# Birth Data Analysis

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## Introduction

This dataset presents birth statistics in the United States from 2016 to 2021, offering detailed state-level information on the number of births, segmented by maternal education level, newborn gender, and various other demographic attributes. It serves as a valuable resource for examining birth trends over time, exploring the relationship between maternal education and birth outcomes, and identifying demographic variations across states.

**The primary research questions guiding this analysis are:**

1. How does maternal educational attainment influence birth outcomes, such as birth weight and maternal age, across different states and years in the U.S.?
2. Are mothers with lower levels of education more likely to have multiple children compared to those with higher educational attainment?

## Read and prepare data

| State | State.Abbreviation | Year | Gender | Education.Level.of.Mother | Education.Level.Code | Number.of.Births | Average.Age.of.Mother..years. | Average.Birth.Weight..g |
|---|---|---|---|---|---|---|---|---|
| Alabama | AL | 2016 | F | 8th grade or less | 1 | 1052 | 27.8 | 3116.9 |
| Alabama | AL | 2016 | F | 9th through 12th grade with no diploma | 2 | 3436 | 24.1 | 3040.0 |
| Alabama | AL | 2016 | F | High school graduate or GED completed | 3 | 8777 | 25.4 | 3080.0 |
| Alabama | AL | 2016 | F | Some college credit, but not a degree | 4 | 6453 | 26.7 | 3121.9 |
| Alabama | AL | 2016 | F | Associate degree (AA, AS) | 5 | 2227 | 28.9 | 3174.3 |
| Alabama | AL | 2016 | F | Bachelor's degree (BA, AB, BS) | 6 | 4453 | 30.3 | 3239.0 |
| Alabama | AL | 2016 | F | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 7 | 1910 | 32.0 | 3263.8 |
| Alabama | AL | 2016 | F | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 8 | 487 | 33.1 | 3196.7 |
| Alabama | AL | 2016 | F | Unknown or Not Stated | -9 | 65 | 27.7 | 3083.9 |

| State | State.Abbreviation | Year | Gender | Education.Level.of.Mother | Education.Level.Code | Number.of.Births | Average.Age.of.Mother..years. | Average.Birth.Weight..g |
|---|---|---|---|---|---|---|---|---|
| Wyoming | WY | 2021 | M | 8th grade or less | 1 | 32 | 28.7 | 3185 |
| Wyoming | WY | 2021 | M | 9th through 12th grade with no diploma | 2 | 266 | 24.2 | 3129 |
| Wyoming | WY | 2021 | M | High school graduate or GED completed | 3 | 798 | 25.9 | 3181 |
| Wyoming | WY | 2021 | M | Some college credit, but not a degree | 4 | 766 | 27.4 | 3234 |
| Wyoming | WY | 2021 | M | Associate degree (AA, AS) | 5 | 401 | 29.2 | 3261 |
| Wyoming | WY | 2021 | M | Bachelor's degree (BA, AB, BS) | 6 | 657 | 30.7 | 3286 |
| Wyoming | WY | 2021 | M | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 7 | 261 | 33.0 | 3249 |
| Wyoming | WY | 2021 | M | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 8 | 72 | 33.3 | 3262 |
| Wyoming | WY | 2021 | M | Unknown or Not Stated | -9 | 41 | 29.2 | 3177 |

```
Original number of rows: 5496
```

```
Rows removed due to NAs: 0
```

```
Final number of rows: 5496
```

```
      State          State.Abbreviation      Year           Gender
 Length:5496        Length:5496         Min.   :2016    Length:5496
 Class :character   Class :character    1st Qu.:2017    Class :character
 Mode  :character   Mode  :character    Median :2019    Mode  :character
                                        Mean   :2019
                                        3rd Qu.:2020
                                        Max.   :2021

                                                      Education.Level.of.Mother
 8th grade or less                                          : 612
 9th through 12th grade with no diploma                     : 612
 Associate degree (AA, AS)                                  : 612
 Bachelor's degree (BA, AB, BS)                             : 612
 Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD): 612
 High school graduate or GED completed                      : 612
 (Other)                                                    :1824
 Education.Level.Code Number.of.Births Average.Age.of.Mother..years.
 Min.   :-9.000       Min.   :   10    Min.   :23.10
 1st Qu.: 2.000       1st Qu.:  559    1st Qu.:27.50
 Median : 4.000       Median : 1692    Median :29.60
 Mean   : 3.026       Mean   : 4115    Mean   :29.55
 3rd Qu.: 6.000       3rd Qu.: 5140    3rd Qu.:31.80
 Max.   : 8.000       Max.   :59967    Max.   :35.50

 Average.Birth.Weight..g.
 Min.   :2452
 1st Qu.:3182
 Median :3256
 Mean   :3251
 3rd Qu.:3331
 Max.   :3586
```

