

# Health and Health Insurance: Analysis of Plan Switching Behavior\*

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## Abstract

Majority of employers offer a choice of more and less generous health insurance plans to their employees, who choose a plan according to their preferences and health status. We analyze the switching behavior of employees between plans of different generosity caused by changes in health status, and compare medical spending of switchers and stayers in plans of origin and destination. We show that switchers to a less generous plan exhibit lower medical spending prior to the switch, while the switchers to a more generous plan anticipate higher spending and delay their spending until after the switch. This transfer of costs from a less to a more generous plan increases the burden of adverse selection. Our data suggests that switching may be more important to the level of premiums than previously documented.

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# 1 Introduction

Sixty percent of the population in the United States is covered by employer sponsored health insurance. More than a half of those employees can choose among competing health insurance plans that vary in generosity (Gabel, 1999; Cutler and Zeckhauser, 2000), although the proportion of employees offered a choice is slightly higher in the public sector than in the private sector (Long and Marquis, 1999).

While competition is usually considered to be beneficial in the private market, its effects in the health insurance market can be a mixed blessing. Although competition drives prices down and promotes efficiency, it also results in negative outcomes, such as adverse selection. The term, adverse selection, is used to describe the phenomenon of sicker individuals being disproportionately attracted to more generous plans. This can cause a welfare loss from the inability to insure against future risks or lack of equilibrium in the insurance market.

The mechanism of provision of health insurance incorporates decisions of three main players: employers, health insurance plans, and employees. Employers decide on the level of coverage and a number of plans with which to contract, and negotiate the prices with plans based on the information available from previous periods. Usually the price paid to a plan is proportional to the expected level of average medical spending in the that plan. In addition, an employer decides how to subsidize the premiums paid by the employees. For example, in 1997 a third of large employers paid a fixed amount, or contribution, towards premiums of different plans, and roughly a half paid a fixed rate (Marquis and Long, 1999).

Plans, paid a fixed amount for each enrollee, are interested in attracting the healthiest employees to minimize their expected costs. Realizing that use of some services is correlated with higher total medical spending, it is profitable for insurers

to restrict the use of these services and deter bad risks, as well as over-provide the services correlated with better health (Frank, Glazer, and McGuire, 2000).

Finally, employees choose a plan and can enroll in any of the offered plans during an open enrollment period. This decision is affected by the premiums, quality of services provided by the plans, and the health status of the employees. A change in any of these components could cause an employee to switch to a different plan, although *status quo* bias has been documented, meaning that employees already having chosen a plan are more prone to remain in that plan than a new employee (Samuelson and Zeckhauser, 1988; Strombom, Buchmueller, and Feldstein, 2002).

The fact that employees can switch between the plans is the central part of the dynamic equilibrium. Past literature has concentrated on switching driven by external reasons, such as changes in relative prices of health plans (Buchmueller and Feldstein, 1997; Cutler and Reber, 1998; Royalty and Solomon, 1999), availability of new plans (Ellis, 1987; Strombom, Buchmueller, and Feldstein, 2002), or arrival of information on plan quality (Beaulieu, 2001; Chernew, Gowrisankaran, and Scanlon, 2002).

Cutler and Reber (1998) analyzed the experience of Harvard University, after it changed its premium policy from sponsoring each plan at a fixed rate to a fixed contribution. As a result, the price of a more generous plan, preferred by sicker employees, became relatively higher. The healthier enrollees of a more generous plan decided to switch to a less generous plan setting off a death spiral. Because the average spending of the remaining enrollees was higher the following year it triggered an increase in premiums, which resulted in further disenrollment of healthier enrollees. Ultimately, the more generous plan was disbanded within three years of the policy change.

Even in the absence of external change, however, individual enrollees may switch

because of changes in their health status. In this case the switchers are not necessarily the healthier enrollees in the more generous plan, but the ones who receive a large enough negative shock to their health status or who do not expect a previously anticipated negative shock (e.g. pregnancy) to repeat. An example of a negative shock can be a new diagnosis, which causes an employee to consider switching to a more generous plan. Even in the absence of changes in premiums, switching driven by changes in health status can result in a death spiral if, on average, sicker employees have higher probability of receiving a bad shock.

In this article we concentrate on switching that was not caused by price changes or other external reasons. We investigate both the factors causing individual employees to switch health insurance plans, as well as the effects of plan switching on medical expenses. We use an insurance claims dataset which includes information on privately insured employees of a number of large employers for years 1998 and 1999.

