Profile: Suicide

Hawai‘i Department of Health
Injury Prevention & Control Program

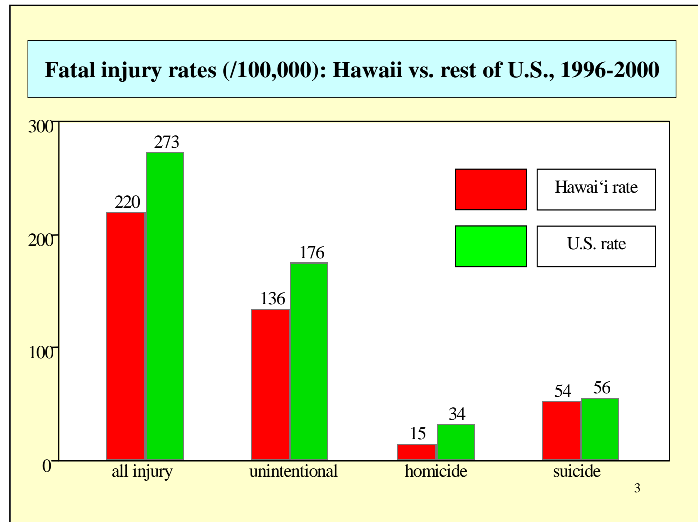
December 2004

Overview of profile

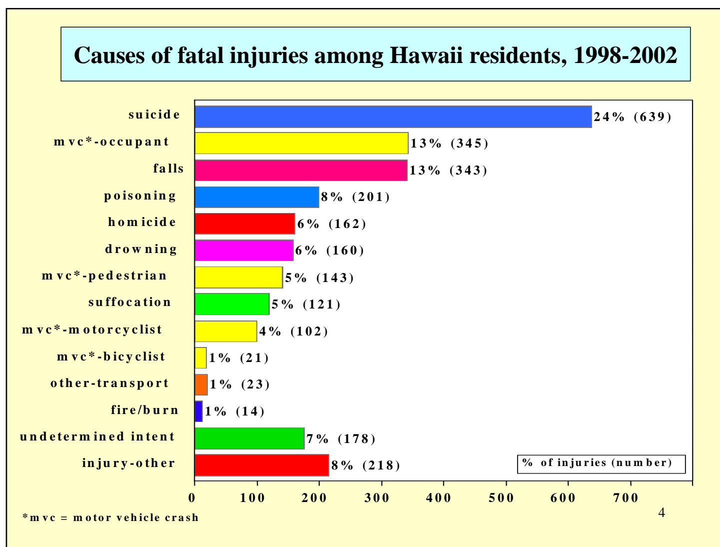
- **Suicides (fatal)**
  - *Comparisons w/ rest of U.S., other types of injuries*
  - *Local description*
    - *Age, gender, county, ethnicity*
  - *More detailed findings (Honolulu ME records)*
- **Suicide attempts (non-fatal hospitalizations)**
  - *Contrast with fatal injuries*
- **Risk factor data (YRBSS)**

This profile presents general information about completed suicides in Hawai‘i, including a comparison of Hawai‘i rates to those for the rest of the U.S. A ranking of suicide with respect to other types of fatal injuries is also provided. Characteristics of suicide (i.e., gender, age, ethnicity, and county of residence of the victim) are presented where the victims were Hawai‘i residents. In addition, detailed information collected from autopsy records on suicide victims in Honolulu County is included. Non-fatal suicide attempts are described using hospitalization data, and the main differences between the fatally injured and those who survive suicide attempts are highlighted. Self-reported risk factor data from the Youth Risk Behavior Surveillance System are included in the profile.

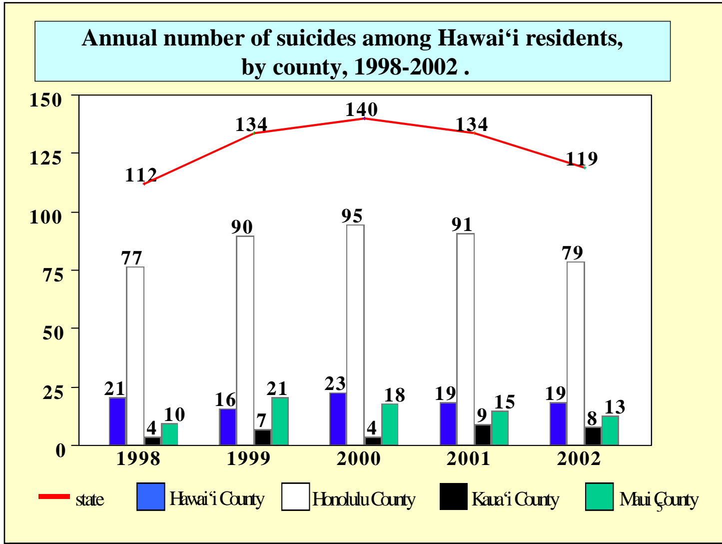
The fatal injury rate for all types of injuries in Hawai'i is significantly lower than the rate for the rest of the U.S.; 23% lower. The unintentional injury rate in Hawai'i is similarly lower, and the homicide rate is less than half the rate for the rest of the U.S. However, the suicide rate in Hawai'i is similar to the rate across the rest of the U.S.



