The Association Between Provider Availability and Patient Satisfaction in Rural Members of the Oregon Health Plan

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ABSTRACT

The rising cost of health care in the United States has stimulated the growth and development of managed care organizations (MCOs) throughout the country. Though managed care advocates claim that MCOs provide more efficient care than traditional health care delivery systems, critics of managed care express concern over the trade-off between cost and quality. This debate has generated an interest in the study of consumer satisfaction as a measure of health care quality. This study examined a single dimension of consumer satisfaction (availability of providers) in a sample of rural members of the Oregon Health Plan (OHP). Data were abstracted from the OHP Client Satisfaction Survey of 1996. Using mulitvariate logistic regression analysis, the relationship between number of providers and overall consumer satisfaction was assessed in the presence of other dimensions of satisfaction. Results of the analysis indicated that the number of available providers was not significantly related to overall consumer satisfaction with health plan or health care received ($p>.136$). Consumer *perception* of availability of providers, however, was found to be significantly related to overall satisfaction with both health plan and health care indicating that some relationship between *actual* availability and consumer satisfaction may exist. Further investigation is advised.

INTRODUCTION

The late twentieth century has seen impressive changes in both the quality and the delivery of health care in the United States. Over the past thirty years, the increase of medical knowledge and technologies has been staggering. Likewise, the overall number of health care providers has grown over the years such that there are now more annual physician visits than ever before. Though impressive in terms of their effect on the volume of health care being delivered in this country, these changes in health care have come with a price. New technology and increased utilization costs money. Although most direct payment for health care now comes from health insurance (public and private), health care costs are increasingly being shifted to the individual through premiums and copayments. As a result of increasing costs, health care expenditures in the United States have grown to nearly 15% of the Gross National Product, making overall health care expenditures in the U.S. the highest in the world. As costs continue to grow, it becomes increasingly difficult for many members of society to pay for health care. This fact has stimulated the growth and development of more efficient ways of delivering health care. One of these is the move from traditional fee-for-service models of health care delivery, to more controlled, managed health care systems.

The essential theory behind managed care is that health care delivery that is coordinated by a single, informed clinician is more efficient and of higher quality than health care managed by individual patients. A patient's primary care provider (PCP), acting on behalf of a health plan, serves as the care coordinator. This provider acts as a "gatekeeper" for the patient, effectively managing how much care the patient gets, and from whom s/he gets it. Under ideal conditions, the PCP will be less likely to prescribe unnecessary treatment and procedures, thus managed health care should be more efficient than un-managed care.

Efficient health care can be defined as quality health care at an optimal price. There is evidence that managed care has, in fact, lowered the overall costs of health care when compared to more traditional fee-for-service care in some markets. A study of an area of heavy managed care penetration found that between 1980 and 1991, health care expenditures in this managed care market were significantly lower than the national average.(Melnick and Zwanziger, 1995) Other studies noted that the growth of managed care correlated strongly with a reduction in the trend of rising health costs.(Aston, 1998; Gardner, 1997) One study, conducted in New York State, examined state spending on patients in traditional Medicaid programs and those in managed care. Medicaid patients enrolled in Health Maintenance Organizations (HMOs) cost the state less than those in fee-for-service by 9.3 percent.(Rosenthal et. al., 1996) Also, in a review of studies of managed care performance after 1980, it was noted that, in general, patients enrolled in HMOs reported higher satisfaction with costs than similar patients enrolled in traditional indemnity plans.(Miller and Luft, 1994)

The cost-saving potential of managed care has sparked the formation of a large number of HMOs. Over the past two decades, HMOs have attracted an increasing number of enrollees to the point that more than 50 million Americans are currently enrolled in an HMO.(National Center for Health Statistics, 1996) With reductions in cost, however, some have voiced concerns about the quality of care delivered from managed care plans. It is argued by some that in an effort to reduce costs, HMOs have restricted the time and referral resources that providers have traditionally used to diagnose and treat medical problems. It has also been suggested that the quality of health care is more important than the cost of care in determining consumer satisfaction. (Dolinsky and Caputo, 1990) However, this concern is not consistently supported by the literature. A study of Medicaid enrollees in Monroe County, NY, found that consumers enrolled in managed care plans reported higher levels of satisfaction with the quality of their health care than similar patients in fee-for-

service plans.(Temkin-Greener and Winchell, 1991) This finding was supported by another study of New York Medicaid beneficiaries which found that managed care enrollees, in general, were more satisfied with their health care than conventional Medicaid beneficiaries.(Sisk et. al., 1996) Other studies, however, have reported less positive results. In the review by Miller and Luft (1994), the same managed care consumers expressing higher satisfaction with costs reported lower satisfaction with the health care they received than consumers in indemnity plans. Another review of HMO performance reported that, for the general population, HMOs did not compromise quality of care but that enrollees with chronic illness were found to be less satisfied with their care.(Miller and Luft, 1997)

The managed care approach to health care delivery has demonstrated strong potential for reducing the cost of medical care, yet there are still remaining questions as to whether the ensuing cost controls are at the expense of health care quality. Health care quality is most directly measured in terms of technical quality and medical outcomes. A literature review of managed care performance suggests that in comparison to fee-for-service plans, HMO plans have lower hospital admission rates, up to 20% shorter hospital stays, a similar number of office visits, less use of expensive procedures, and greater use of preventive services, but mixed results on health outcomes.(Miller and Luft, 1994) More often, however, the quality of health care services is assessed indirectly through the measurement of consumer satisfaction with the health care that they receive.

Consumer satisfaction with their health care has been the focus of study for more than twenty years. Many of these studies have examined the various dimensions of consumer satisfaction with the goal of identifying those elements of health care delivery that contribute the most to overall satisfaction. Once these elements are identified, insurance companies and health care providers strive to improve the satisfaction of their members/patients through focused attention to these elements of care. From a business point-of-view, maintaining consumer satisfaction has obvious economic benefits. Since

HMOs are in the business of providing health care, it is naturally important that they concentrate on consumer satisfaction. As stated by Hall and Dornan (1988), "Satisfaction is potentially a direct indicator of system performance...[and] could be an important determinator of health status." Dolinsky and Caputo (1990) agree by asserting that "consumer satisfaction is perhaps the most important dimension of HMO performance." Shimshak et. al. (1988) further noted that patients' dissatisfaction with the health care they received was a significant predictor of health plan disenrollment. Since there is evidence that a patient's health status can cause changes in consumer satisfaction (Hall, Milburn, and Epstein, 1993) it is in the best interest of the insurance company to ensure the patient receives quality care. Attention to this fact has led many insurance companies to demand that their providers achieve a certain level of consumer satisfaction. In a survey of managed care organizations, Bergman (1994) found that consumer satisfaction was the second most common criteria for evaluating providers. As a result, an increasing number of providers and provider groups routinely use quality assurance (QA) programs to help ensure that elements of health care found to be important to consumer satisfaction are kept at a certain level of patient acceptability.

Consumer satisfaction also has relevance in public health. Studies have shown a significant relationship between consumer satisfaction with access to their provider and subsequent utilization of medical services. (Thomas and Penchansky, 1984) In one study, approximately one-fourth of urban poor patients who saw a physician reported that they delayed obtaining medical care because they were dissatisfied with the waiting time to see the doctor. (Kiefe and Hyman, 1996) Studies have looked at factors influencing consumer satisfaction ranging from consumer demographic characteristics, to physician practice characteristics, to aspects of health care provided by the insurance company. Many of these studies found that personal, physician, and health plan characteristics affect how satisfied consumers are with the health care that they receive.

In a meta-analysis of consumer satisfaction with medical care, Hall and Dornan (1988) noted that the experience level of the physician and the type of medical care that was provided were both significant contributors to consumer satisfaction. These same investigators (1990) noted in a meta-analysis of correlates of consumer satisfaction that age, level of education, marital status, and socioeconomic class of the consumer were significantly associated with satisfaction. Researchers at the Oregon Health Policy Institute found that patients' health status, change in health status, and frequency of medical visits were each associated with consumer satisfaction. (Harris et. al., 1997) Fincham and Wertheimer (1986) also found health status, continuity of care, and physician communication style, to be significant predictors of consumer satisfaction.

Dolinsky and Caputo (1990) also examined the role of patient demographics in satisfaction with health care. They found significant contributions from age, marital status, and education level. In addition, they noted that race and presence of children were significant predictors as well. Despite these findings, the investigators in this study determined that when satisfaction with specific attributes of health care were considered, the role of patient demographics in explaining satisfaction was greatly reduced. Dolinsky and Caputo found that factors such as seeing the doctor when needed, perceived quality of medical care, seeing a specialist when needed, waiting time in the clinic, availability of after-hours service, and relative cost of health care were all significant contributors to overall health care satisfaction. Additional analysis indicated that patient demographics did not have a direct effect on consumer satisfaction. Instead, patient demographics indirectly affected consumer satisfaction through a direct effect on the other variables measured. This finding was supported by Mummalaneni and Gopalakrishna (1995), and Harris et. al. (1997) who found that factors such as technical quality of care, art of care, quality of office facilities, physical access to facilities, cost of care, and continuity of care were important contributors to overall satisfaction regardless of the personal characteristics of the patients.

One important factor examined by several studies of consumer satisfaction was perceived access to health care services. This term "access" has been broadly discussed in health services research literature and has been given several definitions. Throughout this literature, "access" has been used to refer to the notion that not all of the variability in health care utilization can be explained by individual health status or other indicators of need alone.(Fincham and Wertheimer, 1986) It has been demonstrated that factors outside of an individual's health status act as barriers or enticements to utilization of health care resources. Some subset of these factors comprise the concept of access. An Office of Technology Assessment (OTA) report segments access into primary categories: *potential access* and *realized access*. Potential access can be further categorized into 1) *predisposing factors* (including demographic factors such as age, gender, education and occupation), 2) *need factors* (such as health status), and 3) *enabling factors* (including income, insurance, and convenience). *Realized access* is described by indicators that include 1) *use of care* (including physician visits, hospital stays, prescription drug use), and 2) *process of care* (extent and nature of treatment, health care costs, and consumer satisfaction).(OTA, 1992)

A different set of access variables are emphasized in the work of Penchansky and Thomas (1981). Paraphrasing the authors' definition, access is defined as a concept representing the degree of 'fit' between the clients and the system and is related to the enabling variables in the Anderson model of the determinants of use. They describe the dimensions of access as being: *availability* (supply), *accessibility* (location), *accommodation* (logistics), *affordability* (monetary), and *acceptability* (attitudes). (Penchansky and Thomas, 1981) Their categorization of the elements of access incorporates many of the concepts described by the OTA. For example, *availability* is described as the relationship between individual need factors and the utilization of health care; *accommodation* is an enabling factor comprised of system level characteristics and individual predisposing factors; *affordability* describes the cost of health care including

both insurance coverage and individual ability to pay. Penchansky and Thomas go beyond the OTA's report by including patients' attitudes and beliefs about health care and the importance they place on health care provider characteristics.

Each of these dimensions of access is related to a utilization barrier. These barriers, in turn, can be viewed hierarchically in terms of their individual effects on access to care. Lack of availability of health care services is the first barrier which must be overcome; if needed services do not exist, other aspects of access are irrelevant. *Accessibility* refers to the location of health care services relative to individuals who need care. If health care services are located at some distance from individuals seeking care, it is more difficult to use them than if they were situated close by. The barrier of distance is further inhibiting when patients lack the necessary mobility or means of transportation to get them to service locations. *Accommodation* refers to health care services that are organized to meet individual need. Even if a patient can get to the place of care with relative ease, he still has to contend with the location's hours of operation and scheduling. Health care services that are available and accessible, but cannot provide care at a time that is reasonable for the patient, cannot adequately meet the needs of the patient and represent a barrier to use. Affordability comes into play when an individual is unable to utilize health care services because of the costs involved. The ability to pay for health care is determined by the cost of care, the patient's insurance status and available income. If the cost of care exceeds the ability of the patient to pay, affordability could pose a barrier to health care access. *Acceptability*, in addition to the other dimensions of access, deals with individual attitudes and beliefs relative to the practice characteristics of providers. If these elements do not match appropriately, they could act as a deterrent from seeking care.

