Medi-Cal and Managed Care: Risk, Costs, and Regional Variation

E. Kathleen Adams
Janet M. Bronstein
Edmund R. Becker

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Foreword

Although health care for the uninsured has been a key issue at both the federal and state levels, policymakers have been moving on other health care fronts as well. In California, for example, the "two-plan" model now offers Medi-Cal recipients in 11 counties two options: public care provided by counties or enrollment in commercial insurance plans, which receive a flat rate per enrolled recipient from the state. The two-plan model, which assumes that this increased choice will improve the quality of care for Medi-Cal recipients, requires commercial plans that are willing to serve large numbers of these recipients. In *Medi-Cal and Managed Care: Risk, Costs, and Regional Variation,* E. Kathleen Adams, Janet Bronstein, and Edmund Becker provide data that may assist the state as it attempts to build on its initial success.

The authors note that in some ways, Medi-Cal recipients may be attractive potential clients for commercial plans. As a group, they have lower health risks than the study's sample of privately insured employees. This lower risk should translate into lower costs per patient and therefore an opportunity for private plans to recoup their costs and even make a profit. As usual, the devil is in the details. The authors find that four factors stand in the way of continued growth of private enrollments. First, Medi-Cal clients use more services than traditional enrollees in private plans with similar health risks. Second, the state reimbursement rates for Medi-Cal patients are relatively low. Third, short-term Medi-Cal enrollees seem to enter health plans with pent-up demand for services and then leave those plans before the costs of providing those services can be recouped. Finally, the authors find significant regional variations in the risk profiles and patterns of resource use among Medi-Cal enrollees across the state. However, the state does not adjust rates for differing levels of health risk. As a result, private plans have little incentive to enter regions with high percentages of high-risk or short-term Medi-Cal enrollees.

Although the two-plan program has enjoyed considerable success, the authors suggest that these four factors could stand in the way of continued progress. They therefore recommend that the state consider adjusting Medi-Cal rates to reflect variations in health risk. Doing so may provide an early warning of program complications that are likely to emerge further down the road. The good news is that California has joined other states in implementing further privatization of health care provision for those in need. The cautionary note is that adjusted rates may well be necessary if the two-plan program is to accomplish its objectives of improving health care, lowering the cost of care for the Medi-Cal program, and maintaining the provider safety net.

David W. Lyon
President and CEO
Public Policy Institute of California

Summary

Although the states continue to expand their use of managed care for Medicaid enrollees, there are continuing concerns about the fit between managed care and the Medicaid population. Problems with provider participation, implementation, lack of patient and provider education, and certain aspects of the Medicaid program itself make seamless integration of Medicaid enrollees into private plans and provider networks difficult. In addition, states continue to examine issues related to capitated rates—set amounts paid to plans for each enrolled member—so as to ensure adequate provider supply, quality of care, and stability in their managed care programs.

After nearly 30 years of experimentation with managed care, California has launched a new effort to expand it within Medi-Cal, its Medicaid program. A cornerstone of this expansion is the so-called "two-plan" model, in which Medi-Cal enrollees in 11 counties must choose either a local initiative—a licensed health maintenance organization initiated by the county board of supervisors—or a private commercial plan. Although the two-plan model is meant to enhance enrollee choice while retaining traditional providers, its implementation raises key questions regarding Medicaid and the private health care sector:

- Given the lower reimbursement levels in Medi-Cal, will differences in the health needs of its enrollees and privately insured persons make it more difficult for plans to serve Medi-Cal enrollees?
- Should the state consider differences in the health risks of Medi-Cal populations when setting capitated rates? Should the state vary these rates by county to reflect these differences?

- Are there distortions in the use patterns of Medi-Cal beneficiaries that can be reduced by managed care plans? Do these patterns vary across counties?

Answers to these questions should benefit both the state and health care providers. The state needs providers willing to serve significant numbers of Medi-Cal enrollees, but many private providers are unaware of how the needs of these enrollees might differ from those of the groups they usually serve. These comparisons, along with analysis of how groups vary across counties, can also help the state negotiate with plans in different parts of the state. The analysis of risk differences within the Medi-Cal population will also point out the potential usefulness of risk-adjusting capitated rates.

To address these questions, this study analyzes the types of resources used by Medi-Cal and privately insured persons in California in 1994. It uses data on Medi-Cal clientele in seven counties, most of which were slated for inclusion in the two-plan model: Alameda, Los Angeles, San Diego, San Francisco, Butte, Humboldt, and Tulare. It also uses data on a sample of those insured privately through large employers in California.

Some of the results were unexpected. For example, the Medi-Cal enrollees in the system for six months or longer exhibited a lower case mix profile, or expected level of cost and resource use, than those in the privately insured sample. For this reason, managed care plans might prefer Medi-Cal enrollees to those who remain in private plans. However, the managed care plans will make their decisions on the basis of expected payments as well as case mix profiles. Our results indicate that the reimbursement levels for professional services in the Medi-Cal program are approximately 30 percent of those paid to providers in our private California sample. These lower payment levels will likely pose a challenge to the expansion of managed care for Medi-Cal enrollees. Plans will need providers that accept Medi-Cal payment levels and reimbursement schedules while staying under the cap; or these plans must find savings from better management of the resources used by the Medi-Cal population.

We found strong evidence that risk adjusters that go beyond age and sex (such as the Adjusted Clinical Groups developed by Johns Hopkins

University) will be helpful if California hopes to move those with chronic conditions into private managed care. This is especially true if commercial plans compete with the local, often public, providers under the two-plan model. Risk-adjustment methods could also be used to address the variation in case mix profiles across counties. We found that Medi-Cal enrollees in San Francisco and the rural counties, especially Humboldt County, had relatively high case mix profiles. Given this result, a risk-adjustment plan would likely entail redistribution of funds across counties; the counties, in turn, would need to set different rates for the plans within their area based on the case mix profile of their Medi-Cal enrollees.

We also found evidence of distortions in the resource use of Medi-Cal enrollees. Those enrolled in Medi-Cal for six months or longer appeared to use more inpatient days—and, to a lesser extent, more total professional services—than the privately insured with similar health risks. However, this pattern may be linked to the enrollment of pregnant women near or at the time of delivery. If so, managed care will have missed the most promising period of improved management—the prenatal period—and will have to use different types of management tools to improve the situation. Although California has separate capitated rates for pregnant women, these rates may not adequately compensate those plans for the consequences of the postponement of prenatal care. The challenge for managed care plans will be to keep the lower hospital payment rates negotiated by Medi-Cal while better managing the use of hospital days.

These differences have implications for counties that implement, manage, and retain the two-plan model. For example, San Francisco enrollees had the highest case mix index and appeared to "overuse" inpatient days. This pattern, which held even for the younger nondisabled enrollees, may relate to the late enrollment of pregnant women. Los Angeles County, which had the lowest case mix index, was the only other county in which enrollees overused inpatient days. (However, this overuse was balanced by the underuse of outpatient facilities in Los Angeles.) Those enrolled for six months or longer in Humboldt County, which had a relatively high case mix index and has not implemented the two-plan model, appeared to underuse most

services. Thus, commercial plans face different health care needs and patterns of care as they enter Medi-Cal markets across the state.

We conclude that expenditure patterns for those enrolled longer than six months are stable enough to create reliable, risk-adjusted rates. However, this pattern did not hold when short-term enrollees were included. We found evidence that partial-year enrollees come into the system with pent-up demand and have higher costs per month enrolled. If capitated rates do not cover these costs, commercial plans will avoid these enrollees or suffer financially. Further, we found that urban counties tend to have higher proportions of short-term enrollees. Although Los Angeles was an exception to this pattern, short-term enrollees there used twice as many inpatient days as expected given their health risk. California policymakers may want to consider risk-adjustment by county as well as special-rate adjustments to account for the relatively high needs of short-term enrollees. Some states have already made such adjustments. Others have used city-specific risk-adjustments to account for variation in expected expenses of those in highly urbanized areas.

In conclusion, the continued expansion of managed care in California holds both promise and peril. Although our data suggest that commercial plans may find the risk profile of some Medi-Cal enrollees preferable to the privately insured, Medi-Cal's low provider rates may still pose challenges to the continued expansion of managed care in the public sector. Commercial plans in some areas will need to create new provider networks and maintaining the steep provider discounts now used by Medi-Cal may be difficult. Finally, plans will face special challenges in serving the very high risk populations, such as the disabled in San Francisco and pregnant women who postpone needed prenatal care.

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Acronyms

ACG	Adjusted Clinical Group (previously, Ambulatory Care Group)
ADG	Ambulatory Diagnostic Group
AFDC	Aid to Families with Dependent Children
AIDS	Acquired Immune Deficiency Syndrome
AMA	American Medical Association
CHDP	Child Health and Disability Prevention
CMA	California Medical Association
COHS	County Organized Health System
CPSP	Comprehensive Perinatal Services Program
DSH	Disproportionate Share Hospital
FFS	Fee for Service
FPL	Federal Poverty Level
FQHC	Federally Qualified Health Center
GAO	General Accounting Office
GMC	Geographic Managed Care
HCFA	Health Care Financing Administration
HIV	Human Immunodeficiency Virus
HMO	Health Maintenance Organization
MSIS	Medicaid Statistical Information System
NGA	National Governor's Association
PCCM	Primary Care Case Management
PHP	Prepaid Health Plan
PMPM	Per Member Per Month

PPO	Preferred Provider Organization
RBRVS	Resource Based Relative Value Scale
RVU	Relative Value Unit
SMRF	State Medicaid Research Files
SSI	Supplemental Security Income

1. Introduction

Historically, growth in health care expenditures motivated both the public and private sectors to use various forms of managed care, often health maintenance organizations (HMOs) or prepaid health plans (PHPs), to better manage and lower the costs of health care services. Nationally, the Medicaid program came under scrutiny in the early 1990s, as states experienced annual growth rates ranging from 18 to 25 percent. Although managed care initiatives are often credited with savings over traditional Medicaid fee-for-service (FFS) plans, issues have arisen related to quality of care and the financial viability of plans serving large numbers of Medicaid clients. The adequacy of rates is a major issue (Holahan et al., 1999). Recent reports that low profit margins are causing plans to exit Medicaid markets indicate that just as some states are expanding mandatory Medicaid managed care programs, for-profit plans' interest in serving Medicaid clients may be waning (Kilborn, 1998; Fisher, 1998).

Yet states continue to expand their use of managed care for Medicaid populations. The portion of Medicaid beneficiaries in managed care increased from 10 percent in 1991 to 48 percent in 1997; 70 percent of this total is under primary care case management (PCCM) and the remainder is under a fully capitated arrangement. Under PCCM, enrollees choose a primary care physician who is responsible for providing and coordinating their care. In the California PCCM program, physicians are paid on a per capita basis for a subset of services; other providers (e.g., hospital inpatient) are paid directly. Under fully capitated care in California and elsewhere, plans are paid a set amount per capita, or enrolled member, for which they must provide and coordinate care for almost all services; plans do not receive more money if actual service costs for members exceed this total amount or "cap."

National statistics on fully capitated managed care obscure wide variation across states. Holahan et al. (1999) report that in 1998

enrollment in full risk Medicaid managed care ranged from 1 to 3 percent (in Maine, Mississippi, Georgia, North Dakota, and South Carolina) to 80 to 100 percent (Hawaii, Arizona, and Tennessee). In California, the Medicaid program is called Medi-Cal. Although California leads the country in terms of the percentage of *privately* insured residents enrolled in fully capitated managed care plans, the percentage of its Medi-Cal beneficiaries in managed care has grown more slowly (Lewin–Value Health International, 1995). Around 45 percent of California's total population was enrolled in a fully capitated plan in 1997 compared with a national figure of 27 percent (InterStudy, 1998). On the other hand, around 17 percent of California's Medi-Cal enrollees, compared to just over 23 percent nationwide, were reported by InterStudy to be in a fully capitated plan. With recent expansions, however, the state will exceed the national average; as of July 1997, almost 1.9 million of 5.4 million Medi-Cal beneficiaries, or 35 percent, are in one of its contracting managed care programs (Zuckerman et al., 1998).

After nearly 30 years of experimentation with managed care, a new Medi-Cal reform effort has been launched to expand Medi-Cal managed care goals. A cornerstone of this expansion is the so-called "two-plan" model. In this model, Medi-Cal enrollees in 11 counties across the state have a choice of a "local" initiative and a private commercial plan. The state believes that this two-plan model will enhance enrollees' choice while retaining traditional providers. Expansion into the Medi-Cal market may appeal to commercial plans if the high penetration of plans in the private market means that it is "saturated." Saturation of the private market may mean that only the less healthy and more costly privately insured remain outside capitated care. Yet, key questions regarding Medi-Cal and the private sector are unanswered as the state expands its public programs.

This study addresses the following:

- Given the lower reimbursement levels in Medi-Cal, will differences in the health needs of Medi-Cal and privately insured persons in California create difficulties for plans participating in Medi-Cal?

- Should the state consider differences in the health risks of Medi-Cal populations when setting capitated rates? Should the state vary the capitated rates by county to reflect these differences?
- Are there "distortions" in the service use patterns of Medi-Cal beneficiaries that can potentially be reduced by managed care plans? Do these patterns vary across counties?

As California continues this expansion into even more counties, information on the health risks and expense of Medi-Cal and privately insured populations should be informative to both the state and private plans. When plans are paid capitated payments, they naturally prefer the next enrollee to come from a population with fewer health care needs or to "select" enrollees they perceive as a lower-cost risk. Many private plans and their providers are unfamiliar with Medicaid populations. For success, the state needs to retain commercial plans willing to serve significant numbers of Medi-Cal clients and to avoid systematic selection of healthier enrollees by these plans. If selection is based on health risk, the "local" initiative—whether the county or another provider system—may be left with sicker, more expensive clientele who have traditionally used "safety net" providers. Furthermore, the state will need to address concerns across counties that differ in terms of the demographics and health risks of Medi-Cal enrollees, health infrastructure, and market competitiveness. Some counties, for example, use very large and costly public hospitals as the cornerstone of the Medi-Cal provider system; others have traditionally relied on private providers and competition. They also differ along dimensions such as the immigrant population and prevalence of Acquired Immune Deficiency Syndrome (AIDS). Information on resources used historically to serve Medi-Cal enrollees in and across counties will be informative as California continues its successful expansion process.

This study uses administrative claims files for samples of Medi-Cal and privately insured enrollees to analyze the types of health care and resources used. Only those not in fully capitated managed care are analyzed. We use data on Medi-Cal clientele in seven selected counties—four of which are in the two-plan model—along with data on a sample of those insured privately through large employers in California.

The selected counties are Alameda, Los Angeles, San Diego, San Francisco, Butte, Humboldt, and Tulare. The inclusion of rural counties helps distinguish this from many other studies. The data are for 1994; over 2 million Medi-Cal enrollees are included in the sample, which constitutes almost 58 percent of the total enrolled. (The term *enrollee* in this report refers to persons in the state who meet Medi-Cal eligibility criteria and actually enroll in the program; not all enrollees are users of services during the year, nor will all of them be enrolled in HMO plans as managed care expands.)

