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Disability in Ohio: Current and Future Demand for Services

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Dr. Shahla Mehdizadeh is a Senior Research Scholar at Scripps Gerontology Center and Adjunct Associate Professor in the Department of Sociology and Gerontology, both at Miami University. Her research expertise is in estimating prevalence of disability and examining health and long-term care utilization patterns of older disabled people. Her work at Scripps Gerontology Center includes a series of reports projecting the size of the Ohio's older population with disability and their care needs. She has been the co-principal investigator of an ongoing (fourteen-year) longitudinal study that tracks PASSPORT (Ohio's Medicaid Home and Community-Based care services waiver program) and nursing home care use patterns for the Ohio Department of Aging. She has recently completed two projects evaluating both consumer eligibility and cost neutrality aspects of the PASSPORT program. With a background in economics and a keen interest in the aging population, most of Dr. Mehdizadeh's work and interests are in financing long-term care services, from the perspectives of a consumer, a provider, and a state.

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DISABILITY IN OHIO: CURRENT AND FUTURE DEMAND FOR SERVICES

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EXECUTIVE SUMMARY

This report is the first in a set of three, in which we explore the size of Ohio's current and future populations with disability, the long-term care service needs of these populations, the current capacity of the state to meet these needs, and how medical, social, and environmental advances might affect the size of the population with long-term care needs.

In this initial report, we estimate the number of people who had a disability in 2007, by age and type, and project the size of the population with disability through 2020. In addition to examining prevalence rates, we also examine the types of assistance that individuals who experience chronic disability receive. This report explores the public and private (out of pocket) costs of providing long-term care and support today and in the future. ***Estimates of future long-term care use are based on the assumption that current utilization patterns will continue in the future, even though there are already efforts by the state to alter some of these trends.***

Key findings are:

- Of the more than 308,570 estimated persons with severe disability in Ohio, in 2007 a little over 181,670 (58.9%) received formal care, the other 126,900 (41.1%) either received all of their care from family and friends (*informal care*) or purchased home care services exclusively out-of-pocket.

- Almost 79% of those who obtained formal care (or 46% of the individuals with severe disability) received that care through publicly funded programs.

- On average, between 2000 and 2006, long-term care expenditures in Ohio accounted for 42% of the total Medicaid budget from federal, state, and local sources.

- Between 2000 and 2006, the long-term care portion of the Medicaid budget grew at an average annual rate of 7.5%. If Medicaid long-term care expenditures continue to grow at this rate, by the year 2020, the total long-term care portion of Medicaid allocations (from all sources) will grow to over $13.2 billion (up from $4.8 billion in 2006).

- If the cost of health care expenditures grows at only 3% annually between 2007 and 2020, then the total public cost of long-term care services for Ohio's severely

disabled population will increase from $4.9 billion in 2007 to almost $8 billion in 2020, an increase of 64%; 52.4% of this increase is due to inflation and 11.6% is due to the increased number of individuals who will need care.

- Inflation in the cost of long-term care services will play a major role in increasing state expenditures. Over the next 13 years, if inflation in health and long-term care services was held to 3%, Medicaid long-term care expenditures would be more than $7 billion in 2020, but if the annual inflation rate rises to 8%, then that number is estimated to be over $14 billion.

- The only long-term care providers in Ohio that could meet future demands without any expansion in infrastructure are those nursing homes and residential care facilities that currently operate at less than full capacity. On average, in 2005, Ohio's nursing homes and residential care facilities had occupancy rates of 86.4% and 76.9% respectively.

- Even though nursing homes and residential care facilities, the two major long-term care institutional settings, will have the physical space to accommodate the future demand, they, along with other care enterprises, will need additional health care workers to provide the care.

ACKNOWLEDGMENTS

I could not have accomplished a study of this magnitude alone. I received assistance in many ways. Since this was my first attempt to examine the size and the potential growth of the population with disability irrespective of age, I needed much assistance and education about the other "side of the coin", that is, the population aside from that which is older and disabled. My colleague, Kathy McGrew, was essential in helping me to understand definitions of disability among these other populations, and the ways in which they are measured in each context (for people with intellectual and developmental disabilities and for those with mental illness). David Zwyer, Director of the Ohio Developmental Disabilities Council, provided me with considerable guidance and put me in touch with many people at the Ohio Department of Mental Retardation and Developmental Disabilities (MR/DD) who were grappling with similar issues. I am grateful that they each took the time to explain to me and guide me as I attempted to learn and define disability in a comprehensive and all-inclusive way. Mr. Zwyer also took the time to review an earlier version of this report and provided constructive comments.

I was equally determined to learn about all the programs in Ohio and the places where people with disability receive their care. Although I had information on capacity, utilization, cost, and consumer characteristics for some long-term care facilities, (e.g. nursing homes and residential care facilities) from other studies that we at the Scripps Gerontology Center have done, I needed similar information for adult care homes, adult foster homes, and adult day service centers. Both the operators in such facilities and the Area Agencies on Aging were instrumental in providing this information. My colleague, Denise Brothers-McPhail, was responsible for collecting the information. I am grateful that they took time out of their busy

schedules to assist me with data collection, and to Ms. Brothers-McPhail for compiling and summarizing the data for the second report of this series.

At Miami University, my appreciation goes to Drs. Robert Applebaum, Kathy McGrew, and Suzanne Kunkel, who acted as an advisory board for this project. They provided guidance and direction and acted as a sounding board when I needed advice from someone more informed on a specific policy or population. Special appreciation goes to Dr. Applebaum for his comments on earlier versions of this report.

Many agencies provided input regarding the populations that they served. That information was used to assess the aptness of our estimates/projections of each subpopulation with disability. As the state population ages, so does the prison population. Some of the older inmates, in addition to needing treatment for mental illness and drug and alcohol addiction, require special care because of physical limitations. We received considerable assistance from Mike Bellas, a researcher at the Ohio Department of Rehabilitation and Correction, who calculated the number of inmates with physical disability by sex and by age group specifically for this project. His efforts are gratefully appreciated.

Christi Pepe at the Ohio Department of Job and Family Services described the role of each state and local agency in assessing and planning for the care of individuals with MR/DD. Jana Patchen from the Ohio Department of Mental Retardation and Developmental Disabilities provided us with data from the Individual Information Form (IIF) database, which was helpful in assessing the correctness of our estimates of this particular population. Since IIF does not include all school age children with MR/DD, we received help from Tom Lather, from the Ohio Department of Education, who shared a copy of the *State Child Count Data for December 2005*, which the Office of Exceptional Children files with the U.S. Department of Education. They

helped us to understand how younger people with MR/DD are supported and provided with services and to identify which entities pay for that assistance.

Susan Ackerman and David Lipthratt of the Ohio Office of Budget and Management spent a considerable amount of time deconstructing Ohio's budget figures and Medicaid allocations for the last six years by expenditure source and type. They also took the time to explain and clarify state and local contributions toward total Medicaid allocations.

Hallie Baker and Erin Coppinger-Fogus, two graduate students in the Department of Sociology and Gerontology at Miami University, researched how and when a person is diagnosed with intellectual and/or developmental disability or chronic mental illness and how Medicaid eligibility is determined for these two populations. Their assistance in the early stages of this project was invaluable. Lauren Thieman was my graduate assistant for almost two years and she contributed in a variety of ways including data entry and the literature search.

Neal Ritchey, a faculty member in the Department of Sociology at the University of Cincinnati, helped to project the older population of Ohio for an earlier project. For this project, he evaluated our population projection methodology and produced the population pyramids. We are grateful for his valuable contributions to this project.

As always, thanks to Lisa Grant, at the Scripps Gerontology Center for her help with the report preparation and to Valerie Wellin who created all the charts and provided expert editorial assistance. I am thankful for their careful attention to details.

Finally, the insightful comments of Roland Hornbostel, Ohio Department of Aging, led me to revise the analysis to use 2007 as the base year and to take into account the expansions in the Medicaid waiver programs that were enacted in the 2007-2009 biannual budget. I am grateful for his thoughtful review.

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PREFACE

Recent census reports indicate that Ohio's larger cities are losing population and the state as a whole is experiencing slow population growth. This phenomenon is mostly due to changes in Ohio's labor market, specifically a declining manufacturing base. But, even when a state experiences outmigration, the most vulnerable people, the old and the disabled, tend to stay in place.

In a set of three reports, the Scripps Gerontology Center explores the size of Ohio's current and future population with disability, their needs for long-term care services, the current capacity of the state to meet these needs, and how medical, social, and environmental advances can affect the size of the population with long-term care needs.

In this first report, *Disability in Ohio: Current and Future Demand for Services*, we estimate the number of people who experienced a disability in 2007, by age and type, and project the size of the population with disability through 2020. In addition to examining prevalence rates, we examine the types of assistance that individuals who experience chronic disability receive. This report explores the public and private costs of providing long-term care and support today and in the future. ***Estimates of future long-term care use are based on the assumption that current utilization patterns will continue in the future, even though there are already efforts by the state to alter some of these trends.***

The second report, *Disability in Ohio: Long-Term Care Settings & Services*, identifies all the components of Ohio's long-term care system, and describes each facility and program, examines the capacity, utilization rate, client characteristics, and the cost of care in each setting. In the final report, *Disability in Ohio: Scenarios That Could Alter Future Long-Term Care Demand* – through simulation, we examine how the demand for formal long-term care services in the future can be altered if the net migration rate, prevalence of disability among populations of all ages, the ability of family members to provide caregiving, and the preference of consumers for long-term care services varies from what is currently observed.

This report uses 2007 data from a variety of sources as the starting point. In some situations, the 2007 data were not yet available, for those circumstances we extrapolated 2007 figures based on 2005 or 2006 data.

BACKGROUND

This report estimates the number of Ohioans in 2007 with a moderate[1] or severe disability[2], and extends these estimates to project the size of the population with disability through 2020 (when the oldest members of the baby boom generation will be 75 years old). Next, the proportion of the population with severe disability who rely on formal long-term care providers is determined and the role of Medicaid and other public programs in paying for these services is explored. ***Assuming the population with severe disability will continue to use long-term care services at the same rate and intensity in the next 13 years as this population did in 2007***, we determined the capacity of the state's long-term care system to meet the increased demand due to the aging of the baby boom population in the absence of any change in infrastructure.

Overview of the State Population

Ohio's population is aging. Ohio's total population today is 11.6 million with more than 18.3% of this population age 60 years or older. In 1990, 21.6% of the population was between ages 40 and 59; in 2007, this age group represented 28.7% of the total state population. Since the prevalence of some disabilities, as a result of physical and/or cognitive impairment, increases with age an aging population is a matter of concern and requires careful state and local planning. Table 1 provides a breakdown of Ohio's estimated population in 2005 by age group and by sex. Although the focus of this report is all Ohioans with disability, irrespective of age and sex, it is worth noting that the proportion of the entire population that is female (without considering

[1] Inability to perform at least one of the following activities: bathing, dressing, transferring from bed to chair, using the toilet, grooming, or eating; or a diagnosis of cognitive impairment including dementia and Alzheimer's disease, intellectual or developmental disability, or severe mental illness.

[2] A level of disability where the individual meets Medicaid eligibility criteria for nursing home care in an Intermediate Care Facility (ICF) or intermediate care in a facility designed for individuals with intellectual or developmental disabilities in an Intermediate Care Facility for persons with Mental Retardation (ICF/MR).

disability) increases with age, suggesting that the population potentially eligible for, and in need of long-term care services, is more likely to be female.

Table 1
Ohio's 2005 Estimated Population
by Sex and Age Group

Age Group	Men		Women		Total
	Number	Percent	Number	Percent	
0-39	3,098,626	50.6	3,020,609	49.4	6,119,235
40-59	1,619,064	49.1	1,682,098	50.9	3,301,162
60-64	244,010	47.5	270,205	52.5	514,215
65-69	189,312	45.8	224,196	54.2	413,508
70-74	143,249	43.6	185,443	56.4	328,692
75-79	133,672	41.7	186,646	58.3	320,318
80-84	92,998	37.3	156,452	62.7	249,450
85+	66,676	30.7	150,786	69.3	217,462
Total	5,587,607	48.7	5,876,435	51.3	11,464,042

Source: Population Estimates Program, U.S. Bureau of the Census, (Release Date: August 4, 2006) State Single Year of Age by Sex , 00-05 File: P101000003 Single Year of Age by Sex Estimates for Ohio: April 1, 2000 to July 1, 2005. Prepared by: Office of Strategic Research, Ohio Department of Development.

POPULATION PROJECTIONS

The population projections presented in this report are based on 2000 census data. The projections for the 60+ population were first presented in 2004 in a report titled *Profile & Projections of the 60+ Population: Ohio & Counties* by the Scripps Gerontology Center. In that report, in order to project the population age 60 and older for 2005 to 2020, we had to determine the size of the population in the following age categories: 40-44, 45-49, 50-54, and 55-59 for each of the years 2005, 2010, 2015, and 2020. The projections for the 60+ population, and in some instances for the age 40-59 population, were combined with the Ohio Department of Development's population projections for ages 0-59 (in some cases 0-39) to create projections for the entire population of Ohio. The methodology for projecting the 60+ population and the process of combining the two projections is detailed in Appendix B. Table 2 presents the summary of these projections between 2005 and 2020. As the proportion of the population age 0

to 59 decreases gradually from 82.1% in 2005 to 76.9% in 2020, the older age categories combined (60 to 69; 70 to 79; and 80+) increase, from 17.9% of the total population in 2005 to 23.1% in 2020.

The total population of Ohio is expected to increase from an estimated 11.6 million in 2007 to a projected total of 12.2 million in 2020, an increase of 5.1% over 13 years. During the same time, the population age 60+ is anticipated to increase from an estimated 2.1 million to a projected 2.8 million, an increase of 33.2%. As Table 2 shows, the greatest expected population increase is among the 60-69 age group (those who were between ages 45-54 in 2005). For example, in 2007 there were an estimated 1 million Ohioans age 60-69, by the year 2020, when most of the baby boomers have reached age 60 and beyond, the number of people in this age group will increase by 46.7% to a projected total of almost 1.5 million. For a more detailed distribution of population projections by age, see Table A-2 in Appendix A.

For a variety of reasons Ohio has been experiencing a net outmigration of its citizens. The net migration rates of Ohio's population by age and by sex between 1990 and 2000 are displayed in Table 3 (for a detailed explanation of how the migration rates were calculated see Appendix B). Data show that Ohio experienced a net outmigration of its population between birth and age 79 (partially shown) and a net inmigration after age 79. It appears that people who left the state for other locations often returned to be closer to their family and friends in their later years.

