Diabetes & Hypertension among Rural Hispanics: Disparities in Diagnostics and Disease Management

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Executive Summary

Evidence indicates that rural individuals are more vulnerable to poor health outcomes and undiagnosed disease. Limited access to health care services results in fewer medical visits, under-diagnosis, and less optimal health outcomes. Rural and minority populations are particularly vulnerable to the consequences of lower access to care. This project investigated the association of Hispanic ethnicity and rural residence on rates of diagnosis of diabetes and hypertension, indicators of poor medical control (i.e. glycemic control, blood pressure control, lipid control) among people with these diagnoses, and likelihood of having the undiagnosed conditions.

We analyzed of the National Health and Nutrition Examination Survey (NHANES) III, 1988-1994. NHANES III collected multi-stage, stratified, clustered samples from the US civilian, non-institutionalized population. This data allowed us to make population estimates for US adults. With assistance from the National Center for Health Statistics, we classified non-Hispanic white and Hispanic adults as living in a metropolitan statistical area (urban) or outside a metropolitan statistical area (rural). Significant findings:

Diabetes

- Rural Hispanics had a greater prevalence for diagnosed diabetes (8.2%) than urban Whites (4.6%), rural Whites (6.5%), or urban Hispanics (4.5%) with $p<0.01$.
- Urban Hispanics were most likely to have undiagnosed diabetes, with a prevalence of 3.7%, versus 2.3% of rural whites, 2.8% of urban whites, and 2.7% of rural Hispanics ($p=0.04$).
- Approximately 40% of White or Hispanic Americans with diagnosed diabetes have poor glycemic control. This prevalence is not significantly different between rural and urban, Hispanics and Whites.
- Control of hypertension among those with diagnosed diabetes differed between groups, with 37% of urban whites, 29% of rural whites, 28% of urban Hispanics and 45% of rural Hispanics having a measured systolic blood pressure greater than 140 mm Hg ($p=0.01$).
- In regression models controlling for relevant variables including obesity, health status, access to care, education, income and insurance, compared to rural Hispanics, rural and urban Whites with diagnosed diabetes were not significantly more likely to have better glycemic, blood pressure, or lipid control.

Hypertension

- Hispanics, both urban and rural, had lower prevalence of hypertension (18.2% and 20.5%, respectively) than their White counterparts (urban 23.3%, rural 28.5%) with $p<0.01$.
- Undiagnosed hypertension, however, was greatest in rural Hispanics (9.2%), least in urban Hispanics (5.9%), and moderate in Whites (urban 7.3%, rural 8.4%) with $p<0.01$.
- Urban Hispanics with diagnosed hypertension are least likely to have uncontrolled blood pressure (34.9%). Urban Whites, rural Whites, and rural Hispanics all have higher rates of uncontrolled blood pressure (45.7%, 44.4%, and 42.9%, respectively) with $p=0.01$.

- In regression models controlling for relevant variables, compared to rural Hispanics, rural and urban Whites with diagnosed hypertension were not significantly more likely to have better blood pressure or lipid control.
- In regression models controlling for relevant variables, rural and urban Whites were no more or less likely to have undiagnosed hypertension or diabetes than rural Hispanics.

The study found modest disparities in health, with rural Hispanics having a higher prevalence of diabetes. Among persons with diagnosed diabetes or hypertension, rural Hispanics did not experience poorer glycemic or blood pressure control. Rural Hispanics with diabetes did exhibit poorer control of co-morbid hypertension than did whites. While overall disparities were small, differences in blood pressure control experienced by rural Hispanics still merit further study to determine whether problems stem from inadequate patient compliance with recommended drug therapies or from inadequate monitoring and prescribing by rural health care providers. Distance to pharmacy services, cost of medications, reluctance to discuss cost of medications with a provider, or aversion to side effects may all play a role.

I. Introduction: Previous Research & Goals of the Present Study

Diabetes mellitus and hypertension are common chronic diseases affecting millions of Americans (Cowie 2003; Chobanian, 2003). Persons with diabetes are at increased risk for a number of serious complications including retinopathy, renal disease and heart disease (Eastman, 1997; Wilson,1998; Sanchez-Thorin, 1998). Hispanics have been found to have higher rates of diabetes than whites (Cowie 2003). Hispanics tend to have a lower prevalence of hypertension than non-Hispanic whites but Hispanics with hypertension tend to have lower medication use than non-Hispanic whites for the condition (Lorenzo, 2002; Briesacher, 2003; Henderson, 2003).

Rural and minority populations have historically had problems accessing care and are particularly vulnerable to the consequences of lower access to care (Newacheck, 1996; Bolen, 2000; Waidmann, 2000). Limited access to health care services results in fewer medical visits, under-diagnosis, lower rates of recommended monitoring tests for diabetes, and less optimal health outcomes (Ayanian, 2000; Dansky, 1998; Saaddine, 2002; LaVeist, 2003). Reducing access to care disparities can lead to improved outcomes indistinguishable from fully insured persons with full access (Mancini, 2001; Williams, 2001).

Although the data suggest that individuals living in rural areas and Hispanics are more likely to have diabetes or hypertension, it is unclear if both being Hispanic and living in a rural area puts individuals at even greater risk for having disease than either factor alone. Moreover, little information has been available to assess unrecognized disease or inadequate control of diabetes and hypertension among rural Hispanics. Thus, the purpose of this study was to examine in a nationally representative sample of US adults the prevalence of diagnosed and undiagnosed, diabetes and hypertension, as well as control of co-morbid conditions among urban Whites, rural Whites, urban Hispanics, and rural Hispanics.

II. Population Characteristics of Urban and Rural Hispanics 1988 – 1994

Demographics

Hispanics, in comparison with non-Hispanic Whites, generally were younger, had lower incomes, had less education, were in poorer health, and were more likely to be overweight (Table 1). Rural Hispanics, as a group, were older than their urban counterparts: 29.6% of rural Hispanics were age 50 or above as compared to only 22.6% of urban Hispanics (Table 1). The majority of rural Hispanics were male (52.6%) while a majority of urban Hispanics were female (51.2%). While all Hispanics were disadvantaged compared to whites, a greater percentage of rural Hispanics reported household incomes below $20,000 per year (72.0%) or lacked a high school education (62.0%) than urban Hispanics (51.8% and 53.5%, respectively).

