Wandsworth self-isolation pilot: impact evaluation

Contents

Background

The 'What Works' programme was implemented to address the challenges associated with self-isolation and engagement in the Test and Trace (T&T) system in response to the COVID-19 pandemic, with a specific focus on areas with enduring transmission and variants of concern.

The pilot in the London borough of Wandsworth was aimed at reducing the financial barriers associated with self-isolation. Wandsworth Council expanded the criteria for residents to be eligible for the Test and Trace Support Payment (TTSP) scheme, so that those earning up to £30,000 per year were able to apply for financial support during self-isolation. Wandsworth Council also reduced the number of steps and evidence required to be eligible for the scheme.

The pilot began on the 19 April 2021, and as the 'pilot' intervention was essentially a relaxation of the eligibility criteria, it continued this beyond the anticipated end date in mid-May, as this is permitted under the terms of the discretionary scheme.

Table 1. Synthetic control method estimates of impact on outcomes of interest

	Proportion sharing at least one contact	Proportion with 100% successful check-in calls	Weekly testing rate	Weekly percent of TTSP applications among self-isolating
	(1)	(2)	(3)	(4)
Pre-pilot average gap	0.0009	0.0123	-0.0001	0.1052
Post-pilot average gap	0.0765	-0.0112	0.0036	-0.0058
SCM estimate of average impact	0.0757	-0.0112	0.0035	-0.0058
Bonferroni corrected p-value [infimum over all post-pilot periods]	[>0.9999]	[>0.9999]	[>0.9999]	[>0.9999]

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

Estimates are generated using the microsynth package. The number of local authorities in the donor pool is 186. 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 Bonferroni corrected

p-values reported here are the infimum of the set of p-values for the estimated gaps between Wandsworth and the synthetic control areas in each of the post-pilot periods. The permutation-based p-values are obtained using the microsynth package in R, though the p-values for testing rates are calculated having removed the spike in testing rates due to surge testing between weeks -1 and 1 relative to pilot start date. Unadjusted p-values pre-Bonferroni correction for each post-pilot period are reported in the detailed tables for each outcome in the Appendix.

As synthetic control estimation is primarily graphical in nature, Appendix Table 1 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 Wandsworth and the synthetic control over the weeks post-pilot and the average gap in the outcomes in the 6 weeks before the pilot started. They therefore adjust the post-pilot gap in outcomes by the degree to which the synthetic control is a poor fit for Wandsworth in the pre-pilot period and are more conservative estimates than using just the average impact estimate from the post-pilot period. Appendix Table 1 also reports estimated p-values for confidence in the estimates, following the placebo-based approach most commonly used in the literature (3, 4, 5, 7, 8, 9, 10). Bonferroni adjusted p-values are presented for more conservative statistical inference since there are multiple outcomes of interest, and 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 proportion of cases sharing at least one contact in Wandsworth and other local authorities in the donor pool. The graph shows descriptively that this proportion tended to be lower in Wandsworth than in other local authorities. The synthetic control estimates also showed that the trends for Wandsworth and the synthetic Wandsworth followed each other (at least on average) in the weeks preceding the pilot. After the pilot began, the proportion of cases sharing contacts in Wandsworth rose above other local authorities in the descriptive graph (and in the synthetic control). However, the differences in the proportion sharing contacts between Wandsworth and the synthetic control in the weeks following pilot implementation were not statistically significant. The large difference in the proportion sharing contacts in the week immediately following pilot implementation did not then last through the follow up weeks, though even this initial increase is not statistically significant (Appendix Table 2).

Compliance with isolation

The weekly proportion of individuals with 100% successful check-in calls in Wandsworth closely mirrors that in other local authorities, both before and after the pilot implementation (Appendix Figure 5). The results of the synthetic control analysis for self-isolation compliance indicates that there is no substantial systematic impact on this outcome as the trends for Wandsworth and the

synthetic control area closely match one another following the pilot implementation dates ([Appendix Figure 4]).

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 in the weeks following pilot implementation. However, as it is believed that this is due to logistical and process issues (rather than a change in behaviour) and it happens across all local authorities, it may be less of a concern in terms of interpreting differences in changes between Wandsworth and other local authorities.

Testing rates

Testing rates in Wandsworth rose sharply in the weeks around the pilot implementation as surge testing measures were also implemented around this time ([Appendix Figure 5]). However, the levels of testing in Wandsworth were similar to that of other local authorities in the donor pool before the pilot implementation. The synthetic control analysis indicates that while testing rates spiked in Wandsworth during the surge testing period, testing rates after this were close to that of the synthetic control area, with no statistically significant impact ([Appendix Figure 6]).

Note that for this analysis, the surge testing period was excluded when trying to fit a synthetic control area, because the observed spike in testing rates during this period is not indicative of general trends affecting Wandsworth.

TTSP application rates

The TTSP application rate is the main mechanism through which effects on the other outcomes of interest are expected to operate. Before the pilot began the weekly TTSP application rate among self-isolating individuals in Wandsworth were lower than for other local authorities on average ([Appendix Figure 7]). After a drop in the TTSP application rate in the week of the pilot being implemented, the rate increased sharply for those individuals isolating 3 weeks after the pilot was implemented in Wandsworth, though this increase was not sustained over a longer period. The synthetic control estimates indicate that there were no statistically significant differences between the TTSP application rates of self-isolating individuals in Wandsworth and the synthetic control in the post-pilot period ([Appendix Figure 8]).

Conclusion

The findings set out above indicate that the Wandsworth self-isolation pilot had no statistically significant impacts on outcomes of interest in the 6 weeks following pilot implementation, as explored via synthetic control method. This suggests that the change to eligibility criteria implemented as part of the pilot did not lead to self-isolating individuals being more likely to

apply for the support payment, nor to changes in testing behaviour, engagement with the Test and Trace system or an increase in compliance with self-isolation.

Limitations

SCM makes use of statistical techniques to reduce the effects of bias in estimation and is a robust analytical technique to the extent that it does not rely on strong assumptions and also allows for time-varying unobserved confounders. However, it cannot completely rule out the possibility of confounders and biased results, and therefore any findings should still be interpreted with caution. 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.

