# Socioeconomic Factors and Burn Rates in Persons Hospitalized for Burns in Massachusetts

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## Synopsis

*To assess the usefulness of routinely collected socioeconomic variables from the U.S. census in predicting burn incidence rates, burn rates and 25 socioeconomic variables were analyzed at the level of census tracts for the Boston Standard Metropolitan Statistical Area. The burn rates were based on data collected during the National Burn Demonstration Project and consisted of patients who sustained burns between July 1, 1978, and June 30, 1979, and who required inhospital care.*

*Analysis of the data revealed strong associations between burn rates and six of the variables. The six variables were the percentage of families below the poverty level with a householder under age 65 years, the percentage of persons over 5 years of age whose residence in 1975 was a different dwelling but in the same county, the percentage of persons in the civilian labor force who were unemployed at the time of census enumeration, the average age of occupied dwelling units, the percentage of occupied housing units occupied on a rental basis, and the percentage of persons age 25 years or older who acquired some college education but did not complete college. Interpretation of the findings is not straightforward but seems to suggest that the previously observed association between poor socioeconomic status and increased burn risk for individuals can be quantified at the census tract population level.*

PREVIOUS STUDIES HAVE REPORTED the incidence of burns requiring hospitalization to be approximately 25 per 100,000 person-years (*1-4*). The number of patients admitted for inpatient hospital treatment of burns in the United States is estimated to be in the range of 60,000–90,000 per year. The data on which this study is based are in general agreement with these estimates, both with respect to the number of cases and in the distribution of cases by age and sex.

Known risk factors for burn injury include young and old age, alcohol use, and functional or mental impairment. In the United States, the incidence rate of burns requiring inpatient hospital care is higher for males compared with females and for the black population compared with the white population. Economic well-being is a strong predictor of the risk of burning, with poorer economic status associated with higher burn rates for most types of burns (*1-4*).

This study examines patterns of socioeconomic characteristics reported in the 1980 U.S. census publications for census tracts within the Boston Standard Metropolitan Statistical Area (SMSA) and seeks to identify variables that are highly associated with burn incidence. The identification of such variables and the ready availability of census information can allow estimates of burn rates for population groups defined by the various socioeconomic characteristics of their census tracts of residence. These estimates can facilitate the definition of the burn problem more quickly and at less cost than by more conventional methods such as hospital surveys, case reporting, hospital discharge data, vital statistics, and reports by ambulance services. In addition, these estimates may aid health professionals in focusing burn prevention efforts on populations at high risk of burn injury.

## Methods

The data base used for this study was developed during the National Burn Demonstration Project (NBDP) and consisted of a subset of the large file of descriptive information on burn patients at the project's six demonstration sites. The New England Regional Burn Program (NERBP) was the largest of the six sites, collecting burn data from 95 percent of the acute care hospitals in the six-State New England region, which has a population of nearly 12 million.

In addition to collecting data elements established by the NBDP and common to all six sites, the New England group used expanded data collection procedures in which additional information was recorded, including the burn patient's place of residence. The city or town of residence was recorded for all patients entering the study and, for residents of the Boston SMSA, the street address was recórded also so that cases could be assigned to census tracts of residence as a basis for more detailed analysis. In recording this information, suitable precautions were taken to ensure patient confidentiality.

The NBDP protocol called for the reporting of all inpatient (hospitalized) burn cases from May 1978 to June 1980 and cases treated in hospital emergency departments during a shorter period, May 1978 to August 1979.

The cases reported in this paper were taken from the final interim summary tape delivered by the NBDP to its participating sites. The summary tape was processed to select all cases involving Massachusetts residents who received treatment as hospital inpatients for burn injuries sustained from July 1, 1978, through June 30, 1979. Not included were Massachusetts residents treated in hospitals beyond New England or out-of-State residents treated in Massachusetts hospitals.

Because of our use of an interim tape, some relevant burn cases were absent due to late submission or pending the completion of edits or error corrections, although the selection of a reporting period from the first half of the study period helped to increase the completeness of the data we report. (Analysis of a sample of the absent cases demonstrated that there were no strong associations between the absent cases and the socioeconomic characteristics of the burn victims' census tracts of residence.) The interim nature of the tape, when combined with allowance for a small number of nonparticipating hospitals, leads to an estimate that cases in this report represent at least 90 percent of all relevant cases. The underascertainment of cases, however, means that the burn rates used in this analysis are underestimated to a similar degree.