Health Status and Health Care Utilization

Even though Hispanics were more likely than Whites to consider themselves in Fair or Poor overall health (30.3% vs. 13.5%), they were more likely than Whites to have no usual source of care (31.3% vs. 19.7%), no medical insurance (34.5% vs. 9.2%), and no physician visit in the previous year (39.9% vs. 20.7%; Table 2). A greater percentage of rural Hispanics consider themselves in Fair or Poor overall health than urban Hispanics (35.0% vs. 30.0%) (Table 1). Body Mass Index (BMI) was examined because of its links to both diabetes and hypertension. There were no large differences in the distribution of BMI within each population.

Rural and Urban Hispanics did not differ on the likelihood of having a usual source or provider for medical care (Table 2). Neither do they differ in whether they have health insurance or the type of insurance they have (if any). There was no difference between the groups in the number of hospitalizations in the previous twelve months, but urban Hispanics were more likely to have seen a physician in the past twelve months (70.9% vs. 60.5%), and more likely to have seen a physician more than once in the same time period (50.4% vs. 38.8%).

III. Diabetes among Rural Hispanics

In unadjusted analyses, rural residents, and especially rural Hispanics, were more likely to have diagnosed diabetes than urban-dwelling whites or Hispanics, with a US population prevalence of 4.6% for urban whites, 6.5% for rural whites, 4.5% for urban Hispanics, and 8.2% for rural Hispanics ($p < 0.01$; Table 3). Urban Hispanics had the greatest rate of undiagnosed diabetes (3.7%), compared to 2.3% of urban whites, 2.8% of rural whites, and 2.7% of rural Hispanics ($p = 0.04$). Among diagnosed diabetics there were no significant trends in the percentages of uncontrolled diabetes or other co-morbidities (elevated blood pressure or cholesterol) by ethnicity and residence area, except for higher rates of elevated systolic blood pressure among urban Whites and rural Hispanics ($p = 0.01$).

Among persons with diagnosed diabetes, Hispanics, especially rural Hispanics, were more likely to report low income ($p < 0.01$), less than a high school education ($p < 0.01$), and poorer health ($p < 0.01$; Table 4). Urban Hispanics were most likely of the four groups to report that they had no usual source of health care ($p = 0.01$) or no insurance ($p < 0.01$; Table 5). Rural Hispanics were the most likely to have public insurance ($p < 0.01$).

Logistic regression was conducted to assess the effects of ethnicity and residence while holding demographic and health, and utilization factors constant. In all logistic regression models, the ethnicity/residence reference group was rural Hispanics. Among people with diagnosed diabetes, there were no differences across the ethnicity/residence groups in lack of glycemic control (i.e. HbA1c ≥ 8.0; Table 6). Older people were less likely to lack diabetic control (OR 0.97, 95% CI 0.95-0.99), and people with no usual place of care were more likely to lack diabetic control (OR 8.76, 95% CI 2.95-25.96) than people with a usual provider.

Absence of blood pressure control was similarly modeled among persons with diabetes.

In the model predicting lack of blood pressure control (systolic blood pressure ≥ 140 or diastolic blood pressure ≥ 90) among diagnosed diabetics, urban Hispanics were less likely to have uncontrolled blood pressure than rural Hispanics (OR 0.65, 95% CI 0.43-0.98). Compared to rural Hispanics, there was no difference in likelihood of uncontrolled blood pressure among urban whites (OR 0.80, 95% CI 0.39-1.61) or rural whites (OR 0.55, 95% CI 0.29-1.07). Older people (OR 1.07, 95% CI 1.05-1.09) and people with greater BMI (OR 1.05, 95% CI 1.02-1.09) were more likely to lack blood pressure control.

Finally, cholesterol control among persons with diagnosed diabetes was examined in multivariate analysis. Among people with diagnosed diabetes, ethnicity residence was not significant predictor of elevated cholesterol (total cholesterol ≥ 240; Table 8). Males were less likely to have elevated cholesterol (OR 0.26, 95% CI 0.15-0.44), and people with poorer self-reported health were more likely to have elevated cholesterol.

In contrast, lack of LDL cholesterol control (LDL ≥ 160) among diagnosed diabetics did show significant ethnicity/residence differences (Table 9). Urban and rural Whites were significantly more likely to have elevated LDL than rural Hispanics. Interestingly, people with greater BMI were less likely to have elevated LDL. As with total cholesterol, people with poorer self-reported health status were more likely to have elevated LDL.

With demographic and health services use factors held constant, urban Hispanics were more likely to have undiagnosed diabetes (HbA1c > 6.1) than rural Hispanics (Table 10). Whites, urban and rural, were not significantly more likely to have undiagnosed diabetes than rural Hispanics. As expected, people who saw their doctor more frequently, and those people with a family history of diabetes were less likely to have undiagnosed diabetes than people without a family history of diabetes. When using fasting plasma glucose ≥ 126 to define undiagnosed diabetes, the Odds Ratio for urban Hispanics shows them to be at greater risk for having undiagnosed diabetes, but not significantly so (Table 11). The larger confidence interval and the lack of significance at $p < 0.05$ is due to the smaller sample population who had the fasting plasma glucose test conducted.

IV. Hypertension among Rural Hispanics

Hispanics were less likely to have diagnosed hypertension than Whites, and people living in urban areas were less likely than their rural counterparts to have diagnosed hypertension ($p < 0.01$; Table 12). People living in rural areas were more likely to have undiagnosed hypertension (SBP ≥ 140 or DBP ≥ 90 mm Hg) than their urban counterparts. Among diagnosed hypertensives, Hispanics, especially those living in urban areas, were less likely than Whites to have elevated systolic (≥ 140 mm Hg) or diastolic (≥ 90 mm Hg) blood pressure ($p = 0.01$). There were no significant relationships between ethnicity/residence area and lack of control of other co-morbid factors.

Hispanics with diagnosed hypertension, like other Hispanics, were more likely to be younger than age 65, be female, have incomes below $20,000 per year, not have a high school education, have poorer self-reported health, and have greater BMI than Whites (Table 13). There were no great differences between rural and urban Hispanics. Hispanics were more likely to have no usual source of care than Whites, and also more likely to have public or no health insurance than Whites (Table 14). Hispanics with diagnosed hypertension were more likely to have no doctor visits in the past year than were similarly diagnosed whites. Rural Hispanics were markedly less likely to have seen a doctor two or more times in the past year than Whites or urban Hispanics.

