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Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Li Y, Wang X, Campbell H, et al. The association of community mobility with the time-varying reproduction number (R) of SARS-CoV-2: a modelling study across 330 local UK authorities. *Lancet Digit Health* 2021; published online Aug 31. [https://doi.org/10.1016/S2589-7500\(21\)00144-8](https://doi.org/10.1016/S2589-7500(21)00144-8).

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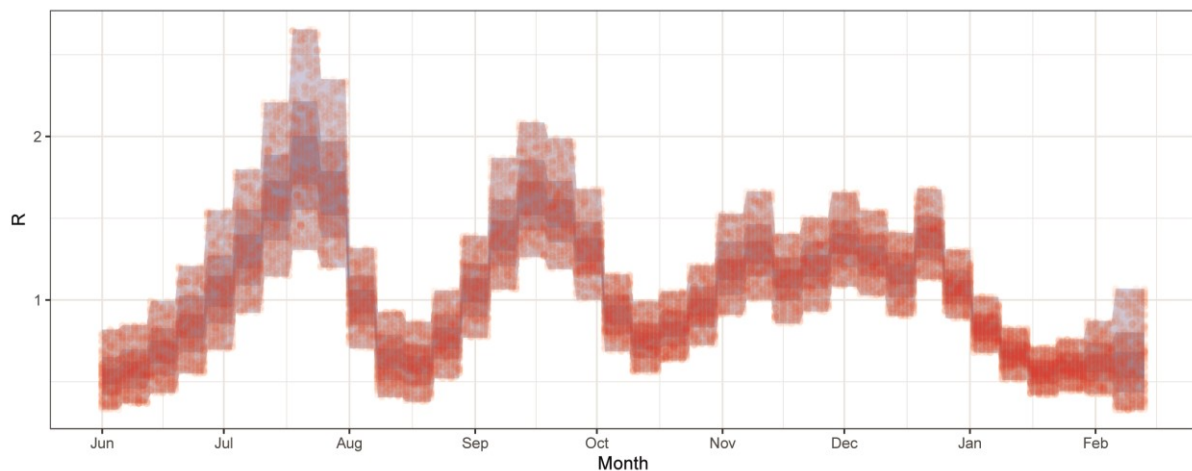
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Text S1. Details of sampling R based on credible intervals

Model estimates of R were reported originally as 30%, 60% and 90% credible intervals (CrI). To incorporate the uncertainty of R, we assumed that within each non-overlapping CrI, R followed a simple continuous uniform distribution. The joint probability density function is as follows:

$$f(R) = \begin{cases} \frac{1}{6} \times \frac{1}{CrI_{60.lower} - CrI_{90.lower}} & \text{for } R \in [CrI_{90.lower}, CrI_{60.lower}] \\ \frac{1}{6} \times \frac{1}{CrI_{30.lower} - CrI_{60.lower}} & \text{for } R \in [CrI_{60.lower}, CrI_{30.lower}] \\ \frac{2}{6} \times \frac{1}{CrI_{30.upper} - CrI_{30.lower}} & \text{for } R \in [CrI_{30.lower}, CrI_{30.upper}] \\ \frac{1}{6} \times \frac{1}{CrI_{60.upper} - CrI_{30.upper}} & \text{for } R \in [CrI_{30.upper}, CrI_{60.upper}] \\ \frac{1}{6} \times \frac{1}{CrI_{90.upper} - CrI_{60.upper}} & \text{for } R \in [CrI_{60.upper}, CrI_{90.upper}] \\ 0 & \text{otherwise} \end{cases}$$

Based on above, we used a two-step sampling method to generate 100 samples of R. As the first step, we randomly selected one interval out of the five intervals (with the interval between 30% lower CrI and 30% upper CrI having twice the probability of being selected than the rest), practically done by a simple random sampling among the numbers 1 to 6 (with the numbers 3 and 4 both representing the interval between 30% lower CrI and 30% upper CrI). Then we sampled 100 times from the selected interval based on uniform distribution. An example of the sampled R (Aberdeen city) is shown below,



where shaded areas denote 30%, 60% and 90% CrIs and red points denote sampled R.

Table S1. Summary of publications on the association between community mobility and transmission of SARS-CoV-2

Index	Reference	Location and country	Mobility metric(s)	Main outcome measure	Main findings on the association between mobility and transmission
1	Badr et al. 2020 ¹	Multiple counties, USA	Mobility ratio relative to a pre-COVID-19 baseline, derived from aggregated and anonymised cell phone data	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> Mobility patterns are strongly correlated with decreased COVID-19 case growth rates for the most affected counties in the USA, with Pearson correlation coefficients above 0.7 for 20 of the 25 counties evaluated. The effect of changes in mobility patterns on COVID-19 cases are not likely to be perceptible for 9–12 days, and potentially up to 3 weeks.
2	Brown et al. 2021 ²	Multiple provinces, Canada	Out-of-home mobility, derived from Google community mobility reports	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> Each 10% increase in mobility is associated with 25% increase in growth rate of COVID-19 cases.
3	Carlitz et al. 2021 ³	Multiple provinces, South Africa	Multiple Google community mobility metrics	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> Mobility reductions are significantly and negatively associated with COVID-19 growth rates two weeks later.
4	Cazelles et al. 2021 ⁴	Multiple regions in France, and Ireland	Multiple Google community mobility metrics	Reproduction number	<ul style="list-style-type: none"> High positive correlation between trends in the transmission of SARS-CoV-2 and mobility.
5	Chen et al. 2021 ⁵	Wuhan, China	Intra-city mobility and inter-city mobility	COVID-19 cases	<ul style="list-style-type: none"> Intra-city mobility is weakly negatively correlated with COVID-19 cases whereas inter-city mobility is positively correlated with COVID-19 cases
6	Da Silva et al. 2021 ⁶	Multiple cities, Brazil	Multiple Google community mobility metrics	COVID-19 cases	<ul style="list-style-type: none"> Inconsistent correlation results between mobility metrics and COVID-19 cases are observed among different cities.
7	Díaz-Castro et al. 2021 ⁷	Multiple states, Mexico	Multiple Google community mobility metrics	COVID-19 cases doubling time	<ul style="list-style-type: none"> The mobility in parks ($p < 0.01$) and the residential mobility ($p < 0.01$) are associated with doubling time of COVID-19 cases.
8	Fan et al. 2021 ⁸	Multiple counties, USA	Facebook co-location maps	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> The mitigation effects of co-location reduction appear in the growth of weekly new confirmed cases with one week of delay.
9	Gao et al. 2020 ⁹	Multiple states, USA	Daily travel distance and home dwell time derived from anonymous mobile phone location data	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> The correlation between the COVID-19 increase rate and travel distance decrease rate is -0.586 and that between COVID-19 increase rate and home dwell time increase rate was 0.526.
10	Gatalo et al. 2020 ¹⁰	Multiple counties, USA	Social distancing metrics created from phone mobility data provided by mobile phone service provider	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> Strong correlation results are observed between decreased mobility and reduced COVID-19 case growth between March 27 and April 20, 2020, but only weak correlation results are observed in later months, between April and July, 2020.
11	Glaeser et al. 2020 ¹¹	Multiple cities, USA	Weekly number of visitors to a point of interest based on cell phone location data	Total / new cases per capita per zip code	<ul style="list-style-type: none"> Total cases per capita decrease by 20% for every ten percentage point fall in mobility.
12	Iacus et al. 2020 ¹²	Multiple regions, France and Italy	Connectivity metric derived from mobile network operators	Excess COVID-19 deaths	<ul style="list-style-type: none"> Mobility alone can explain up to 92% of the initial spread. Internal mobility is more important than mobility across provinces in explaining the spread. The time lag between changes in mobility and excess COVID-19 deaths is 14–20 days.
13	Jamshidi et al. 2020 ¹³	Multiple counties, USA	Mobility index and home index derived from anonymous cell phone location data	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> The mobility index (with the relative importance of 34.32%) is the highest contributing factor to the COVID-19 pandemic growth, followed by homestay (26.14%), population (23.86%), and urban density (13.03%).
14	Kajitani et al. 2021 ¹⁴	Multiple prefectures, Japan	Mobility metric derived from mobile phone service provider	Reproduction number	<ul style="list-style-type: none"> A 20%–35% reduction in weekly mobility is required to reduce R down to below 1.

Index	Reference	Location and country	Mobility metric(s)	Main outcome measure	Main findings on the association between mobility and transmission
15	Kissler et al. 2020 ¹⁵	New York City, USA	The percent change in commuting-style movements between boroughs using data provided by Facebook's Data for Good program	Prevalence of COVID-19 among pregnant women	<ul style="list-style-type: none"> Prevalence of COVID-19 is lowest in boroughs with the greatest reductions in morning movements out of and evening movements into the borough (Pearson R = -0.88 [-0.52, -0.99])
16	Kraemer et al. 2020 ¹⁶	Multiple provinces, China	Real-time travel history data between Wuhan and other provinces from internet services company, Baidu	COVID-19 cases	<ul style="list-style-type: none"> The spatial distribution of COVID-19 cases in China is explained well by mobility data early on but this correlation drops after the implementation of control measures.
17	Lamb et al. 2020 ¹⁷	New York City, USA	Anonymized location data from cell phone visits to businesses obtained via SafeGraph	COVID-19 case positivity	<ul style="list-style-type: none"> Increases in mobility are independently associated with decreased case positivity.
18	Leung et al. 2021 ¹⁸	Hong Kong, China	Number of transactions on Octopus cards (used for transportation and small retail payments)	Reproduction number	<ul style="list-style-type: none"> R estimates are highly correlated with the number of Octopus transactions for transport: the Pearson's correlation coefficients are 0.62, 0.68, 0.80, and 0.76 for children, students, adults, and the elderly, respectively.
19	Li et al. 2020 ¹⁹	Multiple counties, USA	Multiple Google community mobility metrics	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> Mobility metrics have significant correlations with growth rate of COVID-19 cases 11 days later.
20	Monod et al. 2021 ²⁰	Multiple states, USA	Age-specific human mobility trends derived from the Foursquare Labs Inc.	Reproduction number	<ul style="list-style-type: none"> The high reproduction numbers from adults are linked both to rebounding mobility over the summer and elevated transmission risks per venue visit among adults aged 20 to 49.
21	Nakanishi et al. 2021 ²¹	Tokyo, Japan	Population volumes at 10 PM to midnight estimated from phone location data by LocationMind xPop.	Reproduction number	<ul style="list-style-type: none"> R significantly increased 3 weeks after the night-time population volume increased.
22	Sartorius et al. 2021 ²²	Multiple Middle Layer Super Output Areas (MSOA), England	The population movement provided by Cuebiq, which is a location intelligence and measurement platform	COVID-19 case	<ul style="list-style-type: none"> A decrease in mobility at MSA scale has had a significant reduction on caseloads. The change in mobility significantly interacts with population density within a MSA, i.e. the impact of higher mobility is amplified by increasing population density.
23	Sehra et al. 2020 ²³	Multiple counties, USA	Google workplace mobility metric	The slope of change in the 7-day rolling average for new COVID-19 case	<ul style="list-style-type: none"> Counties with the lowest workplace activity had an average slope of change in new cases of 5.64 (4.60, 6.68) per 100 000 population as compared to 7.88 (6.92, 8.84) in the counties with the highest workplace activity (P<0.001).
24	Steiger et al. 2021 ²⁴	Multiple districts, Germany	Multiple Google community mobility metrics	COVID-19 case	<ul style="list-style-type: none"> Daily reported case number increases by 0.11% for every 1% increase in retail/recreation mobility, by 0.33% for every 1% increase in workplace mobility, and by 0.26% for every 1% increase in transit stations mobility. Daily reported case number decreases by 0.23% for every 1% increase in grocery/pharmacy mobility, by 0.03% for every 1% increase in parks mobility, and by 0.97% for every 1% increase in residential stay.
25	Unwin et al. 2020 ²⁵	Multiple states, USA	Average mobility metrics and residential mobility derived from Google community mobility reports	Reproduction number	<ul style="list-style-type: none"> 62% reduction in average mobility could reduce R by 37% 33% increase in residential stay could reduce R by 5%
26	Wang et al. 2020 ²⁶	Multiple cities, China	Mobility scale index (MSI) from internet services company, Baidu	COVID-19 case	<ul style="list-style-type: none"> Each 1 unit increase in daily MSI is significantly positively associated with daily confirmed cases of COVID-19 in all lag days and the correlation is strongest at the lag of 14 days.

Index	Reference	Location and country	Mobility metric(s)	Main outcome measure	Main findings on the association between mobility and transmission
27	Wang et al. 2020 ²⁷	Multiple states, Australia	Multiple Google community mobility metrics	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> Inconsistent relationship between mobility and COVID-19 spread, which varies by date and by mobility type.
28	Xiong et al. 2020 ²⁸	Multiple counties, USA	County-level daily mobility inflow	COVID-19 case	<ul style="list-style-type: none"> Every 10% increase in mobility inflow is associated with 2.34% increase in COVID-19 case one week later
29	Yang et al. 2020 ²⁹	Multiple cities, China	Intra-city travel intensity from internet services company, Baidu	Growth rate of COVID-19 cases	<ul style="list-style-type: none"> Correlation coefficient between the average intracity travel intensity and the average growth rate of COVID-19 cases five days after is 0.86.
30	Younis et al. 2020 ³⁰	Multiple counties, USA	Multiple Google community mobility metrics	Reproduction number	<ul style="list-style-type: none"> Correlation coefficient between various mobility metrics and R ranges 0.66 to 0.89.
31	Zheng et al. 2021 ³¹	Multiple states, USA	Multiple Google community mobility metrics	COVID-19 case	<ul style="list-style-type: none"> Correlation coefficient between various mobility metrics and R ranges 0.22 to 0.48.
32	Zhou et al. 2020 ³²	Shenzhen, China	Anonymized location data from cell phone provided by cell phone service provider	Reproduction number	<ul style="list-style-type: none"> A 20% reduction in mobility is associated with a 25% reduction in transmissibility.
33	Zhu et al. 2020 ³³	Multiple cities, China	Intra-city travel intensity from internet services company, Baidu	COVID-19 case	<ul style="list-style-type: none"> A unit increase in human mobility index is associated with a 6.45% increase in daily COVID-19 cases.

Findings that presented interpretable effect size of community mobility metrics on transmission of SARS-CoV-2 are highlighted **in bold**.

Studies were identified through a rapid literature search in PubMed using the combination of the following search terms: COVID-19 or SARS-CoV-2, mobility and transmission. The following criteria are applied for selection of the publications: 1) peer-reviewed studies (i.e. excluding pre-prints) published between 1-Jan-2020 and 18-Jun-2021 that assessed the association between real-world community mobility metrics and transmission of SARS-CoV-2 at local level; 2) studies are not included if they used mobility data only for mechanistic/statistical model fitting without assessing their specific effects on / association with transmission of SARS-CoV-2; 3) studies are not included if they only assessed the association between mobility restrictions and real-world mobility metrics (i.e. treating mobility metrics as the outcome; 4) studies are not included if they focused on a special group of population (e.g. health-care workers).

Table S2. Summary of datasets included in the analysis

Index	Name	Description
1	Google COVID-19 Community Mobility Reports ^{34,35}	The dataset consists of daily aggregated data on changes in visits and length of stay at different location categories compared to the baseline period, defined as 3rd Jan to 6th Feb, 2020, based on data from users who have opted-in to “location history” for their Google accounts. Six mobility metrics are available in the Google community mobility dataset: visits to retail and recreation places (e.g. restaurants, cafes, shopping centres, theme parks, museums, libraries, and movie theatres), visits to grocery and pharmacy (e.g. grocery markets, food warehouses, farmers markets, specialty food shops, and pharmacies), visits to transit stations (e.g. bus, underground and train stations), visits to parks, visits to workplaces, and length of stay in residential places.
2	Apple Maps Mobility Trends Reports ³⁶	The dataset reports the relative volume of daily directions requests (categorised into walking, driving and public transit), compared to a pre-pandemic baseline volume on 13 th Jan 2020 for 16 major cities of the UK: Belfast, Birmingham, Bradford, Bristol, Cardiff, Edinburgh, Glasgow, Leeds, Liverpool, London, Manchester, Newcastle upon Tyne, Nottingham, Portsmouth, Reading, and Sheffield.
3	COVID-19 Local, Imperial College London ^{37,38}	The dataset consists of daily Rt estimates for local authorities of the UK. The Rt for each local authority was estimated based on the reported COVID-19 cases and deaths by semi-mechanistic Bayesian models. ³⁸ Rt was estimated based on projected infections that were back-calculated from the reported cases and deaths, through the two parameters infection ascertainment rate and infection fatality ratio, respectively. The time lags between infection and reporting of cases, and between infection and reporting of deaths were accounted for in the model so the R estimate was expected to reflect the instantaneous transmissibility of SARS-CoV-2. The local authority R data are published as 30%, 60% and 90% credible intervals and are available from 1 st Jun 2020.
4	UK population density ^{39,40}	The dataset consists of population density data for the year 2019.
5	The Legatum Institute UK Prosperity Index (2016) ⁴¹	The dataset consists of local-authority-specific prosperity index for the year 2016. The prosperity index, ranging between 0 and 1, defines and measures prosperity through seven pillars—economic quality, business environment, education, health, safety & security, social capital, and natural environment. ⁴² A higher prosperity index indicates less deprivation.
6	2011 UK Census data ⁴³	The dataset consists of all 2011 UK Census data. For the current analysis, we extracted the number and proportion of households with six or more people, and the number and proportion of BAME population per local authority.

BAME = Black, Asian and minority ethnic.

Table S3. Summary of secondary analyses in comparison with the main analysis

Index	Objective(s)	Individual-local-authority level analysis (Figure 1)	Meta-analysis across local authorities	Results available at
1	Assess whether use of public transportation was associated with increased R in cities	Two separate analyses, both limiting data to 16 major cities* of the UK: 1. same as the main analysis 2. using the Apple public transit requests in replace of the Google visits to transit stations	Same as the main analysis	Table 1
2	Exclude the mobility metric of residential areas since it had a different measure (i.e. time length) from other metrics (i.e. number of visits)	The independent variable residential stay removed from the main analysis	Same as the main analysis	Figure S2
3	Account for autocorrelation	The error term in the main analysis replaced with an autoregressive error term AR(1)	Same as the main analysis	Figure S2
4	Explore lagged effects	The R ratio of time i replaced with the R ratio of time i+1 while independent variables being the same as the main analysis	Same as the main analysis	Figure S2
5	Obtain results by region	Same as the main analysis	Separately by region	Table 2
6	Explore whether the observed association differed by R level	Stratified by R level (0.5–1.0 and 1.0–1.5)	Separately by R level	Table 3
7	Explore whether the observed association changed over time	Among 13-week moving time windows with the step of two weeks	Separately by time window	Figure 3
8	Explore whether the association was modified by population density, deprivation, proportion of BAME population, latitude and proportion of large household†(for the metric of time spent in residential areas only) of local authority	Same as the main analysis	Meta-regression using population density, prosperity score, proportion of BAME population, latitude and proportion of large household (for the metric of time length at residential areas only) as covariates.	Table S4

BAME = Black, Asian and minority ethnic.

*Belfast, Birmingham, Bradford, Bristol, Cardiff, Edinburgh, Glasgow, Leeds, Liverpool, London, Manchester, Newcastle upon Tyne, Nottingham, Portsmouth, Reading, and Sheffield.

†Defined as households with six or more members.

Table S4. Association between six Google mobility metrics and R by individual local authority, as R ratio (95% CI)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length)
Aberdeen City	1.537 (0.889–2.659)	0.986 (0.826–1.177)	1.332 (0.879–2.017)	0.951 (0.788–1.148)	1.053 (0.698–1.590)	1.074 (0.595–1.939)
Aberdeenshire	0.800 (0.486–1.315)	1.084 (0.899–1.307)	0.942 (0.722–1.228)	1.022 (0.743–1.407)	0.986 (0.727–1.336)	0.737 (0.386–1.408)
Allerdale	1.007 (0.811–1.250)	1.064 (0.936–1.208)	0.965 (0.805–1.157)	0.965 (0.857–1.087)	1.115 (0.845–1.471)	0.866 (0.478–1.569)
Amber Valley	1.041 (0.862–1.257)	1.051 (0.943–1.171)	0.963 (0.842–1.102)	0.929 (0.813–1.061)	1.029 (0.891–1.190)	0.753 (0.511–1.111)
Angus	1.114 (0.828–1.499)	1.067 (0.927–1.227)	0.982 (0.858–1.123)	0.975 (0.895–1.062)	1.025 (0.878–1.195)	0.938 (0.625–1.407)
Ards & North Down	1.102 (0.910–1.334)	1.004 (0.946–1.067)	0.982 (0.904–1.068)	0.965 (0.797–1.168)	0.970 (0.754–1.248)	0.916 (0.561–1.498)
Argyll & Bute	1.115 (0.947–1.313)	0.997 (0.934–1.064)	0.986 (0.906–1.072)	0.972 (0.895–1.057)	1.009 (0.898–1.135)	0.930 (0.709–1.220)
Arun	1.102 (0.921–1.317)	1.012 (0.906–1.130)	1.041 (0.894–1.213)	0.984 (0.931–1.040)	1.174 (0.978–1.410)	1.090 (0.731–1.624)
Ashfield	1.060 (0.869–1.293)	1.011 (0.934–1.093)	0.988 (0.910–1.073)	0.938 (0.805–1.094)	1.051 (0.892–1.238)	0.807 (0.550–1.183)
Ashford	1.015 (0.884–1.165)	0.993 (0.883–1.117)	1.043 (0.850–1.279)	0.922 (0.750–1.134)	1.110 (0.889–1.386)	1.079 (0.692–1.684)
Aylesbury Vale	1.129 (0.921–1.385)	0.963 (0.873–1.062)	1.019 (0.888–1.170)	0.971 (0.849–1.110)	1.098 (0.936–1.287)	1.036 (0.647–1.659)
Babergh	1.090 (0.943–1.259)	1.040 (0.954–1.134)	0.946 (0.862–1.037)	0.953 (0.818–1.111)	1.162 (0.957–1.410)	0.978 (0.753–1.271)
Barking & Dagenham	1.075 (0.909–1.271)	0.982 (0.885–1.090)	1.063 (0.834–1.355)	0.964 (0.883–1.053)	1.082 (0.932–1.257)	1.026 (0.717–1.470)
Barnet	1.056 (0.887–1.257)	0.980 (0.871–1.102)	1.049 (0.742–1.484)	0.962 (0.878–1.054)	1.120 (0.920–1.365)	0.997 (0.670–1.484)
Barnsley	1.169 (0.912–1.500)	0.960 (0.839–1.099)	1.022 (0.868–1.204)	0.919 (0.776–1.089)	1.004 (0.760–1.328)	0.968 (0.626–1.494)
Basildon	1.042 (0.876–1.239)	0.947 (0.863–1.039)	1.006 (0.821–1.233)	0.955 (0.796–1.146)	1.011 (0.817–1.251)	1.010 (0.718–1.421)
Basingstoke & Deane	1.061 (0.803–1.403)	1.026 (0.933–1.128)	1.008 (0.825–1.232)	0.967 (0.776–1.204)	1.115 (0.900–1.381)	0.973 (0.528–1.793)
Bassetlaw	1.030 (0.912–1.164)	0.995 (0.949–1.043)	0.976 (0.905–1.053)	0.853 (0.755–0.963)	0.956 (0.832–1.099)	0.717 (0.507–1.015)
Bath & North East Somerset	1.083 (0.933–1.258)	1.015 (0.887–1.162)	0.937 (0.721–1.218)	0.977 (0.840–1.137)	1.172 (0.921–1.490)	0.939 (0.627–1.406)
Bedford	1.083 (0.915–1.282)	0.978 (0.911–1.050)	1.065 (0.882–1.286)	0.970 (0.877–1.073)	1.114 (0.962–1.291)	1.130 (0.826–1.546)
Belfast	1.028 (0.706–1.496)	1.015 (0.906–1.138)	0.981 (0.703–1.370)	0.922 (0.674–1.260)	1.029 (0.734–1.444)	0.762 (0.426–1.361)
Bexley	1.146 (0.960–1.367)	0.995 (0.892–1.109)	1.076 (0.833–1.390)	0.944 (0.833–1.069)	1.035 (0.805–1.331)	1.055 (0.723–1.537)
Birmingham	1.193 (1.009–1.410)	1.016 (0.926–1.114)	1.030 (0.798–1.331)	0.978 (0.857–1.115)	1.047 (0.880–1.245)	1.023 (0.671–1.559)
Blaby	1.082 (0.994–1.178)	1.012 (0.968–1.058)	0.975 (0.841–1.130)	0.990 (0.946–1.036)	0.983 (0.901–1.073)	1.002 (0.777–1.293)
Blackpool	1.008 (0.936–1.085)	1.040 (0.962–1.123)	0.962 (0.881–1.052)	1.001 (0.950–1.055)	1.059 (0.815–1.377)	0.783 (0.468–1.308)
Bolsover	1.031 (0.946–1.123)	0.999 (0.917–1.088)	0.996 (0.930–1.067)	0.974 (0.895–1.060)	1.060 (0.895–1.255)	0.831 (0.587–1.178)
Bolton	1.178 (0.963–1.442)	1.016 (0.917–1.125)	0.987 (0.789–1.235)	1.036 (0.881–1.219)	1.180 (0.954–1.458)	1.068 (0.662–1.722)
Bournemouth, Christchurch & Poole	1.270 (1.000–1.612)	1.030 (0.886–1.197)	0.889 (0.659–1.200)	1.027 (0.943–1.118)	1.282 (0.968–1.697)	1.123 (0.661–1.910)
Bracknell Forest	1.023 (0.888–1.178)	0.988 (0.875–1.115)	1.000 (0.894–1.119)	0.990 (0.923–1.063)	1.103 (0.951–1.279)	0.986 (0.790–1.230)
Bradford	1.098 (0.891–1.353)	1.004 (0.919–1.096)	1.108 (0.919–1.337)	0.961 (0.860–1.073)	0.986 (0.841–1.157)	1.032 (0.670–1.590)
Breckland	1.055 (0.849–1.310)	1.029 (0.933–1.136)	1.023 (0.893–1.172)	0.908 (0.790–1.044)	1.113 (0.881–1.407)	0.974 (0.585–1.622)
Brent	1.180 (1.009–1.379)	0.998 (0.901–1.106)	0.896 (0.652–1.231)	1.005 (0.941–1.072)	1.090 (0.883–1.347)	1.002 (0.707–1.422)
Brentwood	1.052 (0.900–1.229)	0.958 (0.889–1.033)	1.027 (0.899–1.172)	0.985 (0.844–1.150)	1.181 (0.965–1.446)	1.070 (0.832–1.376)
Bridgend	1.274 (0.952–1.705)	0.989 (0.875–1.118)	0.886 (0.706–1.112)	1.002 (0.932–1.078)	1.039 (0.759–1.421)	1.083 (0.603–1.944)
Brighton & Hove	1.106 (0.843–1.449)	1.037 (0.861–1.248)	0.964 (0.676–1.376)	0.988 (0.855–1.142)	1.238 (0.903–1.697)	1.084 (0.574–2.047)
Bristol, City of	1.334 (0.835–2.129)	1.055 (0.845–1.318)	0.999 (0.572–1.745)	1.005 (0.810–1.247)	1.283 (0.852–1.932)	1.188 (0.564–2.502)
Broadland	1.080 (0.964–1.209)	1.025 (0.954–1.100)	0.967 (0.882–1.061)	0.954 (0.832–1.094)	1.108 (0.929–1.320)	1.034 (0.801–1.334)
Bromley	1.082 (0.937–1.249)	0.976 (0.907–1.050)	1.033 (0.844–1.264)	0.966 (0.846–1.103)	1.095 (0.904–1.326)	1.042 (0.750–1.446)
Bromsgrove	1.118 (1.004–1.245)	1.007 (0.950–1.068)	1.046 (0.975–1.122)	0.949 (0.871–1.034)	1.111 (0.963–1.282)	1.138 (0.816–1.587)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length))
Broxbourne	1.033 (0.897–1.190)	0.981 (0.914–1.051)	1.017 (0.902–1.147)	0.964 (0.846–1.099)	1.059 (0.905–1.241)	0.974 (0.747–1.269)
Broxtowe	0.992 (0.834–1.180)	1.039 (0.935–1.155)	1.059 (0.878–1.277)	0.982 (0.777–1.241)	1.075 (0.780–1.481)	0.890 (0.547–1.447)
Burnley	1.299 (1.036–1.628)	0.980 (0.908–1.057)	1.204 (0.948–1.529)	0.984 (0.881–1.099)	0.896 (0.699–1.149)	1.367 (0.894–2.091)
Bury	1.025 (0.864–1.215)	1.045 (0.966–1.130)	1.020 (0.915–1.136)	0.982 (0.900–1.072)	1.004 (0.849–1.188)	0.846 (0.598–1.197)
Caerphilly	1.300 (0.912–1.853)	0.977 (0.812–1.177)	0.742 (0.500–1.099)	1.028 (0.890–1.188)	1.151 (0.758–1.746)	0.906 (0.474–1.729)
Calderdale	1.056 (0.894–1.247)	1.026 (0.949–1.110)	1.008 (0.837–1.214)	0.918 (0.746–1.128)	1.032 (0.865–1.231)	0.933 (0.590–1.474)
Cambridge	0.837 (0.614–1.142)	1.100 (0.983–1.231)	1.127 (0.734–1.732)	0.834 (0.696–0.999)	1.012 (0.792–1.293)	0.687 (0.400–1.181)
Camden	0.882 (0.596–1.307)	0.908 (0.769–1.072)	1.561 (0.911–2.676)	0.976 (0.822–1.159)	1.006 (0.847–1.195)	1.018 (0.724–1.431)
Cannock Chase	1.051 (0.862–1.280)	1.021 (0.946–1.103)	1.044 (0.974–1.120)	0.951 (0.849–1.066)	1.120 (0.960–1.308)	0.992 (0.718–1.372)
Canterbury	1.161 (0.988–1.365)	0.945 (0.854–1.046)	0.992 (0.854–1.152)	1.019 (0.955–1.087)	1.142 (0.949–1.375)	1.267 (0.905–1.775)
Cardiff	1.146 (0.787–1.668)	0.906 (0.771–1.063)	1.105 (0.689–1.772)	1.078 (0.810–1.434)	1.184 (0.868–1.613)	1.174 (0.660–2.088)
Carlisle	0.959 (0.765–1.202)	1.130 (0.980–1.304)	0.987 (0.785–1.241)	0.829 (0.606–1.134)	1.054 (0.707–1.570)	0.730 (0.398–1.341)
Carmarthenshire	1.121 (0.915–1.374)	0.953 (0.880–1.033)	0.933 (0.808–1.077)	1.037 (0.916–1.174)	1.016 (0.847–1.220)	0.900 (0.602–1.345)
Causeway Coast & Glens	1.041 (0.858–1.264)	1.035 (0.963–1.112)	0.961 (0.816–1.131)	0.989 (0.903–1.083)	1.012 (0.777–1.318)	0.861 (0.499–1.485)
Central Bedfordshire	1.059 (0.851–1.318)	0.966 (0.871–1.072)	0.996 (0.826–1.200)	0.950 (0.851–1.061)	1.057 (0.873–1.279)	0.948 (0.593–1.516)
Charnwood	0.945 (0.728–1.227)	1.070 (0.962–1.189)	0.976 (0.818–1.164)	0.941 (0.845–1.049)	0.975 (0.809–1.176)	0.739 (0.462–1.180)
Chelmsford	1.058 (0.884–1.267)	0.968 (0.862–1.087)	0.992 (0.872–1.129)	0.965 (0.847–1.099)	1.087 (0.894–1.323)	0.981 (0.638–1.507)
Cheltenham	1.070 (0.951–1.204)	1.003 (0.943–1.067)	1.001 (0.948–1.058)	0.989 (0.912–1.072)	1.062 (0.916–1.230)	0.959 (0.744–1.237)
Cherwell	0.953 (0.773–1.175)	1.036 (0.935–1.148)	1.024 (0.849–1.234)	0.839 (0.619–1.136)	1.138 (0.901–1.436)	0.778 (0.434–1.392)
Cheshire East	1.049 (0.911–1.208)	1.006 (0.929–1.089)	1.115 (0.955–1.302)	0.973 (0.869–1.089)	1.012 (0.859–1.192)	0.927 (0.635–1.352)
Cheshire West & Chester	1.152 (0.972–1.366)	1.024 (0.925–1.133)	1.001 (0.873–1.147)	1.017 (0.820–1.262)	1.073 (0.813–1.416)	1.037 (0.625–1.718)
Chesterfield	1.005 (0.860–1.175)	1.035 (0.953–1.123)	1.077 (0.908–1.278)	0.932 (0.852–1.020)	1.104 (0.936–1.303)	0.872 (0.613–1.239)
Chichester	1.030 (0.878–1.208)	1.042 (0.956–1.135)	1.003 (0.870–1.156)	0.931 (0.778–1.113)	1.161 (0.943–1.430)	0.979 (0.630–1.523)
Chiltern	1.069 (0.946–1.208)	0.990 (0.919–1.067)	1.022 (0.884–1.182)	0.955 (0.902–1.012)	1.092 (0.964–1.238)	0.984 (0.785–1.233)
Chorley	0.998 (0.892–1.118)	1.030 (0.965–1.100)	1.022 (0.960–1.088)	0.971 (0.911–1.036)	1.039 (0.886–1.218)	0.832 (0.631–1.098)
City of Edinburgh	1.000 (0.643–1.555)	0.963 (0.820–1.132)	1.125 (0.713–1.776)	0.993 (0.846–1.166)	0.891 (0.677–1.172)	0.774 (0.502–1.193)
Colchester	0.976 (0.815–1.169)	1.047 (0.935–1.171)	1.024 (0.787–1.332)	0.930 (0.795–1.088)	1.065 (0.769–1.474)	0.896 (0.554–1.449)
Conwy	1.032 (0.899–1.186)	1.014 (0.948–1.084)	0.977 (0.905–1.055)	1.002 (0.939–1.069)	1.006 (0.872–1.162)	0.949 (0.711–1.266)
Copeland	1.058 (0.803–1.393)	1.039 (0.926–1.164)	1.058 (0.967–1.158)	0.943 (0.826–1.077)	0.997 (0.724–1.373)	0.790 (0.445–1.405)
Cornwall	1.187 (0.937–1.505)	0.969 (0.786–1.194)	1.000 (0.739–1.352)	0.906 (0.796–1.031)	0.910 (0.673–1.232)	0.586 (0.301–1.142)
Cotswold	1.003 (0.870–1.156)	1.064 (0.958–1.181)	0.977 (0.865–1.103)	0.911 (0.756–1.099)	1.143 (0.954–1.369)	0.854 (0.564–1.295)
County Durham	1.378 (1.006–1.888)	1.015 (0.850–1.212)	0.916 (0.653–1.284)	0.951 (0.710–1.273)	0.969 (0.665–1.412)	0.935 (0.411–2.131)
Coventry	1.152 (0.942–1.408)	1.046 (0.949–1.152)	1.012 (0.791–1.294)	0.982 (0.878–1.100)	1.057 (0.879–1.271)	0.960 (0.624–1.476)
Craven	1.075 (0.973–1.187)	1.024 (0.940–1.115)	1.006 (0.936–1.081)	0.947 (0.849–1.056)	0.996 (0.846–1.172)	0.964 (0.712–1.305)
Crawley	1.034 (0.826–1.294)	1.046 (0.920–1.189)	1.041 (0.847–1.279)	0.997 (0.928–1.072)	1.246 (0.970–1.602)	0.991 (0.657–1.495)
Croydon	1.010 (0.858–1.188)	0.994 (0.910–1.085)	1.162 (0.776–1.740)	0.960 (0.870–1.060)	1.087 (0.892–1.325)	1.011 (0.746–1.372)
Dacorum	1.022 (0.870–1.199)	0.994 (0.927–1.066)	0.978 (0.890–1.075)	0.956 (0.843–1.085)	1.071 (0.936–1.226)	0.957 (0.691–1.325)
Darlington	1.036 (0.923–1.162)	0.967 (0.894–1.046)	1.161 (0.968–1.392)	0.981 (0.931–1.034)	0.991 (0.880–1.116)	0.965 (0.767–1.215)
Dartford	1.056 (0.940–1.187)	1.003 (0.957–1.052)	0.999 (0.854–1.169)	1.000 (0.954–1.049)	1.161 (0.947–1.425)	1.065 (0.833–1.362)
Daventry	1.059 (0.920–1.220)	1.012 (0.929–1.102)	1.055 (0.940–1.185)	0.883 (0.763–1.021)	1.077 (0.919–1.263)	0.953 (0.707–1.285)
Denbighshire	1.016 (0.859–1.202)	1.009 (0.924–1.102)	1.104 (0.900–1.354)	0.945 (0.860–1.039)	0.968 (0.834–1.124)	1.024 (0.783–1.339)
Derby	1.084 (0.879–1.337)	1.049 (0.939–1.172)	1.096 (0.847–1.417)	0.982 (0.863–1.118)	1.074 (0.855–1.350)	0.970 (0.638–1.473)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length))
Derbyshire Dales	1.031 (0.966-1.101)	1.016 (0.972-1.061)	0.990 (0.948-1.033)	0.885 (0.756-1.035)	1.033 (0.915-1.166)	0.818 (0.662-1.010)
Derry City & Strabane	1.161 (0.883-1.527)	0.981 (0.867-1.110)	0.962 (0.795-1.163)	0.939 (0.606-1.455)	0.981 (0.653-1.473)	0.685 (0.345-1.359)
Doncaster	1.004 (0.819-1.231)	1.037 (0.918-1.171)	0.931 (0.719-1.206)	0.885 (0.740-1.059)	0.868 (0.633-1.191)	0.589 (0.329-1.052)
Dorset	1.055 (0.896-1.243)	1.030 (0.920-1.154)	0.974 (0.872-1.088)	0.988 (0.870-1.121)	1.246 (0.891-1.743)	0.985 (0.542-1.789)
Dover	1.041 (0.947-1.144)	1.011 (0.940-1.086)	0.923 (0.865-0.984)	0.992 (0.920-1.069)	1.048 (0.917-1.197)	1.025 (0.768-1.368)
Dudley	1.128 (0.898-1.417)	1.032 (0.946-1.125)	0.995 (0.917-1.079)	0.969 (0.723-1.298)	1.107 (0.875-1.400)	0.924 (0.544-1.569)
Dumfries & Galloway	1.215 (0.680-2.173)	1.024 (0.865-1.212)	1.067 (0.857-1.327)	0.803 (0.581-1.111)	0.976 (0.661-1.440)	0.865 (0.369-2.027)
Dundee City	1.252 (0.978-1.603)	0.964 (0.865-1.075)	1.044 (0.865-1.259)	1.003 (0.898-1.120)	0.978 (0.809-1.182)	0.958 (0.692-1.325)
Ealing	1.067 (0.882-1.291)	1.024 (0.913-1.149)	0.844 (0.544-1.311)	0.964 (0.884-1.051)	1.204 (0.953-1.521)	0.856 (0.555-1.321)
East Cambridgeshire	1.055 (0.943-1.180)	0.993 (0.944-1.045)	0.985 (0.883-1.099)	0.949 (0.851-1.058)	1.068 (0.936-1.219)	0.999 (0.783-1.274)
East Devon	1.020 (0.922-1.129)	1.018 (0.962-1.076)	0.992 (0.922-1.067)	1.007 (0.930-1.089)	1.171 (0.976-1.406)	1.111 (0.786-1.570)
East Hampshire	1.048 (0.905-1.215)	1.031 (0.932-1.140)	1.014 (0.917-1.120)	0.902 (0.790-1.030)	1.010 (0.876-1.164)	0.837 (0.642-1.092)
East Hertfordshire	1.065 (0.936-1.211)	1.033 (0.955-1.117)	1.028 (0.965-1.094)	0.951 (0.851-1.064)	1.048 (0.904-1.215)	1.021 (0.780-1.336)
East Lindsey	1.040 (0.846-1.278)	0.993 (0.931-1.059)	0.969 (0.855-1.098)	0.989 (0.851-1.148)	1.089 (0.922-1.286)	0.834 (0.515-1.351)
East Lothian	1.213 (0.951-1.547)	0.975 (0.878-1.083)	1.024 (0.845-1.242)	0.991 (0.925-1.062)	1.029 (0.901-1.175)	1.077 (0.709-1.634)
East Northamptonshire	1.070 (0.967-1.184)	0.995 (0.946-1.047)	0.991 (0.951-1.033)	0.958 (0.879-1.044)	1.121 (0.985-1.276)	1.045 (0.820-1.333)
East Riding of Yorkshire	1.163 (1.018-1.327)	1.023 (0.943-1.110)	0.981 (0.903-1.067)	0.936 (0.866-1.012)	0.991 (0.831-1.181)	0.872 (0.600-1.269)
East Staffordshire	1.102 (0.935-1.298)	1.026 (0.957-1.100)	1.018 (0.903-1.148)	0.973 (0.905-1.046)	1.061 (0.917-1.228)	1.009 (0.706-1.441)
East Suffolk	1.040 (0.914-1.183)	1.050 (0.974-1.133)	0.945 (0.862-1.036)	1.014 (0.912-1.128)	1.146 (0.974-1.348)	1.024 (0.748-1.403)
Eastbourne	1.014 (0.790-1.302)	1.046 (0.929-1.177)	1.008 (0.808-1.257)	0.991 (0.901-1.091)	1.231 (0.970-1.561)	1.178 (0.623-2.226)
Eastleigh	1.062 (0.806-1.398)	1.054 (0.924-1.202)	0.991 (0.813-1.209)	0.990 (0.815-1.201)	1.249 (0.999-1.562)	0.950 (0.539-1.673)
Eden	1.002 (0.834-1.204)	1.060 (0.996-1.128)	0.917 (0.811-1.036)	0.990 (0.858-1.142)	1.161 (0.956-1.409)	0.936 (0.694-1.261)
Elmbridge	1.046 (0.889-1.230)	1.001 (0.929-1.079)	1.055 (0.933-1.192)	0.958 (0.830-1.104)	1.110 (0.915-1.347)	1.046 (0.757-1.445)
Enfield	1.053 (0.859-1.290)	0.975 (0.868-1.095)	0.990 (0.689-1.421)	0.942 (0.829-1.070)	1.069 (0.839-1.363)	0.914 (0.591-1.416)
Epping Forest	1.091 (0.906-1.313)	0.921 (0.844-1.004)	1.121 (0.916-1.372)	0.985 (0.922-1.052)	1.116 (0.946-1.317)	1.115 (0.771-1.613)
Epsom & Ewell	1.026 (0.913-1.154)	1.008 (0.957-1.062)	1.004 (0.906-1.113)	0.961 (0.881-1.048)	1.090 (0.981-1.212)	0.968 (0.823-1.138)
Erewash	1.034 (0.878-1.218)	1.063 (0.988-1.143)	0.983 (0.905-1.067)	0.929 (0.831-1.038)	1.082 (0.932-1.256)	0.804 (0.563-1.147)
Exeter	1.236 (0.767-1.993)	1.095 (0.823-1.456)	1.111 (0.786-1.569)	1.339 (0.874-2.050)	0.953 (0.522-1.741)	1.668 (0.545-5.106)
Falkirk	1.212 (0.976-1.506)	1.008 (0.925-1.100)	1.017 (0.873-1.185)	0.982 (0.920-1.049)	0.874 (0.749-1.019)	0.798 (0.581-1.097)
Fareham	1.036 (0.857-1.251)	1.037 (0.950-1.132)	1.067 (0.888-1.282)	0.957 (0.870-1.052)	1.127 (0.923-1.375)	0.995 (0.654-1.513)
Fenland	1.013 (0.894-1.148)	1.007 (0.957-1.060)	0.938 (0.887-0.990)	0.975 (0.853-1.114)	1.134 (0.984-1.307)	0.872 (0.663-1.148)
Fife	1.159 (0.905-1.484)	1.063 (0.933-1.212)	1.012 (0.806-1.269)	0.969 (0.850-1.104)	0.902 (0.755-1.078)	0.823 (0.555-1.220)
Folkestone & Hythe	1.050 (0.951-1.160)	1.011 (0.940-1.087)	0.959 (0.885-1.039)	1.011 (0.963-1.060)	1.185 (1.014-1.386)	1.288 (0.972-1.708)
Forest of Dean	1.049 (0.942-1.170)	1.018 (0.951-1.089)	0.973 (0.889-1.066)	0.989 (0.858-1.139)	1.019 (0.853-1.217)	0.877 (0.642-1.198)
Fylde	1.044 (0.960-1.135)	1.017 (0.966-1.070)	0.998 (0.938-1.062)	0.971 (0.915-1.030)	1.055 (0.911-1.221)	0.867 (0.668-1.125)
Gateshead	1.175 (1.010-1.368)	0.993 (0.874-1.129)	0.991 (0.816-1.205)	0.944 (0.809-1.101)	1.022 (0.736-1.419)	0.826 (0.543-1.256)
Gedling	1.127 (0.949-1.340)	1.006 (0.929-1.088)	1.059 (0.940-1.194)	0.963 (0.918-1.011)	1.154 (0.940-1.416)	0.992 (0.664-1.480)
Glasgow City	0.950 (0.716-1.260)	0.966 (0.855-1.092)	1.270 (0.785-2.052)	0.996 (0.885-1.122)	0.880 (0.734-1.056)	0.870 (0.567-1.334)
Gloucester	1.065 (0.934-1.215)	0.984 (0.896-1.080)	0.957 (0.840-1.090)	0.979 (0.910-1.053)	1.065 (0.881-1.286)	0.885 (0.642-1.219)
Gosport	1.000 (0.869-1.152)	1.044 (0.963-1.131)	0.980 (0.863-1.112)	0.972 (0.901-1.048)	1.103 (0.952-1.277)	0.887 (0.634-1.241)
Gravesham	1.096 (0.967-1.242)	1.012 (0.941-1.089)	1.041 (0.917-1.182)	0.907 (0.772-1.065)	1.027 (0.890-1.186)	1.068 (0.831-1.372)
Great Yarmouth	0.996 (0.834-1.190)	1.024 (0.918-1.143)	1.004 (0.921-1.096)	1.003 (0.908-1.109)	1.163 (0.908-1.490)	1.069 (0.731-1.564)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length))
Greenwich	1.079 (0.949-1.226)	0.976 (0.879-1.084)	1.128 (0.806-1.578)	0.965 (0.852-1.094)	1.060 (0.855-1.314)	1.072 (0.743-1.546)
Guildford	1.025 (0.916-1.146)	0.989 (0.943-1.038)	1.058 (0.932-1.201)	0.961 (0.830-1.113)	1.036 (0.918-1.169)	0.966 (0.776-1.202)
Gwynedd	1.022 (0.907-1.153)	1.031 (0.947-1.122)	1.038 (0.892-1.209)	0.937 (0.791-1.111)	0.950 (0.776-1.163)	0.933 (0.687-1.268)
Hackney	0.861 (0.575-1.290)	1.046 (0.886-1.235)	1.545 (0.889-2.683)	0.967 (0.834-1.122)	0.975 (0.671-1.416)	1.040 (0.590-1.831)
Halton	1.091 (0.835-1.427)	1.039 (0.905-1.193)	1.139 (0.923-1.405)	1.003 (0.931-1.081)	0.860 (0.644-1.149)	0.826 (0.500-1.365)
Hambleton	1.038 (0.860-1.254)	1.063 (0.964-1.172)	0.974 (0.807-1.177)	0.892 (0.755-1.054)	1.112 (0.915-1.351)	0.763 (0.511-1.138)
Hammersmith & Fulham	1.016 (0.825-1.251)	0.960 (0.837-1.099)	1.177 (0.812-1.707)	1.016 (0.880-1.173)	1.207 (0.917-1.590)	1.079 (0.763-1.525)
Harborough	1.042 (0.927-1.172)	1.023 (0.960-1.091)	1.002 (0.897-1.120)	0.981 (0.918-1.050)	0.993 (0.904-1.091)	0.920 (0.736-1.150)
Haringey	0.955 (0.769-1.186)	0.978 (0.848-1.129)	1.154 (0.750-1.777)	0.981 (0.886-1.086)	1.138 (0.910-1.423)	1.038 (0.722-1.493)
Harlow	1.024 (0.868-1.208)	1.004 (0.924-1.092)	0.967 (0.868-1.078)	0.979 (0.933-1.028)	1.057 (0.922-1.212)	0.901 (0.697-1.165)
Harrogate	1.052 (0.870-1.272)	0.991 (0.897-1.095)	1.180 (0.967-1.439)	0.905 (0.721-1.134)	1.126 (0.868-1.460)	1.065 (0.625-1.817)
Harrow	1.057 (0.938-1.191)	0.988 (0.916-1.065)	0.939 (0.712-1.238)	0.987 (0.935-1.041)	1.124 (0.942-1.340)	0.950 (0.707-1.277)
Hart	1.007 (0.871-1.164)	1.005 (0.956-1.056)	1.050 (0.956-1.153)	0.960 (0.835-1.103)	1.156 (0.976-1.368)	1.045 (0.760-1.438)
Hastings	1.145 (0.890-1.473)	0.924 (0.793-1.075)	0.985 (0.642-1.511)	1.000 (0.888-1.126)	1.110 (0.833-1.480)	1.141 (0.656-1.983)
Havant	1.129 (0.908-1.403)	1.026 (0.937-1.123)	1.007 (0.847-1.197)	0.984 (0.901-1.076)	1.172 (0.980-1.403)	1.026 (0.579-1.817)
Hasving	1.067 (0.877-1.298)	0.981 (0.870-1.106)	1.108 (0.822-1.494)	0.948 (0.816-1.101)	1.041 (0.832-1.302)	1.009 (0.687-1.483)
Herefordshire, County of	0.985 (0.779-1.245)	1.126 (0.980-1.293)	0.966 (0.835-1.118)	0.818 (0.633-1.057)	0.991 (0.750-1.309)	0.684 (0.379-1.233)
Hertsmere	0.957 (0.769-1.191)	0.981 (0.918-1.049)	0.979 (0.818-1.172)	0.935 (0.831-1.052)	1.053 (0.866-1.282)	0.837 (0.590-1.187)
High Peak	1.040 (0.920-1.174)	1.046 (0.974-1.123)	0.970 (0.882-1.068)	0.986 (0.950-1.023)	1.102 (0.922-1.317)	0.908 (0.646-1.275)
Highland	0.935 (0.653-1.339)	1.132 (0.978-1.311)	1.079 (0.761-1.529)	0.848 (0.668-1.075)	0.865 (0.673-1.111)	0.731 (0.407-1.313)
Hillingdon	1.080 (0.868-1.344)	1.001 (0.912-1.099)	0.982 (0.783-1.232)	0.964 (0.873-1.065)	1.066 (0.899-1.264)	0.923 (0.589-1.446)
Hinckley & Bosworth	1.044 (0.871-1.251)	1.029 (0.956-1.108)	0.968 (0.850-1.103)	0.971 (0.875-1.078)	0.978 (0.867-1.103)	0.845 (0.630-1.132)
Horsham	1.086 (0.921-1.280)	1.005 (0.915-1.105)	1.039 (0.871-1.239)	0.932 (0.801-1.085)	1.017 (0.861-1.200)	0.943 (0.670-1.326)
Hounslow	1.049 (0.848-1.297)	1.015 (0.921-1.118)	0.983 (0.690-1.401)	0.947 (0.858-1.045)	1.148 (0.929-1.418)	0.942 (0.660-1.344)
Huntingdonshire	0.990 (0.781-1.253)	1.020 (0.939-1.108)	1.139 (0.922-1.407)	0.937 (0.836-1.051)	1.053 (0.868-1.278)	0.881 (0.507-1.531)
Ipswich	0.979 (0.776-1.233)	0.996 (0.878-1.130)	1.025 (0.869-1.209)	0.954 (0.808-1.126)	1.057 (0.846-1.319)	0.959 (0.609-1.511)
Isle of Wight	1.106 (0.862-1.421)	1.064 (0.886-1.278)	0.978 (0.805-1.188)	0.897 (0.728-1.105)	1.021 (0.686-1.520)	0.755 (0.416-1.371)
Isles of Scilly	1.190 (0.944-1.500)	0.970 (0.789-1.192)	0.989 (0.729-1.341)	0.909 (0.795-1.040)	0.904 (0.664-1.232)	0.573 (0.288-1.139)
Islington	1.010 (0.630-1.621)	1.034 (0.878-1.218)	1.191 (0.848-1.673)	0.973 (0.835-1.133)	1.150 (0.886-1.493)	1.065 (0.738-1.537)
Kensington & Chelsea	0.907 (0.754-1.091)	1.009 (0.919-1.107)	1.337 (1.002-1.785)	0.896 (0.757-1.061)	1.065 (0.832-1.363)	1.013 (0.807-1.272)
King's Lynn & West Norfolk	1.076 (0.958-1.209)	0.990 (0.912-1.074)	0.993 (0.843-1.169)	1.014 (0.963-1.068)	1.159 (0.968-1.388)	1.144 (0.801-1.635)
Kingston upon Hull, City of	1.091 (0.884-1.517)	1.038 (0.911-1.182)	0.903 (0.691-1.180)	0.875 (0.726-1.055)	1.023 (0.764-1.370)	0.621 (0.356-1.086)
Kingston upon Thames	0.998 (0.921-1.081)	0.972 (0.912-1.037)	1.166 (0.979-1.388)	0.987 (0.951-1.024)	1.031 (0.890-1.195)	1.031 (0.854-1.245)
Kirklees	1.196 (0.968-1.478)	0.984 (0.899-1.078)	0.956 (0.768-1.189)	1.052 (0.907-1.220)	1.124 (0.919-1.374)	1.131 (0.652-1.963)
Knowsley	1.092 (0.789-1.512)	1.076 (0.982-1.179)	1.170 (0.982-1.394)	0.876 (0.682-1.124)	0.884 (0.658-1.188)	0.708 (0.443-1.132)
Lambeth	1.002 (0.719-1.396)	0.982 (0.847-1.138)	1.126 (0.769-1.649)	1.001 (0.841-1.190)	1.291 (0.967-1.722)	1.071 (0.692-1.657)
Lancaster	0.998 (0.756-1.318)	0.998 (0.894-1.114)	1.078 (0.927-1.253)	0.954 (0.766-1.187)	1.048 (0.754-1.459)	0.888 (0.455-1.731)
Leeds	1.158 (0.840-1.598)	0.962 (0.822-1.127)	1.010 (0.677-1.508)	0.998 (0.847-1.175)	1.023 (0.746-1.403)	0.890 (0.487-1.626)
Leicester	1.183 (0.912-1.534)	1.062 (0.967-1.166)	0.997 (0.767-1.297)	0.937 (0.841-1.043)	1.027 (0.836-1.261)	1.097 (0.706-1.706)
Lewes	1.091 (0.939-1.269)	1.019 (0.946-1.097)	0.990 (0.877-1.117)	0.974 (0.923-1.028)	1.176 (0.991-1.395)	1.088 (0.796-1.487)
Lewisham	0.967 (0.755-1.240)	1.012 (0.892-1.148)	1.060 (0.766-1.466)	0.961 (0.878-1.053)	1.132 (0.884-1.450)	0.933 (0.634-1.372)
Lichfield	1.078 (0.951-1.223)	1.031 (0.951-1.117)	1.050 (0.912-1.209)	0.904 (0.782-1.044)	1.010 (0.808-1.262)	0.891 (0.594-1.336)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length))
Lincoln	0.982 (0.861–1.120)	1.004 (0.945–1.067)	0.983 (0.883–1.095)	0.971 (0.924–1.020)	1.040 (0.917–1.180)	0.880 (0.690–1.123)
Liverpool	1.186 (0.878–1.602)	1.113 (0.949–1.304)	0.893 (0.483–1.650)	0.979 (0.715–1.340)	0.961 (0.668–1.383)	0.739 (0.335–1.631)
Maidstone	1.038 (0.968–1.114)	0.986 (0.920–1.056)	1.012 (0.913–1.121)	0.949 (0.861–1.045)	1.039 (0.930–1.161)	1.037 (0.828–1.298)
Maldon	1.046 (0.927–1.180)	1.002 (0.902–1.112)	1.016 (0.870–1.187)	0.978 (0.925–1.035)	1.100 (0.916–1.322)	1.047 (0.756–1.449)
Malvern Hills	1.055 (0.920–1.209)	1.023 (0.944–1.108)	1.042 (0.907–1.197)	0.964 (0.880–1.055)	1.047 (0.911–1.202)	0.951 (0.706–1.280)
Manchester	0.922 (0.532–1.598)	1.036 (0.834–1.288)	1.059 (0.473–2.372)	1.006 (0.749–1.351)	0.919 (0.566–1.492)	0.631 (0.254–1.565)
Mansfield	1.050 (0.900–1.225)	1.044 (0.959–1.137)	0.950 (0.799–1.128)	0.883 (0.726–1.073)	1.082 (0.894–1.311)	0.769 (0.539–1.096)
Medway	1.089 (0.969–1.223)	0.965 (0.890–1.046)	1.023 (0.879–1.190)	0.987 (0.875–1.113)	1.106 (0.931–1.313)	1.128 (0.836–1.520)
Mendip	1.069 (0.925–1.236)	1.017 (0.946–1.093)	0.981 (0.903–1.066)	1.032 (0.901–1.181)	1.163 (0.970–1.393)	1.123 (0.797–1.583)
Merton	0.949 (0.814–1.105)	1.038 (0.957–1.125)	1.009 (0.785–1.298)	0.930 (0.839–1.030)	1.079 (0.889–1.310)	0.867 (0.667–1.128)
Mid Devon	1.025 (0.913–1.151)	0.987 (0.911–1.070)	1.026 (0.951–1.106)	0.941 (0.874–1.013)	1.115 (0.979–1.269)	0.957 (0.784–1.169)
Mid Suffolk	1.087 (0.931–1.271)	0.992 (0.912–1.079)	1.017 (0.867–1.192)	0.936 (0.818–1.072)	1.083 (0.927–1.266)	1.058 (0.788–1.422)
Mid Sussex	1.034 (0.882–1.212)	1.043 (0.941–1.156)	1.021 (0.906–1.150)	0.937 (0.830–1.059)	1.067 (0.916–1.243)	0.916 (0.659–1.273)
Middlesbrough	1.159 (1.008–1.333)	0.975 (0.911–1.044)	1.016 (0.893–1.156)	0.981 (0.917–1.049)	1.028 (0.855–1.236)	0.950 (0.718–1.258)
Milton Keynes	1.029 (0.867–1.221)	0.987 (0.882–1.104)	1.076 (0.831–1.393)	0.983 (0.852–1.135)	1.162 (0.901–1.498)	1.035 (0.588–1.824)
Mole Valley	0.973 (0.844–1.122)	1.054 (0.967–1.150)	1.005 (0.893–1.130)	0.927 (0.733–1.171)	1.187 (1.011–1.394)	0.924 (0.718–1.189)
Monmouthshire	1.085 (0.970–1.214)	1.000 (0.938–1.066)	0.962 (0.877–1.056)	1.012 (0.909–1.126)	1.040 (0.920–1.176)	1.058 (0.924–1.211)
Moray	1.284 (0.888–1.857)	1.001 (0.878–1.142)	1.014 (0.762–1.350)	0.948 (0.784–1.145)	0.935 (0.662–1.320)	0.872 (0.452–1.682)
Neath Port Talbot	1.144 (0.895–1.463)	0.970 (0.896–1.049)	1.050 (0.894–1.232)	0.961 (0.892–1.036)	1.082 (0.884–1.325)	1.055 (0.735–1.514)
New Forest	1.036 (0.923–1.162)	1.099 (0.981–1.232)	0.995 (0.888–1.115)	0.906 (0.764–1.076)	1.062 (0.827–1.363)	0.887 (0.536–1.469)
Newark & Sherwood	1.022 (0.932–1.122)	1.037 (0.982–1.095)	0.985 (0.913–1.062)	0.979 (0.875–1.094)	1.040 (0.896–1.207)	0.866 (0.673–1.115)
Newcastle-under-Lyme	1.247 (0.837–1.859)	1.116 (0.891–1.396)	0.798 (0.546–1.167)	1.122 (0.950–1.327)	0.758 (0.476–1.206)	0.570 (0.238–1.362)
Newcastle upon Tyne	1.071 (0.832–1.379)	0.982 (0.903–1.067)	1.218 (0.889–1.669)	0.982 (0.901–1.072)	1.139 (0.940–1.380)	1.193 (0.827–1.722)
Newham	0.994 (0.843–1.173)	0.989 (0.895–1.092)	1.052 (0.793–1.396)	0.971 (0.921–1.023)	1.088 (0.897–1.320)	0.962 (0.709–1.307)
Newport	1.291 (0.930–1.791)	0.963 (0.865–1.072)	0.909 (0.791–1.045)	1.036 (0.871–1.233)	1.011 (0.787–1.300)	0.992 (0.657–1.498)
Newry, Mourne & Down	1.106 (0.931–1.314)	1.001 (0.922–1.087)	1.003 (0.820–1.226)	1.002 (0.889–1.129)	0.951 (0.704–1.285)	0.903 (0.499–1.635)
North Devon	1.033 (0.898–1.190)	1.011 (0.928–1.102)	0.986 (0.868–1.120)	0.996 (0.946–1.048)	1.089 (0.905–1.310)	0.948 (0.668–1.345)
North East Derbyshire	0.997 (0.877–1.132)	1.043 (0.970–1.121)	0.989 (0.932–1.049)	0.955 (0.798–1.144)	0.984 (0.804–1.206)	0.762 (0.497–1.168)
North East Lincolnshire	1.053 (0.908–1.222)	1.019 (0.943–1.101)	0.969 (0.885–1.061)	0.967 (0.893–1.046)	1.109 (0.904–1.361)	0.802 (0.553–1.164)
North Hertfordshire	1.059 (0.886–1.266)	1.010 (0.930–1.098)	1.006 (0.875–1.158)	0.952 (0.846–1.071)	1.076 (0.889–1.301)	0.974 (0.673–1.410)
North Kesteven	1.048 (0.956–1.148)	1.004 (0.965–1.046)	0.986 (0.948–1.025)	0.928 (0.813–1.060)	1.072 (0.977–1.177)	0.947 (0.776–1.155)
North Lincolnshire	1.123 (0.951–1.325)	0.988 (0.937–1.043)	1.001 (0.933–1.074)	0.950 (0.825–1.093)	1.000 (0.894–1.118)	0.863 (0.656–1.136)
North Norfolk	1.014 (0.928–1.106)	1.019 (0.955–1.087)	0.968 (0.914–1.025)	1.004 (0.943–1.068)	1.127 (0.933–1.361)	1.123 (0.803–1.569)
North Somerset	1.122 (0.946–1.332)	1.013 (0.922–1.113)	1.066 (0.940–1.209)	0.954 (0.872–1.043)	1.182 (0.973–1.436)	1.047 (0.739–1.483)
North Tyneside	1.098 (0.912–1.322)	1.001 (0.905–1.107)	0.991 (0.816–1.202)	0.919 (0.793–1.066)	0.929 (0.763–1.130)	0.723 (0.456–1.144)
North Warwickshire	1.034 (0.921–1.162)	0.981 (0.929–1.036)	1.051 (0.974–1.134)	0.926 (0.812–1.056)	1.134 (0.957–1.343)	0.905 (0.698–1.173)
North West Leicestershire	1.037 (0.854–1.260)	1.060 (0.968–1.161)	1.023 (0.851–1.230)	0.900 (0.748–1.083)	0.938 (0.814–1.080)	0.770 (0.554–1.071)
Northampton	1.032 (0.836–1.274)	1.083 (0.953–1.230)	1.036 (0.778–1.380)	0.951 (0.777–1.164)	1.129 (0.902–1.412)	0.991 (0.694–1.415)
Northumberland	1.131 (0.961–1.332)	1.000 (0.915–1.092)	1.026 (0.894–1.177)	0.937 (0.856–1.026)	0.853 (0.673–1.081)	0.739 (0.452–1.209)
Norwich	1.052 (0.872–1.269)	0.984 (0.902–1.075)	0.997 (0.773–1.286)	0.988 (0.898–1.087)	1.115 (0.914–1.360)	1.060 (0.777–1.446)
Nottingham	1.479 (0.754–2.904)	1.165 (0.777–1.747)	0.713 (0.232–2.189)	1.107 (0.774–1.582)	0.971 (0.448–2.104)	1.119 (0.245–5.105)
Oldham	0.998 (0.773–1.289)	1.092 (0.961–1.241)	1.053 (0.841–1.317)	0.922 (0.834–1.020)	0.993 (0.785–1.258)	0.754 (0.436–1.305)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length))
Oxford	1.108 (0.891-1.377)	0.978 (0.893-1.071)	1.068 (0.758-1.506)	1.050 (0.892-1.235)	1.087 (0.920-1.286)	1.152 (0.812-1.635)
Pembrokeshire	1.040 (0.862-1.255)	0.976 (0.903-1.055)	1.005 (0.904-1.117)	1.007 (0.917-1.105)	1.032 (0.945-1.127)	1.013 (0.720-1.427)
Pendle	1.036 (0.897-1.196)	1.072 (0.992-1.158)	0.967 (0.914-1.022)	0.962 (0.898-1.029)	1.046 (0.903-1.211)	0.898 (0.648-1.244)
Perth & Kinross	1.124 (0.858-1.472)	1.060 (0.920-1.222)	0.942 (0.807-1.099)	0.995 (0.835-1.186)	1.003 (0.824-1.221)	0.925 (0.609-1.404)
Plymouth	1.164 (0.877-1.547)	1.115 (0.962-1.291)	0.839 (0.671-1.049)	1.039 (0.843-1.280)	1.106 (0.876-1.396)	0.779 (0.415-1.462)
Portsmouth	1.205 (0.960-1.513)	1.019 (0.911-1.141)	0.889 (0.698-1.131)	1.016 (0.896-1.152)	1.193 (0.904-1.575)	1.018 (0.550-1.884)
Powys	0.993 (0.929-1.063)	1.010 (0.962-1.060)	0.994 (0.912-1.083)	0.984 (0.895-1.082)	1.020 (0.941-1.106)	0.934 (0.791-1.102)
Preston	0.992 (0.874-1.126)	1.028 (0.964-1.097)	1.031 (0.845-1.257)	0.972 (0.901-1.048)	1.031 (0.896-1.186)	0.795 (0.553-1.143)
Reading	0.952 (0.775-1.170)	1.019 (0.935-1.111)	1.088 (0.759-1.559)	0.979 (0.923-1.037)	1.127 (0.919-1.382)	1.002 (0.734-1.367)
Redbridge	1.106 (0.942-1.298)	0.986 (0.900-1.081)	0.933 (0.647-1.346)	0.973 (0.892-1.061)	1.090 (0.932-1.276)	0.959 (0.650-1.417)
Redcar & Cleveland	1.134 (0.946-1.358)	1.073 (0.961-1.198)	0.906 (0.759-1.082)	0.992 (0.899-1.094)	1.054 (0.868-1.279)	0.785 (0.492-1.254)
Redditch	1.097 (0.946-1.272)	1.021 (0.919-1.134)	1.105 (0.912-1.339)	0.968 (0.897-1.045)	1.012 (0.824-1.244)	0.879 (0.633-1.221)
Reigate & Banstead	1.056 (0.864-1.292)	0.947 (0.862-1.041)	1.133 (0.870-1.477)	0.903 (0.798-1.021)	1.076 (0.901-1.286)	1.002 (0.692-1.450)
Rhondda Cynon Taf	1.280 (0.967-1.695)	0.926 (0.783-1.096)	1.100 (0.673-1.799)	0.978 (0.823-1.162)	0.989 (0.701-1.397)	1.017 (0.545-1.896)
Ribble Valley	1.066 (0.911-1.249)	1.020 (0.959-1.085)	1.036 (0.892-1.204)	0.978 (0.907-1.053)	1.048 (0.899-1.222)	0.984 (0.723-1.339)
Richmond upon Thames	0.982 (0.803-1.200)	0.918 (0.830-1.015)	1.155 (0.897-1.487)	0.967 (0.867-1.078)	1.031 (0.935-1.137)	0.928 (0.642-1.340)
Richmondshire	1.087 (0.976-1.211)	1.019 (0.937-1.108)	1.025 (0.961-1.094)	0.930 (0.826-1.047)	1.041 (0.894-1.211)	0.955 (0.763-1.195)
Rochdale	1.065 (0.897-1.266)	1.045 (0.975-1.121)	0.996 (0.871-1.139)	0.968 (0.898-1.044)	0.999 (0.892-1.119)	0.845 (0.587-1.216)
Rother	1.050 (0.971-1.134)	0.978 (0.920-1.039)	0.992 (0.881-1.117)	1.005 (0.880-1.147)	1.097 (0.966-1.247)	1.108 (0.870-1.411)
Rotherham	1.017 (0.871-1.188)	1.012 (0.938-1.091)	1.022 (0.902-1.159)	0.906 (0.781-1.052)	0.982 (0.799-1.207)	0.859 (0.584-1.263)
Rugby	1.106 (0.947-1.292)	0.993 (0.920-1.072)	1.072 (0.925-1.241)	0.962 (0.878-1.054)	1.008 (0.892-1.139)	0.957 (0.707-1.296)
Runnymede	1.023 (0.938-1.116)	1.023 (0.967-1.081)	0.994 (0.922-1.072)	0.992 (0.947-1.040)	1.082 (0.950-1.232)	0.987 (0.867-1.125)
Rushcliffe	1.013 (0.868-1.182)	1.023 (0.947-1.106)	0.960 (0.881-1.046)	0.943 (0.843-1.055)	1.131 (0.918-1.394)	0.796 (0.547-1.159)
Rushmoor	0.935 (0.673-1.298)	1.066 (0.923-1.232)	1.123 (0.940-1.340)	0.971 (0.900-1.046)	1.187 (0.946-1.490)	0.977 (0.652-1.465)
Ryedale	1.044 (0.962-1.133)	1.013 (0.931-1.102)	1.010 (0.906-1.126)	0.943 (0.802-1.108)	1.093 (0.903-1.324)	0.938 (0.678-1.298)
Salford	1.116 (0.870-1.431)	1.040 (0.953-1.135)	0.980 (0.843-1.139)	0.984 (0.873-1.108)	1.175 (0.923-1.495)	0.888 (0.626-1.259)
Sandwell	1.197 (0.961-1.491)	1.030 (0.941-1.129)	1.180 (0.901-1.546)	0.969 (0.844-1.114)	1.091 (0.908-1.311)	1.107 (0.644-1.900)
Scarborough	1.212 (1.000-1.468)	1.096 (0.953-1.261)	0.905 (0.761-1.075)	0.917 (0.827-1.017)	0.987 (0.723-1.348)	0.882 (0.460-1.693)
Scottish Borders	1.167 (0.896-1.521)	1.043 (0.912-1.192)	0.986 (0.815-1.192)	0.933 (0.711-1.224)	0.916 (0.757-1.108)	0.812 (0.521-1.267)
Sedgemoor	1.126 (0.980-1.295)	1.019 (0.939-1.106)	0.990 (0.932-1.052)	0.974 (0.902-1.052)	1.233 (0.973-1.561)	1.073 (0.749-1.539)
Sefton	1.080 (0.821-1.422)	1.102 (0.930-1.307)	0.875 (0.647-1.184)	0.961 (0.844-1.094)	0.852 (0.603-1.205)	0.548 (0.243-1.239)
Selby	1.186 (0.968-1.453)	1.022 (0.955-1.093)	0.992 (0.913-1.077)	0.897 (0.724-1.112)	1.072 (0.850-1.352)	1.049 (0.673-1.635)
Sevenoaks	1.089 (0.950-1.248)	0.979 (0.902-1.062)	1.078 (0.944-1.232)	0.895 (0.795-1.008)	1.036 (0.878-1.223)	1.021 (0.813-1.281)
Sheffield	1.179 (0.905-1.535)	0.932 (0.806-1.078)	0.979 (0.757-1.267)	1.041 (0.871-1.244)	1.149 (0.828-1.594)	1.080 (0.589-1.980)
Shropshire	1.116 (0.857-1.453)	1.051 (0.920-1.201)	1.045 (0.873-1.252)	1.023 (0.802-1.305)	1.074 (0.765-1.508)	1.041 (0.506-2.144)
Slough	1.112 (0.949-1.303)	1.033 (0.950-1.124)	0.988 (0.847-1.154)	0.974 (0.903-1.050)	1.055 (0.917-1.213)	0.958 (0.739-1.243)
Solihull	1.028 (0.885-1.196)	1.019 (0.954-1.089)	1.226 (0.948-1.584)	0.965 (0.886-1.050)	1.018 (0.880-1.177)	0.968 (0.680-1.378)
Somerset West & Taunton	1.055 (0.885-1.257)	0.992 (0.893-1.101)	1.001 (0.940-1.065)	0.964 (0.841-1.105)	1.063 (0.867-1.302)	0.889 (0.576-1.370)
South Bucks	1.053 (0.917-1.208)	0.982 (0.927-1.040)	1.003 (0.878-1.147)	0.858 (0.717-1.027)	1.039 (0.882-1.222)	0.865 (0.677-1.103)
South Cambridgeshire	1.016 (0.883-1.169)	0.985 (0.912-1.063)	1.050 (0.933-1.182)	0.908 (0.791-1.043)	1.050 (0.892-1.237)	0.938 (0.666-1.322)
South Derbyshire	1.103 (0.932-1.306)	1.051 (0.966-1.143)	1.037 (0.938-1.146)	0.875 (0.741-1.032)	1.093 (0.877-1.363)	0.902 (0.580-1.404)
South Gloucestershire	1.058 (0.855-1.309)	1.048 (0.967-1.135)	0.954 (0.857-1.061)	0.978 (0.868-1.101)	1.210 (1.006-1.455)	0.849 (0.590-1.222)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length))
South Hams	1.026 (0.912-1.155)	1.049 (0.964-1.141)	0.970 (0.884-1.066)	1.000 (0.881-1.136)	1.195 (0.939-1.522)	0.965 (0.644-1.446)
South Holland	1.083 (0.960-1.222)	0.985 (0.924-1.051)	1.005 (0.916-1.102)	0.954 (0.819-1.111)	1.048 (0.903-1.216)	0.962 (0.718-1.290)
South Kesteven	1.084 (0.942-1.247)	1.002 (0.937-1.071)	1.003 (0.944-1.064)	0.990 (0.926-1.059)	1.071 (0.931-1.232)	1.039 (0.756-1.427)
South Lakeland	1.050 (0.959-1.150)	1.004 (0.951-1.061)	1.043 (0.965-1.127)	0.919 (0.798-1.057)	1.041 (0.875-1.239)	1.011 (0.759-1.349)
South Lanarkshire	1.133 (0.948-1.354)	1.011 (0.897-1.139)	0.983 (0.796-1.215)	0.971 (0.883-1.069)	0.900 (0.751-1.079)	0.745 (0.458-1.210)
South Norfolk	1.183 (0.998-1.401)	1.013 (0.940-1.091)	1.008 (0.918-1.107)	0.919 (0.769-1.098)	1.112 (0.878-1.409)	1.092 (0.714-1.672)
South Northamptonshire	1.065 (0.924-1.227)	0.975 (0.917-1.036)	1.040 (0.931-1.162)	0.917 (0.814-1.033)	1.092 (0.923-1.291)	0.882 (0.648-1.200)
South Oxfordshire	0.944 (0.755-1.180)	1.055 (0.929-1.199)	1.054 (0.803-1.383)	0.908 (0.788-1.047)	1.048 (0.842-1.303)	0.767 (0.410-1.435)
South Ribble	0.944 (0.813-1.096)	1.057 (0.989-1.130)	0.951 (0.835-1.082)	0.985 (0.916-1.060)	0.994 (0.855-1.155)	0.706 (0.489-1.020)
South Somerset	1.123 (0.933-1.353)	0.992 (0.911-1.081)	0.968 (0.883-1.062)	1.032 (0.894-1.192)	1.104 (0.927-1.316)	1.036 (0.653-1.645)
South Staffordshire	1.084 (0.954-1.232)	1.022 (0.945-1.106)	1.047 (0.949-1.156)	0.927 (0.817-1.051)	1.062 (0.888-1.272)	0.917 (0.605-1.392)
South Tyneside	1.132 (0.866-1.478)	1.004 (0.890-1.131)	1.011 (0.870-1.175)	0.924 (0.846-1.010)	0.895 (0.728-1.101)	0.760 (0.421-1.370)
Southampton	1.097 (0.882-1.365)	1.021 (0.908-1.148)	0.964 (0.718-1.295)	0.972 (0.775-1.219)	1.182 (0.923-1.514)	0.824 (0.489-1.388)
Southend-on-Sea	1.048 (0.906-1.212)	0.978 (0.882-1.085)	1.054 (0.871-1.275)	0.975 (0.936-1.015)	1.150 (0.963-1.373)	1.096 (0.794-1.513)
Southwark	0.916 (0.633-1.325)	0.978 (0.836-1.144)	1.266 (0.854-1.877)	0.983 (0.772-1.253)	1.146 (0.875-1.500)	1.045 (0.676-1.614)
Spelthorne	1.047 (0.914-1.199)	1.002 (0.917-1.095)	1.019 (0.874-1.188)	0.968 (0.894-1.047)	1.088 (0.904-1.310)	0.938 (0.705-1.249)
St Albans	1.114 (0.891-1.393)	0.988 (0.909-1.074)	0.883 (0.694-1.123)	0.974 (0.873-1.086)	1.151 (0.941-1.408)	1.008 (0.725-1.402)
Stafford	1.017 (0.894-1.157)	1.043 (0.974-1.118)	0.984 (0.881-1.098)	0.926 (0.807-1.063)	0.979 (0.815-1.175)	0.777 (0.518-1.165)
Staffordshire Moorlands	1.002 (0.936-1.074)	1.029 (0.967-1.096)	0.990 (0.952-1.029)	1.011 (0.944-1.084)	0.992 (0.854-1.151)	0.855 (0.662-1.105)
Stevenage	1.006 (0.880-1.150)	1.007 (0.931-1.089)	1.015 (0.852-1.209)	0.970 (0.921-1.021)	1.169 (0.986-1.387)	0.930 (0.721-1.200)
Stirling	0.930 (0.769-1.126)	1.040 (0.974-1.111)	1.090 (0.918-1.295)	1.004 (0.919-1.096)	1.019 (0.888-1.170)	1.013 (0.775-1.324)
Stockport	0.999 (0.849-1.176)	1.086 (1.007-1.172)	1.006 (0.814-1.244)	0.926 (0.806-1.064)	1.033 (0.855-1.247)	0.761 (0.506-1.145)
Stockton-on-Tees	1.104 (0.942-1.295)	0.994 (0.929-1.065)	1.013 (0.928-1.106)	0.919 (0.824-1.024)	0.977 (0.838-1.138)	0.866 (0.649-1.154)
Stoke-on-Trent	1.067 (0.929-1.224)	0.987 (0.912-1.067)	1.032 (0.906-1.176)	0.951 (0.875-1.032)	1.051 (0.888-1.243)	0.945 (0.697-1.282)
Stratford-on-Avon	1.043 (0.924-1.177)	1.009 (0.942-1.080)	1.059 (0.945-1.187)	0.952 (0.837-1.082)	1.109 (0.924-1.332)	1.013 (0.739-1.389)
Stroud	1.071 (0.874-1.312)	0.989 (0.939-1.041)	1.026 (0.956-1.100)	0.912 (0.793-1.050)	1.074 (0.940-1.228)	0.904 (0.650-1.257)
Sunderland	1.005 (0.761-1.327)	1.080 (0.957-1.219)	0.908 (0.771-1.069)	0.905 (0.792-1.034)	0.921 (0.743-1.142)	0.577 (0.337-0.987)
Sutton	1.043 (0.909-1.197)	1.009 (0.920-1.106)	1.014 (0.766-1.343)	0.939 (0.853-1.033)	1.059 (0.870-1.289)	0.933 (0.666-1.308)
Swale	1.104 (0.988-1.233)	1.005 (0.946-1.068)	0.995 (0.898-1.101)	0.971 (0.877-1.075)	1.038 (0.900-1.197)	1.052 (0.801-1.383)
Swansea	1.163 (0.872-1.552)	0.948 (0.840-1.070)	0.889 (0.669-1.182)	0.998 (0.912-1.091)	1.097 (0.859-1.401)	0.774 (0.449-1.334)
Tameside	1.057 (0.840-1.330)	1.058 (0.947-1.182)	0.984 (0.820-1.181)	0.942 (0.817-1.087)	1.045 (0.853-1.281)	0.753 (0.478-1.188)
Tandridge	1.038 (0.906-1.190)	1.013 (0.942-1.089)	1.028 (0.892-1.184)	0.962 (0.845-1.095)	1.089 (0.966-1.228)	1.022 (0.839-1.245)
Teignbridge	1.011 (0.868-1.177)	1.043 (0.957-1.137)	0.957 (0.860-1.066)	1.041 (0.909-1.192)	1.183 (0.956-1.466)	0.999 (0.676-1.477)
Telford & Wrekin	1.113 (0.912-1.358)	1.026 (0.941-1.119)	1.028 (0.959-1.103)	1.024 (0.893-1.174)	1.067 (0.847-1.344)	1.030 (0.605-1.753)
Tendring	1.033 (0.784-1.361)	1.088 (0.961-1.231)	0.959 (0.833-1.105)	0.918 (0.760-1.110)	0.942 (0.644-1.378)	0.803 (0.386-1.673)
Test Valley	1.064 (0.826-1.371)	1.006 (0.886-1.141)	1.003 (0.916-1.098)	0.957 (0.786-1.166)	1.076 (0.867-1.335)	0.921 (0.533-1.594)
Twesbury	1.075 (0.936-1.235)	1.018 (0.943-1.098)	0.998 (0.927-1.075)	0.984 (0.928-1.043)	1.071 (0.918-1.250)	0.940 (0.724-1.221)
Thanet	1.135 (0.982-1.310)	1.035 (0.952-1.126)	0.968 (0.879-1.065)	0.986 (0.935-1.039)	1.180 (0.974-1.431)	1.225 (0.827-1.815)
Three Rivers	1.025 (0.924-1.138)	0.965 (0.911-1.022)	0.988 (0.857-1.140)	1.048 (0.776-1.415)	1.077 (0.916-1.265)	0.930 (0.753-1.150)
Thurrock	1.075 (0.926-1.248)	0.935 (0.779-1.123)	0.974 (0.783-1.212)	1.019 (0.884-1.176)	1.214 (0.921-1.601)	1.004 (0.650-1.552)
Tonbridge & Malling	1.065 (0.948-1.196)	0.983 (0.915-1.055)	1.024 (0.911-1.150)	0.928 (0.810-1.063)	1.085 (0.936-1.257)	1.048 (0.819-1.342)
Torbay	1.039 (0.905-1.193)	1.058 (0.955-1.172)	0.983 (0.881-1.098)	0.927 (0.813-1.057)	1.117 (0.907-1.376)	0.806 (0.513-1.267)

Local authority	Retail & recreation (per weekly increase of 15% of the baseline visits)	Grocery & pharmacy (per weekly increase of 5% of the baseline visits)	Transit stations (per weekly increase of 10% of the baseline visits)	Parks (per weekly increase of 40% of the baseline visits)	Workplaces (per weekly increase of 10% of the baseline visits)	Residential (per weekly increase of 5% of the baseline time length))
Torridge	1.053 (0.969–1.145)	0.990 (0.929–1.056)	0.995 (0.963–1.028)	0.977 (0.873–1.094)	1.024 (0.868–1.209)	0.859 (0.649–1.138)
Tower Hamlets	1.108 (0.836–1.469)	1.001 (0.882–1.135)	1.102 (0.848–1.431)	0.945 (0.779–1.145)	1.101 (0.872–1.389)	1.020 (0.731–1.424)
Trafford	1.089 (0.966–1.228)	1.048 (0.943–1.165)	1.017 (0.824–1.256)	0.965 (0.818–1.139)	1.066 (0.855–1.329)	0.841 (0.542–1.303)
Tunbridge Wells	1.037 (0.920–1.169)	0.998 (0.952–1.047)	1.007 (0.893–1.135)	0.937 (0.810–1.084)	1.019 (0.872–1.190)	0.992 (0.740–1.331)
Uttlesford	1.088 (0.899–1.317)	1.008 (0.908–1.120)	0.962 (0.863–1.072)	0.961 (0.801–1.152)	1.075 (0.894–1.292)	0.922 (0.690–1.231)
Vale of Glamorgan	1.134 (0.977–1.315)	0.951 (0.888–1.018)	1.040 (0.894–1.211)	0.984 (0.931–1.039)	1.043 (0.907–1.200)	1.102 (0.851–1.427)
Vale of White Horse	1.027 (0.866–1.219)	1.050 (0.956–1.153)	0.984 (0.842–1.151)	0.978 (0.869–1.100)	1.134 (0.955–1.348)	0.952 (0.686–1.321)
Wakefield	1.051 (0.898–1.230)	0.981 (0.908–1.060)	1.114 (0.996–1.245)	0.958 (0.842–1.090)	1.123 (0.961–1.312)	1.074 (0.777–1.485)
Walsall	1.081 (0.896–1.303)	1.029 (0.919–1.152)	1.049 (0.897–1.227)	0.960 (0.813–1.135)	0.999 (0.812–1.229)	0.882 (0.533–1.461)
Waltham Forest	1.034 (0.878–1.218)	1.010 (0.919–1.109)	0.966 (0.703–1.327)	0.955 (0.873–1.045)	1.088 (0.901–1.313)	0.957 (0.720–1.274)
Wandsworth	1.101 (0.762–1.592)	0.927 (0.760–1.131)	1.481 (0.988–2.221)	1.013 (0.829–1.237)	1.223 (0.921–1.624)	1.361 (0.748–2.475)
Warrington	1.005 (0.826–1.224)	0.987 (0.903–1.077)	1.089 (0.945–1.256)	0.962 (0.901–1.027)	1.011 (0.811–1.261)	0.804 (0.557–1.161)
Warwick	1.001 (0.869–1.154)	1.028 (0.929–1.139)	0.959 (0.733–1.256)	0.941 (0.824–1.076)	1.078 (0.823–1.411)	0.825 (0.544–1.253)
Watford	1.005 (0.905–1.116)	0.992 (0.918–1.072)	0.957 (0.778–1.176)	0.968 (0.891–1.052)	1.083 (0.922–1.271)	0.914 (0.677–1.233)
Waverley	1.016 (0.880–1.172)	1.042 (0.952–1.140)	1.003 (0.870–1.156)	0.949 (0.838–1.074)	1.111 (0.946–1.306)	0.933 (0.695–1.252)
Wealden	1.025 (0.912–1.153)	1.057 (0.978–1.142)	0.969 (0.903–1.040)	0.929 (0.820–1.052)	1.023 (0.841–1.245)	0.919 (0.625–1.352)
Welwyn Hatfield	1.033 (0.880–1.213)	0.987 (0.869–1.122)	1.032 (0.928–1.146)	0.974 (0.903–1.050)	1.077 (0.881–1.317)	0.961 (0.676–1.367)
West Berkshire	1.041 (0.895–1.211)	1.016 (0.929–1.112)	1.001 (0.884–1.134)	0.979 (0.835–1.148)	1.136 (0.982–1.314)	0.995 (0.781–1.269)
West Devon	0.997 (0.900–1.105)	1.020 (0.974–1.068)	0.961 (0.898–1.029)	1.007 (0.915–1.109)	1.040 (0.930–1.163)	0.874 (0.700–1.092)
West Lancashire	0.995 (0.781–1.267)	1.082 (0.988–1.185)	0.956 (0.817–1.117)	0.951 (0.792–1.141)	0.964 (0.743–1.251)	0.692 (0.424–1.128)
West Oxfordshire	0.985 (0.751–1.293)	1.045 (0.936–1.166)	0.964 (0.849–1.093)	0.988 (0.866–1.127)	1.177 (0.903–1.533)	0.868 (0.498–1.514)
West Suffolk	1.074 (0.892–1.293)	0.981 (0.888–1.083)	0.976 (0.889–1.072)	0.972 (0.831–1.137)	1.134 (0.891–1.444)	1.036 (0.694–1.546)
Westminster	1.022 (0.631–1.655)	0.975 (0.885–1.075)	1.310 (0.765–2.245)	0.961 (0.661–1.397)	1.070 (0.866–1.323)	1.072 (0.761–1.511)
Wigan	1.016 (0.832–1.241)	1.072 (0.986–1.166)	0.975 (0.834–1.139)	1.012 (0.916–1.119)	1.041 (0.858–1.263)	0.755 (0.504–1.131)
Wiltshire	1.080 (0.898–1.299)	1.052 (0.935–1.184)	1.014 (0.839–1.226)	0.907 (0.757–1.087)	1.101 (0.884–1.371)	0.939 (0.576–1.533)
Winchester	1.075 (0.897–1.289)	1.025 (0.940–1.116)	1.032 (0.903–1.179)	0.915 (0.693–1.208)	1.121 (0.910–1.380)	0.953 (0.628–1.447)
Windsor & Maidenhead	1.081 (0.948–1.231)	1.022 (0.935–1.117)	1.000 (0.927–1.079)	0.937 (0.831–1.055)	1.070 (0.883–1.296)	0.907 (0.706–1.164)
Wirral	1.111 (0.859–1.437)	1.061 (0.908–1.240)	1.015 (0.781–1.318)	0.958 (0.829–1.109)	0.927 (0.679–1.266)	0.728 (0.386–1.374)
Woking	1.014 (0.915–1.123)	1.017 (0.963–1.074)	1.002 (0.901–1.115)	0.972 (0.859–1.101)	1.052 (0.943–1.174)	0.965 (0.799–1.166)
Wokingham	1.025 (0.898–1.168)	0.995 (0.926–1.070)	1.002 (0.915–1.096)	0.984 (0.934–1.037)	1.094 (0.963–1.243)	0.979 (0.773–1.240)
Wolverhampton	1.040 (0.863–1.253)	1.118 (1.008–1.241)	0.911 (0.731–1.137)	0.904 (0.760–1.075)	1.072 (0.862–1.334)	0.834 (0.528–1.319)
Worcester	1.087 (0.809–1.460)	1.047 (0.947–1.158)	1.029 (0.919–1.152)	0.977 (0.793–1.203)	1.052 (0.748–1.479)	0.921 (0.524–1.619)
Worthing	0.937 (0.714–1.230)	1.026 (0.929–1.133)	1.008 (0.736–1.380)	0.937 (0.842–1.044)	1.180 (0.902–1.545)	0.728 (0.354–1.498)
Wrexham	1.007 (0.849–1.196)	0.999 (0.896–1.113)	1.090 (0.870–1.366)	0.954 (0.842–1.081)	1.092 (0.872–1.367)	1.058 (0.743–1.506)
Wychavon	1.015 (0.878–1.174)	1.044 (0.968–1.126)	1.001 (0.940–1.065)	0.940 (0.802–1.103)	1.072 (0.892–1.288)	0.845 (0.531–1.343)
Wycombe	1.041 (0.872–1.242)	1.005 (0.928–1.088)	0.939 (0.800–1.103)	0.964 (0.839–1.109)	1.115 (0.940–1.324)	0.923 (0.640–1.331)
Wyre	1.040 (0.912–1.186)	1.012 (0.944–1.084)	1.008 (0.956–1.062)	0.971 (0.853–1.105)	1.095 (0.870–1.379)	0.875 (0.557–1.373)
Wyre Forest	1.133 (0.969–1.324)	0.997 (0.916–1.085)	1.052 (0.949–1.166)	0.948 (0.851–1.056)	1.018 (0.864–1.201)	0.953 (0.687–1.321)
York	1.127 (0.818–1.552)	0.952 (0.791–1.145)	1.069 (0.819–1.396)	0.987 (0.742–1.314)	1.057 (0.745–1.498)	1.038 (0.616–1.749)

*Baseline period: 3rd Jan 2020–6th Feb 2020.

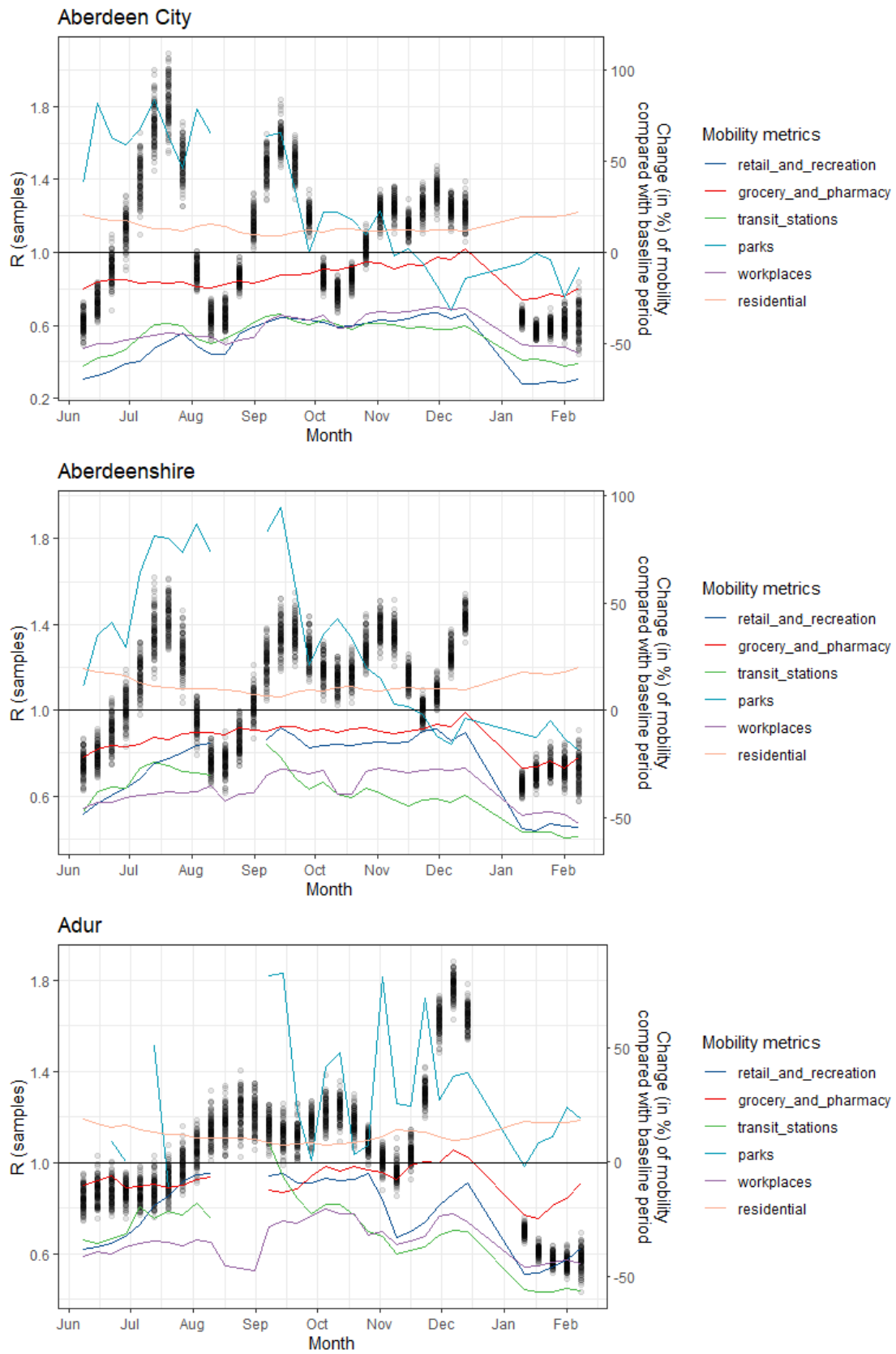
Table S5. Meta-regression findings showing the modifiers of the association between six Google community mobility metrics and R, as the ratio of R ratios (95% CI)

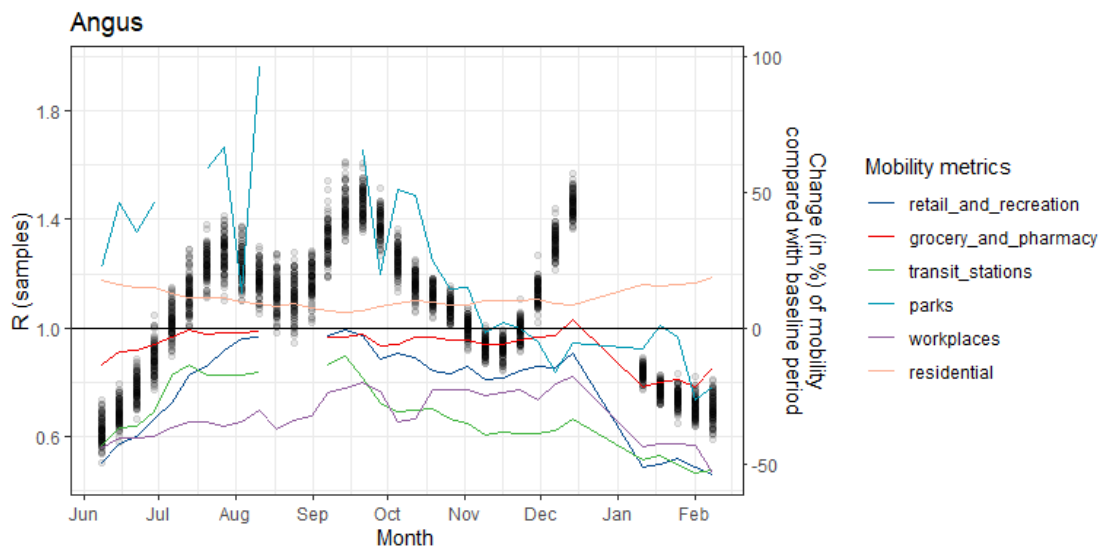
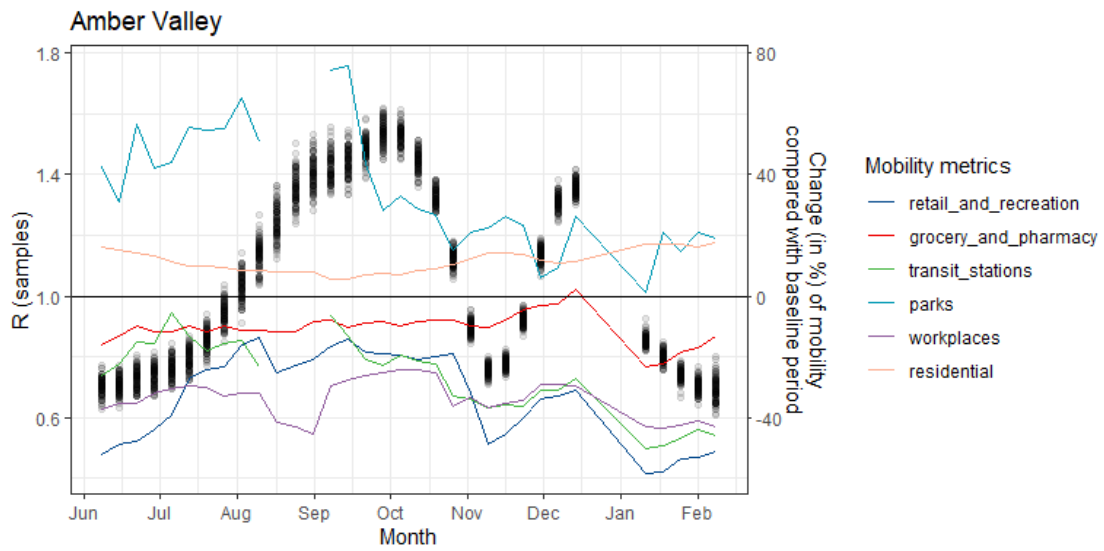
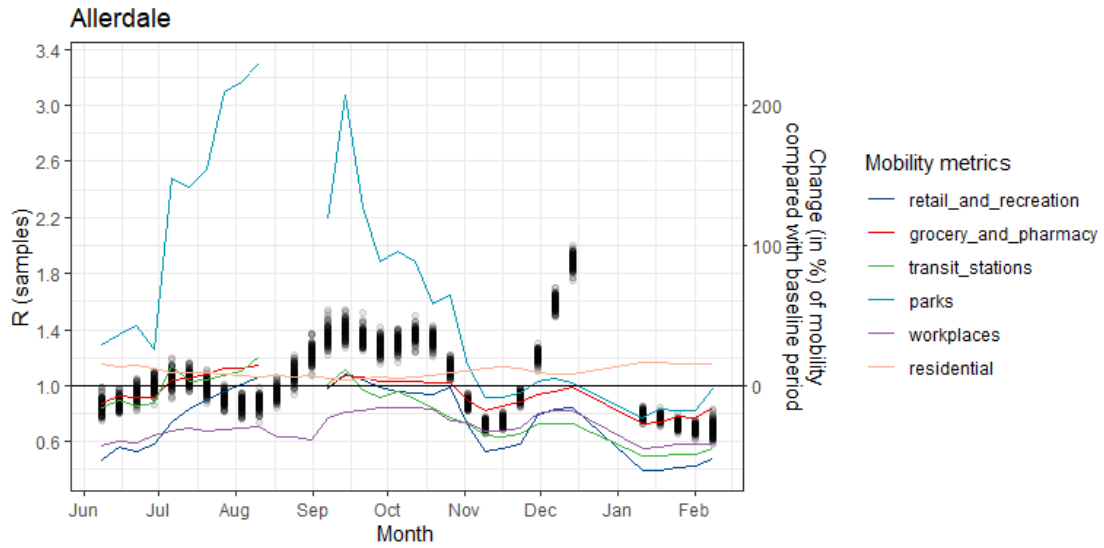
Mobility metrics	Population density (per 1000 persons/km ² increase)	Prosperity score* (per 0.1 points increase)	% BAME population (per 10% increase)	Latitude (per 2 degrees increase)	% Households with 6+ members (per 1% increase)
Retail & recreation	0.991 (0.984–0.999)	0.976 (0.955–0.997)	1.011 (0.998–1.023)	1.001 (0.985–1.018)	—
Grocery & pharmacy	0.997 (0.997–1.005)	1.003 (0.991–1.015)	0.997 (0.991–1.004)	1.009 (1.000–1.018)	—
Transit stations	1.010 (1.002–1.017)	1.015 (0.998–1.033)	1.002 (0.988–1.015)	1.010 (0.998–1.022)	—
Parks	1.000 (0.996–1.005)	0.995 (0.981–1.010)	0.999 (0.992–1.005)	0.994 (0.984–1.004)	—
Workplaces	1.002 (0.995–1.010)	1.006 (0.981–1.032)	1.000 (0.986–1.013)	0.955 (0.938–0.973)	—
Residential	1.002 (0.988–1.016)	1.012 (0.960–1.066)	1.003 (0.958–1.050)	0.948 (0.913–0.984)	1.002 (0.997–1.012)

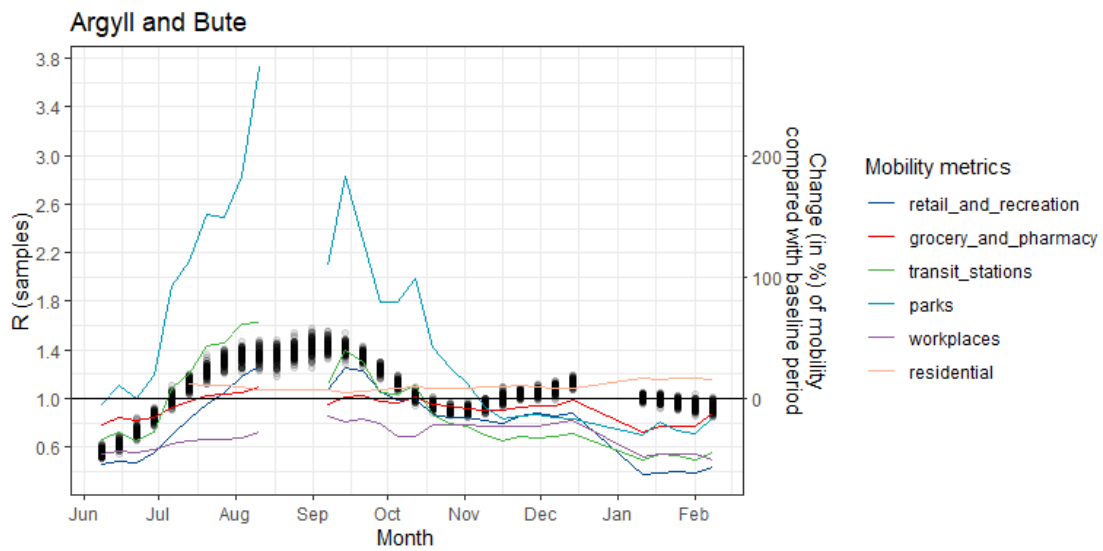
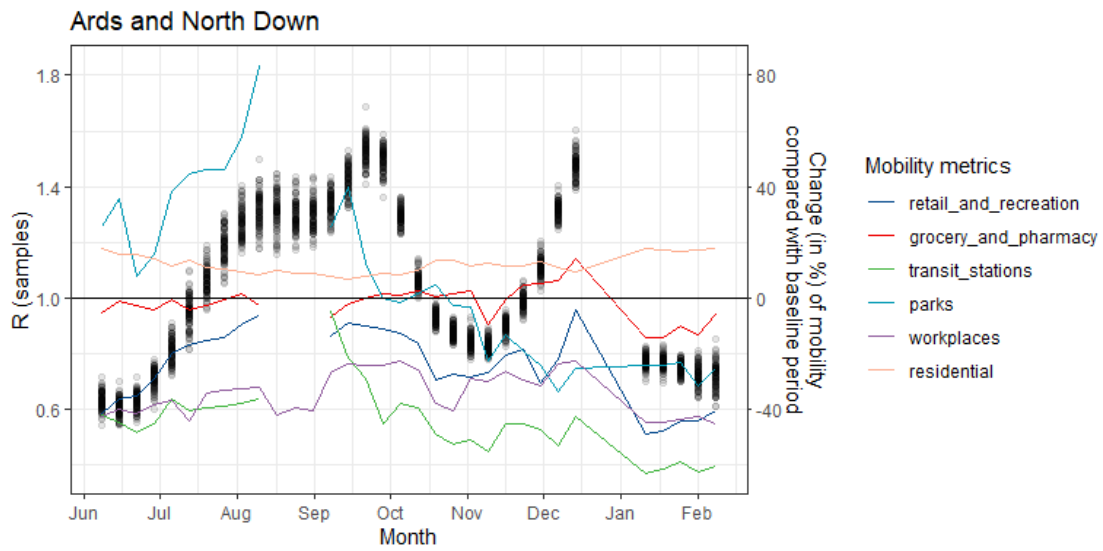
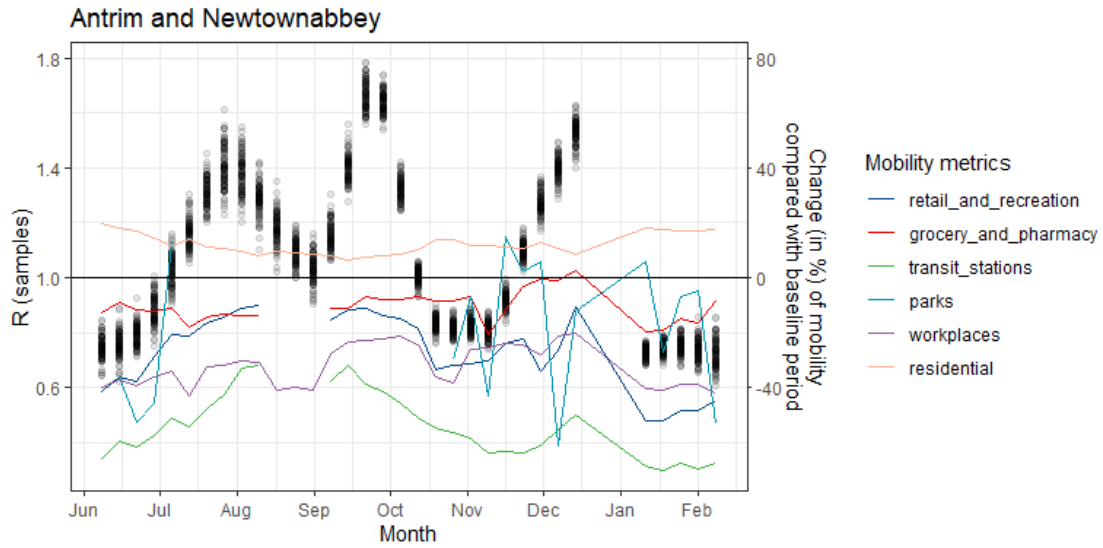
BAME = Black, Asian and minority ethnic. R ratio indicated the weekly change in R associated with weekly difference in mobility metrics relative to the baseline level (baseline period: 3rd Jan 2020–6th Feb 2020). The ratio of R ratios quantified the modification per unit increase in the potential modifiers. Interpretation of the direction of modification is dependent on the R ratio of the corresponding mobility metric (shown in **Table 1**).

