

## Occupational Injuries and Illnesses in the U.S. Caribbean Territories, 1992-2006

by Bruce J. Bergman and James J. Hart  
Bureau of Labor Statistics

*Originally Posted: December 23, 2008*

*Data from the Bureau of Labor Statistics shed light on what distinguishes the economies of the U.S. Caribbean territories and on what differentiates their safety and health experiences. Despite having relatively low injury rates, the two territories have a number of safety and health concerns, including case severity, workplace violence, and repetitive motion incidents.*

In the Caribbean, Puerto Rico and the U.S. Virgin Islands are only separated by about 60 miles, but they can hardly be characterized as similar. Aside from being popular tourist destinations, these semi-autonomous organized territories have distinct economies with differing workplace safety issues. Employers in both areas are subject to the same Federal safety laws and standards as their counterparts on the mainland, including the requirement to log worker injuries and illnesses. These logs provide the basis for occupational safety and health statistics, which Puerto Rico and the U.S. Virgin Islands produce as part of the BLS [Injuries, Illnesses, and Fatalities \(IIF\) program](#), a Federal-State Cooperative Program.<sup>1</sup> Data from that program provide insights into what distinguishes these territories from each other and from the United States in terms of occupational safety and health.

### Occupational Safety And Health In Puerto Rico

With a land mass slightly greater than that of Delaware and Rhode Island combined, Puerto Rico now has more than twice the combined population of those two States. Compared with much of the Caribbean region in 2006, the economy of Puerto Rico was diverse. The territory's workers—more than 1 million strong—were employed in a wide range of industries. Government employment was substantial, accounting for more than 275,000 jobs.<sup>2</sup> Almost a quarter of the territory's private-sector labor force was employed in construction and manufacturing. Outside of goods-producing industries, the largest sector was retail trade, followed by health care and social assistance and accommodation and food services. These three sectors accounted for half of service-providing employment. Besides these industries, the only other sector to have at least 50,000 jobs in Puerto Rico was administrative and waste services.

Within construction, residential building construction accounted for 1 in 3 jobs in 2006, a greater concentration than in the United States.<sup>3</sup> Industrial building and commercial building construction were also relatively strong. Within manufacturing, pharmaceutical and medicine manufacturing accounted for about 1 in 4 jobs in 2006. Employment was also found in large numbers among apparel and footwear manufacturers.

In terms of compensation, pay in Puerto Rico was notably lower than on the U.S. mainland. In the fourth quarter of 2006, the average weekly wage in Puerto Rico was 43 percent less than the average in the United States, and it was 20 percent less than the lowest-ranked State. Although labor costs tend to be lower in the Caribbean, the size of the disparity in average wages was partly due to the industry and occupation mix of the area. That mix also helps explain the nature and frequency of job accidents and work illnesses.

In Puerto Rico, during the years 1993 through 2006,<sup>4</sup> more than 700 workers, or an average of about 50 each year, died from work-related injuries. During most of those years, private sector employers also reported between 23,000 and 26,000 incidents of nonfatal injury and illness related to work. The corresponding incidence rate for total recordable cases tended to be less than that of the United States. The gap in nonfatal incidence rates, however, has diminished over time, as the rate in the United States has declined steadily. (See chart 1a and chart 1b.)

**Job fatalities.** Since the inception of the [Census of Fatal Occupational Injuries](#) in Puerto Rico,<sup>5</sup> workplace fatalities ranged from a high of 85 in 1995 to a low of 29 in 2003. Prior to 1998, Puerto Rico averaged 63 work deaths per year. From 2003 to 2006, Puerto Rico averaged 49 on-the-job fatalities per year, 23.5 percent fewer than the previous time span. In the United States, the average number of fatalities declined by 9.3 percent between the same two periods.

Of the 194 fatal work injuries that occurred during the 2003-06 period, about 65 percent of the fatalities occurred to employees in the prime working ages 25 to 54, which is a similar proportion to that in the United States. However, less similarity existed among the oldest and youngest age groups--15 percent of all work-related fatalities involved workers aged 24 years or younger in Puerto Rico, compared with 10 percent in the United States, and 4 percent of the job deaths claimed lives of workers aged 65 years and older, compared with 10 percent in the United States. This difference, however, may be partly attributable to the generally younger population in Puerto Rico.<sup>6</sup>

**Fatal events.** The most frequent fatal injury event from 2003 to 2006 was assaults and violent acts, with 71 fatalities (37 percent of the total). Homicides, accounting for most of the fatal assaults, were often gun-related--62 workers died during the 2003-06 period from bullet wounds, including 24 who were shot during robberies.

