



Will Health Spans Rise with Life Spans?

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Executive Director

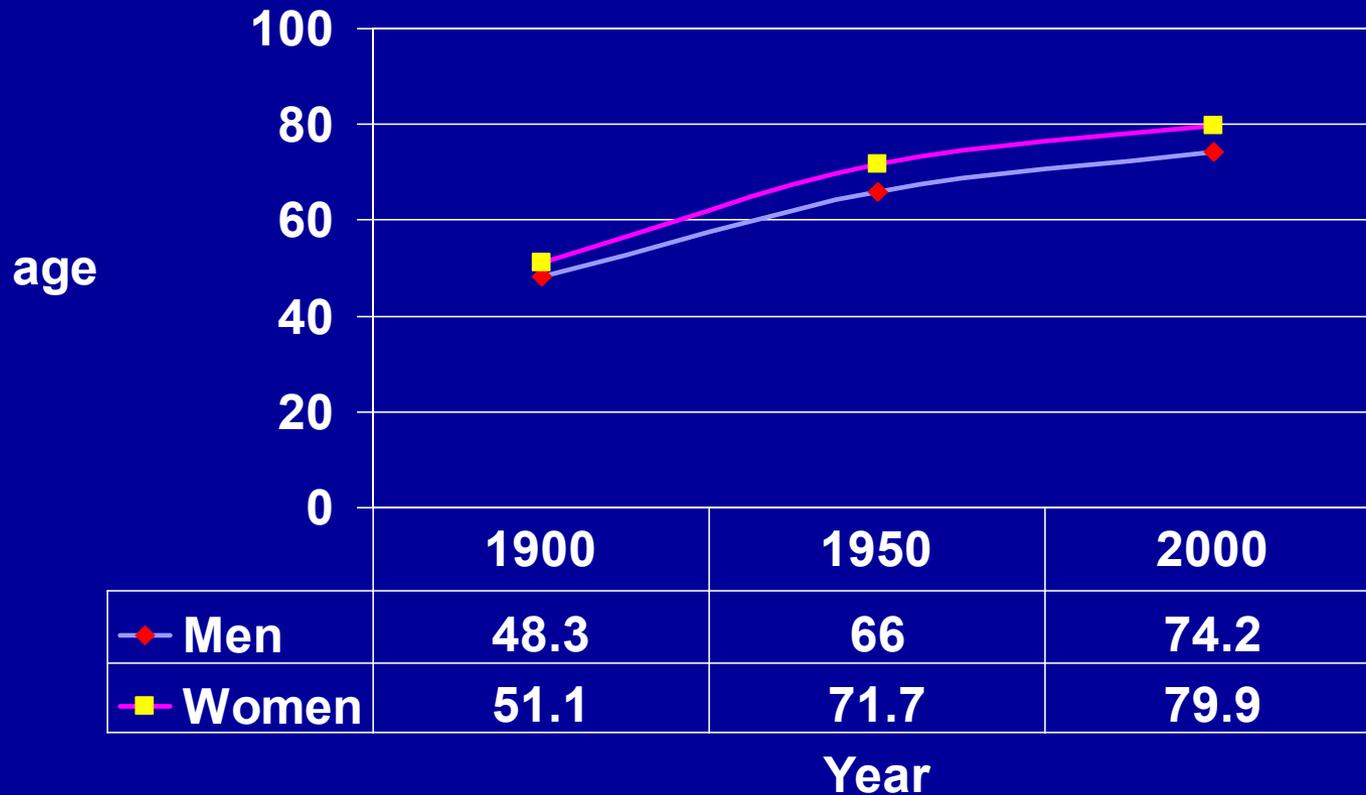
Merck Institute of Aging & Health

What is Life Span?

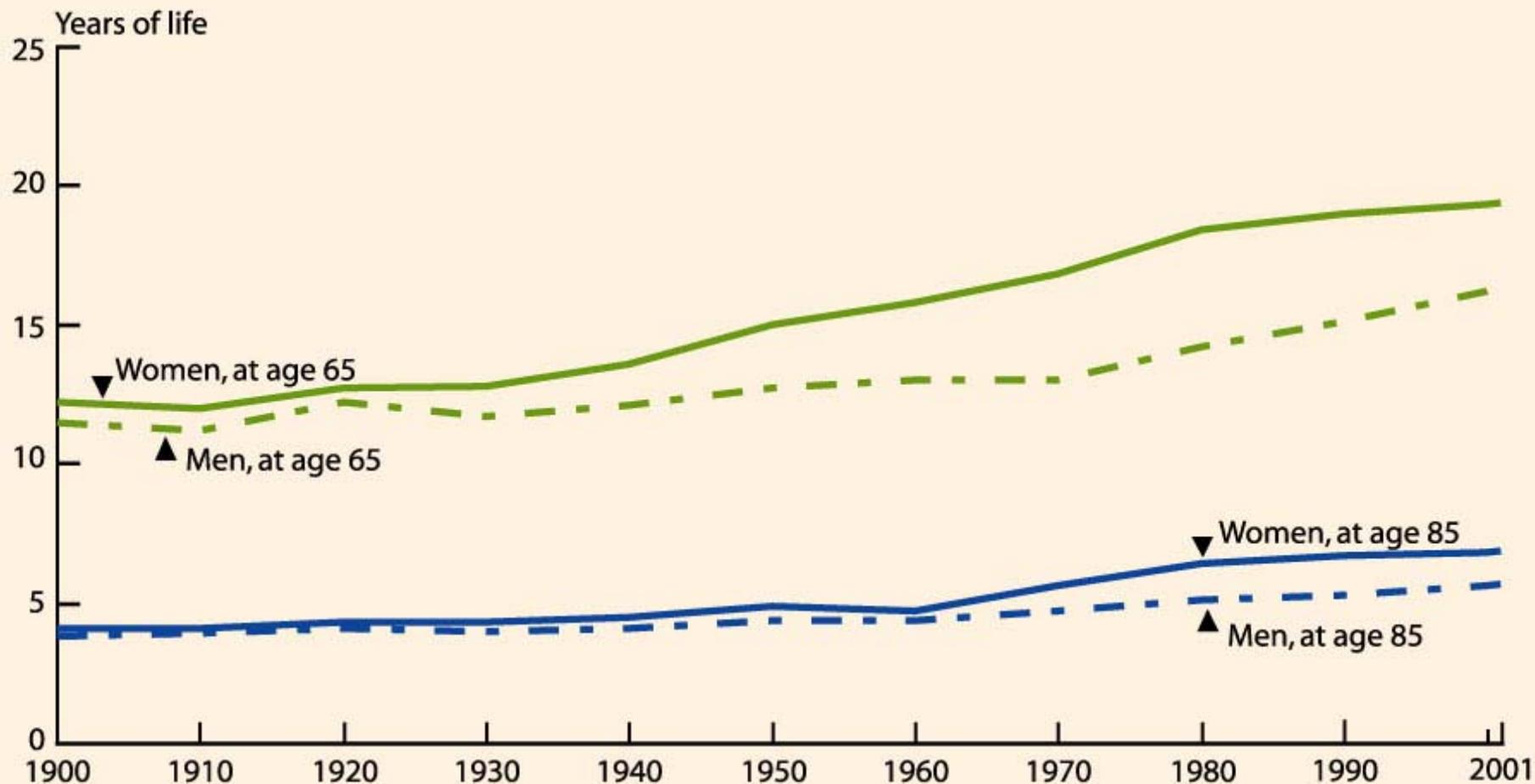
- Life span is usually defined as the maximum life expectancy for a species.
- Human life span is about 115 years.



US Life Expectancy from Birth: 1900-2000



Life expectancy at ages 65 and 85, by sex, selected years 1900-2001



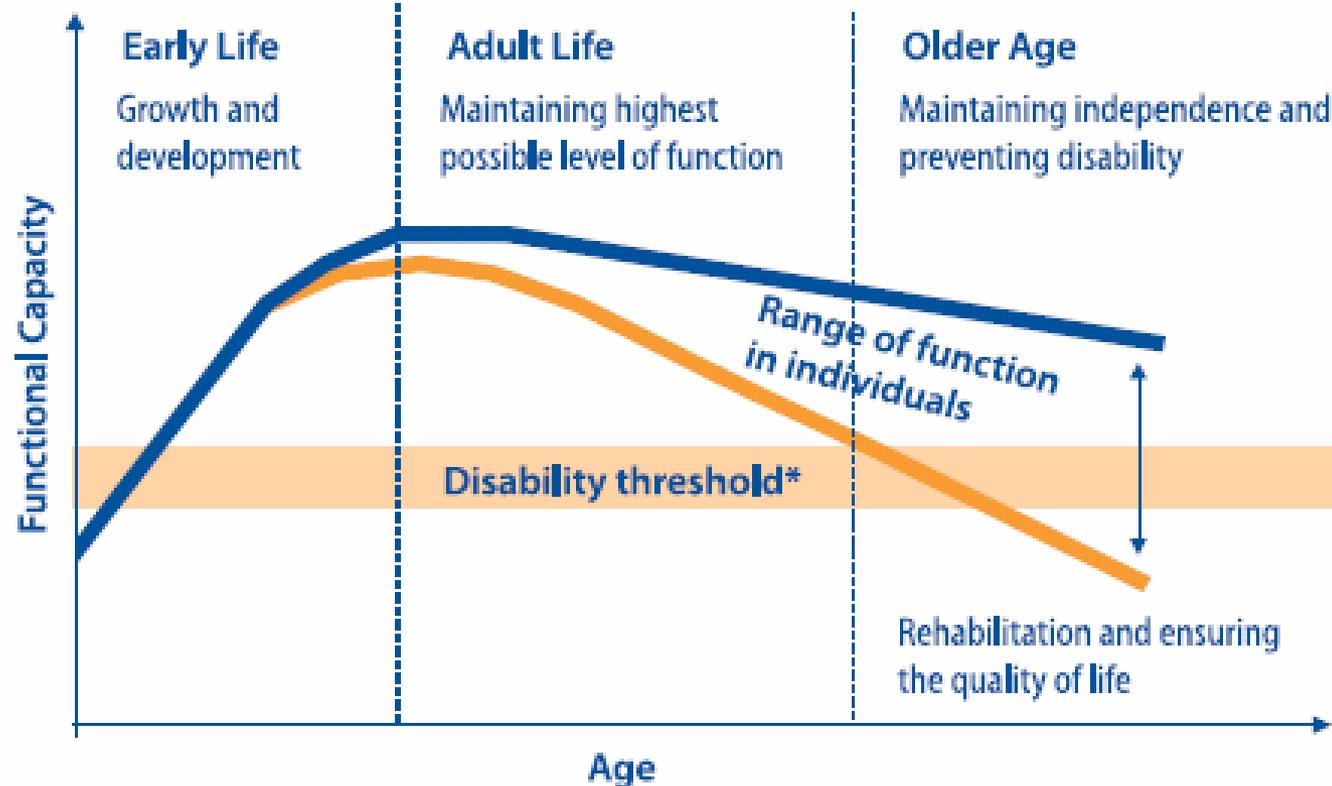
Reference population: These data refer to the resident population.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

What is Health Span?

