UK Health Security Agency

Kirklees self-isolation pilot: evaluation report

Contents

Background

In March 2021, the Department for Health and Social Care (DHSC) introduced a 'What Works' initiative aimed at trialling innovative approaches to improve engagement with the Test and Trace system and compliance with self-isolation. The programme intended to move away from centrally administered schemes to community led pilots, allowing local authorities to be responsive to varying local operational and social contexts. This culminated in the introduction of a range of pilots that targeted areas where enduring transmission and/or where a variant of concern had been identified.

In May 2021, Kirklees was recognised as an 'area of concern', due to the rising prevalence of COVID-19 in the local authority. This was attributable to the variant of concern B.1.617 or 'delta variant'. As a result, Kirklees council was approached by DHSC about its inclusion in the WW programme. Kirklees council identified financial and occupational barriers to self-isolation among its constituents related to the fact that a substantial proportion of its workforce are employed in professions known for their inability to work from home and an increased likelihood of losing income as a result of self-isolation. Therefore, Kirklees council proposed piloting a revised version of the Test and Trace Support Payment (TTSP) scheme. This involved increasing the scheme's income eligibility threshold and implementing an income replacement mechanism. The increased offer was made available for both variations of the original TTSP scheme, which included the main and discretionary payments. Inclusion criteria for the pilot were that individuals:

- were required to self-isolate following a positive COVID-19 result or as a close contact of a confirmed COVID-19 case
- adequately demonstrated a loss in income due to self-isolation
- earned £26,000 or less per annum
- were unable to work from home

Successful applicants received 100% of lost income as a result of self-isolation or a £500 payment (whichever was higher), with a cap at a maximum of £1,000. The pilot began on 27 May 2021 and ran for 4 weeks to 22 June 2021.

Research questions

The main aim of the evaluation was to assess the extent to which outcomes related to testing, tracing and compliance with self-isolation were affected by the pilot. It was hypothesized that the relaxed eligibility criteria and increased maximum payment would encourage better compliance with self-isolation among individuals and that cases were more willing to name contacts as these contacts would be less at risk of losing income. This underlying logic also suggested that individuals may have been more willing to come forward for testing if they were

confident of being able to self-isolate without facing financial barriers. Therefore, the key research questions the impact evaluation was aiming to answer were the following:

- to what extent did the intervention lead to increased compliance with self-isolation?
- to what extent did the intervention lead increased levels of testing?
- to what extent did the intervention lead to higher levels of contact tracing?
- to what extent did the intervention lead to increased uptake of the TTSP scheme?

In addition, the process evaluation aimed to answer the following process evaluation questions.

- what were the barriers and facilitators to the delivery of the intervention?
- what were the barriers and facilitators to the pilot's effectiveness?

Methodology

Impact evaluation

The research questions for the impact evaluation were examined using a synthetic control method (SCM) Approach. Within an SCM approach, an area where an intervention is taking place is compared to a weighted combination of comparator areas, in this case local authorities, where the intervention is not implemented. SCM is becoming a popular tool for evaluating public health interventions in the absence of an experimental design (3, 4 , 5) as it allows for an estimation of the impact of the intervention under weaker assumptions than other common approaches such as difference-in-differences.

Regions and local authorities with existing COVID-19 interventions during the period of analysis were excluded from the donor pool. This was done to ensure that there were no external shocks unrelated to the pilot intervention in potential control areas. Donor pool control areas were considered if their outcome trends and determinates were sufficiently similar to Kirklees. Traditional statistical inference is not applicable with SCM due to the small number of treated and control units. Therefore, permutation-based statistical inference that relies on falsification of effect sizes was used following the approach used by other studies that have implemented synthetic control analysis (6 to 11).

A period of 6 weeks after implementation week was used to consider whether the pilot had any immediate or short-run impacts. There is no established metric on the number of pre-intervention periods that need to be used to fit the synthetic control. The methodological literature on SCM advocates a choice of pre-intervention periods that balances concerns about overfitting (as a small number of pre-intervention periods may result in the synthetic control being fitted by chance) and structural breaks (longer pre-intervention periods may result in lower accuracy of the fit) (5, 9). Therefore, a symmetric number of 6 weeks preceding the pilot start date was used for fitting the synthetic control. Other predictors of post-intervention values of the

outcomes (other than pre-intervention values of the outcomes) were included in the controls to reduce concerns about spuriously fitting the synthetic control with a small number of pre-intervention periods.

SCM was implemented using the microsynth package in R, which calculates permutation-based p-values for each of the weeks following pilot implementation (12, 13). The main results summarised in Table 2 only show the infimum of these p-values as a summary statistic of whether the average impact over the whole post-pilot period used in analysis was statistically significant. The detailed discussion of the effects on each outcome makes use of SCM's ability to investigate whether effects differed over time and therefore describes whether impacts in specific periods post-intervention were statistically significant, if different from the results on average.

Data sources

The data used in the impact analysis consists of information on individuals collected as they progress through the contact tracing and self-isolation journey. Data on the proportion of contacts shared and outcomes of check-in calls was taken from Contact Tracing and Advice Service (CTAS), the contact tracing database with individual records for each positive case and their contacts. Data on testing and test results is taken from the National Pathology Exchange (NPEX) system, which contains information on all reported PCR (swab) tests performed by Testing Pillar 2 and LFT (lateral flow tests). Data on local authority characteristics that is used in the synthetic control analysis is taken from ONS, NOMIS and other government sources.
The data used in analysis is described in Appendix Table 1. The table summarises the main outcomes of interest and the key predictors in Kirklees and all other local authorities included in the analysis sample for the 6 weeks preceding the pilot intervention (or the most recent data available, for the local authority level characteristics). The analysis sample excludes Kirklees and other local authorities where 'What Works' programme pilots were implemented in the period considered.

Appendix Table 1 shows that levels of contact sharing in Kirklees were higher than in other local authorities in the donor pool in the weeks before pilot implementation. Individuals in Kirklees were both more likely to share contacts and share a higher number of contacts when compared to other local authorities. Levels of compliance with self-isolation in the pre-pilot period were not statistically significantly different in Kirklees compared to other local authorities. Isolating cases and contacts in Kirklees were less likely to have successfully completed the self-isolation check-in calls with Test and Trace call handlers than in other local authorities. In Kirklees, newly isolating cases (who were previously contacts and then re-entered the system as cases when they became positive for COVID-19) were more likely to report non-household contacts than in other local authorities. However, these differences were not statistically significant.

In the weeks before the implementation of the pilot, there were no statistically significant differences between Kirklees and other donor pool local authorities in the likelihood of self-

isolating individuals applying for TTSP applications. This was also the case when only looking at successful applications by self-isolating individuals. However, Kirklees Council paid out significantly higher amounts in TTSP payments compared to other local authorities even before the revised TTSP scheme was implemented. Payment amounts were similar due to the cap on payments in the programme, suggesting that these higher payment totals were the result of higher numbers of successful applications. This may be due to the significantly higher case rates in Kirklees compared to other local authorities in the donor pool.

Levels of deprivation in Kirklees were higher than in other local authorities in the donor pool. Close to 45% of Kirklees' population live in areas that fall within the 3 most deprived deciles of the Index of Multiple Deprivation, compared to 27% of individuals in other local authorities. Employment rates in 2020 were also lower in Kirklees than in other local authorities. In terms of demographic composition, Kirklees has a significantly higher Asian population as 18% of its population in 2019 was Asian compared to 8% in other local authorities on average.

Process evaluation

The process evaluation explored enablers and barriers to the success of the pilot. To provide an understanding of the implementation process across the local authority, it was important to capture a range of attitudes and decision-making across key internal and external stakeholders. Participants were therefore selected using a purposive sampling strategy. The aim of purposive sampling is to achieve range and diversity against key characteristics that are likely to affect the views and experiences being explored (14). Table 2 (below) outlines the achieved sample for the interviews.

Table 2. Achieved sample

Internal	Number of participants	External	Number of participants
Senior decision-makers	2	Third or voluntary sector leaders	2
CCSO staff	1	Local business leader	1
		Faith community leader	1
Total	3		4

Fieldwork

Interviews were conducted over the phone or by video conferencing software and, with participants' permission, were audio recorded. The interviews were conducted with the aid of a topic guide to help ensure consistent coverage across the range of participants. The guide was structured to help the interviews flow as naturally as possible and to encourage participants to

reflect on their views and experiences in a sensitive and ethical way. The guide was not seen as an exhaustive list of topics and did not prevent unanticipated, but relevant, subjects being discussed.

Data analysis

The data was managed using the framework approach, developed by the National Centre for Social Research (14). Within this approach, the key topics and issues emerging from the data were identified through familiarisation with depth interview and group transcripts. A series of thematic charts were then drawn up and data from each transcript was summarised under each topic. Data from each stage of the study was mapped within a different – although linked – set of thematic charts. These then formed the basis for detailed exploration of the charted data, exploring the range of views and experiences, comparing and contrasting individuals and groups and seeking explanations for similarities and differences within the data.

Findings

This section sets out the findings of the evaluation. It first presents the findings from the impact evaluation (which are supplemented by qualitative data to provide additional context) followed by the process evaluation findings.

Impact evaluation

Table 3 (below) presents the results for the main outcomes of interest considered in the primary and secondary research questions, before more detailed analysis is presented for individual outcomes in the rest of the section. Results indicate that the introduction of the revised TTSP scheme did not have a statistically significant impact on the main outcomes of interest considered in the impact evaluation.

Table 3. Synthetic control method estimates of impact on outcomes of interest

	Pre-pilot average gap	Post-pilot average gap	SCM estimate of average impact	P-value
Mean contacts shared	0.0004	0.2422	0.2419	[>0.9999]
Proportion sharing at least one contact	0.0019	0.0546	0.0526	[>0.9999]
Proportion of isolating cases reporting no non-household contacts	-0.0008	0.0084	0.0076	[>0.9999]

	Pre-pilot average gap	Post-pilot average gap	SCM estimate of average impact	P-value
Proportion with 100% successful check-in calls	-0.0057	0.0151	0.0094	[>0.9999]
Weekly testing rate	-0.0005	-0.0010	-0.0005	[>0.9999]
Weekly positivity rate	0.0000	-0.0018	-0.0018	[>0.9999]
Weekly rate of TTSP applications among self-isolating	0.0725	1.0877	1.0152	[>0.9999]
Weekly rate of TTSP applications among self-isolating in IMD1-3	0.0004	-0.0035	-0.0031	[>0.9999]
Weekly rate of successful TTSP applications among self-isolating individuals	0.0754	1.5896	1.5141	[>0.9999]

Key

*** significant at 0.01
** significant at 0.05
* significant at 0.1

Estimates are generated using the microsynth package, which implements the synthetic control method as outlined in Robbins and colleagues (2017). The number of local authorities in the donor pool is 174. The matching was done using the lagged values of the dependent variable for the pre-pilot period and covariates such as demographic and employment characteristics of the local authorities, as well as case rates and vaccination rates in the pre-pilot period. Full details of the analysis for each outcome are included in the Appendix. The permutation-based p-values are obtained using the microsynth package in R, and are Bonferroni-corrected for multiple hypothesis testing, so that the p-values reported here are the infimum of the set of Bonferroni-corrected p-values for the estimated gaps between Kirklees and the synthetic control areas in each of the post-pilot periods. Unadjusted p-values pre-Bonferroni correction for each post-pilot period are included in the Appendix tables.

As synthetic control estimation is primarily graphical in nature, Table 3 presents numerical estimates of average impact on the outcomes of interest for the 7 weeks following pilot implementation. These estimates are calculated as the difference between the average gap in the outcomes between Kirklees and the synthetic control over the weeks post-pilot and the average gap in the outcomes in the 6 weeks before the pilot started. These estimates therefore adjust the post-pilot gap in outcomes by the degree to which the synthetic control is a poor fit for Kirklees in the pre-pilot period. Therefore, this is a more conservative estimate than using just the average impact estimate from the post-pilot period.

The results in Table 3 present a conservative estimate of impact using the synthetic control method as the average gap in the post-pilot period. This is adjusted using the average gap in the pre-pilot period (of which the degree of divergence in absolute value from zero indicates poorer pre-pilot fit). Note that the synthetic control estimate of impact is calculated as the difference between the average pre-pilot gap in outcomes between Kirklees and 'synthetic Kirklees' and the average post-pilot gap in outcomes for the 2. This estimate therefore takes an average of all data points for the period considered and does not take into account differences in trends. Table 2 also reports estimated p-values for confidence in the estimates, following the placebo-based approach most commonly used in the literature (5, 6, 7, 9, 10, 11, 12).

Bonferroni adjusted p-values are presented for more conservative statistical inference. Since there are multiple post-pilot periods and outcomes of interest, the chances of a Type I error (the probability of failing to reject a statistically insignificant result) increase with multiple comparisons.

Sharing contacts

The graph in Appendix Figure 1 plots the weekly average number of (household and non-household) contacts in the 6 weeks preceding the pilot start date and 7 weeks following its implementation. This descriptive pattern shows that while more contacts were shared on average in Kirklees than in other local authorities, there were no systematic changes with the introduction of the revised TTSP scheme. The synthetic control estimates show that the trends for Kirklees and the 'synthetic Kirklees' closely followed each other in the weeks preceding the pilot. Synthetic control estimates show that was an increase of about 0.24 contacts shared per case on average in the weeks following the pilot (Appendix Figure 2). However, permutation-based p-values obtained using placebo tests across all donor pool local authorities shows that this increase in average contacts shared in the post-pilot period was not statistically significant. An alternative measure of engagement with Test and Trace through contact sharing is the proportion of cases sharing at least one (household or non-household) contact. Descriptive plots of the proportion of cases sharing at least one contact show that there were relatively flat trends throughout the analysis period (Appendix Figure 3). Levels of contact sharing in Kirklees were higher according to this metric throughout, however. Synthetic control estimates indicate that this gap in the proportion of cases sharing contacts widened after pilot implementation. However, this average increase of about 5 percentage points in the likelihood of sharing contacts (Table 2) was not statistically significant (Appendix Figure 4).

Compliance with isolation

The proportion of cases isolating again who report no non-household contacts is a self-reported measure of compliance with self-isolation requirements. This measure refers to a subset of cases who were previously contacts required to self-isolate and re-entered the system as cases when they tested positive for COVID-19, therefore having 2 consecutive periods of self-isolation. Appendix Figure 5 shows that levels of self-isolation compliance according to this

measure remained similar to Kirklees in other local authorities before and after the pilot start date. The synthetic control estimates in Appendix Figure 6 confirm that there was no statistically significant impact of the pilot implementation on this outcome. One caveat is that self-reported levels of compliance with self-isolation are already quite high according to this measure.

A measure of self-isolation compliance that is less reliant on self-reporting is the proportion of individuals with 100% successful check-in calls (Appendix Figure 7). Trends in this outcome for Kirklees are closely mirrored in the other local authorities used in analysis both before and after the pilot was implemented. In the period following the pilot's introduction, there was no systematic or statistically significant impact of the introduction of the revised TTSP scheme on this outcome measure (Appendix Figure 8). It is important to note that there are data quality issues with this measure as there is a dip in the graph for all local authorities over the period used in analysis. As this is due to logistical and process issues (rather than a change in behaviour) and happens across all local authorities, this might be less of a concern in terms of interpreting differences in changes between Kirklees and other local authorities.

These results together suggest that there was no statistically significant impact on the levels of self-isolation compliance because of the more generous TTSP scheme introduced in the Kirklees pilot.

Among council staff, views on the pilot's ability to increase self-isolation compliance were mixed. Council staff felt that it was likely that the pilot had made a positive impact on those who received the increased offer and their ability to comply. However, they were also aware that a number of other factors, including enhanced communications and surge testing may have also contributed.

> "I think the impact was there, I think a number of people benefitted from the pilot and have therefore been able to isolate in a way that they otherwise wouldn't have done. I think it's very, very difficult to unpick that and to say it is specifically related to the pilot or not, particularly because it was happening at a time of heighted attention on Kirklees, you know all of the door knocking and kind of enhanced comms that came at the same time, so really difficult to say."
>
> (Internal participant 1)

Testing rates

Testing rates in Kirklees spiked around the time that the pilot started as surge testing initiatives were also implemented jointly, though this spike did not seem to encourage future increased levels of testing (Appendix Figure 9). Prior to the period of surge testing and the implementation of the pilot, testing rates in Kirklees tended to be lower than in the other local authorities used in analysis. Compared to the counterfactual of the synthetic control areas, testing rates in Kirklees did not significantly increase because of the pilot scheme for the duration of the pilot beyond the

initial spike (Appendix Figure 10). This meant that there was no positive impact on testing rates from the revised TTSP scheme being implemented.

