Title

Hospital variation in post-partum tubal sterilization rates in California and Texas

Authors

Joseph E. Potter, Amanda J. Stevenson, Kari White, Kristine Hopkins, and Daniel Grossman

Abstract

Postpartum sterilization is among the most commonly used methods of contraception in the United States. However, recent scholarship is divided as to whether postpartum sterilization is accessible and over-utilized, or there exist significant barriers to getting a postpartum tubal, especially for Medicaid patients and minorities. We use complete hospital discharge records for Texas and California in 2009 to describe variation in the hospital level rate of postpartum tubal sterilization and find that rates vary substantially between hospitals, between insurance statuses, and by type of delivery. There is also a noticeable difference in the level and pattern of variation between California and Texas. We argue that variation in barriers to access must explain at least part of the hospital level variability in rates of postpartum tubal sterilization.

Introduction

Female sterilization is one of the most common contraceptive methods in the United States. Among current users who have children in the 2006-2008 Cycle of the National Survey of Family Growth (NSFG), the percent distribution in 2006-08 by method was: female sterilization 38%, male sterilization 14%, the pill 16%, condoms 12%, IUDs 9% and other methods 9%. However, we also know from NSFG that while the overall proportion of women who are sterilized is quite large, among women who do not want any more children and who had delivered a child within six months of the survey (n=134), only 21% percent were sterilized (our own tabulation).

Some recent analysts have argued or at least implied that postpartum sterilization is easily available and over-used in the United States, especially among minorities. Borrero et al. (2007) and Bass and Warhime (2009) have interpreted the substantial differentials in the utilization of sterilization by insurance status, rural residence, and race or ethnicity found in large, nationally representative surveys as evidence that less advantaged women are vulnerable to making less than fully informed choice as to their method of contraception, and, most recently Borrero et al. (2011) have found that racial differentials in sterilization are accompanied by differentials in knowledge about the reversibility of sterilization and the safety and effectiveness of long-acting reversible methods (LARC).

On the other hand, information is accumulating from a number of smaller or local studies indicating considerable frustrated demand for postpartum tubal sterilization. In a study of women who desired postpartum sterilization at three urban hospitals, more than 40% of pregnant women who wanted the procedure were not sterilized within 10 months of delivery (Davidson, Philliber et al. 1990). The main reasons for not obtaining a sterilization were bureaucratic and logistical barriers, such as delivering before the Medicaid consent form's 30-day waiting period had passed and unavailability of providers or operating rooms. Other studies have continued to document that health care system factors serve as barriers to sterilization (Zite, Wuellner et al. 2005; Zite, Wuellner et al. 2006; Seibel-Seamon, Visintine et al. 2009; Thurman, Harvey et al. 2009). For example, 31% of women requesting a postpartum tubal ligation during pregnancy did not receive the procedure prior to hospital discharge due to lack of funding and not having a valid Medicaid Title XIX consent form (Thurman, Harvey et al. 2009). Also, a recent report based on a survey of a national sample of obstetricians has shown that doctors often try to dissuade their patients from getting a sterilization (Lawrence, Rasinski et al. 2011).

If logistical or financial barriers to obtaining a postpartum sterilization are important, it is likely that they will vary according to type of delivery. The issue of having an operating room and anesthesiologist present is already solved in the case of a cesarean delivery, and the marginal effort and cost of the tubal ligation is much smaller. Moreover, in the case of mothers with previous cesareans, this history may be seen by the mother or the doctor as justification for a sterilization.

In this paper, taking advantage of the recent availability of hospital discharge data at the state level with nearly complete coverage of all deliveries, we report on variation in rates of postpartum tubal sterilization across hospitals in both California and Texas. We undertook this exercise with a view toward assessing variation in access, but we also have to consider the role that patient demand might play in explaining our results. Without previous literature to guide us, our inclination is to expect that, after controlling for insurance status, the demand for postpartum tubal sterilization is going to be fairly similar across hospitals, whereas the impediments or barriers to sterilization could vary substantially across hospitals. We also expect that importance of barriers and impediments will be greater for vaginal rather than cesarean deliveries.

