

Paper

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Abstract

Introduction

This paper explores how demand on police time changed during COVID-19 pandemic and lockdown. We consider calls for service for a northwest england police force, using 5 years' pre-pandemic data to establish trends, and build a forecast against which to compare observed data. Specifically we look at how call volume, attendance, and response time changed (or did not change) for different call categories (examples), whether there was a change in how the calls came in (999, police non-emergency, etc) or how these changes differed between severity of call (grade). We further disaggregate calls coming from areas with areas with different socio-demographic characteristics to understand how COVID-19 affected different sections of society differently in terms of incidents which they deemed required police assistance.

The contribution of this paper is three fold. First, we contribute to the growing literature which aims to better understand demand on police time, and how the pandemic and associated lockdowns influenced this. Second, we disaggregate calls from areas with different socio-demographic characteristic, to understand not only how police demand changed, but the variations in this change between different groups in society. Finally, we showcase temporal forecasting as an appropriate methodological approach to compare what we might have expected to happen in 2020 in the absence of the pandemic, versus the observed data.

Demand on police time

It is important to study how police spend their time. Misconception about always focus on crime. Majority of time spent on non-crime calls e.g. mental health, missing persons, etc. What we know about demand on police time. 3 reasons why it's important to study.

The effect of COVID-19

Other studies which have explored how COVID-19 and associated lockdowns have affected demand on police time. Why this is important to understand. What is the gap: - big picture (all demand, not just crime), disaggregate by where the calls come from, and using forecasting to project what would have happened based on past data and compare observed data with this.

The current study

In this paper we explore how did demand on police time (as measured by calls to police) change over the pandemic? and address the gaps noted above. Specifically we look to answer the following research questions:

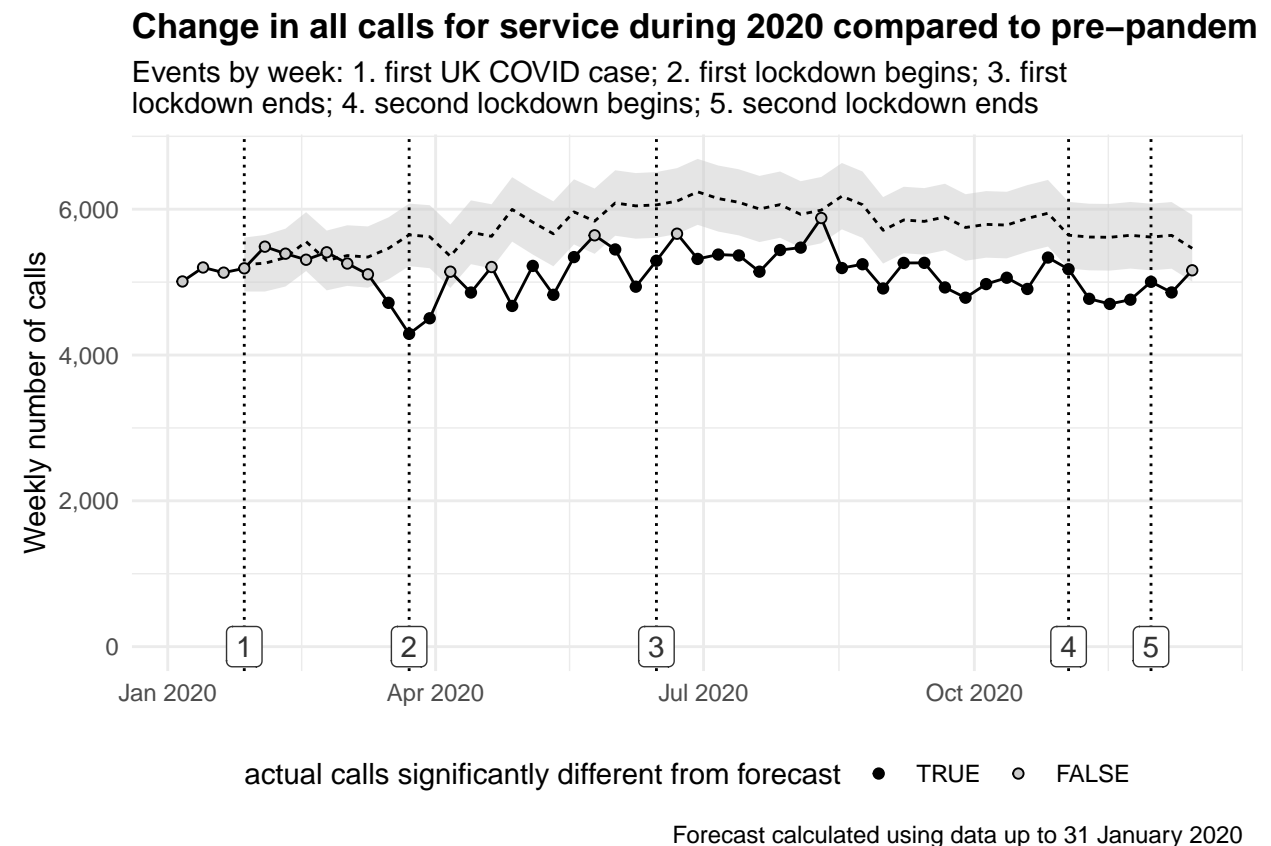
- For which call categories did observed data deviate from what would be predicted in the absence of the pandemic?

- Was there change in what proportion of calls were attended, and in the response time for the attended calls?
- Are there differences between calls coming from areas with different socio-demographic characteristics?

To answer these questions, we use data containing all calls for service made to northwest england police force between start date and end date. We build a forecast on 5 years of pre-pandemic data, and then compare this to what was observed during the pandemic. We followed up this analysis with qualitative interviews with call centre staff in the same force, to understand the experience of call handlers, and build a richer understanding of the context behind the calls data.

Results

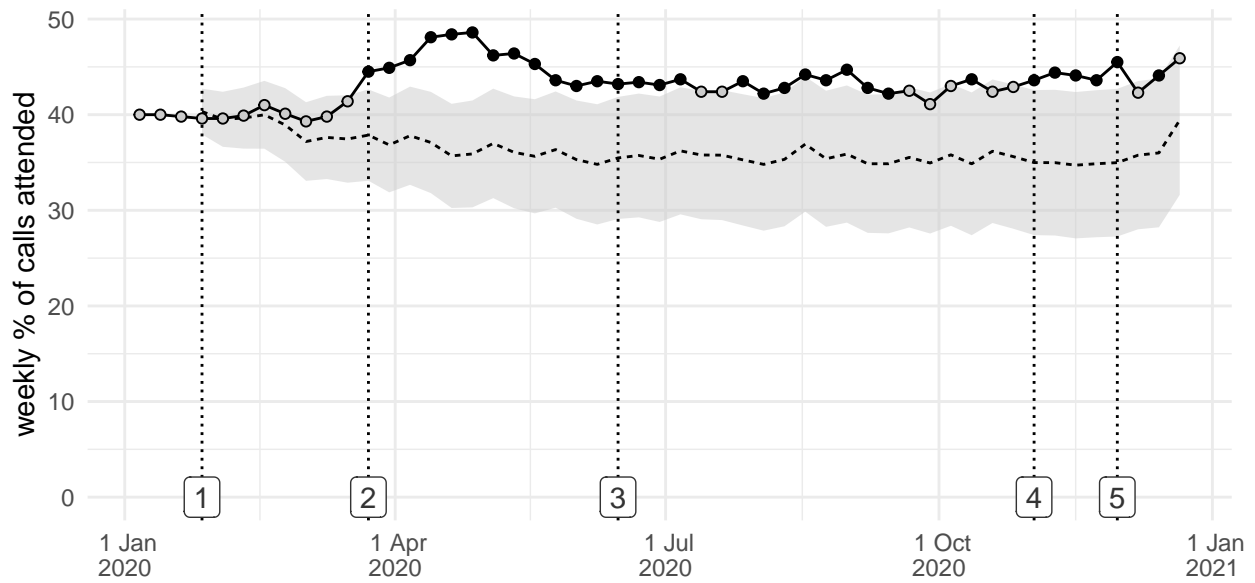
Overall volume of calls for service made in 2020 were below what we would expect based on past years' data.



A higher proportion of calls were attended, and the response time was also shorter than the forecasts.

Attendance rate for all calls for service during 2020 compared to pre-p

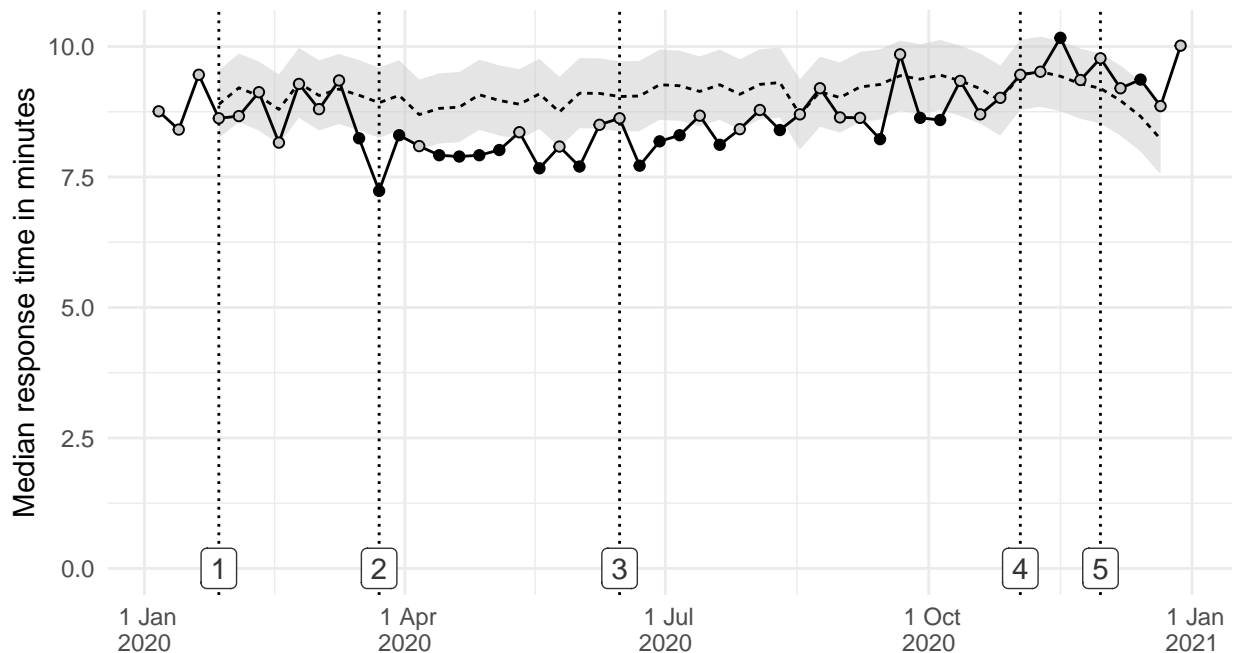
Events by week: 1. first UK COVID case; 2. first lockdown begins; 3. first lockdown ends; 4. second lockdown begins; 5. second lockdown ends



actual % significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Median response time for all calls for service during 2020 compared to pre-p



Response time significantly different from forecast • TRUE ○ FALSE

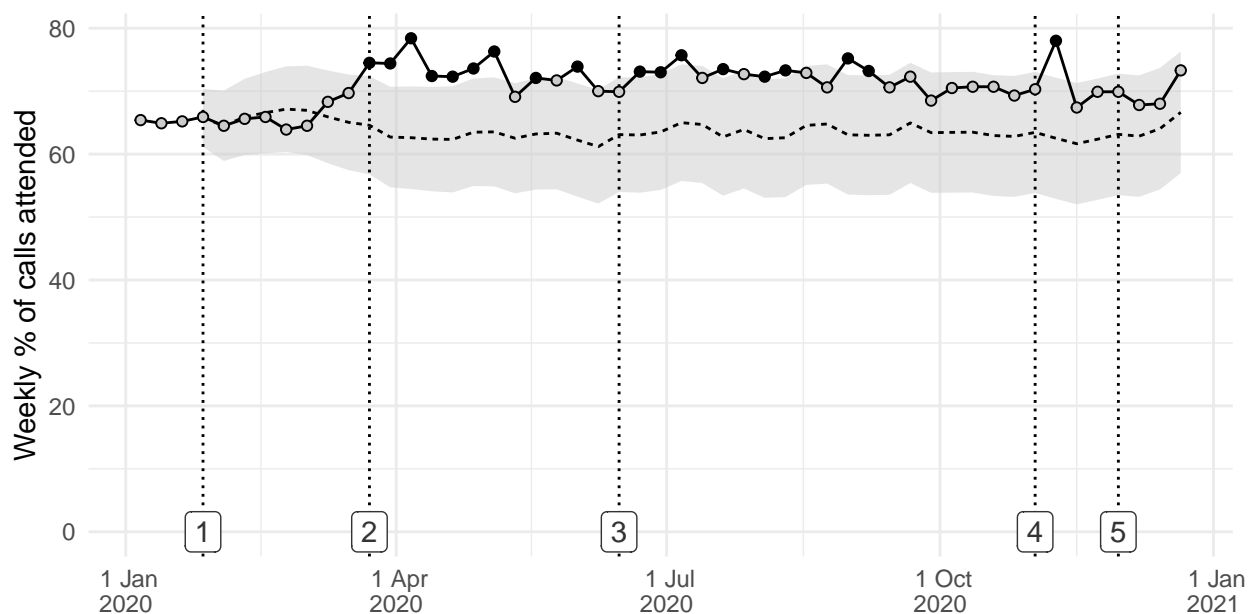
Forecast calculated using data up to 31 January 2020

We present key themes which emerged from our data.

