

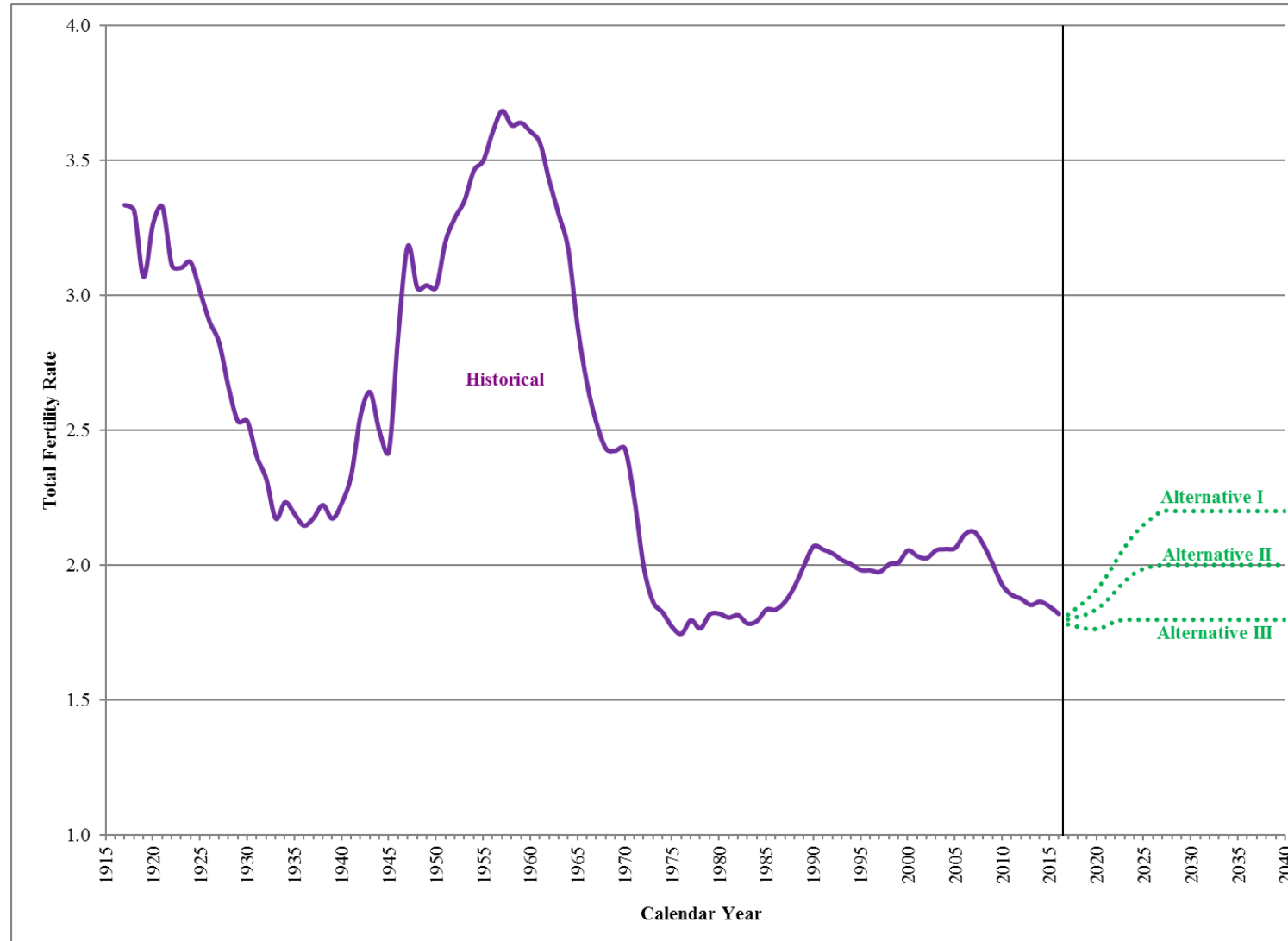
# Fertility Overview

Office of the Chief Actuary  
TPAM 2019 Meeting  
February 15, 2019

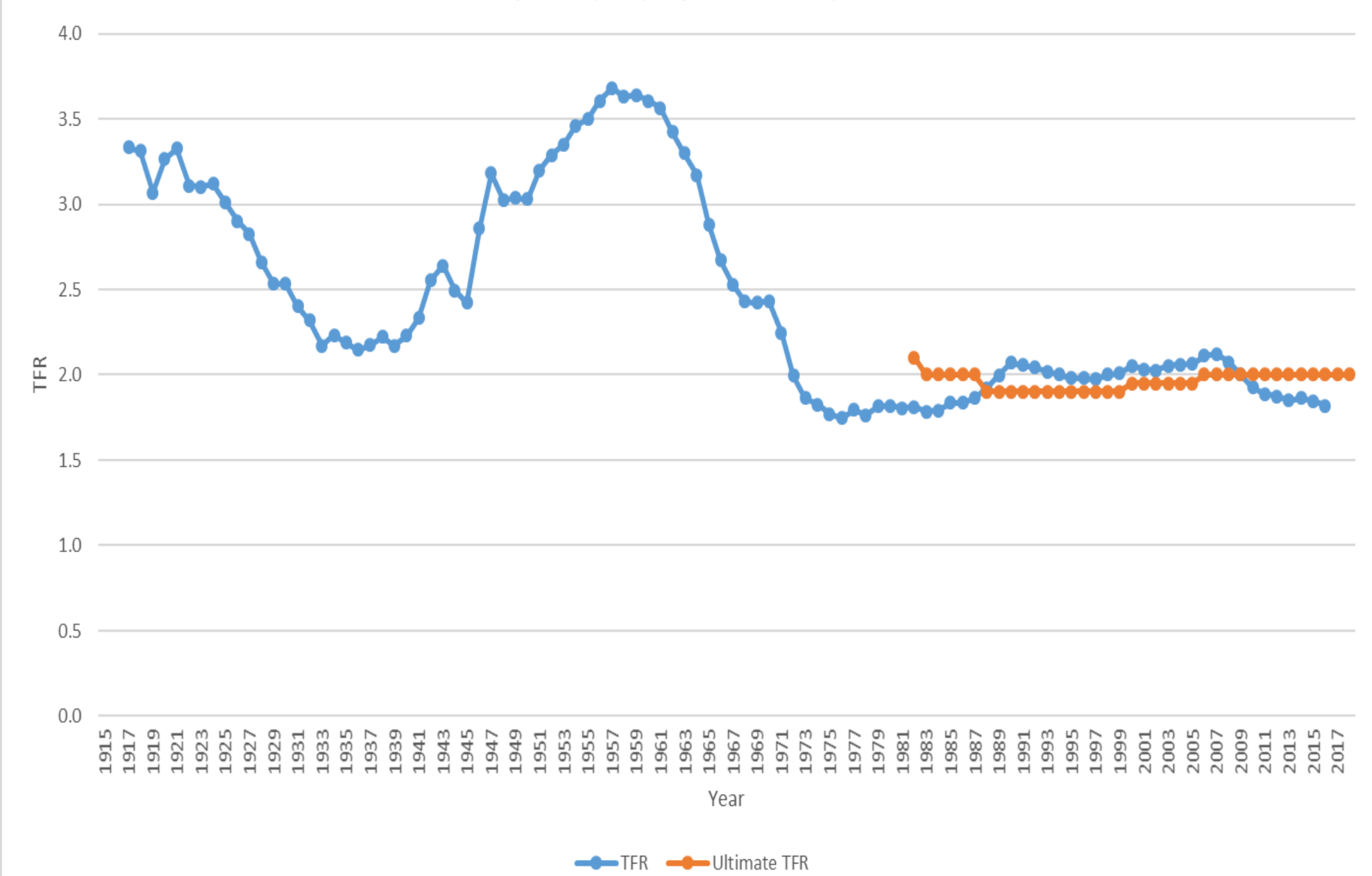
# Birth Data Background

- Age-specific central birth rates
  - Births during the year to mothers at the specified age divided by the midyear female population at that age.
  - Births from National Center for Health Statistics
  - Resident population from Census Bureau.
