FACTORS ASSOCIATED WITH HETEROGENEITY IN THE RISK OF USING HEALTH SERVICES COVERED BY PMAP AND MINNESOTACARE:

PART I

Minnesota Department of Health

July 2002

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Executive Summary

Policy Background

Minnesota has developed and is phasing in a public program risk adjustment system for making capitated payments to participating organizations participating in the Prepaid Medical Assistance Program, the Prepaid General Assistance Medical Care Program, and MinnesotaCare (Minnesota Statute 62Q.03) Risk in this context refers to the risk of the enrolled members using health care services. As part of developing the system, MinnesotaCare law also directs that, "The risk adjustment system for public programs must attempt to reflect the special needs related to poverty, cultural, or language barriers and other needs of the public program population" (Minnesota Statute 62Q.03, Subdivision 5a).

Certain groups concern the legislature as to whether clinically based risk assessment is an adequate predictor for health services use given that they have greater socioeconomic vulnerability relative to others. This reflects the practical concern expressed by some participating health plans that several population groups appear to require more non-medical enabling services to access the care system as well as need more time with providers who must diagnose then prescribe a treatment through an interpreter, thus incurring more costs. Another issue is whether risk adjusted capitation payments give rise to managed care incentives that lead to under use or under provision of services within some member populations

Policy Questions

Since risk adjustment is a mechanism to better align public program prepayments with the actual service utilization experience of the population served, are there specific social, economic, and/or demographic circumstances in which the cost of care is systematically higher than that predicted by clinically-based health status measures alone for the overall population? If these population groups face additional risk not measured by the current risk evaluation system but health plans are paid only on the basis of average risk of their enrolled population, underpayments may occur, thereby creating a financial incentive to avoid serving the groups with greater socioeconomic risk.

Are there social, economic and/or demographic circumstances that are independent of, or interact with, managed care structures, processes or financial incentives that may result in an underuse of health services by some groups? Do governmental program requirements erect barriers to care access? What role does the structure of the health care delivery system play in relation to access and the use of care services? For example, keeping populations healthy requires the establishment of a long-term relationship (at least 2 years) between the covered patient and the managed care provider network. The requisite periodic eligibility determinations for continued enrollment in Medical Assistance work against this goal. Other factors, such as language, cultural and personal beliefs, can also inhibit people needing medical attention from seeking it. Delivery system structural barriers can impede access through the number, type, concentration, location, and organization of health care providers in a locale or in rural Minnesota. Financial barriers can arise that discourage physicians and hospital from treating people with limited means or discourage managed care organizations from providing preventive services and screenings.

Research Goals

The general goal of this risk adjustment study is to begin the investigation of these concerns by: identifying the descriptive population composition variables likely to be associated with differences in the risk of using health services; testing whether the risk of using health services within PMAP and MinnesotaCare is heterogeneous and, if so, whether the heterogeneity is related to population compositional factors or characteristics of the care system; ascertaining whether any of the compositional variables identified provide meaningful explanations for the risk heterogeneities, if any; and if heterogeneities are found and meaningful explanations are validly advanced for their influence, exploring how financial incentives might be employed to reduce the dissimilarities.

This paper constitutes Part I of the study. It provides not only the policy and conceptual background for the work but reviews research literature with the objective of identifying factors likely to be associated with heterogeneities in the risk of using health care services. A second document, Part II, describes the quantitative research to be conducted, the hypotheses to be tested, data sets and analytical methods to be employed. Part III, a third document, concludes the project by reporting the results and providing summary conclusions.

General Research Questions

What are the demographic, socioeconomic, and geographic distributions of PMAP and MinnesotaCare members in each of the participating health plans? Does the risk of using health care services vary within and between MCO? Does the difference in risk, if any, vary according to population compositional characteristics? Is there a relationship between risk heterogeneities, if any, and characteristics of the health care delivery system or the financial incentives that organize it? Does heterogeneity in risk necessarily point to an under use or over use of services by some populations?

Part I Methods

Identification of population composition variables likely to be associated with heterogeneities in health service use risk is facilitated through a consideration of several conceptual frameworks and literature reviews focused upon access to care and the use of health services plus published documentation comparing the characteristics of those enrolled in Medicaid managed care populations with those enrolled in commercial managed. The literature reviews help identify salient variables within populations of color, immigrants, and persons with limited literacy.

Literature Review Findings

Populations of Color – Recent literature reviews document racial/ethnic differences in access to primary care services, prenatal care, screening and preventive care, mental health and various technologically sophisticated diagnostic and therapeutic procedures. Members of racial and ethnic minority groups, in general, appear to use less clinic-based medical care and make more use of hospital emergency departments. Several of the studies with large samples, primarily responses to survey questionnaires, control for possible explanatory or confounding variables such as socioeconomic status, insurance coverage, stage of disease, and self-reported health status, but most smaller studies do not. At best, the findings are mixed and inconsistent primarily due to methodological differences and incomplete conceptualization.

Perhaps the greatest limitation of the literature for the question at hand is that the large majority of this work is not drawn from samples of managed care populations, much less managed Medical Assistance. When public program beneficiaries are studied, samples predominately include fee-for-service Medicare beneficiaries, and to a lesser extent fee-for-service Medicaid, but by in large, most studies were conducted before managed care rose to prominence and before managed care was incorporated into Medical Assistance.

Immigrants – The literature reviews find that having a usual source of care varies by citizenship status. Even when insured, noncitizens and their children have less access to regular ambulatory and emergency care than insured citizens. Foreign-born children living in poor, yet working families had less access and health care use in terms delayed or missed care, number of physician visits and hospital stays in the past year than their US born counterparts. Aside from financial factors, the most important facilitator of immigrant's use of health services is language access through interpreters, bilingual or multilingual provider staff, and translated written materials. In a study prepared for the Urban Institute, researchers documented than many immigrants are poorly educated and illiterate, even in their native language, so they cannot comprehend written materials.

Literacy - Health literacy is directly related to the appropriate use of health services, especially emergency care, and because of the additional time requirements to care for people with limited functional literacy skills, those with low literacy tend to cost more to care for than do others.

Enabling Services – Enabling services and other forms of culturally specific assistance are non-medical services assumed to facilitate access to timely and appropriate medical care, especially for populations enrolled in Medical Assistance. These services include: language/sign interpreters, transportation, targeted case management, associations with safety net providers, health education and outreach, preventive care, and training for providers and staff. Currently DHS pays for interpreters, and transportation, requires inclusion of safety net providers in managed care networks, and provides financial incentives for specific preventive services. Several managed care organizations and community-based organizations provide innovative supplemental services to facilitate access to care for numerous ethnic and cultural groups in Minnesota.

Factors Likely to be Associated with Heterogeneous Risk

When collectively considering the many published resources available, there was a substantial concordance of variables employed in the studies. Measures of patient population characteristics frequently utilized, were:

- Socioeconomic status
    - Income level/federal poverty status
    - Education (children's measure – mom's educational attainment)
    - Employment status
- Literacy in own language
- English proficiency
- Race/Ethnicity
- Place of residence, urban, suburban or rural locations
- Marital status (children's measure - having a single parent)
- Age
- Cultural beliefs and attitudes
- Citizenship status
- Immigrant status, how long in the country
- Health status or disability status
- Health knowledge level
- Transportation availability
- Self reported health status (as a control variable in limited number of studies).

Of these characteristics, the following were most consistently investigated as being related to heterogeneities in health services use:

- Race/ethnicity,
- Socioeconomic status (including income and education)
- Insurance coverage
- Literacy level
- English proficiency
- Place of residence
- Having a regular source of care

General Conclusions

Within the studies reviewed, there were few, if any, attributions made to structural deficiencies or financial incentives within the health care delivery system as the cause of dissimilarities in access and service use. There is a limited literature on the likely role that health care system features play in access and use differences. When heterogeneities in access and use were found, reference was frequently made to a need for specific enabling services, such as improved transportation, interpreter services (language and sign), or the value of culturally sensitive providers to improve access. In a survey of managed care organizations, researchers found that many of the needed enabling services were already being provided in one form or another.

Based upon the literature reviews, there is ample reason to suspect that there are likely racial and/or ethnic heterogeneities in access to primary care services, prenatal care, screening and preventive care, mental health, various technologically sophisticated diagnostic and therapeutic procedures given the sheer volume of studies. But, since the findings were mixed and inconsistent, as well potentially dependent upon the data collection method or reflective of response effects, the causal explanations for the findings needed to guide payment policy formation remain elusive.

Currently, the available research literature is insufficient to explain why heterogeneities occur and whether attributions of cause belong to the health care system, the populations studied, both, or something else. Whether underuse of services will translate into lower or higher risk scores in the work to follow is also unclear. It may be necessary to use other forms of research and compare results from other studies to evaluate whether service underuse is occurring in PMAP and MinnesotaCare.

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At the moment, we believe there is a considerable degree of confusion about the importance of different determinants of health, and the relationship among them. Much of the confusion arises from the peddling of simple conceptualizations of complex phenomena. The problem is that when offered as explanations of why some people are healthy and others not, they are simplistic and incomplete.

Robert G. Evans, Morris L Barer, and Theodore R. Marmor (eds.)
Why Are Some People Healthy and Others Not? [1]

Policy Background and Conceptual Context

Paying risk adjusted capitation rates to health maintenance organizations for providing health care coverage to Minnesotans enrolled in the Prepaid Medical Assistance Program (PMAP), MinnesotaCare, and Prepaid General Assistance Medical Care (PGAMC) has begun. While the Minnesota Disability Health Options (MDHO) demonstration project began enrolling members in September 2001, it will not begin paying risk adjusted capitation payments until a database of encounter records of sufficient size accumulates. This is estimated to be approximately 22 months after the start of the demonstration.

The Minnesota Legislature authorized development of a risk adjustment system to "reduce the effects of risk selection in health insurance premiums by making monetary transfers from health plan companies that insure lower risk populations to health plan companies that insure high risk populations." (Minnesota Statute 62Q.03) Risk in this context refers to the risk of the members enrolled in a publicly financed health coverage using health care services. Methods to accomplish this goal have been developed and incorporated into the capitated payment the Minnesota Department of Human Services (DHS) makes to contracting health plans participating in PMAP, PGAMC, MinnesotaCare, and, eventually, MDHO. Some fee-for-service payments remain in place for Medical Assistance (MA) and General Assistance Medical Care (GAMC) for public beneficiaries not enrolled in PMAP or PGAMC, for services provided during eligibility determination, and for certain services not covered under the associated contracts.

Adjustments to health-plan specific capitation payments are derived from assessments of the enrolled population's risk of health services use during the year nine months prior to the current payment period. Better estimates of the covered populations' risk for health care costs have considerable import for the State's biennial Human Services budgeting process by providing legislators with information about the volume of taxpayer dollars likely to be spent for health care needs. Risk adjustment, then, is a method for adjusting public program capitation payments so that they are more predictive of actual health care expenditures.[2] The Minnesota public program risk adjustment system was implemented for PMAP, PGAMC and MinnesotaCare on January 1, 2000.

PMAP, MinnesotaCare and PGAMC are now in a second year of a planned phase-in of the new payment system. In the first year, 5% of the HMOs' capitation payments were risk adjusted with the remainder subject to the established actuarial demographic rate cell method. The risk-adjusted proportion of payment increases to 30% in year two and 50% in the third year. Negotiations between DHS and the HMOs for coverage provided in calendar year 2003 will determine the rate at which the phase-in will continue.

Currently the Minnesota Department of Health (MDH), in collaboration with the DHS, uses two diagnosis classification systems for estimating the risk of future health services use, one for the non-disabled, non-institutionalized PMAP, MinnesotaCare, and PGAMC populations, and a second for the MDHO population. No one system adequately describes the medical conditions and needs of these two very different program populations. The technology employed in the first instance is the Johns Hopkins Adjusted Clinical Groups Case-Mix System,[3,4] and in the second, the Disability Payment System.[5] Both systems rely upon demographic and clinical diagnosis data obtained from claims-like encounter records gathered by DHS from participating managed care organizations (MCO). Predictive models include sets of relative weights that are then used to adjust a phased-in proportion of the monthly capitation payments DHS makes to health plans on behalf of each eligible beneficiary.

As part of developing the system, MinnesotaCare law also directs that, "The risk adjustment system for public programs must attempt to reflect the special needs related to poverty, cultural, or language barriers and other needs of the public program population" (Minnesota Statute 62Q.03, Subdivision 5a). Given that Medical Assistance was established by Congress to assist low income children, pregnant women, the elderly, people with disabilities, and parents meeting specific income thresholds, the legislature is concerned whether age, gender, and diagnostic information about beneficiary diagnoses alone adequately describe the full spectrum of economic, demographic, social and cultural risk to health status that some of these populations confront. This legislative question has many implications, but two considerations emerge as salient. The first questions whether diagnosis-based risk assessment is an adequate predictor for all populations independent of sociodemographic factors, and the second inquires as to whether risk adjustment gives rise to financial disincentives that lead to under use of services by certain groups. Both concerns are interrelated.

More specifically, the concern in question one is that since risk adjustment is a mechanism to better align public program prepayments with the actual experience of the population served, are there specific social, economic, and/or demographic circumstances in which the cost of care is systematically higher than that predicted by prior diagnoses for the overall population? If some subgroups face additional risk not measured by the diagnosis-based system once 100% risk adjustment is implemented, but health plans are paid only on the basis of average risk of their enrolled population, underpayments may occur, thereby creating a financial incentive to avoid the groups with additional risk.

Question two concerns whether social, economic and/or demographic circumstances interact with the managed care financial incentives created by risk adjustment in a way that results in an underuse of health services by some groups. Recall that the intent of risk adjustment is to “re-slice” the DHS payment “pie” so that larger slices go to MCOs that enroll sicker members and smaller slices go to those with healthier members. The first question inquires as to whether the larger pie slices are adequate for some special subpopulations. Question two deals with whether the smaller slices are so small that they serve as a financial disincentive to scrimp on preventive services with MCOs not educating all members of the importance of preventive care.

It is the contention of participating MCOs specialized in serving public populations, that some subgroups are more expensive to serve than others due to their greater reliance upon enabling services (interpreters, translated materials, transportation, etc.) and a need for longer provider/patient encounter times to diagnosis, prescribe, then, communicate treatment plans. These additional costs are not related to the medical conditions represented by their diagnosis histories but flow from social, economic and demographic circumstances that hinder their ability to access the care system. Costs that are not directly reimbursable through increased capitation or add-on payments may appear as increases in managed care administrative expense.

