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Exploring the relationship between local volunteering opportunities and the propensity to volunteer using a nationally representative survey of adults in Wales

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Abstract

This study explored the respective importance of compositional (individual) and contextual (neighbourhood) factors associated with the propensity to engage in formal volunteering among a nationally representative sample of adults in Wales, UK. To date, while certain contextual characteristics of local communities have been found to be associated with the propensity to volunteer, compositional characteristics of residents tend to be stronger predictors. Few studies to date have specifically explored associations with local volunteering opportunities. To address such gaps, this study examined the extent to which such opportunities and broader neighbourhood factors such as urban/rural status and deprivation impacted upon propensities to volunteer, adjusting for important compositional predictors of voluntarism. In summary, while volunteering was marginally associated with a measure of local voluntary opportunities, hinting that the odds of formal volunteering are greater among those living in areas with more local voluntary organisations, this association was not retained following adjustment for other factors. This suggests that much of the area-level variance is explained by spatial variations in compositional factors. Further research is needed to examine determinants of volunteering behaviour at a range of spatial scales by drawing on wider measures of volunteering opportunities, before the factors at play can be fully understood.

Keywords: Formal Volunteering; Neighbourhood Effects; National Survey for Wales (NSW); Geographical Information Systems; Logistic Regression models.

1. Introduction

A relatively consistent 25-30% of UK adults formally volunteer (i.e. provide unpaid help to organisations outside their own household) at least once a month (Lindsey and Mohan, 2019; p. 61). However, hidden within these national figures are important geographical variations in volunteering at the local level which have been the subject of several studies (see for example, McCulloch et al., 2012). Whilst some of this variation will be due to compositional factors that have been shown to impact on volunteering, such as population-level demographic characteristics and existing levels of human capital, more research is needed to examine the degree to which these factors explain geographical patterns in wider aspects of volunteering (Musick and Wilson, 2008). Wilson and Musick, (1999; p. 245), for example, have suggested that “people’s affiliation with and participation in a voluntary association is affected by ecological factors”. These may include spatial variations in the availability of volunteering opportunities, which have been shown to have important implications for local patterns of volunteering (Mohan and Bennett, 2019).

Building on existing theoretical and empirical approaches primarily in relation to formal volunteering, the primary objective of this paper is to examine evidence concerning spatial dimensions of voluntarism by focusing on the potential influence of the neighbourhood context, including the density of volunteering organisations that provide local opportunities, on the propensity to volunteer. Specifically, we examine the utility of data drawn from the National Survey for Wales (NSW)¹ to examine the types of factors that may influence volunteering patterns. If it can be assumed that most volunteering is conducted locally, then the argument developed, and the hypothesis tested in this study, is that the propensity to volunteer is partly determined by the nature and volume of volunteering opportunities within reasonable travelling distance in such communities.

By drawing on an administrative database of voluntary organisations collated by the Welsh Council for Voluntary Action (WCVA), the utility of such sources to measure opportunities, or at least to represent a ‘proxy’ measure of the intensity of volunteering organisations, are examined in order to determine if their absence/presence has any impact on whether people are volunteering or not. Wilson (2000; p. 229) has earlier cautioned that “the impact of context on individual volunteering is one of the least understood issues in the field”. He points to a relative dearth of social science research in this area as compared to a burgeoning literature

¹ <https://gov.wales/national-survey-wales>

concerned with exploring the role of neighbourhood characteristics in influencing so-called 'problem behaviours' in areas such as crime, health and education. Studies conducted to date in volunteering research have largely been concerned with using proxy measures of neighbourhood conditions such as levels of home ownership and duration of residence. If as asserted by Musick and Wilson (2008; p. 319) that "there is every reason to believe that good as well as bad behaviour is shaped by locality", we may hypothesise that, after controlling for the kind of individual level variables previously found to be associated with volunteering, such rates are influenced by immediate neighbourhood area characteristics. The aim of this paper is to investigate the propensity to volunteer and the extent to which variations between places are a function of the interactions between compositional influences and neighbourhood contextual variables.

The rest of this paper is structured as follows; firstly, we briefly summarise the types of factors that have been shown to be associated with formal volunteering in order to make a case for research that incorporates area-level predictors such as urban/rural status, deprivation levels and the availability of volunteering opportunities. Secondly, recent studies that have drawn attention to the potential role of such factors are discussed in order to make a case for research that examines whether people are more likely to volunteer in different spatial contexts. The results from our analysis are then described before we draw on these findings to highlight the need for further research to explore such influences. Finally, we conclude by re-iterating the policy importance of this type of research particularly in relation to austerity-driven losses in public services and the increasing role of the third sector in the provision of services previously provided by local government in the UK.

2. Determinants of formal volunteering

Previous studies have adopted a variety of theoretical, conceptual and methodological approaches to describe individual and ecological level factors associated with differing facets of volunteering activities (see for example, Musick and Wilson, 2008; Wilson, 2000, 2012; Bekkers, 2016; Haski-Leventhal et al., 2018). The aim here is to briefly summarise those factors associated with the willingness, subjective disposition or motivations to formally volunteer in order to place our research in a wider context (readers are referred to Wilson (2012) for a more comprehensive review).

