

**Survey Shows...
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**The Relationship of Smoking Status to
General Health and the Quality of Life**

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Hawai'i Department of Health

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I. Introduction

General health and the quality of life are subjective issues; however, the individual's perception of his own health and his own quality of life is more important to his well-being than the opinions of others because it is that perception which will likely influence his choice in health behavior and self-care. The concept of quality of life is so important that "increas(ing) the quality and years of healthy life" has become one of the health goals of the U.S. for Healthy People 2010 (Zahran et al., p. 2), for which the measure "years of healthy life" (i.e., YHL) was developed (ODPHP, p. 1).

Smoking has long been considered detrimental to health. Research on different aspects of smoking, however, and their relationships to various measures of health continue. For example, results from a cross-sectional analysis of Behavioral Risk Factor Surveillance System (BRFSS) data by Mody & Smith indicate that current smokers are more likely to report being in poor physical or mental health and having activity limitations than nonsmokers or ex-smokers. (AJHP, [In Brief]) With respect to years of healthy life, research by Ostbye and Taylor followed subjects from baseline to death in order to "estimate the effects of smoking on quality of life over time." In the Health and Retirement Study, which surveyed individuals 50 to 60 years of age, the YHL remaining to those who had ceased smoking at least 15 years before baseline was similar to the number of YHL left to those who had never smoked. (Blackwell Synergy, [abstract])

The Surgeon General's Report for 2004 focuses on the topic of active smoking and identifies diseases for which there is evidence "sufficient to infer a causal relationship" with smoking. Diseases newly recognized as caused by smoking include "cancers of the stomach, uterine cervix, pancreas, and kidney; acute myeloid leukemia; pneumonia; abdominal aortic aneurysm; cataract; and periodontitis," the results of "widespread organ damage... likely reflecting the systemic distribution of tobacco smoke components and their high level of toxicity." (NCCDPHP, pp. 3-9) The impact of smoking on the musculoskeletal system, for example, includes a higher risk of osteoporosis, "delays (in) healing of fractures and wounds," a higher "incidence of rheumatoid arthritis," and a higher rate of surgery complications. In addition, nicotine "causes a decrease in blood flow to all tissues in the human body... (especially in the) hands and feet" which can lead to tissue death and amputation, hand contraction, and nerve problems. (AAOS, [Position Statement])

For all the reasons outlined above, the relationship between smoking status and general health as well as the quality of life merits close attention. The Surgeon General's report confirms the disease prevention benefits of never smoking as well as the prospects for lowering one's tobacco-related disease risk and improving general health status through smoking cessation.

II. Methodology

This report, based on data from the Behavioral Risk Factor Surveillance System (BRFSS) for the state of Hawai'i during calendar year 2002, focuses on the relationship between smoking status (i.e., current¹, former², or never³) and general health as well as the quality of life. Questions were posed to samples of Hawai'i residents 18 years of age or older, asking how they perceived their own health. They were asked about their physical and mental health during the previous 30 days, including any limitations on activity due to illness. The average number of days during the preceding 30 days was used as a measure of how often:

- ✍ the physical health of the respondent was "NOT GOOD"
- ✍ the mental health of the respondent was "NOT GOOD"
- ✍ the respondent felt healthy and full of energy
- ✍ the respondent did not have enough rest or sleep
- ✍ the respondent felt worried, tense, or anxious
- ✍ the respondent felt sad, blue, or depressed

The questions about physical and mental health pertain to general health. Those related to how the respondent felt are indicators of quality of life.

The answers to questions calling for numbers of days were grouped into the following four categories:

- ✍ 0 days
- ✍ 1 to 7 days
- ✍ 8 to 14 days
- ✍ 15 days or more

With the exception of the question pertaining to 'the respondent felt healthy and full of energy', the first category or level (i.e., 0 days) is the best and the fourth category or level (i.e., 15 days or more) is the worst.

Analysis of the data was preceded by age-adjustment of the population groups using the U.S. 2000 Census population as the standard population and relied on SUDAAN software (Proc Descript) in significance testing.

¹ Current smokers are those who have smoked at least 100 cigarettes and were still smoking at the time of the survey.

² Former smokers are those who have smoked at least 100 cigarettes but were no longer smoking at the time of the survey.

³ The group of respondents who had never smoked includes all who do not fit the criteria for "current" or "former" smokers.