California and Texas

The two states we have chosen for this project, California and Texas, are central to debates about fertility, unintended pregnancy, the contraceptive practice of Hispanics, and women whose delivery is covered by public insurance. First, both have high levels of unintended pregnancy. Finer and Kost(Finer and Kost 2011) have used data from the PRAMS to prepare state-level estimates of unintended pregnancy for 2006. These ranged from 69 (per thousand women) in Mississippi to 36 in New Hampshire. California had a very high rate of 66 per thousand women; Texas was only slightly lower at 62. Unintended pregnancies represented 56% of all pregnancies in California, 53% in Texas. Second, California and Texas are the two states in the nation with the largest number of Medicaid births, which account for about half of all births in each state. Third, Hispanics account for over half of all births, and roughly 70% of Medicaid births, in both California and Texas, are to Hispanic women. Indeed, more than half of all births to women of Mexican origin in the U.S. take place in these two states. In California, 43% of all Medicaid (Medi-Cal) births are to undocumented migrants; the comparable figure for Texas is 28%, according to special tabulations from claims data.

While similar in terms of their high rates of unintended pregnancy, Medicaid births, and Hispanic births, TX and CA differ markedly in their political and cultural orientation (Lesthaeghe and Neidert 2006; Lesthaeghe and Neidert 2009). These orientations are reflected in their very different approaches to supporting family planning. Without a doubt, California's programs are more generously funded and more inclusive of recent migrants. There are three main sources of public funding for family planning in each state. The first is specific federal funding for clinics: Titles X, V, and XX. The Title X Family Planning program is a federal program that provides comprehensive family planning and related preventive health services to low-income women and men. In 2009, Title X served approximately 1.2 million clients in California, far more than in Texas. Title X eligibility does not require documentation of immigration status. The second source of public funding for family planning in California and Texas is Medicaid, which requires states to cover pregnancy-related services for eligible women. In Texas, the upper income eligibility level for pregnant women is 185% of FPL, while in CA it is 200% of FPL. Undocumented immigrants are only eligible for emergency Medicaid, which includes coverage for emergency labor and delivery. In California but not in Texas, emergency Medicaid covers postpartum contraception including sterilization.

Both Texas and California extend family planning services to low-income people under Medicaid waiver or State Plan Amendment programs. The Texas waiver program, known as the Women's Health Program (WHP), covers fertile women age 18 and older up to 185% of FPL; it is

due to expire at the end of 2011. A rider passed in the current legislative session authorizes renewal of WHP, but it excludes Planned Parenthood as an eligible provider and it may significantly diminish the accessibility of contraception in the state of Texas. In California a State Plan Amendment, Family PACT, covers both fertile women and men of any age up to 200% of FPL. Undocumented women are not eligible for the Texas WHP. California Family PACT has effectively extended coverage to undocumented and recent immigrants.

Data and Methods

For this analysis, we secured access to data from the Texas Inpatient Hospital Discharge (THID) and California Patient Discharge (CPD). Because both states mandate complete reporting, these data include virtually all hospital discharges. The data are structured as one record per discharge with multiple procedures and diagnoses, which allows us to reliably and completely identify deliveries with and without postpartum sterilizations. Additionally, we secured data on discharges from ambulatory surgery centers for Texas and California from the Texas Center for Health Statistics and the California Office of Statewide Health Planning and Development. Together, these four data sources provide a registry of all deliveries and sterilizations in the two states.

The inpatient hospital discharge data for each state are extracted by hospitals from their electronic medical records billing systems. Therefore, they include space for up to 75 CPT procedure codes and ICD-9-CM codes, allowing us to precisely determine the type of delivery, including number of infants born and their vital status, surgical procedures, and complications. The records also include the patient age, insurance status, and hospital name. However, the reporting on race/ethnicity is incomplete, and parity is not available in these records.

We identified deliveries by type (vaginal or caesarean) and by the provision of postpartum sterilization. First, using inpatient data for each state, we applied CPT and ICD-9-CM codes for vaginal and cesarean deliveries of singleton liveborn infants. Second, using the inpatient data for each state, we applied CPT and ICD-9-CM codes for bilateral occlusion or destruction of the fallopian tubes to identify discharges with sterilizations. Third, using ambulatory data for each state, we applied CPT and ICD-9-CM codes for bilateral occlusion or destruction of the fallopian tubes to identify interval sterilizations.