The second most frequent category of events was transportation incidents, with 51 fatalities (26 percent of the 4-year total). These included 27 fatal highway incidents and 13 workers who were fatally struck by vehicles. After transportation incidents, falls were the third most prevalent event, accounting for 36 worker fatalities (19 percent). By comparison, in the United States during the same 4-year period, transportation incidents accounted for 43 percent of all work fatalities, followed by contact with objects and equipment (17 percent). The two categories, falls and assaults and violent acts, each accounted for an additional 14 percent of job deaths in the United States. (See chart 2a and chart 2b.)

The occupational group with the greatest number (46) of on-the-job fatalities from 2003 to 2006 was construction and extraction. Protective service occupations, primarily police and security guards, had the second highest number (38) of workplace fatalities. Transportation and material moving occupations followed, with 31 fatalities. These three occupational groups accounted for 59 percent of all workplace fatalities in Puerto Rico. In the United States, the same three groups accounted for 51 percent of the Nations fatal workplace injuries during the 4-year period.

**Nonfatal incidents, 2003-06.** From 2003 to 2006, about one-third of all nonfatal occupational injury and illness cases in Puerto Rico occurred in State and local government, a greater proportion than State and local governments share of total employment (about 28 percent). Five industry sectors accounted for at least 70 percent of all private-industry work-related injuries and illnesses during the 2003-06 period: construction, manufacturing, retail trade, health care and social assistance, and accommodation and food services. These sectors accounted for about 63 percent of private-industry employment in Puerto Rico.

In 2006, among large private industry sectors employing at least 50,000 workers, the rate of total cases reported per 200,000 hours worked (the equivalent of 100 full-time workers) ranged from 3.4 in administrative and waste services to 6.2 in health care and social assistance. Since 2003, health care and social services have consistently ranked above goods-producing industries in case rates. (See chart 3.) For more severe cases, those involving days away from work, the injury and illness rate ranged from 2.6 in administrative and waste services to 4.1 in accommodation and food services in 2006.

**Cases with days away from work.** Notably, injuries and illnesses in Puerto Rico tended to be more severe than in the 50 States. About 73 percent of all private-sector incidents occurring in 2006 resulted in at least a 1-day absence beyond the day of injury. The same year, in the United States, these "cases with days away from work" accounted for 29 percent of the total. Several industry sectors, including construction, manufacturing, and retail trade, had lower rates of *total recordable* cases in Puerto Rico, compared with the United States; but the incidence of cases that involved *days away from work* was higher in Puerto Rico.

Cases that involved days away from work tended to be not only more frequent, but lengthier as well. In 2006, the median absence duration was 21 days in private industry in Puerto Rico, which is 3 times the length of such cases in the United States.<sup>7</sup> Median days lost for State and local government workers in Puerto Rico also was high, at 26 days. While the length of private sector days-away-from-work cases in the United States declined by 1 day between 2003 and 2006, in Puerto Rico, the median duration rose by 2 days. Although further research is necessary to fully explore these phenomena, a closer look at the characteristics of days-away-from-work cases may provide some explanation.

As in the United States, the nature or condition most often associated with absences from work in Puerto Rico was sprains. Contact with objects, as well as overexertion (lifting, pulling, pushing, etc.) and repetitive motion, were the most frequent events that led to days-away-from-work cases, depending on the industry sector. In 2006, contact with objects occurred more often than other disabling events in goods-producing industries, as well as in retail trade and accommodation and food services. In health care and social assistance, overexertion was the most frequent disabling event in health care and social assistance.

Repetitive motion factored into more than 15 percent of these days-away-from-work cases, compared with 3 percent in the United States. (See table 1.) In 2006, repetitive motion cases in Puerto Rico occurred at a rate of 51.6 incidents per 10,000 full-time equivalent workers in the private sector, compared with a rate of 4.1 in the United States. Repetitive motion was even more frequent in Puerto Rico's public sector--the State and local government rate was 96.1. Accompanying the high incidence rates were prolonged absences from work. The median number of days lost resulting from repetitive motion in Puerto Rico was 35; in the United States, these cases resulted in a median loss of 19 days.