Suicide was the leading cause of fatal injuries among Hawai'i residents from 1998-2002, accounting for almost one-quarter of all fatal injuries. Motor vehicle crashes accounted for almost as many injuries, but this is masked by the breakdown into four main subcategories of victim types: car occupants (second highest category overall), pedestrians, motorcyclists, and bicyclists.

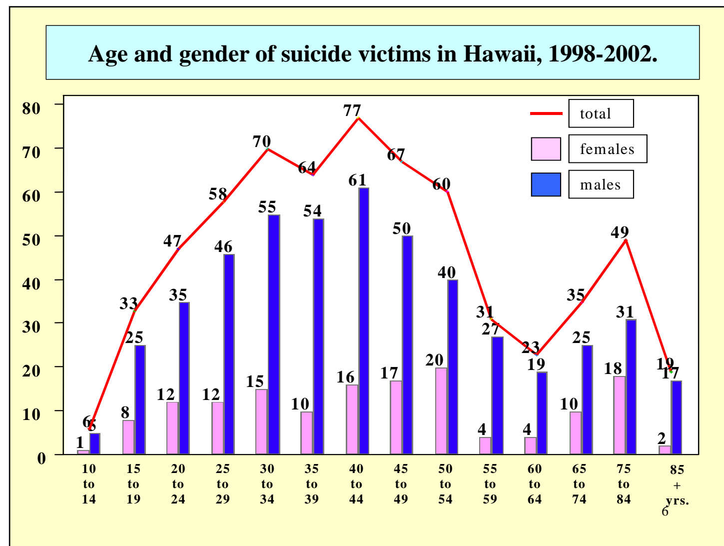


There were nearly as many deaths from falls as there were from car crashes. Poisoning was the fourth leading cause, followed by homicide and drowning.

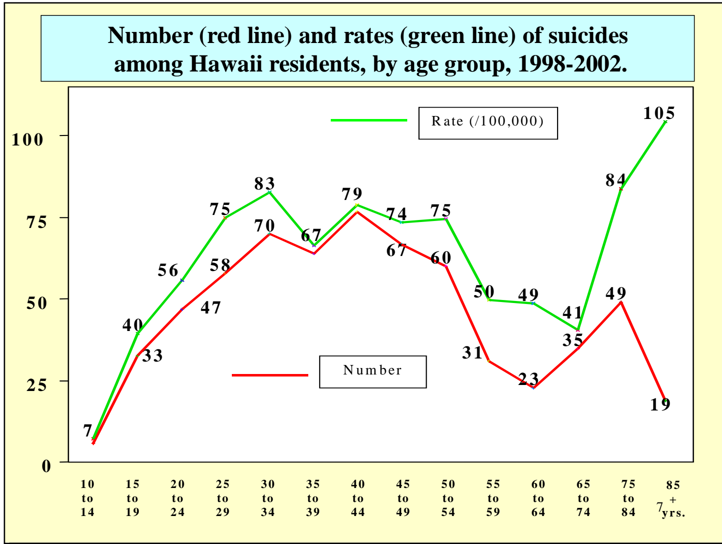


There were 639 suicides statewide from 1998 to 2002, an average of 128 per year. About two-thirds (432, or 67%) were committed by residents of O'ahu, 15% (98) by Hawai'i County residents, 12% (77) by Maui County residents, and the remaining 5% (32) by Kaua'i residents. Given that almost three-quarters of the state's population reside in Honolulu County, there was an excess number of victims on the Neighbor Islands compared to O'ahu. There was no noticeable trend in the numbers of suicides either statewide or at the county level.

The majority (77%) of victims were male, where the male-to-female ratio was about 3-to-1. The gender ratio was lower in the older age groups (i.e., 65 to 84 years).

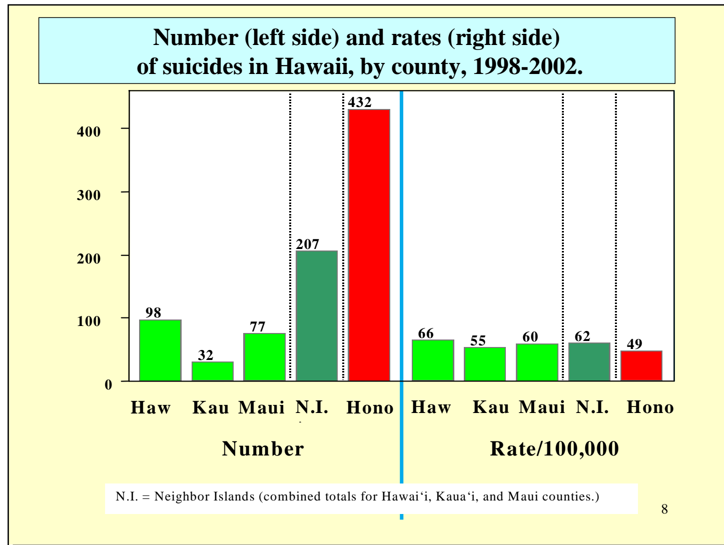


The youngest victim was 10 years of age, but almost all of the victims (94%) were 20 years of age or older. About two-thirds (396, or 62%) were 25 to 54 years of age. There were also a significant number of senior-aged victims; 16% (103) were 65 years of age or older.

