UNDERSTANDING THE CHARACTERISTICS OF PATIENTS SEEKING OPTOMETRIC CARE

by

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APPENDIX A

APPROVAL PAGE

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Has been approved

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APPENDIX B

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UNDERSTANDING THE CHARACTERISTICS OF PATIENTS SEEKING
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APPENDIX C

ABSTRACT

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Background: This study will attempt to understand, through a regression analysis, the characteristics of patients who seek optometric care. Its goal is twofold. First, it will potentially allow us to better see how disparities can be made smaller. Also, it will allow optometry to direct practice growth programs to where they will have the greatest impact. *Methods:* This study will use data from the medical expenditure panel survey (MEPS). A regression analysis using PASW Statistics 18 statistical software will be used. This data set will include all patients in the survey who visited an optometrist in 2007, the newest set publicly available. A level of $\alpha = .05$ will be used to determine the statistical significance of all variables included. *Results:* The variable that has the greatest effect on a patient visiting an optometrist is the patient's health insurance status. Unexpectedly, patients wearing a correction whether spectacles or contact lenses are no more likely to visit an optometrist, other things equal. *Conclusions:* The results of the analysis will allow the optometrist to better fulfill the role as a primary health care provider. This will be accomplished by determining the characteristics of areas of the population that may be underutilizing optometric care. Once the characteristics are better understood, optometry can target efforts in public health and practice growth even more efficiently. This will be able to be done since the characteristics that cause the biggest effect on whether a patient seeks optometric care will be identified.

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BACKGROUND

There are various methods that optometry uses on individual and organizational levels to increase the proportion of patients receiving optometric care. The reason for this can be seen as a public health program or a practice building technique. This study will attempt to understand, through a regression analysis, the characteristics of patients who seek optometric care. Its goal is twofold. First, it will potentially allow us to better see how disparities can be made smaller. This will allow public health projects to focus directly where they will have the greatest effects. Also, it will allow optometry to direct practice growth programs to where they will have the greatest impact. This will allow practicing optometrists to target patients that are currently less likely to visit an optometrist.

A review of the literature using PubMed's electronic database returned no results on research previously done on this topic. Combinations of words using "access", "care", "optometric", "optometry", "patients" and "characteristics" were searched with no results that match the topic of this paper. The author believes that this is a unique project since no others have been able to be found.

DATA AND MEHTODS

This research will use data from the medical expenditures panel survey (MEPS). This data is collected by the United States Department of Health and Human Services. The reason this data was chosen is that MEPS allows the relationships between characteristics of individuals and health care utilization to be studied. Each year this survey collects information about patients, providers and employers. Information is collected on what services are used and how frequently these services are used.[1] Data is

also collected about the cost of services and how they are paid for. It provides a nationally representative sample of the United States civilian, non-institutionalized population.[1] It features an over sampling of African Americans and Hispanics.[2] This data is limited by its self-reporting nature and also it is difficult to analyze rare conditions due to sample size concerns.[2] Another concern is that data is not verified by patient medical records. The survey contains data on approximately 12,000 households and 33,000 individuals within these households.[3] The sampling design is described as an overlapping panel design. A new panel of households is added each year, but each component of the panel is interviewed five times in about a two-year period.[3] At the time of writing this paper the newest publicly available data is 2007. The raw data that was used in this analysis can be downloaded from the internet at: http://www.meps.ahrq.gov/mepsweb/data_stats/download_data_files_detail.jsp?cboPufN umber=HC-110G.

The data was downloaded into the PASW Statistics 18 statistical software.[4] This is a program that is produced by IBM. It allows the user to accommodate the complex sampling design that the MEPS data collection uses. A regression analysis was chosen for this study because it allows one to analyze the variation in the dependent variable based on the independent variables included. The dependent variable in this study is whether or not a patient has visited an optometrist in the year. The coefficient on the independent variable quantifies the amount of change in the dependent variable that is due to change in the independent variable holding all other things equal. This allows the effect of a single independent variable to be isolated. The data was then transformed from the raw data provided by the survey into variables that were included in the

regression analysis. The dependent variable is an indicator variable indicating whether the person has had an office based visit with an optometrist in the year 2007. The independent variables are indicator variables for: being male, greater than 45 years in age, being diabetic, having an income of greater than 400% of the federal poverty line which equates to $40,050, being married, lacking health insurance, a glasses or contact lens wearer and having a bachelors degree or greater. These variables were chosen because they are readily observable characteristics of patients.

