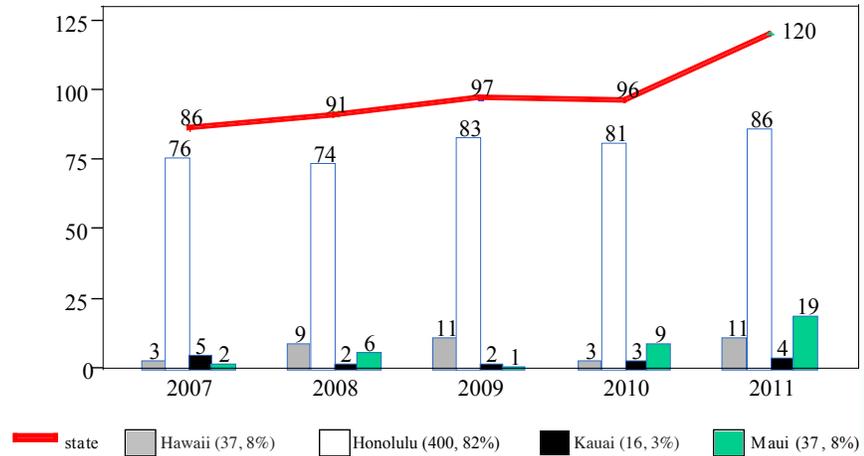


# Poisonings

## Fatal injuries

Poisonings were the 2nd leading causes of unintentional injury fatalities in the state, with 490 over the 5-year period, or an average of 98 deaths each year (Figure 133). There was a generally increasing trend in the annual number of poisonings, with a particularly large increase in 2011. However, trends are difficult to examine because poisonings make up a large proportion of injury deaths where the intent could not be established (see Figure 170), or they can also be classified as suicides. There was no consistent trend in the annual number of poisonings of undetermined intent over this period, so the observed trend in unintentional poisonings was probably not due to disparities in coding. It is also difficult to know the accuracy with which the intent was determined over the years and across the 4 different counties. Most (82%) of the poisonings that were coded as unintentional occurred on Oahu. However, if poisonings of undetermined intent are also included, that proportion drops to 63% because proportionally more of the poisonings on Neighbor Islands were coded as undetermined intent. Most of the poisonings on Hawaii (67%, or 75 of 112) and Maui counties (69%, or 83 of 120) were coded as undetermined intent, compared to only 12% (53 of 453) of those on Oahu.

**Figure 133. Annual number of fatal poisonings among Hawaii residents, by county, 2007-2011.**



Compared to most injury categories, the age distribution of poisoning victim was narrowly distributed, with a peak among 35 to 64 year-old victims (Figure 134). Most (81%, or 396) of the victims were in this 30-year age group, including 39% (193) who were 45 to 54 years of age. Only 4 of the victims were under 18 years of age. Figure 102 also shows that most (78%, or 381) of the poisoning victims were male.

