Ministry of Housing,
Communities &
Local Government

Impact evaluation of the Rough Sleeping Initiative 2018

September 2019

Ministry of Housing, Communities and Local Government

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FOREWORD

This impact evaluation of the Rough Sleeping Initiative is the latest evaluation in the Ministry of Housing, Communities and Local Government Rough Sleeping Research and Evaluation programme which seeks to ensure new policy ideas and interventions are evidenced based and that we build up an evidence base on 'what works' to reduce rough sleeping.

The Department has already published the London Homelessness Social Impact Bond Evaluation which included a quasi-experimental case-level impact evaluation and a qualitative process evaluation. More recently, we published the Homelessness Prevention Trailblazer Evaluation, which again included a quasi-experimental area-level impact evaluation, as well as qualitative case studies and evidence on homelessness prevention approaches.

The impact evaluation of the Rough Sleeping Initiative (RSI) set out in this report uses a regression adjusted difference-in-difference approach to estimate the impact of the Initiative, comparing the change in rough sleeping between autumn 2017 and autumn 2018 in the 83 areas that received RSI funding and the 83 areas that had the next highest number of people sleeping rough in 2017 but did not receive RSI funding.

Selecting comparison areas and taking account of other external factors that might be related to changes in the level of rough sleeping, such as weather conditions and whether areas changed their approach to how they measure rough sleeping helps to ensure comparator areas are similar and reduces bias, which helps to improve the robustness of the findings from the evaluation.

As well as the impact evaluation, the Department will also be publishing a separate process evaluation in the autumn, which will share learning about what has worked and why from the perspective of local authorities and other key delivery partners.

I would like to pass on my thanks to the analytical team in the Department who undertook the evaluation, which included Anthony Ash, Chloe Enevoldsen, Jon White and Ricky Taylor, as well as the Homelessness and Rough Sleeping Policy team who have fully supported the evaluation.

We are also very grateful to Susan Purdon of Bryson Purdon Social Research for providing invaluable insight, advice and quality assurance as our independent peer reviewer for the evaluation.

I am pleased with the progress we have made to ensure our rough sleeping interventions and ideas are evidenced based and that we are continuing to build up an evidence base on what works to reduce rough sleeping.

Further details about our evaluations and new research are available in our Homelessness and Rough Sleeping research programme.

Stephen Aldridge
Director for Analysis and Data and Chief Economist
Ministry of Housing, Communities and Local Government
September 2019

1. Summary

1.1. The Rough Sleeping Initiative (RSI) was launched in March 2018 and was targeted at local authorities with high numbers of people sleeping rough, based on the 2017 rough sleeping snapshot. This included a £30m fund for 2018-19 which was allocated to 83 local authorities, as well as a specialist team of Advisers made up of rough sleeping and homelessness experts drawn from local authorities and the third sector.

1.2. The initiative seeks to support people sleeping rough off the streets and develop their wellbeing and stability, helping to reduce the number of people sleeping rough in both the short and longer term. In its first year, the RSI provided over 1,750 new bed spaces and 500 staff.

1.3. The initiative is part of the government's ongoing Rough Sleeping Strategy which sets outs the vision for halving rough sleeping by 2022 and ending it altogether.

1.4. The impact evaluation looks at the impact of the RSI on the change in the numbers of people sleeping rough on a single night between 2017 and 2018, as recorded by the official annual rough sleeping snapshot in local authority areas. It therefore represents the impact of the programme from when it started to the Autumn of 2018, when the statistics on rough sleeping were compiled by local authorities.

1.5. Specifically, the analysis compares the change in rough sleeping in the 83 areas that received RSI funding in 2018 - 19 with 83 areas that had the next highest number of people sleeping rough in 2017 but did not receive RSI funding. Selecting comparison areas in this way helped to ensure that the comparator areas were closely matched to the RSI areas on prior rough sleeping levels.

1.6. **The analysis suggests the RSI led to a significant reduction on the overall number of people sleeping rough between 2017 and 2018**, and that the impact remained even after controlling for a range of other factors, including local weather patterns on the night of the data collection; local housing and labour market conditions and previous levels of homelessness and rough sleeping.

1.7. The analysis also specifically controlled for area level changes in the approach taken to measure rough sleeping levels between 2017 and 2018 in the official statistics. Local areas can, in accordance with the published guidance provided by Homeless Link who oversee the rough sleeping snapshot, change from providing an evidence-based estimate to undertaking a physical street count of people sleeping rough between years, and vice versa, if they think this will update their intelligence on local rough sleeping levels. Of those areas that received RSI funding, 23 per cent changed their approach from an estimate to a count in 2018 and 1 per cent changed from a count to estimate, and 76 per cent kept the same approach. For comparison, in the non-RSI comparator areas 11 per cent changed their approach from an estimate to a

count, 6 per cent changed from a count to estimate, and 83 per cent stayed the same. This still meant most areas did not change their approach to measuring rough sleeping, but the changes from estimates to counts were concentrated in RSI areas. However, **the analysis presented in this report shows that these changes did not account for the fall in rough sleeping seen in the RSI areas**.

1.8. After controlling for the above factors, on average, there was a net reduction of 15.92 people sleeping rough in 2018 in each of the RSI areas compared to the 83 areas not part of the initiative. In other words, this is equivalent to **an overall net reduction of 1,321 people sleeping rough across the RSI areas in 2018 compared to the counterfactual, had the RSI not been in place.**

1.9. **A net reduction of 1,321 would represent a 32% reduction in rough sleeping levels from what it would have been had the RSI not been in place[1].**

2. Introduction

2.1. This research study aims to understand the impact of the recent RSI on the overall numbers of people sleeping rough, over and above what would have happened in the absence of the intervention, by comparing RSI areas to a comparison group of non-RSI areas. Multivariate statistical analysis is then used to control for any differences between the intervention and comparison group areas to help ensure that the estimate of impact of the RSI is unbiased and not the result of other external factors. Every effort has been made to include other external factors which may have an impact on the overall levels of rough sleeping but there will be unobserved factors which we do not have data for and, therefore, are not able to include in the analysis.

2.2. The impact analysis was undertaken by analysts at the Ministry of Housing, Communities and Local Government (MHCLG) and has been independently peer reviewed by Bryson Purdon Social Research, which is an independent research partnership specialising in policy and programme impact evaluation and survey methodology.