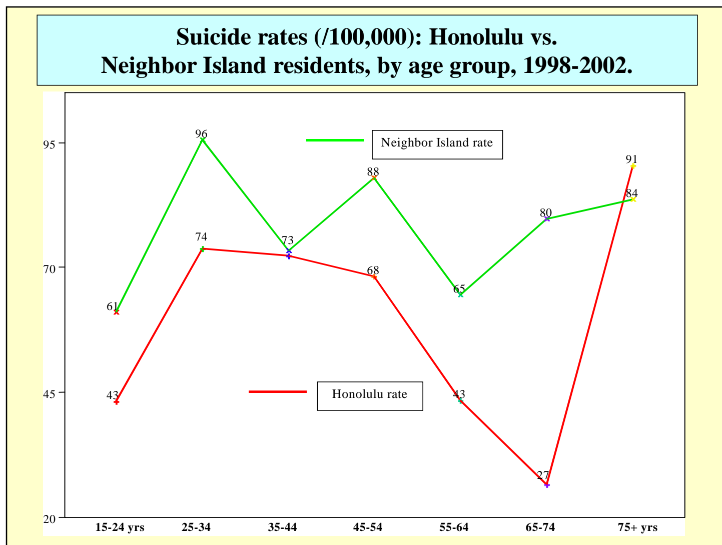


The number of suicides rises from a low in adolescence to higher levels in the 25- to 54-year age range, and then decrease at older ages. Suicide rates follow a similar pattern, except there is a sharp increase at ages 75 and older. Suicide rates were highest among residents aged 85 and older, although this is based on only 19 deaths.

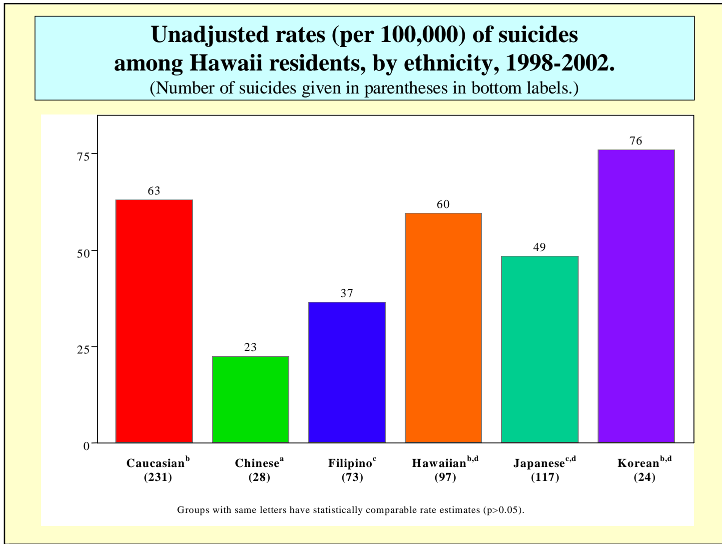
The majority of suicides (67%) occur among residents of Honolulu County. However, rates were significantly higher among Neighbor Island residents -- about 21% higher.



The highest rates were computed for Hawai'i County, but the rates for all three Neighbor Island counties were statistically comparable.

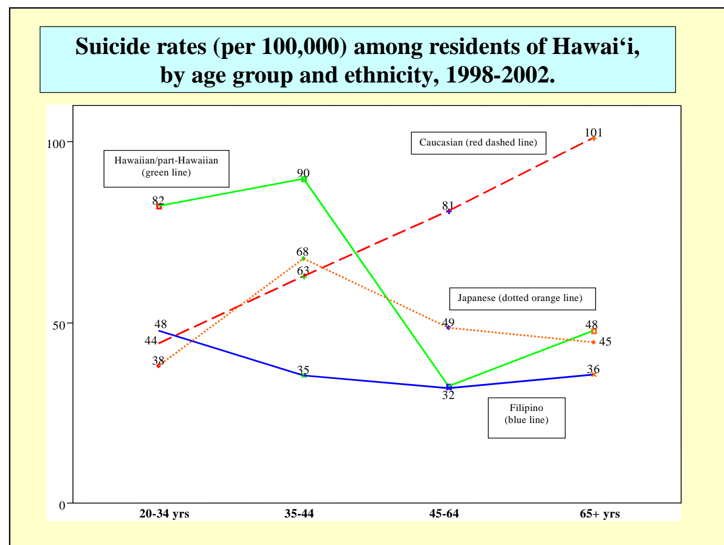


Suicide rates among Neighbor Island residents were generally higher than those for residents of O'ahu across almost all age groups, except for older residents, aged 75 years and older.



