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Abstract

We examine linkages between the Social Mobility Commission's index and the EU referendum leave vote for 324 English local authorities. We find strong correlation suggesting that those areas with lower social mobility were more likely to have voted leave in the EU referendum. There is also strong correlation between low adult opportunity and higher leave vote. We look at regions separately and discover this is not North. vs South issue as dissatisfaction with the EU exists across England and particularly for the communities that have been left behind by the forces of globalisation.

JEL: C01, D72, J60.

Keywords: social mobility, EU referendum, correlations, cross-section regression.

Introduction

In the European Union (EU) referendum held in the UK on 23rd June 2016 51.9% of the electorate voted to leave the EU and 48.1% to remain. Within the UK the leave result for England was higher at 53.4% and for Wales 52.5% and both Scotland (38% leave vote) and Northern Ireland (44.2% leave vote) voted to remain. The mass of news stories and analysis that followed the result have again drawn attention to the unbalanced nature of the UK economy. Numerous theories have been put forward in the wake of the referendum on why people voted to leave the EU. These range from immigration, austerity, sovereignty, education, demographics to communities feeling left behind by the forces of globalisation. Some communities, with low levels of education and skills, have been left unequipped to deal with the competitive nature of the global economy where the race to the bottom of low wages and insecure work contracts has left many families relying on precarious employment, welfare benefits and food banks.

At the heart of this debate is the fact that we are living in a very unequal society and the referendum has laid bare divisions by income, education, age, geography and class. The Government's Social Mobility Commission (2016b) has shown that children born in Margaret Thatcher's 1980s Britain are the first post-war cohort to start their working lives on lower incomes than their immediate predecessors. Social mobility has stalled for an entire generation.

In this paper we investigate if varying patterns of social mobility across England are related to the way people voted in the EU referendum. We correlate the leave share of the vote for 324 English local authorities[1] with the Social Mobility Commission (2016a) indices which measure the overall life chances and then those for early years, school age children, youth and adult stages of life. In the next section we review the literature on the EU referendum results and surrounding debate. In section 3 we describe the Social Mobility Commission's index and compare these to the regional Brexit voting patterns in England. In section 4 we present the correlation and regression analysis for English local authorities between the Brexit vote and social mobility characteristics contained in the index. In section 5 we conclude. To preview our results we find a significant relationship between the overall social mobility index and the EU referendum leave vote for English local authorities, indicating that places with higher leave votes have lower social mobility.

The Brexit Vote, Inequalities and Social Mobility

The political turmoil that has followed the EU Referendum result has been unprecedented with a change of Prime Minister and cabinet, a leadership challenge in the Labour party and Theresa May calling for a General Election on 8th June, less than one year after the Brexit vote. The Ashcroft (2016) poll suggested a class divide in the vote with 57% of the professional class (social grade AB) voting to remain in the EU, 51% of social grade C1 (supervisory, clerical and admin) and 64% of the working classes (social grades C2 and DE) voting to leave[2]. For further discussion of class and inequalities see Devine and Sensier (2017).

Ashcroft (2016) also reported an age divide with 73% of 18 to 24 year olds voting to remain and 60% of those aged 65 or over voting to leave. For the geographical divide we present the share of the vote for those who voted to leave the EU by English regions in Table 1 along with the local authority with the highest leave vote in each region. The only English region that voted to remain in the EU was London which has been highlighted by the Social Mobility Commission (2016a) as pulling away from the rest of the county in terms of opportunity.

Table 1: EU Referendum vote by English region

Region	Leave	Remain	Highest Leave vote LA	Leave LAs
North East	58%	42%	Hartlepool (69.6%)	11/12
North West	53.7%	46.3%	Blackpool (67.5%)	32/39
Yorkshire & Humber	57.7%	42.3%	NE Lincolnshire (69.9%)	18/21
East Midlands	58.8%	41.2%	Boston (75.6%)	38/40
West Midlands	59.3%	40.7%	Stoke-on-Trent (69.4%)	29/30
East of England	56.5%	43.5%	Castle Point (72.7%)	42/47
London	40.1%	59.9%	Havering (69.7%)	5/32
South East	51.8%	48.2%	Gravesham (65.4%)	43/67
South West	52.6%	47.4%	Torbay (63.2%)	28/36

Note: Data from BBC web-site. Last column is leave LAs out of total in each region, the total for England is 246/324.

A number of empirical studies test indicators that relate to the Leave vote. Goodwin and Heath (2016a) estimate a multivariate regression with the share of the leave vote for 380 local authorities in England, Wales and Scotland as their dependent

variable and 2011 Census data for explanatory variables along with voting patterns in the 2014 EU elections. Goodwin and Heath (2016a) find a significant relationship of places with a higher share of older people (aged 65+), people with no qualifications and people who voted for UKIP in 2014 (see also Ford and Goodwin, 2014) and the leave vote in the EU referendum. They also include the percentage of EU migration to an area but find it is the change of EU migration over a decade that is more related to the leave vote. In a further study Goodwin and Heath (2016b) utilise British Election survey data for individuals and use logistic regression to identify factors that were associated with people voting to leave. They find that white people on a lower income, older and lower educated were more likely to have voted to leave. When they include Census data by Parliamentary Constituency they find a much greater polarisation of the leave vote along education lines. In their model they interact people with University degrees and the education profile for an area and estimate predicted support for leave by categorising "high skilled areas", where more than 60% of the population have a degree (they assume greater opportunities exist in these places), were the most likely to have voted remain. "Lower skilled areas" (where less than 10% of the population have a degree) were far more likely to have voted leave BUT more educated people within those localities were more likely to have voted leave due to the lack of opportunities that exist. Becker, et al (2016) analyse the Brexit results at the district and ward level for Great Britain using a search algorithm for the best possible combination of variables from regressions, by minimising the Akaike information criteria and excluding highly correlated regressors. They find the strongest predictors of the leave vote to be the share of older voters (aged 60+) and the places with a greater share of people with few or no qualifications, along with areas that have had a strong tradition of manufacturing employment, low pay and high unemployment. They also find that areas that had the most fiscal consolidation (austerity) and lower quality NHS provision were more likely to have voted leave.

To shed light on the extent of inequalities that exist within our society you need to go back to 1970s Britain (see Piketty, 2015).. In the mid-1970s Britain reached its most equal state ever in income (see page 11 of Jenkins, 2015) after decades of steady social progress and progressive taxation. But the Thatcher revolution of the 1980s started financial deregulation (see Tanndal and Waldenström, 2016), cut top taxes and curbed trade union power[3]. This allowed the pay of the working classes to fall and growth of top earnings to rise. Nationally real average weekly earnings are still £20 below the pre-recession peak level of £490 in 2008[4]. Bell

and Machin (2016) compare the real median weekly wage in 380 British local authorities and find 62 places have actually seen falls in the real wage between 1997 and 2015. The UK economy in the early 1980s was in recession and faced a double whammy of high exchange rates (driven by North Sea Oil revenues) and high interest rates. But as Coyle (2016a) points out it was automation and technological change that caused so many mills and factories to close. As older machines became obsolete little effort was made to replace infrastructure and redeploy the thousands of workers who lost manufacturing jobs. Shafique (2016) discusses the link between the high leave vote and places left behind by the competitive forces of globalisation where traditional manufacturing workers lost their jobs and areas went from full employment in 1960s to mass worklessness by 1980s. Beatty and Fothergill (2016) report that 6.5 million jobs have been lost in manufacturing and coal mining since the 1960s and generations of these left behind communities have had to rely on low paid work and welfare benefits which account for over half of the Government's budget deficit. They describe the "hidden unemployed" as those people on incapacity benefits (around 2.5 million) that are not counted in the unemployment figures. Beatty and Fothergill (2016, page 19) list 20 former industrial local authorities for England and from this list only Liverpool voted to remain in the EU. Los, et al (2017) find that the UK regions that voted strongly for leave tended also to be those same regions with greatest levels of dependency on European Union markets for their local economic development.