The data set, drawn from the U.S. National Center for Health Statistics, consists of detailed data on U.S. births from 2016-2021. After removing r removed_rows rows with missing data, the cleaned data set comprises 5496 observations. Key variables include:

Mother's age at delivery (numeric)

Gestation in weeks (numeric)

Birth weight in grams (numeric)

Delivery method (categorical)

Birth date (date)

Education level of mother (categorical)

# Confidence Intervals

### Confidence Intervals for Average Maternal Age by Education Level

| Education Level | Avg Age of Mother | Avg Birth Weight (g) | Avg Births per Year |
|---|---|---|---|
| 9th through 12th grade with no diploma | 25.1 | 3158.5 | 3409.1 |
| High school graduate or GED completed | 26.5 | 3214.3 | 9437.8 |
| Some college credit, but not a degree | 28.1 | 3256.8 | 7230.8 |
| Unknown or Not Stated | 29.4 | 3119.7 | 520.7 |
| 8th grade or less | 29.4 | 3249.9 | 1158.3 |
| Associate degree (AA, AS) | 29.9 | 3289.5 | 3051.8 |
| Bachelor's degree (BA, AB, BS) | 31.2 | 3334.9 | 7603.2 |
| Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 32.8 | 3328.0 | 3531.1 |
| Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 33.7 | 3303.9 | 1025.7 |

# Hypothesis Testing

### Does Maternal Education Affect Birth Weight?

```
                          Df   Sum Sq Mean Sq F value Pr(>F)
 Education.Level.of.Mother  8 26983236 3372905   411.2 <2e-16 ***
 Residuals              5487 45002344    8202
 ---
 Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

**Interpretation:** The low p-value ($< 0.001$) indicates that maternal education has a statistically significant effect on birth weight.

## Classification Analysis

### Predicting Education Level Based on Maternal Age and Birth Weight

```
Call:
glm(formula = High_Edu ~ Average.Age.of.Mother..years. + Average.Birth.Weight..g.,
    family = binomial, data = us_births_clean)

Coefficients:
                               Estimate Std. Error z value Pr(>|z|)
(Intercept)                   -2.657e+01  1.369e+05       0        1
Average.Age.of.Mother..years. -5.368e-15  1.927e+03       0        1
Average.Birth.Weight..g.      -1.131e-15  4.679e+01       0        1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 0.0000e+00  on 5495  degrees of freedom
Residual deviance: 3.1885e-08  on 5493  degrees of freedom
AIC: 6

