

Injury & Violence Prevention and Occupational Safety & Health

Injury and Violence Prevention: The National Challenge*

The risk of injury is so great that most persons sustain a significant injury at some time during their lives. Nevertheless, this widespread human damage too often is taken for granted, people tend to believe that injuries happen by chance and are the result of unpreventable “accidents.” In fact, many injuries are not “accidents,”; rather, most injuries are predictable and preventable.

In 1997, 146,400 persons in the United States died from injuries. These injuries were caused by a variety of modes such as motor vehicle crashes, firearms, poisonings, suffocations, falls, fires, and drownings. About 400 persons die from injuries

each day. One death out of every 17 in the United States results from injury. Of these deaths, 63 percent are classified as unintentional and 34 percent as intentional. Unintentional injury deaths include approximately 42,000 resulting from motor vehicle crashes per year. In 1997 there were approximately 50,000 intentional injury deaths. Of these almost 31,000 were classified as suicide and nearly 20,000 as homicide.

Injuries are the leading cause of death as measured by years of potential life lost. (YPLL). In 1997, injuries accounted for 20 percent more YPLL than cancer did (1,990 per 100,000 compared to 1,500 per 100,000).

For ages 1 through 44 years, deaths from injuries far surpass those from cancer—the overall leading natural cause of death at these ages—by about three to one. Injuries cause more than two out of five deaths (43 percent) of children aged 1 through 4 years and result in four times the number of deaths due to birth defects, the second leading cause of death for this age group. For ages 15 to 24 years, injuries are the cause of nearly four out of five deaths. After age 44 years, injuries account for fewer deaths than other health problems, such as heart disease, cancer, and stroke. However, despite the decrease in the proportion of deaths due to injury, the death rate from injuries is actually higher among older persons than among younger persons.

Injuries often are classified on the basis of events and behaviors that preceded them as well as the intent of the persons involved. Although the events leading to an intentional injury and an unintentional injury differ, the outcomes and extent of the injury are similar.

Occupational Safety and Health: The National Challenge*

The toll of workplace injuries and illnesses is significant. Every 5 seconds a worker is injured in the United States. Every 10 seconds a worker is temporarily or permanently disabled. Each day, an average of 137 persons die from work-related diseases, and an additional 17 die from injuries on the job. Although adolescents aged 17 years and under represent only 2 percent of the total workforce, each year 74,000 require treatment in hospital emergency departments for work-related injuries, and 70 die of those injuries. In 1996, an estimated 11,000 workers were disabled each day due to work-related injuries. In 1996, the National Safety Council estimated that on-the-job injuries alone cost society \$121 billion, representing the sum of lost wages, lost productivity, administrative expenses, health care, and other costs. The 1992 combined U.S. economic burden for occupational illnesses and injuries was an estimated \$171 billion.

Work-related injuries and illnesses include any injuries or illnesses incurred by persons engaged in work-related activities while on or off the worksite. This includes injuries and illnesses that occur during apprenticeships and vocational training, while working in family businesses, and even while volunteering as firefighters or emergency medical services (EMS) providers.

The Nation is poised to make significant improvements in the quality of life for all working people in the United States. The National Occupational

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Jacksonville Injury & Violence Prevention and Occupational Safety and Health Report Card