Freed up resources

With fewer calls it is likely that officer workload changed (i.e. lowered). This means that we see police responding to a higher proportion of calls than we forecast with the absence of lockdown. Indeed, we tend to see this higher proportion of calls being attended for grade 1 (Emergency Response: Attendance within 15 minutes of call receipt), grade 2 (Priority Response: Attendance within 1 hour of call receipt), grade 3 calls (Routine Response: Attendance within 4 hours), and even in grade 4 calls (Scheduled Response: Attendance or other resolution within 48 hours) (grade 5 calls are not attended, these refer to Telephone Resolution: First-time telephone resolution of a call).

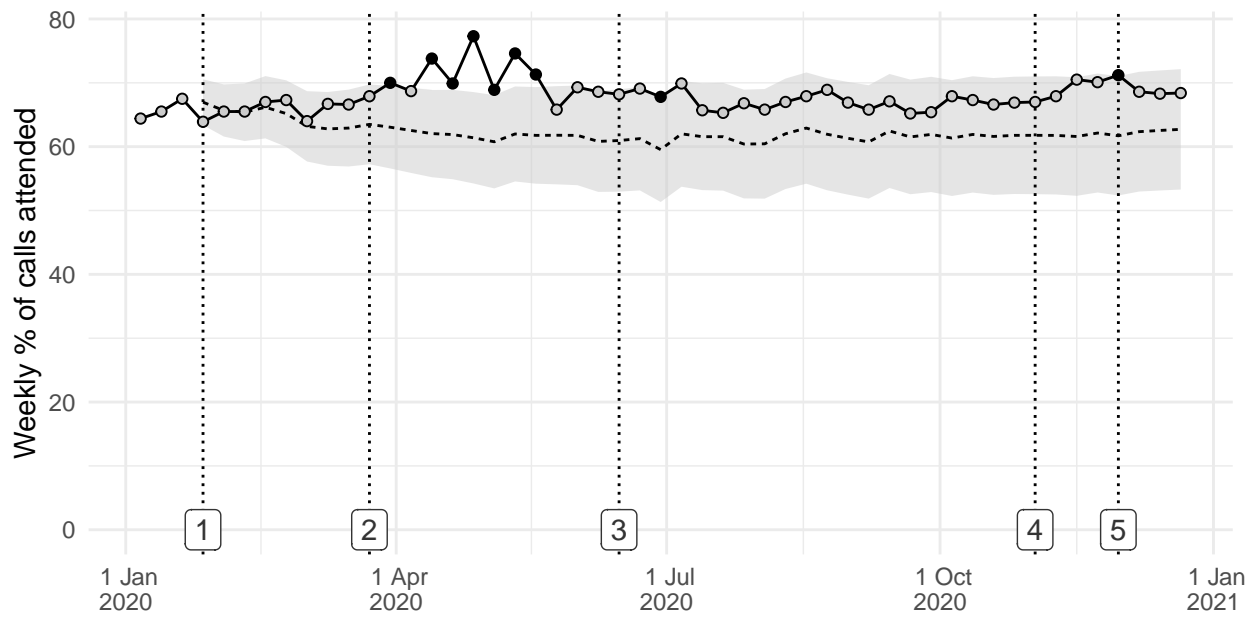
Grade 1



Actual observed value significantly different from forecast • TRUE ○ FALSE

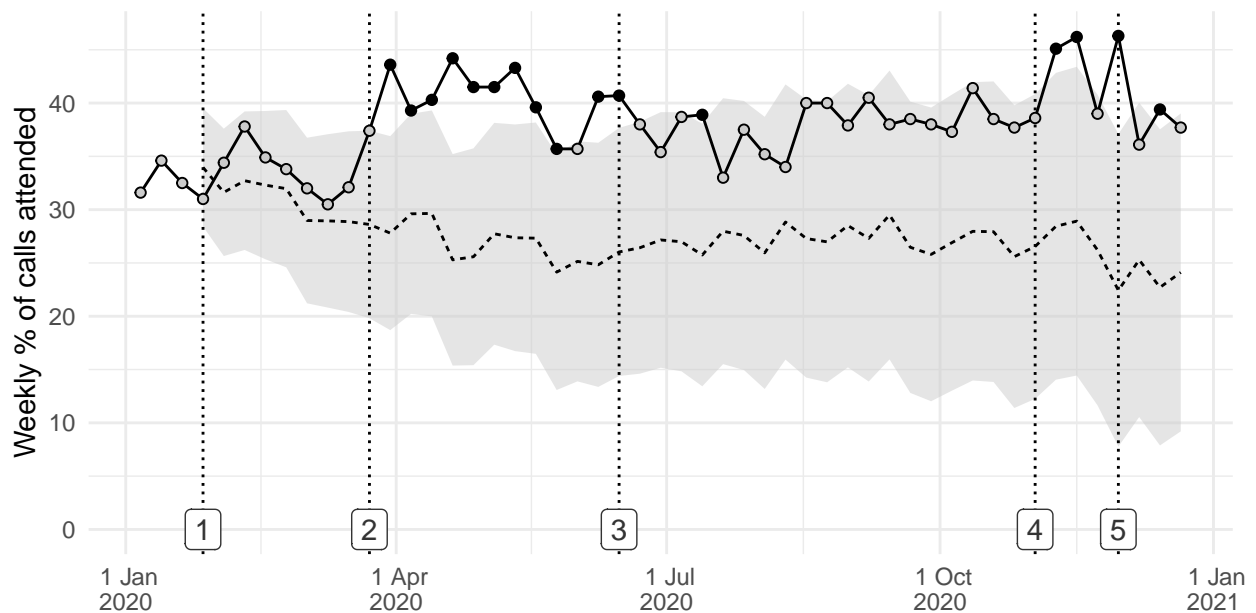
Forecast calculated using data up to 31 January 2020

Grade 2



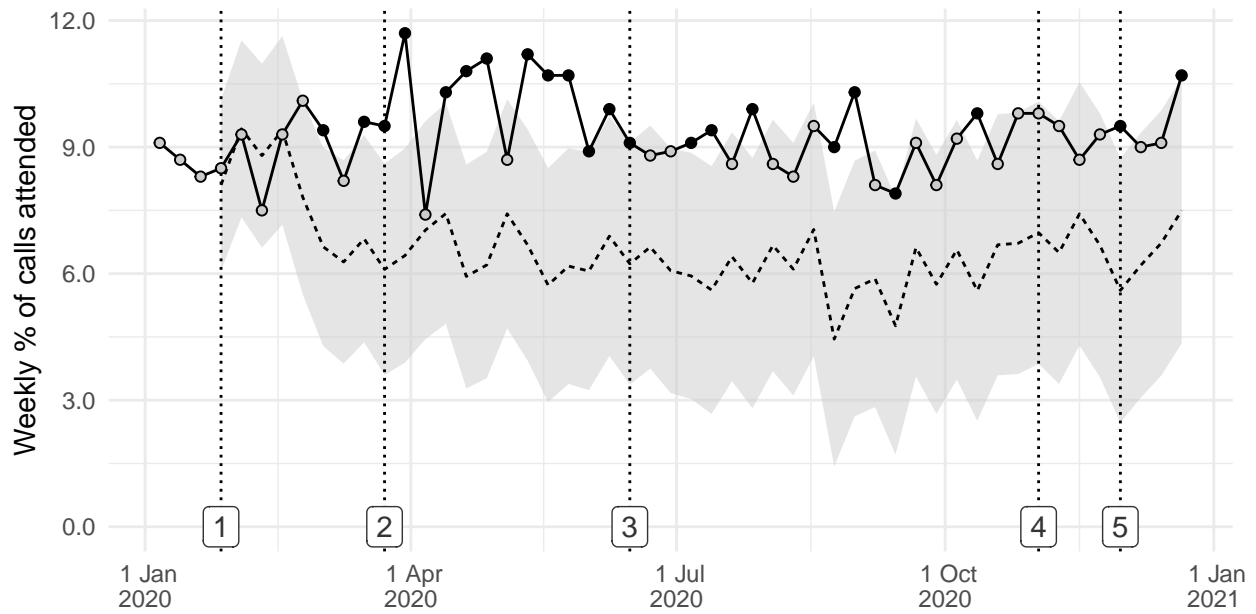
Forecast calculated using data up to 31 January 2020

Grade 3



Forecast calculated using data up to 31 January 2020

Grade 4

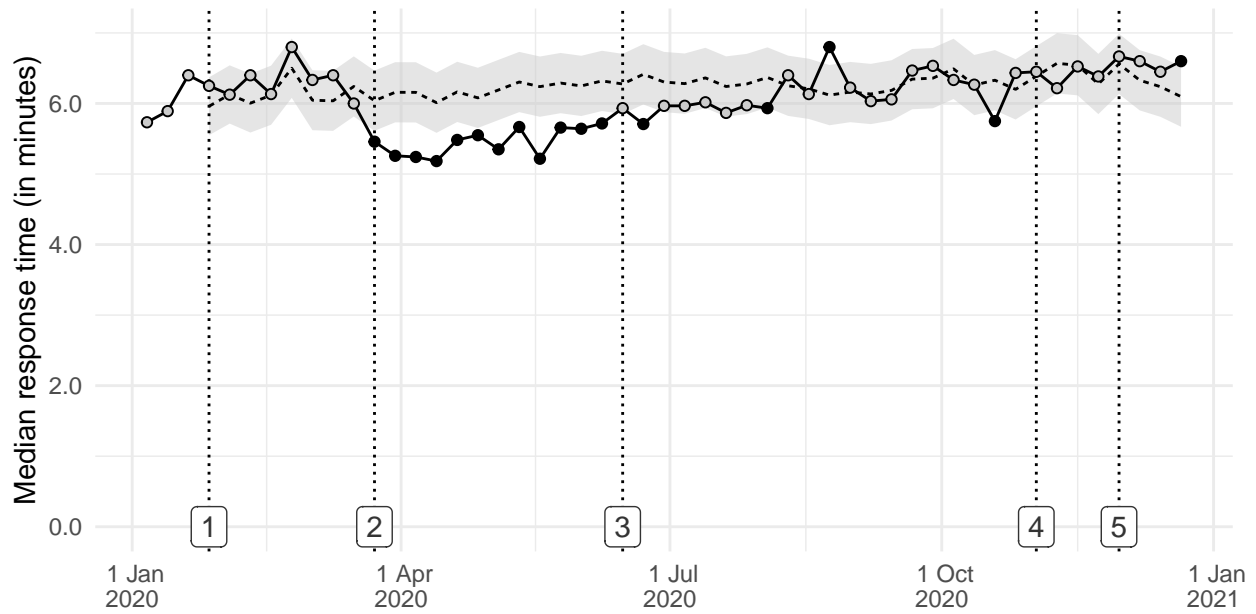


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

As well as being able to respond to more calls, 2020 also saw quicker response times for calls. Figure X shows median response times by grade. Response times decreased for grade 1, grade 2, and grade 3 calls, the most drastic decrease in the latter category. This suggests that the freed up resources allowed faster responding to routine response calls. There was no difference in response time to those grade 4 calls (these require attendance or other resolution within 48 hours) and grade 5 calls are not attended.