This study is part of a larger project in which data for California, Georgia, and Mississippi were analyzed (Adams and Bronstein, 1998). In some instances, comparison across the three states helps interpret the patterns seen in the California data as both of these southeastern states have much lower levels of private managed care.

The remainder of this report is divided into nine chapters. Chapter 2 provides background information on the various forms of managed care that have been used to serve Medi-Cal clients over time and on current national issues. The next chapter lays out the major study objectives. In Chapter 4, we describe our major data sources and state samples. Chapter 5 details the major steps in our analytical methods and describes the key measures we have used throughout the remainder of the report. We begin to present results in Chapter 6, where we describe the basic demographics of the Medi-Cal and privately insured populations and the number of types of health problems for which they seek care during the year. In Chapter 7, we present results based on actuarial analysis of how well the adjusted clinical group (ACG) system predicts actual expenses at the individual and group level. The next chapter compares the level of health care resources used by Medi-Cal and privately insured populations using several measures. It also includes a risk-adjusted analysis of health care resource usage of Medi-Cal enrollees. In the final analytic chapter, we present much of the same analysis county by county. We also include analysis of those enrolled for short time periods, by county, in this chapter. The final chapter describes the major conclusions and discusses them in light of California's policies and characteristics.

2. Background

Since 1968, California has contracted with PHPs to provide capitated care. In the 1980s and early 1990s, the state implemented additional programs: PCCM and county organized health system (COHS) in counties with 25,000–50,000 enrollees to form one plan, but not two. Under PHPs, state-licensed managed care organizations receive a predetermined or capitated amount for a full range of services (in some areas some services are "carved" out) and take on the risk of covering these services under a cap. The PCCM model was developed in 1983 to provide a transition to fully capitated care. Under this model, primary care providers provide and assume risk for primary and specialty care and other selected services. They also authorize/arrange inpatient services that are paid for separately under the state's selective contracting system. Under COHS, the county takes on the management of all services for its Medi-Cal enrollees based on a per capita payment.

In 1993, the state released geographic managed care (GMC), its strategic plan for Medi-Cal managed care for larger counties (more than 50,000 enrollees). For counties with enough enrollees for two competing plans, the two-plan model called for a local initiative—a locally developed California licensed HMO initiated by the county board of supervisors—and a commercial plan organized by the private sector (U.S. GAO, 1995; CMA, 1995). Both the public and private plan would be paid capitated rates. GMC was implemented in these larger counties where the two-plan model was intended but a local initiative failed. In GMC, there are multiple plans in the private sector, most of which are for-profit. The hope is that successful plans will expand to provide managed care for the smallest counties adjacent to them with less than 25,000 Medi-Cal enrollees.

The two-plan model offers a choice between a commercial plan, or consortium of plans, and a "local initiative" organized or operated by the county. California has implemented the two-plan model in 11 counties

with larger numbers of Medi-Cal enrollees: Alameda, Contra Costa, Fresno, Kern, Los Angeles, Riverside, San Bernardino, San Francisco, San Joaquin, Santa Clara, and Stanislaus. Tulare was scheduled to implement the two-plan model but has not yet done so. Under the two-plan model, welfare-related, poverty-related, and medically needy Medi-Cal eligibility groups must choose from either: (1) a local initiative which must contract with all disproportionate share hospitals (DSHs) (those serving a disproportionate number of Medicaid or uninsured) and traditional safety-net Medicaid providers (e.g., federally qualified health centers (FQHCs), community health centers, and county clinics), or (2) designated commercial plans in the county. Enrollment is optional for selected Medi-Cal eligibility groups—persons receiving Supplemental Security Income (SSI) or the disabled, foster care children, dual Medicare enrollees, and medically indigent adults.

Five counties with enough enrollees for one but not two plans are currently operating COHSs: Santa Barbara, San Mateo, Solano, Santa Cruz, and Orange Counties. These programs cover all Medi-Cal eligibility groups and services (with the exception of San Mateo) through the county board of supervisors. GMC has been implemented in Sacramento and will be implemented in San Diego County. Although these counties have sufficient numbers of enrollees for two plans, no local initiative was formed. Multiple commercial and nonprofit plans enroll Medi-Cal beneficiaries independently in these counties.

As of July 1997, there were 1.13 million Medi-Cal enrollees in the two-plan model but concerns had emerged (Zuckerman et al., 1998). In Tulare, for example, there has been uncertainty about the date of operation (Zuckerman et al., 1998) as plans initially had difficulty organizing provider networks (U.S. GAO, 1997). At the time of these reports, there were concerns in other counties that there may not be enough Medi-Cal enrollees to support the two plans because of declines in the number of eligibles when the state economy improved in 1994 (U.S. GAO, 1997). Federal welfare and immigration reforms in 1996 led to further declines in the number of eligibles and enrollees.

In both the two-plan and GMC models, enrollment brokers are used to help avoid risk selection, to maximize voluntary choice, and to provide educational materials for beneficiaries. The two-plan model provides

some assurances that enrollees will be assigned to traditional safety-net providers, but it does not guarantee providers a specified number of enrollees. Those who fail to choose a plan are assigned to the local initiative at a level sufficient to maintain DSH funding to the county (Zuckerman et al., 1998).[1] The GAO noted that many beneficiaries are not choosing safety-net providers and many who are assigned to them disenroll. This may leave the local initiative with a higher-risk population to serve. In Alameda County, there has been conflict between the private and county initiative regarding the alleged "skimming" of healthier Medi-Cal enrollees by private plans and hospitals (Zuckerman et al., 1998).

The state sets Medi-Cal capitation rates essentially the same way for all models of managed care. Capitation rates are based primarily on FFS historical expenses adjusted for age, sex, geographic area, eligibility group, and dual eligibility (Medicare). Adjustments are made for services provided under other programs (e.g., children's preventive care and stop-loss insurance) and the costs of mental health services (and psychotherapeutic drugs) are not included in the rates. An allowance for administrative and dental costs is added, and DSH payments are made to hospitals according to Medi-Cal negotiated contracts. Most states have set capitated rates for their Medicaid populations at 95 percent of historical FFS expenditure levels on the premise that private plans can easily find those savings by controlling use of hospital days and specialty services even though administrative costs are higher. States also face upper limits on capitated rates since, by federal regulation, their managed care initiatives cannot cost more than FFS programs would have.

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[1]Historically, Medicaid programs were required to make supplemental payments to hospitals serving a disproportionate share of low-income and uninsured persons. In the late 1980s, states used tax and donation revenue from hospitals to obtain a federal match under the Medicaid DSH program. In turn, they enhanced reimbursements to hospitals. California's DSH program (commonly referred to as "855" after the state bill enabling the program) is one of the largest in the country, with annual expenditures of $2.2 billion. Although federal legislation has capped these programs, the revenues still in the system are an important source of funding for hospitals serving relatively more uninsured persons.

Setting rates below FFS may be less viable for Medi-Cal given its historically low physician reimbursement levels (Norton and Zuckerman, 2000). The California Medi-Cal program has been quite successful in using its bargaining power along with growing market competition to achieve savings. The state sets physician payment rates quite low and has successfully used selective contracting with its hospital providers to keep Medi-Cal payment rates low. The state is viewed by many as one of the most cost-efficient. On average, California spent 29 percent less than the national average in 1995—$1,959 per enrollee compared to $3,202. Some of this difference may also reflect a lower use of long-term care than in other states.

The presence of significant private managed care and price competition in the state has apparently made providers willing to accept the low reimbursement rates. Yet it is unclear how long managed care can continue to create or maintain adequate networks for Medi-Cal enrollees, maintain steep fee discounts, and provide quality care to enrollees under the capitated amounts. Rate adequacy was one major reason for recent exits from the Medicaid market by for-profit HMOs (AMA, 1997), and withdrawals from the Pennsylvania markets were related to financial losses and the resulting squeeze placed on their pharmacy benefit managers (State Health Watch, 1998). A recent study found that commercial plans withdrew more and entered less often in 1997 and 1998 than in previous years (Felt-Lisk, 1999). This and another study noting rate inadequacy (McCue et al., 1999) express concern over continued participation of commercial plans in the Medicaid market.

3. Study Objectives

If the two-plan model successfully integrates more commercial plans in the Medi-Cal market, this will further mainstream Medi-Cal enrollees into private provider systems. However, private providers may not be aware of differences in payment rates, health risk, and resource use between Medi-Cal and the privately insured populations they are more used to serving. Understanding these differences can inform the state and providers about the extent of provider discounts that plans will need to maintain and potential distortions in service use by Medi-Cal enrollees that plans may have to better manage to stay within their cap. Understanding differences in the health risk of Medi-Cal and privately insured persons and variation within Medi-Cal populations can also inform the state on the need to risk-adjust capitated payment rates. Finally, examining the variation in health risk and resource use across counties will highlight issues that may arise in one geographic area of the state but not another. The specific objectives of this study are to:

- Compare price-standardized resources used in serving Medi-Cal and privately insured Californians in the same age, sex, and health risk group;
- Consider the potential usefulness of adjusting for differences in the health risk of Medi-Cal enrollees; and
- Compare the observed resource use of Medi-Cal enrollees to that expected if they were treated the same as those privately insured overall and in specific California counties.

We use data on those insured in the public and private sectors and in FFS plans to meet these objectives; our public sector data contain some in case management; the private sector data contain some in preferred provider organizations (PPOs) and utilization review systems. By using data on the insured still in FFS plans, however, we can observe all

utilization and make direct comparisons between the two populations. Further, it is the patterns of care under FFS that states hope to improve under managed care for Medi-Cal enrollees.

A major step in meeting our objectives is the use of ACGs developed by Johns Hopkins University to examine the distribution of Medi-Cal and privately insured enrollees across health risk groups. We combine this information on health risk with data on resource utilization and expenditures to examine the above issues. Taken together, the above analyses will inform California policymakers on relative payment and use rates of those publicly insured at a time when they are being moved more into private managed care plans. As noted above, although there has been significant enrollment in the two-plan model, some problems may arise with selection of healthier enrollees by commercial plans. Some counties had difficulty initially recruiting commercial plans; retention of plans may also vary by county. The county data and analysis will be informative as contracts are being monitored and renegotiated. The data can also be used as a benchmark against which to compare use rates once Medi-Cal enrollees are further integrated into capitated managed care.

4. Data and Sample Selection

Data for our analysis of the publicly insured include the Medi-Cal enrollment and claims data for 1994; we chose 1994 as a time period before much of the current expansion to have full claims data. We obtained 1994 data for seven California counties: Alameda, Los Angeles, San Francisco, San Diego, Humboldt, Butte, and Tulare, since the sheer volume of Medi-Cal data prevents us from analyzing the entire state. We chose the above counties in consultation with colleagues at the Public Policy Institute of California, as representing large, densely populated, as well as more rural, less dense areas of the state. These counties also differ in the types of provider systems that have historically been used to serve the publicly insured as well as in their plans for expanding managed care. Together, the enrollment in these counties accounted for almost 58 percent of the total state's enrollment in 1994.

We obtained the Medi-Cal data from the Health Care Financing Administration (HCFA) as part of the State Medicaid Research Files (SMRF) maintained there. These files are created from participating states' Medicaid Statistical Information System (MSIS) files submitted to HCFA and are edited and reformatted. The files are arranged by calendar year and date of service and claims adjustments have been applied. The SMRF files contain separate eligibility, ambulatory, inpatient, provider, drug, and long-term care claims files. The eligibility file provides data on sociodemographics (age, sex, race) and enrollment data and the claims files provide all diagnostic and procedural detail on services received under the Medi-Cal program. We have categorized enrollees into four major eligibility groups: welfare-related (Aid to Families with Dependent Children (AFDC) in 1994), poverty-related, disabled, and foster care children. The poverty-related group includes pregnant women, infants, and children qualifying under the expansions to higher-income groups implemented in the latter 1980s. The

medically needy are included in their respective categorical (e.g., welfare-related) groups.

For this project, we obtained eligibility, ambulatory, and inpatient claims. Because of major differences in coverage of outpatient prescription drugs between those publicly and privately insured, we omit these claims. Although drug expenses are growing rapidly, we focus on differences between those publicly and privately insured at a point in time. We fear that observed differences in the use and expense of drugs would more likely reflect differences in coverage than differences in health risk. Finally, drug claims generally contain no diagnostic information and, hence, their omission does not affect the ACG to which an individual is assigned. We also do not include payments for durable medical equipment, as coverage for this is variable across plans. Finally, we omit direct reimbursements to Medi-Cal providers on a per month basis for case management services provided to patients.

For those privately insured, we use 1994 data from Medstat's MarketScan data. The MarketScan data are from selected large, self-insured employers across the nation and include the health care claims for over seven million individuals across the country. These claims data are for individuals (and their dependents) who work for these large firms; we created a subset of California residents from this national sample. This is a nonrandom sample of the privately insured and may reflect those with relatively generous benefit packages. Yet, large employers have historically tried to contain health care costs by contracting with a variety of noncapitated health plans maintained by third-party administrators. These data include all diagnostic and procedural information for all physician/other professional, outpatient, inpatient, and drug services (omitted here) paid for those insured through these companies. Separate files contain counts of covered persons by age and sex groups.

Appendix A lists some of the Medstat clients nationally as well as comparative statistics on employees in the California sample and overall Medstat database. As these data show, the California sample contains a larger percentage of employees in manufacturing than are represented in the overall database. We also find that there is a higher percentage of salaried (versus hourly) persons but a lower percentage of unionized

compared to the overall Medstat sample. Although union membership generally relates to higher insurance coverage, these two patterns may counterbalance each other. The California sample is more comparable to the overall sample with respect to full-time, part-time, and seasonal workers.

We also use 1990 Census data to identify zip codes in California in which there are relatively high levels of poverty; the STF3B Census files provide counts of households with family income below varying cutoff points in relation to the federal poverty level (FPL). Information on poverty levels has been used by others to help define distressed areas (Kasarda, 1993). *Distressed* neighborhoods are areas that simultaneously exhibit disproportionately high levels of poverty (20 percent or more), joblessness, female-headed families, and welfare receipt. *Severely distressed* neighborhoods are areas with 40 percent or more of the persons living in poverty, the above characteristics, and, in addition, high teenage dropout rates. To approximate such neighborhood types, we identified enrollees in urban counties whose zip code was characterized by having 20 percent and, alternatively, 40 percent below 100 percent of the FPL.

