

**Los Angeles County**

**Injury**

**Hospitalization**

**Report**

**2008**



Injury and Violence Prevention Program  
Division of Chronic Disease & Injury Prevention  
Department of Public Health  
Los Angeles County

# Los Angeles County Injury Hospitalization Report 2008

## MANAGING EDITOR

Patti L. Culross, MD, MPH

## EDITOR

Isabelle Sternfeld, MSPH

## CONTRIBUTIONS

Laura M. Sanger, MA

Nicolle Perras, MPH

James M. DeCarli, MPH, MPA, CHES

Susan Huynh

Alan Zhao

Jose Cabrera

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For copies of this report contact:

Injury & Violence Prevention Program

Los Angeles County Department of Public Health

3530 Wilshire Blvd, Suite 800

Los Angeles, CA 90010

(231) 351-7888

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# Los Angeles County Injury Hospitalization Report 2008

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## **Executive Summary**

Injuries have an enormous impact on Los Angeles County residents — they are the leading cause of death among residents 1-44 year olds. Countywide, between 2000 and 2005 (the latest year for which fatality statistics are available), an average of 4,044 residents died each year from injuries. However, injury fatalities account for only a small portion of all injury occurrences. For every injury-related death, there are many more injury-related hospitalizations and injury-related visits to emergency departments, clinics, and doctor's offices. Statewide, injuries were responsible for 6.8% of the total number of hospitalizations in 2005. In Los Angeles County, they were responsible for 6.1% of total hospitalizations.

It is important to look at patterns of nonfatal injuries since they may be quite different from injury fatalities (which were discussed in a previously released report<sup>1</sup>). For example, firearms caused nearly half of all completed suicides since 2000, but were responsible for less than one percent of all nonfatal suicide attempts. Injury hospitalizations are also important because these severe injuries can have a long lasting impact; in addition to initial treatment, many injuries require long-term rehabilitation or may result in permanent disability.

This report focuses on nonfatal hospitalized injuries in Los Angeles County and covers the years 2000-2006. The report uses data provided by the California Office of Statewide Health Planning and Development (OSHPD) and reviews hospitalization data only. There are no data presented on emergency room visits, primarily because that database goes back only to 2005. Also, there are no data presented on outpatient clinic visits or private practice provider office visits since these health care encounters do not involve hospitalization.

To better explain how injuries affect Los Angeles County residents, this report begins with an overview of injury hospitalizations that discusses what types of injuries are most prevalent and which county residents are most at risk for injury hospitalizations. The next several sections of the report focus on each of the most common causes of injury hospitalizations. Each of these sections compare Los Angeles County statistics with statewide data, show trends over time in hospitalizations, provide information on the populations most affected by that particular type of injury, compare patterns of injury hospitalizations with those of fatal injuries, and discuss prevention strategies for the injury type. Finally, six appendices contain more information including, detailed charts of the top ten causes of injury hospitalization broken down by age, gender, and racial/ethnic group; definitions for terms used in the report; technical notes; and a resource list for more information about injuries.

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<sup>1</sup> Los Angeles County Department of Public Health. Injury and Violence Prevention Program. Report on Injury Related Morbidity and Mortality in Los Angeles County: Prevalence and Prevention. 2005.

Overall, there were nearly half a million (468,282) hospitalizations due to injuries in Los Angeles County from 2000-2006, an average of 66,897 per year. Over half of all injury hospitalizations were caused by either falls (41%) or motor vehicle traffic (12%). The majority (84%) of injury hospitalizations were for unintentional injuries (those commonly referred to as accidental). Another 8% were for assaults and 6% were the result of suicide attempts. The remaining hospitalizations were for injuries of undetermined intent and legal intervention injuries. More than one third (35.9%) of all people hospitalized for an injury were over the age of 64. In fact, during the seven year period, there were more injury hospitalizations among 81 year olds than for any other age group.