2.3. A separate process evaluation has also been commissioned which we expect to be published in the autumn. This will share any learning about how the RSI has worked, good practice and key challenges, including primary research with local authorities and other key delivery partners.

[1] The regression adjusted Difference-in-Difference estimate suggests that the net impact of the RSI was to reduce rough sleeping by 1,321 across the 83 RSI areas. The actual number of rough sleepers in the RSI areas was 2,748 in 2018. In the absence of the RSI the number of rough sleepers in the RSI areas would have been expected to be 4,069 (2,748+1,321=4,069). The percentage reduction attributable to the RSI was therefore a 32% reduction (1,321/4,069).

3. Background

3.1. The RSI was launched in March 2018 and is targeted at local authorities with high numbers of people sleeping rough, based on the 2017 rough sleeping snapshot. This initiative is part of the government's ongoing Rough Sleeping Strategy which sets outs the vision for halving rough sleeping by 2022 and ending it altogether. The initiative seeks to support people sleeping rough off the streets and develop their wellbeing and stability, helping to reduce the number of people sleeping rough in both the short and longer term.

3.2. The RSI Team within MHCLG includes rough sleeping and homelessness experts, drawn from other government departments, local authorities and third sector organisations with specialist knowledge and work experience across a wide-range of areas. The Team also has specialist advisers with knowledge in health, care leavers, employment, prisons and probation, and the faith sector to ensure a holistic approach to the rough sleeping issue. The RSI Team is working closely with local authorities to help develop capability and deliver interventions to tackle rough sleeping.

3.3. The £30m RSI fund for 2018-19 was allocated to 83 local authorities with the highest levels of rough sleeping based on the 2017 annual snapshot statistics. This was the first year of funding and was allocated in July 2018 to make an immediate impact in providing and boosting the support available to individuals sleeping rough. The £30m had been funded from existing MHCLG budgets and was ring-fenced to ensure that it was specifically targeted towards rough sleeping services and programmes. In its first year, the Rough Sleeping Initiative provided over 1,750 new bed spaces and 500 staff.

3.4. The RSI Team will continue to work with the 83 areas in 2019-20 alongside other areas who need support to tackle rough sleeping locally. A further £46m fund for 2019/20 (£12m of which is reserved for authorities not funded in the first year) has been allocated to build upon support and further help reduce rough sleeping. The impact evaluation reported here only considers the impact of the first year's round of funding, which may have been a period when the service was bedding in.

4. Data

4.1. The main data source for the analysis was the official annual rough sleeping statistics[i]. These statistics provides information on the single night snapshot of rough sleeping for the autumn of each year and date back to 2010. The snapshot is taken annually in England using street counts, evidence-based estimates, and estimates informed by spotlight street counts.

4.2. Since 2010, all local authorities have provided either a street count or an estimate of the number of people sleeping rough in their local area. Prior to this, only those areas

who were estimated to have more than 10 people sleeping rough in their area conducted an annual street count, so there was not a complete national snapshot picture.

4.3. Homeless Link, who are the national membership charity for organisations working directly with people who become homeless in England have been funded by MHCLG since 2010 to provide independent verification, validation, and guidance to local authorities who conduct the annual snapshot of rough sleeping. The overall snapshot methodology was developed after consultation with local authorities and the voluntary sector with the objective of strengthening the accuracy of the figures. Each year, Homeless Link verify all the street counts in person and attend around 10% of estimate meetings. Every local authority also has a telephone call with a verifier at Homeless Link to discuss the final figures and to check that the guidance had been followed, for example relevant partners were involved, that a single typical night was used, and that there was an understanding of the rough sleeping definition.

4.4. Rough sleeping street counts and estimates are single night snapshots of the number of people sleeping rough in local authority areas. Based on what is most appropriate in their area, local authorities decide whether to carry out a street count of visible rough sleeping, an evidence-based estimate, or an estimate informed by a spotlight street count. All the available methods record only those people seen, or thought to be, sleeping rough on a single 'typical' night. They do not include everyone in an area with a history of sleeping rough, or everyone sleeping rough in areas across the October-November period. Local authorities use a specific definition to identify people sleeping rough. This includes people sleeping or who are about to bed down in open air locations and other places including tents, cars, and makeshift shelters. The full definition of a person sleeping rough, for the annual single night snapshot is as follows:

> *People sleeping, about to bed down (sitting on/in or standing next to their bedding) or actually bedded down in the open air (such as on the streets, in tents, doorways, parks, bus shelters or encampments). People in buildings or other places not designed for habitation (such as stairwells, barns, sheds, car parks, cars, derelict boats, stations, or "bashes" which are makeshift shelters, often comprised of cardboard boxes). The definition does not include people in hostels or shelters, people in campsites or other sites used for recreational purposes or organised protest, squatters or travellers. Bedded down: is taken to mean either lying down or sleeping. About to bed down includes those who are sitting in/on or near a sleeping bag or other bedding.*

4.5. The single night snapshot provides a way of estimating the number of people sleeping rough across England on a single night and assessing change over time. The snapshot methodology used in England aligns with the approach which is now standard in many parts of the world including Canada, the United States and several other European countries including France, Ireland, Italy and Spain.

4.6. Other government and executive agency statistics have been collated and used for the purposes of the evaluation to take account of a range of factors which may also be having an impact on the change in rough sleeping levels between 2017 and 2018, alongside the activities due to the RSI. These are referred to as control variables.

4.7. The data collected for this study was informed by the previous literature on the drivers of rough sleeping and drew particularly on a recent Rapid Evidence Assessment for MHCLG and DWP[ii]. This suggested that individual factors such as mental health and relationship breakdown were more likely to be the reasons for people sleeping rough than structural factors such as unemployment levels, poverty and housing affordability. However, more recent literature acknowledges that structural factors create the conditions that cause some people with personal problems to be more vulnerable, and to end up rough sleeping. This study attempts to control for some of these factors indirectly using area level data as part of the evaluation design.