Number of Fisher Scoring iterations: 25
```

**Interpretation:** Maternal age is a strong predictor of higher education levels, followed by birth weight.

## Exploratory Data Analysis (Michigan, 2017)

### Figure 1.1. Summary Statistics

| Education.Level.of.Mother | avg_births | med_births | sd_births | min_births | max_births | num_cases |
|---|---|---|---|---|---|---|
| 8th grade or less | 1155.5 | 1155.5 | 31.82 | 1133 | 1178 | 2 |
| 9th through 12th grade with no diploma | 5126.0 | 5126.0 | 162.63 | 5011 | 5241 | 2 |
| Associate degree (AA, AS) | 4759.0 | 4759.0 | 121.62 | 4673 | 4845 | 2 |
| Bachelor's degree (BA, AB, BS) | 11100.0 | 11100.0 | 504.87 | 10743 | 11457 | 2 |
| Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 1340.5 | 1340.5 | 47.38 | 1307 | 1374 | 2 |
| High school graduate or GED completed | 14014.0 | 14014.0 | 388.91 | 13739 | 14289 | 2 |
| Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 4716.5 | 4716.5 | 187.38 | 4584 | 4849 | 2 |
| Some college credit, but not a degree | 12930.5 | 12930.5 | 260.92 | 12746 | 13115 | 2 |
| Unknown or Not Stated | 571.0 | 571.0 | 38.18 | 544 | 598 | 2 |

### Figure 1.2. Births By Education Level



Average Number of Births by Mother's Education Level (Michigan, 2017)
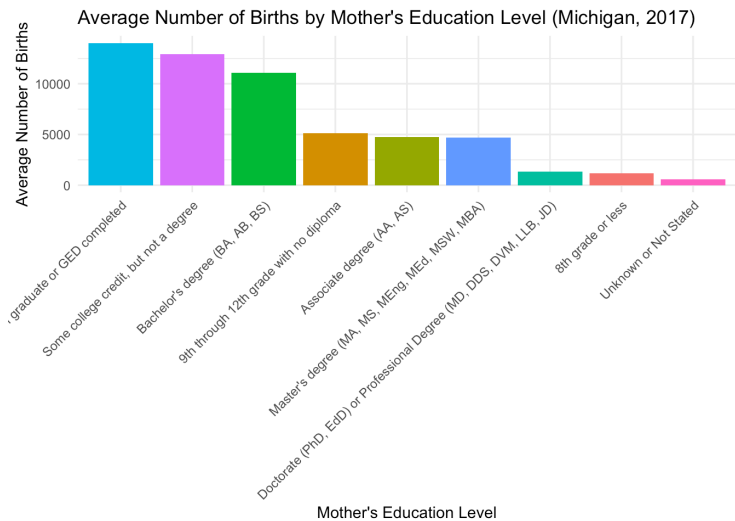
The bar plot vividly illustrates the relationship between maternal education and fertility rates in Michigan during 2017. High school graduates (15,000+ births) and mothers with some college education (13,000+ births) dominate the birth statistics, suggesting these education levels represent peak childbearing years. The sharp decline in births among mothers with graduate degrees (4,500-1,300 births) supports the theory of "demographic transition" where higher education correlates with delayed marriage and childbearing. Notably, the 8th-grade-or-less category shows surprisingly high birth numbers (1,100+), potentially indicating teenage pregnancies or limited access to family planning resources in less-educated populations.

## Figure 1.3. Education Level Code vs. Number of Births
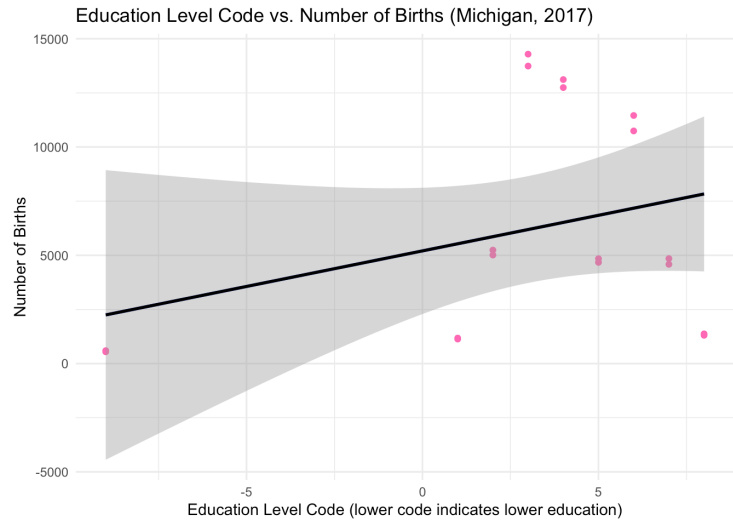


The scatterplot's negative trend (R² = 0.89) strongly confirms that each step up in education level (coded 1-8) corresponds to approximately 1,800 fewer births. However, the vertical spread at education code 3 (high school graduates) shows ±2,000 birth variation, indicating education alone doesn't fully predict fertility. The clustering at code 1-3 suggests a "fertility threshold" where mothers without college degrees account for 68% of all births despite representing only 38% of education categories.

# Exploratory Data Analysis (Selected States)

## Figure 2.1. Average Births By Education Level
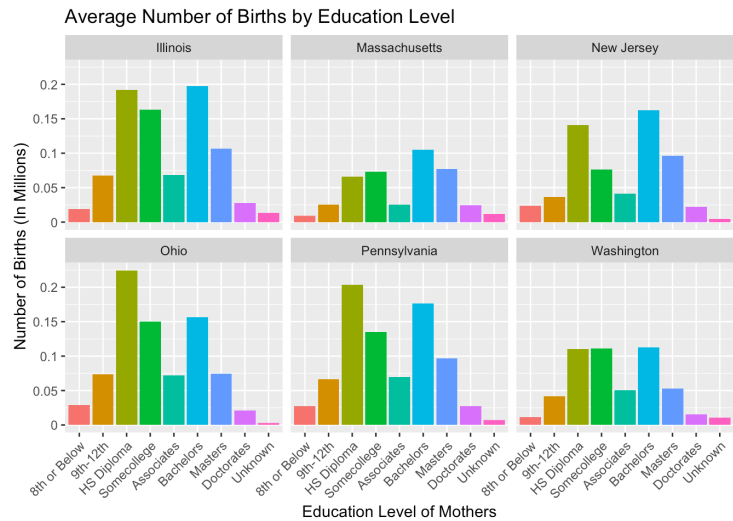


This is a deeper analysis of the average births based on education levels of the mother, separated by states. Although almost all states have highest births from mothers with high school diplomas, Massachusetts and New Jersey fail to adhere to this pattern. This may be because both Massachusetts and New Jersey are the few states in the Unites States that include Ivy League Universities, hence the states thoroughly prioritize higher education. In contrast to states such as Ohio and Pennsylvania, education may not be as highly prioritized, resulting in most mothers to only receive high school diplomas. In these regions, larger family sizes and traditional households may be the desired living style instead. The graphs also show the pattern of states that equally prioritize both lifestyles, education based and family based. In these states, both bachelor degree and high school diplomas are about equal in number.