- Do we mean Health Expectancy?
(Average years of good health?)
- What is Health?
 - Absence of Disease?
 - Absence of Disability/Morbidity?
 - Functional Capacity?
 - Quality of Life?
- Health Expectancy vs. Life Expectancy

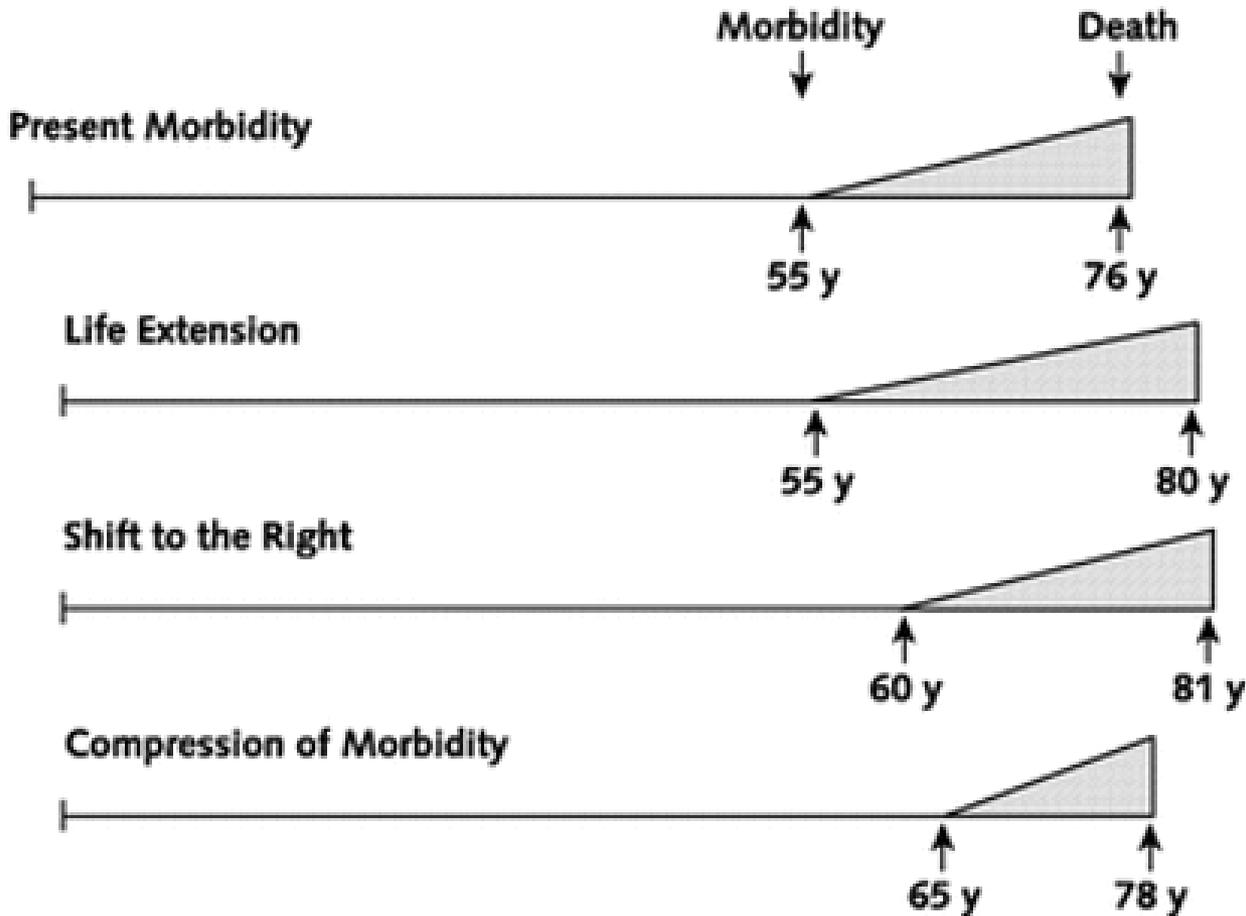
Functional Capacity and Aging



Source: Kalache and Kickbusch, 1997

Lifetime Morbidity (Fries, *Annals* 2003)

Present morbidity (infirmity or disability) and future scenarios



The Significance of Functional Capacity

Fried, et al, *Archives Int Med*, 2001

- Measured by

- Self-reported Activities of Daily Living (ADLs)

- Bathing
- Dressing
- Transferring
- Walking
- Eating
- Toileting

- Instrumental Activities of Daily Living (IADLs)

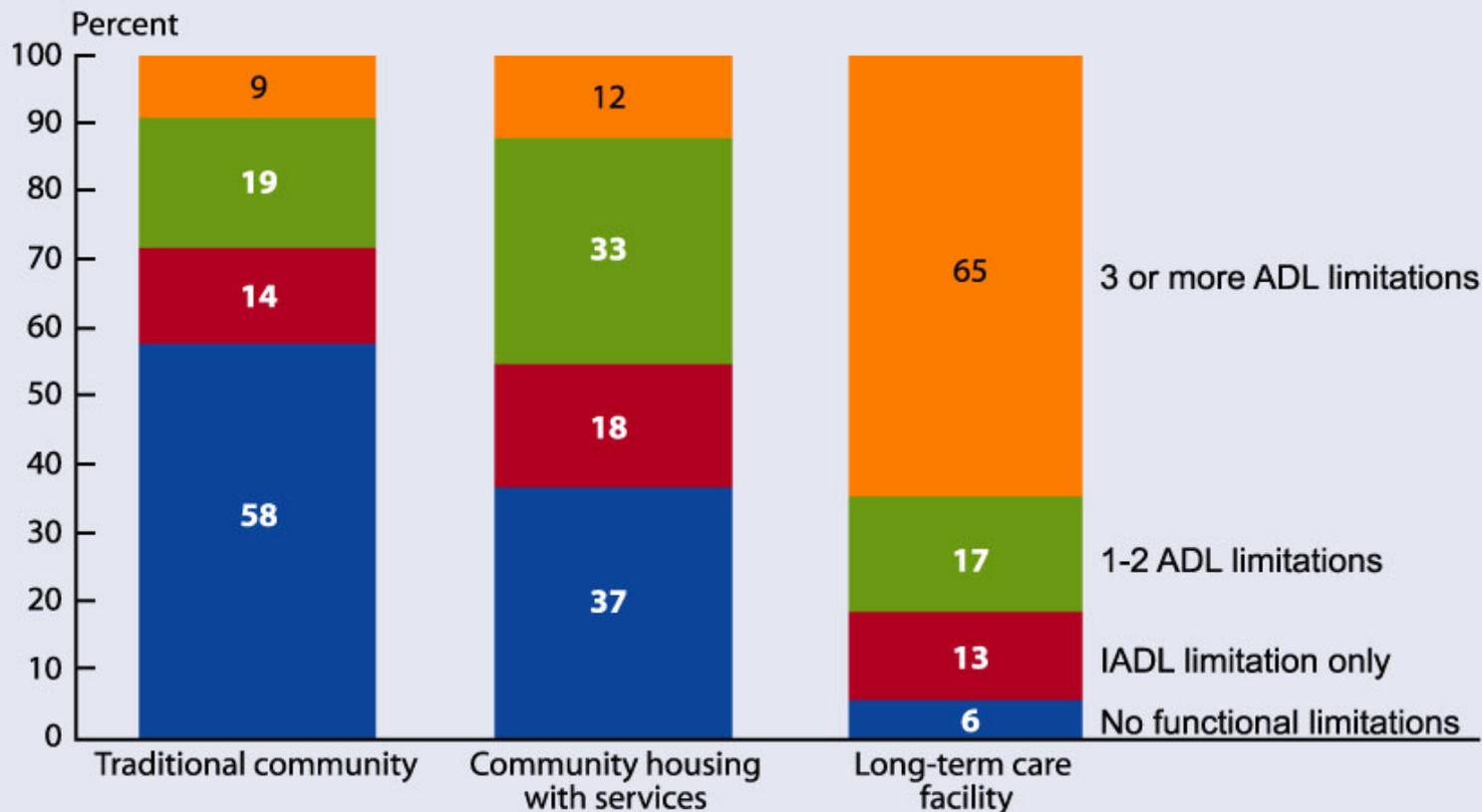
- Shopping
- Food preparation
- Finances
- Medications
- Housekeeping
- Arranging transportation
- Telephone
- Laundry

The Significance of Functional Disability

Fried, et al, *Archives Int Med*, 2001

- Predicts many outcomes
 - Total mortality
 - Recovery from intensive care and acute illnesses such as pneumonia
 - Nursing home placement
 - Use of home health services
 - Medicare expenditures in risk-adjusted models

Percentage of Medicare enrollees age 65 and over with functional limitations, by residential setting, 2002



Note: Community housing with services applies to respondents who reported they lived in retirement communities or apartments, senior citizen housing, continuing care retirement facilities, assisted living facilities, staged living communities, board and care facilities/homes, and other similar situations, AND who reported they had access to one or more of the following services through their place of residence: meal preparation, cleaning or housekeeping services, laundry services, help with medications. Respondents were asked about access to these services but not whether they actually used the services. A residence is considered a long-term care facility if it is certified by Medicare or Medicaid; or has 3 or more beds and is licensed as a nursing home or other long-term care facility and provides at least one personal care service; or provides 24-hour, 7-day-a-week supervision by a caregiver. IADL limitations refer to difficulty performing (or inability to perform, for a health reason) one or more of the following tasks: using the telephone, light housework, heavy housework, meal preparation, shopping, managing money. ADL limitations refer to difficulty performing (or inability to perform, for a health reason) the following tasks: bathing, dressing, eating, getting in/out of chairs, walking, using the toilet. Long-term care facility residents with no limitations may include individuals with limitations in certain IADLs: doing light or heavy housework or meal preparation. These questions were not asked of facility residents.