- Total fertility rate (TFR)
  - Sum of the age-specific central birth rates during the year.
  - Can be interpreted as the average number of children that would be born to a woman if she were to experience, at each age of her life, the birth rate observed in, or assumed for, a specified year, and if she were to survive the entire childbearing period.

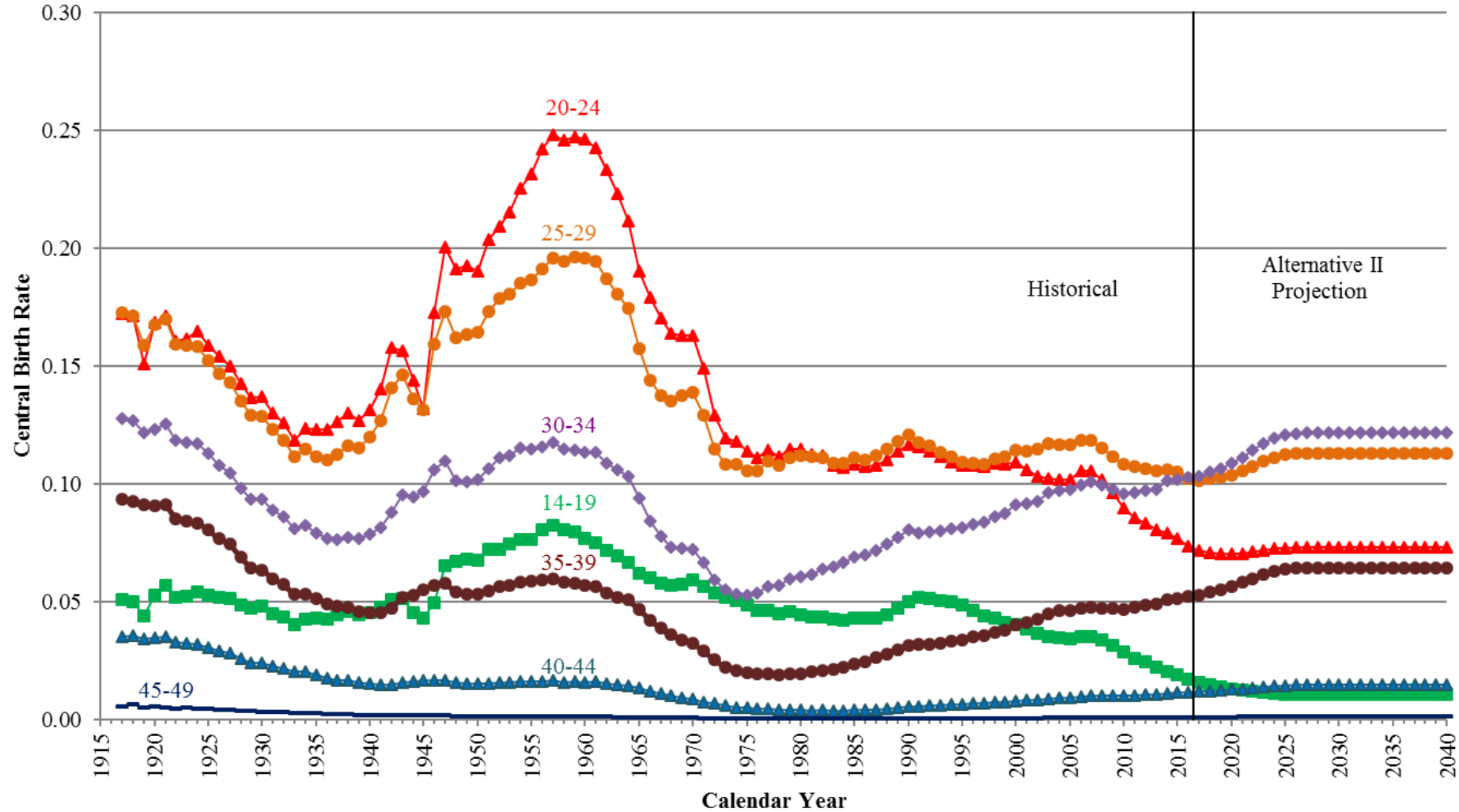
# Total Fertility Rate, Historical and Projected, 2018 TR