There may be still other groups who have difficulty navigating the system but may not be aware of available enabling resources that could ease access. For others, enabling resources may not be available because of where they live (ex. rural Minnesota) and, thus, under utilize the care system. Furthermore, the care delivery system may not be structured in a way that provides culturally competent care to some groups, which may make alternative modalities of care more attractive to some groups.

Some assumptions implicit in these policy-oriented considerations are that:

- Good health is essential for all Minnesotans to participate in the American way life;
- To achieve good health, some individuals, due to their social and economic circumstances need more assistance than others in accessing care;
- To better target investments in health, it is necessary to identify the social and economically vulnerable and engage them in ways that will enhance their long-term health prospects.

Risk adjustment, then, because it relies solely upon prior diagnoses, age, gender and institutional status, does not account for a majority of the variance in health use and cost. Of the amount of variance left unexplained, it is hypothesized by the legislature that some of the remaining unexplained variance is attributable to other characteristics of vulnerable populations that may challenge them in accessing and obtaining needed care. This orientation speaks to the need to consider ways of blending the disease burden orientation of medical risk assessment methods with other risk increasing factors that may be associated with social, economic and/or cultural vulnerability. The purpose of this study is to identify these other risk increasing factors and test whether they independently or in conjunction with current risk assessment methods explain more variance in the risk of using health care services. To more fully understand the contexts of these concerns, a brief review of the purpose for risk adjustment is warranted.

Risk Adjustment Revisited

Risk adjustment, as implemented in Minnesota, is a mechanism for incenting health plans and other participating entities to enroll populations with more high-cost members by paying correspondingly higher total payments. Conversely, those plans enrolling members lower-than-average risk will receive correspondingly lower payments. Without risk adjustment, health plans have little incentive to enroll and care for high-risk individuals but a strong incentive to enroll individuals with low health care needs, since payments are likely to exceed expenditures. Risk adjustment is a means of "leveling the playing field" so that health plans are better able to compete on the basis of quality and efficiency, rather than on the basis of their ability to selectively enroll low risk patients.[6]

The risk adjustment statutory language reflects the legislature's intention to:

- Remove coverage and access disincentives for high risk and special needs populations;
- Achieve a more equitable and efficient system of health care financing;
- Have health plans compete on the basis of cost-effective practices, not risk avoidance;
- Avoid health plans profiting due to biased selection.

Within the risk prediction system developed by MDH and implemented by DHS for PMAP and MinnesotaCare, a population's risk of using health services is concurrently predicted by the following member characteristics:

- Age
- Gender
- Institutional status
- Dual-eligibility for Medicaid and Medicare
- All ICD9-CM diagnosis codes accumulated for each covered member for a period of one year, ending nine months prior to the current payment quarter.

Because risk adjustment is derived from a system of averages, there will always be groups of individuals with needs and health care expenses, reflective of their personal circumstances, that are greater than those experienced by the mass of individuals clustering at the mean. For example, if risk adjusted capitation payments consistently fall short of covering the costs of certain enrolled subgroups, are there consistent, specific sociodemographic characteristics such as lack of fluency in English or ethnic group membership, that describe the distribution of enrollments falling above the mean? If so, then a disincentive may be created for managed care organizations to avoid enrolling more like them. In such cases, age, gender and diagnoses may be necessary but not sufficient to fully predict each member's risk of using care.

What this illustrative example does not address are the reasons why the subgroups' care may cost more. Iezzoni suggests that variations in the following patient characteristics can result in a differential risk of health outcomes and that these factors can be synthesized into an overall assessment of patients' need for services:

- Age
- Gender
- Acute clinical stability
- Severity of principal diagnosis
- Extent and severity of comorbidities
- Physical functional status
- Psychological, cognitive, and psychosocial functioning
- Cultural, ethnic, and socioeconomic attributes and behaviors
- Health status and quality of life
- Patient attitudes and preferences for outcomes.[7]

Two of these dimensions of risk are the focus of this study, the dimension of psychological, cognitive, and psychosocial functioning and the dimension of cultural, ethnic and socioeconomic attributes and behaviors.

The dimension of psychological, cognitive, and psychosocial functioning encompasses a range of individual characteristics having to do with such things as the ability of people to appreciate and interact with their surroundings as well as other individuals, the capacity to understand information about one's health and health care needs, and having others who can provide care or serve as social supports. For example, outside the controlled institutional environment of a hospital, psychological and cognitive factors can compromise activity levels, self-care, motivation and perceptions in ways that have consequences for response to treatment. Many of these same factors impact individual decisions to seek care in the first place and the way they go about it.

Cultural, racial, ethnic and socioeconomic attributes or patient populations are typically placed outside of the purview of traditional clinical measures. Nonetheless, such factors may be critically related to a patient's need for services and health outcome. For example, low socioeconomic status has been linked to excess mortality rates, possibly due to delayed access to medical care or other deprivations that impair physiological health.[8] Culture, religion, and ethnicity may influence not only the risk of maloutcomes, but the use of health services as well. These factors can influence compliance with therapy (some religious groups reject blood transfusions, for example), diet and other attributes of everyday life, and attitude toward health and medical care. In sum, studies that simply compare a clinical event such as a doctor visit or hospital admission between populations of individuals without addressing these dimensions do not validly represent an "apples to apples" comparison of event rates. These dimensions reflect a diffuse set of psychosocial, sociodemographic and economic characteristics likely to impact the ways specific groups decisions about the need for health care, their perceptions and beliefs about the delivery system, and the way in which they approach the system for care.

Risk assessment for the likely use of health services, as currently implemented in PMAP, PGAMC and MinnesotaCare, relies upon clinical documentation (diagnosis codes) to measure a member's illness burden in relation to the cost of care associated with that level of illness over a period of time. Sicker people are expected to use more medical resources and healthier members less. But, the risk assessment technology in place does not account for members' use of certain enabling services that facilitate access to care, nor does it account for additional time expended in medical encounters due to a patient's fluency in English or a provider's fluency in a second language, or a patient's ability to comply with a complex treatment regimen, for example.

Enabling services and other forms of culturally specific assistance are non-medical services assumed to facilitate access to timely and appropriate medical care, especially for populations enrolled in Medical Assistance. Examples of enabling services include interpreters (sign or language), non-emergency transportation, childcare, targeted case management, community outreach, health promotion and educational programs. Enabling services were conceived as a means for promoting access to care and counterbalancing the rules and financial incentives that Medical Assistance managed care poses for benefit recipients.[9] The costs of these non-medical services are not explicitly detailed within the current risk adjustment system, but are nonetheless directly or indirectly part of the total cost of care. Enabling services are not available in every geographic location within the state, nor are they all available to the population enrolled in MinnesotaCare.

A member's need for enabling services is presumed to reflect the economic, social, cultural, or behavioral circumstances, and/or language skills a patient brings to an encounter with the health care delivery system. Use of services that exceed health plan capitation payments as well as under use of services may be indicative of a misfit of the care delivery system to the needs of specific groups. Under use of preventive services among minority populations, notably contractually specified Child and Teen Checkups (C&TC), is another representative example of the concern under consideration. Scheduled C&TC visits are, by definition, "long" clinical encounters due to their comprehensiveness. MCO compliance with the C&TC visit schedules has already been identified as a challenge in Minnesota and an issue that both DHS and MDH, through its Maternal and Child Health section, have assertively begun to address. In Minnesota, underuse of recommended preventive health services is more readily identified through data collected outside the risk adjustment system.

Because diagnosis data representing historical provider treatment patterns are used to predict each population's risk of using health care services, chronic underuse or overuse may continue to echo into the future. In anticipation that delayed care or unknown clinical conditions may result in a sudden spike of expenses, DHS reassess every eligible member's risk for the year ending nine months prior to the beginning of each quarter. Current risk adjustment measures compensates the plans for their experience, but they do not specifically incent the MCOs to bring members in for timely primary and preventive care through outreach and education or to identify other barriers that may stand in the way of a subgroup making timely use of services.

Goals of the Study

The preponderance of the research about dissimilar access to care and use of health services, reviewed later in this document, describes the breadth and depth of a complex and controversial problem. Studies reviewed employ several types of data, but, most commonly, the research relies upon self-reports from respondents of population surveys at the national, regional as well as state level and administrative records from hospitals, clinics and health insurance claims. Beyond four limited studies conducted in the state to date, information about dissimilarities in the use of care does not exist in Minnesota to the breadth and depth that it does nationally or in some larger states.

Because of the distributive justice agendas implicit in a substantial proportion of this literature, there is a heated ideological and scientific debate about the validity and utility of the concepts measured. Resolution of these issues will take time and much discussion, but the practical implication of postponing action is a potential deterioration of population health status and the evolution of a delivery system capable of meeting the needs of only those with the economic means to pay for care. Therefore, in order to inform evolving health policy decision-making, especially now that the cost of health coverage has inflated at double-digit rates, the overall goals of this risk adjustment study are to:

- Ascertain which of the many variables examined are most the relevant, valid, and useful for the objective research at hand;
- Test whether the risk of using health services within PMAP and MinnesotaCare is heterogeneous;
- Test whether any of the variables identified through the literature reviews provide meaningful explanations for the heterogeneities, if any are found;
- If heterogeneities are found and meaningful explanations are validly advanced for their influence, explore how financial incentives might be employed to reduce the dissimilarities.

General Research Questions

1. Given the introduction and discussion above, what are the demographic, socioeconomic, and geographic distributions of PMAP and MinnesotaCare members in each of the participating health plans?

    a. Do these distributions differ from the enrolled program population as a whole?
    b. Relatively speaking, are demographic, socioeconomic and geographic groups concentrated in specific plans or are they equally distributed across all health plans?
    c. Do some plans serve a more rural membership than others?

2. Given the various distributions of enrollees in participating managed care organizations, does the risk of using health care services vary within and between MCO?

    a. If variation in risk is found, how does this relate to the overall risk score used to risk adjustment capitation payments to each MCO?
    b. If variation is found, is the risk of using health services associated with these distributional variables net of the variance explained by the prior diagnoses of eligible members?
    c. Are prior diagnoses as represented by Ambulatory Care Groups associated with the distributional characteristics?

3. Is there a relationship between risk heterogeneities, if found, and characteristics of the health care delivery system or the financial incentives that organize it?

These are the general questions this study will address to the degree that valid and reliable data are available for linkage to the risk scores of individual members covered by managed care organizations.

Study Outline

The project is divided into three principal parts. Part I summarizes the policy background underlying risk adjustment within public coverage programs and interprets the legislative intent of Minnesota Statute 62Q.03 Subd. 5a. It further describes: a shift in the demographic composition of the state; defines heterogeneity of risk; provides a conceptual overview of an access to care framework for identifying both structural and financial barriers to care; provides a historical health system reform context for the problem; presents the concept of enabling resources as a means to offset negative managed care incentive; discusses the role of primary care in health maintenance and access to care; touches upon other health system structural features such as the geographic availability of care, provider characteristics and the fit of the system to the needs of the populations served; contrasts the characteristics of populations enrolled in managed Medical Assistances programs nationwide with those enrolled in commercial managed care; reviews the research literature describing heterogeneities in access to care and use of services for three general populations (populations of color, immigrants and the illiterate); provides concrete examples of the enabling services in action; discusses the quality of the scientific evidence of the literatures reviewed; offers a general summary of the findings; and concludes with a list of variables likely to be associated with heterogeneities in the risk of health services use.

Part II describes the quantitative research to be undertaken. First, a set of hypotheses are presented for testing followed by a description of administrative data gathered by DHS as part of the eligibility determination process is presented followed by a discussion of the fit of data with the concepts under evaluation. Finally, the data processing and analytical procedures used to conduct the analyses are described.

Part III concludes the project by reporting the results of the research, describes areas where further research and/or data collection are needed, and provides summary conclusions.

Population Diversity in Minnesota

Inquiry into the potential existence of heterogeneities in the risk of using health care within Minnesota's public programs is made more urgent by demographic changes reported in Minnesota's US Census 2000 results. It is clear that rapidly increasing diversity in the composition of Minnesota's population is taking place and, with it, a likely change in the overall health status of Minnesotans. Minority population as a percent of the state's total population grew from 6.3% in 1990 to 11.8% in 2000. The African American population increased 80.9% over the decade, the Asian population 84.8%, the Hispanic population 166.1%, and the Native American population grew 10.1% compared to a white population increase of 6.5%.[10]

Furthermore, for the first time, the 2000 Census permitted residents to classify themselves as being of more than one race, or ethnicity. In all, 514,027 Minnesota residents reported themselves as being of one race, or ethnicity, other than white, but the preceding racial percentages excluded 82,742 individuals who identified themselves as being of more than one race. If persons indicating they were of more than one race were included in the percentage increases above, the rate of increase for almost all ethnic categories would be even larger.

The aggregate Census categories used to report the proportions above obscure the true diversity of ethnic peoples living in Minnesota. Among the largest contingents immigrating into the state are Chicanos from Mexico (two thirds of all Latinos in the state), Hmong from Laos (30% of all reporting solely Asian origins), other Southeast Asians (Vietnam, Cambodia, Thailand), Tibetans, Somalis and other East Africans, West Africans, Russians, and Yugoslavs.[11,12] Forty-five percent of the nation's Hmong residents now reside in Minnesota and Wisconsin. The city of St. Paul has the largest Hmong population in the country with 24, 389 residents.[13]

As another measure of increasing diversity in Minnesota, the Department of Children, Families and Learning reports that during the 1999-2000 school year, four language groups spoken at home, other than English, were predominant among the 56,000 students counted. Asian languages comprised the largest language group with the majority of students living in the Twin Cities metropolitan counties. Students speaking Spanish at home were the next largest language group, followed by African speakers (predominately Somali), then Eastern Europeans (Russians and Yugoslavs).[14]

These demographic changes signal a potential need to more closely monitor access to care within the state's public coverage programs in order to maintain or improve the health of all residents. During 1998, the most recent year for which data are publicly available, 36% of the population eligible for Medical Assistance was nonwhite or Hispanic. Of the total population eligible for Medical Assistance, 59.2% was enrolled in the prepaid program. Within the prepaid population, 42.8% identified themselves as nonwhite or Hispanic.[15] This means that as the demographic composition of the state encompasses growing populations of color and immigrants, there is commensurate need for culturally competent, and effective health services that reflect the different values, beliefs, languages, health needs, social and economic circumstances of the state's newest residents.

Many foreign-born Minnesota residents are members of refugee populations. A sizable proportion of refugees experienced personal trauma before and during their exodus from war torn countries of origin. Some bring with them chronic health and mental health concerns indigenous to those locales in addition to the stress of relocating to a new country with a very different culture, language barriers, economic requirements for food clothing or housing, educational systems, and modes of transportation as well as the stresses of integrating into newly established immigrant communities.

