Local geography of the COVID-19 crime drop: the first six months

Introduction

- An evidence-base has begun to emerge around the impact of the COVID-19 pandemic on crime and anti-social behaviour.
- Findings have tended to demonstrate a widespread decline in police-recorded crime, although the extent to which this holds true varies by crime type.
- But, most studies have focused on macro-level units of analysis, such as cities or countries.
- A recent study took a 'look back' on the first six months of lockdown using police-recorded crime data aggregated to England and Wales.
- The macro-level longitudinal patterns observed were consistent with opportunity perspectives on crime.
- Here, we disentangle this macro-level trend using localized data aggregated to neighbourhood units across England and Wales.
- We focus on the extent to which localized areas remained stable, or were subject to volatility, amidst the nationwide change in police-recorded crime.
- This includes a descriptive analysis of concentration, an identification of the 'drivers' of the lockdown crime drop, and the characteristics of localized areas driving the change.
- In doing so, we disentangle the macro-level crime trends observed during lockdown in England and Wales.

Background

- Overview of findings on lockdown crime to date.
- Note that a key missing component relates to spatial concentrations, and the extent to which macro-level trends mask underlying, localized variation.
- These discussions have proved vital to crime and place research, and our understanding of criminal opportunity and routine activities theory (e.g. law of crime concentration).
- Localized analysis may also shed light on policing and resource allocation during lockdown.
- In England and Wales, we already have a reasonable understanding of the macro-level trends.

