

INJURY BRIEF

Overexertion-Related Injuries

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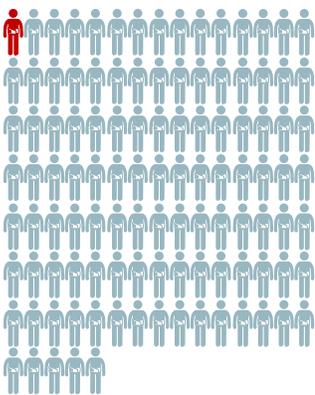
What are the Healthy People 2020 Goals and how does Hamilton County stack up against the national goal?

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Quick Facts

3.3 Million

Emergency room visits in the U.S. each year due to overexertion¹.



1 in every 110 Hamilton County residents experienced an overexertion-related injury in 2011.

25%

Of all workplace injuries in Ohio result from overexertion caused by lifting, pulling, or pushing objects³.

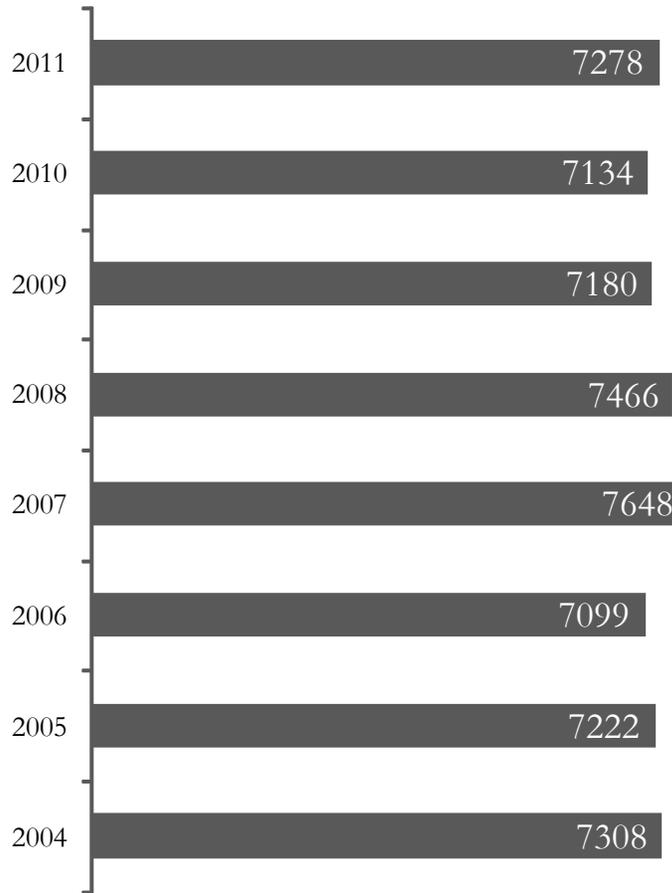


Figure 1: Number of Overexertion-Related Injuries Among Hamilton County Residents, 2004-2011

Overexertion-Related Injuries Throughout The Years

According to the National Safety Council, overexertion is the third leading cause of unintentional injuries in the United States¹. Overexertion occurs when, “the load, whether lifted, lowered, carried, pushed, pulled or otherwise handled, exceeds the limits of the human joint system doing the work (high physical demand)².” Overexertion injury is likely to occur in four different ways:

1. **High force demands** -

this can happen when lifting, pushing, pulling, carrying, gripping, and using tools³.

2. **Awkward or stationary posture** - this can occur when bending, twisting, reaching and kneeling³.

3. **Repetitive movements of actions** - this can occur from doing the same motions repeatedly without taking a few short rest breaks³.

4. **All over overexertion hazards** - this includes contact stress, hand-arm

vibration, whole-body vibration, and working in cold temperatures or hot environments³.

From 2004 to 2011, overexertion-related injuries in Hamilton County remained relatively consistent. Between 7,000 and 7,700 overexertion-related injuries were treated each year by emergency departments and hospitals. While the majority of overexertion-related injuries are non-fatal, unintentional overexertion may still cause death in individuals. From 2004 to 2011, there were 8 deaths due to overexertion-related injuries in Hamilton County.

Multiple factors drive the number of overexertion-related injuries that are treated at emergency departments and hospitals. Overexertion prevention strategies should emphasize:

- Education
- Safe lifting practices
- Creating safer, ergonomically friendly environments

Throughout this issue brief, the problem of overexertion within Hamilton County will be highlighted and methods for preventing overexertion-related injuries will be presented. Awareness and action are needed in order to promote reduction in overexertion-related injuries.

