



The Demand for Dental Care and Financial Barriers in Accessing Care Among Adults in California

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ABSTRACT Receiving dental care is positively related to having dental insurance; being female; increasing age; being white, Hispanic or Asian; higher levels of education; higher levels of family income; better health status; and being unmarried. In contrast, being more likely to perceive financial barriers to receiving needed dental care is positively related to lacking dental insurance, being female, being younger, being black or other race, having less education, lower family income, and having worse health status.

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Dental care is important in the maintenance of good oral health.¹ Regular dental visits allow adults to gain expert opinions about the state of their oral health, receive preventive care, learn the latest preventive practices, as well as receive needed restorative care. Access to dental care, adapting the definition of access to general health services from the Institute of Medicine, can be defined as “the timely use of personal (dental) health services to achieve the best possible (oral) health outcomes.”²

Since many oral health problems are not easily visible and often produce no discomfort in their early stages,

determining whether individuals are accessing sufficient dental services to achieve the best possible oral health outcomes requires an accurate and complete assessment by a dentist.

As a result, determining precisely how access to dental care varies across socioeconomic groups in California is prohibitively expensive. Given the high cost of clinical examination and the need for policymakers to understand how access to dental care varies across socioeconomic groups in California, self-reported measures emerge as a reasonable way to gather essential policy-relevant information at a reasonable cost. Past work using such self-reported measures to deter-

mine access to dental care in California has been done, but updated and more comprehensive information is needed.³

Two valuable self-reported measures are (1) the utilization of dental care and (2) the existence of financial barriers that prevent individuals from being able to afford needed dental care (based on their perceived need for dental care). The validity of self-reported dental visits has been found to be good.⁴ However, when comparing actual clinical examination to self-reported measures of need, it has been found that self-reported measures underestimate clinical need.⁵

In addition, when comparing clinically determined measures of need with self-reported measures of disease and pain, it has been found that people are more likely to act on self-reported measures rather than clinically determined measures.⁶ This suggests that self-reported measures of need are useful but should be considered a lower bound in measuring need.

In the following analysis, utilization of dental care serves as a proxy for access to care and financial barriers that prevent an individual from being able to afford needed dental care serve as a proxy for lack of access to care. These are two complementary ways of looking at the same phenomenon. Note that it is possible for the same person to be in seemingly contradictory categories: a person may have received dental care in the last 12 months but not have received as much dental care as they believed was needed (due to financial barriers).

The authors use the concept of economic demand to organize their analysis. The economic theory of demand states that as prices rise, individuals purchase less dental care, and as family income rises, individuals purchase more dental care, other things equal. If stated in terms of not being able to afford needed care,

the economic theory of demand states that as prices rise, individuals are more likely to not be able to afford needed dental care, and as family income rises, individuals are less likely to not be able to afford needed dental care. In other words, the economic model of demand when applied to visits is inverse to the economic model of demand when applied to affordability. Estimating both models acts as a check on the reliability of the results.

Methods

Data

This analysis used data from the California Health Interview Survey, CHIS, for the years 2001 and 2003.⁷ The CHIS is a state health survey which focuses on public health and access to health care. It is the largest state-level survey conducted in the U.S. and is designed to produce reliable state-level and county-level estimates. Data were collected from adults aged 18 and older through a random digit dial telephone survey. The 2001 and 2003 CHIS sample sizes are 56,279 and 42,044, respectively.

Statistical Analysis

The authors' statistical models examined the extent to which (1) the use of dental services and (2) whether needed dental care is considered unaffordable are associated with the financial and nonfinancial characteristics of individuals. Financial characteristics include the price of dental services, whether an individual has dental insurance, and family income. Nonfinancial characteristics include those that might influence an individual's preferences or inclination to seek dental services such as their general health status, racial/ethnic group, whether they were born in the United States, age,

gender, marital status, and level of education. The prices of products and services related to dental services, the relative cost of living, general weather patterns, local culture, and other county-level characteristics may also affect an individual's inclination to seek dental services.

