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Working Paper

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GLO Discussion Paper, No. 586

Provided in Cooperation with:
Global Labor Organization (GLO)

Suggested Citation: Rienzo, Cinzia (2020) : Trick or treat? The Brexit effect on immigrants' wellbeing in the UK, GLO Discussion Paper, No. 586, Global Labor Organization (GLO), Essen

This Version is available at:
https://hdl.handle.net/10419/221800

Trick or treat? The Brexit effect on immigrants' wellbeing in the UK.

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Abstract

This paper is the first attempt to analyse the effect of the Brexit Referendum results on subjective well-being of immigrants living in the UK. Using the national representative UK Household Longitudinal Study (Understanding Society) data and adopting a difference-in-differences estimates, we define natives as control group, and different sub-groups of immigrants as treatment groups. The current analysis suggests that following the EU Referendum Results Non-EU migrants experienced an improvement in both mental health and life satisfaction relative to the UK natives. The results are robust to several robustness checks. Among others, we account for unobserved individual fixed effects and for unbalanced panel data. The results are consistent with the idea that the end of free movement for EU immigrants has alleviated the sense of discrimination and frustration felt by Non-EU immigrants results mainly of the toughened visa restrictions enforced since 2010 by the UK Government.

Keywords: immigration, Subjective Wellbeing, Brexit.

JEL Classification: O15, J61

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Acknowledgments: I am grateful to Thomas Buser, Zovanga Kone and Bernard Milward for comments and suggestions. The analysis is based on the U.K. Household Longitudinal Study (UKHLS) or "Understanding Society", Special License. This is an initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by the National Centre for Social Research and TNS BRMB. Data are available through the U.K. Data Archive.

1. Introduction

Since the Referendum on EU membership held in June 2016 in the UK, during which 51.9% of voters voted to leave the EU, and after years of talks and negotiations, the EU referendum result remains one of the most controversial decision in British policy history, continuing to represent a major divide in British society and policy.

There is a certain consensus that one of the main drivers of the Brexit referendum debate and result has been the increasing level of immigration in the UK: immigrants represent a growing share of the UK population, with the foreign-born population in the UK more than doubled from 5.3 million to around 9.3 million between 2004 and 2018 (Rienzo and Vargas-Silva, 2019). The exposure to European immigration since the enlargement of the EU in 2004 has been one of the key issues of the political debate during the election campaign (Becker et al, 2017), with the focus on immigration of the Leave campaign[2] being highlighted by the press. Immigration has certainly been the key claim for the vote Leave campaign, arguing that Brexit would allow more control over the flow of immigrants to the UK from the rest of the EU (Wadsworth et al 2016). Moreover, it has been suggested that concerns related to low-skilled immigration might have been a key driver of the UK's vote to leave the EU (Meleady, Seger, and Vermue 2017).

In the Brexit context, immigration is not only thought as a driver of the Referendum and its results, but it is also involved when it comes to its consequences. The Brexit referendum result is a major policy change with potentially significant socio-economic implications for both UK born and immigrants (Sumption, 2017). In 2017, 39% of the foreign-born population were from EU countries. Due to the uncertainty of the Brexit referendum result, combined with the lower value of the pound and better economic conditions in some of the sending countries, the UK has become a less attractive place to live with larger number of EU migrants leaving since the referendum (The Guardian, 2018[3]), and an increasing number of Non-EU arriving in the UK.

Using the unexpected result of the Brexit referendum as a unique natural experiment researchers have examined the effect of Brexit on subjective wellbeing in UK (Kavetsos et al 2018; Powdthavee et al 2019; Vandoros et al 2019), finding on average a deterioration of subjective wellbeing (Kavetsos et al 2018; Vandoros et al 2019), an increase in life satisfaction, and notable rise in average mental distress (Powdthavee et al (2019). The increase in clinical distress among

[2] https://www.bbc.co.uk/news/uk-politics-eu-referendum-36375492

[3] https://www.theguardian.com/uk-news/2018/nov/29/eu-net-migration-uk-falls-lowest-level-almost-six-years

large subgroups of British people has been confirmed by psychotherapists, according to which the Brexit experience has created monumental upset (Hughes, 2019).

However, the existing evidence only provides a partial picture of the effect of the referendum on subjective-wellbeing in the UK by either focusing on England only (Vandoros et al, 2019), or comparing the effect to other EU citizens living outside the UK (Kavetsos et al 2018), or without accounting for the presence of immigrants in the UK population (Powdthavee et al, 2019). Furthermore, none of the contributions have analysed the effect that the EU referendum result had on immigrants already living in the UK.

With Brexit arguably having implications for immigrants not only about feeling welcomed and integrated, but also about the prospects of continuing to live or instead deciding (or having) to leave the hosting country. It is therefore plausible to observe different effects of the Brexit referendum result on natives and immigrants, as well as on different sub-groups of immigrants (e.g. EU versus Non-EU). Therefore, an analysis of the effect of the Brexit referendum result on immigrants is crucial to understand not only the psychological and emotional implications but also the choice that immigrants may take as a result.

This paper presents a new evidence of the effect of the Brexit Referendum result by focusing on subjective wellbeing (mental health and life satisfaction) of immigrants living in the UK. We use a difference-in-differences approach whereby we compare subjective wellbeing of immigrants with that of UK natives before and after 23rd June 2016. Considering immigrants as treatment group is motivated by various reasons. Firstly, the Brexit political debate and campaign was very much centred around immigration, hence immigrants might feel the UK a less welcoming place to live as a reflection of the growing anti-immigration sentiment linked to Brexit. Secondly, EU immigrants are likely to see their prospects substantially affected having to fulfil the new legal requirements. Thirdly, Non-EU immigrants, particularly those who arrived since 2010 or so who have been experiencing a toughening of visa restrictions, might see the Brexit Referendum result as creating a new legal system based on which once the UK leaves the EU, citizens from EU and Non-EU will be treated the same.

In order to reflect different characteristics, and nature in social/working experience in the UK as well as legal restrictions, we define three different "treatment groups" of immigrants. We start by considering immigrants as a single treatment group; then we separate further into three sub-groups such as EU, Non-EU and Other immigrants, and finally for each of these three groups we consider the length of stay in the UK by separating between those who arrived recently (less than 10 years), and those who have been living in the UK for longer (10 years or more) performing a triple difference-in-differences analysis.

Using the national representative UK Household Longitudinal Study (Understanding Society) data waves 6, 7 and 8 the results demonstrate that defining appropriate (immigrant) treatment groups is crucial for identifying the effects of the EU referendum result on immigrant population in the UK. Initial results considering immigrants as a single treatment group, show a general improvement in both mental health and life satisfaction. However, when separating further results show that EU immigrants only experience a statistical significant improvement for mental health, however such effect becomes no longer insignificant when adopting fixed effects estimations reflecting perhaps individual perspectives and experiences. On the other hand results show that Non-EU immigrants experience an overall improvement in both measures of subjective wellbeing. These results are robust to several robustness checks, including adopting fixed effect estimations and using a balanced panel.

We hypothesised that one explanation for such improvements in subjective wellbeing of Non-Eu migrants originates from their experience of being usually significantly disadvantaged in European countries due higher cultural and institutional barriers to access labor markets (Dustmann and Frattini, 2013). The Brexit Referendum result, that will give an end to the unrestricted rights for EU immigrants to work and life in the UK, will then generate a single, equal system for EU and Non-EU immigrants that is perhaps perceived as fairer by the Non-EU immigrants. Such feeling is likely to be more marked amongst recent Non-EU migrants, those who have been subject to more visa restrictions to entering the UK since 2010 having to face frustrating, expensive and onerous visa.

In re-considering the effects of the Brexit Referendum result on subjective wellbeing of immigrants, this study complements and contributes to the recent literature on the effect of Brexit by providing a more complete and comprehensive analysis, accounting for potential implications for different sub-groups of the population.

The current paper is organised as follows: part 2 presents a review of the literature on Brexit and subjective wellbeing; part 3 discusses the data used; part 4 presents the econometric methodology; part 5 discusses the results and part 6 concludes.

