

The long-term effect of birth control and abortion laws (1960-1979) on women's health at old age: Evidence from the US Health and Retirement Study

Authors: Amy Ehntholt¹, Erika Sabbath², Lisa F. Berkman^{1,2}, Mauricio Avendano^{1,3}

Affiliations:

¹ Department of Social and Behavioral Sciences, Harvard School of Public Health, Department of Social and Behavioral Sciences, Boston, USA

² Center for Population and Development Studies, Harvard School of Public Health, Cambridge, USA

³ London School of Economics and Political Science, Department of Social Policy, LSE Health and Social Care, London, United Kingdom

Address for correspondence:

Amy Ehntholt
Department of Social and Behavioral Sciences
Harvard School of Public Health
667 Huntington Avenue
Boston, MA 02115
USA

Email: ame290@mail.harvard.edu

Introduction

The oral contraceptive pill, approved by the Food and Drug Administration for contraceptive use in 1960 (Knowles, 2012), has been hypothesized as a major factor explaining the large increase in labor force participation, reduced fertility, and delayed marriage among young women during the second half of the twentieth century. An important, yet untested, hypothesis is that by transforming young women's life trajectories, contraception laws may also have had unexpected consequences on women's long-term health trajectories. In addition, recent evidence (Knowles, 2013), suggests that abortion laws were also essential in transforming women's labor market, marriage, and fertility outcomes. Laws enabling access to the pill often coincided with laws enabling access to contraception. Therefore, a framework that assesses the complete policy environment is essential in understanding the impact of contraception and abortion laws on women's outcomes. To the best of our knowledge, there have been no studies examining whether the combination of contraception and abortion laws that transformed women's life trajectories during the second half of the 20th century had any long-term, permanent effects on women's health.

Studies assessing the causal effect of the pill on young women have relied on exogenous variation arising from state differences in laws granting confidential access to the pill for unmarried women under the age of 21. For example, Goldin and Katz (2002) find evidence of delayed marriage and higher rates of graduate school education among female college graduates with legal access to the pill before age eighteen. Additional studies have suggested that contraceptive access may lead to reduced fertility (Bailey, 2006, 2009; Ananat and Hungerman, 2008), higher educational attainment (Hock, 2008), improved stability in marriage (Zuppann, 2012), more positive long-term outcomes for women's offspring (Ananat and Hungerman, 2008), as well as higher female labor supply, wages, and diversity by occupation (Bailey, 2006; Steingrimsdottir, 2010). Contrary to some of these studies, recent evidence by Knowles (2013) suggests that legal changes that granted young unmarried women access to the pill had only a small effect on the average probabilities of marriage and giving birth at a young age, while access to abortion had substantial effects on the probability of entering into marriage and motherhood. These findings advocate for the importance of considering both contraception and abortion laws in understanding their impact on women's lives.

There are at least two broad pathways through which contraception and abortion laws may have influenced women's long-term health. First, abortion laws may have had a direct effect on women's health at young age by reducing the risk of complications associated with illegal abortion (Tietze and Lincoln, 1987), and potentially preventing late-life, long-lasting health problems associated with exposure to illegal abortion earlier in life. Similarly, the introduction of the pill may have reduced the risk of both legal and illegal abortions (Vlassoff et al., 2011) potentially reducing associated risks in the long term for women who benefited. A second, less explored hypothesis is that contraception and abortion laws had permanent effects on mothers' employment opportunities, marriage trajectories, and overall social and economic well-being, and that through these mechanisms, late-life health and survival among women were improved. By enabling women to pursue higher education, delay age at first birth, enter the labor force, and follow a career trajectory, contraception and abortion laws may have permanently led to sustainable gains in women's health in the long-run.

In this paper, we exploit variations arising from state differences in laws granting access to the pill and abortion among women at ages 15 to 22 to assess their causal impact on women's late-life health and survival. We use longitudinal data for women participating in the Health and Retirement Study (HRS) from 1992 to 2010, and construct complete employment, marriage, and fertility histories based on life-history event data for ages 15 to 39. We then link these data to state-level data on abortion and contraception laws, recently updated by Knowles (2013). Our study is innovative by extending previous investigations on the impact of the pill on social outcomes to assess whether they led to sustainable health gains among women reaching middle- and old age.

Methods

Sample

Data came from 10,055 women in the Health and Retirement Study (HRS), a representative sample of U.S. adults aged 50+. HRS is a longitudinal survey of a national sample of U.S. adults aged 50 or older and their spouses. Details of the study are provided elsewhere¹⁰. Enrollment was staggered by birth cohort, with enrollments in 1992, 1993 and 1998. Biennial interviews (or proxy interviews for decedent participants) were conducted through 2010. Our sample included

all female HRS participants born 1929-1968 with state of residence information (n=10,055). Women in these birth cohorts were 15 to 39 between 1960 and 1979, the period covering the largest changes in contraception and abortion laws.

