

The impact of welfare benefit sanctioning on food insecurity: a dynamic cross-area study of food bank usage in the UK.

Running title: Sanctions and food bank usage

Rachel Loopstra^{1*}, Jasmine Fledderjohann², Aaron Reeves³, David Stuckler⁴

- 1- Department of Nutritional Sciences, King's College London
- 2- Department of Sociology, Lancaster University
- 3- International Inequalities Institute, London School of Economics
- 4- University of Bocconi, Milan Italy

* Corresponding author: Rachel Loopstra, rachel.loopstra@kcl.ac.uk
Department of Nutritional Sciences, King's College London, Franklin-Wilkins Building,
Room 3.102, 150 Stamford St. London SE1 9NH

Funding

This research was funded by a grant provided by The Trussell Trust Foodbank Network. RL and DS were supported by a Wellcome Trust Investigator Award during the course of this research. RL is supported by an ESRC research fellowship. The research question, design, analyses, and writing were solely devised by the study authors. The views expressed reflect only the authors' interpretations of the findings.

Acknowledgements

We would like to thank members of our advisory group who provided feedback on early drafts of the paper.

1 **Abstract**

2 Since 2009, the UK witnessed marked increases in the rate of sanctions applied to
3 unemployment insurance claimants, as part of wider agenda of austerity and welfare
4 reform. In 2013, over 1 million sanctions were applied, stopping benefit payments for
5 a minimum of four weeks and potentially leaving people facing economic hardship
6 and driving them to use food banks. Here we explore whether sanctioning is
7 associated with food bank use by linking data from The Trussell Trust Foodbank
8 Network with records on sanctioning rates across 259 local authorities in the UK.
9 After accounting for local authority differences and time trends, the rate of adults fed
10 by food banks rose by an additional 3.36 adults per 100,000 (95% CI: 1.71 to 5.01) as
11 the rate of sanctioning increased by 10 per 100,000 adults. The availability of food
12 distribution sites affected how tightly sanctioning and food bank usage were
13 associated ($p < 0.001$); in areas with few distribution sites, rising sanctions led to
14 smaller increases in food bank usage. In conclusion, sanctioning is closely linked with
15 rising food bank usage, but the impact of sanctioning on household food insecurity is
16 not fully reflected in available data.

17 *Keywords:* food bank, social security, benefit sanctions, household food insecurity

18 **Introduction**

19 Insufficient and insecure household incomes, particularly short-term income losses, put
20 households at risk of food insecurity—that is, inadequate access to food (Leete and Bania,
21 2010; Loopstra and Tarasuk, 2013; Ribar and Hamrick, 2003; Tarasuk et al., 2014; Huang et
22 al., 2010). A growing body of evidence shows how government policies can either increase
23 or reduce household food insecurity by changing access to social security programmes
24 (Arteaga et al., 2016; Ionescu-Ittu et al., 2015; Loopstra et al., 2015a; McIntyre et al., 2016).

25 One aspect of social security policy that may increase food insecurity among low-income
26 households is the practice of sanctioning, which abrogates financial support to unemployed
27 persons receiving unemployment insurance if they fail to meet criteria for seeking work.

28 Unemployment insurance acts as a buffer against household income shocks, smoothing food
29 consumption at the micro level (Bloemen and Stancaelli, 2005). Sanctions, in contrast, by
30 temporarily removing this buffer, may therefore affect access to food. Yet empirical evidence
31 on the impact of sanctioning has been limited; and so advocates of welfare conditionality
32 have argued that sanctions encourage re-employment without exacerbating food insecurity.

33 This debate is particularly pertinent to the UK, where a rapid rise in the number of people
34 being sanctioned was concurrent with a large increase in the distribution of emergency food
35 parcels over 2011 to 2013 following governmental efforts to increase benefit conditionality
36 and more severely penalize non-compliance (Watts et al., 2014). The Trussell Trust—the
37 UK’s largest food bank network – has reported that sanctions are a key reason why people
38 receive referrals to their member food banks (The Trussell Trust, 2014). Frontline food aid
39 providers tell a similar story, reinforcing the conclusions of other investigations into food
40 bank usage in the UK (Forsey, 2014; Perry et al., 2014).

41 There are reasons to be cautious of this claim, however. Food bank usage may have risen
42 during this period regardless of any changes to welfare conditionality and sanctions. For
43 example, food parcel distribution may have increased because the number of food banks rose
44 (Loopstra et al., 2015c) or the number of hours the food banks were open increased.
45 Similarly, background economic factors in the British economy, such as high unemployment,
46 could have created additional financial pressures leading to food bank usage even if sanctions
47 were not increasing (Lambie-Mumford and Dowler, 2015; Loopstra et al., 2016).

48 As highlighted in a recent UK National Audit Office (NAO) report (Comptroller and Auditor
49 General, 2016), the impact of sanctioning on material hardship is not well-understood. Here,
50 we ask, does temporarily stopping people's social security payments drive them to food
51 banks? We conceptualize food bank usage as a marker of severe food insecurity to examine
52 the dynamic relationship between sanctioning and food insecurity using data harmonised data
53 from 392 Trussell Trust Foodbanks in 259 local authorities over 2012 to 2015.

54 **Background**

55 *Benefit conditionality and sanctioning in social security systems*

56 Internationally, there has been increasing experimentation with using active labour market
57 programmes to incentivise changes in behaviour among social security recipients (Watts et
58 al., 2014). This is part of a wider trend of increasing welfare conditionality in social security
59 systems, whereby individuals' entitlement to state support has become increasingly
60 dependent on meeting an expanding number of behavioural conditions, such as regular
61 meetings with work coaches and showing adequate evidence of job search activity, among
62 others. These conditions vary across countries but so too does the strictness of requirements
63 and how closely they are monitored (Venn, 2012). For example, in some countries,

64 jobseekers are required to show job search activity only on request, where in others, proof
65 must be shown to work coaches weekly or every second week.

66 Sanctioning penalties also differ depending on context, but generally the threat of sanctioning
67 (and the sanctions themselves) is assumed to incentivise unemployed persons to seek
68 employment and reduce potential gaming behaviour (Watts et al., 2014; Venn, 2012). In
69 many countries, sanctions are rarely applied, and countries employ warning systems to alert
70 recipients of the potential for a sanction to be imposed. Others impose a penalty of reduced
71 income support for only 1-2 weeks (Venn, 2012) or stop payments altogether.

