

# Managed Care

University of Alabama

October 13, 2016

## Last Class

- ▶ A history of health reform dating back to WWII
- ▶ What the Affordable Care Act changes, i.e. mandated health insurance, Medicaid expansion in some states, the dependent coverage provision, prohibition of denial based on preexisting conditions, etc.
- ▶ The Supreme Court case that decided constitutionality of the ACA's individual mandate and Medicaid expansion
- ▶ Early economic studies of the ACA -mainly using specific provisions as discontinuities to study labor market outcomes, job-lock, etc.

# What is Managed Care?

Thus far, when we have discussed insurance, we have referred to a fee-for-service (FFS) system. In a FFS system, every time the patient goes to the doctor, they pay for that specific instance of utilization, i.e. they pay a fee for each unit of service.

Managed Care refers to a slightly different system of health care in which patients agree to visit only certain doctors and hospitals, and in which the cost of treatment is monitored by a managing company.

In managed care, consumers

- ▶ pay a premium
- ▶ get a more limited variety of health benefits
- ▶ are restricted to certain doctors covered by the plan

## An Analogy for Managed Care

- ▶ Suppose that rather than health care insurance, employers provided food and clothing insurance for their workers.
- ▶ A fee-for-service type plan would allow workers to purchase their food and clothing at any merchant of their choice and would reimburse the consumers subject to coinsurance rates and deductibles.
- ▶ A consumer with a 20% coinsurance rate could purchase filet mignon for \$20 per pound and have the insurer pay \$16 per pound. Likewise, another consumer could purchase \$200 Air Jordans and allow the insurance company to pay \$160 for the shoes.
- ▶ Consumers would likely buy more (or more expensive) food and clothing than if they had to incur the full price themselves.

## An Analogy for Managed Care

- ▶ This overconsumption of food and clothing would lead consumers and their insurers to worry about the costs of food and clothing and expenditure inflation.
- ▶ Suppose that in response to these high costs stemming from a fee-per-service plan a group of consumers and their employers organized and offered a “managed food and clothing plan.”
- ▶ In this plan, members would pay a fixed amount per person per month in food and clothing (presumably less than they were paying under the fee-for-service plan).
- ▶ In return for their premiums, consumers would be limited to shopping at a singly shopping center with which managers had negotiated lower prices for food and clothing.
- ▶ Moreover, managers could limit the types of goods purchased (no filet mignon and no Jordans). It is likely that at least some consumers would find these cheaper plans appealing.

# Features of Modern MCOs

MCOs have two distinct features that separate them from standard insurance

1. Extensive reliance on health care information systems.
  - ▶ MCOs are quite complicated with multiple levels and types of health care providers within a given system.
  - ▶ This clearly creates some complications with respect to administrative costs, billing, record keeping, etc.
  - ▶ One of the major challenges to MCOs in the beginning was to set up these integrated health information networks.
2. De-emphasis of the acute care hospital model
  - ▶ Hospitals provide expensive care, and any cost-effective system necessarily moves away from hospital care.
  - ▶ MCOs attempt to do so by allowing the primary care physician to act as a “gatekeeper” to hospitals.
  - ▶ Managed care seeks a vertical integration of what previously had been an unintegrated system.

## Economic Characteristics

MCOs feature a health care delivery structure involving the integration of insurers, payment mechanisms, and a host of providers, including physicians and hospitals. There are four related mechanisms by which MCO plans seek to contain costs and improve quality of care:

1. *Selective contracting*, in which managers negotiate prices and contract selectively with local physicians and hospitals.
2. *Steering* of enrollees to the selected (in-network) providers. If patients select non-network providers, they may have to pay substantially higher out-of-pocket costs.
3. *Quality assurance* through meeting voluntary accreditation standards.
4. *Utilization review* of the appropriateness of provider practices. The utilization review process may be prospective (in advance), concurrent (at the same time), or retrospective (looking back).

## Why move from FFS to MCO?

Cutler, McClellan, and Newhouse (2000) provide a conceptual model that asks how much a patient would have to be compensated to move from FFS to MCO coverage. The compensation presumably would be related to the patient's difference in utility between FFS and MCO.