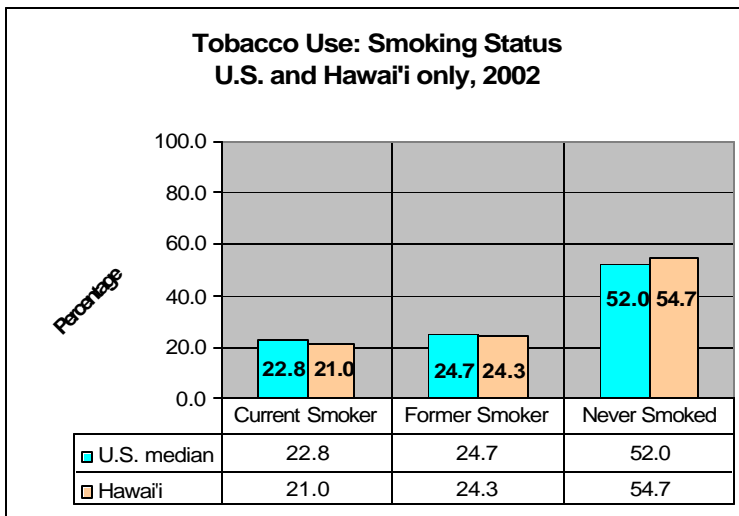
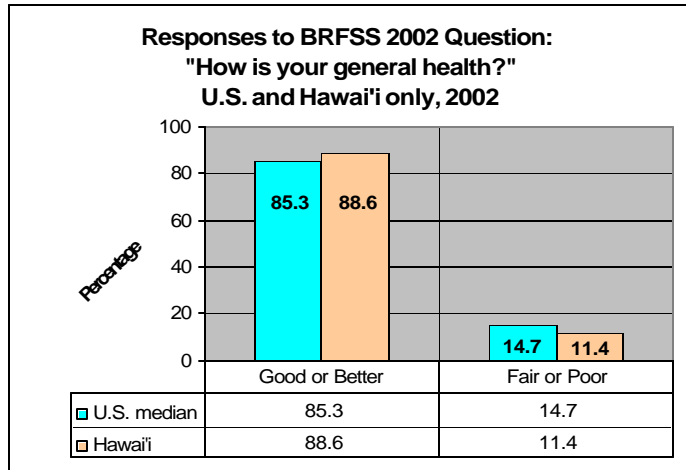
III. Analysis and Discussion

Hawai'i Compared with the Nation⁴

In 2002, data from the participating BRFSS states and U.S. territories showed that the median proportion of perceived **general health** as “good or better” was 85.3 percent, and the median proportion where the perceptions were “fair or poor” was 14.7 percent.

Perceptions appear more optimistic in Hawai'i alone, where the proportion of BRFSS respondents who

perceived their general health as “good or better” was higher at 88.6 percent [CI (87.6-89.6)] and the proportion who considered their health as fair or poor was 11.4 percent [CI (10.4-12.4)]. (CDC, [Survey Data])



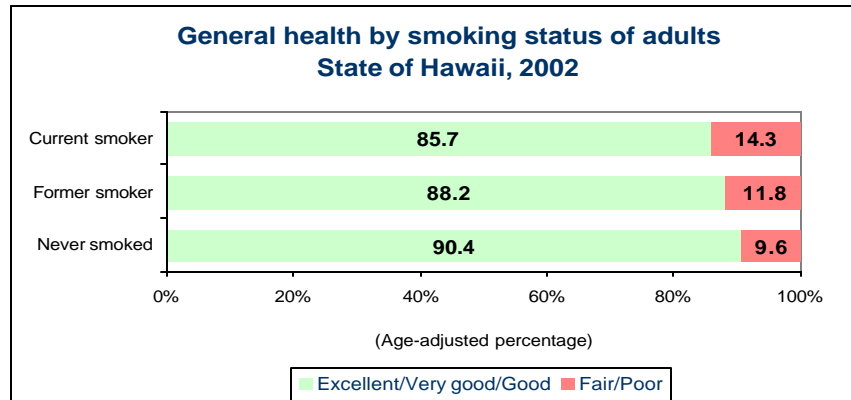
The outlook on **smoking status** appeared more favorable in Hawai'i than at the national level in 2002. The median proportions of states where BRFSS respondents indicated being current smokers, former smokers, or individuals who had never smoked were 22.8 percent, 24.7 percent, and 52.0 percent, respectively. In Hawai'i,

the percentages of current (21.0 percent) and former smokers (24.3 percent) were lower than the national median. The proportion of survey respondents in Hawai'i who reported never having smoked was higher (54.7 percent). (CDC, [Survey Data])