SCM uses data at an aggregate level, so the analysis may be underpowered to detect small but real impacts that did arise from the program. This analysis also stops 6 weeks after the pilot intervention came into place, and as such only provides a short-term measure of impact.

Therefore, it may be that some of the impacts of relaxing the eligibility criteria (and the other measures that came into place alongside) may not yet have emerged. Further analysis would be needed to assess whether the pilot has had a delayed effect on key outcomes.

This analysis was conducted using data in the contact tracing system, with some measures such as the proportion of isolating individuals with successful check-in calls acting as proxies for the true outcome of interest (self-isolation). This measure was also subject to some serious data quality problems due to process issues in the period over which analysis was conducted.

Appendix tables and figures

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

	Total	Wandsworth	Other local authorities	p value
Weekly proportion sharing at least one contact	0.814 (0.099)	0.719 (0.091)	0.814 (0.098)	0.019
Proportion with 100% successful check-in calls	0.835 (0.061)	0.875 (0.029)	0.835 (0.061)	0.110
Weekly proportion of self-isolating individuals who made TTSP applications	0.030 (0.020)	0.027 (0.005)	0.030 (0.020)	0.755
Weekly testing rate (tests per population)	0.030 (0.008)	0.043 (0.035)	0.030 (0.008)	< 0.001
Weekly case rate per 100,000 population (gov.uk)	43.545 (28.742)	30.986 (5.681)	43.613 (28.803)	0.283

Table 1b. Demographic and employment characteristics

	Total	Wandsworth	Other local authorities	p value
Age in years (ONS 2017)	41.499 (4.037)	34.351 (0.000)	41.537 (4.014)	< 0.001
Proportion male (ONS 2017)	0.495 (0.007)	0.479 (0.000)	0.495 (0.007)	< 0.001
Index of Multiple Deprivation rank (2019)	17,089.468 (5352.954)	18,713.156 (0.000)	17,080.738 (5366.008)	0.457
Proportion of population in IMD deciles 1-3	0.280 (0.211)	0.138 (0.000)	0.281 (0.212)	0.098

Table 1c. Ethnicity (ONS 2019)

	Total	Wandsworth	Other local authorities	p value
White British	0.792 (0.184)	0.542 (0.000)	0.794 (0.183)	< 0.001
White other	0.051 (0.045)	0.140 (0.000)	0.051 (0.045)	< 0.001

|	Total	Wandsworth	Other local authorities	p value
Mixed	0.029 (0.019)	0.064 (0.000)	0.028 (0.019)	< 0.001
Asian	0.081 (0.090)	0.113 (0.000)	0.081 (0.090)	0.384
Black	0.035 (0.053)	0.119 (0.000)	0.035 (0.053)	< 0.001
Other ethnicities	0.011 (0.015)	0.022 (0.000)	0.011 (0.015)	0.078
Hourly pay (ASHE, 2020)	15.596 (2.517)	21.920 (0.000)	15.562 (2.481)	< 0.001
Employment rate (ONS, 2020)	0.761 (0.042)	0.849 (0.000)	0.760 (0.042)	< 0.001
% deaths due to COVID-19, 2020 (ONS, 2020)	12.522 (3.739)	13.600 (0.000)	12.516 (3.748)	0.479
Number of observations	1122	6	1,116	

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 8 March 2021 and 19 April 2021.
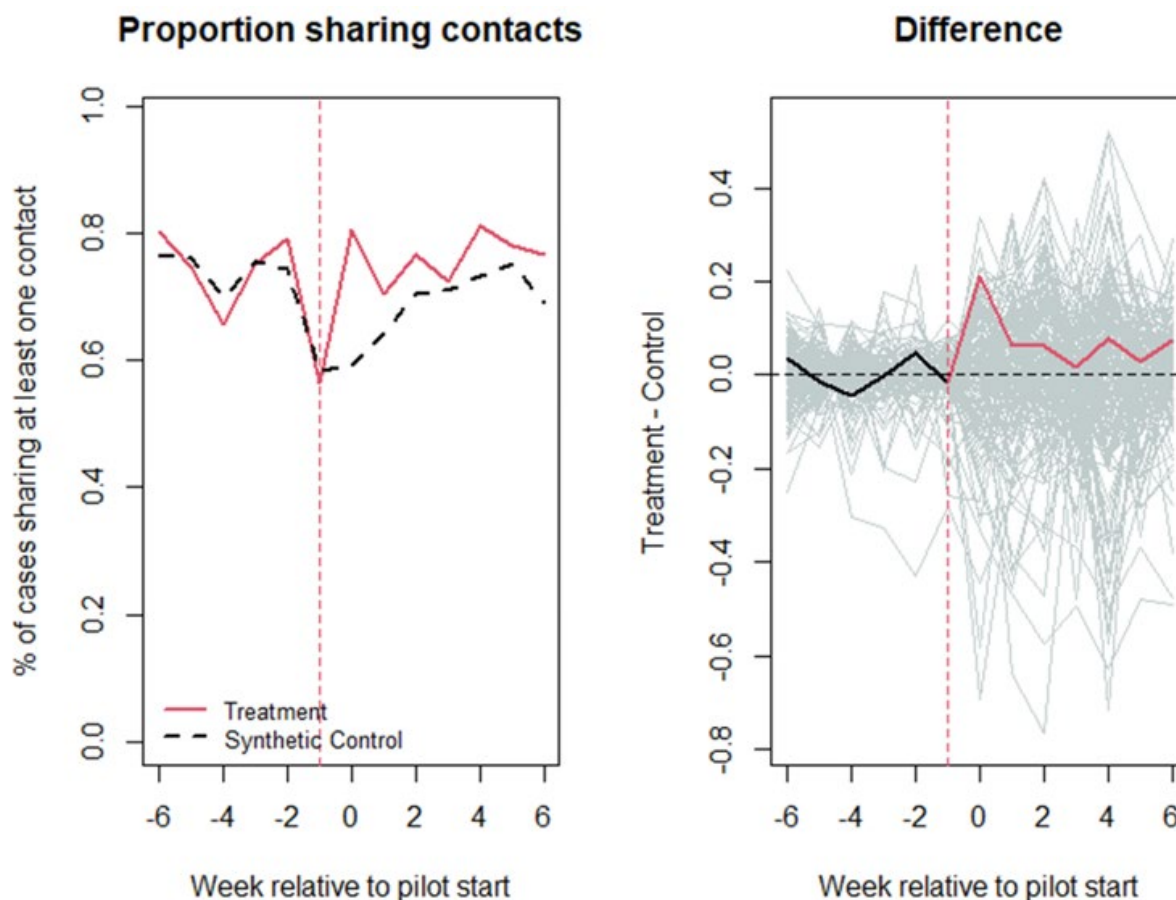
Synthetic control method