4.8. The following sets out the specific data collected as part of this study per local authority, and used as control variables in the multivariate analysis:

- The average number of people sleeping rough between 2010 and 2016, from the single night snapshot for each of the respective years;
- The total number of households in temporary accommodation[iii] in 2017, collected as part of the statutory homelessness statistics. These have been included to control for previous levels of homelessness per local authority prior to the introduction of the RSI;
- Whether an authority is in London or the rest of England has been included, as the patterns and characteristics of people sleeping rough in London are different to the rest of England. For example, in London, the increase in the overall number of people sleeping rough between 2017 and 2018 was largely driven by increasing numbers of people sleeping rough who were EU (non-UK) nationals;
- Local area income deprivation[iv] has also been included in the evaluation using the English Indices of Multiple Deprivation (IMD) and measures the proportion of people in each local authority that are on low incomes and who are in receipt of benefits and tax credits. This has been included to take account of the variation in deprivation levels across England;
- Office for National Statistics Housing Affordability estimates[v] have also been included in the analysis. Housing affordability estimates are calculated by dividing house prices by annual earnings to create a ratio. A larger housing affordability ratio means that an area is less affordable, whereas a smaller ratio means that an area is more affordable. This variable acts as a proxy for overall housing market conditions that could influence the affordability and availability of housing;

- Met Office data on historical weather conditions[vi] on the nights leading up to and on the night of the snapshot of rough sleeping in each local authority area were also analysed. The weather of the chosen night for the count or estimate may have a large impact on the number of people sleeping rough. Severe weather conditions may force many people who normally sleep rough to use a night shelter or hostel, to 'sofa surf', or sleep in locations which are more hidden. These people would be excluded from the count or estimate which may alter the detected level of rough sleeping. By including historical weather information, the analysis controls for weather conditions up to and on the night of the count or estimate.
- Whether there was extreme weather in either 2017 and 2018 was also included. Extreme Weather is defined as when the mean temperature was less than or equal to zero degrees on the day or night of the snapshot or on any of three preceding days. This variable acts as a proxy for the Severe Weather Emergency Protocol (SWEP), which would be actioned by local authorities if temperatures were forecast to fall to below zero and would provide emergency accommodation (e.g. in church halls, community centres etc.) for people sleeping rough. In the official rough sleeping statistics, the guidance makes clear people should still be included in the overall rough sleeping figures while in SWEP facilities and therefore we wouldn't expect SWEP to reduce the overall numbers of people sleeping rough.

4.9. The analysis includes those key external factors which may have an impact on the overall levels of rough sleeping but there will likely be other unobserved factors which may have an impact which have not been included in the analysis.

5. Methodology

5.1. The impact evaluation uses a regression adjusted Difference-in-Difference (DiD) approach to estimate the impact of the RSI on the change in rough sleeping levels between 2017 and 2018. The method is popular in empirical economics to estimate the impact of policy interventions and policy changes that do not affect everybody at the same time and in the same way.

5.2. The DiD compares the change in rough sleeping between autumn 2017 and autumn 2018 between the 83 areas that received RSI funding and 83 areas that had the next highest number of people sleeping rough in 2017 but did not receive RSI funding (a list of the 83 RSI and 83 comparator areas can be found in Annex B). Selecting comparison areas in this way helped to ensure that the comparator areas were closer matches to the RSI areas on prior rough sleeping levels rather than if all non-RSI areas (243) had been included in the comparison group because many of these areas did not identify any people sleeping rough in the 2017 snapshot.

5.3. Essentially DiD is a method for measuring the impact of an intervention on a given outcome over time. It compares the mean change over time in the outcome variable for the intervention group, compared to the mean change over the same period for a comparison group. Although it is intended to mitigate the impact of extraneous factors that could influence the outcome variable, the method may still be subject to bias as there may still be differences that have not been controlled for between the comparison and intervention groups. Many potential biases can, however, be controlled for by using a regression adjusted version of the simple DiD estimate. The DiD can be specified in a multiple regression model and other control variables can be added to the model as independent variables. This is the main method used in this report.

5.4. In this evaluation a multiple regression model is used that uses the net change in rough sleeping between 2017 and 2018 as the dependent variable. A dummy variable is included in the model for the impact of the RSI[2]. As described above, several control variables are then included into the model that *a priori* might be expected to influence the dependent variable.

5.5. In terms of sample details, across the 83 RSI areas there were 2,748 people recorded as sleeping rough in autumn 2018, this is a decrease of 639 or 19% from the 2017 figure of 3,387. Across the 83 comparison areas, there were 1,211 people sleeping rough in autumn 2018, an increase of 257 or 27% from the 2017 figure of 954.

5.6. A regression adjusted DiD experiment could be biased by the statistical phenomena of regression to the mean. This bias would work as follows: areas would be selected in 2017 for having very high levels of rough sleeping, which could have been because of atypical extreme values. In 2018 the same areas could then regress towards their average levels of rough sleeping, leading to falls in rough sleeping in the 2018 statistics for the RSI group of areas. These falls could be falsely attributed to the RSI when in fact it is because the extreme cases that were selected have simply regressed towards their mean (or true) levels of rough sleeping. In the analysis we try to rule out regression to the mean as a source of bias by examining the extent of the phenomena in previous years (i.e. selecting 83 areas with the highest levels of rough sleeping in 2016 and looking to see whether they regressed towards a lower value in 2017). If this was not the case then it would imply that regression to the mean is probably not a major source of bias in the impact analysis, although this would not rule out this source of bias entirely. This analysis can be found in Section 6.2.

