Title
Socioeconomic Outcomes of Women Who Receive and Women Who Are Denied Wanted Abortions in the United States

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Socioeconomic Outcomes of Women Who Receive and Women Who Are Denied Wanted Abortions in the United States

Diana Greene Foster, PhD, M. Antonia Biggs, PhD, Lauren Ralph, PhD, MPH, Caitlin Gerdis, PhD, MHS, Sarah Roberts, DrPH, and M. Maria Glymour, ScD, MS

Methods. To determine the socioeconomic consequences of receipt versus denial of abortion.

Results. In analyses that adjusted for the few baseline differences, women denied abortions who gave birth had higher odds of poverty 6 months after denial (adjusted odds ratio [AOR] = 3.77; P < .001) than did women who received abortions; women denied abortions were also more likely to be in poverty for 4 years after denial of abortion. Six months after denial of abortion, women were less likely to be employed full time (AOR = 0.37; P = .001) and were more likely to receive public assistance (AOR = 6.26; P < .001) than were women who obtained abortions, differences that remained significant for 4 years.

Conclusions. Women denied an abortion were more likely than were women who received an abortion to experience economic hardship and insecurity lasting years. Laws that restrict access to abortion may result in worsened economic outcomes for women. (Am J Public Health. Published online ahead of print January 18, 2018: e1–e7. doi:10.2105/AJPH.2017.304247)

Since 2011, hundreds of state-level restrictions on abortion have been implemented in the United States. Little is known about the socioeconomic consequences for women and families if women are not able to obtain a wanted abortion. When women are asked why they want to end a pregnancy, the most common reasons are financial—in particular, not having enough money to raise a child or support another child.1–3 Yet no research has evaluated the economic consequences for US women of being unable to terminate an unwanted pregnancy and carrying the pregnancy to term.

The lack of evidence about the socioeconomic consequences of barriers to abortion services is largely the result of methodological challenges related to study design and the identification of appropriate comparison groups.4–6 Given that preexisting economic difficulties contribute to a woman’s decision to terminate a pregnancy, studies that compare socioeconomic outcomes of women who receive abortion services to women who do not choose to terminate a pregnancy may not identify the effects of abortion, but instead may reflect the characteristics that lead women either to seek abortions or carry a pregnancy to term, such as poverty, lack of education, and younger age.7,8

We aimed to examine the effects of receiving versus being denied a wanted abortion on women’s socioeconomic well-being by following a group of women who all sought abortions, some of whom were denied services. Facility and state-imposed gestational age limits restrict abortion for women whose pregnancies are past the limit. Women who request services immediately before a facility’s gestational limit are potentially similar to women who seek services immediately after the limit, but women in the former group receive the abortion whereas the latter do not. Gestational limit thresholds provide a quasi-experiment that can reveal the consequences of denial of abortion services on household structure, employment, income, use of public assistance, and poverty in the 5 years after seeking abortion.

METHODS

We used data from the Turnaway Study, a 5-year, longitudinal study of women who presented for abortion care at 1 of 30 facilities throughout the United States between 2008 and 2010. Gestational limits at the study facilities ranged from the end of the first trimester to the end of the second. Each facility had the latest gestation age limit of any provider within 150 miles.9 Study participants were pregnant women with no known fetal anomalies or demise who spoke English or Spanish and were aged 15 years or older. Participants were enrolled into 3 study groups

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in a 2-to-1-to-1 ratio on the basis of ultrasound dating of gestational age relative to each facility’s limit: (1) near limits presented for abortion up to 2 weeks under the facility’s gestational age limit and obtained wanted abortions, (2) turnaways presented for abortion up to 3 weeks over a facility’s limit and were denied abortions, and (3) first trimesters received abortions at gestations up to 14 weeks. The unequal study groups reflect fewer women meeting the criteria for the turnaway group.

