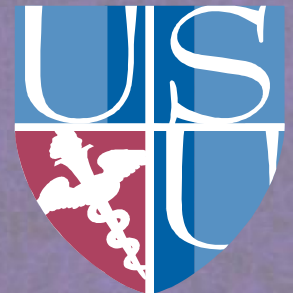


MIDLIFE TRENDS IN ACTIVITIES AND DISABILITY

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OBJECTIVES

Compare trends in activities and in disabilities over the past decade for midlife Americans.

Assess if time use is linked to disability for midlife Americans.

HYPOTHESES

1. Activities change more over time than disabilities do.
2. People with disability spend more time on obligatory activities, and less on discretionary ones, than people without disability.

DATA

Health and Retirement Study (HRS), a nationally representative panel survey of community-dwelling midlife and older Americans.

Core HRS interview, conducted every two years;
N~20,000.

Consumption and Activities Mail Survey (CAMS),
conducted every two years for a subsample; N~3,000-
5,500.

Time points for analysis

Disability: 2000, 2002, 2004, 2006, 2008

Activities: 2001, 2003, 2005, 2007, 2009

Trends are estimated over an 8-year time interval.

MIDLIFE SAMPLES

Sample criterion: person responded to CAMS and prior-year Core.

	<u>2001</u>	<u>2003</u>	<u>2005</u>	<u>2007</u>	<u>2009</u>
55-59	487	362	774	747	648
60-64	813	612	751	705	730
65-69	703	670	1085	1037	850
Total	2003	1644	2610	2489	2228

Altogether 10,974 records; 4363 individuals.

Sample increase for 2005+ is due to new cohort added to HRS and spouses added to CAMS.

ACTIVITIES

CAMS has 33 items about personal care, household management, religious and voluntary activities, socializing, hobbies, recreation, entertainment, and sleep/rest. Hours spent last week or month are asked.

Items are pooled into 13 domains using a standard time-use classification.

For each domain, we analyze number of hours spent per month (0+).

Descriptive data for 2005; ranks for other years are similar.

	<u>hours/month (average)</u>	<u>rank</u>
Obligatory Activities		
Personal Care	36.6	6
Sleep/Naps	188.3	2
Walking	27.5	7
Committed Activities		
Paid Work	79.8	3
Household	66.5	4
Repairs/Yard	16.3	8
Shopping	15.4	9
Help Others	7.4	13
Discretionary Activities		
Socializing	61.0	5
Entertainment	7.8	12
Public Service	8.7	11
Hobbies/Leisure	201.9	1
Sports/Exercise	9.3	10

DISABILITY

ADLs: 5 items (dress, bathe/shower, eat, walk across room, get in/out of bed). Disability is health-related difficulty doing the activity, or use personal assistance or special equipment for it.

IADLs: 5 items (prepare hot meal, shop for groceries, make phone calls, take medications, manage own money). Disability is health-related difficulty doing the activity.

For each type, we analyze number of disabilities (0+).

PREVALENCE

Descriptive data for 2004.

	<u>ADL Disability</u>		<u>IADL Disability</u>	
	<u>Any</u>	<u>Mean</u>	<u>Any</u>	<u>Mean</u>
55-69	11.2%	0.22	8.4%	0.12

For all years, ADL disability prevalence exceeds IADL prevalence due to the items included; other HRS literature about disability shows same.

TRENDS

Question: Do people now in midlife differ in their activities compared to midlife people a decade ago? Do they differ in disability prevalence?

Five year age groups: 55-59, 60-64, 65-69

Dependent variable is activity hours, or disability count. Predictors are time, age group, time x age interactions, gender, and education.

Mixed linear regression models (MRM).

MRM FEATURES

1. Allows presence of case and item missing data. Assumes that available data for a subject are representative of subject's deviation from average trends across time, estimated based on whole sample. "Borrowing of strength" approach.
2. Allows time-varying and time-invariant covariates.
3. Allows irregularly-spaced measurements across time.
4. Can estimate average change across time in a population, and also change for each subject.

This analysis has case missing data (panel members skip one or more CAMS), little item missing data, both types of covariates, and regularly-spaced measurements over time; we estimate population changes over time.

MRM FEATURES

In more technical terms, MRM derives robust parameter estimates with missing observations, computes both random and fixed effects, and handles autoregressive error structure of outcome data

References:

Hedeker D, Gibbons RD. Longitudinal Data Analysis. Wiley. 2006.