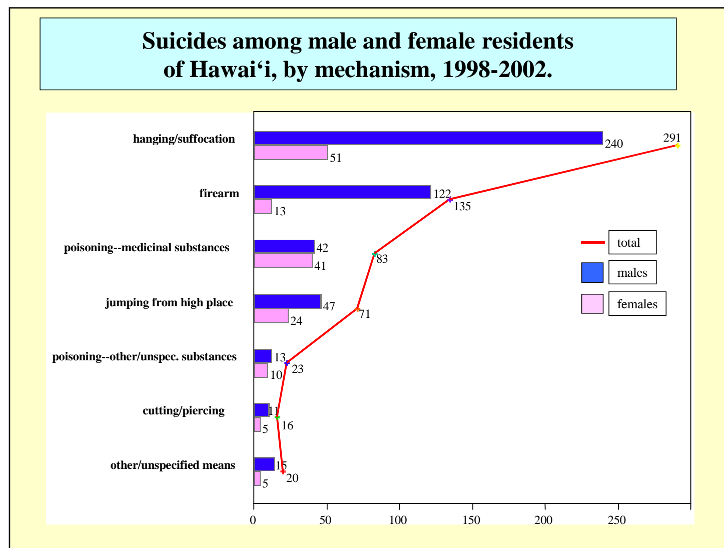
Caucasians had the highest rates of suicide among the six main ethnicities. A comparably high rate was calculated for Koreans, but this is based on a relatively low number of 22 suicides. The rate for Caucasians was significantly greater than that for all the other ethnicities except for Koreans. Rates were lowest for Chinese and Filipino residents. Intermediate rate estimates were computed for Japanese and Hawaiian/part-Hawaiian residents.

Suicide rates of Caucasians, Hawaiians/part-Hawaiians, Filipinos, and Japanese are displayed in the graph, where there were at least 60 deaths in each ethnic group over the 5-year period of 1998-2002.



Hawaiians/part-Hawaiians had significantly higher rates for 20 to 34 year-old residents than did the other three ethnicities as well as the highest rate among 35 to 44 year-olds. However, rates for Hawaiians/part-Hawaiians decreased to relatively low levels among residents aged 45 years and older. The suicide rate increased steadily across the age range for Caucasian residents, who had the highest rates in the oldest age groups. In contrast, the rates were relatively flat across the age ranges for Japanese and Filipino residents.

To summarize, Hawaiian/part-Hawaiian residents had the highest suicide rates in younger ages, while Caucasian residents had the highest rates in older ages.



This shows the mechanism of suicide, by gender, with male victims indicated by the blue bars, and females by the pink bars. The most common mechanism of suicide was by hanging or suffocation, which accounted for 45% of the deaths. Use of firearms was the second most common method (25%), although it accounted for a much higher proportion of the suicides among males (27%), than among females (7%). Firearms were a much more commonly used mechanism of suicide in other parts of the U.S., accounting for about 57% of the suicides, or twice the proportion in Hawaii.

Other major mechanisms included poisoning from medicinal substances (85 victims, or 13% of the total), and jumps from high places (63 victims, 10%). Male victims were more likely to die by firearm use (27% of male victims) and hangings/suffocations (47%), compared to female victims (7% and 37%, respectively). Females were more likely than males to use medicinal substances (28% vs. 9%) and jumping from high places (16% vs. 8%).

There were no clear differences in mechanism of suicide and age or county of residence of victim, nor were there any clear trends over the 5-year period.

Other major mechanisms included poisoning from medicinal substances (83 victims, or 13% of the total), and jumps from high places (71 victims, 11%). Male

victims were more likely to die by firearm use (25% of male victims) and hangings/suffocations (49%), compared to female victims (9% and 34%, respectively). Females were more likely than males to use medicinal substances (28% vs. 9%) and jumping from high places (16% vs. 10%). There were no clear differences in mechanism of suicide and age or county of residence of victim, nor were there any clear trends over the 5-year period.

Findings from autopsy records of suicide victims in Honolulu County, 1997-1999.

- **Negative life events—about two-thirds (64%)**
  - ***Most commonly serious illness, or loss of relationship***
- **Alcohol/drug use**
  - ***One-third had BAC >0; one-fifth had BAC >0.08%***
    - ***Drinking more common among males and younger victims***
  - ***One-fourth tested positive for illicit drugs***
    - ***Most commonly methaphetamine (14%)***
    - ***Drug use more common among younger victims***
- **History of mental illness—about two thirds (62%)**
  - ***Most commonly mood disorders (59%)***
  - ***Older victims: 40-64 year-olds: 74%; >65 years: 68%***
- **Previous attempts—22%**