Study participants completed a baseline telephone interview 1 week after either receiving or being denied an abortion and follow-up interviews by phone every 6 months for 5 years. Other studies from the Turnaway Study have examined the effect of abortion received and denied on outcomes including mental health, emotions, physical health, violence, and achievement of 1-year plans. To our knowledge, this is the first to examine socioeconomic outcomes.

Outcome Measures

Household structure variables included household size and whether the woman was living with adult family members, with a male partner, or without either a male partner or adult family members. Three employment outcomes were assessed: full-time employment, part-time employment, and not employed. We evaluated 3 outcomes related to past-month receipt of public assistance from Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Temporary Assistance for Needy Families (TANF), and Supplemental Nutritional Assistance Program (SNAP), also known as food stamps. We assessed access to health insurance as a binary indicator for having either private or public health insurance.

Outcomes related to financial security included personal monthly income from employment, child support, and government assistance; household monthly income of all adults living with the respondent who share expenses; poverty, a binary indicator for household income at or below 100% of that specific year’s US Census Bureau federal poverty level (FPL) based on household composition and income; and subjective poverty, a dichotomous indicator that the woman reported that she did not always have enough money to meet basic living needs such as food, housing, and transportation in the month before the interview.

Longitudinal analyses used multivariate mixed effects linear and logistic regression models with random intercepts for both recruitment facility and individual. In the models, we measured time in months since the mean expected date of delivery, 4.4 months after recruitment, because we expected socioeconomic trajectories to diverge after the birth of a child. Models included a main effect of study group, continuous time in months, and an interaction between study group and months (interpreted as the difference between study groups in rate of change in the outcome). In all longitudinal models, we adjusted for baseline age, parity, and the baseline value of the dependent variable. Ability to report household income was associated with household structure—women living with adult relatives, such as parents, were less likely to know their household income. Therefore, we also controlled for household type at baseline (living with a partner or spouse, with adult family members, or other) to remove systematic bias in household income reporting models in which household structure was not an outcome. In graphs, we presented predicted values derived from our adjusted models by time since seeking abortion from 6 months to 5 years. For baseline values, we plotted predicted values at baseline, with control for age, parity, and household structure. We assessed differences in predicted probabilities of outcomes at 6-month intervals by using postrandomization margins commands.

To examine the effect of denial of abortion, regardless of whether the woman received an abortion elsewhere, we present supplementary intent-to-treat (ITT) analyses comparing near limits women to all turnaway women. In this supplementary analysis, we used instrumental variables analyses to estimate the effects of giving birth associated with being denied an abortion, comparing the near-limits women to all turnaway women and accounting for the fraction of turnaway women who either miscarried or obtained an abortion at another facility (Appendix A, available as a supplement to the online version of this article at http://www.ajph.org). Provides detailed methods description and the results of ITT and treatment-on-treated [TOT] analyses. All analyses were conducted in Stata version 14.0 (StataCorp LP, College Station, TX).
RESULTS
Among eligible women approached for study participation, 37.5% \( (n = 1132) \) consented to take part in the 5-year study. Among those who consented, 85% \( (n = 956) \) completed the baseline interview. Participation did not differ between near-limit and turnaway–birth groups. Ninety-two percent of participants who completed the baseline interview were retained at the 6-month follow-up interview and an average of 95% were retained at each subsequent 6-month interview. Of women interviewed at baseline, 58% were retained at the 5-year follow-up, with no differential loss to follow-up between study groups through 5 years.

A total of 452 women were recruited into the near-limit abortion group, 231 women to the turnaway group, and 273 women to the first-trimester group. We removed 76 participants from 1 facility with a gestational limit of 10 weeks from the analysis because more than 90% of turnaways from that facility in the study ultimately received abortions elsewhere. We excluded an additional 2 participants in the near-limit abortion group and 1 in the first-trimester group from analyses because they later reported that they had not had the abortion. Among women in the turnaway group, 5 experienced a miscarriage or stillbirth and 44 received an abortion at a different facility subsequent to being turned away; these women constitute the turnaway–birth group. Sixty-four of the remaining women completed only the first interview and did not provide follow-up data, bringing the total for this analysis to 813. The final counts by study group include 382 women in the near-limit abortion group, 146 in the turnaway–birth group (including 15 who placed their child for adoption), 45 in the turnaway–no birth group, and 240 in the first trimester group.