Appendix Figure 11 shows that the weekly PCR positivity rate (positive tests as a proportion of all tests) in Kirklees fell in the weeks following the pilot. The synthetic control analysis in Appendix Figure 12 confirms that there was no statistically significant impact on the positivity rate on average over all the weeks considered in the post-pilot period. However, there was a significantly lower positivity rate in Kirklees compared to the synthetic control areas about a month after the pilot (and associated surge testing measures) were implemented. No lasting increases in testing rates beyond the initial spike were observed as a result of surge testing, and there were no substantial impacts on the other outcomes of interest, including contact sharing and self-isolation compliance. This suggests that increases in surge testing led to more successful case identification that reduced the risk of onward transmission, even in the absence of impacts on contact tracing and self-isolation compliance.

Council staff felt that for some, the pilot acted as a safety net, which meant that if individuals did test positive, they would receive the effective financial support required to help them self-isolate.

> “Surge testing and being able to offer people the support that they could risk testing, because they knew they could receive financial support if they needed [to] self-isolate.”
>
> (Internal participant 1)

However, participants also suggested that a lack of messaging clarity around COVID-19 testing and vaccination could have had a negative impact on testing uptake. This lack of clarity was attributed to messaging and/or content issues delivered via the national approach, with a perceived ‘trickle-down’ effect experienced by local authorities. It was noted that this had implications for local authorities’ ability to deliver clear messaging.

> “I don't think we've ever quite got the messaging right about why it’s important to continue to get tested, even after your vaccinated… and it’s been impossible to get it right at a local level because the messages coming nationally have not been clear enough.”
>
> (Internal participant 1)

Some staff felt that surge testing would have had a similar impact, regardless of the enhanced payment on offer.

> “I think it [testing] would have continued as normal even if the payment wasn't there… I didn't come across anybody that said: 'Can I get paid for it', I never came across that… [and] none of the staff came back to me and said that.”
>
> (Internal participant 3)

TTSP application rates

The TTSP application rate is the main mechanism through which effects on other outcomes of interest are expected to operate. Application rates for the support payment are therefore an intermediate outcome that is likely to have been affected by the introduction of the revised TTSP scheme. It may be, however, that the availability of the revised TTSP scheme may have had an impact on testing rates, contact sharing, and compliance with self-isolation even in the absence of an impact on application rates. The weekly TTSP application rate is calculated as the number of individuals in the local authority who were self-isolating in a particular week who made applications to the TTSP scheme. As individuals were eligible in the 42 days following the end of their self-isolation period, their applications may not necessarily have been made in the weeks they were self-isolating. This was accounted for in the calculation of the weekly application rates.

Table 4. Recipients of the revised TTSP scheme in Kirklees

Amount paid over standard £500	Number of recipients
£500	9
£400 to £499	2
£300 to £399	7
£200 to £299	9
£100 to £199	9
£50 to £99	4
£1 to $49	6
Total	46

The weekly TTSP application rate among self-isolating individuals in Kirklees was higher even before the pilot was introduced (Appendix Figure 13). These rates increased for those individuals isolating in the weeks following the introduction of the revised TTSP scheme. Synthetic control estimates show that the one percentage point increase in the probability of self-isolating individuals applying to the revised TTSP scheme in Kirklees was not statistically significant (Appendix Figure 14). This suggests that increasing case rates were associated with increased numbers of self-isolating individuals, and therefore rising need for financial support. Similar patterns are seen in the synthetic control estimates in Appendix Figure 16, which shows that though there was an increase (of about 1.5 percentage points) in successful application rates among self-isolating individuals in the weeks following pilot implementation, this increase was not statistically significant.

Among internal council stakeholders, there were varying views as to whether the pilot had increased the number of TTSP applications. For some senior council members, a rise in application numbers and successful outcomes was demonstrable in the councils centrally held data. However, council staff generally understood and accepted that the rise in applications

could also be attributed to a variety of other factors, including surge testing, enhanced communications, and increased contact tracing.

> "In so much as we had an increase in applications and successful applications, but yeah, it did, to some extent. If you look at it in the context of what the scheme was designed to do in the first place, it was designed as several measures to control infection in communities. The fact the pilot tried to deliver an extended reach; you still look at it in the context of the whole."
>
> (Internal participant 2)

Looking at the figures of pilot applications in isolation (see Table 4), when compared to the level of standard TTSP submissions, some participants suggested that the pilot may not have been as impactful as anticipated.

> "You don't know this at the start, but some of our projections…it could actually open up a floodgate that we couldn't stop…in reality it perhaps didn't have much of a massive impact."
>
> (Internal participant 2)

However, some staff were sceptical about even the potential for changes in eligibility criteria to make an impact. For example, one view was that individuals engaging in door-to-door testing were more concerned with test outcomes over receiving the payment.

> "I don't think there was a general interest in the payment itself…most people who were taking the test were taking it because they wanted to get tested, to see if they did have COVID or not."
>
> (Internal participant 3)

A further view was the pilot may have needed longer to achieve substantial awareness for sustained uptake.

> "I must say if it [the pilot] went on for any longer it might have [increased awareness]. That's me using my sort of professional experience from other such pilots in other such guises. It comes to a sort of tipping point where everybody talks about it…so yeah, [it] takes a while for these things to filter through."
>
> (External participant 1)

TTSP application rates among individuals in IMD1-3 deciles

The final research question around impact investigates whether the availability of the revised TTSP scheme led to more applications among the most financially vulnerable individuals. These individuals may have faced the steepest barriers preventing them from complying with self-

isolation requirements. It is not possible to identify these individuals in the Test and Trace data. The evaluation has considered whether there was an increase in application rates among individuals living in LSOAs with Indices of Multiple Deprivation scores in the first 3 deciles. This assumes that individuals who are more financially vulnerable are more likely to be geographically concentrated in areas that have high deprivation scores. This is therefore an imperfect approximation of whether the revised TTSP scheme was able to successfully target individuals who may have been most in need of financial support to self-isolate. Synthetic control analysis showed no statistically significant impact on TTSP application rates even among self-isolating individuals in the most deprived areas in Kirklees (scoring within the 30% most deprived areas in England) (Appendix Figure 18).

Pilot stakeholders also showed mixed confidence in the pilot's ability to reach the most financially vulnerable individuals. For some council members there was a concern that the pilot had not made an impact on hard-to-reach groups, which had been their experience of similar interventions.

> "I think it will probably have done what most public health interventions always end up doing, which is no matter how good your intention is… to help those people who are hardest to reach, you probably haven't… In all likelihood, no we probably didn't reach the people that were most in need because we rarely do."
>
> (Internal participant 1)

However, other external participants felt strongly that the pilot had made an impact on the ability of the most deprived to self-isolate. It was noted that this was because of a reduction in financial burden caused by self-isolation. This was felt to have made a particular impact on hard-to-reach, single-income families living in multi-generational households.

> "I think [the enhanced payment] was an excellent method [for increasing self-isolation uptake]. It is really, really, difficult to self-isolate, especially when you have family members who are dependent on you. It wasn't just the individuals isolating [it's] the whole family isolating. We've got multi-generational families living together in the South Asian community and sometimes in the BAME [communities] too, just to keep [themselves] going.
>
> (External participant 2)

Process evaluation

This section focuses on the findings of the process evaluation based on the qualitative depth-interviews conducted with internal and external stakeholders. It follows the implementation of the pilot chronologically, looking first at the council's initial interaction with DHSC and the self-isolation WW programme. It then goes on to describe the development of the pilot, exploring the views of council staff and their preparations to deliver the pilot. Finally, this section goes onto

explore the barriers to implementation, mapping the range of experiences across internal and external stakeholders.

Perceptions of the aims and objectives of the pilot

From the council's perspective, there was a broad agreement that the overarching aim of the pilot and the self-isolation WW programme was to reduce the level of COVID-19 infection rates in the community. In line with this, the programme was viewed as intrinsically linked to the package of increased interventions introduced in May across parts of the North West, Midlands and West Yorkshire, set out by the former Secretary of State for Health and Social Care.

> "For me it [the pilot] sat within the broader context [of the increased interventions]. There was a whole range of things we were asked to do, including the door knocking the wastewater testing...so in my head the enhanced payments [sat] inside all of those additional [pieces of] work."
>
> (Internal participant 1)

Within this context, participants identified 3 aims specifically associated with the TTSP pilot:

- improving self-isolation outcomes
- integrating COVID-19 responses
- improving engagement with hard to reach audiences

Improving self-isolation outcomes

The original TTSP scheme was criticised for its eligibility criteria being too restrictive and the application process being overly bureaucratic. Participants felt the pilot would reduce the complexity of these processes. In practical terms, staff felt the programme would increase application numbers through simplifying eligibility criteria and messaging and by raising awareness of the scheme.

> "[It was] partly done verbally from the people doing the door knocking… partly it was done through the website… and then one the things that we're very dependent on is extending our reach from the website into the communities that wouldn't necessarily look at the council website, so making third sector leaders aware and those people who have better... routes of penetration into communities to give those messages…[We wanted to] make it as simple as possible, for as many people as possible who needed to access additional financial support to self-isolate… to take away some of those barriers of: 'well if you are in this particular financial situation you are [eligible], but if you're not, its slightly different and its complicated and its complex'."
>
> (Internal participant 1)

A further view was that the pilot should look to provide additional financial resource to individuals throughout their self-isolation to ensure compliance was not broken due to financial implications. It was suggested that the TTSP scheme in its original format did not provide a simple, consistent, and viable approach to self-isolation support.

> "I think if we'd have had a process of paying for self-isolation and offering financial support for people to self-isolate from the beginning that was simpler and took into account that… a lot of people in Kirklees, a lot of people in the country, are living very, very hand-to-mouth."
>
> (Internal participant 1)

Integrating COVID-19 services

For some, the pilot was viewed as a 'tool in the armoury' in terms of providing an integrated approach to reducing COVID-19 transmission. Senior council members in particular felt that a multifaceted response to reducing transmission was required. The pilot was seen as part of a holistic approach that included integrating surge testing, vaccination pathways and general advice on transmission reducing behaviours. It was suggested that together this would allow the council to address key factors associated with transmission.

> "[We wanted there to be] 3 possible outcomes. One that you would door knock and say: 'You've not been tested, you need to be tested, you've come back negative and this is how you continue to keep yourself negative, please go and have a vaccine.' The second outcome of door knocking was: 'You haven't been tested [and you test positive] and therefore we give you the additional support and the support that you need in order to self-isolate'….then those split into 2, one you test positive and you've been vaccinated, great. Two you test positive and you haven't been vaccinated, so you've got to wait 28 days from a positive PCR to be vaccinated, but here's how I can support you to be vaccinated. So, I really wanted to be able to wrap a whole package."
>
> (Internal participant 1)

Improving engagement among hard to reach audiences

A final perceived aim of the pilot was to increase engagement with Test and Trace among under-served populations.

> "We felt what we were trying to capture on the ground were those people who were less likely to come forward…[through] community engagement, like knocking on doors, and…encouraging people around things like taking your vaccination, promoting the schemes available, like this self-isolation scheme."
>
> (Internal participant 2)

Additionally, it was hypothesized that making the offer more accessible to those in higher-income groups would reduce the stigma of those in lower socio-economic backgrounds when applying for support.

> “The stigma element was really important...we wanted to make it a more open offer…It was absolutely about taking the stigma away…because people in a higher income bracket were eligible for that level of support, people in a lower bracket would think 'that's okay because they're getting it, and therefore I feel better about taking that additional resource’.”
>
> (Internal participant 1)

Preparations for implementation

Initial meetings between local and national government stakeholders were characterised as positive. As the programme intended, these sessions were used to build a sense of shared ownership, providing the council with a platform to design its pilot with guidance from DHSC.

> “I think clearly there was a commitment on both sides to turn it around…the whole nature of these pilots [is] they’re happening in real time and all parties are kind of responding to the situation.”
>
> (Internal participant 2)

However, as the project progressed into the commissioning phase, a breakdown in communication was experienced. Challenges with communication were often underpinned by a sense of imbalance between local and national government prioritisation.

> “We were asked to do a thing really rapidly, we did a thing really rapidly and then it took ages to get the formal sign off… so there was a difference in the speed of response from local and national government, which was frustrating.”
>
> (Internal participant 1)

Senior council staff understood that central government commissioning procedures could be time-consuming. However, they reported that the sign-off processes associated with the pilot were not always clearly defined. As a result, a level of frustration was experienced by council staff when pilot sign-off processes, specifically around funding, did not meet expected internal deadlines.

> “The bureaucracy of government departments, I don't think helped us… we went backwards and forwards just trying to get it confirmed that the money would be available... we actually ended up going at risk... we just wouldn't have got going otherwise.”
>
> (Internal participant 1)

Similarly, council staff implied that central government did not always understand local governance procedures, nor appreciated that they were less hierarchical and time-consuming than national ones.

> “We effectively signed it off at our end through our officer delegation scheme, you know, we didn’t have to go back to our cabinet and get executive sign-off… I think on your end, you needed to go through those internal governance checks to get the pilot scheme signed off… to some extent that was clearly outside of our control… is it just custom practice and procedure that its irrelevant the size of what the pot is, you have to go through a certain set of hoops to get something signed off at the relevant hierarchical level?”
>
> (Internal participant 2)

For council staff, being able to work with clearly identified central government contacts helped the pilot in working efficiently at the start of the process. However, staff turnover and movement within the pilot programme meant that council staff were not always liaising with the same contacts and it was felt that knowledge was lost when key individuals moved on.

> “I think there were some personnel issues…from our end, we were probably chasing [DHSC] colleagues a little bit, and it wasn’t for a want of trying at your end…I know some of your colleagues were leaving the organisation or moving around…and it happens doesn’t it… so perhaps we lost a bit of the audit trail.”
>
> (Internal participant 2)

Among senior council staff, there was a consensus that the commissioning process was highly time-consuming and bureaucratic which acted as a significant barrier for resource allocation and planning.

> “I’m not sure we ever quite managed to get it moving that smoothly. [It was] because [of] the delays that we experienced in getting it confirmed [that] the additional resource was going to be made available for the isolation payments…that would be my most significant frustration with the process.”
>
> (Internal participant 1)

Within Kirklees council, dedicated roles were created for the duration of the pilot across public health, welfare, and exchequer functions. These roles were filled through external recruitment and temporary re-allocation of staff internally. Underpinning the recruitment drive were concerns about the unmanageable staffing demands due to the possibility of a large volume of TTSP submissions.

“We were mindful of…the additional capacity we had to put in to process the applications…we had already redirected [a] considerable number of welfare and exchequer staff away from their day-job activities…in wanting to deliver the right outcomes for the pilot, we didn’t want to create a monster in terms of an unmanageable capacity.”

(Internal participant 2)

Training was seen as important in developing a pool of staff that were able to deliver the pilot consistently. Training was delivered to 2 main teams, the first of which was the exchequer function, encompassing training on the changes to the pilot’s eligibility criteria. The second was the COVID Community Support Officers (CCSO) team, which focused on public engagement. In some cases, staff felt they were well prepared through training, but a degree of ‘learning on the job’ was also reported. This was especially the case for CCSOs, some of whom felt that training was rolled out too quickly, and more time and additional support would have been welcomed.

“It was a very last minute thing, we only found out a few days before that we were going to do surge testing the next week…it was kind of like a bit rushed… there could have been a bit more training... I think a couple of days training around what you need to do, how to speak to the people, what you can say, what you can't say... and to give us an idea of how to approach people.”

(Internal participant 3)

Underpinning the communications strategy were concerns about the unmanageable amount of applications a significant public awareness campaign could have had on internal resource.

“We did debate that as well, not to make it a big fanfare, because we weren’t sure how it was going to be reacted too. What we did do is [use] the existing comm’s that we had just to make [people aware of] the scheme… I think the other thing we were mindful of as well, was the additional capacity we had to put in [to] actually process the applications, you know even the unsuccessful ones, it requires administration capacity.”

(Internal participant 2)

For senior council participants, consultation with local external stakeholders was seen as an important phase in the development of locally run initiatives. Local enterprise, faith community and VCS partners were noted as particularly important as sounding boards for any policy initiatives. However, this process was not able to be undertaken during the development of the pilot. While council members were committed to involving a wide range of stakeholders in the process, staff reported time constraints as a barrier to engagement.

“In ideal circumstances, what we would have done...we have a conglomeration of the kind of VCS [partners] in Kirklees that sit under the banner of third sector leaders, so... what we would of done, and what we would do, in normal circumstances, is taken something to [them] and say this is the opportunity we have, this is the outcome we want to achieve, what is your advice? We couldn't do that.”

(Internal participant 1)

Pilot delivery

The pilot was similar to the original TTSP scheme in terms of its processes. This meant that many of the IT systems and structures required to implement the pilot were already embedded within the council. While the majority of systems and processes were already in place, 3 delivery mechanisms were required for the pilot’s rollout:

- information cascading across external partners
- surge testing by CCSOs
- changes to the online application forms and the council’s website

Information cascading across external partners

The pilot relied on increasing awareness of the pilot using a variety of existing external relationships across local enterprise, VCS and faith community partners. Onus was placed on strategic leads and staff to cascade information about the scheme across and within relevant stakeholders. The strategy employed by the council was to disseminate a clear message about the increased financial offer for those required to self-isolate.

