

Preventing Unintentional Injury in Minnesota

A Working Plan for 2020



Injury and Violence
Prevention Unit

Preventing Unintentional Injury in Minnesota: A Working Plan for 2020



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Preventing Unintentional Injury in Minnesota: A Working Plan for 2020

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About this Plan

Unintentional injuries take the lives of more than 1,800 Minnesotans each year and send nearly 300,000 more to the emergency department and hospital. They result in enormous human suffering, affecting not only injured individuals, but also their families, friends and wider community. The cost of unintentional injuries in Minnesota is in the billions of dollars each year. And most unintentional injuries are predictable and preventable.

The goal of *Preventing Unintentional Injury in Minnesota: A Working Plan for 2020* is to share data, provide possible strategies, suggest potential partners and help all of us work together more effectively to reduce unintentional injuries. It explores questions such as:

- What are our biggest problems?
- Who is most at risk?
- What trends do we see?

It examines our most frequently-occurring injuries and areas where we can make a significant impact by implementing effective strategies.

Many sources contributed to the creation of this plan, two in particular we wish to highlight: first, the Minnesota Injury Data Access System (MIDAS), maintained by the Minnesota Department of Health, provided a wealth of historical context and identified Minnesota-specific injury trends. Second, a series of meetings coordinated by the Minnesota Safety Council was held in 2011 on specific areas of unintentional injury. In those meetings, experts identified issues, trends and potential strategies, and provided valuable insights. Sixty individuals from 42 organizations – public and private safety, health and community organizations – participated in these meetings. They are listed on the next two pages. Much of the richness of the information in this plan results from their input and we thank them for their contributions.

Preventing Unintentional Injury in Minnesota: A Working Plan for 2020 is a benchmark and a guide, designed to support those who work to reduce unintentional injuries as we navigate the second decade of this century. Ultimately, its aim is to enhance the quality of life in our state by helping Minnesotans prevent fatal and non-fatal unintentional injuries. We hope you find it useful.

Acknowledgements

- Thank you to the Minnesota Safety Council for its role in the development, organization and production of this plan.
- The individuals listed below provided valuable information for the plan, participating in meetings about specific injury areas. They offered insights into data, trends and strategies, and also brainstormed initiatives that could be considered if resources were not an issue.

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(continued on next page)

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Unintentional Injury in Minnesota

How big is the problem?

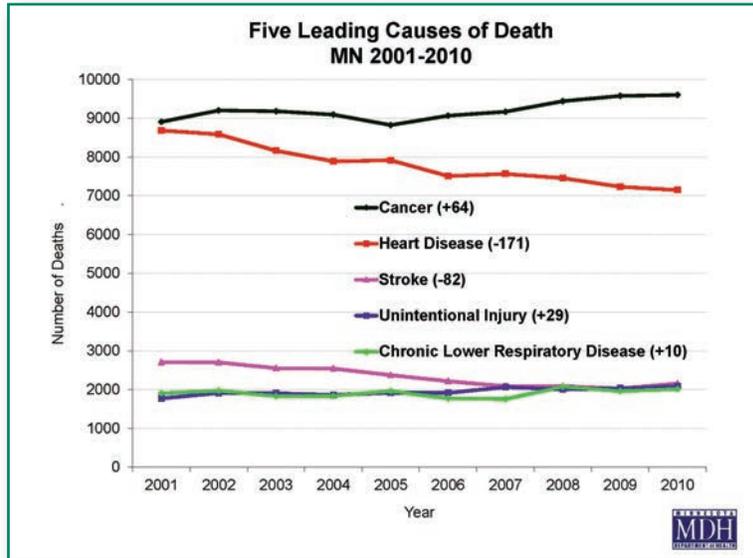
Unintentional injuries – falls, traffic crashes and other events sometimes called “accidents” – are a leading cause of death, disability and economic loss in Minnesota and the United States.

Nationally:

- Unintentional injury is the leading cause of death from age 1–44 and the fifth leading cause of death overall.²
- Annual economic losses from unintentional injury are estimated at more than \$730 billion.³

In Minnesota, unintentional injury:

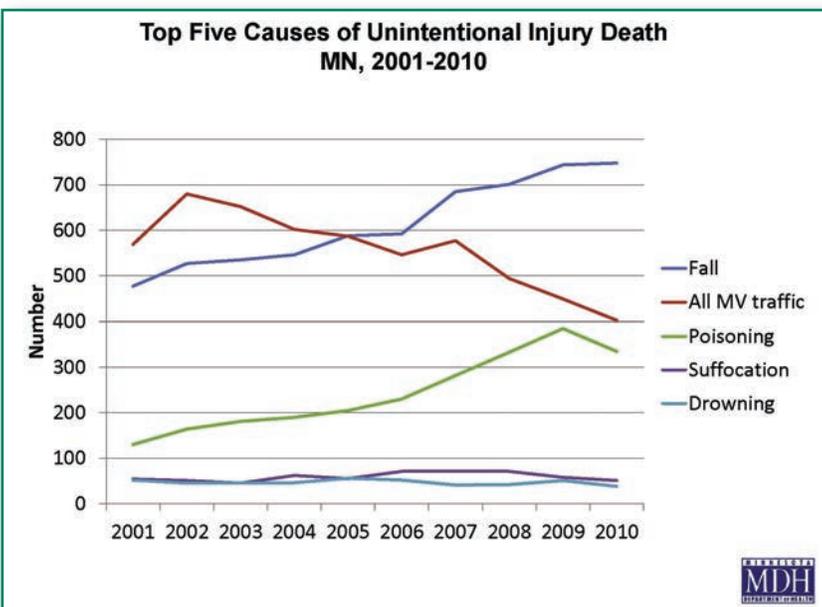
- is the number one killer of Minnesotans aged 1–34⁴
- is the fourth leading cause for all ages⁴
- causes the deaths of more than 1,900 Minnesotans each year, on average⁴
- requires nearly 300,000 people to seek hospital care each year^{5,6}
- is the leading cause of years of potential life lost before age 65, and at a higher proportion than the U.S. as a whole (6.3% higher)⁷



Only cancer, heart disease, and stroke take more lives. And while deaths from heart disease and stroke have declined, unintentional injury deaths as a whole have increased.

Falls, motor vehicle injuries and poisoning are the leading causes of unintentional injury death in Minnesota. Falls surpassed motor vehicle traffic incidents as the leading cause in 2005. Minnesota’s rate of fall deaths among older adults is one of the highest in the nation.⁸ The number of motor vehicle deaths has declined significantly since 2002, but remain the leading cause of unintentional-injury death from ages 1–64.⁹ Falls

and poisoning have been on the rise, fueled respectively, in part, by our aging population and abuse/misuse of prescription drugs.



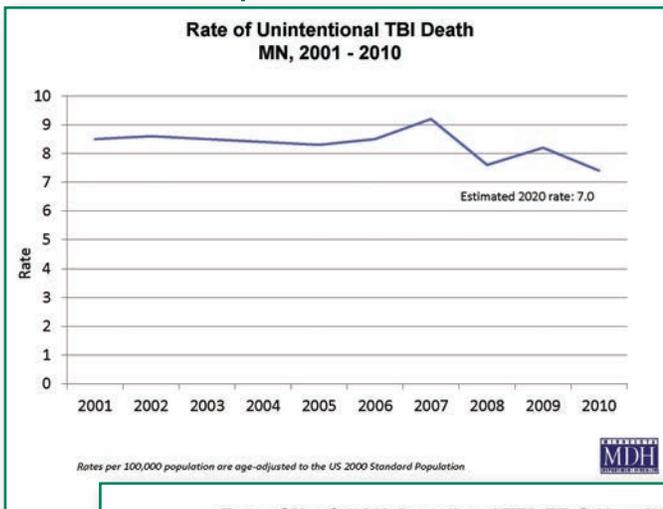
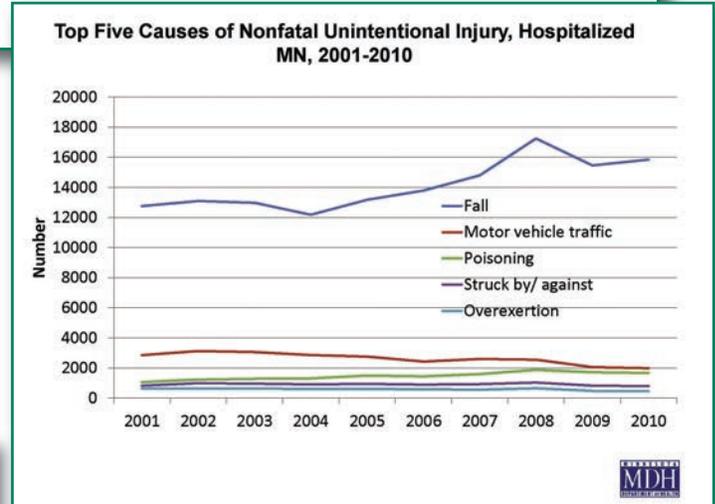
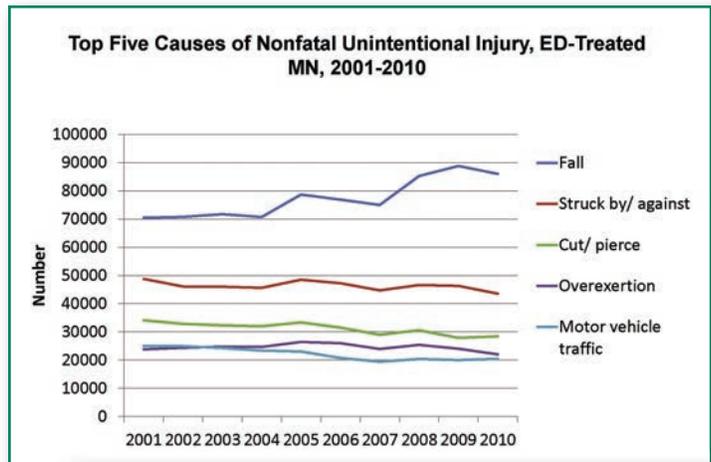
Minnesota is a “healthy” state, placing consistently near the top of national rankings for many years.¹ However, while we are making good progress on other leading causes of death, unintentional injury deaths are increasing.



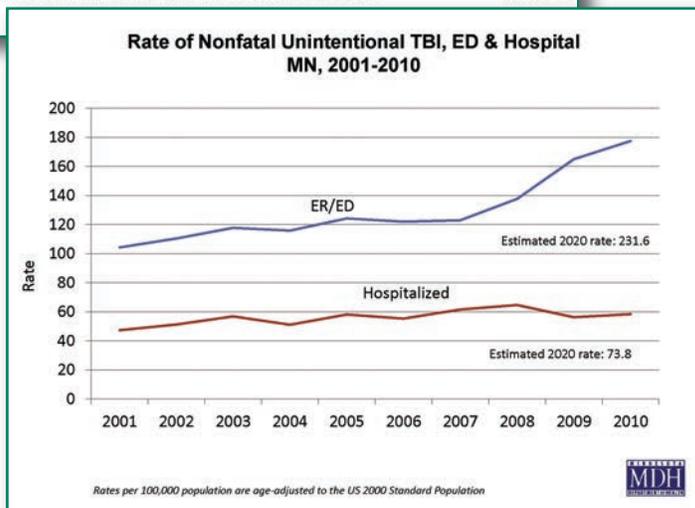


Deaths are the tip of the iceberg. From 2001–2010, unintentional injuries sent an average of 265,000 people to emergency departments and 25,000 to the hospital each year.^{5,6} These are the injuries that were reported; others were treated in clinics or doctors' offices, or outside of health care systems and simply not reported. Overwhelmingly, falls were the leading type of injury requiring medical treatment.

The rate of unintentional-injury death increased from 30.2 to 33.1 from 2001–2010;¹⁰ the rate of hospitalization and emergency department treatment for non-fatal injuries remained fairly static.¹¹



Traumatic brain injuries (TBIs), caused by a blow or jolt to the head, are closely associated with unintentional injury. The top three causes of TBI are falls, traffic crashes and sports-related injuries. A TBI disrupts the normal function of the brain and can affect thinking, sensation, language, or emotions. 100,000 Minnesotans live with TBI-related disabilities. Eighty-three percent of offenders entering the Minnesota prison system have a history of TBI.¹²



From 2001–2010, the rate of unintentional TBI deaths remained fairly stable, increasing in 2007 (to 9.2) and declining to 7.4 by 2010. The rate of emergency department treatment has increased, with a sharp rise beginning in 2008, possibly as a result of increased awareness of concussion injuries and how to respond effectively to them. Hospitalization for TBI has also risen.

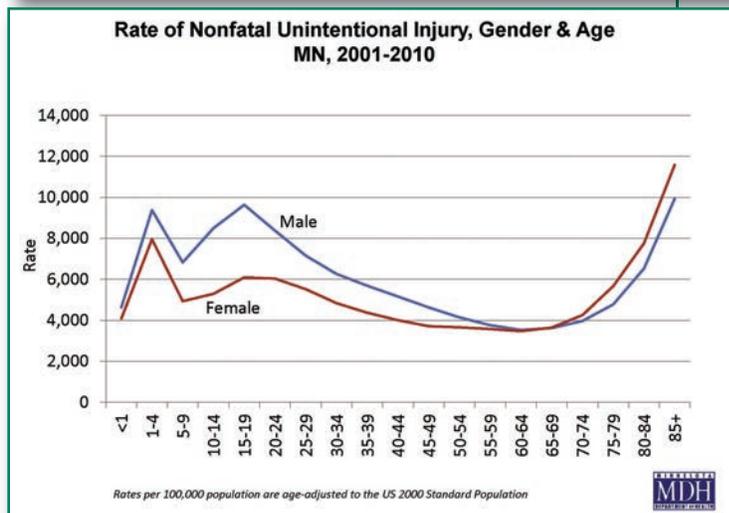
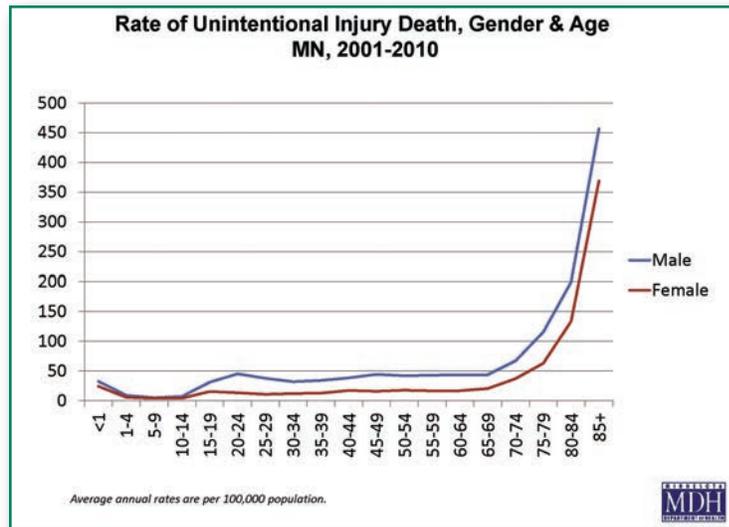
Who is most at risk?

For *children, teens and young adults*, unintentional injuries are the leading cause of death.⁴ Children aged 1–4 have the highest rate of emergency department treatment for unintentional injury, followed by 15–19 year-olds, 10–14 year-olds and people in their early 20s.⁵

Older adults have the highest injury death rates (see chart at right) and the highest rates of hospitalization for unintentional injury.⁶

Males. From the mid-teens on, males have significantly higher death rates from unintentional injury. Their rates of nonfatal injury are also higher, until the mid-late sixties when the rate for females overtakes males. The rate of unintentional injury death begins to climb significantly for both genders in the seventies, with an increasing prevalence of fall deaths.

For unintentional traumatic brain injuries, among the most devastating of unintentional injuries, the rate of both fatal and non-fatal cases is consistently higher for males at all ages.^{13,14}



American Indians. The death rate from unintentional injuries for all Minnesotans is 35.8 per 100,000 population; for American Indians the rate is more than twice as high, at 85.0.

Age Adjusted Unintentional Injury Mortality Rates per 100,000 by Race/Ethnicity, Minnesota 2003 – 2007

| White | African American | American Indian | Asian | Hispanic |
|-------|------------------|-----------------|-------|----------|
| 34.8 | 37.3 | 85.0 | 21.9 | 28.2 |

Source: Minnesota Department of Health, Center for Health Statistics¹⁵

“The causes of health disparities are complex and can occur throughout the lifespan. They include both individual factors as well as factors related to the physical, social and economic environment in which people live (often referred to as social determinants of health) . . . Throughout the lifespan, health is influenced by factors such as nutrition, physical activity, stress, income, education, safe housing, access to immunizations and preventive care, and the person’s physical environment. Disparities arise when these factors combine to prevent certain populations from achieving health equity with the broader population.”

– *Eliminating Health Disparities Initiative, Report to the Minnesota Legislature 2011, Minnesota Department of Health*

“Identifying the factors that most influence health outcomes in a specific community, characterizing their interaction, and developing concrete examples of activities and approaches capable of addressing them, is essential to reducing health disparities.”

– *The Imperative of Reducing Health Disparities through Prevention, Prevention Institute*



Looking ahead: Trends and challenges

As we develop strategies and goals for 2020, a number of trends and factors will affect our efforts to reduce unintentional injury:

- **An aging population.** Injuries among older adults tend to be more severe and require longer recovery time. By 2030, the number of Minnesotans age 65 and over will increase to 24 percent of the total state population (or about one in every four Minnesotans). Aging baby boomers are more active than the previous generation and will need different strategies than their parents to keep themselves safer from injury. By 2050, the number of Minnesotans 85 and older will nearly triple to 250,000.¹⁶ Falls among the elderly will become an even bigger issue and maintaining safety and independence at home and behind the wheel will become a greater challenge.
- **Increasing cultural diversity.** Perceptions and definitions of safety may vary by culture. Minnesota's population diversity requires cross-cultural sensitivity, competence and effective partnerships, and engagement on the terms of other cultures. Just providing information doesn't work; traditional methods of reaching those at risk are not effective across all ages or cultures. The challenge is not only outreach, but also inclusion.
- **A depressed economy.** Continuing economic uncertainty and diminished public funds will drive the need for new and creative partnerships, and a greater sharing of resources. There are limited resources – both financial and human – for prevention.
- **Anti-regulatory political/philosophical beliefs.** Strongly held attitudes about personal freedom/personal rights cut across all injury areas, particularly in the public policy arena and in rural areas. Simply passing laws is not sufficient – it is necessary to help people see their value and gain compliance.

How can we prevent unintentional injuries?

- **Create a culture of prevention** that will raise public awareness and support behavior change. Develop a clear focus and support it consistently through coordinated statewide campaigns and programs.
- **Develop and implement strategic, targeted programs** tailored to local issues, integrating education, enforcement, engineering improvements and efficient emergency medical and trauma response.
 - Review most current fatal and non-fatal unintentional-injury data (state, region, county) through the Minnesota Injury Data Access System (MIDAS); analyze and target local efforts accordingly.
 - Mandate universal E-coding (recording external cause of injury) in order to better assess what's happening with unintentional injury.
 - Identify families who are at risk and families in which children experience multiple types of unintentional injuries.
 - Conduct visits to assess the home environment for injury risks. (See the Minnesota Department of Health *Home Safety Checklist*, which is used for home visits throughout Minnesota by public health nurses.) Promote use of home safety checklists by individual families.
 - Gather specific details about at-risk groups and risky behavior. Ask questions and seek to understand. Acknowledge that we can't solve issues by simply imposing a solution. Tailor education to developmental level and to preferred methods of communication. Identify influencers of targeted groups and engage them (including parents and peers).
 - Concentrate limited resources on proven strategies (e.g., seat belt use, helmet use, smoke alarms, etc.) and programs. Work with state and federal agencies to develop consensus on what constitutes "evidence-based" to ensure that programs will meet funding guidelines.

- **Identify and collaborate with traditional and non-traditional community partners.**

Work with local partners to support and implement programs that are effective and meaningful. Coordinate communication, community education and interventions through multiple channels (e.g., health care, churches, insurance industry, local businesses). Use a collaborative approach, common tools and consistent messages.

Promote existing resources to other organizations with a stake in the issue. Examples:

- Develop new partnerships/corporate partnerships to support projects (e.g., to fund adaptations to homes).
- Explore partnerships with schools to develop strategies to support injury prevention.
- Work with employers to develop policies (e.g., distracted driving, seat belt) and support the influence of the workplace.
- Develop resources for families with special needs through established advocacy organizations that are already in a trusted position.

Develop relationships with multi-cultural service programs. Reach out to people new to this country through trusted sources and communication channels/media in their communities. Hire people of the same culture to work with the community. Work with Office of Multi-Cultural Health, MDH. Cultivate social flexibility and public health responsiveness – be prepared for issues that may arise.

As an example, for American Indian communities, be aware that unintentional injury is viewed in a broader context. Injury issues are not addressed in isolation, but as a community (although change is respected as an individual act and approached one person at a time). High infant mortality rate, high suicide rate and unintentional injury are all combined as a wellness issue. The perspective is: How can we change this to improve our health? Resources may be available but members of the community have to be ready to make a change. Embrace and include the culture of reservations when addressing unintentional injury issues;

it's a sensitive area and linked to the history of the people. Significant factors in the elevated rate of unintentional injury death include unresolved anger/depression over underlying historical issues, and substance abuse (including both drugs and alcohol). Go to the reservation and ask what people need. Craft information carefully using words that mean something, that people can understand and that build trust. Tribal health coordinators are a primary contact. Some nations have health and human services programs joined together; it varies from nation to nation.