METHODOLOGY

In 2000, the rates of disability were similar for Ohio's 60+ population and the U.S. overall, based on categories defined by the U.S. Census Bureau (sensory, physical, mental, and

Table 2
Ohio's Population Projections by Age

Age Group	2005*		2007∞		2010		2015		2020	
	Population	**Percent**	**Population**	**Percent**	**Population**	**Percent**	**Population**	**Percent**	**Population**	**Percent**
0-59	9,420,397	82.1	9,465,719	81.7	9,533,702	81.0	9,461,165	79.1	9,355,990	76.9
60-69	927,723	8.1	1,005,205	8.7	1,121,430	9.5	1,327,541	11.1	1,474,618	12.1
70-79	649,010	5.7	647,236	5.6	644,574	5.5	708,233	5.9	870,029	7.1
80-84	249,450	2.2	243,936	2.1	235,644	2.0	218,349	1.8	230,718	1.9
85+	217,462	1.9	222,062	1.9	228,963	2.0	245,349	2.1	246,502	2.0
Total	**11,464,042**		**11,584,158**		**11,764,333**		**11,960,864**		**12,177,857**	

Source: *Population Estimates Program, U.S. Bureau of the Census, (Release Date: August 4, 2006)
State Single Year of Age by Sex, 00-05 File: P101000003 Single Year of Age by Sex Estimates for Ohio: April 1, 2000 to July 1, 2005
Prepared by: Office of Strategic Research, Ohio Department of Development.

∞ 2007 estimates are extrapolations based on 2005 estimates and 2010 projections.

Years 2010-2020 are a combination of the Scripps Gerontology Center projections and the Ohio Department of Development projections as explained in the text.

Table 3
Ohio's Estimated Net Population Migration Rate between 1990-2000 (Rate per 1,000 Population)

Age	Males Rate (per 1,000 population)	Females Rate (per 1,000 population)
45-49	-16.5	-3.4
50-54	-7.9	-14.9
55-59	-20.4	-26.9
60-64	-29.8	-31.6
65-69	-40.7	-31.3
70-74	-33.2	-16.5
75-79	-26.0	-12.1
80-84	20.2	20.7
85 and older	30.8	6.7

Source: Census data for 1990 and 2000 and tallies of county deaths from Ohio public-use mortality files (Ohio Department of Health, 1990-2000).

self-care). To provide more detailed disability rates for Ohio, we used the 5th wave of the 2001-2002 Survey of Income and Program Participation (SIPP) conducted by U.S. Census Bureau. SIPP is a nationally representative household survey of U.S. community (non-institutionalized) residents. The survey asks specific questions about disability status, income, employment, and participation in programs designed to assist people with disability. Information on functional limitations (seeing, hearing, speaking, and being understood), range of motion limitations (walking, lifting and carrying objects ten pounds or heavier, pushing or pulling large objects, and climbing stairs), activities of daily living limitations (bathing, dressing, transferring, using the toilet, and eating) and limitations in instrumental activities of daily living (shopping, meal preparation, light house work, taking the prescribed amount of medicine, and keeping track of money) is also collected in this survey. In addition, health-related questions inquire about the presence of certain conditions related to severe mental illness, the presence of intellectual or developmental disabilities, as well as other physical diagnoses. In a two-step process, the

survey investigates whether the household member has *difficulty* performing a function, and if there is difficulty, whether the household member *needs help from another person* to perform that function. Although there is extensive literature on measuring disability, for this study we define a person residing in the community as impaired in an activity if she/he has difficulty performing the particular function *and* requires the assistance of another person to perform that function. This strict definition of disability was adopted to resemble the Medicaid eligibility criteria for nursing home or intermediate care facilities for people with mental retardation (ILOC-MR) coverage. In Ohio, a person meeting at least one of the following four criteria will be eligible for *intermediate nursing home level of care* (ILOC) and Medicaid reimbursed long-term care services if she/he also meets the Medicaid income and resource eligibility criteria: 1) Require *hands-on assistance* with at least two activities of daily living (ADL); 2) Need *hands-on assistance* with at least one ADL and *also require the help of another person to administer medication;* 3) Need *24-hour per day supervision* from another person to prevent harm to self or others because of cognitive impairment including, but not limited to dementia; or 4) Have an *unstable medical condition* and require at least one skilled nursing service at less than seven days per week, and/or a skilled rehabilitation service at less than five days per week[3].Similarly a person with a diagnosis of MR and/or DD who also meets nursing home level of care will be eligible for care in an intermediate care facility for people with mental retardation (ICF/MR).

Using SIPP we calculated the estimated prevalence of physical and/or cognitive disability (based on impairment on activities of daily living, need for assistance with medication, or diagnosis of dementia or Alzheimer's disease), presence of severe mental

[3] Law Write Ohio Laws and Rules. (2008). Ohio Administrative Code 5101:3-3-05 to 5101:3-3-08 (Intermediate Level of Care) Retrieved April 15, 2008 from http://codes.ohio.gov/oac/5101%3A3-3-06

illness (based on diagnosis), and intellectual disability (or "mental retardation") and/or developmental disability (based on diagnosis) among the community population by five-year age groups and sex. The definition of disability in each category (physical and/or cognitive disability, severe mental illness, and intellectual or developmental disability) was based on Medicaid eligibility criteria for intermediate nursing home level of care (ILOC) or intermediate level of care for persons with intellectual or developmental disability (ID and/or DD), commonly known as ILOC for ILOC-MR. These estimated community prevalence rates were multiplied by the Ohio community population to obtain the estimated number of people with disability in the community. These numbers are then added to the actual number of people with disability (in each age and sex group) that are residing in different institutions (nursing homes, assisted living facilities, ICFs/MR, residential mental health centers, prisons, and residential centers for persons with developmental disabilities)[4] to obtain the total number of disabled persons in each age and sex category. The combined number of disabled persons, in each age and sex group, is divided by the total number of people in that age and sex group to attain the prevalence of disability by age, sex, and type of disability, which will then be used to project the number of people with disability for 2010 through 2020.

The prevalence of certain types of disability, such as physical and/or cognitive disability varies considerably by age and sex (See Appendix A, Table A-1). For example, between the ages of 0 to 34, the prevalence of severe physical and/or cognitive disability, although generally low, is higher among males than females; females are more likely to be

[4] The number of individuals in each setting was either available to us from other studies conducted at Scripps Gerontology Center or we asked and received data from different state departments for a tally of residents in each setting or program. These departments include the Ohio Department of Job and Family Services, the Ohio Department of Mental Retardation and Developmental Disabilities, the Ohio Department of Aging, the Ohio Department of Development, and the Ohio Department of Correction and Rehabilitation. In addition, we collected data from County Boards regarding consumers who benefited from county levy programs and health care associations regarding the characteristics of the residents of the residential care facilities (Brothers-McPhail & Mehdizadeh, 2008).

severely disabled than males at every age after 34. The prevalence of severe ID and/or DD is generally higher among males than females (see Table A-1). The prevalence of disability due to severe mental illness increases by age irrespective of sex, but rates vary by sex. Between ages 0 to 34 the prevalence of severe mental illness is higher among males than females, it is about the same for both sexes between ages 35 to 39, and then it is higher for females between ages 40 to 69. Males over age 70 have a higher prevalence of severe mental illness than males or females in any other age group except for women age 85 or older.

Types and Extent of Disability

For the purposes of this study we divide disability into three categories: 1) physical and/or cognitive; 2) intellectual and/or developmental; and 3) severe mental illness. Further, we classify disability as either moderate or severe. Severe disability is defined to match Ohio's Medicaid eligibility definitions. Thus, if a person meets Intermediate Level of Care (ILOC) and there is no evidence of severe mental illness or intellectual and/or developmental disability, even if he or she has a diagnosis of dementia or Alzheimer's disease, that individual is classified as having *severe* physical and/or cognitive disability. When the individual meets ILOC and the diagnosis of severe mental illness is present, the individual is classified as having *severe* disability due to mental illness; when the individual meets ILOC and the presence of intellectual or developmental disability is confirmed by diagnosis, then the individual is classified as having severe intellectual and/or developmental disability.

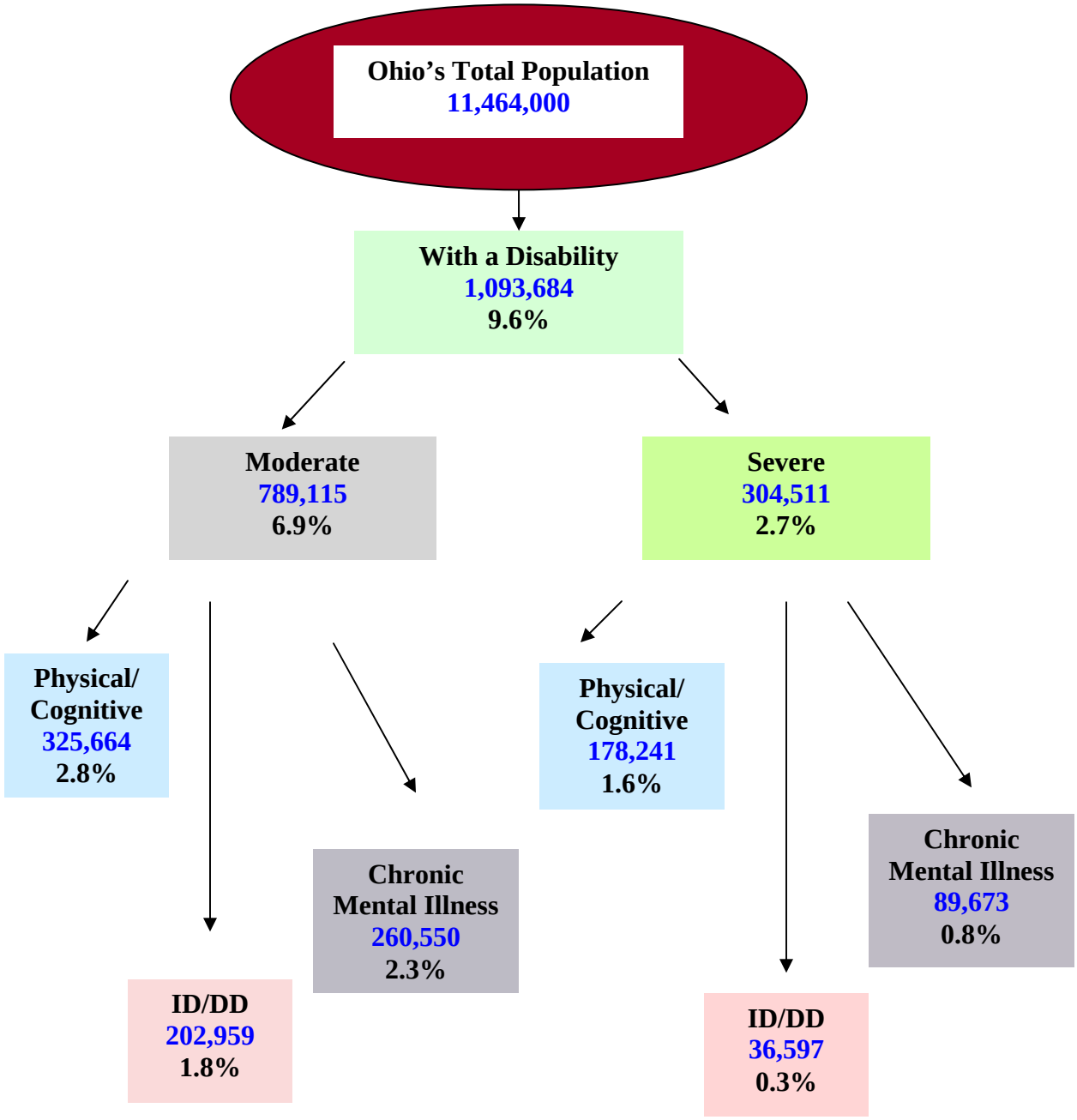
When a person is unable to perform one of the activities of daily living, or needs the assistance of another person with taking medication and there is no evidence of ID and/or DD or severe mental illness, that person is classified as having moderate physical and/or cognitive disability. A person with a diagnosis of ID and/or DD who does not meet the intermediate level

of nursing home care is classified as having moderate intellectual or developmental disability. Finally, individuals who stated that they were frequently depressed, anxious, had trouble getting along with other people, concentrating, or coping with day-to-day stresses of life but did not meet intermediate nursing home level of care are designated as having moderate disability due to mental illness.

Figure 1 presents the distribution of the almost 1.1 million Ohioans with a chronic disability. Almost 7% of the population was moderately disabled, while fewer than 3% were designated as severely disabled in 2005. Those classified as severely disabled were so disabled that they required the assistance of another person for their daily care. The largest group of those who were designated with moderate or severe disability are people with physical and/or cognitive disability, and the smallest is the group with intellectual or developmental disabilities.

Using the prevalence of disability by age and sex (Table A-1 in Appendix A) and the projected population by age and sex, the number of individuals with each type of disability for the next 13 years was calculated and presented in Tables 4 and 5. As mentioned earlier, Ohio's total population will experience relatively low growth (5.1%) during the next 13 years. However, with the aging of the baby boomers, the population age 60 and over will increase by more than one fourth. The number of people with moderate disability will increase by 6.3% (more than 50,000 persons), and the number of people with severe disability is projected to increase at a higher rate 12.8% (more than 39,500 persons). Since, in this report, ***the rates of disability are held constant***, the increase in the number of people with disability is the result of change in the populations' age composition and growth in the projected population.

Figure 1
Distribution of Disability Among the Ohio Population:
by Type and by Severity, 2005



As Figure 2 shows, the prevalence of disability increases with age. Almost 29% of those age 80 and older have a disability, compared to just under 13% of the 60-69 year olds, and 7.5% of the 25-44 year olds.

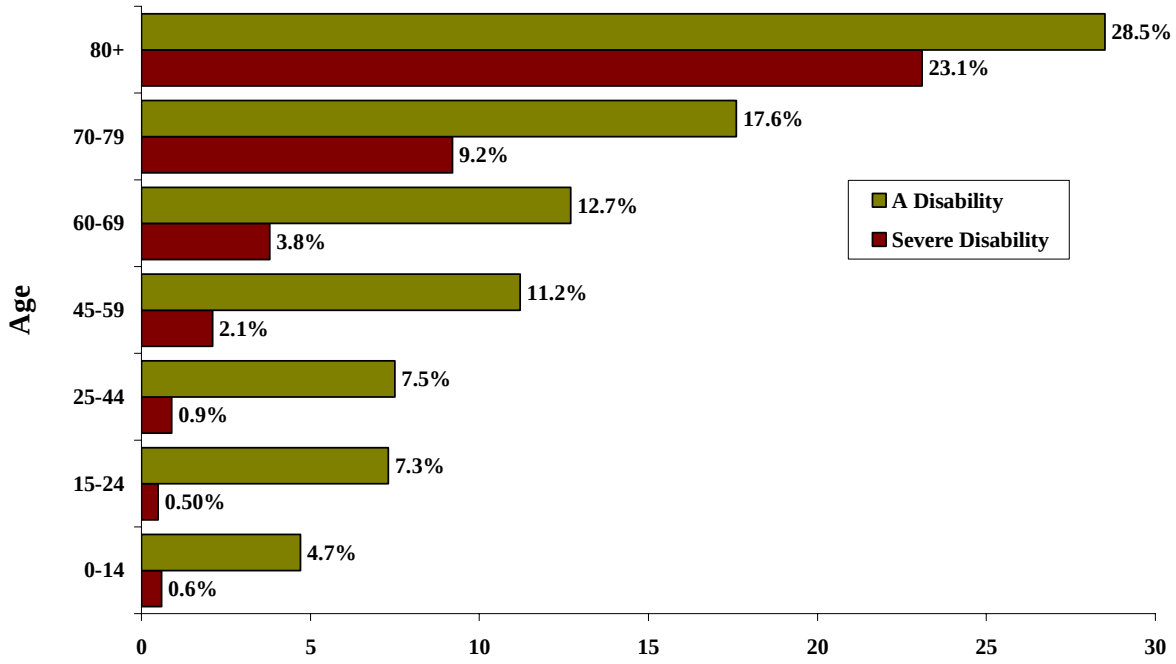
Because persons with moderate disabilities are not dependant on Medicaid, our focus will remain on those with severe disability. However, we do recognize the care needs of the more than 800,000 people in 2007 who we defined as moderately disabled. These individuals either have at least one ADL impairment (and certainly some IADL impairments) or they have a diagnosis of ID and/or DD or mental illness, but their condition is not severe enough to meet intermediate nursing home level of care and therefore Medicaid eligibility. Although there are some publicly funded programs such as county tax levies, Older American Act funded services, state and/or federal block grants and city and county funds, Social Security and other forms of disability benefits, numerous charitable organizations such as United Way, and many faith based organizations that provide assistance, the great majority of moderately disabled people receive their care from family and friends.

