

Disability Living Allowance and the Troubles.

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Abstract

Disability rates are much higher in Northern Ireland (NI) than the rest of the UK on a range of different measures. Disability Living Allowance, a social security payment for the additional costs of living with a disability, recipiency was proportionally twice as high in NI as in the rest of the UK with 214,260 recipients in August 2016. This paper uses data from the Northern Ireland Cohort Of Longitudinal Ageing (NICOLA) survey to examine whether exposure to the Troubles can explain variations in DLA receipt among older working-age people. Troubles-related fatality rates are used to account for measurement error in reporting past exposure to trauma. Exposure to the conflict is found to increase the likelihood of DLA receipt by 31 percentage points. This paper also looks at which health conditions have been impacted by conflict exposure and finds that mental ill-health and respiratory conditions are more likely for those who report having been personally exposed to the conflict.

1. Introduction

The proportion of the population in receipt of Disability Living Allowance (DLA), the social security payment designed to contribute to the extra costs faced by those living with a disability, was significantly higher in Northern Ireland (NI) than elsewhere in the UK. Indicators of disability prevalence such as self-reported disability or income replacement disability benefit rates are also higher but not to the same extent. The number of people in NI receiving DLA peaked in August 2016¹ at 214,260 or 11% of the eligible population (DfC, 2016) with particularly high rates among the population aged 50-64 (19%). The high levels of DLA receipt in NI are more concentrated in socially deprived areas and these areas also experienced greater conflict during the period of civil unrest known locally as the 'Troubles' (Devlin et al., 2023).

NI has a complex political, social, and economic background. NI came into existence in 1921 as a constituent country of the UK and was intentionally set-up to preserve the Protestant and Unionist majority in the northeast of Ireland. Discrimination towards the Catholic minority population led to the civil rights movement of the 1960's. Tensions in Derry on 5th October 1968 following a civil rights march led to several days of rioting and is viewed by many as the start of the 30-year conflict (McKittrick & McVea, 2002; Gillespie, 2009). The 'Troubles' led to more than 3700 people being killed and at least 47,000 more injured (McKittrick et al., 2001). The Good Friday Agreement signed in April 1998 seen the end of most, but not all, violence in NI.

More recently, welfare reform has been a contentious issue in NI in some part due to the differing impacts in how such reforms would be felt between the two main communities. The extension to NI of a range of reforms to the social security system including disability payments already introduced by the Conservative government in England in 2012 was delayed due to the perceived disproportionate effect the reforms would have on deprived, and particularly Catholic,

¹ It should be noted that the introduction of the Personal Independence Payment (PIP) to replace DLA was delayed in NI and did not occur until after the data used was collected.

communities. The introduction of PIP eventually took place in June 2016 as part of a welfare mitigation package totalling £585 million. Welfare mitigation was particularly supported by Nationalist communities given the severe impacts reforms would have in their areas while Unionist politicians supported the reforms as cost-saving measures.

The Troubles has been associated with a legacy of health issues especially psychological morbidity. Mental ill-health has been found to be 25% more prevalent in NI than in the rest of the UK (DHSSPS, 2014). Furthermore, in terms of physical health, at least 47,000 people were injured during the Troubles² although not all were long-term or life changing injuries. Although this number has been disputed and may be an underestimate.

There is extensive evidence of long-term mental ill-health with one study attributing half of the 29% prevalence rate of mental illness in the population to the conflict (O’Neill et al, 2015). Even more importantly, there is also evidence of an inter-generational transmission of trauma (O’Neill et al., 2015; Hanna et al., 2012) where the Troubles continues to impact on the mental health of the population across generations.³

NI has a history of high economic inactivity. At the end of 2020 economic inactivity amongst the NI working age population was 25.9%, 6 percentage points higher than England and the highest of all regions in the UK (as shown in Figure 1) (ONS, 2020a). And NI has a higher proportion economically inactive due to long-term sickness than the UK average (shown in Figure 2) (ONS, 2020b and NISRA, 2020).

[Figure 1 here]

² The number of injured persons during the Troubles depends on the source used and varies from 47,000 reported by the RUC/PSNI to 107,334 reported by the Commissioner for Victims and Survivors (cited in Breen-Smyth, 2013). The number reported by the police service is likely to be an underestimate due to the reluctance of the Catholic community to engage with the security forces (Hamilton, Moore & Trimble, 1995).

³ How the effects of trauma trickle down to further generations is debated in the mental health literature and is beyond the scope of this study.

[Figure 2 here]

Despite poorer health in the region other explanations have been suggested for the high levels of DLA receipt. Armstrong (1999) found significant hidden unemployment in NI particularly amongst men with long-term illnesses. This is the only research on hidden unemployment in NI despite its likely prevalence. Devlin et al. (2023) in a study of various disability measures finds that the health and labour market play only a minor role in determining DLA receipt and put forward a range of potential solutions including: higher levels of deprivation, social norms, and the conflict.

The proportion of people inactive due to long-term sickness has increased threefold from 1981 (Magill & McPeake, 2016). Furthermore, Magill & McPeake (2016) point out that the prevalence of disability in NI is only slightly higher than the UK average but the economic activity rate for the disabled population is significantly lower than the rest of the UK and nearly 10 percentage points lower than the lowest English region the North East (NISRA, 2021). It is likely that a majority of those inactive on the grounds of long-term sickness will receive social security payments due to their disability. This could point to a lack of employment opportunities for those disabled and while those in work are eligible for DLA it may be that a lack of work leads to an overreliance on disability-related social security in general in NI or it could be that people in England do not utilise the social security payments to which they are entitled. There is a significant literature on the stigma attached with living off income not earned through work (Meyer et al., 2019; Bollinger & David, 1997). Understanding the impact of the Troubles on current levels of DLA receipt is critical in trying to reduce social security spending related to disability in the short-term. It is also important in the long-run given the possibility of intergenerational transmission of trauma, which will impact on PIP receipt. Furthermore, given the tight labour market we have seen post-pandemic increasing labour force participation is key for growth in the regional economy.

This paper sets out to quantify the relationship between DLA receipt and the Troubles in NI and also examine to what extent these high levels of DLA receipt within NI are driven by exposure to

the 30-year conflict. The Northern Ireland Cohort of Longitudinal Ageing (NICOLA) study is the first large scale study in NI to combine detailed questions on exposure to conflict with extensive health and socio-economic data. We find that being exposed to the Troubles made individuals 31 percentage points more likely to be in receipt of DLA. This is the first contribution of this paper. We also examine the effect different Troubles related events have on DLA receipt.

The medical conditions which may increase likelihood of DLA receipt are then examined. Findings point to a direct link between Troubles exposure and mental ill-health as found in other conflict studies. This is of particular policy relevance given that the NI suicide rate is the highest in the UK and per capita mental health spending is below the UK average (Black & McKay, 2019).

Furthermore, NI provides a particularly useful context for studying the long-lasting effects of conflict as most literature in this area focuses on developing countries where data quality is often poor. While, NI has the advantage of comprehensive and accurate data sources for carrying out this type of analysis.

2. Literature

2.1. Conflict and the Economy

Many studies have demonstrated the negative economic impact of conflict. Gutpa et al. (2014) find that conflict leads to lower economic growth, higher inflation, lower tax revenues and lower investment spending. Conflict often leads to significant physical destruction which interrupts economic growth as productive resources are destroyed and government spending is diverted to defence spending. The literature, however, suggests that the impact on human capital is more important economically than the direct destruction of physical capital and that it takes longer for economies to recover from human capital losses (Barro & Sala, 2003). Human capital is also impacted more in internal civil wars like the NI conflict than in inter-state wars where physical destruction is more intense.

Conflict negatively affects human capital development mainly due to the years of lost education. This is the case for both combatants engaged in conflict (Angrist, 1990 and Blattman & Annan, 2010) and for civilians living in areas of conflict (Akbulut-Yuksel, 2014 and Kesternich et al., 2014). Akbulut-Yuksel (2014) find that the labour productivity of those who lived through WWII was never recovered. Furthermore, Havari & Peracchi (2017) find that exposure to trauma in an individual's early years can negatively affect cognitive ability going forward. Justino (2011) also argues that destruction of human capital in childhood when many important human capital investments are made has long-term impacts and can lead to poverty traps.

Conflict also negatively impacts on human capital formation in terms of the effect it has on the health of individuals and public health. Conflict can lead to food insecurity (International Food Policy Research Institute, 2019), sanitation issues (UNICEF, 2019) and disruptions to medical services and provisions (Debarre, 2018) to name a few. These are on top of the direct impacts of conflict on health due to violence. Debarre (2018) argues that as well as the "war-wounded" there are health ramifications for the whole populace.