2010 Injury Objectives

Obj #	Objective	U.S. (1998)	FL (2001)	Duval (2001)	2010 Target
15-1	Reduce hospitalization for nonfatal head injuries. (Per 100,000)	60.6	62.6 ¹	42.1 ¹	45.0
15-2	Reduce hospitalization for nonfatal spinal cord injuries. (Per 100,000)	4.5	4.4 ¹	2.7 ¹	2.4
15-3	Reduce firearm-related deaths. (Per 100,000)	11.3	10.6 ²	7.4 ²	4.1
15-6	(Developmental) Extend State-level child fatality review of deaths due to external causes for children aged 14 years and under.		FL has CDR	DC has CDR	
15-8	Reduce deaths caused by poisonings. (Per 100,000)	6.8	11.5 ²	13.8 ²	1.5
15-9	Reduce deaths caused by suffocation. (Per 100,000)	4.1	4.5 ²	4.7 ²	3.0
15-13	Reduce deaths caused by unintentional injuries. (Per 100,000)	35.0	39.8 ²	43.5 ²	17.5
15-15	Reduce deaths caused by motor vehicle crashes. (Per 100,000)	15.6	17.5 ²	17.7 ²	9.2
15-16	Reduce pedestrian deaths on public roads. (Per 100,000)	1.9	2.7 ²	3.5 ²	1.0
15-19	Increase use of safety belts. (Percent)	69%	75.1% ³ (2002)	65.1% ⁴ (2002)	92%
15-20	Increase use of child restraints. (Percent)	92%	64.2% ³ (2002)	81.9% ⁴ (2002)	100%
15-22	Increase the number of States and the District of Columbia that have adopted a graduated driver licensing model law.	23 State	State Law ⁵	State Law ⁵	All
15-23	(Developmental) Increase use of helmets by bicyclists. (Percent)		23.6% ⁶ (1996)	41.7% ⁷ (2002)	
15-24	Increase the number of States and the District of Columbia with laws requiring bicycle helmets for bicycle riders.	10 States	State Law ⁸	State Law ⁸	All
15-25	Reduce residential fire deaths. (Per 100,000)	1.2	.68 ²	1.59 ²	.2
15-27	Reduce deaths from falls. (Per 100,000)	4.7	5.05 ²	6.21 ²	3.0
15-28	Reduce hip fractures among older adults.				
15-28a	<i>Females aged 65 years and older (Per 100,000)</i>	1,055.8	924.6 ¹	968.8 ¹	416
15-28b	<i>Males aged 65 years and older. (Per 100,000)</i>	592.7	418.3 ¹	497.6 ¹	474
15-29	Reduce drownings. (Per 100,000)	1.6	2.14 ²	2.53 ²	.9
15-32	Reduce homicides. (Per 100,000)	6.5	6.04 ²	10.4 ²	3.0
18-1	Reduce suicides. (Per 100,000)	11.3	13.3 ²	13.8 ²	5.0
20-1	Reduction in Deaths From Work-Related Injuries <i>Deaths per 100,000 Workers Aged 16 Years and Older</i>				
20-1a	All industry	4.5	2.8 ^{9*}	2.7 ^{9*}	3.2

¹ Agency for Health Care Administration

² Florida Department of Health, Office of Vital Statistics

³ 2000 Obs. Survey of Safety Belt and Child Restraint Use in Florida

⁴ 2002 Duval County Seat Belt/Child Restraint Device Use Obs. Survey

⁵ Insurance Institute for Highway Safety

⁶ Florida Bicycle Helmet Use Survey, Florida Department of Transportation

⁷ 2002 Duval County Bike Helmet and Child Bike Riding Beh. in Traffic Obs. Survey

⁸ National Safe Kids Campaign

⁹ Data not available at the state & county level. Vital Statistics data used to cal. rates.

* Used 18 and over population, while nation used 16 and over population.

Data Report Card Overview

Carol Conroy, PhD., Director of DCHD's Epidemiology Division

Data presented in the report card are limited. There are other relevant injury-related objectives in Healthy People 2010 that are not presented here simply because local data are not available to measure the magnitude of these problems. These include intentional non-fatal injury such as domestic abuse and non-fatal unintentional injury due to all causes. Without available data to determine the extent of the problem it is not possible to establish a baseline to monitor our progress towards meeting national objectives. Available data sources that are used in the report card include hospital discharge data from the Agency for Health Care Administration, death certificate data from the Office of Vital Statistics, and observational surveys conducted in Duval County.

Most of the Healthy People 2010 injury objectives presented here relate to decreasing fatalities due to selected external causes (firearms, suffocation, motor vehicles, falls, fires, drowning). Other objectives address homicides or fatal injury from all unintentional causes. Another objective relates to decreasing a selected nature of injury (hip fractures). Remaining objectives relate to increasing the use

of personal protective equipment (such as bicycle helmets, child restraints, and safety belts) or injury prevention legislation.