Table 4
Projections of Disability Among the Ohio Population, 2005[a]-2020

Year	Total Population	Population with Moderate Disability	Population with Severe Disability
2005	11,464,042	789,115	304,511
2007	11,584,158	802,154	308,573
2010	11,764,333	821,727	314,650
2015	11,960,864	837,860	329,419
2020	12,177,857	852,382	348,129

[a] 2005 Data are U.S. Census Bureau estimates.

Figure 2
Estimated Disability Prevalence by Age, Ohio: 2005



Not surprisingly, there are more individuals suffering from physical and/or cognitive disability than those with intellectual and/or developmental disability and severe mental illness combined. The majority of the growth in the number of people with severe disability between 2007 and 2020 will also be among the population with physical and/or cognitive disability.

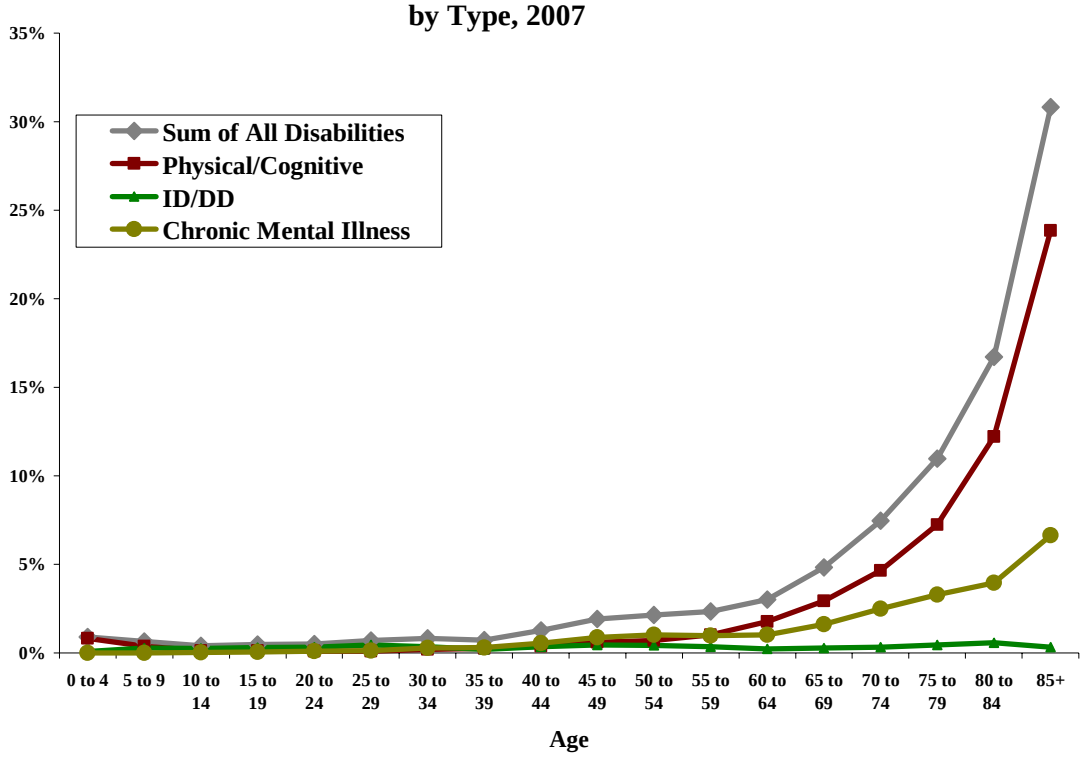
As the population ages, the prevalence of severe disability also increases; this increase is dominated by physical and/or cognitive disability (Figure 3) and to a much lesser degree by severe mental illness. Prevalence of ID and/or DD among the older population does not increase by age, mostly because individuals with intellectual and/or developmental disability usually have lower life expectancies and the conditions are present and diagnosed early in their lives.

Table 5
Ohio's Projected Population with Severe Disability by Type

Year	Total Population	Physical and/or Cognitive	Intellectual and/or Developmental	Severe Mental Illness	Total Population with Severe Disability
2005	11,464,045	178,241	36,597	89,673	304,511
2007	11,584,158	181,220	36,899	90,454	308,573
2010	11,764,330	185,672	37,352	91,626	314,650
2015	11,960,871	195,507	37,875	96,037	329,419
2020	12,177,862	208,154	38,485	101,490	348,129

For a review of the projected population by extent and type of disability and by age group see Tables A-2 to A-4 in Appendix A.
Source: Author's calculations based on prevalence of disability rates in Table A-1 and Population Projections by sex and 5 year age group.

Figure 3
Percentage of Ohio's Population with A Severe Disability by Type, 2007



WHAT PROPORTION OF PEOPLE WITH SEVERE DISABILITY RECEIVE FORMAL LONG-TERM CARE? WHO PAYS FOR THEIR CARE?

Of the more than 308,500 estimated Ohioans with severe disability in 2007, more than 41% received assistance from family and friends or purchased care through the provider system, as shown in Figure 4. About one quarter of the severely disabled people received care in a nursing home and an additional 1.9% received services in an ICF/MR setting. Almost 17% of Ohio's severely disabled population received services through Medicaid home and community-based waiver programs including a small number in Ohio's Program of All Inclusive Care for the Elderly (PACE). An additional 8.5% of the severely disabled population received services from county tax levies, most often designed for the over 60 population[5]. The remaining population with severe disability is served in residential settings including private assisted living[6] (4.4%) or the state's residential services and support programs (1.5%)[7] and prisons (1.3%)[8].

Public Financing of Long-Term Care and Type of Disability

Not everyone who received formal care needed publicly funded services for that care, but a large majority did. About 143,000 (79%) of the 181,670 individuals with severe disability who relied on formal long-term care services had Medicaid, or one of the county levy programs paid for their care. That is less than 50% of the total number of individuals with severe disability

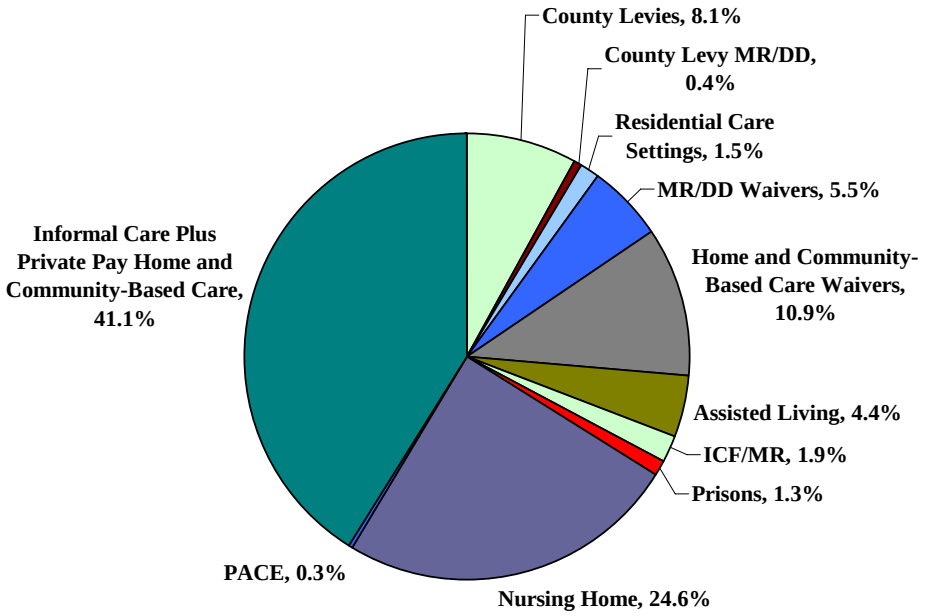
[5] Only counties with a large levy that pays for home care services of older people are included. Within those counties only individuals with disability at the intermediate level of care are included.

[6] Only individuals living in assisted living who are disabled at the intermediate level of care or ILOC-MR level of care are included here.

[7] Residents of Developmental Centers, Mental Health Centers, Residential Care Centers, and the Residential State Supplement (RSS) consumers are included here.

[8] Ohio Department of Rehabilitation and Correction publications, 2006; and Mike Bellas of Ohio Department of Rehabilitation and Correction [Personal communication, September 9-20, 2006].

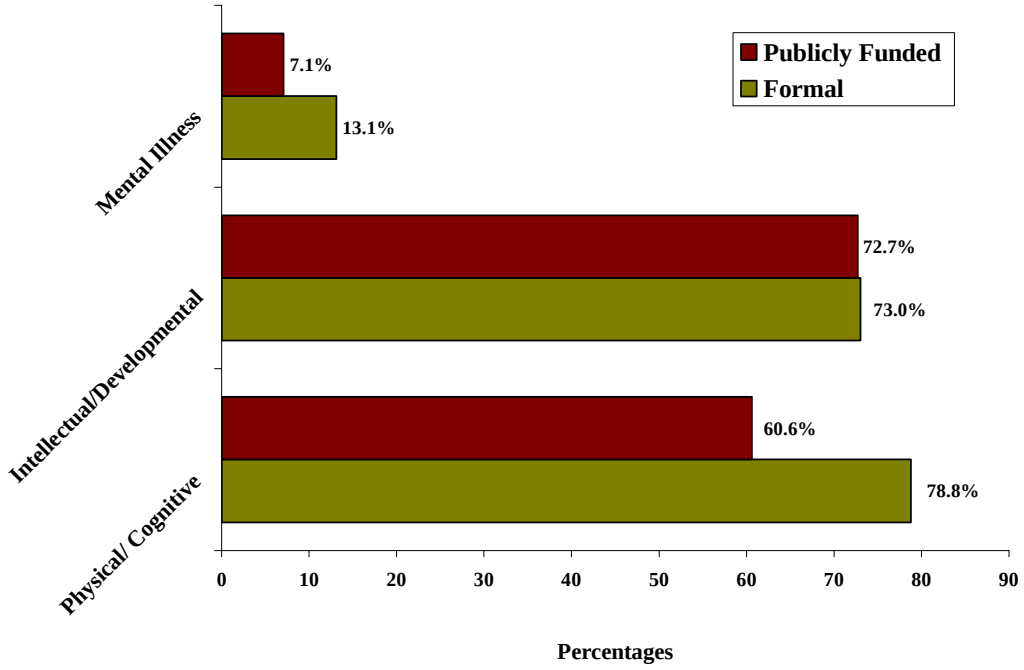
Figure 4
Estimated Proportion of Ohio's Population with Severe Disability in Different Long-Term Care Settings, 2007



(308,500). Figure 5 compares the proportion of the population with different types of severe disability who received formal care. In addition, among those receiving formal long-term care services, the percentage that relied on publicly funded services are displayed. The difference in availability of public funds by type of disability is rooted in the Medicaid eligibility criteria and in the way mental illness is defined, recognized, and treated.

As was discussed earlier, the prevalence of disability, whether it is moderate or severe, varies by age and by type of disability. In 2007, the proportion of individuals with severe disability who sought formal long-term care services and relied on Medicaid or some other type of publicly funded services varied by age and by type of disability.

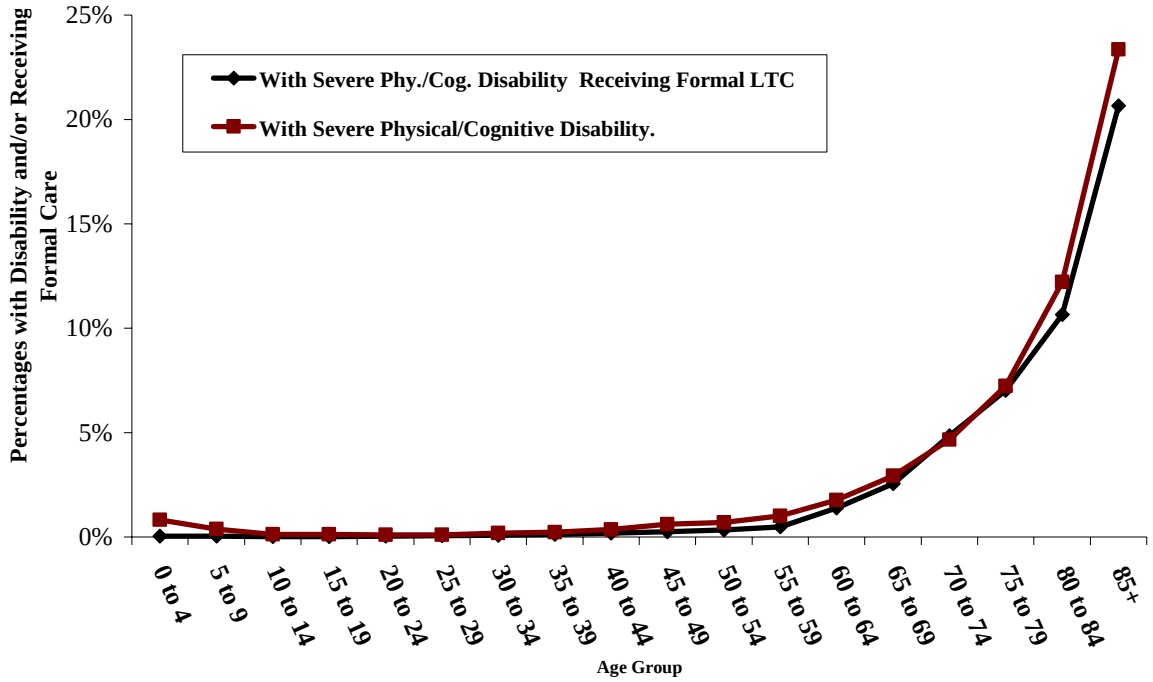
Figure 5
Comparison of the Proportion of the Population with Different Types of Disability, Using Formal Care, and Public Funds for Services, 2007



Figures 6 through 8 compare the proportion of the population with a severe disability by age and by each of the three disability types. In addition, these figures present the proportion of the population that uses formal long-term care services by age. The consumers who have informal caregivers and might have purchased some services privately are not accounted for in these graphs because a clear estimate of the number of these consumers and the amount of services that they purchase is not available.