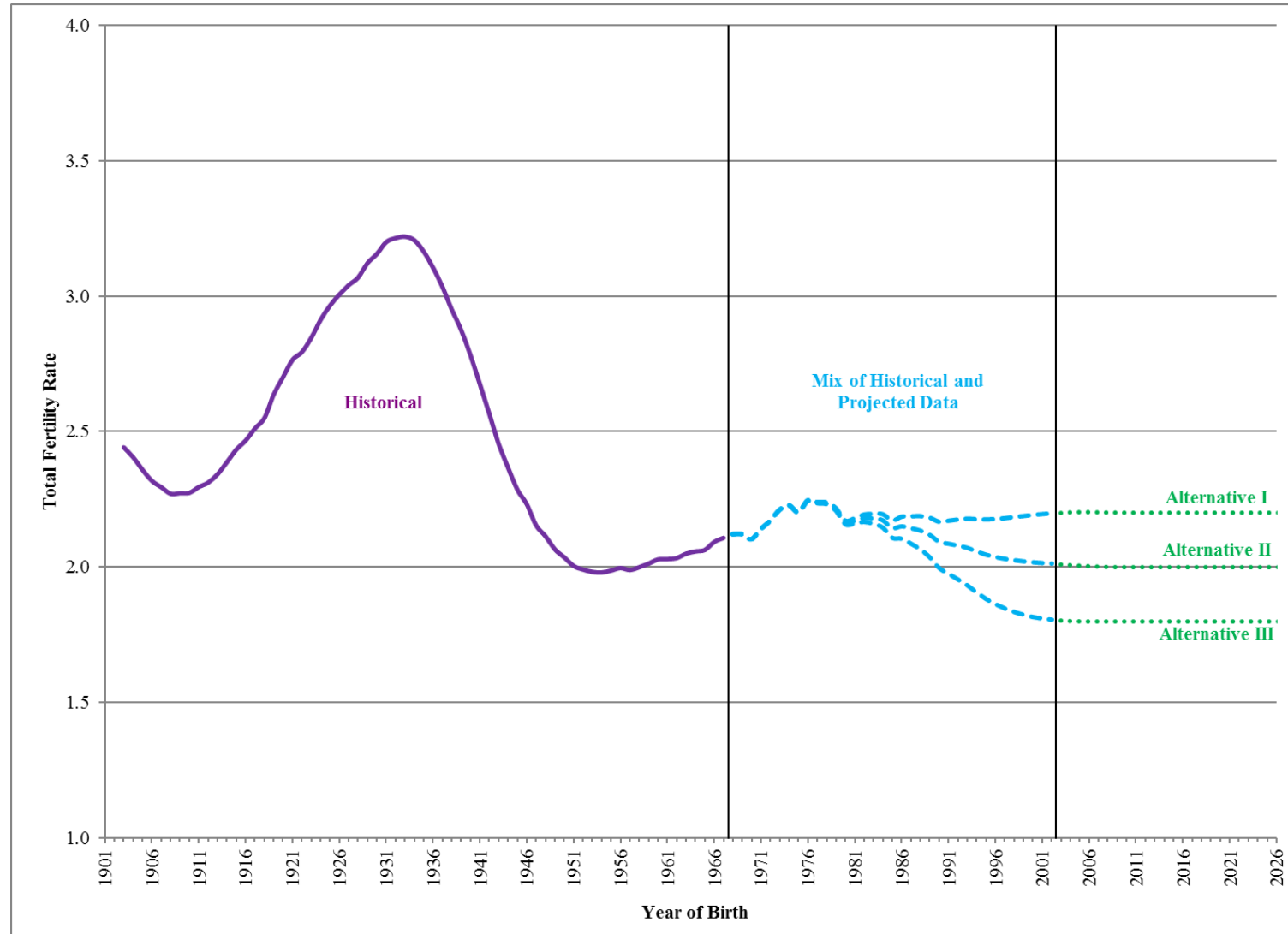
Ultimate Total Fertility Rate (TFR), by Trustees Report, and Historical TFRs