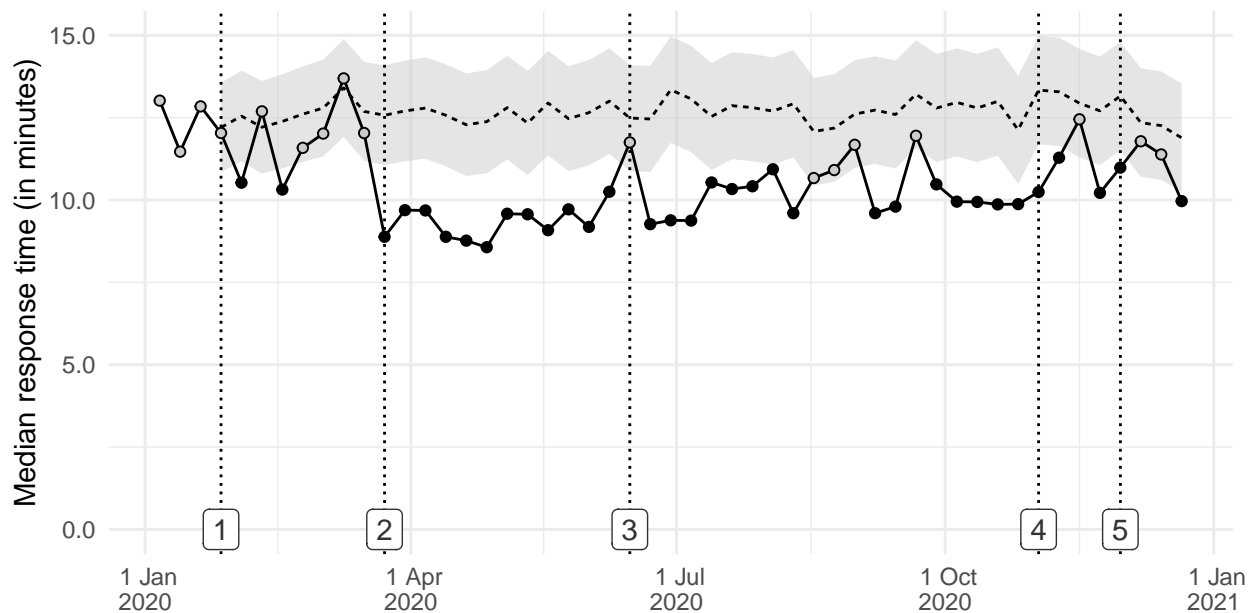
Grade 1



Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

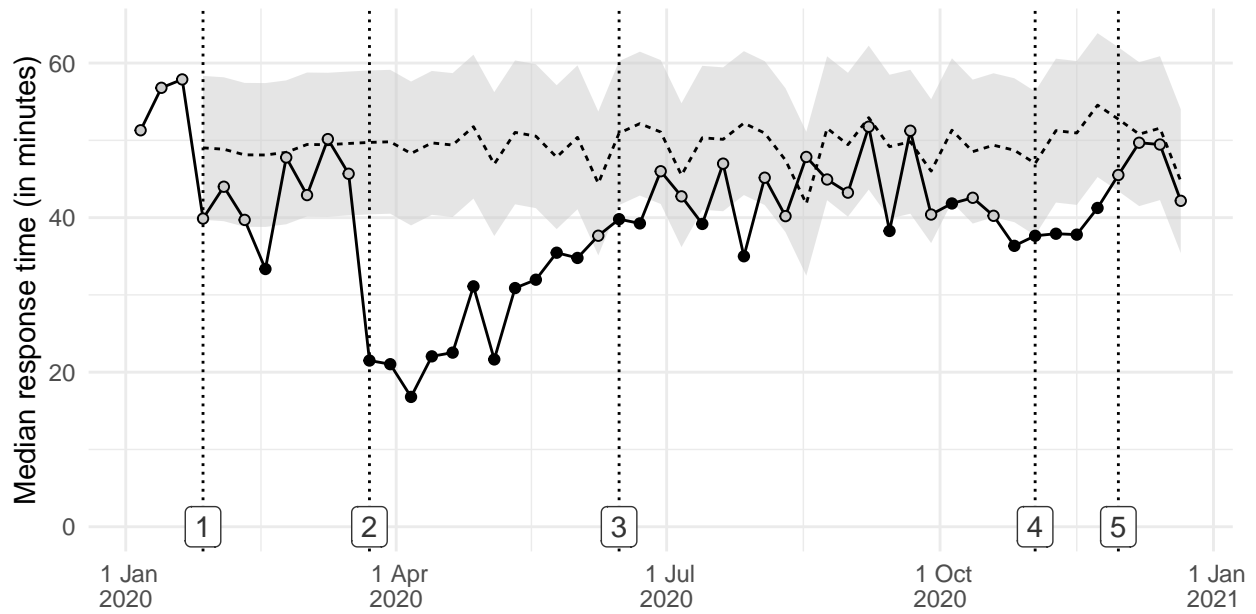
Grade 2



Actual observed value significantly different from forecast • TRUE ○ FALSE

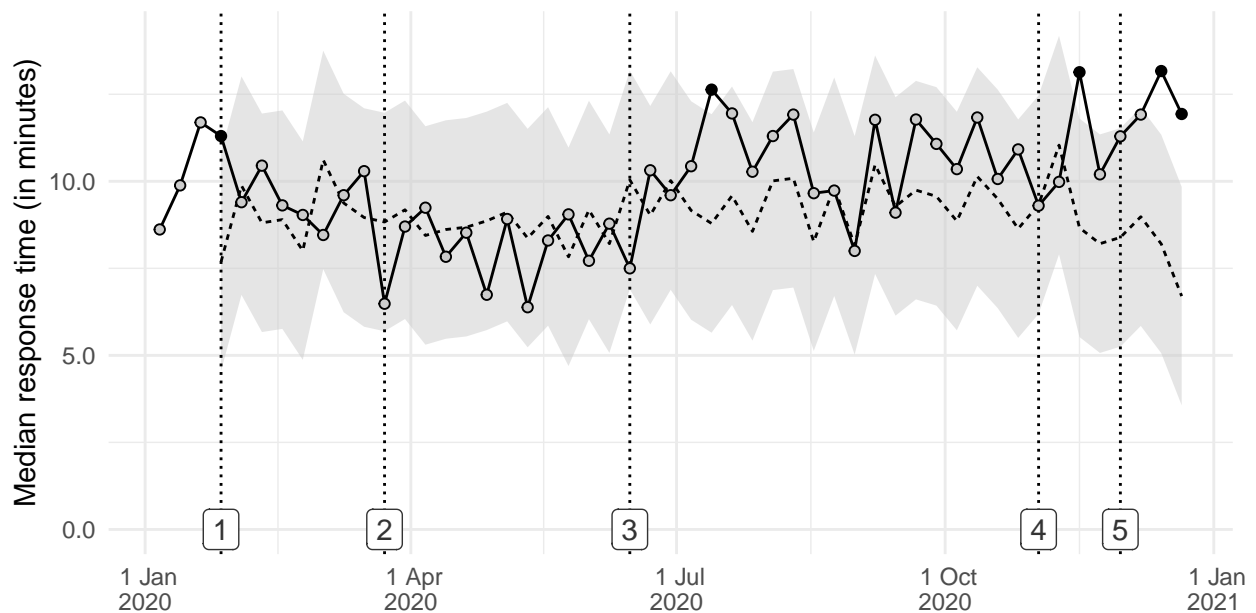
Forecast calculated using data up to 31 January 2020

Grade 3



Forecast calculated using data up to 31 January 2020

Grade 4

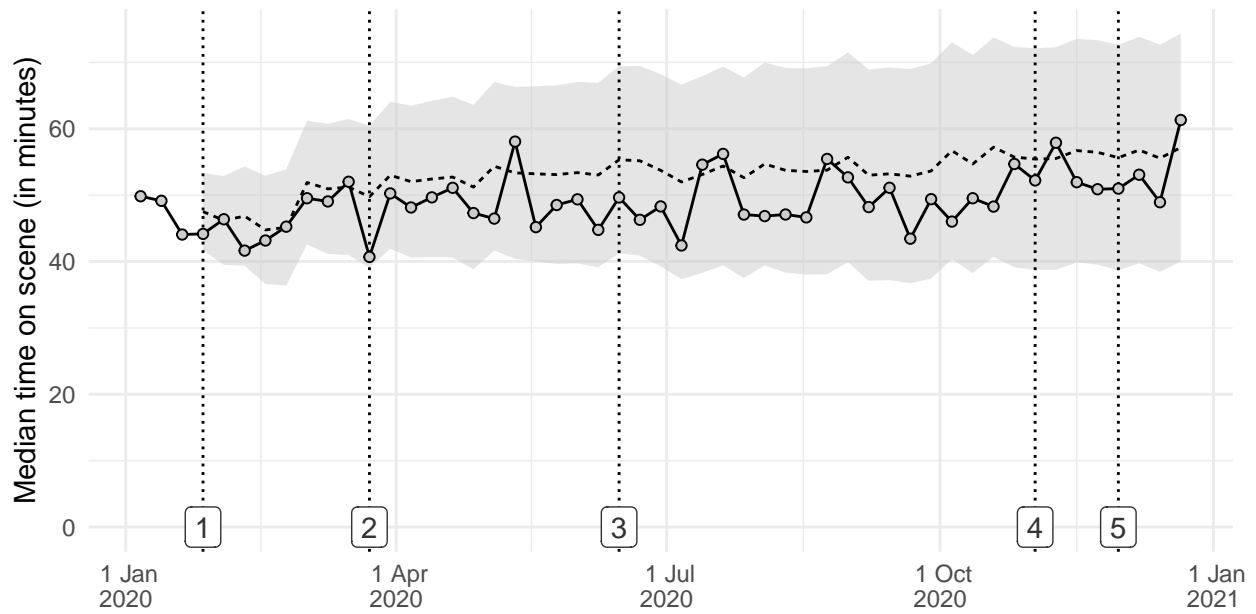


Forecast calculated using data up to 31 January 2020

Another possible explanation for the increased time besides the decrease in call volume is that the calls

which did come in required less time on scene.

