

Supporting Information (SI)

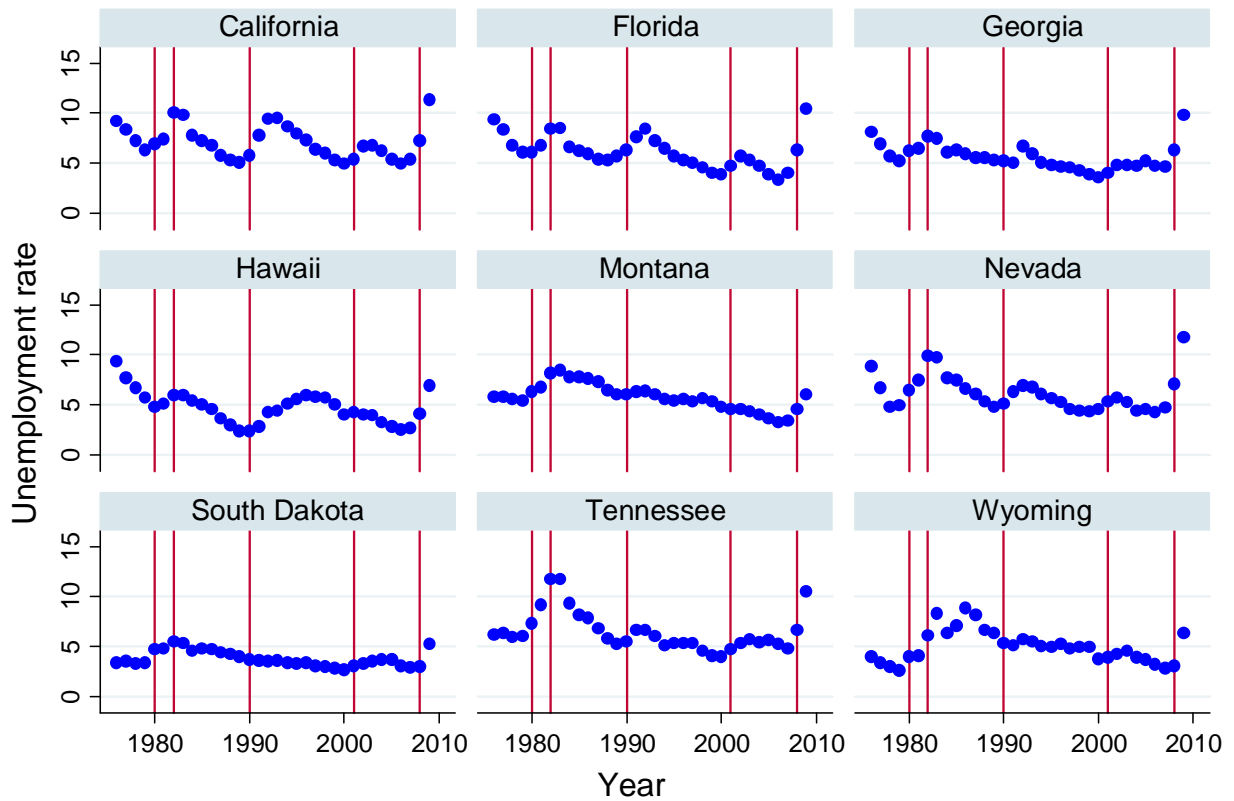


Fig. S1: Variation in unemployment rates over time in nine example states. Monthly unemployment rates are plotted for nine states. Red vertical lines indicate the starts of recessions in 1980, 1981, 1990, 2001, and 2008.