Our results suggest that switching to more and less generous plans follows different patterns. While switchers to a less generous plan switch after spending less than the plan average, switchers to a more generous plan delay their spending until after the switch, and then spend much more than the plan average. We evaluate the effects of the observed adverse selection on post-switch plan spending by comparing the observed plan spending with the hypothetical predicted spending in the absence of adverse selection. We compare our findings with those of Altman, Cutler, and Zeckhauser (1998), based on earlier data, and find higher levels of adverse selection than they report.

## 2 Dataset and Results

Our sample comes from the MarketScan<sup>TM</sup> database (The Medstat Group, Ann Arbor, MI) for the years 1998 and 1999. The Medstat Group has collected information on clinical utilization, expenditures, and enrollment from a number of private employers, health plans, government and public organizations located in a number of regions of the US. The claims data includes outpatient, inpatient, and pharmacy claims.

Our cohort consists of individuals who were employed full-time during the years 1998 and 1999, continuously enrolled (for at least 335 days in a year) in one or more of the health insurance plans, and elected individual rather than family insurance coverage. We restrict our cohort only to those with individual coverage to exclude employees who could have switched insurance plans because of changes in health status of their family members, about whom we did not necessarily have information.

Because the main goal of this article is to investigate switching between health insurance plans, it is important to be able to identify the set of plans available to the employees. We define a choice set as a set of health insurance plans offered by a company. We restrict the dataset to five companies with comparable health insurance offerings in both years. We thus exclude companies that either changed the number of offered plans or the type of plans offered. We also exclude companies that only offered plans of the same type, for example, two indemnity plans with varying deductibles.

The health insurance plans offered by each firm are divided into Preferred Provider Organization (PPO) and non-PPO plans, the majority of which are Point of Service plans, later referred to as POS plans. While both the PPO plans and the POS plans are types of managed care and divide the providers into in- and out-of-network

providers, there are three important differences: 1) POS plans require all patients to choose a Primary Care Provider; 2) POS plans have no deductible and full coverage for services provided by in-network providers, after a copay, usually ranging from 5 to 15 dollars; and 3) The relative price difference between seeing a provider in- and out-of-network is much higher for the POS plans. Based on these differences we refer to PPO plans as more generous and to POS plans as less generous.

The switchers are defined as the subset of employees who were enrolled in plans of different type in January 1998 and January 1999. An employee who was enrolled in a PPO plan in January 1998 and in a POS plan in January 1999 is referred to as switcher down, indicating a switch from a more to a less generous plan. Conversely, a switcher up is an employee who switched from a POS plan to a PPO plan. The vast majority of switches occurred in the last quarter of the calendar year.

From the claims data we extract information on outpatient, inpatient and pharmacy utilization as well as diagnosis information on a set of serious medical conditions: cancer, congestive heart failure (CHF), acute myocardial infarction (AMI), major depressive disorder (MDD), schizophrenia (SCHZ), and bipolar disorder (BPAD). Those with these conditions will have higher than average future utilization. All diagnoses are identified from the International Classification of Diseases, Ninth Revision, (ICD-9), codes in the claims data.

Table 1 presents a summary of the cohort. Not surprisingly, relatively few employees are switchers. Only 4% of those enrolled in PPO plans in 1998 switched to a POS plan. Fewer than one percent of those enrolled in POS plans in 1998 switched to a PPO plan. Altman et al. (1998) have reported similar proportions of switching (2% and 1% to a less and more generous plans, respectively).

Summaries of utilization and spending for the whole cohort are reported in Table 2. The proportions of employees who used any outpatient services is about 80% in

Table 1: Cohort in 1998

Plan Type in 1998		
	N	%
Total	81,815	
Age, Mean (SD)	42	(11)
Female, N (%)	43,147	(53)
Diagnoses in 1998		
	N	%
Cancer	1,084	1.32
AMI	543	0.66
CHF	789	0.96
MDD	2,706	3.31
BPAD	439	0.54
SCHZ	576	0.70

Table 2: Health Care Utilization

Year	1998	1999
Any Outpatient, N(%)	65,332 (80)	63,777 (78)
Costs for users (\$)		
Mean (SD)	1,603 (4,674)	1,793 (4,514)
Any Inpatient, N(%)	2,904 (4)	3,147 (4)
Costs for users (\$)		
Mean (SD)	9,734 (15,408)	11,114 (22,638)
Any Pharmacy, N(%)	25,867 (66)	27,201 (70)
Costs for users (\$)		
Mean (SD)	679 (1,378)	802 (1,641)

Note: Pharmacy results summarize data from three contributing companies (47.5% of the sample)

both years. Only 4% of employees used inpatient services. The information on pharmacy use is only available for three out of five firms in 1998, and four firms in 1999. The data on pharmacy use come from the firms that provided pharmacy information in both years, which constitutes 47.5% of the sample. For these firms the proportion of individuals using pharmacy services slightly increased from 66% to 70% during 1998-1999 period.