Each of these dimensions of access have been studied in some fashion with respect to consumer satisfaction. For example, using their definition of access and its components, Penchansky and Thomas (1981) investigated factors influencing a consumer's choice of

health plan. Factors such as travel time (accessibility), time to get an appointment (accommodation), length of relationship with physician (availability and accessibility), and waiting time in the clinic (availability and accommodation) all contributed significantly to overall satisfaction. In addition, the number of visits and patient education were found to be important. Using a similar definition of access to Penchansky and Thomas, Stewart et. al. (1997) performed a study of primary care and patient's perceptions of access. In particular, the investigators focused on a regular place of care, continuity of care, comprehensiveness of care, and physician-patient communication. The study concluded that variables such as distance, waiting time for an appointment, time in the waiting room, ease of obtaining access by phone, length of care, and factors of communication were all important elements to consumer satisfaction. Few studies have looked at the relationship between consumer satisfaction and access in terms of the overall availability of health care providers and facilities. The adequacy of provider supply has been a significant policy issue in this country since the early 1960s. Despite an overall increase in the number of physicians and other primary care providers in the United States over the past 35 years, many areas of the country are still viewed as underserved. The vast majority of underserved areas exist in inner-city and rural areas of the country where it is difficult to attract practicing physicians. The federal government uses two separate designations to identify underserved areas: Health Provider Shortage Areas (HPSAs) and Medically Underserved Areas (MUAs). HPSAs are defined as areas with high population-to-practitioner ratios (3,500:1 or greater). MUAs are further defined by infant mortality rates, percent of the population over 65, and percent of the population living in poverty.(OTA, 1990) At the beginning of 1989, there were approximately 1,944 federally designated HPSAs and 2,440 MUAs.[1] Of the 2,440 MUAs, 1,328 represented entire counties.(OTA, 1990) As of June, 1996, the number of HPSAs had increased to 2,597.(BPHC, 1996)

[1] Note: MUAs may also be designated as an HMSA given the overlap in definitions.

Though they share elements in common, not all underserved areas are necessarily alike. For example, there are several characteristic differences between urban and rural populations that make the needs of underserved communities in each of these areas somewhat unique. For example, demographically, rural residents are more likely to be Caucasian and married, and less likely to be employed or to have finished high-school. When compared to urban populations, rural communities have a greater proportion of people with chronic illness or disability, are more likely to report their health status as poor or fair, and experience slightly higher infant mortality but lower mortality rates overall. Among people living below the federal poverty level, rural residents are less likely to be covered by Medicaid than urban residents.(OTA, 1990) In general, health care services tend to be less accessible for rural residents than urban residents in general.(Deprez, Agger, and McQuinn, 1996) In fact, of the 2,597 Federally designated HPSAs in 1997, 1,742 (67%) were located in rural areas.(BPHC, 1996)

The U.S. Department of Health and Human Services recommends that for a geographic area to be *adequately served* medically, there should be, on average, one provider for every 2,000 residents.(BPHC, 1996) There is evidence that the relative availability of providers may be important to overall consumer satisfaction with health care. Greater availability of providers means a greater degree of choice. There is evidence that the availability of choice is important to consumer satisfaction. For example, Schmittdiel et. al. (1997) conducted an examination of the relationship between consumer satisfaction and choice of their personal physician in a random sample of HMO enrollees. They found that patients who chose their personal provider were up to 20% more likely to rate their satisfaction as "excellent" or "very good" than patients who were assigned a provider. This significant association with satisfaction was independent of patient demographics, health beliefs, or provider characteristics and specialty. Furthermore, choosing one's physician was found to be the strongest predictor of high overall satisfaction.(Schmittdiel et. al., 1997)

Choice has also been shown to play a part in consumer satisfaction with their health plan. In a study of member satisfaction in an HMO, Hiramatsu (1990) found that consumer satisfaction was significantly associated with the quantity and quality of plan physicians, and the ease of access to health care. Thus the ability of patients to have a choice of providers seems to be related to consumer satisfaction overall.

The Oregon Health Plan

The evidence supporting the ability of managed care to provide lower-cost, quality care has led to the growth of managed care organizations throughout the country. It has also led many states to enroll publicly insured individuals (i.e. Medicaid beneficiaries) into managed care organizations. In an effort to curb the rising costs of the Medicaid program, all but eight states had implemented a Medicaid managed care program by 1994.(Sisk et. al., 1996) Beginning in 1989, the Oregon State Legislature passed a series of bills that established an expanded Medicaid program based on a prioritized list of health care services. By prioritizing what was covered, the legislature was able to expand eligibility to all residents up to 100 percent of the federal poverty level. This was planned in four elements. First was to reform Medicaid coverage by limiting the number and type of services that were covered by the health plan. A second element was to create a high risk pool for people deemed uninsurable due to preexisting health conditions. Third, was a reform of insurance products available to small employer groups. The final element was to impose an employer insurance mandate for Oregon businesses. Although the first three elements were successfully implemented, the federal waiver needed for the employer mandate was rejected and never went into effect. To further increase efficiency of health care delivery in the Oregon Medicaid system, the majority of recipients were enrolled into a growing number of managed care organizations that were contracting with the Medicaid program. Setting up the plan in this way required that the State apply to the federal Health

Care Financing Administration (HCFA) for a Medicaid waiver. After a few modifications, the waiver was approved in 1993 and the Oregon Health Plan (OHP) went into effect in February 1994. In its first year, nearly 120,000 new members enrolled in the OHP with approximately 75 percent of those enrolled in managed care plans.(Conviser, 1996)

The Oregon Health Plan has been an innovative approach to providing health care to low-income residents across the state. The development, and approval, of this innovative method of allocating finite resources drew much criticism and attention from professionals and the media across the country. It was therefore in the best interests of Oregon Health Plan supporters to conduct some form of evaluation of the health plan's early performance. Under the leadership of the Oregon Health Plan Administrator (OHPA), the Oregon Consumer Scorecard Consortium (OCSC) was formed to develop a consumer-oriented scorecard of the MCOs involved in the Oregon Health Plan. Faculty from the Oregon Health Policy Institute (OHPI) served as staff to the consortium and were largely responsible for the analysis of the OHP Satisfaction Survey Data. This score card was to serve two purposes. First, it was meant to provide the OHP consumer with an informational tool to assist them in selecting their health plan. Second, the scorecard would serve as a comparative measurement tool to provide feedback to the health plans, purchasers, and state agencies about OHP performance. In developing the Scorecard, the consortium, in partnership with the state's Medicaid agency (Office of Medical Assistance Programs), conducted an extensive satisfaction survey of a randomly selected sample of OHP members across the state. The purpose of the survey was to assess members' perceptions and satisfaction with various dimensions of health care from their health care provider and through their health plan. The sample was stratified such that comparisons could be made between urban and rural residents and between individual health plans.

In analyzing the survey, OHPI researchers found that, OHP members were generally satisfied with both their health plan and their health care provider, but that

satisfaction scores were somewhat lower across the board for members residing in rural areas. This effect remained notable even within health plans servicing both rural and urban areas; rural members were generally less satisfied than urban members of the same plan. A subsequent analysis of the data found an indirect effect of place of residence on member satisfaction with both health plan and health care providers. (Harris et. al., 1997)

Given the role of consumer satisfaction in assessing health care quality and acceptability, and the recent expansion of managed care into Medicaid programs across the country, it has become increasingly important to understand the factors contributing to consumer satisfaction. This becomes even more crucial for new and innovative programs like the Oregon Health Plan as they try to modify and improve upon traditional Medicaid. One aspect of understanding group differences in consumer satisfaction is to further explore the reasons behind the noted differences. As previously noted, rural and urban residents differ somewhat in their demographic profile as well as their health care needs. It is possible that one of these differences is contributing to the observed variation in consumer satisfaction.

Most of the characteristics reported to be different between rural and urban groups have already been examined in terms of consumer satisfaction in the literature. Demographic characteristics such as age, education, marital status, and health status have all been found to be independently associated with consumer satisfaction, though this association weakens when more directly associated dimensions of satisfaction are considered.(Dolinsky and Caputo, 1990) Although insurance status has also been shown to be related to consumer satisfaction, OHP enrollees had identical benefits and coverage with no cost sharing at the time of the survey, therefore, the observed differences in satisfaction based on level of coverage do not apply here. Another known difference between urban and rural communities is the availability of health care providers. Some literature suggests that the number of available providers may affect consumer satisfaction based on the

concept of choice. These studies, however, measured this relationship through the patient's perception of their ability to choose, not the actual degree of choice available. In fact, very few studies have looked at the availability of choice of provider as a direct correlate of consumer satisfaction.

Hiramatsu (1990) examined the availability of choice in a limited fashion. The study looked at members of a single HMO in comparison to a group of non-HMO members. Hiramatsu concluded that HMO patients were more satisfied in general because there were more providers available to them. While this may be true for the single HMO examined in that study, it is quite possible that the results of the study are not generally applicable. The OHPI researchers also examined the relationship between the number of providers and consumer satisfaction in the OHP population. In their study, the number of providers was not found to be significantly associated with consumer satisfaction either directly or indirectly. For the purposes of their analysis, the researchers compiled data on the absolute number of physicians available in each county and computed a provider-to-population ratio for the county. This ratio was used as the indicator for number of providers. It is possible, however, that calculating the number of physicians in this manner does not represent the actual *availability* of physicians to the OHP population in their study. Members of the Oregon Health Plan are limited in the number of providers that they can see to only those providers who contract with OHP-Medicaid MCOs and whose practices were open to OHP enrollees at the time of the survey. Since not all providers in all counties are willing to see OHP patients, and not all providers in each county contract with every health plan available in the county, the absolute number of providers is unlikely to represent the number of providers actually available. Therefore, the question of the relationship between provider availability and consumer satisfaction remained unanswered.

This study examined the relationship between the number of available OHP providers and consumer satisfaction with their health plan and the health care they receive. Specifically, the study will seek answers to the following questions:

1) Are rural patients of the Oregon Health Plan in counties with a higher number of available primary care providers more satisfied with their health care than OHP patients in rural counties with a relatively low number of available primary care providers?

2) Are the factors that were found in the literature to predict consumer satisfaction among residents in urban areas the same as those that predict consumer satisfaction of OHP patients in rural areas?

The first question will be examined by measuring self-reported measurements of consumer satisfaction with their health plan and the health care they receive and comparing these ratings by degree of choice, that is, number of available primary care providers. The relationship between provider availability and consumer satisfaction will be viewed in the presence of other dimensions of consumer satisfaction to elicit the purest possible measurement of this relationship. The second question will be examined by determining the factors found to be significantly related to consumer satisfaction in the OHP population and comparing them to factors found to be significant in the literature.