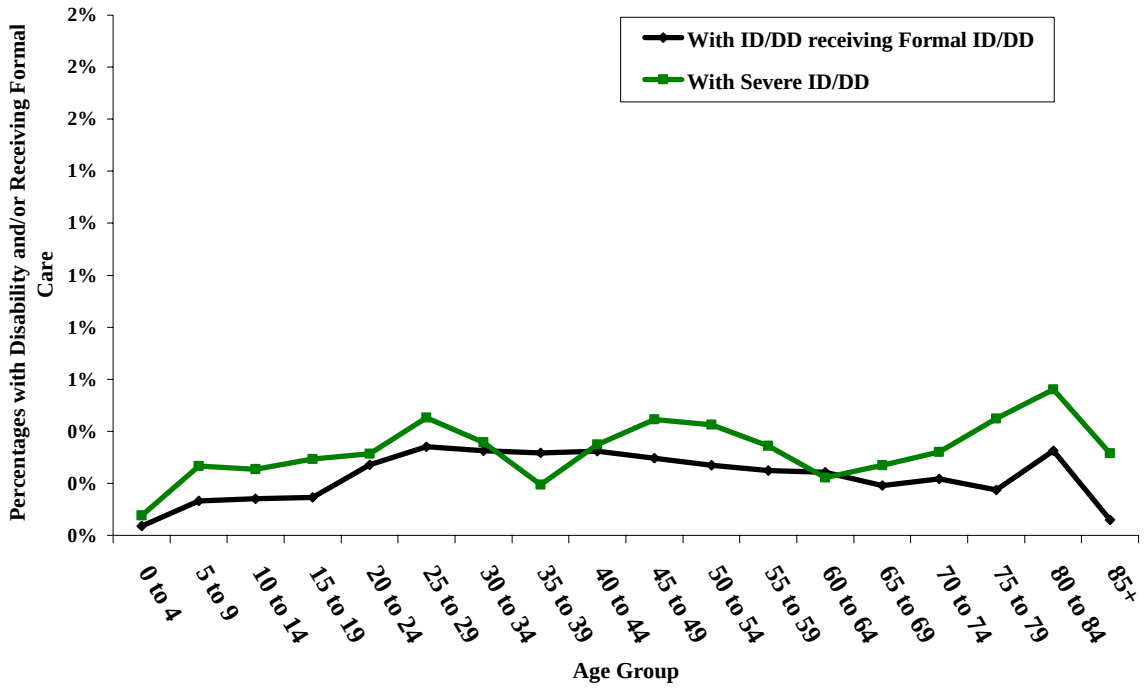
Figure 6 shows that the estimated percentage of Ohioans with physical and/or cognitive disability is relatively low before age 40. However, the proportion of the population with these disabilities increases consistently starting at age 40 with a substantial increase beginning at age 75. The proportion of those with severe disability who receive formal long-term care services shows an increase with age that mirrors the growth in the severely disabled population.

Figure 6
Percentage of Ohioans with Physical and/or Cognitive Disability, by Age, and by Use of Formal LTC Services in 2007



The long-term care use patterns for people with ID and/or DD (Figure 7) are different. Intellectual and/or developmental disabilities are diagnosed early in life and children with ID and/or DD are eligible for services. The proportion of the population using long-term care services designed for people with ID and/or DD, at every age, closely follows the proportion of the population identified with severe ID and/or DD, except those beyond age 70. It appears that some older people, who are severely disabled, are not receiving formal long-term care services because an ID and/or DD diagnosis must be done before ages 19 and 22 respectively in order to meet Medicaid eligibility.

Figure 7
Percentage of Ohioans with Intellectual and/or Developmental Disability, by Age, and by Use of Formal LTC Services in 2007

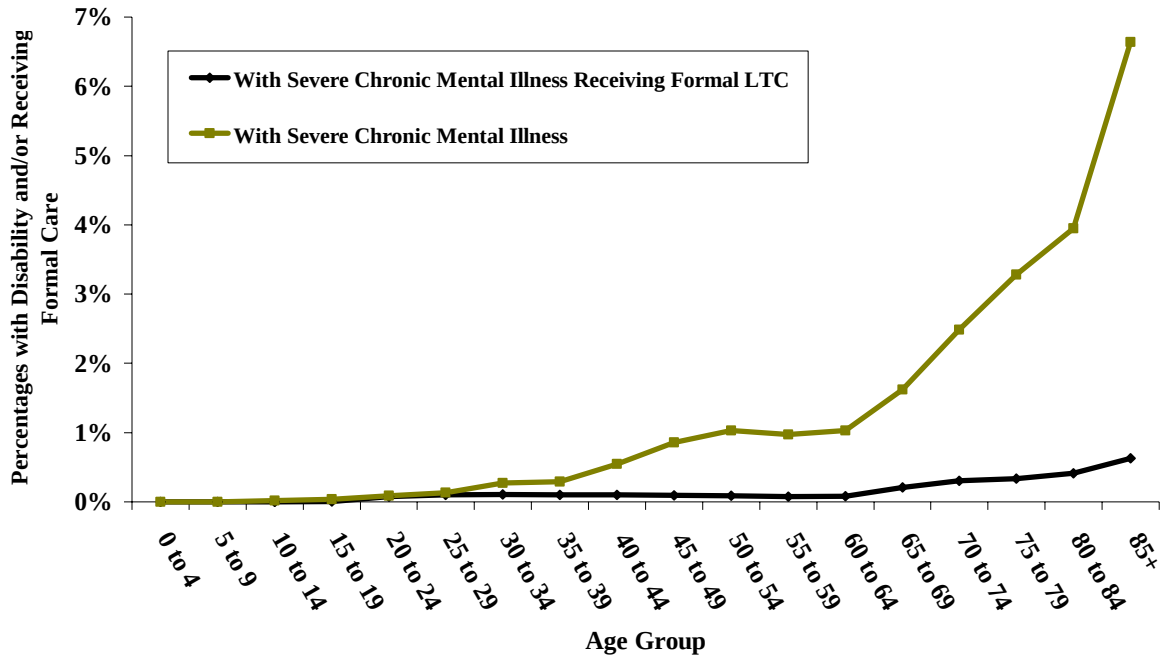


The estimated prevalence of disability in the community due to emotional or mental illness is based on the response to the following questions: During the past 12 months, were you frequently depressed or anxious? Did you have trouble getting along with other people, concentrating, coping with day-to-day stresses of life to the extent that it interfered with your ability to manage everyday activities? We defined severe disability due to mental or emotional illness when there was a combination of a "yes" response to the above questions and when the respondent had met Ohio's intermediate nursing home level of care. As is clear in comparisons of Figure 8 with Figures 6 and 7, a much smaller proportion of those with severe mental illness received formal long-term care services compared to the two other disability types.

We found almost no one under age 22 who used formal long-term care services for severe mental illness and very few who met our criteria for that disability classification. There

appears to be strong formal care support for those people between ages 20 and 29, but beyond that age range there is a reduction in formal care. Less than 10% of those over age 50 with severe mental illness receive formal long-term care services.

Figure 8
Percentage of Ohioans with Mental Illness Disability, by Age, and by Use of Formal LTC Services in 2007



Tables A-5 through A-8 in Appendix A present more detailed information about individuals with a severe disability, and the use of formal long-term care services.

IF WE MAINTAIN THE STATUS QUO, WHAT WILL LONG-TERM CARE USE PATTERNS LOOK LIKE IN 2020?

The previous section presented data on the size of the population with severe disability, the current use of formal long-term care services, and the number of persons who relied on Medicaid or other public programs to pay for their services in 2007. In this section we will project the number of individuals with severe disability who will use formal long-term care services including the number of individuals who will rely on Medicaid or other publicly funded

services over the next 13 years. ***To produce these projections we made the following two assumptions: 1) people in need of formal long-term care services will have the same preferences and choices for care in the next 13 years as they did in 2007; 2) state policies will remain the same, such that the long-term care delivery system and eligibility for Medicaid will not change.***

Table 6 presents the projected number of Ohioans with severe disability, those who will be receiving formal long-term care services, and those whose formal long-term care will be paid for either by Medicaid, other federal sources, or by county property tax levies for the years 2007 to 2020. The largest increase in need for formal long-term care will come from those with physical and/or cognitive disability, an increase of an estimated 21,390 individuals (15%). Those with severe mental illness will increase about 1,450 (12.2%), while the increase in need for care by those with severe ID and/or DD, 1,158 (4.3%), will be more modest. As the number of people who need formal long term-care increases, so does the number of people who will rely on public dollars to pay for that care. There will be an increase of about 18,500 individuals between 2007 and 2020 who will need formal long-term care and have little or no resources to pay for that care. Most of these individuals will be older people with physical and/or cognitive disability. Although Ohio has expanded home and community-based programs in the recent years, some of these Medicaid HCBS programs currently have a waiting list[9]. The only long-term care providers in Ohio that were operating at less than full capacity and could meet the future demands without any expansion in infrastructure are the nursing home and residential care facilities that were operating at 86.4% and 76.9% of their capacity in 2005, respectively (Mehdizadeh, et al., 2007).

[9] Home Care, the Medicaid home and community-based waiver program, was designed for individuals under 60 with severe disability, and the HCBS waivers for individuals with MR and/or DD had a waiting list in June 2007.

Table 6

Ohio's Projected Population with Severe Disability, Needs for Formal Long-Term Care, and Public Funds for Services: 2005-2020

Year	With Severe Disability	Physical and/or Cognitive Disability		Intellectual and/or Developmental Disability		Severe Mental Illness	
		Needed/ will Need Formal LTC[f] Services	Needed/ will Need Public Funds for LTC Services	Needed/ will Need Formal LTC Services	Needed/ will Need Public Funds for LTC Services	Needed/ will Need Formal LTC Services	Needed/will Need Public Funds for LTC Services
2005	304,511	134,631	108,920	25,668	24,327	11,728	7,645
2007	308,573	142,863	109,843	26,936	25,560	11,877	7,586
2010	314,650	146,512	112,675	27,267	25,874	12,031	7,685
2015	329,419	154,273	118,643	27,648	26,236	12,610	8,054
2020	348,129	164,252	126,317	28,094	26,659	13,326	8,512

An array of programs, institutions, and home care providers currently deliver services to Ohioans with severe disability. Table 7 presents both current use and the projected increase in demand based on population growth for each long-term care setting. ***This table was prepared with the assumption that the same proportion of individuals with severe disability will use formal long-term care services in the future and the proportion who will need publicly funded services will also remain the same***. In some cases the increases are gradual, but nevertheless the combined effect of the increases in demand in all settings represents an overall increase in the number of Medicaid recipients under the current utilization patterns. Nursing homes alone will experience an increase of almost 11,250 *long stay* residents in their average daily census; almost 7,500 of them will need Medicaid to pay for their care. PASSPORT's (and other Medicaid home and community-based waivers for older persons) average daily census will need to increase to almost 30,000 (an increase of 3,960) over 2007 utilization. Home Care and ID and/or DD

waivers will also need to expand (1,190 and 720 respectively). The number of individuals with severe disability who will rely exclusively on informal care will increase from almost 126,900 persons in 2007 to 142,450 in 2020, an increase of more than 15,500 individuals. Dotty, Jackson, and Crown, in a 1998 study, argue that even individuals who rely on informal caregivers purchase about four hours of paid care every week for the tasks that family members are not available for or feel inadequate to perform. Even though the formal care needs of these care recipients are very limited, cumulatively, these individuals will increase the demand for home care workers in Ohio by 3.2 million hours a year (about 1,600 full time workers per year) by 2020. There will be an increase of almost 6,000 individuals who will rely on PASSPORT, Choices, Home Care waiver, PACE, or one of the three ID and/or DD waivers; an additional 3,770 will rely on one of the many county levy programs for the care of older people or persons with ID and/or DD. Even though the two major long-term care industry institutions — nursing homes and residential care facilities — will have the rooms to accommodate the demand, they too will have staffing challenges**.** If use pattern rates remain constant, the institutional settings would need to care for an additional 13,000 residents with severe disability on a daily basis by 2020.

As the Ohio prison population ages, its need for in-house long-term care will also increase. There will be 518 more prisoners with physical and/or cognitive disability or with severe mental health problems in need of daily assistance in 2020.

Table 7
Projected Demand for Formal Long-Term Care
2007-2020

	2007		2010		2015		2020	
Long-Term Care Options	**Private Pay**	**Medicaid and Other Public Payers**	**Private Pay**	**Medicaid and Other Public Payers**	**Private Pay**	**Medicaid and Other Public Payers**	**Private Pay**	**Medicaid and Other Public Payers**
Nursing home [a]	24,422	47,182	25,021	48340	26,346	50,897	28,050	54,185
Nursing Home for Persons with Mental Illness[b]	281	1,126	284	1,141	299	1,195	316	1,263
ICFs/MR[c]		5,832		5,904		5,986		6,083
Assisted Living[d]	13,569		13,845		14,505		15,341	
PASSPORT[e]		25,648		26,410		27,810		29,608
Home Care Waiver[f]		8,002		8,199		8,633		9,191
County Levies (Aging)[g]		25,000		25,614		26,971		28,717
County Levies (MR/DD) [♣]		1,200		1,215		1232		1,252
MR/DD Waivers[h]		16,773		16,979		17,217		17,494
Developmental Centers[i]		1,660		1,680		1,704		1,731
Mental Health Centers[j]		1,260		1,276		1,338		1,414
RSS[k]		1,758		1,781		1,867		1,972
Correctional Facilities[l]		4,100		4,172		4,364		4,618
PACE[m]		829		840		894		952
Other Nursing Home Residents	415	2,619	426	2,683	448	2,825	477	3,008
Informal Care/ Privately Purchased LTC Services[n]	126,897		128,840		134,888		142,457	
Total Number of Persons Receiving LTC[o]	**165,584**	**142,989**	**168,416**	**146,234**	**176,486**	**152,933**	**186,641**	**161,488**

[a] MDS data from Centers for Medicare and Medicaid Services, 2006; Dorsky, 2008.
[b] MDS data from Centers for Medicare and Medicaid Services, 2006; Dorsky, 2008 .
[c] OSCAR from Centers for Medicare and Medicaid Services, 2006; Williams 2006.
[d] Scripps Gerontology Center, 2006 and the National Center for Assisted Living, 2001.
[e] Mehdizadeh, Applebaum, Nelson, Straker, and Baker, 2007, Dorsky, 2008.
Note: All aging waivers (PASSPORT, Choices, Assisted Living, and Transition Carve Out) are combined.
[f] Ohio Department of Job & Family Services (2004) and Ohio Department of Job & Family Services Decisions support system, 2006; Dorsky 2008.
[g] Payne, Applebaum, Molea, & Ross 2007; Council on Aging of Southwestern Ohio. (2007).
[h] Ohio Department of Job & Family Services, 2004; Williams 2006.
[i] Ohio Department of Development. Estimated Group quarters Population 2006.
[j] Ohio Department of Development. Estimated Group quarters Population 2006.
[k] Ohio Department of Aging, 2006.
[l] Ohio Department of Rehabilitation and Correction, 2006, and [personal communication with Mike Bellas].
[m] Ohio Department of Aging, 2006; Dorsky, 2008.
[n] Author's calculations.
[o] Author's calculations based on all the entries in the table.
♣ The number of people receiving support from the MR/DD levies and meeting ILOC-MR level of care is estimated based on a personal communication with Kevin Aldridge, Ohio Department of MR/DD.

IF WE MAINTAIN THE STATUS QUO, DOES OHIO HAVE THE FINANCIAL RESOURCES TO CONTINUE SERVING ITS POPULATION WITH DISABILITIES?