2.1 Demographic factors

Musick and Wilson expand on the types of *micro-level* characteristics associated with different aspects of volunteering behaviour. These include individual-level resources correlated with participation in formal volunteering such as age, income, occupation/employment status and physical health, as well as household level factors such as marital status and family obligations (Smith, 1994; Wilson, 2000; Egerton and Mullan, 2008; Niebuur et al., 2018). Similar sets of explanatory factors have also been shown to account for the continuation (or withdrawal) of volunteering commitments (Wilson and Musick, 1999; Wilson, 2012). These studies have often tended to underplay wider contextual influences, although Niebuur et al (2018) in a systematic review and meta-analysis of individual factors associated with volunteering, have drawn attention to inconsistencies in findings between studies of volunteering conducted in Europe and those performed in the United States (US) and elsewhere (for example, in relation to associations between gender and volunteering). Meanwhile, Mohan et al. (2011), in a study concerned with understanding factors associated with variations in volunteering such as the characteristics of the areas in which volunteers live, highlighted the importance of compositional factors at the individual level on the tendency to volunteer in comparison to regional level place characteristics. However, a lack of significant variation in volunteering levels between larger spatial scales such as UK regions suggests researchers may have to look to sub-regional scales (in their research Wales, for example, was studied as a single region) to investigate contextual influences on volunteering capacity.

2.2 Human, Cultural and Social Capital

Others have drawn attention to the importance of cultural, religious and human capital including the values held by individuals and how this may impact on their willingness or motivation to volunteer (Wilson and Musick, 1997; Forbes and Zampelli, 2014; Wilson and Janoski, 1995). The relative importance of such factors can depend on the exact type, range and duration of volunteering activity (for example, between formal volunteering and informal helping), the social resources and networks individuals are able to draw on during their life course, and to varying extents the national context in which such volunteering efforts are nested (Musick and Wilson, 2008). Nevertheless it has been postulated that indicators of social capital combine with, or amplify, individual level resources associated with the range and frequency of volunteering activities such as years of schooling and social class, to explain why those of higher socio-economic status volunteer more and for a wider range of causes (Wilson and

Musick, 1998). This interaction between human and social capital means that “more highly educated people made better use of all forms of social resources” by, for example, joining more organisations or religious groups and being more active within them which in turn impacts on the nature of their volunteering behaviour (Musick and Wilson, 2008; p. 277).

2.3 Social factors

A large body of research in volunteering has been concerned with theoretical strands that highlight the role of the social context in which volunteering is taking place and has been primarily concerned with encapsulating ideas surrounding the nature of social networks, both formal and informal, as well as frequent interaction through social ties, as forms of social capital (Wilson and Musick, 1997; Wilson, 2000). This has primarily focused on associational memberships (e.g. local clubs, religious and recreational organisations) and how these vary through the life course with potential implications for volunteering recruitment and retention (Dawson et al., 2019; Dury et al., 2014; Einolf and Chambre, 2011; Hustinx et al., 2010; Nesbit, 2012; Smith, 1994). Social integration factors have been shown to be some of the strongest predictors of volunteering, with individuals having the most memberships with voluntary organisations, and stronger formal and informal social networks through for example greater religious participation, having greater likelihood and levels of volunteering (Lim and MacGregor, 2012; Musick and Wilson, 2008; Musick et al., 2000; Forbes and Zampelli, 2014). Others have discussed the importance of behavioural variables (for example, frequency of contact with neighbours) but have cast doubt on the consistent influence of attitude constructs such as ‘perceptions of neighbours as trusting’ in alternative contexts (Wilson and Son, 2018).

2.4 External Influences

Notably, there has been less research examining the role of contextual influences such as the potential impact of neighbourhood, community or regional-level characteristics (*macro-level* factors), which may interact with individual level and social resource variables to varying degrees to explain variations in volunteering rates. Smith (1994) drew attention to the potential role of community and regional-level contextual characteristics such as the size of the community, deprivation levels and urban/rural status of the area in which an individual resides on volunteering within programs and associations in the US. Comparing and contrasting such findings with research exploring the influence of social background, personality, attitudes and situational factors, Smith drew attention to the relative paucity of studies exploring these types of effects (Smith, 1994; p. 246). More recently, Einolf and Chambre (2011) have called for

models that incorporate a measure of the density of non-profit organisations and the social capital of residents at a community level in order to help explain the likelihood of volunteering.

3. Contextual influences on formal volunteering

Wilson (2000) drew attention to the impact of inner-city poverty levels on membership rates of voluntary organisations in the US, highlighting an inverse relationship which persisted even after controlling for individual characteristics. The exact impact of such factors has been subject to on-going debates within the volunteering literature with some arguing that variations in volunteering are likely to be explained by compositional factors, implying that variations in volunteering are largely explicable in terms of the mix of people who live in different types of place. Twigg et al. (2006) suggest that once allowance is made for composition, contextual effects are very small. Similar debates surround the importance or otherwise of urban/rural dichotomies of the place of residence on volunteering rates as well as the reasons why people volunteer. Musick and Wilson (2008) question the stereotype of rural areas having consistently more social resources to account for higher volunteering rates in comparison with inner-city areas, pointing to inconsistencies in findings to date at the national level in the US.