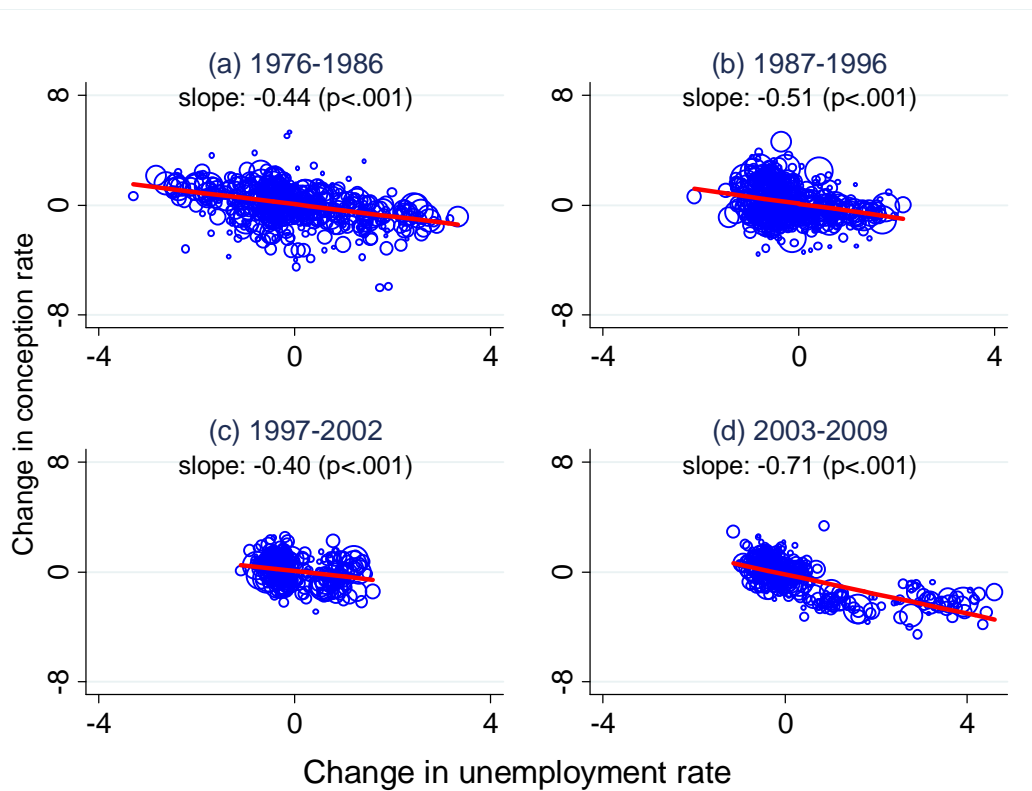


Fig. S2: Short-term fertility responses across four recession periods (US born women). Plotted are changes in the conception rate against changes in the unemployment rate at the state-year level. Four time periods are chosen to include distinct recession periods. See Fig. S1 for the timing of each recession. Straight lines are fitted using OLS. Observations are weighted by state size.

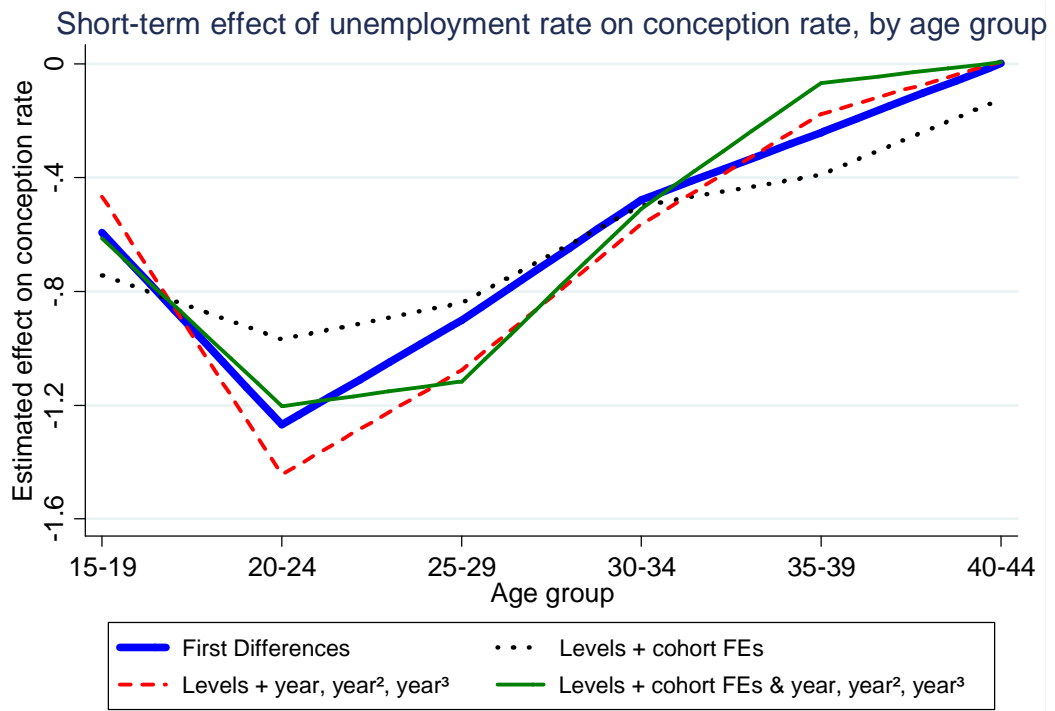


Fig. S3: Short-term effect of the unemployment rate on the conception rates by age group, estimated with different econometric specifications. Coefficients are estimated in separate regressions for each age group. These estimates are connected across age groups for a given econometric specification. Regression results are shown in Table S1 (B) for the first difference specification and in Table S2 for the levels specifications.