2. Literature Review

Following the unexpected result of the Brexit referendum, researchers have analysed the effect of Brexit on subjective wellbeing exploiting the quasi experimental nature of the event and adopting a difference-in-differences approach.

Becker et al (2018) focus on the determinant of the voting leave at the local authority level, and analyse vote and turnout shares across 380 local authority areas in the United Kingdom. They find that exposure to the EU in terms of immigration and trade provides relatively little explanatory power for the referendum vote.

Using monthly data from January 2011 - December 2016 on prescription medication for antidepressant drugs for all 326 voting areas in England, and benchmarking against prescriptions for other drug classes, Vandoros et al (2019) found an increase in antidepressant prescriptions compared to other drug classes. This study, as the authors acknowledge, is not as informative in determining the wellbeing implications for society as whole and does not capture any changes in mood or mental health of people who do not take antidepressants.

Kavetsos et al (2018) using data from the Eurobarometer compare subjective wellbeing of individuals in the UK to those in other European countries, representing the control group. They find that Brexit result led to an overall decrease in subjective wellbeing in the UK with the effect being different between those with different preferences towards the EU.

Powdthavee et al. (2019) investigate whether pre-Referendum subjective wellbeing significantly predicts preferences over EU membership, based on the idea that protest voting in the Referendum may be reflected in Leavers' lower subjective wellbeing scores prior to the Referendum date. Using an early-released version of the 2015–16 waves of the UK Household Longitudinal Study and focusing on both life satisfaction and mental distress, they show that those reporting lower life satisfaction in 2015 were more likely to express a preference for leaving the EU in 2016, while mental Health was less predictive of pro-Brexit attitudes. Post-Referendum, those with Leave preferences enjoyed an increase in life satisfaction but there was no change in average life satisfaction in the overall sample. In contrast, the average level of mental Health increased in the sample post- Referendum. This study, however does not account for the presence of immigrants in the UK population, nor it separated them from the sample and is based on the assumption that preferences to leave the EU have not changed over time. We later show that this assumption is likely not to hold.

Existing research has shown that mental health of natives and migrants differs (see Dorsett et al (2018) for a recent overview), moreover the EU foreign-born in the UK are likely to be affected by the outcome of the Brexit Referendum. Due to the uncertainty of the Brexit referendum result, combined with the lower value of the pound and better economic conditions

in the sending countries, the UK has become a less attractive place to live with larger number of EU migrants leaving since the referendum (The Guardian, 2018[4]).

Therefore the potential different socio-economic consequences of the Referendum result, call for specific analysis on the effect on immigrants in general, and an analysis on different sub-groups of immigrants.

This paper contributes to the recent Brexit empirical literature by assessing the effect of the Brexit Referendum result on subjective wellbeing of immigrants living in the UK, complementing in so doing to the existing evidence on the consequences of Brexit on subjective wellbeing.

3. Data

The data for the current analysis is based on the Special Licence edition of Understanding Society, the UK Household Longitudinal Study (UKHLS), a longitudinal survey of approximately 40,000 households (at Wave 1) living in the United Kingdom, in which each adult member of the household is interviewed annually to collect information on changes to their household and individual circumstances. It is a nationally representative sample, that has been running since 2009. The dataset contains rich demographic information such as age, gender, ethnicity, education, current labour market situation, health, income, as well as subjective wellbeing of individuals such as life satisfaction, and mental health.

UKHLS also contains information on migration history and variables that capture migration-related characteristics such as country of birth, year of arrival in the UK, language in childhood. In addition, in Wave 6 an immigrant and ethnic minority boost sample (IEMB) comprising approximately 2,900 participating households was added. This is particularly suited to the current study giving a large enough sample of immigrants that allows analysis of sub-groups before and after the Brexit Referendum. Unfortunately, Understanding Society does not collect detailed information of country of birth for everyone, so that 32% of immigrants do not report details of the country of birth[5]. Despite this limitation, countries of birth included do represent the largest immigrant groups in the UK, representing 9 out of the top ten sending countries of immigrants in the UK population. Using the Office of National Statistics' Annual Population

[4] https://www.theguardian.com/uk-news/2018/nov/29/eu-net-migration-uk-falls-lowest-level-almost-six-years

[5]Specifically details of the countries reported are as follows: Cyprus, France, Germany, Ireland, Italy, Poland, Spain, Bangladesh, China/Hong Kong, India, Pakistan, Sri Lanka, Ghana, Kenya, Nigeria, South Africa, Uganda; Jamaica, United States, Canada, New Zealand, and Australia.

Survey Tables from 2015 to 2017, Appendix Table 1 shows the share of the twenty-five top sending countries by place of birth. It documents that 68% of all immigrants in the UK came from twenty-five countries. Data from Understanding Society shows that eighteen out of twenty-five main sending countries are identified, corresponding to 56% of immigrants in the UK. Using Understanding Society data seven out of the nine top EU sending countries are identified, corresponding to 62% of the actual EU immigrants in the UK; while for the Non-EU countries twelve out of sixteen top Non-EU sending countries, corresponding to 57% of all Non-EU migrants between 2015 and 2017, are identified in the current data.

We first categorise each respondent into immigrant if born outside the United Kingdom, and native if born in the United Kingdom. We then classify immigrants into three main groups:

1. EU immigrants (Cyprus, France, Germany, Ireland, Italy, Poland, and Spain)
2. Non-EU immigrants (Bangladesh, China/Hong Kong, India, Pakistan, and Sri Lanka; Ghana, Kenya, Nigeria, South Africa, Uganda; Jamaica, United States, Canada, New Zealand, and Australia)
3. Other immigrants.

Moreover, to account for the time they have been in the UK we separate further each immigrant groups into Recent (identified as those who have been living in the UK for 9 years or less[6]), and Established (those who have been living in the UK for 10 years or more). Distinguishing between those two groups is crucial not only because those who arrived in the UK recently might be in the country only temporary, and therefore might have less attachment to the hosting country. On the other hand, those who have been in the UK for longer are more likely to have more established relationships (e.g. family and friends) and are more likely to be integrated in the UK labour market. Moreover, they are also more likely to have granted a permanent residency and/or British citizenship. This distinction is also relevant given that those who have been in the UK for fewer years, might not meet the requirements needed to apply for a permanent residency, requiring having lived in the UK for a continuous 5 years. In fact, according to the government EU citizens and their family members who can prove they have lived in the UK for five years or more will be granted settled status, and those living for less than five years will be granted pre-settled status.

The main outcome of interest of this paper is subjective wellbeing. The term "subjective wellbeing" refers to both mental health and life satisfaction. The measure for mental health is based on the 12-item General Health Questionnaire (GHQ) (the variable SCGHQ2_DV in the

[6] Although it would be ideal to define Recent migrants who have been living in the UK for 5 years or less given the legal requirement to apply for the settlement status for EU immigrants, the sample size would not allow an accurate analysis. Moreover, by defining Recent those who have been living in the UK for 9 years or less, it is more likely to capture those Non-EU who have been affected by visa restriction since 2010.

UKHLS) with a scale ranging from 0 (best mental wellbeing) to 12 (worse mental wellbeing). The GHQ is a self-administered screening test aimed at detecting psychiatric disorders that require clinical attention among respondents in community and non-psychiatric clinical settings. The GHQ is used to detect disorders of a temporary nature, such as depression or anxiety, but also permanent conditions such as psychotic depression and schizophrenia. Respondents are asked to report how satisfied or dissatisfied they are with their life overall on a scale from 1 (completely dissatisfied) to 7 (completely satisfied).

In addition to the measures of subjective wellbeing, Understanding Society contains rich demographic information. We use the following as control variables in the regression analysis: age, gender, a dummy for working (as employed or self-employed), a dummy for being student, a dummy for being retired, a dummy for being long-term ill, a dummy for partnership, number of own children in the household (none, 1 child, 2 or more children), and region where living. We also include logged household income, equivalised using the modified OECD equivalence scale to take account of household composition, as well as month and year of the interview and type of interview (if face-to-face, by phone etc).