The purpose of this report is not only to inform, but also to stimulate thought and action. Los Angeles County is home to 10 million people, with diverse populations and subpopulations. This report shows that there are often distinct differences in the causes of injury-related hospitalization and the rates of hospitalization according to age, gender, racial/ethnic group, and geography. For example, while females outnumbered males overall among fall-related hospitalizations, males were more commonly involved in falls that were possibly associated with male-dominated employment such as construction: falls from scaffolding (84% male), falls from buildings (83% male) and falls into holes or openings (67% male). This may suggest the need for increased attention to safety at locations with these types of potential hazards.

Other statistics confirm what we may already suspect in these perilous times for some Los Angeles County residents: Firearm injuries were the 1<sup>st</sup> leading cause of hospitalization for males 15-19 years old and the 2<sup>nd</sup> leading cause for males 20-24 years old. More than half (54%) of all patients hospitalized for a firearm injury were between the ages of 15 and 24 years old.

In another example, 49% of all injury hospitalizations due to excessive heat or cold occurred among residents 65 years and older. This age group represents only 10% of the total population but a disproportionate number of those affected by extremes in weather. Los Angeles County is a broad geographic area that experiences the full range of high and low temperatures. It is important to keep in mind the deleterious health effects cold temperatures, or hot and humid weather can have on the older population of Los Angeles County residents.

This report was prepared to provide detailed information about injury hospitalization risks and prevention strategies that can be used by a wide range of Los Angeles County residents, including community groups, medical professionals, and other individuals and organizations. The report was written by the staff of the Injury and Violence Prevention Program (IVPP), which is part of the Division of Chronic Disease and Injury Prevention within the Los Angeles County Department of Public Health. IVPP's mission is to reduce and prevent injuries among Los Angeles County residents. IVPP measures and monitors the

occurrence of injuries among population groups, and develops and implements strategies to reduce the morbidity and mortality caused by injuries. For more information about IVPP or to request additional data, please contact us at (213) 351-7888, or visit our website at [www.publichealth.lacounty.gov/ivpp](http://www.publichealth.lacounty.gov/ivpp)

Isabelle Sternfeld, MSPH  
Epidemiologist, Injury and Violence Prevention Program

Patti Culross, MD, MPH  
Director, Injury and Violence Prevention Program

## 1<sup>st</sup> Leading Cause: Falls

Falls were the leading cause of injury hospitalizations in Los Angeles County by a significant margin, with an average of 27,000 reported each year. Between 2000 and 2006, for every hospitalization due to a motor vehicle traffic collision (the second leading cause of injury hospitalization), there were more than 3 fall-related hospitalizations. Falls were also the leading cause of injury hospitalizations statewide. In California, there were 597,100 fall-related hospitalizations between 2000 and 2005 (statewide data are not yet available for 2006); 28% of these hospitalizations occurred in Los Angeles County.

### **Trends**

There were 194,028 fall-related hospitalizations in Los Angeles County during the seven years of this report. The number of hospitalizations increased 13% from 1997 to 2006; however the rate of fall-related hospitalizations actually decreased slightly during this period (Figure 1).

### **Intent**

The vast majority of fall-related hospitalizations were unintentional, resulting from tripping, stumbling, or other activities causing a loss of balance. Intentional falls, such as from suicide attempts or as a result of assaults, and injuries of undetermined intent, together accounted for less than one half of one percent of all fall-related hospitalizations.

### **Types of Falls**

Coding for fall injuries allows for remarkable detail in describing the specifics of how falls occur (Table 1). Despite the capacity

Figure 1: Fall-Related Hospitalization Rate per 100,000 Population by Year, Los Angeles County

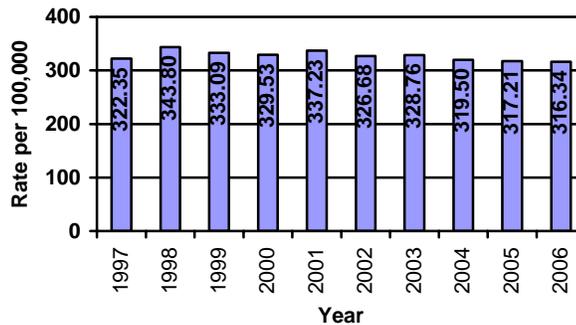


Table 1: Types of Falls Resulting in Hospitalization, Los Angeles County, 2000-2006