What these studies show us is that place is very important and is the main influence on equality of opportunity and social mobility. The Great British Class survey, (Savage et al., 2015), found a powerful spatial dimension to these inequalities with an elite and high professional and managerial middle classes concentrated in London, as a global city, and the South East. Savage and Cunningham (2016) find that high levels of social capital are highly correlated with the Brexit remain vote along with economic and cultural capital, these are again strongest in London.

The Geography of Social Mobility and the Brexit Vote

The Social Mobility Commission (SMC) remit is to monitor the progress of the Government on social mobility. In January 2016 SMC produced a social mobility index which compares the life chances of a child from disadvantaged backgrounds for the 324 local authorities of England with most data for 2014[5]. The index compiles indicators to measure stages of life chances in education at early years, school, youth

and then adulthood chances in terms of job opportunities and the housing market. The index analyses short-term social mobility with education, medium-term with youth indicators and long-term with adult measures. The four components of the index are given equal weight and combined to form an overall index of social mobility. The index focuses on the upward social mobility of disadvantaged children who are eligible for free school meals (FSM) and this covers between 9-30% of children in each local authority. Most indicators are for where people are resident but some education measures are for school location. There is likely to be migration between different areas where there are selective schools and in post-16 education. The living wage indicator is based on job location in the local authority.

The report ranks the authorities from 1st best for social mobility down to 324. It refers to the top 20% of local authorities as "social mobility hot-spots" with the highest overall being Westminster in London. At the other end of the range the lowest 20% are referred to as "socially mobility cold-spots" with West Somerset in the South West being the least mobile authority. 12 of these areas listed as cold spots have been earmarked to receive Government funding for additional education support that will create a research school in each of the "opportunity areas" (these include Blackpool, Derby, Norwich, Oldham, Scarborough, West Somerset, Bradford, Doncaster, Fenland & East Cambridgeshire, Hastings, Ipswich and Stoke-on-Trent)[6].

Cities in the SMC indicators like Manchester (rank 144 overall), Newcastle (128) and Birmingham (160) only do as well as the average but some, like Nottingham (310), Derby (303) and Norwich (323) do much worse than average. Also the performance of the wider conurbations is poor against the city centres in Manchester and Birmingham. Larger cities mainly voted to remain in the EU including Manchester, Liverpool, Newcastle, York, Norwich and Leeds. Those with just over 50% of the electorate voting to leave the EU included Birmingham, Nottingham and Sheffield. Coastal areas and former industrial heartlands are also on the list of social mobility cold-spots. These include former industrial or coal-mining towns (Mansfield, Corby and Barnsley) or places that are seaside resorts (Blackpool, Scarborough). These places were more inclined to vote to leave the EU as noted by Shafique (2016).

We compare the leave vote with the overall rank of the SMC's index in Table 2 noting the top 10 English local authorities in the index along with the lowest ranking including the Government's opportunity areas. From Table 2 we see that of the top 10 places with highest social mobility all are in London and they voted to remain in the

EU at the referendum. From the local authorities listed as social mobility hot spots 38% (25/65) of places voted to leave. In the list of 65 least socially mobile places 62 of these voted to leave the EU, or 95%. The lowest ranking authorities are from six different English regions but all (apart from Norwich) voted to leave the EU.

Table 2: Rankings from the Overall Social Mobility Index with the Brexit vote

Rank. Local Authority Top 10 Social Mobility Index:	**Region**	**Leave Rank**	**Leave**	**Remain**
1. Westminster	London	312	31.03%	68.97%
2. Wandsworth	London	320	24.97%	75.03%
3. Redbridge	London	272	46.03%	53.97%
4. Tower Hamlets	London	309	32.54%	67.46%
5. Islington	London	321	24.78%	75.22%
6. Hackney	London	323	21.52%	78.48%
7. Kensington and Chelsea	London	311	31.31%	68.69%
8. Ealing	London	303	39.6%	60.4%
9. Barnet	London	306	37.77%	62.23%
10. Hammersmith and Fulham	London	315	29.98%	70.02%
SMI lowest (including Opportunity Areas - OA:				
277. Bradford (OA)	Yorkshire and The Humber	184	54.23%	45.77%
282. Hastings (OA)	South East	170	54.88%	45.12%
292. Ipswich (OA)	East of England	125	58.26%	41.74%
294. Oldham (OA)	North West	87	60.86%	39.14%
298. Stoke-on-Trent (OA)	West Midlands	15	69.36%	30.64%
301. Doncaster (OA)	Yorkshire &H	16	68.96%	31.04%
303. Derby (OA)	East Midlands	139	57.22%	42.78%
311. East Cambridgeshire (OA)	East of England	231	50.92%	49.08%
312. Scarborough (OA)	Yorkshire &H	75	61.99%	38.01%
315. Tameside	North West	82	61.14%	38.86%
316. Blackpool (OA)	North West	27	67.46%	32.54%
317. Mansfield	East Midlands	7	70.86%	29.14%
318. Waveney	East of England	59	62.9%	37.1%
319. Fenland (OA)	East of England	6	71.39%	28.61%
320. Wellingborough	East Midlands	67	62.42%	37.58%
321. Corby	East Midlands	44	64.25%	35.75%
322. Wychavon	West Midlands	132	57.86%	42.14%
323. Norwich (OA)	East of England	286	43.76%	56.24%
324. West Somerset (OA)	South West	92	60.59%	39.41%

Note: SMI rank is the for the overall social mobility index.

In the Appendix Table A.1 lists the top 10 authorities with the highest leave vote and bottom 10 with the highest remain vote along with the rank of places in the overall social mobility index. We see that the top 10 leave vote is dominated by authorities in the East Midlands and the East of England with 6 coastal regions. At the

other end London boroughs dominate the highest remain votes, along with Oxford and Cambridge both with large student populations and low leave votes. The SMC (2016a) report suggests Oxford and Cambridge are producing poor education outcomes for their disadvantaged children but have better adult outcomes.

We list the local authorities in the top and bottom 10 from the early year's index ranking in Table A.2 along with the proportions for the two indicators listed above and the share of the leave vote from the EU referendum. According to the SMC ranking the best place for early year's education is South Holland in the East Midlands, which had 89.2% of nurseries rated good or outstanding by Ofsted and 63.2% of children on FSM achieving a good level of development at the end of Early Years Foundation Stage (EYFS). South Holland had the second highest leave vote at 73.6%. At the other end of the spectrum Bury in the North West was ranked the worse performing early year's authority with 67.8% of nurseries rated good or outstanding by Ofsted and 39.7% of children on FSM achieving a good level of development at EYFS. In Table A.2 we also list the overall social mobility index rank for authorities and from this we can see that some authorities that perform poorly overall, like the Isle of Wight at rank 220 is 8th in the early years index as it has very good nursery provision and 47% of children on FSM get a good level of development at the end of EYFS. We see that for both the top and bottom 10 authorities in this Table 3/10 places voted to leave so no definite link is emerging from the extremes. Oldham, 4th from the bottom EYFS, was named as the most deprived town in England by the Office of National statistics, Prothero (2016), as it had more than 60% of its local areas in the most 20% deprived areas based on the index of deprivation, its share of the leave vote was 61%.

Table A.3 sets out the highest and lowest ranking ten authorities in the school index with London boroughs dominating the top of this index apart from Rushcliffe in the East Midlands third in the ranking (rated 44th in the overall index). At the bottom end are two authorities in the East of England with Waveney (rated 318th in the overall index) having a higher proportion of children on FSM at 61.4% of primary schools rated good or outstanding by Ofsted with similarly good Key stage 2 results at 52.6% but a much lower share of FSM children attending good secondary schools (31.5%) and achieving 5 good GCSEs at 16.2%. The contrast here is stark with the top 10 rated areas for school all voting to remain in the EU and the bottom 10 all voting to leave.