*A higher prosperity index indicates less deprivation.

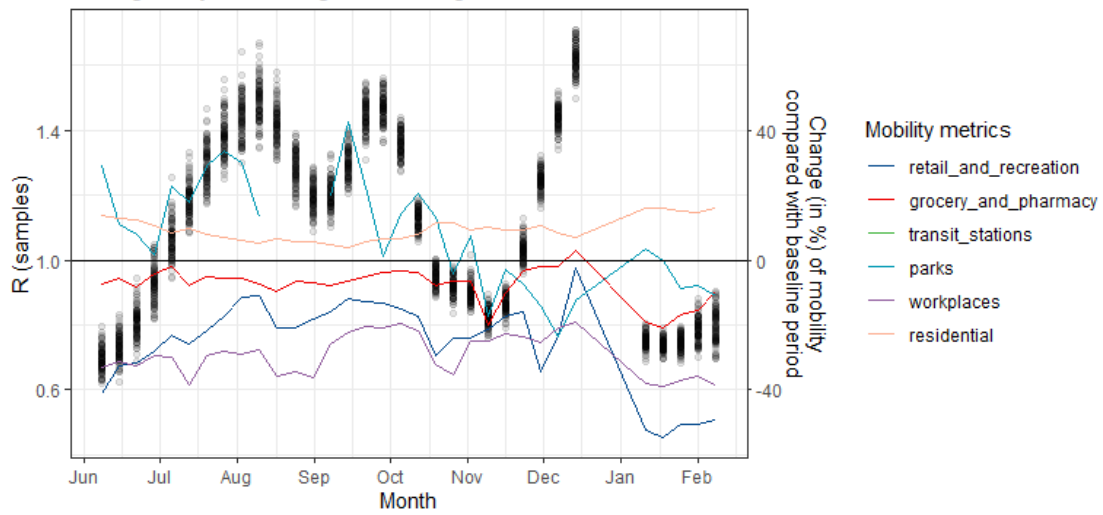
Figure S1. Change over time (by week) in the mobility metrics and R on the local-authority level



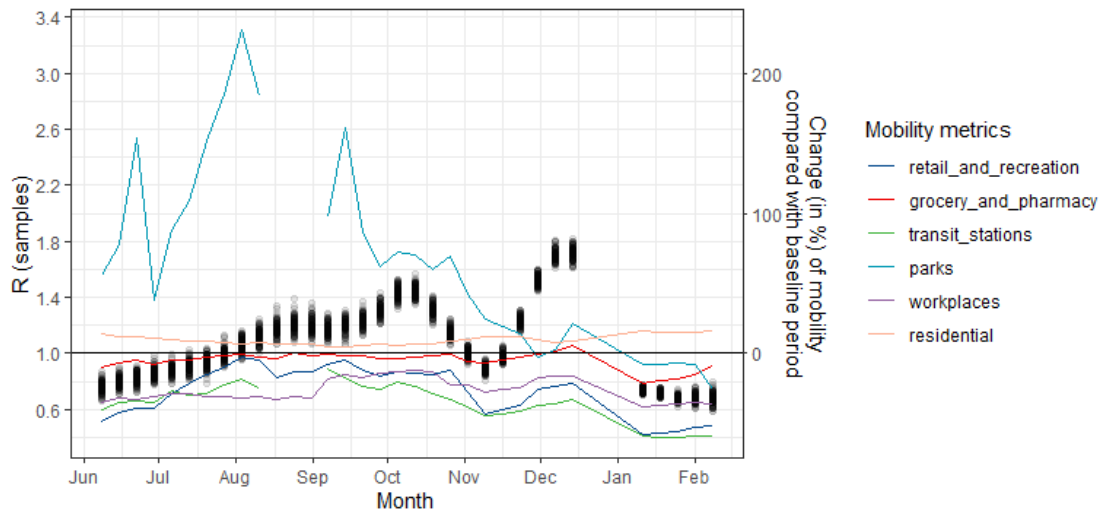




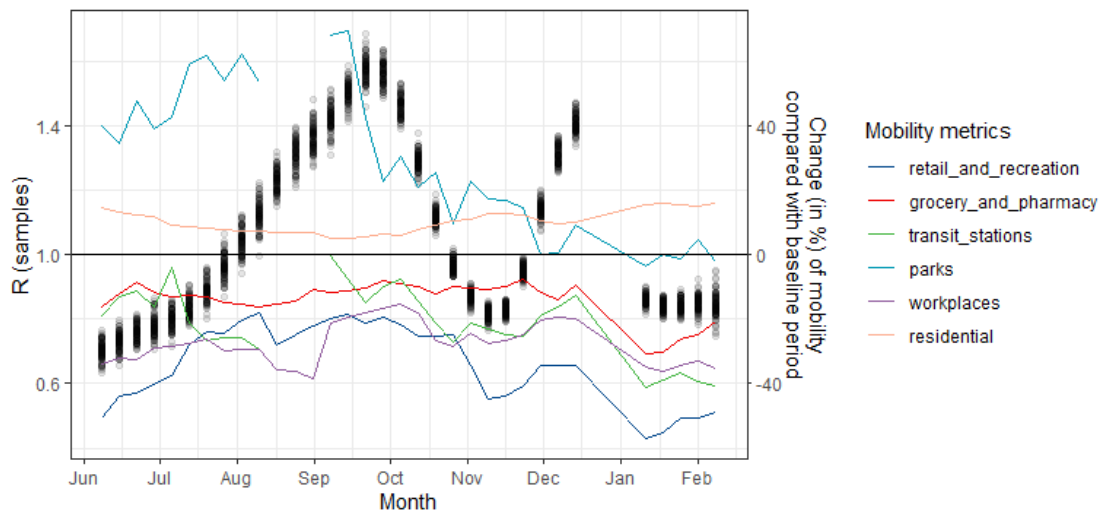
Armagh City, Banbridge and Craigavon

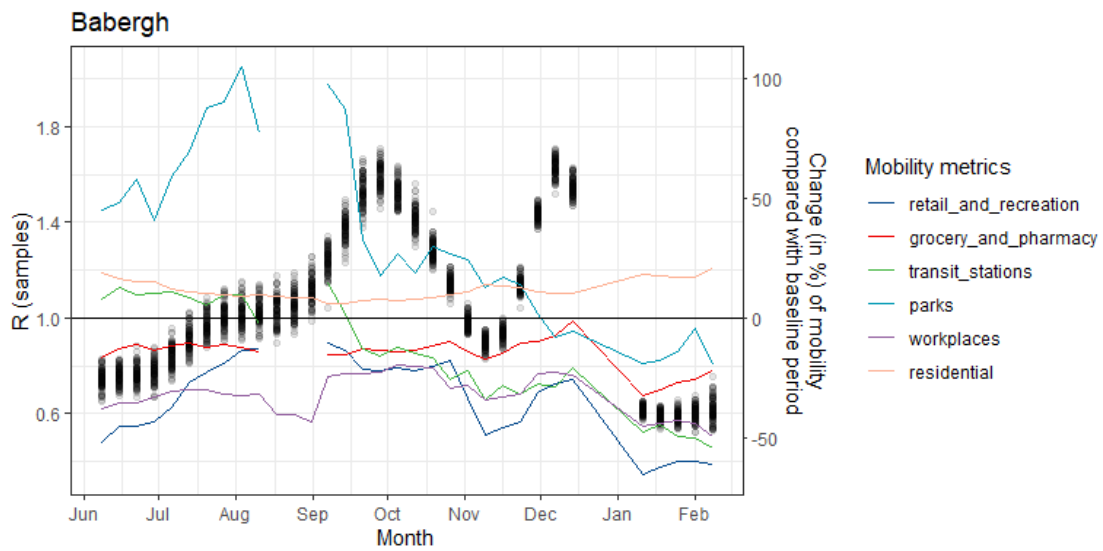
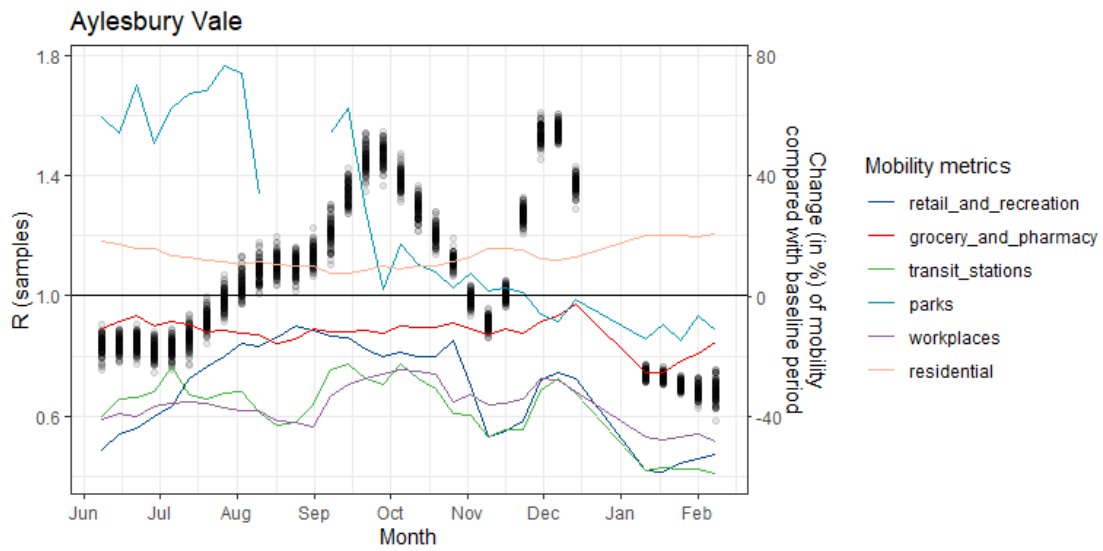
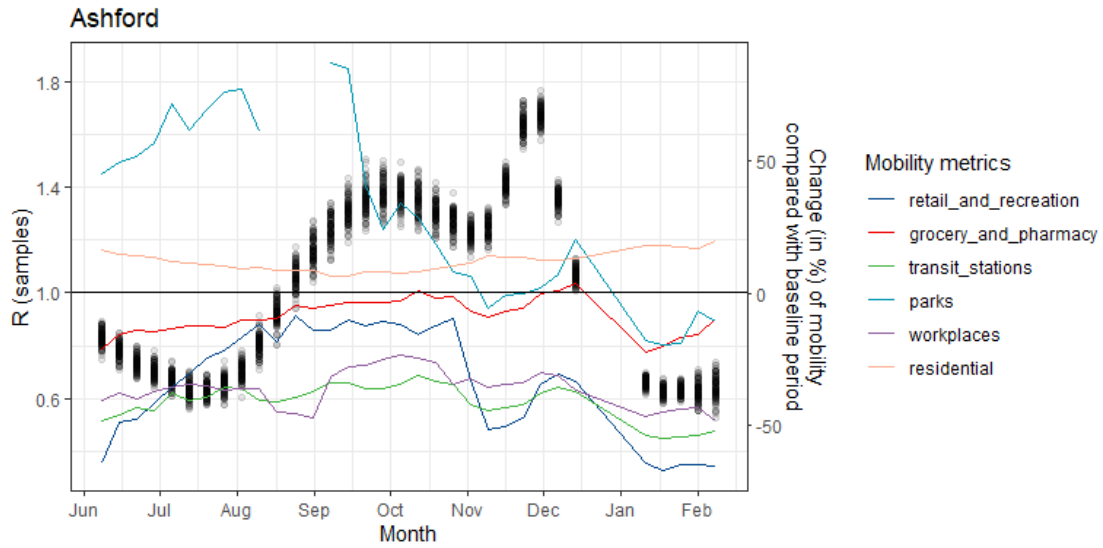


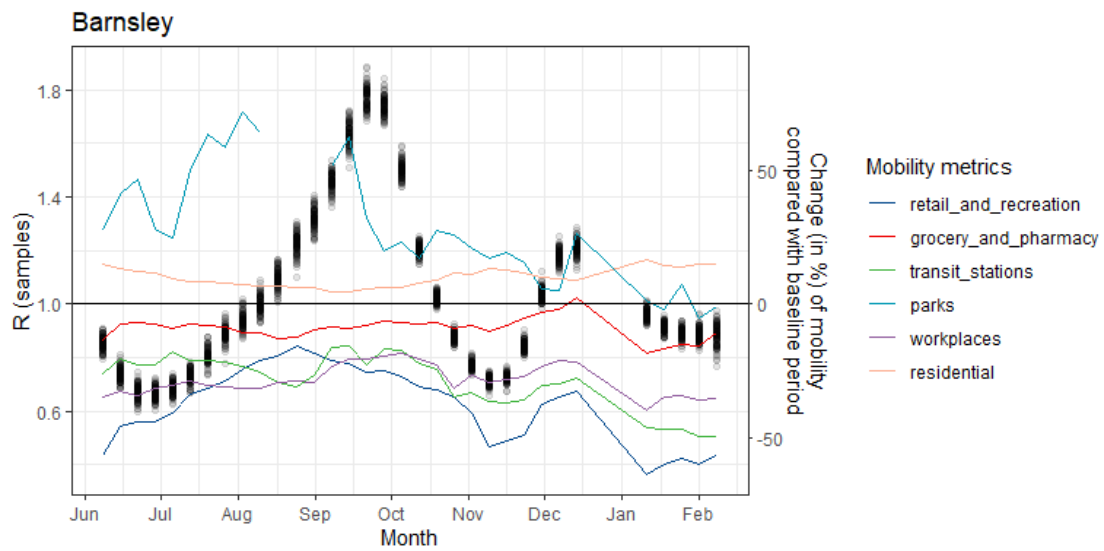
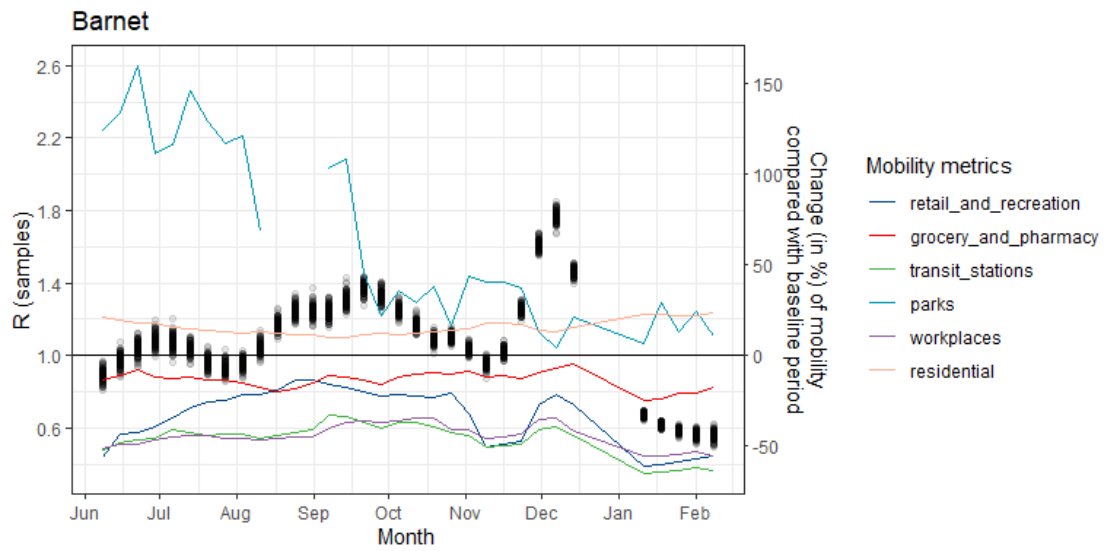
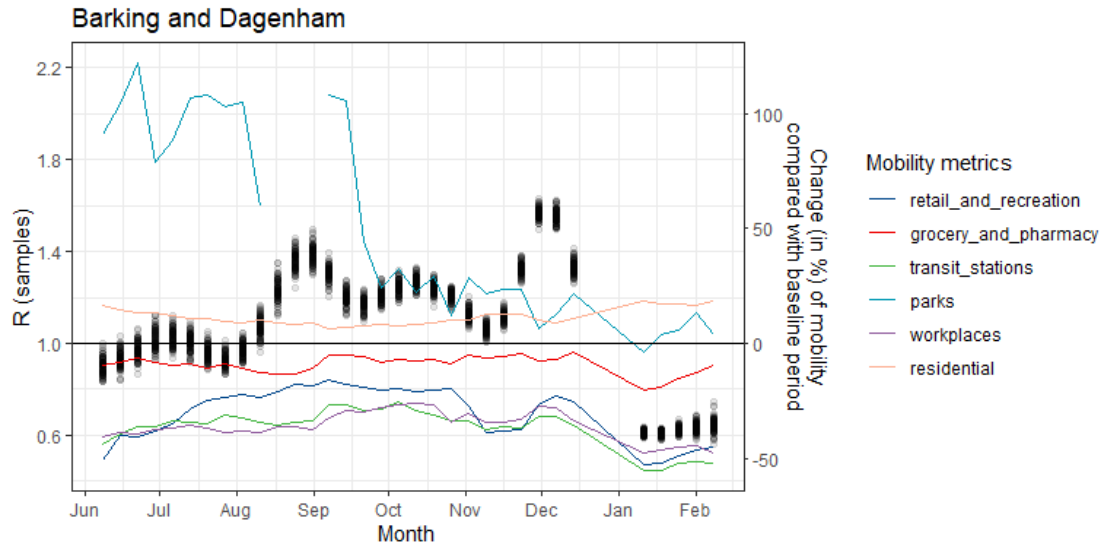
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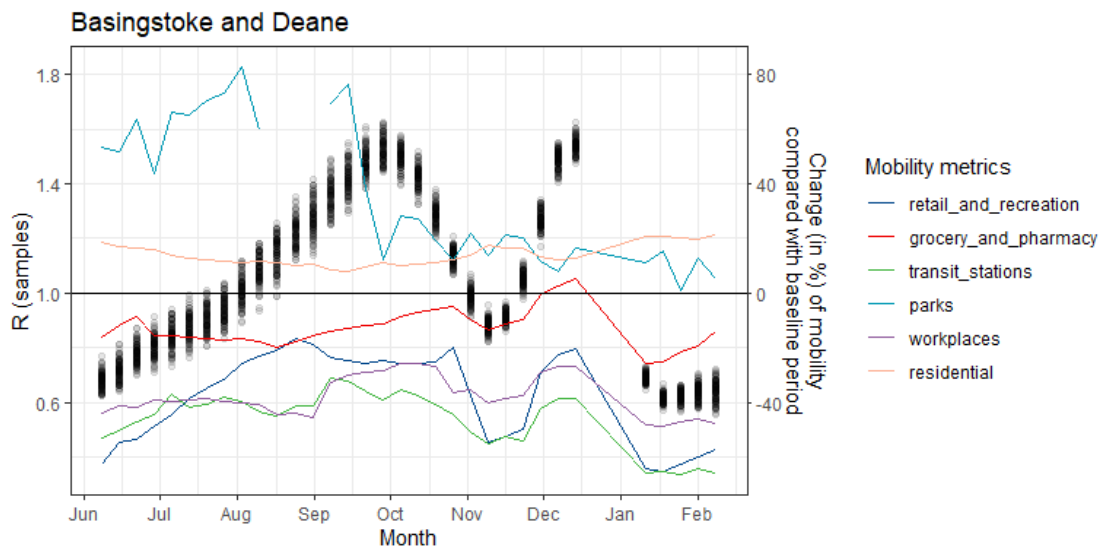
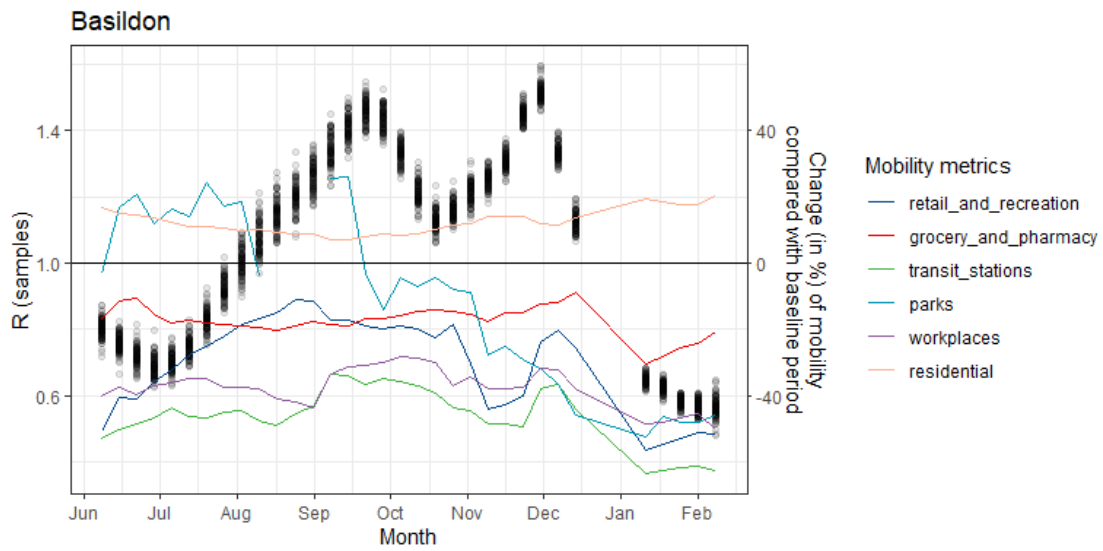
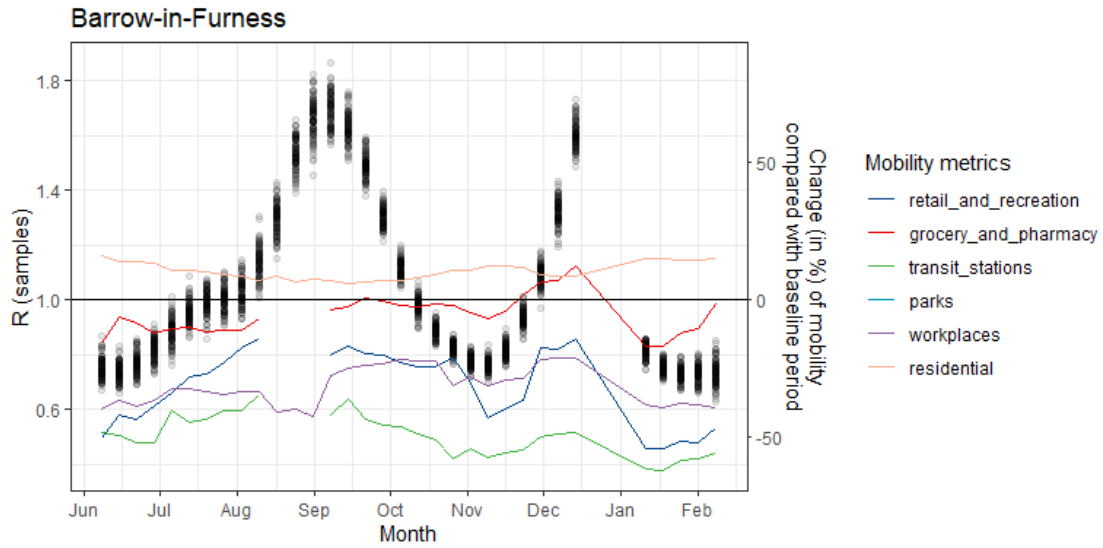


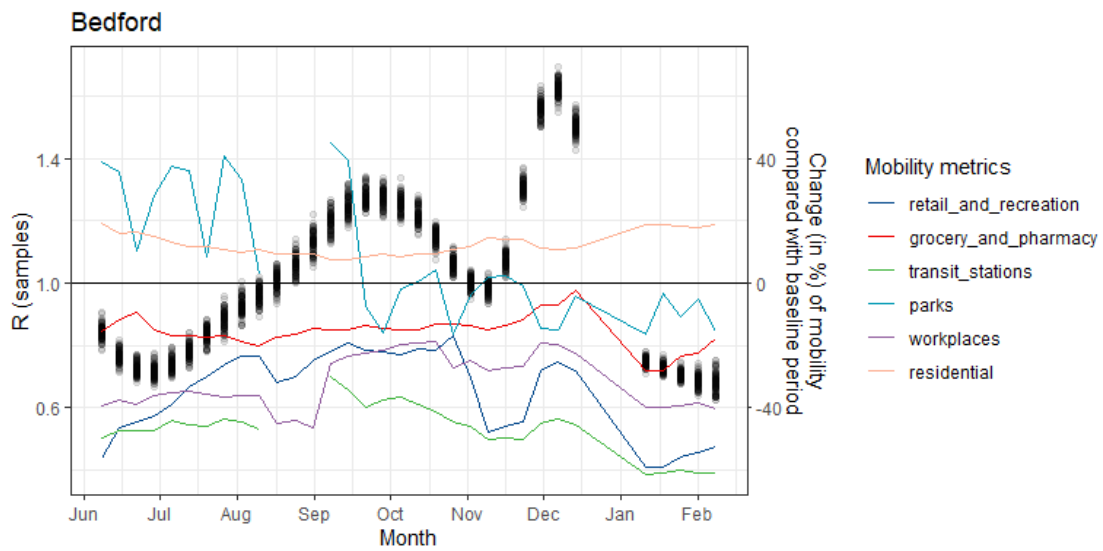
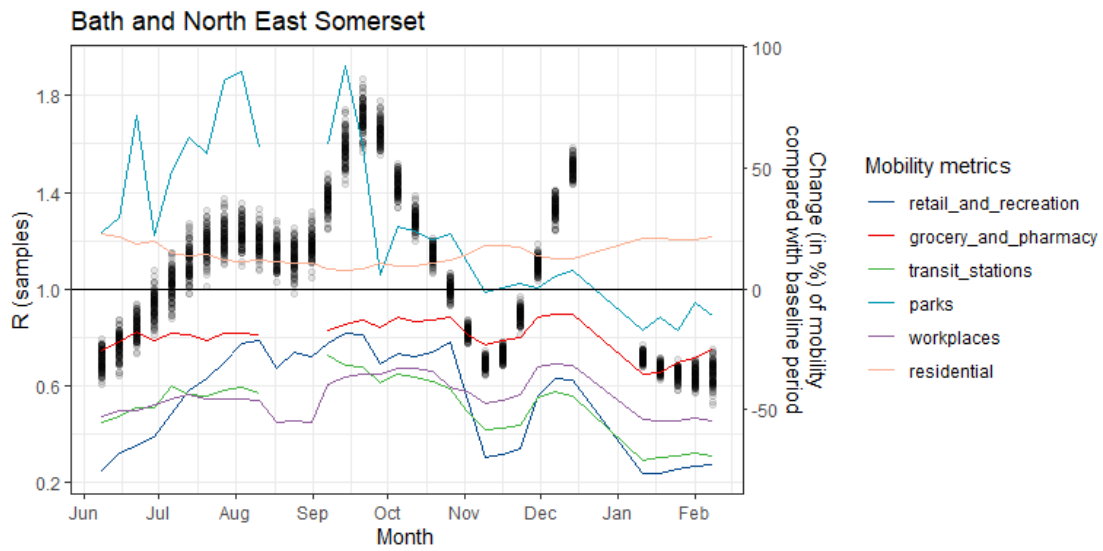
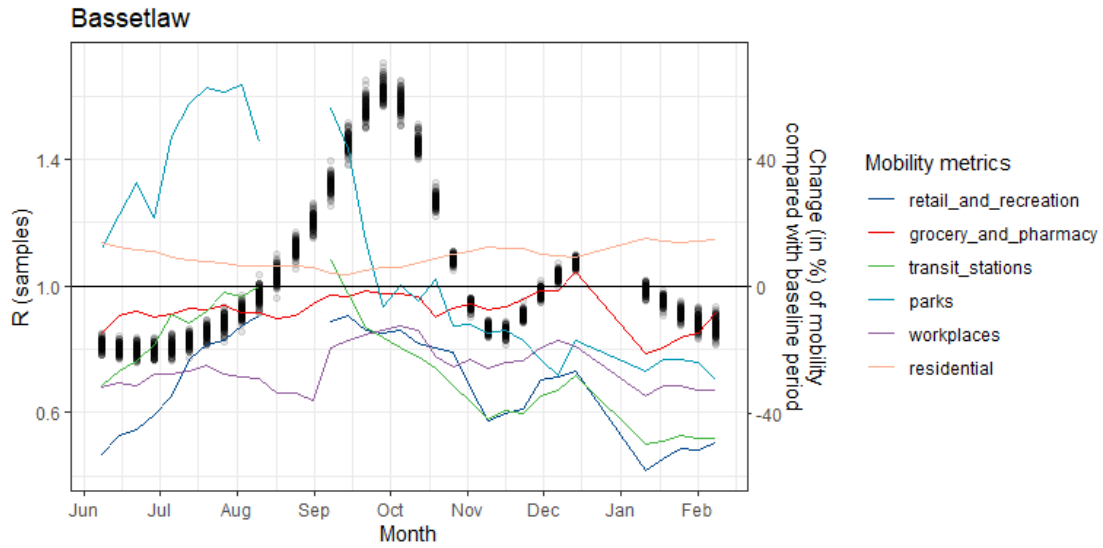
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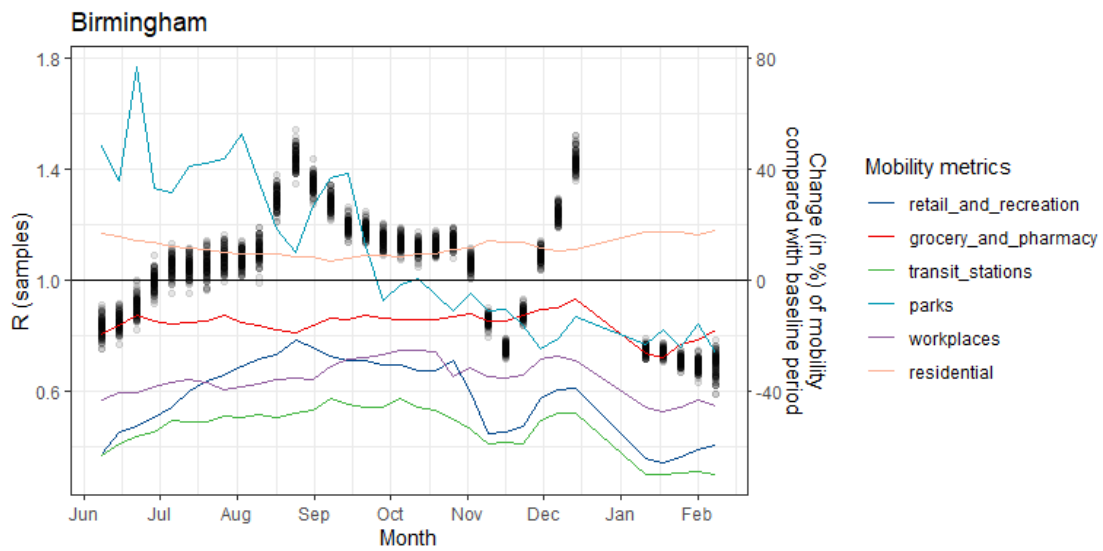
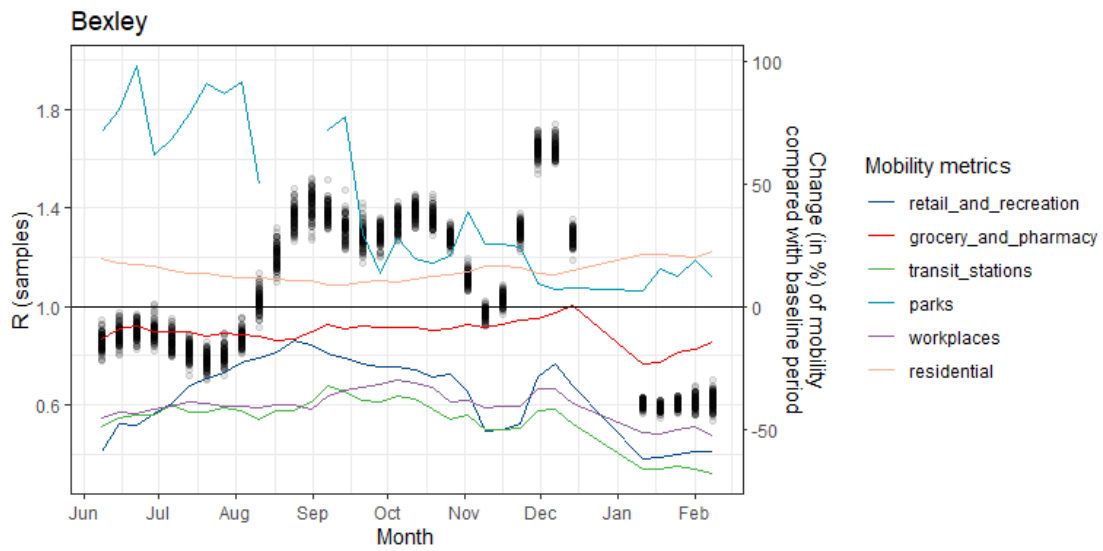
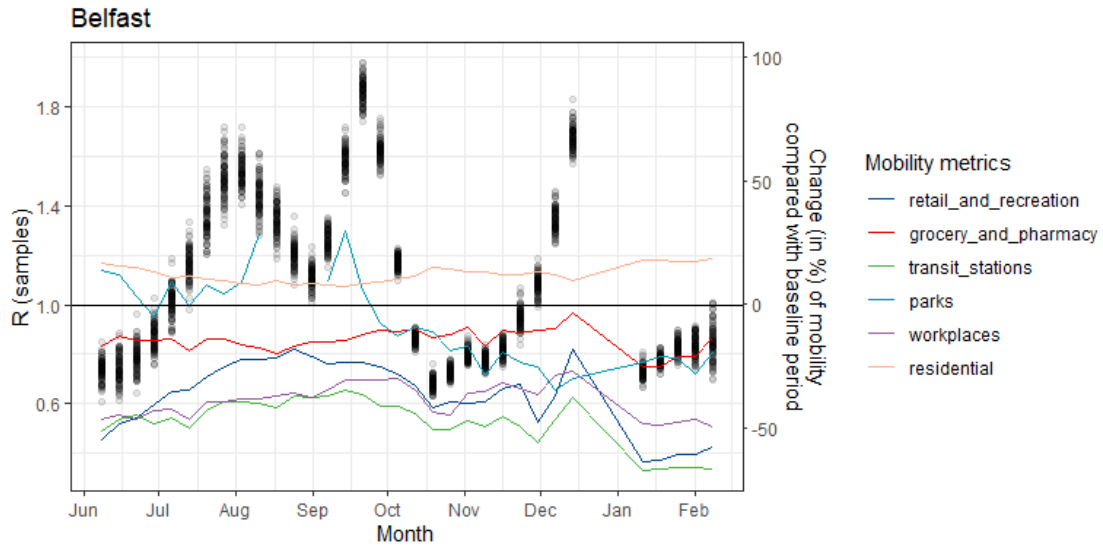


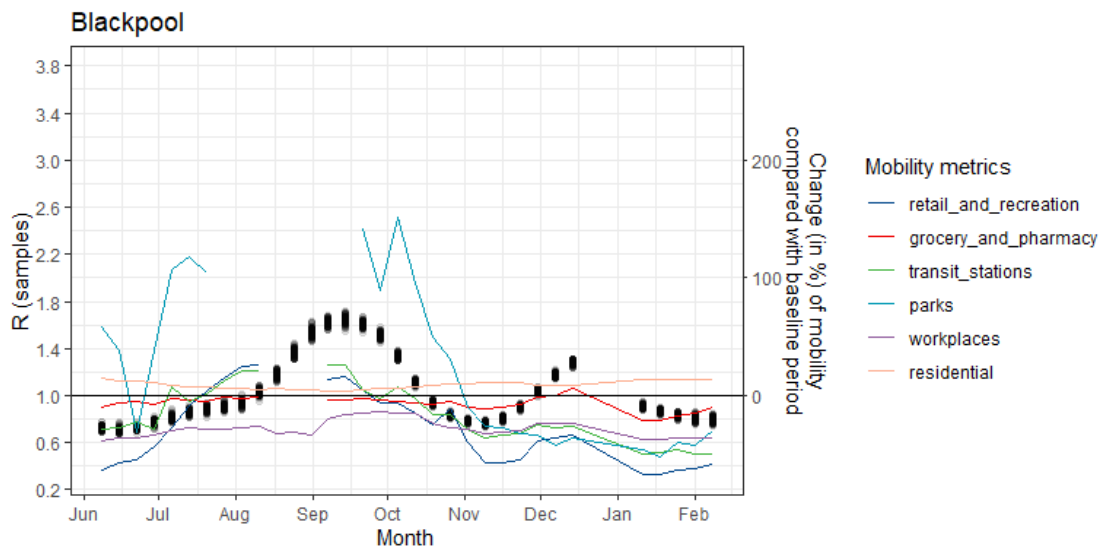
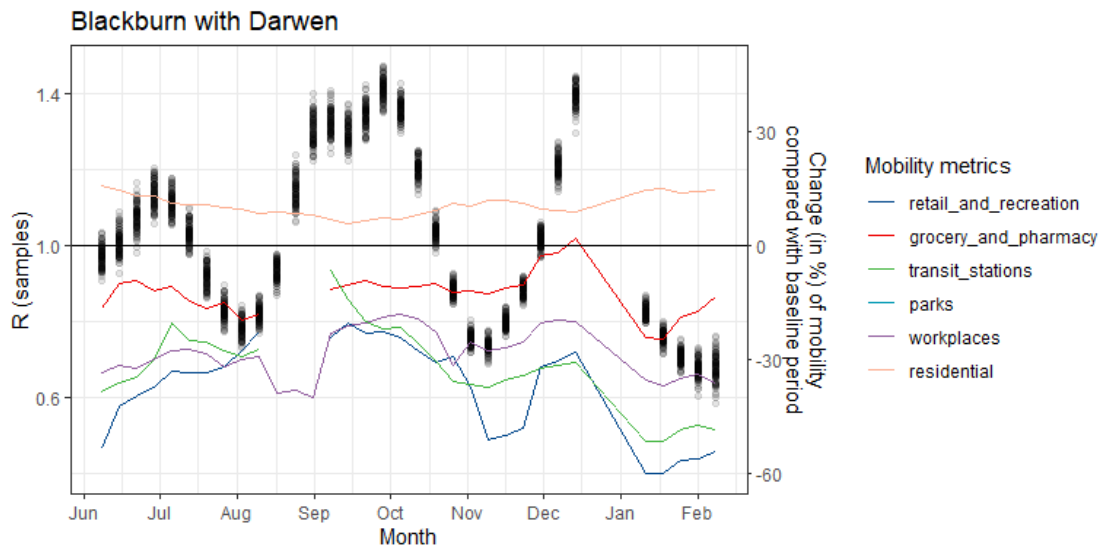
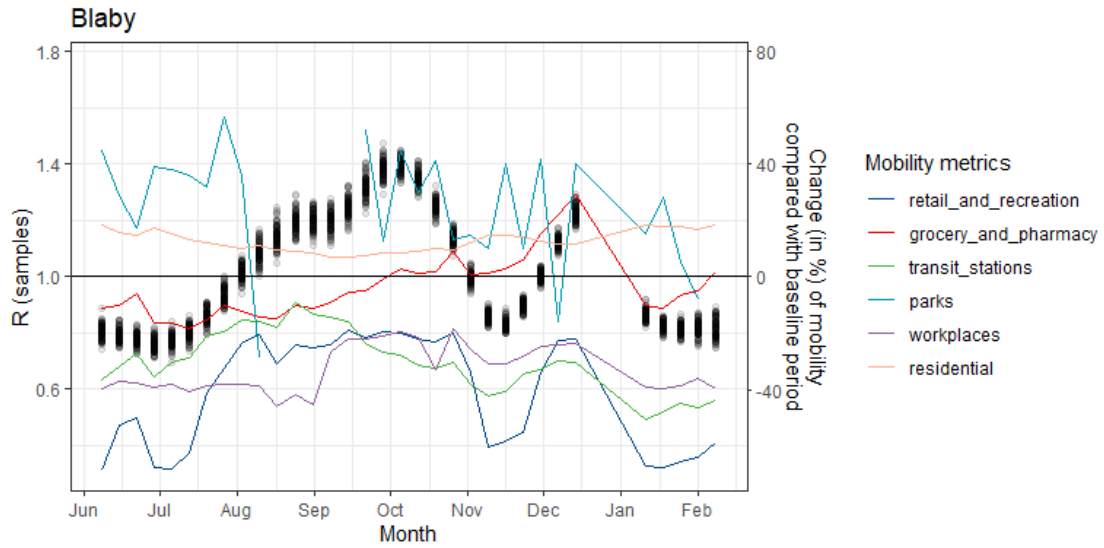


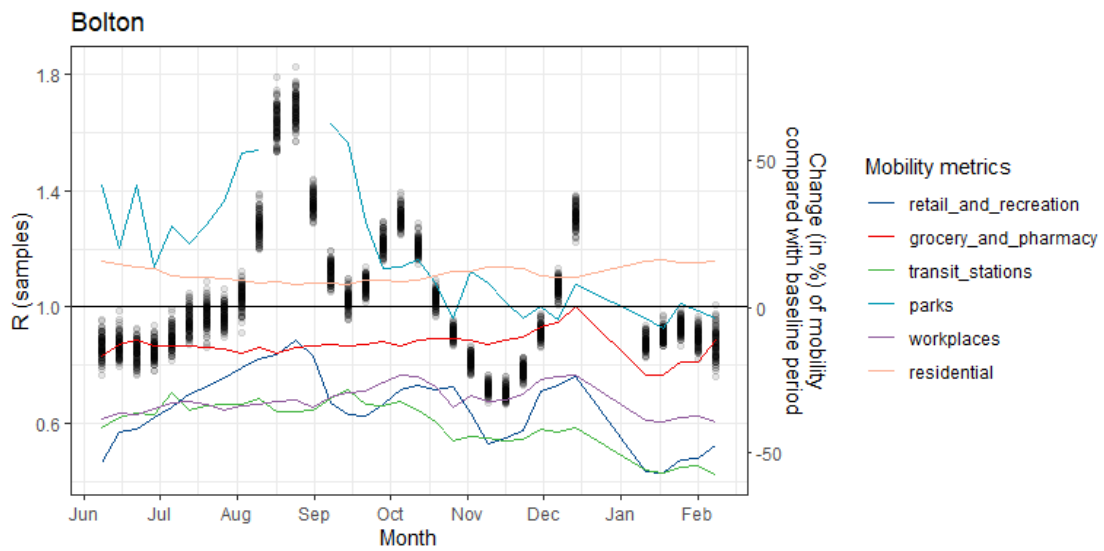
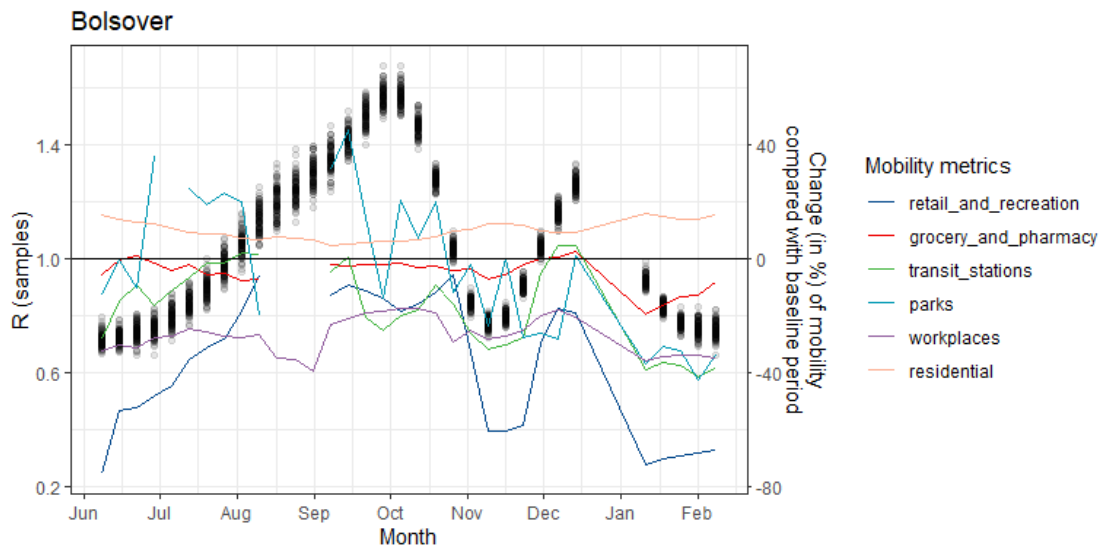
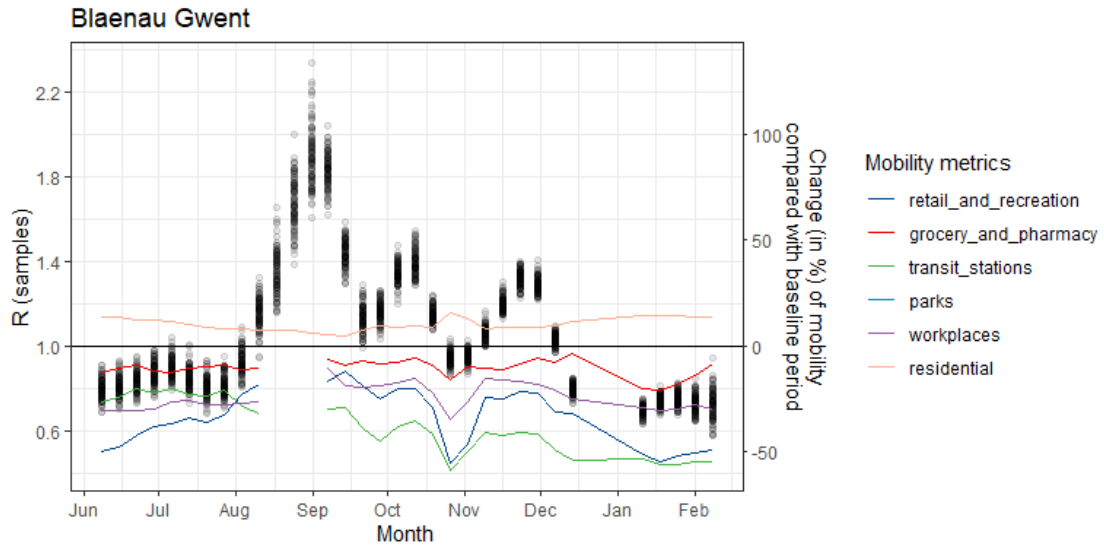


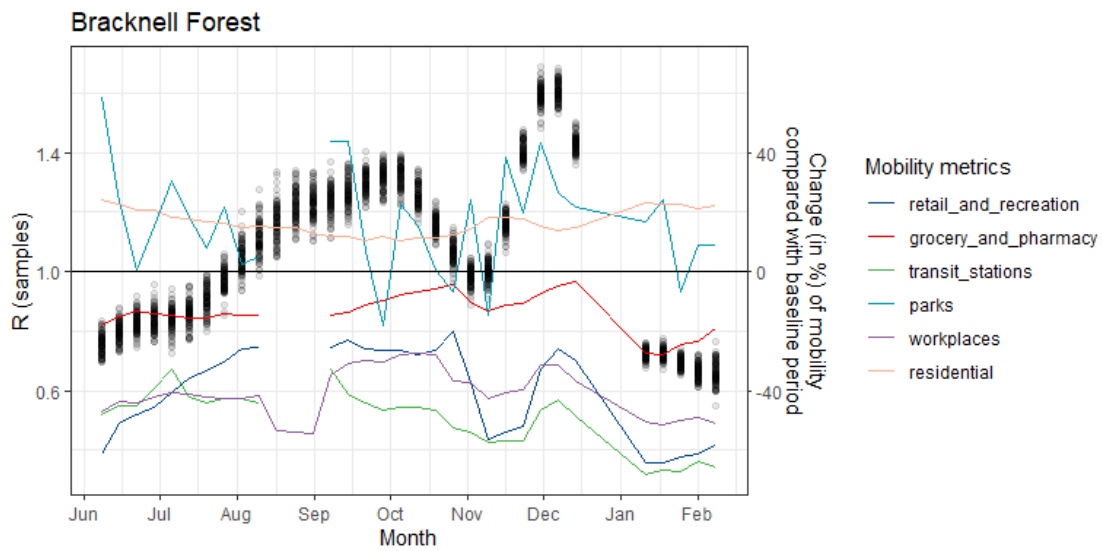
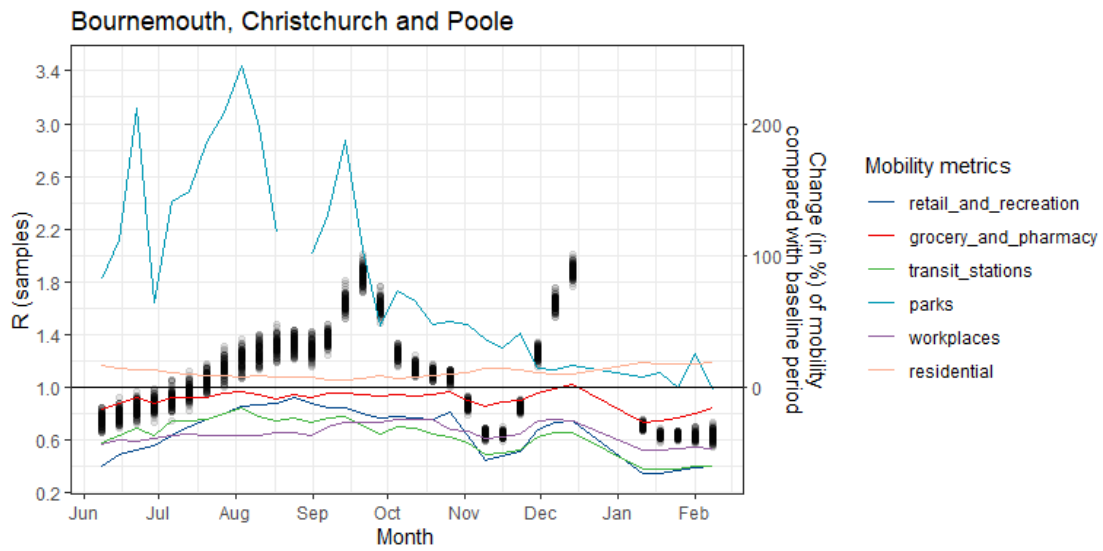
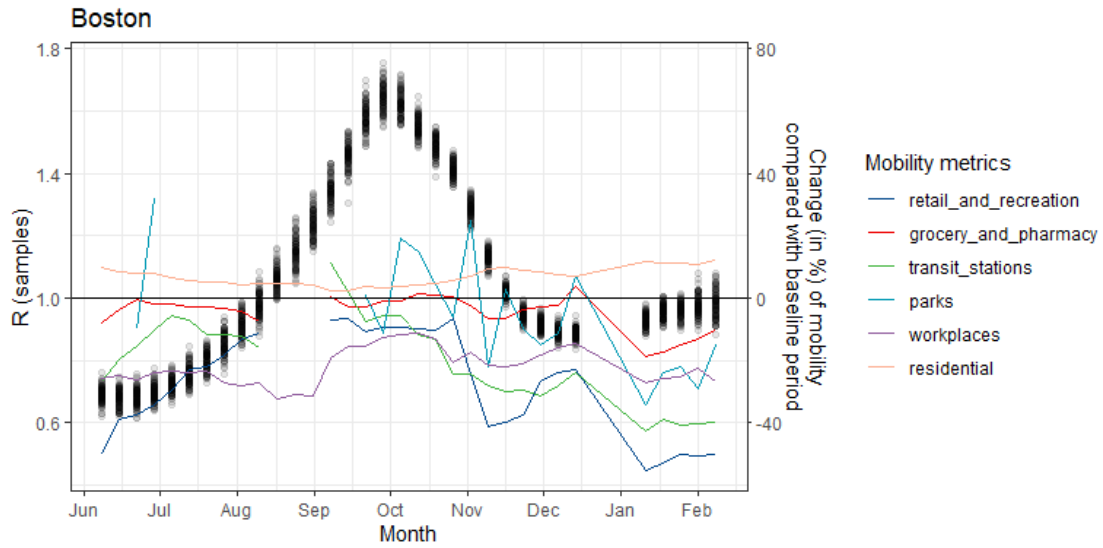


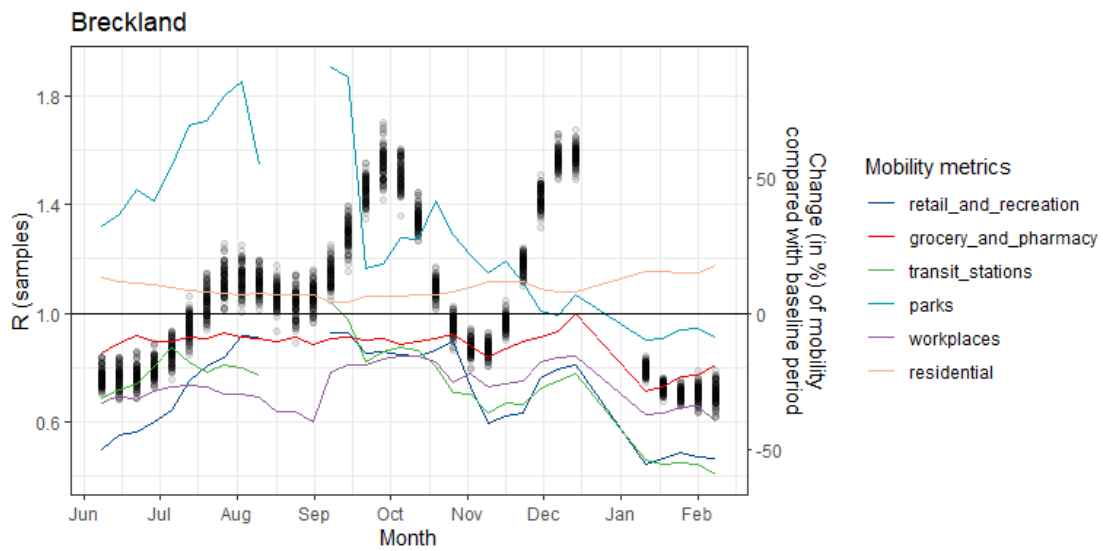
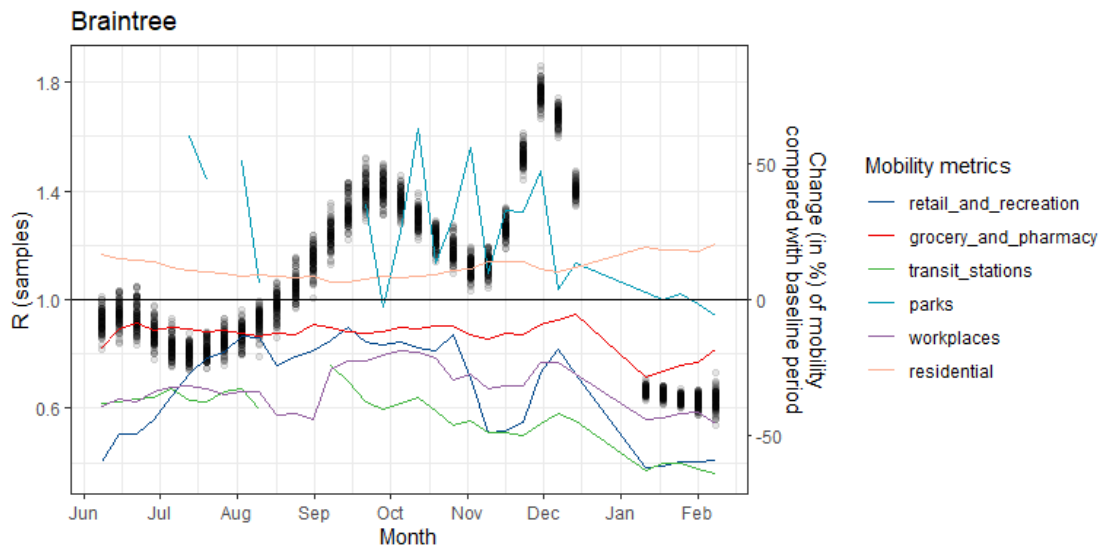
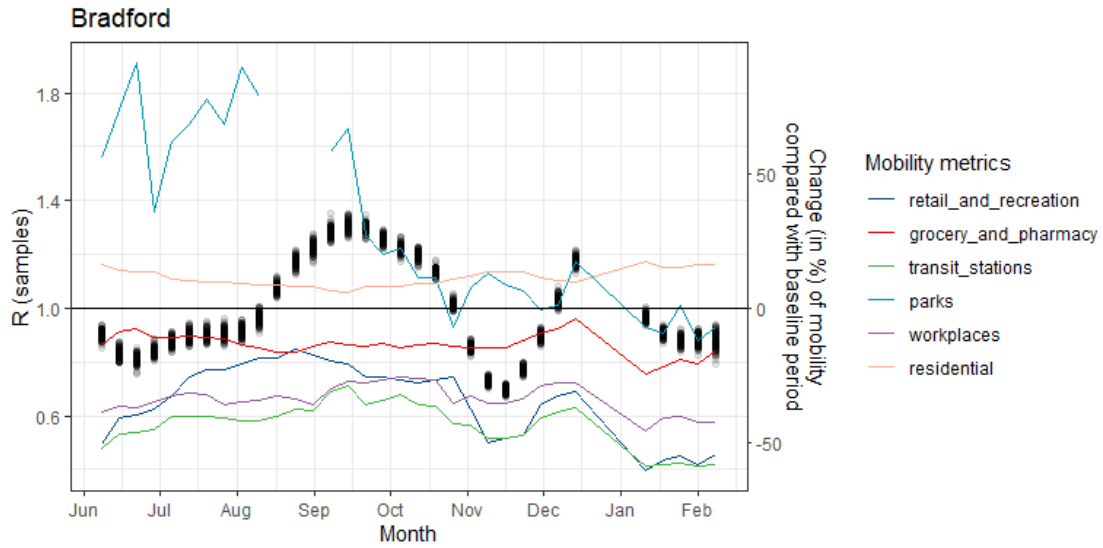


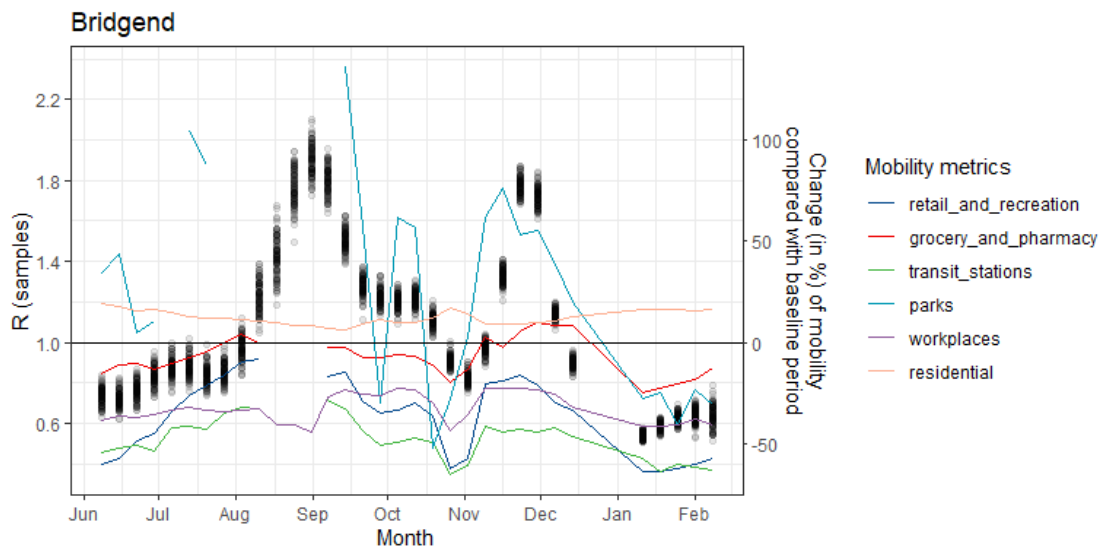
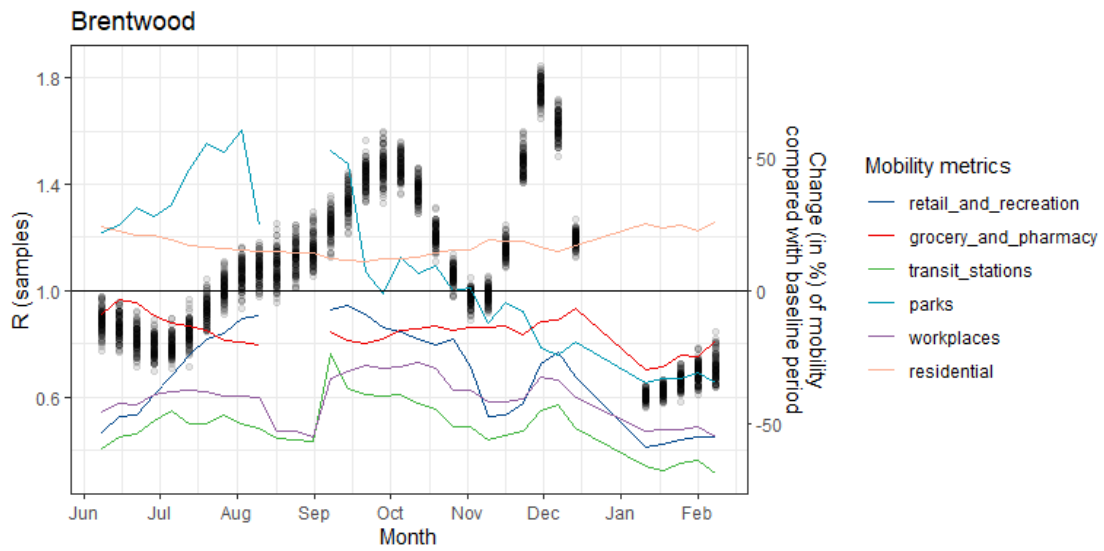
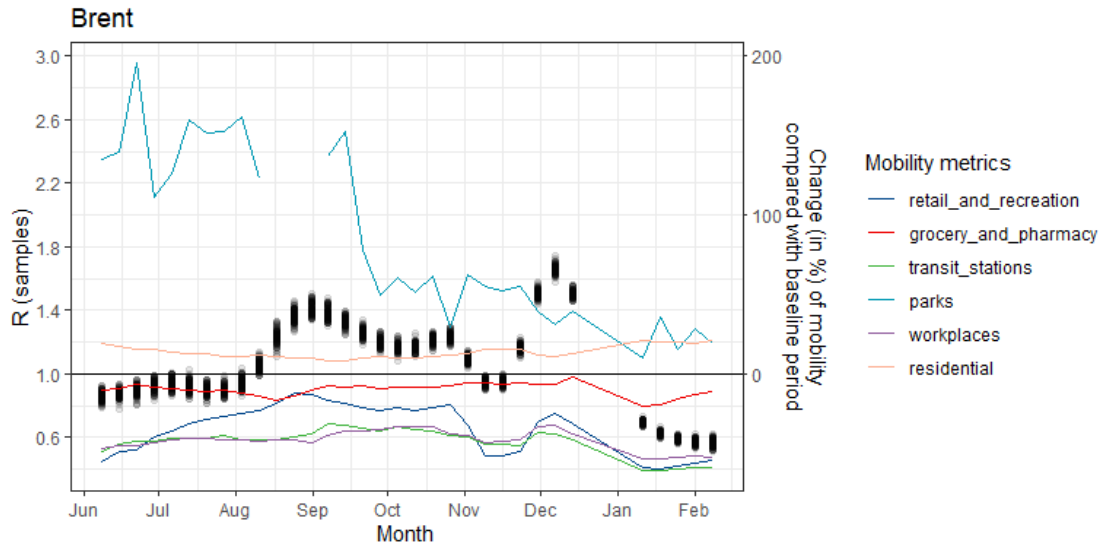


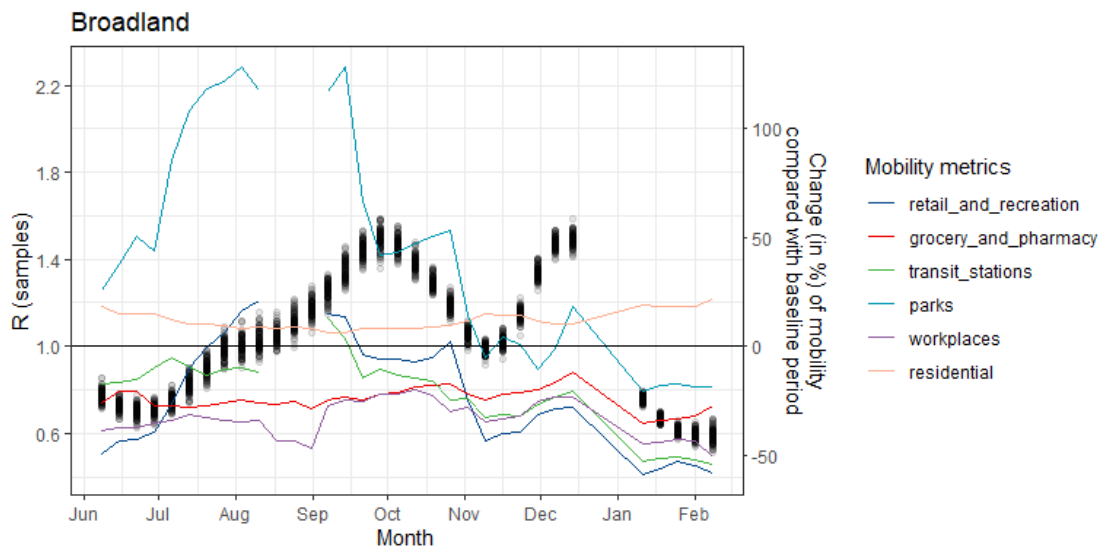
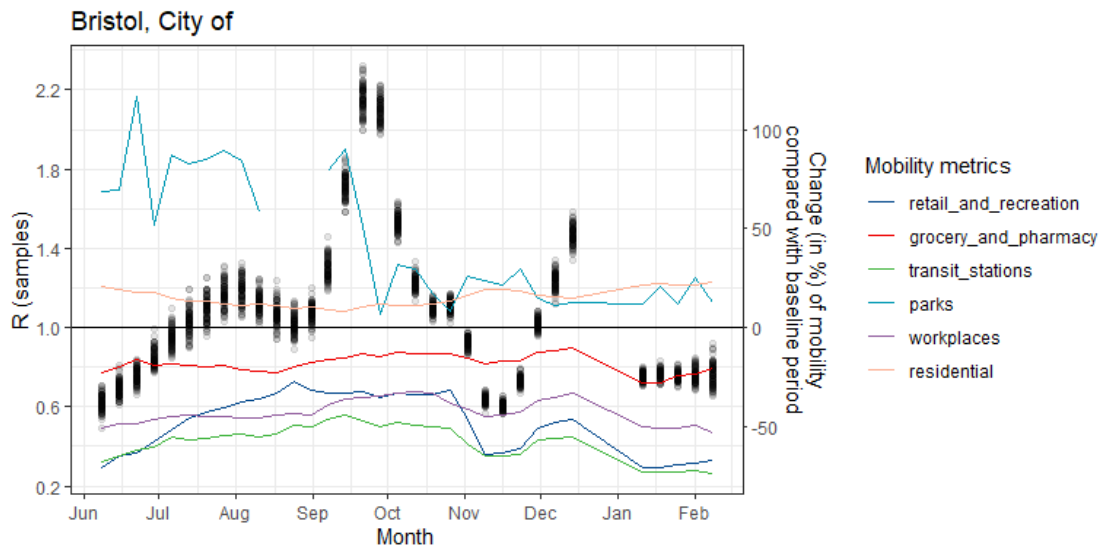
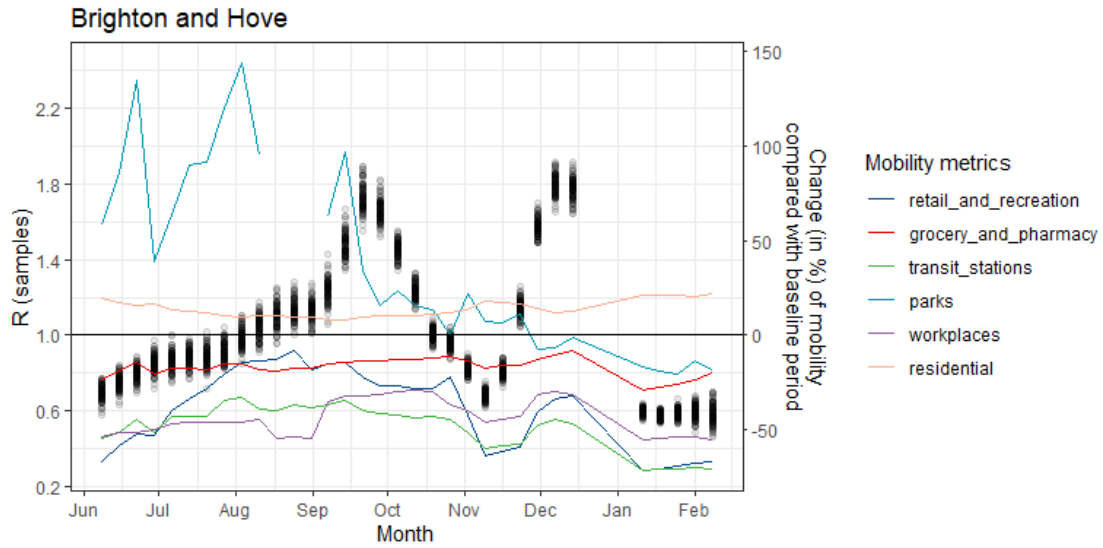


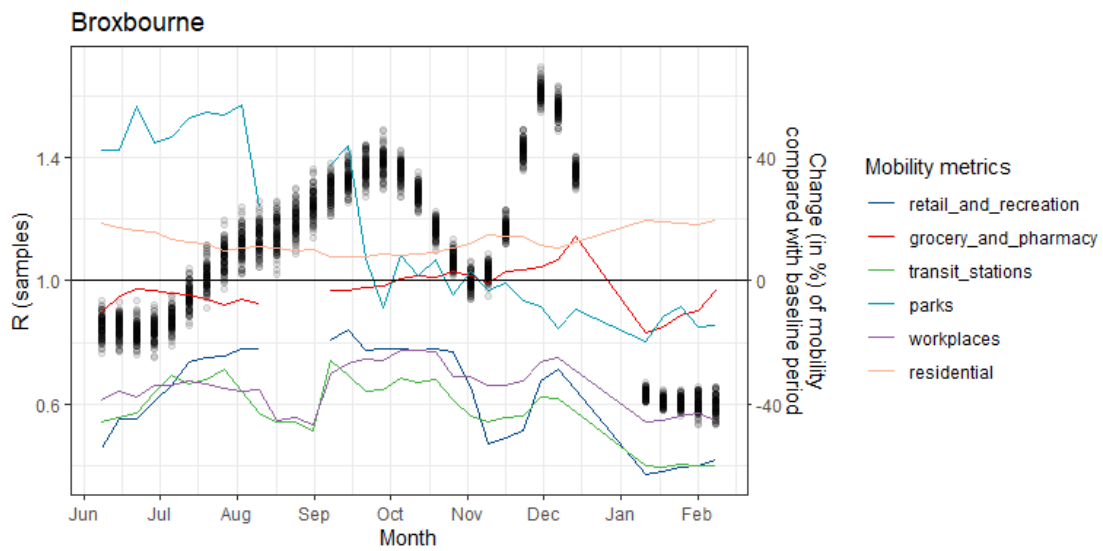
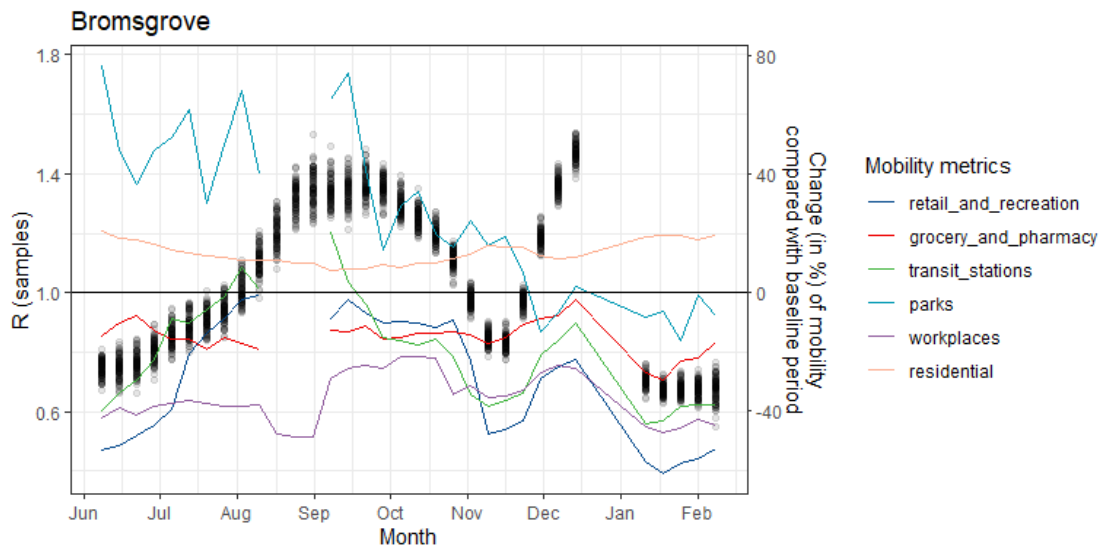
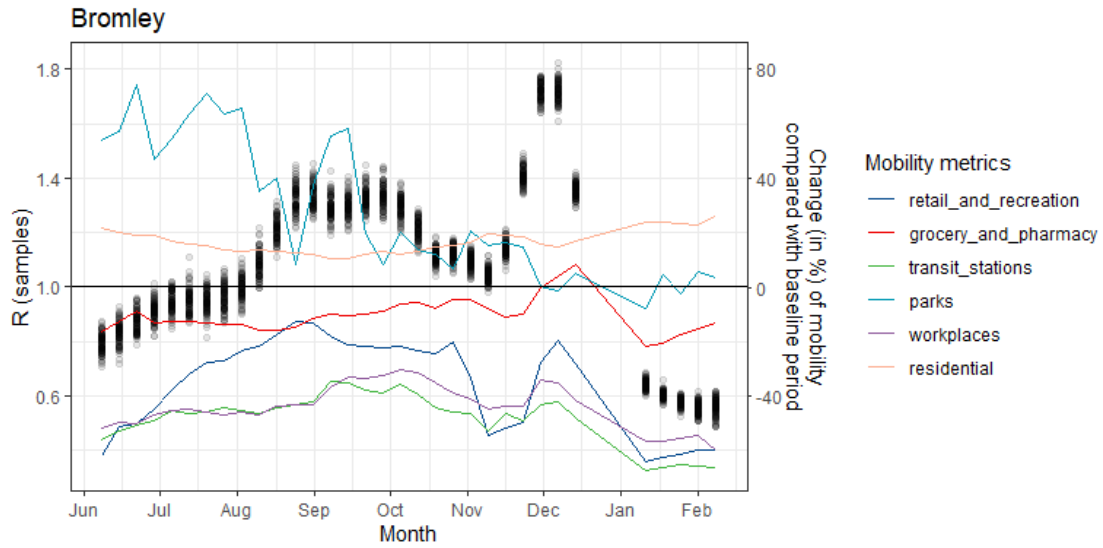


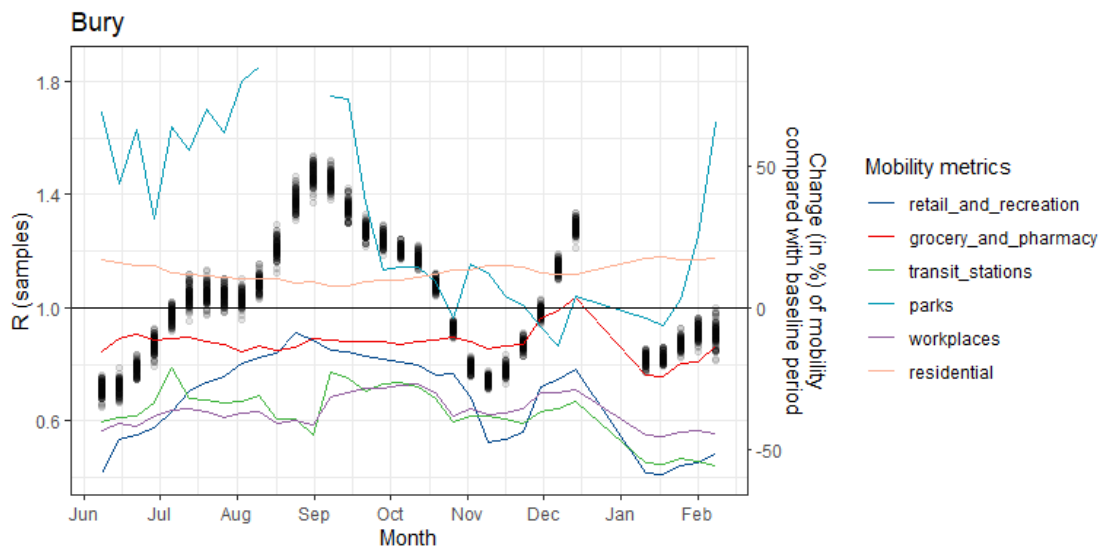
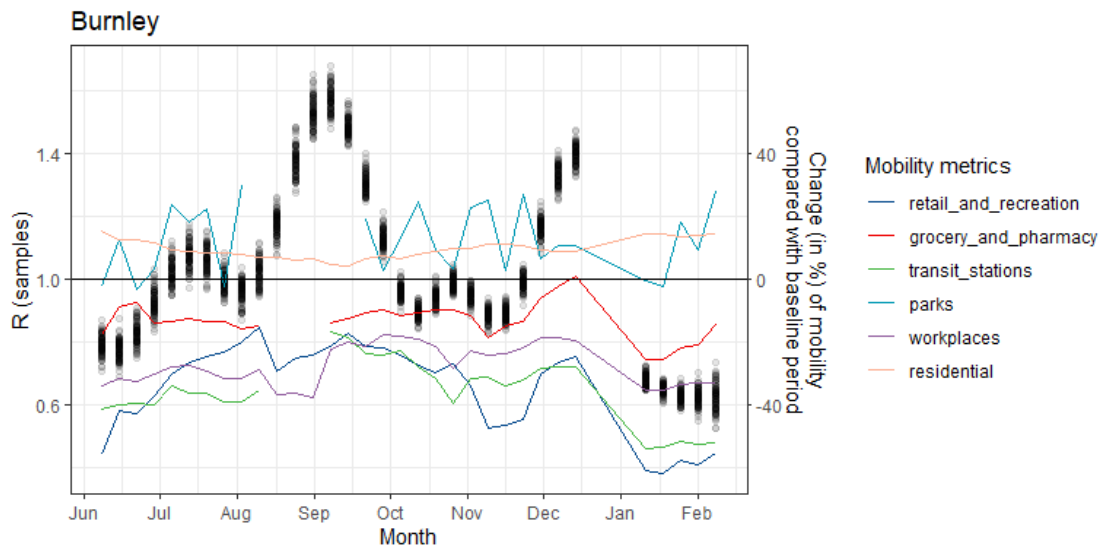
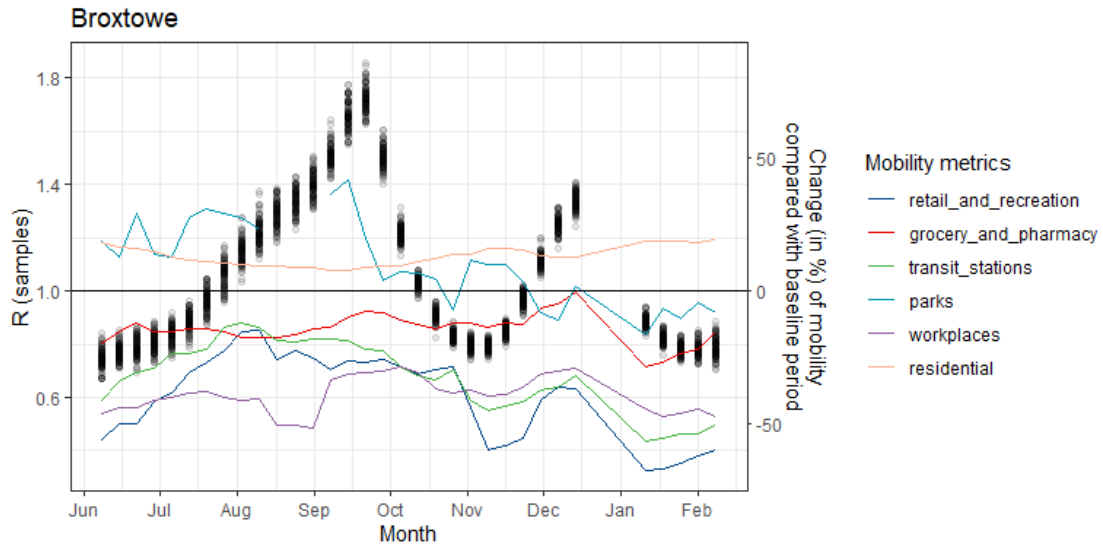


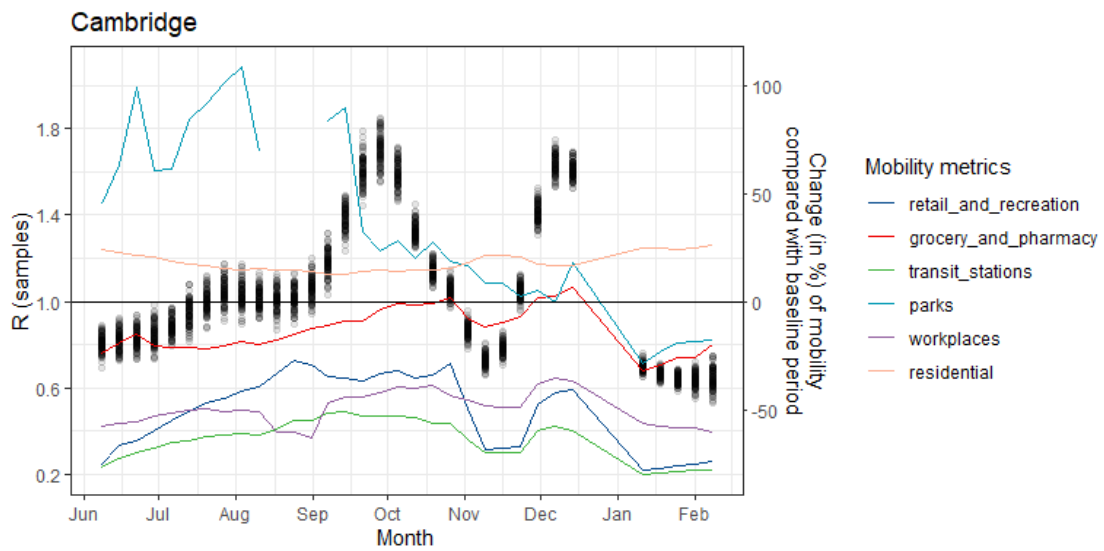
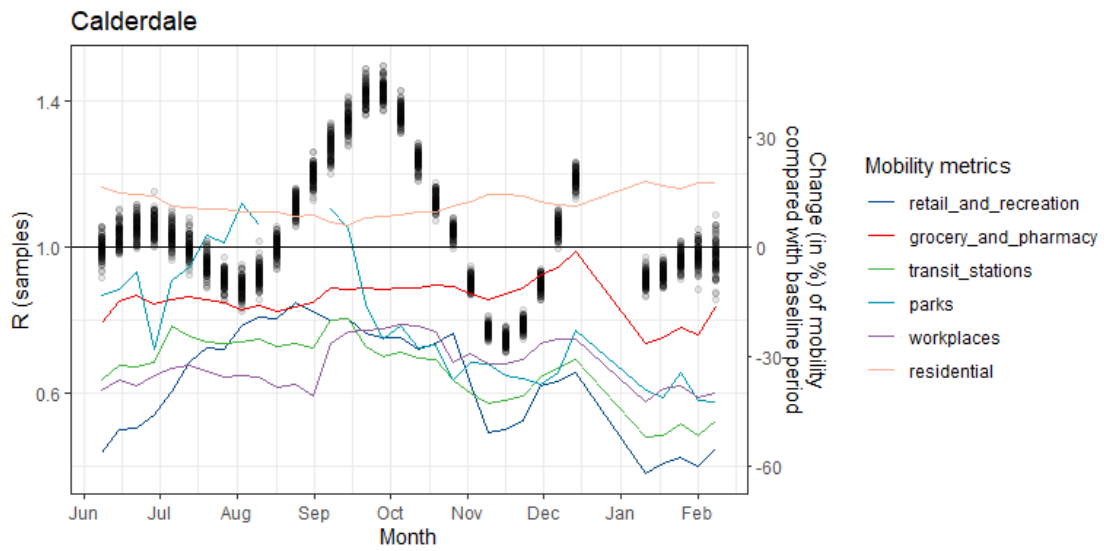
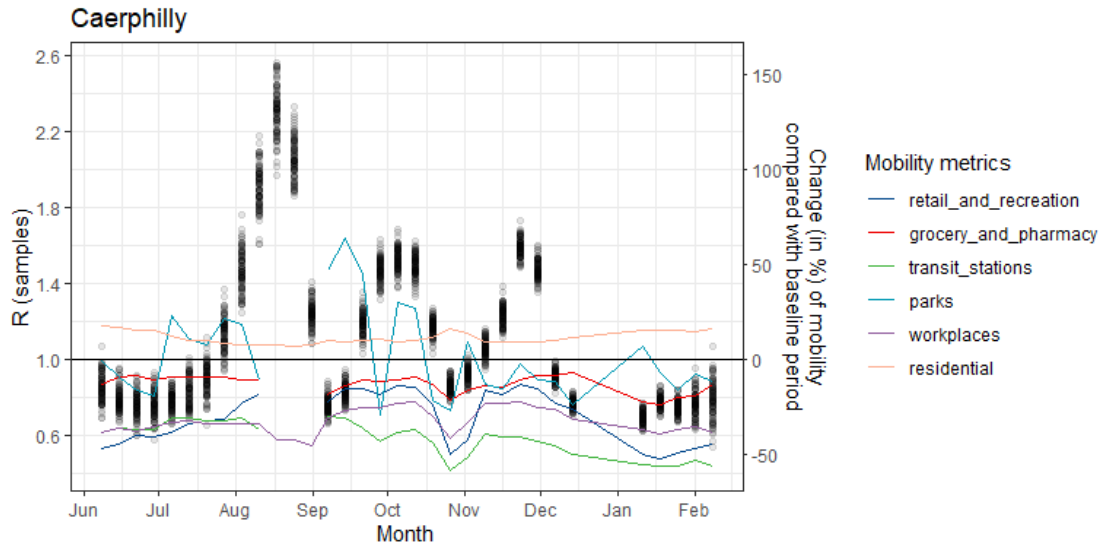


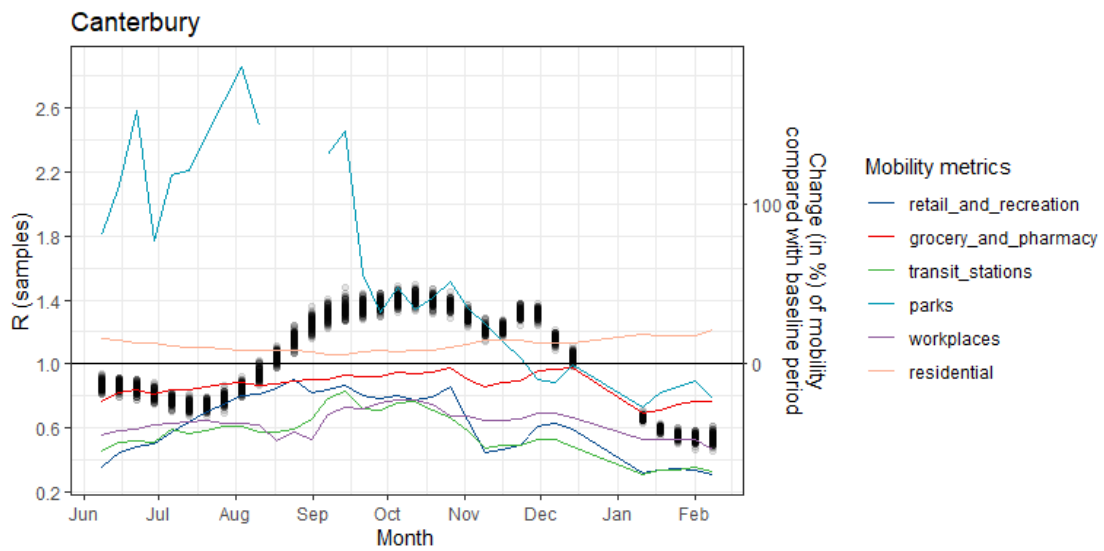
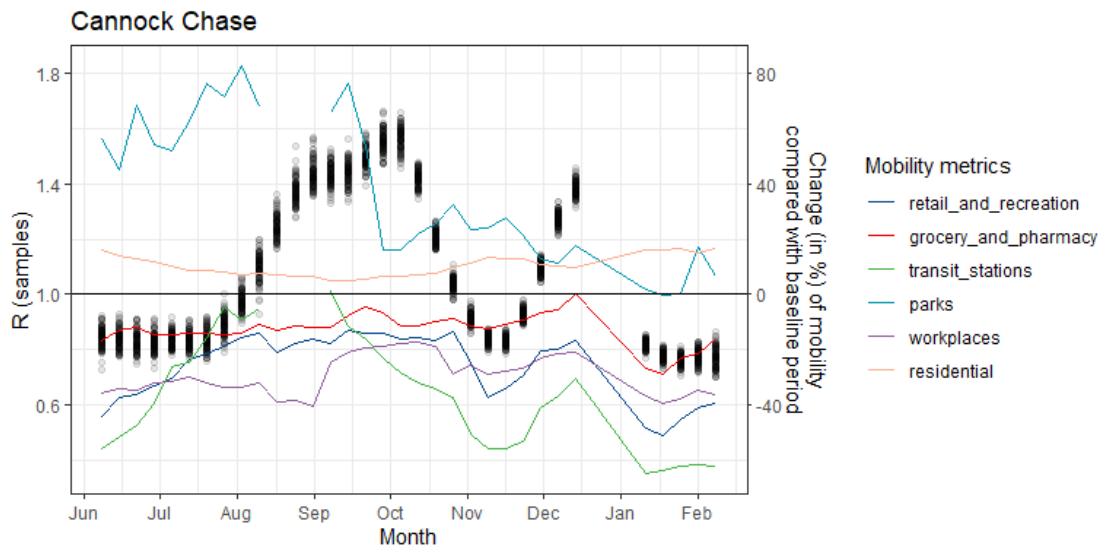
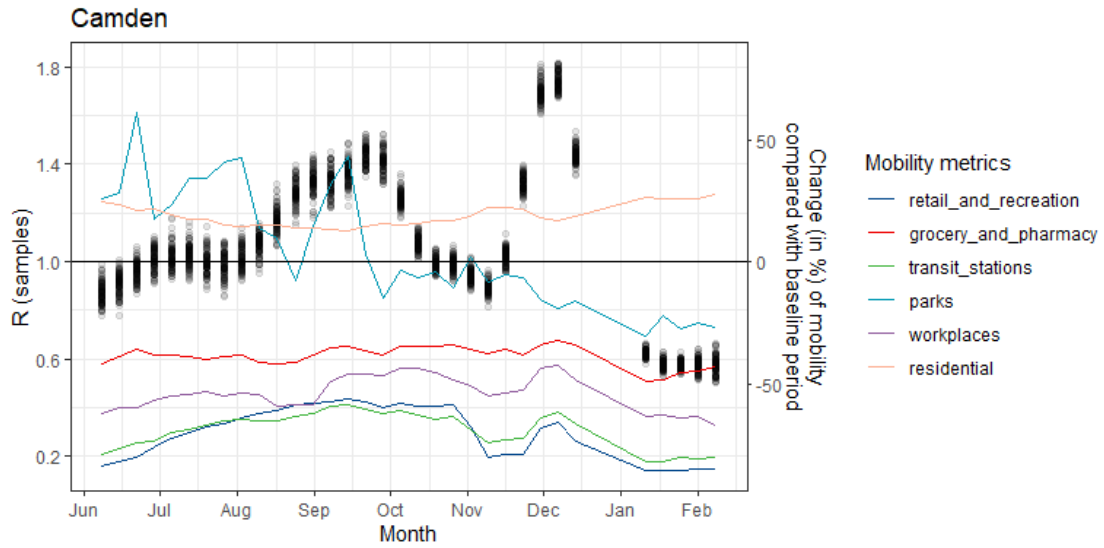


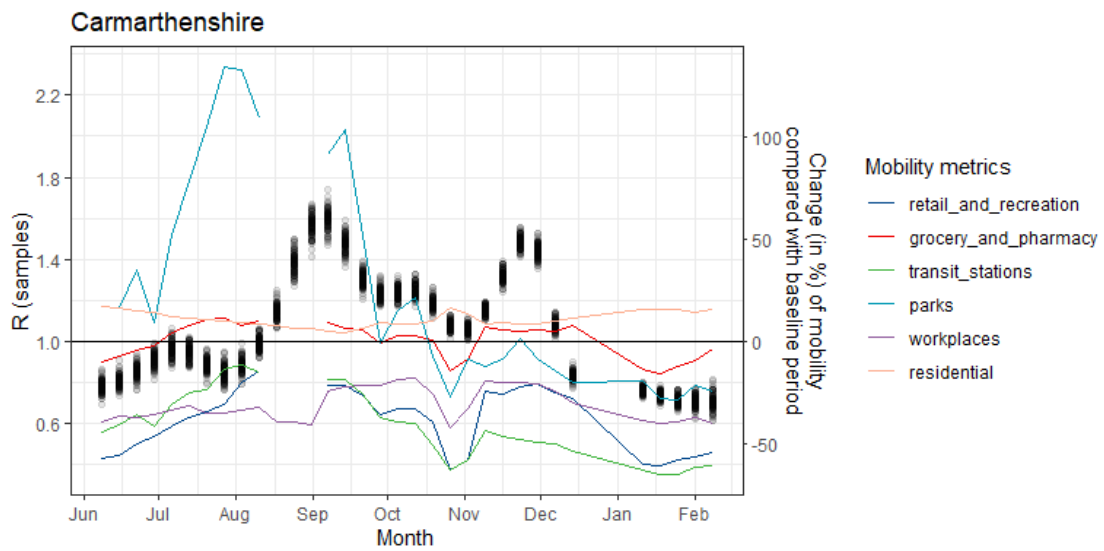
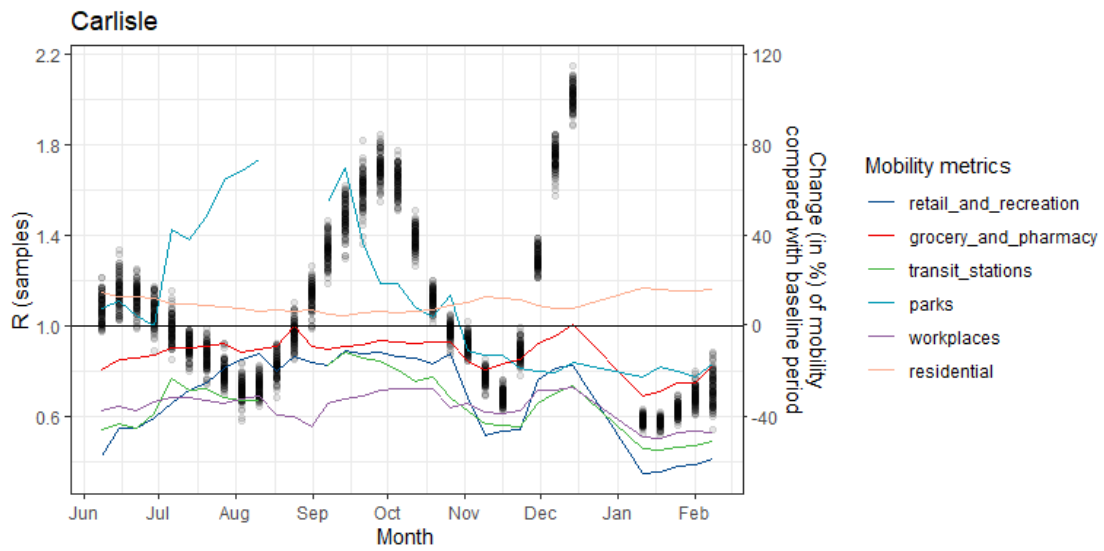
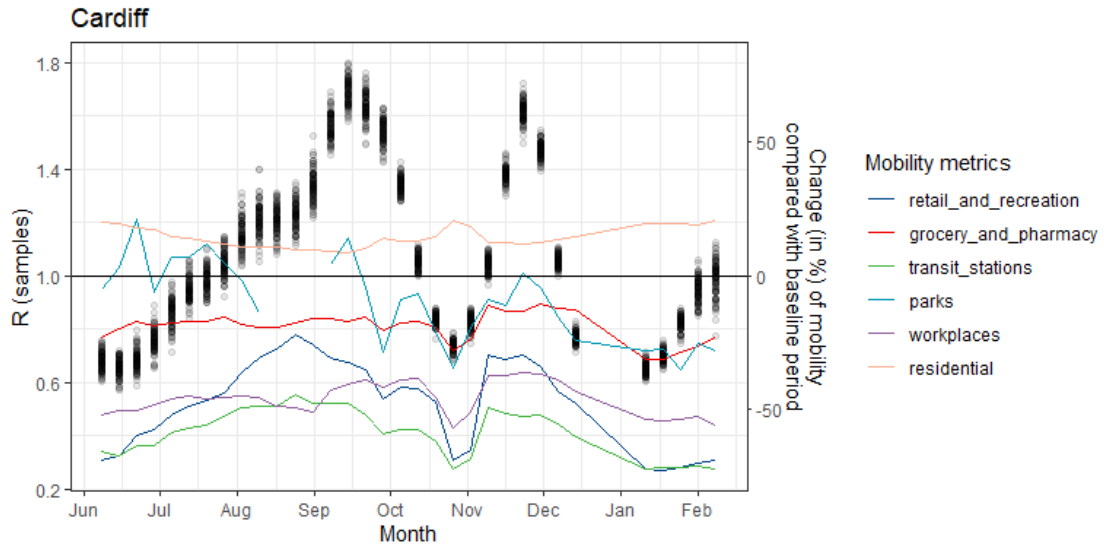


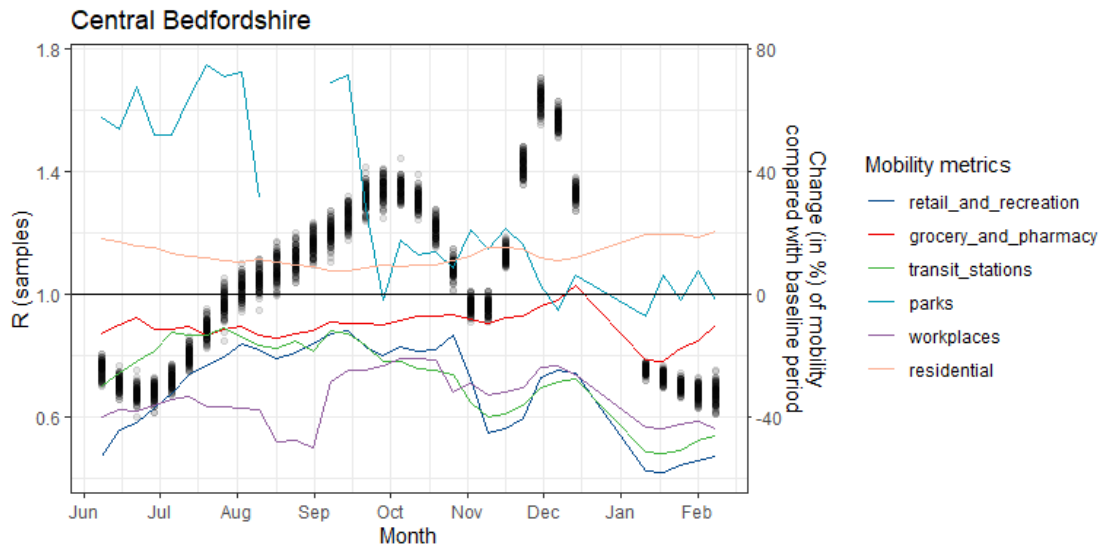
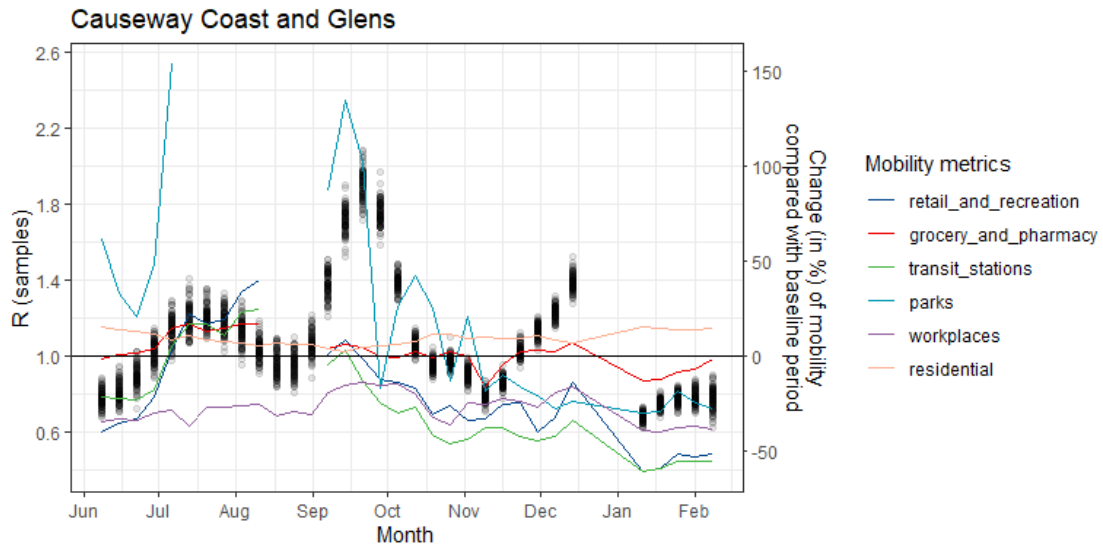
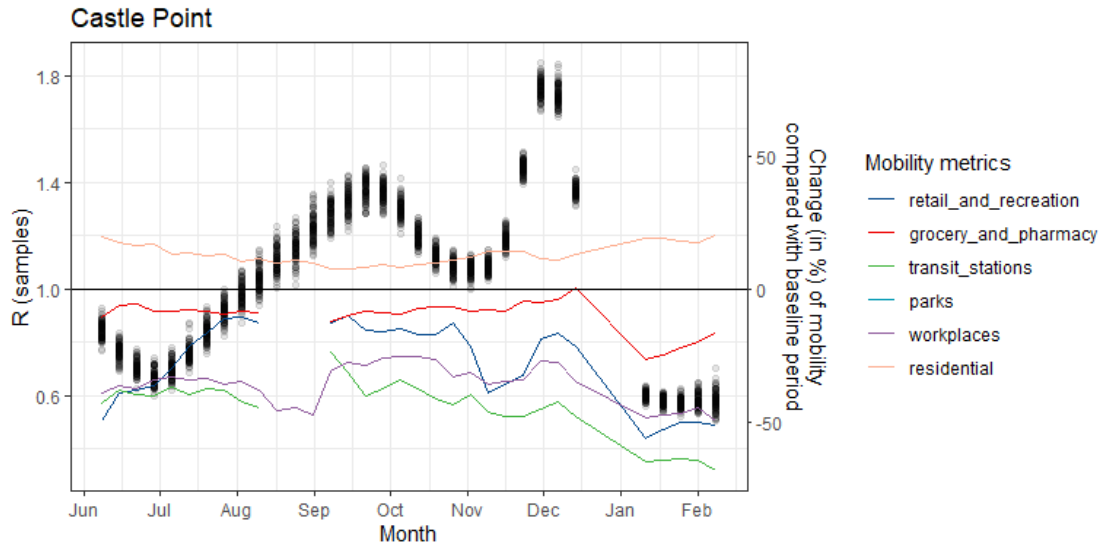