**Figure 134. Age and gender distribution of poisoning victims in Hawaii, 2007-2011.**

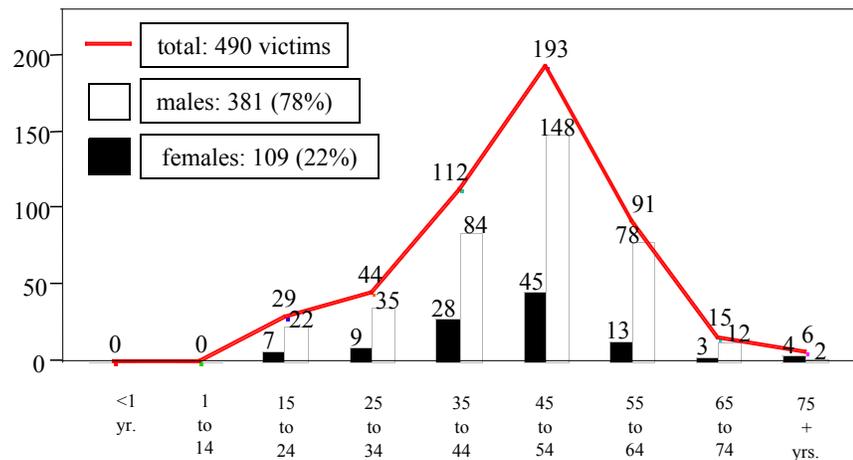
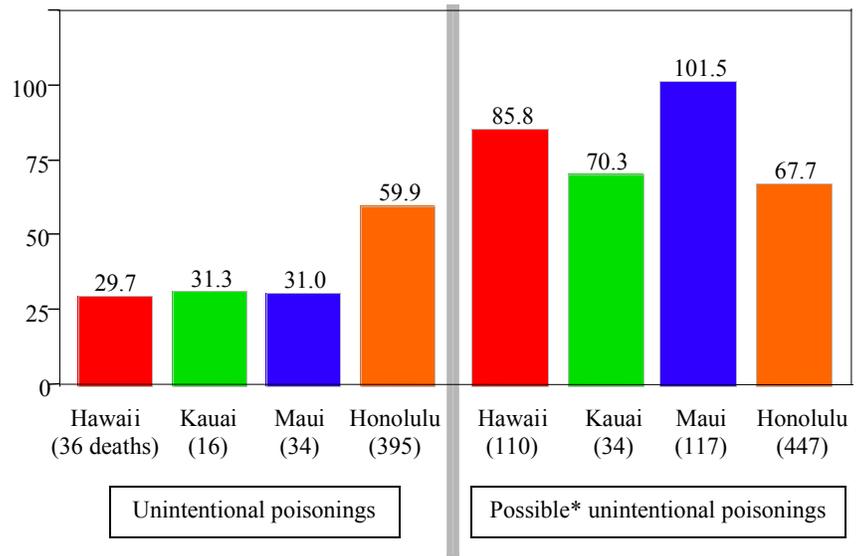


Figure 135 shows the uncertainty of comparing poison fatality rates across the counties of Hawaii, given the differences in the coding of intent. If only those poisonings that were coded as unintentional are considered, the rate was significantly higher among residents of Honolulu County compared to any other county, while the rates across Neighbor Islands were all statistically comparable. However, if poisonings of undetermined intent are also included (right side of Figure 135), the rate for Honolulu County residents was significantly lower than the rates for residents of Hawaii or Maui counties.

**Figure 135. Five-year rates (/100,000) of unintentional poisonings and possible\* unintentional poisonings, by county, 2007-2011.**

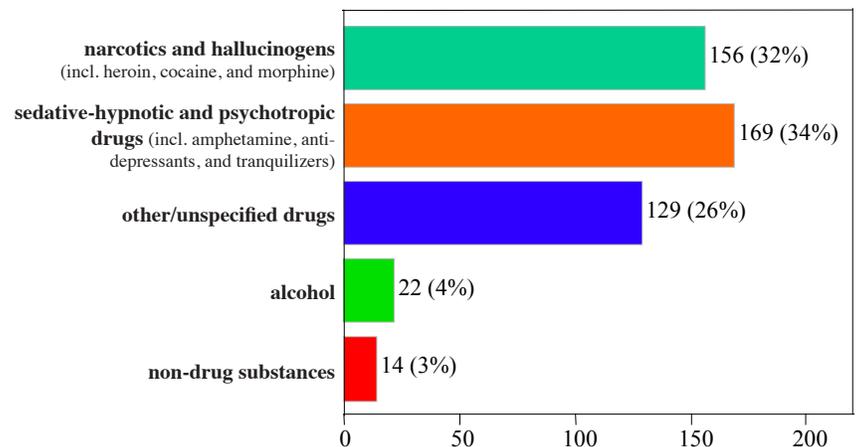
(Includes residents aged 20 years and older. Rates are age-standardized to the 2000 U.S. population distribution)



\*Sum of poisonings of unintentional and undetermined intent.

