Institutional Arrangements as Candidate Explanations for the US Mortality Disadvantage*

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*This paper was prepared for the NAS/IOM panel on Understanding International Health Differences in High-Income Countries. Bambra took the lead role in drafting sections 4-8; Beckfield took the lead role in drafting sections 1-3 and 9. Correspondence may be directed to Clare Bambra <Clare.Bambra@durham.ac.uk> or Jason Beckfield <jwb@fas.harvard.edu>.

1. Introduction

Previous research into the relative underperformance of the US in terms of health and mortality has tended to focus on micro-level lifestyle factors (e.g. Banks et al 2012). What has too often been neglected is the potential influence of various macro-level institutional arrangements which might help to account for the US mortality disadvantage relative to other wealthy societies, or, as Wilensky evocatively calls them: "rich democracies" (Wilensky 2002). This review paper addresses this issue. As we have each conducted research on the welfare state and welfare state regimes, the welfare state is the central institutional arrangement we consider. But the welfare state is not the sole institutional arrangement that differentiates the rich democracies: other such institutions include collective bargaining institutions (Pinto and Beckfield 2011), political incorporation (Krieger et al 2008), and cultural configurations (Hall and Lamont 2009). These have in common a rule-like quality that ranges from informal (e.g., symbolic categories of worth and status hierarchies) to inscribed in law (e.g., employment protection legislation that structures the labor market). We explore how health varies by institutional arrangement and the importance of the impact of different institutional arrangements on the social determinants of health. We conclude with a discussion of significant gaps in the evidence on the relationship between institutional arrangements and population health, with an emphasis on suggestive evidence from interventions based on the social determinants of health. We note that this paper draws on and should be read in conjunction with Bambra (2011), Bambra et al (2010), Beckfield (2004), Beckfield and Krieger (2009), and Beckfield and Olafsdottir (2009).

2. Theoretical Approach

Connecting societal-level institutional arrangements to population health raises a number of conceptual, theoretical, and empirical challenges. On the conceptual side, there is a long tradition in political sociology and political science of conceptualizing institutional arrangements, but this work is rarely connected to population health (with some prominent exceptions, including the influential work of Nancy Krieger and, separately, Vicente Navarro). For instance, political sociology offers a conceptual apparatus for linking institutions to economic development and economic inequality, but this political-sociology lens is rarely turned to population health. On the theoretical side, the causal logic that connects institutional arrangements to population health is underdeveloped, and suffers from more unobserved mechanisms that remain "black boxes" than, say, the

explanation of mortality differences among older age cohorts as a function of differences in mortality due to lung cancer caused by smoking (see previous panel report). On the empirical side, the current evidentiary base is too weak to support the sort of research that has conclusively connected institutional arrangements to other outcomes of interest, such as income inequality, employment performance, and economic innovation. We think solutions are possible, particularly solutions to shortcomings in the evidentiary base, and we elaborate on these in the conclusion of our review.

In this section, we want to clarify a theoretical approach that explains why we think institutional arrangements are important for population health. In other words, why should institutions matter? Why look upstream in the first place? We think institutions are important for at least two reasons.

First, institutions – the "rules of the game" – stratify. Institutions are crucial for organizing social relations, and for sorting and ranking people into social hierarchies. As people are sorted, institutions determine the kinds of rewards that accrue to different ranks. New research on social stratification provides an example: it is increasingly clear that social class can helpfully be conceptualized in occupational terms, such that instead of one or two or three "big classes," we observe a graded set of "micro-classes" that shape patterns of social mobility (Weeden and Grusky 2005). Institutions (such as licensing regulations) cement the "occupational closure" that is crucial for income determination (Weeden 2002). Research on income inequality, much of it using the exceptional data provided by the Luxembourg Income Study, shows that institutions (the welfare state, centralized wage bargaining, and other factors) are the most important determinant of cross-national variation and over-time change in income inequality (Alderson and Nielsen 2002). Research from poverty also shows that poverty is largely a function of institutional arrangements that vary dramatically across the rich democracies and influence not only the rate, but also the depth, of poverty (Brady 2008).

Second, institutions not only influence the extent and kind of social stratification in society, they also condition the operation of the social determinants of health. For example, the welfare state – itself a complex of citizenship rights (Marshall 1960) – provides resources to citizens that may make other kinds of resources less necessary for preventing illness and ensuring good health. An example of a fairly direct effect of the welfare state on health would be the de-commodification of health care. We elaborate on this below, but the general point is that in places where cash is necessary to purchase health care, we would anticipate that income would be a more important determinant of the part of health that is caused by health care (we are

aware of research showing that in the rich democracies, this proportion is small). Since societies vary greatly in the extent to which they de-commodify health care, income as a social determinant of health should vary systematically across national institutional arrangements.

3. Institutional Arrangements

Comparative research from political sociology and political science has developed an array of conceptual approaches to understanding cross-national differences in institutional arrangements (Kenworthy 2004; Pontusson 2005). Before delving into this conceptual catalogue, we note that the bounded-ness of society is of course itself a thorny problem. Some of the most innovative on-going research problematizes the national itself as a natural boundary of institutions, thereby surpassing the "methodological nationalism" that characterizes much research from the social and population sciences (Bonikowski 2010; Wimmer and Glick-Schiller 2002). Such work is of course directly related to theoretical issues in epidemiology surrounding the very definition of "population" (Krieger 2011). We hope that we are on relatively solid ground in this review when we highlight national institutions, given (1) the general purpose of considering the national health disadvantage of the US population relative to the populations of other nations, and (2) the predominance of national-level policy in the kinds of institutions we consider. Still, we note that a forefront area of research is supra-, sub-, and non-national populations and policy (Beckfield 2009; Lynch 2009).

Institutional arrangements that differentiate the United States from other rich democracies that have better overall mortality profiles include social welfare benefits in the areas of health, pension, and unemployment insurance (both generosity and coverage vary systematically and can be rigorously measured), collective bargaining institutions, political incorporation, incarceration, and cultural configurations. Very little empirical work has been done to connect such institutions to population health (Beckfield and Krieger 2009). In their review of this small but growing literature, Beckfield and Krieger note that the institutional arrangements that have been related to population health in the rich democracies include (1) neoliberal re-structuring of social policy, (2) the welfare state, and (3) political incorporation and, conversely, social exclusion, of subordinated groups. Political incorporation of minority groups and women is robustly associated with better health among those groups, suggesting a direct connection between political empowerment and health (this is currently an active area of research, and we are aware of soon-to-be-published studies showing

an association between women's political representation and population health, and other forthcoming studies on the negative association between incarceration and the health of family members of the incarcerated in the United States). In contrast to the broad consensus among studies of political incorporation, research on the welfare state is marked by controversy and debate, although on balance it does appear that there is at least a positive association between the generosity of the welfare state and population health (more on this below).

One striking characteristic of this body of scholarship is that little attempt is made to connect aggregate measures of population health (such as life expectancy and infant mortality) to measures of social inequality in health (cf. Eikemo et al. 2009). This is perhaps the most pressing problem in identifying what role institutions might play in explaining mortality differences across societies, given that, following our theoretical framework sketched above, institutions profoundly shape social inequality. Surprisingly, then, a "known unknown" is how social inequality in health is related to average population health. The issue is very similar to the classical debate in comparative political economy over whether income inequality and economic growth are related (they appear not to be). It is quite possible that inequality in health could be positively associated with average population health, if the causes of health improvement reach the better-off first. It is also possible that inequality in health could be negatively associated with average population health, if the causes of health improvement are targeted at the worse-off. Of course, the two could also be unrelated. It is surprising that this basic question is so rarely addressed. It is a critical one to resolve, given the noted contradiction between excellent overall population health profiles and large social inequalities in health in Scandinavia (Mackenbach 2011).