Overexertion Across All Ages

Age is an important factor to consider when addressing the issue of overexertion-related injuries within a community. As Table 1 shows, those in early adulthood (20 to 39) had the highest rates of overexertion-related injuries in 2004 and 2011. Table 1 also shows the difference between the 2004 and 2011 rate, along with the percent rate difference. Using the 2004 data as the baseline and looking at the rate difference, the age groups that have experienced the greatest increase in burden due to overexertion-related injury can be determined.

Hamilton County residents 35 to 39 years of age experienced the greatest increase in age-specific injury rate due to overexertion (2.1 per 1,000). This suggests that individuals within this age group are burdened the most by the increase in overexertion-related injuries. Hamilton County children 10 to 14 years of age experienced the largest decrease in the age-specific overexertion-related injury rate (1.2 per 1,000). However, these young residents are still at a high risk of overexertion-related injuries.

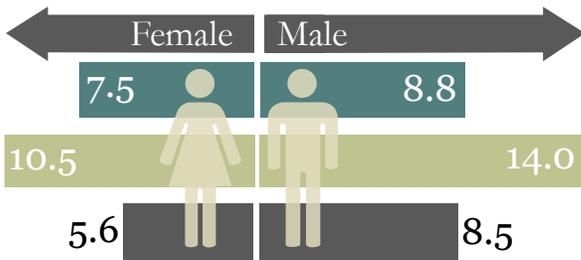
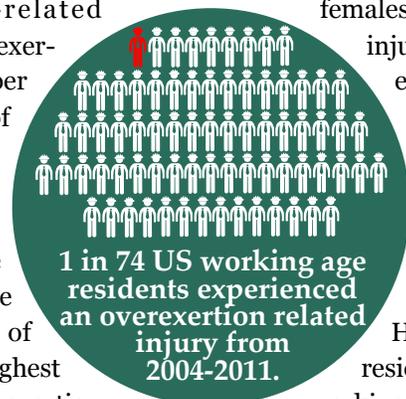
Age Group	2004 Rate (Per 1,000)	2011 Rate (Per 1,000)	Rate Difference	Percent Rate Difference
0-4 Years	4.4	4.2	-0.2	-4.5%
5-9 Years	3.8	3.7	-0.1	-2.6%
10-14 Years	12.9	11.7	-1.2	-9.3%
15-19 Years	13.5	13.5	0.0	0.0%
20-24 Years	14.6	13.7	-0.9	-6.2%
25-29 Years	14.1	14.7	0.6	4.3%
30-34 Years	14.7	15.2	0.5	3.4%
35-39 Years	12.4	14.5	2.1	16.9%
40-44 Years	10.0	11.0	1.0	10.0%
45-54 Years	7.1	8.9	1.8	25.4%
55-64 Years	4.4	4.5	0.1	2.3%
65-74 Years	3.4	3.8	0.4	11.8%
75-84 Years	3.3	3.1	-0.2	-6.1%
85+ Years	3.4	3.4	0.0	0.0%

*Note: Rate differences are calculated per 1,000 residents and may differ from manual calculations performed from the table due to rounding.

Table 1: Rate of Overexertion-Related Injuries Among Hamilton County Residents by Age Group, 2004 vs. 2011

Overexertion Among the Working Age

Every year, approximately 3.3 million Americans visit the emergency room due to an overexertion-related injury¹. Overexertion is the number one cause of nonfatal disabling work injuries⁴. Individuals who are of working age (15-64 years of age) have the highest rates of overexertion-related injuries in Hamilton County. While overexertion-related injuries are more likely to occur among the working age population, males are more likely than females to experience an injury from overexertion⁴. Figure 2 shows the race-sex specific rates of all overexertion-related injuries that occurred in Hamilton County residents who are of working age (15-64 years of age). As the figure illustrates, the highest rates of overexertion-related injuries occurred



*Note: Rate is gender-race specific injury rate per 1,000 residents.

White Black Other

Figure 2: Distribution of Overexertion-Related Injury Rates Among Hamilton County Working Age Residents (15-64 Years of Age) by Race/Sex, 2004-2011

Overexertion Among the Working Age (Continued)

among black male residents. Male residents of all racial groups had higher rates of overexertion-related injuries than their female counterparts.

Along with a higher overall overexertion-related injury rate, working age Hamilton County residents also experienced a higher age-specific rate of emergency department visits. Hamilton County adult residents who were 30 to 34 years of age had the highest rate of emergency department visits (15.06 per 1,000 residents). This rate is 3.5 times higher than adults 55 to 64 years of age.

