*Disparities in Access to a Desired Postpartum Sterilization among Publicly Insured Women in Texas* 

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#### Introduction

Postpartum tubal sterilization is one of the most widely used and most effective methods of contraception in the United States. The procedure follows about 10% of all US deliveries, but the frequency is much higher following cesarean as compared to vaginal births, and is more prevalent in certain regions of the country, and racial-ethnic groups (Bass 2013; Borrero et al. 2007, 2009, 2009; Chan and Westhoff 2010; White et al. 2015; Whiteman et al. 2012).

Despite rates of postpartum sterilization that are much higher than those found in many other industrialized countries, there is considerable evidence that a significant fraction of women who desire the procedure do not get one while in the hospital for delivery. One indication of unmet demand is the large difference in the incidence of the procedure between vaginal and cesarean births. Second, studies of the fraction of sterilization requests that are met in distinct hospital settings have shown that a substantial fraction are not met (Thurman et al. 2009; Thurman and Janecek 2010; Zite et al. 2006). These studies identify a difference between the completion rate by type of delivery as well as by demographic characteristics. Some studies also identify the barriers that prevented women from obtaining the procedure, including problems with the Medicaid consent form, the lack of availability of an operating room, and lack of insurance coverage or other funding.

One less noticed aspect of postpartum tubal sterilization in the US is the large variation in incidence across hospitals (J. E. Potter et al. 2013). Some of this variation results from the prohibition of sterilization in Catholic hospitals, and the variation in cesarean rates across hospitals. However, the bulk of the variation cannot be explained by these variables, and it is not yet known how much of the residual variation is due to differences in patient demand as compared to the completion proportion.

In this paper, we seek to identify unmet demand for postpartum tubal ligation among public patients who delivered at eight hospitals in Texas. Using data from a prospective survey, we identify women who wanted to be sterilized while they were in the hospital for delivery, as well as those who did and did not obtain the

procedure before discharge. We then analyze the proportion sterilized before discharge among women who desired a procedure according to demographic groups and by hospital. This analysis is conducted for all births and then separately vaginal and cesarean births. We also identify the barriers encountered by the women who were not sterilized, and their contraceptive use six months after delivery.

#### Materials and Methods

In 2014, the Texas Policy Evaluation Project (TxPEP) began a prospective cohort study of 1700 women that gave birth in 8 hospitals across 6 Texas cities. Hospitals were selected to reflect the experiences of publicly insured women delivering in urban areas. Three of them are privately owned, and five were teaching hospitals with residents in place at the time the baseline interviews were conducted. Participants were recruited soon after delivery and were considered eligible if they were between the ages of 18-44, spoke English or Spanish, and wanted to delay childbearing for at least two years. All women had delivered a single, healthy baby whom they expected to take home upon discharge, currently lived in Texas within the hospital's service area, and planned to live in the area for at least one year. All participants were either covered by public insurance or had no insurance for their hospital deliveries. In total, we enrolled 100 participants from a hospital in Odessa, 300 from each hospital selected in Austin, Edinburg, and Dallas, 400 from 2 hospitals in Houston, and 300 from 2 hospitals in El Paso. Additional details regarding the sample are provided in an earlier paper (Joseph E. Potter et al. 2017).

Data collection for each hospital sample continued over a two year period, with follow-up phone interviews conducted at 3, 6, 12, 18, and 24 months after delivery. 24-month follow-up interviews are currently in progress. We administered a 20-minute face-to-face baseline interview in either English or Spanish after obtaining signed informed consent from participants. The baseline questionnaire collected an array of demographic and socioeconomic variables, to include education, age, race, nativity, parity, and relationship status. We also

collected information on the type of delivery and where the participant had received prenatal care (public versus private clinic), insurance status and contraceptive use and preferences.

Current Medicaid policy does not cover payment of sterilizations for women under age 21, so we omit this age group from our sample. Among all women who delivered their first child, only 4 received a sterilization at baseline, so for purposes of statistical analysis, we removed all uniparous women.

To determine whether or not a woman desired a sterilization before hospital discharge, we first asked non-sterilized women to tell us what method of birth control they would like to be using in 6 months (Figure 1). Women said they would like to be sterilized by then were asked if they planned to be sterilized before leaving the hospital. Both groups of women, regardless of preferred method, were then asked the following question: "Would you have liked to have had your tubes tied right after you had your baby?" Participants were classified as wanting a sterilization if they provided a positive answer to either question.