Another striking characteristic of research in this area is that the mechanisms, or processes that are theorized to connect political institutions and population health, are rarely tested. Of the 45 studies Beckfield and Krieger reviewed, only six actually investigated mechanisms. Typically, if mechanisms are addressed at all, appeal is made to secondary research on hierarchy stress (the argument being that institutions that flatten hierarchies reduce stress and elevate health, presumably by reducing cardiovascular disease). Rarely, arguments are made that connect specific social policies to specific groups that benefit from those policies; for example, Olafsdottir (2007) uses survey data from Iceland and the United States to show that parents are healthier in Iceland than in the US, at least in part because of the more generous family policy of the Icelandic welfare state. A particularly impressive study is an early one by Conley and Springer (2001), who disaggregate

different kinds of infant mortality to bolster the inference that the welfare state (through investments in health technology) reduces infant mortality more strongly in more generous welfare states. Another notable feature of the Conley and Springer study is its use of fixed-effects models that control for unmeasured heterogeneity – such heterogeneity plagues comparative research.

4. Welfare State Capitalism[i]

The 'welfare state' is a contested term within social and political analysis (Eikemo and Bambra, 2008). Conventionally, the phrase has been used in a narrow sense, as a means of referring to the various post-war state measures for the provision of key welfare services or those state policies that permit, encourage or discourage the decommodification of labour. The welfare state is thus understood as the state's role in education, health, housing, poor relief, social insurance and other social services that developed in capitalist countries during the post-war period and were delivered as a citizenship right (Ginsburg, 1979: 3). Welfare state responsibility and structures include not only the direct provision of cash benefits (such as unemployment benefit) and welfare services (such as health care), but also the regulation and subsidy of private forms of welfare (Ginsburg 1992:1). The welfare state is thus a term which is often used as shorthand for the post-war social systems which developed in the West and comprise a mixed economy, a liberal polity and a social welfare sector (Mishra 1984: xi). In contrast, the welfare state can be considered more broadly as a particular form of state, or a specific type of society which emerged in advanced market democracies in the post-war period (Pierson 1998: 7). In political-economy terms then, the welfare state is understood as a particular form of the capitalist state (Hay 1996: 9), the fundamental concern of which is the maintenance and reproduction of capitalist social relations and the use of state power to modify the reproduction of labour power and to maintain (and discipline) the non-working population (Ginsburg 1979: 2; Gough 1979: 44-5). The welfare state is thereby understood as more than a set of transfers and services, it consists of systems and processes which themselves shape society and structure socio-economic and demographic stratifications.

The historical development of post-war welfare provision across the West can be divided into four distinctive periods: pre-welfare state, the golden age of the welfare state, crisis and restructuring, and the emergence of post-Fordist workfare states. To some extent the timings of these periods of welfare state development vary by country and by welfare state regime. For example, the Southern regime countries

(except Italy) experienced dictatorships until the mid-1970s with highly regressive fiscal policies, within other regimes the timing of developments is not universal either as, for example, Finland's welfare state developed later than that of the other Scandinavian countries. This historical overview is therefore only able to capture the broad thematic changes in the development of advanced welfare states.

4.1 Pre-welfare state

For most of the 19th Century, there was minimal state welfare within Europe beyond very basic "poor relief" – the provision of basic food rations and shelter (often provided via institutions such as the English workhouse system). Beyond these provisions welfare came via family members or charity (particularly the Church). This began to change in the early 20th century with the introduction of rudimentary and highly selective (non-workers which included most women were typically excluded from such schemes) state organised welfare systems were introduced which provided basic pensions, unemployment, and sickness benefits funded via social insurance payments (e.g. the 1911 National Insurance Act in the UK or the Bismarckian welfare reforms of 1880s Germany).

4.2 Golden age of welfare

It was not until after the Second World War (1945) that what is now referred to as the Fordist welfare state was established. There are competing explanations as to why the welfare state emerged at this point between modernisation theory, the power resources model and the requirements of capital thesis (for a detailed overview, see Bambra, 2011). To a greater or lesser extent, the golden age Fordist welfare state was characterised by centralism, universalism, and Keynesian demand management, full (male) employment and high public expenditure, and the promotion of mass consumption via a redistributive welfare system and social wage. There was also a mainstream political consensus in favour of the welfare state. In the golden age of welfare state expansion (1940s to 1960s), Western Europe experienced significant improvements to public housing, health care, and the other main social determinants of health (although it should also be noted that

there was already a good deal of cross-national variation in population health in the pre-welfare state era, with for instance lower infant mortality rates in Social Democratic countries).

4.3 Crisis and restructuring

The golden age of welfare state expansion effectively ended with the economic crisis of the 1970s (high inflation, slow economic growth, the end of full employment) during which there was a general loss of confidence in the ability of Fordist welfare state capitalism to adequately maintain profitability and safeguard capitalist reproduction (initially in the UK and then across continental Europe). As well as these internal constraints, there were also external challenges such as globalisation. The political consensus of the early post-war years was also broken and governments started to dismantle and restructure the welfare state. Reforms (which largely occurred in the 1980s and 1990s) were characterised by the privatisation and marketisation of welfare services; entitlement restrictions and increased qualifying conditions for benefits, and a shift towards targeting and means testing; cuts or limited increases to the actual cash values of benefits; modified funding arrangements (with a shift away from business taxation); and an increased emphasis on an active rather than a passive welfare system. While the reality of retrenchment was debated among political scientists and sociologists in the 1990s, and Pierson's work shows that the political process of rolling back welfare benefits follows a different dynamic from the process of establishing new benefits, more recent work shows that retrenchment did actually happen in many welfare states in the late 1990s and early 2000s (Beckfield 2005; Korpi and Palme 2003). Research from Australia and New Zealand shows that welfare cutbacks in those nations were associated with increasingly negative health outcomes among vulnerable populations, including ethnic minorities (see work reviewed in Beckfield and Krieger 2009).

4.4 Post-Fordist workfare states

The restructuring of the welfare state has been analysed by some commentators as a shift from the Fordist system of Keynesian welfare state capitalism, which could afford and required a high level of public welfare expenditure, to a post-Fordist system of Schumpeterian workfare state capitalism in which high welfare

expenditure is incompatible with the continuing needs of capital accumulation. Post-Fordist workfare states are characterised by decentralisation and welfare pluralism, the promotion of labour market flexibility, supply-side economics, the subordination of social policy to the demands of the market, and a desire to minimise social expenditure. Like Fordist welfare states, there are variants on the post-Fordist model reflecting welfare state regimes and their differing policy responses to common challenges.