Population counts used in calculating incidence rates were taken from the 1980 U.S. census (*5–9*). The total population of Massachusetts was adjusted by subtracting the combined population of 12 communities served by 3 nonparticipating hospitals. The magnitude of this adjustment was 298,269, or 5.2 percent of the total population reported for Massachusetts. The communities to be excluded were identified by reviewing patient origin data published by the Massachusetts Health Data Consortium, Inc., Waltham, MA, and selecting communities for which 10 percent or more of the residents hospitalized for medical-surgical care were treated in one of the nonparticipating hospitals. To prevent bias, burns to residents of these communities were excluded from the analysis also.

It should be noted that the incidence rates calculated for this analysis are based on numerators that consist of burns occurring from mid-1978 to mid-1979, while the denominators are population counts reported for 1980. The unavailability of numerators and denominators for a common time interval and the expectation of a minimal effect of this slight discontinuity made this methodologic approach acceptable for purposes of this analysis.

To achieve more stable incidence rates, categories of census tracts were formed by combining tracts having similar socioeconomic characteristics, as reported in the 1980 U.S. census publications (*5–9*). The tracts were grouped by placing them in rank order for each variable of interest and then identifying 6–10 categories for analysis. Examination of the range and distribution of the ordered data determined the number of categories and the category limits for each variable. For example, in the percentage of residents unemployed, the 506 census tracts analyzed had unemployment levels of 0.0–23.7 percent, suggesting 6 categories tightly grouped in the lower range of unemployment percentages (table 1). For the percentage of residents in rental housing (table 2), the values ranged from 2.2 to 100 percent, leading to 10 categories in 10 percent intervals.

The midpoint of the socioeconomic characteristic for each category of census tracts was calculated as the weighted mean of the values for the census tracts within the group, with the weights equal to the size of the population for each tract. Regression equations were estimated using the total size of the population for that group as the weight for each group of census tracks.

## Results

**Demographic variables.** The number of Massachusetts residents sustaining burns who received inpatient care during the 12-month period was 1,237, equivalent to 22.7 burns per 100,000 person-years. Inpatient burns were nearly 2.4 times more frequent among males than among females, and the preponderance of males was apparent for all ages except 85 years and older. The incidence of burns was strikingly higher among young children than the burn rates for older persons, with rates per 100,000 person-years of 143.8 burns for males under 2 years and 110.4 burns for females under 2 years. Rates for children ages 2–4 years were lower but still substantially higher than the rates for both males and females older than 5 years. A high frequency of burns among blacks was noted also. For all ages, the rates for black males and black females were approximately three times higher than the rates for whites, and for some age and sex groups the rate for blacks was fourfold to fivefold or even higher than the comparable rate for whites.

**Socioeconomic factors.** The initial attempt to associate the incidence of inpatient burns with socioeconomic variables was limited to 19 Massachusetts communities with 10 or more cases during the reporting period. The analysis was restricted in this way in an effort to avoid interpretive difficulties that might result from the instability of calculated incidence rates for communities for which the numerators (that is, the number of inpatient burns) were small numbers.

For the initial analyses described in the previous paragraph, linear regression yielded correlation coefficients ($r$ values) in the range of 0.03–0.61, offering little potential for usefulness in predicting burn rates on the basis of a single value for an entire community for the routinely collected socioeconomic variables. As previously noted by MacKay and coworkers (*4*), the use of a single value to summarize a socioeconomic characteristic in relatively large communities (median population of approximately 75,000) may obscure a considerable amount of variability in subdivisions of these communities.

In order that the expected variability in socioeconomic variables might be allowed to express itself and provide a useful means of predicting burn rates, an analysis was conducted at the level of census tracts. For this purpose, it was necessary to limit the data to the Boston SMSA because it was only for patients living there that the place of residence could be assigned to the appropriate census tract. In addition to the data base adjustments described previously for the statewide analysis, further adjustments were made to exclude 16 census tracts in nine communities that had not been part of the SMSA in 1970, because cases in these communities would not have been reported as to census tract during the data collection phase of the NBDP. Also excluded from the analyses were seven additional census tracts that entirely, or nearly, consisted of State institutions, and, thus, were not part of the general population in terms of exposure and risk factors for burn injuries. Following these adjustments, the portion of the Boston SMSA used in the analysis consisted of 506 census tracts, an aggregate population of 2,495,372, and a total of 514 inpatient burns.