The 2009 discharge data include 376,607 deliveries in 225 hospitals in Texas and 511,177 deliveries in 274 hospitals in California. We distinguish between deliveries paid by private

insurance (including military insurance) and deliveries paid by Medicaid (or Medi-Cal in California). Deliveries paid by other sources (including county funds, indigent care, self, and unknown) are omitted from our analysis. The proportion of deliveries not identifiably paid by Medicaid or Medi-Cal or private insurance was 9.9% in Texas and 3.6% in California. The proportion is higher in Texas because Texas has more births in small hospitals with low birth volume, leading to the redaction of identifying information, including Medicaid eligibility status. The proportion of Medicaid births was 53% in Texas and 48% in California.

Collapsing the individual records by hospital and insurance type, we associate each delivery with the hospital context in which it took place. Because rates of sterilizations and cesareans vary by insurance status within the same hospital, deliveries paid by Medicaid (or Medi-Cal) are associated with the hospital level rates for Medicaid deliveries and deliveries paid by private insurance are associated with the hospital level rates for private deliveries. We then categorize each "hospital"[1] according to the overall sterilization rate in that institution for the respective insurance status. We use bar charts to present results, using seven categories for the hospital's sterilization rate: 0 - 0.015, 0.015 – 0.045, 0.045 -0.075, 0.075-0.105, 0.105 - 0.135, 0.135 – 0.165, 0.165 and greater. Since, we are using the universe of deliveries for 2009, statistical significance is not an issue.

In this extended abstract, we first look at the distribution of deliveries according to the hospital sterilization rate, and then at the composition of postpartum sterilizations according to the type of delivery they follow in the different sterilization rate categories. For the final paper, we will augment this analysis with age standardization of sterilization rates at the hospital level. We will also examine the between city variation in sterilization rates as well as the between hospital variation.

Results

Table 1 shows the distribution of sterilizations by type for each state and insurance status. The three types of sterilizations are: postpartum sterilizations with cesarean section deliveries, postpartum sterilizations with vaginal deliveries, and interval sterilizations. Across state and insurance status categories, the most common type of sterilization is postpartum with cesarean delivery. There are relatively few postpartum sterilizations with vaginal deliveries among sterilizations for women with private insurance (11% in California and 13% in Texas).

[1] Because we collapse on both hospital and insurance status, there are actually two "hospitals" for each institution, one for Medicaid patients and one for private patients.

The proportion of interval sterilizations for Texas women with Medicaid is also low at 12%. Across the two states, California has a greater proportion of interval sterilizations in both insurance categories. And in both California and Texas interval sterilizations represent a greater proportion of all sterilizations among women with private insurance than they do among women with Medi-Cal or Medicaid.

In order to assess the overall utilization of sterilization in each state and insurance status category, we summed all postpartum sterilizations and interval sterilizations in 2009 in each category and divided that total by the total deliveries in 2009 in each category. In California the ratio of total sterilizations to deliveries in both Medi-Cal and private insurance is 10%. For Texas Medicaid, the ratio of total sterilizations to deliveries is 13% and for Texas private insurance, this ratio is 14%.[2]

Distribution of Deliveries by Hospital Sterilization Rate

Figures 1 and 2 display the volume of deliveries by the hospital context in which each delivery took place. The first conclusion to be drawn from these figures is that the hospital context varies widely in both states and for both insurance statuses. Many women deliver in hospitals where less than 5% of deliveries are followed by postpartum sterilization, while a significant fraction deliver in hospitals where three times this proportion obtain a sterilization.

Overall, deliveries in California tend to occur in hospitals with lower sterilization rates than deliveries in Texas. Within each state, private deliveries occur more frequently in low-sterilization rate hospitals than Medicaid or Medi-Cal deliveries do. In Texas 46% of Medicaid-insured deliveries occurred in hospitals with sterilization rates less than 10.5%, whereas 74% of Medi-Cal deliveries occurred in hospitals with this low a sterilization rate. While in both states privately insured women are more likely to deliver in low sterilization rate hospitals than Medicaid women, in Texas the distributions of Medicaid paid and private insurance paid deliveries have a similar mode. By contrast, in California the distributions of Medi-Cal paid and private insurance paid births by hospital sterilization rate have dramatically different modes, with the modal hospital sterilization rate for Medi-Cal paid deliveries being greater than the modal hospital sterilization rate for private insurance paid deliveries.