To identify women who were in fact sterilized following the baseline interview, but before discharge, we asked participants whether or not they had been sterilized in the hospital after giving birth in the 3-month interview.

For our analysis, we created dichotomous variables for whether or not women desired and obtained a postpartum sterilization. We then calculated the proportion of the sample desiring a postpartum sterilization according to age, race/ethnic group (distinguishing native from foreign born Hispanics), relationship status, parity, education, type of delivery, and hospital where the delivery took place. We then calculated the proportion of participants who desired a postpartum procedure who received the procedure before discharge according to the same set of categorical variables.

Next, we performed a multivariable analyses of the proportion receiving a sterilization using logistic regression with fixed effects for each hospital. In the first model, we included all women desiring a sterilization and included type of delivery

as a covariate. In the second models, we further restricted the analysis to cesarean births. The third model was restricted to vaginal births. For this model, we found it useful to collapse the five hospitals where there were few (less than 10) sterilizations following a vaginal birth into a single residual category. Reference categories were constructed according to demographics of women that are historically more likely to receive this procedure: US-born Hispanics with less-than high school education, married women, those having 4 or more children, and women who obtained prenatal care from somewhere other than a private provider (almost exclusively public clinics in the US).

In the 3-month interview, we queried women who were unable to obtain a desired sterilization regarding the barriers they encountered. Women were able to provide more than one barrier in their response. Responses that were originally categorized as "other" were manually reviewed and recoded if they fit within one of the primary categories.

We also assessed contraceptive use at 6 months postpartum among women who wanted but did not receive a postpartum procedure. At the 6-month interview, we first asked participants if they were currently using birth control and then asked a follow-up question to determine their specific method from a list of 20 options.

Human subjects approval for this study was obtained from the institutional review boards of the University of Texas at Austin, Texas Tech University Health Sciences Center El Paso, Texas Tech University Health Sciences Center Lubbock, University of Texas Southwestern Medical Center, University of Texas Health Science Center at Houston, and Las Palmas Del Sol Healthcare.

## Results

Our analytical sample of women 21 and over with 2 or more children included 1,160 study participants. Participant characteristics are presented in Table 1. Women under 30 made up 62% of the sample. The sample is largely Hispanic (82%) and 63% of the Hispanic participants were foreign-born. Most women were either married or cohabiting (79%). Nearly one third had just delivered a fourth or

higher order birth. The overall proportion of cesarean deliveries among all births was 37.5%. The number of participants delivering at each of the hospitals ranged from 48 to 216.

Overall, 35.% had either been sterilized or desired for a postpartum sterilization at the time of the baseline interview. This proportion increased with age, but was relatively stable across the other categories. It was lower among women who received prenatal care from a private provider, and was higher among women whose last birth was by cesarean section. It was also lower among women who delivered at Hospital 6.

The proportion of women desiring a postpartum sterilization who obtained the procedure before discharge was 52.2% overall. This proportion increased with age, was lower for Foreign Born Hispanics and Blacks, and was much greater for participants who had a cesarean delivery (Table 1). It also varied substantially across the eight hospitals ranging from 23% to 72%.

In the multivariable analysis of the whole sample, the odds of women obtaining the procedure before discharge among women desiring a postpartum sterilization were significantly lower for women age 21-24, and for foreign-born Hispanics, Blacks, and Whites relative to US born Hispanics. It was also far more likely among women who had a cesarean delivery (Table 2). Relative to Hospital 4, which had the highest proportion of "requests" fulfilled, the estimated odds of obtaining the procedure before discharge were much lower at Hospitals 2, 3, 5, 6, and 7. To show the magnitude of the hospital fixed-effects, in Figure 2 we show the predicted proportion obtaining the procedure by hospital assuming mean values for all other covariates.