- **Develop and conduct effective evaluation.**

Improve evaluation and outcome measurement. Prove risk benefit (that is, spending money now saves dollars later).

- **Use new media tools.** Match messages to preferred methods of communication/technology. Focus on how each generation wants to get information. Use social media sites and tools for non-emergency information/education. Evaluate effectiveness of various technological approaches.

Support effective legislation and rigorous enforcement.

Promote awareness of legislation and make the case for its value.

How will we measure progress?

- Track annual and multi-year data and trends: hospital admissions, emergency department visits and deaths. Track number and severity of fatal and non-fatal unintentional injuries, including traumatic brain injury (TBI) injury and spinal cord injury.
- Document successful partnerships, programs and projects.
- Examine how we've changed the culture: Implement observational surveys similar to seat belt surveys looking at various safety behaviors to determine if what we're doing is making a difference. Share ongoing evaluations and insights among key partners/practitioners in injury prevention.





Brainstorm: What if resources were not an issue?

• *Develop/expand partnerships.*

- Explore the potential for insurance company incentives for desired behavior (e.g., wearing motorcycle helmets or seat belts, installing smoke alarms, etc.) and how to engage those most at risk.
- Develop the capacity of the trauma system. Work with regional committees to analyze data and define regional issues, strategies and solutions.

• *Technology and engineering*

- Design communities with safety and people in mind. For example, design roads for lower speeds and with the actual layout of the community in mind (e.g., where the senior centers are, how people get to the store, etc.).
- Develop more interactive and immediate communication using new communications technology.
- Develop interactive educational experiences (e.g., mobile injury prevention unit).
- Use technology to enhance data collection and research, i.e., to increase the detail of what we can collect and how we analyze.
- Develop resources to solve various safety problems, for example, online assessments that can help families evaluate when elders should give up the keys.
- Support development and distribution of new safety devices (e.g., medical alert device that senses if a person falls and calls for help for them; inflatable seat belts.)
- Create online programs/resources for families who have members with special needs (for example, modeled on Text4Baby, which provides regular text messages with information based on the age of the fetus/baby).

• *Education and outreach*

- Create onsite education in hospitals, e.g., “safety villages,” targeted to the issues that bring people to the hospital.
- Explore and utilize effective methods of motivating behavior change, such as motivational interviewing
- Develop coordinated media campaigns and methods to make unintentional injury compelling.
- Address distraction as a primary factor in injury.
- Develop a comprehensive library of proven replicable prevention initiatives including curriculums, presentations, print materials; organize them and make them easily accessible through an electronic library; market the library broadly (educators, community leaders, youth program coordinators and injury prevention professionals) and keep it current.

• *Research*

- Evaluate programs/interventions to demonstrate what works and to guide strategies in a more effective way.
- Explore how to reach resistant groups (e.g., youth who don’t buckle up).
- Research injury issues to quantify the financial cost, e.g., as with the Crash Outcomes Data Evaluation System (CODES) data, which measured hospital medical care charges associated with unbuckled vehicle occupants and looked at the cost impact on government payer sources. Emphasize the economic benefit of injury prevention to society.
- Plug data gaps: Ensure better/more consistent data, linked in a timely manner. Gather information about employee injuries off the job. Explore partnerships with insurance companies to gather aggregate data.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, <http://www.cdc.gov/injury/overview/index.html>; Injury and Violence Prevention Podcasts, <http://www.cdc.gov/Injury/podcast.html>
- Minnesota Brain Injury Alliance, <http://www.braininjurymn.org/>
- Minnesota Department of Health, Injury and Violence Prevention Unit, <http://www.health.state.mn.us/injury>
- Minnesota Department of Health, Family Home Visiting Program, *Home Safety Checklist*, <http://www.health.state.mn.us/divs/fh/mch/fhv/documents/MDHHSC.pdf>
- Minnesota Department of Health, Minnesota Injury Data Access System (MIDAS), <http://www.health.state.mn.us/injury/midas/ub92/index.cfm>
- Minnesota Department of Health, Office of Minority and Multicultural Health, <http://www.health.state.mn.us/ommh/>
- Minnesota Department of Human Services, Aging 2030 initiative, http://www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=id_054450
- Minnesota Safety Council, <http://www.minnesotasafetycouncil.org>
- National Fire Protection Agency, *Risk Watch: Keeping Kids Safe* school-based curriculum, <http://www.nfpa.org/categoryList.asp?categoryID=1050&cookie%5Ftest=1>
- Safe Kids USA, www.safekids.org; Safety Resources by Risk Area, <http://www.safekids.org/safety-basics/safety-resources-by-risk-area/>
- Safe Kids Minnesota, <http://www.minnesotasafetycouncil.org/safekids>
- U.S. Department of Health and Human Services, Healthy People 2020; MAP-IT: A Guide to Using Healthy People 2020 in Your Community, <http://www.healthypeople.gov/2020/implementing/default.aspx>

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- ² Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. *Ten Leading Causes of Death and Injury*. Available at <http://www.cdc.gov/injury/wisqars/LeadingCauses.html>.
- ³ National Safety Council. *Injury Facts, 2012 Edition*.
- ⁴ Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Death by Age Group, Minnesota 2001–2010*.
- ⁵ Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Nonfatal Emergency Department-Treated Unintentional Injury by Age Group, Minnesota 2001–2010*.
- ⁶ Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Nonfatal Hospitalized Unintentional Injury by Age Group, Minnesota 2001–2010*.



- ⁷Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Office of Statistics and Programming, National Center for Health Statistics, Vital Statistics System. *Years of Potential Life Lost (YPLL) Before Age 65, 2000–2009 Minnesota, All Races, Both Sexes, All Deaths*. Accessed from WISQARS, 5/31/12.
- ⁸Minnesota Department of Health and Healthy Minnesota Partnership. *The Health of Minnesota, Statewide Health Assessment: Part Two*. Available at <http://www.health.state.mn.us/healthymnpartnership/sha/docs/1205healthofminnesotasupp.pdf>.
- ⁹Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Unintentional Injury Death by Age Group, Minnesota 2001–2010*.
- ¹⁰Minnesota Department of Health, Injury and Violence Prevention Unit. *Rate of Unintentional Injury Death, Minnesota, 2001–2010*.
- ¹¹Minnesota Department of Health, Injury and Violence Prevention Unit. *Rate of Nonfatal Unintentional Injury, ED & Hospital, Minnesota, 2001–2010*.
- ¹²Minnesota Department of Health, Injury and Violence Prevention Unit. *Minnesota Facts on Traumatic Brain Injury 2008*. 2010. Available at <http://www.health.state.mn.us/injury/pub/TBIFactsheet2008.pdf>.
- ¹³Minnesota Department of Health, Injury and Violence Prevention Unit. *Rate of Unintentional TBI Deaths, Gender & Age, Minnesota, 2001–2010*.
- ¹⁴Minnesota Department of Health, Injury and Violence Prevention Unit. *Rate of Nonfatal Unintentional TBI, Gender & Age, Minnesota, 2001–2010*.
- ¹⁵Minnesota Department of Health, Center for Health Statistics. *Health Disparities by Racial/Ethnic Populations in Minnesota*. December 2009. Available at <http://www.health.state.mn.us/divs/chs/raceethn/rankingbyratio20032007.pdf>.
- ¹⁶Minnesota Department of Health. *Demographics of an Aging Population*. 2005. Available at <http://www.health.state.mn.us/divs/orhpc/pubs/healthyaging/demoage.pdf>.

Bicycle Injuries

“My son was wearing one of the free bike helmets given away at the fair with the “I Got Caught” program when he was backed over by a truck. It is a miracle he is alive; the helmet helped save his life.”

– Chad D.



How big is the problem of bicycle injuries?

Nationally:

- About 567,000 people go to hospital emergency departments with bicycle-related injuries each year; about 350,000 of them are children under 15. Of those children, about 130,000 sustain brain injuries.¹
- The average bicycle injury in Minnesota costs \$49,000. This includes hospitalization, loss of productivity, and pain and suffering.
- For bicycle injuries involving motor vehicles, the rate of non-fatal cases treated in emergency rooms has increased from 2001–2010; the rate of hospitalization has declined (see below).

In Minnesota:

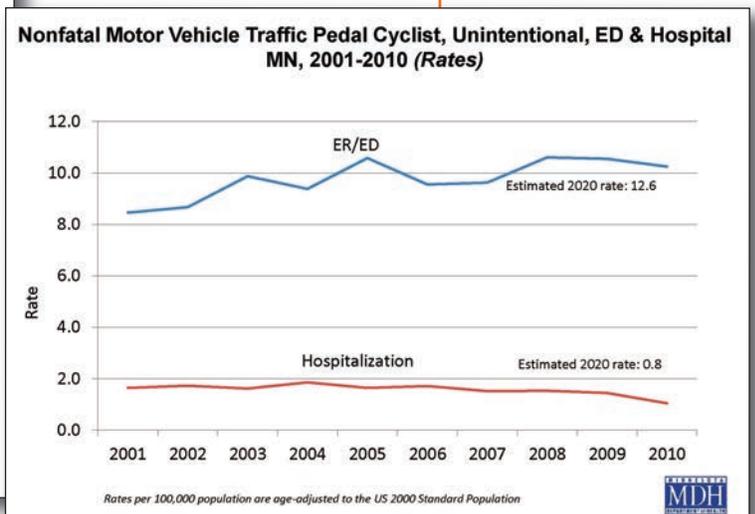
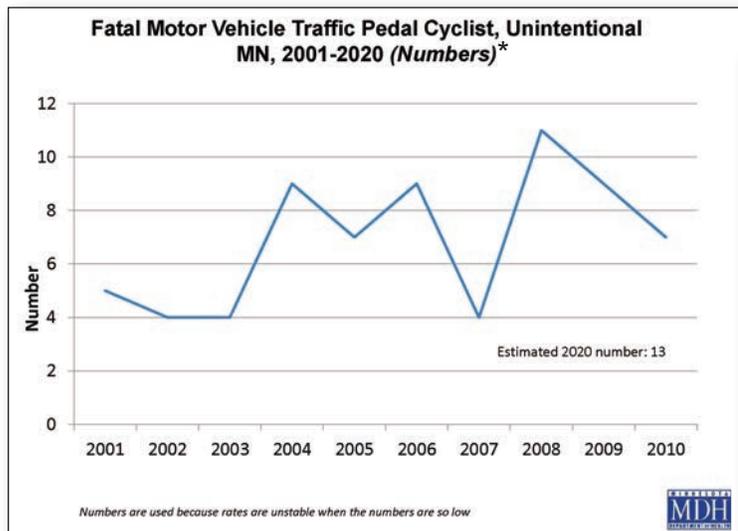
- Bicycle crashes among children ages five to 14 account for about 13 percent of traumatic brain injuries.

Bicycle Crash Summary, 2002–2011 (involves only those in collision with a motor vehicle)

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------|------|------|------|------|------|-------|------|------|------|------|
| Crashes | 909 | NA | 985 | 965 | 944 | 1,020 | 981 | 957 | 898 | 963 |
| Deaths* | 7 | 6 | 10 | 7 | 8 | 4 | 13 | 10 | 9 | 5 |
| Injuries | 860 | NA | 937 | 952 | 908 | 979 | 942 | 963 | 882 | 937 |

Source: Minnesota Department of Public Safety²

*All deaths, Minnesota residents and non-residents



*Minnesota residents only

From 2001–2010, 37 bicyclists died from injuries that did not involve motor vehicles, about half the number of deaths from bicycle injury involving motor vehicles. For bicycle injury not involving motor vehicles, annually about seven people per 100,000 people were hospitalized (more than 3 times those involving motor vehicles) and 101 people per 100,000 were treated in the emergency department (10 times those involving motor vehicles; see chart above). Although much less common than non-traffic bicycle crashes, motor vehicle related cycle crashes are significantly more likely to result in death.

Who is most at risk?

For motor-vehicle related bicycle injuries:

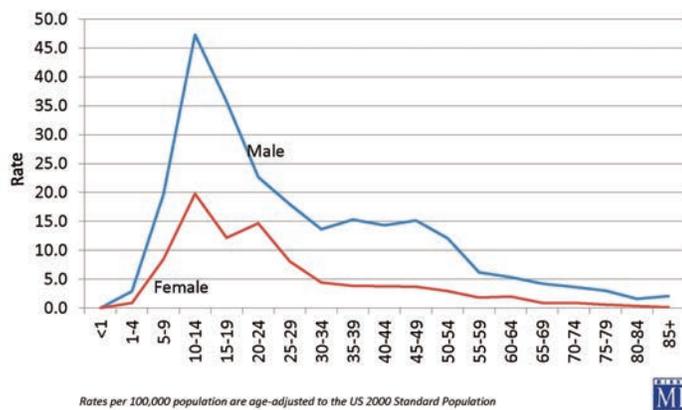
Children. Children aged 10–14 had the highest non-fatal bicycle injury rates and the highest number of fatalities (2001–2010). More children ages five to 14 go to hospital emergency departments with injuries related to biking than with any other sport.¹

Males. Overwhelmingly, males experience a higher incidence of non-fatal and fatal injuries.

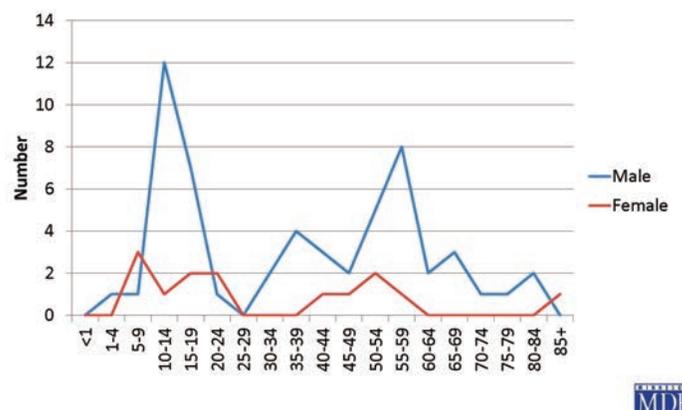
For non-motor-vehicle injuries:

From 2001–2010 the largest number of non-traffic-related bicycle injury deaths occurred among males in their forties (nine fatalities) and fifties (seven fatalities).³

Nonfatal Motor Vehicle Traffic Pedal Cyclist, Unintentional, Gender & Age MN, 2001-2010 (Rates)



Fatal Motor Vehicle Traffic Pedal Cyclist, Unintentional, Gender & Age MN, 2001 - 2010 (Numbers)



What trends and challenges do we face?

- The number of bicyclists has continued to climb; slightly more than half of Minnesotans now say they ride a bike sometime during the year, up from previous years.⁴
- The National Highway Traffic Safety Administration (NHTSA) estimates that only about 20 to 25 percent of all bicyclists wear bicycle helmets.⁵ When worn properly, bike helmets can reduce the risk of brain injury by 88 percent.⁶

How can we prevent bicycle injuries?

- **Promote bicycle helmet** use among parents and children.
- **Develop community partnerships** to distribute helmets and to provide incentives to wear them.

- **Educate bicyclists and motorists** about rules and responsibilities of using/sharing the road. Teach bike safety in schools, at police and fire departments, safety camps and other community settings.
- **Tailor educational programs** and messages to specific audiences, e.g., children, adults, commuters, recreational cyclists, etc.
- **Promote comprehensive community transportation plans** and policies that support non-motorized/bicycle travel.
- **Engineer the travel environment** to support bicycle-friendly solutions (e.g., bike lanes, signage).
- **Involve community partners** in enforcement campaigns.
- **Promote bicycling in conjunction with using mass transit.** Create safe and accessible environments at and around transit stops.
- **Develop strategies** to institutionalize policy, political and financial support for bicycling and cycling programs.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

- Minnesota Department of Health, Injury and Violence Prevention Unit, *Bicycle Safety*, <http://www.health.state.mn.us/injury/topic/topic.cfm?gcTopic=8>
- Minnesota Department of Public Safety, Office of Traffic Safety, *Minnesota Motor Vehicle Crash Facts* reports, <https://dps.mn.gov/divisions/ots/reports-statistics/Pages/crash-facts.aspx>
- Minnesota Department of Transportation, The Minnesota *Share the Road* Bicycle Safety Education Program, <http://www.sharetheroadmn.org/>
- Minnesota Injury Data Access System (MIDAS), <http://www.health.state.mn.us/injury/midas/ub92/index.cfm>
- Pedestrian and Bicycle Information Center <http://www.bicyclinginfo.org/>
- U. S. Department of Transportation, National Highway Safety Administration, <http://www.nhtsa.gov/Bicycles/>

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- ¹ Minnesota Brain Injury Alliance. *Fast Facts About Brain Injury*. Available at <http://www.braininjurymn.org/aboutUs/pressRoom/stats.php>.
- ² Minnesota Department of Public Safety, Office of Traffic Safety. *Minnesota Motor Vehicle Crash Facts 2011*. Available at <https://dps.mn.gov/divisions/ots/educational-materials/Documents/CRASH-FACTS-2011.pdf>.
- ³ Minnesota Department of Health, Injury and Violence Prevention Unit. *Fatal Non-Traffic Pedal Cyclist, Unintentional, Gender & Age, MN, 2001–2010 (Numbers)*.
- ⁴ Jon Collins, Minnesota Public Radio. *Bicyclist deaths down, injuries up*. May 3, 2012. Available at <http://minnesota.publicradio.org/display/web/2012/05/03/bicyclist-injuries-up-deaths-down/>.
- ⁵ National Highway Traffic Safety Administration, United States Department of Transportation. *Traffic Safety Facts: Bicycle Helmet Use Laws*. January 2008. Available at <http://www.nhtsa.gov/bicycles>.
- ⁶ RS Thompson, FP Rivara, DC Thompson. A case-control study of the effectiveness of bicycle safety helmets. *New England Journal of Medicine* 1989;**320**:1361–7. Available at <http://www.nejm.org/doi/pdf/10.1056/NEJM198905253202101>.

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Drowning

Lifejackets prevented a double drowning on a lake near Deerwood, Minnesota on a late spring day. After a couple's canoe capsized in 50-degree water, the 56-year-old woman swam toward shore, weighted down by a cast on her leg and a heavy denim jacket. When she reached shore and a forest office, a response team was notified, reaching her husband after he had spent nearly an hour in the water. He was semi-conscious but still supported by his life-jacket. Crow Wing County Sheriff's Department personnel said, "She would have not made it to shore without a life jacket on and he would never have made it without a life jacket. . . . Without life jackets on I'm convinced we would have had a double fatality."

– Information from *The Brainerd Dispatch*



Drowning is the process of having trouble breathing because of submersion/immersion in liquid. Drowning can be fatal or non-fatal. Non-fatal drownings can cause brain damage because of lack of oxygen. This can result in long-term problems with memory, learning, and the basic ability to function.

How big is the problem of drowning?

Nationally:

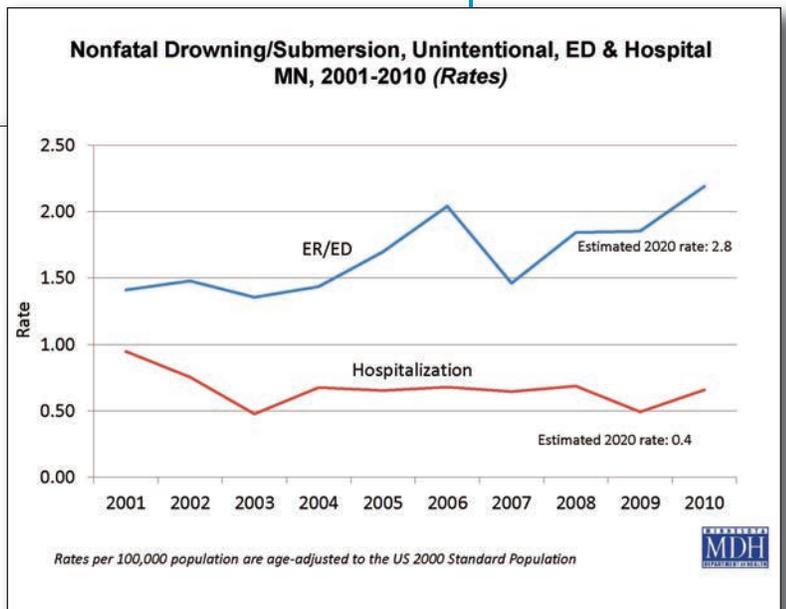
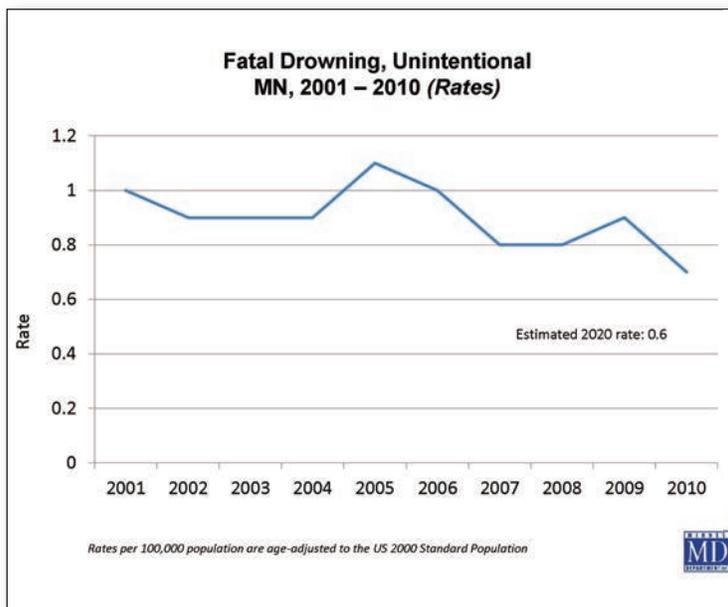
- About ten people die from unintentional drowning every day.
- Drowning is the fifth leading cause of unintentional injury death.¹

In Minnesota (2001–2010):

- Drowning was the fifth leading cause of unintentional-injury death.²
- The rate of unintentional drowning deaths decreased 30 percent, from 1.0 per 100,000 to 0.7.
- Rates for cases requiring hospitalization or emergency department treatment were relatively low. Emergency department case

rates increased over the ten-year period, while the hospitalization rate declined.