All spending data are adjusted using per-capita private medical spending, which is a ratio of private personal health care expenditure (Health Care Financing Review, Statistical Supplement, 2001, Table 1) and total resident population (Statistical Abstract of the United States, 2002, US Census Bureau). We use this measure rather than the more usual price deflator in order to compare spending of switchers and non-switcher before and after. The average spending on medical services increased by roughly 12% (outpatient) to 18% (pharmacy) between 1998 and 1999.

## **2.1 Comparison of Transition Groups**

We next turn to comparing the characteristics of switchers and stayers, which are presented in Tables 3a (switchers down) and 3b (switchers up). Both tables compare the characteristics of switchers to those of stayers in the plan of origin before the switch, and stayers in the destination plan after the switch. Each table consists of summaries of demographic variables (age and sex), diagnoses in 1998, and medical spending on outpatient, inpatient, and pharmacy services in each year. Because prices of medical services vary between plan types, we only compare medical spending for groups enrolled in the same type of plan. For example, the spending of switchers down is contrasted with spending of stayers in the PPO plans before the switch, and with stayers in the POS plans after the switch.

The results in Table 3a show that switchers down are younger and less likely

Table 3a: Comparison of Transition Groups, Switchers Down

	Stayers in PPO N=31,734		Switcher from PPO to POS N=1,388		Stayers in POS N=48,364	
	%	Mean (SE)	%	Mean (SE)	%	Mean (SE)
Age		45.34* (0.05)		41.03 (0.28)		40.31* (0.05)
Female	60*		53		48*	
Diagnoses in 1998						
Cancer	1.80		1.08		1.02	
AMI	0.79		0.65		0.58	
CHF	1.28		1.15		0.75	
MDD	2.89		2.59		3.60*	
BPAD	0.54		0.36		0.54	
SCHZ	0.80*		0.22		0.66*	
Spending in 1998						
Outpatient	79.45	\$1,600* (19)	74.32	\$1,163 (77)		
Inpatient	4.27	\$394 (17)	3.09	\$449 (134)		
Pharmacy	58.69	\$595* (27)	61.90	\$389 (46)		
Spending in 1999						
Outpatient			80.72	\$1,249 (94)	75.96	\$1,167 (16)
Inpatient			3.38	\$432 (103)	3.56	\$383 (21)
Pharmacy			69.82	\$464 (50)	71.13	\$539* (7)

Note: Pharmacy results summarize data from three contributing companies. \* represents variables of stayers that are significantly different from switchers. All means are significantly different for stayers in PPO plans and POS plans, except for BPAD. Means and standard errors are computed for all employees in each group. The standard errors were not adjusted for multiple comparisons.

Table 3b: Comparison of Transition Groups, Switchers Up

	Stayers in POS N=48,364		Switcher from POS to PPO N=329		Stayers in PPO N=31,734	
	%	Mean (SE)	%	Mean (SE)	%	Mean (SE)
Age		40.31* (0.05)		43.38 (0.51)		45.34 (0.05)
Female	48*		63		60*	
Diagnoses in 1998						
Cancer	1.02		1.52		1.80	
AMI	0.58		1.21		0.79	
CHF	0.75		1.21		1.28	
MDD	3.60		3.94		2.89	
BPAD	0.54		0.91		0.54	
SCHZ	0.66		0.91		0.80	
Spending in 1998						
Outpatient	80.21	\$1,074 (21)	82.42	\$1,277 (131)		
Inpatient	3.08	\$313 (17)	4.55	\$377 (134)		
Pharmacy	67.66	\$431* (6)	80.32	\$794 (110)		
Spending in 1999						
Outpatient			84.24	\$2,393 (232)	80.76	\$1,745* (27)
Inpatient			6.97	\$844 (236)	4.26	\$489 (31)
Pharmacy			79.77	\$917 (116)	61.72	\$714* (30)

Note: Pharmacy results summarize data from three contributing companies. \* represents variables of stayers that are significantly different from switchers. All means are significantly different for stayers in PPO plans and POS plans, except for BPAD. Means and standard errors are computed for all employees in each group. The standard errors were not adjusted for multiple comparisons.

to be women than stayers in the PPO plans, yet are older and more likely to be women than stayers in the POS plans—both averages are significantly different at a 5% significance level (the significance level used throughout the article).