The dependent variable in each model is defined as follows: (1) use of dental care in the last 12 months is indicated by a one and no use of dental care in the last 12 months is indicated by a zero; (2) not receiving needed dental care in the last 12 months because of a lack of affordability is indicated by a one and no such problems in receiving dental care are indicated by a zero. All models include measures of dental insurance (no dental insurance, private dental insurance, Denti-Cal), and individual family income as a percent of the federal poverty threshold (0-99 percent, 100-199 percent, 200-299 percent, 300+ percent).

The authors also included information on gender (male, female), age (18-24, 25-34; 35-44; 45-54; 55-64, 65-74, and 75 or greater), race/ethnicity (white, Asian/Pacific Islander, Hispanic, black, and other race), marital status (unmarried, married), birthplace (U.S.-born, foreign-born), self-reported general health status (excellent, very good, good, fair, poor), and education (less than high school, high school graduate, post-high school training, college graduate, post-college). In addition, the authors included N-1 county-level dummy variables where N is the number of counties (58) designated in the data, and an additional variable that contains the value of the year.

Note that the model of the use of dental services includes data from both 2001 and 2003, while the model of the affordability of needed dental care only used data from 2003 (no affordability data

were available for 2001). In the model that included data from both 2001 and 2003, the county-level dummy variables picked up the effects of all nontime-varying omitted characteristics at the county level, such as the prices of products and services related to dental services, the availability of dental services, the relative cost of living, general weather patterns, local culture, and other county-level characteristics, all of which will tend to be fairly constant within counties over a three-year period of time, but vary between counties.

All regressions are estimated using probit models with Stata 9.2. The marginal probabilities reported represent predicted changes in probability, on a scale from 0 to 1 (e.g., a coefficient of 0.05 implies a five-percentage points increase in the probability of a person receiving dental care). Each marginal probability is computed at the mean of the other independent variables. The statistical analysis accounts for the complex survey design of the CHIS including probability weighting, stratification, and clustering. Due to missing data, the sample size used for the model of dental service use was reduced from 98,323 to 98,100, and the sample size used for the affordability model was reduced from 42,044 to 42,043.

Results

The Demand for Dental Care in California

TABLE 1 presents descriptive statistics of the data. **TABLE 2** presents the probit parameter estimates as marginal probabilities for the dental visits and affordability models. For example, in the dental visits model, a marginal probability is the difference in the probability that a person with a given characteristic has visited the dentist relative to the reference group when the other variable values are set to their means.

TABLE 1

Descriptive Statistics: Pooled 2001 and 2003 California Health Interview Surveys

Variables	Proportions
DENTAL VISIT IN THE PAST 12 MONTHS	
Yes	0.619
No	0.381
UNABLE TO AFFORD NEEDED CARE IN THE PAST 12 MONTHS*	
Yes	0.204
No	0.796
DENTAL INSURANCE	
Private	0.529
Denti-Cal	0.130
None	0.341
FAMILY INCOME (% OF THE FEDERAL POVERTY THRESHOLD [FPT])	
0-99% of FPT	0.154
100% to 199% of FPT	0.196
200% to 299% of FPT	0.141
300% or higher of FPT	0.509
GENDER	
Male	0.490
Female	0.510
AGE	
18 – 24	0.136
25 – 34	0.202
35 – 44	0.218
45 – 54	0.182
55 – 64	0.115
65 – 74	0.076
75 and older	0.070

RACE/ETHNICITY

White	0.495
Black	0.060
Asian/Pacific Islander	0.120
Hispanic	0.301
Other	0.024

EDUCATION

Less than high school	0.209
High school	0.235
Some post-high school	0.255
College graduate	0.184
Post-college	0.117

MARITAL STATUS

Married	0.548
Unmarried	0.452

BIRTHPLACE

U.S.-born	0.666
Foreign-born	0.334

GENERAL HEALTH STATUS

Poor	0.044
Fair	0.156
Good	0.294
Very good	0.304
Excellent	0.202
Observations	98,100

All proportions are calculated using sampling weights to account for the complex survey design of the 2001 and 2003 California Health Interview surveys.