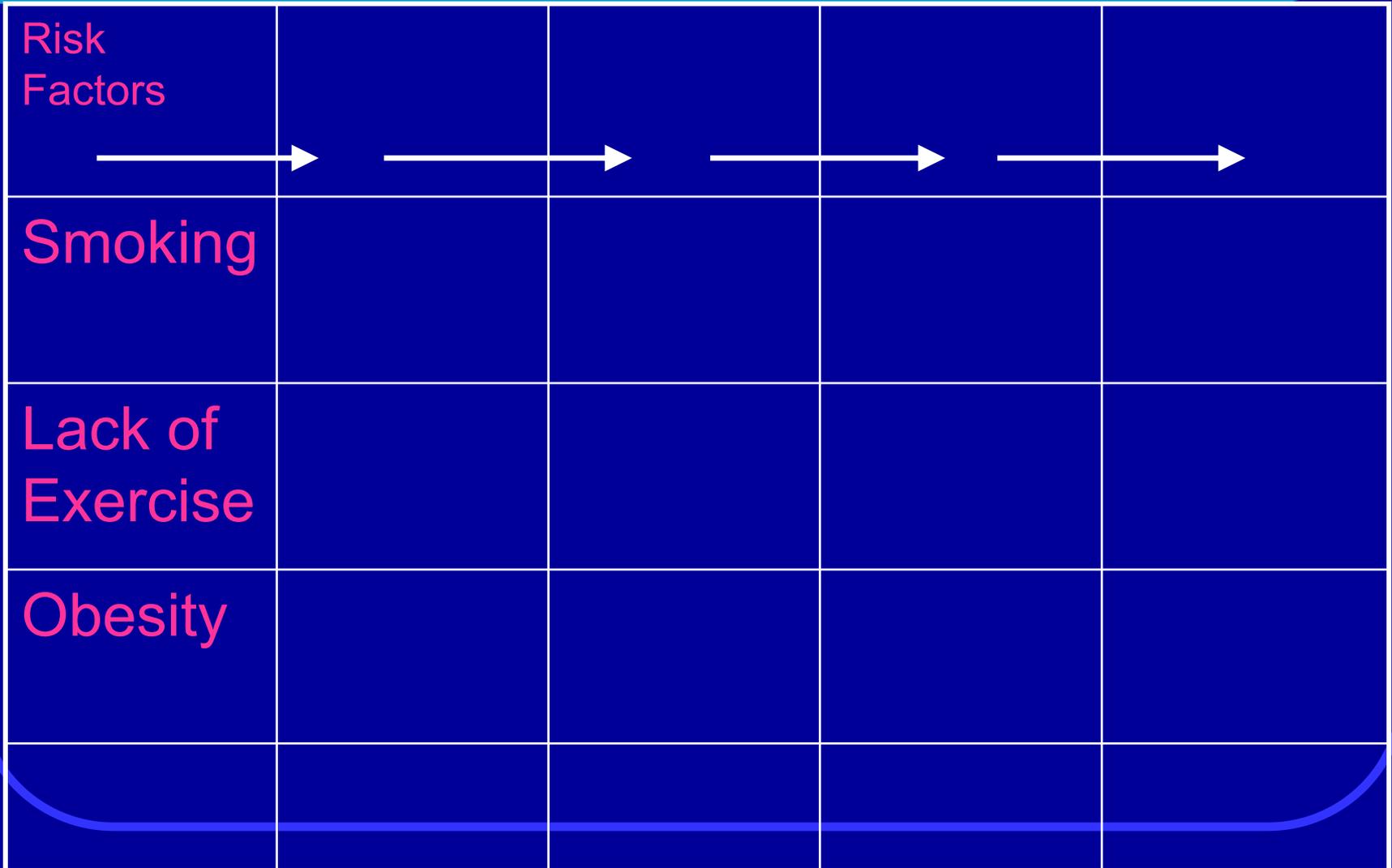
Reference population: These data refer to Medicare enrollees.

Source: Centers for Medicare and Medicaid Services, Medicare Current Beneficiary Survey.

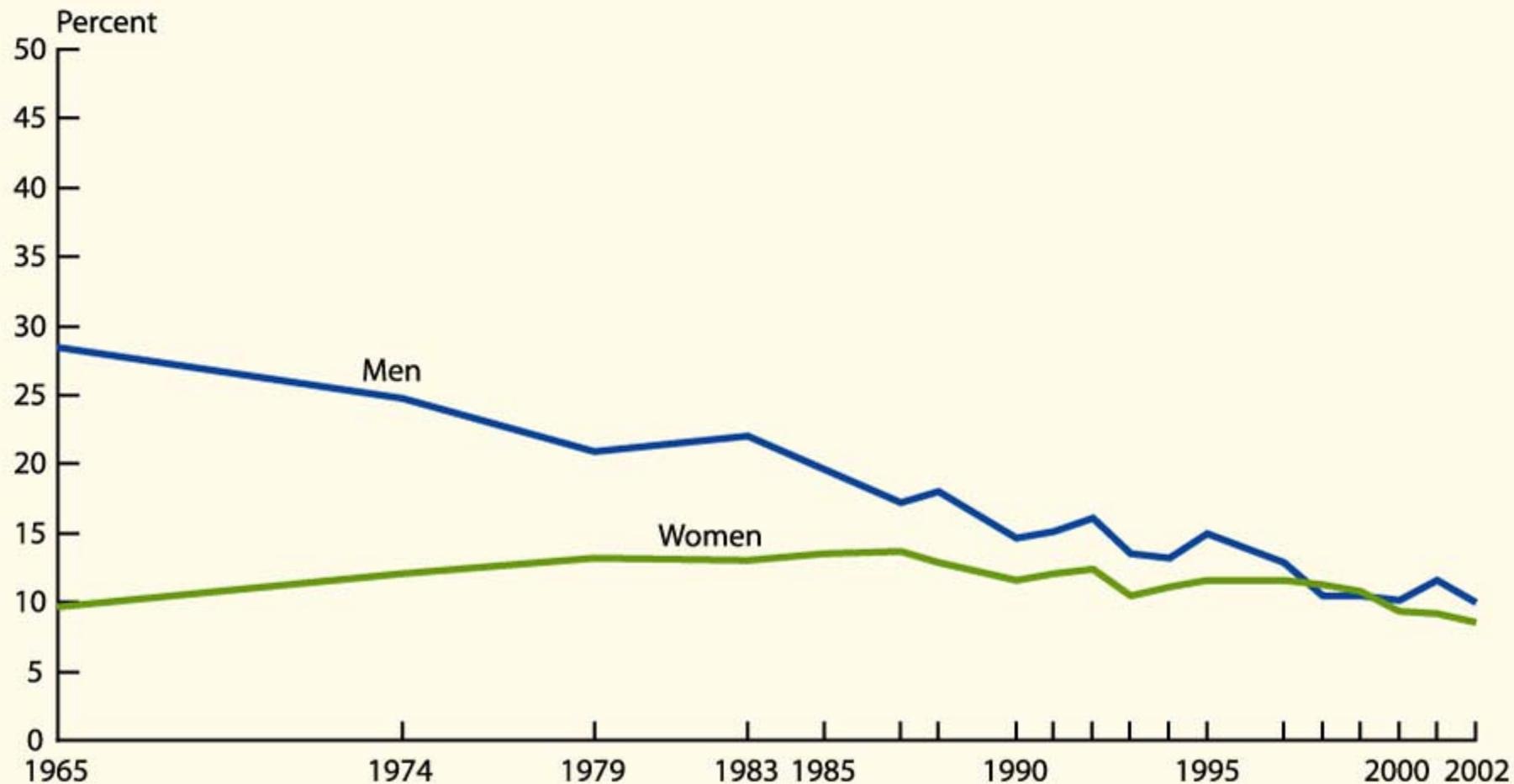
A Model of Disability (NAS, 1991)

Risk Factors	Pathology/ Disease	Impairment/ Injury	Functional Limitation	Disability
	→	→	→	→
	Interruption/ interference	Abnormal structure or function	Restricted action or activity	Limited social activity/role
<i>Levels of reference</i>	Cells and tissues	Organs and organ systems	Organism - performance or function	Society – tasks and performance
<i>Examples</i>	Arthritis	Joint pain, stiffness	Limited joint motion	Inability to clean house
	Diabetes	Retinal damage	Impaired vision	Inability to shop for food

A Model of Disability (NAS, 1991)



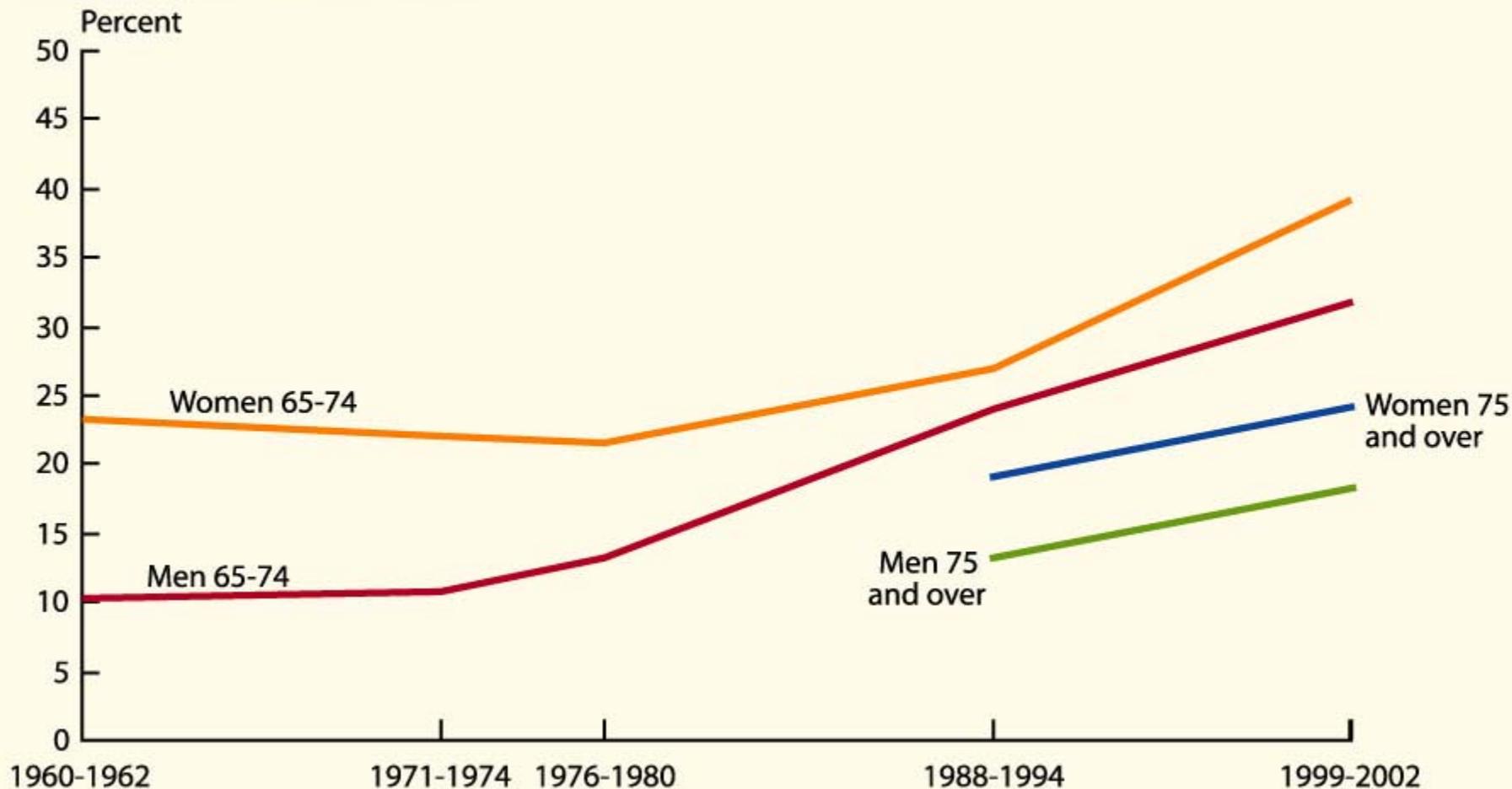
Percentage of people age 65 and over who are current cigarette smokers, by sex, selected years 1965-2002



Reference population: These data refer to the civilian noninstitutionalized population.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey.