Duval County has similar rates per 100,000 people for deaths due to suffocation, drowning, and hip fractures in older adults when compared to Florida. Duval County actually has a lower rate of firearm-related death compared to Florida or the US (7.4 compared to 10.6 and 11.3). When compared to Florida and the United States, Duval County has higher rates for deaths due to poisoning, unintentional injury, falls, drowning, and homicide. Duval County has 10.4 homicides per 100,000 people while Florida has a rate of 6.0 and the US rate is 6.5. The fatality rate for unintentional injury (43.5) also is higher than the Florida (39.8) or the US rate (35.0). Also the rate of poisoning deaths is considerably higher for Duval County (13.8) compared to either the state (8.8) or the US (6.8). The nonfatal rate for brain and spinal cord injuries is lower (42.1 and 2.7) when compared to the Florida (62.6 and 4.4) or the United States (60.6 and 4.5). In fact, Duval County is close to meeting the Health People 2010 target

rates (45.0 and 2.4) for both these objectives.

Duval County appears to score well for safety legislation. However, our current (state) bicycle helmet law specifies only bicyclists under age 16 are required to wear helmets. Related to the law, bicycle helmet use by bicyclists is higher for Duval County (41.7%) compared to 23.6% statewide. Child restraint use also is higher when compared to statewide use. Duval County has 81.9% use compared to 64.2% for the State. Our seat belt use is only 65.1%, lagging behind the state of Florida (75.1%) and the US (69.0%). Although Duval County and the State have a graduated driver's licensing law, it is not as rigorous as those in many other states.

These objectives highlight some of the compelling public health problems related to injury for Duval County. In addition to working towards Healthy People 2010 targets. Baseline data for other relevant HP objectives are needed.

Duval County Health Department's Health Zones

The Duval County Health Zones were developed to address four issues related to data. The first is statistical reliability. Statistically reliability becomes an issue when analyzing small numbers. According to Healthy People 2010's suppression criteria, data becomes unreliable for population based data systems when there are less than 20 cases. When analyzing data at the zip code level the small numbers issue is quite apparent.

A second issue is planning. Duval County is a large county with close to 800,000 residents. In order to target specific populations, a geographic area smaller than the county is needed. If zip codes cannot be

used, larger health zones that combine zip codes are needed.

As the health department expands its emphasis on population based science, surveillance becomes more important. In order to conduct surveillance efficiently, health zones instead of zip codes would reduce the number of samples to make a valid estimation. This would also reduce the cost of surveillance.

The last issue deals with confidentiality. With all the new privacy laws, data keepers must be very diligent in meeting confidentiality standards. In using health zones, data is aggregated by

combining zip code. This would make it harder to identify individuals.

The Duval County Health Department divided the county into six health zones. The zones use zip codes boundaries and they are similar to other ways that Duval County is broken into sub units. The health zones are as follows:

- Zone 1 Urban Core
- Zone 2 Greater Arlington
- Zone 3 Southeast
- Zone 4 Southwest
- Zone 5 Outer Rim
- Zone 6 Beaches

(See map on back cover)

For more information on DCHD's Health Zones, please call Radley Remo at 665-3116.

Injury and Violence: Health Disparities at the Local Level*

Injury is one of the leading cause of death for all people in Duval County. However injuries appears to occur more frequently in certain racial, age and gender specific groups.

When comparing race, whites have a higher overall injury rate than African Americans. But when you divide injuries into unintentional and intentional, a clearer picture is shown. Although whites still have a higher unintentional injury rate, African Americans have a significantly higher intentional injury rate (41.1 to 24.0) than whites (Graph 1).

When comparing age groups, the elderly are at highest risk than all the other age groups for unintentional injuries. Looking at graph 2, there are two significant changes from one age group to the next. The first is from age group 15-24 to 25-34. There is a large decrease in rates (55.26 to 39.6). However the most substantial change is from age group 55-64 to the 65 and older age group. The rates more than double from 39.9 to 86.7 per 100,000 for the 65 and older age groups.