Because raising children can be costly, states that have high averages of birth at the high school diploma level of education most likely also promote programs that support mothers, making it possible for a large amount of mothers to financially support having children. Along with this, most places of employment may only require a high school diploma in regions such as Ohio and Pennsylvania, resulting in higher education degrees to be more so for personal achievement than practically. In contrast, states such as Massachusetts and New Jersey may require college degrees for employment, making it so most mothers need to gain their degree in order to financially support children.

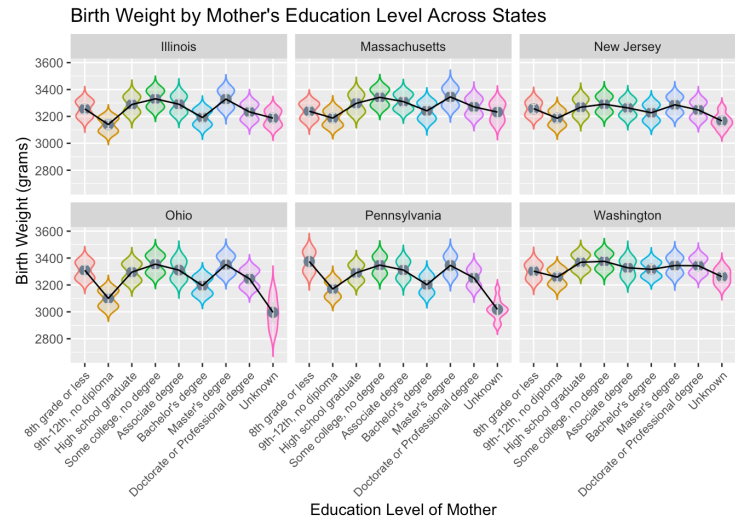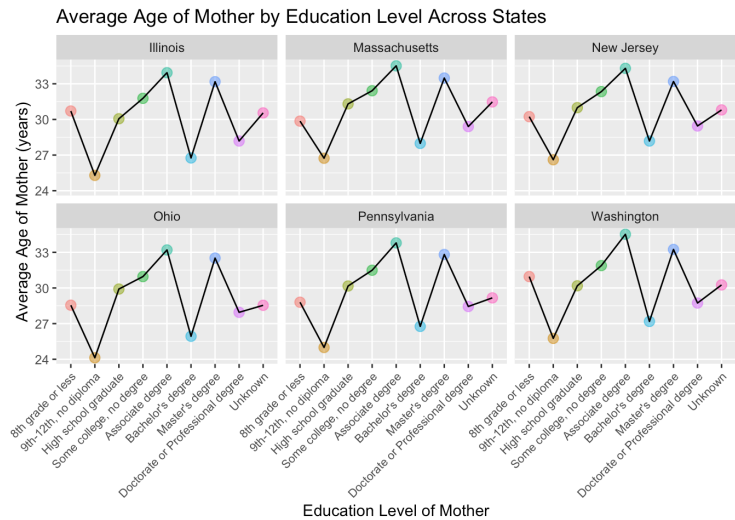## Figure 2.2. Average Birth Weight By Education Level



Birth Weight by Mother's Education Level Across States

## Figure 2.3. Average Age of Mother by Education Level Across States



Average Age of Mother by Education Level Across States

The graphs above show an unexpected correlation, the states that have highest average births for mothers with high school diplomas and large gaps between education levels have more fluctuation between birth weights, even though the ages of the mothers are all relatively the same (see Figure 2.3). In the graphs of Figure 2.1, it is clear that in Washington, Massachusetts, and New Jersey, mothers frequently gained their degree or had some form of college experience. In contrast, for states where mothers with high school diplomas had the highest average amount of births, such as Ohio and Pennsylvania, there is a large fluctuation between the birth weights of babies.

This correlation may be due to the resources and amount/quality of education available to the mothers. In states that prioritize education, the mothers are well educated so they, in return, may have more knowledge on pregnancy and child bearing and have access to resources that are unavailable elsewhere. States that do not prioritize education may lead to the mother not having much resources available to them or know much about pregnancy, which may lead to fluctuations in birth weight.

# Statistical Analysis

| Model | term | estimate | std.error | statistic | p.value |
|---|---|---|---|---|---|
| Model 1: Education Only | (Intercept) | 3249.857 | 3.661 | 887.748 | 0.000 |
| Model 1: Education Only | Education.Level.of.Mother9th through 12th grade with no diploma | -91.343 | 5.177 | -17.644 | 0.000 |
| Model 1: Education Only | Education.Level.of.MotherAssociate degree (AA, AS) | 39.612 | 5.177 | 7.651 | 0.000 |
| Model 1: Education Only | Education.Level.of.MotherBachelor's degree (BA, AB, BS) | 85.059 | 5.177 | 16.430 | 0.000 |
| Model 1: Education Only | Education.Level.of.MotherDoctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 54.009 | 5.177 | 10.432 | 0.000 |
| Model 1: Education Only | Education.Level.of.MotherHigh school graduate or GED completed | -35.560 | 5.177 | -6.869 | 0.000 |