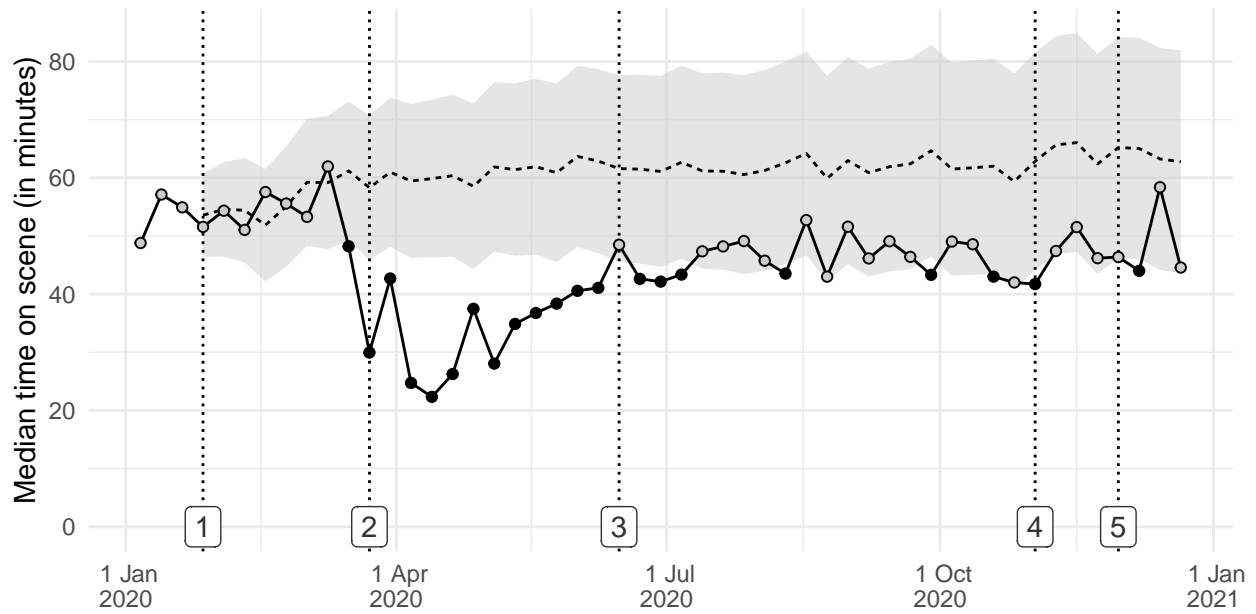
Grade 1



Actual observed value significantly different from forecast • TRUE ○ FALSE

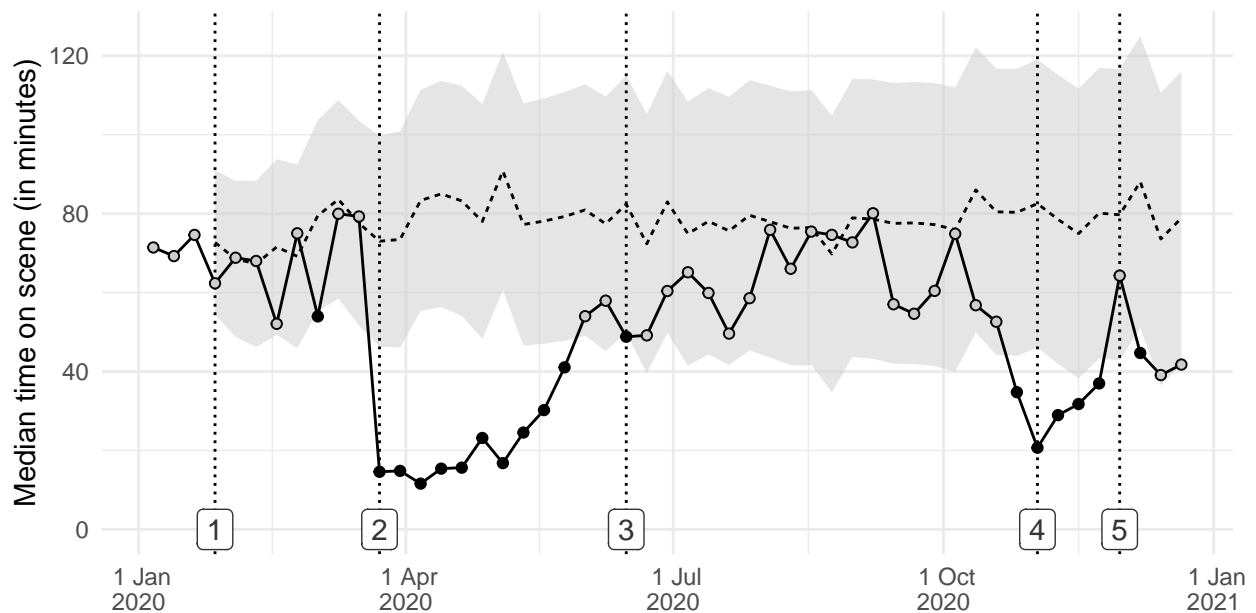
Forecast calculated using data up to 31 January 2020

Grade 2



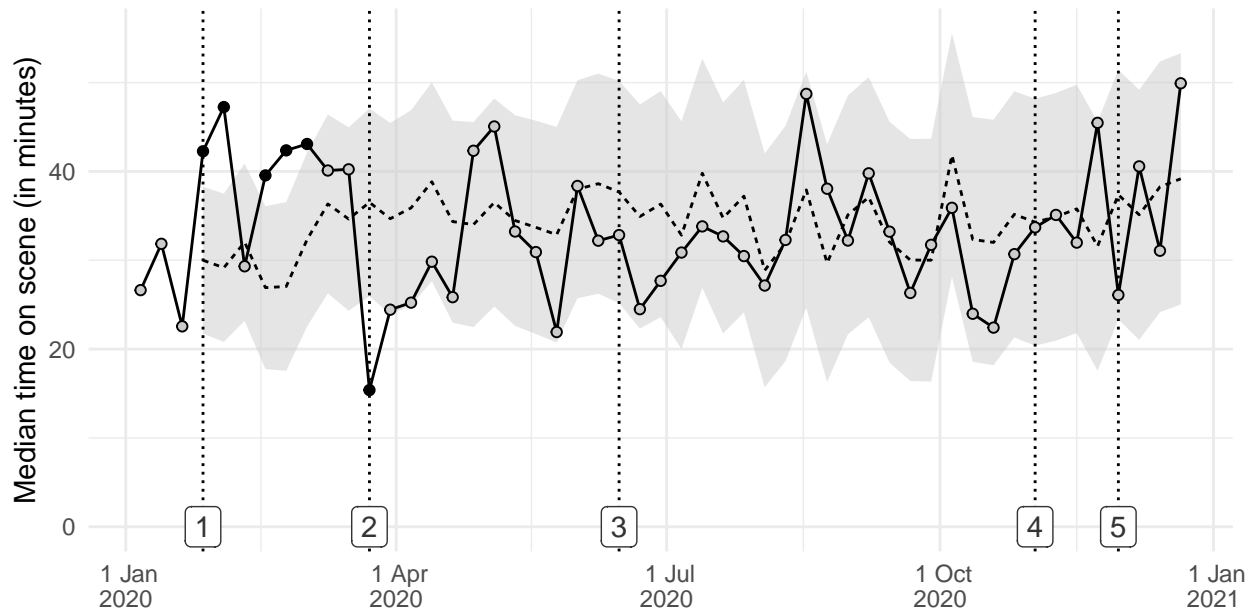
Forecast calculated using data up to 31 January 2020

Grade 3



Forecast calculated using data up to 31 January 2020

Grade 4



Actual observed value significantly different from forecast • TRUE ○ FALSE

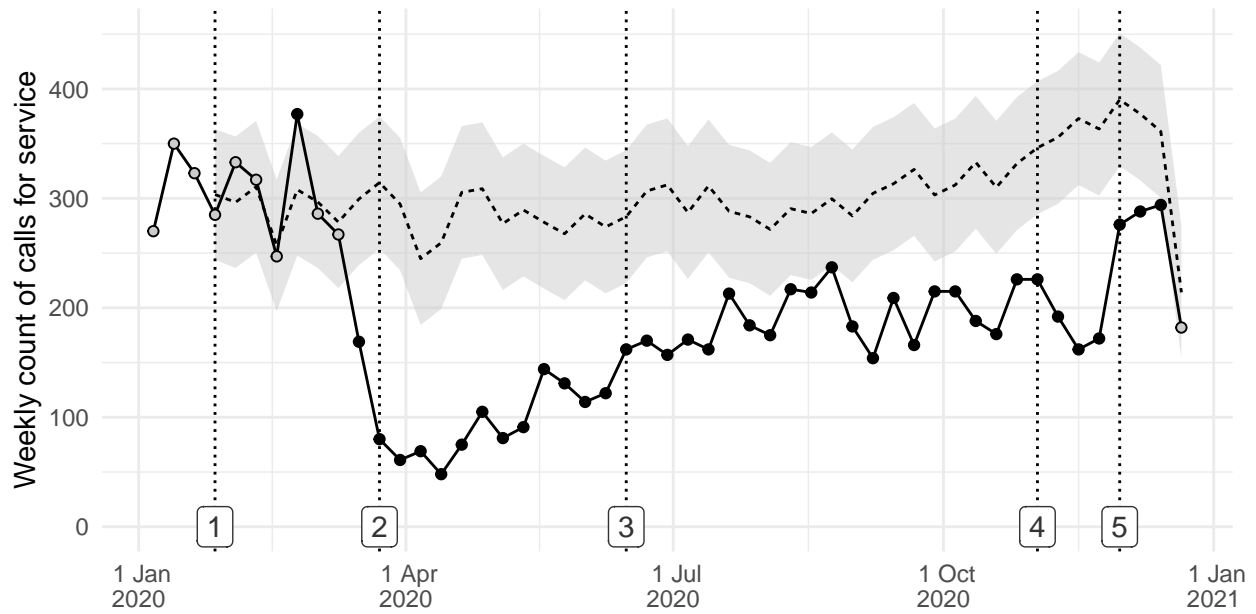
Forecast calculated using data up to 31 January 2020

Budget for covid cars - also free up resources - these dealt with the ASB? **Ask in interview about “covid cars” and whether these dealt with ASB**

Quiet streets

Another possible explanation for the decrease in response times of course is the quiet streets. We see that calls related to roads all dropped off in the first lock down, as fewer people were driving. Figures A, B, and C show how calls for highway disruption, traffic collision, and road related traffic offences were all less than would be expected based on previous years' data.

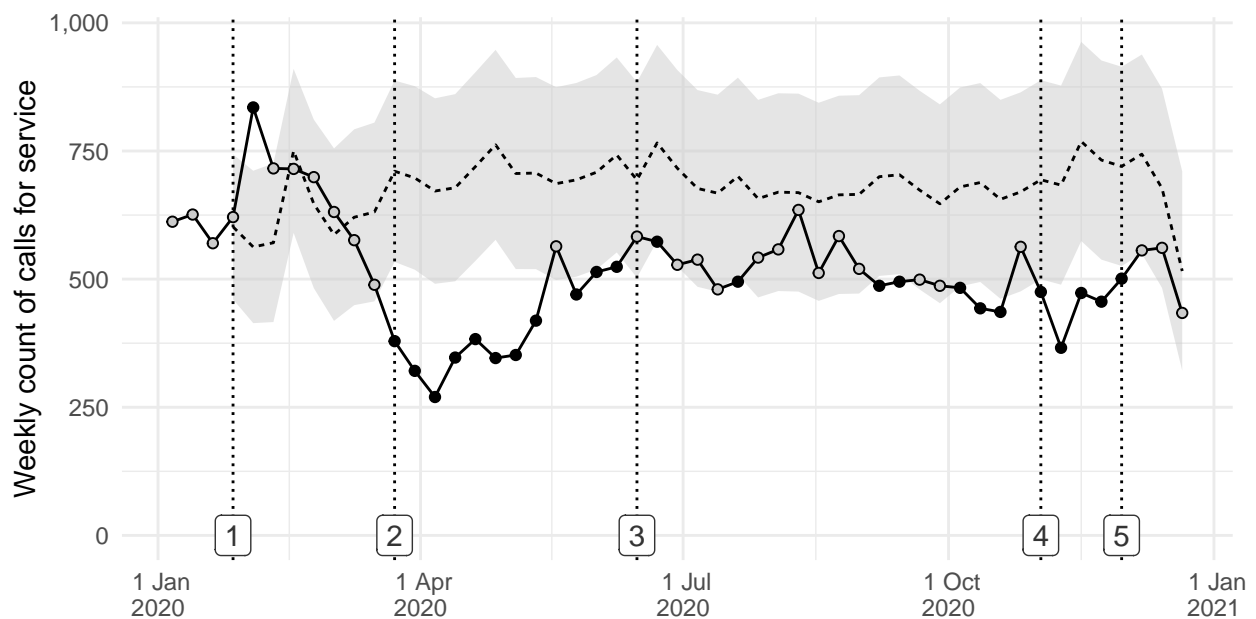
traffic collision



Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

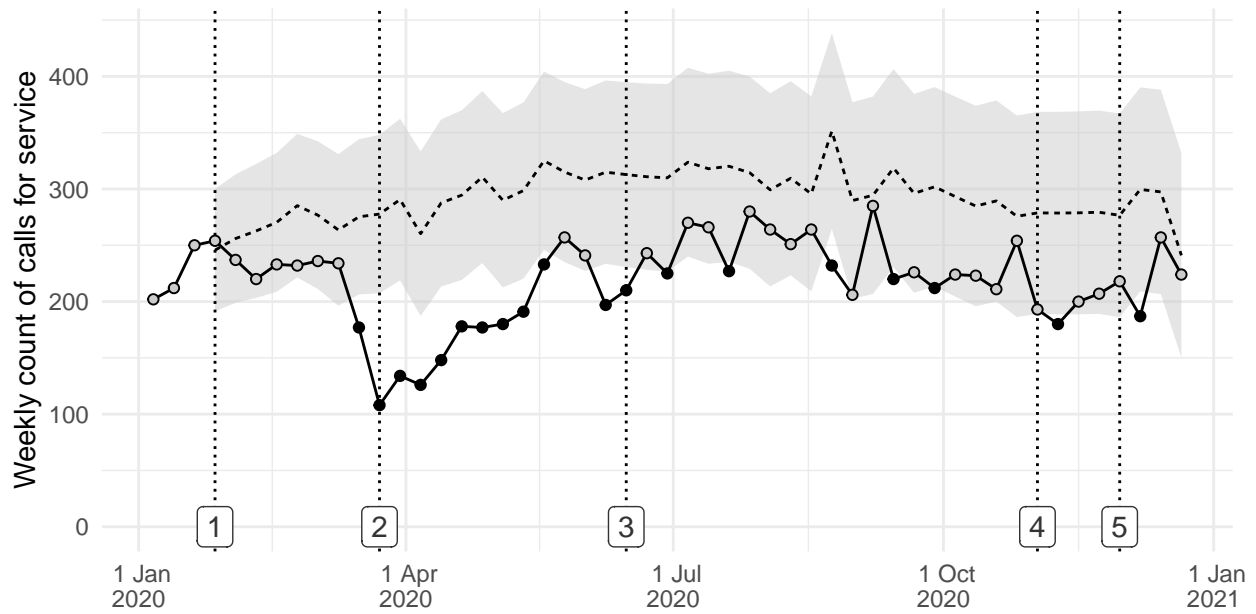
Highway Disruption



Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Road Related Traffic Offence



Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

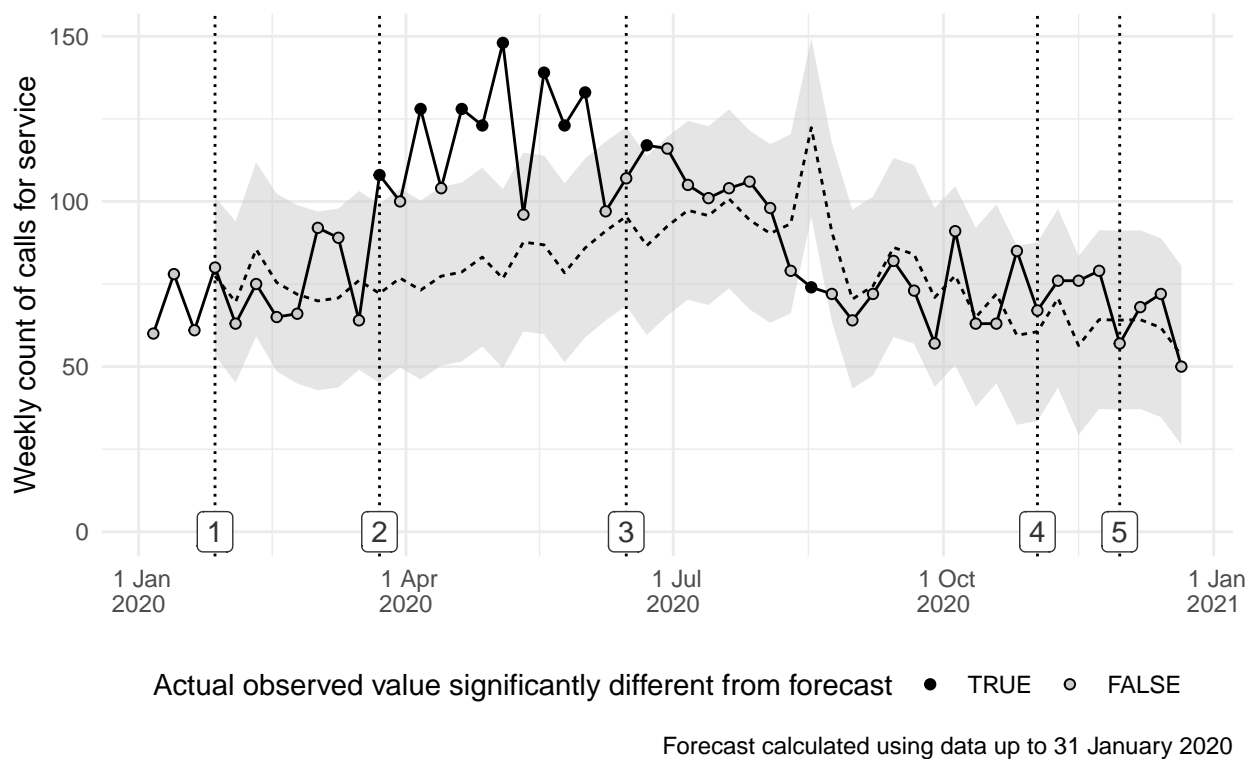
So not only were fewer calls coming in overall, which required less time to be spent on scene (??) but also the route to them was not so much blocked with traffic.

Shooting fish in a barrel

The quiet streets allowed not only for faster response times, but also for an ease of spotting people out and about doing things they should not be doing.

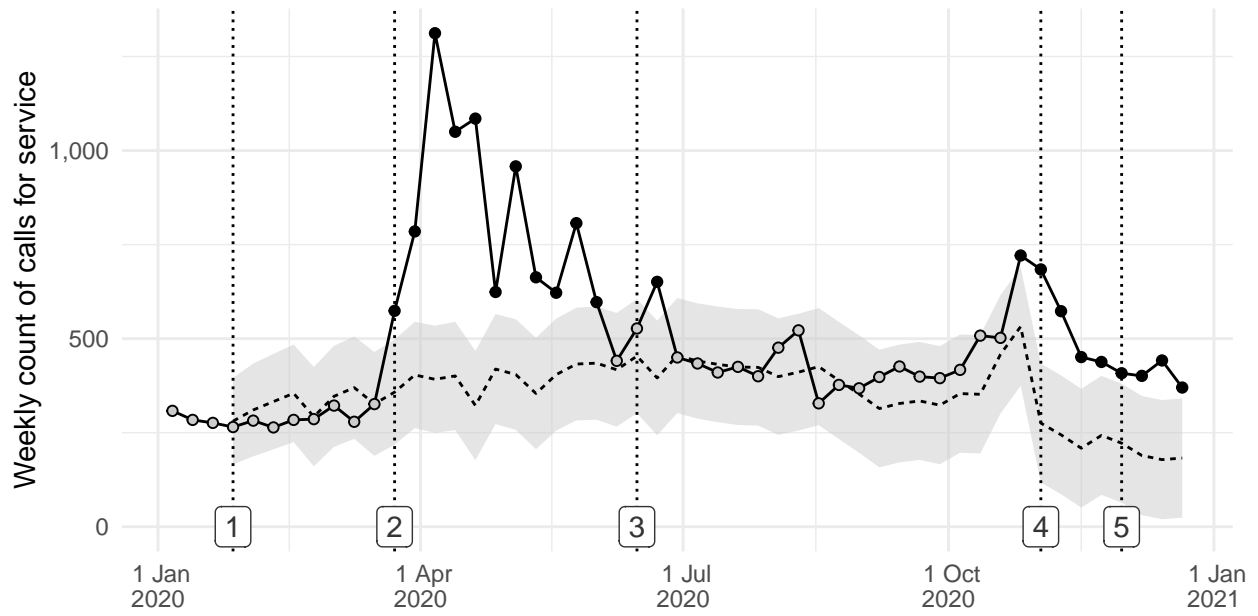
- Drug related offences

Drugs



- ASB - although COVID breach was coded as ASB so can we even say this??

ASB

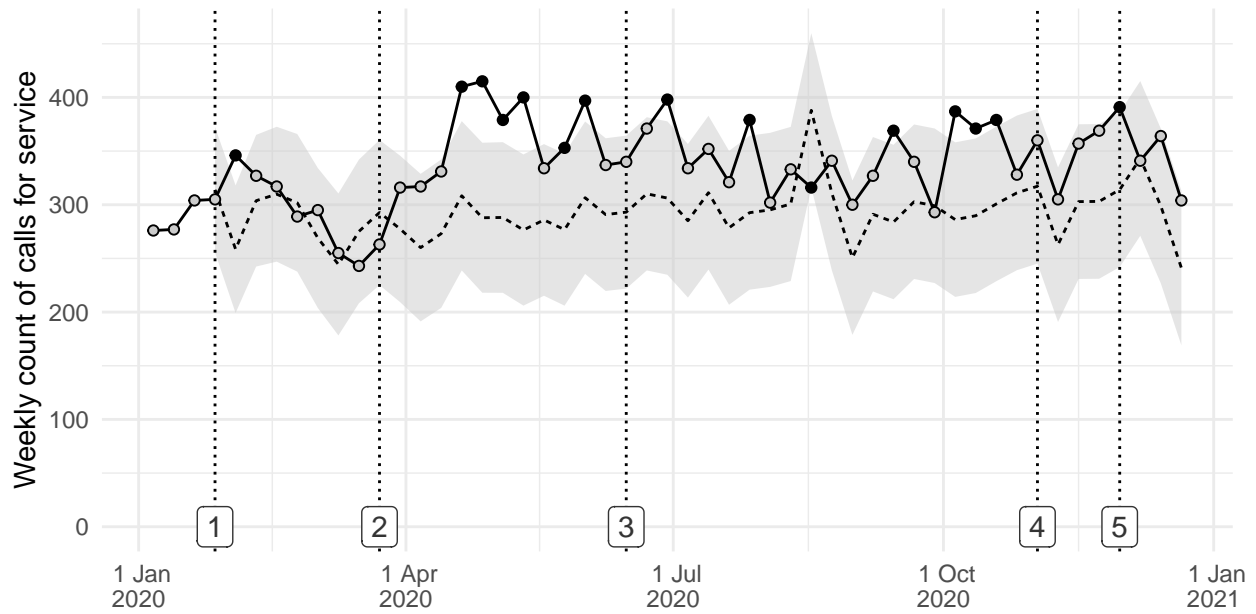


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

- Police generated?

Police Generated



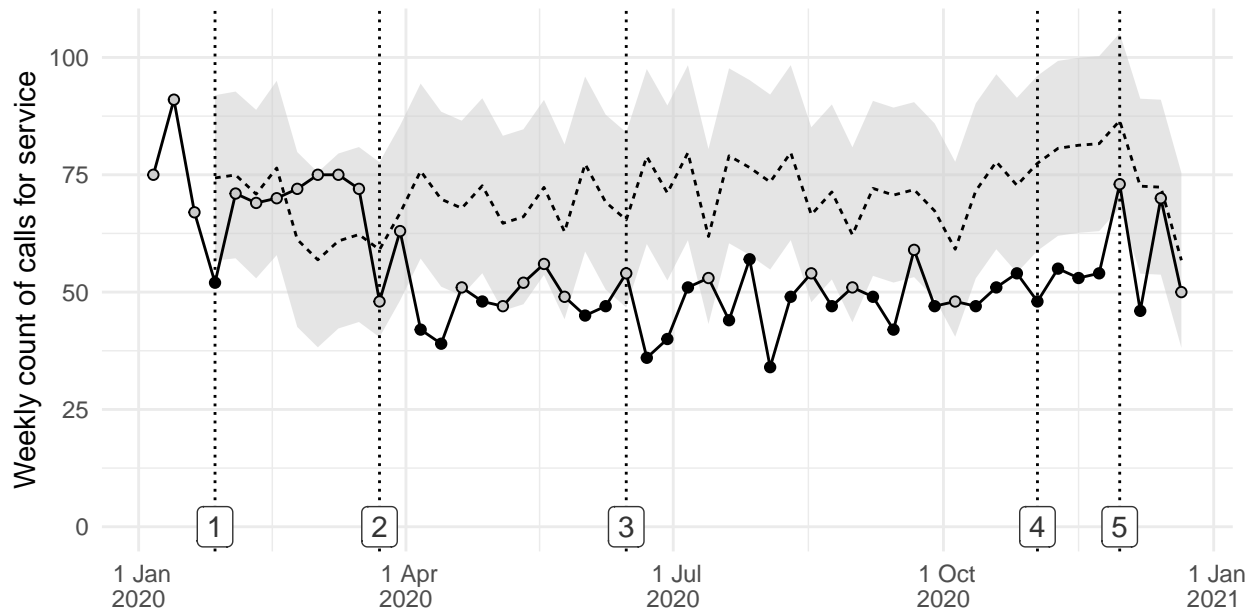
Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Increased guardianship