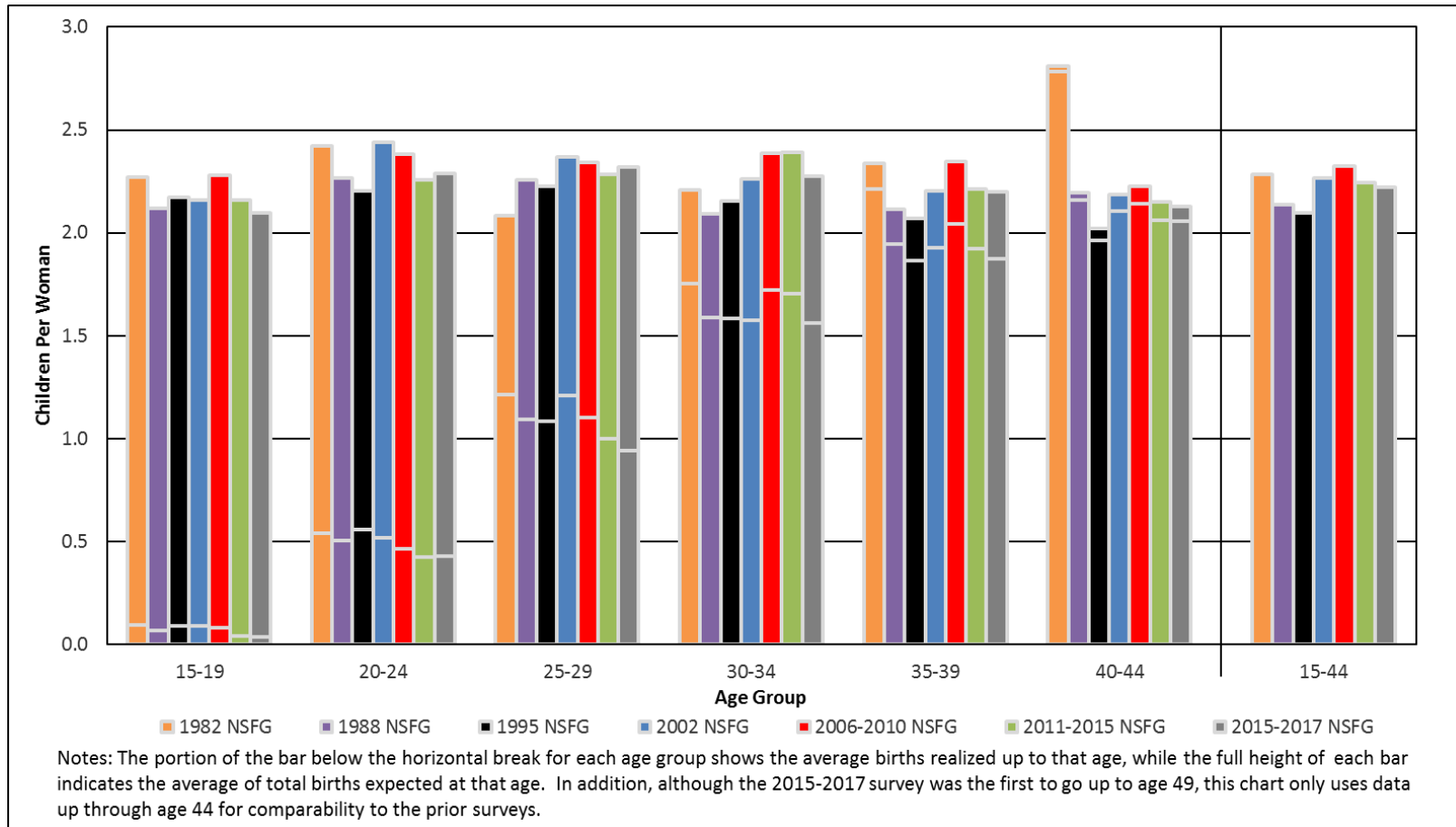
# Central Birth Rates, 5-Year Age Groups, 2018 TR



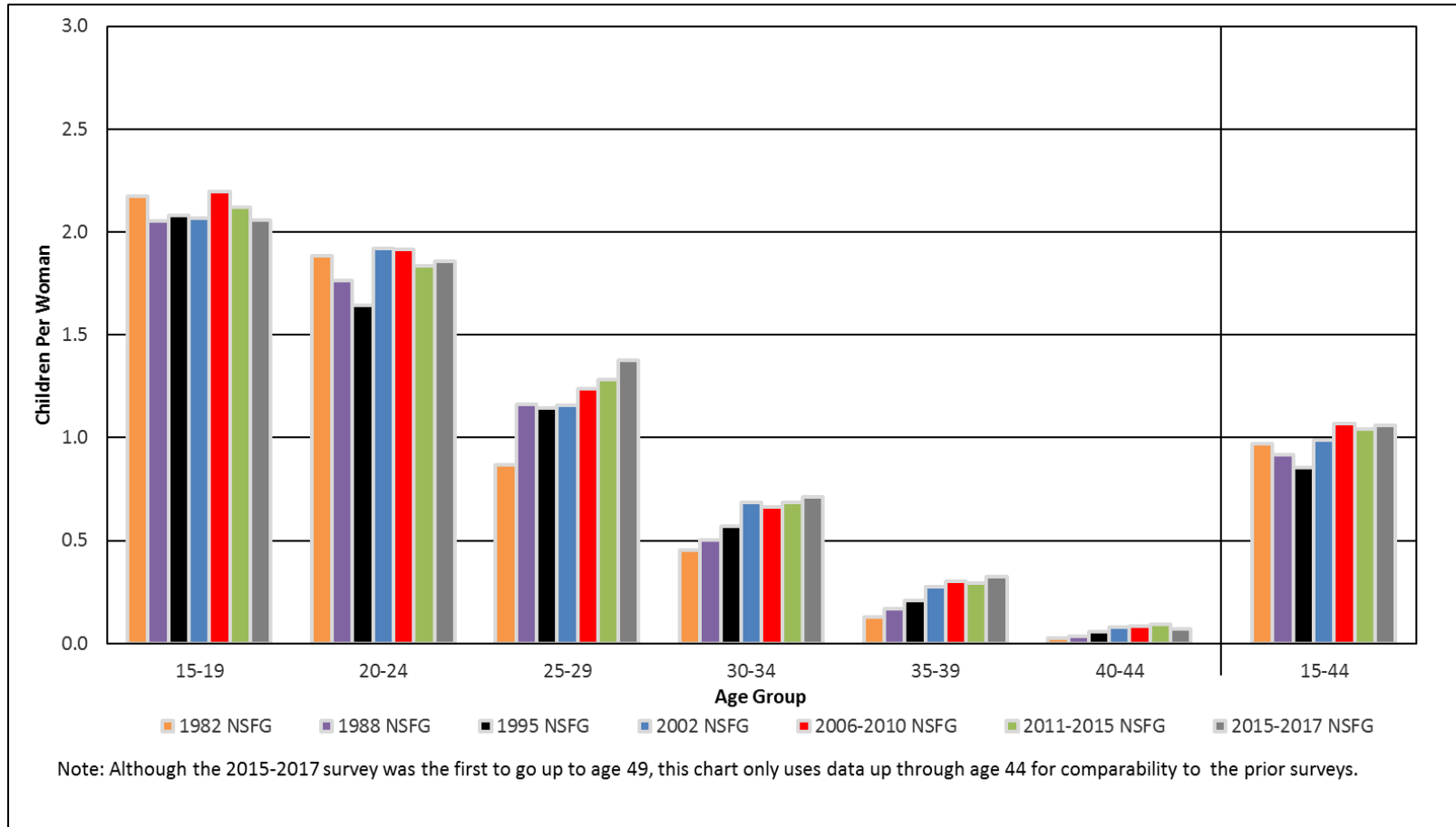
# Cohort Total Fertility Rate, Historical and Projected, 2018 TR