- ▶ If a MCO offers less utility than FFS, then compensation to the insured must be positive to make the client indifferent.
- ▶ If a MCO offers more utility than a FFS plan, then compensation must be negative.

What difference between MCOs and FFS might affect compensation?

Once again, compensation is some amount that must be paid to (by) the consumer to make up for a loss (gain) in utility.



# Compensation Differences between MCOs and FFS

Three differences between MCOs and FFS might affect compensation:

1. **Difference in health.** If the MCO provides reduced health due to reduced treatment, then the compensation must be positive for those who choose the MCO.
2. **Cost savings.** If, holding health constant, the MCO provides savings due to either less treatment or cheaper treatment, the compensation must be negative, because the MCO is saving money for its clients.
3. **Financial risk from different out-of-pocket payments.** Clients may prefer an MCO if it ensures them from having to make large out-of-pocket payments. If so, the compensation will be negative because payment variability is reduced.

# Compensation Differences Between MCOs and FFS

This framework suggests that one must measure the differences between managed care and fee-for-service along several dimensions: health, price of care, and quality of care.

Some people, for example, may value health less, and may choose less health care by choosing an MCO, or possibly even no insurance, rather than FFS care.

Others might value health more, and also may believe “you get what you pay for.” This type of person may be better suited to obtain a FFS type plan that does not contain the cost saving and underutilization measures built into an MCO.

# Managed Care Organizations (MCOs)

Types of MCOs include

- ▶ Health Maintenance Organizations (HMOs)
- ▶ Preferred Provider Organizations (PPOs)
- ▶ Point-of-Service (POS) plans (no not the other P.O.S. plan)

MCOs are typically believed to restore competition to the health care sector and to control expanding health care costs.

HMOs receive special attention due to their pioneering roll within managed care, and also due to the fact that much of the scholarly and policy research has focused on them in particular.

# HMOs

## *Health maintenance organizations (HMOs)*

- ▶ Provide relatively comprehensive health care
- ▶ Entail few out-of-pocket expenses
- ▶ Require that all care be delivered through the plan's network and that the primary care physician authorize any services provided.

Each subscriber is assigned a primary care physician (“gatekeeper”) upon joining the HMO. If health care services are provided without gatekeeper authorization, then the HMO usually does not cover the services. The subscriber is personally liable for payment of the nonauthorized services.

Most HMOs set up their network by contracting with physicians in geographically spread out, independent practices. This type of setup is called an Independent Practice Association (IPA).

# PPOs

## *Preferred Provider Organizations (PPOs)*

- ▶ Give subscribers two distinct tiers of coverage
- ▶ If subscribers seek health care outside the network, the level of cost-sharing of the consumer goes up.
- ▶ Primary care physicians do not act as gatekeepers. Rather, patients must pay more if they choose to go outside the network.
- ▶ In this way, PPOs created financial incentives for subscribers to use network providers rather than go outside the network for care.

# POS plans

## *Point-of-Service (POS) plans*

- ▶ A hybrid of HMOs and PPOs
- ▶ Just like PPOs, POS plans offer two tiers of insurance benefits.
- ▶ Out-of-pocket costs are lower when members use network providers and less generous when they use non-network providers.
- ▶ Like HMOs, POS plans assign each member a physician gatekeeper who must authorize in-network care in order for the care to be covered on in-network terms.

# HMOs

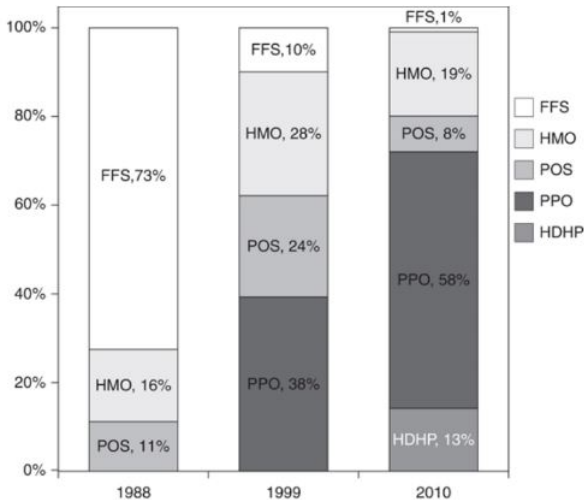
HMOs were the first version of MCO, so we will focus most attention to these plans.