5. Worlds of Welfare State Capitalism[ii]

In *The Three Worlds of Welfare State Capitalism*, which remains perhaps the most influential and widely-cited analysis of the welfare state, Esping-Andersen (1990) presented a typology of Fordist welfare states based largely upon measuring decommodification. Decommodification is the extent to which individuals and families can maintain a normal and socially acceptable standard of living without being reliant on wages gained from the labour market (Esping-Andersen, 1987: 86). Commodification on the other hand refers to the extent to which workers and their families are reliant upon the market sale of their labour (Eikemo and Bambra, 2008). Labour became extensively commodified during the industrial revolution as workers became entirely dependent upon the market for their survival (Esping-Andersen, 1990: 21). In the early 20th century, the introduction of some rights to social welfare brought about a 'loosening' of the pure commodity status of labour. The post-war Fordist welfare state, to a greater or lesser extent, fully decommodified labour because certain services and a certain standard of living became a right of citizenship (although the basis or extent of citizenship was often related to previous engagement with the labour market, work history and prior earnings), and reliance on the market (i.e. earnings from work) for survival decreased (Esping-Andersen, 1990: 22). Decommodification is most often used to refer to cash benefits, but it can also be used in relation to access to welfare services such as health care (Bambra, 2005). Social stratification (the role of welfare states in maintaining or breaking down market created socio-economic and demographic stratification) and the private-public mix in welfare (the relative roles of the state, the family and the market in welfare provision) were also examined. This analysis led to a division of Fordist welfare states into three ideal regime types: Liberal, Conservative and Social Democratic (Table 1: 'Main welfare state typologies').

5.1 Liberal Regime

In the welfare states of the Liberal regime, state provision of welfare is minimal and benefits have strict entitlement criteria. Recipients are usually means-tested and benefit receipt is stigmatised (Esping-Andersen, 1990: 26). In this model, the dominance of the market is encouraged by guaranteeing only a minimum and by subsidising private welfare schemes. In areas such as health and pensions a stark division exists between those, largely the poor, who rely on state aid and those who are able to afford private provision. The Liberal welfare state regime therefore minimises the decommodification effects of state welfare and restricts social rights. There is a basic equality amongst state welfare recipients within this Beveridgian system but it is an equality of poverty. Many benefits are universal but of such little value that there is a clear division both politically and economically between those who can and those who cannot source additional welfare support by virtue of their position in the labour market (Esping-Andersen, 1990: 27). The welfare mix in Liberal regimes is stratified into three layers: the bottom layer of those who are reliant on public relief, the middle layer who are predominantly served by social insurance schemes and the 'privileged' top group whose welfare needs are satisfied almost exclusively by the market (Esping-Andersen, 1990: 65). Private provision is therefore comparatively high and this leads to the description of the countries of the Liberal regime as residualist because the market prevails (Esping-Andersen, 1990: 86). In terms of gender stratification, this regime is to varying degrees associated with a paternalistic male breadwinner model of the family (Lewis, 1992; Esping-Andersen, 1999). The USA is considered to be the key example of the liberal regime type.

5.2 Conservative Regime

In contrast, the Conservative welfare regime is concerned with the preservation of status divisions, and social rights are therefore attached to class and occupational status (Esping-Andersen, 1990: 27). This welfare state regime is distinguished by its status differentiating welfare programmes in which benefits are often earnings related and geared towards maintaining existing social patterns. This regime is characterised by the principle of social insurance and so the redistributive impact of this type of welfare state is minimal as benefits usually reflect previous earnings. In terms of gender stratification, this regime actively promotes a male breadwinner model of the family (Lewis, 1992; Esping-Andersen, 1999). However, as the role of the market is marginalised, in terms of decommodification, it lies between the low decommodifying Liberal regime and the highly decommodifying Social Democratic regime. The private-public mix is strongly weighted towards the latter although this is largely provided by voluntary (charities, especially churches) rather than statutory agencies. In

terms of stratification, the Conservative regime is highly stratified with numerous different state-run and status-differentiated social insurance schemes. Status distinction, hierarchy and privilege characterise welfare provision in these countries (Esping-Andersen, 1990: 61). In terms of demand-management, these states operate highly corporatist systems of governance but with the intention of preserving existing inter- and intra-occupational class differences. Germany is considered to be the clearest example of a Conservative welfare state.

5.3 Social Democratic Regime

The 'third world of welfare', the Social Democratic, is the smallest regime cluster in which the principles of universalism and the decommodification of social rights are not limited to the very poorest but extended across the working and middle classes (Esping-Andersen, 1990: 27). Its provision is therefore characterised by universal and comparatively generous benefits, a commitment to full employment and income protection and a strongly interventionist state. The state is used to promote social equality in two main ways: firstly via pre-taxation wage compression organised via strong collective bargaining and the incorporation of the trade union movement within the state; and secondly by using the taxation system to redistribute via the welfare state social security system. Unlike the other welfare state regimes, the Social Democratic regime type therefore promotes an equality of the highest standards, not an equality of minimal needs (Esping-Andersen, 1990: 27) and income inequalities are the smallest in these countries, particularly the Scandinavian countries (Ritakallio and Fritzell, 2004). The Social Democratic regime is also the least socially stratified of the three regimes as it is firmly based around principles of collectivism, solidarity and universalism. The state provides the majority of benefits, which are set at relatively generous levels and thus incorporate both the working class and the middle classes (Esping-Andersen, 1990: 69). Similarly, these universalistic state-dominated systems minimise the role of the market. Social benefits are set at a level that is attractive to a broad population base and the need for market provision to supplement state benefits is therefore minimal. Widespread entitlement eradicates both status privilege and market provision (Esping-Andersen, 1990: 87). In terms of gender stratification, this regime uses publicly funded child care and parental leave to promote a dual earner family model in which both and men and women are expected to work (Lewis, 1992; Esping-Andersen, 1999). Sweden is widely considered to be the ideal-type Social Democratic welfare state.

5.4 Beyond the Three Worlds

The *Three Worlds of Welfare Capitalism* typology sparked a volatile debate (for overviews see Abrahamson 1999; or Bambra, 2007) about which principles should be used to classify welfare states; in which regimes particular countries belong; the number of countries and the different regime types; the methodology of regime construction (for an overview see Bambra 2006); and the nature of gender stratification within different types of welfare state (for an overview see Bambra 2004). The entire concept of welfare state regimes has also been challenged on the basis that it incorporates two flawed assumptions: that most of the key social policy areas within a welfare regime will reflect a similar, across the board approach to welfare provision; and secondly, that each regime type itself reflects a set of principles that establishes a coherence in each country's welfare package (Kasza, 2002). A comprehensive discussion of these criticisms and how they link into public health research is made in Bambra 2007. It should be noted that welfare state regimes are ideal, not real, types: no single country adheres to all aspects and there is internal policy variation within individual welfare states and within the countries of each welfare state regime (most notably in terms of health care provision in the Liberal countries, see Bambra, 2005). Some countries are more consistently placed in each regime than others and most notably the Scandinavian countries are most consistently placed together in one regime and in most typologies they are considered to be the only Social Democratic countries (Table 1). However, the concept is still very useful in analysing the complexity of welfare state formations and social provision across different countries and different times. Subsequently, the main outcome of the *Three Worlds* debate has been the development of alternative typologies (the most prominent ones in public health research are presented in Table 1) and of most significance here, is the suggestion that there are more than three types of welfare state capitalism.

