

# SSA Office of the Chief Actuary Labor Force Participation Rate (LFPR) Projections

Social Security Advisory Board Technical Panel Presentation

June 1, 2016

Office of the Chief Actuary, SSA

# Presentation

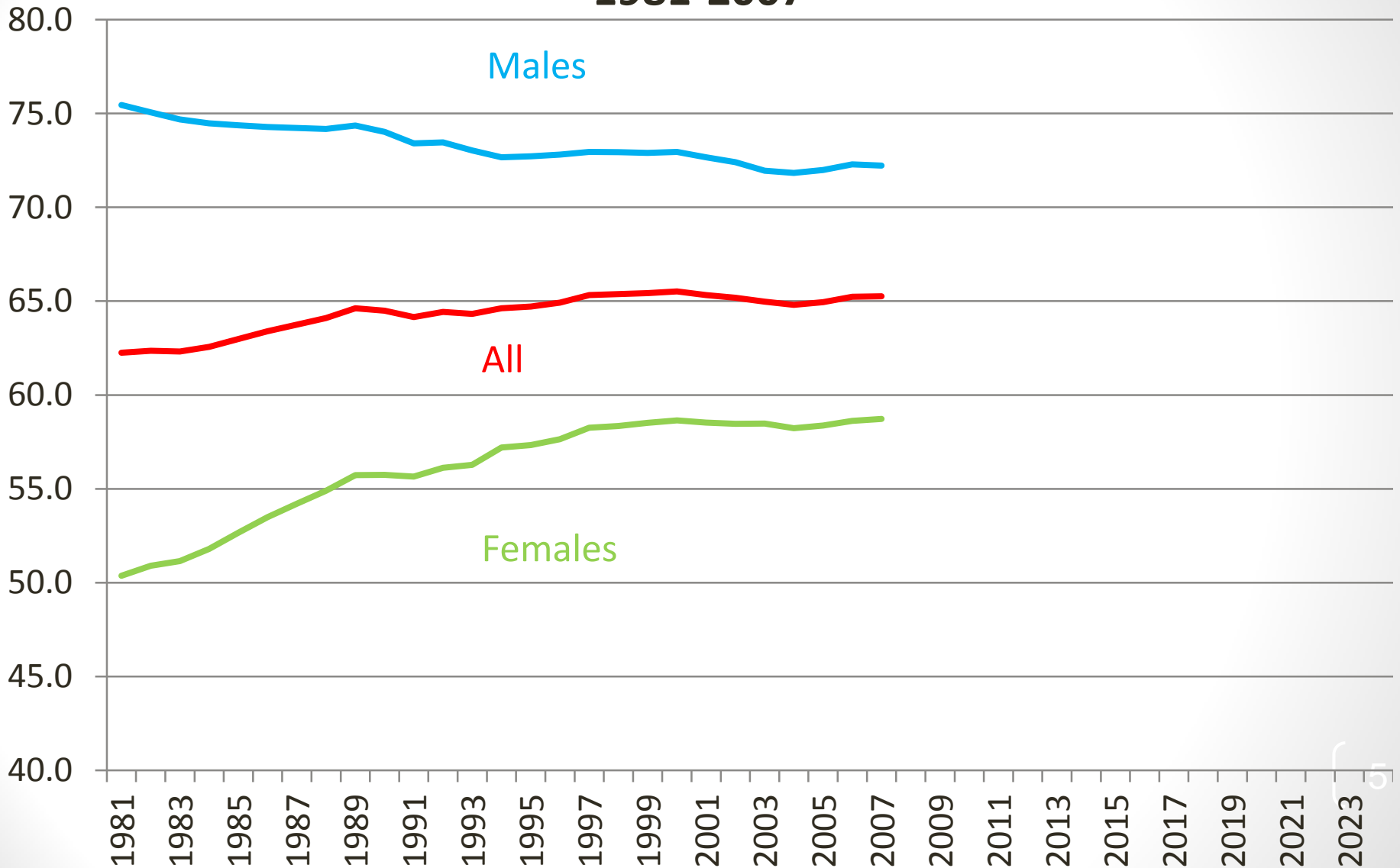
- How LFPR projections fit within OCACT trust fund projections
- Historical LFPRs and OCACT LFPR projections
- Description of OCACT LFPR model
- Comparisons to other LFPR projections
- Recommendations from prior technical panels
- Potential enhancements to the LFPR model