72 The employment outcomes of sanctioning policies have been widely debated (Watts et al.,
73 2014). Theoretically, sanctions encourage people to find work faster by increasing job search
74 efforts among those who are sanctioned and those who want to avoid being sanctioned.

75 Sanctions are also imposed for failure to take offered work, encouraging people to accept the
76 first opportunity rather than waiting for a better future opportunity. Yet, quantitative studies
77 examining employment outcomes have found mixed results, potentially because they increase
78 the quantity not the quality of the job search and fail to take into account the nature and
79 supply of employment opportunities available (Arni et al., 2013; Webster, 2016; Boockmann
80 et al., 2014; Lalive et al., 2005; van der Klaauw and Van Ours, 2013). There are also
81 concerns about the fairness of the practice (Work and Pensions Committee, 2015), given
82 evidence that disadvantaged groups are more likely to be sanctioned than others and that
83 sanctions may actually reduce re-employment among particular vulnerable groups (Reeves
84 and Loopstra, 2017; Comptroller and Auditor General, 2016).

85 Although sanctions may improve employment-outcomes for some, they may also create
86 health and social harms for others because they reduce incomes for people who are more
87 likely to be financially vulnerable. Little is known about the health and social consequences

88 of sanctioning, and in particular, on whether or not sanctioning may mean that people cannot
89 afford basic needs, such as food. Following welfare reforms in the United States, families that
90 had been sanctioned were more likely to have experienced poverty and inadequate access to
91 food than families who had not been sanctioned (Cook et al., 2002; Kalil et al., 2002).
92 Similarly, one longitudinal study of new parents found that mothers who reported their
93 benefit payments reduced or eliminated in the past 12 months due to sanctions were more
94 likely to report experiences of food insecurity for themselves and their children (Reichman et
95 al., 2005). To our knowledge, no quantitative studies examining the relationship between
96 welfare sanctioning policies and household food insecurity have been conducted in a
97 European context. Given that sanctioning is now considered integral to many Western
98 nations' social security approaches, it is critical to understand how this practice impacts
99 access to food.

100 *Sanctions and the broader context of welfare reform*

101 In 2010, the Conservative-Liberal Democrat Coalition Government announced a programme
102 of wide-sweeping reforms aimed at reducing the deficit, with a particular focus on reducing
103 welfare costs (HM Treasury, 2010). School budgets, the NHS, and pensions were protected,
104 but budgets for local government services, social care, and welfare benefits were reduced
105 dramatically (De Agostini et al., 2017; Lupton et al., 2015).

106 Alongside targeted actions to reduce welfare spending (for example, lost or reduced
107 entitlement to Housing Benefit and Child Benefit for some claimants, the introduction of
108 Benefit Caps, and benefit freezes), a number of welfare reforms also made it harder for
109 claimants to qualify, and maintain the requirements, for benefit receipt. Employment and
110 Support Allowance (ESA) claimants were newly required to undergo Work Capability
111 Assessments to determine their eligibility for the benefit. Those placed in the work-related

112 activity group were additionally required to engage in work-related activity, such as job
113 searches, work preparation schemes, and practice job interviews, in order to maintain receipt
114 of benefits (Dwyer et al., 2016; Barr et al., 2015). Similarly, these types of conditions were
115 intensified for lone parents claiming Income Support with children aged 5 or older (Johnsen,
116 2016). As a further move toward greater conditionality, the Claimant Commitment was
117 introduced for Jobseeker's Allowance (JSA) claimants (Department for Work and Pensions,
118 2013) and, in 2013, everyone claiming Universal Credit. These commitments, determined by
119 Jobcentre Advisors, outline job-seeking actions that claimants must follow in order to be
120 eligible for these benefits. Failure to meet outlined requirements means claimants are
121 disentitled from benefits altogether or temporarily have their benefits stopped. Together,
122 these actions, which make it harder for people to comply with benefit conditions, also mean
123 reducing spending on welfare claims as claimants move off benefits - sometimes into work,
124 but also not (Work and Pensions Committee, 2015; Loopstra et al., 2015b; Reeves, 2017).

125 As highlighted, benefit conditionality is often buttressed by sanctions for failure to comply.
126 Although behaviour-related conditionality and accompanying sanctions are now more than 20
127 years old, the 2012 reforms initiated a step-change with the Coalition introducing one of the
128 strictest sanctioning regimes across OECD countries. Sanctioning penalties were intensified,
129 stopping benefit payments with immediate effect for a new minimum of 4 weeks,
130 representing a £300 reduction for a single claimant aged 25 or over (Comptroller and Auditor
131 General, 2016). For more serious offences, penalty periods were extended to a minimum of
132 13 weeks, and up to 156 weeks (Department of Work and Pensions, 2013).

133 Monthly rates of sanctions applied to claimants nearly doubled between 2009 and 2013, with
134 about 3% of claimants sanctioned each month in 2009 to over 6% of claimants sanctioned
135 every month in 2013 (Figure 1). This dramatic rise has been linked with the expansion of the
136 Work Programme in 2011 and the introduction of the 2012 Welfare Reform Act (Webster,

137 2016), which tightened the criteria for receipt of JSA and marked an active push to increase
138 welfare conditionalities as part of a broader agenda of creating active citizenship (Reeves and
139 Loopstra, 2017). In 2013, over 1 million sanctions were applied.

140 [Figure 1 here]

141

142 *Welfare reform and the rise of food banks in the UK*

143 Welfare reform is the backdrop for the dramatic rise in food bank usage since the Great
144 Recession. The Trussell Trust Foodbank Network has reported rising demand for their
145 services in recent years, evidenced by the rapid expansion of their franchise emergency food
146 aid model, the Foodbank, and accompanying rising numbers of food parcels being distributed
147 (Lambie-Mumford, 2013). In 2011, the Trust reported about 129,000 instances of people
148 receiving food from their member food banks. By 2014/15, the number had climbed to almost
149 1.1 million (The Trussell Trust, 2015). Early examinations of the patterned growth of the
150 network have found food banks were more likely to open in areas of higher unemployment,
151 and in areas that had experienced deeper reductions in the amount of spending going out to
152 local authorities for local services and welfare support (Loopstra et al., 2015c). These
153 findings matched qualitative studies that found local social service agencies and community
154 members, in the face of reduced budgets, turning to The Trussell Trust model as a source of
155 service delivery (Lambie-Mumford, 2013). Since then, many other studies have linked
156 demand for food banks with aspects of benefit reform, including longer wait times to receive
157 benefit payments, the abolition of the social fund, loss of entitlements and benefit transitions
158 (Perry et al., 2014; The Trussell Trust, 2017; Fitzpatrick et al., 2016a; Garratt et al., 2016;
159 Forsey, 2014). In-depth interviews with people using food banks conducted by Perry et al.
160 (2014) revealed the range of challenges faced by people using food banks, such as loss of a

161 job or partner or disability, but also noted that most often it was the acute impact of losing
162 welfare entitlements or the inability to access welfare in these circumstances that led to their
163 food bank referral. Thus, the evidence suggests that the rapid rise of food bank use from
164 2011, and persistence of high rates across the country since, are cumulative outcomes of the
165 many changes to the benefit system over this period.