The SMC report suggests that the youth stage is a key point in young people's lives where they make decisions that will impact on their future work prospects. Table A.4 presents the highest and lowest ranking ten authorities in the youth index with all the top 10 made up of London boroughs. The good performance of London schools was probably helped by the Labour government's education initiatives (National Strategies) as noted in Greaves, et al (2014) who found that when they control for prior attainment, the gap between London and the rest of the country narrows. They suggest that the roots of the improvement lie with primary schools but that this takes a long time to become visible in national results. The lowest 3 ranking authorities are also shown of Stoke, North East Lincolnshire and Eastleigh. The highest proportion of those on FSM who are not in education, employment or training (NEET) after 1 year is in Southend-on-sea with 33% (58% voted to leave), followed by Bournemouth (55% leave) and Knowsley (52% leave) at 28% and Nottingham (51% leave) at 27%. All the local authorities in the top 10 of the youth index voted to remain in the EU and in the bottom 10 only Cambridge, voted to remain (26% leave).

The adulthood SMC index contains indicators that aim to capture how good education outcomes can be converted into good outcomes as an adult. Table A.5 reproduces the SMC's highest and lowest ranking ten authorities in the adulthood index with St. Albans (37.3% leave vote) at the top followed by Rushcliffe (42.5% leave vote) and Hart (47.6% leave vote). At the other end are two authorities in the South West (both with just over 60% of the authority voting to leave). Places dominated with skilled workers in industry and good rates of pay figure highly in the index – for example the only authority in the North West in the top 20 is Copeland in Cumbria (16th in the adult index and 75th overall) with the nuclear industry at Sellafield helping with the higher than average weekly wage of £503 and only 11.2% of jobs paid less than the living wage, but although this was higher up in the index the vote to leave here was 70%.

Correlation and Regression Analysis

In this section we analyse the correlations of the leave vote with all the SMC indicators and then present regression results. The averages of the indicators are shown in the appendix Table A.6 for all local authorities and we then analyse 3 sets of geographical grouping as follows:

1. Coastal local authorities vs. inland authorities.
2. Cities[7] vs. towns (excluding London).

3. Each Government Office region individually (see Table A.7).

In the lower part of Table A.6 we show the indicators means from the adult social mobility index broken down into the authorities that voted to leave and those that voted to remain.

Table 3: Correlations of SMC index the EU Referendum Leave vote

Sample:	**Full**	**Full**		**Full less London**	
	All	**Coastal**	**Inland**	**Cities**	**Towns**
Overall SMI	-0.51**	-0.27**	-0.56**	-0.18	-0.48**
Life Stage index or component:					
Early Years index	-0.04	-0.001	-0.14**	-0.13	-0.002
Good Nurseries	0.003	-0.03	-0.05	-0.04	-0.15**
Good EYFS	-0.06	0.10	-0.14**	0.18	0.16**
School index	-0.42**	-0.22**	-0.47**	-0.05	-0.34**
Good Primaries	-0.27**	-0.12	-0.33**	-0.04	-0.23**
Good Secondaries	-0.33**	-0.20*	-0.36**	-0.07	-0.31**
Key stage 2 prog.	-0.30**	0.06	-0.35**	0.13	-0.01
5 GCSEs A*-C	-0.47**	-0.04	-0.52**	-0.08	-0.23**
Youth index	-0.38**	-0.12	-0.42**	-0.17	-0.28**
NEET	0.30**	0.10	0.33**	0.03	-0.03
Points Level 3	-0.12**	0.02	-0.14**	0.10	-0.15**
A levels	-0.53**	-0.16	-0.55**	-0.24*	-0.27**
Going to HE	-0.54**	-0.18	-0.55**	-0.08	-0.16**
Selective Unis.	-0.53**	-0.08	-0.55**	-0.33**	-0.36**
Adulthood index	-0.38**	-0.42**	-0.33**	-0.42**	-0.58**
Median salary	-0.60**	-0.23**	-0.62**	-0.49**	-0.51**
Av. house price/salary	-0.62**	-0.37**	-0.66**	-0.62**	-0.52**
Prof. Occupation	-0.68**	-0.55**	-0.68**	-0.82**	-0.65**
Living wage	0.41**	0.42**	0.38**	0.42**	0.47**
Home Ownership	0.34**	-0.14	0.42**	0.10	-0.35**
N	324	79	245	49	243

Note: Significance level of 5% is ** and 10% is *.

We perform secondary data analysis on the cross-sectional series by correlating the EU referendum leave vote with the social mobility indices by local authority area. The EU referendum share of the vote for English local authorities is ranked from the highest leave share (1= Boston, with 75.6% voting to leave) to the lowest (324= Lambeth with 21.4% voting to leave)[8]. The rank of the social mobility index is then correlated with the rank of the leave vote for all local authorities to see if there is any association between improved life chances and a greater desire to leave in the European Union.

Table 3 presents the Spearman rank correlation coefficients for the SMC indices with the association for the indices between the highest rank of social mobility index and the highest rank of the leave vote. In the first column of results for the whole of England the correlation between the leave vote and the overall social mobility index is significant at -0.5 suggesting that those areas with less social mobility were more likely to vote leave in the EU referendum. For the components of the index there is very low correlation between the early year's index and the leave vote which is not significant. The highest ranking local authority in the early year's index is South Holland in the East Midlands which had the second highest leave vote at 73.6%. The social mobility indices for school, youth and adult life chances do have negative and significant correlations with the areas that voted leave suggesting a lack of life chances are playing a role. We also analysed all the 16 component indicators and correlate these with the percentage who voted to leave the EU of the indicators and have included the correlations in Table 3 using pairwise product moment correlation coefficients.

The correlation with the leave rank and the school index is negative and significant at -0.42 and the highest correlation of the indicators within the school index is having a larger proportion of children on FSM obtaining good GCSE results at -0.47 (here there is a big contrast between results in leave areas of 38% getting 5 GCSEs compared to 47% in remain areas). Having good or outstanding primary and secondary schools (as rated by Ofsted) is also significant and negatively correlated with the leave percentage along with good progress at key stage 2 for children on FSM. Previous work (Snee and Devine, 2014) found that better education outcomes help with social mobility and the evidence of significant association here supports this literature.

The youth index and leave rank are negatively correlated at -0.38. Within this index the significant positive correlation between the leave vote percentage and the proportion of children on FSM who are not in education, employment, or training (NEET) one year after finishing Key Stage 4 means places with a higher proportion of NEETs had a greater share of the leave vote. Areas with a greater proportion of children on FSM that achieved 2 good A'levels, went on to higher education or selective universities all correlate negatively with the leave vote.

The correlation with the leave rank and the adulthood index is negative and significant at -0.38. Here we find the highest negative association is between those who voted to leave and the percentage of people in management and professional

occupations in an area at -0.68, the highest share of managers and professionals is found in Rushcliffe at 52.2% with 57.6% voting to remain in this authority. Also where the median salary is higher and the housing affordability index is higher we have a higher absolute correlation with the leave vote. The areas with a greater share of people paid less than the living wage has a positive correlation with those that voted to remain the EU at 0.41 this suggests that greater disadvantage is contributing to people's dissatisfaction of the EU, or the political elite as suggested by Goodwin and Heath (2016a). There is a positive correlation between the leave vote and the share of people with children who own their homes at 0.34, this is backed up by the averages in Table A.6 which showed a greater share of home ownership in the authorities that voted to leave (64% to 57% in remain areas).

