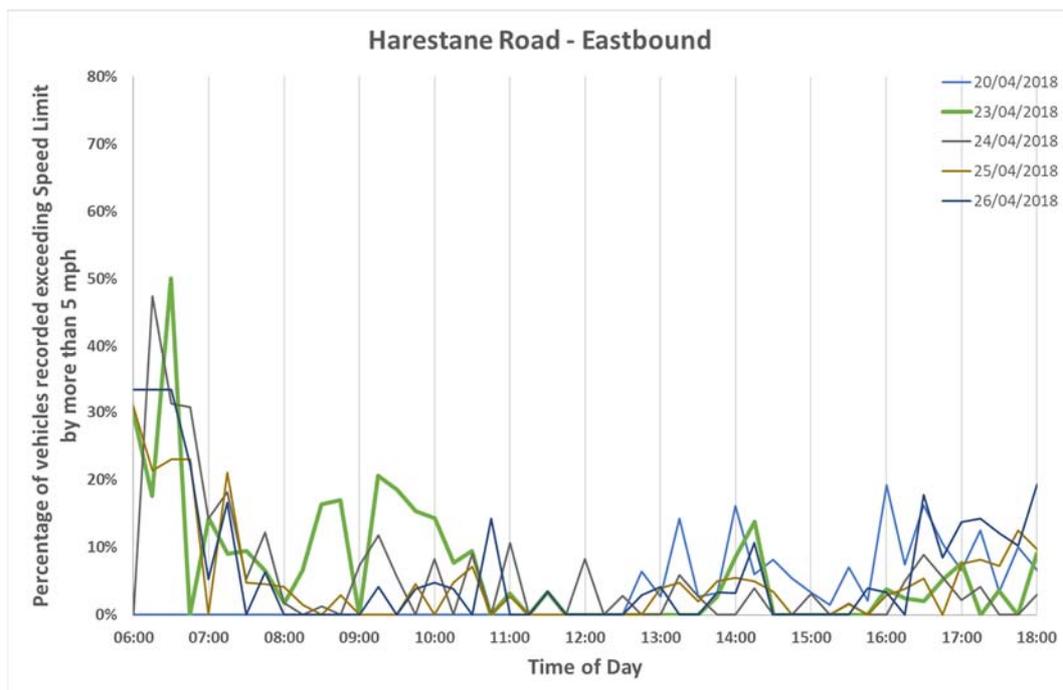


Figure 15: Harestane Road Eastbound

The 20th April westbound looks odd and the raw data does not look reliable. It is not considered reliable to include this site in the comparison.

5.7 Other potential effects

A potential other effect is that Pop-Up Jim has a greater effect on the proportion of vehicles exceeding the speed limit by a much higher speeds. The results for that are not presented here for brevity, but the data for higher speeds is even noisier.

Maybe Pop-Up Jim didn't have much effect on the day of deployment as drivers saw 'him' too late, but might make them alter their behaviour for subsequent days. If this does happen, it's not possible to discern with the data available.

What about 'year on year'? Maybe Pop-Up Jim doesn't have a specific day effect, but 'his' deployment just generally reduces traffic speeds across the area. Again, with the limited data available, it wasn't possible to see any such effect.

5.8 Public complaints about speeding

Going back to the genesis of this study and as noted in section 2.1, it was prompted by numerous complaints by the public to Police Scotland and local Councillors about vehicle speeding in the area. What effect did the deployment of Pop-Up Jim have on complaints?

The following are responses I received from three of the four local Councillors covering the Kirkton area in the Strathmartine Ward, Dundee and from Sergeant Lesley Mann, Strathmartine and Coldside Community, Police Scotland.

Cllr Kevin Keenan: "I think that the "Pop up Jim" has made a difference as I have had conversations with drivers who were a bit concerned that they had been caught speeding.

I do feel that it hasn't resolved the problem completely, however it has had some level of success."

Cllr Stewart Hunter: "As councillors, certainly in my experience, we tend to hear from those who have complaints rather than those who want to speak positively about anything that is happening. So generally I tend to hear from the vocal minority and often they are not representative of the views of the majority in the area. That doesn't mean of course that they don't have valid viewpoints.