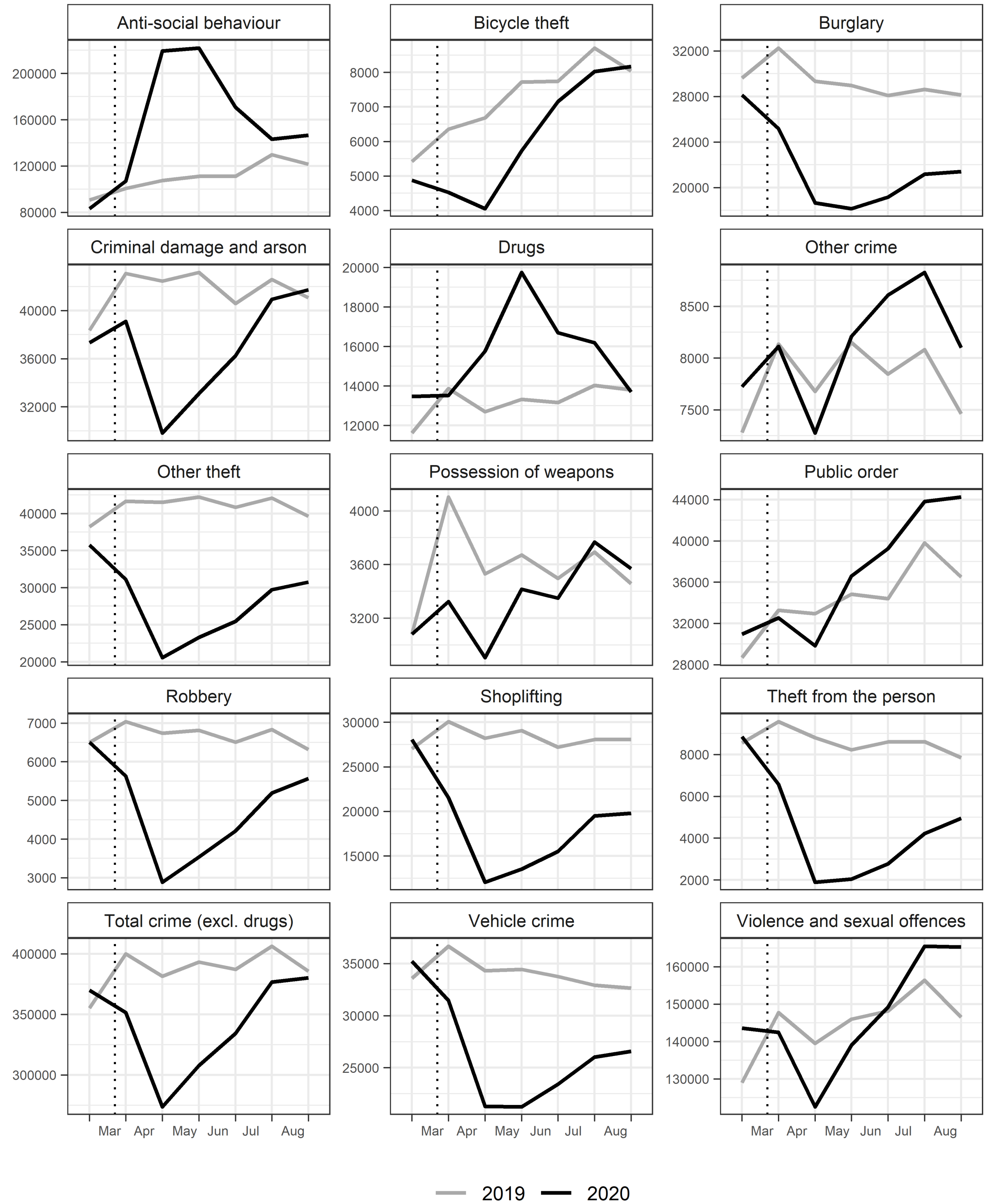

Figure 1: Macro-level crime trends in England and Wales during the lockdown period in 2020.

Data and Method

- Generalized Gini coefficient for all offence categories.

- Focus on two broad categories: notifiable offences and anti-social behaviour (ASB).
- Decile change to establish whether previously high-crime/ASB areas remained, ceased or became increasingly problematic during lockdown.
- Non-parametric longitudinal clustering (k-means) used to disentangle the macro-level trends observed during the lockdown, and identify the 'drivers' of the dramatic drop and subsequent resurgence.
- This speaks to existing literature and methods deployed in crime and place research.

