



Disabilities

The definition of a person with a disability can vary. Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 have adopted a definition that encompasses the person, physical surroundings, and social environment. A person with a disability is someone who (1) has a physical or mental impairment that substantially limits one or more major life activities; (2) has a record of such impairment; or, (3) is regarded as having such impairment. From a legal, benefit, and social program perspective, disability is often defined on the basis of specific activities of daily living, work, and other functions essential to full participation in community-based living. *The Surgeon General's Call to Action to Improve Health and Wellness of Persons with Disabilities*¹ established 4 goals that shown in Table 16.1.

In the United States, more than 50 million people experience some form of disability.³ In general, disabilities are characteristics of the body, mind, or senses that affect a person's ability to engage in some or all aspects of day-to-day life. Some disabilities are visible; others are not. Some are physical, some visual or auditory, some developmental or cognitive, and some mental or behavioral. For example, the three most common causes of physical disability in the United States are arthritis or rheumatism, back or spine problems, and heart trouble.⁴

Developmental disabilities are chronic conditions that initially manifest in persons aged at most 18 years and result in impairment of physical health, mental health, cognition, speech, language, or self-

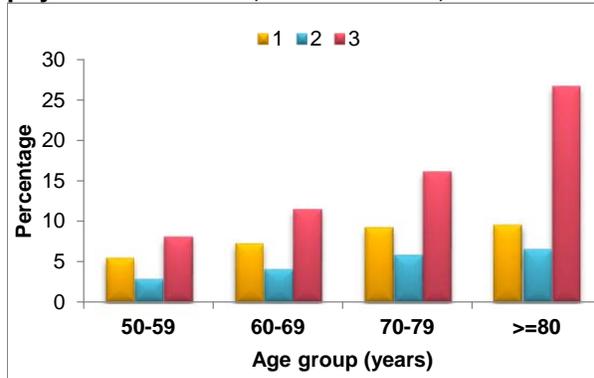
care. The estimated average lifetime economic costs per person with developmental disabilities are \$1,014,000 for intellectual disabilities, \$921,000 for cerebral palsy, \$566,000 for vision impairment, and \$417,000 for hearing loss.⁵ Healthcare expenditures for a Missouri adult with disabilities average \$2,396 per year.⁶ The personal costs incurred by families caring for children with disabilities also can be substantial.⁷ It has been estimated that within the bi-state metropolitan statistical area, 14.9% of children have special health care needs as a result of disabilities (14.4% in Jackson County).⁸ The rate is higher among non-Hispanic whites than non-Hispanic blacks or Hispanics. Older adults with intellectual disabilities generally die at an earlier age than do adults in the general population.⁹

As individuals age, the prevalence and number of physical limitations increase (Figure 16.1). Lower socioeconomic status in childhood appears to be linked to racial differences in disability in adulthood.¹⁰ Yet, the National Long Term Care Study reports that the disability rate among people aged at least 65 years has been declining.¹¹ Changes in the prevalence of heart and circulatory conditions, as well as visual limitations, played a major role in this decline, although it appears that increases in obesity may have a countervailing effect. Data suggest that disabilities affecting basic activities of daily living, instrumental activities of daily living and mobility, are actually increasing among those 60-69 years of age, while remaining steady or declining in older age groups.¹²

Table 16.1. Surgeon General's call to action goals

Goal 1	People nationwide understand that persons with disabilities can lead long, healthy productive lives
Goal 2	Health care providers have the knowledge and tools to screen, diagnose, and treat the whole person with a disability with dignity
Goal 3	Persons with disabilities can promote their own good health by developing and maintaining healthy lifestyles
Goal 4	Accessible health care and support services promote independence for persons with disabilities

Figure 16.1. Percentage of adults by number of physical limitations, United States, 2001-2007



(source: NCHS Data Brief 20. Julv 2009)

In the United States, almost 30% of the non-institutionalized adult population has difficulty with basic actions. This was indicated by reporting at least some difficulty with basic movement (more than 20%) or sensory (13%), cognitive (3%) or emotional difficulties (3%).¹³ Non-Hispanic blacks aged at least 50 years not only have higher rates of physical limitations that non-Hispanic whites of the same age, but they generally experience rates of physical limitations similar to non-Hispanic whites a decade older.¹⁴ Women are more likely than men to have physical limitations and these differences increase with age.