“We just wanted it to be: 'if you have been told to self-isolate in Kirklees in this timeframe for the purpose of this pilot, its dead easy and you just click here’.”

(Internal participant 1)

However, participants suggested that the simplicity of pilot messaging may have been undermined by funding availability, complexity of the original TTSP scheme, issues with COVID-19 messaging more broadly and COVID-19 messaging fatigue.

“It was very, very muddled, because we spent a long time going backwards and forwards [asking] well can we say we're doing this, can't we say were doing this, what's the financial situation going to look like? We were never able to make it straight forward, so I think if you find the penetration [isn’t what we hoped for], it’s because it was too bloody complicated…I think there's a problem with the scheme itself, I think there's a problem with the approach to COVID messaging, it’s been complicated for a very long time. I don't think people are listening anymore, we've never quite got the simplicity of the messaging right. I think it’s hard for people

to engage with it because it's being going on for such a long time, I think we've lost our audience."

(Internal participant 1)

External stakeholders indicated that the process of information cascading did not always deliver messages about the pilot as simply or effectively as intended. In some cases, stakeholders were unaware of the pilot because information about it was lost in a surplus of COVID-19 messaging. There were also concerns about consistency and level of detail available, particularly at what was a very busy time.

"I wouldn't say [it was communicated] particularly well... so we knew there were some changes, but we didn't know the granular detail."

(External participant 1)

"It might have been something [we were] given [information about], but you're going to have to remember that this was DEFCON 6… it was at a really busy time for us as a business unfortunately."

(External participant 4)

CCSO and surge testing

The strategy employed by the council was to disseminate information about the pilot using surge testing. CCSOs were responsible for communicating the revised scheme to individuals who took part in door-to-door testing. CCSO staff were generally complementary of the direction provided by senior colleagues at the council, which they described as supportive, structured, and engaging.

"I think they supported us quite well... they were constantly there for us, for example if I was out and about and I ran out of testing kits or leaflets or something like that [they would help us]...and they would get us whatever we need…[it was] structured, if somebody had a problem, they would tell me as [job title] and I would escalate it to my supervisor...we all knew how to go down the line, how to deal with it."

(Internal participant 3)

However, participants also considered that one of the main barriers to delivery was the time constraints associated with the rollout of surge testing. This was seen to have broader implications for the preparedness of CCSO staff.

> “If they had more time, they could have been a bit more organised…sometimes we didn't know who was coming to work on that day...some staff said they had there other jobs to do that day [or they said]: “I can't come in tomorrow I've got my other job…”, and we were like: “okay we need to find somebody else”. If we had known in advance, we could [have] organised the staff to certain days.”
>
> (Internal participant 3)

Online application forms and webpage changes

As a part of the changes in eligibility criteria, the council’s online TTSP application form was amended to reflect the pilot’s new eligibility criteria. This process included changes to the online application forms dropdown lists and multiple-choice answers. However, these processes were considered relatively minor, with staff reporting only small details needing to be changed. Similarly, amends were made to the council’s webpage to signpost the increased offer, which was also reported as being relatively straightforward.

In some cases, staff reported positive engagement with the public, however, it was also noted that residents were not prepared to engage, which presented barriers to recommending the payment.

> “[I was telling them about the enhanced payment]…I was getting it in at the beginning, middle or end, I was just getting it in whenever I could, but you know... some people… didn't talk to you…it just depended on who answered the door and who you are speaking to… we got a mixed reaction. Some people wanted [to engage with CCSOs] and other said, ‘No thank you, bye’.”
>
> (Internal participant 3)

Conclusion

The synthetic control analysis presented in this evaluation suggests that the Kirklees self-isolation pilot had no statistically significant impacts on the outcomes of interest. This included the rate of TTSP applications among self-isolating individuals, compliance with self-isolation, contact sharing and testing rates in the 7 weeks following pilot implementation.

In the pre-intervention period, contact sharing in Kirklees was on average higher than in other local authorities in England. However, no systematic changes were observed in the number of contacts shared in the weeks following the introduction of the pilot. Similarly, no systematic impact was observed on the proportion of cases sharing at least one (household or non-household) contact in Kirklees in the post-pilot period

Levels of compliance with self-isolation guidance in Kirklees were similar to those in other local authorities both before and after the pilot was introduced. This was true both using a self-reported measure of compliance for cases that re-entered the system after having tested positive when they were contacts, as well as a more observational indicator of compliance in the proportion of isolating individuals with 100% successful check-in calls. In line with this, synthetic control measures confirmed that there were no statistically significant impacts on compliance as a result of the pilot.

Prior to the pilot's implementation, Kirklees exhibited lower testing rates when compared to donor pool local authorities used for this analysis. Testing rates in Kirklees experienced a spike during the pilot's implementation due to its co-occurrence with surge testing measures. Beyond the initial testing spike, synthetic control analysis indicated that there was no impact on testing rates as a result of the introduction of the pilot.

TTSP application rates were considered the main mechanism through which its effects on other outcomes were expected to operate. TTSP application rates in Kirklees were higher in the weeks before the pilot, with these rates increasing in the weeks following the pilot's introduction. Synthetic control estimates showed a one percentage point increase in the average probability of TTSP applications among self-isolating individuals in the weeks following the pilot's implementation. However, this was not statistically significant.

From the perspective of senior council members, the pilot was viewed mostly as a success by due to the increase in TTSP application numbers. This was the case for both the standard and the enhanced payment. In addition, while monitoring the impact of compliance was seen as challenging (due to a lack of mechanisms to measure uptake), it was hypothesized that the pilot may have increased compliance rates among individuals who received the increased offer.

Testing uptake was also thought to have been bolstered through increased awareness of the pilot and its ability to offer a financial safety net for those otherwise unable to self-isolate effectively due to financial concerns.

However, there was an air of caution exercised about the mechanisms by which these factors occurred. In line with the quantitative analysis, some participants linked these outcomes to a variety of external factors, including surge testing, enhanced communications, and increased contact tracing. In addition, a range of barriers to implementation and communication were identified and, in particular, a concern about generating an over-whelming number of applications. In the end, the number of additional applications received was relatively limited and there was evidence that a lack of knowledge and understanding of the pilot among both key external partners and the public.

Limitations

As synthetic control analysis uses data at an aggregate level, the sample consists of about 174 local authorities (the number of local authorities used in analysis varies with the outcome and data availability) and so the analysis may be underpowered to detect small but real impacts that did arise from the program. A further caveat of this interpretation may be that the synthetic control method aggregates effects over the local authority rather than considering the individual level effects of exposure to or receipt of the revised TTSP pilot. In this way, any strong impacts for the small selection of individuals who were exposed to the pilot (in areas targeted by surge testing) may be neutralised by weak or null impacts on those individuals who were not in the targeted areas or groups.

This analysis also stops 7 weeks after the pilot intervention came into place, and as such only provides a short-term measure of impact. It may be that some of the observed impacts of the revised TTSP scheme (such as contact sharing behaviour) may have increased or dissipated over the longer term. As synthetic control analysis conducts comparisons between ‘treated’ and comparator areas over time, it does rely on the assumption that there is conditional independence in the evolution of outcome trends over time, given past outcomes that have been matched on. It is also important to note that this analysis assumes that there were no other ‘shocks’ or changes that came into place at the same time as the pilot intervention. In such a situation, the estimates produced by the synthetic control method would be biased depending on how these other changes affected the outcomes of interest.

Appendix

Appendix Table 1. Descriptive statistics of outcomes of interest and covarying characteristics in pre-pilot period

	Total	Kirklees	Other local authorities	p value
Household and non-household contacts shared per case	2.442 (0.831)	3.160 (0.149)	2.438 (0.832)	0.034
Weekly proportion sharing at least one (household or non-household) contact	0.788 (0.158)	0.917 (0.022)	0.788 (0.159)	0.045
Proportion with 100% successful check-in calls	0.788 (0.140)	0.713 (0.141)	0.788 (0.139)	0.187
Proportion of newly isolating cases who report no non-household contacts	0.821 (0.127)	0.782 (0.034)	0.821 (0.127)	0.455
Weekly proportion of self-isolating individuals who made TTSP applications	0.023 (0.023)	0.032 (0.004)	0.023 (0.023)	0.335
Weekly proportion of self-isolating individuals who made successful TTSP applications	0.012 (0.016)	0.019 (0.004)	0.012 (0.016)	0.281
Weekly total TTSP payments (£)	1,210.249 (2,215.088)	12,916.667 (3,992.702)	1,142.582 (2,015.106)	< 0.001
Weekly testing rate (tests / population)	0.033 (0.035)	0.025 (0.002)	0.033 (0.035)	0.578
Weekly positivity rate (positive tests / tests)	0.000 (0.001)	0.001 (0.000)	0.000 (0.001)	0.502
Weekly case rate per 100,000 population (GOV.UK)	20.982 (18.767)	70.710 (20.402)	20.690 (18.376)	< 0.001
Proportion fully vaccinated (GOV.UK)	29.933 (10.011)	33.400 (8.052)	29.913 (10.021)	0.395
Demographic and employment characteristics				
Age in years (ONS 2017)	41.785 (4.137)	41.194 (0.000)	41.788 (4.149)	0.726
Proportion male (ONS 2017)	0.495 (0.009)	0.496 (0.000)	0.495 (0.009)	0.69

	Total	Kirklees	Other local authorities	p value
Index of Multiple Deprivation rank (2019)	17,608.744 (5,370.497)	13,913.988 (0.000)	17,630.101 (5,378.631)	0.091
Proportion of population in IMD deciles 1-3	0.259 (0.208)	0.447 (0.000)	0.258 (0.208)	0.026
Ethnicity (ONS 2019)				
White British	0.792 (0.185)	0.750 (0.000)	0.792 (0.185)	0.582
White other	0.052 (0.047)	0.019 (0.000)	0.052 (0.047)	0.085
Mixed	0.028 (0.019)	0.028 (0.000)	0.028 (0.019)	0.969
Asian	0.082 (0.090)	0.177 (0.000)	0.081 (0.090)	0.01
Black	0.035 (0.052)	0.019 (0.000)	0.035 (0.053)	0.45
Other ethnicities	0.011 (0.017)	0.007 (0.000)	0.011 (0.017)	0.575
Hourly pay (ASHE, 2020)	15.653 (2.553)	14.100 (0.000)	15.662 (2.558)	0.135
Employment rate (ONS, 2020)	0.763 (0.044)	0.725 (0.000)	0.764 (0.044)	0.032
Economic inactivity rate (ONS, 2020)	0.200 (0.039)	0.252 (0.000)	0.200 (0.039)	0.001
Age standardised mortality rates, 2019	910.195 (132.044)	979.710 (0.000)	909.779 (132.329)	0.196
Age standardised mortality rates, 2020	1,038.638 (163.414)	1,136.030 (0.000)	1,038.055 (163.728)	0.143
COVID-19 deaths as % of all deaths, 2020	12.282 (3.720)	14.000 (0.000)	12.271 (3.729)	0.257
Industry composition of employment (BRES, 2019)				
Agriculture	0.001 (0.002)	0.000 (0.000)	0.001 (0.002)	0.138
Mining	0.012 (0.009)	0.005 (0.000)	0.012 (0.009)	0.062
Manufacturing	0.084 (0.052)	0.158 (0.000)	0.083 (0.052)	< 0.001
Construction	0.054 (0.022)	0.061 (0.000)	0.054 (0.022)	0.487
Motor trades	0.021 (0.008)	0.023 (0.000)	0.021 (0.008)	0.562
Wholesale	0.044 (0.019)	0.056 (0.000)	0.044 (0.019)	0.117
Retail	0.097 (0.023)	0.122 (0.000)	0.096 (0.023)	0.007
Transport	0.051 (0.035)	0.033 (0.000)	0.052 (0.035)	0.188

	Total	Kirklees	Other local authorities	p value
Accommodation and food services	0.074 (0.024)	0.060 (0.000)	0.074 (0.024)	0.161
Information and communications	0.041 (0.032)	0.018 (0.000)	0.041 (0.032)	0.075
Finance and insurance	0.025 (0.034)	0.010 (0.000)	0.025 (0.034)	0.268
Property	0.018 (0.008)	0.027 (0.000)	0.018 (0.008)	0.008
Professional, scientific, and technical	0.086 (0.044)	0.057 (0.000)	0.086 (0.045)	0.106
Business administration	0.090 (0.038)	0.056 (0.000)	0.090 (0.038)	0.027
Public health administration	0.037 (0.021)	0.033 (0.000)	0.037 (0.021)	0.639
Health	0.128 (0.042)	0.138 (0.000)	0.128 (0.042)	0.531
Arts and entertainment	0.047 (0.014)	0.043 (0.000)	0.047 (0.014)	0.543
Education	0.090 (0.031)	0.101 (0.000)	0.090 (0.031)	0.376
Number of observations	1,044	6	1,038	

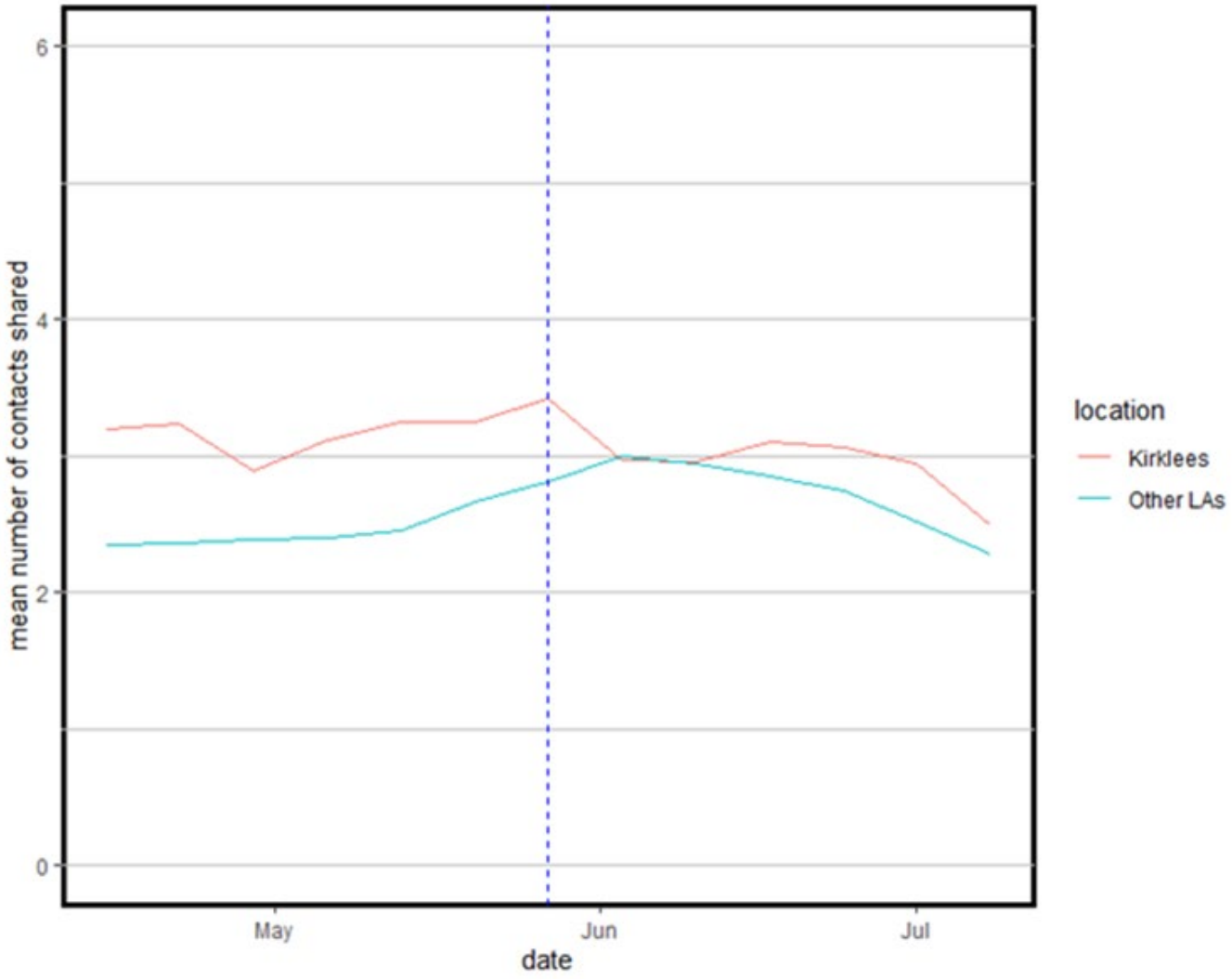
Notes

The table reports summary statistics for the variables of interest means as well as standard deviations in parentheses. Each observation is the weekly aggregate statistic for the local authority in the week. Demographic and employment characteristics are taken as fixed from official characteristics and are matched at LSOA level where available before aggregating to the local authority level. The pre-pilot period consists of all weekly observations between 15 April 2021 and 26 May 2021.

