

## Smoking Characteristics of US Workers, 1978-1980

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Data from the 1978-1980 National Health Interview Survey smoking questionnaire were used to analyze prevalence and levels of cigarette smoking among groups of US workers. This information is valuable for indirect adjustment in occupational epidemiology studies as well as for describing smoking patterns of workers in a wide range of job settings. Although there was a higher percentage of current smokers among men than women in the general population, there were few differences in prevalence of smoking among men and women for specific occupations. Also, race and employment status had an influence on prevalence of smoking, where both the currently unemployed and blacks generally had a higher proportion of current smokers, although blacks generally had a higher proportion of current smokers, although blacks smoked fewer cigarettes. Industry also played a major role in the variation of smoking habits. For instance, the percentage of current smokers of a given occupation had as much as a 25% difference depending on the industry they were employed, such as 52% vs 26% for managers and administrators. Detailed data will be made available as microcomputer files for interested researchers.

**Key words:** Smoking, occupation, NHIS

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### INTRODUCTION

Information on smoking habits (initiation, duration, and cessation) by occupation is not sufficiently available for occupational epidemiology studies even though the health effects of smoking have been documented for decades [Kotin and Gaul, 1980]. Because many occupational diseases (eg, asbestosis) are influenced by smoking, occupational-disease epidemiologists often must assess the contribution of smoking either as a confounder or as an effect modifier of occupational risk factors [Axelson and Steenland, 1987]. Direct (complete smoking data available) and indirect adjustment (only incomplete data available) have been described for controlling for smoking in occupational epidemiological studies [Steenland et al, 1984]. This paper presents smoking information from a national survey that is potentially useful for the indirect method of control—for example, when comparing smoking habits of a study population to the US population.

Most occupational health studies have not included smoking history in their analysis. A review of 300 occupational health studies (50% were retrospective cohort,

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20% primary case-control, and the remaining were registry, nested case-control, or proportionate mortality) showed that only a third obtained and used smoking information [Marsh and Sachs, 1988]. Fifty percent of the case control studies and about 20% of the retrospective cohort studies used smoking history obtained directly from surveying cases and controls. This direct method is preferred because it is a more accurate and reliable representation of the study population. However, it is often not possible to use these direct methods for obtaining smoking history in occupational epidemiology studies, since the majority are retrospective cohort and registry studies, which typically rely on existing records. In such cases indirect methods may be used, by which adjustments would be made using detailed smoking data by occupation from a representative national survey.

Two previously cited studies that have analyzed smoking prevalence by occupation are Sterling and Weinkam [1976] and Covey and Wynder [1981]. Sterling and Weinkam showed general relationships between smoking habits and type of occupation by using data collected in the 1970 National Health Interview Survey (NHIS). Applying their analysis to indirect adjustment is, however, limited because they did not employ weighted estimates. Covey and Wynder described the smoking characteristics by occupation of 2,528 white males between the ages of 41 and 70 who had previously been used as controls in case-comparison studies. Their findings are also limited to a subset of the working population.

The surgeon general released a report that included a chapter on the description of smoking by occupation [USDHHS, 1985]. Smoking habits of US workers were described by using data from a supplement on smoking for 1978–1980. We have extended the analysis to include cross-classification by employment status, race, and industry, using the 1978–1980 NHIS smoking information. In addition, we have computed an approximate standard error for all our estimates, so that the significance of differences in smoking habits between occupational groups can be assessed. However, we stress that one should not overinterpret estimates based on small cell sizes, even though the standard error is an important aid in making a judgment about the error associated with estimates.

## **MATERIALS AND METHODS**

### **Description of NHIS**

The NHIS is a unique, continuous, nationwide, voluntary household survey sponsored by the National Center for Health Statistics (NCHS). This survey collects information on demographic and personal characteristics (including employment), health, and medical-care utilization from an annual sample of approximately 42,000 US households, which here included approximately 134,000 individuals (approximately 40,000 of whom were in the labor force at the time of interview) [USDHHS, 1981]. Interviews of household members were conducted in person, or the information was obtained from a proxy respondent, that is, another household member. Respondents participate in only one year of the NHIS.

For 1978, 1979, and 1980, the NHIS questionnaire consisted of two basic parts. The first part collected information on health, demographic, and socioeconomic variables. The second part, or the supplement, obtained information on smoking habits (see Appendix I for smoking supplement survey items) [USDHEW, 1979]. For each of these years, a one-third subsample of persons age 17 or older in the basic

NHIS sample was selected and administered the smoking supplement. Information was obtained directly from the preselected individual. Information from proxy respondents (0.6% of all respondents) was accepted only in cases where the individual was unable to respond due to health reasons, such as being hospitalized at time of interview [USDHHS, 1983].

The 1979 supplemental smoking survey was administered during all four quarters of the 1979 NHIS and contains information on 26,271 persons. Supplemental smoking data for 1978 and 1980 were collected only during the third and fourth quarters. For that reason, only 12,111 persons were surveyed for the 1978 supplement and only 11,333 were surveyed for the 1980 supplement. The public-use tapes for the 1978–1980 NHIS supplemental smoking surveys were combined into a single file consisting of 49,715 records.

### **Employment Variables**

Information on current activity during the two weeks before interview was used to determine a person's employment status. The three employment-status categories were (1) currently employed, (2) currently unemployed, or (3) not in the labor force [USDHHS, 1980]. Persons not in the labor force included retired persons, housewives or charity workers who received no pay, and physically handicapped persons who were unable to work [USDHEW, 1975]. All the employment categories were used in this analysis.

The occupation information from the 1978–1980 basic NHIS survey was coded according to the 1970 US Bureau of Census three-digit occupation codes [US Bureau of the Census, 1971]. As part of this analysis, we used both the detailed and the major census occupational groups.

The detailed 1970 census industry codes were converted to two-digit 1972 Standard Industrial Classification (SIC) System codes. (See Appendix II for comparability between census industry and SIC industry.) We chose to code industry by SIC codes because this system will enable us to link the smoking prevalence data with other data systems which used the SIC system, such as a National Institute for Occupational Safety and Health (NIOSH) job exposure matrix, based on the National Occupational Hazard Survey [Sieber, 1986].

### **Smoking Measures**

All the explanatory variables in our analysis were based on the survey items used in the 1978–1980 smoking questionnaires. The nature of the questions and the kinds of responses restricted the various derived measures for describing smoking patterns in the US. The following definitions refer to the smoking questionnaire (Appendix I).

**Smoking status.** The major categories of smoking status, “ever” and “never,” were determined by the question “Have you smoked at least 100 cigarettes in your entire life?” However, the next item “About how old were you when you first started smoking cigarettes fairly regularly?” resulted in some interviewees offering a non-solicited response that they smoked but they were not regular smokers. This group (2.1% of all respondents) was defined as “occasional smokers” and a derived variable was created to represent this group. Occasional smokers were included in the “ever” smoker category or those who smoked at least 100 cigarettes in their life. Item 2b—“Do you smoke cigarettes now?”—distinguished between “current” and “former”

smokers. In addition, there was another category of smokers for whom "current" and "former" was indeterminable, and these were referred to as "present status unknown" (.32% of all respondents). For this particular analysis current and former smokers included both regular and occasional smokers. The percentages of "current" and "never" smokers were proportions of totals of a specific group, while the percentages of "former" smokers were the proportion of "ever" smokers in the group being estimated.

**Mean daily cigarettes smoked.** For current smokers, the item "On the average about how many cigarettes a day do you smoke?" was used for computing the mean daily cigarettes smoked. The weights used to make the national estimates were incorporated into the calculation of these means. These weighted means were used to subdivide the current smokers into those who smoked 20–39 cigarettes daily and into those smoking 40 or more cigarettes daily.

### Statistical Techniques

The sample counts were inflated to represent the US population by using the weights provided on the NHIS supplemental smoking tapes. These weights were essentially the reciprocals of the selection probability in each stage of the design, adjusted for nonresponse and age-sex-race distributions in the 1970 census [USDHHS, 1985]. In other words, the number of people each interviewee represented depended on his/her sampling unit, gender, race, and age; the weights were not adjusted for occupation.

For statistical comparison of smoking prevalence by demographic and occupational groups, standard errors were estimated by using SESUDAAN, a program designed to estimate variance of weighted proportions and means from a multistage nonrandom population survey [Shah, 1981]. This program used a method of approximating variance called Taylor series linearization in which the variances were derived from the strata and weight values [Woodruff, 1971]. The standard errors for each of the estimates were included in all the tabulations.

A significant difference was based on a paired comparison by using a standard error of the difference to calculate a z score evaluated against  $z(.05/2)=1.96$ . In Appendix III, we describe various methods that the reader can use to evaluate these data.

## RESULTS

### Patterns for the General Population

Similarly to previously published reports, women in most race and age groups had lower percentages of current smokers than men (Table I) [Stellman and Stellman, 1981; USDHHS, 1985]. However, 17–19-year-old white women, a group which was not included in the surgeon general's report, had a higher prevalence of current smokers than 17–19-year-old men. Black men had the highest overall percentage of current smokers.

### Employment Status

Employment status exerted a large influence on cigarette-smoking habits. In addition, the interactions between employment status, race, gender, and age were complex (Tables II–V). In general, "currently unemployed" had significantly higher



percentages of current smokers than “currently employed” or “not in labor force” groups, although the prevalence of current smokers among black women did not significantly vary by employment status (Table II). In addition, the “currently unemployed” 20–44-year-old black men had the highest percentage of current smokers (61.4%) (Table II). Among women, “currently unemployed” 20–44-year-old white women were the most likely to be current smokers (42.9%).

There was also a lower percentage of former smokers among the currently unemployed (Table III). On the other hand, race had a much greater influence than employment status on the proportion of heavy smokers as shown by the relatively low percentage of blacks who were heavy smokers regardless of employment (Table V). Interestingly, 17–19-year-old white men had the largest difference in percentage of current smokers due to employment status: 50.2% for “currently unemployed” white men vs 15% for those “not in the labor force” and 25.8% for those “currently employed” (Table II).

### **Smoking and Occupation**

Tables VI–IX show cigarette-smoking descriptors for the currently employed according to broad occupational groups and race, gender, and age. The smoking characteristics among the different groups displayed in these tables are similar to previous reports [Sterling and Weinkam, 1976; USDHHS, 1985]. However, in contrast to the surgeon general’s report, we included race as a dimension. That report described smoking characteristics by major occupational group, age, and gender in sufficient detail, so that these patterns do not have to be rendered again here. Otherwise, some general important patterns include the following:

(1) The prevalence of current smokers was highest among “blue collar” occupations including transportation equipment operatives (48.7%); craftspeople (44.6%); operatives, except transportation (40.7%); and laborers, except farm (40.4%) (Table VI).

(2) There was a significantly lower percentage of women smoking than men in blue collar occupational groups, but there was not a difference in the percentage of current smokers between men and women in the remaining occupational groups (Table VI).

(3) There were 10–15% more never smokers among women for most of the occupational groups; and the opposite was true for former/ever smokers (Tables VII, VIII).