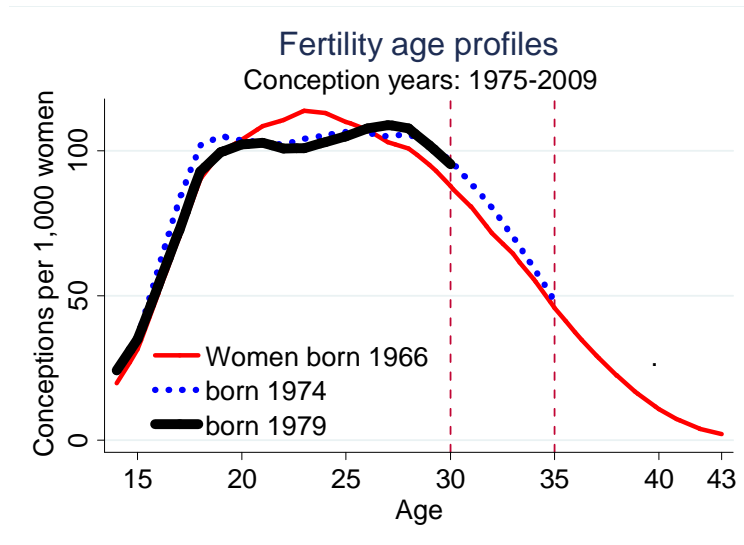


Fig. S4: Fertility age profiles for different birth cohorts of women. Annual conception rates are plotted by age for three example birth cohorts. The available calendar years for which we observe conceptions limit the age up to which different cohorts can be followed.

		CALENDAR YEAR (YEAR OF CONCEPTION)																																	
		76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	2	3	4	5	6	7	8	9
WOMEN'S YEAR OF BIRTH	60	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
	61	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
	62	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	63	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
	64	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
	65	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
	66	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
	67	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	68	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
	69	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
	70	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
	71	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	72	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
	73	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
	74	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
	75	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
	76		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
	77			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	78				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	79					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	80						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

Fig. S5: Birth cohorts included in the analysis of completed fertility. Cells indicate the age of cohorts born 1961 to 1980 in calendar years 1976 to 2009. State-level unemployment rates are available starting in 1976, while conceptions are observed until 2009. Green cohorts ('61-'70) are included in Table 2. Blue cohorts ('71-'75) are added in columns (3) and (4) of Table S6. Purple cohorts ('76-'80) are added in column (5) of Table S6.

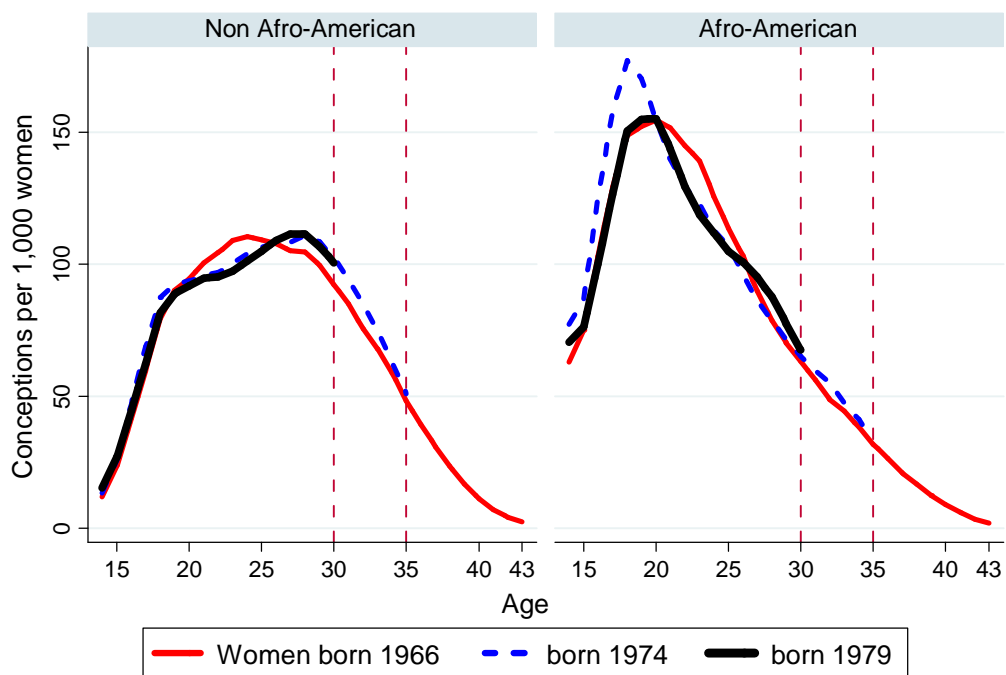
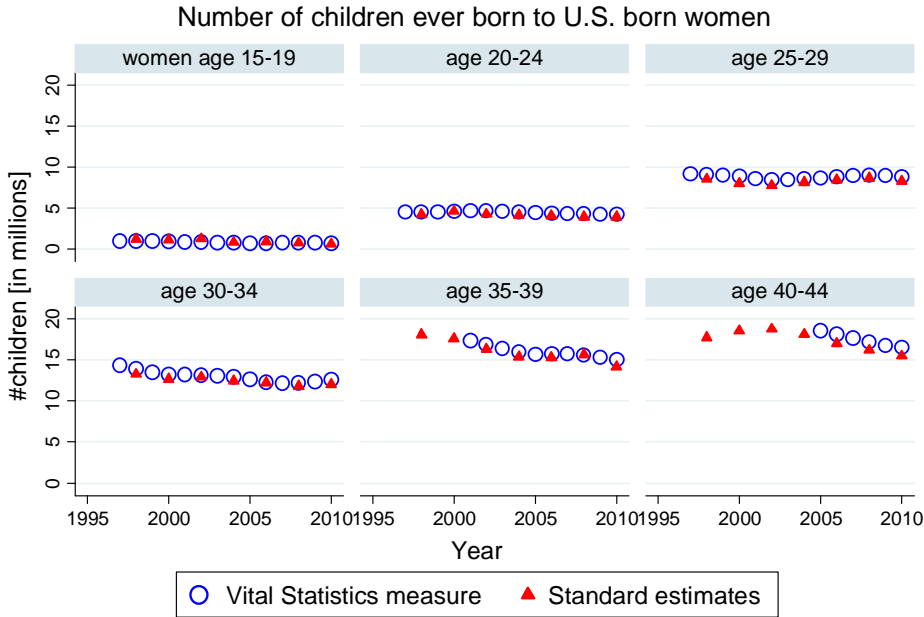


