

# **Natality and Infant Mortality Trends in Connecticut by Race and Ethnicity, 2003-2022**

**Vital Statistics Report**



**Connecticut Department of Public Health**  
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# INTRODUCTION

## Background

The Connecticut Department of Public Health (DPH) updates state vital statistics through the release of annual Registration Reports.<sup>1</sup> Reports comprise two parts: Tables and Narrative. Narratives provide descriptions of selected natality and mortality indicators for Connecticut. Revisions to the content and structure of Report Narratives introduced standardized reporting of rate patterns over time, or trend analyses, through visualizations and narrative interpretation for indicators derived from vital statistics. Since the 2018 Report, trend analysis results have been provided for the largest racial and ethnic groups in Connecticut, as well as the state's entire resident population.<sup>2</sup>

Two main factors drove the 2018 introduction of standardized trend reporting in Report Narratives. First, collaboration amongst DPH analysts to prepare the 2025 State Health Assessment formalized trend assessment reporting, both as a means to capture patterns of persistent and emergent health disparities and as a broader tool to inform state health improvement planning.<sup>3</sup> Second, the recent release of formal guidance from the National Center for Health Statistics (NCHS) on the use of piecewise regression through NCI's Joinpoint software for trend assessment had facilitated its use by public health agencies.<sup>4</sup>

The prominence of standardized trend assessment for surveillance of key health indicators in agency reporting underscores the value and relevance of understanding how patterns change over time to improve the health of Connecticut's residents. Trend assessments are based on statistical modeling, aspects of which can be difficult to convey to some audiences.<sup>5,6</sup> Complexities due to model assumptions and choice are described or assumed understood by readers when trend analysis results are presented in the scientific literature. However, a lack of guidance on effective communication approaches for non-technical readers poses challenges when presenting trend analyses in general agency reporting.

DPH encountered one such challenge when preparing trend analysis results by race and ethnicity for the 2021 Report Narrative. This challenge originates from a 1997 revision to the Standards for the Collection of Federal Data on Race and Ethnicity by the Office of Management and Budget.<sup>3,4</sup> With the new standard, race was expanded from four to five categories and respondents could now choose multiple categories to report race. Connecticut death, birth, and fetal death certificates adopted the 1997 Revised Standard for collection of race and ethnicity data in 2005, 2016, and 2018, respectively. See two fact sheets on this topic for additional information.<sup>7,8</sup> Revision to the race classification warranted assessment of the impacts of race changes on analysis of race trends over time.

The shift from the previous 1977 Standard to the 1997 Revised Standard imposed a change in race classification at data *collection* of vital events which necessitated implementing a new Race and Ethnicity Classification (REC) for data *reporting* in vital statistics. The expansion of race from four to five categories had little impact on vital statistics

reporting by race and ethnicity for Connecticut.\* However, the ability of respondents to choose multiple races with the 1997 Revised Standard effectively created a new race category that did not exist in the previous 1977 Standard. The REC under the previous 1977 Standard, referred to as *Bridged REC*, had collectively included five race and ethnicity reporting groups: four non-Hispanic (NH) race groups (White, Black, Asian, and American Indian/Alaskan Native) and the single ethnicity group of ‘Hispanic’. The new REC based on the 1997 Revised Standard, referred to as *Single and Two or More Race REC* or simply as *Single/TOM REC*, differs from the Bridged REC only by the addition of ‘Two or More Races’ (TOM) as a unique reporting group for non-Hispanic ethnicity. The addition of NH TOM expanded the number of race and ethnicity reporting groups from the five used under Bridged REC (four NH single races and Hispanic) to six (four NH single races, NH TOM, and Hispanic) under the Single/TOM REC.

The change from Bridged to Single/TOM REC also had one other important consequence: it changed the composition of the NH single race groups. Single NH race groups reported in Bridged REC had included either 1) individuals reporting a single race on vital certificates (for data collected before updates to the 1997 Revised Standard to allow for reporting of multiple races), or 2) multiracial individuals artificially bridged to separate single races (for data collected after updates to the 1997 Revised Standard).<sup>7</sup> By contrast, single NH race groups reported based on Single/TOM REC strictly included individuals identifying as a single race even when given the option of reporting multiple races.<sup>7</sup> This change in NH single race group membership was considered a potential assumption violation of trend analysis models for consistent data collection methods over time.<sup>9</sup>

DPH addressed the potential assumption violation by providing trend analysis results in Registration Reports published for data year 2021 onward using the earliest year that both birth and death data could be reported in Single/TOM REC as trend starting points, which is 2016.<sup>8</sup> This decision was based on 1) precedent set by federal reporting standards,<sup>10</sup> 2) prioritization of unambiguous reporting of health indicators according to race groups consistent with current OMB Standards and 3) deterrence of potential reader uncertainty concerning trend assessment results owing to inclusion of pre-2016 rates calculated under the 1977 standard-based single race definitions in analyses.<sup>1</sup>

Despite the value of Report Narratives featuring trend results strictly adherent to the new standard, the potential loss of information and statistical power associated with excluding historical (pre-2016) data was a known limitation. DPH addressed this limitation by evaluating the impact of the REC change on rates of standard natality and infant mortality indicators used in public health reporting. This assessment, results of which are summarized elsewhere,<sup>8</sup> focused on the comparison of rates for focal indicators using both Single/TOM and Bridged REC for the years during which data were available in both Classifications (2016-2019) to calculate Comparability Ratios, similar to a double-coding study approach used by other surveillance systems.<sup>11</sup> Results indicated minimal impacts of the change from Bridged REC to Single/TOM REC on rates for health indicators evaluated for those years. As such, the presentation of

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\* Under the 1997 Revised Standard, the 1977 Standard group of ‘Asian or Pacific Islander’ was separated into ‘Asian’ and ‘Native Hawaiian or Pacific Islander’. DPH combines ‘Asian’ and ‘Native Hawaiian or Pacific Islander’ for purposes of vital statistics reporting which effectively makes this category consistent across OMB Standard versions.

results of trend analyses that included historical data was determined to be justified when accompanied by an explanation of assumptions to guide data consumer's understanding and interpretation.

## Purpose and Scope

The purpose of this report is to supplement reporting trends purely adherent to the new race and ethnicity reporting standard (Single/TOM REC) used in Registration Report Narratives by providing results of long-term trend assessment for selected natality and infant mortality indicators over the entire period 2003-2022. These long-term trend assessments offer the benefit of increased statistical power by including additional data years for trend characterization. They thus may be more useful at capturing emergent trends than those based on data years 2016 and later alone, as published in *Report Narratives*.

Justification for combining annual trend data across the REC change year (2016) in long-term trend analysis of single-race groups is based on the assumption that rates for NH single-race groups calculated based on Bridged REC are the same as the rates for those groups based on Single/TOM REC. Evidence to support this assumption stems from the results of Comparability Ratio assessments for focal health indicators, which found no difference in rates.<sup>8</sup> Although DPH considers such evidence to support this assumption reasonable based on federal guidance, it also recognizes that it is just that – an assumption – and some limitations to the use of Comparability Ratios have been noted.<sup>12</sup> As such, long-term trends assessments results which rely upon this assumption are presented here as a separate report distinct from presentation of short-term trends in *Report Narratives* for purposes of transparency concerning trend-model assumptions.

Short-term trend assessment results accompany those for long-term trends in this report. These trend pattern syntheses are provided together to inform readers of both historical rate trend patterns (i.e. those prior to 2016) and those for recent years (2016-2022) and to underscore any differences, when they exist, in trend interpretation for the period 2016-2022 based on which dataset was used. In summary, this report provides evidence of trends detected only through the inclusion of historical data and, in effect, supports the potential for more comprehensive understanding of natality and infant mortality indicator trends by race and ethnicity than those offered in *Registration Report Narratives* alone.

## Report Content and Organization

The main content of this report is organized into nine Sections, with each Section presenting results of trend assessments for a single natality or infant mortality indicator by race and ethnicity. Sections include indicator descriptions, followed by visualizations of trend patterns. Visualizations show annual rates for selected health indicators over the period 2003-2022<sup>±</sup> with overlays of two fitted trend lines. These two trend lines correspond, separately, to results of analyses for either the combined dataset (2003-2022, whereby annual rates for the period 2003-2015 are classified by Bridged REC 2003-2015 but by Single/TOM REC for the period 2016-2022) or the limited dataset (2016-

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<sup>±</sup> 2005-2022 for Infant Mortality, Neonatal Mortality, and Postneonatal Mortality

2022, all annual rates classified by Single/TOM REC). Supporting narrative interpretation of trend analysis results and a table of annual rates of the respective indicators for each REC are included.

The *Technical Notes* section describes the data collection and statistical modeling approach used in report development, as well as the framework for trend interpretation.



## TECHNICAL NOTES

**Connecticut Vital Event and Population Data.** Data used for trend analyses presented in this report were collected through the national vital statistics system via birth and death registration. These data are maintained by the agency by statutory mandate as the Connecticut birth and death registries. Denominators for population-based rate calculations were sourced from annual population datasets published by DPH.<sup>13,14</sup>

**Race and Ethnicity Classifications.** Rates presented by race and ethnicity in the report were calculated according to one of two possible Race and Ethnicity Classifications (RECs): either *Bridged* or *Single and Two or More Race* (Single/TOM). Single/TOM REC separates individuals who identify as multiple non-Hispanic races from non-Hispanic single-race groups into their own group. Natality and infant mortality indicator data can be classified in Single/TOM REC as far back as 2016, the year of birth certificate update to the 1997 Standard that allows individuals to report multiple races. Natality and infant mortality indicator data are only available in Bridged REC for data years prior to 2016. In 2023, DPH adopted Single/TOM REC for all vital statistics reporting, effective for data year 2020 and later and also retroactively applied Single/TOM REC to 2016-2019 data released for historical reporting purposes.<sup>7</sup>

**Joinpoint Regression Modeling.** We estimated both short-term (2016-2022) and long-term (2003-2022) trends from analysis of annual rates for each indicator-race and ethnicity combination using piecewise regression implemented through Joinpoint software. Application of Joinpoint modeling for Connecticut vital statistic trend analysis is described in annual Registration Report methods.<sup>1</sup> Short-term trend assessments were conducted using annual rates based on Single/TOM REC. Long-term trends were assessed using datasets comprised of rates based on Bridged REC 2003-2015 (2005-2015 for infant mortality indicators) and Single/TOM REC 2016-2022. Accordingly, the “combined” dataset refers to trends in rates 2003-2022 period, whereas the “limited” dataset refers to those based only on 2016-2022 rates.

Short- and long-term trends for indicator-race and ethnicity combinations were modeled in Joinpoint using the Standard Joinpoint model, an approach that assumes uniformity in data collection and coding over the time trend period. We used the Standard model based on failure to reject the null hypothesis (Comparability Ratio = 1) for indicators and non-Hispanic single races evaluated.<sup>15</sup> For one indicator, Early Prenatal Care (PNC), we used the Joinpoint (JP)-Jump model alternative due to the change in the way that data of first prenatal care visit was collected in 2016.<sup>16</sup> The second model type is a feature of Joinpoint introduced in software version 2017 that supports a change in data coding that analysts suspect may alter conclusions of analytical trend assessment absent any true changes to the health indicator itself outside of the coding change.<sup>12,15</sup> It allows for parameterization of piecewise regression models that supports inference surrounding trends across the timepoint at which a coding change occurred. Jump locations in timepoints were specified as 2015.5, corresponding to the midpoint of the years between the change in the early PNC data collection in Connecticut. All Joinpoint models were specified as log-linear and were based on default Joinpoint model settings for selection of minimal spacing between Joinpoints.<sup>4</sup> Joinpoint model selection was based on results of permutation tests for long-term trend assessment and Bayesian Information Criterion for short-term trends, in accordance with Joinpoint modeling guidance.<sup>4</sup>

**Result Interpretation and Presentation.** For each selected model, we interpreted trend based on Annual Percent Change (APC) values for each regression segment, i.e. time periods between Joinpoints in the model. APCs were classified as either increasing (positive valued,  $p < 0.05$ ), decreasing (negative valued,  $p < 0.05$ ), or stable ( $p > 0.05$ ), as generalized from federal reporting guidance and previously applied to trend reporting in Registration Reports.<sup>1</sup> In situations where analysis of the combined (long-term) dataset resulted in a conclusion of an increasing or decreasing trend but analysis of the limited dataset did not, the rate change pattern for the limited dataset was reported as “no statistically significant change”.

