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Abortion access and state variation in observed unintended pregnancy☆

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Abstract

Objective: The state-level proportion of pregnancies that are unintended is an important social and public health indicator, and comparisons between states inform policy discussions. Unintended pregnancy is measured as a composite of abortions and unintended births, each of which is measured with error. We investigate whether between-state differences in abortion access and demand may bias comparisons between states' unintended pregnancy proportions when pregnancy intentions are misreported.

Study design: We algebraically specify the model currently used to estimate unintended pregnancy, extend it to include underreporting, and simulate the impact of underreporting on observed unintended pregnancy. Comparing the impact of underreporting across states, we identify levels of underreporting at which between-state comparisons are compromised.

Results: We find that underreporting of unintended pregnancies could bias between-state comparisons when reporting of unintended pregnancies is less than 90–95%.

Conclusion: Current methods for estimating state-level unintended pregnancy proportions may underestimate unintended pregnancy to a greater degree in places with less abortion, and between-state comparisons may be biased. Estimates of state-level unintended pregnancy proportions would be more comparable if adjustment for completeness of retrospective underreporting were included in the estimation process.

Implications: Estimates of unintended pregnancy should be adjusted for nonsampling error and include variances based on sampling and nonsampling error in order to permit robust comparisons between states, between populations, and across time. More research on the fidelity of retrospective reporting of pregnancy intention would facilitate this endeavor.

Keywords: Unintended pregnancy; Social indicators; Reproductive health; Abortion

1. Introduction

State-level reproductive health policies have diverged, due in part to a deluge of state legislation affecting the funding of family planning, parental consent for minors, contraceptive access for undocumented migrants, postpartum contraceptive access, sexual education in the schools, and restrictions on the provision of abortion care [1]. Compounding this divergence, 15 states have yet to implement full Medicaid expansion, 28 have implemented it one way or another, and 7 states are still debating the issue [2]. In states that failed to expand Medicaid, some but not all provide access to family planning through Medicaid waiver programs, which are also targets of political attack [3]. In debates over the impact of these varied policies, an indicator that elected officials, policy advocates, and media are likely to call for and examine is state rate of unintended pregnancy.

Estimates of unintended pregnancy at the state level have only been available since 2011, when Finer and Kost compiled the necessary survey and vital registration data for each state and adapted the methods used to generate national-level estimates [4,5]. Their state estimates have been used widely [6–9], but the relative standing of states did not correspond with states' levels of support for family planning and socioeconomic characteristics [10,11]. To take one example, 53% of 2008 Texas pregnancies are estimated to be unintended, slightly lower than the 56% estimated for New York, which did not correspond with New York's more generous support for family planning [5,12].

The question we explore is whether these anomalous rankings can be explained by underreporting. Unintended pregnancies that end in abortion are subject to little reporting

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error in many states because of vital registration, and in other states, careful censuses have yielded reliable results [13,14]. In contrast, the number of unintended live births is only known from retrospective surveys, which in the case of state-level estimates are mostly telephone interviews conducted a few months after delivery among a sample of women who gave birth during the year in question. In these interviews, respondents are asked whether just before getting pregnant they wanted to be pregnant sooner, later, at that time, or never again [15]. Demographers have been arguing for many decades over the reliability of answers to these questions and the extent to which they are affected by *ex post* rationalization stemming from a reluctance to label a recently born child as mistimed or unwanted [16–20]. Without an independent accurate estimate of the level of intended fertility, the existence and magnitude of bias is difficult to assess, but there are indications that it may be substantial. Perhaps the most important is that many women report pregnancies that resulted from contraceptive failure as having been intended [21,22]. A more direct indication of bias is that large discrepancies have been found when it has been possible to contrast prospective reports of intentions before a pregnancy with reports obtained after the pregnancy had been detected [16,18,22].