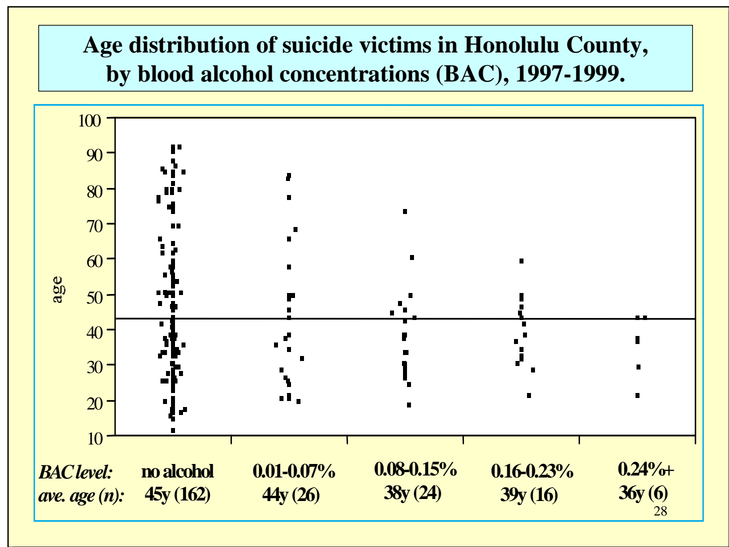
Records from the Medical Examiner (ME) of Honolulu County were linked to the suicides that occurred in the county from 1997 to 1999. ME records were located for 98% (250 of 256) of the suicides in Honolulu County over the 3-year period. This data collection was expanded to include autopsy records from all counties in the state and will be updated to the 1996-2002 period. However, those data are not yet available.

At least one negative life event was documented in the ME file of nearly two-thirds (161, or 64%) of the 250 victims. Most of the victims (114, or 71%) had experienced a single negative event, 21% had two, and 8% had three. The most common negative events were serious illness (documented in 28% of the cases), and end of relationship (27%).

Legal problems, job loss, and financial problems were documented for approximately 10% of the victims. There was no significant difference in the overall proportion of male victims with a documented negative event, compared to female victims (67% vs. 57%). Male victims, however, were more likely to have had legal

problems (12% vs. 2% for females) or the loss of a job (14% vs. 3%) as negative events, and females were more likely to have had a serious illness (34% vs. 26% for males).

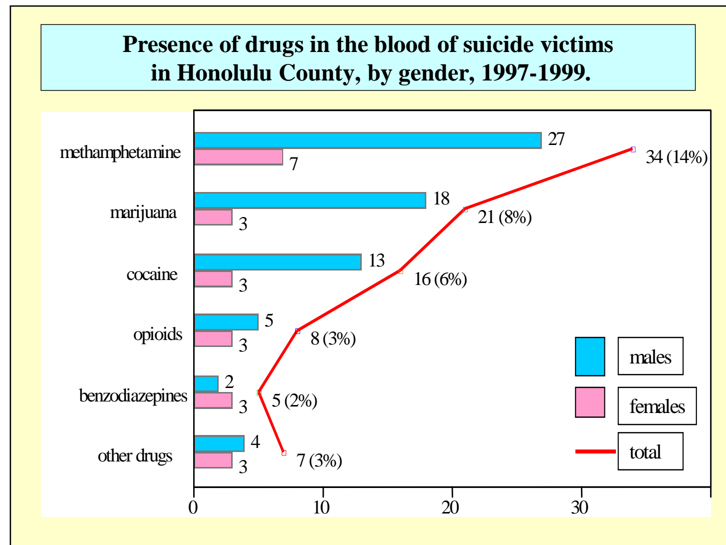
Victims with a documented negative life event were significantly older than those without (average age 46 vs. 38 years). Relatively few (40%) of the younger victims (ages 15 to 29 years) had a documented negative life event, compared to victims 30 years and older (73% with negative life events). Older victims (ages 65 or older) most commonly had serious illnesses documented (65% (24 of 37 victims), compared to 0% to 3% for the other events listed in the figure). The most common event among the youngest victims (ages 19 and younger) was an end to a relationship (19% (3 of 16 victims), compared to 0% to 6% for the other events). Job loss (21% (17 of 82 victims) and financial problems (20% (16 of 82 victims) were most common among victims aged 40-64 years.



Alcohol test results were available for 94% (234) of the 250 victims linked to ME records. About one-third of the victims (72, or 31%) had measurable levels of alcohol in their blood at the time of autopsy, and one-fifth (46, or 20%) had a BAC of 0.08% or greater, the level used to indicate inebriation among drivers in Hawai‘i. (These proportions were similar if only victims aged 21 years and older are considered: 32% and 21%, respectively.) Male victims were more likely to have had detectable levels of alcohol (33% vs. 24% for females), but not to a statistically significant degree.

About 11% (22) of the victims had BAC levels of 0.16% or greater (i.e. twice the legal limit). The average age of victims with BAC levels of 0.08% or greater was significantly younger than that of the non-drinkers (38 vs. 45 years). There were proportionally more 30 to 49-year-olds with BAC levels of at least 0.08%; there were

more senior-aged victims (i.e., ages 65 and older) among the non-drinkers. The figure above shows a progression toward younger average age among the heavier drinkers, as the average victim age decreased from 45 years among non-drinkers to 38 years for those with a BAC of 0.08 to 0.15%, to 36 years for those few victims with a BAC of 0.24% or greater.



Toxicologic exams identified illicit drugs in the blood of about one-fourth (65, or 26%) of the victims. (The term "illicit" includes drugs such as opioids and benzodiazepines, which also have medicinal uses.) The most commonly identified drug was methamphetamine, present in 14% (34) of the victims, followed by marijuana and cocaine. As per alcohol use, male victims were more likely to have had detectable levels of drugs (28% vs. 20% for females), but this was not a statistically significant difference. The average age of victims who had used drugs was significantly younger than that of those who had not (34 vs. 46 years, respectively). Most of the drug users (71%, or 46 of 65) were between the ages of 20 and 39 years.