Type of Fall	Number
Fall From Stairs/Steps	9,429
Escalator	102
Sidewalk curb	913
Other stairs/steps	8,414
Fall From Ladder/Scaffolding	4,718
Ladder	4,389
Scaffolding	329
Fall From Building or Other Structure	2,630
Fall Into Hole or Other Opening	348
Dive/Jump Into Water (Pool)	138
Storm drain or Manhole	19
Other hole/opening	191
Other Fall From One Level to Another	25,347
Playground Equipment	2,252
Cliff	190
Chair	3,193
Wheelchair	2,310
Bed	7,940
Other Furniture	860
Toilet	885
Other	7,717

Table 1 is continued on the next page.

to code the details of falls, a plurality of fall-related hospitalizations were still coded as “unspecified” or “other” for type (40% of all hospitalizations). The remaining types of unintentional falls can generally be grouped into two broad categories: 1) falls on the same level, such as from tripping or stumbling (38% of hospitalizations); and 2) falls between levels, such as down stairs or out of bed (22% of hospitalizations).

**Age**

Falls accounted for less than 10% of injury hospitalizations among 18-20 year olds, but for more than 75% of all injury hospitalizations among people 80 years old and older (data not shown). The average age of people hospitalized with a fall-related injury was 64 years, while the average age of people hospitalized for all other types of injury was 41 years. The overall number of fall-related hospitalizations peaked among people in their late 70s and early 80s (Figure 2), while hospitalization rates peaked among people in their 90s (Figure 3).

*Table 1 (cont.): Types of Falls Resulting in Hospitalization, Los Angeles County, 2000-2006*

Type of Fall	Number
<b>Fall From Slipping, Tripping, Stumbling</b>	<b>70,870</b>
Non-motorized scooter*	280
Roller or in-line skates	608
Skateboard	1,515
Skis	356
Snowboard	490
Other	67,621
<b>Fall From Collision, Pushing, or Shoving</b>	<b>1912</b>
Sports	1131
Other/Unspecified	781
<b>Other/Unspecified Fall</b>	<b>78,085</b>
Fall Results in Striking Sharp Object**	11,251
Fall Results in Striking Other Object**	2,220
Other/Unspecified	64,614
<b>Suicide Attempt; Jump from High Place</b>	<b>383</b>
Residential Premises	133
Other Manmade Structure	191
Other/Unspecified***	59
<b>Assault by Pushing from High Place</b>	<b>52</b>
<b>Undetermined Intent</b>	<b>254</b>
Residential Premises	93
Other Manmade Structure	88
Other/Unspecified***	73

\* This code went into effect in 2002, during 2000-2001 these injuries were included in the “other” category.  
 \*\* These codes went into effect in 2001, during 2000, sharp object falls were included as cut/pierce injuries and other object falls were in the other/unspecified category.  
 \*\*\* The categories for falls from natural sites (both suicide attempts & undetermined intent) contained fewer than 6 hospitalizations; therefore these falls were combined with those in the “other/unspecified” category for each intent.