A determination of these injuries was made using primary diagnoses codes. Primary diagnosis codes specify which injury during a patient's visit was most

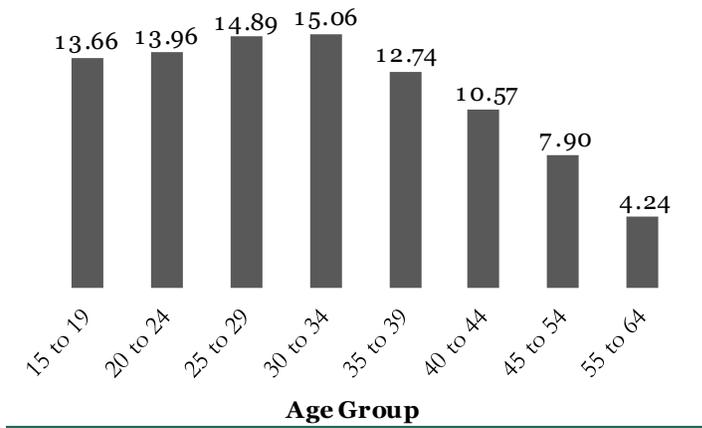


Figure 3: Average Annual, Age-Specific, Overexertion-Related Emergency Department Rate (per 1,000 Residents) for Hamilton County Working Age Residents (15-64 Years of Age), 2004-2011

responsible for the patient's stay. Of the 46,246 emergency department visits due to overexertion-related injuries that occurred within the working age population from 2004-2011, the top three primary diagnoses were sprains and strains of the ankle and foot (12,409), sprains & strains of other and unspecified parts of the back (12,167) and sprains & strains of the knee and leg (4,188). Table 2, illustrates the top five primary diagno-

ses of overexertion-related injuries within the working age population.

Overexertion prevention will help reduce the number of severe overexertion-related injuries, decrease the number of emergency department visits, and the overall number of injuries among working age population.

According to the 2013 Liberty Mutual Workplace Safety Index, overexertion injuries were responsible for \$14.2 billion in direct costs to U.S employers in 2011⁵. Ultimately, promoting the prevention of overexertion among those of the working age within Hamilton County will improve the quality of life for its residents as well as reduce costs for medical care associated with these injuries.



Quick Facts

Sprains & Strains

The most common types of overexertion injuries.

Back

The most common body part injured by overexertion⁴.

53%

More than half of overexertion injuries are a result of lifting objects⁴.

Type of Diagnosis	Number of Injuries	Percent of Injuries
Sprains & strains of the ankle and foot	12,409	26.8%
Sprains & strains of other and unspecified parts of the back	12,167	26.3%
Sprains & strains of the knee and leg	4,188	9.1%
Sprains & strains of the shoulder and upper arm	3,497	7.6%
Other and unspecified types of injury	2,070	4.5%

Table 2: Top 5 Primary Diagnoses of Overexertion-Related Injuries Hamilton County Working Age Residents, 2004-2011

Did you know?

While overexertion affects people differently, the most common injuries are strains & sprains, especially to the lower back.

Overexertion injuries result from excessive physical effort, such as:

- Carrying
- Lowering
- Turning
- Holding
- Pulling
- Lifting
- Pushing

Stop and take a break if you experience the following:

- Dizziness
- Sore or painful muscles
- Pulse higher than recommended exercise pulse for your size & physical condition
- Feeling very hot & sweating profusely
- Lower abdominal pain
- Nausea
- Fluttering heartbeat-call your doctor if it lasts more than 30 minutes
- Chest pain - call your doctor immediately

Call 9-1-1 if you experience the following:

- Shortness of breath or labored breathing
- Headache - if severe
- Blue lips and/or fingers
- Lack of coordination

Healthy People 2020 Goals

Every 10 years the U.S. Department of Health and Human services releases the Healthy People objectives. The Healthy People 2020 objectives were released in December 2010. Healthy People are a set of nationwide health promotion and disease prevention goals that support prevention efforts to create a healthier nation⁷. Many of these objectives are created by taking rates from a previously measured national rate gathered during Healthy People 2010, or from a 10 percent decrease there-in. Specific objec-

Ways to Prevent Overexertion-Related Injuries

Whether at home or in the workplace, overexertion-related injuries can occur. There are ways to prevent an overexertion-related injury from occurring. Overexertion injuries typically cause inflammation, which can lead to pain and discomfort¹. The following are areas of prevention recommended by the National Safety Council that can be used to reduce overexertion-related injuries.