Proportion of cases sharing at least one contact

Appendix Figure 1. Weekly proportion of cases sharing contacts in Wandsworth and other local authorities in donor pool
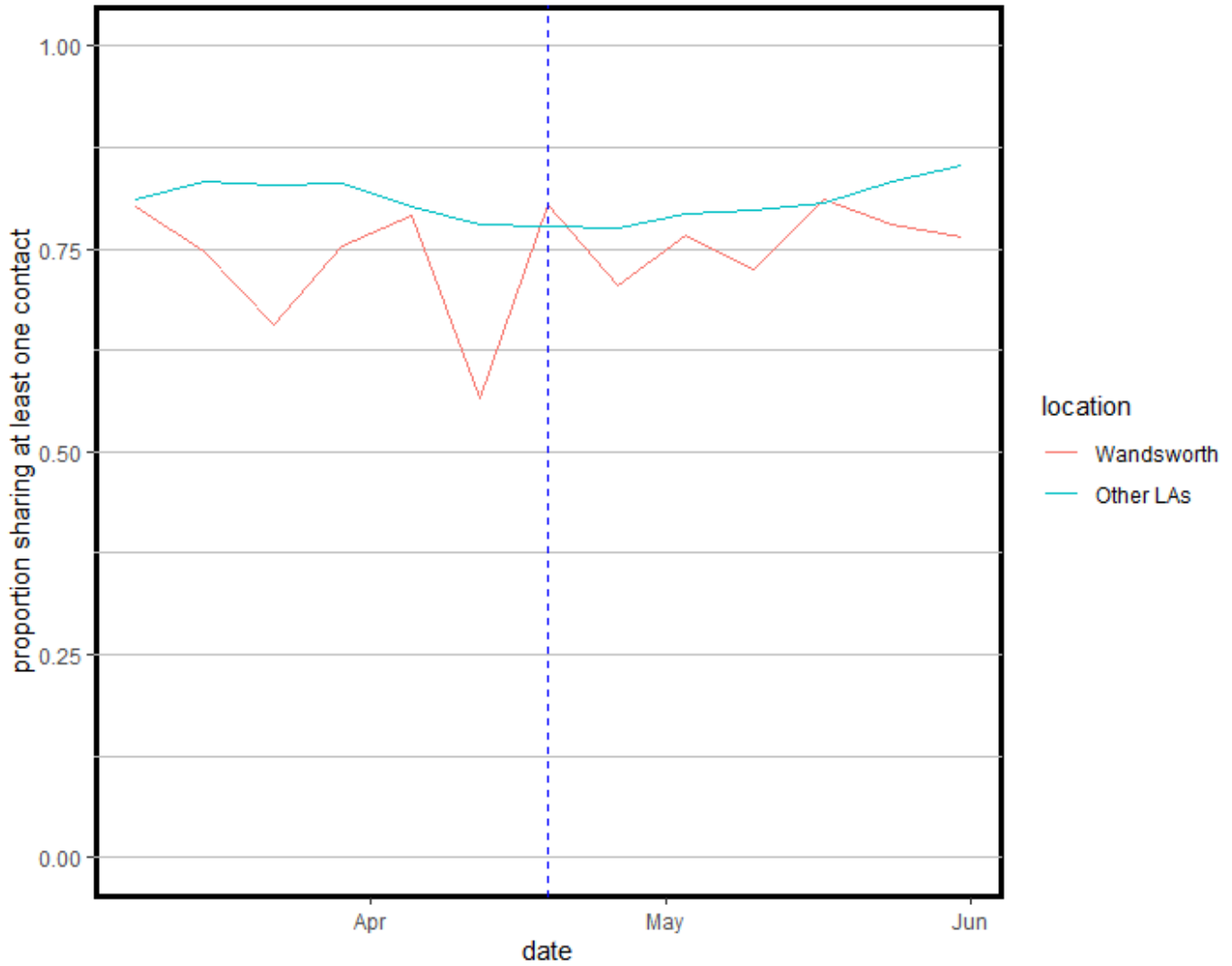
Appendix Figure 2. Synthetic control estimates of proportion of cases sharing at least one contact

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 2. Synthetic control estimates of gaps between Wandsworth and synthetic control in proportion sharing contacts

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.0345	
-5	-0.0132	
-4	-0.0425	
-3	-0.0030	
-2	0.0465	
-1	-0.0171	
0	0.2116	0.3234 (0.0462)
1	0.0621	>0.9999 (0.1734)
2	0.0623	>0.9999 (0.2659)
3	0.0163	>0.9999 (0.2659)

Week relative to pilot start date	Treatment - control	Permutation p-values
4	0.0781	>0.9999 (0.3006)
5	0.0296	>0.9999 (0.3353)
6	0.0756	>0.9999 (0.2775)
Pre-treatment average gap	0.0009	
Post-treatment average gap	0.0765	
Average impact estimate	0.0757	

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. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