Contraception and Abortion Laws

Data on abortion and contraception laws have been updated and fully revised by Knowles (2012). The FDA approved the first contraceptive pill for the treatment of menstrual disorders in 1957. Use of the pill spread quickly thereafter so that half a million women were using the pill when the FDA approved its use for contraceptive purposes in 1960. By 1962, 1.2 million married women were on the pill, and this number grew to 6.5 million married women by 1965 (Knowles, 2012). In order to identify the causal impact of contraception laws, we exploit the fact that laws enabling women to consent to the use of the pill before age 21 were enacted gradually across US states. Although the Federal Comstock Act prohibiting the distribution of contraceptives had been invalidated by the time the pill was introduced, many states continued to enforce these laws by restricting access and sales. Subsequent US Supreme Court rulings in 1965 (for married women) and 1972 (for unmarried women) recognized the right of women to use birth control without legal restrictions. The Court's recognition led to changes in enforcement and compliance with state Comstock laws, and years after the rulings, many states subsequently repealed or substantially liberalized their anti-contraception laws. After 1965, new state contraception laws were introduced to affirm all women's access to contraception.

Similarly, abortion became legal in the US in January 1973 after the Supreme Court ruled that women had a fundamental constitutional right to privacy in choosing to abort a fetus. Previous to this ruling, however, abortion had been legalized in five states as well as in the District of Columbia beginning in the 1970s. In addition, thirteen states had adopted reforms that made abortion legal if performed by a physician because of substantial risk that continuing the pregnancy would cause the physical or mental health impairments or the death of the mother; the baby would be born with a grave physical or mental defect; or the pregnancy was due to rape or incest. In all other states, abortion was prohibited in all cases (Knowles, 2012).

Linkage of HRS to Contraception and Abortion Laws

Knowles (2013) used these variations across states in the enactment of contraception and abortion laws to study their impact on fertility and marriage outcomes. We follow a similar approach to study the impact of contraception and abortion laws on the long-term health of HRS women. We do this by linking longitudinal data from HRS from 1992 to 2010 to data on contraception and abortion laws in the years in which HRS females were 15 to 22. We complement this with detailed retrospective data on fertility (age at first birth, number of children), marriage (age at first marriage) and labor market trajectories available for almost all HRS respondents.

Following Knowles (2013), we adopt a quasi-experimental approach to estimate the effects of the introduction of the pill and legalized abortion on women's late-life health. Our exposure variable was defined as the number of years women were exposed to laws that legalized the use of the contraceptive pill and access to abortion from ages 15 to 22. We focus on this narrow age bracket because of previous evidence that exposure to these laws at these ages was particularly important for women's age at first birth and age at first marriage (Knowles, 2013). Our identification strategy relies on the fact that cohorts of women within each state were exposed to different contraception and abortion laws at ages 15 to 22, and that the timing of exposure varied for women in different states which enacted these laws in different years. We use data from HRS on state of residence at age 10 to assign "treatment state" to avoid the potential impact of migration across states in anticipation of changes in contraception and abortion laws.

Our identification strategy is equivalent to a series of difference-in-differences equations implemented as a state fixed effect model as follows: We first model age at first birth as a function of the number of years a woman was exposed to legalized contraception use and abortion at ages 15 to 22, controlling for state fixed effects, year of birth fixed effects, and an extensive set of socio-demographic confounders. These models are implemented in order to assess whether previous findings based on other datasets on the impact of these laws on fertility outcomes are reproduced for women participating in HRS. Second, we follow a similar approach to model health at old age as a function of the number of years a woman was exposed to

legalized contraception use and abortion at ages 15 to 22, controlling for confounders. We focus on a variety of health outcomes including the diagnosis of major chronic diseases, the onset of depressive symptoms, and mortality.

Preliminary Results: Figure 1 shows the predicted age at first birth among women as a function of the number of years of exposure to contraception and abortion laws at ages 15 to 22. Values come from a model that includes state and year of birth fixed effects, so that variation comes from cohorts within states in the number of years of exposure, net of age differences across cohorts and time-invariant state characteristics. Results document a strong effect of the introduction of the pill on age at first birth: Women who were exposed to laws enabling access to contraception had a higher age at first birth than women with less years of exposure. In contrast, we do not see a clear effect of abortion laws on the age at first birth.