In the second model in which we restricted the sample to women who had a cesarean delivery, there was similar variation in the odds of obtaining a procedure according to age and race/ethnic group, and lower odds were also estimated for women having a second as opposed to a higher order birth. (Table 2) The odds again

varied by hospital, and relative to Hospital 4, were significantly lower at Hospitals 2, 5, and 8. Predicted proportions obtaining a procedure are again shown in Figure 2

In the third model restricted to vaginal births, there were significantly lower odds of obtaining a procedure for women less than 25, and for foreign-born Hispanics, Blacks and Whites. Women who delivered at Hospital 8 had lower odds of obtaining the procedure than women who delivered at Hospital 4, whereas women who delivered at the aggregate group formed for Hospitals 2, 3, 5, 6, and 7 had much lower odds of obtaining the procedure. See also the predicted proportions shown in Figure 2.

Table 3 provides an overview of the reasons women who did not receive a postpartum sterilization gave for not having obtained a procedure. Cost and or insurance coverage, hospital or systems barriers, and provider barriers such as the respondent being told she was too young were all frequently mentioned, but so were other reasons that had more to do with her situation such as having changed her mind or having a contraindication.

Finally, Table 4 shows the distribution of women who wanted but did not receive a postpartum sterilization according to the method of contraception they were practicing at the 6-month interview. A relatively small proportion (12.2%) had obtained an interval sterilization, and 17.8% were using a LARC method. But together hormonal methods and less-effective methods including withdrawal and condoms represented over half of all use in this group.

### Discussion

This analysis has shown that is a sizeable sample of women who delivered with public or no insurance in Texas urban hospitals, only about half of those who desired a postpartum tubal ligation actually received one while in the hospital for delivery. After adjusting for a spectrum of covariates, the proportion obtaining a procedure varied by age, and race/ethnic group, and was much greater for women who had a cesarean delivery than those who had a vaginal birth. In addition, the observed and predicted proportions obtaining a sterilization also varied

enormously according to the hospital where the woman delivered. This variation across hospitals was especially pronounced for women having a vaginal delivery, but was also significant among women who had a cesarean delivery.

Some aspects of these results are not surprising. For instance, the lower odds of receiving a postpartum tubal ligation among younger women is likely the product of individual and collective provider decisions based on concern about the higher likelihood of regret for such women (Curtis et al. 2006; Lawrence et al. 2011). The lower odds of foreign-born Hispanics, on the other hand, and likely driven by the lack of insurance coverage for contraception for undocumented women whose delivery is covered by CHIP-Perinate rather than pregnancy Medicaid. Lastly, the lower likelihood that African-Americans have of obtaining a postpartum procedure has been noted in previous studies (Borrero et al. 2009; Zite et al. 2005).

The most remarkable finding of the study is the variation across hospitals in the proportion of women desiring a postpartum tubal ligation who receive one before discharge. Previous work has identified variation in the proportion sterilized postpartum across hospitals above and beyond that due to religiously based prohibitions (J. E. Potter et al. 2013), but we believe that this is first study to identify the relationship between demand for the procedure and actually receiving it across multiple hospitals. Among all women desiring a postpartum tubal in our sample, there is substantial variation across hospitals after accounting for type of delivery and the other covariates as shown in Figure 2. Among just women who had a vaginal delivery, however, the differences between the three hospitals where the predicted proportion of success is substantial and the remaining hospitals is staggering. Even among women who had a cesarean delivery, there is variation in unmet demand, with women who delivered at Hospital 2 standing out as having much lower odds of obtaining the procedure.

The two remaining findings of the study concern the reported barriers among women who did not obtain a desired procedure as well as their contraceptive use at six-months postpartum. The reported barriers are in-line with

previous studies, and identify problems with the consent process, the lack of an operating room or anesthesiologist among other barriers. The relatively high proportion of women with unmet demand for sterilization who are using lesseffective or hormonal methods is in line with previous studies comparing the numbers of women desiring highly effective methods with the proportion who are actually using them in the postpartum period (Joseph E. Potter et al. 2014, 2017). This finding is also consistent with the high proportion of women with a frustrated demand for sterilization who became pregnant in the following year in a study conducted in San Antonio (Thurman and Janecek 2010).