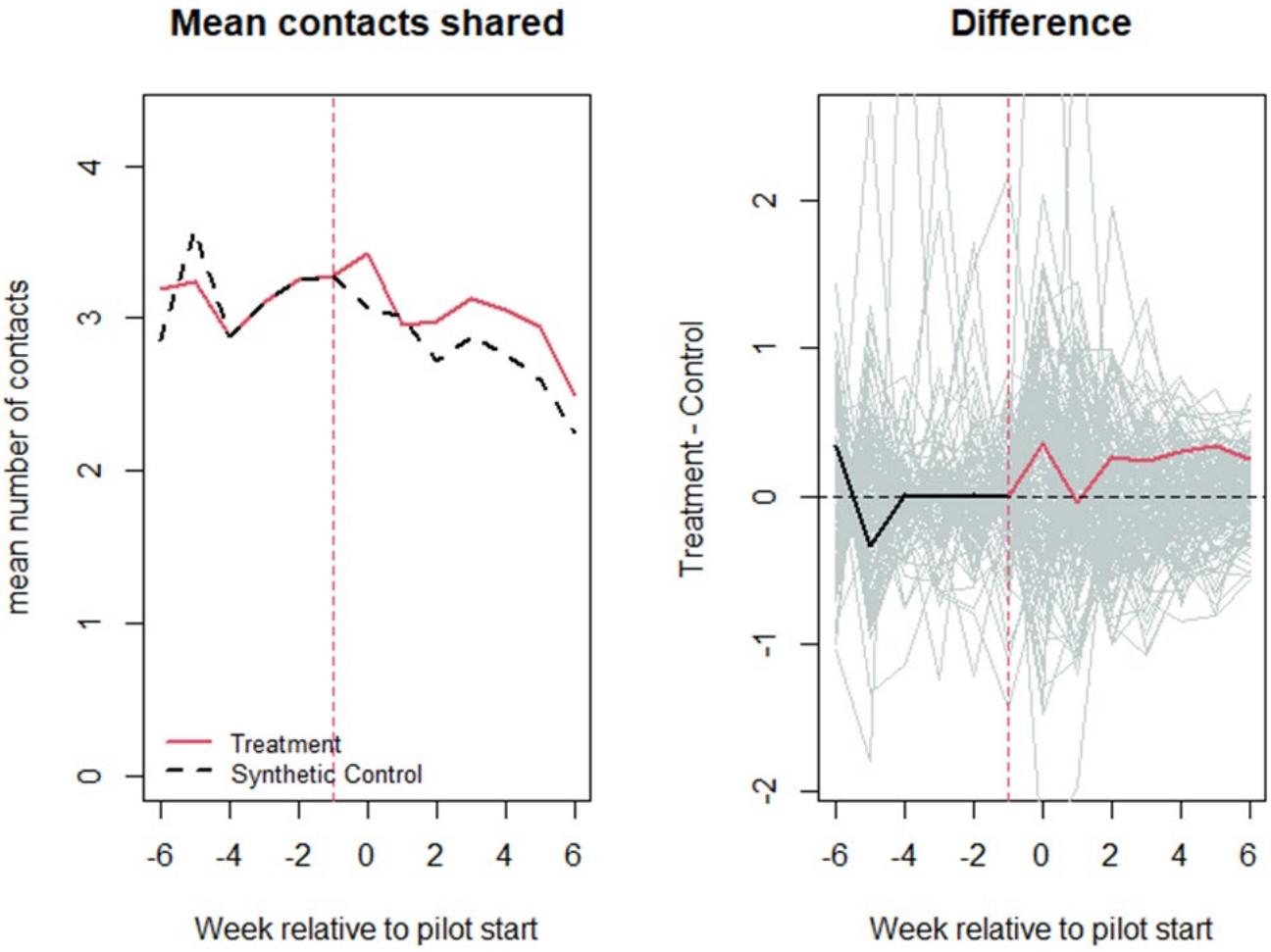
Synthetic control method

Mean contacts shared

Appendix Figure 1. Weekly mean (household and non-household) contacts shared per case in Kirklees and other local authorities in donor pool



Appendix Figure 2. Synthetic control estimates of weekly mean contacts shared



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 2. Synthetic control estimates of gaps between Kirklees and synthetic control in mean contacts shared

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.3338	
-5	-0.3338	
-4	0.0008	
-3	0.0003	
-2	0.0014	
-1	-0.0004	
0	0.3580	>0.9999 (0.7329)
1	-0.0478	>0.9999 (0.8696)
2	0.2580	>0.9999 (0.6584)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	0.2408	>0.9999 (0.6335)
4	0.2955	>0.9999 (0.5466)
5	0.3397	>0.9999 (0.3975)
6	0.2513	>0.9999 (0.4224)
Pre-treatment average gap	0.0004	
Post-treatment average gap	0.2422	
Average impact estimate	0.2419	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 3. Balance table showing variables used to select synthetic control for mean contacts

	Kirklees	Synthetic control	All local authorities (scaled)
Proportion White British	0.750	0.745	0.789
Proportion mixed ethnicity	0.028	0.027	0.029
Proportion Asian	0.177	0.174	0.084
Proportion Black	0.019	0.019	0.036
Proportion other ethnicities	0.007	0.008	0.011
COVID-19 deaths as % of all deaths, 2020	14.000	14.001	12.334
Average hourly pay (£)	14.100	14.099	15.713
Outcome_lag.-1	3.282	3.282	2.671
Outcome_lag.-2	3.251	3.250	2.494
Outcome_lag.-3	3.108	3.108	2.397
Outcome_lag.-4	2.883	2.882	2.414
Outcome_lag.-6.-5	6.439	6.439	4.708

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 4. Weights and local authorities used to construct synthetic control for mean contacts

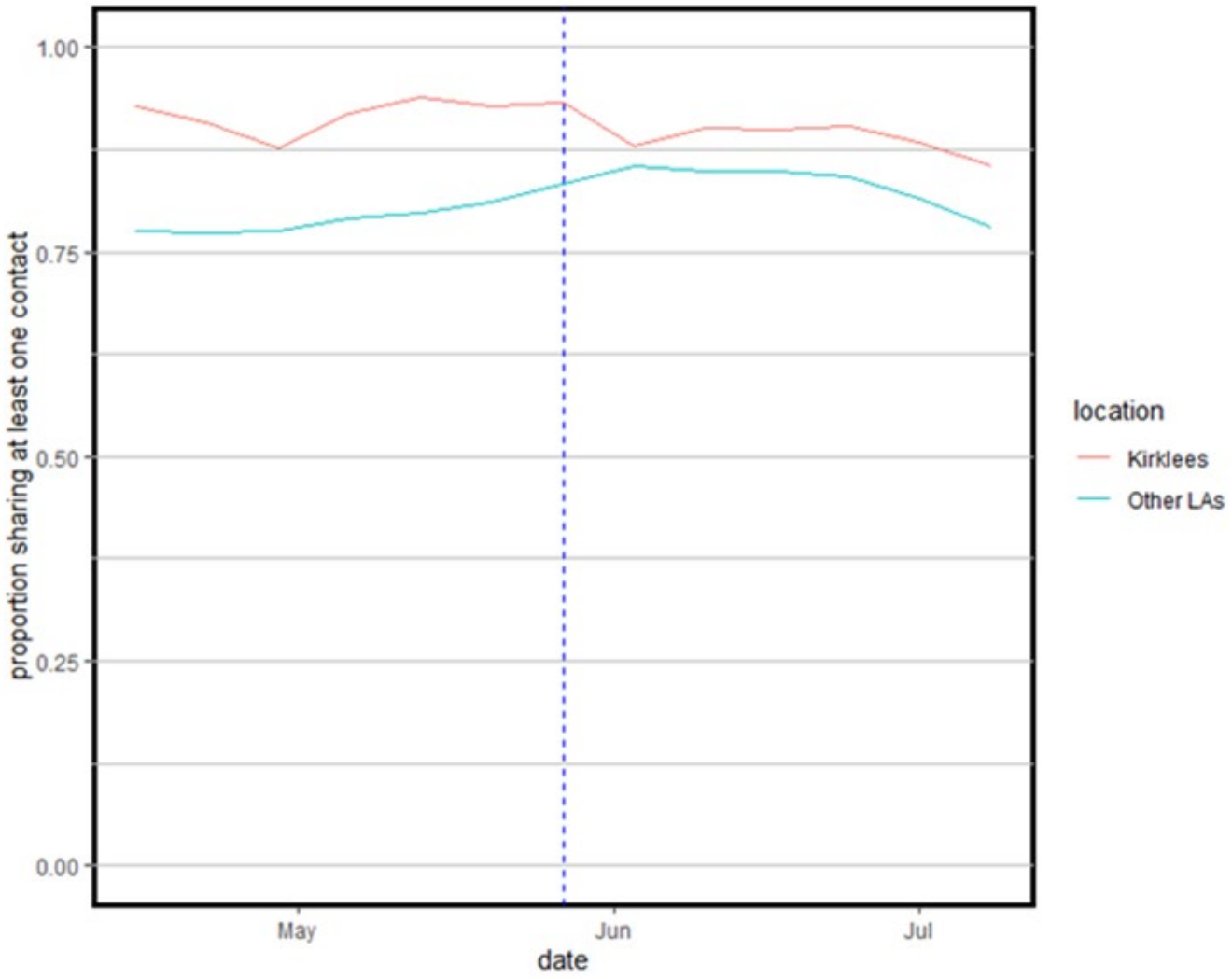
Local authorities	Weights
Blackburn with Darwen	0.087
Blackpool	0.010
Hyndburn	0.143
Nottingham	0.099
Oadby and Wigston	0.160
Pendle	0.192
Redbridge	0.032
Rushmoor	0.184
Telford and Wrekin	0.079
Test Valley	0.013

Notes

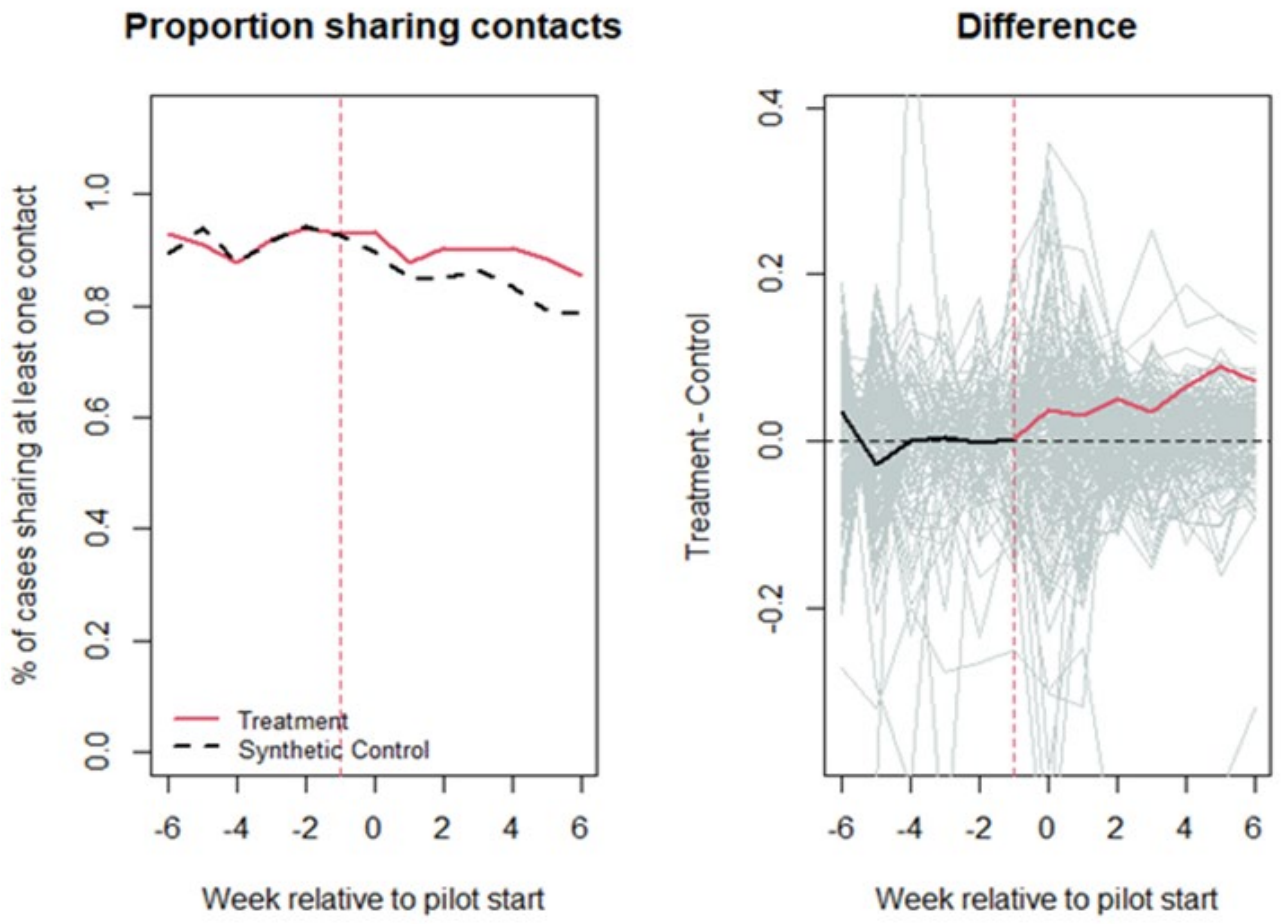
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Proportion of cases sharing at least one contact

Appendix Figure 3. Weekly proportion of cases sharing contacts in Kirklees and other local authorities in donor pool



Appendix Figure 4. Synthetic control estimates of proportion of cases sharing at least one contact



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 5. Synthetic control estimates of gaps between Kirklees and synthetic control in proportion sharing contacts

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.0357	
-5	-0.0288	
-4	-0.0001	
-3	0.0042	
-2	-0.0023	
-1	0.0029	
0	0.0371	>0.9999 (0.4534)
1	0.0309	>0.9999 (0.3789)
2	0.0507	>0.9999 (0.2422)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	0.0348	>0.9999 (0.2174)
4	0.0665	>0.9999 (0.1801)
5	0.0905	0.6958 (0.0994)
6	0.0714	0.4781 (0.0683)
Pre-treatment average gap	0.0019	
Post-treatment average gap	0.0546	
Average impact estimate	0.0526	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 6. Balance table showing variables used to select synthetic control for proportion sharing (household and non-household) contacts

	Kirklees	Synthetic control	All local authorities (scaled)
Average age in local authority	41.1942	41.2010	41.6567
Average hourly pay (£)	14.1000	14.0999	15.7133
Outcome_lag.-1	0.9302	0.9272	0.8138
Outcome_lag.-2	0.9399	0.9422	0.8032
Outcome_lag.-3	0.9197	0.9155	0.7864
Outcome_lag.-4	0.8776	0.8776	0.7805
Outcome_lag.-6.-5	1.8374	1.8305	1.5491

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 7. Weights and local authorities used to construct synthetic control for proportion sharing contacts

Local authorities	Weights
Ashfield	0.042
Cambridge	0.007
Hinckley and Bosworth	0.499