# Fertility Expectations

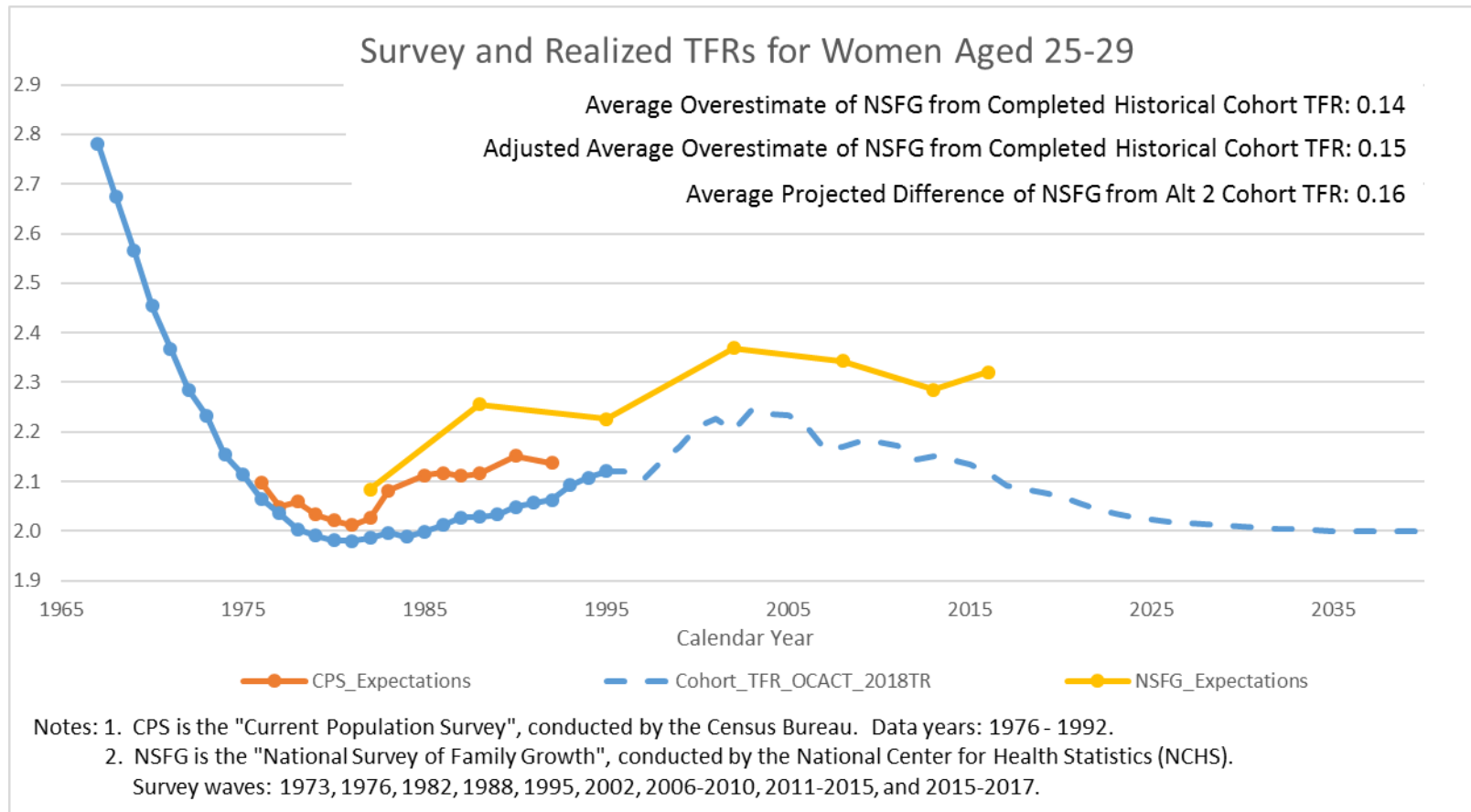


# Future Expected Additional Births Only

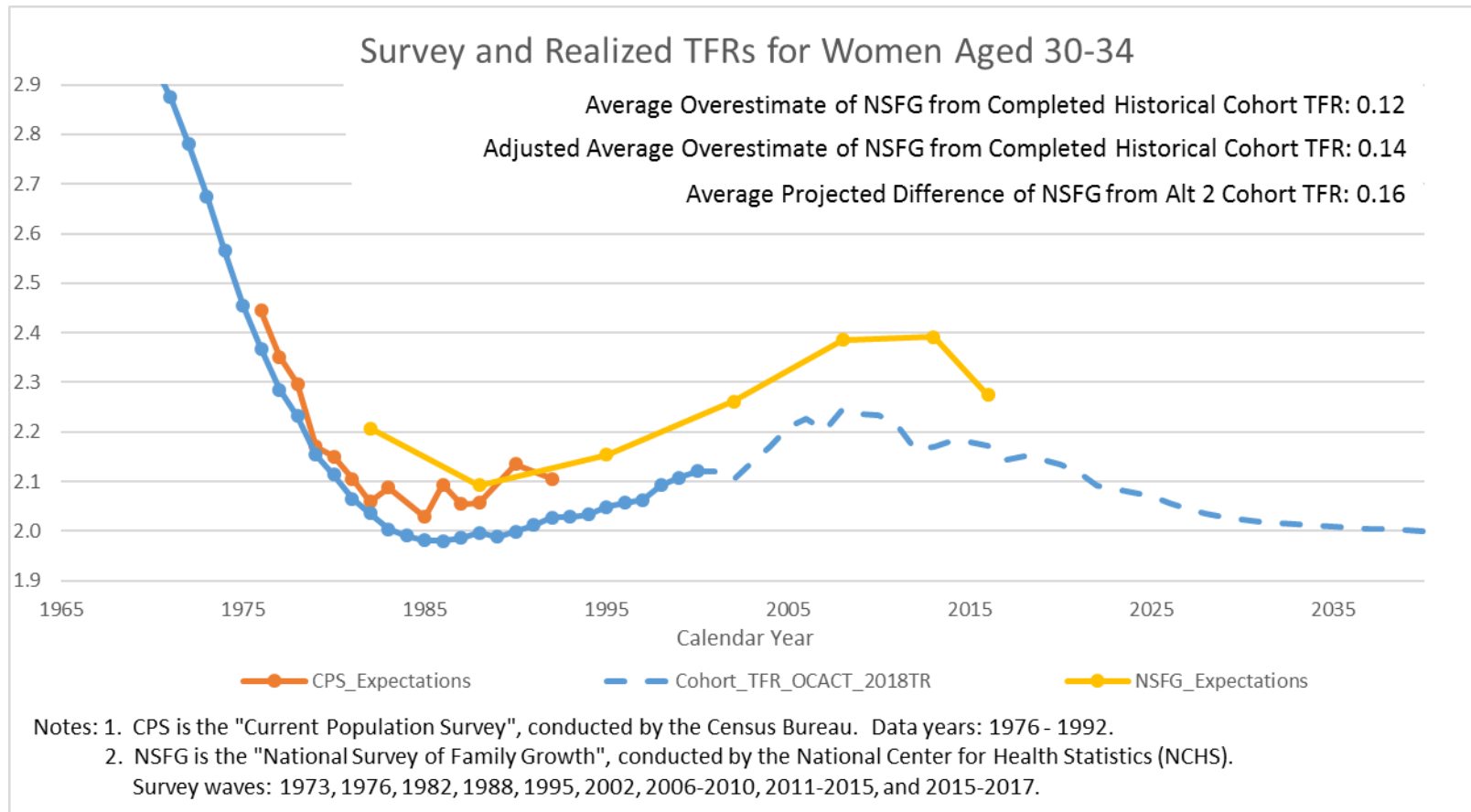