Drownings can happen in bathtubs, toilets and pails of water; in pools and at water parks, and on open water (ponds, lakes, rivers). Factors related to drowning include lack of adult/parental supervision or adult inattention, lack of swimming skills (or poor skills), absence of barriers around pools, failing to use personal flotation devices (PFDs), and drinking alcohol while boating, water skiing or taking part in other water sports.



Open water drownings and boating deaths, Minnesota

Rate per 100,000 population

1945 5.87
1950 4.19
1960 3.87
1970 3.05
1980 2.10
1990 1.14
2000 1.36
2010 0.87

Source: Minnesota Department of Natural Resources⁵

Who is most at risk of drowning?

Children and young adults. Children ages 1 to 4 have the highest drowning rates.¹ In Minnesota from 2001–2010, drowning was the second leading cause of unintentional-injury death from ages 1–14 and the third leading cause from ages 15–34.² And for every child who dies from drowning, the Centers for Disease Control estimates another four receive emergency department care for nonfatal submersion injuries.¹

Males. In Minnesota and the U.S. as a whole, about four out of five drowning deaths involve males.^{1,3} Rates of near drownings are also higher for males.

The Minnesota Department of Natural Resources reports that boating-related drownings typically involve adult males in small, non-motorized boats. Deaths spike among young males, in middle age, and among seniors in their 80s and older.

80s and older.

African Americans

Nationally, between 2005 and 2009, the fatal unintentional drowning rate for African Americans across all ages was significantly higher than that of whites. For African American children ages 5–14, the rate was almost three times higher than for white children in the same age range.¹

What trends and challenges do we face?

- **Fewer people know how to swim or perform lifesaving skills.** In general, there is a growing lack of swimming and basic lifesaving skills. Fewer children are taking swimming lessons and swimming is no longer part of physical education in the schools. Many people new to our country/Minnesota have no swimming training or skill.

- **Swimming ability varies widely by race.** A study commissioned in 2010 by USA Swimming (the national governing body for the sport of swimming in the United States) found that nearly 70% of African American children and 58% of Hispanic children have low or no swimming ability, compared to 40% of Caucasians.⁴

- **Barriers for low income families.** Among low income families, many children do not have swimsuits, which prevents them from participating in formal swimming lessons.

- **Growing hazards.** High profile incidents in apartment complex pools have raised awareness of settings where no lifeguards are present. The popularity of water parks also presents safety issues, particularly with younger children wandering away from parents, or parental inattention.

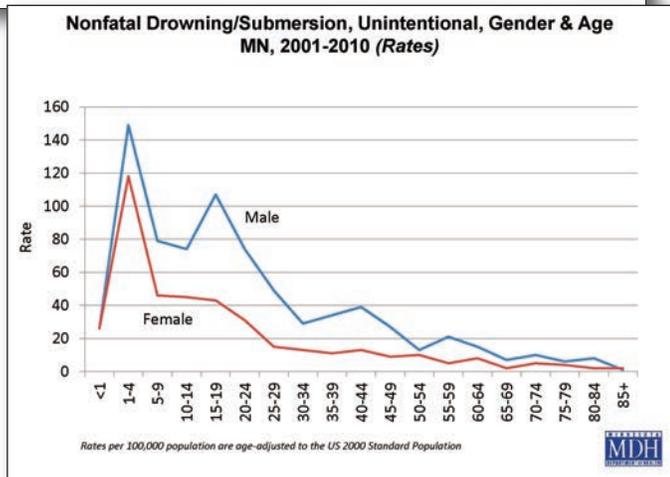
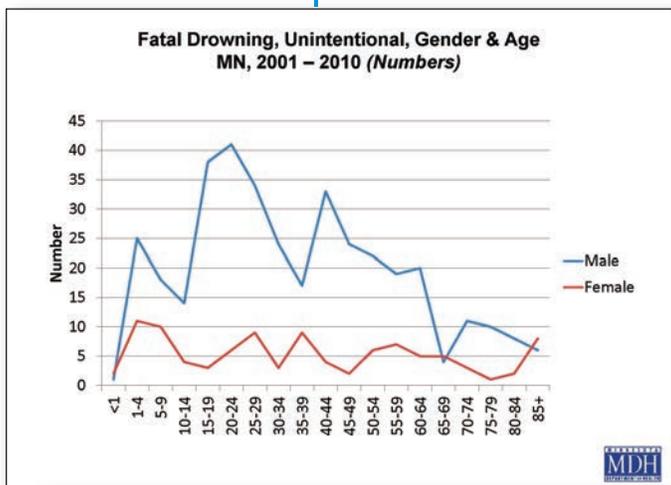
- **Alcohol use on open water is decreasing.** Alcohol involvement in boating and other water-related activities is still an issue, but the numbers are dropping.

How can we prevent drownings?

- **Promote parent/adult supervision of children around water.** Children less than a year old are most likely to drown in bathtubs, buckets, or toilets. Children ages 1 to 4 are most likely to drown in residential swimming pools.⁶

- **Educate parents/caregivers about drowning.** Many parents are ignorant about how quickly and quietly a child can drown. Supervision around water, including pools and bathtubs, is also essential for persons with seizure disorders.

- **Promote formal swimming lessons and water safety programs** (for children and entire families). Seek funding for community



programs that can provide transportation and swimsuits, if needed. Boating and water safety programs are most effectively tied with early childhood. They are not as effective when people are older, unless an insurance incentive is involved.

- **Support/enforce use of life jackets.** Get children used to PFDs before using them near water – they are often resistant to wearing them because they find them uncomfortable. Go beyond the requirements of the law to encourage use of PFDs when boats are anchored. Most deaths occur when the boat is stopped.

- **Promote CPR training.**

- **Develop awareness/education campaigns** that discourage alcohol use before or during swimming, boating, water skiing, fishing, and other water-related activities. Address the issue of inattention, which is a primary factor in non-fatal boating incidents.

- **Support public policy solutions.** Support adoption and enforcement of /education about pool safety measures and laws, such as building fences, installing locked gates and guards, and providing accessible telephones and emergency retrieval equipment. Support compliance with Minnesota’s pool drain safety law. Strengthen residential pool requirements and creating requirements for in-ground and inflatable pools.

Strengthen the law regarding lifejackets and emphasize best practice. Restrict the number of boats that can be tied together out on the water.

- **Seek out data.** Review most current fatal and non-fatal drowning data (state, region, county) through the Minnesota Injury Data Access System (MIDAS), analyze and target local efforts accordingly.

- **Conduct home visits.** Conduct visits to assess the home environment for drowning risks. See the Minnesota Department of Health (MDH) Home Safety Checklist, which is used for home visits throughout Minnesota by public health nurses.

- **Identify and coordinate with community partners** (public health educators,

hospitals/trauma centers, multi-cultural service agencies, YMCA, local chapters of safety organizations [Safe Kids, Red Cross, etc.], schools, parks and recreation programs, county extension educators) and prevention efforts that are based on local data and needs, and that utilize proven or promising programs.

- **Engage in education/outreach**

Work with schools to provide water safety education.

Using existing materials, develop a travelling “water safety program in a box” and get funding to pay for shipping.

Develop life jacket loaner programs through trauma centers to provide PFDs on site at lakes and other open water areas. Provide education and demonstration when lifejackets are checked out at municipal facilities and commercial aquatic facilities.

Coordinate key messages among organizations involved with water safety/drowning prevention.

Utilize social media – Facebook and You Tube – as well as outreach through traditional media.

Brainstorm: What if resources were not an issue?

Public policy

- Link PFD requirements to boat licensure.

Technology and engineering

- Support further development of pool alarms based on motion.
- To aid lifeguards, develop methods to counter the difficulty of seeing through water.

Education/Outreach

- Develop and implement a school curriculum for the most effective window: first grade (spring) and second grade (fall).
- Provide continual education for lifeguards.
- Develop a central water safety resource on the web for Minnesota and promote it broadly to safety educators, public health, teachers and others.
- Focus on non-fatal boating incidents and non-boating drownings.

Research

Develop a national database that tracks incidents in which a lifeguard goes into the water.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, *Water-Related Injuries*, <http://www.cdc.gov/HomeandRecreationalSafety/Water-Safety/index.html>
- Consumer Product Safety Commission, *Pool and Spa Safety Publications*, www.cpsc.gov/cpsc/pub/pubs/chdrown.html
- Minnesota Department of Health, Injury and Violence Prevention Unit, Water Safety Resources, <http://www.health.state.mn.us/injury/best/best.cfm?gcBest=drown>
- Minnesota Department of Natural Resources, *Boat and Water Safety*, <http://www.dnr.state.mn.us/safety/boatwater/index.html>
- Minnesota Department of Natural Resources, *Ice Safety*, <http://www.dnr.state.mn.us/safety/ice/index.html>
- Minnesota Injury Data Access System (MIDAS), <http://www.health.state.mn.us/injury/midas/ub92/index.cfm>
- USA Swimming, Diversity Research Reports, 2008 and 2010, <http://www.usaswimming.org/DesktopDefault.aspx?TabId=1796&Alias=rainbow&Lang=en>

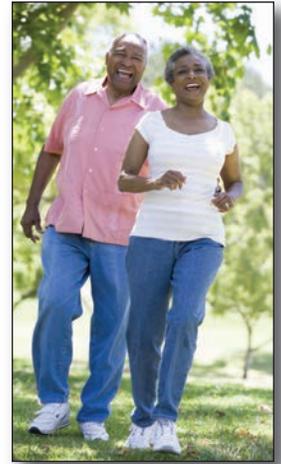
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- ² Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Unintentional Injury Death by Age Group, 2010–2010*.
- ³ Minnesota Department of Health, Injury and Violence Prevention Unit. *Number of Unintentional Drowning Deaths by Gender and Age Group, MN, 2001–2010*.
- ⁴ USA Swimming. 2010 *Diversity Research Study*. Available at <http://www.usaswimming.org/desktopdefault.aspx?tabid=1796&alias=rainbow&lang=en>.
- ⁵ Minnesota Department of Natural Resources. *Minnesota Yearly Watercraft and Water Accident Record*. Available at <http://www.dnr.state.mn.us/safety/boatwater/statistics.html>.
- ⁶ Minnesota Department of Health, Injury and Violence Prevention Unit. *Best Practices to Prevent Drowning*. 2004. Available at <http://www.health.state.mn.us/injury/best/best.cfm?gcBest=drown>.

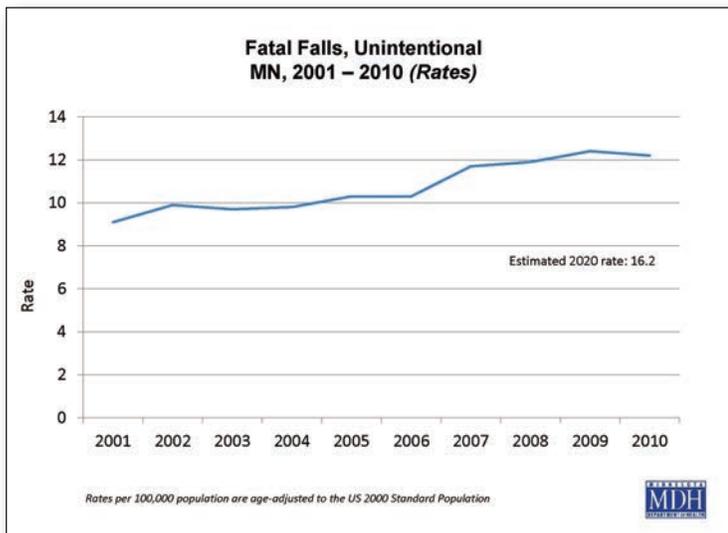
Falls

“Taking part in the Simple Steps Program this year has allowed me to spend more time with my parents (who are in their 70s and 80s). On a normal day, I would always call and check in with them, or stop in quick after work. After signing up for Simple Steps, I see them on a daily basis, as Mom wanted to be my walking partner, and Dad occasionally will join us too. We get to spend quality time together and get our walks in too.”

– Feedback sent to Dakota County, Simple Steps Program



People can fall on stairs; from furniture, windows, one level to another, on the same level, and by tripping or slipping. People who fall can tear their skin, break a hip or injure their heads. Fear of falling can cause older people in particular to be less active, making them less physically fit and actually increasing their risk of falling.



How big is the problem of falls?

Nationally:

- Falls are the third leading cause of unintentional injury death.¹
- One in every three adults age 65 and older falls each year.²
- As our population ages, the number of falls and the costs to treat them are likely to increase.³

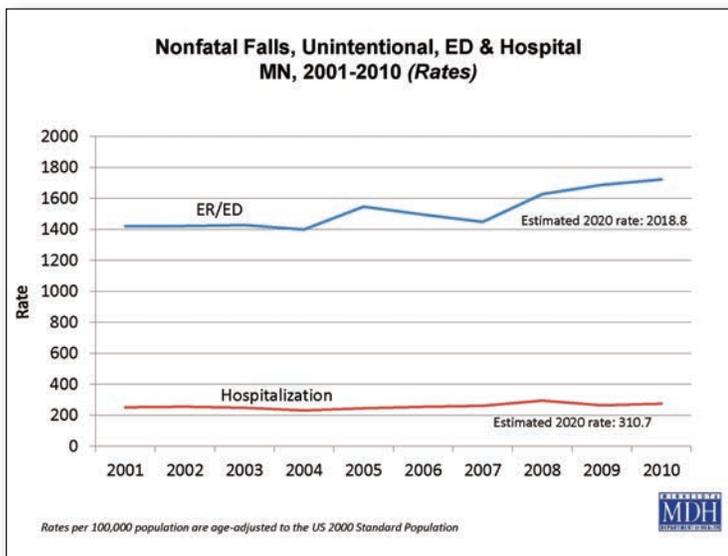
In Minnesota:

- We rank fourth highest in the nation for fall-related deaths among older adults (65+).⁴

From 2001–2010, falls were:

- the leading cause of injury death⁵ and the rate of fall-related death increased by more than 30 percent.
- the number one reason for emergency department visits and hospital admissions.⁶
- the leading cause of traumatic brain injury.⁷

From 2001–2010, the rate of emergency department-treated cases increased 21 percent; hospitalization rates showed a 9 percent increase.



Who is most at risk?

Young children and the elderly have the highest rates of non-fatal falls. From 2001–2010, falls were also the leading cause of non-fatal emergency department treatment for all ages except ages 10–19, and of hospitalization for all ages except 15–24.⁶

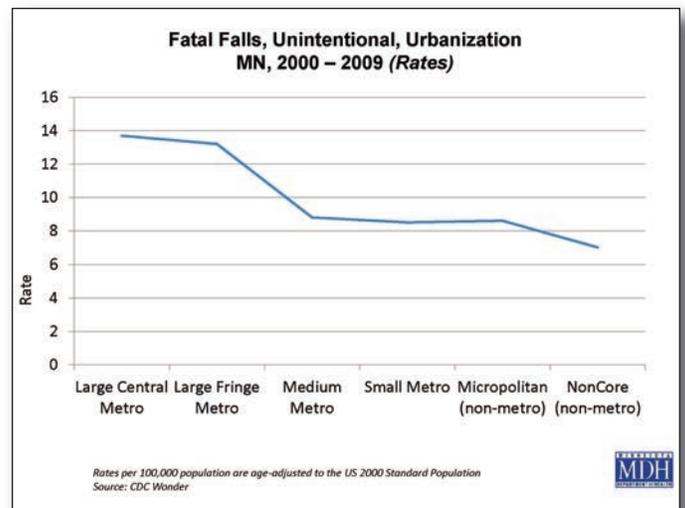
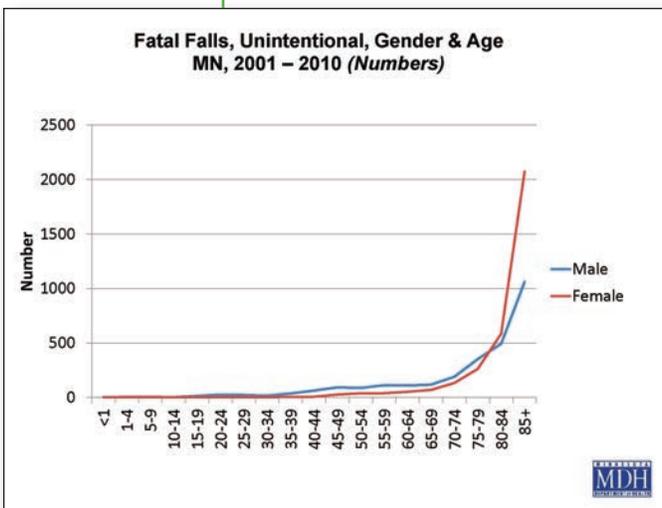
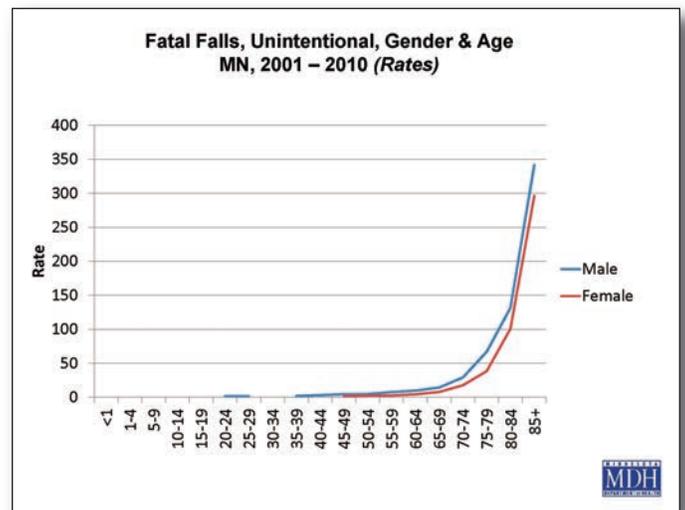
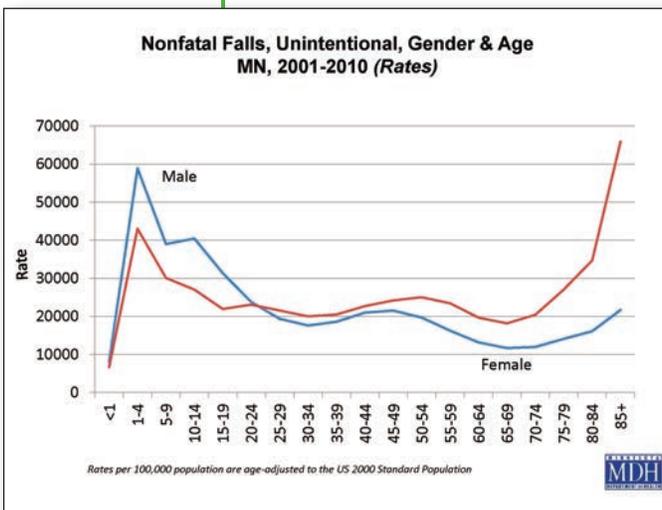
Adults 65 and older have the highest rates and numbers of fatal falls.

Males have a higher death rate from falls at all ages. They also experience larger numbers of deaths until the early eighties.

From the mid-twenties on, **women** have higher rates of non-fatal falls.

Urban dwellers. Fall death rates are highest in large metro areas in Minnesota and lowest in the least densely populated areas.

Whites and Non-Hispanics. Nationally, older whites are 2.4 times more likely to die from falls than their black counterparts, and white women have significantly higher hip fracture rates than black women. Older non-Hispanics have higher fatal fall rates than Hispanics.²



What trends and challenges do we face?

- **Minnesota is high in fall deaths**, but the reasons are not clear. It may be because in Minnesota people are healthy and active longer, even as they get older and become increasingly frail. At some point they may fall and break a hip, leading to their death.
- **More falls in urban areas.** In Minnesota, there are more falls in urban areas. This is not the case nationally, where we see no relationship between living in urban or rural areas and falls.
- **Aging population and falls in the home.** Most fatal falls occur in the home, especially for children and the elderly.⁸ Minnesota's population is getting older (one in four will be age 65 or older by 2030⁹) and most people want to stay in a home setting as long as possible. Therefore, it will be important to look at how new houses are designed, how existing homes can be made safer, and the living situation of older adults in general. Housing stock takes 50 years to turn over so it will take a long time for design to have an impact. Factors often related to aging, including medications, decreased vision, strength and balance must also be targeted.
- **Resistance and denial among seniors.** In addition, older people often resist or have a negative reaction to home modifications and/or universal design (an approach to design that works to ensure products and buildings can be used by virtually everyone, regardless of their age or level of ability or disability). They may feel that it implies they are less capable. They may also fear that someone coming in to assist them or assess their home may try to make them leave it. Finally, they may also simply be in denial: they don't want to identify themselves (or be perceived) as at risk for falls. They don't want to admit it can happen to them.
- **Barriers for those with low income.** For low income people, the cost of making changes to the home or purchasing and installing devices such as grab bars may be an issue. They also may not have access to programs and individuals who can provide effective education about preventing falls.