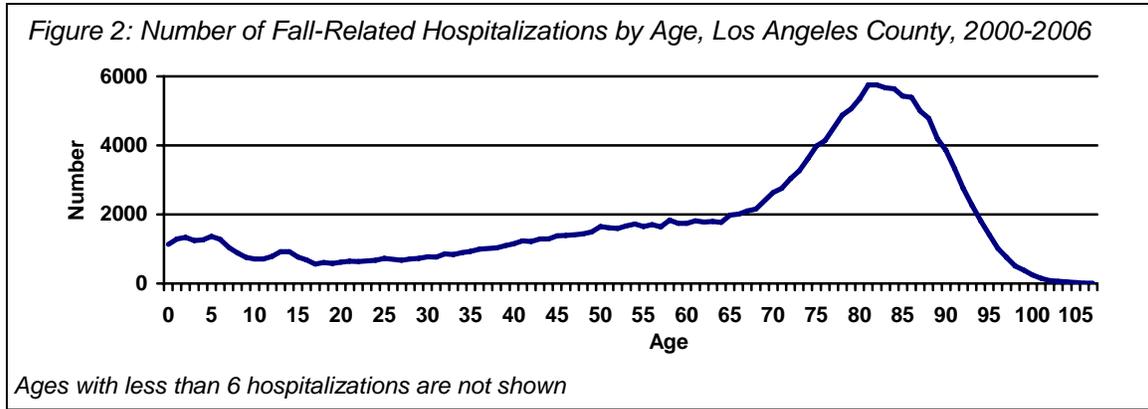
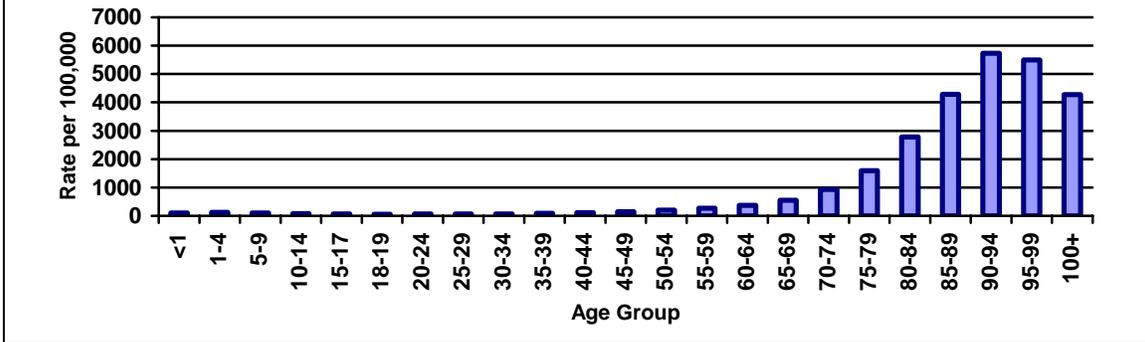


Figure 3: Fall-Related Injury Hospitalization Rates by Age Group, Los Angeles County, 2000-2006



Fall-related hospitalization rates were less than 100 visits per 100,000 population for people between the ages of 5 and 39. Rates were lowest for 18-19 year olds, and increased for each age group until peaking among 90 to 94 year olds. Hospitalization rates also varied by the type of fall that caused the injury (Table 2). Although falls between levels accounted for only 22% of all fall

Table 2: Age Specific Fall Hospitalization Rates by Type of Fall, Los Angeles County, 2000-2006

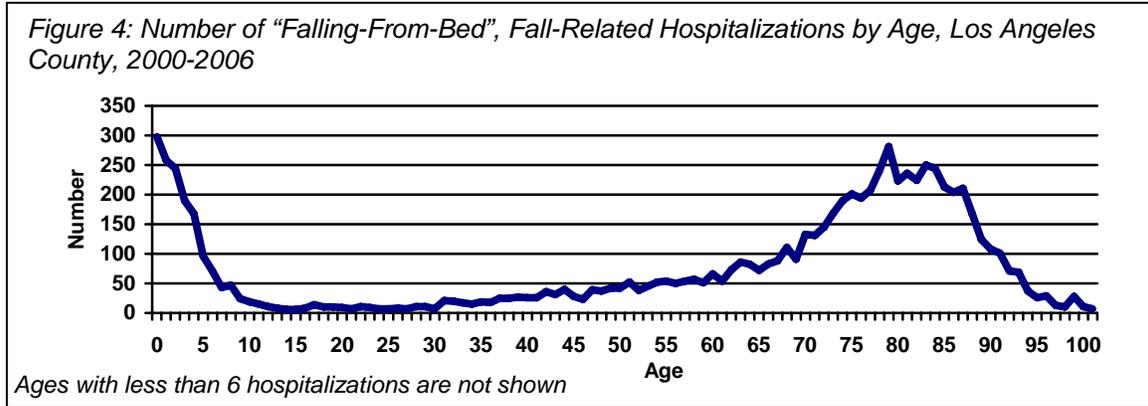
Age Group	Between Levels	Same Level	Other/Unspec.
<1 Year	82.75	6.48	16.50
1-4 Years	76.18	20.23	24.46
5-9 Years	53.33	23.29	20.12
10-14 Years	18.83	36.95	17.56
15-19 Years	18.21	29.33	14.40
20-24 Years	26.35	22.39	14.81
25-29 Years	25.56	23.19	17.01
30-34 Years	28.10	22.67	20.31
35-44 Years	37.16	31.28	31.85
45-54 Years	49.47	58.37	62.87
55-64 Years	71.88	111.37	124.22
65+ Years	240.37	699.95	795.68

All rates are per 100,000.