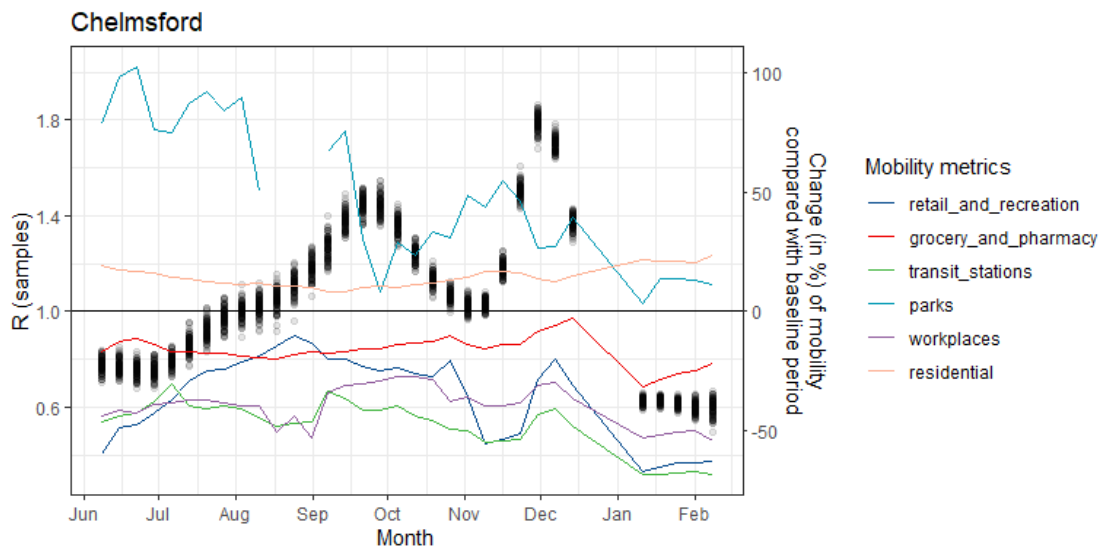
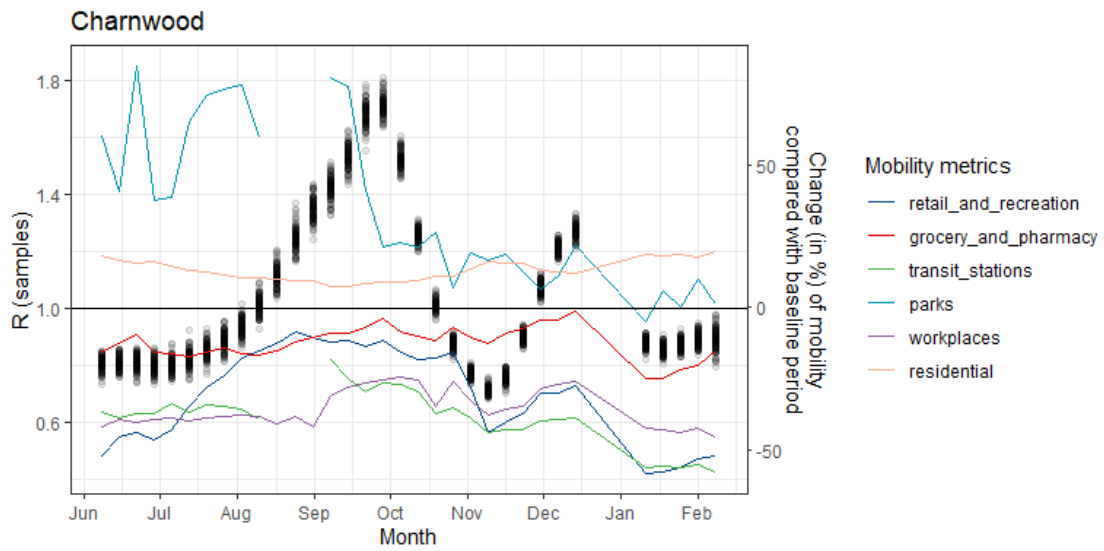
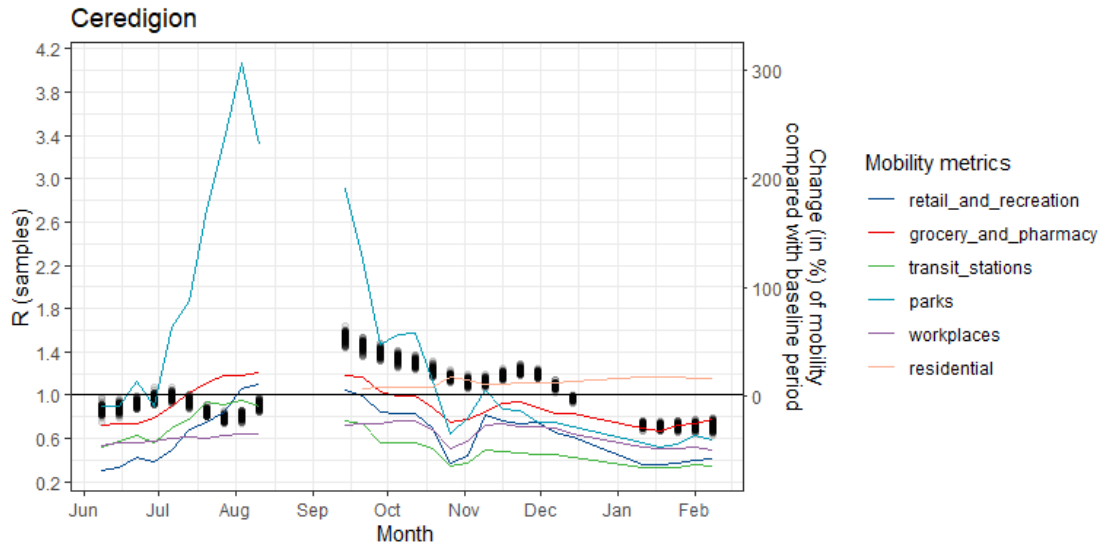


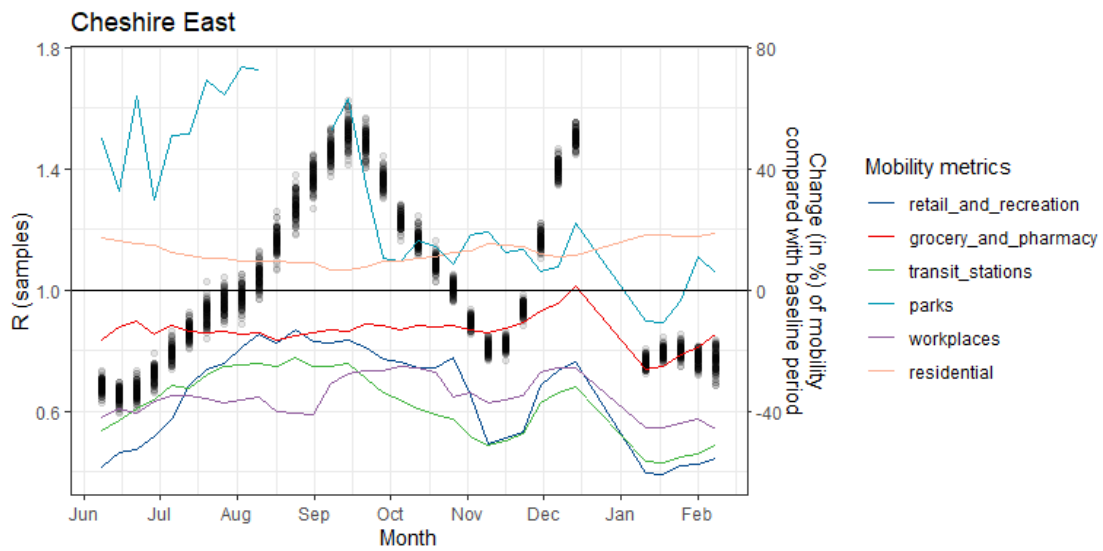
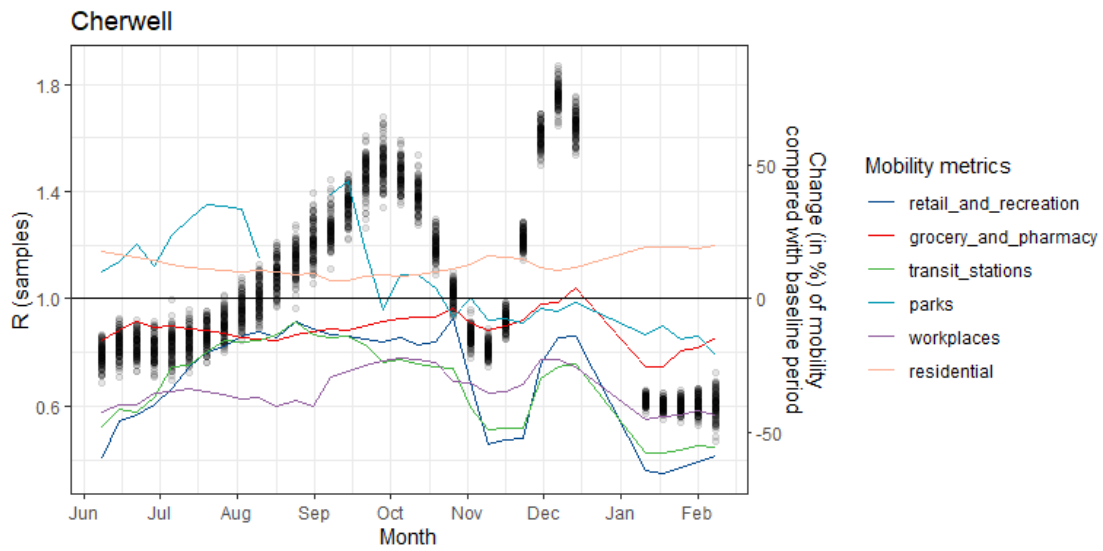
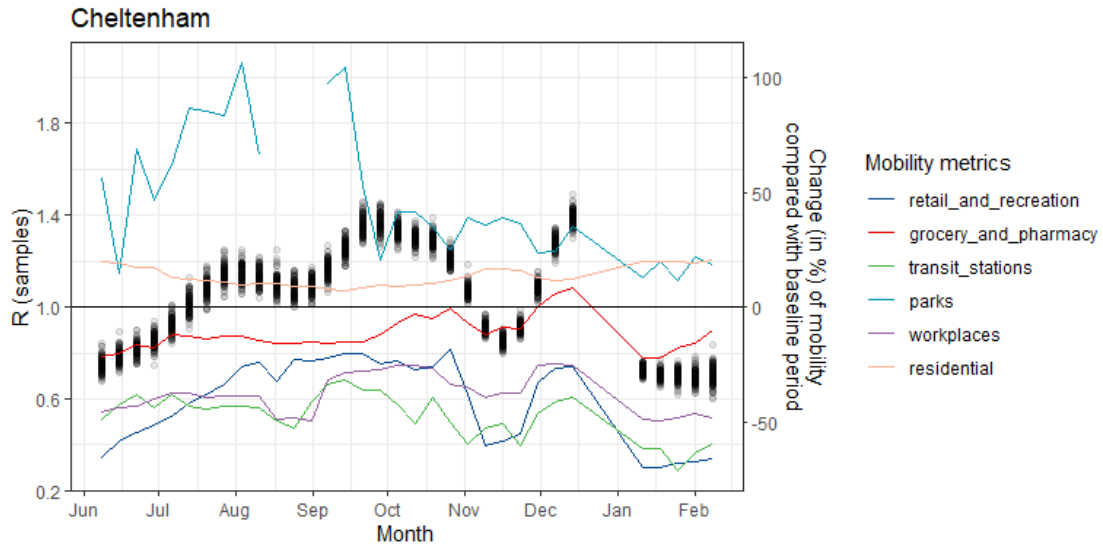


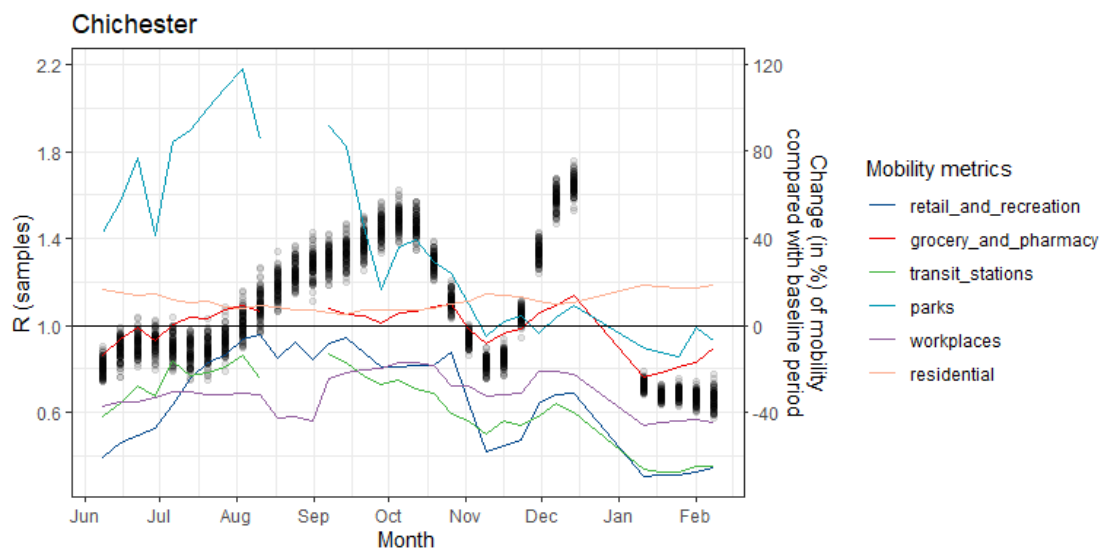
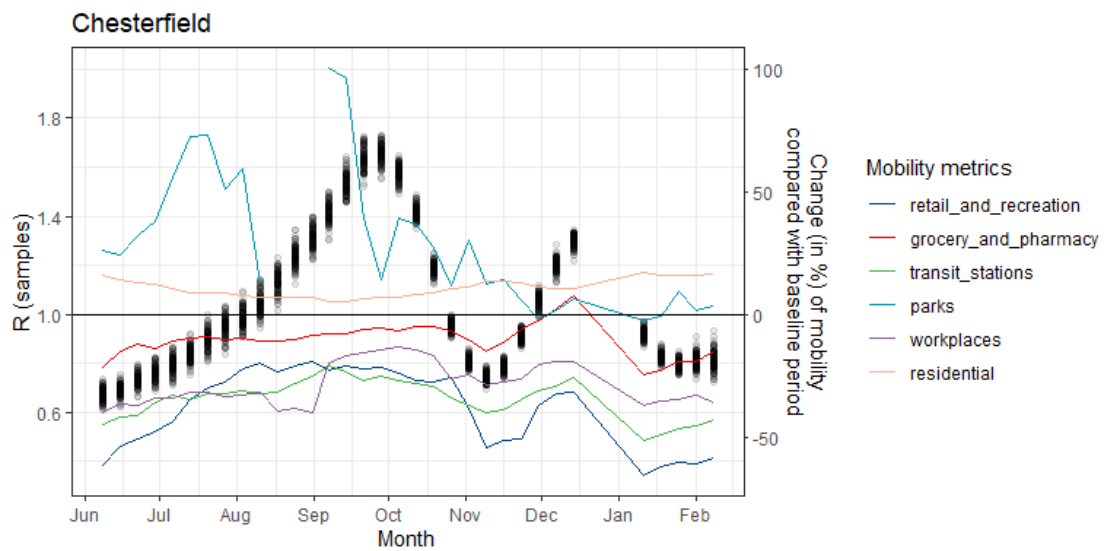
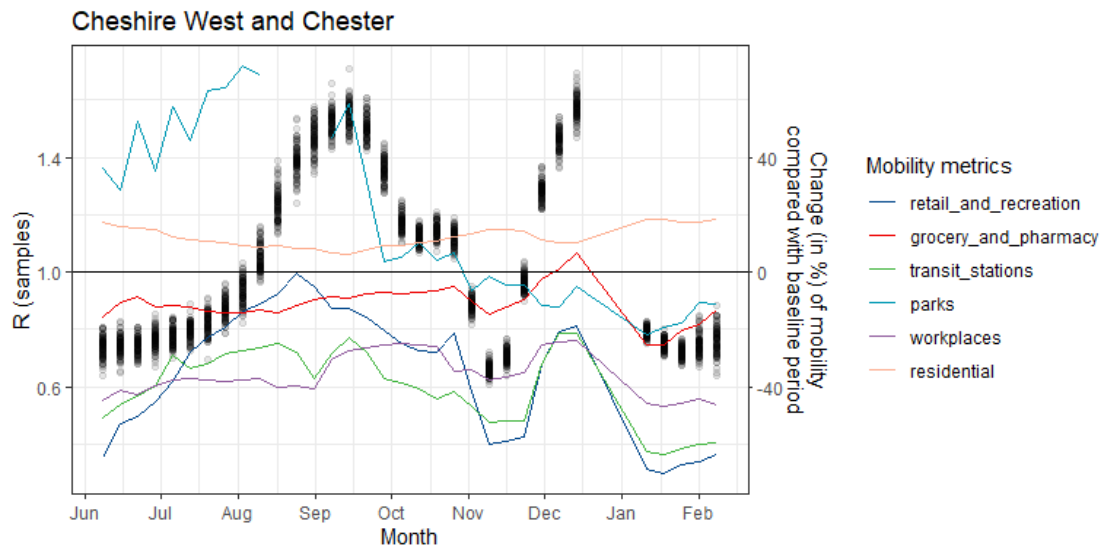


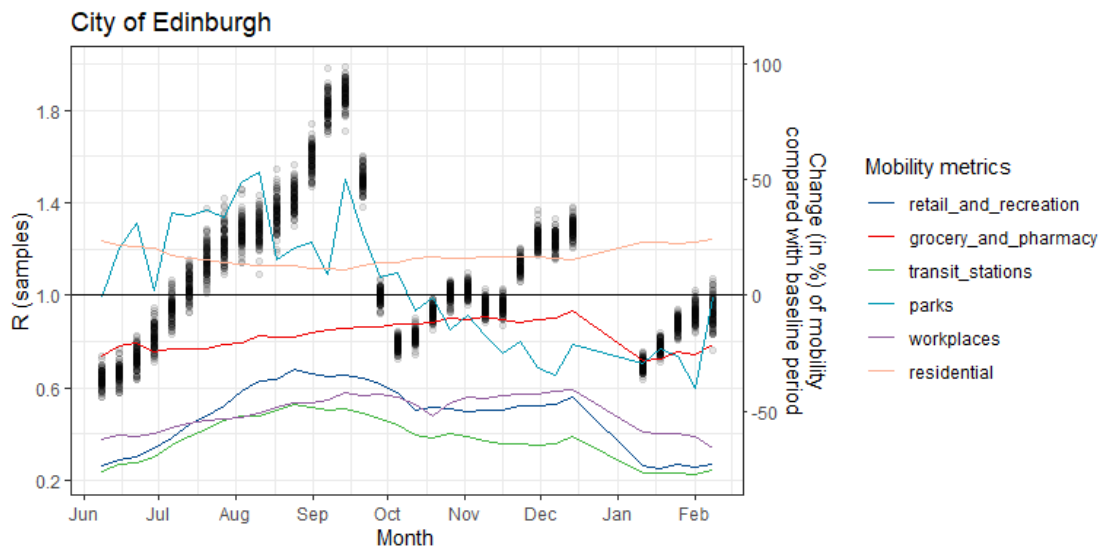
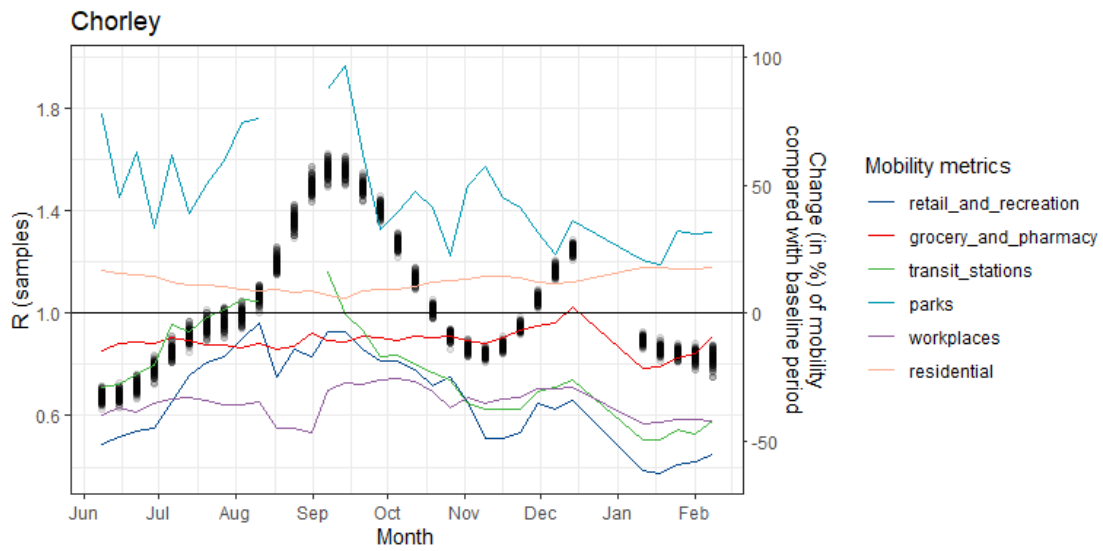
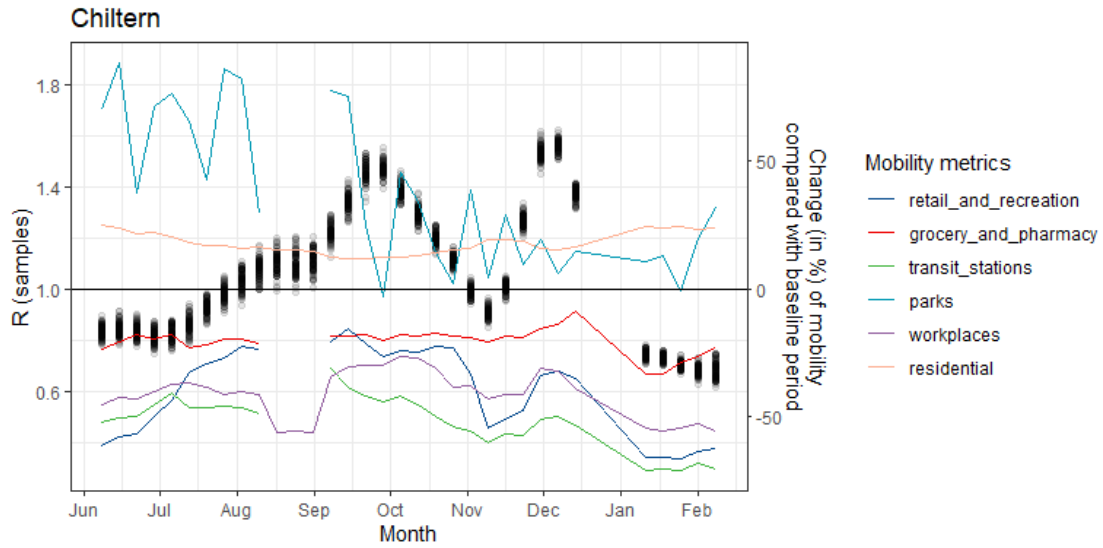


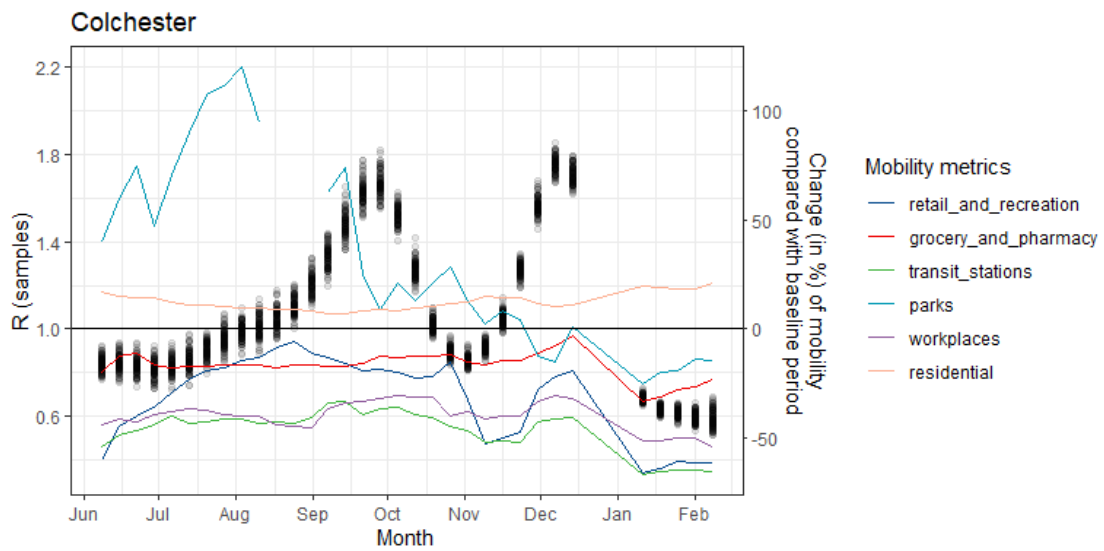
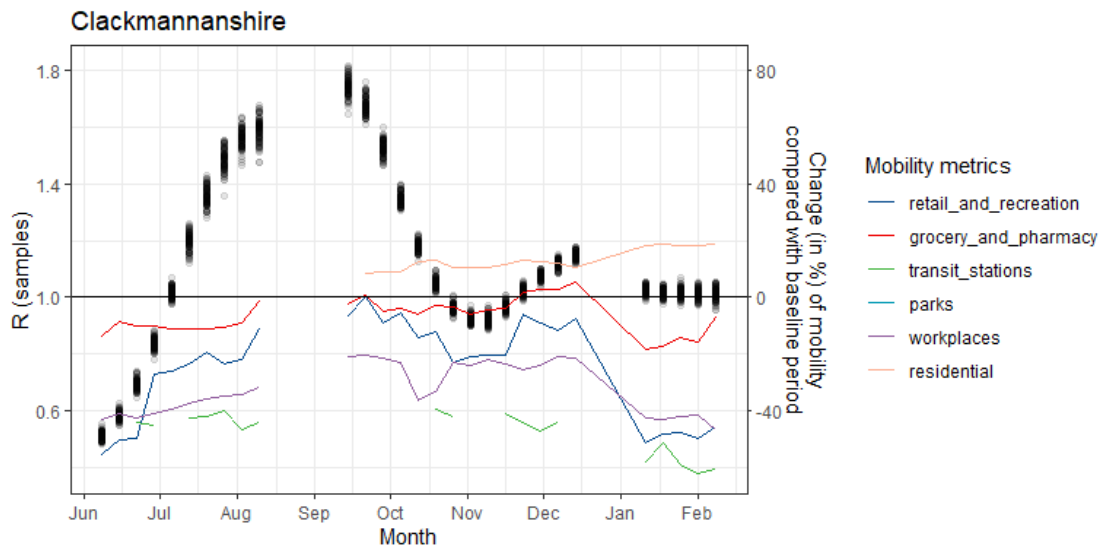
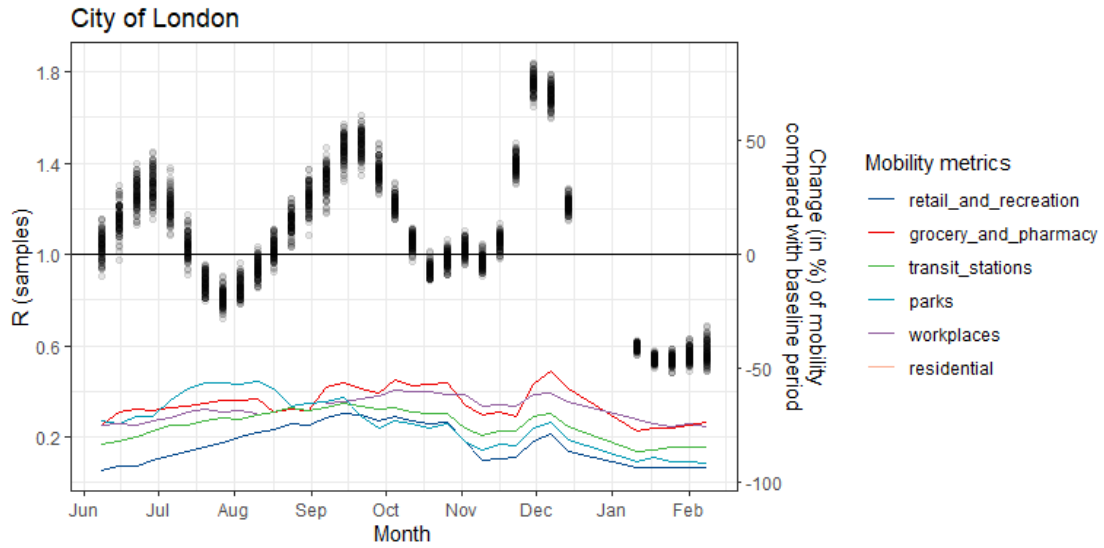


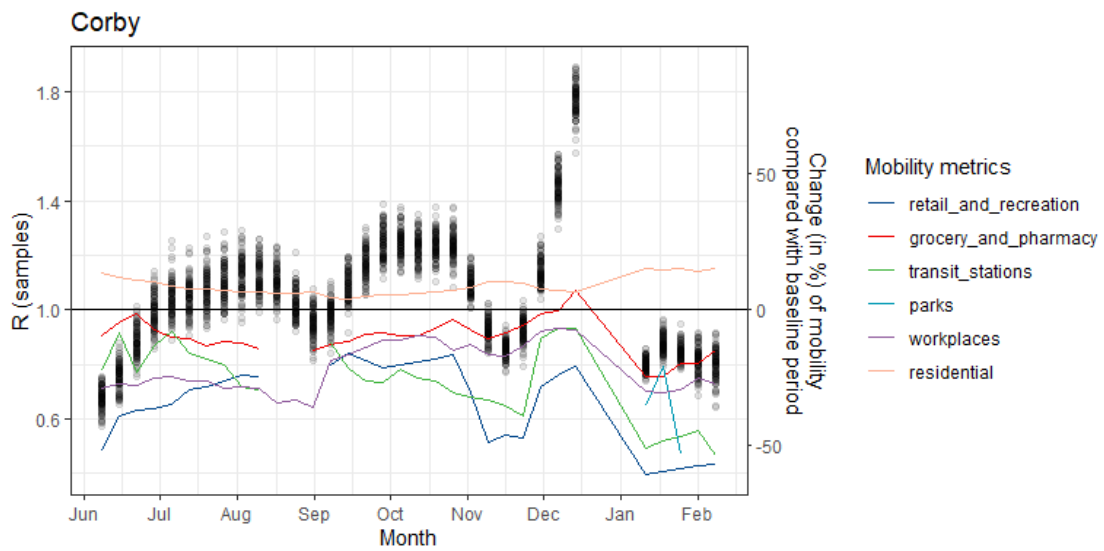
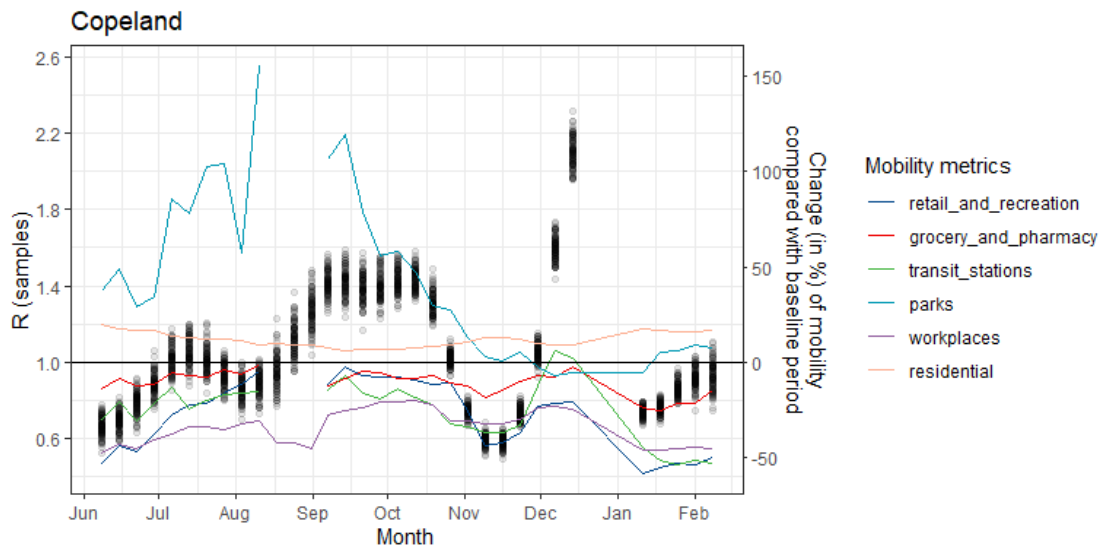
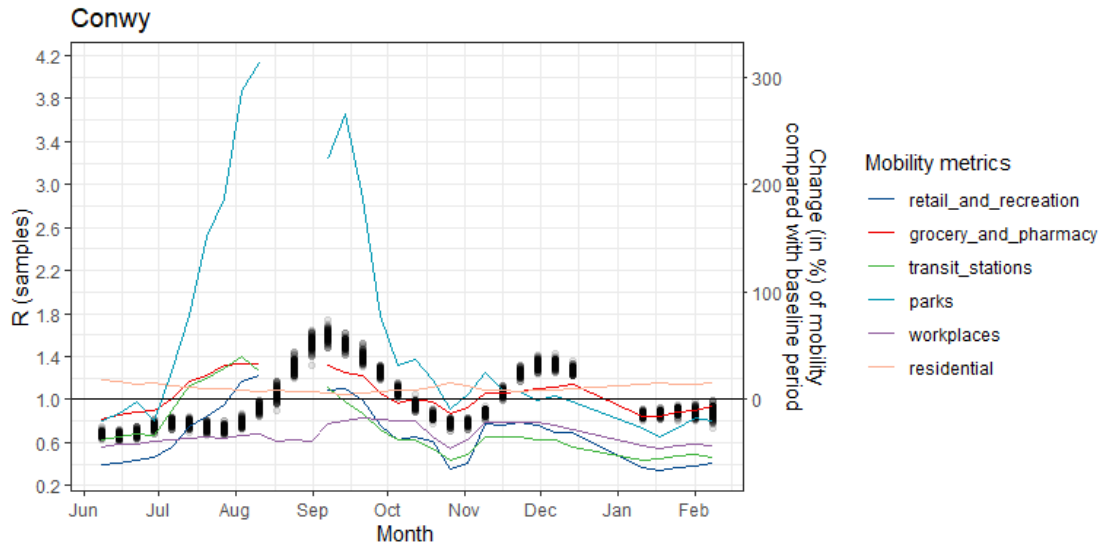


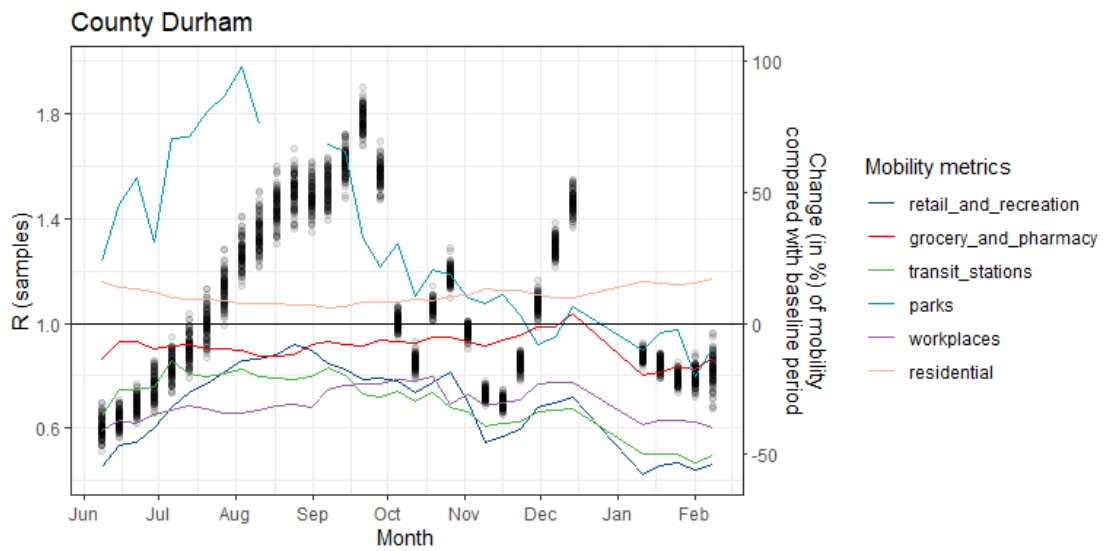
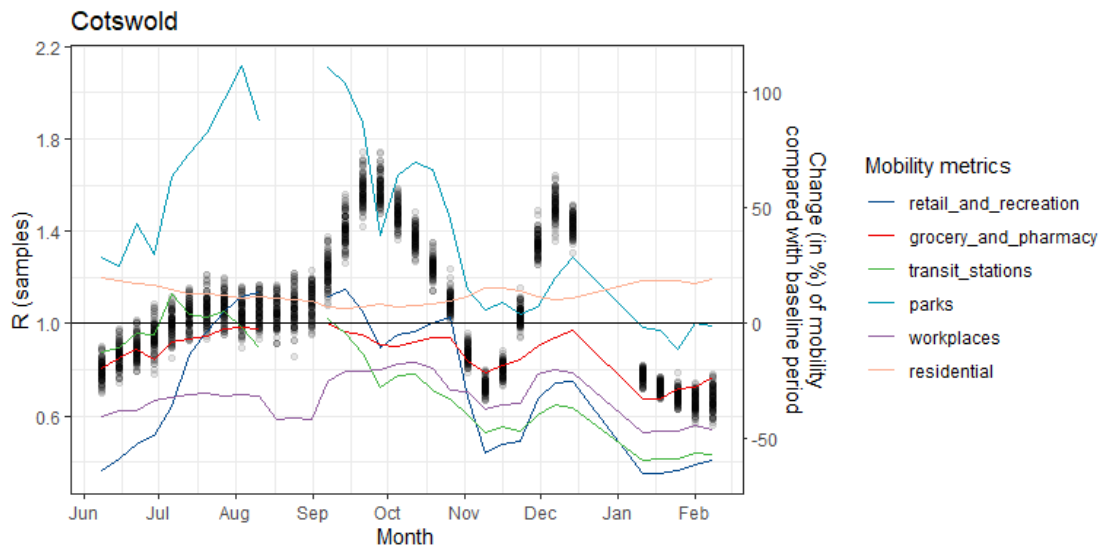
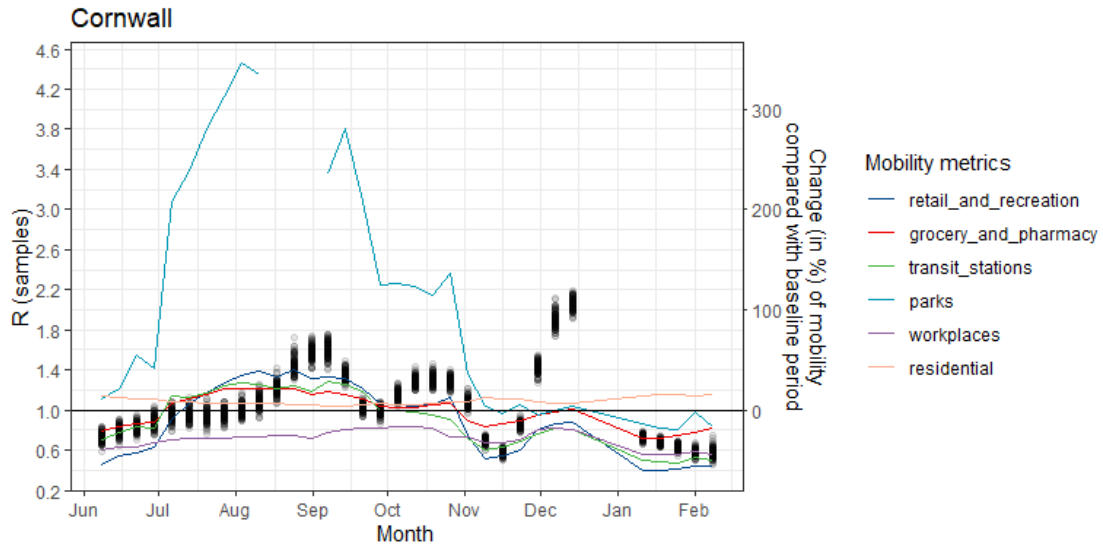


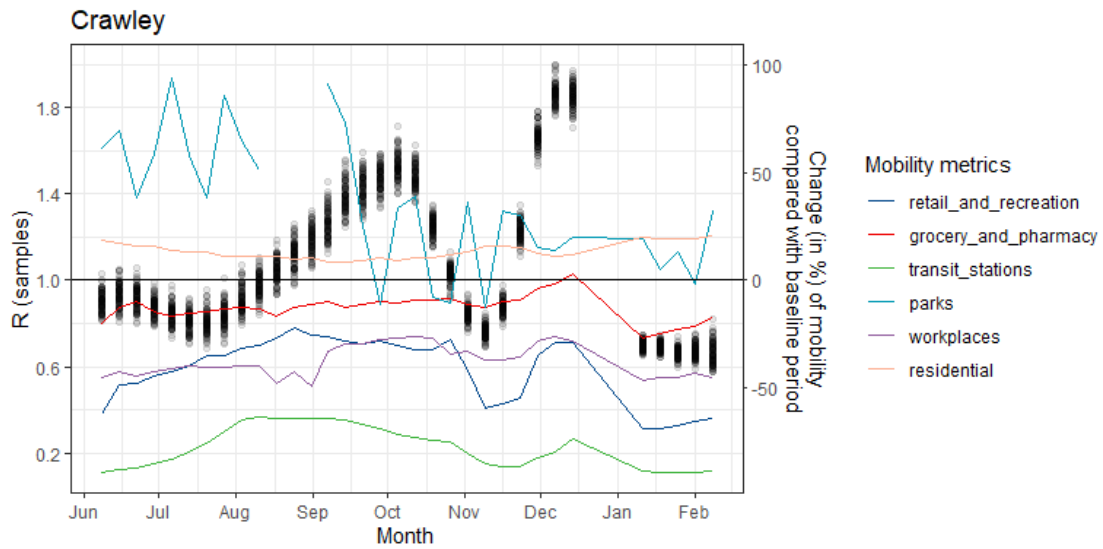
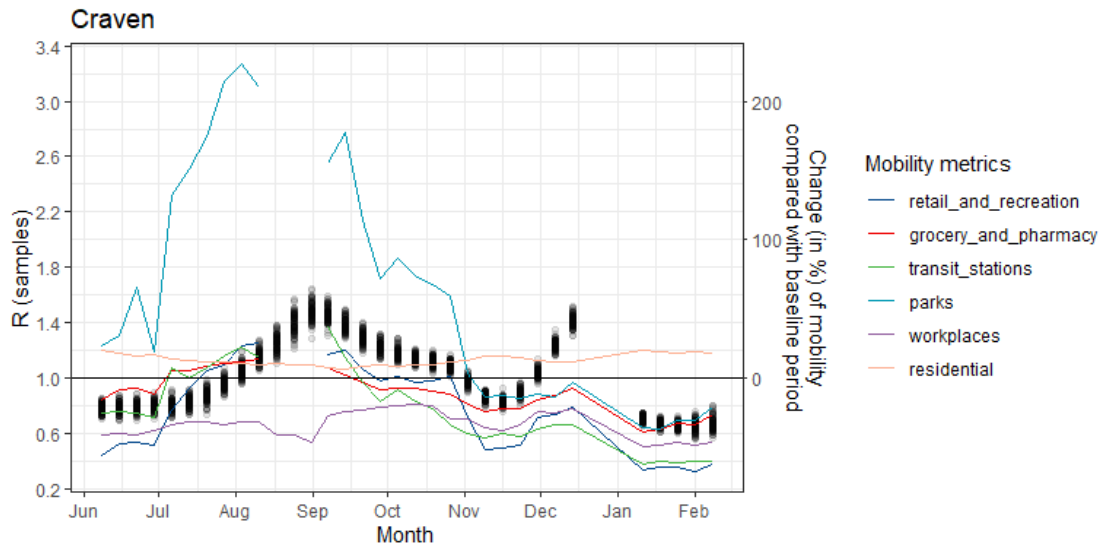
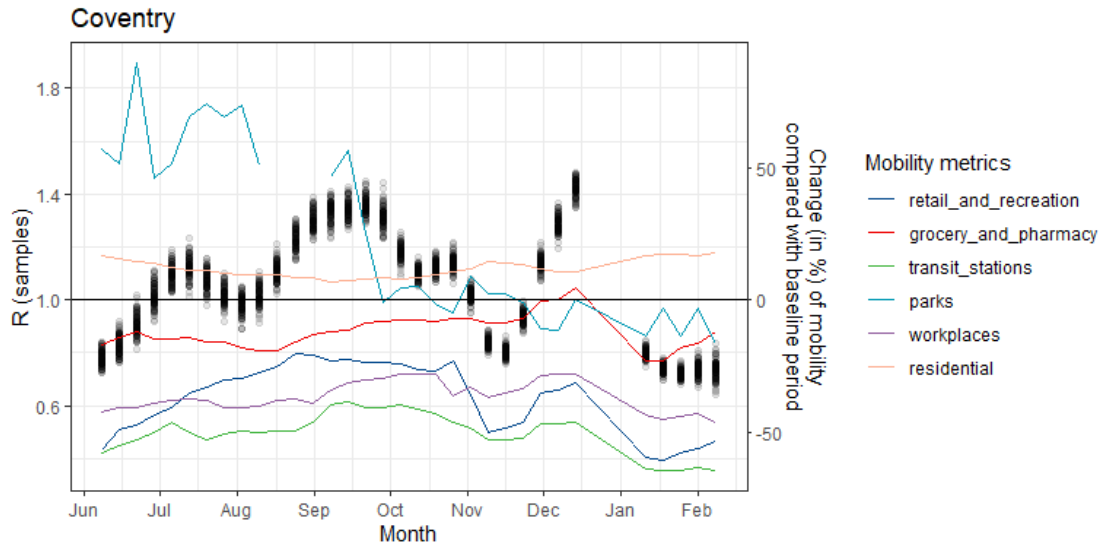


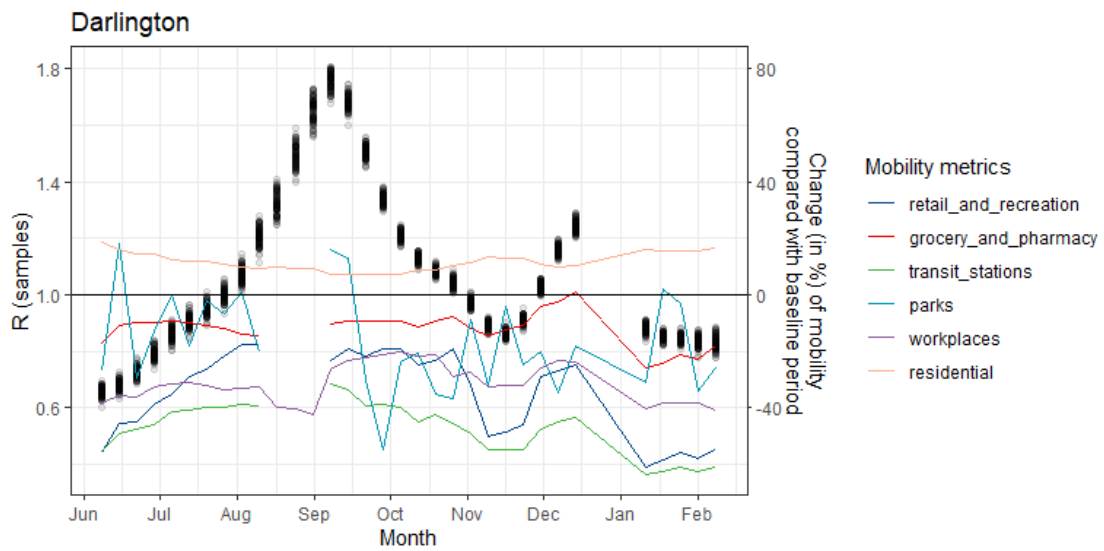
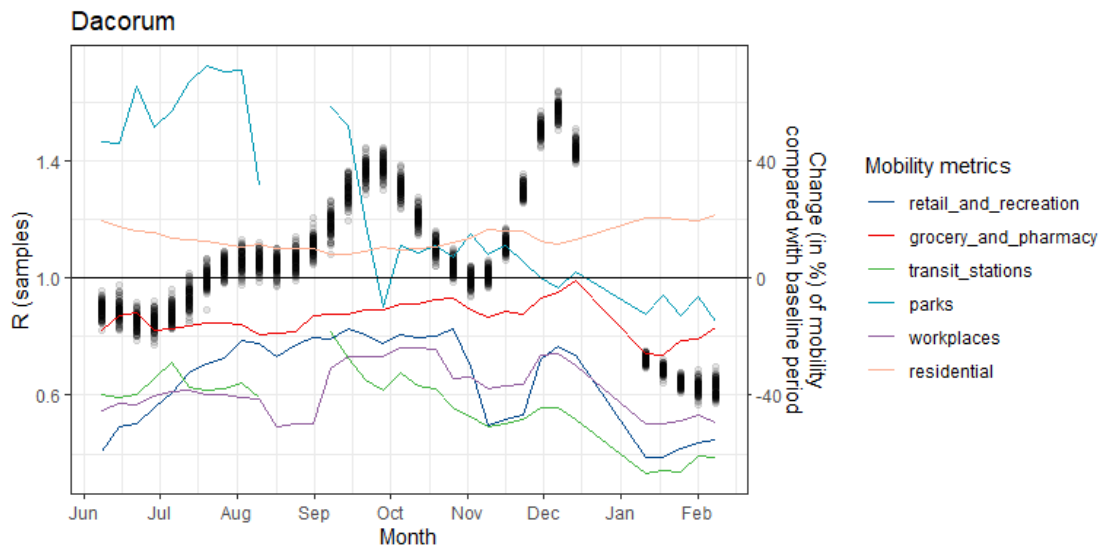
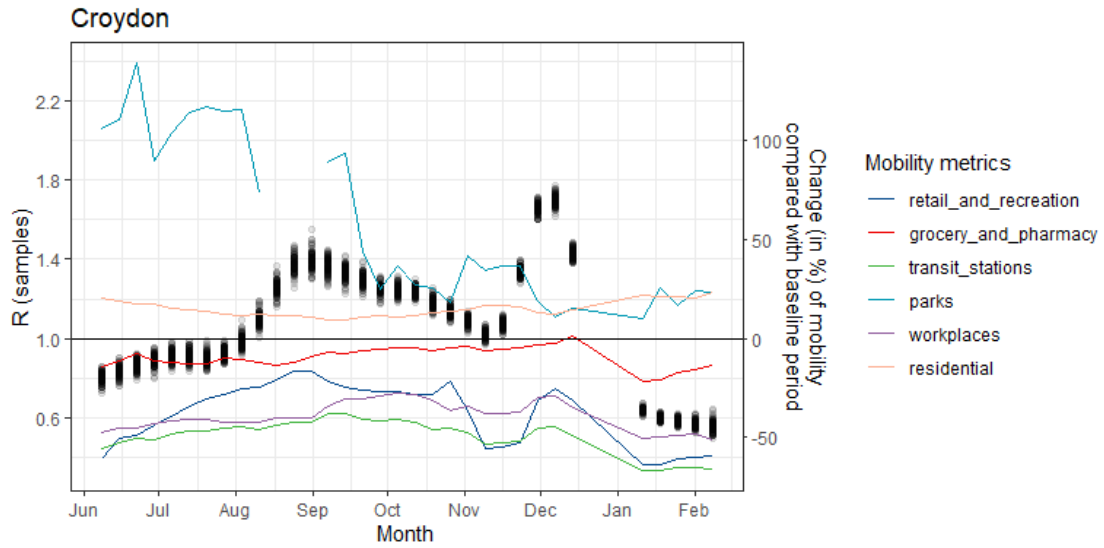


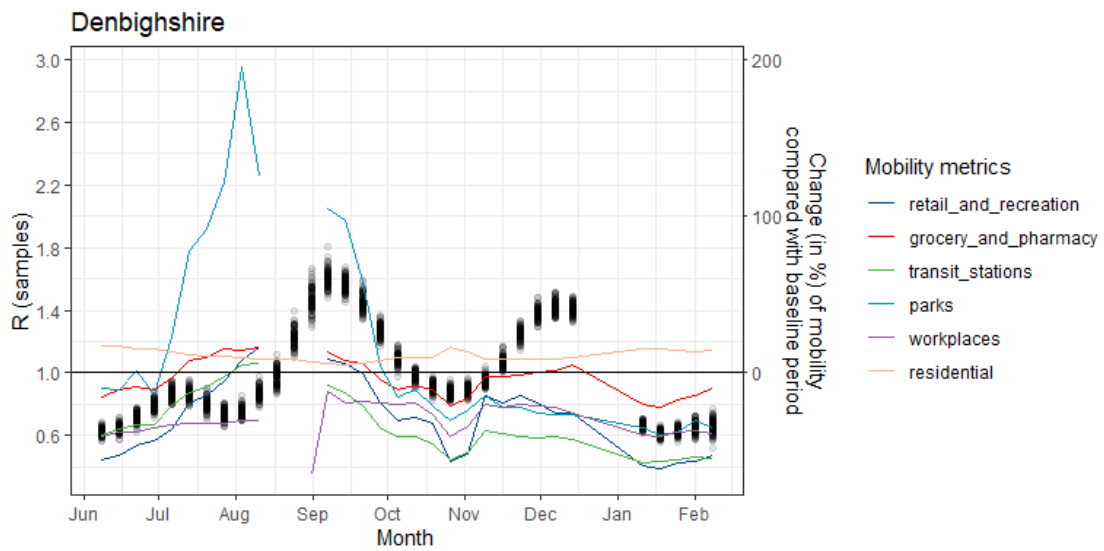
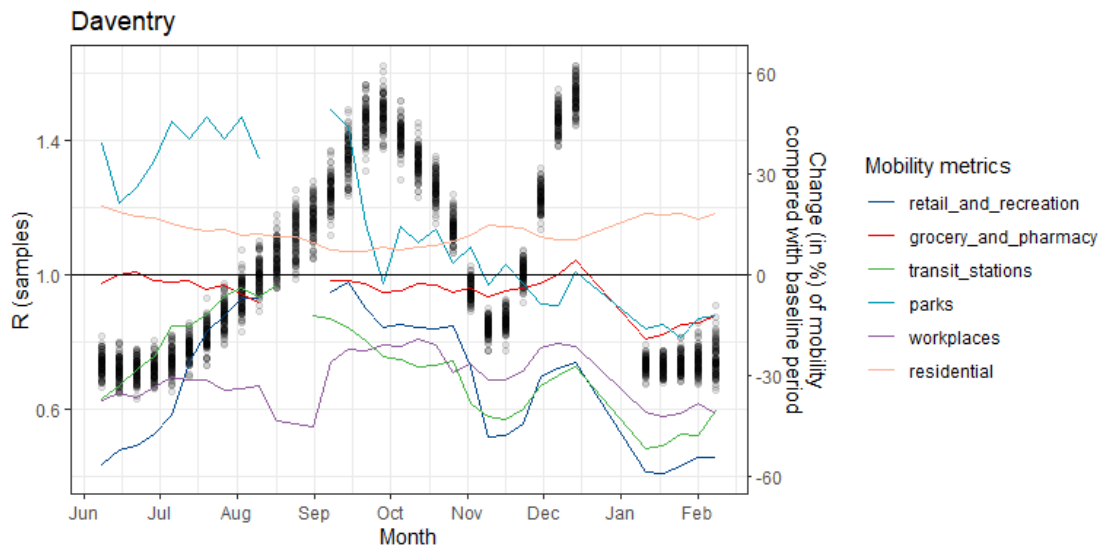
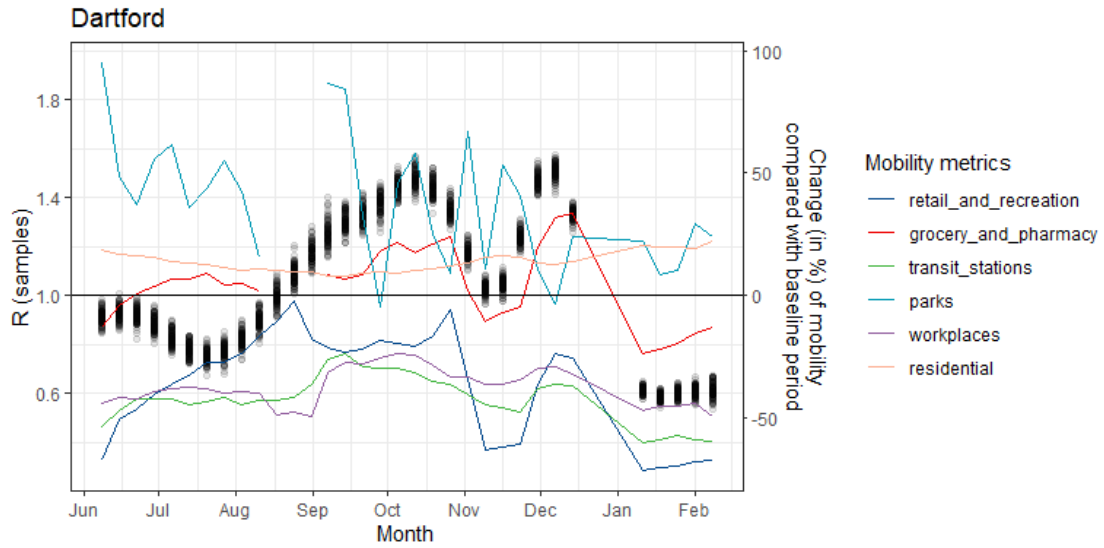


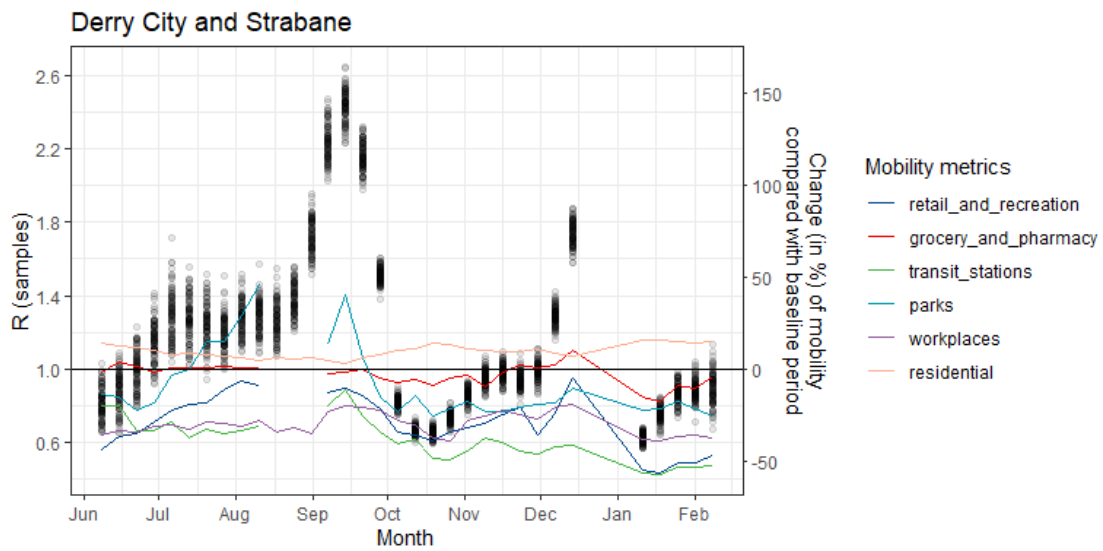
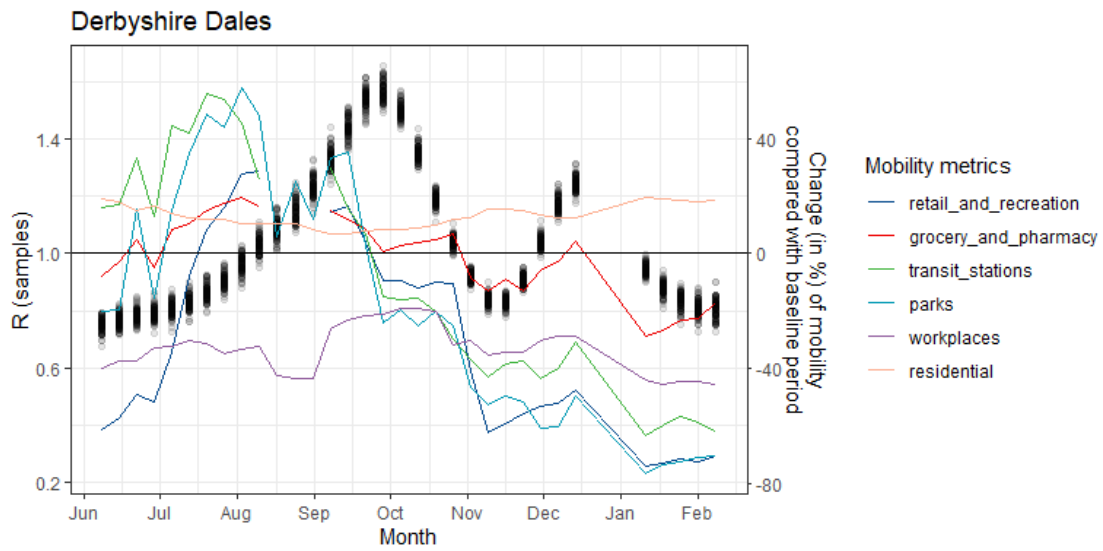
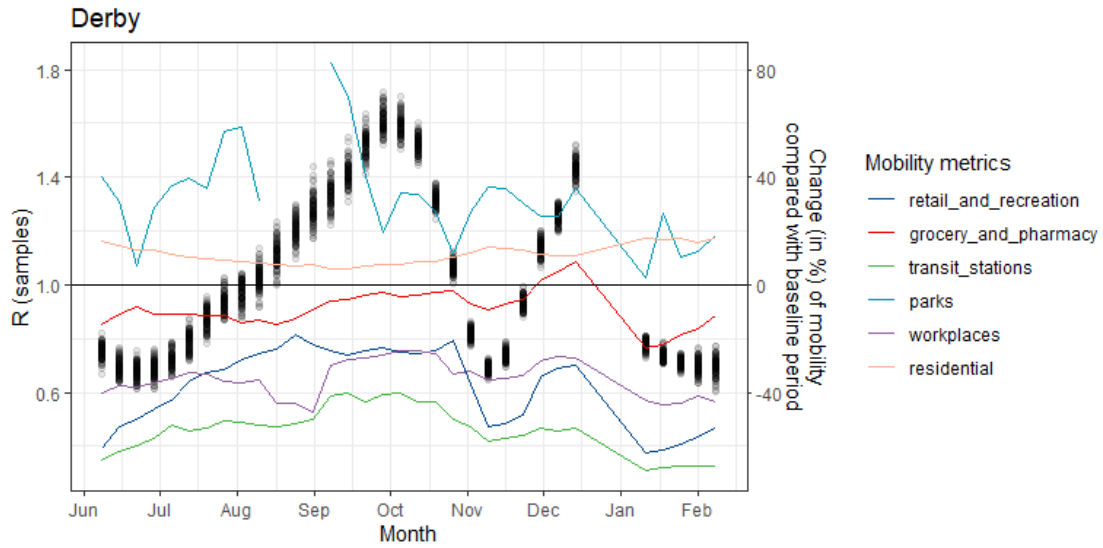


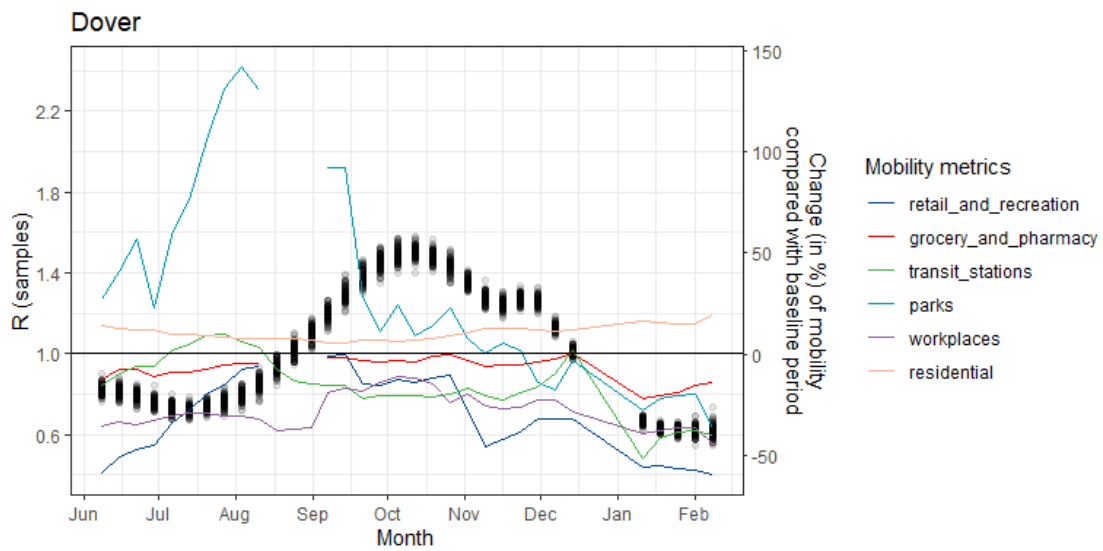
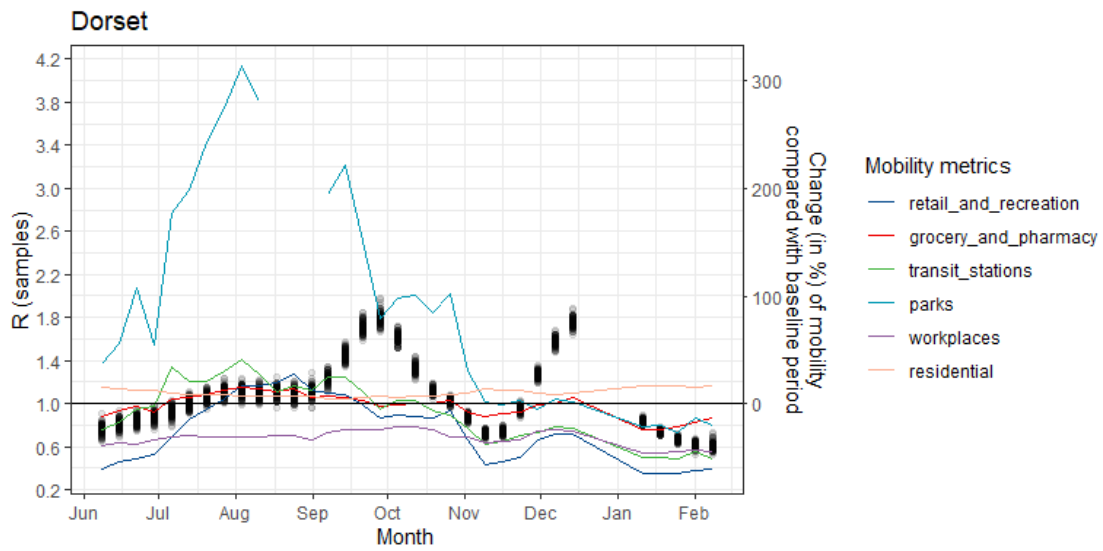
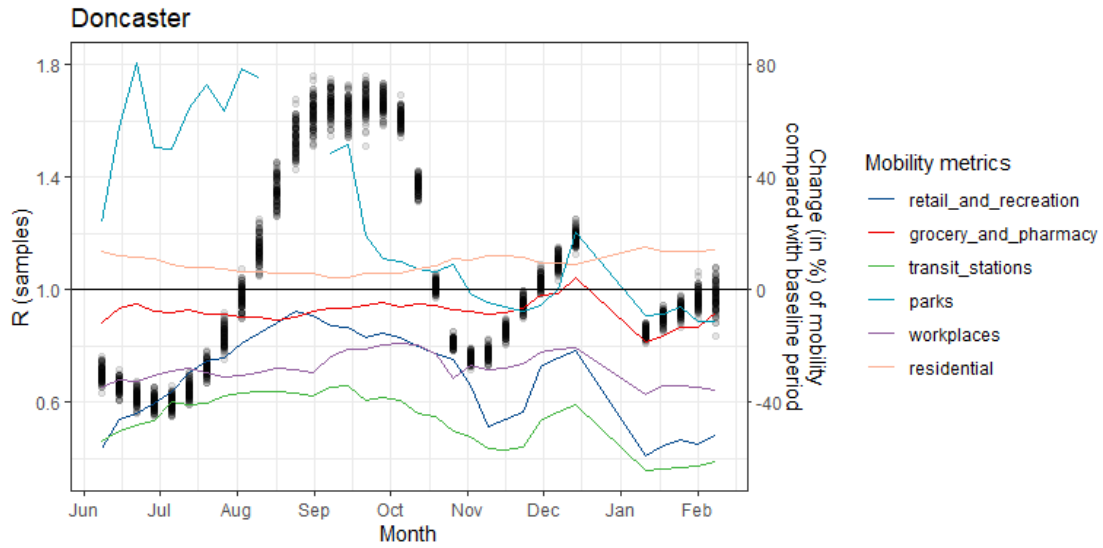


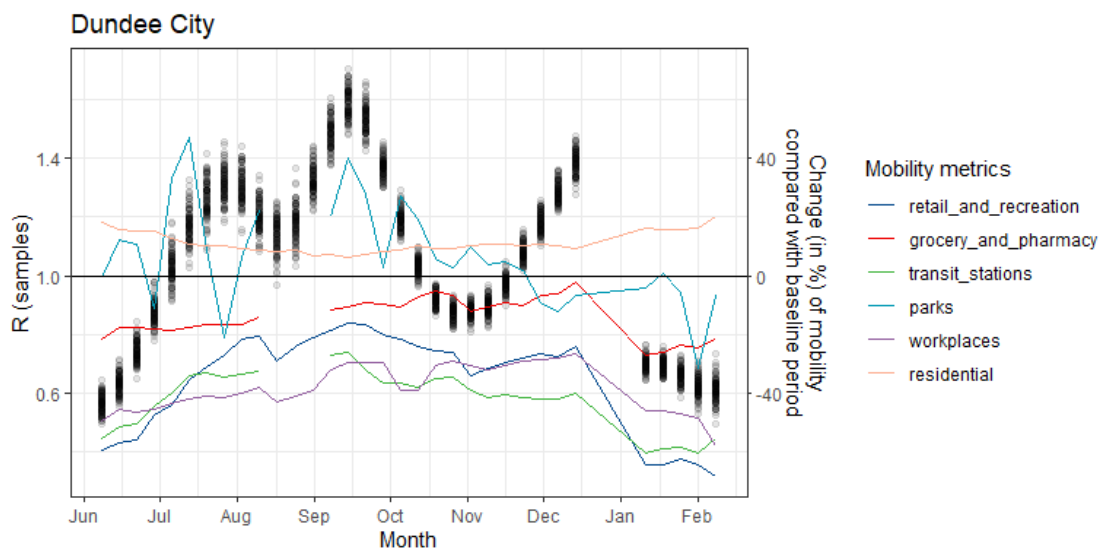
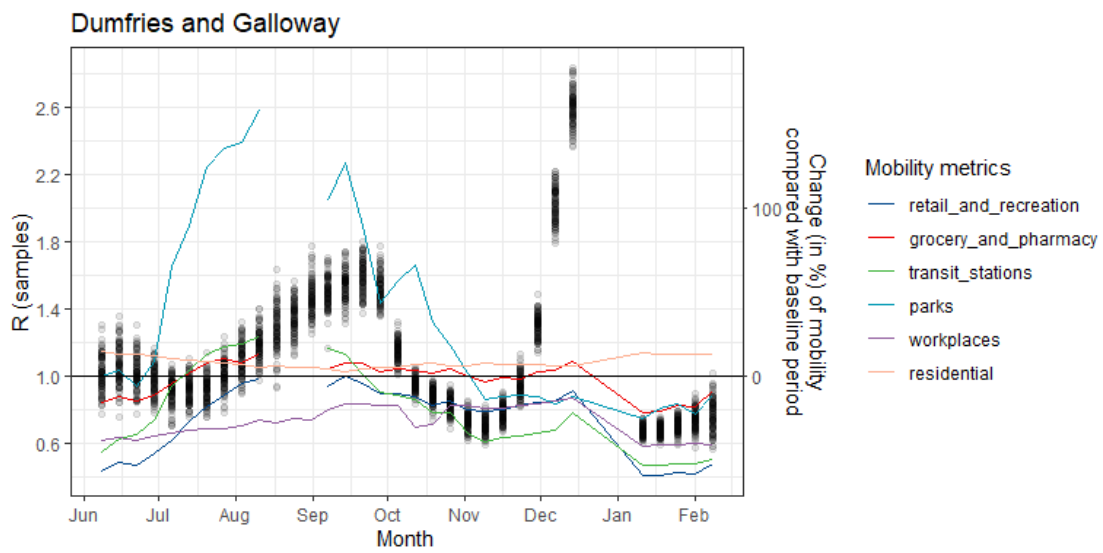
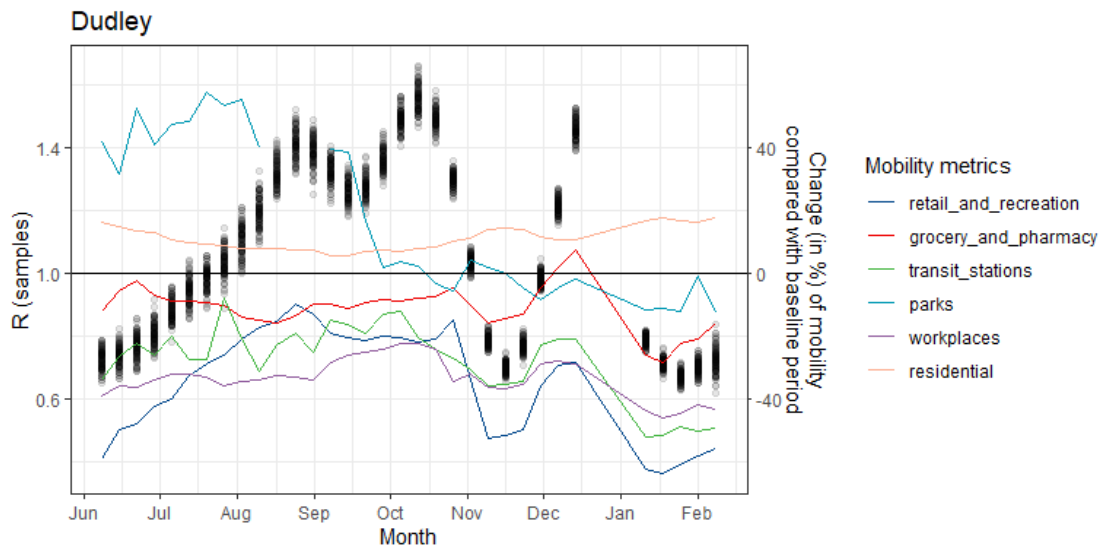


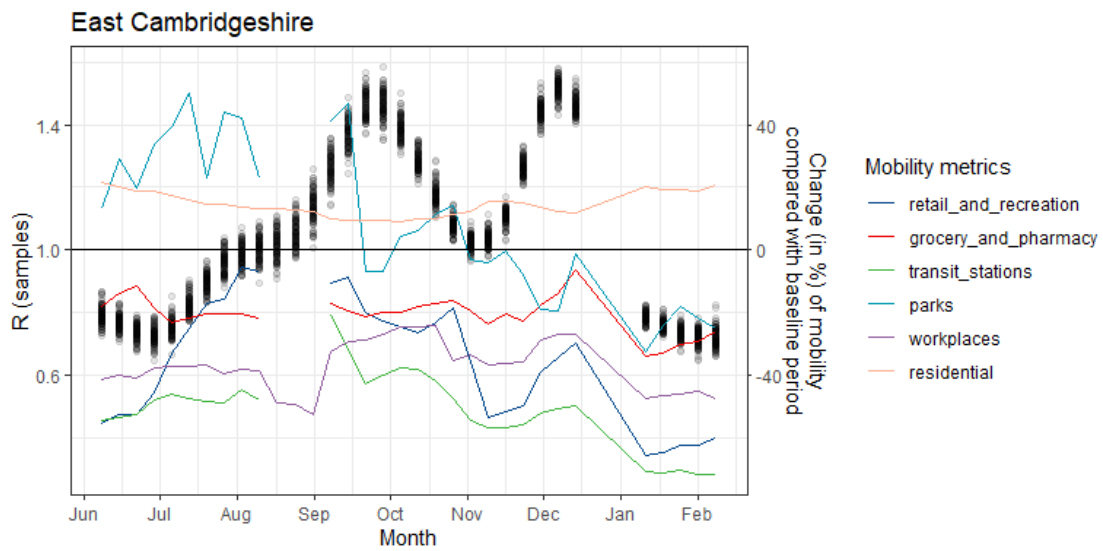
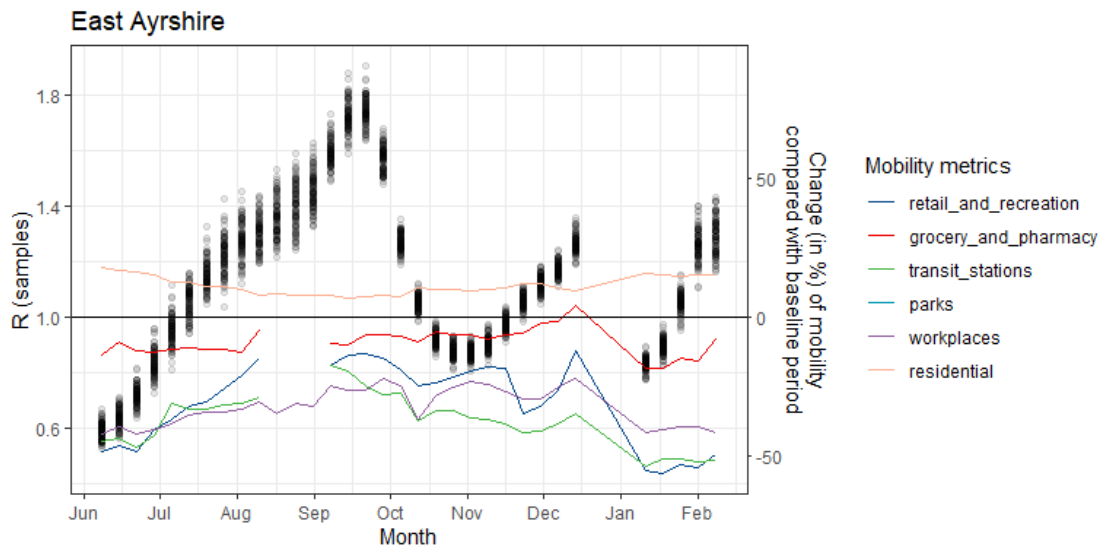
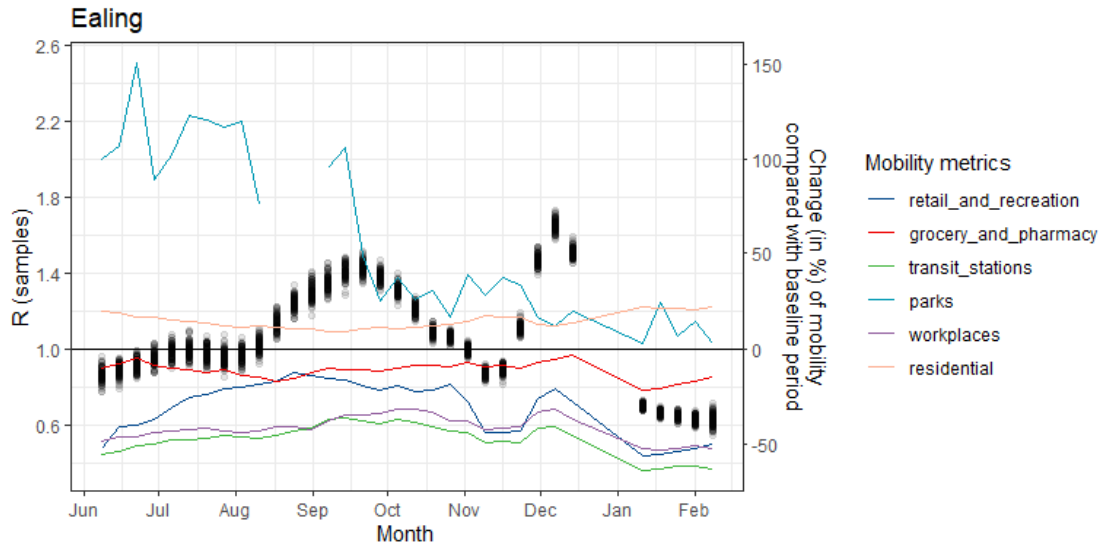


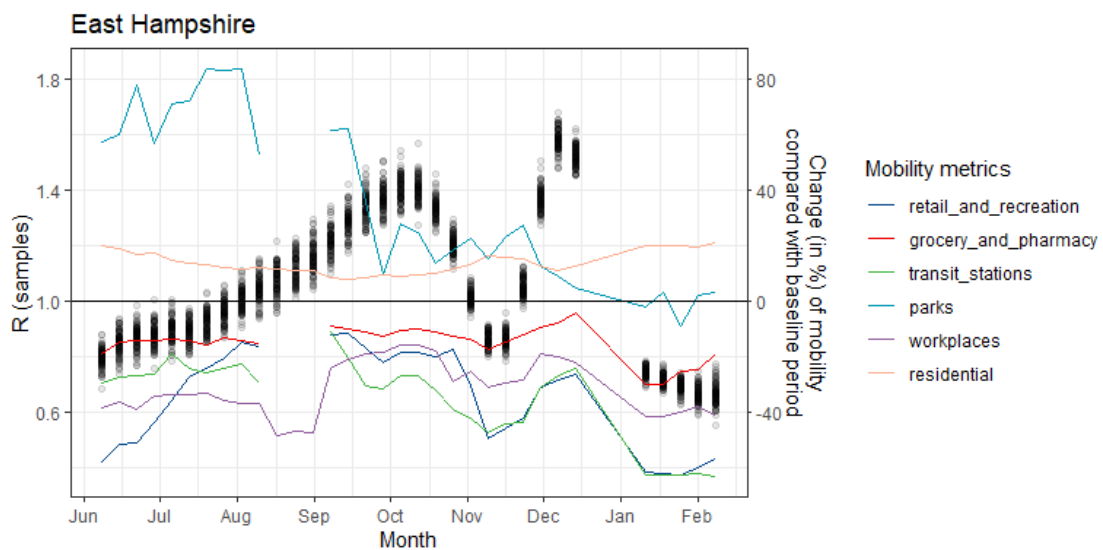
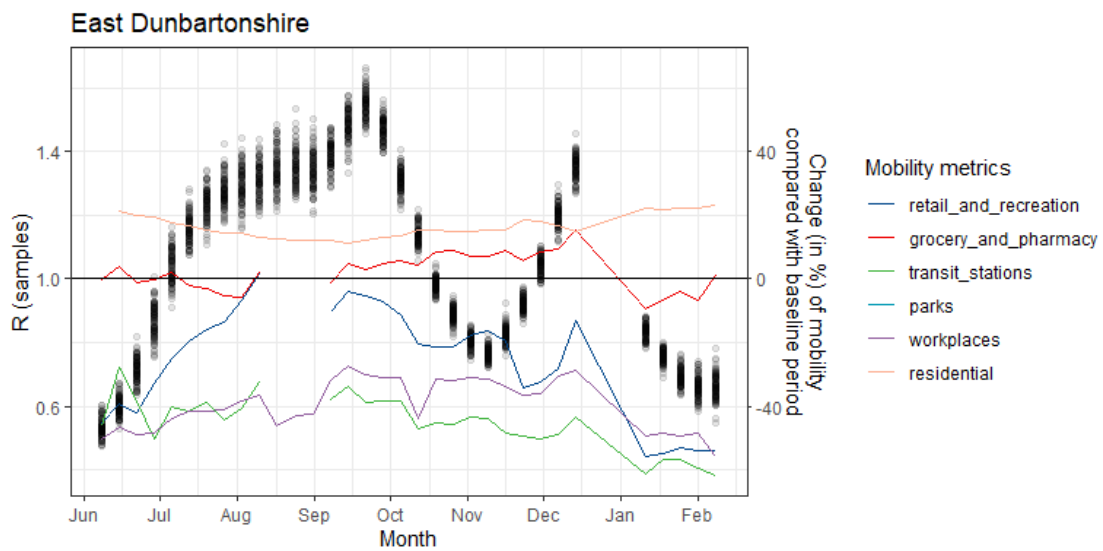
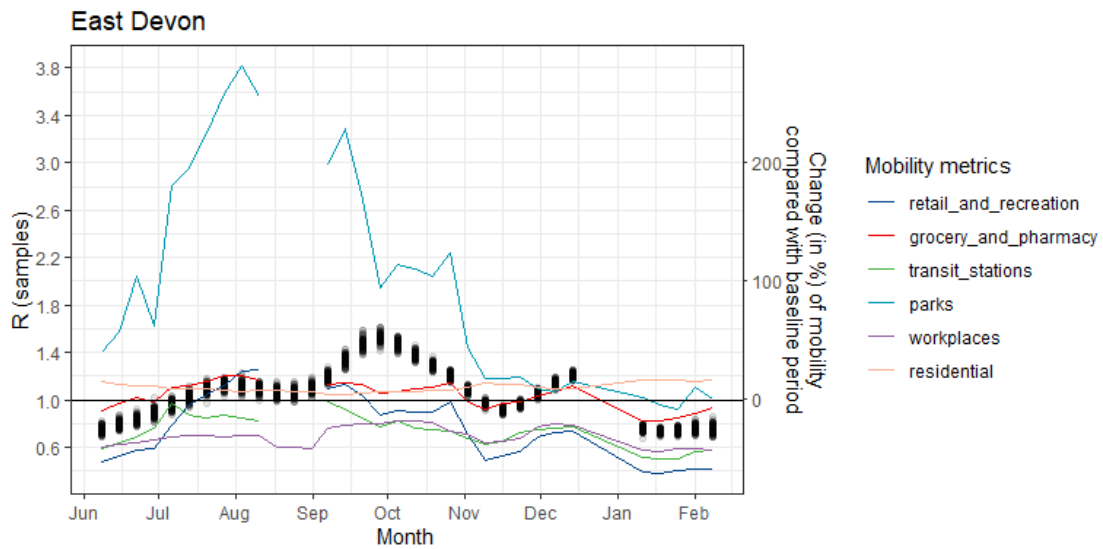


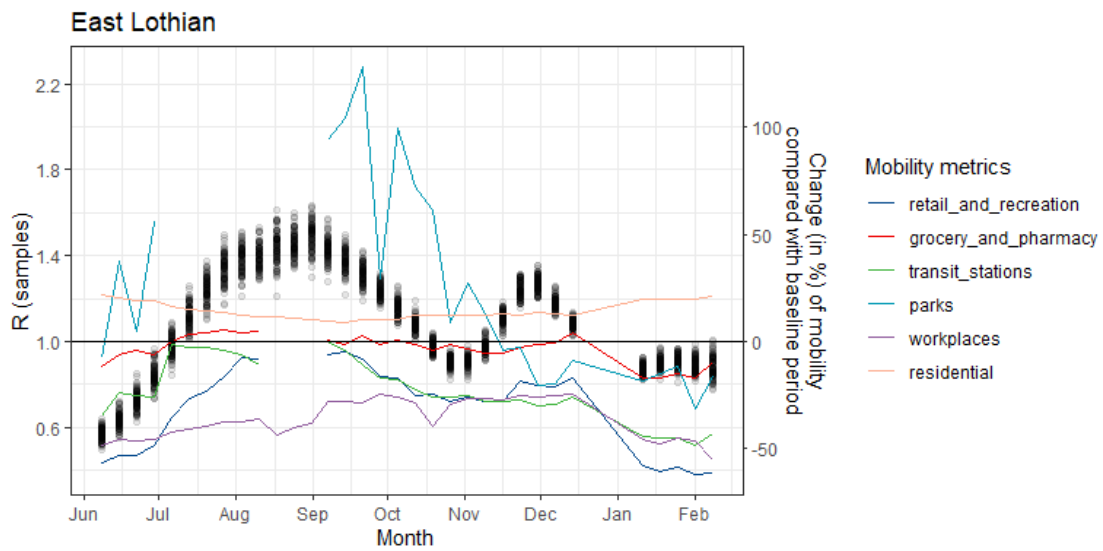
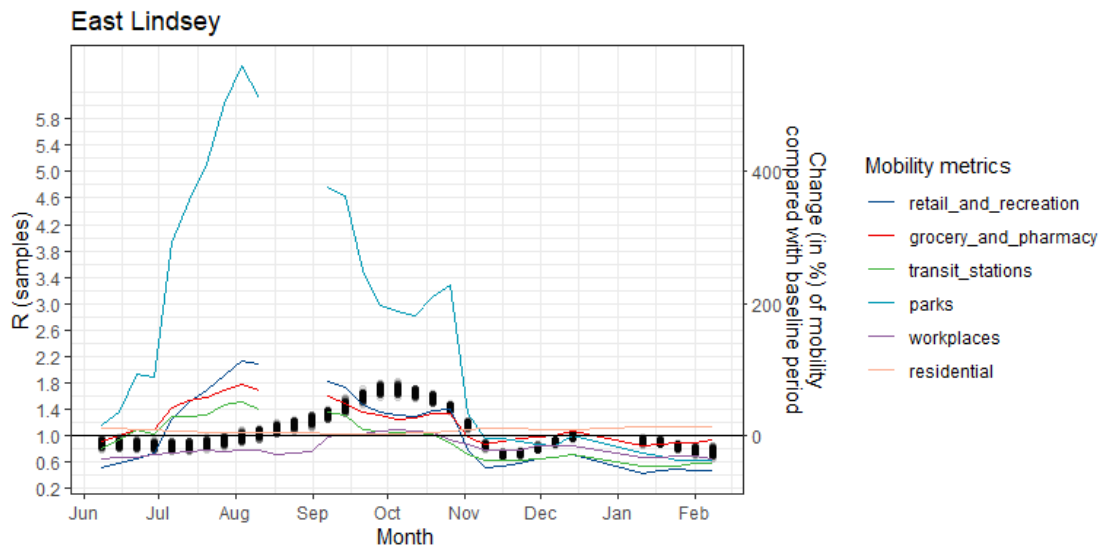
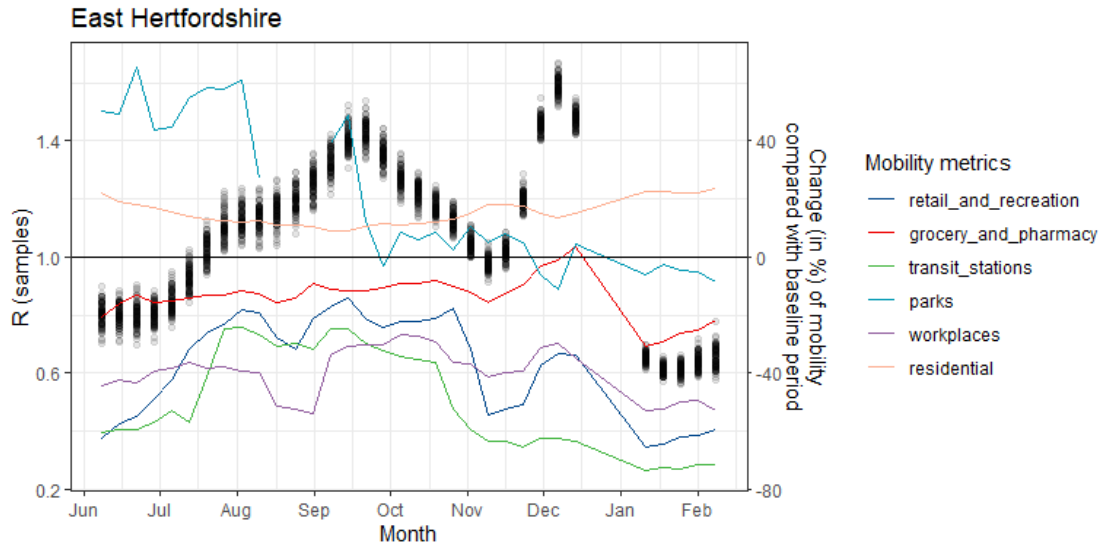


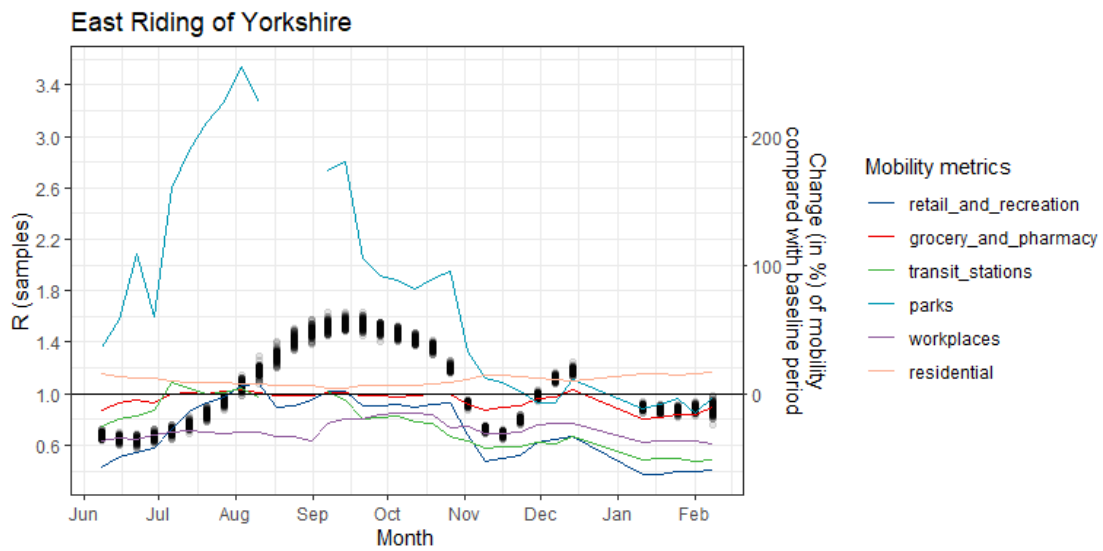
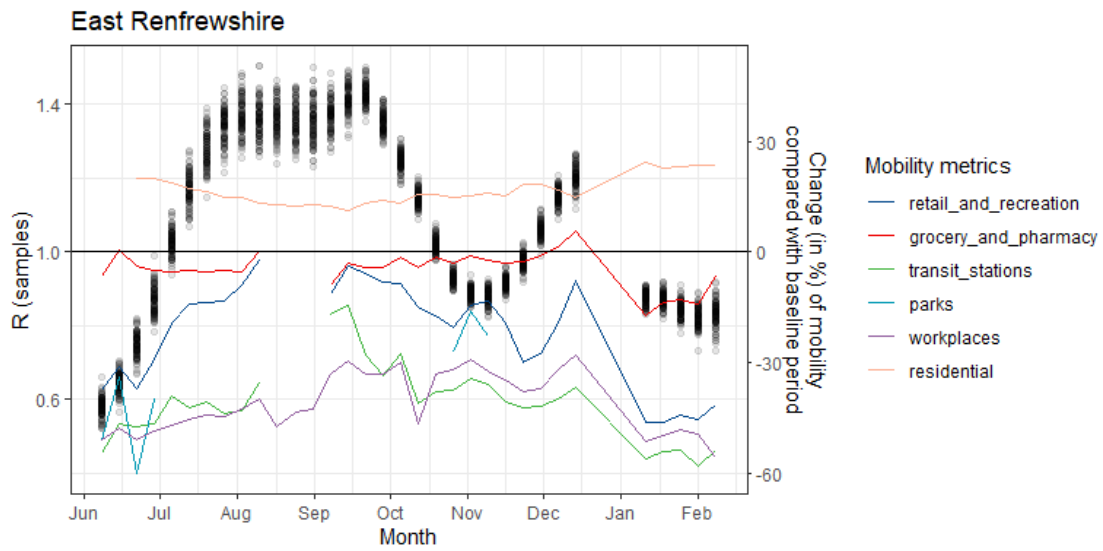
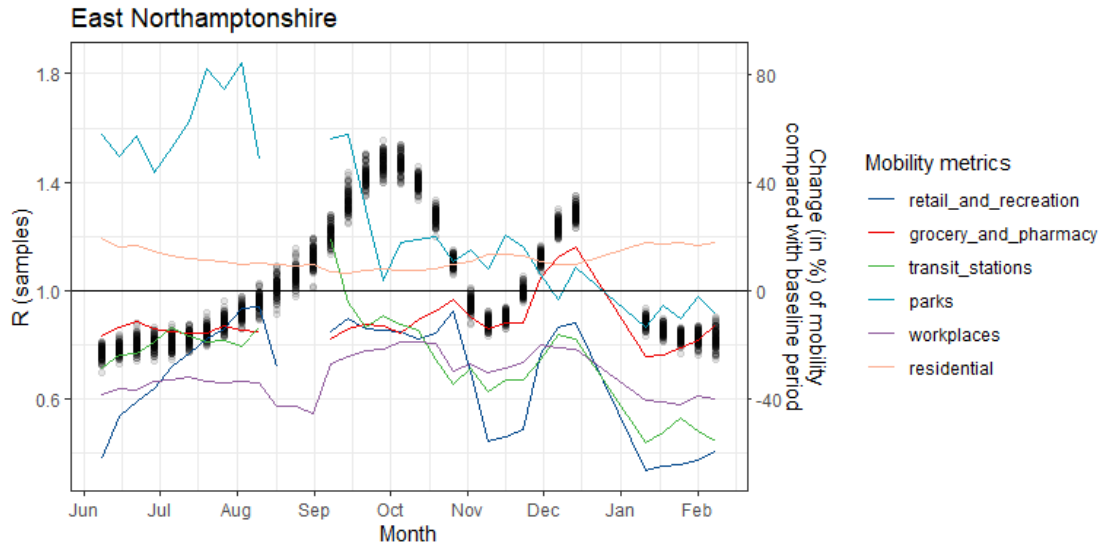


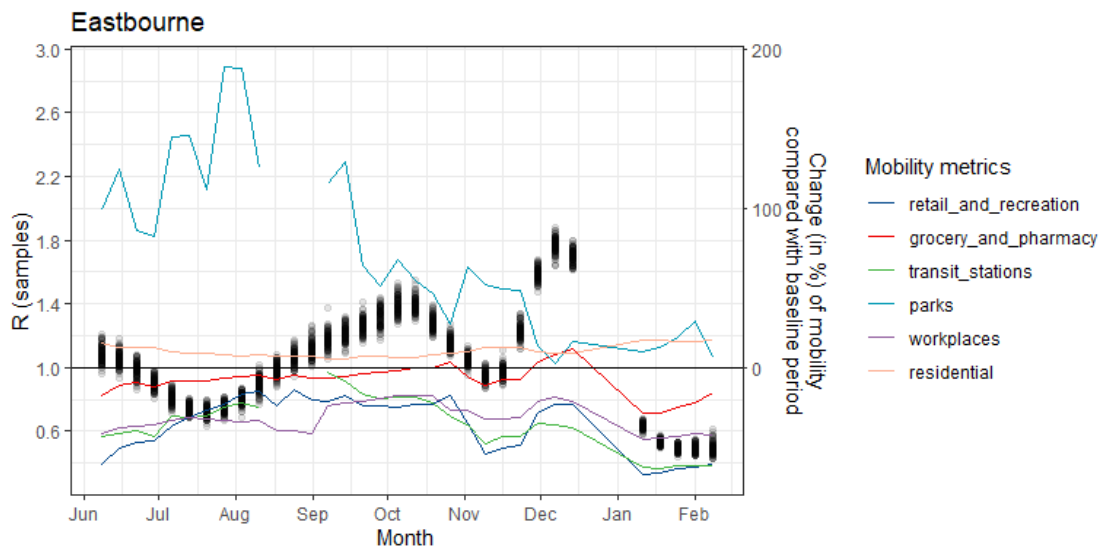
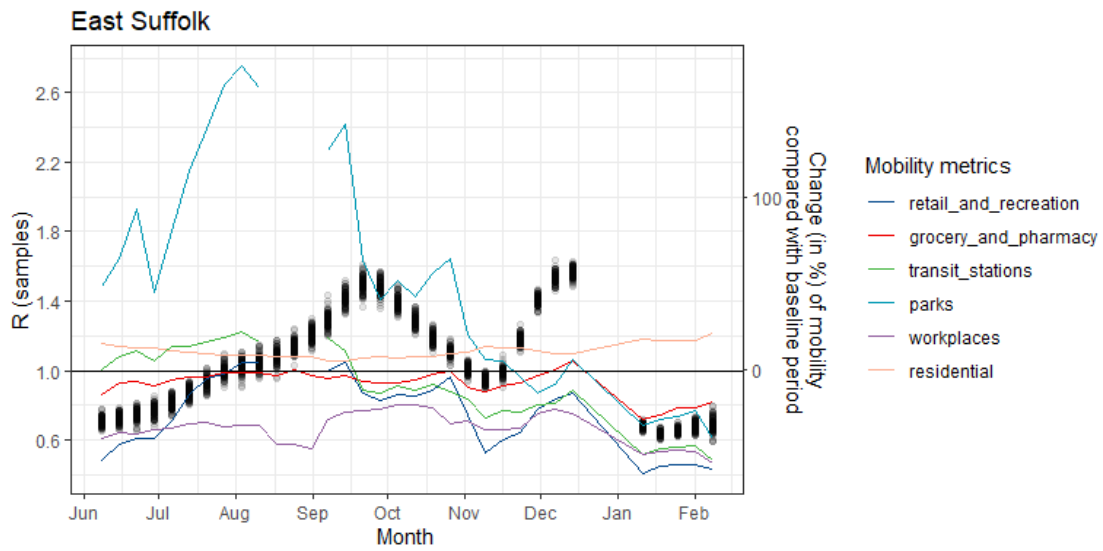
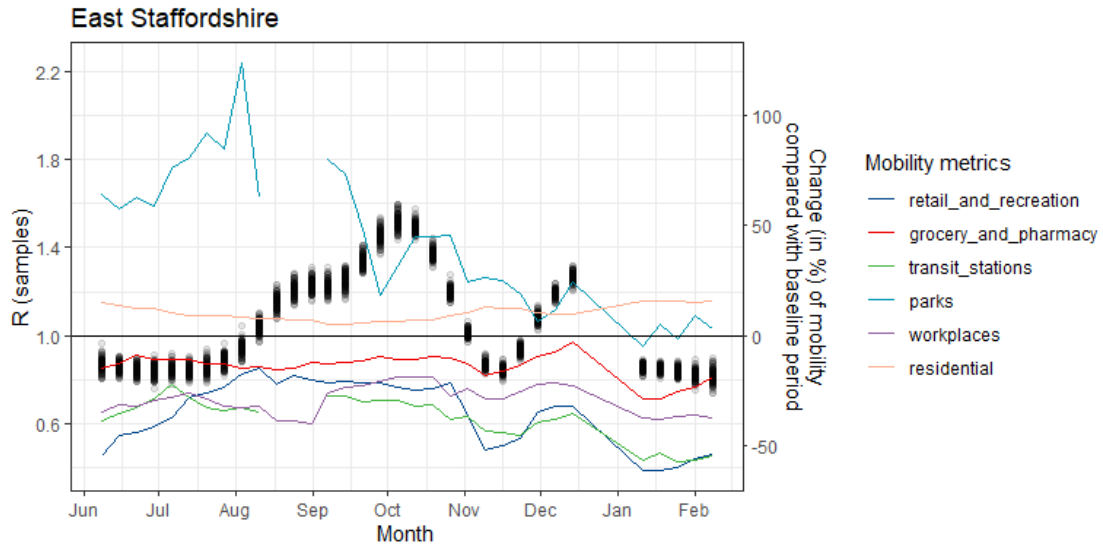