Fig. S6: Fertility age profiles, by women's race and cohort. Annual conception rates are plotted by age for three example birth cohorts, separated by race. Further comments as in Fig. S3.

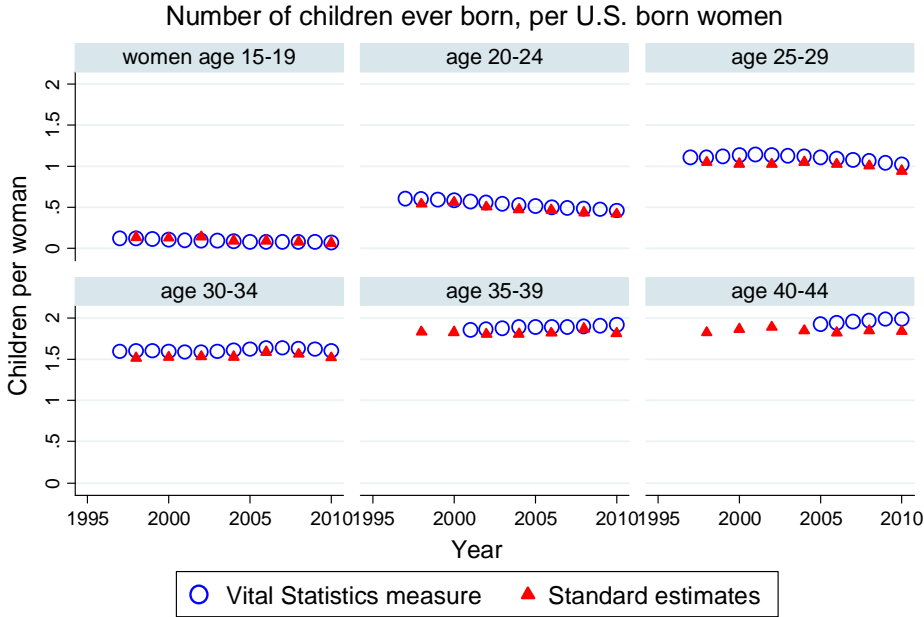
Fig. S7: Comparison of our completed fertility measures (based on Vital Statistics birth records) with standard estimates published biannually by the Census bureau.

A



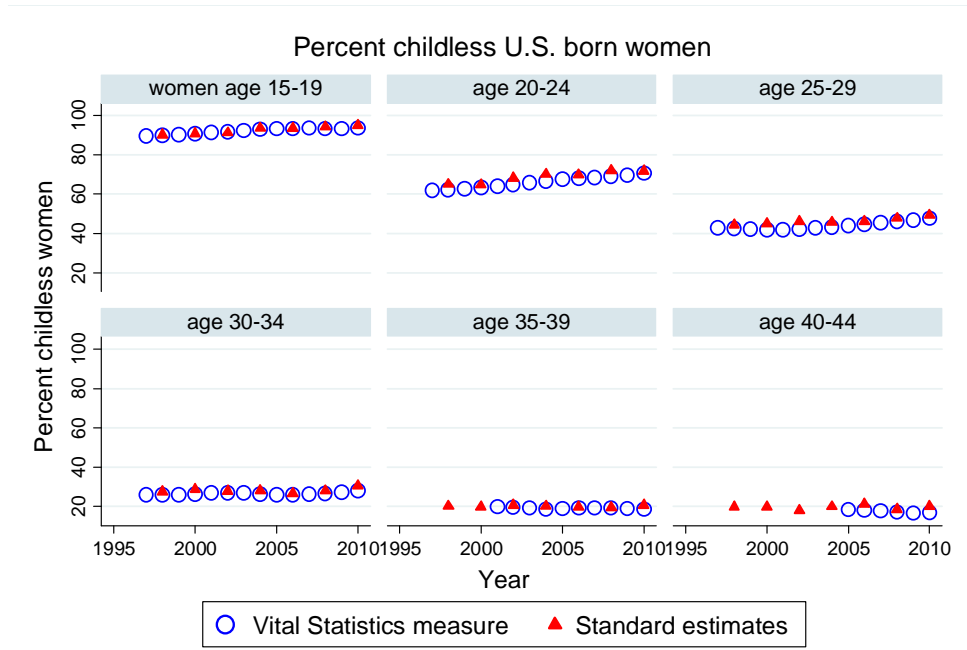
Notes: Standard estimates of completed fertility are published biannually by the U.S. Census Bureau (<http://www.census.gov/hhes/fertility/>), based on survey data collected by the American Community Survey, the Current Population Survey and the Survey of Income and Program Participation. Our Vital Statistics measure is based on the universe of births occurring after 1975. Cohorts of women who enter the fertile age range before 1975 are excluded (i.e. those aged 35-39 before year 2000, or aged 40-44 before year 2005). Here we focus on births rather than conceptions resulting in live births (as in the remainder of the paper) for better comparability with the Census estimates.