As minority populations become a larger proportion of the Minnesota population, this change has several implications for the state's overall level of health for several reasons. Mortality rates for African Americans are persistently higher than rates for whites, yet rates for Hispanics and Asian/Pacific Islanders are lower than those of whites. There are also several differences of note in the prevalence of chronic conditions. Blacks have higher rates of cerebrovascular disease, diabetes, obesity and hypertension than whites. Hispanics have lower rates of some diseases (such as arthritis and hypertension) and higher rates of other diseases (such as diabetes) than whites. Disability prevalence estimates reflect similar racial/ethnic differences, but there are several exceptions. Hispanic men appear to have lower, but Hispanic women higher, levels of disability than their white counterparts. These mortality, disease, and disability prevalences persist after statistical adjustments for socioeconomic status.[16]

An early signal that this change had arrived in Minnesota appeared in a joint study by MDH's Office of Minority Affairs and the Urban Coalition, which found that while the state's overall population was one of the healthiest in the nation, the largess was not shared by all, because people of color suffered a much greater burden of illness and death. [17] In the literature review to follow, only four studies specific to Minnesota have documented racial or ethnic access to care heterogeneities in the state. Dissimilarities in the use of health services among beneficiary groups covered by Medical Assistance, the Prepaid Medical Assistance Program and Minnesota Care have not been documented beyond a very limited set of findings reported in the four studies, nor is there a sense of each of the programs' population risk of using health care beyond that already developed as part of the risk adjustment project.

Heterogeneity in Risk

Socioeconomic, demographic and cultural categories represent some of the population characteristics researchers have utilized to identify vulnerable subpopulations at risk for ill health and use of care services. Within the US, the United Kingdom and European countries, respectively, there are extensive literatures documenting health and health care utilization inequalities or disparities. These literatures will be reviewed to aid in identifying research variables to be considered for inclusion in this project with one importance difference. Rather than refer to inequalities, inequities, or disparities, this study, following Hertzman et al., will use the term heterogeneities in reference to variations, or dissimilarities in the risk of using health services. Assessing the homogeneity of effects, and conversely heterogeneity, is common in the practice of epidemiology.[18] The notion of heterogeneity implies that variations in the risk of service utilization may not be normative. It is also a less value-laden term and connotes the purely descriptive, scientific context of the research to follow.[19]

It is not a goal of this study to convey or imply any judgment of fairness in this work. Meaningful action can only occur when there is an understanding of causality behind a research result. Assessing to what extent certain heterogeneities are, in fact, inequities requires knowledge of the cause, then a judgment as to the fairness of these causes with reference to one of the many varied perspectives of social justice. Therefore, inequities, because of the subjective judgments required, cannot be measured directly whereas heterogeneities can be described.

A determination of causality behind a relationship of two or more variables is difficult because the standards for evidence are high. They are high because, in epidemiology, as well as other scientific disciplines, actions and interventions often flow from research knowledge. In 1965, Hill[20] identified nine issues relevant to establishment of causality in epidemiologic research. These nine considerations, similar to a criminal justice decision, are intended to set the standard for proof of causal existence beyond a reasonable doubt. They are:

- *Strength of the association* – A strong association (correlation) is less likely to be the result of errors.
- *Consistency upon repetition* – Refers to whether the association between the event of agent and putative health effects have been observed in different persons, in different places, circumstances and times.
- *Specificity* – Is the association limited to specific persons, at specific sites, at specific times, under specific conditions?
- *Time sequence* – Which variable in the association is the cart and which is the horse, the chicken or the egg?
- *Biologic gradient* – Is there an increase in risk with an increase in the amount of exposure or influence from the other variables under consideration?
- *Plausibility* – Is the explanation for the association plausible given the current state of knowledge? Can one expect a given result with a given set of conditions?
- *Coherence of explanation* – Does the association conflict with what is already known about the history and evolution of the problem?

- *Experiment* – Is the research hypothesis testable? Does the research rely upon a randomized experimental design? Does it approximate it, as in a quasi-experimental design? (Experimental or quasi-experimental research designs being the most scientifically powerful in comparison to observational studies.)
- *Analogy* – Is the association analogous to other known associations of a similar nature?

Examining the etiology of heterogeneities constitutes a classic "Which came first, the chicken or the egg?" problem. For example, in the following study, are the heterogeneities reported a direct result of patient decision-making or due to a lack in the deliver system? In a Center for Disease Control (CDC) analysis of the Medicare Current Beneficiary Survey, 65% of adults aged 65 years or greater reported receiving an influenza vaccination during the previous 12 months and 45% reported ever receiving a pneumococcal vaccination. These vaccinations are free to Medicare beneficiaries, therefore cost is not an issue.

Not knowing the vaccination was needed was the most commonly reported reason for not receiving an influenza (19%) or pneumococcal (57%) vaccination. Ten to 15% reported not thinking of, or missing, the vaccination. Around 40% cited concerns that the flu vaccine would cause the flu or other side effects as a reason for not obtaining immunization. When the results were disaggregated by ethnic group. Hispanics and persons of other racial/ethnic groups were more likely than non-Hispanic whites to cite not being aware of the need for pneumococcal vaccination (61% versus 55% and 66% versus 55%, respectively). Hispanics were less likely than non-Hispanic whites to cite lack of a doctor's recommendation as a reason for not receiving the pneumonia vaccine (8% versus 13%). Non-Hispanic blacks were less likely than non-Hispanic whites to report thinking influenza vaccine could cause side effects as a reason for nonvaccination (11% versus 16%).[21]

Study results like these represent but one example of a voluminous body of international, national, and regional research examining population composition variables associated with differential access to care and the use of health services. Relatively unexamined in this regard are other sets of factors related to the structural characteristics and financing incentives of the health care delivery system.

Structural Incentives and Access to Care

Patrick and Erickson observe that many determinants of health and health-related quality of life exist outside the health care system. These determinants are related to the cultural, political and economic systems of a society as well as to the physical, social and personal environments of individuals and populations. They influence health without working through the care delivery system. But these same systemic forces also impact the structures and processes of the health care system as well in that culture and the social environment help to define what is considered a health care need within a specific society and how these needs are to be met. Generally health care systems have the following elements:

- *Resources:* facilities, personnel, equipment and technology;
- *Structure:* finances and organization
- *Services:* preventive, curative, and palliative;
- *Education and promotion:* mass media, community interventions, personal services;
- *Geographic distribution:* national, regional, urban, or rural availability;
- *Current standards of practice:* condition-specific practice guidelines, professional standards reviews, audits, and utilization reviews.[22]

Medical care, health care and preventive services are regarded by numerous cultures as a strategy for improving health and health-related quality of life. The structure of the health care delivery system influences and is influenced by the characteristics of the population it services. Health care is a "need" in US society, usually related to an individual's health status, with that level of need being greater or smaller depending upon social circumstances. Thus, the relationship between need and health related quality of life is not consistent across social groups. Differences in health beliefs, illness behavior, social networks, willingness and ability to pay for services and other psychosocial, economic and cultural processes influence how needs are perceived and translated into the demand for health services. Figure 1, adapted by Patrick and Erickson[23] represents the relationship of forces outside the health care system, the structure, processes and outcomes of the health case system and its use and describes the interface between the system and the diversity of populations it serves. This model underlies much of the conceptual work to follow and serves as a guide as to services and variables to include in the literature reviews.

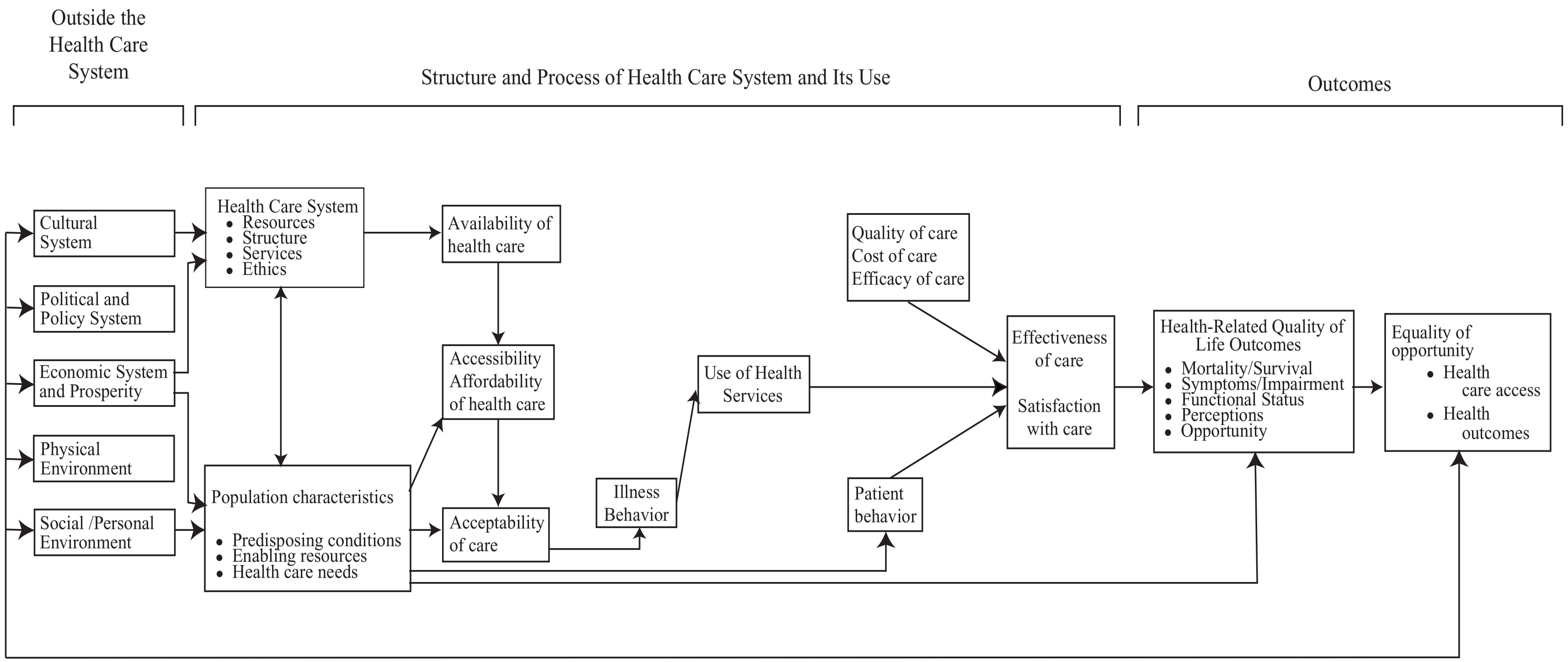
Patrick and Erickson acknowledge the difficulty of defining access to health care, but elected to include elements of the behavioral framework for access to care proposed by Aday and Anderson[24] in their model along with other refinements. Access refers to the "actual use of personal health services and everything that facilitates or impedes the use of them."[25] Operating from a similar conception, the Institute of Medicine (IOM) Committee on Monitoring Access to Personal Health Care Services suggested three general categories of impediments or barriers to access that alone, or in concert, can inhibit the use of medical services, possibly resulting in poor health outcomes. They are:

- *Structural Barriers* – Impediments to care directly related to the number, type, concentration, location, or organizational configuration of health care providers in a locale.
    - Availability and proximity of care (urban and rural settings)
    - How organized
    - Transportation, interpretation services

- *Financial Barriers* – Restrict access by inhibiting the ability of patients to pay for needed medical care or by discouraging physicians and hospitals from treating people with limited means.
    - Medical benefits covered
    - Out of pocket costs
    - Provider reimbursement arrangements
    - Public support

Figure 1

Determinants if health-related quality of life in the Health Resources Allocation Strategy



Source: Patrick and Erickson. (1993). Health Statistics and Health Policy" Allocating Resources to Health Care. New York: Oxford University Press, P. 45. Reprint permission pending.

- *Personal and Cultural Barriers* – Inhibit people who need medical attention from seeking it or, once they obtain care, from following treatment or post-treatment instructions.
    - Acceptability of care
    - Cultural orientation
    - Languages spoken or not spoken
    - Attitudes about the care system
    - Education and/or income levels.[26]

These conceptual categories closely correspond with the real-world impediments encountered by members of focus groups conducted by the Wilder Research Center under contract to the Maternal and Child Health Section of MDH. Participants in the rural white and African American groups mentioned having experienced long waits in hospital emergency departments (IOM personal and cultural barrier - acceptability). Rural whites, immigrants, and Native Americans spoke of needing expanded clinic hours so they would not miss work to attend medical appointments (IOM structural barrier - Availability). Others expressed a need for expanded transportation services and options (IOM structural barrier – transportation and interpretation services). The unavailability of language interpreters was a problem at some clinics and dental offices as was a lack of cultural competency among some providers[27] (IOM structural and cultural barriers). Transportation, interpreter services, and cultural competency are examples of "enabling services" that, if available, are believed to facilitate access to care.

The fit between the needs of the populations served and the structure of the health care system is shaped by the way the system is financed. Within the United States and the state of Minnesota, health care financing arrangements have undergone dramatic change since 1982 beginning with the implementation of the Medicare Prospective Payment System (DRGs or Diagnosis Related Groups) for hospitals. In Minnesota, attempts at health care reform occurred during the late 1980s and culminated with the MinnesotaCare legislation in 1992. A substantial number of the policies put in place during that period have either sunset or been repealed, but many of the structural elements facilitated by those policies nearly ten years ago remain today. The most recognizable among these are the MinnesotaCare program plus highly consolidated managed care and medical services sectors.

The Institute of Medicine Committee on Monitoring Access to Personal Health Care Services observed that, historically, most structural barriers to access have their roots in the way health care is financed.[28] Payment policies have a strong influence on how health care is organized and delivered as well as how patients select and use that care.[29] Thus, it is important to evaluate how changes in the organization, financing and delivery of care differentially impact certain groups of people, especially the vulnerable and disadvantaged who are most at risk of poor care or inadequate access to care.[30] The IOM also recognizes that current payment policies are complex and contradictory. [31] Conflicting financial incentives are rampant within the US health care system, due in part to policies intended to contain costs through the use of market forces and the subsequent system restructuring that followed.

Beginning with the implementation of the Medicare Prospective Payment System in 1982, the US health care system moved from a profitable fee-for-service system for individual providers, to a prospective DRG payments to hospitals, to a confusing array of managed competition arrangements reliant upon managed care operations that promoted horizontal and vertical integration as well as merging and consolidation within and across the provider and insurance sectors. Some third-party payers became health care providers while providers found ways to integrate third-party payers, resulting in many contradictory and conflicting financial incentives, with the most locally visible example of the conflict evinced by the Allina Health System.