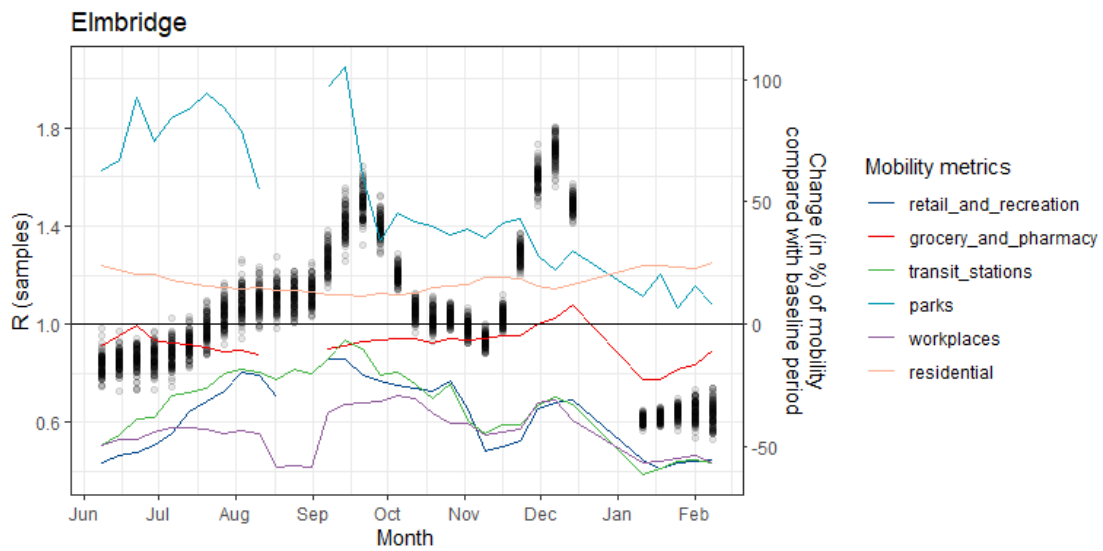
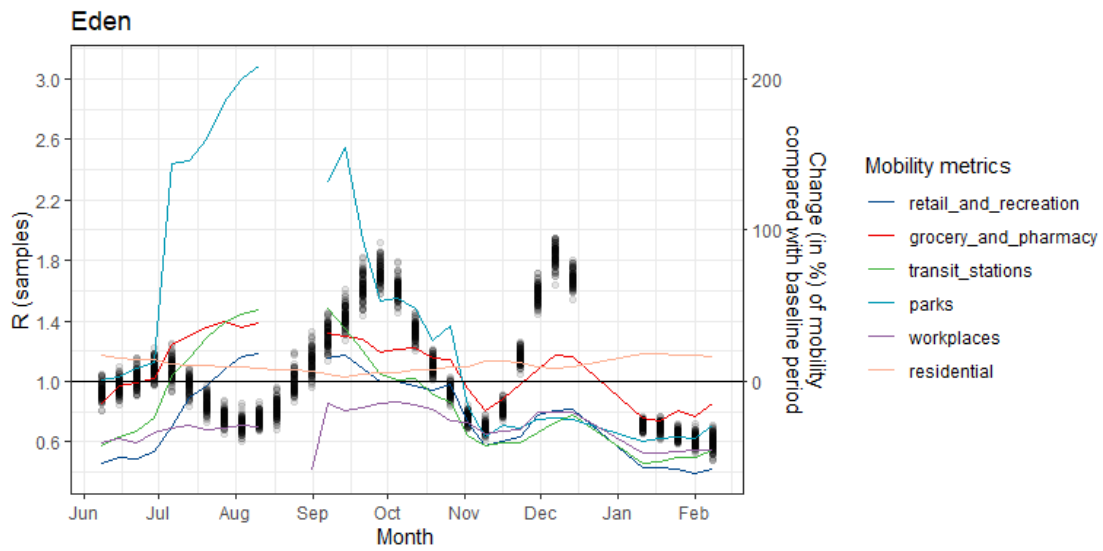
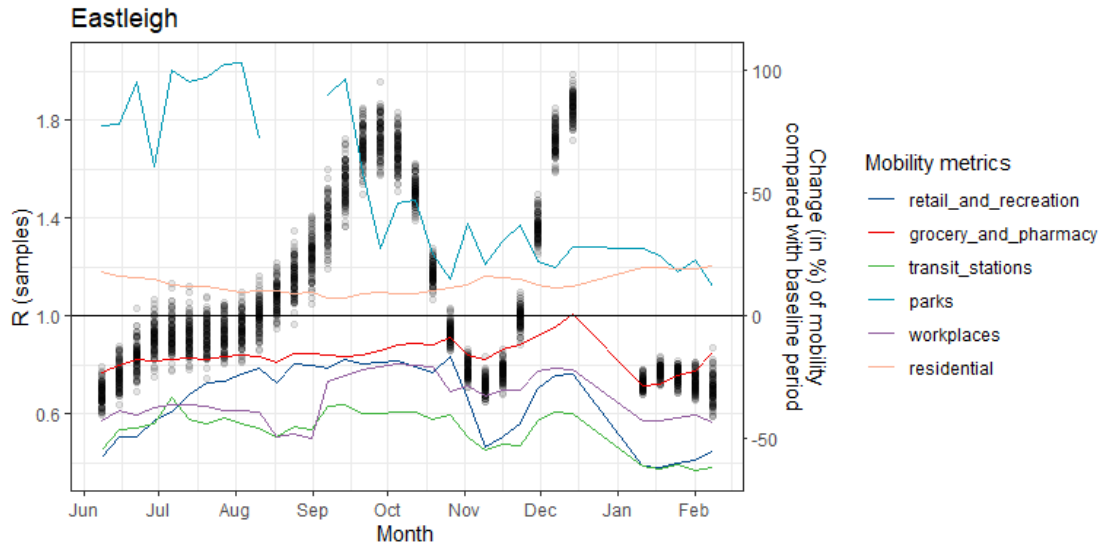


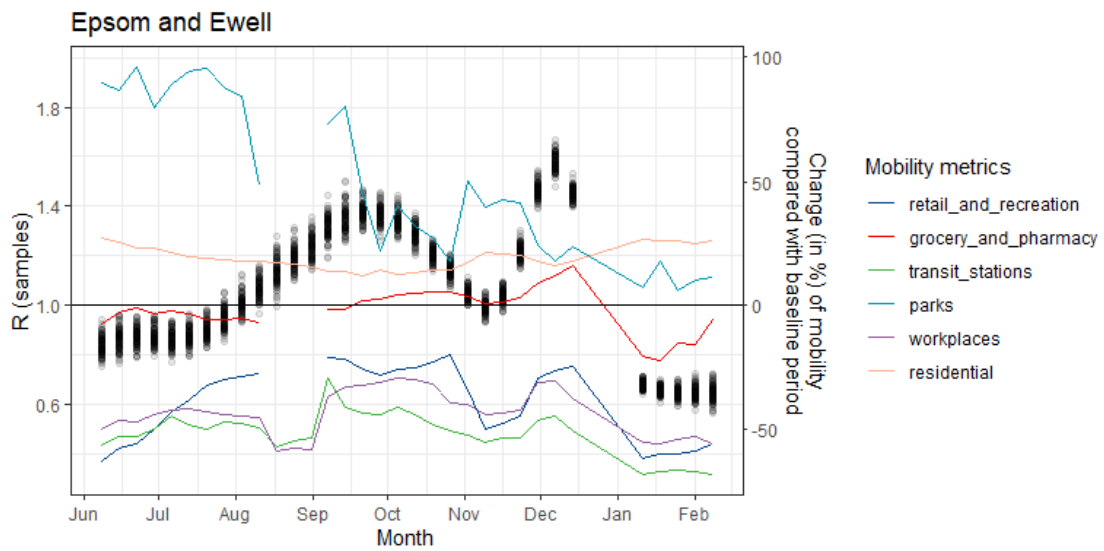
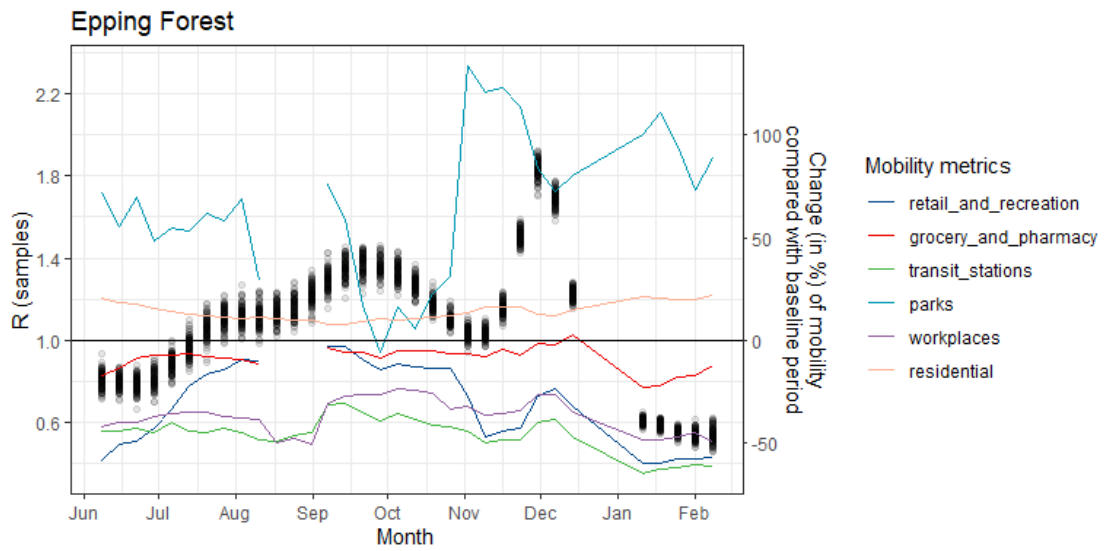
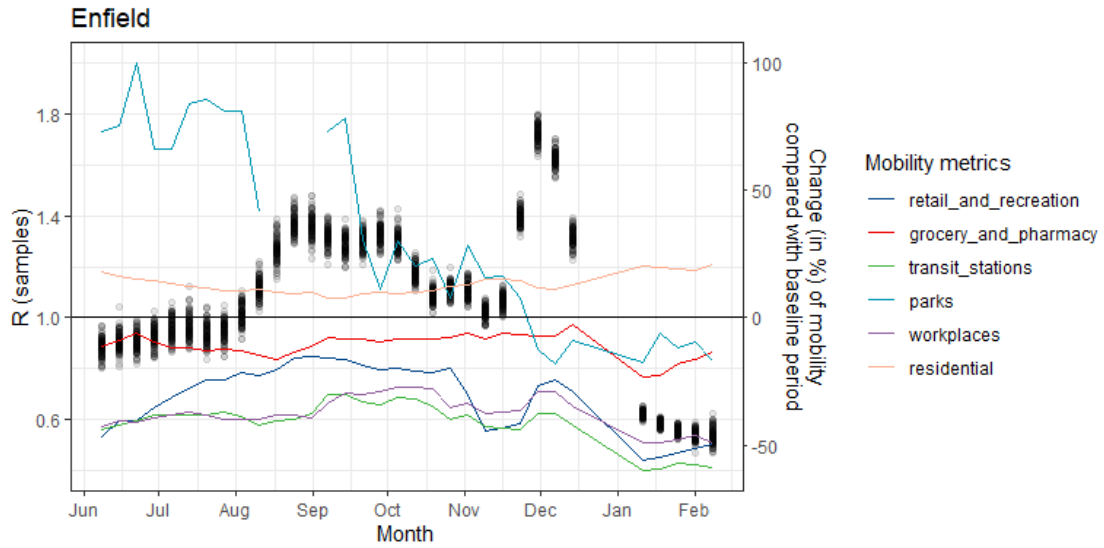


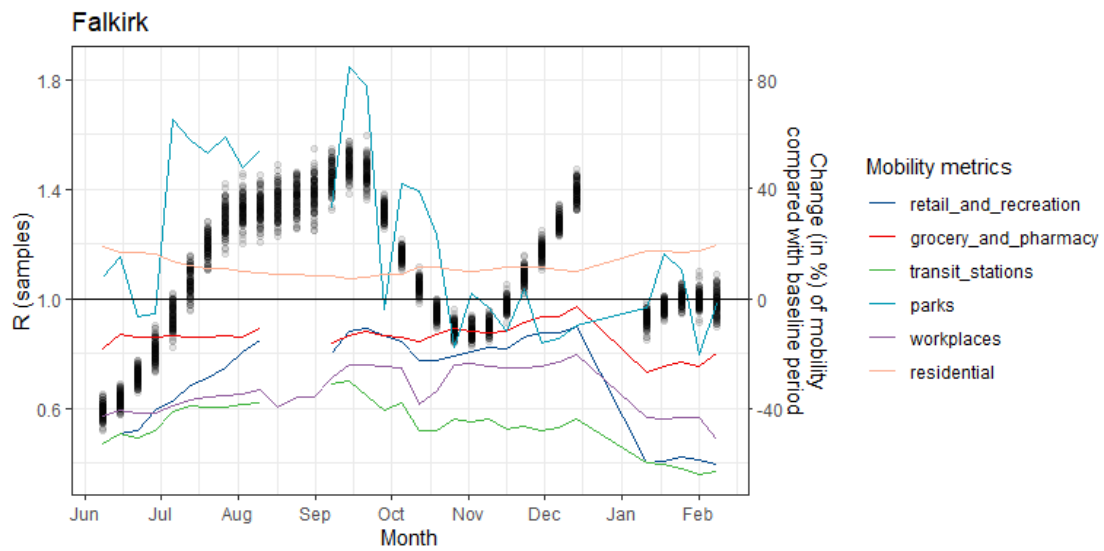
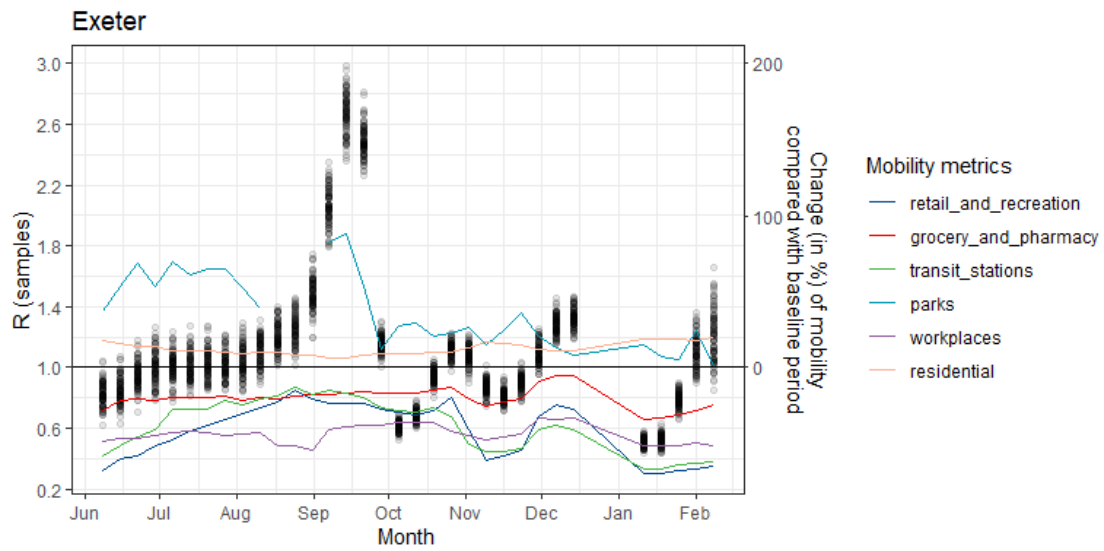
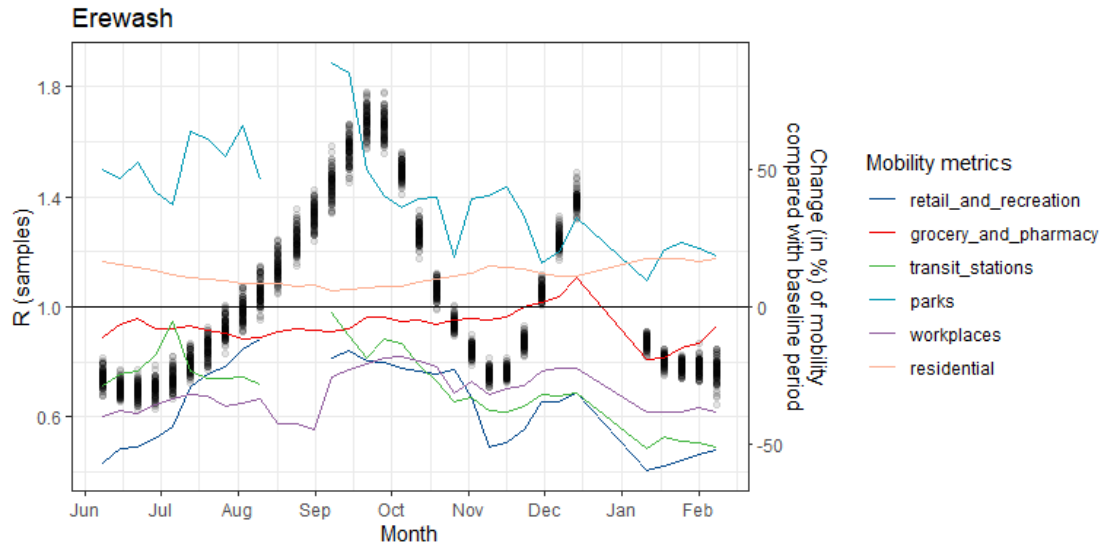


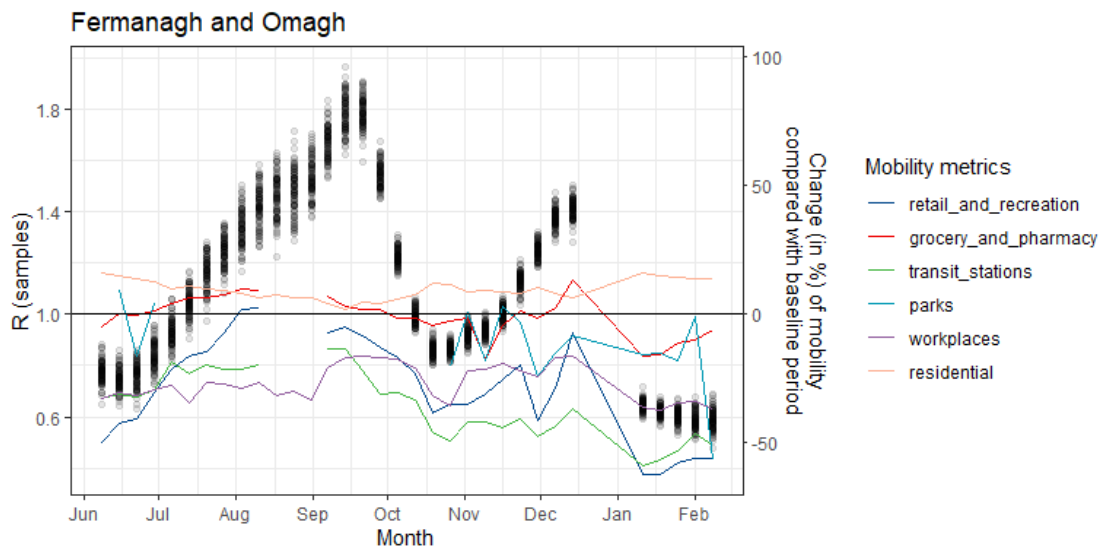
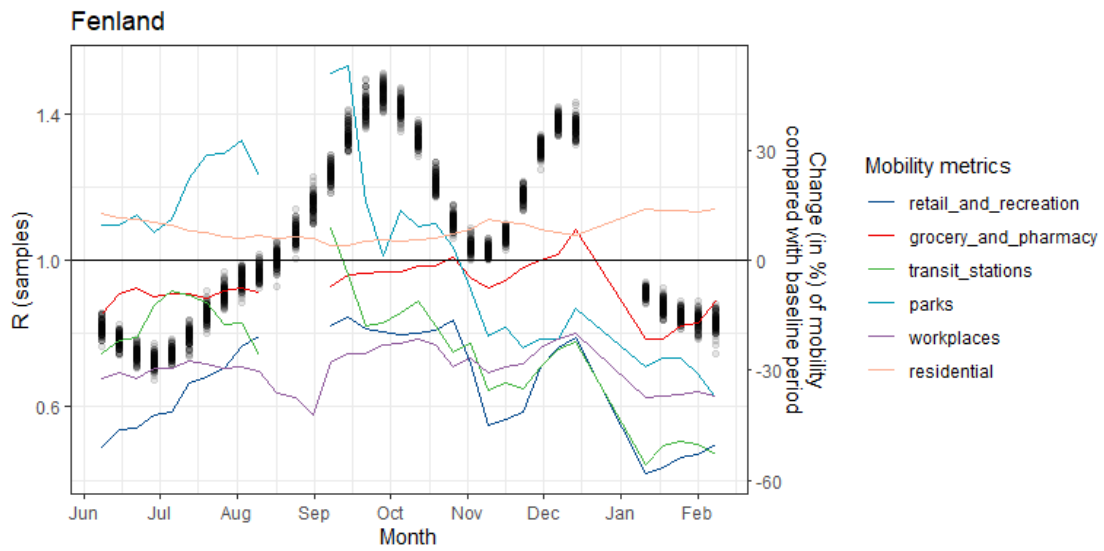
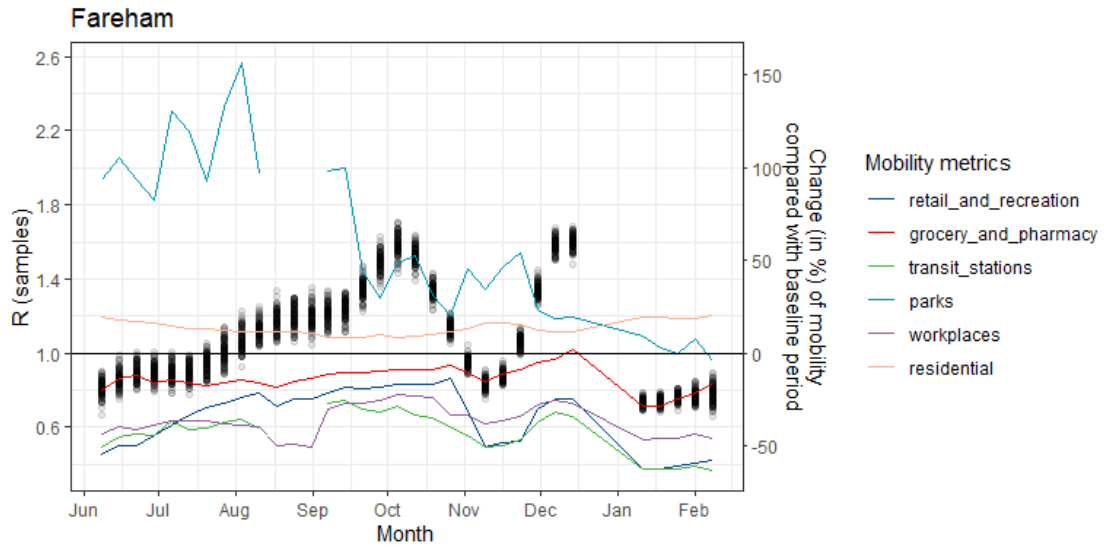


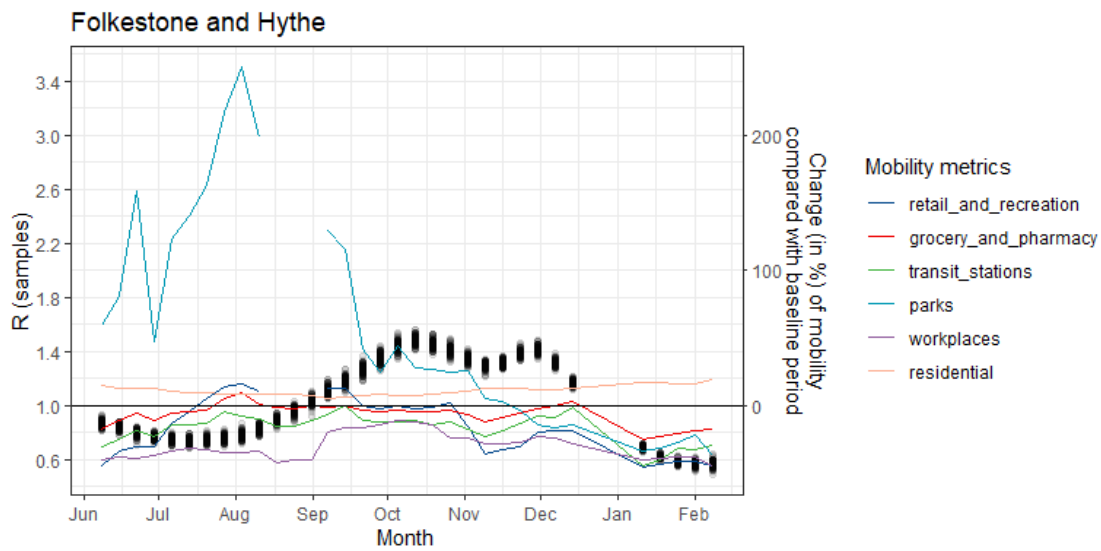
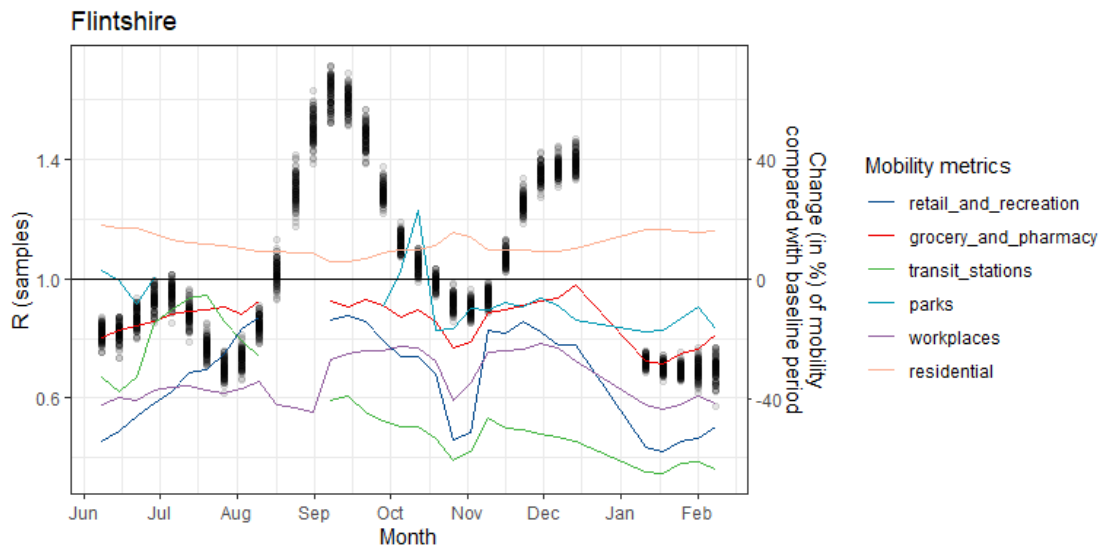
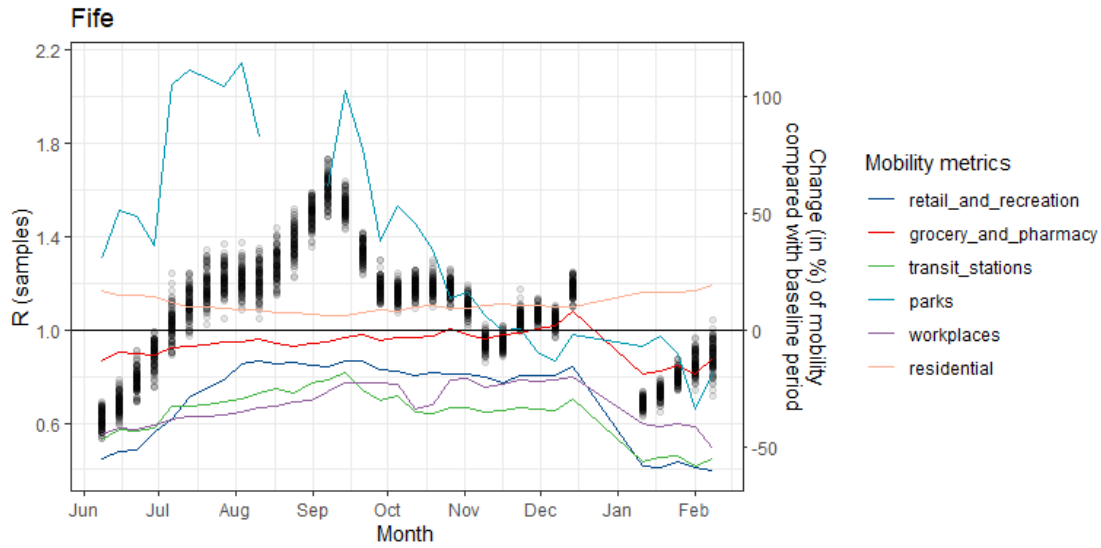


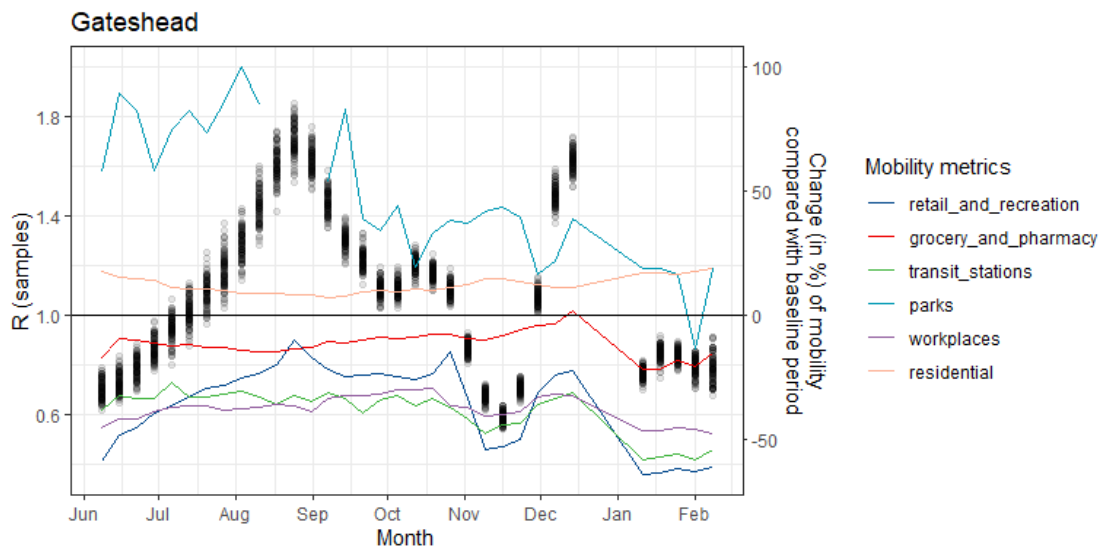
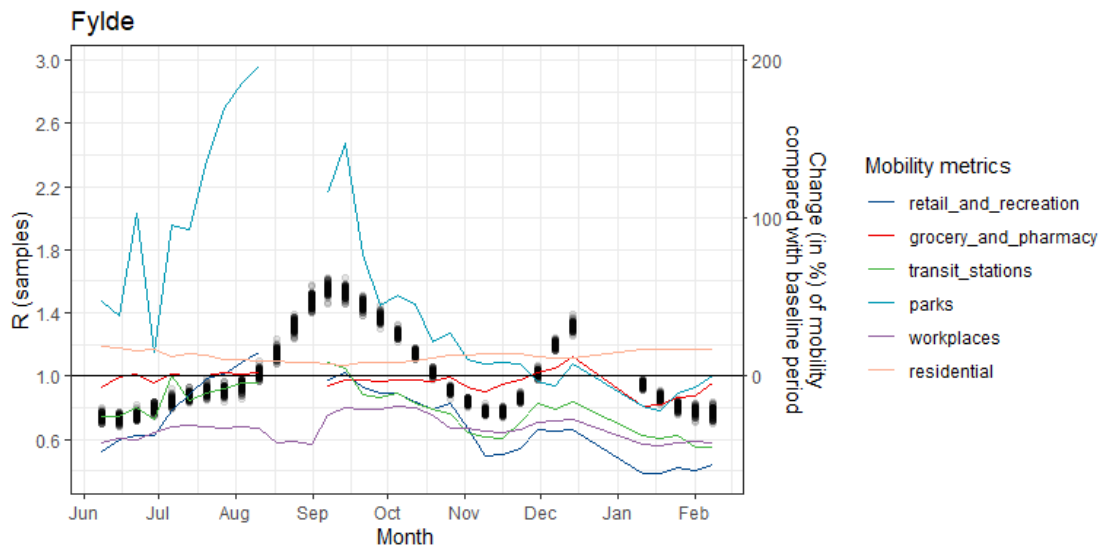
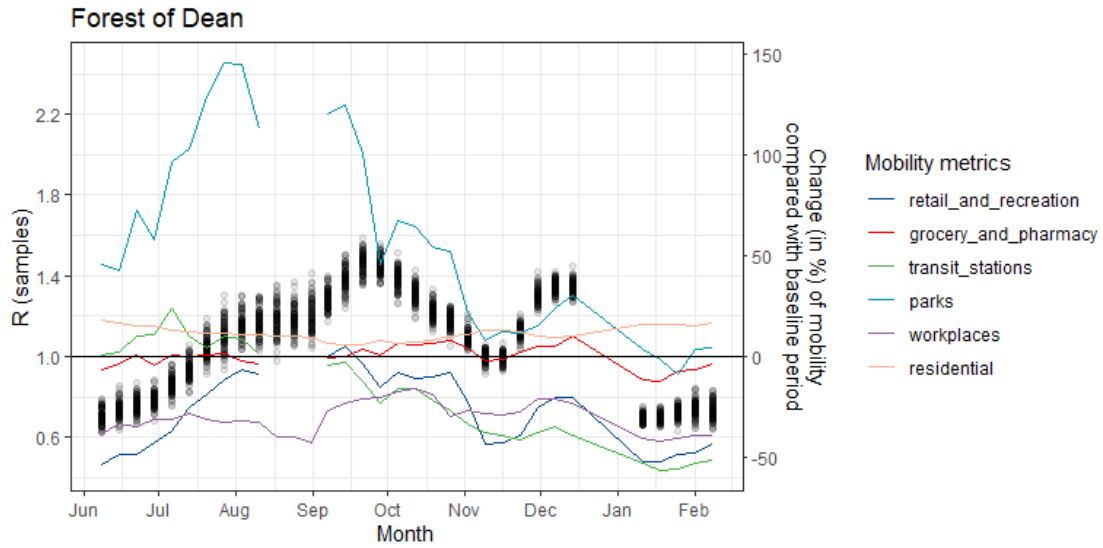


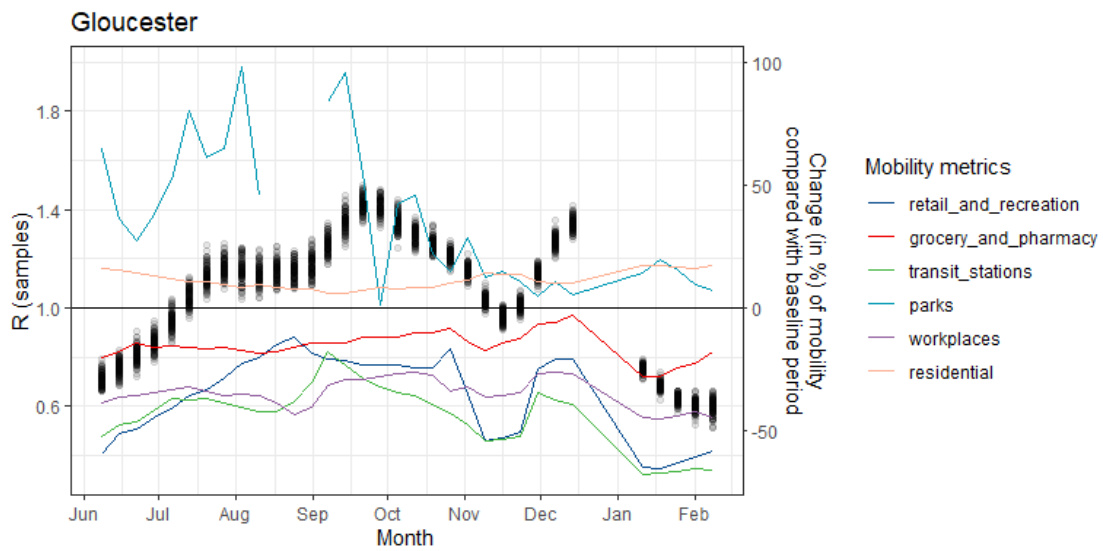
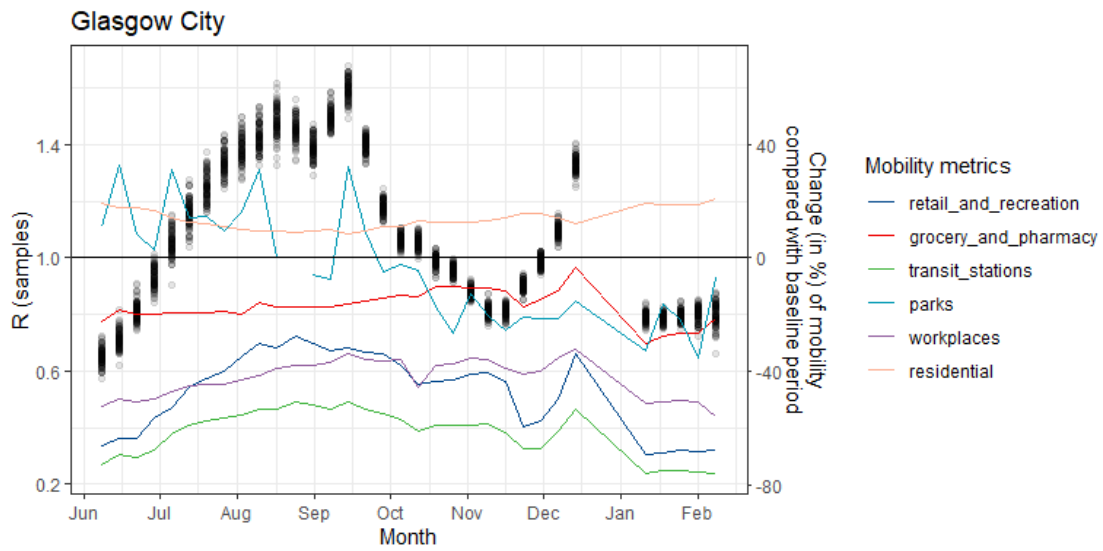
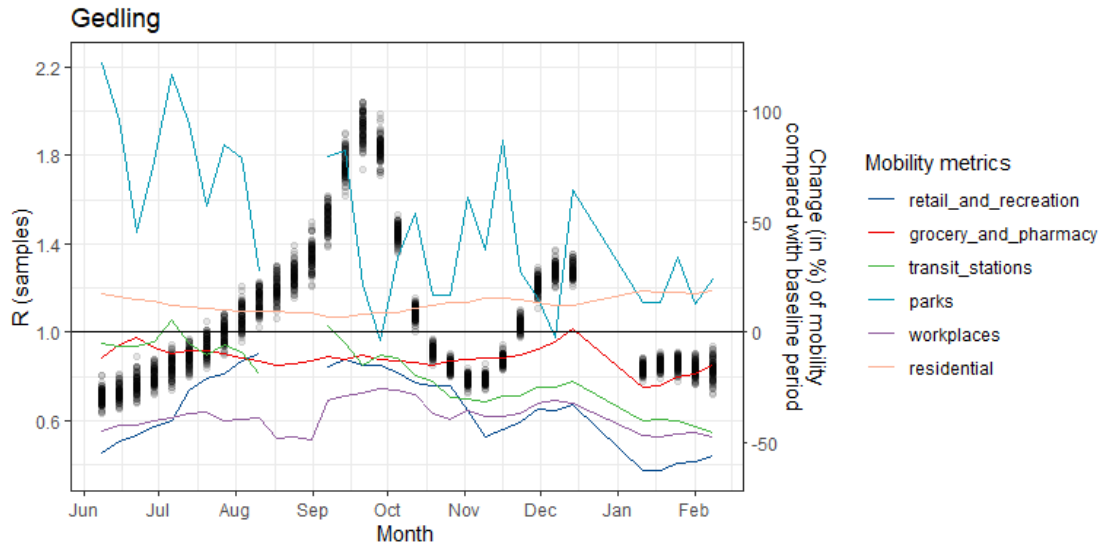


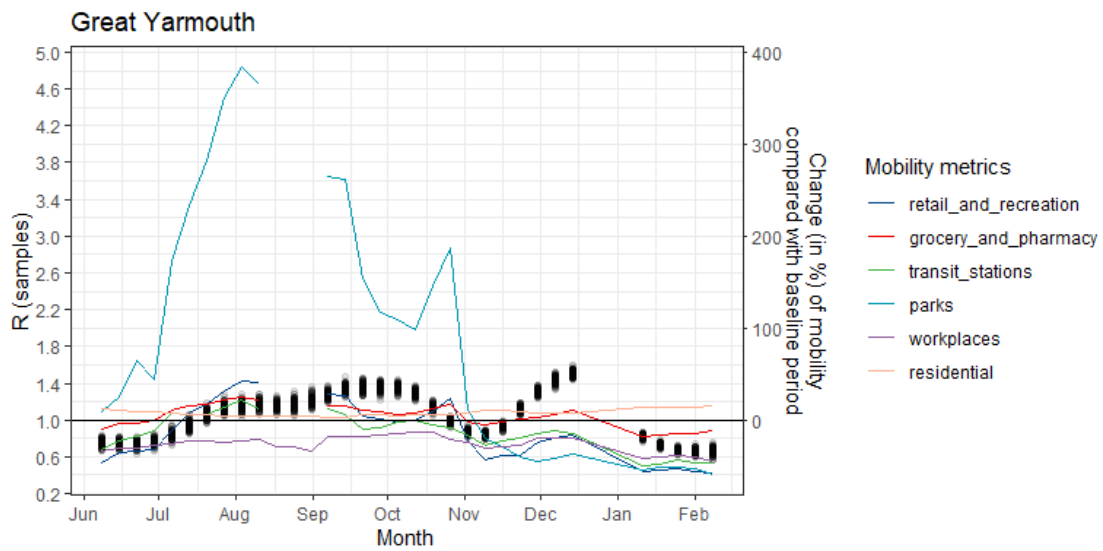
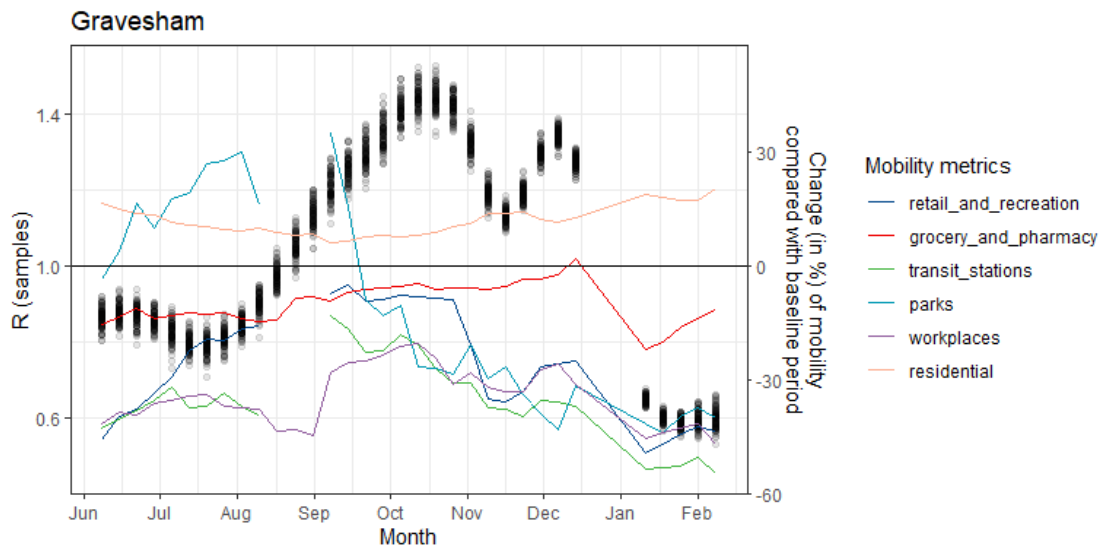
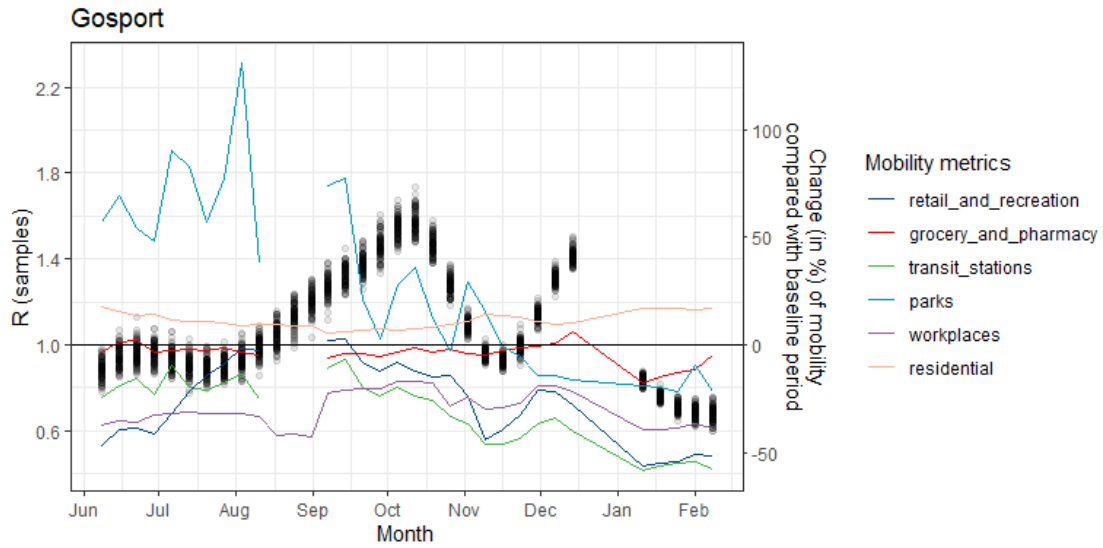


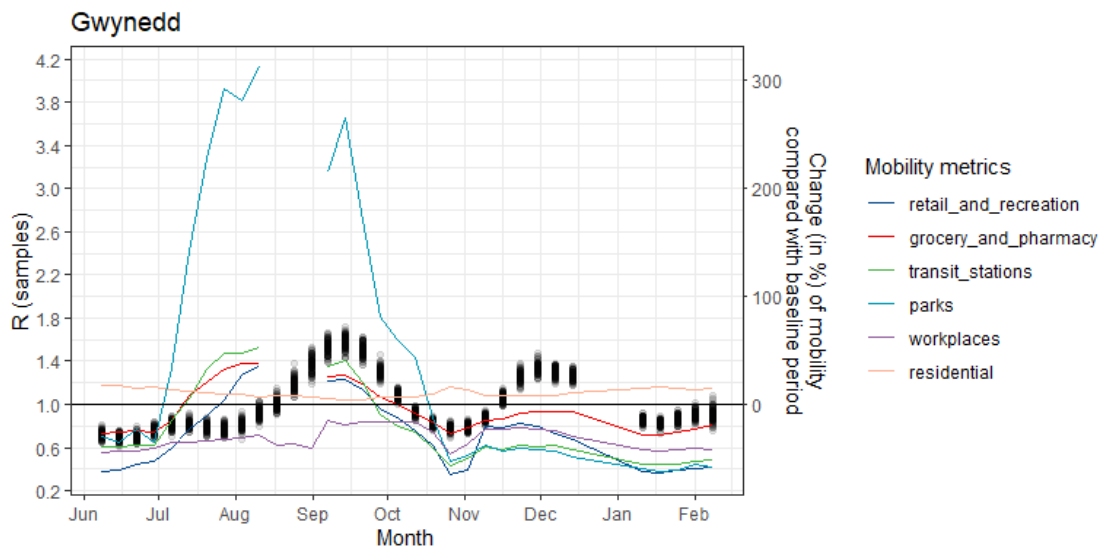
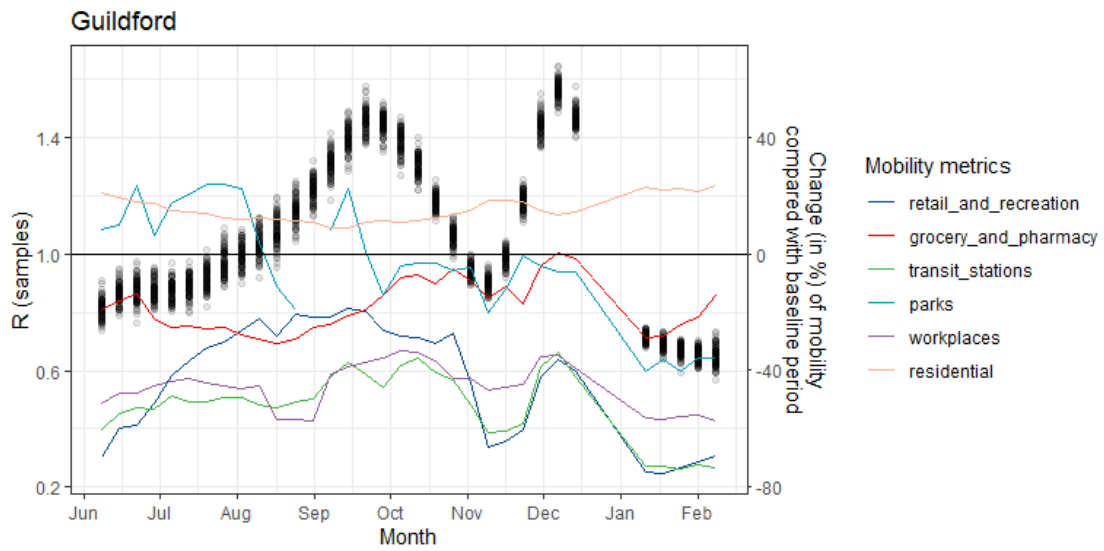
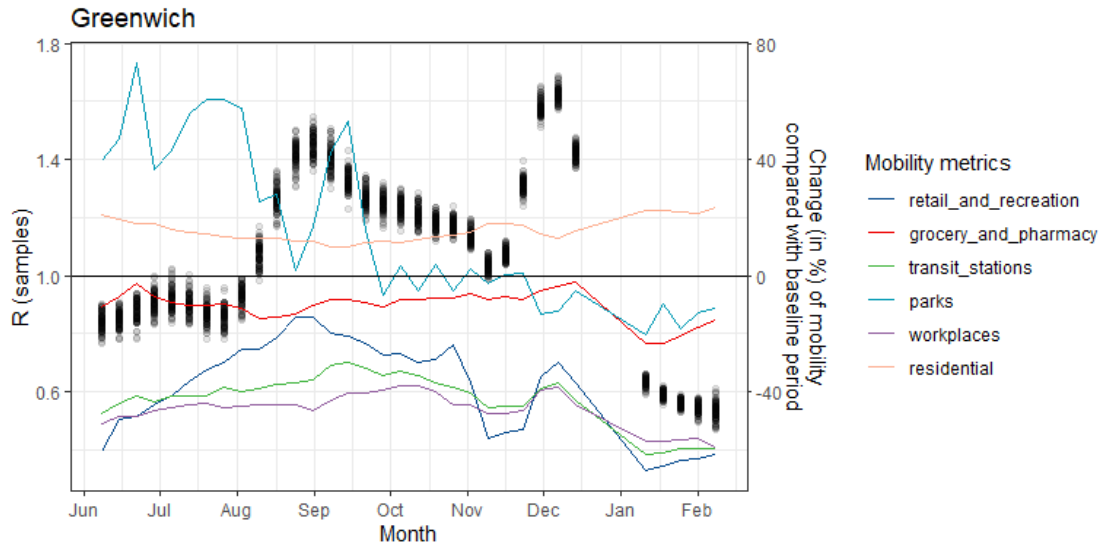


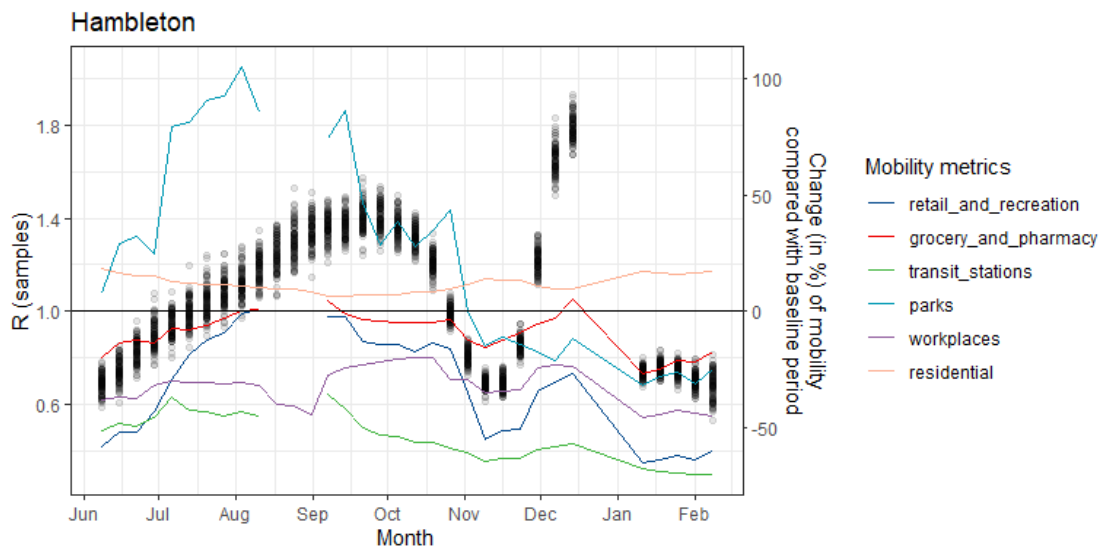
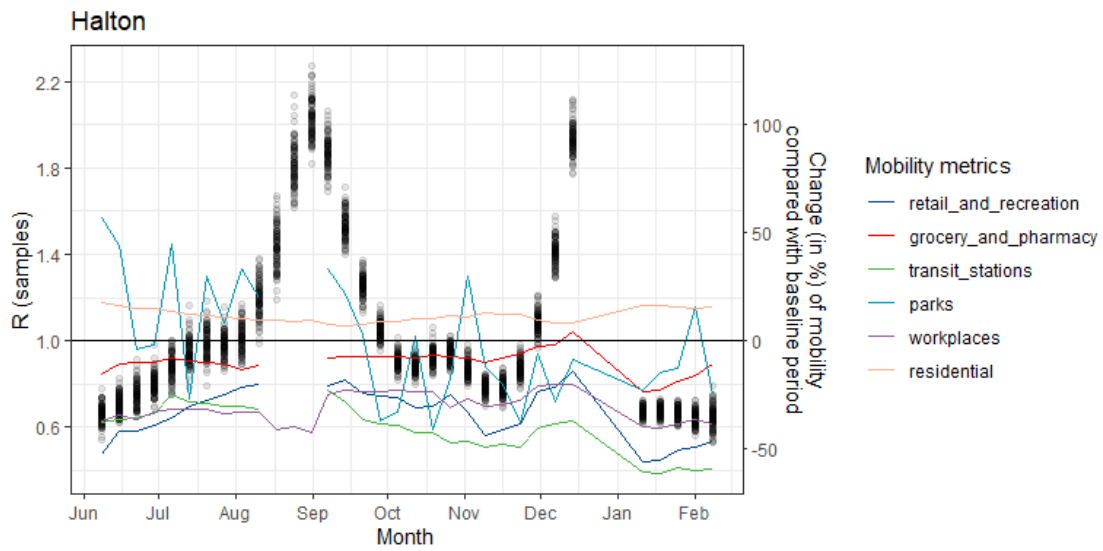
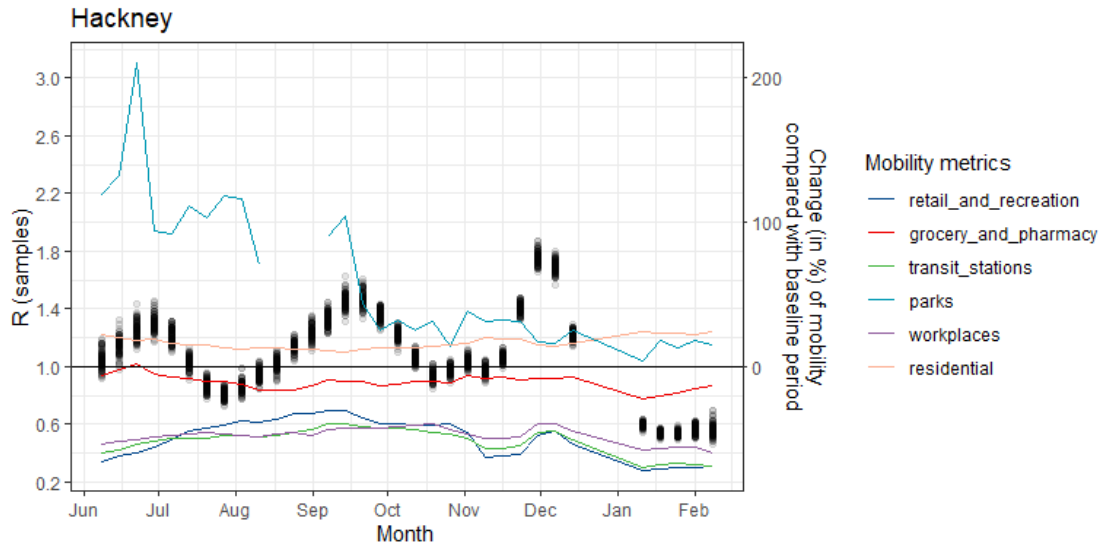


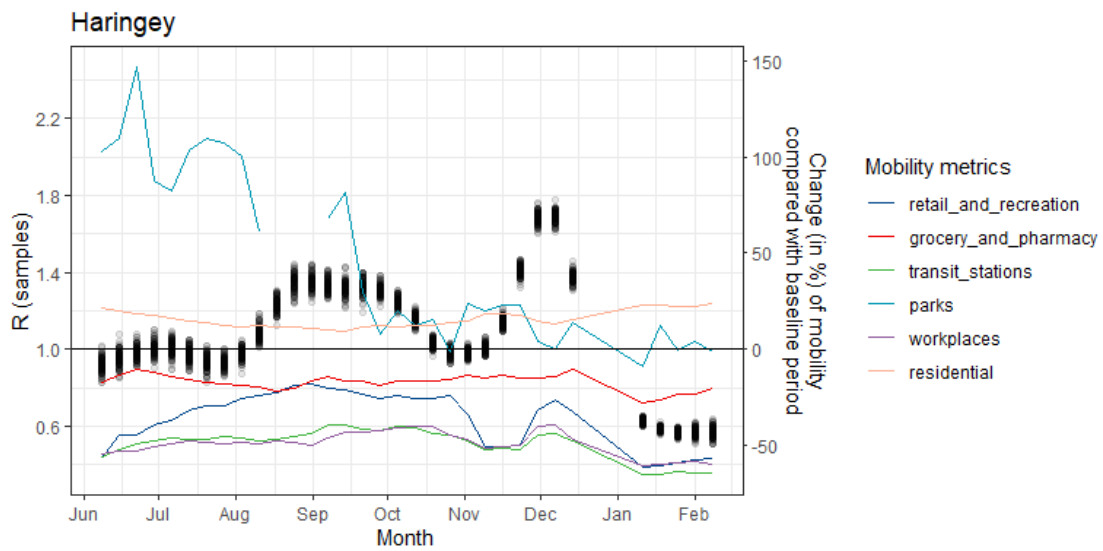
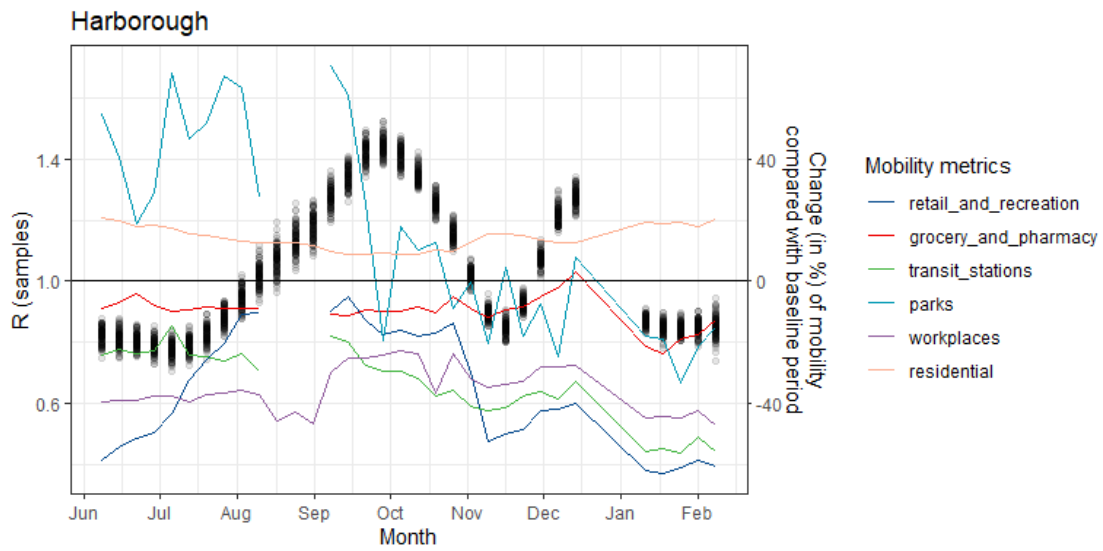
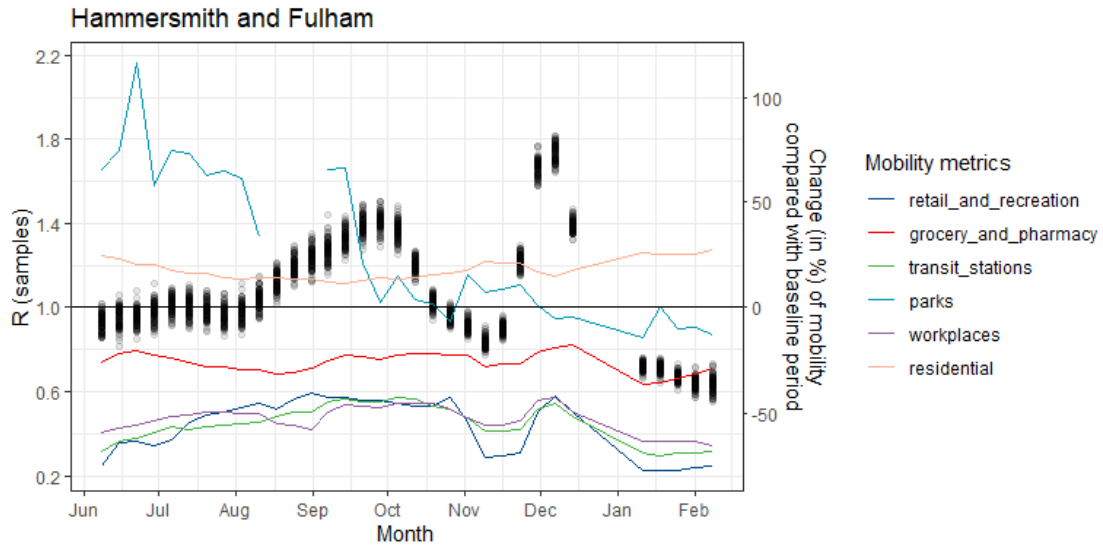


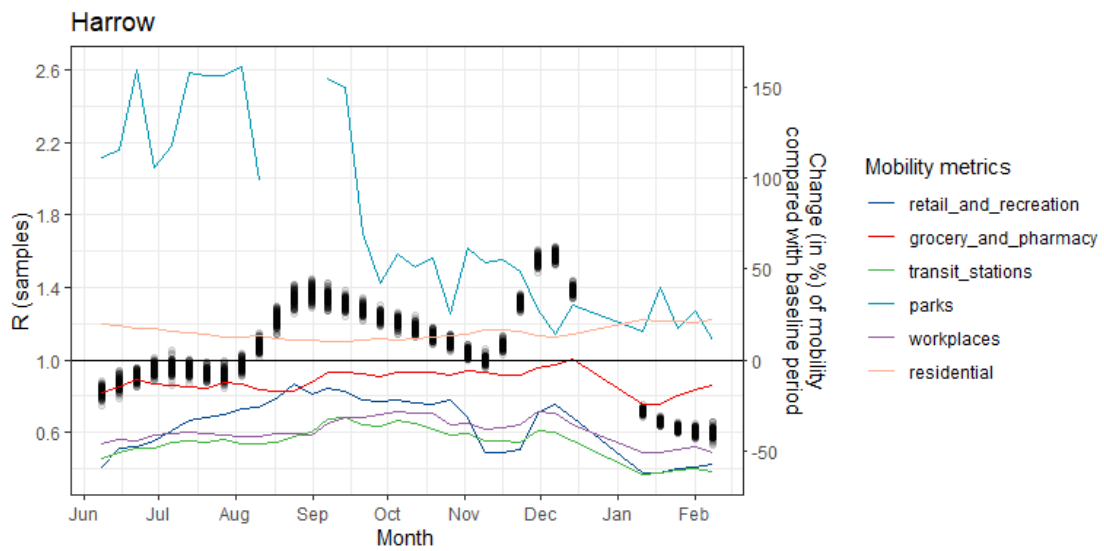
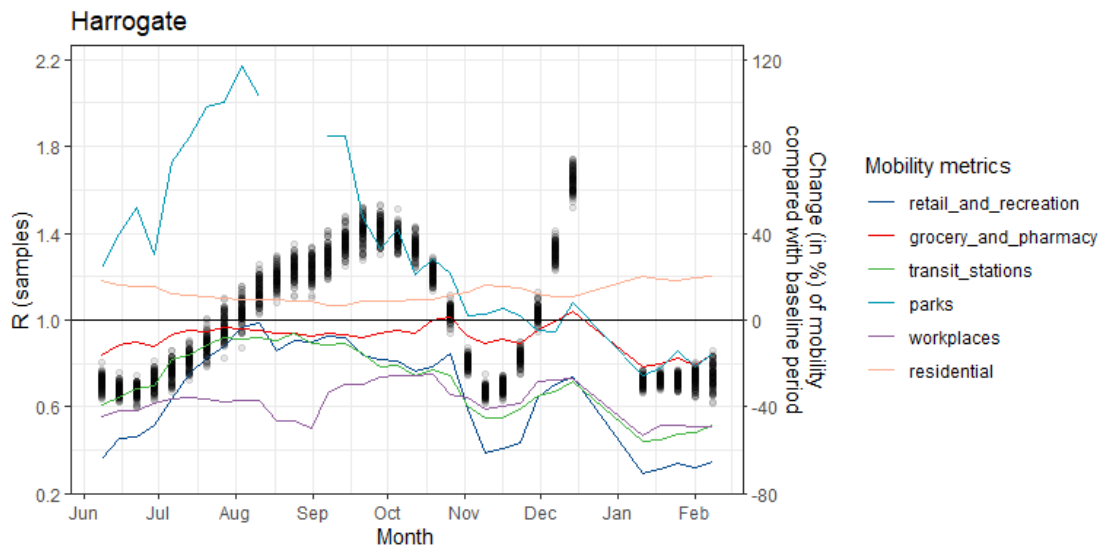
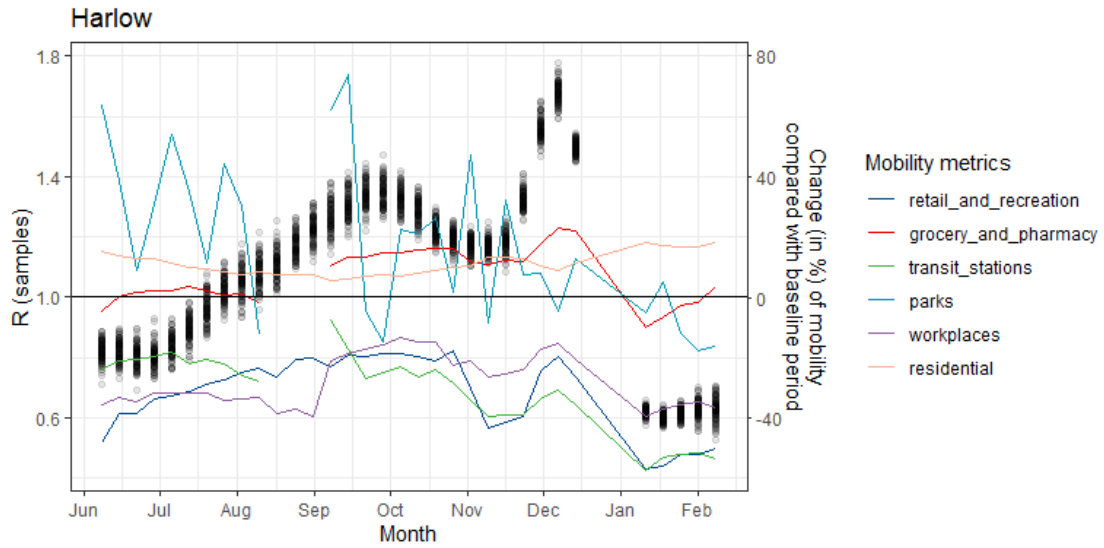


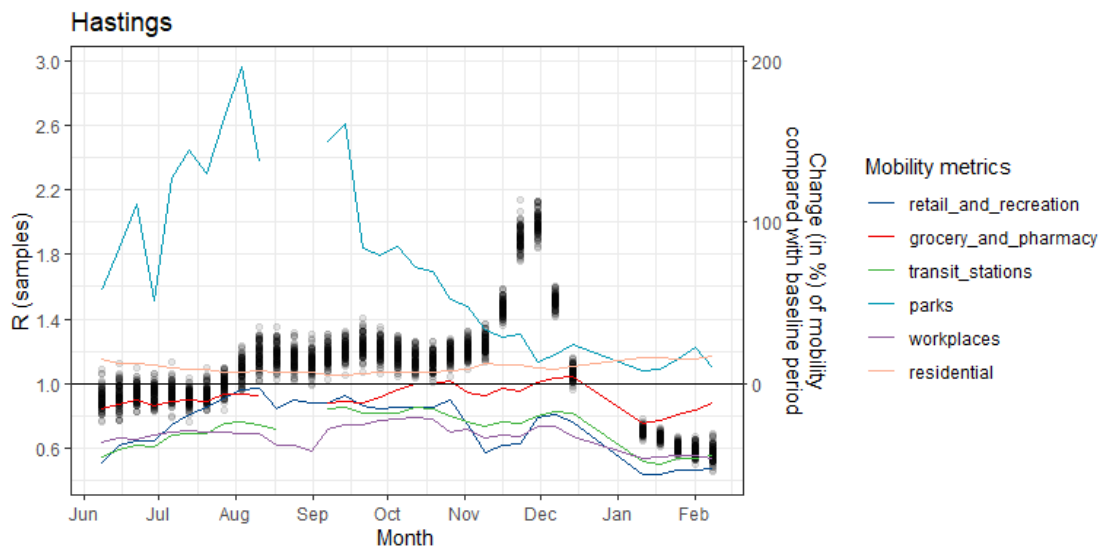
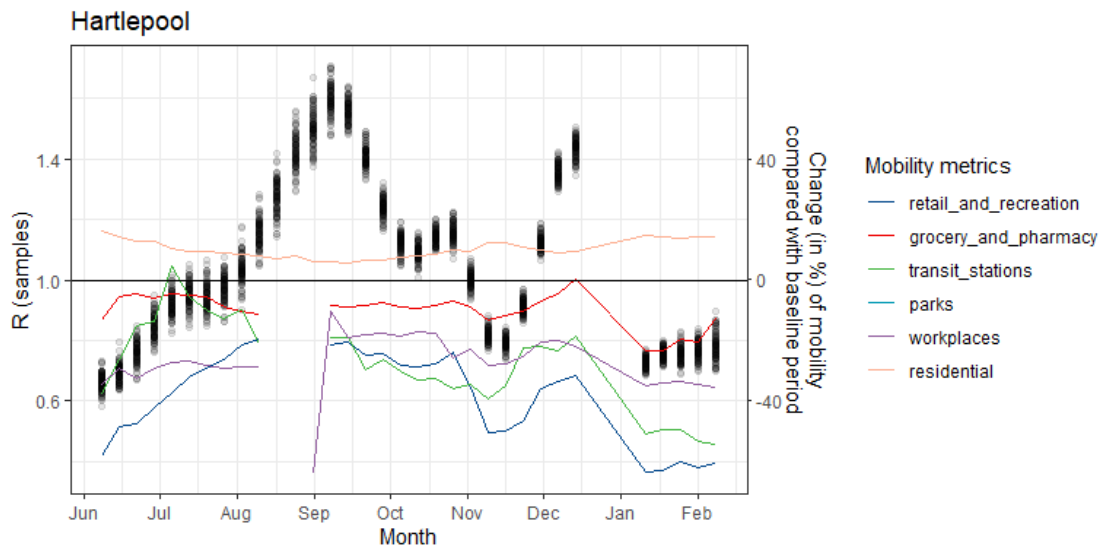
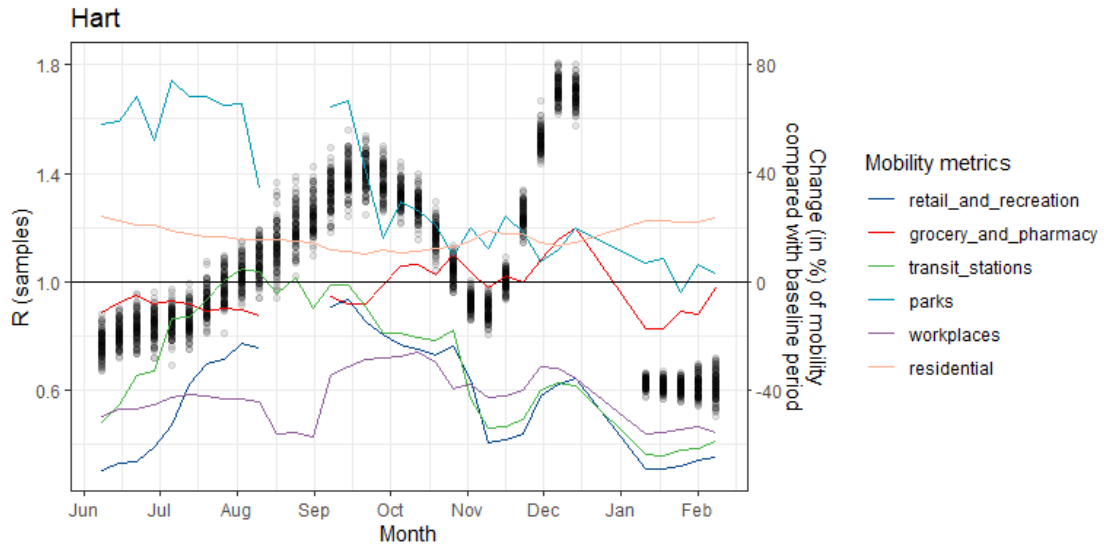


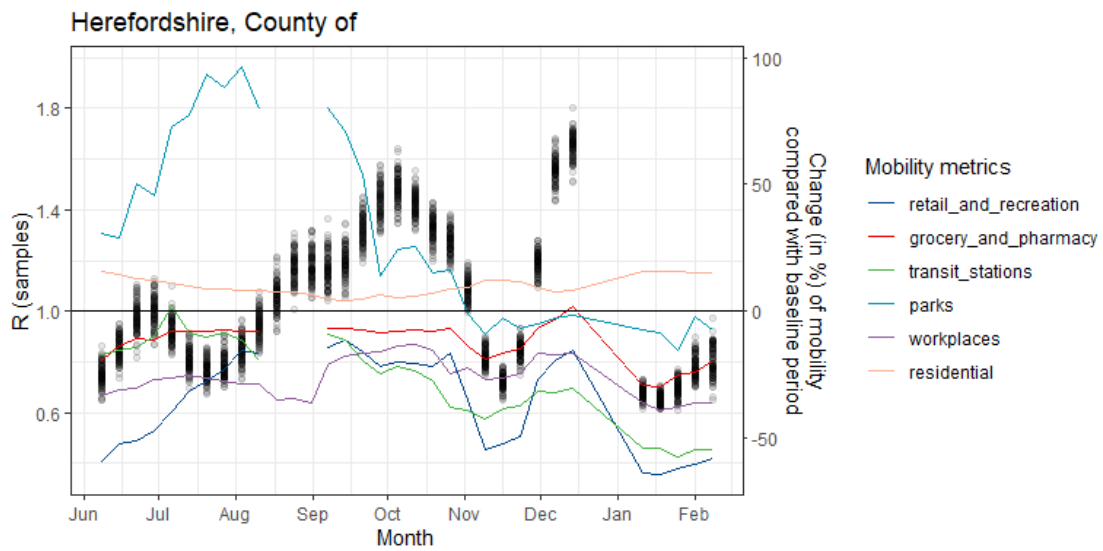
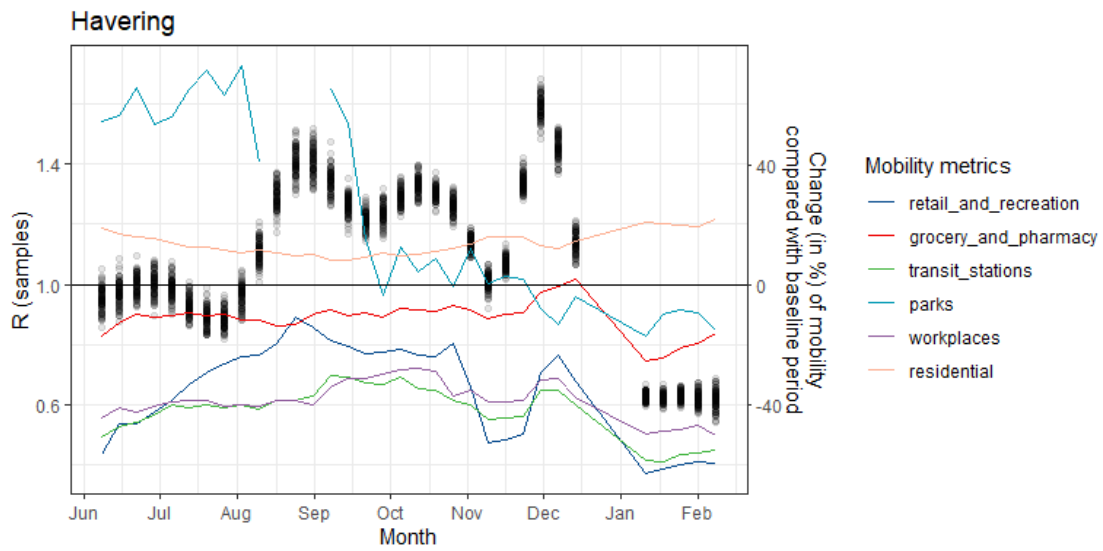
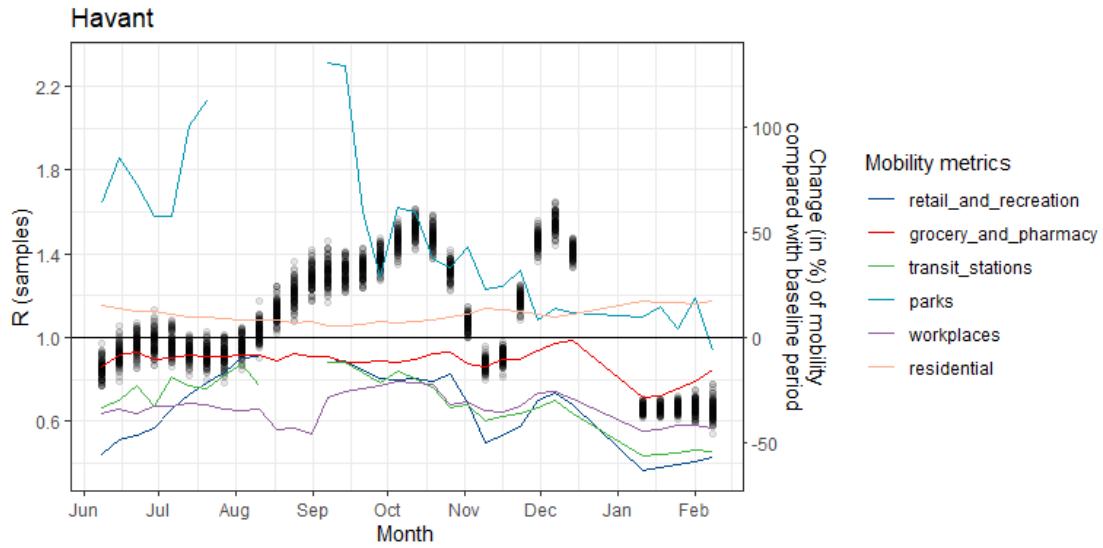


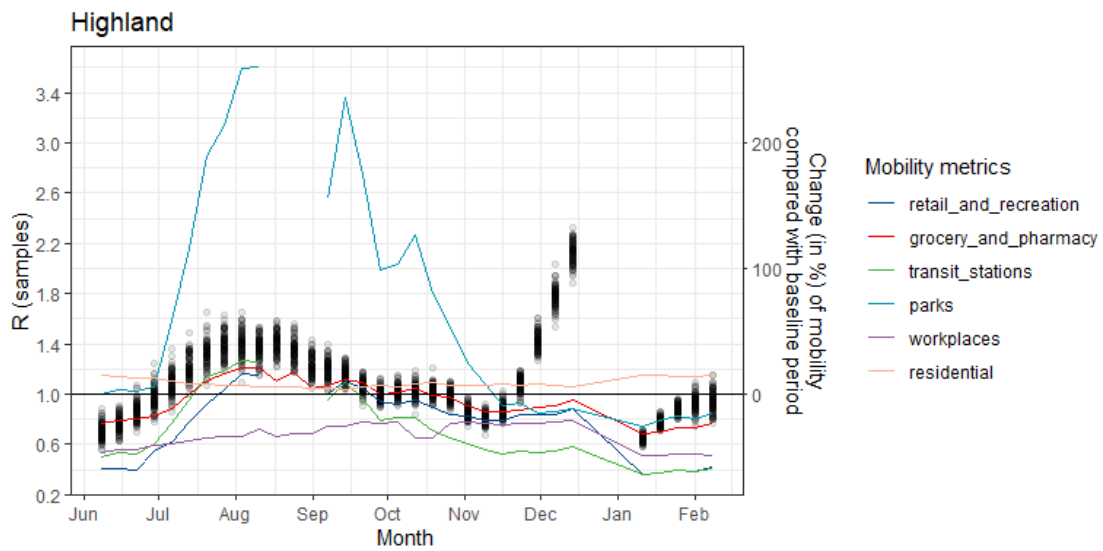
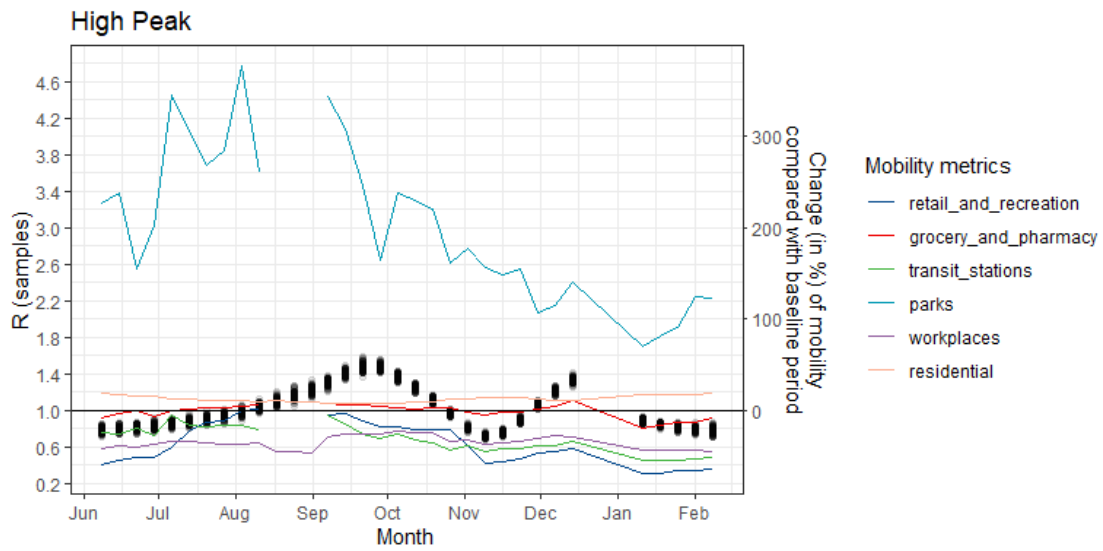
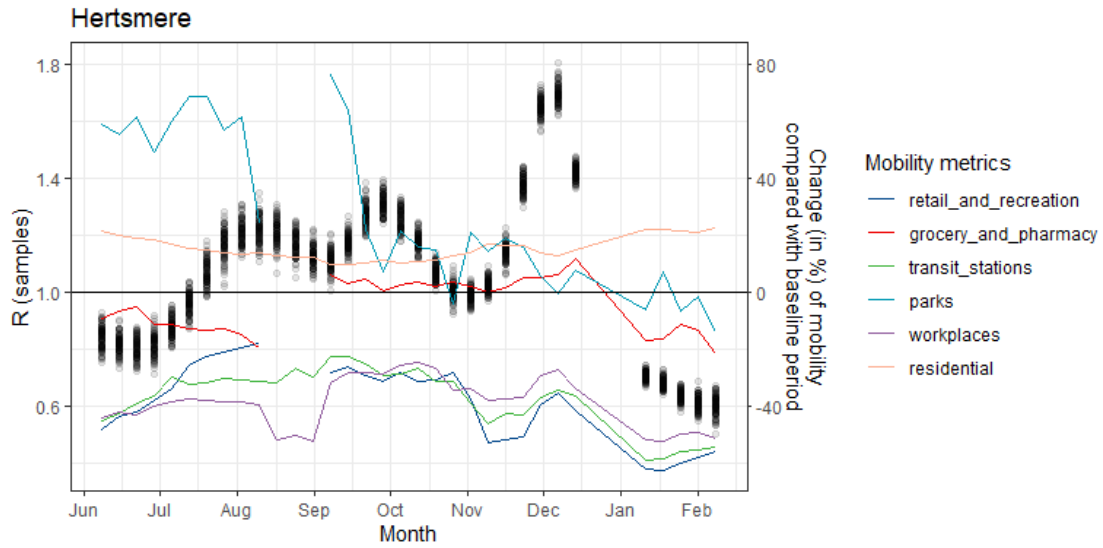


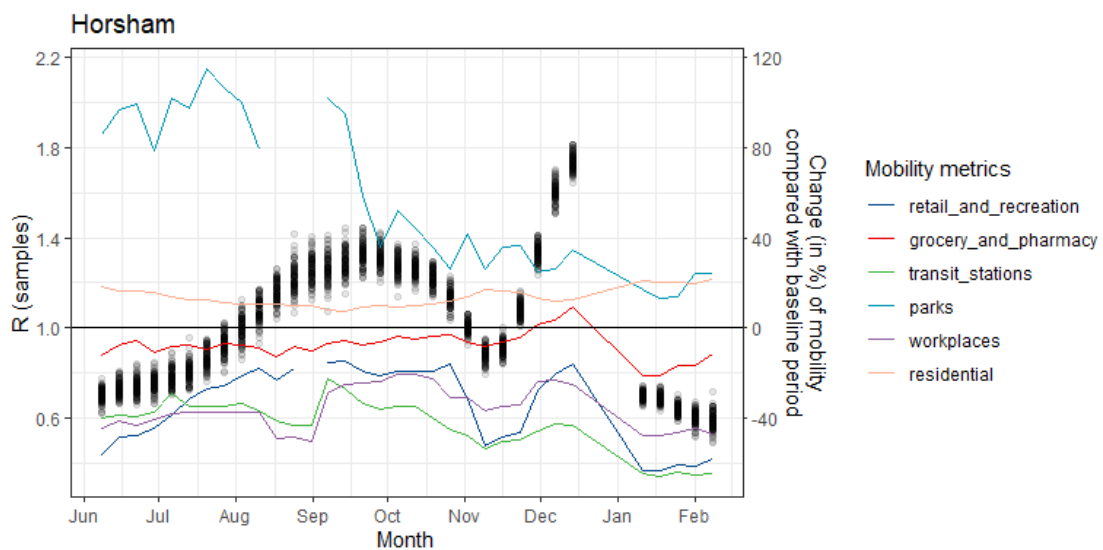
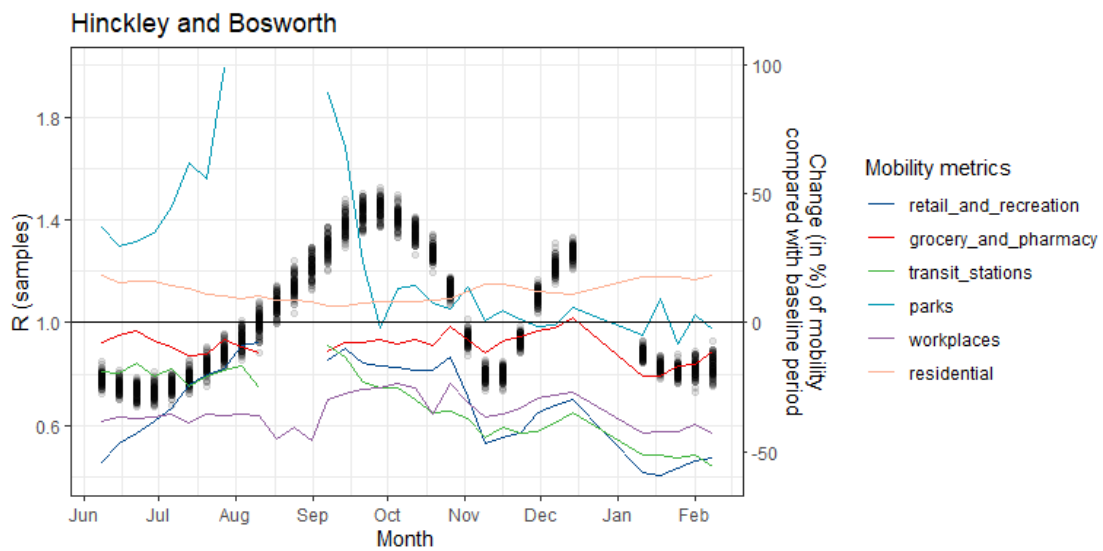
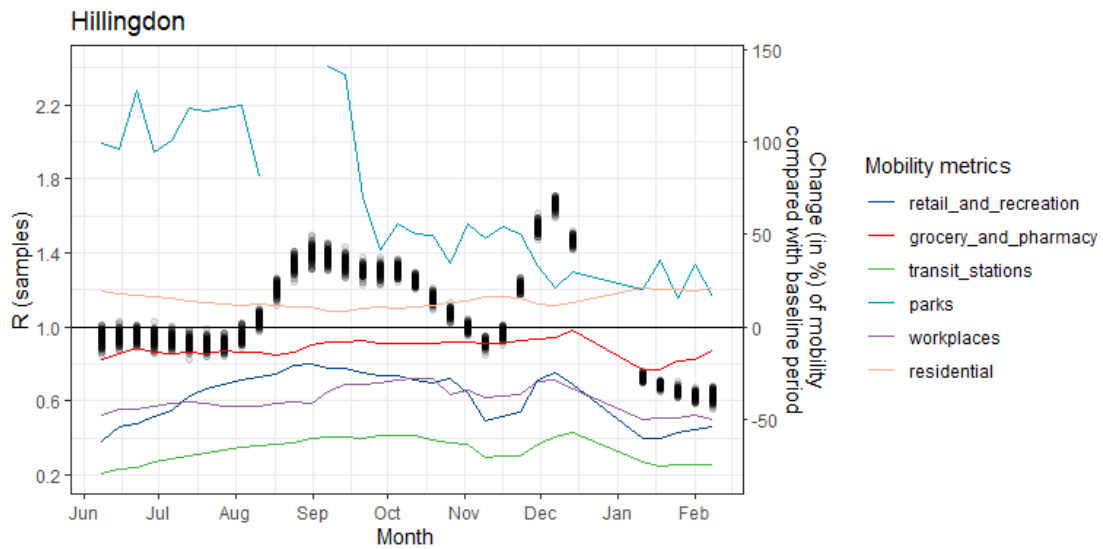


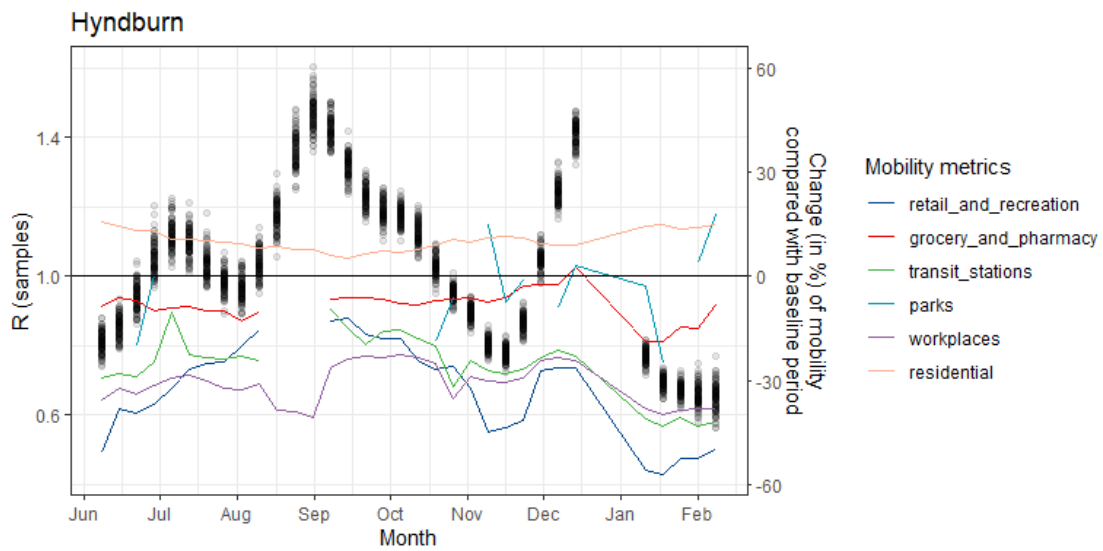
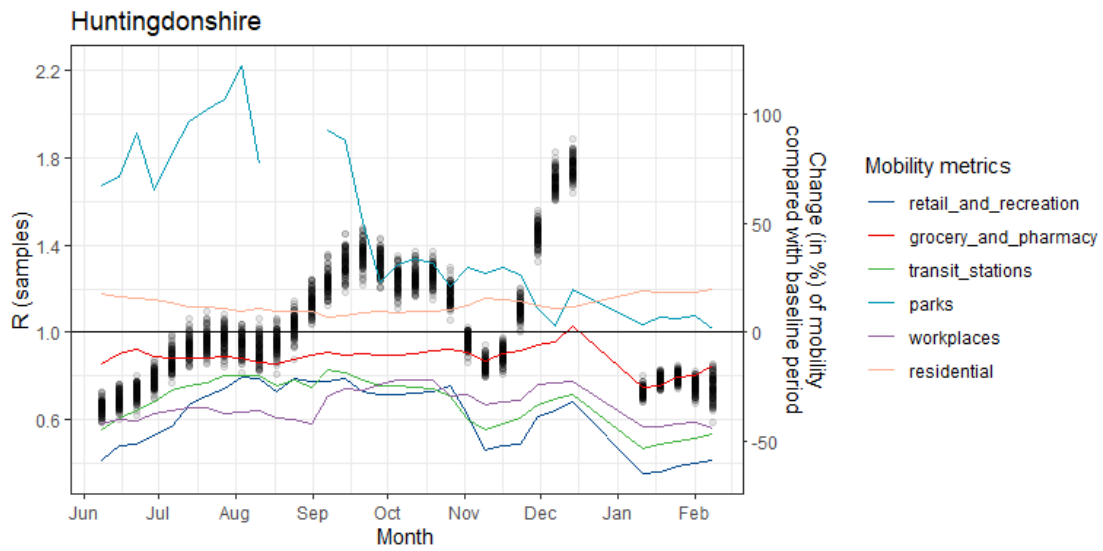
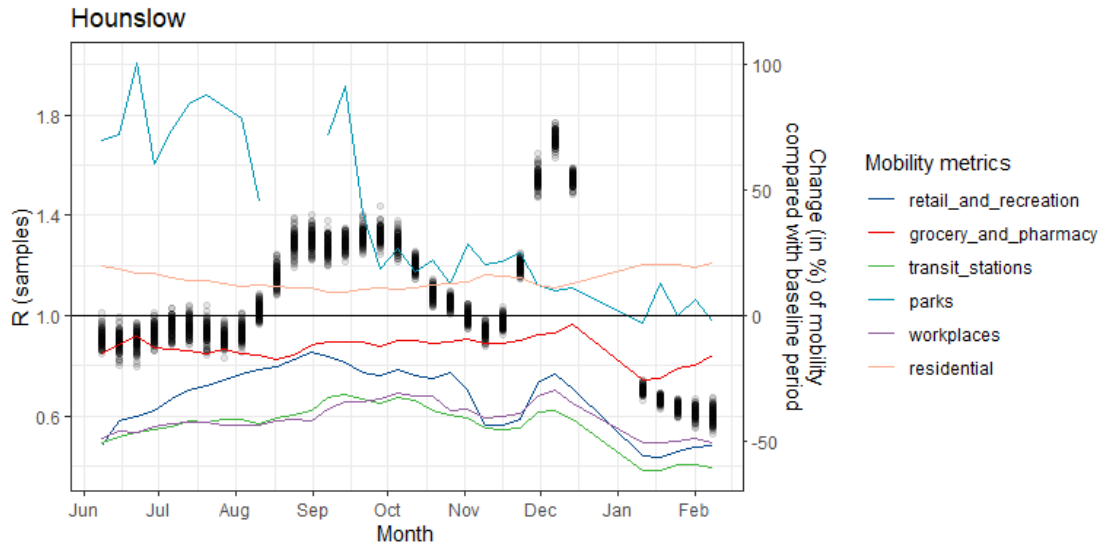


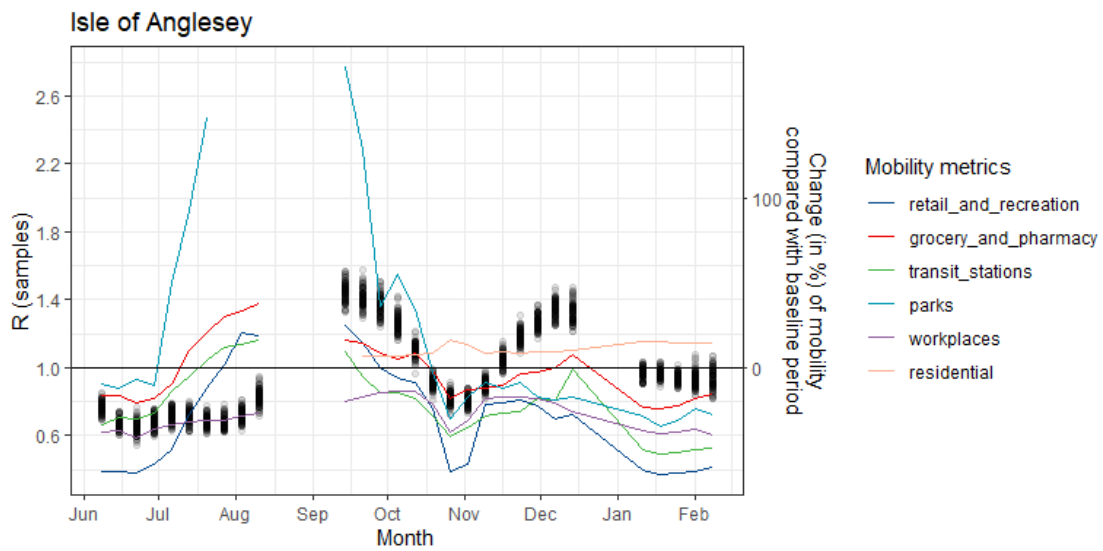
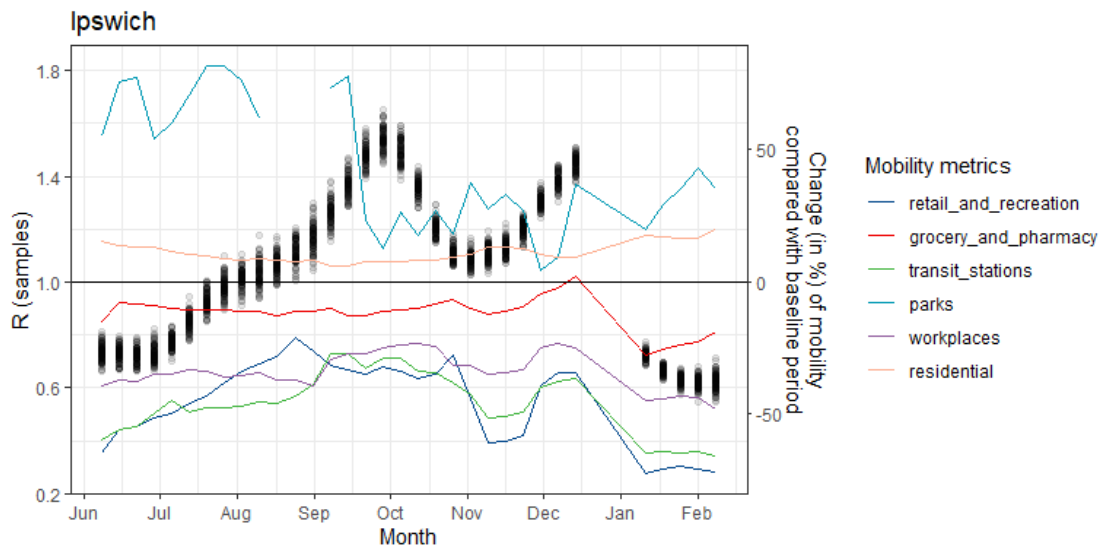
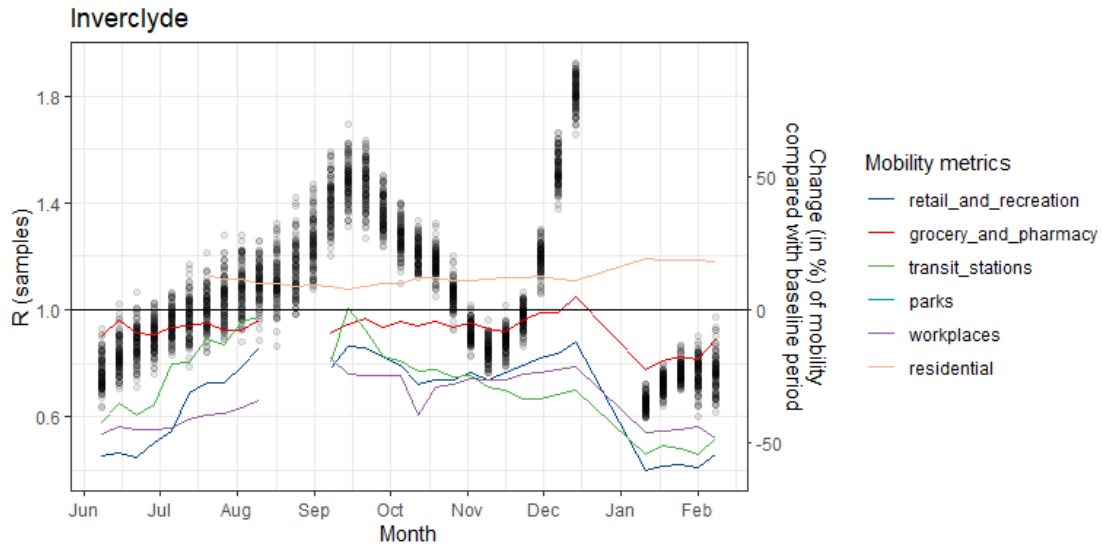