- ▶ HMOs appear to overcome many of the information problems inherent in fee-for-service (FFS) health care markets that ordinary insurance coverage may exacerbate.
- ▶ Under a FFS system, the provider provides health care and advises the consumer on how much to get. At first glance, this information asymmetry between the provider and the consumer, when combined with a FFS payment system, may create the incentives for substantial overconsumption.
- ▶ The HMO structure appears to eliminate these overconsumption incentives and replace them with cost-control incentives and even possible incentives toward underconsumption.

# A History of HMOs

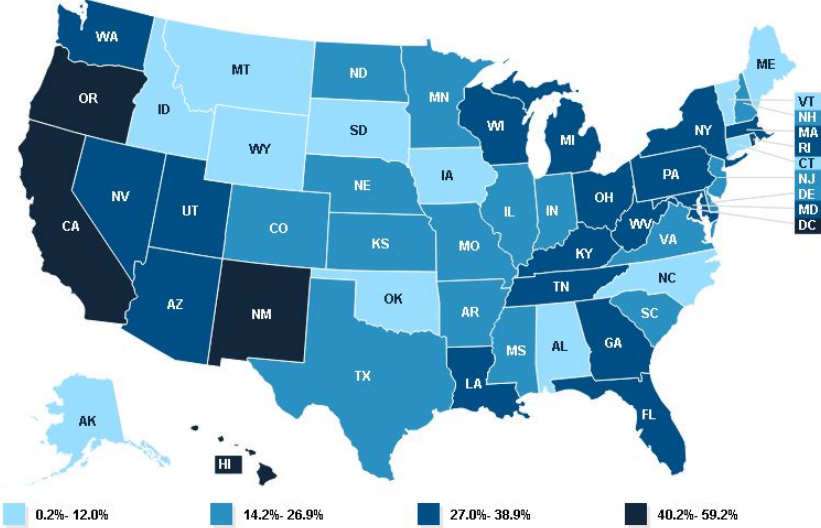
- ▶ HMOs originated on the west coast in the early 1930s and it provided a plan for all Los Angeles County employees who paid monthly premiums of \$1.50.
- ▶ The first big HMO was Kaiser Permanente Corporation in the 1940s.
- ▶ HMOs were pretty slow to spread for a few reasons
  - ▶ Massive resistance from physicians' groups
  - ▶ the AMA believed that HMOs would lead to worse health outcomes and eventually lead to socialized medicine
  - ▶ the AMA lobbied state legislatures to outlaw HMOs
- ▶ The Nixon administration passed the HMO Act (1973), which created a federal program to promote the development of HMOs. Loan guarantees and grants for startup costs were made available.
- ▶ In the 1980s, HMOs finally began to accelerate.





Source: Kaiser Family Foundation/Health Research and Educational Trust, Employer Health Benefits, 2010 Annual Survey, Exhibit 5.1. Available at [www.kff.org/insurance](http://www.kff.org/insurance) accessed May 23, 2011. This information was reprinted with permission from the Henry J. Kaiser Family Foundation. The Kaiser Family Foundation is a non-profit private operating foundation, based in Menlo Park, California, dedicated to producing and communicating the best possible information, research, and analysis on health issues.

# HMO Penetration



# Medicare and Medicaid

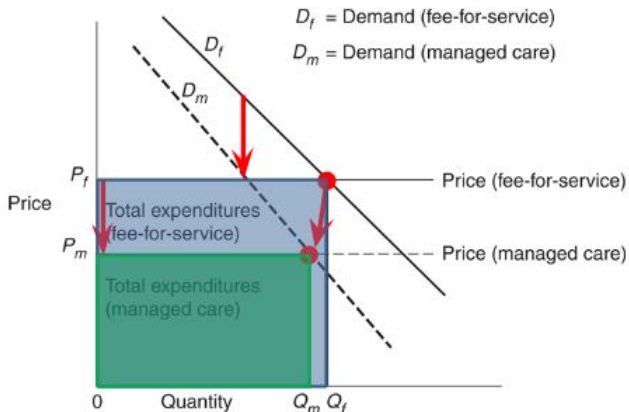
Due to concerns about rising costs in the past few years, many states have adopted MCO type models for Medicaid coverage. As of 2009, 36.2 Medicaid beneficiaries nationwide (72% of Medicaid recipients) were enrolled in some form of managed care.