Coye observes that management in the face of conflicting financial incentives is a major problem in health care. Managed care incentives, for example, encourage physicians to cut hospital utilization but increase office visits, while hospital administrators strive to fill beds to cover fixed costs. Mid-level managers are encouraged to maximize net operating revenues for their units, while clinical care improvements that cut their revenues may yield savings across the larger institution or spectrum of care. [32] Robinson adds that each consecutive attempt to change patterns of care triggers a cascading series of negative and positive incentives, each provoking actions that reinforce or impede the success of the effort.[33]

The IOM access committee finds that financial barriers may restrict access in two ways, either by inhibiting the ability of patients to pay for needed care or by discouraging physicians and hospitals from treating patients with limited means.[34] Despite a large physician workforce and over 600 community health centers, the poor still find it difficult to find a physician who will accept Medical Assistance most likely due to low MA reimbursement rates in many states.[35] When population subgroups that share personal or population characteristics systematically underuse services capable of making a difference in their health, there is good reason to believe that the problem can be addressed by modifying structural or financial incentives in ways that compensate for patient lack of education or negative attitudes about the way care is organized. Thus, for various population subgroups, insurance coverage and the availability of providers are necessary but not sufficient for gaining access to care.

Risk adjustment is one approach to deal with the financial incentives related to adverse selection on the part of potential members and risk avoidance on the part of health plans. Risk adjustment methods endeavor to provide payment to health plans and providers that are commensurate with the health risks of the populations served so that the organizations compete on the basis of efficiency, service and quality instead of risk selection.[36] Risk adjustment, however, is based upon “realized” access and service use and does little to encourage health plans to seek out populations that under use services (potential or unrealized access). Becher and Chassin point out that financial incentives for improving underuse are problematic in today’s environment, because physicians, hospitals, and health plans have little financial motivation to undertake costly activities of identifying populations of patients who could benefit from effective services, locating individuals who are not appropriately treated, and engaging in treatment those who could benefit. [37]

To incent participating managed care organizations to provide Child and Teen Checkups (Minnesota's version of the federal EPSDT, Early Periodic, Screening, Diagnosis, and Testing program) beyond the established fee-for-service baseline level, Minnesota's Department of Human Services has begun to experiment with incorporating performance payments into its PMAP payment mix. For example, DHS withholds 1% of payments to MCOs from the child and parent rate cells to create an incentive pool of money. If MCOs provide C&TC services at the FFS baseline, they receive the full 1% withheld from their payments. Participating MCOs can receive up to an additional 1% if they hit an 80% target rate for the services.

DHS capitation payments have also been increased to incent MCOs to pay for the provision of language or sign interpreters, and common carrier non-emergency transportation for medical care. Beyond this, little is documented, other than anecdotal reports, as to how participating managed care organizations reimburse their provider networks for certain enabling services or what types of business incentives are in place for providing medical services to specific subgroups of the PMAP and MinnesotaCare member populations. These payment initiatives are the current extent to which Minnesota has explored financial means as a way to enhance access. Lurie suggests additional incentives could be developed that create a special focus for provision of preventive services, based upon MCOs performance on the HEDIS measures currently collected by the state.[38]

Given this policy and conceptual context, the literature reviews to follow should be considered in light of a two-decade long process of health system restructuring and attempts at cost control. With the magnitude and scope of change that has occurred in health care, both across the US and within Minnesota, it's important to reflect upon whether any of the changes made to date (including the Balanced Budget Act of 1997) facilitated a better fit of the health care delivery system with the health needs of the diverse populations it serves. Current research and comments made by policy makers reflect the existence of a problem but ways to address the issues identified are still elusive. For example, a director of the Robert Wood Johnson Foundation health care group, in reporting the results of a recent RWJ survey of Spanish-speaking Latinos about their access to care, commented, “What we have in a lot of places is a mismatch between the need and the (system) capacity.” When contacted by the media about new federal money needed to fund an executive order directing health care providers to use culturally appropriate services for patients recommended by the RWJ survey results, a Bush administration official remarked, “People would like to be doing the right thing, but it's a question of priorities and it hangs on reimbursement.”[39]

Enabling Services

Bernstein and Falik have identified some negative implications of the financial incentives inherent in many capitation arrangements that can lead to underservice in the managed Medical Assistance population. These incentives can cause managed care plans to restrict members' choice of primary care physicians, require advance authorizations for making appointments with specialists or other services, and also require a phone call to obtain permission to make an urgent care or emergency room visit. Requirements like these can erect barriers to accessing care, especially for the chronically ill who may be reluctant to switch to physicians unfamiliar with their particular course of treatment, or for non-English speaking members that have difficulty communicating with plan representatives or providers who do not converse in the member's native language or understand the member's culture.[40]

Concerns about the implications of MA managed care rules and financial incentives for vulnerable populations have prompted several states to begin making enabling services available as a way to counteract some of the challenges erected the managed care bureaucracy. Enabling services are defined as those non-medical services that facilitate access and care coordination among high-risk, multi-risk and hard-to-reach populations. It is important to recognize that many of these services were conceived and developed by safety net providers who have had extensive experience in finding ways to facilitate access to care for vulnerable groups. As a result, the most often documented services include interpreters, transportation, childcare, case management, patient and provider education.

Given that the Medical Assistance population is comprised of disadvantaged individuals, a large proportion of which are mothers and children, the institutionalized aged and developmentally disabled, blind, and physically disabled, the tailoring of enabling services to meet the needs of these diverse groups is nontrivial given that some individuals' circumstances can cross cut these general categories. Service customization requires knowledge of the social, economic, demographic and special needs of these populations in order to proffer appropriate and timely enabling services. Examples of enabling services available in Minnesota will be provided later in the text. One of the primary objectives of enabling services is to provide the community resources needed to maintain an ongoing relationship with a regular source of primary care.

One of the differences between Prepaid Medical Assistance and MinnesotaCare benefits are some of the enabling resources. All MCOs enrolling PMAP members are required to provide interpreter services, and non-emergency common carrier transportation in addition to special transportation for the elderly and disabled. MCOs participating in MinnesotaCare provide interpreter services and special transportation to all members, but only covered pregnant women and children have the option to utilize common carrier transportation, a benefit similar to that covered by PMAP. Capitation payments to participating managed care organizations have been increased by DHS to compensate the plans for these specific enabling services requirements.

The Primacy of Primary Care

Within the United States, primary care has been identified as a significant health system variable associated with better health status.[41,42] Starfield asserts there are two key goals for any health services system:

- Optimizing the health of the population by employing the most advanced state of knowledge about the cause of disease, illness management, and health maximization;

- Minimizing dissimilarity in treatment across population subgroups so that certain groups are not at a systematic disadvantage with regard to access to care and achievement of optimal health.[43,44]

One of the most touted advantages for Medical Assistance beneficiaries' enrollment in managed care plans is enhanced access to primary care.[45] For example, hospitalization of children for conditions such as asthma, hypoglycemia, epilepsy and dehydration, some of the so-called "ambulatory-sensitive-conditions," can often be prevented with timely primary care.[46] But if improved access has not been realized for every member of the enrolled population and heterogeneities in access to and use of services detected, then a direct contradiction with the second primary goal of a health system occurs.

Primary care is most effective when a long-term relationship between physician and patient is established. Starfield contends that health maintenance cannot be achieved in periods of time shorter than one year, and when utilization is infrequent, it may takes several years. The requisite periodic eligibility determinations for continued enrollment in Medical Assistance work against this objective. Given MA member turnover, there is no incentive for managed care organizations to retain panels of patients over the long term, therefore, they have no incentive to provide services early in the development of an illness or to provide preventive services likely to provide a long-term return on investment. Instead, the periodic eligibility determinations required of MA recipients can lead to cyclic changes of health plans and loss of physician/patient relationships. This situation is a no-win situation for managed care organizations that must resort to providing episodic care instead of managing health.

Factors shown to contribute to a populations' ability to access care includes geographic availability of services, transportation, patient literacy and level of education, health knowledge, health beliefs, racial or cultural concordance between patient and physician, patient attitudes and preferences, competing demands including work and child care, and provider bias.[47] Among population characteristics, socioeconomic position appears to be one of the most influential determinants of primary care use in the U.S.[48] Lower socioeconomic position is associated with receiving fewer Pap smears, mammograms, childhood and influenza immunizations, diabetic eye exams, later enrollment in prenatal care, and lower quality ambulatory and hospital care, all within the domain of primary care. Other studies document the ability of regular primary care to prevent emergency room use and to promote delivery of preventive care.[49]

Better access to primary care alone does not eliminate all access problems, however. As seen above, problems related to making appointments, obtaining specialty care, language issues and receiving after hours care have been cited as some of the barriers to improved access. The Institute of Medicine points out that the notion of the availability of care needs to be distinguished from that of realized accessibility and acceptability of care, especially for the Medical Assistance population, before non-financial barriers can be fully appreciated.[50] IOM further suggests that structural factors may be at the heart of a lack of fit between features of the health care system and the populations it serves. It concludes that structural barriers, rather than lack of acculturation, explain most of the differences in utilization of services found between diverse groups. Chief among these is the geographic availability and proximity of services.

Geographic Availability of Care

Geographic availability and proximity of care are important factors influencing the utilization of health care resources in Minnesota, which is collectively an urban, a suburban, an exurban, a rural, and a frontier state. According to the MDH Rural Health Plan, four northern counties meet the federal definition of “frontier” territory. Minnesota’s frontier counties are Kittsen, Lake of the Woods, Koochiching, and Cook. Fully half of the state’s population resides in non-urban rural areas of the state. Three Minnesota counties designated as “urban” by the U.S. Office of Management and Budget are exceptions to the rule in that they have extensive rural land distributions (St. Louis, Stearns, and Polk) beyond the metropolitan areas situated on their borders and the reason for their urban classification.[51]

In several areas of the state, there are not enough health care providers and facilities to serve the local population. Minnesota has numerous federally designated medically underserved areas and health professional shortage areas. This means, in most cases, residents must travel long distances for health care. In a study of the change in methods of financing Medical Assistance in Minnesota, Coughlin and Long found high levels of unmet need (approximately 60%) within the MA population residing in the northern tier of counties. They found that substantial shares of both fee-for-service and managed care MA beneficiaries encountered travel times greater than thirty minutes to the doctor. The authors partially attribute this unmet need to the sparseness of providers in the areas covered by the study.[52]

Provider Characteristics

Provider characteristics are another aspect of the structure of the health care delivery system that may influence the use of health services. For instance, provider characteristics such as gender and training have been shown to influence the utilization of preventive services.[53] Hargraves found that compared to white physicians, minority physicians reported more difficulty obtaining medically necessary services for their patients. Minority physicians were significantly more likely to report than their white counterparts that they could never, rarely, or only sometimes obtain services such as non-emergency hospitalizations and referrals to specialists. Apparent racial differences appeared to be partially explained by the fact that many African-American physicians work from solo practices whereas white physicians tend to work in group practices. Differences between Hispanic and white physicians were reduced when it was identified that the Hispanic physician was a graduate of an international medical school.[54]

In a recent study of racial differences in which black or white patients were seen by black or white physicians for cardiac catheterization following acute myocardial infarction, the authors found no differences in the use of catheterization among patients treated by black physicians and those treated by white physicians. Nonetheless, black patients had a lower rate of catheterization than whites regardless of the race of the attending physician. The article concludes that racial discordance between physician and patient could not explain the difference in rates of treatment. [55]

Racial discordance between physician and patient may also partly explain why African Americans and Hispanics distrust their physician's judgment. As a result, they are more likely to rely upon hospital-based care and community health clinics than private practice physicians. But, within these settings, coordination of care is often problematic and may not be managed as efficiently or as continuously as that received in private physician's offices.[56] Patient's attitudes and perceptions are yet other factors that influence access to care and service use.

Patients' View of Access

Penchansky and Thomas define access to care as the degree of fit between characteristics of providers and health services and the characteristics, expectations, and satisfaction levels of patients.[57] They conceive of access from the patient's perspective as having five dimensions:

- *Availability* – refers to the adequacy of the supply of resources, physicians, dentists, and other providers, hospitals, mental health clinics, emergency care and specialized programs;
- *Accessibility* – refers to the location of the supply in relation to the patient, including patient transportation resources, travel time, distance and cost;
- *Accommodation* – the manner in which the supply of resources is organized including appointment systems, hours of operation, walk-in facilities, telephone services; includes patients' perception of their appropriateness;
- *Affordability* – cost of services in relation to patients' ability to pay or purchase insurance;
- *Acceptability* – refers to patients' attitudes about the personal and practice characteristics of providers; most often used in the literature to refer to provider attributes such as age, gender, ethnicity, type of facility, neighborhood of facility, religious affiliation is any. Also can refer to the types of patients providers are willing to serve.

These dimensions share some commonality with the IOM access framework. In testing their multidimensional concept of access, Penchansky and Thomas found that:

- Travel time is a strong predictor of patient satisfaction with accessibility;
- Time to obtain an appointment is predictive of satisfaction with accommodation;
- A longer relationship with a provide implies greater satisfaction with the availability and acceptability of care;
- Having to wait longer in the physician's office negatively influences satisfaction with availability and accommodation;
- Travel time and waiting time in the physicians office, together representing opportunity cost for a visit, were shown to influence satisfaction with affordability;
- More visits were positively associated with availability, accessibility, and accommodation.

Similarly, Hargraves et al. concluded that more frequent use of hospital emergency rooms implies less access to primary care.[58] Thus, the patients' perspective has the potential to identify disincentives extant in financing health care or barriers to access that are not apparent within the delivery system. Ongoing studies conducted from the patients' or members' perspective provide the documentation needed to improve the fit between clients' needs and the system.

Documented Heterogeneities in the Use Of Health Services

Risk adjustment is a newly forged tool that states can use to make capitated payments to participating managed care entities within their managed Medical Assistance programs. Out of fifty states, only Minnesota, Maryland, Oregon, Colorado and California are experimenting with various forms of risk adjustment. While a large proportion of the remaining states have moved to managed Medical Assistance they have not adopted risk adjusted methods of payment. Consequently, the research literature reviewed below lags these developments. A majority of the findings summarized pertain to populations studied prior to the introduction of managed care into the public coverage programs, both in Medicaid and Medicare. In no population studied was risk adjusted capitation the modality through which public program coverage was financed. Future research is needed to evaluate whether risk adjustment has improved access to care for specific groups.