Results

Gini

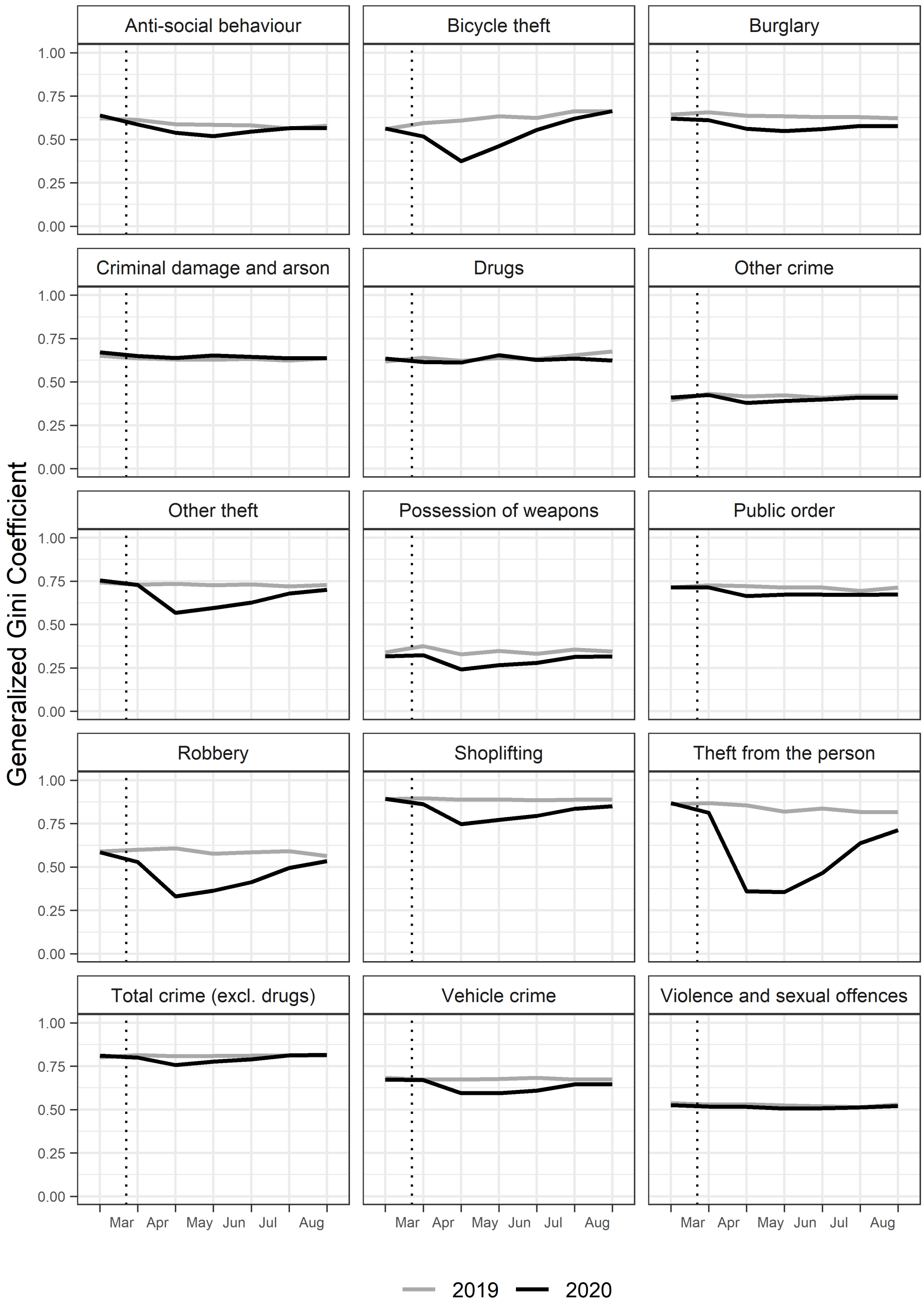

Figure 2: Measure of concentration using the generalized Gini coefficient during the lockdown period.