As with employer plans, Medicaid managed care plans vary significantly from state to state. Some states contract directly with HMOs that already exist in local markets, while other states have created their own loosely structured provider networks.

Unlike Medicaid, Medicare is dominated by traditional FFS type plans. Medicare Advantage (aka Medicare Part C) is a form of managed care type plan, however only a small fraction of Medicare patients are a part of this.

# The Economics of Managed Care

Economic effects can be described using a simple model of demand. By exerting market power over supplier, HMO managers may lower prices from  $P_f$  to  $P_m$ . A price reduction is possible when providers have been earning economic profits. In effect, managed care reduces or eliminates those economic profits. Note the reduction in total health care expenditure from the MCO.



# Positive Externalities of HMOs

Suppose that we consider a dynamic problem with two time periods: when patients are young and then when they are old.

- ▶ If an HMO invests a lot in a person when they are young, through preventative care in period one, then this may lead to lower costs when the patient becomes old, i.e. lower costs in period two.
- ▶ Suppose that in period two, a second HMO swoops in and takes away a patient from the first HMO. Then this second HMO realizes a positive externality of the first HMO investing a good deal in period one preventative care.

## Problems with HMOs

Recall that in FFS plans, providers are paid for each treatment in order to cover costs. In an HMO, however, providers are paid fixed rates per person irrespective of the amount of treatment used. These differences in payments have led to discussions within the medical community regarding three frowned upon practices:

1. **Dumping.** Refusing to treat less healthy patients who might use services in excess of their premiums.
2. **Creaming.** Seeking to attract more healthy patients who will use services costing less than their premiums.
3. **Skimming.** Providing less than the optimal quantity of services for any given condition in a given time period.

## Estimating Health Care Costs

It is well understood that MCOs offer many cost saving attributes that fee-for-service plans do not. Many would predict that MCOs will spend less per member, reducing health care costs. Theory would also predict, however, that if fewer resources are used, quality of care may also suffer.

Conceptually, it seems fairly simple to compare health care costs between an HMO and a FFS type plan. One would simply collect data on cost of care across a wide spectrum of the population. Suppose one wanted to estimate the model:

$$Health_{costs} = \alpha + \eta * HMO + \beta X + \varepsilon$$

where the outcome variable is some measure of health costs for an individual,  $\eta$  estimates a relationship between being covered by an HMO and health outcomes, and  $X$  is a vector of individual level covariates such as age, race, sex, etc.

# Estimating Health Care Costs

$$Health_{costs} = \alpha + \eta * HMO + \beta X + \varepsilon$$

One potential problem with this estimation is Selection Bias. This estimation will only be accurate if patients are randomly assigned to either HMO or FFS treatment.

What direction is the selection bias?

- ▶ On one hand, HMOs offer comprehensive coverage and so they may attract and retain sicker members. This might make HMOs appear more expensive than they are and bias the  $\eta$  coefficient in an upward direction.
- ▶ On the other hand, HMOs may attract disproportionately younger members and families who tend to be healthier, and for whom the costs of care tend to be relatively lower. This might make HMOs appear cheaper than they are and bias the  $\eta$  coefficient in a downward direction.



# Estimating Health Care Costs

Manning et al. (1987), i.e. the RAND HIE article, includes a section studying health costs of HMOs in comparison to FFS type plans.

- ▶ A group of participants were randomized into a free fee-for-service type plan.
- ▶ A second group of participants were enrolled in an HMO plan of the Group Health Cooperative of Puget Sound in Seattle.
- ▶ Finally, they compared outcomes of these two groups to a group of people that were already previously enrolled in the HMO.