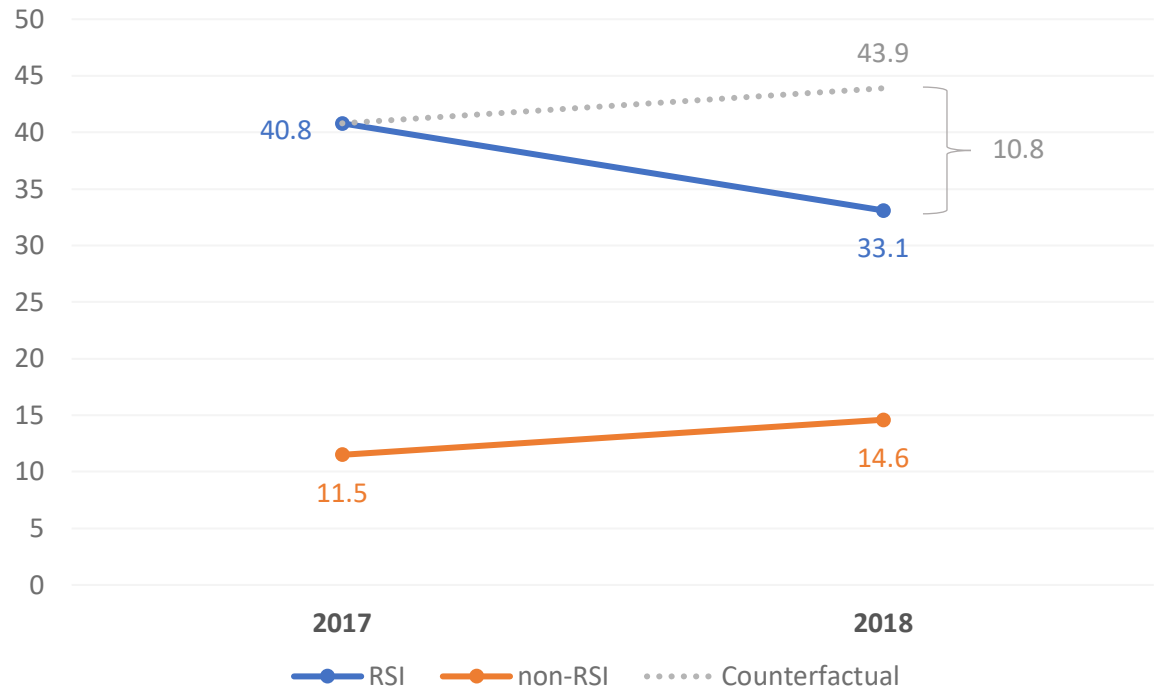
[2] The RSI dummy variable is coded “1” if areas are part of the RSI and “0” for all other areas, which make up the comparison areas.

6. Results

Simple Difference in Difference

6.1. A simple Difference-in-Difference[3] (DiD) approach suggests the RSI led to a significant reduction on the overall number of people sleeping rough between 2017 and 2018. **On average, there was a net reduction of 10.8 people sleeping rough in 2018 per RSI area compared to those 83 comparison areas and this result was statistically significant (see Figure 1).**

Figure 1: Simple difference-in-difference estimate of the RSI, based on the net change in the average number of rough sleepers between 2017 and 2018 in RSI and non-RSI comparison areas[4]



Regression to the mean

6.2. To test whether the DiD estimates could be accounted for by regression to the mean, the model was re-run for previous years with a group of areas that would have been given RSI funding, had the initiative launched in a different year (see Table 1). Across previous years, no statistically significant results were found, apart from 2018 when the RSI was started. **This suggests that the difference between RSI and**

[3] Simple Difference-in-Difference means there has been no regression adjustment to the estimates to take account of other factors.

[4] The counterfactual has been estimated by taking the difference in the average number of rough sleepers in 2017 compared to 2018 in the comparison areas and applying this difference to the average number of rough sleepers in 2017 in RSI areas. This provides a counterfactual result for 2018 had the RSI not happened (ie 11.5-14.6=3.1; 40.8+3.1=43.9)

non-RSI areas, found in the 2018 snapshot, was unlikely to be a consequence of regression to the mean.

Table 1: Simple DiD regression estimate for previous years[5,6].

	Year		
	15-16	**16-17**	**17-18**
Average number of people sleeping rough in RSI areas (n=83)	1.7	4.1	**-7.7**
Average number of people sleeping rough in non-RSI areas (n=83)	2.4	1.5	**3.1**
Net change	-0.7	2.6	**-10.8**
Sig.	0.689	0.236	**0.000**

Count vs estimates

6.3. The results from the simple DiD analysis might be biased by changes in the approach used by local authorities to measure the extent of rough sleeping in their local area between 2017 and 2018. This should not be the case because local authorities decide alongside local partners, and based on advice from Homeless Link, to use the approach that they believe will return the most accurate figure to assess the extent of people sleeping rough in their local area. There are several reasons areas may change from an estimate to a count from year to year. They may change approach because they have reason to believe that there has been a change in rough sleeping patterns; difficulties forming an estimate based on the information available; and disagreement among agencies. The decision, though, is not linked to RSI funding.

6.4. However, some RSI areas might possibly have changed their approach because they felt that the level of rough sleeping was falling or changing due to the initiative, and so they may have wanted to improve their intelligence. In addition, they would also have had more resources to do a street count as they had more funded outreach workers. Multiple Linear Regression is used to help disentangle this via the use of a range of interaction terms which take account of the change in approach and whether an area was part of the RSI (see Table 2). These interactions are entered into the statistical model to test if the change in approach from an estimate to a count (and vice versa), and whether an area was part of the RSI, had an impact on the overall numbers of people sleeping rough compared to a base category of no change in method between 2017 and 2018. The results are shown in Table 2.

[5] The 2015 – 2017 'RSI' and 'Non-RSI' areas were selected in the same way as they were for the RSI and for this evaluation, respectively, according to rough sleeping statistics in those years.

[6] The figures highlighted in red are statistically significant at the 95% confidence level.

Table 2: Regression model looking at change in approach to measuring rough sleeping[7]

	Unstandardized Coefficients[8]		Standardized Coefficients[9]	
Control Variables	**β**	**SE β**	**β**	**Sig.**
(Constant)	3.74	2.05	0.01	0.07
RSI (1=RSI; 0= Non-RSI comparison area)	-8.99	2.97	-0.27	0.003
Count to Estimate	1.86	7.90	0.04	0.81
Estimate to Count	-6.96	6.04	-0.18	0.25
RSI x Count to Estimate	3.39	18.91	0.02	0.86
RSI x Estimate to Count	-4.00	7.51	-0.04	0.60

Adjusted R-squared: 0.10[10]

6.5. When we take account of whether an area received RSI funding and whether it has changed its approach from estimate to count (or vice versa) there is no evidence that these changes had a statistically significant impact on the change in rough sleeping levels between 2017 and 2018. Controlling for these differences though does slightly reduce the size of the coefficient for the RSI as the average net impact across areas falls from -10.8 to -8.99, but it is still highly statistically significant, with less than a 1 in a 100 chance of the impact being the result of chance.

Controlling for other factors

6.6. Having recognised that the change in approach from estimate to count (or vice versa) does not have an impact on the change in levels of rough sleeping, there are still other external factors that must be controlled for. The impact of the RSI could be biased by other external factors that might be related to changes in the level of rough sleeping, such as previous trends in rough sleeping, income deprivation, housing affordability and weather conditions. These are entered as control variables in a multiple regression analysis.

6.7. There will also be other unobserved factors which have an impact on the overall levels of rough sleeping which have not been included in the analysis.