METHODS

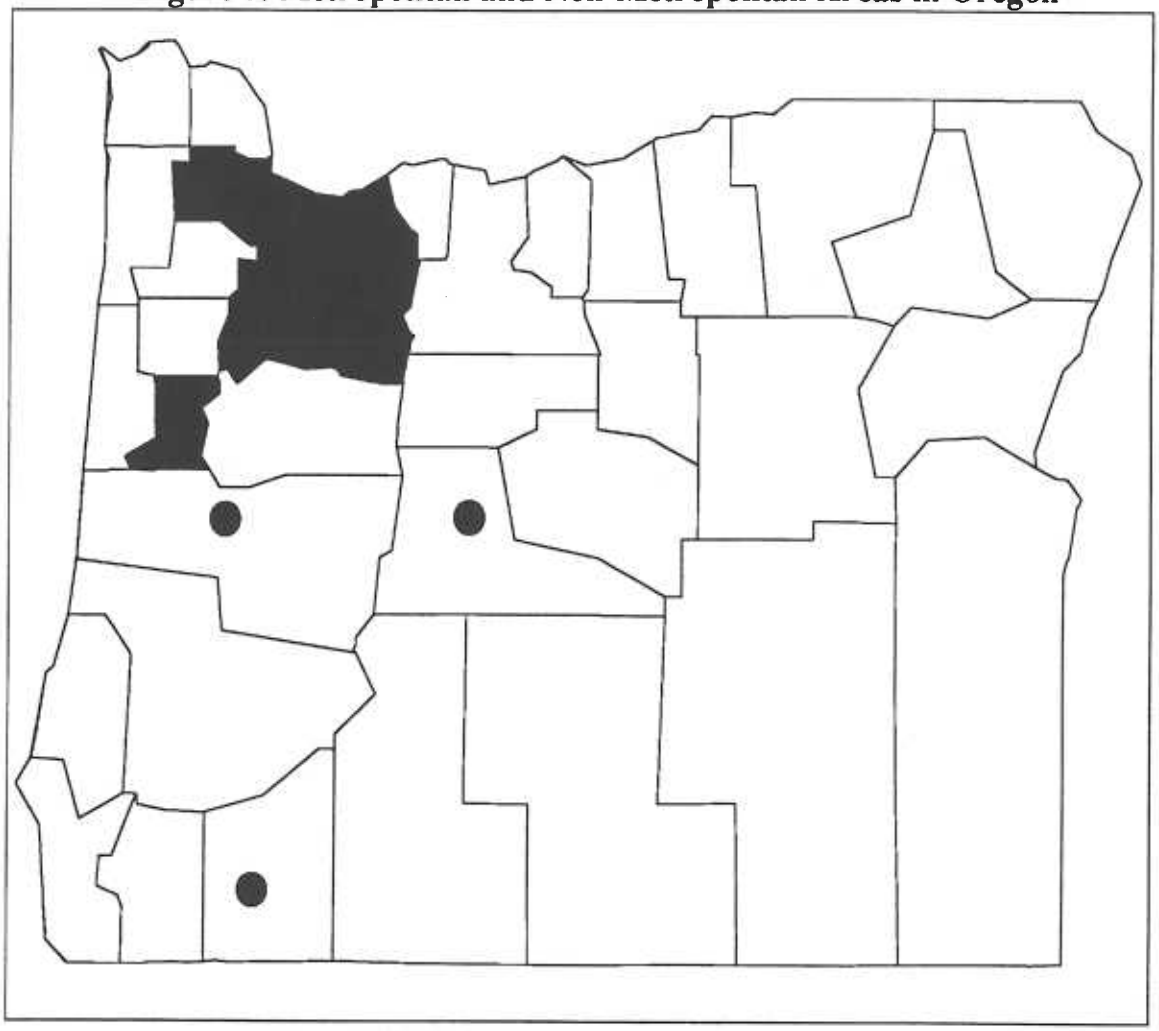
Study Population

Data for this study were obtained from the 1996 Oregon Health Plan Client Satisfaction Survey. As previously noted, the Oregon Health Plan (OHP) is a state program designed to expand Medicaid eligibility to a greater number of Oregonians through a federal Medicaid waiver. Through the OHP, more than 120,000 people who were not previously eligible for Medicaid coverage are now covered and primarily enrolled in a managed care organization (MCO). At the time of the survey, approximately seventy percent of OHP members received their care from managed care organizations. Oregon Health Plan enrollees reside in both urban and rural areas of the state. Eligibility for the Oregon Health Plan requires that all enrollees earn an income of less than 100 percent of the federal poverty level, therefore, the populations included in the survey were relatively homogeneous in terms of income level. As the satisfaction survey was designed to assess the perceived performance of the Oregon Health Plan, the survey population consisted only of adults (18-64 years) who had been continuously enrolled in a managed care plan through the OHP for at least six months prior to the survey. Continuous enrollment in this case was defined as uninterrupted enrollment in the same health plan for the six months prior to the survey mailing (July through December, 1995). At the time of the survey (January 1996), 61,269 OHP members met the inclusion criteria. In order to obtain a representative sample from each of the managed care plans participating in the OHP, the sample was stratified by plan and geographic location to include 1000 enrollees per plan. For plans that did not have 1000 enrollees meeting the inclusion criteria, the entire eligible population was included. Likewise, to ensure adequate sample size for urban/rural comparisons, rural counties were oversampled. Based on these stratifications, surveys were sent to a randomly selected sample of 19,098 OHP enrollees throughout the state. Of these, 11,591 completed surveys were returned for a response rate of 61 percent.

Definition of "rural"

The primary interest of this study is to investigate the relationship between provider availability and consumer satisfaction in rural members of the Oregon Health Plan. There are two definitions of "rural" that are commonly used for statistical purposes: the definition used by the Census Bureau to identify "non-urban populations" and that used by the Office of Management and Budget (OMB) to identify "non-metropolitan populations."(OTA, 1990) Both definitions have advantages for this study. The OMB definition identifies populations based on the boundaries of county lines and is therefore relatively stable over time. By this definition, counties which contain a population center of 50,000 or more people and contain a total county population of 100,000 people or more are classified as metropolitan counties. All other counties are defined as non-metropolitan. Using this definition, seven Oregon counties (Benton, Clackamas, Jackson, Linn, Marion, Multnomah, and Washington) are considered metropolitan. However, not all areas in metropolitan counties should be considered urban areas. Two counties (Linn and Jackson) defined as metropolitan by the above definition contain one or more population centers which contain a large portion of the county population in a relatively small area of the county. In fact, despite populations greater than 100,000 people, these two counties have an overall population density of less than 100 people per square mile. Residents outside of the population centers, by most definitions, would not be considered urban. Therefore, a more precise definition of metropolitan is needed. Using the national census bureau definition of an "urbanized area", cities and their immediate surrounding areas that contain more than 50,000 people are considered metropolitan areas. By this definition, one population center in Linn county and one in Jackson county were identified as metropolitan. The remaining communities in those counties were considered "non-metropolitan." In addition to the population centers identified in Linn and Jackson counties, one other "urbanized area" was

Figure 1: Metropolitan and Non-Metropolitan Areas in Oregon



Legend: Blacked-out areas are excluded from the analysis

identified in Deschutes county, a county that was otherwise designated as non-metropolitan. Survey respondents residing in counties or areas identified as metropolitan were excluded from the sample for this analysis. All other areas of the state from which completed surveys were received were examined. For the purposes of this study, the term "rural" refers to any area of the state that has been defined as non-metropolitan using the definitions described above. (Figure 1)

Provider Availability

For the purpose of this study, primary care providers included MDs, DOs, and NPs who are designated as primary care providers (PCPs) under an OHP associated health plan. Though PAs are also considered eligible to be primary care providers for many health plans, not all plans were able to supply complete information on the PA availability. Looking at statistics for all PAs working in rural Oregon counties in 1995, there were, on average, less than 3 PAs per county. In addition, more than 81% of PAs overall were practicing in a group practice.(OHD, 1996) Therefore, excluding PAs from this study should result in minimal loss of information. Provider availability is determined for each survey respondent by health plan membership and county of residence. "Available" providers are defined as those providers who were located in the same county as the respondent and were reported to be seeing OHP enrollees from that respondent's health plan during the survey period. Individual providers are often associated with more than one health plan in their county of practice. Therefore, by using this definition, it is likely that a specific provider will be counted more than once for a specific county. However, since the data on provider availability in this study is specific to the individual respondent and not to the entire population, this should not present a problem during analysis. MCO Provider panel data were obtained from each of the health plans represented in the survey population and is comprised of the number of eligible providers in each county at the time the survey was conducted. Provider panels were matched to individual survey respondents by county of residence and MCO enrollment.

The Survey

The Oregon Health Plan Client Satisfaction survey was designed based on an instrument developed by the Group Health Association of America (GHAA) and modified to apply specifically to the OHP-Medicaid population. The GHAA survey was a widely used consumer satisfaction survey at that time, designed to measure consumer satisfaction

in three general categories: health care services and providers, dimensions of health care, and health plan features. Indicators of satisfaction used in the GHAA survey were chosen based on their overall statistical reliability and validity as measures of satisfaction. The following indicators of satisfaction were used for the OHP survey: *Accessibility and Availability of services and providers*, *technical quality*, *interpersonal care*, *communication*, *choice and continuity*, *outcomes of care*, *coverage*, and *health plan communication*. In addition to these indicators, questions about overall satisfaction with health plan performance and medical care were included as well as questions regarding health status, perceived level of access, and patient demographics. A copy of the survey instrument is provided in Appendix A.

In an effort to maximize the number of responses, the initial mailing of the survey was preceded by a letter explaining the purpose of the survey and its importance. The survey was then administered by mail to the 19,098 OHP members who met the survey criteria. The initial mailing of the survey was followed by a reminder postcard to everyone in the original sample. Following the postcard mailing, a second survey was sent to those people in the sample who had not returned the first survey. Utilizing this method of survey distribution, the response to the client satisfaction survey was nearly double the response rate generally found in surveys of Medicaid populations.(Edlund, 1997)

Survey Data

Data for this analysis consisted of responses to various questions on the satisfaction survey. The questions used in this study measure individual perceptions of several dimensions of consumer satisfaction with either their health care or health plan. In addition to the dimensions of satisfaction, respondents were asked to state their overall satisfaction with their health plan and with the health care they receive. Finally, respondents were asked to supply some personal demographic information. Questions about perceptions of access and satisfaction were mostly measured on a 5-point Likert scale, with a few

questions measured in 3- or 4-point ordinal scales. Questions included in the analysis were those that, through cursory observation, appeared to measure dimensions of satisfaction previously identified in the literature. A complete list of survey questions is available in Appendix A. Questions selected for the analysis are described in Table 3a.

Analysis

The primary aim of the study was to examine the relationship between OHP consumer satisfaction with health plan and with health care received, and the availability of primary care providers in rural counties of Oregon. Since a number of factors are likely to play a role in consumer satisfaction, the relationship between availability of providers (numbers per county) and consumer satisfaction were determined through construction of a multivariate regression model using overall consumer satisfaction as the dependent variable. This model provided a measurement of *number of providers* to predict consumer satisfaction in the presence of other relevant variables.

The total set of variables from the survey considered for the model were determined by whether the factor had been found to be significant in previous consumer satisfaction literature. For example, question number 19 "About how long does it usually take to get to your doctor's or nurse's office or clinic?" should provide reasonably similar information to "distance to provider" that was found to be significant in previous studies. Those variables determined in this manner to be contributors to consumer satisfaction were then examined individually as to the statistical strength of their relationship to overall satisfaction, and to each other. In some cases, several questions were asked in close proximity to each other that, taken together, measure an underlying construct found important in the literature. In building regression models with large numbers of independent variables, reducing the number of variables can often improve the power of the model when the sample size is limited. The power can be further enhanced if the reduction in the number of variables results in a scale that is shown to be a valid indicator of an important dimension of the

dependent variable. To reduce the number of variables in this analysis, some of these questions were examined in groupings that appeared to measure an underlying construct. Other questions that were highly correlated to each other were examined for collinearity effects.

The set of variables selected for use were all entered into a model along with a variable representing the number of providers available to each survey respondent. The number of providers that were available to survey respondents in each county was limited to the number of providers who contracted with individual health plans and who saw patients on the Oregon Health Plan during the survey period. Therefore, the variable for *number of available providers* represents the number of providers who were, in theory, "available" to each respondent at the time of the survey. Since the number of providers is limited by health plan and does not necessarily represent the total number of primary care providers in each county, an additional variable was created depicting the number of managed care plans that were available to Oregon Health Plan members in each county at the time of the survey. Adding this variable into the analysis accounts for some of the variability in consumer satisfaction that was due to health plan availability.

The dependent variables for the model were overall satisfaction for both "Health Care", and "Health Plan". Member responses to these questions were in the form of a 5-item Likert scale with response categories ranging from "Poor" to "Excellent". As ordinal-logistic regression models can be difficult to interpret, the outcome variables were adjusted to become binomial, nominal variables that were then used to build a nominal logistic regression model. This adjustment was made by collapsing the top two responses ("Excellent" and "Very Good") into a "more satisfied" response, and collapsing the bottom two responses ("Poor" and "Fair") into a "less satisfied" response. In order to avoid loss of information and maintain the size of the sample, the ordinal response of "Good" needed to be incorporated into one of the new categorical responses. Unfortunately, there is no established protocol to determine how this should be done. The use of "Good" in this

question was meant to represent a neutral mid-point response indicating that the respondent was neither pleased nor displeased with their health care or health plan in general. If respondents actually interpreted the response categories this way, including "Good" responses in the "less satisfied" category could be viewed as the conservative assumption that these respondents are not "more satisfied" and should therefore not be depicted as such. However, it could be argued that the word "Good" carries a positive connotation that may bias the response such that respondents who marked this category were actually generally satisfied, but do not consider their health care or health plan to be "Very Good". If this is the case, then "Good" respondents should be included in the "more satisfied" category.