The introduction of enabling services as a way to expressly redress the negative incentives and added complexity of managed care into public programs is also a recent phenomenon. Most of the studies predate this development too, especially the use of interpreter services and transportation subsidies. Nonetheless, the reader should be cognizant of the historical time frame implicit in these reviews, the recent introduction of managed care into public programs, provision of enabling services to facilitate access to care, and the newness of risk adjustment techniques to payment policy.

The US research literature documenting heterogeneities in access to care and use of services appears, by volume, to be dominated by work in three general demographic segments defined by race/ethnicity, recency of immigration, and functional literacy, in that order. References to several very recent studies are included, but the largest proportion of the information to follow was culled from literature reviews complied by other researchers. The reviews cover many diverse populations and the included studies range from low to high methodological quality. To date, no systematic evaluation of the quality of evidence has taken place in this domain. Due to time constraints and limited staff resources, the literature review in each category was not exhaustive nor was it conducted according to a pre-established criteria for the validity, strength and quality of evidence. A section discussing observations about the various research methods and data used in the studies follows the literature review sections.

The Managed Medical Assistance Population

Medical Assistance is the nation’s major public financing program for providing health and long-term care coverage to low-income people. Coverage is dependent upon several criteria in addition to low income such as low-income children, pregnant women, the elderly, people with disabilities, and parents meeting specific income thresholds. States set their own income and asset eligibility standards within federal guidelines. Adults and children in low-income families make up nearly three quarters of MA beneficiaries nation-wide but they account for only 25% of MA spending.[59]

Nationally, a large proportion of persons eligible to receive MA benefits have enrolled in managed Medical Assistance programs. Aday et al. note that the theoretical presumption underlying the shift to Medicaid managed care (PMAP in Minnesota) is that by enrolling individuals in managed care plans and restricting access to certain providers faced with financial incentives and utilization controls, states can simultaneously control costs, coordinate care, and ensure access to needed medical services for low income populations.[60]

One of the appealing aspects of managed care is its philosophy of prevention and the close coordination of care to improve the health status of enrolled populations. Because health care financing and delivery are “integrated” in managed care, providers are financially incented to deliver cost-effective medically necessary care and to avoid provision of unnecessary care. This orientation stands in sharp contrast with fee-for-service economic incentives that increase episodic service use whether medically necessary or not. Some of the effectiveness of managed care also relies, to a larger extent than in the fee-for-service sector, upon its ability to teach members to improve their own health status, strive toward wellness, manage their health issues, and take more responsibility for their own care.

Disadvantaged populations have historically encountered challenges in accessing health care providers and services within the traditional MA fee-for-service system. Managed care adds one more layer of complexity to Medical Assistance coverage and requires greater beneficiary knowledge of the selected plan’s rules and processes in order to obtain health care.[61,62] Docteur et al. note that under managed care, obtaining services is a two-stage process. Individuals must first select one of the MCOs available to them, and then choose a provider from among those participating in the covered network. Second, when care is needed, individuals must follow the MCO rules and procedures for scheduling appointments, seeing specialists, or making an emergency room visit. Consequently, members’ perceptions of plan characteristics while making plan selections are conditioned by:

- Knowledge of managed care (if any);
- Previous experience with managed care and attitudes related to that experience;
- Existing physician relations and care-seeking behaviors;
- Socioeconomic and demographic characteristics;
- Health and/or disability status, special needs.[63]

In some states, the first step in enrollment is obviated by the administering agency. If a person fails to choose a plan from the options available, the agency will automatically enroll an individual in a plan. It is not well understood what impact automatic enrollment of a person eligible for MA has upon member satisfaction, rates of access and utilization, and level of understanding of the managed care system.[64] But, once a plan is chosen, people must seek care within the structure established by that plan, which may include unique care-delivery processes and rules for care seeking. These unique delivery processes and care seeking rules may well exert a significant influence upon public member utilization patterns, as well as the range of clinical descriptors reported.

Public program recipients confront yet another obstacle. The decision-making, rules and processes associated with managed enrollment are separate and in addition to the application process for becoming eligible to receive Medical Assistance coverage. In Minnesota, a similar eligibility determination process also applies to MinnesotaCare. It is not unusual for individuals' eligibility and coverage to cycle between the two programs or other public coverage options.

To realize managed care's promise, each beneficiary should establish a regular, ongoing relationship with a stable network of providers, a substantial proportion of which should be engaged in the practice of primary care. This means that the relationship should be long-term rather than short-term and that factors upsetting the point of first contact should be minimized. These ideals, goals, and practices may play an unintended role in the creation of new vulnerable groups. Some of the subgroups identified as vulnerable under fee-for-service Medical Assistance may be at further risk within Medicaid managed care. Some minorities, such as those individuals living in Health Professional Shortage Areas, or in urban poverty areas may continue to be at risk in that their circumstances of vulnerability are not improved by managed care arrangements.[65] Other special needs populations with traditional access challenges include the homeless, the disabled, substance abusers, adolescents, children with special needs, and persons needing mental health care.[66]

Docteur et al. suggest that two general categories of public beneficiaries may be at additional risk in managed care delivery systems. Those who do not receive adequate care from health plans responding inappropriately to cost-containment incentives, such as enrollees with chronic medical conditions requiring ongoing resource-intensive care, and those who have difficulty navigating systems of care because of medical, psychological, economic, sociological or other reasons.[67] For managed care incentives to work in both the plans' and members' favor, it is important for beneficiaries to remain in a plan for an extended period of enrollment.

Experts in primary care argue that for health benefits to be realized, members should be enrolled in a managed care plan and receiving care for a period not less than a year, perhaps longer if service use is infrequent.[68] Across all states combined, the average period of Medicaid eligibility was less than nine months during 1998.[69] In Minnesota, the average number of months of PMAP enrollment during FY 2000 was 7.7 months. Numerous studies indicate that the majority of individuals meeting the definition of poverty experience such circumstances for only short periods of time while a minority remain persistently poor and in need of ongoing medical benefits. Providing consistent, regular health care to a group of individuals who need assistance getting through a temporary fiscal crisis is quite different from caring for those impoverished over the long run.

Short-term enrollees tend to be at different stages of life than long-term enrollees with the very young and the elderly disproportionately eligible for the program for longer periods of time. This is an important consideration for risk adjustment. Long-term enrollment incents plans to provide quality and timely care because they must deal with the preventable costs of illness and disability. Short-term enrollment translates into less of an incentive for establishing ongoing therapeutic relationships and the provision of preventative care. Therefore, rapid turnover in enrollment runs counter to managed care incentives, compromises establishment of stable relationships with providers, and may increase care costs in the long run.

Under the current per member per month method of risk adjustment, predictive accuracy favors those with longer periods of enrollment and predicts less well for those with shorter enrollment periods. The longer a person is enrolled in MA, the more likely they are to have a history with the care system and the status of their health documented.

MA beneficiaries have historically confronted obstacles when seeking care from private practitioners and have had to rely upon emergency departments, publicly funded institutions and community clinics for their health care. Many reside in medically underserved areas, especially in rural regions of the country and are less likely to be aware of the importance of preventive services than the general population, especially services for their children. Other characteristics of the Medical Assistance managed care population in US that make it very different from the commercial managed care population. These include:

- Cultural, language, illiteracy, and socioeconomic differences that can present barriers to provider-patient relationships.
- Logistical barriers are common including lack of a telephone, child-care availability and affordability, transportation challenges, and the ability of parents to obtain time-off for children's medical visits from low-wage service jobs.
- Individuals are less likely to have a stable or usual source of health care.
- Individuals are more vulnerable (e.g. exposed to violence, inadequate living conditions, poor nutrition).
- Individuals have low incomes and are not in a financial position to purchase additional health care services on their own.
- Individuals have a higher prevalence of behaviors that are a risk to health because of socioeconomic factors and other social inequalities.
- Individuals place lower priority on health-seeking behaviors in favor of obtaining food, housing and clothing.
- Individuals often have poor advocacy or negotiation skills.
- Clinically, they present more chronic illnesses; more comorbidities and overlays of complex social problems; and complicated pregnancies.
- There is a greater need for mental health and substance abuse care.[70]

Use of Health Services by Populations of Color

Minnesota Studies

Four Minnesota studies conducted in 1988, 1997,1999 and 2001 provide documentation that access to care is problematic among populations of color in Minnesota. A 1988 joint Urban Coalition and University of Minnesota survey found that:

- Many women of color did not receive adequate prenatal care even when enrolled in Medical Assistance. Ambivalence about pregnancy, personal and family stresses, lack of childcare and transportation, and previous negative experiences with the health care system were found to have had an influence on use of access to prenatal care.[71]

A 1997 MDH/Urban Coalition study of vital records and school immunization surveys found that:

- Children from populations of color in Minnesota were less likely to receive recommended vaccinations at the appropriate time.
    - For the 1992-1993 school year, less than half of African American, Asian and Hispanic children were up-to-date with the vaccinations at the age of 24 months.
- American Indian women were eight times more likely to receive inadequate prenatal care (Adequacy of Prenatal Care Index) or no care at all than White women.
    - Asian and African American women were six times more likely to have received inadequate care or no care at all.
- MDH concluded that lack of health care insurance coverage was an issue for some of the population but that the non-financial barriers cited in the U of M and Urban Coalition study were important influences on the use of prenatal care.[72]

An analysis of data from the National Survey of American Families collected in 1997 from households within Minnesota found:

- A 12.6% gap between the rates reported by non-Hispanic white households and higher rates reported by African American households for not having a usual source of health care.
    - 18% of the difference was explained by lack of insurance coverage, 10% by income, 8% by marital status and the presence of children in the household, 6% due to age and/or gender differences, 5% citizenship status, with employment status and education together accounting for another 3%. 50% of the gap remained unexplained.[73]

A recent study of health disparities in Minnesota conducted by the Twin Cities metro Minority Health Assessment Project found that:

- Women of color are less likely to receive adequate prenatal care than White women across the Seven County Metro Area.
- Mothers of all racial groups living in Anoka, Carver, Dakota and Washington counties are more likely to receive adequate prenatal care than mothers living in Hennepin and Ramsey counties.
- Children of color in all metro counties are less likely than White children to be up to date with their immunizations.
- Despite higher rates of poverty and lower rates of prenatal care, foreign-born mothers are generally less likely to have low birth weight babies than US born women of color.[74]

In addition to these Minnesota-specific findings, a number of peer-reviewed health services and medical research journal articles, plus two extensive research literature reviews focused prepared for the Henry J. Kaiser Family Foundation focused upon racial and ethnic differences document a variety of findings. The general topic areas of primary care, hospital services, emergency room use, specific medical conditions and costs organize the literature summarized.

Primary Care and Physician Services

- White females entered prenatal care earlier than African American and Hispanic women.[75]
- Adolescent and adult African Americans as well as Hispanics were less likely to have physician contact over the course of a year than whites, independent of their income or health status.
- African Americans who did have physician contact reported fewer visits than whites and less satisfaction with physicians' treatments.
- In a study limited to Medicare beneficiaries, African Americans were found to use ambulatory and preventive services at a lower rate than whites, after adjusting for income.[76]
- In a survey of the care seeking experiences of low-income African Americans and Hispanics in three states:
    - African Americans who exercised choice in selecting a Medical Assistance managed care plan were less likely to be without a usual source of care, to have no regular provider, and to have needed but not obtained care.
    - Hispanics did not exercise their choice of plans at the same rates as African Americans or whites, 39% versus 64% and 65%, respectively.[77]
- Analyses of data from several national health surveys found that minority children receive less primary care than white children independent of income and health insurance coverage. However, immunizations rates among minority children have been improving over time.[78]
- Latinos, particularly Mexican Americans, average fewer physician visits per year than other ethnic groups.[79,80]
    - However, having health insurance increases the likelihood that Latinos, as well as other groups, will have a regular connection to health care services.[81]
- In an analysis of the 1996 Medical Expenditures Panel Survey, almost one third of Hispanics reported not having a usual source of care and encountering organizational barriers to accessing care.
    - Hispanics were twice as likely as non-Hispanic whites to report long waits for care and that their provider failed to listen to them or provide them with needed information.
    - Medical Assistance-enrolled Hispanics were less likely than other MA enrollees were to have a usual source of care.[82]
- In a nationally representative sample of persons with private or public health insurance, Hispanics, compared to whites, were less likely to have a regular provider and had more visits to physicians in the ER.

  - Hispanics were the least likely to have had their last visit with a specialist when compared to African Americans and whites.
  - African Americans were less likely to have a regular provider and had more of their physician visits occur in an ER than whites.
  - African Americans were on parity with whites in terms of having a doctor visit in the previous year and access to specialists.[83]
- After adjusting for demographic variables, insurance status, health status and having a regular source of care, Latinos with fair to poor English proficiency reported significantly fewer physician visits than English-speaking non-Latinos.[84]
- Gaskin and Hoffman found that Hispanic children, working-age African American adults, African American and Hispanic elderly patients were at a greater risk for being hospitalized for preventable conditions than their white counterparts.[85]
  - The relationship persisted after adjusting for differences in patient health care needs, socioeconomic status, insurance coverage, and the availability of primary care.
  - Hispanics and African Americans fared better in terms of preventable hospitalizations in rural states and/or states where they were a small proportion of the population compared with the large states of California, New York, Florida and New Jersey where they were a larger proportion of the population.
  - In a national sample of hospital discharges between 1980 and 1998, the rate of preventable hospitalizations for white patients decreased while the rate for black patients rose for those under age sixty-five.[86]
- In a study of a well-educated, employed patient population with managed care coverage and moderate to severe asthma symptoms, researchers found significantly fewer African Americans were provided care that was consistent with National Asthma Education and Prevention Program treatment guidelines than whites. The largest dissimilarity appeared for the daily use of inhaled corticosteroids.[87]

Hospital Services

- Several studies documented lower access to hospital services among African Americans and other minorities after accounting for differences in health status, source of payment, and site of hospitalization.
  - African American Medicare beneficiaries were less likely to receive technologically advanced procedures and rehabilitation services than whites; differences persisted among elders who had dual Medicare and Medicaid coverage, and were higher among the rural elderly.
  - Racial and ethnic minorities were less likely than whites to receive a wide range of procedures once hospitalized, including dialysis, arterial catheterization, cardiac bypass, endoscopy, bronchoscopy, Caesarian section and organ transplantation.[88]
- African American infants were admitted to neonatal intensive care units more than two and one half times as frequently as white infants, independent of birth weight.[89]

- African American women were more likely to be hospitalized for antenatal and pregnancy loss complications and have longer lengths of stay than white women.[90]
- Discharge planning for African American patients was less likely to involve nursing home placement than white and use of formal home services, perhaps due in part to cultural preferences.
- African Americans who did seek nursing home placements experienced discharge delays longer than whites, regardless of clinical and demographic characteristics.[91]

Hospital Emergency Department Services

- African American children were found to use hospital emergency departments as their usual source of care at twice the frequency of white children.
  - In addition to ethnicity, demographic factors related to children's routine use of hospital emergency departments included having a single-parent, a mother with less than a high school education, poverty level income and living in an urban setting.
  - Frequent users of ER resources did not appear to lack medical care resources as measured by immunization rates, insurance coverage, or having a primary care physician.
  - In some studies, marital status was a unique correlate of ER use for African Americans while gender, education, insurance coverage, employment status, and region of residence were unique determinants for whites.
  - Some differences in the use of emergency care among African American, white and Hispanic ambulatory adult patients can be explained by differences in age, health insurance coverage, and having a regular source of care.[92]

Services for Specific Conditions

- African Americans were significantly less likely than whites to receive diagnostic and surgical interventions for heart disease and stroke, with differences ranging from 13 to 70%: similar gaps were documented for Hispanics.[93]
- African American women have achieved equivalent, and in some cases superior access to screening services compared to white women for breast and cervical cancer; Hispanic women lag behind both groups.[94]
- Racial and ethnic minorities were more likely than whites to be diagnosed with cancer at advanced stages and less likely to receive major therapeutic interventions.[95]
- African Americans are 41 to 73% less likely to receive advanced drug therapies for HIV/AIDS than whites, net of age, gender, mode of HIV transmission, insurance overage, residence, income and education.[96]
- A report issued by the US Surgeon General documents heterogeneities in use of mental health services by minority groups. Major findings of the study were that:
  - Differences in levels of access for African Americans are partly attributable to financial barriers and the availability of African American providers.
  - African Americans with mental health needs are less unlikely to receive treatment than the under treated mainstream population and to be incorrectly diagnosed than White Americans.