5. Analytic Methods

To assess the health risk in the Medi-Cal and privately insured populations, we use the ACG system developed at Johns Hopkins University (Johns Hopkins University, 1997; Weiner et al., 1991, 1998). This system clusters the diagnoses (ICD-9 codes) recorded on claims for ambulatory care over a one-year period. The system first assigns claims for individuals to one or more of 34 ambulatory diagnostic groups (ADGs). The system then categorizes individuals into one of 52 *mutually exclusive* risk groups (ACGs) based on their observed health problems, age, and sex. The value of the ACG system is that it identifies categories of individuals who are relatively *homogeneous* within each category and relatively *distinct* across categories in terms of their expected health care utilization and expense. The ACG system is built on a hierarchy of *all* problems for an individual who seeks care. For example, a person with one or more minor acute conditions (such as a minor infection) is assigned to one ACG category, whereas a person with multiple serious conditions (such as diabetes or asthma) is assigned to another. In general, the higher the ACG number, the higher the expected resource usage; it can be used as a proxy for health risk.

One disadvantage of the ADG and ACG information is the large number of categories used. A useful way to summarize this distribution is to use a case mix index. To calculate a case mix based on the ACGs, we first created a "pooled weight" for each ACG by dividing the mean amount of resources used by individuals categorized into that ACG by the mean amount of resources used across ACGs for the whole population. (Resource use is measured based on standardized expenses explained below.) Thus, if members of an ACG risk group used twice the average amount of resources over the year, the ACG had a *relative* weight of 2. The index for each population, then, is the sum of the number of cases within that population in each ACG multiplied by this *relative* weight. Thus, if there are more people categorized in ACGs with

higher relative weights, such as the above example of 2, in Medi-Cal than in the private group, the Medi-Cal index will be higher. This case mix index is first developed inclusive of all Medi-Cal enrollees and then just for the welfare- and poverty-related enrollee groups.

We also assess the usefulness of the ACG system in deriving "risk adjusters" for payment rates. The basic issue is that managed care plans, if given only one premium for enrollees regardless of their health status, will have an incentive to "select" better health risks and "shun" bad ones. Favorable (adverse) risk selection occurs when relatively more healthy (less healthy) individuals enroll in managed care. The overall effect will be that managed care organizations will tend to compete on selection of members with lower health risks rather than on the basis of providing better quality care at the same or lower price. Several states are using risk-adjustment systems to enable their Medicaid managed care markets to function better.

To assess the usefulness of the ACG system, we use a split-sample actuarial technique to see how well simple age- and sex-adjusted rates compare to age-, sex-, ACG-adjusted rates. We do this by deriving measures of predictability of payments derived from a random 50 percent sample of those privately and publicly insured applied to actual expenses in the remaining 50 percent of each group. Mean errors and predictive ratios for 50 random groups of 2,500 each are derived and compared across the public and private sectors. Analysis of predictability for nonrandom groups within the Medicaid population is also presented.

Given information on the underlying risk structure of the insured populations, we also ask how the public and private sectors differ in terms of the resources typically used to serve people of similar health risk. Since much of the difference in public and private expenses is driven by differences in payment levels, we developed a "standardized" expenditure measure. To do this we first created within-state standardized prices for three types of health care resources: (1) professional services, (2) inpatient facility and ancillaries, and (3) outpatient facility and ancillaries.

For professional services, we used procedure codes (CPT-4 codes) recorded on claims to identify the total relative value units (total RVUs) used during the encounter. The Resource Based Relative Value Scale

(RBRVS) system was created to reimburse physicians based on the amount of resources used in the care of patients, including time, skill, and practice costs (Hsiao et al., 1988a; Ginzberg et al., 1990). Each professional service procedure code is "worth" a different number of RVUs as depicted in this scale (*Federal Register*, 1991). Using an individual's claims, we assigned the number of RVUs used during the year and then used a conversion factor ($55) derived from the California Medstat data to "convert" each into dollars. The $55 figure was used for both Medi-Cal and privately insured populations so that the units of professional services are priced at the same rate. We note that the conversion factor for the Medi-Cal program was only $16 indicating that the program pays only about 30 percent of what is paid by insurers in our private sample. This ratio was 34 percent in Mississippi and 55 percent in Georgia (Adams and Bronstein, 1998).

We also created standardized prices per day of inpatient care. Our standardized price summarizes across plans and, hence, payment methods, within the Medstat data. The standardized price is simply total private dollars for inpatient days divided by private days. This price per day is then multiplied by the actual days used by the Medicaid population to derive standardized inpatient expenses. In a similar manner, we divided the total private outpatient dollars by the count of total private outpatient visits made to (paid for) outpatient facilities. We used this average payment per visit by which to multiply the Medicaid enrollee's outpatient visits to derive standardized outpatient dollars. We then recalculated each enrollee's *total* care expenditures by using these standardized expenses and the units of services received. Per member per month (PMPM) standardized expenditures were calculated by dividing the total standardized expenditures by the number of months that enrollees were eligible for care.

Comparisons of actual resource utilization provide valuable information but do not reflect the use of resources relative to underlying health risks. We therefore derive measures of the *expected* resource use of Medi-Cal enrollees. We do this by first deriving relative resource weights in a multivariate analysis of private individuals. These weights are used to derive a *predicted* or *expected* amount of resource use by Medi-Cal individuals as if they were served in the private sector. If the *expected* is

greater than the *observed* value, this would indicate potential *losses* for private plans if they treat Medi-Cal clients in the "usual fashion" and at the same payment rates as the privately insured (in these large self-insured firms).

We also examine geographic variation in health risk and relative resource use within the Medi-Cal population across our seven selected counties. Analysis of variance is used to assess whether these differences are significant after adjusting for age, sex, and ACG. Differences in the actual Medi-Cal expenses PMPM and standardized amounts as well as risk-adjusted resource use are examined for each county.

6. Demographics and Health Risks

In general terms, managed care plans have reported that the Medicaid population differs from the privately insured population in ways that are important for insurance companies. The data in Table 6.1 examine the age and sex structure of the privately insured and Medi-Cal populations in our California data. It is clear from these data that the Medi-Cal population includes many more children and fewer adults than the privately insured population. Compared to the privately insured, a much higher portion of the Medi-Cal population requires coverage for pregnancy services.

In the broader study (Adams and Bronstein, 1998), we found that California had relatively fewer pregnant women in Medi-Cal than

Table 6.1

Demographic Characteristics of Enrolled Populations in California

	Private	All Medi-Cal (Selected Counties)	Welfare-Related	Poverty-Related	Disabled	Foster
No. of enrollees	188,506	2,977,438	1,679,666	905,281	331,893	60,598
% of total	100.0	100.0	56.4	30.4	11.1	2.0
% age 0–17	22.0	57.5	64.8	59.0	9.7	96.4
% age 18–34	21.5	22.7	20.4	30.6	21.4	3.1
% age 35–44	20.7	9.7	9.5	5.9	22.4	0.0
% age 45–54	18.9	4.5	3.4	1.0	20.8	0.0
% age 55–64	16.8	3.4	0.8	0.2	25.6	0.0
% female	54.8	59.0	60.0	63.0	47.0	49.0
No. with pregnancy	4,929	195,875	96,392	95,694	3,222	567
% with pregnancy	2.6	6.6	5.7	10.6	1.0	0.9

Georgia and proportionately more children. Some of these patterns are affected by differences in the states' coverage of pregnant women and children's groups. In 1994, for example, although all three states covered the poverty-related expansion groups up to 185 percent of the FPL, California's AFDC income eligibility level (for a family of three) was at 59 percent of the FPL compared to 41 percent in Georgia and 36 percent in Mississippi (NGA, 1994). In addition, California's medically needy income level (for a family of three) was at 91 percent of the FPL compared to 37 percent in Georgia; Mississippi had no medically needy program.

We also found that California and Mississippi have the highest rates of partial-year enrollees. It can be difficult for plans to accumulate enough funds through capitation payments to pay for the full costs of care used when participants move in and out of the system. Eighteen percent of the 1994 Medi-Cal population was enrolled less than six months, and the poverty-related eligibility group is the most transient. This most likely reflects that Medicaid eligibility for pregnant women is suspended after their delivery. In California, almost 32 percent of poverty-related enrollees are enrolled less than six months; in Mississippi this proportion equals almost 55 percent (Adams and Bronstein, 1998).

An important issue for both state Medicaid programs and health plans interested in serving Medicaid clients is whether health risks in the Medicaid population overall differ from the health problems in the privately insured population. To address this question, we first examine what proportion of privately insured and Medi-Cal enrollees use care at all during the year, and we then compare the types of health problems for which care is used. For the analyses of ADGs and ACGs in this chapter and most of the remaining analysis, we use data only on individuals enrolled in Medi-Cal for at least six months. Assignment of ACGs is considered more stable for these longer-term enrollees. Those enrolled for shorter time periods have different characteristics and generally cost more per month. Since "turnover" of the Medicaid population is an issue for the implementation of managed care, however, we include analysis specific to this group at the end of Chapter 9.

The data in Table 6.2 indicate that a higher proportion of privately insured than Medi-Cal enrollees used any type of care in 1994. This

Table 6.2

Proportion of Enrollees Using Care

	Status	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Age 0–17	Enrollees	41,548	1,402,834	945,387	376,237	30,141	51,069
	Users	31,085	846,188	608,154	182,855	23,674	31,505
	Percent	74.8	60.3	64.3	48.6	78.5	61.7
Age 18–64	Enrollees	146,944	985,115	484,288	229,140	270,086	1,641
	Users	115,657	702,888	350,025	128,222	225,665	973
	Percent	78.7	71.4	72.3	55.1	83.6	59.3

holds for both children (ages 0–17) and adults (ages 18–64) with the exception of the disabled Medi-Cal eligibility group. The latter are chronically ill and generally more expensive. California and most other states have either exempted these groups or are slowly experimenting with their enrollment in managed care.

Ambulatory Diagnosis Groups

Managed care organizations are also likely to be interested in the types of diagnoses for which persons seek care throughout the year. We use the ACG system to first characterize the health problems for which care is used and, then, to develop more summary measures of health risk. The 34 problem types used as the initial health problem categories in this system (ADGs) represent diagnoses that have some clinical similarity and that require similar amounts of health care resources to diagnose and treat. Individuals can be placed in more than one ADG. In the following text we discuss only general patterns of health care use. We present the actual data on these patterns in Appendix Table B.1 because of the table's length and detail.

As seen in Table B.1, Medi-Cal children use more care that is explicitly identified as preventive (through the Child Health and Disability Prevention (CHDP) program) in comparison with privately insured children and more receive visits for dental diagnoses than privately insured children. These differences are likely related to differences in benefit design. Coverage for preventive care is mandated

under Medicaid, whereas many private FFS insurance plans do not cover preventive care and even fewer cover routine dental care. Medi-Cal children ages 0–5 use less care for "minor primary infections" and "likely to recur, discrete infections" compared to children with private insurance coverage. They are also less likely to be treated for "allergies," and less likely to use what is termed "discretionary" care, which includes, for example, care for diseases of the tonsils and adenoids.

As in the younger age group, children ages 6–17 (see Table B.1) covered by Medi-Cal use more care explicitly labeled as preventive, more dental care, and more care for eye problems (these are likely also covered preventive visits). The use of care for infections is equivalent between the Medicaid and the privately insured populations in this age range, but children covered by Medi-Cal are less likely to use care for allergies, dermatological problems, and "discretionary" diagnoses. More Medi-Cal disabled children receive care for psychosocial problems, and a smaller percentage of other Medi-Cal children actually receive care for these problems than children covered by private insurance.

Medi-Cal covered adults (ages 18–64) follow a similar pattern to Medicaid children. Many (73 percent) of California Medi-Cal covered adults also use care labeled as being for "signs and symptoms, uncertain." Although we found that these diagnoses are typically used in California for CHDP claims and only those ages 18–21 in this group are eligible for CHDP, it may be that these claims are also for preventive care. Use of care for stable eye conditions is higher for Medi-Cal adults, and they are more likely to use care for minor primary infections. The Medi-Cal population in this age range uses more care for psychosocial problems than the privately insured population, but the California privately insured population has more visits for these diagnoses than the privately insured in other states (Adams and Bronstein, 1998).

We also use the data and ADG system to isolate those women experiencing pregnancy sometime during the year. Data for pregnant users among the privately and publicly insured populations is shown at the bottom of Table B.1. These data show that there is a greater use of preventive care among Medi-Cal covered patients and a greater use of care for "signs and symptoms uncertain" with greater use of dental and eye care among Medi-Cal pregnant women. Use of care for primary

minor and recurrent infections is roughly the same among the Medi-Cal and privately insured women. Use of care for psychosocial problems is actually higher among women who are pregnant and covered by private insurance. It is likely that psychosocial services received by Medi-Cal enrollees are special claims (Comprehensive Perinatal Services Program or CPSP) that do not have diagnoses coded (and perhaps are coded as "signs and symptoms uncertain"). Care for injuries among pregnant women is somewhat higher in the privately insured than in the Medi-Cal populations. This may reflect the group of Medi-Cal pregnant women (the poverty-related groups) who qualify for pregnancy-only services and, hence, do not have coverage for injuries under Medi-Cal.

In addition to examining which types of problems receive treatment, it is useful to examine the *number* of different problems for which enrollees sought care. Over a year, the use of care due to a wider variety of problems could be one indication that a given population has a generally poorer health status. Table 6.3 shows the mean number of different problems (ADGs) per individual for which care was sought during a one-year period.

Data in Table 6.3 indicate that for the nonpregnant insured, the California privately insured used care for fewer problems than did the Medi-Cal population. However, those pregnant in our privately insured sample used services for more problems than did Medi-Cal overall and, especially, for the poverty-related expansion group. The disabled (SSI) population clearly uses services for more health problems, and in some age groups, the welfare-related Medi-Cal enrollee uses more than the privately insured. Differences in which benefits are covered may partially

Table 6.3

Mean Number of ADGs for Which Enrollees (Enrolled > Six Months) Sought Care

	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Age 0–5	3.62	3.47	3.48	3.26	6.23	3.98
Age 6–17	3.14	3.23	3.19	2.76	4.70	4.07
Age 18–64	4.37	4.66	4.51	3.27	5.27	4.44
Pregnant	5.47	4.55	5.58	3.08	7.51	6.84

explain this; Medi-Cal enrollees clearly used more preventive care services. However, it may also be that our privately insured sample is disproportionately representative of those who do not choose managed care plan coverage and, hence, are less healthy individuals among the privately insured in California.

Adjusted Clinical Groups

The health risk (ACG) classification includes a set of 52 *mutually exclusive* groups, based on a hierarchy of *all* the problems for which the individual sought care. For example, a person with one or more minor acute conditions (such as a minor infection) is assigned to one ACG category, whereas a person with multiple serious chronic conditions (such as diabetes or asthma) is assigned to another. As opposed to the ADGs discussed above, each person is categorized into *only one* ACG. Appendix Table B.2 illustrates this categorization system for the Medi-Cal and privately insured. Nonusers are categorized into ACG 5200.