Little RJ, Rubin DB. Statistical Analysis with Missing Data. Wiley. 2nd edition. 2002.

Littell RC, Milliken GA, Stroup WW, Wolfinger RD, Schabenberger O. SAS for Mixed Models. SAS Institute Inc. 2nd edition. 2006.
(PROC MIXED)

RESULTS: TRENDS

Activities for midlife Americans

- Leisure and Sports/Exercise hours increase
- Repairs/Yard hours decrease
- Personal Care, Paid Work, Entertainment, Public Service, and Walking have convex trends (highest mid-period)
- No change for five domains

Disability for midlife Americans

- No change in ADL
- Slight increase in IADL

RESULTS: PREDICTORS

For activities, models have many significant effects. Gender and education are the topmost predictors. Time is next in overall importance, then age. Interactions (time x age) are negligible.

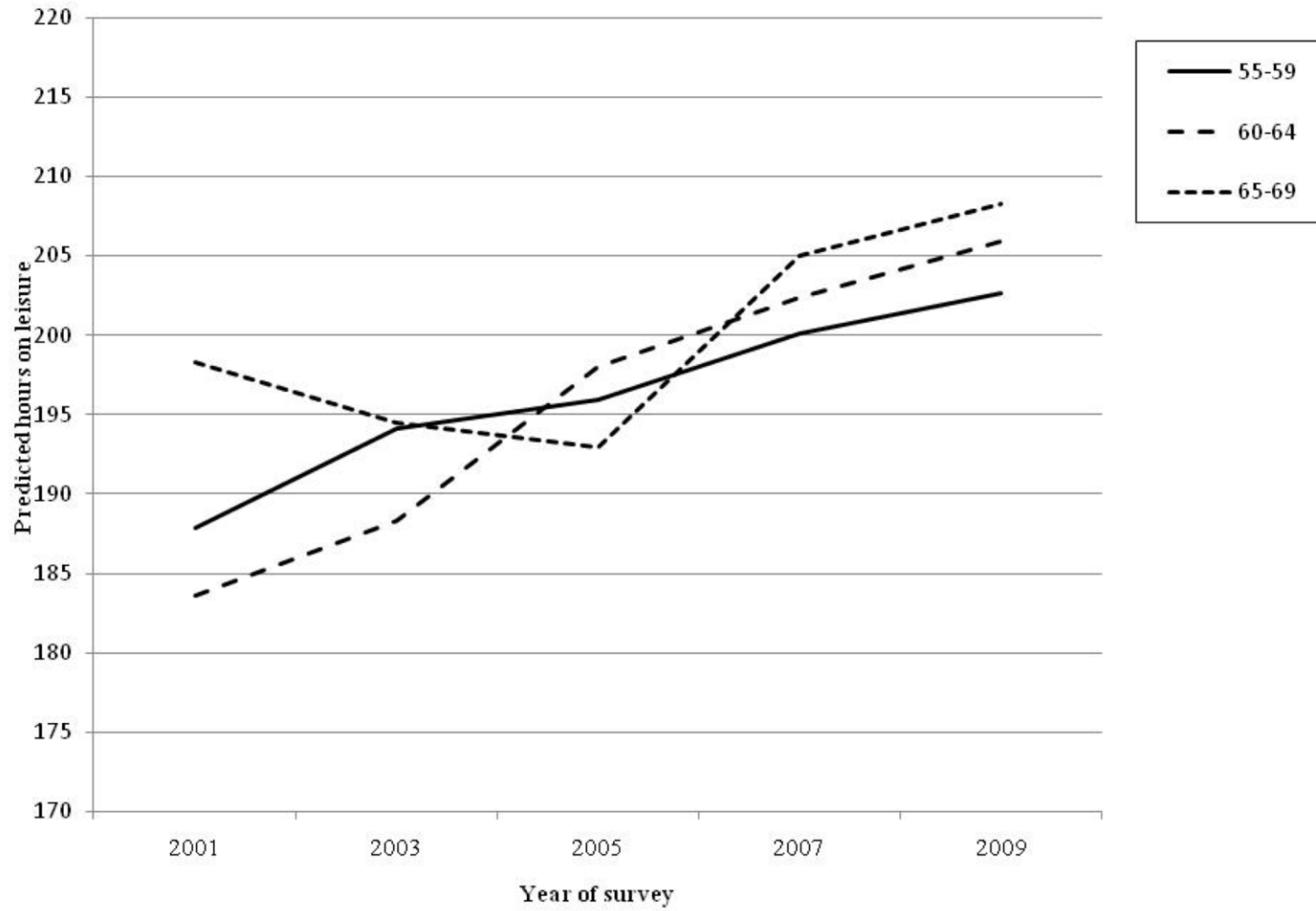
For disability, models yield very little. The predictors have nonsignificant effects with few exceptions.