Of the approximately 308,570 persons with severe disability in 2007, almost half (46.3%) received some public funding for services. ***Assuming that the proportion of the population with disability, who use publicly funded services, stays the same as in 2007***, there will be an additional 18,500 severely disabled person served in 2020. The projected number of individuals in each program and setting are presented in Table 7. Among the notable increases are more than 7,500 in the nursing home Medicaid daily census, 3,960 in PASSPORT and other aging waivers, 3,770 in the county levy caseload (both for older persons and persons with ID and/or DD), and almost 1,200 in the Home Care waiver. Since the growth in the number of individuals with ID and/or DD in the next 13 years is projected to be relatively small, the number of individuals

needing care provided by ICFs/MR will increase only by 251, while the number of individuals needing assistance from ID and/or DD waivers will increase by 720.

Traditionally, the health care industry has experienced a higher annual inflation rate than other industries (in Ohio between 7 and 8% since 2000 [Joint Economic Committee, 2008; Keehan, et al., 2008])**.** For this report, however, initially we are assuming a 3% annual inflation rate across the board (Knickman and Snell, 2002), even though we know that reimbursement rates for PASSPORT and other Medicaid home care providers have not been inflation adjusted annually. Table 8 presents the inflation-adjusted annual rates for each of the settings for each year. An inflation rate of 3% over 13 years increases the Medicaid cost by 47%. For example, in 2007, on average, the net total annual Medicaid cost of caring for a person in a nursing home was $50,575; in 2020 this cost will increase to $74,271. An increase of 7,500 Medicaid residents in the nursing home daily census will increase the total Medicaid nursing home bill by $381 million due to increased census (at 2007 prices); but a 3% inflation rate increases the total Medicaid share of nursing home expenditures another $1.4 billion making the total nursing home bill in 2020 $1.8 billion higher than in 2007.

As shown in Table 9, the total public bill for long-term care services for the severely disabled population will increase from $4.9 billion in 2007 to almost $8 billion in 2020, an increase of 64%; 52.3% of this increase is due to inflation and 11.6% is due to the increased number of individuals needing care.

Table 8
Annual Per-Person, Per-Year Rates for Each of Ohio's Long-Term Care Settings or Programs (3% Annual Inflation Rate is Assumed)

	2007*	2010	2015	2020
Nursing Home (Medicaid Cost)[p]	$50,575	$55,265	$64,067	$74,271
Nursing Home (Private Cost)[q]	$64,663	$70,659	$81,913	$94,960
Nursing Home for Persons with Mental Illness[r]	$50,575	$55,265	$64,067	$74,271
ICFs/MR[s]	$103,278	$112,854	$130,829	$151,667
Aging Related Waivers				
PASSPORT[t]	$13,774	$15,051	$17,449	$20,228
Transition Carve Out[u]	$31,038	$33,916	$39,318	$45,558
Choices[u]	$18,330	$20,030	$23,220	$26,918
Assisted Living[u]	21,018	$22,967	26,625	$30,866
Home Care Waiver[v]	$32,082	$35,057	$40,641	$47,113
County Levies				
Aging Levies[w]	$4,146	$4,530	$5,252	$6,089
MR/DD Levies[x]	$8,854	$9,675	$11,216	$13,002
MR Waivers[y]				
Individual Options	$50,092	$54,737	$63,455	$73,562
Transition	$20,649	$22,564	$26,158	$30,324
Level One	$8,854	$9,675	$11,216	$13,002
Developmental Centers[z]	$126,678	$138,424	$160,472	$186,031
Mental Health Centers[aa]	$12,360	$13,506	$15,657	$18,151
RSS[bb]	$5,117	$5,591	$6,482	$7,514
Prisons[cc]	$2,992	$3,269	$3,790	$4,394
PACE[dd]	$33,288	$36,375	$42,168	$48,885
RCF/Assisted Living[ee]	$40,603	$44,368	$51,435	$59,627
Privately Purchased LTC Services[ff]	$2,600	$2,841	$3,294	$3,818

Source: ***** The 2010 to 2020 rates are based on 2007 rates with 3% annual inflation rate. If 2007 rates were not available then the 2007 rates, based on 2005 or 2006 rates, were extrapolated.

[p] Extrapolated based on Mehdizadeh, 2007.
[q] Extrapolated based on Mehdizadeh, Applebaum, Nelson, Straker, & Baker, 2007.
[r] Extrapolated based on Mehdizadeh, 2007.
[s] Williams, 2006.
[t] Mehdizadeh, 2007.
[u] Dorsky, 2008; Brown and Applebaum, 2007.
[v] Ohio Department of Job & Family Services, 2004.
[w] Council on Aging of Southwestern Ohio, 2007.
[x] The average annual cost of services for persons receiving care paid by local MR/DD levies was set equal to level one MR/DD waiver.
[y] Ohio Department of Job & Family Services, 2004.
[z] Williams, 2006.
[aa] Williams, 2006.
[bb] Ohio Department of Aging, 2006.
[cc] Ohio Department of Rehabilitation and Correction, 2006.
[dd] Ohio Department of Aging, 2006; Dorsky, 2008.
[ee] Extrapolated based on Mehdizadeh, Applebaum, Nelson, Straker, & Baker, 2007.
[ff] Mehdizadeh and Murdoch, 2003.

What If the Inflation Rate Is Higher than 3%?

Table 9 also shows the gradual growth of Medicaid long-term care expenditures (and county levy taxes) up to the year 2020. In these calculations we assumed a modest inflation rate of 3% annually. Even an annual increase of 3% in the cost of long-term care services along with the higher number of disabled population, will increase the projected Medicaid long-term care expenditures from a total of $4.7 billion in 2007 to $7.8 billion in 2020 (excluding county levies).

But of course, the 3% inflation rate is overly optimistic. A study released in February, 2008 (Keehan, et al.), projected that national health and long-term care expenditures will grow at an annual rate of 6.7% between now and the year 2017, mostly driven by an increase in the cost of medical goods and services, but also by an increase in demand as baby boomers age. Similarly, a report by the office of the Assistant Secretary for Planning and Evaluation at the U.S. Department of Health and Human Services, indicated that between 1990 and 2003 the average annual rise in the price of overall medical care was 5.8%. Thus, if the recent past and the

Table 9
Projected Annual Public and Private Long-Term Care Expenditures
2005-2020 (in thousands)
(3% Inflation Rate is Assumed)

	2005		2010		2015		2020	
Long-Term Care Options	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**
Nursing Home	$2,575,633	$1,573,747	$2,741,527	$1,813,755	$3,518,362	$2,213,937	$4,341,591	$2,732,388
ICFs/MR	$602,315		$666,292		$783,143		$922,589	
Aging Waivers	$365,915		$412,695		$503,799		$621,791	
Home Care Waiver	$256,720		$287,431		$350,850		$433,020	
County Levies (Elderly & MR/DD)	$103,650		$116,043		$114,652		$174,845	
MR Waivers	$667,207		$738,053		$867,575		$1,021,904	
Developmental Centers	$210,285		$232,553		$273,444		$322,020	
Mental Health Centers	$15,574		$17,234		$20,949		$25,666	
RSS	$8,996		$9,958		$12,102		$14,819	
Prisons	$12,267		$13,640		$16,540		$20,291	
PACE	$27,596		$30,555		$37,698		$46,538	
Assisted Living		$534,890		$614,275		$746,060		$914,736
Privately Purchased LTC Services		$329,932		$366,046		$444,267		$543,928
Total	**$4,856,783**	**$2,438,569**	**$5,277,737**	**$2,794,076**	**$6,539,932**	**$3,404,264**	**$7,961,351**	**$4,191,051**

Source: Based on the data in tables 7 and 8.

new projections are any indication, the inflation rate in the health and long-term care industry will be much higher than 3%. To show the impact of inflation rate we recalculated (see Table 10) the projected long-term care expenditures using different annual inflation rates ranging from 3% to 8%. As is shown in Figure 9, in 2020, Medicaid expenditures could potentially increase from almost $7.8 billion, when inflation is at 3%, to $14.4 billion (excluded are county levies) assuming an inflation rate of 8%.

The projected public long-term care expenditures for the population with disability at different inflation rates show that the range of Medicaid long-term care allocations necessary to meet the future needs of the aged and the disabled population is a function of the increase in the price of health and/or long-term care services, more so than the increase in the number of people needing services, as shown in Tables 9 and 10 (last columns).

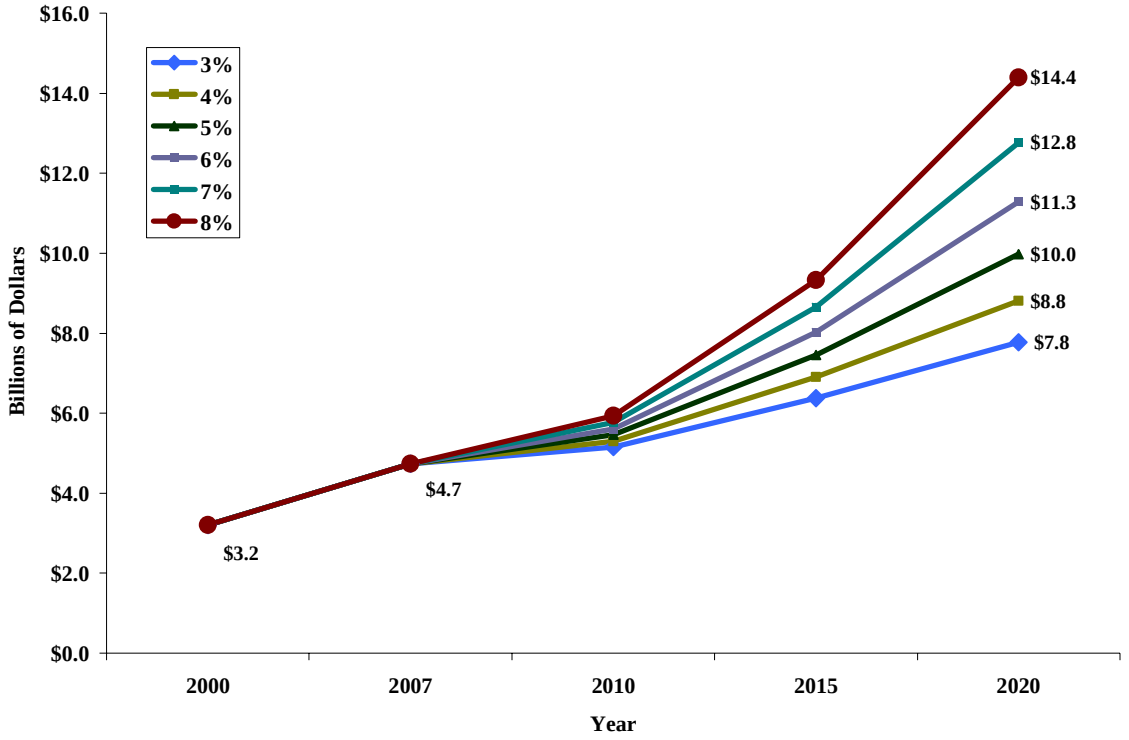
MEDICAID, LONG-TERM CARE EXPENDITURES, AND OHIO'S BUDGET

Medicaid is a joint state and federal program that provides health and long-term care coverage to low-income individuals and families. During 2006, Medicaid paid $13.6 billion (state, federal, and local) for the health and long-term care services of over 2 million Ohio residents, with an average monthly enrollment of 1.8 million persons. Ohio categorizes its Medicaid consumers into two broad categories: consumers who are age 65 and older, are blind, and/or are disabled, usually referred to as ABD population (Aged, Blind, and Disabled); all other consumers under age 65 are referred to as Covered Families and Children. As figures 10 and 11 show, slightly over one fourth of Ohio's Medicaid consumers are in the ABD category, yet, they are the beneficiaries of 72% of the state's total Medicaid expenditures, with an average annual expenditure per consumer of almost $17,250 compared to $2,255 for Covered Families and children (Ohio Department of Job and Family Services, 2007).

Table 10
Projected Public Long-Term Care Expenditures for 2020
at Different Inflation Rates (in thousands)

Long-Term Care Options	At 3%	At 4%	At 5%	At 6%	At 7%	At 8%
Nursing Home	$4,341,591	$4,922,644	$5,574,756	$6,305,815	$7,124,495	$8,040,329
ICFs/MR	$922,589	$1,046,062	$1,184,636	$1,339,986	$1,513,956	$1,708,571
Aging Waivers	$621,791	$705,008	$798,401	$903,102	$1,020,351	$1,151,514
Home Care Waiver	$433,020	$490,973	$556,013	$628,927	$710,581	$801,924
County Levies	$191,124	$216702,	$245,409	$277,592	$313,631	$353,948
MR Waivers	$1,021,904	$1,158,669	$1,312,161	$1,484,234	$1,676,931	$1,892,496
Developmental Centers	$322,020	$365,117	$413,484	$467,708	$528,430	$596,358
Mental Health Centers	$25,666	$29,101	$32,956	$37,277	$42,117	$47,531
RSS	$14,819	$16,802	$19,028	$21,523	$24,317	$27,443
Prisons	$20,291	$23,006	$26,054	$29,471	$33,297	$37,577
PACE	$46,538	$52,766	$59,757	$67,593	$76,368	$86,185
Total	**$7,961,351**	**$9,026,850**	**$10,222,655**	**$11,563,228**	**$13,064,474**	**$14,743,875**

Figure 9
Projected Medicaid Long-Term Care Expenditures by Inflation Rate (2007-2020)



Note: This Figure is based on the data that is presented in Tables 9 & 10, but the totals are adjusted to exclude county levy funds.

In the previous sections of this report we discussed the aging of Ohio's population, the impact of this change on the size of the population with disability, and the projected cost of caring for these additional people with disability. In this section, we will review the consequences of the increased demand for care paid for by Medicaid. As expected, a program that provides health and/or long-term care for an average of 1.8 million (almost 16% of total population) Ohioans monthly, accounts for a considerable portion of the state's budget.