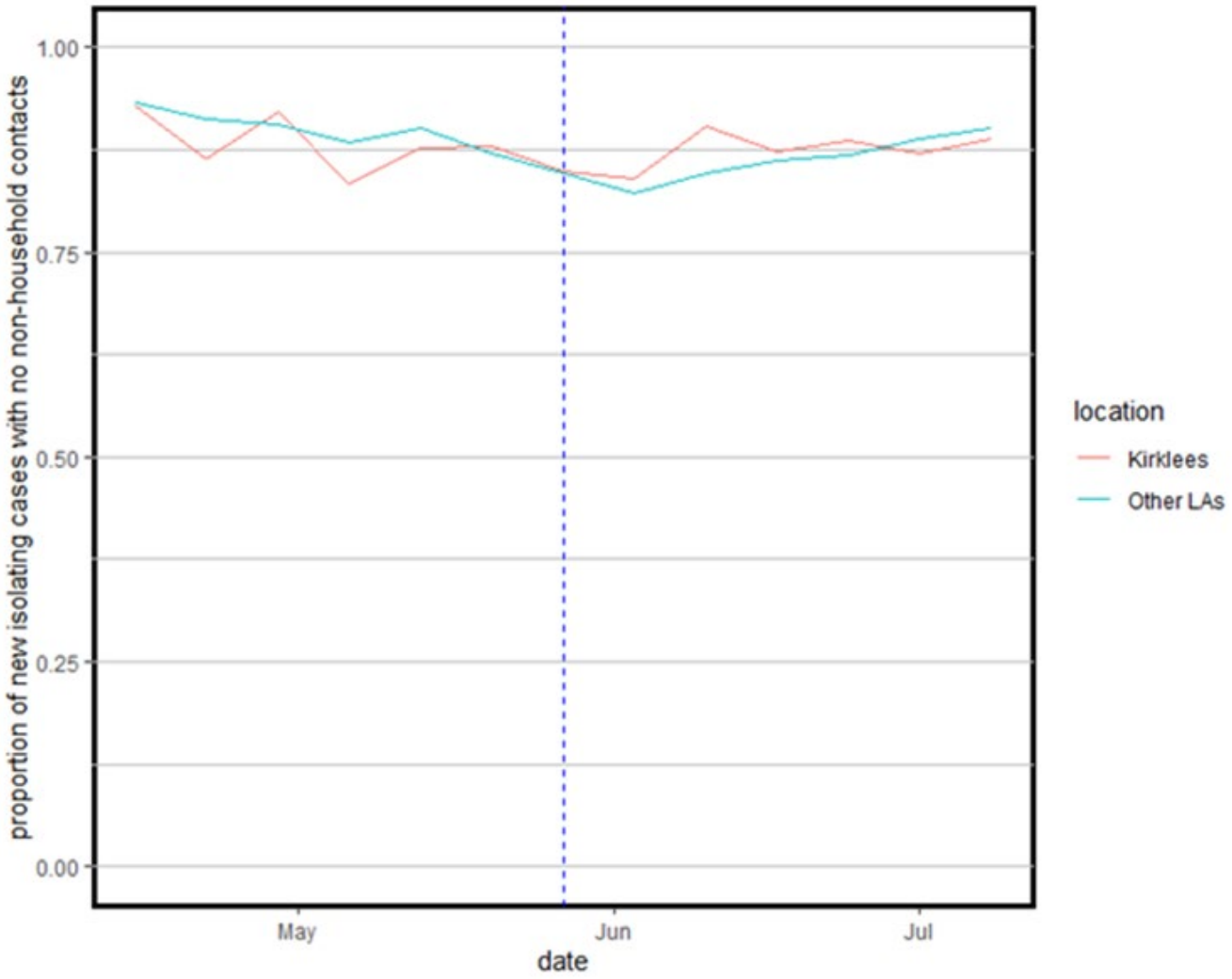
Local authorities	Weights
Leicester	0.163
Newcastle upon Tyne	0.270
Welwyn Hatfield	0.020

Notes

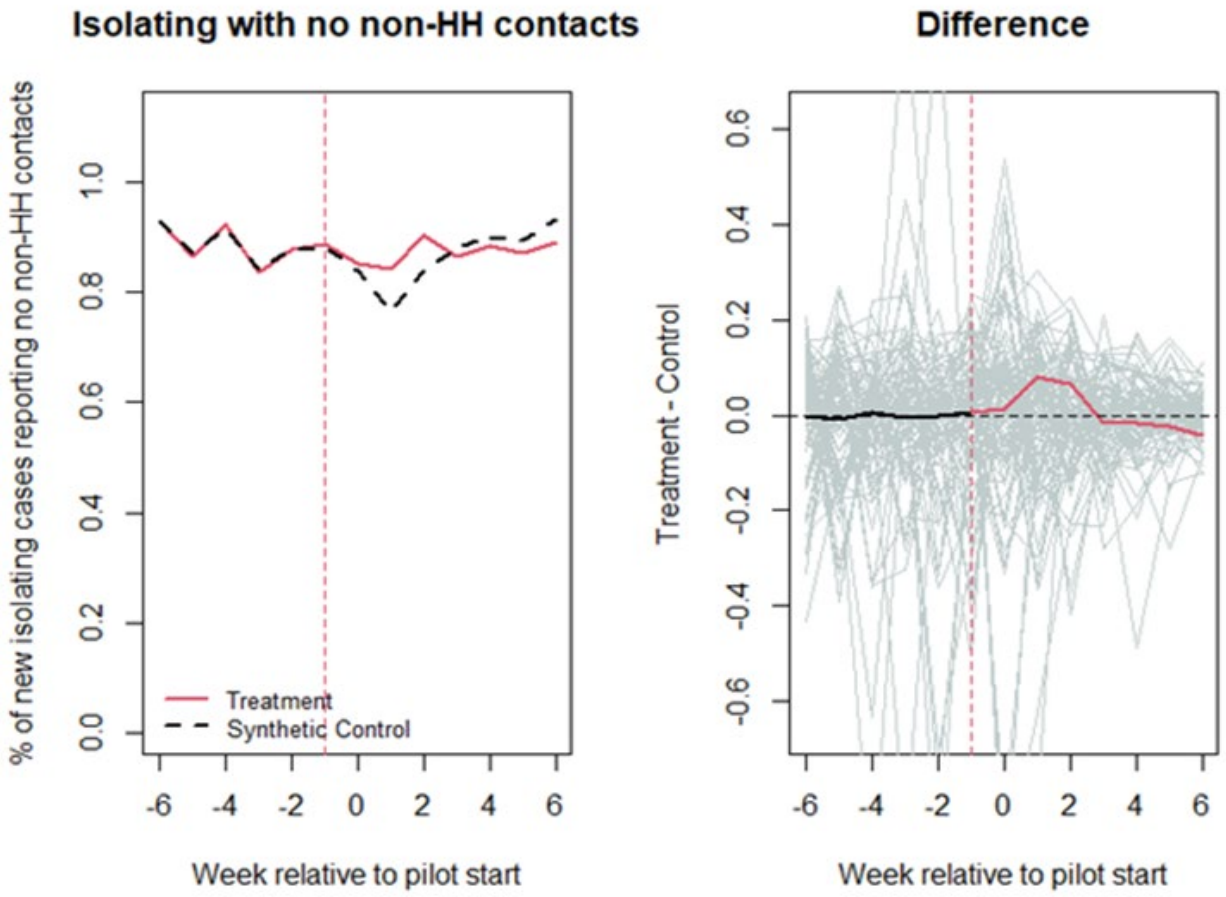
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Proportion of new isolating cases reporting no non-household contacts

Appendix Figure 5. Weekly proportion of new isolating cases not reporting any non-household contacts in Kirklees and other local authorities in donor pool



Appendix Figure 6. Synthetic control estimates of weekly proportion of new isolating cases reporting no non-household contacts



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 8. Synthetic control estimates of gaps between Kirklees and synthetic control in proportion of new isolating cases reporting no non-household contacts

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.0001	
-5	-0.0079	
-4	0.0046	
-3	-0.0064	
-2	-0.0009	
-1	0.0054	
0	0.0124	>0.9999 (0.8485)
1	0.0788	>0.9999 (0.7879)
2	0.0642	>0.9999 (0.5859)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	-0.0156	>0.9999 (0.7475)
4	-0.0153	>0.9999 (0.7677)
5	-0.0229	>0.9999 (0.8485)
6	-0.0426	>0.9999 (0.9495)
Pre-treatment average gap	-0.0008	
Post-treatment average gap	0.0084	
Average impact estimate	0.0076	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 9. Balance table showing variables used to select synthetic control for proportion of new isolating cases reporting no non-household contacts

	Kirklees	Synthetic control	All local authorities (scaled)
Mean IMD rank of local authority	13,913.9900	13,913.9900	16,389.6500
Percentage of local authority population in IMD deciles 1 to 3	0.4468	0.4457	0.3146
Average age in local authority	41.1942	41.1868	41.0264
Percent vaccinated	22.1000	22.0875	18.2610
Economic inactivity rate	0.2518	0.2450	0.2055
Age standardised mortality rates, 2019	979.7100	979.7409	931.1648
Age standardised mortality rates, 2020	1,136.0300	1,136.0130	1,070.0180
Outcome_lag.-1	0.8866	0.8812	0.8700
Outcome_lag.-2	0.8769	0.8778	0.8884
Outcome_lag.-3	0.8361	0.8425	0.8986
Outcome_lag.-4	0.9211	0.9164	0.9132
Outcome_lag.-6.-5	1.7922	1.8000	1.8423

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 10. Weights and local authorities used to construct synthetic control for proportion of new isolating cases reporting no non-household contacts

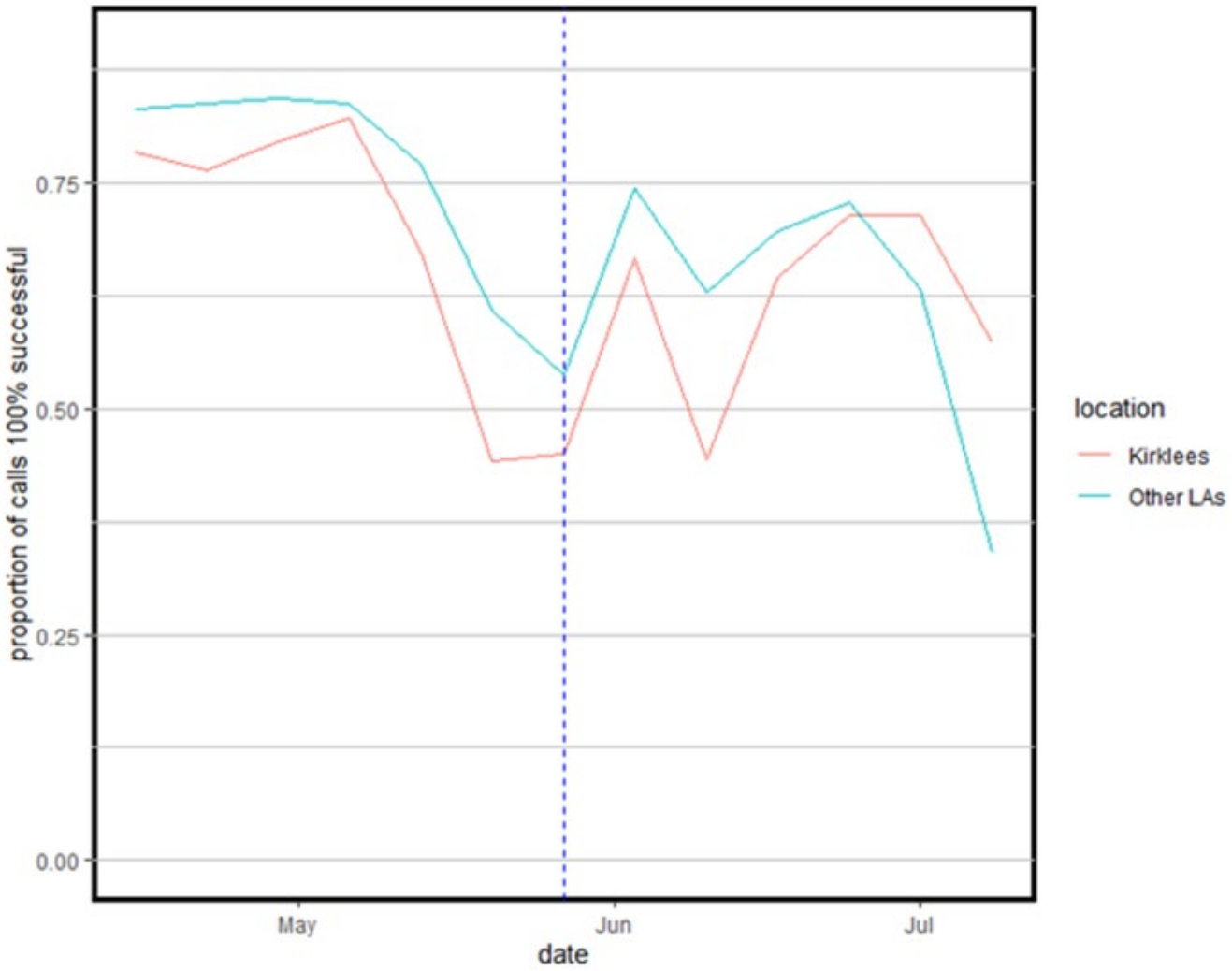
Local authorities	Weights
East Lindsey	0.007
Enfield	0.225
Harrow	0.053
Hyndburn	0.320
Middlesbrough	0.058
North Kesteven	0.034
Sefton	0.033
Sutton	0.018
Warwick	0.065
West Lancashire	0.045
Wirral	0.117
Wokingham	0.025

Notes

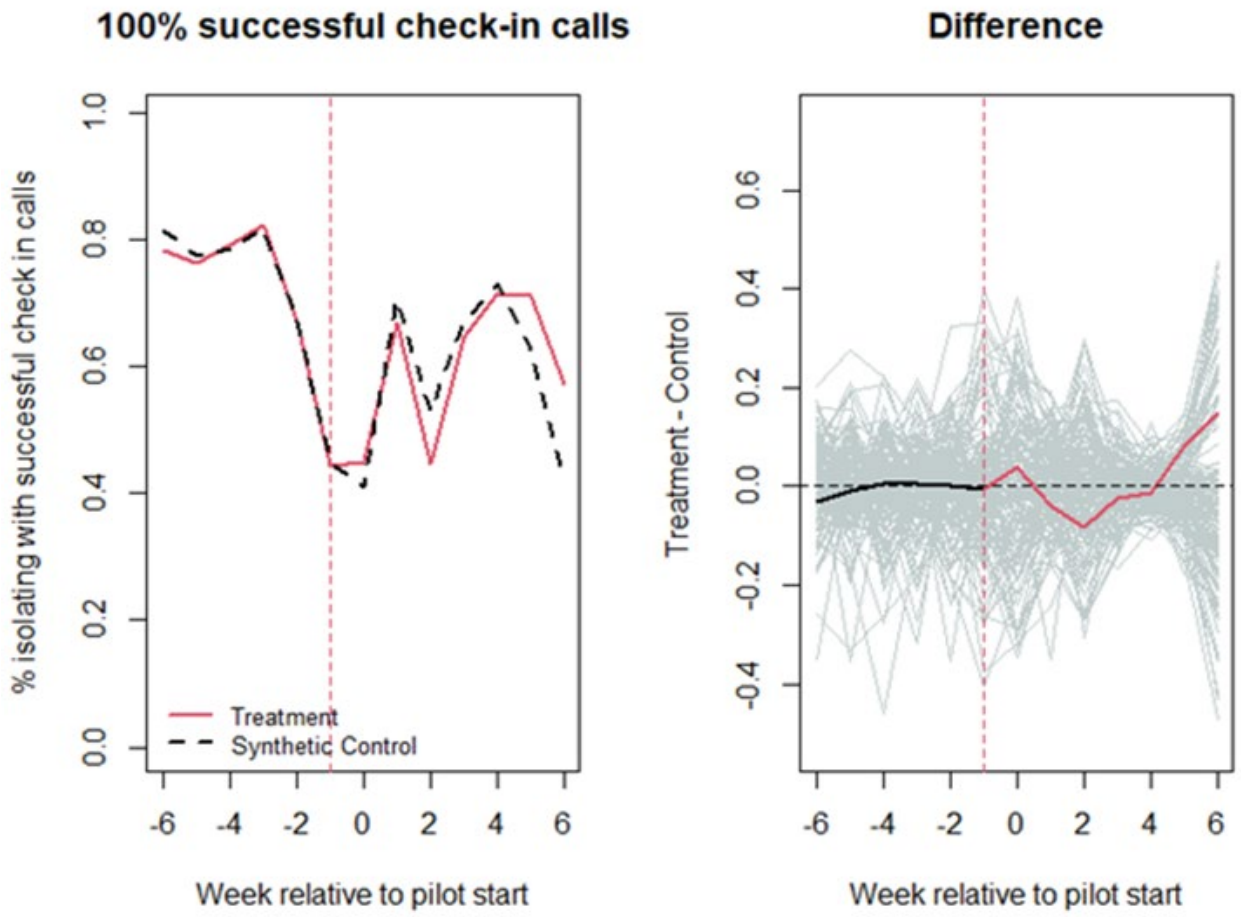
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Proportion of isolating individuals with 100% successful check-in calls

Appendix Figure 7. Weekly proportion of isolating individuals with 100% successful check-in calls in Kirklees and other local authorities in donor pool



Appendix Figure 8. Synthetic control estimates of weekly proportion of self-isolating individuals with 100% successful check-in calls



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 11. Synthetic control estimates of gaps between Kirklees and synthetic control in proportion of self-isolating individuals with 100% successful check-in calls

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	-0.0302	
-5	-0.0101	
-4	0.0053	
-3	0.0065	
-2	-0.0004	
-1	-0.0054	
0	0.0384	>0.9999 (0.7485)
1	-0.0374	>0.9999 (0.9693)
2	-0.0835	>0.9999 (0.6994)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	-0.0256	>0.9999 (0.6871)
4	-0.0152	>0.9999 (0.6258)
5	0.0831	>0.9999 (0.8344)
6	0.1462	>0.9999 (0.8466)
Pre-treatment average gap	-0.0057	
Post-treatment average gap	0.0151	
Average impact estimate	0.0094	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 12. Balance table showing variables used to select synthetic control for proportion with 100% successful check-in calls