To ensure a larger and more representative sample of the population, and allow for a sufficient sample of different immigrants sub-groups, the current analysis is based on Waves 6, 7 and 8 of Understanding Society. This has some advantages since data collection for each wave usually continues for an additional 5 months in the following year to interview eligible sample members who did not provide interviews when first issued to field (Knies, 2018).

Using the day, month and year of interview we then identify those who have been interviewed between 1st January 2015 and 22nd June 2016 (pre-EU Referendum), and those interviewed from 24th June 2016 to 28th March 2017 (post- EU Referendum). We exclude as part of the post-Brexit referendum period starting the 28 March 2019, when the Government trigged Article 50 as this can be regarded as another unexpected shock.

The special licence edition used in the current analysis contains details of the local area where the respondents live. Using this information the UKHLS data is then matched at local authority area to the Referendum result published by the Electoral Commission (2017). A dummy for individual living in a local area where the vast majority voted to leave is derived. Throughout the analysis longitudinal adult main interview weights are used.

3.1. Preferences to leave/remain in the UE

Previous evidence of the effect of Brexit on subjective wellbeing in the UK has demonstrate that the observed results is due to own preferences to leave the EU. However, the

use of this variable in the data presents some limitations. The question capturing respondent's own preference to leave the EU is the following: *"Should the United Kingdom remain a member of the European Union?"*. Unfortunately, this question was only asked in Wave 8, therefore for the same individuals interviewed in previous wave the variable is not available. To overcome the issue of missing observations in Wave 7 for about 18,000 individuals Powdthavee et al. (2019) assume the person's preference for EU referendum remains unchanged across the two waves.

However, it may indeed be the case that individuals changed their view about the preference for EU referendum. This could be particularly the case as the Referendum was announced on the 20th February 2016 while the question about EU preference has been collected from the 5th January 2016 to 10th May 2018. Hence this announcement, followed by the campaign, might have affected the view on whether the UK should remain in the EU or not. This is particularly relevant as the vast majority of individuals have been interviewed after the 24th June, hence in the post Referendum. Therefore, assigning to the same individual the preference expressed post referendum is likely to bias the results.

Table 1 reports the frequencies for the variable capturing preference to leave the EU separating before and after the referendum was first announced (February 2016), as well as before and after the referendum took place (June 2016). The table shows that those expressing preference to leave the EU increasing from 34% to 42% before and after the Referendum was announced in February 2016 (Column 1 and 2), and from 37% to 44% before and after the Referendum was held in June 2016 (column 3 and 4). In both cases the t-test shows statistical significance difference at 99%.

[Table 1 around here]

These descriptive statistics document that the assumption that individuals do not change preference across the 2015 and 2016 may not hold. These is in line with existing studies. For example, Janmaat et al (2018) analyse the volatility of the opinions of the British electorate about the Britain's membership of the EU. Using Understanding Society data collected both before and after the referendum, they show that there are reasons to believe that support for leaving the EU was not stable and has changed before and after the referendum. Similarly, Clarke et al (2017) tracing long term attitudes towards the EU starting from 2004, show how volatile popular opinion has been on this subject over time. For this reason, and to make use of a larger, more representative sample, the current analysis does not control for the preference to leave the EU[7].

[7] Estimates carried for the whole sample, without controlling for own preference to leave the EU, are indeed consistent with Powdthavee et al. (2019), although the magnitude of the effects is smaller.

4. Methodology

The identification strategy proposed relies on an interpretation of the Brexit referendum result as a natural experiment, and is based on two assumptions: first, similarly to previous studies of this kind (Powdthavee et al 2019), the identification strategy assumes that the timing of the interview is random. Secondly, it also assumes that the result of the Referendum was unexpected as the outcome vote was unknown and largely unanticipated, moreover the exit-polls were estimating a victory for Remain. Therefore in absence of the EU referendum subjective wellbeing would have changed in the same way for those interviewed before and after the Referendum. In other words, the EU Referendum outcome is such that it can be treated as a quasi-experiment that generates exogenous variation in subjective wellbeing.

Under the plausible assumption that the results were not anticipated and that they represented a 'shock' to the expectations of respondents, the sample is divided into two groups: the treated group (respondents whose interview took place after the EU Referendum Result) and the control group (respondents whose interview took place before the EU referendum result). We define treatment groups relying on workers' nationality, specifically we start with defining the treatment group as 'all immigrants', then we separate them further into three sub-groups: EU immigrants(EU), and Non-EU immigrants (NonEU), and Other immigrants (OI). In all cases the comparison group is represented by natives, those born in the UK.

The impact effects are generated using a characteristics-adjusted difference-in-differences (DID) approach.

We start with the baseline specification that has the following form:

(1) $$SW_{it} = \beta_0 + \beta_1 I_i + \beta_2 PostEURef_t + \beta_3 (I_i \times PostEURef_t) + x_{it} + L_i + M_i + T_i + \mu_i + \varepsilon_{it}$$

Where SW_{it} corresponds to the level of subjective wellbeing, specifically mental Health and life satisfaction experienced by individual *i* at time *t*. *I* is an indicator of immigration status. The *PostEURef* is a dummy variable equal to one if the interview was carried after the EU Referendum and identifies the 'treated'.

The coefficient of interest is β_3, the interaction between the immigration status and the dummy for those interviewed between 24th June 2016 and 28th March 2017, that is after the Brexit referendum. For estimates having mental health as dependent variable, a positive estimate of β_3 would imply a worsening of mental Health, while a negative estimate of β_3 would imply an improvement of it. The interpretation goes in the other way around for estimates with life

satisfaction as dependent variable, with a positive estimate of β_3 implying a worsening of life satisfaction, and a negative estimate of β_3 would imply improvement of it.

We control for characteristics that might be systematically different between natives (control group) and immigrants (treatment group) with X*it* being a vector of individuals' characteristics and L_i a dummy variable =1 for individual living in local area that voted to leave. M is an indicator for the months of interview, and T refers to the year of interview. The vector of controls include: age, age squared, dummy for female, marital status, number of children, dummies for: working, retired, long term illness, students; then household income; level of education (lower, intermediate and higher), type of interview (face to face, by phone, by letter) and region (twelve) where living.

To account for immigrants' specific characteristics and aspects that could affect their integration in the hosting countries, following existing evidence (e.g. Chiswick et al 2008), estimates also include as controls: a dummy variable for being a migrant from a non-English speaking country; a dummy for being an immigrant whose childhood language was not English; an indicator for being an immigrant who has been living in the UK for less than 10 years, and an indicator for being a long term migrant, i.e. who has been living in the UK for 10 years or more.

Robust standard errors, clustered at the individual level, are reported in parenthesis in all tables.

We then separate further EU immigrants (EU), Non-Eu immigrants (NonEU) and Other immigrants (OI) to perform another DID analysis in order to interact each immigrant groups with the post EU referendum dummy. The specification has the following form:

(2) $$SW_{it} = \beta_0 + \beta_1 EU_i + \beta_2 NonEU_i + \beta_3 OI_i + \beta_4 PostEURef_t + \beta_5(EU_i \times PostEURef_t) + \beta_6(NonEU_i \times EU_i \times PostEURef_t) + \beta_7(OI_i \times EU_i \times PostEURef_t) + x_{it} + L_i + M_i + T_i + \mu_i + \varepsilon_{it}$$

With coefficients of interest being β_5, β_6 *and* β_7 specifically the interaction between EU, Non-EU and Other immigrants respectively, with the post Brexit Referendum dummy. In addition, we perform a triple DID to interact each immigrant group with a dummy for time they have been living in the UK, explicitly Recent immigrants (RM), or Established immigrants (EM) and the dummy for post EU referendum interview. The triple DID assumes the following form:

(3) $$SW_{it} = \beta_0 + \beta_1 EU_i + \beta_2 NonEU_i + \beta_3 OI_i + \beta_4 RM_i + \beta_5 EM_i + \beta_6 PostEURef_t + \beta_7(EU_i \times PostEURef_t \times RM_i) + \beta_8(EU_i \times PostEURef_t \times EM_i) + \beta_9(NonEU_i \times PostEURef_t \times RM_i) + \beta_{10}(NonU_i \times PostEURef_t \times EM_i) + \beta_{11}(OI_i \times PostEURef_t \times RM_i) + \beta_{12}(OI_i \times PostEURef_t \times EM_i) + L_i + M_i + T_i + \mu_i + \varepsilon_{it}$$

The key identifying assumption of the DID approach is that, in absence of the treatment, subjective wellbeing of immigrants and natives would follow parallel trends over time. In addition, immigrants or natives could not self-select into treatment or comparison group, since respondent's exposure to the treatment is determined jointly by two variables: their country of birth and the date of participation in the survey. In both cases, it would not be possible to manipulate their country of birth or choose the date of interview.