Almost all (93%, or 454) of the 490 unintentional poisonings were drug-related (Figure 136). One-fourth (129 deaths) were classified as “other” or “unspecified” drugs, but there were two other major categories: 1) narcotics, and 2) sedative-hypnotic and psychotropic drugs. The former category includes most of the illicit substances, like heroin, cocaine, and morphine. The latter category includes amphetamine, antidepressants, barbiturates, and tranquilizers. Deaths among residents of Neighbor Islands were much more likely to be coded as due to “other” or “unspecified” drugs, compared to deaths among residents of Honolulu County (53% vs. 20%). The increasing trends shown in Figure 101 were apparent for all 3 categories of drugs. The 22 alcohol poisonings were approximately double 12 resident fatalities recorded over the preceding 16-year period from 1991 to 2006. Most of these victims (59%, or 13) were males in the 45 to 64 years age range; only 1 of the 22 victims was under 21 years of age.

**Figure 136. Fatal poisonings among Hawaii residents, by type, 2007-2011.**



## Nonfatal injuries

There was an increasing trend in the annual number of nonfatal poisonings treated in EDs, but no trend for those requiring hospitalization (Table 30). The increasing trend in ED visits was apparent for residents of all counties except Kauai. Gender was nearly equally distributed for both settings, with males in a slight majority (52% overall). Patients who were hospitalized were significantly older than those who were treated in EDs (mean age: 47 vs. 30 years, respectively). More than one-quarter (28%) of those who were treated in EDs were under 5 years of age (compared to 9% of hospitalized patients), and only 9% were in the senior age range. Age was more broadly distributed among hospitalized patients, although there was also a peak in the toddler age range; 8% were 1 to 3 years of age. Honolulu County residents comprised more than two-thirds (68%) of the hospitalized patients.

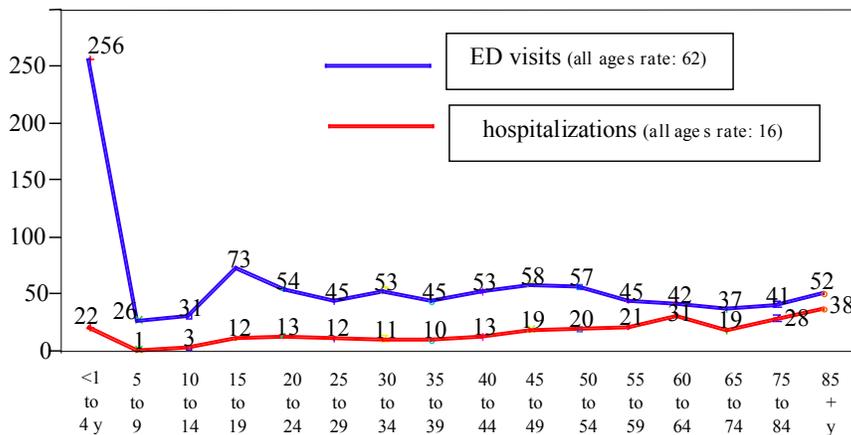
**Table 30. Demographic characteristics\* of Hawaii residents with nonfatal poisonings.**