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

	Wandsworth	Synthetic control	All LAs (scaled)
Proportion White British	0.5419	0.5643	0.7895
Proportion mixed ethnicity	0.0638	0.0553	0.0287
Proportion Asian	0.1131	0.1168	0.0838
Proportion Black	0.1190	0.1208	0.0352
Proportion other ethnicities	0.0221	0.0280	0.0113
Case rate	32.5286	32.5283	57.1874
Outcome_lag.-1	0.5652	0.5823	0.7753
Outcome_lag.-2	0.7910	0.7445	0.7975
Outcome_lag.-3	0.7529	0.7559	0.8302
Outcome_lag.-5.-4	1.4039	1.4597	1.6609

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 proportion sharing contacts

Local authorities	Weights
Cheltenham	0.085
Dover	0.042
Exeter	0.015

| Local authorities	Weights
Hammersmith and Fulham	0.047
Harlow	0.230
Kensington and Chelsea	0.164
Lewisham	0.301
Tower Hamlets	0.115

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 3. Weekly proportion of isolating individuals with 100% successful check-in calls in Wandsworth and other local authorities in donor pool
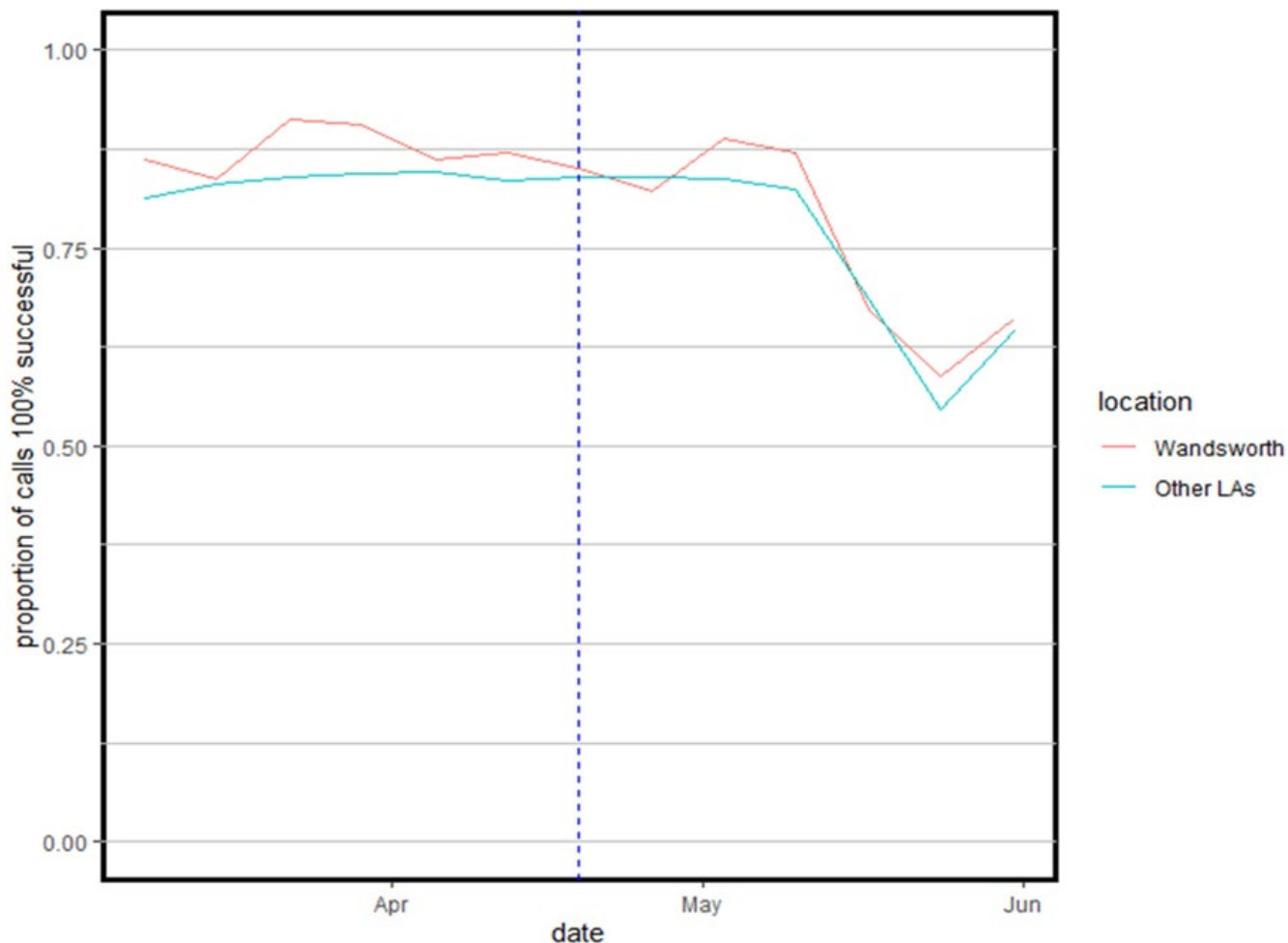
Appendix Figure 4. Synthetic control estimates of weekly proportion of self-isolating individuals with 100% successful check-in calls
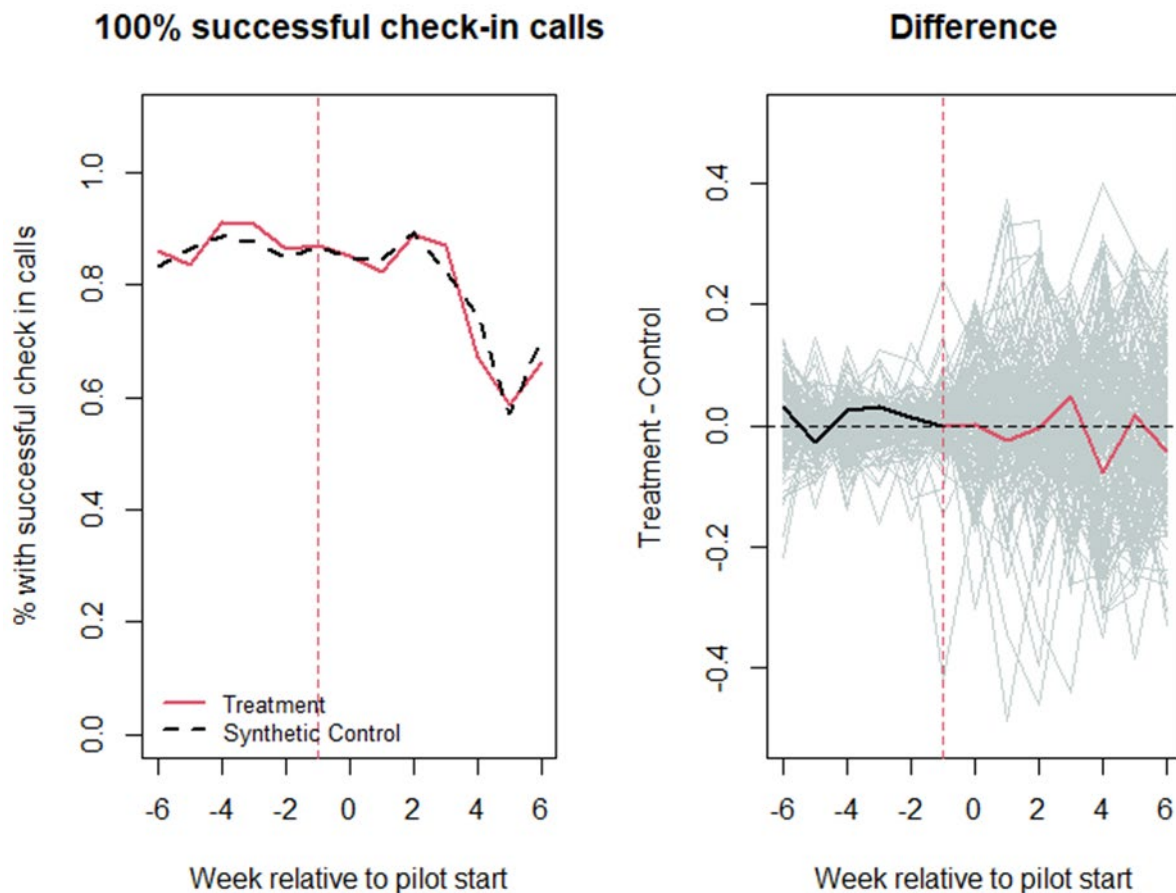
Notes