Note: This chart only includes unintentional injuries.

hospitalizations, they resulted in the highest hospitalization rates for young children (0-9 year olds), and also for many adults (20-44 year olds), when compared to rates in the other two categories. Among older adults (45+ year olds), hospitalization rates were highest for other & unspecified falls. Among adolescents (10-19 year olds) rates were highest for falls on the same level, a category that includes many falls from athletic endeavors including skiing, skateboarding, and sports. As might be expected from these hospitalization rates, people who were injured while falling from one level to another were younger (average age of 50 years) than people injured while falling on the same level (67 years) or those injured in an unspecified fall (70 years). More specifically, people injured on playground equipment were very young (average age of 7.2 years), while the average age of hospitalized victims was more than 70 years for falls from wheelchairs (70.8 years), toilets (75.2 years), other slips/trips/stumbles (70.2 years), and unspecified falls (71.2 years).

Falls from bed, while not an overwhelming cause of fall-related hospitalizations, had an interesting bimodal pattern, with hospital visits occurring most frequently among the youngest (0-5 years) and oldest (70 years and older) age groups (Figure 4).



**Gender**

Women accounted for 59% of all unintentional fall-related hospitalizations. This is one of only two injury mechanisms for which more females than males were hospitalized (the other is poisoning). The gender disparity varied both by intent and type of injury and age of the person injured. While intentional injuries made up only a very small fraction of all fall-related hospitalizations, the victims of suicide attempts, assaults, and injuries of undetermined intent were largely male (Table 3). Males also made up the majority of patients hospitalized for falls from ladders & scaffolding (84% male), from buildings (83% male), and falls into holes or openings (67% male). Many of these falls among males may be job-related; certain occupations that place employees at high risk for on-the-job falls tend to be dominated by males (e.g., construction). Occupation-related falls among males are also suggested by the much younger age at which males (average age of 55 years) were hospitalized in comparison to females (average age of 71 years).

*Table 3: Gender Distribution of Fall Hospitalizations by Intent, Los Angeles County, 2000-2006*

Intent	% Male	% Female
Unintentional	41%	59%
Suicide Attempt	63%	37%
Assault	65%	35%
Undetermined Intent	74%	26%

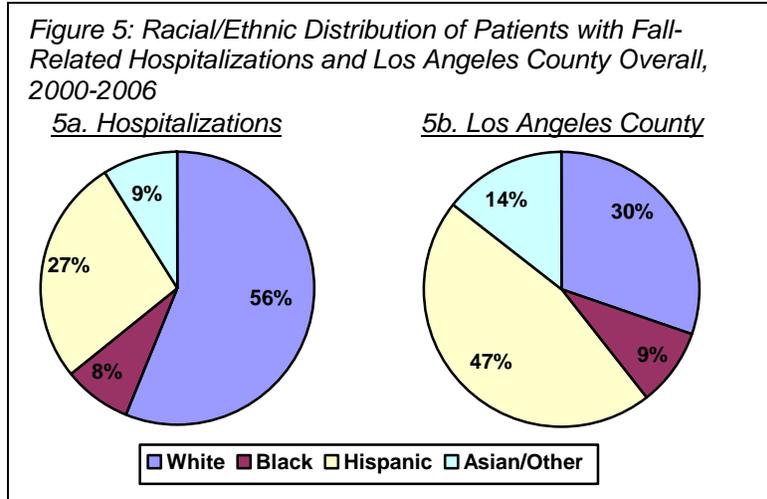
**Race/Ethnicity**

Racial/ethnic group was unknown for 1.8% of all fall-related hospitalizations; all statistics presented in this section only include those records for which race/ethnicity was reported. Over half of all hospitalizations for fall-related injuries were among Whites (56%), even though Whites accounted for just 30% of the Los Angeles County population (Figure 5). Whites also had the highest age-adjusted hospitalization rate for falls (391 per 100,000) followed by Latinos

(260 per 100,000), Blacks (257 per 100,000) and Asians/Others (196 per 100,000).