For additional information, please contact [DPH.VitalStats@ct.gov](mailto:DPH.VitalStats@ct.gov).

## NATALITY AND INFANT MORTALITY INDICATOR SECTION GUIDANCE

**Figures.** Figures in Sections 1-9 show rates of selected natality and infant mortality indicators 2003-2022 by race and ethnicity, with 2003-2015 using Bridged REC and 2016-2022 using Single/TOM REC. Figures correspond, separately, to the largest race and ethnicity groups in Connecticut: non-Hispanic White (NHW), non-Hispanic Black (NHB), non-Hispanic Asian (NHA), Puerto Rican (PR), and Other Hispanic (OH). Trends for smaller race and ethnicity groups are not provided for infant, neonatal, and post-neonatal mortality or teen birth rates due to consistently poor annual rate reliability. Teen birth and general fertility rates are provided for the entire Hispanic population, rather than separately as PR and OH, due to lack of availability of annual population counts (denominators) for Hispanic subgroups.

Each figure shows two Joinpoint-modeled trend results for a single race-ethnicity group corresponding to 1) trend analysis for only 2016-2022 (**blue lines**), and 2) trend analysis over the entire period 2003-2022, which combines Bridged REC and Single/TOM REC (**yellow lines**). Legends provide model-based estimates of Annual Percent Change (APC) values corresponding to individual trend line segments with an asterisk (\*) to indicate that the change over time is statistically significantly different from zero. The terms *combined* and *limited* refer to trend results for the entire 2003-2022 or 2016-2022 time periods, respectively, in trend descriptions.

**Tables.** Sections 1-9 tables provide annual rates of natality and infant mortality indicators for Connecticut residents, stratified by race and ethnicity and presented separately by REC (either Bridged or Single/TOM). Rates are only available by Bridged REC 2003-2019 and by Single/TOM REC 2016-2022. The four years for which rates are shown for both RECs correspond to the period during which the 1997 Revised Standards for race and ethnicity collection, which allowed individuals to report TOM Races, had been applied to Connecticut birth certificates but the National Center for Health Statistics continued to send bridged (single) race assignments to DPH for individuals that had reported TOM races.

See Technical Notes for more information on rate calculations, Joinpoint trend modeling, and trend pattern interpretation.

## Section 1: Singleton Preterm Birth

Figures 1A-1E and Table 1 show annual rates of preterm birth (infants born before 37 completed weeks gestation) among singleton live births to Connecticut residents 2003-2022 by race and ethnicity. Both datasets show stability in preterm birth rates among the non-Hispanic white, non-Hispanic Asian, Puerto Rican, and Other Hispanic populations, at least since 2016 (Figures 1A, 1C, 1D, 1E). The combined dataset shows an increase in the preterm birth rate among the NHB population since 2014 while the limited dataset shows no statistically significant change (Figure 1B).

Figure 1A. Singleton Preterm Birth: Non-Hispanic White (NHW)

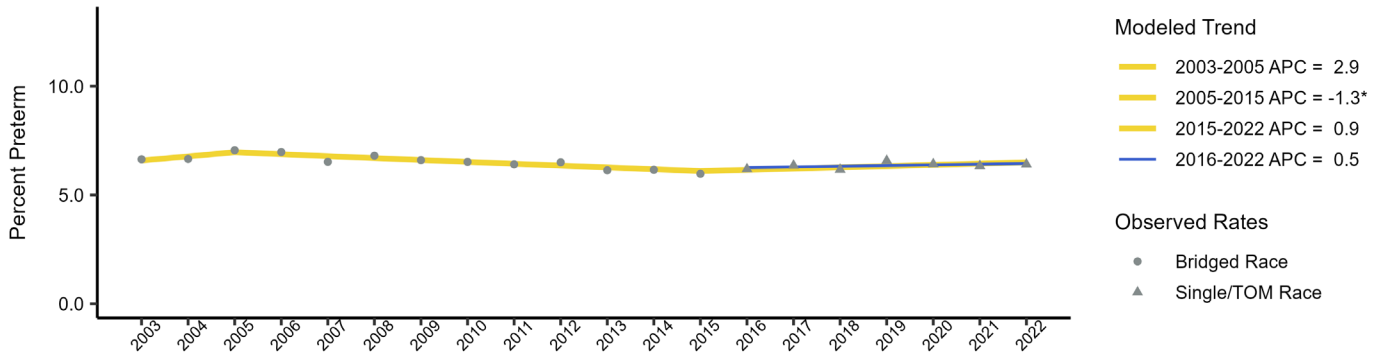


Figure 1B. Singleton Preterm Birth: Non-Hispanic Black (NHB)

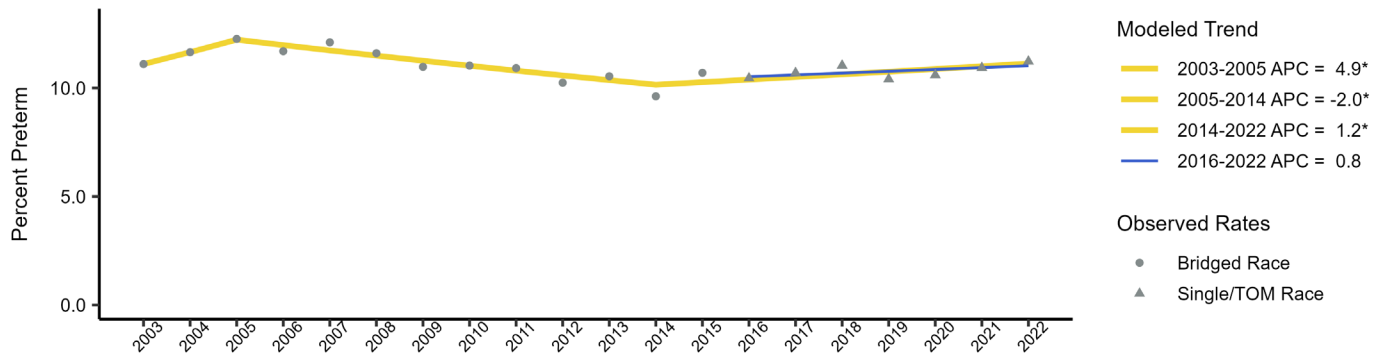


Figure 1C. Singleton Preterm Birth: Non-Hispanic Asian (NHA)

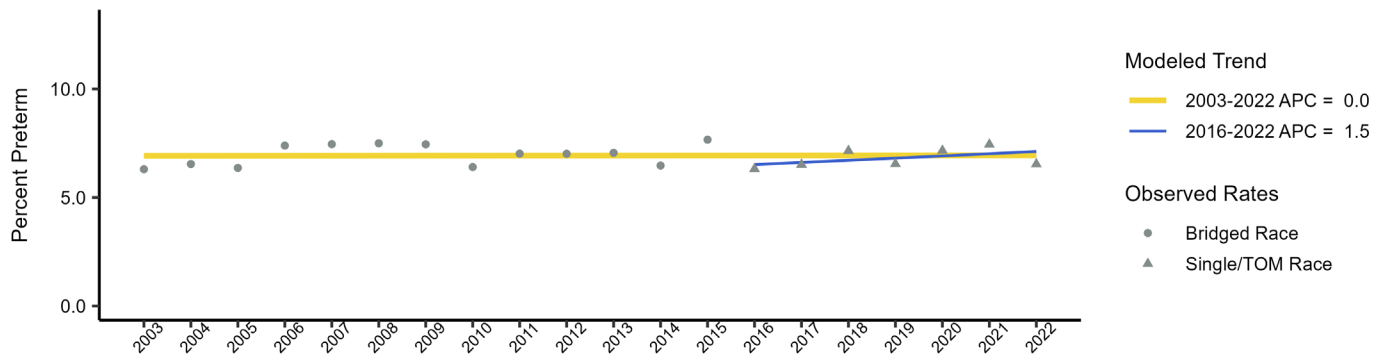


Figure 1D. Singleton Preterm Birth: Puerto Rican (PR)

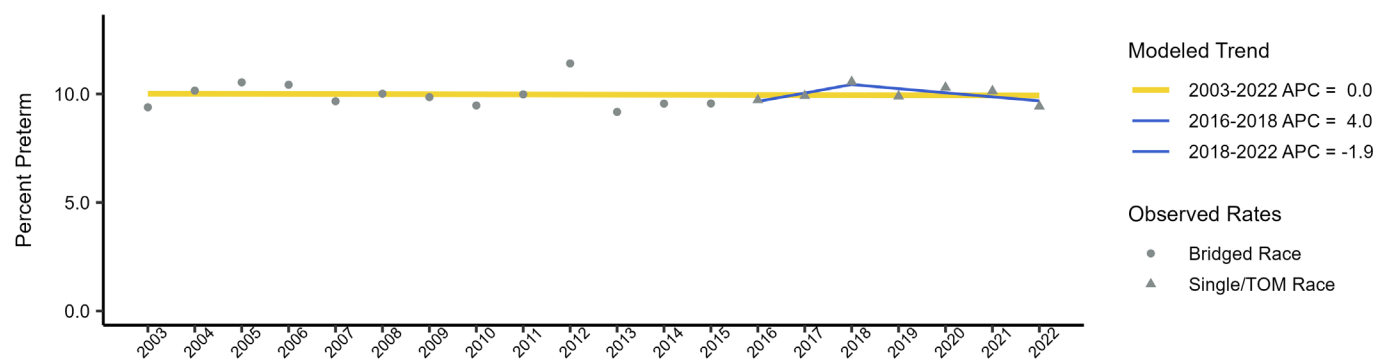


Figure 1E. Singleton Preterm Birth: Other Hispanic (OH)

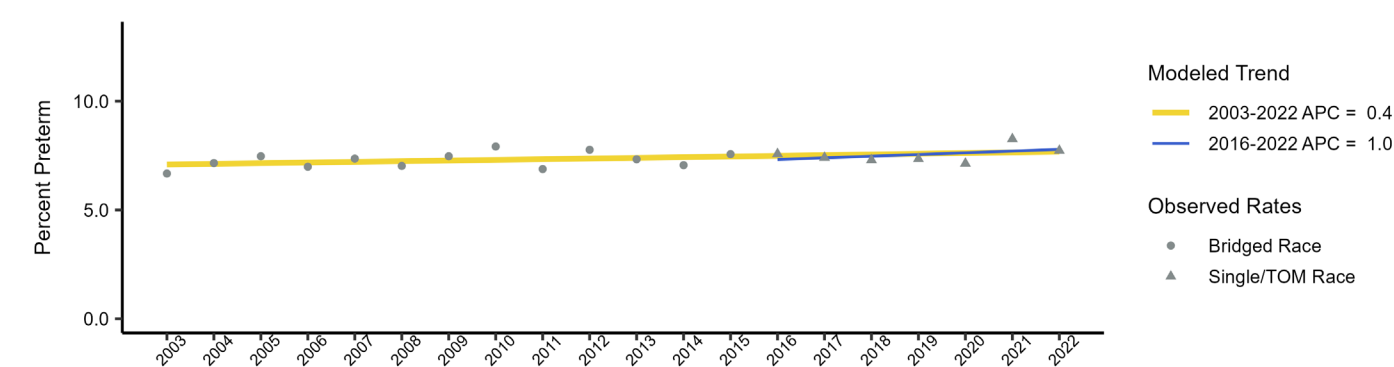


Table 1. Annual Rates of Preterm Birth (%) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2003-2022.

