

# **Older Maternal Ages, Increasing Rates of Planned Births, and Shifts from Births Wanted Later to Births Wanted Sooner**

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## **Introduction**

Compared to other economically developed countries the U.S. has had historically high rates of pregnancies happening earlier than wanted or to women who did not want to be pregnant by then or at any time in the future (i.e., unintended pregnancies) and of births resulting from these pregnancies.<sup>1-3</sup> From 1982 to 2010, half of the pregnancies and one-third of births were perceived as unintended.<sup>4-6</sup> The majority of these pregnancies happened sooner than wanted.

Explanations have pointed to poor access to contraception, to effective methods and abortion, and to relatively high rates of contraceptive failure in the U.S.<sup>1,7-9</sup> Therefore, births happening earlier than wanted or to did not want to be pregnant by then or at any time in the future reflected persistent social inequalities by education and race/ethnicity.<sup>4</sup> Non-Hispanic Black (hereafter "Black") women consistently reported two-thirds of their pregnancies in these categories.<sup>1,4-6,9-12</sup>

However, and for the first time since mid-1990s, the proportion of unintended pregnancies in the U.S. dropped substantially beginning from the late 2010s: from 54 in 2008 to 45 per 1000 women aged 15-44, and from 51% pregnancies in 2008 to 45% in 2011.<sup>1,11</sup> The change happened mostly due to a reduction of 'sooner than wanted' while the proportion of 'unwanted' pregnancies remained stable.<sup>11</sup> Rates of the pregnancies wanted sooner increased across racial, ethnic, education, and age-groups, with a relative larger reduction among women aged 18-24.<sup>11</sup> Yet, rates of unintended pregnancies of Black mothers were twice the size of White mothers in 2011.<sup>1</sup> In 2006-2010, 45% of their pregnancies happened 'sooner than wanted'.

Among other factors, greater access to contraception and use of more effective methods, are thought to have contributed to the downward trend.<sup>3,11,13-17</sup> Despite a consistent negative association between maternal age and unintended pregnancies<sup>6</sup> changes in the age composition of mothers over the period of the decline have been overlooked as a potential explanation of increases in the 'I wanted to be pregnant sooner' category. Recent evidence shows that from 2009 to 2015, older mothers, 35 to 44, were significantly less likely to get pregnant at the 'right time' (one-fourth decrease) and to get pregnant 'too soon' (39% decrease), and more likely to do it 'too late' (84% increase).<sup>18</sup>

We address this gap in the literature by analyzing the contribution of changes in the composition of mothers' ages on changes in the proportion of women who reported 'I wanted to be pregnant sooner' births. We also examine the contribution of changes in maternal ages to the positive trend of 'planned births'.

## **Maternal Ages and Birth Intentions**

In the last 30 years, mothers' age composition switched through a considerable drop of mothers younger than 20, and a rise of those 30 or older, from 23.9% to 30.2%.<sup>19</sup> This trend accelerated since 2007, and teenagers and women aged 20-24 hit their lowest fertility rate every year since then.<sup>28,41</sup> On the contrary, the fertility rates of 'older' women have increased continuously, with

rates of 30-34 surpassing the rates of 25-29 age-group since 2014 (93.7 and 98.3 per 1000 women in 2019, respectively).<sup>28,41</sup> These shifts were mostly due to the postponement of first births, which were observed across racial and ethnic groups. Black women experienced the highest increase on the mean age of first birth (22.3 to 24.2, from 2000 to 2014).<sup>22</sup>

Rising maternal ages are found across high-income countries and are explained by increases in women's educational levels and employment opportunities.<sup>23-26</sup> Other social changes, such as higher expectations about the 'right' economic condition and partner relationship quality before a birth, also contribute to the postponement.<sup>27</sup> In this scenario, having a baby emerges as incompatible with women's educational and career goals, particularly, becoming mother at ages when more progress is made in these dimensions. Arguably, these underlying causes of trends toward older maternal ages do not necessarily depress fertility wantedness.<sup>28</sup> In the U.S., almost all women want to be mothers, and the ideal number of children is homogeneous across educational groups.<sup>23,29</sup>

Because they have fewer reproductive years ahead, older mothers are presumably less likely to want their last births to have happened later. Therefore, we expect the trend towards older mothers to be associated with decreasing rates of births happening 'sooner than wanted.' Similarly, and because higher access and use of more effective contraceptive methods enable motherhood postponement,<sup>16 17,24</sup> we expect older maternal ages to be associated with increases in planned births, and a reduction of those happening when not using contraception.