B



Notes: We construct the number of children ever born per woman the same way as the completed conception rate (see Materials and Methods), but with birth instead of conception counts. Further comments as in panel A.

C



Notes: For the construction of the percent childless women using the Vital Statistics data see the Materials and Methods section. Further comments as in panel A.

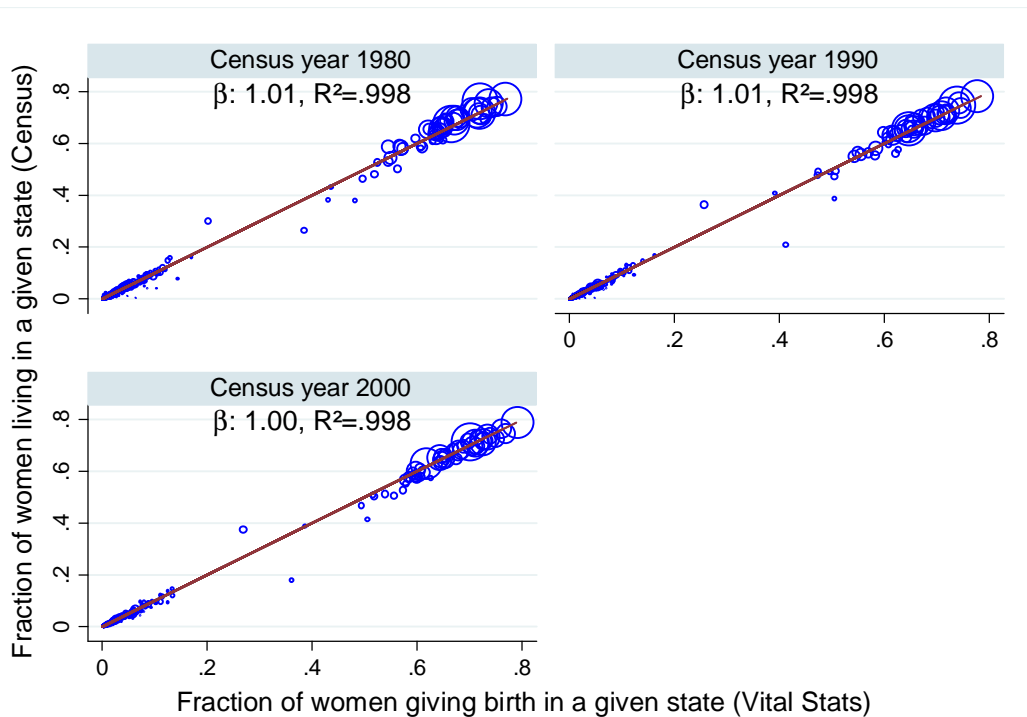


Fig. S8: The fraction of women residing in a state from the Census vs. from Vital Statistics data. Every circle represents the fraction of women born in one state X and giving birth / living in state Y (which might equal X). There are $51 \times 51 = 2,601$ X-Y combinations. Circles are scaled by the number of women in each combination according to the Census estimate. Large circles at the top right of each figure represent X=Y combinations, i.e. the fractions of women who reside in their own birth state according to the Census and who give birth in their own birth state according to the Vital Statistics. Straight lines are fitted using OLS. The slope and the R^2 are close to unity, which indicates that the state of residence pattern observed among women giving birth in the Vital Statistics is a good predictor of the overall state of residence pattern among women in the fertile age range that is observed in the Census. The two outliers in the .2-.4 range are women born in DC who live/give birth in DC and in Maryland, respectively. Our results do not change when we exclude DC born women from the analysis.