Women seeking abortion reported economic hardships at the time of abortion seeking—half (51%) were living below 100% of the federal poverty level; 3 quarters (76%) reported not having enough money to cover housing, transportation, and food. Most (63%) already had children. Recruitment of participants above and below the gestational limit at each clinic resulted in similar turnover–birth and near-limit abortion groups. There were no differences by study group in race, education, or marital status at baseline (Table 1). However, there were age, parity, family structure, and income reporting differences between the turnover–birth and near-limit groups. Compared with women in the near-limits group, those in the turnover–birth group were more likely to be aged younger than 20 years (30% vs 16%; \( P = .001 \)), less likely to have children (54% vs 67%; \( P = .007 \)), more likely to be unemployed (60% vs 45%; \( P = .002 \)), more likely to be living with other adult family members (49% vs 36%; \( P = .024 \)), and less likely to report household income at baseline (60% vs 73%; \( P = .004 \)). The association between turnover–birth and missing data on income was largely eliminated by adjustment for household composition, age, and parity (adjusted \( P = .205 \)). Reporting of household income improved over time—85% reported their household income at 5 years with no difference by study group. First-trimester participants had higher household incomes and were less likely to be living in poverty than were women in the near-limit or turnaway groups. Turnaway–no birth participants were more similar to near-limit women than to turnover–births, including a similar, lower gestational age, which may have permitted them to find abortion services elsewhere.

Changes in Household Structure
Household size and composition differed by study group over time (Table 2). Turnaway–births had more people \( (B = 1.00; \ 95\% \ \text{confidence interval \ (CI) = 0.78, 1.22}) \) in their household than near limits at the 6-month interview, which occurred an average of 1.6 months after the expected date of delivery. The difference in household size slowly narrowed over 5 years as women ceased living with adult family members. Turnaway–birth and near-limit women had similar odds of living with a male partner throughout the 5-year follow-up. By 5 years, women in the turnover–birth group were more likely than those in the near-limit group to be raising children alone without adult family members or a male partner (47% vs 39%; \( P = .040 \)).

Changes in Employment
Over 5 years, women in the near-limit group gradually increased full-time employment—from 40% working full time at 6 months to more than 50% at 5 years. At 6 months, only 30% of women in the turnover–birth group were working full time, significantly lower than those in the near-limit group \( (\text{adjusted odds ratio \ (AOR) = 0.37; \ 95\% \ \text{CI = 0.20, 0.68}; \ Table \ 2}) \). Women in the turnover–birth group increased full-time employment relative to those in the near-limit group over time so that by 4 years, there was no statistically significant difference between groups. Participants in the turnover–birth group had more than 3 times the odds of not working at 6 months compared with those in the near-limit group \( (\text{AOR} = 3.06; \ 95\% \ \text{CI = 1.78, 5.25}) \), a difference that was no longer statistically significant by 3 years.

Public Assistance and Health Insurance
Turnaway–births had 6-times-higher odds of receiving TANF \( (\text{AOR} = 6.26; \ 95\% \ \text{CI} = 2.63, 14.88) \) at 6 months, when slightly more than 15% of turnover–births but less than 8% of near limits were receiving TANF (Table 2). Receipt of TANF decreased over time for both groups; by 5 years, the difference between near limits and turnover–births was no longer statistically significant. At 6 months, one third \( (33\%) \) of near limits and 44% of turnover–births received food assistance (SNAP), a significantly higher odds of receipt among turnover–births \( (\text{AOR} = 2.54; \ 95\% \ \text{CI = 1.45, 4.44}) \) that remained statistically significant across the 5 years. At 6 months, 8% of near limits and 50% of turnover–births were receiving WIC benefits, an AOR of 48 \( (95\% \ \text{CI = 21}, 109) \). The difference remained significant over 2 years despite substantial decreases in turnover–birth WIC receipt over the time period. Turnaway–births were more likely than near-limit women to have health insurance at 6 months \( (\text{AOR} = 2.54; \ 95\% \ \text{CI = 1.48, 4.36}) \) but did not retain this advantage after 1 year.