Figure 10
Distribution of Ohio's Medicaid Beneficiaries by Type of Consumer, 2006

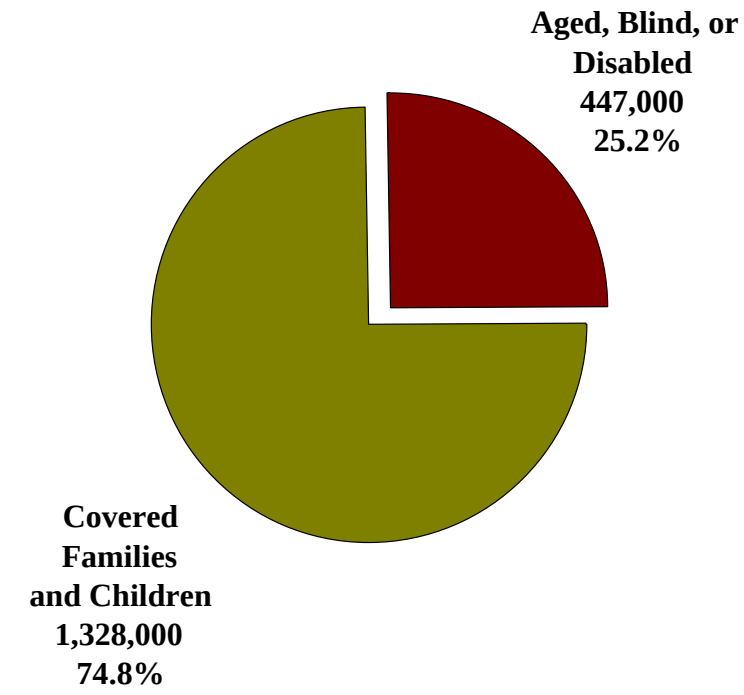
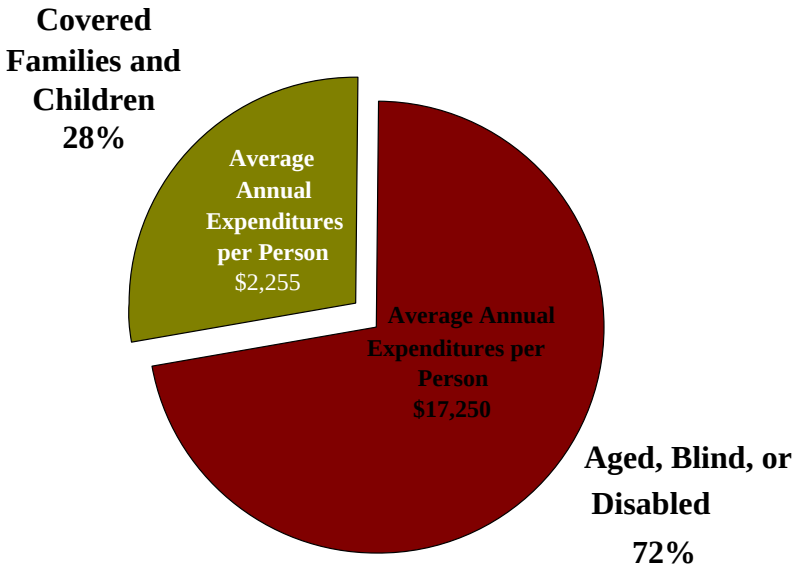


Figure 11
Medicaid Expenditures by Type of Consumer, 2006



Although funding long-term care services for individuals with disability who also meet the financial eligibility is part of the Medicaid program's responsibility, albeit a considerable one, Medicaid serves other populations and functions. In the following section, first, we briefly compare the growth of the state's budget and Medicaid allocations over time; next we examine the escalation of Medicaid long-term care expenditures since 2000.

Ohio's budget (state-only GRF)[10] has been growing steadily since 2000, although at a much slower pace than it grew during the 1990s. The total budget has grown from $15.9 billion in 2000 to $19.4 billion in 2006 (annual growth of rate of 3.7%), and the recently enacted budget extends the 2009 budget to $21.2 billion (at an average growth rate of 2.0% annually), an overall increase of 32% over 9 years, or 3.3% annually. The state's Medicaid expenditures have been growing faster than the overall budget, from $2.6 billion in 2000 to $4.4 billion in 2006 (annual rate of 11.5%).

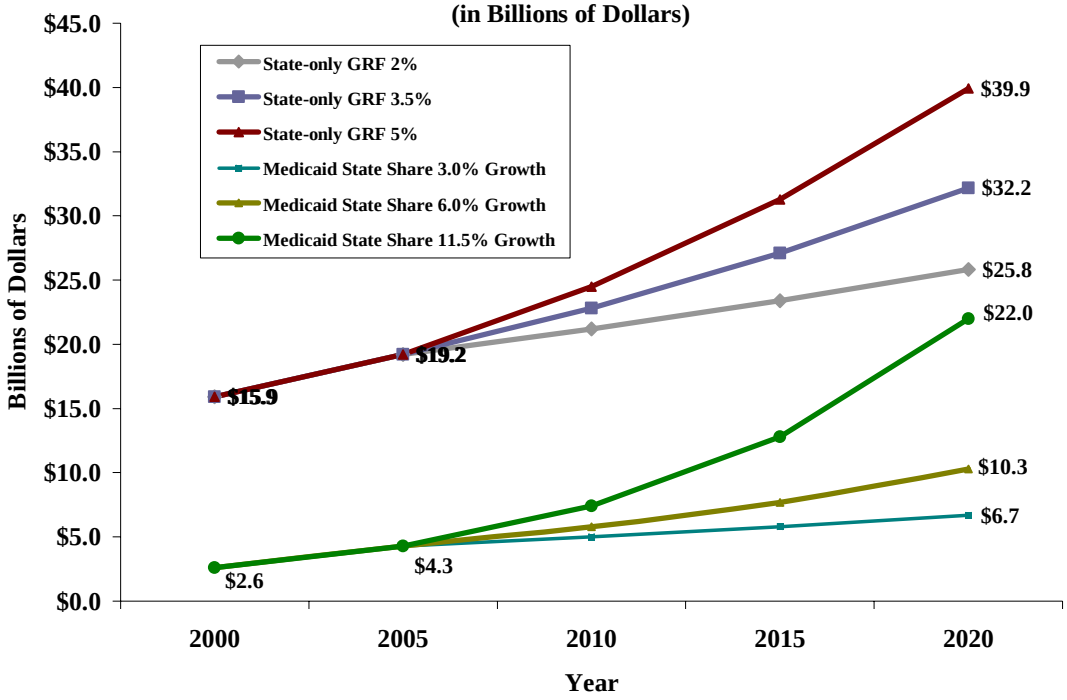
Figure 12 shows the simulated state budget for 2007 to 2020 at different growth rates, ranging from a 2% annual growth, similar to the most recent budget increases, to a high of 5%, more comparable to the budget expansions that the state experienced in 1990s. The simulated state share of Medicaid, ranging from 3% to 11.5%, is also displayed[11].

Medicaid as a proportion of state budget has grown gradually from 16% of the budget in 2000, to 22.6% of the budget in 2006, due to a faster growth rate than the overall budget.

[10] Throughout this report anytime Medicaid expenditures are mentioned, it is a reference to the total Medicaid dollars combined from state, federal, and local sources except in this section. In Ohio, state share varies from about 49 cents for each dollar spent on nursing home, ICFs/MR and the HCBS waivers to 30 cents per dollar for State Children's Health Insurance Program (Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, 2007).

[11] Data for 2000 to 2006 is based on personal communication on November 1, 2006 with Susan Ackerman, of Ohio Office of Budget and Management and September 20 through October 15, 2007 communication with David Lipthratt. The 2008-2009 data is from the Governor's Executive Budget Briefing.

Figure 12
Simulation of Total State Budget and State Share of Medicaid
(in Billions of Dollars)



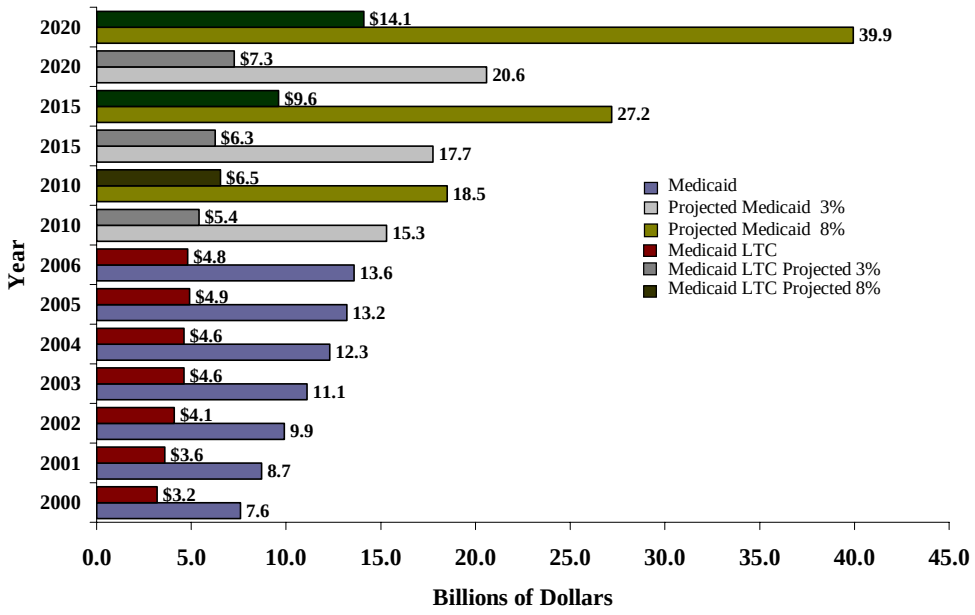
If we assume that the state budget can continue to grow at the unlikely annual rate of 2%, and the Medicaid budget at the rate of 3% from now until the year 2020, by the year 2020 Medicaid will consume 26% of the total state-only GRF. If, on the other hand, state economic conditions improve, and the state budget can grow at the rate of 5%, and Medicaid at 6% annually (at a rate still lower than the annual predicted inflation rate for health care services, 6.7%), then by the year 2020 the Medicaid share will be about 25% of the state budget. However, if Medicaid grows at 11.5% annually, as it did between 2000-2006, then the Medicaid program consumes 68% of total state GRF when the budget grows at 3.5%, and 55% when the budget grows at 5% annually.

What about the Long-Term Care Component of Medicaid?

Long-term care — the day-to-day extended care of individuals in the ABD category of Medicaid clients — uses a large proportion of the Medicaid program allocations. On average, between 2000 and 2006, long-term care expenditures accounted for an average of 39% of the total Medicaid budget from all sources (federal, state, and local). In response to the increasing number of people with long-term care needs and health care inflation the long-term care portion of the Medicaid budget grew by 7.5% between 2000 and 2006. ***Assuming that both Medicaid long-term care expenditures and the Medicaid program as a whole will continue along the same path in the next 14 years as occurred between 2000 and 2006,*** by the year 2020, the total long-term care portion of Medicaid dollars (from all sources) will grow to $13.2 billion, while total Medicaid expenditures will grow to $62.4 billion.

To understand how Medicaid growth could impact the entire state budget, we simulated both total Medicaid program and Medicaid long-term care expenditures for 2007 to 2020 using 3% and 8% annual cost increases. The results are presented in Figure 13. An average annual increase of 3% between 2007 and 2020 will increase the total Medicaid expenditures to $20.6 billion and Medicaid long-term care expenditures to $7.3 billion. If the rate of increase is as high as 8%, then the total Medicaid expenditures will increase to almost $40 billion while the long-term care component will increase to more than $14 billion. In the most likely scenario, both Medicaid and the long-term care expenditure component will grow at a rate somewhere between these two rates.

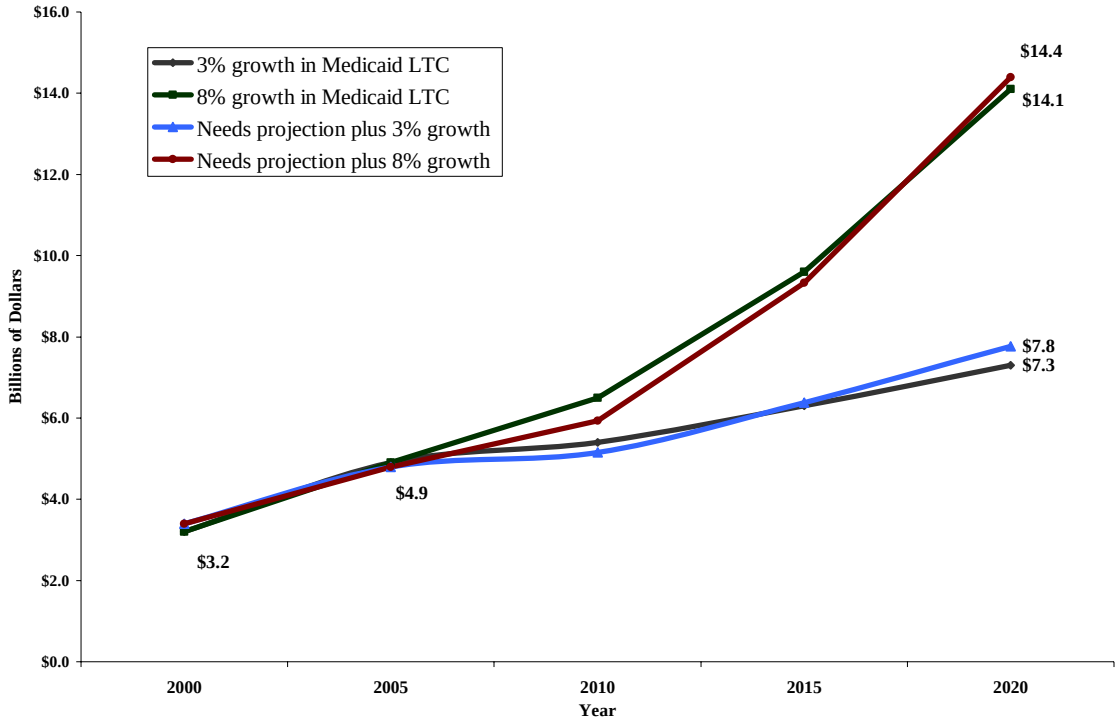
Figure 13
A Simulation of Total Medicaid and Medicaid Long-Term Care Expenditures
(in Billions of Dollars)



What If Medicaid Long-Term Care Expenditures and Use Patterns Continue on Their Current Paths?

To understand how Medicaid long-term care expenditure growth could impact the entire Medicaid program, and possibly state budget allocations, we compared the results of the projected range of potential Medicaid long-term care expenditures based on the increase in the number of people with disability at different inflation rates (Figure 9) with the simulated Medicaid long-term care expenditures for 2007 to 2020 based on the growth pattern in the last six years (Figure 13). The Medicaid long-term care allotment that will be necessary to meet the future needs of the aged and the disabled population is much more sensitive to the rise in the price of health and/or long-term care services than the increase in the size of the population with disability, as shown in Figure 14. The simulated budget shows that the Medicaid long-term allocations, patterned after 2000 to 2006 expenditures, takes into account the increase in the number of people with disabilities who need long-term care services.

Figure 14
Comparison of Projected and Simulated Long-Term Care Expenditures
(in Billions of Dollars)



Similarly, any annual rise in the cost of medical care services in future must be met with a more than equal annual increase in the Medicaid long-term care budget. This would be necessary to compensate for the increase in the cost of services, in addition to the increase in demand due to a larger number of people with long-term care needs. If we accept that the cost of medical goods and services will rise at 6.7% annually for the next 14 years, as predicted by Keehan and colleagues, then Ohio's Medicaid long-term care expenditures need to increase at a rate slightly higher than 7.5% to meet the needs of the population with disability. But, an 7.5% Medicaid long-term care growth has to be accompanied with at least an equal annual growth in the total Medicaid allocation to prevent crowding out all other Medicaid clients. In such a scenario, by 2020 total Medicaid allocations need to be about $37.4 billion, almost three times as the 2006

amount. That dictates a much higher annual growth rate for the state budget in order to preserve other functions of state government.