Figure 1: Years of Access vs Age at First Birth

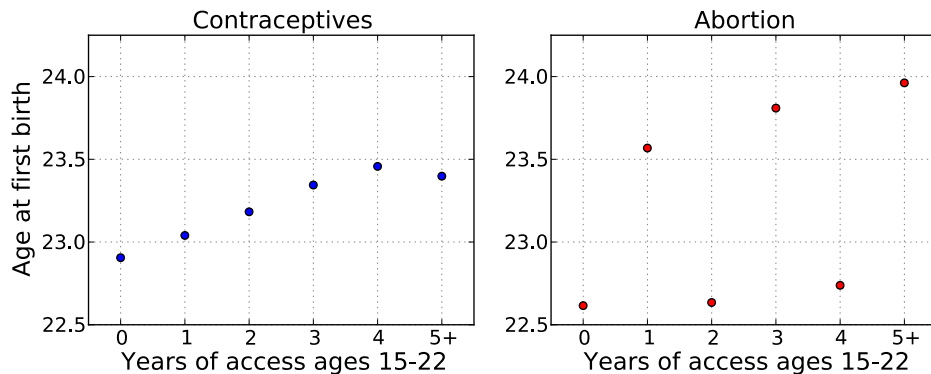


Figure 2 shows models of the impact of contraception and abortion laws on mortality.

Preliminary results suggest that increased years of exposure to contraception and abortion laws at ages 15 to 22 are associated with higher risk of depressive symptomatology. More detailed models including possible significant confounders are forthcoming.

Figure 2: Years of Access vs Mortality

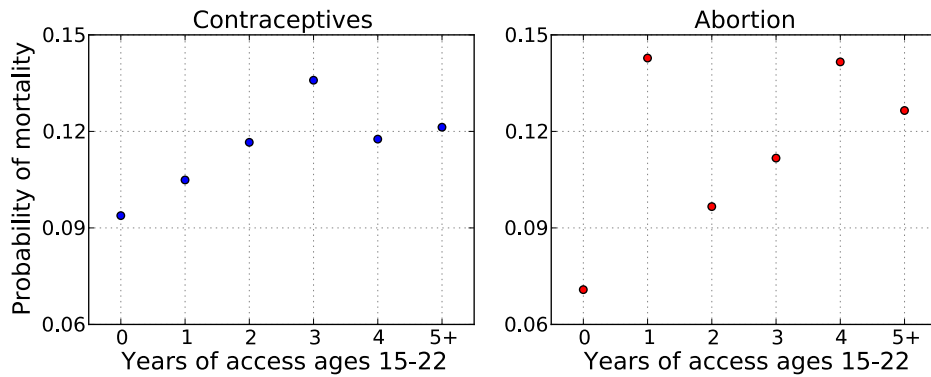
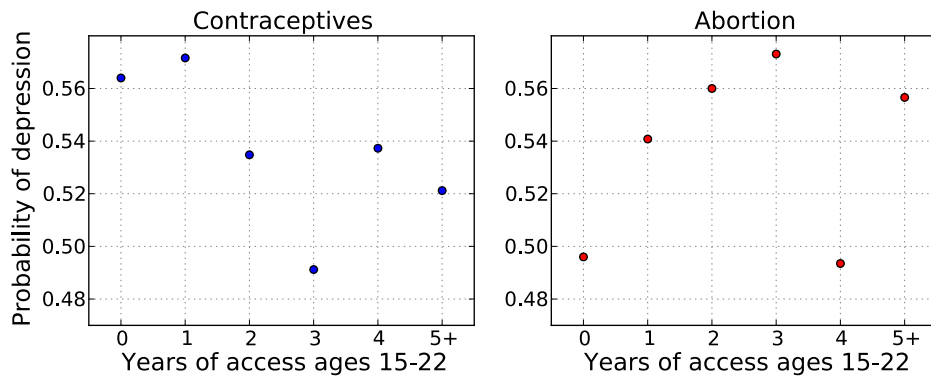


Figure 3 shows models of the impact of contraception and abortion laws on the onset of depressive symptoms as measured with the Center for Epidemiologic Studies Depression (CES-D) scale (dichotomized as “ever depressed” if reporting a score of 3 or higher anytime during follow-up). Results suggest that increased years of exposure to contraception laws at ages 15 to 22 are associated with lower risk of depressive symptomatology. In contrast, we find less clear evidence of a consistent effect of abortion laws on depressive symptoms.

Figure 3: Years of Access vs Depression



Conclusion: From our very preliminary results, we conclude that the laws do seem to have an effect on age at first birth. While additional effects are apparent on health outcomes (depression and mortality), the story remains complex. We will extend this initial analysis to look at several outcomes in more detailed models, and anticipate that our results could have important policy implications.