RESULTS

Once the variables were created, an ordinary least squares linear regression equation was estimated using the statistical software. The results of the regression are as follows: TABLE 1

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.038	.002		18.515	.000
	MALE	-.015	.002	-.032	-6.132	.000
	GREATER THAN 45	.011	.003	.024	4.150	.000
	+ DIABETES DIAGNOSIS	.004	.005	.005	.892	.372
	MARRIED	.005	.003	.010	1.705	.088
	INCOME > 400% POVERTY	.013	.004	.021	3.533	.000
	+ GLASSES/CONTACT LENSES	.000	.000	.237	44.655	.000
	> BACHELORS DEGREE	.011	.003	.019	3.276	.001
	+ HEALTH INSURANCE	-.025	.003	-.041	-7.695	.000

TABLE 2

Coefficients

Model		95.0% Confidence Interval for B	
		Lower Bound	Upper Bound
1	(Constant)	.034	.042
	MALE	-.019	-.010
	GREATER THAN 45	.006	.017
	+ DIABETES DIAGNOSIS	-.005	.014
	MARRIED	-.001	.010
	INCOME > 400% POVERTY	.006	.020
	+ GLASSES/CONTACT LENSES	.000	.000
	> BACHELORS DEGREE	.004	.018
	+ HEALTH INSURANCE	-.031	-.019

All coefficients are significant at the $\alpha = .05$ level except, having a diagnosis of diabetes and being married. Although these variables are not significant it does not imply that these variables have no effect on patients visiting the optometrist. The author included standardized coefficients for completeness although they were not used in this analysis. The results will be analyzed using the unstandardized coefficients. The characteristic that had the greatest effect on whether or not a patient visited an

optometrist in 2007 was whether or not the patient had health insurance. Other things equal a patient with health insurance was 2.5% less likely to visit an optometrist than a patient without health insurance. With this data set vision insurance was unable to be identified. Regardless of whether the patient had vision insurance, this is a meaningful characteristic of patients that visit optometrists.

The variable with the next largest impact was being male. A male is 1.5% less likely to visit an optometrist than a female other things equal. Other things equal a patient with income greater than 400% of the federal poverty level is 1.3% more likely to visit an optometrist. The patient being greater than 45 and holding at least a bachelor's degree effect the regression equally. Other things equal, these patients are 1.1% more likely to visit an optometrist.

The other variables in the regression had less than 1% effect on a patient visiting an optometrist. Being married and having a diagnosis of diabetes increased the likelihood of a patient visiting an optometrist. Perhaps the most interesting result of this regression is that a patient that wears contact lenses or eyeglasses is no more likely to visit an optometrist other things equal.

DISCUSSION

Anecdotally, males typically visit the doctor less and people over the age of 45 typically visit the doctor more frequently other things equal. Being married, having an income of greater than 400% of the federal poverty level and having a bachelor's degree of higher all increased the likelihood of visiting an optometrist other things equal.

Patients with health insurance were less likely to visit an optometrist. The limitation with this data is that patients with both medical and vision insurance were

unable to be identified. A possible explanation for this is that a patient with medical insurance and not vision insurance might visit an ophthalmologist due to confusion over how eye exams can be billed. Whatever the true reason is, this shows the importance of optometrists to be providers for medical insurances if these patients are to be served by the profession.

A patient with a diagnosis of diabetes is only slightly more likely to visit an optometrist other things equal. This shows an area where growth can be made from a public health perspective. Diabetics must be made aware of the importance of annual dilated eye examinations.

Perhaps the most striking result is that patients who wear spectacles or contact lenses are no more likely to visit an optometrist other things equal. This finding is statistically significant. One explanation for this is that optometry has done an exceptional job at educating the public of the importance of eye examinations whether or not corrective lenses are worn.