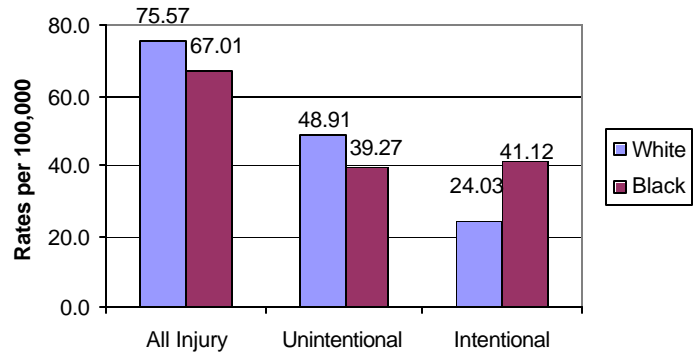
For intentional injuries the 45-54 group have the highest rate with 41.3, while the 15-24 have the lowest rate with 27.6 per 100,000. These types of injuries are minor for the elderly when compared to unintentional injuries (27.2 to 86.7 per 100,000).

Injuries also affect gender groups disproportionately. Males account for two-thirds of all the injuries in Duval County (Graph 3). This also holds true for unintentional injuries, 64.4 percent for males to 35.6 percent for females (graph not shown). However for intentional injuries the percentage is a bit higher. Males account for 75.7 percent while females only account for 24.3 percent.

With sub-populations affected by injuries in so many different ways; a good understanding of the local injury problem is essential to develop and implement effective injury prevention interventions.

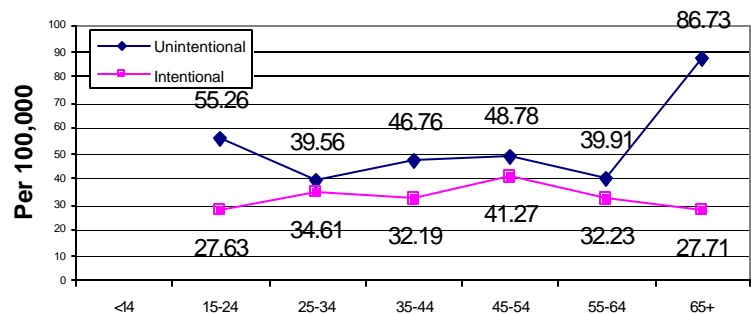
Injury Rates by Intent, Duval County, 2001

Graph 1



Injury Rate by Age Group & Type, Duval County 2001*

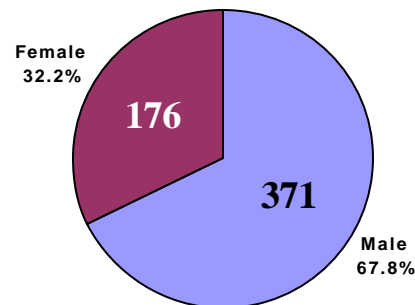
Graph 2



* Note <14 rate was not calculated due to small numbers.

All Injuries by Gender, Duval County 2001

Graph 3



Injury Prevention: The Effectiveness of Education, Engineering and Policy on Safety

At the turn of the century, the work place was the leading place of accidental death. Today it is the least likely place of accidental death. Safety in the work place provides important insights for injury prevention. At the inception of the 1970 Occupational, Safety and Health Act, work place injuries were a leading cause of death. Since then tremendous strides have been made to reduce this burden. During a 16-year span (1980-1995) in the U.S., a combination of education, engineering and policy has reduced the occupational mortality rates from 7.8 to 4.3 deaths per 100,000. Following is a brief description of each injury prevention strategy.

According to the authors of Injury Prevention and Public Health, education was once the predominant approach to injury prevention. Although education alone cannot solve the problem, it still plays an important role. It is education that 'primes' the population, the policy makers and the law enforcers. Without education, populations won't change behavior because it is not the norm. Policy makers won't write/pass safety legislation because they don't know safety is an issue. The public won't support legislation and regulatory policies and law enforcement won't enforce safety laws because they don't believe it is a 'good law'.