In terms of medical spending, switchers down spent significantly less on outpatient and pharmacy services than the stayers in the PPO plans in 1998 (\$1,163 vs. \$1,600; and \$389 vs. \$595, respectively), and slightly, but not significantly, more on inpatient services. After the switch, switchers spent relatively similar amounts to the stayers in the POS plans on both inpatient and outpatient services, and significantly less on pharmacy.

Table 3b presents the results for switchers up. Comparisons of utilization of services show that switchers up spent slightly but not significantly more on outpatient and inpatient services, and much more on pharmacy benefits than stayers in the POS plans before the switch. The most striking difference is between the average spending of switchers up after the switch and stayers in the PPO plans—switchers up spent about 50% more than stayers in the PPO plans on outpatient and inpatient services. In addition, switchers up doubled their spending between 1998 and 1999. We have not decomposed this increase into price and quantity effects. The differences in spending can be easily seen from Figure 1, which compares spending on each type of services for all four groups of employees.

Lastly, we compare the information for stayers in the both types of plans. As expected, the stayers in PPO are older and more likely to be women than the stayers in POS. Stayers in PPO are more likely to have diagnoses of cancer, acute myocardial infraction, congestive heart failure, and schizophrenia and less likely to have diagnosis of major depressive disorder, with no difference of proportions of bipolar disorder. Spending on all types of services is higher for stayers in PPO than for stayers in POS.

Our results suggest that switching up and switching down are driven by different factors. Switchers down change plans after they already differ from the plan average in terms of spending, and utilize similarly to the plan average after the switch. Switchers up, on the other hand, on average delay the anticipated higher spending until after the switch and compensate for the delay post switch.

We next examine the differences in types of outpatient services consumed by stayers and switchers in order to get a better understanding of switching behavior.

## 2.2 Categories of Outpatient Spending

We group the claims for reimbursement into categories of based on provider type and report average annual spending by category. The categories are: pathology, surgery, internal medicine, obstetrics and gynecology (ObGyn), radiology, anesthesiology, mental health, facility, miscellaneous, and total outpatient spending. The facility category consists of claims associated with services such as hospitals and centers, transportation, and home health agencies. The services that constitute the miscellaneous category are allergy, dermatology, emergency medicine, family practice, physical medicine and rehabilitation, preventive medicine, and podiatry. These categories represent major outpatient specialties and can be predictive of switching behavior.

Figure 2 presents the means of spending in these categories, identifying the categories in which spending is significantly different for switchers and stayers enrolled in the same plan. The three categories with higher spending, total outpatient spending, facility, and miscellaneous, are presented on a separate set of axes.

Spending in all categories is significantly different ( $p$  value less than 5%) for stayers in the PPO and the POS plans. Stayers in the PPO plans spent more than stayers in the POS plans on all categories of outpatient services, except mental

health.

Mental health spending stands out the most because of the contrast between the spending of switchers up and that of all other groups. Switchers up spent almost three times more on mental health than the stayers in POS in 1998 and almost three times more than the stayers in PPO in 1999. Not only do the switchers up have the highest spending on mental health, they also have the highest levels of post switch spending in every category except radiology.

These findings are consistent with service level selection (Frank, Glazer, and McGuire, 2000; Cao, 2003). In particular it is consistent with these data that the POS plans tightly ration mental health services in order to deter bad risks. Our findings are consistent with those of Cao (2003), who found that both inpatient and outpatient mental health services are among the most tightly rationed services by Medicare HMOs.

In our dataset four out of five contributing companies carved out mental health services. For reasons of confidentiality we no information on the level of carve out is available and we cannot determine whether there was one carve out for the firm or if each plan utilized its own carve out.

Until now we have presented the summaries of the whole dataset without controlling for the fact that our data come from five distinct companies. We next present a model of plan switching that accounts for the clustering of the data.

### 3 Switching Model and Results

In this section we formalize the relationship between observed information prior to the switch and the probability of plan switching.

The probability of switching to a different plan is specified as follows:

$$\Pr(Sw_{ij} = 1 | i \in P) = \Phi^{-1}(Costs'_{98i}\alpha + Diagnoses'_{98i}\beta + Demographics'_i\gamma + \mu_j),$$

where  $\Pr(Sw_{ij} = 1 | i \in P)$  is the probability that employee  $i$  employed by firm  $j$  switched plans, conditional on being enrolled in plan  $P$  in 1998, and  $\mu_j$  is a firm-specific random effect. The cost variables consist of spending in categories of outpatient services and total inpatient spending. The pharmacy data are omitted because of the large proportion of missing data. The diagnoses are parameterized as a vector of dummy variables, and the demographic data consist of age, as a continuous variable, and gender.