Ethnicity and residence were not significant predictors of whether a person with diagnosed hypertension would have elevated systolic or diastolic blood pressure (Table 15). Male hypertensives were more likely than females to have elevated blood pressure. Older people, and people with greater BMIs were more likely to have elevated blood pressure. Education, self-reported health status, income level, insurance type, continuity of care, and frequency of seeing a physician were not significant predictors of lack of blood pressure control.

As with blood pressure control, ethnicity and residence area were not significant predictors of whether a person with diagnosed hypertension would have elevated total cholesterol after other factors were held equal (Table 16). Males with diagnosed hypertension were less likely than females to have elevated total cholesterol, and older people were more likely to have elevated total cholesterol. People with poorer self-reported health status were more likely to have elevated total cholesterol. Education, BMI, income level, insurance type, continuity of care, and number of times having seen a physician in the past year were not significant predictors of elevated total cholesterol.

Similarly, ethnicity and residence were not significant predictors of whether people with diagnosed hypertension also had elevated LDL cholesterol after other characteristics were controlled statistically (Table 17). Among all of the control variables, only increasing age was significantly related to elevated LDL.

In comparison with rural Hispanics, urban Hispanics and all Whites tended to be less likely to have undiagnosed hypertension, but the trends were not significant ($p > 0.05$; Table 18). Males, older people, and people with no usual source of care were more likely to have undiagnosed hypertension. People with greater BMI, poorer health, and who saw physicians more frequently were less likely to have undiagnosed hypertension. Education, income, and insurance type were not significant predictors of undiagnosed hypertension.

V. Conclusions

Summary of Findings

Rural residents, especially rural Hispanics, were more likely to have been diagnosed with diabetes than urban non-Hispanic whites. Among persons with diagnosed diabetes, ethnicity and residence did not affect control of diabetes. However, control of systolic blood pressure was markedly poorer among rural Hispanics with diabetes than among rural whites or urban Hispanics. This relationship persisted even with factors such as insurance, continuity of care and physician visits during the past year held constant. Further research is needed to explore whether failure to control co-morbid blood pressure among rural Hispanics with diabetes stems from patient behaviors, such as reluctance to purchase or use multiple medications, or from poor communication between practitioner and patients, perhaps due to higher workloads among rural practitioners. Additional areas further research should also include how the costs of medications and lack of insurance factor into failure to control co-morbid blood pressure among rural Hispanics.

Undiagnosed diabetes was more prevalent among urban than rural Hispanics, a finding that remained unchanged even when factors such as income and insurance were held constant. As might be anticipated, lack of a usual source of care was also associated with undetected diabetes, while each additional physician visit per year reduced the likelihood of undiagnosed diabetes. Recent evidence has indicated that having a usual provider of medical care is associated with having physician detected diabetes (Koopman, 2003). Persons with a family history of diabetes had significantly lower odds of undetected diabetes, suggesting that both patients and their practitioners are sensitive to the implications of this risk factor.

Both urban and rural Hispanic adults were at lower risk of having diagnosed hypertension than were whites, while rates of undiagnosed hypertension were similar across ethnic groups. In unadjusted analyses, rural Hispanics with hypertension were not more likely to lack blood pressure control than were whites. In general, there was little evidence of ethnicity/ residence disparities with regard to this diagnosis.

The present report suggests that health disparities in the control of diabetes and hypertension between rural Hispanics and urban or rural non-Hispanic whites are relatively modest. Previous data have indicated that rural African Americans have distinct health care disparities (Mainous, in press). Outcomes among rural Hispanics, although they could be improved, suggest fewer ethnic disparities.

Limitations

There are several strengths and limitations to this study. A limitation to the study is that the data are becoming slightly outdated for documenting current health care delivery. However, at the time of the study, in cooperation with the National Center for Health Statistics Research Data Center, these data were the most current population-level data available with both clinical information as well as access to care information. A second limitation is that by using a nationally representative population because of the specific subgroups under investigation, some of the analyses had too few individuals available for analysis to compute accurate population estimates.

Strengths of this study are that it is the first to our knowledge to examine on a population level the health care of the ethnic/residency subgroup of rural Hispanics in comparison to other subgroups of the population. Moreover, the design of this study allowed us to compute national population estimates of both disease prevalence as well as control of common chronic diseases.

VI. Recommendations

Because the research reported here did not document wide health disparities associated with Hispanic ethnicity or rural residence, its recommendations are modest. As noted previously, control of co-morbid elevated blood pressure was poorer among rural Hispanics than among other populations. Given that continuity of care and number of physician visits were held constant in the models, as well as patient resources, the search for causes for this problem will probably entail qualitative research and detailed local studies. If the volume of patient visits is similar, failure to control blood pressure may originate in the nature of patient and provider interactions. Side effects of blood pressure medications, as well as the necessity of treating both diabetes and blood pressure simultaneously, may not be adequately communicated to rural Hispanic patients. The value of patient education and physician education about cultural differences cannot be overstated. A renewed commitment to patient education that conveys the knowledge in a way that is culturally appropriate could increase patient compliance with the care plan. This type of education goes beyond ensuring patient literature is available in both English and Spanish. It pertains to the provider's ability to establish a trusting relationship that crosses cultural boundaries. An appreciation by the physician on how his or her prescribed therapies interfaces with a home culture that may be counterintuitive to Western medicine should be facilitated.

On the patient side, lack of blood pressure control may stem from failure to fill prescriptions, or to take medications as directed. The present study did not examine prescription drug coverage within categories of insurance. Research among Medicare beneficiaries without drug coverage has found that minority patients with diabetes or hypertension use fewer medications than white patients (Briesacher et al, 2003). Distance to pharmacy services, cost of medications, reluctance to discuss cost of medications with a provider, or aversion to side effects may all play a role. It is likely that insurance status is a significant factor in the filling of prescriptions by persons of all races and ethnicities, but especially rural Hispanics. Being uninsured or under-insured inhibits access to both physicians and prescription drugs. Stated differently, lack of compliance with a pharmaceutical regime may have more to do with financial or insurance issues than cultural norms and values.

APPENDIX I

Methods

This study is an analysis of the National Health and Nutrition Examination Survey (NHANES) III, 1988-1994. For NHANES III, the National Center for Health Statistics (NCHS) collected multi-stage, stratified, clustered samples from the US civilian, non-institutionalized population. Detailed information on the plan and operation of the NHANES III has been previously published (NCHS, 1994).