# Estimating Health Care Costs

TABLE 7—ANNUAL USE OF MEDICAL SERVICES PER CAPITA, SEATTLE SAMPLE, BY HMO AND FFS STATUS<sup>a</sup>

Plan	Likelihood of Any Use (%)	One or More Admissions (%)	Imputed Expenditures ANOVA <sup>b</sup> (1983 \$)	Imputed Expenditures with Age-Sex Covariates <sup>b</sup> (1983 \$)	Person Years
HMO Experimental	87.0 (1.0)	7.1 (0.50)	434 (28)	426 (23)	3687
HMO Control	91.1 (0.8)	6.4 (0.55)	432 (34)	465 (47)	2596
Free Fee-for-Service	85.3 (1.6)	11.2 (1.17)	640 (81)	612 (66)	1221
<i>t</i> -Statistic on Free-Experimental Difference <sup>c</sup>	-0.88	3.24	2.44	2.69	
<i>p</i> Value for <i>t</i> -Statistic, 2 tail	n.s.	.0012	.016	.007	

<sup>a</sup>Standard errors are shown in parentheses. The sample includes participants while they remained in the Seattle area. The sample excludes children born into the study and excludes partial years except for deaths, similar to Tables 1 and 2 above. For HMO Controls and Experimentals, the data include both in- and out-of-plan use. The standard errors are corrected for intertemporal and intrafamily correlation using an approach due to Huber in a similar fashion to Tables 1 and 2 above. The numbers differ slightly from those in Manning et al. (1984), because of minor corrections in the data, as well as the use of a less precise, but more robust method of calculating standard errors. The method is the same as that described in Table 2.

<sup>b</sup>See Manning et al. (1984) for details of imputation method.

<sup>c</sup>Testing null hypothesis of no difference between HMO Experimental and Free Fee-for-Service plan.

# Estimating Health Care Costs

- ▶ Because the HMO experimental group consumed health care at about the same levels as the HMO control group, this indicates that there is no selection bias present in the decision to enroll in an HMO.
- ▶ Additionally, individuals enrolled in either the treatment or control HMO groups spent only about 70% as much on health care as those in the free fee-for-service type plan.
- ▶ These results reflect the less hospital-intensive style of health care implemented within an HMO. Less money is spent because the primary care physician acts as a “gatekeeper,” and only directs patients to more expensive hospital care if completely necessary.

## Some Backlash Against HMOs

Thus far, we have discussed the direct effects of MCOs. In short, managed care tends to decrease health care utilization and lower health care spending. These cost saving attributes of managed care seem appealing, but as is the case with most things, we must consider the tradeoffs between saving money and issuing appropriate levels of care.

In the early 1990s, managed care plans placed increasingly severe restrictions on patient choices, including prior approval for access to specialists and certain high-cost procedures. In 1998, a group of Americans were surveyed in an effort to gauge the public's anxiety toward managed care.

# Public Anxiety about Managed Care

Per the results of this survey:

- ▶ Only 34% thought that MCOs were doing a “good job.”
- ▶ 51% believed that MCOs had decreased the quality of care.
- ▶ 52% favored government regulation even if it would raise costs

Concerned about timely access to care, California voters passed a law in 2002 intended to ensure that HMO members do not face undue delays in receiving medical attention. The rules were not approved until 2010, but they are quite specific in nature. The rules specify that

- ▶ HMO members will face maximum waiting periods for nonemergency care.
- ▶ Specifically, 48 hours for urgent care with no prior authorization, and 15 business days for nonurgent specialty care.

## Public Anxiety about Managed Care

While it is too early to assess the effects of the California measures on cost, quality, and compliance, the “drive-through delivery” offers a prime example of a natural experiment involving HMOs.

Drive-through delivery refers to managed care’s movement in the early 1990s toward one-night hospital stays for mothers expecting a normal (or non-cesarean delivery) childbirth.

Fueled by stories of instances in which children died shortly after the mother’s release, there was an enormous public outcry to require managed care plans to provide at least a second night of hospital care.

## “Drive-through Delivery”

- ▶ As recently as 1980, nearly 70% of mothers experiencing normal delivery had hospital stays of three days or more.
- ▶ Inpatient care is very costly. Yet, as long as hospitals received reimbursement for what they charged, they had no incentive to send the new mother home earlier.
- ▶ Almost certainly, the marginal benefits to the woman of being in the hospital for a third day did not measure up to the costs of keeping her there.