Given the uncertainty surrounding error and bias in the parameters used to estimate the intention status of live births in individual states, and in light of the fact that there are large differences between states in the proportion of all unintended pregnancies that depend on retrospective survey responses, we use simulation to test the sensitivity of between-state comparisons in unintended pregnancy to different levels of completeness in the reporting of unintended live births.

We begin by algebraically specifying how Finer and Kost combine data from vital registration and surveys to estimate state unintended pregnancy [4]. We then extend their equations to include a term for the completeness of unintended pregnancy reporting. Finally, we perform a sensitivity analysis in order to calculate the level of underreporting at which between-state comparisons in unintended pregnancy are affected.

2. Background

Finer and Kost's procedures can be encapsulated in equations. These equations are the basis for our simulation model, and we derive them based on the authors' text descriptions. Note that we only follow Finer and Kost's estimation as far as the generation of the proportion of pregnancies that are unintended and do not distinguish between pregnancies that are unwanted and those that are mistimed.

The proportion of pregnancies in a state that are unintended is the ratio of unintended pregnancies to all pregnancies. We represent this ratio as μ in the following equation:

$$\mu = \frac{A + B_{\mathrm{U}} + M_{\mathrm{U}}}{P} \tag{1}$$

where A is the number of abortions in the state (assumed for the purposes of this analysis to all be unintended), B_{U} is the number of unintended births in the state, M_{U} is the number of miscarriages of unintended pregnancies, and P is total pregnancies. The latter are the sum of all abortions (A), births (B), and miscarriages (M):

$$P = A + B + M \tag{2}$$

Thus, estimating μ requires estimates of the number of unintended pregnancies ending in birth (B_{U}), the number of unintended pregnancies ending in miscarriage (M_{U}), as well as the total number of births, abortions, and miscarriages. Only the total numbers of births and abortions are recorded in vital registration.

In order to estimate the remaining values, Finer and Kost first partition all pregnancies, P, into unintended pregnancies (P_{U}) and intended pregnancies (P_{I}) (see Fig. 1). They then partition unintended pregnancies (P_{U}) into pregnancies the woman would end with abortion (P_{A}) and pregnancies the woman would carry to term (P_{T}) — where miscarriage is not present. The pregnancies P_{A} resolve either through abortion (A) or miscarriage (M_{A}). Analogously, the pregnancies P_{T} resolve either through birth (B_{U}) or miscarriage (M_{T}).

There are three steps in the estimation of μ. The first generates an estimate of the number of unintended births, $\widehat{B_{\mathrm{U}}}$, as the product of the number of births from vital statistics (B), and the proportion of live births that are reported as unintended in the state (p):

$$\widehat{B_{\mathrm{U}}} = B \cdot p \tag{3}$$

The quantity p is based on a retrospective question in each state's survey asking about pregnancy intentions and is the proportion of survey respondents answering that they would have liked to have their child later or not at all.

The second step is inflation of all births and abortions to account for random miscarriage. Finer and Kost assume that

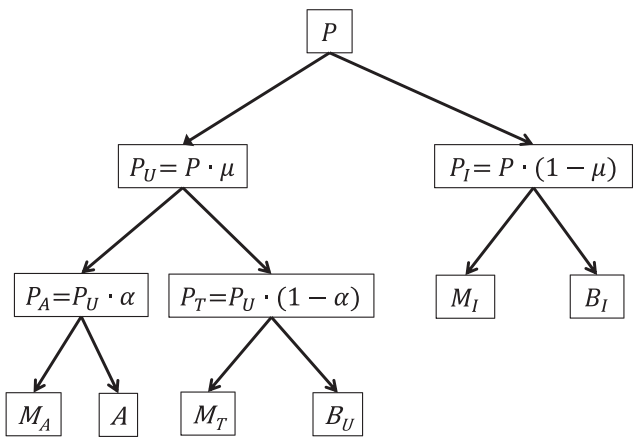

Fig. 1. Partition of pregnancies by intention and resolution.