Deciles

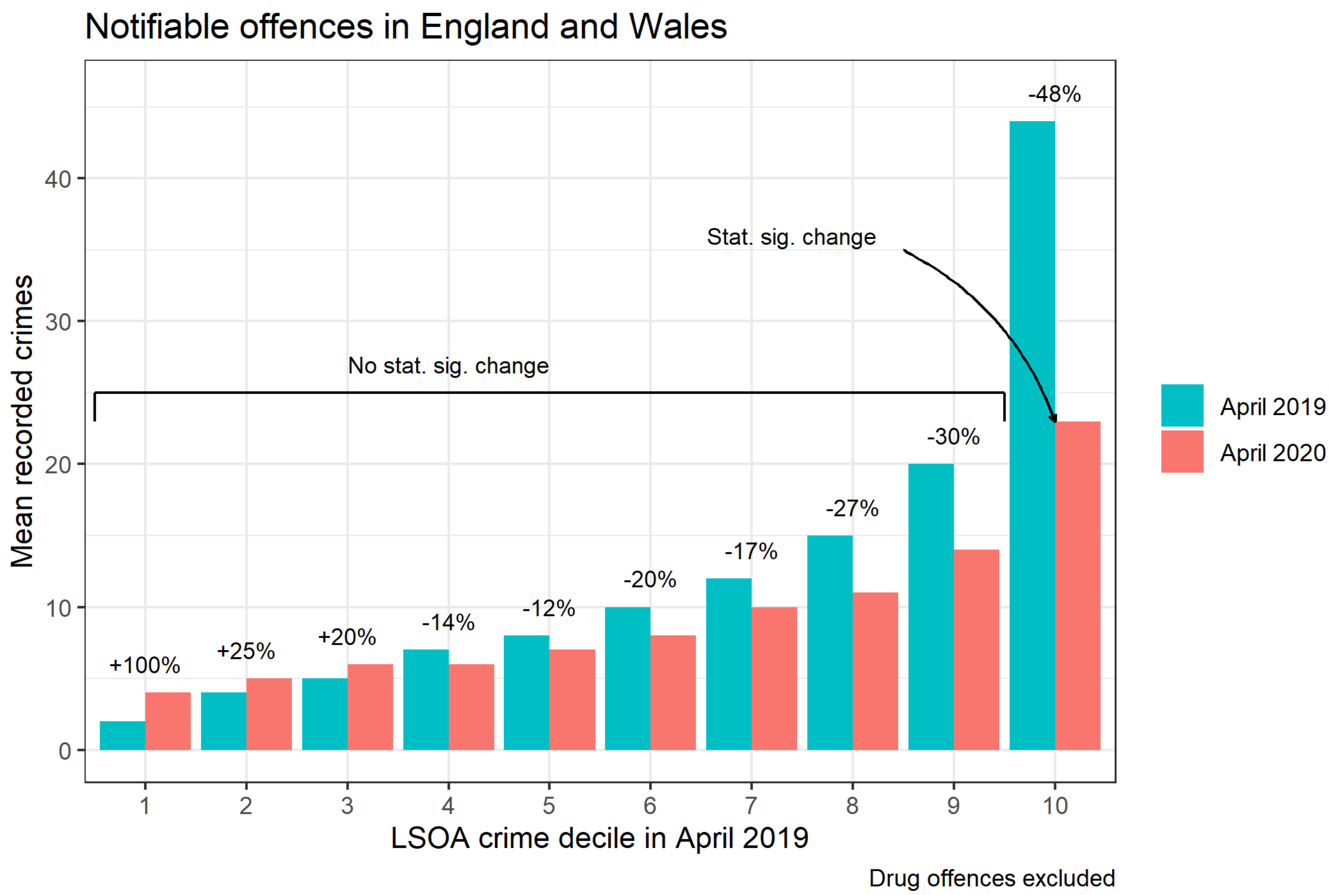

Figure 3: Decile changes in notifiable offences.

Longitudinal clustering

Cluster trends

- General conclusion: most of the lockdown crime drop can be attributed to a small number LSOAs.
- Most localized areas actually experienced minimal crime change during the pandemic.
- The proportion of total crime attributable to very low and very high crime clusters fell into April, while mid-crime areas increased their proportion.
- All clusters converged back to 'normality' by the end of August.
- Remarkable stability given the absolute change that occurred during this study period.
- 2020 mean (dotted line) and median (solid line) of each cluster are shown in black.
- 2019 mean (dotted line) and median (solid line) of each cluster are shown in red.
- This demonstrates that the clusters identified using the 2020 data were distinct and meaningful even when also applied to the 2019 data.