Engineering is another strategy in reducing occupational injuries. Engineering introduces the idea of passive protection. Passive protection means that no effort is necessary by the worker to receive the safety benefits (i.e. design of rollover protective structures on tractors), while active requires an individual to act (i.e. put on safety goggles or gear). The more action/effort that is required the less likely a person will act. Active protection is more indicative to the education and policy strategies.

Policy & Legislation has also led to a reduction in occupational injuries. Safety policies and legislation can be far

reaching. They can cover a whole industry or geographic population. If there is non-compliance, stiff fines and penalties can be assessed. An example of a safety policy is the requirement for protective packaging for hazardous substances to reduce/eliminate worker's exposure. Applied to other settings, automobile safety policies helped reduce automobile fatalities by requiring automobile manufacturers to make safer cars and people to buckle-up.

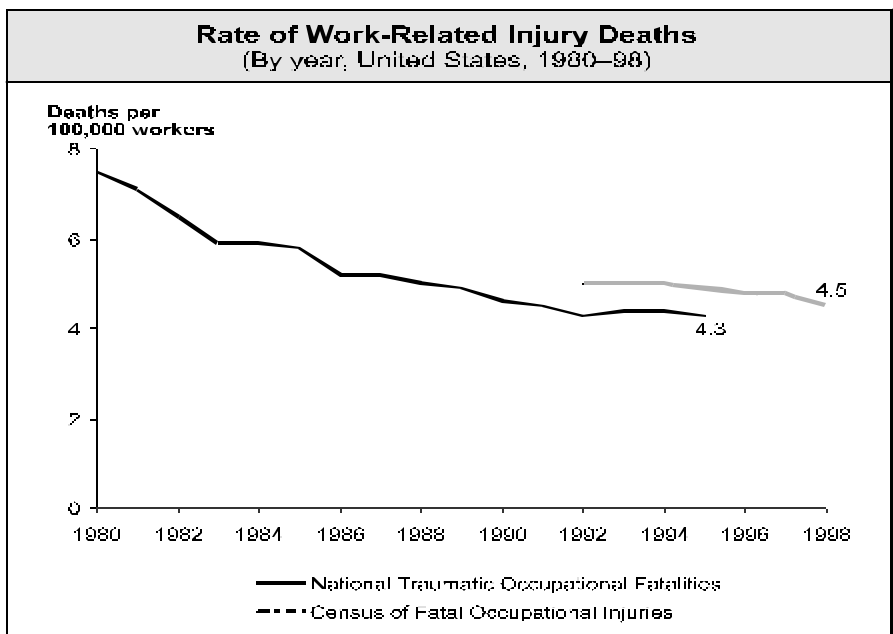
All three of these strategies are complementary and when combined they have tremendous potential to reduce injuries. The automobile is another good example of engineering, policies and education worked to reduce deaths from injuries. Workers have reaped the benefits of a well-designed, well-coordinated and highly financed effort to provide a safer work environment.

Occupational Safety & Health (cont. from page 1)

Research Agenda (NORA), developed by the National Institute for Occupational Safety and Health (NIOSH) in partnership with more than 500 outside organizations and individuals, was released in April 1996 as a framework to guide occupational safety and health research into the 21st century. NORA partners include representatives from labor, industry, academia, State governments, and national professional organizations. The NORA process resulted in a consensus on the top 21 research priorities for occupational safety and health.

One of the 21 specific priority areas identified by the NORA process is intervention effectiveness research, a type of research aimed at finding out which prevention strategies effectively protect worker safety and health. This research will evaluate the impact of occupational prevention interventions, programs, and policies on safety and health outcomes across a broad spectrum of industries. Although measurable improvements in worker safety and health have been achieved, only a few interventions have been evaluated systematically.

Graph 4



Sources: DOL, BLS. Census of Fatal Occupational Injuries (CFOI), 1992-98. CDC, NIOSH. National Traumatic Occupational Fatalities Surveillance System (NTOF), 1980-95.