5. Results

5.1. Descriptive Statistics

We start by presenting descriptive statistics of the main outcomes of interest and independent variables, as well as the immigrants' distribution in the UK.

Table 2 reports the distribution of immigrants before and after the EU referendum, for the whole sample (Panel A), as well as the distribution of immigrants across EU, Non-EU and Other immigrants (Panel B).

[Table 2 around here]

The distributions of immigrants and immigrant sub-groups before and after the EU referendum appears roughly balanced, with the share of immigrants in the UK being approximately 19% before and after the EU Referendum. EU immigrants represent about 14% of the immigrant population both before and after the EU Referendum, while Non-EU immigrants represents just above 50% of the sample. As clarified above about 30% of the immigrants cannot be classified in either groups. While the statistics are slightly different from the official ones that report Non-EU immigrants represent 65% of all immigrant population, the groups here do represent the largest immigrant groups in the UK.

Table 3a summarises the main dependent variables for the main groups of interests, natives and immigrants, and the immigrant sub-groups by country of origin, showing differences in subjective wellbeing before and after the EU Referendum. Looking at changes between the post EU Referendum and before, Mental Health has decreased (worsen) for natives, while has increase (improved) for all migrants, especially for EU and Non-EU migrants. Life satisfaction instead has worsened for both natives and EU migrants, while improving for Non-EU and Other Immigrants. Table 3b presents the main individual characteristics of natives and immigrants, before and after the EU Referendum. On average a higher percentage of immigrants in the sample work compared to natives. One every four natives is retired, while this corresponds to 15% or less for immigrants. Immigrants have a slightly higher number of children, are better educated and more likely to be

married compared to natives. Table 3c presents immigrant characteristics, showing that just above half of them do not speak English as main language, and the breakdown of Non-EU immigrants show that the bigger group is represented by Asian, corresponding to about 22% of all Non-EU immigrants.

[Table 3a around here]

[Table 3b around here]

[Table 3c around here]

5.2. Regression results

Did the EU Referendum Result act as *'treat or trick'* for subjective wellbeing of immigrants compared to UK natives? In other words, did subjective wellbeing of immigrants in the UK improve or worsen after the Brexit Referendum Result? We start to answer this question by estimating equation (1) with a standard OLS regression, considering immigrants as a single, treatment group. Estimation results are reported in Table 4 separately for mental health (column 1 and 2) and life satisfaction (column 3 and 4). For both dependent variables we report the estimates without (column 1 and 3) and with immigrants' characteristics control (column 2 and 4).

Though they are not reported, but can be supplied on request, the estimated coefficients of individual characteristics show that following the Brexit Referendum result older people experienced a statistically significant improvement in subjective wellbeing; women experienced an improvement in mental health and a worsening in life satisfaction; there is not statistical significant effect for married people; subjective wellbeing for respondents with higher household income statistically significantly worsen; similar effect is found for those with a higher number of children; those working; students, and respondents living in Northern Ireland. A slight worsening of mental health is also experienced for respondents living in Scotland. A statistically significant improvement in both measures of subjective wellbeing is observed for those with poorer health, those who are long-term sick, and respondents living in West Midlands, while a slight improvement in life satisfaction is observed for those lining in London. However, when estimating the same model with individual fixed effects, some of the above effects become no longer significant or of a weaker significance.

Focusing on the more complete models that control for immigrants' characteristics, for the mental health regression (column 2) the estimated coefficient of the interaction between "Post EU Ref Interview" and "All Immigrants" is negative and statistically significant at 5%. Specifically,

following the Brexit Referendum result mental health of immigrants resulted in an improvement of 0.114 points. In similar vein, the life satisfaction regressions in column (4) show a statistically significant improvement in life satisfaction for 'All Immigrants' with a coefficient of 0.073, smaller than that of mental health, but still statistically significant at 5%.

Living in a local area that voted to leave is associated with an improvement of subjective wellbeing, with the coefficient being larger and highly statistically significant for mental health, and quite small and only significant at 10% for life satisfaction. Immigrants whose language in childhood was not English, experienced a high significant increase in both mental health and life satisfaction, with the effect being larger for mental health. Previous studies have demonstrated the importance of language of the destination countries, in the process of acculturation, integration as well as for health status of immigrant (Chiswick et al. (2008), Adserà & Ferrer, (2015)). Such effect for immigrants from non-English speaking country of birth is statistically significant for life satisfaction. Additional immigrants' controls do not seem to have any statistically significant effect, except for a 10% statistical significant improvement in life satisfaction for recent migrants.

[Table 4 around here]

The group of immigrants is itself very heterogenous, with EU and Non-EU migrants differing in many aspects including education, ethnicity, culture and origin. Moreover, differences arise in terms integration in the labour market as well as in the social life. Most importantly, the Brexit Referendum result have direct implications only for EU immigrants who, in order to remain in the UK and maintain their right to work and live, need to be granted a pre/settlement status, unless they have already obtained the British citizenship. On the other hand, the Brexit Referendum result do not have any direct implications for Non-EU immigrants who in order to live in the hosting country, would already had granted a visa, a process that has been made more difficult after the 2010 election, as discussed later on.

It is therefore relevant to separate the effect of the EU Referendum on EU and Non-EU (as well as Other migrants) migrants, since this separation provides insight into which group has been more affected and how. We do this in Table 5 estimating equation (2). Focusing on the regression that controls for immigrants' characteristics (column 2 and 4) we notice that although the direction of the coefficients remains the same observed for the whole group of immigrants, showing a general improvement in subjective wellbeing, the magnitude and the significance differs between the three groups with EU immigrants experiencing a larger and significant effect at 5% for mental health only, with the coefficient being negative and equal to 0.262. Unlike the EU immigrants, Non-EU immigrants experienced an improvement in both measures of subjective wellbeing though only significant at 10% for mental health with a coefficient almost half of that

of EU immigrants equal to 0.134, and at 5% significance with a smaller coefficients of life satisfaction equal to 0.079. The effect for Other immigrants in much smaller in magnitude but not statistically significant. The effects of the other variables are qualitatively similar to what has been already discussed for Table 4.

[Table 5 around here]

We hypothesise that this general improvement in subjective wellbeing experienced by Non-EU respondents may capture the sense of relieve for Non-EU immigrants who often see the process of entering the UK life and UK labour market discriminatory and in favour of EU migrants who are seen as they can 'just walk in'. In fact, unlike EU-migrants, Non-EU immigrants need permission to live and work in the UK, even before entering the country. Moreover, the process is also frustrating since someone who seeks permission does not receive a straightforward 'yes' or 'no' answer to their application. Even if they are successful, the Home Office will grant them one of a range of migration statuses determining the length of time (and rights) they may remain in the UK (Briddick, 2019).

While it is well established that immigrants are disadvantaged relative to natives in the labour market, such disadvantage is particularly pronounced for Non-EU immigrants, who may face higher cultural and institutional barriers to access labor markets (Dustmann and Frattini, 2013). For example, before the free movement of EU migrants to the UK will end, EU nationals have unrestricted rights to engage in both employment and self-employment. This is not the case for Non-EU immigrants whose access to waged employment and self-employment are strongly influenced by route of entry, at least in the immediate years after arrival (Kone et al, 2020).