Race and Ethnicity/ Classification	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>NH White</b>																				
Bridged	6.6	6.7	7.1	7.0	6.5	6.8	6.6	6.5	6.4	6.5	6.1	6.2	6.0	6.2	6.4	6.2	6.6			
Single/TOM														6.2	6.4	6.2	6.6	6.4	6.3	6.4
<b>NH Black</b>																				
Bridged	11.1	11.6	12.3	11.7	12.1	11.6	11.0	11.0	10.9	10.2	10.5	9.6	10.7	10.3	10.6	10.7	10.3			
Single/TOM														10.5	10.8	11.1	10.4	10.4	10.9	11.2
<b>NH Asian</b>																				
Bridged	6.3	6.5	6.4	7.4	7.5	7.5	7.5	6.4	7.0	7.0	7.1	6.5	7.7	6.3	6.4	7.4	6.7			
Single/TOM														6.2	6.5	7.0	6.6	7.1	7.2	6.5
<b>Puerto Rican</b>																				
Bridged	9.4	10.2	10.5	10.4	9.7	10.0	9.9	9.5	10.0	11.4	9.2	9.6	9.6	9.7	9.9	10.6	9.9			
Single/TOM														9.7	9.9	10.6	9.9	10.3	10.1	9.4
<b>Other Hispanic</b>																				
Bridged	6.7	7.2	7.5	7.0	7.4	7.0	7.5	7.9	6.9	7.8	7.3	7.1	7.6	7.6	7.4	7.3	7.3			
Single/TOM														7.6	7.4	7.3	7.3	7.1	8.2	7.7

## Section 2. Singleton Low Birthweight

Figures 2A-2E and Table 2 show annual rates of low birthweight (LBW; infants weighing less than 2,500 grams at delivery) among live singleton births to Connecticut residents 2003-2022 by race and ethnicity. Both datasets show stability in LBW rates among the NHW and PR populations (Figures 2A, 2D) and an increase in LBW rates in recent years among the NHB population (Figure 2B). The combined dataset shows a long-term increase in LBW rate among the NHA and OH populations while the limited dataset shows no statistically significant change (Figures 2C, 2E).

Figure 2A. Singleton Low Birthweight: Non-Hispanic White (NHW)

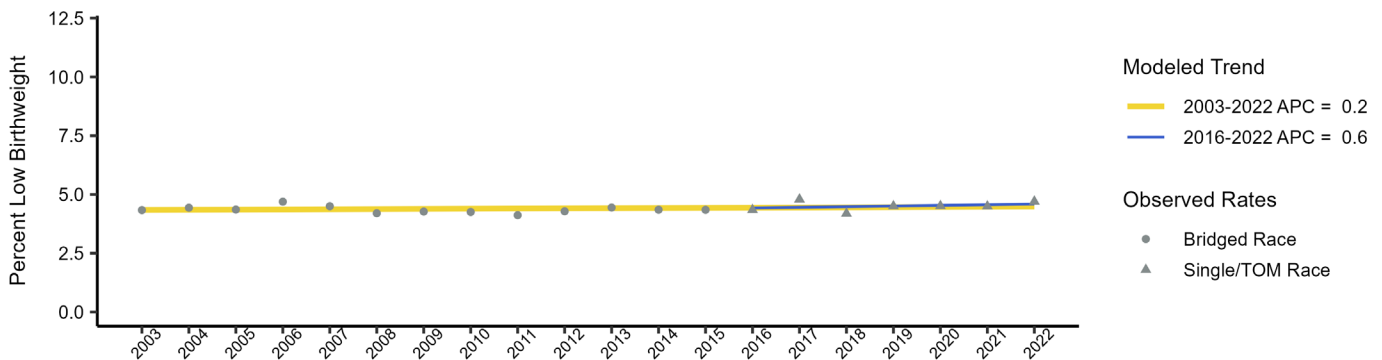


Figure 2B. Singleton Low Birthweight: Non-Hispanic Black (NHB)

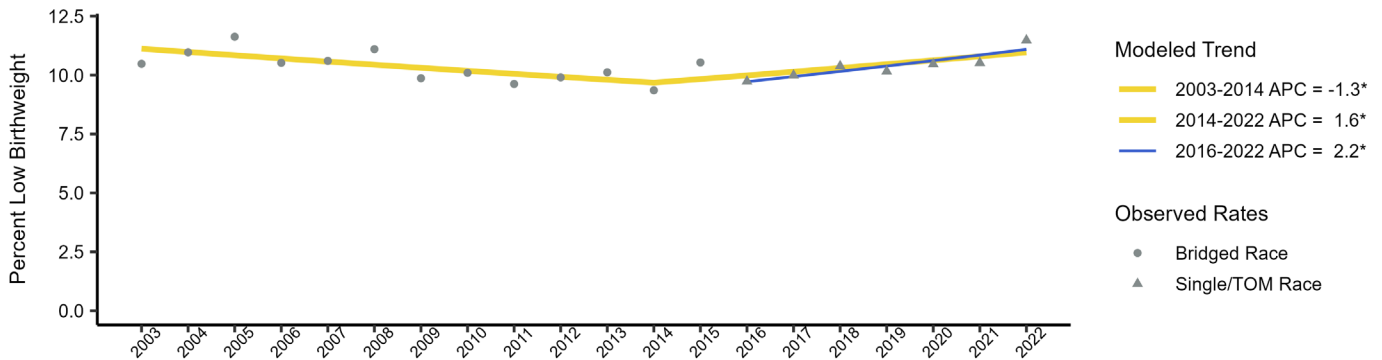


Figure 2C. Singleton Low Birthweight: Non-Hispanic Asian (NHA)

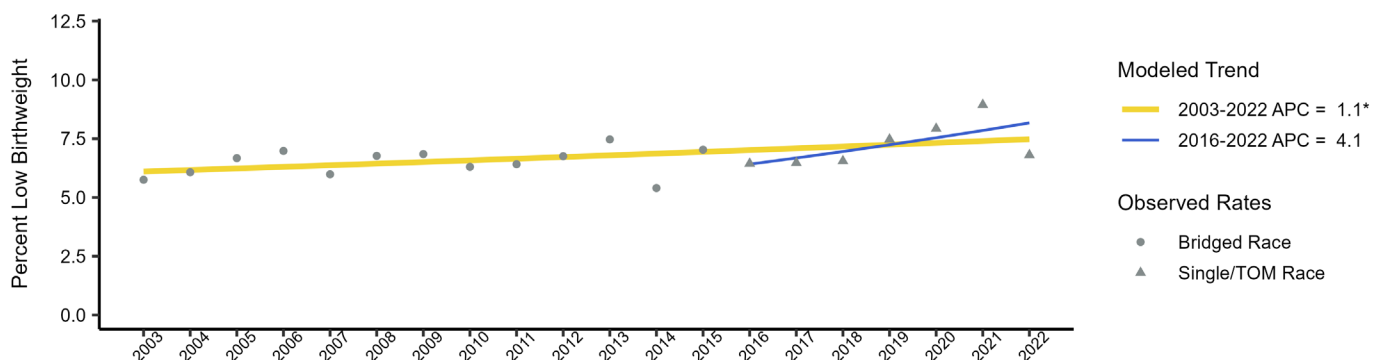


Figure 2D. Singleton Low Birthweight: Puerto Rican (PR)

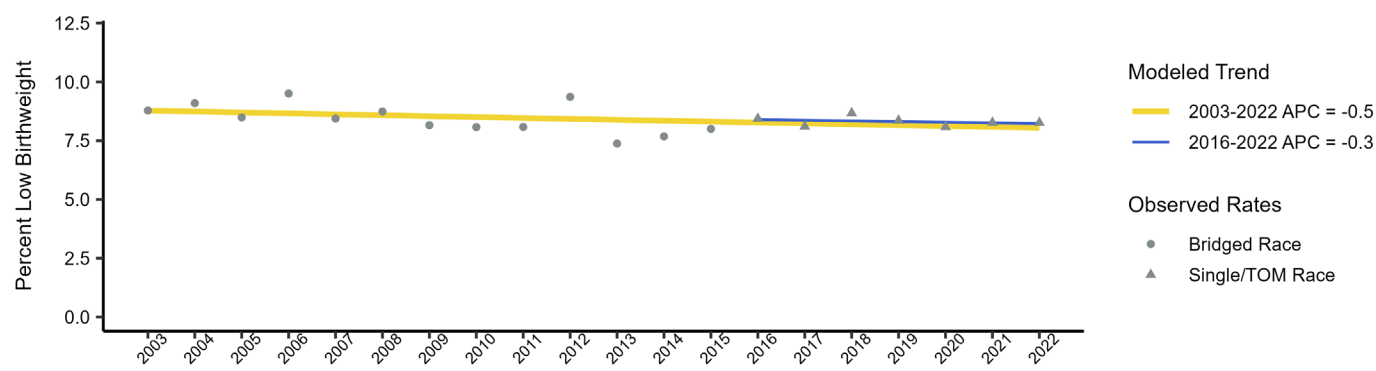


Figure 2E. Singleton Low Birthweight: Other Hispanic (OH)

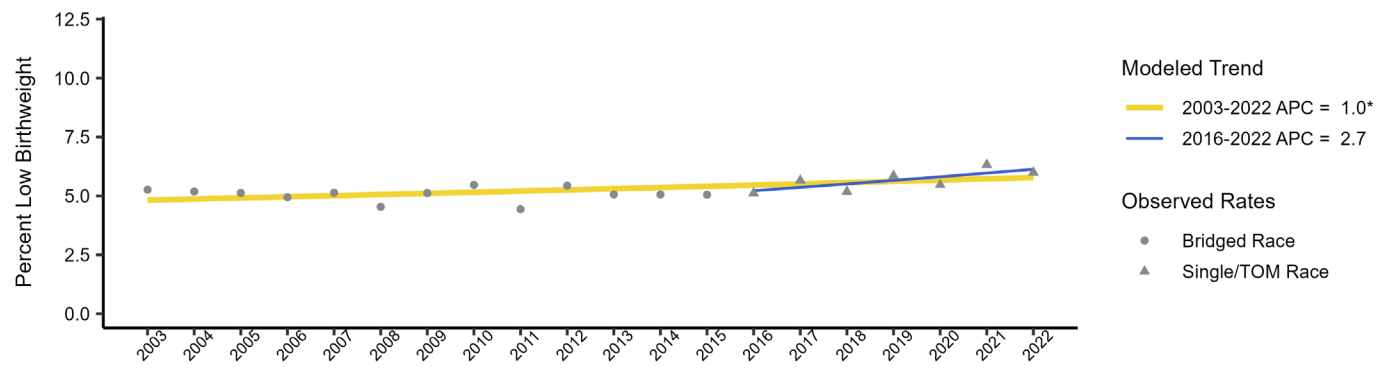




Table 2. Annual Rates of Singleton Low Birthweight (%) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2003-2022.

Race and Ethnicity/ Classification	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>NH White</b>																				
Bridged	4.3	4.4	4.4	4.7	4.5	4.2	4.3	4.3	4.1	4.3	4.4	4.4	4.3	4.3	4.8	4.2	4.5			
Single/TOM														4.3	4.8	4.2	4.5	4.5	4.5	4.7
<b>NH Black</b>																				
Bridged	10.5	11.0	11.6	10.5	10.6	11.1	9.9	10.1	9.6	9.9	10.1	9.4	10.5	9.5	9.9	10.3	10.0			
Single/TOM														9.7	10.0	10.5	10.0	10.4	10.5	11.5
<b>NH Asian</b>																				
Bridged	5.8	6.1	6.7	7.0	6.0	6.8	6.8	6.3	6.4	6.8	7.5	5.4	7.0	6.5	6.5	6.7	7.5			
Single/TOM														6.4	6.5	6.5	7.4	7.9	8.7	6.7
<b>Puerto Rican</b>																				
Bridged	8.8	9.1	8.5	9.5	8.4	8.7	8.2	8.1	8.1	9.4	7.4	7.7	8.0	8.4	8.1	8.7	8.4			
Single/TOM														8.4	8.1	8.7	8.4	8.1	8.3	8.2
<b>Other Hispanic</b>																				
Bridged	5.3	5.2	5.1	4.9	5.1	4.5	5.1	5.5	4.4	5.4	5.1	5.1	5.1	5.1	5.7	5.2	5.9			
Single/TOM														5.1	5.7	5.2	5.9	5.5	6.3	6.0

### Section 3. Singleton Very Low Birthweight

Figures 3A-3E and Table 3 show annual rates of very low birthweight (VLBW; infants weighing less than 1,500 grams at delivery) among live singleton births to Connecticut residents 2003-2022 by race and ethnicity. The combined dataset shows a decrease in VLBW rates over the full 20-year period among the NHW, NHB, and PR populations whereas the limited dataset does not show a statistically significant increase or decrease for these populations (Figures 3A, 3B, 3D). Among the NHA and OH populations, both datasets show stability in VLBW rates (Figures 3C, 3E).