Within the NI context, education amongst combatants was not particularly affected by the Troubles. Encouraged by their organizations, many incarcerated paramilitary members spent their time in prison gaining qualifications (Irwin, 2003, Purbrick, 2004). Prisoners studied not only basic and vocational skills but also university degrees and some continued their studies on release. Informal learning was also common amongst peers with a particular emphasis on politics and history. This is particularly important given that many of those involved in the conflict who spent time in prison were young (Ritchie, 1998) and/or many came from more deprived backgrounds with minimal access to education (Gormally, 2001).

In terms of the civilian population, NI school performance was comparatively high during the Troubles despite the conflict. In a review of the literature in 2000, Muldoon et al found that the Troubles had little impact on young people and children in NI due to them becoming habituated to

violence and cognitively distancing themselves from the conflict. This led to them building resilience to the stress caused by conflict and thus minimised any serious psychological harm. In terms of educational achievement, they also find that pupils in NI matched reading standards elsewhere in the UK and secondary school performance does not appear to have been impaired. In 1995/6, 52% of NI pupils compared to 45% of English pupils achieved 5 or more grades GCSE A*-C (state exams taken at age 15) while 36% in NI compared to 30% in England achieved 2 or more A levels (taken at age 18) (Regional Trends 38).

2.2. Conflict and Health

As well as negatively affecting human capital accumulation in terms of education there is a negative impact of conflict on physical health. Bedard & Deschênes (2006) find that ex-combatants following World War II and the Korean War had increased mortality from lung cancer and heart disease many years after discharge. Ghobarah et al. (2003) and David et al. (2011) also find significant negative long-run effects on health following conflict. However, Angrist et al (2010) find that those who served during the Vietnam War had no significant detrimental effect on their health from the conflict exposure although this was based on self-reported health status which may be subject to measurement error. Men disproportionately bear the mortality burden caused by violent conflict and are more likely to be physically injured while women suffer more over the long-term (Buvinic et al., 2013; Li & Wen, 2005).

A number of studies also find negative long-term health effects for civilians especially children. Akbulut-Yuksel (2017) found that those who experienced conflict exposure during WWII in their early years grew up with higher BMIs and had an increased risk of suffering from cardiovascular conditions. Havari & Perracchi (2017) argue that children exposed to conflict are more likely to suffer from two or more chronic conditions sixty years later. Violent conflict is an important negative social determinant of health for children yet further research is needed especially on the causal mechanism from conflict exposure to poorer health outcomes for children (Kadir et al. 2018; 2019).

Many studies highlight the negative impact of violent conflict on mental health although the literature often focuses exclusively on veterans. Effects have been observed from as early as WWI. Bogacz (1989) finds that a significant number of ex-soldiers were receiving a disability pension two years after the end of the conflict due to neurasthenia⁴. Following the Vietnam War, veterans had disproportionately higher mortality rates due to car accidents and suicide and at the same time made more claims for disability benefits for post-traumatic stress disorder (PTSD) (Hearst et al., 1986; Angrist et al., 2010). While Iversen et al. (2007) find that veterans of the later Gulf War who were not diagnosed with PTSD reported suffering from tiredness, numbness, low mood and concentration and memory problems over a decade after the war. Kim (2017) also find significant long-term effects of conflict on mental health; children exposed to conflict during the Korean War had worse mental health some fifty years later.

A more recent literature connects mental ill-health - PTSD in particular - and a negative impact on physical health. PTSD has been found to increase the likelihood of respiratory disease (Pedersen et al., 2010); hyperlipidaemia and musculoskeletal pain (McFarlane, 2010); coronary disease (Edmondson et al., 2013); obesity (Bartoli et al., 2015) and metabolic syndrome (Heppner et al., 2009). Psychological stress leads to physical stress on organs and internal systems (Cohen et al., 2018) and McFarlane (2010) argues that facing traumatic stress has an impact on physical and psychological health equally.

2.3. Conflict and Health – Northern Ireland

Evidence on the impact of the NI conflict on health, especially over the longer term, is sparse. In terms of physical health, at least 47,000 people were injured during the Troubles⁵ although not all were long-term or life-changing injuries. The 2010 omnibus survey found 6% reported physical injuries as a result

⁴ The term neurasthenia is no longer used but in the late 19th century it was the diagnosis given to otherwise healthy individuals who were experiencing “physical pain, emotional distress and profound exhaustion” (Schuster, 2003).

⁵ The number of injured persons during the Troubles depends on the source used and varies from 47,000 reported by the RUC/PSNI to 107,334 reported by the Commissioner for Victims and Survivors (cited in Breen-Smyth, 2013). The number reported by the police service is likely to be an underestimate due to the reluctance of the Catholic community to engage with the security forces (Hamilton, Moore & Trimble, 1995).

of the Troubles giving an estimate of 107,334 people with conflict-related physical injuries in the population. The Cost of the Troubles survey conducted at the end of the conflict found that 20% of respondents reported that they or family members were physically damaged by the conflict (Morrissey et al., 1999). That these figures diverge significantly is likely to be due to different wording of questions and differences in the timing of data collection. Armistead (1977) found that in the first 6 years of the Troubles when violence was at its most intense there were 170 major amputations at the Royal Victoria Hospital Belfast due to the conflict while Graham & Parke (2004) identified 129 amputees at one NI hospital due to car bombs. Breen-Smyth (2012) also found significant sight and hearing loss problems due to the Troubles, many of which went undiagnosed for some time.

Mental ill-health prevalence is 25% higher in NI than England (DHSSPS, 2014) and NI prescribing costs per capita for anti-depressants are considerably higher than in other UK regions (Mental Health Foundation, 2016). Mental health is not distributed evenly across the NI population with poorer mental health concentrated in more deprived neighbourhoods and at interfaces⁶ (Maguire et al., 2015).

Those who were affected to a greater extent by the Troubles have been found to be more likely to suffer mental ill-health (O'Reilly & Stevenson, 2003). More recently, a study attributed half of the 29% prevalence rate of mental illness in the NI population to the conflict (O'Neill et al, 2015). There is also evidence of an inter-generational transmission of trauma (O'Neill et al., 2015; Hanna et al., 2012) where the Troubles continues to impact on the long-run mental health of the population across generations.⁷

These studies have many common limitations. Self-reports of exposure to conflict are liable to be biased by measurement error. They could be prone to justification bias as people who are not active

⁶ Interfaces, also known as peace walls, were built during the Troubles and are security barriers used to separate the two communities and were often areas of conflict. They were mostly located in working class areas of Belfast with others in Derry City, Craigavon and Lurgan.

⁷ How the effects of trauma trickle down to further generations is debated in the mental health literature and is beyond the scope of this study.

in the labour force use the conflict as a means of justifying their incapacity to work. There could also be political motivation behind misreporting the impact of the conflict.

2.4. Conflict and disablement

Although studies have established clear links between the Troubles and poor health, other factors may have contributed to high NI disability rates (Burkhauser et al., 2014; McVicar 2013). There is, however, a dearth of literature on how conflict affects disablement. An early study pointed out that estimates of conflict-related disability are rare and when they do exist are unreliable (Elwan, 1995). This is still the case 25 years later.

There is a literature on how the Troubles may have indirectly led to higher rates of disability. NI Levels of deprivation are high relative to the rest of the UK particularly in areas most exposed to violence (Abel et al., 2016). Higher rates of unemployment also increase the disability rate through 'hidden unemployment'. Beatty & Fothergill (1996) found that in the North East of England following widespread job loss after coal mines closed there was little to no change to the unemployment rate while the disability rate increased significantly. Their later work finds evidence of hidden unemployment in other areas of England where job loss due to industrial decline was common (Beatty & Fothergill, 2005; Beatty et al., 2012). NI may also suffer from this hidden unemployment particularly given we have relatively low unemployment rates compared to the rest of the UK (Beatty & Fothergill, 2013). Higher unemployment rates are associated with conflict areas and the proximity of 'peace walls' (Hall, 2010).

3. Methodology

Our dependent variable is self-reported DLA receipt⁸. Our main explanatory variable is self-reported exposure to the Troubles. It is anticipated that there could be measurement error bias due to the

⁸ It is important to note that the introduction of PIP did not take place in NI until June 2016, later than the rest of the UK. This is discussed further in the data section.

subjective nature of the explanatory variable. As such, the number of Troubles-related fatalities in the local area is used as an instrument to account for the intensity of the experience of the Troubles. The Troubles-related fatalities measure is exogenous in that it is unlikely to affect one's likelihood of being in receipt of DLA in any other way than through impacting on their life. Furthermore, the fatality rate is significantly correlated with the Troubles exposure variable with a correlation coefficient of 0.34 with community impact and a correlation coefficient of 0.18 with personal exposure (both significant at the 1% level).