PLOTS

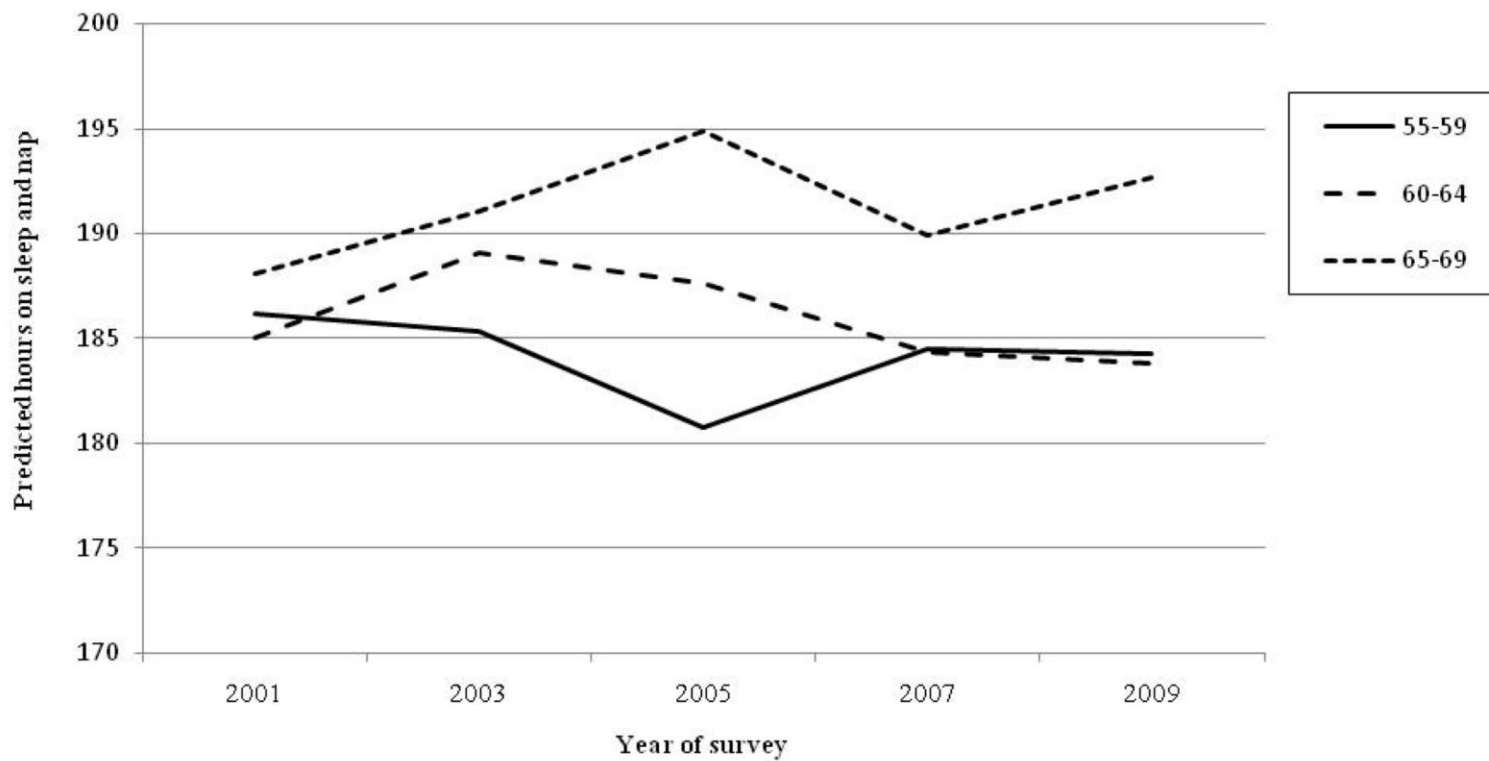
The results are illustrated by four plots.