|                                       | ED visits | hospitalizations | total     |
|---------------------------------------|-----------|------------------|-----------|
| <b>Year of admission</b>              |           |                  |           |
| <b>2007</b>                           | 780       | 198              | 978       |
| <b>2008</b>                           | 753       | 197              | 950       |
| <b>2009</b>                           | 797       | 231              | 1028      |
| <b>2010</b>                           | 833       | 204              | 1037      |
| <b>2011</b>                           | 860       | 204              | 1064      |
| <b>average annual total</b>           | 805       | 207              | 1011      |
| <b>Patient gender</b>                 |           |                  |           |
| <b>Female</b>                         | 384 (48%) | 97 (47%)         | 481 (48%) |
| <b>Male</b>                           | 421 (52%) | 110 (53%)        | 530 (52%) |
| <b>Patient age</b>                    |           |                  |           |
| <b>infants</b>                        | 26 (3%)   | 2 (1%)           | 28 (3%)   |
| <b>1-4 y</b>                          | 199 (25%) | 17 (8%)          | 217 (21%) |
| <b>5-14 y</b>                         | 45 (6%)   | 3 (1%)           | 47 (5%)   |
| <b>15-24 y</b>                        | 110 (14%) | 22 (11%)         | 132 (13%) |
| <b>25-34 y</b>                        | 90 (11%)  | 21 (10%)         | 111 (11%) |
| <b>35-44 y</b>                        | 85 (11%)  | 19 (9%)          | 104 (10%) |
| <b>45-54 y</b>                        | 105 (13%) | 35 (17%)         | 141 (14%) |
| <b>55-64 y</b>                        | 68 (9%)   | 40 (19%)         | 109 (11%) |
| <b>65-74 y</b>                        | 34 (4%)   | 17 (8%)          | 51 (5%)   |
| <b>75-84 y</b>                        | 27 (3%)   | 19 (9%)          | 46 (5%)   |
| <b>85+ y</b>                          | 15 (2%)   | 11 (5%)          | 27 (3%)   |
| <b>County of residence of patient</b> |           |                  |           |
| <b>Hawaii</b>                         | 155 (19%) | 37 (18%)         | 193 (19%) |
| <b>Honolulu</b>                       | 502 (62%) | 141 (68%)        | 643 (64%) |
| <b>Kauai</b>                          | 59 (7%)   | 13 (6%)          | 72 (7%)   |
| <b>Maui</b>                           | 88 (11%)  | 15 (7%)          | 103 (10%) |

\*Statistics are annual averages over the 2007-2011 period.

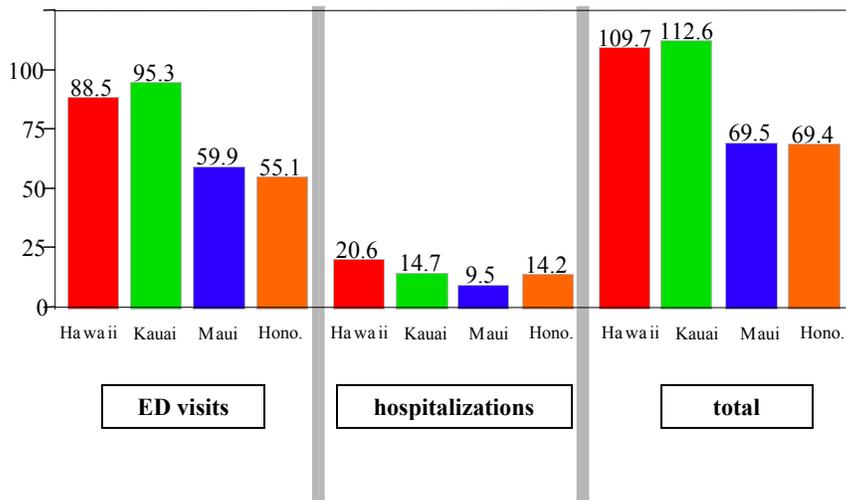
Rates of ED visits were highest by far for residents under 5 years of age, nearly 5 times higher than the rate for almost all other age groups (Figure 137). Rates were low among residents 5 to 14 years of age, were elevated across the 15 to 54 year age group, before generally decreasing across older residents. Residents aged 5 to 14 years also had the lowest rates of hospitalizations, which generally increased among succeeding age groups.

**Figure 137. Average annual rates (per 100,000 residents) of hospitalizations and ED visits for nonfatal poisonings in Hawaii, by age of patient, 2007-2011.**



Residents of Honolulu and Maui counties had comparable rates of both ED visits and total (ED visits combined with hospitalizations) nonfatal poisonings (Figure 138). These rates were significantly higher among residents of Hawaii and Kauai counties. The total rate for Oahu and Maui County residents was 37% lower than for residents of Kauai County, and 38% lower than the rate for Hawaii County residents. Maui County residents had a significantly lower rate of hospital admissions for poisonings than Hawaii County residents. Otherwise, hospitalization rates were comparable across all counties.