We are limited in our analysis by the scope of the data we collected. While we obtained data from a sample of women delivering at eight different hospitals, we recruited a relatively small number of women at two of them. More importantly, we did not attempt to systematically assess the barriers and facilitators for postpartum sterilization that at the individual hospitals. We know from various sources that the hospital that had the lowest fraction of women desiring a sterilization who did not receive one, and which we chose as the reference point for the other hospitals, is one that is known for the commitment hospital staff have made over the years to meeting sterilization requests. However, we can see from these results that there is no simple explanation based on hospital ownership or hospital teaching status. And, of course, all eight hospitals operate subject to the same state and federal regulations regarding informed consent.

Ultimately, it would seem that the difference across hospitals seems mainly to reside in the degree to which there are "champions or patient advocates for postpartum sterilization...(who) help to coordinate administration and health care staff in streamlining access to the procedure" (quoted from ACOG Committee Opinion 530 on *Access to Postpartum Sterilization*). This kind of support may also include securing additional financial resources for women who are ineligible for Medicaid.

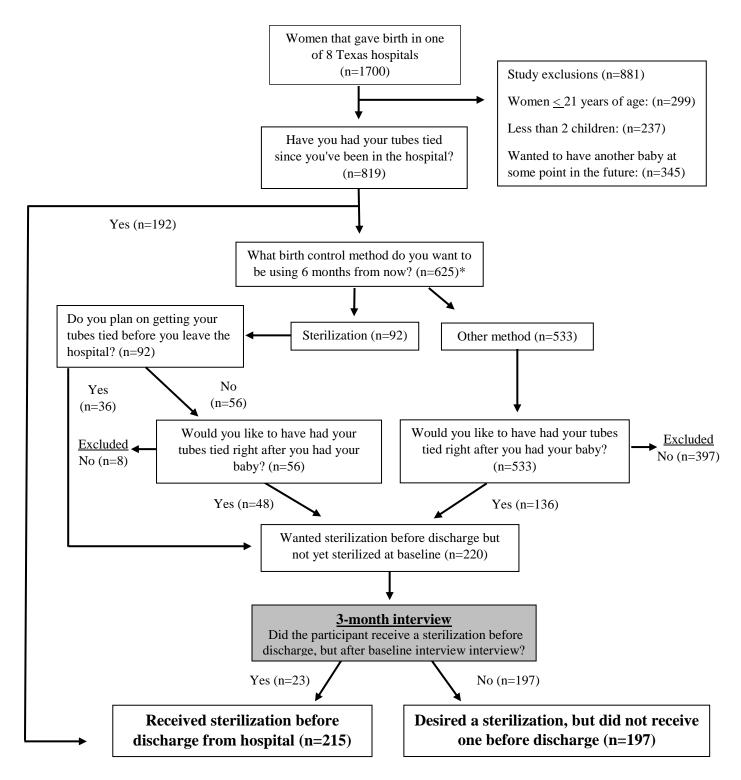
In closing, we find the disparities in access to postpartum sterilization we observe among low-income women in Texas to be lamentable. While local or

hospital based efforts can clearly do much to eliminate these disparities, there is also ample room for efforts by the state to facilitate the consent process and to remove the uneven coverage of public insurance for the procedure. It might also be helpful to include unmet demand for this and other contraceptive methods into the metrics used for quality evaluation.