- Leisure: increase over time, no age difference
- Sleep/Nap: no change over time, significant age difference (always higher for 65-69)
- Public Service: convex for time, increases with age
- ADL: no change over time, no age effect

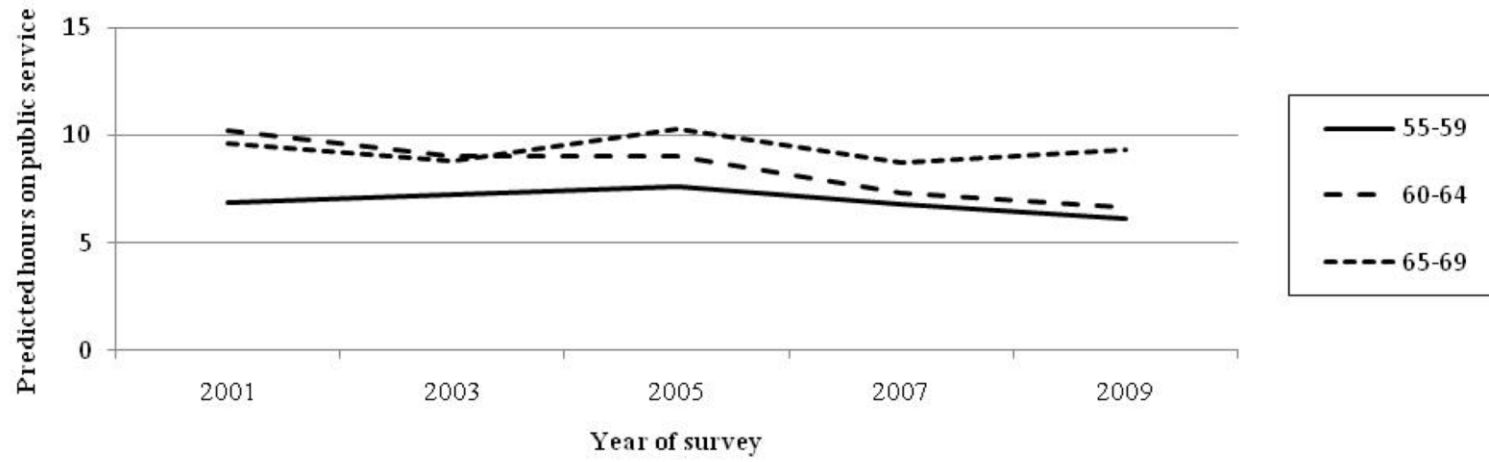
Trends in Leisure Hours



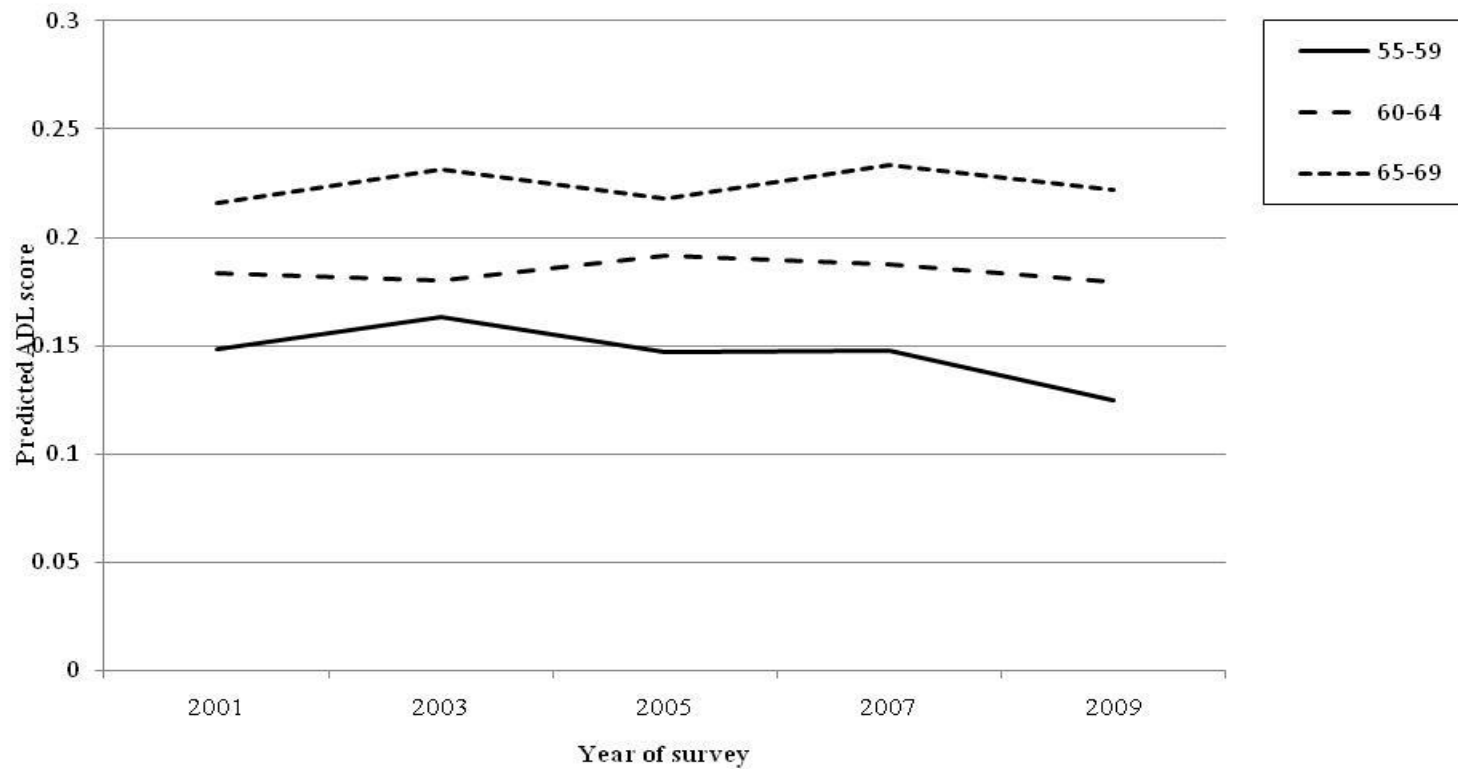
Trends in Sleep and Naps



Trends in Public Service



Trends in ADL Disability



ACTIVITY - DISABILITY LINKS

Question: Is time use linked to disability? That is, do hours spent on personal care or other activities vary by disability status?