- **Falls in the workplace.** Nationally, older workers have a high rate of falls. In general, their injuries tend to be more severe and require longer recovery time.¹⁰

How can we prevent injuries from falls?

- **Study the data.** Use state, region and county data available through the Minnesota Injury Data Access System (MIDAS) to analyze and target efforts. Study what's happening with the aging population in "older" rural counties that are demographically 15 years ahead of urban areas in the state to see what's happening and what issues are arising.
- **Supervise, control the environment, and use protective gear.** Conduct home visits to identify potential fall risks. Educate parents and caregivers about the need to supervise children around stairs, playground equipment and other fall hazards, and the need for constant attention to infants/children on changing tables, counters and sofas.

Promote the use of home safety devices, including ASTM-compliant window guards and stair gates at the top and bottom of stairs. Provide education and distribute home safety devices through day care providers, hospitals, public health and community organizations.

Playground areas should be engineered with fall-absorbent material under play equipment; equipment must be properly maintained. Ensure properly fitted protective gear for sports and recreational activities.

- **Identify and work with partners in the community** (e.g., day care providers, health care providers, public health programs, pharmacists, churches) and existing proven programs to coordinate community education and distribution of home safety devices. Create a more active role for health care. Working with Medicare, involve primary care physicians in home safety and have them monitor patients for risk. Implement medication management systems that create communication between in-home care person and the primary care provider.
- **Intervene early – before the fall**
Conduct visits to assess the home environment. (See the Minnesota Department of

Health (MDH) Home Safety Checklist, which is used for home visits throughout Minnesota by public health nurses.)

Provide access to resources (e.g., window guards) for families that need them.

For adults, begin fall prevention education and strategies at an earlier age (with people in their 50s) when the information may be less threatening and there may be a greater long term benefit. Help prevent people from becoming so frail: Encourage dietary changes, vitamin D consumption and increased activity. Support and develop methods that will help people take action. Gather information from seniors about what would influence them to make home adaptations to prevent falls.

For older adults, promote regular physical activity in order to strengthen legs and improve balance (for example, tai chi exercise and walking); medication management to prevent unanticipated interactions and side effects such as dizziness; and regular eye examinations. Market prevention programs to the 50–60-year-old children of older adults. Provide tip sheets for caregivers. Provide fall prevention education for the elderly in independent, congregant and assisted living situations (particularly in rural settings). Work with trusted sources to provide information and education.

- ***Engineer the environment***

Apply universal design principles in construction. Make universal design commonplace and positive; emphasize maximizing independence or livability. Involve builders. Find a middle ground with education and engineering that people can afford. Engineer stair design (size, contrast, etc.) for optimal fall prevention. Incorporate aesthetic design, portability and convenience into equipment/engineering controls, in order for people to be willing to use them.

- ***Conduct research***

Determine what kinds of falls are occurring in the largest numbers and which of those are causing the greatest number of injuries and/or deaths (e.g., on or down stairs, from one level to another, on same level, trips, slips on loose surface materials, from furniture, falls from windows, etc.).

Analyze dollar cost of senior falls among those 85 and older (2,000-plus cases/year) to build the case for applying resources to prevention.

Brainstorm: What if resources were not an issue?

- ***Public policy***

Mandate universal E-coding (recording external cause of injury) in order to assess and better understand what's happening with falls.

- ***Technology and engineering***

Explore/support use of new technologies to prevent falls (e.g., human airbag, accelerometers on cell phones that automatically send a message if someone falls; home sensor or sensor on a person that monitors patterns and changes in gait; motion sensors that turn on lights as people enter a room, etc.).

- ***Education and outreach***

- Conduct in-home assessments. Create a non-threatening assessment that examines multiple factors. Provide home nurse assessment for infants and older elders. Provide insurance/financial incentive for parents to have a home visit and a follow up, with a reward if recommended strategies are still in place.
- Promote use of health care homes/medical homes (an approach to primary care in which primary care providers, families and patients work in partnership to improve health outcomes and quality of life for individuals with chronic health conditions and disabilities). Link community resources/programs and health care homes.

- ***Research***

- Conduct a formal epidemiological investigation of falls. Several studies could be done:
- Conduct a pilot study to find what's most useful.
 - Analyze fatalities.
 - Conduct interviews.
 - Implement a hospital-based population study or survey.
 - Conduct a survey of community populations to learn about falls and fall risks.
 - Interventional studies: implement an intervention in a number of communities and compare to communities with no intervention.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control
 - *Falls – Older Adults*, <http://www.cdc.gov/HomeandRecreationalSafety/Falls/index.html>
 - *Protect the Ones You Love: Falls* (children), <http://www.cdc.gov/SafeChild/Falls/index.html>
- Children’s Hospital of Philadelphia, *Fall-Related Safety*, <http://www.chop.edu/service/injury-prevention-program/child-safety-information/fall-related-safety.html>
- Minnesota Brain Injury Alliance, *Senior Falls Prevention*, <http://www.braininjurymn.org/seniors/index.php>
- Minnesota Department of Health, Family Home Visiting Program, *Home Safety Checklist*, <http://www.health.state.mn.us/divs/fh/mch/fhv/documents/MDHHSC.pdf>
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- Minnesota Injury Data Access System (MIDAS), <http://www.health.state.mn.us/injury/midas/ub92/index.cfm>
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- Safe Kids USA, *Falls Prevention Fact Sheet*, <http://www.safekids.org/our-work/research/fact-sheets/falls-prevention-fact-sheet.html>
- Centers for Disease Control and Prevention and National Fire Protection Association, “Remembering When” curriculum, designed to reduce the risk of fire and fall-related injuries and deaths in adults age 65 and older (involves a fee), <http://www.nfpa.org/categoryList.asp?categoryID=2301&URL=Safety%20Information/For%20public%20educators/Education%20programs/Remembering%20When>.

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- ⁵ Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Unintentional Injury Death by Age Group, Minnesota, 2001–2010*.
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Fire – Burn Injuries



The most serious burns are usually caused by scalding hot or flammable liquids, and fires. Chemicals and electrical current can also cause severe injury and damage to the skin.⁵

A smoke alarm woke a Cloquet mother at 3:30 in the morning, giving her enough time to rescue her son and herself from a fire. The fire had broken out in a bedroom next to the room where her son was sleeping, destroying that room and creating smoke and heat damage throughout the rest of the house. The woman and her son were not injured.

– Information from Fox 21 News, KQDS

How big is the problem of fires/burns?

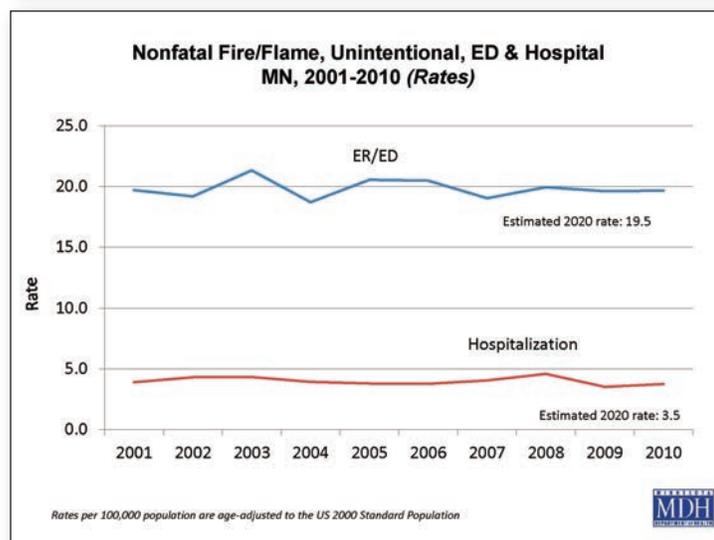
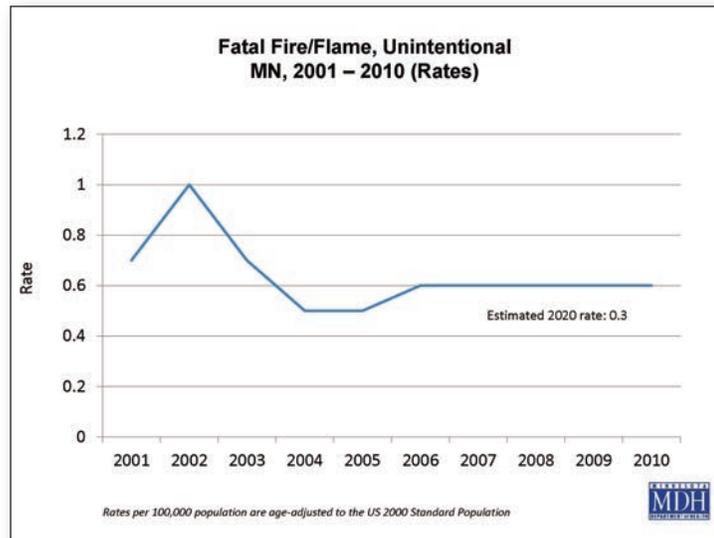
Nationally:

- Deaths from fires and burns are the third leading cause of fatal home injury.
- 85 percent of all fire deaths in 2009 occurred in the home.¹

In Minnesota:

- Fire/flame is the seventh leading cause of unintentional-injury death.²
- It's the fourth leading cause in the home (MDH, 2004–2008).³
- In 2010, eighty-seven percent of Minnesota fire deaths occurred in the home.⁴
- The death rate dropped significantly from 2002–2004 and has remained level since 2006.

From 2001–2010, rates for emergency department-treated non-fatal fire injuries remained relatively constant (19.7 in 2001 and 2010, with a peak of 21.3 in 2003). The rate of cases requiring hospitalization peaked at 4.6 in 2008 and decreased to 3.7 in 2010. Rates for emergency department-treated and hospital treated burns involving hot objects/hot substances declined from 2001 to 2010.⁶



Trauma centers report that fireplaces and campfires are related to a growing number of hospital admissions.

One out of four homes does not have working smoke alarms, and these homes have the most fire deaths.

- National Fire Protection Association

Cooking, open flames and heating are the leading causes of fire in Minnesota. Leading factors in cooking fires are unattended equipment, combustibles too close to a heat source, equipment turned on accidentally and misuse of a product or material.⁴ Other factors related to fire deaths include:

- alcohol and drug impairment, often linked with smoking
- physical disabilities and lack of mobility
- flammable items stored too close to a heat source
- lack of smoke alarms, or failure to maintain smoke alarms.

Factors associated with burns include:

- wood stoves, glass fireplace doors, exposed heating sources, or electrical cords
- hot water heater set above 130 °F
- heated foods and containers
- too much exposure to the sun.⁵

Who is most at risk?

Fatal injuries

Males are more frequently killed by fires than females.

From 2001–2010, the number of deaths gradually increased with age, with peaks in the following age groups: 1-4, 25-29, 45-64 and 80-plus.

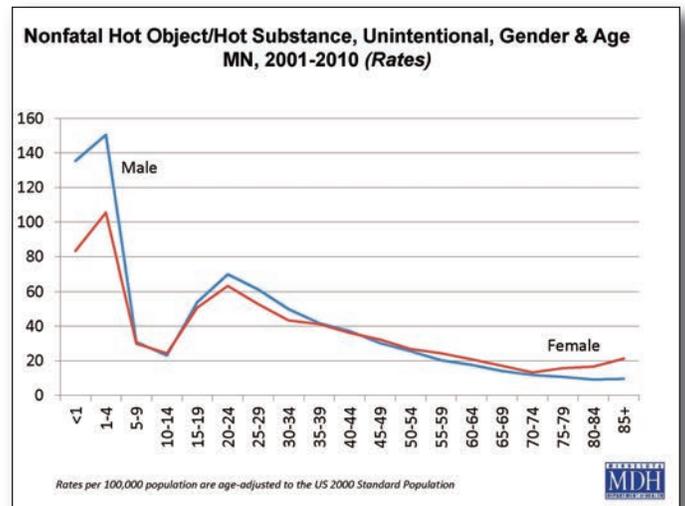
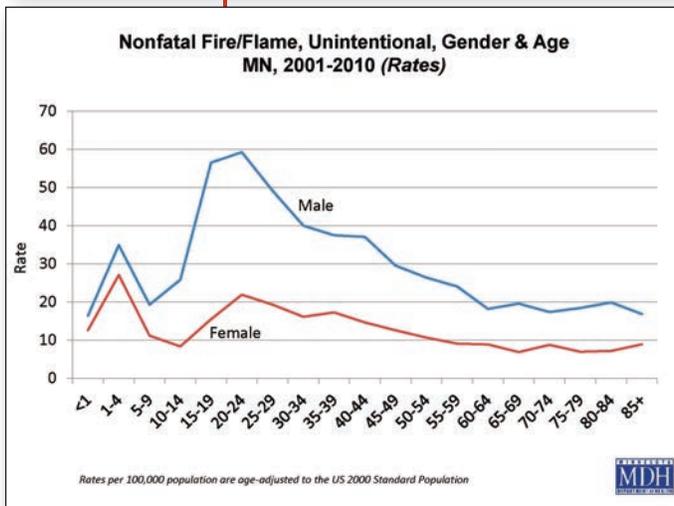
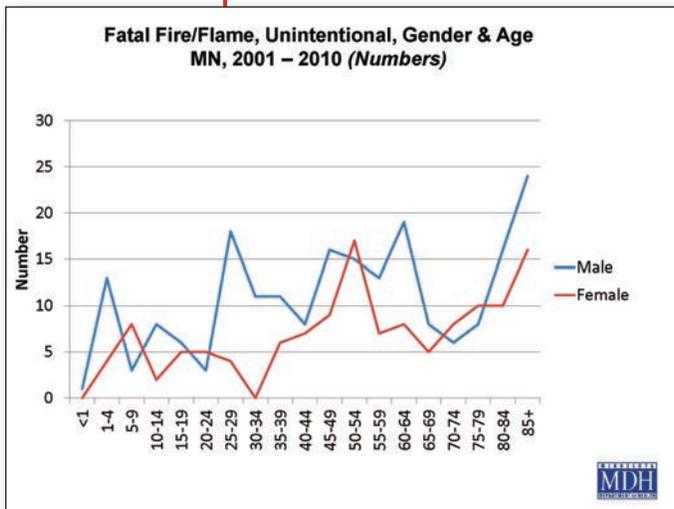
Older adults. People over sixty years of age represented 17.3% of Minnesota’s population according to 2008 data. Yet, the State Fire Marshal Division reports that the over-sixty age group suffered 43% of Minnesota’s fire deaths in 2009⁷ and 36 percent in 2010.⁴

People living in rural areas. The rate of fire deaths in greater Minnesota is typically twice that of the Twin Cities metropolitan area (although the rate in the metro area was higher in 2010).^{4,7}

Nationally, the Centers for Disease Control (CDC) reports that those at greatest risk include **African Americans** and **American Indians**, those living in greatest **poverty** and people living in **manufactured homes or substandard housing**.¹

Non-fatal injuries

Males and youth. Males consistently experience higher rates of non-fatal fire burns. (The State Fire Marshal Division reports that in 2010, 69 percent of burn patients in Minnesota were male.⁴) While the gender difference is not as pronounced with contact burns, boys ages 1–4 and older women experience higher



rates. Non-fatal fire/burn injury rates peak dramatically from the mid-teens through the twenties (2001–2010 data).

Children are at greatest risk for burns resulting from contact with hot objects or substances (e.g., scalds, contact burns). It's a leading cause of emergency department treatment through age nine and of hospitalization through age four.⁸

What trends and challenges do we face?

- **The good news:** Fire deaths in Minnesota continue on a downward trend.
- **Non-functioning/absent smoke alarms.** The failure to install or properly maintain smoke alarms continues to be a major factor in fire deaths in Minnesota. In 2010, in more than a third of fire deaths in home settings there was no smoke alarm or it wasn't operating. In another 32 percent of cases, it was not possible to determine whether a smoke alarm was present or whether smoke alarms were operating.⁴
- **Alcohol, drugs and smoking: a deadly combination.** Alcohol or drug use was a factor in 36 percent of fire deaths in 2010. A high percentage of careless smoking deaths (71 percent in 2010) involve alcohol or drug use.⁴
- **Causes of burns have shifted among children.** Historically, scald burns have accounted for more than half of burns among children, but scalds have decreased and contact burns have increased.
- **Older burn patients show gender patterns.** Older females frequently get burned while cooking, when clothing catches on fire; they're also more likely to slip and have scald injuries. Males get burned doing work activities and chores, e.g., farmers burning brush and trash.
- **More education is needed.** There is a lack of awareness about fire and burn risks and incidents.
- **Differences in oversight.** Code inspection requirements (for example, inspection of rental properties) vary by city.

How can we prevent fire/burn injuries?

- **Improve data collection.** Review most current fatal and non-fatal fire/burn data (state, region, county) through the Minnesota Injury Data Access System (MIDAS) and the Minnesota Fire Incident Reporting System (MFIRS) system. Analyze and target efforts accordingly. Link MFIRS and Minnesota Department of Health data to capture the total picture of fire-related deaths and injuries and better estimate injury costs. Promote participation of all Minnesota fire departments in MFIRS. Gain complete and accurate reporting from the fire service regarding causes of death. Document injuries through the statewide trauma system.
- **Identify and work with partners** in the community (e.g., fire service, day care providers, schools, youth organizations, senior programs, health care providers, public health/home visiting programs) and existing proven programs to coordinate community education and distribution of fire alarms.
- **Conduct home visits to identify potential fire/burn risks.**
- **Develop targeted educational programs for professionals, older adults and people with disabilities.**
 - Encourage and train health professionals to provide fire safety education messages to patients treated for fire-related injuries.
 - Encourage older adults and individuals with disabilities to develop fire response skills and an escape plan that accommodate limited mobility or other impairments. Promote fire safety curriculum in schools, youth organizations and senior education programs.
- **Targeted smoke alarm programs:** Develop smoke alarm installation programs that target areas at high risk for residential fires, the elderly, low income families and families with young children.
- **Develop/support comprehensive fire safety education programs** that include:
 - installation and maintenance of smoke alarms (with 10-year batteries)

Minnesota's Fire Deaths

1970s 961 deaths
1980s 776 deaths
1990s 585 deaths
2000s 465 deaths
2010s 390 deaths
(estimate)

Source: Minnesota State Fire Marshal Division

- design and practice of a fire escape plan
 - safe use of heating devices
 - safe water heater temperature
 - safe cooking practices and supervision of children around hot cooking surfaces
 - the relationship of alcohol use to home fires
 - proper storage of flammable materials
 - storage of matches and lighters away from children
 - proper treatment of burn injuries.
- **Support enforcement** of residential fire safety codes and efforts to discourage use of illegal fireworks. Amend legislation and relevant codes (e.g., fireworks legislation, water temp in rental housing) to better prevent burns/fires.
 - **Promote engineering solutions.** For example, encourage installation of fire suppression sprinkler systems in homes and promote use of faucet locks, which block the ability to turn to “hot.”

Brainstorm: What if resources were not an issue?

- **Public policy**
 - Require sprinkler systems for residential dwellings.
- **Technology and engineering**
 - Work with industry on hot water heaters to make it more difficult to adjust how hot they will get; put a limit on upper temperature.
 - Engineer glass fireplace doors to prevent contact burns.
- **Education and outreach**
 - Hire more people to check alarms in apartments/homes.
 - Do a brief risk assessment with parents in the Emergency Department (for example, use of iron, socket protectors, children left alone in bathroom, etc.).
 - Develop incentives for safe behavior (e.g., installing smoke and CO alarms).
 - Create educational packets on campfire safety to be distributed in the parks system and provided at every campsite.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

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- ⁸ Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Nonfatal Emergency Department-Treated Unintentional Injury by Age Group, Minnesota 2001–2010*, and *Ten Leading Causes of Nonfatal Hospitalized Injury by Age Group, Minnesota 2001–2010*.

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Poisoning/Overdose

“Thanks so much for coming to our home and doing the fire safety inspection and for installing smoke alarms and CO detector. Unfortunately, we had a carbon monoxide leak. We are thankful the detector went off and alerted us especially since my husband is at end stage cancer and was in the bed. The fire department came and aired the house out and called Xcel. It was reading at 89 but they were able to get it to 0 . . .”

– Feedback provided to St. Paul Fire Department, Project Safe Haven

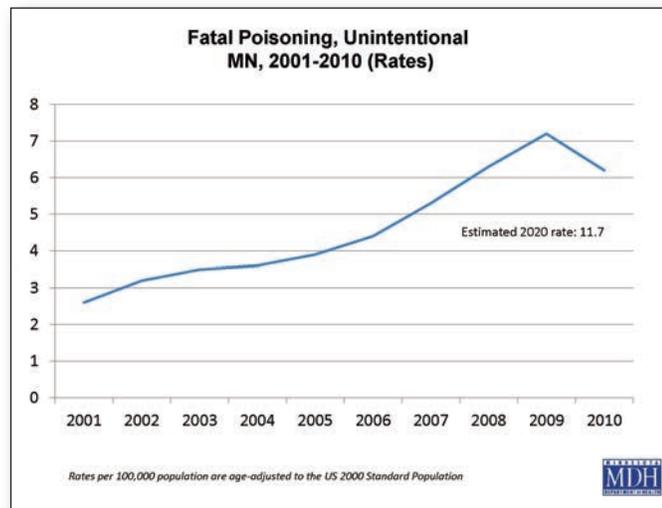


The Minnesota Poison Control System received 58,165 poison exposure calls in 2010. Four out of five were unintentional exposures. Eighty-nine percent of exposures occurred in the person's own residence. Fifty-five percent of the exposures involved drug substances.⁷

How big is the problem of unintentional overdose/poisoning?