# Compare to Cohort TFR (25-29)



# Compare to Cohort TFR (30-34)



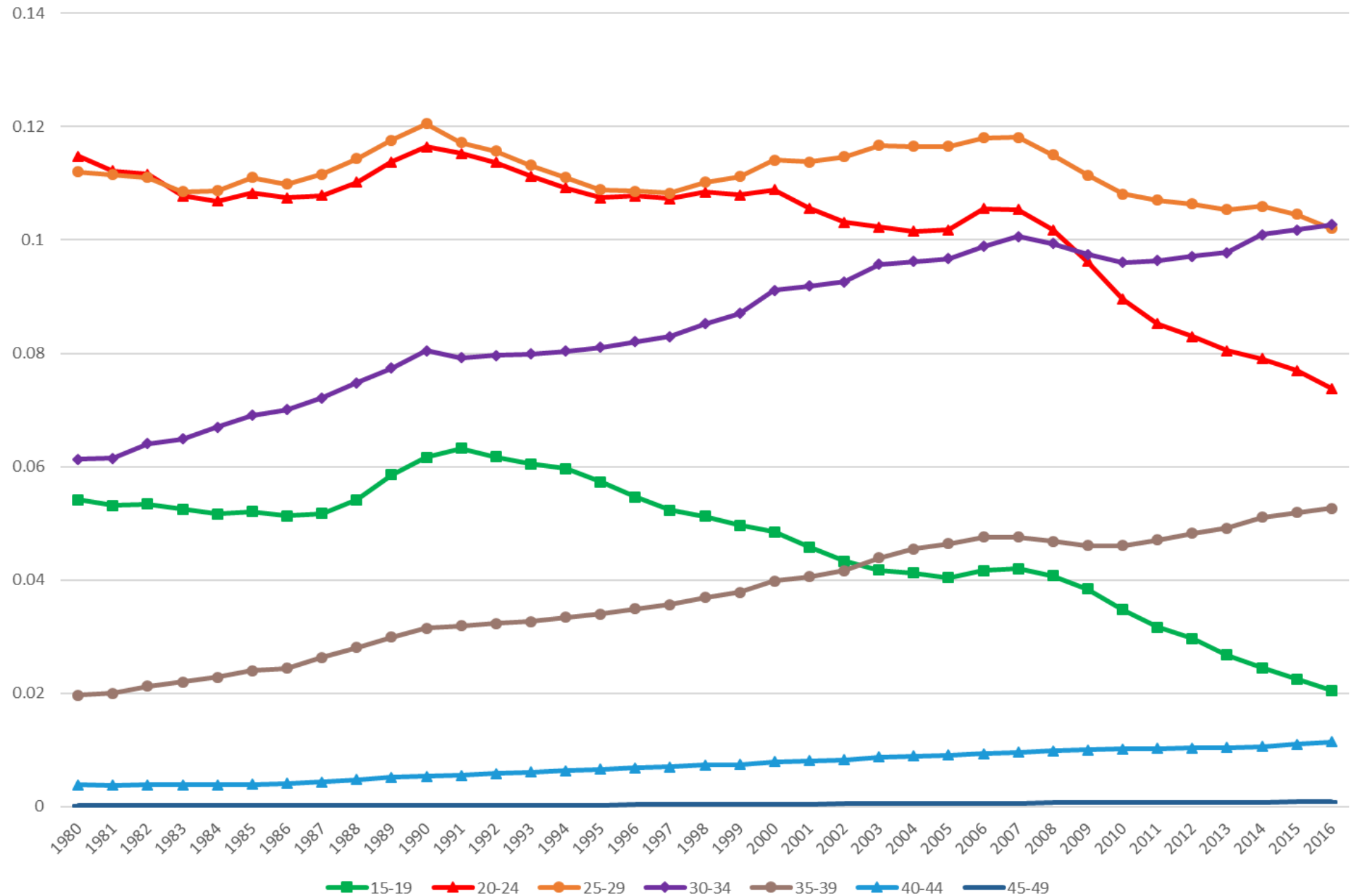
# Historical Total Fertility Rates, by Country