Dependent variable is hours. Predictors are disability (number, or 0 vs 1+), time, age (single years), gender, and education.

Mixed linear regression models (MRM).

We focus on the disability effects.

RESULTS

Many activities (Sleep/Naps, Walking, Paid Work, Household, Repairs/Yard, Shopping, Entertainment, Sports) decrease as disability increases.

Only one activity (Personal Care) increases with disability.

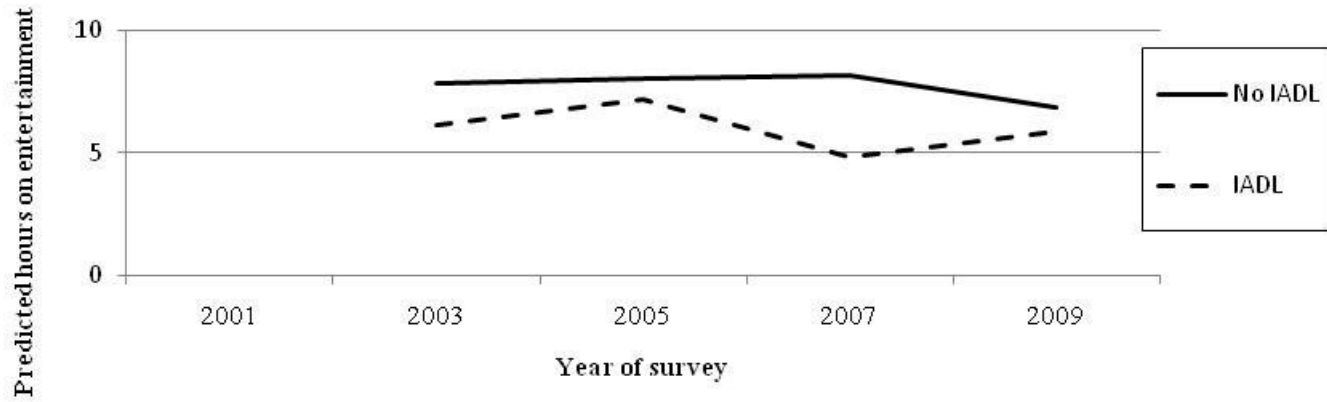
Models have same results for ADL and IADL predictors.