As shown in **TABLE 1**, 61.9 percent of individuals visited a dental professional during the previous year. An individual's financial characteristics are strongly associated with the demand for dental services. As shown in **TABLE 2**, those who have private dental insurance are 15.5 percentage points ($p < 0.001$) more likely and those with Denti-Cal are 11.4 percentage points ($p < 0.001$)

more likely to have visited a dental professional in the last year than those without dental insurance. Those with higher incomes are also more likely to have visited a dental professional in the last year. Those whose family income is 200-299 percent of the federal poverty threshold are 4.3 percentage points ($p < 0.001$) more likely and those whose family income is 300 percent or higher

TABLE 2

Demand for Dental Care and Being Unable to Afford Needed Dental Care

Variables	Demand for Care Marginal Probability	95% Confidence Interval	Unable to Afford Marginal Probability	95% Confidence Interval
DENTAL INSURANCE				
No insurance	reference		reference	
Private	0.155***	[0.145, 0.166]	-0.145***	[-0.158, -0.132]
Denti-Cal	0.114***	[0.098, 0.130]	-0.089***	[-0.101, -0.076]
Family Income				
0-99% of FPT	reference		reference	
100% to 199% of FPT	0.010	[-0.007, 0.027]	0.002	[-0.016, 0.020]
200% to 299% of FPT	0.043***	[0.025, 0.062]	-0.033***	[-0.051, -0.015]
300% or higher of FPT	0.124***	[0.106, 0.141]	-0.138***	[-0.158, -0.118]
GENDER				
Male	reference		reference	
Female	0.058***	[0.049, 0.068]	0.042***	[0.031, 0.053]
Age				
18 - 24	reference		reference	
25 - 34	-0.092***	[-0.112, -0.072]	0.083***	[0.058, 0.108]
35 - 44	-0.051***	[-0.071, -0.032]	0.063***	[0.040, 0.087]
45 - 54	-0.015	[-0.034, 0.004]	0.061***	[0.037, 0.085]
55 - 64	0.022*	[0.002, 0.042]	0.008	[-0.016, 0.031]
65 - 74	0.023*	[0.002, 0.044]	-0.06***	[-0.080, -0.039]
75 or older	0.030**	[0.008, 0.051]	-0.128***	[-0.142, -0.114]
RACE/ETHNICITY				
White	reference		reference	
Black	-0.042***	[-0.063, -0.021]	0.031**	[0.007, 0.056]
Asian/Pacific Islander	-0.013	[-0.032, 0.005]	-0.033**	[-0.053, -0.014]
Hispanic	0.007	[-0.008, 0.021]	0.009	[-0.008, 0.026]
Other race	-0.071***	[-0.097, -0.045]	0.035*	[0.003, 0.067]
Education				
Less than high school	reference		reference	
High school	0.047***	[0.031, 0.063]	-0.004	[-0.022, 0.013]
Some post-high school	0.073***	[0.057, 0.089]	0.013	[-0.006, 0.032]
College graduate	0.115***	[0.098, 0.132]	-0.023*	[-0.042, -0.003]
Post-college	0.152***	[0.135, 0.169]	-0.049***	[-0.070, -0.029]
GENERAL HEALTH STATUS				
Good	reference		reference	
Excellent	0.071***	[0.058, 0.084]	-0.062***	[-0.076, -0.048]
Very good	0.040***	[0.029, 0.052]	-0.033***	[-0.046, -0.019]
Fair	-0.025**	[-0.040, -0.009]	0.046***	[0.028, 0.065]
Poor	-0.077***	[-0.101, -0.053]	0.093***	[0.063, 0.122]

TABLE 2 CONTINUED FROM 542

MARITAL STATUS				
Unmarried	reference		reference	
Married	-0.047***	[-0.057, -0.037]	0.036	[0.024, 0.048]
BIRTHPLACE				
U.S.-born	reference		reference	
Foreign-born	-0.001	[-0.015, 0.012]	0.030	[0.014, 0.046]
YEAR				
2001	reference			
2003	0.058***	[0.054, 0.063]		
χ^2	5050.17***		2840.80***	
Observations	98,100		42,043	

County dummy variable results not shown. Regression model included sampling weights; the standard errors were estimated using replicate weights that accounted for the complex survey design * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed z-tests). FPT: federal poverty threshold.

than the federal poverty threshold are 12.4 percentage points ($p < 0.001$) more likely to have visited a dental professional in the last year than those whose family income is less than 100 percent of the federal poverty threshold.