These data show many of the same patterns—higher use of preventive care among Medi-Cal enrollees. It also again indicates that the Medi-Cal population to some extent has fewer health risks than the privately insured population in the state. Although adult women in this group have more multiple health problems (and this may be somewhat distorted by use of the uncertain signs and symptoms diagnosis), the proportion of pregnancies that are high risk is lower overall in the California Medi-Cal than in the privately insured population. Among those with Medi-Cal coverage, the proportion of infants with serious health problems and children with multiple health problems is also lower, as is the proportion with psychosocial health risks.

In Table 6.4, we present the case mix index, or relative expected resource use, discussed above. We present this for the privately insured, for all Medi-Cal eligibility groups, and then for only the welfare- and poverty-related groups (referred to as welfare/poverty-related in the remainder of the report).

From the above indices, it appears that the privately insured in our sample have a case mix that is more intensive than the state's Medi-Cal insured population. One way to interpret the higher value of their index—1.19 compared to .99—is that the privately insured sample has

Table 6.4

Case Mix Index of Expected Resource Use

Including All Medi-Cal Enrollees (Enrolled > Six Months)		Including Only Welfare/Poverty-Related Medi-Cal Enrollees (Enrolled > Six Months)	
Private	Medi-Cal	Private	Medi-Cal
1.19	.99	1.31	.97

about a 19 percent higher-than-average expected resource use whereas the Medi-Cal population is close to the average. The difference in expected resource use is even greater when only the welfare- and poverty-related groups are compared to the privately insured. This would lead us to conclude that the Medi-Cal population has a lower health risk profile than the privately insured, but this finding is perhaps reflective of the very high penetration of private managed care in California. That is, it is quite possible that our sample of privately insured in California disproportionately consists of those privately insured who did not choose to enroll in a managed care plan because they are less healthy.

To shed insight on this issue, we used data from our other study states to derive two additional case mix indices: (1) an index based on Medicaid resource weights "pooled" across all three Medicaid programs, and (2) an index based on private resource weights "pooled" across all three study states. The indices in Table 6.5 indicate that the case mix of our privately insured California sample is indeed higher than its private counterpart in the other study states. Whereas the California private sector index equals 1.20, this index is less than 1 in both Georgia and

Table 6.5

Case Mix Indices Across States

	Private	Medicaid (All Enrollees)	Medicaid (Welfare/Poverty-Related Enrollees (Enrolled > Six Months))
California	1.20	.98	.89
Georgia	.78	1.16	1.34
Mississippi	.73	.88	.93

Mississippi. The Medicaid indices on the other hand suggest that the health risk profile of all Medi-Cal enrollees is higher than that of Mississippi enrollees but lower than that in Georgia. Although we expected the poorer southern states to exhibit higher Medicaid case mix indices, the results for all Medicaid enrollees may reflect the presence of medically needy programs—which allow those with catastrophic illnesses and expenses to "spend-down" to Medicaid levels—in California and Georgia but not in Mississippi. It does appear that the younger eligibility groups—women, infants, and children in the welfare- and poverty-related groups—in Mississippi have somewhat higher health risks than their counterparts in California.

7. Usefulness of ACGs for Risk Adjustment

As California increasingly becomes a purchaser rather than provider of health care services, the issue of potential risk selection will arise. Selection on the basis of health risk hampers competition and poses other problems. One particular problem is access for high-risk individuals. Even within the younger Medi-Cal welfare population, as we have seen, there are individuals who are relatively more ill and who may be selected against. If managed care organizations can select on health risk, relatively more ill individuals will have access problems.

Risk adjustment to capitated rates, especially if based on health risks derived from diagnoses, has the potential to alter incentives by reducing the negative consequences for the plan of enrolling the less healthy individual. Studies have shown, for example, that risk adjustment to capitated rates can help prevent discrimination against chronically ill children (Newhouse et al., 1993; Fowler and Anderson, 1996). We explore in this chapter the usefulness of using one such system for risk adjustment—ACGs—for California. (For a comparison of the ACGs to other diagnosis-based risk-adjustment systems see Dunn et al., 1996.)

To set capitated rates, states need to determine categories of enrollees they expect to be predictive of future health care use. Only by doing this can they set rates that will attract and retain plans and avoid selection based on health risk. At a minimum, states often use age, sex, and eligibility to create these categories although several states are now experimenting with risk adjusters based on diagnoses. In this chapter we focus on the predictive power gained when the ACGs are used in addition to simply age and sex categories. We assess this for randomly generated private and public groups and for nonrandomly generated groups within the Medi-Cal population. The latter is most pertinent to potential risk selection among Medi-Cal enrollees.

One way to gauge the predictive power of the ACGs is to simulate their use in setting PMPM payment rates and compare them to actual expenditures at either the individual or group level. The ability to equitably transfer dollars across plans requires measures of how well they predict for a group, whereas the ability to minimize plans' incentives to selectively enroll individuals or specific subgroups requires predictive measures at the individual level. We develop both.

To do this, we predict expenditures for those in 50 random groups drawn from those on whom we did not fit the model. Comparisons were made of predicted and actual expenditures and then summarized using (1) mean absolute prediction error, (2) mean absolute percentage prediction error for measures of predictive ability for individual "accuracy," and (3) predictive ratio for accuracy. The mean absolute prediction error is the average (across the 50 groups) of the absolute difference between mean actual and mean predicted expenditures for individuals. The predictive ratio is the ratio of the sum of the predicted to the sum of their actual dollar expenses, for all individuals in a group, averaged across the 50 random groups. In each instance we compare these measures when just age and sex are used to when age, sex, and ACGs are used to risk-adjust rates. We note that the Medi-Cal population used here consists of only those enrolled for six months or longer; their patterns of use may be more stable than those for the overall Medi-Cal population and yet they will be more likely to be enrolled in a capitated plan.

In Table 7.1, we show the individual predictive measures assuming random assignment of enrollees across groups. The mean absolute error for Medi-Cal enrollees is between $3 and $4 and the age, sex model performs almost as well as the age, sex, ACG model. That is, payments based on simply age, sex categories would differ only slightly from actual expenses per Medi-Cal person enrolled for six months or longer. For the privately insured, the mean absolute and percentage errors are considerably higher with or without ACG adjustment and, even in these completely random groups, ACGs appear more effective.

If individuals of differing health risk were, in fact, distributed randomly across different health plans, it would not be important to risk-adjust. If, however, those who are sicker and have higher expected

Table 7.1

Summary of Predictive Accuracy for Alternative Models, Random Groups (Enrolled > Six Months)

	Private: Mean Absolute Error (Mean Percent Error)	Medi-Cal: Mean Absolute Error (Mean Percent Error)
Models Estimated on PMPM Expense—No Truncation		
Age, sex	$15 (6.7)	$4 (6.8)
Age, sex, ACG	$13 (5.9)	$4 (6.5)
Models Estimated on PMPM Expense—Truncation at $50,000		
Age, sex	$10 (4.8)	$4 (6.1)
Age, sex, ACG	$7 (3.4)	$3 (5.5)

resource use are concentrated in a few plans, plans may experience financial problems and access may be compromised. We gauge the usefulness of ACGs for risk adjustment in light of two selection processes that could take place within the Medi-Cal population: (1) presence of high-cost, chronic conditions, or (2) location in a relatively poorer residential area.

The high-cost, chronic conditions included in the analysis are cancer, heart disease, Human Immunodeficiency Virus (HIV), diabetes, sickle cell anemia, and congenital anomalies. The PMPM for those welfare- or poverty-related with *any* of the high-cost conditions was $335—almost six times as much as the average. In Table 7.2 we use the same approach as before to gauge the usefulness of risk-adjusters for nonrandom groups based on presence of a chronic, high-cost condition. In this analysis, the 50 groups are made up solely of individuals with high-cost conditions.

Table 7.2

Predictive Accuracy for Nonrandom High-Cost Groups (Enrolled > Six Months)

	Mean Absolute Error (Mean Percent Error)	Predictive Ratio
Models Estimated on PMPM Expense—No Truncation		
Age, sex	$259 (77.1)	.23
Age, sex, ACG	$119 (35.3)	.65
Models Estimated on PMPM Expense—Truncation at $50,000		
Age, sex	$261 (77.8)	.22
Age, sex, ACG	$133 (39.5)	.60

In Table 7.2, we show the average individual predictive measures as well as the predictive ratio. As noted, this predictive ratio provides useful information on how the "typical" plan would fare *in total* under the alternative rate-setting methods. The results indicate that significant individual errors can occur with simple age- and sex-adjusted rates but using ACGs reduces them significantly. The mean absolute error is reduced by over $100 per person per month and the mean absolute percentage error is cut in half. The results also show that a plan serving only those with high-cost conditions would experience a larger shortfall of payments if rates were based on only age, sex as risk-adjusters. The ratio of total payments to total expenses for the average plan would be only 23 percent. This markedly improves with the use of ACGs, to 65 percent, but total payments would still fall short of total expenses.

The results based on the truncated data are not much different, showing again a marked improvement in predictive accuracy with the use of ACGs. Although truncation and re-insurance would address the issues of unpredictable, very expensive cases, it would not necessarily free the managed care plan from the additional, predictable expenses (up to the $50,000 cap) associated with these types of conditions. Of those Medi-Cal poverty-related (enrolled > six months) enrollees with these high-cost conditions, only around 1 percent had annual expenses over $50,000.

Other characteristics could also lead to "selection" of certain groups. Geographic characteristics, such as relatively poorer neighborhoods, for example, could be readily used to "select out" certain enrollees. Geographic location may also reflect underlying access problems such as the lack of office-based physician practices physically located there. One study focusing on Washington, D.C., found that the supply of doctors in the metropolitan area was characterized by excesses of specialists but shortages of family doctors in many communities that need them most (Goldstein, 1994). These two characteristics may work together if, for example, an urban teaching hospital is located in a relatively poor neighborhood and is either part of a Medicaid managed care network or is forming its own, as is the case in the two-plan model.

One question for setting capitated rates, especially in California, where enrollees may be more likely to enroll in the local or public plan, relates to the usefulness of risk adjustment for enrollees. In Table 7.3, we

Table 7.3

Predictive Accuracy for Nonrandom High-Poverty Medi-Cal Groups (Enrolled > Six Months)

	Zip Code with > 20% < 100% FPL		Zip Code with > 40% < 100% FPL	
	Mean Absolute Error (Mean Percent Error)	Predictive Ratio	Mean Absolute Error (Mean Percent Error)	Predictive Ratio
Age, sex	$7 (10)	1.01	$7 (12)	1.07
Age, sex, ACG	$6 (9)	1.01	$7 (11)	.91

show the individual predictive measures and the predictive ratio for 50 groups of 2,500 drawn from enrollees in urban zip code areas with high rates of poverty. The predicted amounts are based on urban-specific age, sex, and ACG predicted amounts; use and expense rates differ for urban/rural areas.

First, as expected, the mean absolute and percentage error is higher for these nonrandom groups than for the set of random groups analyzed above (Table 7.1). For those in zip codes where 20 percent or more of the households are in poverty, the mean absolute error equals $7. There is only a slight improvement in predictive accuracy with the use of ACGs for enrollees in either this or the poorest, severely distressed areas (40 percent or more of households in poverty).

The predictive ratios for these nonrandom enrollee groups in Table 7.3 indicate that there is the possibility for slight overpayment for Medi-Cal enrollees in California urban zip codes with 20 percent or more poverty with or without ACG adjustment. A different picture emerges, however, for those in the very poorest zip codes. In these areas, the age, sex models would overpay; the predictive ratio equals 1.07. The use of ACGs does not improve the predictive ratio and actually implies that there would be underpayment (0.91) for this nonrandom group. This suggests that this high-poverty group uses more resources than we would expect given its health risk profile. This might be an overuse of emergency room services but it could, in turn, indicate general problems with access. Overpayments to plans willing to serve these areas may not

be of concern if the state believes that these plans will improve access and work to reduce use of nonurgent emergency room services.

In California, the percentage of urban enrollees (in our sample) in the poorest zip code areas is only 2 percent as compared to almost 9 percent in Georgia (Adams and Bronstein, 1998). The absolute number of enrollees in the poorest zip codes in California is quite small, and it appears that there is more variation in expenses that remain unexplained by the ACG system. The lower percentage of Medi-Cal enrollees in these poorest urban areas is consistent with an earlier study that found more limited concentration of the poor in western cities than in their southern counterparts (Kasarda, 1993). Almost 8 percent of the poor population lived in severely distressed neighborhoods in southern cities in 1990, compared to about 4 percent in such neighborhoods in western cities. This finding, in conjunction with our results, suggests that very poor Medi-Cal enrollees are more scattered geographically (less segregated) and, hence, there is perhaps less potential for this type of risk selection in California.

8. Resource Use

The ability of private plans to continue to serve Medi-Cal clientele will be affected by the relative resource needs of this clientele. As private plans consider the enrollment of Medi-Cal enrollees, they will want to know their expected costs. If there are differences in expected resource use that are not compensated for and if plans are not able to implement efficiencies in service provision to reduce these costs, private plans may have incentives to underserve Medi-Cal enrollees. Even though commercial plans are currently participating in Medi-Cal, their long-run participation will likely require attention to the adequacy of payment rates as has been found elsewhere (McCue et al., 1999).

In this chapter, we first compare actual PMPM expenditures across Medi-Cal and privately insured individuals. PMPM expenditures are calculated by dividing total health care expenditures by the number of months that individuals are enrolled in either Medi-Cal or private insurance. Medi-Cal data include month-to-month enrollment but monthly data are not available for all Medstat enrollees. For this study, we estimated the number of months for which the Medstat insured were enrolled during the year using MarketScan data on length of enrollment by age and sex for a subset of covered persons. If this method overstates the number of months enrolled for our privately insured population, their PMPM expenditures will be biased downward.

The data in Table 8.1 show that, with the exception of enrollees with disability eligibility, Medi-Cal pays less for medical care, per member per month, than do private insurance programs for those in the same broad age groupings. However, this is not surprising given the relatively low level of Medi-Cal payment rates noted above. Although actual expenses are the most readily available measure of resources used and form the basis for calculating the state's capitated rates, they tell us little about the relative value of health care resources used in serving these two groups. To better compare the value of resources used, we derived price

Table 8.1

PMPM Actual Expenses for Enrollees (Enrolled > Six Months)

Age 0–17	$108.45	$36.59	$26.30	$33.34	$345.18	$68.52
Age 18–34	$140.57	$71.94	$38.41	$43.89	$252.49	$68.29
Age 35–44	$193.49	$113.81	$58.34	$62.83	$241.36	$0.00
Age 45–54	$254.38	$176.34	$88.35	$75.04	$254.10	$0.00
Age 55–64	$369.16	$230.49	$114.00	$122.68	$249.46	$0.00
Pregnant	$589.42	$376.28	$364.00	$383.77	$544.93	$346.79

"standardized" expenses as described in Chapter 5. These are shown in Table 8.2.