Attempts to apply regression analysis to examine the association between burn incidence and various census variables for the entire array of 506 census tracts were equally unrewarding, with $r$ values even

Table 1. Regression equation [1,2] and incidence rates for inpatient-treated burns, by unemployment levels of Boston SMSA census tracts, July 1, 1978–June 30, 1979

| *Percent unemployed* | *Weighted midpoint* | *Number of census tracts* | *Burn incidence rate* [3] | *Number of burns* |
|---|---|---|---|---|
| Less than 3.0 | 2.3 | 92 | 13.2 | 62 |
| 3.0–4.4 | 3.6 | 178 | 16.7 | 164 |
| 4.5–5.9 | 5.0 | 102 | 18.1 | 96 |
| 6.0–7.4 | 6.6 | 55 | 24.6 | 63 |
| 7.5–9.9 | 8.4 | 43 | 41.3 | 71 |
| 10.0–23.7 | 12.7 | 36 | 69.2 | 58 |
| Total | 4.6 | 506 | 20.6 | 514 |

[1] Predicted burn rate = 5.56 (percent unemployed) − 5.26.
[2] $r$ = 0.97.
[3] Number of burns per 100,000 person-years.

Table 2. Regression equation [1,2] and incidence rates for inpatient-treated burns, by levels of rented housing of Boston SMSA census tracts, July 1, 1978–June 30, 1979

| *Percent of rentals* | *Weighted midpoint* | *Number of census tracts* | *Burn incidence rate* [3] | *Number of burns* |
|---|---|---|---|---|
| Less than 10.0 | 6.2 | 35 | 6.7 | 13 |
| 10.0–19.9 | 14.9 | 52 | 10.5 | 33 |
| 20.0–29.9 | 24.1 | 55 | 12.3 | 39 |
| 30.0–39.9 | 34.9 | 43 | 11.4 | 30 |
| 40.0–49.9 | 44.2 | 38 | 21.2 | 48 |
| 50.0–59.9 | 55.2 | 68 | 21.1 | 76 |
| 60.0–69.9 | 65.4 | 72 | 30.7 | 95 |
| 70.0–79.9 | 74.4 | 58 | 36.0 | 77 |
| 80.0–89.9 | 84.0 | 49 | 34.1 | 54 |
| 90.0–100.0 | 95.5 | 36 | 36.3 | 49 |
| Total | 46.1 | 506 | 20.6 | 514 |

[1] Predicted burn rate = 0.37 (percent rented housing) + 3.55.
[2] $r$ = 0.97.
[3] Number of burns per 100,000 person-years.

Table 3. Variables in the incidence of burns as examined by linear regression analysis

| Variable | r value |
|---|---|
| Population characteristics: | |
| Percent of population, black | 0.94 |
| Percent of population, under age 18 years | Nonlinear |
| Percent of population, age 65 years and over | Nonlinear |
| Percent of population, under age 5 years | Nonlinear |
| Economic indicators: | |
| Median family income | −0.90 |
| Percent of families below poverty level | 0.99 |
| Percent unemployment | 0.97 |
| Education characteristics: | |
| Percent of population with high school education | Nonlinear |
| Percent of population with some college education | −0.96 |
| Percent of population completing college or higher | −0.72 |
| Residential characteristics: | |
| Persons age 5 years and over by place of residence 5 years ago: | |
| Percent in same residence | Nonlinear |
| Percent in different residence, same county | 0.98 |
| Percent in different county | Nonlinear |
| Percent of residential occupancies in rental status | 0.97 |
| Percent of occupants entering present residence in stated year: | |
| 1979 | 0.79 |
| 1975–78 | 0.94 |
| 1970–74 | Nonlinear |
| 1960s | −0.88 |
| Prior to 1960 | 0.90 |
| Housing characteristics: | |
| Year when structure was built: | |
| 1970s | Nonlinear |
| 1960s | Nonlinear |
| 1950s | Nonlinear |
| 1940s | Nonlinear |
| Prior to 1940 | 0.91 |
| Average age of housing | 0.97 |