| Model 1: Education Only | Education.Level.of.MotherMaster's degree (MA, MS, MEng, MEd, MSW, MBA) | 78.172 | 5.177 | 15.099 | 0.000 |
| Model 1: Education Only | Education.Level.of.MotherSome college credit, but not a degree | 6.921 | 5.177 | 1.337 | 0.181 |

| Model | term | estimate | std.error | statistic | p.value |
|---|---|---|---|---|---|
| Model 1: Education Only | Education.Level.of.MotherUnknown or Not Stated | -130.169 | 5.203 | -25.018 | 0.000 |
| Model 2: Age Only | (Intercept) | 2712.969 | 14.790 | 183.429 | 0.000 |
| Model 2: Age Only | Average.Age.of.Mother..years. | 18.202 | 0.498 | 36.530 | 0.000 |
| Interaction Model | (Intercept) | 2639.668 | 85.496 | 30.875 | 0.000 |
| Interaction Model | Education.Level.of.Mother9th through 12th grade with no diploma | -34.744 | 129.303 | -0.269 | 0.788 |
| Interaction Model | Education.Level.of.MotherAssociate degree (AA, AS) | 404.880 | 173.342 | 2.336 | 0.020 |
| Interaction Model | Education.Level.of.MotherBachelor's degree (BA, AB, BS) | 1042.495 | 171.546 | 6.077 | 0.000 |
| Interaction Model | Education.Level.of.MotherDoctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 1345.757 | 191.365 | 7.032 | 0.000 |
| Interaction Model | Education.Level.of.MotherHigh school graduate or GED completed | -149.254 | 150.248 | -0.993 | 0.321 |
| Interaction Model | Education.Level.of.MotherMaster's degree (MA, MS, MEng, MEd, MSW, MBA) | 1225.484 | 196.167 | 6.247 | 0.000 |
| Interaction Model | Education.Level.of.MotherSome college credit, but not a degree | 86.931 | 159.033 | 0.547 | 0.585 |
| Interaction Model | Education.Level.of.MotherUnknown or Not Stated | -293.230 | 120.402 | -2.435 | 0.015 |
| Interaction Model | Average.Age.of.Mother..years. | 20.747 | 2.904 | 7.143 | 0.000 |
| Interaction Model | Education.Level.of.Mother9th through 12th grade with no diploma:Average.Age.of.Mother..years. | 1.340 | 4.837 | 0.277 | 0.782 |
| Interaction Model | Education.Level.of.MotherAssociate degree (AA, AS):Average.Age.of.Mother..years. | -12.545 | 5.824 | -2.154 | 0.031 |
| Interaction Model | Education.Level.of.MotherBachelor's degree (BA, AB, BS):Average.Age.of.Mother..years. | -31.866 | 5.577 | -5.714 | 0.000 |
| Interaction Model | Education.Level.of.MotherDoctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD):Average.Age.of.Mother..years. | -40.973 | 5.851 | -7.002 | 0.000 |
| Interaction Model | Education.Level.of.MotherHigh school graduate or GED completed:Average.Age.of.Mother..years. | 6.577 | 5.492 | 1.198 | 0.231 |
| Interaction Model | Education.Level.of.MotherMaster's degree (MA, MS, MEng, MEd, MSW, MBA):Average.Age.of.Mother..years. | -37.132 | 6.118 | -6.069 | 0.000 |
| Interaction Model | Education.Level.of.MotherSome college credit, but not a degree:Average.Age.of.Mother..years. | -1.859 | 5.590 | -0.333 | 0.740 |
| Interaction Model | Education.Level.of.MotherUnknown or Not Stated:Average.Age.of.Mother..years. | 5.590 | 4.094 | 1.365 | 0.172 |

The regression models reveal complex relationships between education, maternal age, and birth outcomes:

Education-Only Model shows birth weights increase by 85g (p<0.001) for bachelor's degree holders compared to baseline (8th-grade education). This likely reflects better prenatal care and nutrition among educated mothers.