To avoid biasing the results of this study one way or the other, analyses were run using both categorizations for the dependent variables. To aid in the subsequent interpretation of the results of these analyses, the collapsed dependent variables were statistically compared to the original ordinal variables to determine their relative predictive strength. The results of this comparison should lend some support as to the likelihood of the actual meaning of "Good" in this case.

In addition to the variables under consideration for analysis of consumer satisfaction with their health care and their health plan, it was likely that the dependent variables themselves are related to one another as well. For example, consumer satisfaction with their health plan could be related to their satisfaction with the health care they receive, and visa versa. It was therefore important that the analysis included an independent variable reflective of each consumer's overall satisfaction with their health care and health plan. As indicated in the literature, consumer satisfaction was likely to be related to one or more of the variables that were considered in this analysis. To reduce the chance for redundant data in the final analysis, multicollinearity diagnostics were performed to determine if adding independent variables of overall satisfaction would significantly affect the other independent variables in the model. This method should effectively allow for the

inclusion of consumer satisfaction as an independent variable without duplicating information already in the model.

The secondary goal of this study was to identify other variables that might be significant predictors of consumer satisfaction in health care in this rural OHP population. This goal was accomplished indirectly from building the prediction models for the primary aim of the study. In constructing the regression models for examining the variable for number of doctors, it was possible to observe which, if any, of the controlling variables also exhibited a significant relationship to consumer satisfaction.

Analysis Outline

I. Exclusion of cases

   A. Cases excluded due to:
      1. Residence in urban or metropolitan area
      2. Omitted answers to dependent variables
      3. Missing data on available providers

   B. Analysis of excluded cases
      1. Excluded vs Included cases due to omitted answers to dependent variables
      2. Excluded vs Included cases due to missing provider data

II. Definition of dependent variables

   A. Creating binomial variables from 5-point scale
      1. Inclusion of middle response category
      2. Testing binomial variables against original 5-point scale

III. Selection of Independent variables

   A. Qualitative selection
      1. Selecting questions based on similarity to variables in the literature
      2. Identifying variables to be compiled into scales

   B. Quantitative/Statistical Selection
      1. Validity and reliability of scale formation
      2. Measuring the independent association of selected variables with the outcome variables

IV. Correlation and Covariance of Independent variables

   A. Correlated variables
   B. Test of collinearity

V. Measuring the relationship between satisfaction and provider availability

   A. Logistic regressions
      1. Satisfaction with health care (Good=more satisfied)
      2. Satisfaction with health care (Good=less satisfied)
      3. Satisfaction with health plan (Good=more satisfied)
      4. Satisfaction with health plan (Good=less satisfied)

RESULTS

The Oregon Office of Medical Assistance Programs (OMAP) mailed surveys to 19,098 randomly selected members of the Oregon Health Plan throughout the State of Oregon. Of these, 11,591 members responded to the survey for a response rate of 61%. Of those who responded to the survey, 6,305 members resided in rural areas and were included in this analysis.

Preliminary examination of the survey data revealed that many survey respondents omitted responses to several questions on the survey. Of the 6,305 survey respondents eligible for the study, 62 omitted responses to both of the questions that were to be used as outcome variables in this analysis leaving an overall sample size of 6,243. An additional 1,176 surveyed members omitted responses to one of the two outcome questions resulting in sample sizes of 5,188 and 6,122 for outcomes of health care satisfaction and health plan satisfaction respectively.

Information regarding provider availability was requested from the 14 managed care plans associated with the Oregon Health Plan and operating in rural areas of Oregon at the time of the survey. Health plans were asked to supply information on the number of primary care providers that contracted with their plan and that reported seeing OHP patients during the survey period. Of the 14 plans that were queried, 10 were able to supply complete and accurate information about their providers during the period in question. Two health plans were able to supply provider information for only some of the counties during the survey period. Two health plans were unable to supply any provider information from that time. As the provider availability information was critical to the question of interest in this study, it was necessary to exclude those survey respondents for whom provider information was unavailable. Exclusion of these respondents removed 1,906 cases from the original sample for a resulting overall sample of 4,337 and sample sizes of 3,624 and 4,258 for health care satisfaction and health plan satisfaction respectively.

Table 1-a: Group differences - Excluded vs Not-excluded by omission of response to both outcome variables

Variable	Mean/Percent (Excluded) (n=62)	Mean/Percent (Included) (n=6243)	Significance (p<)
Age (mean in years)	40.8	37.1	.013*
Race (% Caucasian)	95%	95%	.941
Gender (%male)	44%	31%	.033*
Marital Status (% Married)	27%	38%	.079
Education (mean rank)†	2.90	3.21	.024*
Provider Availability (mean # of providers)	35	40	.297

* - Depicts significant difference between groups.
† - For rank designations please see question #54 in Appendix

Table 1-b: Group differences - Excluded vs Not-excluded by missing provider data

Variable	Mean/Percent (Excluded) (n=1906)	Mean/Percent (Included) (n=4337)	Significance (p<)
Age (mean in years)	38.1	36.7	.000*
Race (% Caucasian)	96%	94%	.000*
Gender (%male)	32%	30%	.135
Marital Status (% Married)	37%	39%	.297
Education (mean rank)†	3.23	3.20	.176
Health care satisfaction (Mean rank)¥	3.51	3.58	.028*
Health plan satisfaction (Mean rank)¥	3.34	3.44	.001*

* - Depicts significant difference between groups.
† - For rank designations please see question #54 in Appendix
¥ - Rank designations: Poor=1; Fair=2; Good=3; Very Good=4; Excellent=5

Respondents who were excluded from the analysis were compared to those who were not excluded to determine if the two groups were in any way different from one another. Comparisons were made between groups on demographic characteristics (Age, Race, Gender, Marital Status, and Education), on responses to the outcome variables (satisfaction with health care and health plan), and on availability of providers. (Tables 1a and 1b) In general, included and excluded respondents were found to be similar with some

Table 2-a: Distribution of Scores for Dependent Variables

Dependent Variable	Ordinal Rank (Poor to Excellent) 1	2	3	4	5
Satisfaction with Health Care					
(Good=high) Less Satisfied	18%				
More Satisfied			82%		
(Good=low) Less Satisfied	45%				
More Satisfied				55%	
Satisfaction with Health Plan					
(Good=high) Less Satisfied	18%				
More Satisfied			82%		
(Good=low) Less Satisfied	53%				
More Satisfied				47%	

Table 2-b: Validation of Collapsed Dependent Variables

Variable	R^2 Good = "more satisfied"	Good = "less satisfied"
Rate the Health Care you get...	.551	.742
Rate your Health Plan	.525	.726

exceptions. Those respondents excluded due to omission of a response to both outcome variables were more often male and tended to be older and less educated than those who responded to at least one of the two questions. Those respondents who were excluded due to lack of provider information were more likely to be Caucasian and tended to be older in age. These excluded respondents also tended to be less satisfied with their health care and health plan overall.

Examination of Dependent variables

For each of the two outcome variables (Satisfaction with Health Care and Satisfaction with Health Plan) there were two possible condensations (Excellent+Very Good+Good/Fair+Poor or Excellent+Very Good/Good+Fair+Poor) to create binomial variables representing people who are generally "more satisfied" and "less satisfied". The two condensed variables were compared to the original ordinal variable by simple

Table 3-a: Questions measuring concepts previously indicated as contributors to consumer satisfaction

Question*	Mean Score	Low end - High end** 1	2	3	4	5
Rate the number of providers you have to choose from	3.0	13%	20%	31%	22%	15%
How hard is it for you to find a provider near you?	3.8	6%	13%	16%	21%	44%
How long does it take to get to your provider's office?†	3.2	3%	18%	36%	43%	---
How many times did you see your provider in the last 6mos?†	2.8	10%	19%	50%	21%	---
How often do you see the same provider?	4.2	1%	5%	9%	42%	44%
How happy are you with your provider's office hours?	3.6	11%	8%	27%	19%	35%
How hard is it for you to get to your provider's office?	4.1	2%	9%	14%	23%	52%
How hard is it for you to be sent to a specialist?	3.3	12%	17%	23%	25%	24%
How hard is it for you to get medical care?	4.0	3%	9%	16%	31%	41%
How hard is it to get an appointment with your provider?	3.8	5%	12%	15%	33%	35%
How hard is it to get medical advice during office hours?	3.6	6%	14%	20%	32%	29%
How hard is it to get medical advice outside office hours?	2.9	17%	21%	28%	22%	13%
How long do you usually sit in the waiting room?††	2.2	20%	40%	40%	---	---
My provider listens to what I say	3.8	4%	11%	23%	28%	35%
My provider explains things to me	3.8	3%	10%	22%	28%	36%
The medical exams are complete and careful	3.7	5%	13%	23%	27%	33%
My provider follows through on care	3.5	10%	15%	22%	23%	30%
My provider shows a personal interest in me	3.5	9%	16%	23%	23%	29%
My provider tells me about ways to stay healthy	3.4	10%	16%	24%	24%	26%
My provider spends enough time with me	3.5	8%	17%	23%	22%	29%
How confident are you with your provider's abilities?	3.9	4%	10%	13%	35%	39%
Rate your general health	3.1	7%	21%	35%	27%	10%
Rate your health compared to a year ago	3.4	3%	11%	50%	19%	17%
What was the highest grade you completed in school?	3.2	3%	19%	41%	29%	8%
Rate your health plan overall	**3.4**	**3%**	**15%**	**35%**	**30%**	**17%**
Rate your health care overall	**3.6**	**3%**	**15%**	**28%**	**30%**	**24%**
Number of health plans in county	3.6	Range: 1-6 StdDev: 1.5				
Number of Available Providers	**52.7**	**Range 0-128 StdDev: 37.7**				

* - Questions were edited for space. Please refer to Appendix A for full question.
** - Most questions had 5 response categories. Data was coded such that responses thought to detract from satisfaction were coded lowest.
† - These questions had only 4 response categories
†† - This question had only 3 response categories.

regression to determine the degree to which each predicted the original (r-square). Tests of both outcome variables determined that incorporation of the response "Good" into the "less satisfied" category best represented the original ordinal variable as shown in Table 2.

Selection of Independent Variables based on Previous Studies

Survey questions were examined for their potential to measure factors noted as significant to consumer satisfaction in the literature. Potential variables selected by this process are described in Table 3a. The factors represented by the selected questions include: *perception of provider availability, distance to provider, number of visits to provider, provider continuity, clinic hours of operation, accessibility of health care services, waiting time for appointments, interpersonal care and provider communication, physician experience, self-reported health status,* and *change in health status.* Also included were demographic variables of *age, gender, race, marital status,* and *education.*

Data reduction and Construction of Scale Measurements

Twenty questions on the survey appeared to measure similar dimensions of satisfaction and were examined for their potential to be combined into a single scale of measurement. A list of these questions is provided in Table 3b. A cursory examination of the questions suggested that they describe two distinct dimensions of consumer satisfaction: *accessibility of services* and *provider care and communication.* While the group of questions appeared to represent to specific factors, it was possible that more than two underlying concepts are represented. To validate the assumption that only two factors were represented, the group of questions was entered into a factor analysis. Using an analysis of covariation between variables, factor analysis allows for the grouping of variables into separate factors that appear to explain the variance of a common underlying

Table 3-b: Questions considered for data reduction

Question	Factor 1 Load	Factor 2 Load	Scale
How hard is it to find a provider?	**.677**	.169	Access
How long does it take you to get to your provider's office?	.267	.000	-------
How many times did you see your provider in the last 6 mos?	-.002	.060	-------
How often do you see the same provider?	.168	.261	-------
How happy are you with your provider's office hours?	.421	.050	-------
How hard is it for you to get to your doctor's office?	**.607**	.146	Access
How hard is it for you to be sent to a specialist?	**.610**	.283	Access
How hard is it for you to get medical care?	**.713**	.347	Access
How hard is it to get an appointment?	**.649**	.293	Access
How hard is it to get medical advice during office hours?	**.576**	.420	Access
How hard is it to get medical advice outside of office hours?	**.547**	.308	Access
How long do you sit in the waiting room?	.280	.347	-------
My provider listens to what I say	.235	**.850**	Provider
My provider explains things to me	.230	**.855**	Provider
The medical exams are complete and careful	.284	**.856**	Provider
My provider follows through on care	.266	**.842**	Provider
My provider shows an interest in me	.224	**.888**	Provider
My provider tells me about ways to stay healthy	.238	**.836**	Provider
My provider spends enough time with me	.236	**.888**	Provider
How confident are you in your provider's abilities?	.315	**.677**	Provider

dimension. Examination of the variables segregated by factor analysis further aids in the determination of the dimension that is being measured.