The model is estimated in Stata, using a Maximum likelihood estimator. Because the switching to a more and less generous plan is driven by different reasons, we estimate the model separately for the sub-sample of employees enrolled in the PPO plans and employees enrolled in the POS plans in 1998.

The first two columns of Table 4 present the results for the switchers down, and the next two columns present the results for the switchers up. The results of the model are similar to the results presented in Tables 3a and 3b. Switchers down are more likely to be younger and have lower miscellaneous spending, while the other covariates have no significant effect on the probability of switching. The standard deviation of the random effect indicates that there is a significant variation in probability of switching among the companies. The right side of the table shows that switchers up are more likely to be women and spend more on mental health and miscellaneous services. Here too the probability of switching among the companies varies.

## 4 Plan Level Effects of Adverse Selection

We next show the effects of switching on the average spending in the entire plan and compare our results to Altman et al. (1998), hereafter referred to as ACZ, who computed the effects of selection using data from the Group Insurance Commission

Table 4: Results of Probit Model of Switching

	Switch Down, N=33,122		Switch Up, N=48,693	
	Coeff.	St.Err.	Coeff.	St.Err.
Age	<b>-0.0168</b>	0.0028	0.0029	0.0021
Female	0.0337	0.0517	<b>0.1420</b>	0.0435
Diagnoses				
Cancer	0.2503	0.1974	0.0600	0.1735
CHF	0.3205	0.2079	0.0693	0.2053
AMI	0.0270	0.3620	0.1867	0.2096
BPAD	-0.8181	0.6802	0.0859	0.2277
MDD	0.0361	0.1387	-0.0590	0.1099
SCHZ	-0.4823	0.4284	0.2176	0.2133
Outpatient Spending by Category, 100\$				
facilities	-0.0016	0.0020	-0.0024	0.0024
miscellaneous	<b>-0.0035</b>	0.0014	<b>0.0022</b>	0.0008
pathology	-0.0073	0.0132	0.0048	0.0114
surgery	0.0057	0.0126	-0.0043	0.0075
internal	-0.0041	0.0071	0.0028	0.0036
obgyn	-0.0006	0.0493	0.0090	0.0087
radiology	0.0311	0.0206	-0.0006	0.0086
anesthesiology	0.0371	0.0329	0.0132	0.0139
mental health	-0.0118	0.0089	<b>0.0127</b>	0.0034
Inpatient Spending, 1,000\$	0.0068	0.0045	-0.0022	0.0059
Constant	<b>-0.8903</b>	0.1174	<b>-2.6066</b>	0.1207
St.d.( $\mu$ )	<b>0.4162</b>	0.0580	<b>0.1816</b>	0.0362

Note: Boldface numbers represent coefficients that are significantly different from zero under 5% significance level. Pharmacy spending is omitted from the model estimation because of the large amount of missing data.

Table 5: Plan Level Effects of Adverse Selection

	Higher Option	Lower Option	Net
ACZ (Indemnity-HMO)	\$16 (1%)	-\$9 (-1%)	\$25
T. et al. (PPO-POS)	\$26 (1.3%)	\$1 (0.08%)	\$25

Note: The ACZ data include 171,000 employees and family members of GIC in 1994-1995. All results are in 1995 dollars, using per capita medical spending nationally to deflate.

(GIC) of Massachusetts for the years 1994-1995.

To compute the effect of adverse selection on plan spending we compare the observed average spending during 1999 in each type of plans with the simulated spending in the absence of switching, assuming that the switchers would have spent the same share relative to the stayers in both years. To simulate the spending in 1999 in the absence of switching we compute the average spending for switchers, had they not switched as

$$\widehat{sw99} = st99 \times \frac{sw98}{st98},$$

where  $sw98$ ,  $st98$ , and  $st99$  correspond to average total spending of switchers in 1998, stayers in 1998, and stayers 1999, respectively. All calculations were carried out for twenty age-sex cells and then aggregated. We omit pharmacy spending from our calculations because of the missing pharmacy information for part of the sample.

Table 5 compares our results with ACZ's. Our results are deflated to the 1995 dollars using per-capita private medical spending. Entries of Table 5 represent the increase (and percent increase) in average plan spending attributed to switching.

ACZ reported that in the absence of switching the average spending of the more generous plan (Indemnity in their sample) would have been \$16 lower, while the spending in the less generous plan (HMO) would have been \$9 higher, resulting in

the net effect of adverse selection of \$25. While our results show the same net effect they are caused by different reasons—the entire burden of adverse selection is born by the higher generosity plan.