Changes in Income and Poverty
Personal income was lower among turnover–births compared with near limits at 6 months \( (\$175; \ 95\% \ \text{CI =}$342, 3$8) \) but differed little from near limits for the rest of the study period (Table 2). There were no
differences in household income between turnaway–births and near limits at 6 months or over time, but, because of increases in household size, turnaway–births were more likely to live in poverty. Turnaway–births’ average household income was at 110% of the FPL compared with 144% among near limits at 6 months with 61% of turnaway–births and 45% of near limits below the FPL. At 6 months, turnaway–births had almost 4-times–higher odds of being below the FPL (AOR = 3.77; 95% CI = 1.96, 7.25), a difference

### TABLE 1—Characteristics of Study Participants Who Completed More Than 1 Interview, by Study Group: United States, 2008–2016

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Near-Limit Abortion (n = 382), Mean ±SD or %</th>
<th>First-Trimester Abortion (n = 240), Mean ±SD or %</th>
<th>Turnaway-Birth (n = 146), Mean ±SD or %</th>
<th>Turnaway-No Birth (n = 45), Mean ±SD or %</th>
<th>Total (n = 813), Mean ±SD or %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational age, weeks</td>
<td>19.9 ± 4.1</td>
<td>7.8 ± 2.4</td>
<td>23.4 ± 3.4</td>
<td>19.3 ± 4.0</td>
<td>16.9 ± 7.0</td>
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<td>Age, y</td>
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<td></td>
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<tr>
<td>15–19</td>
<td>16</td>
<td>15</td>
<td>30*</td>
<td>20</td>
<td>18</td>
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<tr>
<td>20–24</td>
<td>40</td>
<td>28</td>
<td>34*</td>
<td>42</td>
<td>35</td>
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<tr>
<td>25–51</td>
<td>44</td>
<td>57</td>
<td>36*</td>
<td>38</td>
<td>46</td>
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<td>Race/ethnicity</td>
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<td>White</td>
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<td>25</td>
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<td>Black</td>
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<td>20</td>
<td>27</td>
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<td>8*</td>
<td>14</td>
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<td>13</td>
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<td>Nulliparous</td>
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<td>36</td>
<td>46*</td>
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<td>Highest level of education</td>
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<td>&lt; high school</td>
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<td>High school or GED</td>
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<td>30</td>
<td>36</td>
<td>24</td>
<td>33</td>
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<tr>
<td>Associates, some college, or technical school</td>
<td>41</td>
<td>43</td>
<td>35</td>
<td>49</td>
<td>41</td>
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<tr>
<td>College</td>
<td>7</td>
<td>11</td>
<td>6</td>
<td>9</td>
<td>8</td>
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<tr>
<td>Marital status</td>
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<tr>
<td>Single, never married</td>
<td>80</td>
<td>76</td>
<td>84</td>
<td>78</td>
<td>79</td>
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<tr>
<td>Married</td>
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<td>11</td>
<td>10</td>
<td>4</td>
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<td>Separated, divorced, widowed</td>
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<td>13</td>
<td>6</td>
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<td>Part time</td>
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<td>Not employed</td>
<td>45</td>
<td>35*</td>
<td>60*</td>
<td>51</td>
<td>45</td>
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<tr>
<td>Household structure</td>
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<tr>
<td>Living with adult family members</td>
<td>36</td>
<td>24*</td>
<td>49*</td>
<td>40</td>
<td>35</td>
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<tr>
<td>Living with spouse or partner</td>
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<td>22</td>
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<tr>
<td>Living without male partner or family</td>
<td>38</td>
<td>44</td>
<td>29*</td>
<td>40</td>
<td>38</td>
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<tr>
<td>No. of people in the household</td>
<td>3.7 ± 1.8</td>
<td>3.3 ± 1.6*</td>
<td>3.9 ± 1.9</td>
<td>3.6 ± 1.6</td>
<td>3.6 ± 1.7</td>
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<tr>
<td>Income and poverty</td>
<td></td>
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</tr>
<tr>
<td>Personal monthly income, $</td>
<td>891 ± 861</td>
<td>1337 ± 1281*</td>
<td>743 ± 973</td>
<td>935 ± 821</td>
<td>996 ± 1040</td>
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<tr>
<td>Household monthly income, $ (n = 596)</td>
<td>1758 ± 1461</td>
<td>2502 ± 2384*</td>
<td>1700 ± 1649</td>
<td>2166 ± 2517</td>
<td>2007 ± 1915</td>
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<td>No household income</td>
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<td>23</td>
<td>40*</td>
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<td>Not enough money to make ends meet</td>
<td>78</td>
<td>70</td>
<td>83</td>
<td>73</td>
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<td>Below FPL</td>
<td>57</td>
<td>40*</td>
<td>56</td>
<td>52</td>
<td>51</td>
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<td>Receives TANF assistance</td>
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<td>5*</td>
<td>12</td>
<td>11</td>
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</tr>
<tr>
<td>Receives WIC assistance</td>
<td>14</td>
<td>13</td>
<td>18</td>
<td>11</td>
<td>14</td>
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<tr>
<td>Receives food stamps</td>
<td>31</td>
<td>26</td>
<td>34</td>
<td>40</td>
<td>31</td>
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<td>Health insurance</td>
<td>69</td>
<td>69</td>
<td>75</td>
<td>67</td>
<td>70</td>
</tr>
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</table>