**Illnesses.** During the 4-year period from 2003 to 2006, between 3,200 and 3,700 work-related illnesses were reported each year in private industry in Puerto Rico. The high incidence rate of repetitive motion contributed to an elevated illness rate--between 2003 and 2006, work-related illnesses occurred at a rate of 54.0 to 61.1 cases per 10,000 full-time equivalent workers. Among goods-producing industries, the rate ranged from 57.4 to 74.1, relatively close to the range of illness rates for service providers, 49.9 to 61.8. During the same period, the illness rate among service providers in the United States ranged from 18.8 to 21.6.

Puerto Rico's public sector reported a disproportionate two-thirds as many illnesses as the private sector during 2003 through 2006. The occupational illness rate in State and local government operations ranged from 142.6 to 162.7. (See chart 4.)

### **Occupational Safety And Health In The U.S. Virgin Islands**

Acquired by the United States in 1917, the territory is less than half the area of New York City. The U.S. Virgin Islands had formerly been a Danish colony, Danish West Indies. The area consists of the islands of St. Thomas, St. Croix, and St. John, with about 50 islets. As in Puerto Rico, government enterprise accounted for a large proportion of total employment in 2006. In the U.S. Virgin Islands, State and local government constituted slightly more than 1 in 4 jobs.

The U.S. Virgin Islands has had a relatively low number of work-related injuries and illnesses, compared with the United States and Puerto Rico. Over the 1992-2006 period, 25 deaths--an average of less than 2 each year--occurred between 1992 and 2006. Between 800 and 1,000 nonfatal injuries and illnesses occurred in most years. The incidence rate for total nonfatal occupational injuries and illnesses occurring in private industry tended to be lower than that of the United States.

**Workplace fatalities.** During the 11-year period from 1992 to 2002, there were 20 employees killed while on the job. More than two-thirds (14) of those fatally injured were employed in nonmanufacturing industries in the private sector. Between 2003 and 2006, 5 workers died on the job, 3 of whom worked in the private service-providing sector. During both time periods, the nature of injury that was cited most frequently as contributing to death was open wounds, the category that includes gunshot wounds. Open wounds factored into 9 of the occupational fatalities prior to 2002 and 3 of those reported after 2002, or 48 percent of all workplace fatalities between 1992 and 2006. In contrast, open wounds factored into less than 15 percent of the United States 15-year total. (In Puerto Rico, gunshot wounds accounted for about 1 in 3 occupational deaths; open wounds accounted for 35 percent.)

**Nonfatal incidents, 2003-06.** In 2006, nearly a third of the injuries and illnesses in the U.S. Virgin Islands occurred in the public sector. About 22 percent (200 cases) of all recordable nonfatal job injuries and illnesses occurred in private sector leisure and hospitality industries. Construction and retail trade both had about 100 cases each.

Similar to the downward trend in the United States, the incidence rate of all private sector cases in the U.S. Virgin Islands declined steadily, from 2.8 cases per 100 full-time workers in 2003 to 2.1 in 2006, the latter is about half the level

experienced on the mainland. During this period, incidents occurred in the public sector of the U.S. Virgin Islands at a rate that hovered between 2.8 and 2.9 cases per 100 full-time workers. (See chart 1a and chart 1b.)

Between 2003 and 2006, the leisure and hospitality supersector had a relatively high rate of total injuries and illnesses. (See chart 5.) Within leisure and hospitality, incidents occurred in arts, entertainment, and recreation at a rate of 7.2 cases per 100 full-time equivalent workers and in accommodation at a rate of 5.9. In 2006, rates of at least 5 were also recorded in utilities (5.4); construction of buildings (5.2); and health care and social assistance (5.2).

For all industries, cases serious enough to require days away from work accounted for half of all cases, with an incidence rate of 1.2 in 2006. The median absence duration was 6 days. Industries with higher days away from work case rates in 2006 included utilities (3.5); accommodation (2.6); and construction of buildings (2.2). In the public sector, days-away-from-work cases occurred at a rate 1.4 per 100 full-time workers, with a median duration of 7 days.

As with occupational injuries, work-related illnesses in the U.S. Virgin Islands occurred relatively less frequently than in the United States. The rate of such workplace illnesses dropped to 7.6 cases per 10,000 full-time equivalent workers in 2006; the rate had been 15.9 in 2004 and 15.5 in 2005.

### **Puerto Rico And The U.S. Virgin Islands: The Occupational Health Picture**

Data from the Bureau of Labor Statistics shed light on what distinguishes the economies of the Caribbean territories and on what differentiates their safety and health experiences. Looking at the overall injury and illness picture, rates have not declined as quickly as they have in the United States. This might be partly explained by the relatively low rates of total recordable injuries in the region; enforcement and special emphasis efforts have traditionally been targeted to industries and areas with high rates.