Given our dependent and main explanatory variables are both dichotomous, we use a recursive bivariate probit (biprobit) model. Tebaldi and Elmslie (2021) consider a biprobit model a "viable and robust option in dealing with endogeneity problems when the variables of interest are binary" and cite several other articles which have used a similar approach in recent years (i.e. Appelt, 2015; Chen et al, 2014; Zanin et al., 2013).

The biprobit model takes the form:

$$4. \quad y_1^* = \delta_1 y_2 + z_1' \beta_1 + \epsilon_1 \quad (1)$$

$$5. \quad y_2^* = z_2' \beta_2 + \epsilon_2 \quad (2)$$

where y_1 is DLA receipt; y_2 is Troubles impact; z_1 and z_2 are vectors of controls. The vectors of controls in the equations are based on the literature in this area and differ slightly. The set of controls, z_1 , in the first equation are age, gender, marital status, education, religion, unemployment rate, median wages an urban rural classification, and then dependant on the model health measures and a measure of income deprivation affecting older people are also included. The set, z_2 , in the second equation includes fatality rates at district electoral area (DEA) which are used as an objective measure of Troubles intensity as well as set of controls which includes age, gender, education, religion, marital status and an urban rural classification. The error terms, ϵ_1 and ϵ_2 , have a bivariate normal distribution with zero mean, unit variance and correlation coefficient, ρ . The Wald test is used to test

if the correlation coefficient between the error terms, ρ , is equal to zero. If ρ is equal to zero then two standalone probit models would be preferable but if ρ is statistically different from zero then the bivariate probit model provides more robust estimates (Tebaldi & Elmslie, 2021). Standard errors in all regression models are clustered at the DEA level⁹. This methodology in part follows the technique undertaken by French (2019).

As discussed, the controls included differ slightly based on the specification. Initially sociodemographic variables and labour market strength are controlled for alongside the main explanatory variable that is Troubles exposure. This model does not include a deprivation measure despite deprivation and disability having a strong relationship as per the international literature this is because the NI deprivation measure includes disability and health components as well as education and income information meaning including the NIMDM 2017 in the model would lead to multicollinearity and biased estimates. However, not accounting for deprivation means the estimates in this specification are likely to over estimate the impact Troubles exposure has on DLA receipt. In the second model we control for income deprivation amongst older people and we believe the results of this model to be robust. Finally, health is also controlled for. Health is going to be correlated with DLA receipt as individuals need to provide proof of a disability normally from their GP to be eligible for the benefit. However, as discussed previously health measures may be subject to significant justification bias in that people report their health as worse to justify receipt of said benefits. As such, this third specification may significantly underestimate the impact Troubles exposure has on DLA receipt. The same three models are then executed whereby Troubles exposure on one's community is used as the main explanatory variable rather than exposure to the conflict at a personal level.

Individual bivariate probit models are also ran whereby health conditions are the dependant variable. Health conditions being moderate heart conditions, severe heart conditions, respiratory conditions,

⁹ There are 80 DEAs in Northern Ireland.

musculoskeletal conditions, diagnoses of cancer, any other diagnosed condition and mental health conditions. The main explanatory variable is impact of the Troubles on the individual and the controls included are age, gender, marital status, education, local labour market strength and an urban rural classification. The fatality rate at DEA level is again used to solve for the endogeneity associated with the Troubles impact variable.

6. Data

6.1. Source of data

The Northern Ireland Cohort of Longitudinal of Ageing study (NICOLA) is a study of people aged 50 and over in NI which covers a wide range of topics including health, finance and socio-economic indicators. It takes the form of an initial interview, a self-completion questionnaire and a health visit with a nurse. It is designed to be representative of the over 50 population and has a sample size in wave 1 of around 8,500 respondents. Of these, almost 5000 completed the self-completion questionnaire which included extensive questions on exposure to the Troubles. The data used here is taken from wave one which was collected between February 2014 and March 2016. The NICOLA study was designed to be comparable with other international ageing studies including TILDA (Ireland), ELSA (England) and HRS (US). For further details on the study see Cruise & Kee (2017). We use those respondents aged 50-65 at the time of interview. The respondents were therefore aged under 18 at the outbreak of the Troubles in 1968 and aged approximately between 33 and 48 years in 1998 when the Good Friday Agreement was signed.

Our dependent variable is a dichotomous variable reflecting whether a respondent reports as being in receipt of DLA at the time of their interview. The timing of the NICOLA fieldwork means that all surveys were done before the replacement of DLA by the Personal Independence Payment (PIP). PIP was not rolled out in NI until June 2016 due to mitigation measures taken by the NI Executive.

Given the large proportion of people in NI who were in receipt of DLA it was thought NI would be disproportionately affected by the welfare reform due to the existing levels of poverty and the worse mental and physical health of the population (Northern Ireland Affairs Committee, 2019).

Our main explanatory variable is the level to which the respondent was exposed to the Troubles. Respondents are asked “In general, what impact do you think the Troubles have had on your life?”. Possible responses are then ‘none’, ‘a little bit’, ‘a moderate amount’, ‘quite a bit’ or ‘an extreme amount’. We code ‘quite a bit’ and ‘an extreme amount’ as one and zero otherwise. There could be measurement error in this variable due to its subjective nature. Given the ongoing political significance of the Troubles legacy in Northern Irish society it is likely that the self-reports are not consistent across respondents for the same objective level of Troubles exposure. There may be a form of justification bias where the effect of the Troubles could be used as a justification mechanism to explain receipt of social security payments. Furthermore, given the length of time which the Troubles lasted and its intensity in some areas it is possible that some people became normalised to the violence which could lead to further differences in reporting.

These measurement issues are likely to bias single equation probit estimates of the impact of the Troubles on DLA receipt, and in an uncertain direction. Therefore, we instrument using a proxy for conflict intensity - the number of Troubles-related fatalities 1969-1998 per 1000 population by district electoral area (DEA). Fatalities from the ‘Index of Deaths from the Conflict in Ireland’ (Sutton, 2002) were geocoded and are mapped in Figure 3. This data was further supplemented with the ‘Database of Deaths associated with Violence in NI’ (McKeown, 2009) which allowed each fatality to be classified by type of death – from hunger strike to petty crime. Respondents in NICOLA were also asked “to what extent their community had been affected by the Troubles and as before those who responded ‘quite a bit’ and ‘an extreme amount’ are coded as one and zero otherwise. We use this second dependent variable to check the robustness of our findings.

Socio-economic indicators and the strength of the local labour market are used as additional controls in our models as these are associated with disability as discussed earlier. Although as previous work by these authors found not to the same extent as is found elsewhere in the literature (Devlin et al., 2023). We use doctor diagnoses of particular illnesses to examine which conditions in particular have been impacted by the conflict. Doctor diagnoses variables have been deemed to be objective measures of illness due to the specificity of the question (Baker et al., 2004).

We control for local labour market conditions using both local unemployment rates and local median wage rates. The unemployment rate is taken from benefit claimant counts¹⁰. The median wage is based on weekly median pay excluding overtime from the UK Annual Survey of Hours and Earnings.

6.2. Descriptive Statistics

[Table 1 here]

Means of outcome, explanatory and key control variables are reported in Table 1 using appropriate weights. DLA recipients make up 13% of our sample. The main explanatory variable for DLA receipt is exposure to the Troubles; 24% of respondents report being personally impacted while 30% report that their community was impacted. The mean DEA Troubles fatality rate from 1968 to 1998 is 1.60 fatalities per 100,000 people although this varies widely across NI. Looking at the demographics of our sample, 70% of the sample are aged between 50 and 59, 45% of respondents are male and 25% are single. Almost half are educated to secondary level while 43% have a higher education. Catholics make up 36% of our sample while 50% report as Protestant/Other Christian.

Table 2 summarises self-reports of exposure to specific Troubles-related events. The majority of respondents have been exposed to some sort of conflict-related event with 19% reporting a friend was killed, 55% witnessing a bomb explosion, 45% witnessing gunfire, 57% witnessing rioting and 8%

¹⁰ The LFS measure of unemployment is the standard in similar work but the LFS in NI has a small sample size and given we disaggregate further by DEA this could prove unreliable. The sample size of the NI LFS is around 2,800 households every year (NISRA, 2015). The claimant count is based on administrative data of all those who claim unemployment benefits (Jobseeker's Allowance) and is a more reliable measure.

witnessing a murder. One tenth of respondents were forced to leave their homes due to attack, intimidation, threats or harassment and 5% were forced to leave a job.