Percentage of people age 65 and over who are obese, by sex and age group, selected years 1960-2002

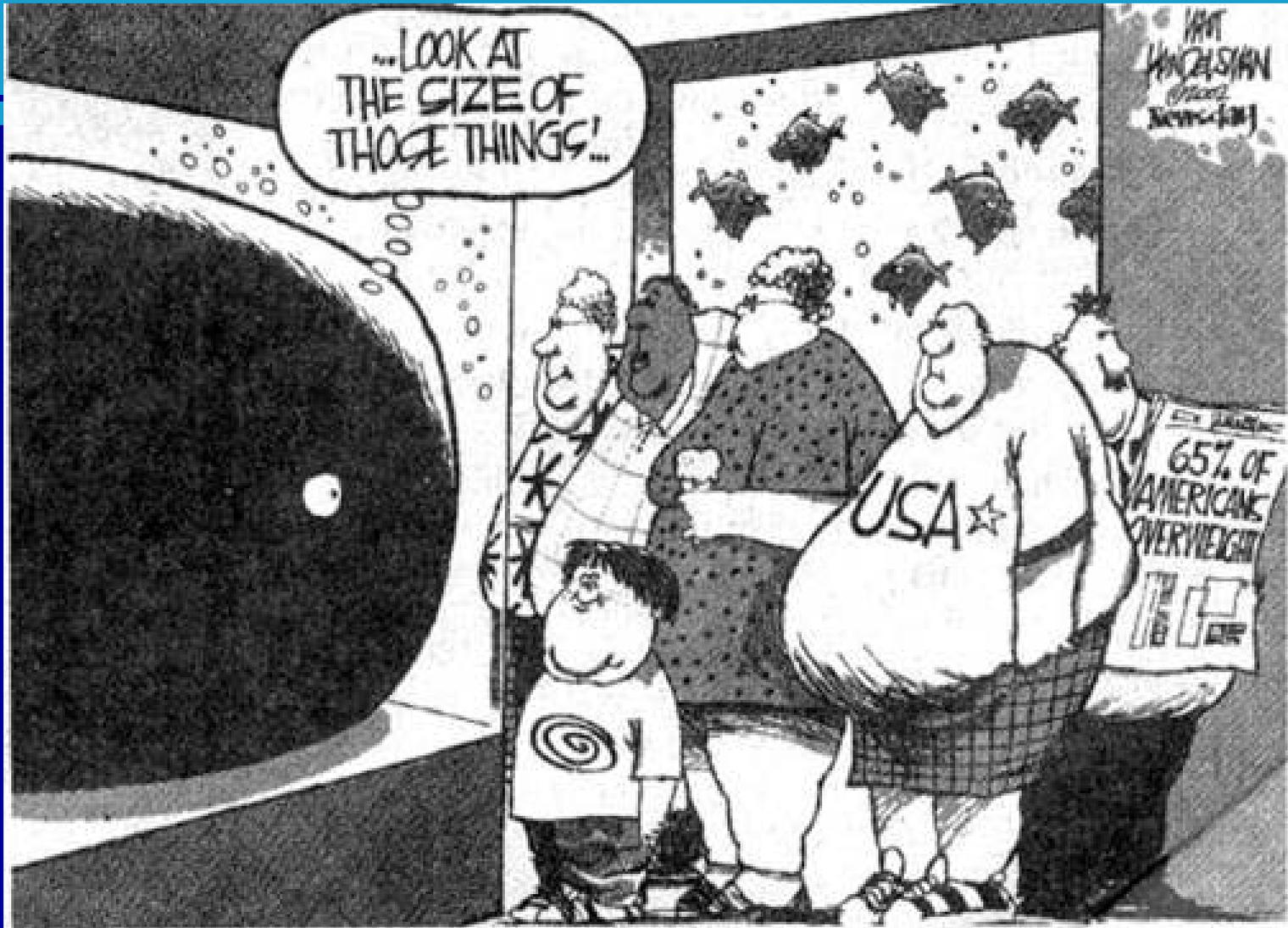


Reference population: These data refer to the civilian noninstitutionalized population.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey.

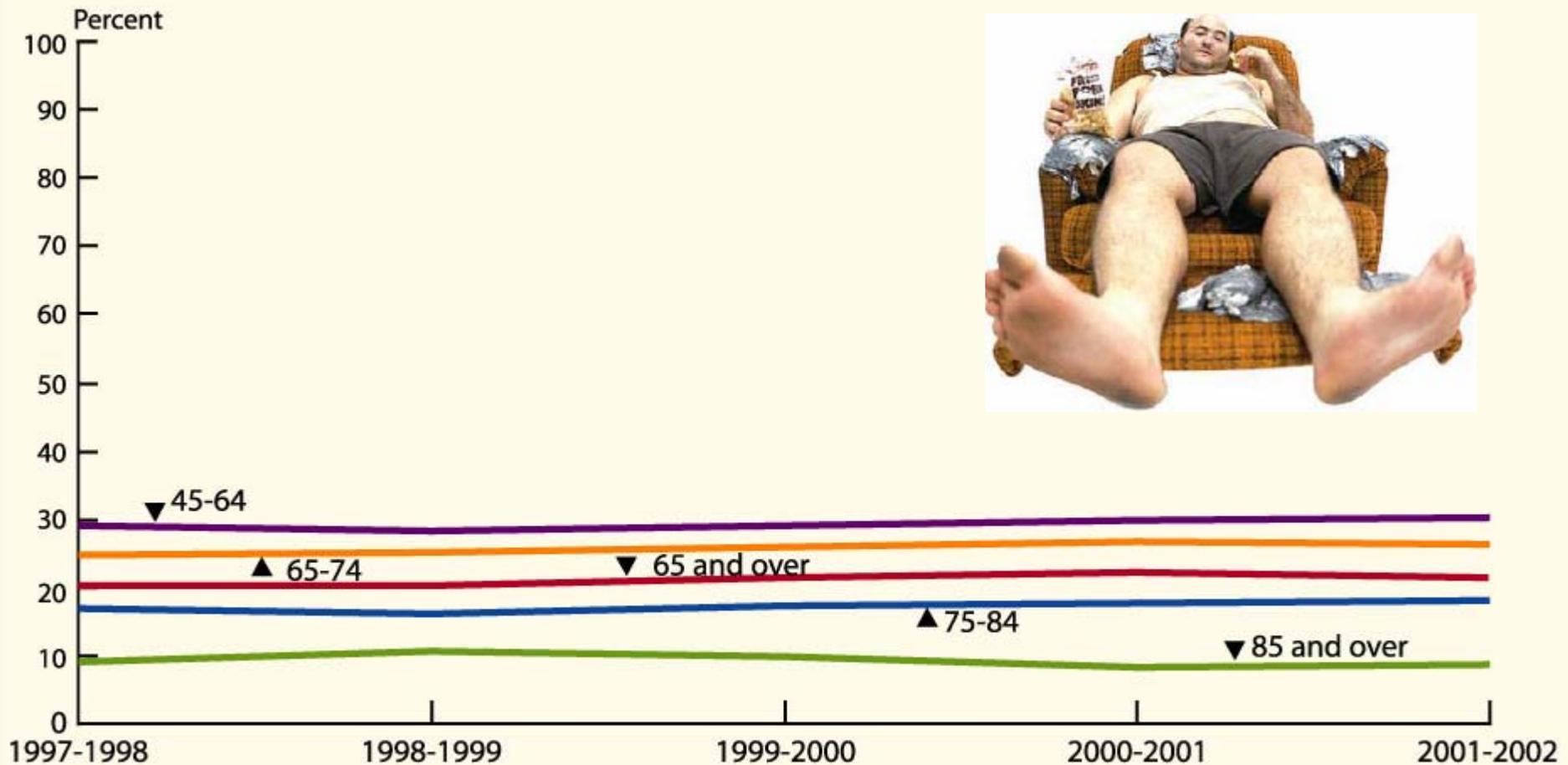
Obesity = BMI >30

Overweight = BMI 25-29.9



Estimated combined prevalence of overweight and obesity in US adults is 64%. Flegal, *JAMA* 2002.

Percentage of people age 45 and over who reported engaging in regular leisure time physical activity, by age group, 1997-2002



Note: Data are based on 2-year averages. "Regular leisure time physical activity" is defined as "engaging in light-moderate leisure time physical activity for greater than or equal to 30 minutes at a frequency greater than or equal to 5 times per week, or engaging in vigorous leisure time physical activity for greater than or equal to 20 minutes at a frequency greater than or equal to 3 times per week."

Reference population: These data refer to the civilian noninstitutionalized population.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey.