- Residential burglary

Burglary – Residential

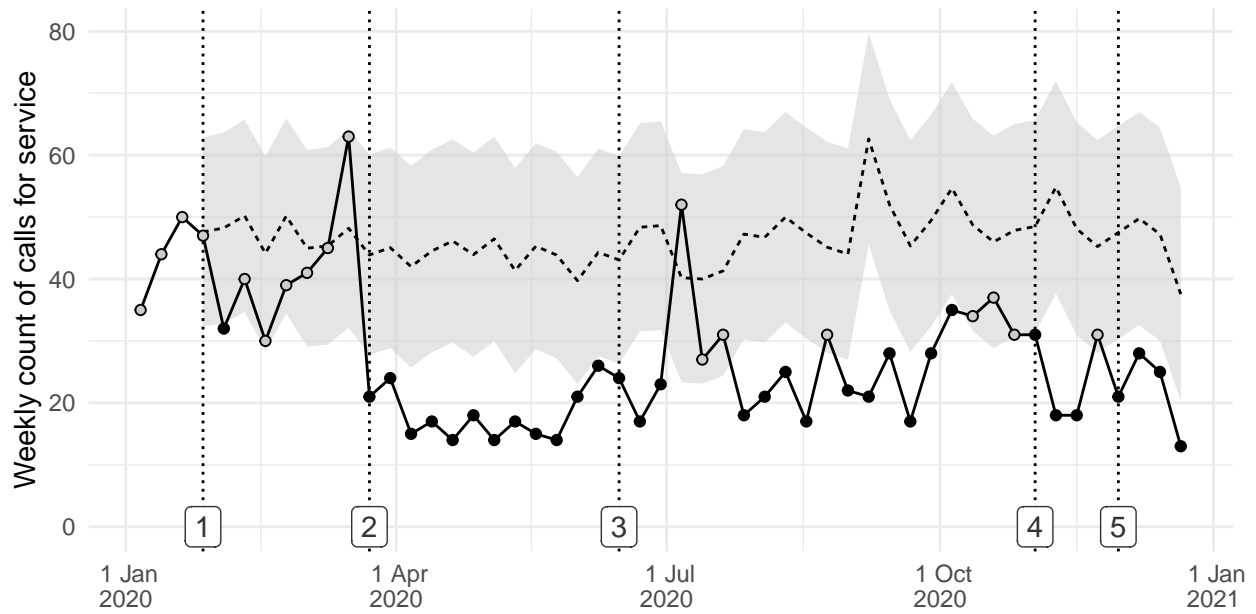


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

- Theft from MV (and theft of)

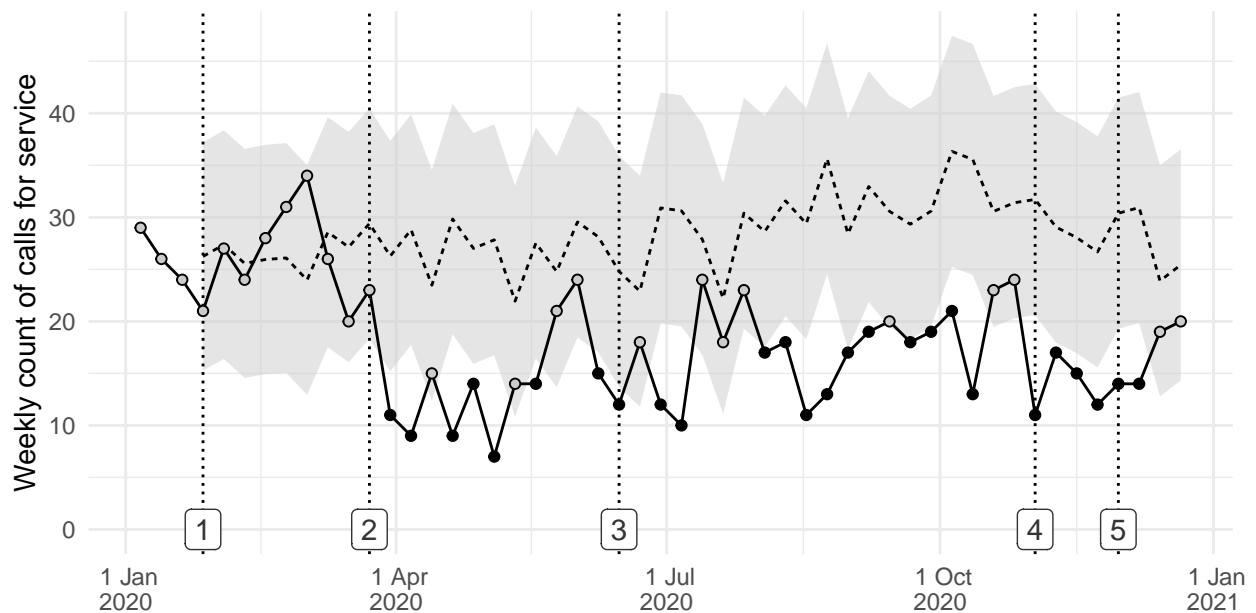
Theft From Motor Vehicle



Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Theft Of Motor Vehicle

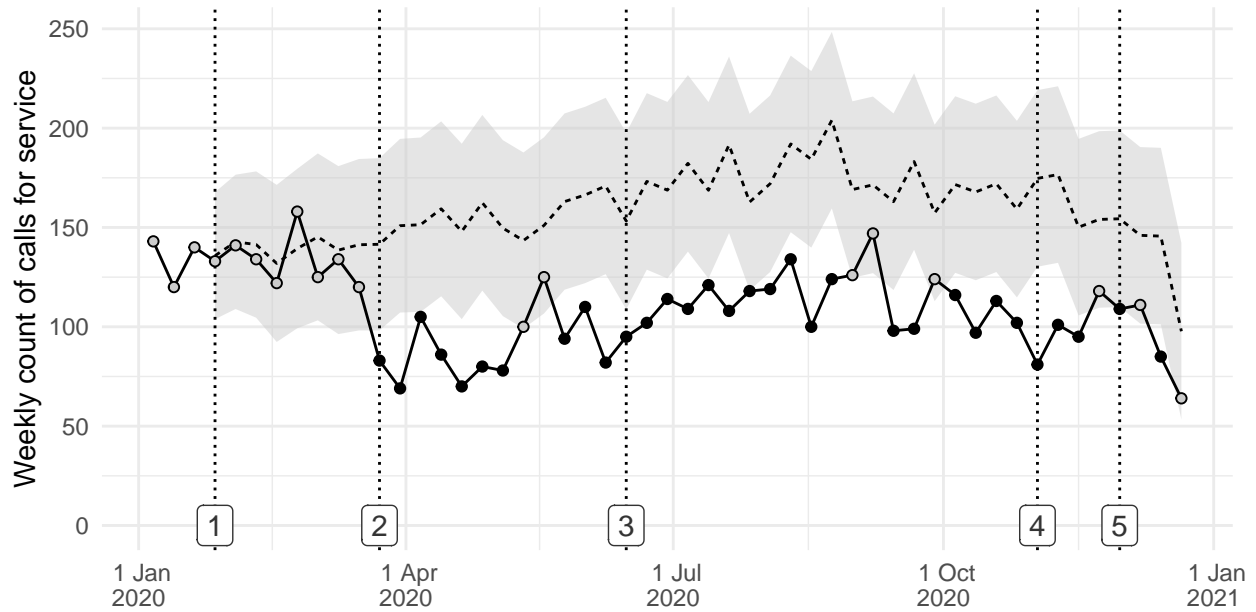


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

- Theft other

Theft Other

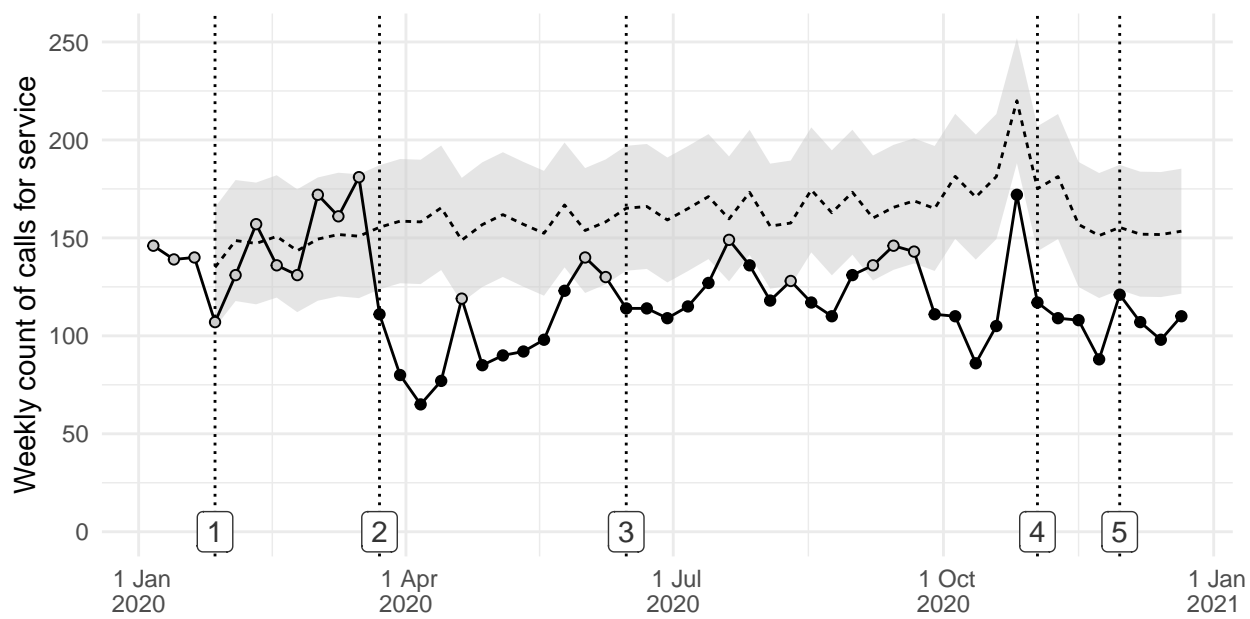


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

- Criminal damage (???)

Criminal Damage



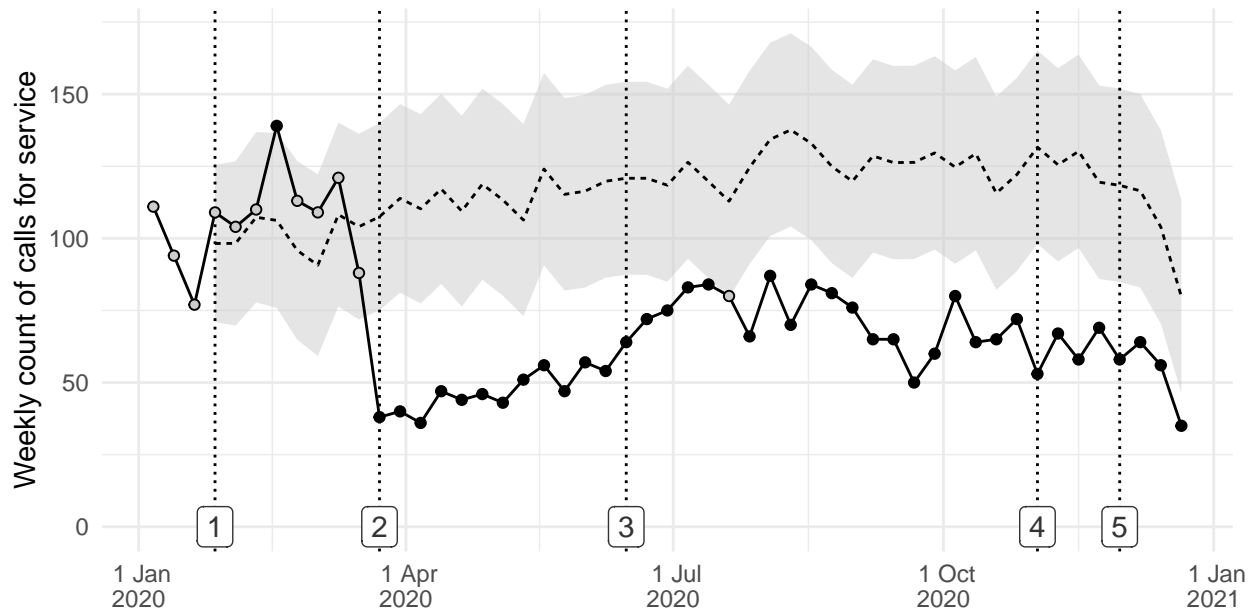
Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Removal of suitable targets