Figure 3A. Singleton Very Low Birthweight: Non-Hispanic White (NHW)

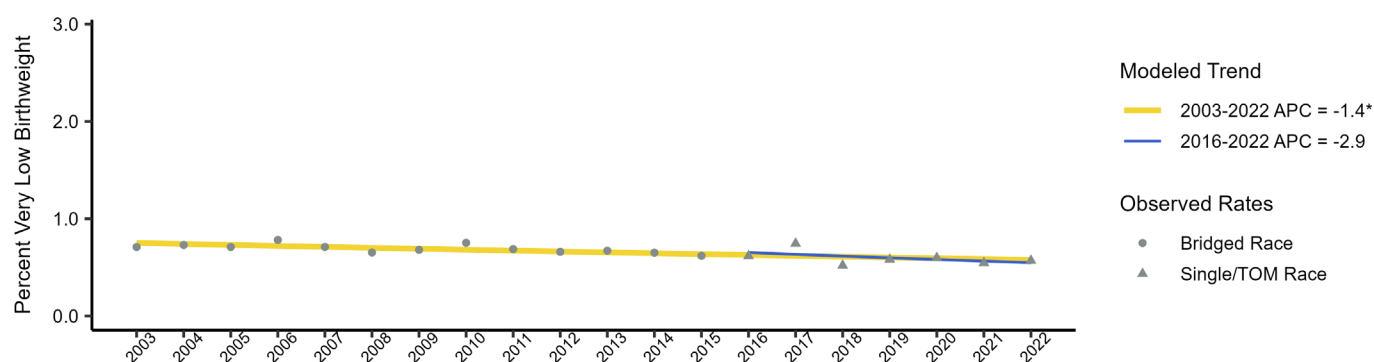


Figure 3B. Singleton Very Low Birthweight: Non-Hispanic Black (NHB)

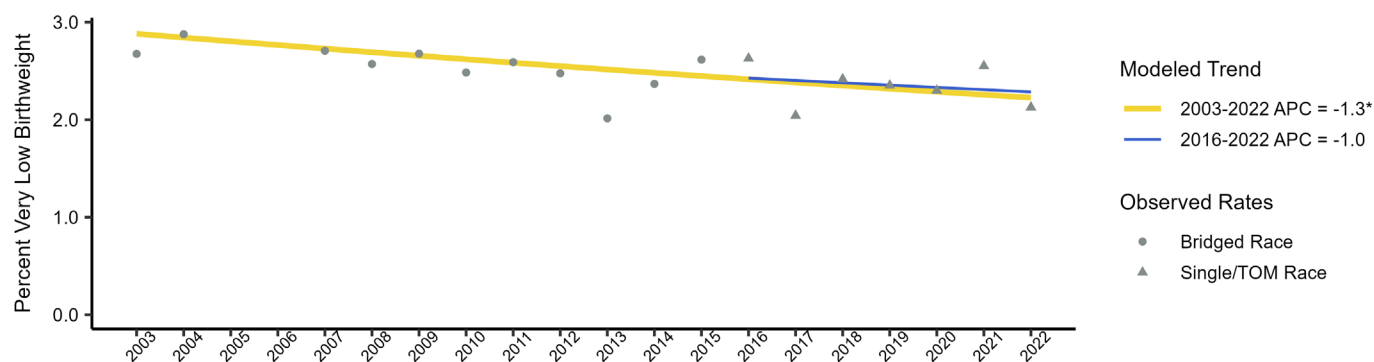


Figure 3C. Singleton Very Low Birthweight: Non-Hispanic Asian (NHA)

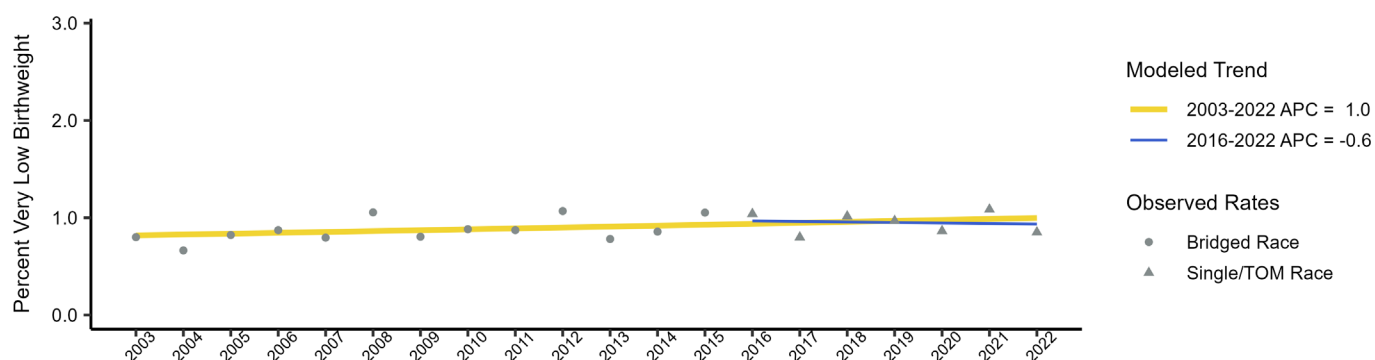


Figure 3D. Singleton Very Low Birthweight: Puerto Rican (PR)

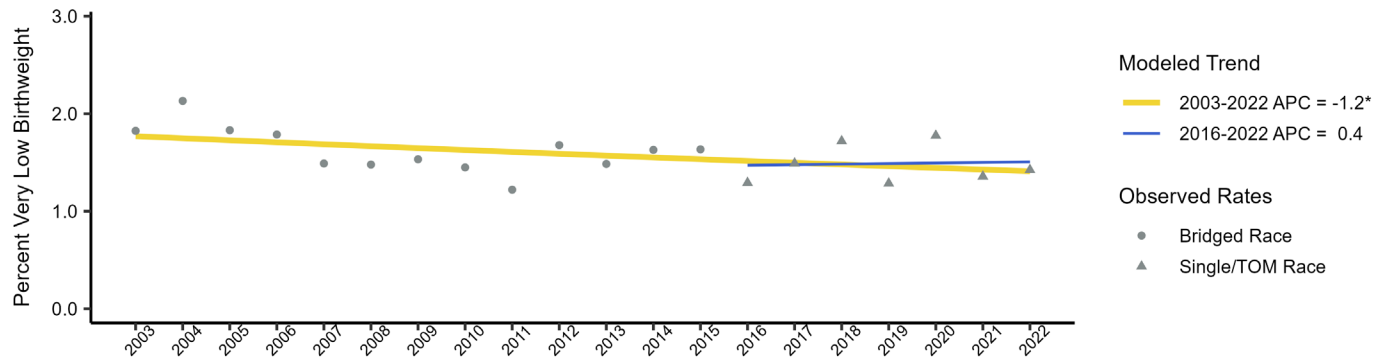
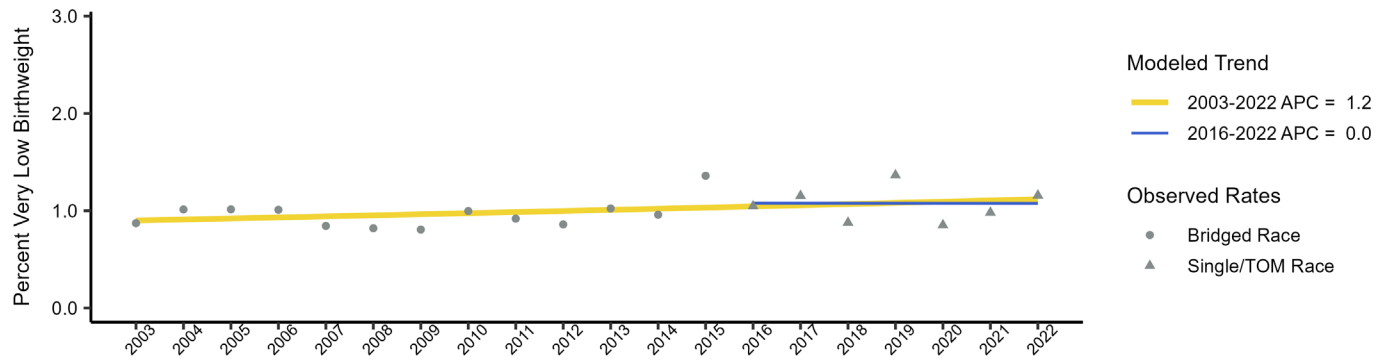


Figure 3E. Singleton Very Low Birthweight: Other Hispanic (OH)



**Table 3.** Annual Rates of Singleton Very Low Birthweight (%) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2003-2022.

Race and Ethnicity/ Classification	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>NH White</b>																				
Bridged	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.8	0.5	0.6			
Single/TOM														0.6	0.8	0.5	0.6	0.6	0.5	0.6
<b>NH Black</b>																				
Bridged	2.7	2.9	3.0	3.1	2.7	2.6	2.7	2.5	2.6	2.5	2.0	2.4	2.6	2.5	2.0	2.4	2.2			
Single/TOM														2.6	2.1	2.4	2.3	2.3	2.5	2.2
<b>NH Asian</b>																				
Bridged	0.8	0.7	0.8	0.9	0.8	1.1	0.8	0.9	0.9	1.1	0.8	0.9	1.1	1.1	0.7	1.0	0.9			
Single/TOM														1.1	0.8	1.0	1.0	0.9	1.1	0.8
<b>Puerto Rican</b>																				
Bridged	1.8	2.1	1.8	1.8	1.5	1.5	1.5	1.4	1.2	1.7	1.5	1.6	1.6	1.3	1.5	1.7	1.3			
Single/TOM														1.3	1.5	1.7	1.3	1.8	1.4	1.4
<b>Other Hispanic</b>																				
Bridged	0.9	1.0	1.0	1.0	0.8	0.8	0.8	1.0	0.9	0.9	1.0	1.0	1.4	1.0	1.2	0.9	1.4			
Single/TOM														1.0	1.2	0.9	1.4	0.9	1.0	1.2

## Section 4. Early Prenatal Care Initiation

Figures 4A-4D and Table 4 show annual rates of early prenatal care (PNC) initiation (the number of pregnant women who had their first PNC visit during the first trimester of pregnancy) among women delivering live births in Connecticut 2003-2022 by race and ethnicity. PNC initiation was collected differently starting in 2016, resulting in an abrupt decrease in the reported rate of early PNC initiation. Therefore, we used the jump model in Joinpoint to detect possible trends that may be obscured by the change in collection method (See technical notes for more information). Early PNC initiation was stable in both datasets among the NHW population (Figure 4A). The combined dataset shows an increasing trend in early PNC initiation among the NHB population while the limited dataset does not show statistically significant change (Figure 4B). Both datasets show a small, increasing trend in early PNC initiation over time among the PR population (Figure 4C). Both datasets show an increase in early PNC initiation through 2019 among the OH population; then, from 2019-2022, the limited dataset shows a decrease whereas the combined dataset shows no statistically significant change (Figure 4D).