## Data and Methods

*Data.* We use data from the Pregnancy Risk Assessment Monitoring System (PRAMS) years 2007 to 2020. Crucially for the present study, the PRAM's questionnaire includes questions that ask about what were the woman's pregnancy intentions, plans, and contraceptive behavior around the time that she became pregnant with the index birth. A question asks in all states addresses pregnancy *intention* as follows: "*Thinking back to just before you got pregnant with your new baby, how did you feel about becoming pregnant?*" Beginning in 2012, response options have been: "I wanted to be pregnant later", "I wanted to be pregnant sooner", "I wanted to be pregnant then", "I didn't want to be pregnant then or at any time in the future", and "I wasn't sure what I wanted."

Since 2007, PRAM's participants states have had the option of including a question asking women about whether they were trying to get pregnant when they conceived the index birth: "*When you got pregnant with your new baby, were you trying to get pregnant?*" Those who responded 'yes' we classify as having had a "planned birth." For those who responded 'no', they were then asked if they were using contraception: "*When you got pregnant with your new baby, were you or your husband or partner doing anything to keep from getting pregnant?*" We refer to those who were using contraception at the time they got pregnant as having experienced 'contraceptive failure,' as distinct from those who were 'not trying to get pregnant and not using contraception'. We refer to these questions used since 2007 as the '*planning*' questions.

Based on which states implemented the optional 'planning' questions in their PRAMS survey questionnaire we create two balanced samples of states. Seven states asked the '*planning*' questions in all years 2007 to 2020, and eight additional states and New York City participated in PRAMS in the years 2012 to 2020 and therefore included the core '*intention*' question. The '*intentions*' sample comprises 144,867 respondents, and the '*planning*' sample includes 109,971 respondents.

*Standardization and Decomposition.* We compare age-standardized to the first year of the period (2007 or 2012) with observed proportions and calculate what fraction of these changes would not have happened without changes in the composition of mothers' age. Using the mother's age distribution in the first year of our series (2007 for planning and 2012 for intentions), we estimate standardized age-specific probabilities for each outcome each year after. Next, we estimate what proportion of the change was due to changes in the distribution of mother's ages between 2007 or 2012 and 2019. We chose 2019 as the final year for decomposition analyses because 2020 data was collected when the pandemic started, a context that could make motherhood experiences less comparable to previous years.

## **Selected Results**

*Overall Trends.* Figure 1 shows a yearly rise in the share of mothers trying to get pregnant, from 52.5% in 2007 to 61.2% in 2020. The share of births to non-contraceptive users remained stable at around one-fourth, while births following use of contraception at the time of becoming pregnant decreased from 21.8% in 2007 to 14.6% in 2020. Figure 2 illustrates the continuous decline of unintended pregnancies from 29.5% in 2012 to 21.1% in 2020, the upward time trend of births wanted then or sooner and a 10% decline of wanted later births: also, a stable proportion of the unwanted and unsure categories.

[FIGURES 1 AND 2 ABOUT HERE]

*Age standardized and decomposition.* Figures 3 and 4 show standardized and observed proportions for each outcome, and for all and Black women. As seen in Figure 3, among All women, half or more mothers were trying to get pregnant before their last birth throughout the 2007-2020 period, whereas this was true for only between 25% and 35% of Black Women. This fraction, however, grew strongly for both groups. Of the two categories of 'not trying to get pregnant', the largest difference between Black Women and All women – we observe a fairly stable fraction of no contraceptive users, which increased from 41% to 45% between 2007 and 2020 for Black Women, while decreased slightly for All women, from around one-fourth in 2007. The fraction of births following use of contraception ("contraceptive failure") was lower for All women than for Black Women throughout the 2007-2020 period, but declined for both groups, and declined more for Black women (from 33.5% to 24.6%).

[FIGURE 3 AND TABLE 1 ABOUT HERE]

We discuss the differences between the observed (darker colors) and age-standardized proportions (lighter colors) between 2007 and 2019, noting that the year 2020 tended to be somewhat exceptional, possibly due to the COVID-19 pandemic period of births and survey data collection from the mother.