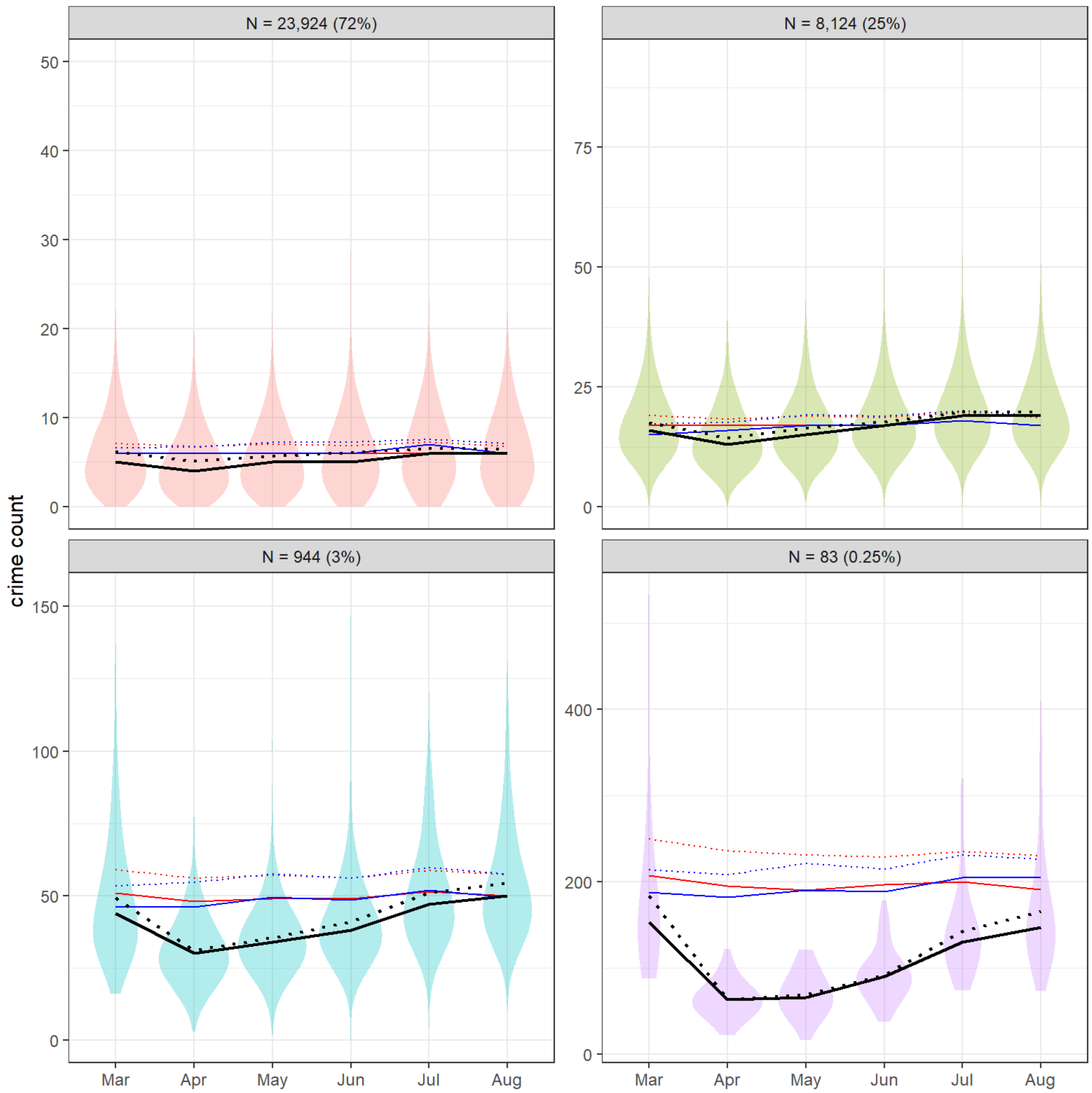

Figure 4: K-means cluster solutions for LSOA notifiable offences. Mean (dotted line) and median (solid line) are shown for each cluster for 2020 (black), 2019 (red) and 2018 (blue) respectively. Distributions refer to 2020 only.