# **References:**

- Bass, L. E. (2013). Living in the American South and the Likelihood of Having a Tubal Sterilization. *Sociological Focus*, *46*(1), 47–67. doi:10.1080/00380237.2013.740991
- Borrero, S., Qin, L., Moore, C., Schwarz, E. B., Akers, A., Creinin, M., & Ibrahim, S. (2009). Race And Unintended Pregnancy And Their Relationship With Tubal Sterilization. *Journal of General Internal Medicine*, *24*, 154–154.
- Borrero, S., Schwarz, E. B., Reeves, M. F., Bost, J. E., Creinin, M. D., & Ibrahim, S. A. (2007). Race, insurance status, and tubal sterilization. *Obstet Gynecol*, *109*(1), 94–100. doi:10.1097/01.AOG.0000249604.78234.d3
- Chan, L. M., & Westhoff, C. (2010). Tubal sterilization trends in the US. *Fertility and Sterility*.
- Curtis, K. M., Mohllajee, A. P., & Peterson, H. B. (2006). Regret following female sterilization at a young age: a systematic review. *Contraception*, 73(2), 205–210. doi:10.1016/j.contraception.2005.08.006
- Lawrence, R. E., Rasinski, K. A., Yoon, J. D., & Curlin, F. A. (2011). Factors influencing physicians' advice about female sterilization in USA: a national survey. *Human Reproduction*, *26*(1), 106–111. doi:10.1093/humrep/deq289
- Potter, J. E., Coleman-Minahan, K., White, K., Powers, D. A., Dillaway, C., Stevenson, A. J., et al. (2017). Contraception after delivery among publicly insured women in Texas. *Obstetrics & Gynecology*, *130*(2), 393–402.
- Potter, J. E., Hopkins, K., Aiken, A. R. A., Hubert, C., Stevenson, A. J., White, K., & Grossman, D. (2014). Unmet demand for highly effective postpartum contraception in Texas. *Contraception*, *90*(5), 488–95. doi:10.1016/j.contraception.2014.06.039
- Potter, J. E., Stevenson, A. J., White, K., Hopkins, K., & Grossman, D. (2013). Hospital variation in postpartum tubal sterilization rates in California and Texas. *Obstet Gynecol*, *121*(1), 152–8. doi:10.1097/AOG.0b013e318278f241
- Thurman, A. R., Harvey, D., & Shain, R. N. (2009). Unfulfilled postpartum sterilization requests. *Journal of Reproductive Medicine*, *54*, 467–472.

- Thurman, A. R., & Janecek, T. (2010). One-year follow-up of women with unfulfilled postpartum sterlization requests. *Obstet Gynecol*, *116*, 1071–1077.
- White, K., Potter, J. E., & Zite, N. (2015). Geographic variation in characteristics of postpartum women using female sterilization. *Womens Health Issues*. doi:10.1016/j.whi.2015.06.011
- Whiteman, M. K., Cox, S., Tepper, N. K., Curtis, K. M., Jamieson, D. J., Penman-Aguilar, A., & Marchbanks, P. A. (2012). Postpartum intrauterine device insertion and postpartum tubal sterilization in the United States. *American Journal of Obstetrics and Gynecology*, 206(2), 127 e1-7. doi:10.1016/j.ajog.2011.08.004
- Zite, N., Wuellner, S., & Gilliam, M. (2005). Failure to obtain desired postpartum sterilization: risk and predictors. *Obstetrics and Gynecology*, *105*(4), 794–799. doi:10.1097/01.aog.0000157208.37923.17
- Zite, N., Wuellner, S., & Gilliam, M. (2006). Barriers to obtaining a desired postpartum tubal sterilization. *Contraception*, *73*(4), 404–407.



**Figure 1:** Survey questions used to measure desire and receipt of a sterilization procedure before hospital discharge

<sup>\*</sup> Two participants removed from study due to administrative error. Mistakenly marked as sterilized in preceding question and never included for follow-up questions.

Respondent Characteristics	Desired Sterilization			Obtained Sterilization before Discharge	
	n=1160	n=412	(%) <sup>a</sup>	n=215	(%) <sup>a</sup>
Age					
21-24	332	64	(19.3)	20	(31.3)
25-29	387	121	(31.3)	57	(47.1)
30-34	255	117	(45.9)	68	(58.1)
35-39	150	87	(58.0)	56	(64.4)
40-44	36	23	(63.9)	14	(60.9)
Race					
Hispanic (US-Born)	351	102	(29.1)	62	(60.8)
Hispanic (Foreign-	601	240	(39.9)	123	(51.2)
Born)					( )
Black	141	49	(34.8)	18	(36.7)
White and Other	67	21	(31.3)	12	(57.1)
Relationship Status			()		()
Married	455	166	(36.4)	91	(54.8)
Single	241	90	(37.3)	39	(43.3)
Cohabitating	463	156	(33.7)	85	(54.5)
Parity			()		()
2	467	74	(15.8)	36	(48.6)
3	346	136	(39.3)	72	(52.9)
4+	347	202	(58.2)	107	(53.0)
Education			()		()
Less than high school	454	176	(38.8)	96	(54.5)
High school diploma	413	131	(31.7)	64	(48.9)
More than high school	293	105	(35.8)	55	(52.4)
Prenatal Care Provider	_/ •		(2273)		(====)
Public/Mexico/None	731	289	(39.5)	152	(52.6)
Private	429	123	(28.7)	63	(51.2)
Delivery Type	>		()	05	()
Vaginal	725	238	(32.8)	75	(31.5)
C-section	435	174	(40.0)	140	(80.5)
Hospital		271	()	110	(23.2)
1	209	83	(39.7)	55	(66.3)
2	154	75	(48.7)	17	(22.7)
3	48	16	(33.3)	9	(56.3)
4	216	64	(29.6)	46	(71.9)
5	60	11	(18.3)	3	(71.3) (27.3)
6	193	49	(25.4)	26	(53.1)
7	125	47	(37.6)	18	(38.3)
8	125	67	(43.2)	41	(61.2)
Total	1160	412	(35.5)	215	(52.2)