On average, White patients were older than those from any other racial/ethnic group when admitted to a hospital for a fall related injury. The average age of a White patient was 72 years, followed by Asian/Other patients (67 years),

Blacks (58 years), and Latinos (50 years). This difference in ages was closely linked to the type of falls most often experienced by the different racial/ethnic groups. The percentage of falls attributable to the two largest categories of falls (falls from slipping, tripping, or stumbling and other/unspecified falls) closely follows the age distribution: 81% of falls among Whites were from one of those two categories, followed by Asians/Others (79%), Blacks (74%), and then Latinos (67%). The two categories of falls with the largest percentage of Latino victims were falls from buildings (55% Latino) and falls from collisions, pushing, or shoving (46% Latino); these were the categories with the lowest average age at hospitalization (33.4 years for falls from buildings and 32.8 years for falls from collisions, pushing, or shoving).



**Geography**

While the greatest number of fall-related hospitalizations was found in the San Fernando SPA, this was also the SPA with the largest population. Generally, there was not much variation between SPAs in the rate of fall-related hospitalizations (Table 4). The lowest rates were found in the San Gabriel and the South Bay SPAs and the highest rate was in the Metro SPA.

Certain groups of fall-related injuries showed more variation between SPAs. While suicide attempts, assaults and injuries of undetermined intent made up only a tiny fraction of all hospitalizations for falls, they were concentrated in certain areas of the county. The Metro

*Table 4: Total Number of Fall Hospitalizations and Average Annual Age Adjusted Hospitalization Rate by SPA, Los Angeles County, 2000-2006*

SPA	Number	Rate
SPA 1: Antelope Valley	5,886	333.7
SPA 2: San Fernando	42,759	334.2
SPA 3: San Gabriel	34,767	303.5
SPA 4: Metro	25,608	354.1
SPA 5: West	15,662	338.4
SPA 6: South	16,443	311.2
SPA 7: East	23,823	311.0
SPA 8: South Bay	29,065	303.5
Unknown SPA	15	---
Los Angeles County Total	194,028	322.8

*Note: Rates are per 100,000 population.*

and the South SPAs accounted for 37% of these fall hospitalizations but just 22% of unintentional fall hospitalizations and about 22% of the county's total population.

Table 5: Average Annual Age Adjusted Fall Hospitalization Rate by Race/Ethnicity and SPA, Los Angeles County, 2000-2006

SPA	Rate			
	Black	Latino	As/Oth	White
SPA 1: Antelope Valley	256.5	237.4	157.7	378.1
SPA 2: San Fernando	254.6	236.2	215.9	368.7
SPA 3: San Gabriel	226.7	255.7	177.4	404.7
SPA 4: Metro	328.7	300.3	219.3	469.4
SPA 5: West	289.9	219.9	209.9	367.7
SPA 6: South	283.4	291.6	419.7	991.6
SPA 7: East	305.8	281.7	176.5	377.5
SPA 8: South Bay	202.4	249.0	191.4	378.2
Los Angeles County Total	256.5	259.9	195.7	391.1

Note: Rates are per 100,000 population.

When looking at rates by

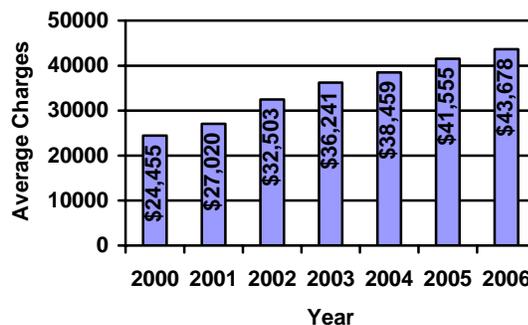
racial/ethnic group and SPA, some distinct patterns emerged (Table 5). Whites had the highest rate of fall-related hospitalizations in each SPA. Asians/Others had the lowest rate in seven of the eight SPAs; Blacks had the lowest rate in the South SPA. Among Whites, hospitalization rates ranged from 367.7 to 469.4 per 100,000 for seven of the eight SPAs; the rate in the South SPA (991.6 per 100,000) was more than double that of the next highest SPA. A similar pattern was seen for Asians/Others; the rate in the South SPA was almost twice the rate seen in any other SPA. Among Blacks and Latinos, there was no SPA with exceptionally high rates. Fall-related hospitalization rates were highest in the Metro SPA (328.7 per 100,000 for Blacks and 300.3 per 100,000 for Latinos) and lowest in the South Bay SPA for Blacks (202.4 per 100,000) and in the West SPA for Latinos (219.9 per 100,000).