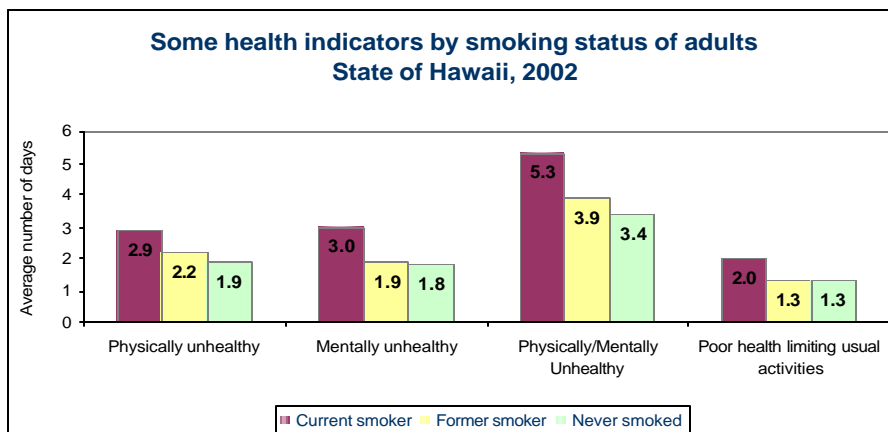
⁴ U.S. data are for the 50 states and the District of Columbia, excluding U.S. territories.

Hawai'i: Data on General Health

When BRFSS data for Hawai'i on **perception of general health** were analyzed by smoking status, the group of those who had never smoked reported the most favorable perception of their general health – 90.4 percent responding with “good or better” (i.e., Excellent / Very Good / Good). Current smokers reported the least favorable perception (85.7 percent responding with “good or better”). *(The difference between these two percentages, 4.7 percent, is statistically significant at $p=0.01$.)* The proportion of current smokers responding with “good or better” was about the same as the overall national median regardless of smoking status, (85.7% vs. 85.3 %).



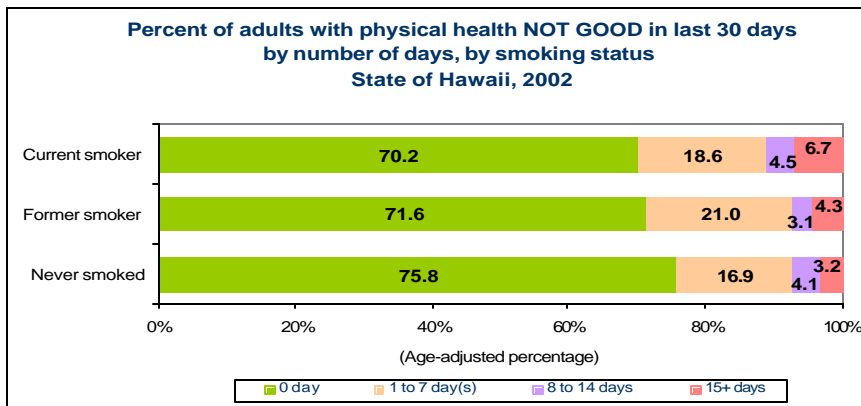
When respondent perceptions of more specific states of health (i.e., physically unhealthy, mentally unhealthy, physically/mentally unhealthy, poor health limiting usual activities) were analyzed by smoking status, current smokers were found with the most unfavorable self-assessments while those who had never smoked expressed the least unfavorable. Among current smokers, the average number of days spent **physically unhealthy** during the 30 days prior was 2.9, compared to 2.2 among former smokers and 1.9 among those who had never smoked. The average number of days spent **mentally unhealthy** over the same time frame was 3.0 among current smokers, 1.9 among former smokers, and 1.8 among those who had never smoked. When asked about a **combined**



state of impaired physical and mental health, current smokers reported an average of 5.3 days, compared to 3.9 days among former smokers and 3.4 among those who had never smoked.

Current smokers reported an average

of 2.0 days over the prior 30 days in **poor health that kept them from doing the usual activities of self-care, work, or recreation**. The averages reported by former smokers and those who had never smoked in this health indicator category were the same: 1.3 days. *(With respect to the average number of days spent physically unhealthy, mentally unhealthy, or physically / mentally unhealthy over the prior 30 days, the difference between the averages for current smokers and those who had never smoked is statistically significant at $p < 0.002$. The difference between the averages for current smokers and former smokers is also statistically significant at $p < 0.05$.)*