Also, in regard to blacks vs whites, professional and technical blacks had a higher percentage of current smokers than whites (blacks 37.5% vs 25.0%), although in all occupational groups there were proportionately fewer heavy smokers among the currently smoking blacks (Table IX).

### **Analysis by Detailed Occupation and Industry**

We have been able to include estimates of smoking habits by three-digit census occupation codes (detailed) with the standard error associated with each estimate. However, in order to maintain a relative standard error of approximately 30% or less with each estimate, we have chosen to present detailed occupations that have at least 100,000 employed. Table X shows percent current of total, percent former of ever, percent never of total, percent 20–39 cigarettes daily, and percent 40 or more

cigarettes daily among current smokers by detailed occupation. The tabulated occupational groups include all currently employed 17 years old and older, race and gender combined. The smoking habits were not presented separately for men and women because there were only a few occupational groups where the percentage of current smokers differed significantly by gender. These comparisons are shown in Table XI. It is interesting that for over half of these occupations, proportionately more women smoked than men and in some cases considerably more, eg, writers, artists, busboys, and bartenders.

Five descriptive measures of smoking are presented by industry groups (two-digit SIC) in Table XII. All the industry categories are shown regardless of estimated number of employed. Not unexpectedly, we found that the tobacco industry had the second highest percentage of current smokers (54%) (Table XII). Coal mining was also among the top ten industries, with 49% current smokers. Metal mining, in contrast, was ranked the lowest for percentage of current smokers (21%), and also had the highest percentage of former ever smokers (68%).

The detailed information was also useful for relating different measures of smoking, such as percentage of current smokers and percentage of heavy smokers. For instance, 32% of currently smoking lumbermen and 26% of recreation attendants were heavy smokers (Table X) (the mean percentage of heavy smokers was 16% of current smokers), but only 42% of all lumbermen and 37% of recreation attendants were current smokers; these percentages ranked them lower by percentage of current smokers than many other occupations.

Table XIII shows how examining only occupation can be misleading in evaluating smoking prevalence. For instance, managers and administrators, a large occupational group, had 57% smokers, if they worked in the trucking/warehouse industry or 26% if they worked in restaurants. This variation of smoking prevalence by industry was observed in the other occupations of secretaries, foremen, and machine operators.

### **Using These Data for Further Analysis**

These data are structured in such a fashion that an interested researcher can obtain this information upon request. All the tables are available as Lotus spreadsheets or ASCII files on microcomputer diskettes (DOS). Because the denominator for all the proportions was included, a user could recalculate proportions for different combinations of groups given the detail of the data provided. It would also be possible to do rudimentary statistical comparisons by using the standard error (see Appendix III). Readers are encouraged to consider how they could further evaluate these data.

## **DISCUSSION**

This analysis not only substantiated the description of smoking characteristics reported elsewhere [Sterling and Weinkam, 1976; USDHHS, 1985; Weinkam and Sterling, 1987] but also considerably augmented the value of using NHIS survey data for indirect adjustment in occupational epidemiology studies. Specifically, this analysis incorporated smoking characteristics by (1) three-digit occupation categories, (2) industry, and (3) occupation within industry with the standard error and denominator for each estimate.

**TABLE II. Current Cigarette Smokers (Percent) According to Employment Status, Age, Race, and Gender: NHIS, US 1978-1980**

	Employment status														
	Currently employed						Currently unemployed						Not in labor force		
	17-19	20-44	45-64	Total	17-19	20-44	45-64	Total	17-19	20-44	45-64	Total			
White men	25.8	40.4	37.0	37.6	50.2	52.6	50.3	50.6	15.0	38.0	47.2	28.4			
SE	1.50	0.60	0.80	0.45	5.12	2.72	4.35	2.21	2.21	2.16	1.80	0.79			
Denominator (in thousands)	3,418	30,030	15,110	50,437	344	1,481	515	2,518	1,390	2,055	3,114	13,336			
Black men	24.6	46.8	45.8	44.3	36.9	61.4	57.9	54.8	19.5	42.6	52.4	36.6			
SE	5.76	1.70	3.35	1.49	7.66	5.29	11.93	4.44	4.70	5.11	4.65	2.51			
Denominator (in thousands)	263	2,876	1,165	4,454	107	304	70	491	378	483	517	1,994			
White women	29.1	34.3	32.1	32.7	47.1	42.9	29.8	40.9	27.8	33.3	30.8	26.1			
SE	1.58	0.63	0.84	0.50	4.57	2.43	3.78	1.89	2.04	0.87	0.89	0.45			
Denominator (in thousands)	2,919	21,604	9,957	35,623	481	1,789	458	27,913	1,969	11,617	9,952	34,843			
Black women	19.2	34.7	32.4	32.6	29.8	37.7	36.3	35.9	22.7	36.3	32.9	26.5			
SE	4.40	1.79	2.48	1.43	9.62	5.04	11.03	4.10	4.21	2.33	2.87	1.54			
Denominator (in thousands)	254	2,886	1,185	4,446	111	377	52	541	433	1,456	866	3,743			

**TABLE III. Ex-cigarette-Smokers (Percent Former/Ever) According to Employment Status, Race, Age, and Gender: NHIS, US 1978-1980**

	Employment status														
	Currently employed						Currently unemployed						Not in labor force		
	17-19	20-44	45-64	Total	17-19	20-44	45-64	Total	17-19	20-44	45-64	Total			
White men	20.5	36.0	51.4	42.0	7.0	25.5	41.4	28.6	25.5	29.3	43.9	56.6			
SE	2.49	0.70	0.93	0.55	3.73	2.62	4.43	2.16	5.42	2.90	1.91	1.11			
Denominator	3,332	18,960	11,496	32,739	702	1,046	442	1,786	840	1,106	2,622	8,748			
Black men	14.8	22.9	37.9	28.0	5.2	23.8	23.8	21.9	5.6	26.1	32.2	34.5			
SE	7.59	2.06	3.59	1.99	5.24	5.28	1.30	4.49	3.90	5.63	4.62	3.11			
Denominator	228	1,745	858	2,742	125	245	79	345	234	279	399	1,115			
White women	19.0	30.9	34.3	31.5	8.8	24.2	36.7	24.3	19.3	33.0	37.2	37.7			
SE	2.49	0.96	1.25	0.73	3.56	2.76	6.07	2.16	3.32	1.23	1.35	0.81			
Denominator	3,139	10,715	4,863	17,005	745	1,012	216	1,507	2,054	5,770	4,907	14,624			
Black women	9.9	21.5	29.2	23.7	N/A	11.8	52.6	17.1	12.5	19.9	32.0	28.9			
SE	6.39	2.17	3.51	1.80	N/A	4.44	14.81	4.51	6.18	2.89	4.21	2.30			
Denominator	102	1,277	541	1,904	99	162	40	234	336	660	420	139			

**TABLE IV. Never Cigarette Smokers (Percent) According to Employment Status, Race, Gender, and Age: NHIS, US 1978-1980\***

	Employment status														
	Currently employed						Currently unemployed						Not in labor force		
	17-19	20-44	45-64	Total	17-19	20-44	45-64	Total	17-19	20-44	45-64	Total			
White men	67.1	36.6	23.7	34.8	46.1	28.9	14.2	28.8	79.4	45.8	15.4	34.0			
	SE	0.58	0.72	4.65	5.12	2.40	3.59	1.92	2.39	2.07	1.29	.81			
Black men	71.1	38.8	25.7	37.9	61.1	19.5	17.8	28.9	79.3	42.4	22.8	44.0			
	SE	5.92	1.80	1.53	7.76	4.21	9.16	4.24	4.75	4.94	3.91	2.64			
White women	64.2	50.3	51.0	52.1	48.3	43.1	53.0	45.8	65.3	50.1	50.2	57.7			
	SE	1.65	0.64	5.46	4.68	2.45	3.87	1.89	2.23	0.99	0.94	5.68			
Black women	77.7	55.3	53.2	56.5	70.2	57.2	19.4	56.3	74.1	54.3	51.5	62.6			
	SE	4.78	1.88	1.44	9.63	5.19	9.17	4.14	4.14	2.57	3.19	1.7			

\*The estimated denominators are the same as in Table II.



TABLE VI. Current Cigarette Smokers (Percent) by Broad Occupational Groups, Race, Gender, and Age: NHIS, US 1978-1980

Occupational group	Total <sup>a</sup> race, gender, age group	Whites				Blacks				Total <sup>a</sup> blacks	
		Men		Women		Men		Women			
		20-44	45-64	20-44	45-64	20-44	45-64	20-44	45-64		
Professional and technical (001-195)	25.6 0.70 15,958	24.5 1.20 5,488	26.6 1.89 2,379	25.3 1.23 4,607	26.6 1.99 1,455	25.0 0.71 14,580	39.0 5.76 302	35.1 13.01 75	37.5 4.07 475	38.9 7.59 145	37.5 2.63 1,056
Managers and administrators, no farms (201-245)	35.7 0.94 11,234	39.0 1.50 4,392	30.7 1.75 2,920	38.2 2.31 1,761	40.4 2.95 968	35.6 0.97 10,594	33.6 6.90 213	62.2 10.28 97	38.9 8.40 125	31.5 16.32 27	39.4 4.29 481
Sales workers (260-296)	34.7 1.12 5,973	41.1 2.39 1,820	37.7 2.96 992	34.0 2.38 1,257	33.2 3.32 747	34.7 1.18 5,684	47.7 12.39 89	NA <sup>c</sup> NA	22.3 9.15 81	53.9 17.59 26	35.4 6.58 238
Clerical workers (301-395)	32.4 0.67 17,159	36.8 2.37 7,735	40.5 3.41 933	33.2 1.05 7,558	31.3 1.60 3,353	32.5 0.69 15,322	30.7 6.03 269	36.9 12.29 99	32.2 3.10 893	48.7 6.38 175	34.0 2.71 1,569
Crafts people (401-580)	44.6 0.89 13,164	47.1 1.23 7,081	41.8 1.81 3,488	48.0 4.42 526	44.5 5.65 262	44.6 0.93 12,202	44.6 4.26 508	55.5 7.19 202	41.5 13.79 49	NA NA 16	44.9 3.34 820
Operatives, except transportation (601-695)	40.7 1.04 10,063	47.3 1.76 3,373	43.1 2.91 1,318	40.6 2.10 1,934	31.3 2.35 1,241	41.0 1.09 8,856	49.8 5.32 354	41.1 7.16 154	34.5 4.69 379	27.7 7.51 111	39.6 2.92 1,044

Transportation equipment	48.7	53.3	43.1	43.0	35.2	47.8	58.0	52.2	39.4	61.8	54.6
operatives (701-715)	1.76	2.66	3.67	6.96	12.47	1.81	6.36	8.94	29.57	22.39	4.93
Denominator	3,273	1,534	773	173	48	2,782	280	129	10	15	454
Laborers, except farm (745-785)	40.4	43.1	45.6	39.3	16.3	38.1	62.7	39.6	34.6	NA	50.9
Denominator	1.64	2.54	4.36	6.25	9.13	1.74	5.33	8.17	15.64	NA	4.36
Farmers and farm managers (801,802)	4,185	1,761	547	227	66	3,459	394	154	31	17	683
Denominator	24.7	22.2	32.5	52.6	10.9	24.4	NA	NA	NA	NA	NA
Farm laborers and foremen (821-824)	2.20	3.42	3.85	13.81	7.74	2.21	NA	NA	NA	NA	NA
Denominator	1,566	543	619	60	55	1,529	7	5	5	NA	NA
Service, except household (901-965)	29.6	36.4	42.2	23.8	5.7	28.0	76.7	40.9	56.4	NA	52.5
Denominator	2.92	5.97	9.39	6.76	4.02	3.09	15.94	19.88	19.83	NA	10.90
Private household (980-984)	957	280	92	138	69	825	41	23	21	10	95
Denominator	38.3	47.9	45.1	40.6	35.0	39.2	47.2	43.5	38.8	28.0	34.5
	0.99	2.72	3.18	1.80	2.50	1.07	6.21	6.76	3.47	3.58	2.26
Denominator	11,014	1,739	911	9,008	1,444	8,907	335	204	695	428	1,909
	26.4	NA	100.0	39.1	30.1	29.4	31.0	67.3	18.4	27.6	23.1
Denominator	3.05	NA	NA	7.12	7.67	4.17	26.30	27.20	7.41	6.04	4.39
	893	2	4	588	129	489	7	8	100	205	397

<sup>a</sup>Totals include 17-year olds and older.