Figure 4A. Early Prenatal Care Initiation: Non-Hispanic White (NHW)

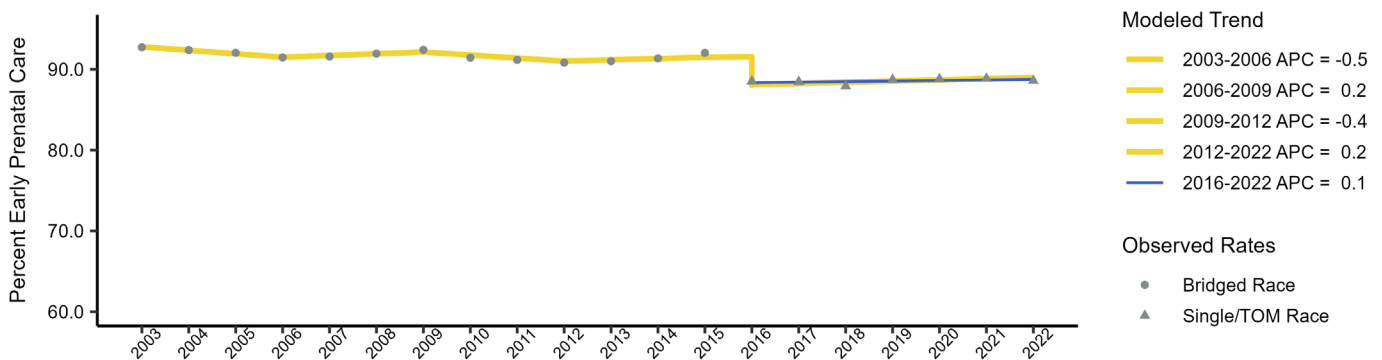


Figure 4B. Early Prenatal Care Initiation: Non-Hispanic Black (NHB)

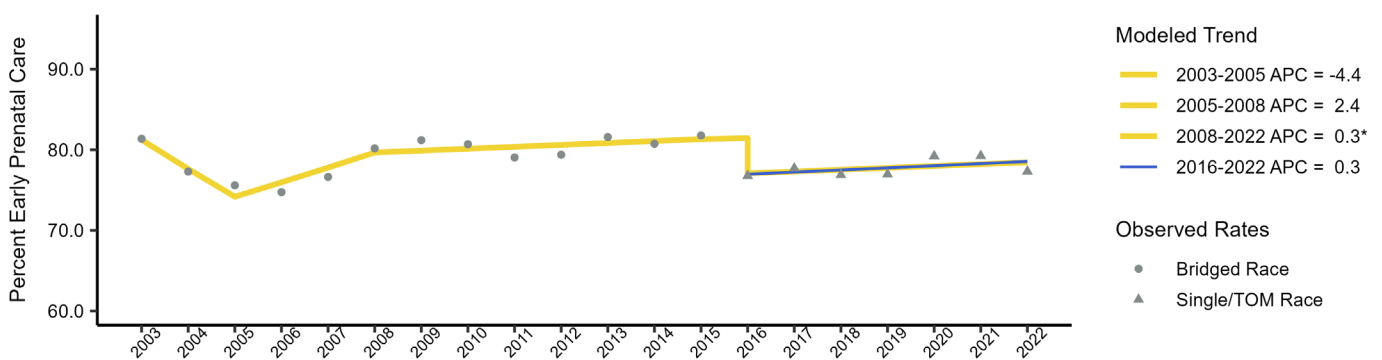


Figure 4C. Early Prenatal Care Initiation: Non-Hispanic Asian (NHA)

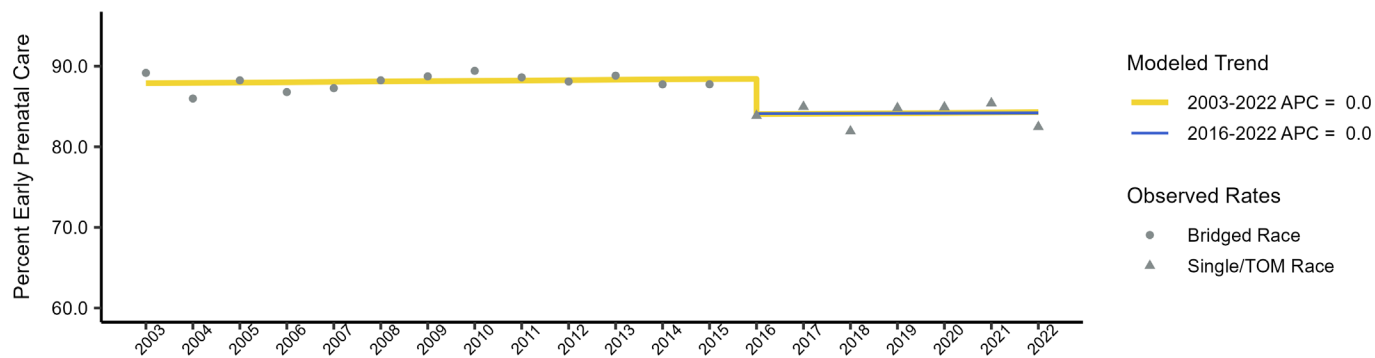


Figure 4D. Early Prenatal Care Initiation: Puerto Rican (PR)

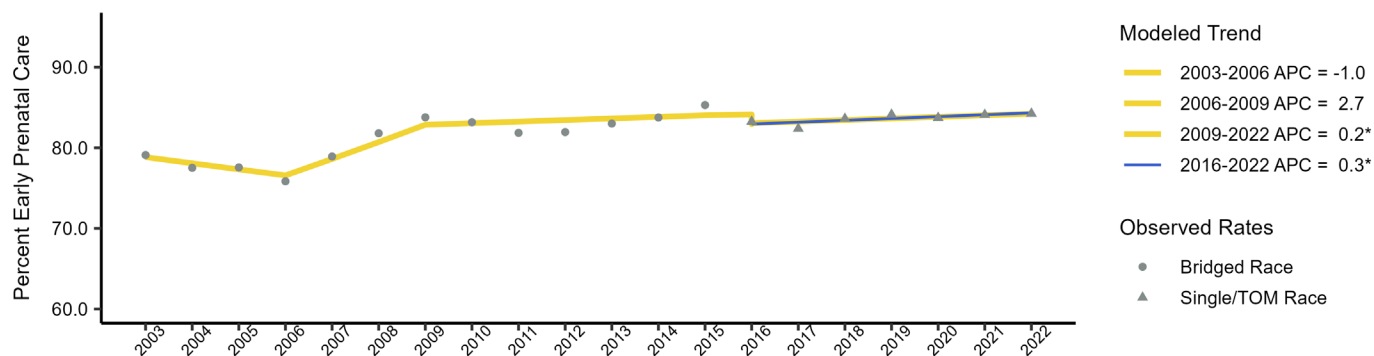
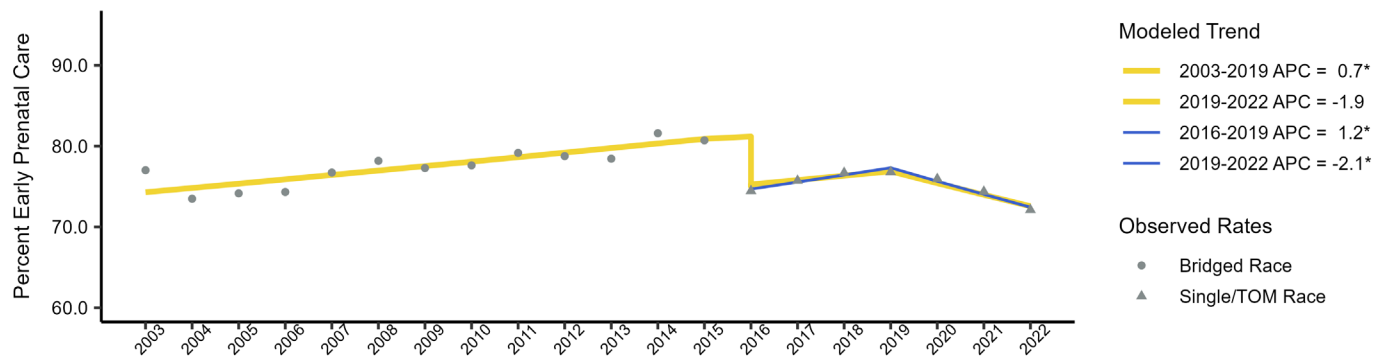


Figure 4E. Early Prenatal Care Initiation: Other Hispanic (OH)



**Table 4. Annual Rates of Early Prenatal Care Initiation (%) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2003-2022.**

<b>Race and Ethnicity/ Classification</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>NH White</b>																				
Bridged	92.7	92.4	92.0	91.5	91.6	91.9	92.4	91.4	91.2	90.8	91.0	91.4	92.0	88.3	88.2	87.8	88.7			
Single/TOM														88.7	88.5	88.0	88.8	88.9	88.9	88.6
<b>NH Black</b>																				
Bridged	81.4	77.3	75.6	74.7	76.6	80.2	81.2	80.7	79.1	79.4	81.6	80.7	81.8	77.1	78.0	77.0	77.3			
Single/TOM														77.0	77.8	77.0	77.0	79.4	79.3	77.3
<b>NH Asian</b>																				
Bridged	89.2	86.0	88.2	86.8	87.3	88.2	88.7	89.4	88.6	88.1	88.8	87.7	87.8	83.7	84.9	81.7	84.5			
Single/TOM														83.7	85.4	81.8	84.6	84.6	85.4	82.5
<b>Puerto Rican</b>																				
Bridged	79.1	77.5	77.6	75.8	78.9	81.8	83.8	83.2	81.9	81.9	83.0	83.8	85.3	83.2	82.4	83.6	84.1			
Single/TOM														83.2	82.4	83.6	84.1	83.7	84.1	84.2
<b>Other Hispanic</b>																				
Bridged	77.0	73.5	74.2	74.3	76.7	78.2	77.3	77.6	79.2	78.8	78.4	81.6	80.7	74.5	75.7	76.7	76.8			
Single/TOM														74.5	75.7	76.7	76.8	75.9	74.4	72.1

## Section 5. Infant Mortality

Figures 5A-5D and Table 5 show annual rates of infant mortality (overall number of infant deaths per 1,000 live births to residents) in Connecticut 2005-2022 by race and ethnicity. Infant mortality rate trends are not available for the NHA population due to poor annual rate reliability. The combined dataset shows that the infant mortality rate decreased among the NHW and NHB populations while the limited dataset shows no statistically significant change (Figures 5A, 5B). Both datasets show no statistically significant change in infant mortality rates among the PR and OH populations (Figures 5C, 5D).

Figure 5A. Infant Mortality Rate: Non-Hispanic White (NHW)

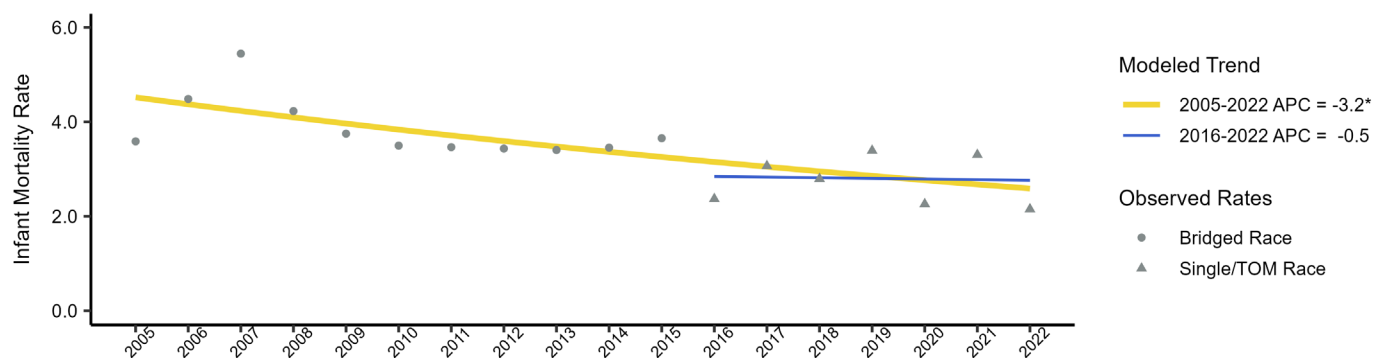


Figure 5B. Infant Mortality Rate: Non-Hispanic Black (NHB)

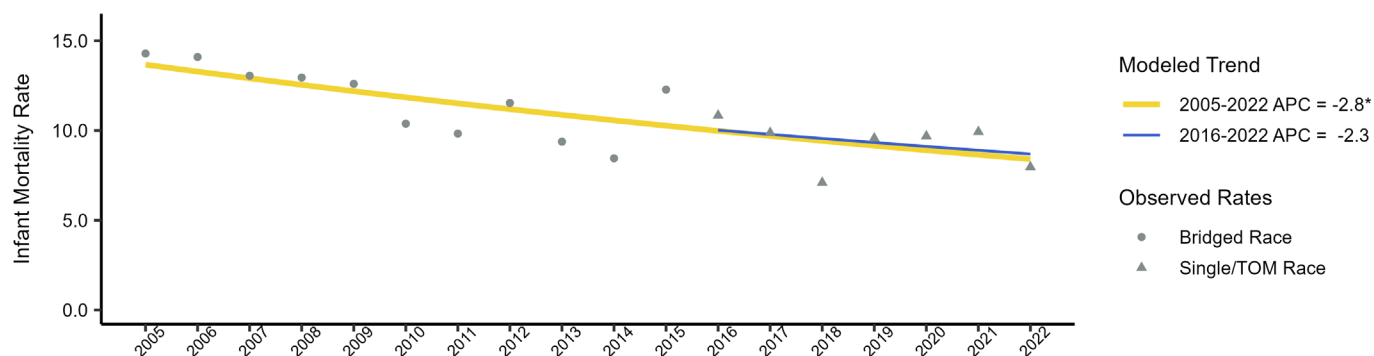


Figure 5C. Infant Mortality Rate: Puerto Rican (PR)

