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Is California Different? State-Specific Risk Adjustment Needs under Health Reform

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Abstract

The Affordable Care Act (ACA) allows state variation in implementing health reform. Critical to a stable health insurance market under reform is the use of risk adjustment to share risks across insurance plans. The ACA requires states to implement risk adjustment, but a California-specific risk adjustment scheme would require expertise beyond existing abilities of state agencies. California could rely on a default federal risk adjustment scheme, but it is unclear California's health care market is sufficiently different from the national market to render the federal scheme inadequate. We compare the distribution of risk-adjusted health care expenditures in California versus the United States. We find California expenditures highly similar to the United States and conclude that California could rely on a federal risk adjustment scheme that pays special attention to high risks and differential patterns for HMO vs PPO plans.

Keywords: health care reform, The Affordable Health Care Act, California health care, risk adjustment

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Introduction

The 2010 Affordable Care Act (ACA) federal health reform legislation is projected to substantially improve health insurance coverage and access in California, with four million state residents expected to obtain their insurance through the new health insurance purchasing exchanges (Long and Gruber 2011). The ACA and subsequent implementing regulations also acknowledge considerable variation across states in health reform preferences, expertise, and needs. As the most populous state in the nation, with a population greater than many European nations with advanced health insurance systems, California could be expected to take full advantage of state discretionary authority to develop health reforms tailored to California-specific needs and health care market structures.

Indeed, California has been a vanguard state in enacting legislation to enable ACA reforms in the state. In 2010, California became the first state in the nation to enact post-ACA legislation creating a state purchasing exchange (the bill SB900 established the California Health Benefit Exchange). Yet despite California's tradition of innovation and early efforts to enable ACA reforms, state government faces a massive undertaking in preparing for smooth reform implementation. While the broad exchange legislation has passed, the devil will be in the details.

One critically important feature necessary for enabling successful insurance reform is a robust system of risk adjustment. Risk adjustment is essentially a method to share risk across health insurance plans, to reduce market instabilities and adverse selection risk spirals of premiums that occur when healthier enrollees are attracted to certain insurance plans and sicker enrollees are attracted to others (for

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more extensive discussion of risk adjustment see Baicker and Dow 2009). Adverse selection concerns have consistently bedeviled reform efforts and were a major theme in debates surrounding appropriate structure of ACA reforms.

California has a history of a highly touted small business purchasing exchange (Health Insurance Plan of California/PacAdvantage) that was discontinued in 2006 due to adverse selection that led to unsupportable premium spirals (for further details see e.g., Weinberg and Kramer 2011). Such concerns are particularly important under guaranteed issue coupled with "community rating" regulatory systems, such as established in the ACA, i.e., when insurers are required to issue products to all applicants and are banned from charging different individuals different premiums based on their health status.

The ACA includes various provisions to mitigate this type of adverse selection concern. Of particular relevance for this paper, it requires that each state must establish a risk adjustment scheme that operates in that state's individual and small group health insurance markets both inside and outside the insurance purchasing exchange. In addition, states must establish transitional reinsurance programs, and the federal government will establish risk corridors; reinsurance and risk corridors are to operate during the first three years of the exchanges (2014–2016).

The federal Department of Health and Human Services (DHHS 2011a, 2011b) has issued a lengthy proposed rule providing details (and rationale for those details) on a minimally acceptable risk adjustment scheme. These draft regulations indicate that DHHS will establish a federal risk adjustment scheme that states will be expected to adopt unless they establish a federally approved state-specific alternative. In this paper we report analyses comparing health-adjusted spending distributions in California versus the U.S. as a whole, to better understand the extent to which California may or may not need to develop its own state-specific risk adjustment scheme.

California vs. U.S. Health Care Spending Patterns

Why might California consider establishing its own state-specific alternative risk adjustment scheme? Several arguments have been advanced, based in part on the vast literature analyzing regional variations in health care spending. This variation can be broken out into variation in underlying health status, provider prices, and intensity of treatment (each of which has a variety of determinants):

- To the extent that health status patterns in California differ from elsewhere, this would not by itself argue for the need for a different risk adjustment system. If medical diagnoses are coded differently in California than elsewhere, this could be problematic, suggesting need for a state-specific risk adjustment scheme, but we do not suspect that this is a major issue.

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- If provider prices or treatment intensity are systematically higher or lower in California than elsewhere, this still would not be problematic if they were scaled in California by roughly similar magnitudes—this could be addressed using a uniform modification to the scale of risk adjustment payments. It would be more problematic, though, if instead prices or intensity varied (relative to U.S. average) across different diseases, such that insurers could identify groups of enrollees for whom they are over or underpaid in California, when only risk adjusted at average U.S. levels.