166 Quantitatively linking these changes to changing food bank usage is difficult, however, due
167 to the number of changes that occurred, and different rollouts of the reforms geographically
168 and over time. While the rise in food bank use matched the timing of when these reforms
169 were rolled out (i.e. beginning in 2011 and ongoing through to 2015), at the aggregate level,
170 the growth in numbers using food banks is hard to disentangle from new food banks
171 beginning to operate in places where they had not been previously seen.

172 The intensification of conditionality and subsequent rise in sanctions is one possible
173 exception—a discrete change in welfare receipt that can be tested using quantitative methods.
174 The Department of Work and Pensions (DWP) data available document the number of
175 sanctions applied to claimants each month, charting the variation in local authorities across
176 space and time. This variation can be linked to variation in food bank use over time within
177 local areas. While we might expect there to be variation in the level of sanctions across areas
178 due to differences in population characteristics, examining how rates of food bank use
179 associated with changes in sanctioning within a given area removes these endogenous
180 characteristics, tracking only changes in the application of sanctions--a largely exogenous
181 source of variation arising from policy changes over this period.

182 *The uncertain link between sanctions and food bank use*

183 The impact of sanctioning on food bank use continues to be debated. A small-scale
184 questionnaire delivered to people using three food banks across England found that 20-30%

185 had recently been affected by sanctions (Perry et al., 2014), but this evidence has been
186 dismissed by policymakers. In a House of Commons debate in 2015, the previous Minister
187 for Employment, Priti Patel, stated that “there is no robust evidence that directly links
188 sanctions and food bank use” because the “reasons for food bank use are complex and
189 overlapping” (HC Debate 22 June 2015 vol 595 c608). Indeed, previous studies and evidence
190 reviews, which rely on cross-sectional and anecdotal data, have been unable to disentangle
191 whether there is a dynamic and systematic relationship between sanctioning rates and food
192 bank usage (Forsey, 2014; Loopstra et al., 2015c; Perry et al., 2014). Without longitudinal
193 data, the nature of the relationship between sanctioning and food bank usage is difficult to
194 resolve.

195 The problem of hidden hunger is one important issue that may contribute to uncertainty in
196 the relationship between sanctions and food bank usage. Food insecurity underlies food bank
197 usage (Loopstra and Tarasuk, 2012; Loopstra and Lalor, 2017), but is not regularly
198 measured in any UK survey. In the absence of monitoring of household food insecurity in
199 household surveys, data on food bank usage is often the only available indicator of the
200 problem of hunger in high-income countries (Loopstra and Tarasuk, 2015). But a significant
201 degree of hidden hunger can exist. In the case of the UK, and relevant to the understanding
202 the relationship between sanctioning and food bank usage, if someone is sanctioned and
203 unable to afford food, their ability to access emergency food may be largely determined by
204 the availability of a food bank distribution centre in their area. Thus, if sanction rates go up
205 in an area where there are far fewer distribution centres, then food parcel distribution may
206 only be weakly associated with sanctioning rates even though hunger is potentially rising. In
207 short, hidden hunger may introduce uncertainty in the relationship between sanctioning rates
208 and food bank usage.

209 Further complicating this picture is that after 2013, the number of sanctions applied to JSA
210 claimants in the UK declined; this is in part because the number of claimants has also
211 declined, but even as a proportion of claimants, sanction rates have reduced (Figure 1). This
212 fall in sanctioning has not corresponded with a decline in the aggregated number of people
213 receiving food parcels in The Trussell Trust Network. In 2013/14, The Trussell Trust
214 reported 913,138 instances of food parcel distribution, but in 2014/15, this number increased
215 to 1,084,604, and further increased to 1,109,309 in 2015/16.

216 The disconnect in these trends is not well understood, but may be explained by two different
217 processes. One is that the spread of the food bank network as a whole may obscure levels of
218 rising or falling need attributable to sanctions for any specific local area because total
219 numbers are in part driven by the availability of food banks to distribute food. Over 2011 to
220 2014, new Trussell Trust food banks opened in places where they were not operating before,
221 which means people in need in these communities could newly use food banks where they
222 were unable to before. Alternatively, food banks can also leave The Trussell Trust Network,
223 no longer reporting the number of parcels they are distributing to the national Trussell Trust
224 office. In short, disentangling the relationship between sanctions and food bank usage
225 requires accounting for the number of food banks in these areas and should focus on the
226 trends *within* these local areas. The other possible explanation is that sanctions may lead to
227 longer term financial hardships, whereby increases in the number of sanctions applied are
228 associated with increases in food bank usage, but declines may not equally relate to declines
229 in food bank usage.

230 To explore the relationship between sanctioning and food bank use, accounting for the
231 potential impact of the supply of food banks on this relationship, we compiled a novel
232 database linking quarterly sanctioning rates in local authorities to area-level food bank usage
233 data from The Trussell Trust over fiscal years 2012 to 2015. We additionally incorporated

234 data on network characteristics to understand how the provision of food assistance influences
235 the sanctioning-food bank usage relationship. We draw on these data to ask, how do rates of
236 sanctioning vary with rates of food bank usage? We also explore if declines in number of
237 sanctions have meant fewer people needing food assistance. Lastly, we examine how the
238 availability of Trussell Trust assistance affects the relationship between sanctioning and food
239 bank usage. Specifically, we investigate whether the impact of sanctioning on food insecurity
240 may not be reflected in Trussell Trust food bank usage figures where their food banks are less
241 available, thereby providing evidence that the true impact of sanctioning on hunger is
242 potentially obscured by the data available.