Researchers such as Milligan and Fyfe (2004) have highlighted the potential for geographical perspectives to offer insights into voluntary sector activities at a range of spatial scales. Such perspectives are arguably even more important given the increasing role of the third sector in the UK, and elsewhere, in the delivery and management of local public services and the concomitant need to understand and research levels of the underlying volunteering base (Fenwick and Gibson, 2016; Nichols et al., 2015; Findlay-King et al., 2017; Forbes et al., 2017). Any suggestion of an uneven landscape of voluntary action and infrastructure may have implications both for levels of provision for services most dependent on volunteering support and on opportunities to participate in voluntary activities (Clifford, 2012; Lindsey, 2013). Early studies from the US reviewed by Milligan and Conradson (2011) suggest that within the urban areas in their study there was a division between ‘voluntary sector rich’ and ‘voluntary sector poor’ and that more affluent areas were characterised by higher levels of active volunteering.

Williams (2003) conducted a geographical analysis of regional variations in the extent of community involvement and found that areas of south-east England, London, and affluent wards, were all seen to have higher rates of participation in community involvement but that

more informal forms of interaction were prevalent in deprived areas and in regions of the North of England. This may hint at a role for area-level influences at the regional and local level but no attempt was made to control for individual level attributes and the analysis was confined to the responses to questions regarding involvements with a local organisation (formal volunteering) and whether respondents had either done a favour or were a recipient of a favour from a neighbour (informal volunteering). Furthermore, the use of regional units of analysis is recognised as a coarse level of aggregation. At more detailed scales, Rotolo and Wilson (2014) have examined the potential impact of social heterogeneity on volunteering rates between US cities and found that, whilst a significant proportion of inter-city variation can be explained by the individual composition of each city, there is evidence that social heterogeneity has a negative effect on volunteering. While “place matters”, it was concluded that “much of the variation from city to city is due to individual-level differences” (Rotolo and Wilson, 2014; p. 447). However, their findings also provided evidence of the influence of voluntary organisational infrastructure on the likelihood of volunteering that is independent of individual level resources – with the latter being higher in those cities with higher numbers of non-profit organizations per capita – hence drawing attention to the potential influence of the supply of such opportunities.

More recently, Mohan and Bennett (2019) used a multi-level modelling approach to study whether counts of charity organisations (ratios per 1000 population) at local authority level in England impacts on the likelihood of a respondent engaging in formal volunteering within communities after controlling for individual and area level confounders (including neighbourhood measures of socio-economic circumstances, urban/rural status, and the distribution of such organisations). They found a “positive relationship between the numbers of charities operating locally and the likelihood of volunteering” (p. 950) amongst approximately 7900 respondents to the 2009–2010 Citizenship Survey in England, but no relationship with the size (levels of resources) of charities as proxied by median expenditure. In common with previous studies, their findings also suggest people living in urban areas are less likely to volunteer compared to those in rural areas, and that there is a negative association between social deprivation and the likelihood of volunteering which is independent of compositional effects. In this study we draw on a database of voluntary organisations to see if such community level influences are mirrored in Wales through using an alternative methodological approach, including the use of more detailed spatial matches of contextual

variables than the local authority codes that were used in their study, to examine factors hypothesised to influence the propensity to volunteer.

4. Data and Methods

4.1 Volunteering

Individual-level data on formal volunteering were obtained from the 2016-17 and 2017-18 versions of the NSW; a nationally representative, cross-sectional survey of around 11,000 adults (aged 16 years and older) living in Wales (Welsh Government, 2017a; 2017b). The 2016-17 version of the survey asked, for the first time, ‘Which of these clubs or organisations, if any, are you currently giving your time to for free?’, with respondents presented with a list of possible organisations such as tenants or neighbourhood watch groups, arts groups, environmental and sports clubs. A binary measure of formal volunteering was derived with persons giving their time for free to any organisation classed as a volunteer and compared to non-volunteers. While the survey did not explicitly differentiate between formal and informal acts of volunteering, the format of the question, which is geared towards voluntary activity associated with a club or organisation, is more akin to definitions of formal volunteering.

4.2 Volunteering opportunities

Density of voluntary organisations at lower super output area (LSOA) level (of which there are 1,909 in Wales with an average population of ~1,600 people) was used to proxy for local volunteering opportunities. Data were obtained from a register of voluntary organisations maintained by the WCVA and made accessible, on request, via Administrative Data Research (ADR) Wales (ADRC-W (2017); <https://www.adruk.org/>). The database consists of all registered Third Sector charities and organisations in Wales and includes information regarding the scale of operation (i.e. national, regional or local), activity type (e.g. youth charities, services for older people, sports and recreation activities, religion, education and training, housing and environment, etc.), and their postcode. Data were anonymised and aggregated to 2011 LSOA level prior to receipt and accessible only through a secure data environment. A density score was derived for each LSOA based only on ‘local’ voluntary organisations, i.e. those covering one county or less (representing 87% of the total sample), with aggregate counts transformed into comparable rates per 100 population (termed ‘WCVA density score’) using population estimates sourced from the UK Office for National Statistics. The range of density scores (0 to 7.61; Mean: 0.82. SD: 0.64) suggests the data are highly skewed, with some LSOAs

having an extremely high WCVA density per 100 population but on average most LSOAs have less than one organisation per 100 population (Figure 1).