It is also striking that the proportion of deliveries in hospitals with zero or nearly zero postpartum sterilizations is greater in California than in Texas. This difference reflects a greater

[2] Of course, the interval sterilizations were in many cases performed on mothers whose last birth was earlier than 2009, but barring large variation in the size of annual birth cohorts, this ratio should give a reasonable picture of the relative importance of each type of sterilization for women in each state and insurance status.

proportion of women delivering in Catholic hospitals, where Church policy prohibits the use of such methods.

Distribution of Postpartum Sterilizations by Hospital Sterilization Rate and Type of Delivery

Figures 3 through 6 show the volume of postpartum sterilizations by hospital sterilization rate and break that volume into postpartum sterilizations with cesarean section delivery and postpartum sterilizations with vaginal delivery. Each of these figures describes sterilizations for a single insurance status in a single state.

For Texas Medicaid paid deliveries, figure 3 shows a negative association between the hospital sterilization rate and the proportion of postpartum sterilizations occurring with cesarean rather than vaginal deliveries. Figure 4 illustrates a similar negative correlation for Texas private insurance paid deliveries, but the association is less easy to note given the relatively small proportion of sterilizations following a vaginal deliveries in all seven categories. Turning to California within state differences in postpartum sterilizations by hospital sterilization rate, figures 5 and 6 also illustrate that the negative correlation between hospital sterilization rate and proportion holds for deliveries paid by private insurance and Medi-Cal, and again the relationship seems to be stronger for private insurance paid deliveries than Medi-Cal paid deliveries.

A crude way to summarize the association between type of postpartum sterilization and the overall hospital sterilization rate is to look at just two categories for the latter, those with hospital sterilization rates below 10.5%, and those with rates greater than or equal to 10.5%. Table 2 shows cesareans as a proportion of all sterilizations in hospitals with high as compared to low sterilization rates. It illustrates that for postpartum sterilizations in both states and both insurance statuses, hospitals with lower sterilization rates have higher proportions of postpartum sterilizations with cesarean section deliveries versus vaginal deliveries. Comparing across states, Table 2 also reveals that Texas has uniformly higher cesarean section rates within postpartum sterilizations regardless of insurance status and hospital sterilization rate.

A perspective on the likelihood of obtaining a sterilization given the type of delivery is provided in Table 3, which shows the proportion of postpartum sterilizations among deliveries of each type, controlling for state, insurance status, whether the hospital sterilization rate was above or below 10.5%. Comparing hospitals with low and high overall sterilization rates, the greatest differences in the proportion of deliveries followed by a sterilization occurs for vaginal deliveries. Furthermore, the differences for vaginal deliveries are more pronounced for Medicaid deliveries in both states.

Discussion

The first conclusion to be drawn from this analysis of hospital discharge data from California and Texas is that there is great variation across hospitals in the frequency with which deliveries are followed by a postpartum tubal ligation. We have also established that the variation in the likelihood of sterilization seems to be even greater among women having a vaginal delivery, and among Medicaid as compared to private patients. The main question of interpretation is whether the main driver of this variation is patient choice or obstacles and impediments to obtaining the procedure, especially following a vaginal delivery. Without information from recent or prospective mothers concerning their preferences, we can only assess the relative plausibility of the two possibilities. That said, it seems unlikely to us that there could be such enormous variation in patient preferences across hospitals.

Consider the case of the virtual absence of postpartum sterilizations in Catholic hospitals. Do the women who want no more children and deliver in Catholic hospitals have no interest in a postpartum sterilization? Or are they simply reconciled to the fact that they cannot get sterilized then and there, and will go on to seek an interval procedure some time after the delivery? Considering that in NSFG Catholic women are only slightly less likely to rely on female sterilization than the rest of the population, the former hypothesis seems implausible.

An intermediate possibility is that at least some women are aware of the relative ease with which they might obtain a postpartum sterilization in the different hospitals available to them, and those wanting a sterilization choose a hospital where the chances of getting one are highest. Such behavior would tend to augment the variation across hospitals with "demand" moving toward the institutions where the "supply" is greatest. Such compensatory behavior, of course, also raises the possibility that women who want a sterilization may also "choose" to deliver by way of a scheduled cesarean section. The phenomenon of women choosing to deliver by cesarean in order to get a sterilization has been amply studied in Brazil (Potter, Perpetuo et al. 2003), but seems to have received little attention in the United States in spite of the fact that the rate of cesareans among multiparas with no previous cesareans or other medical indications has doubled over the last decade (MacDorman et al. 2008).