 Table 1: Characteristics of postpartum women that desired or obtained sterilization before hospital discharge

a = row percentage

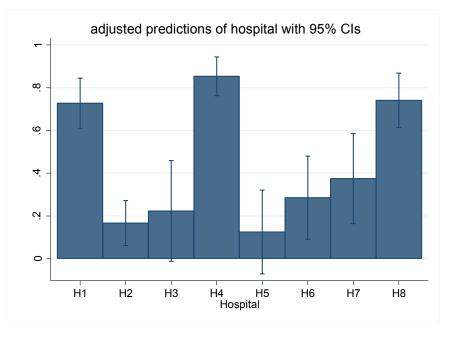
Table 2: Multivariable-adjusted odds ratios for obtaining a desired sterilization before hospital discharge,

	Model 1 Received a desired sterilization (n=415)		Model 2 Among Cesarean deliveries (n=174)		Model 3 Among vaginal deliveries (n=241)	
Age						
21-24	0.20**	(0.08-0.50)	0.18*	(0.03-0.97)	0.25*	(0.08 - 0.77)
25-29	0.60	(0.31-1.18)	2.45	(0.56-10.80)	0.38*	(0.16-0.89)
30-34	1.00	Ref	1.00	Ref	1.00	Ref
35-39	1.04	(0.48-2.24)	2.11	(0.53-8.41)	0.73	(0.25-2.09)
40-44	1.68	(0.51-5.51)	3.88	(0.25-60.04)	1.21	(0.27-4.66)
Race and nativity						
Hispanic US Born)	1.00	Ref	1.00	Ref	1.00	Ref
Hispanic (Foreign Born)	0.13***	(0.06-0.31)	0.13*	(0.03-0.64)	0.06***	(0.02-0.23)
Black	0.09***	(0.03-0.27)	0.02**	(0.00-0.26)	0.05***	(0.01-0.27)
White and Other	0.15**	(0.04–0.61)	0.05*	(0.00-0.66)	0.08*	(0.01-0.93)
Education						- /
Less than high school	1.00	Ref	1.00	Ref	1.00	Ref
High school diploma	0.90	(0.48 - 1.71)	0.87	(0.24-3.18)	0.86	(0.38-1.95)
More than high school	0.92	(0.44–1.93)	0.91	(0.22-3.72)	0.80	(0.31-2.11)
Relationship status		× /				× ,
Married	1.00	Ref	1.00	Ref	1.00	Ref
Single	0.65	(0.31-1.34)	0.24	(0.05-1.04)	0.93	(0.36-2.42)
Cohabitating	0.87	(0.47-1.62)	0.30	(0.07-1.19)	1.09	(0.50-2.34)
Parity	,	(000) 000_)		(****		(0.000 - 00 0)
2	0.82	(0.38-1.76)	0.22*	(0.05-0.90)	0.83	(0.28-2.45)
3	1.19	(0.65-2.17)	0.43	(0.12-1.56)	1.17	(0.54-2.51)
3 4+	1.00	Ref	1.00	Ref	1.00	Ref
Prenatal care provider	1.00	101	1.00		1.00	itter
Public (US), Mexico, None	1.00	Ref	1.00	Ref	1.00	Ref
Private (US)	0.77	(0.34–1.76)	0.63	(0.11-3.75)	0.41	(0.14-1.21)
Delivery type	0.77	(0.51 1.70)	0.05	(0.11 5.75)	0.11	(0.11 1.21)
Vaginal	1.00	Ref	1.00	Ref	1.00	Ref
v uginur	17.83**		1.00	Rei	1.00	Rei
C-Section	*	(9.32-34.07)				
Hospital						
1	0.46	(0.18-1.16)	0.77	(0.04-15.66)	0.38	(0.13 - 1.10)
2	0.40	(0.13 - 1.10) (0.01 - 0.10)	0.00***	(0.00-0.06)	0.56	(0.15-1.10)
3	0.05***	(0.01-0.10) (0.01-0.26)	0.00	(0.00-2.43)		
4	1.00	(0.01-0.20) Ref	1.00	(0.00-2.43) Ref	1.00	Ref
5	0.02***	(0.00-0.18)	0.01*	(0.00-0.32)	1.00	itti
6	0.02***	(0.00-0.18) (0.02-0.26)	0.01	(0.00-0.32) (0.00-1.24)		
7	0.10***	(0.02-0.20) (0.03-0.34)	0.04	(0.00-1.24) (0.01-3.31)		
8	0.10.149	(0.03 - 0.34) (0.21 - 1.16)	0.22	(0.01-3.31) (0.00-0.62)	0.76***	(0.30, 1.10)
o	0.49	(0.21-1.10)	0.03	(0.00-0.02)		(0.30-1.10)
					All other	-
Constant	15 40	(151)	2217.01	(50.76.00005.00)	0.03***	(0.01-0.11)
Constant	15.49	(4.51-)	2317.81	(59.76-89895.89)	33.88***	(6.32-181.46)

