

# Effect of the Affordable Care Act on Infant Health: Evidence from Insurance Mandates<sup>1</sup>

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## **Abstract**

**Reproductive technologies have radically**

# 1 Introduction

Improved infertility treatments are increasingly benefiting couples who w

infertility treatment induced by these mandates, we avoid possible endogeneity bias associated with comparing users of infertility treatments with other mothers.

First, using Natality data for 1981–99, we show that infertility treatment mandates are associated with a statistically significant increase of between 10 and 23 percent in the probability that infants born to older mothers are twins and a 16–37 percent increase in the probability that infants born to older mothers are mixed-sex twins. Using Natality data and Census population data for the same period, we find similar patterns. We find that mandates are also associated with a statistically significant increase of between 24 and 40 percent in the twin delivery rate for older women. These findings establish that the mandates

fertilizations performed in 2000. If the mandates affect higher-order multiple births in the same way that they affect twins, the mandate-associated cost of additional triplet and higher-order multiples is an additional \$82 million per year. videsitional

The rest of the paper proceeds as follows. Section 2 provides background on infertility, infertility treatment,

separated from the other components of \_\_\_\_\_ in laboratory and then the concentration is placed in  
ix or high in uterus using a catheter. Because women undergoing IUI often superovulating, there is  
l risk of pregnancies with IUI. The \_\_\_\_\_ for infertility include

**As a result, the total number of pregnancies and live births resulting from AR**



### **3 Theoretical**

### 3.2 Infertility, infertility treatment, and infant and child health

Many papers in medical and public health journals examine trends in infertility and infant health and in the use of infertility treatments and infant health.<sup>5cal</sup> Findings on the association between infertility and birth outcomes

are mixed. Some studies find that infertility is associated with having small-for-gestational-age and preterm births while other studies find no such association. Many studies note one difficulty in identifying an association between infertility (and infertility treatment) and birth outcomes: Infertile w



inputs such as prenatal care are associated with infant health. Another is the effect of access to new technologies on health outcomes.

Selection is an important issue when evaluating the impacts of various inputs on infant health. There can be selection both in which women use health inputs and in the health <sup>infant</sup> ~~miss~~ <sup>and</sup> another

**Berendes & Isotalo (1992)).**

**The existing clinical literature on effects of infertility treatment tends to rely on cross-sectional data. It also pays less attention to possible selection than the birth selection literature suggests is warranted. The economics literature on these mandates focuses mostly on fertility behavior or on use**





number of twin deliveries per 1000 women (pregnancies resulting in twin live births per 1000 women) for each time period. Twin delivery rates are also considerably higher when mandates were in effect—about



## 5 Empirical Model

We would like to know the direct impact of infertility treatment on fertility and health. However, use of treatment is both potentially endogenous and rarely recorded in public-use data sets. Thus, we compare women who are likely to have easy access to infertility treatment (live in mandate states) to women who do not. Infants born via use of ART or other infertility treatment, while growing in number over the 1980s and 1990s, still represent a small share of total births. We focus on a population where they are likely to be a larger share of

outcome.<sup>14</sup>

In the health regressions using PUMS/ACS data,  $y_{ist}$  is any of the four disability measures: (1) being





as differences-in-differences-in-differences estimates; in this case the main effects would hopefully have been a precisely estimated zero. However, we know some share of the younger women are using the treatments. We have explored the negative effect further by interacting age group with mandate, and find that it is driven by the youngest women (women under 25) who are indeed unlikely to be obtaining treatments. We also note that the analogous main effects in the regressions predicting health outcomes are almost all insignificant, and additionally are often the same sign as the age-mandate interaction effect, however (see Table 1).



Table 8 present results for regressions explaining birth weight for twins. First, note that the main mandate effects here are the same sign as the age-interactions and are never significant, in contrast to the results for twinning. Column 1 of Table 8 shows that for twins of women 30 and older, being born in a state with any infertility mandate is associated with a statistically significant decrease in birth weight of around 16 grams (the mean at baseline for women 30 and older is 2475 grams). This is not a large effect. However, the only women who should be impacted by this law are those using infertility treatment; thus a zero impact on other women is being averaged with a larger effect on women using treatment, leading to a small overall effect.

A back of the envelope calculation gives a sense of the possible overall magnitude of results for the "treated" group (twins with older in mandate states). Society for Assisted Reproductive echnology, American Society for Reproductive Medicine (1999) suggests that around 6,360 twins were born after use of IVF or other ART from pregnancies initiated during 1996. Suppose twice as many women had twins due to any use of infertility treatment as did due to use of ART and that two-thirds of the women using infertility treatment are at least 30 (as opposed to about 46 percent of all twin (IVF)Tj Suppose further that all twin births to women 30 and older were evenly



born in the mandate-but-no-IVF states than in the mandate-and-IVF-covered states.<sup>24</sup> Regardless,

### 6.4 Mandates and child health outcomes for twins: PUMS/ACS data

Table 12 presents results from OLS regressions predicting longer-term health impacts for twins born from 1982–1997, with cover and offer mandates included. Here the mandates are interacted with an indicator for the mother being at least 30 at conception. Most of the point estimates for the mandate-age interactions are positive for a twin born in a mandate state

ed). Regressions including leads of the policy variables showed that the leads were not significant, addressing concerns about policy endogeneity.