As these data show, judging by standardized measures, nearly all Medi-Cal age and eligibility groups are more costly to care for than the privately insured population. Differences between the privately insured and the disabled Medi-Cal population as well as between publicly and privately insured pregnant enrollees are particularly dramatic. The analysis indicates that, when price differentials are put aside, the Medi-Cal covered population, on average, used a higher dollar amount of resources each month than the privately insured population.

These patterns are surprising in that the value of health care resources used by those in the private sector is lower than for Medi-Cal enrollees. Recall that the case mix index presented above indicated that the privately insured in our California sample had more resource-intensive needs than the Medi-Cal population. It is consistent with previous studies of the Medicaid program, however, that there are distortions in resource use for the publicly insured. That is, there is

Table 8.2

Price Standardized Expenses PMPM for Enrollees (Enrolled > Six Months)

Age 0–17	$89.00	$107.59	$89.25	$97.20	$645.24	$205.65
Age 18–34	$112.54	$198.50	$117.83	$122.13	$650.37	$233.62
Age 35–44	$150.51	$322.90	$175.14	$180.50	$665.64	$0.00
Age 45–54	$187.44	$492.69	$260.38	$203.48	$700.35	$0.00
Age 55–64	$264.05	$632.55	$327.23	$316.14	$682.92	$0.00
Pregnant	$471.83	$901.87	$849.00	$949.42	$1,265.33	$975.10

likely overuse *relative to health risks* of some costly resources, such as hospital outpatient or emergency room care, and possible underuse of resources, such as private physician care, which are more difficult to secure for the Medicaid-covered population.

In this chapter, we try to assess these potential distortions in resource use by taking into account the differences in health care risks for the two insured populations. This is done by using the rate of health care resource use per ACG found in the privately insured state sample and applying this to the distribution of Medi-Cal enrollees in each ACG to calculate an "expected" amount of resource use for them. This estimate represents their usage "as if" they were treated in the private sector. The actual resource use of the Medi-Cal population is then divided by this expected use to create an "observed-to-expected" ratio of total resource use. Where this ratio is close to 1, the Medi-Cal population uses the same amount of total resources that the private sector does for the same types of health risk. Where the ratio is greater than 1, the Medi-Cal population uses more resources, and where the ratio is less than 1, the Medi-Cal population uses less than would be expected.

Examination of the observed-to-expected ratios of resource use shown below in Table 8.3 indicates that on a risk-adjusted basis, the Medi-Cal-covered population uses somewhat less outpatient services than would be expected but more inpatient days and total professional services. Adjusting for differences in health risks, the Medi-Cal population uses around 21 percent more inpatient days than would be expected for the privately insured. Total professional services appear to be overused relative to that expected by about 12 percent. We note that

Table 8.3

Risk-Adjusted Resource Use for Medi-Cal Enrollees
(Enrolled > Six Months)

Inpatient Days	Outpatient Visits	Work Component of Professional Services	Total Professional Services (All Populations)
1.21	.68	.67	1.12

in Georgia and Mississippi (Adams and Bronstein, 1998), the ratios for outpatient facility days were greater than 1, indicating possible overuse of emergency room/outpatient services. Thus, the higher average standardized expenditure measures seen above for the Medi-Cal population may partly reflect an excessive number of inpatient days and, to a lesser extent, excessive use of total professional services, given the health risks represented in the Medi-Cal population. If managed care plans can reduce hospital admissions by better management of care or can create incentives for hospitals to shorten lengths of stay for Medi-Cal enrollees, these higher-than-expected inpatient days may be a potential source of savings.

9. County Variation

There are many differences in the organization and delivery of health care services in urban and rural areas. Urban areas are more heavily bedded, have higher physician-to-population ratios, and have more competition in many areas, whereas rural areas are still struggling with adequate physician supply and many community hospitals are fighting to survive. In this chapter, we consider relative case mix or expected health care use/costs across counties and how this relates to patterns of actual resource utilization. We also examine the observed-to-expected resource use to see if the distortions found overall—higher inpatient facility days—apply across all counties. Most states use some type of geographic adjustment in setting capitated rates, but it is unclear whether these adjustments are for health risk, prices, access concerns, or some combination. Given that California's managed care is proceeding largely county by county, it is important to examine our measures at the county level. These patterns will help the state understand the relative health needs of different counties and inform managed care plans that may serve Medi-Cal clients in different areas of the state.

Enrollment Patterns

As background, we first examine differences in the eligibility characteristics of enrollees across counties. The distribution of enrollees across eligibility categories is informative for expected health care use because of the rules that define eligibility. For example, women eligible because of their pregnancy will fall largely into the poverty-related expansion eligibility groups, whereas longer-term welfare recipients—usually low-skilled women with young children—will fall more into the welfare-related group. The disabled, by definition, are the nonelderly (we have omitted those over age 65) who have chronic illness or disabling conditions that prevent them from working.

The data in Table 9.1 show the distribution of enrollees by major enrollment group. These data show that most of the urban and rural counties have close to two-thirds of their enrollees in the welfare-related category; for the rural counties, the range is from 60 to 66 percent. Among the urban counties, Los Angeles and San Francisco differ from this 60 percent range. In Los Angeles, the welfare-related eligibility group is 55 percent of the total and the poverty-related group is correspondingly higher, at 34 percent. This may reflect a greater number of women in the pregnancy expansion groups in Los Angeles. In San Francisco, the proportion of the total in the welfare-related eligibility group is also lower but this reflects a much higher proportion of Medi-Cal disabled (SSI)—25 percent compared to 10 to 16 percent—in the other urban counties. This likely reflects a higher prevalence of HIV/AIDS in this geographic area.

Table 9.1

Distribution of Medi-Cal Enrollees (Enrolled > Six Months) by Major Enrollment Category and County

	Welfare-Related	Poverty-Related	Disabled	Foster Care
Urban counties				
Alameda	63%	19%	16%	2%
Los Angeles	55%	34%	10%	2%
San Diego	60%	26%	12%	2%
San Francisco	48%	23%	25%	3%
Rural counties				
Butte	66%	17%	15%	2%
Humboldt	62%	16%	20%	2%
Tulare	60%	29%	10%	2%

Variation in Case Mix

One key result in our broader study (Adams and Bronstein, 1998) was a higher health risk profile for rural than for urban Medicaid enrollees in California and Mississippi. Table 9.2 presents the values for enrollees in the rural and urban study counties. The higher case mix index for rural areas means that a higher proportion of the rural enrollee population falls into ACGs with higher-than-average expected resource

Table 9.2

Case Mix Index for Urban and Rural Medi-Cal Enrollees
(Enrolled > Six Months)

	Urban	Rural
All Medi-Cal enrollees	.99	1.10
Welfare/poverty-related Medi-Cal enrollees	.99	1.66

NOTE: Data are for seven selected counties: Alameda (U), Butte (R), Humboldt (R), Los Angeles (U), San Diego (U), San Francisco (U), and Tulare (R).

use/costs. The welfare/poverty-related groups in the rural areas studied exhibit 66 percent higher-than-average expected costs. Initially, we expected this pattern in the southeastern states where there are more disabled in the poorer/rural areas. However, our overall study found this primarily in Mississippi (Adams and Bronstein, 1998). California and Georgia had only slightly higher percentages of disabled enrollees in their rural county areas. Although this may be a factor in the higher case mix index for all Medi-Cal enrollees in rural areas, we also see a higher case mix for the poverty-related groups in rural California counties. These differences may provide an incentive for managed care plans to "select" against rural enrollees.

These urban/rural patterns may vary for specific counties. Table 9.3 presents county-specific case mix indices and there are marked differences. We found rural enrollees to have a higher case mix overall, but the pattern by specific counties indicates that one urban county (San Francisco) and one rural county (Humboldt) have the highest case mix indices among our seven selected counties. Most of the remaining counties have indices above 1, but the index for Los Angeles is the lowest of all counties analyzed.

We would expect these differences in the case mix, or expected resource use, to be reflected in historical utilization and expense. Table 9.4 presents actual PMPM, price-standardized expenses and total RVUs for welfare and poverty-related Medi-Cal enrollees in each county. These data indicate that actual expenses PMPM vary across counties by as much as 38 percent and the differences are significant at the .01 level even after adjusting for age, sex, and ACG. Although the relative ranking

Table 9.3

Case Mix Index by County, All Eligibility Groups and Welfare/Poverty-Related Enrollees (Enrolled > Six Months)

	All	Welfare/Poverty-Related
Urban counties		
Alameda	1.12	1.13
Los Angeles	.94	.95
San Diego	1.07	1.08
San Francisco	1.41	1.20
Rural counties		
Butte	1.16	1.18
Humboldt	1.38	1.32
Tulare	1.02	1.13

Table 9.4

Actual PMPM Expenses, Price Standardized Expenses (PMPM), and Total RVUs by County for Welfare/Poverty-Related Enrollees (Enrolled > Six Months)

		Price Standardized	
	PMPM	PMPM	Total RVUs
Urban counties			
Alameda	$69	$194	18
Los Angeles	$58	$158	14
San Diego	$60	$169	16
San Francisco	$67	$224	19
Rural counties			
Butte	$65	$213	17
Humboldt	$78	$214	26
Tulare	$57	$160	18

of the seven counties on actual PMPM is generally in line with their ranking on the case mix index, San Francisco is not the highest nor is Los Angeles the lowest. This might indicate differences in local markets—such as greater or lesser hospital discounts—which lead to lower or higher expenses relative to expected resource use.

When we consider the price standardized expenses PMPM (column 2) they are exactly in line with the relative measures of health risk across counties. This analysis indicates that independent from the actual costs of health care resources in local areas, the relative value of resources actually received by Medi-Cal enrollees across counties is as expected given their relative health risks. In the last column of Table 9.4, we present total RVUs per enrollee. Enrollees in Humboldt are receiving many more professional services as reflected in their higher actual expenses PMPM.

To further explore the differences across county areas we present in Table 9.5 the mean outpatient and inpatient facility days per enrollee. These are also significantly different at the .01 level after adjusting for age, sex, and ACG. The data show some interesting patterns. The highest use of outpatient facility days is in Butte, San Francisco, and Humboldt Counties. The lowest rate of use is actually in Los Angeles. There may be room for some lowering of outpatient facility use among Medi-Cal enrollees in these areas, especially in Butte and San Francisco, and we examine this further in the next section.

The highest inpatient facility use occurs in San Francisco and Los Angeles. The higher rate of use in San Francisco is likely related to the

Table 9.5

Mean Outpatient and Inpatient Days per Enrollee
by County for Welfare/Poverty-Related Enrollees
(Enrolled > Six Months)

	Outpatient Facility Days	Inpatient Facility Days
Urban counties		
Alameda	1.01	.22
Los Angeles	.38	.29
San Diego	.60	.23
San Francisco	1.54	.30
Rural counties		
Butte	2.01	.20
Humboldt	1.08	.19
Tulare	.67	.20

higher case mix found there, but recall that Los Angeles has the lowest case mix index of the selected counties. In San Diego, a county that relies largely on private providers to serve Medi-Cal enrollees, the use of outpatient and inpatient facility days appears relatively low.

Risk-Adjusted Use

Above, we considered the risk-adjusted use of inpatient, outpatient, and professional services by the Medi-Cal-covered population to identify distortions. As noted, we found that they use less outpatient care but more inpatient days and total professional services than would be expected. In this section we consider the risk-adjusted use of services of Medi-Cal enrollees for each county. In each instance, their use is being compared to the use "expected" in our total sample of the privately insured in California.

The ratios in Table 9.6 indicate that there are some interesting patterns across counties. Higher-than-expected use of inpatient facility days occurs primarily in Los Angeles and San Francisco. In these counties, inpatient days are from 21 to 35 percent higher than expected

Table 9.6

Risk-Adjusted Resource Use for Welfare/Poverty-Related Enrollees (Enrolled > Six Months) by County

	Inpatient Days	Outpatient Facility Days	Work Component of Professional Services	Total Professional Services (All Populations)
Urban counties				
Alameda	.91	1.10	.61	1.20
Los Angeles	1.35	.52	.69	1.10
San Diego	.91	.70	.69	1.12
San Francisco	1.21	1.57	.69	1.16
Rural counties				
Butte	.75	2.01	.58	1.07
Humboldt	.66	.96	.48	1.43
Tulare	.81	.72	.54	1.17
All	1.21	.68	.67	1.12

given the health risks of Medi-Cal welfare- and poverty-related enrollees in those counties. Recall that actual inpatient and outpatient days per enrollee appeared high in San Francisco but not in Los Angeles. The "overuse" of inpatient days in Los Angeles may reflect the higher proportion of poverty-related enrollees—likely pregnant women enrolling late in their pregnancy—in that county. Los Angeles also has had a hospital-centered system of care historically.

Although overall results did not indicate higher-than-expected use of outpatient days, the results in Table 9.6 indicate that this occurs in Alameda and, especially, San Francisco and Butte Counties. The ratio of observed outpatient visit days to those expected given the health risk profile of welfare/poverty-related enrollees in San Francisco County is 1.57 and in Butte, it is over 2.00. Managed care plans in the San Francisco area may be able to generate savings from better management of inpatient and outpatient facility use for the welfare- and poverty-related groups. In Butte, the potential appears to be in reducing outpatient facility area, unless outpatient days are being used as a cost-effective substitute for inpatient days. Los Angeles enrollees continue to exhibit a low use rate for outpatient days, even after adjusting for health risks.

The other county with a relative high case mix profile is Humboldt. The observed-to-expected ratios in Table 9.6 indicate that the use of health care services for the welfare/poverty-related enrollees in this county is generally not above that expected given their risk profile, with the exception of total professional services. As discussed in our larger study, this service category included many state-specific codes to which we could not assign RVUs and in California, especially, appeared to be related to mental health services. The latter services have been largely carved out of the capitated rate in California. The data in the above table, however, suggest that use of these services is 43 percent higher than would be expected in the private sector in Humboldt County. Again, the welfare- and poverty-related enrollees in San Francisco appear to be overusing these services even after adjusting for the higher case mix of enrollees in that county.

We note again the higher-than-expected use of total professional services by welfare/poverty- related enrollees in the largest county area,

Los Angeles. The image of overuse of emergency room services among Medicaid populations in larger urban areas is not substantiated by this finding. Rather, there is higher-than-expected use of inpatient and professional services. If the higher-than-expected use of inpatient days reflects postponed enrollment by pregnant women and lack of prenatal care, managed care plans will have to achieve savings via outreach, increased social supports, or other methods perhaps not typically used by private plans.

Short-Term Enrollees

All the analyses to this point have been of enrollees in Medi-Cal for six months or longer. Yet the entry and exit of short-term enrollees is endemic to the Medicaid program and poses major issues for managed care plans. Before concluding our county-level analysis, we consider the variation in the proportion of short-term enrollees, their relative costs, and their overuse of services for each county analyzed.

Short-term enrollees can make it difficult for managed care organizations to accumulate enough funds through capitation payments to pay for the full costs of care. As noted above, we found that California and Mississippi have the highest rates of partial-year enrollees among the three study states. As in the other states, the poverty-related eligibility group in California is the most transient; almost 32 percent of poverty-related enrollees are enrolled for less than six months.