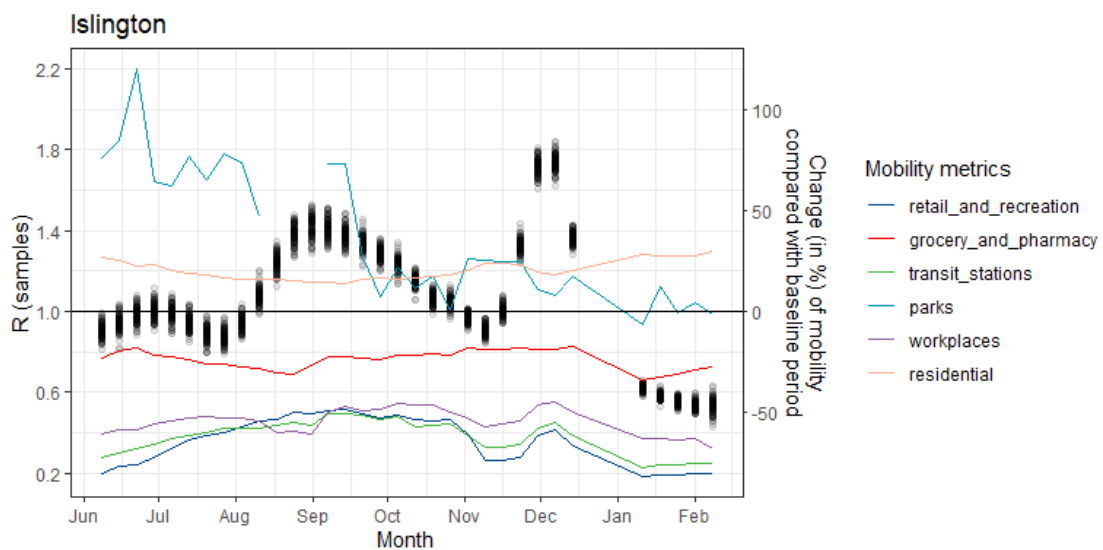
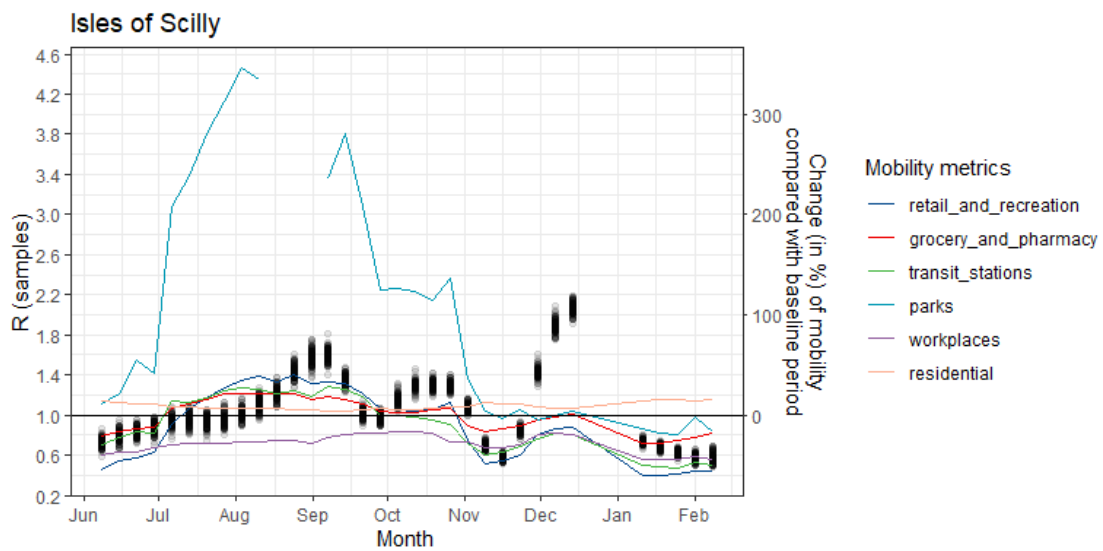
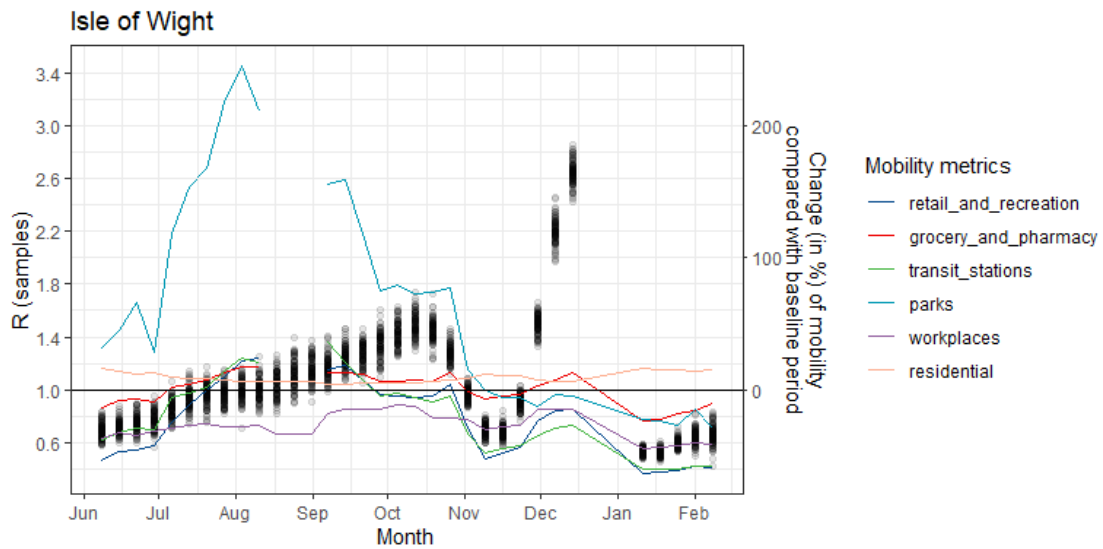


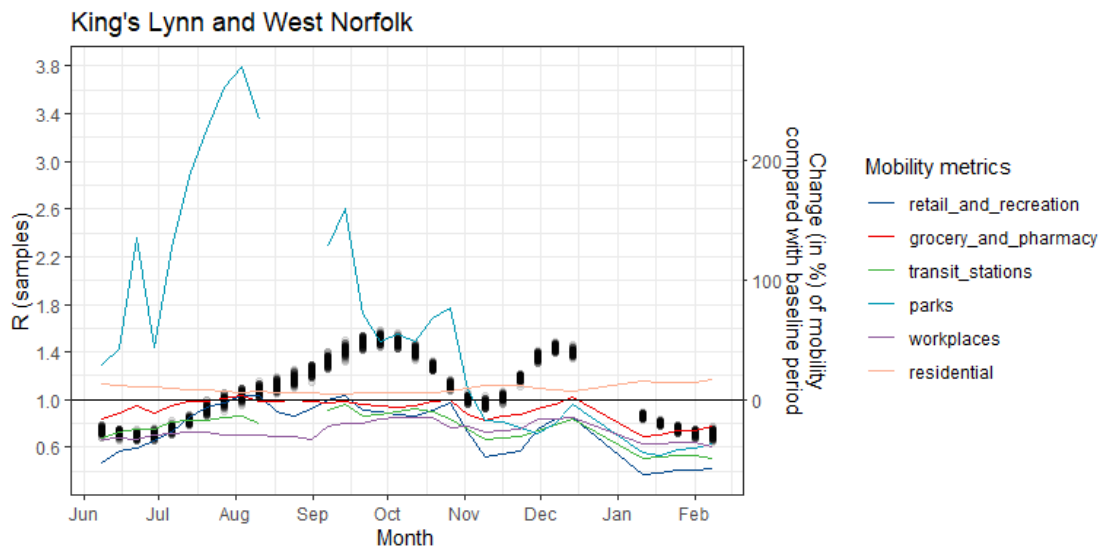
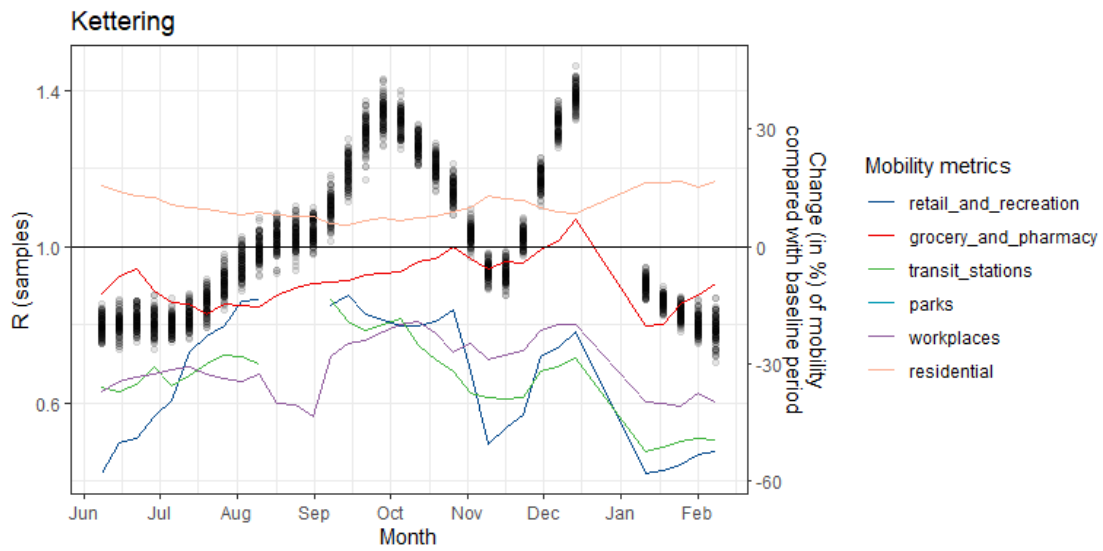
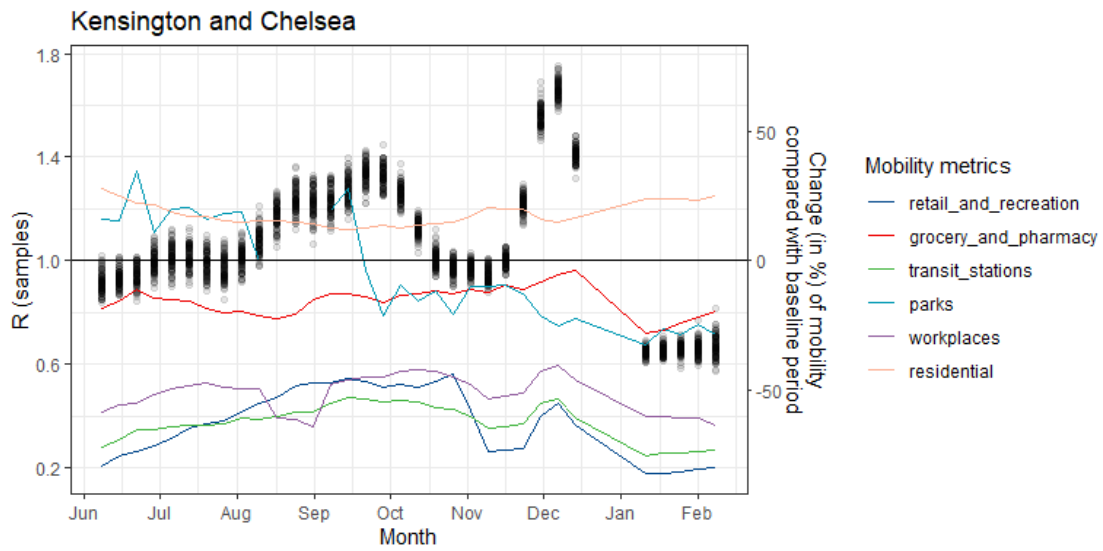


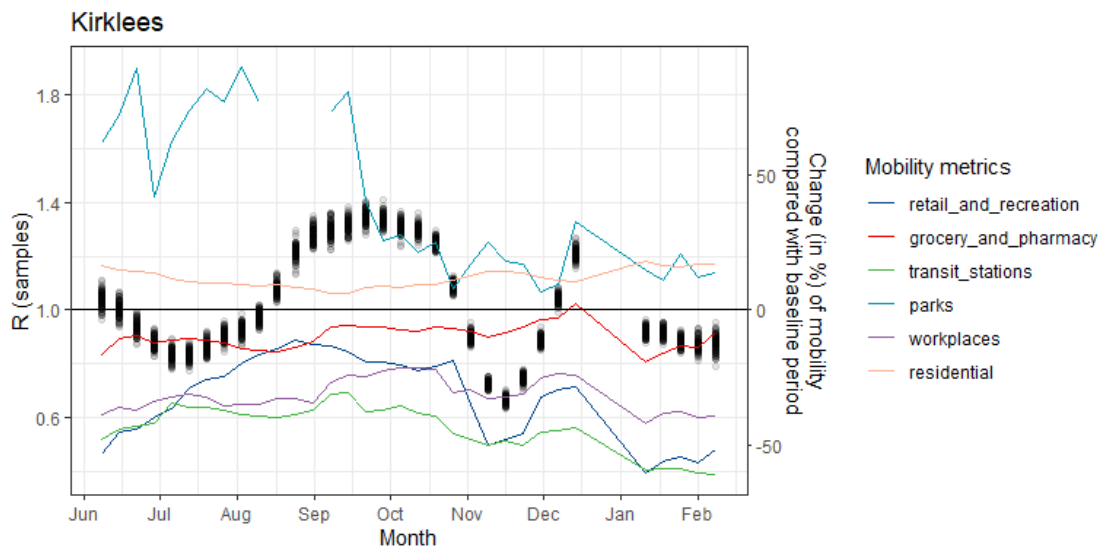
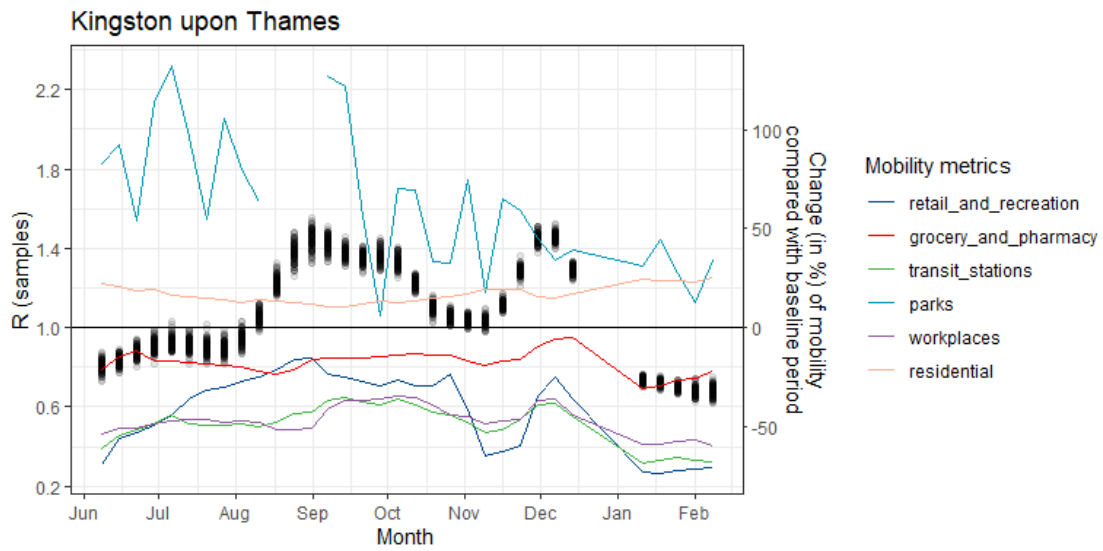
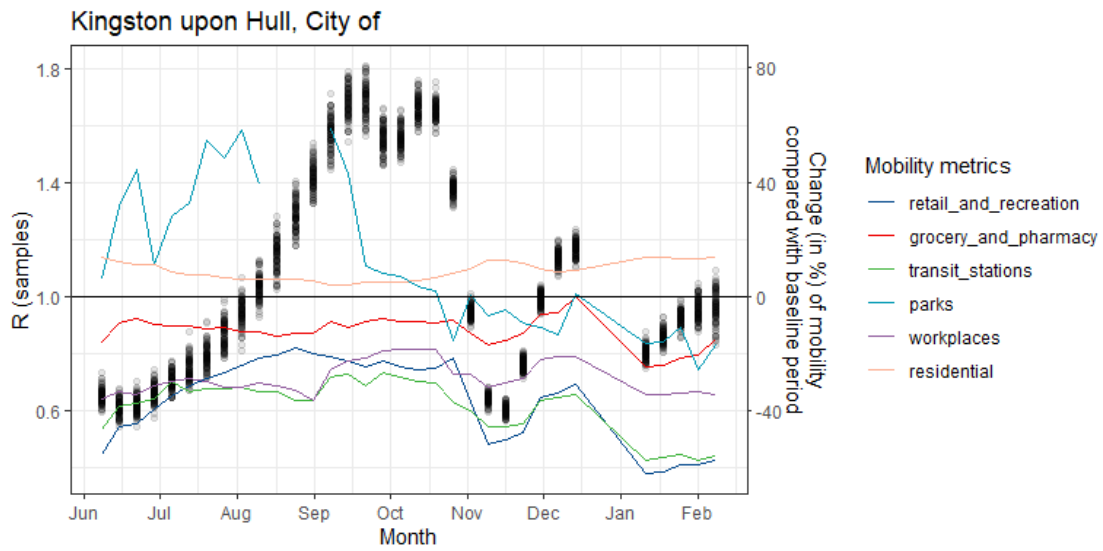


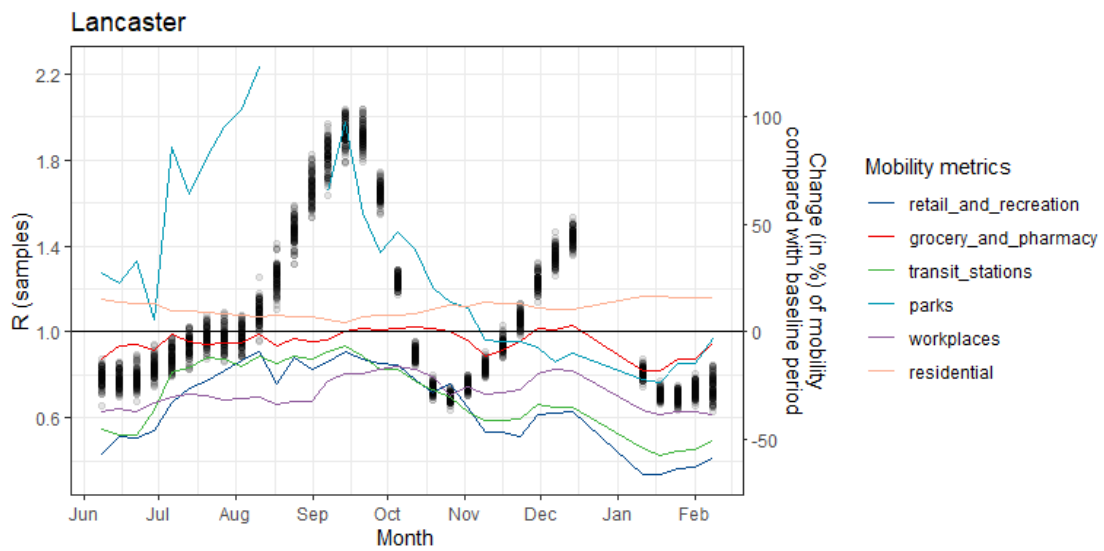
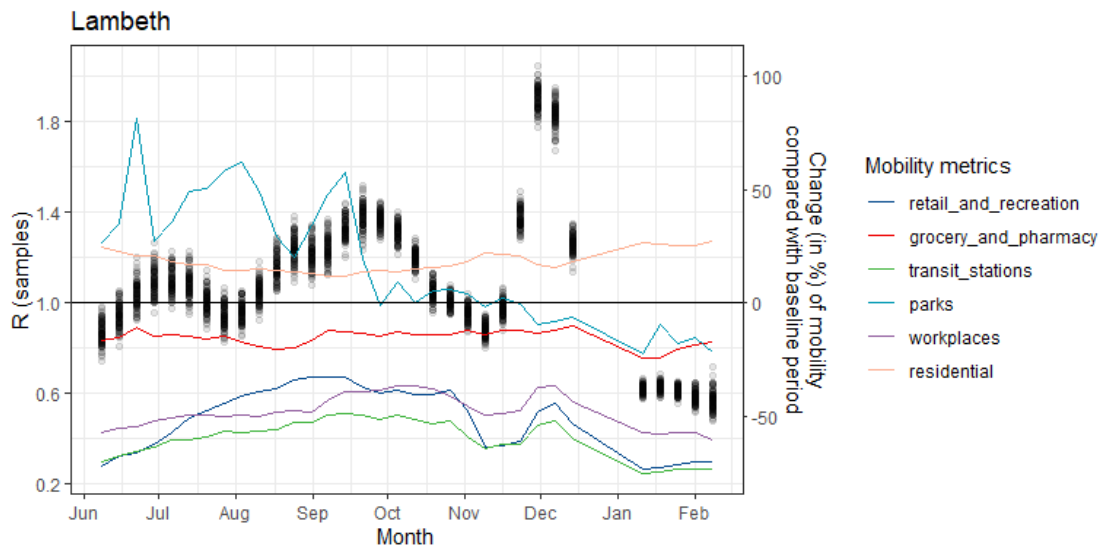
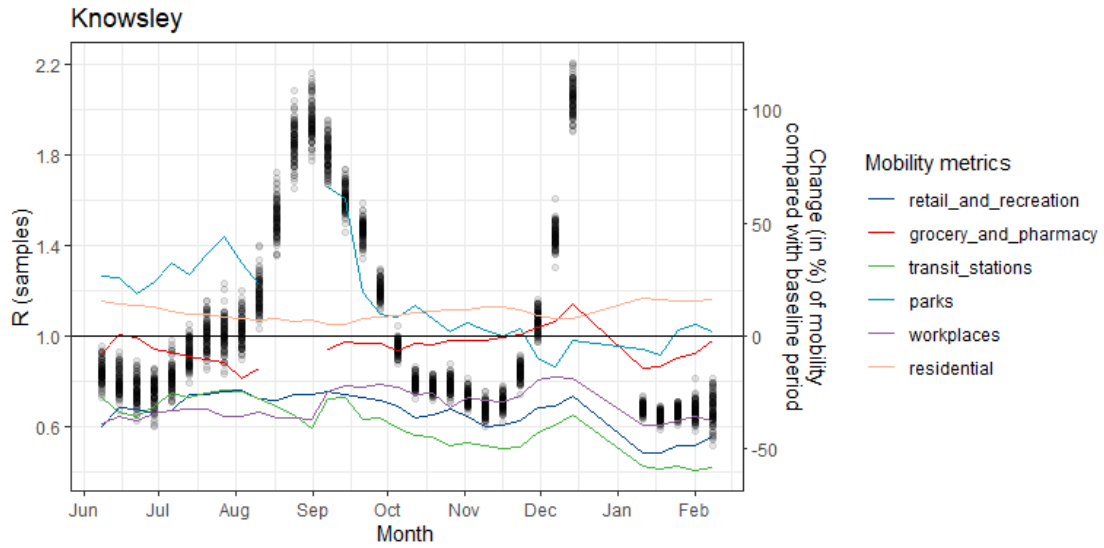


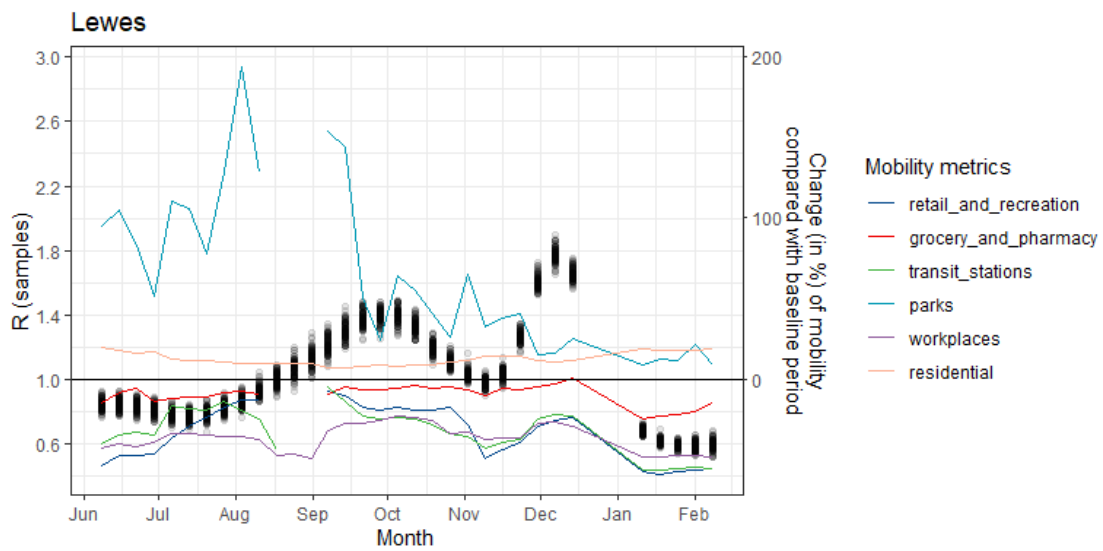
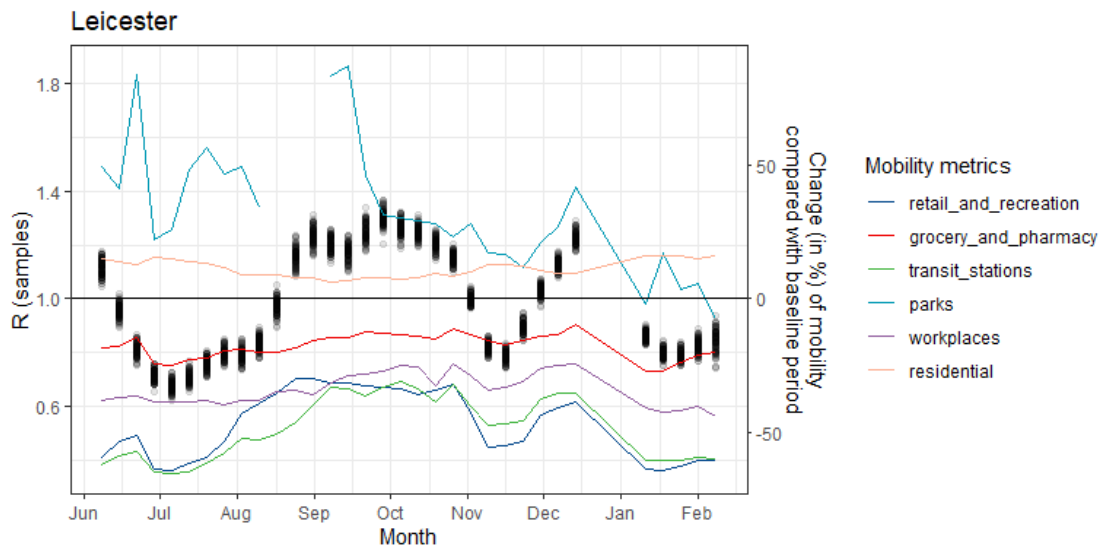
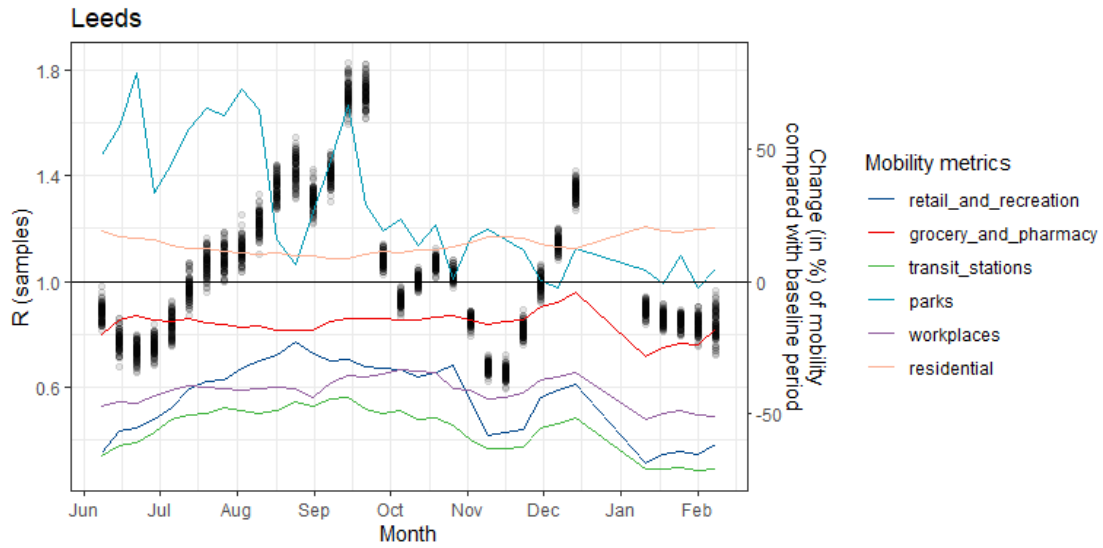


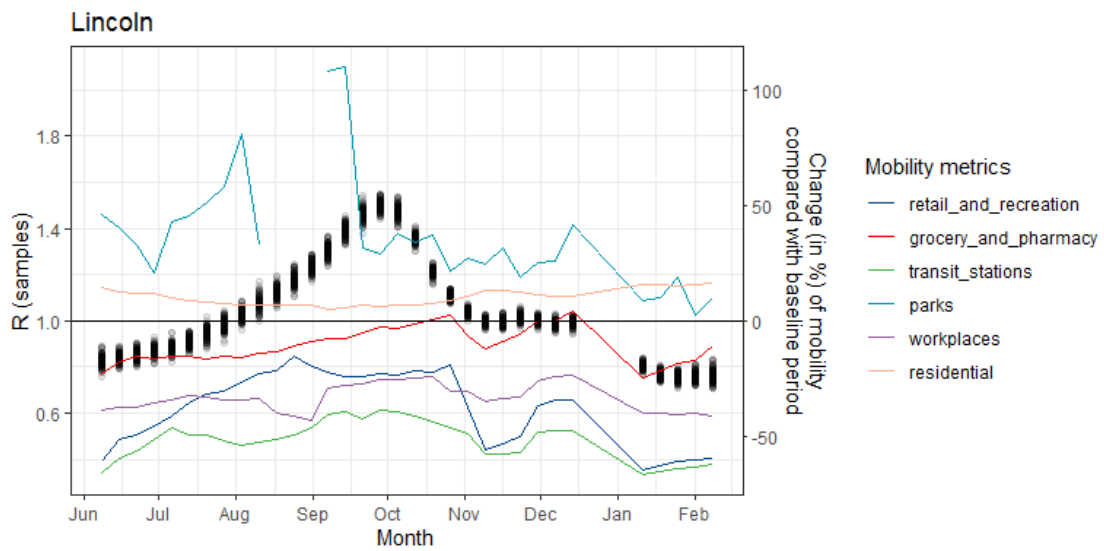
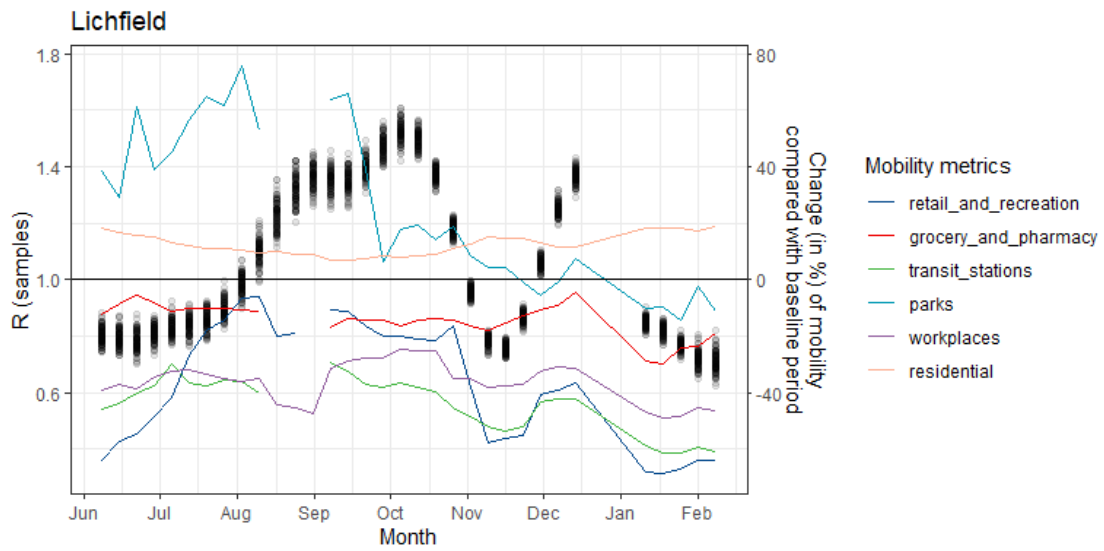
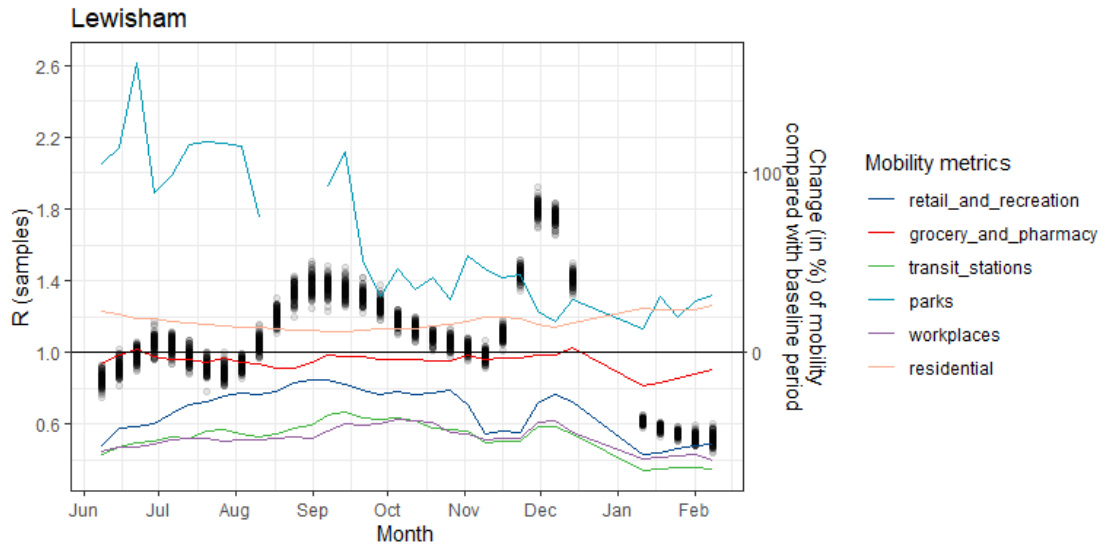


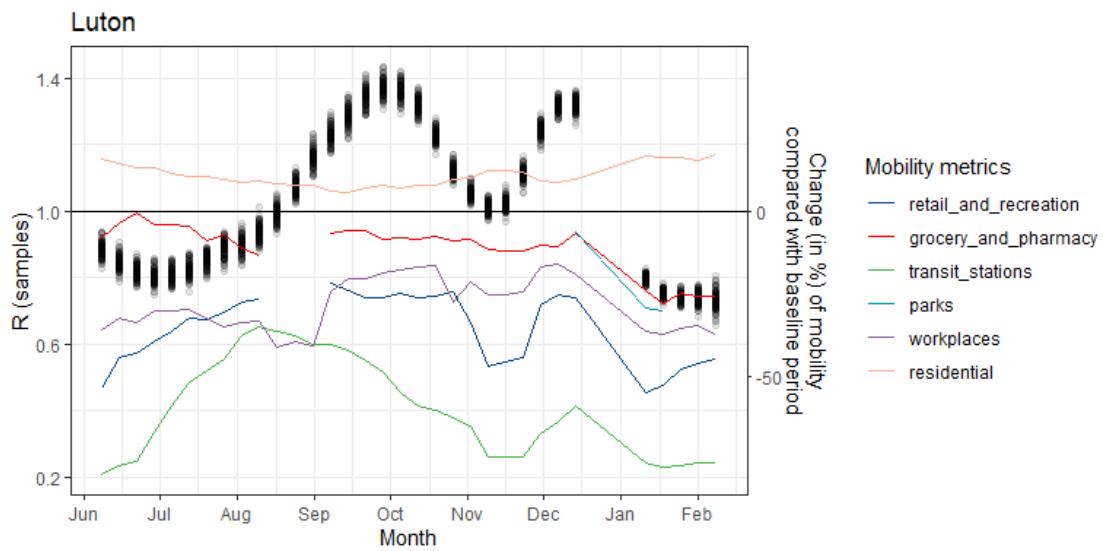
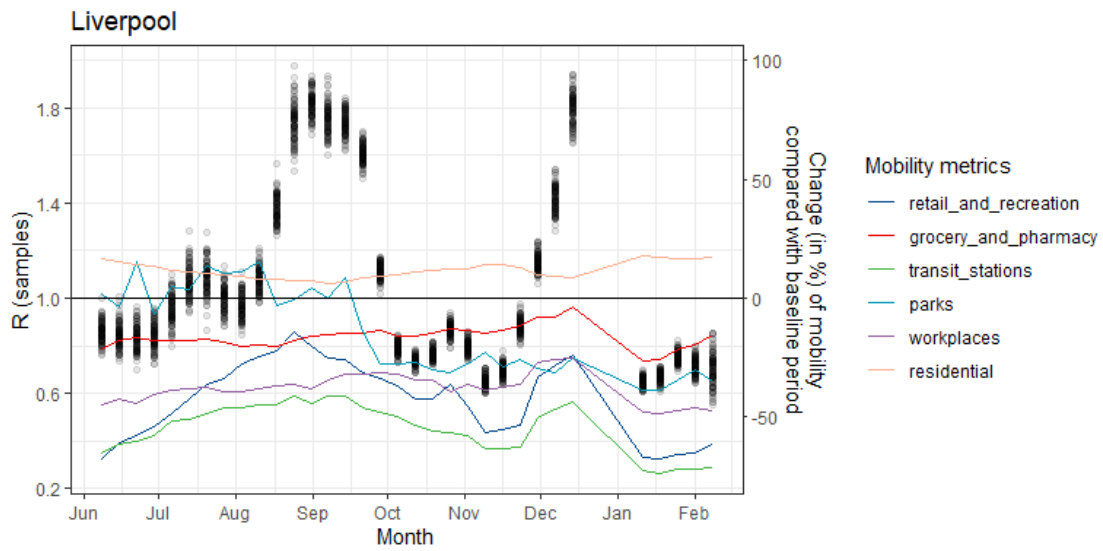
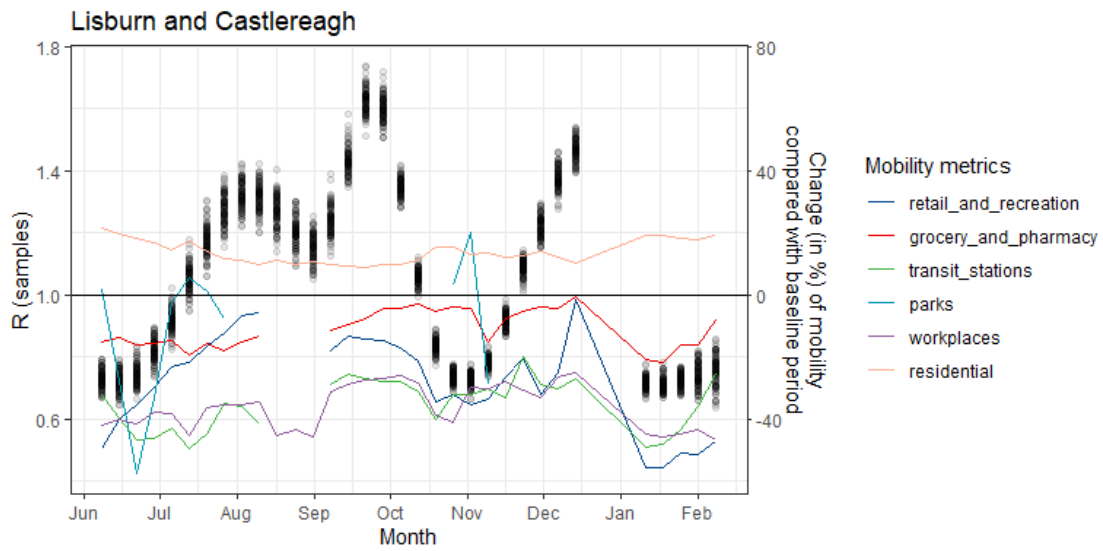


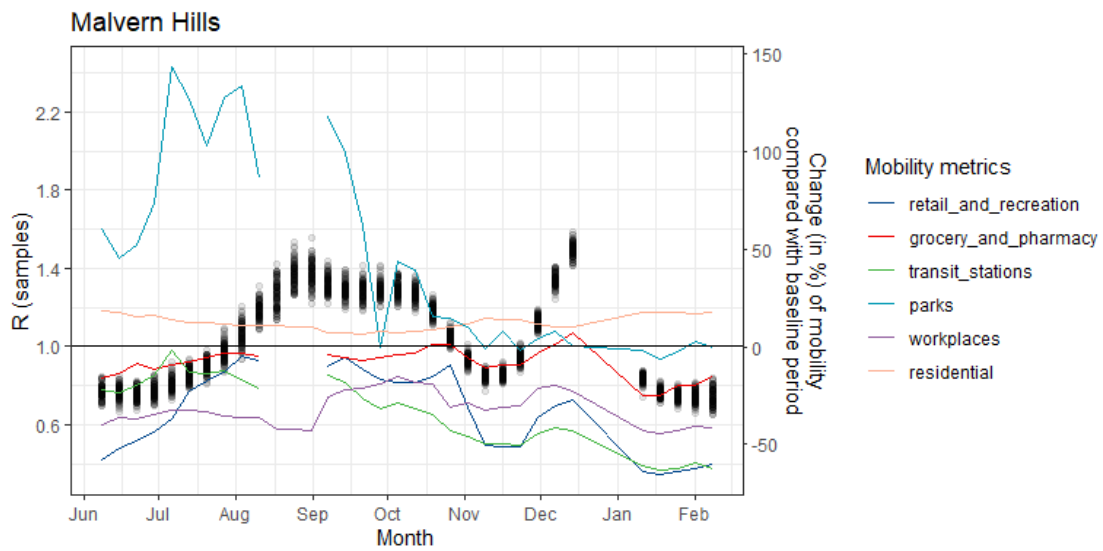
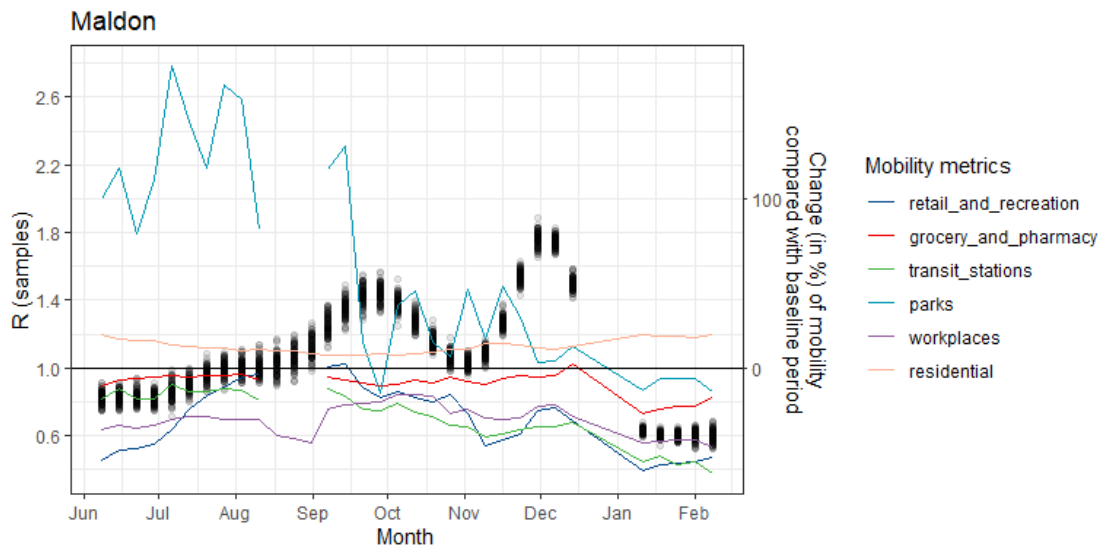
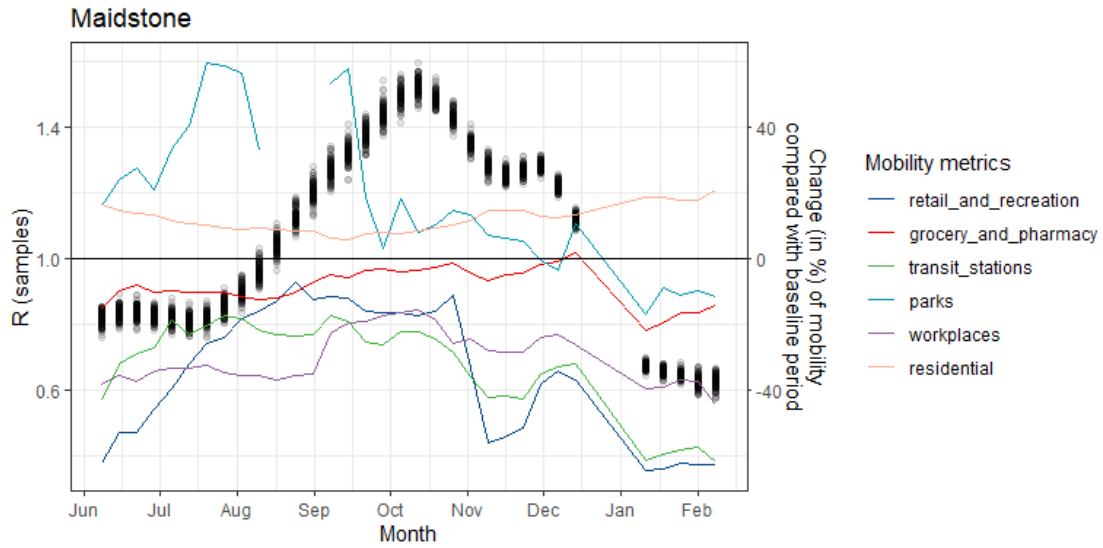


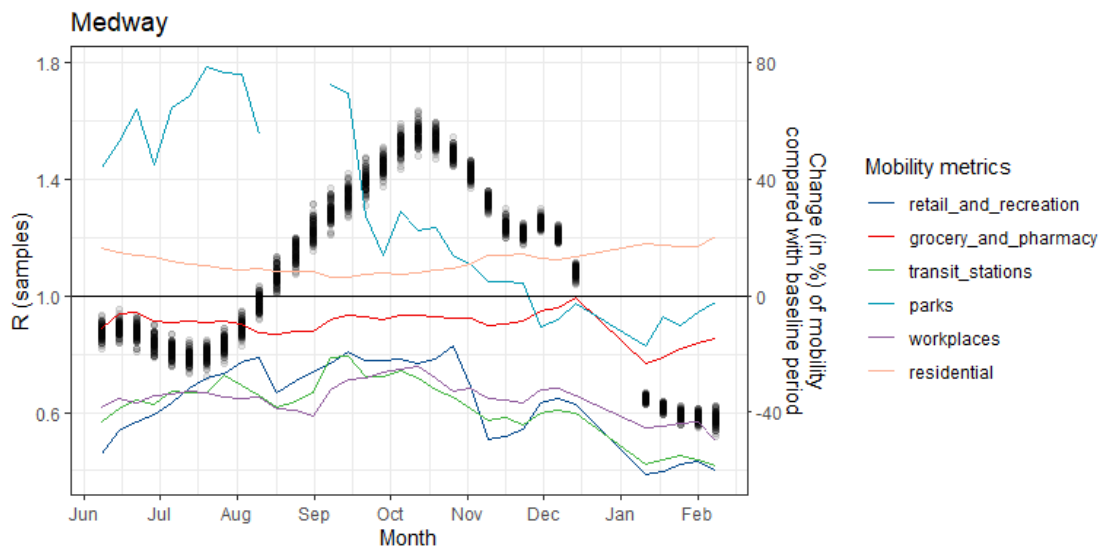
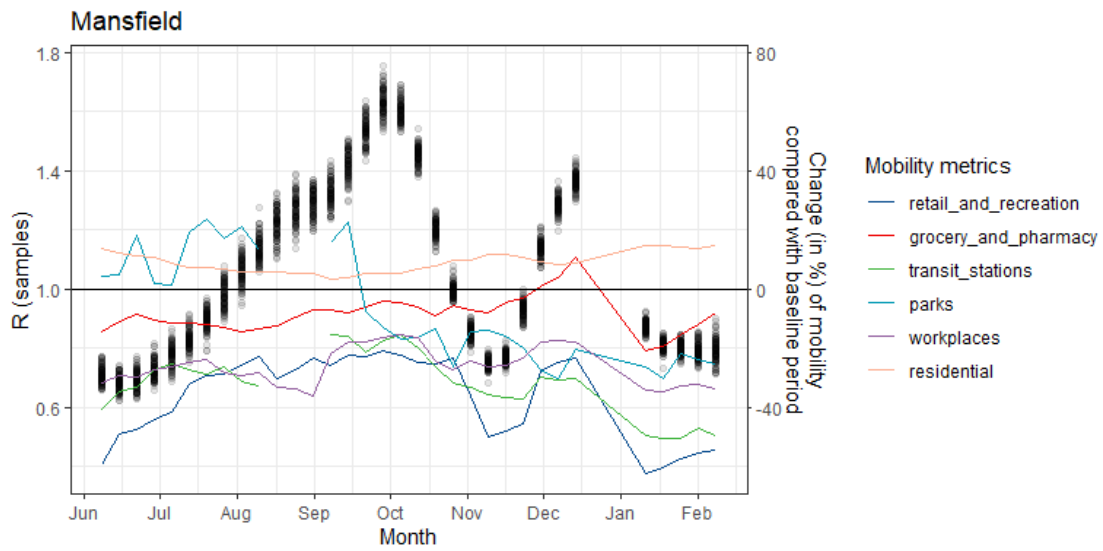
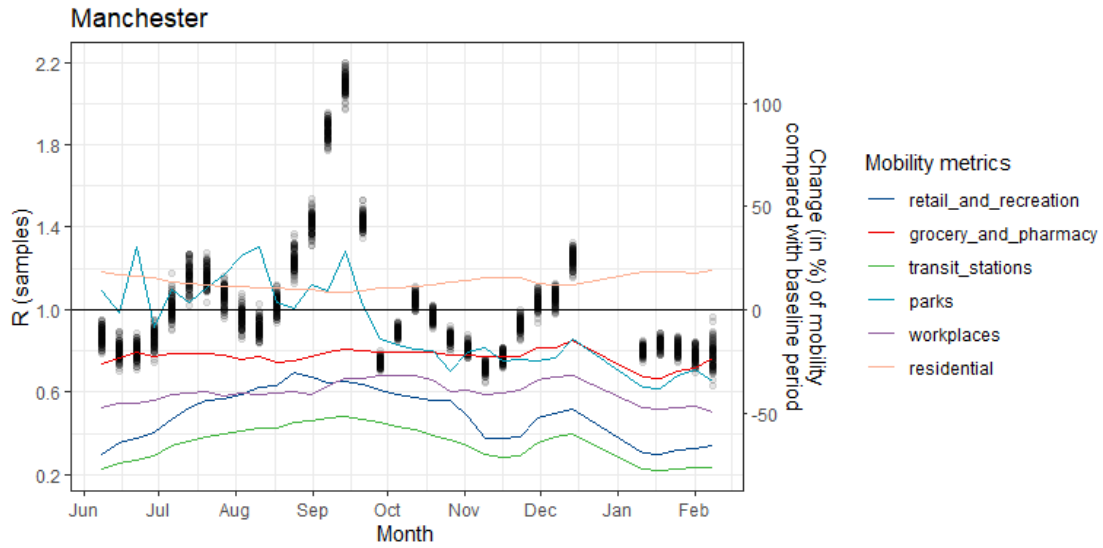


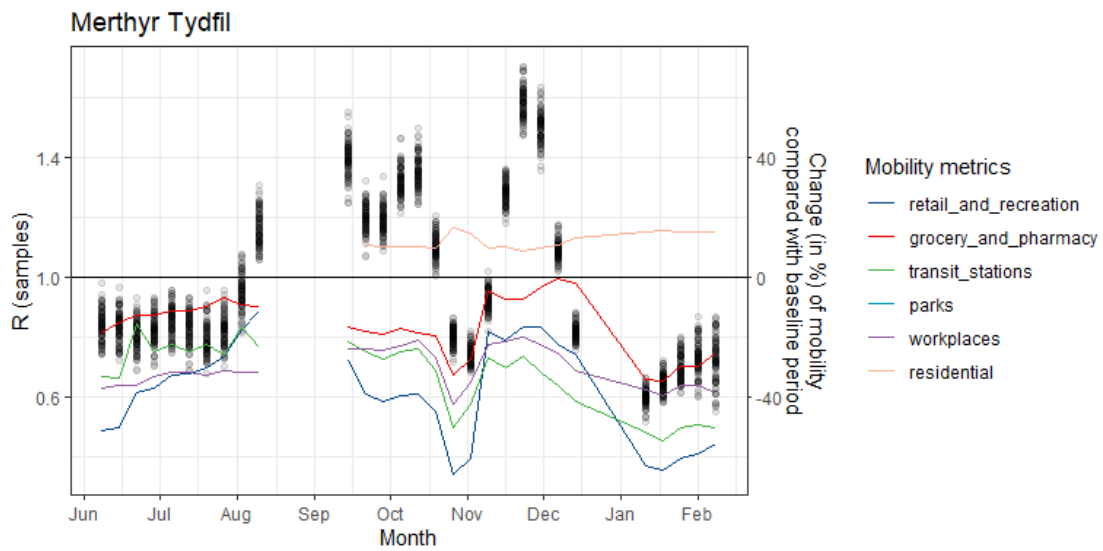
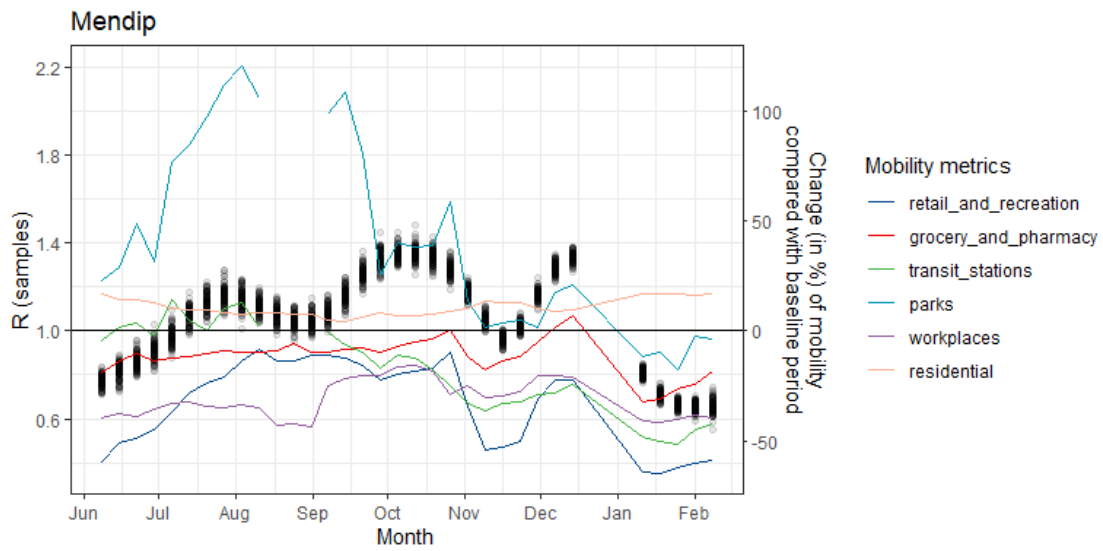
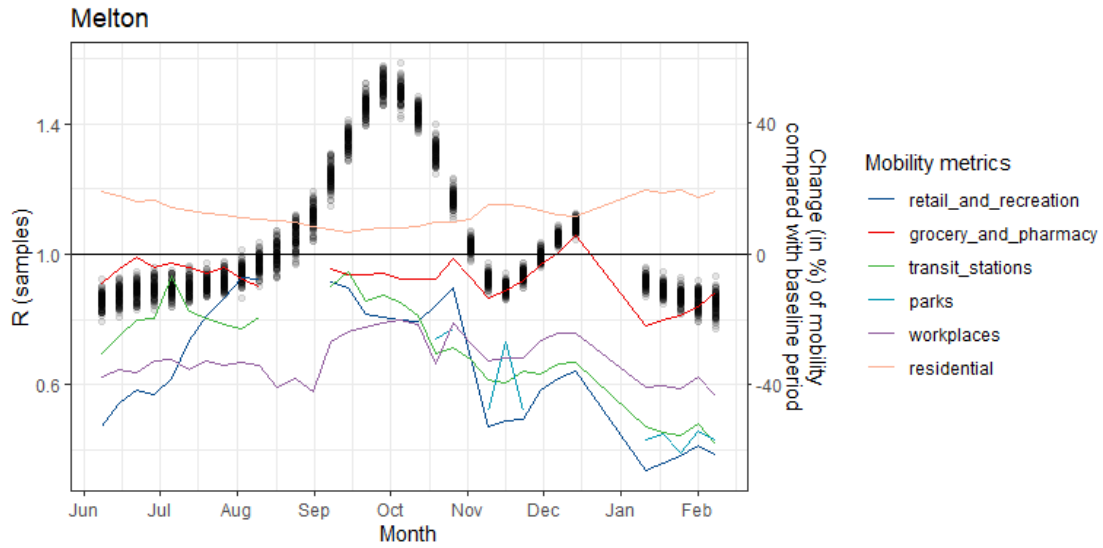


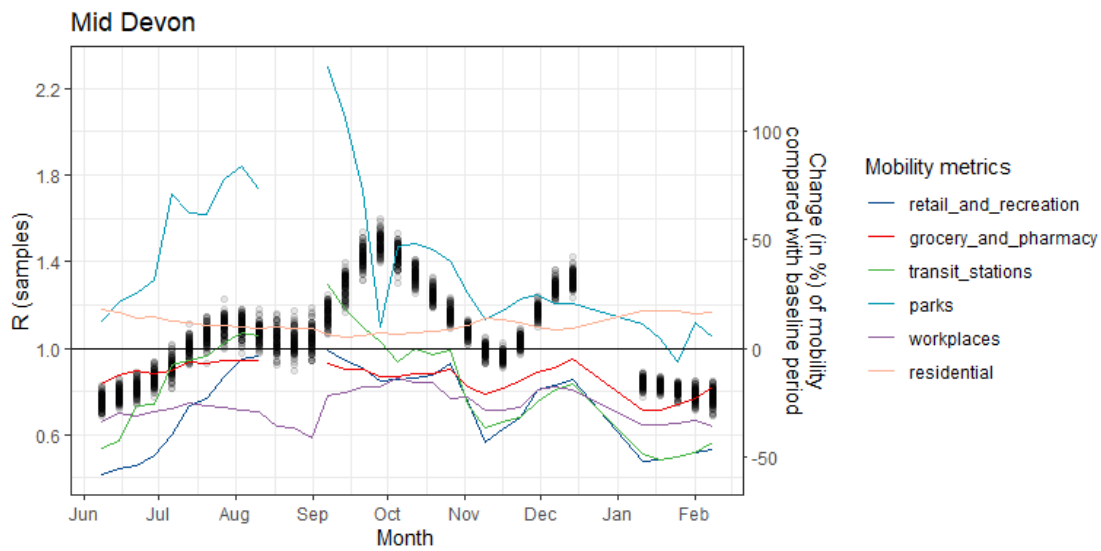
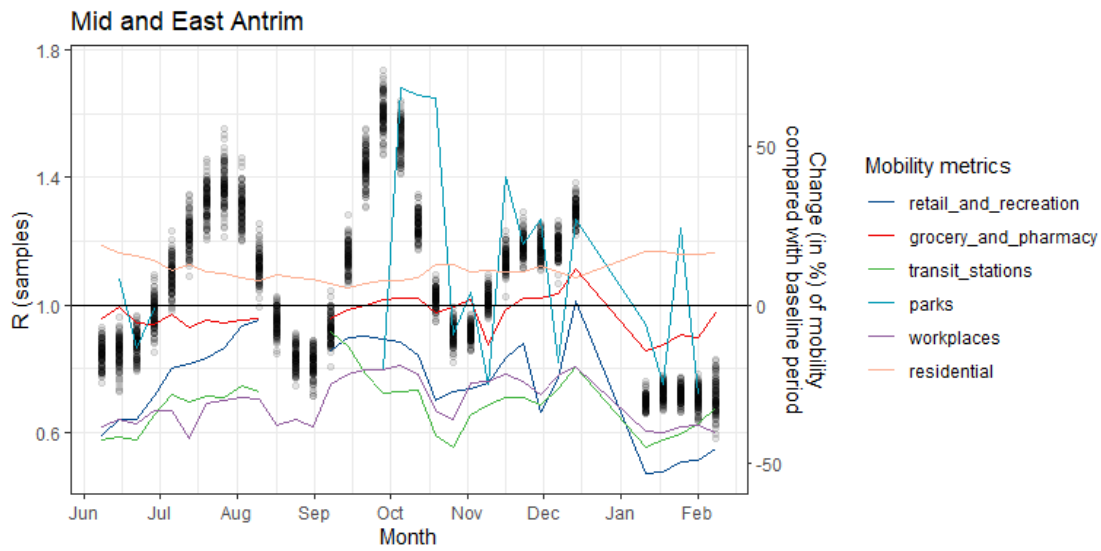
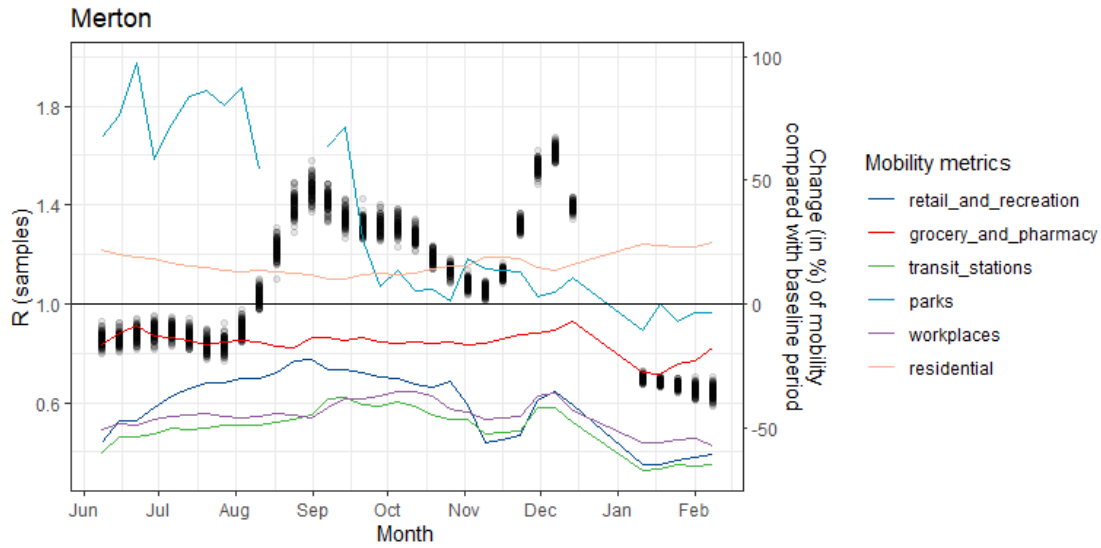


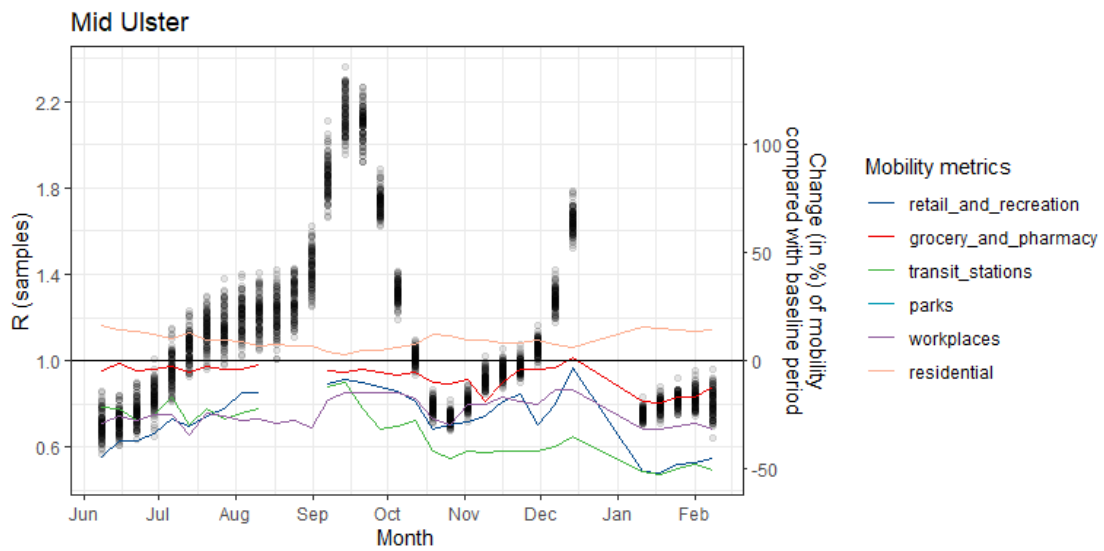
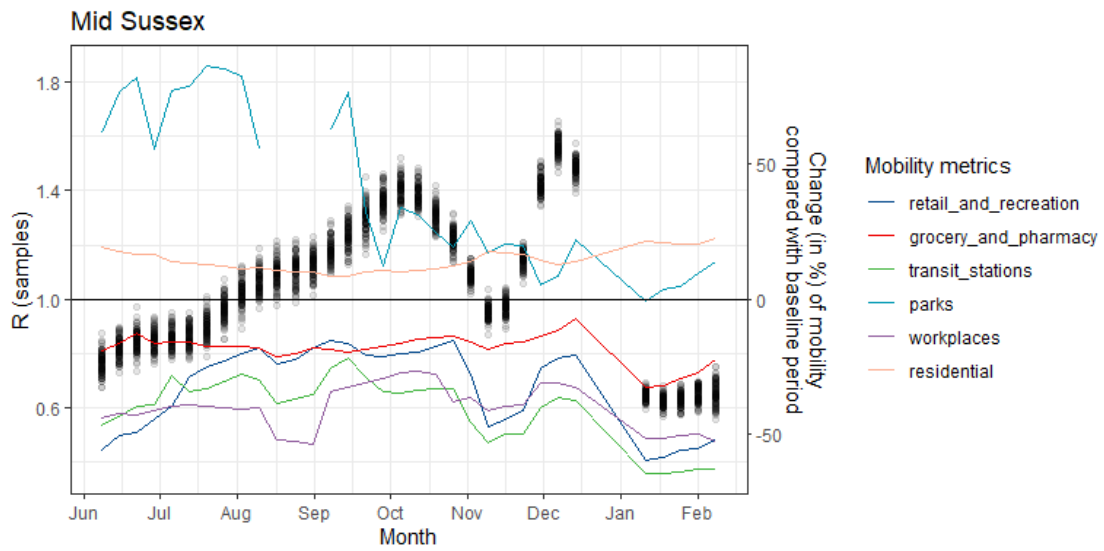
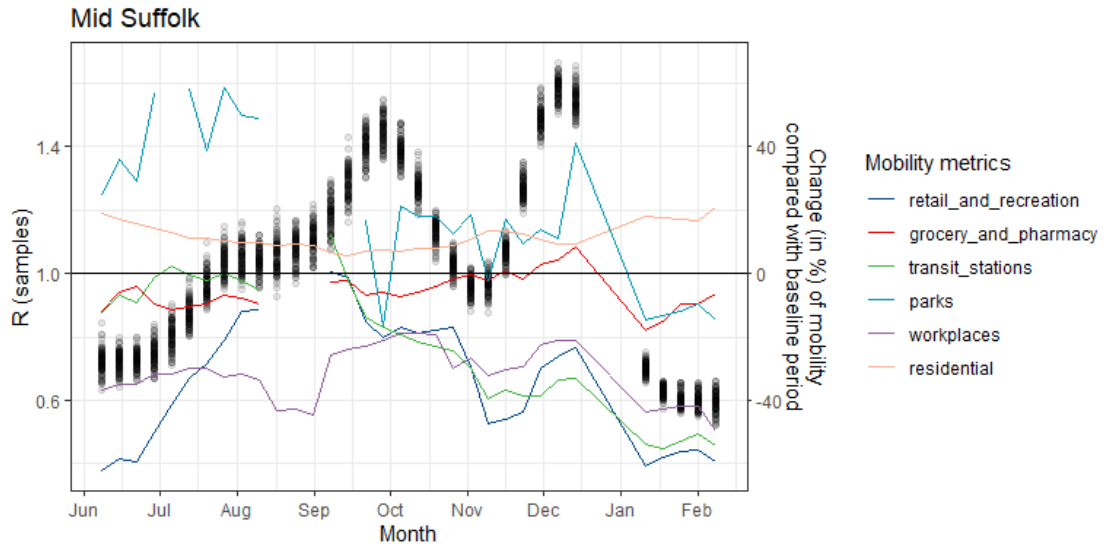


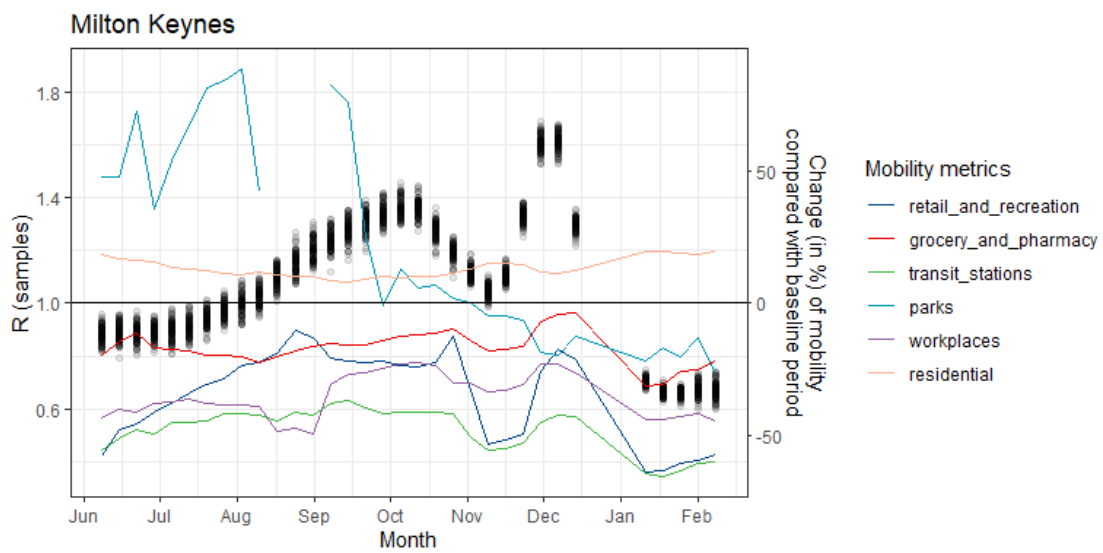
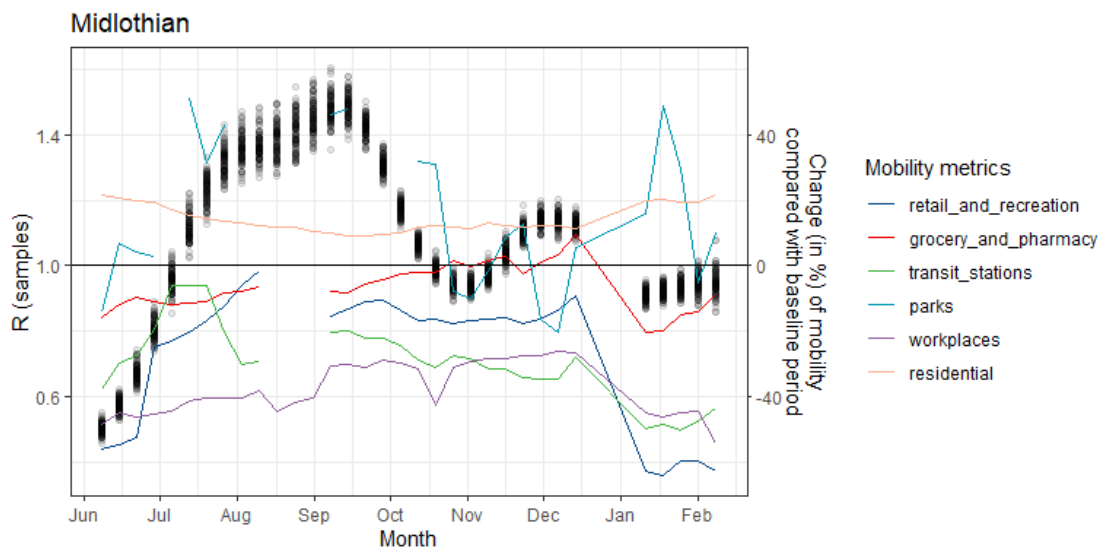
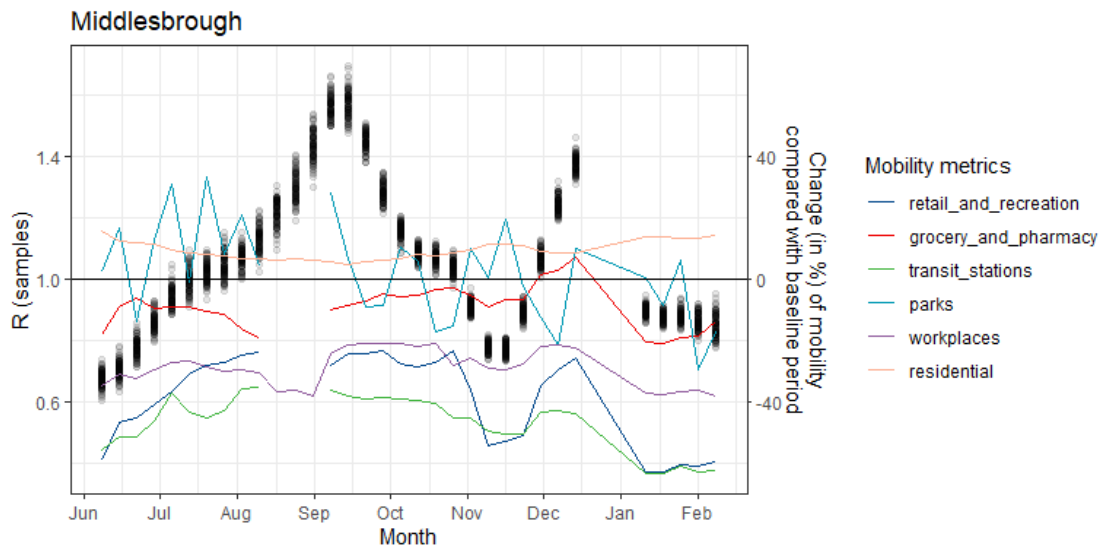


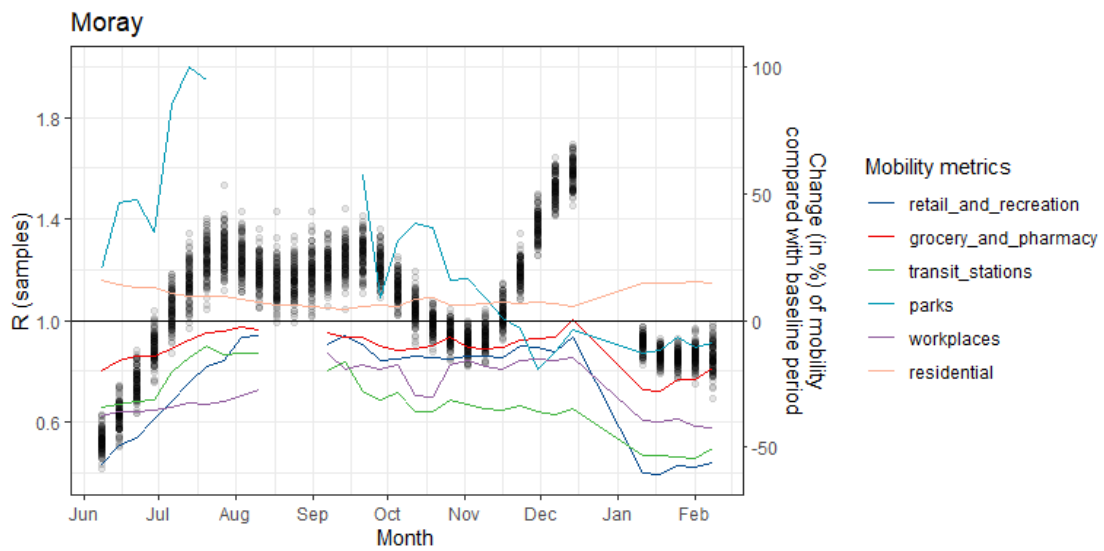
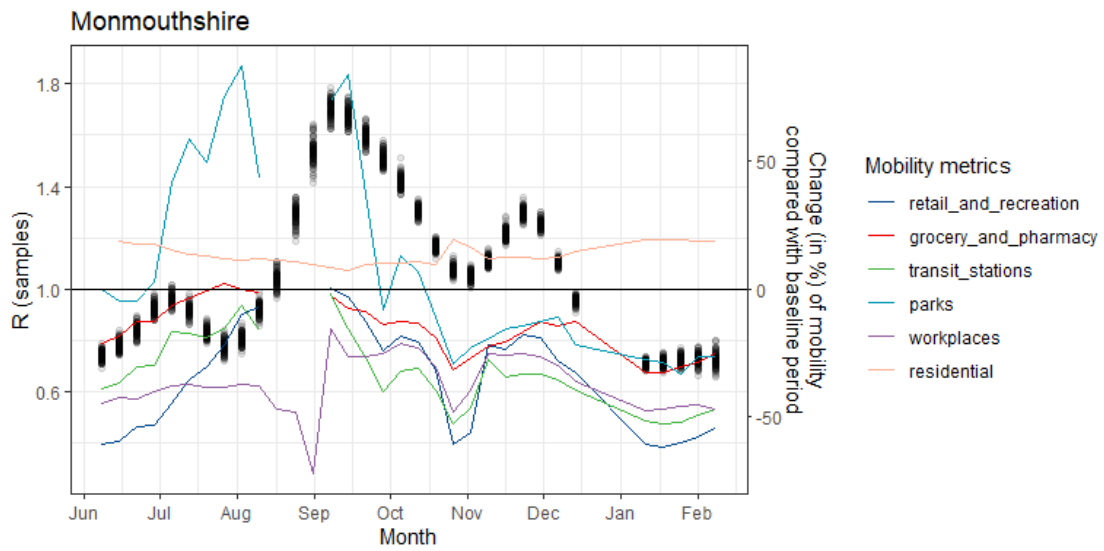
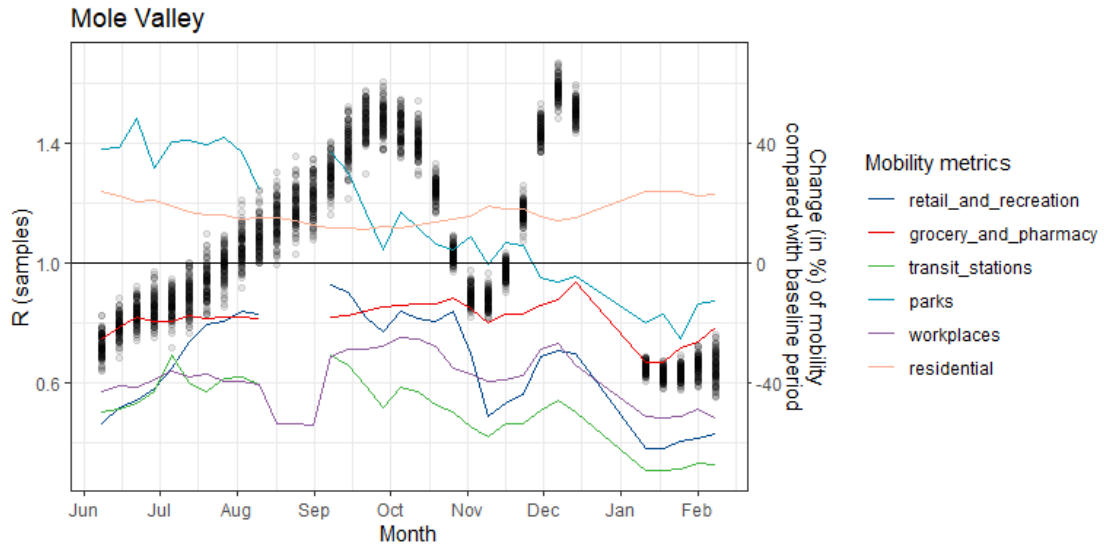


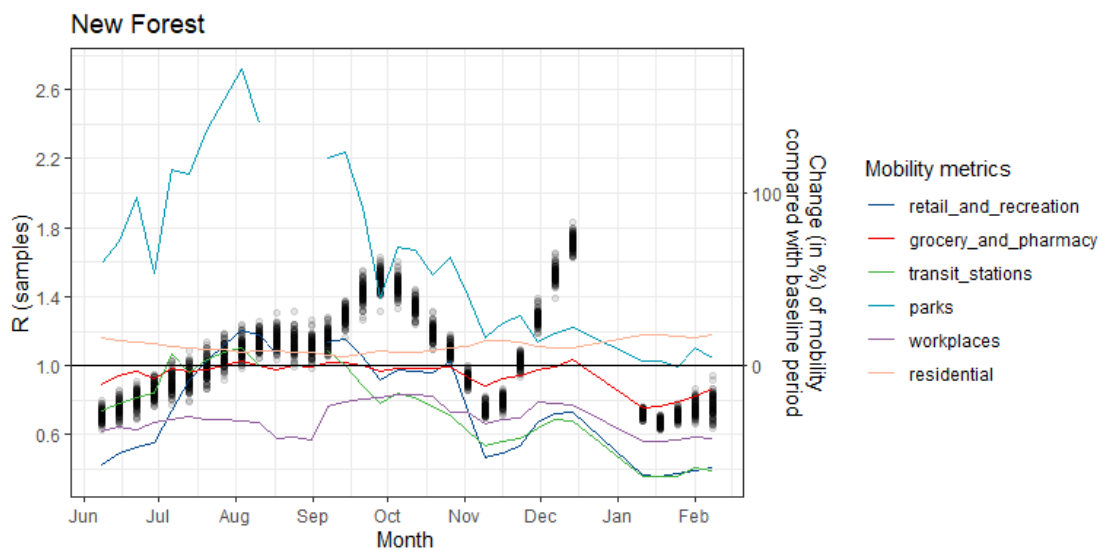
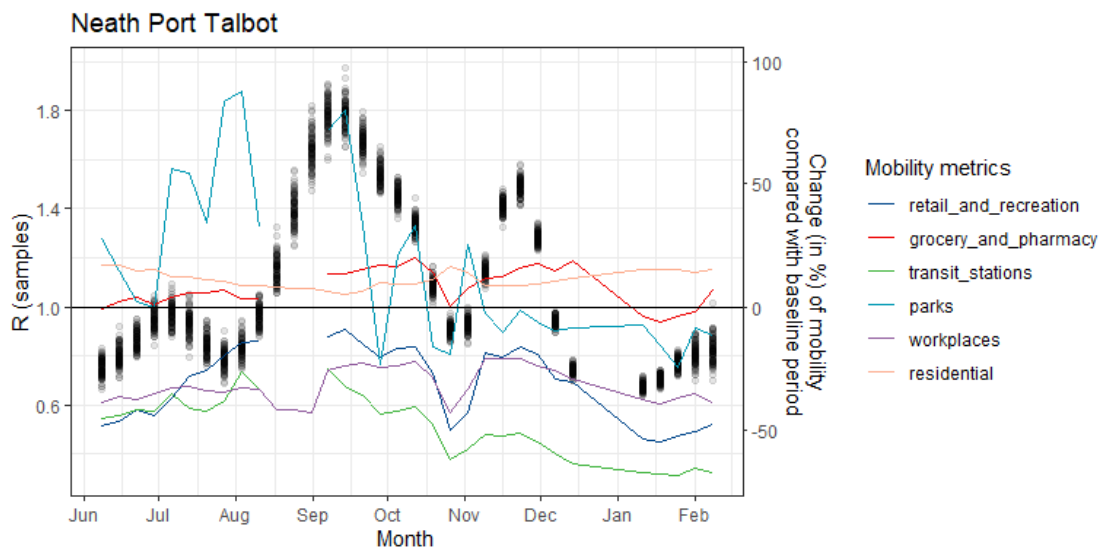
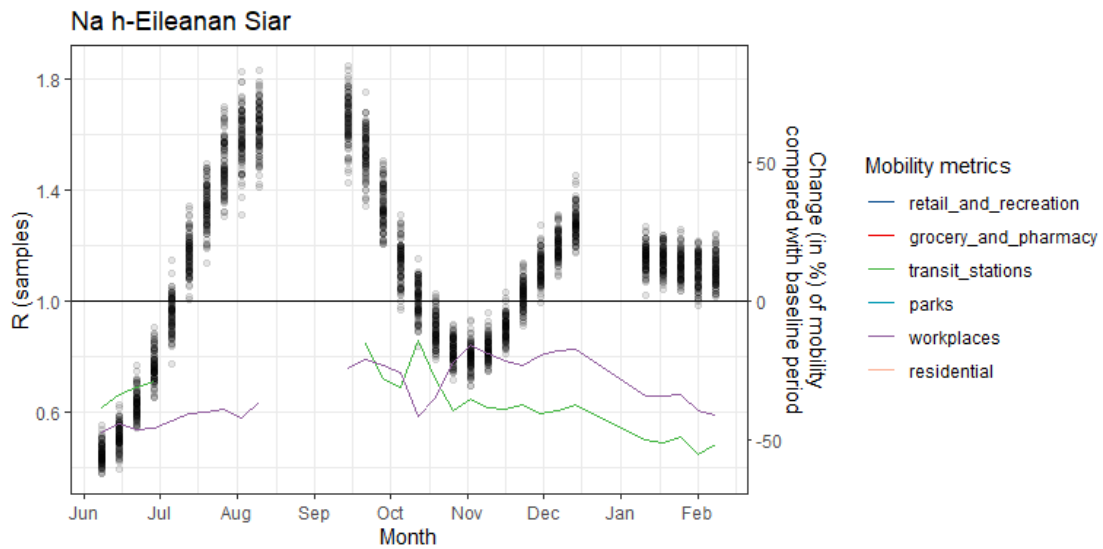


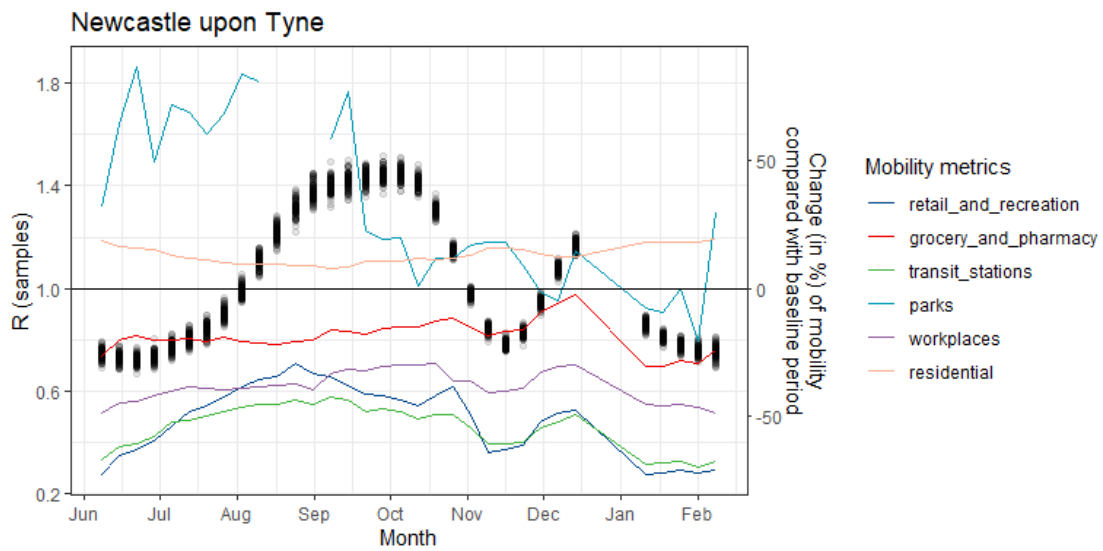
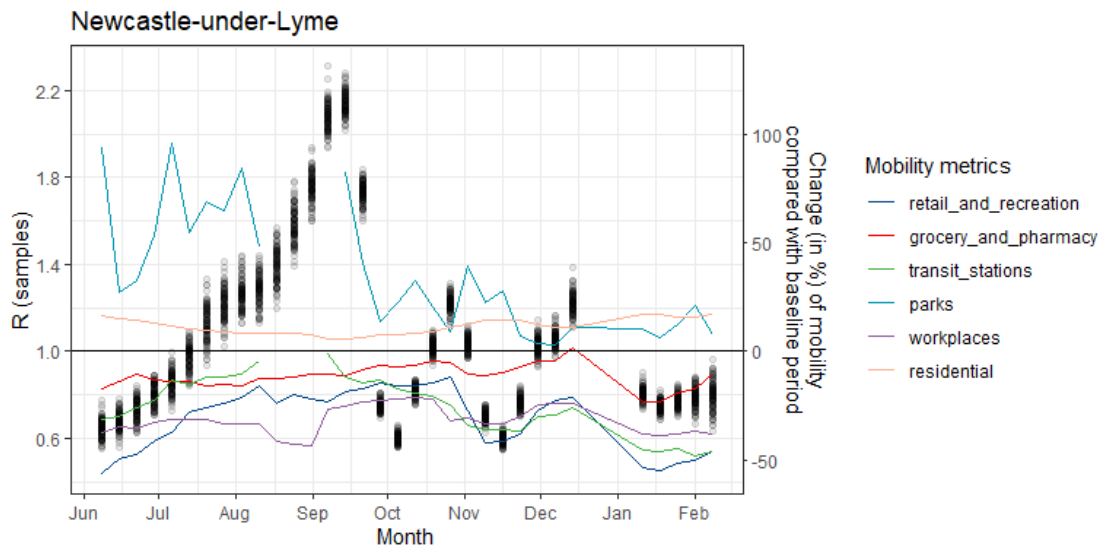
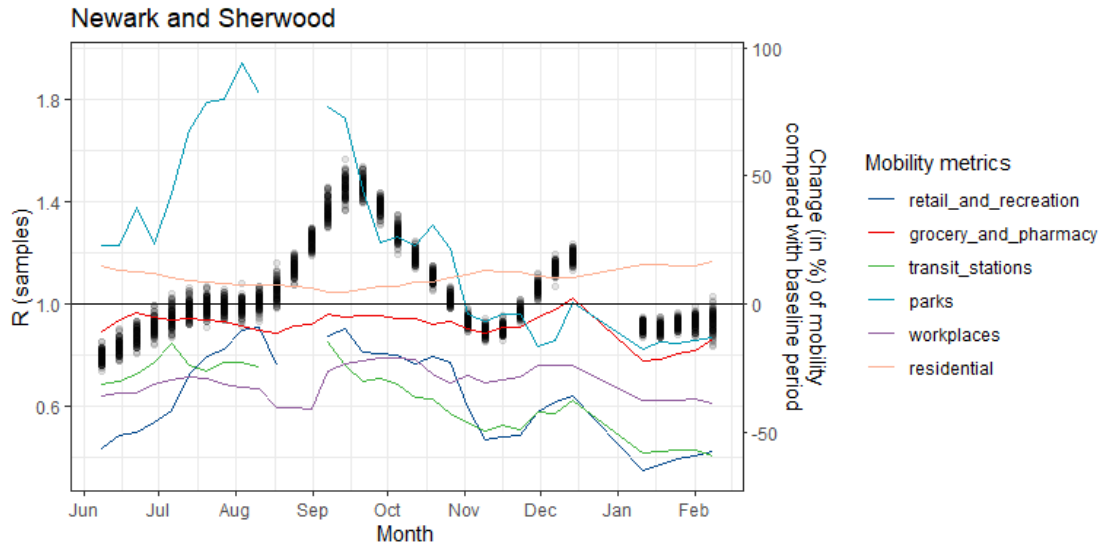


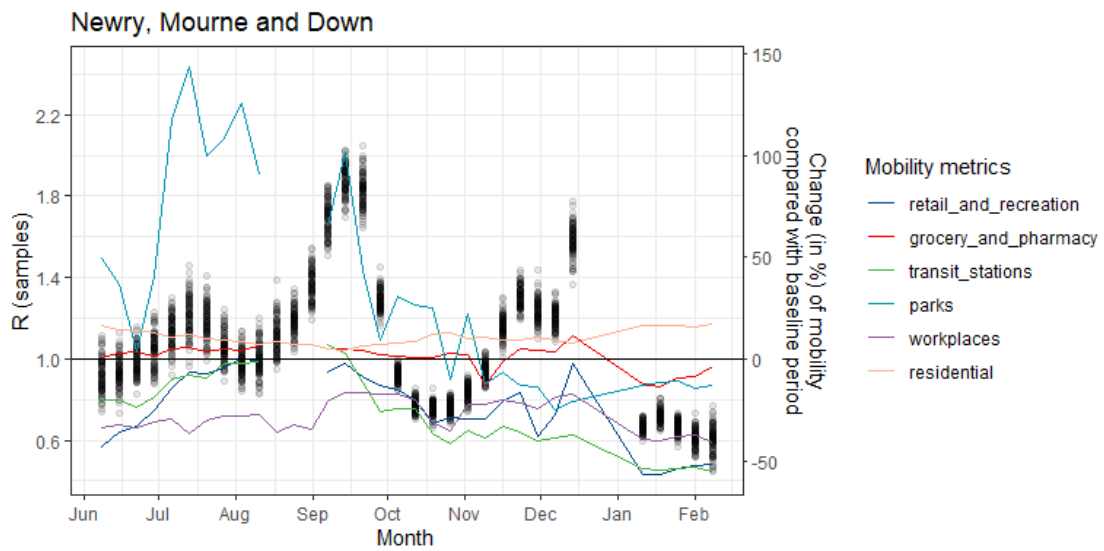
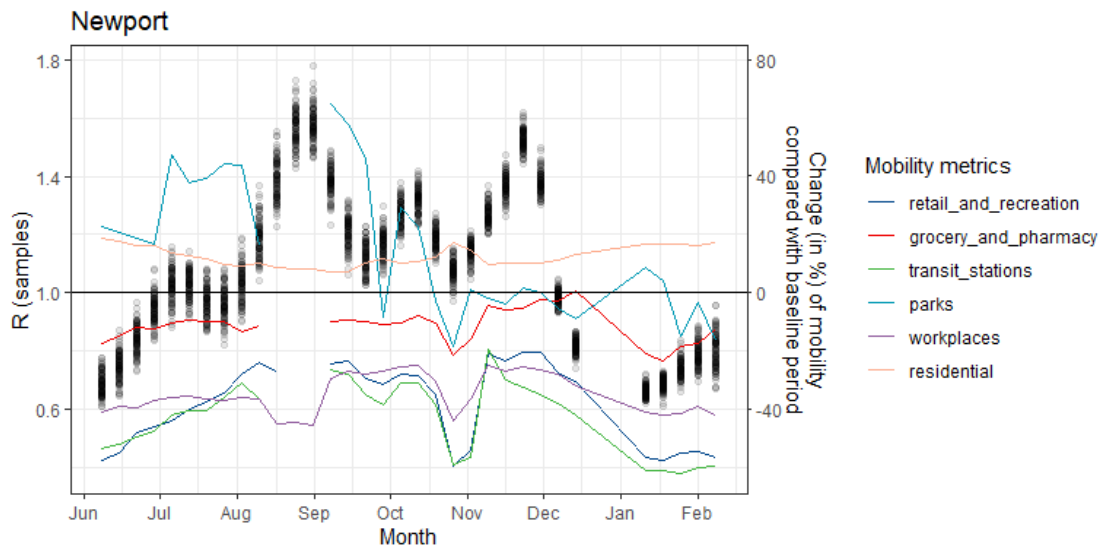
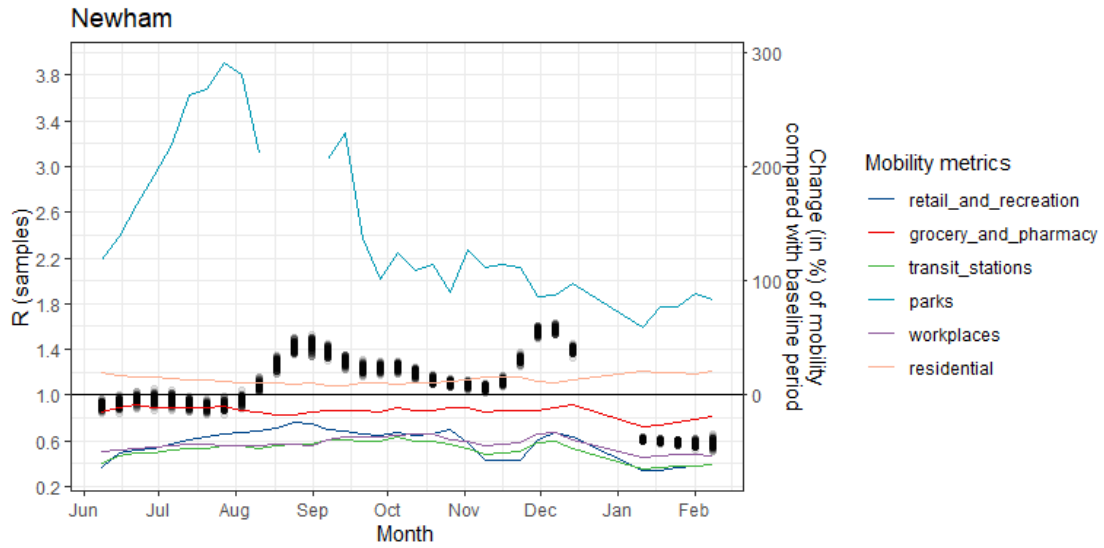


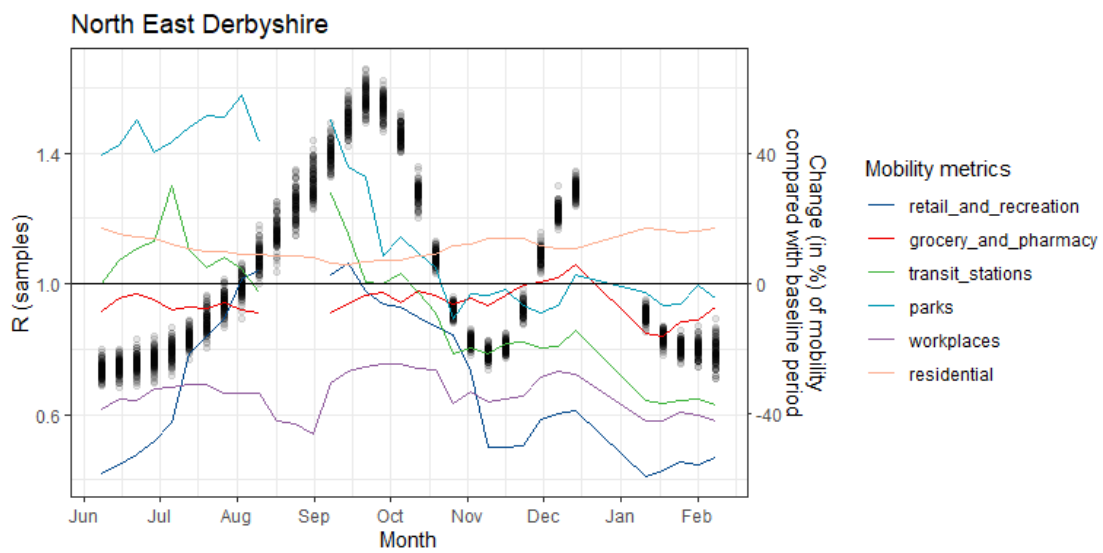
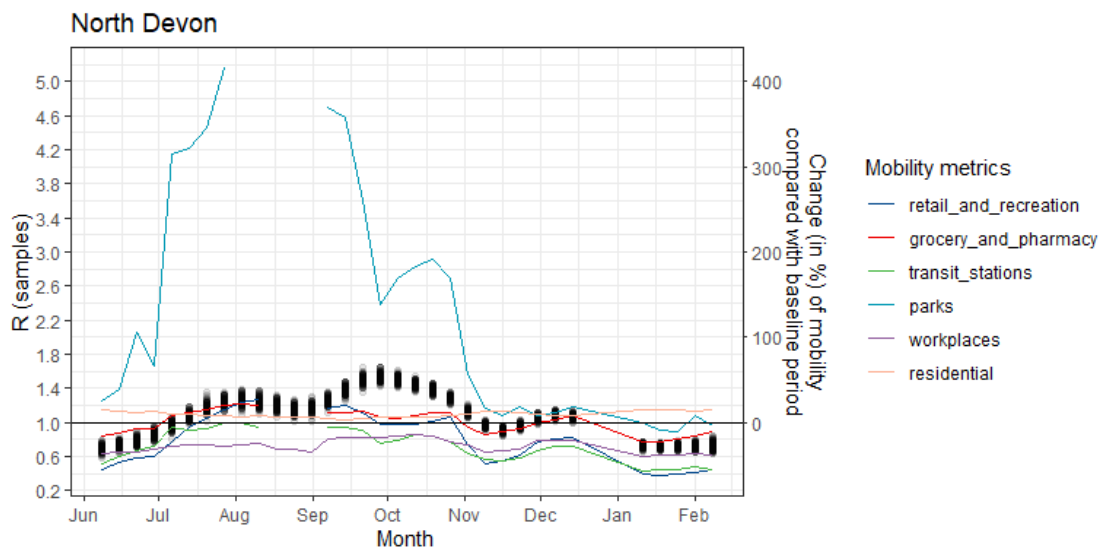
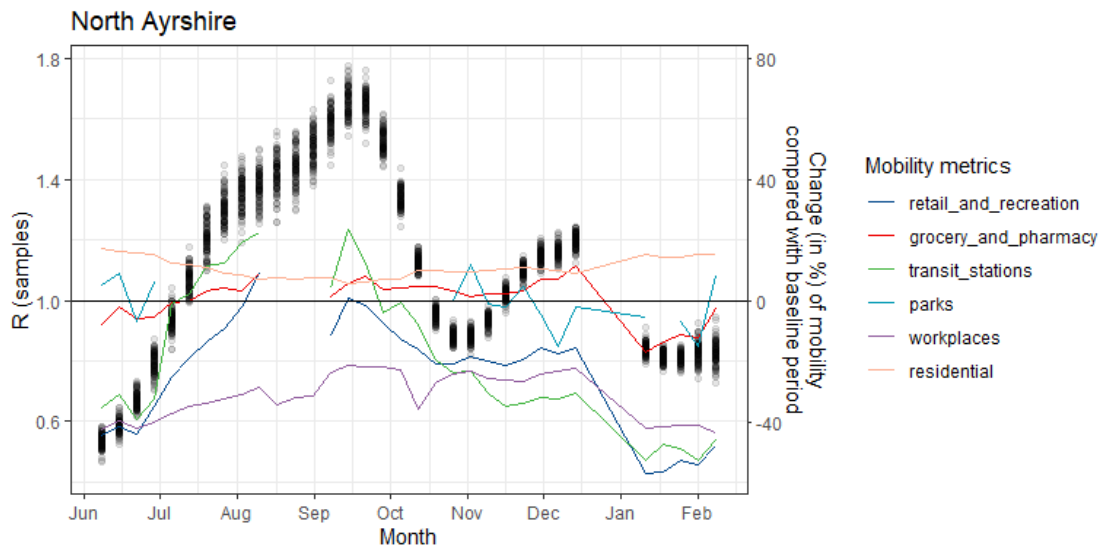