Table 1: Main welfare state typologies[iii]

Author	Welfare state regimes				
Esping-Andersen (1990)	Liberal Australia Canada Ireland New Zealand UK USA	Conservative Finland France Germany Japan Italy Switzerland	Social Democratic Austria Belgium Netherlands Denmark Norway Sweden		
Leibfreid (1992)	Anglo-Saxon Australia New Zealand UK USA	Bismarck Austria Germany	Scandinavian Denmark Finland Norway Sweden	Latin Rim France Greece Italy Portugal Spain	
Castles and Mitchell (1993)	Liberal Ireland Japan Switzerland USA	Conservative Germany Italy Netherlands	Non-Right Hegemony Belgium Denmark Norway Sweden		Radical Australia New Zealand UK
Ferrera (1996)	Anglo-Saxon Ireland UK	Bismarck Austria Belgium France Germany Luxembourg Netherlands Switzerland	Scandinavian Denmark Finland Norway Sweden	Southern Greece Italy Portugal Spain	
Bonoli (1997)	British Ireland UK	Continental Belgium France Germany Luxembourg Netherlands	Nordic Denmark Finland Norway Sweden	Southern Greece Italy Portugal Spain Switzerland	
Korpi and Palme (1998)	Basic Security Canada Denmark Ireland Netherlands New Zealand Switzerland UK USA	Corporatist Austria Belgium France Germany Italy Japan	Encompassing Finland Norway Sweden		Targeted Australia
Navarro and Shi (2001)	Liberal-Anglo Saxon Canada Ireland UK USA	Christian Democrat Belgium Netherlands Germany France Italy Switzerland	Social Democratic Sweden Norway Denmark Finland Austria	Ex-Fascist Spain Greece Portugal	

Commentators such as Bonoli (1997), Ferrera (1996), Leibfreid (1992) have asserted that when the Latin rim countries of the European Union (Spain, Portugal, Greece) are added into the analysis, a fourth 'Southern' world of welfare emerges into which Italy can also be placed (Table 1). The Southern welfare states are described as 'rudimentary' because they are characterised by their fragmented system of welfare provision which consists of diverse income maintenance schemes that range from the meagre to the generous and a health care system that provides only limited and partial coverage (Bonoli, 1997; Ferrera, 1996, Leibfreid, 1992). Reliance on the family and voluntary sector is also a prominent feature. Similarly, Navarro and colleagues have argued strongly for the existence of a "late democracy" regime consisting of Greece, Portugal and Spain (Navarro and Shi, 2001; Navarro et al, 2003, 2006). These countries were not democratic until the mid-1970s, and had until then the most regressive fiscal policies in Europe and underdeveloped welfare services, the legacy of which is still evident today. The Ferrera typology in particular has been used extensively in public health research as it has been shown to be the most empirically accurate of the various typologies in terms of within-regime homogeneity and between-regime heterogeneity (Bambra, 2007).

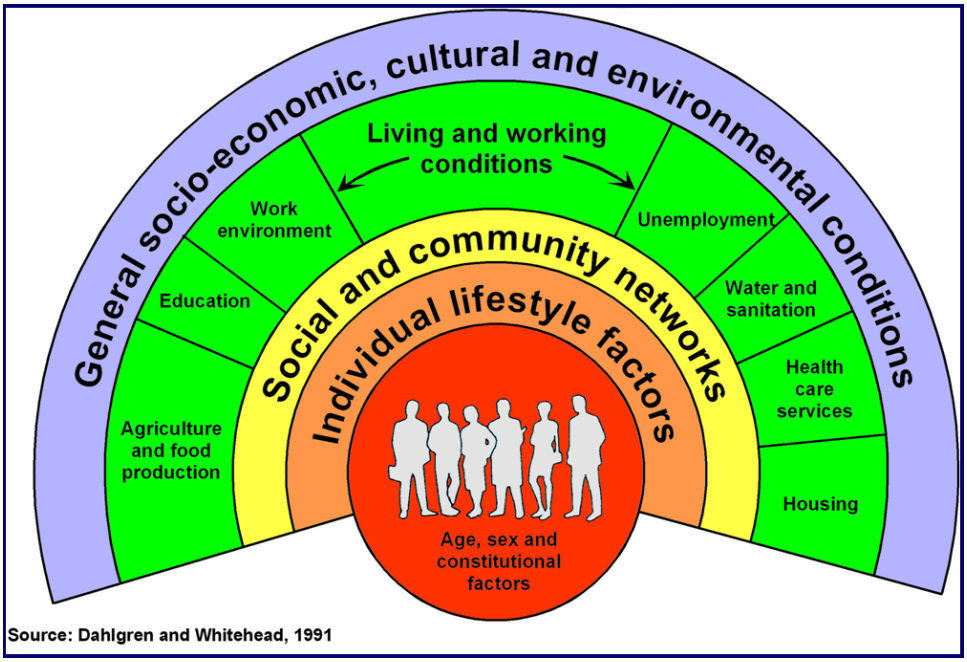
In addition, Castles and Mitchell (1993) suggested that the UK, Australia and New Zealand constitute a 'Radical', targeted form of welfare state, in which poverty and income inequality are tackled through redistributive instruments rather than by high expenditure levels (Table 1). In the same vein, Korpi and Palme describe the existence of a 'Targeted' welfare state regime (Korpi and Palme; 1998). More recently, research into East Asian welfare states (South Korea, Taiwan, Hong Kong, Singapore) has suggested that these countries, sometimes including Japan, form a further 'Confucian' welfare state regime (Asphalter, 2006; Croissant, 2004; Walker and Wong, 2005). The Confucian welfare state is characterised by low levels of government intervention and investment in social welfare, underdeveloped public service provision, and the fundamental importance of the family and voluntary sector in providing social safety nets. This minimalist approach is combined with Confucian social ethics (obligation for immediate family members, thrift, diligence, and a strong education and work ethic). The formerly Communist countries of Eastern Europe (Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia) have also increasingly begun to be analysed as a separate welfare state regime (Cerami and Vanhuysse, 2009). However, they have experienced extensive economic

upheaval and have been radically reformed so that the universalism of the Communist welfare state has been replaced by a more liberal welfare system (Eikemo and Bambra, 2008).

6. Social Determinants of Health[iv]

The social determinants of health are the conditions in which people work and live - what have been referred to as the 'causes of the causes' (Marmot, 2006). The main social determinants of health are widely considered to be: working conditions, unemployment, access to essential goods and services (specifically water, sanitation and food); housing and the living environment; access to health care; and education (Figure 1) (Dahlgren and Whitehead, 1991). We note that the social distribution of all these causes of causes is a function of institutional arrangements that vary systematically across societies (collective bargaining institutions profoundly affect working conditions and un/employment, and welfare states structure access to goods, services, housing, health care, and education by defining some and not others as among the social rights of citizenship).

Figure 1: Dahlgren and Whitehead's model of the social determinants of health



6.1 Working conditions[v]

The work environment has long been acknowledged as an important determinant of health and health inequalities. Physical working conditions (e.g. exposure to dangerous substances such as lead, asbestos, mercury etc., as well as physical load or ergonomic problems) were a major cause of ill-health in the working age population and, because of the steep social gradient in physical working conditions, remain an important factor behind social inequalities in health. Stressful psychosocial work environments (specifically demand-control and support or effort reward imbalance, see Bambra 2011 for a comprehensive overview), however, have become more prominent as determinants of health, and exposure exhibits a strong social gradient which influences inequalities in health amongst employees. There are important international variations in working conditions which reflect differences within the wider welfare state and labour market regulation context as for example, workers in countries with higher union membership are able to obtain better working conditions (Benach et al, 2007; Landsbergis, 2009).