We also found that part-year enrollees had higher expenses PMPM than those enrolled for longer periods, perhaps reflecting "pent-up" demand as they enter the Medicaid program. Table 9.7 shows the portion of all enrollees enrolled for less than six months in each county as well as their PMPM expenses. Those enrolled for less than six months had twice the expenses of longer-term enrollees in California; the difference for short- and long-term enrollees in Mississippi was almost triple (Adams and Bronstein, 1998). If the counties vary in terms of the proportions of their caseloads that are short-term rather than long-term enrollees, this would affect their overall expenses and perhaps their ability to manage them in a capitated setting.

Table 9.7

Percentage Enrolled Less Than Six Months and PMPM for These Enrollees

	All Enrollees	Welfare/ Poverty-Related	All Enrollees	Welfare/ Poverty Enrollees
Urban counties				
Alameda	16%	17%	$222	$145
Los Angeles	20%	21%	$212	$158
San Diego	23%	24%	$154	$131
San Francisco	22%	25%	$211	$118
Rural counties				
Butte	15%	16%	$152	$126
Humboldt	19%	22%	$183	$134
Tulare	21%	22%	$130	$101

The data in Table 9.7 indicate that the urban counties studied tend to have somewhat higher proportions of short-term enrollees. In urban counties, the proportion enrolled less than six months ranges from 16 to 25 percent for eligibility groups shown and 15 to 22 percent in the rural counties. San Francisco County has the highest proportions enrolled for short periods. The PMPM expenses shown in the last columns of Table 9.7 are multiples of those shown for longer-term welfare/poverty-related enrollees in each county (see Table 9.4). They range from a little less than twice as much in the rural counties to almost three times as much in Los Angeles County.

Given these findings, we repeated the observed-to-expected analysis for only the short-term enrollees in each county. We note, however, that the assignment of ACGs to short-term enrollees is based on far less information and is less likely to reflect their underlying health risk. However, it does provide insight on their effect on the Medi-Cal FFS or managed care system, since they often have pent-up demand or are entering the Medi-Cal program *because* they have medical problems (e.g., through the medically needy program).

In Table 9.8 we show the observed-to-expected ratios for all welfare/poverty-related enrollees for those enrolled less than six months. We derive predicted, or "expected," resource use based on the expected values for the privately insured in the same ACG, just as we did above for those enrolled longer than six months. Overall, the ratios indicate an overuse of only inpatient days. For all counties, the ratio in Table 9.8 indicates that inpatient days are 72 percent higher than expected for the health risk (ACG) categories of these individuals. This result is consistent with either pregnancy or conditions that qualify enrollees under the medically needy option. There is not an indication of overuse in the remaining service categories for short-term enrollees.

There is also significant variation in these ratios across counties. Although there is higher-than-expected use in all urban and most rural counties, Humboldt does not fit this pattern. Indeed, there is potentially underuse of services in this county. On the other hand, short-term enrollees in Los Angeles use virtually twice that expected given our measure of health risk (ACGs). Although Los Angeles did not have an

Table 9.8

Risk-Adjusted Resource Use for Welfare/Poverty-Related Enrollees (Enrolled < Six Months) by County

	Inpatient Days	Outpatient Visits	Work Component of Professional Services	Total Professional Services (All Populations)
Rural counties				
Alameda	1.28	.76	.33	.84
Los Angeles	2.00	.35	.33	.75
San Diego	1.19	.48	.45	.79
San Francisco	1.16	1.09	.37	.76
Urban counties				
Butte	1.13	1.19	.41	.78
Humboldt	.74	.68	.31	.86
Tulare	1.04	.49	.35	.78
All	1.72	.45	.36	.76

exceptionally high proportion of short-term enrollees, this differential in hospital use indicates that the short-term enrollees, perhaps pregnant women near delivery, come in to Medicaid with immediate needs for expensive hospital services. Short-term enrollees in other urban counties, including San Francisco, also have higher-than-expected use of inpatient days. This adds another dimension to the managed care challenge in this specific county.

With respect to outpatient facility services, we again see higher-than-expected use in San Francisco and Butte County. This indicates that both short- and long-term enrollees are using these services at higher-than-expected rates in these counties. The results in the last column, however, indicate that short-term enrollees are not necessarily using more total professional services than expected in these or other counties. The latter may reflect that short-term enrollees are not in the system long enough to establish relationships with physicians and other professional providers.

10. Conclusions and Discussion

Our results indicate that the Medi-Cal population exhibits a lower case mix profile, or expected level of cost and resource use, than our privately insured sample. This pattern, specific to California in our broader study (Adams and Bronstein, 1998), may be related to the level of private managed care and competitive pressure existing in the state. Although Georgia and Mississippi have very low levels of managed care among the privately insured, California leads the country. Thus, those remaining in private indemnity coverage in California may be those less healthy and less inclined to enroll in a capitated plan. Consistent with this hypothesis, the case mix index of our California privately insured sample was higher than that in the other two study states. Thus, California managed care plans considering who to enroll next may actually prefer Medi-Cal enrollees who exhibit a lower case mix profile than the privately insured seen here.

If this result applies generally to those remaining in the noncapitated privately insured population and commercial plans judge on the basis of health risk alone, the state will likely continue to have an adequate supply of private plans willing to serve Medi-Cal clientele. However, plans will consider not only health risks but also the adequacy of the state's capitated rates. Our results confirm the lower (than private) reimbursement levels used by the Medi-Cal program. Even if plans view Medi-Cal enrollees as lower risk, the lower provider payment rates the state has secured over time will need to be maintained by plans to a certain extent. That is, plans will need to maintain existing or new providers willing to accept these lower payment levels or somehow alter reimbursement schedules while staying within the overall cap. Alternatively, they may find some savings from better management of health care resource use by the Medi-Cal population.

As California continues to move enrollees into these capitated payment arrangements, our results indicate that risk adjustment based on

ACGs would be helpful in addressing potential adverse selection *within* the Medi-Cal population. If the goal is to enroll those with chronic conditions into private managed care, our results provide evidence that risk-adjusters that go beyond age and sex categories would be helpful. This is particularly true if commercial plans are competing with public providers who may suffer from adverse selection. Many states are using risk-adjustment in setting their rates, largely on a prospective basis, and some are using ACGs.

In addition, we found that the Medi-Cal case mix profiles differ across county areas, sometimes in unexpected ways. Although the higher risk profile of San Francisco enrollees is not surprising, we found *rural* Medi-Cal enrollees to have higher risk profiles overall and those in Humboldt County to be particularly high. Given this result, the risk-adjustment of capitated rates would likely entail the redistribution of Medi-Cal funds across counties. In turn, counties would need to use risk-adjustment in making payments across plans within their area. Counties would need to set different rates, for example, for the local and commercial plans serving clients within their area based on the relative case mix of their enrolled members.

We did find some evidence of distortions in the way Medi-Cal enrollees are served. Those enrolled for six months or longer appear to use a more-than-expected number of inpatient days and to a lesser extent, total professional services, given their health risk. As noted, California has been successful in using a selective contracting system to keep hospital provider rates low. Our findings are evidence that providers may have adjusted to this system by increasing total inpatient days. The challenge for managed care plans will be to keep the lower rates while better managing the use of hospital days. It may also be, however, that the higher-than-expected use of inpatient days found in some counties is closely linked to the enrollment of pregnant women near or at the time of delivery. If this is the case, managed care will have missed the most promising period of improved management—the prenatal period—and will have to use different types of management tools to improve the situation. California has separate capitated rates for pregnant women, but these may not adequately compensate plans for the consequences of the postponed prenatal care.

We also asked whether there were differences across counties whose delivery systems and initial adjustments to the two-plan model differ. In Alameda and Los Angeles, for example, there have been strong traditional public providers, whereas San Diego has relied heavily on private providers. In Alameda County, issues of risk selection arose with the implementation of the two-plan model (Zuckerman et al., 1998). We found differences in the counties' case mix but we also found evidence of possible overuse of services relative to need. The analysis indicated a higher-than-expected use of inpatient days among longer-term enrollees in two counties—Los Angeles and San Francisco. Although this was coupled to lower-than-expected use of outpatient facility days in Los Angeles, use of outpatient facilities in San Francisco was also higher than expected. In Humboldt, a county with a relatively high case mix index, service use appeared generally lower than expected with the exception of professional services. Managed care plans in these different counties will face different health care needs and historical patterns of care as they enter the Medi-Cal market in the various county areas. We note that Humboldt has not implemented the two-plan model.

Although we found that expenditure patterns for those enrolled longer than six months were stable enough to create reliable, risk-adjusted rates when short-term enrollees were included in the analysis, this finding did not hold (Adams and Bronstein, 1998). We examined the utilization and costs of these short-term enrollees in Medi-Cal and found that they tend to come into the system with pent-up demand and much higher costs. This may make it difficult for managed care to recoup the full costs of serving such enrollees. If there is a lag in enrollment of those newly entering Medicaid into health plans, however, the brunt of these costs may actually fall on the Medi-Cal FFS, rather than on the managed care sector. Indeed, actual capitation rates are higher than they would be if the short-term enrollees were excluded from the state's calculations.

We found that California counties vary in terms of the proportion of short-term enrollees, with urban counties tending to have more. Although Los Angeles did not have a particularly high proportion of short-term enrollees, they apparently enter with excessive pent-up demand. In Los Angeles, short-term enrollees use twice as many

inpatient days as expected given their health risk. The ability of states to measure the health risks of short-term enrollees is limited and this poses issues for setting capitation rates. Several states are making special rate adjustments to account for the relatively higher use of short-term enrollees.

California policymakers may want to consider risk-adjustment by county or within county. Some states have adjusted rates for specific urban areas and at least two have used city-specific (risk) adjustments. The intent is to account for variation in expected expenses of those in highly urbanized areas, although it is unclear whether states view this as related to geographic variation in the costs of providing services, to health risk, or to access concerns. Special policies may also be needed to deal with the most urbanized areas. We note that a federal waiver granted to Los Angeles will help it retain some of its federal DSH payments while allowing it to restructure what has historically been a hospital-centered public provider system.

In conclusion, the expansion of managed care in California holds both promise and peril. Although commercial plans may find Medi-Cal clientele preferable to the privately insured not yet enrolled in managed care, we have been able to examine only a limited private sample in this study. Even if the risk profile of Medi-Cal enrollees is lower than the remaining noncapitated privately insured population, Medi-Cal's low provider rates may still pose challenges to continued expansion. Commercial plans will likely need to create new provider networks in some areas of the state and maintaining the steep provider discounts now used by Medi-Cal may be difficult, especially over the long-run. Finally, plans will face special challenges in serving the very high risk populations such as the disabled in San Francisco and pregnant women who postpone needed prenatal care.

Appendix A

Medstat MarketScan Data

Given the importance of the MarketScan data for our analysis and conclusions, we include in this appendix some detail on the nature of the sample data for California. As noted, this database is generated by the voluntary participation of large, self-insured firms in the Medstat client base. These firms share their health care claims and data on covered persons with Medstat in return for value-added services and software.

Since their participation is voluntary and will vary somewhat by state, we compared the California sample to MarketScan data overall on some key variables. These include (1) major industry of employee, (2) employee status (e.g., full or part time), and (3) employee classification (e.g., union/nonunion). We show each of these distributions for our 1994 California sample and the total MarketScan 1994 database nationally in the tables that follow. A sample list of large employers included in the Medstat client base can be found in Medstat's standard marketing materials.

As the data in Table A.1 show, the California sample differs from the overall MarketScan database largely in terms of the proportion of employees who work in durable manufacturing. Whereas 27 percent of the overall database is in this industry, around 50 percent of the California sample is. However, if we consider manufacturing as a whole—both durable and nondurable goods production—42 percent of the overall database employees are in this broad industry category versus 58 percent in the California sample. There is also a higher percentage of the California Medstat sample in mining employment, and, correspondingly, a lower percentage in state government than in the overall MarketScan database. Finally, the percentage in finance/insurance/real estate is over twice that in the overall database.

We do not know if the percentages seen in the California Medstat data reflect the types of employment of all privately insured in the state. If the sample is different from the privately insured population along

Table A.1

Distribution of Covered Persons by Major Industry: California Sample and MarketScan Database, 1994
(in percent)

Industry	California Sample	MarketScan Database
Mining	9	4
Construction	0	0
Manufacturing—durable goods	50	27
Manufacturing—nondurable goods	8	15
Transportation and public utilities	5	22
Wholesale trade	0	0
Retail trade	8	9
Finance, insurance, and real estate	9	4
Services	11	9
Federal government	0	0
State government	<1	10

these dimensions, it is still difficult to conclude whether these differences translate into differences in health status or utilization.

The data shown in Table A.2 show the percentage of employees covered by salaried and nonsalaried, union and nonunion status. The distribution of covered persons again differs for the California sample and the overall database. Overall, a higher percentage of the California sample is salaried as opposed to hourly but a lower percentage is in a union versus nonunion position. Although union membership has been shown to relate to greater insurance coverage, the combination of these two patterns may have counterbalancing effects on the types of insurance plans covering those in the California Medstat sample and those in the overall database.

Finally, we show data on the percentage of covered persons by employee classification (full-time, part-time) in Table A.3. These data show more comparability between the California and overall Medstat database. Yet, there is a higher percentage of active full-time employees in California, 81 versus 76 percent, as well as a higher percentage of active part-time/seasonal employees in California versus the overall

Table A.2

Distribution of Covered Persons by Employee Status:
California Sample and MarketScan Database, 1994
(in percent)

Employee Status	California Sample	MarketScan Database
Salaried, nonunion	12	18
Salaried, union	<1	2
Salaried, other	29	16
Hourly, nonunion	9	15
Hourly, union	<1	13
Hourly, other	13	9
Nonunion, unknown	12	4
Union, unknown	1	1
Unknown	24	21

Table A.3

Distribution of Covered Persons by Employee Classification:
California Sample and MarketScan Database, 1994
(in percent)

Employee Classification	California Sample	MarketScan Database
Active full-time	81	76
Active part-time or seasonal	3	<1
Early retiree	7	7
Retiree (status unknown)	1	3
COBRA continuee	1	1
Long-term disability	<1	1
Surviving spouse/dependent	<1	1
Other/unknown	6	8

database. The California sample has somewhat lower percentages of retirees and those with long-term disabilities. If the data were recalibrated to reflect the lower percentage "unknown" in California, however, these differences would be smaller.

Appendix B

Medi-Cal and Private Enrollees by ADG, ACG

Table B.1 shows the Ambulatory Diagnosis Groups (ADGs), which are the building blocks used in creating the final ACG assignment for an individual. They represent broad groupings of medical problems/ diagnoses for which care is received during the year. Data in Table B.1 show the percentage of private and Medi-Cal enrollees receiving care for diagnoses included in each ADG within three major age groups and separately for those pregnant during the year. Recall that individuals can be classified in more than one ADG.