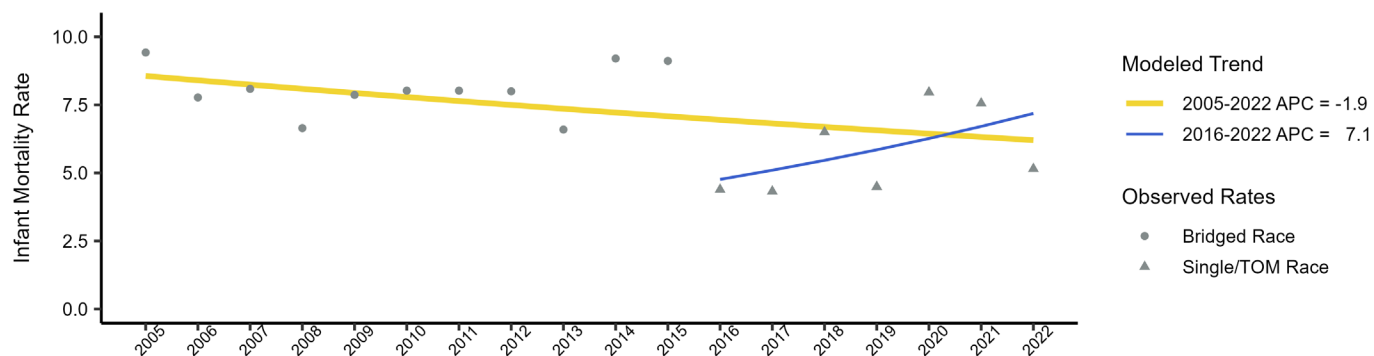
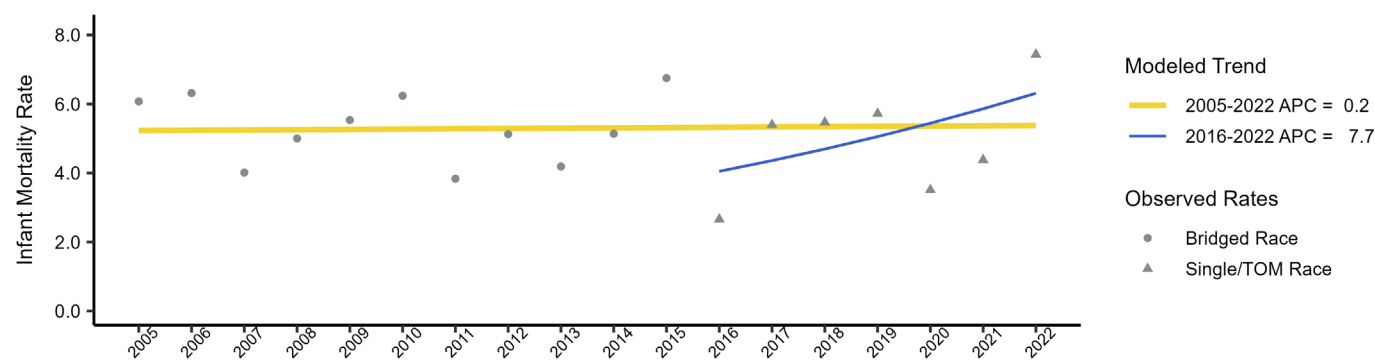




Figure 5D. Infant Mortality Rate: Other Hispanic (OH)



**Table 5. Annual Rates of Infant Mortality (per 1,000 births) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2003-2022.**

Race and Ethnicity/ Classification	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>NH White</b>																		
Bridged	3.6	4.5	5.4	4.2	3.8	3.5	3.5	3.4	3.4	3.5	3.7	2.9	3.0	2.8	3.4			
Single/TOM												2.4	3.1	2.8	3.4	2.3	3.3	2.2
<b>NH Black</b>																		
Bridged	14.3	14.1	13.1	13.0	12.6	10.4	9.8	11.5	9.4	8.5	12.3	11.3	9.9	6.9	8.9			
Single/TOM												10.8	9.9	7.1	9.6	9.7	9.9	8.0
<b>NH Asian</b>																		
Bridged	3.1	4.0	5.7	8.4	3.9	1.6	4.2	2.1	0.4	2.9	3.7	7.9	3.2	2.6	1.8			
Single/TOM												7.7	3.2	2.7	1.8	4.9	1.5	4.2
<b>Puerto Rican</b>																		
Bridged	9.4	7.8	8.1	6.6	7.9	8.0	8.0	8.0	6.6	9.2	9.1	4.4	4.3	6.5	4.5			
Single/TOM												4.4	4.3	6.5	4.5	8.0	7.6	5.1
<b>Other Hispanic</b>																		
Bridged	6.1	6.3	4.0	5.0	5.5	6.2	3.8	5.1	4.2	5.1	6.8	2.7	5.4	5.5	5.7			
Single/TOM												2.7	5.4	5.5	5.7	3.5	4.4	7.4

*Grey cell shading indicates rates with poor statistical reliability (Relative Standard Error > 30%).*

## Section 6. Neonatal Mortality

Figures 6A-6D and Table 6 show annual rates of neonatal mortality (deaths occurring within the first 27 days of life per 1,000 live births to residents) in Connecticut 2005-2022 by race and ethnicity. Neonatal mortality rate trends are not shown for the NHA population due to poor annual rate reliability. The combined dataset shows that neonatal mortality rates decreased among the NHW and NHB populations while the limited dataset shows no statistically significant change (Figures 6A, 6B). Neither dataset shows an increase nor decrease in the neonatal mortality rate among the PR population (Figure 6C). Among the OH population, the limited dataset shows an increase while the combined dataset shows stability in the neonatal mortality rate (Figure 6D).

Figure 6A. Neonatal Mortality Rate: Non-Hispanic White (NHW)

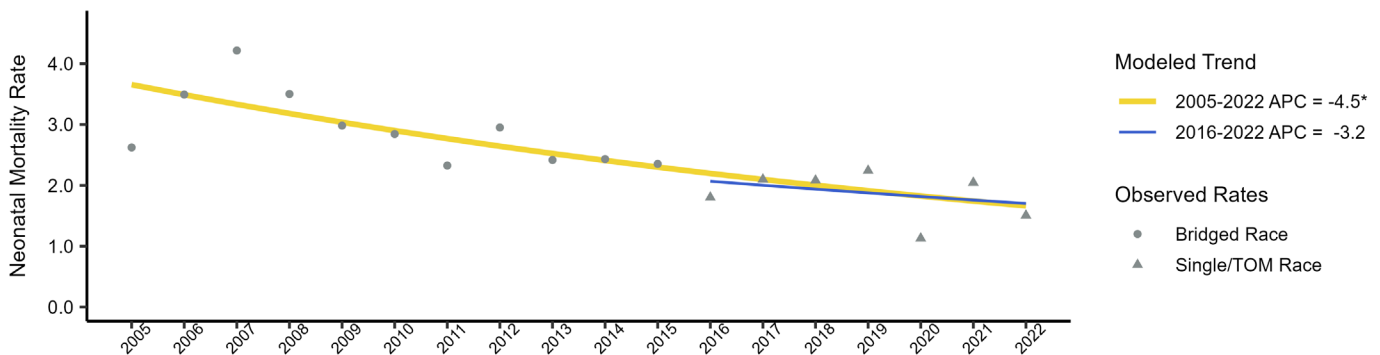


Figure 6B. Neonatal Mortality Rate: Non-Hispanic Black (NHB)

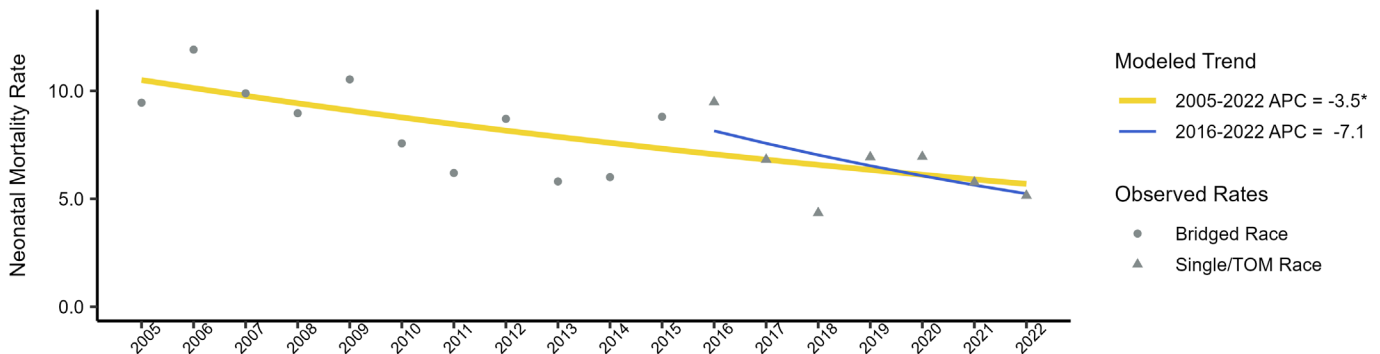


Figure 6C. Neonatal Mortality Rate: Puerto Rican (PR)

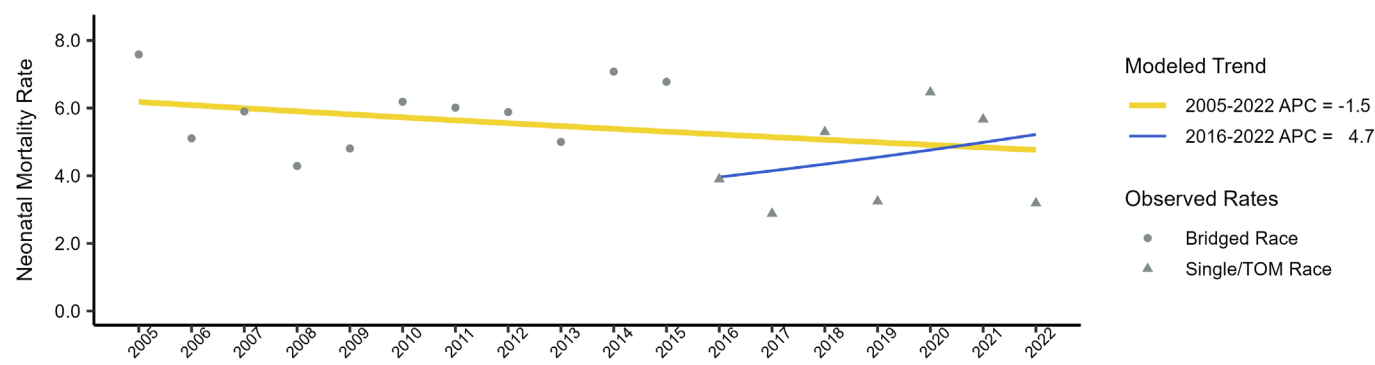


Figure 6D. Neonatal Mortality Rate: Other Hispanic (OH)

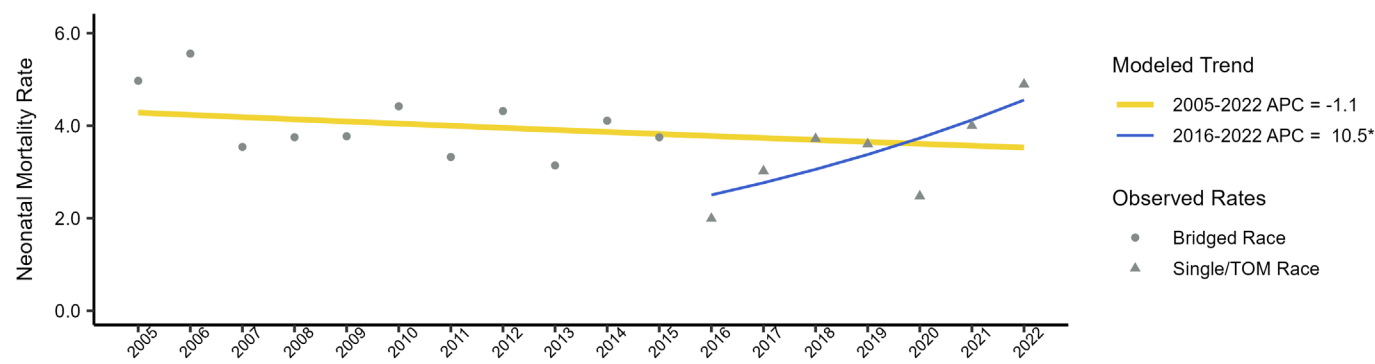


Table 6. Annual Rates of Neonatal Mortality (per 1,000 births) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2005-2022.