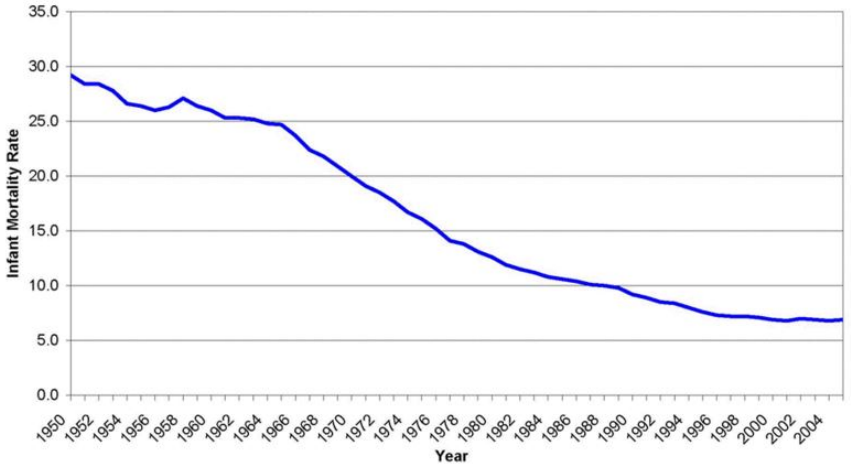
The cost inefficiency became apparent to HMO managers, and by 1995, the average length of stay for a mother with a normal delivery was 1.7 days, with 46.8% of mothers staying one day or less.

# Infant Mortality

- ▶ There were a few cases in which babies died after mothers were released from the hospital after only one day.
- ▶ These instances were discussed heavily within the media, so everyone caught wind of the unfortunate deaths.
- ▶ A lot of the blame got placed upon insurance companies, specifically those managed care organizations that limited the number of nights that many mothers could stay in the hospital.
- ▶ Did limiting the number of nights that mothers and children can stay in the hospital adversely affect infant health?
- ▶ The concern is that by limiting hospital stays, health care providers may not have sufficient time to detect certain conditions, hence requiring that patients seek treatment for the infants soon after discharge.



## Infant Mortality Rate, US. 1950-2005



## Evans et al. (2008)

- ▶ Did laws requiring minimum postpartum length of stays occurring in the late 1990s increase the average postpartum hospital length of stay?
- ▶ Moreover, did these laws influence the health of the mothers and their newborns?
  - ▶ If these laws did improve health of mothers and their newborns, then the policy fulfilled its intended purpose.
  - ▶ If these laws did not improve health, then they likely led to wasteful health spending
  - ▶ In order for laws to be cost-effective, the benefit realized by the mothers in terms of health should outweigh the financial costs of funding additional nights in the hospital.

## Evans et al. (2008)

### Data

- ▶ A restricted-use data set of more than 3-million California births over the 1995-2000 period that includes information on age, race, sex, information about the admission such as length of stay, procedures used, diagnoses codes, hospital charges, type of insurance, and whether the patient died in the hospital.

### Policy Change

- ▶ The California Newborns' and Mothers' Health Act of 1997 (NMHA), which went into effect on August 27, 1997, mandated that insurance carriers provide coverage for at least 48 hours of hospital stay for normal childbirths and 96 hours of hospital stay for cesarean deliveries.
- ▶ An analogous federal law, the Newborns' and Mothers' Health Protection Act of 1996 went into effect on January 1, 1998

## Evans et al. (2008)

So the California state law took effect August 27, 1997, while the federal law didn't take effect until January 1, 1998.

- ▶ Both laws exempted Medicaid births from coverage, however due to the unique structure of California's Medicaid managed care plans, some Medicaid recipients were in fact covered by these statutes.