THE IMPLICATIONS OF THE INCREASED DEMAND FOR LONG-TERM CARE SERVICES ON MEDICAID UTILIZATION

The number of Ohioans who rely on Medicaid financed long-term care services and support has been growing rapidly and may grow at an even higher rate in response to an additional nearly 40,000 individuals with severe disability, some of whom are expected to need publicly funded long-term care services between now and the year 2020. ***If these Ohioans use formal long-term care services at the same rate as their predecessors did in 2007,*** then there will be an increased demand for services in every facet of the long-term care industry. Some components of this industry, such as nursing homes, residential care facilities, and ICFs/MR currently have excess capacity and will be able to respond to the additional demand. The HCBS programs, on the other hand, will have to be expanded legislatively to successfully respond to the anticipated increased need. Both home care industry and institutional long-term care providers rely on the same pool of personal care workers for the majority of the day-to-day care of their consumers. This increase in demand may require improvements to the wage and benefit packages now offered to these workers in order to attract more people to these careers.

Ohio has been seeking ways to control the Medicaid long-term care expenditures by gradually transitioning from a system of long-term care that essentially relied on institutional care, to a system that provides an array of home and community-based care services. In fact, in 2005, the PASSPORT daily census was close to about one half of that of the nursing home Medicaid daily census (Mehdizadeh, et al., 2007). Yet, Medicaid long-term care dollars spent on institutional care for Ohio's population with physical and/or cognitive disability were nearly four

times the amount spent on HCBS services (79% versus 21%, respectively), and Ohio ranked 35th among the states in terms of the percentage Medicaid spent on nursing home care versus HCBS care in 2006 (Burwell, 2007).

The state has expanded HCBS for individuals with ID and/or DD. Currently, for every person residing in an ICF/MR there are almost three persons in the community receiving HCBS. In spite of these use patterns, Ohio's long-term care expenditures for individuals with ID and/or DD were almost evenly divided between institutional care and home care in 2006 (52.6% versus 47.4%, respectively). A majority of the other states have allocated a larger portion of their budget to non-institutional care. In fact, Ohio was ranked 43rd amongst the states in terms of their proportion of Medicaid funds spent on institutional ID and/or DD care versus home and community-based services (Burwell, 2007).

As a large state, Ohio has a sizeable number of individuals experiencing disability. In particular, Ohio ranks 7th in the number of individuals over age 60 and as the state population ages, the challenges associated with long-term care services and supports will continue to grow. While states such as Ohio are still searching for the answers to these challenges, what is clear is that the option of simply maintaining the current approach will not be viable for the future.

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APPENDIX A: DETAILED AGE BREAKDOWNS

Table A-1
Prevalence of Severe Disability Among Ohioans
by Sex, Age Group, and Disability Type, 2005

	Physical and/ or Cognitive Disability		ID and/or DD		Mental Illness	
	%		%		%	
Age Group	Female	Male	Female	Male	Female	Male
0 to 4	0.58	1.04	0.07	0.07	0.00	0.00
5 to 9	0.19	0.55	0.23	0.30	0.00	0.00
10 to 14	0.04	0.21	0.26	0.25	0.00	0.04
15 to 19	0.07	0.20	0.30	0.28	0.05	0.03
20 to 24	0.14	0.06	0.29	0.34	0.02	0.15
25 to 29	0.05	0.16	0.26	0.65	0.07	0.19
30 to 34	0.15	0.24	0.25	0.46	0.16	0.38
35 to 39	0.31	0.17	0.13	0.26	0.29	0.29
40 to 44	0.48	0.25	0.20	0.50	0.58	0.51
45 to 49	0.82	0.39	0.29	0.61	1.00	0.72
50 to 54	0.85	0.53	0.49	0.36	1.46	0.59
55 to 59	1.12	0.90	0.31	0.38	1.06	0.89
60 to 64	2.22	1.27	0.22	0.22	1.08	0.98
65 to 69	3.05	2.80	0.21	0.34	1.91	1.28
70 to 74	5.13	4.04	0.34	0.29	2.44	2.55
75 to 79	8.04	6.14	0.40	0.51	3.32	3.22
80 to 84	12.89	11.08	0.58	0.53	3.53	4.65
85 +	26.58	16.07	0.37	0.12	7.45	5.39

Table A-2
Projections of Ohio's Population by Age Group and Type of Disability: Physical and Cognitive

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2005	**Under 15**	2,264,102	6,833	9,722
	15-24	1,614,620	20,088	1,930
	25-44	3,114,621	80,687	7,258
	45-59	2,427,054	109,078	18,311
	60-69	927,723	47,689	21,243
	70-79	649,010	42,835	38,506
	80-84	249,450	13,774	30,476
	85+	217,462	4,680	50,795
	Total	11,464,042	325,664	178,241

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2010	**Under 15**	2,304,380	7,076	9,715
	15-24	1,678,340	20,398	2,025
	25-44	3,007,630	77,533	6,941
	45-59	2,543,352	114,667	19,337
	60-69	1,121,430	57,466	25,252
	70-79	644,574	42,221	37,373
	80-84	235,664	13,123	28,745
	85+	228,963	7,135	56,284
	Total	11,764,333	339,619	185,672

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2015	**Under 15**	2,269,520	6,923	9,649
	15-24	1,697,900	20,950	2,034
	25-44	2,990,850	76,945	6,842
	45-59	2,502,895	113,273	19,298
	60-69	1,327,541	68,012	30,347
	70-79	708,233	46,214	40,576
	80-84	218,349	12,208	26,612
	85+	245,576	7,729	60,149
	Total	11,960,864	352,254	195,507

Table A-2 Continued
Projections of Ohio's Population by Age Group
and Type of Disability: Physical and Cognitive

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2020	**Under 15**	2,273,130	6,883	9,754
	15-24	1,669,350	20,585	2,001
	25-44	3,039,290	77,686	6,831
	45-59	2,374,220	106,975	18,194
	60-69	1,474,618	75,502	33,790
	70-79	870,029	56,537	49,223
	80-84	230,718	12,956	28,096
	85+	246,502	7,796	60,265
	Total	12,177,857	364,920	208,154

Source: Author's projections.

[a] Moderate disability is defined as having difficulty performing at least one of the following activities of daily living and requiring the assistance of another person to perform the activity: bathing, using the toilet, dressing, grooming, eating, taking medications, or moving from one position to another (transferring in and out of bed or chair). Persons with cognitive impairment requiring supervision are also considered to be experiencing some disability.

[b] Severe disability is defined as needing assistance of another person in at least two of the following activities of daily living: bathing, using the toilet, dressing, grooming, eating, or moving from one position to another (transferring in and out of bed or chair); or at least needing assistance with one of the activities of daily living and with taking medications; or being cognitively impaired and requiring 24-hour supervision.

Table A-3
Projections of Ohio's Population by Age Group and Type of Disability: Intellectual and/or Developmental Disability

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2005	**Under 15**	2,264,102	61,920	4,530
	15-24	1,614,620	55,905	4,897
	25-44	3,114,621	47,318	10,482
	45-59	2,427,054	29,590	9,905
	60-69	927,723	6,282	2,257
	70-79	649,010	1,005	2,491
	80-84	249,450	0	1,400
	85+	217,462	939	635
	Total	11,464,042	202,959	36,597

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2010	**Under 15**	2,304,380	64,398	4,668
	15-24	1,678,340	59,008	5,080
	25-44	3,007,630	45,797	9,986
	45-59	2,543,352	30,647	10,352
	60-69	1,121,430	7,781	2,718
	70-79	644,574	949	2,431
	80-84	235,664	0	1,322
	85+	228,963	359	795
	Total	11,764,333	208,939	37,352

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2015	**Under 15**	2,269,520	63,003	4,572
	15-24	1,697,900	58,915	5,145
	25-44	2,990,850	45,480	10,071
	45-59	2,502,895	29,811	10,126
	60-69	1,327,541	9,019	3,241
	70-79	708,233	1,016	2,651
	80-84	218,349	0	1,224
	85+	245,576	374	845
	Total	11,960,864	207,618	37,875

Table A-3 Continued
Projections of Ohio's Population by Age Group and
Type of Disability: Intellectual and/or Developmental Disability

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2020	**Under 15**	2,273,130	62,420	4,558
	15-24	1,669,350	58,087	5,060
	25-44	3,039,290	46,120	10,270
	45-59	2,374,220	28,382	9,625
	60-69	1,474,618	9,990	3,606
	70-79	870,029	1,219	3,228
	80-84	230,718	0	1,293
	85+	246,502	369	845
	Total	12,177,857	206,587	38,485

Source: Author's projections.

[a] Moderate disability is defined as having a diagnosis of ID or DD with or without difficulty performing at least one of the following activities of daily living and requiring the assistance of another person to perform the activity: bathing, using the toilet, dressing, grooming, eating, taking medications, or moving from one position to another (transferring in and out of bed or chair). Persons with cognitive impairment requiring supervision are also considered to be experiencing some disability.

[b] Severe disability is defined as having a diagnosis of ID or DD and needing assistance of another person in at least two of the following activities of daily living: bathing, using the toilet, dressing, grooming, eating, or moving from one position to another (transferring in and out of bed or chair); or at least needing assistance with one of the activities of daily living and with taking medications; or being cognitively impaired and requiring 24-hour supervision.

Table A-4
Projections of Ohio's Population by Age Group and Type of Disability: Severe Mental Illness

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2005	**Under 15**	2,264,102	23,163	163
	15-24	1,614,620	34,099	1,042
	25-44	3,114,621	77,827	10,020
	45-59	2,427,054	81,039	23,096
	60-69	927,723	28,221	12,000
	70-79	649,010	10,692	18,681
	80-84	249,450	3,412	9,844
	85+	217,462	2,097	14,827
	Total	11,464,042	260,550	89,673

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2010	**Under 15**	2,304,380	24,033	171
	15-24	1,678,340	35,582	1,054
	25-44	3,007,630	75,377	9,596
	45-59	2,543,352	84,920	24,257
	60-69	1,121,430	34,256	14,290
	70-79	644,574	10,741	18,301
	80-84	235,664	3,233	9,331
	85+	228,963	5,071	14,626
	Total	11,764,333	273,213	91,626

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2015	**Under 15**	2,69,520	23,507	167
	15-24	1,697,900	35,883	1,085
	25-44	2,990,850	74,625	9,458
	45-59	2,502,895	83,442	23,845
	60-69	1,327,541	40,268	17,135
	70-79	708,233	11,869	19,978
	80-84	218,349	3,001	8,656
	85+	245,576	5,427	15,713
	Total	11,960,864	278,022	96,037

Table A-4 Continued
Projections of Ohio's Population by Age Group and Type of Disability: Severe Mental Illness

Year	Age Group	Total Population	Population with Moderate Disability[a]	Population with Severe Disability[b]
2020	**Under 15**	2,273,130	23,351	165
	15-24	1,669,350	35,302	1,066
	25-44	3,039,290	75,316	9,396
	45-59	2,374,220	78,988	22,475
	60-69	1,474,618	44,661	19,064
	70-79	870,029	14,669	24,375
	80-84	230,718	3,177	9,163
	85+	246,502	5,441	15,786
	Total	12,177,857	280,905	101,490

Source: Author's projections.

[a] Moderate disability is defined as having a diagnosis of mental illness with or without difficulty performing at least one of the following activities of daily living and requiring the assistance of another person to perform the activity: bathing, using the toilet, dressing, grooming, eating, taking medications, or moving from one position to another (transferring in and out of bed or chair). Persons with cognitive impairment requiring supervision are also considered to be experiencing some disability.

[b] Severe disability is defined as having a diagnosis of mental illness and needing assistance of another person in at least two of the following activities of daily living: bathing, using the toilet, dressing, grooming, eating, or moving from one position to another (transferring in and out of bed or chair); or at least needing assistance with one of the activities of daily living and with taking medications; or being cognitively impaired and requiring 24-hour supervision.

Table A-5
Proportion of Ohio's Population With Severe Disability and Use of Formal Long-Term Care Services, 2007

	Persons With Severe Disability		Persons Receiving Formal LTC	
All Disabilities Combined by Age	**Number**	**Percentage of Total Population**	**Number**	**Percentage of Severely Disabled**
Under 15	14,476	.63	3,280	22.7
15-24	7,985	.49	4,679	58.6
25-44	27,265	.89	16,798	61.6
45-59	52,365	2.12	17,653	33.7
60-69	38,204	3.80	22,692	59.4
70-79	59,049	9.12	41,412	70.1
80-84	40,792	16.72	27,771	68.1
85+	68,437	30.82	47,390	69.3
Total	**308,573**	**2.66**	**181,676**	**58.9**

Source: Tables A-2 to A-4 and MDS June 2005, PASSPORT Information Management System, Medicaid Management Information System, OSCAR for ICFs/MR resident characteristics, the CMS 372 reports for Ohio home and community-based services waivers and Medicaid long-term care unified budget presentations.

Table A-6
Proportion of Ohio's Population With Severe Physical and/or Cognitive Disability and Use of Formal Long-Term Care Services, 2007

	Persons With Severe Disability		Persons Receiving Formal LTC	
Physical/Cognitive by Age	**Number**	**Percentage of Total Population**	**Number**	**Percentage of Severely Disabled**
Under 15	9,725	.43	888	9.1
15-24	1,968	.12	631	32.1
25-44	7,131	.23	3,616	50.7
45-59	18,721	.76	8,766	46.8
60-69	22,847	2.27	19,076	83.5
70-79	38,053	5.88	38,059	100.0
80-84	29,784	12.21	25,966	87.2
85+	52,991	23.86	45,860	86.5
Total	**181,220**	**1.56**	**142,863**	**78.8**

Source: Tables A-2 to A-4 and MDS June 2005, PASSPORT Information Management System, Medicaid Management Information System, OSCAR for ICFs/MR resident characteristics, the CMS 372 reports for Ohio home and community-based services waivers and Medicaid long-term care unified budget presentations.

Table A-7
Proportion of Ohio's Population With Severe Intellectual and/or Developmental Disability and Use of Formal Long-Term Care Services, 2007

	Persons With Severe Disability		Persons Receiving Formal LTC	
ID/DD by Age	**Number**	**Percentage of Total Population**	**Number**	**Percentage of Severely Disabled**
Under 15	4,585	.20	2,392	52.2
15-24	4,970	.30	3,384	68.1
25-44	10,284	.34	10,002	97.3
45-59	10,084	.41	6,751	67.0
60-69	2,441	.24	2,209	90.5
70-79	2,467	.38	1,273	51.6
80-84	1,369	.56	793	57.9
85+	699	.29	133	19.0
Total	**36,899**	**.32**	**26,936**	**73.0**

Source: Tables A-2 to A-4 and MDS June 2005, PASSPORT Information Management System, Medicaid Management Information System, OSCAR for ICFs/MR resident characteristics, the CMS 372 reports for Ohio home and community-based services waivers and Medicaid long-term care unified budget presentations.

Table A-8
Proportion of Ohio's Population With Severe Mental Illness and Use of Formal Long-Term Care Services, 2007

	Persons With Severe Disability		Persons Receiving Formal LTC	
Severe Mental Illness by Age	**Number**	**Percentage of Total Population**	**Number**	**Percentage of Severely Disabled**
Under 15	166	0	0	0
15-24	1,047	0	664	63.4
25-44	9,850	.32	3,180	32.3
45-59	23,560	.95	2,136	9.1
60-69	12,916	1.28	1,407	10.9
70-79	18,529	2.86	2,080	11.2
80-84	9,639	3.95	1,012	10.5
85+	14,747	6.64	1,397	9.5
Total	**90,454**	**.78**	**11,877**	**13.1**

Source: Tables A-2 to A-4 and MDS June 2005, PASSPORT Information Management System, Medicaid Management Information System, OSCAR for ICFs/MR resident characteristics, the CMS 372 reports for Ohio home and community-based services waivers and Medicaid long-term care unified budget presentations.