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 5. Synthetic control estimates of gaps between Wandsworth and synthetic control in proportion with successful check-in calls

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.0309	
-5	-0.0269	
-4	0.0243	
-3	0.0310	
-2	0.0136	
-1	0.0006	
0	0.0031	>0.9999 (0.8182)
1	-0.0233	>0.9999 (0.7045)
2	-0.0051	>0.9999 (0.6932)
3	0.0487	>0.9999 (0.8295)

Week relative to pilot start date	Treatment - control	Permutation p-values
4	-0.0768	>0.9999 (0.6250)
5	0.0162	>0.9999 (0.6932)
6	-0.0414	>0.9999 (0.7159)
Pre-treatment average gap	0.0123	
Post-treatment average gap	-0.0112	
Average impact estimate	-0.0112	

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

	Wandsworth	Synthetic control	All LAs (scaled)
Proportion White British	0.5419	0.5566	0.7908
Proportion mixed ethnicity	0.0638	0.0653	0.0286
Proportion Asian	0.1131	0.1157	0.0829
Proportion Black	0.1190	0.1205	0.0352
Proportion other ethnicities	0.0221	0.0258	0.0112
Average hourly pay (£)	21.9200	21.9095	15.6116
COVID-19 deaths as % of all deaths, 2020	13.6000	13.6011	12.5390
Outcome_lag.-1	0.8699	0.8693	0.8372
Outcome_lag.-2	0.8625	0.8489	0.8480
Outcome_lag.-3	0.9071	0.8761	0.8459
Outcome_lag.-5.-4	1.7483	1.7509	1.6701

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 with 100% successful check-in calls

| Local authorities	Weights
Bexley	0.044
Croydon	0.085

| Local authorities	Weights
Hart	0.019
Islington	0.401
Richmond-upon-Thames	0.225
South Cambridgeshire	0.055
Southwark	0.105
Tower Hamlets	0.066

