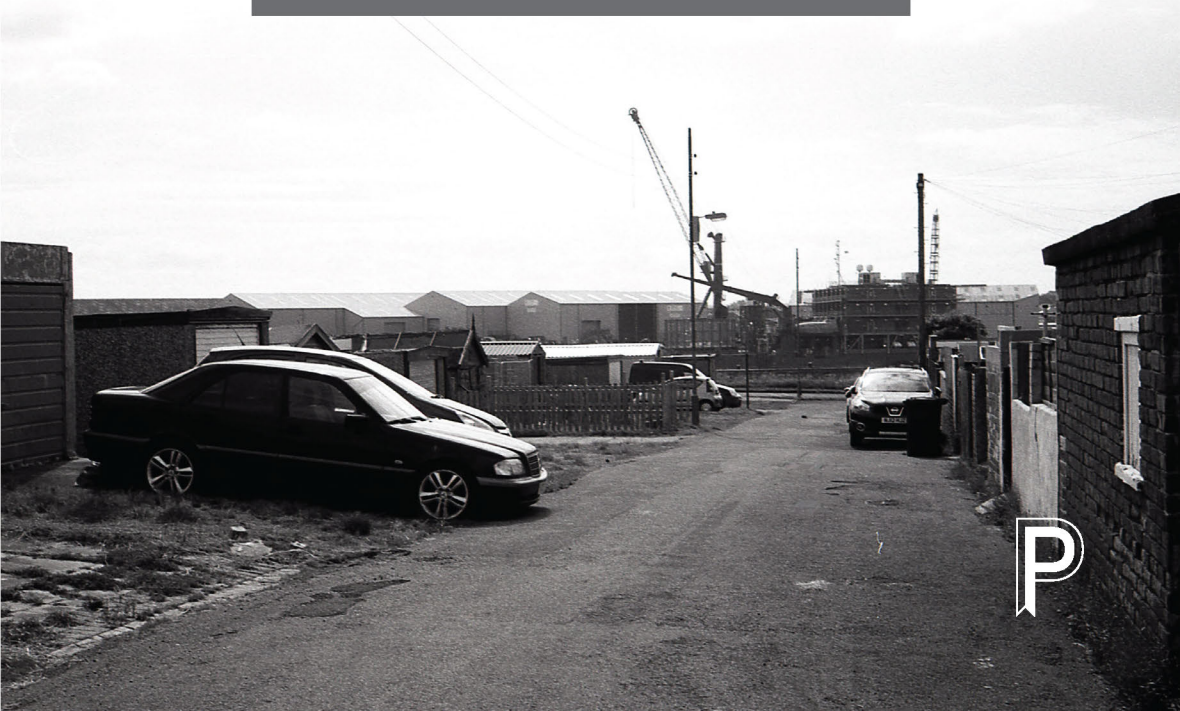


Health in Hard Times

Austerity and Health
Inequalities

Edited by
Clare Bambra



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Minding the Gap

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Introduction

This chapter examines inequalities in mental health in Stockton-on-Tees using survey data. It engages with key debates around the causes of socioeconomic inequalities in mental health by examining the extent and underpinning determinants of the gap in mental health and wellbeing between the most and least deprived neighbourhoods of Stockton-on-Tees. Using data from the longitudinal household survey, it establishes the extent of inequalities in mental health and wellbeing in Stockton-on-Tees and examines the explanatory role of behavioural, psychosocial and material factors in explaining this gap. Longitudinal time trend analysis also examines the effects of austerity and welfare reform on this gap and on the contribution of the underpinning determinants. The results indicate that there is a significant gap in mental health and wellbeing between the most and least deprived neighbourhoods of Stockton-on-Tees and, in contrast to the majority of public health practice and discourse, it is material and psychosocial factors that are the major explanations of the health gap – not behavioural factors. However, there were few changes in these relationships overtime. The chapter discusses the implications of the findings for mental health policy and practice in the context of further likely exacerbation during prolonged austerity.

The Great Recession

Recessions are period of temporary economic decline (technically defined as two consecutive quarters of negative growth in gross domestic product: Oxford Dictionaries [2012]). The 2007/08 economic crisis affected most countries around the world. Economic recessions are accompanied by a rise in unemployment, decline in income, unmanageable debts, precarious job environment, stress,

and consequently higher prevalence of mental health problems, substance misuse and an increase in suicides. The 2007/08 crisis also resulted in increased bankruptcies, downward trends in stock markets, increased unemployment and housing repossessions. According to the International Labour Organization, worldwide the number of jobless people increased to 212 million in 2009 compared to about 34 million jobless people in 2007 (Chang et al., 2013). The post-2007 economic decline has been longer, wider and deeper than earlier recessions (for example, the 1930s Great Depression) and is commonly known as the 'Great Recession'. The International Monetary Fund (IMF) has stated that this Great Recession is the worst experienced in the global economy for 60 years (Gamble, 2009).

The effect of the recession varied by country as a result of social safety nets and the policy measures taken. International responses varied and the UK responded with policies of austerity (Reeves et al., 2013). In an attempt to reduce public deficits, large cuts were made to central and local government budgets, health care system, welfare services and social security benefits (Reeves et al., 2013; Kitson et al., 2011). Reeves et al. (2013) compared policies across European countries between 2009–11 to assess how the UK fared with rest of the Europe (Reeves et al., 2013). They found that the UK had the third most extensive austerity policy among other European countries. There have been a raft of 'welfare reforms' initiated in the UK, with many individuals affected by multiple cuts. Consequently, the UK had a large rise in unemployment and a strong association was evident between unemployment rates and increased rates of suicide in males. For example, Knapp (2012) reported that more than 2.7 million people were unemployed with over 860,000 of them being unemployed for more than a year. The average household debt was high and rising (Knapp, 2012). Between 2009 and 2011, the UK experienced a reduction of 2.5% public expenditure (equivalent to about £245 per capita). At this time of increased unemployment, there were also considerable cuts to social security with those on the lowest incomes who have been most heavily affected (Reeves et al., 2013). It is also the most deprived local authorities that have been hardest hit by the cuts (Beatty and Fothergill, 2016). Since 2010 the North East as a region has lost £966 million (O'Donoghue, 2016). Previous international research on welfare changes has shown that where welfare services are cut, this has a detrimental impact on the health of the poorest (Shaw et al., 2005; Blakely et al., 2008). This chapter discusses the effect of post-recession austerity on neighbourhood inequalities in mental health in Stockton-on-Tees using data from our longitudinal household survey.

Inequalities in mental health

Mental health is a crucial element of the overall wellbeing of individuals, societies and countries (Box 6.1), and deprivation in various forms can be detrimental to it. Positive mental health promotes wellbeing so that individuals can realize their abilities, are able to cope with normal stresses of life, to work productively and to contribute to their community (WHO, 2003). There is ample evidence that mental health and social position are inversely associated and even follows a social gradient (Murali and Oyeboode, 2004; Reiss, 2013; Delgadillo et al., 2016; Marmot, 2017). The 2001 World Health Report, for example, shows that in high-income countries the prevalence of mental health problems such as depression and anxiety was 1.5 to 2 times higher among the most deprived than their most affluent counterpart (WHO, 2001).