As the SMC index report states that coastal regions have less advantage we compare coastal vs. inland authorities in our analysis which are shown in columns 3 and 4 of the results in Table 3. The overall index is still significantly correlated with the leave vote but much lower at -0.27 for coastal authorities compared to -0.56 for inland authorities. By removing the coastal authorities the early year's index becomes significant along with the indicator for good levels of development at EYFS, both are negatively correlated with the leave vote at -0.14. The school and youth indices and components have low correlation for the coastal regions but are much stronger for the inland authorities. The Future Leaders Trust (2015) investigates why coastal schools are failing and suggests that industrial decline in these areas is part of the problem. The adulthood index is stronger for the coastal authorities at -0.42 than inland regions at -0.33, showing greater correlation between less adult opportunity and the leave vote. Overall the component indicators have lower correlation coefficients for the coastal authorities but the proportion of people earning less than the living wage is stronger and positively correlated to the leave vote, here Table A.6 shows that 27% of the working population were paid less than the living wage in the coastal areas that voted to leave. Generally coastal authorities have a greater share of people employed in seasonal occupations on lower wages, the average weekly median salary for the coastal authorities is £393.81 and for inland is £434.47.

As the SMC reports that cities generally rank higher in the social mobility index where suburban regions have less advantage we compare cities vs. towns but exclude London authorities from our analysis, the results of this are shown in columns 5 and 6 in Table 3. For cities we find the overall social mobility index still has a negative correlation with the leave vote but it is not significant, in fact only 2

components of the youth index are significant and negatively associated with the leave vote BUT the adult index and the components are all significant and within this strong negative correlation exists between median salary, house price/salary and the average share of professional occupations which is highly correlated at -0.82 with the leave vote. This is evidence of greater inequality of opportunity, as cities with the highest leave vote Stoke (69%) and Hull (68%) both have low share of managers and professionals at 19% to the other extreme of the lowest leave vote Cambridge (26%) and Oxford (30%) with 46% and 52% managers and professionals respectively. The towns do have a significant negative association between the leave vote and the overall social mobility index at -0.48. The correlations for schools and youth indices and components are significant but are lower than the inland sub-grouping with the London effect removed. The adulthood index is strongly negatively correlated (-0.58) with the leave vote for towns showing the greatest dissatisfaction about the EU coming from places with less adult opportunities, here there are strong negative correlations for median salary, house prices, professional occupations with the leave vote. There is high positive correlation of the leave vote with the proportion of people being paid the living wage, with the average being higher in towns at 25% than in cities at 22%. The average home ownership of families with children in cities is 58% and 65% in towns (and greater for the remain voting towns).

In Table A.8 we compare the Government Office Regions (GORs) of England separately to see if there are any regional differences. We find that the highest correlation with the leave vote and the overall social mobility index is for London at -0.56, followed by the North East at -0.55. The North West and the East Midlands do not have significant correlation between the leave vote and the overall index though they are negative. Some places that ranked higher in the social mobility index for the North West like Fylde (22nd) voted to leave with a 57% share, or Ribble Valley (52nd) voted to leave with 56.4% while places further down the index voted to remain like Manchester (144th) with a 39.6% leave vote and in the East Midlands Leicester (249th) had a 48.9% leave vote.

The correlation of the leave vote and early year's index is significant for the South East at 0.46 followed by East Midlands at 0.32, both of these correlations are positive so better early year's provision correlates with a higher leave vote in these regions. The nursery component is negatively correlated for the East of England suggesting better nurseries are found in places with a lower leave vote, but this is positive for the East Midlands and the South East, so here places with better nursery

provision were more likely to have voted to leave the EU. The good EYFS rating for children on FSM is positively correlated with the leave vote in the East of England, South East and East Midlands.

The school index is negative and strongly correlated with the leave vote for the West Midlands, London and the South West. Within this good primary and secondary schools ratings for proportion of children on FSM meals drives the result in the West Midlands with London having the highest negative correlation with the leave vote and GCSE results. The North East has a high negative correlation between the leave vote and good primaries at -0.55 and also had the highest average in Table A.7, but the SMC report suggests these are not being translated into better opportunities later on. The SMC report also states that many authorities in the East of England are low in the social mobility ranking and it has some of lowest scoring secondary schools and GCSE results for children on FSM and also has some of the highest leave votes with Waveney at 62.9% and Fenland at 71.4%.

The correlation between the rank of the leave vote and the youth index is negative and significant at -0.53 for Yorkshire and Humberside. London has a high negative correlation between the leave vote and those on FSM achieving 2 or more good A' Levels.

In Table A.8 the correlation between the leave vote and the adulthood index is negative and highest for the South East at -0.67, it is also high in the West Midlands, North East, South West and East of England, but not significant for London. Within this index the correlation for the leave vote and median salary is highest for London, followed by the South East (see also Figure A.1). The average house price to salary ratio is highly negatively correlated to the leave vote in Yorkshire and Humberside, here areas with high house price to salary ratio (like Harrogate) voted to remain (see Figure A.2). This is also high in the West Midlands, London, East of England and the South East. The highest correlation of the leave vote to the share of professionals and managers in an area is for West Midlands where the only authority that voted to remain, Warwick has a high share of managers and professionals at 43%. This is also high in London and the South East but is strong for all regions, see Figure A.3. The highest positive correlation of the leave vote with those earning under the living wage is for the North East followed by the West Midlands (see Figure A.4). Home ownership is positively correlated with the leave vote in London suggesting that areas with a higher proportion of families with children owning their own home were more likely to have voted leave (the 5 authorities that voted leave in London had an average

of 59% of families with children owning their own homes, the authorities that voted to remain in London had a lower average home ownership of 42%), see Figure A.5. The inequality of opportunity is more extreme in London where the 5 authorities that voted to leave had lower median salaries (£487) on average than those that voted to remain (£535), lower house price to salary ratio (10 vs. 15), lower shares of managers and professionals (28% vs. 37%) and higher shares of people earning less than the living wage (27% vs. 24%). As Friedman and Macmillan (2017) discover when they analyse intergenerational mobility in Great Britain, London has the lowest absolute upward mobility and the highest rate of downward mobility. Although the SMC report says that London is pulling ahead there are still authorities that are struggling in the capital.

Table 4: Multivariate Regressions for the EU Referendum Leave vote

Regions:	**All**	**10% inc. Leave change**	**Excluding London**	**10% inc. Leave change**
Good EYFS	0.098**	1.0%	0.138***	1.4%
Good Primaries	-0.067**	-0.7%	-0.05**	-0.5%
Going to HE	-0.146*	-1.5%	-0.119	-1.2%
Log(Median salary)	-10.5***	-1.1%	-11.1**	-1.2%
Log(Av. HP/salary)	-8.64***	-0.9%	-10.24***	-1.0%
Prof. Occupation	-0.561***	-5.6%	-0.522***	-5.2%
Living wage	0.144**	1.4%	0.191***	1.9%
Home Ownership	0.288***	2.9%	0.271***	2.7%
Coastal	1.87**		1.55*	
North West	-3.27**		-3.55**	
Yorkshire & Humber	-1.42		-1.33	
East Midlands	0.53		0.59	
West Midlands	3.45**		3.57**	
Eastern Region	3.35*		3.81**	
London	3.07		-	
South East	1.89		2.76	
South West	-0.21		0.29	
Constant	135.1***		136.58***	
R^2	0.75		0.64	
Mean VIF	3.74		3.19	
RESET test	0.00		0.37	
BP Hetero. test	0.00		0.03	
N	324		292	

Note: Coefficient significance is * for 10%, ** for 5% and *** for 1% with robust standard errors.

We estimate cross-section ordinary least squares (OLS) with the percentage of the leave vote as the dependent variable and SMC indicators as explanatory variables.