- Stretching and/or warming up before heavy lifting or strenuous activity
- Lifting with your legs bent and objects held close to your body
- Avoid bending, reaching and twisting when lifting
- Ask a friend for help when lifting

The National Safety Council advises to perform the task twice:



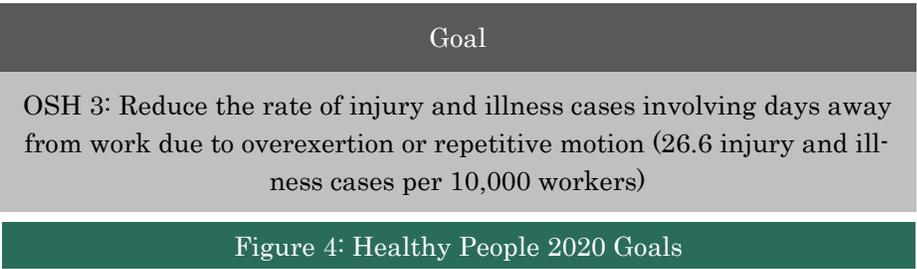
This means to complete a task/move by:

- Looking at the surface between you and the destination,
- Looking at obstacles between you and the destination,
- Looking at the destination,
- Using safe lifting techniques to lift/transport the object⁶.

For more information about overexertion and overexertion injuries, please visit the National Safety Council's website:

<http://www.nsc.org/Pages/HelpPreventOverexertion.aspx>

tives for overexertion-related injuries are given by the Occupational Safety and Health (OSH) goal 3. Figure 4 describes this goal. There currently is no benchmark to be measured against this Healthy People 2020 goal for Hamilton County.



Additional Reports

For additional reports on injuries in Hamilton County, please visit:
www.hamiltoncountyhealth.org/en/resource_library/reports.html



Where Does Public Health Get the Data?

The data used in this report were gathered from the Hamilton County Injury Surveillance System (HCISS). The HCISS is a collaborative surveillance effort led by Hamilton County Public Health and supported by our local hospitals, the Hamilton County Coroner's Office, and the Greater Cincinnati Health Council. Data on non-fatal injuries were obtained from local hospital trauma registries and represent emergency department visits and hospitalizations (inpatients); data on fatal intentional injuries were obtained from the Hamilton County Coroner's Office. Figure 5 shows the breakdown of overexertion-related injuries as reported through the HCISS. The bottom layer represents the least severe inju-

ries, yet the largest number of patients; the next two layers, hospitalizations and deaths, represent the most severe and costly injuries to residents of Hamilton County. An unknown number of unreported overexertion injuries were not identified in the HCISS because these individuals did not seek medical care for their injury.



Figure 5: Overexertion Injury Pyramid, Hamilton County, 2004-2011

References

- 1 National Safety Council. *Overexertion*. Itasca, IL: National Safety Council. Accessed May 7, 2014. Retrieved from http://www.nsc.org/nsc_events/Nat_Safe_Month/Documents/PreventingOverexertion.pdf
- 2 National Safety Council. *Overexertion: How do they occur? How can they be prevented?*. Itasca, IL: National Safety Council, Accessed May 7, 2014. Retrieved from http://www.nsc.org/members_get_more/Documents/overexertion%20presentation.pdf
- 3 The Ohio State University Extension. *Overexertion Causing Secondary Injury*. Columbus, OH: The Ohio State University, Accessed May 8, 2014. Retrieved from http://ohioline.osu.edu/aex-fact/pdf/AEX_981_5_10.pdf
- 4 National Safety Council. *Safety Ambassador: Overexertion*. Itasca, IL: National Safety Council, Accessed May 9, 2014. Retrieved from http://www.nsc.org/members_get_more/Documents/OverexertionPPT_Notes.pdf
- 5 Liberty Mutual Research Institute for Safety. *2013 Liberty Mutual Workplace Safety Index*. Hopkinton, MA: Liberty Mutual Research Institute for Safety, Accessed May 9, 2014. Retrieved from http://www.libertymutualgroup.com/omapps/ContentServer?c=cms_document&pagename=LMGResearchInstitute%2Fcms_document%2FShowDoc&cid=1138365240689
- 6 Washington State Department of Labor & Industries. *Preventing Overexertion Injuries*. Olympia, WA: Washington State Department of Labor & Industries, Accessed May 9, 2014. Retrieved from <http://wisha-training.lni.wa.gov/training/presentations/Overexertion.ppt>
- 7 United States Department of Health and Human Services. *About healthy people*. Updated March 29, 2012. Washington, DC: U.S. Department of Health and Human Services. Accessed May 6, 2014. Retrieved from <http://www.healthypeople.gov/2020/about/>