# How LFPR projections fit within trust fund projections

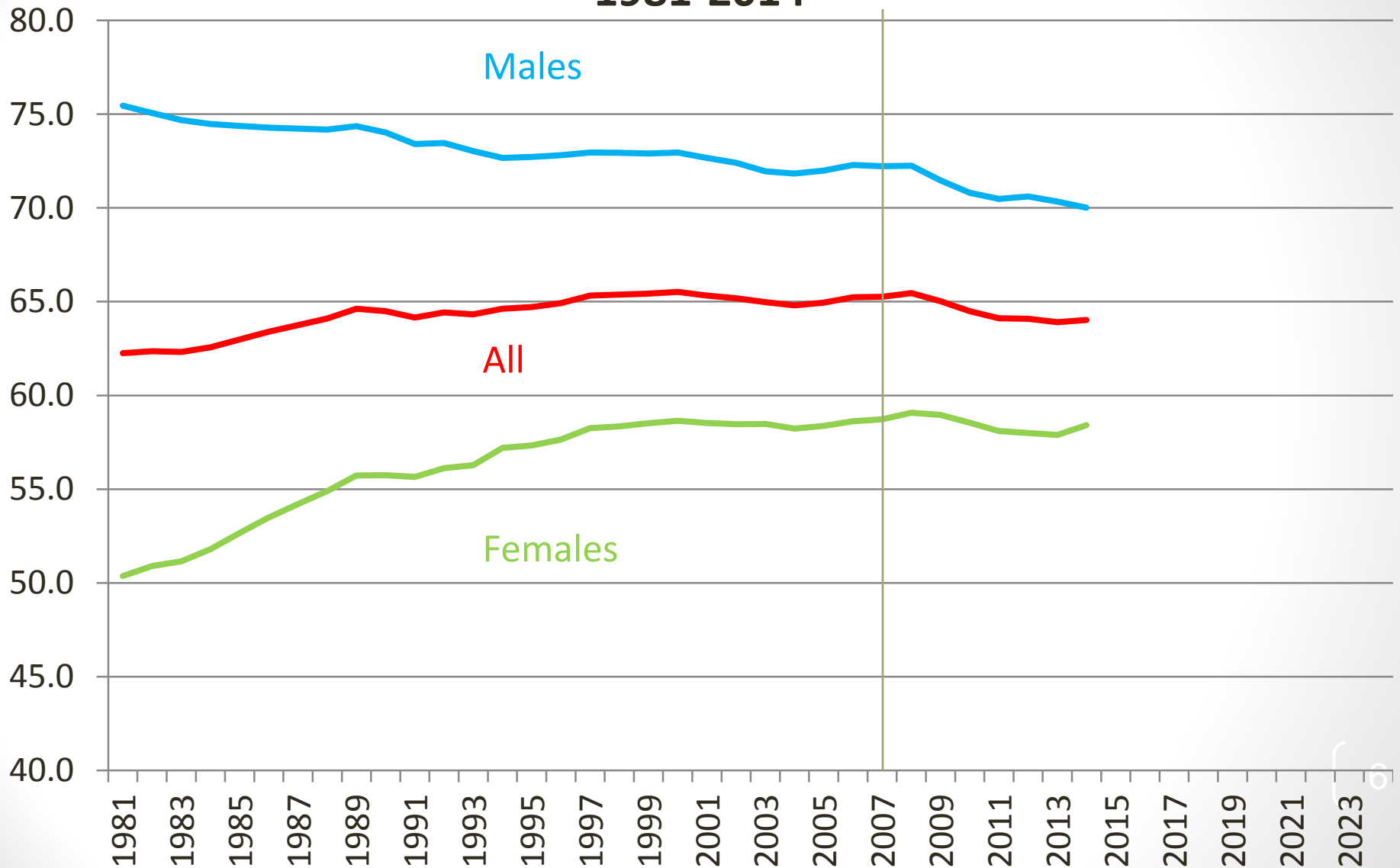
- Social Security cost and solvency---
  - Ratio of beneficiaries to workers
    - Principally a demographic issue
  - LFPR affects covered workers, payroll and tax income first
    - Offsetting effect on beneficiaries later
  - LFPR affects insured status
  - LFPR also affects fullness of career earnings
- Trend parameters that accumulate have most effect
  - A “level shift,” as in higher or lower ultimate LFPR has less effect
- The big questions:
  - Demand as well as supply of labor in U.S., and internationally
  - Permanent or transient effects of recent recession?