In Missouri, it is estimated that 21.4% of the adult population suffers from at least one disability with prevalence higher among females (22.0%) than males (20.7%).¹⁵ The prevalence of disability increases with age. According to 2008 Behavioral Risk Factor Surveillance System (BRFSS) data (www.cdc.gov), 22.1% of adults in the Kansas City bi-state metropolitan area report activity limitation because of physical, mental, or emotional problems. Additionally, 8% of adults have health problems that require special equipment. The United States 2000 Census identified 85,046 non-institutionalized Kansas City residents aged at least 5 years (21.0%) who

Table 16.2. Disabilities by age group, Kansas City, MO, Census 2000

Age-Group (years)	Disability	No Disability
5-15	3,837	65,009
16-20	4,875	22,525
21-64	54,899	204,125
65-74	9,496	17,552
75+	11,939	10,477
Total	85,046	319,688

had a disability (Table 16.2). Of those between the ages of 16 and 64 who had a disability, 56.7% were employed. As socioeconomic status increases, the prevalence of impairments or health problems that limits crawling, walking, running, or playing among children aged fewer than 18 years declines.¹⁶

Functional limitations among Americans between the ages of 55 and 84 years have been found to be inversely related to social class across the full spectrum of the socioeconomic gradient.¹⁷ This did not extend beyond those aged 85 years or more. Females are more likely than males to experience functional difficulties and the likelihoods increase with age.¹⁸ Obese individuals report more difficulties than overweight individuals.

In public health, there is a population health measure known as disability-adjusted life years, or DALY. It was developed so non-fatal outcomes could be considered alongside mortality in the prioritization of health resources.¹⁹ DALYs are composed of both years of life lost due to premature death and years lived with disability. Because “years lived with disability” are based on perceived desirability rather than measures of activity limitations, there are those who believe that the DALY does not meaningfully measure disability as defined by the World Health Organization’s International Classification of Functioning, Disability, and Health.^{20 21} Those individuals argue that DALY calculations should not be used for resource allocation.

Physical and Sensory Disabilities

Arthritis

Arthritis is the leading cause of physical disability in the United States.²² It affects 46 million adults and costs approximately \$128 billion a year. Age is the strongest risk factor for arthritis and, therefore, the prevalence of arthritis is expected to increase as a result of the aging population. By 2030, an estimated 67 million persons (approximately one in four U.S. adults) are expected to be affected by arthritis.²³ In Missouri, it is estimated there will be nearly 1.6 million persons with arthritis in 2030 (a 14% increase from the prevalence in 2005), and 631,000 persons will have arthritis-attributable activity limitations.²⁴

There are approximately 150 symptoms defined by the National Arthritis Data Work Group that are thought to represent arthritis and other rheumatic conditions.²⁵ The most common form of arthritis is osteoarthritis, which is usually associated with aging. This form of arthritis most often causes pain and stiffness in the fingers, knees, and hips. A less common form of arthritis is rheumatoid arthritis, occurring when the body's immune system causes pain in the joints and bones; it may also affect internal organs and organ systems.

Nationally, approximately 22% of adults report having been diagnosed with arthritis and 9.4% report activity limitations.²⁶ A higher prevalence of arthritis is associated with being female, older, and overweight or obese.^{27 28} Doctor-diagnosed arthritis is nearly twice as prevalent in obese individuals (38%) compared with normal weight individuals (20%); the prevalence rate of arthritis varies by the degree of obesity. The prevalence of arthritis is highest among non-Hispanic whites, persons with low educational attainment, and those in with low socioeconomic status.

Arthritis is a potential barrier to physical activity among adults²⁹ and contributes to why more than 35% of adults do not attain the minimum level of aerobic physical activity outlined in the *2008 Physical Activity Guidelines for Americans*.^{30 31} Per-

sons with arthritis and activity limitations are more likely to have less than a high school education or to be obese or physically inactive. The combination of arthritis and obesity is significantly related to a decreased active life among adults aged 70 years.³²

According to the Agency for Healthcare Research and Quality, approximately 9.5% of persons aged at least 18 years use prescription medications to control arthritis pain and approximately \$32 billion is spent per year for arthritis treatment.³³

Economic Impact

Arthritis accounts for 6.2% of all hospital admissions in the country and for 7.4% of admissions among persons who are overweight.³⁴ In addition, arthritis is the 3rd leading cause of work limitation.³⁵ Minorities have higher rates of arthritis-attributable activity limitation, arthritis-attributable work limitation, and severe joint pain compared to non-Hispanic whites with arthritis.³⁶ Arthritis, coupled with obesity, has been proposed as the major reason for the increasing trend in total knee replacements.^{37 38} Nearly half of U.S. adults will develop osteoarthritis of the knee during their lifetime. Of those developing osteoarthritis, 35% will be of normal weight, 44% will be overweight, and 65% will be obese.³⁹ While whites and blacks are at equal risk for symptomatic knee osteoarthritis, there is a racial disparity in total knee replacements among Medicare enrollees, with blacks in Missouri nearly 50% less likely to receive a knee replacement.⁴⁰

Updated national estimates of the costs of arthritis and other rheumatic conditions are \$80.8 billion in direct costs and \$47 billion in indirect costs.⁴¹ It is estimated that arthritis and other rheumatic conditions cost Missourians \$2.8 billion annually in direct and indirect costs.⁴²

Despite the increased medical costs associated with arthritis, there has not been any progress

nationwide towards the *Healthy People 2010* objectives related to arthritis management. The three objectives focus on weight counseling, physical activity counseling, and arthritis education.⁴³ Consequently, in 2010, a national public health agenda for osteoarthritis was issued;⁴⁴ and its recommendations are shown in Table 16.3.