Some of these figures may seem high but it should be reiterated that the Troubles was a protracted conflict and as the respondents in NICOLA were aged 50-64 at the time of interview they were aged 4-18 at the start of the conflict in 1968 and at the signing of the Good Friday Agreement in 1998 were aged between 34 and 48 years. For a majority of NICOLA respondents at the time of interview the conflict had been ongoing for more than half of their lifetime. More than half of respondents witnessed rioting which is not surprising as in the 1971 census about a third of the population lived in the cities of Belfast and Derry (Census, 1971) where rioting was commonplace for three decades as well as in many other towns across the country. 7% of NICOLA respondents were physically injured themselves as a result of the conflict which is in line with the 107,334 injuries reported by the Commissioner for Victims and Survivors (cited in Breen-Smyth, 2013). According to PSNI reports 19,605 people were charged with terrorist and other serious offences between 1969 and 2003, using the 1971 census population figures this equates to 1.3% of the population. This is in line with what is found in NICOLA whereby 1.4% of respondents report as having been in prison. Poverty and Social Exclusion (PSE) also examined the legacy of the Troubles and the extent to which people experienced conflict related events (Tomlinson, 2013). They found 10% of adults lost a close relative (12% in NICOLA sample), 11% lost a close friend (19% in NICOLA sample), 33% witness a bomb (55% in NICOLA sample) and 3% witnessed a murder (8% in NICOLA sample). Furthermore, 9% of adults in the PSE study reported having had their house searched compared with 16% in the NICOLA sample. That the figures in the NICOLA sample are higher is to expected as we are looking solely at the 50-64 age group which grew up with the Troubles compared to the PSE research which looks at all adults some of whom will have been born in the later stages of the conflict when violence was tapering off (there were 470 deaths in 1972 compared to 55 in 1998).

We estimate a series of probit regressions whereby the Troubles exposure variables are the dependent variable and the main explanatory variable of interest are the reporting of specific Troubles-related events. We additionally control for Age, Gender, Marital Status, Education, Religion and DEA unemployment rate. These models allow us to determine what sort of events are more likely to lead to individuals reporting an effect of the Troubles on their lives or communities. This is important as the conflict differed within NI. Outside of Belfast security forces were generally the targets of violence while in Belfast sectarian killings were common (McKeown, 2009).

Results are given in Table 2 where the dependent variable is the degree to which the Troubles has impacted on the respondent's life in the first set of estimates and that the degree to which their community was affected in the second set. Individuals are more likely to report that their life was affected by the Troubles if they had direct or proximate experience of conflict-related events. Incarceration, personal injury or witnessing violence increased the probability of reporting a life impact. Also less direct but traumatic experiences such as the killing of friends or relatives worsened the effect on respondents' lives. The relationship between experiences and the effect on respondents' communities is more pronounced. The murder of friends, relatives or acquaintances or witnessing violence lead to a greater probability the respondent reported an effect of the Troubles on their community. Imprisonment of friends and intimidation in the community or workplace also increased the severity of reported impact on the community. These results then provide some evidence that these Troubles exposure variables are internally valid measures of the impact of the conflict on respondents and their communities although we still regard them as subject to some measurement error.

Table 3 summarises the prevalence of health conditions. More than half of respondents have a moderate heart condition (high blood pressure, hypertension, angina, diabetes, high blood sugar, high cholesterol, heart murmur, atrial fibrillation, abnormal heart rhythm or any other heart troubles). 5% report having a doctor diagnosis of a severe heart condition (heart attack, congestive heart failure,

stroke or mini-stroke) while 13% report having been diagnosed with a respiratory condition (chronic lung disease or asthma). More than a quarter of respondents report a doctor diagnosis of a musculoskeletal condition and 5% report having a cancer (or malignant tumour) diagnosis. 9% of respondents report as having a diagnoses of “other”, this includes serious memory impairment, Parkinson’s disease, Alzheimer’s disease, stomach ulcers, varicose ulcers, cirrhosis or serious liver damage. 21% report a psychiatric problem or emotional/ nervous condition or alcohol/substance abuse.

7. Results

5.1 Exposure to the Troubles and DLA

Table 4 presents the results from the bivariate probit regression model. Our key explanatory variable is personal exposure to the Troubles in the first set of estimates and the impact the Troubles had on the community in the second set. The coefficient on Troubles exposure in the first column is highly significant ($\beta=1.143$) and equates to a marginal effect of 0.31. That is, reporting as having been affected personally by the Troubles leads to respondents being 31 percentage points more likely to be in receipt of DLA. We find similar results when we use the community Troubles exposure variable. The coefficient on community exposure to the Troubles ($\beta=0.798$) equates to a marginal effect of 0.19. Exposure to the Troubles leads to individuals being much more likely to be in receipt of DLA in their later years.

The model also included several controls, the results for which were also in line with what would be anticipated. Those who are older; have lower educational attainment; are unmarried or living in Belfast are all more likely to be in receipt of DLA. Religion on the other hand has no significant effect on the likelihood of DLA receipt after controlling for Troubles exposure. This is important as the higher rates of DLA receipt in Catholic areas has been highlighted in political debates as evidence of a claimant culture amongst Catholic communities in NI. It is clear from these findings that Troubles intensity and other socio-economic factors explain this correlation rather than any systemic difference

between the Catholic and Protestant communities. The complete results with first-stage regressions are included in the appendix at Table A.1.

5.2 Troubles Intensity by Conflict Type and DLA

In this section, we exploit the spatial difference in types of violence to check the robustness of our estimates to alternative instrumentation and potentially different local average treatment effects. We found in our main analysis that respondents who reside in Belfast were more likely to receive DLA even after controlling for Troubles exposure and other observable differences. This may be due to the differing nature of the conflict across NI. The spatial variation in fatality rate by type is pronounced (Figures 4-6). For example, Sperrin DEA, which includes Derry City, had a fatality rate by explosion of 3.96 per 1000 of population compared to 14 DEAS which saw no deaths due to explosions (Figure 4). Figure 5 shows how the fatality rate from sniper attacks differed spatially while Figure 6 maps the other Troubles deaths (that is not from bomb explosions or a sniper attack). Deaths from bomb explosions were common in the West of NI and some areas of Belfast while sniper attack fatalities were more common in the two main cities, Derry and Belfast, as well as County Down. All other fatality deaths were more numerous per capita in the areas surrounding Belfast and Derry as well as the border region.

In Table 5, bivariate probit model results are presented using these three instruments rather than an overall fatality measure. We include the same range of controls as we have in other specifications. The results in Table 5 show that the coefficient estimates are very similar. The coefficient on Troubles exposure where the endogenous variable is personal Troubles impact is now 1.110 and is within a 99% confidence interval of the estimate in Table 4. Where the endogenous variable is community Troubles impact the coefficient is slightly lower than before ($\beta=0.749$). Our conclusion is that our IV estimates are largely robust to using alternative sets of instruments. Furthermore, there is little change in our local average treatment effects which are now 0.30 (Troubles

impact (personally)) and 0.18 (Troubles impact (community)) compared to 0.31 and 0.19 in Table 4. The complete results with first-stage regressions are included in the appendix at Table A.2.

We also use a 2 stage least squares IV approach to test instrument validity (Table 6). Using deaths by explosion, deaths by sniper attacks and other Troubles fatalities as instruments gives Hansen J-statistic p-values of 0.39 (Troubles impact (personally)) and 0.98 (Troubles impact (community)). We conclude that our chosen instruments pass the exclusion restriction.

[Table 6 here]

5.3 Troubles Events and DLA

In this section, we use a reduced form probit model to look at the effect exposure to particular events has on DLA receipt rather than the more general Troubles impact variables.

[Table 7 here]

This set of estimates show that as expected DLA receipt is significantly more likely at the 5% level for those who were physically injured and also for those who had a friend killed or home searched at the lower 10% level of significance. Other events have no statistical association with disability social security payment receipt or even a counterintuitive association in the case of acquaintance injured. There are two conclusions we make from these findings. As we saw in Table 2, respondents report Troubles impact due to a wider range of experiences than are captured in the survey. Also, subjective reports of traumatic experiences need to be interpreted with caution thus reinforcing the importance of using IV approaches when subjective experiences are the explanatory variables. We note also that once again religion is of no relevance to the probability of DLA receipt.

5.4 Medical conditions and DLA

We also examine the effect of exposure to the Troubles on health. These results are included in Table 3 using doctor diagnoses of medical conditions as the dependent variable in individual biprobit models as described in equations (1) and (2). The coefficients given are for the impact of the Troubles. Additional controls are included and the troubles exposure variable is instrumented using the fatality rate at the DEA level. Exposure to the Troubles makes individuals more likely to report as having been diagnosed with a severe heart condition (heart attack, congestive heart failure, stroke or mini-stroke) (but only at the lower 10% level of significance ($\beta=1.075$)) or a respiratory condition (chronic lung disease or asthma) significant at the 5% level ($\beta=0.770$). The Northern Ireland Study of Health and Stress examined the mental health sequelae of trauma but in qualitative interviews themes emerged

of how experiences of trauma had also negatively affected physical health, including cardiac and respiratory health (Ferry et al., 2008). Not surprisingly Troubles exposure makes individuals much more likely to have a diagnosis of a mental health condition ($\beta=0.981$), significant at the 5% level. The estimated coefficient equates to individuals exposed to the Troubles either quite a bit or an extreme amount being 31 percentage points more likely to suffer from mental ill-health than those respondents who report as being less affected by the conflict. This provides at least a partial explanation for the higher prevalence of mental ill-health in NI (DHSSPS, 2014).