243

244 **Methods**

245 *Source of Data*

246 We collected data on food bank usage from The Trussell Trust, an umbrella organisation for
247 424 member food banks in the UK, comprised of over 1200 distribution sites in churches or
248 community centres (The Trussell Trust, 2016). While there are numerous food banks that
249 operate independently in the UK, The Trussell Trust is the only franchise model that operates
250 nationally, creating a source of comparative and harmonised data. Each member food bank is
251 responsible for obtaining referrals from local social service agencies. Referred persons
252 receive a food parcel meant to provide three days' worth of food for all household members.

253 Data from referral vouchers are entered into the central Trussell Trust database. We received
254 access to aggregated data from each food bank in the network, collated on a quarterly basis
255 for fiscal years 2012/13 to 2015/16. These data provide the number of instances in which
256 adults and children received food parcels, reflecting usage volume rather than number of
257 individuals served. The number of unique individuals helped by Trussell Trust food banks

258 has not been tracked. We use the number of adults fed scaled relative to the size of local adult
259 population, but these numbers cannot be interpreted as a quarterly prevalence rate, as some
260 individuals may have received food parcels on more than one occasion in the same quarter.

261 We also obtained information on food bank postcodes, the year food banks were initiated, the
262 number of distribution sites affiliated with the food bank, and the hours of operation at each
263 distribution site from The Trussell Trust to enable description of area-level food bank
264 operations.

265 *Sanctioning and Unemployment Data*

266 We obtained government data for local authorities in the UK on the number of people
267 claiming JSA, the number of sanctions applied to JSA claimants, unemployment and
268 employment rates, deprivation ranking (England only), rural-urban classification (England
269 only) and population size from Nomis, Stat Xplore, and UK Government Statistics databases.
270 Sanction data are the number of sanctions applied to claimants, summed over the months in
271 each quarter, which were available up to the second quarter of 2015/16. Similar to food bank
272 data, these do not pertain to individuals, so the same claimant could have received more than
273 one sanction in the same quarter. Monthly claimant data were averaged over the quarter to
274 provide an estimate of the quarterly claimant count. We use unemployment and employment
275 data in our sensitivity analyses. These are aggregated data from the Annual Population
276 Survey. At the local authority level, Nomis provides data for 12-month periods beginning
277 every quarter.

278 *Analytic sample*

279 We restricted our sample to local authorities in Scotland, Wales, and England, as sanctioning
280 data were unavailable for Northern Ireland. We excluded five local authorities with small
281 population sizes (City of London, Isles of Scilly, Orkney Islands, Shetland Islands, and

282 Eilean Siar). Food bank postcodes were used to link food banks to their respective local
 283 authority areas, resulting in a sum of the total number fed, sum of distribution sites operating,
 284 and sum of total operating hours for the local authority that varied across quarters. We
 285 excluded food banks and corresponding local authorities which did not consistently collect
 286 data each quarter over 2012/13 until the end of 2015/16 (n= 15) and also those authorities in
 287 which Trussell Trust food banks do not operate (n= 101). This yielded a final analytical
 288 dataset of 259 local authorities spanning 16 quarters (Web Figure A2). Descriptive statistics
 289 showing rates of feeding and the number of food banks operating for local authorities over
 290 time are shown in Web Table A1 and in Web Figure A3.

291 *Statistical Analysis*

292 First, we examined how the rate of sanctions applied in local authority populations relates to
 293 food parcel distribution. We use a fixed-effects model to control for unobserved differences
 294 across local authorities and time, asking if the instances of adults receiving food assistance is
 295 dynamically related to the number of sanctions applied in the population, as follows:

$$296 \text{Fed}_{it} = \beta_0 + \beta_1 \text{Sanctions}_{it} + \beta_2 \text{Claimants}_{it} + \beta_3 \text{Season} + \beta_4 \text{First} + \beta_5 \text{Distribution}_{it} + \beta_6 \text{Hours}_{it} + \mu_i$$

$$297 + \varepsilon_{it}$$

298 Here, i denotes the local authority and t denotes the time point. Fed is the quarterly number of
 299 instances adults received food parcels per 100,000 adults in the population. $Sanctions$ is the
 300 number of sanctions applied per 100,000 adults, and $Claimants$ is the number of JSA
 301 claimants per 100,000 working age adults. $Season$ is a dummy variable for first, second,
 302 third, and fourth quarters to account for seasonal trends in food parcel distribution. $First$ is a
 303 dummy variable denoting the first quarter a food bank opened in local authorities if they
 304 opened after April 2012. $Distribution$ is the number of food bank distribution sites operating
 305 in local authority. $Hours$ is the total number of hours food banks open per week. μ_i denotes

306 local-authority fixed-effects and ε_{it} is the random error term. In subsequent models, we
307 include an adjustment for linear and quadratic time trends to account for secular trends in the
308 numbers fed, sanctions applied, and JSA claimants across the UK over this time period.

309 Next, using a first difference model, we unpacked whether increasing sanctions from the
310 previous quarter is associated with an increase in adult food bank usage, and in turn, whether
311 a decline in the number of sanctions is associated with a decline in adult food bank usage,
312 thus testing the acute dynamic relationship from quarter to quarter in numbers fed in relation
313 to number of sanctions applied. To do this, we created two time-varying measures of
314 sanctions: one capturing increases from the previous quarter and the other decreases. For
315 each, changes in the opposite directions were coded as zero.

316 Lastly, we explored the potential problem of hidden hunger, whereby, for a given increase in
317 the number of sanctions applied, the extent to which this may lead to food insecurity is not
318 fully reflected in food bank usage. In places where sanctions have increased, people who
319 experience food insecurity as a result may not be able to reach food banks where food banks
320 are less available; this would temper an observed relationship between sanctions and food
321 bank usage, resulting in a downward bias in our estimate of the impact of sanctions. To
322 investigate this, we examined the interaction between change in the number of sanctions
323 applied, with the level of food bank operations in a given local authority-year, namely the
324 number of distribution sites and the number of operating hours.

325 **Results**

326 The number of operating Trussell Trust food banks increased from 138 sites in 114 local
327 authorities in the first quarter of 2012/13 to 392 food banks in 259 local authorities in the last
328 quarter of 2015/16 (Web Table A1). The average rate of feeding across local authorities with
329 food banks rose from about 18,855 adult users per 100,000 over April to June 2012, to a high

330 of 52,468 per 100,000 over January to March 2014. As shown in Web Figure A2, trends in
331 food bank usage are more telling after accounting for growth of the Network. Though food
332 bank usage generally exhibits a growth curve, whereby usage accelerates in the first 6-12
333 months after food banks are launched, evidence of growth in food bank usage through 2013
334 and 2014 in places where food banks were already well-established and constant after 2011,
335 suggests there was increasing demand over and above the supply of food banks over 2013
336 and 2014, but that in 2015, food bank use started to decline.

