Social Science & Medicine 178 (2017) 115–126

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Do U.S. states' socioeconomic and policy contexts shape adult disability?

Jennifer Karas Montez [a, *], Mark D. Hayward [b], Douglas A. Wolf [c]

[a] Department of Sociology and Aging Studies Institute, 314 Lyman Hall, Syracuse University, Syracuse, NY 13244, USA
[b] Population Research Center, 1800 Main, University of Texas at Austin, Austin, TX 78705, USA
[c] Department of Public Administration and International Affairs, and Aging Studies Institute, 314 Lyman Hall, Syracuse University, Syracuse, NY 13244, USA

ARTICLE INFO

Article history:
Received 14 September 2016
Received in revised form
3 February 2017
Accepted 8 February 2017
Available online 13 February 2017

Keywords:
United States
Disability
Health
Social determinants
States

ABSTRACT

Growing disparities in adult mortality across U.S. states point to the importance of assessing disparities in other domains of health. Here, we estimate state-level differences in disability, and draw on the WHO socio-ecological framework to assess the role of ecological factors in explaining these differences. Our study is based on data from 5.5 million adults aged 25–94 years in the 2010–2014 waves of the American Community Survey. Disability is defined as difficulty with mobility, independent living, self-care, vision, hearing, or cognition. We first provide estimates of age-standardized and age-specific disability prevalence by state. We then estimate multilevel models to assess how states' socioeconomic and policy contexts shape the probability of having a disability. Age-standardized disability prevalence differs markedly by state, from 12.9% in North Dakota and Minnesota to 23.5% in West Virginia. Disability was lower in states with stronger economic output, more income equality, longer histories of tax credits for low-income workers, and higher cigarette taxes (for middle-age women), net of individuals' socio-demographic characteristics. States' socioeconomic and policy contexts appear particularly important for older adults. Findings underscore the importance of socio-ecological influences on disability.

The United States has fallen precipitously in international rankings of life expectancy in recent decades, both in terms of life expectancy at birth and at age 50 (National Research Council, 2011). The fall partly reflects the large and growing differences in life expectancy across U.S. states (Wilmoth et al., 2011). While differences in longevity between states have been the focus of recent research (Montez et al., 2016; Patel et al., 2014; Tencza et al., 2014; Wilmoth et al., 2011), much less is known about cross-state differences in health. Do they mirror differences in life expectancy? Do they mainly reflect states' population characteristics (e.g., residents' educational attainment) or states' socioeconomic and policy environments? And, given evidence that the magnitude of mortality differences across states is dissimilar for women and men and across age groups (Wilmoth et al., 2011), are health differences also dissimilar across gender and age groups?

This study begins to address gaps in our understanding of cross-state differences in health by examining adult disability given its salience for independent living and healthcare costs. The central questions are: (1) to what extent do states differ in their prevalence of disability, (2) do these differences vary by gender and age, and (3) do states' socioeconomic and policy contexts shape disability status, net of individuals' sociodemographic characteristics? Our study extends prior work in several ways: (1) it is grounded in the socio-ecological framework proposed by the World Health Organization (WHO); (2) it utilizes a multilevel approach to estimate disability from individual-level characteristics and state-level contexts, while accounting for the clustering of individuals within state and local areas; (3) it examines gender-age subgroups; and (4) it uses a large dataset on over 5.5 million adults across all state and local areas. The results shed light on the importance of states' contexts for adult disability status.

1. Prior research

As Lin (2000) observed over a decade ago, comparatively few studies of geographic disparities in U.S. health and mortality have examined health, and even fewer have investigated the policy contexts that contribute to those disparities—a critique that holds

* Corresponding author.
E-mail addresses: jmontez@maxwell.syr.edu (J.K. Montez), mhayward@prc.utexas.edu (M.D. Hayward), dawolf@maxwell.syr.edu (D.A. Wolf).

http://dx.doi.org/10.1016/j.socscimed.2017.02.012
0277-9536/

true today. This comparative lack of evidence was again made apparent in a recent review of studies examining contextual factors and disability (Philibert et al., 2015). It located just 16 U.S. studies published between 1998 and 2014 that met the basic search parameters of the review.

Most U.S. studies have focused on documenting geographic differences in later-life disability. Further, most have examined large geographic areas such as regions and divisions, which are not policy-making units but rather are delineated by the U.S. Census Bureau for the presentation of census data. In general, these studies find that geographic differences in disability are large and cannot be entirely accounted for by population characteristics. Lin (2000) used the 1990 Census to examine differences across 11 regions in the prevalence of disability among adults aged 65 years and older. The differences were stark and persisted net of individuals' demographic and socioeconomic characteristics. Using the same sample, Lin and Zimmer (2002) did a simulation study and concluded that raising education levels of the population would lower disability rates, but would not erase the effects of contextual factors.