There was a significant association between alcohol and drug use, as 38% of the victims who tested positive for alcohol also tested positive for drugs, compared to only 21% of the non-drinkers. There was also a clear progression of drug use across the categories of non-drinkers (21% positive for drug use), those with a BAC level of 0.01 to 0.08% (27%), and those with a BAC of 0.08% or greater (43%).

Almost two-thirds (154, or 62%) of the victims had a history of mental illness documented in the ME record. (Mental illness does not include substance dependence, in

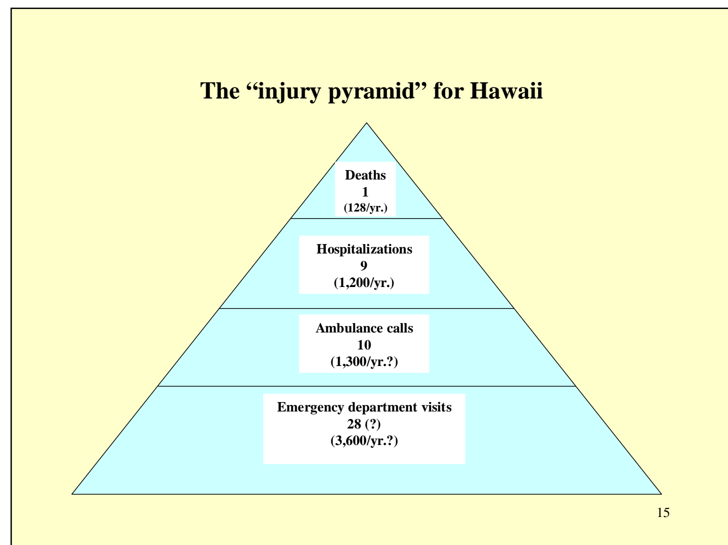
this case.) Almost all of the mentally ill victims (148, or 59%) had a diagnosis of mood disorder. Fifteen victims had psychosis, and seven others had anxiety disorder. History of mental illness was particularly common among the 40 to 64 year-olds (74%) and victims aged 65 years and older (68%).

About one-fifth (22%, or 55) of the victims had a previous suicide attempt documented in the ME record. There were no differences in the gender or age distributions of the victims who did and did not have a history of attempting suicide.

Completed suicides represent only a small proportion of all self-inflicted injuries. For every fatal suicide, there are more non-fatal attempts that require, for example, hospitalization and probably even more that require visits to hospital emergency departments, or at least medical assistance from ambulance personnel.

In Hawai‘i, for every fatal suicide, there are an estimated 12 hospitalizations for attempts and perhaps as many as 35 attempts treated in emergency departments, where about one-third are transported via ambulance.

The Injury Pyramid shows the four most common levels at which injury data are collected, but presently there is access only to data at the top two layers: on completed suicides from death certificates and on hospitalizations from the Hawai‘i Health Information Corporation.



EMS data do not currently specify self-inflicted injuries, and there is currently no access to emergency department data; however, that is expected to change as early as

May 2005. Current knowledge of suicide attempts is therefore limited to hospitalization data.

There is generally not the same level of detail in data from hospital records as there is in data from death certificates and autopsy records. If demographic information is compared, the general profile of suicide attempts is very different from the profile on completed suicides. The gender and age ranges are different, as are the mechanisms involved. (Due to county differences in E-coding, it is not possible to compute or compare county-specific rates.)

Extreme differences in demographics suggest that data from hospitalizations and data from completed suicides do not describe a continuum of self-inflicted injuries. It is more likely that suicide attempts and completions are two very different events, and separate prevention strategies may be necessary to address both.

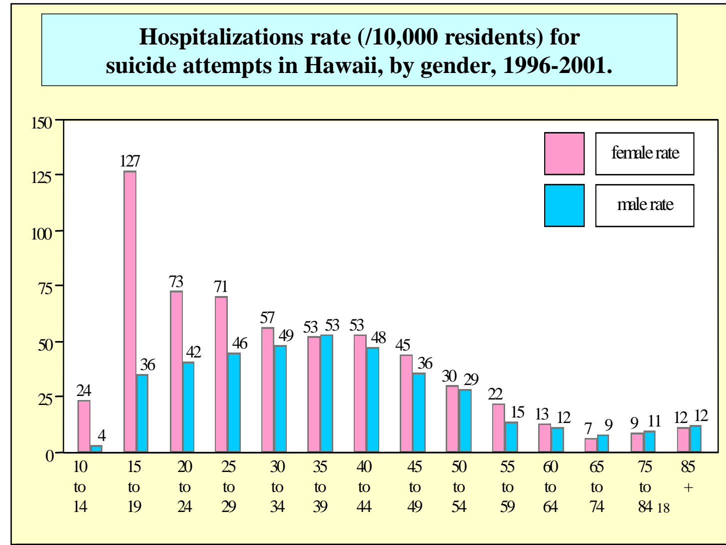
Hospitalizations for suicide attempts among Hawaii residents, 1996-2001.