To examine the relationship between ethnicity, residence and medical condition indicators, three of the five NHANES data files were selected for analysis: the household adult data file, examination data file, and laboratory data file. All NHANES III public use data files are linked by a common survey participant variable. The variable consistently identifies the same participant in each different data file. We excluded any person who did not participate in all three parts of the survey.

The household adult data file contains the results of the questionnaire administered to all adults in the survey population described above. Adults are defined by NCHS as any non-institutionalized civilian 17 years of age or older. The adult interviews were conducted in English and Spanish by highly trained field staff. We limited our analysis to adults 20 years of age or older.

The examination and lab data files contain the results of the exams and labs performed on survey participants who followed up their household interview as requested with a visit to one of the NHANES mobile examination centers (MEC). Survey participants were examined within a month of completing their household interview. A less comprehensive home examination was available to those participants who were unable to leave their home.

The analysis of the NHANES III was modified to accurately investigate rural/urban issues. The public use data set contains a rural/urban variable that is based on USDA criteria that was selected by the National Center for Health Statistics (NCHS) to protect respondent confidentiality. In discussions with NCHS staff this USDA rural/urban variable would not give the degree of differentiation of communities to appropriately investigate rural/urban issues. Working with the NCHS Research Data Center we were able to merge respondent residence in a Metropolitan Statistical Area, data not available in the public use datasets, with the other public use NHANES III data. All findings reported in this study were checked at the Research Data Center by the confidentiality officer prior to being released to the investigators.

Variables

Independent variables:

Race/Ethnicity: The subject's race and ethnicity are self-reported. We used the NHANES III racial/ethnic categories of "nonhispanic white" and "Hispanic".

Residence Area: There are a variety of ways to define rural versus urban residence. For many large population-based studies Metropolitan Statistical Area (MSA) is used (Steinberg, 2000; Schoenborn, 2002; White, 2002). Residence in an MSA was categorized as urban, while residence outside an MSA was defined as rural.

Dependent Variables

Diagnosed Diabetes: A previous diagnosis of diabetes was assessed by an item asking if a doctor has ever told the subject that he or she has diabetes. Individuals with only gestational diabetes were excluded from this categorization.

Undiagnosed Diabetes: Individuals who denied previously diagnosed diabetes were categorized as having undiagnosed diabetes if they had fasting plasma glucose levels obtained during the examination $\geq$ 126 mg/dl. This standard satisfies the diagnosis of diabetes according to American Diabetes Association diagnostic criteria prevailing at the time of this study (Expert Committee, 1997; Harris, 1998). This standard has been successfully used with the NHANES III to make population estimates of undiagnosed diabetes (Harris, 1998).

Diagnosed Hypertension: A previous diagnosis of hypertension was assessed by an item asking if a doctor has ever told the subject that he or she has hypertension or high blood pressure.

Undiagnosed Hypertension: Individuals who denied a previous diagnosis of hypertension were determined to have undiagnosed hypertension if they had measured systolic blood pressure (SBP) $\geq$ 140 mm Hg or diastolic blood pressure (DBP) $\geq$ 90 mm Hg.

Glycemic Control: Among patients with diagnosed diabetes we classified individuals with HbA1c $\geq$ 8% as having poor control. This level corresponds to the American Diabetes Association action point for glycemic control (ADA, 1997).

Blood Pressure Control: We defined poor control of blood pressure as a measured SBP

≥140 mm Hg or DBP ≥90 mm Hg. Lack of SBP control and DBP control were also considered separately.

Cholesterol Control: Lack of cholesterol control was defined as total cholesterol ≥240 mg/dl (ADA, 1997). Lack of LDL cholesterol control was defined as LDL ≥160 mg/dl (ADA, 1997).

Control Variables

We included several variables that might affect the likelihood of recognition or control of diabetes. Several health care access and social variables were also measured as potential covariates.

Age: The population was grouped into four age categories: 20-34, 35-49, 50-64, and ≥65.

Gender: The respondent's gender is included in the survey data.

Body Mass Index: We categorized the population according to data from the physical examination and computed body mass index (kg/m^2) (BMI). A two-part variable was created grouping the population into those with BMI <27 and those with BMI ≥27. Another variable was created grouping the population into 4 BMI ranges: <18.5, 18.5-24.9, 25.0-29.9, and ≥30.

Self-Perceived Health Status: This variable consisted of a single 5-point item asking the respondent to rate his or her own overall health (Excellent, Very Good, Good, Fair, Poor).

Length of time with Diabetes: For those with diagnosed diabetes, we calculated their length of time with diabetes from their current age and their self-reported age at diagnosis of diabetes.

Income: The total annual household income was reported. The population was grouped into those with annual household incomes <$20,000 and those ≥$20,000.

Medical Home: This three-part variable was defined as whether the respondent reported a usual place for health care and, if so, a usual doctor.

Doctor Visits: We included a variable for the number of times the patient has seen a doctor in the past twelve months.

Hospitalizations: We included a variable for the number of hospitalizations in the past twelve months.

Health Insurance: The type of health insurance was included in the survey. From this information we defined three population groups: those with Public insurance, those with Private insurance, and those with no insurance.

Education: The population was grouped into those who were high school graduates and those who had not completed high school.

Analysis Plan

The population under study was restricted to adult Hispanics and nonhispanic whites. With the large over sampling of young children, older persons, black persons, and Mexican-Americans in NHANES III, it is essential that the sample weights be used in all analyses. NHANES III is based on a complex, multi-stage probability sample design. Appropriate sample weights are needed to estimate prevalence, means, medians, and other statistics. Sample weights are used to produce correct population estimates because each sample person does not have the same probability of selection. The sample weights incorporate the differential probabilities of selection and include adjustments for noncoverage and nonresponse. Sample weights can be considered as measures of the number of persons the particular sample observation represents. (NHANES Documentation, Dec 1996). The SUDAAN statistical package was used to provide unbiased national estimates representative of the adult civilian, noninstitutionalized population.

Chi square analyses were used to compare the categorical data. Logistic regression models were computed to determine the independent relationship of the residence/racial variable with disease control, adjusting for the control variables of age, sex, BMI, perceived health status, income, insurance status, education, medical home, number of times seeing the doctor in the past year, and length of time with diabetes. Among respondents with diagnosed diabetes the disease control outcomes studied included elevated HbA1c, blood pressure, and cholesterol. The likelihood of having undiagnosed diabetes was also calculated using a logistic regression model. A similar series of analyses were conducted examining hypertension prevalence, control, and likelihood of having undiagnosed hypertension.