Finally, how might the policy environment have influenced the differences we have observed between California and Texas, and between Medicaid and private patients? First, with regard to Medicaid patients, one might have expected that California's greater funding for family planning in general, and this state's willingness to extend the same funding opportunities for

sterilization to undocumented and recent migrants as are available to other qualified women should have led to higher rather than lower postpartum sterilization rates in California as compared to Texas. The only other explanation that would not imply greater barriers to sterilization in California would be a greater availability to, or interest in LARC among Medi-Cal patients. However, the California MIHA survey does not show particularly high utitilization of LARC among recent mothers whose delivery was paid for by Medi-Cal (data not shown). Secondly, in both states, private patients make greater use of interval sterilization than do Medicaid patients. The fact that this difference is largest in Texas accords with the differential funding for the procedure for migrants.

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Figure 1

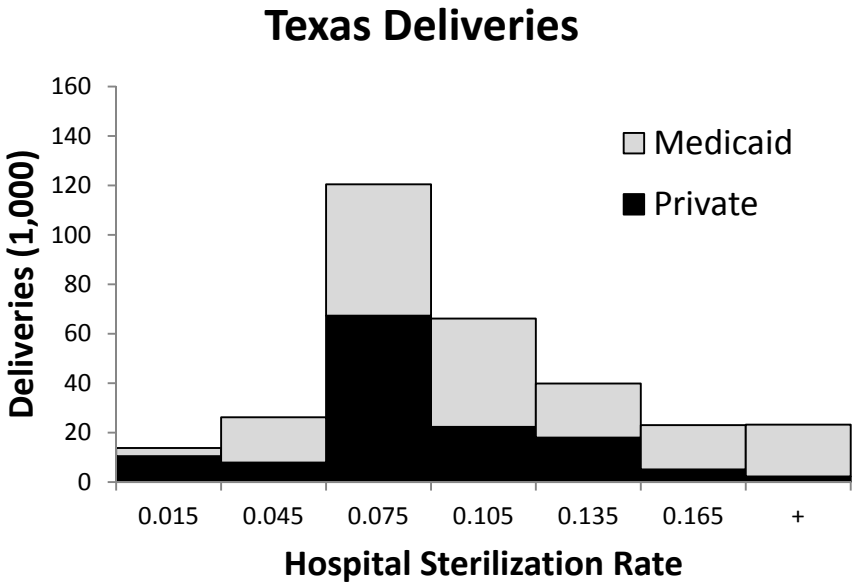

Figure 2

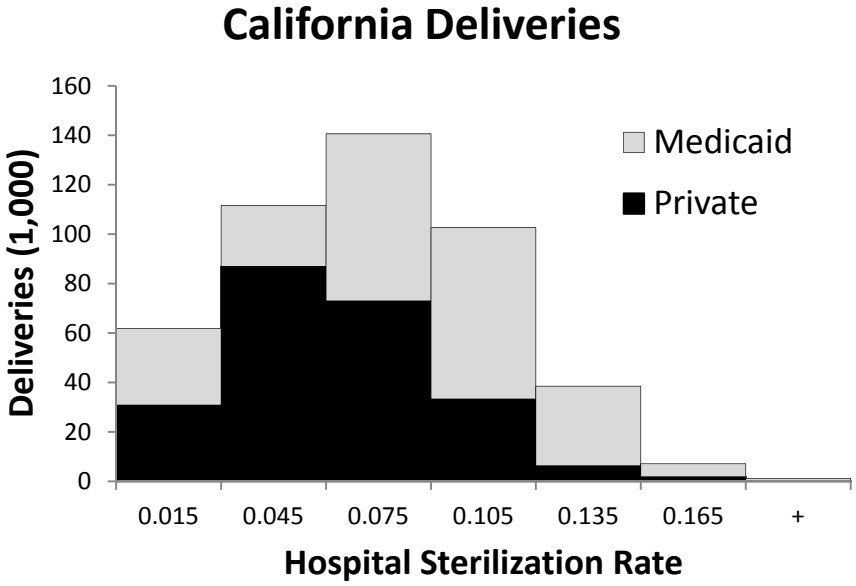

Figure 3

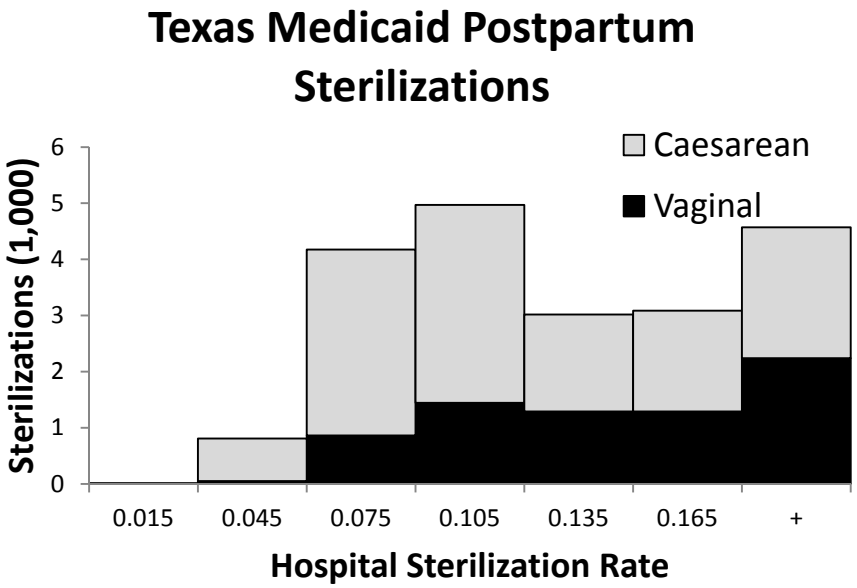

Figure 4

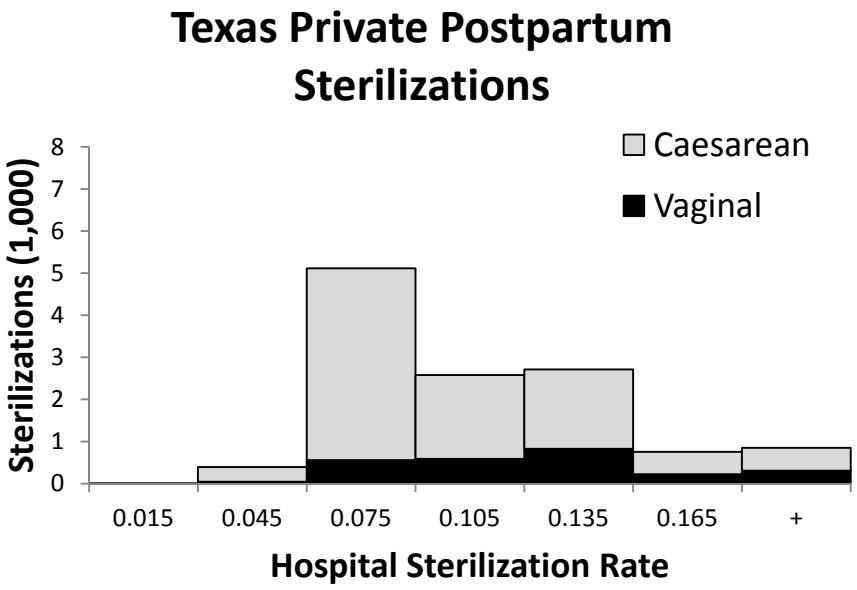

Figure 5

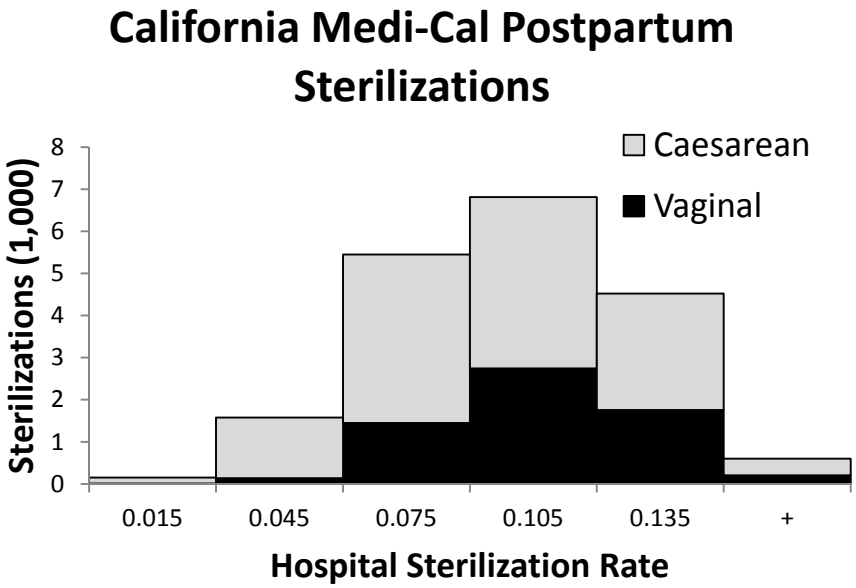

Figure 6

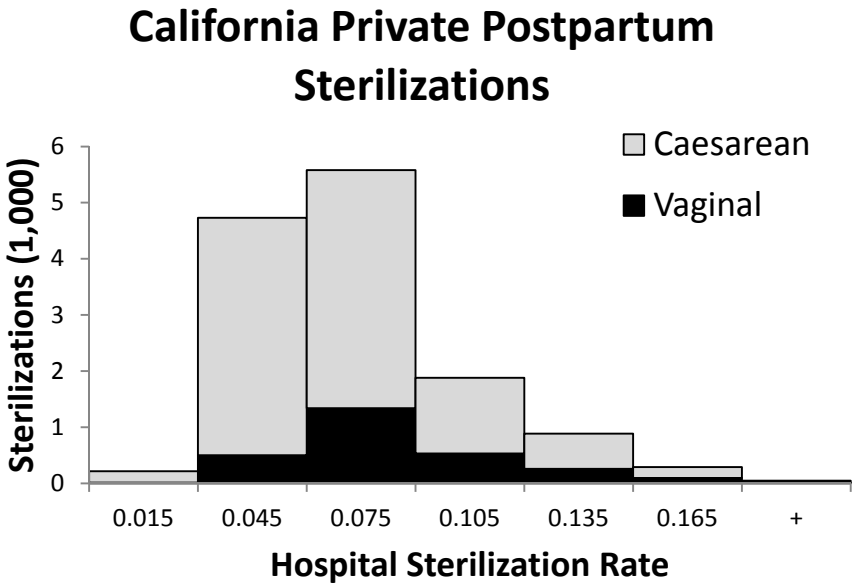

Table 1. Distribution of Sterilizations by timing and type of Delivery, 2009

	Postpartum			
State & Payer	Cesarean	Vaginal	Interval*	Total**
CA Medi-Cal	51%	25%	25%	100%
CA Private	43%	11%	47%	100%
TX Medicaid	57%	31%	12%	100%