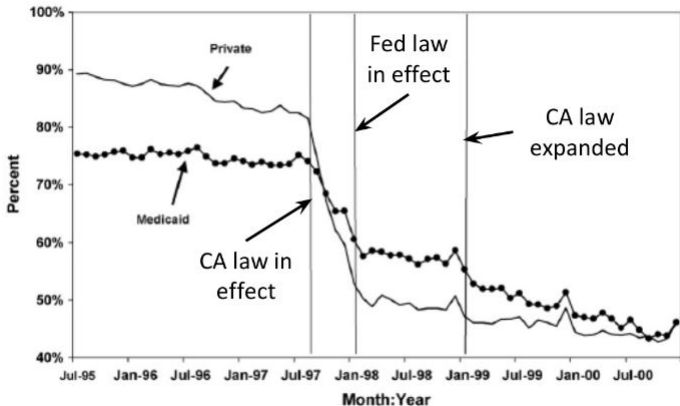
To ensure that all Medicaid patients were eventually covered, a bill was introduced that would extend the California early discharge statute to all Medicaid patients in the state. This law took effect on January 1, 1999.

## Evans et al. (2008)

### Outcome Variables (dependent variables)

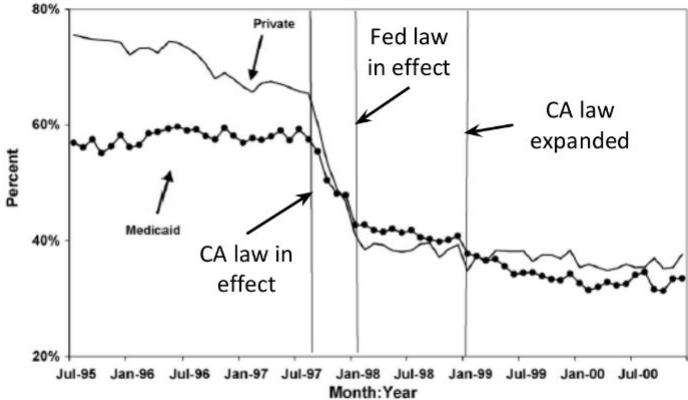
- ▶ whether the newborn was discharged early from the hospital (less than two nights for a normal birth, and less than four nights for a c-section). This is a dummy variable taking on a value of 1 if discharged early, and 0 if not discharged early.
- ▶ whether the infant is readmitted to the hospital within 28 days of birth. This is a dummy variable taking on a value of 1 if the infant is readmitted, and 0 if not readmitted.  
Readmissions measure an outcome that can be prevented with longer hospital stays.
- ▶ 28 day infant mortality. This is a dummy variable taking on a value of 1 if the infant died in the first 28 days of life, and 0 otherwise.

## Evans et al. (2008)



Here the y-axis represents the fraction of newborns delivered normally without complications that were released in less than 2 days in each month. The first vertical line is the CA law, the second is the federal law, and the third is when the state law was expanded to include Medicaid patients.

# Evans et al. (2008)



Here the y-axis represents the fraction of newborns delivered normally with complications that were released in less than 2 days in each month.

# Evans et al. (2008)

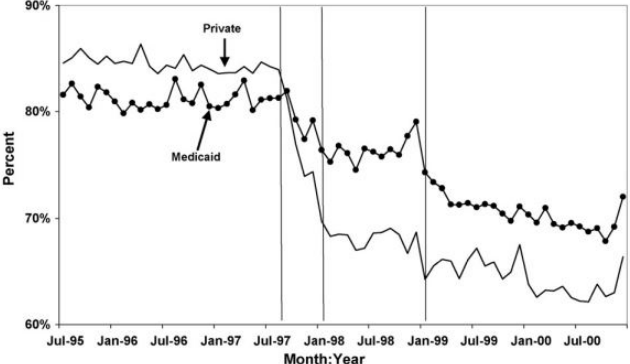


Fig. 3. Percentage newborn discharged early, c-section deliveries.

Here the y-axis represents the fraction of newborns delivered via c-sections that were released in less than 4 days in each month.



# Evans et al. (2008)

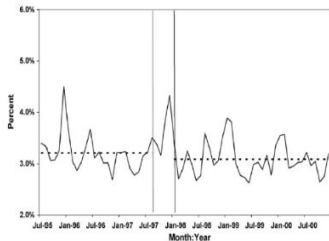


Fig. 4. Percentage newborns re-admitted within 28-days, vaginal deliveries without complications, private insurance.