The South SPA was the only SPA in which males (307 per 100,000) had a higher rate of fall-related injuries than females (303 per 100,000). The female-to-male rate ratio ranged from 0.99 in the South SPA to 1.38 in the Antelope Valley SPA. For males, the highest rate was found in the Metro SPA (327 per 100,000) and the lowest rate was found in the San Gabriel (258 per 100,000). Among females, the highest rate was found in the Antelope Valley (378 per 100,000) and the lowest was found in the South SPA (303 per 100,000).

**Medical Charges**

During the seven years included in this report, the average charge for a fall-related hospitalization was \$34,940. The average annual charge increased dramatically during this time, from \$24,455 in 2000 to \$43,678 in 2006 (Figure 6).

Figure 6: Average Medical Charges for Fall Hospitalizations by Year, Los Angeles County



for children under 15 years old were less than \$20,000, while charges for people 30 years and older were more than \$35,000. Average charges were lowest among Latinos (\$31,532), followed by Whites (\$35,715), Blacks (\$36,925), and Asians/Others (\$38,380). Charges were slightly higher for males (\$36,677) than females (\$33,725).

### **Comparison to Mortality Data**

While falls were the leading cause of injury hospitalizations in Los Angeles County, between 2000 and 2005, they were only the 4<sup>th</sup> leading cause of injury death (after firearms, motor vehicle traffic collisions, and poisonings). During this period, there were 75 fall related hospitalizations for each fall fatality in Los Angeles County

Fatal injury data are currently only available through 2005, so the mortality and hospitalization data presented in this section and in Table 6 only include 2000-2005 data. Both fatal and non-fatal falls were almost always unintentional; less than one percent of fall-related hospitalizations were *not* classified as unintentional. However, while the majority of fatalities were also unintentional, suicides accounted for nearly ten percent of fall-related deaths. The racial/ethnic distribution and average age of victims of fatal falls and non-fatal fall hospitalizations were nearly identical. By contrast, the gender distribution is quite distinct. Female victims of falls accounted for 59% of injury hospitalizations, but only 38% of fatalities.

*Table 6: Demographics of Fatal Falls and Non-Fatal Fall Hospitalizations, Los Angeles County 2000-2005*

	Deaths	Hosps
Total Number	2,208	165,661
Intent (%)		
Unintentional	89.4%	99.6%
Suicide/Sui Attempt	9.7%	<1%
Homicide/Assault	<1%	<1%
Legal Intervention	<1%	<1%
Undetermined	1%	<1%
Race/Ethnicity (%)		
Black	7.4%	7.9%
Latino	25.1%	26.5%
White	55.8%	55.2%
Asian/Other	11.3%	8.4%
Unknown	<1%	1.9%
Gender (%)		
Male	62.2%	41.1%
Female	37.8%	58.9%
Average Age (Years)	68.1	64.1

## ***Falls Discussion***

These data show that falls are a significant cause of injury and hospitalization for all age groups in Los Angeles County. Among people 35 years and older, falls were the primary cause of injury hospitalizations from 2000-2006 (see Appendix VI). A few general strategies for preventing falls include, age- and ability-appropriate physical activity, monitoring the effects of taking multiple medications, and creating safe environments at home.

Regular physical activity: For adults of all ages, insufficient physical activity is a risk factor for falling. Lack of physical activity causes lower extremity weakness, poor endurance and stamina, muscle and joint stiffness, slower reaction times to sudden changes in balance, and slow walking speeds.<sup>1,2</sup> Regular physical activity has been shown to prevent falls by improving strength, balance, gait stability and velocity, and endurance.<sup>3</sup> Physical activity enhances health and reduces risk for all-cause mortality.<sup>4</sup> Among older adults, Tai Chi is a popular type of exercise that can reduce the risk of falls.<sup>5</sup> Tai Chi classes are often offered at local community recreation centers.