<sup>b</sup>Denominators are in thousands.

<sup>c</sup>NA = not available.

TABLE VII. Former/Ever Cigarette Smokers (Percent) by Broad Occupational Groups, Race, Gender, and Age: NHIS, US 1978-1980

Occupational group	Total <sup>a</sup> race, gender, age group	Whites						Blacks					
		Men			Women			Men			Women		
		20-44	45-64	Total <sup>a</sup> whites	20-44	45-64	Total <sup>a</sup> whites	20-44	45-64	Total <sup>a</sup> blacks	20-44	45-64	Total <sup>a</sup> blacks
Professional and technical (001-195)	49.7	52.6	61.5	42.0	45.4	51.3	29.2	50.0	13.2	33.4	25.4	3.65	
SE	1.25	2.02	2.44	2.33	3.41	1.26	7.05	15.69	4.37	10.13	3.65		
Denominator <sup>b</sup>	8,202	2,839	1,640	2,007	709	748	166	52	205	85	530		
Managers and administrators, no farms (201-245)	44.3	40.0	59.4	31.0	28.0	44.9	36.4	22.9	30.7	NA <sup>c</sup>	29.8		
SE	1.18	1.83	2.16	3.17	3.56	1.19	9.61	10.43	10.04	NA	5.78		
Denominator	7,223	2,853	2,004	976	543	6,851	112	78	70	8	270		
Sales workers (260-296)	38.0	33.6	49.4	31.7	33.7	38.5	27.6	NA	39.4	NA	26.9		
SE	1.54	3.01	3.85	3.73	4.50	1.62	13.58	NA	18.21	NA	8.42		
Denominator	3,356	1,125	739	625	373	3,208	58	3	29	14	115		
Clerical workers (301-395)	33.5	36.5	48.6	30.4	36.4	34.3	30.8	37.9	25.3	15.5	24.9		
SE	0.98	3.50	3.82	1.52	2.29	1.02	8.79	13.53	3.86	6.92	3.14		
Denominator	8,407	1,006	735	3,609	1,649	7,578	119	58	384	101	710		
% former/ever	36.4	32.0	47.6	25.0	20.7	37.0	27.3	32.7	NA	NA	28.1		
SE	1.01	1.43	2.10	4.63	5.68	1.05	5.05	7.61	NA	NA	3.94		
Denominator	9,241	4,903	2,779	336	146	8,633	311	166	20	0	512		
Operatives, except transportation (601-695)	31.9	32.7	45.7	23.8	28.7	32.6	25.3	33.9	23.1	32.5	26.2		
SE	1.19	1.94	3.40	2.59	3.39	1.24	5.96	9.19	6.29	10.75	3.83		
Denominator	6,038	2,369	1,045	1,030	545	5,396	235	96	170	45	559		

Transportation equipment operatives (701-715)	% former/ever	30.8	25.8	46.3	18.2	33.2	32.5	13.6	35.3	NA	NA	20.1
	SE	1.89	2.63	4.13	6.82	17.02	1.94	5.67	9.32	NA	NA	4.58
	Denominator	2,311	1,100	621	90	25	1,969	187	104	4	9	310
Laborers, except farm (745-785)	% former/ever	30.3	29.4	42.1	30.2	47.7	32.4	8.5	43.5	40.6	NA	20.8
	SE	1.89	2.73	5.09	8.41	21.40	2.1	3.19	10.18	23.47	NA	4.0
	Denominator	2,427	1,075	431	127	20	1,952	269	107	18	4	438
Farmers and farm managers (801,802)	% former/ever	53.8	49.8	51.7	18.1	4.0	53.9	NA	NA	NA	NA	NA
	SE	3.33	6.18	4.85	12.90	25.16	3.41	NA	NA	NA	NA	NA
	Denominator	838	240	417	38	47	808	7	5	0	0	12
Farm laborers and foremen (821-824)	% former/ever	29.5	22.0	50.6	31.5	33.4	30.2	NA	50.1	NA	NA	21.0
	SE	4.46	7.05	10.70	12.94	27.32	4.81	NA	23.60	NA	NA	13.60
	Denominator	404	130	78	47	6	330	31	19	11	4	66
Service, except household (901-965)	% former/ever	28.4	27.4	40.5	26.3	29.1	28.7	22.6	43.9	16.2	35.3	28.2
	SE	1.22	3.06	3.46	2.09	3.31	1.37	6.18	7.57	3.91	6.52	2.86
	Denominator	5,925	1,147	689	1,651	712	4,888	204	158	321	186	918
Private household (980-984)	% former/ever	29.2	NA	NA	14.4	27.1	22.9	52.6	NA	41.2	30.2	36.4
	SE	4.90	NA	NA	6.79	11.03	5.79	35.38	NA	16.68	8.96	8.09
	Denominator	335	NA	NA	89	53	186	4	5	31	81	144

<sup>a</sup>Totals include 17-year olds and older.

<sup>b</sup>Denominators are in thousands.

<sup>c</sup>NA = not available.

TABLE VIII. Never Cigarette Smokers (Percent) According to Broad Occupational Groups, Race, Gender, and Age: NHIS, US 1978-1980

Occupational group	Total <sup>a</sup> race, gender, age group	Whites				Blacks				Total <sup>a</sup> blacks	
		Men		Women		Men		Women			
		20-44	45-64	20-44	45-64	20-44	45-64	20-44	45-64		
Professional and technical (001-195)	48.6 0.76 958	47.7 1.29 5,488	30.8 1.97 2,379	56.2 1.31 4,607	50.9 2.49 1,455	48.3 0.84 14,580	45.0 5.74 302	29.8 11.89 75	54.6 3.95 475	40.2 7.35 145	48.6 2.68 1,056
Managers and administrators, no farms (201-245)	35.2 0.91 11,234	34.7 1.42 4,392	24.0 1.49 2,920	44.6 2.30 1,761	43.9 2.95 968	35.1 0.92 10,594	47.3 8.17 213	19.3 7.99 97	42.3 9.26 125	68.5 16.32 27	43.4 4.99 481
Sales workers (260-296)	43.8 1.40 5,973	37.7 2.23 1,820	25.5 2.84 992	50.1 2.61 1,257	49.4 3.51 747	43.3 1.39 5,684	34.1 11.58 89	62.7 13.43 8	63.2 10.97 81	46.1 17.59 26	51.6 7.14 238
Clerical workers (301-395)	51.0 0.74 17,159	41.8 2.30 1,735	21.1 2.60 933	52.0 1.11 7,558	50.7 1.71 3,353	50.4 0.80 15,322	53.0 5.75 269	40.5 11.02 99	56.9 3.27 893	42.4 6.19 175	54.3 2.56 1,569
Crafts people (401-580)	29.8 0.89 13,164	30.7 1.16 7,081	20.2 1.39 3,488	36.0 4.48 526	43.9 5.83 262	29.2 0.93 12,202	37.6 4.06 508	17.5 5.59 202	58.5 13.79 49	100.0 0.00 16	36.9 3.15 820
Operatives, except transportation (601-695)	40.0 1.01 10,063	29.4 1.59 3,373	20.1 2.05 1,318	46.6 2.20 1,934	56.1 2.73 1,241	38.8 1.07 8,856	33.3 5.10 354	37.8 7.29 154	55.1 5.30 379	57.1 8.73 111	46.2 3.02 1,044

Transportation equipment operatives (701-715)	% never smokers	29.4	28.3	18.9	47.5	47.2	29.0	32.9	19.3	60.6	38.2	31.6
	SE	1.57	2.20	2.91	7.00	3.14	1.63	6.33	6.55	29.52	22.39	4.71
	Denominator	3,273	1,534	773	173	48	2,782	280	129	10	15	454
Laborers, except farm (745-785)	% never smokers	42.0	38.8	21.2	43.7	68.8	43.3	30.8	30.0	41.8	72.1	35.4
	SE	1.52	2.57	3.51	6.33	11.17	1.70	4.75	6.77	15.22	22.77	3.99
	Denominator	4,185	1,761	547	227	66	3,459	394	154	31	17	683
Farmers and farm managers (801,802)	% never smokers	46.5	55.7	32.6	35.7	74.8	47.1	NA <sup>c</sup>	NA	100.0	NA	NA
	SE	2.80	4.21	3.94	12.94	11.39	2.81	NA	NA	NA	NA	NA
	Denominator	1,566	543	619	60	55	1,529	7	5	5	0	0
Farm laborers and foremen (821-824)	% never smokers	57.8	53.3	14.8	65.2	91.4	59.2	23.3	18.1	43.6	58.6	33.5
	SE	3.25	6.22	6.57	7.40	4.89	3.43	15.94	12.56	19.83	27.98	9.50
	Denominator	957	280	92	138	69	825	41	23	21	10	95
Service, except household (901-965)	% never smokers	46.2	34.0	24.3	44.9	50.4	45.0	39.1	19.1	53.7	54.5	50.9
	SE	0.96	2.28	2.73	1.82	2.51	1.09	5.18	5.42	3.55	4.01	2.09
	Denominator	11,014	1,739	911	9,008	1,444	8,907	335	204	695	428	1,909
Private household (980-984)	% never smokers	62.5	NA	NA	54.3	58.8	61.5	34.5	32.7	68.7	60.4	63.7
	SE	3.39	NA	NA	7.06	8.31	4.36	27.78	27.20	9.24	7.27	5.33
	Denominator	893	2	4	588	129	489	7	8	100	205	397

<sup>a</sup>Totals include 17-year olds and older.

<sup>b</sup>Denominators are in thousands.

<sup>c</sup>NA = Not available.