APPENDIX II
Supporting Tables

Table 1. Population estimates of demographic characteristics of adults by ethnicity and residence area.

	Whites		Hispanics		
	Urban	**Rural**	**Urban**	**Rural**	**p**
Population Estimate	106,830,224	28,330,663	15,110,672	1,153,501	
Age					<0.01
20-34	33.18	27.79	45.21	43.94	
35-49	31.34	25.17	32.23	26.45	
50-64	18.24	21.33	14.92	19.57	
65+	17.25	25.70	7.64	10.03	
Gender					0.41
Male	48.04	46.82	48.78	52.58	
Female	51.96	53.18	51.22	47.42	
Income					<0.01
Below $20,000	24.54	43.31	51.76	71.95	
Above $20,000	75.46	56.69	48.24	28.05	
HS Grad					<0.01
No	17.94	30.73	53.50	62.01	
Yes	82.06	69.27	46.50	37.99	
Health Status					<0.01
Excellent	22.70	18.50	12.87	12.28	
Very Good	34.68	30.08	19.22	11.74	
Good	30.51	32.82	37.98	41.00	
Fair	9.72	14.21	25.91	28.61	
Poor	2.39	4.39	4.02	6.37	
BMI					<0.01
<27	63.30	58.56	54.83	51.18	
≥27	36.70	41.44	45.17	48.82	
BMI					<0.01
<18.5	2.55	2.49	1.30	2.13	
18.5-24.9	44.60	40.04	34.95	32.90	
25.0-29.9	31.98	35.03	37.99	37.00	
≥30	20.86	22.43	25.76	27.97	

Table 2. Health care utilization of adults by ethnicity and residence area

	Whites		Hispanics		
	Urban	**Rural**	**Urban**	**Rural**	**p**
Continuity of Care					<0.01
None	20.73	15.95	31.46	29.55	
Usual Source	9.75	7.07	23.81	18.42	
Usual Provider	69.52	76.98	44.73	52.04	
Insurance					<0.01
Public	6.18	8.98	16.18	19.83	
Private	85.39	79.05	49.36	45.42	
None	8.43	11.97	34.46	34.74	
Hospitalizations					0.08
None	88.16	86.30	87.79	87.06	
1	8.46	10.44	9.60	9.87	
2+	3.37	3.26	2.61	3.07	
Doctor Visits					<0.01
None	20.25	22.19	29.13	39.49	
1	21.67	19.42	20.49	21.67	
2+	58.08	58.39	50.38	38.84	

Table 3. Percentages of adults, by ethnicity and residence area, with self-reported physician diagnosed diabetes, undiagnosed diabetes (FPG ≥ 126), undiagnosed diabetes (HbA1c > 6.1), and, among diagnosed diabetics, levels of control and co-morbidity.

	Whites		**Hispanics**		
	Urban	**Rural**	**Urban**	**Rural**	**p**
Diagnosed Diabetes	4.57	6.51	4.51	8.22	< 0.01
UnDx Diabetes (FPG)	2.31	2.75	3.68	2.74	0.04
UnDx Diabetes (HbA1c)	5.68	5.58	8.87	4.63	<0.01
Diabetic Control					
$HbA1_c \geq 8\%$	43.03	36.63	41.88	40.80	0.66
Co-morbidities					
Systolic BP ≥ 140	37.22	29.48	28.71	45.55	0.01
Diastolic BP ≥ 90	3.92	5.30	6.66	8.71	0.29
Either elevated	39.81	32.00	30.25	45.55	0.06
Total Cholesterol ≥ 240	37.09	34.37	31.97	38.72	0.76
LDL ≥ 160	29.87	10.51	13.84	17.58	0.22
HDL ≤ 30	10.92	10.89	7.83	5.17	0.23
Triglycerides > 200	38.53	42.27	44.26	37.53	0.86

Table 4. Population estimates of demographic characteristics of diagnosed diabetics by ethnicity and residence area.

	Whites		Hispanics		
	Urban	**Rural**	**Urban**	**Rural**	**p**
Population Estimate	4,877,477	1,840,965	680,927	94,842	
Age					†
20-34	*	*	4.13	*	
35-49	*	*	26.63	*	
50-64	32.84	37.33	39.88	41.67	
65+	45.42	41.67	29.37	31.10	
Gender					0.07
Male	47.56	49.84	37.31	33.40	
Female	52.44	50.16	62.69	66.60	
Income					<0.01
Below $20,000	36.85	51.52	62.50	78.75	
Above $20,000	63.15	48.48	37.50	21.25	
HS Grad					<0.01
No	34.22	46.32	71.28	83.55	
Yes	65.78	53.68	28.72	16.45	
Health Status					<0.01
Excellent	6.86	2.47	1.51	4.38	
Very Good	18.91	16.07	7.75	3.39	
Good	38.14	37.63	30.16	27.50	
Fair	23.87	30.89	46.75	44.80	
Poor	12.22	12.94	13.84	19.92	
BMI					0.10
<27	32.85	35.12	30.66	45.28	
≥27	67.15	64.88	69.34	54.72	
BMI					†
<18.5	2.67	*	*	*	
18.5-24.9	16.91	*	*	*	
25.0-29.9	36.06	36.38	44.26	37.98	
≥30	44.36	41.48	42.18	43.01	

* Due to small sample numbers in these cells, percentages could not be reliably calculated.
† p-values could not be reliably calculated due to cells with small sample numbers.

Table 5. Health care utilization of diagnosed diabetics by ethnicity and residence area

	Whites		Hispanics		
	Urban	**Rural**	**Urban**	**Rural**	**p**
Continuity of Care					0.01
None	1.82	6.48	11.42	5.08	
Usual Source	9.89	2.09	16.67	14.24	
Usual Provider	88.29	91.43	71.91	80.68	
Insurance					<0.01
Public	15.77	17.14	35.86	45.13	
Private	82.21	72.28	45.64	37.92	
None	2.02	10.59	18.50	16.95	
Hospitalizations					<0.01
None	77.32	65.00	78.01	69.02	
1	14.39	23.42	15.60	18.59	
2+	8.29	11.58	6.39	12.39	
Doctor Visits					0.01
None	4.34	3.88	2.19	6.29	
1	6.21	3.49	10.03	19.39	
2+	89.45	92.63	87.78	74.32	

Table 6. Logistic regression model for lack of diabetes control ($HbA1_c \geq 8.0$) among patients with self-reported physician-diagnosed diabetes.