State of Aging & Health in America

MIAH and CDC, 2004



Spotlight: Physical Activity and Older Americans

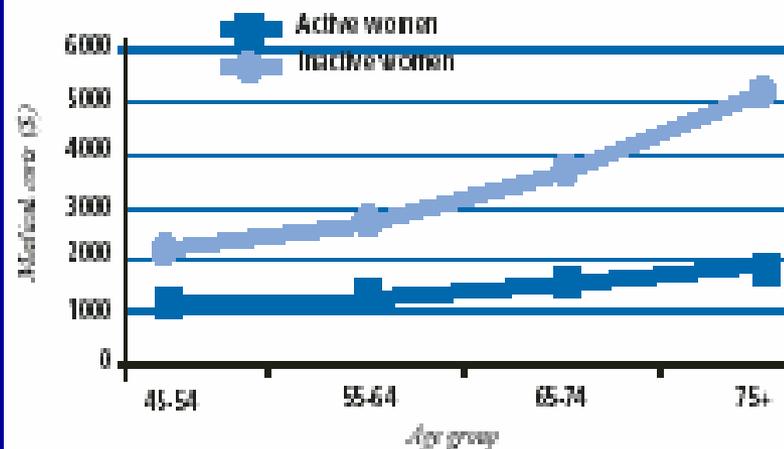
Regular physical activity can have substantial physical and mental health benefits for people of all ages. However, our knowledge of the benefits of physical activity for older adults has not yet been fully translated into action.¹

Exercise and Gender

(State of Aging & Health, 2004)

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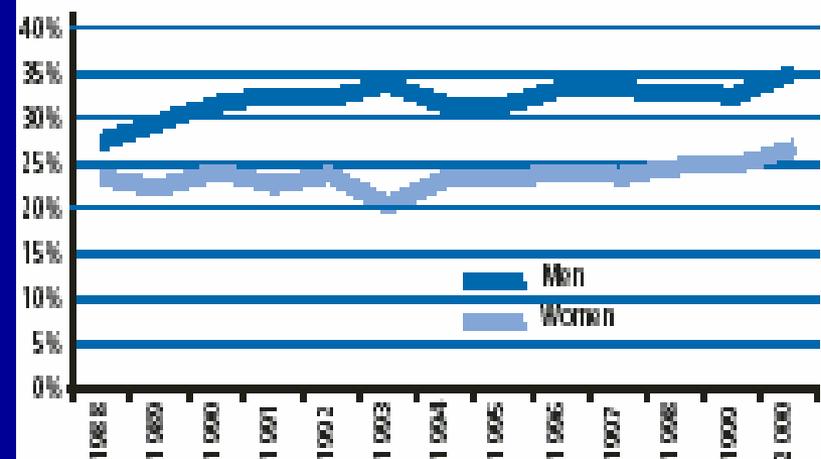
IN 1987, MEDICAL COSTS ROSE WITH INCREASING AGE, ESPECIALLY FOR INACTIVE WOMEN



Source: Pratt M, Morone CA, Wang G. Higher Direct Medical Costs Associated with Physical Inactivity. *The Physician and Sportsmedicine* 28, No. 10, 2000; 63-70.

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MORE MEN THAN WOMEN AGE 65 AND OVER ARE ENGAGING IN RECOMMENDED* LEVELS OF PHYSICAL ACTIVITY DURING THEIR LEISURE TIME



* Moderate intensity physical activity for >=5 days per week for >= 30 minutes each time.

Source: CDC, Behavioral Risk Factor Surveillance System, 1988-2000.

State of Aging & Health in America

MIAH and CDC, 2004

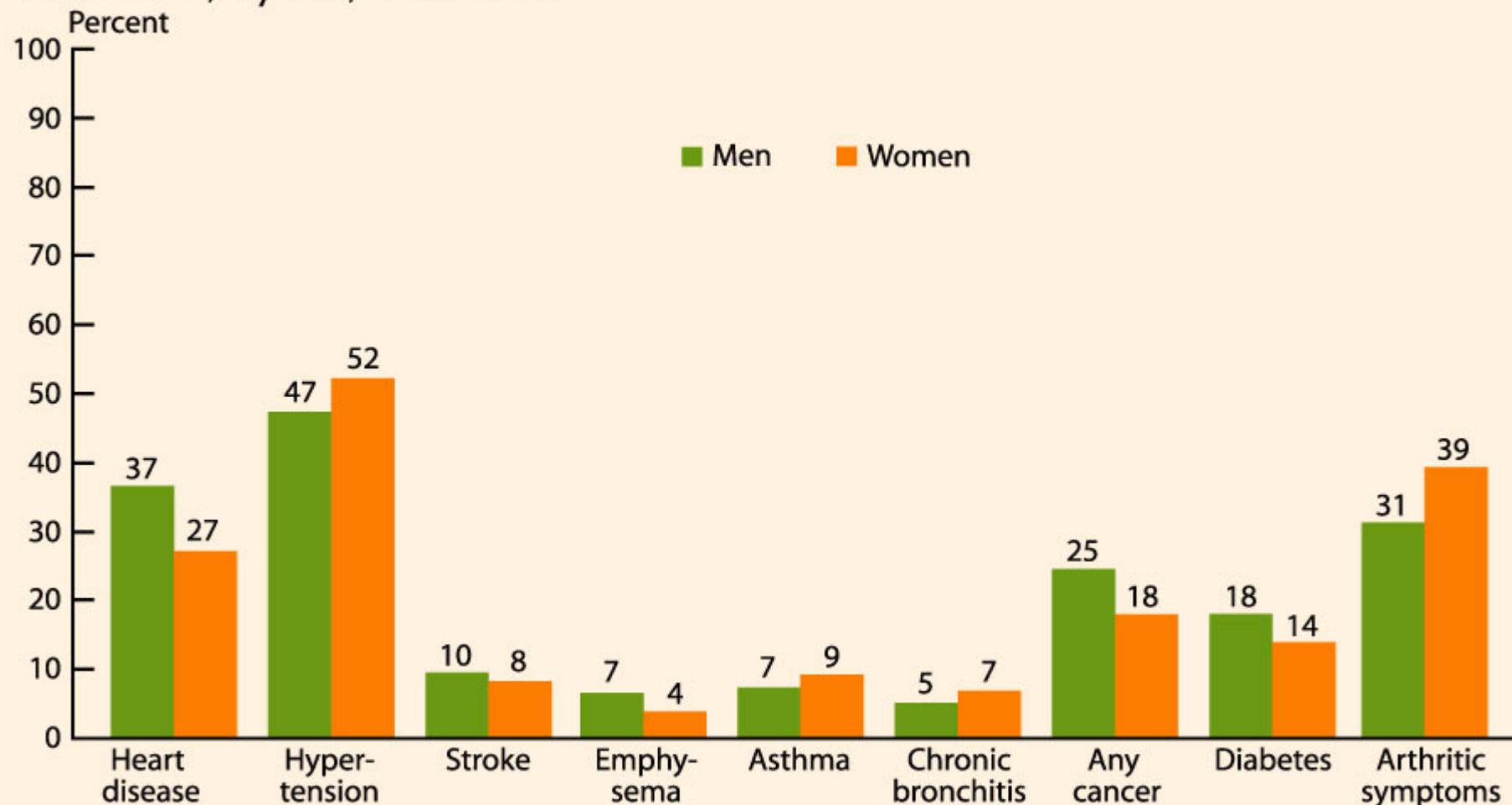
Spotlight: Physical Activity and Older Americans

Regular physical activity is a critical element of an overall healthy lifestyle, which can extend years of independent living, reduce disability and improve the quality of life of older people. However, our knowledge of the benefits of physical activity for older adults has not yet been fully turned into action. The challenge, and the opportunity, is to make physical activity more accessible to older adults of all ages, abilities and interests.

A Model of Disability (NAS, 1991)

Risk Factors	Pathology/ Disease			
	Interruption/ interference			
<i>Levels of reference</i>	Cells and tissues			
<i>Examples</i>	Arthritis			
	Diabetes			

Percentage of people age 65 and over who reported having selected chronic conditions, by sex, 2001-2002

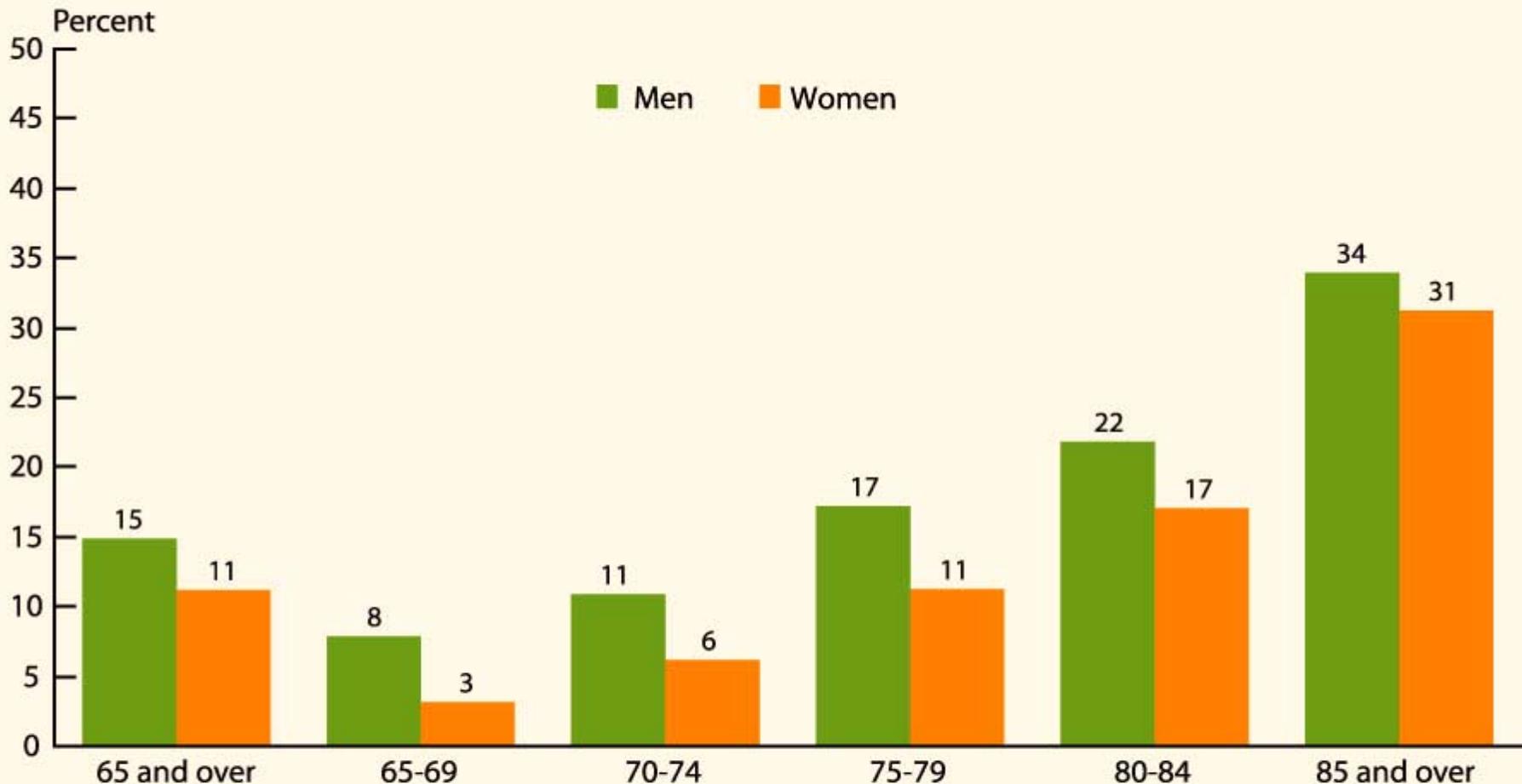


Note: Data are based on a 2-year average from 2001-2002. Data for arthritic symptoms are from 2000-2001.