By way of example, relationships between stressful psychosocial work environments and health differ by country and welfare state regime specifically, there is a lower prevalence of work-related stress in countries with more comprehensive welfare states (where the psychosocial work environment is more regulated such as Sweden or Norway), and that the effects on health of adverse psychosocial work environments are also lessened in these countries (Dragano et al, 2010). By way of example, Dragano and colleagues (2010) used data from the Survey of Health, Ageing and Retirement in Europe (SHAPE) and the English Longitudinal Study on Ageing (ELSA) to examine the links between welfare state regime type (Liberal, Conservative, Social Democratic and Southern), stressful work environments (measured as low control and effort-reward imbalance) and the development of mental ill health (measured by depressive symptoms using the Centre for Epidemiological Studies Depression scale [CES-D] and the EURO-D depression scale) amongst older employed adults (9,917 men and women aged 50-64) in twelve European countries (England, Sweden, Denmark, Germany, Netherlands, Belgium, France, Switzerland, Austria, Italy, Spain, Greece). The study found that levels of workplace psychosocial stress were highest in the Southern welfare states (i.e. levels of low control at work and effort-reward imbalance were highest in the Southern countries) and that in multi-level models, welfare state regime type accounted for almost 75% of the differences between countries in terms of workplace stress. With respect to health, the study found that participants in any country who reported high levels of

workplace stress, had an increased risk of depressive symptoms: effort-reward imbalance twelve country pooled odds ratio OR = 2.12 (95% CI 1.83 to 2.46); low control pooled OR = 1.81 (95% CI 1.53 to 2.14). However, there were significant variations in the level of this association by welfare state regime type, with the odds ratios highest in the Liberal welfare state regime and lowest in the Social Democratic one: effort-reward imbalance Liberal OR = 2.64 (95% CI 2.03 to 3.43), Conservative OR = 1.96 (95% CI 1.53 to 2.50), Social Democratic OR = 1.69 (95% CI 1.07 to 2.66), Southern OR = 2.14 (95% CI 1.47 to 3.11); low control Liberal OR = 2.29 (95% CI 1.69 to 3.11), Conservative OR = 1.75 (95% CI 1.33 to 2.28), Social Democratic OR = 1.48 (95% CI 0.89 to 2.45), Southern OR = 1.67 (95% CI 1.12 to 2.50). The health effects resulting from stressful work environments are less pronounced in older workers in welfare states with higher levels of social protection.

6.2 Unemployment[vi] [vii]

Unemployment is associated with an increased likelihood of morbidity and mortality. The negative health experiences of unemployment are not limited to the unemployed only but also extend to families and the wider community. Links between unemployment and poorer health have conventionally been explained through two inter-related concepts: the material consequences of unemployment (e.g. wage loss and resulting changes in access to essential goods and services), and the psychosocial effects of unemployment (e.g. stigma, isolation and loss of self-worth). Lower socio-economic classes are disproportionately at risk of unemployment and it is a key determinant of the social gradient in health. Health-related worklessness is also concentrated in more deprived areas and amongst less skilled workers.

Social protection (particularly wage replacement rates) during unemployment varies by welfare state regime. To a large degree this reflects the historical influence of differing political traditions, with those countries experiencing more post-war years of Social Democratic rule providing more generous systems of support (Esping-Andersen, 1990). In essence, there are three interrelating principles underpinning provision: universalism, social insurance and means-testing (Diderichsen, 2002). Systems based on universal provision do not make reference to previous contributions or means-testing and are offered to all citizens on an entitlement basis as long as specific demographic, social or health criteria are fulfilled. Often flat-rate benefits are paid. Under social insurance systems, entitlement to benefits is dependent on previous contributions and in most cases subsequent benefit levels reflect previous earned income. Under means-testing, entitlement is restricted

on the basis of income and the (often minimal) financial support is targeted at those in most need, usually after they have exhausted all other means (e.g. personal savings or social insurance) (Rhodes, 1997).

Unemployment protection in each welfare state regime therefore represents a complex mix of these differing principles. However, there are clear differences by welfare state regime - due to the influence of differing political traditions - in terms of how these principles are put into practice, particularly in terms of the generosity of benefits paid to the unemployed (replacement rates), the qualifying period and conditions, duration of benefit payments and the waiting period before entitlement is activated. In each of these respects, the Scandinavian welfare states are generally more generous than the other welfare state regimes, particularly in comparison to the Liberal and Eastern European regimes. Differences in the social protection offered to the unemployed could therefore be an important mediatory factor in the relationship between poverty, unemployment and health (Bartley et al, 2006).

A study by Bambra and Eikemo (2009) compared the extent to which relative health inequalities between unemployed and employed people varied across twenty-three European countries and in terms of the different approaches to social protection taken by the five European welfare state regimes (Social Democratic, Liberal, Conservative, Southern and Eastern). The study used data from the 2002 and 2004 waves of the cross-sectional European Social Survey (37,499 respondents, aged 25–60). Employment status was measured as the main activity in the last seven days. Health variables were self-reported limiting long term illness (LLTI) and fair/poor general health (PH). The study found that in all countries, unemployed people reported higher rates of PH than those in employment. There were also clear differences by welfare state regime. Relative inequalities between employed and unemployed were largest in the Liberal (men: OR_{PH}=2.97, 1.92 to 4.60; women: OR_{LLTI}=2.73, 1.50 to 4.95 and OR_{PH}=2.78, 1.63 to 4.73) Conservative (men only: OR_{LLTII}=2.21, 1.74 to 2.79 and OR_{PH}=2.72, 2.21 to 3.35), and Social Democratic (women only: OR_{LLTI}=2.28, 1.71 to 3.03 and OR_{PH}=2.99, 2.34 to 4.00) regimes, and smallest in the Southern (men: OR_{PH}=1.82, 1.35 to 2.46; women: OR_{LLTI}=1.52, 1.03 to 2.25 and OR_{PH}=1.66, 1.31 to 2.11) and Eastern (women only: OR_{LLTI}=1.65, 1.24 to 2.10 and OR_{PH}=1.76, 1.38 to 2.25) welfare state regimes.

This study identified important differences in the magnitude of the relationship by welfare state regime. Specifically, relative inequalities were found to be largest for men and women in the Liberal countries. Wage replacement rates for the unemployed are the lowest in these welfare states, and benefits are means-tested and subject to strict entitlement rules. The unemployed in the Liberal welfare states are therefore at a

great financial disadvantage in comparison to those in employment and this may well explain the magnitude of inequality as financial strain has been found to be an important factor in the relationship between unemployment and ill health (Kessler et al, 1987). Furthermore, means-tested benefits are associated with stigma and so the non-financial problems of unemployment may be greater in the Liberal welfare states (Diderichsen, 2002). A comparative study by Rodriguez (2001) found that in the UK, Germany and the USA, the likelihood of reporting poor health was significantly higher amongst unemployed people in receipt of means-tested benefits than those in receipt of entitlement benefits.

6.3 Food, water and sanitation

Access to clean water and hygienic sanitation systems are the most basic prerequisites for good public health. In the advanced capitalist democracies, access to water and sanitation were amongst the first major public health reforms of nineteenth century Europe, although it was often only with the slum clearances and the advent of the post-war welfare state that access became universal. Agricultural policies affect the quality, quantity, price, and availability of food, all of which are important for public health (Dahlgren et al, 1996). While overall increases in life expectancy may be partly attributed to better nutrition, increases in the prevalence of obesity in many countries point to the contribution food policies also make to over-nutrition. Access to healthy food is often restricted by what have been termed 'obesogenic environments': geographic areas (usually low income areas) with little access to fresh fruit and vegetables, high access to fast foods combined with low access to green space or sports facilities in terms of exercise (Lake and Townshend, 2006). International variations in access to healthy food and obesogenic environments may be important factors behind differences in the health of countries.