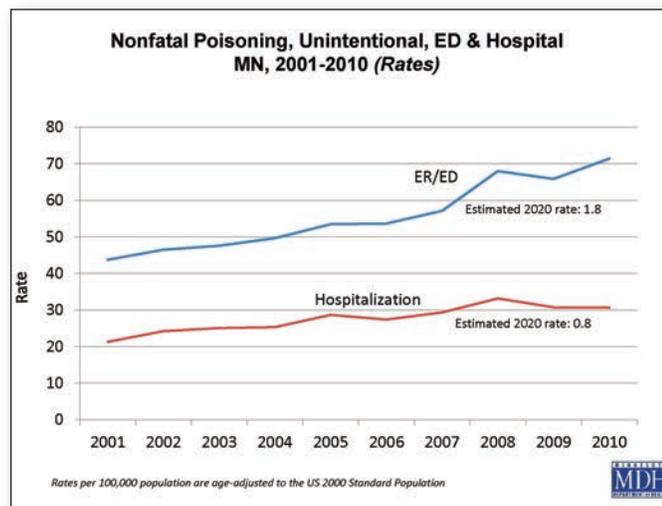
Nationally:

- Unintentional overdose/poisoning deaths increased by 160% from 1999 to 2009.¹
- In 2009, unintentional poisoning was the second leading cause of unintentional injury death, and the leading cause for people aged 25–64 years old.¹
- Nearly nine out of ten poisoning deaths are caused by drugs, most commonly opioid pain medications, followed by cocaine and heroin.¹
- Each year, carbon monoxide poisoning causes 450 deaths and 20,000 nonfatal injuries.²
- Approximately 500,000 U.S. children aged 1–5 years have excessive blood lead levels.³



In Minnesota, for 2001–2010:

- Overdose/poisoning was the third leading cause of unintentional-injury death⁴ and of hospitalization for unintentional injury.⁵
- 2,435 Minnesotans died from unintentional overdose/poisoning; the rate of unintentional poisoning deaths rose dramatically from 2001–2009 (2.6. to 7.2).
- The rate of cases requiring emergency department treatment and hospitalization rose steadily.
- Increases in deaths and hospital-treatment were primarily due to misuse of prescription drugs.⁶



Who is most at risk?

For fatal poisonings:

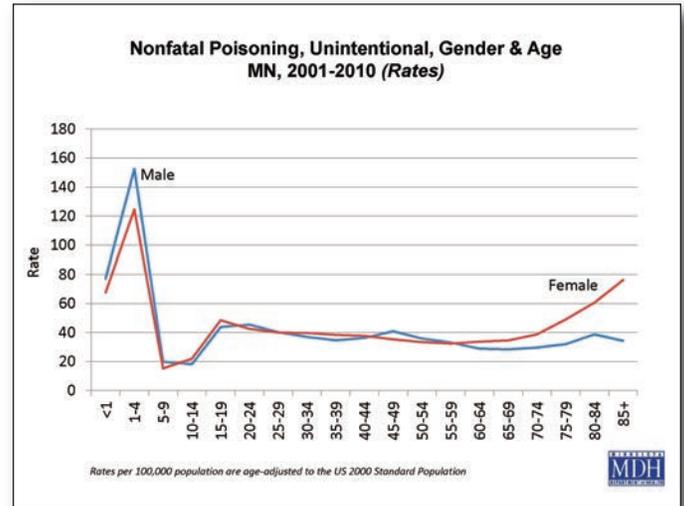
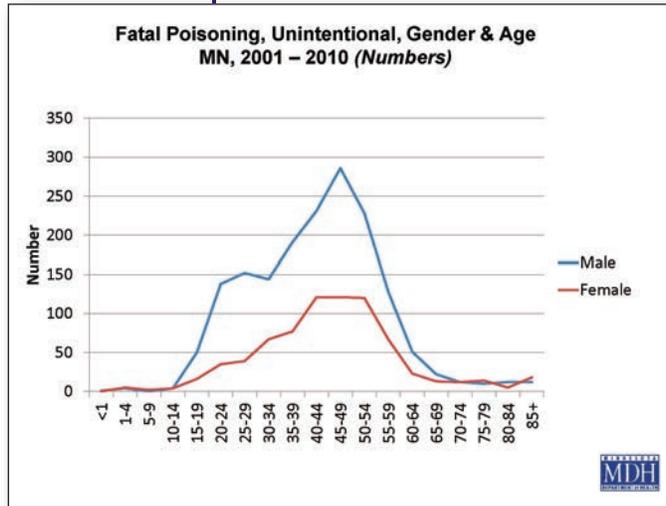
Males. Both nationally (2007) and in Minnesota (2001–2010), men are twice as likely as women to die from unintentional poisoning.⁸

Middle-aged adults. Deaths begin to climb dramatically for both genders in the mid-teens, peaking in the forties and early fifties.

For non-fatal poisonings:

Children. Non-fatal unintentional poisoning is the second leading cause of unintentional-injury hospitalization for children aged 1–4.⁵ The rate of non-fatal poisoning is highest for young children, particularly boys.

Older women. Women have higher rates of nonfatal poisoning beginning with the 60–64 year-old age group.



What trends and challenges do we face?

• *Poison center calls for kids are staying level.*

The largest percentage of calls to the Minnesota Poison Control System are for children age five and under with unintentional home exposures. Non-fatal and fatal cases have been level in this age group for some time.

• ***Increases in teen drug misuse and senior overdoses.*** Among older teens there's been a big increase in drug misuse and abuse involving prescription and over-the-counter drugs. There have been significant increases in medicine overdoses among Minnesota seniors, including over-the-counter drugs, from 2003–2010.

• ***Abuse of painkillers has jumped dramatically.*** Nationally, from 2004 to 2008, the estimated number of emergency department visits linked to the nonmedical use of prescription pain relievers rose from 146,644 visits to 305,885 visits a year.⁹

substances most frequently involved in poison exposures are:

- Painkillers (over the counter or prescribed) such as acetaminophen, ibuprofen, methadone, or oxycodone.
- Cosmetics and personal care products such as creams, lotions, make-up, perfume, and soap.
- Household cleaning substances such as bleach, dishwasher detergent, pest repellent, and drain opener.¹⁰

Minnesota's rate of prescription drug overdose is 7.2 per 100,000 population, compared with the nation's highest rate (27.0, New Mexico) and the lowest (5.5, Nebraska).⁶

How can we prevent unintentional poisonings?

• ***Identify causes and apply appropriate resources.*** More clearly define/identify intentional and unintentional poisoning causes and apply appropriate resources toward them. Involve appropriate organizations and programs to address drug abuse/recreational drug use/overdose.

According to the American Association of Poison Control Centers (AAPCC) the

- **Work with partners in the community** (e.g., EMS providers, day care providers, schools, youth organizations, senior programs, health care providers, public health/home visiting programs, pharmacists) and existing proven programs to coordinate community education and distribution of safety devices such as carbon monoxide alarms, cabinet locks, etc. Seek out non-traditional partners for carbon monoxide education (for example, home improvement stores).

Develop partnerships between the poison center and other organizations (state agencies, state trauma system, safety organizations, insurance companies), to expand capabilities for public education. Develop speaker's bureau and key messages and provide "train-the-trainer" sessions so other professionals can assist with raising awareness. Explore potential funding support from insurance companies for poison control system.

- **Educate populations at risk** for poisoning: *Children.* Educate parents and caregivers about effective prevention strategies (e.g., read the labels and warnings on medicines, cleaning products and other potential poisons, and store them in locked or child-proof cabinets; keep medicines/products in their original containers; dispose of old or unneeded medicines).

Work with pediatricians to provide information at well-child visits.

Educate health care plans and providers about the need to screen at-risk children.

- *Teens.* Provide early education from multiple sources to help prevent teen misuse and abuse of prescription and over-the-counter drugs.
- *Adults.* Educate about the dangers of drug and alcohol interaction, misuse of prescription drugs and painkiller addiction and how to properly use acetaminophen to avoid liver injury.
- *Seniors.* Partner with senior groups to educate their members on adverse effects of medication and potential interactions.

Evaluate, improve and coordinate existing medication management programs that help older adults screen and assess their medications (Medicare, Medicaid, Older Americans Act).

Contact pharmacists' associations to educate seniors on safe use of medications.

- *English as a Second Language Populations (ESL).* Work with organizations within immigrant/non-English speaking communities to address cultural issues related to Western medicine and using the 800 number. Work with Office of Multi-Cultural Health, MDH. Cultivate social flexibility and public health responsiveness.
- *Rural areas.* Conduct continuing education training on poison prevention and poison center services for public health nurses, social workers, EMS personnel, rural hospital staff, and Indian Health Services. Special topics of concern in rural areas include pesticides, farm hazards, and methamphetamine labs and their toxins.

- **Promote awareness of the Minnesota Prescription Monitoring System** among physicians and others who prescribe drugs, and encourage participation in it.
- **Promote awareness of the Poison Control Center**, its logo and phone number, the fact that it is a free, confidential, 24–7 local resource, what it can do and when to call it. Create awareness that people can be helped at home rather than incurring costs in the healthcare system. Promote new American Association of Poison Control Centers (AAPCC) poison prevention app for mobile phones (press button on phone and connect with local poison center).
- **Continue to collect and analyze poisoning data** on the state level. Maintain a high-quality poison information center with round-the-clock free service for the public and health care professionals. Document calls using an established database. Analyze caller data to look for emerging trends, location, ages, symptoms, and outcomes. Submit data to national database in real time for surveillance.

Brainstorm: What if resources were not an issue?

Public policy

- Raise awareness of Minnesota's carbon monoxide alarm law (Statute 299F.51) which requires that single family dwellings and every unit in a multifamily dwelling must have an approved and operational carbon monoxide alarm installed within ten feet of each room lawfully used for sleeping.
- Work with industry to put appropriate and consistent warnings on products that are dangerous.
- Mandate poison prevention education in the school curriculum.
- Explore mandatory participation in the Minnesota Prescription Monitoring Program.

Education and outreach

- Support enhanced skills/background for poison prevention educators, including public health, epidemiology and technology. Separate public education training from professional education.
- Within poison control system, have dedicated staff for providing education through technology.
- Develop a comprehensive library of proven effective resources, keep them current, make them accessible and market them broadly.
- Develop core curriculum for schools.

- Provide low-cost/no-cost prevention tools (e.g. cabinet locks) for low income families.
- Promote installation and maintenance of carbon monoxide alarms.
- Develop “take back” programs for medications – make it easy for people to dispose of unused medications.
- Examine health care or medical home model as a primary care structure with which to improve the coordination of care (and thus, medications) across multiple practitioners.

Technology and engineering

- Work with all phone providers to pre-program the “Poison Help” 800 number.
- Address area code routing issues that arise when poison centers are accessed by new residents on a mobile phone programmed for another area (the 800 number is geographically linked, so when newcomers call, they aren't getting the local poison center).
- Establish a common, shared electronic medical record for all patients to improve clinician knowledge of a patient's other physicians and pharmacists.

Research

Examine poisoning trends in counties that have already documented significant increases in the older adult population in order to gain insights for areas of the state that will grow older in the next 10-30 years.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

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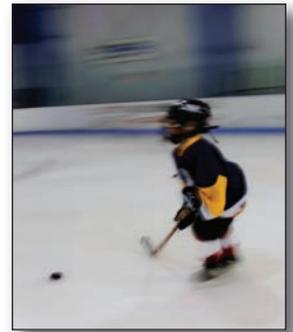
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Sports and Recreation Injuries

“My son is a B1 Bantam playing very rough and competitive hockey. At a tournament this weekend he sustained a hit to the head that, I believe, would have normally resulted in a concussion. But since we had purchased a(n) M11 [Messier helmet] a couple weeks ago with this concern in mind, he was able to walk away with only his ‘bell getting rung.’

– Dave B., Circle Pines, Minnesota; e-mail to “The Captain,” a blog of the Messier Project



How big is the problem of sports and recreational injury?

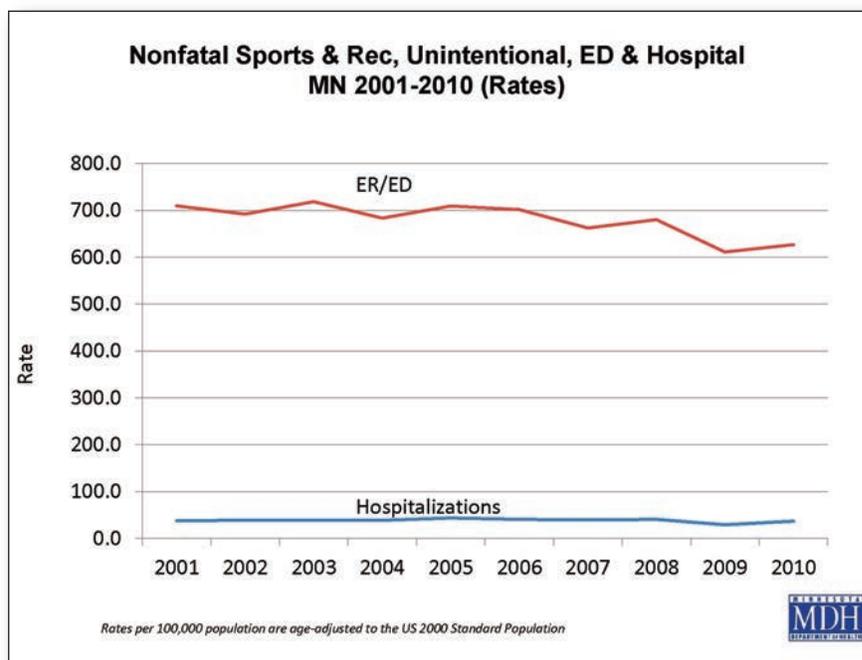
Nationally:

- About 11,000 people receive treatment in emergency departments each day for sports/recreation-related injuries.²
- One of every six emergency department visits for an injury is the result of participating in sports or recreation.²
- Each year from 2001–2009, an estimated 2.6 million children and youth aged 19 and younger were treated for sports and recreation-related injuries. About 173,285 of these injuries each year were traumatic brain injury (TBIs). During this period, the number of sports and recreation-related TBI visits to emergency departments increased 62 percent, with highest rates among 10–19-year-old males.³

- About 45 percent of playground-related injuries are severe—fractures, internal injuries, concussions, dislocations, and amputations.²
- The leading cause of death from sports-related injuries is traumatic brain injury (although deaths are not common).⁴
- Sports and recreational activities contribute to about 21 percent of all traumatic brain injuries among American children and adolescents.⁵

In Minnesota:

- The rate of sports and recreation injuries requiring emergency department care declined slightly from 2001–2009, rising again in 2010.
- Rates for injuries requiring hospitalization remained relatively steady (see below).



Sports injuries can happen when participating in contact and non-contact athletics, taking part in outdoor activities (bicycling, roller sports, playground activities, ATV and snowmobile use, etc.) and exercising.

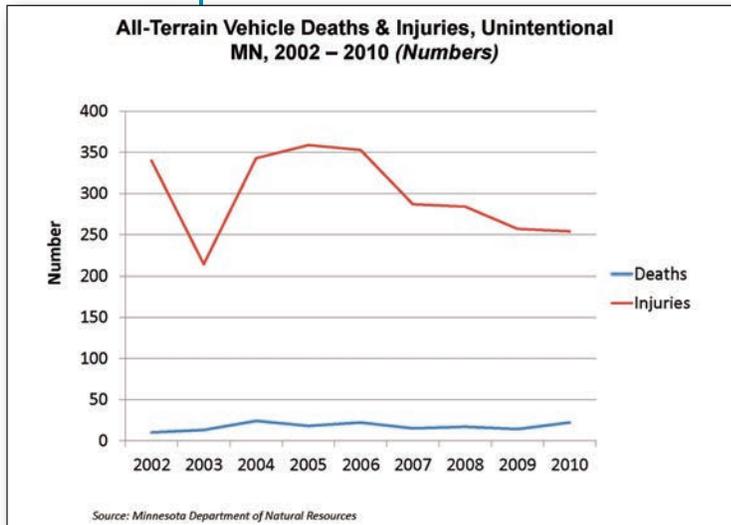
The most common sports injuries are:
Sprains and strains
Knee injuries
Swollen muscles
Achilles tendon injuries
Pain along the shin bone
Fractures
Dislocations

– National Institutes of Health¹

The Minnesota Department of Natural Resources (DNR) tracks injuries and deaths related to several popular types of recreation, including use of all-terrain vehicles (ATVs), snowmobiles, hunting and boating (for more on drowning, see page X). Several decades of incident reports to the DNR reveal the following:

All-terrain vehicles. In 1982 injury reporting began, with five injuries reported. In 1987 the first ATV-related deaths (three) were reported. Significant increases in injuries and deaths have occurred over the past three decades:

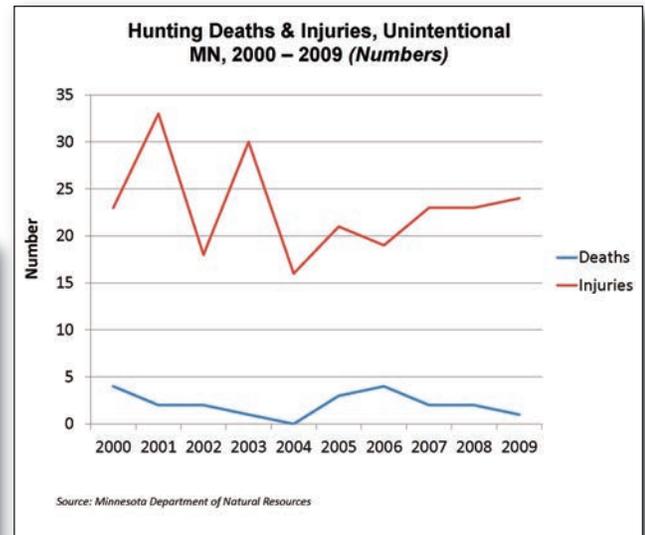
1982–1991: 28 deaths and 642 injuries
 1992–2001: 79 deaths and 1,781 injuries
 2002–2010: 155 deaths and 2,691 injuries.
 Injuries peaked in the middle of the last decade, with 343 injuries in 2004, 359 in 2005 and 353 in 2006, with a significant decline since then.



Boating deaths and open water drownings. DNR records of boating deaths and non-boating drownings date back to 1945. In 1961, non-boating drownings and boating death data began to be archived separately; non-fatal boating incidents were first recorded in 1970 (92 incidents).

| Years | Non-boating drownings | Boating deaths | Non-fatal boating incidents |
|-------------|-----------------------|----------------|-----------------------------|
| 1961 - 1970 | 766 | 434 | 92 (1970 only) |
| 1971 - 1980 | 646 | 401 | 946 |
| 1981 - 1990 | 456 | 237 | 1,435 |
| 1991 - 2000 | 393 | 184 | 1,427 |
| 2001 - 2010 | 372 | 169 | 962 |

Hunting-related deaths and injuries. Hunting deaths have declined over the past several decades: 45 in the 1980s, 29 in the 1990s, and 21 from 2001–2009. Non-fatal incidents have dropped from 290 recorded by the DNR from 1990–1999, to 230 recorded from 2000–2009. Factors associated with this decline include Minnesota’s strong hunter safety education and training efforts, which also involve sporting groups and retailers.



Snowmobile injuries and deaths. Snowmobile-related injuries and deaths have declined over the past two decades.

| Years | Deaths | Injuries |
|-------------|--------|----------|
| 1991 - 2000 | 195 | 3,994 |
| 2001 - 2010 | 157 | 2,131 |

Who is most at risk?

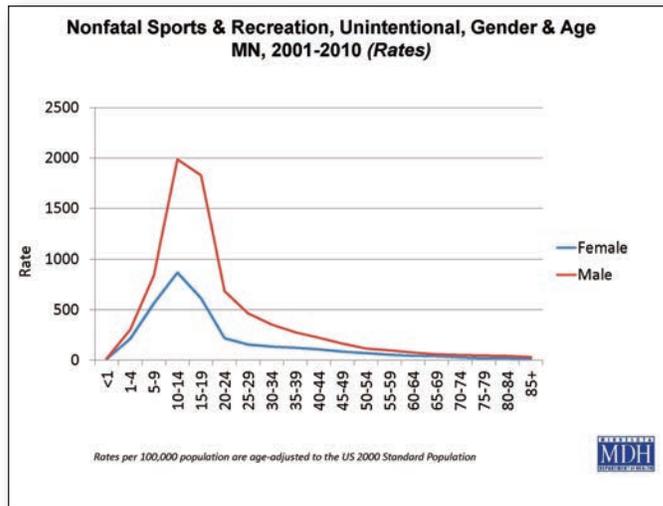
Children. Nationally, children account for about two-thirds of emergency department visits from sports-related injuries. The rate and severity of sports-related injury increases with a child's age.⁴

Teens and males. In Minnesota from 2001–2010, the rate for nonfatal sports and recreation injuries was highest among children and teens, with males consistently experiencing higher rates.