Table 4. Regression equation [1,2] and incidence rates for inpatient-treated burns, by poverty levels of Boston SMSA census tracts, July 1, 1978–June 30, 1979

| Percent below poverty level | Weighted midpoint | Number of census tracts | Burn incidence rate [3] | Number of burns |
|---|---|---|---|---|
| Less than 2.0 | 1.3 | 88 | 9.4 | 42 |
| 2.0–3.4 | 2.6 | 88 | 12.6 | 65 |
| 3.5–4.9 | 4.2 | 77 | 14.7 | 64 |
| 5.0–7.4 | 5.9 | 67 | 19.4 | 70 |
| 7.5–9.9 | 8.3 | 36 | 25.4 | 42 |
| 10.0–14.9 | 12.2 | 59 | 28.6 | 76 |
| 15.0–24.9 | 19.1 | 48 | 44.7 | 82 |
| 25.0–57.0 | 33.2 | 43 | 60.3 | 73 |
| Total | 7.2 | 506 | 20.6 | 514 |

[1] Predicted burn rate = 1.62 (percent below poverty level) + 9.30.
[2] $r$ = 0.99.
[3] Number of burns per 100,000 person-years.

lower than previously described. The explanation for this outcome appeared to be that, for events as rare as burn injuries, the expected number of cases in a 1-year observation period would be very small in exposure groups as small as individual census tracts, for which the average population is about 5,000. Indeed, more than a third of the census tracts had no observed inpatient burns during the 12-month period, yielding incidence rates of zero.

It was believed that the instability of incidence rates for individual census tracts could best be overcome by combining census tracts into larger, homogeneous groups as previously described. More stable rates were produced by using the total number of burns in all of the census tracts in a group as the numerator and the aggregate population of the group of tracts as the denominator.

A total of 25 census variables were examined by simple linear regression analysis (table 3). For 11 variables, the association between the variable and burn incidence appeared, on examination, to be nonlinear. Of the remaining 14 variables, 6 produced $r$ values with an absolute value higher than 0.95, 5 had $r$ values with absolute values in the range of 0.90 to 0.95, while the remaining variables had $r$ values of −0.88, 0.79, and −0.72. These analyses changed little, if at all, when standardized for age and sex. The six variables found to have the highest correlations with burn incidence are discussed in the following sections, and a data summary and the equation of the least squares regression line are given for each variable.

**Percentage below poverty level.** This variable is based on the percentage of families below poverty level with a householder under age 65 years, and, therefore, it directly reflects economic status (table 4). The regression analysis shows that, as the percentage of families below the poverty level increases, the incidence of burns also increases. An $r$ value of 0.99 shows an exceedingly strong association between poverty status and the incidence of inpatient burns.

**Percentage residing in same county.** The percentage of persons more than 5 years of age whose residence in 1975 was a different dwelling but in the same county is described by this variable (table 5). An $r$ value of 0.98 shows a very strong association between this variable and burn incidence. Correlations between burn incidence and the percentage of persons having the same residence and the percentage of persons previously residing in a different county were substantially lower. This variable may be seen, therefore, as reflecting an intermediate level of residential stability.

**Percentage unemployed.** This variable reports the percentage of persons in the civilian labor force who were unemployed at the time of census enumeration (table 1). An *r* value of 0.97 shows that this variable, also an indicator of economic status, is a strong predictor of burn incidence.

**Age of dwelling unit.** For each census tract, the census data include the number of dwelling units constructed during each decade. From this information, the mean age for all occupied dwelling units in each census tract was calculated and regression analysis was used to examine the association of burn incidence to the average age of such dwellings (table 6). For the purposes of this calculation, the midpoint of each decade was taken to represent the age of all units constructed during that decade. The period prior to 1940 is open-ended, and its midpoint was assumed to be 1925. An *r* value of 0.97 shows a strong association, but the interpretation is somewhat obscure. It would appear to reflect a combination of factors including environmental and structural variables, population density, and economic status.

**Percentage rental housing.** The percentage of occupied housing units in each census tract that are occupied on a rental basis is described in this variable (table 2). Although the variable is strongly associated with burn rates (*r* value of 0.97), an explanation of the association is not immediately apparent. A possible explanation might involve a correlation between rental status and economic well-being.