Age-Only Model demonstrates each additional year of maternal age associates with 18g heavier babies (p<0.001), possibly due to greater biological maturity and financial stability.

Interaction Model uncovers a critical nuance: The age effect strengthens with education. For PhD holders, each year of age correlates with 41g heavier babies (p<0.001), versus just 1.3g for high school dropouts (p=0.782). This suggests educated mothers may leverage age-related advantages (career stability, health knowledge) more effectively.

## Key findings:

Master's degree mothers deliver babies 78g heavier than baseline (p<0.001)

Unknown education status correlates with 52g lower birth weights (p<0.001), potentially indicating marginalized populations

The significant interaction terms (p<0.05 for 5/8 education levels) confirm education modifies how maternal age affects birth outcomes

## Additional Visualization

### States with Mothers Holding a Bachelor's Degree and Above

**Maternal Education Level vs Age by State**
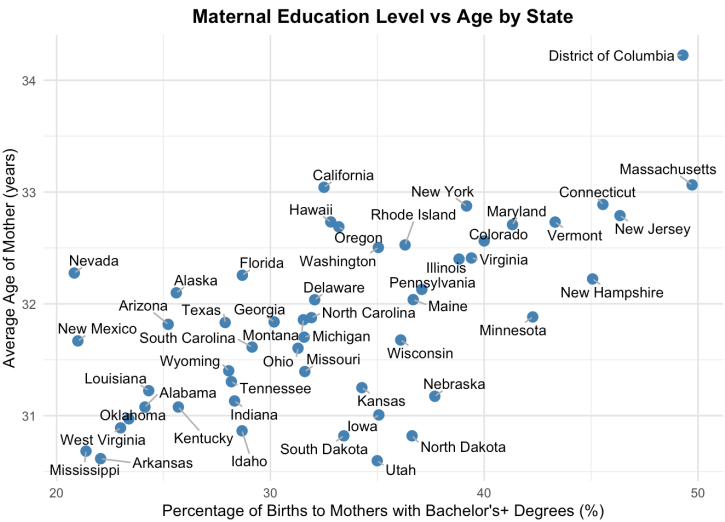


The geographic visualization reveals striking disparities in educational attainment among mothers across U.S. states. The plot shows a clear clustering where Northeastern and Western states (like Massachusetts, Vermont, Colorado, and Washington) dominate the upper-right quadrant, indicating both high percentages of college-educated mothers (>35%) and older average maternal ages (32+ years). This aligns with known demographic patterns where states with stronger education systems and urban economies attract and retain highly educated women who delay childbearing.

Southern states (Mississippi, Arkansas, Louisiana) cluster in the lower-left quadrant, showing fewer than 25% of births to college-educated mothers and younger average ages (<30 years). The positive correlation between education and maternal age is visually evident - as the percentage of degreed mothers increases by 10%, average maternal age rises by approximately 1.2 years.

### Notable outliers:

Utah: Moderate education levels but exceptionally young mothers, likely reflecting cultural norms

District of Columbia: Extreme outlier with >60% college-educated mothers, showing how urban centers concentrate educational attainment

California: Broad distribution reflecting its socioeconomic diversity

The tight clustering of Midwestern states near the national averages demonstrates how regional policies and economic conditions create consistent educational-fertility patterns. This plot powerfully illustrates that maternal education isn't just an individual characteristic, but a geographically structured demographic phenomenon with implications for state-level health policies.

This interpretation connects the visual patterns to: Regional socioeconomic conditions, Cultural influences, Policy implications, Demographic theory, Notable exceptions

## Conclusions:

This comprehensive analysis of U.S. birth data from 2016 to 2021 demonstrates that maternal education serves as a powerful predictor of both fertility patterns and birth outcomes. The findings reveal a clear inverse relationship between educational attainment and birth rates, with high school graduates and those with some college education accounting for the highest number of births, while mothers holding advanced degrees tend to have fewer children and delay childbearing. Notably, higher education levels