337 Figure 2 shows the correlation between the rate of sanctions applied in local authorities and
338 the rate of adults fed for one quarter, January to March 2014. Here, we see evidence that in
339 places where the rate of sanctioning was higher, the rate of adult food bank usage was also
340 higher ($r=0.26$; $p<0.0001$).

341 [Figure 2 here]

342 Table 1 shows how quarterly rates of food bank usage among adults related to the number of
343 sanctions applied in the population each quarter over 2012 to 2015, after accounting for local
344 authority differences. For every 10 sanctions applied per 100,000 in the population, the rate
345 of adult food bank users was 6.44 per 100,000 adults higher (95% CI: 4.72 to 8.15). This
346 association remained robust after adjusting for the scale of food bank operations and how
347 long food banks had been operating (Table 1, Model 2). Lastly, we adjusted for linear and
348 quadratic time trends. Though attenuated, the relationship between sanctioning and food bank
349 use remained strong: for every 10 additional sanctions applied, the rate of food bank users per
350 100,000 was about 3.36 higher (95% CI: 1.71 to 5.01).

351 [Table 1 here]

352 To put these figures in context, rates of sanctioning applied in local populations rose from a
353 mean of 302 per 100,000 adults over the April to June quarter of 2012/13 to 340 per 100,000

354 over the July to September quarter of 2013/14. Our model predicts this increase in JSA
355 sanctioning would account for about 5-10% of the increase in the rate of food bank usage
356 observed over this period.

357 When we delineated the effects of acute increases in sanctions applied from the previous
358 quarter from acute declines (Table 2), we observed that for increases in sanctions,
359 specifically, every 10 additional sanctions applied was associated with about 5 more adults
360 fed in food banks (95% CI: 3.00 to 7.40). A decline of 10 sanctions from the previous quarter
361 was associated with a decline of about 2 adults fed (95% CI: -3.23 to -0.34).

362 [Table 2 here]

363 Lastly, we examined how the dynamic relationship between change in sanctions applied and
364 change in the number of adults fed was affected by the scale of food bank operations in local
365 authorities (Web Table A2). The number of distribution sites available in local authorities
366 significantly modified the observed relationship between the change in sanctions and the
367 change in numbers fed. This is illustrated in Figure 3. In local authorities with few
368 distribution sites per capita (< 1 per 100,000), if the number of sanctions increased by 20 per
369 100,000, there was not a corresponding significant increase in the number of adult food bank
370 users. But for local authorities with 5 distribution sites or more operating per 100,000, an
371 increase in 20 sanctions per 100,000 related to an estimated increase of about 10 more adult
372 food bank users.

373 *Sensitivity Analyses*

374 We performed a series of sensitivity analyses to assess the robustness of our models to
375 alternate specifications. To test the possibility that the association between sanctions and food
376 bank use was spurious, driven by higher rates of unemployment, we additionally adjusted our
377 models for employment and unemployment rates and found our results unchanged (Web

378 Table A4). We also checked for outliers (i.e. observations with residuals $> |2SD|$) and
379 extreme observations to ensure our estimates were not being driven by these observations. No
380 observations met our criteria for outliers. After removing observations with extreme quarterly
381 changes in rates of feeding (i.e. $>$ the 99th percentile), our results were unchanged (Web Table
382 A5).

383 We also re-ran our models using a random effects framework and adjusting for time-invariant
384 characteristics to explore the relationship between sanctions and food bank use after adjusting
385 for a wider set of area-level characteristics: specifically the Index of Multiple Deprivation,
386 the ESA claimant rate, 2011 census data on lone parenthood and disability, and rural-urban
387 classification. Due to many of these variables only being available for England, these models
388 were only conducted for English local authorities (Web Table A6). We found, consistent with
389 earlier studies of these relationships (e.g. (Lambie-Mumford and Green, 2017; Vidgen et al.,
390 2016) that food bank use was higher in more deprived local authorities and with higher rates
391 of disability and lone parenthood. However, even after adjusting for these area-factors, we
392 observed the relationship between sanction rates and food bank use to be consistent with our
393 fixed-effect models.

394 **Discussion**

395 Our findings suggest a strong, dynamic relationship exists between the number of sanctions
396 applied in local authorities and instances of adults receiving emergency food parcels. As the
397 quarterly rate of sanctioning rose in local authorities, the rate of adults receiving food
398 assistance also rose. We observed that a quarter-to-quarter increase of 10 sanctions per
399 100,000 was associated with about 5 more instances of adults needing food, while a decline
400 in 10 sanctions applied was associated with about 2 fewer instances of adults needing food.
401 The extent to which sanctioning is reflected in demand for food assistance from The Trussell

402 Trust depends on availability of distribution sites in a given area. Where distribution sites
403 were not widely available to the population to use (as measured by distribution sites per
404 capita), there was not a corresponding increase in the numbers fed, even if more people were
405 sanctioned.

406 Our study uses the best current data available to examine the relationship between
407 sanctioning and food bank usage but there are still some important limitations. We were only
408 able to use data at the area level and so our results could be vulnerable to ecological fallacy,
409 where rates of sanctioning correlate with food bank usage, but do not mean that the people
410 sanctioned are the same individuals who show up in food banks. Our area level findings are
411 consistent with those observed among individuals in reports from frontline food assistance
412 providers and qualitative studies, however (Forsey, 2014; Perry et al., 2014; Garthwaite,
413 2016; Fitzpatrick et al., 2016b).

414 To our knowledge, The Trussell Trust data are the only source of longitudinal and
415 harmonised data on food bank usage in the UK, but are influenced by factors that we could
416 not control for. The data are a measure of volume and do not reflect the number of unique
417 users each quarter. This may lead to variation across local areas and over time if there are
418 differences in frequency of use between places or over time. Each member food bank also
419 establishes relationships with local referral agencies, and these relationships are not always
420 stable, which may affect how easily people in a given area are able to receive help from their
421 local food bank.