Missouri and Kansas City

According to 2009 Missouri BRFSS data, 31.0% of respondents (26.3% of males; 35.3% of females) had doctor-diagnosed arthritis. Nationally, among working age adults aged 18 to 64 years, 10% have arthritis-attributable work limitations. Excess burden is placed on the elderly since 6% of those aged 18 to 44 years and 17% of those aged 45 to 64 years have arthritis-attributable work limitations.⁴⁵ Among workers with arthritis, 42% claimed to have arthritis-attributable work limitations. Nationally, the state median percent of workers with arthritis who claimed arthritis-attributable work limitations is 33%.

Individuals with arthritis have a higher prevalence of other chronic diseases, including cardiovascular disease, diabetes, and osteoporosis. This group also has a higher prevalence of risk factors associated with serious chronic diseases, such as

high blood pressure, high blood cholesterol, obesity, and physical inactivity. As a result, they perceive their physical and mental health to be poorer than those without an activity limitation.

There are 7 regional arthritis centers across the state to help Missourians cope with the effect of rheumatoid arthritis illnesses. The Kansas City center is at St Luke's Hospital.

Children

While the above discussion focused primarily on adults with arthritis, there also is the issue of arthritis in children.⁴⁶ Estimates of arthritis in children have varied widely because not only is it an umbrella term for which there are many definitions but also because it is a relatively uncommon condition. The Centers for Disease Control and Prevention (CDC) estimates that 294,000 children have significant pediatric arthritis and other rheumatologic conditions (SPARC).⁴⁷ Further, CDC estimates there are 827,000 ambulatory visits each year because of SPARC, including 83,000 emergency department visits. Literature suggests that between 50,000 and 100,000 children suffer from juvenile rheumatoid arthritis which, if untreated, can destroy the cartilagi-

Table 16.3. Ten recommendations for a national public health agenda for osteoarthritis

Recommendations	
1	Self management education should be expanded as a community-based intervention for people with symptomatic osteoarthritis
2	Low impact, moderate intensity aerobic physical activity and muscle strengthening exercise should be promoted widely as a public health intervention for adults with osteoarthritis of the hip and/or knee
3	Existing policies and interventions that have been shown to reduce osteoarthritis-related joint injuries should be promoted, implemented and enforced
4	Weight management should be promoted for the prevention and treatment of osteoarthritis, and national nutrition and dietary guidelines for the general population should be followed by adults with osteoarthritis so they select a quality diet while staying within their calorie requirements
5	A national policy platform for osteoarthritis should be established to improve the nation's health through evidence-based clinical and community prevention and disease control activities, including core public health infrastructure improvement activities
6	Systems to deliver evidence-based interventions should be expanded
7	Quality of and equal access to evidence-based interventions for osteoarthritis should be assured
8	Workplace environments should be improved by adopting policies and interventions that prevent onset and progression of osteoarthritis
9	A well designed communication strategy should be initiated and sustained to enhance understanding and change attitudes and behavior among consumers, healthcare providers, policy makers, employers and the business community, and community organizations
10	Research and evaluation should be pursued to enhance surveillance, better understand risk factors, refine recommended intervention strategies, evaluate workplace interventions, and examine emerging evidence on additional promising interventions

(from the Arthritis Foundation and the Centers for Disease Control and Prevention)



nous tissue that protects the joints. Without timely diagnosis, permanent joint damage can ensue. CDC estimated that 5,700 children in Missouri and 2,800 children in Kansas are living with some form of arthritis. According to CDC, about 15,000 children with SPARC live in 11 states that do not have any pediatric rheumatologists.

A prior analysis by the Kansas City Health Department,⁴⁸ found that, between 2001 and 2005, children (aged 0 to 19 years) living in Kansas City made 456 emergency department visits for arthritis.