An individual's nonfinancial characteristics are also strongly associated with the demand for dental services. Women are 5.8 percentage points ($p < 0.001$) more likely to have visited a dental professional than men. The association of age and dental visits drops and then rises. Those who are unmarried are 4.7 percentage points ($p < 0.001$) less likely to have visited a dental profession than those who are married. Asians/Pacific Islanders and Hispanics are statistically no more or less likely to have visited a dental professional than whites. However, blacks are 4.2 percentage points ($p < 0.001$) less likely and those from "other" races/ethnicities are 7.1 percentage points ($p < 0.001$) less likely to have visited a dental professional than whites.

More educated persons are more likely to have visited a dental professional. Those with a high school (or equivalent) education are 4.7 percentage points ($p < 0.001$) more likely than those with less than a high school education

to have visited a dental professional in the last year. Those with some college are 7.3 percentage points ($p < 0.001$) more likely, those with a college degree are 11.5 percentage points ($p < 0.001$) more likely, and those who have attended graduate school and/or have a graduate degree are 15.2 percentage points ($p < 0.001$) more likely to have visited a dental professional than those who have not completed high school.

Whether an adult was born in the United States or outside its borders was not found to be statistically associated with the demand for dental services in the analyses. Note that this does not distinguish between citizens and non-citizens and that these subgroups may differ in their demand for dental services.

Finally, an adult's general health status is associated with dental visits. Those with excellent health are 7.1 percentage points ($p < 0.001$) more likely and those with very good health are 4.0 percentage points ($p < 0.001$) more likely to have visited a dental professional than those with merely good health. Those with fair health are 2.5 percentage points ($p < 0.01$) less likely and those with poor health are 7.7 percentage points ($p < 0.001$) less likely to have visited a dental professional than those with good health.

Who Needs Dental Care But Cannot Afford It?

A startling one-fifth (20.4 percent) of individuals report being unable to afford needed dental care, as shown in **TABLE 1**. **TABLE 2** presents the marginal probabilities of being in this group for individuals with various characteristics. These findings are based only on the 2003 CHIS. The reference group is made up of the average person in the sample for all characteristics other than the particular characteristic under consideration. In terms of financial characteristics, those who have private dental insurance are 14.5 percentage points ($p < 0.001$) less likely and those with Denti-Cal are 8.9 percentage points ($p < 0.001$) less likely than those without dental insurance to believe they needed dental care but were unable to afford it. Those whose family income is 200-299 percent of the federal poverty threshold are only 3.3 percentage points ($p < 0.001$) less likely to perceive this relative to those whose family income is less than 100 percent of the federal poverty threshold. Those whose family income is 300 percent or above the federal poverty threshold are 13.8 percentage points ($p < 0.001$) less likely to perceive this relative to those whose family income is less than 100 percent of the federal poverty threshold.