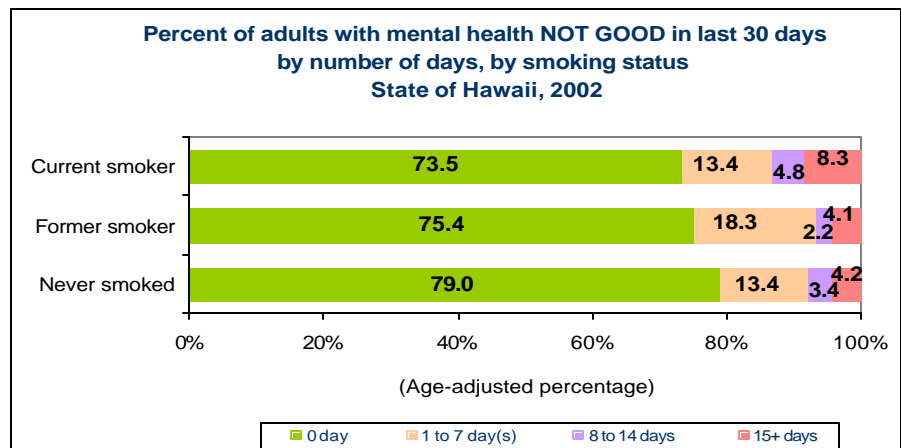


Current smokers include the largest proportion with impaired physical health at 15 days or longer (6.7%) followed by former smokers (4.3%) and those who had

never smoked (3.2%). *(Within the categories of “0 days” and “15 days or more,” the differences between current smokers and the other two smoking status groups are statistically significant at $p < 0.05$.)*

Similarly, the current smoker group includes the **largest proportion with impaired mental health** over the prior 30 days, compared to those who had never smoked and the group of former smokers. The proportion that reported 15 or more days of “mental health not good” is 8.3 percent, almost double the proportions

observed in the group of those who had never smoked (4.2 percent) and former smokers (4.1 percent). Note that the proportion with impaired mental health lasting 15 days or longer is

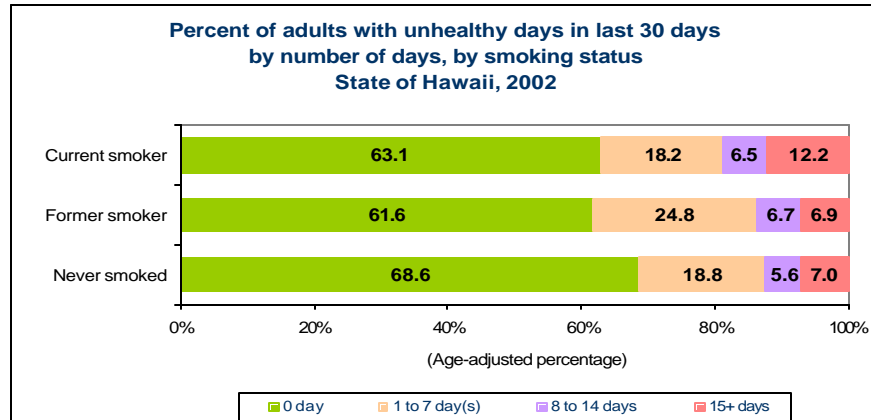


about the same as the proportions among former smokers and those who had never smoked. *(Within the categories of “0 days” and “15 days or more,”*

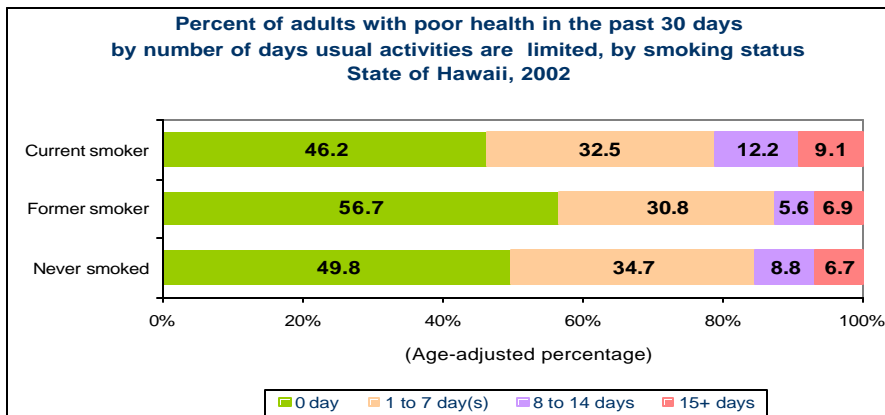
differences between current smokers and the other two smoking status groups are significant at $p < 0.01$.)

When the data on reported **physical and mental health are combined** and examined as “unhealthy days,” the largest proportion with no unhealthy days is observed among those who had never smoked (68.6 percent) compared to former smokers (61.6 percent) and current smokers (63.1 percent). Current smokers

continue to include the largest proportion of adults with 15 days or longer spent in physical or mental ill health over the prior 30 days, 12.2



percent compared to 6.9 percent of former smokers and 7.0 percent of those who had never smoked. (Within the categories of “0 days” and “15 days or more,” differences between current smokers and those who had never smoked are significant at $p < 0.02$.)