Table B.2 shows the Adjusted Clinical Group (ACG) system, which places individuals into one out of 52 distinct groups that are distinct not only in terms of the cluster of diagnoses that define them but also the relative amount of health care resources expected to be used. Data in Table B.2 show the percentage of private and Medi-Cal enrollees assigned to each of the 52 ACGs within two major age groups and separately for those pregnant during the year. Note that nonusers of any services are assigned to their own ACG (5200).

Table B.1

Percentage of Users Seeking Care for Problems Categorized by ADGs

Category	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Age 0–5						
Time-limited, minor	29.8	26.3	26.9	25.4	26.2	19.2
Time-limited, minor primary infections	67.0	66.8	67.5	65.5	67.8	58.9
Time-limited, major	4.1	2.1	1.8	2.0	17.6	3.5
Time-limited, major primary infections	8.4	7.7	7.7	7.4	15.5	7.9
Allergies	9.1	5.3	5.5	4.9	5.7	4.6
Asthma	6.0	6.8	7.0	5.5	15.5	10.1
Likely to recur, discrete	12.1	13.1	13.4	12.2	16.9	11.9
Likely to recur, discrete, infections	52.8	39.6	39.8	38.9	48.2	37.6
Likely to recur, progressive	0.5	0.4	0.4	0.3	2.3	0.5
Chronic medical, stable	5.0	4.8	4.1	4.2	41.0	6.6
Chronic medical, unstable	3.2	3.2	2.7	2.8	33.8	4.9
Chronic specialty, stable, orthopedic	0.5	0.3	0.3	0.3	2.8	0.4
Chronic specialty, stable, ear, nose, throat	1.7	0.7	0.5	0.5	7.8	2.7
Chronic specialty, stable, eye	8.4	5.6	5.6	4.9	16.8	6.3
Chronic specialty, stable, other	0.0	0.0	0.0	0.0	0.0	0.0
Chronic specialty, unstable, orthopedic	0.3	0.2	0.2	0.2	1.5	0.4
Chronic specialty, unstable, ear, nose, throat	0.2	0.0	0.0	0.0	0.2	0.0
Chronic specialty, unstable, eye	1.4	1.2	1.0	1.0	11.7	2.3
Chronic specialty, unstable, other	0.0	0.0	0.0	0.0	0.0	0.0
Dermatologic	5.1	3.5	3.7	2.6	4.0	5.5

Table B.1 (continued)

Category	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Injuries/adverse effects, minor	12.3	10.3	10.9	8.4	13.1	12.4
Injuries/adverse effects, major	8.8	8.7	8.8	7.1	20.8	14.2
Psychosocial, time-limited, minor	1.2	0.8	0.6	0.5	2.2	9.3
Psychosocial, recurrent, stable	2.4	2.4	1.7	1.4	22.5	20.2
Psychosocial, recurrent, unstable	0.2	0.2	0.1	0.1	3.2	1.0
Signs/symptoms, minor	19.5	18.7	19.2	16.9	34.3	16.6
Signs/symptoms, uncertain	18.0	23.6	23.4	22.4	48.2	26.5
Signs/symptoms, major	16.3	8.0	7.6	6.9	35.0	12.0
Discretionary	8.4	4.3	4.0	4.3	15.6	5.1
See and reassure	1.7	1.0	0.9	0.9	4.2	1.1
Preventive, administrative	56.1	74.4	75.1	72.5	73.9	79.0
Malignancy	0.4	0.3	0.2	0.3	3.8	0.3
Pregnancy	0.5	0.1	0.1	0.1	0.1	0.1
Dental	0.3	1.5	1.6	1.3	3.6	1.7
Age 6–17						
Time-limited, minor	18.6	17.4	18.2	14.2	17.0	15.1
Time-limited, minor primary infections	48.2	52.1	54.2	46.3	47.4	41.9
Time-limited, major	2.1	1.7	1.4	2.3	5.6	1.8
Time-limited, major primary infections	4.8	4.9	4.8	4.4	6.8	4.6
Allergies	11.6	7.0	7.5	5.1	5.7	5.5
Asthma	7.4	6.9	7.0	5.6	9.0	7.7
Likely to recur, discrete	8.7	8.5	8.9	6.5	10.5	7.8
Likely to recur, discrete, infections	26.2	21.4	21.5	20.5	24.5	19.1
Likely to recur, progressive	0.4	0.3	0.3	0.2	2.0	0.4

Table B.1 (continued)

Category	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Chronic medical, stable	8.8	6.7	5.7	5.2	29.3	7.7
Chronic medical, unstable	4.0	3.3	2.5	2.6	19.5	4.3
Chronic specialty, stable, orthopedic	2.2	0.6	0.5	0.4	2.5	0.7
Chronic specialty, stable, ear, nose, throat	1.4	1.0	0.8	0.7	5.6	1.3
Chronic specialty, stable, eye	5.0	17.9	18.1	14.8	21.9	21.2
Chronic specialty, stable, other	0.0	0.0	0.0	0.0	0.0	0.0
Chronic specialty, unstable, orthopedic	1.9	0.5	0.4	0.4	1.2	0.5
Chronic specialty, unstable, ear, nose, throat	0.1	0.1	0.1	0.1	0.2	0.1
Chronic specialty, unstable, eye	1.3	1.4	1.3	1.2	4.3	1.5
Chronic specialty, unstable, other	0.0	0.0	0.0	0.0	0.0	0.0
Dermatologic	18.2	6.7	6.9	4.8	6.6	8.6
Injuries/adverse effects, minor	23.3	14.3	14.4	11.8	15.8	18.9
Injuries/adverse effects, major	15.2	10.7	10.4	9.7	16.4	14.4
Psychosocial, time-limited, minor	4.4	3.2	2.0	2.2	7.0	21.4
Psychosocial, recurrent, stable	9.2	8.2	5.2	5.6	31.1	40.9
Psychosocial, recurrent, unstable	1.3	1.2	0.4	0.9	8.0	7.0
Signs/symptoms, minor	18.0	15.2	15.5	12.2	20.5	14.8
Signs/symptoms, uncertain	23.6	51.6	52.0	47.1	58.6	52.9
Signs/symptoms, major	9.5	8.2	7.8	6.2	19.9	9.7
Discretionary	8.6	3.8	3.5	3.5	9.5	3.8
See and reassure	2.1	1.1	1.1	0.8	2.3	1.3
Preventive, administrative	27.2	42.6	42.0	36.9	50.5	62.3
Malignancy	0.6	0.4	0.2	0.4	3.3	0.3
Pregnancy	0.0	0.1	0.1	0.1	0.1	0.1

Table B.1 (continued)

Category	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Dental	0.2	2.3	2.3	2.2	4.7	2.1
Age 18–64						
Time-limited, minor	28.3	21.6	24.1	17.1	19.8	19.3
Time-limited, minor primary infections	32.1	36.7	42.3	29.6	31.9	35.1
Time-limited, major	5.6	6.8	5.2	6.9	8.8	2.5
Time-limited, major primary infections	6.5	9.1	8.2	6.9	10.8	7.8
Allergies	9.3	6.2	7.8	4.4	4.8	4.9
Asthma	3.7	4.8	4.6	3.1	5.4	4.8
Likely to recur, discrete	24.1	23.7	25.2	15.3	24.2	12.1
Likely to recur, discrete, infections	20.7	21.6	26.9	18.5	15.8	20.2
Likely to recur, progressive	2.3	3.5	1.5	1.1	6.6	0.7
Chronic medical, stable	41.8	31.3	26.2	15.0	42.4	9.1
Chronic medical, unstable	18.5	20.1	11.6	7.1	34.4	5.5
Chronic specialty, stable, orthopedic	4.4	2.4	1.9	1.0	3.5	1.5
Chronic specialty, stable, ear, nose, throat	1.4	1.3	0.8	0.5	2.3	1.0
Chronic specialty, stable, eye	5.3	27.5	26.7	18.9	31.0	23.8
Chronic specialty, stable, other	0.0	0.0	0.0	0.0	0.0	0.0
Chronic specialty, unstable, orthopedic	3.7	1.3	1.1	0.5	1.9	0.0
Chronic specialty, unstable, ear, nose, throat	0.3	0.2	0.3	0.1	0.3	0.0
Chronic specialty, unstable, eye	4.2	4.1	2.8	1.6	6.3	0.9
Chronic specialty, unstable, other	0.0	0.0	0.0	0.0	0.0	0.0
Dermatologic	19.4	7.0	7.1	5.8	7.2	14.3
Injuries/adverse effects, minor	17.4	14.1	14.5	12.3	14.1	22.9
Injuries/adverse effects, major	10.6	12.2	9.8	10.6	15.7	18.1

Table B.1 (continued)

Category	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Psychosocial, time-limited, minor	4.3	3.0	2.3	1.8	4.1	17.9
Psychosocial, recurrent, stable	9.4	12.3	9.0	6.0	18.2	39.8
Psychosocial, recurrent, unstable	2.2	12.2	3.3	3.0	26.0	14.4
Signs/symptoms, minor	28.9	27.6	28.4	18.7	29.1	18.6
Signs/symptoms, uncertain	41.3	73.2	75.2	59.2	74.8	64.5
Signs/symptoms, major	23.6	22.9	23.0	15.6	24.9	14.4
Discretionary	15.7	10.5	10.7	6.9	11.3	5.4
See and reassure	5.7	3.2	3.0	1.6	3.8	2.4
Preventive, administrative	40.9	41.0	43.3	35.8	39.5	55.9
Malignancy	4.9	2.5	1.4	1.0	4.2	0.1
Pregnancy	0.0	0.1	0.1	0.2	0.0	0.0
Dental	0.3	2.6	2.3	1.7	3.3	2.1
Pregnant						
Time-limited, minor	29.0	20.7	28.3	10.3	35.0	33.2
Time-limited, minor primary infections	29.9	23.3	32.8	10.0	43.0	43.6
Time-limited, major	18.0	14.9	17.5	11.4	21.3	14.6
Time-limited, major primary infections	6.0	8.7	10.8	5.6	15.2	12.9
Allergies	6.4	2.6	3.9	0.8	6.6	4.0
Asthma	2.8	2.0	2.8	0.6	7.2	8.3
Likely to recur, discrete	21.6	13.9	19.0	6.6	28.4	19.4
Likely to recur, discrete, infections	30.0	21.9	29.6	11.3	36.4	41.7
Likely to recur, progressive	0.5	0.7	0.8	0.3	3.8	0.6
Chronic medical, stable	23.7	10.1	13.1	5.5	29.7	11.4
Chronic medical, unstable	9.5	5.1	6.5	2.5	19.6	5.5

Table B.1 (continued)

Category	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Chronic specialty, stable, orthopedic	1.6	0.4	0.6	0.2	1.7	0.8
Chronic specialty, stable, ear, nose, throat	0.7	0.4	0.5	0.2	2.4	1.5
Chronic specialty, stable, eye	3.0	9.7	14.3	3.2	21.9	22.8
Chronic specialty, stable, other	0.0	0.0	0.0	0.0	0.0	0.0
Chronic specialty, unstable, orthopedic	1.7	0.2	0.3	0.1	1.2	0.4
Chronic specialty, unstable, ear, nose, throat	0.2	0.1	0.1	0.0	0.1	0.2
Chronic specialty, unstable, eye	1.2	0.8	1.2	0.3	3.2	1.3
Chronic specialty, unstable, other	0.0	0.0	0.0	0.0	0.0	0.0
Dermatologic	13.6	3.6	5.2	1.4	7.0	8.7
Injuries/adverse effects, minor	12.3	7.1	9.9	3.1	18.2	17.6
Injuries/adverse effects, major	7.2	6.5	8.1	3.7	18.7	13.5
Psychosocial, time-limited, minor	3.6	1.2	1.4	0.4	7.1	24.5
Psychosocial, recurrent, stable	6.6	3.6	4.8	1.1	20.1	37.4
Psychosocial, recurrent, unstable	0.9	1.7	1.8	0.5	23.1	6.1
Signs/symptoms, minor	33.2	19.2	26.1	9.3	41.0	31.3
Signs/symptoms, uncertain	41.8	51.9	65.3	35.6	78.3	69.3
Signs/symptoms, major	43.0	34.4	45.3	19.7	51.8	48.6
Discretionary	15.9	6.7	8.9	3.6	12.4	8.7
See and reassure	4.1	1.3	1.8	0.6	3.8	1.7
Preventive, administrative	77.2	68.4	81.0	51.7	79.9	80.6
Malignancy	1.6	0.6	0.7	0.3	2.8	0.9
Pregnancy	100.0	100.0	100.0	100.0	100.0	100.0
Dental	0.3	1.1	1.7	0.4	3.5	1.1

Table B.2

Percentage of All Enrollees (Enrolled > Six Months) Categorized by ACGs

Category	ACG	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Age 0–17							
Acute:minor 1	100	0.7	1.1	1.1	1.4	0.1	0.3
Acute:minor 2–5	200	3.4	3.9	4.0	4.2	0.5	1.7
Acute:minor 6+	300	6.2	3.5	4.1	2.3	2.2	2.5
Acute:major	400	2.2	2.4	2.5	2.3	1.9	2.6
Recur no allergies	500	4.6	2.1	2.1	2.1	0.8	1.4
Recur w allergies	600	0.7	0.2	0.2	0.2	0.1	0.2
Asthma	700	0.2	0.2	0.2	0.2	0.2	0.2
Chronic medically unstable	800	0.1	0.1	0.1	0.1	0.7	0.1
Chronic medically stable	900	0.3	0.2	0.1	0.1	0.7	0.2
Chronic specialty	1000	0.1	0.0	0.0	0.0	0.2	0.0
Ophthalmology-dental	1100	0.3	0.8	0.9	0.5	0.8	0.8
Chronic specialty unstable	1200	0.1	0.0	0.0	0.0	0.1	0.1
Psychosocial (PS) no PS unstable	1300	0.9	0.3	0.2	0.2	1.2	2.3
Psychosocial w PS unstable no PS stable	1400	0.0	0.0	0.0	0.0	0.1	0.1
Psychosocial w PS unstable and PS stable	1500	0.1	0.0	0.0	0.0	0.1	0.1
Preventive-administration	1600	2.2	4.0	4.3	3.5	1.2	3.2
Acute minor and major	1800	4.6	7.1	8.1	5.2	3.4	4.5
Acute minor recur:1	1900	1.6	1.6	1.6	1.9	0.1	0.5
Acute minor recur:2–5	2000	4.9	3.2	3.3	3.2	0.5	1.4
Acute minor recur:>5, no allergies	2100	4.0	1.2	1.4	0.7	0.8	0.8
Acute minor recur:>5, allergies	2200	1.0	0.3	0.3	0.1	0.2	0.1

Table B.2 (continued)