APPENDIX B: EXTENDED METHODOLOGY

Projections of Ohio's population with disability occurred in several steps. First, in a 2004 report titled *Profile & Projections of the 60+ Population* by Scripps Gerontology Center, we developed projections for each of the 88 counties by sex and age group from 2000 to 2020 by five year increments. The county projections were then combined to obtain state population projections. These population projections, in conjunction with the population projections from the Ohio Department of Development, were used in this report. Next, we estimated the prevalence of physical and cognitive disability, intellectual and developmental disability, and severe mental illness among the population by age group and by sex. Finally, we applied these disability rates to the projected population — ***assuming the rates will remain the same for the projection period 2005-2020*** — to predict the number of persons with each type of disability in Ohio.

Projection Method – For projecting the older population, we developed population projections using the "cohort component method" (Shryock, Siegel, and Associates, 1973). This method involves beginning with actual population counts in each sex and age group, and applying specific rates of change (births, deaths, and migration) to estimate the future population. We projected the population in cycles of five-year periods through the year 2020, then we applied projected survival rates to the beginning population in order to calculate the surviving population for the five-year periods (see following section for an explanation of survival rates). Next, we applied sex and age group specific migration rates to calculate the number of survivors leaving and joining the state population during the five-year periods. The final projected population equals the survived population plus the difference between the number of migrants leaving and the number joining the state. The projected population at the end of each five-year period becomes the beginning population for the next five-year period, and the procedure is repeated

until 2020. We used five-year age groupings of men and women to make the projections. In order to project the population that will be 60+ in 2020, we began with the population that was 40+ in 2000 (these cohorts, of course, age as they are projected forward in time).

Survival Rates - To calculate survival rates for Ohio's older population, we combined projected national mortality rates from the U.S. Census with actual mortality rates for the state to develop a trended set of survival rates for 2005-2020. All calculations were done for each sex in each of the five-year age groups. Using Census projected life tables for 2000, 2005, 2010, 2015, and 2020, we developed five-year survival rates for the nation (for life tables, see http://www.census.gov/population/www/projections/natdet.html). Using Ohio counts of both death and population for 2000, we developed survival rates for Ohio for 2000. We then projected each county's survival rates to pattern the expected change for the nation, while maintaining the difference between the state and the nation that occurred in 2000.

Migration Rates - We computed net migration estimates (i.e., the difference in the number of migrants joining and leaving the state) for each county in the state for each sex in five-year age groups (beginning with ages 40-44 years old, through 95+). We calculated migration estimates using Census data for 1990 and 2000 and tallies of state deaths from Ohio public-use mortality files (Ohio Department of Health, 1990-2000). We "survived" the 1990 state population of each sex and age group by subtracting the deaths from those residing in the county from April 1, 1990 through March 31, 2000. In calculating the deaths occurring to an age group, we adjusted for the group's getting older, or aging, during the decade. We calculated net migration by subtracting this survived population from the 2000 count of the population (the age group that was 10 years older in 2000 than they were in 1990). Thus, net migration equals the actual 2000 population count minus the survived population (or minus the number of people who would have been in the

county had no migration taken place during the decade). The aforementioned set of assumptions which guided our projection methodology garnered specific results. If these assumptions were changed, different results would be obtained.

We took on the task of projecting the older population in the earlier report because we desired a detailed age and sex break down for the "oldest old", the population over 85 years old, and because we wanted the projections to reflect the net migration of that same population. However, in this study, we are examining the entire population. Therefore, for ages 0 to 59 we relied on the population projections produced by the Ohio Department of Development (ODOD) so as not to duplicate their efforts.

The population projections completed by Scripps Gerontology Center were combined with the population projections by ODOD for five-year age groups between 0 and 49 for 2010; 0 to 54 for 2015, and 0 to 59 for 2020. The 2005 data are the actual U.S. Census estimates for all ages. Figures B-1 to B-4 in this Appendix present Ohio's population pyramids for 2005 to 2020. Through a combined effect of a large number of baby boomers reaching ages 40 to 60 in 2005, 45 to 64 in 2010, 50 to 69 in 2015, and 55 to 74 in 2020, in addition to a net outmigration in Ohio, the population pyramids shown here deviate from traditional pyramid shapes.

Estimation of Age and Sex Specific Disability Rates - Disability in this study is defined as a measure that reflects difficulty in performing Activities of Daily Living (ADL) and requiring the assistance of another person to perform the activity. The inability to perform an ADL could be the result of physical and cognitive impairment, intellectual/developmental disability, or as a result of severe mental illness. For each type of disability two levels are assigned to indicate the severity of the impairment: "severe" disability and "moderate" disability. The definition for severe disability in this study is equivalent to meeting Medicaid eligibility criteria for

Intermediate Level of Care (ILOC) in a nursing home or Intermediate Level of Care in an intermediate facility for intellectually or developmentally disabled persons (ILOC-MR). Those people designated with moderate disability either need the assistance of another person, with only one ADL or administration of medication or had a diagnosis of cognitive impairment, dementia, ID and/or DD or mental illness but did not meet ILOC or ILOC-MR.

Disability rates for community residents were calculated separately from the institutional-dwelling residents, and were applied to the community population to get the number of individuals with each type of disability (physical and/or cognitive, intellectual/developmental, mental illness) in the community. These numbers were then combined with the actual number of disabled persons in Ohio institutions to obtain the total size of Ohio's population with each type of disability in 2005.

The community disability rates are based on the fifth wave (2001-2002) Survey of Income and Program Participation (SIPP). SIPP is a nationally representative household survey of U.S. community residents. The extensive and specific questions regarding the presence of certain conditions such as "learning disability", "mental or emotional problem or disorder", "mental retardation" and "senility/dementia/Alzheimer's", along with the responses to ADL questions, were key to determining the type and extent of disability among the survey participants.

The disability rate for the institutional population of Ohio is based on the actual number of persons with disability in Ohio institutions in 2005. The number of persons in each disability group in nursing homes, ICFs/MR, assisted living facilities, Ohio prisons, mental health centers, and residential settings for persons with developmental disabilities were combined to determine the number of persons with each type of disability in each sex and age group in Ohio institutions.

The numbers of persons with disability in institutional settings were then added to the projected number of persons with disability in the community in 2005 to find an estimated total number of disabled persons in Ohio by sex, age group, and by type of disability. ***Assuming the proportion of the population with disability within each sex and age group remains the same during the next 15 years***, these proportions were applied to the projected population for 2005 to 2020 to obtain the projected number of disabled persons.

Figure B-1
2005 Age-Sex Pyramid: Ages 45+ from Scripps Census Estimates and Ages 0-44 from ODOD

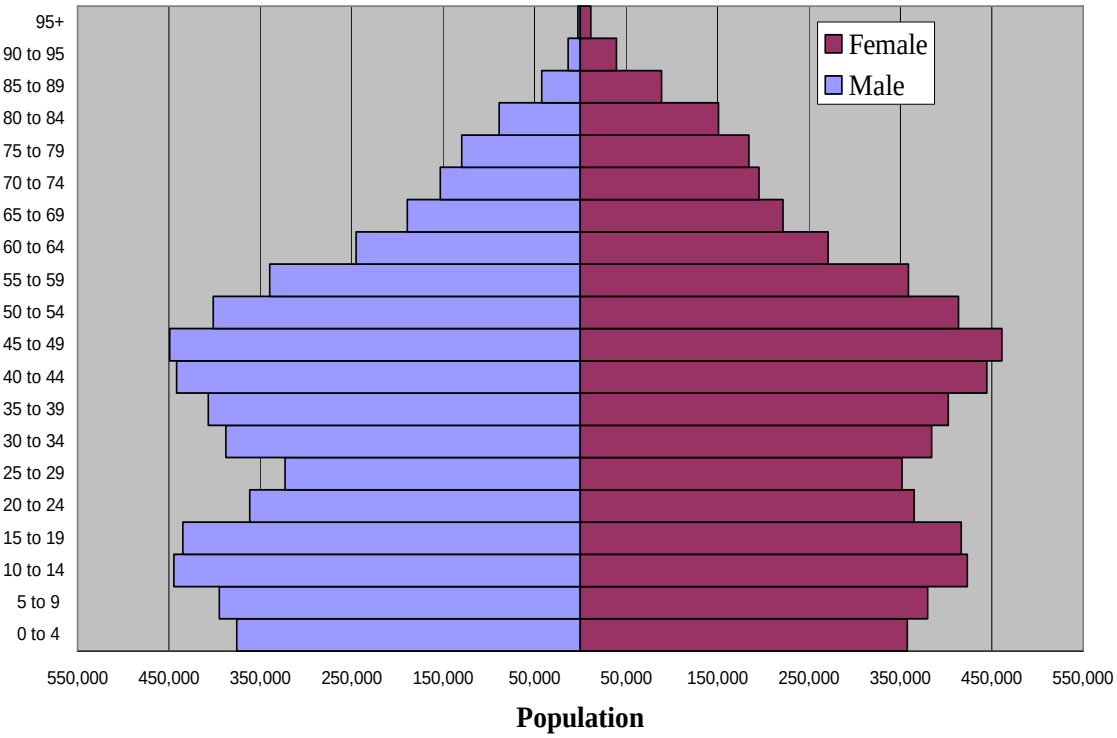

Figure B-2
2010 Age-Sex Pyramid: Ages 50+ from Scripps Population Projections and Ages 0-49 from ODOD

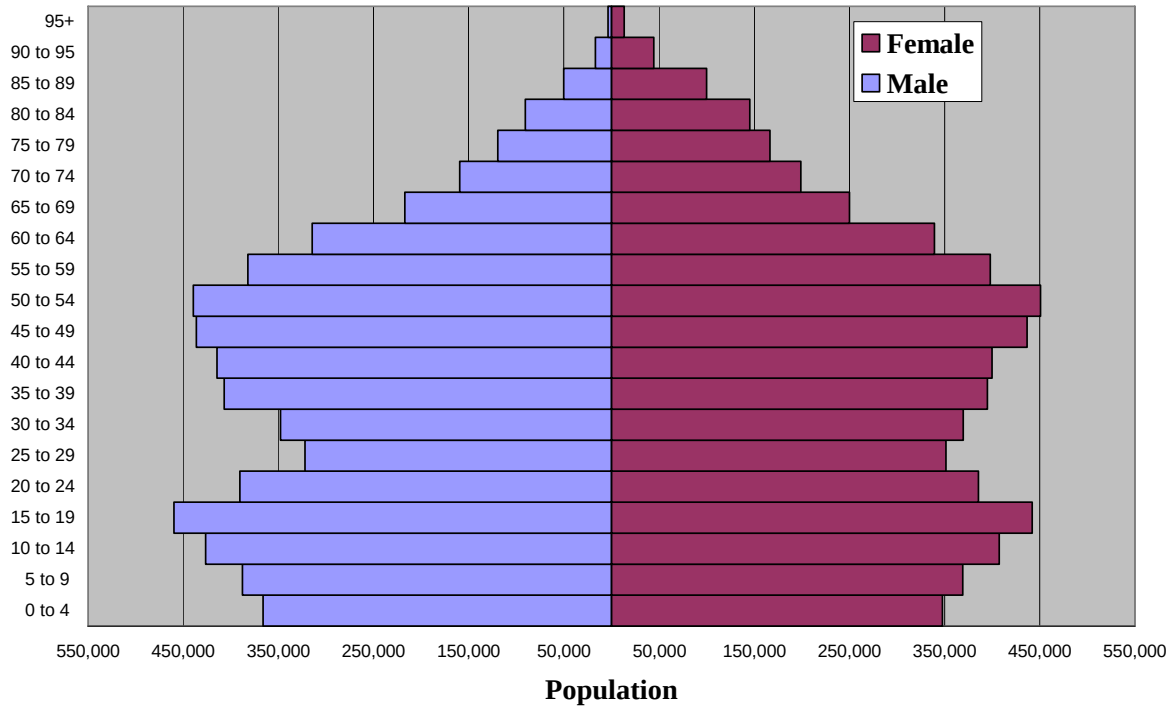

Figure B-3
2015 Age-Sex Pyramid: Age 55+ from Scripps Population Projections and Ages 0-54 from ODOD

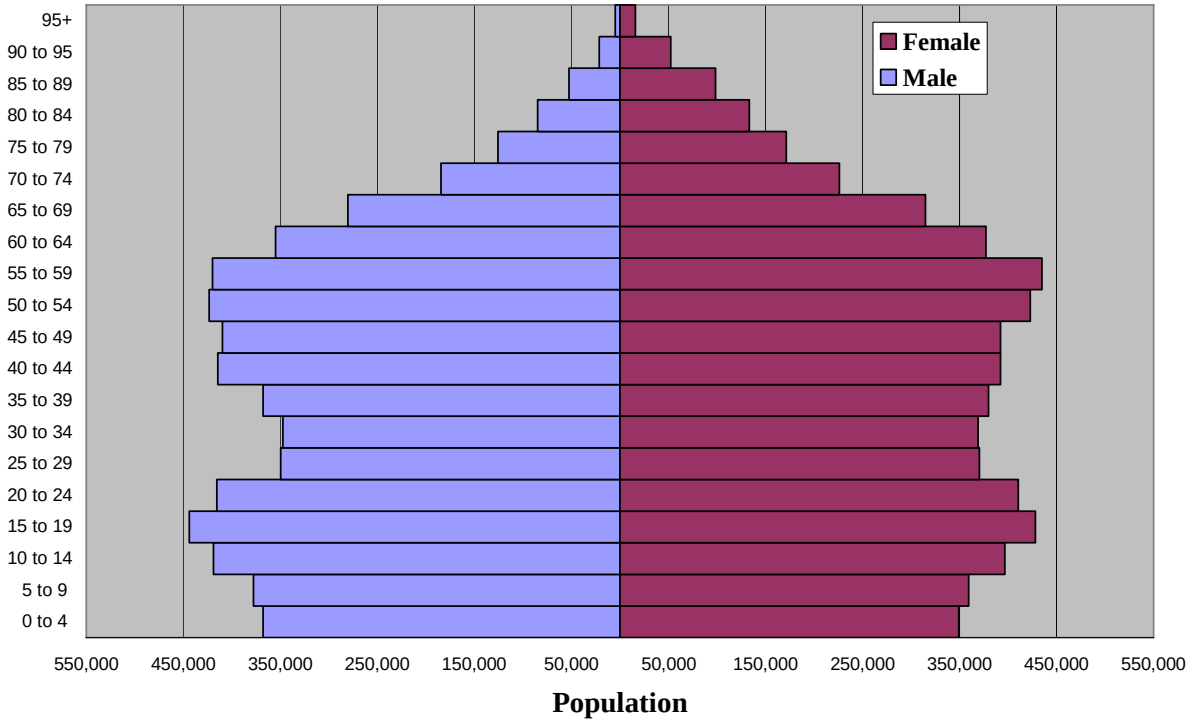

Figure B-4
2020 Age-Sex Pyramid: Age 60+ from Scripps Population Projections and Age 0-59 from ODOD