All twenty variables under consideration were entered into a simple factor analysis using the statistical package SPSS (SPSS Inc. version 8.0). Eigenvalues, representing the proportion of variance attributed to each potential factor, were plotted on a Scree Plot. Examination of the Scree Plot revealed that the majority of variance was explained by two separate factors. Using factor analysis with Varimax-orthogonal rotation, the 20 selected survey questions were extracted into two likely factors. Factor loading values for each variable are listed in Table 3b. Those variables with loading factors greater than .50 for a particular factor are considered to load most heavily into that factor.(DeVellis) Grouping variables by their loading factor value resulted in two distinct factors which are likely candidates for scales of measurement. Evaluation of the questions grouped into each factor

Table 3-c: Internal Validation of Scales

Question	r-square (for scale)	Alpha if excluded
Accessibility of Services - [Lowest alpha=.815] - Alpha (full set)=.825		
How hard is it to find a provider?	.314	.810
How hard is it for you to get to your doctor's office?	.283	.813
How hard is it for you to be sent to a specialist?	.325	.808
How hard is it for you to get medical care?	.541	.779
How hard is it to get an appointment?	.405	.797
How hard is it to get medical advice during office hours?	.472	.793
How hard is it to get medical advice outside of office hours?	.394	.809
Provider Care and Communication - [Lowest alpha=.953] - Alpha (full set)=.955		
My provider listens to what I say	.776	.948
My provider explains things to me	.780	.948
The medical exams are complete and careful	.773	.946
My provider follows through on care	.699	.949
My provider shows an interest in me	.777	.946
My provider tells me about ways to stay healthy	.687	.950
My provider spends enough time with me	.786	.946
How confident are you in your provider's abilities?	*.491*	*.957*

confirms the original observation of two distinct measurements of consumer satisfaction: Accessibility of Services and Provider Care and Communication.

Internal validity of scales with variables using multiple response categories is often done through the computation of Chronbach's alpha coefficient. (Table 3c) The value of alpha is interpreted as the proportion of a scale's total variance that can be attributed to a single source. This source is generally presumed to be the underlying variable being measured by the scale. (DeVellis) Alpha values greater than 0.70 are generally considered as an indication of good internal validity. Chronbach's alpha coefficients computed for the constructed scales of Accessibility of Services (alpha=.825) and Provider Care and Communication (alpha=.957) indicate strong internal validity for both scales. Although the validity of both scales is strong, scale validity is often data dependent. To further verify their validity, alpha coefficients were calculated for both scales using randomly selected samples from within the original sample. Comparisons over four random samples

indicated that both scales are consistently valid with the lowest alpha for either scale reaching .815. During the validation of the scale for Provider Care and Communication, it was found that one variable (Confidence in Provider), shown to be strongly associated with the other variables in the scale, actually decreases the value of the alpha coefficient. To maintain the highest possible validity, this variable was excluded from the scale and was entered into later analyses as an independent variable.

Statistical Selection of Independent variables

Independent variables were selected by their individual association with each of the dependent variables. Each question of the survey thought to measure a factor similar to those found significant in the literature was regressed on the two outcome variables to determine their independent association. Questions that were determined to be significantly associated with the outcome variables were included in the analysis as independent predictor variables (Table 4).

Additional Variables

In addition to the independent variables selected from the survey, continuous variables were created to represent the number of health plans and the number of primary care providers that were available to survey respondents at the time of the survey. The variable representing the number of available providers is the variable of interest in this study. Descriptions of both variables are given in Table 3a.

Correlation of Independent Variables

A simple bivariate correlation was performed between each of the independent variables to determine the possibility of redundant information. Given the large sample size, statistical significance of the correlation coefficient is uninformative. Unfortunately, there is no standard for determining the significance of lower-level correlations in large

Table 4: Independent Relationships between Selected Survey Questions and Dependent Variables†

Question	r		Significance (p<)		Include?	
	HC1	HP2	HC	HP	HC	HP
Rate the number of PCPs you have to choose from	.273	.303	.000	.000	Yes	Yes
Rate your health plan overall	.514	N/Å	.000	N/Å	Yes	N/Å
How long does it take to get to your provider's office?	.004	.002	.000	.006	Yes	Yes
How many times did you see the doctor (in past 6 mos)?	.002	.001	.008	.114	Yes	No
How often do you see the same provider?	.044	.023	.000	.000	Yes	Yes
How happy are you with your provider's office hours?	.051	.051	.000	.000	Yes	Yes
How long do you usually sit in the waiting room?	.092	.057	.000	.000	Yes	Yes
Confidence in your provider3	.310	.160	.000	.000	Yes	Yes
Overall, how would you rate the health care you get?	N/A	.514	N/A	.000	N/A	Yes
In general, how would you say your health is?	.079	.064	.000	.000	Yes	Yes
Compared to last year, how would you rate your health now?	.097	.068	.000	.000	Yes	Yes
What was the highest grade that you completed in school?	.000	.001	.715	.038	No	Yes
Marital Status (married or unmarried)	.002	.002	.003	.002	Yes	Yes
Gender	.000	.000	.196	.928	No	No
Race (Caucasion or Other)	.000	.000	.354	.320	No	No
Age (continuous)	.004	.004	.000	.000	Yes	Yes
Scale of Accessibility and Availability of Services	.371	.269	.000	.000	Yes	Yes
Scale of Provider Care and Communication	.456	.229	.000	.000	Yes	Yes
Number of Plans per county	.006	.004	.000	.001	Yes	Yes
Number of Available Providers	.000	.001	.947	.030	Yes*	Yes

† - Item responses are ordinal scales ranging from 3-5 responses unless otherwise noted

1 - HC refers to outcome variable: "Rate the Health Care that you get..."

2 - HP refers to the outcome variable: "Rate your Health Plan"

3 - Question reads: "How sure are you that your [provider] can figure out what is wrong with you and what needs to be done?"

* - This is the independent variable of interest and will be used regardless of its individual predictive value

Table 5: Selected Correlations between Independent Variables

Variable	Rate # of PCPs	Confidence in provider	Scale of Accessibility	Scale of Care/ Comm.
Rate # of PCPs				
Confidence in provider	.394 (n=3496)			
Scale of Accessibility	**.485** (n=3072)	**.535** (n=3142)		
Scale of Care/ Comm.	**.462** (n=3463)	**.687** (n=3549)	**.613** (n=3120)	

samples. For the purposes of this study, a conservative approach to this issue was taken: a correlation coefficient greater than .40 was selected as an indication of two correlated variables. This would mean that factors which were related by sixteen percent or more would be viewed as moderately correlated. Tests of the independent variables demonstrated correlation coefficients less than .40 in nearly every case. Coefficients greater than .40 were found between the two constructed scales (r=.613) and between each of the scales and the variables *rate number of PCPs* and *confidence in provider*. (See Table 5) Correlated variables were subsequently tested formally for multicollinearity using Variance Inflation Factors (VIFs). With all independent variables under consideration, VIFs for all variables were found to be relatively low (VIFmax=2.85, meanVIF=1.36) therefore no modifications were made to account for collinearity.

Consumer Satisfaction as an Independent Variable

Strong correlation was found between consumer satisfaction with their health plan and with the health care they receive (r=.707) indicating that the two measurements are likely related to one another. Therefore, in assessing the relationship between consumer satisfaction and provider availability, it is important to take into account the relationship

between consumer satisfaction with their health plan and with the health care they receive. Since overall measures of consumer satisfaction are also naturally correlated with other variables in the model, an additional test for multicollinearity was performed including consumer satisfaction. Results of the test indicate that although it is moderately correlated with many of the variables in the model, the addition of consumer satisfaction did not significantly raise the variance of the model (VIFmax=2.82).

Relationship between Provider Availability and Consumer Satisfaction with Health Care

Using the two collapsed binomial variables for consumer satisfaction with the health care that they receive as the dependent variables, multivariate logistic regression models were constructed using independent variables selected as previously described. Through independent assessment of questions from the survey, sixteen independent variables were found to be likely contributors to consumer satisfaction with their health care. (Table 4) All sixteen variables were entered into the regression model and examined for their relationship to consumer satisfaction with their health care. (Tables 6-a & 6-b)

When using the dependent variable with "Good" coded as "more satisfied," examination of the regression model indicates that eight of the sixteen independent variables were significantly related to consumer satisfaction with their health care ($p<.05$, model r-sq=.377). The variable of interest in this study (*number of available providers*) was not significantly related to consumer satisfaction (p=.136). When using the dependent variable with "Good" coded as "less satisfied," examination of the regression model indicates that seven of the sixteen independent variables were significantly related to consumer satisfaction with their health care ($p<.05$, model r-sq=1.0). The variable "*number of available Providers*" was not significantly related to consumer satisfaction (p=.486).

Table 6-a: Satisfaction with Health Care (Good="more satisfied")

Variable	r-sq	Exp(B)	95% Confidence Int.	Sig. (p)
Rate number of providers	.000	1.01	0.87 - 1.18	.867
How long to get to provider	-.011	0.87	0.73 - 1.04	.130
How many times saw provider	.000	1.02	0.86 - 1.20	.846
How often see same provider	.000	1.02	0.88 - 1.20	.762
How happy with provider's hours	.032	1.14	1.01 - 1.29	**.032**
How long in the waiting room	.000	0.96	0.79 - 1.17	.658
Confidence in provider	.050	1.25	1.08 - 1.45	**.004**
Health status	.026	1.18	1.00 - 1.39	**.051**
Change in health status	.075	1.43	1.21 - 1.70	**.000**
Marital Status	.000	0.88	0.66 - 1.17	.385
Age	.028	1.01	1.00 - 1.03	**.044**
Scale of Accessibility	.114	1.11	1.07 - 1.15	**.000**
Scale of Provider Care & Comm.	.149	1.11	1.08 - 1.14	**.000**
Satisfaction with Health Plan	.280	4.66	3.78 - 5.76	**.000**
Number of Health Plans	.000	1.07	0.97 - 1.17	.183
Number of Available Providers	-.009	1.00	0.99 - 1.00	.136
Model r-square: .377 r-square without provider availability: .377				

Table 6-b: Satisfaction with Health Care (Good="less satisfied")

Variable	r-sq	Exp(B)	95% Confidence Int.	Sig. (p)
Rate number of providers	.033	1.16	1.03 - 1.30	**.013**
How long to get to provider	.000	0.99	0.86 - 1.15	.933
How many times saw provider	.000	0.94	0.82 - 1.08	.377
How often see same provider	.000	1.05	0.91 - 1.21	.488
How happy with provider's hours	.017	1.09	0.99 - 1.19	.080
How long in the waiting room	.000	1.05	0.89 - 1.25	.557
Confidence in provider	.043	1.25	1.08 - 1.39	**.003**
Health status	.003	1.10	0.97 - 1.25	.154
Change in health status	.044	1.22	1.07 - 1.39	**.002**
Marital Status	.000	1.00	0.79 - 1.26	.979
Age	.000	1.00	0.99 - 1.01	.796
Scale of Accessibility	.052	1.05	1.02 - 1.08	**.000**
Scale of Provider Care & Comm.	.213	1.17	1.14 - 1.20	**.000**
Satisfaction with Health Plan	.281	4.49	3.79 - 5.31	**.000**
Number of Health Plans	.053	1.15	1.07 - 1.25	**.000**
Number of Available Providers	.000	1.00	1.00 - 1.00	.486
Model r-square: 1.0 r-square without provider availability: 1.0				

Relationship between Provider Availability and Consumer Satisfaction with Health Plan

Using the two collapsed binomial variables for consumer satisfaction with their health plan as the dependent variables, multivariate logistic regression models were constructed using independent variables selected as previously described. Through qualitative and independent quantitative assessment of questions from the survey, sixteen independent variables were found to be likely contributors to consumer satisfaction with their health plan. (Table 4) All sixteen variables were entered into the regression model and examined for their relationship to consumer satisfaction with their health plan. (Tables 6-c & 6-d)

When using the dependent variable with "Good" coded as "more satisfied," examination of the regression model indicates that five of the sixteen independent variables were significantly related to consumer satisfaction with their health plan ($p<.05$, model r-sq=.301). The variable of interest in this study (Number of Available Providers) was not significantly related to consumer satisfaction ($p=.451$). When using the dependent variable with "Good" coded as "less satisfied," examination of the regression model indicates that six of the sixteen independent variables were significantly related to consumer satisfaction with their health care ($p<.05$, model r-sq=.402). The variable "Number of Available Providers" was not significantly related to consumer satisfaction ($p=.551$).