The 2007-2019 standardized series show that without changes in age, the increase in the fraction of mothers trying to get pregnant would have been substantially lower. We estimate that two-thirds of the 5.9% increase for All and three-fourths of the 7.5% of the increase for Black women were due to changes in age (Table 1).

For All women, the fraction of no contraceptive users would have increased slightly without age-distribution changes, whereas the observed change was a slight decrease. However, changes toward older mothers suppressed a substantially higher increase of non-contraceptive users among Black Women (5.6% vs 1.3%). Age composition also contributed, but less, to the downward trends of contraceptive failure for both groups.

[FIGURE 4 AND TABLE 2 ABOUT HERE]

Compared to All women, Black women had a consistently higher proportion of women who wanted their births later or were unsure; and higher by 5% unwanted births. They also had a consistently much lower-by 20 percentage points-fraction of births ‘wanted then’. Across the period, Black mothers also had a lower fraction-by 5%-of births wanted sooner.

Without changes in the age distribution of mothers, the observed decrease in births from pregnancies ‘wanted later’ would have been lower, as the observed increase in births from pregnancies ‘wanted sooner’. Through visual examination, the lower overlap between darker and lighter lines in Figure 4 suggests that changes in age composition were more relevant for Black women. For both groups, proportions of ‘unwanted’ and ‘unsure’ births would have been similar across years.

For All women, one-third of the 5.2% drop in wanted later births, half of the 2.0% increase of those wanted sooner, and almost all the increase of births wanted by then (1.2% higher in 2019) were due to changes in age composition (Table 2). For Black women, we also find one-third of the 7.5% lower percentage of wanted later births, half of the 2.6% higher proportion of wanted sooner, and almost all the increase of births wanted then (1.4% higher in 2019) were due to changes in the age composition. One-fourth of the 2.3% decrease in unwanted births was due to age.

## Tables

**Table 1. Decomposition of Planned Births: Observed vs Standardized to Age Composition 2007, by year. All and Black women, 2007 and 2019, weighted percentages.**

	All women			Black women		
	Trying to get pregnant	Not trying, no contraception	Not trying, yes contraception	Trying to get pregnant	Not trying, no contraception	Not trying, yes contraception
observed 2007	52.5	25.6	21.9	25.3	41.2	33.5
observed 2019	58.4	24.4	17.2	32.9	42.5	24.6
standardized 2019	54.3	26.3	19.3	27.4	46.8	25.9
% change due to changes in age composition	68.6	157.3	45.4	72.9	-316.3	14.1
N	109,971			17,385		

Source: PRAMS. DE, IL, ME, MA, NJ, PA and WA.

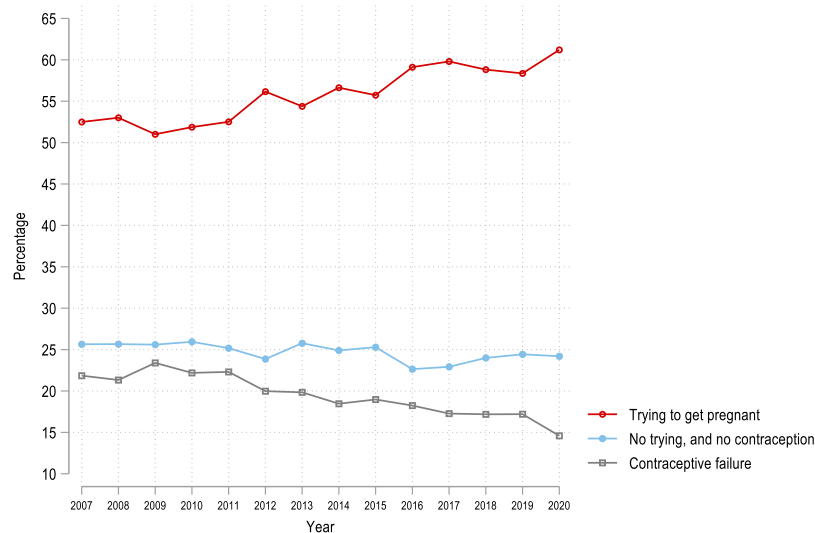
**Table 2. Decomposition of Pregnancy intentions: observed vs standardized to age composition 2012, by year. All and Black women, 2012 and 2019, weighted percentages.**