London

6.8. The analysis suggests that levels of rough sleeping between 2017 and 2018 in local authorities in London increased compared to the rest of England, even after controlling for other factors. This was expected as the 2018 rough sleeping statistics show that the number of people sleeping rough increased by 13% in London and

[7] The figures highlighted in red are statistically significant at the 95% confidence level.

[8] The unstandardized β coefficient represents the amount of change in a dependent variable Y (ie the change in rough sleeping) due to a change of 1 unit in the independent or 'control' variable. The SE β is the standard error for the unstandardized beta.

[9] The standardized β coefficient compares the strength of the effect of each individual independent or 'control' variable to the dependent variable.

[10] The R square is a measure of the proportion of the variation in the dependent variable Y (the change in rough sleeping) which can be explained by the model (ie the independent or 'control' variables).

decreased by 6% in the rest of England, from Autumn 2017. After controlling for all these factors, on average, the analysis suggests **there was an increase of 15.19 people sleeping rough between 2017 and 2018 in local authorities in London compared to those local authorities across the rest of England.**

6.9. However, there is no statistical evidence that the RSI in London is having a different impact on the change in levels of rough sleeping compared to RSI areas across the rest of England, after controlling for other factors. This is shown by the non-significant interaction term in the regression adjusted DiD model[11].

[11] The interaction term variable is called RSI x London and is shown in Table 3.

Impact of RSI

6.10. The final regression adjusted DiD analysis suggests that the RSI still had a significant impact even after controlling for all these factors.

6.11. After controlling for all these factors, on average, the analysis suggests **there was a reduction of 15.92 people sleeping rough in 2018 in RSI areas compared to those areas not part of the initiative.** Indeed, after controlling for these differences between areas the overall impact of the RSI increases compared to the simple DiD which had a net impact of -10.8.

6.12. An average net impact of –15.92 people sleeping rough per area, across the 83 RSI areas, would be equivalent to an **overall net reduction of 1,321 people sleeping rough in 2018 compared to the counterfactual where the RSI had not been in place.**

6.13. **A net reduction of 1,321 would therefore represent a 32% reduction attributable to the RSI in the RSI areas.** This is because the actual number of rough sleepers in the RSI areas was 2,748 in 2018. In the absence of the RSI the number of rough sleepers in the RSI areas would have been expected to be 4,069 (2,748 +1,321=4,069). The percentage reduction attributable to the RSI was therefore a 32% reduction (1,321/4,069) **(See Figure 2).**

Figure 2: Impact of the RSI on the overall levels of rough sleeping between 2017 and 2018 in RSI and non-RSI comparison areas

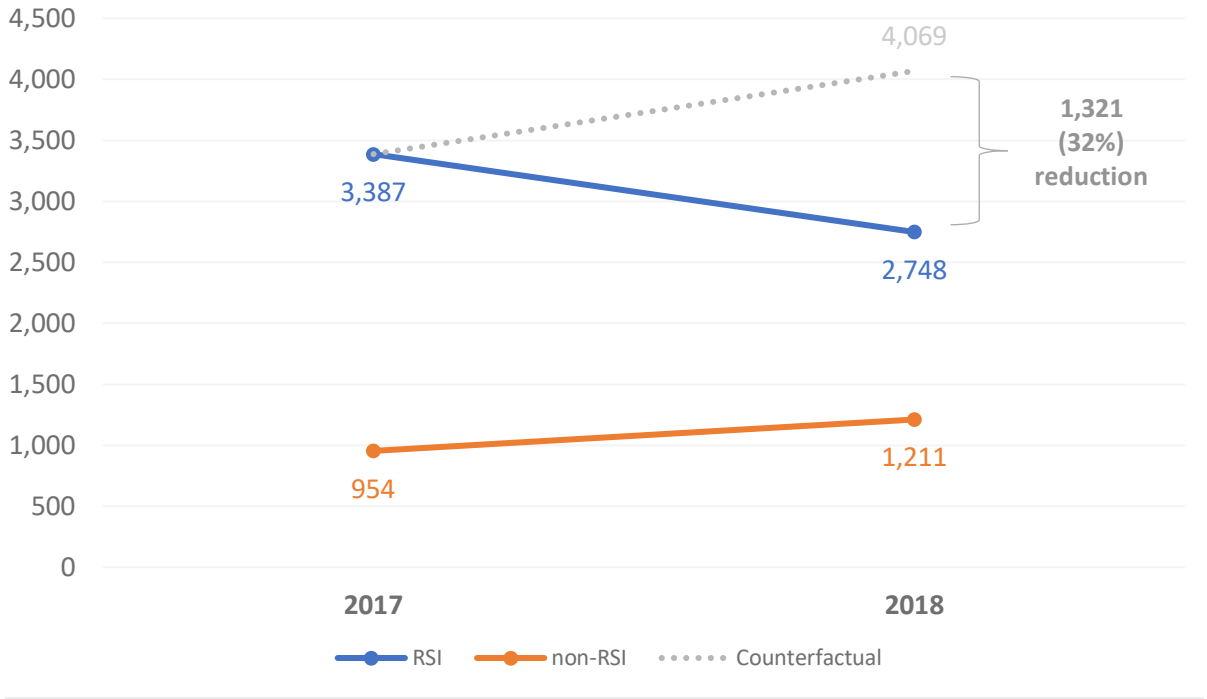


Table 3: Regression adjusted DiD model[12]

	Unstandardized Coefficients[13]		Standardized Coefficients[14]	
Control Variables	**β**	**SE β**	**β**	**Sig.**
(Constant)	-9.80	7.50	0.01	0.194
RSI (1= RSI, 0 = Non-RSI comparison areas)	**-15.92**	**3.21**	**-0.44**	**0.000**
Average number of people sleeping rough between 2010 and 2016	**0.33**	**0.09**	**0.30**	**0.000**
London (1=London 0 = Rest of England)	**15.19**	**8.38**	**0.32**	**0.072**
Method (Count to Estimate) (1=change from count to estimate, 0 = no change)	-2.70	7.78	0.03	0.729
Method (Estimate to Count) (1=change from estimate to count, 0 = no change)	-7.67	5.71	-0.18	0.182
Total number of households in Temporary Accommodation in 2017/18	**-0.005**	**0.003**	**-0.21**	**0.084**
Housing affordability ratio 2018	0.12	0.45	0.03	0.792
Income deprivation: Proportion of people who are in receipt of benefits and tax credits	**69.33**	**33.92**	**0.19**	**0.043**
Rainfall (mm) on day of count 2017	-0.46	1.36	-0.02	0.737
Rainfall (mm) on day of count 2018	1.22	1.17	0.08	0.299
Extreme Weather 2017[15] (1= extreme weather, 0 = no extreme weather)	5.30	5.35	0.07	0.323
Extreme Weather 2018 (1= extreme weather, 0 = no extreme weather)	-0.44	4.19	-0.01	0.917
RSI x Method(Count to Estimate)	11.23	17.95	0.06	0.532
RSI x Method (Estimate to Count)	-2.39	7.12	-0.02	0.738
RSI x London	0.30	8.01	0.00	0.970

Adjusted R-squared: 0.22[16]

[12] The figures highlighted in red are statistically significant at the 95% confidence level. The figures highlighted in orange are statistically significant at the 90% confidence level.