Upon examining the issue of **poor health limiting the usual activities** of the respondent over the prior 30 days, the proportion of current

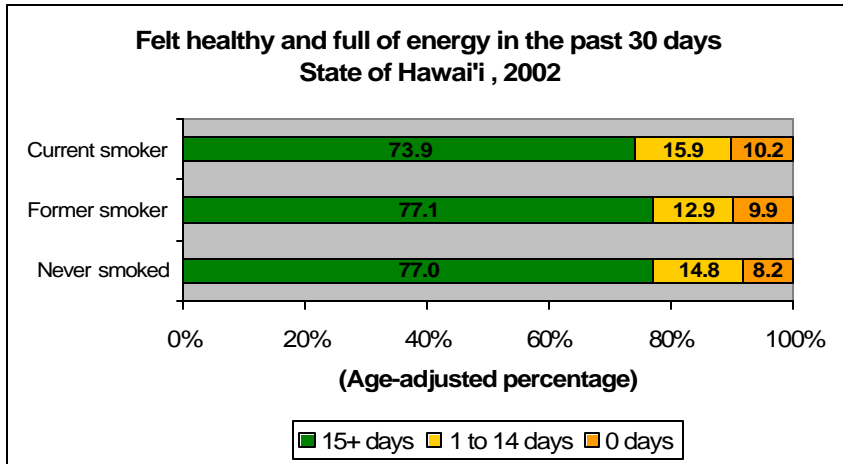
smokers who reported durations of 15 days or more (9.1 percent) was much higher than the proportions of former smokers (6.9 percent) and of those who had never smoked (6.7 percent). The trends differ, however, where the duration periods are “1 to 7 days” and “8 to 14 days.” Those who had never smoked reported the highest proportion (34.7 percent) with 1 to 7 days of limited usual activities due to poor health, and former smokers reported the lowest proportion (30.8 percent). Where the duration was 8 to 14 days, current smokers reported the highest proportion (12.2 percent) while former smokers reported the lowest (5.6 percent). (With respect to those who reported no days of limited activity due to poor health, former smokers reported the highest proportion (56.7 percent)

and, as a group, are different in a statistically significant way from current smokers ($p = 0.03$) and from those who had never smoked ($p=0.05$.)

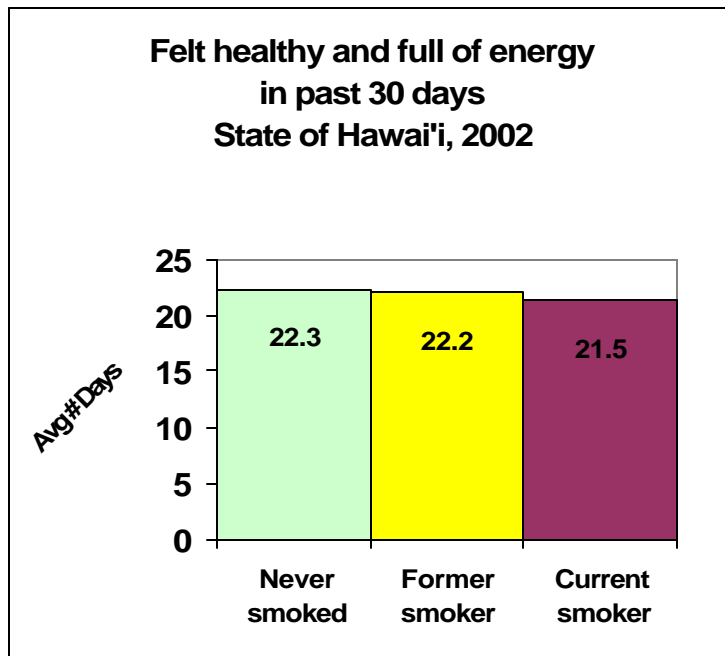
Hawai'i: Data on Quality of Life

Perceptions of quality of life were quantified through the following questions on the BRFSS survey (CDC, [Questionnaire]):

1. During the past 30 days, for about how many days have you felt very healthy and full of energy?
2. During the past 30 days, for about how many days have you felt you did not get enough rest or sleep
3. During the past 30 days, for about how many days have you felt worried, tense, or anxious?
4. During the past 30 days, for about how many days have you felt sad, blue, or depressed?

