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Consequences of disability from the perspective of time allocation

A significant proportion of the economics literature on the consequences of disability focuses on its implications for labor market activity and the effects of programs dedicated to supporting the disabled. This focus leaves out fundamental aspects of disability, and poor health more generally, which play a crucial role in directly determining individual and social welfare. In this policy brief, we report key results from a recent paper in which we examine the implications of disability from the perspective of time use (Hamermesh and Myck, 2025). Our analysis is based on the data from the American and the Polish Time Use Surveys and is complemented with time use information from several other countries. We examine how disability affects the variety of activities performed during the day by older individuals and how it changes the amount of time spent on the main, most common activities. Using information on how people value variety, we provide monetary estimates of the time cost of disability.

Introduction

Having a physical disability may in many ways restrict opportunities. Disability reduces employment, labor force participation, and work hours; it has negative consequences for earnings and thus consumption and wealth. It affects happiness, partly through labor-market effects, and partly through its inherent impact. A substantial body of literature has examined the interaction of disability and labor market outcomes with a particular focus on the implications of disability support and labor market activity (Acemoglu and Angrist, 2001; Autor and Duggan, 2003; Kruse et al., 2018). While there are also studies on disability and overall welfare measures (Meyer and Kok, 2019; Deshpande et al. 2021), little is known about how disability affects details of people's daily routines beyond labor market decisions. We address this gap in a recent paper (Hamermesh and Myck, 2025) in which we look at the implications of physical disability through the lens of time use.

Since utility is jointly determined by income and time, disability-related changes in how people allocate their time during the day may significantly affect their well-being. These effects will be especially important for older people, since they are more likely to have a physical disability and less likely to be working for pay than others. Understanding how disability affects time use may also be informative about policies that ease the daily lives of people with a disability. A physical disability imposes a constraint on how a person spends his/her time. Some things become more difficult, perhaps even impossible, to do, essentially raising the amount of time spent on that activity needed to achieve a given amount of satisfaction from it. For other activities, the rise in the cost of time inputs may be less; but other than passive leisure and passive personal activities, it is difficult to think of endeavors whose cost is not raised by a physical disability. Physical disability could also make switching activities more difficult, which means that additional time spent on certain activities adds nothing to the person's utility. If so, disability will, in this case, again lead to fewer activities being undertaken. Because variety in time use rises with income (Gronau and Hamermesh, 2008), if supported by the data, these arguments underlie an additional dimension of the loss engendered by a disability.

Disability and allocation of time in time use surveys

To examine the implications of disability on how people allocate their time, we take advantage of time use studies from the US (ATUS) and Poland (PolTUS) and complement them with results based on studies from several other countries. Individuals in these studies are asked to complete detailed diaries with information on how they spent their day, usually with well over a hundred activity categories assigned to each of the 144 10-minute slots in the 24 hours covered by the survey diary. On top of the information about how people spend their day, the two surveys include information on self-assessed disability status (in the case of the US data) and on the official certified disability status (in the PolTUS data). Our analysis focuses on older people who are no longer active on the labor market (aged 70+ in the US, 65+ in Poland), for whom we have detailed time use information as well as other necessary basic characteristics, such as age, marital status, ethnicity, education, etc.

Table 1. Relation of Temporal Variety and Disability Status, Older Nonworkers in the USA (ATUS) and Poland (PolTUS)

	Time Categories (by minutes spent per day on average in the full sample)			
ATUS data (2008-22, N=11,188)				
	10+ minutes	**5+ minutes**	**2+ minutes**	**1+ minutes**
Dependent variable: total time in category				
Coefficient on: Mobility/physical difficulty	41.10 (4.49)	27.68 (4.17)	33.28 (3.46)	26.51 (2.87)
Dependent variable: # activities in category				
Coefficient on: Mobility/physical difficulty	-0.380 (0.034)	-0.695 (0.050)	-0.799 (0.066)	-0.995 (0.079)
PolTUS data (2013, N: 7,090 indiv. * 2 diaries)				
	10+ minutes	**5+ minutes**	**2+ minutes**	**1+ minutes**
Dependent variable: total time in category				
Coefficient on: Certified disability status	2.749 (5.316)	-2.931 (4.467)	0.299 (3.134)	1.475 (1.713)
Dependent variable: # activities in category				
Coefficient on: Certified disability status	-0.272 (0.061)	-0.415 (0.086)	-0.308 (0.103)	-0.315 (0.110)

Source: Hamermesh and Myck (2025). Notes: reported coefficient values on disability measures; controls include standard demographic characteristics, household composition, time, and regional controls. Standard errors reported in parentheses below the parameter estimates. ATUS: N=11,188, PolTUS: N = 14,180 diaries, 7,090 individuals. Total number of activities per category: ATUS: 13, 24, 46, 74; PolTUS: 16, 30, 47, 71. For details see Hamermesh and Myck (2025).

In the first step of the analysis, we use samples of all adults to aggregate reported non-work activities into four categories of the most common things people do: activities that, on average, take over 10 minutes per day, more than 5, 2, and 1 minute per day. We then use these categories to examine how a physical disability, conditional on a number of socio-demographic characteristics, affects the time spent on these activities ("total time in category") and the number of activities within the categories performed on the survey day ("# activities in category"). The summary of results is presented in Table 1.