Hearing

There were significant changes in health and lifestyle throughout the 20th century which may have changed temporal patterns of hearing impairment in adults. Currently, 17% of U.S. adults aged at least 18 years have some difficulty hearing without a hearing aid.^{49 50} By age 70, a quarter of adults have hearing impairments.⁵¹ Hearing loss affects nearly two-thirds of older Americans, but blacks are much less likely than whites to have hearing problems.⁵² Odds of hearing loss are 450% higher in men than women and 70% lower among blacks than whites. In addition, 17% of teenagers of both sexes have hearing losses that can make it harder for them to hear speech and some high-pitched sounds.⁵³ It has been reported that up to a quarter of college students in the United States have hearing loss in the range of frequencies important for speech discrimination, as well as in higher frequencies.⁵⁴ Worldwide, hearing loss is the 4th leading cause of years lived with disability

(http://whqlibdoc.who.int/hq/2010/WHO_NMH_2009_2_eng.pdf).

Data from the Epidemiology of Hearing Loss Study suggest not only that older adults (aged at least 45 years) may be retaining good hearing longer than previous generations, but also that modifiable factors contribute to hearing impairment in adults.⁵⁵ With every 5 year increase in birth year, the odds of having hearing impairment are 13% lower in men and 6% lower in women. There are many causes of hearing loss, and increases in hearing

Of the 456 visits, non-Hispanic white children made 165 visits (36.2%) while non-Hispanic black children had 218 visits (47.8%). Furthermore, 238 (52.2%) of the visits were made by females and 218 (47.8%) by males. Unfortunately, data available to the Kansas City Health Department do not permit identification of multiple visits by a single individual. Therefore, the actual number of children who made the 456 visits cannot be determined. The children making the visits came from 39 different zip codes across the City.

loss prevalence occur earlier among persons who smoke, are exposed to excessive noise, and have cardiovascular risks. Other causes of hearing loss, for example, include genetics, infections, head trauma, subarachnoid hemorrhage, and drug toxicity. Among persons aged 20 to 29 years, the prevalence of hearing loss is 9% and seems to be increasing.

The National Health Interview Surveys (NHIS) show that the prevalence of hearing impairment among older workers is 3 times that of the prevalence of visual impairment.⁵⁶ Furthermore, among persons with hearing loss, the prevalence of fair or poor health status, difficulties with physical functioning, and serious psychological distress increased with the degree of hearing loss experienced.⁵⁷ Adults who are deaf or who have a lot of trouble hearing are about 3 times more likely than adults with good hearing to be in fair or poor health and to have difficulty with physical functioning. These adults are more than 4 times as likely to experience serious psychological distress. Adults who have a little trouble hearing also have higher rates of these health problems compared with adults who considered their hearing to be good. Diabetes and high blood pressure are more prevalent among adults who are deaf or have a lot of trouble hearing, compared with adults with good hearing.⁵⁸ In addition, hearing loss in older persons has been associated with increased mortality.⁵⁹ Furthermore, it has been reported that use of hearing aids could delay dementia among persons who have impaired hear-

ing.⁶⁰

Adults who are deaf or have moderate to severe hearing impairment are more likely than adults with good hearing to currently smoke cigarettes, have had five or more drinks in 1 day in the past year (a proxy for at-risk drinking), have engaged in no leisure-time physical activity (a measure of sedentary behavior), be obese, and usually sleep 6 hours or less. Disparities in health risk behavior prevalence between adults with and without hearing loss are largely concentrated among adults aged less than 65 years. Among adults aged 18 to 44 years, greater than 40% of those who were deaf or had a lot of trouble hearing currently smoked cigarettes compared with 24% of those with good hearing. Disparities in smoking prevalence persisted among middle aged adults but not among those aged at least 65 years.

Infants and Children

Congenital or acquired hearing loss in infants and children has been linked with lifelong deficits in speech and language acquisition, poor academic performance, personal-social maladjustments, and emotional difficulties. Even children with unilateral hearing loss have worse oral language scores than those with normal hearing.⁶¹ Identification of hearing loss through neonatal hearing screening, regular surveillance of developmental milestones, auditory skills, parental concerns, middle-ear status, and objective hearing screening of all infants and children at critical developmental stages can prevent or reduce many of these adverse consequences.⁶²

Genetic causes account for 50-60% of childhood hearing loss in developed countries.⁶³ In the United States, 1.2 of every 1,000 newborns screened are identified as having hearing loss.⁶⁴ Early identification of hearing loss and enrollment in appropriate intervention services during the first 6 months of life provides an infant with a greater chance of developing speech and language consistent with their peers. However, among children with bilateral permanent hearing loss, early detection

of hearing impairment is associated only with higher scores for language and not speech in mid-childhood.⁶⁵

With the advent of national newborn screening,⁶⁶ the average infant in which hearing loss is confirmed is significantly younger.⁶⁷ Infants in whom remediation is begun within 6 months are able to maintain language and social and emotional development that is appropriate for their physical development. This is in striking contrast with those whose hearing loss is first detected after 6 months of age.⁶⁸

As a result of legislation passed in 1999 (RSMo 191.925 through 191.937), every infant born in Missouri is required to have his/her hearing screened prior to discharge from an ambulatory surgical center or hospital. Follow-up of infants who missed or did not pass a final hearing screening falls under the responsibility of the Missouri Department of Health and Senior Services' Bureau of Genetics and Healthy Childhood. In 2009, 79,033 (97.7%) of newborns had their hearing screened and 147 were diagnosed with permanent hearing loss;⁷⁰ data specific for Kansas City is not available.