Box 6.1: Mental health

Concepts of mental health include subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational dependence and recognition of the ability to realize one's intellectual and emotional potential. It has also been defined as a state of well-being whereby individuals recognize their abilities, are able to cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their communities. Mental health is about enhancing competencies of individuals and communities and enabling them to achieve their self-determined goals. (WHO, 2003: 7)

Poverty and deprivation have wide-ranging impacts. Poverty acts as a constraint for many of the material conditions of life. This includes leading to limited access to adequate housing, inability to access good nutrition, constrained opportunities to participate in society and reduced access to goods and services (Shaw et al., 2006; Bambra, 2016). Poorer health and higher rates of mortality are found in almost all studies of neighbourhoods characterised by poverty and unemployment, and the link between income and health is evidenced in the vast majority of studies in this area (Bambra, 2016; Bartley, 2016). The stress associated with life on a low income – such as insecure work, financial difficulties, and living in areas with high levels of deprivation – also appears to have particularly damaging effects on mental and physical health (Marmot and Wilkinson, 2006; Thoits, 2010).

While poverty and health are inversely associated, economic hardship due to crisis such as recession has an additional mental health impact (Friedli, 2009). The 2008 global recession had both short and long-term negative impacts on mental health, particularly on key groups such as disabled people and those experiencing mental distress (Frasquilho et al., 2016). The effects of economic hardship are widespread, negatively affecting many aspects of wellbeing and functioning (Barnes et al., 2017). Following the 2008 recession, worldwide an excess of 4,884 suicides were observed in 2009; these would not have occurred if the trend in 2000–07 had continued (Corcoran et al., 2015). A rise in suicide attempts or self-harm was also evident in Ireland, Greece, Spain and Italy (Hawton et al., 2016). In the longer term, an excess of 4,750 suicides in the US, 1,000 suicides in England (Corcoran et al., 2015), and 680 suicides in Spain were observed over the next three years (2008–10). Although suicide is often reported, it is only tip of the iceberg. Both self-harm and non-fatal negative effects on wellbeing follow a gradient of socioeconomic deprivation (Hawton et al., 2016).

The long-term public health impacts of recession varied between countries as a result of their respective policy measures (Hawton et al., 2016; Ruckert and Labonté, 2017). Stuckler and Basu (2013) argue that it is *how* the state responds to economic crises that determines their impact on health. Where social safety nets are reduced for instance, economic shocks can rapidly turn into health crises (Stuckler and Basu, 2013). Conversely, economic stimulus can have a protective effect on the harm caused by recession. Whereas Sweden, Poland and Germany substantially increased government spending, the austerity measures adopted in the UK (expenditure cut of about £245 per capita) ranked the third largest for spending cuts in Europe after Greece and Luxembourg. Greece, Spain and Portugal adopted strict fiscal austerity and restricted health budget and a rise in prevalence of suicides and infectious disease were evident in these countries. In contrast, Iceland had little or no negative effect on health when it rejected austerity and instead increased public expenditure (Karanikolos et al., 2013).

Though health outcomes are influenced by the distribution of social and economic resources between and within countries, high levels of inequality within a country or region further increase the risk to physical and mental health. Virtually all health and social problems are worse in more unequal societies (Wilkinson and Pickett, 2010). The more inequitable a society is, the higher the risk for its population to experience increased stress, anxiety, depression, and in the worst cases suicide and self-harm (Wilkinson and Pickett, 2010): social inequality

is bad for mental health. These adverse effects were evident for both individual-level and area-level aggregated analysis: the neighbourhoods with greater unemployment had higher rates of suicide (Hawton et al., 2016). While population mental health usually declines during an economic recession and then recovers, this has not been the case in the current period: 2013 witnessed the highest male suicide rate since 2001 (ONS, 2015). Between 2010 and 2013, the largest increases in poor mental health (measured by suicide rates, self-reported mental health problems and anti-depressant prescriptions) have been in the most deprived neighbourhoods, leading to increasing inequalities in mental health (Barr et al., 2016). These widening inequalities have been attributed to the raft of welfare cuts, and worsening financial situations, of those on the lowest incomes. Deprived areas have been the hardest hit by austerity and this is having an impact on spatial and society inequality (Hastings et al., 2015). A recent study using data from European social study survey observed that there was a negative association with social expenditure and health inequalities in welfare countries in Europe (Álvarez-Gálvez and Jaime-Castillo, 2018). They also found that social expenditure can moderate the relationship between socioeconomic status (SES) and health inequality.

Social inequalities are closely linked to health inequalities, and by having an impact on social inequality, UK austerity policies are likely to further widen the existing north-south divide and health inequalities at the local level (Beatty and Fothergill, 2013; Bambra et al., 2014; Coope et al., 2014; Bambra and Garthwaite, 2015; Clayton et al., 2015; Bambra, 2016). These negative effects will challenge the progress in reaching the United Nations Sustainable Development Goal 10 of making the world a more equitable society (United Nations). Therefore, it is important to assess and understand the impact of austerity, as evidence has shown that the impact of recession may vary depending on responses, such as whether a country chooses austerity over alternative measures on increased public expenditure. It is crucially important that health inequalities are investigated and understood properly, and adequate policy responses are in place.

Explaining inequalities in mental health

There are three key explanatory models for why such health inequalities exist: materialist, psychosocial and behavioural/cultural (Bambra, 2016; Bartley, 2016).

The materialist explanation of health inequalities describes how the distribution of financial and related resources relates to health

(Williams, 2003; Shaw et al., 2006). It focuses on how the various material conditions of life (such as the physical environment, income, housing, nutrition, opportunities for participation and access to health care services) affect health outcomes. An important aspect of the material model is that there is clear negative association between poverty, deprivation and health. Every increase in deprivation is associated with worse health: the higher the level of neighbourhood deprivation, the higher is level of mortality or illness. The effect is twofold: someone with a low income has limited capacity to buy things important for their health, but s/he also has may well live in a deprived neighbourhood which further limits their access to salutogenic factors: the amplification of deprivation (Macintyre, 2007). Dreger et al. (2014), for example, have identified material deprivation, such as ability to pay for basic goods and services, as a significant determinant of mental health and wellbeing.