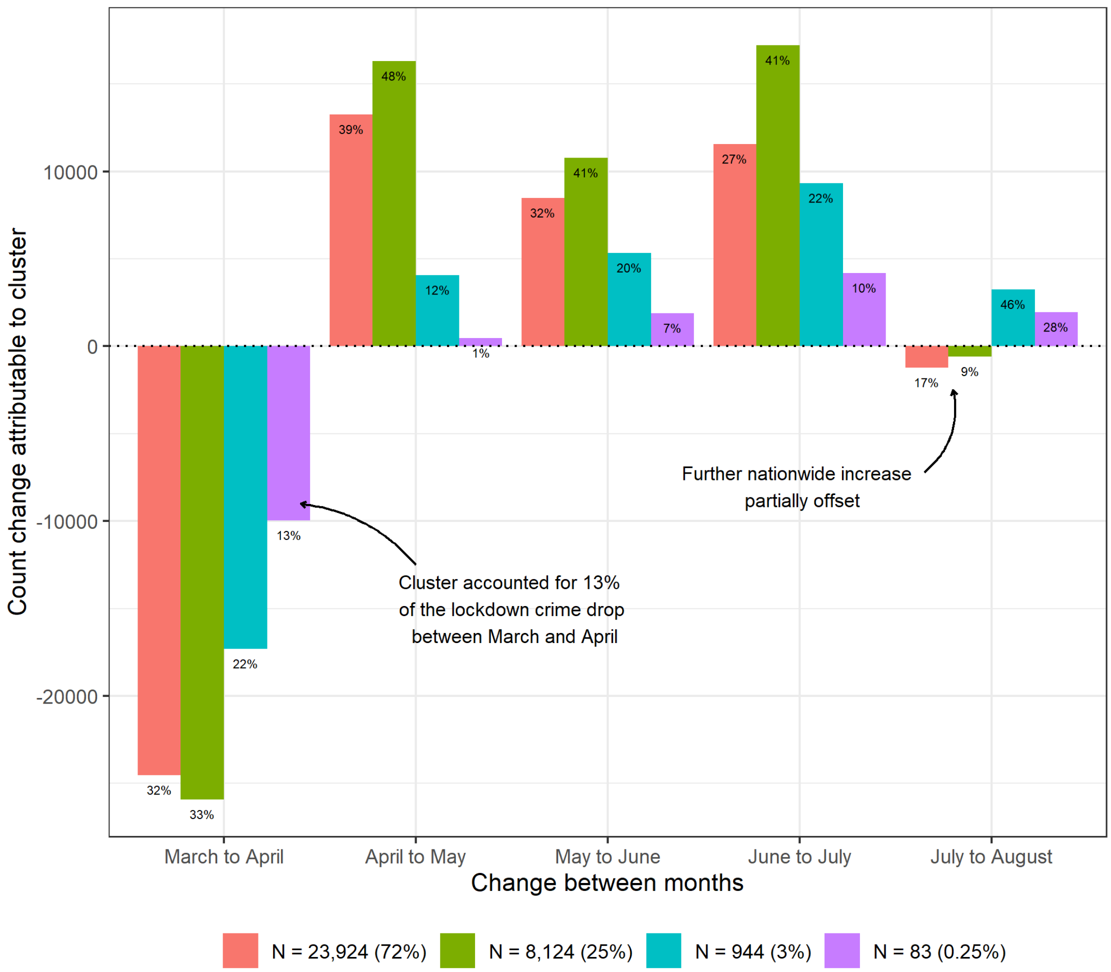

Figure 5: Count and percentage change between months attributable to each cluster.

Contribution of each cluster

- The above summarises absolute counts and proportional month-on-month change attributable to each cluster.
- We use this to identify which clusters drove the initial decline and subsequent resurgence nationwide.
- Percentages represent the proportion of total nationwide month-on-month change attributable to each cluster.
- For example, the red cluster (N = 23,924), despite consisting of 72% of total LSOAs, only contributed to 32% of the drop in notifiable offences between March and April.
- While, the pink cluster (N = 83) despite comprising only 0.25% of LSOAs, contributed to 13% of the fall in notifiable offences between March and April.
- This 'high crime big drop' cluster would stabilise between April and May, contributing little to the initial nationwide increase – rather, this change is due to the other clusters increasing and 'resurging' back to normality.
- Between July and August, red and green clusters would actually experience a drop in notifiable offences, accounting for 17% and 9% of total change respectively. This would partially offset the continued increase among the blue and pink clusters, which accounted for 46% and 28% of total change respectively.
- The macro-level outcome of this July to August change was a marginal increase in crime.
- The nationwide trend of 'decline and resurgence' masks underlying volatility: most of the initial 'lockdown crime drop' can be attributed to a disproportionately small number of areas, and the

subsequent resurgence back to normality was not uniform, varying considerably at localised spatial scales.

Spatial distribution of clusters

- List major city composition?
- Maps of major city case studies.
- Link to interactive map.

Characteristics of clusters

Descriptive statistics about the LSOAs in each cluster solution.

Table 1: Descriptive statistics of facilities in each cluster. Sourced from Open Street Map.

Trajectory	Nightlife (median)	Shops (median)	Public Transport (median)	Bicycle parking (median)	Nightlife (mean)	Shops (mean)	Public Transport (mean)	Bicycle parking (mean)
N = 23,924 (72%)	0	0	4	0	0.69	0.14	5.67	0.54
N = 8,124 (25%)	0	0	5	0	1.21	0.53	6.49	1.46
N = 944 (3%)	3	1	9	2	6.02	4.05	11.33	5.40
N = 83 (0.25%)	25	16	27	15	34.14	24.64	32.27	28.36

Crime type profile

- What crime types tend to comprise each cluster?