[FIGURE 1 INSERTED ABOUT HERE]

4.3 Analysis

NSW surveys in 2016-17 and 2017-18 were pooled for statistical analysis with WCVA density scores combined with individual-level data using NSW 2011 LSOA identifiers obtained from the data owner. Multilevel logistic regression models were used to examine associations between individual propensity to volunteer and local volunteering opportunities, with individuals nested within LSOAs and LSOAs within Welsh local authorities (n=22). Both unadjusted and adjusted models are reported, the latter controlling for both compositional and contextual factors. At an individual level, factors controlled for included; gender (male, female), age group (16-24, 25-44, 45-64, 65-74, and 75+ years), religion (Christian, other religion, no religion), educational qualifications (UK level 1, level 2, level 3, level 4-8), marital status (single, married/cohabiting), household tenure (owner-occupied, social housing, private rented), car use (yes, no), health status (good/very good, fair, bad/very bad), economic activity (employed, unemployed, retired, student, inactive), Welsh language (yes, no), internet use (yes, no), trust (range: 0-10), and sense of community (yes, no). At LSOA-level, a measure of population density was calculated (total population / km (squared)) drawing on publicly available data from ONS to proxy for rural/urban geography, while the income domain of the 2014 Welsh Index of Multiple Deprivation (WIMD) was used to proxy for area deprivation (Welsh Government, 2014a). Here, income deprivation is assessed by ranking LSOAs from most deprived (=1) to least deprived (=1,909) drawing on indicators of income-related benefits (see WIMD technical report for more information: Welsh Government, 2014b). All statistical analysis was undertaken in Stata v.14.

5. Results

5.1 Descriptive statistics

The total pooled sample size was 21,868 adults aged 16 years and older, of which 12,326 (55.5% female) provided a response to the volunteering question; 10,446 respondents from the 2016-17 survey and 1,880 from 2017-18. Disparity in responses between survey years was due to only a subsample of 2017-18 NSW respondents being asked about their voluntary activity (see Table 1 for sample demographics). These 12,326 NSW respondents were nested within

1,896 LSOAs contained within 22 local authorities. Of the total pooled sample, 29.3% (95% confidence intervals [CI]: 28.5-30.1) volunteered formally with little variation by gender (males, 29.0%; 95% CI: 27.8-30.2; females, 29.6%; 95% CI: 28.5-30.7). Overall, 25,091 voluntary organisations contained in the WCVA database operated at a 'local' scale and had a valid Welsh postcode. The count of organisations per LSOA varied, ranging from zero to 114 voluntary organisations.

[TABLE 1 INSERTED ABOUT HERE]

5.2 Regression models

Table 2 reports the findings of the multilevel models. In unadjusted models, having a religious affiliation, higher educational attainment, being married, being a home-owner, having access to a car, being of good/very good health, speaking Welsh, using the internet, being in work, being more trusting, and having a sense of community, were all compositional factors associated with greater odds of engaging in formal volunteering. A non-linear association between age and likelihood of volunteering was also shown, with odds highest among those aged 65-74 years relative to those aged 16-24 but tailing off thereafter. In this study, gender had no discernible effect on a person's propensity to volunteer formally. As for contextual influences, population density (proxying for urban/rural geography) was inversely related to volunteering, with lower odds of formal volunteering among person's from more densely populated (urban) environments, while likelihood of volunteering increased with lessening deprivation levels. In addition, a marginal association was also found between propensity to volunteer and WCVA density score, with odds of formal volunteering greater among person's living in LSOAs with more local voluntary organisations per head of population.

[TABLE 2 INSERTED ABOUT HERE]

In the partially adjusted model (adjusting only for compositional factors), all associations were retained except for marital status, which became non-significant following adjustment for other factors. Interestingly, being a student or a retired person was significantly associated with greater odds of volunteering (relative to employed persons) in the partially adjusted model, whereas previously significant inverse associations between volunteering and both economic inactivity and unemployment were lost. Following adjustment for both compositional and contextual factors in the fully adjusted model, marital status, car use, WIMD (income), and WCVA density score measures failed to retain significance. Comparing intraclass correlation coefficient values between base (0.038), partially adjusted (0.008), and fully adjusted (0.005)

models, suggests much of the area-level variance was explained by spatial variations in compositional factors related to volunteering propensity, while adjustment for contextual influences such as area deprivation, population density, and density of voluntary organisations, had little impact.

6. Discussion

Few studies to date have examined associations between community-level variations in volunteering and local volunteering opportunities, controlling for compositional factors and other area-level influences. Community influence can be encapsulated through the impact on individuals' subjective perceptions of their local areas or via more objective attributes of neighbourhood characteristics for different spatial (ecological) units. This could include population level factors such as home ownership rates, crime levels, or school performance data captured at this level. However, the exact nature of ecological variables, the direction of influence on different aspects of volunteering behaviour, and the precise mechanisms whereby factors such as neighbourhood poverty impact on volunteering activity remain relatively understudied and the effect of neighbourhood 'problems' on volunteering is contested. As an example, a case could be made for economic deprivation increasing rates of volunteerism in communities through increased demand for services, but the majority of studies to date suggest the opposite, i.e. poorer areas have lower rates of volunteering (Musick and Wilson, 2008; p. 324).