    - Asian Americans and Pacific Islanders have the lowest rates of utilization of mental health services among ethnic populations and appear to delay seeking help until the problems are very severe.

The Cost of Care

- A study examining costs of care in the last year of life based upon Medicare fee-for-service claims found that end of life costs were higher for minorities and those living in ZIP codes with high poverty rates.
    - After removing costs related to end-stage renal disease, minority decedents costs remained 20% above the costs of others.
    - Corroboration with the Medicare Current Beneficiary Survey showed that costs were elevated for African Americans only, not others.[97]

General Themes

Overall, recent literature reviews document racial/ethnic differences in access to primary care services, prenatal care, screening and preventive care, mental health and various technologically sophisticated diagnostic and therapeutic procedures. Members of racial and ethnic minority groups, in general, appear to use fewer clinic-based medical care and make more use of hospital emergency departments. Many of the studies with large samples, primarily responses to survey questionnaires, control for possible explanatory or confounding variables such as socioeconomic status, insurance coverage, stage of disease, and health status, but most others do not. Self-reported health status is occasionally utilized as a crude risk adjustment.

In some studies, associations between population characteristics appear, but diminish when controlling for confounding variables, while in other studies, the association disappears when controls for other individual and population characteristics are employed. At best, the findings are mixed and inconsistent. There may be two primary reasons for this state of the literature.

First, a number of the studies rely upon survey samples designed for other purposes and second, the gross aggregation of very diverse populations into super categories renders many results incomparable and inexplicable. As a result, when controlling for confounding factors, racial and ethnic heterogeneities diminish or disappear, but not consistently, leaving uncertain as to what factors may be at the root cause of differences reported. The types of research methods employed and data sets analyzed also appear to play a role in the results.

Advance conceptualization of the meaning of the racial and/or ethnic categories employed was notably lacking in many studies relying, instead, upon ex post facto speculation as to why the results occurred. (See the subsequent section on methodological issues and caveats for a more in depth discussion of confounding factors and measurement issues.) Studies currently in progress seek to determine to what extent racial and ethnic heterogeneities in access are linked to structural aspects of the delivery or financial barriers in contrast to cultural preferences, attitudes and beliefs of the populations served. They intend to address the basic question, are the differences found attributable to the health care system, the compositional characteristics of populations of individuals, or both?

Immigrants' Use of Health Services

The majority of immigrants (85%) enter the US legally, and most legal immigrants (about 65%) are admitted for family reunification. The US accepts a limited number of refugees each year as determined by the President and Congress. In 2000, the US permitted 90,000 refugees with half coming from Europe and the former Soviet Union. The typical immigrant family pays an estimated $80,000 more in taxes than they receive in local, state, and federal benefits over time. More than half of undocumented immigrants cite work as their main reason for coming to the US. Of the undocumented immigrants from Mexico, over 90% have a worker in their family.[98]

Access to health insurance and health care is an important socioeconomic opportunity, especially for the health of immigrant children. Without adequate access to primary care, acute conditions such as otitis media or streptococcus infections can lead to chronic and disabling conditions among these children. Without appropriate medical management, chronic conditions may lead to life-threatening medical emergencies and many impose economic and social burdens upon both families and society. Without adequate access to immunizations and well-baby/child checkups, both chronic and acute conditions are more likely to occur and children's developmental problems may go undiscovered or untreated.[99]

Access to medical care for immigrants and refugees is contingent upon establishing a consistent, ongoing relationship with a local care provider. To enhance access, providers must find ways to overcome language barriers, either through interpretive services or family members, and to show respect for traditions through cultural competence in the perspective on health each ethnic patient brings to an encounter. Primary care and covering organizations must also facilitate transportation, enrollment outreach and health education for available services to be most effective.[100]

All US citizens and nationals who meet Medicaid eligibility requirements are entitled to coverage. The Immigration and Nationality Act defines the "US" to include the fifty states, District of Columbia, Puerto Rico, Guam, the Virgin Islands and Northern Mariana Islands, plus American Samoa or Swain's Island. For US citizens, the eligibility requirements are relatively straightforward, but for immigrant populations, who is covered and with what benefits can be confusing, especially under recent welfare reform.[101]

The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) and the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) of 1996, in effect, restricted immigrant's eligibility for Medicaid and other benefits by imposing a five-year ban on MA eligibility for non-refugee immigrants entering the US after August 22, 1996. Both laws required that the income(s) of immigrants' sponsors should be counted in determining eligibility. In the subsequent year, the Balanced Budget Act of 1997 created the State Children's Health Insurance Plan (SCHIP) that extended coverage to certain alien children. The combined impact of these policies created confusion about the eligibility requirements for benefits and appeared to lead many immigrants to avoid public programs altogether[102]

PRWORA established two classifications of immigrants, qualified and non-qualified, in order to determine whether an immigrant is eligible to receive Medical Assistance. For certain qualified classes, coverage is mandatory while for others, coverage is optional at states' discretion. In general, non-qualified non-exempt aliens are barred from Medical Assistance for any care other than emergency treatment. Within CHIP, long-term qualified alien children (residing in the US before 8-22-96) can receive insurance coverage. Newly entering alien children cannot quality for CHIP assistance.

Working immigrants interested in the MinnesotaCare program find that DHS has established residency requirements for permanent state residents, some of which also extend to non-citizens. To apply for coverage, a person must have a fixed address, (not a temporary place such as a hotel, shelter, or someone else's house), live in Minnesota for at least 180 days and intend to live here permanently. Non-citizens must also have authorization to stay in the U.S. permanently. These conditions may also extend to pregnant women and families with children up to age 21, both citizens and authorized non-citizens.

A review of the literature studying health care use by immigrants and refugees documented the following heterogeneities in access to medical care for several specific population characteristics.

Citizenship Status

- Even when insured, noncitizens and their children have less access to regular ambulatory and emergency care than insured American citizens.[103]
    - Having a usual source of care varies by citizenship status. For low-income adults, 37% of non-citizens reported not having a usual source of care compared to 19% of low-income citizen adults.[104]
    - Non-citizen children averaged 1.5 provider visits a year while citizen children with citizen parents average 3.7 visits per year.
    - Non-citizen children were less likely to visit the emergency room than citizen children.

Regular Source of Care

- For measures of a regular source of care, delayed or missed care, number of doctor visits in past year, or number of hospitalizations, foreign-born children in poor, yet working, families had less access and health care use than did their US-born counterparts.[105]
    - Only 66% of foreign-born children from poor working parents had a regular source of care compared the 92% of their US born counterparts.[106]

  - Among insured children, those foreign-born were less likely than US-born to have a regular source of care or to have visited a doctor in the previous year.[107]

Language and Other Access Barriers

- Aside from financial factors, the most important facilitator for immigrants' use of health services is language access through availability of bilingual or multilingual staff, translated materials, and interpreter services.
  - Many immigrants are poorly educated and illiterate, even in their native language, so they cannot comprehend written materials.
  - Many newly arrived immigrants are often isolated in their communities and do not know how to access community resources, indicating a need for more intensive outreach efforts, particularly for preventive services and prenatal care.
  - Safety net clinics and hospitals are critical sources of care for immigrants because they provide services for free or at discounted prices and because they are more likely to have multilingual staff.
  - Many immigrants, particularly the undocumented, are wary of using government clinics or hospitals out of fear that the providers might report their presence to the Immigration and Naturalization Service.
  - Even if they had insurance coverage through Medical Assistance, immigrants encountered difficulty making the managed care plan choices within a limited time frame, and then selecting a primary care physician.
  - Immigrants often could not read the managed care enrollment materials and were assigned to unfamiliar providers with whom they could not communicate. [108]

General Themes

The literature reviews concerning immigrant and refugee populations finds that having a usual source of care varies by citizenship status. Even when insured, noncitizens and their children have less access to regular ambulatory and emergency care than insured citizens. Foreign-born children living in poor, yet working families had less access and health care use in terms delayed or missed care, number of physician visits and hospital stays in the past year than their US born counterparts. Aside from financial factors, the most important facilitator of immigrant's use of health services is language access through interpreters, bilingual or multilingual provider staff, and translated written materials.

In a study prepared for the Urban Institute, researchers documented than many immigrants are poorly educated and illiterate, even in their native language, so they cannot comprehend written materials.[109] Provision of written materials has been challenging in Minnesota for two large immigrant populations that did not have a written language until recently. Safety net clinics and hospitals are critical resources for immigrants because they provide tailored services for free or at discounted prices for those with not health insurance and because they are more likely to employ multilingual staff. Many of the research methodological concerns expressed about studies conducted in populations of color also apply to immigrant and refugee populations.

Literacy and the Use of Health Services

Education, especially an ability to read and comprehend written material, is a key correlate of personal health status and the initiation of health promoting behaviors. The American Medical Association's Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, highlighting findings from the National Adult Literacy Survey, noted that illiteracy is especially prevalent among the elderly in the US. In their *JAMA* report, the committee concluded that illiterate patients were likely to report worse health status and have less understanding about their medical conditions and treatments. Preliminary studies also seem to suggest that inadequate health literacy may increase the risk of hospitalization. Health literacy is defined as the ability to read and comprehend prescription bottles, appointment slips, informed consent documents, insurance forms and other essential health-related materials.[110]

The *JAMA* committee report summarized research results from several sources, finding that:

- Numerous studies document that health material such as educational brochures, discharge instructions, contraception instructions, and consent forms often are written at levels exceeding patients' reading skills.
- After adjusting for socioeconomic factors, self-efficacy, and cultural background, literacy levels are correlated to the level of health knowledge, health status, and use of health services.
- Among patients with diabetes in one study, only half of those with inadequate literacy knew the symptoms of hypoglycemia compared with 94% of those with adequate literacy.
- Fewer patients with hypertension and inadequate literacy knew that blood pressure could be reduced with weight loss and exercise.
- Among people with asthma, poor literacy skills correlated with less knowledge of asthma and improper metered-dose inhaler skills.
- Women with inadequate health literacy have poorer understanding of mammography and more negative attitudes toward breast cancer screening.
- In a large study of patients at two public hospitals, after adjustments for literacy, educational level had no significant association with health status.
- Low literacy is a better predictor or metastatic prostate cancer than race or age.
- In a study of English and Spanish-speaking Medicaid participants, those who read at the lowest grade levels had average annual health care costs of $12,974 compared with $2, 969 for the overall population studied.
- After two-year follow-ups in a study of 958 low-income patients, those with inadequate literacy were twice as likely to have been hospitalized during the previous year, after adjusting for health and socioeconomic status.

- Less than half of the US adult population understands many commonly used medical terms, which interferes with clinicians' ability to obtain an accurate and complete medical history. [111]

In research conducted upon a nationally representative sample of the US adult population, the National Academy on an Aging Society found that people with low health literacy use more health care services than those with higher health literacy. Among the reported findings were that:

- Among adults who stayed overnight in a hospital during 1994, those with low health literacy skills averaged 6% more hospital visits and stayed in the hospital nearly two days longer than those with higher skills.
- Among adult with at least one physician visit in 1994, those with low health literacy skills had on average one more doctor visit than those with higher skills.
- When self-reported health status was taken into account, patients with low health literacy had fewer doctor visits but used substantially more hospital resources.
- The estimated additional health care expenditures due to low health literacy were $78 billion in 1998 health care dollars. This includes an estimated $30 billion the population that is functionally illiterate plus $43 billion for the marginally illiterate population.[112]
- Among elderly Medicare beneficiaries, Gronick observed that lack of knowledge about symptoms of disease and the effective monitoring of chronic conditions is a likely contributor to the heterogeneities documented in the use of certain health services covered by the federal program.
  - As a result, the poorest and least educated individuals generally acquire the least amount of knowledge about the value of preventive services and about specific indications of disease that warrant making an appointment to see a physician.[113]
- A policy paper published by the Canadian government concludes that while lack of education and literacy are not the sole reasons for poverty, there is extensive research indicating that they are the major factors.
  - Even in a country with a universal care system, many people with limited literacy skills do not know where and when to go for the health services they need.
  - Lack of information, fear of embarrassment, low self-confidence and limited resources often result in people with low literacy neglecting preventive care, failing to assert themselves, and waiting to seek medical help until a health problem has reached crisis state.

Health literacy is directly related to the appropriate use of health services, especially emergency care, and because of the additional time requirements to care for people with limited functional literacy skills, those with low literacy tend to cost more to care for than do others.[114]

Enabling Services Initiatives

In a 1998 survey of 197 managed care organizations offering some form of capitated managed care to Medicaid eligibles, most MCOs participating in the study were providing a variety of enabling services.[115] Almost every responding organization reported they provided some interpretation or translation services or that enrollees had access to language or signing services through their state Medicaid agency. Ninety-seven percent of MCOs provided a form of targeted case management and 87% reported various education and health promotion activities. Sixty-three percent provided non-emergency transportation. But there were differences in the way the services were organized and delivered.