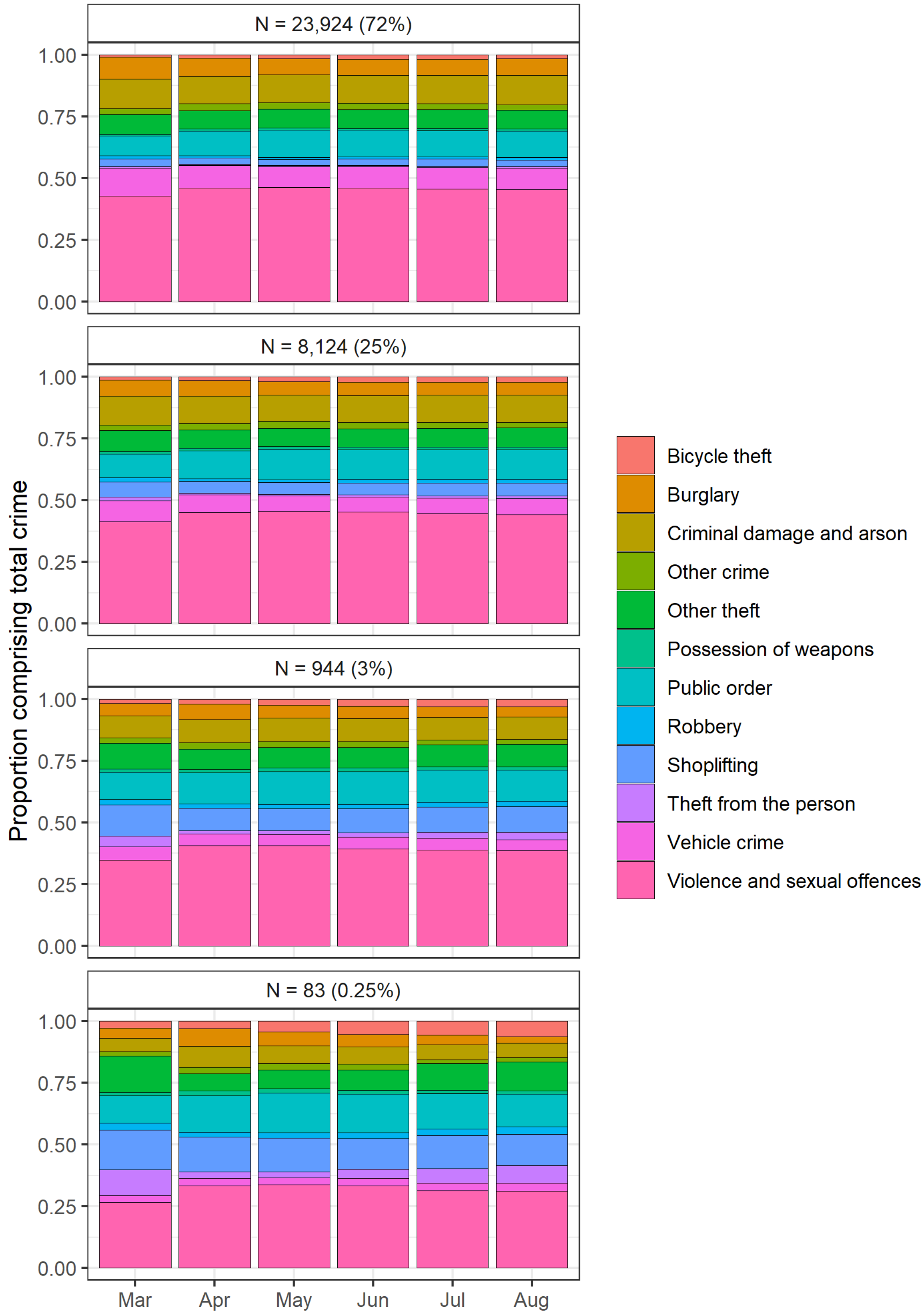

Figure 6: Crime type characteristics of each cluster solution.

Discussion

Appendix