We take the natural log of the median salary and average house price to salary ratio so these variables can then be interpreted as percentages within the regression. We perform a general to specific search for the best set of variables to describe the leave vote, variables are eliminated one by one until all remaining variables are significant. We also include dummy variables for coastal local authorities and for GORs (excluding the North East). We calculate the effect a 10% increase in the indicator variable on the leave vote, keeping all other variables fixed. This is noted in columns 3 and 5 of Table 4. We perform diagnostic tests on each model to check the residuals. The tests are for functional form (Ramsey's RESET test), heteroscedasticity (Breush-Pagan test) and for stability of parameters (Mean VIF- variance inflation factor, ideally getting an average less than 4). The diagnostic tests from these models signal that there is a problem with the functional form and heteroscedasticity for the model in column 2. As London voted to remain the lowest shares of the vote is found here (skewing the distribution), so we exclude London in column 4 of Table 4 and estimate the models again. This model passes the RESET test but there is still some evidence of heteroscedasticity, so we present robust standard errors.

To interpret our results a 10% increase in good early year's provision suggests (keeping all other variables fixed) that this would increase the Leave vote by 1%, and excluding London this increases to 1.4%. Good primary schools and going to higher education reduce the leave vote and this is stronger for the whole of England. Increasing the median salary or average house price to salary ratio by 10% predicts the leave vote will be about 1% lower, excluding London this increases. The greatest effect comes through with a 10% increase in professional occupations which would reduce the leave vote by 5.6% (slightly lower at 5.2% excluding London). For a 10% increase in the share of people earning less than the living wage the leave vote is predicted to increase by 1.4% for England, but excluding London this increases to 1.9% (as higher shares of workers earn less than the living wage outside of London and the South East). A 10% increase in home ownership (for families with children) gives a predicted leave vote increase of 2.9%, but excluding London this is 2.7%. The coastal dummy and those for the West Midlands and the Eastern Region are positively related to the leave vote with the North West negatively related. The message coming through from our regression results, focusing on the variables that reduce the leave vote, is that greater improvements in education (primary schools, higher education) could contribute to improvement in skills so people could earn more than the living wage and increase their median salary and life chances.

Conclusions

We have found that lower levels of social mobility, as measured by the Social Mobility Commission's index, is correlated with higher leave votes in the EU referendum across England.

Analysing the averages of the adult indicators we find that in areas that voted to remain in the EU: 1) the median salary is generally higher (the only region where this is not the case is the North East where only Newcastle voted to remain); 2) the ratio of average house price to salary is higher; 3) the share of professionals and managers is higher; 4) the share of people earning less than the living wage is lower. This is the inequality of opportunity described by Goodwin and Heath (2016b).

What we find by analysing different geographical groupings is that where we have high correlations we have much greater extremes in the data with inequality of opportunity, particularly in London (see also Friedman and Macmillan, 2017). This is not a North vs. South story as much dissatisfaction exists with the EU across England.

Our analysis points to more interventions needed at every life stage. Early year's education is important but the effects are difficult to see long term. The Teach First scheme that began in London in 2002[9] and which offered high-calibre graduates intensive teaching and management training and then sent them to schools in poor areas has seemed to have helped London pull away from the rest of the country in terms of results for disadvantaged children. Skills development needs to be targeted not just for young people but older workers to provide retraining. Investment in the underlying drivers of growth is critical, these include: innovation, industrial strengths and clusters, trade, skilled labour, and the systems that support them[10] (high quality apprenticeships, living wage). New job opportunities are vital and the role the state can play in facilitating job growth, particularly good jobs with career prospects across the private and public sector. Economic inclusion is very important for political inclusion. Allowing councils to have more control of their skills and training budgets locally like Greater Manchester with its devolution deal to target the skills needed for local businesses. Creating better opportunity by implementing policies promised with the Northern Powerhouse, including greater spending on transport infrastructure (see also Coyle, 2016b, on creating a post-Brexit multi-engine economy). Furthermore councils need to prioritise the location of jobs/ new businesses in areas that have not seen any improvements since large manufacturing sector jobs losses of the 1980s so communities no longer feel left behind.

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Endnotes

[1] Data on EU vote is accessed from the Electoral Commission web-site at: http://www.electoralcommission.org.uk/find-information-by-subject/elections-and-referendums/upcoming-elections-and-referendums/eu-referendum/electorate-and-count-information

[2] As pointed out by Danny Dorling (2016) the largest population share of the leave vote actually came from the middle classes and those living in the South of England using the Ashcroft Poll estimates.

[3] See the Guardian article by Polly Toynbee on 17/11/16: https://www.theguardian.com/commentisfree/2016/nov/17/brexit-trump-despair-equality-further-than-ever

[4] Media release from Torsten Bell, Resolution Foundation on 24/6/16 at: http://resolutionfoundation.org/media/blog/the-referendum-living-standards-and-inequality/

[5] The City of London and the Isles of Scilly were excluded from the SMC index as there is not enough data for these areas.

[6] The announcement is here: https://www.gov.uk/government/news/education-secretary-announces-6-new-opportunity-areas

[7] The 49 cities in England (excluding City of London and City of Westminster) are listed by Wikipedia at: https://en.wikipedia.org/wiki/List_of_cities_in_the_United_Kingdom

[8] Using the rank of the remain index results in the same correlation coefficient but with the opposite sign.

[9] See https://www.teachfirst.org.uk/what-we-do/our-impact

[10] These areas are included in the 10 pillars of the Government's Industrial Strategy green paper, see: https://www.gov.uk/government/news/developing-a-modern-industrial-strategy

Appendix for "Social Mobility and Brexit: A Closer Look at England's 'Left Behind' Communities", Sensier and Devine (2017).

Table A.1: Rankings from EU Referendum Vote

Rank. Local Authority **Top Ten Leave vote:**	**Region**	**SMI Rank**	**Leave**	**Remain**
1. Boston	East Midlands	147	75.56%	24.44%
2. South Holland	East Midlands	61	73.59%	26.41%
3. Castle Point	East of England	136	72.7%	27.3%
4. Thurrock	East of England	235	72.28%	27.72%
5. Great Yarmouth	East of England	297	71.5%	28.5%
6. Fenland	East of England	319	71.39%	28.61%
7. Mansfield	East Midlands	317	70.86%	29.14%
8. Bolsover	East Midlands	274	70.83%	29.17%
9. East Lindsey	East Midlands	217	70.65%	29.35%
10. North East Lincolnshire	Yorkshire and The Humber	288	69.87%	30.13%
Bottom Ten:				
315. Hammersmith and Fulham	London	10	29.98%	70.02%
316. Oxford	South East	264	29.73%	70.27%
317. Southwark	London	11	27.19%	72.81%
318. Cambridge	East of England	275	26.15%	73.85%
319. Camden	London	19	25.06%	74.94%
320. Wandsworth	London	2	24.97%	75.03%
321. Islington	London	5	24.78%	75.22%
322. Haringey	London	32	24.43%	75.57%
323. Hackney	London	6	21.52%	78.48%
324. Lambeth	London	21	21.38%	78.62%

Note: SMI rank is the for the overall social mobility index.

