Sex-Specific Trends in ADL Disability in the U.S. Elderly Population 1984–2004: New Estimates from the National Long Term Care Survey

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ABSTRACT

Purpose: To estimate sex-specific trends in ADL disability above age 65 using the 1984 and 2004 NLTCS based on the HIPAA ADL trigger. **Methods**: ADL disability was assessed using self- and proxy-reported use of active personal assistance in two or more of six HIPAA ADLs in the 1984 and 2004 NLTCS detailed community and institutional interviews. The NLTCS was a representative sample survey of the entire elderly population; it was specifically designed to provide information on both the institutionalized and non-institutionalized components of the population. Age- and sex-specific prevalence rates were formed from weighted tabulations of the NLTCS records; standard errors of prevalence rates were calculated using Potthoff et al's (1992) method. Prevalence rates were summarized and compared over time using direct age-standardization. Cross-sectional estimates of lifetime disability years were calculated and compared over time using Sullivan's (1972) life table method. **Results**: The ADL disability crude prevalence rates (CPRs) for both sexes combined declined from 9.6% in 1984 to 8.2% in 2004 (a relative decline of 14.9%); age standardization to the 1984 unisex population reduced the 2004 value to 6.6% (increasing the relative decline to 31.1%); age standardization to the 2004 unisex population increased the 1984 value to 11.9% (increasing the relative decline to 31.5%). ADL CPRs for males declined from 7.5% to 5.8% (a relative decline of 22.0%); age standardization to the 1984 male population reduced the 2004 value to 4.8% (increasing the relative decline to 35.4%); age standardization to the 2004 male population increased the 1984 value to 9.2% (increasing the relative decline to 36.7%). ADL CPRs for females declined from 11.0% to 9.8% (a relative decline of 10.2%); age standardization to the 1984 female population reduced the 2004 value to 7.9% (increasing the relative decline to 27.7%); age standardization to the 2004 female population increased the 1984 value to 13.6% (increasing the relative decline to 27.9%). Life expectancy at age 65 for males increased from 14.5 to 16.7 years (+15.3%); expected years of ADL disability (ADLE) for males decreased from 1.23 to 0.98 years (-20.1%). Life expectancy at age 65 for females increased from 18.6 to 19.5 years (+4.6%); ADLEs for females decreased from 2.41 to 1.88 years (-22.0%). **Conclusions**: The prevalence rates of ADL disability differed substantially between the sexes both at the start and end of the study period, as did the very substantial rates of change in both the crude (22% vs. 10%) and age-standardized (36% vs. 28%) prevalence rates. Likewise, the expected years of ADL disability differed substantially between the sexes both at the start and end of the study period, but the relative declines in those values were similar and very substantial (20% vs. 22%). The expected number of years of ADL disability beyond age 65 is an important measure of population health; understanding the reasons for sex differentials in the absolute value of this measure and sex similarities in its relative rates of decline will facilitate accurate projections of future trends in this measure. Accurate projections are needed for developing sustainable national LTC insurance programs such as proposed in the CLASS Act, a component of the recently enacted Patient Protection and Affordable Care Act of 2010.

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Percent of Population Meeting HIPAA ADL Trigger, United States 1984 and 2004, Unisex, Age 65 and Above, by Age and Totalled Over Age, with Two Modes of Age Standardization

Age	1984	2004	% Change	Annual Rate of Decline; 20 yr.
65-69	3.3	2.2	-33.9	2.05%
70-74	5.2	3.8	-26.0	1.50%
75-79	8.8	6.4	-28.1	1.63%
80-84	15.9	10.6	-33.5	2.02%
85-89	27.9	19.4	-30.4	1.80%
90-94	46.9	28.6	-39.1	2.45%
95+	67.4	51.1	-24.2	1.37%
Total	9.6	8.2	-14.9	0.80%
1984 ASDR	9.6	6.6	-31.1	1.84%
2004 ASDR	11.9	8.2	-31.5	1.87%

NOTE: ASDR denotes age-standardized disability rate; the 1984 and 2004 results were separately age-standardized to the 1984 and 2004 NLTCS weighted unisex population.

Source: Authors' calculations based on the 1984 and 2004 NLTCS.

Percent of Population Meeting HIPAA ADL Trigger, United States 1984 and 2004, Males, Age 65 and Above, by Age and Totalled Over Age, with Two Modes of Age Standardization

Age	1984	2004	% Change	Annual Rate of Decline; 20 yr.
65-69	3.1	2.1	-32.0	1.91%
70-74	5.5	3.7	-33.0	1.98%
75-79	8.6	5.9	-30.6	1.81%
80-84	13.5	8.7	-35.2	2.15%
85-89	21.9	11.8	-46.1	3.04%
90-94	37.3	21.7	-41.8	2.67%
95+	54.2	31.4	-42.1	2.69%
Total	7.5	5.8	-22.0	1.23%
1984 ASDR	7.5	4.8	-35.4	2.16%
2004 ASDR	9.2	5.8	-36.7	2.26%

NOTE: ASDR denotes age-standardized disability rate; the 1984 and 2004 results were separately age-standardized to the 1984 and 2004 NLTCS weighted male population.

Source: Authors' calculations based on the 1984 and 2004 NLTCS.

Percent of Population Meeting HIPAA ADL Trigger, United States 1984 and 2004, Females, Age 65 and Above, by Age and Totalled Over Age, with Two Modes of Age Standardization

Age	1984	2004	% Change	Annual Rate of Decline; 20 yr.
65-69	3.5	2.3	-35.0	2.13%
70-74	4.9	3.9	-20.2	1.12%
75-79	9.0	6.7	-26.0	1.50%
80-84	17.2	11.8	-31.5	1.87%
85-89	30.1	23.3	-22.7	1.28%
90-94	49.8	31.4	-37.0	2.28%
95+	70.1	56.1	-20.0	1.11%
Total	11.0	9.8	-10.2	0.54%
1984 ASDR	11.0	7.9	-27.7	1.61%
2004 ASDR	13.6	9.8	-27.9	1.62%

NOTE: ASDR denotes age-standardized disability rate; the 1984 and 2004 results were separately age-standardized to the 1984 and 2004 NLTCS weighted female population.

Source: Authors' calculations based on the 1984 and 2004 NLTCS.

Life Expectancy and HIPAA ADL Expectancy (in Years at Age 65), United States 1984 and 2004, by Sex

	Males				Females			
	1984	2004	Change	Relative Change	1984	2004	Change	Relative Change
Life Expectancy	14.46	16.67	2.21	15.3%	18.64	19.50	0.85	4.6%
ADL Expectancy	1.23	0.98	-0.25	-20.1%	2.41	1.88	-0.53	-22.0%

Source: Authors' calculations based on 1984 and 2004 NLTCS, 1984 life tables interpolated from 1980 and 1990 life tables in Bell and Miller (2005), and 2004 life tables from Social Security Online.