Table S1: Short-run effect of the unemployment rate on the conception rate**A: All ages**

Dep. var.:	Dep. var. in first differences		Dep. var. in levels
	National level	State level	State level
Conception rate	(1)	(2)	(3)
Change in unemployment rate	-0.480 *** (0.144)	-0.465 *** (0.029)	
Unemployment rate			-0.668 *** (0.082)
Controls:			
State FEs, time, time ² , time ³			Yes
N	33	1,683	1,734

B: Age group-specific regressions (state level)

Dep. var.:	Age					
	15-19	20-24	25-29	30-34	35-39	40-44
Change in conception rate	(1)	(2)	(3)	(4)	(5)	(6)
Change in unemployment rate	-0.594 *** (0.047)	-1.270 *** (0.083)	-0.901 *** (0.044)	-0.479 *** (0.025)	-0.242 *** (0.011)	0.002 (0.004)
Average conception rate	64.94	105.16	101.95	63.85	22.83	4.10
Semi-elasticity	-0.92%	-1.21%	-0.88%	-0.75%	-1.06%	0.04%
N	1,683	1,683	1,683	1,683	1,683	1,683

Notes: Coefficients from OLS regressions of changes in the conception rate on changes in the overall unemployment rate are displayed. The data is aggregated by calendar year in (A) column 1, by calendar year and women's state of birth in (A) column 2, and by calendar year, women's state of birth and women's age group in (B). Hence state level regressions in (A) 2 and (B) refer to women's own state of birth. Changes refer to annual changes. The assigned unemployment rate is the weighted average unemployment rate across states where women give birth, with the number of births as weights. Standard errors in parenthesis are clustered by state of birth. Observations are weighted by cohort size. Significance levels: *: $p < 0.1$, ** $p < 0.5$; *** $p < 0.01$.

Table S2: Short-run effects over age groups, across different specifications

Dependent variable:	Age					
	15-19	20-24	25-29	30-34	35-39	40-44
Conception rate	(1)	(2)	(3)	(4)	(5)	(6)
(1) Levels specification with age, state, and cohort FEs						
Unemployment rate	-0.743 *** (0.077)	-0.969 *** (0.117)	-0.840 *** (0.116)	-0.498 *** (0.115)	-0.391 *** (0.069)	-0.125 *** (0.021)
(2) Levels specification with age and state FEs, and 3rd order time polynomial						
Unemployment rate	-0.468 *** (0.163)	-1.443 *** (0.133)	-1.077 *** (0.096)	-0.565 *** (0.120)	-0.177 *** (0.056)	0.008 (0.015)
(3) Levels specification with age, state and cohort FEs, and 3rd order time polynomial						
Unemployment rate	-0.615 *** (0.099)	-1.203 *** (0.141)	-1.117 *** (0.095)	-0.510 *** (0.128)	-0.067 (0.073)	0.006 (0.020)

Notes: The coefficients from regressions of the conception rate on the unemployment rate are displayed. Each coefficient is derived from a separate regression. For a graphical representation of these results see Fig. S3. Equation (IV) in the Methods section shows the regression model for specification (3).

Table S3: Long-run effect of the unemployment rate at different ages on completed fertility, using the unemployment rate in women's own state of birth as an instrumental variable (2SLS regressions).

Dependent variable Incl. cohorts '61-'70 2SLS	Conceptions per 1000 women, prior to				
	age 40 (1)	age 35 (2)	age 30 (3)	age 25 (4)	age 20 (5)
Effect of average unemployment rate (instrumented) at					
Age 15-19	-5.29 (6.91)	-4.88 (6.29)	-4.18 (5.39)	-9.67*** (3.48)	-7.63*** (1.97)
Age 20-24	-13.81** (5.48)	-14.82*** (5.30)	-14.45*** (5.02)	-7.86** (3.80)	0.53 (2.18)
Age 25-29	5.02 (8.74)	1.24 (6.42)	0.94 (4.56)		
Age 30-34	-2.47 (14.59)	-1.86 (14.27)			
Age 35-39	-0.63 (11.57)				
N	510	510	510	510	510
Mean dep. var.	1,916	1,784	1,418	902	372

Notes: Coefficients from two-stage least squares (2SLS) regressions are displayed. The average unemployment rates in women's own state of birth at age 15-19, 20-24, ..., 35-39 are used as instruments for the average unemployment rate in the states where women give birth at age 15-19, 20-24, ..., 35-39. The Kleibergen-Paap F-statistic is always in excess of 10. All regressions include indicator variables for women's state and year of birth. Standard errors are shown in parenthesis and are clustered by state of birth. Observations are weighted by cohort size. See Materials and Methods for definitions of completed fertility rates. Significance levels: *:p<0.1, ** p<0.5; *** p<0.01.

Table S4: Long-run effect of the unemployment rate in women's own state of birth at different ages on completed fertility .

