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Article

# Reproductive justice & preventable deaths: State funding, family planning, abortion, and infant mortality, US 1980–2010

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ABSTRACT

*Introduction:* Little current research examines associations between infant mortality and US states' funding for family planning services and for abortion, despite growing efforts to restrict reproductive rights and services and documented associations between unintended pregnancy and infant mortality.
*Material and methods:* We obtained publicly available data on state-only public funding for family planning and abortion services (years available: 1980, 1987, 1994, 2001, 2006, and 2010) and corresponding annual data on US county infant death rates. We modeled the funding as both fraction of state expenditures and per capita spending (per woman, age 15–44). State-level covariates comprised: Title X and Medicaid per capita funding, fertility rate, and percent of counties with no abortion services; county-level covariates were: median family income, and percent: black infants, adults without a high school education, urban, and female labor force participation. We used Possion log-linear models for: (1) repeat cross-sectional analyses, with random state and county effects; and (2) panel analysis, with fixed state effects.
*Results:* Four findings were robust to analytic approach. First, since 2000, the rate ratio for infant death comparing states in the top funding quartile vs. no funding for abortion services ranged (in models including all covariates) between 0.94 and 0.98 (95% confidence intervals excluding 1, except for the 2001 cross-sectional analysis, whose upper bound equaled 1), yielding an average 15% reduction in risk (range: 8–22%). Second, a similar risk reduction for state per capita funding for family planning services occurred in 1994. Third, the excess risk associated with lower county income increased over time, and fourth, remained persistently high for counties with a high percent of black infants.
*Conclusions:* Insofar as reducing infant mortality is a government priority, our data underscore the need, despite heightened contention, for adequate public funding for abortion services and for redressing health inequities.


## 1. Introduction

The infant mortality rate is well-recognized as a fundamental measure of societal well-being (Report of the Secretary's Advisory Committee on Infant Mortality (SACIM), 2016; David & Collins, 2014). Acutely sensitive to economic, racial/ethnic, and gender inequality and to abridgment of reproductive rights (SACIM, 2016; David & Collins, 2014), infant mortality is both associated with unintended pregnancy (SACIM, 2016; Finer & Zolna, 2014; Tsui, McDonald-Mosley & Burke, 2010), and serves as a gauge for infant morbidity and maternal mortality (SACIM, 2016). In 2008, an estimated 41% of births globally (Singh, Sedgh & Hussain, 2010) and 49% of US births (Finer & Zolna, 2014) were unintended pregnancies, with risk highest among impoverished women (Finer & Zolna, 2014; Tsui et al., 2010; Singh et al., 2010).

Contributing to risk of unintended pregnancies and their sequelae are inadequate reproductive health policies and resources (Gruskin, 2013; Frost, Sonfield, Zolna & Finer, 2015). These include lack of awareness of and access to such goods and services as appropriate contraceptives, family planning services, and abortion procedures (SACIM, 2016; David & Collins, 2014; Finer &

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Zolna, 2014; Tsui et al., 2010; Singh et al., 2010; Gruskin, 2013; Frost et al., 2015). Within the United States, evidence that increased state funding for family planning and abortion services can lower infant mortality rates, especially for low-income women of color (Grossman & Jacobwitz, 1981; Corman & Grossman, 1985; Joyce, 1987a, 1987b; Meier and McFarlane, 1994; McFarlane & Meier, 1998; McFarlane & Meier, 2001), is provided by a handful of studies, initially conducted in the 1980s (Grossman & Jacobwitz, 1981; Corman & Grossman, 1985; Joyce, 1987a, 1987b), and followed by a few that extended the data through 1998 (Meier & McFarlane, 1994; McFarlane & Meier, 1998; McFarlane & Meier, 2001). No studies to our knowledge have reported on these associations since 1998.

Suggesting it would be worthwhile to extend the time frame of analyses are several salient temporal changes: (a) declines in the infant mortality rate and changes in its recognized determinants (e.g., socially patterned declines in smoking during pregnancy and increases in gestational diabetes) (SACIM, 2016; Singh & Kogan, 2007); (b) declines in state funding for both reproductive health services (Sonfield & Gold, 2012; Schreiber & Traxler, 2015) and other social services influencing risk of infant mortality (Clayton & Pontusson, 1998; Rabarison, 2013); and (c) shifts in rates of contraceptive use (by type), unintended pregnancies, and use of abortion services (SACIM, 2016; Finer & Zolna, 2014; Rabarison, 2013; Jones, Mosher & Daniels, 2012; Frost, Henshaw & Sonfield, 2010; Kost, 2015; Jones and Kavanaugh, 2011; Jacobs & Stanfors, 2015). Thus, at this time of sharp debate over growing restrictions affecting provision of family planning and abortion services (Gruskin, 2013; Schreiber & Traxler, 2015; Gee, 2014; Devi, 2015), it is important to test the hypothesis that inverse associations continue to exist between provisions of these services and infant mortality rates.