	All women					Black women				
	Later	Sooner	Then	Unwanted	Was not sure	Later	Sooner	Then	Unwanted	Was not sure
observed 2012	23.3	15.0	43.3	6.2	12.2	33.7	8.6	26.1	13.2	18.4
observed 2019	18.1	17.0	44.5	5.7	14.8	26.2	11.3	27.5	10.9	24.1
standardized 2019	19.6	16.0	43.4	5.6	15.5	28.4	9.9	26.3	10.4	25.1
% change due to changes in age composition	28.7	50.0	92.4	-8.6	-25.2	28.9	51.6	83.4	-24.5	0.923
N	144,867					22,318				

Source: PRAMS. AK, DE, IL, ME, MD, MA, MO, NJ, NM, NYC, PA, UT, WA, WI and WY.

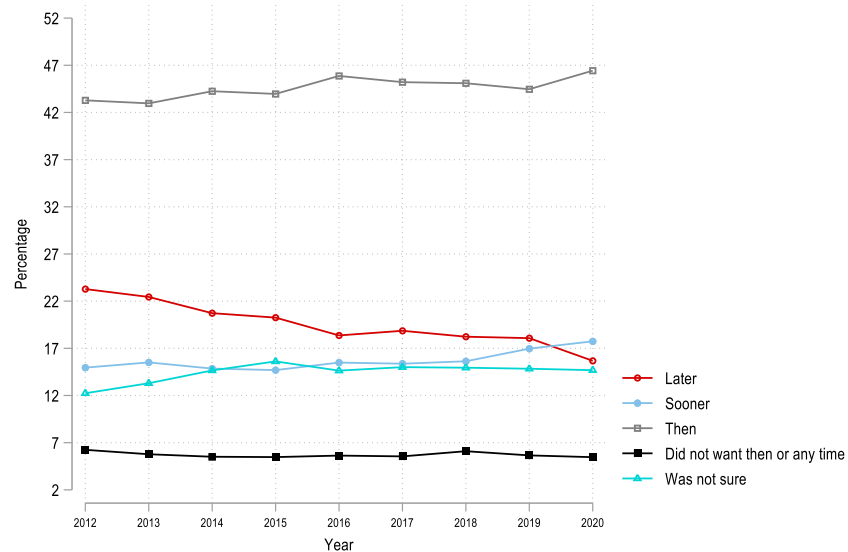
## Figures

Figure 1. Planned Births by year. All women. 2007-2020, weighted. (unweighted N=109,97)



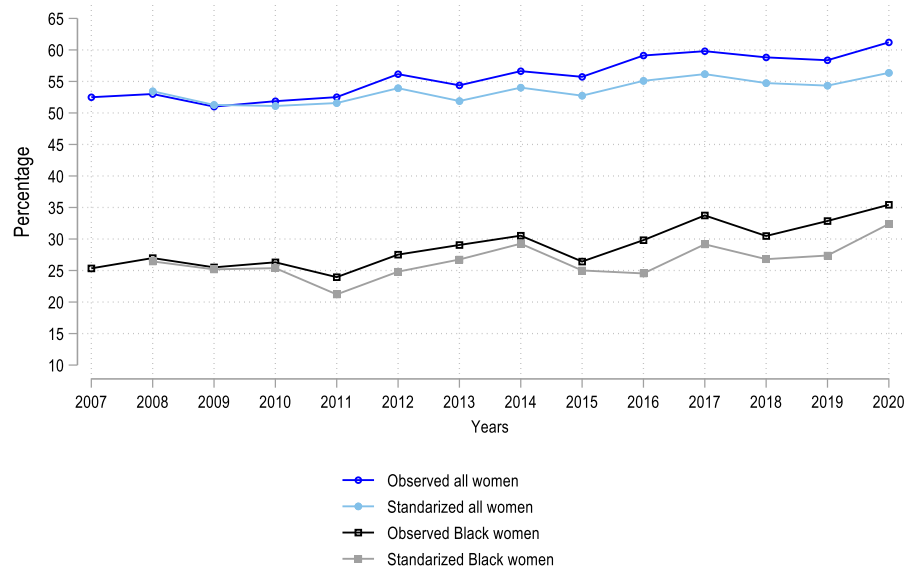
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Figure 2. Pregnancy intentions by year. All women. 2012-2020, weighted (unweighted N=144,867).