Dependent variable Incl. cohorts '61-'70	Conceptions per 1000 women, prior to				
	age 40 (1)	age 35 (2)	age 30 (3)	age 25 (4)	age 20 (5)
Effect of average unemployment rate in women's own state of birth at					
Age 15-19	-4.22 (5.73)	-3.80 (5.28)	-3.23 (4.51)	-7.71** (2.93)	-6.09*** (1.65)
Age 20-24	-10.18** (4.03)	-10.88*** (4.00)	-10.63*** (3.87)	-5.74** (2.96)	0.45 (1.70)
Age 25-29	3.73 (5.81)	1.16 (4.49)	0.91 (3.31)		
Age 30-34	-1.59 (9.24)	-1.11 (9.13)			
Age 35-39	-0.34 (6.82)				
N	510	510	510	510	510
Mean dep. var.	1,916	1,784	1,418	902	372

Notes: Coefficients from OLS regressions of completed fertility on the average unemployment rate at different periods of women's fertile lifecycle are displayed. The data is aggregated by women's state and year of birth. All regressions include indicator variables for women's state and year of birth. The unemployment rate refers to the unemployment rate in women's own state of birth. Standard errors in are shown in parenthesis and are clustered by state of birth. Observations are weighted by cohort size. See Fig. S4 for an illustration of the included birth cohorts and Materials and Methods for definitions of completed fertility rates. Significance levels: *:p<0.1, ** p<0.5; *** p<0.01.

Table S5: Long-run effect of the unemployment rate at different ages on completed fertility for non African-American women

Dependent variable Incl. cohorts '61-'70	Conceptions per 1000 non African-American women, prior to				
	age 40 (1)	age 35 (2)	age 30 (3)	age 25 (4)	age 20 (5)
Effect of average unemployment rate at					
Age 15-19	-1.88 (8.59)	-0.84 (7.74)	1.43 (6.67)	-6.11 (4.18)	-4.61** (2.11)
Age 20-24	-12.91* (7.01)	-13.50** (6.65)	-11.69* (6.37)	-4.23 (4.34)	2.58 (2.10)
Age 25-29	6.29 (11.16)	3.11 (7.47)	5.39 (6.10)		
Age 30-34	-8.61 (17.66)	-7.06 (16.45)			
Age 35-39	-1.23 (15.90)				
N	510	510	510	510	510
Mean dep. var.	1,869	1,716	1,345	818	306

Notes: Coefficients from regressions using completed fertility for non African-American women (i.e. children ever born to non A-A women, per 1,000 A-A women) are displayed. Significance levels: *:p<0.1, ** p<0.5; *** p<0.01. Further comments as in Table 2.

Table S6: Long-run effect of the unemployment rate at different ages on completed fertility across different cohorts.

Dependent variable	Number of conceptions per 1000 women prior to				
	age 40	age 35		age 30	
Incl. cohorts	'61-'70	'61-'70	'61-'75	'61-'75	'61-'80
	(1)	(2)	(3)	(4)	(5)
Effect of average unemployment rate at					
Age 15-19	-5.07 (7.60)	-4.83 (6.94)	-2.29 (5.67)	-4.43 (5.28)	-2.28 (3.79)
Age 20-24	-14.21** (6.02)	-15.35** (5.84)	-12.52*** (4.21)	-15.89*** (4.06)	-15.21*** (3.63)
Age 25-29	5.41 (9.68)	1.27 (6.97)	7.43 (6.58)	2.18 (4.99)	5.16 (6.09)
Age 30-34	-5.23 (16.30)	-4.44 (16.03)	7.95 (11.37)		
Age 35-39	0.40 (12.83)				
N	510	510	765	765	1,020
Mean dep. var.	1,916	1,775	1,784	1,419	1,417

Notes: Coefficients from OLS regressions of completed fertility on the average unemployment rate at different periods of women's fertile lifecycles are displayed. The data is aggregated by women's state and year of birth, hence only U.S. born women are included. All regressions include indicator variables for women's state and year of birth. The unemployment rate refers to the weighted average unemployment rate across states where women from the relevant cohort gave birth, with the number of births as weights. Standard errors are shown in parenthesis and are clustered by state of birth. Observations are weighted by cohort size. See Fig. S4 for an illustration of the included birth cohorts and Materials and Methods for definitions of completed fertility rates. Significance levels: *:p<0.1, ** p<0.5; *** p<0.01.

Table S7: Long-run effect of the unemployment rate at different ages on the percent of childless non African-American women

Dependent variable Incl. cohorts '61-'70	Percent childless non African-American women at				
	age 40 (1)	age 35 (2)	age 30 (3)	age 25 (4)	age 20 (5)
Effect of average unemployment rate at					
Age 15-19	0.34 (0.30)	0.29 (0.28)	0.08 (0.25)	0.35* (0.18)	0.44*** (0.12)
Age 20-24	0.57** (0.23)	0.59*** (0.21)	0.69*** (0.23)	0.43** (0.19)	-0.07 (0.12)
Age 25-29	-0.06 (0.40)	0.05 (0.31)	0.05 (0.23)		
Age 30-34	0.49 (0.57)	0.37 (0.52)			
Age 35-39	0.09 (0.58)				
N	510	510	510	510	510
Mean dep. var.	19.22	22.81	33.03	52.89	76.95

Table S8: Long-run effect of the unemployment rate at different ages on the percent of childless women across different cohorts.