Mature adults. Mature athletes, whose bodies are not as flexible and strong as they were when they were younger.

“Weekend warriors.” Persons of any age who overdo, don't train properly or move too quickly from an inactive to a more active lifestyle are also at risk.

Women in organized sports. Female athletes have higher injury rates than men in a number of sports, particularly basketball, soccer, alpine



skiing, volleyball, and gymnastics. Possible factors include conditioning level, structural differences of muscles, and the way players move, among others.⁶

People who don't wear protective gear, such as helmets and personal flotation devices.

People impaired by alcohol or other drugs when taking part in recreational activities.

What trends and challenges do we face?

Sports

- **Concussion awareness is increasing.** Nationally, data show concussions on the rise from 2000 – 2008 (which could be related to greater awareness and reporting, among other factors). We're also seeing larger numbers of concussions going unrecognized until a later date.

- **Younger children are being affected.** Children ages 5–12 are now coming into emergency departments with injuries related to organized sports, but there is not the same level of awareness, education and resources for helping them as at the high school level. Programs for younger children may have more lax policies regarding equipment, proper technique and supervision. Parent coaches may not recognize what a concussion is and therefore, follow-up is lacking.

Sports injuries have surpassed traffic crashes as the leading cause of spinal cord injuries for teens.⁷

- **Doctors need education.** Primary care doctors often don't know what's involved in clearing an athlete for return to play, but if they do clear the child, the trainer has to let them play. And if a doctor doesn't clear the child, the parents may simply get another opinion.
- **The culture of sports encourages playing through pain.** Kids want to be heroes. If the coach/culture supports playing through pain/injury, the child's reaction may be "I can't be injured; I can't let my parents/coach down," etc. The mindset is "strive to do the best, hit the hardest," etc. At the same time, the size, mass and speed of athletes has increased and players of very different sizes may come into contact with each other.
- **Overuse.** Unlike in the past, the infrastructure is in place for year-round activity for youth. There is pressure for kids to focus on one sport at an early age and to be involved year-round. Overuse and the changing body are issues for baby boomers and people in their 60s or 70s who still want to be active.

- ***Equipment fit and maintenance.***

Equipment typically includes a wide range of sizes. How do programs determine if a helmet or shoulder pads truly fits the player? Companies certified by NOCSAE (National Operating Committee for Standards on Athletic Equipment) can re-condition/recertify helmets, but they may check just a sample of the helmets provided by a school, not all. Also, helmets may be rented out for the summer and not re-conditioned before fall.

- ***Data collection is a challenge.*** Emergency department and hospital data about sports and recreation injuries is just the tip of the iceberg.

Recreation

- Use of alternative transportation such as bicycles is increasing.
- Minnesota has no helmet law requirement. Minnesota's personal flotation device law requires only that they be worn through age 9.
- A significant percentage of recreation-related deaths involve alcohol.

How can we prevent sports/recreation injuries?

- ***Promote proper technique,*** warmups and cool downs and stretching.
- ***Educate about heat stress*** and how to prevent heat illnesses.
- ***Prevent overuse.*** Encourage youth involvement in a variety of sports to prevent overuse.
- ***Support Minnesota's sports concussion law.*** Promote awareness of Minnesota's concussion legislation, which requires training for coaches and education for coaches, parents and youth.
- ***Promote a healthy sports culture.*** Teach kids the skills and behaviors of being a good athlete (which may not be reflected in the athlete persona portrayed in the media). Teach them when to say I can't play/I need to sit out. Develop a contract for parents and coaches that the parents will agree if the coach says a child can't play.

- ***Promote and provide proper gear and well maintained equipment.***

- Ensure that playground equipment and surfaces meet the standards of the Consumer Product Safety Commission.
- Promote regular helmet usage by adults and children when bicycling, skateboarding and using scooters. In general, promote gear that protects, fits well, and is right for the sport.
- Promote/ensure appropriate padding on posts and proper field maintenance and care.

- ***Target education to mature athletes.*** For mature athletes, promote finding a balance of activity (for cardio, balance and bone) with degenerative issues. Educate mature athletes about when to shift to lower impact activities (e.g., from running to biking), where to find reliable sources of information/advice, and the need to assess bone strength/joint issues and training frequency/stress.

- Provide education about avoiding alcohol before and during recreational activities such as water sports, hunting and snowmobiling.
- Promote hunting, snowmobile and ATV/OHV safety education programs offered through the Minnesota Department of Natural Resources.
- Promote basic hunter safety practices, including carrying a map and compass, basic survival kit, using fall protection if hunting from an elevated stand and wearing a life vest if on the water.
- Promote basic snowmobile safety practices, including monitoring weather and trail conditions, dressing properly, riding at safe speed, staying to the right on trails and avoiding lakes and rivers.
- Limit use of ATVs and other off-highway vehicles by young people (e.g., limit usage at night, increase minimum age for operation on private property). Encourage riders to wear protective gear, maintain their vehicles and follow basic safety practices regarding speed and following distance.
- Promote and educate about the need for adult supervision when children are swimming.

- Work with partners in the community (e.g., EMS providers, day care providers, schools, youth organizations, senior programs, health care providers, public health programs, insurance companies, agents) and existing proven programs to coordinate education and distribution of safety gear (e.g., bike helmets). Research what primary care doctors know about concussion management and return to play. Develop educational materials for them.
- Gather more complete data. Develop a system for more fully documenting sports injuries.
- Have all athletes take a cognitive pre-test to provide a baseline before the season begins and another test at the end of the season.

- **Protective gear**

- Provide access to and consistent use of appropriate gear for each sport.
- Promote education about the role of properly fitted helmets in reducing concussion.
- Maintain research on equipment age, use and re-conditioning.

- **Data collection and research**

- Work with insurance companies to retrieve information about sports injury claims. Collect data, analyze and prioritize sports-related injuries: concussion, fractures and sprains; heat injury/dehydration and other totally preventable outdoor environment issues such as thunderstorms/lightening.
- Require reporting of sports-related injuries.
- Create a sports injury database through the Minnesota Department of Health that includes practices and games, and information about numbers involved and equipment used.

Brainstorm: What if resources were not an issue?

- **Education and outreach**

- Develop standardized educational requirements for volunteer coaches beyond concussion law requirements. Educate and certify them in first aid/CPR, proper use of equipment, proper hydration, recognition of heat illness, etc.
- Have trainers onsite for youth athletic events.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

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Concussion in Sports, <http://www.cdc.gov/concussion/sports/index.html>
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Playground Injuries Fact Sheet, <http://www.cdc.gov/HomeandRecreationalSafety/Playground-Injuries/playgroundinjuries-factsheet.htm>
Protect the Ones You Love: Sports Injuries, http://www.cdc.gov/safechild/Fact_Sheets/Sports-Injury-Fact-Sheet-English-a.pdf
- Consumer Product Safety Commission, *Injuries and Investigated Deaths Associated With Playground Equipment, 2001–2008*, <http://www.cpsc.gov/library/foia/foia10/os/playground.pdf>
- Minnesota Department of Health, Injury and Violence Prevention Unit, *Bicycle Injuries*, <http://www.health.state.mn.us/injury/topic/topic.cfm?gcTopic=8>
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- ⁴ Safe Kids USA. *Sports and Recreation Safety Fact Sheet*. Available at <http://www.safekids.org/our-work/research/fact-sheets/sport-and-recreation-safety-fact-sheet.html>.
- ⁵ American Association of Neurological Surgeons. *Sports-Related Head Injury*. Available at <http://www.aans.org/Patient%20Information/Conditions%20and%20Treatments/Sports-Related%20Head%20Injury.aspx>.
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- ⁷ Mary Jo Webster and Brian Murphy. *Spinal Cord Injuries Hit Teen Athletes the Hardest*. *St. Paul Pioneer Press*. January 16, 2012. Available at http://www.twincities.com/ci_19750035.

Suffocation



The “Back to Sleep” campaign began in 1994 as a way to educate parents, caregivers, and health care providers about ways to reduce the risk for Sudden Infant Death Syndrome (SIDS). The campaign was named for its recommendation to place healthy babies on their backs to sleep. Since the campaign started, the percentage of infants placed on their backs to sleep has increased dramatically, and the overall SIDS rates have declined by more than 50 percent.

– National Institutes of Health, Eunice Kennedy Shriver National Institute of Child Health and Human Development

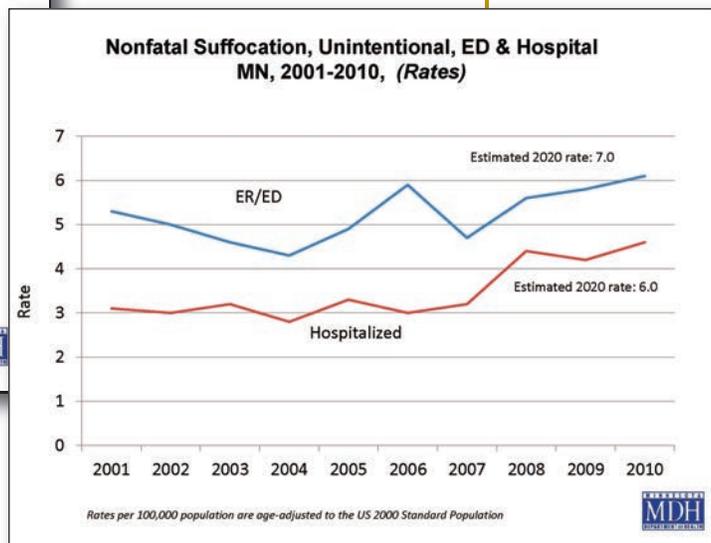
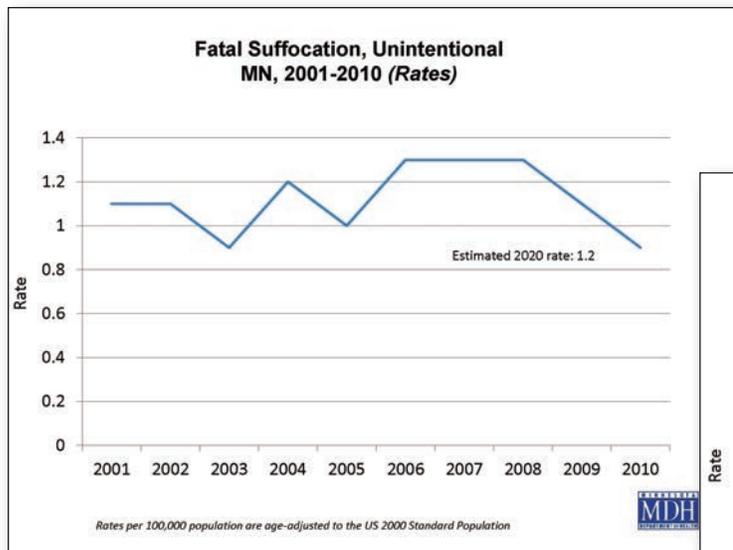
How big is the problem of suffocation?

Nationally:

- Infant mortality rates due to unintentional suffocation and strangulation in bed more than quadrupled from 1984 to 2004.¹ This is related in large part to more accurate identification of cases in which an infant dies from accidental strangulation or suffocation in bedding. Many of these cases were previously identified as SIDS, which is now a classification of last resort, if no other identifiable cause is found.

In Minnesota:

- Unintentional suffocation is a leading cause of injury-related death among young children and older adults.² Most infant suffocation occurs in the sleeping environment. Toddlers are more likely to suffocate from choking on food or small objects.³
- Suffocation is the fourth leading cause of unintentional injury death among Minnesotans of all ages.²
- It’s the leading cause among children under one year of age.²
- During the ten years from 2001–2010, fatal suffocation rates peaked from at 1.3 from 2006–2008, before declining to a 10-year low (0.9) in 2010 (see below, left).
- Non-fatal suffocation rates for both hospitalization and emergency department-treated cases increased from 2001–2010 (see below).

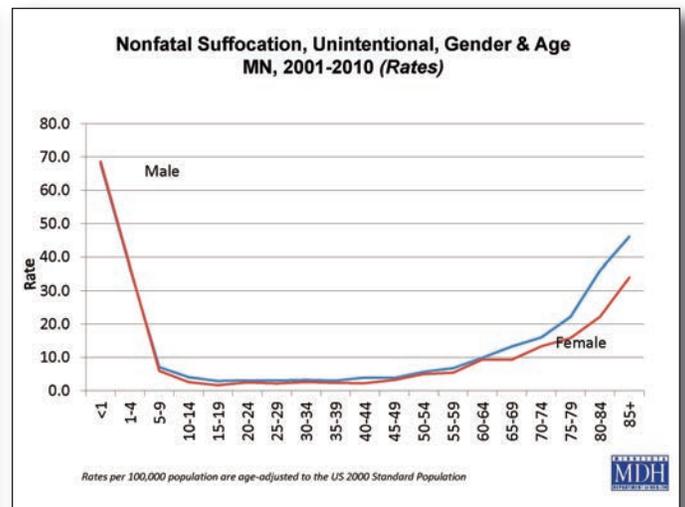
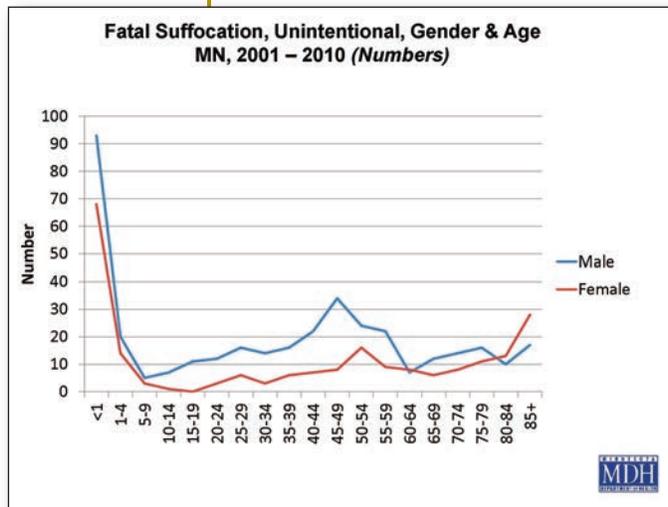


Who is most at risk?

Infants and young children. By far, the largest number of suffocation deaths occur among infants and very young children in Minnesota. It's the leading cause of unintentional injury death for infants under age one and the third leading cause for children 1–4. Non-fatal suffocation rates are also highest among infants, young children and older adults.

Older adults. Deaths spike among older adults in the mid-forties through the fifties, and those 85 and older, but in much lower numbers than among infants and young children. However, suffocation is the fourth leading cause of death among adults 75 and older.

Older males. Males experience higher rates of nonfatal suffocation starting in the 5-9-year-old age group, with the most significant increase beginning in the 65-69-year-old age group.



Factors related to suffocation

Infants and children. Overlays (rolling against or on top of a child while sleeping) are a leading cause of suffocation death for infants. The risk of suffocation for infants is 40 times higher in adult beds than cribs.⁴ Because infants under the age of four months don't have the strength to lift their heads and turn their faces, the majority of suffocation deaths are due to airway obstruction from items such as clothing or soft sleeping surfaces. These deaths may account for 60 percent of cases attributed to sudden infant death syndrome (SIDS) each year.⁴ Young children are also at risk from choking on food or small objects.

Older adults. For older adults, suffocation is often related to choking on food or some other object (for example, dentures). Suffocation deaths in older adults have been associated with chronic conditions such as Parkinson's, Alzheimer's disease, and stroke. Difficulty

swallowing is more frequently found among persons with these diseases than among the older population in general.⁵ Another cause is entrapment within hospital bed rails or between rails and the mattress, which, while uncommon, is often fatal.⁶

How can we prevent suffocation?

For infants and children:

Educate parents and other caregivers about the need to:

- lay babies on their backs to sleep.
- use a crib that meets Consumer Product Safety Commission and Juvenile Products Manufacturers Association safety standards.
- ensure crib slats are not broken and are no more than 2 $\frac{3}{8}$ inches apart.
- always use a crib-type bed – don't put babies to sleep on beds, sofas, recliners, chairs, soft surfaces, bouncy chairs, baby swings, or car seats.

- use a firm, tight-fitting mattress covered with a crib sheet and nothing else in the crib (no pillows, comforters, stuffed toys, bumper pads or other soft items).
- learn CPR and First Aid for infants and children.
- supervise children at all times.
- not give young children foods that are choking hazards, e.g., nuts, raisins, gum, popcorn, hard candy, raw vegetables, foods with seeds.
- keep small objects out of reach.
- follow age recommendations on toys.
- remove drawstrings and cords from clothing.

For older adults:

- Avoid high risk foods or prepare food so that it is easy to swallow.
- Develop hospital bed standards to reduce entrapment gaps.

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, *Suffocation: The Reality* (children), <http://www.cdc.gov/safekids/Suffocation/index.html>
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- ² Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Unintentional Injury Death by Age Group, Minnesota 2001–2010*.
- ³ Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. *Protect the Ones You Love: Suffocation*. Available at <http://www.cdc.gov/safekids/Suffocation/>.
- ⁴ Safe Kids USA. *Choking and Suffocation Prevention Fact Sheet*. Available at <http://www.safekids.org/our-work/research/fact-sheets/choking-and-suffocation-prevention-fact-sheet.html>.
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- ⁶ Joan Ferlo Todd. Waking Up To Hospital Bed Entrapment Risks. Reprinted from *Nursing* 2008, January issue, p.14-15. Available at <http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/TipsandArticlesonDeviceSafety/ucm064614.htm>

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Traffic

Dani Fiebelkorn was wearing her seat belt when she fell asleep behind the wheel on Interstate 35 in southern Minnesota. Awakened by the sound of rumble strips, she overcorrected. Her car left the road and rolled several times, hitting a tree and a fence. She credits the belt with saving her life. “Without it I probably would have died,” Dani said. “I hope everyone wears their seat belt and doesn’t have to go through what I did – or worse.”

- Information from Northfield News



During 2001–2010 motorcycling reached record levels in Minnesota. The largest increases in registered vehicles and endorsements were among older riders. A majority of deaths occurred among people age 40 and over. Nearly six times as many male riders were killed as female riders. Non-fatal injury rates were highest were among male riders in their twenties.⁶

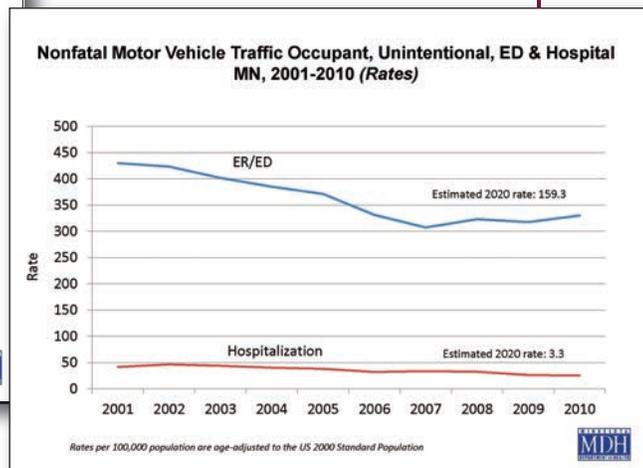
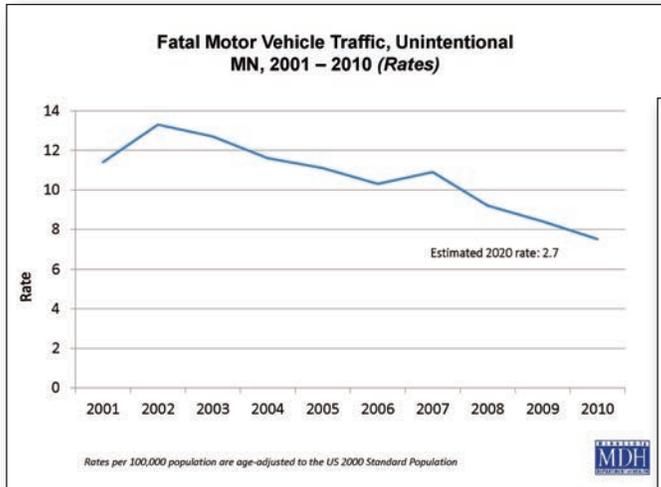
Traffic injuries: How big is the problem?

Nationally:

- Motor vehicle crashes are the leading cause of death among ages 5-34 in the U.S.
- More than 2.3 million adult drivers and passengers were treated in emergency departments as the result of being injured in motor vehicle crashes in 2009.
- Lifetime costs of crash-related deaths and injuries among drivers and passengers were \$70 billion in 2005.¹

In Minnesota traffic crashes, injuries and deaths have dropped significantly since 2002, both in number and rate. However, they are:

- the second leading cause of unintentional-injury death in Minnesota.²
- the second leading cause of traumatic brain injury for all ages.³
- a leading cause of hospitalization and emergency department treatment.⁴
- estimated to have cost nearly \$1.5 billion in 2011.⁵



Why the drop in traffic deaths and injuries?

Reasons for the decline in traffic injuries and deaths include positive changes in driver behavior (increased seat belt use, decreased alcohol-related crashes), effective legislation, enforcement supported by education, engineering improvements and efficient emergency response. Safer vehicles have also played a role. Significant coordinated statewide strategy has been driven by Toward Zero Deaths, a Minnesota partnership involving public agencies and private organizations working to create a culture where traffic deaths and serious injuries are not acceptable.