Despite having relatively low rates and an excellent safety record overall, the two territories do have a number of safety and health concerns. The severity of cases in Puerto Rico--as well as the frequency of repetitive motion incidents and the disparity between the private and public sectors--may prompt additional research into the nature of absences and their causes.

In Puerto Rico and the U.S. Virgin Islands, the service-providing sector continues to be plagued with on-the-job violence. Unlike in the United States, where work-related homicides decreased dramatically during the 1990s, workplace assaults continue to be relatively frequent in the two territories.

Bruce J. Bergman

Economist, Economic Analysis and Information, New York Region, Bureau of Labor Statistics.

Telephone: (646) 264-3623; E-mail: [Bergman.Bruce@bls.gov](mailto:Bergman.Bruce@bls.gov).

James J. Hart

Supervisory Economist, Occupational Safety and Health Statistics, Boston/New York Region, Bureau of Labor Statistics.

Telephone: (617) 565-2300; E-mail: [Hart.James@bls.gov](mailto:Hart.James@bls.gov).

### **Notes**

**1** Data from injury and illness logs from a sample of employers are used in the BLS [Survey of Occupational Injuries and Illnesses](#) to estimate the frequency of incidents at the national, State, and territory level. The BLS Federal-State Cooperative Program also produces the annual [Census of Fatal Occupational Injuries](#), which provides national, State, and selected metropolitan area fatality counts by characteristic.

**2** The State and local government category includes all public sector organizations, without regard to economic activity. In addition to public administration, government employment in both Puerto Rico and the U.S. Virgin Islands included utilities and educational and health services, among other industries. Public sector employees who are not Federal government workers are classified in "State and local government."

**3** Industry concentration was evaluated using location quotient data based on 2006 annual averages from the BLS [Quarterly Census of Employment and Wages](#). The location quotient is the ratio of analysis-industry employment in the analysis area to base-industry employment in the analysis area divided by the ratio of analysis-industry employment in the base area to base-industry employment in the base area.

4 Effective January 1, 2002, the Occupational Safety and Health Administration (OSHA) revised its requirements for recording occupational injuries and illnesses. Due to the revised recordkeeping rule, the estimates from the 2002 survey are not comparable with those from previous years.

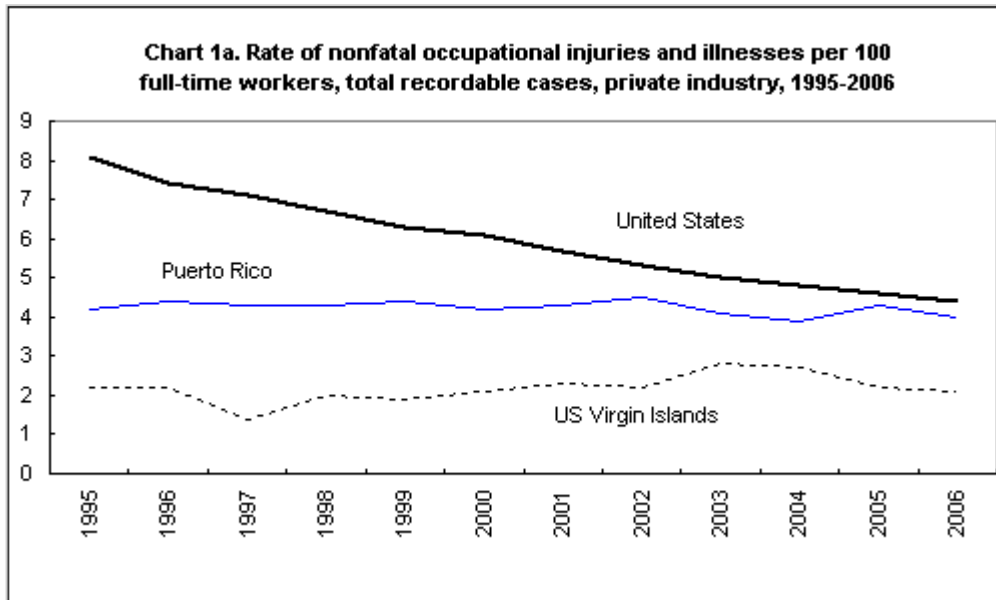
5 Although the first year of the BLS [Census of Fatal Occupational Injuries](#) was 1992, Puerto Rico did not participate in the Census until 1993.