**Figure 138. Age adjusted annual rates (per 100,000 residents) of nonfatal poisonings, by level of care and county of residence of patient, 2007-2011.**



Patients were hospitalized for slightly over 3 days on average, and hospitalizations comprised 45% of the total number of days of care (Table 31). The average charge for a hospitalization was nearly \$18,000, however, over 11 times the average charge for an ED visit. Hospitalizations therefore comprised most (77%) of the total annual charges of \$4.8 million. Most (76%) of the poisonings were caused by drugs or medicinal substances, including 92% of those that required hospitalization. Poisonings from drugs or medicinal substances were particularly common among senior-aged patients (86%). Narcotics caused 21% of the hospitalizations, tranquilizers 13%, aromatic analgesics (which include acetaminophen, or Tylenol) 8%, and cardiovascular agents 8%. The type of drug was more widely distributed among the ED visits, although aromatic analgesics (7%), tranquilizers (7%), and narcotics (8%) were among the most commonly coded.

**Table 31. Clinical characteristics\* of Hawaii residents with nonfatal poisonings.**

|   | ED visits      | hospitalizations | total          |
|---|----------------|------------------|----------------|
| <b>Length of care and financial charges</b> |                |                  |                |
| Ave. length of stay (days)                  | 1.0            | 3.1              | 1.4            |
| Total number of days                        | 805            | 647              | 1452           |
| Average charge                              | \$1,604        | \$17,766         | \$4,715        |
| Total charges                               | \$1.29 million | \$3.67 million   | \$4.77 million |
| <b>E-code classifications</b>               |                |                  |                |
| <b>Drugs and medicinal substances</b>       |                |                  |                |
| heroin                                      | 7 (1%)         | 1 (1%)           | 8 (1%)         |
| methadone                                   | 6 (1%)         | 9 (4%)           | 15 (1%)        |
| other opiates & related narcotics           | 51 (6%)        | 34 (16%)         | 85 (8%)        |
| salicylates (incl. aspirin)                 | 8 (1%)         | 6 (3%)           | 13 (1%)        |
| aromatic analgesics (incl. acetaminophen)   | 54 (7%)        | 16 (8%)          | 69 (7%)        |
| other analgesics/antipyretics               | 34 (4%)        | 5 (2%)           | 39 (4%)        |
| sedatives and hypnotics                     | 24 (3%)        | 8 (4%)           | 31 (3%)        |
| tranquilizers                               | 54 (7%)        | 27 (13%)         | 82 (8%)        |
| other psychotropic agents                   | 49 (6%)        | 15 (7%)          | 65 (6%)        |
| anticonvulsants                             | 10 (1%)        | 10 (5%)          | 20 (2%)        |
| other depressants                           | 19 (2%)        | 5 (3%)           | 24 (2%)        |
| anaesthetics (incl. cocaine)                | 2 (0%)         | 0 (0%)           | 3 (0%)         |
| antibiotics                                 | 9 (1%)         | 0 (0%)           | 9 (1%)         |
| hormones and synthetics                     | 27 (3%)        | 13 (6%)          | 40 (4%)        |
| cardiovascular agents                       | 32 (4%)        | 16 (8%)          | 48 (5%)        |
| other drugs/medical substances              | 191 (24%)      | 25 (12%)         | 217 (21%)      |
| <b>Non-medicinal substances</b>             |                |                  |                |
| alcohol                                     | 23 (3%)        | 6 (3%)           | 29 (3%)        |
| cleaners and paints                         | 20 (3%)        | 1 (0%)           | 21 (2%)        |
| petroleum products                          | 22 (3%)        | 2 (1%)           | 24 (2%)        |
| insecticides/animal poisons                 | 19 (2%)        | 1 (0%)           | 20 (2%)        |
| other non-medicinal substances              | 64 (8%)        | 4 (2%)           | 68 (7%)        |
| toxic foods                                 | 38 (5%)        | 2 (1%)           | 40 (4%)        |
| gases and vapors                            | 41 (5%)        | 2 (1%)           | 43 (4%)        |

\*Statistics are annual averages over the 2007-2011 period.