422 Similarly, sanction data are limited by how they are recorded. While the government provides
423 information on claims where adverse and non-adverse decisions were made and whether the
424 decision was based on an original decision, mandatory reconsideration, or appeal, they do not
425 provide information on the total number of original adverse decisions (Comptroller and

426 Auditor General, 2016). These data would be important for tracking the impact of sanctions
427 in a given quarter because during the reconsideration and appeals process, claimants have
428 their benefit payments stopped; the month that an appeals decision is recorded could be one
429 or two months after a claimant first had his/her payments stopped. We based our data on
430 original adverse decisions because we could not know with certainty that claimants had
431 sanctions applied in these months, but using only these figures mean our estimates have
432 likely underestimated the impact of sanctioning on food bank usage. Data on the number of
433 people receiving Universal Credit, a new benefit in the UK subject to conditionality, are also
434 not available, which also means the full impact of sanctioning practices on food bank usage
435 cannot be charted. These data limitations would introduce error in our estimates that would
436 tend to bias our results toward the null; however, despite these data limitations, we observed
437 a strong and dynamic relationship between sanctioning and food bank usage.

438 By focussing on the acute impact of sanctions and using difference models, we have not
439 examined the influence of other changes to social policy that appear to have played a role in
440 the rise of food bank usage, as outlined above. While earlier analyses have examined some of
441 these links (Loopstra et al., 2015c), as have qualitative studies (e.g. Garthwaite, 2016; Perry
442 et al., 2014), more research is needed to further explore how welfare reforms already
443 implemented and those ongoing, in particular, the rollout of Universal Credit, may be
444 impacting on the ability for households to afford food.

445 This study addresses critical gaps in the literature. Like earlier work, we find a consistent and
446 strong positive relationship between sanctioning rates and food bank use (Loopstra et al.,
447 2015c; Fitzpatrick et al., 2016b; Garthwaite, 2016), but this work addresses limitations of
448 these earlier papers by accounting for changes in The Trussell Trust network and cross-local
449 variation in distribution sites. These data do not allow us to firmly establish causality but the
450 associations we document are certainly consistent with a causal explanation. In addition, we

451 explicitly consider what happens to people who are sanctioned in areas where there are fewer
452 food banks. Our models suggest there are places in Britain where sanctioning rates are high
453 but food bank usage rates are low and that appears to be the case where food aid distribution
454 is limited, highlighting the possibility of hidden hunger, namely people who lack both access
455 to food financially and who cannot access emergency food assistance.

456 Our results intervene in the ongoing debate about the drivers of rising food bank usage.
457 Government officials have suggested sanctions have no impact on food bank use according to
458 the evidence available (HC Debate 22 June 2015 vol 595 c608). Here, we have shown a
459 robust empirical link between sanctioning and food bank usage. This has important policy
460 implications. The recent decline in sanctioning is a positive sign, and has likely contributed to
461 the decline in the numbers of people using food banks within local authorities in 2015/16.
462 Yet, in 2015, there were still about 358,000 sanctions applied to JSA claimants, with the net
463 cost to sanctioned jobseekers (total cost of sanctions minus hardship payments) just under
464 £100 million (Comptroller and Auditor General, 2016). We also observed that declines in
465 sanctioning were not as strongly linked to declines in food bank usage, explaining why the
466 decline in food bank usage has not been as fast as the decline in sanctions. This could be
467 because experiences of sanctions trigger longer-term financial crises, such as debt
468 accumulation. A recent report from one Trussell Trust food bank (West Cheshire) found that
469 people who received food bank referrals for the reason of being sanctioned were more likely
470 to have crises that lasted for 3 months or more (Garratt et al., 2016). It may also be the case
471 that longer length sanctioning penalties lead to longer term food bank usage.

472 It is possible sanctions may positively affect employment outcomes. A preliminary analysis
473 of the Work Programme by the NAO found that JSA claimants who received a sanction were
474 more likely to move into employment than those who were not sanctioned (Comptroller and
475 Auditor General, 2016). However, conditionality and sanctions do not appear to work for

476 everyone, potentially driving people off unemployment support entirely (Comptroller and
477 Auditor General, 2016; Loopstra et al., 2015b). The same NAO analysis mentioned above
478 also found that people on ESA who were sanctioned were actually less likely to return to
479 work (Comptroller and Auditor General, 2016) while a cross-local authority analysis suggests
480 sanctions may increase economic inactivity among people living with a disability (Reeves,
481 2017). This is especially relevant to people receiving help from food banks, as many are
482 living with mental or physical ill health (Loopstra and Lalor, 2017). However, data that
483 enable employment and hardship outcomes to be tracked among claimants who are
484 sanctioned and those who are not are needed for more robust analyses of potential costs of
485 benefit sanctions alongside potential benefits (Comptroller and Auditor General, 2016).

486 Tracking the effects of sanctions will become even more essential with the introduction of in-
487 work conditionality for Universal Credit claimants, which has raised concerns that more
488 people will be exposed to sanctions, making these findings highly relevant to an increasing
489 number of benefit claimants in the UK (Welfare Conditionality, 2016).

490 Our results also have relevance for the providers of charitable food assistance and the wider
491 problem of food insecurity in the UK. Trussell Trust data likely only capture a proportion of
492 people who experience food insecurity; our results suggest there could be hidden hunger due
493 to sanctioning in places where Trussell Trust food banks are not available. People in these
494 areas may instead seek help from other agencies or non-Trussell Trust food banks, but these
495 numbers are not reflected in Trussell Trust data. Despite known limitations of this measure
496 (Loopstra and Tarasuk, 2015), this is currently the only longitudinal indicator of household
497 food insecurity across areas in the UK. The Poverty and Social Exclusion survey includes an
498 item querying if households can afford to eat two meals a day, and this figure rose from 1%
499 to 3% over 1999 to 2012; however, the long time lag between surveys (with an intermediate
500 time point in 2005) and small-scale nature of the survey means it cannot be used to track

501 changes over time or local areas. Further, the measurement of household food insecurity
502 should involve multi-item scales that capture the chronicity and severity of experiences of
503 household food insecurity since it is often experienced intermittently or cyclically. A recent
504 cross-sectional survey of adults in the UK (Bates et al., 2017) did include the internationally
505 validated USDA Adult Food Security Scale, and found that 8% of adults were moderately or
506 severely food insecure (equating to an estimated 4 million adults). In contrast, Trussell Trust
507 estimated that 500,000 unique adults and children were using their food banks over 2014/15.
508 This discrepancy highlights how important it is for the UK to implement household food
509 insecurity monitoring.