6 According to the United States Census Bureau, only eight States had a lower median age than that of Puerto Rico.

7 Absence duration does not include the day of injury.

**Table 1. Injuries and illnesses in Puerto Rico and the United States, 2006**

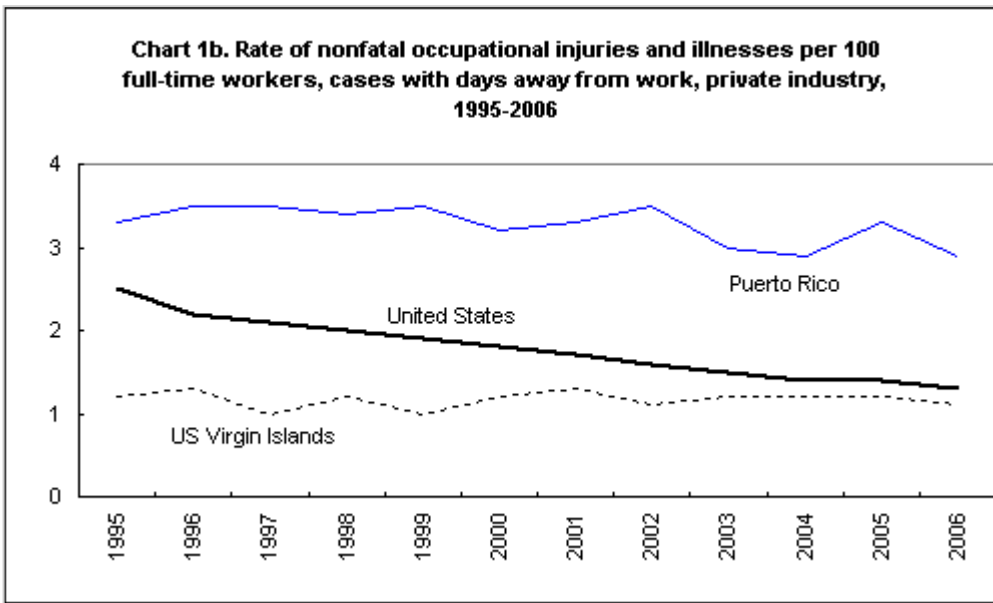
Measure	Puerto Rico			United States
	All industries	Private industry	State and local government	Private industry
<b>Total Recordable Cases (TRC)</b>	37,000	24,400	12,600	4,085,400
<b>Cases with days away from work (CDAFW)</b>	27,400	17,800	9,600	1,183,500
<b>CDAFW as percent of TRC</b>	74.1	73.0	76.2	29.0
<b>Cases involving repetitive motion</b>	4,680	3,160	1,520	38,310
<b>Repetitive motion as a percent of CDAFW</b>	17.1	17.8	15.8	3.2
<b>Rate of repetitive motion incidents per 10,000 full-time workers</b>	60.7	51.6	96.1	4.1
<b>Median absence duration related to repetitive motion</b>	35	35	36	19



**Data for Chart 1a. Rate of nonfatal occupational injuries and illnesses per 100 full-time workers, total recordable cases, private industry, 1995-2006**

	United States	Puerto Rico	US Virgin Islands
<b>1995</b>	8.1	4.2	2.2
<b>1996</b>	7.4	4.4	2.2
<b>1997</b>	7.1	4.3	1.4
<b>1998</b>	6.7	4.3	2.0

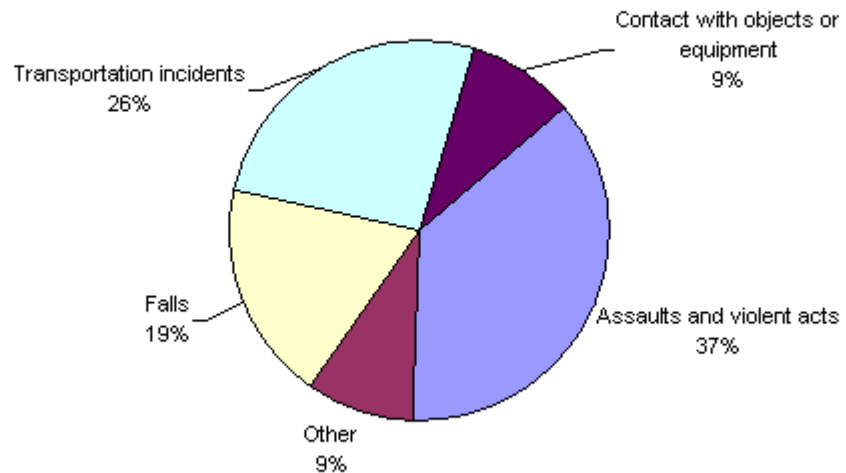
	United States	Puerto Rico	US Virgin Islands
1999	6.3	4.4	1.9
2000	6.1	4.2	2.1
2001	5.7	4.3	2.3
2002	5.3	4.5	2.2
2003	5.0	4.1	2.8
2004	4.8	3.9	2.7
2005	4.6	4.3	2.2
2006	4.4	4.0	2.1