So with that being the context I have had feedback from a couple of residents that has been negative but that is only because they want police in their street all the time with speed cameras which is not practical. The reality is that those that are happy with Pop Up Jim are not generally going to contact me to tell me that.

I can say that the number of people complaining about speeding has declined which maybe illustrates my point about people who are happy do not generally contact their councillor."

Cllr John Alexander: "Speaking personally and looking through my constituent inbox, I have had absolutely zero representations made to me since the introduction of the pop-up jims. Prior to their introduction, I did have some constituents who regularly contacted me regarding speeding issues and others on more of an ad hoc basis. If that's any measure of success then I'd say that they've worked fantastically well.

I can also say that on a personal level, they've also worked on me as I'm very conscious of my speed in the areas in which they were deployed."

Sgt Lesley Mann: "Before Pop-up Jim I would get at least two emails a week from residents complaining about speeding. Now it's maybe one a month at most."

5.9 Conclusion

Given how 'noisy' the data is, it is not possible to make a definitive conclusion on whether or not Pop-up Jim has a positive influence on the proportion of vehicles speeding whilst deployed. This is not to say that there is no effect, just that it's not large enough to positively identify.

Notwithstanding the inability to detect a change in vehicle speeds, the deployment of Pop-up Jim did have a positive effect in the community on the numbers of complaints about speeding submitted to Police Scotland and the Councillors representing the ward.

However, as noted in §5.1, no actual speed limit enforcement was taking place in Kirkton. It was postulated that if drivers were not seeing actual enforcement and only Pop-up Jim deployed that they felt certain enough that they did not have to alter their behaviour.

It was agreed with Police Scotland to repeat the study but this time combining actual enforcement with Pop-up Jim.

6 Evaluation – Speed Limit Enforcement combined with Pop-up Jim

Working with Police Scotland, a programme of speed limit enforcement by officers with speed guns followed by deployment of Pop-up Jim the following day was developed and operated in April and May 2019.

It must be borne in mind that officers may be redeployed at short notice to deal with other incidents.

6.1 Impact on Vehicle Speeds

Manual speed limit enforcement was undertaken at the four sites on the following dates, directions and times:

- 14th May 2019 - Old Glamis Road (North of the Kingsway) – Southbound 09:30 to 12:15
- 9th April 2019 - Gillburn Road at St Pauls – Eastbound 09:45 to 10:45 and 14:30 to 15:30
- 24th March 2019 - Strathmartine Road near East School Road – Southbound 09:30 to 10:30, 12:15 to 13:15 and 14:15 to 15:15
- 18th April 2019 - Harestane Road at Sidlaw View – Eastbound 10:45 to 11:30

Pop-up Jim was deployed at the four sites on the following dates, directions and times:

- 15th May 2019 - Old Glamis Road (North of the Kingsway) – Southbound 09:30 to 14:30
- 10th April 2019 - Gillburn Road at St Pauls – Eastbound 10:45 to 15:15
- 25th March 2019 - Strathmartine Road near East School Road – Southbound 09:00 to 14:30
- 19th April 2019 - Harestane Road at Sidlaw View – Eastbound 07:30 to 15:00

The following data presents the percentage of vehicles speeding by more than 5 mph greater than the speed limit on a number of weekdays except Strathmartine Road which was done on a weekend. The day of either actual enforcement or deployment of Jim is detailed in each section.

6.2 Old Glamis Road (North of Kingsway) Southbound

Figure 16 presents the percentage of vehicles exceeding the speed limit by more than 5 mph for a number of weekdays in mid May 2019 heading south on Old Glamis Road.

14th May when human enforcement of the speed limit was deployed is shown with a thick brown line. The following day, 15th May, when Pop-up Jim was deployed is shown with a thick blue line.