Such felling of alienation and discrimination is likely to have increased following the 2010 election when the UK Government established a net migration target of fewer than 100,000 migrants per year by the end of the parliament (i.e. 2015) as a key policy objective, and given the limitations for restricting EU and EEA migration, the UK Government's efforts to reduce net migration have been built around the restriction of inflows of non-EEA nationals and efforts to boost outflows of Non-EEA nationals (Rienzo and Vargas-Silva, 2015) by making migration more restrictive to Non-EU nationals. Some of these restrictions have been toughened even more recently. For example, since 2012 the UK Government has made it more difficult for Non-EU nationals and settled migrants to bring a non-EEA spouse or children from abroad. This process has clearly created some more frustrations amongst Non-EU immigrants, without leading to a decrease in immigration in the UK.

The increased sense of frustration and discrimination is more likely to be felt differently among Non-EU migrants, depending on how long they have been living in the UK. Those who are long-term migrants are unlikely to have been affected by this toughened visa routes and are likely to have already established legal rights for them and families. While Non-EU migrants who arrived in the UK recently have been subject to such restrictions, and new visa regulations. In order to test whether migrants who have been in the UK for a different time period have been affected differently, we further separate the groups of EU, Non-EU and Other migrants into two sub-groups, each separated between those who have arrived in the UK less than a decade ago (recent), and those who have arrived in the UK a decade or more ago (Established). We do this by estimating equation (3) that adopts a triple DID.

Results are reported in Table 6 that shows the estimation adopting a triple interaction between country of birth (EU, Non-EU and Other), post-Referendum interview and time spent in the country for immigrants (whether recent or established immigrants[8]). When separating further each immigrant group by length of time in the UK, we notice that the improvement in subjective wellbeing is now experienced only and mainly by Recent migrants, this is the case for both EU and Non-EU migrants, while also noticing a general worsening in mental health only for Other Recent immigrants. These results meet the expectations that given the toughen restriction introduced in 2010 and onwards, the EU Referendum Result although does not directly affect Non-EU immigrants, it is likely to have alleviated their feeling of discrimination, generating a sense of 'fairness' in the system hosting immigrants, that is now perhaps perceived as 'fairer'.

At the same time we notice an improvement in both mental health and life satisfaction of recent EU migrants, with the coefficients being now larger. Although surprising at first, these effects might capture different psychological aspects. They could perhaps be linked to the sense of relieve for some group of migrants who were more likely to compete with the new waves of low skilled migrants (e.g. from Bulgarian and Romanian) whose work restrictions in the UK were lifted at the beginning of January 2014, and many of whom have been taking seasonal work once filled mainly by Polish immigrants. Moreover, it is in also plausible that differences might vary by the respondents' own preference to the EU Referendum Result. According to the UKHLS data 25% of all immigrants would prefer the UK to leave the EU, this compares to 43% of Natives; while 23% and 28% of EU and Non-EU respectively expressed preference to leave the EU. At first glance this might not appear too surprising, but in a political campaign that has focused heavily on immigrants, these statistics opens up the question on what made over every four migrants to

[8] Additional results not reported, also control for an interaction between immigrants and living in a local area that voted to leave. While the main effects do not change, apart from a statistical significantly worsening in mental Health of Established Non-EU migrants, the interaction does not show any relevant pattern.

prefer leaving the EU. An analysis conducted just before the EU Referendum on ethnic minority voters, representative of the general population, has shown a strong and robust lead for Remain in ethnic minority communities (G. Gibbons, 2016).

Although to the best of knowledge there are no studies analysing the voting behaviour of immigrants (with right to vote) during the EU Referendum, some existing analysis on ethnic minority seems to suggest that ethnic minority voters were more likely to vote Leave. For example, Ehsan (2017) claims that the strength of euroscepticism within the British South Asian population was perhaps stronger than previously anticipated. Migration background impacts considerably on vote choice, with citizens with migration background are mostly affected by the rise of the anti-immigrant campaigns (Strijbis, 2014).

[Table 6 around here]

5.3. Robustness checks

5.3.1. Individual heterogeneity

One concern that might arise is that the effects observed before may be driven by individual heterogeneity. This could be particularly relevant when analysing different groups of immigrants, as this is the case for EU, Non-EU and Other immigrants in the UK, who differ from many aspects, for example for ethnicity, culture, religion, motivation and tastes, as well as culture-specific skills and limitations (e.g. language) that might translate into advantages or disadvantages not only in the labour market but also in the social life, affecting therefore their subjective wellbeing. To address this issue exploiting the panel element of the UKHLS we next control for individual heterogeneity adopting fixed effects estimations and repeating the analysis for equation (1) and (2). Due to small sample size of different sub-groups of immigrants by time living in the UK, fixed effects estimations are not repeated for equation (3) as they are likely to be imprecise.

Fixed effect estimates of equation (1) and equation (2) are reported in columns (1) and (2), and (3) and (4) respectively in Table 7. When using fixed effect estimations results treating all immigrants as a single treatment group still show a general improvement for both mental health and life satisfaction, although slightly smaller in size (0.106 and 0.075 respectively for mental health and life satisfaction) and significant at 10% for mental health, and 5% for life satisfaction.

Looking across Table 7 for the three treatment groups of immigrants, we notice that coefficients for Non-EU migrants are now larger and still statistically significant, while the effects for EU are now much smaller and no longer statistically significant. The results confirm that even

controlling for individual heterogeneity following the EU Referendum Result the general subjective wellbeing of Non-EU migrants statistically significantly improved.

[Table 7 around here]

5.3.2. Balanced Panel

Another concern is that it might be argued that the unobserved individual fixed effect might bias the estimates when an unbalanced panel is used. To test whether this is the case for the results, Table 8 repeats the fixed effects estimations of equation (2) now keeping a balanced panel data so that the same individuals are interviewed before and after the Brexit referendum. The effect of general improvement in subjective wellbeing for Non-EU migrants is confirmed with results remaining statistically significant at 5% for both mental health and life satisfaction.

[Table 8 around here]

5.3.3. Working population only

Additional robustness check includes estimates Equation (2) on only those who are working, separating between those aged 49 or less, and those aged 50 or more (Table 9). The choice of those two age groups is motivated by the fact that younger working immigrants might feel more the pressure of competition in the labour market, and or might have weaker ties and knowledge of the labour market to give rise to more security. Estimates also control for whether the respondent has a temporary contract to reflect anxiety due to job insecurity. Results show that only younger cohort of workers with temporary contracts are affected by the Brexit Referendum result, with their mental health and life satisfaction improving, while no statistically significant effect is observed for older cohorts. The analysis by cohort of workers shows that only Non-EU migrants are affected, with a general improvement in mental health experienced by younger Non-EU workers, while older Non-EU workers experience an opposite effect with a general worsening in mental health only. These results confirm the idea that following the EU Referendum result Non-EU workers felt a sense of relieve and fairness in having access to jobs compared to the EU immigrants who are viewed as having a comparative advantage. This does not affect older workers who might have stronger ties in the labour marker, and in the society as a whole.

[Table 9 around here]

5.3.4. Different Time Window

To test whether the effect of the general improvement in subjective wellbeing of immigrants changed with time, we then restrict the time window to only 2015 and 2016 by excluding those

interviewed in 2017, in order to see how and if the observed effects have changed over time, showing some adaptation effect. We do this by using both OLS and fixed effect estimations. Results presented in Table 10a show that compared to results in Table 5 in the first six month or so following the EU Referendum result, the effect for Non-EU were slightly stronger in magnitude and significance for both measures of wellbeing, while the Referendum had no statistically significant effect on EU migrants, whose mental health was statistically significantly improved only later in time.

[Table 10a around here]

We then repeat the analysis using as treatment group all immigrants, and now using Fixed effect estimates. Table 10b reports these results for the unbalanced (columns 1 and 2) and balanced panel (columns 3 and 4), and show that compared to Table 4, even restricting the time window and using fixed effects, the main results of a general improvement in subjective wellbeing for all immigrants is observed, with both magnitude and significance being larger than what observed using an OLS estimates.