Who is most at risk?

Young people. Motor vehicle crashes are the leading cause of death for children, teens and young adults^{7,2} and the leading cause of traumatic brain injury for Minnesotans ages 15-29.³ In 2011, drivers ages 15 – 24 accounted for 14.9 percent of licensed drivers, but made up 24.2 percent of drivers involved in crashes.⁵

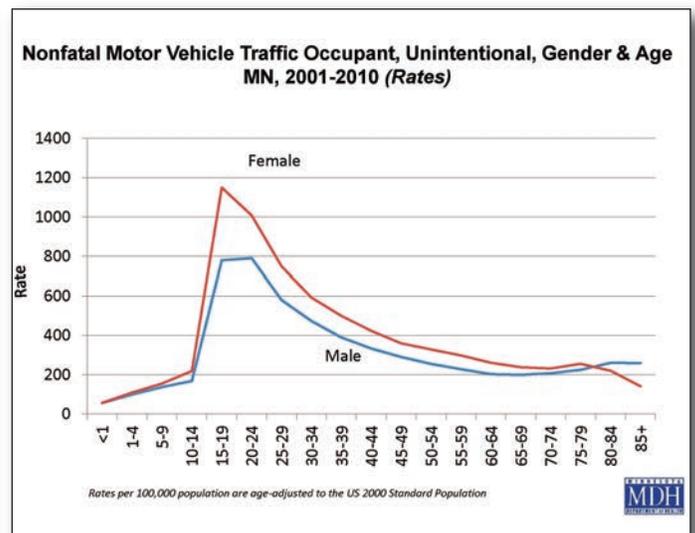
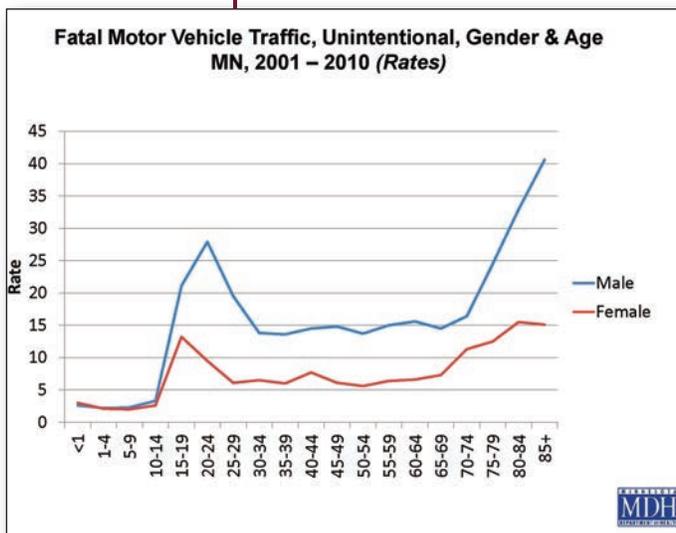
Males. Among drivers, males are over-represented in crashes, especially young males.⁵ Males are most likely to be killed, whether as motor vehicle occupants, motorcyclists, bicyclists or pedestrians. They also have higher rates of non-fatal injuries in all of these areas except as motor vehicle occupants.

Older adults. Seniors are also over-represented, accounting for 21 percent of deaths while being

involved in only 8 percent of total crashes in 2011.⁵ While older drivers are less likely to be involved in a crash, they are more likely to be severely injured or killed if a crash occurs.

Women (non-fatal injuries). While men have higher rates of severe injuries, women have higher overall rates in this area. Although the reasons for this have not been studied, they could include injured men being less likely to seek medical treatment, physical differences between men and women, and the fact that women are more likely to buckle up, which may result in their surviving crashes at higher rates.

American Indians. Nationally, American Indians are involved in motor vehicle crashes resulting in injury and death with rates 1.5 to 3 times higher than rates for other Americans.⁸



What trends and challenges do we face?

- **Rural roads are deadliest.** While fatalities are dropping overall, the percentage of deaths on rural roads is not changing. In 2011, nearly 70 percent of all fatal crashes occurred in rural areas (defined as having a population of less than 5,000 people).⁵ Other factors specific to rural areas: longer emergency response time, fewer alternatives to cars and trucks for teens and elders, and overall, an older population.
- **Aging population.** Minnesota's population is aging: Older adults are more fragile and at risk of more serious injury in a crash. Their driving

skills may be affected by medications. More families need help with determining whether an elderly adult should be driving, but there is still not a lot of clarity on how this should be done. Seventy percent of those responding to a MN/DOT study agreed there should be an age where people are re-tested. However, there is resistance to actually putting this into practice – it doesn't mesh with the culture.

- **More vulnerable roadway users.** Use of motorcycles, mopeds and bicycles is increasing and many of these riders fail to wear helmets. More people are walking as well; pedestrian/crosswalk safety is an issue.

- **Big truck-related deaths are up.** The Minnesota State Patrol reports an increase in commercial motor vehicle-related fatalities; researchers are studying this trend.
- **Seat belt use rate rising more slowly.** Seatbelt use is high (nearly 93% in 2011) and at that rate, gains come slowly; however, the rate continues to slowly rise. People are still not as likely to use them in the back seat. Many don't see the value of seat belt use, especially teens. State Farm Insurance reports an increase in traffic-related deaths around age 12. Kids are exhibiting the behavior they see in the vehicle – if adults are not buckling up, then the kids are not buckling up.
- **Alcohol and drug issues:** Minnesota has a high level of heavy binge drinking among teens. It has been a persistent issue and documented in the Minnesota Student Survey. MADD is receiving more calls about child endangerment issues; e.g. neighbors or others will call about someone driving drunk with kids in the car. The Minnesota Chiefs of Police Association reports an increase in DUI with controlled substances, heroin and cocaine, and over-the-counter medications.
- **Greater awareness of mild brain injury.** The Brain Injury Alliance of Minnesota reports an increase in calls about cases in which people suffered concussions in a crash, but the concussion was not initially diagnosed.
- **Resistance to change.** Changing behavior requires long term cultural change – how do we do it? We have laws, but the human/behavioral element is key. Resources for education and enforcement are limited. Our current driving culture accepts behaviors such as driving over the speed limit, talking on the cell phone, etc. Even though we have a no-texting law, people are still doing it. Research shows some people are resistant to newer vehicle safety technology (for example, turning off the lane departure system to stop it from sounding).

There's also resistance to new roadway engineering solutions, such as roundabouts. However, people get killed at intersections,

and roundabouts eliminate the problem. People will have to adjust to the “new” (as they have done with cable median barriers) and balance convenience with the need for safety.

- **Technology can help – and distract.** The challenge is to create an effective interface without adding to driver distraction. Data show active safety systems on vehicles are reducing injuries and crashes, but they're offered as options at this point because to make them standard would be too expensive.

How can we prevent traffic deaths?

- **Change the culture by integrating and applying the four E's – education, enforcement, engineering and emergency response.**
 - Motivate drivers to change their driving habits. Continue to combine education with targeted enforcement in areas such as impaired driving and safety belt use. Address traffic safety at younger ages (elementary and junior high students).
 - Ensure/increase compliance with traffic laws. Continue to identify specific traffic safety problems and plan targeted enforcement campaigns to address them (speed, seat belt, .08 alcohol level).
 - Change the physical environment (road design, signs, speed limit, etc.).
 - Ensure fast, efficient emergency medical services in response to crashes in both urban and rural areas.
- **Identify community partners** (neighborhoods, schools, strategic alliances among organizations, the TZD Safe Roads Program, MADD and SADD chapters and other local groups) and work together toward common goals, using coordinated messages. Examples:
 - Provide more education in schools (e.g. health classes, PSAs, etc.)
 - Educate parents about impact of their behavior. Educate kids about the impact they can have on parents and how to get parents involved.
 - Educate regarding texting, cell phone use.
 - Increase the number of organizations that make traffic safety a priority in their fleets.
 - Support DWI courts for repeat offenders.

Key factors related to traffic injuries include:

- **Inattention/distraction**
- **Speed**
- **Impairment (alcohol and drug use, fatigue)**
- **Not using a seat belt**
- **Road environment**

- **Target key behaviors and issues:** buckling up, distraction, sharing the road. Promote seat belt use. Distribute car seats to those who can't afford them. Provide resources that teach proper installation and use. Promote public awareness about hazards of sleep deprivation and other driver distraction issues. Raise driver awareness of pedestrians and bicyclists. Promote use of helmets by motorcyclists and bicyclists.

- **Target most common types of crashes.**

In urban areas: angle crashes (T-bone) at intersections. In rural areas: running off the road and hitting something in a ditch or rolling. Head-on crashes are also more frequent.

Engineer the road to keep people on it or if they do leave the road, engineer it to get them back on the road safely.

- **Target most at-risk drivers: young adults and teens; young males.** Find new strategies that will be effective with young males in their early twenties. Promote graduated driver licensing law to teens and parents. Encourage parents of novice drivers to sign an agreement with them to limit risky driving situations, such as having multiple teen passengers and driving at night.

- **Reach seniors through health care providers.** Educate health care providers and pharmacists about medication and driving issues among seniors. Develop easy guidelines for doctors to use to evaluate/discuss senior driving issues with older patients and their families.

- **Strengthen driver licensing laws.** Strengthen graduated driver licensing (increasing privileges as the driver gets older), discuss raising the driving age to 18, and retest elderly drivers more frequently. Influence driving behavior (buckling up, etc.) by increasing the penalties for failure to comply, particularly for high risk groups like teens. Increase fines for moving violations and allocate a percentage to each "E" (education, enforcement, engineering, emergency response). Expand automated enforcement – speed and/or red lights.

- **Support safety with technology,** for example cell phone technology that provides feedback

to parents about their teen's behavior while driving. Install monitors in vehicles driven by teens to provide information for parents.

- **Promote use of alternative modes of transportation.**

- **Analyze data.** Review most current fatal and non-fatal traffic crash data (state, region, county) through the Minnesota Injury Data Access System (MIDAS) and from DPS. Broaden access to data. Plug data gaps:
 - Texting and driving; get phone records associated with crashes.
 - Get more complete data on serious injuries. Gain a clearer understanding of how we define serious injury and how it is officially assessed (i.e., law enforcement).
 - More complete and consistent data on rural crashes.

- **Support and participate in the TZD partnership.**

Brainstorm: What if resources were not an issue?

- **Public policy**
 - Devote more resources to enforcement, particularly in rural areas.
 - Support laws that can be effectively enforced.
 - Make alternative transportation more accessible in rural areas.
 - Provide incentives for seat belt use.
 - Require every bicycle sold to include a helmet.
 - Require periodic road test for all drivers.
 - Require periodic re-testing for seniors.
 - Conduct driver's exams on actual roadways.
- **Education and outreach**
 - Provide more training to respond to traffic injuries among children.
 - Involve parents and schools. Develop tools to foster dialogue between parents and kids about traffic safety issues.
 - Develop resources to deal with child endangerment issues (someone driving drunk with kids in the car).
 - Provide more education for law enforcement about how to recognize the effects of DUI with controlled substances, illegal drugs and over-the-counter medications.

- **Technology and engineering**

- Install active safety systems on vehicles as standard equipment. Install passive alcohol detection technology, ignition interlock, stability control, cameras in cars with teen drivers etc.
- Develop apps that turn the phone off if a car is going more than 15 miles per hour.
- Install sensors in cars that prevent start-up until belts are buckled.
- Equip EMS responders to respond optimally to a crash (e.g., provide smart phones/cameras to EMS to take pictures and send ahead to hospital). Develop/use technology to assess the road conditions ahead (flooding, snowfall, etc.) to cut response time. Improve information sharing between

- law enforcement, EMS and hospitals in order to reduce fatalities when traveling a greater distance to a trauma center.
- Re-engineer locations where motor vehicles meet bikers, pedestrians, etc. so they don't cross each other.
- Create an optimal number of bike lanes.

- **Research**

- Develop a system that will yield more accurate crash data, e.g., vehicle data at the moment of the crash; causal factors.
- Conduct research that helps us shift the debate (for example, as was done with data that linked hospital costs and seat belt use).

For more information

Note: All charts contained in this publication, as well as additional Minnesota data, can be found in the 2020 Plan Chartbook.

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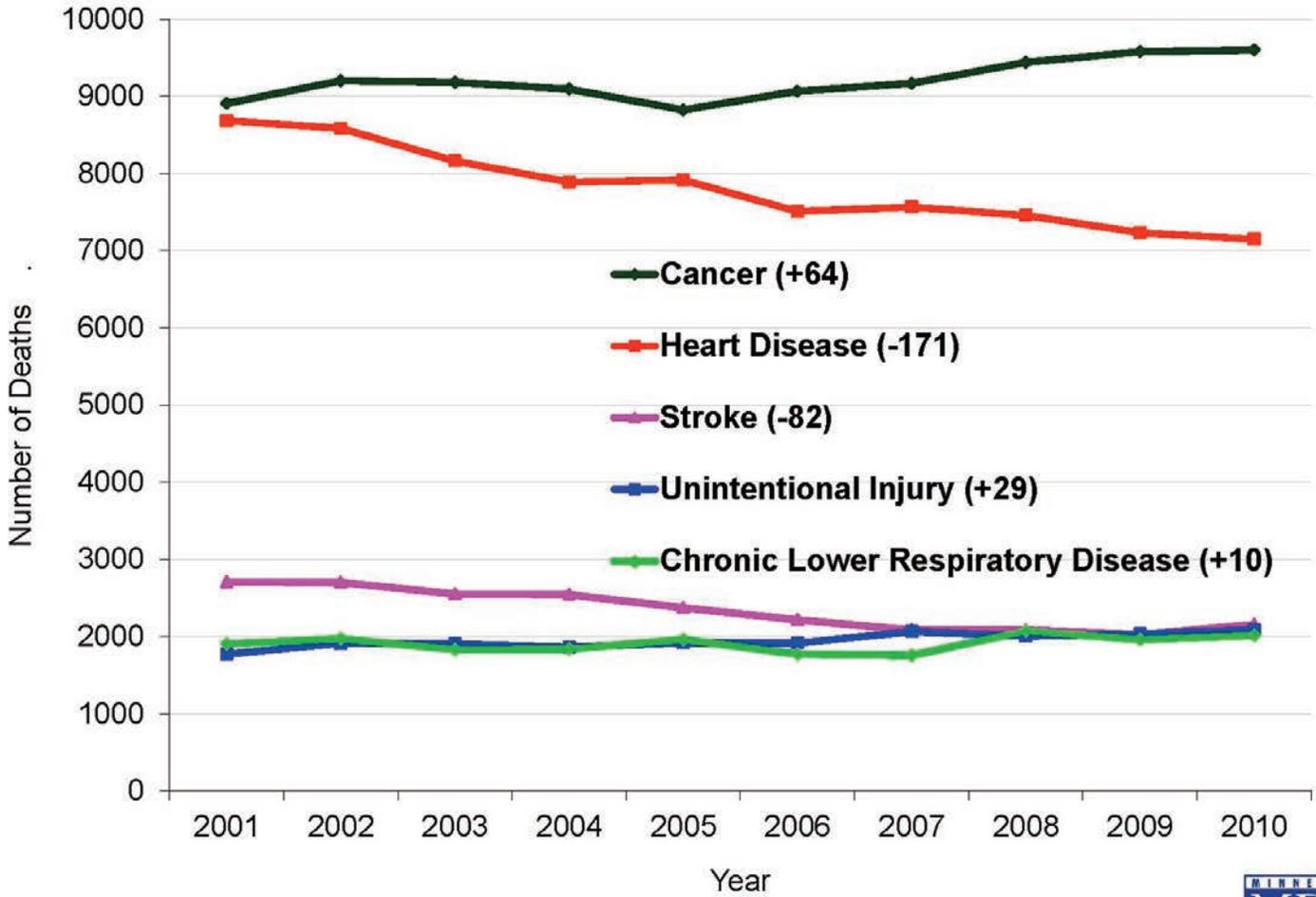
- ¹ Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. *Motor Vehicle Safety*. Available at <http://www.cdc.gov/Motorvehiclesafety/index.html>.
- ² Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Unintentional Injury Death by Age Group, Minnesota 2001–2010*.

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- ⁴ Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Nonfatal Hospitalized Unintentional Injury by Age Group, MN, 2001–2010* and *Ten Leading Causes of Nonfatal Emergency Department-Treated Unintentional Injury by Age Group, MN, 2001–2010*.
- ⁵ Minnesota Department of Public Safety, Office of Traffic Safety. *Minnesota Motor Vehicle Crash Facts 2011*. Available at <https://dps.mn.gov/divisions/ots/educational-materials/Documents/CRASH-FACTS-2011.pdf>
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- ⁷ Minnesota Department of Health, Injury and Violence Prevention Unit. *Ten Leading Causes of Death by Age Group, Minnesota, 2001–2010*.
- ⁸ Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. *Native American Road Safety*. Available at <http://www.cdc.gov/Motorvehiclesafety/native/index.html>.

Appendix

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Five Leading Causes of Death MN 2001-2010