- Shoplifting

Shoplifting

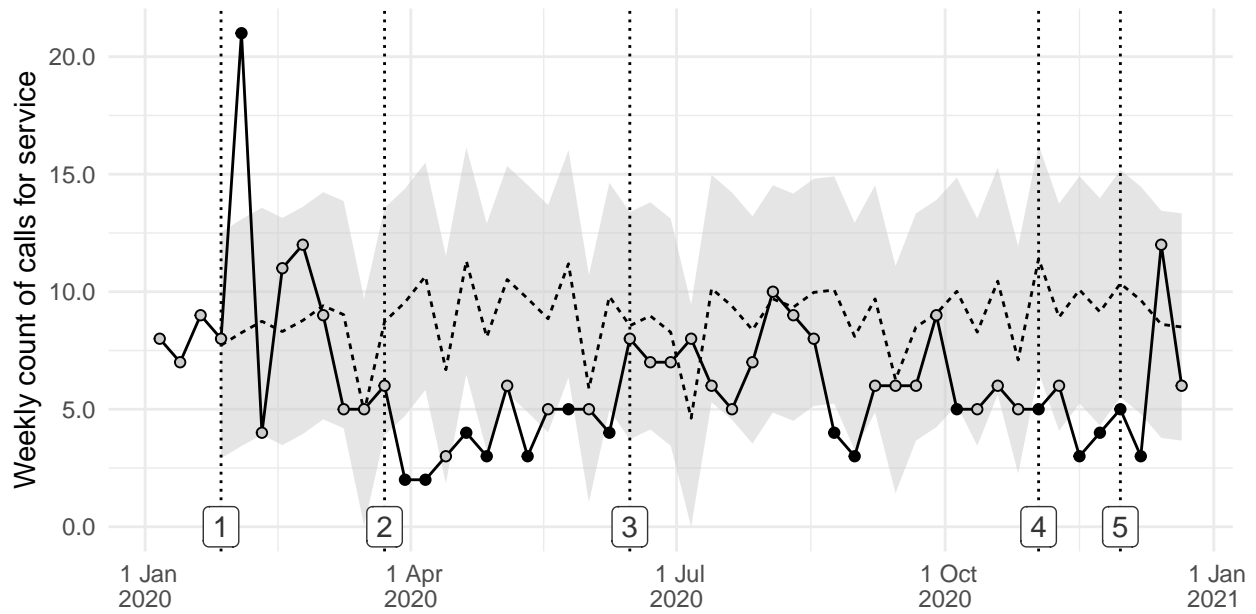


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

- Robbery

Robbery



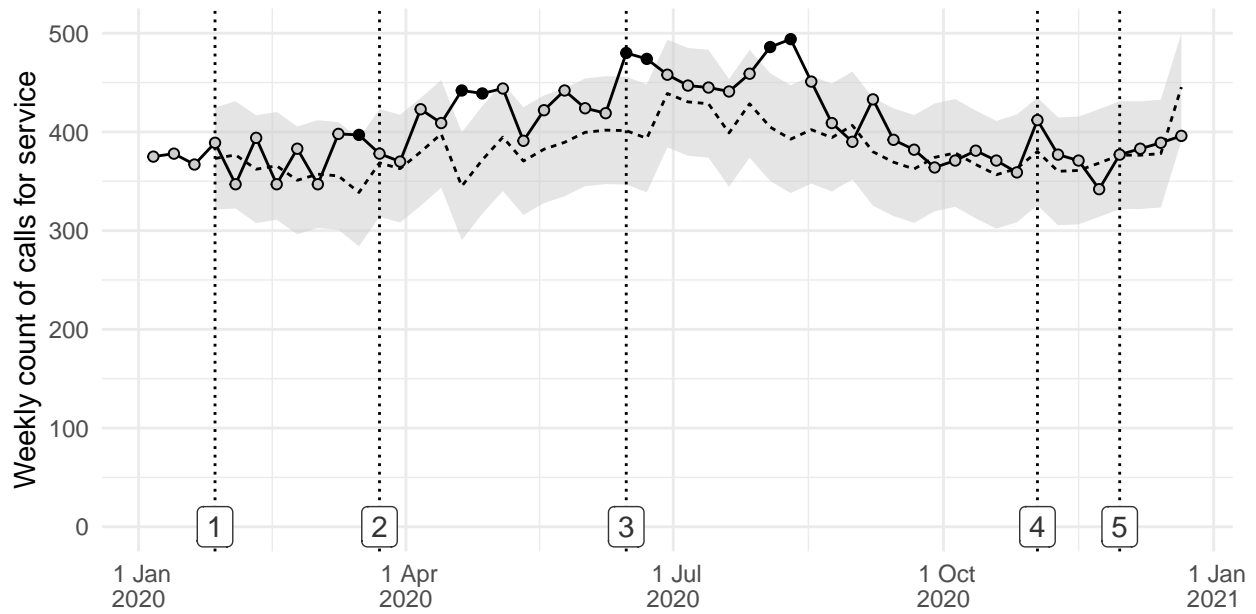
Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Domestic incidents

This is worth highlighting as there was much discussion about increase of domestic incidents during the lockdowns. When we look at all domestic incidents as a whole we do not really see this.

Domestic Incident

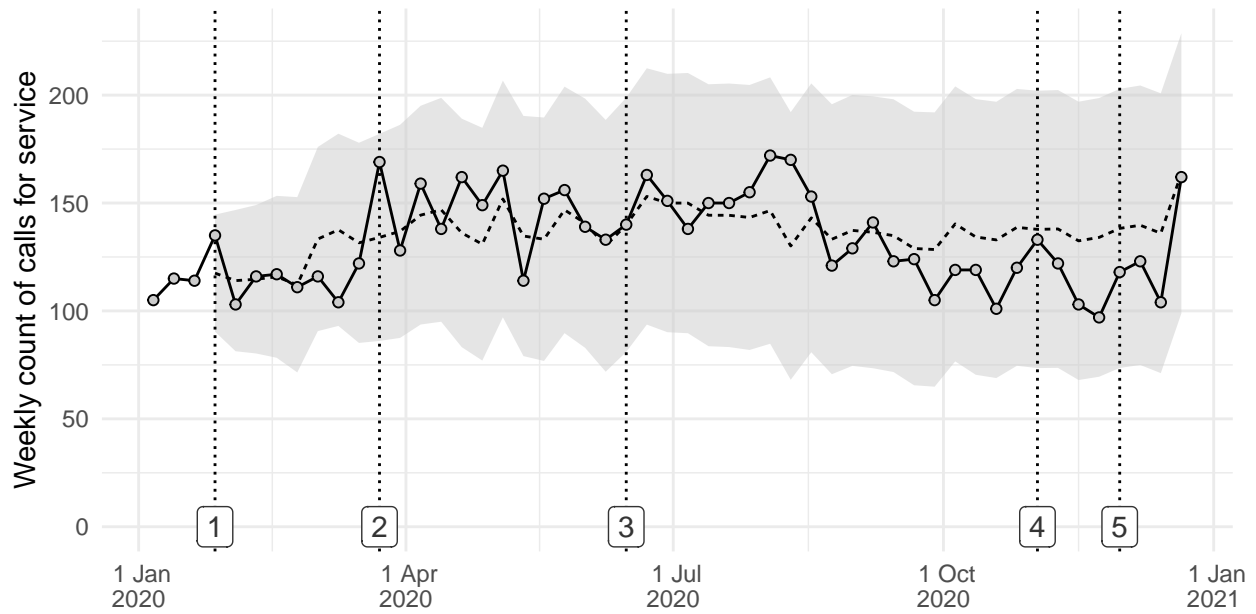


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

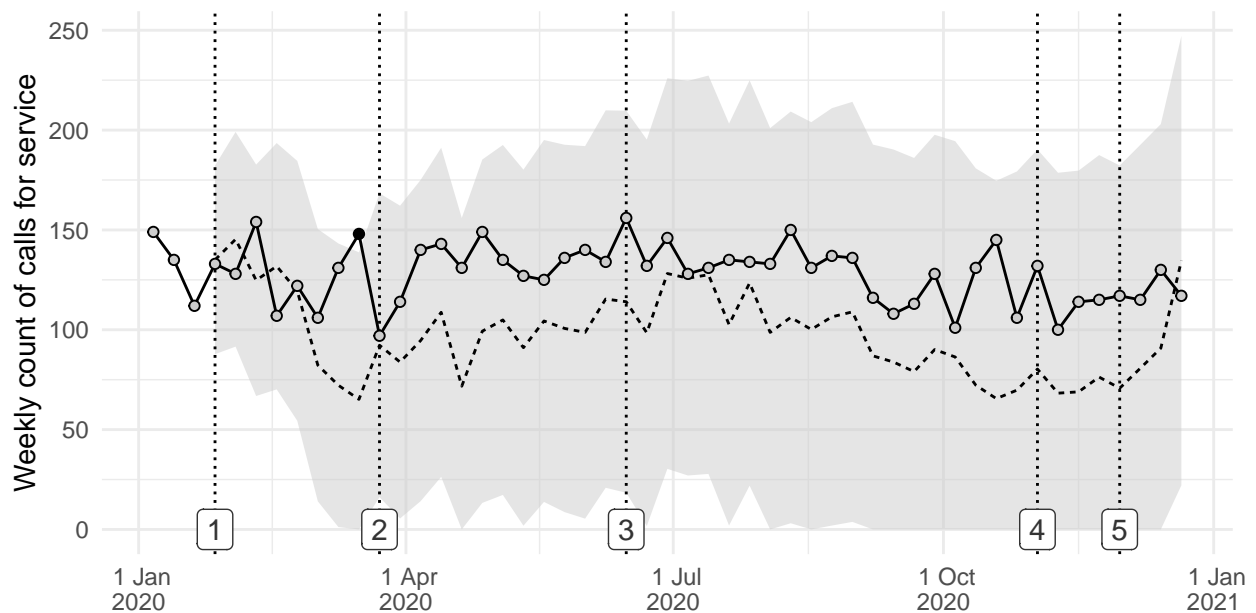
This does not change when we break down by grade of call.

Grade 1



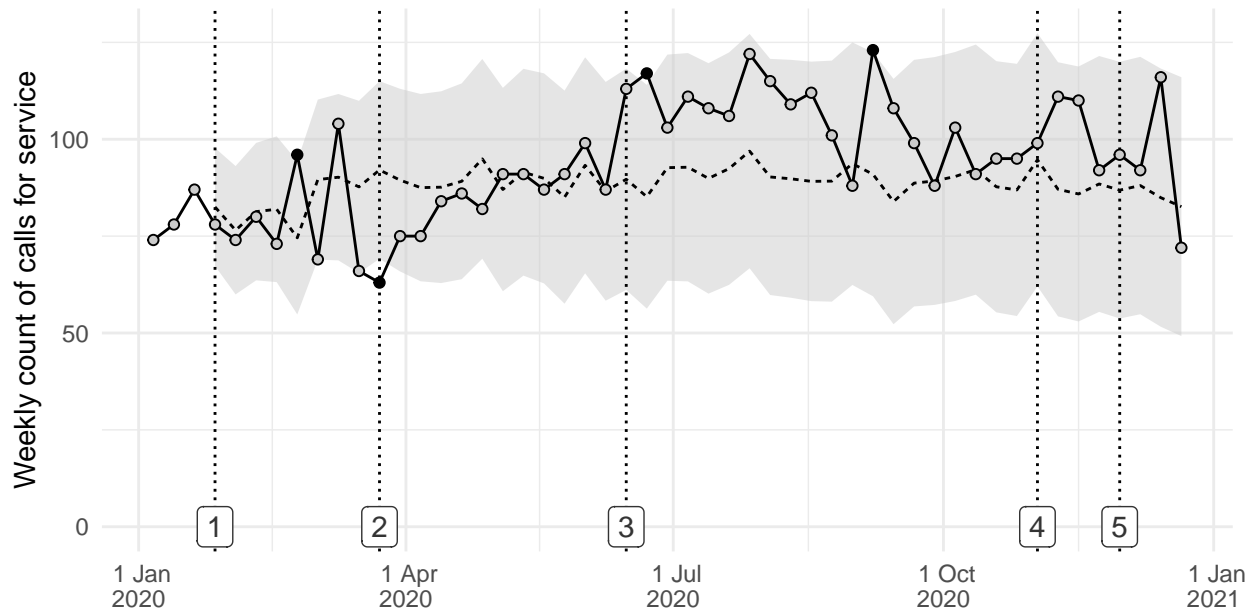
Forecast calculated using data up to 31 January 2020