[Table 10b around here]

5.3.5. Clearly identifiable country of birth of immigrants

Another concern with the current study could be related to the potential measurement error in the classification of immigrants, due to the fact that for about one third of all immigrants in the data the country of birth cannot be clearly identified, as information is unavailable, resulting in the group of 'Other immigrants' being a mix of EU and Non-EU immigrants. To check whether the main results for EU and Non-EU immigrants are stable to the definition adopted, previous results have been re-run by restricting the sample to only those immigrants whose country of birth is clearly identifiable, hence excluding from the analysis 'Other immigrants'. Results remain qualitatively similar is magnitude and significance, both adopting OLS and Fixed Effect estimations (Table 11a and Table 11b)

[Table 11a around here]

[Table 11b around here]

5.3.6. Placebo Test

In order to show that our results are not driven by previous trends we conduct two placebo estimations, one with OLS, another with Fixed Effects estimations. In this case, we use data from June 2013 to June 2015, and define T_t is a 'pseudo' post dummy equal to one for 24th June 2014

to 23rd June 2015 and equal to zero for June 2013 to June 2014. If the assumption of parallel trends holds, we should expect the coefficients for the placebo treatment variables to be statistically insignificant. We show that this is the case, with the interaction of this variable with the three immigrants' groups dummy being statistically insignificant. This is the case for both OLS estimations and Fixed effects estimations (Table 12). Hence, the evidence suggests that the results are not driven by previous trends affecting immigrants' wellbeing in the UK.

[Table 12 around here]

6. Conclusions

This study analyses the effect of the Brexit Referendum result on subjective wellbeing of immigrants living in the UK. While existing research has shown that following the EU Referendum Results the UK as a whole has experienced a worsening in subjective wellbeing, to the best of knowledge no attention has been given to the effect of Brexit Referendum result on subjective wellbeing of immigrants living in the UK, whose lives might be directly or indirectly affected by the consequences of ending the free movement in January 2021.

A difference-in-differences analysis is performed defining natives as the control group, and different immigrant groups as treatment(s) to reflect country of origin and time spent in the country, in order to capture the legal and personal experience, and integration in the UK. Results show that on average subjective wellbeing, measured by Mental Health and life satisfaction, of immigrants improved after the EU Referendum. When separating further immigrant groups, the effect is pronounced for Non-EU immigrants, particularly those who arrived in the UK in the last decade or so. The results are robust to different robustness checks, including controlling for individual heterogeneity using individual fixed effects, as well as balanced panel, and different time windows.

The results are consistent with the idea that the EU Referendum result alleviates the sense of unfairness, frustration and discrimination that Non-EU migrants experienced particularly following the toughened restriction that since 2010 the UK Government has imposed on Non-EU immigrants with the aim of reducing net immigration in the UK to 'tens of thousands'. Ending freedom of movement in January 2021 will mean that EU and Non-EU citizens wishing to move to the UK will be treated in the same way. This paper shows how this change has been perceived by Non-EU immigrants and how it has affected their wellbeing.

These results perhaps add to the controversy of Brexit process, by showing that despite immigrants have been one of the key drivers of the Brexit campaign and process, the Brexit

Referendum result has acted as a 'treat' for Non-EU immigrants whose wellbeing has improved, presumably more than that of the UK natives.

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Tables

Table 1. 'Should UK remain a member of the EU', 2016 only.

	(1)	(2)	(3)	(4)
	Referendum announced in February		*Referendum held in June*	
	Before	After	Before	After
Remain a member of the European Union	57.44	52.17	53.92	51.83
Leave the European Union	34.07	41.57	37.17	43.68
Not answered, DNK, missing	8.49	6.26	8.91	4.49
Total	**100**	**100**	**100**	**100**
Observations	**2,129**	**17,359**	**8,936**	**10,552**

Notes: Based on Wave 8, Year 2016 only of Understanding Society Data. The category 'Other' includes refusal, Do not know. (Proxy, missing and inapplicable have been dropped).

Table 2: Distribution of Immigrants

	Before EU Referendum	After EU Referendum
	Percent	Percent
Panel A: All		
Natives	81.16	80.97
All Immigrants	18.84	19.03
Total	100	100
Total N	**46,142**	**19,860**
Panel B: All Immigrants by country of origin		
EU-Immigrants	14.52	14.04
Non-EU Immigrants	51.74	52.02
Other-Immigrants	33.74	33.94
Total	100	100
Total N	**8,610**	**3,754**

Table 3a. Descriptive Statistics, Dependent Variables

	Before	*After*	*Difference*
	Natives		
Mental Health	1.677	1.788	0.111
Life satisfaction	5.275	5.237	-0.038
	All Immigrants		

Mental Health	1.701	1.515	-0.186
Life satisfaction	5.187	5.204	0.017
EU Immigrants			
Mental Health	1.774	1.498	-0.276
Life satisfaction	5.167	5.130	-0.037
Non-EU Immigrants			
Mental Health	1.657	1.398	-0.259
Life satisfaction	5.220	5.308	0.089
Other Immigrants			
Mental Health	1.703	1.655	-0.048
Life satisfaction	5.161	5.139	-0.023

Table 3b. Descriptive Statistics

	Pre Brexit	Post Brexit	Pre Brexit	Post Brexit
	Natives		Immigrants	
Age	47.9	48.4	45.4	45.8
Female	50.9%	51.6%	52.5%	51.2%
Working	56.0%	55.8%	63.9%	67.6%
Retired	24.9%	25.8%	15.0%	13.8%
Long term sick- or disabled	3.0%	3.1%	2.2%	2.5%
Student	7.2%	6.6%	5.7%	4.4%
Log Household Income	7.52	7.54	7.51	7.55
Number of Children in HH	0.37	0.36	0.63	0.65
Education				
Lower	42.58	42.36	20.73	19.63
Intermediate	32.14	31.98	34.75	36.31
Higher	25.28	25.66	44.52	44.06
Marital Status				
Never Married	35.47	36.16	26.54	27.76
In partnership	48.67	47.78	60.67	60.63
Formerly in partnership	15.86	16.06	12.79	11.61
Observations	**36,632**	**15,813**	**8,574**	**3,709**

Table 3c. Descriptive Statistics, Immigrants only

	Pre Brexit	Post Brexit
Non English speaking in childhood	68.7%	68.2%
English speaking in childhood	31.3%	31.8%
Non-English speaking country	83.8%	83.1%
English speaking country	18.2%	16.9%
Recent Immigrants	21.8%	17.6%
Established Immigrants	78.2%	82.4%

Country of Origin (%):		
EU	14.52	14.04
Non-EU	51.74	52.02
Other	33.74	33.94
	100	100
Total	**8,610**	**3,754**

Table 4: Estimates of the Effect of Brexit on Subjective Wellbeing, OLS. Treatment groups: all Immigrants.

	(1)	*(2)*	*(3)*	*(4)*
Variables	*Mental Health*		*Life Satisfaction*	
All Immigrants X Post EU Ref	-0.099*	-0.114**	0.093***	0.073**
	(0.053)	(0.053)	(0.029)	(0.029)
All Immigrants	-0.130***	0.384	-0.003	-0.460*
	(0.038)	(0.380)	(0.021)	(0.278)
Post EU Ref	0.122***	0.109***	-0.023	-0.010
	(0.039)	(0.032)	(0.016)	(0.020)
50% or more voted to leave in local area	-0.171***	-0.173***	0.032*	0.030*
	(0.034)	(0.034)	(0.017)	(0.017)
Non-English Speaking in childhood		-0.228***		0.146***
		(0.082)		(0.042)
Non-English Speaking country of birth		-0.087		0.119***
		(0.063)		(0.033)
Recent immigrants		-0.290		0.348*
		(0.238)		(0.180)
Established immigrants		0.179		0.211
		(0.235)		(0.178)
EU immigrants		-0.398		0.098
		(0.278)		(0.205)
Non EU		-0.295		-0.010
		(0.285)		(0.207)
Other Immigrant Country		-0.318		-0.019
		(0.279)		(0.205)
Constant	1.371***	1.372***	5.120***	5.086***
	(0.289)	(0.287)	(0.149)	(0.150)
Observations	64,755	64,755	61,675	61,675
R-squared	0.194	0.195	0.185	0.186

Notes. Results are based on an OLS regression. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Estimates of the Effect of Brexit on Subjective Wellbeing, OLS. Treatment groups: EU, Non-EU, and Other Immigrant.