Country	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Most Recent TFR	Latest 10-Year Change
Australia	1.9	1.9	1.9	1.8	1.8	1.8	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	-0.1
Austria	1.7	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	0.1
Belgium	1.7	1.5	1.6	1.5	1.6	1.7	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	-0.1
Canada	1.7	1.6	1.7	1.6	1.5	1.5	1.6	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	-0.1
China	2.6	2.7	2.4	1.6	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.0
Denmark	1.5	1.4	1.7	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.9	1.8	1.7	1.7	1.7	1.7	1.8	1.8	0.0
Finland	1.6	1.6	1.8	1.8	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6	-0.2
France	1.9	1.8	1.8	1.7	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	-0.1
Germany	1.6	1.4	1.5	1.2	1.4	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.6	0.3
Greece	2.2	1.7	1.4	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.4	1.3	1.3	1.3	1.3	1.4	1.4	0.0
India	4.8	4.5	4.0	3.7	3.3	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.4	2.3	2.3	-0.6
Ireland	3.2	2.5	2.1	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	0.0
Italy	1.7	1.4	1.4	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	-0.1
Japan	1.8	1.8	1.5	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.4	1.4	0.1
Mexico	4.7	3.9	3.4	3.0	2.6	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	-0.2
Netherlands	1.6	1.5	1.6	1.5	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	0.0
New Zealand	2.0	1.9	2.2	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.2	2.1	2.1	2.0	1.9	2.0	1.9	1.9	-0.1
Norway	1.7	1.7	1.9	1.9	1.9	1.8	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7	-0.2
Portugal	2.2	1.7	1.6	1.4	1.6	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.2	1.3	1.4	1.4	0.0
Spain	2.2	1.6	1.4	1.2	1.2	1.3	1.4	1.4	1.5	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	-0.1
Sweden	1.7	1.7	2.1	1.7	1.5	1.8	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	0.0
Switzerland	1.6	1.5	1.6	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.1
United Kingdom	1.9	1.8	1.8	1.7	1.6	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	0.0
United States	1.8	1.8	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	-0.3

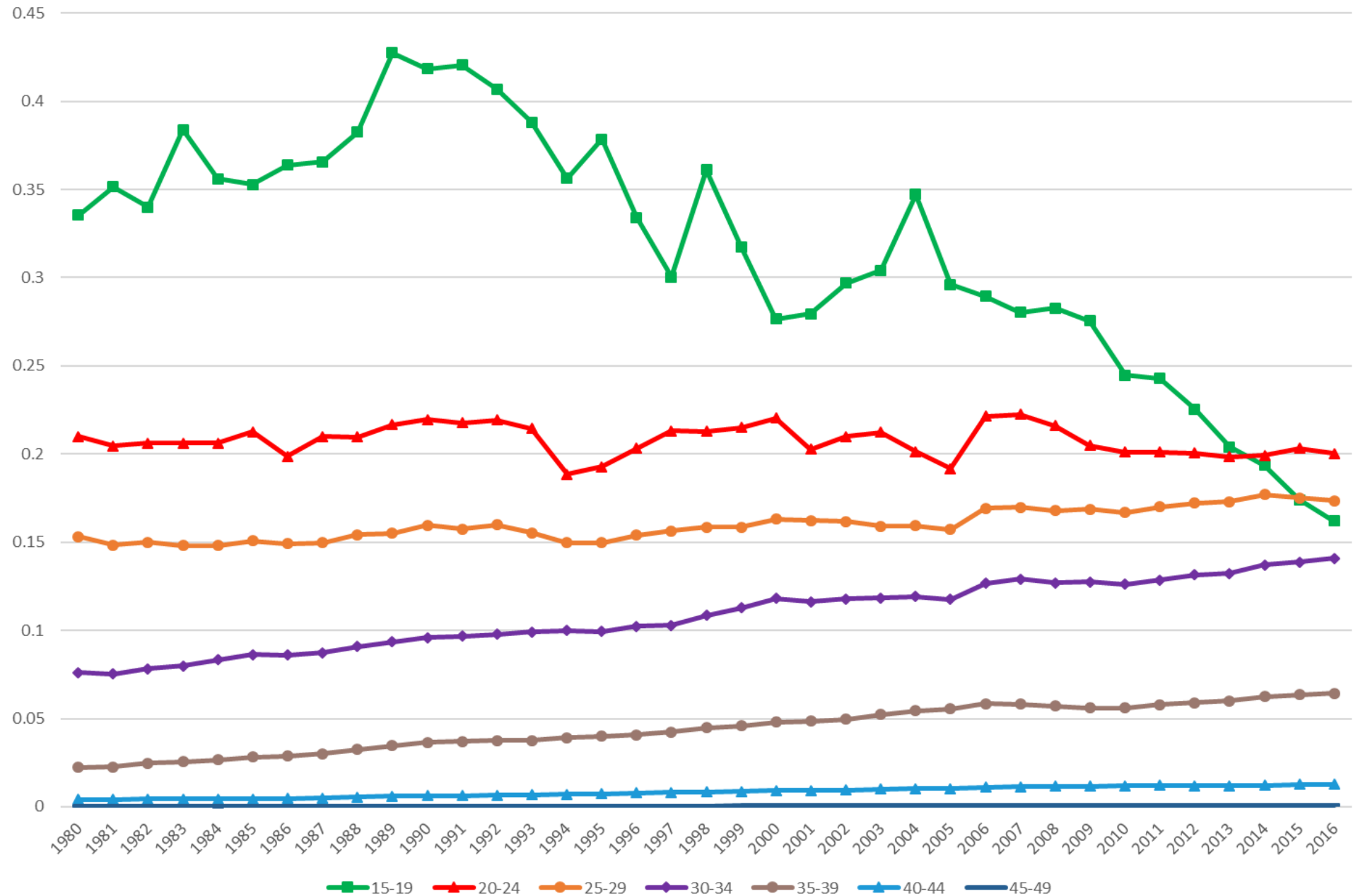
Source: United States: Social Security Administration Office of the Chief Actuary calculations based on data from the National Center for Health Statistics and the Census Bureau  
Other countries: Organisation for Economic Co-operation and Development website at: <https://data.oecd.org/pop/fertility-rates.htm>