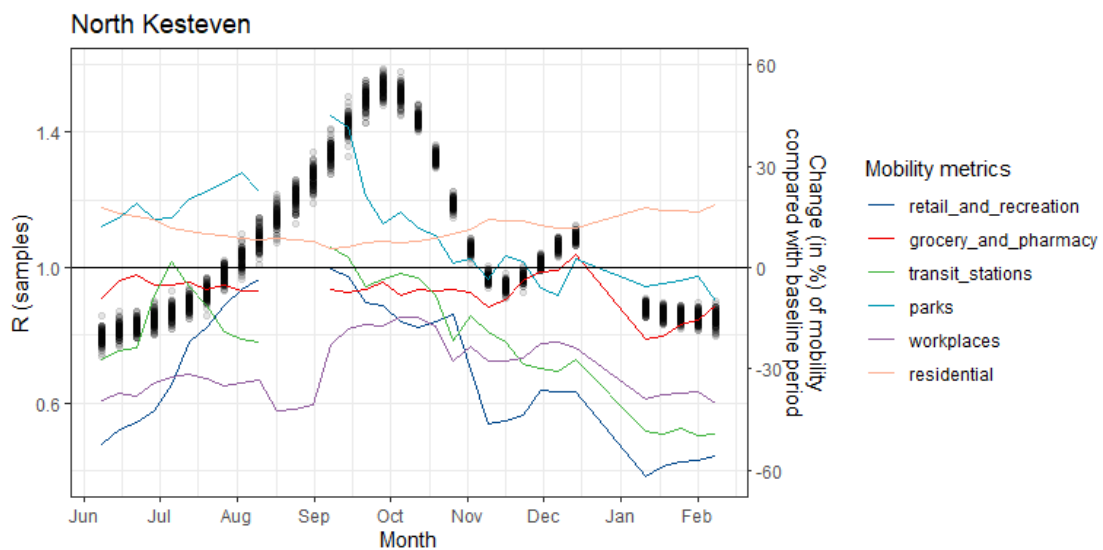
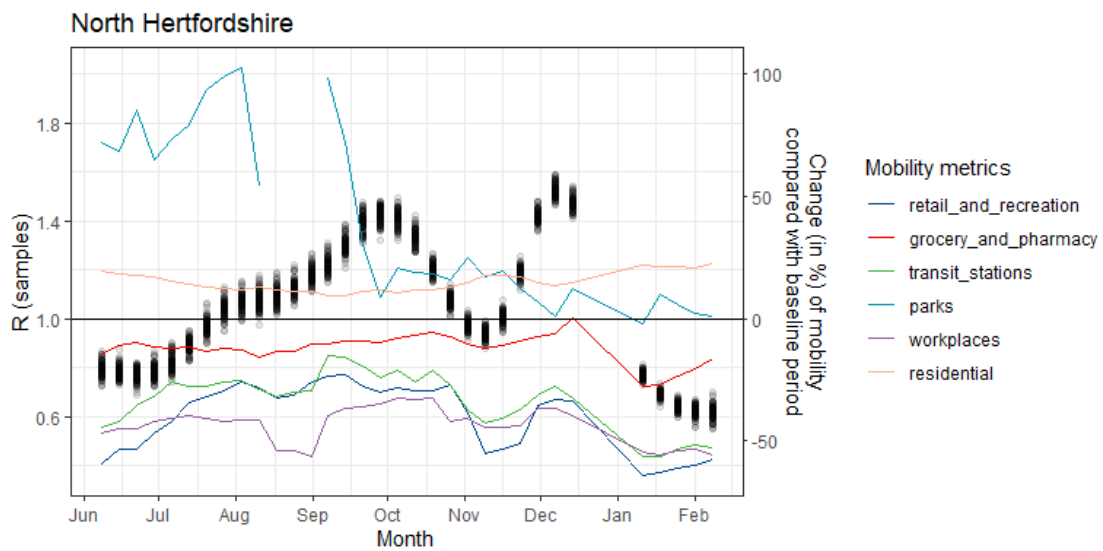
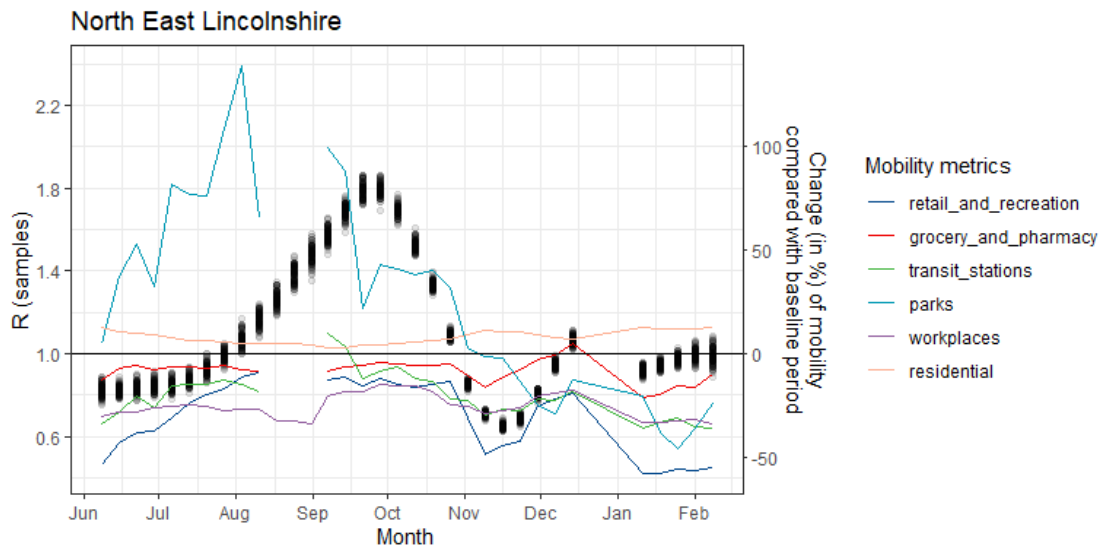


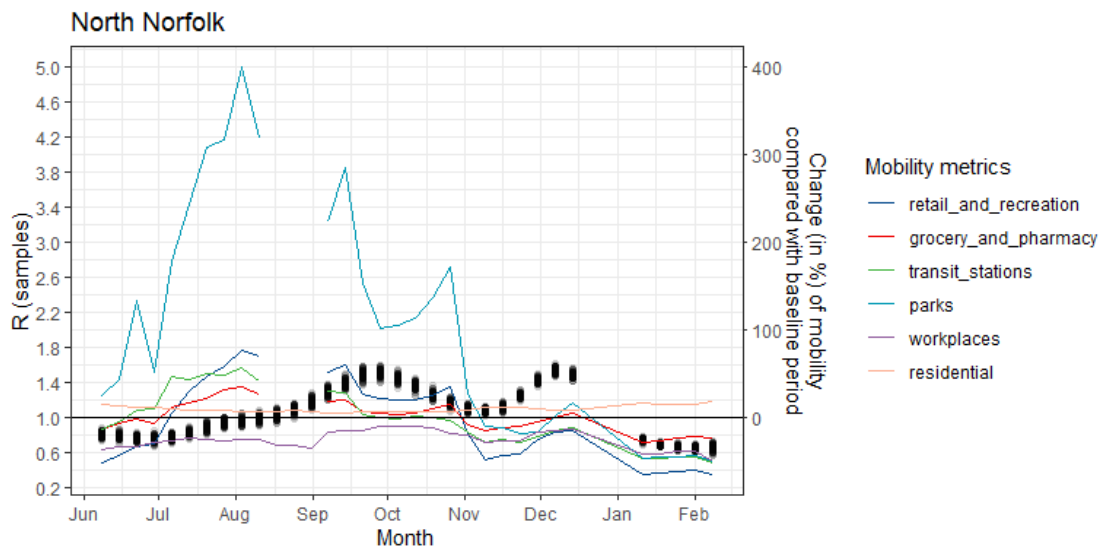
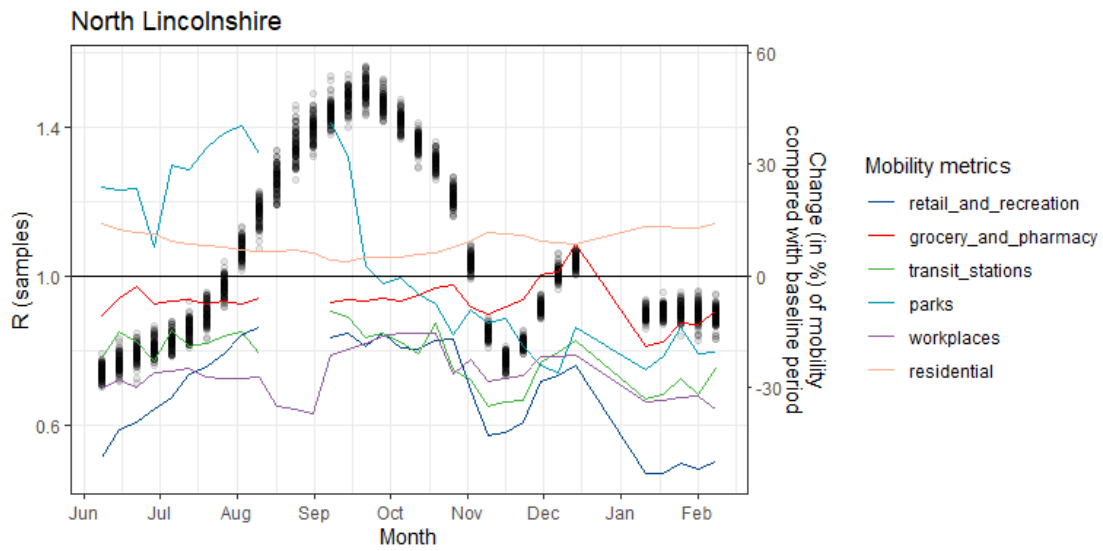
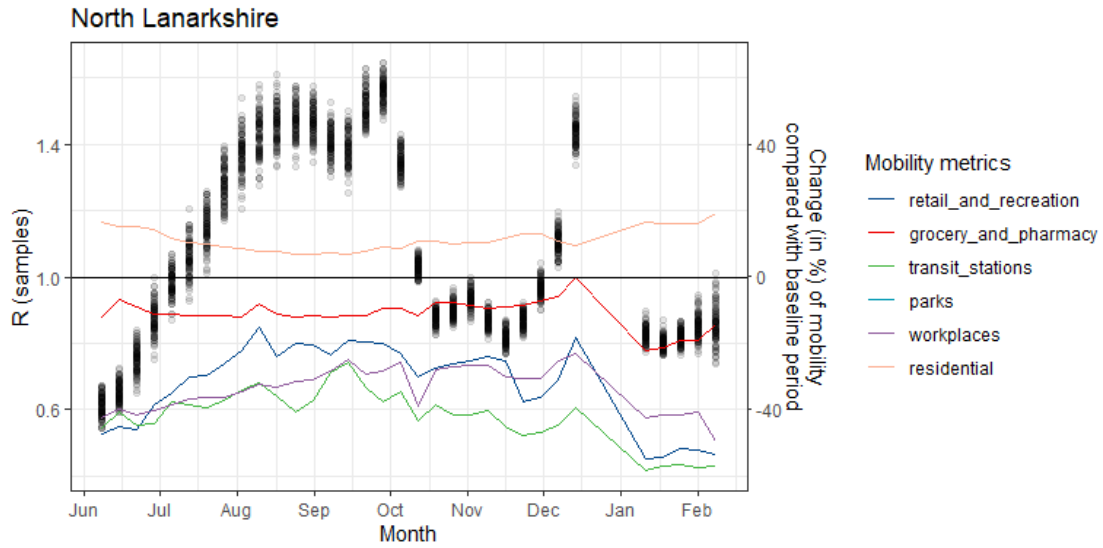


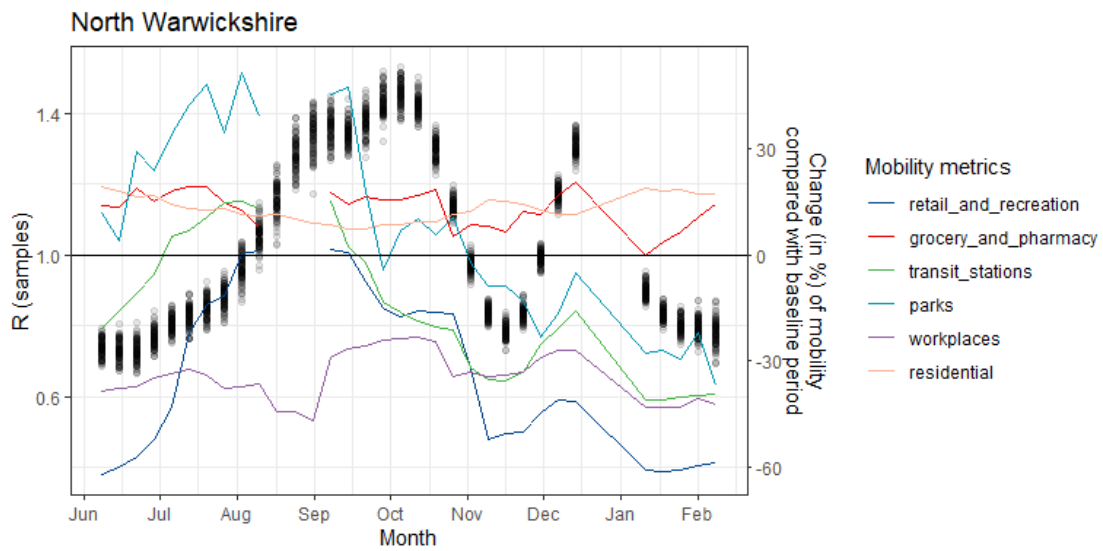
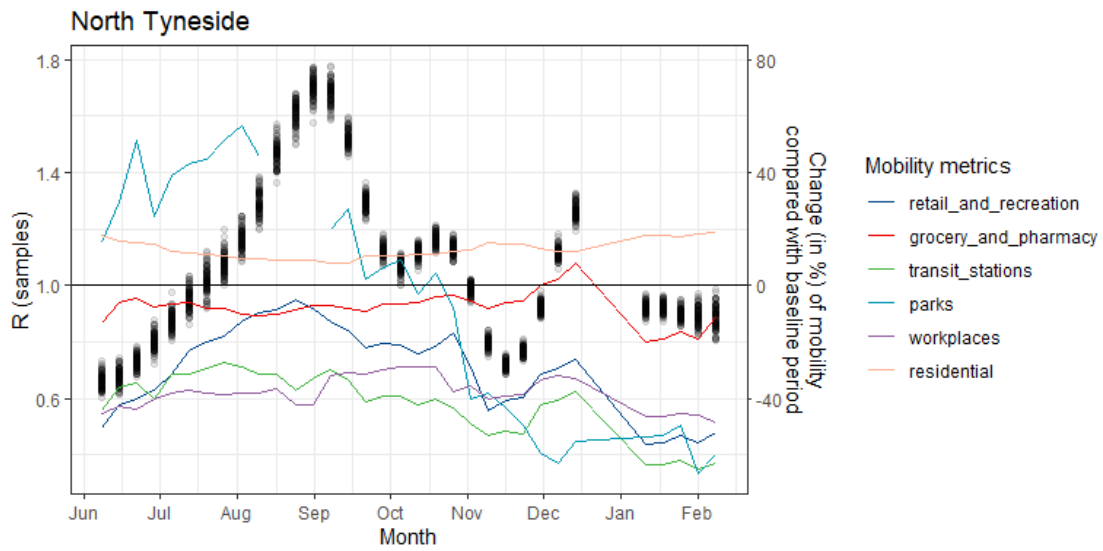
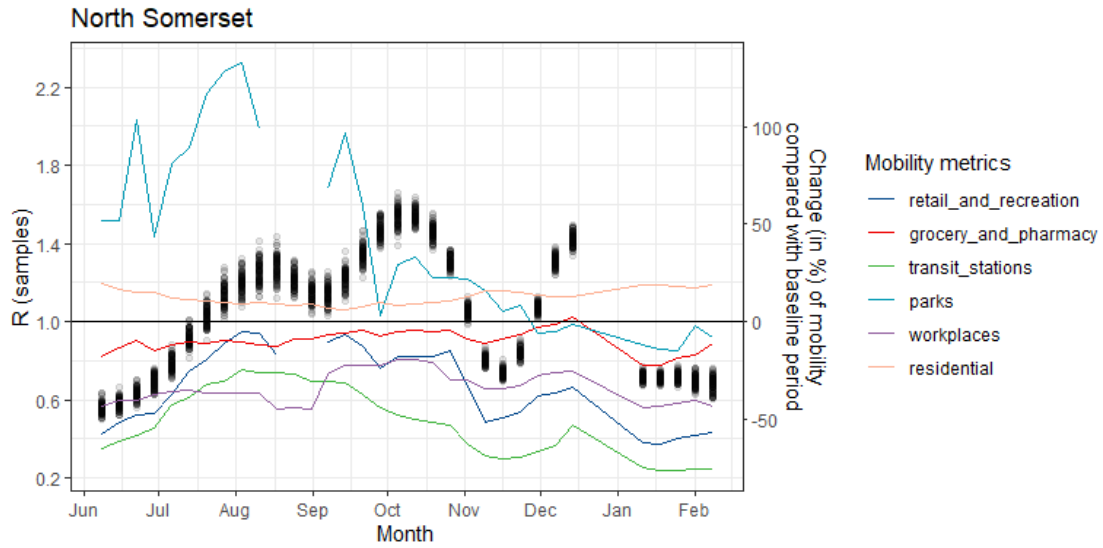


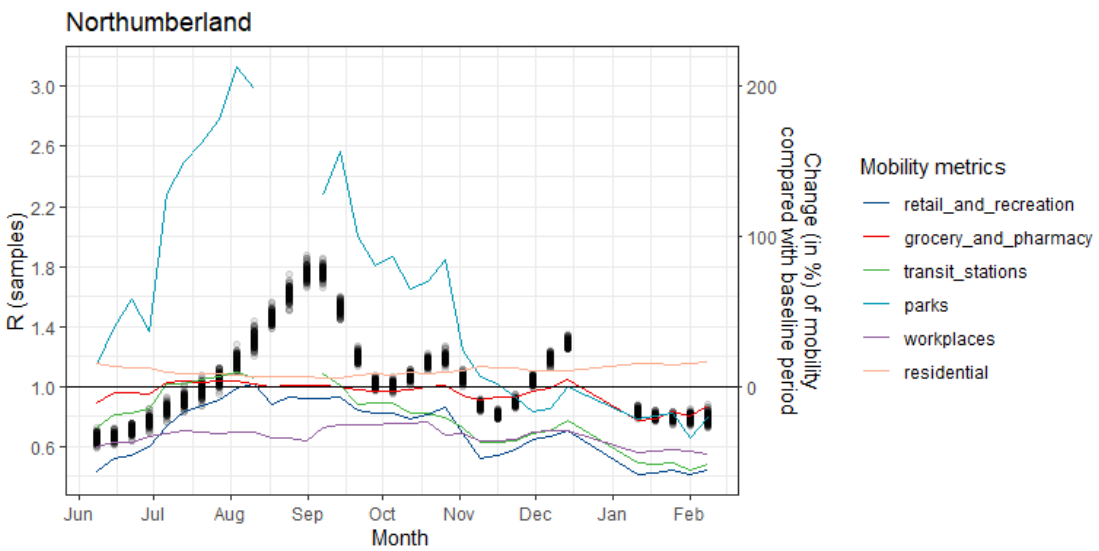
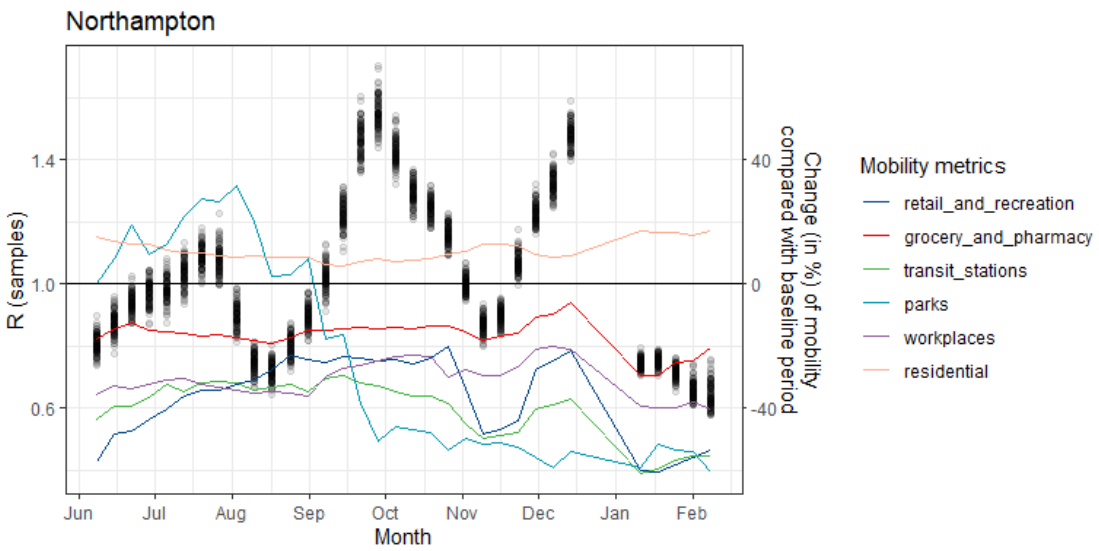
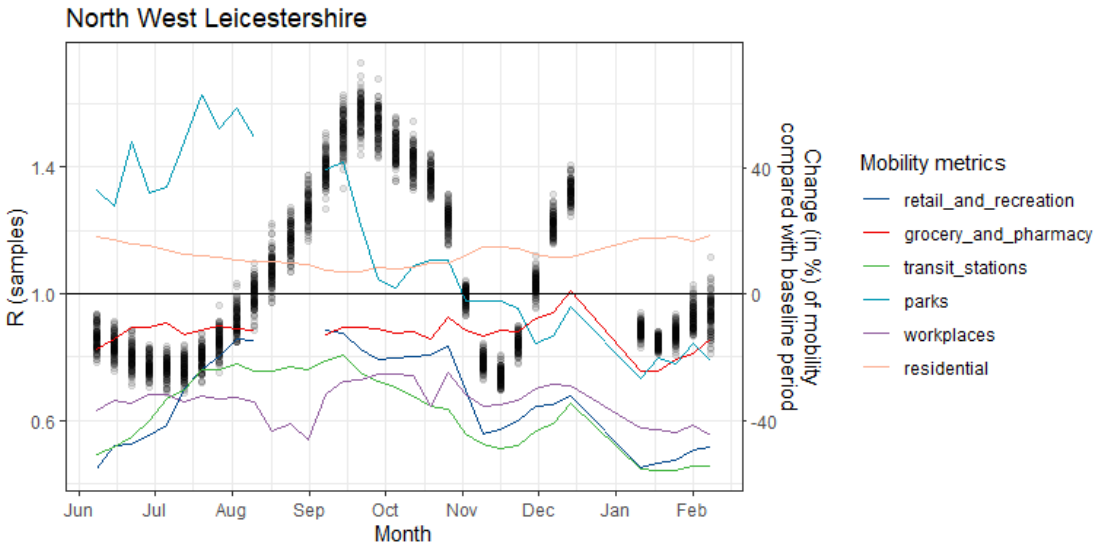


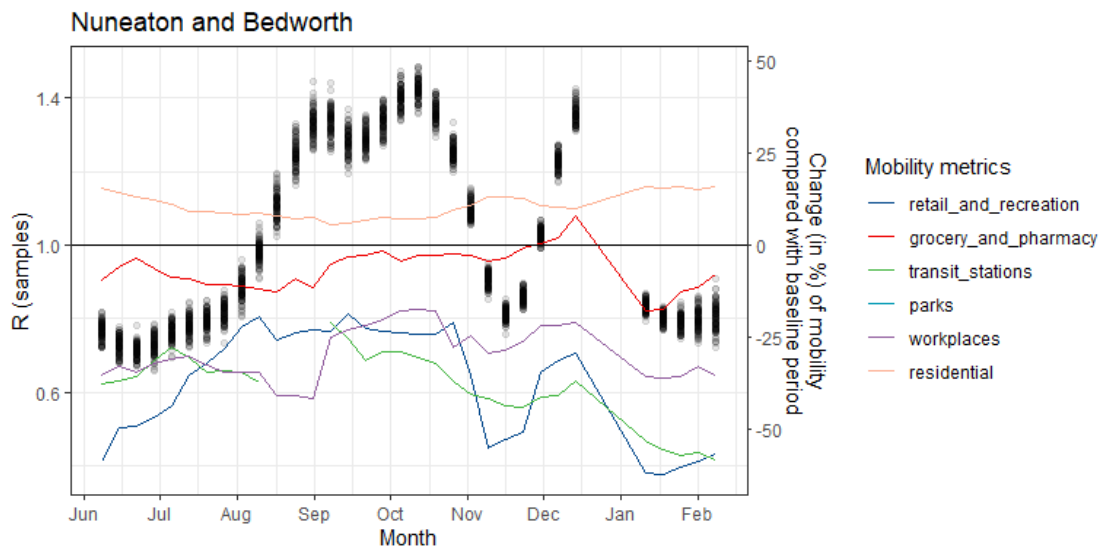
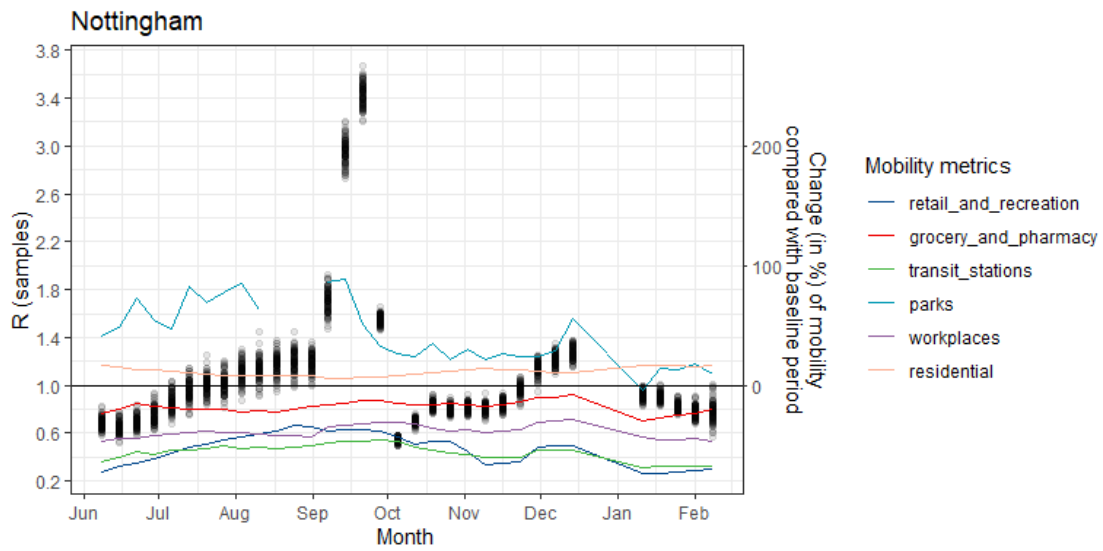
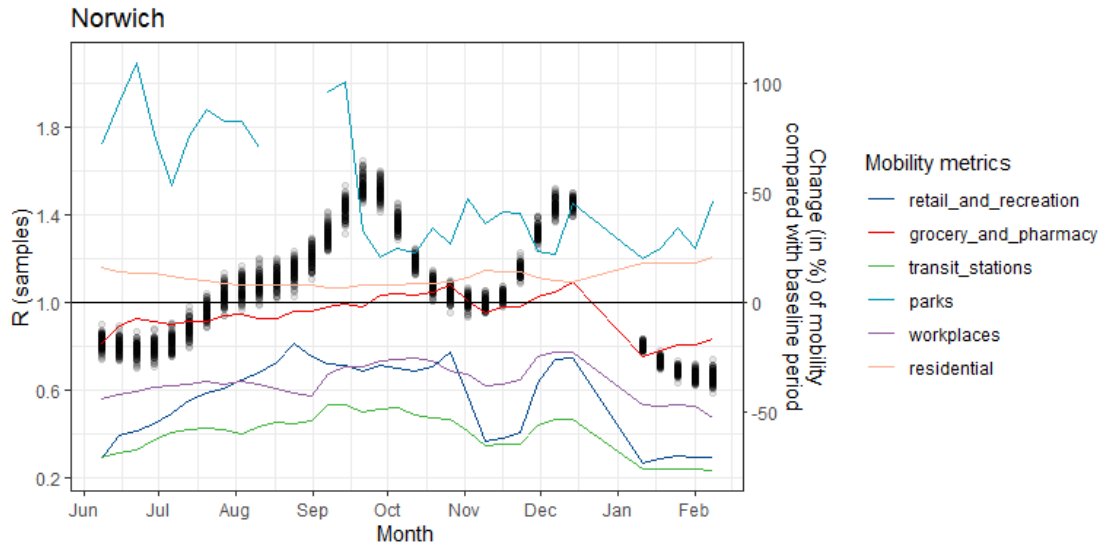


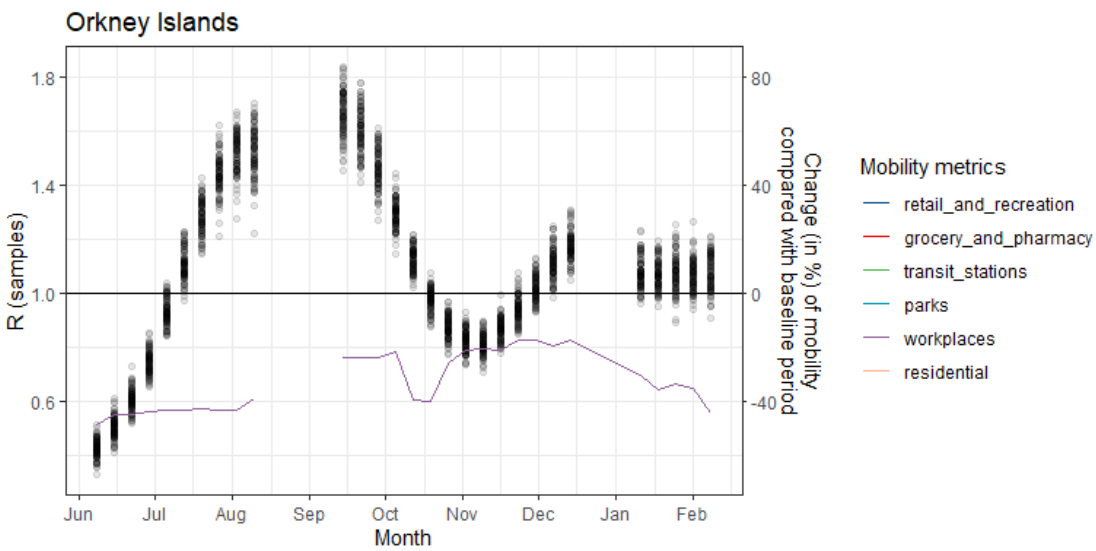
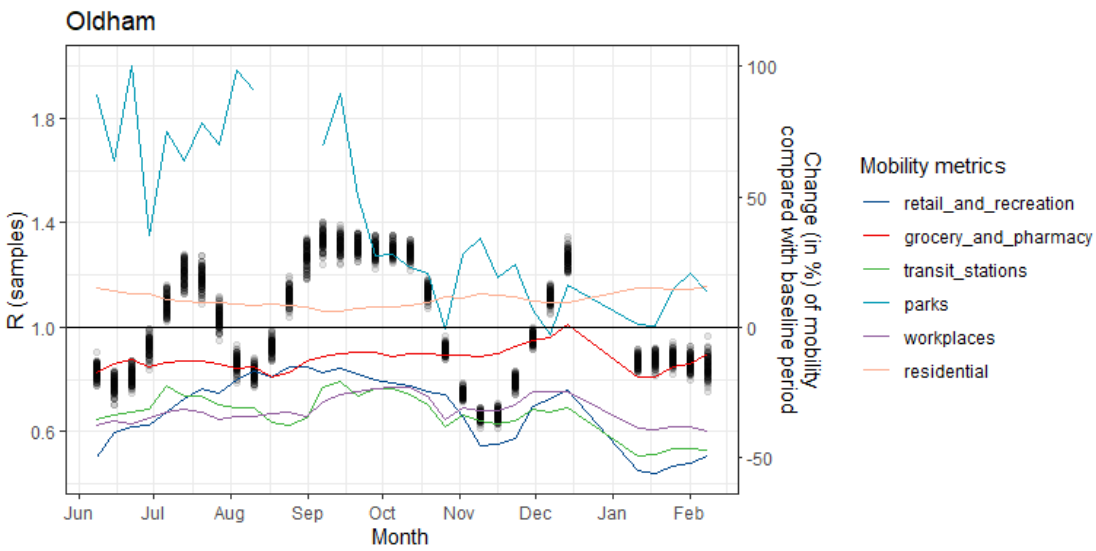
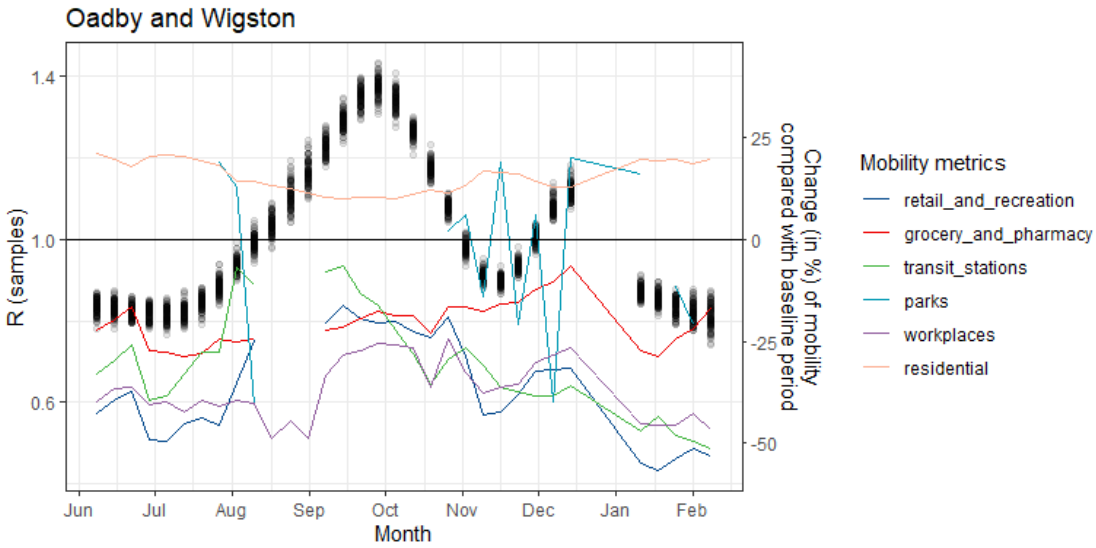


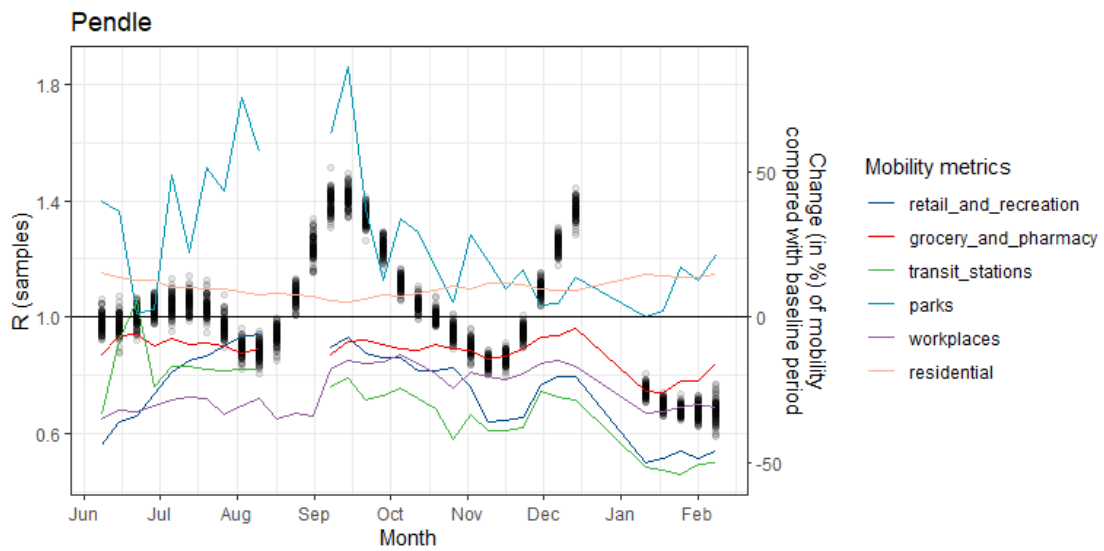
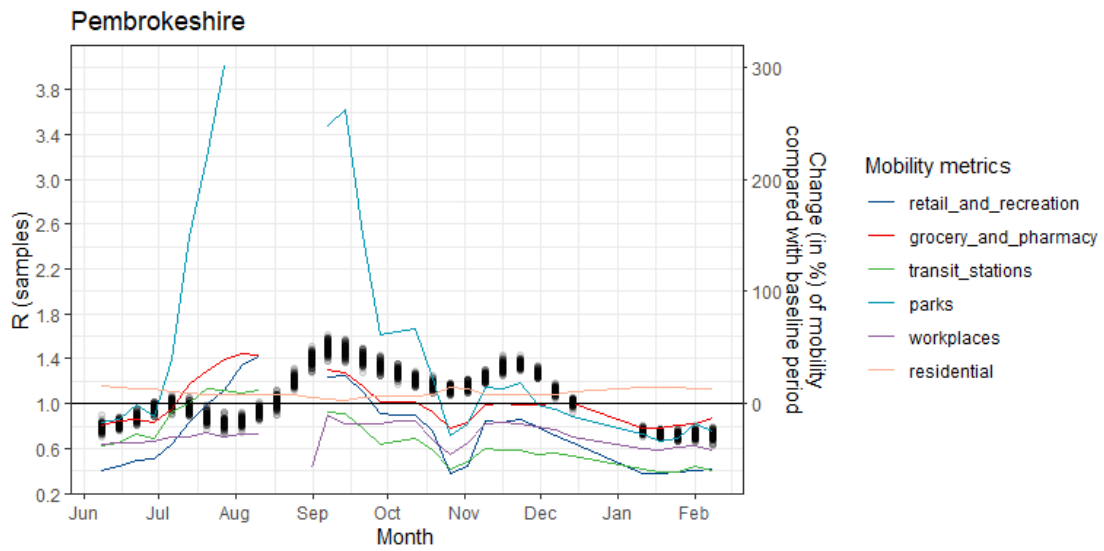
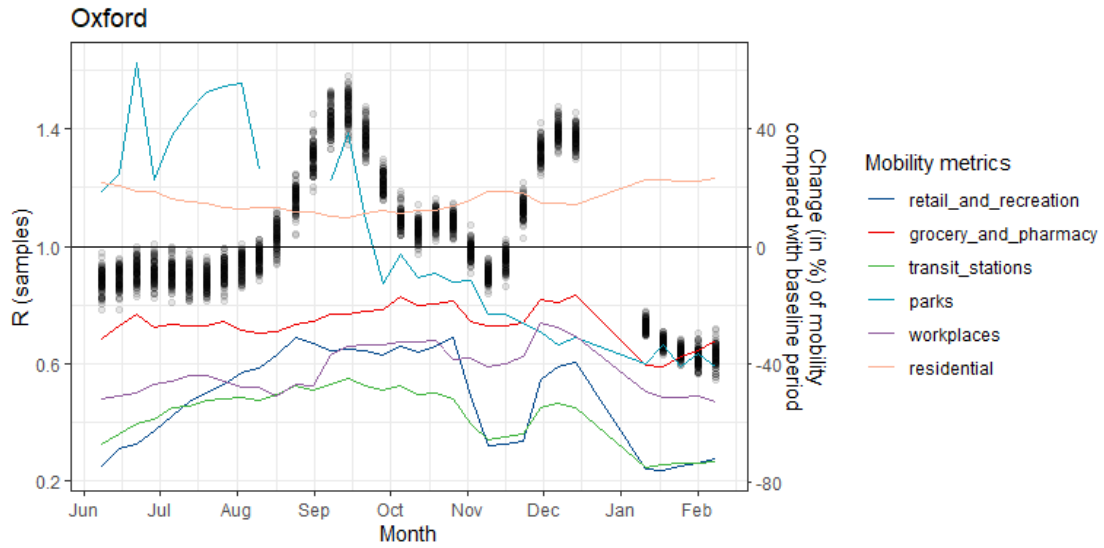


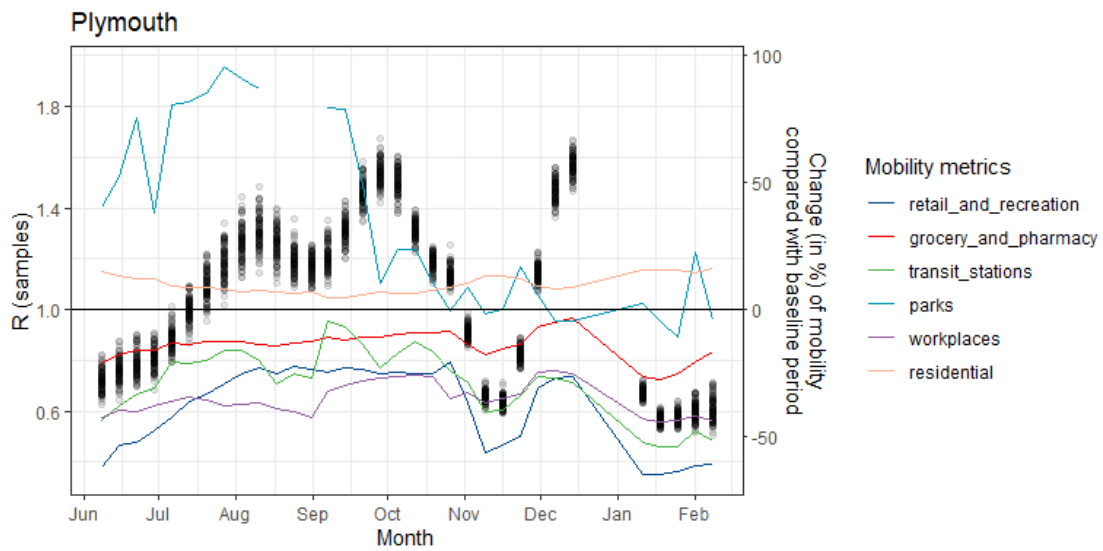
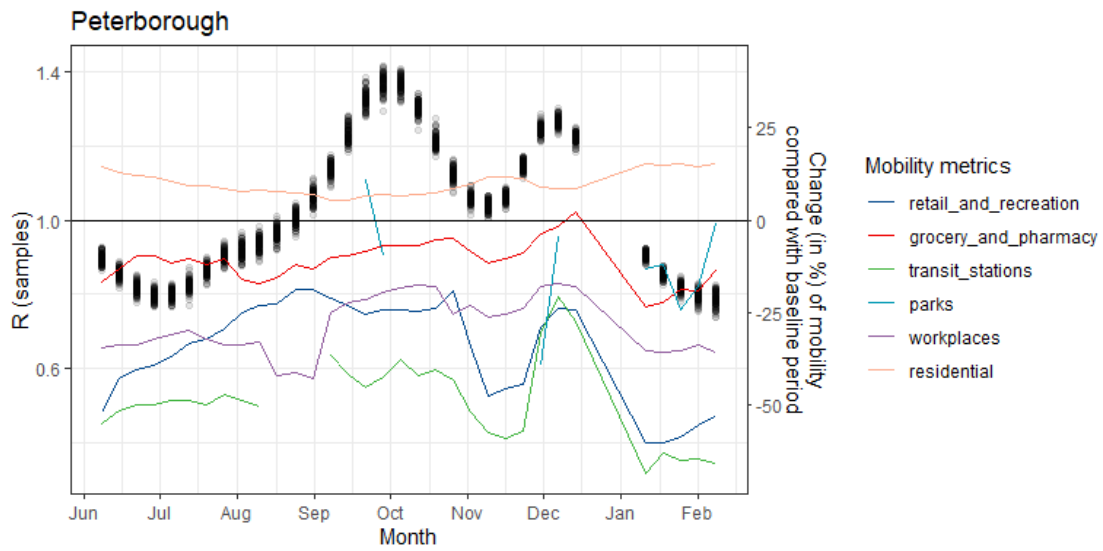
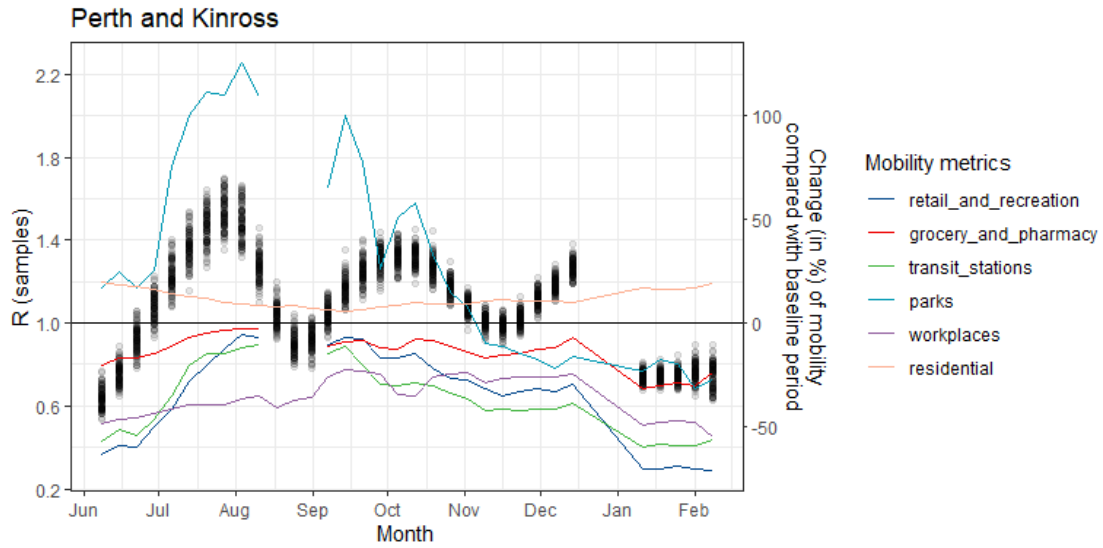


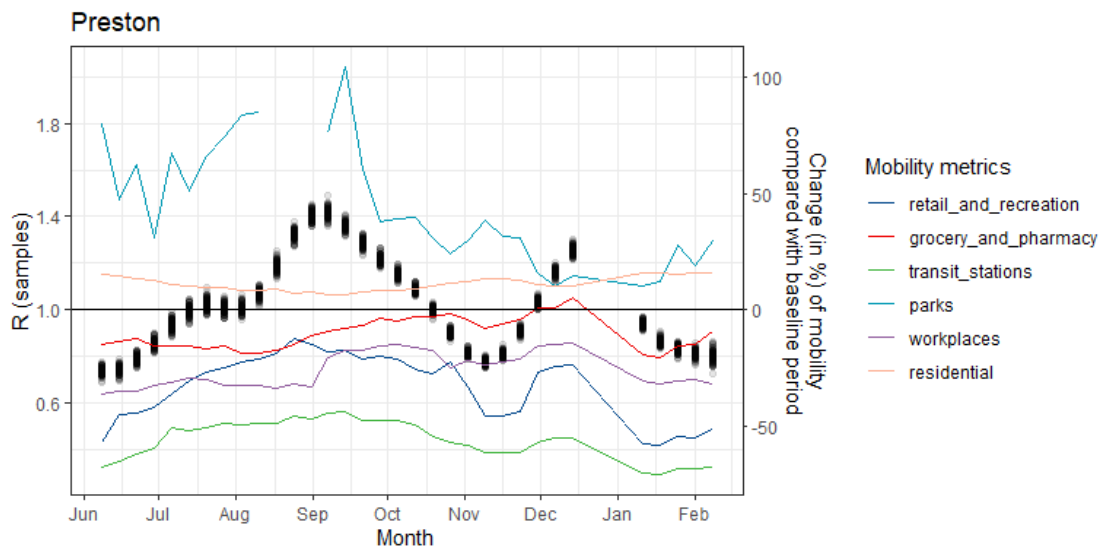
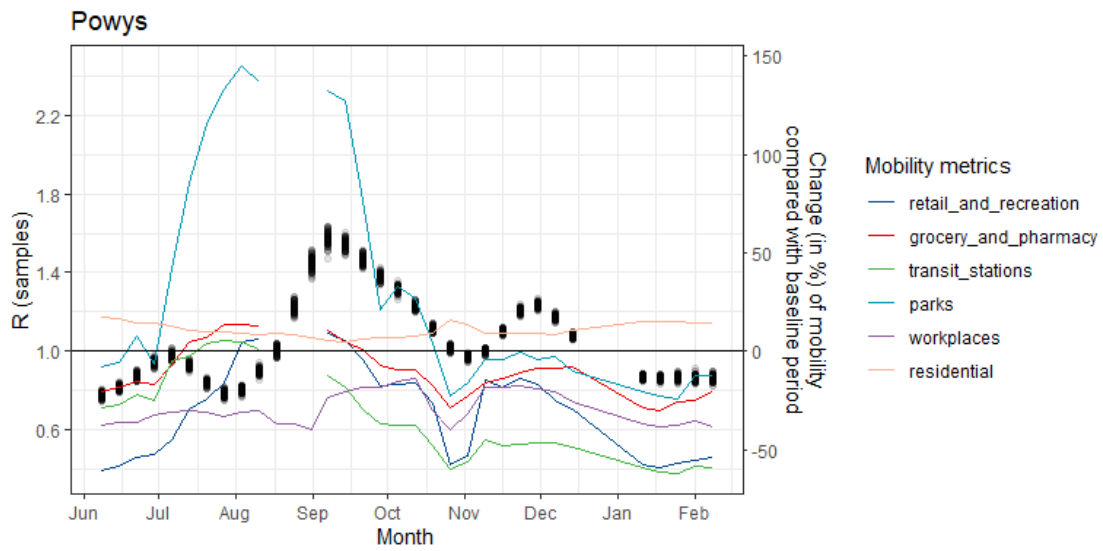
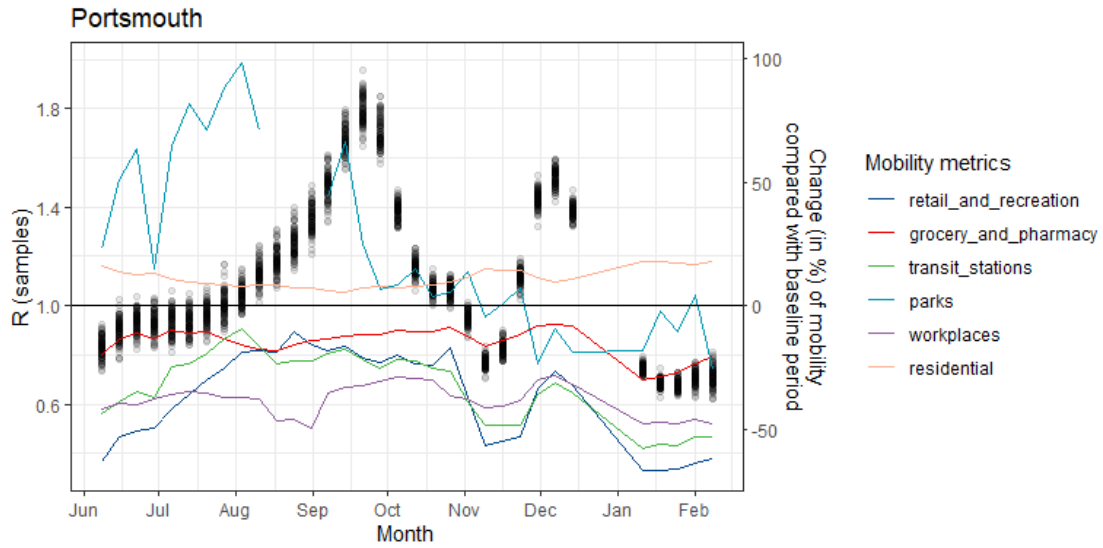


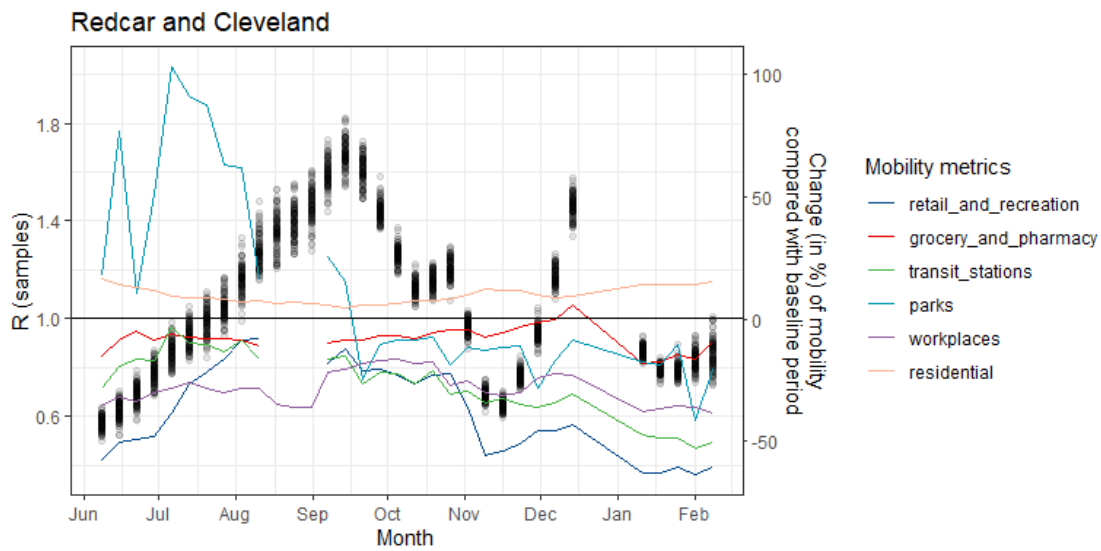
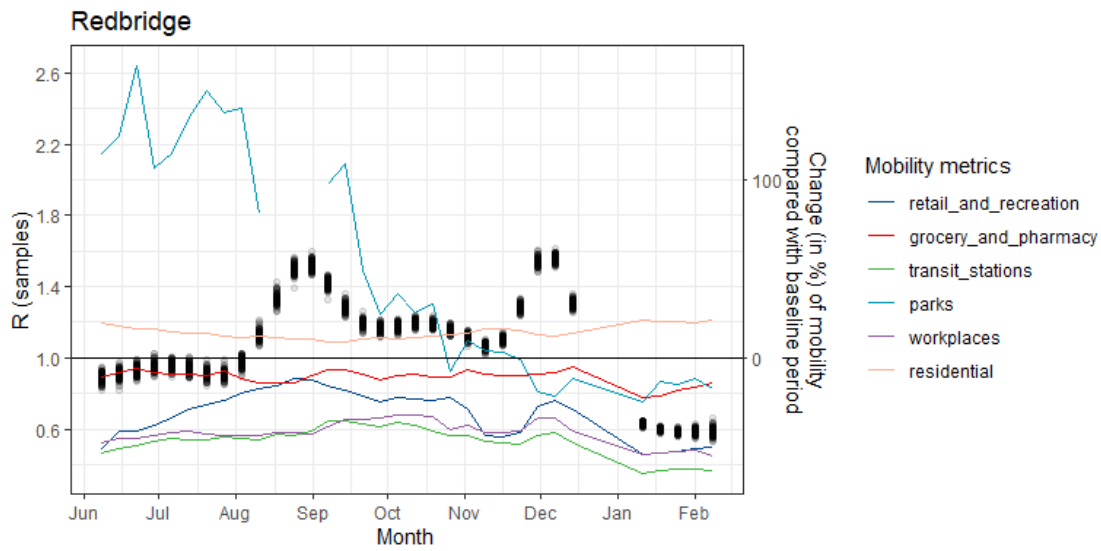
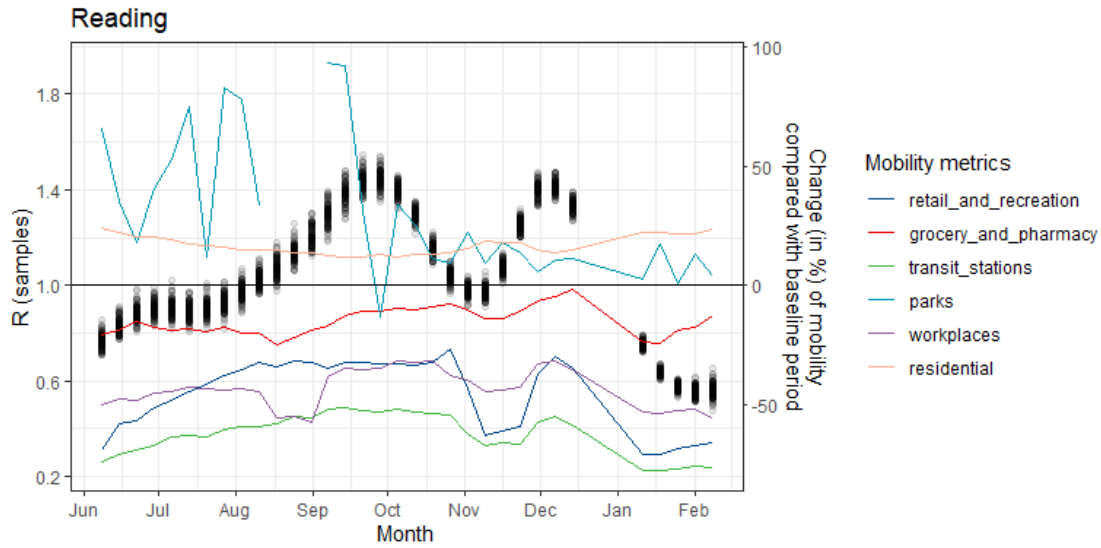


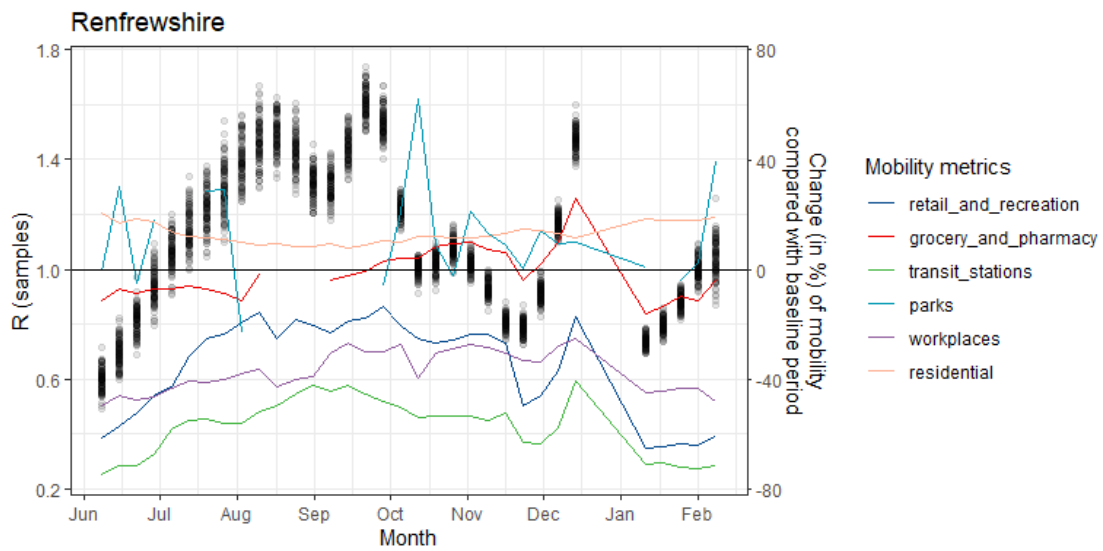
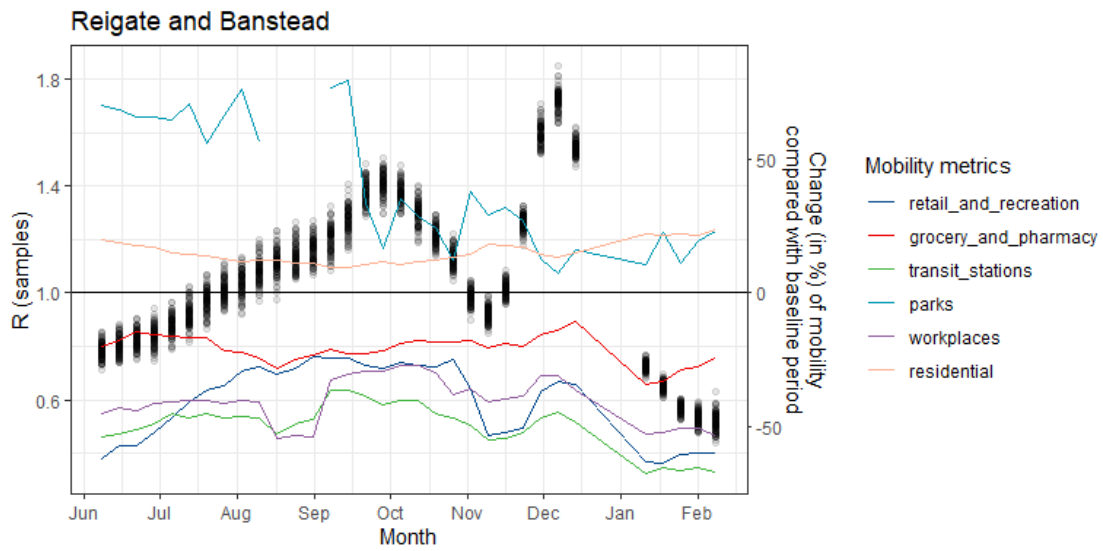
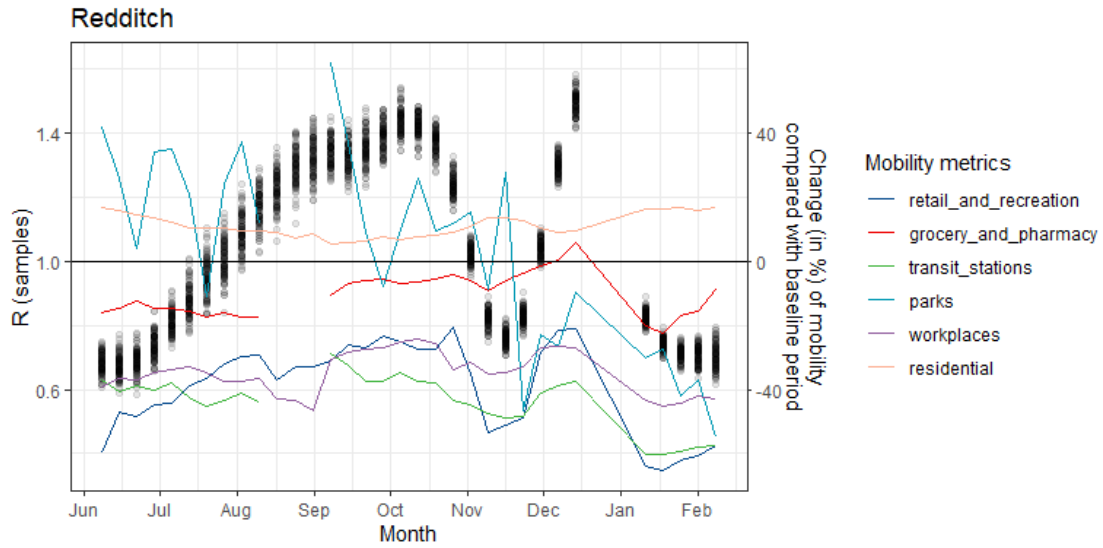


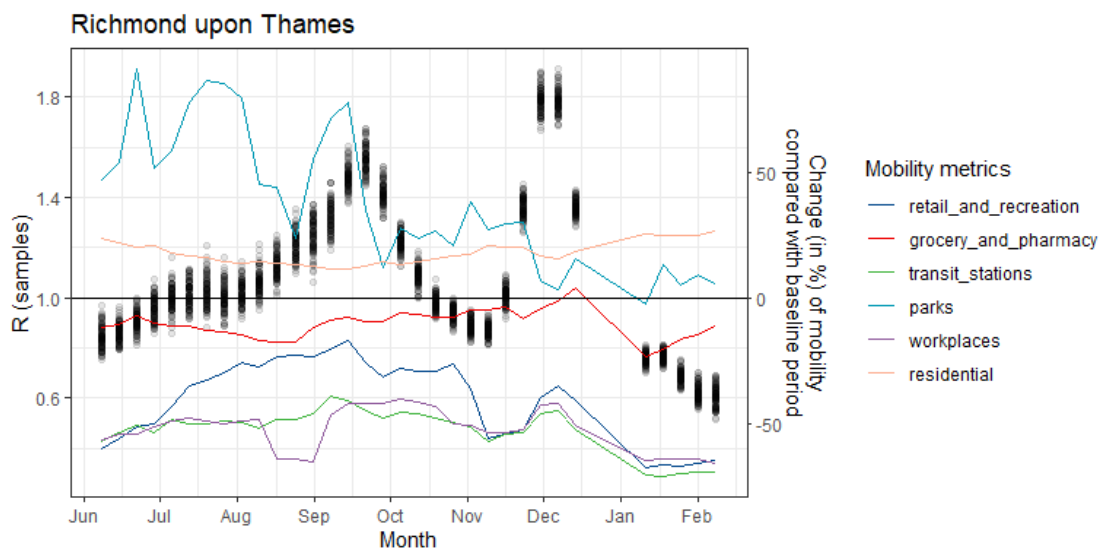
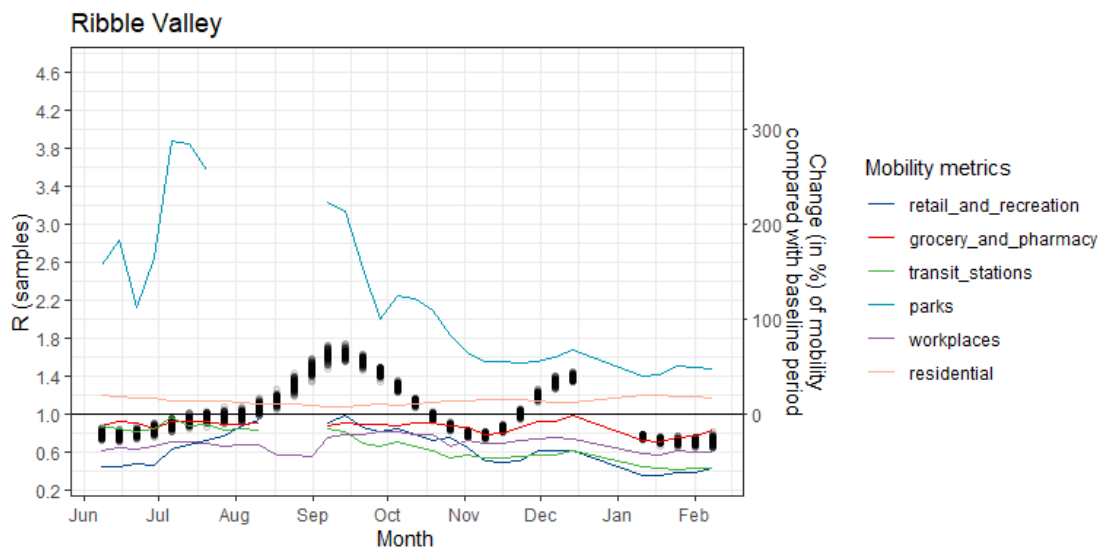
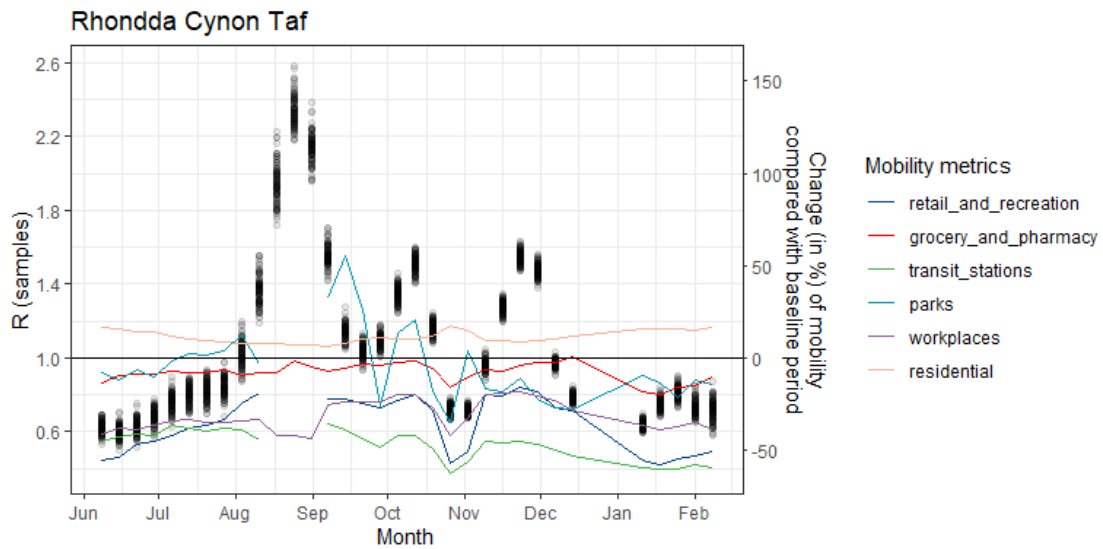


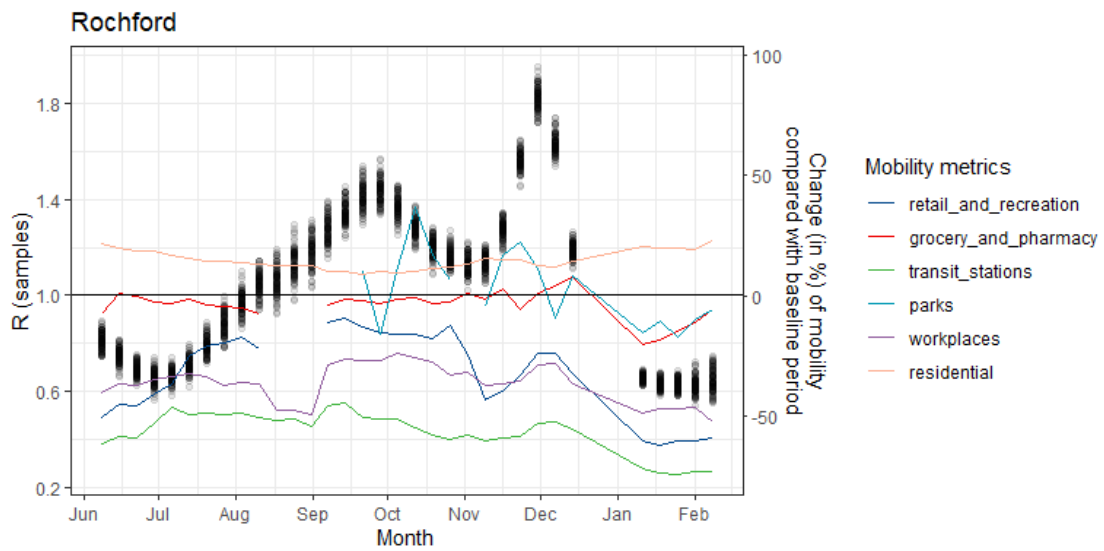
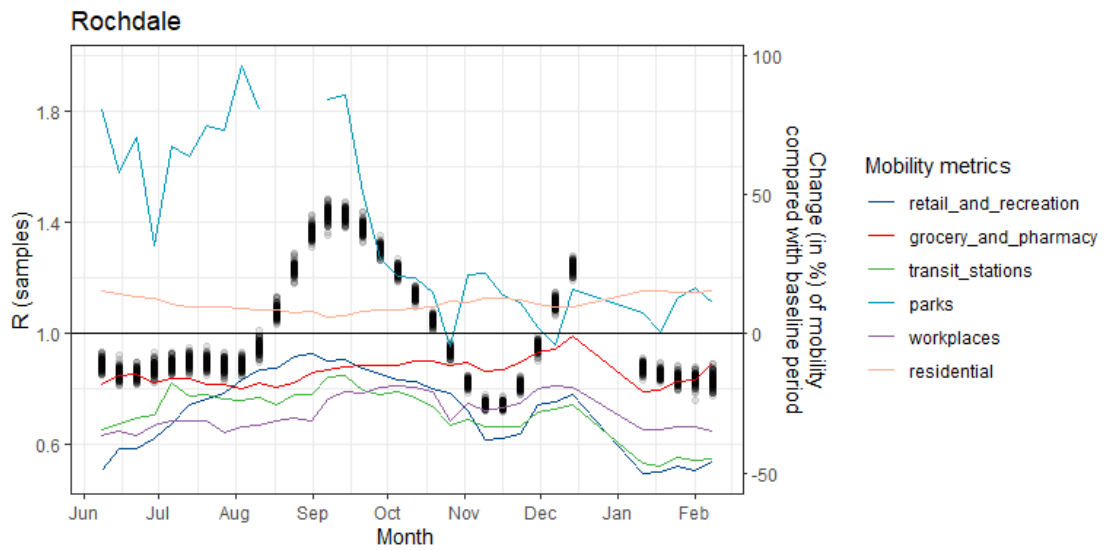
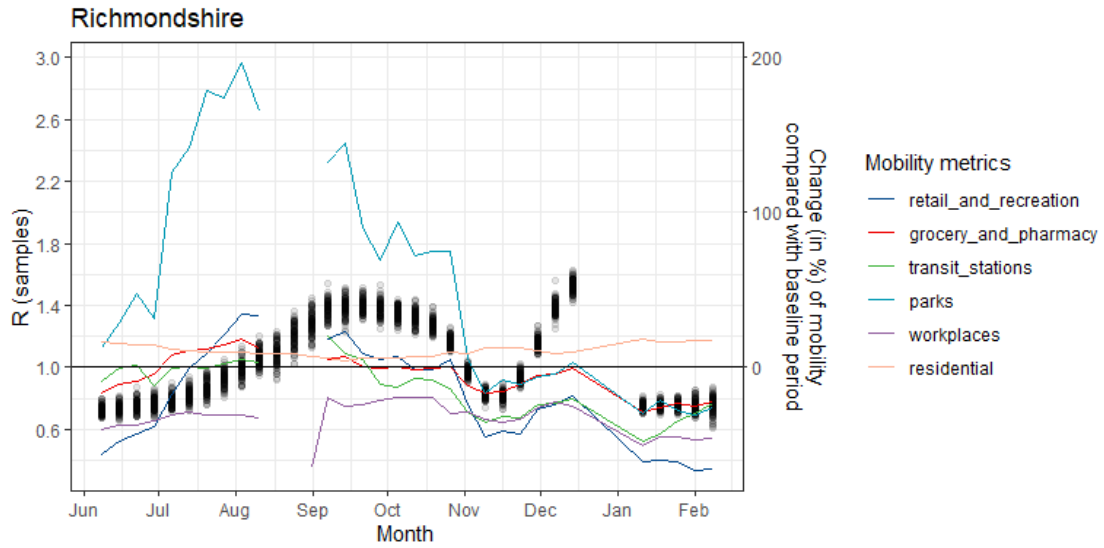


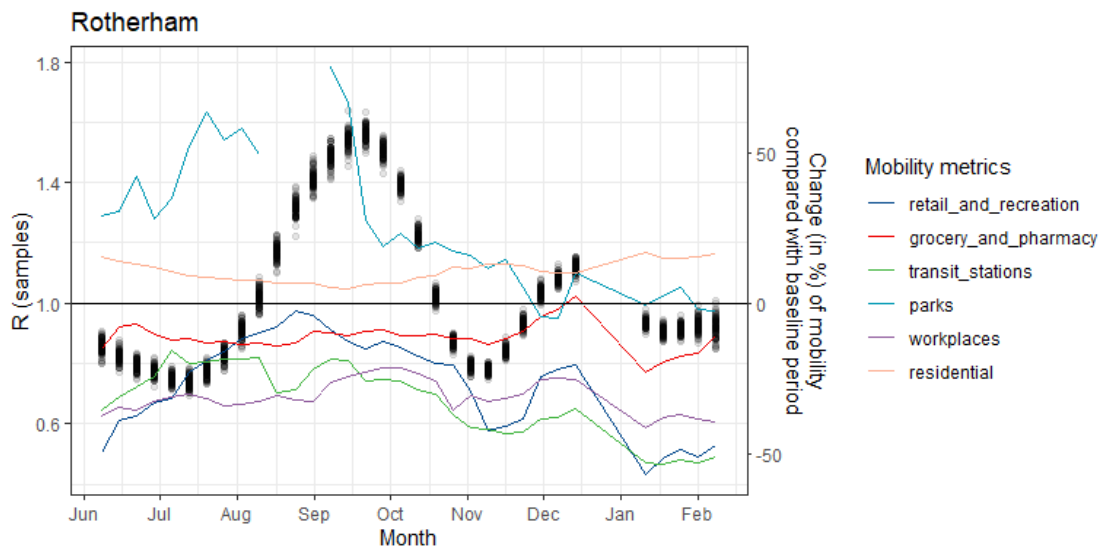
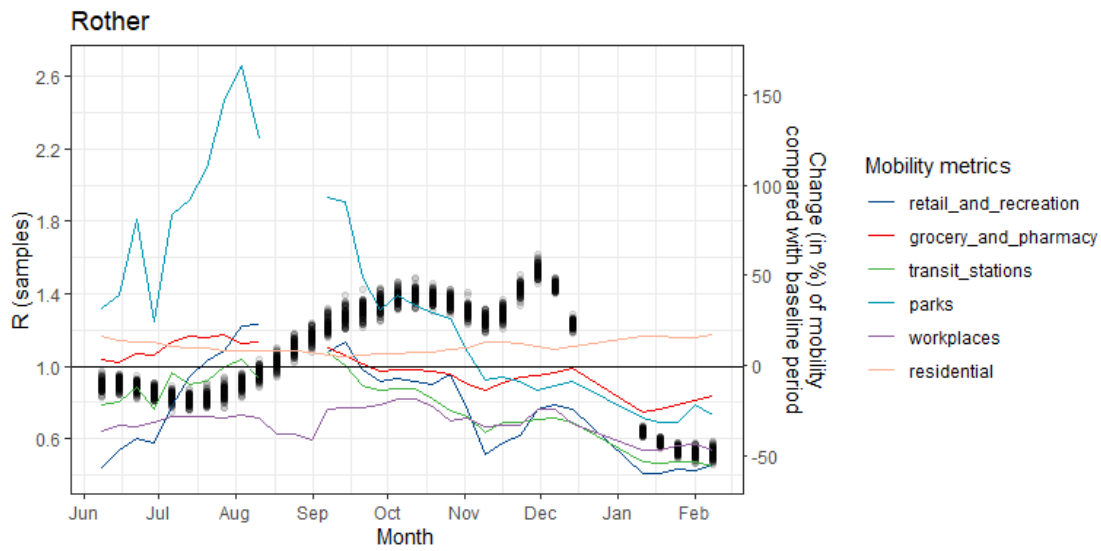
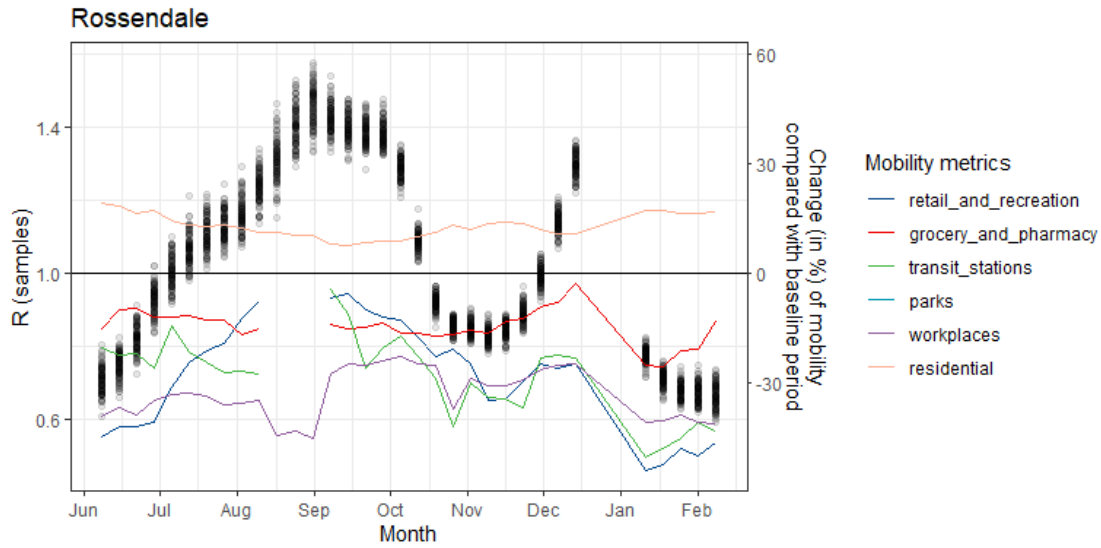


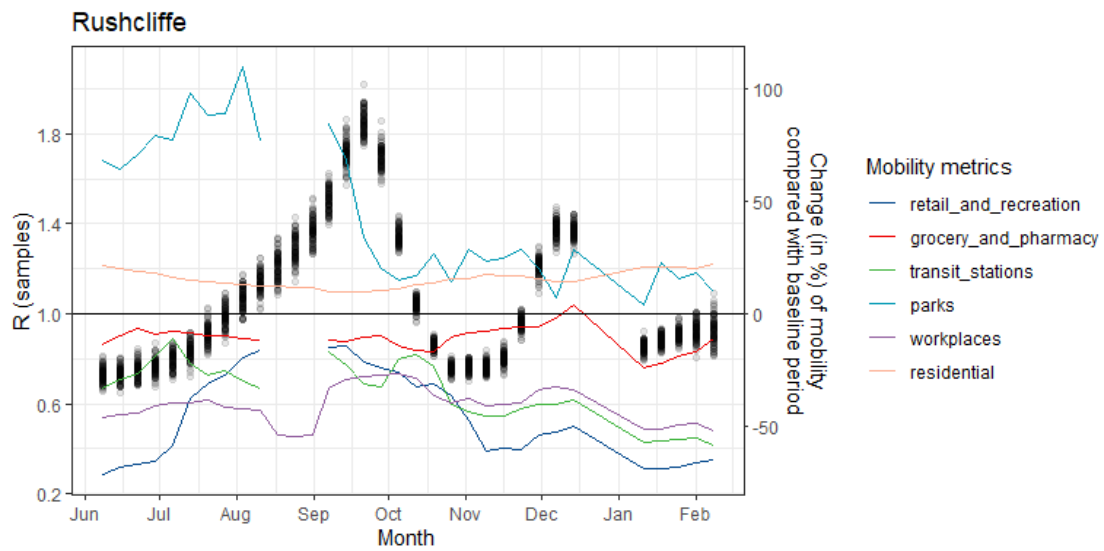
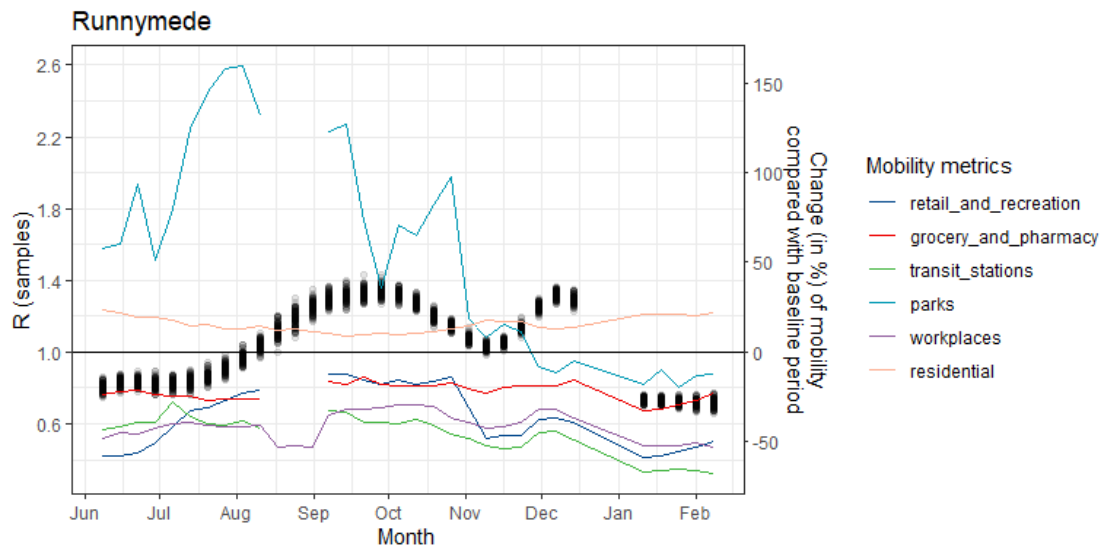
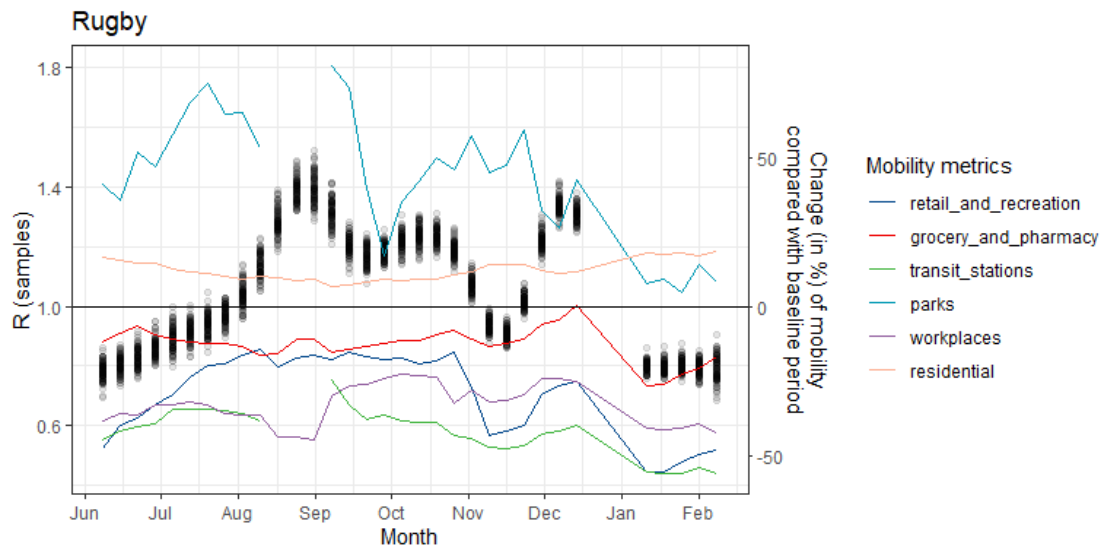


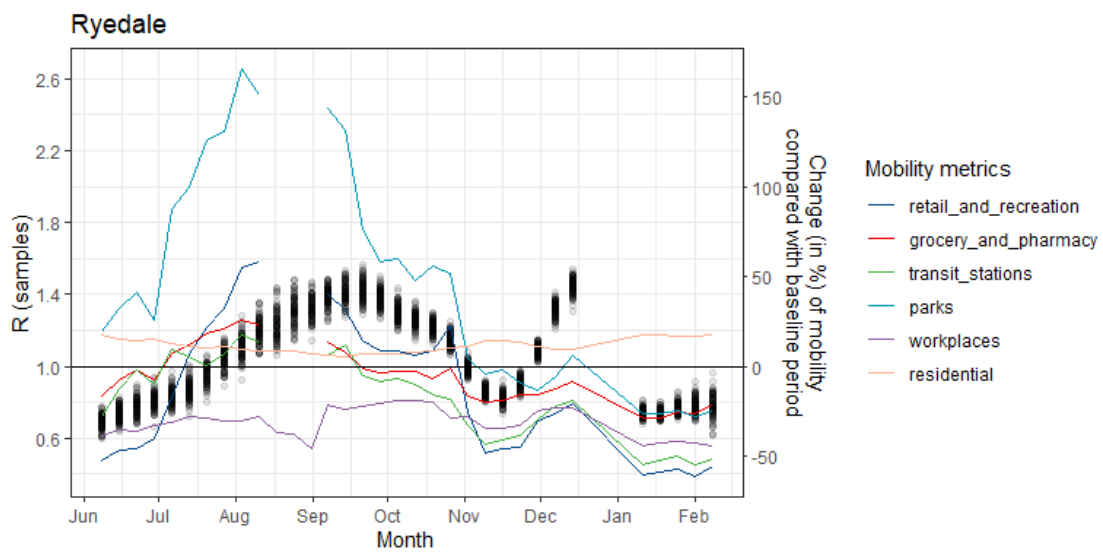
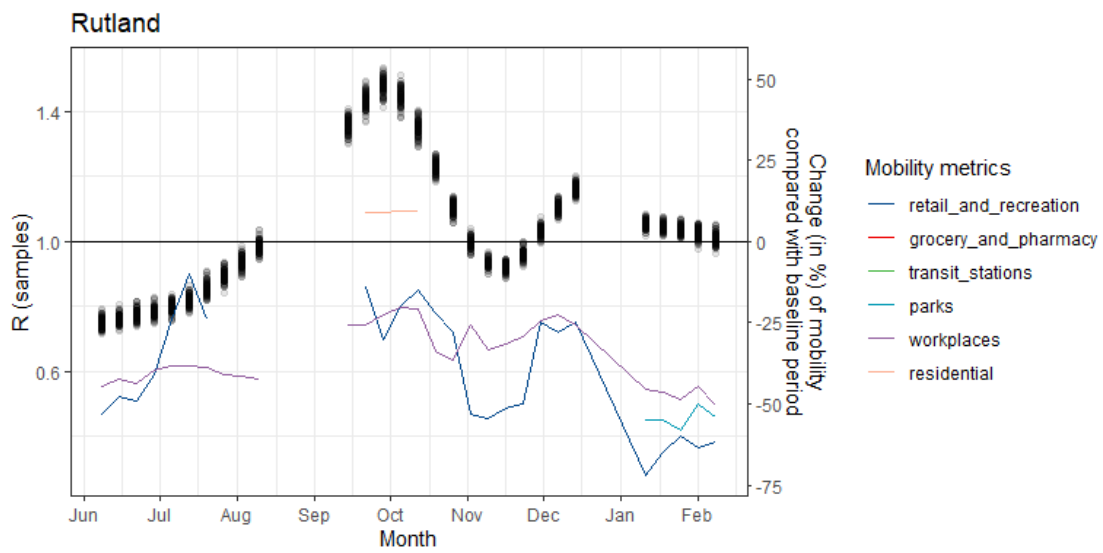
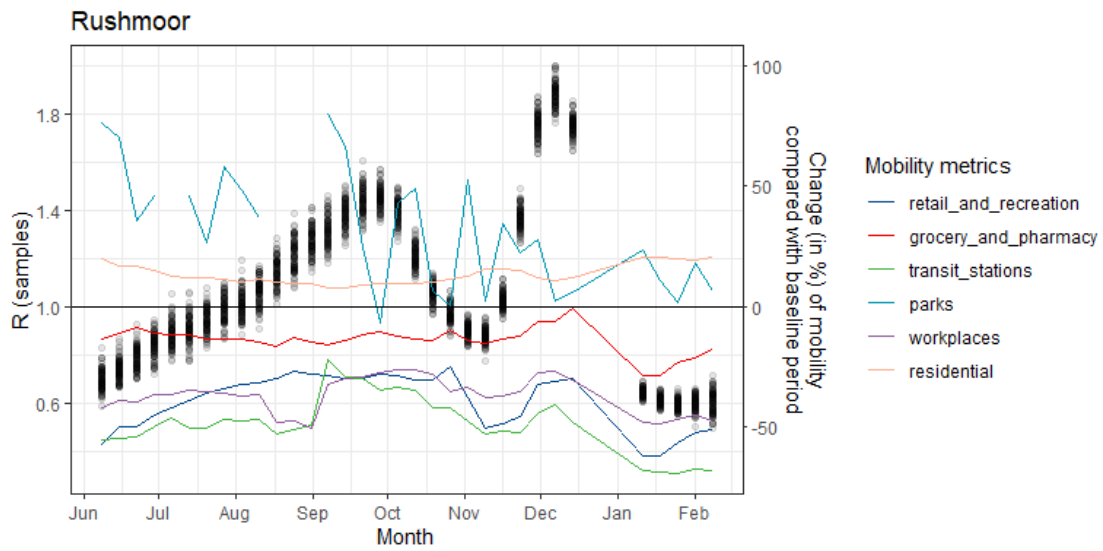


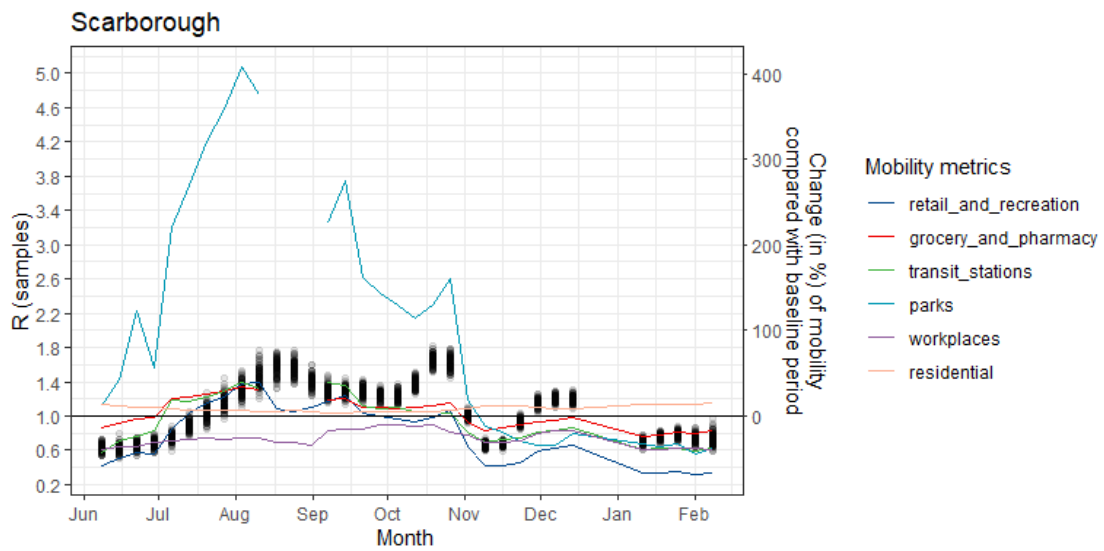
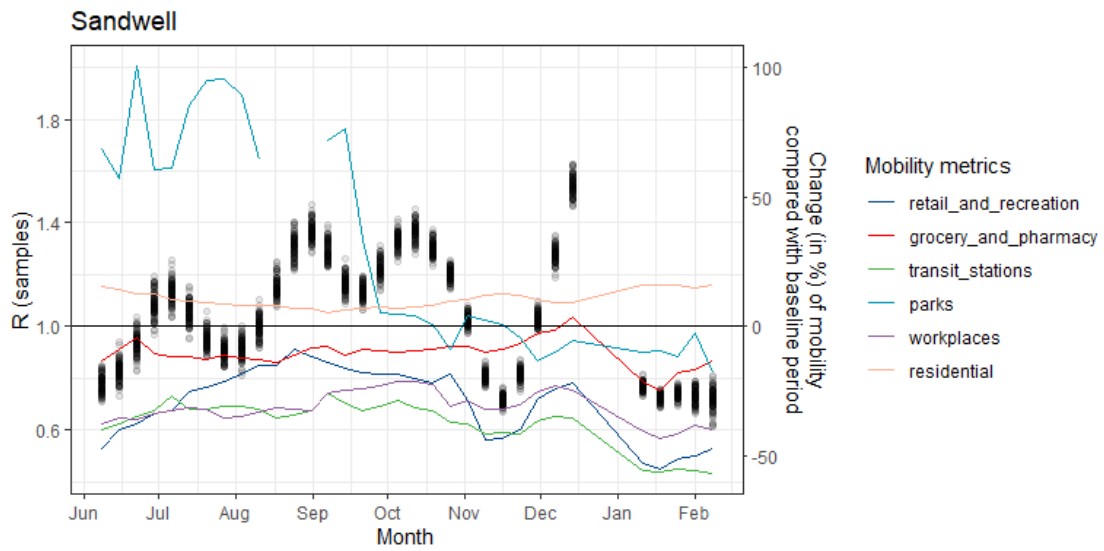
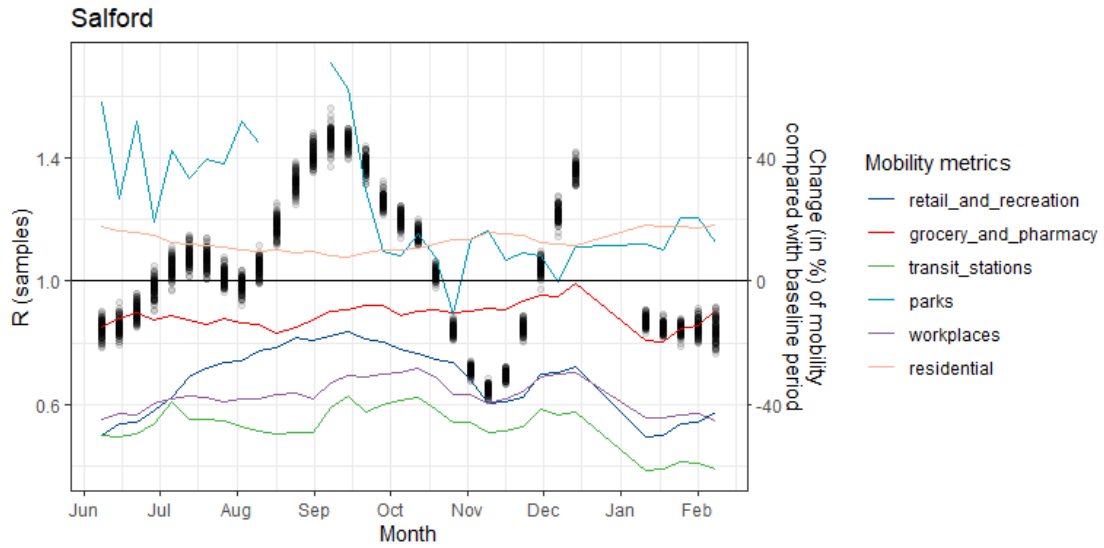


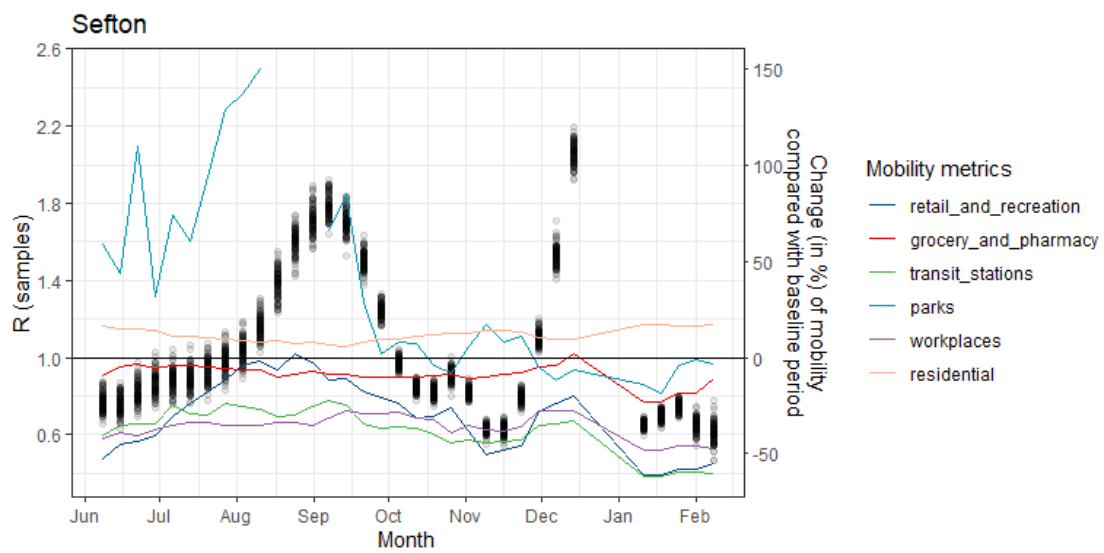
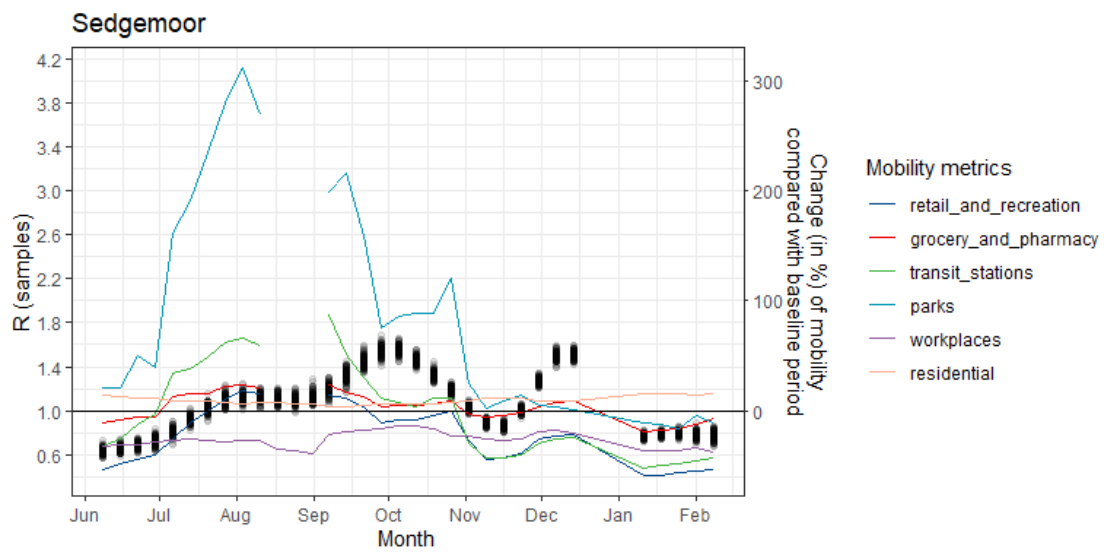
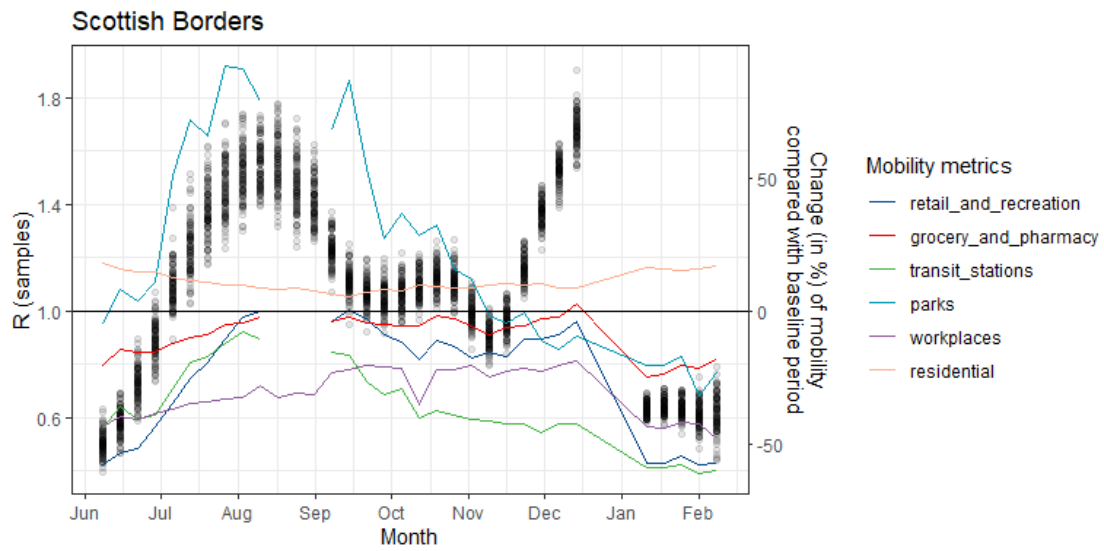