6.4 Housing and the living environment

Housing has long been recognised as an important material determinant of health, and health concerns underpinned the slum clearances that accompanied the advent of the post-war welfare state. Damp housing can lead to breathing diseases such as asthma; infested housing leads to the rapid spread of infectious diseases; overcrowding can result in higher infection rates and is associated with an increased prevalence of household accidents. Expensive housing (e.g. as a result of high rents) can also have a negative effect on health as expenditure in other areas (such as diet) is reduced (Stafford and McCarthy, 2006). The wider living

environment is also an important determinant of population health. In the past, environmental issues tended to focus on pollution from factories. However, more recently psychosocial concerns such as crime levels leading to stress and fear (as well as preventing people from exercising or walking) or the negative reputation of deprived areas resulting in the poor self-esteem of the inhabitants, have also been recognised as potentially important influences on health. Differences between countries in these social determinants may be important in terms of national level health outcomes.

6.5 Access to health care

Access to health care is a fundamental determinant of health, particularly in terms of the treatment of pre-existing conditions. In most European countries, access to health care is universal. However, there are variations in terms of how health care is funded (e.g. social insurance, private insurance or general taxation), the role and level of co-payments for treatment, and the extent of provision – what has been collectively termed 'health care decommodification' (Bambra, 2005). Provision can also vary within countries. For example, in the nationalised UK health system, it has long been the case that an 'inverse care law' operates whereby there are less doctors in areas of higher need (Tudor-Hart, 1971). People in lower socio-economic classes are also less likely to access health care services than those in higher socio-economic classes with the same health need (ibid.).

There are important and well known differences between the USA and Europe in terms of health care provision which may be an important issue in terms of explaining the USA health disadvantage. By way of example, this can be examined via a health care decommodification index (Bambra, 2005). Health care decommodification is *"the extent to which an individual's access to health care is dependent upon their market position and the extent to which a country's provision of health care is independent from the market"* (Bambra, 2005). Bambra developed an index that applied Esping-Anderson's methodology to health care. Measures used were: private health expenditure as a percentage of GDP; private hospital beds as a percentage of total bed stock; and the percentage of the population covered by the health care system. As Table 2 shows, the USA (score 9.0) has a much lower health care decommodification score than all the other developed countries in the index, even when compared to the other Liberal countries of the UK (60.0), Canada (40.0), New Zealand (40.0) and Australia (20.0). This suggests that access to health care in the USA is highly market dependent and therefore subject to the socio-economic vagaries of distribution inherent within such an unequal system.

Table 2: Health care services decommodification data[viii]

	Private health expenditure (% of GDP)	Private hospital beds (% of total bed stock)	Public health care system coverage (% of population)	Decommodification Index Score
Finland	1.7	4.7	100.0	50
Norway	1.3	0.32	100.0	60
Sweden	1.5	20.3	100.0	50
Germany	2.3	50.1	92.2	27.6
Netherlands	2.4	22.4	72.0	28.8
Switzerland	3.1	22.4	100.0	30
Australia	2.6	54.9	100.0	20
Japan	1.6	71.2	100.0	30
USA	7.5	81.6	45.0	9
Ireland	1.7	22.4	100.0	40
New Zealand	1.8	25.8	100.0	40
UK	1.0	3.7	100.0	60
Austria	2.2	29.7	99.0	39.6
Belgium	0.9	61.8	99.0	39.6
Canada	2.9	0.8	100.0	40
Denmark	2.7	0.0	100.0	40
France	2.2	35.4	99.5	39.8
Italy	2.3	24.0	100.0	40
Adjusted Mean	2.0	22.3	95.2	38.0

6.6 Education

There is undoubtedly a strong case for highlighting education as a major determinant of health and health inequalities – not least though its interaction with other determinants. Education has traditionally been an important route out of poverty for disadvantaged groups in many countries as qualifications improve people's chances of getting a job and of having better pay prospects. This in turn improves opportunities to obtain the prerequisites for health – nutritious food, safe housing, a good working environment and social participation (Dahlgren and Whitehead, 2007). There is a strong association between education and health: the lower the educational achievement, the poorer the adult health status and vice versa (Furnee et al, 2008). High educational attainment improves health directly – greater health knowledge may help people promote their

own health and avoid health hazards, including risky behaviour - but also indirectly - through influences on the types of work open to an educated person, the greater income that they can command, and the lower levels of stress that they encounter as a result of their privileged position (Dahlgren and Whitehead, 2007; Furnee et al, 2008). A well-functioning education system therefore has tremendous potential for promoting health (in general) and reducing social inequities in health (in particular) (Dahlgren and Whitehead, 2007). A meta-analysis of the association between health and education found that the quality adjusted life years of a year of education is 0.036 (Furnee et al, 2008). Access to higher education, the average education of the population and the quality of education vary by country and may contribute to international differences in health even between developed countries (Human Development Index, 2010).

7. Welfare State Regimes and Population Health[ix]

In its narrow definition as the state's role in education, health, housing, poor relief, social insurance and other social services, the welfare state clearly plays a key role as mediator in the influence of these social determinants of health. This is most obvious in terms of the strong relationship between universal health care systems, higher levels of health care decommodification (Bambra, 2005). However, as has been shown already, the *welfare state* cannot be reduced to a set of specific social benefits and welfare services: it is a complex system of stratification, and the economic, political and social relationships enshrined within welfare state, or more recently workfare state, capitalism are therefore the most important macro-level determinants of individual and population health. In its broadest definition, welfare state capitalism sets the parameters in which the social determinants of health (including the work environment, unemployment and so forth) take place. Further, the way in which the *welfare state* distributes financial resources and welfare services has consequences for social and economic hierarchies. As outlined in section 3, there are different types of Fordist and post-Fordist welfare states offering varying levels of welfare provision and labour market decommodification. These have mediated the impact of the social determinants of health and also of socio-economic class on health to varying degrees. International research on the social determinants of health has therefore increasingly started to examine how population health and health inequalities vary by welfare state regime type.

Given the characteristics of the different types of welfare/workfare states and their varying influence on the social determinants of health, it would be expected that population health would be better in the more decommodifying Social Democratic welfare states of the Scandinavian countries, particularly in comparison to the Liberal welfare states. This is certainly the general pattern found by those epidemiological studies that have used welfare state regime typologies to analyse cross-national differences in population health – specifically in terms of infant mortality rates (IMR), low birth weight (LBW), life expectancy (LE) and self-reported health (Chung and Muntaner 2007; Coburn 2004; Navarro et al, 2003; Navarro et al. 2006; Eikemo et al, 2008). Studies have consistently shown that IMR vary significantly by welfare regime type, with rates lowest in the Social Democratic Scandinavian countries and highest in the Liberal and Southern regimes. For example, Chung and Muntaner's (2007) multilevel longitudinal analysis of welfare state regimes found that around 20% of the difference in IMR between countries, and 10% for LBW, could be explained by the type of welfare state. Social Democratic countries had significantly lower IMR and LBW rates, compared to all other welfare state regimes. Similarly, a study by Karim and colleagues (2010) found that LE (R^2=0.58, adjusted R^2=0.47, $p<0.05$) differed significantly by welfare state regime with 47% of the variation explained by welfare state regime type. A clear association between decommodification and health outcomes has also been established (Coburn, 2004). By way of example, Table 3 presents data on infant mortality rates and life expectancy by welfare state regime.