Language/Interpreter Services

Seventy percent of MCOs in the survey above provided access to bilingual primary care providers and physicians in their network. Eighty-two percent reported using some form of telephone interpretation service, but few relied exclusively upon this mode of assistance. Over half reported having bilingual medical staff and/or bilingual non-medical staff. Forty-two percent of MCOs reported they retained professional interpreters, with than half of those trained in the use of medical terminology. Seventy-two percent of the plans translated their plan handbook into languages other than English, but only 38% translated the requisite information needed to choose a primary care provider. Translation of consent forms transpired in only 27% of the MCOs responding.[116]

Other studies show that the use of primary care can be increased among populations confronting language barriers through HMOs providing professional interpreter services. Jacobs et al. found that professional interpretive services improved the delivery of care to limited English proficiency patients, increased the use of preventive and primary care and reduced the use of emergency department services. A staff model HMO, in which the two-year cohort study was conducted, estimated the cost of such interpretive services to be $0.20 per HMO member month.[117]

A study of why Vietnamese refugees in the US did not optimally use health care services found that the presence of an interpreters can made a positive difference in improving access to care.[118] Minnesota law requires providers to make translator services available to patients at their request, as do federal requirements for providers serving the Medicare or Medicaid populations.

The Minnesota Department of Human Services reimburses providers directly for translation services for fee-for-service Medical Assistance or General Assistance Medical Care patients. Prepaid health plans are required to provide language and signing interpreter services for PMAP, PGAMC and MinnesotaCare enrollees with MA benefits. Interpreter services may be arranged through the health plans or their participating clinics. For patients enrolled in PMAP or MinnesotaCare, the capitation payments made by DHS to the MCOs were increased to underwrite the provision of this enabling service. How network providers are reimbursed for members’ use of interpreter services is subject to negotiated arrangements between the participating health plans and their respective care systems.

MDH monitors the availability of interpreter services to HMO members enrolled in Medicare Plus Choice or the Minnesota Seniors Health Options program as required by the federal government. It does not monitor the availability of interpretation services for HMOs participating in PMAP, GAMC or the MinnesotaCare program but would do so at the request of DHS. Availability of interpreter services is an access to care measure NCQA requires all HMOs seeking accreditation to annually monitor. It should be noted that the NCQA HEDIS measure only evaluates the availability of interpreter services, not how much the service was utilized. Consequently, the state has no measure of the demand for such services and whether the need was met or unfulfilled.

Several PMAP and MinnesotaCare participating MCOs assist members in finding physicians and providers that speak their language or share cultural backgrounds in addition to providing interpreter services. For example, the HealthPartners Consumer Choice website on the Internet allows members to select a network physician on the basis of language. Members simply select their language from the menu and the search engine lists all doctors in the network that speak the language selected. Metropolitan Health Plan's (MHP) website provides visitors with the option to select a language in which to view the information presented. MHP website visitors can select among the English, Amharic, Cambodian, Hmong, Laotian, Russian, Somali, Spanish and Vietnamese languages informing readers about its member transportation, bilingual and foreign language services, as well its service of providing cell phones to members with serious health problems.

Transportation Services

Sixty-three percent of managed care organizations surveyed in the Bernstein and Falik study offered non-emergency transportation assistance while another 20% relied upon state agencies to provide this enabling service. The most common method of assistance provided was member reimbursement for public transportation. Forty-one percent of the MCOs provided cab fare, 21% used their own vehicles, and 7% used volunteers. Forty-four percent of responding MCOs offered more than one form of transportation assistance.

Transportation services for medical appoints are also reimbursed as a covered benefit under Medical Assistance and MinnesotaCare in Minnesota. In Minnesota, as required by contract, prepaid health plans must provide common carrier transportation for their PMAP and PGAMC enrollees who have no other means of transportation to their medical appointments. Enrollees may contact the health plan to arrange a ride. MinnesotaCare enrollees with MA benefits may contact the DHS MinnesotaCare office for information regarding reimbursement policy.

Targeted Case Management

Within the Bernstein and Kalik national Kaiser survey of MCOs participating in managed Medical Assistance, 96% of the plans reported they provided at targeted case management for at least one out of seventeen health conditions enumerated for survey response. Seventy-eight used pregnancy as a target condition, 73% HIV/AIDS, and 72% targeted asthma. Forty-seven percent of the MCOs case managed substance abuse patients, 43% the mentally ill, and 42% developmentally disabled patients.

Associations with Safety Net Providers

Seventy-four percent of Medicaid MCOs in the Kaiser survey had established contracts, agreements, and letters of understanding with local safety net providers including local health departments. Agreements with home health or visiting nurse agencies were reported by 78% of the responding organizations. There were referral arrangements with local substance abuse treatment programs (68%) and children's social service programs (70%), which included school-based health centers and Head Start. Over one third of the MCOs established forms or referral relationships with education welfare agencies responsible for financial, housing and welfare-to-work issues.

To shield traditional safety net providers, Minnesota's Department of Human Services requires participating MCOs to include community clinics and other safety net providers in their networks. In this way, members preferring services designed specifically for them do not lose the option to use that clinic should DHS automatically assign a member to a commercially based health plan when individuals elect not to choose a specific managed care organization.

Aday et al. observed an unintended structural consequence of enrolling public beneficiaries in commercial MCOs. They noted that the shift of public beneficiary populations to commercial HMOs had the effect of financially threatening community-based, safety net providers. Enrolling public beneficiaries that had traditionally been served by community-clinics, county and university teaching hospitals in commercial health plans, has had the effect of siphoning away needed revenues and cases from these public facilities. As a result, safety net providers have had to develop innovative cost-cutting strategies and strategic alliances to remain viable.[119] The former University of Minnesota Medical Center and Hennepin County Medical Center (HCMC) exemplify pursuit of such strategies.

Each public medical center established its own HMO designed specifically provide outreach and care to individuals enrolled in PMAP, GAMC and MinnesotaCare. Implementation and refinement of these strategies has been under way for several years with UCare ultimately being spun-off from the academic medical center at the University. Metropolitan Health Plan, as an operating unit of Hennepin County government, is a component of the county's Project for Multi-Cultural Service Delivery. This approach features a single entry point for people from other cultures and languages to the county social service system and associated health care. UCare has designed and implemented a culturally sensitive out reach program to the Hmong community as it disperses across the state from the Twin Cities.

Health Education and Outreach Activities

Among the managed care organizations responding to the Kaiser survey of Medicaid MCOs, 87% reported providing at least one health education class. Smoking cessation, perinatal education, asthma management, diabetes management, and nutrition classes were most commonly reported. Nineteen percent of the plans offered classes on ten or more topics. Over three fourths offered referrals to community-based agencies and provided reminders for screenings and preventive services such as immunizations. Almost 87% provided fact sheets or brochures about health conditions and preventive services.

Preventive Services

Typically, preventive services are provided to healthy people and risk adjustment was implemented to move capitation dollars from the healthy to the sick. This action has the potential of creating a financial disincentive for participating MCOs to provide preventive care. Preventive services are classified in Adjusted Clinical Group 1600 (Preventive/Administrative) within the current risk assessment system. On one hand, ACG 1600, based upon payments made from the 1996 fee-for-service data base used to develop the set of risk weights employed in risk adjustment, has a relative weight lower than that for members with no diagnosis history. On the other hand, DHS holds contracting MCOs publicly accountable for providing specific preventive and screening services to their public members on schedules set by DHS. DHS recognizes the potential for conflicting incentives and has taken steps to correct some of the structural inconsistency.

As mentioned earlier, DHS provides supplemental payments to MCOs for delivering Child and Teen Checkup services through an incentive pool funded through a 1% payment withhold. As such, this form of "partial capitation" makes payment policy more consistent with public health objectives and incentivizes MCOs to help public members find a regular source of primary care and obtain the recommended preventive services.

Preventive services disincentives were also recognized at the federal level when the US General Accounting Office (GAO) found that children covered by Medical Assistance were not receiving the benefits to which they are entitled, specifically Early and Periodic Screening, Diagnosis, and Testing (EPSDT) services (Child and Teen Checkups in Minnesota). The GAO discovered that the broad package of benefits offered could result in confusion and potential under-service if health plans and providers were not clearly informed of their responsibilities. Medicaid managed care contracts in more than three-dozen states often failed to spell out the full range of EPSDT services that plans are responsible for providing and did not always require contractors to educate beneficiaries or providers about the benefits available. Minnesota has already incorporated clarified language into managed care contracts between DHS and MCOs.[120]

According to the GAO, beneficiary outreach and education is typically a responsibility shared between the states and managed care plans. At certain times in the process, states may have primary responsibility for informing beneficiaries about covered services, such as when they are enrolled. But once in a plan, the state may require the plan to take measures to inform patients and families about covered services and how to access them. Some states have established performance standards and measurements that are included in their Medicaid managed care contracts. [121] In Minnesota, contracts between state government and MCOs encourages plans to strive to reach state public health goals. DHS and MDH require participating MCOs to collect performance measures evaluating rates for the provision of select preventive services in accordance with the National Committee on Quality Assurance Health Employer Data and Information Set standards. Each MCOs' rate is compared to the relevant public health objective and findings reported annually in the Minnesota Department of Health's *HMO Profile*.[122]

Training for Providers and Staff

While not a direct-delivery enabling service, Bernstein and Falik report that slightly less than half of the MCOs responding to the Kaiser survey or Medicaid managed care organizations offered provider training programs to assist network staff to better understand the special circumstances of Medicaid enrollees. Among the topics covered were, socioeconomic characteristics, disease prevalence, and implications of cultural diversity for care experiences and care patterns.

Community-based Enabling Service Initiatives in the Twin Cities

Information about the provision of enabling resources in Minnesota is very limited and communicated mostly by anecdotal reports. However, there are several community-based enabling service models currently in operation among specific ethnic communities within the state. The following are provided as examples of these local efforts and are not intended to represent a catalogue of the variety of offerings. MDH's Office of Rural Health, however, is in the process of publishing a catalogue of community-based services for the elderly living in Greater Minnesota.

Of particular note are the examples set by:

- The culturally sensitive health and multilingual services offered by the West Side Community Health Services (La Clinica) in St. Paul;
- The transportation services available from Chicanos y Latinos Unidos En Servicios;
- And, the population-specific outreach services employed by UCare and Metropolitan Health Plan.

Community-based enabling services are also available within the Hmong and Southeast Asian communities as well as becoming established within Minnesota's growing Somali community in the Twin Cities. MDH has begun offering financial assistance grants to community organizations to facilitate further development of these community-based resources.

Because the commercial MCOs have had less experience working with the myriad social challenges that public program members bring to the care system, collaborations between commercial plans and public sector plans are taking place. Medica, for instance, is collaborating with Metropolitan Health Plan in a pilot project to conduct outreach to parents of children eligible for PMAP through neighborhood churches in Minneapolis. These are but a sample of the innovative grassroots initiatives undertaken by ethnic communities and MCOs in Minnesota to assist their members in accessing needed health care.

Methodological Issues in the Literature

Given the range, scope, and varying quality of the many studies summarized in this review of literature reviews, it is important to acknowledge the many limitations study design and quality place upon the generalizations possible from the body of literature reviewed. The Morehouse Medical Treatment and Effectiveness Center, conducting the largest literature review to date on racial and ethnic differences in access to care for the Henry J. Kaiser Family Foundation, cautions readers that the causes for underlying health care access and use disparities are varied, complex and poorly understood.

Perhaps the greatest limitation of the literature for the question at hand is that the large majority of this work is not drawn from samples of managed care populations, much less managed Medical Assistance. When public program beneficiaries are studied, samples predominately include fee-for-service Medicare beneficiaries, and to a lesser extent fee-for-service Medicaid, but by in large, most studies were conducted before managed care rose to prominence and before managed care was incorporated into Medical Assistance.

While several methodologically sophisticated studies included in the review found persistent independent, cumulative associations of race/ethnicity with access to health services net of health status, socioeconomic status and income, the preponderance of such findings tended to appear in analyses of large national probability sample surveys that rely upon respondents' recall of events and self-reported health status. In several analyses employing health care administrative records, the association between population characteristics and actual use of health services often disappeared where demographic data were available for application to administrative records and where the sample was adequate size to have enough degrees of freedom to employ statistical controls. These observations highlight an important point.

Of necessity, a large proportion of the research was carried out with existing "secondary" data. Instead of designing research to directly test a hypothesis with data collected for that purpose, a "reasonable" approximation of the desired measurement was assumed for the analysis. In many samples, the population characteristics captured were the "standard" ones measured by every other health survey. This is a matter of researcher convenience, but perhaps more pertinent is that secondary analysis of existing data sets is a low cost research strategy.

Sorely needed in this body of knowledge are studies designed specifically for questions about population heterogeneities with thoughtful conceptualization of measures. Many of the medical studies, for example, assume a biological basis for racial differences when anthropologists and geneticists have soundly discredited the notion. When reviewed studies were designed to examine differences in patterns of health services utilization, they did not take advantage of the rich conceptualization and theoretical developments emerging in the field, hence they provide little explanation or understanding as to "why" the dissimilarities found occurred.

One of the confounding factors leading to mixed and inconsistent findings in this literature is the gross aggregation of diverse populations into Census categories. Categories of race employed in national surveys, by government agencies, health care providers, and insurers mask the cultural diversity of peoples residing in the US today. The category "American Indian and Alaskan Natives," for instance obscures the identity of over 500 tribes with different cultural traditions, languages and ancestry. The African American category not only includes US decedents of slaves brought to the America but also recent immigrants from the Caribbean, South America and Africa. Hispanics in aggregate include persons of Mexican, Puerto Rican, Cuban, Central and South American, or other Hispanic heritage. Asian Americans include at least 43 subgroups speaking well over 100 languages.

Furthermore, when evaluating survey results with gross population aggregates, it is important to recognize that categories of people are not randomly distributed across the US. Minority populations tend to concentrate in a few states within large metropolitan areas with ethnic concentrations varying from place to place. For example, according to the 2000 Census, the Upper Midwest (Minnesota, Wisconsin and Michigan) is home to the largest concentration of Hmong, followed by the Carolinas and Georgia, then Colorado, Kansas and Oklahoma. Thus, the ethnic diversity of minority populations from region to region may be reflected in some of the results reported by the very large aggregate categories. The demographic category African American in the Minneapolis/St. Paul area will contain a concentration of recent refugees and immigrants from Somalia and other parts of Africa that skew results in unanticipated ways. The social and economic circumstances of the diverse ethnic groups constituting this community may be very different from US-born African Americans' experiences. It is not surprising then, that the findings from the literature are mixed and inconsistent given that many other confounding factors are not recognized or understood. Population diversity also makes comparisons between studies problematic.