There are several differences between our data and ACZ's. First, unlike ACZ, we only included employees with individual coverage. Including other employees would increase the absolute amount of selection, because the scale of spending would increase with family coverage. Second, we did not include pharmacy spending in our calculations. Had we done so, the values we reported relative to ACZ would have been greater (recall that switchers up have the highest pharmacy spending). Third, we analyzed switching between the POS and the PPO plans. Mean spending in these two types of plans is closer together than in HMO and Indemnity plans that ACZ analyzed. Finally, ACZ analyzed data from Massachusetts, which had the highest level of per capita medical spending, while our sample comes from a number of regions. Because all four factors should tend to reduce the value we find relative to ACZ's we can conclude that we find a higher level of adverse selection, although we do not want to overemphasize the comparability. Nonetheless, we take some comfort from the comparison with ACZ's results.

## 5 Summary and Conclusions

In this article we have presented evidence of adverse selection in a private health insurance market. Using an administrative dataset for years 1998 and 1999 we have analyzed the switching behavior among plans of different generosity.

We have shown the presence of adverse selection. The fact that the two types of plans attract more and less healthy employees is not a problem, as long as the employer cross subsidizes the costs of a more generous plan from premiums for the less generous plan. In reality this is not a common practice (Marquis and Long,

1999). In addition even if employers did subsidize a more generous plan, computing the appropriate subsidy in real time is impossible, because the subsidy must be set before the switching behavior is observed, and our model points out that it is not just the marginal spender who will switch.

We show that switchers to a less generous plan exhibit lower medical spending prior to the switch, while the switchers to a more generous plan anticipate higher spending and delay their spending until after the switch. This transfer of costs from a less to a more generous plan increases the burden of adverse selection. Our data suggests that switching may be more important to the level of premiums than previously documented.

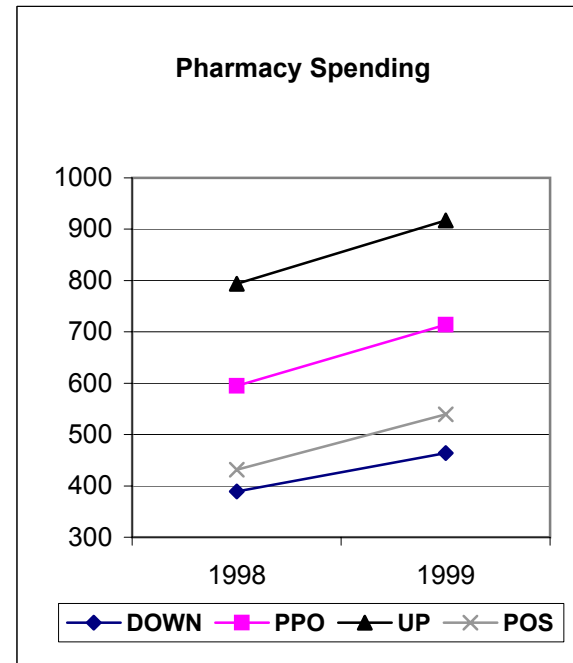
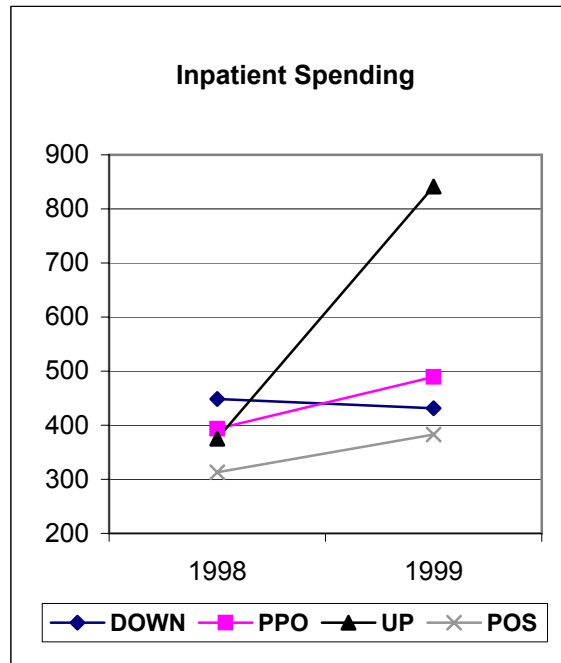
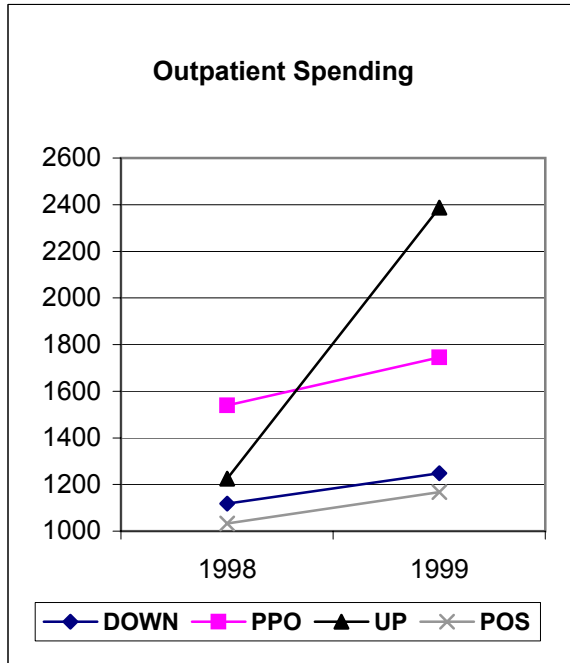
## 6 References