TABLE 3

Predicted Probabilities: Dental Visit in the Last 12 Months and Being Unable to Afford Needed Care in Last 12 Months: Selected Subgroups

		Dental Visit	Unable to Afford Needed Care
Subgroup (1):	Private dental insurance, year 2003, male, aged 45-54, white, post-college education, family income 300% or greater than the federal poverty threshold, excellent health, married, U.S.-born, living in Alameda County	0.970	0.018
Subgroup (2):	Denti-Cal insurance, year 2003, female, aged 25-34, black, high school education, family income 200-299% of the federal poverty threshold, very good health, unmarried, U.S.-born, living in Alameda County	0.815	0.186
Subgroup (3):	No dental insurance, year 2003, male, aged 35-44, Hispanic, less than high school education, family income less than 100% of federal poverty threshold, good health, married, foreign-born, living in Alameda County	0.665	0.371
Subgroup (4):	No dental insurance, year 2003, female, aged 65-74, Asian/Pacific Islander, some college education, family income 300% or greater than the federal poverty threshold, good health, unmarried, foreign-born, living in Alameda County	0.870	0.139

An individual's nonfinancial characteristics are also strongly associated with the individual believing that he or she needed dental care, but not being able to afford such care. Women are 4.2 percentage points ($p < 0.001$) more likely than men to perceive a financial barrier to needed dental services. The association of age and perceived financial barriers to needed care rises and then drops. Those who are unmarried are not more likely to perceive a financial barrier to needed care than those who are married. Relative to whites, blacks are 3.1 percentage points ($p < 0.01$) more likely, and "other" races/ethnicities are 3.5 percentage points ($p < 0.05$) more likely to perceive a financial barrier to needed care, while Asians/Pacific Islanders are 3.3 percentage points ($p < 0.01$) less likely to perceive a financial barrier to needed care. Hispanics are not different from whites with respect to perceiving financial barriers.

Those with a college degree are 2.3 percentage points ($p < 0.05$) less likely to perceive a barrier to needed care than those with less than a high school education, while those who have attended graduate school and/or have a graduate degree are 4.9 percentage points ($p < 0.001$) less likely

to perceive this than those with less than a high school education. There is no statistical difference between the perceptions of those with other levels of education and those with less than a high school education. Those born outside of the United States are statistically no more or less likely to perceive a financial barrier to needed dental care than the native born.

Finally, one's general health status is also associated with the perception of financial barriers to needed dental care. Those with excellent health are 6.2 percentage points ($p < 0.001$) less likely and those with very good health are 3.3 percentage points ($p < 0.001$) less likely to have this perception than those whose health is merely good. Those with fair health are 4.6 percentage points ($p < 0.001$) more likely and those with poor health are 9.3 percentage points ($p < 0.001$) more likely to have this perception than those with good health.

Predicting the Demand for Dental Services in California: Demographic Subgroups

One can get a better picture of the variation in the demand for dental services among different demographic subgroups and the variation in the per-

ception that there are financial barriers in receiving needed dental services among different subgroups by using the above models to predict outcomes for different subgroups. The authors present results for four subgroups in **TABLE 3**. For readers who would like to compute probabilities for subgroups other than those presented in the text, simple instructions on how to do this in Excel using the untransformed probit coefficients are included in the appendix. Note that while this method allows readers to compute accurate probabilities, it does not allow readers to compute confidence intervals (doing so would require statistical software and the actual data, which includes restricted data accessible only at the Data Access Center at the University of California, Los Angeles, Center for Health Policy Research). Thus, the authors have not included confidence intervals in the numbers reported here.

The authors' four subgroups are as follows: (1) private dental insurance, year 2003, male, aged 45-54, white, post-college education, family income 300 percent or greater than the federal poverty threshold, self-reported excellent health, married, U.S. native, living in Alameda County; (2) Denti-Cal insurance, year 2003, female,

aged 25-34, black, high school education, family income 200-299 percent of the federal poverty threshold, very good health, unmarried, U.S. native, living in Alameda County; (3) no dental insurance, year 2003, male, aged 35-44, Hispanic, less than high school education, family income less than 100 percent of federal poverty threshold, good health, married, foreign-born, living in Alameda County; (4) no dental insurance, year 2003, female, aged 65-74, Asian/Pacific Islander, some college education, family income 300 percent or greater than the federal poverty threshold, good health, unmarried, foreign-born, living in Alameda County.

The authors found that these groups varied a great deal in the probability that they have visited a dental professional in the last year with subgroup (1) having highest probability (0.970) and subgroup (3) having the lowest probability (0.665). It was also found that these groups varied a great deal in the probability that they perceived a financial barrier to receiving needed dental care with subgroup (1) having the lowest probability (0.018) and subgroup (3) having the highest probability (0.371).