# Appendix

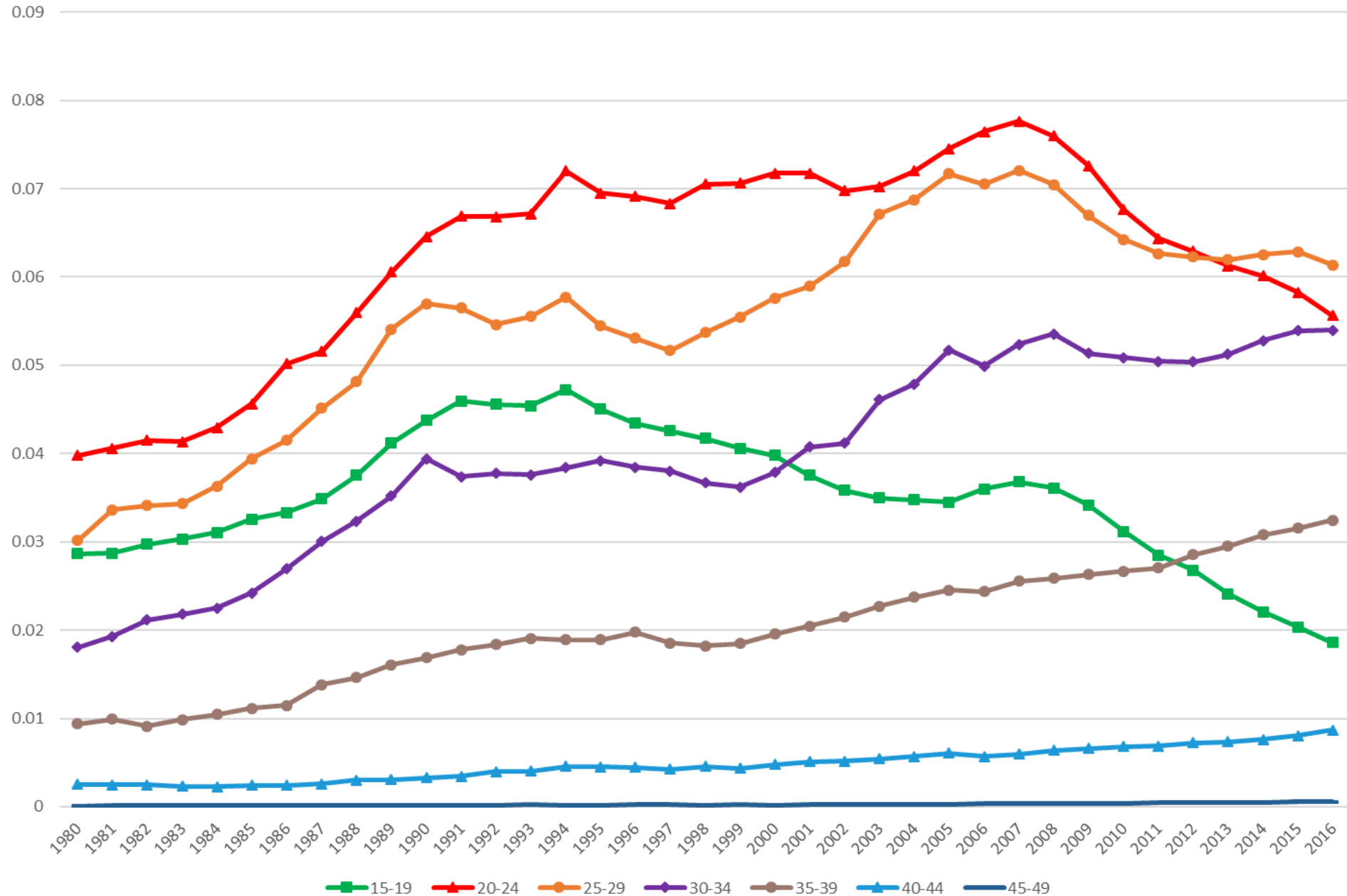
Central Birth Rates for Five-Year Age Groups: Total



Central Birth Rates for Five-Year Age Groups: Married Only



Central Birth Rates for Five-Year Age Groups: **Unmarried Only**



Percentage of Females Currently Married, by Age Group, 2018 TR