[13] The unstandardized β coefficient represents the amount of change in a dependent variable Y (ie the change in rough sleeping) due to a change of 1 unit in the independent or 'control' variable. The SE β is the standard error for the unstandardized beta.

[14] The standardized β coefficient compares the strength of the effect of each individual independent or 'control' variable to the dependent variable

[15] Extreme Weather is defined as when the mean temperature was <=0 degC on the day/night of the count or on any of the three preceding days/nights prior to the count

[16] The Adjusted R square is a measure of the proportion of the variation in Y (the change in rough sleeping) which can be explained by the model (ie the independent or 'control' variables).

7. Discussion

7.1. The results of this evaluation suggest that the RSI had a significant impact on rough sleeping in 2018. The initiative would appear to have reversed an upward trend in rough sleeping in the RSI areas, whereas rough sleeping in the non-RSI comparator areas continued to rise. Therefore, the overall net impact is large compared to other factors and is highly statistically significant.

7.2. The analysis accounts for a range of confounding factors, including changes in the way areas reported levels of rough sleeping. Some areas shifted from evidence-based estimates to street counts to measure the levels of rough sleeping in their local area, or visa-versa, and this change was particularly concentrated in RSI areas. However, there was no evidence that this change in approach had any impact on the overall reduction in levels of rough sleeping reported in the RSI areas.

7.3. There would also appear to be no evidence of regression to the mean because of the way RSI areas were selected for funding. The analysis presented here shows that had 83 areas been selected according to the criteria for the RSI for previous years there were no statistically significant net differences in the overall change in the numbers of people sleeping rough between areas in any year from 2015 to 2018, other than in 2018 when the RSI was actually running. Had the selection of those 83 areas with the highest numbers of people sleeping rough resulted in regression to the mean we would have expected to see statistically significant differences in previous years. The fact there are no differences in previous years apart from 2018 suggests that the RSI itself was probably making the difference in that year.

7.4. The study also controls for weather patterns, housing affordability, deprivation, past levels of rough sleeping and levels of temporary accommodation in each local authority. After controlling for these differences between areas the net impact of the RSI appears to get bigger compared to a model without these controls. The analysis also suggests there is no evidence that extreme weather (temperatures of zero or below in the area) has an impact on the change in numbers of people sleeping rough. This suggest areas are following the guidance for the official statistics which makes clear if people sleeping rough do take up emergency accommodation as part of SWEP they are still included in the official snapshot rough sleeping statistics.

7.5. In an ideal world we would want to compare identical RSI and non-RSI areas so that they were the same in every single aspect. This would mean the only difference between the areas would be the impact of the RSI. However, that would only be possible if enough areas were selected at random in a randomised controlled trial (RCT). Nonetheless, this does not mean that the results presented here are not a valid measure of impact. The impact of the RSI remains after controlling for several factors that evidence would suggest could influence levels of rough sleeping, and the evaluation includes a counterfactual.

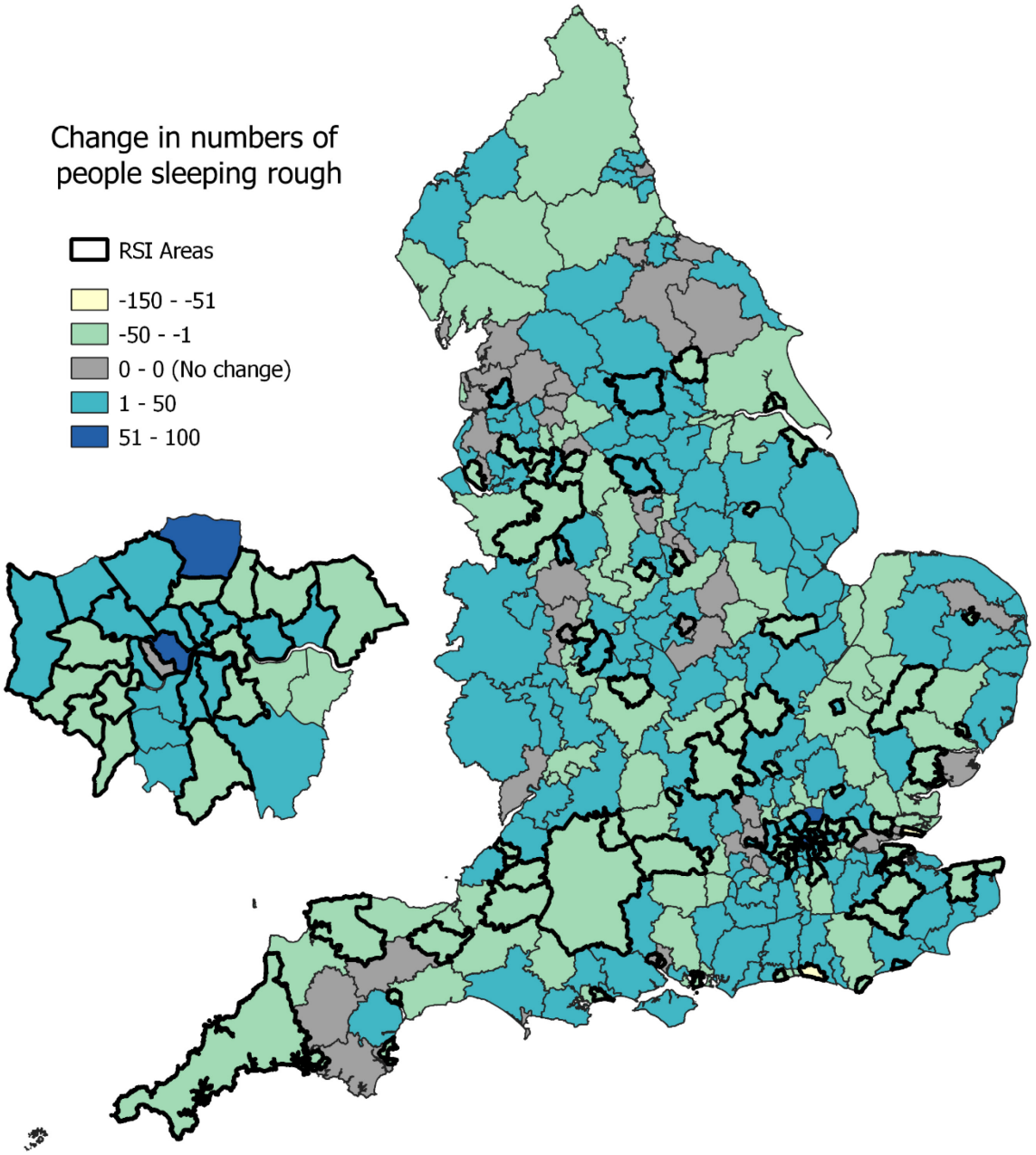
7.6. The results of the impact analysis though cannot explain how the RSI is driving the net reductions in rough sleeping. This might be due to the organisation of each area and the types of interventions that they are putting in place. This will be explored further in the RSI process evaluation, expected later this year, by speaking to stakeholders and initiative areas themselves to find out how the RSI has worked.