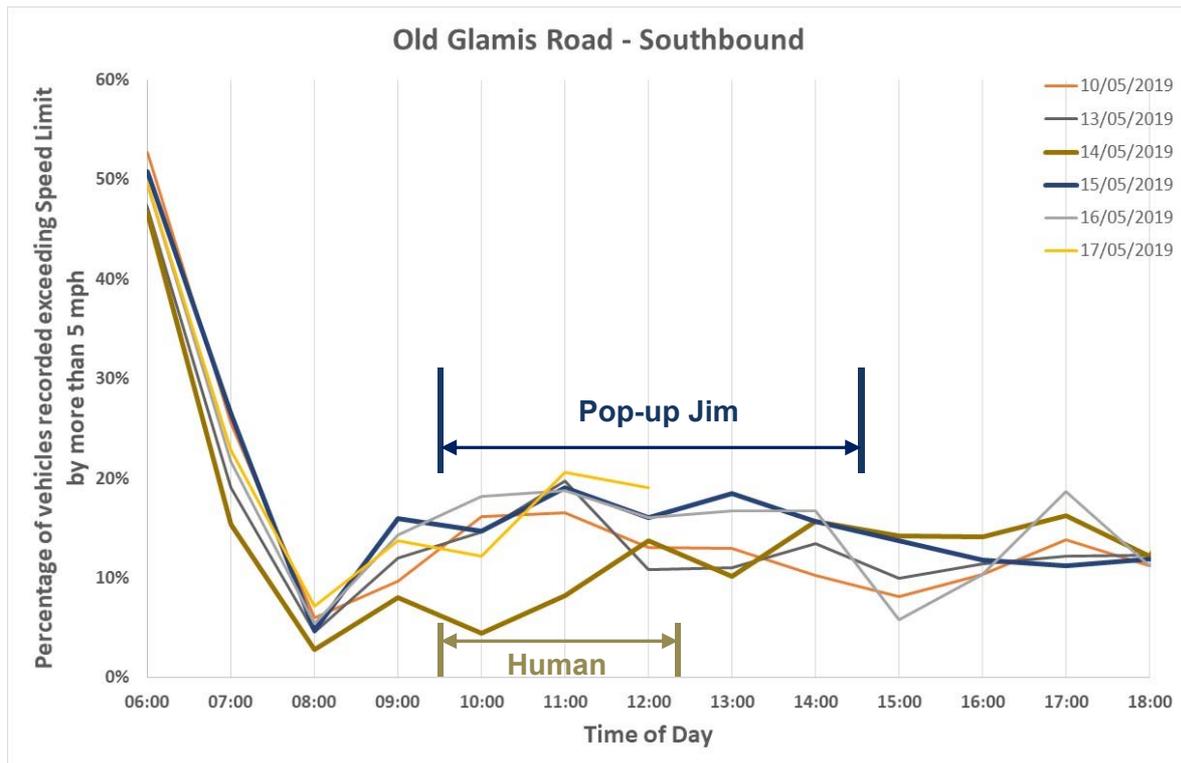


Figure 16: Old Glamis Road Southbound

As presented in the figure, it appears that during the last 15 minutes of human enforcement on the 14th May there were many vehicles speeding. It may be that during these 15 minutes there were very few vehicles speeding but many in the following 45 minutes.

Notwithstanding the limitations of the data, it would appear that human enforcement of the speed limit has a significant effect on vehicle speeds. However, it does not appear that Pop-up Jim has the same effect.

6.3 Gillburn Road Eastbound

Figure 16 presents the percentage of vehicles exceeding the speed limit by more than 5 mph for a number of weekdays in early April 2019 heading east on Gillburn Road.

8th May when human enforcement of the speed limit was deployed is shown with a thick brown line. The following day, 15th May, when Pop-up Jim was deployed is shown with a thick blue line.