Table A.2: Rankings from Early Years Indicators

Rank. Local Authority Top Ten:	**Region**	**1**	**2**	**Leave vote**
1. South Holland (61)	East Midlands	89.2%	63.2%	73.6%
2. Torbay (129)	South West	100.0%	48.0%	63.2%
3. South Hams (40)	South West	89.1%	61.5%	47.1%
4. North Kesteven (59)	East Midlands	89.2%	59.1%	62.3%
5. Tonbridge and Malling (43)	South East	89.9%	58.0%	55.7%
6. Shepway (120)	South East	89.9%	57.5%	62.3%
7. Greenwich (15)	London	84.6%	64.3%	44.4%
8. Isle of Wight (220)	South East	97.8%	47.0%	62.0%
9. Broxbourne (46)	East of England	89.3%	57.7%	66.3%
10. Knowsley (171)	North West	94.7%	50.3%	51.6%
Bottom Ten:				
315. Rutland (307)	East Midlands	78.9%	36.4%	50.6%
316. Vale of White Horse (173)	South East	83.6%	29.9%	43.3%
317. Sandwell (291)	West Midlands	72.5%	43.7%	66.7%
318. Wychavon (322)	West Midlands	85.9%	26.3%	57.9%
319. Tameside (315)	North West	76.8%	38.0%	61.1%
320. Leicester (249)	East Midlands	78.9%	33.9%	48.9%
321. Oldham (294)	North West	75.0%	38.6%	60.9%
322. Derby (303)	East Midlands	76.7%	36.3%	57.2%
323. West Somerset (324)	South West	86.1%	20.0%	60.6%
324. Bury (213)	North West	67.8%	39.7%	54.1%

Note: The numbers in brackets is the rank in the overall social mobility index. The numbers in column headings relate to the indicators from the SMC report for the early year's index, this includes:

1. the proportion of nursery provision in the local area that is rated good or outstanding by Ofsted.
2. the proportion of five-year-olds eligible for free school meals (FSM) who achieve a good level of development at the end of the Early Years Foundation Stage (EYFS, Department of Education data).

Table A.3: Rankings from School Indicators

Rank. L. Authority Top Ten:	Region	1	2	3	4	Leave vote
1. Westminster (1)	London	97.0%	84.7%	79.9%	58.7%	31%
2. Kensington and Chelsea (7)	London	89.5%	100.0%	75.9%	N/A	31.3%
3. Rushcliffe (44)	East Midlands	94.4%	100.0%	78.0%	52.2%	42.4%
4. Redbridge (3)	London	92.7%	91.3%	80.8%	51.6%	46%
5. Camden (19)	London	95.1%	82.3%	77.5%	55.6%	25.1%
6. Tower Hamlets (4)	London	88.9%	83.1%	77.3%	54.7%	32.5%
7. Hackney (6)	London	88.9%	99.4%	75.0%	51.5%	21.5%
8. Islington (5)	London	84.1%	100.0%	75.5%	53.5%	24.8%
9. Wandsworth (2)	London	93.1%	100.0%	74.2%	47.6%	25%
10. Southwark (11)	London	84.0%	98.7%	74.4%	53.2%	27.2%
Bottom Ten:						
315. Isle of Wight (220)	South East	58.1%	12.1%	56.1%	28.6%	62%
316. South Bucks (197)	South East	67.7%	20.1%	55.6%	20.0%	50.7%
317. Ipswich (292)	East of England	62.3%	34.3%	51.8%	23.0%	58.3%
318. Wellingborough (320)	East Midlands	59.7%	43.7%	47.5%	25.2%	62.4%
319. Gosport (251)	South East	55.7%	26.9%	54.7%	25.0%	63.9%
320. Bracknell Forest (203)	South East	54.9%	52.1%	49.2%	22.4%	53.9%
321. Crawley (309)	South East	52.2%	51.2%	51.0%	22.2%	58.4%
322. Corby (321)	East Midlands	37.4%	42.8%	55.0%	26.7%	64.3%
323. Waveney (318)	East of England	61.4%	31.5%	52.6%	16.2%	62.9%
324. Fenland (319)	East of England	55.6%	16.5%	45.6%	26.6%	71.4%

Note: The numbers in brackets is the rank in the overall social mobility index. N/A is not available, the SMC report states that missing data is due small sample sizes so they are unable to make robust estimates in these cases they use the authority's nearest statistical neighbour as a proxy. The numbers in column headings relate to the four indicators are combined to create the SMC school index, these are the proportion of children eligible for FSM:

1. attending a good or outstanding Ofsted rated primary school;
2. attending a good or outstanding Ofsted rated secondary school;
3. achieving a level 4 or above in reading, writing, and mathematics at Key Stage 2 (DfE data); and
4. achieving 5 A*-C grades including English and Maths at GCSE (DfE data).

Table A.4: Rankings from Youth Indicators

Rank. LAuthority Top Ten:	Region	1	2	3	4	5	Leave vote
1. Kensington and Chelsea (7)	London	7.0	208.8	59.8	51.0	15.0	31.3
2. Westminster (1)	London	8.0	211	61.9	49.0	12.0	31
3. Redbridge (3)	London	8.0	206.3	56.8	49.0	10.0	46
4. Brent (27)	London	9.0	207.7	54.3	46.0	11.0	40.3
5. Harrow (23)	London	8.0	207.6	60.0	45.0	9.0	45.4
6. Newham (17)	London	10.0	216	60.6	45.0	8.0	47.2
7. Hackney (6)	London	9.0	211.2	56.6	44.0	9.0	21.5
8. Hounslow (16)	London	8.0	204.8	54.1	42.0	10.0	48.9
9. Ealing (8)	London	9.0	210	56.5	42.0	9.0	39.6
10. Tower Hamlets (4)	London	11.0	215.3	56.7	39.0	10.0	32.5
Bottom Ten:							
315. North Norfolk (280)	East of England	20.0	175	16.7	14.0	4.0	58.9
316. Wychavon (322)	West Midlands	24.0	173	30.3	15.0	2.0	57.9
317. Carlisle (302)	North West	20.0	188.8	16.9	13.0	1.0	60.1
318. Rushmoor (248)	South East	20.0	154.3	26.6	14.0	3.0	58.2
319. East Cambridgeshire (311)	East of England	21.0	175.7	19.0	15.0	2.0	50.9
320. Cambridge (275)	East of England	21.0	156	29.5	15.0	2.0	26.2
321. Hastings (282)	South East	20.0	175.7	15.0	11.0	3.0	54.9
322. Stoke-on-Trent (298)	West Midlands	21.0	162.6	26.1	13.0	2.0	69.4
323. North East Lincolnshire (288)	Yorkshire and The Humber	20.0	150	25.2	10.0	1.0	69.9
324. Eastleigh (199)	South East	20.0	90	34.5	14.0	3.0	52.5

Note: The numbers in brackets is the rank in the overall social mobility index. The numbers in column headings relate to the five indicators that make up the youth index which include young people eligible for FSM:

1. the proportion who are not in education, employment, or training (NEET) one year after finishing Key Stage 4 (DfE data).
2. the average points score for those entered for a level 3 qualification (DfE).
3. the proportion at age 15 who achieve 2+ A-levels or equivalent qualifications by age 19 (DfE).
4. the proportion at age 15 who enter higher education by age 19 (BIS data).
5. the proportion who enter higher education at one of the third most selective universities by age 19 (BIS data).