8. Conclusion

The literature on the long-term effects of conflict on disability rates is limited; it typically focuses on veterans and in most cases looks at either the World Wars or violent conflict in less developed countries. This paper looks at the effect of exposure to conflict during the NI Troubles (1968-1998) on the high levels of DLA receipt which were seen in NI prior to the introduction of PIP. While disability rates across a variety of measures are higher in NI than in the rest of the UK, DLA is an extreme case with about one in nine adults in receipt of DLA at its peak in 2016.

We find that the exceptionally high rates of DLA receipt in NI are being driven by exposure to the Troubles. The effect of this exposure is to increase the likelihood of DLA receipt by 31 percentage points. Similar results are found for those who report that their community was affected by the Troubles with those whose communities were affected being 19 percentage points more likely to be in receipt of DLA.

DLA receipt has been a politically contentious issue, particularly given the historical discrepancy in DLA recipiency rates between the main religious communities in NI (Catholics and Protestants) (O'Reilly et al., 2021). While the unemployment rate, which was once twice as high among Catholics as Protestants, has converged over time the same has not been the case for DLA receipt. Our results show differences in social security payments related to disability between the communities are

completely explained by the level of exposure to the conflict as well as differences in socio-economic measures as the highest levels of deprivation tend to be experienced in predominantly Catholic areas. This is in line with other work which finds that religious differences in NI are reflections of socioeconomic status rather than religion (O'Reilly & Rosato, 2008).

The higher proportion of Catholics receiving DLA also meant that following the 2012 welfare reform political parties who find their support amongst Catholic communities were particularly keen to mitigate against the reform. This led to PIP being introduced much later in NI and more research is required to assess the impact on current numbers in receipt of social security payments related to disability.

The relationship between diagnosed health conditions and conflict is also examined. Severe heart conditions, respiratory conditions and mental ill-health are all more likely for those individuals who were exposed to the Troubles. Respondents who were exposed to the Troubles are 31 percentage points more likely to have a mental health diagnosis. The increased prevalence of physical health conditions following conflict may be explained by the stress and anxiety caused by Troubles exposure as per the health literature.

In summary, the legacy effects of the Troubles help explain the previously unexplained high levels of DLA receipt in NI (Devlin et al., 2023). Our findings reinforce the importance of providing continuing support to the people and communities worst affected by the conflict. Mitigating the possibility of intergenerational transmission of trauma will be an important step in reducing the number of individuals in receipt of social security payments related to disability in NI over the long-term and increasing labour force participation in NI.

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Figures & Tables

Figure 1: Economic inactivity rates, Nov-Jan 2020, by region

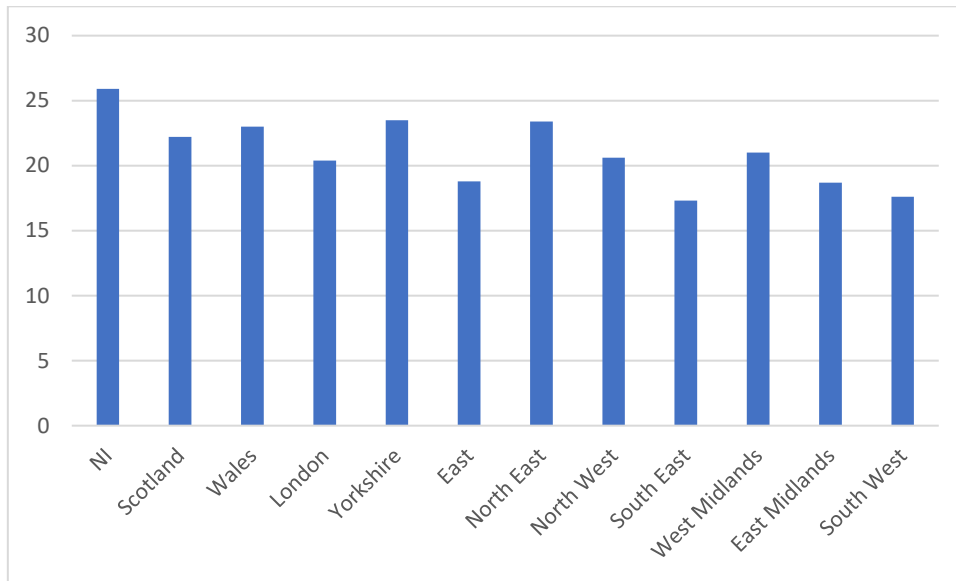


Figure 2: Economic inactivity by reason in NI and the UK, Nov-Jan 2020

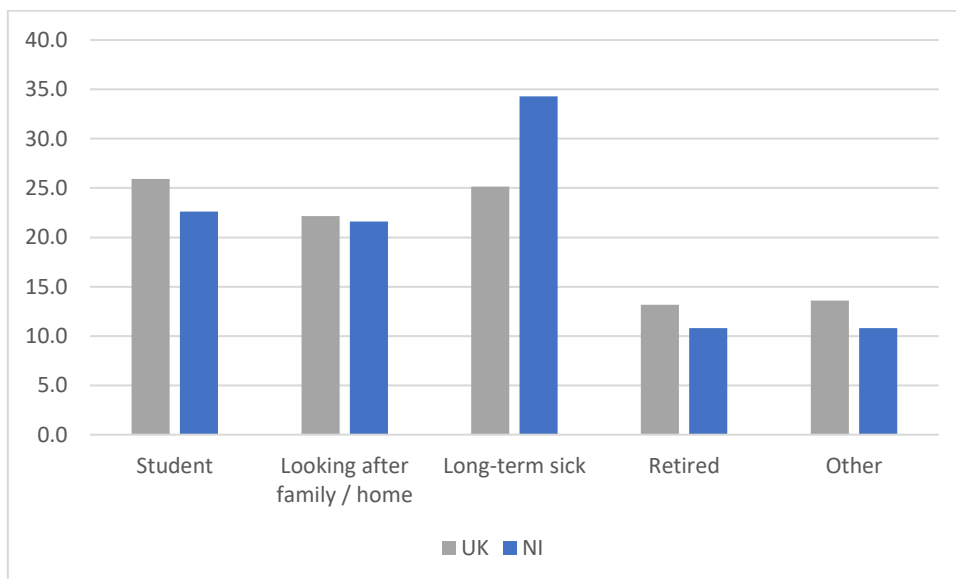


Figure 3: Troubles-related fatalities 1969-1998 by DEA (per 1000 of population)

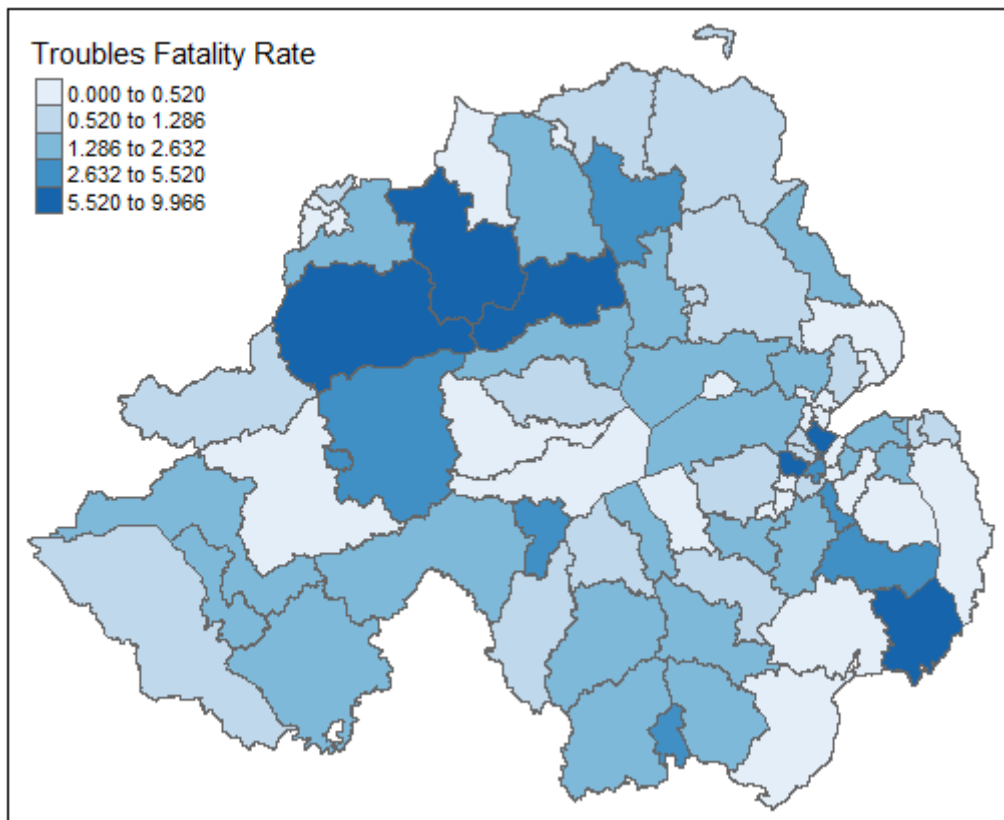


Figure 4 – Fatalities from bomb explosions 1969-1998 by DEA (per 1000 of population)