7.7. The analysis suggests that levels of rough sleeping in London increased compared to the rest of England, although in RSI areas in London there is no evidence of any different impact on the levels of rough sleeping compared to RSI areas across the rest of England.

7.8. Rough sleeping levels in London continued to rise between 2017 and 2018. This might be due to differences in the characteristics of rough sleeping in London. The obvious difference would be the relatively high number of non-UK people sleeping rough. Currently, many of this group are not eligible for all homelessness services available for UK people sleeping rough which may explain these findings. However, this could only really be tested with in-depth qualitative research.

7.9. Overall, these findings suggest the RSI has been successful in reducing rough sleeping. Over three-quarters of local authorities in England are now covered by specialist RSI funding which will support more people sleeping rough off the streets and help to reduce the number of people sleeping rough in both the short and longer term.

Annex A: Map of RSI areas and all non-RSI areas, and the change in the numbers of people sleeping rough between 2017 and 2018



Annex B: List of RSI areas

	Numbers of people sleeping rough on single night		
RSI local authority areas	**2017**	**2018**	**Change**
Aylesbury Vale	20	13	-7
Barnet	21	24	3
Basildon	24	12	-12
Bath & North East Somerset	34	20	-14
Bedford	76	51	-25
Birmingham	57	91	34
Bournemouth	48	29	-19
Brent	29	30	1
Brighton & Hove	178	64	-114
Bristol	86	82	-4
Cambridge	26	27	1
Camden	127	141	14
Canterbury	36	33	-3
Cheshire East	21	10	-11
City of London	36	67	31
Colchester	20	13	-7
Cornwall	68	53	-15
Croydon	31	15	-16
Derby	37	26	-11
Ealing	62	33	-29
Eastbourne	41	6	-35
Exeter	35	17	-18
Haringey	43	32	-11
Harlow	24	9	-15
Hastings	40	48	8
Havering	22	2	-20
Hillingdon	36	70	34
Hounslow	22	18	-4
Ipswich	21	11	-10
Islington	27	43	16
Kensington & Chelsea	20	20	0
Kingston upon Hull	28	26	-2
Kingston upon Thames	27	23	-4
Lambeth	34	50	16
Leeds	28	33	5
Leicester	31	31	0
Lewisham	22	5	-17
Lincoln	28	26	-2
Liverpool	33	15	-18

Luton	87	47	-40
Maidstone	41	9	-32
Manchester	94	123	29
Medway	44	19	-25
Mendip	19	14	-5
Milton Keynes	48	41	-7
Newham	76	79	3
North Devon	20	12	-8
North East Lincolnshire	22	13	-9
Norwich	30	21	-9
Nottingham	43	34	-9
Oxford	61	45	-16
Peterborough	31	29	-2
Plymouth	26	23	-3
Portsmouth	42	19	-23
Preston	19	23	4
Reading	31	25	-6
Redbridge	65	26	-39
Richmond upon Thames	19	14	-5
Salford	49	26	-23
Sheffield	20	26	6
Slough	27	29	2
Southampton	29	29	0
Southend-on-Sea	72	11	-61
Southwark	44	47	3
St Edmundsbury	22	20	-2
Stoke-on-Trent	19	34	15
Swindon	45	35	-10
Tameside	43	36	-7
Taunton Deane	23	14	-9
Thanet	46	23	-23
Torbay	24	19	-5
Tower Hamlets	21	10	-11
Tunbridge Wells	20	7	-13
Walsall	20	11	-9
Waltham Forest	44	22	-22
Warwick	21	12	-9
West Berkshire	20	18	-2
Westminster	217	306	89
Wigan	30	17	-13
Wiltshire	31	22	-9
Wolverhampton	19	19	0
Worthing	35	11	-24
York	29	9	-20
Total	**3,387**	**2,748**	**-639**

Mean	**40.8**	**33.1**	**-7.7**

List of RSI comparator areas

	Number of people sleeping rough on a single night		
Comparator local authorities	**2017**	**2018**	**Change**
Arun	17	18	1
Ashford	11	20	9
Basingstoke & Deane	15	8	-7
Bassetlaw	13	16	3
Bexley	16	5	-11
Blackpool	13	12	-1
Bolton	17	21	4
Boston	15	22	7
Bradford	15	24	9
Bury	10	3	-7
Central Bedfordshire	13	17	4
Chelmsford	17	14	-3
Cheltenham	9	2	-7
Cherwell	9	11	2
Cheshire West & Chester	18	17	-1
Chesterfield	12	18	6
Chichester	10	16	6
Coventry	8	25	17
Crawley	17	28	11
Dacorum	7	14	7
Dartford	9	12	3
Doncaster	8	27	19
Dover	13	20	7
Dudley	11	5	-6
Durham	13	12	-1
East Lindsey	9	18	9
East Riding of Yorkshire	10	8	-2
East Staffordshire	16	11	-5
Elmbridge	8	11	3
Enfield	9	78	69
Fareham	10	19	9
Fenland	9	23	14
Folkestone & Hythe	16	18	2
Forest Heath	7	2	-5
Gateshead	8	10	2
Gloucester	15	6	-9
Gosport	9	0	-9
Gravesham	9	21	12