- Altman, D., Cutler, D.M., Zeckhauser, R.J. (1998): “Adverse Selection and Adverse Retention,” *American Economic Review*, 88 (2), 122–126.
- Altman, D., Cutler, D.M., Zeckhauser, R.J. (2003): “Enrollee mix, Treatment Intensity, and Cost in Competing Indemnity and HMO Plans,” *Journal of Health Economics*, 22, 23–45.
- Beaulieu, N.D. (2002): “Quality Information and Consumer Health Plan Choice,” *Journal of Health Economics*, 21, 43–63.
- Buchmueller, T.C., and P.J. Feldstein (1997): “The Effect of Price on Switching Among Health Plans,” *Journal of Health Economics*, 16, 231–247.
- Cao, Z. (2003): “Comparing the Pre-HMO Enrollment Costs between Switchers and Stayers: Evidence from Medicare,” *Service-level Risk Selection by HMOs in Medicare*, Ph.D. Dissertation, Boston University.

- Chernew, M., Gowrisankaran, G., Scanlon, D.P. (2002): “Learning the Value of Information: The Case of Health Plan Report Cards,” *NBER*, Working Paper 8589.
- Cutler, D.M., and R.J. Zeckhauser (2000): “The Anatomy of Health Insurance,” In: Culyer, A., Newhouse, J.P. (Eds.), *Handbook of Health Economics*, vol. 1A, Elsevier, Amsterdam, 563–643.
- Cutler D.M., and S. Reber (1998): “Paying for Health Insurance: The Tradeoff Between Competition and Adverse Selection,” *Quarterly Journal of Economics*, 113, 433–466.
- Ellis, R.P. (1989): “Employee Choice of Health Insurance,” *Review of Economics and Statistics*, 71m 215–223.
- Feldman, R., and B. Dowd (1982): “Simulation of a Health Insurance Market with Adverse Selection,” *Operations Research*, 30, 1027–1042.
- Frank, R.G., Glazer J., and T.G. McGuire (2000): Measuring Adverse Selection in Managed Health Care,” *Journal of Health Economics*, 19, 829-854.
- Gabel, J.R. (1999): “Job-Based Health Insurance, 1977-1998: The Accidental System Under Scrutiny,” *Health Affairs*, 18, 62–74.
- Keeler, E.B., Carter, G., Newhouse, J.P. (1998): “A Model of the Impact of Reimbursement Schemes on Health Plan Choice,” *Journal of Health Economics*, 17, 297–320.
- Long, S.H., and S.M. Marquis (1999): “Stability and Variation in Employment-Bases Health Insurance Coverage, 1993-1997,” *Health Affairs*, 18(6), 133–139.