The Newborn Hearing Screening Service Coordination Project was initiated in 2006 between the Missouri Department of Health and Senior Services and the Missouri Department of Elementary and Secondary Education. This project was implemented in the Kansas City area and links an audiologist, an educator of the deaf and hard-of-hearing, or a speech language pathologist with experience with deaf or hard-of-hearing children, with the First Steps service coordinator for family interactions and service planning related to infants diagnosed with severe to profound permanent hearing loss.

Children need to have their hearing periodically assessed. About 10% of children fail hearing screening tests at well-child visits, but providers neither recheck nor refer more than half of these children.⁷¹ This is important because, according to a 2006 survey by the American Speech-Language Hearing Association (www.zogby.com), high school students are more likely than adults to say they have experienced 3 of the 4 symptoms of hearing loss,



namely, turning up the television or radio volume, asking people to repeat what they say during conversations, and ringing in the ears. Only 49% of high school students reported not experiencing any of these symptoms compared to 63% of adults. Hearing loss may be attributable to the use of personal electronic devices and head phones. Among adolescents aged 12 to 19 years, the prevalence of hearing loss is increasing and stands at 19.5%.⁷² A study from Holland demonstrated that adolescents often exceed occupational safety levels for noise exposure.⁷³

Vision

Vision disability is one of the top 10 disabilities among U.S. adults and one of the most prevalent disabling conditions among children.⁷⁵ Vision disorders that occur childhood may manifest as problems well into adulthood.⁷⁶ Worldwide, vision loss is the 2nd leading cause of years lived with disability

(http://whqlibdoc.who.int/hq/2010/WHO_NMH_2009_2_eng.pdf).

Recommendations of the American Optometric Association for eye examinations for children and adults are presented in Table 16.4. The United States Preventive Services Task Force recommends vision screening for all children at least once between the ages of 3 and 5 years to detect the presence of amblyopia or its risk factors. The data were judged inconclusive for screening children aged fewer than 3 years of age.⁷⁷ In a health assessment survey commissioned by the Kansas City Health Department, a quarter of adult respondents reported not receiving routine eye care.⁷⁸ Forty-five percent of

Score 1 for Health is a health promotion and disease prevention program for elementary-aged children and is co-sponsored by the Kansas City University of Medicine and Biosciences and the Deron Cherry Foundation. For the 2005-2006 school year the frequency of hearing referrals by grade among *Score 1 for Health* participants was highest in the lower grades: 5.3% and 5.5% in kindergarten and 1st grade, respectively, and relatively constant in grades 2 through 5, between 2.6% and 3.0%.⁷⁴

respondents received routine eye care from optometrists, 21% from ophthalmologists, 7% from community health centers, and 2% from other sources. Sixty-percent had their eyes examined within the preceding two years and 80.5% within the preceding 5 years.

Adults

According to NHIS, 10% of the [U.S.](#) adult population has vision problems (defined as trouble seeing, even with glasses or contact lenses). Women are more likely than men to have vision problems and the prevalence of vision problems increases with age. Among women aged at least 40 years with serious, generally progressive eye diseases, 8-21% of them do not receive eye-care follow-up as recommended by national professional organizations.⁷⁹

The American Academy of Ophthalmology estimates that more than 43 million Americans will develop age-related eye diseases by 2020. It is recommended that all adults be screened for eye disease starting at age 40 years, which is when symptoms and vision changes typically occur. The National Commission on Prevention Priorities has identified vision screening among adults aged at least 65 years as one of the top 10 priorities among effective clinical preventive services.

Table 16.4. American Optometric Association recommendations for eye examinations

	Age	Frequency
Infant/Toddler	0 to 24 months	By 6 months of age
Preschooler	2 to 5 years	At 3 years of age
School age	6 to 18 years	Before 1 st grade; every 2 years thereafter
Adults	19 to 40 years	Every 2 to 3 years
Adults	41 to 60 years	Every 2 years
Adults	≥61 years	Every year