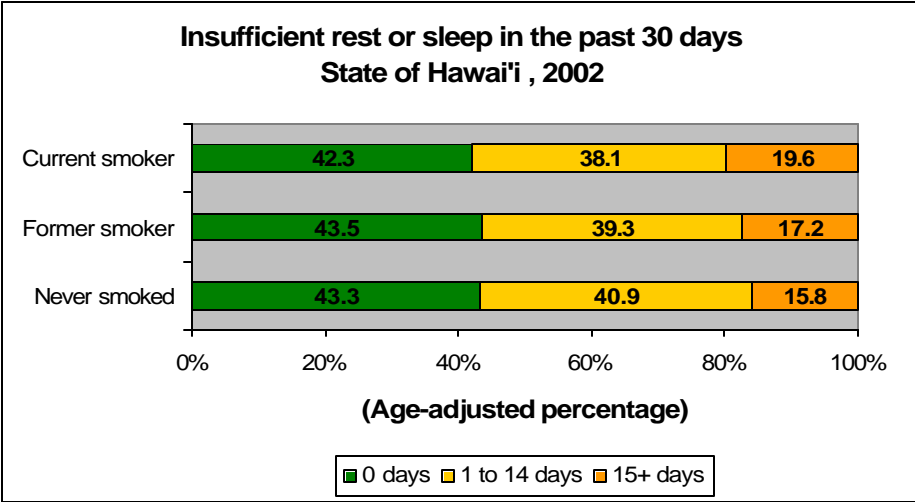


The proportions of former smokers (77.1 percent) and of those who had never smoked (77.0 percent) were similar with respect to having **felt healthy and full of energy** for 15 days or longer during the 30 days prior to responding to the survey. Where the

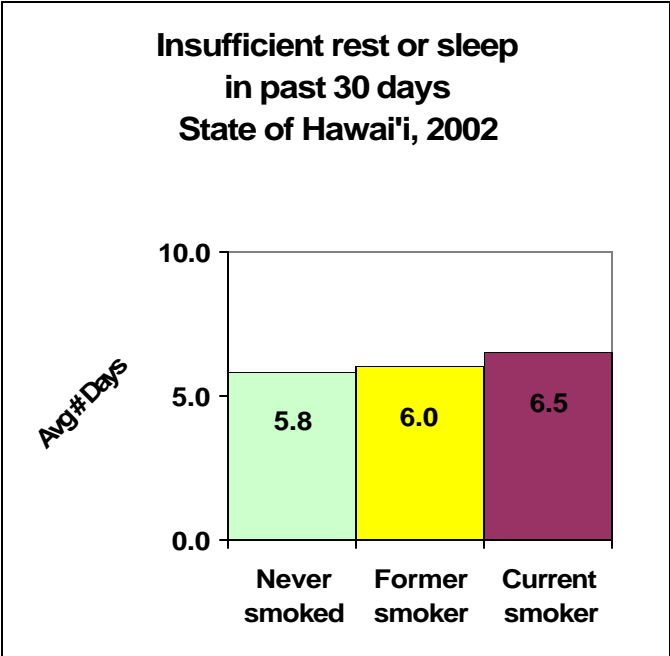


duration was 1 to 14 days, the highest proportion (15.9 percent) occurred among current smokers, followed by 14.8 percent among those who had never smoked and 12.9 percent among former smokers. Small percentages of those who had never smoked (8.2 percent), former smokers (9.9 percent), and current smokers (10.2 percent) reported not having had any days of feeling healthy or full of energy during the 30 days prior to the survey. *These percentages, by smoking status, are not statistically different from each other.*

The average number of days where the respondents felt healthy and full of energy was 22.3 among those who had never smoked, 22.2 among former smokers, and 21.5 among current smokers. *(Differences by smoking status category were not found to be statistically significant with respect to the average number of days spent feeling healthy and full of energy during the 30 days prior to the survey.)*

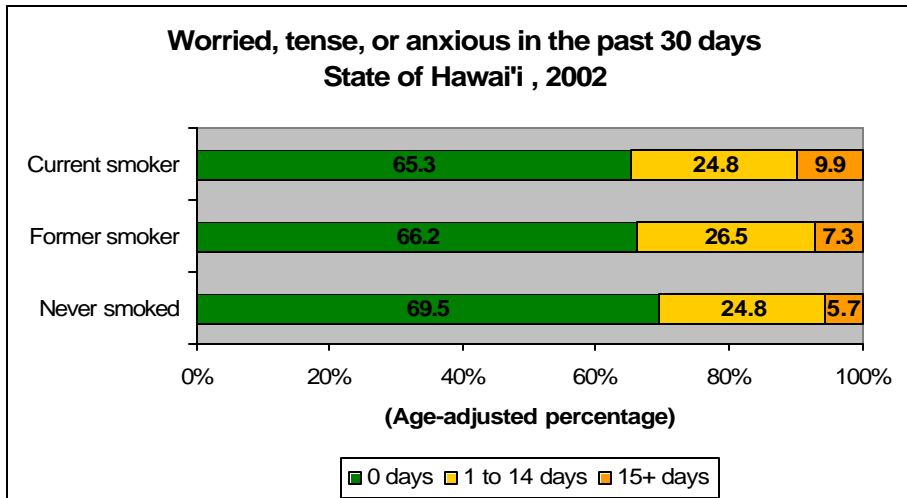


In each smoking status category, the proportion that reported at least one day of **insufficient rest or sleep** was the majority – 57.7 percent of current