TABLE IX. Cigarettes Smoked Daily (20-39 Cigarettes per Day and More Than 40 Cigarettes per Day) According to Occupational Groups, Race, Gender, and Age: NHIS, US 1978-1980

Age group: Cigarettes/day:	Whites																					
	Men									Women									Total whites			
	20-44			45-64			20-44			45-64			20-39			40+			20-39		40+	
%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	
Professional and technical	50.0	1.44	12.6	0.93	51.9	2.19	15.7	1.47	48.5	1.42	12.1	1.04	51.8	2.56	12.0	1.56	50.1	0.93	13.0	0.67		
Managers and administrators, no farms	53.4	1.63	17.1	1.21	47.6	1.88	19.8	1.53	45.7	2.16	14.3	1.61	49.0	3.28	16.0	2.38	50.1	1.08	16.9	0.85		
Sales workers	48.1	2.37	17.3	1.87	45.6	2.94	19.9	2.64	48.4	2.57	12.7	1.74	45.3	3.57	16.4	3.13	46.9	1.42	16.3	1.06		
Clerical workers	51.9	2.37	15.4	1.67	48.3	3.14	15.7	2.56	49.6	1.16	12.8	0.84	47.7	1.89	12.3	1.01	49.3	0.97	13.2	0.66		
Crafts people	53.0	1.20	16.8	0.88	49.8	1.56	18.6	1.41	51.5	4.41	18.0	3.71	45.2	5.96	16.6	4.70	52.2	0.98	17.3	0.81		
Operatives, except transportation equipment	54.0	1.72	13.4	1.23	49.0	2.72	18.8	2.10	53.1	2.40	11.1	1.41	48.4	2.87	14.7	2.06	52.1	1.24	13.9	0.88		
Transportation equipment operatives	54.4	2.65	15.8	1.98	54.5	3.64	21.4	2.75	46.5	7.55	12.6	4.94	54.6	12.88	20.6	10.70	54.1	1.97	17.3	1.52		
Laborers, except farm	51.9	2.52	15.4	1.84	55.6	4.83	15.6	3.21	51.2	6.66	12.8	4.00	62.7	11.68	3.0	3.00	53.1	2.10	14.9	1.50		
Farmers and farm managers	48.8	4.89	10.1	2.89	51.7	4.25	13.1	2.76	42.4	11.82	7.2	6.40	73.0	14.0	15.2	8.92	51.3	3.01	12.3	1.84		
Farm laborers and foremen	42.5	6.24	12.1	4.04	47.2	9.86	16.3	7.53	57.3	8.22	9.9	4.35	39.7	10.56	16.1	8.02	46.5	4.03	13.5	2.74		
Service, except household	47.8	2.60	15.8	2.05	48.8	3.31	20.2	2.84	46.3	1.94	15.4	1.37	50.3	2.49	13.1	1.72	47.7	1.18	15.4	0.91		
Private household	NA	NA	NA	NA	NA	NA	NA	NA	42.1	6.32	15.4	5.10	46.2	8.23	7.7	4.10	40.2	4.57	11.8	3.10		

## Blacks

Age group: Cigarettes/day:	Men						Women						Total blacks								
	20-44		45-64		20-44		45-64		20-39		40+		20-39		40+						
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE					
Professional and technical	37.2	5.23	8.0	3.13	44.2	12.89	6.7	4.63	40.5	4.33	9.8	2.56	39.9	7.5	8.9	4.62	40.2	3.08	8.9	1.79	
Managers and administrators, no farms	32.0	7.41	14.7	5.30	29.1	9.0	17.4	7.42	45.8	8.65	6.8	3.99	31.4	16.3	23.2	15.20	3.52	4.13	13.8	3.20	
Sales workers	41.7	9.86	2.9	2.89	N/A	N/A	37.3	13.40	51.1	11.5	5.0	4.94	7.8	7.68	7.9	7.75	39.0	6.51	5.7	2.80	
Clerical workers	28.5	6.34	7.3	3.39	62.6	12.29	5.1	3.70	40.0	3.23	7.4	1.55	31.0	6.71	13.7	5.29	37.6	2.69	8.0	1.43	
Crafts people	42.0	4.66	10.0	2.93	44.8	8.08	9.7	4.31	51.6	14.48	12.4	8.70	2.32	20.18	N/A	N/A	42.9	3.9	10.3	2.10	
Operatives, except transportation	37.3	5.29	5.2	2.54	36.0	8.00	12.1	5.35	33.4	4.32	9.6	2.70	24.7	7.23	9.3	4.65	34.0	3.18	8.3	1.67	
Transportation equipment operatives	50.3	6.52	2.8	1.57	31.6	8.69	N/A	39.4	29.52	22.5	21.35	51.6	23.23	N/A	44.0	5.12	3.1	1.39			
Laborers, except farm	37.4	5.33	6.1	2.21	50.2	8.02	5.2	3.86	38.3	15.56	7.0	7.00	64.7	21.89	N/A	40.7	4.29	6.4	2.05		
Farmers and farm managers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24.7	21.72	N/A	N/A
Farm laborers and foremen	53.6	18.16	N/A	N/A	18.1	12.56	22.4	19.00	11.1	10.8	N/A	N/A	80.7	18.33	19.3	18.30	40.2	9.44	7.4	5.20	
Service, except household	40.8	5.36	7.6	2.85	42.4	7.74	13.6	5.00	34.8	3.48	7.8	1.86	44.7	4.14	9.9	2.96	40.0	2.46	9.3	1.50	
Private household	34.5	27.77	NA	NA	NA	NA	NA	NA	45.0	9.42	6.1	4.55	44.2	6.16	7.1	3.40	48.1	4.86	8.2	4.70	

<sup>a</sup>NA = not available.

TABLE X. % Current, % Former, % Never, % Smoked 20-39 Cigarettes, and % Smoked 40 or More Cigarettes Daily According to 3-Digit Occupation: NHIS, U.S. 1978-1980\*

Census occupation titles	Census occupation code	% Current smokers		% Former/ever		% Never smokers		% 20-39 cigarettes daily		% 40 or more cigarettes daily		Estimated employment	% Men
		%	SE	%	SE	%	SE	%	SE	%	SE		
Bartenders	910	65.3	5.2	17.5	4.9	20.8	4.7	58.4	6.1	19.0	5.0	274,938	54.2
Building managers	216	59.0	7.6	32.0	7.3	13.2	4.9	50.5	7.5	18.6	5.8	156,890	54.3
Meat cutters	631	55.4	7.1	34.5	7.7	15.3	5.2	49.6	7.2	13.9	5.2	184,343	>99.0
Aircraft repair	471	54.9	7.6	26.4	7.7	25.4	5.8	44.0	7.9	11.7	5.5	181,713	>99.0
Roofers	534	54.6	9.5	33.3	9.6	18.3	6.8	65.0	8.5	21.3	7.0	127,913	>99.0
Brickmasons	410	53.7	6.8	29.2	6.9	24.2	5.6	65.2	6.6	17.6	4.9	227,353	>99.0
Struct metal craft	550	53.5	9.8	26.8	10.0	26.9	8.7	62.0	9.5	22.8	8.3	120,576	>99.0
Truck drivers	715	53.1	2.4	29.0	2.5	25.2	2.0	52.8	2.3	16.5	1.8	1,798,298	98.3
Cutting operators, nec	612	52.9	6.6	25.7	6.3	28.8	6.7	42.8	6.7	11.8	4.7	209,637	74.9
Pressmen	530	51.9	7.3	22.0	6.6	33.5	7.3	44.5	6.7	22.6	6.5	196,873	83.4
Restaurant mgt	230	51.7	4.6	24.9	4.7	31.2	4.1	44.2	4.4	20.1	3.7	476,057	59.6
Auto body repair	472	51.0	6.9	30.4	7.9	26.6	6.4	50.9	7.4	20.0	5.8	189,806	>99.0
Air-cond repair	470	50.7	7.2	33.3	8.2	24.1	5.4	56.2	7.0	17.1	5.3	222,094	>99.0
Fork lift operatives	706	50.2	4.8	29.4	4.9	27.4	4.3	52.8	5.2	12.5	3.2	366,711	>99.0
Construct labor	751	49.9	3.6	22.8	4.0	35.1	3.3	59.2	3.8	10.7	2.2	801,946	>99.0
Misc repairmen	492	49.6	6.5	29.5	6.7	29.6	5.9	54.3	6.5	18.1	4.8	221,280	>99.0
Painters, construction	510	48.9	4.5	31.9	5.0	28.2	4.1	51.5	4.6	16.1	3.2	477,912	92.5
Tinsmiths	535	48.3	9.1	21.2	8.7	38.6	9.3	49.9	9.3	16.0	7.7	134,202	>99.0
Carpenters	415	48.2	2.7	34.5	3.2	26.5	2.4	52.4	2.8	15.5	2.0	1,382,805	>99.0
Waiters	915	48.2	2.6	15.8	2.4	42.7	2.7	49.7	2.7	13.1	2.1	1,264,284	10.1
Excavating mach oper	436	48.0	6.1	36.2	6.6	24.7	4.7	42.7	5.6	17.4	4.3	279,888	>99.0
Mine operatives	640	47.9	7.3	31.5	8.0	30.1	6.8	53.5	7.3	15.3	5.3	196,980	>99.0
Fillers, sanders	621	47.4	8.6	20.4	8.4	40.4	9.1	52.5	8.8	14.8	6.8	113,791	>99.0
Plumbers	522	46.9	4.4	39.5	4.9	22.2	3.6	48.7	4.4	19.3	3.9	483,504	>99.0
Auto mechanics	473	46.7	3.1	31.2	3.4	32.0	2.9	50.3	3.4	14.7	2.1	1,023,174	>99.0
Payroll clerks	360	46.4	6.7	14.9	6.8	45.5	6.8	46.9	7.4	11.9	4.7	197,690	31.4
Heavy equip repair	481	46.0	3.4	38.0	4.0	25.6	3.2	52.8	3.7	20.9	3.0	724,990	>99.0
Misc laborers	780	45.4	6.4	28.0	7.4	37.0	6.1	49.9	6.0	11.5	4.1	283,202	>99.0
Welders	680	45.4	3.8	37.2	4.2	26.9	3.6	59.1	3.7	11.6	2.6	637,177	>99.0