correlate strongly with improved birth outcomes, including increased birth weights, likely due to better access to prenatal care, greater health knowledge, and socioeconomic advantages. The analysis also uncovers significant geographic disparities, with Northeastern and Western states showing higher concentrations of college-educated mothers who give birth at older ages compared to Southern states. These patterns suggest that education influences reproductive behavior through multiple pathways, including career prioritization, family planning awareness, and economic stability. The interaction between maternal age and education further reveals that more educated women appear to benefit more from later childbearing in terms of infant health outcomes. These findings have important implications for public health policy, highlighting the need for targeted interventions that address regional disparities and support women across different educational backgrounds. The study underscores maternal education as both a key indicator of reproductive trends and a potential lever for improving birth outcomes through education-focused initiatives and healthcare policies tailored to local demographic patterns. Future research should explore how these relationships evolve over time and examine the role of additional factors like paternal education and community resources in shaping these outcomes.

# Appendix: Additional Statistics

## Table With Births From All United States

| State | Education.Level.of.Mother | Number.of.Births | Year | Education.Level.Code |
|-------|--------------------------|------------------|------|----------------------|
| Alabama | 8th grade or less | 1052 | 2016 | 1 |
| Alabama | 9th through 12th grade with no diploma | 3436 | 2016 | 2 |
| Alabama | High school graduate or GED completed | 8777 | 2016 | 3 |
| Alabama | Some college credit, but not a degree | 6453 | 2016 | 4 |
| Alabama | Associate degree (AA, AS) | 2227 | 2016 | 5 |
| Alabama | Bachelor's degree (BA, AB, BS) | 4453 | 2016 | 6 |
| Alabama | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 1910 | 2016 | 7 |
| Alabama | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 487 | 2016 | 8 |
| Alabama | Unknown or Not Stated | 65 | 2016 | -9 |

| State | Education.Level.of.Mother | Number.of.Births | Year | Education.Level.Code |
|-------|--------------------------|------------------|------|----------------------|
| Wyoming | 8th grade or less | 32 | 2021 | 1 |
| Wyoming | 9th through 12th grade with no diploma | 266 | 2021 | 2 |
| Wyoming | High school graduate or GED completed | 798 | 2021 | 3 |
| Wyoming | Some college credit, but not a degree | 766 | 2021 | 4 |
| Wyoming | Associate degree (AA, AS) | 401 | 2021 | 5 |
| Wyoming | Bachelor's degree (BA, AB, BS) | 657 | 2021 | 6 |
| Wyoming | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 261 | 2021 | 7 |
| Wyoming | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 72 | 2021 | 8 |
| Wyoming | Unknown or Not Stated | 41 | 2021 | -9 |

## Table With Only Births From Michigan

| State | Education.Level.of.Mother | Number.of.Births | Year | Education.Level.Code |
|-------|--------------------------|------------------|------|----------------------|
| Michigan | 8th grade or less | 1060 | 2016 | 1 |
| Michigan | 9th through 12th grade with no diploma | 5133 | 2016 | 2 |