510 Our findings also highlight the limitations of any charitable food support network's ability to
511 eradicate food insecurity. These networks are increasingly relied upon to fill in the gaps in
512 welfare support but, by relying on volunteers and donated food and space to operate, they
513 will vary in their capacity to address hunger in their area (Lambie-Mumford, 2013; Lambie-
514 Mumford, 2016). As such, they are not equipped to address these gaps in every part of the
515 country and are less able to respond quickly to changes in need.

516 These observations point to several directions for future research. The incorporation of
517 household food insecurity and food bank usage monitoring into routine surveys conducted in
518 the UK would enable individual analyses of the causes and consequences of these
519 experiences. There is also a need for harmonised data collection across short-term providers
520 of emergency assistance to enable better identification of where there may be gaps in the
521 provision of emergency support and to enable evaluation of this support on the wider problem
522 of food insecurity. Lastly, food bank usage is one possible harm associated with sanctioning,
523 but other potential outcomes include declines in mental health, debt, and even death
524 (Gentleman, 2014). Longitudinal studies of benefit claimants would enable better

525 understanding of how prevalent sanctioning is and what types of outcomes are associated
526 with this practice.

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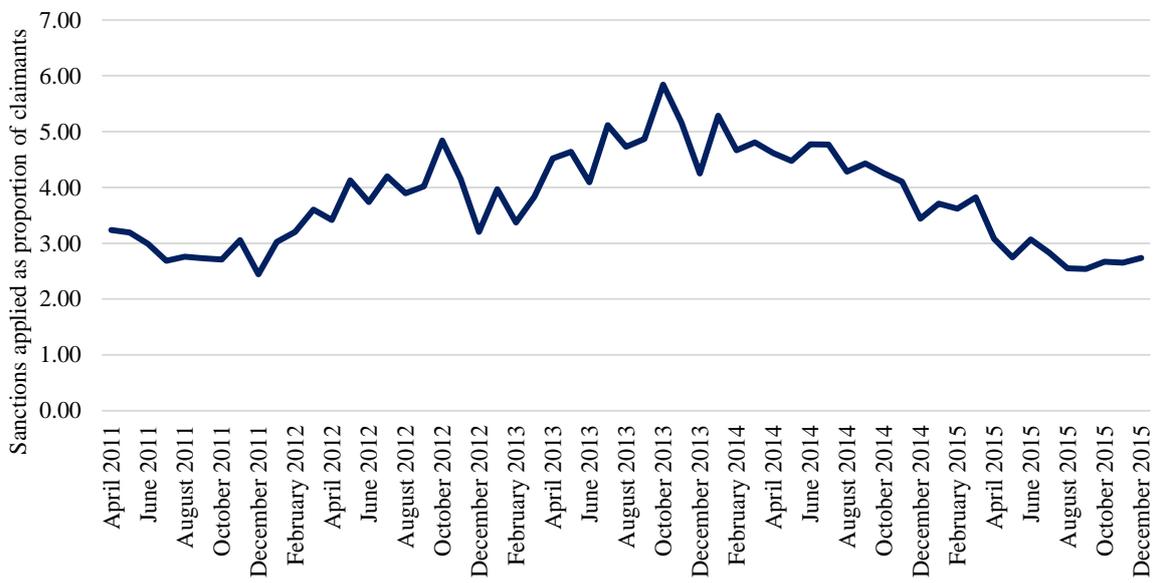
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663 quarter-to-quarter and change in numbers using food banks.

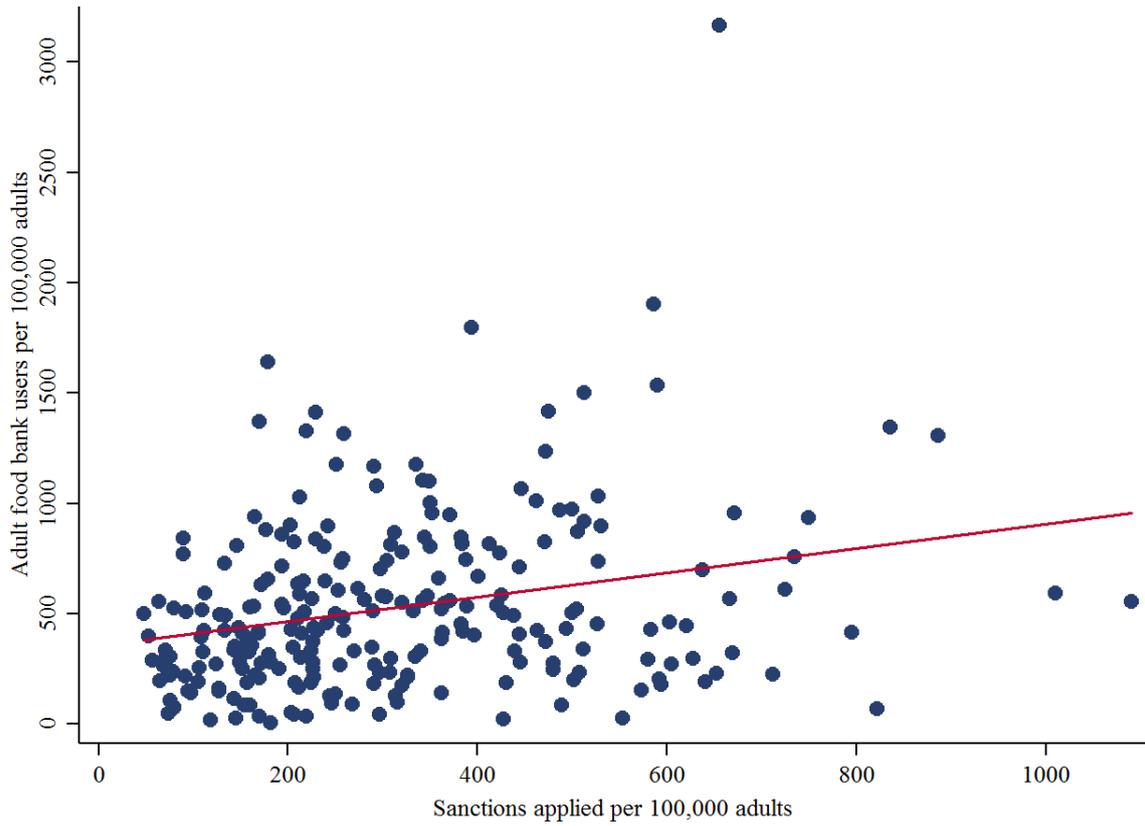
Figure 1 Average monthly rates of sanctioning among Jobseeker’s Allowance claimants sanctioned each quarter over 2011 to 2015.