Data for Chart 1b. Rate of nonfatal occupational injuries and illnesses per 100 full-time workers, cases with days away from work, private industry, 1995-2006

	United States	Puerto Rico	US Virgin Islands
1995	2.5	3.3	1.2
1996	2.2	3.5	1.3
1997	2.1	3.5	1.0
1998	2.0	3.4	1.2
1999	1.9	3.5	1.0
2000	1.8	3.2	1.2
2001	1.7	3.3	1.3
2002	1.6	3.5	1.1
2003	1.5	3.0	1.2
2004	1.4	2.9	1.2
2005	1.4	3.3	1.2
2006	1.3	2.9	1.1

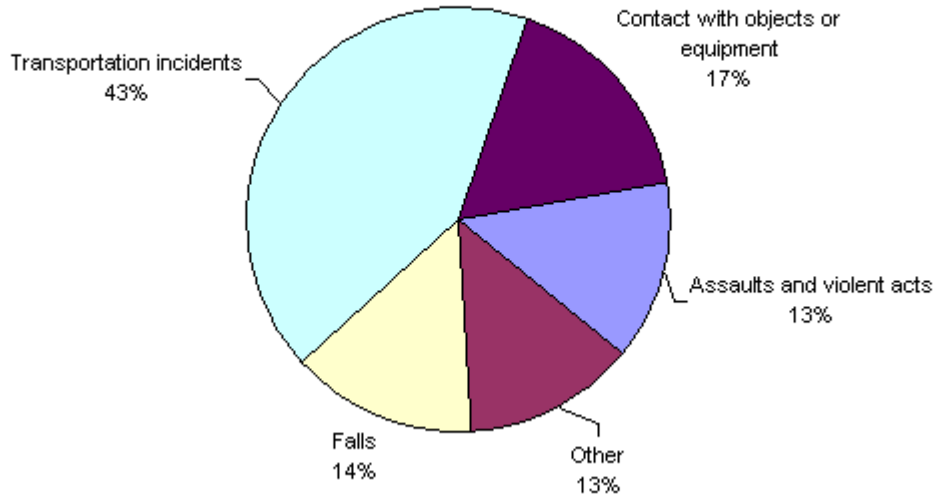
**Chart 2a. Distribution of fatal occupational injuries by event, Puerto Rico, 2003-06**



**Data for Chart 2a. Distribution of Fatal Occupational Injuries by Event, Puerto Rico, 2003-06**

Event	Percent of fatal injuries attributed to event
Assaults and violent acts	37
Falls	19
Transportation incidents	26
Contact with objects or equipment	9
Other	9

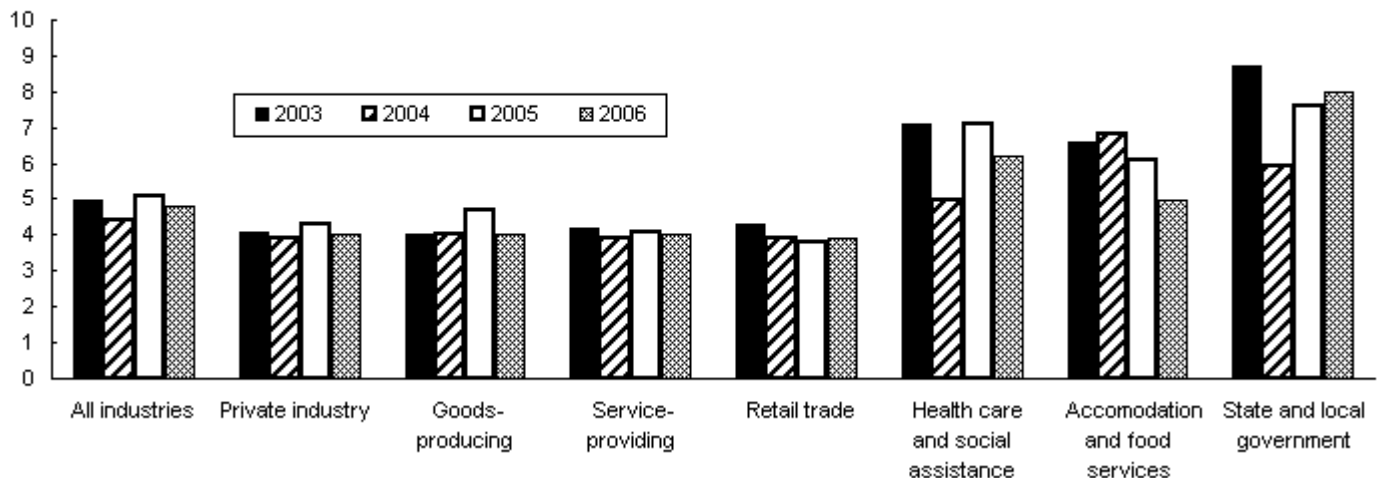
**Chart 2b. Distribution of fatal occupational injuries by event, United States, 2003-06**