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	0.15	0.45	1.16	0.47-2.87
Rural Whites	-0.16	0.45	0.85	0.34-2.11
Urban Hispanics	-0.08	0.43	0.93	0.39-2.19
Rural Hispanics	0	0	1.0	1.0
Gender				
Male	-0.05	0.24	0.95	0.58-1.55
Female	0	0	1.0	1.0
Age (1 year)	-0.03	0.01	0.97	0.95-0.99
Highest school year completed	0.02	0.05	1.02	0.92-1.12
Body Mass Index	-0.0004	0.02	0.9996	0.96-1.04
Health Status				
Excellent	0	0	1.0	1.0
Very Good	-0.99	0.61	0.37	0.11-1.27
Good	-0.87	0.55	0.42	0.14-1.26
Fair	-0.70	0.61	0.50	0.15-1.68
Poor	0.07	0.66	1.07	0.28-4.04
Income				
Below $20,000	0.05	0.36	1.05	0.51-2.16
Above $20,000	0	0	1.0	1.0
Insurance				
Public	-0.13	0.58	0.88	0.27-2.82
Private	-0.09	0.58	0.92	0.29-2.94
None	0	0	1.0	1.0
Continuity of Care				
None	2.17	0.54	8.76	2.95-25.96
Usual Source	-0.21	0.37	0.81	0.38-1.72
Usual Provider	0	0	1.0	1.0
No. of times saw MD last 12 mo.	-0.03	0.02	0.97	0.94-1.01
Length of time with Diabetes	0.01	0.01	1.01	0.99-1.03

Table 7. Logistic regression model for lack of hypertension control (SBP ≥ 140 or DBP ≥ 90) among patients with self-reported physician-diagnosed diabetes.

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	-0.23	0.35	0.80	0.39-1.61
Rural Whites	-0.59	0.33	0.55	0.29-1.07
Urban Hispanics	-0.44	0.21	0.65	0.43-0.98
Rural Hispanics	0	0	1	1
Gender				
Male	-0.31	0.22	0.73	0.47-1.14
Female	0	0	1	1
Age	0.07	0.01	1.07	1.05-1.09
Highest school year completed	0.01	0.04	1.01	0.93-1.09
Body Mass Index	0.05	0.02	1.05	1.02-1.09
Health Status				
Excellent	0	0	1	1
Very Good	1.03	0.60	2.80	0.84-9.32
Good	1.00	0.60	2.72	0.82-9.00
Fair	0.95	0.54	2.59	0.88-7.60
Poor	0.64	0.66	1.90	0.50-7.23
Income				
Below $20,000	0.40	0.29	1.49	0.84-2.65
Above $20,000	0	0	1	1
Insurance				
Public	0.03	0.49	1.03	0.38-2.77
Private	-0.12	0.44	0.89	0.37-2.16
None	0	0	1	1
Continuity of Care				
None	-0.22	0.59	0.80	0.24-2.61
Usual Source	-0.41	0.46	0.66	0.26-1.66
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.01	0.01	0.99	0.96-1.01
Length of time with Diabetes	0.01	0.01	1.01	0.99-1.03

Table 8. Logistic regression model for lack of cholesterol control (Total cholesterol ≥ 240) among patients with self-reported physician-diagnosed diabetes.

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	0.02	0.36	1.02	0.50-2.10
Rural Whites	-0.25	0.32	0.78	0.41-1.49
Urban Hispanics	-0.42	0.31	0.66	0.35-1.23
Rural Hispanics	0	0	1	1
Gender				
Male	-1.34	0.26	0.26	0.15-0.44
Female	0	0	1	1
Age	-0.002	0.01	1.00	0.98-1.02
Highest school year completed	-0.001	0.04	1.00	0.92-1.08
Body Mass Index	0.02	0.02	1.02	0.98-1.05
Health Status				
Excellent	0	0	1	1
Very Good	1.72	0.72	5.59	1.33-23.54
Good	1.23	0.61	3.43	1.005-11.72
Fair	2.04	0.68	7.67	1.97-29.88
Poor	2.04	0.76	7.68	1.67-35.38
Income				
Below $20,000	-0.35	0.23	0.70	0.45-1.11
Above $20,000	0	0	1	1
Insurance				
Public	0.07	0.43	1.07	0.45-2.54
Private	0.14	0.50	1.15	0.42-3.11
None	0	0	1	1
Continuity of Care				
None	-0.53	0.70	0.59	0.14-2.42
Usual Source	-0.82	0.47	0.44	0.17-1.13
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.05	0.02	0.95	0.91-0.99
Length of time with Diabetes	-0.005	0.01	1.00	0.97-1.02

Table 9. Logistic regression model for lack of LDL cholesterol control (LDL ≥ 160) among patients with self-reported physician-diagnosed diabetes.

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	3.74	0.84	42.21	7.80-228.40
Rural Whites	1.77	0.85	5.89	1.07-32.33
Urban Hispanics	0.78	0.96	2.19	0.32-15.00
Rural Hispanics	0	0	1	1
Gender				
Male	0.07	0.47	1.08	0.42-2.76
Female	0	0	1	1
Age	-0.03	0.02	0.97	0.93-1.002
Highest school year completed	-0.13	0.09	0.88	0.73-1.06
Body Mass Index	-0.08	0.04	0.93	0.86-0.99
Health Status				
Excellent	0	0	1	1
Very Good	4.14	1.25	62.99	5.08-781.12
Good	4.76	1.15	116.73	11.64-1171.14
Fair	4.42	1.35	82.87	5.45-1259.25
Poor	6.93	1.25	1024.85	82.45-12738.02
Income				
Below $20,000	-0.11	0.79	0.90	0.18-4.41
Above $20,000	0	0	1	1
Insurance				
Public	0.04	1.38	1.04	0.06-16.70
Private	-0.99	1.26	0.37	0.03-4.65
None	0	0	1	1
Continuity of Care				
None	-1.60	0.98	0.20	0.03-1.43
Usual Source	0.24	0.76	1.27	0.28-5.83
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	0.01	0.03	1.01	0.95-1.07
Length of time with Diabetes	0.07	0.03	1.07	0.999-1.14

Table 10. Logistic regression model of the likelihood of having undiagnosed diabetes ($Hb1A_c > 6.1$).

