

ANALYSIS OF TRENDS IN TOBACCO CONSUMPTION BY MINORITIES

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Governments around the world are relating smoking to various diseases, e.g., lung cancer (Le Maistre, 1987) while the tobacco industry is arguing otherwise to justify its advertizing and marketing the product. The industry achieves its purpose in several ways; including reduction of the creditability of these studies and arguments relating to fundamental freedom of choice and speech (Fericola, 1987). An institute was also established by contributions from the tobacco industry to promote their interests. They conduct studies in support of the tobacco industry and lobby for the industry in various legislative bodies.

Since the governments are convinced about the negative effects of smoking, various types of regulations are proposed to ban or at least to reduce the consumption of tobacco products; primarily cigarettes. These attempts could be national, e.g., in the U.S. and Canada (Loro, 1988) or worldwide (Hill, 1986). The result of these efforts has been the decline in the

consumption of cigarettes. For example, average consumption by persons 18 years or older was 192 packs in 1981 and 160 packs in 1987 (Gladwell, 1989). It is also observed that overall exports during this period fell from 83 billion cigarettes to 72 billion cigarettes. However, while the exports to Western Europe have declined because American cigarettes are now increasingly rolled and packaged under licence in this region. American exports to East Asia have increased significantly. For example, exports of American cigarettes to Japan have risen from 5.2 billion to 32 billion in the period stated above (Anonymous, 1988).

To improve their sales, tobacco companies are exploring new territories. These include countries where laws are not so stringent (e.g., Asian countries), or segments of population which are either not so well informed for one reason or another (e.g., minorities) or smoking is on the rise other wise, e.g., in young women (Sherman, 1985). In other words, companies are using

every possible method to increase their sales. This included giving of gifts to the health and human services organizations (Useem, 1988), donation to the state department and using lobbyists or managing their political clout to influence the promotion of their sales overseas (Anonymous, 1988) and targeting certain sectors like minorities and women to increase their sales (Ticer, 1988).

Aykac, Corstjens, and Gautschi (1984) found that the cigarette industry is a degenerate case. That is, the advertising level has no impact on cigarette sales. That observation could be because of the impact of the heavy campaigning by antismoking groups. In other words, if the cigarette industry had not advertized, the sales might have fallen more than they have in the presence of these advertisements. The effect of advertisements in other countries are very significant. For example, in Japan, the market share of American cigarette companies has risen from 2% in 1985 to around 11% (worth approximately \$3 billion in U.S. exports) in 1987. Increase in overall consumption among women is also clear from the fact that 17% or Japanese female college students now smoke, while only 3% of their mothers

do. Thus, the advertisement do have an impact in promoting the product. Advertisements targeted on different sectors would also have similar effects.

Objective of the Study

The objective of the paper is to study the patterns of smoking by minorities and to identify the relationship that may exist between tobacco consumption and a number of demographic and socioeconomic factors. To this end, data gathered by the Bureau of Labor Statistics on Consumption Expenditure Survey for the periods 1973 and 1984 is used. Basically, the data is on household expenditures of essential commodities including tobacco products of 10,000 and 25,843 households respectively. This represents the largest sample survey currently available at the national level. However, there is a shortcoming in this data because the unit of observation is consumer unit (i.e., household) and not individual consumers.

Methodology

Consistent with the objective, the 1973 and 1984 surveys are separately cross-classified by race and habit to determine the proportion of minority smokers. Chi-square analysis is then conducted to determine if smoking is dependent

on race. Furthermore, discriminant analysis is employed to identify the variables that discriminate between smokers and non smokers in the general population and in minorities. The data is then regressed using tobacco expenditure as the dependent variable and the variables identified in the previous steps as discriminating variables as independent variables in order to determine how well the latter explain the variation in total tobacco consumption. The same analysis is repeated on deflated 1984 expenditure to per capita expenditure and 1973 price both for the population as a whole and minorities. In an attempt to discriminate better between smokers and non smokers, interaction of some seemingly discriminating variables such as education, income, sex and occupation is taken.

Results and Analysis

Approximately 50% and 29% of the households reported some expenditure on tobacco in 1973 and 1984 respectively. This shows a significant drop in the proportion of smokers in the population as a whole. However, a test of independence between smoking and race indicates that smoking was independent of race in 1973 but that it was dependent in

1984. During the ten-year period the proportion of white smokers dropped by 22% from 51% to 29%, while that of minority smokers dropped by 12%

from 45% to 33%. The analysis below attempts to identify the factors that contribute to this result, first for the population as a whole and then for minorities.