**Data for Chart 2b. Distribution of Fatal Occupational Injuries by Event, United States, 2003-06**

Event	Percent of fatal injuries attributed to event
Assaults and violent acts	13
Falls	14
Transportation incidents	43
Contact with objects or equipment	17
Other	13

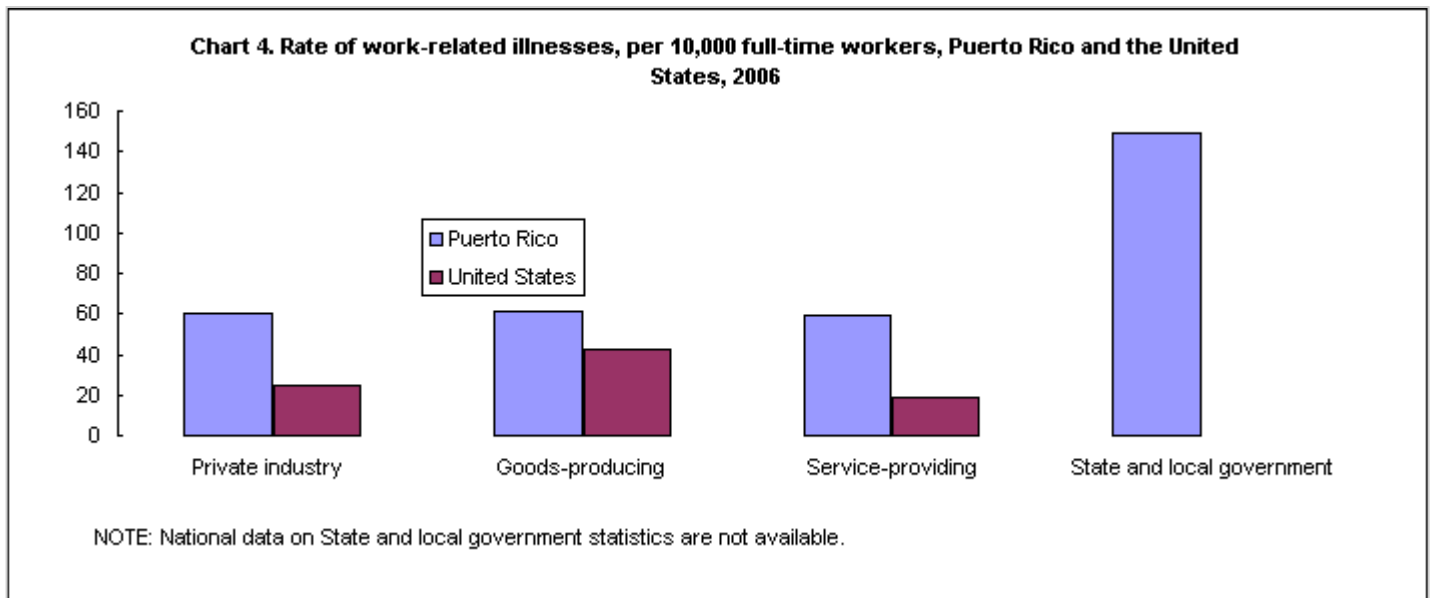
**Chart 3. Rate of total recordable injuries and illnesses per 100 full-time workers, Puerto Rico, 2003-06**