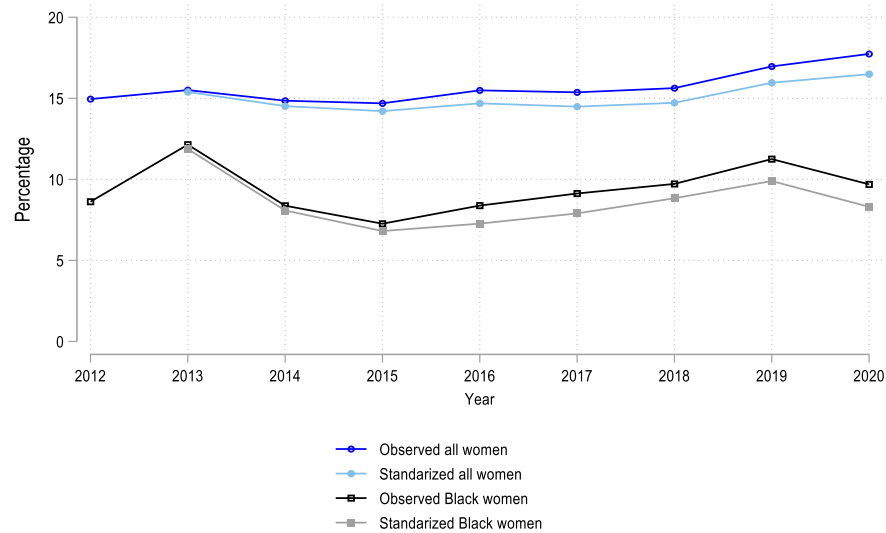
Source: PRAMS. AK, DE, IL, ME, MD, MA, MO, NJ, NM, NYC, PA, UT, WA, WI and WY.

Figure 1. Planned births, observed and age-standardized proportions, by year. All (unweighted N=109,971) and Black women (unweighted N=11,470). 2007-2020, weighted.



Source: PRAMS. DE, IL, ME, MA, NJ, PA and WA.

Figure 4. Wanted sooner observed and age-standardized proportions, by year. All (unweighted N=144,867) and Black (unweighted N=22,318) women. 2012-2020, weighted.



Source: PRAMS. AK, DE, IL, ME, MD, MA, MO, NJ, NM, NYC, PA, UT, WA, WI and WY.

Note (\*) we adjust the scale of proportion according to the maximum and minimum proportion of each category

## References

1. Guttmacher Institute. *Unintended Pregnancy in the United States [Fact Sheet]*. <https://www.guttmacher.org/fact-sheet/unintended-pregnancy-united-states> ((n.d)).
2. Singh, S., Sedgh, G. & Hussain, R. Unintended Pregnancy: Worldwide Levels, Trends, and Outcomes. *Studies in Family Planning* 41, 241–250 (2010).
3. Wise, A., Geronimus, A. T. & Smock, P. J. The Best of Intentions: A Structural Analysis of the Association between Socioeconomic Disadvantage and Unintended Pregnancy in a Sample of Mothers from the National Longitudinal Survey of Youth (1979). *Womens Health Issues* 27, 5–13 (2017).
4. Mosher, W. D., Jones, J. & Abma, J. C. Intended and unintended births in the United States: 1982–2010. *Natl Health Stat Report* 1–28 (2012).
5. Finer, L. B. & Zolna, M. R. Unintended pregnancy in the United States: incidence and disparities, 2006. *Contraception* 84, 478–485 (2011).
6. Kost, K. & Forrest, J. D. Intention status of U.S. births in 1988: differences by mothers' socioeconomic and demographic characteristics. *Fam Plann Perspect* 27, 11–17 (1995).
7. Sundaram, A. *et al.* Contraceptive Failure in the United States: Estimates from the 2006–2010 National Survey of Family Growth. *Perspect Sex Reprod Health* 49, 7–16 (2017).
8. Dehlendorf, C., Rodriguez, M. I., Levy, K., Borrero, S. & Steinauer, J. Disparities in family planning. *American Journal of Obstetrics and Gynecology* 202, 214–220 (2010).
9. Finer, L. B. & Henshaw, S. K. Disparities in Rates of Unintended Pregnancy In the United States, 1994 and 2001. *Perspectives on Sexual and Reproductive Health* 38, 90–96 (2006).