TX Private	51%	13%	35%	100%

* In Texas, based on Q4 2009 and Q1 2010

** Cells may not sum due to rounding

Table 2. Cesareans as a Proportion of all Postpartum Sterilizations, 2009

Hospital Sterilization Rate	Medicaid	Private
CA High (>=10.5%)	59.9%	67.6%
CA Low (<10.5%)	72.0%	81.8%
TX High (>=10.5%)	55.2%	69.0%
TX Low (<10.5%)	78.5%	86.8%

Table 3. Sterilizations by Delivery Type and Insurance Status, 2009 (as a proportion of deliveries)

	Medicaid		Private	
Hospital Sterilization Rate	Vaginal	Cesarean	Vaginal	Cesarean
CA High (>=10.5%)	15.7%	21.8%	6.7%	22.4%
CA Low (<=10.5%)	6.0%	14.2%	1.4%	12.4%
TX High (>=10.5%)	11.4%	25.7%	7.5%	24.3%
TX Low (<=10.5%)*	5.4%	17.2%	1.5%	15.3%
CA Ratio (Low/High)	0.38	0.65	0.21	0.56
TX Ratio (Low/High)**	0.47	0.67	0.20	0.63

*The low number of hospitals in this category

**Comparison includes cell representing few hospitals and deliveries