Race and Ethnicity/ Classification	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>NH White</b>																		
Bridged	2.6	3.5	4.2	3.5	3.0	2.8	2.3	3.0	2.4	2.4	2.4	1.8	2.1	2.1	2.3			
Single/TOM												1.8	2.1	2.0	2.3	1.1	2.1	1.5
<b>NH Black</b>																		
Bridged	9.5	11.9	9.9	9.0	10.5	7.6	6.2	8.7	5.8	6.0	8.8	9.4	7.1	4.3	6.5			
Single/TOM												9.4	7.0	4.5	6.8	6.9	5.7	5.2
<b>NH Asian</b>																		
Bridged	2.2	2.7	4.5	6.7	3.9	0.8	2.9	1.6	0.0	2.5	2.0	6.4	2.0	2.6	1.3			
Single/TOM												6.5	2.0	2.7	1.3	4.0	1.5	3.6
<b>Puerto Rican</b>																		
Bridged	7.6	5.1	5.9	4.3	4.8	6.2	6.0	5.9	5.0	7.1	6.8	3.9	2.9	5.3	3.2			
Single/TOM												3.9	2.9	5.3	3.2	6.5	5.7	3.2
<b>Other Hispanic</b>																		
Bridged	5.0	5.6	3.5	3.8	3.8	4.4	3.3	4.3	3.1	4.1	3.8	2.0	3.0	3.7	3.6			
Single/TOM												2.0	3.0	3.7	3.6	2.5	4.0	4.9

Grey cell shading indicates rates with poor statistical reliability (Relative Standard Error > 30%).

## Section 7. Post-neonatal Mortality

Figures 7A-7D and Table 7 show annual rates of post-neonatal mortality (deaths occurring from 28-365 days of life per 1,000 live births to residents) in Connecticut 2005-2022 by race and ethnicity. Post-neonatal mortality rate trends are not shown for the NHA, PR, and OH population due to poor annual rate reliability. The combined datasets show stability in the post-neonatal mortality rate since 2005 in the NHW population, and the limited dataset shows non-significant increase and followed by non-significant decrease since 2016. (Figure 7A). Similarly, both datasets show neither increase nor decrease in the post-neonatal mortality rate in the NHB population (Figures 7B).

Figure 7A. Post-neonatal Mortality Rate: Non-Hispanic White (NHW)

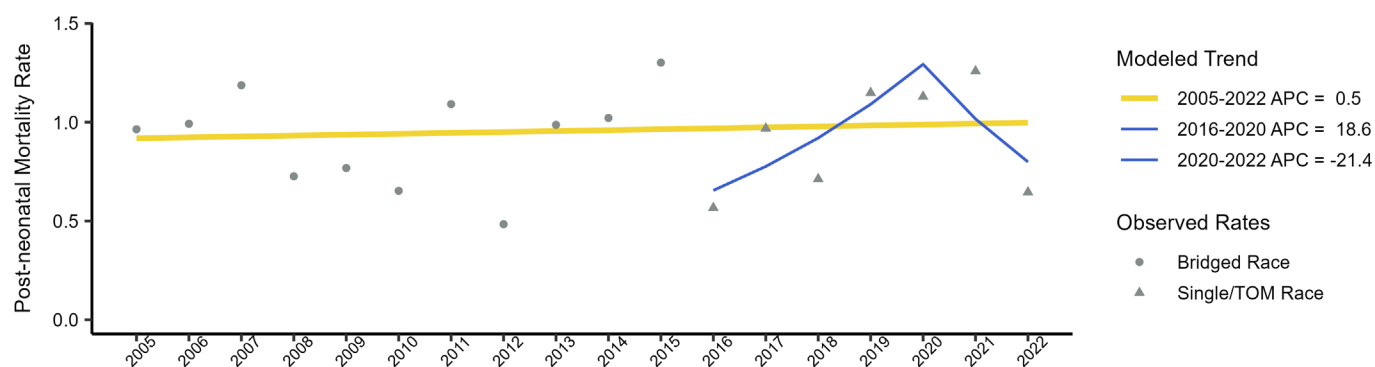


Figure 7B. Post-neonatal Mortality Rate: Non-Hispanic Black (NHB)

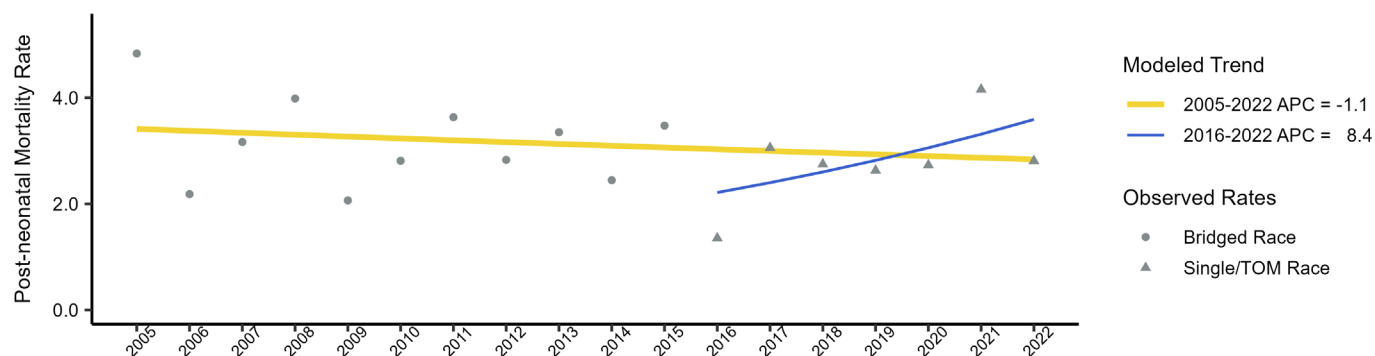


Table 7. Annual Rates of Post-neonatal Mortality (per 1,000 births) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2005-2022.

Race and Ethnicity/ Classification	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>NH White</b>																		
Bridged	1.0	1.0	1.2	0.7	0.8	0.7	1.1	0.5	1.0	1.0	1.3	1.1	0.9	0.8	1.2			
Single/TOM												0.6	0.9	0.7	1.2	1.1	1.3	0.6
<b>NH Black</b>																		
Bridged	4.8	2.2	3.2	4.0	2.1	2.8	3.6	2.8	3.3	2.4	3.5	1.9	2.9	2.6	2.5			
Single/TOM												1.4	3.2	2.8	2.7	2.8	4.2	2.9
<b>NH Asian</b>																		
Bridged	0.9	1.3	1.2	1.7	0.0	0.8	1.3	0.4	0.4	0.4	1.6	1.5	1.2	0.0	0.4			
Single/TOM												1.2	1.2	0.0	0.4	1.0	0.0	0.5
<b>Puerto Rican</b>																		
Bridged	1.8	2.7	2.2	2.4	3.1	1.8	2.0	2.1	1.6	2.1	2.3	0.5	1.4	1.2	1.2			
Single/TOM												0.5	1.4	1.2	1.2	1.5	1.9	2.0
<b>Other Hispanic</b>																		
Bridged	1.1	0.8	0.5	1.0	1.8	1.8	0.5	0.8	1.0	1.0	3.0	0.7	2.4	1.7	2.1			
Single/TOM												0.7	2.4	1.7	2.1	1.0	0.4	2.5

Grey cell shading indicates rates with poor statistical reliability (Relative Standard Error > 30%).

## Section 8. Teen Births

Figures 8A-8D and Table 8 show annual rates of teen births (live births per 1,000 female residents aged 15-19) in Connecticut 2003-2022 by race and ethnicity. Teen birth rates are provided for Hispanic ethnicity as a whole instead of separately by Puerto Rican and Other Hispanic (as in Sections 1-7) due to lack of available population (denominator) counts by these two Hispanic subpopulations. Additionally, teen birth rate trends are not shown for the NHA population due to poor annual rate reliability in recent years. Both the NHW and Hispanic populations have a dramatic decline in teen birth rates over the last 20 years, which is seen in both the combined and limited datasets (Figures 8A, 8C). The limited dataset shows a similar decline in teen birth rates for the NHB population while the combined dataset shows no statistically significant change in recent years (Figure 8B).

Figure 8A. Teen Births: Non-Hispanic White (NHW)

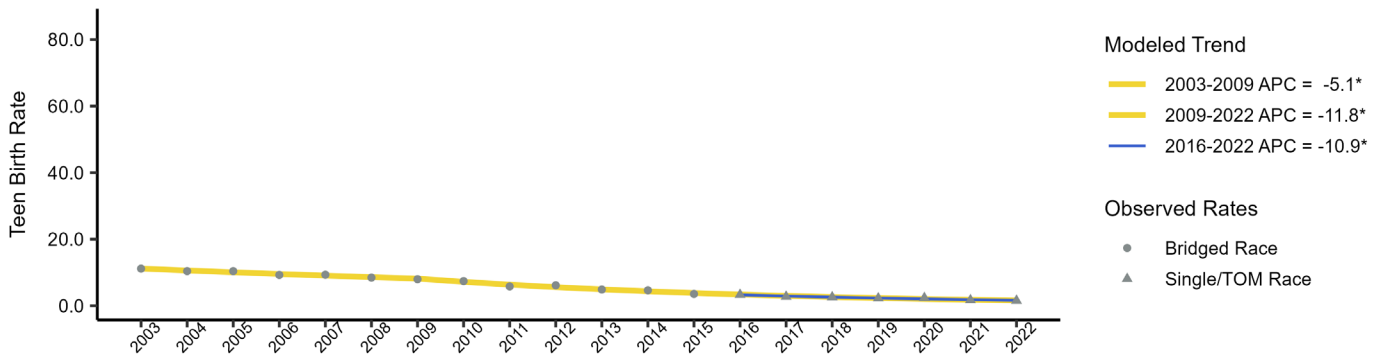


Figure 8B. Teen Births: Non-Hispanic Black (NHB)

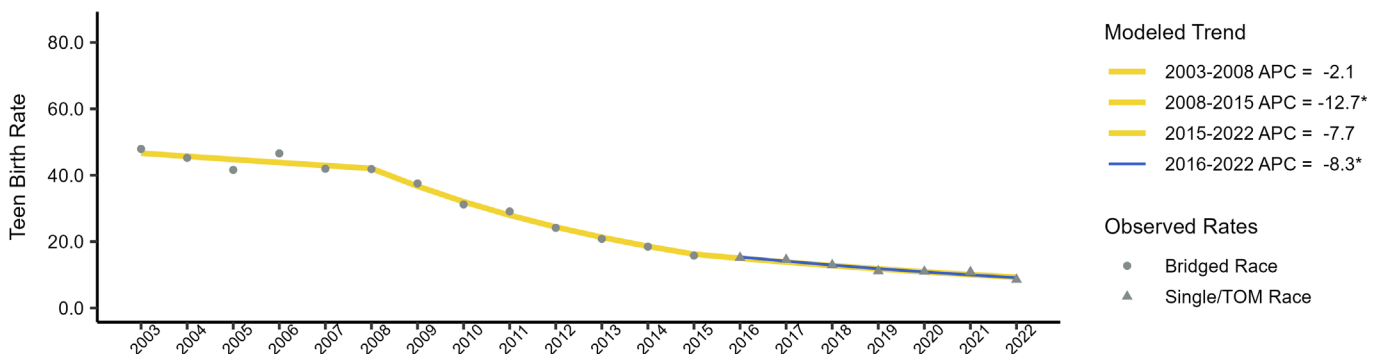




Figure 8C. Teen Births: Hispanic (H)