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 5. Weekly rate of PCR tests / population in Wandsworth and other local authorities in donor pool
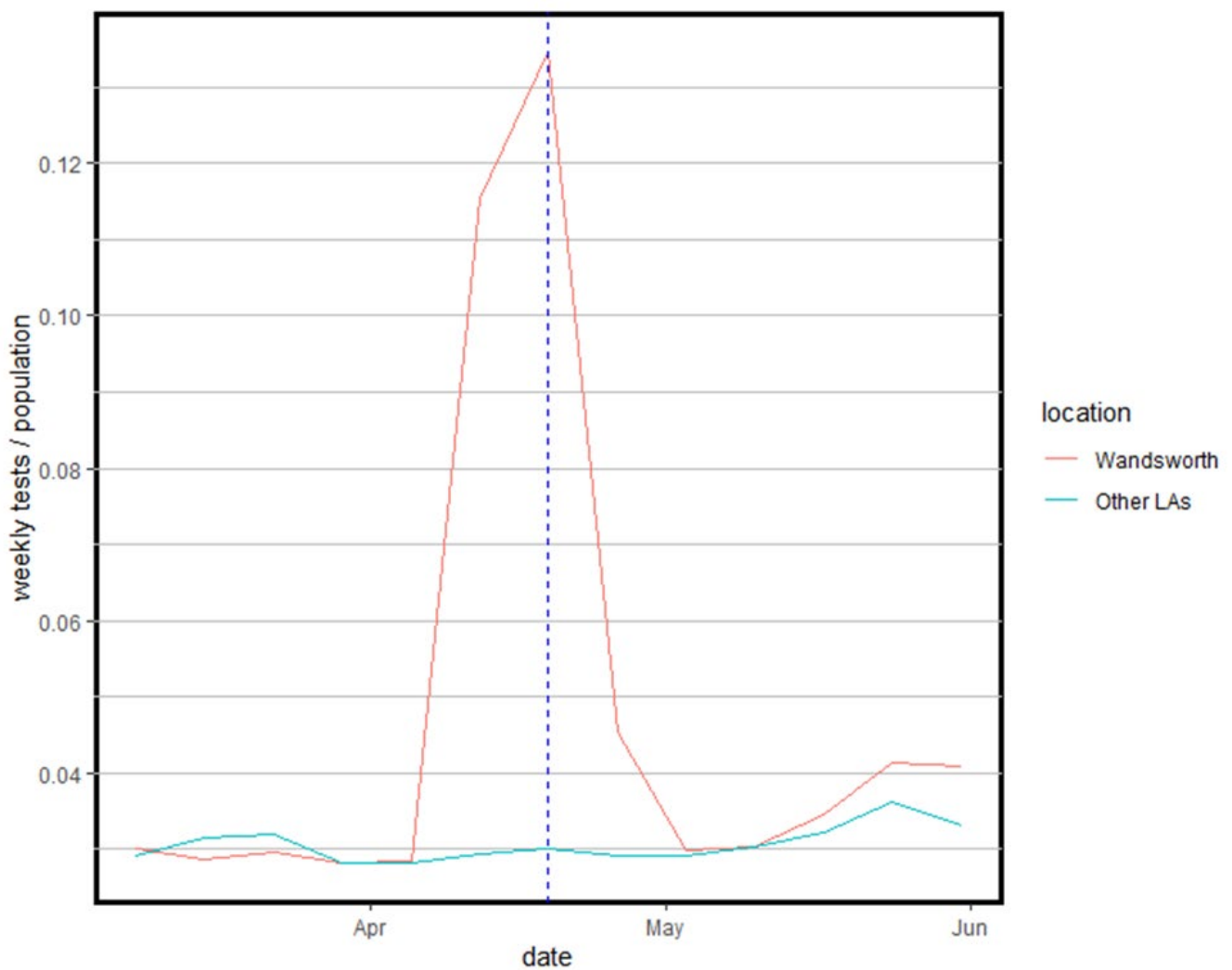
Appendix Figure 6. Synthetic control estimates of weekly testing rate
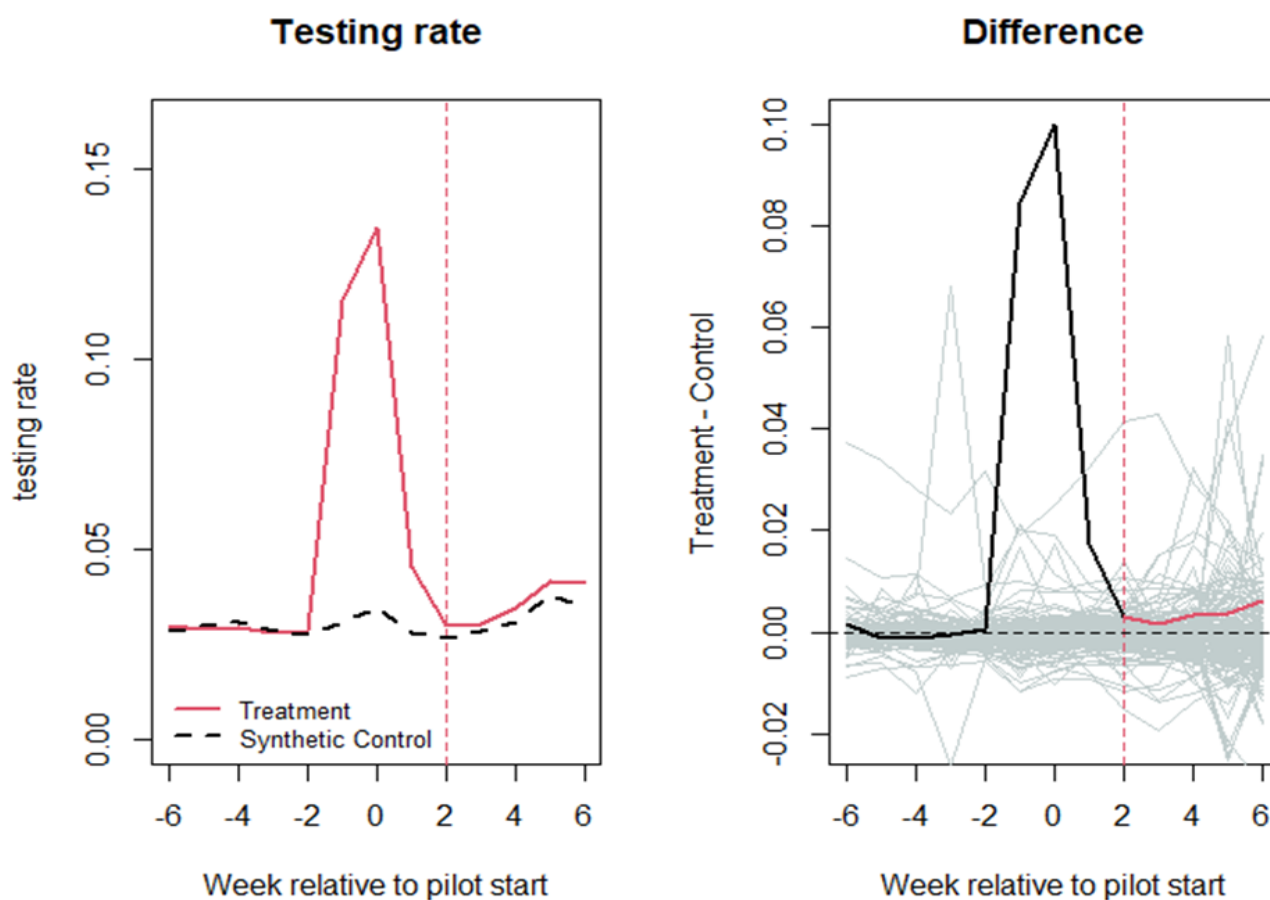
Notes

Synthetic control estimation was done using the microsynth package in R. Estimation was done optimising fit of the synthetic control over the pre-intervention periods between 6 and 2 weeks before the start of the pilot as surge testing measures were in place from the week before the pilot was implemented to one week after the pilot intervention came into place.