Medication effects: Medications can have side effects that impair walking and balance, especially in older adults. Older adults are also the population most likely to take multiple medications at the same time for different conditions. Medications can interact and produce undesired side effects. Therefore, it is important to review all prescription and over-the-counter medications, and discuss fall histories with doctors or pharmacists to assess how regimens may increase the risk of fall-related injuries.<sup>6</sup>

Safe home environments: Many falls occur in the home, and environmental factors may contribute to almost half of all home falls.<sup>7</sup> Older adults and their families should be aware of hazards in the home and correct them to reduce the risk of falling. To make living areas safer, remove throw rugs and obstacles in walkways that are tripping hazards, use non-slip mats and grab bars in showers and bathtubs, install handrails on stairways, and improve direct and ambient lighting in the home.<sup>8</sup> Also be aware that certain balance disorders, such as benign paroxysmal positional vertigo (BPPV) or labyrinthitis, can cause loss of balance when getting up from bed.

Fall risks for young children often include inappropriately high beds, beds with no side rails, and poor supervision of children using the bed for play.<sup>9</sup> Children's beds should be set at the lowest height position, side rails should be used to prevent children from rolling out of bed, and children should not be allowed to use beds for play.<sup>9</sup> While falling from bed is usually unintentional, when infants sustain injury from reportedly falling out of bed, child abuse or neglect should always be ruled out as possible causes.

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<sup>1</sup> American Geriatrics Society, British Geriatrics Society, Academy of Orthopedic Surgeons Panel on Falls Prevention. Guideline for the Prevention of Falls in Older Persons. *J Am Geriatr Soc.* 2001;49:664-772.

<sup>2</sup> Prevalence of No Leisure-Time Physical Activity—35 States and the District of Columbia, 1988-2002. *Morb Mortal Wkly Rep.* 2004;53(04):82-86. Available at:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5304a4.htm> Accessed on: March 14, 2008

<sup>3</sup> Rubenstein LZ, Josephson KR, and Trueblood PR. Effects of a Group Exercise Program on Strength, Mobility, and Falls among Fall-Prone Elderly Men. *J Gerontol.* 2000;55(A):317-321.

<sup>3</sup> Fiaterone MA, O'Neill EF, Ryan ND, et. al. Exercise Training and Nutritional Supplementation for Physical Frailty in Very Elderly People. *N Engl J Med.* 1994;300:769-1775.

<sup>3</sup> Wolfson L, Whipple R, Derby C, et. al. Balance and Strength Training in Older Adults: Intervention Gains and Tai Chi Maintenance. *J Am Geriatr Soc.* 1996;44:498-506.

<sup>4</sup> Increasing Physical Activity: A Report on Recommendations of the Task Force on Community Preventive Services. *Morb Mortal Wkly Rep.* 2001;50:1-18.

<sup>5</sup> Wolf SL, Barnhart HX, Kutner NG, McNeely E, Coogler C, and Xu T. Reducing Frailty and Falls in Older Persons: An Investigation of Tai Chi and Computerized Balance Training. *J Am Geriatr Soc.* 1996;44(5):489-497.

<sup>6</sup> Ray W and Griffin MR. Prescribed Medications and the Risk of Falling. *Topics in Geriatric Rehabilitation.* 1990;5:10-12.

<sup>7</sup> Northridge ME, Nevitt MC, Kelsey JL, and Link B. Home Hazards and Falls in the Elderly - the Role of Health and Functional Status. *Am J Public Health.* 1995;85(4):509-515.

<sup>8</sup> Tideiksaar R. Preventing Falls: Home Hazard Checklists to Help Older Patients Protect Themselves. *Geriatrics.* 1986;41(5):26-8.

<sup>9</sup> Niedbala DK, Smith SJ, and Langenburn S. Pediatric Falls from Beds at Home Result in Significant Injury. Conference at Children's Hospital of Michigan, 2007.