In this nationally representative study of adults in Wales, our findings suggest that spatial variations in compositional factors such as religion, qualifications, housing tenure status, health status, and retired and student status account for much community-level variation in formal volunteering propensity. Some of these factors appear consistently important in the literature; Rotolo et al. (2010), for example, found that homeowners volunteer more than those who privately rent, suggesting a potential association with housing tenure status even after controlling for residential stability. Others have drawn attention to the role of retirees in voluntary activities (although several authors caution against the widespread assumption that such retirees are able to consistently provide their services across all age groups or in every geographical area (Jones and Heley, 2016; Mettenburger and Kupper, 2019)). However, our findings also suggest there are some variables which may not feature heavily in the literature

to date but are worthy of further investigation when considering variations in the propensity to volunteer. The ability to speak Welsh, for example, appears to be significantly associated with the propensity to formally volunteer. Additionally, our findings suggest that those who do not use the internet are less likely to volunteer formally than internet users which may, for example, suggest that people are finding increasing opportunities to volunteer via online sources. Regarding contextual factors, whereas the WCVA density score point towards a higher propensity to volunteer in areas with more local voluntary organisations, such effects are marginal, and they disappear in the fully adjusted model. This is also the case with other area-level variables such as population density.

Previous research on supply-side volunteering opportunities that may impact on rates of volunteering have similarly used the density of non-profit organisations; for example, the study by Rotolo and Wilson (2012) on state-level volunteering rates in the United States. In contrast to our findings, their analysis did provide some support for the hypothesis that the “volunteering rate in an area is not simply a reflection of individual motivations or need but also of opportunities and organizational support” (p.469). Other studies have also sought to help explain cross-national differences in levels of voluntarism through compositional and contextual frameworks (Plagnol and Huppert, 2010; Wilson, 2012). The research reported here has combined the responses to two editions of a national survey to provide the most up-to-date analysis of volunteering predictors in Wales. It extends previous findings on volunteering to include a wider range of individual level predictors and additional contextual/community-level measures, including the density of community-based voluntary organisations that has been put forward as a strategic response for “cultivating enclaved styles of volunteering” (Hardill et al., 2007; p. 408). Our findings are broadly in agreement with Musick and Wilson (2008) and a more recent study by Mohan and Bennett (2019), who found that individual-level factors explained most of the variations in voluntary actions. However, unlike findings from a US based survey that suggests females are more likely to volunteer and spend more time volunteering than men (Forbes and Zampelli, 2014), there appears to be a limited effect of gender in this study. Findings from this analysis do suggest the probability of volunteering increases as people age, which is consistent with the findings from a large body of previous studies as summarised in Section 2 of the paper; although others such as Forbes and Zampelli (2014) find no impact of age on the *level* of volunteering.

There are number of limitations that arise from this research that could form the basis of follow-up studies; firstly, we have adopted the now-standard definition of ‘formal volunteering’ as unpaid help to organisations outside the household which we represent as a binary measure in our regression models. However, the nature of the question in the NSW leaves it open to debate as to how this equates to the propensity to formally volunteer. Such ambiguities in definitions can have important consequences at the local level where the distinction between formal and informal volunteering is often blurred. Several of the studies reviewed in section 2 of the paper have referred to the consequences or limitations of adopting such variable definitions and have hinted at the range of factors associated with differences in both formal and informal volunteering activities (see Musick and Wilson, 2008). Findings from such studies have concluded that there may be scope for examining those factors influencing the exact nature of volunteering activities conducted as well as the amount of time spent volunteering (Woolvin et al., 2015).

Secondly, ethnographic studies (such as that conducted by Dallimore et al., 2018) are needed to help provide more contextual support for these findings and to explore in greater detail the types of factors that may influence trends within communities. Drivers of voluntarism are multifaceted involving complex social and behavioural influences and factors such as length of residence, ethnicity, socioeconomic status, or presence of dependents for which the respondent has caring responsibilities; all of which can impact on the ability to volunteer over time. Nevertheless, we have included a robust number of covariates in the model which capture a diverse range of factors that could inform such studies. Thirdly, questions arise from the nature of the geographical scale of provision of volunteering opportunities with which to represent local contextual conditions; Clifford (2012) for example found important geographical differences in the prevalence of voluntary organisations in England at neighbourhood scales (with a higher prevalence in less deprived areas) but others have used coarser spatial units such as local authority boundaries. In this study we have adopted the LSOA as our spatial reference unit, but further research is needed to see if these findings are consistent across a wider range of spatial scales. Some LSOAs will not have an NSW respondent over these two editions (introducing a potential bias) suggesting a further need for such an approach. Another potential limitation relates to the use of population density to proxy for urban/rural status but our previous research using the ONS Classification of Urban-Rural areas (Office for National Statistics, n.d.), not presented here, delivered similar findings.

Fourthly, attention is needed on the exact nature of the compositional and contextual variables used in these types of regression models. With regard to socio-economic circumstances for example, the income domain of the 2014 Welsh Index of Multiple Deprivation (WIMD) was used to proxy for area-level deprivation, but alternative measures of deprivation or indicators of social capital could have been used to examine the potential influence of area-level measures. The study has also drawn attention to the importance of the ‘ability to speak Welsh’ at the individual level on the propensity to volunteer. However, we have not explicitly examined whether this is indicative of the wider context including the relative impact of living in the area of Wales described as *Y Fro Gymraeg* in which Welsh-speaking is a whole milieu of culture, community, and tradition. Including a contextual Welsh language measure from the 2011 census (for example percentage Welsh-speaking at the LSOA level), could be a useful addition to the regression models but may not capture wider cultural factors that may be impacting on the extent and type of volunteering activities. Similarly, we have alluded to the importance of religion in our models without specifically examining the potential influence of the wider historical and cultural context beyond self-identified adherence and belief. Further research is needed to tease out the relative importance of these wider social and cultural influences.