Note. FPL = federal poverty level; GED = general equivalency diploma; TANF = Temporary Assistance for Needy Families; WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

*P < .05 compared with near-limit abortion group; differences assessed by using mixed effects linear or logistic regression to account for clustering of observations by recruitment facility.
that persisted through 4 years (Figure 1). Throughout the period between 1 and 5 years after seeking an abortion, turnaway–birth women were more likely than near limits to report subjective poverty—not having enough money to cover basic living expenses (Appendix B, available as a supplement to the online version of this article at http://www.ajph.org).

### Intent-to-Treat Analyses

Both ITT and TOT effect estimates showed similar results as the primary analyses (Appendix A). In ITT analyses, we combined the turnaway–birth and turnaway–no birth groups into 1 turnaway group and compared them to near limits; we excluded first trimesters (Appendix A, Table A, available as a supplement to the online version of this article at http://www.ajph.org). The ITT estimates assessed the effect of turning a woman away from a requested abortion, regardless of whether she subsequently carried the pregnancy to term. The TOT estimates described the effect of carrying a pregnancy to term for those women who did so as a result of being denied an abortion. Both ITT and TOT estimates indicated that economic hardship is associated with denial of abortion services. As expected, given that more than three quarters of turnaway women carried their pregnancies to term, ITT and TOT effect estimates were similar. For all outcomes, the difference between near limits and turnaway–births was similar or greater than that between near limits and all turnaways (Appendix A, Tables B and C, available as a supplement to the online version of this article at http://www.ajph.org).