Appendix Table 8. Synthetic control estimates of gaps between Wandsworth and synthetic control in PCR testing rates

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.0016	
-5	-0.0012	
-4	-0.0010	
-3	-0.0004	
-2	0.0006	
-1	0.0846	
0	0.0999	
1	0.0174	
2	0.0032	>0.9999 (0.2159)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	0.0016	>0.9999 (0.3068)
4	0.0035	>0.9999 (0.2500)
5	0.0036	>0.9999 (0.2841)
6	0.0061	>0.9999 (0.3068)
Pre-treatment average gap [-2:-6]	-0.0001	
Post-treatment average gap [2:6]	0.0036	
Average impact estimate	0.0035	

Notes

Synthetic control estimation was done using the microsynth package in R.P-values are adjusted for multiple hypothesis testing using the Bonferroni correction. P-values were estimated separately having removed the spike in testing rates due to surge testing. Alternative p-values calculated by running placebo tests individually and comparing the mean squared error in the post-intervention period between treatment and the local authorities in the donor pool did not change the nature of the results. Unadjusted p-values pre-Bonferroni correction are included in parentheses.

Appendix Table 9. Balance table showing variables used to select synthetic control for weekly PCR testing rate

	Wandsworth	Synthetic control	All LAs (scaled)
Proportion White British	0.5419	0.5472	0.7908
Proportion mixed ethnicity	0.0638	0.0627	0.0286
Proportion Asian	0.1131	0.1144	0.0829
Proportion Black	0.1190	0.1203	0.0352
Proportion other ethnicities	0.0221	0.0235	0.0112
Case rate	32.5286	32.5288	56.8447
Outcome_lag.-2	0.0284	0.0278	0.0283
Outcome_lag.-3	0.0282	0.0287	0.0283
Outcome_lag.-4	0.0296	0.0307	0.0321
Outcome_lag.-6.-5	0.0588	0.0584	0.0609

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 weekly PCR testing rate

| Local authorities	Weights
Cambridge	0.102
Camden	0.008
Croydon	0.049
Haringey	0.121
Lewisham	0.197
Merton	0.214
Nottingham	0.019
Richmond-upon-Thames	0.290