Finally, the importance of the exact definition and locations of voluntary organisations used within such studies have been highlighted in previous studies that draw attention to the fact that voluntary organisations are likely to be active outside the immediate census area (LSOA in our study) in question (Mohan and Bennett, 2019). Whilst the database utilised in this study has been shown to be useful as a general measure of Third Sector activity in Wales (WCVA, 2016), more detailed analysis is required on the ‘timeliness’ of the database, the accuracy of the organisation address location (as opposed to that of ‘contacts’), the field of activity and the quality of the references relating to either a local, regional or national remit and the impacts such data quality issues have on the findings presented here. With regard to changes over time in the location of such organisations, a more recent study by McDonnell et al. (2020) has drawn attention to the potential for longitudinal approaches to investigate potential associations between the distribution of charitable organisations and census-based measures of social need in England and Wales in order to begin to understand potential impacts on geographical variations in participation in voluntary activities. Further research is needed to examine how the distribution and nature of such organisations impact on the levels and types of volunteering opportunities associated with specific types of activities.

8. Conclusions

Understanding the types of individual and community-level factors that are impacting on volunteering levels is timely given the legal imperatives to support voluntary action in Wales, with the Well-being of Future Generations (Wales) Act (2015) having volunteering as a core indicator of ‘national progress’ (Welsh Government, 2016). The increasing pressure on the delivery and management of services previously run by local government, from both heightened public expectations and austerity-driven cuts in public funding, have meant that voluntary agencies in Wales, as elsewhere, need to continually recruit volunteers to help build resilient communities (Welsh Government, 2014c). With an increasing number of public services being partly or wholly delivered or at least supported by volunteers, it is important therefore to understand how community volunteering capacity can impact on those potentially available to offer their services, which in turn will depend, to varying degrees, on the demographic characteristics of serving areas (Casselden et al., 2015; 2019). If voluntary community efforts are to offset the impacts of a loss of such assets to a local area (labelled “community dispossession” by Hobson et al., 2019), then there is an urgent need to understand the types of factors influencing local variations in the extent of the volunteering base in Wales as elsewhere.

Despite these types of policy imperatives, previous commentators such as Blackman et al (2003) have drawn attention to the lack of consistently reliable measures of the nature and types of volunteering activity at detailed spatial scales. Findings from various WCVA-commissioned surveys (e.g. Collis, 2016) and from the NSW (Welsh Government, 2017a) respectively provide estimates of overall levels of volunteering at national and regional levels and offer some insight into the types of factors that influence whether people volunteer or not. However, in common with most other countries, less is known about detailed spatial and temporal patterns of those factors associated with volunteering. While our findings reinforce the importance of compositional over contextual factors, at least on the propensity to volunteer in Wales using these data sources and our methodological approach, further research is needed at a range of scales to begin to understand spatial patterns in volunteering activities. More generally we need to draw on new sources of social media data and web-based resources to identify where people volunteer, and how patterns change over time, in order to investigate the impact of such factors. Previous studies have found that whilst people are usually recruited to

volunteer locally through social and business networks of various kinds and serve local organisations, some volunteering efforts particularly in commuter areas may take place in vicinities not immediate to the neighbourhoods in which respondents reside (Putnam, 2000). This in turn impacts on those who campaign for increasing volunteering input as more services are transferred from statutory to voluntary delivery, particularly if these factors discriminate against areas where austerity driven changes in service provision are having serious consequences for communities and where the future provision of such services cannot be guaranteed.

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Data availability statement

Census data were downloaded from NOMIS, a service provided by the Office for National Statistics to provide free access to the Census of Population data. This information is licensed under the terms of the Open Government Licence (<http://www.nationalarchives.gov.uk/doc/open-government-licence/version/2>). Office for National Statistics, 2011 Census: Digitised Boundary Data (England and Wales) [computer file]. UK Data Service Census Support, downloaded from <https://borders.ukdataservice.ac.uk>

National Survey for Wales metadata were obtained from the UK Data Service (<https://www.ukdataservice.ac.uk/>).

Declaration of interest statement

No potential conflicts of interest to declare

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Table and Figure Captions

Figure 1: Spatial distribution of local voluntary and community organisations at Welsh LSOA level

Table 1: Sample characteristics

Table 2: Odds ratios (ORs) for propensity to volunteer formally in Wales, adults aged 16 years+

Figure 1 Spatial distribution of local voluntary and community organisations at Welsh LSOA level