Table 3: Infant mortality rates and life expectancy at birth for 30 countries and six welfare state regimes[x]

Welfare State Regime and Country	Infant mortality rate (deaths per 1,000 live births)	Life expectancy at birth (in years)
Scandinavian	3.98	78.52
Denmark	4.90	77.10
Finland	3.73	77.92
Norway	3.87	79.09
Sweden	3.42	79.97
Liberal	5.53	78.49
Australia	4.83	80.13
Canada	4.88	79.83
Ireland	5.34	77.35
New Zealand	6.07	78.32
United Kingdom	5.28	78.16
United States	6.75	77.14
Conservative	4.40	78.65
Austria	4.33	78.17
Belgium	4.57	78.29
France	4.37	79.28
Germany	4.23	78.42
Luxembourg	4.65	77.66
Netherlands	4.26	78.74
Switzerland	4.36	79.99
Southern	5.65	78.47
Greece	6.12	78.89
Italy	6.19	79.40
Portugal	5.73	76.35
Spain	4.54	79.23
Eastern	6.83	74.19
Hungary	8.58	72.17
Czech Republic	5.37	75.18
Poland	8.95	73.91
Slovenia	4.42	75.51
East Asian	5.29	78.70
Japan	3.30	80.93
Korea	7.31	75.36
Hong Kong	5.63	79.93
Singapore	3.57	80.42
Taiwan	6.65	76.87

Explanations for the better performance of the Social Democratic Scandinavian welfare state regime have varied. For example, Coburn (2004) has suggested that the key characteristics of the Scandinavian welfare state package (universalism, generous replacement rates, extensive and high quality welfare services) result in narrower income inequalities and higher levels of decommodification, both of which are associated with better population health. Coburn (2004), along with Navarro et al. (2003; 2006), has highlighted the importance of the accumulative positive effect on income inequalities of governance by pro-redistribution political parties in the Scandinavian countries. Other commentators (e.g. Stanistreet et al, 2005) have suggested that increased gender equality within the Scandinavian welfare states may be another incremental factor behind their better health outcomes. Perhaps most influentially, Wilkinson and Pickett have highlighted the beneficial population health effects of higher levels of social equality (Wilkinson and Pickett, 2009; cf. Beckfield 2004).[1] Furthermore, proponents of the social capital approach have highlighted the high levels of social cohesion and integration within Scandinavian societies (e.g. Putnam 2000), something that has also been associated with better population health (e.g. Kawachi et al. 1997). However, each of these explanations tries to pinpoint one or other aspect of the regime as the cause of the relatively better health in these societies. It is unlikely that it is one particular facet of the Scandinavian welfare model that leads to better health outcomes – rather it may be the entire approach to accumulation, legitimation and reproduction taken by this particular type of welfare state capitalism. The relative reduction in material and social inequality in this form of capitalism is a result of the interaction and combination of a variety of policies (e.g. universal access to welfare services, higher replacement rates) resulting in higher levels of decommodification and lower inequality sustained over a long period of time (Chung and Muntaner 2007; Navarro et al. 2006). The welfare state mediates exposure to the social determinants of health for all of the population and especially the most disadvantaged groups (although it should be noted that research often shows a high level of inequality in health by levels of education even in Scandinavia, which again highlights the importance of understanding how inequality in health and aggregate, average population health are or are not related).

[1] The literature on the income inequality hypothesis is not marked by consensus. Indeed, the authors of this background paper disagree about whether income inequality affects population health.

8. Interventions based on the Social Determinants of Health

The importance of the social (as opposed to biological or genetic) causes of health – for example, housing quality, access to health care, or quality of work, is well established. Differences in the social determinants of health (and the lack of a comprehensive welfare state support system) are likely to be behind the US health disadvantage. This means that there is a need to improve the social determinants of health and to implement appropriate interventions. However, the social determinants evidence base is dominated by descriptive, epidemiological studies which, by highlighting associations, are only implicitly able to suggest possible interventions (Bambra et al, 2009). For example studies consistently show associations between higher job control and better mental health, by implication therefore interventions which increase job control should result in health improvements. What is lacking though is further evidence about what sort of interventions might be required or whether they will actually be effective in improving health. Secondly, where interventions aimed at improving health have been developed and evaluated they tend to focus on modifying lifestyle factors such as smoking. This may reflect the fact that lifestyle issues are often easier to identify and treat, or it may be indicative of differences in the respective evidence bases; with evidence on tackling the wider social determinants being less apparent and less accessible to policy makers and practitioners. Nonetheless, a focus on lifestyle factors alone ignores the social causes of these health behaviours. Therefore, what is needed is evidence about what can actually be done to tackle the social determinants of health – specifically which interventions are effective. This requires evaluative studies of interventions which address the social determinants of health.

Unfortunately, such research is rather limited - as has been noted in recent international reports (e.g. WHO, 2008). However, as a way of summarising it, an umbrella review (a systematic review of systematic reviews) conducted by Bambra and colleagues (2009) synthesised systematic reviews on the effects on health of interventions aimed at influencing the social determinants of health. It identified 30 systematic reviews of interventions based on the social determinants of health. Although there was only partial evidence for most of the social determinants, it found that work environment interventions to improve employee control found consistently positive health effects when job control was actually increased (and negative effects when job control decreased) (Table 4) (more details in Bambra et al, 2009). This finding was reinforced by a later

Cochrane review of flexible working (Joyce et al, 2010). Similarly, in terms of housing, the study found evidence that rental assistance (e.g. use of rent subsidies to create mixed-income or desegregated housing in poorer U.S neighbourhoods) suggested that interventions to promote mixed housing may result in increases in perceived neighbourhood safety, perhaps because exposure to crimes against person and property is reduced, along with neighbourhood social disorder (Table 5). The study also found tentative systematic review evidence that such housing mobility policies (at least in the US) do improve health and health behaviours, but the effects are small. General housing improvement is also associated with positive change in social outcomes, including reductions in fear of crime, and improvements in social participation, These interventions ranged from home visits, risk assessments and removal of hazards to reduce the risk of injury; to physical changes to housing structure such as insulation, furniture and more general housing policies (more detail in Gibson et al, 2011).

Table 4: Summary details of housing and community reviews[xi]

Study	Intervention(s)	Summary of results
Anderson et al 2003	"social" changes (rent assistance so that low income families can choose where to live e.g. public/private)	Improvements in self-reported health status such as a decrease in depression; improvements in social outcomes including neighbourhood safety and social disorder.
Acevedo-Garcia et al 2004	"social" changes (rent assistance so that low income families can choose where to live e.g. public/private)	Improvements reported in terms of overall health, distress and anxiety, depression, problem drinking, substance abuse and exposure to violence.
Chang et al 2004	"environmental" changes (changes in the housing infrastructure to reduce risk of falls)	NS reduction in 'at least one fall' (adjusted risk ratio of 0.90 0.77 to 1.05). NS reduction in monthly rate of falling (adjusted incidence rate ratio 0.85 0.65 to 1.11).
McClure et al 2005	"environmental" changes (changes in the housing infrastructure to reduce risk of falls)	Significant decreases in some types of fall-related injuries (relative reduction in fall related injuries ranging from 6-33%).
Nilsen 2004	"environmental" changes (changes in the housing infrastructure to reduce injuries)	Two studies reported decreases in certain injuries but the majority of studies found no decline in rates of any kind of injury.
Thomson et al 2001	"environmental" changes (rehousing, renovation, updating).	Mixed effects on self-reported mental and/or physical health with some studies reporting small improvements and others small negative effects. Improvements found in social outcomes such as perceptions of crime.
Saegert et al 2003	"environmental" changes (rehousing, renovation, updating).	49/72 studies reported a significant improvement in health.
Thomson et al 2006	Area based urban regeneration	Impact of interventions was highly variable with some studies reporting improvements (in mortality) whilst others found deteriorations (in self-reported health).
Hahn et al 2005	Area based firearms restrictions	Findings were inconsistent with some studies reporting reductions in homicides and suicides whilst others reported increases.