Grade 2



Forecast calculated using data up to 31 January 2020

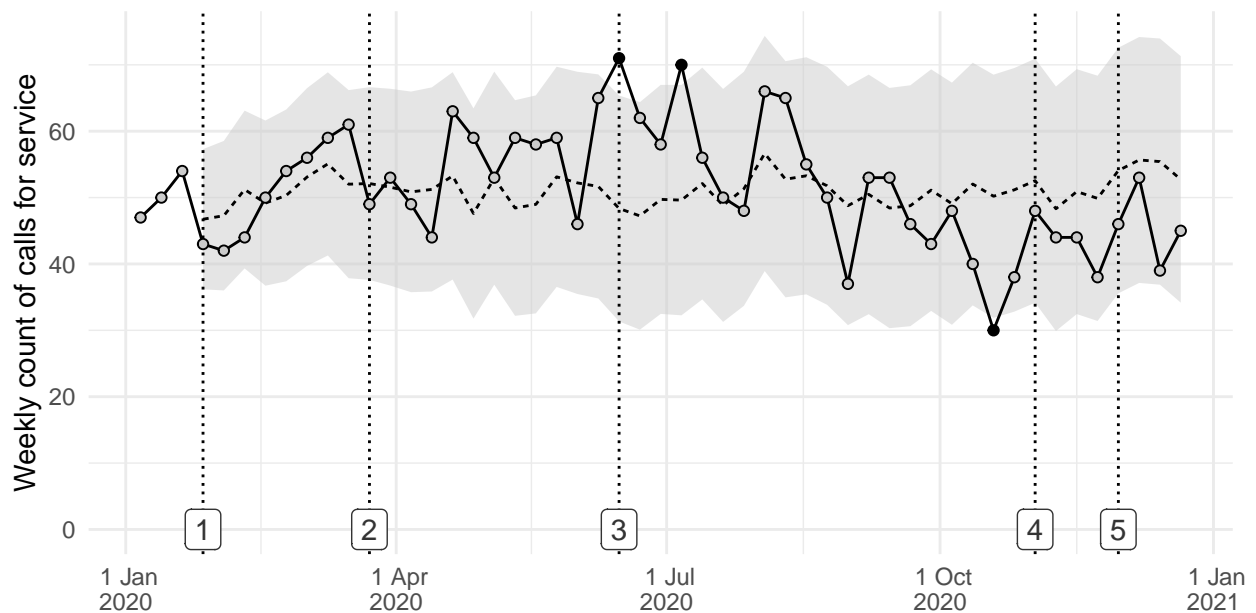
Grade 3



Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Grade 4



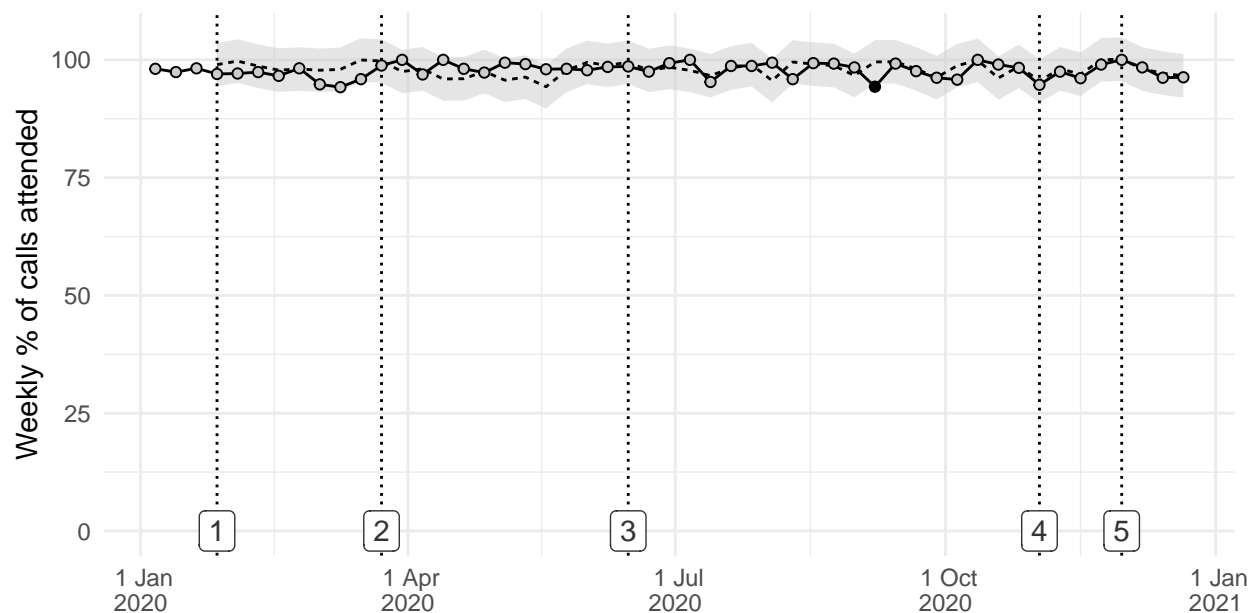
Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

However we do see an increased response from police to Domestic Incident calls. Not so much for grade 1,

which were attended near 100% of cases before, during, and after the pandemic, but for calls initially graded as grade 2 attendance rate increased. Grade 3 and 4 are again too noisy for anything.

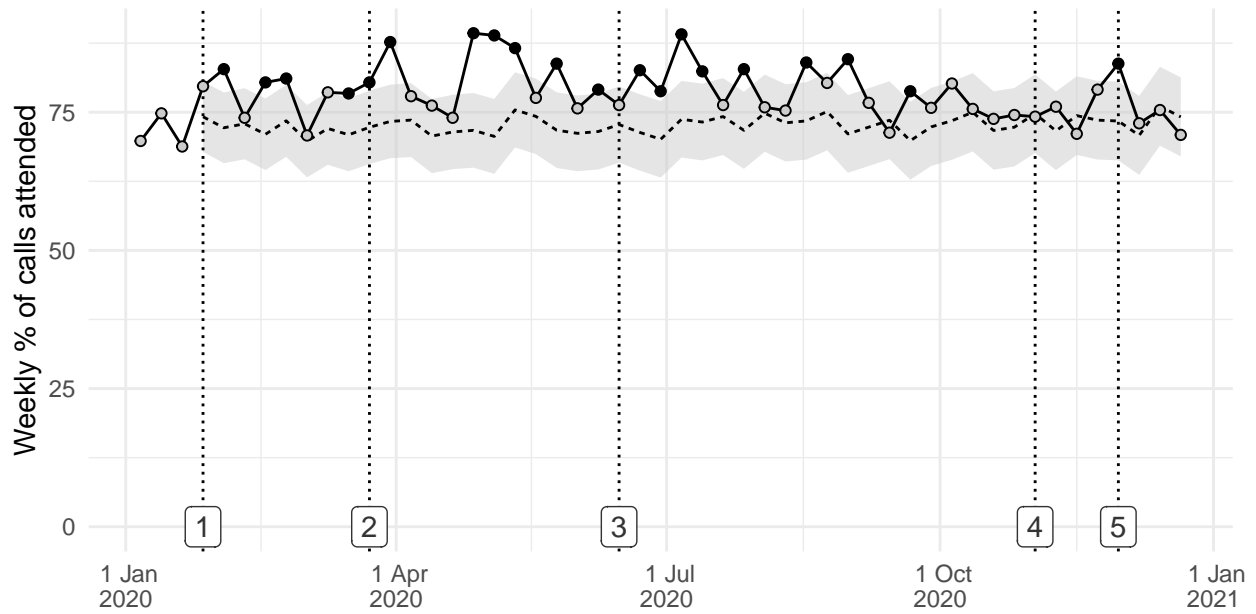
Grade 1



Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

Grade 2

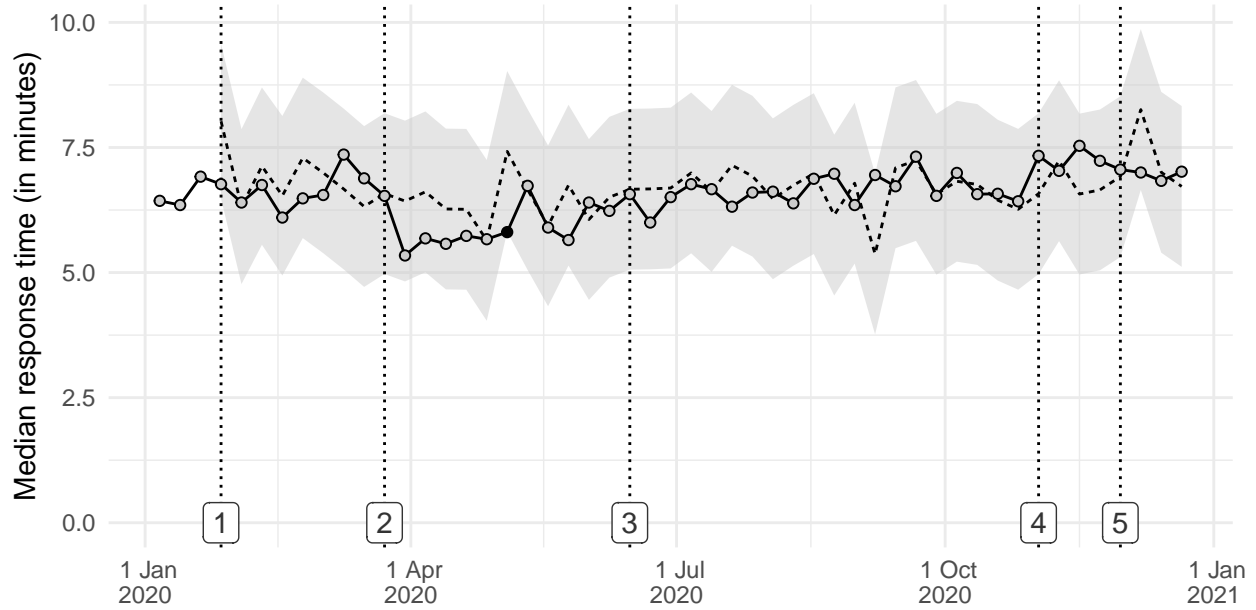


Actual observed value significantly different from forecast • TRUE ○ FALSE

Forecast calculated using data up to 31 January 2020

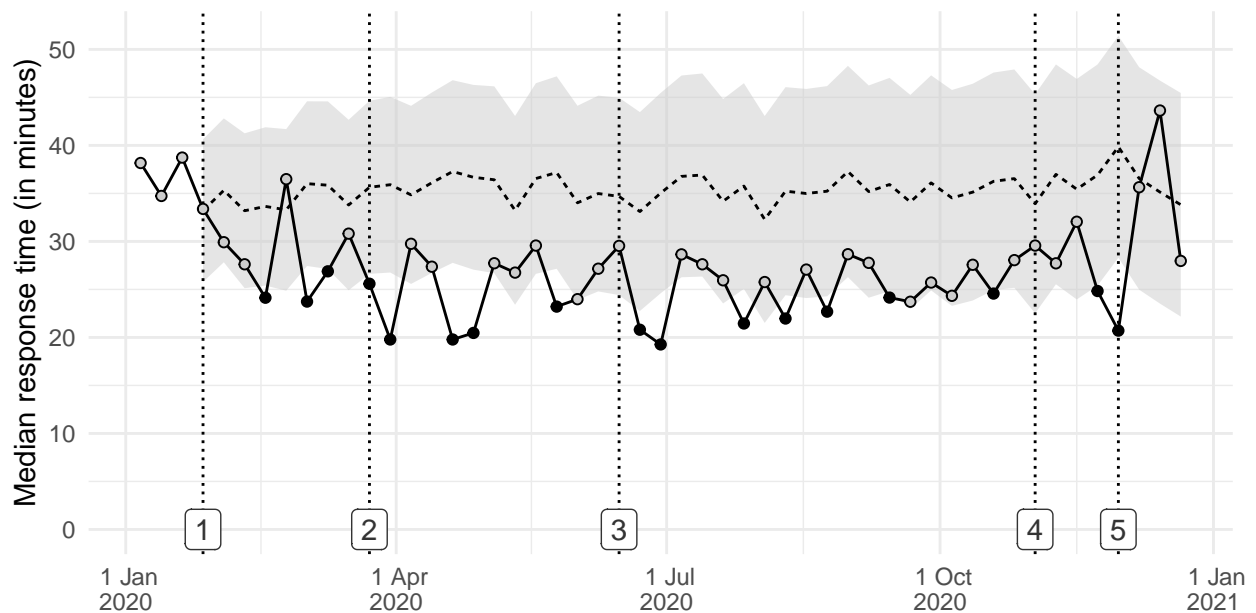
In fact, as well as responding to more calls initially graded as grade 2, response time to these calls has decreased as well. While response time for grade 1 calls was within what was forecasted, for grade 2 calls response times decreased during the pandemic. (for grades 3 and 4 the forecast is too noisy).

Grade 1



Forecast calculated using data up to 31 January 2020

Grade 2



Forecast calculated using data up to 31 January 2020

IMD stuff (did the callers change?)

look at IMD stuff

Discussion