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 7. Weekly TTSP application rate among self-isolating individuals in Wandsworth and other local authorities in donor pool
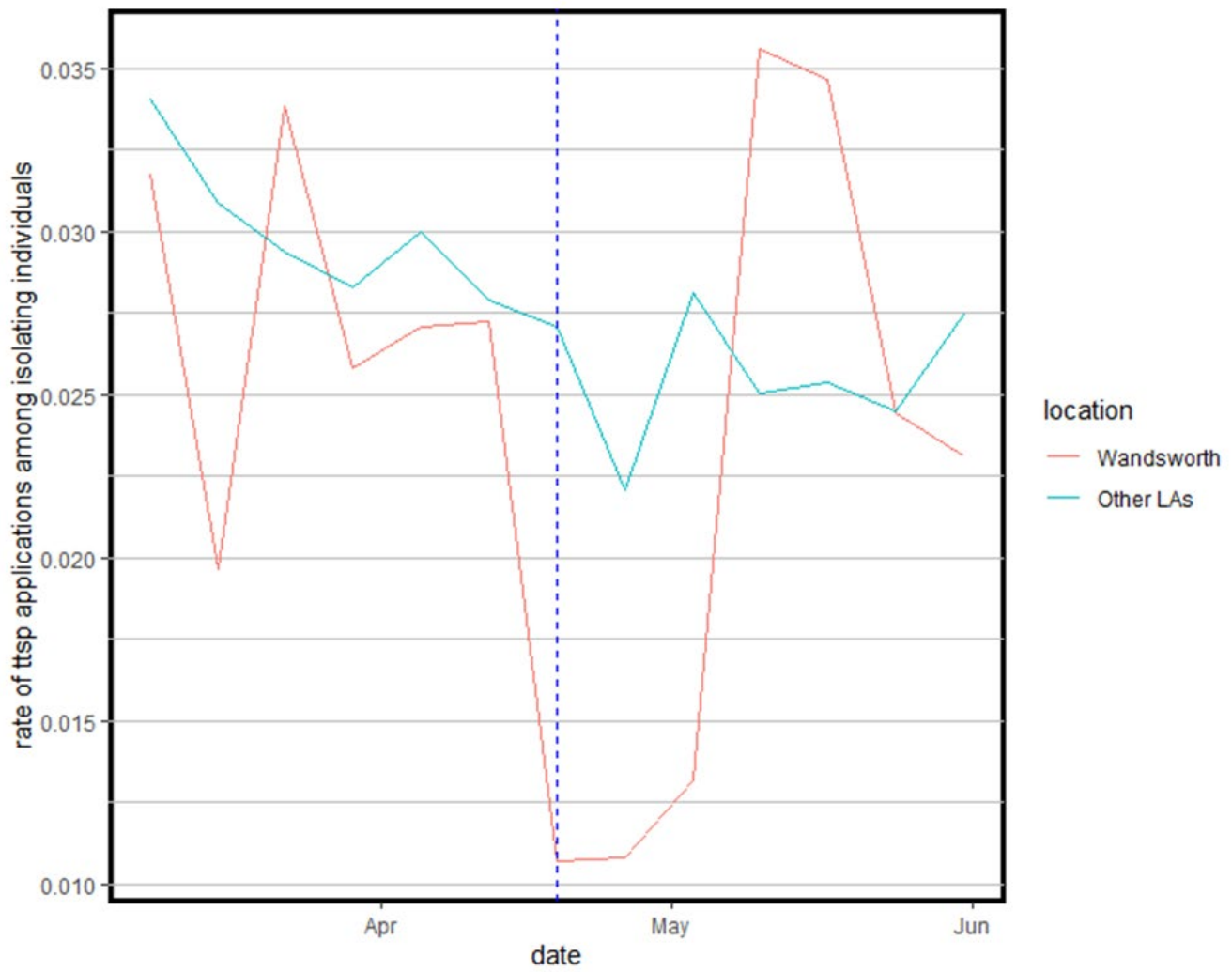
Appendix Figure 8. Synthetic control estimates of weekly TTSP application rates among self-isolating individuals
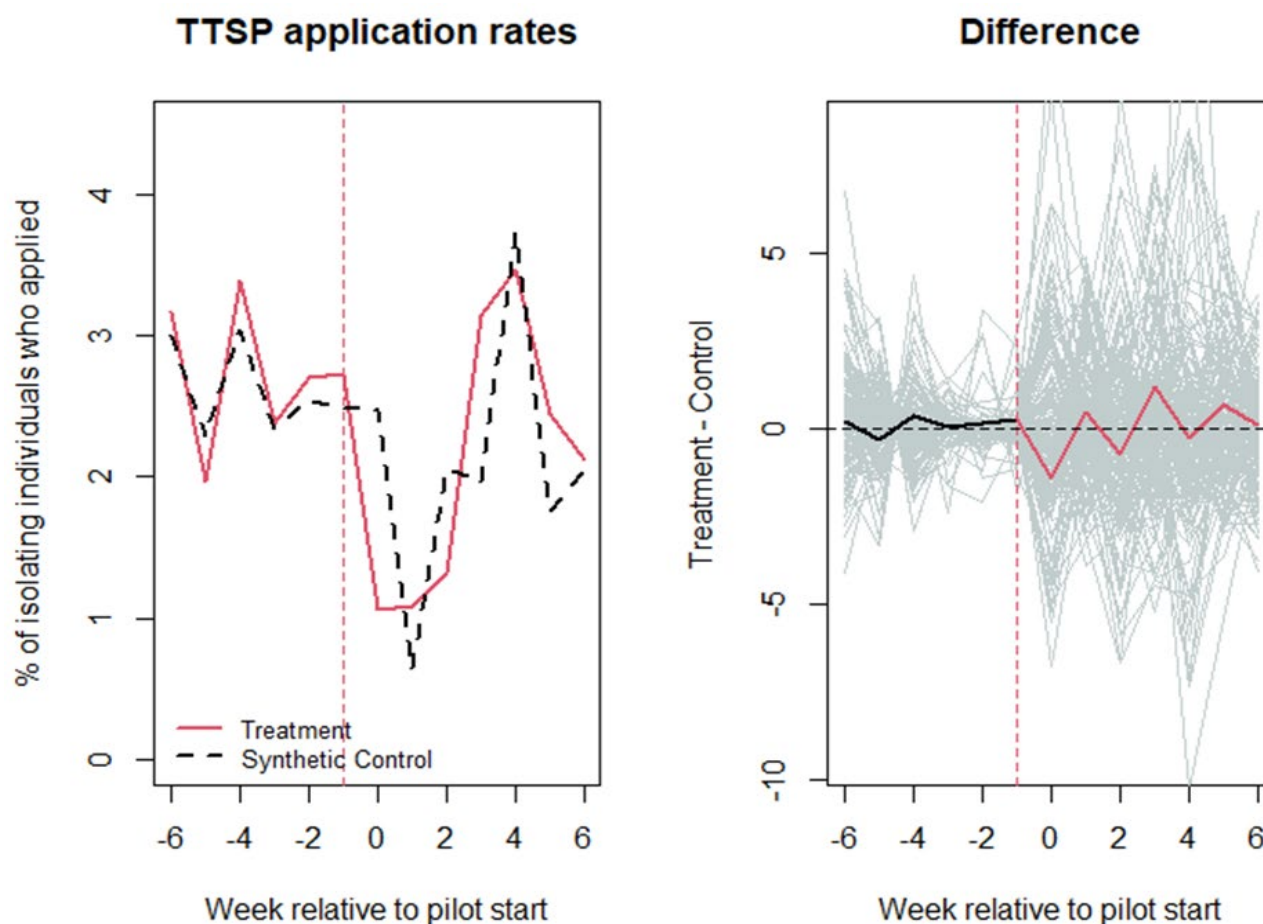
Notes

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 11. Synthetic control estimates of gaps between Wandsworth and synthetic control in TTSP application rates

Week relative to pilot start date	Treatment - control	Permutation p-values
-6	0.2524	
-5	-0.1028	
-4	0.1349	
-3	-0.0023	
-2	0.2411	
-1	0.0965	
0	-1.3952	>0.9999 (0.3409)
1	0.1336	>0.9999 (0.3182)
2	-0.6704	>0.9999 (0.5341)

Week relative to pilot start date	Treatment - control	Permutation p-values
3	1.3574	>0.9999 (0.7841)
4	0.0529	>0.9999 (0.5909)
5	0.6863	>0.9999 (0.6364)
6	-0.1539	>0.9999 (0.7045)
Pre-treatment average gap	0.1052	
Post-treatment average gap	-0.0058	
Average impact estimate	-0.0058	

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

	Wandsworth	Synthetic control	All LAs (scaled)
Percentage of local authority population in IMD deciles 1 to 3	0.1376	0.2001	0.2799
Average age in local authority	34.3514	35.7755	41.4546
Average hourly pay (£)	21.9200	19.8007	15.6116
Employment rate	0.8493	0.7732	0.7613
Outcome_lag.-1	2.7248	2.6283	2.7651
Outcome_lag.-2	2.7079	2.4669	3.0232
Outcome_lag.-3	2.3810	2.3832	2.8010
Outcome_lag.-4	3.3865	3.2515	2.9818
Outcome_lag.-5.-4	1.9672	2.0700	3.0989

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 weekly TTSP application rate among self-isolating individuals

Local authorities	Weights
Bristol	0.070
Cambridge	0.525
Cherwell	0.015
Haringey	0.007

Islington	0.188
Richmond-upon-Thames	0.184
Torbay	0.011

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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339

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