**Data for Chart 3. Rate of total recordable injuries and illnesses, per 100 full-time workers, Puerto Rico, 2003-06**

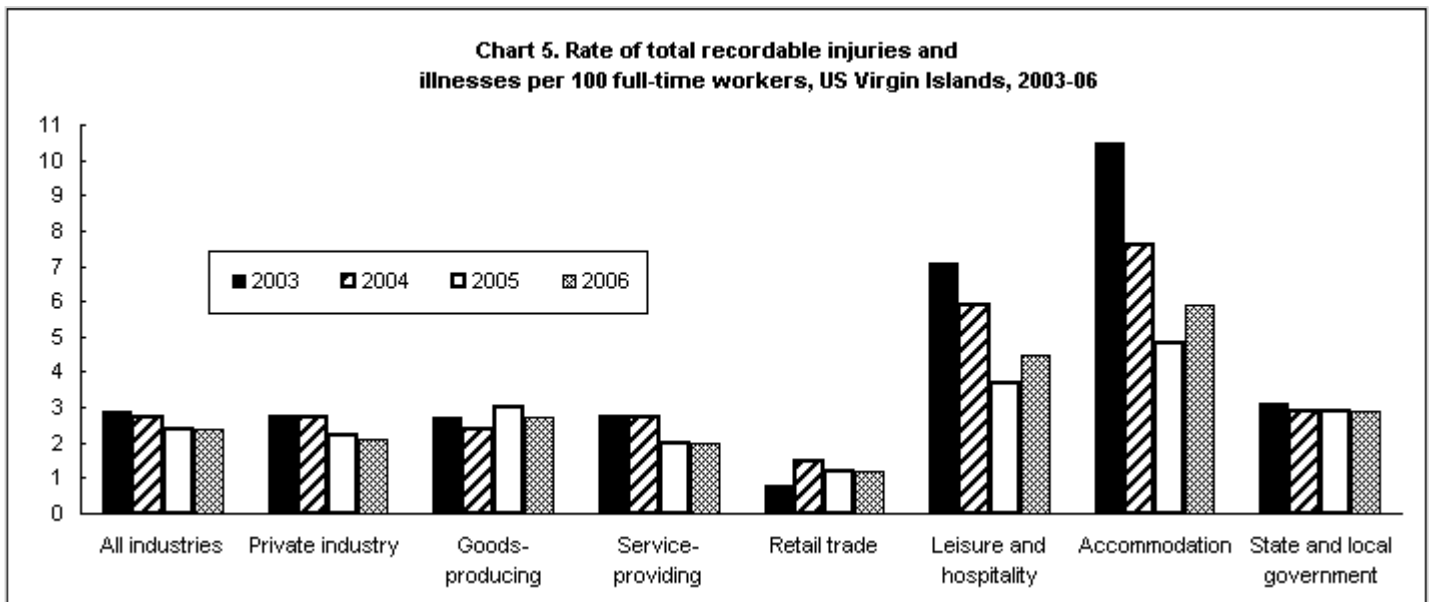
	2003	2004	2005	2006
<b>All industries</b>	5.0	4.4	5.1	4.8
<b>Private industry</b>	4.1	3.9	4.3	4.0
<b>Goods-producing</b>	4.0	4.0	4.7	4.0
<b>Service-providing</b>	4.2	3.9	4.1	4.0
<b>Retail trade</b>	4.3	3.9	3.8	3.9
<b>Health care and social assistance</b>	7.1	5.0	7.1	6.2
<b>Accommodation and food services</b>	6.6	6.8	6.1	5.0
<b>State and local government</b>	8.7	5.9	7.6	8.0



**Data for Chart 4. Rate of work-related illnesses, per 10,000 full-time workers, Puerto Rico and the United States, 2006**

	Puerto Rico	United States
<b>Private industry</b>	59.9	24.6
<b>Goods-producing</b>	61.4	42.6
<b>Service-providing</b>	59.3	18.8
<b>State and local government</b>	148.8	

NOTE: National data for State and local government unavailable.



**Data for Chart 5. Rate of total recordable injuries and illnesses, Virgin Islands, 2003-06**

	2003	2004	2005	2006
<b>All industries</b>	2.9	2.7	2.4	2.4
<b>Private industry</b>	2.8	2.7	2.2	2.1
<b>Goods-producing</b>	2.7	2.4	3.0	2.7
<b>Service-providing</b>	2.8	2.7	2.0	2.0
<b>Retail trade</b>	0.8	1.5	1.2	1.2
<b>Leisure and hospitality</b>	7.1	5.9	3.7	4.5
<b>Accommodation</b>	10.5	7.6	4.8	5.9
<b>State and local government</b>	3.1	2.9	2.9	2.9