Duval County Health Department's Injury Prevention Program

Stephen M. McCloskey, Injury Prevention Program Manager and Inonge S. Cooper, M.P.H., Health Educator

The main goal for the Duval County Health Department's Injury Prevention Program (TIPPO) is to reduce the mortality and morbidity related to injuries in Duval County.

TIPPO projects have included:

- Parenting Child Safety Classes delivered at 7 locations throughout the county per month
 - The Traffic, Bicycle, Pedestrian and Pre Drivers Education project in all the elementary and middle schools
 - The George Alberre Memorial Gunlock Campaign
 - Safe City at KIDS KAMPUS
 - The Comprehensive Day Care Injury Prevention project servicing over 500 county day care centers
 - A Child Passenger Safety Training Institute at UNF and a companion *Fitting Station* to inspect proper installation of child safety seats
 - Annual Observational Studies published on Seat Belt, Child Restraint Device and Bicycle Helmet Usage
 - Low cost safety product sales as incentives: bike helmets, child safety seats, gun locks
 - A Home Safety Inspection project
- These 9 projects address 22 of the 39 (56%) of the national Healthy People 2010 Injury Objectives.

In the past 7 years TIPPO has applied 125,000 education and training services and provided 25,000 safety products to identified Duval County residents with high risk factors for injury mortality and morbidity. However, since 1996 there has been a slight increase in unintentional injury rates for Duval County (see graph 5).

The three main community consortia that DCHD/TIPPO collaborates with to form a countywide coalition infrastructure to prevent injuries and their associated costs are:

The Jacksonville Pediatric Injury Con-

trol System (JPICS),

The Duval County Traffic Safety Team (DCTST) and

The Bicycle/Pedestrian Advisory Committee (BPAC).

JPICS main goal is to determine that every appropriate response and medical protocol was used to save life or magnitude of injury during the various treatment pathways. If mistakes are found, they need to be corrected and solved in this forum until consistent quality delivery is realized. The last step or purpose of this team is to inform the primary injury prevention professionals on where to develop interventions to what demographic group at highest risk.

The DCTST is concerned with just traffic-related injury prevention. They look at reducing traffic injuries by re-engineering dangerous crash sites, increasing rapid response pathways to congested areas and conducting planned enforcement campaigns to increase safe driving and restraint practices. In addi-

tion, public education campaigns aim to train drivers, parents and children of all ages.

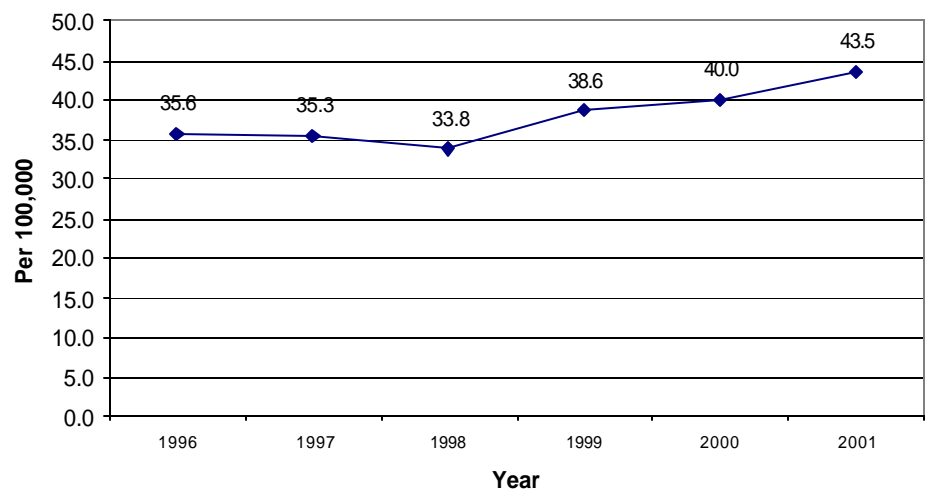
A third injury coalition in Duval County is the Mayor's BPAC. The committee members listen to resident concerns, expert witnesses, i.e. lawyers, engineers, etc. This committee is very concerned that their decisions translate into safe modes of transport.