Table 5: Summary details of work environment reviews[xii]

Study	Intervention(s)	Summary of results
Aust and Ducki (2004)	Dusseldorf Health circles – staff discussion groups on improving working conditions	Mixed results: sickness absence increased in the controlled study, whilst it decreased in the four uncontrolled studies. One study reported improvements in some psychosocial outcomes such as relationships with colleagues.
Egan et al (2007)	Organisational level work reorganisation: participatory committees, control over hours of work.	Participatory committee interventions which increased employee control had a consistent and positive impact on self-reported health.
Bambra et al (2007)	Task structure work reorganisation: task variety, team working, autonomous groups.	Task structure interventions did not generally alter levels of employee control. However, where job control decreased (and psychosocial demands increased), self-reported mental (and sometimes physical) health appeared to get worse.
Bambra et al (2008)	Changing from an 8hr, 5 day week to a Compressed Working Week (CWW) of a 12hr/10hr, 4 day week.	Health effects were inconclusive, although there was seldom a detrimental effect. Work-life balance was often improved.
Bambra et al (2008)	Changes to the organization of shift work schedules	Switching from slow to fast shift rotation; changing from backward to forward shift rotation; and the self-scheduling of shifts were found to benefit health and work-life balance.
Egan et al (2007)	Privatisation of public utilities and industries.	Higher quality studies suggested that job insecurity and unemployment resulting from privatisation impacted adversely on mental health and on some physical health outcomes.
Rivara and Thompson (2000)	Legal regulations (increased safety regulations) to prevent falls from height in construction industry.	Increased regulation, when enforced with inspections, might be associated with a decrease in fall injury rates.

9. Conclusion

Our theoretical perspective – drawn from political sociology, research on social stratification, and comparative political economy traditions – holds that institutional differences between the US and other wealthy nations should be related to cross-national differences in population health. This is because institutional arrangements (or the "rules of the game") shape the structure of social stratification, and provide goods and services that shape how resources can be translated into health. Surprisingly, despite vast cross-national variation in population health, and vast cross-national variation in institutional arrangements, very little work connects the two. There is suggestive evidence that the political incorporation of subordinated groups (through voting rights and political representation, especially the election of women to parliament) is associated with improved

population health, and there is new evidence that political marginalization (through mass incarceration in the US and its downstream effects) is associated with degraded population health. There is also evidence that the welfare state is associated with population health (social-democratic welfare states have the best population health profiles, and welfare-state retrenchment is associated with worsened health). Surprisingly, many of the other institutional arrangements that distinguish the United States from its economic peers (its very low level of unionization, its restrictions on collective bargaining, its strictly limited employment protection legislation, its very low level of public employment, its very high level of military expenditure, and its highly decentralized federal political architecture) have not been connected to population health.

Most of the institutional research that does exist has investigated the welfare state. There is evidence that the welfare state mediates the health impacts of the wider social determinants of health. There are clear international differences in health by welfare state regime especially in terms of infant mortality rates with the Social Democratic welfare state countries performing significantly better than other countries. This may be as a result of the combined welfare state package of higher replacement rates, universal access to services and better employment regulation. The social determinants of health vary between countries and this may be an issue behind the US health disadvantage (for example in terms of health care). There is little evaluative research into the population effects of interventions based on the social determinants of health and this is a priority area for research internationally. It is also important within the US context, not just because of the US disadvantage, but also because of the fact that interventions can often be context specific and may not easily transfer from one country (or one welfare state regime) to another (see for example, Chow et al, 2009). The welfare state is the wider context within which such interventions are implemented and thus forms the backdrop to any impact on health. For the US to catch up in health terms, this review suggests that it will not be enough to change just one thing (such as health care access), as multiple changes are required to improve all of the social determinants of health.

We see three pressing priorities for research in this area. One major gap in our understanding of how institutional arrangements shape population health is the relationship between average population health and social inequalities in health. We stress that population health (as measured by life expectancy, the infant mortality rate, or other population-level statistics) is not the same thing as social inequality in health (as measured by the relative index of inequality, the slope index of inequality, or other measures). It is possible that population health and health inequality are unrelated, positively associated, or negatively associated.

Nancy Krieger and colleagues have published inspiring work along these lines showing that inequality in health followed a U-shaped trend in the United States since the 1960s, while life expectancy followed a nearly linear upward trend (with a declining slope toward the end of the period). Very little is known about such trends in other institutional contexts. We note that a natural extension of research on the welfare state would be to connect social inequalities in specific policy domains to inequalities among the groups that should be most directly affected by policy in that domain (e.g., did the expansion of public pensions reduce health inequality among the pension-eligible population, and does more generous unemployment insurance reduce inequality between the employed and unemployed?). We also need to address gaps on the evidence base on how social determinant based interventions can improve population health.

A second pressing priority for research on population health is to investigate the mechanisms that, theoretically at least, connect institutional arrangements to population health. Simply put, scholarship in this area has far too many black boxes. Psychosocial stress is probably the most commonly-asserted mechanism that connects institutional arrangements to population health, but stress and its biological markers are too rarely measured. We have enough circumstantial evidence to say that institutional arrangements probably do get "under the skin," but we don't know nearly enough about how that process happens. Here, we reach a conclusion similar to McNamara (2009), who identified very few studies of the welfare state and population health that included specific policy indicators or measured mechanisms.

A third pressing priority is a better evidentiary base for comparative institutionalist research on population health. Happily, research on economic inequality provides a model for what such an evidence base would look like: the Luxembourg Income Study (now known by its acronym, LIS). Most of what we know about the institutional determinants of economic inequality and poverty is known because of the efforts of the LIS team. Recognizing the value and the challenges of comparative research on economic inequality, the LIS provided the scientific community with fully harmonized, individual-level, remote-access survey data that are recognized by the scientific community as the highest quality data that are available. We think a "LIS for health" is essential if research relating institutional arrangements to population health is to make real progress. Several key characteristics of the LIS make it a perfect model for a comparative database on population health: researchers can access individual-level data (critical for examining social inequality), access is via remote server (LIS requires application for permission to access the data, but a researcher never "owns" the data, which allows for the free dissemination of sensitive information), and the LIS team harmonizes the

data to aid in international comparison (just as the LIS developed an "income concept" to facilitate comparison, likewise a "health concept" could be developed for comparative analysis).

Because a "LIS for health" would enable exactly the kind of research we call for in priorities #1 and #2 above, we think the development of such a rich resource for the scientific community is the TOP PRIORITY for new science on these critical questions. The sort of detailed comparative research on health that Elo (2009) and others have called for simply cannot be conducted in a way that allows knowledge to cumulate without such data infrastructure.

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