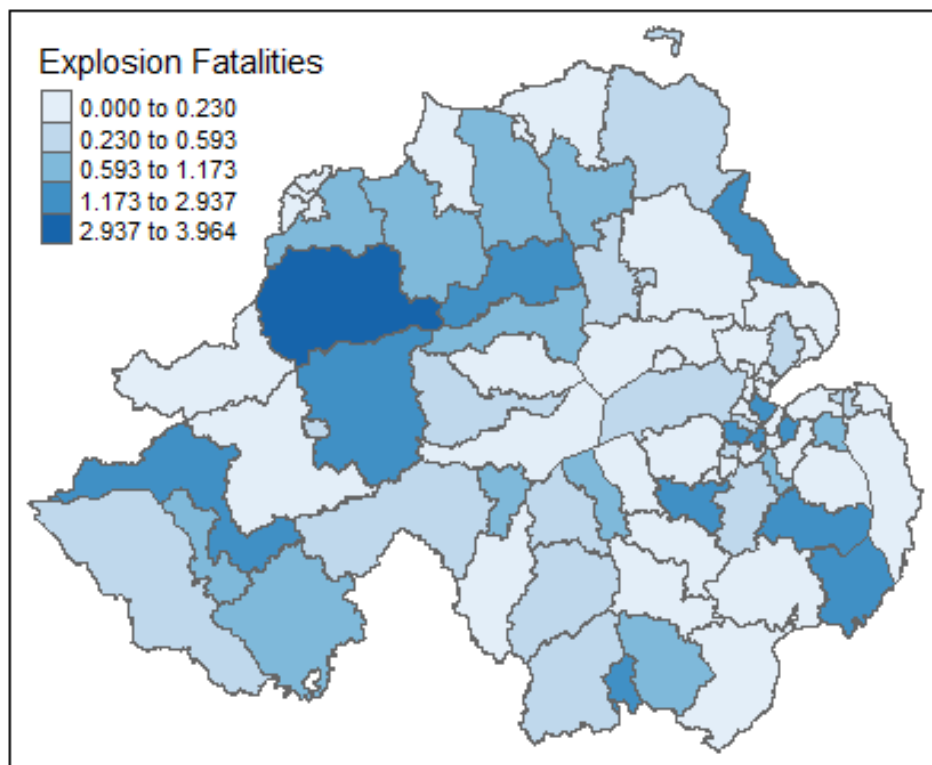


Figure 5 – Fatalities from sniper attacks 1969-1998 by DEA (per 1000 of population)

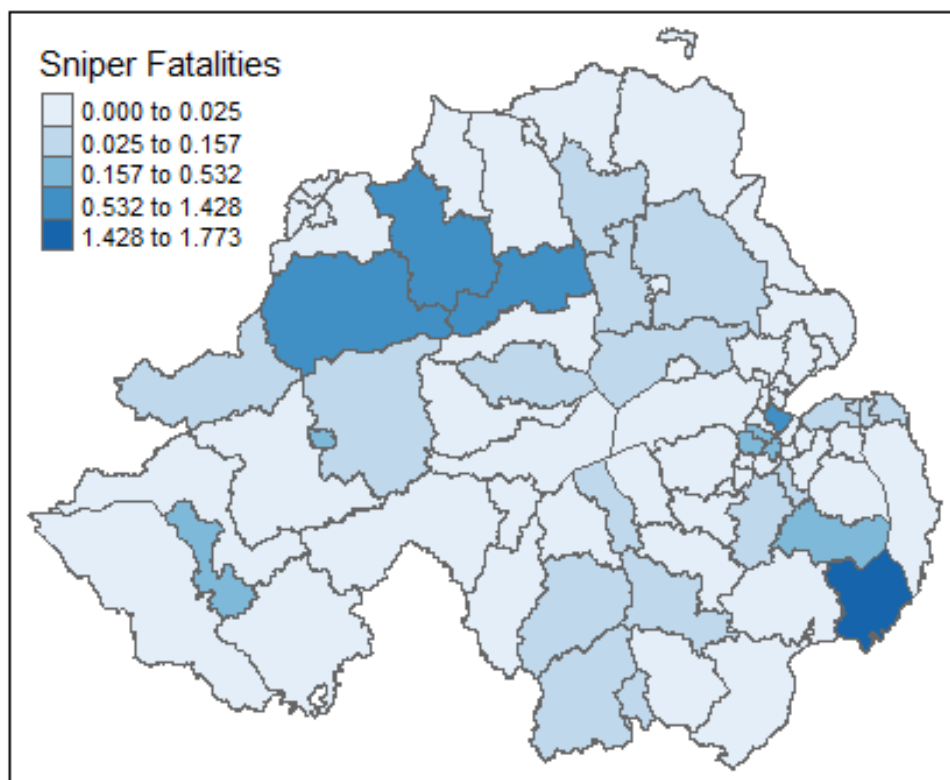


Figure 6 – Other Troubles-related fatalities 1969-1998 by DEA (per 1000 of population)

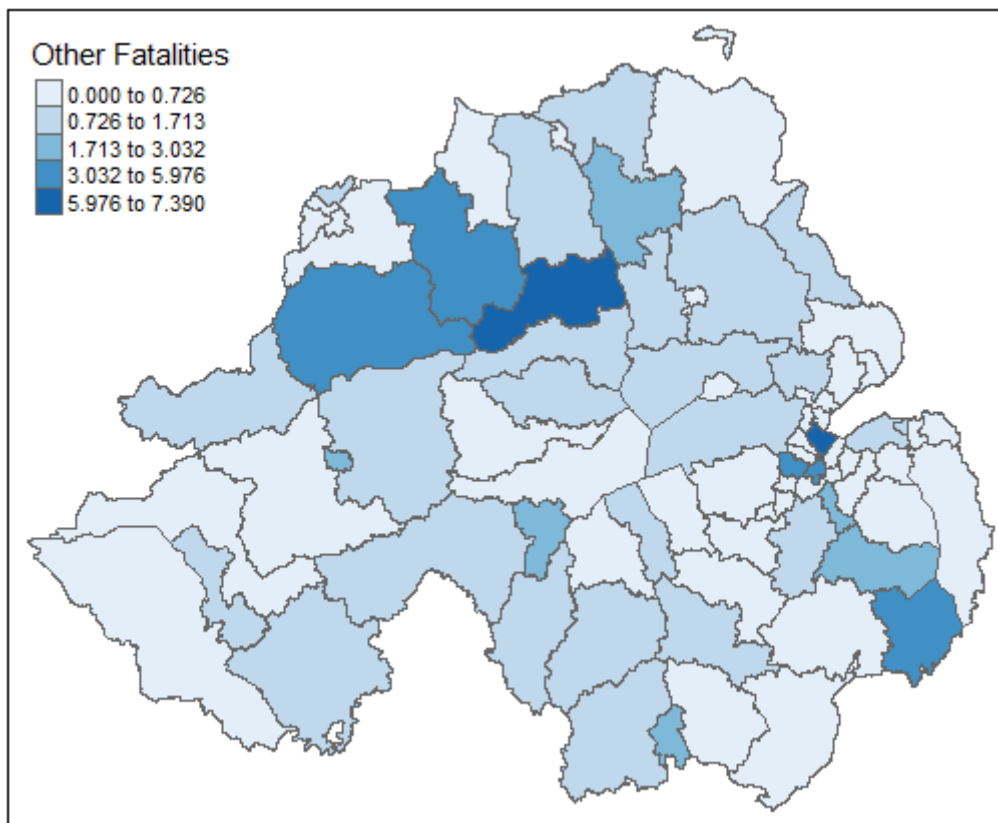


Table 1: Descriptive statistics of selected variables

	Mean	S.D.
DLA receipt	0.13	0.34
Troubles Impact...		
-On you personally	0.24	0.43
-On your community	0.30	0.46
Troubles Fatalities	1.60	2.06
Male	0.45	0.50
Age		
-50-54 years	0.32	0.47
-55-59 years	0.38	0.49
-60-64 years	0.29	0.46
Education		
-None/Primary	0.11	0.50
-Secondary	0.46	0.50
-Higher	0.43	0.50
Religion		
-Catholic	0.36	0.48
-Protestant	0.50	0.50
-Other	0.14	0.35
Single	0.25	0.44
Unemployment	3.52	1.22
Weekly pay	359.29	22.69
Area		
-Belfast City	17.2	0.38
-Other Urban	57.2	0.50
-Rural	25.6	0.44
N	2524	