**Percentage some college education.** The census presents data on the years of schooling completed by persons 25 years old and older (table 7). For this study, the level of education was recorded to show the percentages for all such persons in each census tract who "completed high school," "acquired some college education," or who "completed college or beyond." Persons who acquired some college education had completed high school but not college. An *r* value of −0.96 shows a strong negative association between this variable and burn incidence. The two categories showing lesser or greater levels of educational achievement did not appear to be linearly associated with burn incidence. The negative *r* value shows that the

Table 5. Regression equation [1,2] and incidence rates for inpatient-treated burns, by percentage of residents living in a different dwelling but in the same county as 5 years ago, Boston SMSA census tracts, July 1, 1978–June 30, 1979

| Percent same county | Weighted midpoint | Number of census tracts | Burn incidence rate [3] | Number of burns |
|---|---|---|---|---|
| Less than 12.5 | 9.5 | 48 | 9.9 | 25 |
| 12.5–14.9 | 13.7 | 49 | 13.7 | 38 |
| 15.0–17.4 | 16.1 | 62 | 15.0 | 49 |
| 17.5–19.9 | 18.7 | 75 | 14.7 | 62 |
| 20.0–24.9 | 22.6 | 109 | 22.1 | 125 |
| 25.0–29.9 | 27.0 | 82 | 29.1 | 105 |
| 30.0–55.4 | 35.1 | 81 | 37.6 | 110 |
| Total | 20.9 | 506 | 20.6 | 514 |

[1] Predicted burn rate = 1.13 (percent same county) − 2.65.
[2] $r = 0.98$.
[3] Number of burns per 100,000 person-years.

Table 6. Regression equation [1,2] and incidence rates for inpatient-treated burns, by age of dwelling in Boston SMSA census tracts, July 1, 1978–June 30, 1979

| Age of dwelling (years) | Weighted midpoint | Number of census tracts | Burn incidence rate [3] | Number of burns |
|---|---|---|---|---|
| Less than 25 | 21.5 | 58 | 11.9 | 45 |
| 25.0–29.9 | 27.6 | 63 | 14.9 | 50 |
| 30.0–34.9 | 32.7 | 67 | 15.3 | 60 |
| 35.0–39.9 | 37.7 | 80 | 21.3 | 88 |
| 40.0–44.9 | 42.4 | 84 | 25.4 | 103 |
| 45.0–49.9 | 47.4 | 108 | 27.6 | 123 |
| 50.0 and over | 51.5 | 46 | 35.2 | 45 |
| Total | 36.3 | 506 | 20.6 | 514 |

[1] Predicted burn rate = 0.75 (average house age) − 6.17.
[2] $r = 0.97$.
[3] Number of burns per 100,000 person-years.

Table 7. Regression equation [1,2] and incidence rates for inpatient-treated burns, by percentage of residents with some college education, Boston SMSA census tracts, July 1, 1978–June 30, 1979

| Percent with some college education | Weighted midpoint | Number of census tracts | Burn incidence rate [3] | Number of burns |
|---|---|---|---|---|
| Less than 7.5 | 5.5 | 46 | 50.2 | 51 |
| 7.5–9.9 | 8.9 | 58 | 35.4 | 70 |
| 10.0–12.4 | 11.3 | 55 | 32.8 | 84 |
| 12.5–14.9 | 13.6 | 88 | 25.0 | 115 |
| 15.0–17.4 | 16.2 | 83 | 14.0 | 65 |
| 17.5–19.9 | 18.5 | 83 | 13.5 | 62 |
| 20.0–33.3 | 22.2 | 93 | 12.0 | 67 |
| Total | 16.0 | 506 | 20.6 | 514 |

[1] Predicted burn rate = −2.37 (percent some college education) + 58.74.
[2] $r = -0.96$.
[3] Number of burns per 100,000 person-years.

higher the percentage of census tract residents with some college education, the lower the burn rate.

## Discussion

The study results suggest that burn incidence rates for census tracts can be predicted reasonably accurately by using any of at least six socioeconomic variables collected for the U.S. census. Interpretation of the findings, however, is not straightforward; in addition, two possible sources of inaccuracy warrant discussion.

With respect to possible sources of inaccuracy, it is not known whether persons who sustain burns are typical of their census tract neighbors with respect to the socioeconomic variables considered in this study. It may be, for example, that the regression equations underestimate the slopes of the lines relating each variable to burn rates. Such underestimation would occur if populations with different socioeconomic characteristics were grouped together in one census tract (*10*). Indeed, part of the failure of the initial analyses in this study, which involved the prediction of burn rates for entire communities, probably resulted from the grouping together of populations with different burn rates.