DISABILITIES

There is a substantial social and economic toll taken on those affected with vision loss, including significant suffering, disability, loss of productivity, and diminished quality of life. The annual economic impact of major vision problems among adults aged at least 40 years is more than \$51 billion. The lifetime prevalence of diagnosed vision diseases is as follows: cataract, 8.6% (17 million); glaucoma, 2.0% (4 million), age-related macular degeneration 1.1% (2 million); and diabetic retinopathy 0.7% (1.3 million). Age-related macular degeneration accounts for about half of all blindness in developed countries.⁸⁰ The prevalence of diabetic retinopathy (28.5%),⁸¹ glaucoma, and cataracts among persons diagnosed with diabetes is projected to rise as American diabetes prevalence continues to increase.⁸²

NHIS found an estimated 9.3% adults aged at least 18 years have impaired vision (defined as distance visual acuity of 20/50 or worse), including 0.3% with blindness.⁸³ Approximately 80% of individuals with impaired vision could have their vision improved to 20/40 or better with refractive correction.⁸⁴ Additionally, 3.3 million Americans aged at least 40 years (1 in 28 individuals) are blind or have low vision. According to the National Eye Institute, this number is expected to rise to 5.5 million by 2020 as the baby boomer generation ages.⁸⁵ This is a major concern since poor vision may speed mental decline in the elderly.⁸⁶ BRFSS data for 2008 show that 17% of adult Missourians have myopia, 41% have presbyopia, 3% suffer from age-related macular degeneration, 25% from cataracts, 17% from diabetic retinopathy, and 4% from glaucoma. Cataract surgery may prevent falls and fractures among the elderly.⁸⁷

One of the most common vision impairments is presbyopia, a progressive age-related diminished ability to focus on near objects. The term presbyopia comes from Greek word "presbus" meaning "old person". Presbyopia is generally believed to stem from a gradual loss of flexibility in the natural lens inside the eye. It is different from astigmatism, nearsightedness, and farsightedness, which are related to the shape of the eyeball and caused by genetic

factors, disease or trauma. The first symptoms are usually first noticed between 40 and 50 years of age. It is estimated that globally some 1.04 billion persons have presbyopia and approximately 49% of these individuals do not have eyeglasses to correct their vision.⁸⁸ Currently, an estimated 90 million people in the United States either have presbyopia or will develop it by 2014.

Myopia or nearsightedness is when a person can see near objects clearly but requires eyeglasses to view distant objects clearly. It is the main cause of low vision and the 2nd leading cause of blindness after cataracts.⁸⁹ This condition is likely due to both environmental and genetic factors.⁹⁰ It is estimated that 0.8-4.0% of the world's population is affected⁹¹ and the true burden is probably higher.⁹² The percent of people in the United States with myopia has been increasing and is approximately 42% among persons aged between 12 and 54 years.⁹³ Myopia is correctable with eyeglasses, contact lenses, or laser surgery. Based on National Health and Nutrition Examination Survey data, more than 110 million Americans could or do achieve normal vision with refractive correction.⁹⁴ The annual direct costs of correcting distance vision impairment in the United States is at least \$3.8 billion, of which \$780 million represents the annual cost of providing distance vision correction to persons aged more than 65 years.

Children

When visual impairment is present in infants, toddlers, and children, there may be further effects on overall health, self-perception, educational attainment, job choices, and a number of other social factors. According to the American Optometric Association's InfantSEE Program, 1 out of every 20 infants may be at risk from abnormal vision (www.infantsee.org). CDC established 3 vision related *Healthy People 2010* objectives for children: 1) reducing visual impairment and blindness, 2) increasing the proportion of preschool children who receive vision screening, and 3) increasing the use of protective eyewear in recreational activities and



hazardous situations around the home.⁹⁵ The “patient journey” of children with visual impairment is markedly influenced by the presence of additional impairments/chronic diseases.⁹⁶

Overall 22% of *Score 1 for Health* participants were identified as having or needing possible vision correction.⁹⁷ Ten percent already had glasses, indicating prior identification and treatment for a vision problem, yet 20% of these children failed the *Score 1* screening. Consequently, 14% of partici-

pants were referred for one or more uncorrected vision problems: 8.1% for far vision, 4.4% for near vision, 4.2% for random dot E, and 3.5% for hyperopia (plus lens). The frequency of vision referrals increased in the higher grade levels and the frequency by school increased with decreasing school socioeconomic status. Of those families who participated in the referral tracking process, 52% brought their child to an eye doctor. White families (63%) were most likely to access vision care, whereas Hispanic families (47%) were the least likely.

Mental and Behavioral Disabilities

Depression and anxiety are prevalent among adults with disabilities.⁹⁸ In addition, there are mental and behavioral disabilities that encompass a wide spectrum of disorders. Many of these conditions can result in severe impairments and

even death. On January 29, 2009, Health Management Associates released its *Behavioral Health Needs Assessment for Metropolitan Kansas City* report. That report contained 8 recommendations to improve the mental health delivery system.