Greenwich	8	7	-1
Guildford	13	16	3
Hackney	18	23	5
Harrow	10	13	3
Havant	10	5	-5
Herefordshire	11	18	7
Horsham	7	11	4
Isle of Wight	9	24	15
Kettering	14	17	3
King's Lynn & West Norfolk	9	5	-4
Kirklees	8	13	5
Mansfield	15	17	2
Mid Sussex	8	10	2
New Forest	7	8	1
Newcastle upon Tyne	10	15	5
North Lincolnshire	14	9	-5
North Somerset	7	11	4
Northampton	13	26	13
Poole	13	10	-3
Rochdale	8	3	-5
Rochford	11	3	-8
Rushcliffe	9	2	-7
Sandwell	10	14	4
Sefton	9	11	2
Shropshire	13	21	8
St Helens	9	14	5
Stockport	10	7	-3
Stratford-on-Avon	17	10	-7
Swale	9	32	23
Telford & Wrekin	10	13	3
Thurrock	9	9	0
Tonbridge & Malling	8	12	4
Vale of White Horse	10	9	-1
Wandsworth	13	25	12
Waveney	8	14	6
Wellingborough	12	10	-2
Welwyn Hatfield	18	13	-5
Weymouth & Portland	18	18	0
Winchester	9	8	-1
Windsor & Maidenhead	11	11	0
Wirral	14	16	2
Woking	18	11	-7
Wokingham	10	7	-3
Worcester	12	24	12
Wycombe	14	24	10

Total	**954**	**1,211**	**257**
Mean	**11.5**	**14.6**	**3.1**

Annex C: Summary statistics

Table 1: Descriptive statistics

Variable name	RSI Areas			Non-RSI Comparator areas			All 166 areas in sample		
	Mean	N	SD	Mean	N	SD	Mean	N	SD
Average number of people sleeping rough 2017	40.8	83	32	11.5	83	3.3	26.2	166	27.0
Average number of people sleeping rough 2018	33.1	83	38.8	14.6	83	9.9	23.8	166	29.7
Average change in the number of people sleeping rough between 2017 and 2018	-7.7	83	22.2	3.1	83	10.0	-2.3	166	18.0
Average number of people sleeping rough between 2010 and 2016	19.6	83	21.2	7.7	83	4.3	13.6	166	16.4
Total number of households in Temporary Accommodation in 2017/18	642.8	83	963.7	197.5	83	520.7	420.1	166	803.9
Housing affordability ratio 2018	10.5	83	5.5	9.0	83	3.0	9.7	166	4.5
Income deprivation 2015, proportion of people in each local authority that are on low incomes and who are in receipt of benefits and tax credits	0.2	83	0.05	0.1	83	0.05	0.1	166	0.0
Rainfall (mm) on day of count 2017	0.3	83	0.9	0.3	83	0.9	0.3	166	0.9
Rainfall (mm) on day of count 2018	0.4	83	1.0	0.4	83	1.2	0.4	166	1.1

Table 2: Location of local authorities

Type of area	Geography	n	percent
Non-RSI	Rest of England	77	46.4
Non-RSI	London	6	3.6
RSI	Rest of England	61	36.7
RSI	London	22	13.3
All	All	166	100.0

Table 3: Type of weather in days leading up to count/estimate in 2017

Type of area	Type of weather	n	percent
Non-RSI	Not Extreme	75	45.2
Non-RSI	Extreme	8	4.8
RSI	Not Extreme	81	48.8
RSI	Extreme	2	1.2
All	All	166	100.0

Table 4: Type of weather in days leading up to count/estimate in 2018

Type of area	Type of weather	n	percent
Non-RSI	Not Extreme	74	44.6
Non-RSI	Extreme	9	5.4
RSI	Not Extreme	74	44.6
RSI	Extreme	9	5.4
All	All	166	100.0

Table 5: Correlations between the weather on the date of the count for the 166 (RSI & Non-RSI) local areas relative to the rough sleeping snapshot from 2013 to 2018

Weather		Year					
		2013	2014	2015	2016	2017	2018
Temperature (Deg. C)	Minimum (Day)	0.00	0.05	0.01	0.08	0.08	0.03
	Minimum (Night)	-0.07	0.05	-0.02	0.08	0.10	0.01
	Mean (Day)	0.00	-0.02	-0.05	0.05	0.06	-0.02
	Mean (Night)	-0.06	0.01	-0.03	0.07	0.12	0.01
Wind Speed (m/s)	Mean (Day)	**-0.16**	-0.13	**-0.17**	0.10	0.02	0.12
	Mean (Night)	**-0.18**	-0.11	-0.20	0.11	0.05	-0.03
Rainfall (mm)	Total (day)	-0.02	0.14	0.04	-0.10	0.14	**0.20**
	Total (night)	-0.06	0.14	0.12	-0.09	0.10	**0.17**

Table 6: Correlations of other key variables for the 166 (RSI & Non-RSI) local areas

Affordability & demography variables	Rough sleeper count	
	2017	2018
Income deprivation	0.26	0.36
Individuals in Temporary Accommodation 2017 /18	**0.45**	**0.39**
Housing Affordability 2018	0.13	0.05
Hostel Bed Spaces (2017)	**0.44**	**0.49**

[i] MHCLG, Rough Sleeping Statistics 2018, https://www.gov.uk/government/statistics/rough-sleeping-in-england-autumn-2018
[ii] MHCLG, Causes of homelessness and rough sleeping feasibility study, https://www.gov.uk/government/publications/causes-of-homelessness-and-rough-sleeping-feasibility-study
[iii] MHCLG, Statutory Homelessness Statistics, https://www.gov.uk/government/collections/homelessness-statistics#statutory-homelessness
[iv] MHCLG, English indices of deprivation 2015, https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015
[v] ONS, Housing affordability in England and Wales: 2018, https://www.ons.gov.uk/peoplepopulationandcommunity/housing/bulletins/housingaffordabilityinenglandandwales/2018
[vi] Met Office, Historic Station Data, https://www.metoffice.gov.uk/research/climate/maps-and-data/historic-station-data#?tab=climateHistoric