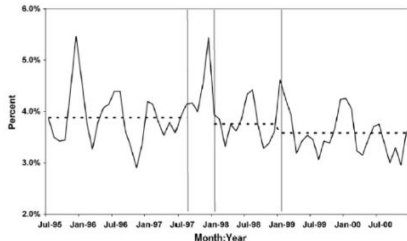


Fig. 7. Percentage newborns re-admitted within 28 days, vaginal deliveries without complications, Medicaid.

This is a plot of the percentage of infants born without complications that are readmitted to the hospital within 28 days of birth. The left panel are those covered by private insurance and the right those covered by Medicaid. The dotted line represents the mean across all months pre/post policy change.

# Evans et al. (2008)

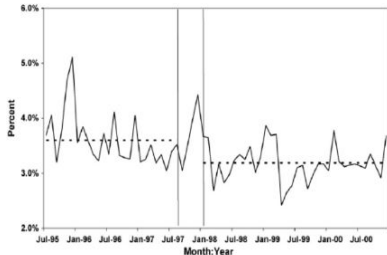


Fig. 5. Percentage newborns re-admitted within 28-days, vaginal deliveries with complications, private insurance.

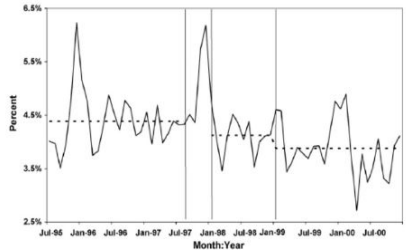


Fig. 8. Percentage newborns re-admitted within 28-days, complicated vaginal deliveries, Medicaid Insurance.

This is a plot of the percentage of infants born with complications that are readmitted to the hospital within 28 days of birth. The left panel are those covered by private insurance and the right those covered by Medicaid. The dotted line represents the mean across all months pre/post policy change.

# Evans et al. (2008)

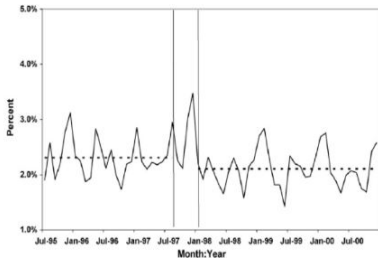


Fig. 6. Percentage newborns re-admitted within 28-days, c-section deliveries, private insurance.

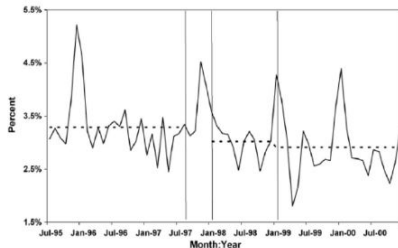


Fig. 9. Percentage newborns re-admitted within 28-days, c-section deliveries, Medicaid insurance.

This is a plot of the percentage of infants born via c-section that are readmitted to the hospital within 28 days of birth. The left panel are those covered by private insurance and the right those covered by Medicaid. The dotted line represents the mean across all months pre/post policy change.

## Evans et al. (2008)

They perform 2SLS estimation using the California state and federal laws as instrumental variables for early discharge to obtain consistent estimates of the impact of length of stay on medical outcomes.

They find that state and federal laws worked as intended in that the fraction of newborns discharged early fell dramatically for both privately insured and Medicaid newborns.

However, changes in readmission rates generated by the passage of the laws were not nearly as uniform. They find little to no effects for privately insured newborns with uncomplicated deliveries.

Among c-sectional deliveries, complicated births, and Medicaid patients with complicated deliveries, they find that changes in early discharge laws decreased readmission rates by a substantial amount.

## Evans et al. (2008)

These results suggest that for routine pregnancies, early discharge of newborns pose little health concern, yet those with the highest risk of readmission benefited enormously from passage of the early discharge laws.

They estimate that these laws extending hospital stays of mothers and newborns increased costs by \$414 million.

Using an estimate of the mother's willingness-to-pay to reduce a newborn re-admission, they estimate that these laws benefited mothers by the amount of \$25 million.

Hence, they estimate that the laws do not appear to be a cost effective policy. These results suggest that altering the law so that only complicated deliveries would be given extra postpartum stays would save resources with little cost to health.

## Next Class

Social Insurance / Medicare (Ch. 21 FGS)