Independent Variables	**Beta Coeff**	**SE Beta**	**O.R.**	**95% C.I.**
Group				
Urban Whites	0.09	0.22	1.09	0.70-1.71
Rural Whites	-0.14	0.23	0.87	0.55-1.37
Urban Hispanics	0.61	0.23	1.84	1.16-2.92
Rural Hispanics	0	0	1	1
Gender				
Male	0.16	0.23	1.18	0.74-1.87
Female	0	0	1	1
Age	-0.01	0.01	0.99	0.97-1.01
Highest school year completed	0.004	0.03	1.00	0.95-1.06
Body Mass Index	0.02	0.02	1.02	0.99-1.05
Health Status				
Excellent	0	0	1	1
Very Good	-0.33	0.43	0.72	0.31-1.71
Good	-0.66	0.44	0.51	0.21-1.24
Fair	-0.94	0.42	0.39	0.17-0.91
Poor	-0.92	0.51	0.40	0.14-1.12
Income				
Below $20,000	0.28	0.26	1.32	0.78-2.25
Above $20,000	0	0	1	1
Insurance				
Public	-0.14	0.57	0.87	0.28-2.73
Private	0.12	0.50	1.12	0.41-3.05
None	0	0	1	1
Continuity of Care				
None	1.12	0.35	3.05	1.50-6.23
Usual Source	-0.01	0.37	0.99	0.47-2.10
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.09	0.03	0.91	0.86-0.97
Family History of Diabetes				
Yes	-1.04	0.24	0.35	0.22-0.57
No	0	0	1	1

Table 11. Logistic regression model of the likelihood of having undiagnosed diabetes (FPG ≥ 126).

Independent Variables	**Beta Coeff**	**SE Beta**	**O.R.**	**95% C.I.**
Group				
Urban Whites	0.47	0.43	1.60	0.67-3.82
Rural Whites	0.05	0.36	1.05	0.51-2.18
Urban Hispanics	0.82	0.43	2.28	0.97-5.37
Rural Hispanics	0	0	1	1
Gender				
Male	0.20	0.26	1.22	0.72-2.07
Female	0	0	1	1
Age	-0.02	0.02	0.98	0.95-1.01
Highest school year completed	-0.02	0.04	0.98	0.90-1.08
Body Mass Index	0.02	0.02	1.02	0.98-1.05
Health Status				
Excellent	0	0	1	1
Very Good	-0.10	0.53	0.90	0.31-2.59
Good	-0.57	0.52	0.57	0.20-1.60
Fair	-0.96	0.50	0.38	0.14-1.05
Poor	-1.01	0.70	0.36	0.09-1.47
Income				
Below $20,000	0.61	0.39	1.83	0.84-3.98
Above $20,000	0	0	1	1
Insurance				
Public	-0.83	0.48	0.43	0.17-1.13
Private	-0.50	0.53	0.61	0.21-1.75
None	0	0	1	1
Continuity of Care				
None	1.40	0.70	4.04	0.99-16.51
Usual Source	0.52	0.38	1.67	0.78-3.60
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.08	0.03	0.92	0.87-0.98
Family History of Diabetes				
Yes	-0.79	0.35	0.45	0.22-0.92
No	0	0	1	1

Table 12. Percentages of adults, by ethnicity and residence area, with self-reported physician diagnosed hypertension, undiagnosed hypertension (SBP ≥ 140 or DBP ≥ 90), and, among those with diagnosed hypertension, levels of control and co-morbidity.

	Whites		Hispanics		
	Urban	**Rural**	**Urban**	**Rural**	**p**
Diagnosed Hypertension	23.34	28.51	18.17	20.48	<0.01
Undiagnosed Hypertension	7.34	8.43	5.91	9.23	
Hypertension Control					
SBP ≥ 140 or DBP ≥ 90	45.74	44.44	34.93	42.89	0.01
Systolic BP ≥ 140	40.49	39.43	32.64	40.29	0.10
Diastolic BP ≥ 90	15.26	13.29	15.97	15.10	0.75
Co-morbidities					
Total Cholesterol ≥ 240	36.13	32.60	28.60	31.12	0.29
LDL ≥ 160	24.55	23.12	23.43	14.69	0.73
HDL ≤ 30	7.36	5.41	6.90	3.16	0.09
Triglycerides > 200	29.13	32.71	30.64	29.11	0.06

Table 13. Population estimates of demographic characteristics of diagnosed hypertensives by ethnicity and residence area.

	Whites		Hispanics		
	Urban	Rural	Urban	Rural	p
Population Estimate	24,743,901	8,054,380	2,792,503	226,531	
Age					<0.01
20-34	14.91	10.69	18.01	15.19	
35-49	24.26	20.15	31.02	26.63	
50-64	26.93	28.95	30.42	39.54	
65+	33.92	40.22	17.55	18.65	
Gender					0.04
Male	46.95	41.18	43.69	39.67	
Female	53.05	58.82	56.31	60.33	
Income					<0.01
Below $20,000	32.65	50.48	59.58	80.82	
Above $20,000	67.35	49.52	40.42	19.18	
HS Grad					<0.01
No	25.39	36.38	64.70	66.59	
Yes	74.61	63.62	35.30	33.41	
Health Status					<0.01
Excellent	9.69	6.15	7.93	15.56	
Very Good	29.36	24.41	12.69	8.11	
Good	38.48	37.00	34.88	27.77	
Fair	16.89	24.16	32.14	35.79	
Poor	5.58	8.28	12.36	12.78	
BMI					0.17
<27	44.11	41.54	34.99	32.62	
≥27	55.89	58.46	65.01	67.38	
BMI					<0.01
<18.5	0.91	1.11	0.48	3.11	
18.5-24.9	26.64	24.15	12.12	11.37	
25.0-29.9	34.14	37.36	40.54	37.73	
≥30	38.31	37.38	43.86	47.79	

Table 14. Health care utilization of diagnosed hypertensives by ethnicity and residence area

	Whites		Hispanics		
	Urban	**Rural**	**Urban**	**Rural**	**p**
Continuity of Care					<0.01
None	12.30	9.03	17.03	13.30	
Usual Source	8.37	5.33	22.77	16.50	
Usual Provider	79.32	85.64	60.20	70.20	
Insurance					<0.01
Public	9.75	13.12	24.16	28.09	
Private	84.42	75.31	45.28	48.60	
None	5.84	11.57	30.56	23.31	
Hospitalizations					0.06
None	82.79	80.71	83.54	83.96	
1	11.33	13.16	13.36	11.68	
2+	5.88	6.14	3.10	4.36	
Doctor Visits					0.02
None	10.99	9.99	15.63	19.04	
1	15.18	13.41	10.53	27.87	
2+	73.83	76.60	73.84	53.09	

Table 15. Logistic regression model for lack of hypertension control (SBP ≥ 140 or DBP ≥ 90) among patients with self-reported physician-diagnosed hypertension.