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

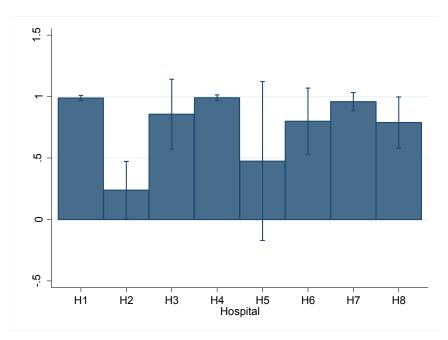
<sup>&</sup>lt;sup>1</sup>Odds ratios estimated from fixed effects generalized linear models

# **Figure 2:** Predicted proportion obtaining sterilization before discharge of receiving a desired sterilization by hospital<sup>2</sup>

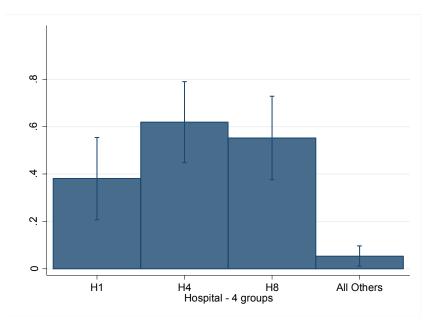


Model 1: Fixed Effects with delivery type

Model 2: Fixed Effects: Predicted sterilization among Cesarean-section deliveries



<sup>&</sup>lt;sup>2</sup> Margins estimated at mean values for all covariates except hospital.



Model 3: Fixed Effects: Predicted sterilization among vaginal deliveries

	Ν	%
Cost	56	28.4
Patient could not afford procedure		
Insurance did not cover procedure		
Hospital/System Barriers	59	30.0
Problems with consent form		
Patient did not have C-section		
Operating room was not available		
Provider Barriers	32	16.2
Patient told she was too young		
Patient told she did not have enough children		
Provider would not operate (other reasons)		
Patient did not discuss with provider		
Other Reasons	64	32.5
Patient changed her mind		
Patient had health condition		
Patient did not have enough information		
Patient's partner was opposed/ Patient had not yet discussed with partner		
Other		

Table 3: Barriers to obtaining a desired sterilization before hospital discharge† (n=197)Respondents that chose at least one reason in the following categories:

oune

Table 4: Method of contraception used at 6 months following delivery among women who did not receive a desired sterilization before hospital discharge (n=167)<sup>3</sup>

	N (%)
Interval Sterilization	24 (12.2)
Partner Vasectomy	2 (1.0)
LARC	35 (17.8)
Hormonal	32 (16.2)
Less-Effective Methods	72 (36.6)
Currently Pregnant	2 (1.0)
Total	167 (100.0)

<sup>&</sup>lt;sup>3</sup> 30 participants were lost to follow-up