All three of these injury prevention coalitions have partnered with DCHD to forward the goal of reducing the preventable pain and sufferings that injuries cause

DCHD/TIPPO actively engages the community by using sound data assessment to frame their respective intervention strategies and seeks to strengthen their projects by having a support system that will aid in organizational changes and policies to insure a higher standard of public health and safety in Jacksonville, Florida.

Graph 5

Unintentional Injury Rates, Duval County 1995-2001



Status of Injury Surveillance in Duval County

Carol Conroy, PhD., Director Epidemiology Division

Local data for persons who are injured is very limited in Duval County as in many other counties and states. Data sources for injury typically reflect the severity of the injury and the level of treatment. Unlike other public health problems, it is critical to know the cause of the injury (not just the diagnosis) to develop prevention strategies. This requires information on the incident as well as the injured person. The worse end of the injury severity spectrum (fatal injury) is typically the best counted. Death certificate data are computerized and readily available at a county level. Unfortunately, other than a single external cause code and demographic data there is little information available. Information on deaths under the jurisdiction of the Duval County Medical examiner provide detailed information useful for injury prevention. However, only selected variables are computerized and these are not publicly available. Surveillance using this data source would require hardcopy record reviews to abstract relevant information to be entered into a database.

Hospital discharge data are available at a local level. However, although there are 10 diagnostic codes, Florida does not include any external cause codes. Therefore, important information regarding the cause of the injury is typically not available. This limits studies using this data source to develop prevention strategies for injury.

Patients who are injured and treated only in the emergency department represent a large proportion of all injured persons. In Duval County there is no county-wide emergency department surveillance system. Such a system would be very useful to study less severely injured people who do not require hospital admission for their treatment.

Emergency Medical Services (EMS) data are collected and available in electronic format for the City of Jacksonville. However, these are not publicly available and have not been systematically used for injury surveillance.

Level 1 trauma centers are required to have a Trauma Registry that collects detailed information concerning all trauma patients. The Level 1 Trauma Center in Duval County has a trauma registry, but this registry is not publicly available. This data source typically contains very detailed data useful to study patients who are severely injured and are treated or consulted by a trauma team.

Law enforcement records are very useful for studying motor vehicle incidents, and for intentional injury (including homicides). These are administrative records and not collected for injury surveillance.

Although injury surveillance is weak, Duval County is one of the few counties in Florida that conducts injury behavior surveillance. The DCHD's Injury Prevention Program Office has conducted two annual observational surveys for the past seven years. The first survey measures occupant protection behaviors, such as seat belt use, child restraint use (car seats) and their proper use. This survey follows the same protocol as the state-wide study. Demographics such as age, race and gender are also tracked. Other variables include type of vehicle and in-state or out-of-state license plates.

The second study measures bicycle behavior such as the use and proper use of bicycle helmets, scanning and signaling. This survey's main focus is to help evaluate a comprehensive traffic and bicycle safety program that has been implemented in Duval County elementary and middle schools.

Funding for both of these surveys were provided by the Florida Department of Transportation. In-kind support was provided by the Injury Prevention Program and the Duval County Public School Board.

In conclusion, Duval County is making progress with but much more work needs to be done to effectively curtail the injury epidemic. injury surveillance is essential if the injury epidemic is to be eliminated.

Injury & Violence Prevention (cont. from page 1)

Unintentional Injury Prevention

More persons aged 1 to 34 years die as a result of unintentional injuries than any other cause of death. Across all ages, 92,353 persons died in 1997 as a result of unintentional injuries. Motor vehicle crashes account for approximately half the deaths from unintentional injuries; other unintentional injuries rank second, and falls rank third, followed by poisonings, suffocations, and drownings.

Although the greatest impact of injury is in human suffering and loss of life, the financial cost is staggering. Included in the costs associated with injuries are the costs of direct medical care and rehabilitation as well as lost income and productivity. By the late 1990s, injury costs were estimated at more than \$441 billion annually, an increase of 42 percent over the 1980s. As with other health problems, it costs far less to prevent injuries than to treat them.