Another major limitation of the research is lack of prior conceptualization of the meaning of categories of race and ethnicity used in measurement. Race/ethnicity is often confounded with measures of socioeconomic status, but most research questions fail to address whether race/ethnicity is antecedent to the socioeconomic status of the groups under study. There is concern in the research community about the many dimensions measured when categories of race or ethnicity are employed and how to interpret the results action.[123,124,125] While the biological and genetic basis for racial categories has been thoroughly discredited, the cultural meaning of race is hypothesized by some to reflect a local social and economic environment of inequality based upon racism, discrimination, segregation, violence and poverty. There is considerable debate in the medical science literature as to whether concepts of racism and discrimination are measurable in the health system and whether they explain the racial and ethnic differences being reported.[126]

More pragmatically, Williams observes that race is typically used in a mechanical and uncritical manner as a proxy for unmeasured biological, socioeconomic, and/or sociocultural factors. He suggests that future research explore how clearly delineated environmental demands combine with specific behavioral and physiological responses to increase the risk of illness for groups differentially exposed to psychosocial adversity.[127]

For example, in many large cities, minorities settle in segregated neighborhoods with widely differing availability of jobs, family structure, opportunities for marriage, educational quality, lack of exposure to conventional role models, diminished quality of life, and access to resources and amenities that sustain health.[128] This suggests a number of socioecologic factors that, to date, have not extensively been evaluated in relation to the use of health care services, nor have they been conceptualized or hypothesized in advance of the analysis. Until these notions are fully conceptualized, measures developed, tested, and utilized, the ability to fully understand the causes of heterogeneities will be limited.

Other measurement issues appear in many of the studies included for review. Recognition of respondent recall and other culturally based measurement issues in national health surveys is just beginning to emerge in the literature. For example, Schur, et al. found that when interviewed in Spanish, Hispanics were more likely to report fair or poor health compared to Hispanics interviewed in English. Non-English speaking Hispanics were also less likely to report encountering barriers when accessing health care.[129] Schur speculates that the Spanish language interview is a proxy for recent immigration. Recent Hispanic immigrants tend to be poor, less educated, less likely to have health insurance, and more reluctant to use the health care system than health care consumers in general. If a Hispanic individual never uses the system, they do not develop any expectation of care, which means it simply falls outside their frame of reference. These cultural differences in expectations for medical care can contribute to inaccuracies in reported access to care in surveys.

“Telescoping” and “omission” in survey responses may also be an issue.[130] Omissions are simply instances when the respondent entirely forgets an episode or event. Telescoping is a time compression effect where an event is remembered as occurring more recently that it did. For example, a respondent reporting a trip to the doctor during the past seven days when the doctor’s chart show the visit took place three weeks prior. Errors of the latter type tend toward remembering an event as having occurred more recently than it did, with respondents over age 55 more likely to underreport as the recall period lengthens. Memory effects may also be present depending upon whether the questionnaire is administered face-to-face or self-administered; the level of perceived threat associated with the question; the position of the question in the series; and whether close-ended or open-ended questions were used. These issues are particularly relevant when asking respondents in telephone surveys questions about receiving specific preventive services and access to care.[131,132,133,134]

An important advancement in exploring the elaboration of associations between population categories, access to care and use of services is the inclusion of measures of the social contexts in which study subjects provide data. This is especially relevant to the conceptualization suggested by Williams above that individual attitudes and circumstances are conditioned by their social and economic environments. Phillips et al. conducted a systematic literature review of the studies employing versions of the Anderson[135] behavioral model of health care utilization over the past twenty year. It should be noted that the Anderson model underlies the IOM access model referenced earlier.

They found that 45% of the studies reviewed included environmental variables such as characteristics of the health care delivery system, the external environment and community enabling resources, while 51% included provider-related variables, e.g. whether the patient has a regular source of care, physician gender, medical specialty and training, the proximity of providers, and out-of-pocket costs. Both types of variables represent information about the “context” for use of health services and may help to explain dissimilarities in rates of use.[136] The majority of studies covered in the literature reviews did not employ contextual measures, primarily because the information was not available or not collected in the samples’ responses. Research into the effect of environmental, societal, and macro-economic forces upon health and health care use is in its infancy.

An important methodological consideration for inclusion in studies relying upon medical or clinical records is the use of a severity of illness or case-mix complexity measure so that adjustments can be made for patients’ medical status. Few of the independent studies reviewed made an attempt to adjust for differences in the burden or illness, comorbidities, or case-mix complexity between the populations compared. Many of the condition-specific studies did not account for the presence of important comorbidities related or unrelated to the condition under study. As noted earlier, comparison of clinical events between demographically different populations should also take into account the clinical and functional status differences as well (see Iezzoni’s dimensions of risk listed earlier in the document.) Differences attributed to population factors may well reflect differences in a population’s burden of illness without accounting for these confounding variables. Risk adjustment methods as currently implemented addresses age, gender, and existence of comorbidities, but not other dimensions of risk such as education and socioeconomic status.

The mixed and inconsistent nature of the evidence and the slow development of appropriate research methods continue to hinder investigators’ ability to fully understand and effectively address the factors that result in the heterogeneous access and use of health care services results reported. Lack of more sophisticated measures for health status, other than self-reported levels of health, and the inclusion of other key sociodemographic or psychosocial dimensions potentially underlie the inconsistency of findings, as are likely methodological issues. For example, the Commonwealth Fund has underwritten research at The RAND Corporation to study whether heterogeneities found in a variety of service utilization measures when analyzing the Consumer Assessment of Health Plans Survey (CAHPS) actually reflect differences in health care received or simply reflect differences in the way diverse groups respond to the surveys.[137] Until a number of studies like this are completed, a clearer picture of what this body of literature is saying will remain elusive.

Potential Sources of Risk Heterogeneity

Evaluations of ways to risk adjust state capitation payments made by state government to obtain health care coverage eligible individuals enrolled in PMAP and MinnesotaCare began in 1995. After methods were developed in conjunction with DHS and input from the Public Programs Risk Adjustment Work Group, program implementation began on a phase-in basis on January 1, 2001. Now in its third year, the phase-in proportion of payments subject to risk adjustment will increase to 50%. Future negotiations with participating managed care organizations will determine the timeframe for 100% implementation.

Minnesota law directs the state agencies responsible for developing the risk adjustment system to study whether the special health needs of the enrolled populations related to poverty, cultural, or language barriers, etc. are adequately represented by the current risk assessment system. The purpose of this study is to satisfy the legislative requirement. To that end, this study has reviewed the relevant conceptual as well as research literature associated with the potential heterogeneities in use of health services suggested by the legislature. The objective of the review process is to identify likely structural or financial characteristics of the health care delivery system inducing a misfit of the system to the needs of specific PMAP or MinnesotaCare populations.

Both PMAP and MinnesotaCare offer a standard set of health care benefits to those enrolled in each public program. Lack of insurance is not an issue for these covered populations, but enrollment discontinuity is an ongoing problem for continuity of care as many members cycle on and off programs as well as between programs. These on-again/off-again cycles stem primarily from requisite eligibility testing for coverage continuation and members' response to the requirements. Risk adjustment predictions do no account for enrollment discontinuity. Instead, risk scores may be adjusted for the population's average length of enrollment within a year's timeframe, regardless of the continuity pattern, to correct for the tendency of those enrolled longer to have higher predicted levels of risk.

It is clear from the literature that the characteristics of the Medical Assistance population, and likely that enrolled in PMAP as well as individuals enrolled in MinnesotaCare, are very different from commercial managed care plan populations. In fact, special needs populations are more prevalent in MA with the majority comprised primarily of mothers and children. To further complicate matters, MA is not a single unified program but multiple programs, each targeting specific groups with certain needs.

In general, persons enrolled in MA have low incomes, a higher prevalence of risky behaviors with consequences for health related to their socioeconomic circumstances, clinically present with more chronic illnesses, have more comorbid conditions, and overlays of complex social problems. Complicated pregnancies and low birth weight babies are more prevalent than in commercial populations. There is a greater need for mental health and substance abuse care. The potential is greater for cultural, language, illiteracy and socioeconomic differences to erect barriers blocking effective provider-patient relationships. Enabling services are believed to address a few specific barriers but members may also encounter other logistical barriers including: lack of telephone service, child-care availability, transportation options, and the ability of parents to obtain time-off for children's medical visits.

Personal and household characteristics that distinguish the managed MA population from the commercial population include:

- Income
- Education
- Age
- Gender
- Marital status
- Number of children in household
- Number of persons in household
- Ethnicity/race
- Employment status, work hours

When collectively considering the research literature reviewed, there was a substantial concordance of variables employed in the studies. Measures of patient characteristics frequently utilized, were:

- Socioeconomic status
- Income level/federal poverty status
- Education (children's measure – mom's educational attainment)
- Employment status
- Literacy in own language
- English proficiency
- Race/Ethnicity
- Place of residence, urban, suburban or rural locations
- Marital status (children's measure - having a single parent)
- Age
- Cultural beliefs and attitudes
- Citizenship status
- Immigrant status, how long in the country
- Health status or disability status
- Health knowledge level
- Transportation availability
- Self reported health status (as a control variable in limited number of studies).

Of these characteristics, the following were most consistently investigated as being related to heterogeneities in health services use:

- Race/ethnicity,
- Socioeconomic status (including income and education)

- Insurance coverage
- Literacy level
- English proficiency
- Place of residence
- Having a regular source of care

Within the studies reviewed, there were few, if any, attributions made to structural deficiencies or financial incentives within the health care delivery system as the cause of dissimilarities in access and service use. When heterogeneities were found, reference was made to a need for specific enabling services, such as improved transportation, interpreter services (language and sign), or the value of culturally sensitive providers. In a survey of managed care organizations, researchers found that many of the services were already being provided in one form or another.

While the variables listed above are often common across the literature, the ways in which the measures were operationalized varied considerably. This, and a number of methodological concerns were observed in the literature reviewed. First, many of the analyses conducted were from survey samples designed to address other research questions, not those hypotheses or questions specifically pertaining to dissimilarities in access to care and service use. Second, highly aggregated demographic categories employed in the large majority of studies reviewed mask the consequences of ethnic, cultural, socioeconomic and geographic diversity such studies seek to understand. Third, of special concern were the ways in which measures of race and ethnicity were conceptualized, collected, and used. Fourth, methods of data collection, too, ranged from surveys to administrative and clinical records with the strength and persistence of results varying by the type of data and analytical methods employed.

Based upon the literature reviews, there is ample reason to suspect that there are likely racial and/or ethnic heterogeneities in access to primary care services, prenatal care, screening and preventive care, mental health, various technologically sophisticated diagnostic and therapeutic procedures given the sheer volume of studies. But, since the findings were mixed and inconsistent, as well potentially dependent upon the data collection method or reflective of response effects, the causal explanations for the findings needed to guide payment policy formation remain elusive. Currently, the available research literature is insufficient to explain why heterogeneities occur and whether attributions of cause belong to the health care system, the populations studied, both, or something else. Whether underuse of services will translate into lower or higher risk scores in the work to follow is also unclear. It may be necessary to use other forms of research and compare results from other studies to evaluate whether service underuse is occurring in PMAP and MinnesotaCare.

Part II of this document constitutes a research prospectus outlining the research hypotheses of interest, data available to test the hypotheses, and methods of analysis. Unless external funding becomes available, either through the legislature or a granting organization, Part II of this study will be subject to many, if not all, of the same methodological criticisms associated with the literature reviewed.

Despite these limitations, this proposed research entails some important “firsts.” Chief among these is that this study will be the first in the nation to compute and examine whether the risk of using health services varies by population characteristics. Health risk scores provide a summary measure of the health status of any subpopulation given their history of health care use. It provides a point of reference to the relative health status of any given population to the overall enrolled population, or any other population deemed appropriate for comparison. And, risk assessment technology provides a means for examining the “case-mix” of health conditions and describing differences in health condition, including the presence of multiple clinical manifestations. These assessments, however, assume that the population has successfully accessed and used the health system.

Another important aspect of the work is to examine the level of risk in association with characteristics of the health system structure. While differences in levels of risk as described by population characteristics may be informative, their association with health system characteristics, if any, can suggest likely areas for policy interventions and problem resolution. It is necessary to document the existence of a problem, but documentation alone is insufficient to recommend possible solutions. If heterogeneities in the risk of using health care services are found, then information that guides thinking about ways to alter health system financing and structure to better fit the needs of the populations served can become the basis for future study and action. Part II details the many hypotheses to be tested, the data available for the work, and the methods to be employed in conducting the analyses.

Data Availability

Readers are reminded that the DHS encounter records are the only data available containing the clinical elements needed to estimate the risk of health services use by residents of seven-county metropolitan Twin Cities region, especially in Hennepin and Ramsey counties where the majority of the populations of interest reside. To date, PMAP, PGAMC, and MinnesotaCare risk adjusted capitation rates have been set with very limited information about the risk of using health care services in the metropolitan counties. That’s because current risk adjusted capitation rates are set using risk weights derived from 1996 public program fee-for-service data.

1996 fee-for-service data are used because all of the Twin Cities metropolitan counties were participating in PMAP by the end of 1995, and since members’ coverage was financed through capitation, no fee-for-service claims were generated for the metro program expansions. DHS has required participating managed care organizations to submit provider encounter records to DHS at least since 1992. The details of “how” to accomplish this, meaning data flows between providers to MCOs and MCOs to DHS, were not finalized until 1999. Meanwhile, DHS has had no reliable encounter data for the metro area counties to use for risk adjustment (see Minnesota’s HCFA §1115 waiver application for the history of the PMAP program)[138]. Managed care organizations have expressed concerns about the quality of the provider encounter records and encouraged DHS to conduct an evaluation of data quality, especially information detailing medical diagnoses.

DHS, with funding from the Centers for Medicare and Medicaid Services, has engaged William M. Mercer, Inc. to conduct such an evaluation study. It is expected that this work will be completed in the second half of 2003. Until the Mercer study is completed and information systems modifications implemented, if needed, reliable encounter data will not be available for re-estimating risk weights to adjust capitation rates or conducting the risk heterogeneity study proposed above until 2004 or 2005. Budgetary and policy priorities, in what is expected to be a leaner state government, in the next biennium will determine whether the proposed study will continue at that time.

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