This study has provided some insight into the characteristics of patients visiting optometrists. Although there are some limitations previously discussed, it can be used as a baseline study with baseline information as future programs are implemented. A study that may be done with this information in mind is determining if the patients with characteristics that make them less likely to visit an optometrist are being underserved. It is hoped that this information will be used to effectively target patient populations for public health and optometric practice growth reasons.

Sources

1. MEPS Survey Background. Agency for Healthcare Research and Quality, Rockville, Md. http://www.meps.ahrq.gov/mepsweb/about_meps/survey_back.jsp

2. MEPS. Data on Health and Well-being of American Indians, Alaska Natives, and Other Native Americans Data Catalog. http://aspe.hhs.gov/hsp/06/catalog-ai-an-na/MEPS.htm

3. MEPS-HC Sample Design and Collection Process. Agency for Healthcare Research and Quality, Rockville, Md. http://www.meps.ahrq.gov/survey_comp/hc_data_collection.jsp

4. IBM SPSS Statistics 18. http://www.spss.com/statistics/

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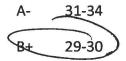|	0			3
	Did not meet expectations			*Met expectations*
Abstract completed and approved by 5/1/09	No			Yes
Literature search completed by 5/1/09	No			Yes
HSRC	Did not file/gathered data before approval			Filed; approved before data gathering started (or was not required)
First draft in by 2/5/10	No +2			Yes
Final draft submitted by 4/2/10	No +2			Yes

	0	1	2	3
	Well below expectations	*Below expectations*	*Expected*	*Above expectations*
Project	Very little time and effort expended	Minimal time and effort expended	Appropriate amount of time and effort expended	Worked diligently with significant investment of time and energy
Consultation	Never consulted with advisor	Minimal consultation with advisor	Reasonable level of consultation	Kept advisor well informed of status
Final Paper:				
Abstract	Loose and disorganized or missing	Project poorly summarized	Cogent and reasonably stated	Very well thought out and written
Introduction, Background & literature review	Very minimal or no background research. No explanation of rationale behind study. Objectives &/or hypotheses not stated.	Minimal background research. Poor explanation of rationale behind study. Objectives &/or hypotheses poorly stated.	Adequate background research leading to rationale behind study AND Objectives &/or hypotheses stated fairly well	Very thorough background research leading to rationale behind study AND Objectives &/or hypotheses clearly stated.
Methodology	Many important details pertinent to subjects, apparatus and/or procedures missing	Some important details pertinent to subjects, apparatus and/or procedures missing	Most details pertinent to subjects, apparatus and/or procedures included	All details pertinent to subjects, apparatus and/or procedures included
Data Analysis & Results	Very little or NO description of data as representative figures, graphs &/or text. No measures of central tendency & variance included.*	Poor description of data as representative figures, graphs &/or text. No measures of central tendency & variance included.*	Reasonably clear description of data as representative figures, graphs &/or text. Measures of central tendency & variance included where appropriate.*	Very clear description of data as representative figures, graphs &/or text. Measures of central tendency & variance included where appropriate.*
Discussion, Interpretation of results & Conclusions	Illogical or ambiguous interpretations & conclusions. No effort to interpret results in the context of previous work.*	Interpretations & conclusions somewhat unclear. Very little interpretation of results in the context of previous work.*	Clear interpretations & conclusions. Some effort to interpret results in the context of previous work.*	Clear & insightful interpretations and conclusions. Results well interpreted in the context of previous work.*
Referencing	Grossly deficient and inaccurate citations.	Most factual claims unsupported by appropriate citations OR Inaccurate citations & inconsistency in style of referencing across paper.	Most factual claims supported by appropriate citations AND Referencing accurate & fairly consistent in style across paper.	All factual claims supported by appropriate citations AND Referencing accurate & consistent in style across paper.

*Where applicable

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Suggested grading scale:

A	35-39
A-	31-34
B+	29-30
B	27-28
B-	25-26
C+	23-24
C	21-22
C-	19-20
D	16-18
F	<16