	(1)	(2)	(3)	(4)
VARIABLES	*Mental Health*		*Life Satisfaction*	
EU immigrants X Post EU Ref	-0.246**	-0.262**	0.080	0.057
	(0.124)	(0.124)	(0.070)	(0.070)
Non-EU immigrants X Post EU Ref	-0.123*	-0.134*	0.097**	0.079**
	(0.071)	(0.070)	(0.039)	(0.039)
Other immigrants X Post EU Ref	0.013	-0.007	0.091*	0.072
	(0.083)	(0.084)	(0.048)	(0.048)
EU immigrants	-0.037	0.140	-0.047	-0.467**
	(0.088)	(0.266)	(0.050)	(0.191)
Non-EU immigrants	-0.129***	0.001	0.031	-0.366**
	(0.048)	(0.251)	(0.028)	(0.184)
Other immigrants	-0.180***	0.041	-0.037	-0.482**
	(0.057)	(0.260)	(0.035)	(0.189)
Post EU Ref	0.121***	0.119***	-0.013	-0.010
	(0.039)	(0.039)	(0.020)	(0.020)
50% or more voted to leave in local area	-0.171***	-0.170***	0.031*	0.030*
	(0.034)	(0.034)	(0.017)	(0.017)
Non-English speaking country		-0.228***		0.148***
		(0.082)		(0.042)
Non-English speaking in childhood		-0.090		0.120***
		(0.063)		(0.033)
Recent Immigrant		-0.289		0.346*
		(0.237)		(0.181)
Established Immigrant		0.171		0.212
		(0.234)		(0.178)
Constant	1.384***	1.396***	5.098***	5.090***
	(0.289)	(0.289)	(0.150)	(0.150)
Observations	64,658	64,658	61,633	61,633
R-squared	0.194	0.195	0.185	0.186

Notes. Results are based on an OLS regression. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Estimates of the Effect of Brexit on Subjective Wellbeing, OLS. Triple DID.

		(1)	(2)
		Mental Health	Life Satisfaction
EU	Immigrant X Recent Immigrant X Post EU Ref	-0.559***	0.385**
		(0.207)	(0.152)
EU	Immigrant X Established Immigrant X Post EU Ref	-0.195	-0.005

	(0.145)	(0.078)
Non-EU Immigrant X Recent Immigrant X Post EU Ref	-0.389***	0.212**
	(0.130)	(0.094)
Non-EU Immigrant X Established Immigrant X Post EU Ref	-0.082	0.058
	(0.080)	(0.043)
Other Immigrant X Recent Immigrant X Post EU Ref	0.434**	-0.018
	(0.173)	(0.111)
Other Immigrant X Established Immigrant X Post EU Ref	-0.120	0.089*
	(0.094)	(0.053)
Post EU Ref	0.121***	-0.012
	(0.039)	(0.020)
50% or more voted to leave in local area	-0.172***	0.030*
	(0.034)	(0.017)
Constant	1.416***	5.083***
	(0.290)	(0.151)
Observations	64,549	61,556
R-squared	0.195	0.186

Notes. Results are based on an OLS regression. Additional Variables not reported are: dummy for Non-EU, Eu and Other immigrants; dummy for recent and established immigrants; age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Estimates of the Effect of Brexit on Subjective Wellbeing, Fixed Effects.
Treatment groups: All Immigrants; EU, Non-EU and Other immigrants.

	(1)	(2)	(3)	(4)
	Mental Health	Life Satisfaction	Mental Health	Life Satisfaction
All Immigrants X Post EU Ref	-0.106*	0.075**		
	(0.059)	(0.036)		
EU immigrants X Post EU Ref			-0.093	0.027
			(0.132)	(0.087)
Non-EU immigrants X Post EU Ref			-0.188**	0.142***
			(0.078)	(0.049)
Other immigrants X Post EU Ref			0.023	-0.007
			(0.095)	(0.058)
Post EU Ref	0.081**	0.006	0.079*	0.006
	(0.041)	(0.021)	(0.041)	(0.021)
50% or more voted to leave in local area	-0.042	0.214*	-0.041	0.213*
	(0.273)	(0.121)	(0.273)	(0.121)
Constant	1.366	6.568***	1.463	6.532***
	(2.308)	(1.403)	(2.311)	(1.400)
Immigrant control			Yes	Yes
Observations	64,755	61,675	64,658	61,633
R-squared	0.042	0.022	0.042	0.023

Number of pidp	35,979	34,786	35,915	34,745

Notes. Results are based on an OLS regression. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions, and immigrants characteristics. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Estimates of the Effect of Brexit on Subjective Wellbeing, Fixed Effects and balanced panel. Treatment groups: EU, Non-EU and Other immigrants.

	(1)	(2)
	Mental Health	Life Satisfaction
EU immigrants X Post EU Ref	-0.117	0.022
	(0.141)	(0.093)
Non-EU immigrants X Post EU Ref	-0.188**	0.126**
	(0.082)	(0.054)
Other immigrants X Post EU Ref	-0.024	-0.017
	(0.098)	(0.063)
Post EU Ref	0.079	0.051
	(0.095)	(0.050)
50% or more voted to leave in local area	0.103	0.262*
	(0.336)	(0.147)
Constant	4.592*	5.397***
	(2.741)	(1.558)
Immigrants controls	Yes	Yes
Observations	34,771	33,297
R-squared	0.047	0.028
	18,346	18,226

Notes. Results are based on an FE regression. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. As well as immigrants controls. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Estimates of the Effect of Brexit on Subjective Wellbeing, OLS. Treatment groups: EU, Non-EU and Other immigrants. Workers only.

	Aged 49 or less		*Aged 50 or more*	
VARIABLES	(1) Mental Health	(2) Life Satisfaction	Mental Health	Life Satisfaction
EU immigrants X Post EU Ref	-0.166	0.038	0.005	-0.134
	(0.169)	(0.091)	(0.366)	(0.214)
Non-EU immigrants X Post EU Ref	-0.261**	0.092	0.350**	0.076
	(0.103)	(0.061)	(0.161)	(0.092)
Other immigrants X Post EU Ref	-0.114	0.015	0.005	0.048
	(0.115)	(0.071)	(0.205)	(0.112)
EU immigrants	0.160	-0.380	0.509	-0.970**
	(0.447)	(0.334)	(0.855)	(0.415)
Non-EU immigrants	0.096	-0.318	0.175	-0.837**
	(0.432)	(0.327)	(0.809)	(0.383)
Other immigrants	0.125	-0.419	0.302	-0.907**

	(0.446)	(0.333)	(0.805)	(0.399)
Post EU Ref	0.113*	-0.008	0.147*	-0.004
	(0.064)	(0.031)	(0.085)	(0.045)
50% or more voted to leave in local area	-0.128**	0.004	-0.230***	0.112***
	(0.052)	(0.026)	(0.078)	(0.041)
Temporary contract	0.300***	-0.140***	0.069	0.032
	(0.072)	(0.035)	(0.099)	(0.049)
Non-English speaking country	-0.170	0.143**	-0.119	0.191**
	(0.121)	(0.069)	(0.179)	(0.097)
Non-English speaking in childhood	-0.016	0.115**	0.053	0.201**
	(0.083)	(0.048)	(0.140)	(0.079)
Recent Immigrant	-0.295	0.220	-0.740	0.644
	(0.412)	(0.318)	(0.808)	(0.399)
Established Immigrants	-0.072	0.121	-0.292	0.599
	(0.410)	(0.316)	(0.793)	(0.373)
Constant	2.869***	4.658***	-25.220**	8.683
	(1.093)	(0.563)	(10.649)	(5.847)
Observations	24,430	23,001	11,880	11,563
R-squared	0.114	0.128	0.120	0.119

Notes. Results are based on an FE regression. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. As well as immigrants controls. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 10a: Estimates of the Effect of Brexit on Subjective Wellbeing, OLS.
Treatment groups: EU, Non-EU and Other immigrants, excluding 2017