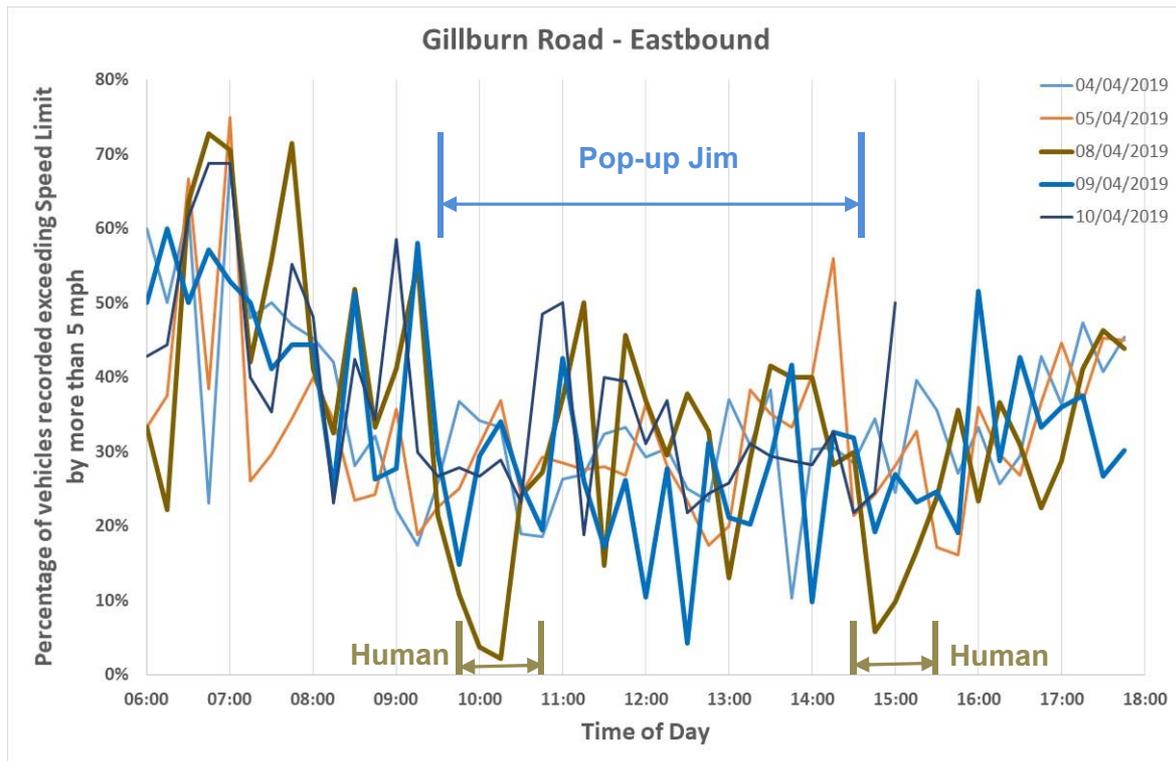


Figure 17: Gillburn Road Eastbound

As with Old Glamis Road there is a notable drop in the percentage of drivers exceeding the speed limit whilst human enforcement is taking place. On the following day when Pop-up Jim was deployed it is difficult to discern any difference compared to a normal weekday.

6.4 Strathmartine Road Southbound

The original date that Strathmartine Road was due to be enforced could not happen so it was done on a different day. Unfortunately that day was a Saturday with Pop-up Jim put out on the Sunday. The profile of traffic and speeding on the weekend is different to weekdays and Saturday is different to Sunday. As only a week of data was collected this means there isn't any other comparator data to analyse.

6.5 Harestane Road Eastbound

Harestane Road was originally selected because it had a history of speeding and it was known that the entrances for two new schools, Baldragon Academy and Sidlaw View Primary, would be on this road.

When the schools were constructed though, speed reducing measures were installed on the road comprising chicanes, raised table zebra crossings, and 20mph roundels on the road.

As a result of these interventions vehicle speeds are generally within the speed limit so it's not possible to discern the effect of either human enforcement or the use of Pop-up Jim.

7 Conclusion

It has not been possible with the data available to identify any effect of Pop-up Jim on vehicle speeds. This is in contrast to the use of human officers with speed guns which definitely does have an effect. It is not known why this happens.

Nonetheless, the deployment of Pop-up Jim in the community has reduced the number of complaints about speed in the area considerably.

Acknowledgements

I would like to thank the following organisations for their help and support in bringing Pop-Up Jim to Kirkton and for the photographs, deployment of Pop-Up Jim, undertaking speeding enforcement, and providing speed data.

Strathmartine and Coldside Community Team, Police Scotland

Dundee City Council and Councillors

Kirkton Community and Safety Partnership

Dundee Partnership – Community Regeneration Fund