One concern about our findings is that they are merely picking up the effects of advanced equipment to save babies in mandate



living twins, the risk of severe or overall handicap is also

significantly higher than for single

is the product of the number of additional twins and the cost per additional twin.<sup>27</sup>

Table 13 presents the components for calculations of the cost of imposing various mandates from increased twins (rows 5 and 7), from lower birth weights among twins (row 10), or from both (row 11). It also presents the increase in the probability that a twin will die before first hospital discharge associated with the decreased birth weight from mandates (row 9).<sup>28</sup> For example, we found that children older than 18 years old (in) 11.2582 0 T



as a share of twin plus singleton births and the twin delivery rate), birth outcomes (for twins and singletons), and



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**Figure 1: Pregnancies, Deliveries, and Live Infants from ART, SART Registry**

—○— Pregnancies      —△— Deliveries  
—□— Live infants

Thousands of pregnancies, deliveries, or live infants

1985

Year

1990

1995

2000

2005

2010

2015

2020

2025

2030

2035

2040

2045

2050

2055

2060

2070

2080



**Figure 4: Share of**

**Table 1: Use of Various Infertility Treatments by Women, 2002 National Survey of Family Growth**

	All women	<i>Age group</i>	
		15–29	30–44
Any infertility treatment, year before interview (to get pregnant or prevent miscarriage)	0.028	0.020	0.033
Ever had any infertility treatment (to get pregnant or prevent miscarriage)	0.134	0.063	0.182
Ever had treatment to prevent miscarriage	0.062	0.034	

**Table 2: States Enacting Laws Mandating That Health Insurers Cover or Offer to Cover Infertility Treatment, 1981–2001**

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**State**



**Table 4: Share of Twin and Singleton Children That Are Twins and Twin Health Outcomes, by Presence of Infertility Treatment Mandate, PUMS and ACS**

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**Table 5: Determinants of Being a Twin, Coefficients on Mandates and Their Interactions with Mother's Age > 30, Sample of Singletons**

**Table 6: Determinants of Twin Deliv**

Table 7: Determinants of Being a Mixed-Sex Twin, Coefficients on Mandates and Their Interactions with Mother's Age 30, Sample of Singletons and Twins, Natality Data

Controls for	Any mandate and age 30	IVF/no IVF and IVF/no IVF age 30	Cover/offer and Cover/offer age 30
HI for infert.	-0.00063 (0.00048)		
HI for infert. 30	0.00160** (0.00079)		
HI for infert. may incl. IVF		-0.00087 (0.00052)	
HI for infert. may incl. IVF 30		0.00135* (0.00070)	
HI for infert. excl. IVF		-0.00009 (0.00076)	
HI for infert. excl. IVF 30		0.00184 (0.00137)	
HI must cover infert.			-0.00099*
			*** (0.00077)
HI must offer infert. coverage			-0.00063 (0.00082)
HI must offer infert. 30			0.00028 (0.00034)

Table presents coefficients on insurance mandate variables in regressions of determinants of birth being a mixed-sex twin. Sample is one in fifty random subsample of all singleton and matched twin births for 1981–99. Each column represents one regression. The coefficient in column 1 is for an indicator for any .6560 (v) 1.7670 (insurers) 3.4350 (co) 0.9220 (v) 0.4830 (e)

**Table 8: Determinants of Birth Weight (Grams), Coefficients on Mandates and Their Interactions with Mother's Age  $\geq 30$ , Sample of Twins, Natality Data**

Controls for	Any mandate and Any mandate age $\geq 30$	IVF/no IVF and IVF/no IVF age $\geq 30$	Cover/offer and Cover/offer age $\geq 30$
HI mandate for infert.	-3.750		

**Table 9: Determinants of Gestation (Weeks), Coefficients on Mandates and Their Interactions with Mother's Age 30, Sample of Twins, Natality Data**

Controls for	Any mandate and Any mandate age 30	IVF/no IVF and IVF/no85eage	Cover/offer and
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**Table 10: Determinants of 5-Minute Apgar Score, Coefficients on Mandates and Their Interactions with Mother's Age** ~~oe Age~~ ~~Age~~

Table 11: Determinants of Birth Weight (Grams), Coefficients on Mandates and Their Interactions with Mother's Age 30, Sample of Singletons, Natality Data

Controls for	Any mandate and Any mandate age 30	IVF/no IVF and IVF/no IVF age 30	Cover/offer and Cover/offer age 30
HI mandate for infert.	-2.745 (4.137)		
HI for infert. 30	-7.550 (5.796)		
HI for infert., may incl. IVF		-5.469 (4.018)	
HI for infert., may incl. IVF 30			

**Table 12: Determinants of Impairments or Long-Lastingof**