Watchmen & guards	962	44.9	4.4	29.7	5.0	36.3	4.2	48.5	4.2	14.0	2.7	577,198	81.1
Firemen	961	44.5	7.5	23.2	6.8	42.1	7.0	58.6	6.2	10.3	3.8	218,044	>99.0
Electricians	430	44.3	3.9	33.8	4.4	33.1	4.3	54.2	4.0	13.3	2.8	590,129	>99.0
Salesmen, construction	285	43.7	6.1	42.8	6.8	23.6	4.9	47.5	6.0	14.6	3.9	272,356	74.3
Production controllers	323	43.6	5.0	34.8	5.5	32.6	5.4	51.3	4.9	14.6	3.6	364,621	64.7
Sales reps, wholesale	282	43.6	4.0	36.9	4.7	30.9	3.3	50.7	4.2	13.8	2.8	643,692	89.4
Foremen, nec	441	43.5	2.0	41.5	2.4	25.7	1.9	53.7	2.2	13.6	1.5	2,012,591	84.7
Packers, except meat	643	43.4	4.2	16.6	4.2	48.0	4.2	45.7	4.1	12.6	2.6	581,344	37.6
House appli repair	482	43.2	8.7	40.2	9.2	27.8	8.4	53.6	8.1	11.3	6.9	115,575	>99.0
Janitors	903	42.7	3.0	35.4	3.9	33.7	2.8	42.0	2.8	14.1	2.1	1,181,670	77.2
Sales mgt, not retail	233	42.7	5.1	39.8	6.7	29.1	5.0	48.1	5.3	21.9	4.7	295,540	85.8
Stationary engineers	545	42.7	6.0	37.5	7.3	31.8	5.3	56.6	5.7	7.8	3.1	290,217	>99.0
Sawyers	662	42.3	9.4	14.1	7.9	50.8	9.4	56.6	9.9	5.9	4.3	102,236	>99.0
Lumbermen	761	42.1	8.2	43.1	9.1	26.0	6.8	41.8	7.7	32.3	6.5	138,811	>99.0
Spinners	672	42.0	9.3	22.3	9.9	45.9	8.2	43.1	9.1	13.3	6.8	124,862	34.6
Misc machine operator	690	42.0	2.5	31.7	3.0	38.1	2.4	45.6	2.6	14.9	2.0	1,577,333	64.8
Taxicab drivers	714	41.9	7.2	33.1	9.2	37.4	8.1	49.7	9.0	16.2	5.9	153,010	>99.0
Machinists	461	41.9	3.7	37.6	4.6	32.9	3.5	53.0	4.1	19.1	3.2	644,582	>99.0
Buyers, wholesale	205	41.8	8.6	44.7	10.0	24.5	6.7	50.6	7.4	20.3	6.1	141,916	52.8
Mach oper not specified	692	41.8	5.4	30.8	6.5	39.6	5.4	49.3	5.5	16.3	4.1	306,573	77.0
Vehicle washers	764	41.8	8.4	32.1	1.3	38.4	7.4	34.5	8.0	19.6	6.4	136,858	>99.0
Salesmen, retail	284	41.7	5.3	40.6	6.5	28.2	4.6	47.2	5.6	18.9	4.5	355,717	89.5
Deliverymen	705	41.6	5.0	35.6	5.6	35.3	4.4	48.0	4.7	11.7	2.9	475,972	91.4
Sales reps, manu	281	41.0	3.8	35.0	4.5	36.9	3.7	48.9	3.6	19.9	3.0	639,480	79.2
Not spec operative	695	40.7	6.8	34.3	7.8	38.1	6.4	50.2	7.1	14.3	4.5	203,085	59.0
Rail conductors	703	40.7	6.2	34.0	6.9	38.4	5.5	52.2	5.1	10.0	3.0	342,835	54.5
Shipping clerks	374	40.6	4.3	28.8	5.6	43.0	4.3	43.9	4.2	15.0	3.3	461,546	79.3
Warehousemen, nec	770	40.6	7.1	31.3	7.9	41.0	7.4	49.6	7.0	16.3	5.1	234,576	>99.0
Insurance agent	265	40.4	4.5	42.1	5.1	30.3	4.3	45.8	4.5	20.5	3.7	484,408	73.5
Job & die setter	454	40.3	8.6	49.7	9.7	20.0	7.2	44.0	8.4	22.1	7.5	123,548	>99.0
Assemblers	602	40.2	2.9	31.2	3.6	41.7	2.9	46.7	3.1	13.8	2.3	1,132,439	45.2
Freight handlers	753	40.2	4.0	33.1	4.6	39.6	3.9	48.7	4.1	12.9	2.6	573,328	89.0
Office manager	220	45.2	5.5	24.3	6.2	40.3	5.5	48.2	5.8	18.7	4.2	285,666	26.1
Policemen	964	45.2	4.5	35.5	5.6	29.9	4.0	49.5	4.6	15.4	3.2	522,201	>99.0
Health technologists, mec	85	45.1	11.2	18.0	8.9	45.0	1.4	61.5	8.9	0.0	0.0	109,885	35.3

(continued)

**TABLE X. % Current, % Former, % Never, % Smoked 20-39 Cigarettes, and % Smoked 40 or More Cigarettes Daily According to 3-Digit Occupation: NHIS, U.S. 1978-1980\* (continued)**

Census occupation titles	Census occupation code	% Current smokers		% Former/ever		% Never smokers		% 20-39 cigarettes daily		% 40 or more cigarettes daily		Estimated employment	% Men
		%	SE	%	SE	%	SE	%	SE	%	SE		
Checkers; manufact	610	40.0	3.3	38.3	4.2	35.3	3.3	53.7	3.5	14.3	2.4	782,044	46.2
Tool & die makers	561	39.6	6.9	44.2	8.4	29.1	6.3	47.7	7.4	19.4	5.4	197,225	>99.0
Nursing aides	925	39.5	2.9	21.6	3.5	49.4	2.9	43.4	3.2	14.1	2.1	1,026,715	12.6
Radio & TV repair	485	39.5	8.0	32.2	9.6	40.1	8.0	39.5	7.9	25.2	7.2	154,590	>99.0
Social workers	100	39.5	4.9	37.0	6.1	36.9	4.5	40.2	4.8	12.8	3.2	395,831	33.2
Practical nurses	926	39.4	4.0	26.8	5.2	46.2	3.9	44.4	4.7	13.6	3.0	495,756	>99.0
Health admin	212	39.4	7.5	40.8	9.2	33.5	7.1	44.4	7.6	13.1	5.1	164,077	41.3
Musicians	185	39.0	6.6	35.2	8.0	39.8	7.0	51.7	7.3	15.7	5.1	206,375	77.4
Misc operatives	694	38.8	3.8	36.1	4.9	39.3	4.1	56.3	4.2	7.9	2.2	592,840	74.4
Gardeners	755	38.7	4.2	32.8	5.3	42.5	4.4	45.0	4.5	14.1	3.0	549,132	93.1
Punch press operators	656	38.5	8.9	50.0	1.1	22.9	7.8	53.7	7.6	7.1	4.4	136,367	68.6
Cashiers	310	38.2	2.8	22.0	3.0	51.1	2.9	48.0	2.6	11.8	1.7	1,345,770	12.5
Cranemen	424	37.8	5.7	45.3	6.9	30.9	6.0	42.6	6.3	17.3	4.6	249,496	>99.0
Insur adjusters	326	37.7	6.2	34.1	8.1	42.8	6.8	42.0	7.1	16.3	5.3	172,978	40.7
Mail carriers	331	37.5	6.4	39.0	8.3	38.5	6.4	42.9	7.1	15.1	4.5	210,646	>99.0
Cosmetologists	944	37.5	4.1	34.5	5.1	42.4	4.2	42.9	4.0	14.6	3.2	534,668	5.9
Ticket agents	390	37.3	8.5	34.4	1.2	43.1	7.9	50.6	8.5	14.5	5.7	159,502	61.6
Attend, recreation	932	36.8	9.2	5.1	5.0	61.3	9.2	28.4	8.0	26.2	8.3	111,570	36.3
Painters, manufact	644	36.6	9.3	46.1	12.0	27.8	7.5	45.9	9.7	14.5	5.4	130,087	>99.0
Phone install & repair	552	36.5	5.6	40.2	7.0	39.0	6.0	48.9	6.6	16.7	3.7	397,065	>99.0
Designers	183	36.4	7.0	39.3	9.1	40.1	6.9	47.4	7.7	7.9	3.6	188,460	68.1
Computer operators	343	35.9	4.3	35.4	5.8	44.5	4.8	45.7	4.8	8.1	2.6	453,613	45.6
Not spec labor	785	35.5	4.4	36.6	5.6	44.0	4.4	47.3	4.8	16.8	3.6	511,798	89.4
Mgt & Admin, nec	245	35.2	1.1	45.8	1.4	34.8	1.1	50.6	1.3	16.6	1.0	7,202,409	78.3
Health aides except nurse	922	35.1	5.7	24.5	7.3	53.5	5.7	42.0	5.5	17.4	4.2	332,055	17.9
Bookkeepers	305	35.1	2.1	30.1	2.8	49.8	2.1	51.0	2.3	13.7	1.3	1,948,756	9.1
Attend, personal service	933	35.1	7.7	26.5	11.6	52.3	8.2	48.8	8.9	21.7	7.8	122,496	43.5
Mail handlers, not PO	332	35.1	7.2	20.3	8.7	56.0	7.1	51.2	8.1	11.6	4.9	173,219	41.8
Postal clerks	361	35.0	4.7	43.2	6.5	36.5	4.9	58.9	5.2	11.4	3.4	370,714	69.6
Cleaning workers	901	35.0	7.7	27.6	9.8	51.6	8.3	42.9	7.0	10.0	4.0	177,916	29.4

Inspectors, nec	452	34.9	9.2	50.3	11.4	29.9	8.3	40.8	8.3	23.8	7.2	133,566	>99.0
Statistical clerks	375	34.8	5.5	29.6	8.1	49.8	6.1	44.4	5.9	13.8	3.8	259,355	19.2
Bakers	402	34.8	7.9	19.4	1.5	56.8	8.6	44.9	8.5	5.2	3.0	119,609	59.7
Typesetters	422	34.7	7.7	43.2	9.6	38.9	8.5	62.0	8.5	16.4	6.2	129,194	59.0
Laundry operators	630	34.5	7.0	39.5	1.6	43.0	7.1	43.2	7.4	17.2	5.0	162,640	28.7
Clerical supervisors	312	34.3	8.0	27.8	11.4	52.4	8.2	47.0	8.8	7.0	4.8	119,304	>99.0
Public relations	192	34.2	8.0	49.2	11.7	41.9	8.3	28.8	7.4	7.4	5.1	118,140	65.0
Draftsmen	152	33.7	5.6	33.0	7.5	49.7	5.7	57.2	5.3	7.2	2.7	293,911	87.0
Real estate agents	270	33.3	3.8	45.7	5.1	38.1	3.6	47.8	3.6	17.1	2.8	641,858	58.6
Stock clerks	381	33.3	3.6	35.0	5.0	48.7	3.9	51.7	3.9	14.8	2.8	634,944	61.9
Misc clerical	394	33.2	2.8	35.1	4.0	48.8	3.5	49.5	3.1	12.9	2.2	919,750	20.9
Charwomen	902	33.0	3.5	29.6	4.5	52.3	3.8	50.3	3.2	14.0	2.5	793,519	41.3
Food counter work	914	33.0	6.9	11.7	5.8	62.7	6.9	40.4	7.2	4.7	2.9	188,693	>99.0
Dishwashers	913	32.6	6.9	20.2	8.9	58.1	7.3	39.8	6.8	14.9	4.9	202,799	70.6
Personnel & Labor Relations	56	32.5	4.2	45.8	5.9	40.2	4.7	36.9	4.1	16.9	3.3	489,583	54.8
Bank officers	202	32.2	3.5	45.7	5.2	40.8	3.6	50.8	4.0	11.6	2.5	658,970	63.1
Cooks	912	32.1	2.6	30.7	3.9	52.7	2.7	43.3	3.0	13.3	1.9	1,153,569	41.3
Estimators, nec	321	31.4	4.5	47.5	6.1	40.3	4.6	44.3	5.1	14.3	3.6	449,832	37.6
Farm labor, wage	822	31.0	3.3	27.0	5.0	57.3	3.7	45.6	3.8	14.3	2.9	729,515	73.7
Typists	391	30.9	2.9	35.7	4.4	52.0	3.2	48.2	3.3	14.8	2.4	832,312	6.1
Window dressers	425	30.8	8.6	47.1	12.1	41.8	9.3	49.7	9.1	15.3	6.9	101,967	32.1
Sales clerks, retail	283	30.3	1.8	33.3	2.5	54.3	2.1	44.0	2.0	13.5	1.4	2,440,399	33.5
Secretaries, nec	372	30.3	1.4	34.5	2.2	53.5	1.8	46.8	1.7	12.4	1.1	3,596,763	1.1
Telephone operators	385	30.2	5.0	29.6	9.1	57.1	5.3	41.7	6.1	7.7	3.1	271,108	>99.0
Busboys	911	30.1	7.2	4.0	4.0	68.7	7.3	31.1	7.3	21.0	7.2	171,417	77.0
Gas station attend	623	30.0	5.2	37.9	7.7	51.8	6.3	46.2	5.5	17.9	4.6	275,784	>99.0
Engin tech, nec	162	29.9	5.1	40.0	7.3	49.5	6.2	48.8	5.4	14.8	4.2	298,678	72.0
Painters	190	29.5	5.2	46.7	8.1	44.6	6.1	46.4	6.8	10.7	4.1	217,575	53.2
Teachers, nec	145	29.4	5.1	44.6	6.7	47.0	5.7	55.7	5.5	14.8	4.1	323,277	25.9
Sales mgt, retail	231	29.4	5.1	51.0	7.1	40.2	5.1	46.9	5.2	15.9	4.0	334,798	66.6
Elec engin, tech	153	29.1	5.3	51.2	7.1	38.7	5.4	49.2	6.5	17.8	4.7	295,392	83.3