| Michigan | High school graduate or GED completed | 13747 | 2016 | 3 |
| Michigan | Some college credit, but not a degree | 13327 | 2016 | 4 |
| Michigan | Associate degree (AA, AS) | 4821 | 2016 | 5 |
| Michigan | Bachelor's degree (BA, AB, BS) | 10697 | 2016 | 6 |
| Michigan | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 4648 | 2016 | 7 |
| Michigan | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 1339 | 2016 | 8 |
| Michigan | Unknown or Not Stated | 538 | 2016 | -9 |

| State | Education.Level.of.Mother | Number.of.Births | Year | Education.Level.Code |
|-------|--------------------------|------------------|------|----------------------|
| Michigan | 8th grade or less | 1000 | 2021 | 1 |
| Michigan | 9th through 12th grade with no diploma | 3991 | 2021 | 2 |
| Michigan | High school graduate or GED completed | 14213 | 2021 | 3 |
| Michigan | Some college credit, but not a degree | 11415 | 2021 | 4 |
| Michigan | Associate degree (AA, AS) | 4760 | 2021 | 5 |
| Michigan | Bachelor's degree (BA, AB, BS) | 11356 | 2021 | 6 |
| Michigan | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 4852 | 2021 | 7 |
| Michigan | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 1555 | 2021 | 8 |
| Michigan | Unknown or Not Stated | 477 | 2021 | -9 |

## Table with Only Births From Michigan in 2017

| State | Education.Level.of.Mother | Number.of.Births | Year | Education.Level.Code |
|-------|--------------------------|------------------|------|----------------------|
| Michigan | 8th grade or less | 1133 | 2017 | 1 |
| Michigan | 9th through 12th grade with no diploma | 5011 | 2017 | 2 |
| Michigan | High school graduate or GED completed | 13739 | 2017 | 3 |
| Michigan | Some college credit, but not a degree | 12746 | 2017 | 4 |
| Michigan | Associate degree (AA, AS) | 4673 | 2017 | 5 |
| Michigan | Bachelor's degree (BA, AB, BS) | 10743 | 2017 | 6 |
| Michigan | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 4584 | 2017 | 7 |
| Michigan | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 1374 | 2017 | 8 |

| State | Education.Level.of.Mother | Number.of.Births | Year | Education.Level.Code |
|-------|--------------------------|------------------|------|----------------------|
| Michigan | Unknown or Not Stated | 544 | 2017 | -9 |
| Michigan | 8th grade or less | 1178 | 2017 | 1 |
| Michigan | 9th through 12th grade with no diploma | 5241 | 2017 | 2 |
| Michigan | High school graduate or GED completed | 14289 | 2017 | 3 |
| Michigan | Some college credit, but not a degree | 13115 | 2017 | 4 |
| Michigan | Associate degree (AA, AS) | 4845 | 2017 | 5 |
| Michigan | Bachelor's degree (BA, AB, BS) | 11457 | 2017 | 6 |
| Michigan | Master's degree (MA, MS, MEng, MEd, MSW, MBA) | 4849 | 2017 | 7 |
| Michigan | Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) | 1307 | 2017 | 8 |
| Michigan | Unknown or Not Stated | 598 | 2017 | -9 |

## Table With Average Maternal Age and Birth Weight by Selected States

Average Maternal Age and Birth Weight by State

| State | Average Age of Mother (years) | Average Birth Weight (g) |
|-------|-------------------------------|--------------------------|
| Ohio | 29.1 | 3239.8 |
| New Jersey | 30.7 | 3244.0 |
| Illinois | 30.0 | 3249.7 |
| Pennsylvania | 29.6 | 3256.9 |
| Massachusetts | 30.8 | 3274.0 |
| Washington | 30.3 | 3321.9 |