PLOTS

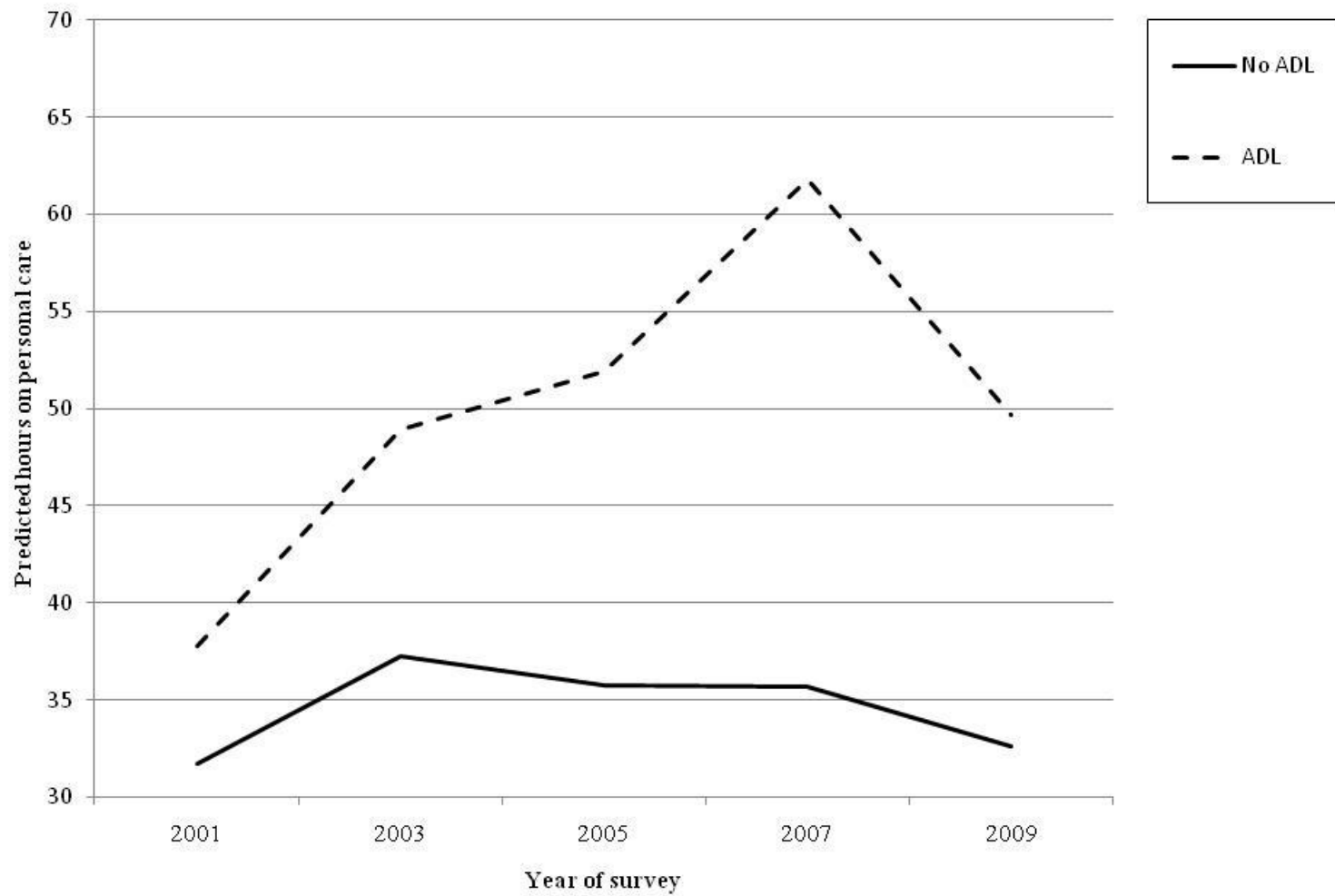
The results are illustrated by two plots.

- Entertainment: fewer hours for people with any IADL
- Personal Care: more hours for people with any ADL

Trends in Entertainment Hours by Disability Status



Trends in Personal Care Hours by Disability Status



CONCLUSION

Activities change more over time than disabilities do.

Disability affects how people use time. (Cross-sectional differences; we state the most likely causal relationship.)

Results support the two hypotheses.

Activities are very amenable to longitudinal analyses because they are more dynamic than disability.

An alternative to standard disability analysis is to study levels and changes in activities, related to functional and disability status.

OUR NEXT STEPS

Repeat the analysis for persons ages 70+. For older persons, we anticipate more trends in disability. But we expect continued strong support for the two hypotheses.

Include 2011 data; this gives 10-year time interval for trends.

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