Category	ACG	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Acute minor:chronic medically stable	2300	0.4	0.2	0.3	0.2	0.4	0.1
Acute minor:eye-dental	2400	0.4	0.8	0.9	0.5	0.5	0.5
Acute minor and PS, no PS unstable	2500	0.5	0.3	0.2	0.1	1.0	1.7
Acute minor and PS w PS unstable, no PS stable	2600	0.0	0.0	0.0	0.0	0.1	0.0
Acute minor and PS w PS unstable and stable	2700	0.0	0.0	0.0	0.0	0.1	0.1
Acute major recur	2800	1.2	1.5	1.6	1.2	0.9	1.3
Acute minor major recur:1	2900	1.0	1.0	1.0	1.1	0.1	0.4
Acute minor major recur:2–5	3000	2.6	2.6	2.8	2.5	0.8	1.1
Acute minor major recur:6–11	3100	1.3	1.8	2.2	1.0	1.0	1.0
Acute minor major recur:>12, no allergies	3200	1.6	0.8	1.1	0.3	0.7	0.6
Acute minor major recur:>12, w allergies	3300	0.4	0.2	0.3	0.1	0.1	0.1
Acute minor recur:eye-dental	3400	0.9	0.7	0.7	0.5	0.4	0.3
Acute minor recur psychosocial	3500	0.6	0.2	0.2	0.1	0.8	1.3
Acute minor major recur:eye-dental	3600	0.9	0.6	0.7	0.4	1.6	0.3
Acute minor major recur psychosocial	3700	0.8	0.5	0.4	0.2	1.9	2.7
2–3 otr combination,<17	3800	4.5	4.9	5.1	3.2	13.0	9.1
2–3 otr combination, males 17–34	3900	0.2	0.1	0.1	0.1	0.5	0.3
2–3 otr combination, females 17–34	4000	0.2	0.1	0.1	0.1	0.3	0.2
2–3 otr combination, >34	4100	0.0	0.0	0.0	0.0	0.0	0.0
4–5 otr combination, <17, no major	4210	3.1	3.5	3.8	2.1	6.7	5.9
4–5 otr combination, <17, 1 major	4220	1.7	1.2	1.1	0.8	8.3	2.1
4–5 otr combination, 17–44, no major	4310	0.1	0.1	0.1	0.0	0.3	0.3
4–5 otr combination, 17–44, 1 major	4320	0.1	0.1	0.1	0.0	0.4	0.2
4–5 otr combination, 17–44, 2+ major	4330	0.0	0.0	0.0	0.0	0.1	0.0

Table B.2 (continued)

Category	ACG	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
4–5 otr combination, >44, no major	4410	0.0	0.0	0.0	0.0	0.0	0.0
4–5 otr combination, >44, 1 major	4420	0.0	0.0	0.0	0.0	0.0	0.0
4–5 otr combination, >44, 2+ major	4430	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, <6, no major	4510	0.9	0.7	0.8	0.6	1.1	0.6
6–9 otr combination, <6, 1+ major	4520	0.7	0.6	0.5	0.5	5.1	0.8
6–9 otr combination, 6–16, no major	4610	1.1	1.0	1.1	0.3	3.1	2.3
6–9 otr combination, 6–16, 1+ major	4620	1.1	0.7	0.6	0.2	7.2	1.9
6–9 otr combination, males 17–34, no major	4710	0.0	0.0	0.0	0.0	0.1	0.1
6–9 otr combination, males 17–34, 1 major	4720	0.0	0.0	0.0	0.0	0.2	0.1
6–9 otr combination, males 17–34, 2+ major	4730	0.0	0.0	0.0	0.0	0.2	0.1
6–9 otr combination, females 17–34, no major	4810	0.1	0.0	0.0	0.0	0.1	0.1
6–9 otr combination, females 17–34, 1 major	4820	0.1	0.0	0.0	0.0	0.1	0.1
6–9 otr combination, females 17–34, 2+ major	4830	0.0	0.0	0.0	0.0	0.1	0.0
6–9 otr combination, >34, 0–1 major	4910	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, >34, 2 major	4920	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, >34, 3 major	4930	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, >3, 4+ major	4940	0.0	0.0	0.0	0.0	0.0	0.0
10+ otr combination, 1–6, no major	5010	0.1	0.1	0.1	0.0	0.3	0.2
10+ otr combination, 1–16, 1 major	5020	0.2	0.1	0.1	0.0	1.2	0.4
10+ otr combination, 1–16, 2+ major	5030	0.2	0.1	0.0	0.0	2.9	0.3
10+ otr combination, >16, 0–1 major	5040	0.0	0.0	0.0	0.0	0.0	0.0
10+ otr combination, >16, 2 major	5050	0.0	0.0	0.0	0.0	0.0	0.0
10+ otr combination, >16, 3 major	5060	0.0	0.0	0.0	0.0	0.1	0.0
10+ otr combination, >16, 4+ major	5070	0.0	0.0	0.0	0.0	0.0	0.0

Table B.2 (continued)

Category	ACG	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Nonusers	5200	25.3	40.0	36.0	51.9	21.6	38.7
Infants:0–5, no major	5310	7.0	2.7	2.7	3.1	0.1	1.1
Infants:0–5, 1+ major	5320	0.8	0.2	0.2	0.2	0.1	0.2
Infants:6+, no major	5330	0.9	0.1	0.1	0.1	0.0	0.1
Infants:6+, 1+ major	5340	0.7	0.1	0.1	0.1	0.4	0.1
Age 18–64							
Acute:minor 1	100	0.0	0.0	0.0	0.0	0.0	0.0
Acute:minor 2–5	200	0.0	0.0	0.0	0.0	0.0	0.0
Acute:minor 6+	300	6.1	2.6	3.2	3.1	1.4	2.7
Acute:major	400	2.8	4.0	4.1	5.6	2.9	3.0
Recur no allergies	500	3.4	1.0	1.1	1.3	0.6	1.2
Recur w allergies	600	0.5	0.1	0.1	0.1	0.0	0.1
Asthma	700	0.1	0.1	0.1	0.1	0.1	0.2
Chronic medically unstable	800	0.6	0.4	0.1	0.2	0.8	0.0
Chronic medically stable	900	2.1	0.5	0.3	0.3	0.8	0.1
Chronic specialty	1000	0.1	0.0	0.0	0.0	0.1	0.1
Ophthalmology-dental	1100	0.2	1.1	1.3	1.0	1.0	0.4
Chronic specialty unstable	1200	0.2	0.1	0.0	0.0	0.1	0.0
Psychosocial no PS unstable	1300	0.9	0.3	0.2	0.2	0.5	1.7
Psychosocial w PS unstable no PS stable	1400	0.1	0.5	0.1	0.1	1.2	0.3
Psychosocial w PS unstable and PS stable	1500	0.1	0.1	0.0	0.0	0.2	0.3
Preventive–administration	1600	1.1	0.8	0.8	1.4	0.3	1.6
Acute minor and major	1800	3.4	4.8	6.6	4.1	2.6	5.4
Acute minor recur:1	1900	0.0	0.0	0.0	0.0	0.0	0.0

Table B.2 (continued)

Category	ACG	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
Acute minor recur:2–5	2000	0.0	0.0	0.0	0.0	0.0	0.0
Acute minor recur:>5, no allergies	2100	3.6	0.8	1.2	0.7	0.4	0.7
Acute minor recur:>5, allergies	2200	0.7	0.2	0.2	0.1	0.1	0.1
Acute minor:chronic medically stable	2300	1.7	0.3	0.3	0.1	0.3	0.0
Acute minor:eye-dental	2400	0.2	0.5	0.6	0.4	0.3	0.3
Acute minor and PS, no PS unstable	2500	0.4	0.1	0.1	0.1	0.2	0.9
Acute minor and PS w PS unstable, no PS stable	2600	0.0	0.1	0.0	0.0	0.3	0.1
Acute minor and PS w PS unstable and stable	2700	0.0	0.0	0.0	0.0	0.1	0.1
Acute major recur	2800	2.0	2.3	3.2	2.0	1.1	1.7
Acute minor major recur:1	2900	0.0	0.0	0.0	0.0	0.0	0.0
Acute minor major recur:2–5	3000	0.0	0.0	0.0	0.0	0.0	0.0
Acute minor major recur:6–11	3100	0.0	0.0	0.0	0.0	0.0	0.0
Acute minor major recur:>12, no allergies	3200	3.9	4.0	6.2	2.7	1.5	3.0
Acute minor major recur:>12, w allergies	3300	0.7	0.7	1.1	0.4	0.2	0.3
Acute minor recur:eye-dental	3400	0.2	0.2	0.3	0.2	0.1	0.1
Acute minor recur psycosocial	3500	0.5	0.1	0.1	0.0	0.2	0.6
Acute minor major recur:eye-dental	3600	4.6	2.1	3.0	0.9	1.6	0.2
Acute minor major recur psychosocial	3700	0.7	1.0	0.9	0.3	1.5	3.2
2–3 otr combination, <17	3800	0.0	0.0	0.0	0.0	0.0	0.0
2–3 otr combination, males 17–34	3900	1.0	1.6	1.0	1.1	2.6	4.7
2–3 otr combination, females 17–34	4000	1.2	2.2	2.9	2.0	1.4	3.2
2–3 otr combination, >34	4100	9.1	7.0	4.6	1.8	14.1	0.0
4–5 otr combination, <17, no major	4210	0.0	0.0	0.0	0.0	0.0	0.0
4–5 otr combination, <17, 1 major	4220	0.0	0.0	0.0	0.0	0.0	0.0

Table B.2 (continued)

Category	ACG	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
4–5 otr combination, 17–44, no major	4310	2.2	3.1	4.5	1.9	1.7	4.1
4–5 otr combination, 17–44, 1 major	4320	1.8	2.6	2.5	1.2	3.5	3.9
4–5 otr combination, 17–44, 2+ major	4330	0.5	1.0	0.5	0.3	2.1	1.0
4–5 otr combination, >44, no major	4410	2.4	1.5	1.3	0.4	2.6	0.0
4–5 otr combination, >44, 1 major	4420	2.9	1.9	0.8	0.2	4.7	0.0
4–5 otr combination, >44, 2+ major	4430	1.0	0.9	0.2	0.1	2.5	0.0
6–9 otr combination, <6, no major	4510	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, <6, 1+ major	4520	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, 6–16, no major	4610	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, 6–16, 1+ major	4620	0.0	0.0	0.0	0.0	0.0	0.0
6–9 otr combination, males 17–34, no major	4710	0.1	0.2	0.2	0.1	0.2	1.3
6–9 otr combination, males 17–34, 1 major	4720	0.2	0.3	0.2	0.2	0.6	2.3
6–9 otr combination, males 17–34, 2+ major	4730	0.2	0.4	0.1	0.1	1.1	1.5
6–9 otr combination, females 17–34, no major	4810	0.4	0.8	1.4	0.5	0.2	2.1
6–9 otr combination, females 17–34, 1 major	4820	0.5	0.9	1.3	0.5	0.5	1.5
6–9 otr combination, females 17–34, 2+ major	4830	0.3	0.5	0.6	0.2	0.7	1.0
6–9 otr combination, >34, 0–1 major	4910	6.2	5.7	5.6	1.2	8.6	0.0
6–9 otr combination, >34, 2 major	4920	2.5	2.4	1.3	0.3	5.3	0.0
6–9 otr combination, >34, 3 major	4930	0.8	0.9	0.3	0.1	2.4	0.0
6–9 otr combination, >3, 4+ major	4940	0.2	0.3	0.1	0.0	0.7	0.0
10+ otr combination, 1–6, no major	5010	0.0	0.0	0.0	0.0	0.0	0.0
10+ otr combination, 1–16, 1 major	5020	0.0	0.0	0.0	0.0	0.0	0.0
10+ otr combination, 1–16, 2+ major	5030	0.0	0.0	0.0	0.0	0.0	0.0
10+ otr combination, >16, 0–1 major	5040	1.2	1.0	1.0	0.2	1.4	0.6

Table B.2 (continued)

Category	ACG	Private	Medi-Cal	Welfare-Related	Poverty-Related	Disabled	Foster
10+ otr combination, >16, 2 major	5050	1.1	1.1	0.8	0.2	2.0	0.8
10+ otr combination, >16, 3 major	5060	0.8	0.8	0.4	0.1	1.9	0.3
10+ otr combination, >16, 4+ major	5070	0.6	0.7	0.2	0.1	2.0	0.0
Nonusers	5200	22.0	33.4	32.8	61.6	16.6	43.2
Infants:0–5, no major	5310	0.0	0.0	0.0	0.0	0.0	0.0
Infants:0–5, 1+ major	5320	0.0	0.0	0.0	0.0	0.0	0.0
Infants:6+, no major	5330	0.0	0.0	0.0	0.0	0.0	0.0
Infants:6+, 1+ major	5340	0.0	0.0	0.0	0.0	0.0	0.0
Pregnant							
Preg:0–1	1710	10.3	24.3	9.4	44.2	3.5	9.1
Preg:2–3, no majors	1720	24.2	24.0	23.6	25.2	11.1	13.5
Preg:2–3, 1+ major	1730	4.5	5.6	4.3	7.4	3.5	0.8
Preg:4–5, no majors	1740	17.5	14.4	19.4	8.2	11.2	18.2
Preg:4–5, 1+ major	1750	9.8	8.8	10.1	7.1	11.4	4.7
Preg:6+, no major	1760	12.8	8.2	12.5	2.3	12.9	25.8
Preg:6+, 1+ major	1770	20.8	14.7	20.7	5.4	46.5	27.9

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About the Authors

E. KATHLEEN ADAMS

E. Kathleen Adams is an associate professor at Emory University's Rollins School of Public Health. Before joining the faculty at Emory, she worked as a senior economist for Medstat, Inc., where she studied low-income and Medicaid populations. Her current projects include investigating the role of cancer screening among low-income populations and primary care case management and the Child Health Insurance Program in Georgia and Alabama's Medicaid programs. She holds a Ph.D. in economics from the University of Colorado and a B.S. in mathematics from Florida State University.

JANET M. BRONSTEIN

Janet M. Bronstein is an associate professor in the School of Public Health at the University of Alabama at Birmingham. Her research interests include health care delivery for low-income populations, particularly women and children. She is currently investigating the effects of changes in health insurance for low-income children on provider availability and access to care in Alabama and Georgia. In addition to her teaching and research, she has served as a consultant to the Medicaid Agencies of Alabama and Mississippi. She holds a Ph.D. in applied medical anthropology from the University of Kentucky and a B.A. in anthropology from Brandeis University.

EDMUND R. BECKER

Edmund R. Becker is a professor at Emory University's Rollins School of Public Health. Before arriving at Emory, he was a senior research associate and project director at Harvard School of Public Health and a faculty member at the College of Business and Administration at the University of Colorado in Denver. He is the author of over 80 articles on topics ranging from cost-shifting and unionization in hospitals to the implementation and problems with physician payment. He holds a Ph.D. in sociology from Vanderbilt University and a B.S. in mathematics from Westminister College.