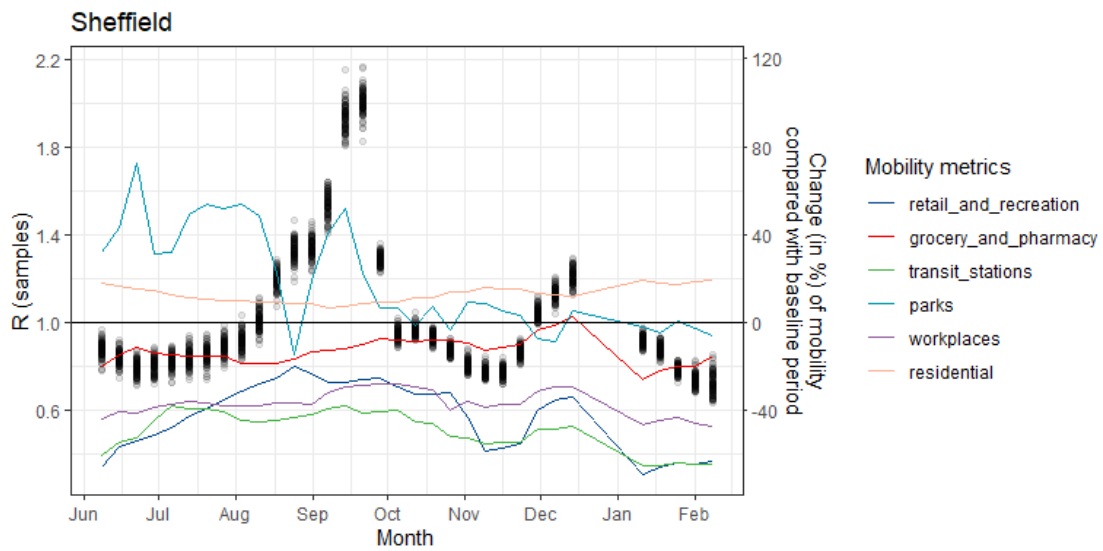
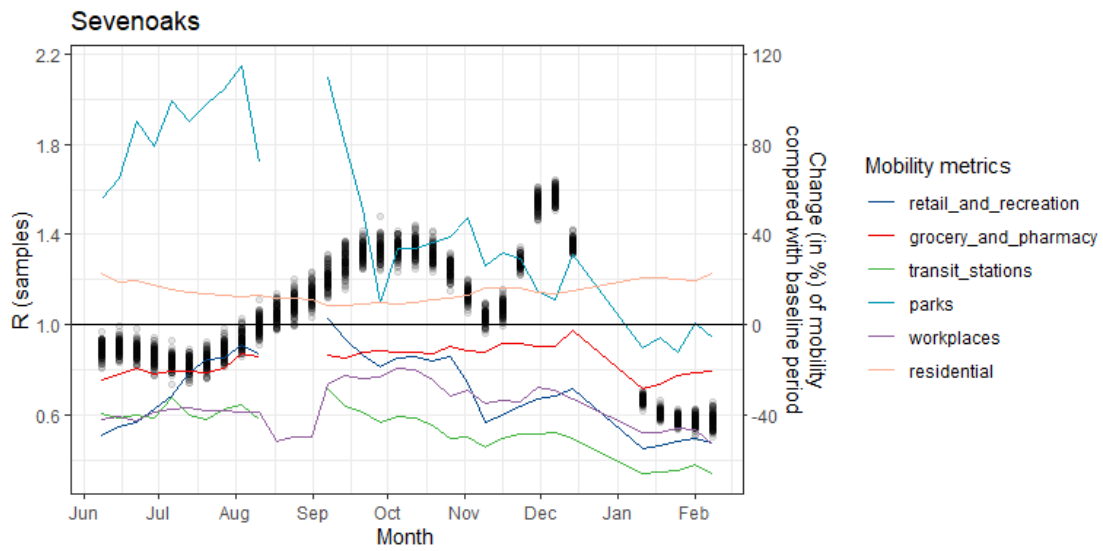
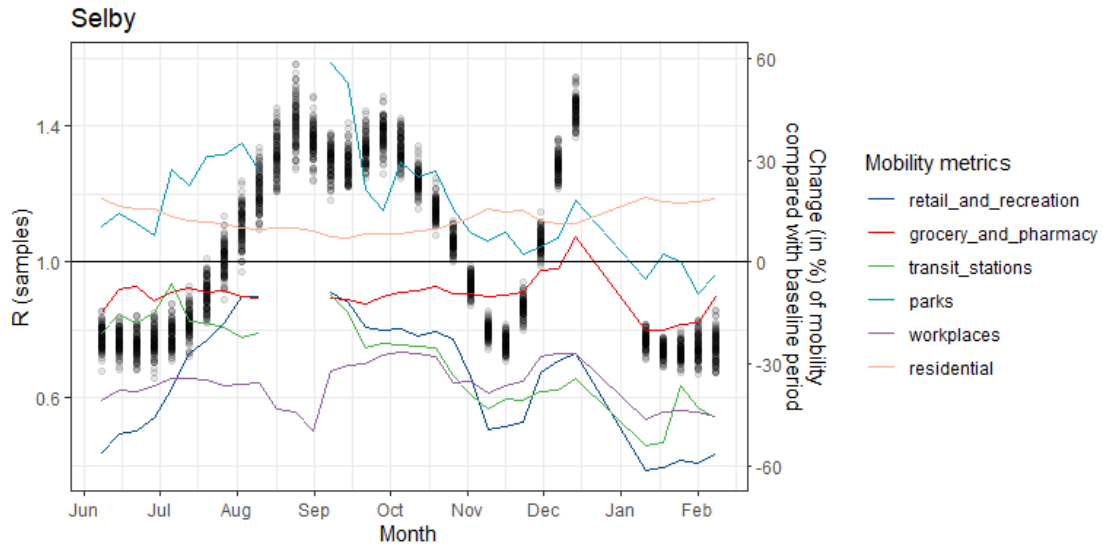


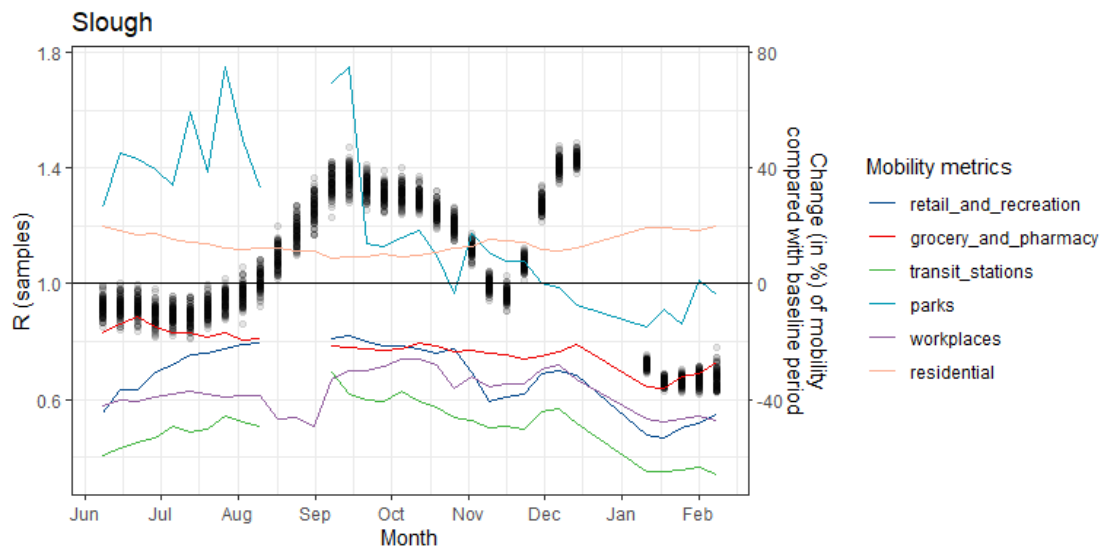
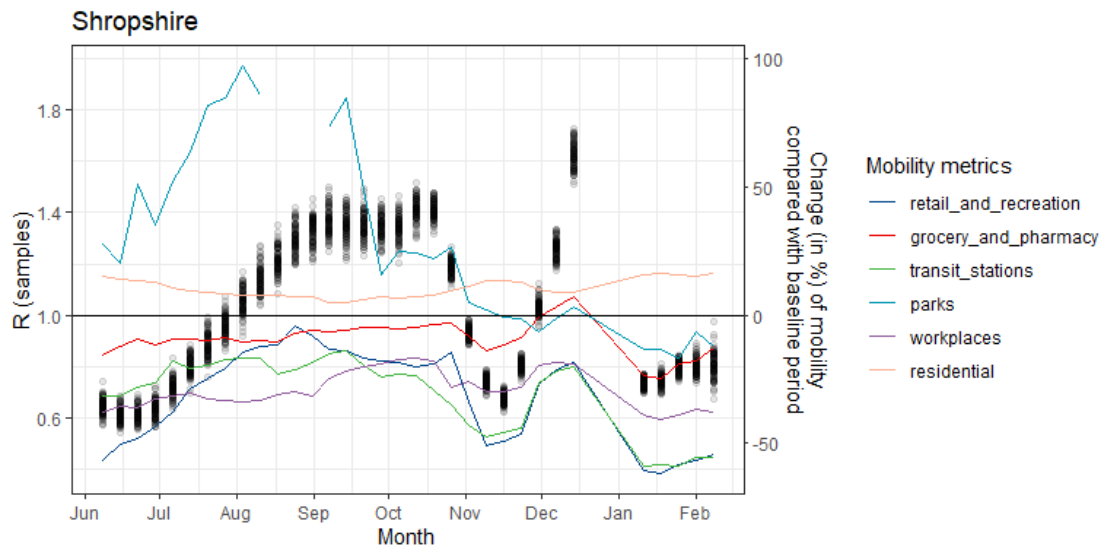
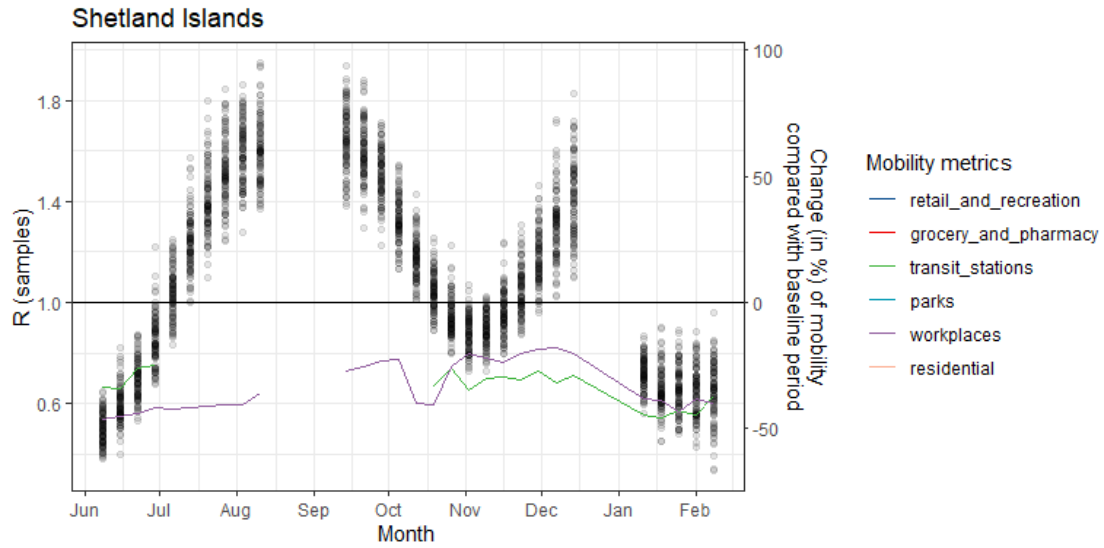


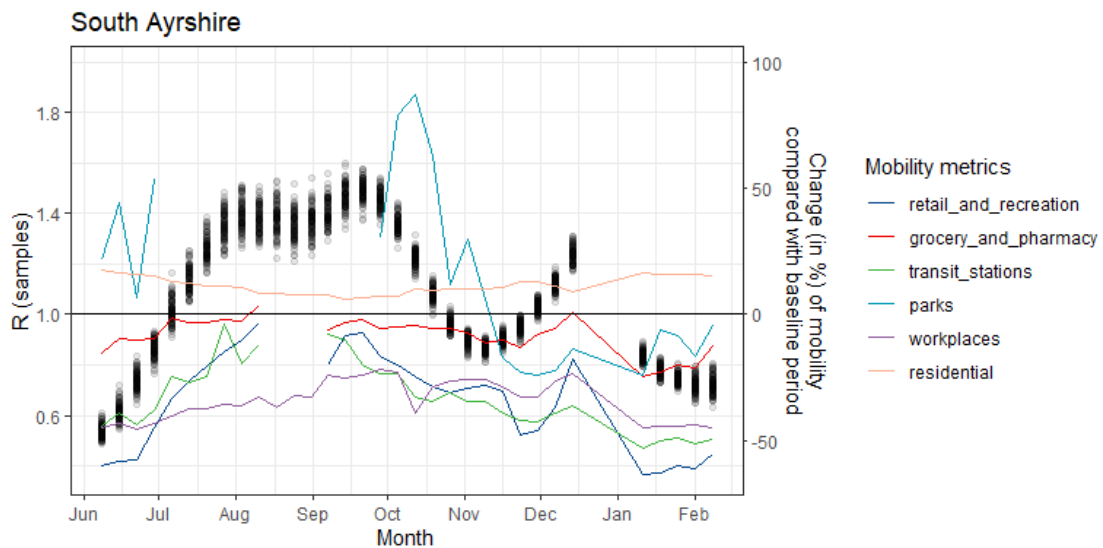
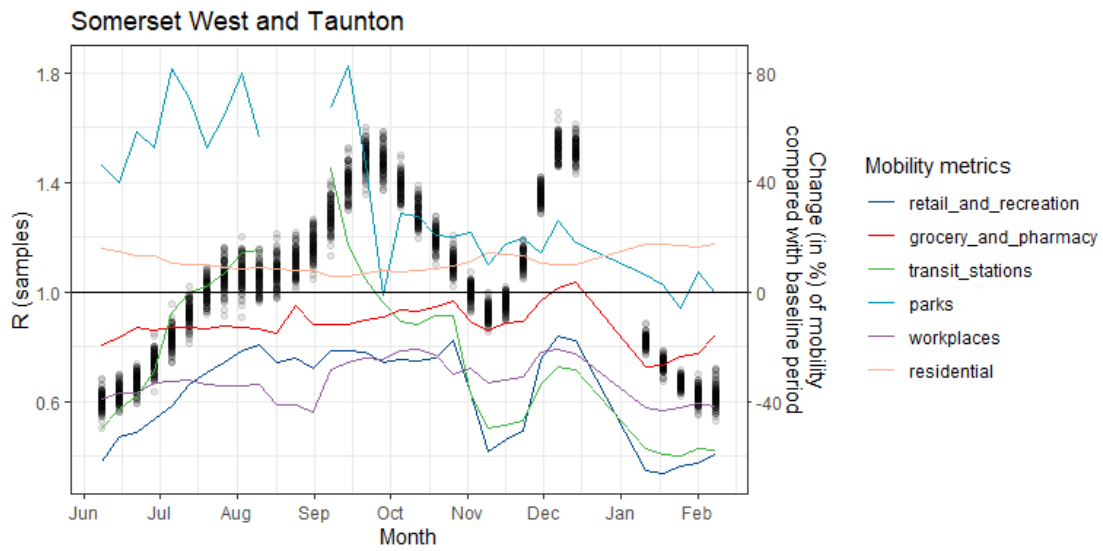
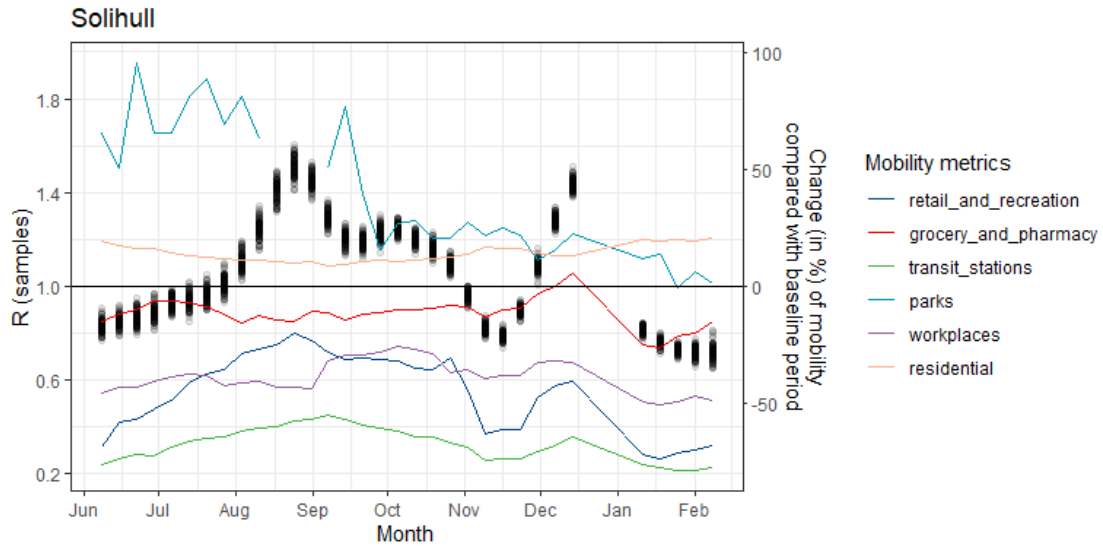


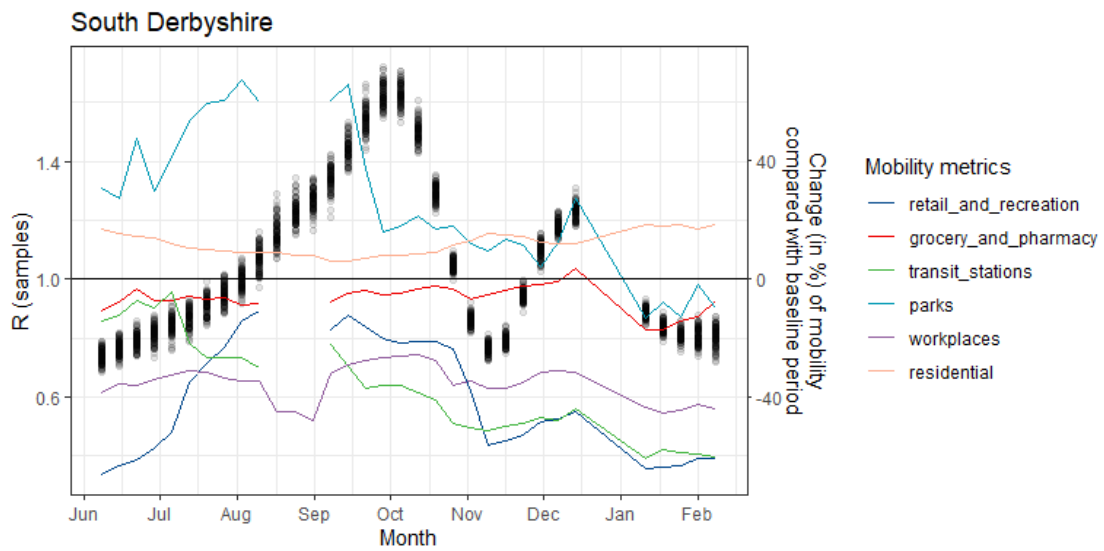
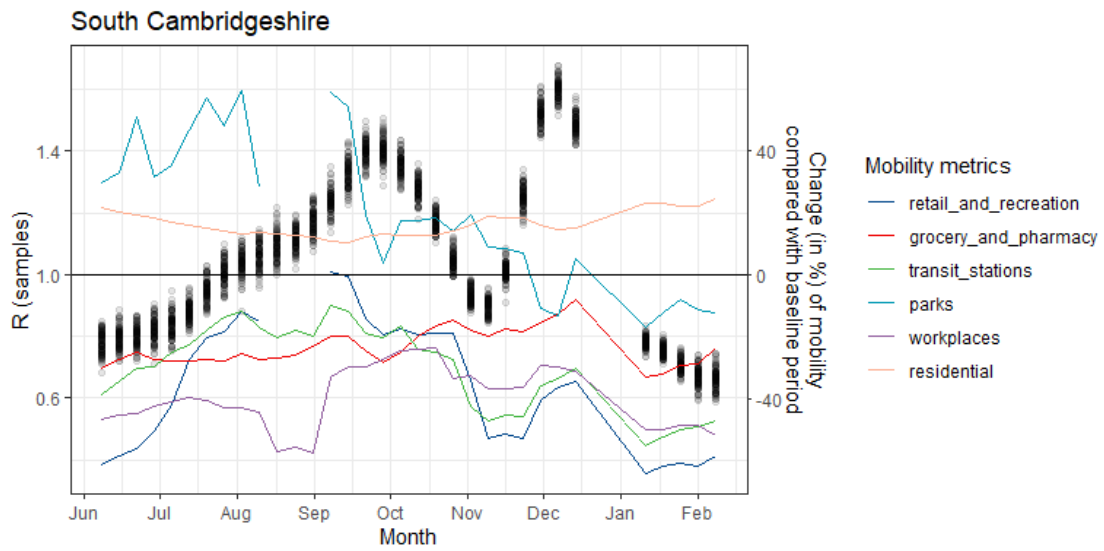
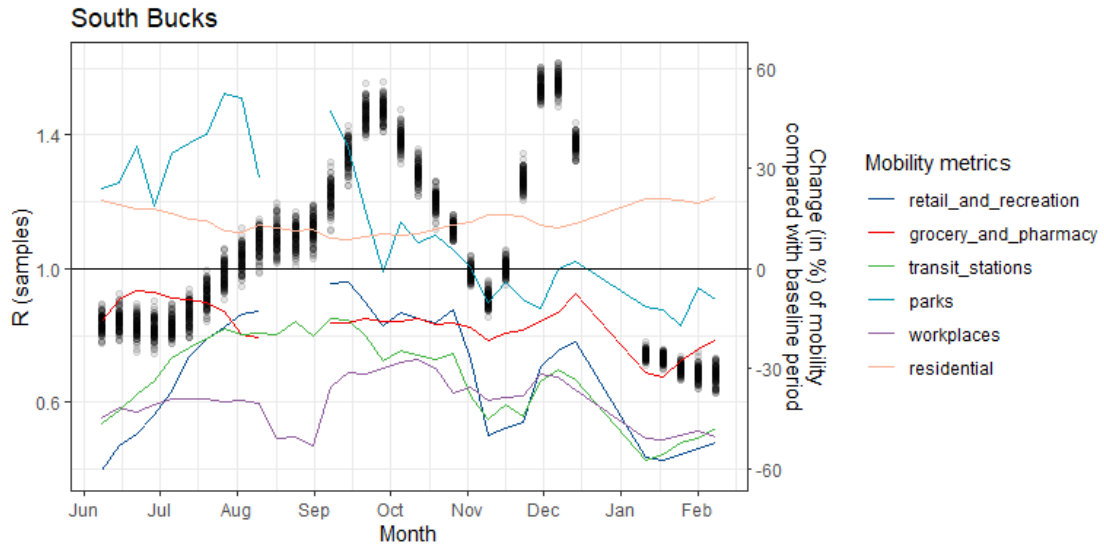


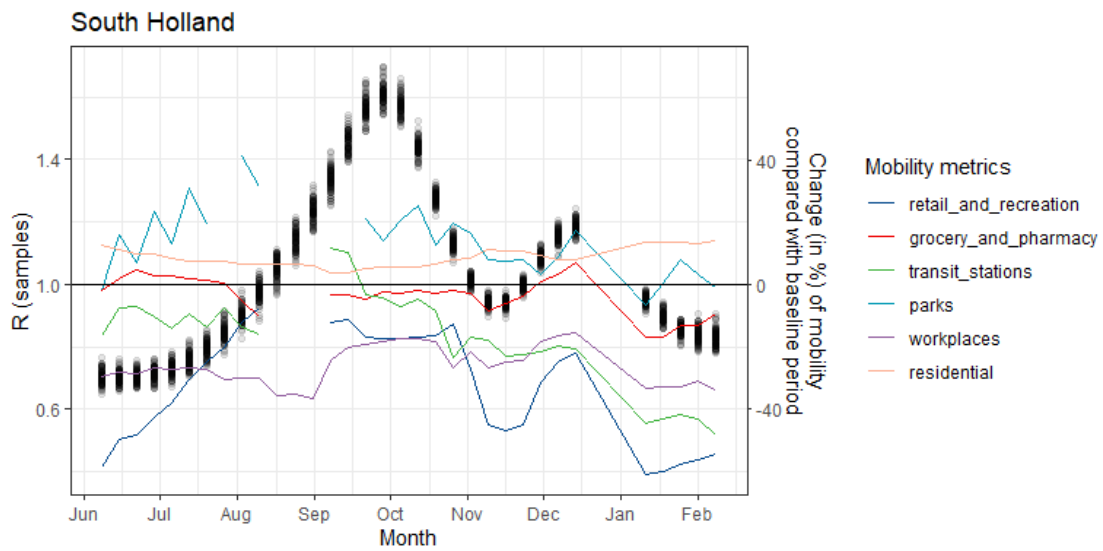
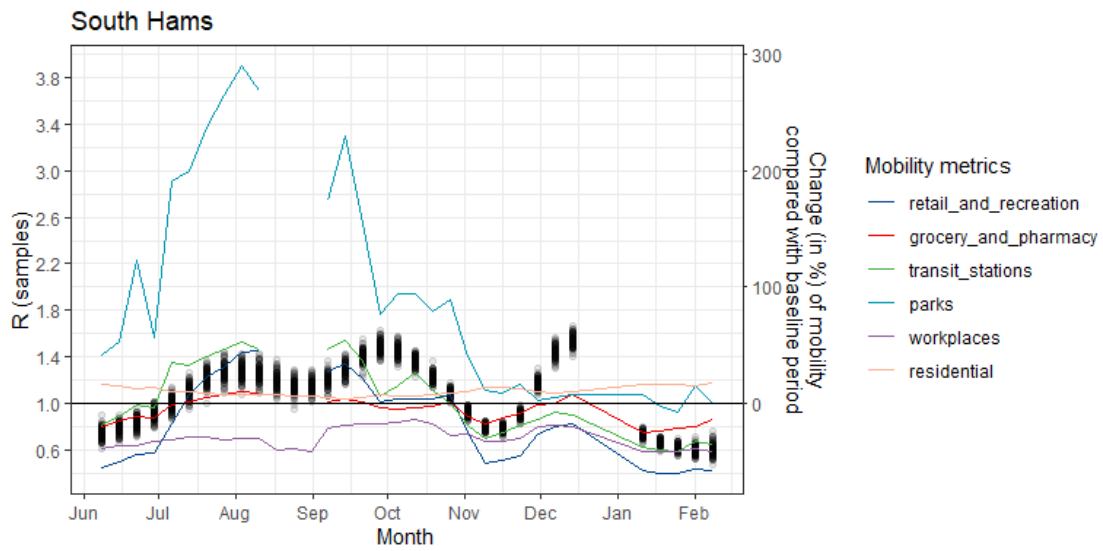
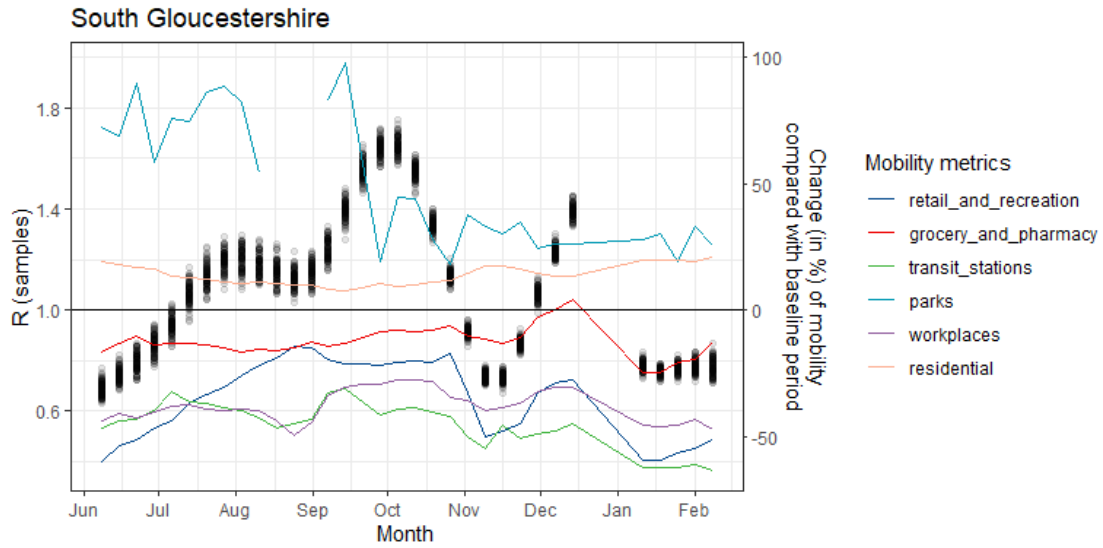


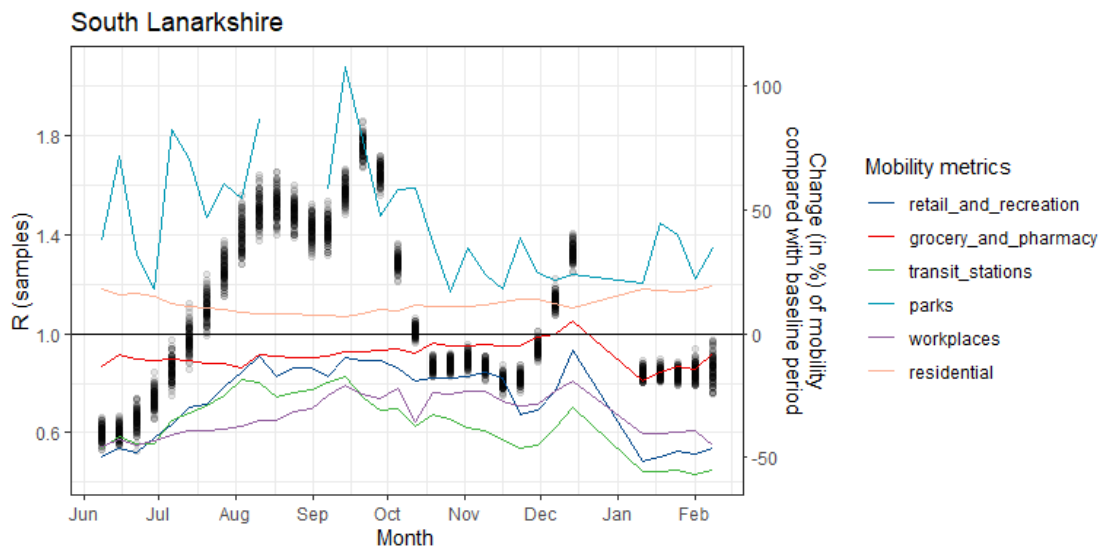
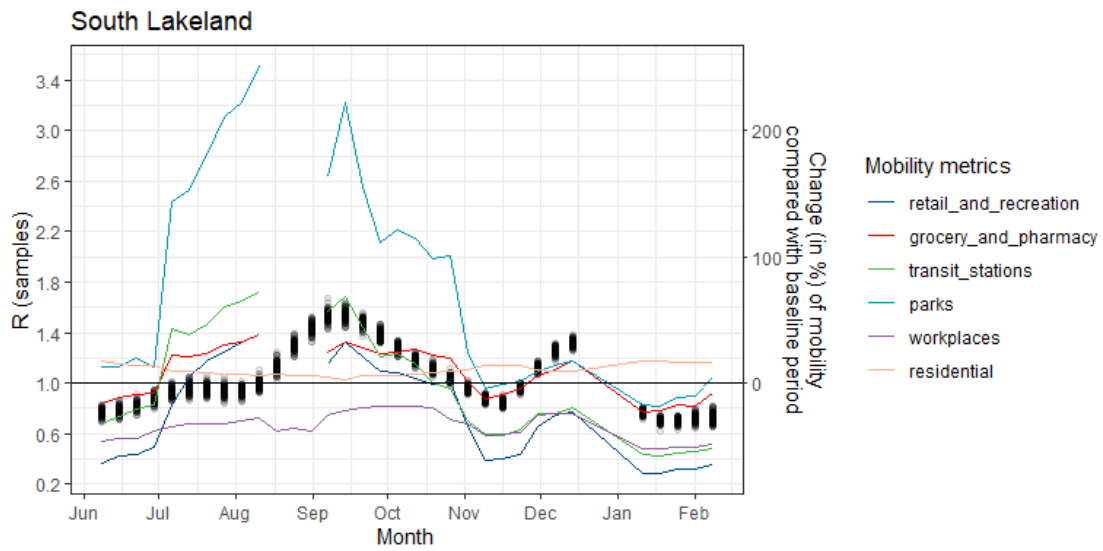
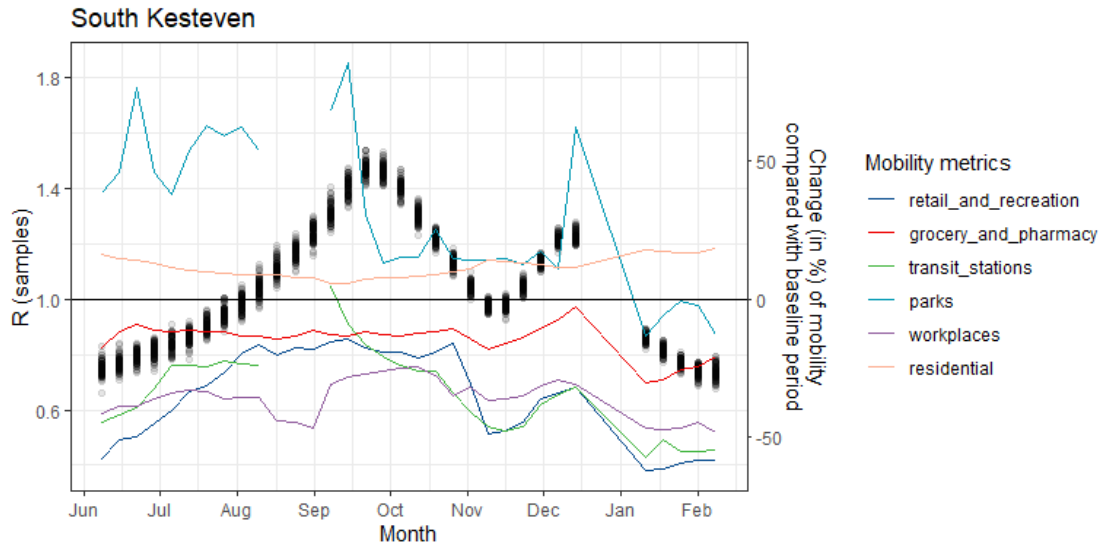


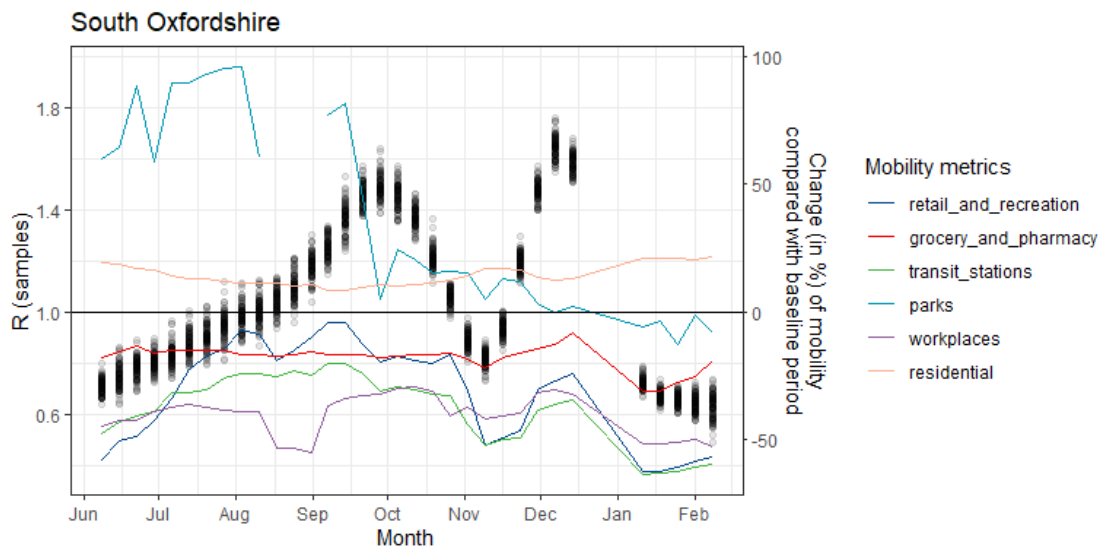
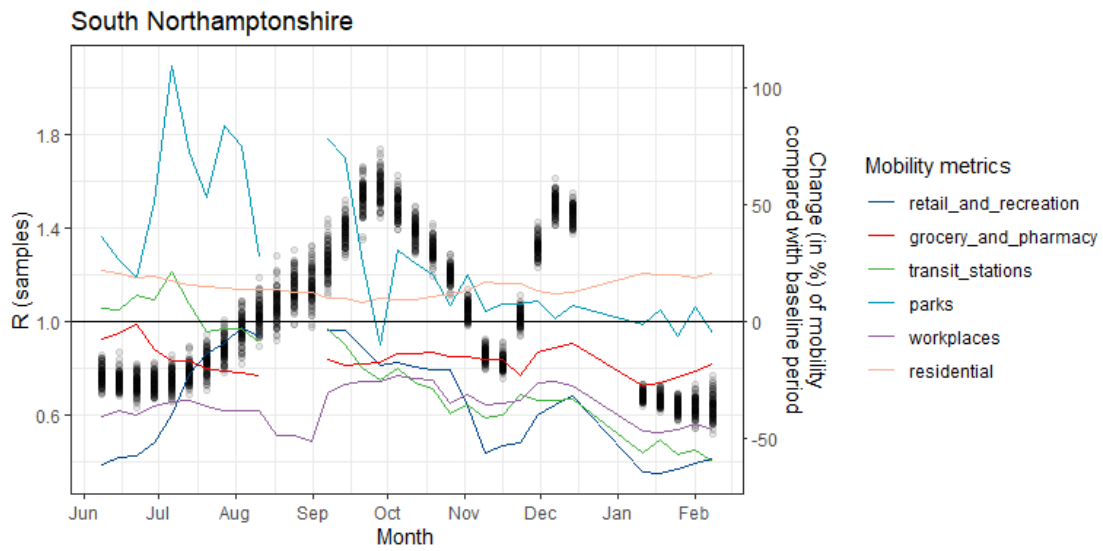
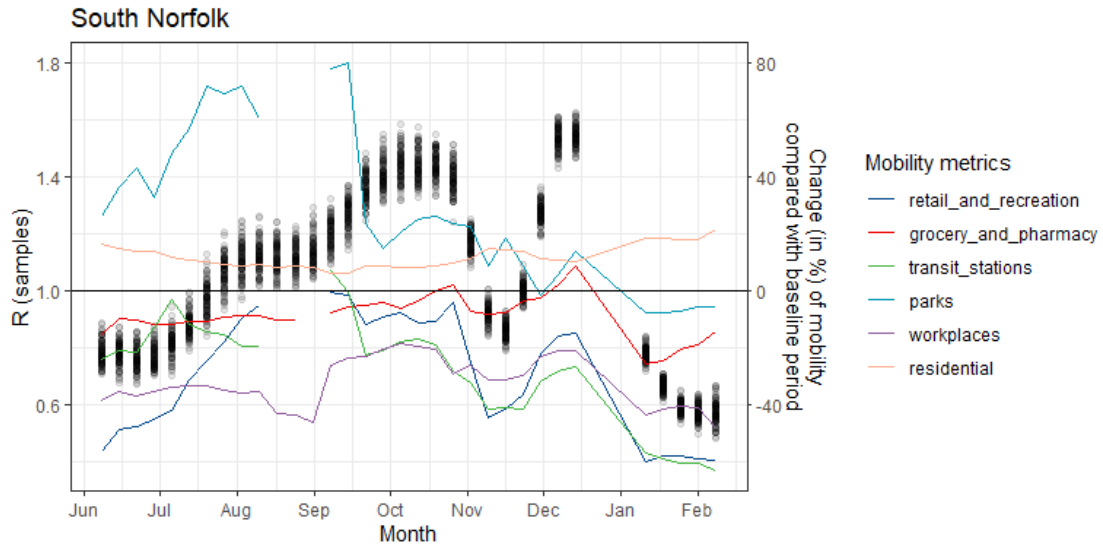


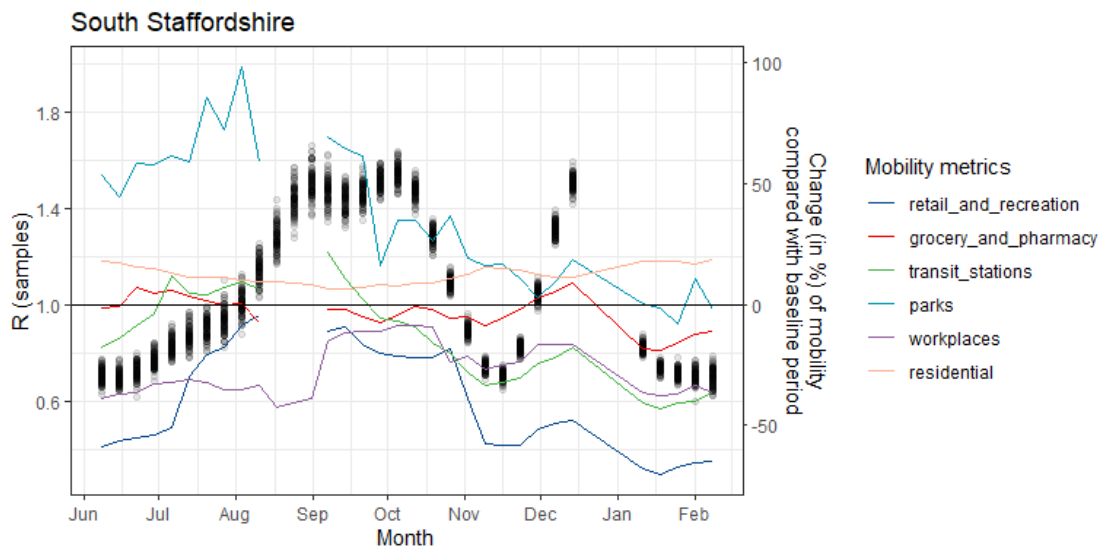
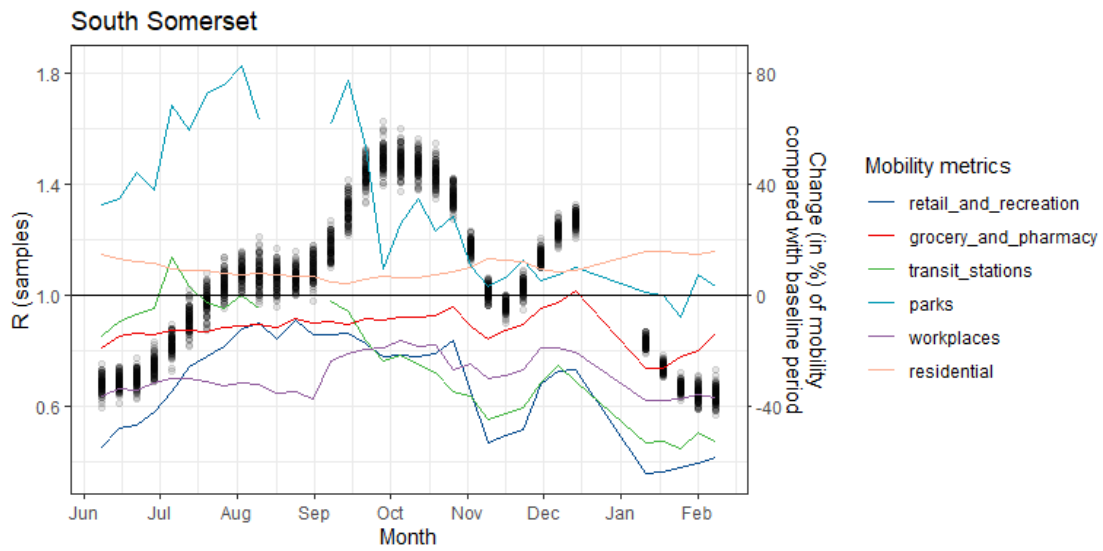
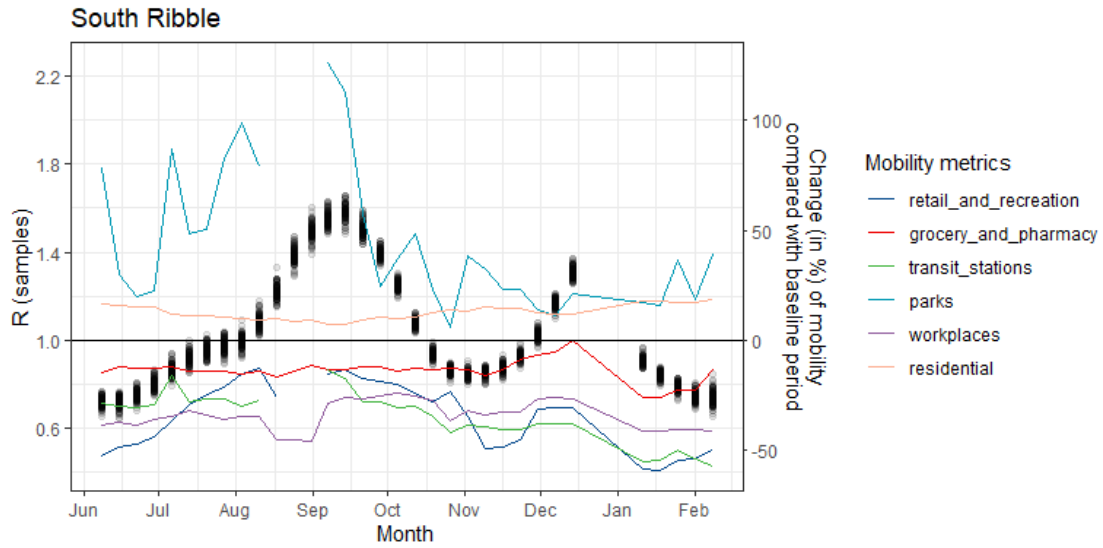


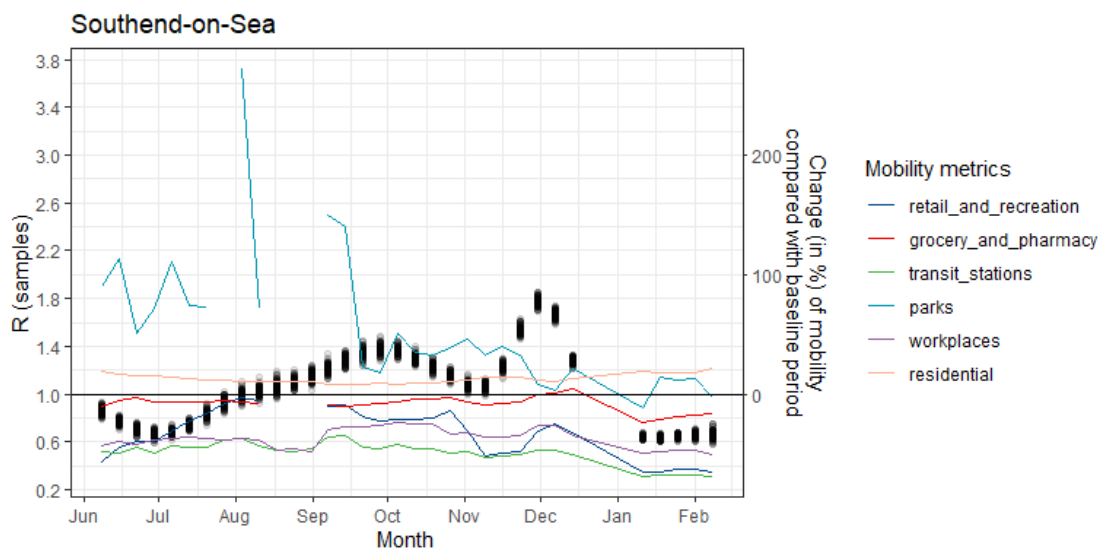
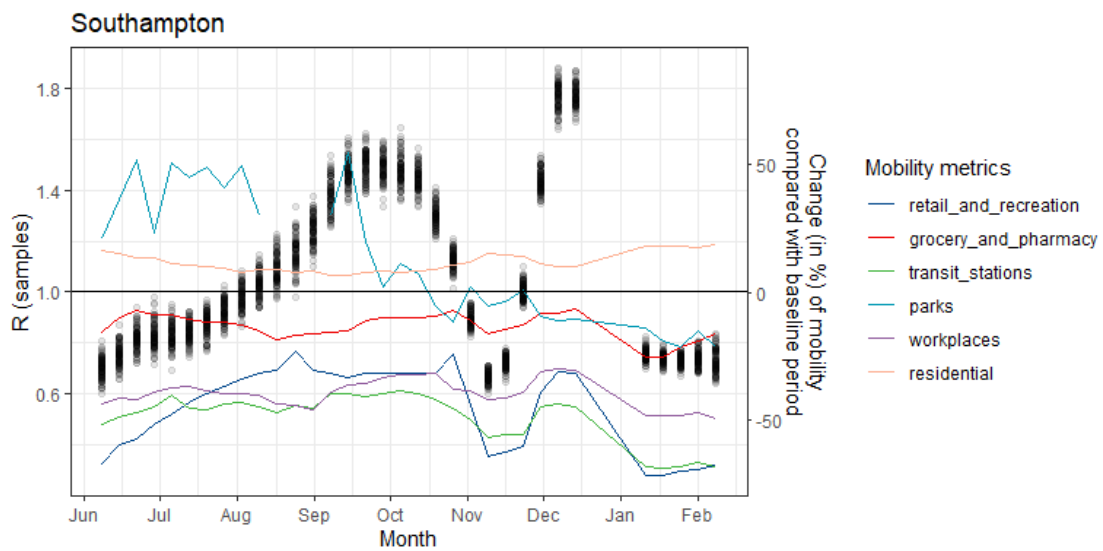
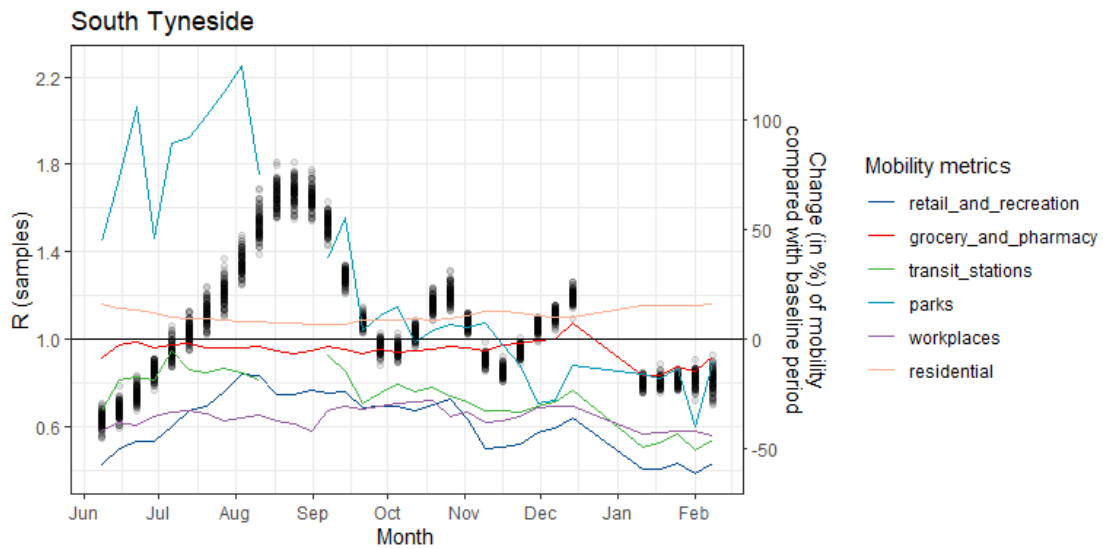


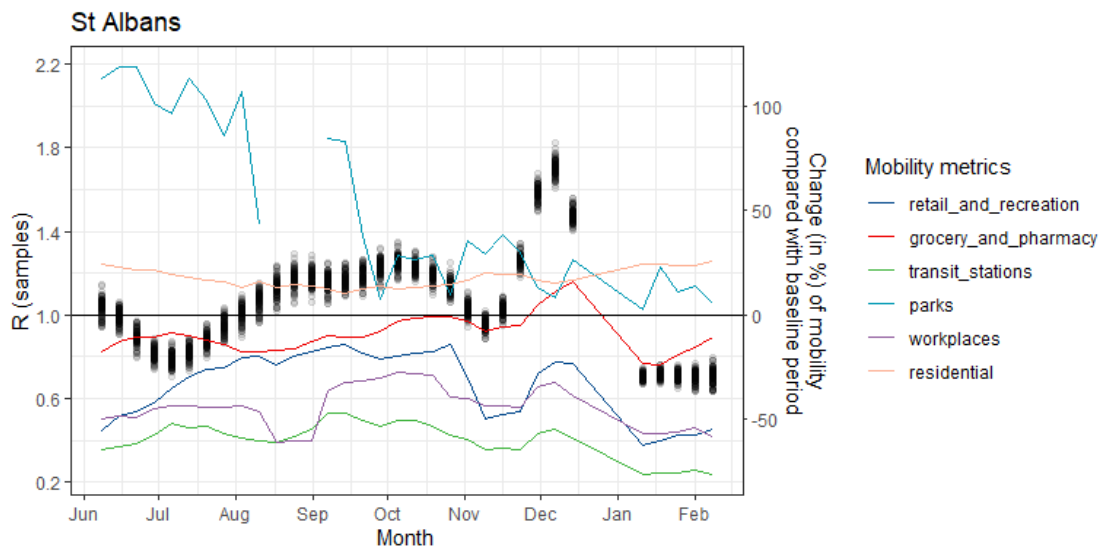
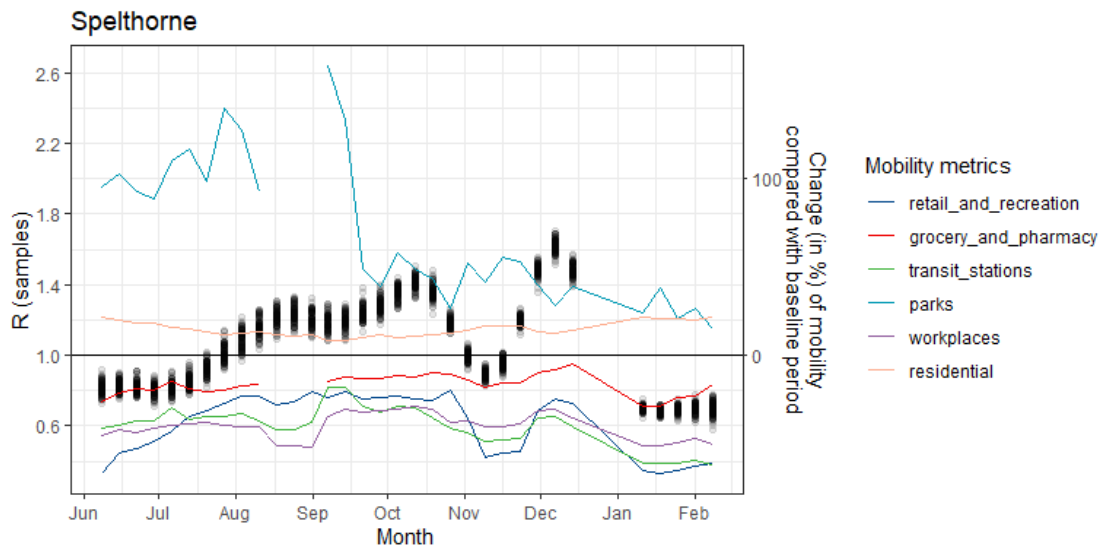
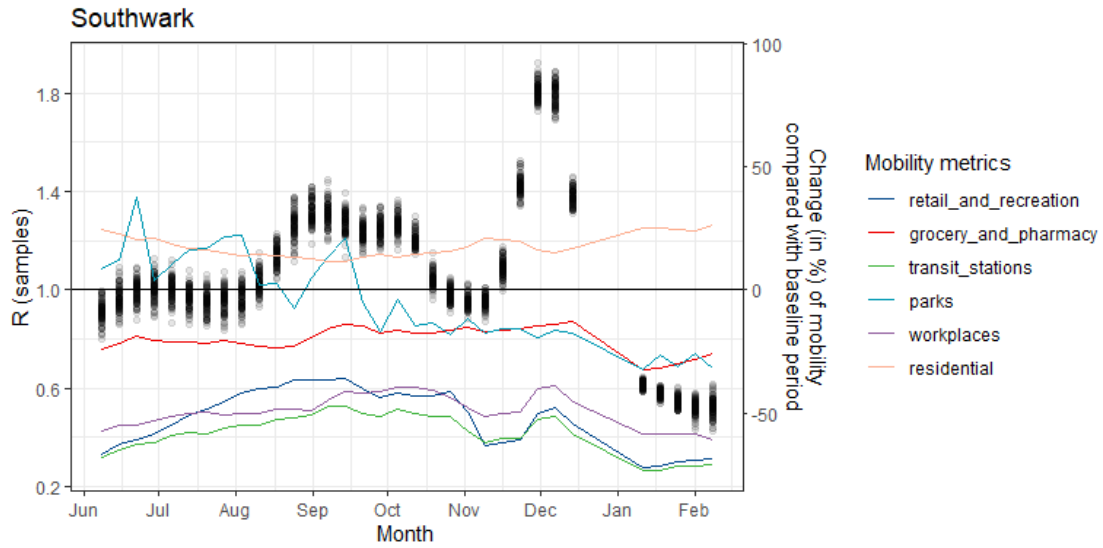


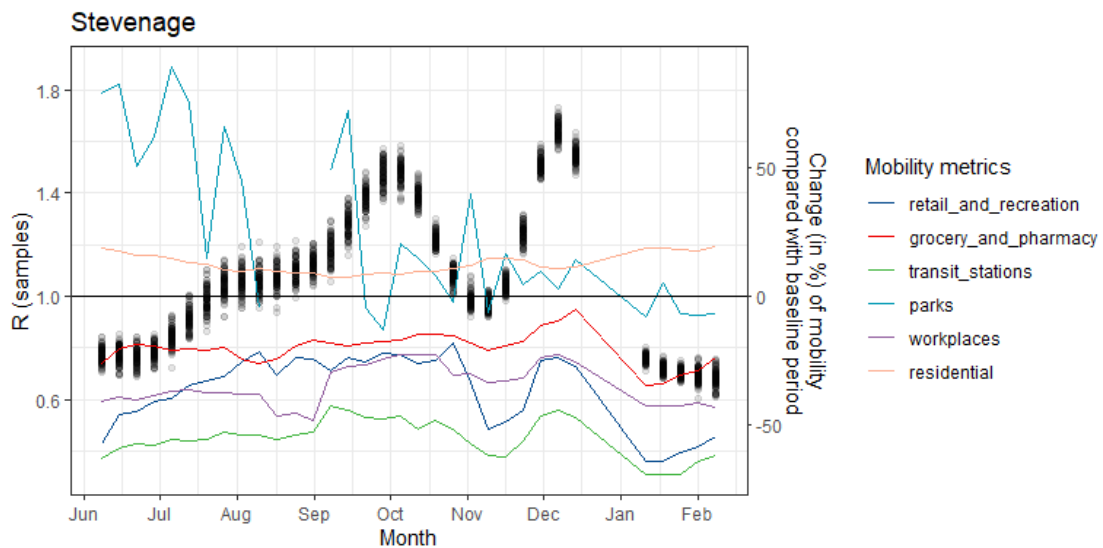
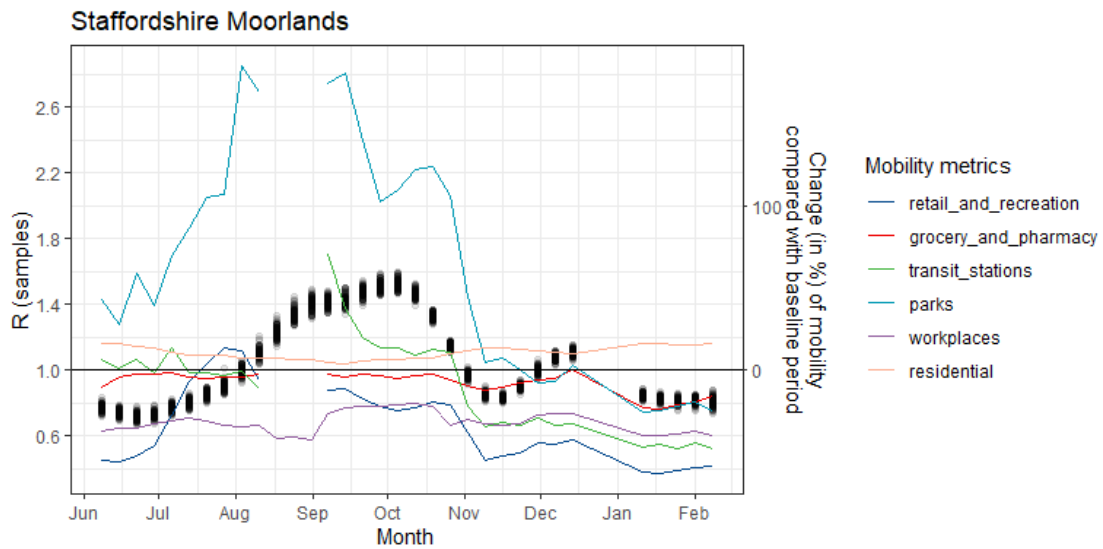
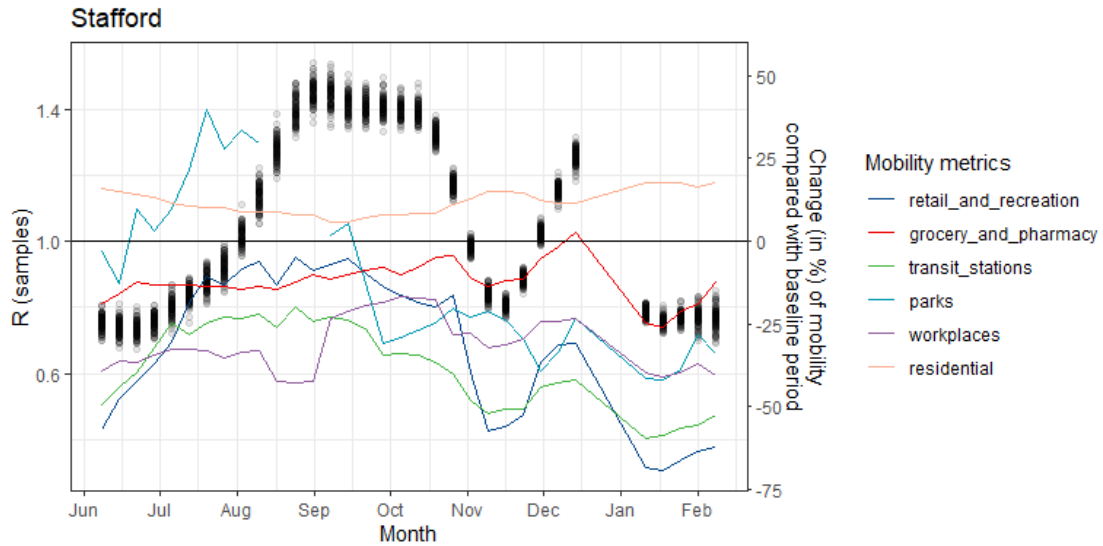


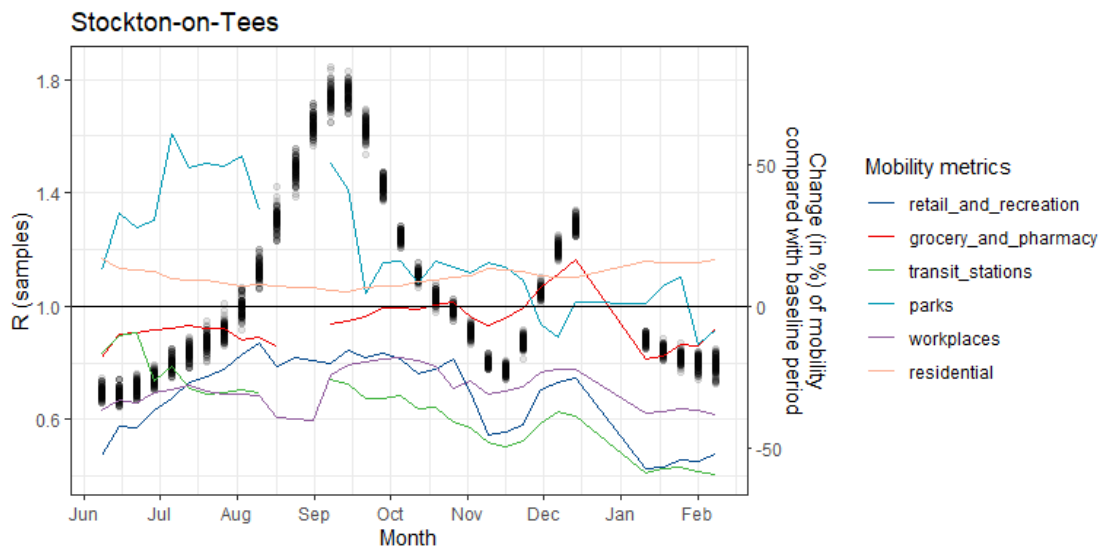
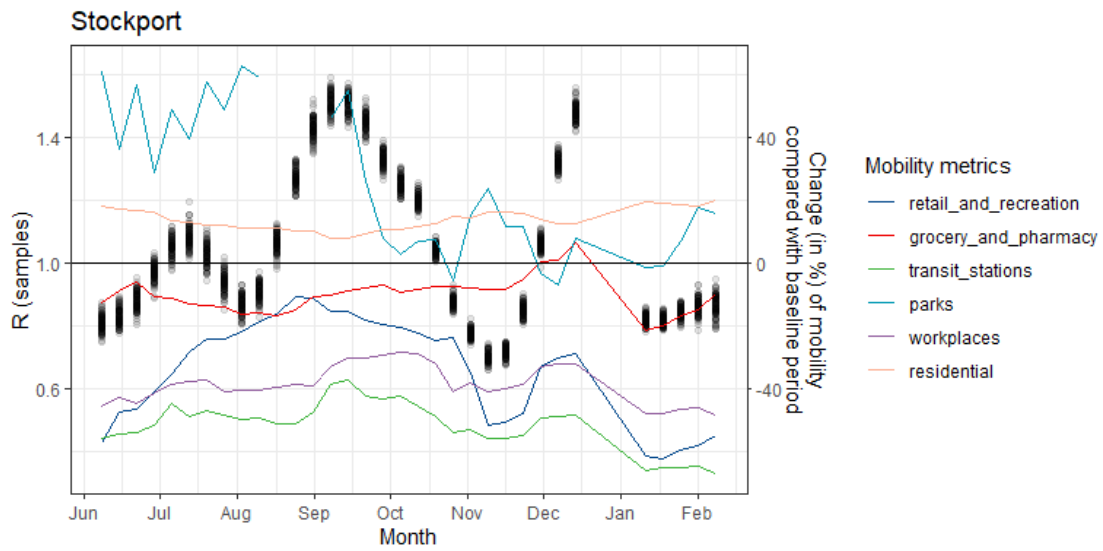
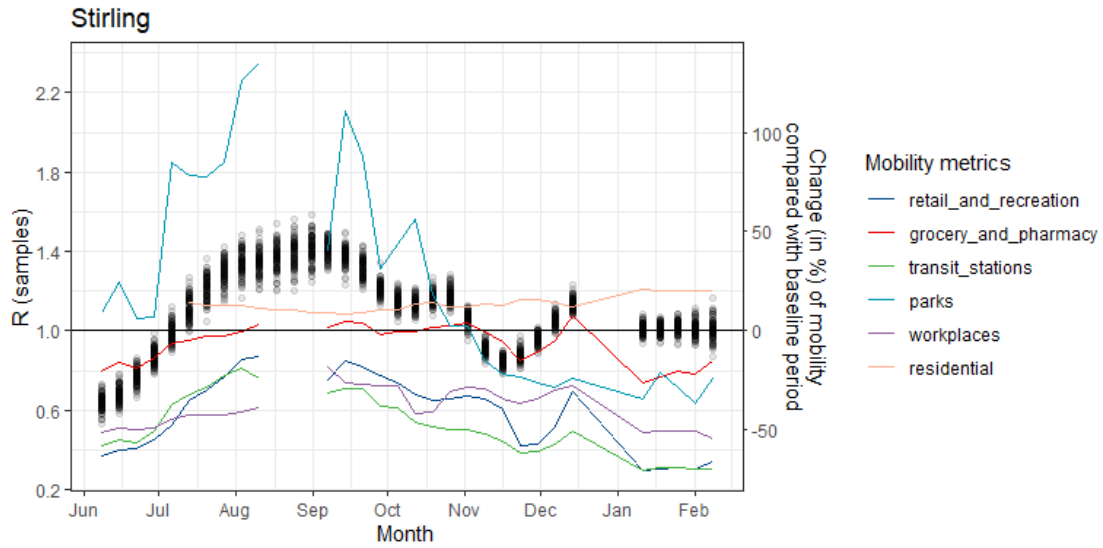


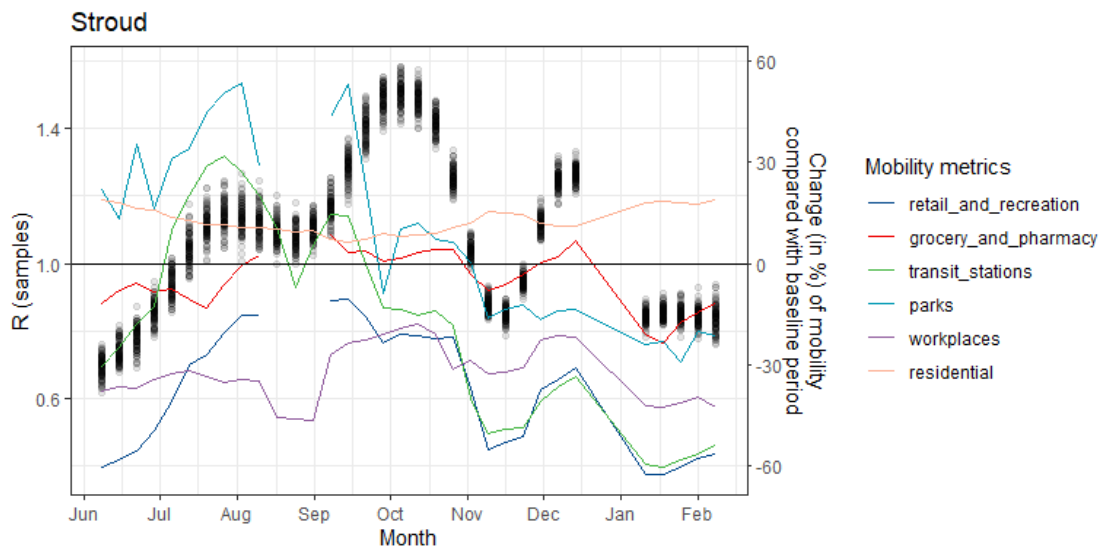
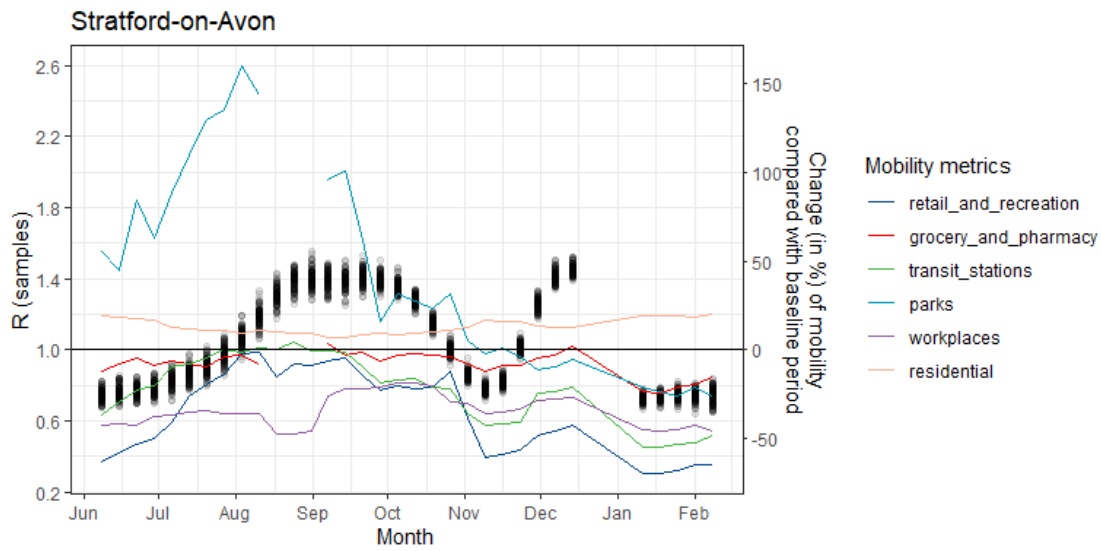
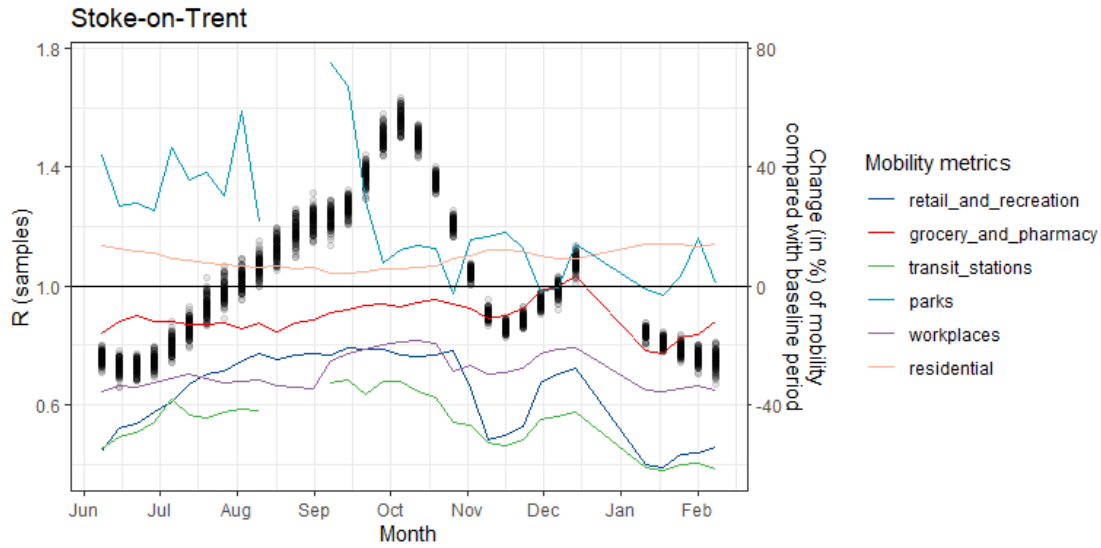


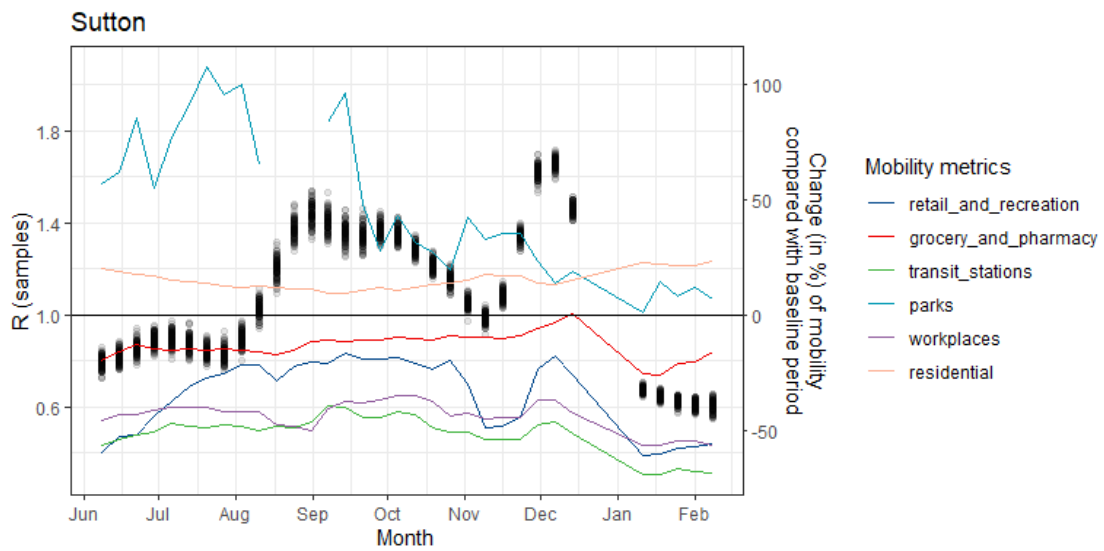
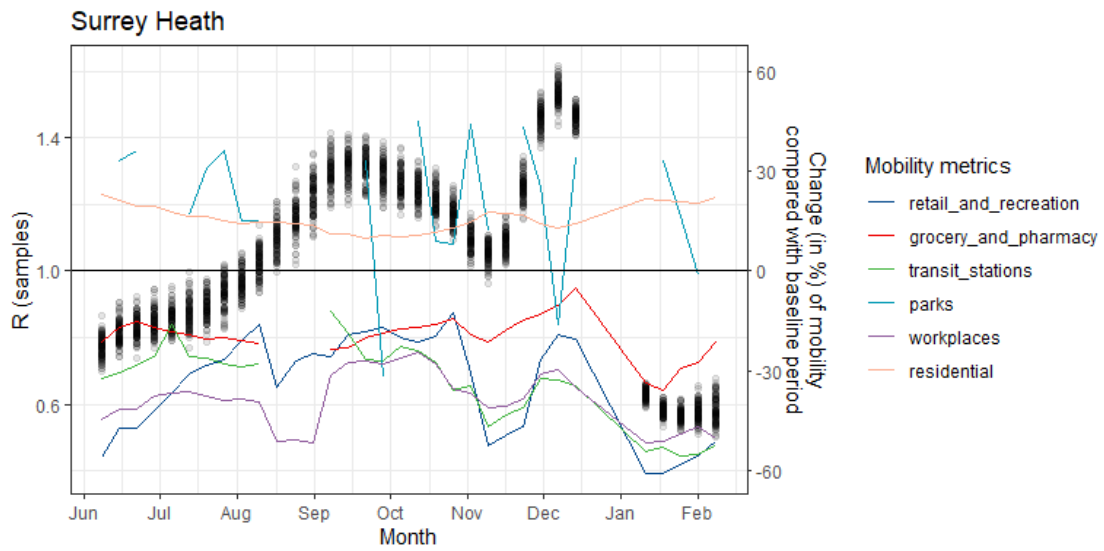
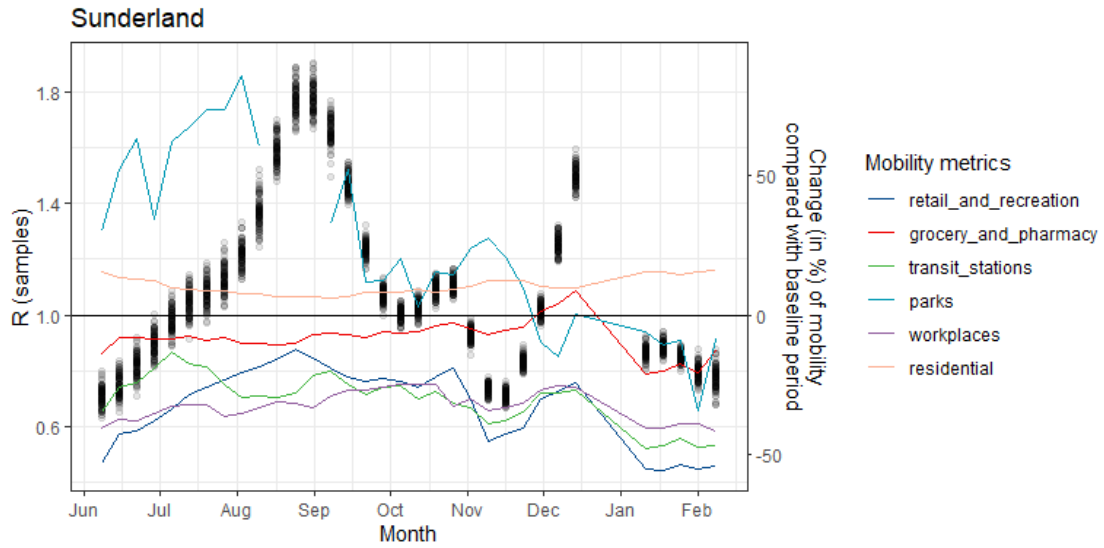


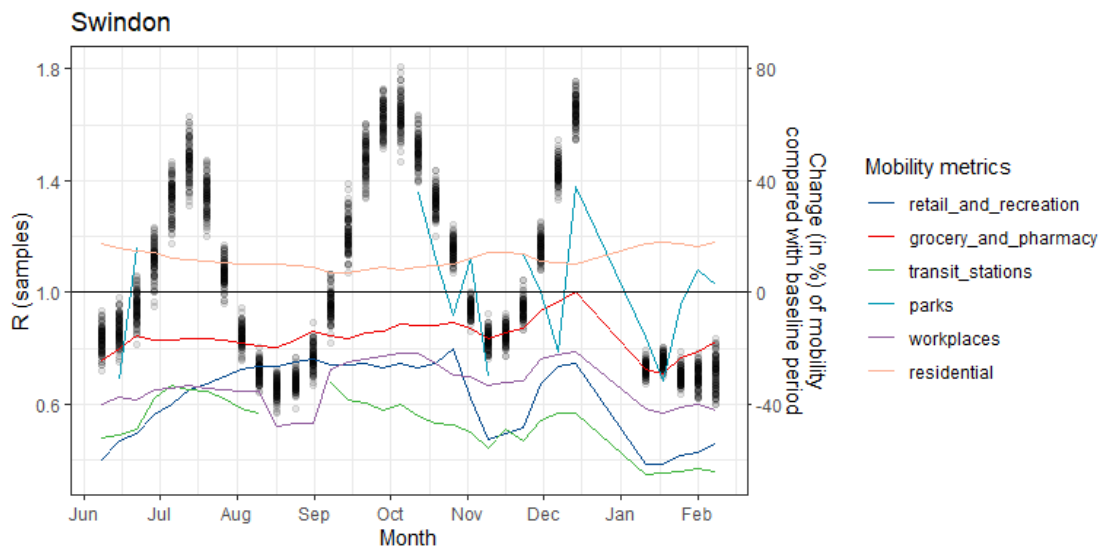
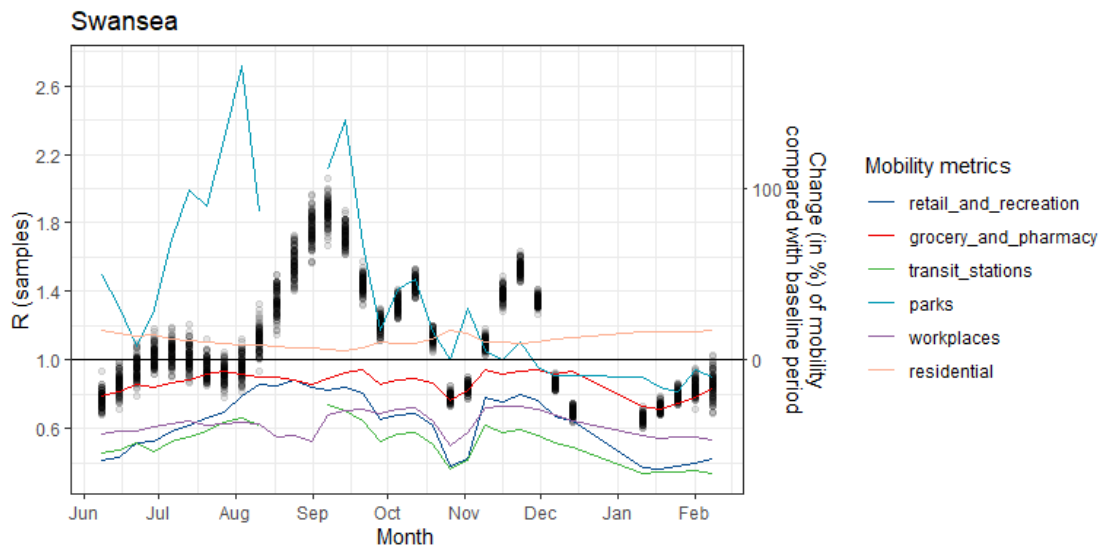
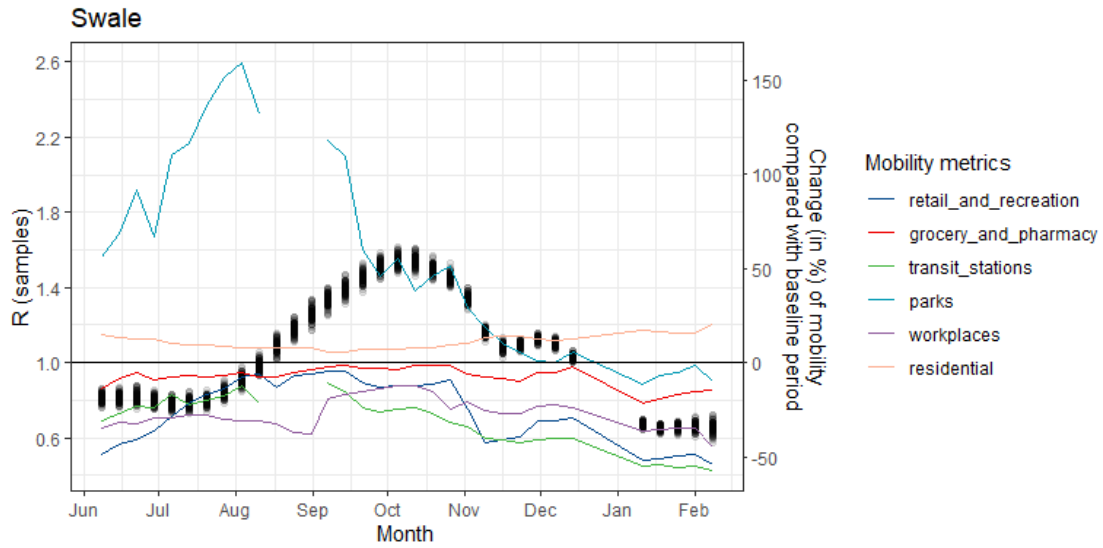


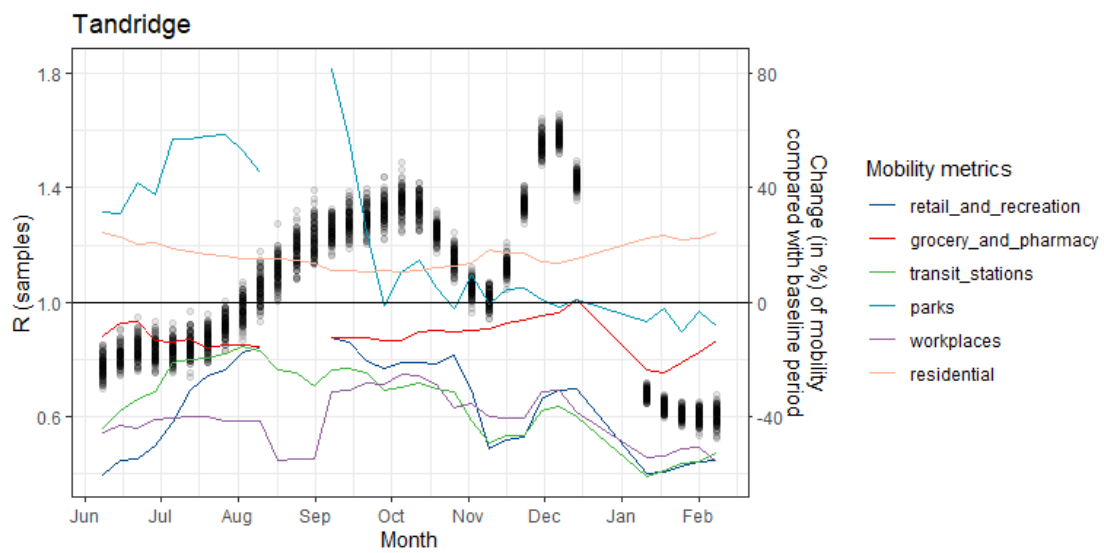
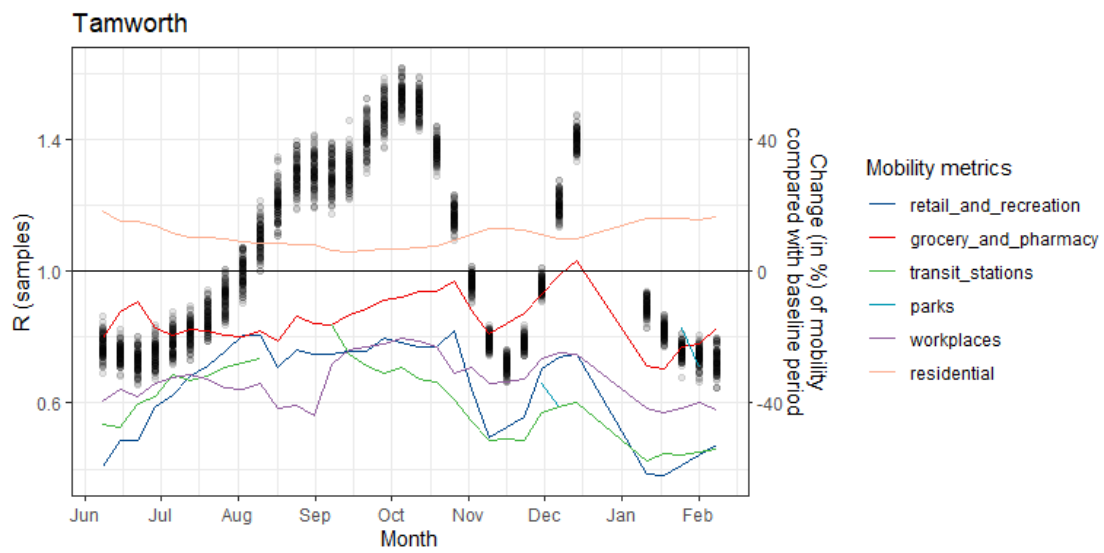
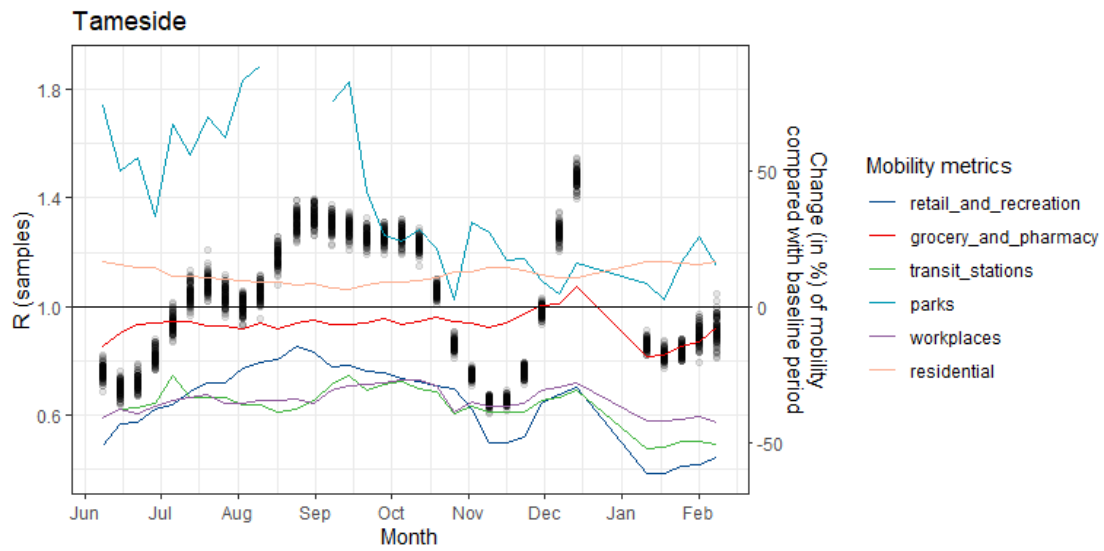


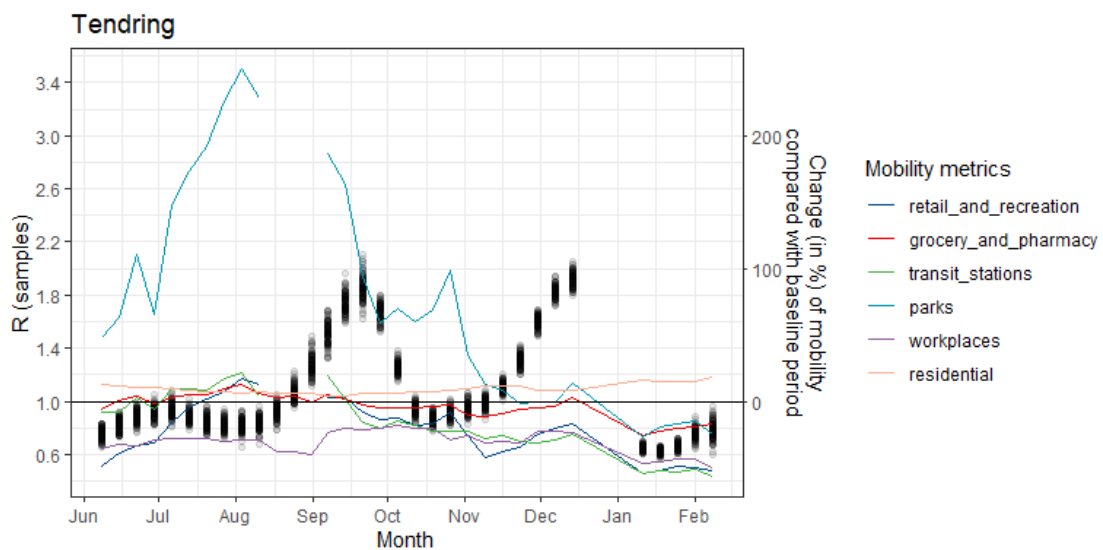
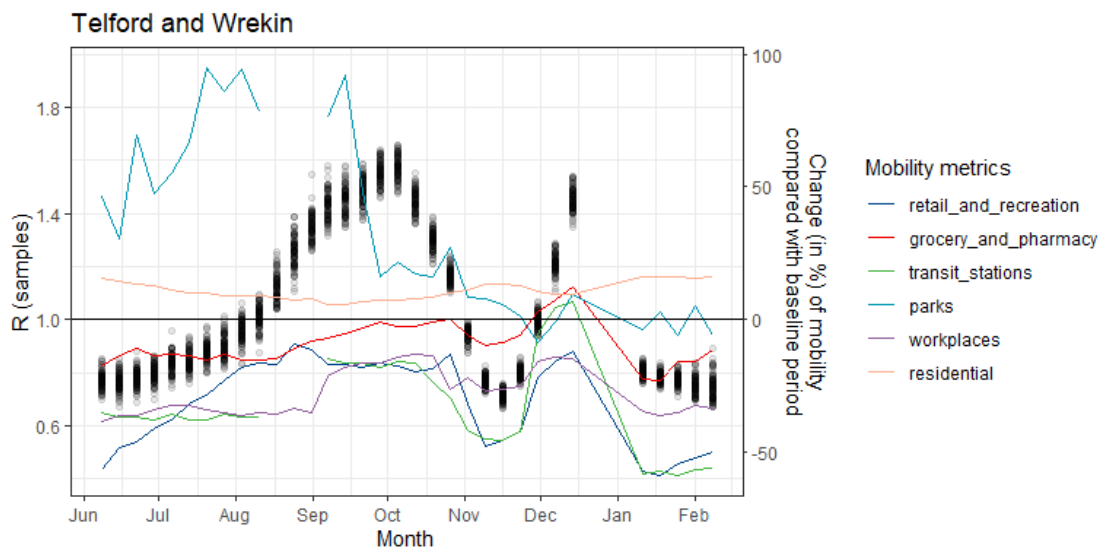
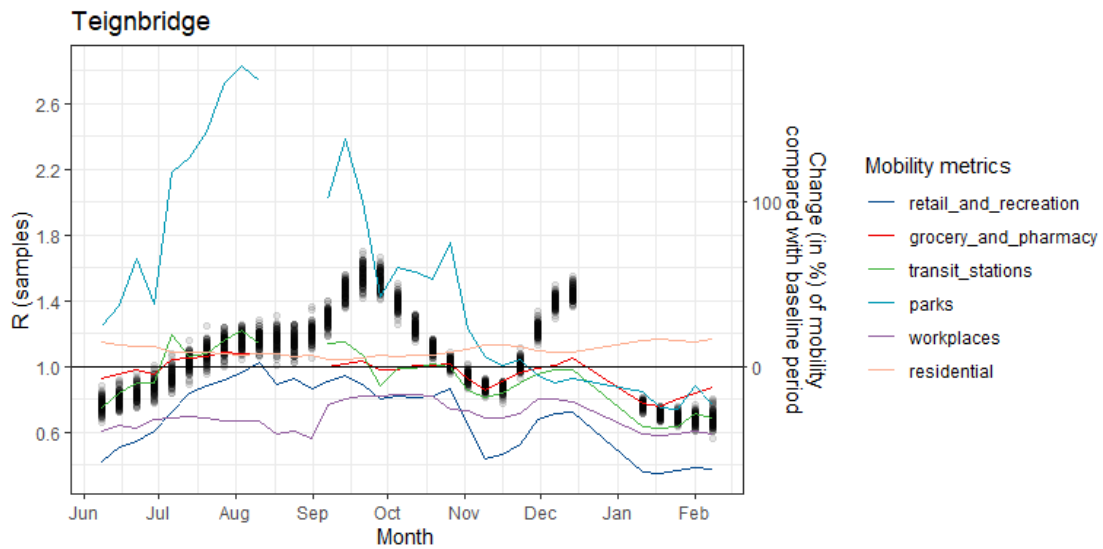


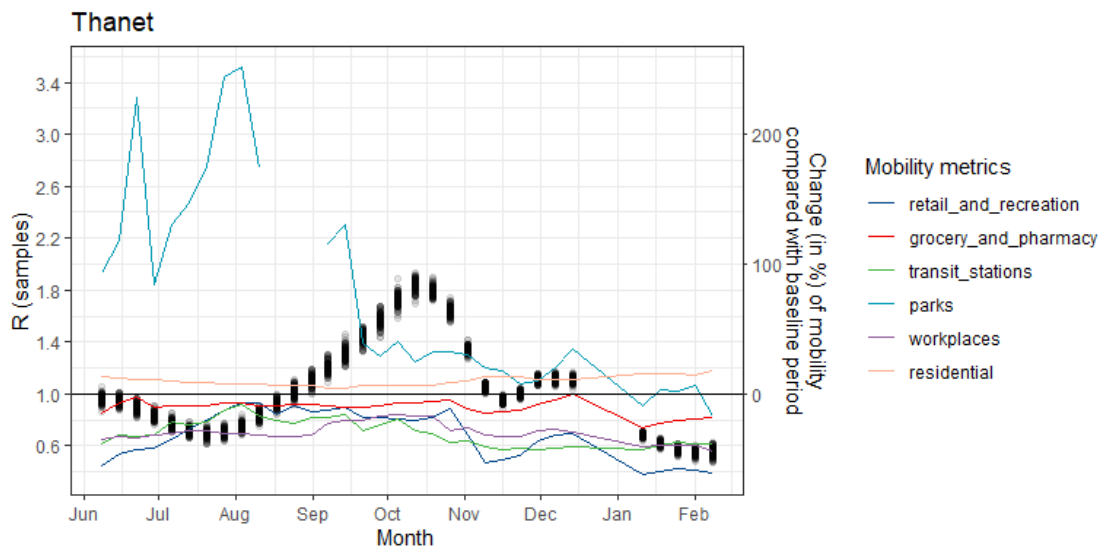
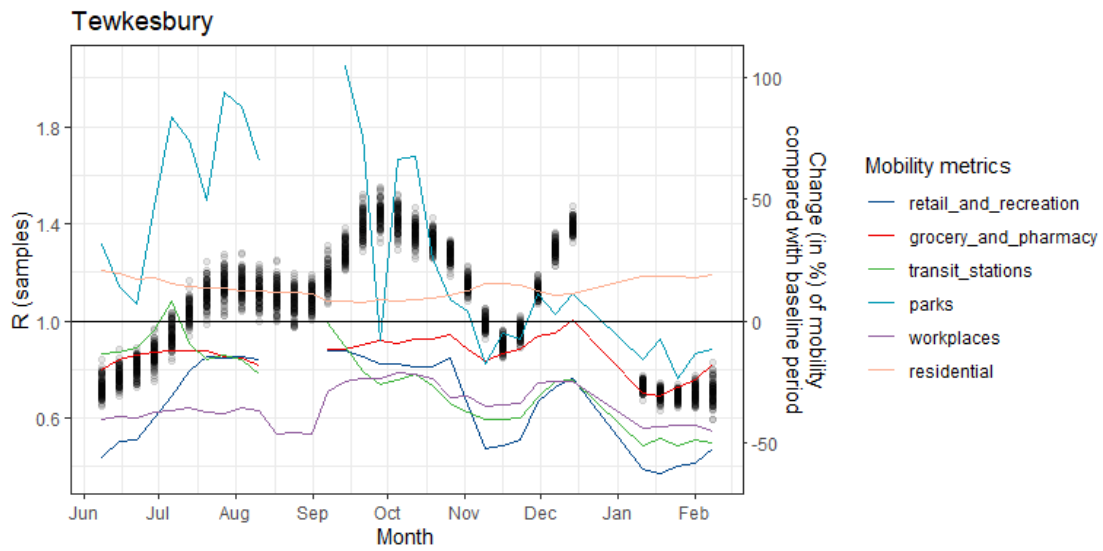
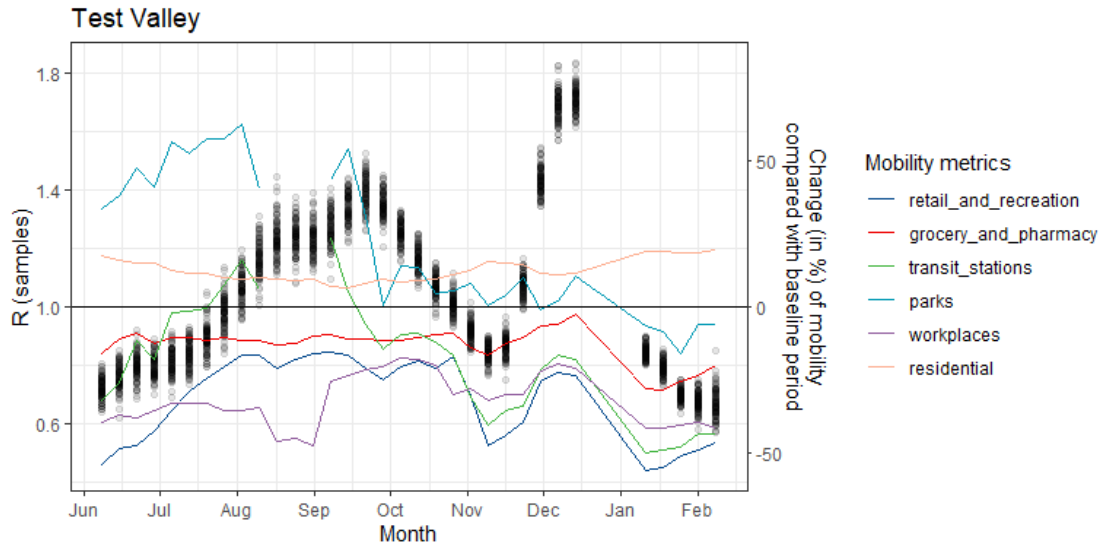