So what do we currently know about how health and spending differ in California versus the U.S. as a whole? One indicator is that mean 2010 employer-based premiums in California were 8% higher than in the United States as a whole for single coverage, and 5% higher for family coverage (California HealthCare Foundation 2010). Data for the individual market are less available, but America's Health Insurance Plans (2009) estimates California individual market premiums at 1% below national average for single coverage and 4% above national average for family coverage.

These figures are generally consistent with recent Institute of Medicine (2011) data showing that Medicare enrollees in California spent 7% more than the national average. This is partly due to higher prices though: after standardizing prices, Californians actually spent 6% less than the national average. When further adjusting for health status as well, Californians spent 10% less than average Medicare enrollees.

This evidence confirms that there is indeed substantial regional variation in spending, and that adjustments in spending can considerably change the average relationship of California versus other states. But it does not indicate whether there are identifiable portions of the risk distribution that are systematically over or underpaid, and thus is not sufficient to conclude that a federal risk adjustment scheme might be insufficient for promoting market stability.

In the balance of the paper we present new empirical evidence showing how average California health-adjusted spending compares to the U.S. as a whole. For example, if health care spending patterns in California among sicker enrollees are higher than in other states, a federal risk adjuster would systematically underpay insurers for those sicker enrollees, implying that insurers could have strong incentives to structure their plans so as to "cream skim" healthier enrollees and "lemon drop" sicker enrollees—exactly the type of behavior that risk adjustment is designed to avoid. In that case, a California-specific risk adjuster could be quite important to promoting market stability. Alternatively, if health-adjusted spending patterns are quite similar in California compared to elsewhere, this would provide some confidence that a federal scheme might be sufficient in California, thus avoiding the complex process of developing a state-specific risk adjustment scheme.

Data

For purposes of comparing spending patterns, we use a large dataset of employer-based insurance claims. These claims data are from the 2002 Thomson Reuters MarketScan Commercial Claims and Encounters (CCAE) Database (Thomson Reuters 2008). The CCAE data are constructed from medical and prescription drug claims paid by approximately 100 private payers, including commercial insurance companies, Blue Cross and Blue Shield plans, and third-party administrators. The claims are for members in employer-sponsored plans, primarily large, self-insured employers. The 2002 CCAE data include 11,216,494 members who are a combination of active employees, early retirees, COBRA continuees, and dependents.

From these data, we included 6,083,814 members based on them meeting the following four criteria: aged 0-64, enrolled for all 365 days in 2002, had a primary residence within California or outside California for all 12 months, and had a health insurance plan based on fee-for-service (FFS) payments for all 12 months. Members who had encounter claims were not included, because the payment information was often missing or unreliable.[1] A DxCG relative risk score was estimated for each of these members (see Methods section below).

The analytic sample for the health care spending analysis included 6,079,716 members (dropping a further 4,098 members due to negative total spending or encounter data reported). The analytic sample includes 338,975 (5.6%) members whose primary residence was California. Table 1 shows how each criterion reduced the sample size; the primary reduction was due to only including members who were enrolled for 365 days in 2002. It also shows the California share of members, which is smaller in the analytic sample compared to the overall database, because there is greater HMO penetration in California (and HMO patients were dropped from this analysis due to lack of reliable payment data).

For our analyses, we used the claim's net payment, because this represents the amount for which the insurer is liable. The net payment equals the gross covered payment less the deductible and coinsurance, savings from coordination of benefits, payments by another health plan for some portion of the claim, and penalties. Net payments are from inpatient admissions, outpatient services, and outpatient drug claims.

Methods

To adjust for each member's health status, a relative risk score (RRS) was estimated for each member using Sightlines DxCG Risk Solutions 3.1.0 (Verisk Health 2010); this DxCG methodology is closely related to that used in Medicare Advantage. A RRS in a concurrent model represents a member's risk with respect to health

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Table 1: Health Care Spending Analytic Sample Size

Sample Descriptor	United States Members	California Members	Non-California Members	Percent California
CCAE Database (1)	11,216,494	1,083,713	10,132,781	9.7%
Aged 0-64	11,208,430	1,083,692	10,124,738	9.7%
Enrolled 365 days	7,852,383	805,776	7,046,607	10.3%
No primary residence change (2)	7,820,578	801,243	7,019,335	10.2%
Fee for service only or encounter only (3)	7,796,893	799,256	6,997,637	10.3%
DxCG fee for service sample	6,083,814	339,132	5,744,682	5.6%
Health care spending analytic sample (4)	6,079,716	338,975	5,740,741	5.6%