Notes: Respondents aged 50-64. Means are weighted. *Troubles impact* is response to 'In general, what impact do you think the Troubles have had on your life?' and response to 'How much was the community you live in affected by the Troubles?' with 'Quite a bit' and 'An extreme amount' coded one in each case and zero otherwise. *Troubles Fatalities* is the rate per 100,000 people at DEA level as discussed in the data section. *Education* is highest level of education achieved. *Unemployment* is the claimant count at DEA level. *Weekly pay* is DEA median wages excluding overtime.

Table 2: Events experienced during the Troubles

	Probit regression				
	Proportion (%)	Troubles impact (personally)		Troubles impact (community)	
		Coeff.	(s.e.)	Coeff.	(s.e.)
Friend Killed	19.1	0.258***	(0.096)	0.172*	(0.099)
Relative Killed	11.7	0.383***	(0.118)	0.275**	(0.132)
Someone else killed	53.0	0.126	(0.095)	0.215**	(0.089)
Was physically injured	6.8	0.458***	(0.161)	0.257*	(0.151)
Friend injured	21.9	0.182*	(0.105)	0.019	(0.101)
Relative injured	17.9	0.110	(0.109)	0.231**	(0.104)
Someone else injured	43.7	0.244**	(0.099)	0.113	(0.097)
Witnessed bomb	55.0	0.149*	(0.084)	0.034	(0.093)
Witnessed murder	7.7	0.306**	(0.134)	-0.314**	(0.133)
Witnessed gunfire	45.1	0.073	(0.093)	0.249***	(0.095)
Witnessed rioting	56.7	0.352***	(0.106)	0.391***	(0.101)
Witnessed assault	38.9	0.081	(0.096)	0.020	(0.093)
Witnessed other violence	28.0	0.211**	(0.107)	0.181*	(0.104)
Was in prison	1.4	1.207**	(0.513)	0.755*	(0.408)
Friend in prison	10.7	0.027	(0.155)	0.388**	(0.158)
Close relative in prison	9.7	0.141	(0.151)	0.183	(0.149)
Other relative in prison	9.3	-0.249*	(0.143)	-0.122	(0.121)
Other in prison	23.4	0.065	(0.099)	0.248***	(0.090)
House searched	15.7	0.210	(0.128)	0.410***	(0.115)
Forced to leave home	10.0	0.297**	(0.141)	0.365***	(0.131)
Forced to leave job	5.3	0.247	(0.178)	0.270*	(0.162)
N		2082		2074	
Pseudo R ²		0.2564		0.2696	

Notes: Respondents aged 50-64. Proportions are weighted. The dependent variable in (1) is *Troubles impact (personally)* and in (2) is *Troubles impact (community)*. Additional controls are Age, Gender, Marital Status, Education, Religion, DEA unemployment rate, Weekly median pay and Area rurality. Standard errors are clustered at the geographical level, DEA. * p<0.10, ** p<0.05, *** p<0.01.

Table 3: Prevalence of medical conditions

Medical condition	Proportion (%)	Biprobit regression	
		Coeff.	(s.e.)
Moderate Heart	52.6	0.102	(0.394)
Severe Heart	5.1	1.075*	(0.553)
Respiratory	12.9	0.770**	(0.368)
Musculoskeletal	26.0	0.493	(0.434)
Cancer	5.4	0.791	(0.837)
Other	8.8	0.133	(0.526)
Mental ill-health	20.8	0.981**	(0.471)

Notes: Proportions are weighted. Coefficient estimates are given for *Troubles impact (personally)* in individual biprobit models with medical condition as dependent variable and additional controls (Age, Gender, Marital Status, Education, Religion and DEA unemployment rate, weekly pay and area rurality). *Moderate heart* are diagnoses of high blood pressure, angina, diabetes, high cholesterol, heart murmur, atrial fibrillation, abnormal heart rhythm or any other heart trouble. *Severe heart* are diagnoses of heart attack, congestive heart failure, stroke or mini-stroke. *Respiratory* are diagnoses of chronic lung disease or asthma. *Musculoskeletal* are diagnoses of arthritis or osteoporosis. *Cancer* are diagnoses of cancer or a malignant tumour. *Other* are diagnoses of serious memory impairment, Parkinson's, Alzheimer's, stomach ulcers, varicose ulcers, cirrhosis or serious liver damage. *Mental ill-health* are diagnoses of alcohol abuse, substance abuse, emotional, nervous or psychiatric problems. *Troubles Fatalities* is used as an instrument to control for measurement error in the Troubles Impact variable. Standard errors are clustered by DEA. *p<0.10, **p<0.05, ***p<0.01.

Table 4: Bivariate probit regression results

	Troubles impact (personally)		Troubles impact (community)	
	Coeff.	(s.e.)	Coeff.	(s.e.)
Troubles impact	1.143***	(0.217)	0.798***	(0.208)
Male	-0.125**	(0.056)	-0.097*	(0.057)
Age				
- 55-59	0.120	(0.080)	0.154*	(0.084)
- 60-64	0.279***	(0.088)	0.286***	(0.087)
Education				
-Secondary	-0.100	(0.104)	-0.142	(0.104)
-Higher	-0.471***	(0.10)	-0.496***	(0.107)
Religion				
-Protestant	-0.054	(0.079)	-0.012	(0.088)
-Other	-0.144	(0.096)	-0.079	(0.105)
Single	0.302***	(0.072)	0.276***	(0.071)
Unemployment	-0.003	(0.035)	-0.009	(0.035)
Weekly pay	-0.000	(0.002)	-0.000	(0.002)
Other Urban	-0.348**	(0.139)	-0.335**	(0.146)
Rural	-0.270*	(0.150)	-0.251	(0.157)
N	2467		2456	
Log pseudo likelihood	-2203.48		-2229.80	
Fisher's ρ	-0.519***	(0.170)	-0.350*	(0.128)

Notes: Respondents aged 50-64. Dependent variable is *DLA receipt*. Other explanatory variables are as in Tables 1 and 3. *Troubles fatalities* is the instrument in the omitted first-stage regressions. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are in brackets and are clustered at the DEA level.

Table 5: Bivariate probit regression results

	Troubles impact (personally)		Troubles impact (community)	
	Coeff.	(s.e.)	Coeff.	(s.e.)
Troubles Exposure	1.110***	(0.223)	0.749***	(0.200)
Male	-0.121**	(0.056)	-0.093*	(0.056)
Age				
-55-59	0.124	(0.080)	0.156*	(0.084)
-60-64	0.283***	(0.088)	0.289***	(0.087)
Education				
-Secondary	-0.102	(0.104)	-0.142	(0.104)
-Higher	-0.474***	(0.107)	-0.496***	(0.107)
Religion				
-Protestant	-0.058	(0.080)	-0.022	(0.090)
-Other/none	-0.147	(0.096)	-0.088	(0.104)
Single	0.306***	(0.072)	0.281***	(0.070)
Unemployment	-0.011	(0.035)	-0.015	(0.036)
Weekly pay	-0.000	(0.002)	-0.000	(0.002)
Other urban	-0.359***	(0.139)	-0.351**	(0.143)
Rural	-0.278*	(0.151)	-0.267*	(0.155)
N		2467		2456
Log pseudo likelihood		-2195.79		-2221.70
Fisher's ρ	-0.491***	(0.170)	-0.317***	(0.119)

Notes: Respondents aged 50-64. Dependent variable is *DLA receipt*. Other explanatory variables are as in Tables 1 and 3. *Explosion fatalities*, *sniper attack fatalities* and *Other Troubles-related fatalities* are the three instruments in the omitted first-stage regressions. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are in brackets and are clustered at the DEA level.