(continued)

TABLE X. % Current, % Former, % Never, % Smoked 20-39 Cigarettes, and % Smoked 40 or More Cigarettes Daily According to 3-Digit Occupation: NHIS, U.S. 1978-1980\* (continued)

Census occupation titles	Census occupation code	% Current smokers	SE	% Former/ever	SE	% Never smokers	SE	% 20-39 cigarettes daily	SE	% 40 or more cigarettes daily	SE	Estimated employment	% Men
Purchasing agents	225	29.0	5.1	39.9	8.3	51.7	5.7	47.2	5.8	11.2	3.4	283,267	62.8
Registered nurses	75	28.9	2.4	41.4	3.9	50.6	2.6	53.1	2.5	10.9	1.6	1,284,345	3.5
Maids, private	984	28.8	3.9	30.1	6.0	58.4	4.5	41.6	4.0	9.3	2.2	541,100	6.0
Receptionists	364	28.5	4.3	33.6	6.5	56.6	4.7	50.3	4.7	10.8	2.7	427,017	>99.0
Industrial engineers	13	28.4	5.8	54.5	7.9	37.6	6.1	45.9	6.7	13.1	4.4	239,869	>99.0
Engineers, nec	23	28.0	6.5	50.5	9.4	43.4	6.8	48.5	6.2	13.0	4.3	212,724	>99.0
Child care work	942	27.8	4.0	37.6	6.5	54.5	4.4	50.6	4.2	11.4	3.1	484,555	>99.0
Stock handlers	762	27.7	3.6	33.8	6.0	58.1	4.0	51.9	4.0	11.0	2.4	651,144	74.7
Accountants	1	27.5	2.2	47.3	3.7	47.2	3.1	47.4	2.8	15.1	2.2	1,214,072	61.7
Counter clerks	314	27.4	4.5	35.7	7.4	57.4	5.3	47.9	5.5	11.3	3.4	310,370	21.2
Keypunch operators	345	27.3	6.5	37.5	1.0	56.4	6.9	41.1	6.3	15.8	4.5	214,423	>99.0
Economists	91	27.3	8.1	55.6	11.3	36.7	8.6	47.5	8.9	5.8	4.2	123,393	55.5
Teacher aides	382	26.8	5.1	38.3	8.7	56.6	5.4	41.4	6.1	9.8	3.5	276,537	>99.0
Clerical	395	26.8	2.6	33.9	4.0	58.7	3.0	52.0	3.0	8.4	1.5	1,060,310	15.5
Mechanical engineers	14	26.2	5.0	58.6	6.5	36.7	5.8	44.1	5.7	14.0	3.8	301,074	>99.0
Computer programmers	3	26.2	5.2	50.9	8.5	46.7	5.7	52.3	5.5	15.2	4.3	288,754	67.3
Clin lab technologists	80	25.8	6.1	45.5	9.9	52.7	6.8	37.7	6.7	18.6	5.2	236,945	33.7
Sewers & stitchers	663	25.2	3.0	30.3	5.7	63.6	3.4	48.2	3.3	9.9	2.0	851,838	4.5
Farmers (own & tenant)	801	24.7	2.2	54.1	3.3	46.3	2.9	51.2	3.0	11.5	1.8	1,528,332	91.3
Bank tellers	301	24.5	4.5	38.8	7.8	59.9	4.8	45.0	4.8	15.2	3.6	467,682	6.8
Therapists	76	24.4	5.4	44.9	9.0	55.7	6.5	43.2	5.3	13.4	4.4	254,543	26.0
High school teachers	144	24.4	2.3	46.5	4.3	53.9	2.7	54.8	2.6	10.6	1.8	1,160,528	49.9
Housekeepers	950	24.3	8.0	57.7	12.4	48.7	8.4	51.3	7.4	14.2	6.0	136,755	>99.0
Library attendants	330	24.3	6.7	28.8	11.9	65.9	7.5	57.5	8.2	5.1	3.1	158,732	>99.0
Child care, private	980	24.2	5.3	25.2	9.4	67.6	5.7	50.7	6.0	7.6	3.4	265,253	>99.0
Computer systems analyst	4	24.1	6.9	54.1	11.3	47.4	8.3	44.0	8.0	7.6	4.5	156,246	100.0
Food service work, nec	916	23.9	3.5	34.9	6.4	63.2	4.1	46.5	4.6	12.9	3.1	522,372	19.3

Pharmacists	64	23.9	6.9	49.2	11.1	53.1	8.6	56.0	8.7	12.3	6.6	145,217	76.2
Legal secretary	370	23.8	5.6	42.0	1.7	56.9	6.3	36.4	6.5	20.8	5.0	203,777	> 99.0
Vocational counselors	174	23.8	5.5	44.5	9.7	57.2	6.2	42.7	6.3	17.6	5.0	258,321	56.8
Peddlers	264	23.5	6.1	37.1	11.5	62.6	6.9	52.8	7.5	10.1	4.3	165,533	> 99.0
Reporters and editors	184	23.3	6.3	55.8	1.6	47.4	7.5	61.5	6.8	8.1	4.1	175,938	57.6
Architects	2	23.2	6.5	59.1	11.7	43.2	8.0	44.4	7.5	14.0	5.8	126,850	100.0
Preschool teachers	143	22.4	5.5	41.2	9.7	61.9	6.0	42.4	6.3	5.2	2.7	228,733	> 99.0
Schl admin, K-12	240	22.0	4.7	58.1	7.9	47.6	5.8	53.5	5.6	13.0	3.8	290,663	73.2
Not spec research work	195	21.6	6.1	56.3	11.7	50.5	7.9	42.9	8.3	17.4	6.0	148,330	62.2
File clerks	325	21.1	5.3	30.2	11.0	69.8	6.5	46.7	6.7	7.1	3.7	197,669	> 99.0
Lawyers	31	21.0	3.8	63.0	5.9	42.4	4.6	49.7	4.5	12.8	3.2	502,153	82.4
Pub admin official nec	222	20.9	4.4	64.3	6.9	39.3	5.3	50.0	5.2	15.8	3.8	339,566	66.9
Photographers	191	19.8	6.1	52.7	12.5	58.2	8.0	50.6	8.6	13.8	4.8	259,875	> 99.0
Elementary school teachers	142	19.2	2.0	48.5	4.2	62.5	2.4	50.6	2.6	10.6	1.4	1,548,190	18.3
Civil engineers	11	18.0	4.9	70.7	7.6	38.4	7.8	47.6	7.1	17.7	5.7	169,551	> 99.0
Physicians	65	17.0	3.6	58.1	7.2	57.1	4.9	47.4	5.3	8.5	4.9	136,840	86.8
Chemists	45	15.8	5.0	70.4	9.0	46.7	6.8	56.9	6.6	4.8	2.8	175,711	80.2
Farm labor, unpaid	823	15.6	5.4	34.7	13.6	76.1	6.5	51.2	8.3	8.0	3.3	178,810	36.6
Electrical engineers	12	15.4	3.4	75.0	5.6	38.4	4.9	50.3	5.4	13.0	3.8	349,605	> 99.0
Librarians	32	14.6	5.1	65.1	11.6	58.3	7.5	47.5	8.9	12.5	5.5	144,374	> 99.0
Dentists	62	14.2	5.9	65.3	13.0	59.1	9.2	52.0	9.2	13.8	5.6	107,464	> 99.0
Dressmakers, except factory	613	12.9	6.4	65.5	14.8	62.6	8.9	45.2	9.1	10.2	5.8	105,602	> 99.0
Stock salesman	271	11.5	6.3	67.7	15.4	64.5	1.2	44.4	8.4	9.7	6.6	100,047	> 99.0
Dental asst	921	11.3	7.5	69.0	17.5	63.7	9.5	67.2	8.7	8.5	5.7	110,809	> 99.0
Clergymen	86	10.7	4.3	77.7	8.2	51.9	6.6	50.3	6.7	9.5	3.9	244,284	> 99.0

\*Occupational groups have at least 100,000 employed.

**TABLE XI. Three-Digit Occupation Groups in Which Men and Women Differed Significantly (Alpha = 5%) in Percentage of Current Smokers: NHIS, US 1978-1980**

Occupational title	1970 census code	Men	Women	Combined	t-value men vs women
Sales clerks, retail	283				
% current smokers		59.1%	24.9%	30.3	1.96
Estimated employment		817,288	1,623,111	2,440,399	
Cleaners and charpeople	901				
% current smokers		41.2%	27.1%	35.01%	2.06
Estimated employment		327,945	465,574	177,916	
Purchasing agents and buyers	225				
% current smokers		37.9%	14.1%	29.04%	2.52
Estimated employment		177,917	105,309	283,267	
Foremen, nec	441				
% current smokers		41.8%	52.3%	43.5%	-1.96
Estimated employment		1,704,869	307,722	2,012,591	
Research workers	195				-2.07
% current smokers		12.1%	37.3%	21.6%	
Estimated employment		92,189	56,141	148,330	
Writers and artists	194				
% current smokers		16.5%	62.6%	36.0%	-2.57
Estimated employment		54,446	40,085	94,551	
Busboys	911				
% current smokers		19.4%	65.7%	30.7%	-2.68
Estimated employment		132,008	39,409	171,417	
Real estate agents	270				
% current smokers		24.1%	46.4%	33.3%	-2.87
Estimated employment		376,349	265,510	641,858	
Bartenders	910				
% current smokers		52.3%	80.8%	65.3%	-2.91
Estimated employment		149,072	125,866	274,938	

Using indirect data for adjustment without the variance of the estimates has been a problem. For instance, Suta and Thompson [1983] neglected to compensate for the variance associated with NHIS smoking estimates, which they used for adjusting the risk of disease from smoking cigarettes in their study cohort according to Steenland et al [1984]. The variance of the estimates in the present report would permit a researcher to evaluate estimates and decide whether they were within acceptable bounds.