	Kirklees	Synthetic control	All local authorities (scaled)
Mean IMD rank of local authority	13,913.9900	13,913.9900	17,474.7500
Percentage of local authority population in IMD deciles 1 to 3	0.4468	0.4404	0.2640
Percent vaccinated	22.1000	22.0875	18.8531
Average hourly pay	14.1000	14.1108	15.7157
Age standardised mortality rates, 2019	979.7100	979.7434	912.6911
Age standardised mortality rates, 2020	1,136.0300	1,136.0220	1,042.3070
Outcome_lag.-1	0.4441	0.4495	0.6042
Outcome_lag.-2	0.6721	0.6725	0.7718
Outcome_lag.-3	0.8227	0.8162	0.8344
Outcome_lag.-5.-4	1.5536	1.5584	1.6803

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 13. Weights and local authorities used to construct synthetic control for proportion with 100% successful check-in calls

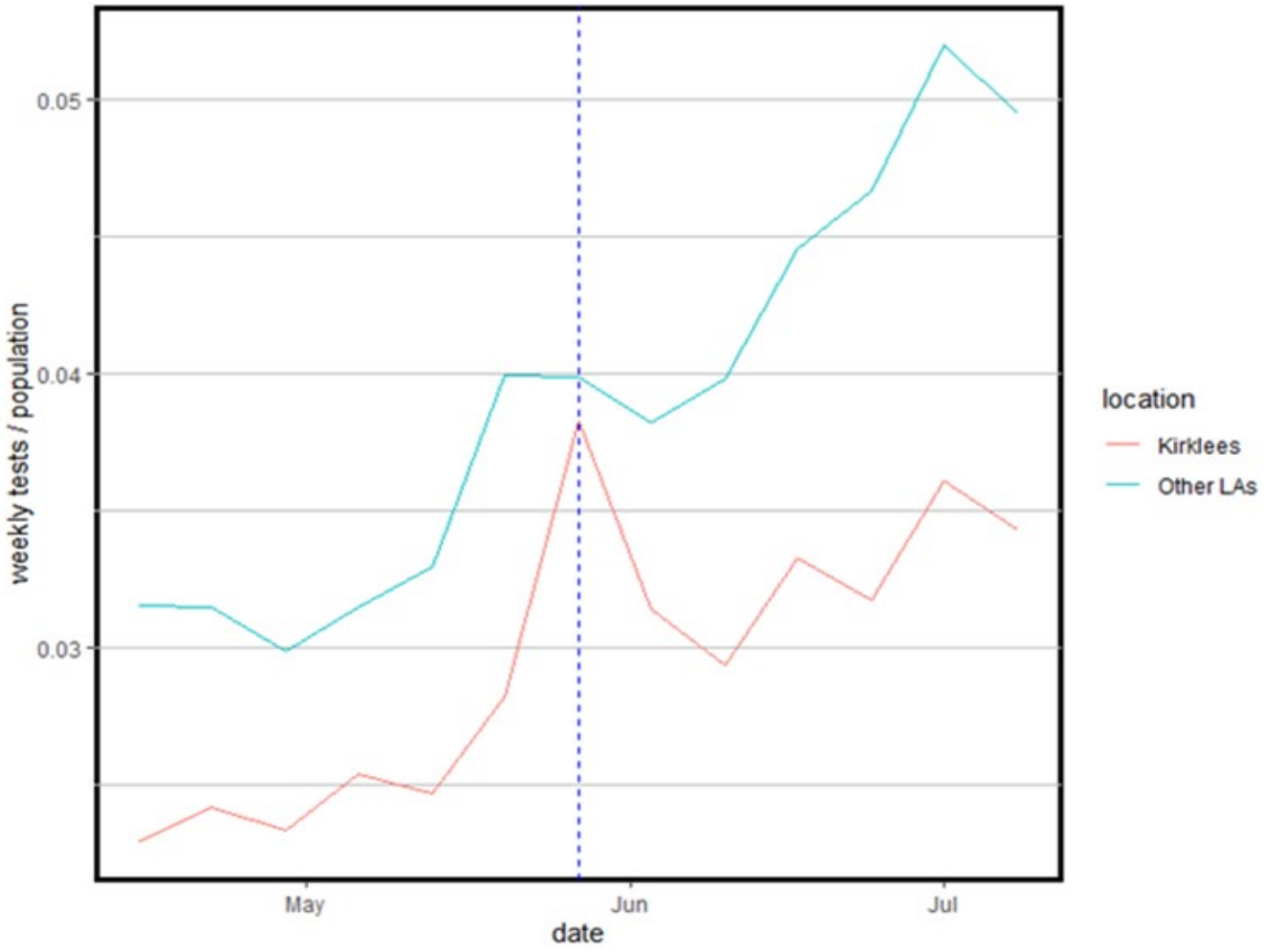
Local authorities	Weights
Blaby	0.054
East Suffolk	0.012
Enfield	0.168
Herefordshire, County of	0.058
Horsham	0.132
Hyndburn	0.259
Pendle	0.065
South Tyneside	0.146
Sunderland	0.065
Wirral	0.042

Notes

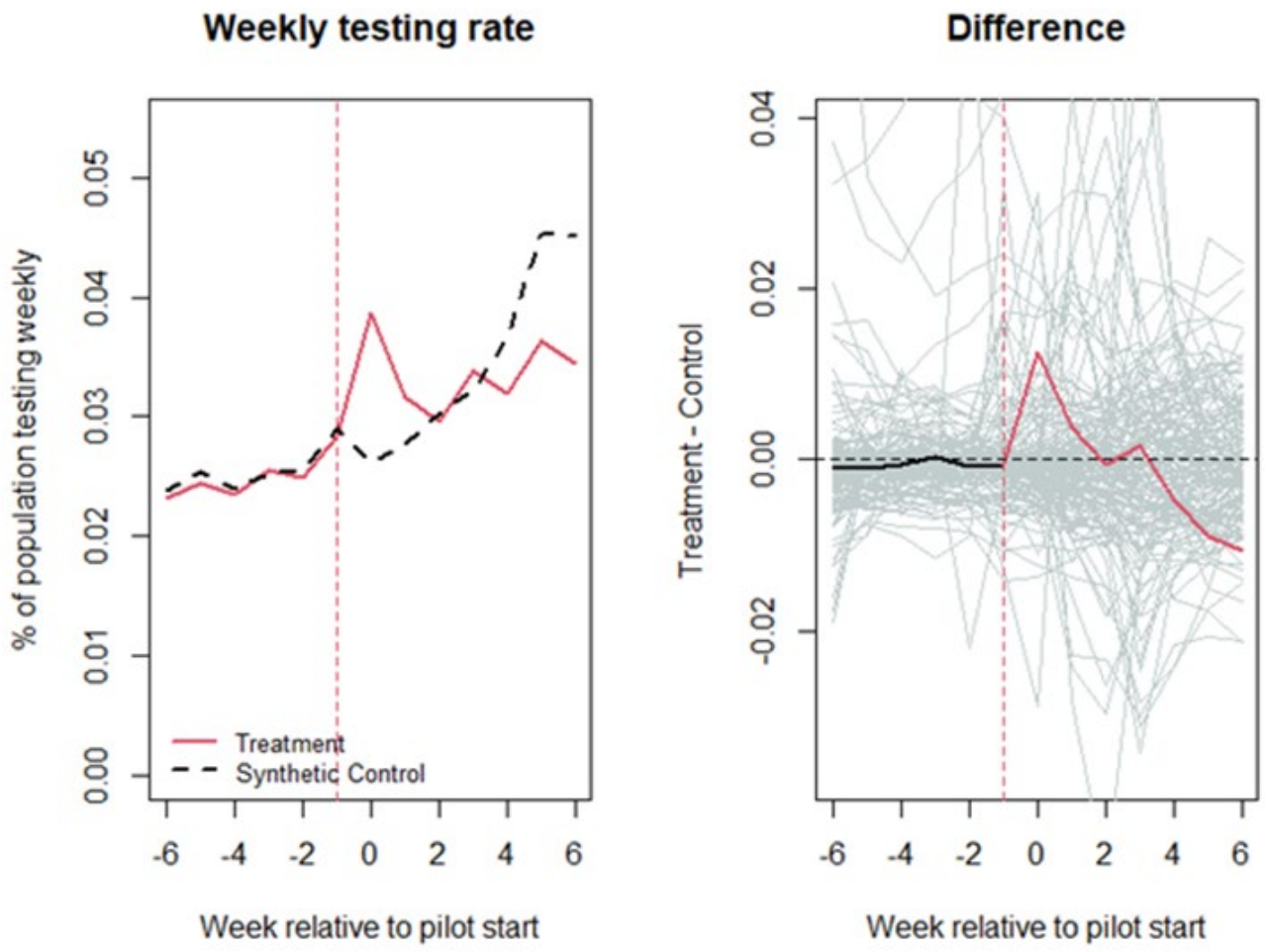
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Weekly PCR testing rate

Appendix Figure 9. Weekly rate of PCR tests / population in Kirklees and other local authorities in donor pool



Appendix Figure 10. Synthetic control estimates of weekly testing rate



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 14. Synthetic control estimates of gaps between Kirklees and synthetic control in testing rate

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	-0.0007	
-5	-0.0010	
-4	-0.0005	
-3	0.0004	
-2	-0.0007	
-1	-0.0006	
0	0.0126	0.6874 (0.0982)
1	0.0038	>0.9999 (0.1963)

Week relative to pilot start date	Treatment - control	Permutation p-values
2	-0.0006	>0.9999 (0.3067)
3	0.0016	>0.9999 (0.3926)
4	-0.0047	>0.9999 (0.5399)
5	-0.0090	>0.9999 (0.7607)
6	-0.0106	>0.9999 (0.9080)
Pre-treatment average gap	-0.0005	
Post-treatment average gap	-0.0010	
Average impact estimate	-0.0005	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 15. Balance table showing variables used to select synthetic control for weekly PCR testing rate

	Kirklees	Synthetic control	All local authorities (scaled)
Mean IMD rank of local authority	13,913.9900	13,913.9900	17,474.7500
Percentage of local authority population in IMD deciles 1 to 3	0.4468	0.4464	0.2640
Average age in local authority	41.1942	41.1955	41.6698
Average hourly pay	14.1000	14.1001	15.7157
Employment rate	0.7254	0.7131	0.7636
Economic inactivity rate	0.2518	0.2438	0.2000
Outcome_lag.-1	0.0283	0.0290	0.0357
Outcome_lag.-2	0.0248	0.0255	0.0318
Outcome_lag.-3	0.0256	0.0252	0.0306
Outcome_lag.-5.-4	0.0478	0.0493	0.0595

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 16. Weights and local authorities used to construct synthetic control for weekly PCR testing rate

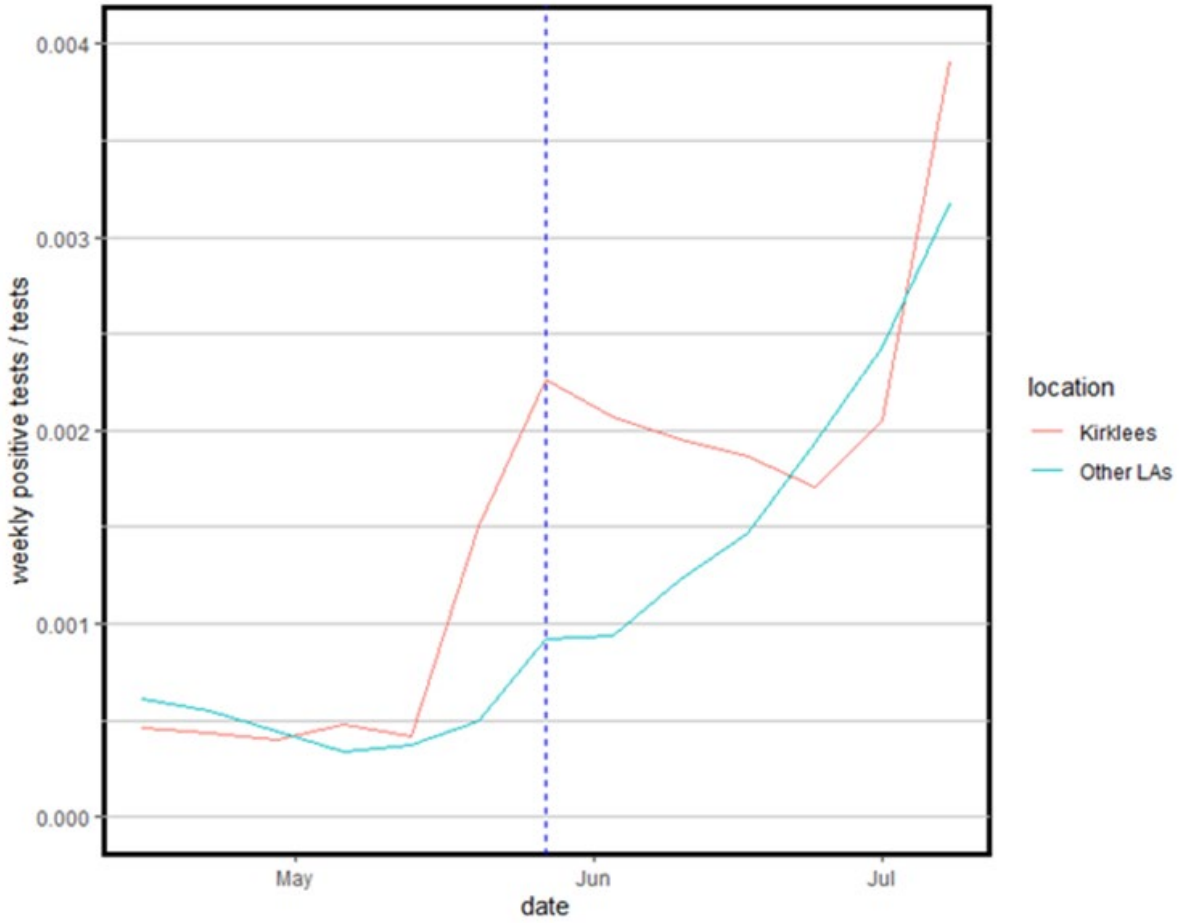
Local authorities	Weights
Enfield	0.026
Gedling	0.202
Middlesbrough	0.222
Nottingham	0.124
South Tyneside	0.080
Stockton-on-Tees	0.243
Wirral	0.074
Wokingham	0.029

Notes

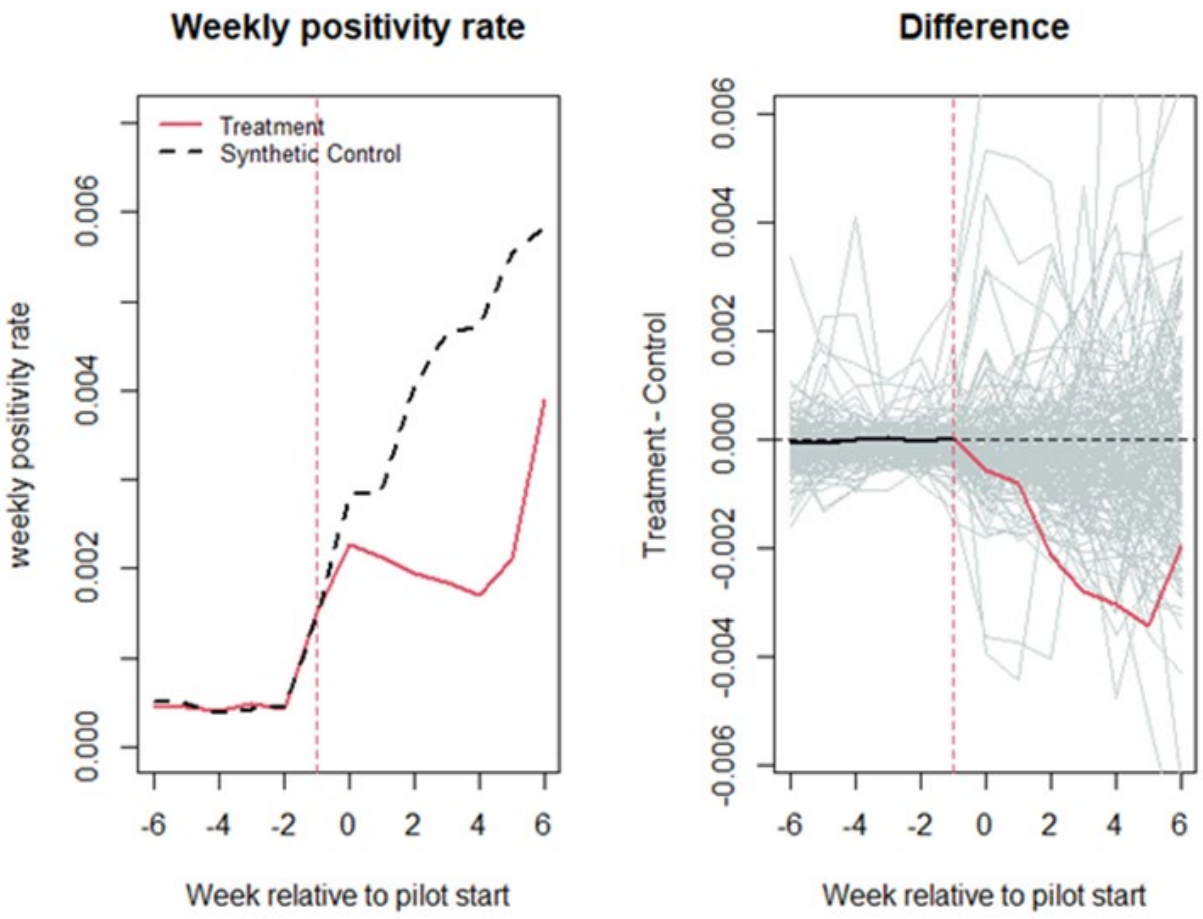
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Weekly PCR positivity rate (positive tests / all tests)