Relationship between Consumer Satisfaction and other independent variables

Overall, eleven variables were found to be significantly related to consumer satisfaction with either their health plan or the health care they receive. In looking at consumer satisfaction with their health care, five variables (*confidence in provider, change in health status, scale of accessibility, scale of provider care and communication,* and *satisfaction with health plan*) were found to be significantly related to consumer satisfaction with both versions of the dependent variable. In addition to these five, three variables

Table 6-c: Satisfaction with Health Plan (Good="more satisfied")

Variable	r-sq	Exp(B)	95% Confidence Int.	Sig. (p)
Rate number of providers	.121	1.53	1.34 - 1.75	**.000**
How long to get to provider	.000	0.93	0.79 - 1.09	.365
How often see same provider	.000	1.04	0.90 - 1.20	.604
How happy with provider's hours	.000	1.04	0.93 - 1.17	.455
How long in the waiting room	.000	1.10	0.92 - 1.32	.316
Confidence in provider	.000	0.96	0.83 - 1.11	.566
Health status	.072	1.34	1.15 - 1.55	**.000**
Change in health status	.000	1.05	0.91 - 1.22	.504
Education Level	.000	1.01	0.88 - 1.17	.877
Marital Status	.000	1.09	0.83 - 1.42	.541
Age	.002	1.01	1.00 - 1.02	.157
Scale of Accessibility	.083	1.07	1.04 - 1.10	**.000**
Scale of Provider Care & Comm.	-.077	0.95	0.92 - 0.97	**.000**
Satisfaction with Health Care	.299	4.55	3.73 - 5.54	**.000**
Number of Health Plans	.000	1.03	0.94 - 1.13	.506
Number of Available Providers	.000	1.00	1.00 - 1.00	.451
Model r-square: .301 r-square without provider availability: .301				

Table 6-d: Satisfaction with Health Plan (Good="less satisfied")

Variable	r-sq	Exp(B)	95% Confidence Int.	Sig. (p)
Rate number of providers	.174	1.73	1.56 - 1.91	**.000**
How long to get to provider	-.020	0.88	0.78 - 1.01	.062
How often see same provider	.000	0.94	0.83 - 1.06	.318
How happy with provider's hours	.000	1.04	0.96 - 1.12	.383
How long in the waiting room	.000	0.99	0.85 - 1.15	.876
Confidence in provider	-.036	0.84	0.74 - 0.96	**.008**
Health status	.032	1.15	1.03 - 1.28	**.015**
Change in health status	.000	1.05	0.94 - 1.18	.384
Education Level	-.015	0.91	0.81 - 1.02	.092
Marital Status	.000	0.93	0.76 - 1.14	.503
Age	.035	1.01	1.00 - 1.02	**.011**
Scale of Accessibility	.054	1.05	1.02 - 1.07	**.000**
Scale of Provider Care & Comm.	.000	0.99	0.96 - 1.01	.194
Satisfaction with Health Care	.291	4.28	3.65 - 5.02	**.000**
Number of Health Plans	.000	0.99	0.93 - 1.06	.856
Number of Available Providers	.000	1.00	1.00 - 1.00	.551
Model r-square: .402 r-square without provider availability: .401				

(*happy with provider's hours, health status,* and *age*) were significantly related to consumer satisfaction when "good" was coded as "more satisfied." Two additional variables (*rate number of providers* and *number of health plans*) were found to be significantly related to consumer satisfaction when "good" was coded as "less satisfied."

In looking at consumer satisfaction with their health plan, four variables (*rate number of providers, health status, scale of accessibility,* and *satisfaction with health care*) were found to be significantly related to consumer satisfaction with both versions of the dependent variable. In addition to these four, one variable (*scale of provider care and communication*) was significantly related to consumer satisfaction when "good" was coded as "more satisfied." Two additional variables (*confidence in provider* and *age*) were significantly related to consumer satisfaction when "good" was coded as "less satisfied."

DISCUSSION

The purpose of this study was to examine the relationship between provider availability and consumer satisfaction with health plan and health care received among rural residents enrolled in the Oregon Health Plan. The results of the analysis indicate that, for this sample of the population, the number of available providers is not significantly related to consumer satisfaction in either case.

The study hypothesis was that availability of providers would significantly contribute to overall satisfaction with both one's health care and health plan. Previous examination of the OHP Consumer Satisfaction Survey by the OCSC and OHPI suggested that differences exist between OHP-MCO enrollees in rural communities and those in more urban settings, with rural members generally less satisfied with their health care. A notable difference in access to health care between urban and rural communities is the availability of providers, therefore one could postulate a positive relationship between provider availability and consumer satisfaction.

Before analyzing the results further, it is necessary to address the issue of the dependent variables. As demonstrated in Tables 6a-d, there are some differences in the models created using the different versions of each dependent variable. As the two versions of the binomial dependent variables are not equal, it must be that they are different and that one version is more likely than the other to approximate the original response variable. Intuitively, most people would tend to think of "good" as a generally positive response to a question. Therefore, the tendency would be to add it to the "more satisfied" category as opposed to the "less satisfied" category. Looking at a distribution of the responses to the original question indicates that more people tended to report their satisfaction as being "very good" or "excellent" than "fair" or "poor." This would tend to support the intuitive conclusion that "good" represents a "more satisfied" response. Statistically, however, this idea does not fit as well. In comparing the binomial variables to their original ordinal variable it was found that putting "good" in the "less satisfied"

category best approximated the original variable. It is possible that this statistical test is data dependent and while the result may be true for the whole sample, it may not be consistent over subsets of the data. Conducting the same comparison using four different random samples from within the data set (n approx. 1000) showed that when looking at satisfaction with health care, the *highest* r-square with "good" classified as "more satisfied" was 0.562 while the *lowest* r-square with "good" in the "less satisfied" category was 0.731. Results of the same test looking at satisfaction with health plan gave similar results (0.532 and 0.721) respectively. Therefore, statistically speaking, classifying "good" as a "less satisfied" response seems more appropriate.

The results of this study are such that, in looking at the primary goal of the study, the selection of which outcome variable to use makes no difference. The independent variable of interest, *Number of available providers* was not significantly related to consumer satisfaction in any of the regression models built during the analysis. Selection of the outcome variable does, however, affect the interpretation of the secondary goal of the study which was to look at the other variables of importance to consumer satisfaction. For the purposes of that discussion, the dependent variable with "good" coded as "less satisfied" will be used. In this interpretation, "less satisfied" will refer to respondents who were not "very satisfied" (responded "very good" or "excellent").

It is possible that, as these results indicate, there is not a meaningful relationship between provider availability and consumer satisfaction. If this is the case, it would be likely that there is another undetermined, and unrelated, factor which is responsible for the differences in consumer satisfaction between urban and rural residents. However, given the extensive literature on consumer satisfaction, it is unlikely that a single factor that could directly account for the noted differences in satisfaction between urban and rural communities has been thus far overlooked.

It is also possible that a relationship does exist between provider availability and consumer satisfaction. If such a relationship exists, it is likely that an extraneous

confounding factor is masking the effect. Such a factor would be closely related to both consumer satisfaction and provider availability and its presence would likely lessen the positive effect on consumer satisfaction that we would expect from changes in provider availability. Elements in this study lend support to the idea that an extraneous variable may be confounding the relationship. One of the questions from the survey used in this analysis asked respondents to "Rate the number of [PCPs] you have to choose from with your health plan." This question represents the patient's *perception* of the number of available providers as opposed to the more objective measure used in this analysis. The patient's perception of provider availability was found, in both cases, to be significantly related to consumer satisfaction. (Tables 2 & 5) However, comparisons between the number of available providers and the patient's perception of provider availability show that the two indicators are poorly correlated. (r=.101) It is likely that the differences between the objective and subjective measures are due to an outside factor not evaluated in this study.

The discrepancy between the objective measure of provider availability (number of providers available) and the subjective measure (perception of availability) indicates that the theoretical definition of availability used in this study does not correspond to the actual availability as perceived by the population. There are several possible explanations for this observation. First, data on the number of available providers was collected from the health plans such that an "available" provider was one who was reported to be seeing OHP patients for that health plan in a particular Oregon county. While it may be true that providers reported as seeing OHP patients during the time of the survey were in fact seeing one or more OHP patients, it is possible that these same providers were not accepting new OHP patients at the time a survey respondent signed up with their MCO. This would, in effect, make those providers *not* available to that respondent thereby making the respondent's perception of provider availability less than the availability measured objectively in this study. Unfortunately, data from the client satisfaction survey used in this study did not include the MCO enrollment date for each member. Had these data been

available, it would have been possible to assess the number of providers that were open to new OHP members at the time of their enrollment. Assessing provider availability in this fashion may have better approximated member perception.

Second, it is also possible that providers who were accepting new OHP patients at the time of enrollment could not *accommodate* new OHP members. For example, if a new OHP enrollee was selecting a provider through his/her MCO and was unable to get an appointment with a provider in a reasonable amount of time, they might consider that provider to be unavailable due to their full schedule. Thus, although the provider was considered "available" by definition, the patient's *perception* might be that the provider was not available. Again, using the survey data, it was not feasible to assess the perceived accommodation for every provider whose practice was open to new OHP members at the time each survey respondent enrolled in their MCO.

Third, there are cases in which OHP members do not choose their provider at all. In many of the MCOs, enrollees who do not select their own PCP within a given amount of time (e.g. 30 days) are assigned a provider in their area. In these cases, it is likely that the OHP member would not have a high perception of provider availability even if a relatively large number of providers were theoretically available. If only those members who were allowed to choose their provider were examined, it is possible that we would find a higher correlation between the number of providers and perception of availability.

Fourth, providers were considered to be available in this study if they were seeing OHP members in the same county as the survey respondent. In most cases, the providers that are available to OHP members practice in the same county where the member lives. In some cases, however, it is possible for an OHP member to see a provider in a different county if that provider is more accessible to the member than those in the same county. For example, if a OHP member resides near the border of two counties and the nearest health care provider contracted with their health plan practices across the county line, it is sometimes possible for the member to see that provider as their PCP. In these cases, the

definition of available used in this study would not include those providers and may have underestimated provider "availability."

A fifth explanation could be the relative distribution of providers within a given county. The number of providers available to an individual is determined in most cases by health plan enrollment and county of residence. While the data from this study included the overall number of providers available to individuals in each county and took into account the length of time it takes for an individual to travel to his or her provider's office, data was not included on whether all of the providers in a county were geographically available to individuals. Geographic availability in this case could be defined as providers available to be seen, but located in such a way as to make it difficult for a patient to get to the provider's office. One of the potential barriers to geographic access is lack of adequate transportation. In the population examined in this study nearly 27% of respondents stated that they travel to their provider's office by some method other than driving themselves. If there are not many providers located in the geographically accessible vicinity of the individual, their perception of provider availability may be less than the actual number of providers available through their health plan. There is some evidence to suggest that this situation is possible. A recent study of distribution of rural physicians found that primary care physicians in rural areas tend to cluster together rather than distribute themselves throughout an area.(Connor, Hillson, and Krawelski, 1995) If PCPs in rural counties of Oregon also tend to cluster, it is likely that many residents in rural counties, particularly in those counties with low population densities, are far enough away from these clusters as to inhibit their ability to reach the providers. Thus, providers that are otherwise available (by definition) would not be accessible to those patients and might therefore be perceived as unavailable. This discrepancy could explain why, in this study, patient perception of provider availability was significantly related to consumer satisfaction while actual availability was not.