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	0.07	0.41	1.07	0.46-2.46
Rural Whites	-0.18	0.47	0.84	0.33-2.16
Urban Hispanics	-0.04	0.41	0.96	0.42-2.20
Rural Hispanics	0	0	1	1
Gender				
Male	0.40	0.13	1.49	1.15-1.95
Female	0	0	1	1
Age	0.06	0.005	1.06	1.05-1.07
Highest school year completed	-0.03	0.02	0.97	0.94-1.01
Body Mass Index	0.03	0.01	1.03	1.01-1.06
Health Status				
Excellent	0	0	1	1
Very Good	0.04	0.23	1.04	0.65-1.65
Good	0.15	0.21	1.16	0.76-1.76
Fair	0.03	0.26	1.03	0.62-1.72
Poor	0.0008	0.24	1.00	0.62-1.62
Income				
Below $20,000	-0.25	0.13	0.78	0.60-1.01
Above $20,000	0	0	1	1
Insurance				
Public	0.11	0.29	1.12	0.63-2.00
Private	0.04	0.27	1.04	0.61-1.78
None	0	0	1	1
Continuity of Care				
None	-0.12	0.22	0.88	0.57-1.38
Usual Source	-0.21	0.29	0.81	0.45-1.45
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.01	0.01	0.99	0.98-1.01

Table 16. Logistic regression model for lack of cholesterol control (total cholesterol ≥ 240) among patients with self-reported physician-diagnosed hypertension.

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	0.16	0.31	1.17	0.63-2.18
Rural Whites	-0.14	0.22	0.87	0.56-1.34
Urban Hispanics	-0.15	0.34	0.86	0.43-1.70
Rural Hispanics	0	0	1	1
Gender				
Male	-0.36	0.13	0.70	0.53-0.91
Female	0	0	1	1
Age	0.02	0.01	1.02	1.01-1.03
Highest school year completed	-0.003	0.02	1.00	0.95-1.04
Body Mass Index	0.01	0.01	1.01	0.99-1.03
Health Status				
Excellent	0	0	1	1
Very Good	0.58	0.28	1.79	1.02-3.16
Good	0.54	0.21	1.72	1.12-2.63
Fair	0.55	0.24	1.73	1.07-2.79
Poor	0.66	0.27	1.93	1.13-3.31
Income				
Below $20,000	-0.13	0.14	0.88	0.67-1.15
Above $20,000	0	0	1	1
Insurance				
Public	-0.37	0.23	0.69	0.43-1.10
Private	-0.22	0.26	0.80	0.47-1.36
None	0	0	1	1
Continuity of Care				
None	-0.10	0.29	0.91	0.50-1.63
Usual Source	-0.20	0.22	0.82	0.52-1.29
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.01	0.01	0.99	0.96-1.01

Table 17. Logistic regression model for lack of LDL cholesterol control (LDL ≤ 160) among patients with self-reported physician-diagnosed hypertension.

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	0.82	0.48	2.27	0.86-5.98
Rural Whites	0.55	0.54	1.74	0.59-5.01
Urban Hispanics	0.65	0.56	1.92	0.62-5.97
Rural Hispanics	0	0	1	1
Gender				
Male	0.22	0.21	1.24	0.81-1.89
Female	0	0	1	1
Age	0.03	0.01	1.03	1.01-1.04
Highest school year completed	-0.02	0.03	0.98	0.91-1.05
Body Mass Index	0.01	0.02	1.01	0.98-1.05
Health Status				
Excellent	0	0	1	1
Very Good	0.24	0.38	1.27	0.60-2.70
Good	0.02	0.37	1.02	0.49-2.12
Fair	-0.14	0.39	0.87	0.39-1.91
Poor	0.44	0.40	1.55	0.69-3.45
Income				
Below $20,000	-0.34	0.29	0.71	0.39-1.28
Above $20,000	0	0	1	1
Insurance				
Public	-0.91	0.49	0.40	0.15-1.08
Private	-0.75	0.55	0.47	0.16-1.42
None	0	0	1	1
Continuity of Care				
None	-0.20	0.46	0.82	0.33-2.04
Usual Source	-0.30	0.52	0.74	0.26-2.11
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.01	0.01	0.99	0.86-1.02

Table 18. Logistic regression model of the likelihood of having undiagnosed hypertension (SBP ≥ 140 or DBP ≥ 90).

Independent Variables	Beta Coeff	SE Beta	O.R.	95% C.I.
Group				
Urban Whites	-0.60	0.41	0.55	0.24-1.25
Rural Whites	-0.70	0.37	0.50	0.24-1.03
Urban Hispanics	-0.40	0.47	0.67	0.26-1.71
Rural Hispanics	0	0	1	1
Gender				
Male	0.53	0.08	1.69	1.44-1.99
Female	0	0	1	1
Age	0.03	0.004	1.03	1.03-1.04
Highest school year completed	-0.02	0.02	0.98	0.95-1.02
Body Mass Index	-0.04	0.01	0.97	0.94-0.99
Health Status				
Excellent	0	0	1	1
Very Good	-0.84	0.17	0.43	0.31-0.61
Good	-1.06	0.20	0.35	0.23-0.52
Fair	-1.29	0.19	0.27	0.19-0.40
Poor	-1.62	0.27	0.20	0.12-0.34
Income				
Below $20,000	0.11	0.12	1.12	0.88-1.43
Above $20,000	0	0	1	1
Insurance				
Public	-0.51	0.29	0.60	0.34-1.08
Private	-0.23	0.27	0.80	0.46-1.38
None	0	0	1	1
Continuity of Care				
None	0.43	0.20	1.54	1.03-2.32
Usual Source	-0.03	0.22	0.97	0.63-1.49
Usual Provider	0	0	1	1
No. of times saw MD last 12 mo.	-0.08	0.02	0.92	0.88-0.97

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