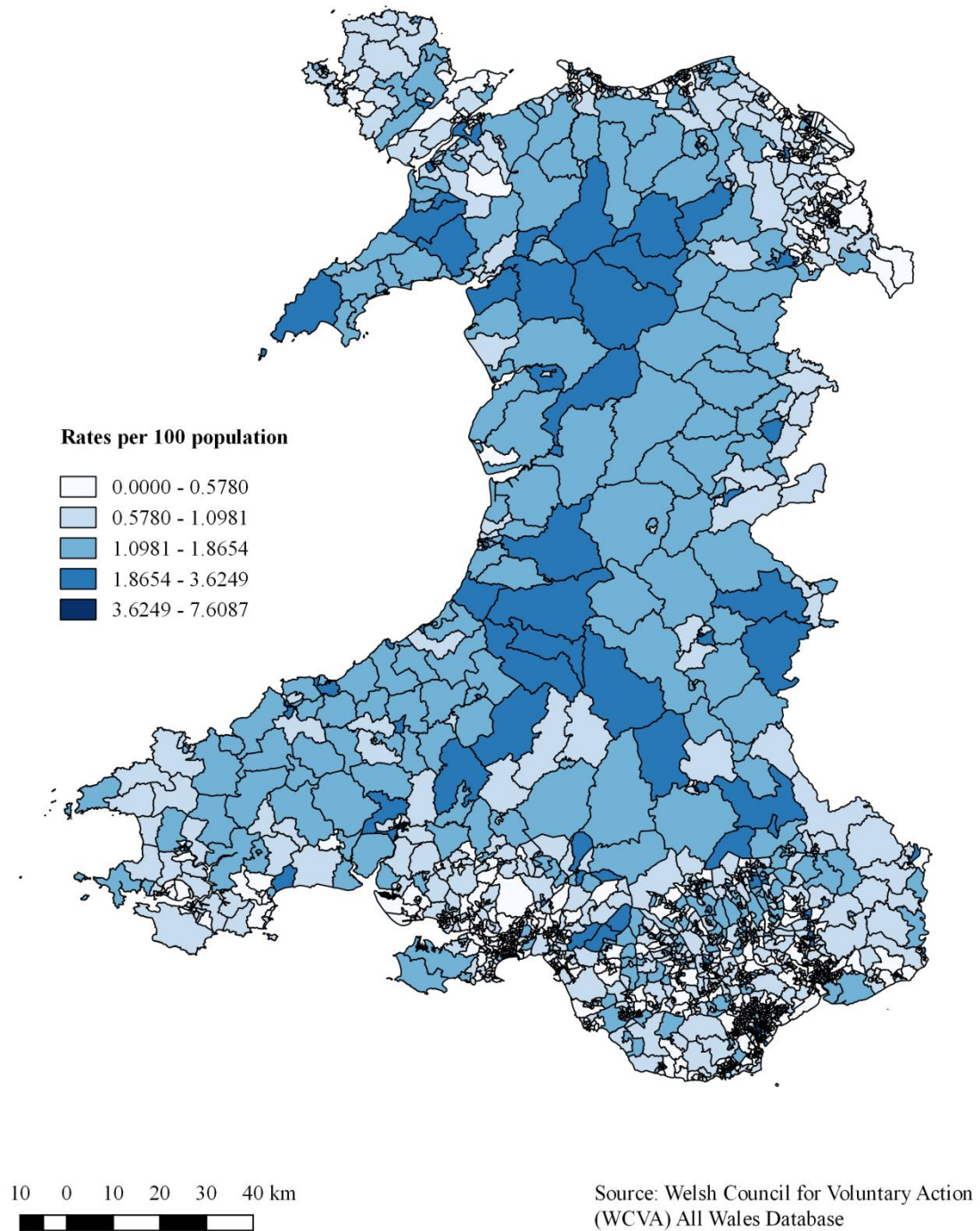


Table 1 Sample characteristics

| Variable | Category | n (%) |
|--|-----------------|-----------------|
| Gender | Male | 5,491 (44.5) |
| | Female | 6,835 (55.5) |
| Age group | 16-24 | 747 (6.1) |
| | 25-44 | 3,072 (24.9) |
| | 45-64 | 4,131 (33.5) |
| | 65-74 | 2,522 (20.5) |
| | 75+ | 1,854 (15.0) |
| Religion <i>n=10,975</i> | No religion | 4,277 (39.0) |
| | Christian | 6,446 (58.7) |
| | Other religion | 252 (2.3) |
| Qualifications <i>n=11,167</i> | None | 4,445 (39.8) |
| | Level 1 | 1,733 (15.5) |
| | Level 2 | 2,011 (18.0) |
| | Level 3 | 388 (3.5) |
| | Level 4-8 | 2,590 (23.2) |
| Marital status <i>n=12,323</i> | Married/cohabit | 5,548 (45.0) |
| | Single | 6,775 (55.0) |
| Tenure <i>n=12,171</i> | Owner-occupied | 8,751 (71.9) |
| | Social housing | 1,952 (16.0) |
| | Private rented | 1,469 (12.1) |
| Car use | Car | 10,179 (82.6) |
| | No car | 2,147 (17.4) |
| Health status <i>n=12,304</i> | Very good/good | 8,350 (67.9) |
| | Fair | 2,697 (21.9) |
| | Bad/very bad | 1,257 (10.2) |
| Speak Welsh <i>n=12,321</i> | Yes | 2,475 (20.1) |
| | No | 9,846 (79.9) |
| Internet use <i>n=12,320</i> | Yes | 9,863 (80.1) |
| | No | 2,457 (19.9) |
| Economic activity <i>n=12,311</i> | Employed | 5,726 (46.5) |
| | Unemployed | 323 (2.6) |
| | Retired | 4,510 (36.6) |
| | Inactive | 1,342 (10.9) |
| | Student | 410 (3.3) |
| Mean trust (SD) <i>n=12,255</i> | 0-10 | 6.1 (2.2) |
| Sense of community* <i>n=10,284</i> | Yes | 5,437 (52.9) |
| | No | 4,848 (47.1) |
| Mean population density (SD) | 4.7-21600 | 1803.3 (2290.8) |
| Mean WIMD (income) 2014 (SD) | 1-1909 | 1006.9 (530.4) |
| Mean WCVA density score (SD) | 0-7.61 | 0.82 (0.64) |