Another possible factor affecting the results of this study is the differences found between respondents included in the study, and those who were excluded due to missing

information. It was found that those respondents excluded from the analysis due to omission of both outcome variables were more likely to be older, male and less educated than respondents who were included. While the effect of these differences on the results of this study are uncertain, it is unlikely that any of these differences had a significant effect. In prescreening the independent variables for the strength of their relationship to the outcome variables, it was found that gender was moderately related overall to consumer satisfaction with the health care they receive. However, direct comparison of gender and scores of health care satisfaction in respondents that were included in the study shows no significant differences between males and females. Therefore, although those excluded due to omission of the outcome variables were more likely to be male, this fact should have little to no effect on the outcome of the study. Likewise, in prescreening the independent variables, it was found that level of education was not related to consumer satisfaction in this sample and it is therefore unlikely that education differences between the included and excluded respondents would affect the outcome of the study. The variable of Age was found to be significantly and positively related to consumer satisfaction with their health plan. Since they tended to be older, it is possible that the respondents excluded in this step were, in general, more satisfied with their health plan than those left in the study. Given the small number of respondents excluded, however, and the relatively weak relationship between age and satisfaction, it is also unlikely that Age affected the outcome.

Additional differences were noted between included respondents and those who were excluded from the analysis due to missing provider data. Excluded respondents were found to be more likely older and Caucasian, and less likely to be satisfied with their health plan and their health care than respondents included in the analysis. In prescreening the independent variables for the analysis, it was found that race was not related to consumer satisfaction in this sample and it is therefore unlikely that a greater percentage of Caucasian respondents left out of the analysis would affect the final outcome of the study. Also, as

discussed above, small differences in age are unlikely to have a large effect on consumer satisfaction.

Of potential concern, however, is the noted difference between these two groups in consumer satisfaction with both their health plan and the health care they receive. Since consumer satisfaction is the primary concern with this study, a significant difference in this measure could potentially affect the study results. Unfortunately, the potential effect of this difference between groups is difficult to determine. The primary goal of this study was to determine the relationship between consumer satisfaction and provider availability. For those respondents who were excluded in this step, data on provider availability could not be obtained. Therefore it is not possible to know the number of available providers for the excluded group relative to the group included in the analysis. If there is truly no relationship between provider availability and consumer satisfaction as the results of this study suggest, then the missing cases included in this group should have no effect on the outcome of the study. If, however, a relationship does exist, it is possible that such a relationship was not observable in the sample that was eligible for analysis in this study. For example, if a positive relationship exists, as stated in the hypothesis for the study, it is possible that those patients for which provider data was unavailable had, on average, fewer providers available to them than those who were included in the study. If this is true, it is equally possible that the inclusion of this group into the analysis would uncover a significant relationship.

It is further possible that the differences in consumer satisfaction between the included and excluded respondents is unrelated to provider availability. Nearly one half of the missing cases were respondents enrolled in only two managed care plans. For respondents within each plan, the average overall satisfaction with health care and health plan is lower than the averages for the other plans in the study. This fact implies that the lower satisfaction scores may be due to factors within the health plan and not to relative

availability of providers. If this is truly the case, then omission of these respondents from the analysis should have no effect on the outcome of the study.

A secondary goal of this study was to identify other independent predictors of consumer satisfaction as depicted in the literature. Questions to be analyzed for the primary goal of the study were selected based on their resemblance to factors shown to be important to consumer satisfaction in the literature. In building the model used in this analysis, it was possible to identify those factors which showed significant relationships to areas of consumer satisfaction in the OHP population. Nine variables were found to be significantly related to consumer satisfaction with either their provider or with the health care they receive. (Tables 6-b & 6-d) Patient perception of provider availability (discussed above) was found to have a positive relationship with both measures of consumer satisfaction indicating that those patients with greater perception of availability are more likely to be satisfied with their health care. Similar relationships were found for *confidence in provider, health status, change in health status, perception of accessibility of services, perception of interpersonal care and provider communication,* and *number of health plans.* All of these relationships suggest that consumers are more likely to be satisfied when these factors are improved.

Similar to previous studies of consumer satisfaction, most of the patient demographic variables in this study were not significantly related to consumer satisfaction. Independently, marital status, gender, and age were all significantly correlated with consumer satisfaction. However, when entered into multivariate models, only the variation in age was still significant. The relationship between age and consumer satisfaction with their health plan would indicate that older patients are more likely to be satisfied with their health plan than younger patients. In general, however, as proposed by Dolinsky and Caputo, the effects of demographic factors were largely accounted for by other variables in the model.

Many of the factors found to be significantly related to consumer satisfaction in the literature were also significant in the OHP population. This would seem to indicate that the OHP population is somewhat similar to other populations in their perception of health care delivery. If this is true, it is likely that efforts aimed at increasing satisfaction in rural populations in general will also increase satisfaction in the OHP population. In terms of the goals of this study, the fact that elements of satisfaction in the OHP population are similar to the general population suggests the possibility that the results of this study might be generalizable to other populations as well.

LIMITATIONS OF THE STUDY

The Oregon Health Plan is a unique and innovative approach to managing health care for low-income members of the population. Though they seem to share many of the same factors important to consumer satisfaction, it is still possible that OHP members experience health care in a different way than do traditional Medicaid recipients across the nation. Traditional Medicaid recipients may experience a greater perception of provider choice since they are not restricted to providers who contract with specific MCOs (though the reverse may also be true). OHP members may also experience health care differently from consumers enrolled in private MCOs in that services covered under the OHP are limited to those identified on the prioritized list of services. Therefore, it is possible that the results of this study would not apply to the general population. This does not discount, however, the relevance of these findings to the OHP population. According to the Bureau of Primary Health Care (Health Resources and Services Administration, Dept. of Health and Human Services), as of mid-1996, 12 percent (344,867) of the population in Oregon lives below the 100 percent poverty level. Of these, 38 percent (131,982) are enrolled in a Medicaid MCO.

It is also important to recognize that this study is a cross-sectional examination of the OHP population at a single point in time. The nature of a cross-sectional study is such that it is not possible to state that changes in any of the variables measured would actually

result in a change in consumer satisfaction. We are limited by the data in this study to identifying likely relationships between dimensions of satisfaction and overall reported satisfaction. Causal relationships are best identified through controlled intervention studies. It is also important to note that the period of time measured in this study was at a relatively early point in the life of the OHP. In the early stages of the OHP, many enrolled members were previously ineligible for health insurance, even through Medicaid. Furthermore, OHP benefits received through MCOs are different from those in traditional Medicaid fee-for-service. Since entrance into the OHP was a change in insurance for most enrollees, it is possible that those members surveyed with the Client Satisfaction Survey expressed different levels of satisfaction at the time of the survey then they would more than two years later.

RECOMMENDATIONS

It is still unclear from this and other studies why patients in rural communities report less satisfaction with their health care than their urban counterparts. Since a primary difference in health care delivery between the two populations is the overall number of available providers, it seems reasonable that increases in the number of providers would improve consumer satisfaction. This study does not support that hypothesis. However, there is a strong indication that the *perception* of provider availability is still a strong predictor of overall satisfaction. The discrepancy between the perception of availability and the absolute number of providers theoretically available demonstrates that, even in counties with relatively higher numbers of "available" providers, access to health care in this population is still limited. Therefore, *provider availability* may not be an issue of the number of providers in rural areas, but of access to those providers who are already there.

The past decade has been marked by efforts both at the policy level and the institutional level to increase the number of primary care providers practicing in rural counties across the nation. Growing interest on the part of medical students in primary care

specialties promises to increase the current supply of primary care physicians over the next decade. Also, recent increases in the acceptance of Nurse Practitioners and Physician Assistants will increase the number of primary care providers even more. If the results of this study are typical of the larger population, such increases may be unnecessary. The results of this study suggest that a more important issue to address in rural areas may be increasing the level of access to providers who are currently practicing in these areas. For the general population, this effort could be facilitated by encouraging a wider distribution of providers throughout rural counties. For the rural OHP population, access might be improved by enlisting the services of a greater proportion of rural providers or by encouraging currently participating providers to accept more OHP members into their practice.

It is quite possible that increasing access to health care in rural areas is not feasible without increasing the number of providers practicing in these areas. Issues such as accommodation are often linked to the needs of the population relative to the availability of services. For example, a provider may be forced to schedule patients months in advance due to the fact that s/he is providing health care to a large number of patients. By definition, this provider is "available" but may not be perceived as such and increasing access for the patient population in this case may only be achieved by adding more providers. However, adding providers to this area will only improve availability if other dimensions of access are considered.

The results of this study would support the implementation of policies aimed at increasing overall access to health care in rural areas. As institutional practice tends to lag behind policy recommendations, it would be prudent to examine the relationship between provider availability and consumer satisfaction further. This should be done in a number of ways. First, the examination of the relationship between provider availability and consumer satisfaction should be expanded to include other types of insurance coverage in addition to Medicaid. It is possible that rural residents who are covered by commercial

health insurance do not have the same perceptions of provider availability as members of the OHP. If this is true, policy efforts to increase health care access may require a different approach. Second, there should be further examination of the relationship between the number of available providers and the perception of provider availability by the population. As discussed earlier, this might be accomplished by measuring the number of providers available at the date of member enrollment, assessing the size of each provider's practice, evaluating the geographic distribution of providers relative to that of the population, and determining the ability of consumers to travel to the areas where health care services are located. Third, it would be interesting to conduct a prospective study of a cohort of consumers to evaluate the effect of length-of-time enrolled in a health plan on overall satisfaction. This could be accomplished by surveying members at the time of enrollment and subsequently at six months, one year, and two years.

There is no doubt that access to health care is an issue in rural areas. This seems to be particularly true for rural members of the Oregon Health Plan. The results of this study suggest that issues of access are prevalent even in areas that seem to have large numbers of available providers. This would seem to suggest that policy efforts need to be aimed at increasing access to providers already in practice. This is not to say, however, that more providers are not needed in rural areas. While the number of providers may not be the access issue in some counties, many other rural counties are still in need of additional providers to meet even the minimum health care needs of the population. In these areas, efforts to bring in new providers should be coupled with efforts to maximize access to those providers.

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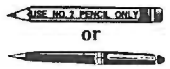
APPENDIX A:

The Oregon Health Plan Client Satisfaction Survey

Please answer every question. For most answers you should just choose the answer that fits you best. Your answers will be completely confidential.

INSTRUCTIONS FOR AUTOMATIC SCANNING

1. Please use a **No.2 pencil** or **blue** or **black** ink.



2. Please fill in the ovals completely; an "X" or a check mark may not read correctly.
3. Example of correct mark: ● Incorrect Marks: ⊘ ⊗ ⊖ ⊙

Your Health Plan

1. This survey is about **the health plan you are in right now**. Which one are you in? *(Fill in one oval.)*

① Care Oregon
② Coordinated Healthcare Network
③ Evergreen Medical Systems
④ Family Care
⑤ Grants Pass Clinic
⑥ HMO Oregon
⑦ InterCommunity Health Network
⑧ Kaiser Permanente
⑨ Klamath Comprehensive Care
⑩ Medford Clinic
⑪ ODS Health Plan
⑫ PACC Health Plans
⑬ PacifiCare of Oregon
⑭ Providence Good Health Plan of Oregon
⑮ QualMed
⑯ RHEI Health Plan
⑰ SelectCare
⑱ Tuality Health Alliance
⑲ Don't know
⑳ Other *(please tell us)*_____

2. How many months or years **in a row** have you been in **your health plan**? *(Fill in one oval.)*

① Less than 6 months
② At least 6 months, but less than 1 year
③ At least 1 year, but less than 2 years
④ At least 2 years, but less than 3 years
⑤ More than 3 years
⑥ Don't know

3. How were you enrolled in **your health plan**? *(Fill in one oval.)*

① I was in this plan in the past.
② It was the only one in my area.
③ I had more than one plan to pick from, and I picked this one.
④ I was placed in it.
⑤ Don't know.
⑥ Some other way *(please tell us how)*_____

Your Health Plan

4. If you picked your health plan yourself, which of the following **helped you the most**? *(Fill in one oval.)*

   ① My doctor helped me decide.
   ② A neighbor, friend or family member helped me decide.
   ③ I used the information given to me with my application.
   ④ I didn't pick a health plan.
   ⑤ Other *(please tell us)*_____

5. When you think about **choosing a health plan**, which **three** of the following items are **most important** to you? *(Fill in ovals for the **three most important** items.)*

   ① Choice of doctors
   ② Choice of hospitals
   ③ Choice of pharmacies
   ④ Dental benefits
   ⑤ After hours clinics
   ⑥ Well-child care
   ⑦ Family planning
   ⑧ 24-hour medical advice available by telephone
   ⑨ Other_____

Now, thinking about your health plan, how do you feel about the following?