Psychosocial models of health inequalities focus on how relative deprivation may influence health outcomes: “What matters is where we stand in relation to others in our own society” (Wilkinson and Pickett, 2010: 25). The position held in a social hierarchy can make a person feel frustrated and stressed if they are lower down. This is particularly the case in high income countries (Wilkinson and Pickett, 2010), where people from lower socioeconomic backgrounds cannot afford the range of commodities available and accessible to wealthier households. The psychosocial pathway describes how stress related to low position and feelings of lack of power caused by living in an unequal society act as psychosocial risk factors for mental health (Marmot and Wilkinson, 2001; Bambra, 2011; Marmot, 2017). It emphasises that people’s experience and emotions are translated as acute and chronic stress and then cumulatively have an impact on the body and result in adverse physical and mental health outcomes (Marmot and Wilkinson, 2006; Thoits, 2010). The effect of chronic anxiety, low levels of self-esteem and a lack of control at work – or at the community level – can be very damaging to physical and mental health (Brunner and Marmot, 2006). Availability of social support, having control and autonomy at work, being able to balance between home and work and having a balance between efforts and rewards are also included as factors in this model that can affect health (Bartley, 2016).

Behavioural models, on the other hand, suggest that what people do as an individual can be damaging to their health, and that certain groups of people are more likely to demonstrate health damaging behaviours compared to others (Marmot and Bell, 2012). They focus

on unhealthy behaviours, such as smoking, drinking alcohol, lack of fruit and vegetable consumption and lack of exercise. These behaviours are more commonly seen in deprived communities. The behavioural model shifts the focus from collective to individual responsibilities for health inequalities. This model attributes health inequalities to the personal characteristics of individuals (that is, their choice of behaviour) (Bartley, 2016). The wider structural determinants of health (and health behaviours) are thereby marginalised in favour of focusing on the individual, and apportioning blame, and the impetus for change, firmly on that person.

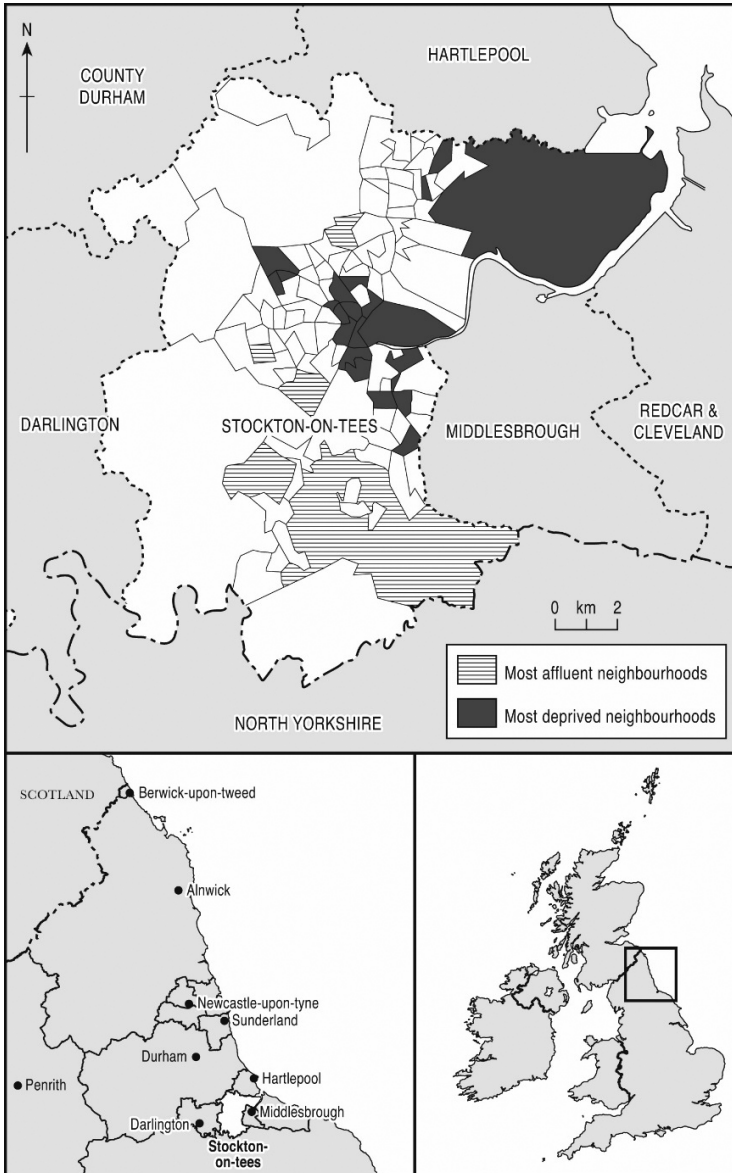
Stockton-on-Tees survey

Stockton-on-Tees is an area in the North East of England with high spatial and social inequality (Bambra et al., 2014; Mattheys et al., 2016), which has one of the highest life expectancy gaps of all English local authorities (Schrecker and Bambra, 2015; Bambra, 2016). This chapter examines changes in inequalities in mental health between least and most deprived neighbourhoods of Stockton-on-Tees using a longitudinal household survey that was conducted over 18 months between 2014–16. It investigates the size of the gap in mental health between the least and most deprived areas of Stockton-on-Tees over the study period and assesses the relative contribution of different factors in explaining neighbourhood inequalities in mental health: physical material environment, socioeconomic material environment, and psychosocial and behavioural factors. It also presents a longitudinal analysis of the key factors associated with the mental health outcomes.

We conducted a longitudinal household survey over an 18-month period with participants surveyed at Wave 1 (April–June 2014), Wave 2 (October–December 2014), Wave 3 (April–July 2015) and Wave 4 (October 2015–February 2016). The gap in health between the two areas is examined using a multistage stratified random sampling of adults aged over 18, split between participants from the 20 most and 20 least deprived lower layer super output areas (LSOAs). In order to create a sample for the survey the research team used the 2010 Index of Multiple Deprivation (IMD) to identify the 20 most and 20 least deprived LSOAs in Stockton-on-Tees (DCLG, 2011). The IMD is a summary measure of relative deprivation for each local authority district, unitary authority and LSOA in England. It is published at the level of LSOA and is formed by pulling together 38 individual indicators that are situated within seven broader domains: income deprivation; employment deprivation; health deprivation and

disability; education, skills and training deprivation; barriers to housing and services; living environment deprivation; and crime. Figure 6.1 shows the neighbourhoods included in the survey.

Figure 6.1: Maps of Stockton-on-Tees including most and least deprived survey neighbourhoods