Violence and Abuse Prevention

Violence in the United States is pervasive and can change quality of life. Reports of children killing children in schools are shocking and cause parents to worry about the safety of their children at school. Although suicide rates began decreasing in the mid-1990s, prior increases among youth aged 10 to 19 years and adults aged 65 years and older have raised concerns about the vulnerability of these population groups. Intimate partner violence and sexual assault threaten people in all walks of life.

Violence claims the lives of many of the Nation's young persons and threatens the health and well-being of many persons of all ages in the United States. On an average day in America, 53 persons die from homicide, and a minimum of 18,000 persons survive interpersonal assaults, 84 persons complete suicide, and as many as 3,000 persons attempt suicide.

Duval County Health Department
Institute for Health, Policy & Evaluation Research
900 University Blvd. North, Suite 604 (MC-99)
Jacksonville, Florida 32211

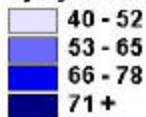
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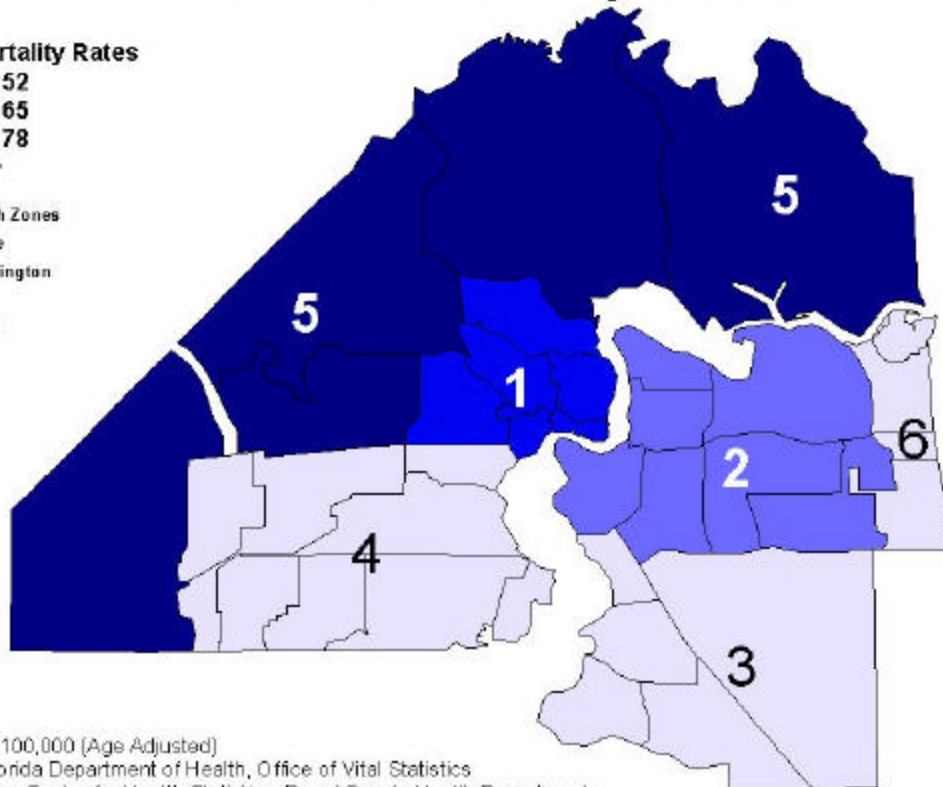
Injury Mortality Rates by Health Zones, Duval County 2001

Injury Mortality Rates



DCHD Health Zones

- 1 Urban Core
- 2 Greater Arlington
- 3 Southeast
- 4 Southwest
- 5 Outer Rim
- 6 Beaches



Rates Per 100,000 (Age Adjusted)
Source: Florida Department of Health, Office of Vital Statistics
Prepared by: Center for Health Statistics, Duval County Health Department