One particularly interesting conclusion of the two studies just mentioned (see also Kington et al., 1998) is that adults seem to carry with them some residual risk of disability from their area of birth. In particular, being born in a Southern state appears to leave a lasting imprint among out-migrants. These conclusions resonate with the mounting evidence on the enduring consequences of early-life conditions on later-life health and mortality (Montez and Hayward, 2011). They also imply that geographic exposures throughout the life course may shape disability status. For these reasons, studies aiming to understand how geographic exposures shape adult disability typically focus on the majority of the population who were born in the state in which they reside at the time of survey ("stayers") and occasionally contrast them against "movers". Consistent with these studies, we focus on stayers in most of our analyses.

While the studies mentioned above did not assess gender differences in their multivariate analyses, Porrell and Miltiades (2002) did and found intriguing results. Using data on adults aged 65 years and older in the 1992–1995 Medicare Current Beneficiary Survey, the authors assessed whether individual characteristics (demographics, socioeconomics, lifestyles, and chronic conditions) and county characteristics (socioeconomics and medical care) explained disparities in disability across seven regions. Interestingly, individual characteristics explained more of the disparities among men than women, while county characteristics (mainly socioeconomic in nature) explained more among women than men. Several subsequent studies have similarly found that contextual factors have a stronger association with women's than men's health and longevity (see Montez et al., 2016).

The few studies that have examined disability-related outcomes across states report striking disparities. One recent study documented large disparities in the Health and Activities Limitation Index across states among adults 65 years and older (Kachan et al., 2014). Two other studies used data on adults 25 and older in the 2003 or 2006 American Community Surveys to examine whether states' income inequality helps explain the large interstate variation in disability (Fuller-Thomson and Gadalla, 2008; Gadalla and Fuller-Thomson, 2008). Greater income inequality was associated with higher disability prevalence, net of individuals' income.

Our review illustrates that few studies have investigated state-level disparities in disability or the state-level policies and mutable contextual factors, such as a state's economy, that contribute to the disparities. Our study begins to address this gap by drawing on the socio-ecological framework proposed by WHO (Solar and Irwin, 2010) and examining specific state contexts as potential explanations. Our review also revealed a lack of attention to gender and age differences. We investigate these potentially heterogeneous effects as they may provide clues about mechanisms and the populations at greatest risk. For instance, state policies and contexts may be more relevant for women given that they are more likely than men to be poor, raising children, caring for elders, and interacting with the health care system; they may also be more relevant during certain life course stages. In addition, most studies have not employed multilevel modeling approaches. This is an important omission because geographic inequalities in disability reflect an intrinsically multilevel phenomenon (Subramanian et al., 2001).

2. Conceptual framework

The socio-ecological framework proposed by the WHO's Commission on Social Determinants of Health (Solar and Irwin, 2010) organizes the complex processes that generate inequalities in population health into three main layers. Overarching socioeconomic and policy contexts, the top layer, create stratification systems based on socioeconomic resources, gender, and race and ethnicity (middle layer). These systems, in turn, expose individuals to proximal risks and resources for health, such as health behaviors (the bottom layer). The framework refers to the top two layers as structural determinants, and the bottom layer as intermediary determinants, to underscore the causal priority of the former. In this study we focus on structural determinants.

The WHO framework incorporates aspects from previous frameworks (especially from Diderichsen et al. (2001)) but emphasizes the role of socioeconomic and policy contexts in stratifying power and social position. Like previous frameworks, it recognizes that *individuals'* socioeconomic resources are a key social determinant of health. However, it emphasizes that the distribution of those resources, as well as their importance for avoiding health risks and garnering health advantages, is heavily shaped by *overarching contexts*. As noted by WHO these contexts have been "seriously understudied" in the literature on the social determinants of health (for an exception see Navarro, 2004) despite the fact that they profoundly impact people's capacity to live healthy lives.

Although the WHO framework was not developed for a specific health-related outcome, it is conceptually consistent with the Disablement Process, one of the most widely-used socio-medical frameworks (Verbrugge and Jette, 1994). Like the WHO framework, the Disablement Process posits that disability results from the confluence of "extra-individual" factors on the one hand and "intra-individual" factors, such as education and a sense of control, on the other. Both assume that the primary causal pathway is one in which extra-individual factors impinge on individuals' lives. Yet, both recognize that the causal pathways are complex, inextricably linked, and contain feedback loops. Our study does not disentangle these intractably complex causal pathways. Rather, our aim is to understand the extent to which a focused set of state contexts predicts disability, net of adults' sociodemographic characteristics.

2.1. Five measures of states' socioeconomic and policy contexts

The WHO framework organizes the myriad extra-individual factors that shape population health into seven categories—governance, macroeconomic policies, social policies, public policies, culture and societal values, social capital or cohesion (hereafter, "social capital"), and the health system—referring to the first five as "socioeconomic and political contexts". We adapt the seven categories and their labels to be more meaningful for an investigation of disability across U.S. states. They include