6. How hard or easy is it for you to **get information** from your health plan **about their benefits and services?** *(Fill in one oval.)*

   1 Very Hard
   2 Hard
   3 Neither Hard Nor Easy
   4 Easy
   5 Very Easy

7. How hard or easy is it for you to **understand what benefits and services are offered** by your health plan? *(Fill in one oval.)*

   ① Very Easy
   ② Easy
   ③ Neither Hard Nor Easy
   ④ Hard
   ⑤ Very Hard

8. Do you know who your **primary care doctor or clinic** is **in your health plan**? *(Fill in one oval.)*

   1 Yes
   2 No

Your Health Plan

Thinking about your health plan, how would you rate the following? *(Fill in one oval on each line.)*	Poor	Fair	Good	Very Good	Excellent
9. Rate your health plan's **coverage for preventive care** and general checkups.	①	②	③	④	⑤
10. Rate your health plan's **coverage for illness visits and treatments.**	①	②	③	④	⑤
11. Rate the number of **primary care doctors or clinics you have to choose from** with your health plan.	①	②	③	④	⑤

12. If a friend or family member was looking for a new health plan, would you send them to your health plan? *(Fill in one oval.)*

① Definitely Yes
② Probably Yes
③ Not Sure
④ Probably Not
⑤ Definitely Not

Your Health Plan Overall

13. Rate your health plan overall. *(Fill in one oval.)*

① Poor
② Fair
③ Good
④ Very Good
⑤ Excellent

Please complete the following sentences.

14. The **best** thing about my health plan is:

_____
_____
_____

15. The **worst** thing about my health plan is:

_____
_____
_____

Getting the Health Care That You Need

16. How **hard or easy** is it for you to **find a doctor or nurse near your home or work** who would see you? *(Fill in one oval.)*

    ① Very hard
    ② Somewhat Hard
    ③ Neither hard nor easy
    ④ Somewhat Easy
    ⑤ Very easy
    ⑥ I didn't try to find a doctor or nurse yet.
    ⑦ I wasn't able to find a doctor or nurse in my area.

17. Where do you **usually** go for health care? *(Fill in one oval.)*

    ① A private doctor's office
    ② A public or community health clinic
    ③ A private health clinic
    ④ Indian Health Service
    ⑤ Hospital emergency room
    ⑥ Some other place *(please tell us where)*_____

18. How do you **usually** get to your doctor's office or clinic? *(Fill in one oval.)*

    ① I drive there.
    ② A family member, a neighbor or a friend drives me there.
    ③ I take a bus.
    ④ I walk there.
    ⑤ I take a taxi.
    ⑥ Some other way *(please tell us how)*_____

19. About how long does it **usually** take to get to your doctor's or nurse's office or clinic? *(Fill in one oval.)*

    ① Less than 15 minutes
    ② More than 15 minutes, but less than 30 minutes
    ③ More than 30 minutes, but less than 1 hour
    ④ More than 1 hour

The next questions are about YOUR experiences in the LAST 6 MONTHS only.

20. **During the last 6 months**, did **you** (not a family member) make any visits to a doctor or nurse who is covered by your health plan? *(Fill in one oval.)*

    1 No ☞ **If no, please skip to Question 47.**
    2 Yes ☞ **If yes, please go to the next question, Question 21.**

Getting the Health Care That You Need

21. **In the last 6 months**, about **how many times** did **you** (not a family member) see a doctor or nurse in your health plan? *(Fill in one oval.)*

1. 1 visit
2. 2 - 4 visits
3. 5 - 9 visits
4. 10 or more visits

22. How long ago was **YOUR MOST RECENT** visit? *(Fill in one oval.)*

1. Less than 1 month
2. More than 1 month, but less than 3 months
3. More than 3 months, but less than 6 months
4. Don't know

23. What was the main reason for **YOUR MOST RECENT** visit? *(Fill in ovals for all that apply.)*

1. General check-up or exam
2. Preventive care (such as blood pressure checks, breast exams or yearly shots)
3. Care for an ongoing health problem
4. Care for a new health problem
5. Emergency care
6. Pregnancy care
7. Eye exam
8. Emotional or mental health problem
9. Other *(please tell us)*_____

24. Does it matter to you if you see the **same person for most of your health care**? *(Fill in one oval.)*

1. Yes, it matters a lot.
2. Yes, it matters a little.
3. No, it does not matter to me.

25. How **often** do you see the **same person for your health care** through your health plan? *(Fill in one oval.)*

1. Always
2. Most of the time
3. Sometimes
4. Rarely
5. Never

Getting the Health Care That You Need

26. How **happy or unhappy** are you with the **hours your doctor's office is open**? *(Fill in one oval.)*

    ① Very Unhappy
    ② Somewhat Unhappy
    ③ Neither happy nor Unhappy
    ④ Somewhat Happy
    ⑤ Very Happy

For the next eight questions, please think about the doctor's office or clinic you visited most often in the last 6 months. If you are unsure, please choose the answer that fits you best.

(Fill in one oval on each line.)

	Very Hard	Somewhat Hard	Not Hard or Easy	Somewhat Easy	Very Easy
27. How **hard or easy** is it for you to **get to your doctor's office**?	①	②	③	④	⑤
28. How **hard or easy** is it for you to be **sent to a specialist** when you need one?	①	②	③	④	⑤
29. How **hard or easy** is it for you to **get medical care** when you need it?	①	②	③	④	⑤
30. How **hard or easy** is it to **get an appointment with your primary care doctor** soon after you call?	①	②	③	④	⑤
31. How **hard or easy** is it to **get emergency medical care** when you need it?	①	②	③	④	⑤
32. How **hard or easy** is it to **get the medicines** that you need?	①	②	③	④	⑤
33. How **hard or easy** is it to **get medical advice** when you phone **DURING** office hours?	①	②	③	④	⑤
34. How **hard or easy** is it to **get medical advice** when you phone **BEFORE OR AFTER** office hours?	①	②	③	④	⑤

35. Please tell us about how long do you **usually** sit in the waiting room or exam room at your doctor's office or clinic. *(Fill in one oval.)*

    ① If I am on time for my appointment, my waiting time is usually not very long.

    ② If I am on time for my appointment, my waiting time is O.K.

    ③ If I am on time for my appointment, my waiting time is too long.

Your Doctor/Health Care Provider and The Care That You Get

For the next eight questions, please think about the doctor's office or clinic you have visited most often in the last 6 months. Please RATE your doctor's office or clinic on the following. If you are unsure, please choose the answer that fits you best.

(Fill in one oval on each line.)

	Poor	Fair	Good	Very Good	Excellent
36. The doctor or nurse **listens** to what I say without interrupting or rushing me.	①	②	③	④	⑤
37. The doctor or nurse **explains** things to me in a way that I know what he or she means.	①	②	③	④	⑤
38. The medical **exams and treatments are complete and careful.**	①	②	③	④	⑤
39. The doctor or nurse **follows through** on my care by telling me about test results or checking on how well I'm doing.	①	②	③	④	⑤
40. The doctor's or nurse's medical treatment **makes me feel better.**	①	②	③	④	⑤
41. The doctor or nurse **shows a personal interest in me.**	①	2	3	4	5
42. The doctor or nurse **tells me about ways to keep from getting sick and to stay healthy.**	①	2	3	4	5
43. The doctor or nurse **spends enough time with me** during a visit.	①	②	3	④	⑤

44. How sure are you that your doctor or nurse **can figure out what is wrong with you and what needs to be done?** *(Fill in one oval.)*

① Very sure
② Somewhat sure
③ Neither sure nor unsure
④ Somewhat unsure
⑤ Very unsure

Rating Your Health Care

45. How **happy** are you **with the doctors or nurses** you have been to **in the last 6 months**? *(Fill in one oval.)*

① Very happy
② Happy
③ Not sure
④ Unhappy
⑤ Very unhappy

46. **Overall**, how would you **rate the health care** you get **through your health plan**? *(Fill in one oval.)*

① Poor
② Fair
③ Good
④ Very Good
⑤ Excellent

Reasons for Not Using Your Health Insurance Plan

47. Did you **need or want any health care** that **you didn't get during the last 6 months**? *(Fill in one oval.)*

1 Yes ☞ **If yes**, please go to the **next question, Question 48**.
2 No ☞ **If no**, skip to **Question 49**.

48. Why were you **not able** to get the health care services **you wanted or needed** through your health plan? *(Fill in ovals for all that apply.)*

1 I had trouble finding a doctor or nurse in my local area that would see me.
2 The health care service I wanted wasn't covered by my health plan.
3 Physical problems made it difficult for me to get to the office or clinic.
4 The doctor or nurse that I saw before isn't part of my health plan.
5 It is easier to see a doctor or nurse who isn't part of my health plan.
6 I didn't like my choice of doctors or nurses.
7 I was not able to get a ride.
8 I don't understand English very well.
9 Other *(please tell us)* _____

The Oregon Health Plan

49. You are currently enrolled in your health insurance plan as a member of the **Oregon Health Plan. Before you were a member of the Oregon Health Plan**, did you have any form of health insurance?
(Mark yes or no, and then answer the question that goes with it.)

① Yes → 49a. **If yes, what kind of health insurance** did you have **before the Oregon Health Plan**? *(Fill in one oval.)*

① Private insurance through my employer
② Private insurance through a family member's employer
③ Medicaid (not managed care)
④ Medicaid Managed Care
⑤ Medicare
⑥ Champus
⑦ Other (please tell us)_____

② No → 49.b **If no**, when did you **last have health insurance coverage**? *(Fill in one oval.)*

① 0-6 months before the Oregon Health Plan
② More than 6 months, but less than 1 year before the Oregon Health Plan
③ 1 year or more, but less than 3 years before the Oregon Health Plan
④ 3 years or more, but less than 5 years before the Oregon Health Plan
⑤ More than 5 years before the Oregon Health Plan

For the following question, please think about your overall sense of well-being since you joined the Oregon Health Plan.

50. Do you think you are **better off or worse off** now than you were before the Oregon Health Plan? *(Fill in one oval.)*

① Better off now than before the Oregon Health Plan

② About the same now as before the Oregon Health Plan

③ Worse off now than before the Oregon Health Plan

About You

51. In general, would you say your health is: *(Fill in one oval.)*

① Excellent
② Very Good
③ Good
④ Fair
⑤ Poor

52. **Compared to a year ago,** how would you rate your health in general **now?** *(Fill in one oval.)*

① My health is **much better** now than one year ago.
② My health is **somewhat better** now than one year ago.
③ My health is **about the same** as one year ago.
④ My health is **somewhat worse** now than one year ago.
⑤ My health is **much worse** now than one year ago.

53. Has a **doctor ever told you** that you have any of the following illnesses? *(Fill in ovals for all that apply.)*

① High blood pressure
② Heart disease
③ Diabetes (high blood sugar)
④ Cancer (except skin cancer)
⑤ Arthritis
⑥ High cholesterol
⑦ Migraine (headaches)
⑧ Depression
⑨ I've never been told that I have any of these illnesses.
⑩ Don't know

54. What was the highest grade that you completed in school? *(Fill in one oval.)*

① Less than 8th grade
② Some high school
③ High school graduate/GED/high school completion
④ Some college
⑤ College graduate

About You

5. Are you: *(Fill in one oval.)*

① Married
② Separated
③ Divorced
④ Widowed
⑤ Single

6. Including yourself, how many adults (over the age of 18) live in your household? (Fill in "00" for none, "01" for one, "02" for two, and so on.)

No. of Adults

57. How many children (ages 0 to 18) live in your household? (Fill in "00" for none, "01" for one, "02" for two, and so on.)

No. of Children

. What is your race/ethnicity? *(Fill in one oval.)*

① White/Caucasian
② African American/Black
③ Asian/Pacific Islander
④ Hispanic origin (any race)
⑤ Native American/Indian
⑥ Other race *(please tell us)*_____

Have you moved in the last 6 months? 1 Yes 2 No
(Fill in one oval.)

Please fill in your current zip code:
(Fill in ovals for the correct zip code. We have already filled in the 9 and the 7 for you.)

Zip Code

☞ Please go to the back.