smokers, 56.5 percent of former smokers, and 56.7 percent of those who had never smoked. Looking at lack of sleep or rest for at least 15 days or longer by smoking status during the 30 days prior to the survey, current smokers reported the highest proportion (19.6 percent), followed by former smokers (17.2 percent) and those who had never smoked (15.8 percent). This pattern is also reflected in the average number of days of insufficient rest or sleep which was lowest among those who had never smoked (5.8 days), slightly higher among former smokers (6.0 days), and highest among current smokers (6.5 days).

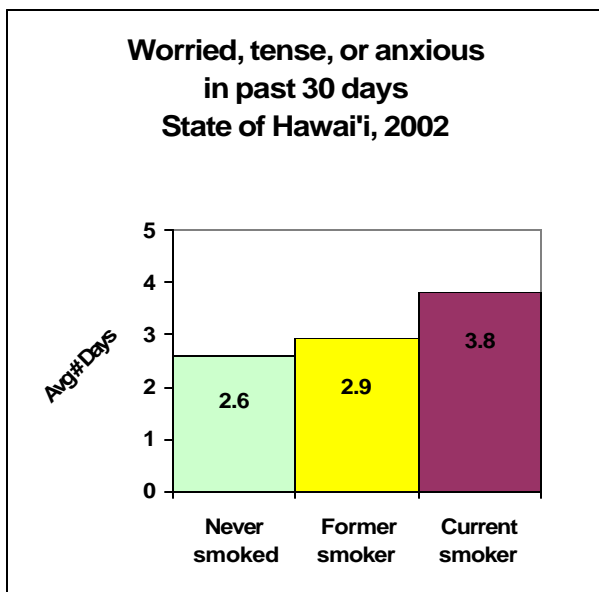
(Within the duration period of 15 days or more, the difference between current smokers and those who had never smoked is statistically significant at $p = 0.02$. With respect to the average number of days, the difference between current smokers and those who had never smoked is statistically significant at $p=0.04$.)



Although the majority of survey respondents, regardless of smoking status, reported that they had not been **worried, tense, or anxious** during the

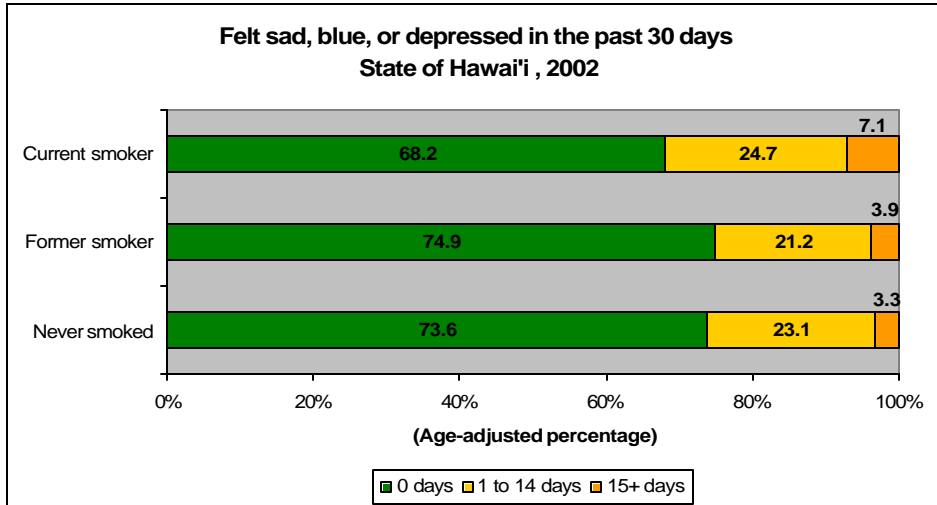
prior 30 days, more than a quarter reported that they had. The highest proportion of those who had suffered in this way for 1 to 14 days (26.5 percent) was found among former smokers. The proportion among current smokers (24.8 percent) was the same as among those who had never smoked. With respect to

the proportion that had been worried, tense, or anxious for 15 days or longer, the highest proportion (9.9 percent) was reported by current smokers, followed by former smokers (7.3 percent). The lowest proportion (5.7 percent) was reported by those who had never smoked.