Limitations

It should be noted that the dental insurance variables in the authors' models may be endogenous or measured with error. The authors did not correct for endogeneity or measurement error as the authors' models are only intended to be descriptive models, not causal models. For example, a person who decides to visit the dentist may purchase insurance just prior to the visit; hence, the dental visit caused the purchase of the insurance, not vice versa. A number of studies have attempted to correct potential endogeneity using the instrumental variables technique but find that the corrected parameter

estimates are larger than the uncorrected parameter estimates.^{8,9} The magnitude of the corrected parameter estimates in the aforementioned studies is far larger than the results for the demand for dental services found in the RAND Health Insurance Experiment.¹⁰ It is thus suggested that the authors' findings are conservative with regard to the association of insurance and dental care visits, that is, they are less than or equal to the true associations.

Additionally, the Denti-Cal insurance variable is not separated by whether

THE DEMAND FOR dental care is strongly related to the financial factors of family income and dental insurance as well as several nonfinancial factors.

individuals with Medi-Cal also know that they have Denti-Cal or not (the data used in this study show that approximately one-third of Medi-Cal enrollees do not know that they also have Denti-Cal insurance). In other words, it is assumed that the percentage of Medi-Cal enrollees who do not know they also have Denti-Cal will not change.

Discussion

In this study, the authors found that the demand for dental care is strongly related to the financial factors of family income and dental insurance as well as several non-financial factors. Specifically, the demand for dental care is positively related to having dental insurance, being female, increasing age, being white, Hispanic or Asian, having higher levels of education, higher levels of

family income, better health status, and being unmarried. In contrast, not being able to afford needed dental care is positively related to lacking dental insurance, being female, younger in age, being black or other race, less educated, lower family income, and having worse health status.

Note that female has a positive association with both the demand for dental care and not being able to afford needed dental care. This simply suggests that, on average, females consistently demand more care than they are receiving.

Since lack of affordability is a major barrier to dental care, one way to solve this problem would be to expand dental insurance coverage (both public and private). However, this would only expand access to the extent that there is excess capacity in the dental care system. Additional studies on the capacity of the dental workforce in California are needed before rational policy planning can take place to expand access to care through the expansion of dental coverage.

However, the above results can aid policymakers in targeting interventions to increase the access of those demographic subgroups that currently have low access to care. In those cases where the subgroup of interest is relatively small, such interventions need not wait until a complete understanding of the capacity of the dental system is completed. Such interventions can greatly enhance the oral health of those targeted and can be expanded as more information about the capacity of the dental care system becomes available. ■■■■

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Appendix: Calculating Probabilities for any Subgroup

For readers who wish to determine the probability of demographic and/or geographic subgroups that the authors did not present probabilities for in the text, the probability of any subgroup can be calculated by summing the relevant probit parameter estimates (listed in this appendix in **TABLE 4**) and then using the NORMDIST function in Microsoft Excel to determine the overall probability. The function “=NORMDIST(B2,

0, 1, TRUE)” should be used where B2 is the cell in which you have placed the summed probit parameter estimates.

When examining **TABLE 4**, remember that the reference characteristics are contained in the constant term and the parameter estimates in the table reflect how any given characteristic is different from the reference group. For example, subgroup 1 for the visits model would be calculated by summing the parameters of the various characteristics plus the constant term: private dental insurance

(0.412), year 2003 (2003 x 0.155=310.465), male (in constant term), aged 45-54 (-0.039), white (in constant term), post-college education (0.434), family income 300 percent or greater than the federal poverty threshold (0.329), excellent health (0.194), married (in constant term), born in the United States (in constant term), living in Alameda County (in constant term), constant term (-309.917). This equals 1.878 which yields a probability of 0.970 when put into an Excel spreadsheet using the formula above.