Previous reports have concentrated on the distribution of smoking by occupation. We combined occupation and industry, and as a result, industry should be considered a covariable with occupation. For example, people within the same occupational category working in different industries have different rates of cigarette smoking. Managers and administrators, for instance, had an estimated 52% current smokers in warehouse industry and 26% in restaurants. We also found previously unreported results for industry alone. Two seemingly related industries—coal mining and metal mining—had juxtaposed prevalences of current and former cigarette smokers. Metal mining was ranked last by percentage of current smokers and ranked first by percentage of former smokers; coal mining was ranked sixth among the industries

TABLE XII. Various Measures of Smoking Habits According to Two-Digit SIC Industries Arranged by % Current Smokers: NHIS, US 1978-1980

Industry	SIC industry code	% Current smokers	SE	% Former/ever	SE	% Never smokers	SE	% 20-39 cigarettes daily	SE	% 40 or more cigarettes daily	SE	Estimated employed
Fisheries	9	65.2	12.86	17.2	12.09	21.2	10.42	83.2	9.73	12.8	9.07	54,052
Tobacco	21	54.1	11.89	30.8	13.07	21.8	10.71	70.6	15.83	0.0	0.00	49,310
Gen contractors exc build	16	50.8	2.86	27.4	3.31	30.0	2.67	51.6	3.57	16.2	2.42	964,301
Water transportation	44	50.0	6.97	24.2	7.10	34.0	7.31	37.8	7.76	12.8	4.97	153,071
Trucking, warehouse	42	49.7	2.69	29.6	2.79	29.4	2.28	54.7	2.52	15.6	1.85	1,451,347
Coal mining	11	48.7	6.93	32.5	8.75	27.8	7.31	56.9	7.62	13.4	5.48	193,079
Taxis & buses	41	46.6	4.37	26.4	4.90	36.7	4.19	50.8	4.59	10.9	2.48	543,441
Gen contractors build	15	45.3	2.67	35.1	2.99	30.0	2.45	49.3	2.46	15.7	1.91	1,457,544
Fabricated metals	34	44.6	2.59	36.4	2.83	29.7	2.50	47.9	2.78	17.7	2.02	1,569,115
Special trade	17	44.3	1.57	34.8	1.82	31.7	1.53	50.2	1.75	18.7	1.31	3,769,716
Railroads	40	44.3	3.73	35.3	4.61	31.5	3.62	56.8	4.46	15.2	2.78	586,503
Primary metal industries	33	43.5	2.94	37.7	2.99	29.9	2.96	49.2	3.24	15.4	2.04	1,265,356
Lumber wood products	24	43.5	3.50	38.7	3.83	29.1	3.50	55.1	3.86	21.6	3.44	670,056
Repair services	75	43.5	2.36	33.0	2.81	35.1	2.30	53.3	2.52	12.6	1.58	1,482,913
Restaurants	58	42.9	1.54	21.6	1.71	45.0	1.51	47.4	1.73	14.4	1.28	3,690,288
Food industries	20	42.7	2.73	31.3	3.17	37.8	2.47	49.1	2.48	16.1	1.84	1,691,045
Transportation equipment	37	42.1	2.15	37.5	2.27	32.3	2.10	49.0	2.02	14.2	1.52	2,609,778
Motor vehicle dealers	55	42.0	2.17	33.4	2.51	36.7	2.17	50.5	2.31	17.7	1.8	1,865,846
Stone, glass, clay products	32	41.6	3.60	35.6	4.53	35.4	3.38	53.9	3.49	12.6	2.57	699,200

(continued)

TABLE XII. Various Measures of Smoking Habits According to Two-Digit SIC Industries Arranged by % Current Smokers: NHIS, US 1978-1980 (continued)

Industry	SIC industry code	% Current smokers	SE	% Former/ever	SE	% Never smokers	SE	% 20-39 cigarettes daily	SE	% 40 or more cigarettes daily	SE	Estimated employed
Textiles	22	40.7	3.95	26.8	3.99	43.6	3.75	48.3	3.71	15.7	2.85	807,924
Furniture	25	40.5	4.35	35.2	5.67	37.4	4.12	56.6	4.20	14.3	3.11	479,595
Rubber & plastics	30	40.5	3.96	34.5	4.66	37.9	3.72	43.2	3.83	11.8	2.85	649,780
Wholesale trade	50	40.3	1.75	38.2	2.18	34.8	1.66	51.6	1.72	14.0	1.31	3,072,960
Agriculture services	7	39.6	4.04	33.9	4.65	40.1	4.32	54.3	3.93	9.6	2.37	547,749
Ordnance	19	39.1	7.91	46.5	9.18	26.9	7.96	37.7	7.76	20.3	6.05	150,648
Utilities	49	39.0	2.64	38.8	3.17	35.7	2.71	51.2	2.85	12.3	1.75	1,259,163
Machinery, except electrical	35	38.6	1.91	40.7	2.44	34.9	1.85	51.3	2.10	15.6	1.48	2,757,758
Printing & publishing	27	38.1	2.87	36.3	3.49	40.0	2.92	46.6	2.78	16.0	1.98	1,322,813
Paper & allied products	26	38.1	3.41	39.5	4.21	36.7	3.50	45.5	3.65	18.2	3.21	717,574
Measuring, photographic	38	38.0	3.93	42.6	4.80	33.7	3.77	49.2	4.58	16.7	2.89	626,375
Real estate	65	37.4	2.52	39.0	3.23	38.1	2.33	48.9	2.75	15.4	1.83	1,558,235
Recreation	78	37.2	3.21	37.1	4.18	39.9	2.97	48.9	3.31	17.0	2.63	944,132
Air transportation	45	36.7	3.47	39.9	4.67	38.9	4.26	42.5	4.05	15.8	3.17	568,028
Local public admin	93	36.7	2.10	37.1	2.65	41.6	2.15	48.4	2.23	14.8	1.57	2,065,178
Petroleum	13	36.6	4.32	36.8	6.30	42.0	4.58	42.9	4.41	17.8	3.35	501,754
Electric machinery	36	36.3	2.12	39.9	2.88	39.3	2.16	52.8	2.08	11.5	1.39	2,265,663
Leather products	31	36.3	5.65	33.2	7.38	45.7	5.91	35.3	5.79	11.9	3.95	314,575
Furniture	57	35.9	3.52	40.1	4.86	39.8	3.79	43.9	3.81	15.9	2.96	636,748
Nonmetallic mining	14	35.8	8.85	51.9	10.65	25.5	8.08	64.1	9.04	10.9	5.94	127,286
Services	73	35.8	1.95	38.6	2.67	41.6	2.06	47.1	2.02	16.6	1.64	2,467,850
Hotels	76	35.5	3.11	29.7	3.98	49.6	3.09	49.8	3.02	13.4	2.10	1,030,588
Food stores	54	35.2	1.93	30.6	2.55	49.0	2.14	49.5	2.09	13.5	1.42	2,378,284
Chemicals & allied products	28	35.0	2.40	42.8	3.19	38.5	2.58	52.6	2.99	12.1	1.81	1,304,693

Apparel, retail	56	34.7	3.60	36.5	4.48	45.4	3.64	45.6	3.59	11.4	2.02	844,626
State public admin	92	34.7	2.84	38.6	3.80	43.3	2.97	49.7	3.18	13.8	2.01	1,114,092
Personal services	72	34.4	2.51	37.6	3.54	44.8	2.77	43.4	2.98	16.7	2.10	1,339,868
Federal public admin	91	34.0	1.78	43.4	2.37	39.3	1.65	51.9	2.17	12.2	1.33	2,725,428
Museums	84	34.0	10.13	12.0	8.45	61.4	10.37	42.3	9.85	10.8	6.86	84,728
Lumber & building materials	52	33.8	3.60	42.0	4.75	41.7	3.56	43.7	3.58	17.6	3.00	735,671
Misc manufacturing	39	33.6	3.86	40.1	5.28	43.6	4.81	49.0	4.47	17.6	3.62	609,816
Insurance	63	33.4	2.30	39.2	2.81	45.2	2.58	44.4	2.33	15.0	1.69	1,810,008
Forestry	8	32.5	10.64	47.3	14.10	38.4	9.61	52.4	10.54	2.9	2.85	76,835
Apparel manufacturers	23	32.4	2.30	31.9	3.32	52.3	2.53	47.0	2.71	12.7	1.66	1,427,649
Medical services	80	31.5	1.07	35.3	1.51	50.9	1.21	46.3	1.22	13.5	0.95	6,926,732
Engineering	89	31.1	2.42	43.3	3.33	45.1	2.75	47.2	2.61	13.0	1.69	1,433,108
Petroleum refining	29	31.1	5.50	50.7	7.65	37.0	6.27	52.0	6.61	14.9	5.02	197,693
Drug stores	59	30.4	1.84	38.4	2.75	50.5	2.15	53.2	2.05	13.5	1.49	2,204,918
Transportation services	47	30.0	5.99	43.9	8.59	44.2	7.42	43.6	7.85	8.4	4.06	184,774
Retail	53	29.5	1.77	35.1	2.96	54.4	1.75	45.9	2.08	11.8	1.24	2,522,476
Banking	60	28.5	2.03	38.6	3.33	53.6	2.40	45.7	2.30	12.6	1.76	1,598,679
Religious organizations	86	28.4	2.26	48.6	3.54	44.3	2.29	45.7	2.39	10.8	1.51	1,750,800
Radio, telephone, telegraph	48	27.4	2.32	46.3	3.53	48.5	2.60	47.2	2.67	14.7	1.97	1,310,367
Agriculture products	1	26.1	1.76	46.8	2.77	50.8	2.13	48.8	2.39	12.7	1.47	2,498,523
Legal services	81	25.2	3.34	49.9	5.19	48.4	3.76	47.7	3.90	14.1	2.43	739,625
Education services	82	25.2	0.97	44.5	1.61	54.4	1.16	48.6	1.35	12.1	0.81	7,894,625
Private households	88	24.7	2.60	36.2	4.78	61.1	2.95	48.0	3.06	10.2	1.98	1,142,628
Security investigations	62	24.7	4.35	52.0	7.34	48.6	5.88	46.5	5.52	11.3	3.63	325,351
Credit agencies	61	24.4	4.37	46.6	7.32	54.2	5.03	52.3	4.22	17.9	3.80	390,093
Metal mining	10	21.0	8.38	68.0	11.36	34.4	11.50	43.7	12.19	16.2	9.16	71,213

TABLE XIII. Comparison of Different Groups (Three-Digit 1970 Occupation) by Industry (Two-Digit SIC) for Percent Current Smokers