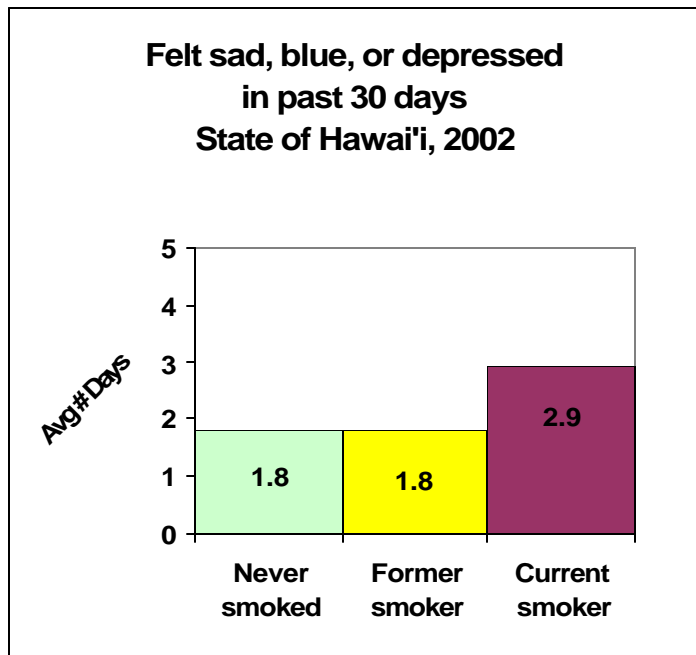


The average number of days spent worried, tense or anxious during the 30 days prior to the survey was highest among current smokers (3.8 days), followed by former smokers (2.9 days) and those who had never smoked (2.6 days).

(Within the duration categories of "0 days" and "15 or more days," the difference between current smokers and those who had never smoked is statistically significant at $p \leq 0.01$. Similarly, with respect to the average number of days, there is a statistically significant difference between current smokers who had experienced worry, tension, and anxiety and former smokers at $p < 0.01$ and between current smokers and those who had never smoked at $p < 0.001$.)



The majority of respondents, regardless of smoking status, reported not having felt sad, blue, or depressed during the 30 days prior to the survey.



However, more than a fifth – 24.7 percent of current smokers, 23.1 percent of those who had never smoked, and 21.2 percent of former smokers – reported having suffered from those feelings for 1 to 14 days. Current smokers (7.1 percent) reported durations of 15 days or more twice as often as those who had never smoked (3.3 percent), and the proportion of former smokers reporting durations of at least 15 days was 3.9 percent.

With respect to the average number of days spent feeling

sad, blue or depressed during the prior 30 days, current smokers reported the highest number – 2.9 days. The averages reported by former smokers and by those who had never smoked were the same – 1.8 days.

(Within the categories “0 days” and “15 or more days,” the difference between current smokers and those who had never smoked was statistically significant at $p \leq 0.01$. With respect to the average number of days spent feeling sad, blue, or depressed, the differences between current smokers and each of the other two smoking status categories were significant at $p < 0.001$.)

IV. Conclusion

In comparison with the nation, Hawai'i residents surveyed through the Behavioral Risk Factor Surveillance System appeared to have a more favorable perception of their general health in 2002 and a better outlook in terms of smoking status. Data on Hawai'i alone indicate that those who had never smoked enjoyed the most favorable perception of their general health and, together with former smokers, a better health-related quality of life than current smokers. Current smokers consistently reported the highest average numbers of days spent in impaired physical health, impaired mental health, a combination of impaired physical and mental health, and poor health limiting usual activities.

The majority of respondents, regardless of smoking status, felt healthy and full of energy for at least 15 of the 30 days prior to the survey, and less than a fifth reported having had 15 or more days of insufficient rest or sleep. However, a significantly greater proportion of current smokers than of adults who never smoked had insufficient rest or sleep for at least 15 days. With respect to (1) having been worried, tense or anxious in the prior 30 days and (2) having felt sad, blue, or depressed over the same time period, the majority of respondents indicated that neither had been an issue for them. However, a significantly greater proportion of current smokers than of former smokers and of adults who never smoked had been worried or felt sad for at least 15 days or longer. The average numbers of days spent in these emotional states were highest for current smokers at statistically significant levels compared to former smokers and adults who never smoked.

The BRFSS data support the findings of other researchers, showing a strong association between smoking status and general health as well as between smoking status and health-related quality of life. Continued surveillance is critical in monitoring trends in health behaviors and perceptions in order to pinpoint areas requiring intervention and to obtain information about the populations in need, to design appropriate interventions.

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