Appendix Figure 11. Weekly positivity rate for PCR tests in Kirklees and other local authorities in donor pool



Appendix Figure 12. Synthetic control estimates of weekly positivity rate



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 17. Synthetic control estimates of gaps between Kirklees and synthetic control in testing rate

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.0000	
-5	-0.0001	
-4	0.0000	
-3	0.0000	
-2	0.0000	
-1	0.0000	
0	-0.0006	>0.9999 (0.2515)
1	-0.0008	>0.9999 (0.1472)
2	-0.0021	0.4291 (0.0613)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	-0.0028	0.2576 (0.0368)
4	-0.0030	0.1288 (0.0184)
5	-0.0034	0.0000 (0.0000)
6	-0.0019	0.1288 (0.0184)
Pre-treatment average gap	0.0000	
Post-treatment average gap	-0.0018	
Average impact estimate	-0.0018	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 18. Balance table showing variables used to select synthetic control for positivity rate

	Kirklees	Synthetic control	All local authorities (scaled)
Mean IMD rank of local authority	13913.9900	13913.9900	17474.7500
Percentage of local authority population in IMD deciles 1 to 3	0.4468	0.4465	0.2640
Average age in local authority	41.1942	41.1943	41.6698
Average hourly pay	14.1000	14.1004	15.7157
Employment rate	0.7254	0.7259	0.7636
Age standardised mortality rates, 2019	979.7100	979.7102	912.6911
Age standardised mortality rates, 2020	1136.0300	1136.0300	1042.3070
Outcome_lag.-1	0.0015	0.0015	0.0005
Outcome_lag.-2	0.0004	0.0004	0.0004
Outcome_lag.-3	0.0005	0.0004	0.0003
Outcome_lag.-5.-4	0.0008	0.0009	0.0010

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 19. Weights and local authorities used to construct synthetic control for weekly PCR positivity rate

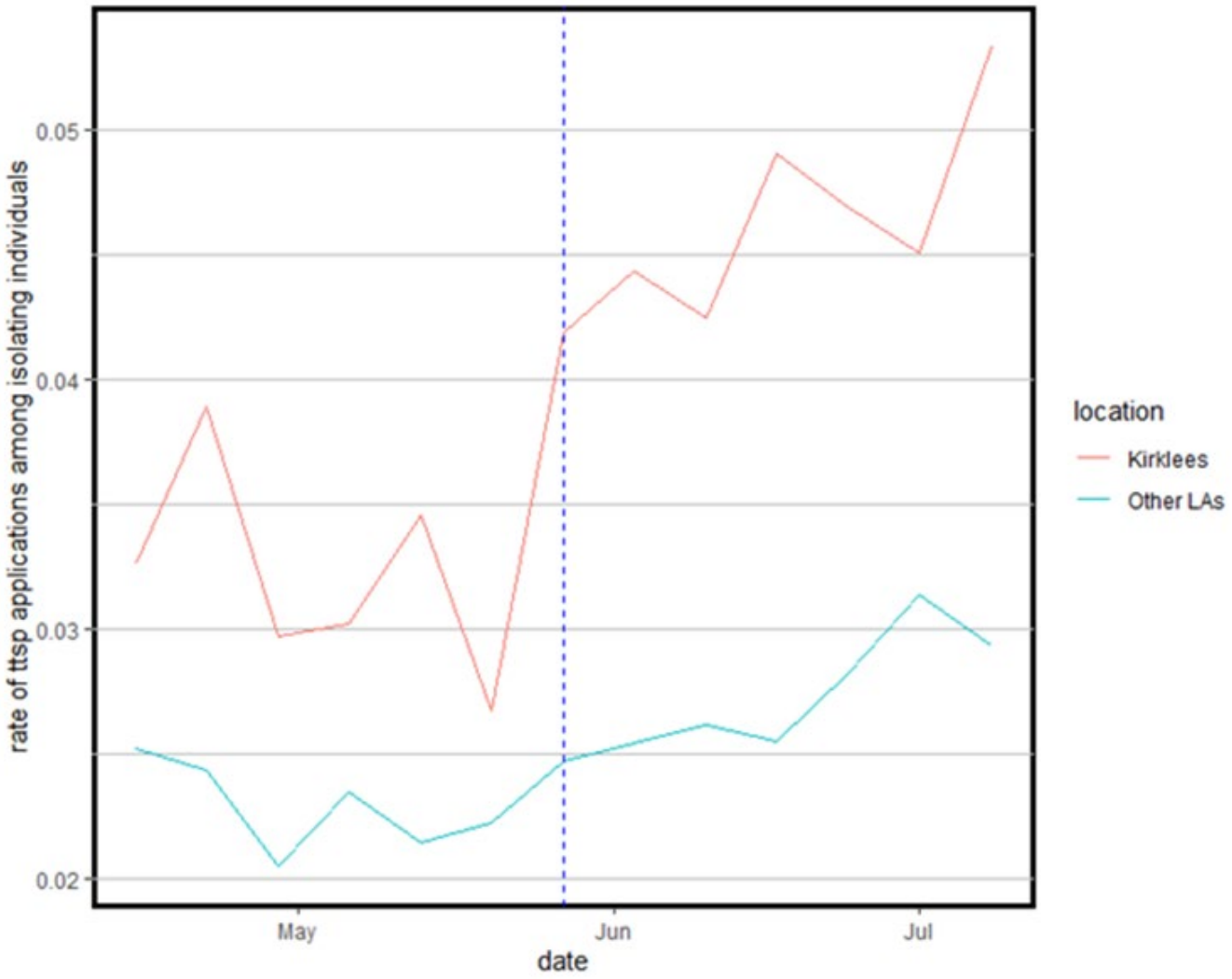
Local authorities	Weights
Barking and Dagenham	0.064
Barnet	0.179
Blackburn with Darwen	0.021
Burnley	0.350
East Lindsey	0.045
Hart	0.043
Newcastle upon Tyne	0.036
Plymouth	0.079
Redditch	0.064
Rushcliffe	0.044
West Lindsey	0.075

Notes

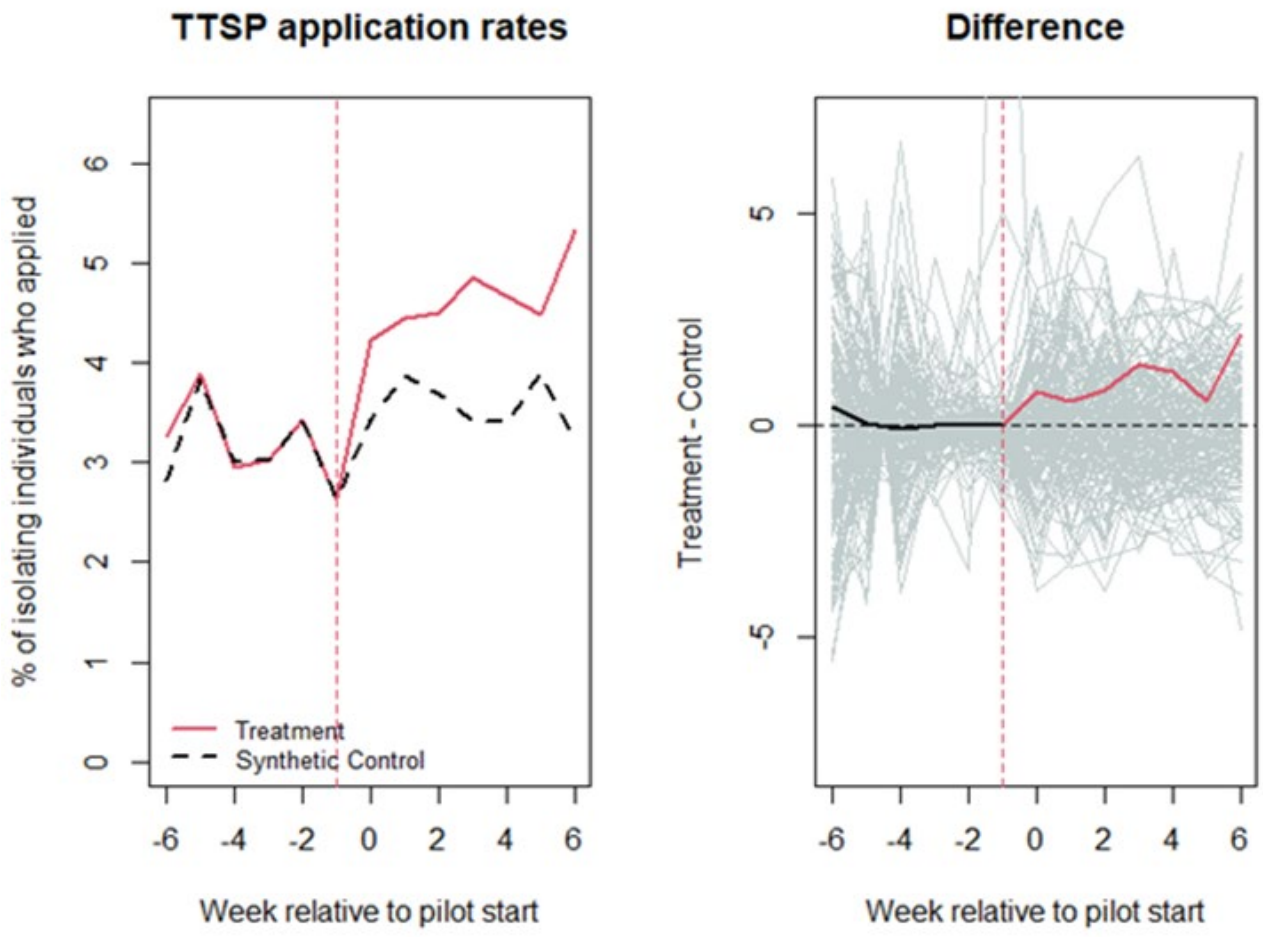
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Weekly TTSP application rates among self-isolating individuals

Appendix Figure 13. Weekly TTSP application rate among self-isolating individuals in Kirklees and other local authorities in donor pool



Appendix Figure 14. Synthetic control estimates of weekly TTSP application rates among self-isolating individuals



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 20. Synthetic control estimates of gaps between Kirklees and synthetic control in testing rate

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.4349	
-5	0.0612	
-4	-0.0609	
-3	-0.0005	
-2	0.0003	
-1	-0.0001	
0	0.7858	>0.9999 (0.4785)
1	0.5710	>0.9999 (0.4785)

Week relative to pilot start date	Treatment - control	Permutation p-values
2	0.8240	>0.9999 (0.5031)
3	1.4497	>0.9999 (0.3436)
4	1.2626	>0.9999 (0.2822)
5	0.5941	>0.9999 (0.3436)
6	2.1270	>0.9999 (0.2454)
Pre-treatment average gap	0.0725	
Post-treatment average gap	1.0877	
Average impact estimate	1.0152	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 21. Balance table showing variables used to select synthetic control for weekly TTSP application rate among self-isolating individuals

	Kirklees	Synthetic control	All local authorities (scaled)
Average age in local authority	41.1942	41.1967	41.6698
Average hourly pay (£)	14.1000	14.1056	15.7157
Employment rate	0.7254	0.7296	0.7636
Age standardised mortality rates, 2019	979.7100	979.7135	912.6911
Age standardised mortality rates, 2020	1136.0300	1136.0320	1,042.3070
COVID-19 deaths as % of all deaths, 2020	14.0000	13.9984	12.3293
% employed in construction	0.0606	0.0605	0.0548
% employed in business administration	0.0561	0.0581	0.0903
% employed in health	0.1383	0.1397	0.1285
Outcome_lag.-1	2.6369	2.6370	2.2762
Outcome_lag.-2	3.4372	3.4369	2.2165
Outcome_lag.-3	3.0151	3.0156	2.3220
Outcome_lag.-5.-4	6.8449	6.8446	4.5289

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 22. Weights and local authorities used to construct synthetic control for weekly TTSP application rate among self-isolating individuals

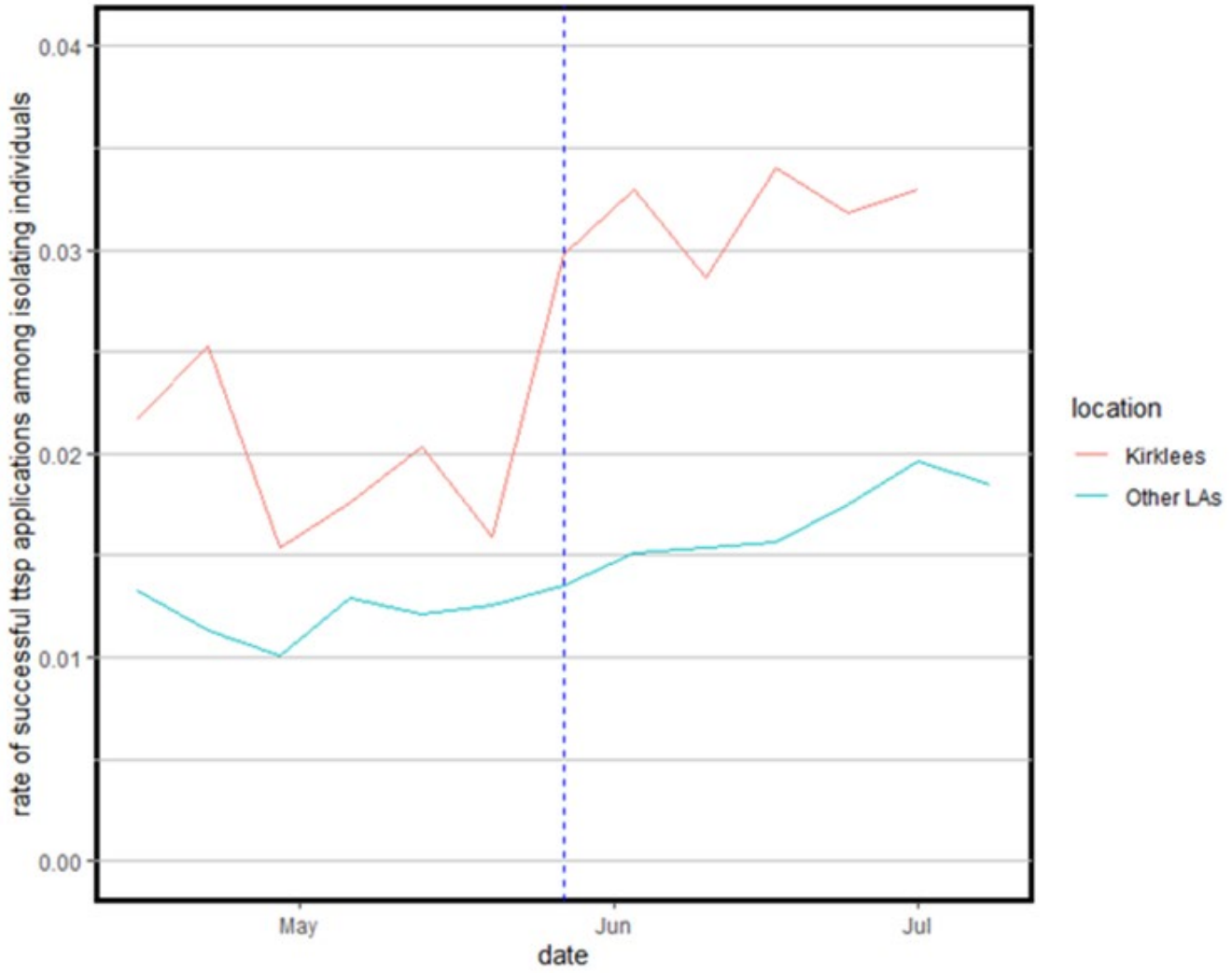
Local authorities	Weights
Blaby	0.003
Brent	0.076
Burnley	0.075
County Durham	0.277
East Suffolk	0.052
Haringey	0.013
Hyndburn	0.118
Leicester	0.026
Oxford	0.166
Pendle	0.092
Sandwell	0.006
South Kesteven	0.016
South Ribble	0.081