Table 6: Two-stage least squares regression results

	(1)		(2)		(3)		(4)	
	Coeff.	(s.e.)	Coeff.	(s.e.)	Coeff.	(s.e.)	Coeff.	(s.e.)
Troubles Impact	0.585***	(0.166)	0.259***	(0.064)	0.457***	(0.136)	0.257***	(0.075)
Male	-0.061***	(0.023)	-0.028*	(0.015)	-0.049**	(0.018)	-0.028**	(0.013)
Age								
-55-59	0.014	(0.020)	0.025	(0.017)	0.016	(0.018)	0.025	(0.017)
-60-64	0.055***	(0.020)	0.054***	(0.017)	0.055***	(0.020)	0.054***	(0.018)
Education								
-Secondary	-0.017	(0.028)	-0.037	(0.024)	-0.021	(0.031)	-0.037	(0.028)
-Higher	-0.090***	(0.028)	-0.104***	(0.024)	-0.095***	(0.030)	-0.104***	(0.026)
Religion								
-Protestant	0.020	(0.024)	0.014	(0.020)	0.008	(0.020)	0.013	(0.023)
-Other/none	-0.013	(0.027)	-0.004	(0.024)	-0.020	(0.023)	-0.005	(0.021)
Single	0.069***	(0.019)	0.061***	(0.017)	0.071***	(0.019)	0.061***	(0.017)
Unemployment	-0.015	(0.011)	-0.009	(0.008)	-0.011	(0.010)	-0.008	(0.009)
Weekly pay	-0.000	(0.001)	0.000	(0.000)	-0.000	(0.001)	0.000	(0.000)
Other city	-0.063*	(0.033)	-0.078***	(0.028)	-0.074*	(0.038)	-0.078**	(0.037)
Rural	-0.051	(0.036)	-0.053*	(0.031)	-0.060*	(0.041)	-0.053*	(0.041)
# instruments	1		1		3		3	
N	2467		2456		2467		2456	
Hansen J p-value					0.389		0.979	

Note: Results are from two-stage least squares regressions. Respondents aged 50-64. Dependent variable is DLA receipt. The main explanatory variable in (1) and (3) is Troubles impact (personally) and in (2) and (4) is Troubles impact (community). Other explanatory variables are as in Tables 1 and 3. The instrument used in (1) and (2) is the overall fatality rate per 1000 population at DEA level and in (3) and (4) the instruments are explosion fatalities, sniper attack fatalities and other Troubles-related fatalities. *p<0.10, **p<0.05, ***p<0.01. Standard errors are in brackets and are clustered at the DEA level.

Table 7: Probit regression results

	Coeff.	(s.e.)
Male	-0.077	(0.076)
Age		
-55-59	0.175*	(0.097)
-60-64	0.316***	(0.103)
Education		
-Secondary	-0.141	(0.131)
-Higher	-0.512***	(0.135)
Religion		
-Protestant	-0.075	(0.096)
-Other/None	-0.198	(0.125)
Single	0.306***	(0.084)
Unemployment	-0.027	(0.044)
Weekly pay	-0.000	(0.002)
Other Urban	-0.411**	(0.155)
Rural	-0.297*	(0.168)
Friend Killed	0.190*	(0.113)
Relative Killed	0.103	(0.132)
Someone else killed	0.127	(0.099)
Was physically injured	0.463**	(0.182)
Friend injured	0.132	(0.121)
Relative injured	0.143	(0.107)
Someone else injured	-0.308***	(0.119)
Witnessed bomb	-0.030	(0.096)
Witnessed murder	-0.137	(0.140)
Witnessed gunfire	-0.024	(0.133)
Witnessed rioting	0.042	(0.096)
Witnessed assault	0.054	(0.104)
Witnessed other violence	0.129	(0.121)
Was in prison	-0.572*	(0.327)
Friend in prison	0.166	(0.153)
Close relative in prison	0.117	(0.187)
Other relative in prison	-0.208	(0.175)
Other in prison	-0.245**	(0.114)
House searched	0.242*	(0.131)
Forced to leave home	-0.045	(0.125)
Forced to leave job	0.241	(0.178)
N	2090	
Pseudo R ²	0.100	

Note: Respondents aged 50-64. Dependent variable is DLA receipt. Other explanatory variables are as in Tables 1 and 3. *p<0.10, **p<0.05, ***p<0.01. Standard errors are in brackets and are clustered at the DEA level.

Appendix

Table A.1: Bivariate probit regression results

First-stage	Dependent variable: Troubles impact			
		(1)		(2)
Fatality Rate	0.102***	(0.019)	0.198***	(0.028)
Male	0.303***	(0.046)	0.245***	(0.051)
Age				
- 55-59	0.080	(0.081)	0.026	(0.082)
- 60-64	0.005	(0.074)	0.055	(0.078)
Education				
- Secondary	-0.068	(0.084)	0.081	(0.086)
- Higher	-0.055	(0.106)	0.010	(0.093)
Religion				
- Protestant	-0.254***	(0.071)	-0.492***	(0.092)
- Other/none	-0.065	(0.094)	-0.278***	(0.108)
Single	0.024	(0.066)	0.081	(0.058)
Second-stage	Dependent variable: DLA receipt			
Troubles impact	1.143***	(0.217)	0.798***	(0.208)
Male	-0.125**	(0.056)	-0.097*	(0.057)
Age				
- 55-59	0.120	(0.080)	0.154*	(0.084)
- 60-64	0.279***	(0.088)	0.286***	(0.087)
Education				
- Secondary	-0.100	(0.104)	-0.142	(0.104)
- Higher	-0.471***	(0.10)	-0.496***	(0.107)
Religion				
- Protestant	-0.054	(0.079)	-0.012	(0.088)
- Other/none	-0.144	(0.096)	-0.079	(0.105)
Single	0.302***	(0.072)	0.276***	(0.071)
Unemployment	-0.003	(0.035)	-0.009	(0.035)
Weekly pay	-0.000	(0.002)	-0.000	(0.002)
Other Urban	-0.348**	(0.139)	-0.335**	(0.146)
Rural	-0.270*	(0.150)	-0.251	(0.157)
N	2467		2456	
Log pseudo likelihood	2203.5		2229.8	

Notes: Respondents aged 50-64. The main explanatory variable in Troubles impact (personally) in (1) and Troubles impact (community) in (2). Other explanatory variables are as in Tables 1 and 3. *Troubles fatalities* is the instrument in the omitted first-stage regressions. *p<0.10, **p<0.05, ***p<0.01. Standard errors are in brackets and clustered at the DEA level.

Table A.2: Bivariate probit regression results

First-stage	Dependent variable: Troubles impact			
	Coeff.	(s.e.)	Coeff.	(s.e.)
Explosions	-0.038	(0.063)	0.088	(0.110)
Sniper Attacks	0.588***	(0.160)	0.930***	(0.335)
Other Fatalities	0.084***	(0.027)	0.146***	(0.148)
Male	0.303***	(0.046)	0.246***	(0.051)
Age				
-55-59	0.085	(0.081)	0.032	(0.081)
-60-64	0.015	(0.073)	0.061	(0.078)
Education				
-Secondary	-0.086	(0.086)	0.063	(0.086)
-Higher	-0.063	(0.106)	0.005	(0.094)
Religion				
-Protestant	-0.261***	(0.072)	-0.495***	(0.093)
-Other/none	-0.096	(0.094)	-0.308***	(0.109)
Single	0.018	(0.067)	0.077	(0.059)
Second-stage	Dependent variable: DLA receipt			
Troubles Impact	1.110***	(0.223)	0.749***	(0.200)
Male	-0.121**	(0.056)	-0.093*	(0.056)
Age				
-55-59	0.124	(0.080)	0.156*	(0.084)
-60-64	0.283***	(0.088)	0.289***	(0.087)
Education				
-Secondary	-0.102	(0.104)	-0.142	(0.104)
-Higher	-0.474***	(0.107)	-0.496***	(0.107)
Religion				
-Protestant	-0.058	(0.080)	-0.022	(0.090)
-Other/none	-0.147	(0.096)	-0.088	(0.104)
Single	0.306***	(0.072)	0.281***	(0.070)
Unemployment	-0.011	(0.035)	-0.015	(0.036)
Weekly pay	-0.000	(0.002)	-0.000	(0.002)
Other urban	-0.359***	(0.139)	-0.351**	(0.143)
Rural	-0.278*	(0.151)	-0.267*	(0.155)
N	2467		2456	
Log pseudo likelihood	-2195.8		-2221.7	

Notes: Respondents aged 50-64. The main explanatory variable in (1) is personally being exposed to the Troubles and in (2) is if the community was affected. Other explanatory variables are as in Tables 1 and 3. *Troubles fatalities by bomb explosion, by sniper attack and all other troubles related events* are the 3 instruments in the omitted first-stage regressions. *p<0.10, **p<0.05, ***p<0.01. Standard errors are in brackets and are clustered at the DEA level.