	OLS		FE	
	(1)	(2)	(3)	(4)
VARIABLES	Mental Health	Life Satisfaction	Mental Health	Life Satisfaction
EU immigrants X Post EU Ref	-0.195	0.074	-0.203	0.157
	(0.144)	(0.077)	(0.165)	(0.105)
Non-EU immigrants X Post EU Ref	-0.171**	0.099**	-0.277***	0.154***
	(0.082)	(0.044)	(0.092)	(0.060)
Other immigrants X Post EU Ref	-0.021	0.092*	0.014	-0.003
	(0.098)	(0.054)	(0.111)	(0.070)
EU immigrants	0.194	-0.427**		
	(0.280)	(0.195)		
Non-EU immigrants	0.052	-0.325*		
	(0.266)	(0.188)		
Other immigrants	0.093	-0.440**		
	(0.275)	(0.193)		
Post EU Ref	0.121***	-0.014	0.096**	-0.001
	(0.040)	(0.020)	(0.042)	(0.021)
50% or more voted to leave in local area	-0.175***	0.024	0.056	0.197
	(0.035)	(0.018)	(0.315)	(0.138)
Non -English speaking country	-0.235***	0.149***		
	(0.084)	(0.045)		
Non-/English speaking in childhood	-0.121*	0.128***		
	(0.064)	(0.034)		
Recent Immigrant	-0.333	0.293	-0.090	0.316***

	(0.251)	(0.183)	(0.192)	(0.117)
Established Immigrant		0.169		
		(0.181)		
Constant	1.430***	5.073***	-0.810	6.806***
	(0.297)	(0.156)	(2.510)	(1.543)
Observations	59,931	56,882	59,931	56,882
R-squared	0.194	0.184	0.044	0.021
Number of pidp			35,332	33,878

Notes. Results are based on an FE regression. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. As well as immigrants' controls. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 10b: Estimates of the Effect of Brexit on Subjective Wellbeing, Fixed Effects.
Treatment groups: All immigrants, excluding 2017

	Unbalance Panel		*Balanced Panel*	
	(1)	(2)	(3)	(4)
	Mental Health	Life Satisfaction	Mental Health	Life Satisfaction
All Immigrants X Post EU Ref	-0.169**	0.104**	-0.190***	0.098**
	(0.070)	(0.044)	(0.072)	(0.046)
Post EU Ref	0.097**	-0.001	0.120	0.052
	(0.042)	(0.021)	(0.146)	(0.078)
50% or more voted to leave in local area	0.052	0.198	0.199	0.213
	(0.315)	(0.138)	(0.379)	(0.183)
Constant	-0.933	6.833***	4.144	4.880***
	(2.503)	(1.547)	(3.084)	(1.801)
Observations	60,022	56,918	30,501	28,989
R-squared	0.044	0.021	0.052	0.029
Number of pidp	35,394	33,914	18,029	17,453

Notes. Results are based on an FE regression. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. As well as immigrants' controls. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 11a. Estimates of the Effect of Brexit on Subjective Wellbeing, OLS and Fixed Effects
Treatment groups: All immigrants, exclude Other Immigrants

	OLS		Fixed Effects	
	(1)	(2)	(3)	(4)
VARIABLES	Mental Health	Life Satisfaction	Mental Health	Life Satisfaction

All Immigrants X Post EU Ref	-0.169***	0.073**	-0.165**	0.116***
	(0.063)	(0.035)	(0.069)	(0.044)
All Immigrants	0.255	-0.593*		
	(0.426)	(0.305)		
Post EU Ref	0.109***	-0.004	0.073*	0.008
	(0.032)	(0.020)	(0.042)	(0.021)
50% or more voted to leave in local area	-0.181***	0.039**	-0.132	0.228*
	(0.035)	(0.018)	(0.272)	(0.125)
Constant	1.296***	5.078***	2.329	6.086***
	(0.299)	(0.154)	(2.413)	(1.432)
Observations	60,799	58,494	60,799	58,494
R-squared	0.196	0.188	0.042	0.022
Number of pidp			33,583	32,742

Table 11b. Estimates of the Effect of Brexit on Subjective Wellbeing, OLS and Fixed Effects
Treatment groups: EU, and Non-EU, exclude Other Immigrants

	OLS		Fixed Effects	
	(1)	(2)	(3)	(4)
VARIABLES	Mental Health	Life Satisfaction	Mental Health	Life Satisfaction
EU immigrants X Post EU Ref	-0.265**	0.055	-0.088	0.030
	(0.124)	(0.070)	(0.132)	(0.087)
Non-EU immigrants X Post EU Ref	-0.137*	0.077**	-0.183**	0.143***
	(0.070)	(0.039)	(0.078)	(0.050)
EU immigrants	-0.028	-0.591***		
	(0.324)	(0.228)		
Non-EU immigrants	-0.173	-0.484**		
	(0.311)	(0.221)		
Post EU Ref	0.105***	-0.005	0.072*	0.008
	(0.040)	(0.020)	(0.042)	(0.021)
50% or more voted to leave in local area	-0.179***	0.039**	-0.132	0.227*
	(0.036)	(0.018)	(0.272)	(0.125)
Constant	1.325***	5.082***	2.342	6.071***
	(0.301)	(0.154)	(2.415)	(1.430)
Observations	60,702	58,452	60,702	58,452
R-squared	0.196	0.188	0.042	0.022
Number of pidp			33,519	32,701

Notes. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. As well as immigrants controls. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Table 12: Placebo test, Fixed Effects. Treatment groups: EU, Non-EU and Other immigrants. OLS and Fixed Effects

	OLS	Fixed Effects

	(1) Mental Health	(2) Life Satisfaction	(3) Mental Health	(4) Life Satisfaction
EU immigrants X Post EU Ref	-0.218	0.096	-0.183	0.051
	(0.184)	(0.094)	(0.232)	(0.105)
Non-EU immigrants X Post EU Ref	0.120	0.047	0.068	0.038
	(0.096)	(0.053)	(0.118)	(0.068)
Other immigrants X Post EU Ref	0.149	-0.055	0.208	-0.117
	(0.118)	(0.068)	(0.141)	(0.084)
EU immigrants	0.052	-0.485**		
	(0.473)	(0.222)		
Non-EU immigrants	-0.329	-0.347*		
	(0.439)	(0.205)		
Other immigrants	-0.287	-0.400*		
	(0.451)	(0.214)		
Post EU Ref	-0.116	0.099*	0.047	0.016
	(0.110)	(0.060)	(0.151)	(0.088)
Constant			0.626	5.719**
			(4.737)	(2.658)
Observations			42,667	42,053
R-squared			0.033	0.019
Number of pidp			31,608	30,919

Notes. Additional Variables not reported are: age, age squared, gender, level of education, marital status, number of children, dummy for working, retired, long sickness, student; log of household income, health status, interview mode, month of interview, year of interview and regions. As well as immigrants controls. Robust standard errors clustered at individual level in brackets. Significance *** p<0.01, ** p<0.05, * p<0.1.

Appendix

Table A1

	Country	Annual Population Survey Share of total immigrants	Identified in Understanding Society
1	Poland	9.8%	Yes
2	India	9.0%	Yes
3	Pakistan	5.7%	Yes
4	Republic of Ireland	4.3%	Yes
5	Romania	3.4%	No
6	Germany	3.3%	Yes
7	Bangladesh	2.6%	Yes
8	South Africa	2.4%	Yes
9	China	2.3%	Yes
10	Italy	2.2%	Yes
11	Nigeria	2.2%	Yes
12	Lithuania	1.9%	No
13	United States of America	1.9%	Yes
14	France	1.8%	Yes

15	Spain	1.6%	Yes
16	Philippines	1.6%	No
17	Portugal	1.5%	No
18	Sri Lanka	1.5%	Yes
19	Australia	1.5%	Yes
20	Jamaica	1.4%	Yes
21	Kenya	1.4%	Yes
22	Zimbabwe	1.3%	No
23	Somalia	1.2%	No
24	Ghana	1.2%	Yes
25	Latvia	1.1%	No
Total		**68.1%**	**56%**