Occupational group	Industry and SIC	% Current smokers	SE	Estimated total employed
Managers, administrators (245)		35.15	1.08	7,202,409
	Trucking, warehousing (42)	56.75	7.29	148,919
	Printing and publishing (27)	47.80	7.88	125,479
	Machinery, except electrical (35)	45.68	8.82	160,449
	Electrical machinery (36)	43.04	8.69	131,637
	Wholesale trade (50)	36.05	4.54	477,045
	Food stores (54)	33.90	4.03	453,692
	Motor vehicle dealers (55)	32.09	4.62	412,791
	Insurance (63)	26.17	6.70	160,600
	Restaurants (58)	25.91	8.55	144,341
Sales clerks (283)		30.29	1.81	2,440,399
	Motor vehicle dealers (55)	58.06	10.09	103,896
	Food stores (54)	39.23	6.26	216,310
	Apparel (56)	32.40	4.61	414,424
	Retail (53)	27.13	3.01	775,254
	Drug stores (59)	27.11	3.45	666,062
	Lumber and building materials (52)	26.61	7.35	142,652
Cashiers (310)		38.20	2.77	1,345,770
	Restaurants (58)	49.25	6.60	202,400
	Food stores (54)	39.31	4.15	531,859
	Retail (53)	34.00	6.99	190,999
Secretaries, not elsewhere classified (372)		30.30	0.01	3,596,763
	Special trade (17)	39.60	9.59	103,110
	Medical services (80)	36.60	6.11	226,122
	Engineering (89)	36.30	8.81	136,794
	Machinery, except electrical (35)	32.30	9.07	111,866
	Wholesale trade (50)	31.40	7.36	180,942
	Services (73)	27.90	7.24	153,392
	Religious organizations (86)	27.20	5.24	255,696
	Education services (82)	27.50	4.25	461,349
	Federal public administration (91)	24.40	8.24	107,161
	Insurance (63)	21.00	4.66	273,711
	Local public	20.20	6.06	134,464
	Foremen, not elsewhere classified (441)		43.50	2.03
Primary metal industries (33)		56.30	9.85	104,198
Utilities (49)		47.70	8.93	111,991
Machinery, except electrical (35)		38.60	9.91	104,154
Transportation equipment (37)		34.40	8.32	140,965
Assemblers (602)		40.29	2.89	1,132,439
	Transportation equipment (37)	49.20	5.72	261,009
	Electrical machinery (36)	37.40	5.09	315,106

(continued)

TABLE XIII. Comparison of Different Groups (Three-Digit 1970 Occupation) by Industry (Two-Digit SIC) for Percent Current Smokers (continued)

Occupational group	Industry and SIC	% Current smokers	SE	Estimated total employed
	Machinery, except electrical (35)	36.20	7.29	188,599
Machinery operators (690)		42.00	2.51	1,577,333
	Electric Machinery (36)	53.90	11.10	106,402
	Primary metal industries (33)	49.80	11.10	118,099
	Machinery, except electrical (35)	48.60	9.70	111,336
	Rubber and plastics (30)	46.70	9.04	127,042
	Chemicals and allied products (28)	36.50	7.53	135,898
	Food industries (20)	35.30	8.05	135,339
	Paper and allied products (26)	29.90	9.55	105,292

for prevalence of current smokers. We interpret this result as suggesting that those working in coal mines continue to smoke regardless of risk, while cessation rates are high among metal miners, because of different regulations.

This analysis indicated a substantial interaction between demographic variables and occupation. For instance, prevalence of cigarette smoking varied by employment status and race. "Currently unemployed" had a higher percentage of current smokers than did "currently employed" or "not in labor force." Weinkam and Sterling [1987] reported from their analysis of 1979-1980 NHIS data that employed had a higher percentage of current smokers than the unemployed. Their definition of unemployed apparently included "not in labor force," which reduced the proportion of smokers in the unemployed category. Also, in regard to race, the differences in the cigarette smoking rates between blacks and whites was greatest for men and women employed in professional and technical occupations. These differences were independent of gender and age. This result is an interesting contrast to the blue collar-white collar distinction in the distribution of current smokers.

For women, we found less variation in the prevalence of smoking as a function of occupation variables than for men, although 20-44-year-old "currently unemployed" women did have a higher percentage of current smokers than their working counterparts. In addition, the blue collar-white collar occupation differences were not as apparent for women as for men. A report that specifically addressed smoking by women suggested that women are under a different set of educational and economic influences than men in the workplace [Stellman and Stellman, 1981].

An important consideration for applying these data to epidemiological analysis is the time period upon which the survey is based. We have provided detailed information for smoking habits by occupation for 1978 to 1980. We admit the latency period has not been reached, since 1980, for most cancers if someone were to assess the contribution of smoking as a risk factor for cancer and planned on using this information for adjustment. However, one could, of course, lag the age distribution so as to offset the latency, if it were assumed that there have not been any substantial

secular changes in smoking habits [see Weinkam and Sterling, 1987]. We have plans to continue analyzing smoking information that was collected by the NHIS for other periods of time. For instance, there are NHIS smoking survey data by occupation for 1970, 1973, 1983, and 1985. We would have more difficulty computing the variance for 1970 and 1973 because of problematic availability of appropriate design information in the data sets. Nonetheless, any of these time periods would have a specific advantage or disadvantage for the analytic purpose it serves.

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**APPENDIX I. 1978–1980 HIS SMOKING QUESTIONNAIRE**

1. Have you smoked at least 100 cigarettes in your entire life?
- 2a. About how old were you when you first started smoking cigarettes fairly regularly?
  - b. Do you smoke cigarettes now?
  - c. On the average, about how many cigarettes a day do you smoke?
3. During the period when you were smoking the most, about how many cigarettes a day did you usually smoke?
- 4a. Do you smoke cigarettes now?
  - b. About how long has it been since you last smoked cigarettes fairly regularly?
5. On the average, about how many cigarettes a day do you now smoke?
- 6a. What brand of cigarettes do (did) you usually smoke?

If more than one brand ask:

  - b. Which brand do (did) you smoke the most?
7. What type of cigarettes are the (*brand*) that you smoke (smoked)?

Are they:

  - a. Filter tip OR nonfilter tip?
  - b. Plain OR menthol?
  - c. Hardpack OR softpack?
  - d. Regular OR king size or 100 millimeter?
- 8a. Have you ever made a serious attempt to stop smoking cigarettes?
  - b. About how many times would you say you made a fairly serious attempt to stop smoking cigarettes entirely?
  - c. During the past 12 months, that is, since (*date*) a year ago, about how many times would you say you made a fairly serious attempt to stop smoking cigarettes entirely?
9. How long ago was the START of the LAST time you tried to stop entirely?
10. How long did you actually stay off cigarettes the last time?

**APPENDIX II. Conversion of 1972 Standard Industrial Classification (SIC) to 1970 Census Industry Classification (CIC) (continued)**

SIC (1972)	CICS (1970)	Industry title
01	017-019	Agriculture products & service
08	027	Forestry
09	028	Fisheries
10	047	Metal mining
11	048	Coal mining
13	049	Petroleum
14	057	Nonmetallic mining
15	067	General contractors building
16	068	General contractors, except building
17	069	Special trade
24	107, 108, 109	Lumber wood products
25	118	Furniture
32	119, 122, 128, 137, 138	Stone, glass, clay and concrete products
33	139, 147, 148, 149	Primary metal industries
34	157, 158, 159, 167, 168, 169	Fabricated metals, except transportation
35	177, 178, 179, 187, 188, 189, 197, 198	Machinery, except electrical
36	199, 207, 208, 209	Electrical machinery
37	219, 227, 228, 229, 237, 238	Transportation equipment
38	239, 247, 248, 249, 257	Measuring, photographic time equipment
39	259	Miscellaneous manufacturing
20	268, 269, 278, 279, 287, 288, 298	Food industries
21	299	Tobacco
22	307, 308, 309, 317, 318	Textiles
23	319, 327	Apparel manufacturers
26	328, 329, 337	Paper and allied products
27	338, 339	Printing and publishing
28	347, 349, 357, 358, 359, 367, 368, 369	Chemicals and allied products
29	377, 378	Petroleum refining
30	379, 387	Rubber and plastics
31	388, 389, 397, 398	Leather and leather products
40	407	Railroads
41	408, 409	Taxis, buses
42	417, 418	Trucking, warehouse
44	419	Water transportation
45	427	Air transportation
46	428	Pipe lines
47	429	Transportation services
48	447, 448, 449	Radio, telephone, telegraph
49	467, 468, 469, 477, 478, 479	Utilities
50	507, 508, 509, 527, 528, 529, 537, 538, 539, 557, 558, 559, 567, 568, 569, 587, 588	Wholesale trade
52	607, 608	Lumber and building materials
53	609, 617, 618, 619, 627	Retail
54	628, 629, 637, 638	Food stores
55	639, 647, 648, 649	Motor vehicle dealers
56	657, 658	Apparel
57	667, 668	Furniture
58	669	Restaurants

(continued)

**APPENDIX II. Conversion of 1972 Standard Industrial Classification (SIC) to 1970 Census Industry Classification (CIC)**

SIC (1972)	CICS (1970)	Industry title
59	677, 678, 679, 687, 688, 689, 697, 698	Drug stores
60	707	Banking
61	708	Credit agencies
62	709	Security investigations
63	717	Insurance
65	718	Real estate
73	727, 728, 729, 737, 738, 739, 747, 748	Services
75	749, 757, 758, 759	Repair services
76	777, 778	Hotels
72	779, 787, 788, 789, 797, 798	Personal services
78	807, 808, 809	Recreation
80	828, 829, 837, 838, 839, 847, 848	Medical services
81	849	Legal services
82	857, 858, 859, 867, 868	Education services
84	869	Museums
88	769	Private households
86	877, 878, 879, 887	Religious organizations
89	888, 889, 897	Engineering
91	907, 917	Federal public administration
92	927	State public administration
93	937	Local public administration

### APPENDIX III. STATISTICAL CONSIDERATIONS

We configured the information in this report so that readers could pursue further analysis, doing specific comparisons with the standard error already in the tables or forming different groups than are presented in the Tables. The following suggests several methods for further analysis of this information:

#### Comparisons

A confidence interval can be calculated for either determining the error range of an estimate or for doing paired comparisons. For example, a 95% confidence interval would be found by

$$\text{Lower limit} = \text{Estimate} - 1.96 * \text{SE}$$

$$\text{Upper limit} = \text{Estimate} + 1.96 * \text{SE}$$

If the confidence intervals of paired estimates do not overlap, then they could be considered statistically different.

#### Forming New Estimates

The inclusion of a denominator provides the capability for recomputing estimates not shown in the Tables. For instance, one could calculate the percent current smokers for male managers or administrators from Table VI by summing the percentage of the corresponding estimate for each group to get the numerator and summing the estimates for the denominator such that percent current smokers for male managers or administrators =  $(.39 * 4392) + (.307 * 2920) + (.336 * 213) + (.622 * 97) / 4,392 + 2,920 + 213 + 97 = .359$  or 36.0%.