(1) CCAE Database: Commercial Claims and Encounters Database
(2) Primary residence was always within or outside California for all 12 months.
(3) Health insurance plan paid on only a fee-for-service or only an encounter basis for all 12 months.
(4) Members net payment claims summed to non-negative amount and did not have any encounter claims, because a few members whose health insurance plan was based on fee for service payments had encounter claims.

care expenses during the period analyzed. An RRS of 1.0 represents a member who is expected to have the population's mean health care expenditures. Each member's RRS can be scaled from 1.0, for example, an RRS of 2.0 represents a member who is expected to have two times the population's mean health care expenditures.

For our analyses, we used DxCG Model 18: All Medical Predicting Concurrent Total Risk. Total risk includes medical risk and pharmaceutical risk. This model uses a member's age, sex, and diagnoses (ICD-9-CM) to estimate the RRS. The diagnoses are from the CCAE inpatient admissions, inpatient services, outpatient services, and facility claims.

After calculating the RRS, we calculated the mean net payments for the United States members (N=6,083,814) and California members (N=339,132) for the following 16 RRS percentile groupings, based on the United States RRS distribution: 1–10%, 11–20%, 21–30%, 31–40%, 41–50%, 51–60%, 61–70%, 71–75%, 76–80%, 81–85%, 86–90%, 91–95%, 96–98%, 99%, 99.5%, and 100%. We estimated the mean net payments by RRS group to simulate insurers' underwriting process, which will use a function of risk to predict net payments. Within a risk group, if the mean predicted net payment was higher (or lower) for U.S. members than California members, the risk adjustment payment would be higher (or lower), if risk adjustment were based on U.S. members. If the difference was large enough, insurers may try to recruit or avoid particular risks.

The standard errors of the means were estimated using generalized least squares regression models, based on Equation (1), where i indexes members. The dependent variable was net payments. The independent variable was the RRS represented

$$netpay_i = \beta_0 + \sum_{k=1}^{15} \beta_k RRS_{k,i} + \varepsilon_i \quad (1)$$

by 15 dummy variables; the omitted group was the 1–10% group. Equation (1) was estimated for all members in the United States and then re-estimated by subsetting on members in California. The standard error of the difference between the mean gross payments for U.S. versus California was estimated using seemingly unrelated estimation (suest command in *Stata* 11).

Results

Table 2 reports demographic characteristics, net payments, and relative risk scores for the United States, California, and non-California states, for the analytic sample (N=6,079,716). The distributions of these measures are similar for both California and non-California members. The mean net payments in this sample were remarkably similar, at $2,373 and $2,371 for California and non-California members, respectively. The mean RRS was 1.16 for both California and non-California members (this is similar to the IOM 2011 finding that average risk score was just 1% higher in California compared to nationwide risk score).

Table 3 shows the mean net payment differences between U.S. and California members by RRS percentile group. The differences are quite small in relation to mean net payments, except in the top risk percentile group (labeled "100") which represents the sickest 0.5% of the sample. In this top 0.5% risk group, the U.S. mean payment is $69,627 (95% CI: $68,738–$70,516) and the California mean is $81,968 (95% CI: $77,020–$86,916), a difference of -$12,341 ($p < 0.01$). This implies that a risk adjustment payment based on a U.S. model would underpay $12,341, assuming the California model is more representative of California members. This would be a large incentive for insurers to avoid insuring these high-risk members. However, this incentive could be mitigated by a reinsurance program.

Figures 1 and 2 graphically present the mean spending information from Table 3. These are broken into two panels due to the extreme difference in scale of spending among the highest risk enrollees. These provide stark visual indication that health-adjusted spending patterns are quite similar in California as compared with the rest of the country.