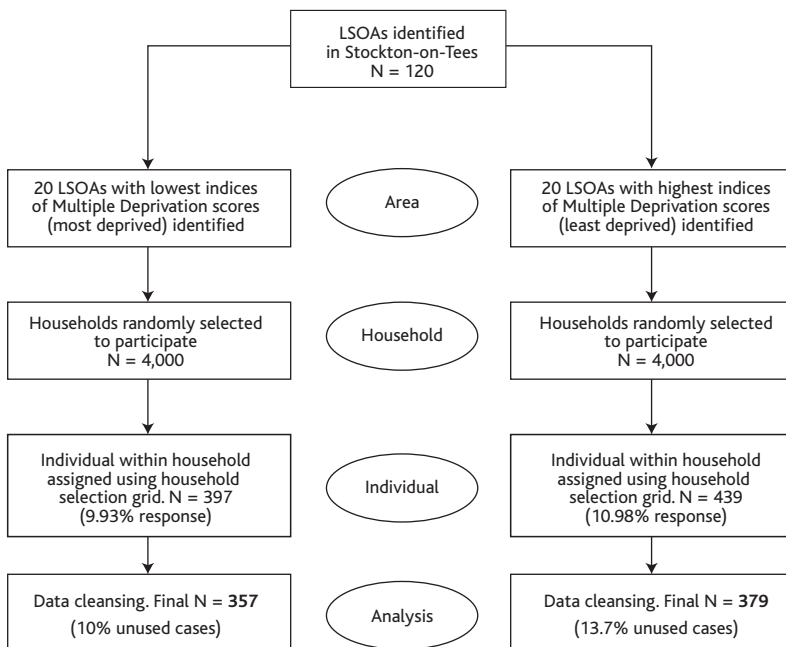


Source: Mattheys et al., 2016

The *scale* at which deprivation is studied can have a really significant impact on the results, as different patterns prevail with different geographical scales. Using larger areas, such as data at the local authority level, can lead to variations within them being smoothed out. As such it is important to use data at as low a level as possible. LSOAs provide the best means of doing this in England (ONS, 2017). LSOAs are small areas of relatively even size (of around 1,500 people in each). There are 32,484 LSOAs in England (DCLG, 2011). It is important to be aware however that although the IMD will identify areas that have characteristics that are associated with deprivation, it does not identify *deprived people* (people who could be considered as deprived may be living in an area that is not considered so). It also should be considered a summary measure; IMD scores are made up of weighted individual domain scores and so the summary score does not tell us how each individual domain is scoring.

Participants were sampled initially by household, and then at the individual level, using a multi-stage sampling strategy. Within this approach, a sample of areas are drawn up (initially larger areas are selected and then progressively smaller ones until a sample of households are randomly selected within the areas) (De Vaus, 1991). A random sample of 200 target households in each of the 40 LSOAs

Figure 6.2: Sampling strategy for the survey



was selected resulting in a total of 8000 households (4,000 most and least deprived) who were sent study invitation letters (200 per LSOA) in April and May 2014. This was done assuming a response rate of 10%. In order to avoid bias in the selection of individuals within a household (for instance the person who is not in employment in a household always responding), we followed the selection procedure that is outlined by De Vaus (1991).

Mental health outcomes

Two measures were selected to assess mental health in the survey: the Warwick Edinburgh Mental Wellbeing Scale and the SF8 Mental Health Score. The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) is a 14-point scale that considers both hedonic and eudaemonic aspects of wellbeing and asks respondents to self-report their experience of each of the statements over the past two weeks. The 14 statements included in WEMWBS each has five possible answers that are scaled from 'none of the time' up to 'all of the time'. The scale gives the individual a total score (up to a maximum of 70), which is used as the dependent variable and is treated as a continuous variable. It has been well validated for use in the general population and has moderate to high levels of construct validity (it measures what it says it is measuring) (Tennant et al., 2007).

The SF8 instrument provides a measure of physical and mental health and provides a separate score for both physical and mental health. It is a condensed version of the SF36 and has eight questions. The individual is asked to report how much each question is applicable to them over the past 30 days. The SF8 tool has two components: Physical Component Summary (PCS) and Mental Component Summary (MCS). The SF8MCS includes questions about social functioning, mental health and emotional role limitation (Roberts et al., 2010). The shorter version of SF8 was used as it was felt that although it is less sensitive than the longer version, on balance it was a more cost effective tool to use within a relatively large survey (Bowling, 2005).

Factors that explain inequalities

To understand how mental health is influenced by various factors, variables were separated into four categories: material socioeconomic variables; material physical environment variables; psychosocial variables and behavioural variables. The group of material socioeconomic variables included questions around how the person occupied their

home, whether anyone in the household was in receipt of benefits, receipt of housing benefit, whether the participant was in paid employment, whether the household was a workless household, total household income and highest educational level. The material physical environment variables included questions around living conditions including whether there were problems with damp, whether the house was too dark and not warm enough in winter. It also included questions around the neighbourhood status including problems with crime, pollution/environmental problems and problems with noise. The psychosocial variables included frequency of meeting socially with friends, family or work colleagues; how safe the participant felt walking alone after dark; how often the participant felt they lacked companionship; how often the participant felt left out; how often the participant felt isolated from others; and how happy the person would identify as on a scale of 1–10. Finally, the behavioural questions included whether the participant smoked, whether the participant drank alcohol, weekly alcohol consumption units, daily fruit and vegetable consumption portions and frequency of physical exercise.

Analysis

The study data were initially utilised to produce summary statistics and visualisation aids, which described the changes in demographic, material socioeconomic, material physical, psychosocial and behavioural factors over the study period.

The key analyses are then done in three segments: first, in line with the objective of the survey to investigate neighbourhood inequality in mental health between the most and least deprived LSOAs in Stockton-On-Tees over time, we fitted multilevel models (MLM) for the mental health outcomes with only deprivation indicator and Waves as the predictor variables. The models also included demographic factors (age and gender), so that the results are adjusted for them. MLMs were used to analyse the mental health outcomes so that it will account for correlation between the repeated observations per participant. The study used individual level data collected from the same individual over a period, which means that these repeated measures are likely to be correlated.

Second, in addition to the longitudinal analysis, compositional and contextual analysis of the relative contribution of the different health inequalities factors to the inequality gap was performed on the baseline data. The analysis focused on the gap in the two mental health scores between respondents from the most and least deprived areas. MLMs

were used to calculate what percentage of the mental health inequalities between the most and least deprived areas were explained by material, psychosocial and behavioural factors. A similar approach was used with regard to explaining socioeconomic inequalities in health in Norway (Skalická et al., 2009) and with respect to the North–South health divide in England (Bambra et al., 2015).

The reference model for each health outcome is a MLM containing only the indicator for the most and least deprived areas together with age and gender. The percentage reduction on inequality gap due to different health inequalities factors or combinations of them was calculated as the ratio of the difference between the reference model and the model including the compositional and contextual factors. Repeating the same process, percentage reduction in inequality gap was calculated for material socioeconomic; material physical environmental; psychosocial, and behavioural factors. This process allowed calculation of their relative contribution in explaining the health inequality gap.

Finally, MLMs were used to assess which factors were associated with mental health inequality over the study period. Associations were examined using longitudinal data for SF8MCS and WEMWBS outcomes separately. The most parsimonious models were used to explain the outcome that included variables adequately explaining the association.

Further details of the underpinning statistical methods are available in Mattheys et al. (2016) and Akhter et al. (2018).

Results

Demographic characteristics

About 27% of the participants in the most-deprived LSOAs belonged to the age group of 65 years and above at Wave 1, which was slightly higher in the least deprived areas (Table 6.1). In the later waves, the percentages of older participants tended to increase with 38% in most deprived and 46% in the least deprived LSOA's. There was not much change in percentage of females participating to the study in both areas (57%–59% for most deprived; 59%–61% for least deprived LSOAs). Throughout the period, the percentages of single participants were much higher in most deprived areas (35%–39%); whereas it ranged from 11%–17% in least deprived areas. In both areas, over time there was slight increase (6%–8% in most deprived; 1%–2% in least deprived) in participation of those who were married and living with their spouses.