Older individuals in the US and Poland with a self-assessed (US) or certified disability (PL) engage in a reduced number of activities per day compared to those with no disability. The reduction ranges from 0.4 to 1.0 activity in the US, depending on the category, which corresponds to a decline in variety from about 6.6 to 10.3 percent. In Poland, the reductions are smaller – from 0.3 to 0.4, corresponding to declines of between 3.5 and 4.3 percent. ATUS estimates also suggest that older disabled Americans spend more time in each of the four sets of activities than do those without a disability.

These results are confirmed in our analysis using time use surveys from Canada, France, Italy, Spain, and the United Kingdom, which are all available in the Multinational Time Use Study (MTUS) database. While countries use slightly different definitions of disability, and there are country-specific differences in how individuals allocate their time during a typical day, in all countries except for the UK, we find consistent results that older non-workers with a disability/health issue enjoy less variety in their time use than those without a disability. The estimated differences are as high as 17 percent in Italy and 18 percent in Spain.

Evaluating the monetary cost of disability using its effect on time use variety

The above results show that having a disability is associated with fewer different activities undertaken during a day. Our additional analysis for the US, based on a proposed "sesqui difference" estimator, supports a claim that this relationship is likely to be causal (for details see Hamermesh and Myck, 2025). Thus, in a framework that recognizes the joint roles of time and income for well-being, by reducing the temporal variety that a person can enjoy, a disability directly reduces living standards. While we cannot infer the change in utility from the imposition of these extra costs and the loss in variety, we can ask how much compensation (income) would allow the person with the disability (and thus less time variety) to achieve the same variety in time use as an otherwise identical non-disabled individual.

For this purpose, we re-estimate our models for the data from the US, Poland, Canada, the UK, France, and Spain, using smaller samples for which we also have details about people's household incomes. The summary of results is reported in Table 2. As the dependent variable we use the group of the top 46 and 47 most common activities in the US and Poland, respectively, and the aggregated activity categories available in the MTUS datasets for the other countries (see Table 2 notes for details). We find positive and statistically significant relations of income to time variety in all of the examined countries and confirm earlier results on the relationship between time use variety and disability measures. We then use the results to compute the monetary compensation C relative to the mean average annual income of older non-workers, Y_{AVE}, that would equalize the temporal variety enjoyed by people with/without a disability:

$C = -[\alpha_D/\alpha_Y]/Y_{AVE}$, where the α_j are the estimated relationships of disability status and income to the variety of time use. The final row in Table 2 shows the estimate of C in each of the six countries. It ranges from a low of 61 percent of average annual income (the U.K.) to nearly five times average annual income (the U.S.). The weighted average of the six estimates is 2.24.

Conclusions

In a recent paper, we demonstrated that a physical disability is related to how a person spends time. Fewer different things are done, so that on average each activity undertaken consumes more of the individual's time (Hamermesh and Myck, 2025). Looking into more details, we find that more time is spent sleeping and watching television, and less is devoted to activities that require active

Table 2. Relationship of Disability Status and Income to Temporal Variety: U.S., Poland, Canada, U.K., France, and Spain

Data years	U.S. 2008-22	Poland 2013	Canada 2005, 2010	U.K. 2000, 2014	France 1998	Spain 2002
Regression estimates: (dep. var. # activities)						
Mobility/physical difficulty (US) Disability (PL, CAN, UK, FR, ES)	-0.846 (0.065)	-0.288 (0.108)	-0.403 (0.077)	-0.100 (0.012)	-0.321 (0.085)	-1.850 (0.078)
Annual family income (thousands USD)	0.0031 (0.0006)	0. 0496 (0.0152)	0.0082 (0.0007)	0.0092 (0.0017)	0.0023 (0.0005)	0.0490 (0.0047)
N diaries	11,083	12,118	8,560	4,276	2,933	9,491
$C = -(\alpha_D/\alpha_Y)/Y_{AVE}$	4.95	0.62	0.87	0.61	1.09	3.47

Source: Hamermesh and Myck (2025). Notes: Time use activity category grouping: US top 46 categories; Poland: top 47; Canada, UK, Italy, and Spain, respectively: 55, 54, 44, and 52 aggregate categories available in MTUS database. For Poland: two time use diaries for each of 6059 individuals. Vectors of controls include standard demographic characteristics, excluding educational attainment, given very high correlation of education with household income. Standard errors reported in parentheses below the parameter estimates. For details see Hamermesh and Myck (2025).

participation, such as cooking, cleaning, and attending religious services. That older people with disabilities engage in fewer activities than otherwise identical individuals implies a loss of well-being because people generally find variety enjoyable— being able to perform more activities on a usual day is income-superior. Indeed, taking the average of the estimates for six different countries, we find that it would take more than twice the value of people's annual income to compensate them for the loss of time-use variety of someone with disability compared to an older person without it.

With disability rates among older people in the range of 20-50 percent, depending on age, a better understanding of the different dimensions of utility loss that result from it seems necessary to specify appropriate policy recommendations. By analyzing how a disability is related to the time use of older people, we have opened a large variety of questions and areas for future research that will add to our understanding of the impact of disabilities. A comprehensive approach to the consequences of disability, going beyond the limitations at the workplace and beyond the expense of medical interventions, is necessary to structure policies focused on relaxing time constraints and thus, among other things, allowing those with disabilities to enjoy a greater variety of activities.

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