TABLE 4

Demand for Dental Care and Being Unable to Afford Needed Dental Care (Probit Parameter Estimates)

Variables	Demand for Care	Unable to Afford
DENTAL INSURANCE		
No insurance	reference	reference
Private	0.412	-0.574
Denti-Cal	0.318	-0.421
FEDERAL POVERTY THRESHOLD		
0-99% of FPT	reference	reference
100% to 199% of FPT	0.027	0.009
200% to 299% of FPT	0.117	-0.139
300% or higher of FPT	0.329	-0.549
GENDER		
Male	reference	reference
Female	0.155	0.169

AGE

18 - 24	reference	reference
25 - 34	-0.239	0.305
35 - 44	-0.135	0.240
45 - 54	-0.039	0.229
55 - 64	0.058	0.031
65 - 74	0.061	-0.271
75 or older	0.08	-0.717

RACE/ETHNICITY

White	reference	reference
Black	-0.11	0.120
Asian/Pacific Islander	-0.035	-0.142
Hispanic	0.018	0.036
Other race	-0.184	0.134

TABLE 4 CONTINUES ON 547

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EDUCATION			Marin	0.179	-0.015
Less than high school	reference	reference	Mariposa	0.009	0.472
High school	0.125	-0.018	Mendocino	0.068	-0.307
Some post-high school	0.198	0.051	Merced	-0.136	-0.228
College graduate	0.318	-0.094	Modoc	-0.062	-0.019
Post-college	0.434	-0.215	Mono	-0.043	-0.241
GENERAL HEALTH STATUS			Monterey	0.058	-0.108
Good	reference	reference	Napa	0.051	0.005
Excellent	0.194	-0.270	Nevada	-0.027	0.114
Very good	0.108	-0.135	Orange	0.013	-0.017
Fair	-0.065	0.177	Placer	0.094	0.023
Poor	-0.2	0.327	Plumas	0.068	-0.019
MARITAL STATUS			Riverside	-0.096	-0.033
Married	reference	reference	Sacramento	0.032	-0.036
Unmarried	-0.124	0.145	Santa Barbara	-0.027	0.186
BIRTHPLACE			Santa Clara	-0.093	-0.04
U.S.-born	reference	reference	Santa Cruz	-0.036	-0.049
Foreign-born	-0.004	0.122	San Benito	0.022	-0.061
YEAR			San Bernardino	-0.04	0.027
2001	reference	-	San Diego	0.072	-0.017
2003	0.155	-	San Francisco	0.058	-0.023
COUNTIES			San Joaquin	0.045	-0.051
Alameda	reference	reference	San Luis Obispo	0.149	-0.117
Alpine	-0.268	N/AV1	San Mateo	0.062	0.164
Amador	0.056	0.028	Shasta	-0.049	0.002
Butte	-0.059	-0.035	Sierra	-0.033	-1.147
Calaveras	-0.007	-0.129	Siskiyou	-0.023	-0.059
Colusa	0.016	-0.181	Solano	0.061	-0.149
Contra Costa	0.069	-0.082	Sonoma	0.067	-0.097
Del Norte	-0.168	0.057	Stanislaus	-0.083	0.092
El Dorado	0.022	0.141	Sutter	-0.078	0.082
Fresno	-0.053	-0.182	Tehama	-0.193	-0.054
Glenn	0.054	-0.085	Trinity	-0.109	-0.478
Humboldt	-0.065	-0.079	Tulare	-0.06	0.059
Imperial	-0.168	-0.290	Tuolumne	0.035	-0.327
Inyo	0.098	-0.002	Ventura	0.09	-0.225
Kern	-0.151	0.102	Yolo	0.136	-0.252
Kings	-0.052	-0.094	Yuba	-0.093	0.02
Lake	-0.109	0.004	Constant	-309.917	-0.727
Lassen	-0.12	-0.045	Observations	98,100	42,043
Los Angeles	-0.021	-0.048			
Madera	0.009	0.092			

The Alpine County parameter could not be estimated due to an insufficient number of observations. As a result, the Alpine County observations were excluded.