Notes

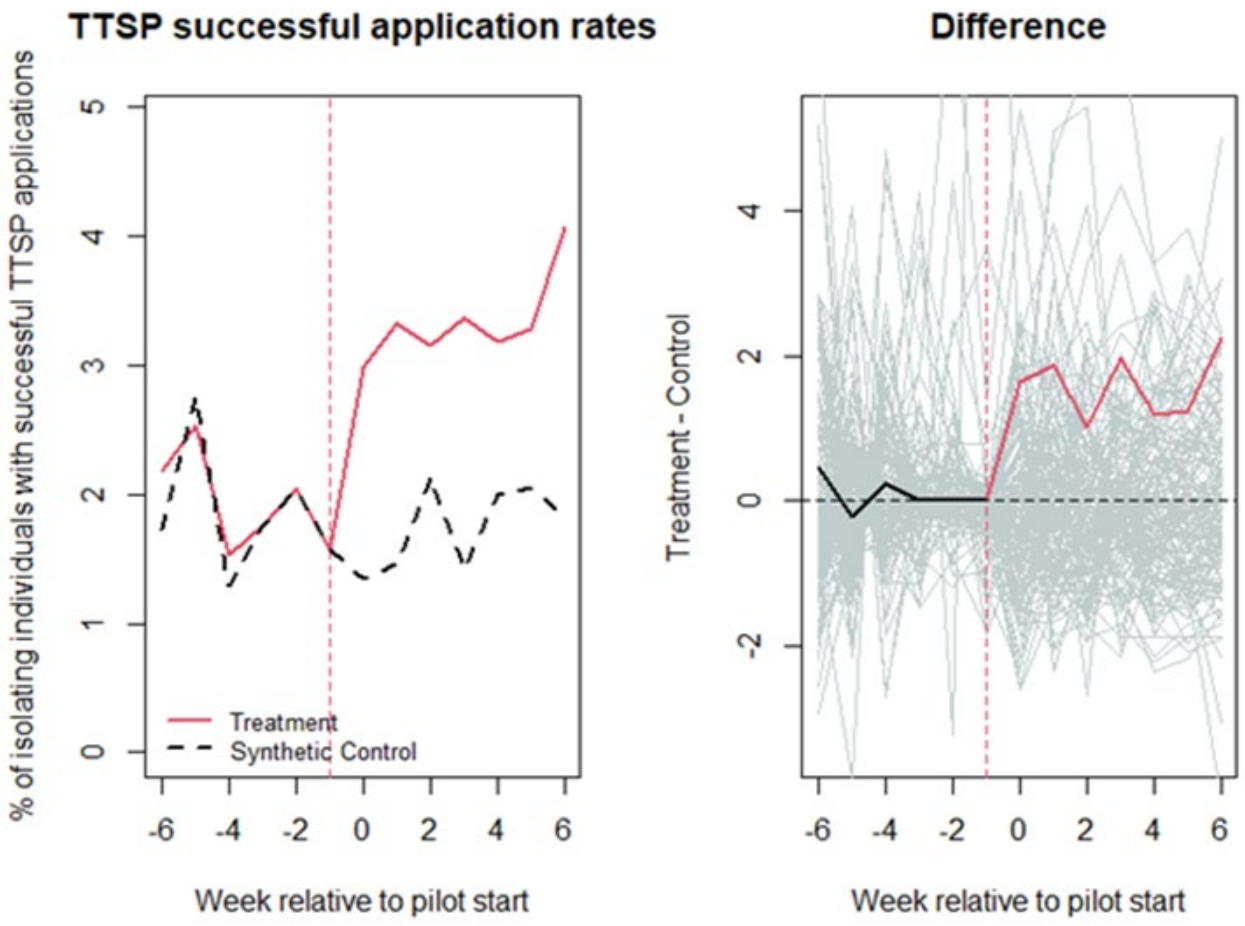
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Weekly successful TTSP application rates among self-isolating individuals

Appendix Figure 15. Weekly successful TTSP application rate among self-isolating individuals in Kirklees and other local authorities in donor pool



Appendix Figure 16. Synthetic control estimates of weekly successful TTSP application rates among self-isolating individuals



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 23. Synthetic control estimates of gaps between Wandsworth and synthetic control in successful TTSP application rates

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.4520	
-5	-0.2319	
-4	0.2324	
-3	0.0000	
-2	-0.0001	
-1	0.0000	
0	1.6371	>0.9999 (0.1104)
1	1.8596	0.7728 (0.0859)
2	1.0094	0.6013 (0.0736)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	1.9589	0.5152 (0.0736)
4	1.1890	0.5152 (0.0736)
5	1.2327	0.9450 (0.1350)
6	2.2403	0.8589 (0.1227)
Pre-treatment average gap	0.0754	
Post-treatment average gap	1.5896	
Average impact estimate	1.5141	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 24. Balance table showing variables used to select synthetic control for weekly successful TTSP application rate among self-isolating individuals

	Kirklees	Synthetic control	All local authorities (scaled)
Mean IMD rank of local authority	13,913.9900	13,913.9900	17,474.7500
Average age in local authority	41.1942	41.1881	41.6698
Average hourly pay	14.1000	14.0944	15.7157
Age standardised mortality rates, 2020	1,136.0300	1,136.0270	1,042.3070
COVID-19 deaths as % of all deaths, 2020	14.0000	13.9996	12.3293
% employed in agriculture	0.0001	0.0002	0.0013
% employed in manufacturing	0.1577	0.1561	0.0837
% employed in construction	0.0606	0.0596	0.0548
% employed in wholesale	0.0557	0.0542	0.0436
% employed in professional, scientific, and technical	0.0567	0.0564	0.0855
% employed in public administration and defence	0.0330	0.0330	0.0374
Outcome_lag.-1	1.5720	1.5720	1.3017
Outcome_lag.-2	2.0408	2.0409	1.2535
Outcome_lag.-3	1.7588	1.7587	1.2533
Outcome_lag.-5.-4	4.0523	4.0517	2.1864

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 25. Weights and local authorities used to construct synthetic control for weekly successful TTSP application rate among self-isolating individuals

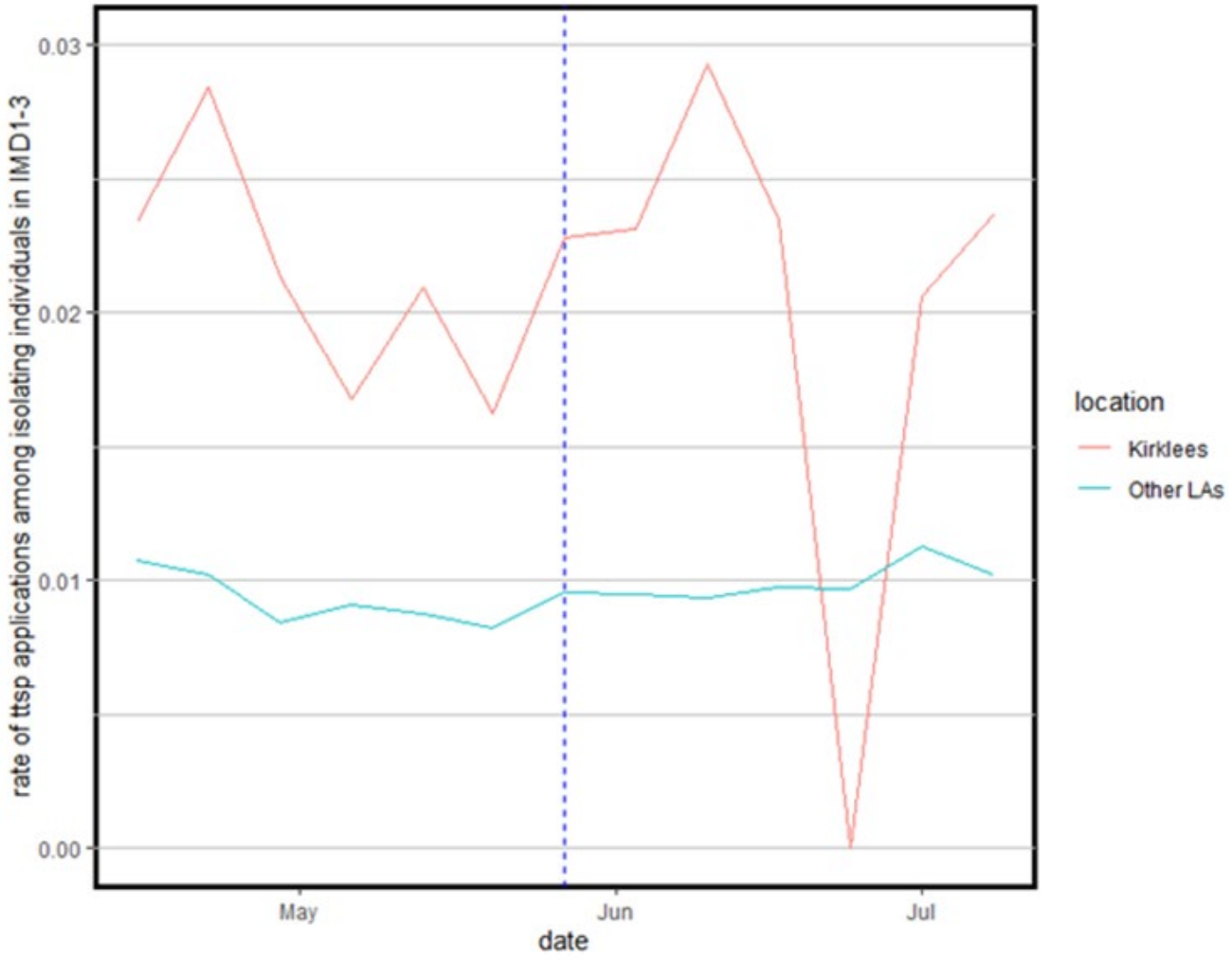
Local authorities	Weights
Ashfield	0.053
Barking and Dagenham	0.029
Basildon	0.022
Burnley	0.021
Dudley	0.192
Gateshead	0.083
Haringey	0.139
Islington	0.001
Pendle	0.104
Redditch	0.239
Richmond upon Thames	0.018
South Ribble	0.027
Stevenage	0.004
Stockton-on-Tees	0.067

Notes

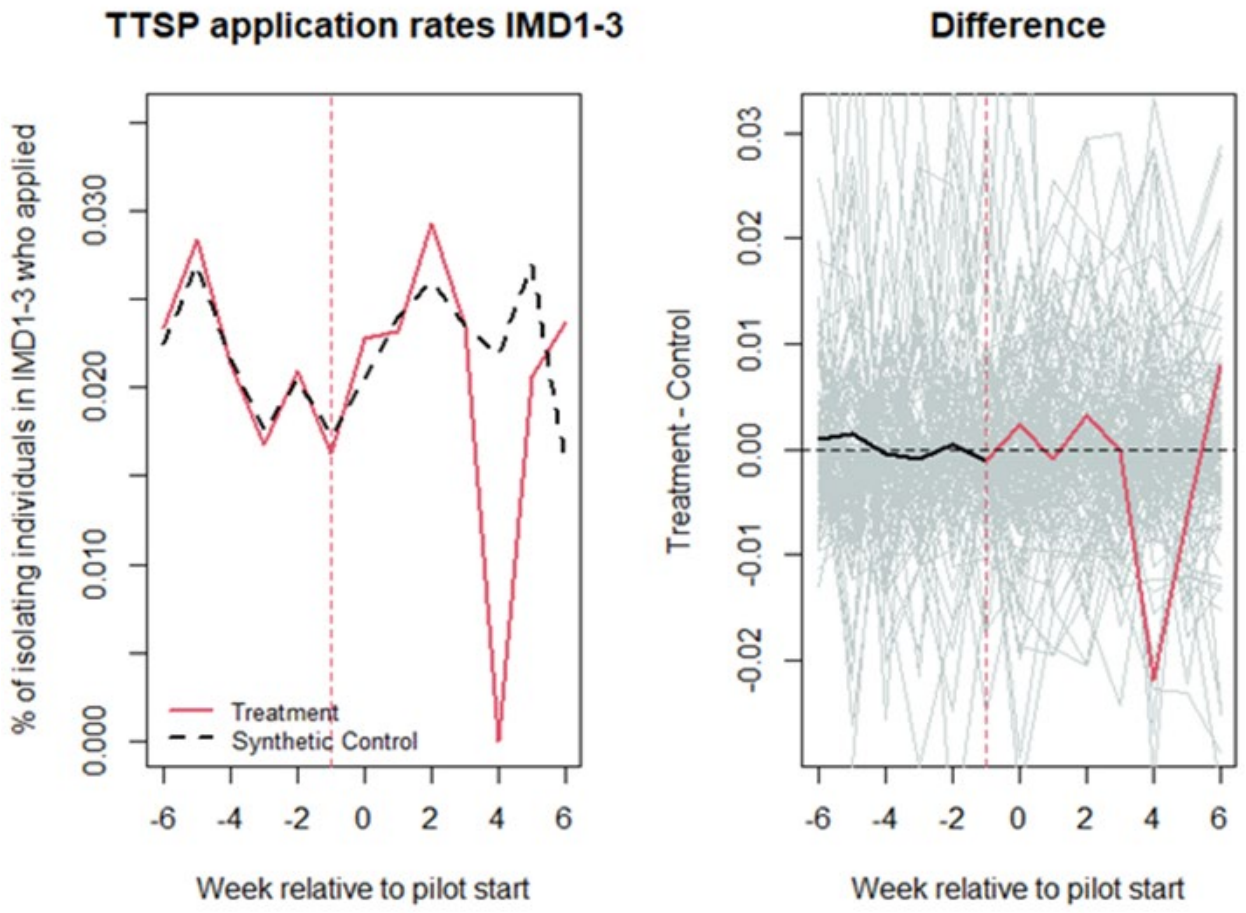
Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

Weekly TTSP application rates among self-isolating individuals in IMD1-3 deciles

Appendix Figure 17. Weekly TTSP application rate among self-isolating individuals in IMD deciles 1 to 3 in Kirklees and other local authorities in donor pool



Appendix Figure 18. Synthetic control estimates of weekly TTSP application rates among self-isolating individuals in IMD 1 to 3 deciles



Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the 6 pre-intervention periods.

Appendix Table 26. Synthetic control estimates of gaps between Kirklees and synthetic control in TTSP application rate among self-isolating individuals in IMD deciles 1 to 3

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.0010	
-5	0.0014	
-4	-0.0003	
-3	-0.0008	
-2	0.0005	
-1	-0.0010	
0	0.0023	>0.9999 (0.5767)
1	-0.0008	>0.9999 (0.7853)
2	0.0032	>0.9999 (0.6626)
3	0.0000	>0.9999 (0.6626)

Week relative to pilot start date	Treatment - control	Permutation p-values
4	-0.0219	>0.9999 (0.3190)
5	-0.0064	>0.9999 (0.2945)
6	0.0080	>0.9999 (0.4785)
Pre-treatment average gap	0.0004	
Post-treatment average gap	-0.0035	
Average impact estimate	-0.0031	

Notes

Synthetic control estimation was done using the microsynth package in R. P-values are adjusted for multiple hypothesis testing using the Bonferroni correction, which multiplies each p-value with the number of hypotheses being tested, and therefore adjusts for the inflated likelihood of committing a Type I error when testing multiple hypotheses. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 27. Balance table showing variables used to select synthetic control for weekly TTSP application rate among self-isolating individuals in IMD1-3 deciles

	Kirklees	Synthetic control	All local authorities (scaled)
Mean IMD rank of local authority	13,913.9900	13,913.9800	17,474.7500
Percentage of local authority population in IMD deciles 1 to 3	0.4468	0.4431	0.2640
Average age in local authority	41.1942	41.1805	41.6698
Proportion White British	0.7502	0.7483	0.7903
Proportion mixed ethnicity	0.0282	0.0258	0.0286
Proportion Asian	0.1766	0.1719	0.0834
Proportion Black	0.0188	0.0193	0.0357
Proportion other ethnicities	0.0072	0.0085	0.0110
Employment rate	0.7254	0.7403	0.7636
Outcome_lag.-1	0.0162	0.0172	0.0086
Outcome_lag.-2	0.0209	0.0204	0.0090
Outcome_lag.-3	0.0168	0.0176	0.0085
Outcome_lag.-5.-4	0.0498	0.0487	0.0192
Outcome_lag.-6	0.0234	0.0224	0.0103

Notes

Synthetic control estimation was conducted using these variables with the microsynth package in R.

Appendix Table 28. Weights and local authorities used to construct synthetic control for weekly TTSP application rate among self-isolating individuals in IMD1-3 deciles

Local authorities	Weights
Blackburn with Darwen	0.199
Burnley	0.034
Hyndburn	0.109
Luton	0.064
Middlesbrough	0.042
North Somerset	0.125
Nottingham	0.083
Oadby and Wigston	0.158
Pendle	0.033
Rushcliffe	0.005
Shropshire	0.088
Walsall	0.061

Notes

Weights used in synthetic control analysis as reported in analysis output from the microsynth package in R, for local authorities with weights greater than or equal to 0.001.

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