10. Finer, L. B. & Zolna, M. R. Shifts in intended and unintended pregnancies in the United States, 2001-2008. *Am J Public Health* 104 Suppl 1, S43-48 (2014).
11. Finer, L. B. & Zolna, M. R. Declines in Unintended Pregnancy in the United States, 2008-2011. *N Engl J Med* 374, 843–852 (2016).
12. Finer, L. B. & Kost, K. Unintended pregnancy rates at the state level. *Perspect Sex Reprod Health* 43, 78–87 (2011).
13. Musick, K., England, P., Edgington, S. & Kangas, N. Education Differences in Intended and Unintended Fertility. *Social Forces* 88, 543–572 (2009).
14. Use of Highly Effective Contraceptives in the U.S. Continues to Rise, with Likely Implications for Declines in Unintended Pregnancy and Abortion. *Guttmacher Institute* <https://www.guttmacher.org/article/2014/12/use-highly-effective-contraceptives-us-continues-rise-likely-implications-declines> (2015) doi:10.1363/2014.14742.
15. Kavanaugh, M. L., Jerman, J. & Finer, L. B. Changes in Use of Long-Acting Reversible Contraceptive Methods Among U.S. Women, 2009–2012. *Obstet Gynecol* 126, 917–927 (2015).
16. Jones, J., Mosher, W. & Daniels, K. Current contraceptive use in the United States, 2006-2010, and changes in patterns of use since 1995. *National health statistics reports* 1–25 (2012).
17. Kost, K., Finer, L. B. & Singh, S. Variation in State Unintended Pregnancy Rates In the United States. *Perspectives on Sexual and Reproductive Health* 44, 57–64 (2012).
18. Kost, K., Zolna, M. R. & Murro, R. Pregnancies in the United States by Desire for Pregnancy: Estimates for 2009, 2011, 2013, and 2015. *Demography* (2023) doi:10.1215/00703370-10690005.
19. Bureau, U. C. Stable Fertility Rates 1990-2019 Mask Distinct Variations by Age. *Census.gov* <https://www.census.gov/library/stories/2022/04/fertility-rates-declined-for-younger-women-increased-for-older-women.html>.
20. Osterman, M. J. K., Hamilton, B. E., Martin, J. A., Driscoll, A. K. & Valenzuela, C. P. *Births: Final Data for 2020*. (2022).
21. Martin, J. A., Hamilton, B. E., Osterman, M. J. K. & Driscoll, A. K. National Vital Statistics Reports Volume 70, Number 2, March 23 Births: Final Data for 2019. (2021).
22. Mathews, T. J. & Hamilton, B. E. *Mean Age of Mothers Is on the Rise: United States, 2000-2014*. <https://www.cdc.gov/nchs/data/databriefs/db232.pdf> (2016).
23. Guzzo, K. B. & Hayford, S. R. Evolving Fertility Goals and Behaviors in Current U.S. Childbearing Cohorts. *Population and Development Review* n/a,.
24. Mills, M., Rindfuss, R. R., McDonald, P. & te Velde, E. Why do people postpone parenthood? Reasons and social policy incentives. *Hum Reprod Update* 17, 848–860 (2011).
25. Lesthaeghe, R. The second demographic transition: A concise overview of its development. *Proc. Natl. Acad. Sci. U.S.A.* 111, 18112–18115 (2014).
26. Greulich, A. & Rendall, M. S. Women’s employment and first birth in Europe. (2021).
27. Molina-García, L. *et al.* The delay of motherhood: Reasons, determinants, time used to achieve pregnancy, and maternal anxiety level. *PLOS ONE* 14, e0227063 (2019).
28. Beaujouan, É. & Toulemon, L. European countries with delayed childbearing are not those with lower fertility. *Genus* 77, 2 (2021).
29. Morgan, S. P. & Rackin, H. The Correspondence Between Fertility Intentions and Behavior in the United States. *Popul Dev Rev* 36, 91–118 (2010).