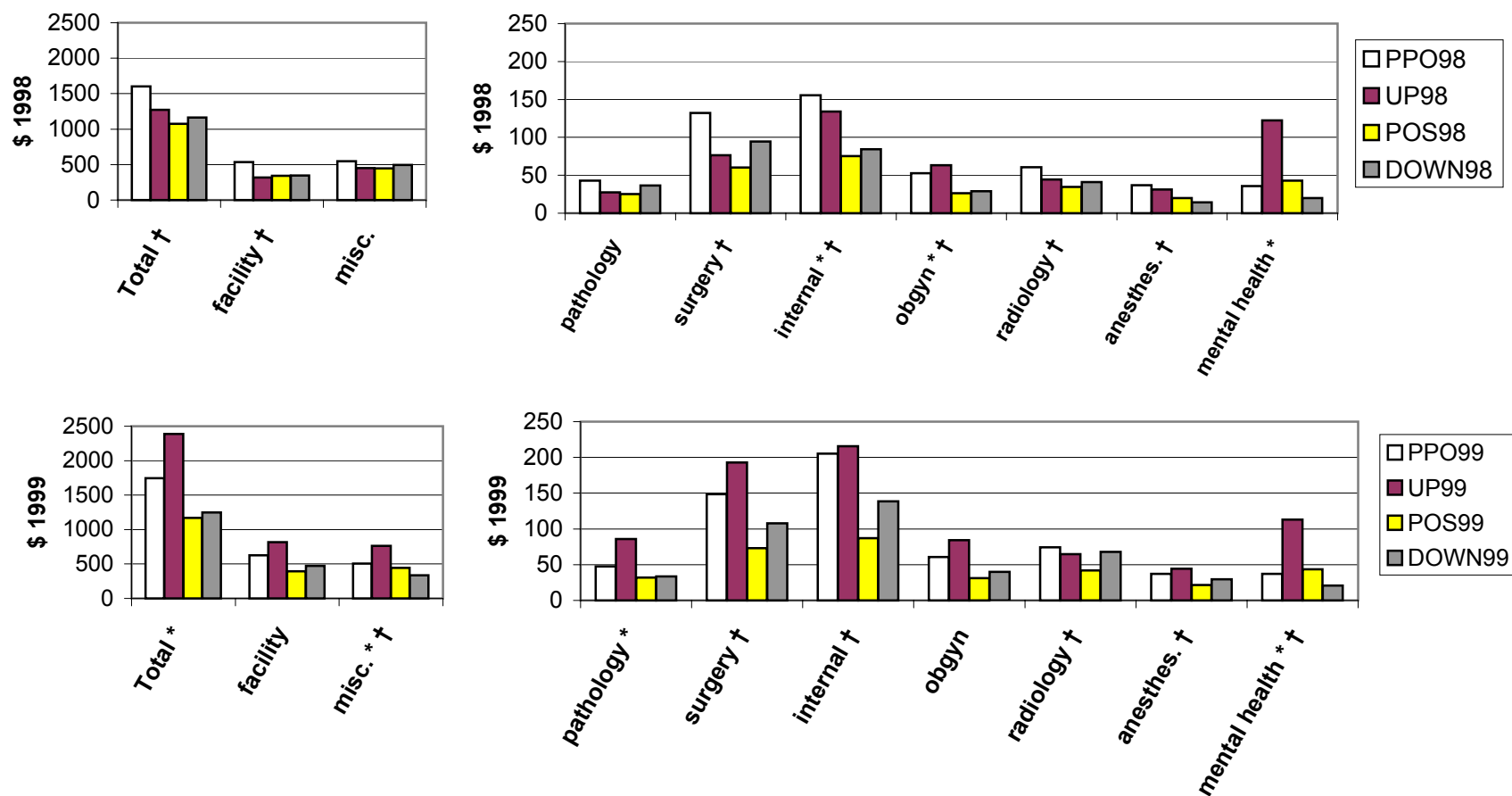
- Marquis, S.M., and S.H. Long (1999): “Trends in Managed Care and Managed Competition, 1993-1997,” *Health Affairs*, 18(6), 75–88.
- Royalty, A.B. and N. Solomon (1999): “Health Plan Choice: Price Elasticities in a Managed Competition Setting,” *Journal of Human Resources*, 34, 1–41.
- Strombom, B.A., Buchmueller, T.C., Feldstein, P.J. (2002): “Switching Costs, Price sensitivity and Health Plan Choice,” *Journal of Health Economics*, 21, 89–116.
- Samuelson, W. and R. Zeckhauser (1988): “Status Quo Bias in Decision Making,” *Journal of Risk and Uncertainty*, 1, 7–59.
- Van de Ven, W.P.M.M., Ellis, R.P. (2000): “Risk Adjustment in Competitive Health Plan Markets,” In: Culyer, A., Newhouse, J.P. (Eds.), *Handbook of Health Economics*, vol. 1A, Elsevier, Amsterdam, 755–845.

# Figure 1: Comparison of Transition Groups



**Note: Down represents switchers down, UP represents switchers up. Pharmacy spending is only computed for contributing companies.**

Figure 2: Provider Type Categories in 1998 and 1999



Note: All means are significantly different for stayers in PPO and POS. \* and † represent means that are significantly different for switcher up and down, respectively, relative to the appropriate comparison group.