Table 6.1: Summary statistics (mean, standard deviation or %, n/N) for outcome and demographic indicators for least and most deprived areas in Stockton-on-Tees across waves

	Variable	Wave1	Wave2	Wave3	Wave4
Most deprived	SF8MC (mean, SD)	49.5 ± 11.8	49.4 ± 10.8	49.7 ± 10.7	48.7 ± 11.0
	WEMWBS (mean, SD)	49.7 ± 12.6	50.6 ± 11.6	51.7 ± 11.5	50.1 ± 12.5
	Age >=65 (%)	27.5 (109/397)	33.6 (77/229)	35.3 (77/218)	38.1 (67/176)
	Female (%)	59.4 (236/397)	57.2 (131/229)	57.8 (126/218)	56.8 (100/176)
	Single (%)	39.0 (155/397)	28.8 (66/229)	28.4 (62/218)	25.0 (44/221)
Least deprived	SF8MCS (mean, SD)	53.5 ± 8.4	52.4 ± 9.0	53.7 ± 7.7	52.2 ± 8.5
	WEMWBS (mean, SD)	54.8 ± 10.2	55.3 ± 9.2	55.8 ± 11.1	55.8 ± 9.7
	Age >=65 (%)	32.8 (144/439)	40.6 (116/286)	43.2 (112/259)	46.2 (108/234)
	Female (%)	58.8 (258/439)	60.8 (174/286)	61.5 (160/260)	60.3 (141/234)
	Single (%)	17.3 (76/439)	14.0 (40/286)	12.7 (33/260)	10.7 (25/234)

Material socioeconomic characteristics

Table 6.2 shows that at Wave 1, 23% more people living in most deprived areas had no formal education compared to those living in least deprived boroughs (47% vs 24.1). The characteristics of participants in both areas remained very similar over the next waves of data collection and the difference remained static (24%). Similarly, majority (72% at baseline) people in most deprived boroughs rented their house, which was significantly lower for the least deprived areas. Over the period, although percentage of those renting houses dropped a bit for the most deprived areas, at any point it was 58%–60% higher than that of the least deprived LSOAs. In the most deprived areas nearly 90% received any benefit at the Wave 1 and it was 6% less at Wave 4. At Wave 1, it was about 18% less in the least deprived areas and remained unchanged for next one and half years. Almost half of those living in most deprived areas received Housing Benefit during baseline, which was less than 5% for least deprived areas. At Wave 4, it dropped by 13% in most and 3% in least deprived areas. About one quarter of the participants in most deprived areas were employed, which remained similar. For those living in least

Table 6.2: Summary statistics (% , n/N and median) for material socioeconomic indicators across waves for most deprived and least deprived areas of Stockton-on-Tees

	Variable	Wave1	Wave2	Wave3	Wave4
Most deprived	No formal education	46.7 (185/396)	46.1 (105/228)	46.1 (100/217)	46.0 (81/176)
	Tenure-rent	72.0 (286/397)	66.8 (153/229)	65.7 (132/201)	64.1 (109/170)
	Annual income*	£26,916 (377)	£29,716 (222)	£30,657 (208)	£33,413 (170)
	Benefit	88.2 (350/397)	83.0 (190/229)	83.0 (181/218)	81.8 (144/176)
	Housing Benefit	54.7 (217/397)	38.4 (88/229)	46.8 (102/218)	41.5 (73/176)
	Workless household	67.8 (269/397)	–	–	–
	Employed	23.9 (95/397)	25.8 (59/229)	26.6 (58/218)	26.1 (46/176)
Least deprived	No formal education	24.1 (106/439)	22.0 (63/286)	21.9 (57/260)	21.8 (51/234)
	Tenure-rent	11.6 (51/439)	8.7 (25/286)	8.5 (22/260)	6.4 (15/234)
	Annual income*	£110,173 (388)	£111,990 (258)	£106,268 (238)	£94,603 (215)
	Benefit	70.4 (309/439)	66.8 (191/286)	71.9 (187/260)	72.6 (170/234)
	Housing Benefit	4.1 (18/439)	3.1 (9/286)	2.7 (7/260)	1.3 (3/234)
	Workless household	36.7 (161/439)	–	–	–
	Employed	46.9 (206/439)	39.9 (114/286)	40.4 (105/260)	38.5 (90/234)

*Median income

developed areas, it was nearly double at baseline, which then dropped by 9% at Wave 4.

Material physical environmental characteristics

Table 6.3 describes the physical environment of the participants living in most and least deprived areas of Stockton-on-Tees. At Wave 1, double the participants in the most deprived areas responded that their houses were too dark than in least deprived areas (18% vs. 9%).

Table 6.3: Summary statistics (% , n/N) for material physical environmental indicators among households from most deprived and least deprived areas in Stockton-on-Tees across waves

	Variable	Wave1	Wave2	Wave3	Wave4
Most deprived	Dark	18.1 (72/397)	18.3 (42/229)	19.9 (40/201)	6.8 (12/176)
	Damp	25.4 (101/397)	21.8 (50/229)	18.9 (38/201)	13.6 (24/176)
	Warmth	80.3 (318/396)	78.2 (179/229)	76.6 (154/201)	86.9 (153/176)
	Noise	22.9 (91/397)	22.7 (52/229)	20.4 (41/201)	17.6 (31/176)
	Pollution	13.1 (52/397)	14.8 (34/229)	13.9 (28/201)	12.5 (22/176)
	Crime	28.0 (111/397)	31.9 (73/229)	31.3 (63/201)	24.4 (43/176)
Least deprived	Dark	9.3 (41/439)	8.4 (24/286)	9.2 (24/260)	2.1 (5/234)
	Damp	2.3 (10/438)	1.4 (4/285)	0.8 (2/259)	0.9 (2/234)
	Warmth	93.4 (410/439)	89.9 (257/286)	85.4 (222/260)	97.4 (228/234)
	Noise	10.5 (46/439)	11.5 (33/286)	10.8 (28/260)	6.0 (14/234)
	Pollution	3.4 (15/439)	4.5 (13/286)	4.2 (11/260)	1.7 (4/234)
	Crime	6.4 (28/439)	6.3 (18/286)	6.5 (17/260)	5.1 (12/234)

The situation remained similar all through, except that fewer people from both areas reported this at the last wave. About one quarter to the participants from most deprived areas mentioned in Wave 1 that they experienced having damp in their households. Over period, this percentage tended to be smaller and at Wave 4 it was about 11% less. However, in the least deprived areas it was only 1%–2% who mentioned having damp at any point of the study.