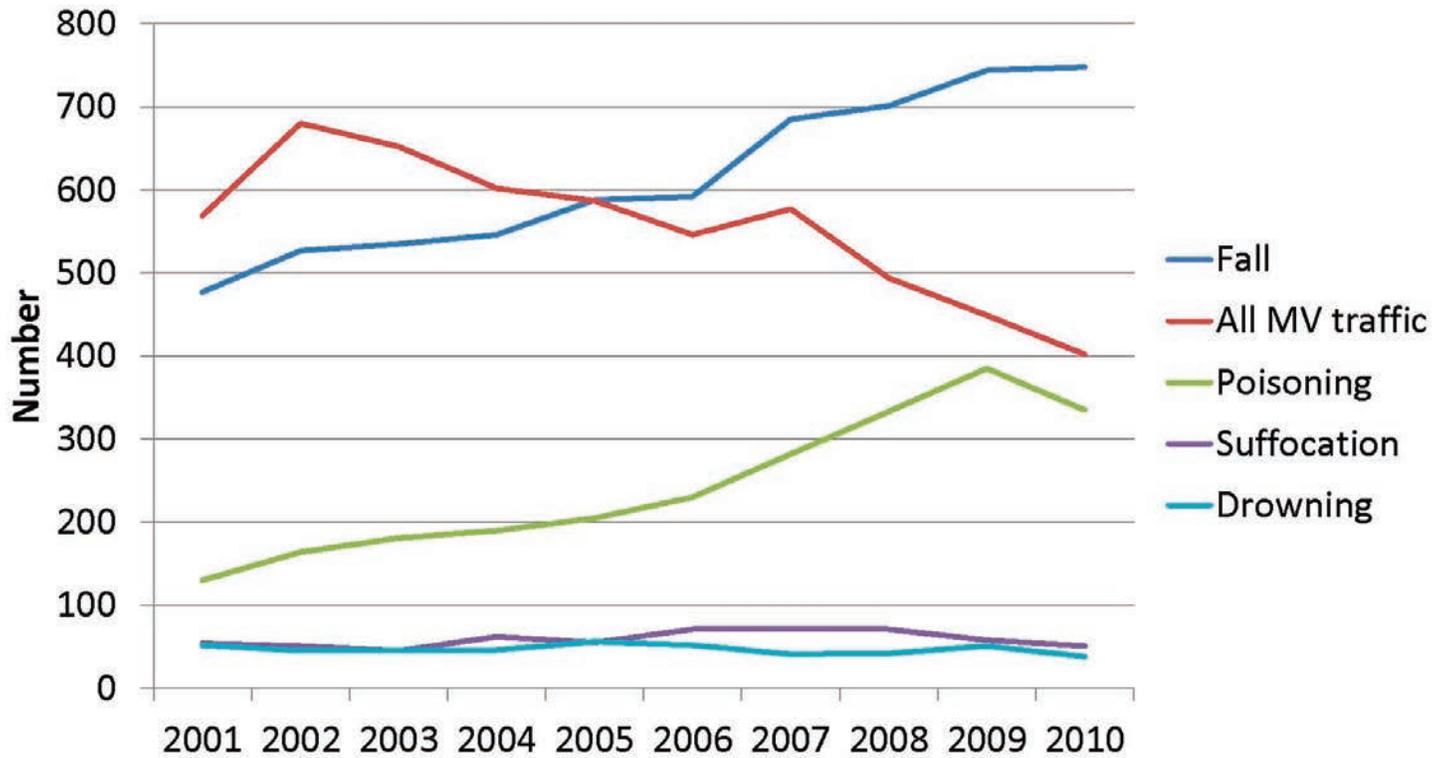


Ten Leading Causes of Death by Age Group, Minnesota 2001-2010

| Rank | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65-74 | 75-84 | 85+ | All Ages |
|---------------|---|---|--|---|--|-------------------------------|-------------------------------|--------------------------------|--|--|--|--|--|---|
| 1 | Congenital Anomalies 956 | Unintentional Injury 206 | Unintentional Injury 149 | Unintentional Injury 202 | Unintentional Injury 881 | Unintentional Injury 1,080 | Unintentional Injury 1,608 | Malignant Neoplasms 2,009 | Malignant Neoplasms 7,322 | Malignant Neoplasms 14,988 | Malignant Neoplasms 21,789 | Malignant Neoplasms 27,474 | Heart Disease 34,746 | Malignant Neoplasms 91,755 |
| 2 | Short Gestation 457 | Congenital Anomalies 86 | Malignant Neoplasms 80 | Malignant Neoplasms 75 | Suicide 355 | Suicide 496 | Suicide 862 | Unintentional Injury 1,980 | Heart Disease 4,073 | Heart Disease 6,257 | Heart Disease 9,692 | Heart Disease 21,093 | Malignant Neoplasms 17,121 | Heart Disease 77,744 |
| 3 | SIDS 323 | Malignant Neoplasms 64 | Congenital Anomalies 29 | Suicide 65 | Homicide 147 | Homicide 221 | Malignant Neoplasms 547 | Heart Disease 1,359 | Unintentional Injury 2,365 | Unintentional Injury 1,635 | Chronic Lower Respiratory Disease 3,970 | Chronic Lower Respiratory Disease 7,293 | Cerebrovascular Disease 11,660 | Cerebrovascular Disease 23,304 |
| 4 | Maternal Pregnancy Complications 229 | Homicide 42 | Heart Disease 14 | Congenital Anomalies 35 | Malignant Neoplasms 113 | Malignant Neoplasms 163 | Heart Disease 331 | Suicide 1,080 | Suicide 1,196 | Chronic Lower Respiratory Disease 1,471 | Chronic Lower Respiratory Disease 2,476 | Cerebrovascular Disease 7,003 | Alzheimer's Disease 8,409 | Unintentional Injury 19,306 |
| 5 | Unintentional Injury 198 | Heart Disease 27 | Homicide 9 | Homicide 20 | Heart Disease 43 | Heart Disease 93 | Homicide 278 | Liver Disease 350 | Liver Disease 935 | Diabetes Mellitus 1,348 | Diabetes Mellitus 2,110 | Alzheimer's Disease 3,632 | Chronic Lower Respiratory Disease 5,734 | Chronic Lower Respiratory Disease 19,007 |
| 6 | Placental Complications 167 | Influenza & Pneumonia 17 | Chronic Lower Respiratory Disease 8 | Heart Disease 15 | Congenital Anomalies 36 | Congenital Anomalies 32 | Diabetes Mellitus 90 | Cerebrovascular Disease 253 | Diabetes Mellitus 713 | Cerebrovascular Disease 1,081 | Unintentional Injury 1,354 | Diabetes Mellitus 3,555 | Unintentional Injury 4,753 | Alzheimer's Disease 12,785 |
| 7 | Respiratory Disease 103 | Cerebrovascular Disease 12 | Perinatal Conditions 8 | Chronic Lower Respiratory Disease 10 | Chronic Lower Respiratory Disease 15 | Cerebrovascular Disease 25 | Congenital Anomalies 71 | Diabetes Mellitus 245 | Cerebrovascular Disease 710 | Liver Disease 895 | Nephritis 890 | Unintentional Injury 2,895 | Influenza & Pneumonia 4,381 | Diabetes Mellitus 11,545 |
| 8 | Circulatory System Disease 82 | Uncertain Neoplasms 8 | Uncertain Neoplasms 6 | Cerebrovascular Disease 7 | Cerebrovascular Disease 9 | Diabetes Mellitus 17 | Cerebrovascular Disease 63 | Homicide 175 | Chronic Lower Respiratory Disease 370 | Suicide 670 | Liver Disease 674 | Nephritis 2,329 | Diabetes Mellitus 3,455 | Influenza & Pneumonia 7,300 |
| 9 | Birth Asphyxia/Hypoxia 59 | Perinatal Conditions 7 | Cerebrovascular Disease 5 | Diabetes Mellitus 7 | Pregnancy, childbirth, and the puerperium 5 | Influenza & Pneumonia 11 | AIDS/HIV 55 | AIDS/HIV 164 | Viral Hepatitis 248 | Nephritis 393 | Hypertension 645 | Unintentional Injury 1,972 | Nephritis 3,404 | Nephritis 7,287 |
| 10 | Neonatal Hemorrhage 59 | Antenatal Hemorrhage 6 | Influenza & Pneumonia 5 | Influenza & Pneumonia 5 | Multiple Ties 5 | Multiple Ties 5 | Liver Disease 39 | Congenital Anomalies 116 | Influenza & Pneumonia 177 | Hypertension 350 | Alzheimer's Disease 583 | Influenza & Pneumonia 1,784 | Hypertension 2,361 | Suicide 5,416 |
| | | Complications of medical and surgical care 6 | | Uncertain Neoplasms 5 | | | | | | | | | | |
| Total Deaths | 3,605 / 508.3 | 668 / 25.2 | 411 / 12.8 | 561 / 16.1 | 1,803 / 48.1 | 2,513 / 65.8 | 4,862 / 71.1 | 9,761 / 125.0 | 22,812 / 295.5 | 35,962 / 705.6 | 55,189 / 1,821.5 | 102,492 / 4,717.9 | 136,664 / 13,266.8 | 377,306 / 695.6 |
| Unintentional | 198 / 27.9 | 206 / 7.8 | 149 / 4.6 | 202 / 5.8 | 881 / 23.5 | 1,080 / 28.3 | 1,608 / 23.5 | 1,980 / 25.4 | 2,365 / 30.6 | 1,635 / 32.1 | 1,354 / 44.7 | 2,895 / 133.3 | 4,753 / 461.4 | 19,306 / 39.2 |
| Suicide | | | 1 / 0.0 | 65 / 1.9 | 355 / 9.5 | 496 / 13.0 | 862 / 12.6 | 1,080 / 13.8 | 1,196 / 15.5 | 670 / 13.1 | 296 / 9.8 | 284 / 13.1 | 110 / 10.7 | 5,416 / 11.9 |
| Homicide | 43 / 6.1 | 42 / 1.6 | 9 / 0.3 | 20 / 0.6 | 147 / 3.9 | 221 / 5.8 | 278 / 4.1 | 175 / 2.2 | 149 / 1.9 | 67 / 1.3 | 57 / 1.2 | 17 / 0.8 | 18 / 1.7 | 1,223 / 3.3 |

Rates per 100,000 are unadjusted and age-adjusted to the U.S. 2000 standard population.

Top Five Causes of Unintentional Injury Death MN, 2001-2010

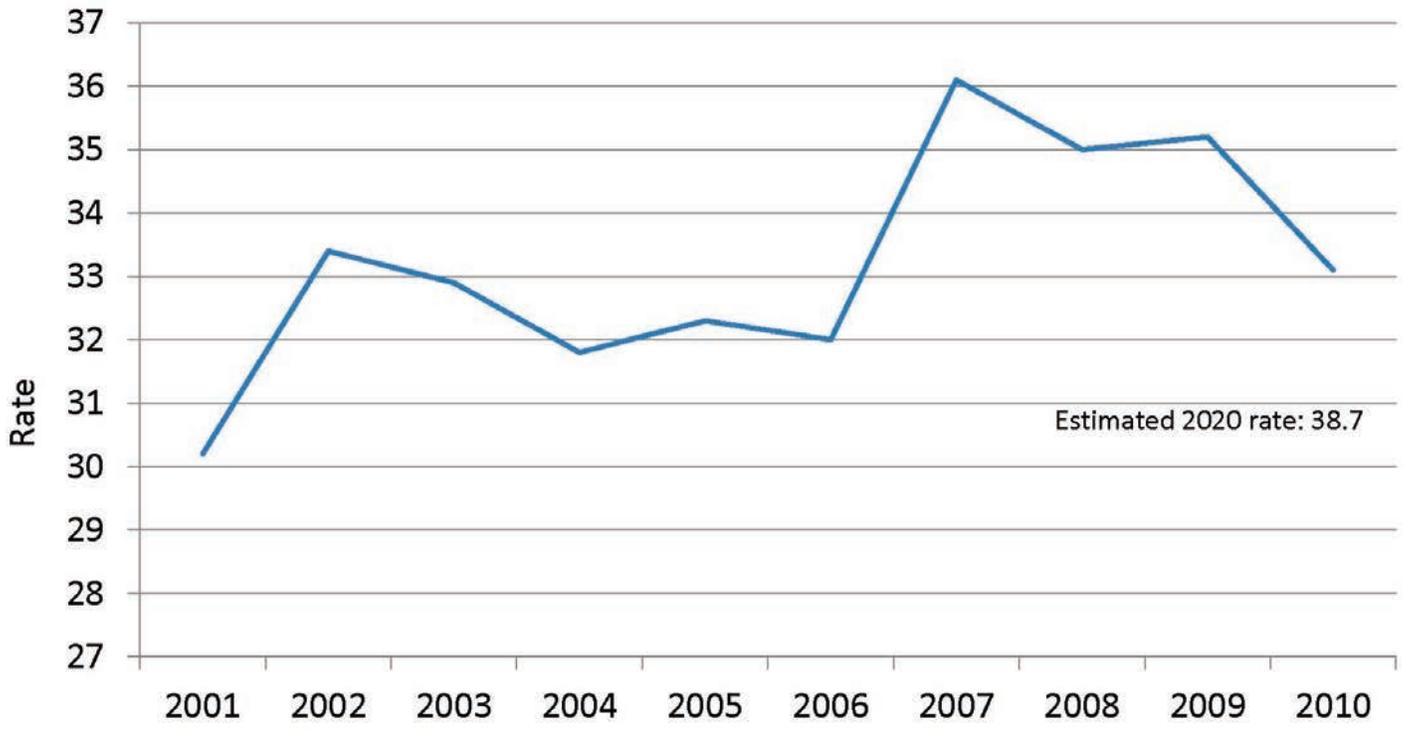


Ten Leading Causes of Unintentional Injury Death by Age Group, Minnesota 2001-2010

| Rank | <1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65-74 | 75-84 | 85+ | All Ages |
|-----------|-----------------------------|---------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------------|
| 1 | Suffocation 161 | MV traffic 58 | MV traffic 72 | MV traffic 105 | MV traffic 646 | MV traffic 687 | MV traffic 792 | MV traffic 806 | MV traffic 776 | MV traffic 566 | Fall 513 | Fall 1694 | Fall 3136 | Fall 6143 |
| 2 | MV traffic 19 | Drowning 36 | Drowning 28 | Drowning 18 | Poisoning 66 | Poisoning 173 | Poisoning 402 | Poisoning 620 | Poisoning 755 | Fall 316 | MV traffic 376 | MV traffic 427 | MV traffic 228 | MV traffic 5558 |
| 3 | Fall 5 | Suffocation 34 | Fire/flame 11 | ATV/Snowmobile, nontraffic 15 | Drowning 41 | Drowning 47 | Drowning 70 | Fall 115 | Fall 247 | Poisoning 269 | Poisoning 59 | Late Effect 51 | Late Effect 78 | Poisoning 2435 |
| 4 | Natural/environmental 4 | Fire/flame 17 | Suffocation 8 | Fire/flame 10 | ATV/Snowmobile, nontraffic 26 | Fall 32 | ATV/Snowmobile, nontraffic 57 | Drowning 63 | Suffocation 82 | Late Effect 54 | Natural/environmental 42 | Suffocation 50 | Suffocation 45 | Suffocation 590 |
| 5 | Drowning 3 | Pedestrian, nontraffic 11 | Fall 7 | Poisoning 8 | Fall 16 | ATV/Snowmobile, nontraffic 21 | Fall 47 | Suffocation 51 | Fire/flame 57 | Drowning 51 | Suffocation 40 | Fire/flame 44 | Fire/flame 40 | Drowning 469 |
| 6 | Fire/flame 1 | Fall 9 | Pedestrian, nontraffic 3 | Suffocation 8 | Fire/flame 11 | Land transport, other 16 | Suffocation 39 | Suffocation 33 | Fire/flame 47 | Late Effect 34 | Poisoning 41 | Poisoning 39 | Late Effect 347 | |
| 7 | Poisoning 1 | Poisoning 9 | ATV/Snowmobile, nontraffic 3 | Land transport, other 7 | Pedestrian, nontraffic 11 | Pedestrian, nontraffic 15 | Fire/flame 33 | Late Effect 37 | Late Effect 55 | Suffocation 46 | Fire/flame 27 | Poisoning 39 | Poisoning 30 | Fire/flame 338 |
| 8 | Struck by/against 1 | Land transport, other 6 | Struck by/against 3 | Fall 6 | Land transport, other 11 | Suffocation 15 | Late Effect 23 | Fire/flame 32 | Drowning 54 | Natural/environmental 43 | Drowning 23 | Land transport, other 22 | Land transport, other 17 | Natural/environmental 283 |
| 9 | Caught in/between objects 1 | Struck by/against 5 | | Pedestrian, nontraffic 4 | Suffocation 11 | Water transport, other 10 | Water Transport 19 | Struck by/against 28 | ATV/Snowmobile, nontraffic 38 | Land transport, other 26 | Machinery 21 | Struck by/against 18 | Drowning 14 | ATV/Snowmobile, nontraffic 253 |
| 10 | | Machinery 4 | | Struck by/against 4 | Water Transport 8 | Water Transport 9 | Land transport, other 17 | Land transport, other 27 | Machinery 28 | Struck by/against 26 | Machinery 14 | Struck by/against 18 | Pedestrian, nontraffic 7 | Land transport, other 184 |
| Number | 196 | 202 | 148 | 202 | 877 | 1075 | 1602 | 1963 | 2327 | 1587 | 1285 | 2565 | 4009 | 18018 |
| Rate | 27.6 | 7.6 | 4.6 | 5.8 | 23.4 | 28.1 | 23.4 | 25.1 | 30.1 | 31.1 | 41.8 | 118.1 | 389.2 | 33.3 |
| YPLL | 1470 | 1464.5 | 1006.4 | 1272.6 | 5086.6 | 5697.5 | 7289.1 | 6968.65 | 5933.85 | 2459.85 | 695.75 | 118.1 | 389.2 | 39344.8 |
| YPLL Rate | 20.7 | 5.5 | 3.1 | 3.7 | 13.6 | 14.9 | 10.7 | 8.9 | 7.7 | 4.8 | 2.3 | | | 7.6 |

Limited to injury as underlying cause of death; excludes adverse effects, pathologic injury, and non-traumatic aspiration.
 Unspecified Unintentional Injury is excluded from the ranking, but included in the totals.
 YPLL (Years of potential life lost) is annualized. Rate and YPLL rate are annualized and age-adjusted to the U.S. 2000 standard population. Rate is per 100,000 population. YPLL Rate is per 10,000 population.
 Ties extending more than one row beyond the tenth rank are not displayed individually.

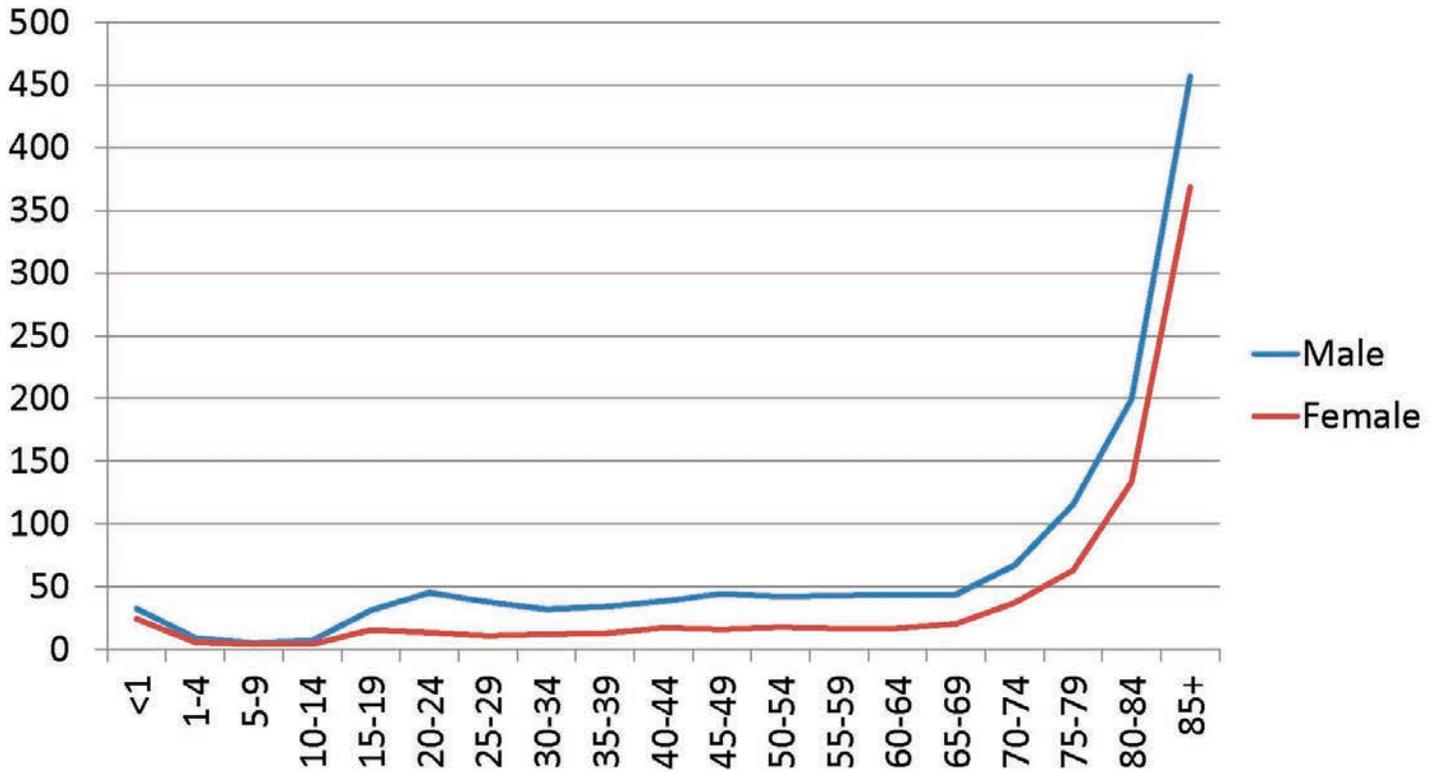
Rate of Unintentional Injury Death MN, 2001 - 2010



Rates per 100,000 population are age-adjusted to the US 2000 Standard Population



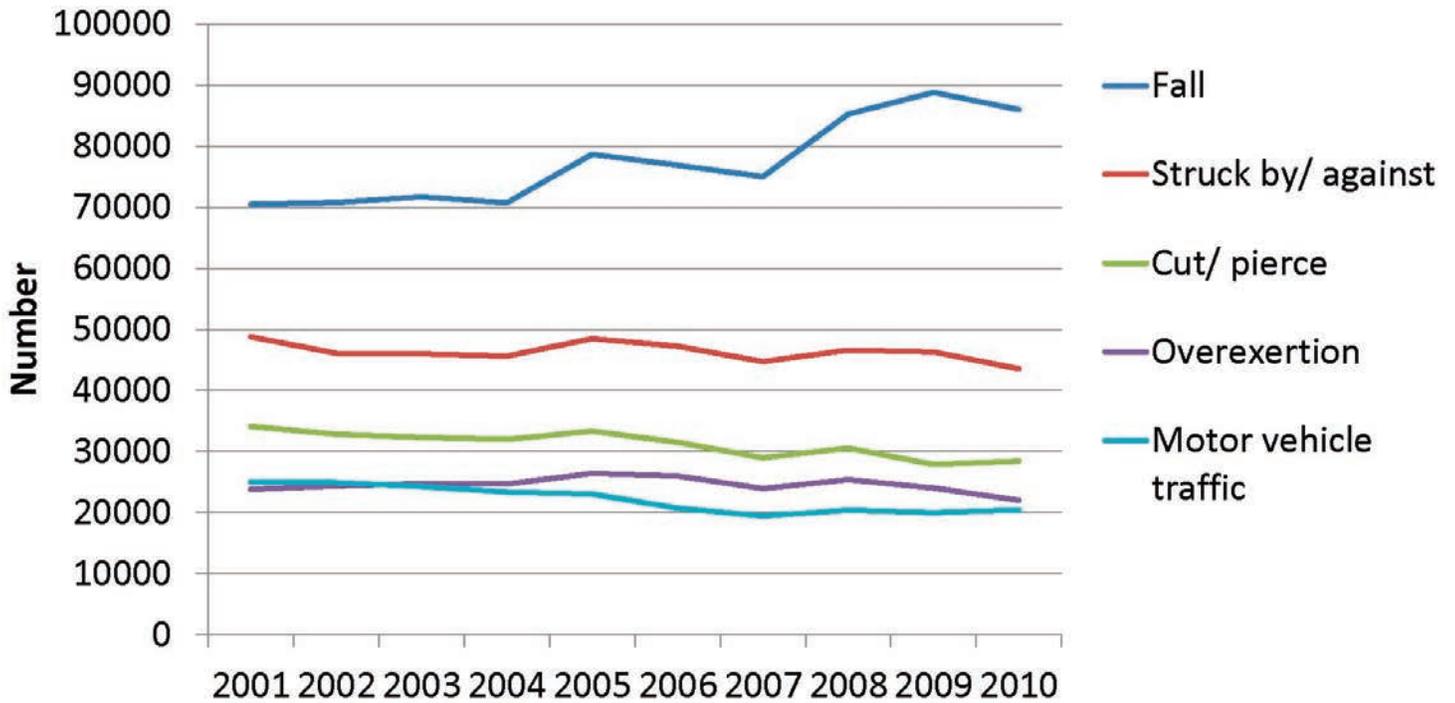
Rate of Unintentional Injury Death, Gender & Age MN, 2001-2010



Average annual rates are per 100,000 population.



Top Five Causes of Nonfatal Unintentional Injury, ED-Treated MN, 2001-2010



Top Five Causes of Nonfatal Unintentional Injury, Hospitalized MN, 2001-2010