Mental and behavioral disorders were the 7th overall leading cause of death among Kansas City residents between 2005 and 2009. It has been reported that persons with major mental illness lose 25-30 years of normal life span compared to the general population.⁹⁹ Table 16.5 shows the distribution of deaths classified as mental/behavioral disorders by ICD-9 codes, among Kansas City residents while Table 16.6 displays the distribution of these deaths by race/ethnicity. Figure 16.2 portrays the age-distribution of deaths from organic (including symptomatic) mental disorders, and mental & behavioral disorders due to psychoactive substance abuse.

Deficits in the quality of medical care seem to explain a substantial portion of the excess mortality and illness experienced by persons with mental disorders.^{100 101} Thus, physical healthcare is a core service for persons with severe mental illnesses and the mental health system has a primary responsibility to ensure access to preventive healthcare and for management and integration of medical care. Emergency department visits and hospitalizations for mental disorders for the period 2005-2009 are shown by race/ethnicity (Tables 16.7) and by age (Table 16.8).

Table 16.5. Deaths attributed to mental/behavioral disorders, Kansas City, MO, 2000-2009

Mental/behavioral disorder	Deaths	Percent of deaths
Organic, including symptomatic, mental disorders	943	68.1
Mental & behavioral disorders due to psychoactive substance abuse	407	29.4
Schizophrenia, schizotypal, & delusional disorders	5	0.4
Mood [affective] disorders	13	0.9
Neurotic, stress-related and somatoform disorders	1	0.1
Behavioral syndromes associated with physiological disturbances & physical factors	4	0.3
Mental retardation	10	0.7
Disorders of psychological development	1	0.1
Unspecified mental disorder	1	0.1
Total	1,385	100.0

Table 16.6. Deaths attributed to mental/behavioral disorders by race/ethnicity, Kansas City, MO, 2000-2009

Mental/behavioral disorder	White, NH ¹	Black, NH	Hispanic	Asian	Native American	Total
Organic, including symptomatic, mental disorders	666	251	21	4	1	943
Mental & behavioral disorders due to psychoactive substance abuse	260	130	15	0	2	407
Schizophrenia, schizotypal, & delusional disorders	3	2	0	0	0	5
Mood [affective] disorders	10	3	0	0	0	13
Neurotic, stress-related and somatoform disorders	1	0	0	0	0	1
Behavioral syndromes associated with physiological disturbances & physical factors	3	1	0	0	0	4
Mental retardation	8	2	0	0	0	10
Disorders of psychological development	0	1	0	0	0	1
Unspecified mental disorder	0	1	0	0	0	1
Total	951	391	36	4	3	1,385

¹ NH = non-Hispanic



Figure 16.2. Distribution of deaths by age due to organic and psychoactive substance abuse-related mental disorders, Kansas City, MO, 2000-2009

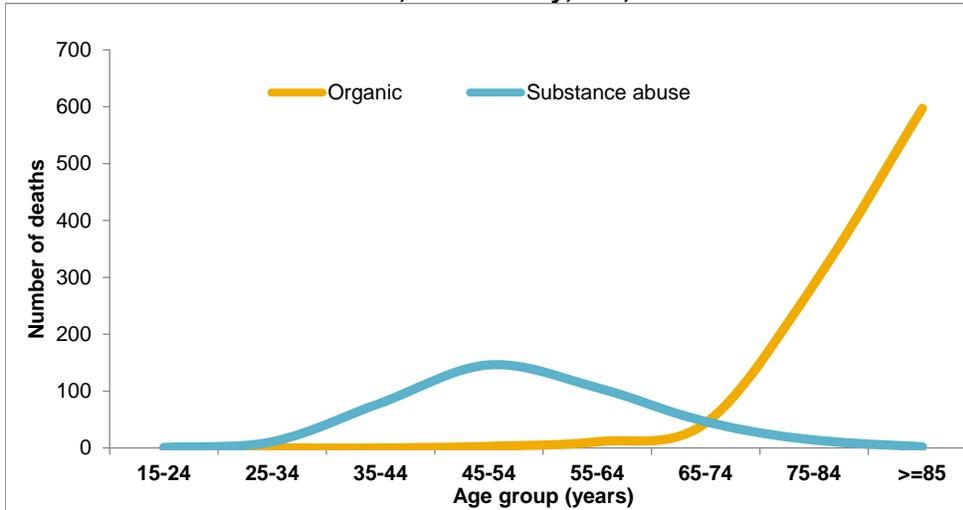


Table 16.7. Emergency department visits and hospitalizations for mental disorders, Kansas City, MO, 2005-2009