* 2016-17 survey only; total sample size, 12,326 (variation in n reported)

Table 2 Odds ratios (ORs) for propensity to volunteer formally in Wales, adults aged 16 years +

| Variable | Category | Unadjusted ORs [95% CI] | Adjusted ORs [95% CI] | |
|--|----------------------|----------------------------|--------------------------|--------------------------|
| | | | Partial model | Full model |
| Gender (ref. male) | Female | 1.03 [0.95, 1.12] | 1.02 [0.93, 1.12] | 1.02 [0.93, 1.12] |
| Age group (ref. 16-24) | 25-44 | 1.26 [1.04, 1.53] | 1.19 [0.94, 1.52] | 1.20 [0.94, 1.53] |
| | 45-64 | 1.35 [1.12, 1.63] | 1.28 [1.00, 1.64] | 1.25 [0.98, 1.60] |
| | 65-74 | 1.73 [1.42, 2.09] | 1.60 [1.20, 2.14] | 1.56 [1.17, 2.09] |
| | 75+ | 1.27 [1.04, 1.56] | 1.59 [1.16, 2.19] | 1.55 [1.13, 2.13] |
| Religion (ref. no religion) | Christian | 1.56 [1.43, 1.70] | 1.49 [1.35, 1.65] | 1.49 [1.35, 1.65] |
| | Other religion | 1.46 [1.11, 1.93] | 1.44 [1.07, 1.96] | 1.47 [1.09, 1.98] |
| Qualifications (ref. none) | Level <2 | 1.55 [1.20, 2.02] | 1.43 [1.07, 1.92] | 1.42 [1.06, 1.91] |
| | Level 2 | 1.74 [1.51, 2.02] | 1.50 [1.27, 1.78] | 1.49 [1.26, 1.76] |
| | Level 3 | 2.18 [1.88, 2.53] | 1.93 [1.62, 1.78] | 1.91 [1.61, 2.27] |
| | Level 4-8 | 3.30 [2.92, 3.73] | 2.60 [2.23, 3.02] | 2.56 [2.20, 2.98] |
| Marital status (ref. married/cohabit) | Single | 0.69 [0.64, 0.75] | 0.97 [0.88, 1.07] | 0.98 [0.88, 1.08] |
| Tenure (ref. owner-occupied) | Social housing | 0.39 [0.35, 0.45] | 0.75 [0.63, 0.88] | 0.78 [0.66, 0.93] |
| | Private rented | 0.63 [0.56, 0.72] | 0.82 [0.70, 0.96] | 0.82 [0.71, 0.96] |
| Car use (ref. car) | No car | 0.44 [0.39, 0.50] | 0.83 [0.70, 0.97] | 0.86 [0.73, 1.01] |
| Health status (ref. good/very good) | Fair | 0.73 [0.66, 0.80] | 0.84 [0.75, 0.94] | 0.84 [0.75, 0.95] |
| | Bad/very bad | 0.35 [0.29, 0.41] | 0.51 [0.41, 0.62] | 0.51 [0.41, 0.63] |
| Speak Welsh (ref. no) | Yes | 1.64 [1.48, 1.82] | 1.51 [1.34, 1.69] | 1.45 [1.29, 1.62] |
| Internet use (ref. yes) | No | 0.51 [0.45, 0.57] | 0.60 [0.51, 0.71] | 0.60 [0.52, 0.71] |
| Economic activity (ref. employed) | Unemployed | 0.66 [0.50, 0.87] | 1.17 [0.84, 1.62] | 1.16 [0.84, 1.61] |
| | Retired | 1.07 [0.98, 1.17] | 1.24 [1.05, 1.47] | 1.23 [1.04, 1.46] |
| | Inactive | 0.52 [0.44, 0.60] | 1.01 [0.84, 1.22] | 1.02 [0.84, 1.23] |
| | Student | 1.08 [0.87, 1.34] | 1.34 [1.01, 1.78] | 1.35 [1.02, 1.79] |
| Trust | 1-10 | 1.12 [1.10, 1.15] | 1.07 [1.05, 1.10] | 1.07 [1.05, 1.10] |
| Sense of community* (ref. yes) | No | 0.70 [0.64, 0.76] | - | - |
| Population density (logarithm) | Range (1.55-9.98) | 0.89 [0.86, 0.91] | - | 0.96 [0.93, 0.98] |
| WIMD (income) 2014 (logarithm) | Range (0-7.55) | 1.36 [1.29, 1.44] | - | 1.06 [0.99, 1.13] |
| WCVA density score (rate per 100 pop) | Range (0-7.61) | 1.08 [1.01, 1.15] | - | 1.05 [0.98, 1.13] |

Note: **P<0.05**; n=9,782 (partially and fully adjusted models)