Reference population: These data refer to the civilian noninstitutionalized population.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey.

Percentage of people age 65 and over with moderate or severe memory impairment, by age group and sex, 2002

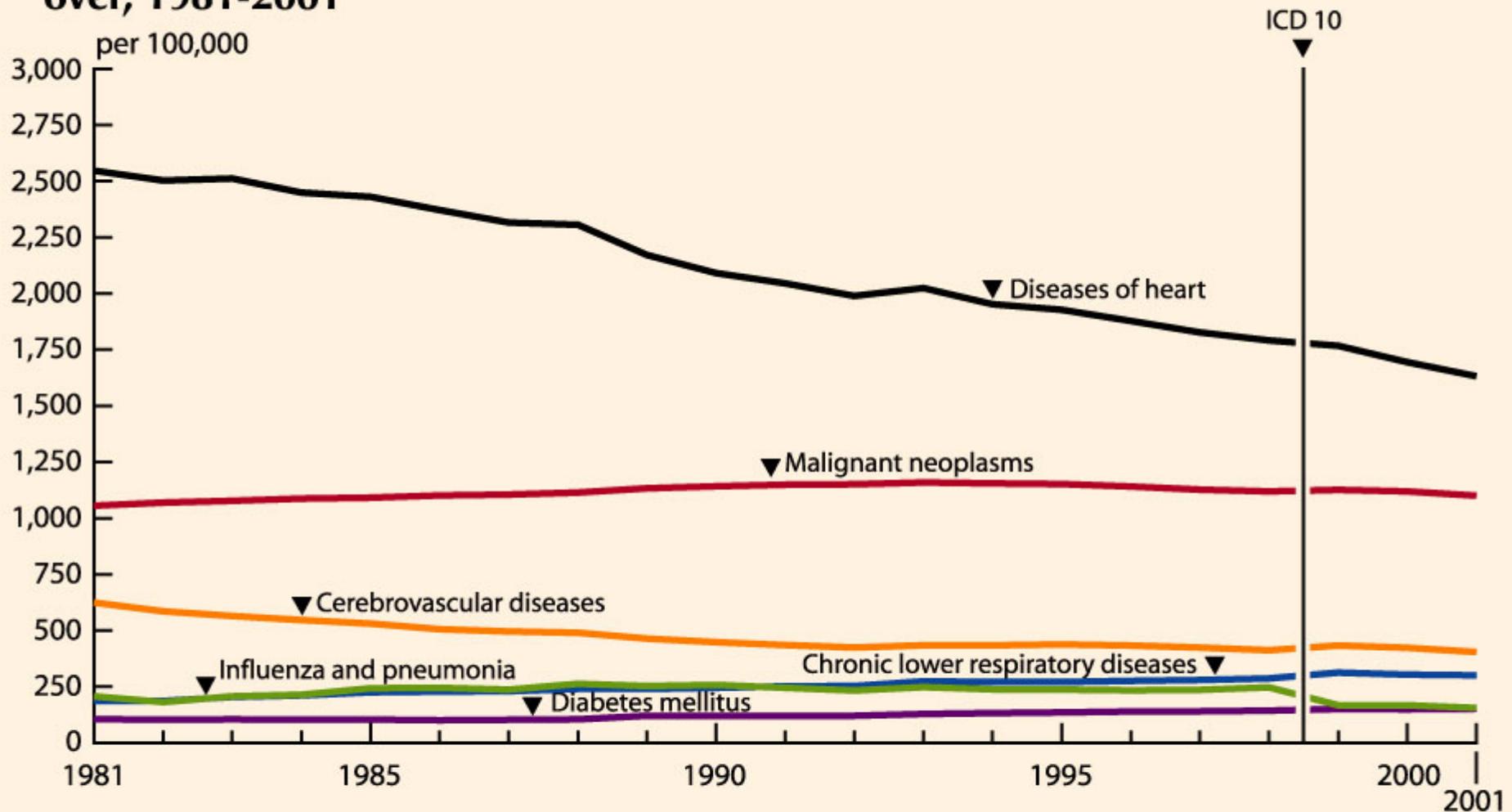


Note: The definition of "moderate or severe memory impairment" is four or fewer words recalled (out of 20) on combined immediate and delayed recall tests among self-respondents. Self-respondents who refused either the immediate or delayed word recall test were excluded from the analysis. Proxy respondents with an overall memory rating of "poor" were included as having moderate or severe memory impairment. Because of some changes in methods from the 2000 edition of *Older Americans*, no inference should be made about longitudinal trends.

Reference population: These data refer to the civilian noninstitutionalized population.

Source: Health and Retirement Study.

Death rates for selected leading causes of death among people age 65 and over, 1981-2001



Note: Death rates for 1981-1998 are based on the 9th revision of the *International Classification of Disease* (ICD-9). Starting in 1999, death rates are based on ICD-10, and trends in death rates for some causes may be affected by this change.²⁰ For the period 1981-1998, causes were coded using ICD-9 codes that are most nearly comparable with the 113 cause list for ICD-10 and may differ from previously published estimates. Rates are age-adjusted using the 2000 standard population.

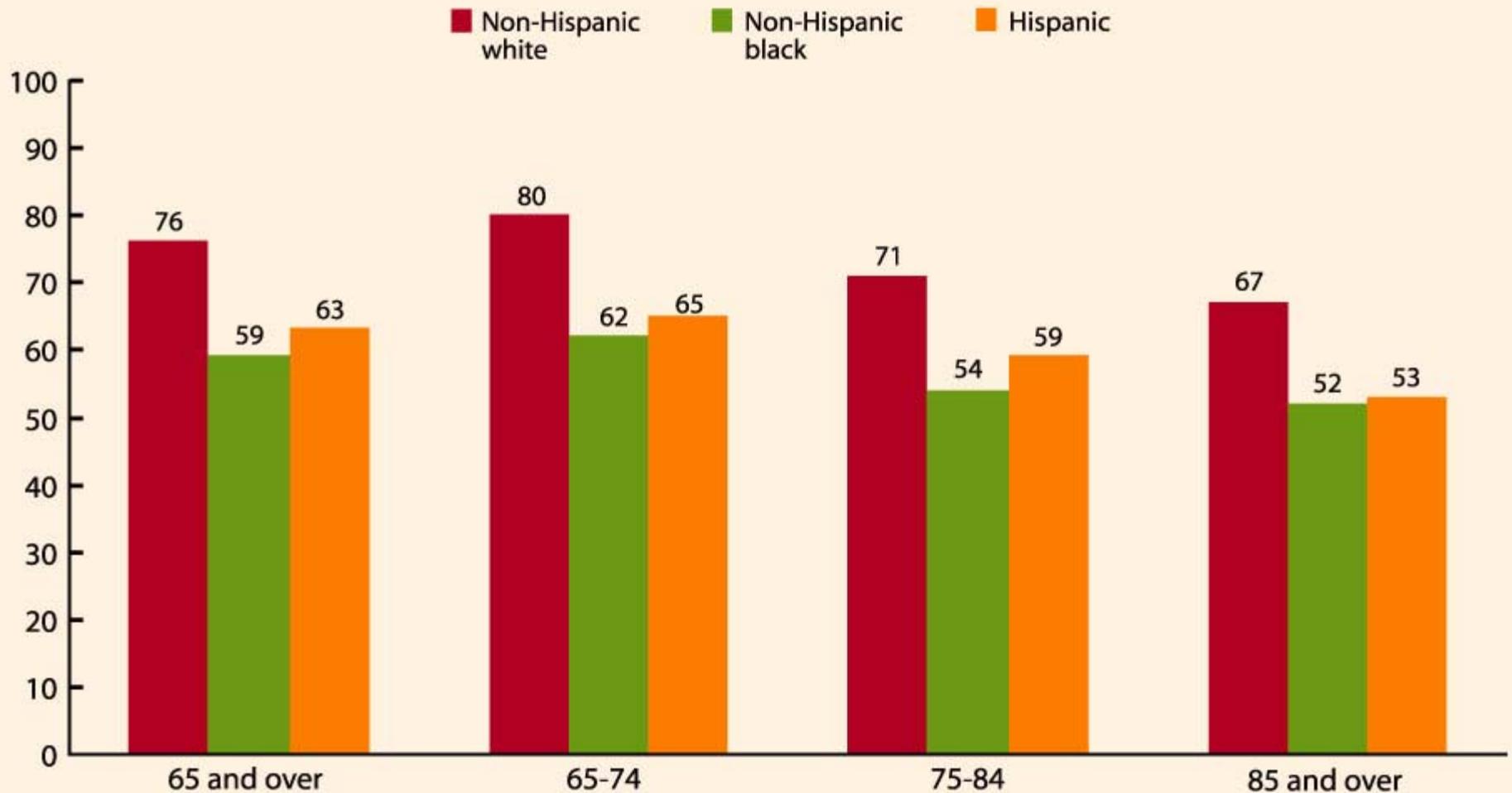
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Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

A Model of Disability (NAS, 1991)

Risk Factors	Pathology/ Disease	Impairment/ Injury	Functional Limitation	Disability
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	Interruption/ interference	Abnormal structure or function	Restricted action or activity	Limited social activity/role
<i>Levels of reference</i>	Cells and tissues	Organs and organ systems	Organism - performance or function	Society – tasks and performance
<i>Examples</i>	Arthritis	Joint pain, stiffness	Limited joint motion	Inability to clean house
	Diabetes	Retinal damage	Impaired vision	Inability to shop for food

Percentage of people age 65 and over who reported having good to excellent health, by age group and race and Hispanic origin, 2000-2002