Emergency department visits								
Condition	White, NH ¹	Black, NH	Hispanic	Asian	Native American	Other	Total	
Organic psychotic syndrome	1,134	405	40	5	3	61	1,648	
Schizophrenic disorders	601	1,482	20	14	1	55	2,173	
Affective psychoses & paranoid states	1,767	668	38	6	3	54	2,536	
Other nonorganic psychoses	707	800	20	12	2	42	1,583	
Neurotic disorders	3,172	1,844	189	23	10	171	5,409	
Personality disorders & sexual deviations	74	93	1	1	0	4	173	
Alcohol dependence	722	246	34	2	3	21	1,028	
Alcohol abuse	99	33	2	0	0	3	137	
Drug dependence	5,584	4,348	373	19	45	398	10,767	
Physiological malfunctions	410	496	34	10	0	38	988	
Acute & adjustment reaction to stress	271	128	13	0	0	11	423	
Depressive disorders & others	3,032	1,555	94	11	6	143	4,841	
Total	17,573	12,098	858	103	73	1,001	31,706	
Hospitalizations								
Condition	White, NH	Black, NH	Hispanic	Asian	Native American	Other	Total	
Organic psychotic syndrome	1,840	802	40	12	6	125	2,825	
Schizophrenic disorders	1,359	1,791	29	16	11	113	3,319	
Affective psychoses & paranoid states	7,371	3,711	152	41	20	518	11,813	
Other nonorganic psychoses	515	571	16	16	6	60	1,184	
Neurotic disorders	376	173	9	3	2	29	592	
Personality disorders & sexual deviations	59	27	1	0	1	3	91	
Alcohol dependence	553	106	6	1	1	24	691	
Alcohol abuse	123	72	4	1	0	8	208	
Drug dependence	154	127	5	1	2	10	299	
Physiological malfunctions	168	54	6	3	0	8	239	
Acute & adjustment reaction to stress	393	251	14	2	1	35	696	
Depressive disorders & others	858	466	23	8	3	62	1,420	
Total	13,769	8,151	305	104	53	995	23,377	

¹ NH = non-Hispanic

Table 16.8. Emergency department visits and hospitalizations for mental disorders, by age group, Kansas City, MO, 2005-2009

Emergency department visits												
Condition	Age (years)											Total
	<1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	>= 85	
Organic psychotic syndrome	0	0	5	78	225	374	488	150	71	140	117	1,648
Schizophrenic disorders	0	0	0	547	453	491	461	163	41	13	3	2,172
Affective psychoses & paranoid states	0	0	81	529	608	616	427	184	44	35	12	2,536
Other nonorganic psychoses	0	1	26	283	309	271	287	163	68	105	70	1,583
Neurotic disorders	0	2	167	1,053	1,360	1,189	953	351	170	120	44	5,409
Personality disorders & sexual deviations	0	1	10	41	31	27	29	22	6	4	2	173
Alcohol dependence	0	0	0	29	104	314	441	112	12	11	5	1,028
Alcohol abuse	0	0	0	28	46	33	21	7	2	0	0	137
Drug dependence	0	2	57	1,247	1,958	2,703	3,526	1,055	138	53	28	10,767
Physiological malfunctions	0	17	60	215	209	202	159	56	31	33	6	988
Acute & adjustment reaction to stress	0	0	17	103	96	86	71	36	13	0	1	423
Depressive disorders & others	0	12	298	1,022	1,081	1,114	912	265	72	42	23	4,841
Total	0	35	721	5,175	6,480	7,420	7,775	2,564	668	556	311	31,705

Hospitalizations												
Condition	Age (years)											Total
	<1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	>= 85	
Organic psychotic syndrome	0	0	4	141	391	638	800	290	202	219	140	2,825
Schizophrenic disorders	0	0	36	468	700	775	778	347	157	46	12	3,319
Affective psychoses & paranoid states	0	17	2,148	2,694	1,864	2,052	1,813	775	250	160	40	11,813
Other nonorganic psychoses	0	1	44	283	235	224	187	97	39	51	23	1,184
Neurotic disorders	0	0	16	68	115	124	137	65	36	22	9	592
Personality disorders & sexual deviations	0	0	24	23	18	13	8	1	1	3	0	91
Alcohol dependence	0	0	0	26	74	201	250	91	35	11	3	691
Alcohol abuse	0	0	0	26	52	66	45	15	4	0	0	208
Drug dependence	0	0	3	51	49	73	82	27	8	5	1	299
Physiological malfunctions	1	1	11	79	35	32	28	22	13	15	2	239
Acute & adjustment reaction to stress	0	4	88	195	162	133	78	23	6	5	2	696
Depressive disorders & others	1	4	135	318	307	294	236	65	31	17	12	1,420
Total	2	27	2,509	4,372	4,002	4,625	4,442	1,818	782	554	244	23,377

¹ NH = non-Hispanic

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