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Table A.5: Rankings from Adulthood Indicators

Rank. LAuthority Top Ten:	Region	1	2	3	4	5	Leave vote
1. St Albans (31)	East of England	£591.5	12.7	50.0	23.8	74.7	37.3
2. Rushcliffe (44)	East Midlands	£475.2	8.4	52.2	25.8	78.1	42.5
3. Hart (29)	South East	£577.3	10.3	36.8	17.3	75.2	47.6
4. South Cambridgeshire (170)	East of England	£494.4	10.2	41.2	10.1	69.8	39.8
5. Wokingham (90)	South East	£526.2	11.1	39.0	15.0	78.6	43.3
6. Chiltern (77)	South East	£531.5	15.5	48.4	13.4	75.2	45
7. Richmond upon Thames (18)	London	£655.0	15.5	48.3	21.1	67.2	30.7
8. Elmbridge (24)	South East	£551.0	15.4	46.9	12.7	71.7	40.5
9. Brentwood (68)	East of England	£553.2	9.6	42.6	24.9	74.8	59.2
10. Vale of White Horse (173)	South East	£488.2	10.3	45.1	13.7	65.4	43.3
Bottom Ten:							
315. Thanet (273)	South East	£332.5	9.8	24.8	35.1	51.4	63.9
316. Brent (25)	London	£440.8	15.5	27.7	29.4	36.6	40.3
317. Waltham Forest (36)	London	£441.3	13.6	29.2	39.0	43.4	40.9
318. Breckland (306)	East of England	£345.9	9.3	19.6	39.3	58.2	64.2
319. Kensington and Chelsea (7)	London	£632.4	36.2	45.0	23.1	33.4	31.3
320. Forest Heath (285)	East of England	£336.3	9.3	20.4	33.6	43.3	65
321. North Norfolk (280)	East of England	£340.0	10.8	16.6	37.8	58.2	58.9
322. Newham (17)	London	£394.0	12.2	20.4	30.0	31.0	47.2
323. Torridge (308)	South West	£333.9	11.0	12.7	41.6	62.1	60.8
324. West Somerset (324)	South West	£287.3	13.4	N/A	41.9	51.6	60.6

Note: The numbers in brackets is the rank in the overall social mobility index. The numbers in column headings relate to the 5 indicators from the SMC report:

1. Median weekly pay of employees (Office for National Statistics data).
2. Housing affordability, as measured by average house prices compared to median annual pay of employees (ONS data).
3. The proportion of managerial and professional jobs as determined by those that are Standard Occupational Classes 1 and 2 (ONS data).
4. The proportion of employee jobs that pay an hourly rate less than the living wage rate applicable to the local area set by the Living Wage Foundation (ONS data).
5. The proportion of families with children that own their own home (Census 2011 data).

Table A.6: Averages for all Social Mobility Index Components

Components:		All		Coastal		Inland		Cities		Towns	
Early Years											
Good Nurseries		87.2%		88.6%		86.8%		86.3%		87.6%	
Good EYFS		43.9%		45.7%		43.4%		42.7%		43.3%	
School											
Good Primaries		79.8%		79.5%		79.8%		79.3%		79%	
Good Secondaries		69.8%		66.8%		70.8%		67.8%		68.2%	
Key stage 2 prog.		61.4%		60.8%		61.5%		60.4%		60.1%	
5 GCSEs A*-C		31.3%		28.8%		32.2%		29%		29.9%	
Youth											
NEET		18%		18.7%		17.8%		19.1%		18.7%	
Points Level 3		204.7		201.3		205.8		201.2		204.8	
A levels		31.9%		28.3%		33%		29.2%		29.9%	
Going to HE		17.9%		14.6%		19%		16.6%		15.7%	
Selective Unis.		3.5%		2.7%		3.8%		2.8%		3.1%	
Adult											
Median salary		£424.55		£393.81		£434.47		£397.20		£416.47	
Leave	Remain	406	484	393	412	412	491	388	415	407	477
Av. house price/salary		9.38		8.88		9.55		8.31		8.94	
Leave	Remain	8.5	12.2	8.82	9.51	8.37	12.4	7.6	9.64	8.6	11
Prof. Occupation		30.1%		27.6%		30.9%		29.8%		29.4%	
Leave	Remain	27.9	36.9	27.1	33	28.3	37.3	26.6	35.8	28.1	37.6
Living wage		24.6%		26.9%		23.9%		22.4%		25.1%	
Leave	Remain	25.6	21.6	27.2	23.6	24.9	21.4	23.1	21.2	25.9	20
Home Ownership		61.9%		61.8%		61.9%		57.8%		65%	
Leave	Remain	63.6	56.6	61.7	62.6	64.4	56.1	58.6	56.1	64.4	68.8
Number LA areas		324		79		245		49		243	
Leave	Remain	246	78	72	7	174	71	32	17	209	34

Table A.7: Averages for all Social Mobility Index Components by Government Office Regions

Life Stage variable	All	NE	NW	YH	EM	WM	ET	LN	SE	SW
Good Nurseries	87.2%	90.6%	85.7%	88.7%	85.5%	84.4%	88%	85.5%	89%	88.4%
Good EYFS	43.9%	38.9%	43.2%	42.6%	42.4%	41.7%	44.2%	50.7%	44.4%	43.4%
Good Primaries	79.8%	87.9%	84.9%	75.2%	77.5%	76.7%	78.3%	85.8%	75.5%	83.7%
Good Secondaries	69.8%	60.3%	61.8%	65.4%	60.7%	69.6%	68%	85.2%	73.4%	76.4%
Key stage 2 prog.	61.4%	64.5%	63.7%	58.8%	60.1%	58.7%	58.9%	71.9%	60%	59.1%
5 GCSEs A*-C	31.3%	30.2%	31.1%	28.6%	29%	30.4%	30.4%	45.4%	29.2%	29.7%
NEET	18%	19.4%	18.2%	19.9%	19.88%	18.2%	18.8%	11.1%	18.7%	18.1%
Points Level 3	204.7	210.4	201.6	206.9	204.9	202.3	201.9	209.7	205.2	205.3
A levels	31.9%	27.9%	32.3%	29.1%	27.1%	30.1%	30.3%	50.7%	30.6%	28.8%
Going to HE	17.9%	15.5%	19%	16%	14%	16.3%	16.7%	37.4%	15%	14.4%
Selective Unis.	3.5%	2.2%	2.5%	2.5%	2.7%	2.8%	3.4%	7.5%	3.9%	3%
Median salary	£424.55	£381.02	£391.63	£381.10	£400.81	£397.54	£431.03	£527.80	£460.05	£382.70
Leave / Remain	406 / 485	382 / 372	388 / 409	379 / 396	400 / 407	395 / 480	425 / 479	487 / 535	438 / 499	379 / 397
Av. house price/salary	9.38	6.43	6.65	7.45	7.29	7.94	9.7	14.43	10.83	10.41
Leave / Remain	8.5 / 12.2	6.3 / 7.3	6.5 / 7.5	7.2 / 8.9	7.27 / 7.6	7.9 / 9.6	9.6 / 10.8	10 / 15.3	10.2 / 12	10.3 / 10.7
Prof. Occupation	30.1%	25.3%	27%	25.6%	28%	28.8%	29.9%	35.3%	33.3%	30.5%
Leave / Remain	27.9 / 36.9	24.9 / 29.6	26.1 / 31.3	24.6 / 31.8	27.4 / 38.5	28.3 / 43.1	28.8 / 38.7	28 / 36.6	29.7 / 39.7	29.3 / 34.6
Living wage	24.6%	25.6%	26.2%	27.8%	27.4%	26.3%	24.3%	24.4%	19.9%	25.8%
Leave / Remain	21.6 / 25.6	25.9 / 23	26.7 / 23.9	28.4 / 24.2	27.5 / 25.3	26.6 / 17.5	24.7 / 21	27.1 / 23.9	21.2 / 17.6	26.6 / 23
Home Ownership	61.9%	59%	64.4%	62.8%	66.1%	64.6%	63.4%	44.4%	64.1%	62.2%
Leave / Remain	63.6 / 56.6	59.8 / 50.8	65.2 / 60.6	62.6 / 63.7	66.3 / 62.8	64.4 / 69.3	63.8 / 59.8	58.9 / 41.7	62.1 / 67.8	62 / 63.1
Number LA areas	324	12	39	21	40	30	47	32	67	36
Leave / Remain	246 / 78	11 / 1	32 / 7	18 / 3	38 / 2	29 / 1	42 / 5	5 / 27	43 / 24	28 / 8

Note: N= number of English local authorities. Cell shading key: red best region, yellow worst region.