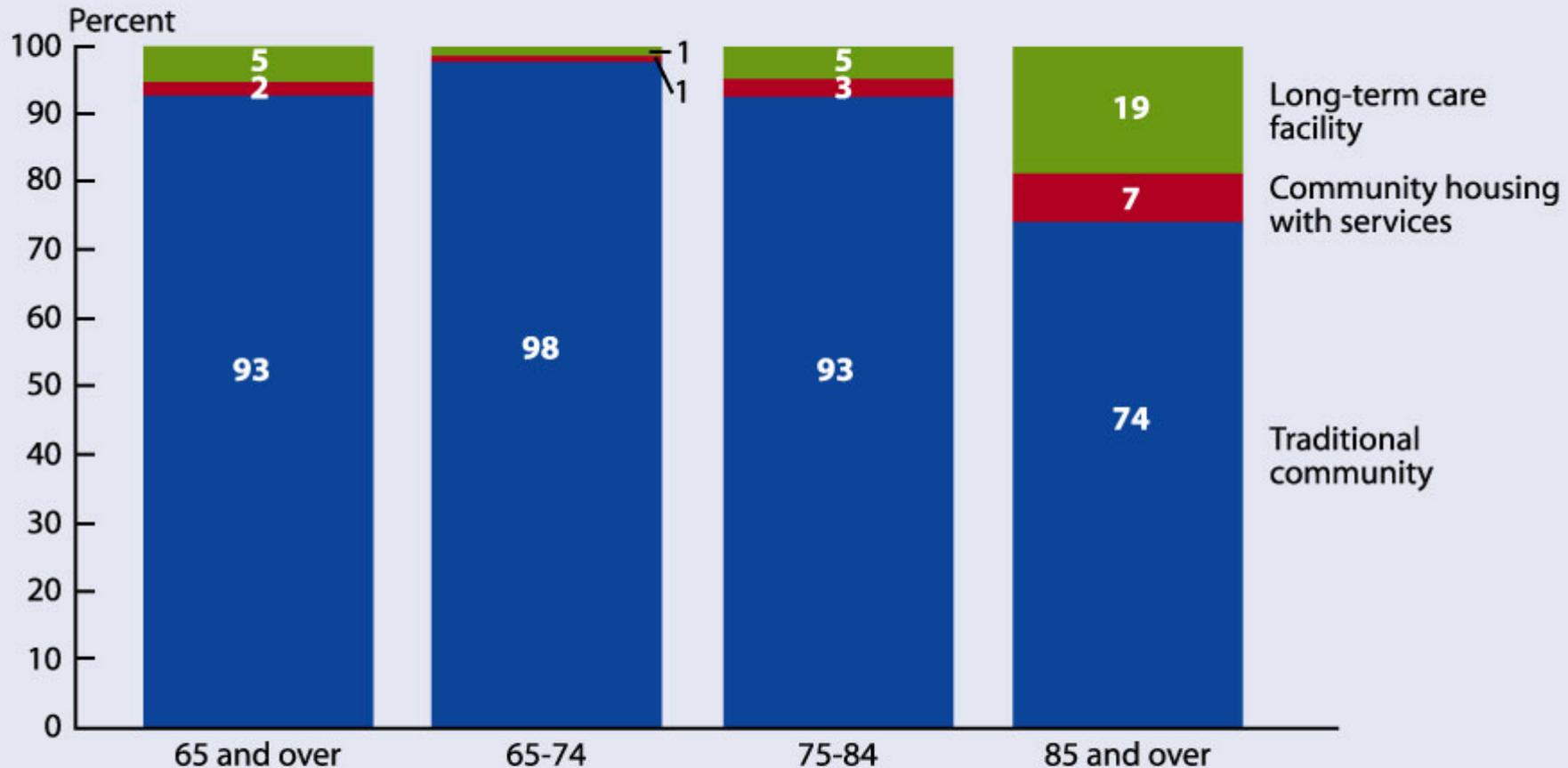


Note: Data are based on a 3-year average from 2000-2002. People of Hispanic origin may be of any race.

Reference population: These data refer to the civilian noninstitutionalized population.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey.

Percentage of Medicare enrollees age 65 and over residing in selected residential settings, by age group, 2002

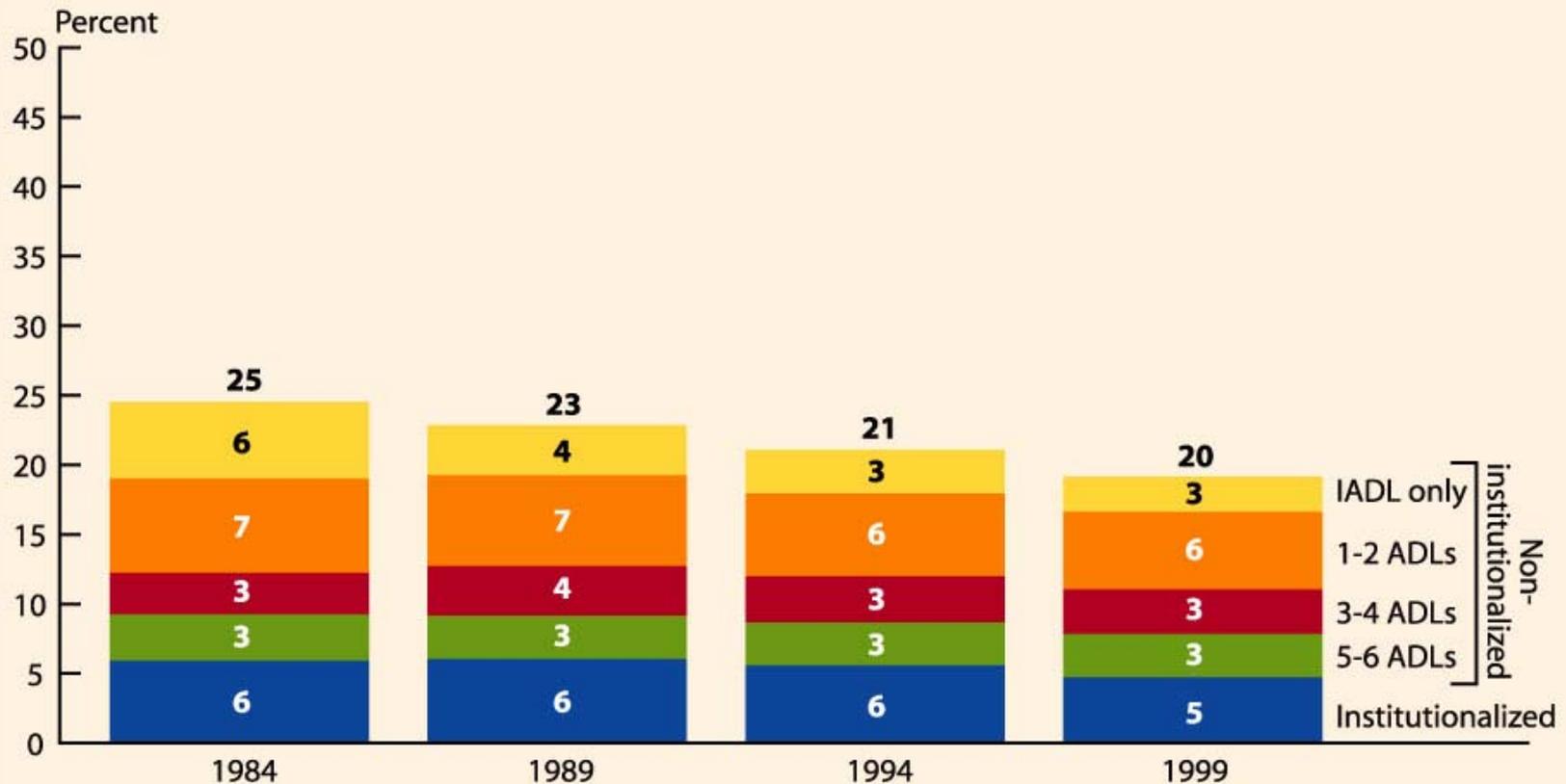


Note: Community housing with services applies to respondents who reported they lived in retirement communities or apartments, senior citizen housing, continuing care retirement facilities, assisted living facilities, staged living communities, board and care facilities/homes, and other similar situations, AND who reported they had access to one or more of the following services through their place of residence: meal preparation, cleaning or housekeeping services, laundry services, help with medications. Respondents were asked about access to these services but not whether they actually used the services. A residence is considered a long-term care facility if it is certified by Medicare or Medicaid; or has 3 or more beds and is licensed as a nursing home or other long-term care facility and provides at least one personal care service; or provides 24-hour, 7-day-a-week supervision by a caregiver.

Reference population: These data refer to Medicare enrollees.

Source: Centers for Medicare & Medicaid Services, Medicare Current Beneficiary Survey.

Age-adjusted percentage of Medicare enrollees age 65 and over who are chronically disabled, by level and category of disability, 1984, 1989, 1994, and 1999