### DISCUSSION

Many women seeking abortion face economic hardship; half live below the FPL and three quarters struggle to pay for food, housing, and transportation. Denial of...
abortion services exacerbates this hardship. We found large and statistically significant differences in the socioeconomic trajectories of women who were denied wanted abortions compared with women who received abortions—with women denied abortions facing more economic hardships—even after we accounted for baseline differences. Differences over time in employment, poverty, and receipt of public assistance suggest that public assistance programs served an important role in mitigating the loss of full-time employment for women denied an abortion. However, public assistance was not sufficient to support the increase in household size resulting from a new baby, and did not keep households of women denied an abortion from living in poverty. Differences in economic outcomes gradually converged over the 5 years. At the time of seeking an abortion, more than a quarter of all women in the study were living in a household as the only adult with children, and this increased significantly for women who were denied an abortion, indicating that the burden of raising a child often falls to women alone rather than to couples or an extended family.

Strengths and Limitations

This study had several notable strengths that distinguish it from past research and address the major evidence gap regarding the economic consequences of policies regulating access to abortion. By studying women who wanted an abortion and comparing women who arrived just before the gestational age limit to women who arrived just after, we removed the major confounding factors related to whether a pregnancy was unwanted. This design enabled us to isolate the effects of receiving a wanted abortion, separate from need or desire to receive an abortion. Our results are robust to several different analytic approaches, confirming that the economic hardship comes not from being denied an abortion itself but from carrying the unwanted pregnancy to term.

Second, our models controlled for baseline values of each outcome variable. Ideally, this baseline value would have been measured before women learned whether they could obtain an abortion. However, our baseline values were measured 1 week after receipt or denial of abortion. To the extent that women had already reacted to impending parenthood by enrolling in public assistance programs, stopping full-time work, or reporting income inadequacy in the week after being denied an abortion, controlling for these baseline values will underestimate the impact of being denied an abortion.

This study had several limitations. A substantial fraction of women did not know their total household income, particularly at baseline. This missingness was highly associated with household composition—women who lived with adult family members (often parents) were less likely to know their total household income than women who were the sole adult in the household. To account for this, we controlled for household structure at first interview, which had no missingness, resulting in unbiased estimates, assuming that income values were missing at random conditional on household structure. The participation rate in this study was 37.5%, within the range of other large-scale prospective studies with 5 years of follow-up. Participation was not associated with our main comparison of interest (receipt vs denial of abortion). For ease of interpretation, we have used linear models of trends to summarize patterns that are probably not perfectly linear.

Finally, despite our quasi-experimental design, there were differences in economic well-being at baseline between study groups; we controlled for these differences in our models. Consistent with the literature showing that young age and nulliparity are associated with delay in recognition of pregnancy, we found differences in age and parity by study group. The finding that turnaway–births were less likely to be employed at baseline is consistent with reports of lower past-month personal income among this group at baseline, likely ruling out the possibility that women had stopped working within the week once they learned they were going to carry a pregnancy to term. We controlled for differences in employment at baseline, yet we still found marked differences in trajectories of poverty and public assistance over time between women who received abortions and those who did not. Child support was too low to measure as an independent outcome but was included in household income.

Public Health Implications

Given the dynamic and intergenerational relationship between poverty and health, our finding of the close link between obtaining abortion care and subsequent poverty is important for providers and policymakers. The majority of women in the study were living in poverty at baseline, and carrying the unwanted pregnancy to term led to almost
a 4-fold increase in the odds that a woman’s household income was below the FPL. Restrictions on abortion that prevent women from obtaining wanted abortions may result in reductions in full-time employment, increased incidence of poverty, more women raising children alone, and greater reliance on public assistance. The net result may have serious adverse economic consequences for women and children. Laws that impose a gestational limit for abortion or otherwise restrict access to abortion will result in worsened economic outcomes for women.

CONTRIBUTORS
D. G. Foster contributed to study concept, design, funding, and supervision. D. G. Foster, M. A. Biggs, L. Ralph, and S. Roberts drafted the article. D. G. Foster, L. Ralph, S. Roberts, and M. M. Glymour performed statistical analysis. All authors performed analysis or interpretation of data and critical revision of the article for important intellectual content.

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The Turnaway Study was approved by the University of California, San Francisco, Committee on Human Research.

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