Despite the fact that more than 65 and 125 variables, including interactions, are taken into account only 28 and 24 variables surfaced as discriminating variables in 1973 and 1984 surveys as a whole respectively. Out of these variables only eight were common to both surveys with similar but varying weights. (Table 1).

On the average, high level of education of response person and spouse and ownership of home of residence discourage smoking. On the other hand, higher total consumption and family size encourage smoking. The result also reinforces the common belief that female are more likely to be classified as smokers than male. It should be mentioned, however, that age, geographical region and location of residence did not fare well as discriminating variables in both surveys contrary to the common belief that they would. One

Table 1: Variables with the Highest Discriminating Weights

| VARIABLE | TABLE I | | |
|--------------------------------------|----------------|----------------|-----------------|
| | 1973 | 1984 | |
| | <u>General</u> | <u>General</u> | <u>Minority</u> |
| Total Consumption | 0.367 | 0.837 | 0.805 |
| Income-Sex | 0.629 | 0.445 | 0.365 |
| Income | 0.219 | 0.282 | |
| Education of Response Person | 0.235 | 0.247 | |
| Sex | 0.314 | 0.245 | 0.310 |
| Education of Spouse | 0.231 | 0.243 | |
| Occupation of Response Person | | 0.208 | 0.309 |
| House Ownership | 0.218 | 0.182 | 0.210 |
| Geographical Location | 0.183 | 0.164 | |
| Family Size | 0.310 | 0.163 | |
| Occupation-Industry (Spouse) | | | 0.252 |
| Industry of Spouse | | | 0.243 |
| Income-Education (Spouse) | | | 0.210 |
| Education-Industry (Response Person) | | | 0.204 |
| Occupation of Spouse | | | 0.201 |
| (MI) | -0.405 | | |

inconsistent observation stands out as far as geographical location is concerned. In the 1973 survey, households living in the south are more likely to be classified as smokers than households in other regions. But in the 1984 survey households living in the midwest are, on the average classified as smokers.

The observation stated above cannot be complete without some evaluation on the estimates given in Table 2. The Wilk's lambda of 0.893 and 0.902 and canonical correlations 0.326 and 0.314 for the 1973 and 1984 surveys respectively are not impressive. Nor are the multiple R squares of 0.105 and 0.084. However, R squares of these magnitudes do not necessarily suggest weak association between variables in cross-sectional

surveys such as these ones. Note also, that 63.08% and 67.64% of the households in the surveys of 1973 and 1984 were correctly classified suggesting no significant difference in group centroids or means.

The summary figures associated with the minority group are statistically the same as the ones associated with the general population. However, as Table 1 shows, only five variables commonly discriminate between smokers and nonsmokers both in the general population and the minority group. They are total consumption, interaction of income and sex, sex, occupation of response person and home ownership in relatively the same order. Interacting variables such as occupation and industry, income and education, education and

Table 2: Summary Figures of the Discriminating Variables

| | 1973 | 1984 | |
|-----------------------|-------|---------|----------|
| | | General | Minority |
| Wilk's Lambda | 0.893 | 0.902 | 0.888 |
| Canonical Correlation | 0.326 | 0.314 | 0.334 |
| Multiple R-Square | 0.105 | 0.084 | 0.114 |
| Correctly Classified | 63.08 | 67.64 | 68.26 |
| Group Centroids | | | |
| Nonsmokers | 0.344 | 0.213 | 0.237 |
| Smokers | 0.347 | -0.513 | -0.530 |

industry seem to be more discriminating than each of the variables taken separately.

CONCLUSION:

As it was pointed out in the analysis, smoking has dropped significantly between 1973 and 1984. This may be attributed to the action taken by the Government, at all levels, to discourage smoking. Perhaps, the result would have been more significant had it not been for the counteraction taken by the tobacco industry which charges that the actions being taken by the Government and other institutions to discourage smoking is a violation of the constitutional rights of the individuals. Be it as it may, twenty five years after the surgeon general' of the US ruled that smoking is hazardous to life, people are

still smoking - although less relative to the population. What is observable in this study is that smoking which was independent of race in 1973 was dependent on race in 1984. Although the proportion of both white and minority smokers has decreased significantly, it is more significant in the former than in the latter. The reason for this may be due to lack of education of minorities to comprehend the danger of smoking and/or the intensive effort that the tobacco industry is putting to promote tobacco consumption in minority communities.

Our effort to identify the variables that discriminate between smokers and nonsmokers and the extent to which the variables explain tobacco consumption did not result in significant revelation. In view of the significant role that

the tobacco industry plays to counter the action taken by various groups to discourage smoking, perhaps, better result could be obtained by incorporating data related to the tobacco industry in the analysis. Furthermore, a definitive conclusion could be obtained had the data analyzed related to individual consumers than households.

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