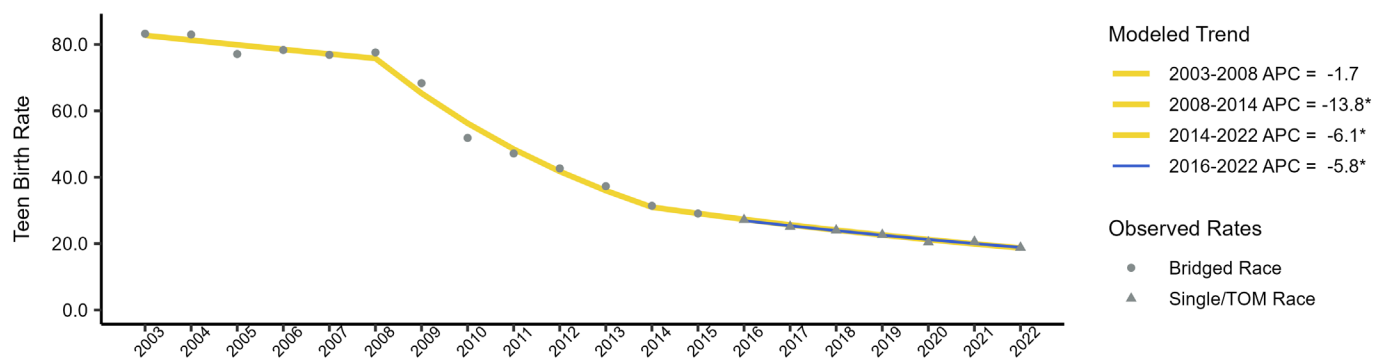


Table 8. Annual Rates of Teen Births (per 1,000 females aged 15-19) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2003-2022.

Race and Ethnicity/ Classification	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>NH White</b>																				
Bridged	11.2	10.4	10.4	9.3	9.3	8.5	8.0	7.4	5.8	6.2	4.9	4.7	3.6	3.5	2.9	2.8	2.4			
Single/TOM														3.3	2.7	2.6	2.2	2.4	1.7	1.6
<b>NH Black</b>																				
Bridged	47.9	45.2	41.6	46.6	42.0	41.8	37.5	31.2	29.1	24.2	20.8	18.5	15.8	14.8	14.8	13.2	11.1			
Single/TOM														15.0	14.5	12.6	10.9	10.9	10.8	8.6
<b>NH Asian</b>																				
Bridged	6.6	9.5	5.6	3.6	7.5	3.6	2.5	3.9	3.3	3.3	2.5	1.9	1.7	1.4	1.6	1.1	1.4			
Single/TOM														1.1	1.4	1.2	1.5	0.5	1.3	0.8
<b>Hispanic</b>																				
Bridged	83.2	83.0	77.1	78.3	76.9	77.6	68.3	51.8	47.2	42.7	37.3	31.4	29.1	26.7	24.9	23.8	22.4			
Single/TOM														26.7	24.9	23.8	22.4	20.0	20.3	18.5

Grey cell shading indicates rates with poor statistical reliability (Relative Standard Error > 30%).

## Section 9. General Fertility

Figures 9A-9D and Table 9 show annual rates of general fertility (live births per 1,000 female residents aged 15-44) in Connecticut 2003-2022 by race and ethnicity. General fertility rates are provided for Hispanic ethnicity as a whole instead of separately by Puerto Rican and Other Hispanic (as in Sections 1-7) due to lack of available population (denominator) counts by these two Hispanic subpopulations. The combined dataset shows that the general fertility rate decreased for the NHW population from 2003-2009 but both the combined and limited dataset indicate stability since at least 2016 (Figure 9A). Both datasets show that the general fertility rate has been decreasing for the NHB and NHA populations and stable for the Hispanic population (Figures 9B, 9C, 9D).

Figure 9A. General Fertility: Non-Hispanic White (NHW)

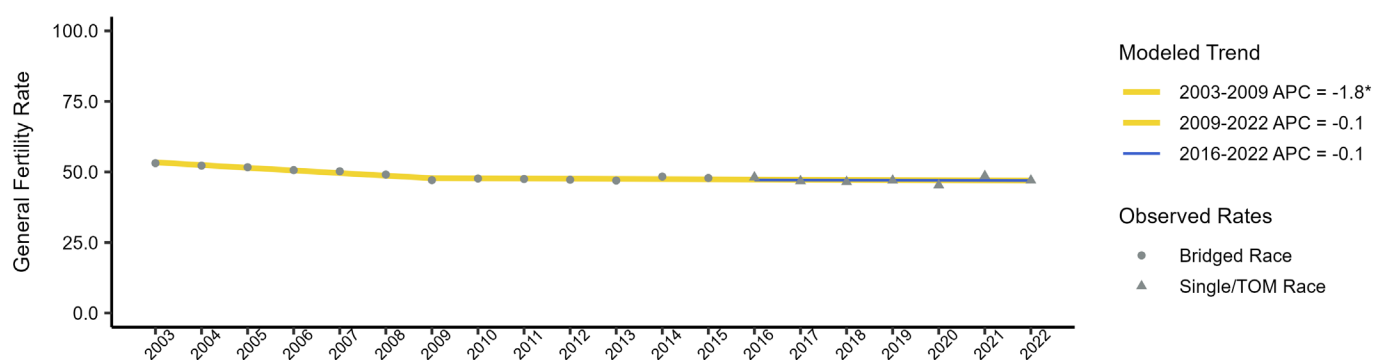


Figure 9B. General Fertility: Non-Hispanic Black (NHB)

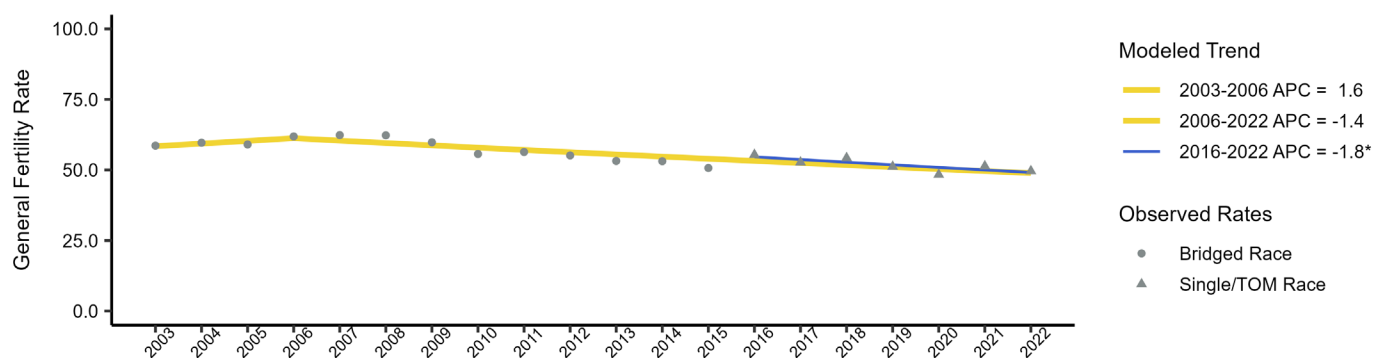


Figure 9C. General Fertility: Non-Hispanic Asian (NHA)

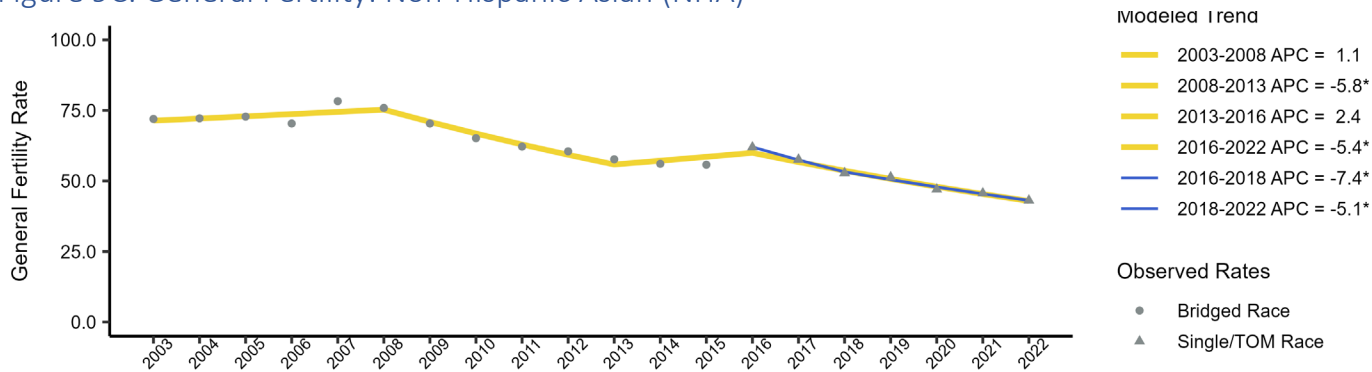
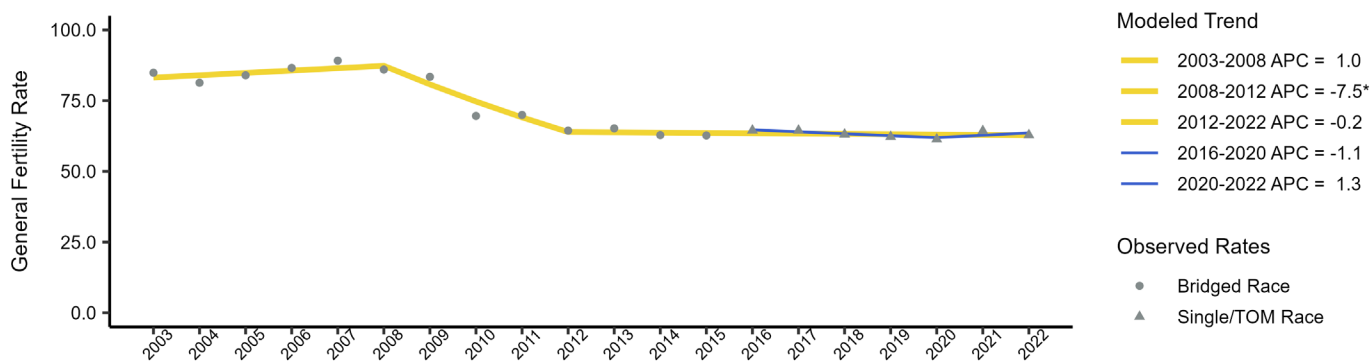


Figure 9D. General Fertility: Hispanic (H)



**Table 9.** Annual Rates of General Fertility (per 1,000 females aged 15-44) Among Connecticut Residents, by Race and Ethnicity and Race and Ethnicity Classification, 2003-2022.

<b>Race and Ethnicity/ Classification</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>NH White</b>																				
Bridged	53.1	52.2	51.7	50.6	50.2	49.1	47.1	47.7	47.5	47.2	47.0	48.4	47.9	48.3	47.0	46.7	47.0			
Single/TOM														47.8	46.5	46.2	46.8	45.1	48.3	46.7
<b>NH Black</b>																				
Bridged	58.6	59.7	59.0	61.9	62.3	62.3	59.8	55.7	56.4	55.2	53.2	53.1	50.7	55.3	52.8	54.4	51.4			
Single/TOM														54.4	51.1	52.7	50.3	47.1	50.3	48.7
<b>NH Asian</b>																				
Bridged	72.0	72.2	72.8	70.4	78.3	75.9	70.3	65.2	62.2	60.5	57.7	56.1	55.8	60.8	56.5	51.8	50.2			
Single/TOM														60.8	56.5	51.8	50.5	46.1	44.7	42.2
<b>Hispanic</b>																				
Bridged	84.9	81.3	84.0	86.6	89.1	86.0	83.4	69.6	70.0	64.4	65.2	62.8	62.7	64.5	64.5	63.1	62.2			
Single/TOM														64.5	64.5	63.1	62.2	61.4	64.3	62.8

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