Psycho-social characteristics

Similarly, differences existed for those living in most deprived areas with 8%–11% more of them experiencing their houses not warm enough, or noise and pollution in the area. This difference was larger in terms of crime which was 19%–22% higher in most deprived areas. Only 5%–6% households in least deprived areas experienced crime within the period of survey. Table 6.4 shows the profile of households from most deprived and least deprived LSOAs in Stockton-on-Tees. Nearly double the participants in the most deprived areas reported that they often felt lack of companionship. In the least deprived areas, about 5%–8% participants often felt lack of companionship. At Wave 1, 11% participants from most-deprived areas reported often feeling left out and there was slight decrease to 8% at Wave 4. However, only 3%–4% participants in the least deprived areas had such experience. Similar difference was evident for often feeling isolated, which was reported by small percentage (3%–4%) among

Table 6.4: Profile of psychosocial indicators (% , n/N or mean, standard deviation) for households in most and least deprived areas of Stockton-on-Tees across waves

	Variable	Wave1	Wave2	Wave3	Wave4
Most deprived	Often lack companion	12.1 (48/397)	14.1 (33/229)	15.1 (33/218)	10.2 (18/176)
	Often felt left out	11.1 (44/397)	10.9 (25/229)	8.7 (19/218)	8.0 (14/176)
	Often felt isolated	11.8 (47/397)	11.8 (27/229)	10.6 (23/218)	10.8 (19/176)
	Social meeting	24.7 (98/397)	21.0 (48/229)	22.5 (49/218)	13.1 (23/176)
	Feels unsafe walking	34.0 (130/382)	35.7 (79/221)	34.8 (73/210)	25.6 (40/156)
	Happiness	7.4 ± 2.1	7.4 ± 2.0	7.4 ± 2.0	7.5 ± 1.9
Least deprived	Often lack companion	6.4 (28/438)	8.0 (23/286)	6.9 (18/260)	4.7 (11/234)
	Often felt left out	3.9 (17/438)	2.8 (8/286)	2.7 (7/260)	3.0 (7/234)
	Often felt isolated	4.1 (18/438)	3.8 (11/286)	2.7 (7/260)	4.3 (10/234)
	Social meeting	15.3 (67/438)	15.4 (44/286)	14.6 (38/260)	9.0 (21/234)
	Feels unsafe walking	2.7 (29/435)	6.4 (18/283)	6.6 (17/258)	7.6 (17/225)
	Happiness	7.9 ± 1.6	7.8 ± 1.5	7.9 ± 1.4	8.0 ± 1.4

participants from least developed areas. About 20%–30% more participants from most deprived areas also felt their area was unsafe. Social meeting, however was more common in most deprived areas but average happiness score remained roughly 0.4–0.5 point lower than those living in least deprived areas.

Behavioural characteristics

In terms of behavioural aspect, consumption of alcohol was much lower (19%–16%) among participants in the most-deprived areas (Table 6.5). About 57% in least deprived areas drank alcohol at Wave 1, which was somewhat lower in Wave 2 and Wave 3. At Wave 4, half the participants there were drinking alcohol. On the contrary, higher percentage of study participants in most deprived areas were doing exercise every day. The difference was 6% at Wave 1 and halved at Wave 4, but was bigger in Wave 2 and Wave 3. On average,

Table 6.5: Summary statistics for behavioural factors (% , n/mean, SD) among most and least deprived areas of Stockton-on-Tees

	Variable	Wave1	Wave2	Wave3	Wave4
Most deprived	Drink alcohol	57.2 (227/397)	41.0 (94/229)	41.7 (91/218)	50.6 (89/176)
	Exercise everyday	34.5 (137/397)	41.5 (95/229)	45.0 (98/218)	31.8 (56/176)
	Fruits & Veg	2.9 ± 2.0	2.9 ± 2.1	2.9 ± 2.0	2.9 ± 1.9
	Smoking	36.8 (146, 3970)	28.8 (66, 229)	28.0 (61, 218)	25.6 (45, 176)
Least deprived	Drink alcohol	75.9 (333/439)	67.1 (192/286)	65.0 (169/260)	70.1 (164/234)
	Exercise everyday	28.9 (127/439)	31.1 (89/286)	34.2 (89/260)	28.6 (67/234)
	Fruits & Veg	4.0 ± 2.0	3.8 ± 1.8	3.8 ± 1.8	3.9 ± 1.8
	Smoking	9.8 (43, 439)	7.0 (20, 286)	7.7 (20, 260)	5.6 (13, 234)

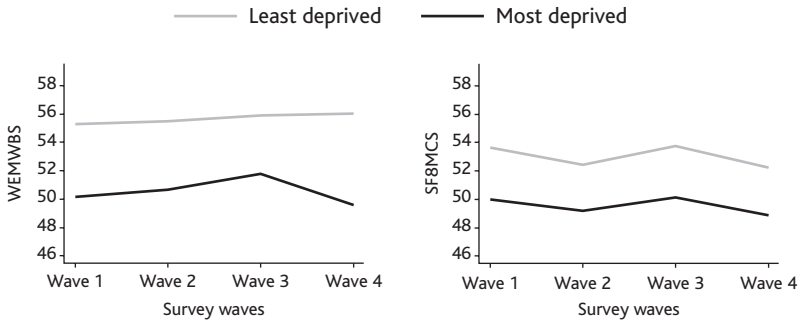
consumption of fruits and vegetables among participants from most deprived areas was about one portion less and it remained static.

Changes in neighbourhood inequalities in mental health

The average profiles presented in Figure 6.3 shows a significant gap in mental health outcomes between the least and most deprived areas at baseline and that this remains more or less constant during the 18-month study period. As expected, for both WEMWBS and SF8MCS participants living in least deprived areas have better mental health scores than those living in the most deprived areas.

The MLMs also showed that the neighbourhood inequality in mental health in Stockton did not change during the study period. The results show that people living in the most deprived areas are much worse at baseline than those living in the least deprived areas. The difference in scores for the participants from the most deprived areas were on average 3.71 (confidence intervals: 2.26, 5.15) and 5.16 (confidence intervals: 3.55, 6.77) unit lower than the participants from the least deprived areas as measured by SF8MCS and WEMWBS, respectively (Figure 6.3). However, the gap in mental health did not change significantly over time. The average difference between the most and least deprived at Wave 1 is not statistically different from the mean difference between the most and least deprived areas at Waves 2, 3 and 4 for both the SF8MCS and WEMWBS. In general, average

Figure 6.3: Mean Warwick Edinburgh Mental Wellbeing Score (WEMWBS) and SF8 Mental Component Summary (SF8MCS) for study participants in most and least deprived areas across waves



mental health scores were constant over the study period, independent of the neighbourhood of the participants. The longitudinal analysis results confirm that the difference in health outcomes between the least and most deprived areas identified at baseline remained constant over the study period.