Notes: Graph shows number of original sanction decisions resulting in a sanction as proportion of number of people claiming Jobseeker’s Allowance in England, Scotland, and Wales. Sources: Stat Xplore and Nomis.

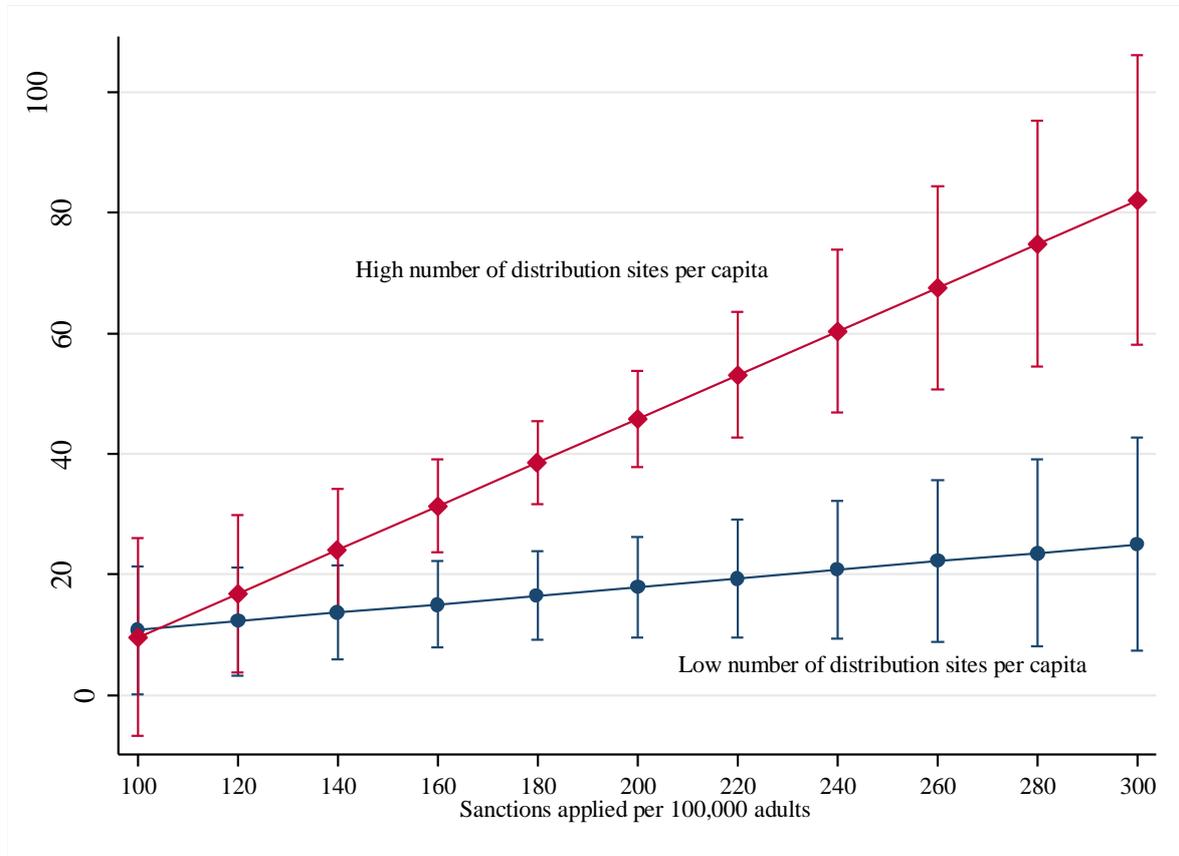
1 Figure 2 Relationship between sanctions applied and numbers of adult food bank users across
2 local authorities with food banks, Jan-Mar 2014.

3



4

5 Figure 3 Relationship between sanctioning and adult food bank usage by concentration of
 6 food bank distribution centres in local authorities.



7

8 *Notes:* Graph illustrates decrease and increase from mean sanction rate of 200 applied per
 9 100,000. High number of distribution sites refers to areas with 5 or more sites per 100,000
 10 and low number of distribution sites refers to areas with <1 site per 100,000 in areas with
 11 food banks present. P value for interaction of change in sanctions with high distribution sites
 12 vs. low = 0.011. For full model see Web Table A3.

13 Table 1 Relationship between sanctions applied and number of adult food bank users in local
 14 authorities with food banks, 2012-2015.

	Adult food bank users each quarter per 100,000 adults		
	(1)	(2)	(3)
Per 10 additional sanctions per 100,000 adults	6.44*** (0.87)	6.35*** (0.87)	3.36*** (0.84)
Per 10 additional JSA claimants per 100,000 adults	-1.81*** (0.20)	-1.73*** (0.20)	-0.76** (0.24)
Distribution sites per 100,000 persons	---	43.9*** (12.5)	33.6** (12.3)
Weekly hours of operation per 100,000 persons	---	-5.22 (3.17)	-4.46 (3.11)
Linear and quadratic time trends	No	No	Yes
Local authority-quarters	3041	3041	3041

15 *Notes:* Robust standard errors in brackets. Models include dummy variable for season,
 16 dummy variable for first quarter a food bank operated, and local authority fixed effects.

17 Constant not shown. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2 Dynamic relationship between the change in number of sanctions applied from quarter-to-quarter and change in numbers using food banks.

	Change in number of adult food bank users from previous quarter	
	(1)	(2)
Per 10 additional sanctions applied from previous quarter	5.20*** (1.12)	---
Per 10 fewer sanctions applied from previous quarter	---	-1.79* (0.73)
Per 10 additional JSA claimants from previous quarter	0.11 (0.28)	-0.038 (0.28)
Per 1 additional distribution site per 100,000 from previous quarter	6.72* (3.28)	6.28 (3.24)
Per 1 additional hour open per week per 100,000 from previous quarter	-0.33 (0.43)	-0.32 (0.44)
Local authority-quarters	2918	2918

Notes: Robust standard errors in brackets. Models include linear and quadratic time trends, and dummy variables for season and first quarter a food bank operated.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$