Dependent variable	Percent of childless women at				
	age 40	age 35		age 30	
Incl. cohorts	'61-'70	'61-'70	'61-'75	'61-'75	'61-'80
	(1)	(2)	(3)	(4)	(5)
Effect of average unemployment rate at					
Age 15-19	0.34 (0.25)	0.33 (0.24)	0.13 (0.18)	0.14 (0.19)	0.06 (0.12)
Age 20-24	0.51** (0.20)	0.55*** (0.18)	0.37** (0.14)	0.72*** (0.14)	0.66*** (0.14)
Age 25-29	-0.06 (0.33)	0.09 (0.28)	-0.23 (0.23)	-0.03 (0.19)	-0.17 (0.20)
Age 30-34	0.27 (0.54)	0.20 (0.53)	-0.33 (0.32)		
Age 35-39	-0.01 (0.46)				
N	510	510	765	765	1,020
Mean dep. var.	18.44	21.55	21.53	31.28	31.82

Notes: Coefficients from OLS regressions of the percent of childless women on the average unemployment rate at different periods of women's fertile lifecycles are displayed. See notes under Table 2 for further explanations. Significance levels: *:p<0.1, ** p<0.5; *** p<0.01.

Table S9: Long-term effect on maternal composition and health at birth

Dependent variable (prior to age 40)	Average age at conception	Percent African- American mothers	Percent low birth weight babies		
	(1)	(2)	(3)	(4)	(5)
Effect of average unemployment rate at					
Age 15-19	0.05*** (0.02)	-0.84** (0.32)	-0.08*** (0.02)	-0.06*** (0.02)	-0.01 (0.02)
Age 20-24	0.03 (0.02)	-0.33 (0.33)	-0.04* (0.02)	-0.02 (0.02)	-0.01 (0.02)
Age 25-29	0.06* (0.03)	-0.55 (0.65)	-0.10** (0.05)	-0.08** (0.04)	-0.05 (0.04)
Age 30-34	0.10* (0.05)	-0.95 (0.66)	-0.06 (0.06)	-0.02 (0.05)	0.02 (0.04)
Age 35-39	0.06 (0.04)	-0.15 (0.82)	-0.07 (0.06)	-0.04 (0.05)	-0.06 (0.05)
Controls:					
Maternal age, gender, parity				Yes	
Fraction African-American mothers					Yes
N	510	510	510	510	510
Mean dep. var.	25.36	16.80		6.11	

Notes: As in previous regressions the data is aggregated by women's own state of birth and year of birth. All birth cohorts from 1961-1970 are included. The dependent variable in column (1) is women's age at conception averaged across all conceptions in a cohort prior to age 40; in column (2) the percent of all mothers in a cohort that are African-American; in column (3) to (5) the percent of all babies conceived in a cohort prior to age 40 that are low birth weight (<2500g). The unemployment rate refers to the weighted average unemployment rate across states where women in a particular year of birth and state of birth cohorts subsequently gave birth, with the number of births as weights. All regressions include indicator variables for women's state and year of birth. Standard errors are shown in parenthesis and are clustered by state of birth. Significance levels: *:p<0.1, ** p<0.5; *** p<0.01.

Table S10: Long-term effect on socio-economic outcomes

Dependent variable (at age 39)	Percent women never married (1)	Years of education (2)	Log family income (5)
Effect of average unemployment rate at			
Age 15-19	-0.04 (0.28)	-0.022 (0.017)	0.017 (0.011)
Age 20-24	0.64** (0.24)	-0.004 (0.017)	0.006 (0.013)
Age 25-29	-0.17 (0.50)	-0.012 (0.035)	0.034 (0.024)
Age 30-34	-0.49 (0.50)	0.050 (0.045)	0.002 (0.022)
Age 35-39	0.12 (0.66)	-0.043 (0.050)	-0.035 (0.024)
N	510	510	510
Mean dep. var.	15.84	13.47	10.73

Notes: As in previous regressions the data is aggregated by women's own state of birth and year of birth. All birth cohorts from 1961-1970 are included. The data is obtained from the 2000 Census and the 2001-2009 American Community Survey (ACS). Women's state of birth is reported in the ACS which allows us to replicate the specification used for the analysis of completed fertility. The unemployment rate refers to the weighted average unemployment rate across states where women in a particular year of birth and state of birth cohorts subsequently gave birth, with the number of births as weights. All regressions include indicator variables for women's state and year of birth. Standard errors are shown in parenthesis and are clustered by state of birth. Observations are weighted by cohort size as reported in the Census/ACS. Significance levels: *: $p < 0.1$, ** $p < 0.05$; *** $p < 0.01$.