Contribution of different factors in explaining the mental health gap

Using the baseline data, we explored the relative contribution of different material, psychosocial and behavioural factors to the gap in mental health between the least and the most deprived areas. Table 6.6 presents the relative contribution of the different factors to gap in mental scores between the least and most deprived areas. Among the material factors, socioeconomic factors explained 32% of the health inequality while the material physical environment factors explained 5% based on WEMWBS. For this outcome, material factors contributed the most to explaining the estimated inequality gap while behavioural factors contributed the least. Psychosocial factors appear to contribute 54% of the gap in SF8 MCS score in Stockton-on-

Table 6.6: Percentage contribution of direct and indirect effects SF8-MCS and WEMWBS

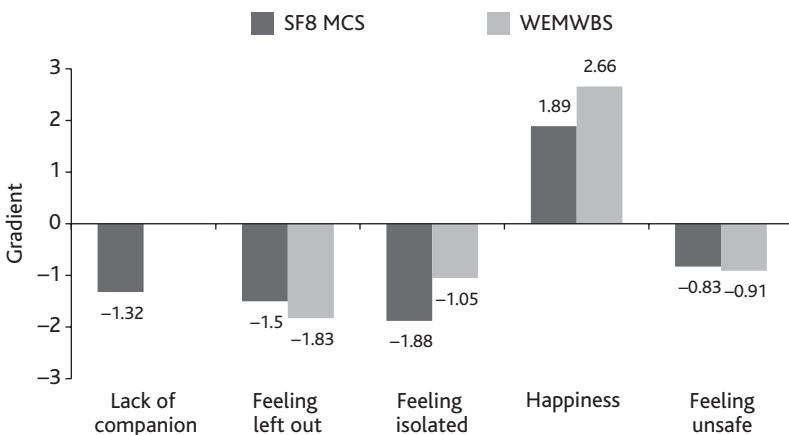
Direct effects	SF8-MCS	WEMWBS
Material (combined)	17.38	36.51
Material socioeconomic	7.62	32.00
Material physical environment	9.45	4.56
Behavioural	4.91	1.61
Psychosocial	54.07	7.61

Tees, while material factors were secondary in importance (17%) to psychosocial factors. The combination of the different factors is also likely to be important as, for example, people often experience both psychosocial and material factors simultaneously (Mattheys et al., 2016).

The MLMs for the longitudinal analysis of the factors associated with SF8MCS and WEMWBS outcomes found that among material factors, employment and income had statistically significant positive association with SF8MCS and WEMWBS, respectively. On average, those with employment are likely to have 1.61 (confidence intervals: 0.58, 2.65) unit higher score for SF8MCS than those without an employment. On the other hand, having one or more dark rooms in their house had a statistically significant negative association. Those living an accommodation with one or more dark room had on average -2.65 (confidence Intervals: -4.36, -0.94) unit lower SF8MCS score than those who did not have such room in their houses.

Figure 6.4 shows the psychosocial factors that were statistically significantly associated with mental health outcomes. Those who felt lacking in companionship, felt left out, felt isolated or did not feel safe walking home at night had significantly lower SF8MCS score than their counterparts. Except for the lack of companionship variable, similar negative associations were also evident for WEMWBS. Those who felt left out had on average -1.50 (confidence intervals: -2.33, -0.67) unit lower score for SF8MCS, whereas the difference was larger for WEMWBS (-1.88 unit lower, confidence intervals: -2.71, -0.93). Happiness was positively associated with both SF8MCS

Figure 6.4: Longitudinal analysis of association between psychosocial factors and mental health outcomes, estimates from multilevel models



and WEMWBS. The happier a participant was, the better was their SF8MCS and WEMWBS score – regardless of which neighbourhood they lived in.

In terms of behavioural factors associated with mental health outcomes over the study period, consumption of alcohol was significantly positively associated with both outcomes. Those who had less frequent exercise or physical activity also had significantly lower (-0.40 unit, confidence intervals: -0.62 , -0.18) WEMWBS scores those that exercised more frequently.

Discussion

This chapter explored the mental health gap between people from the most and least deprived areas of Stockton-on-Tees, during austerity. It also examined the contribution of different type of factors to explaining these inequalities. The longitudinal analysis showed that there was a large inequality gap at baseline, which remained constant during the study period. Over the study period, material factors such as employment and income were positively associated with inequalities in mental health. Similarly, from a psychosocial perspective, people who did not lack companionship, did not feel left out or isolated, felt safe walking at night or were happier had better mental health. In terms of behavioural factors, people who regularly exercised had better mental health outcomes.

At the beginning of the study there was a large gap in mental health between those from the most and the least deprived areas. We did not observe any increases or decreases in this gap over time. There could be several reasons for not observing any further widening of gap over the period. First, the gap was already big at baseline, which shows that the people living in most deprived areas were already living a difficult life and had much worse mental health. The potential of further changes in their context reflecting on the gap could have been limited. In most cases, the MLMs used in this study to longitudinally examine factors associated with mental health did not observe significant changes. It is therefore reasonable that without significant changes in the underlying factors, that the outcome remained unchanged. However, the IMF suggests that there will be significant rise in the implementation of austerity starting in 2017. This could exacerbate the existing inequalities in mental health that we found in Stockton.

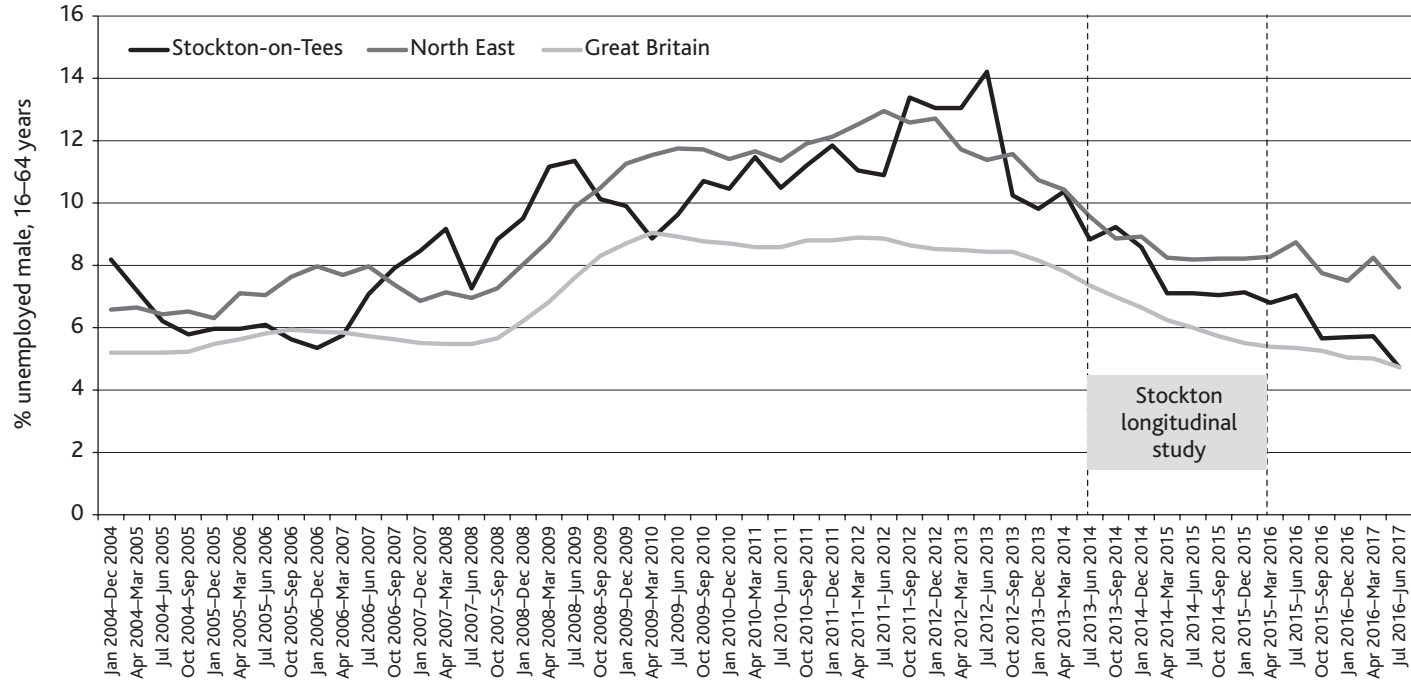
The second reason is that it may be that a longer period of assessment would identify further changes to the gap in mental health between people from the most and least deprived areas, as the incomes of those