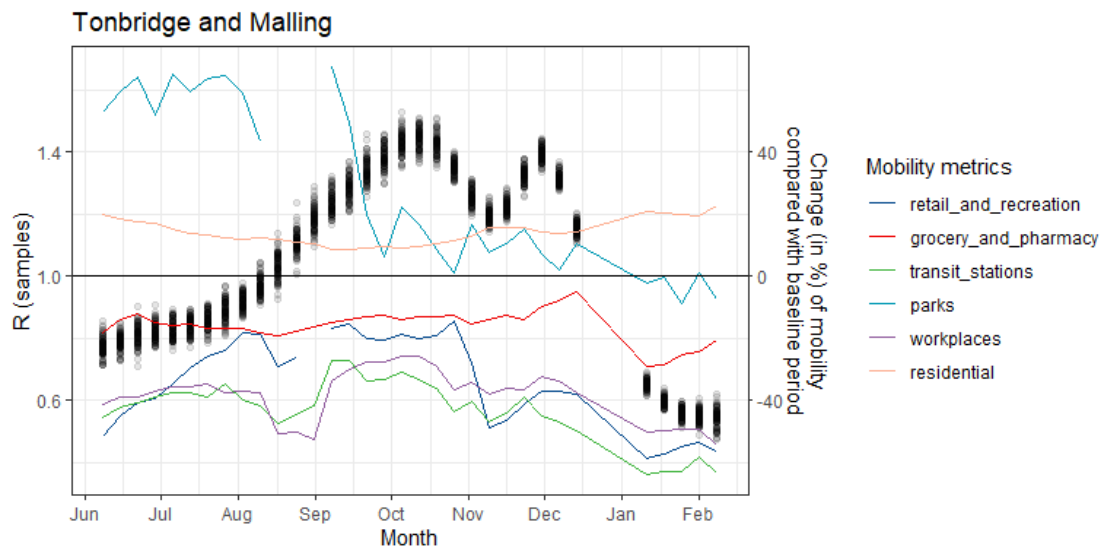
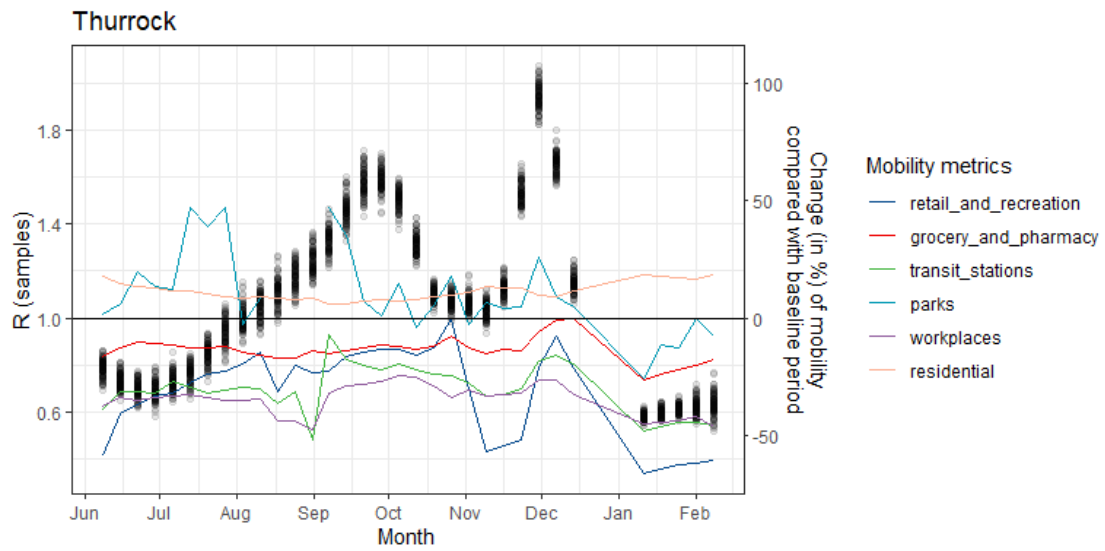
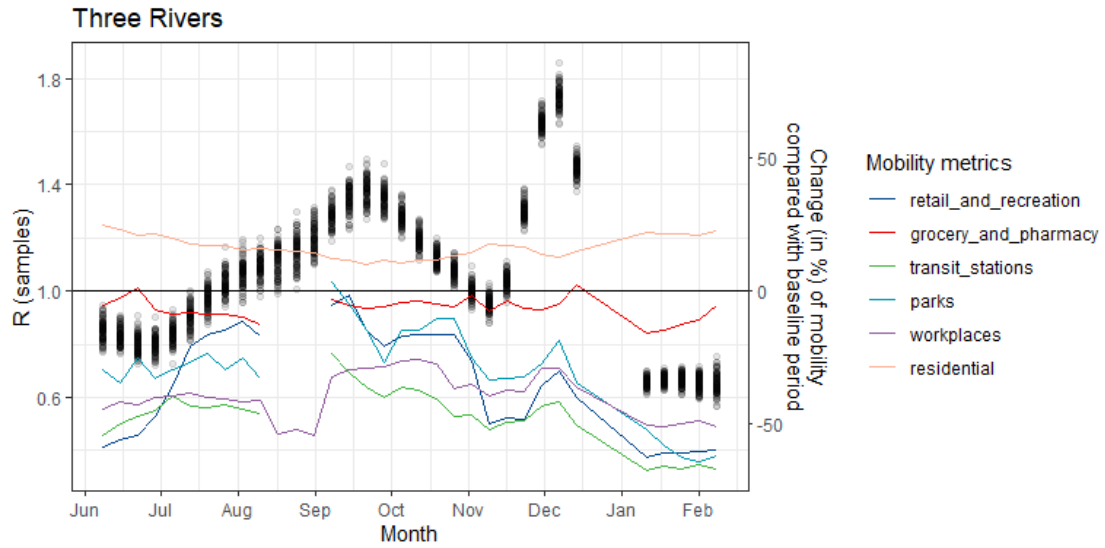


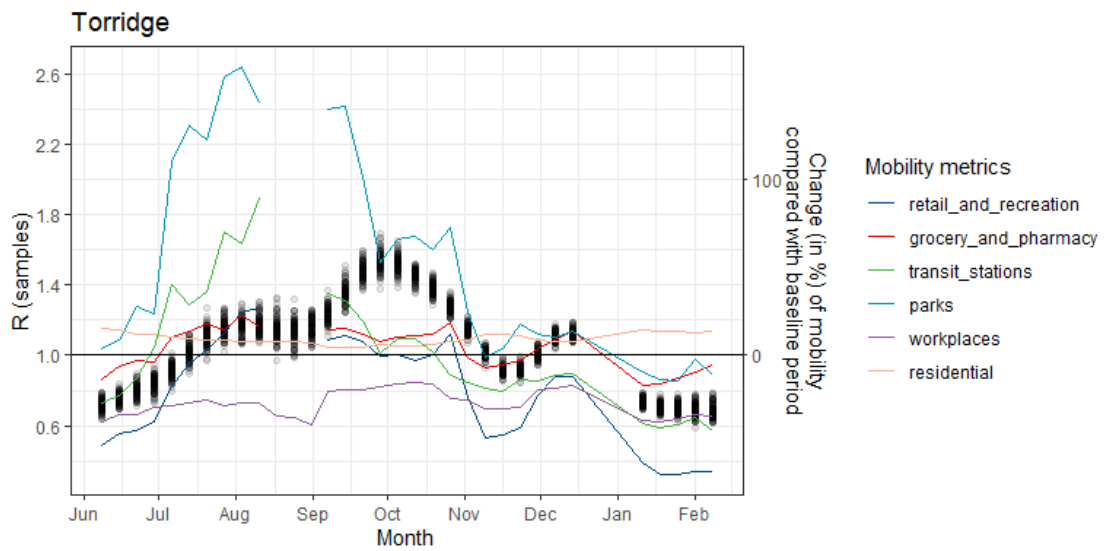
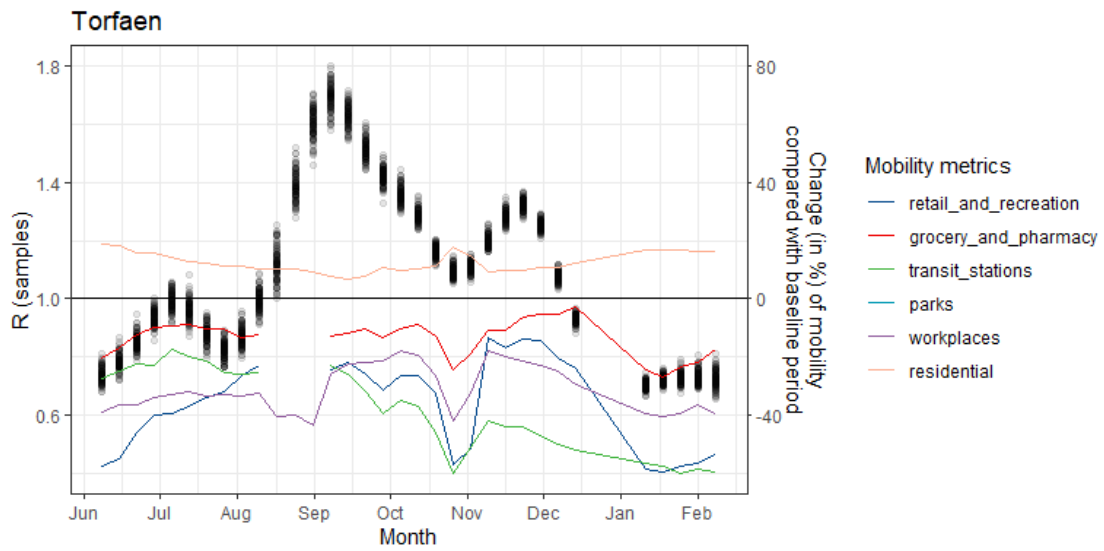
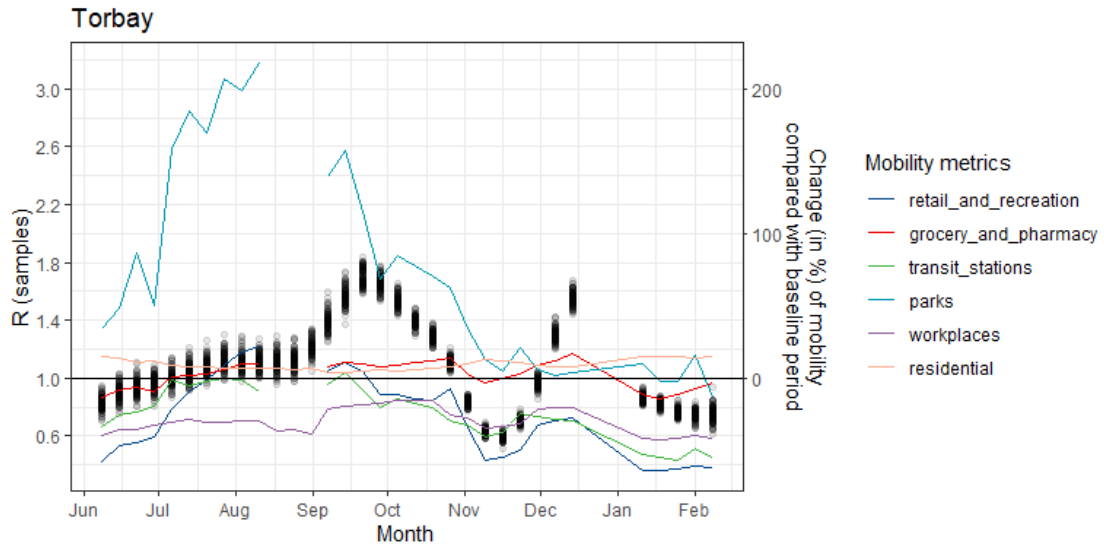


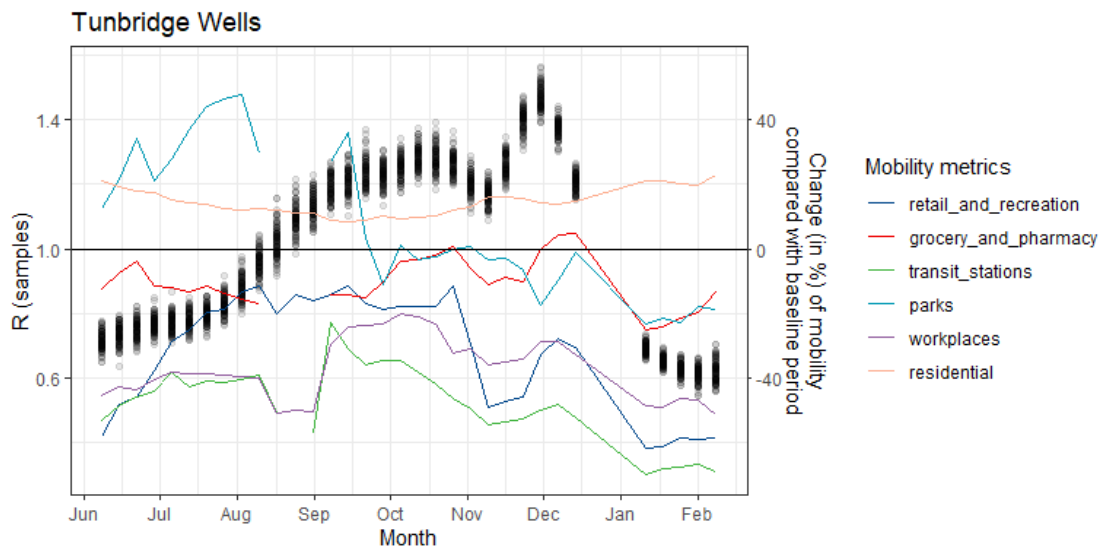
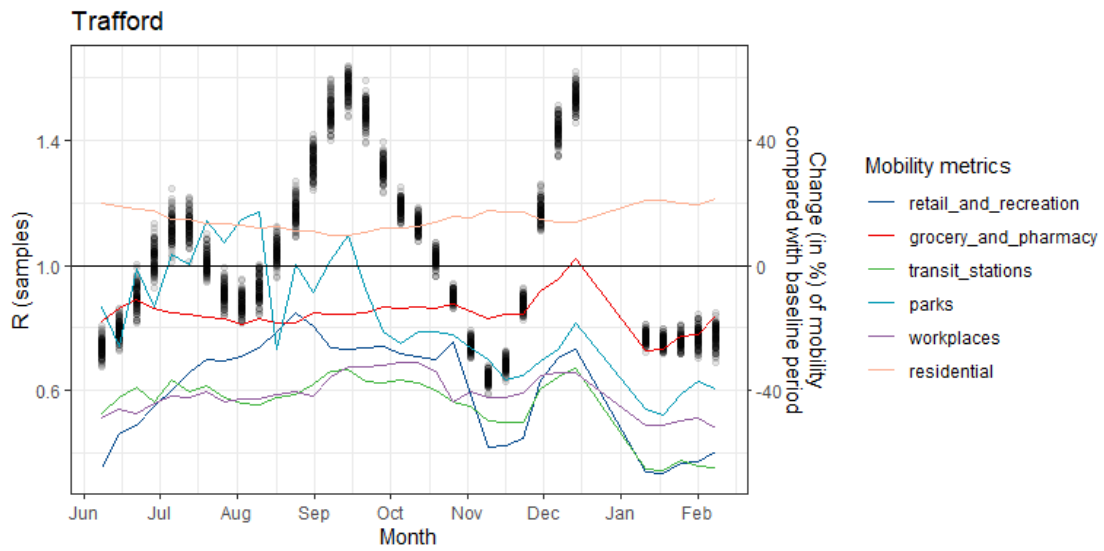
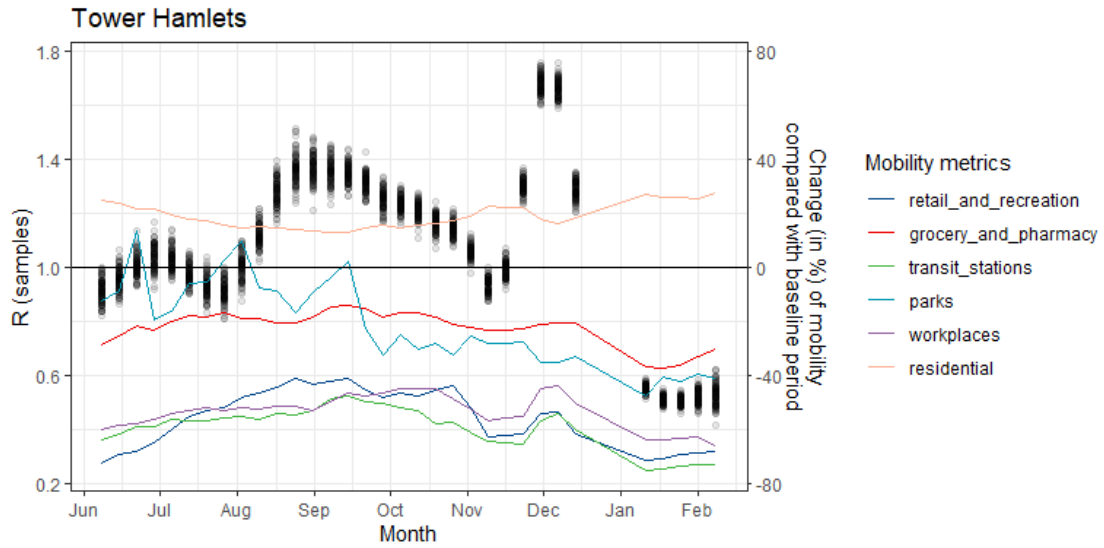


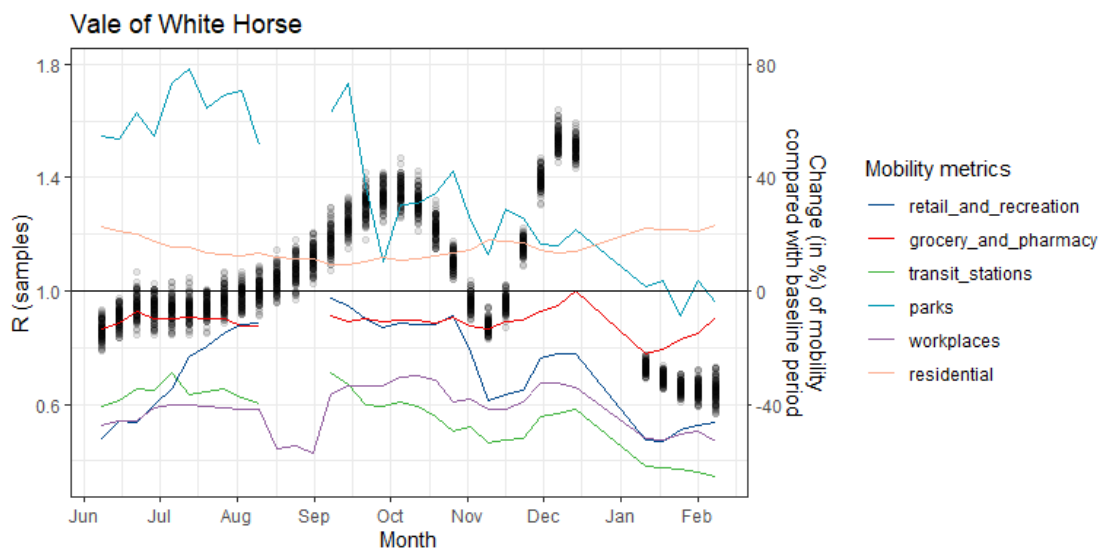
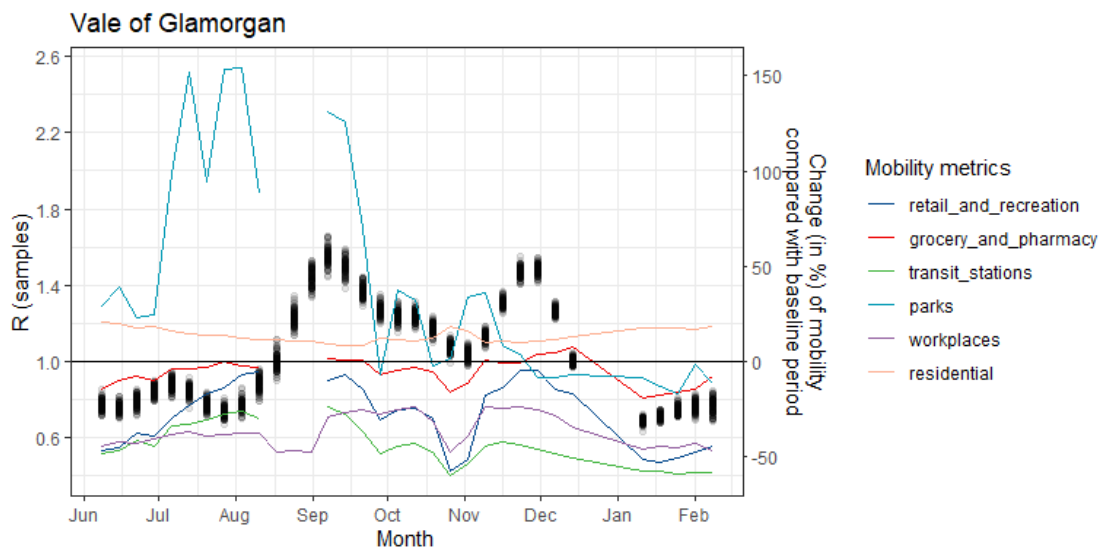
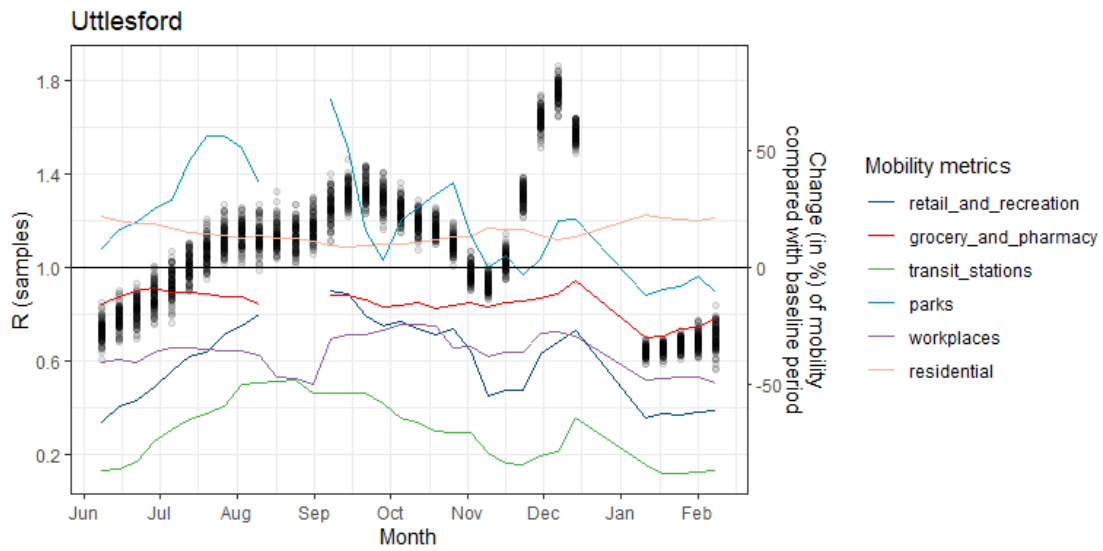


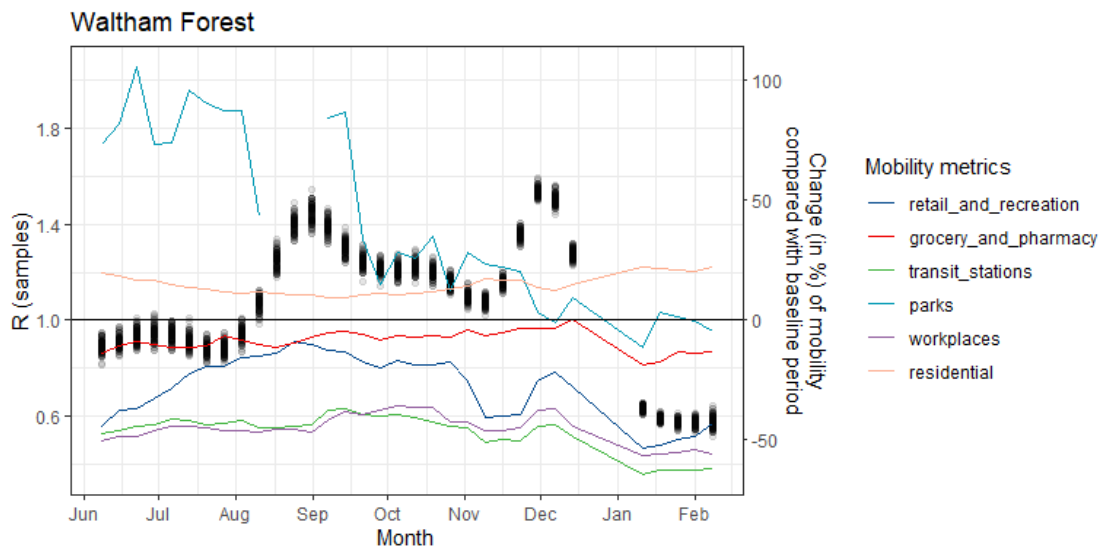
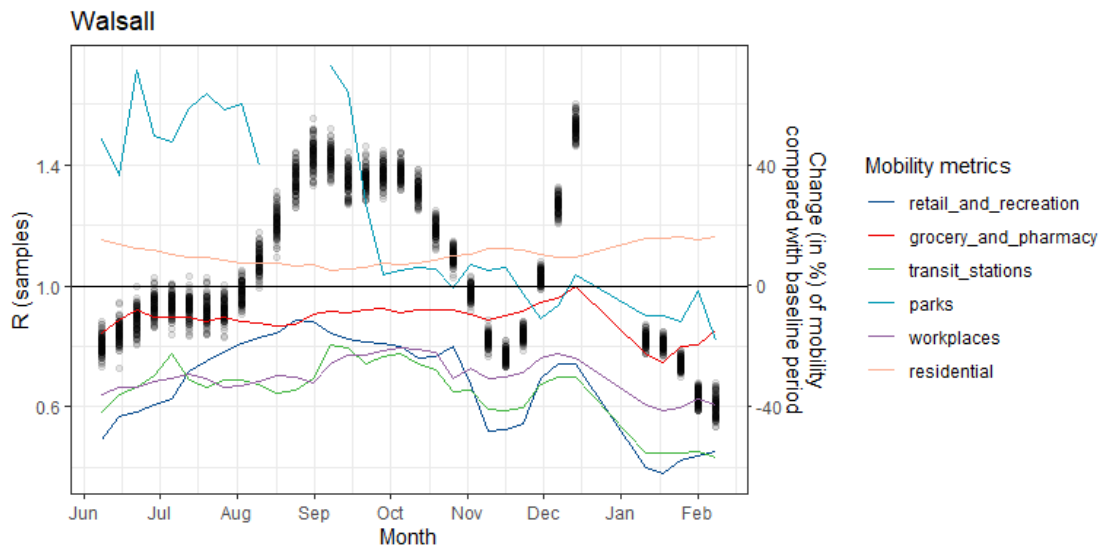
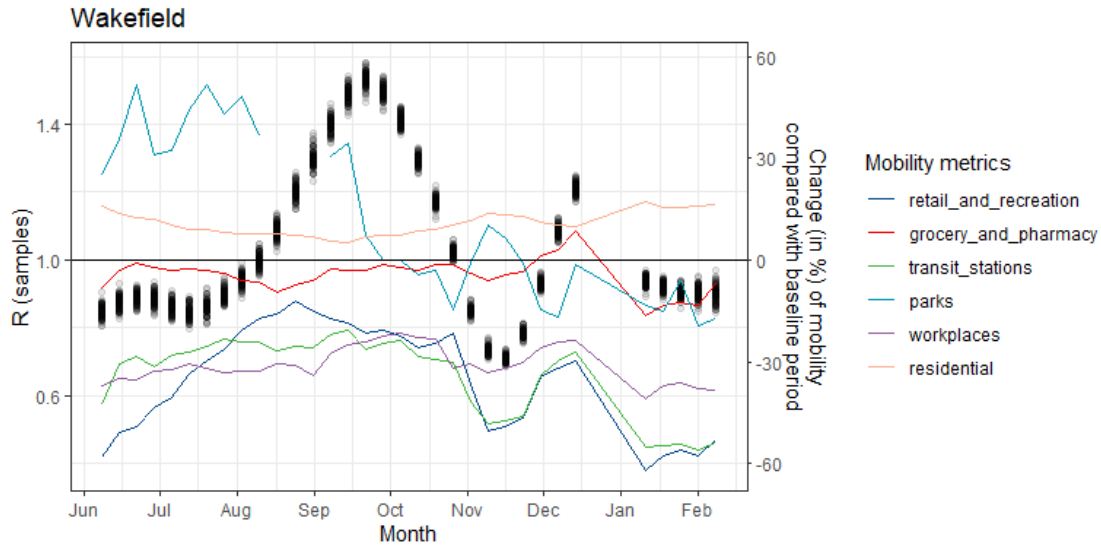


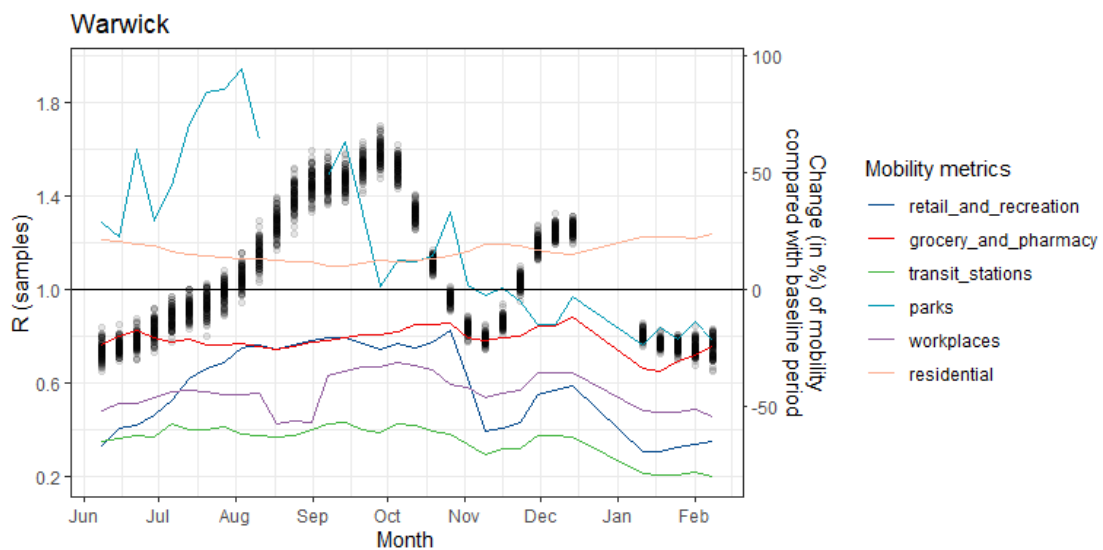
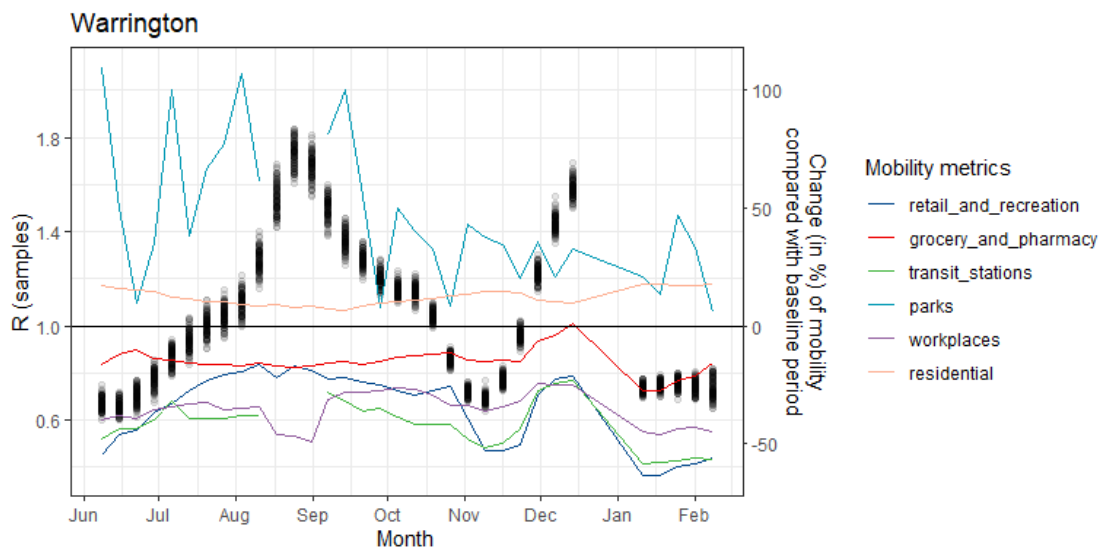
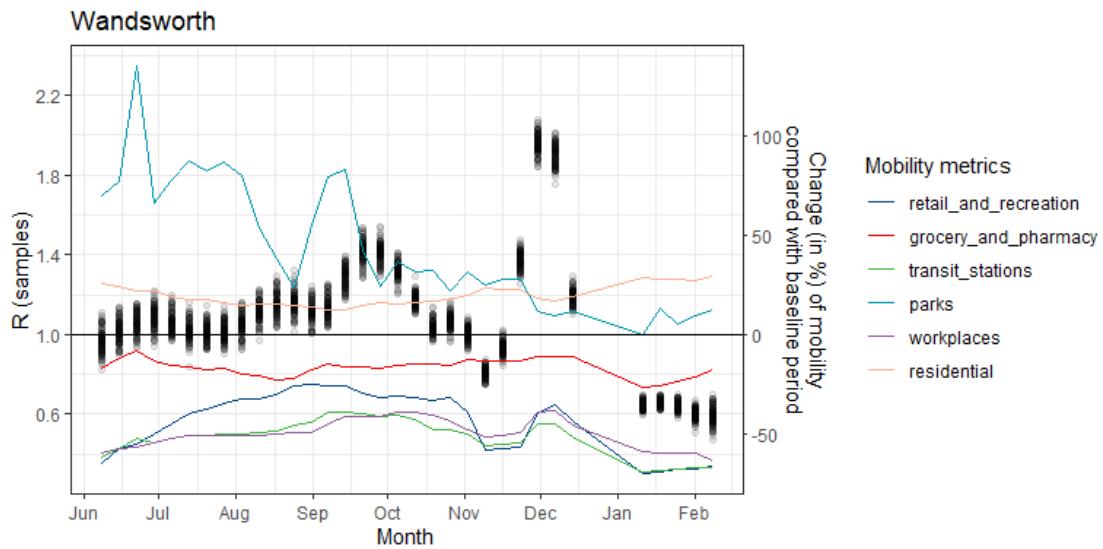


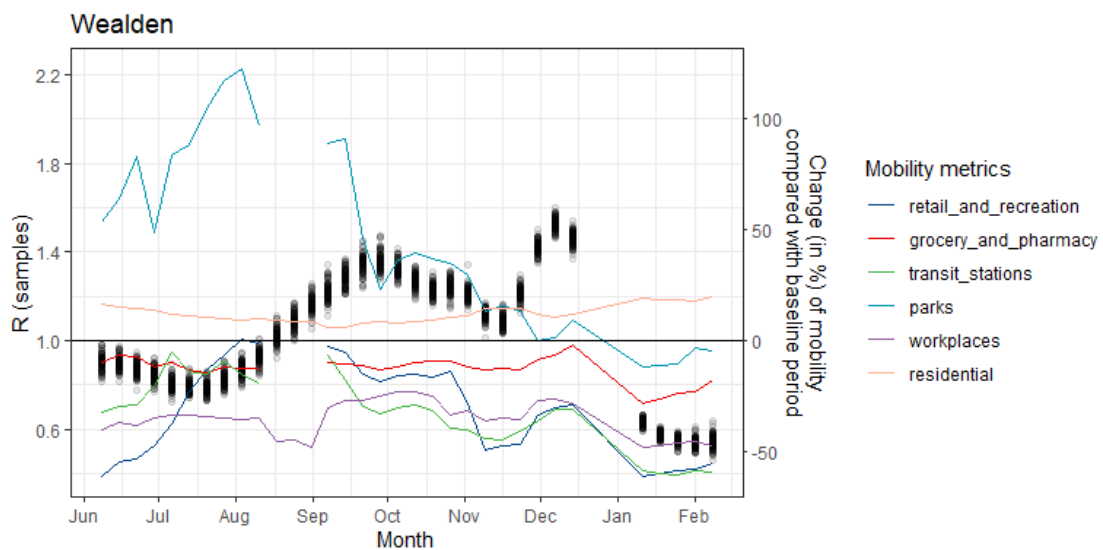
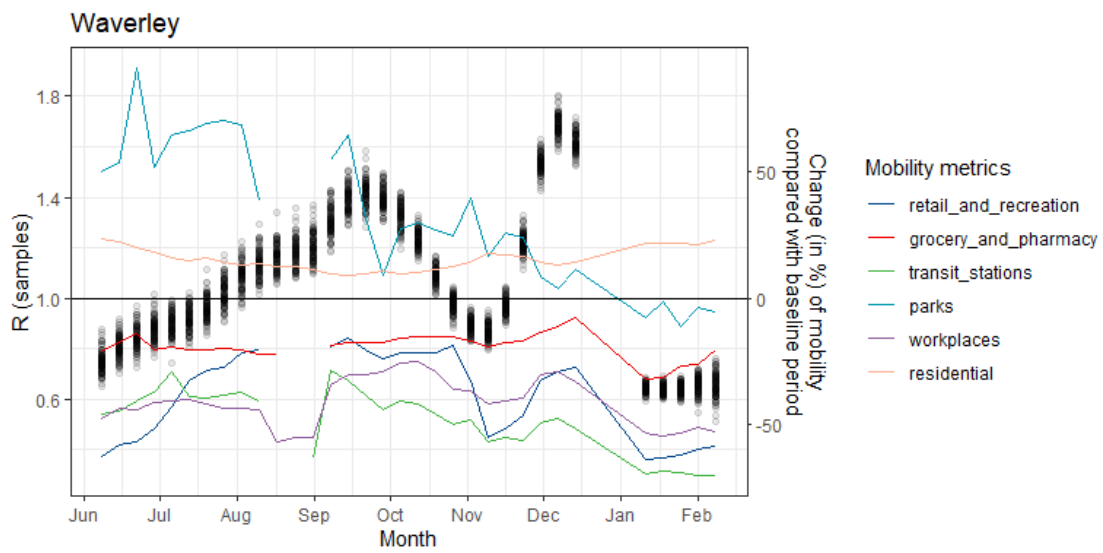
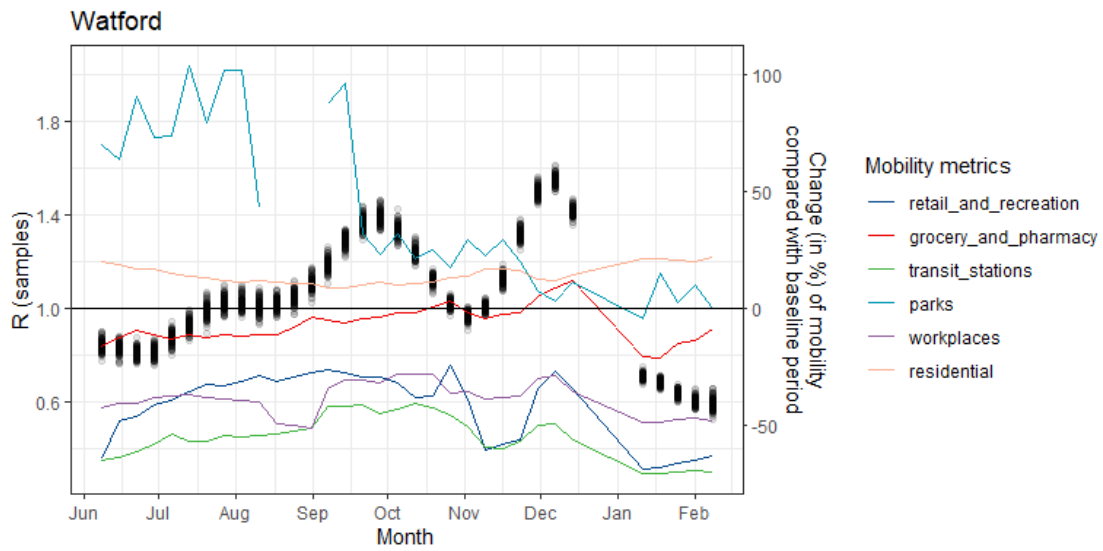


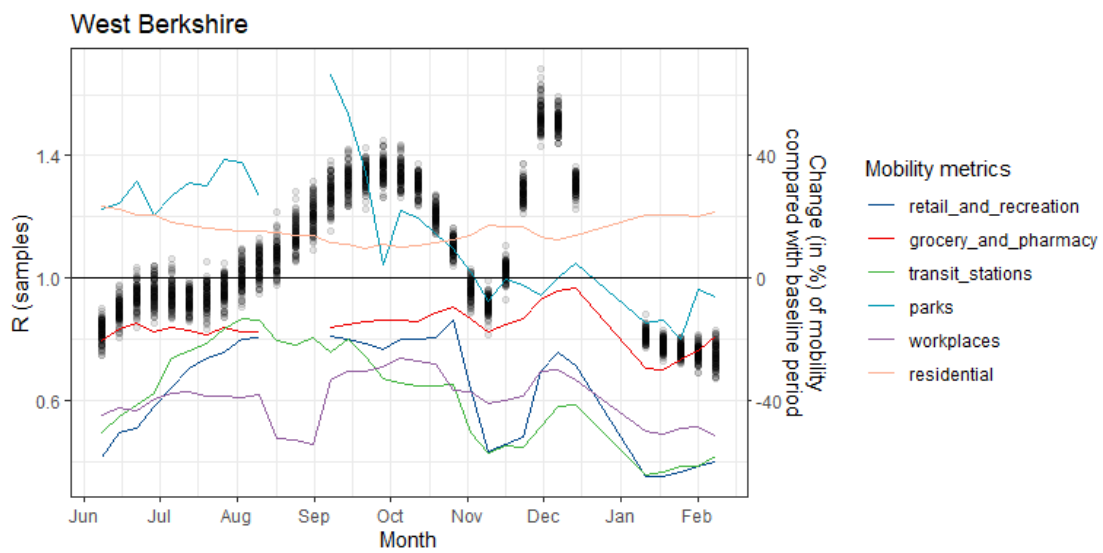
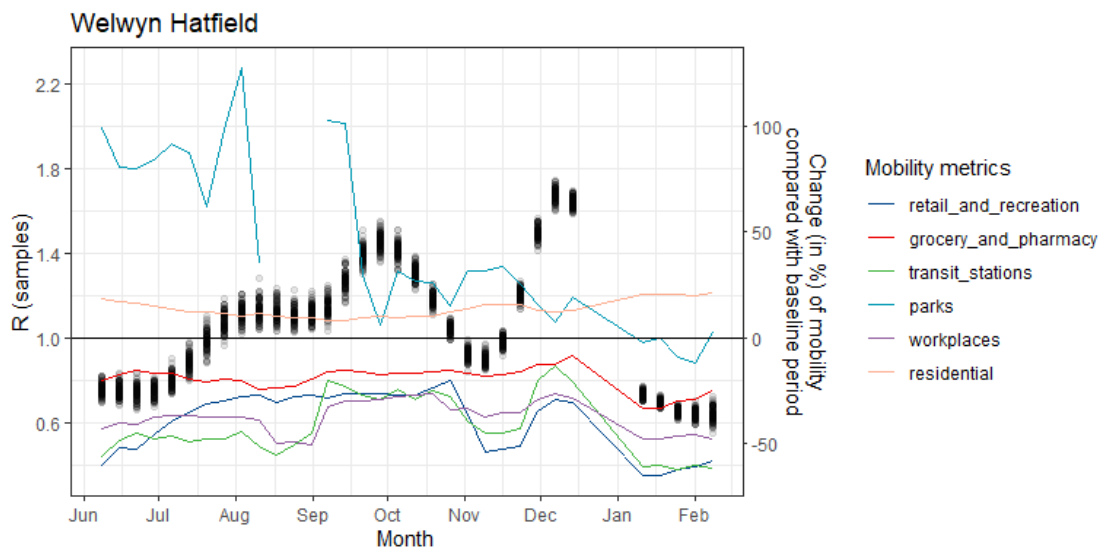
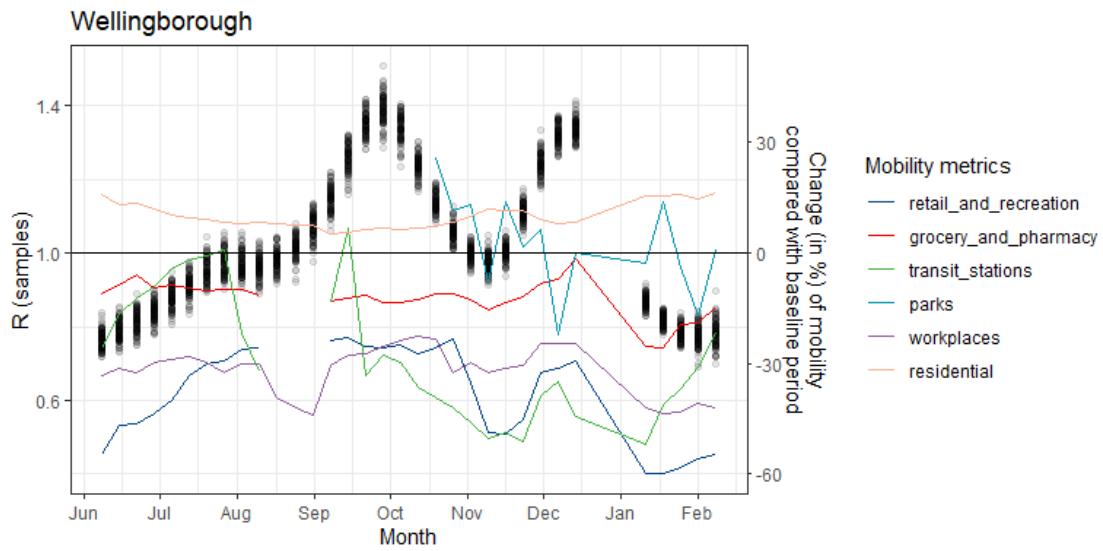


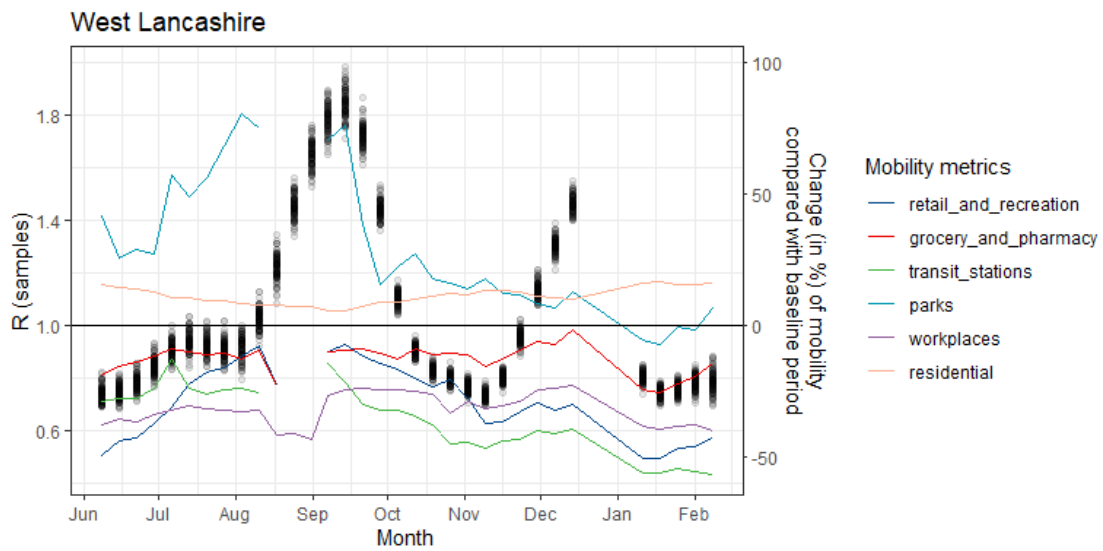
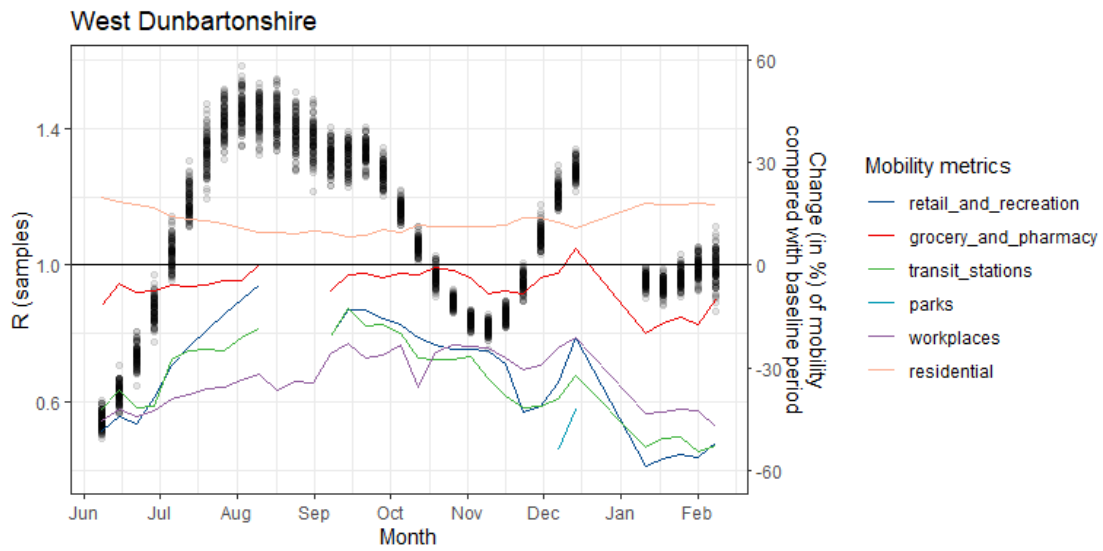
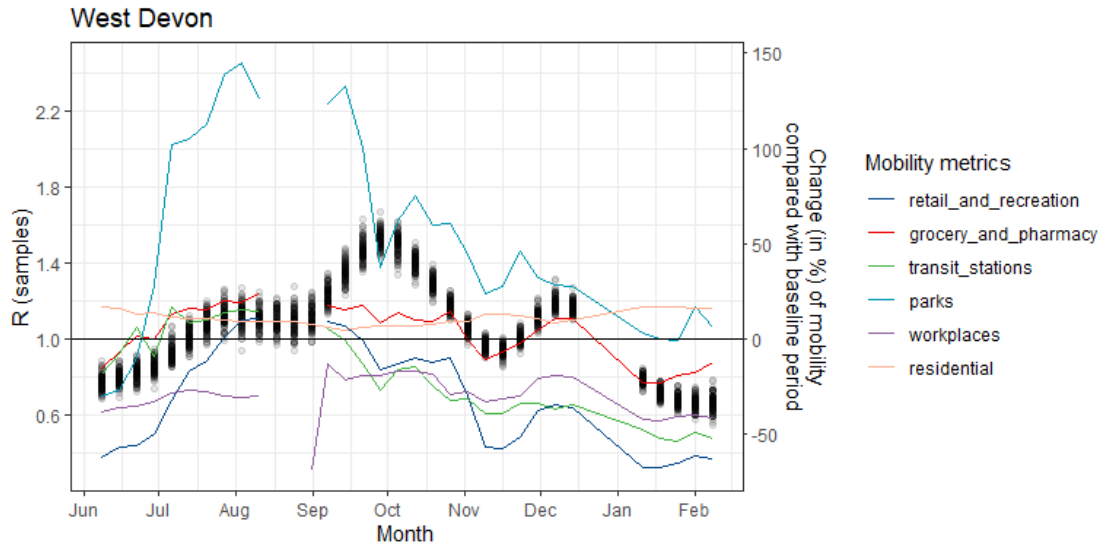


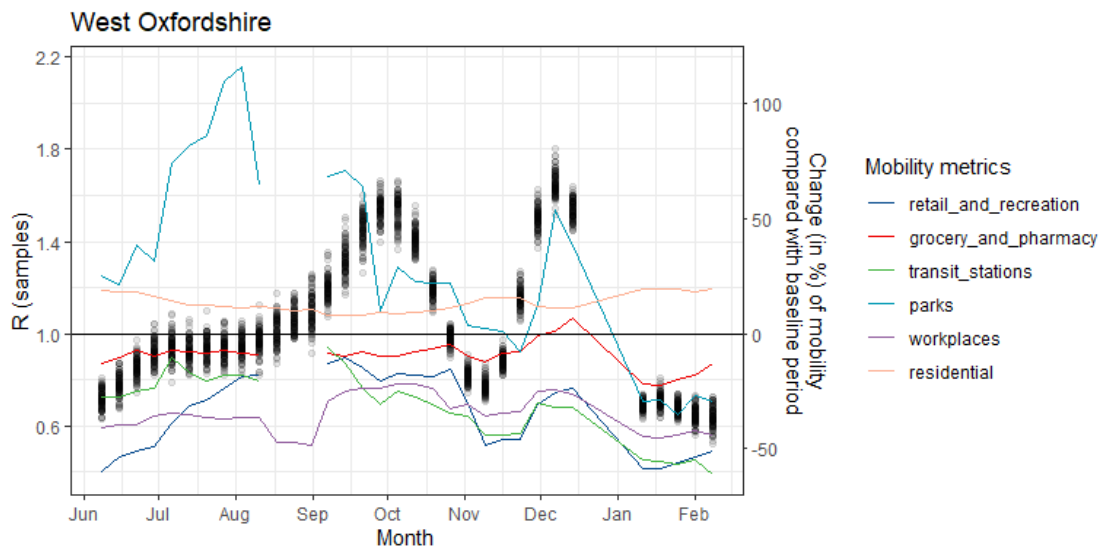
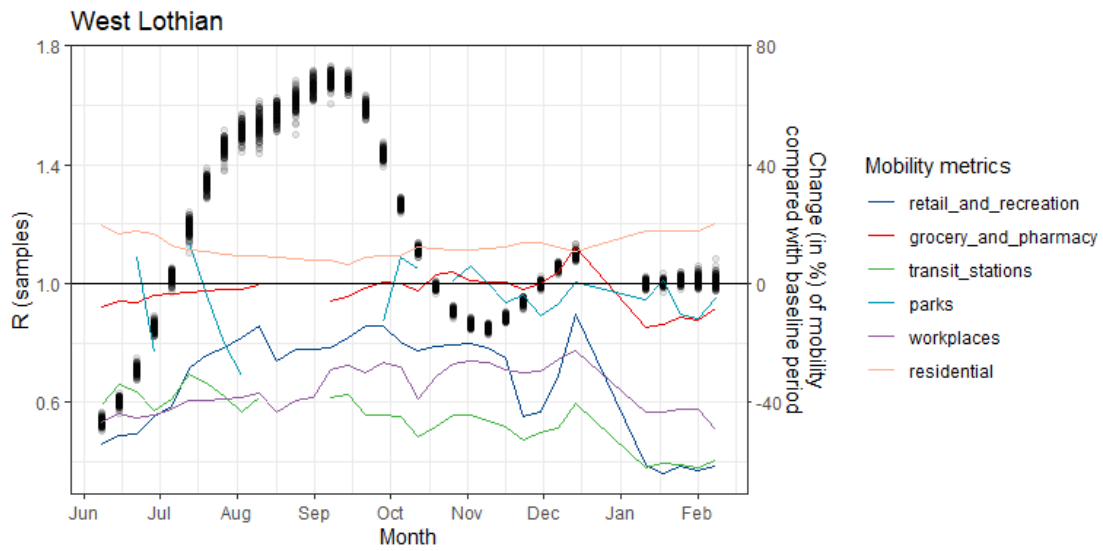
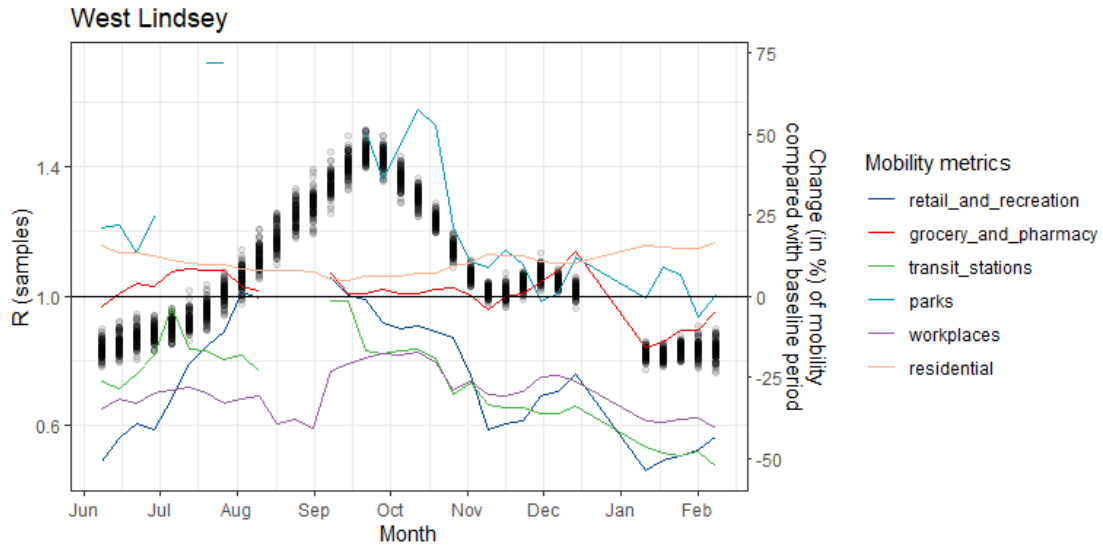


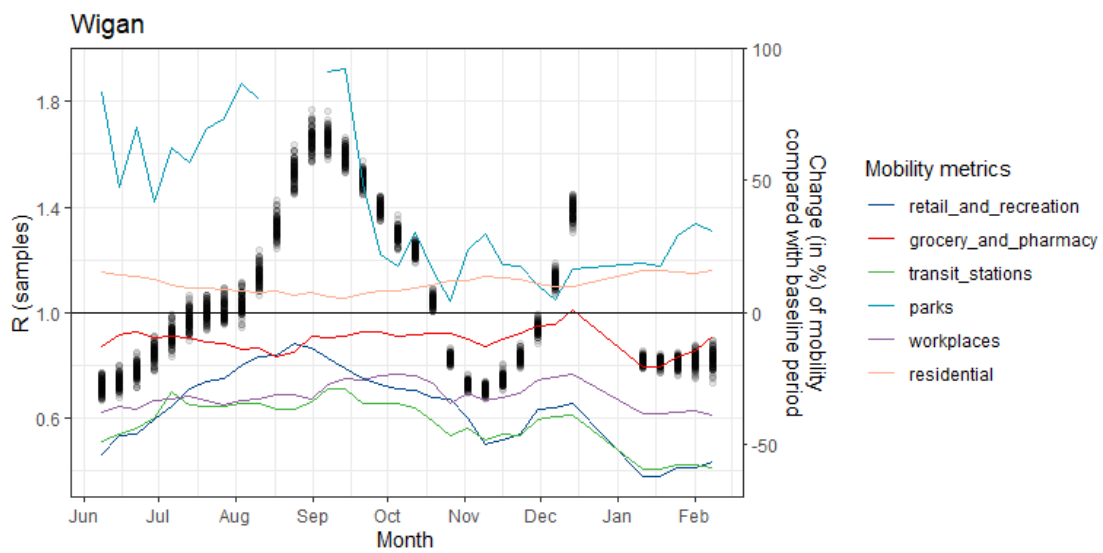
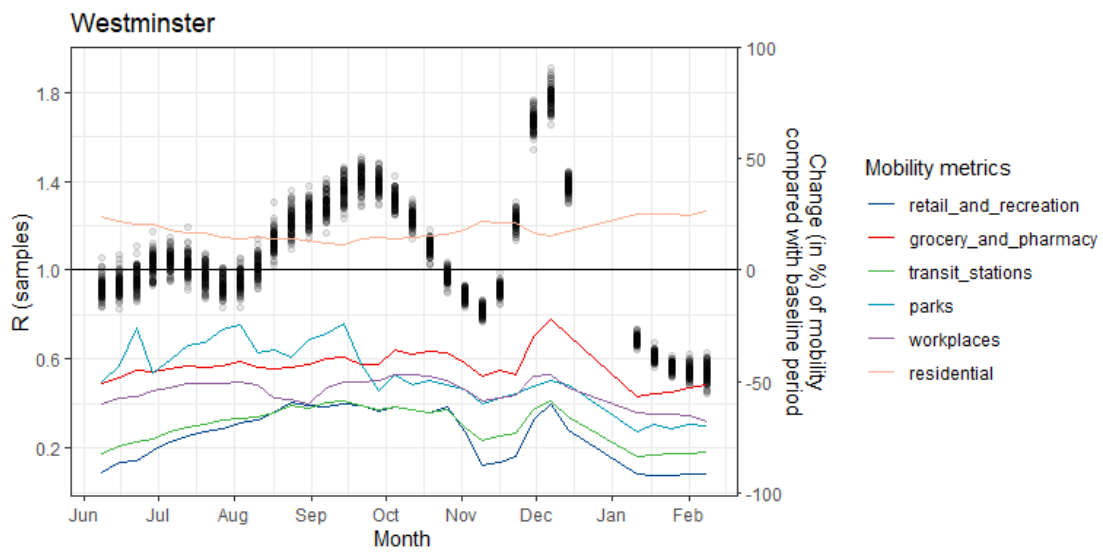
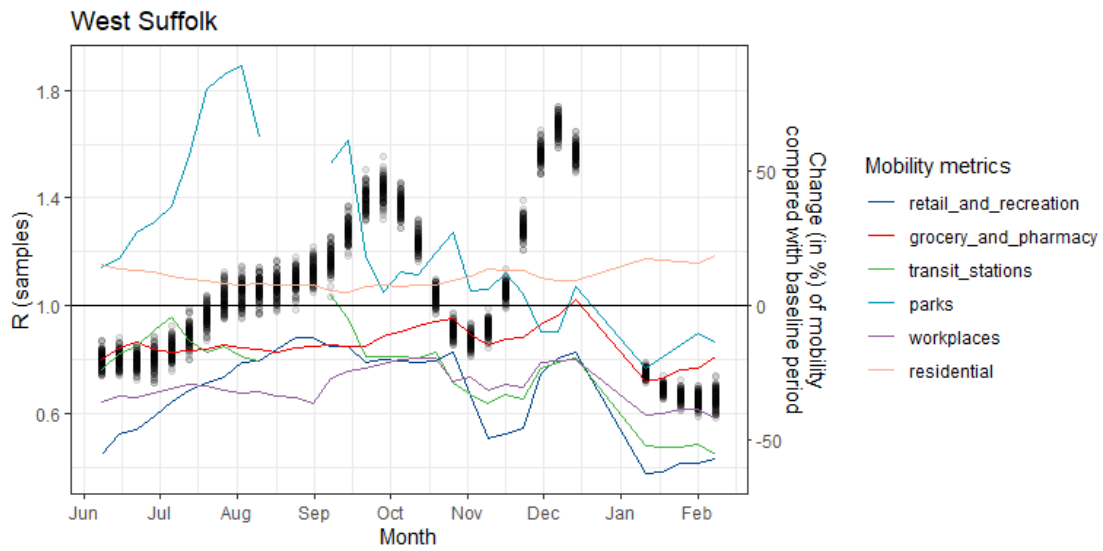


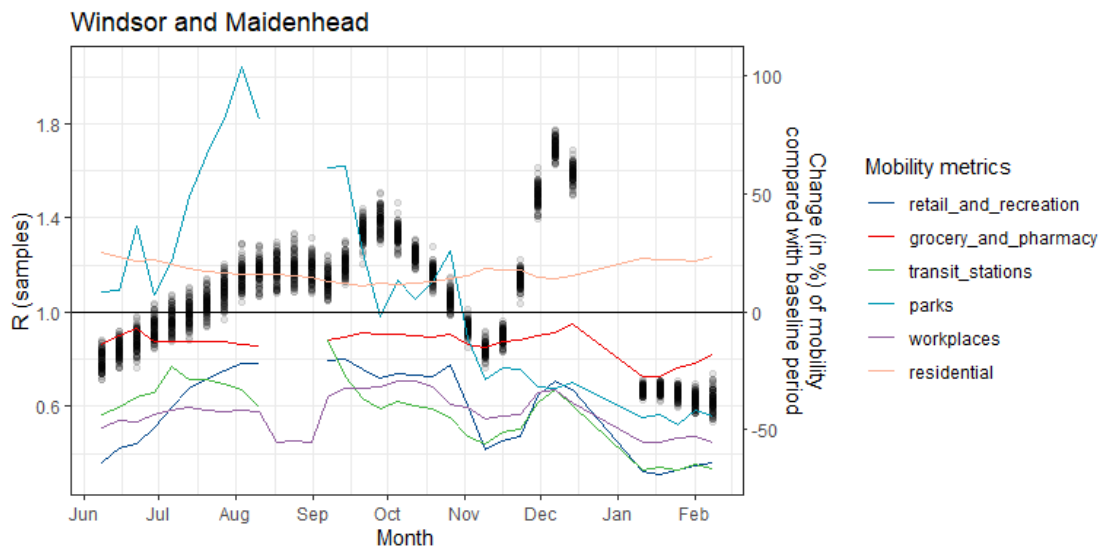
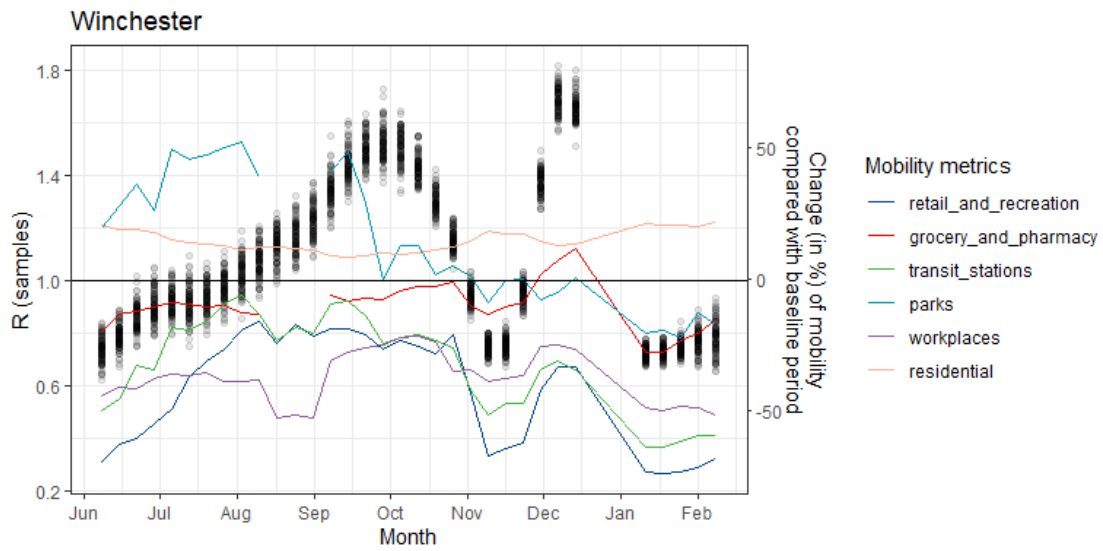
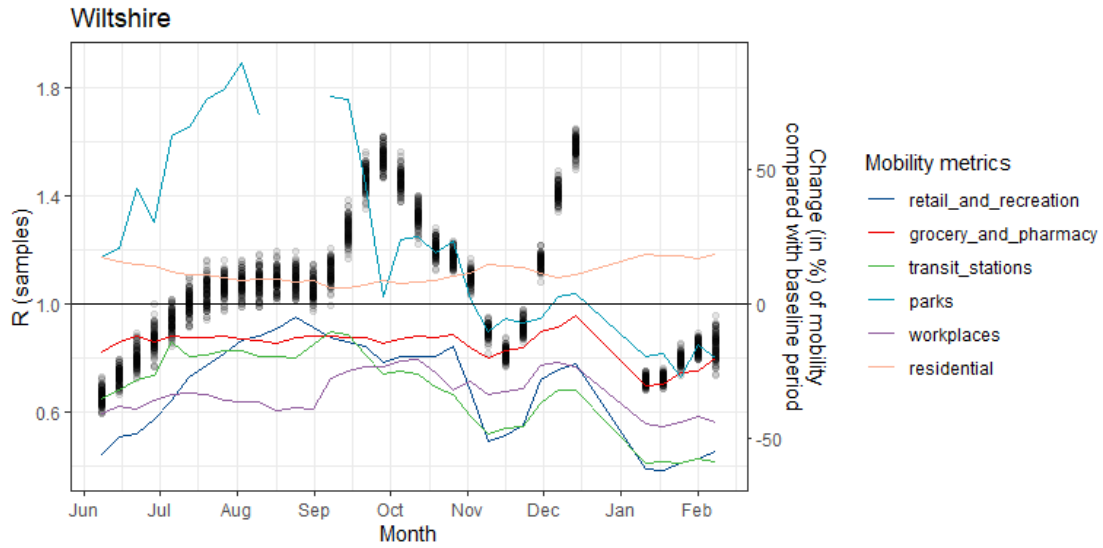


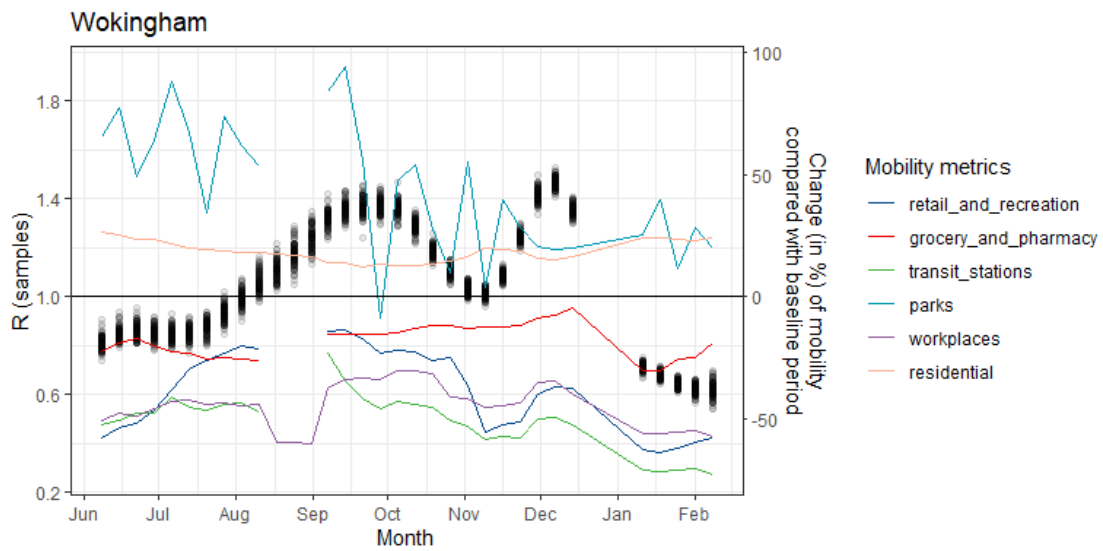
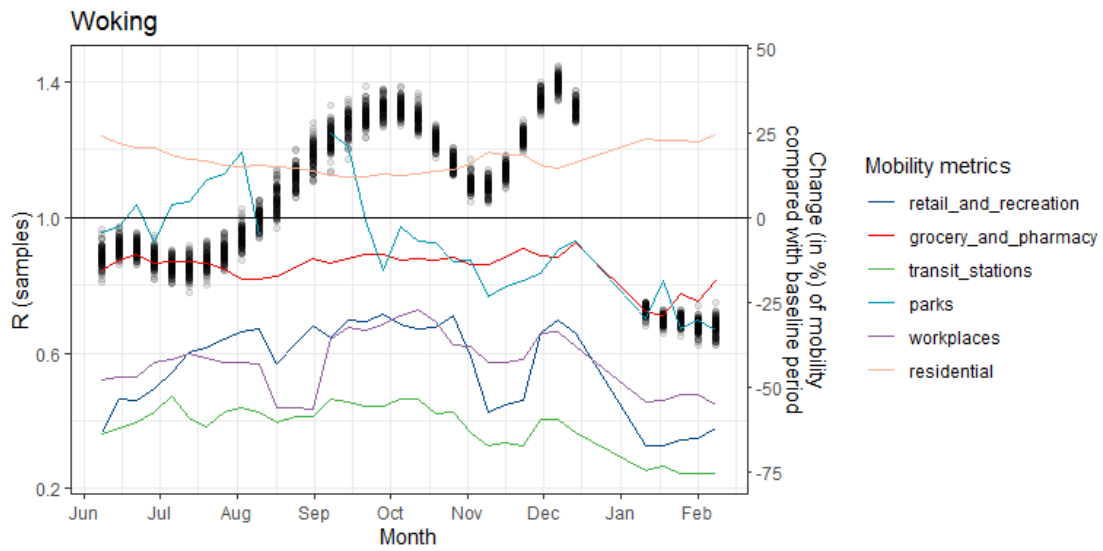
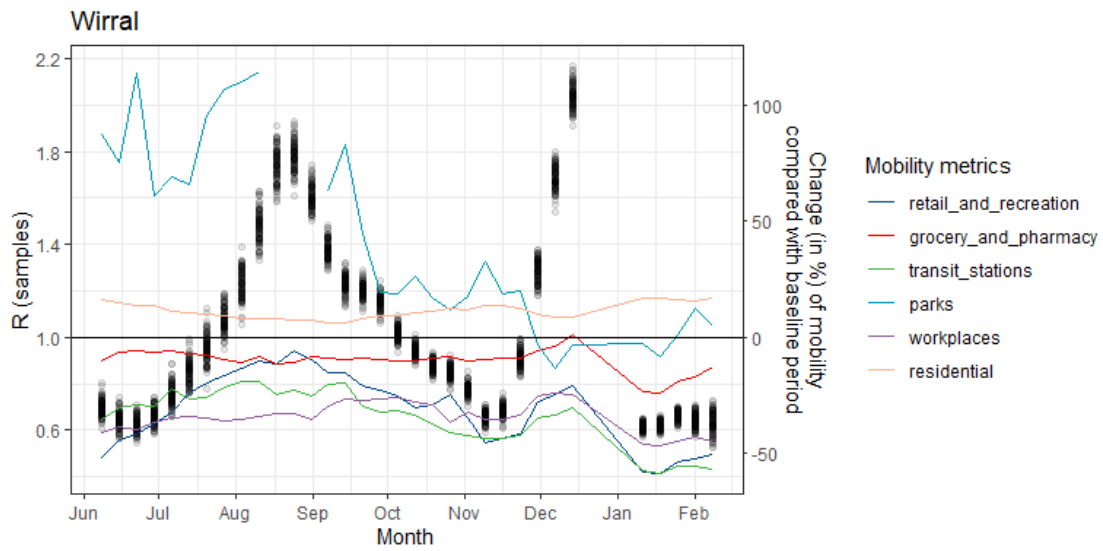


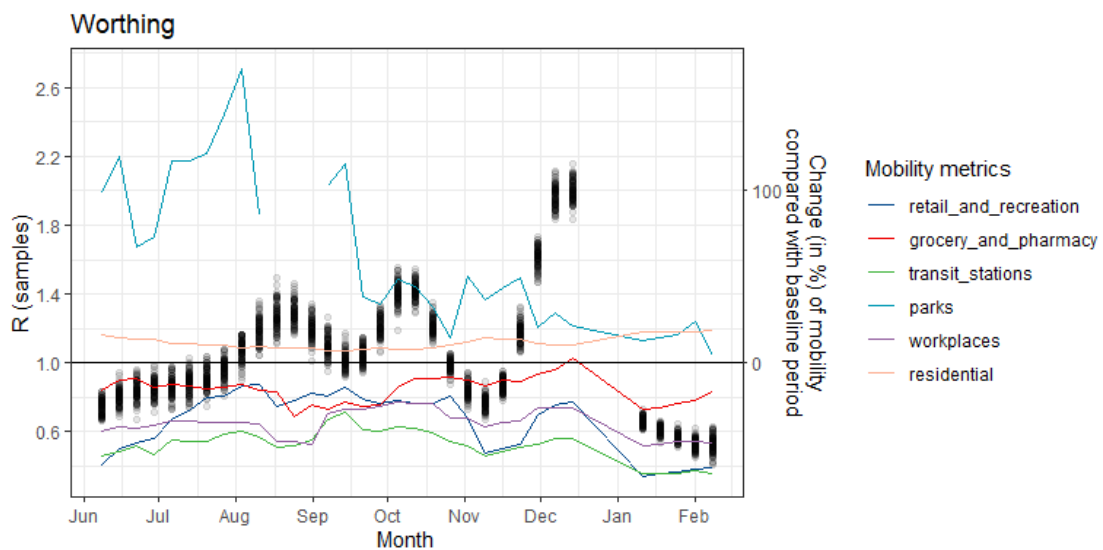
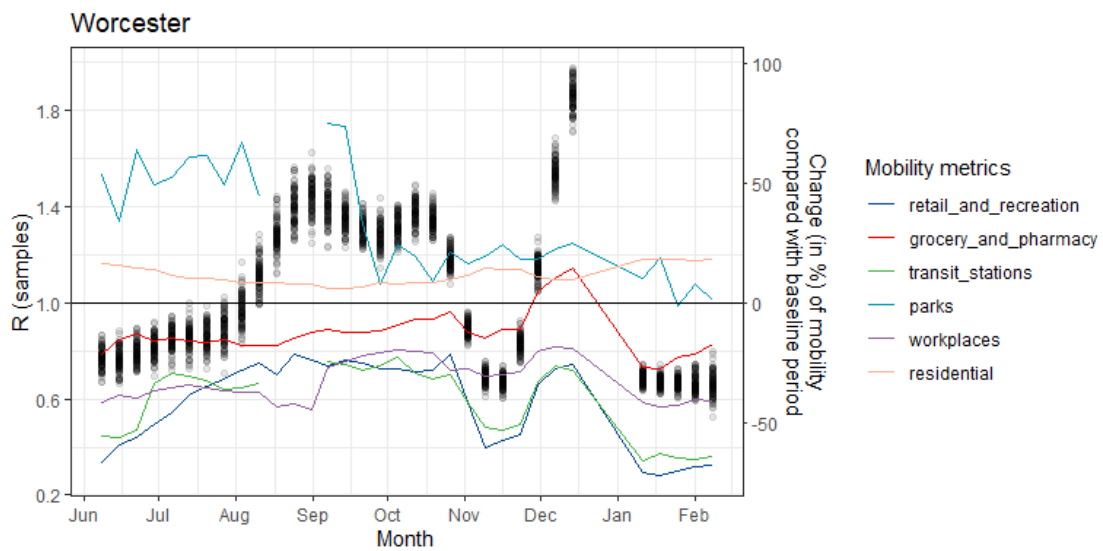
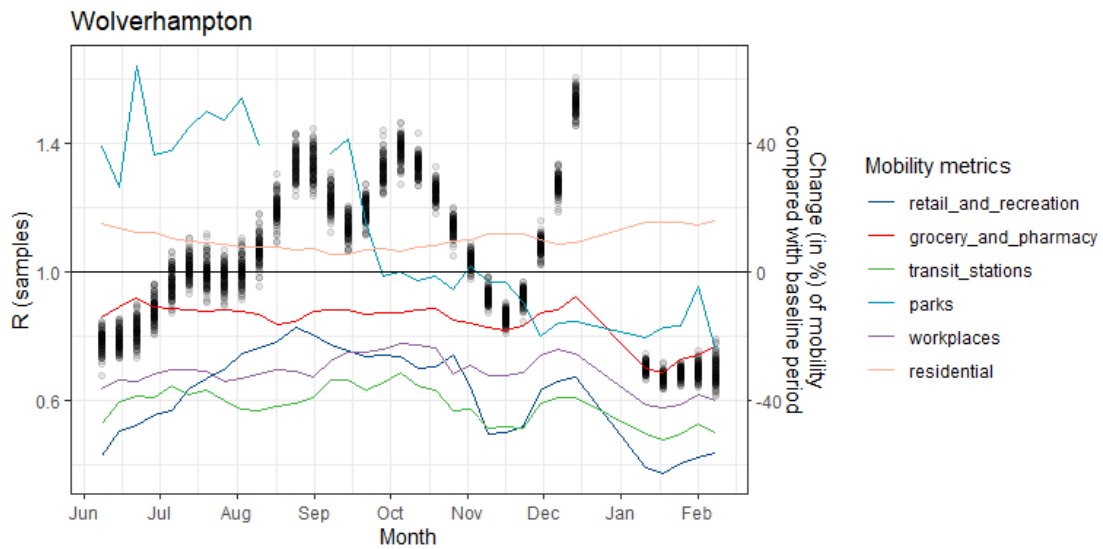


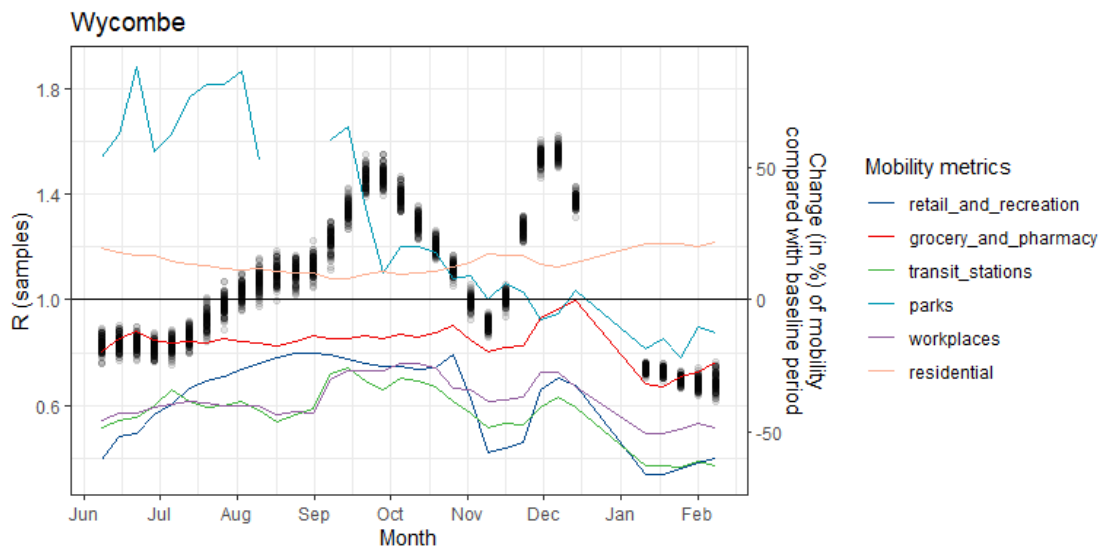
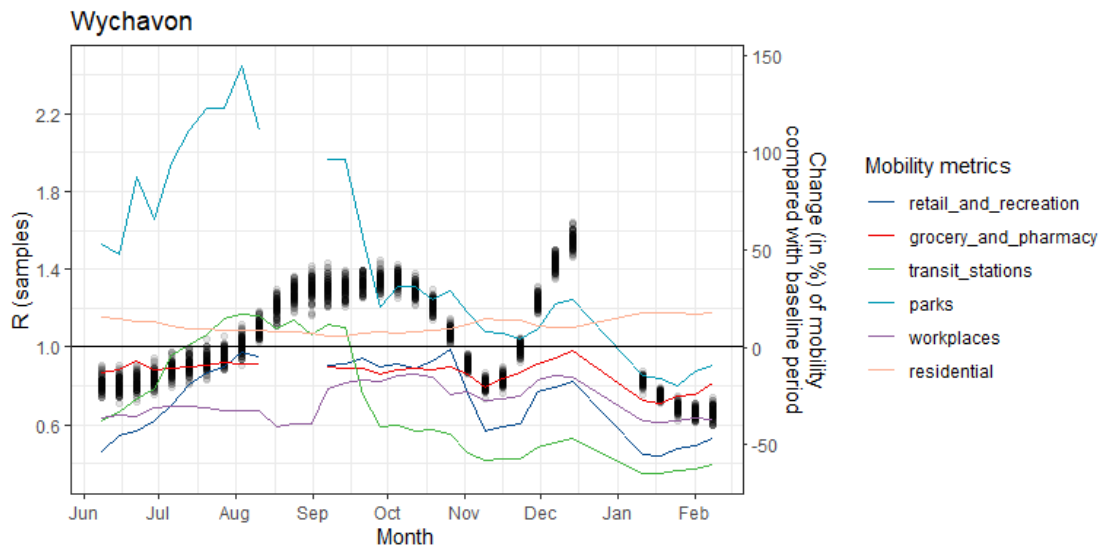
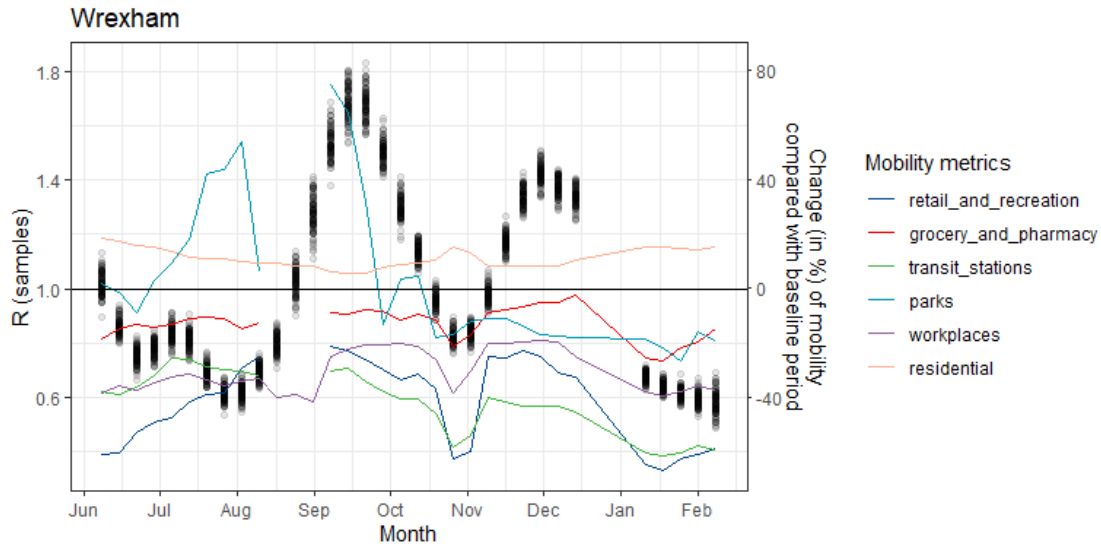


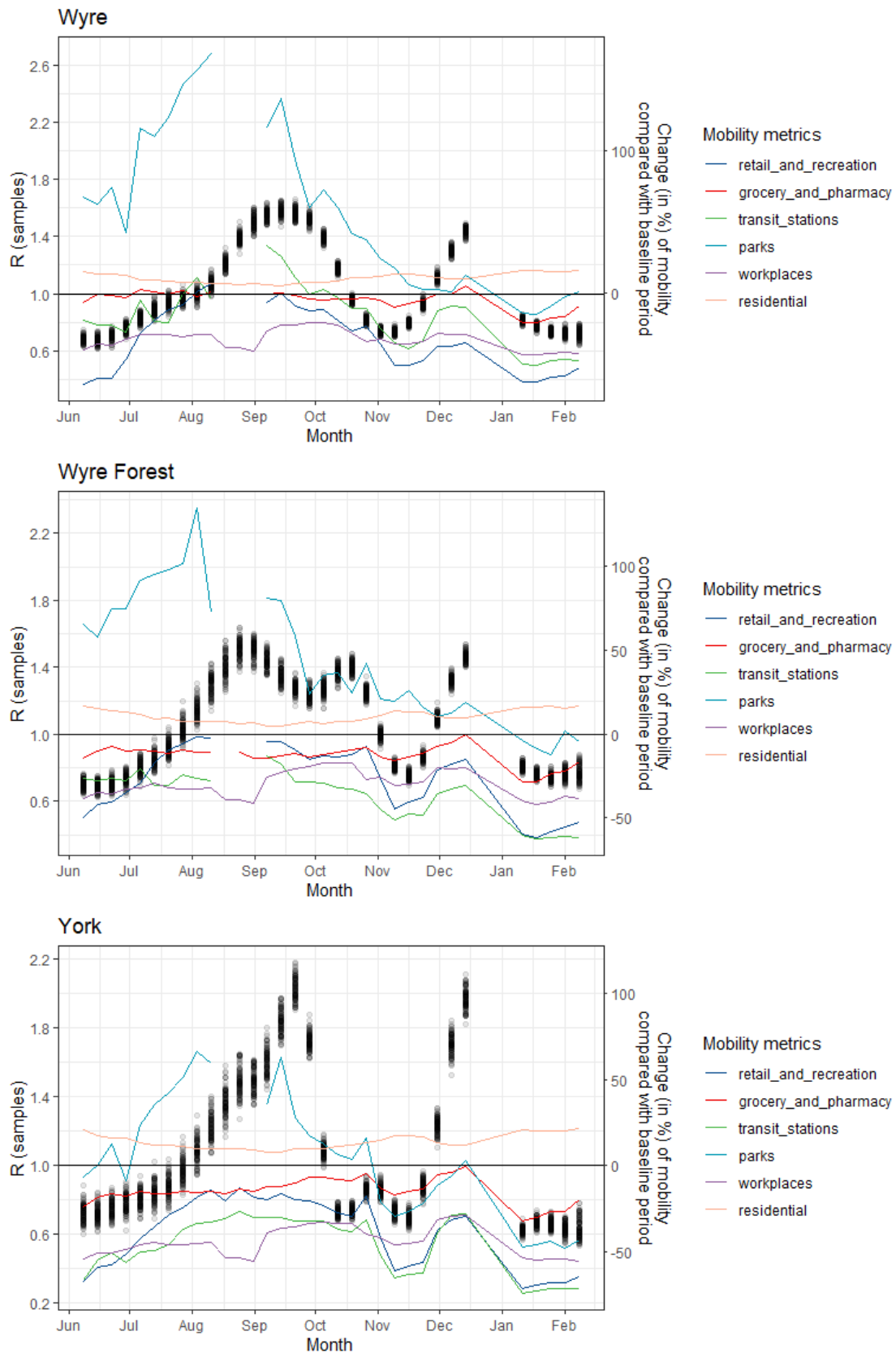






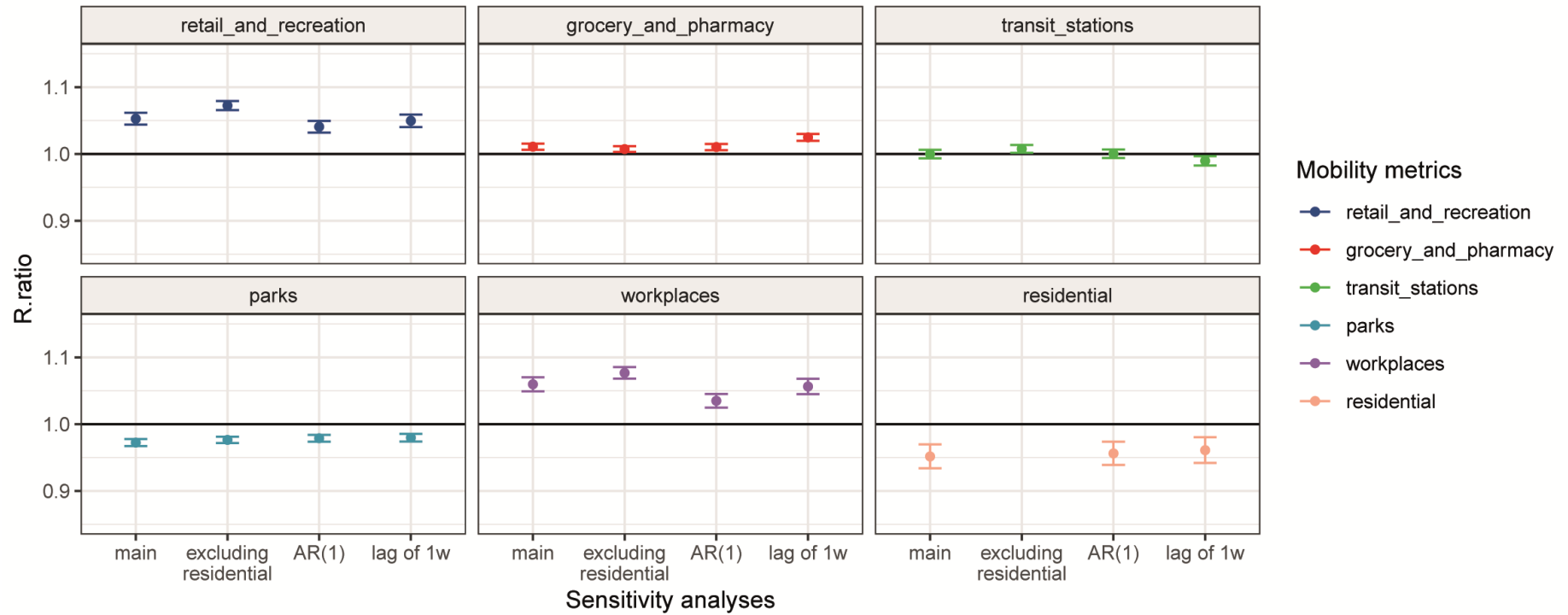






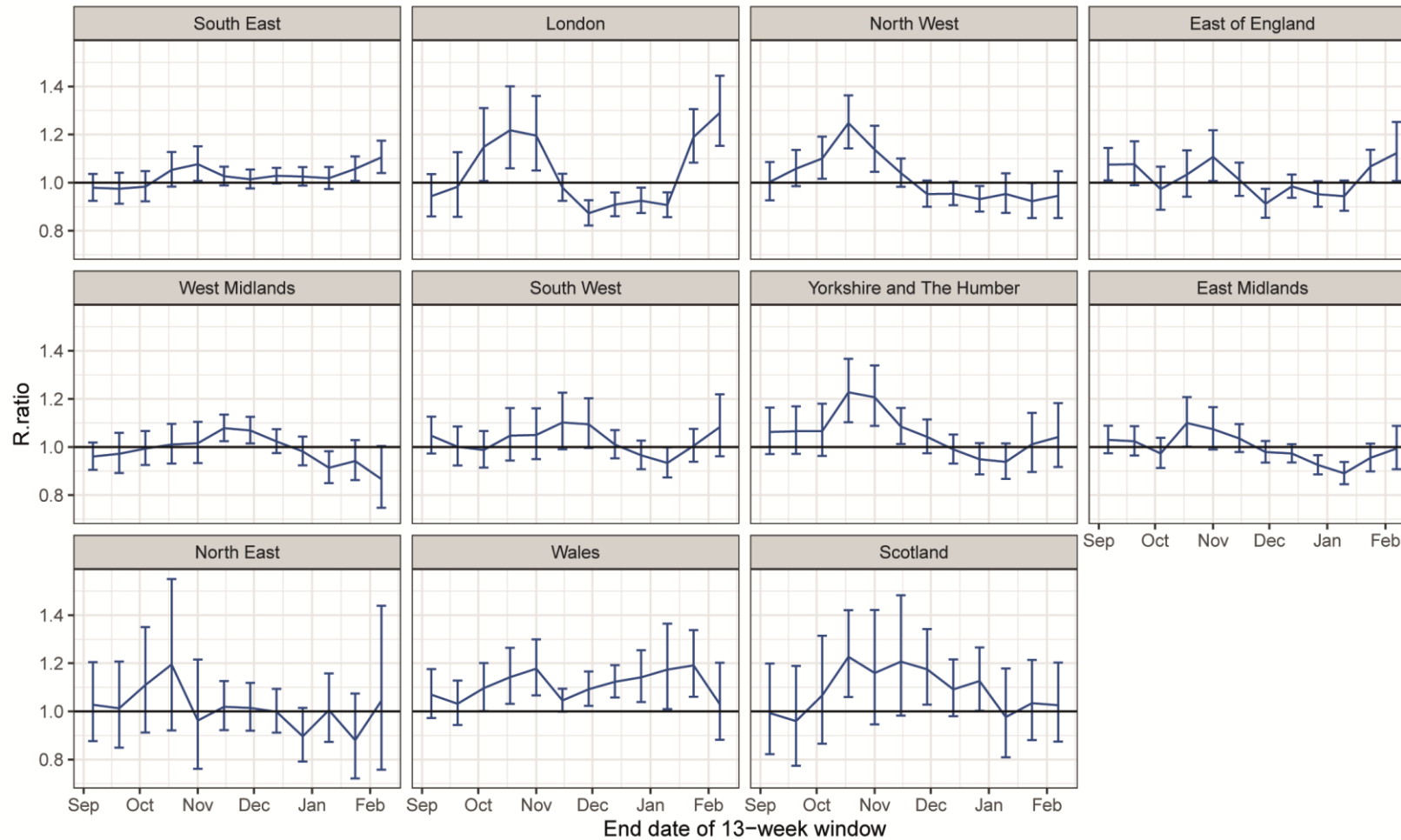
Black dots denote sampled R ; R was sampled 100 times based on the 30%, 60% and 90% credible intervals of the model posteriors as detailed in **Text S1**.

Figure S2. Comparisons of findings from the main and sensitivity analyses



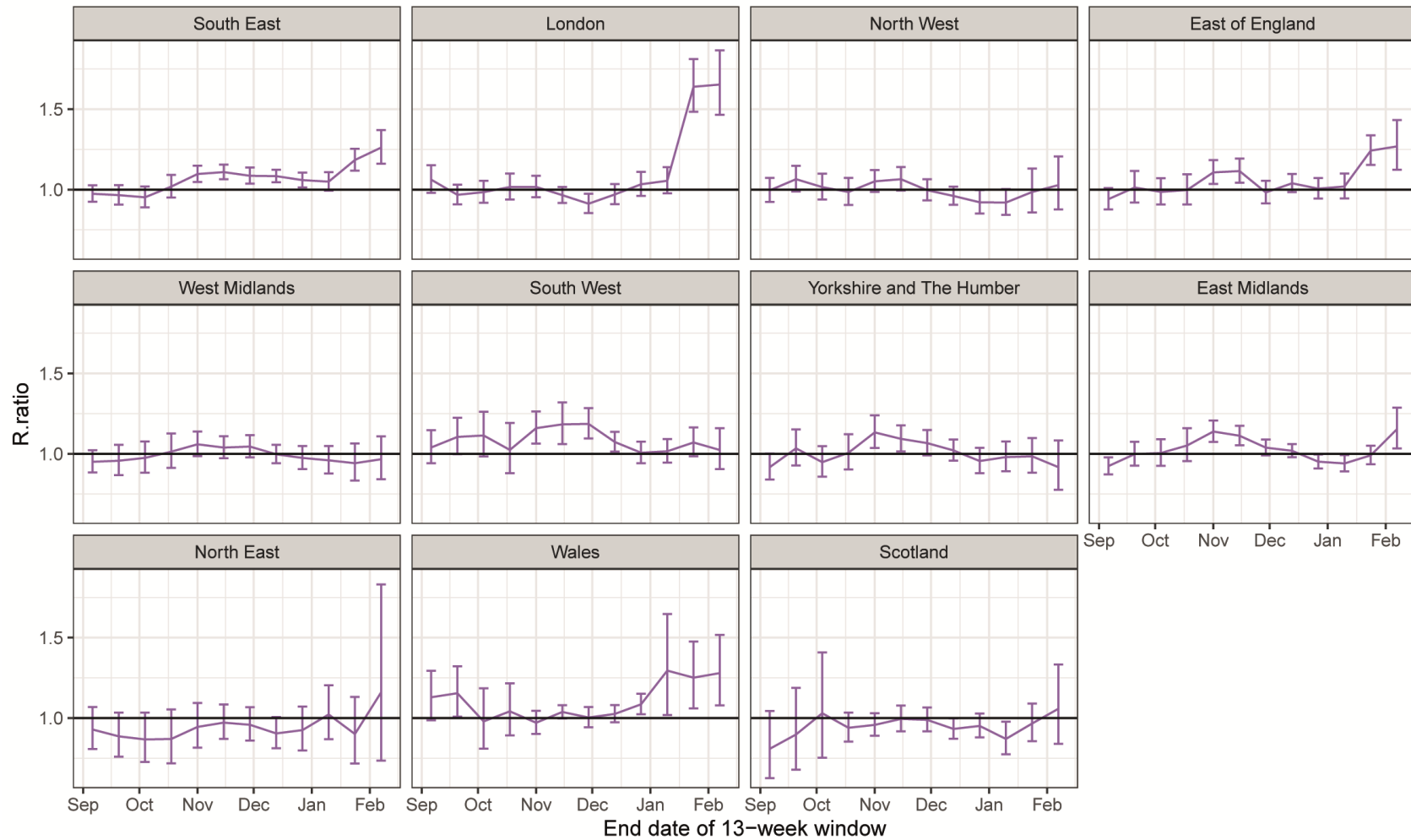
Main = the main model; excluding residential = the sensitivity analysis that excluded the mobility metric of residential stay from the main model; AR(1) = the sensitivity analysis that applied an autoregressive(1) error term; lag of 1w = the sensitivity analysis that applied one week of lag to the effect of changes in mobility metrics on changes in R.

Figure S3. Change over time in the association between visits to retail and recreation places and R by region



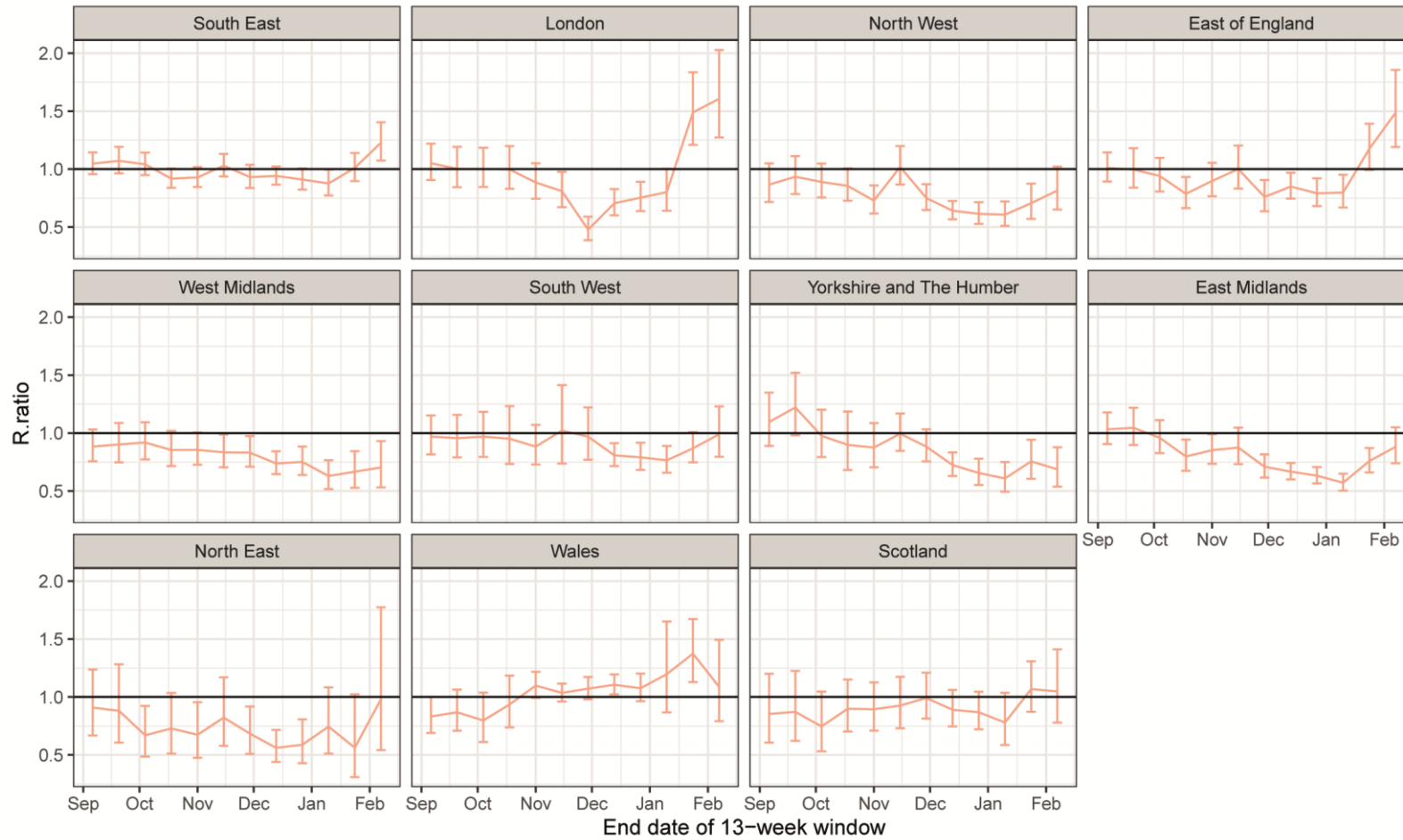
The number by x-axis denotes the number of local authorities included in the analysis. The three weeks of the Christmas and New Year festive period (i.e. between 21st Dec 2020 and 10th Jan 2021) were excluded from the analysis. Northern Ireland was not included in the analysis due to insufficient data.

Figure S4. Change over time in the association between visits to workplaces and R by region



The number by x-axis denotes the number of local authorities included in the analysis. The three weeks of the Christmas and New Year festive period (i.e. between 21st Dec 2020 and 10th Jan 2021) were excluded from the analysis. Northern Ireland was not included in the analysis due to insufficient data.

Figure S5. Change over time in the association between time length spent at residential areas and R by region



The number by x-axis denotes the number of local authorities included in the analysis. The three weeks of the Christmas and New Year festive period (i.e. between 21st Dec 2020 and 10th Jan 2021) were excluded from the analysis. Northern Ireland was not included in the analysis due to insufficient data.

STROBE checklist

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found	1
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			
Study design	4	Present key elements of study design early in the paper	3
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	3-4
Participants	6	(a) <i>Cohort study</i> —Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up <i>Case-control study</i> —Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls <i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants (b) <i>Cohort study</i> —For matched studies, give matching criteria and number of exposed and unexposed <i>Case-control study</i> —For matched studies, give matching criteria and the number of controls per case	4
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4-5
Data sources/measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	3-4
Bias	9	Describe any efforts to address potential sources of bias	5
Study size	10	Explain how the study size was arrived at	NA
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	4-5
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed <i>Case-control study</i> —If applicable, explain how matching of cases and controls was addressed <i>Cross-sectional study</i> —If applicable, describe analytical methods taking account of sampling strategy (e) Describe any sensitivity analyses	4-5

Continued on next page

Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram	5
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest (c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)	Figure S1
Outcome data	15*	<i>Cohort study</i> —Report numbers of outcome events or summary measures over time <i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure <i>Cross-sectional study</i> —Report numbers of outcome events or summary measures	Figure S1
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	5-6
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6
Discussion			
Key results	18	Summarise key results with reference to study objectives	6
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	7-8
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	7
Generalisability	21	Discuss the generalisability (external validity) of the study results	8
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	5

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

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