- **~680 documented per year (1,200 actual?)**
- **More than half female (59%)**
  - ***Females only 23% of suicide victims***
- **Age distribution generally younger**
  - ***Half are 15 to 34 years of age; only 4% seniors***
    - ***Highest rates among 15 to 19 year-olds***
- **Most (80%) are poisonings**
  - ***Mostly (76%) drugs/medicinal substances***

There are about 680 hospitalizations coded as suicide attempts each year in the state. However, due to incomplete injury E-coding, that number is an underestimate; it is more likely that as many as 1,200 such hospitalizations occur in Hawai'i each year. There was no apparent trend in the annual number over this time period.

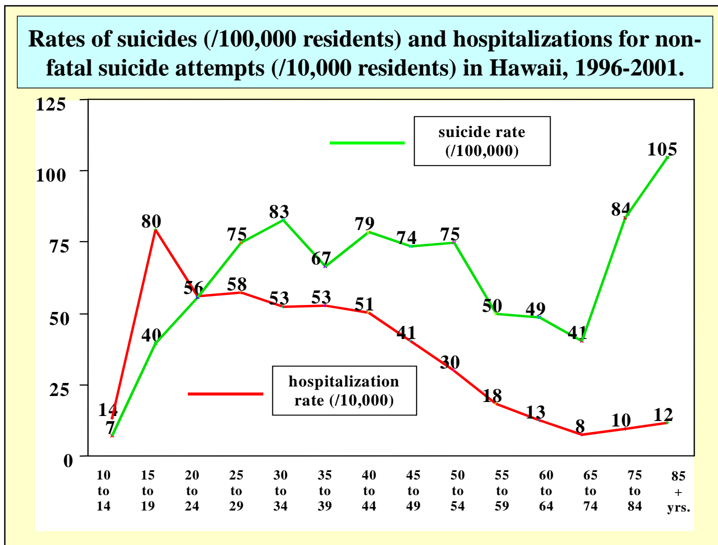
More than half (59%) of those hospitalized are females. This is in contrast to completed suicides, of which only 23% are females. The high proportion of female victims is limited to the 10 to 29-year age range, particularly the 15 to 19-year age group.

The age distribution for hospitalization is also very different, generally being younger than that for completed suicides. Half of those who attempt suicide are in the 15 to 34- year age group, compared to one third (33%) of completed suicides. Only 4% of hospitalizations occur among seniors (who comprise 16% of completed suicides). Also, the highest rates for hospitalizations were computed for 15 to 19 year-olds, a group which had one of the lowest rates for completed suicides. (Age-specific rate estimates for hospitalizations should be interpreted with caution, however, because of possible biases related to incomplete E-coding.)



Attempt rates remained moderately high across the 20 to 44-year age groups, decreased gradually between ages 45 and 59, and remained low after age 60.

This figure shows the peak age for hospitalizations in the 15 to 19-year age range, although this age group had one of the lowest rates of completed suicide. In contrast, rates among senior-aged residents (i.e., 65 years and older) were lowest for hospitalizations, but highest for completed suicides. (Note: The hospitalization rate is shown reduced by a factor of 10 for comparability.)



Hospitalizations for suicide attempts among Hawaii residents, 1996-2001. (cont.)

- **~680 documented per year (1,200 actual?)**
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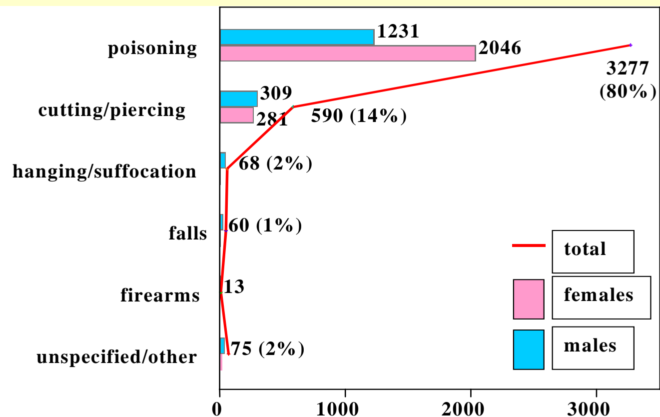
- **Age distribution generally younger**
  - ***Half are 15 to 34 years of age; only 4% seniors***
    - ***Highest rates among 15 to 19 year-olds***
- **Mechanism: Most (80%) are poisonings**
  - ***Mostly (76%) drugs/medicinal substances***