Table A.8: Correlations with the EU Referendum Leave vote and Social Mobility Overall Index in Government Office Regions

Life Stage variable	All	NE	NW	YH	EM	WM	ET	LN	SE	SW
Overall	-0.51**	-0.55*	-0.25	-0.45**	-0.16	-0.48**	-0.35**	-0.56**	-0.33**	-0.51**
Early Years	-0.04	0.04	-0.11	0.12	0.32**	0.26	0.001	-0.003	0.46**	0.02
Good Nurseries	0.003	-0.25	0.03	-0.10	0.31*	0.08	-0.39**	-0.05	0.22*	0.02
Good EYFS	-0.06	0.29	-0.14	0.15	0.37**	0.20	0.42**	-0.02	0.38**	-0.01
School	-0.42**	-0.24	-0.16	-0.37*	-0.15	-0.59**	-0.14	-0.57**	-0.28**	-0.51**
Good Primaries	-0.27**	-0.55*	-0.12	-0.25	-0.09	-0.47**	-0.38**	-0.50**	-0.15	-0.22
Good Secondaries	-0.33**	-0.32	-0.09	-0.43*	-0.19	-0.56**	-0.06	-0.48**	-0.23*	-0.33*
Key stage 2 prog.	-0.30**	-0.19	-0.03	0.15	-0.04	0.0002	0.07	-0.44**	-0.004	0.002
5 GCSEs A*-C	-0.47**	0.09	-0.22	-0.13	-0.35**	-0.42**	0.05	-0.65**	-0.23*	-0.27
Youth	-0.38**	-0.15	-0.16	-0.53**	-0.31**	-0.08	-0.18	-0.29	-0.32**	-0.12
NEET	0.30**	0.19	-0.08	-0.14	-0.01	-0.20	0.03	0.05	-0.18	0.08
Points Level 3	-0.12**	-0.28	-0.19	-0.34	-0.001	-0.26	0.22	-0.18	-0.15	-0.10
A levels	-0.53**	0.05	-0.06	-0.46**	-0.35**	-0.16	-0.19	-0.62**	-0.29**	-0.14
Going to HE	-0.54**	0.38	-0.04	-0.52**	-0.43**	0.07	-0.32**	-0.52**	-0.19	0.16
Selective Unis.	-0.53**	0.39	-0.19	-0.48**	-0.31*	-0.25	-0.26*	-0.24	-0.29**	0.04
Adulthood	-0.38**	-0.56*	-0.38**	-0.40*	-0.40**	-0.57**	-0.54**	-0.01	-0.67**	-0.54**
Median salary	-0.60**	-0.30	-0.29*	-0.09	-0.35**	-0.46**	-0.40**	-0.52**	-0.51**	-0.44**
Av. house price/salary	-0.62**	-0.37	-0.47**	-0.59**	-0.42**	-0.57**	-0.51**	-0.53**	-0.50**	0.06
Prof. Occupation	-0.68**	-0.57*	-0.59**	-0.66**	-0.65**	-0.74**	-0.62**	-0.72**	-0.71**	-0.53**
Living wage	0.41**	0.69**	0.34**	0.35	0.27*	0.53**	0.48**	0.47**	0.42**	0.42**
Home Ownership	0.34**	-0.03	0.21	-0.29	-0.24	-0.17	-0.02	0.63**	-0.29**	-0.19
N	324	12	39	21	40	30	47	32	67	36

Note: N= number of English local authorities. ** is a 5% significance level and * is a 10% significance level.

Table A.9: List of Cities percentage of leave vote

Bath & NE Somerset 42.15	Birmingham 50.42	Bradford 54.23	Brighton and Hove 31.38	Bristol 38.27
Cambridge 26.15	Canterbury 51.04	Chelmsford 52.83	Carlisle 60.14	Cheshire West and Chester 50.68
Chichester 50.92	Truro (Cornwall) 56.52	County Durham 57.55	Coventry 55.6	Derby 57.22
East Cambridgeshire 50.92	Exeter 44.72	Gloucester 58.5	Harrogate 49.03	Herefordshire 59.22
Kingston upon Hull 67.62	Lancaster 51.08	Leeds 49.69	Leicester 48.92	Lichfield 58.81
Lincoln 56.94	Liverpool 41.81	Manchester 39.64	Mendip 48.93	Newcastle upon Tyne 49.3
Norwich 43.76	Nottingham 50.84	Oxford 29.73	Peterborough 60.89	Plymouth 59.94
Portsmouth 58.08	Preston 53.31	Salford 56.81	Sheffield 50.99	Southampton 53.8
St Albans 37.29	Stoke-on-Trent 69.36	Sunderland 61.34	Wakefield 66.36	Wiltshire 52.49
Winchester 41.07	Wolverhampton 62.57	Worcester 53.68	York 41.96	

Figure A.1: Scatter Plots of % Leave Vote with Median Weekly Wage

Figure A.2: Scatter Plots of % Leave Vote with Average House Price/Salary

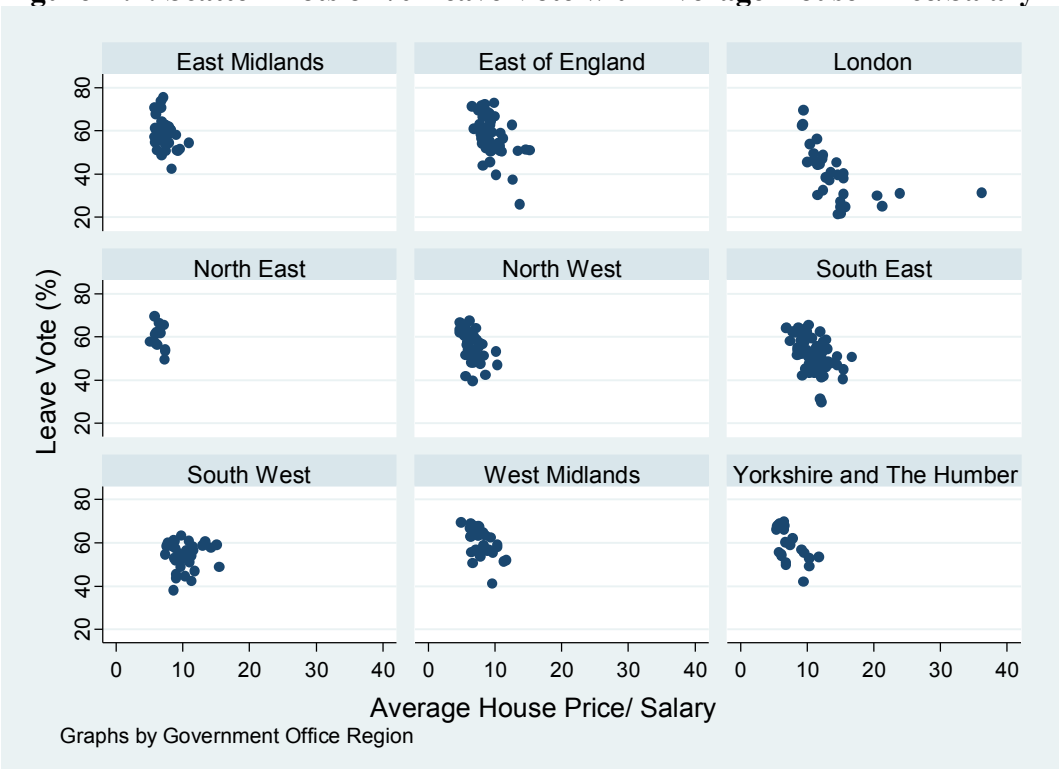

Figure A.3: Scatter Plots of % Leave Vote with % of Managers and Professionals

Figure A.4: Scatter Plots of % Leave Vote with % earning less than Living Wage

Figure A.5: Scatter Plots of % Leave Vote with % families with children owning their own home