Table 2: Descriptive Statistics from Health Care Spending Analytic Sample

Variable	United States	California	Non-California
Demographic Characteristics			
Female	53%	52%	53%
Age			
0-17	25%	24%	25%
18-34	20%	19%	20%
35-44	17%	18%	17%
45-54	22%	22%	22%
55-64	17%	17%	17%
Net Payments			
Mean	$2,371	$2,373	$2,371
Zero	21%	18%	21%
5th percentile	$0	$0	$0
10th percentile	$0	$0	$0
25th percentile	$32	$68	$30
50th percentile	$405	$434	$403
75th percentile	$1,816	$1,719	$1,822
90th percentile	$5,354	$4,916	$5,380
95th percentile	$9,488	$8,754	$9,530
99th percentile	$29,771	$28,645	$29,828
maximum	$2,203,898	$937,110	$2,203,898
DxCG Relative Risk Score			
Mean	1.16	1.16	1.16
Minimum	0.02	0.02	0.02
5th percentile	0.02	0.02	0.02
10th percentile	0.03	0.04	0.03
25th percentile	0.09	0.11	0.09
50th percentile	0.39	0.42	0.39
75th percentile	1.15	1.17	1.15
90th percentile	2.66	2.63	2.66
95th percentile	4.25	4.17	4.25
99th percentile	11.29	10.95	11.30
Maximum	258.55	140.48	258.55
Number of members	6,079,716	338,975	5,740,741

Notes: The table includes 6,079,716 members, not the full DxCG sample of 6,083,814 members, because members whose net payments summed to a negative amount or had an encounter claim were dropped.

Table 3: Net Payments by DxCG Relative Risk Score Percentile Range for U.S. and California Members

DxCG Relative Risk Score		Net Payments					
		U.S. Members		California Members		U.S. - California Difference	
Percentile Range (1)	Percentile Range Upper Bound	Mean	SE	Mean	SE	Mean	z-statistic
1-10	0.03	$32	$0	$33	$1	-$1	-0.52
11-20	0.06	$71	$1	$89	$9	-$18	-2.21*
21-30	0.15	$187	$1	$194	$3	-$7	-2.82**
31-40	0.25	$356	$1	$358	$3	-$2	-0.47
41-50	0.39	$609	$1	$618	$6	-$9	-1.61
51-60	0.60	$947	$2	$929	$7	$18	2.47*
61-70	0.91	$1,465	$2	$1,373	$10	$91	9.33**
71-75	1.15	$2,061	$5	$1,901	$17	$160	9.46**
76-80	1.46	$2,652	$6	$2,532	$25	$121	5.09**
81-85	1.92	$3,428	$7	$3,288	$32	$140	4.55**
86-90	2.66	$4,784	$10	$4,568	$53	$216	4.24**
91-95	4.25	$6,993	$13	$6,757	$61	$235	3.99**
96-98	7.37	$11,027	$29	$10,918	$176	$109	0.64
99	11.29	$18,728	$75	$18,482	$406	$246	0.63
99.5	17.68	$28,930	$161	$29,780	$890	-$850	-0.99
100	258.55	$69,627	$454	$81,968	$2,524	-$12,341	-5.08**
1-100	258.55	$2,371	$8	$2,373	$39	-$1	-0.08

(1) DxCG relative risk score percentile ranges are based on U.S. members.
U.S. members (N=6,079,716), California members (N=338,975). SE: standard error
*p<0.05, **p<0.01

Figure 1: Mean Net Payments by DxCG Relative Risk Score Percentile Range (1 to 90%) for U.S. and California Members