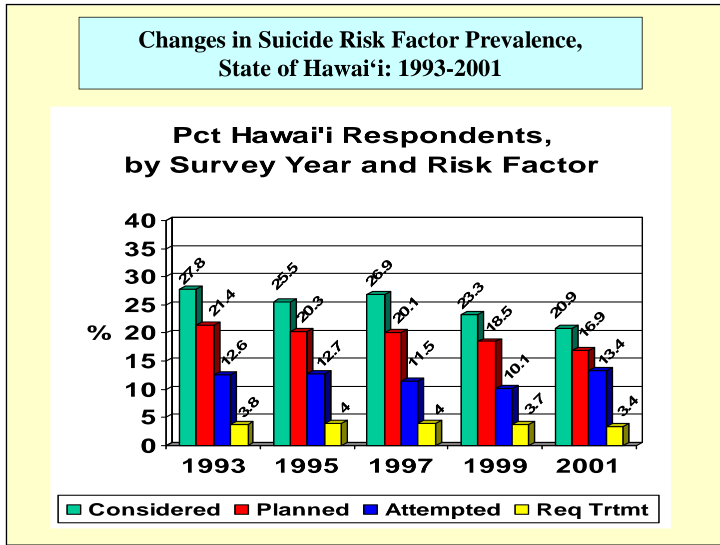
Non-fatal suicide attempts are usually carried out through poisoning (80%), specifically poisoning due to drugs and medicinal substances (76%). Among completed suicides, the most common mechanisms were hanging or suffocation (45%) and the use of firearms (25%) while relatively fewer of the completed suicides were due to poisoning (17%), specifically drugs and medicinal substances (13%).

Female patients were more likely to have poisoned themselves than males (85% vs. 73%), although this was by far the most common method for each gender. Males were somewhat more likely to have a cutting/piercing injury than females (18% vs. 12%).

Hospitalizations for suicide attempts in Hawaii, by mechanism and gender, 1996-2001.

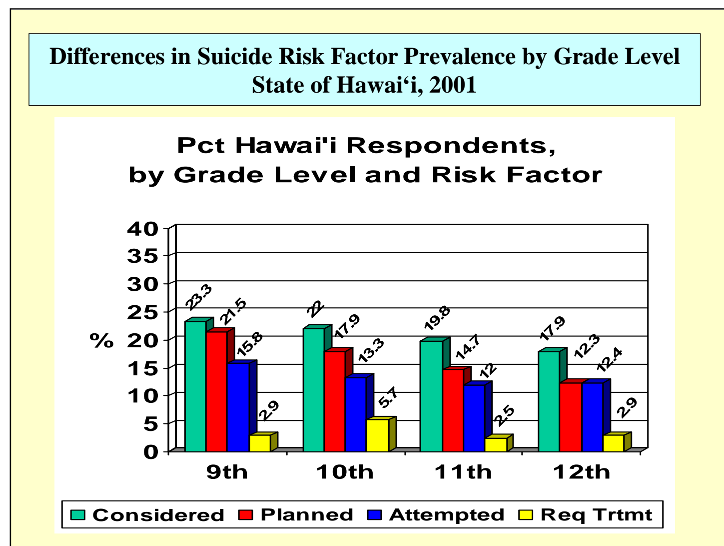


Youth Risk Factors

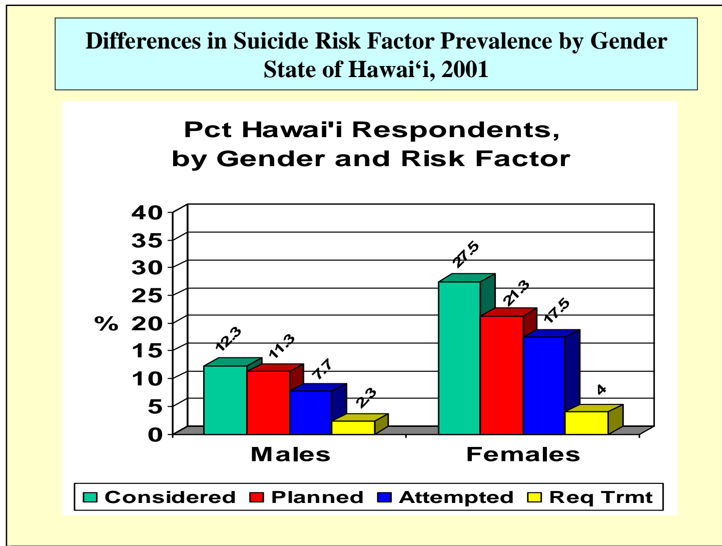


From 1993 to 2001, there was a general decrease in reported consideration of suicide, planning, and attempts (not requiring treatment) by youth surveyed in Hawai'i. In 2001, however, there was a noticeable increase in attempts (not requiring treatment). The percentages of youth reporting attempts requiring treatment varied only slightly over the years; in 2001, despite the increase in reported attempts (not requiring treatment), the percentage requiring treatment showed no commensurate increase.

In 2001, survey data showed the prevalence of consideration of suicide, planning, and attempts (not requiring treatment) highest among 9th graders, decreasing with increasing grade level. Attempts requiring treatment were similar across grade levels except for the 10th, where the percentage reporting was roughly double the percentage at each of the other grade levels.



The data suggest that more 9th graders (than other students) had moved from considering suicide to actually planning it. The proportion of 12th grade students who reported planning an attempt was equal to the proportion who attempted (without requiring treatment). Tenth-graders reported the highest prevalence of attempts that required medical treatment.



In 2001, more females than males reported having considered suicide, planned, or attempted (with or without treatment being required). However, the proportion of males who planned an attempt was nearly equal to the proportion who reported considering suicide.