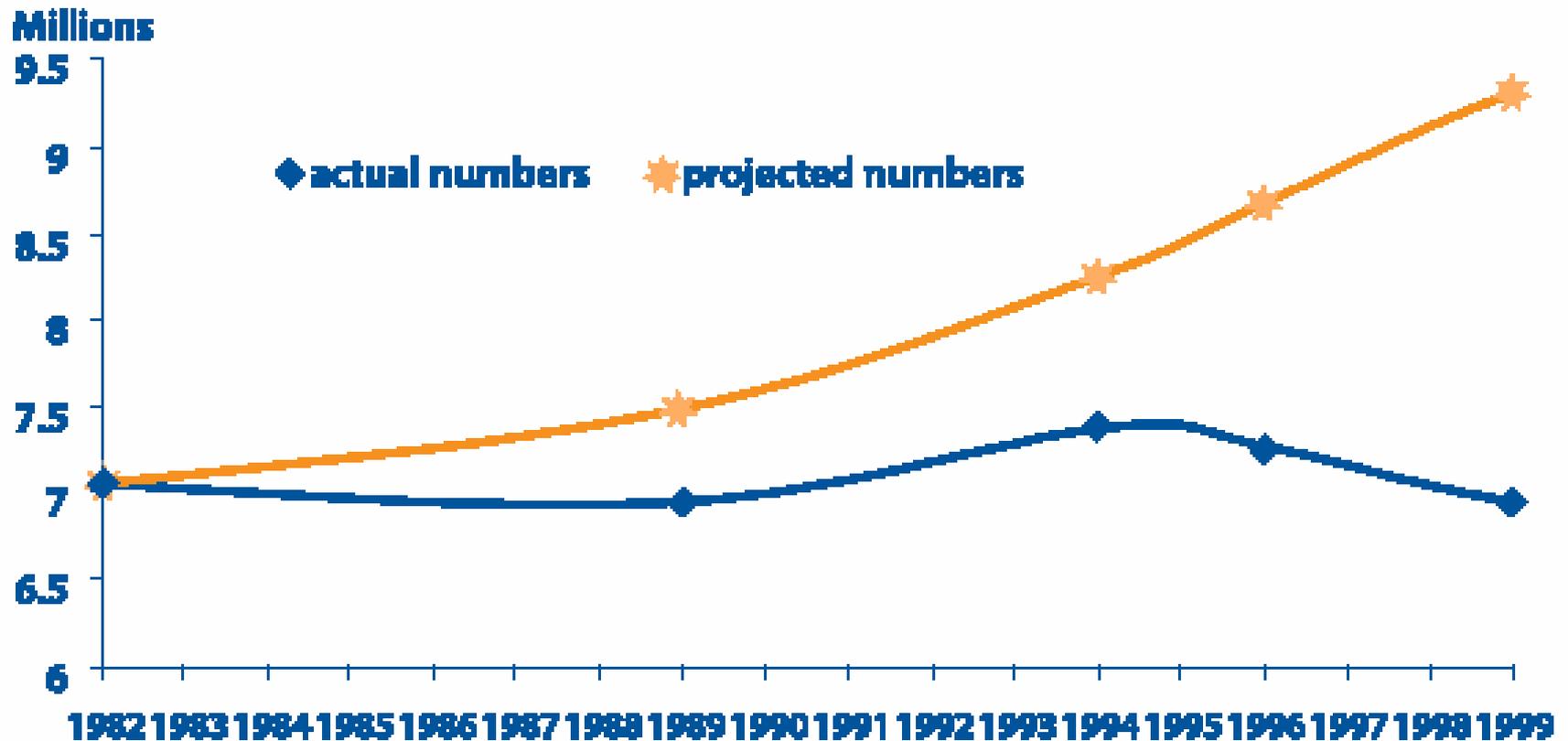


Note: Disabilities are grouped into two categories: limitations in activities of daily living (ADLs) and limitations in instrumental activities of daily living (IADLs). The six ADLs included are bathing, dressing, getting in or out of bed, getting around inside, toileting, and eating. The eight IADLs included are light housework, laundry, meal preparation, grocery shopping, getting around outside, managing money, taking medications, and telephoning. Individuals are considered to have an ADL disability if they report receiving help or supervision, or using equipment, to perform the activity, or not performing the activity at all. Individuals are considered to have an IADL disability if they report using equipment to perform the activity or not performing the activity at all because of their health or a disability. Individuals are considered to be chronically disabled if they have at least one ADL or one IADL limitation that is expected to last 90 days or longer, or they are institutionalized. Data for 1989 do not sum to the total because of rounding.

Reference population: These data refer to Medicare enrollees.

Source: National Long Term Care Survey.

Declining Disability in US



Total number of older people in the USA
1982: 26.9; 1994: 33.1; 1999: 35.3 (millions)

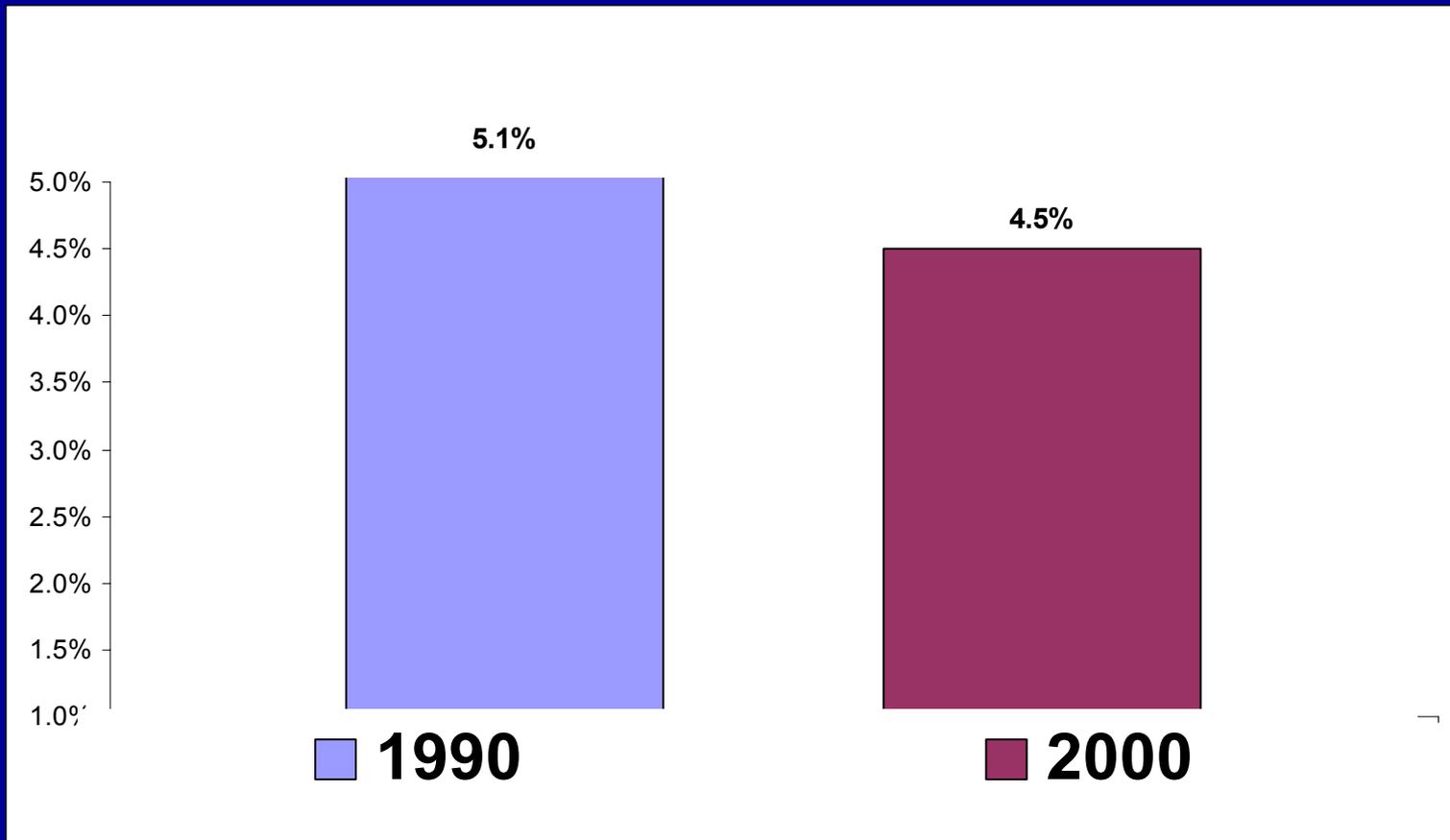
Source: Manton and Gu, 2001

Declining US Disability Ages 65+

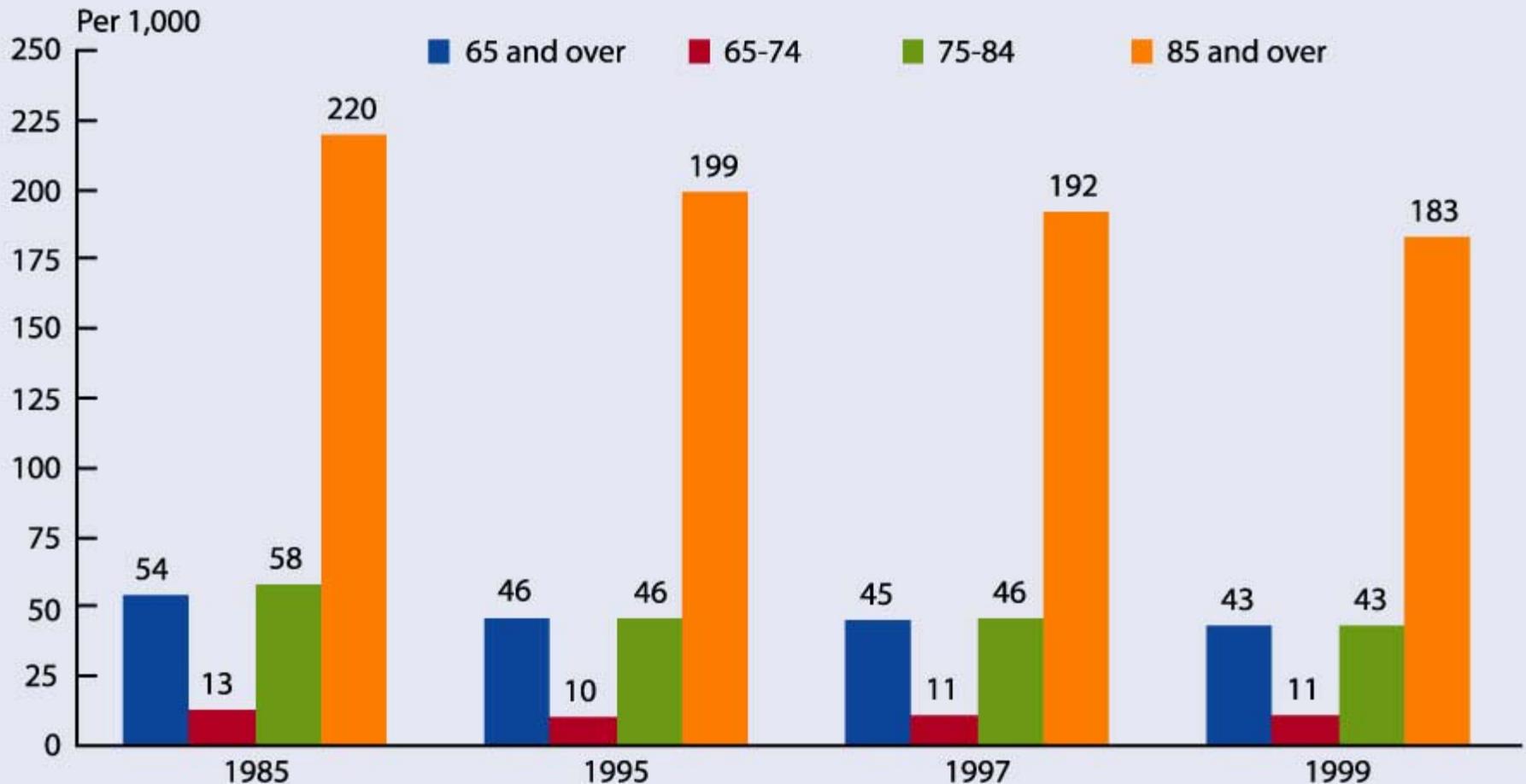
Manton, Gu, *PNAS*, 2001

- Disability declined from 1994-99
- Decline greater in 1990s than 1980s
 - 1982-89 0.26% per year
 - 1989-94 0.38% per year
 - 1994-99 0.56% per year
- Absolute decline of 415,000 persons (22%) in institutional population
- Savings of \$18.9 billion

Proportion of Older Population Living in Nursing Homes: 1990 and 2000



Rate of nursing home residence among people age 65 and over, by age group, 1985, 1995, 1997, and 1999



Note: Beginning in 1997, population figures are adjusted for net underenumeration using the 1990 National Population Adjustment Matrix from the U.S. Census Bureau. People residing in personal care or domiciliary care homes are excluded from the numerator.

Reference population: These data refer to the resident population.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Nursing Home Survey.

Conclusions

- Functional capacity is better than disease diagnosis as a determinant of health and use of health services.
- Functional capacity is improving and disability is decreasing among older adults in the US, but....
- Overweight and obesity are significant threats.
- Proper diet and exercise are (still) the best way to maintain or improve function and health – they're not “rocket science,” but they work!