in the most deprived areas are further stretched. Our study was only 18 months' duration. The programme of 'welfare reform' has been a regressive programme that has almost exclusively targeted those of working age on the lowest incomes, leading to a worsening financial situation for the poorest members of society (Belfield et al., 2014, 2016). As shown in Chapter Five, this has had a chronic impact on the lives and mental health of those who are forced to deal with the effects of these policies. Current moves towards rolling out Universal Credit are likely to have an additional financial and emotional toll. This study may have underestimated the inequality gap due to timing of the survey. Data were collected between 2014–16, a post-recession period when the acute phase of the recession had already passed and *after* the implementation of the first wave of austerity. Ruckert and Labonte (2017) noted that austerity and budget cuts enacted between 2012–15 were at a much slower rate.

Assessment of changes in Stockton-on-Tees between 2010–16 using public health data is in keeping with the observation of Ruckert and Labonte (2017). The negative trends in self-harm and long-term unemployment were much less evident during 2013–16, compared to the earlier period. For example, the unemployment rate in Stockton-on-Tees between 2014–16 was lower than the rate between 2009–13 (Figure 6.5). However, increasing rates of employment in the study period has not led to improved mental health for people living in the more deprived areas of Stockton-on-Tees. This suggests that rising employment is not having a protective mental health impact. Although employment may have risen in Stockton-on-Tees, the figures do not incorporate the quality of that employment, for instance whether that is precarious, low paid or zero hours employment. This type of work has been found to be as damaging to mental health as unemployment (Kim and von dem Knesebeck, 2015). In-work poverty has also increased nationally since 2009, with over half of all people in poverty now either in work or living with a working adult (Belfield et al., 2016).

The composition of our survey sample may have also affected this results, as comparison with census results showed that our sample were generally older than general population of the Stockton-on-Tees. Since austerity measures were more protective of pensioners and older people, it might partially explain why we did not see further deterioration in mental health in our study. It is important to note that, the universal state pension and other universal allowances for the elderly (including winter fuel allowances) were unchanged and in some cases were increased (Green et al., 2017). Our findings are therefore

Figure 6.5: Unemployment prevalence in Stockton-on-Tees 2004–17 in comparison to North East England and Britain



Source: Public Health England, 2017 data

likely to have underestimated the effects of austerity measures, which were implemented from 2010 onwards by the incoming coalition government. Some of the austerity measures were already in place by the first wave of the survey (in 2014), although cuts to social security and to public spending have continued since. It is possible that some of the mental health harm caused by austerity, as identified by national studies finding widening mental health inequalities between 2010–13 (Barr et al., 2015), was already reflected in the baseline gap.

A social determinants model was applied to explore the relative contribution of material (incorporating material physical environment and material socioeconomic), psychosocial and behavioural determinants of mental health and wellbeing. We have demonstrated the importance of material factors in explaining the gap in mental health in Stockton-on-Tees. A continuation of measures that lead to worsening finances for those on the lowest incomes (while those at the other end of the income spectrum remain largely unaffected) is likely to have an impact on spatial inequalities in mental health. Living in less deprived areas affords considerable protection towards mental health and mental wellbeing, and people who live in these areas are likely to score significantly higher on mental health measures (SF8-MCS and the WEMWBS). This is consistent with the substantial research base evidencing inequalities in mental health (Marmot and Bell, 2012). Consistent associations have been found between mental ill health and low income, low education; low social status; unemployment; and poorer material circumstances (Fryers et al., 2004). The literature suggests that it is not only individual factors (such as having a higher income or better housing) that have an impact on the relationship between living in a more affluent area and better mental health, but also the context of the area itself which could be protective including such things as the physical environment (for example, there is better access to green space in more affluent areas), opportunity structures (for example, better access to health care services or education or childcare), or the economic environment (for example, availability of better jobs) (Bambra, 2016).

The baseline analyses showed that material and psychosocial factors are the most important determinants of the divide in mental health and wellbeing in Stockton-on-Tees. With the SF8 score, psychosocial factors contributed most to the gap (54%), whereas in the WEMWBS it was material factors that took precedence (37%). Psychosocial variables, such as social isolation was particularly important in the SF8. Participants in the most deprived areas, who tended to be slightly younger, seemed more isolated and lacking in companionship than

those in the least deprived areas. These are social problems that are often associated with the mental health of older people (Cattan et al., 2005). As such, our findings suggest that either deprivation is strongly associated with social isolation in addition to age, or that the older participants in the most deprived areas were feeling much more isolated than their counterparts in the least.

Our results have also shown that behavioural indicators are the least important of the categories determining the inequality gap in mental health and wellbeing. This is important, as many public health activities focusing on reducing health inequalities tends to lean towards behavioural interventions and individual behaviour change. This shift towards a focus on the individual has been labelled as ‘lifestyle drift’. This finding should be a wakeup call to policy makers that focusing on the individual (Hunter et al., 2009) alone will not reduce the inequality gap in mental health. Health is socially determined, and approaches that avoid a consideration of the contexts in which people live will not succeed in addressing health inequalities (Bambra, 2018).

Conclusion

Our study used detailed longitudinal data to examine the effect of austerity on inequalities in mental health. We found a significant gap in mental health at baseline. However, no statistically significant change in the gap was observed over the 18-month, post-recession period of austerity. We found that material factors (most notably income and employment) and psychosocial factors contributed the most to explaining the mental health gap while behavioural factors contributed the least. Over the study period, employment, companionship, feeling included, not feeling isolated, safety, happiness and exercise were positively associated with mental health. Psychosocial factors such as feeling left out, isolated or not feeling happy or safe were commonly associated with decreased mental health. However, this effect could be a combination of the direct and indirect effects of material deprivation. Overall, the factors associated with mental health are interrelated and have combined effects on the mental health gap.

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