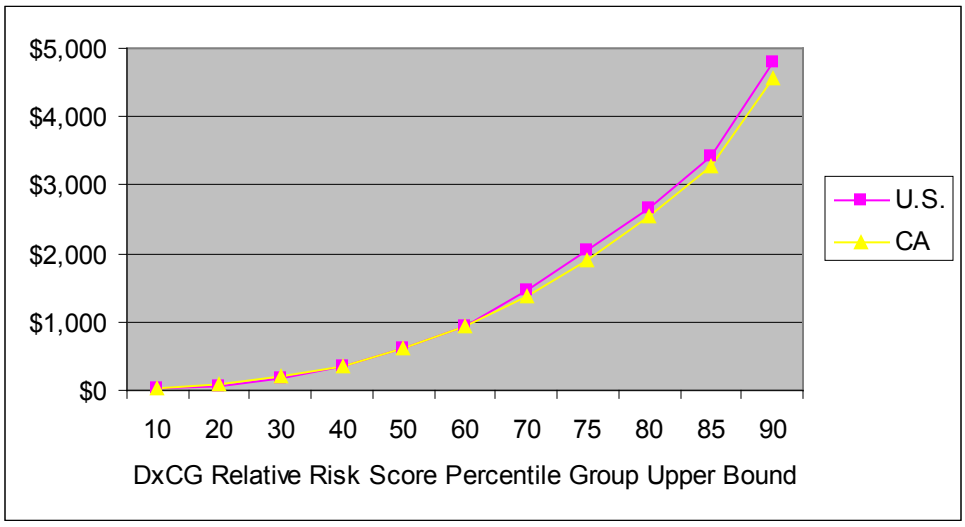
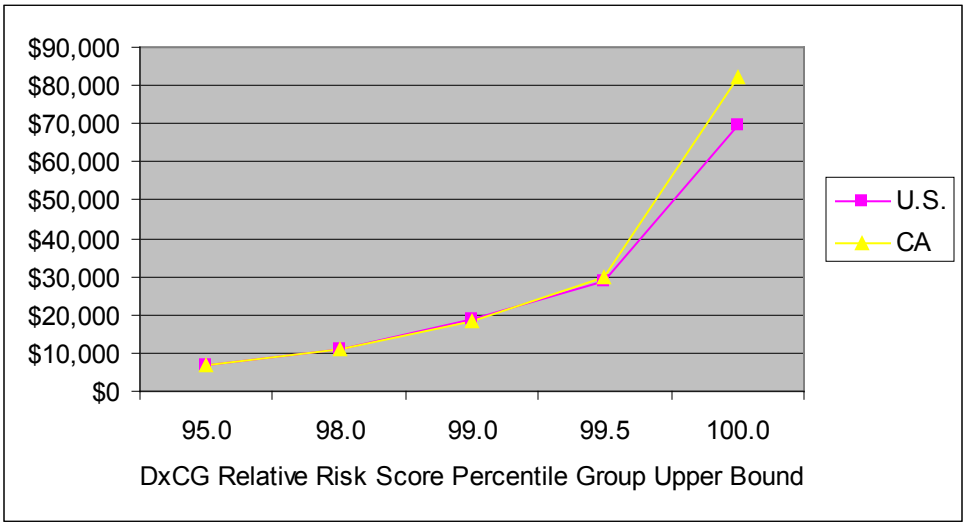


Figure 2: Mean Net Payments by DxCG Relative Risk Score Percentile Range (91 to 100%) for U.S. and California Members



Discussion

After adjusting for health status using the well-known DxCG risk adjustment algorithm, we find that the distribution of California health care expenditures are highly similar to the United States as a whole, except for some divergence among the 0.5% most severely ill. Based on this evidence, we conclude that California could indeed rely on a federally developed risk adjustment scheme, but with several caveats.

First, if the divergence in predicted spending among the top 0.5% of the risk distribution is found to be robust to further risk adjustment modeling refinements, some alternative such as reinsurance or risk corridors may be necessary to continue past the 3–year period currently envisioned. Although reinsurance is an imperfect instrument for mitigating risk selection overall (see Dow, Fulton, and Baicker 2010), and should not be used to reward inefficient providers, it can be helpful for extreme circumstances.

Second, the present analysis has not analyzed the parallel comparison among HMO enrollees in California versus elsewhere, which could be of concern because California has a higher historic managed care emphasis than many other states. Among Californians insured through employer-based policies in 2010, 49% were in Health Maintenance Organizations (HMOs); this contrasts with 19% nationally (California HealthCare Foundation 2010). We will have to await future research

to better understand whether California HMOs (with greater penetration of staff model HMOs such as Kaiser) significantly differ from those elsewhere.

Third, there is some political risk in relying primarily on the federal government's scheme. Robust risk adjustment requires continual updating and refinement, as regulators attempt to keep up with improved risk targeting tools developed by insurance carriers. As political winds change, a future federal administration could greatly de-emphasize the federal risk adjustment program, which would put California's health insurance markets at risk.

Finally, California may wish to continue the tradition of leading-edge innovation in health reform. For example, it is unclear whether the federal formulas will attempt to adjust for nonhealth factors such as socioeconomic characteristics, which are often related to spending levels, and which insurers have been able to use in their cream-skimming selection efforts. Hsu et al (2010) found that the federal risk adjustment scheme for Medicare Part D substantially underpaid plans with lower income enrollees, resulting in distortionary plan behaviors to avoid them.

Although investing in sufficient state expertise to develop and refine risk adjustment models would entail a substantial effort, this effort overall seems small compared to the size of the population that would benefit. While the hurried timeline of launching health insurance exchanges by 2014 may make this initially prohibitive, a plan to develop such expertise over time could yield substantial longer-term benefits.

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Notes

1 Providers that are paid on a capitated basis submit encounter data so that a health plan can track the health and utilization of its members; however, the payment information is often missing or unreliable. Thus the present analysis focuses on enrollees in plans with fee-for-service reimbursement, which are predominantly preferred provider organizations (PPOs). Excluded plans are primarily Health Maintenance Organizations (HMOs), plus some Point-of-Service (POS) plans.