A second possible source of inaccuracy pertains to use of a data base that was incomplete. Although a sample of cases that were missing from the data base used did not reveal any large biases with respect to the omission of cases, it may be that the probability of being hospitalized for a burn injury (rather than being treated on an outpatient basis) is modified by the socioeconomic characteristics of the victim or by constraints imposed by different medical insurance plans. The magnitude and effects of this second possible source of inaccuracy are not clear. Some evidence exists, however, that suggests that a victim's age affects the probability of his or her seeking medical attention for a burn injury (*11*).

Questions that arise with respect to interpretation of the study findings include the following. First, because the socioeconomic variables evaluated reflect the population and environmental characteristics of the Boston SMSA, it is not clear whether the estimated regression equation and correlation between each variable and burn rates are generalizable to other regions. Second, although strong relationships between burn frequency and socioeconomic variables have been reported previously (*1–4*), the environmental and host factors responsible for the relationships have not been fully eludicated, nor can they be precisely identified from our study.

Notwithstanding possible interpretive difficulties, it seems clear that an acceptable estimate of the number of hospitalized burns expected to occur in a year is useful information to professionals who provide health care or who plan the location and types of health care facilities. Hospital services as complex and costly as those typically required in the treatment of burn patients must be available when and where needed. Cost-effectiveness in the delivery of such services, however, continues to be important.

To educators and other health professionals who deal with burns in terms of prevention, knowledge of populations at highest risk of burn injury will enhance preventive interventions because these programs may be targeted at risk groups in such a manner as to increase the potential impact of such efforts. Specific identification of risk groups in terms of location and socioeconomic characteristics will allow the development of educational or inspection services within the limits of available resources but with the knowledge that they are being directed where they are likely to reduce the incidence of burns.

A potential threat to the applicability of the insights we have described is the availability of epidemiologic data with which to delineate patterns and trends of interest. The collection of burn data is a time-consuming and costly job—one not likely to be repeated frequently. Collection of data on burns is especially burdensome because their relatively infrequent occurrence means that data must be sought over an extended time or within a large population in order to generate a sufficient volume of data. The usefulness of identifying a variety of socioeconomic characteristics capable of accurately predicting burn incidence lies in the fact that these variables are readily available in census publications, in libraries, and in city halls. Although the generalizability of the relationships we report has not been examined for populations other than the Boston SMSA in 1978–79, it is believed that the results might readily be verified or modifed if necessary by studying the associations between socioeconomic variables and burn incidence in other populations.

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# The "Missing Cases" of Pleural Malignant Mesothelioma in Minnesota, 1979-81: Preliminary Report

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## Synopsis

*Malignant mesothelioma is a sentinel neoplasm for population exposure to asbestiform fibers. Public health officials may be alerted to temporal or spatial clustering of malignant mesothelioma through analyses of vital records, such as death certificates. Hence, the maintenance of the integrity of the vital statistics system, particularly the cause of death statement on the death certificate, is very important.*

*The report by a northeastern Minnesota radiologist in January 1985 of an elevated prevalence of pleural plaques (related to asbestiform fiber exposure) to the Minnesota Department of Health resulted in an investigation of pleural malignant mesothelioma mortality trends in that area and in three other similar areas in the State. In that study, we noted that in several instances malignant mesothelioma (either intrathoracic or unspecified site) was listed on the death certificate in such a manner as to imply that the neoplasm was either a lung cancer or a malignancy of an unspecified site. The effect of this misclassification is to underestimate the mortality from malignant mesothelioma by fourfold to eightfold. Given the importance of malignant mesothelioma as a proxy for past asbestos exposure, it is necessary to determine the extent of such misclassification for all deaths in the United States.*

In the past 25 years, much epidemiologic and laboratory data have accumulated relating exposure to asbestos fibers with subsequent incidence of malignant mesothelioma (*1*). Although other causes of some malignant mesotheliomas are suspected, this relationship (asbestos-malignant mesothelioma) is very specific (*2*). Hence, it is valuable to public health officials as an index of past asbestos exposure. They can, in turn, prepare health resources needed to contend with the variety of health effects associated with such exposure, such as asbestosis, pleural thickening, lung cancer, and gastrointestinal cancers (*1,3*). The specificity of the asbestos-malignant mesothelioma association can also be used by such officials to assess reports of clusters of asbestos-associated diseases (such as pleural thickening). If a population had been exposed to asbestos in the past, one would expect