We obtained data to analyze, for 1980–2010, associations between infant mortality and US state-only funding for family planning and abortion services, using data for the six years for which high quality publicly available data exist for these state expenditures (1980, 1987, 1994, 2001, 2006, and 2010) (Sonfield & Gold, 2012).

## 2. Material and methods

### 2.1. Exposure data: state expenditures on family planning and abortion services

Numerous theoretical frameworks for analyzing societal determinants of health and health inequities, as employed in social epidemiology, political sociology, and health policy, emphasize the joint importance of resources, rights, and governance, including for reproductive health and reproductive justice (Krieger, 2011; Cottingham et al., 2010; Silliman, Fried, Ross & Gutierrez, 2004). We accordingly focused on state-only expenditures for family planning and abortion services as the exposure of interest. These measures provide quantifiable evidence of state support for these services (Corman & Grossman, 1985; Joyce, 1987a, 1987b; Meier & McFarlane, 1994; McFarlane & Meier, 1998, 2001) and avoid well-known difficulties in assessing implementation and enforcement of enacted legislation (Winter, 2012; Cole & Fielding, 2007). We obtained these high quality state-only funding data from a unique series of periodic reports issued by the Guttmacher Institute, which were designed to be compared validly over time (Sonfield & Gold, 2012). State family planning services, as defined in these reports, comprise “the package of direct patient care services provided through family planning programs to clients receiving reversible contraceptives” [Sonfield & Gold, 2012, p. 5].

For each of the six years for which the Guttmacher data were available (1980, 1987, 1994, 2001, 2006, and 2010) (Sonfield & Gold, 2012), we computed, for both types of services: (1) the fraction of total state expenditures they comprised, and (2) per capita state spending (per woman, age 15–44), with amounts expressed in 2010 constant dollars (US Department of Labor, 2016; US Census Bureau, 2016a). We used both measures because research on the political sociology of the welfare state demonstrates both matter: the fraction of state spending aligns with the "welfare effort" conceptualization of the welfare state, and the per capita approach captures the level of public resources that are available to the average person in a state (Clayton & Pontusson, 1998).

So that we could meaningfully compare parameter estimates for these two variables, we modeled each measure as an ordinal categorical variable, ranging from 0 to 4. For the abortion expenditure data, we created a 5-category variable, whereby the lowest category included states which reported $0 funding (ranging from 8 in 1980 to 20 in 2006; mean (standard deviation [SD])=14.0 (3.6)) plus the small number with unreported funding (ranging from 4 in 1987 and 2006 to 9 in 2001; mean (SD)=5.6 (1.7)), and categories 1 to 4 were quartiles based on distribution of funding $>$ $0. We used the same 5 categories for state family planning expenditures, noting however that these expenditures exceeded $0 in all states in all years.

### 2.2. Outcome data: infant death rates

Using data from the publicly available National Center for Health Statistics (NCHS) US compressed mortality file (CMF) (National Center for Health Statistics, 2016a), we computed the infant death rate, defined as: [deaths $<$ age 1]/[population $<$ age 1], in the same calendar year (National Center for Health Statistics, 2016a). We used this metric instead of the infant mortality rate ([deaths $<$ age 1]/births, in the same calendar year) to enable results to be compared to other long-term analyses of US infant death rates (including in relation to reproductive policies)(Krieger et al., 2008, 2015a, 2015b; Krieger, Chen, Coull, Waterman & Beckfield, 2013) that extend back to 1960, a period that precedes public availability (starting in 1968) of US data on live births (US Center for Disease Control and Prevention (CDC, 2016; MacDorman, Hoyert & Mathews, 2013). Robust evidence demonstrates the infant death rate and infant mortality rate are very highly correlated ($r > 0.95$) (National Center for Health Statistics, 2016a; MacDorman et al., 2013), and both provide an acceptable proxy for the gold-standard infant mortality rate computed using linked data on births and deaths, which are not publicly available until after 1980 (National Center for Health Statistics, 2016b).

The individual-level mortality records and census denominator data, stratified by age, gender, and race/ethnicity, were available aggregated to the county level; counties are the primary legal division of most states and most are functioning governmental units (US Census Bureau, 2016b). We report on the infant death rate lagged by one year after the exposure (state expenditure data), to reflect time elapsed since conception, and note that results were substantively identical to analyses with no lag, as would be expected given relatively little year-to-year variability in our dependent and independent variables.

### 2.3. Covariates

We included data on nine key state- and county-level sociodemographic and health service covariates identified in the literature as being associated with risk of infant mortality (SACIM, 2016; David & Collins, 2014; Finer & Zolna, 2014; Tsui et al., 2010; Singh et al., 2010; Gruskin, 2013; Frost et al., 2015; Grossman &