# OCACT LFPR Projections

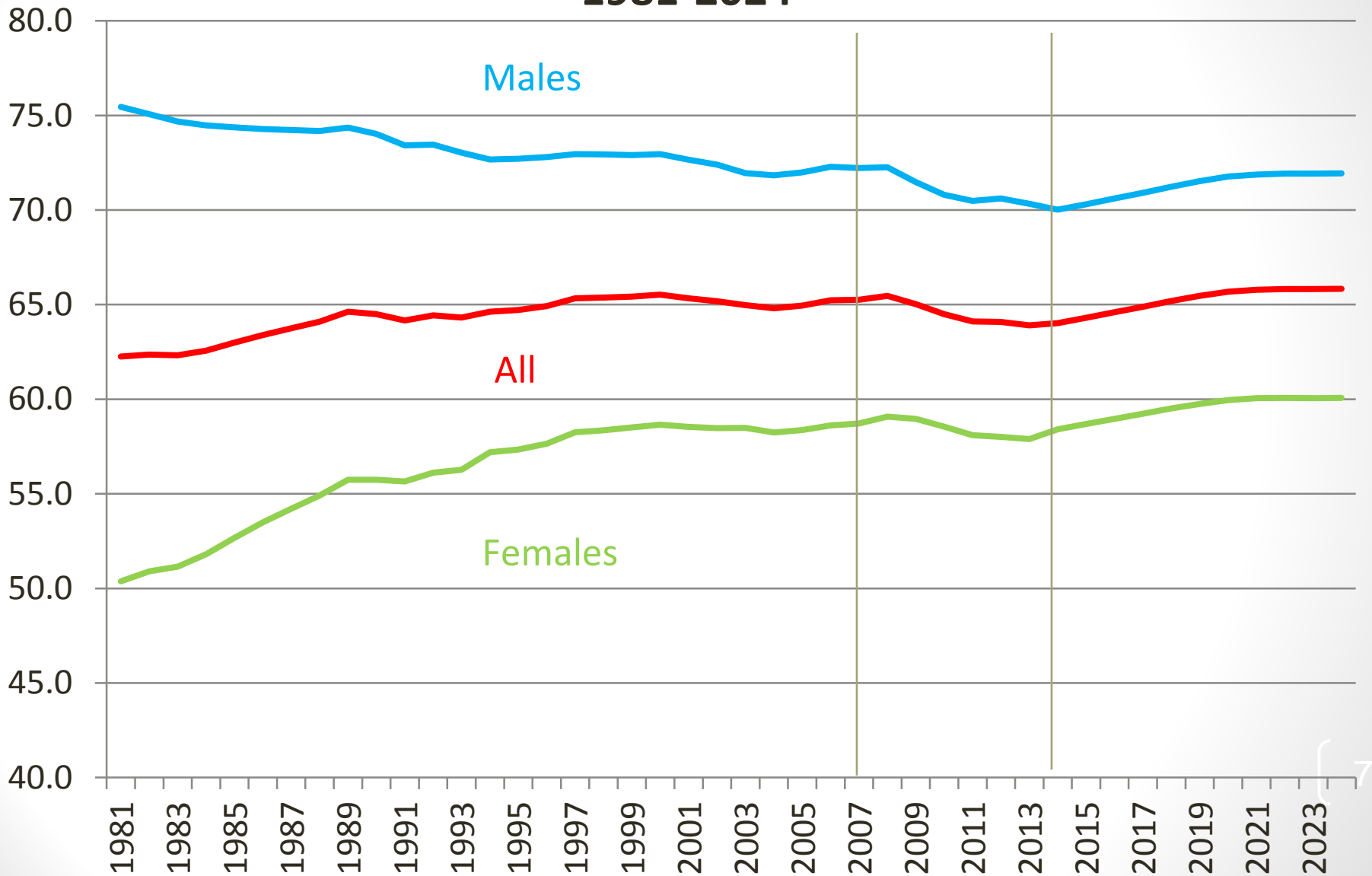
# Age-Sex-Adjusted Total LFPRs 1981-2007



# Age-Sex-Adjusted Total LFPRs 1981-2014



# Age-Sex-Adjusted Total LFPRs 1981-2024



# OCACT LFPR Model

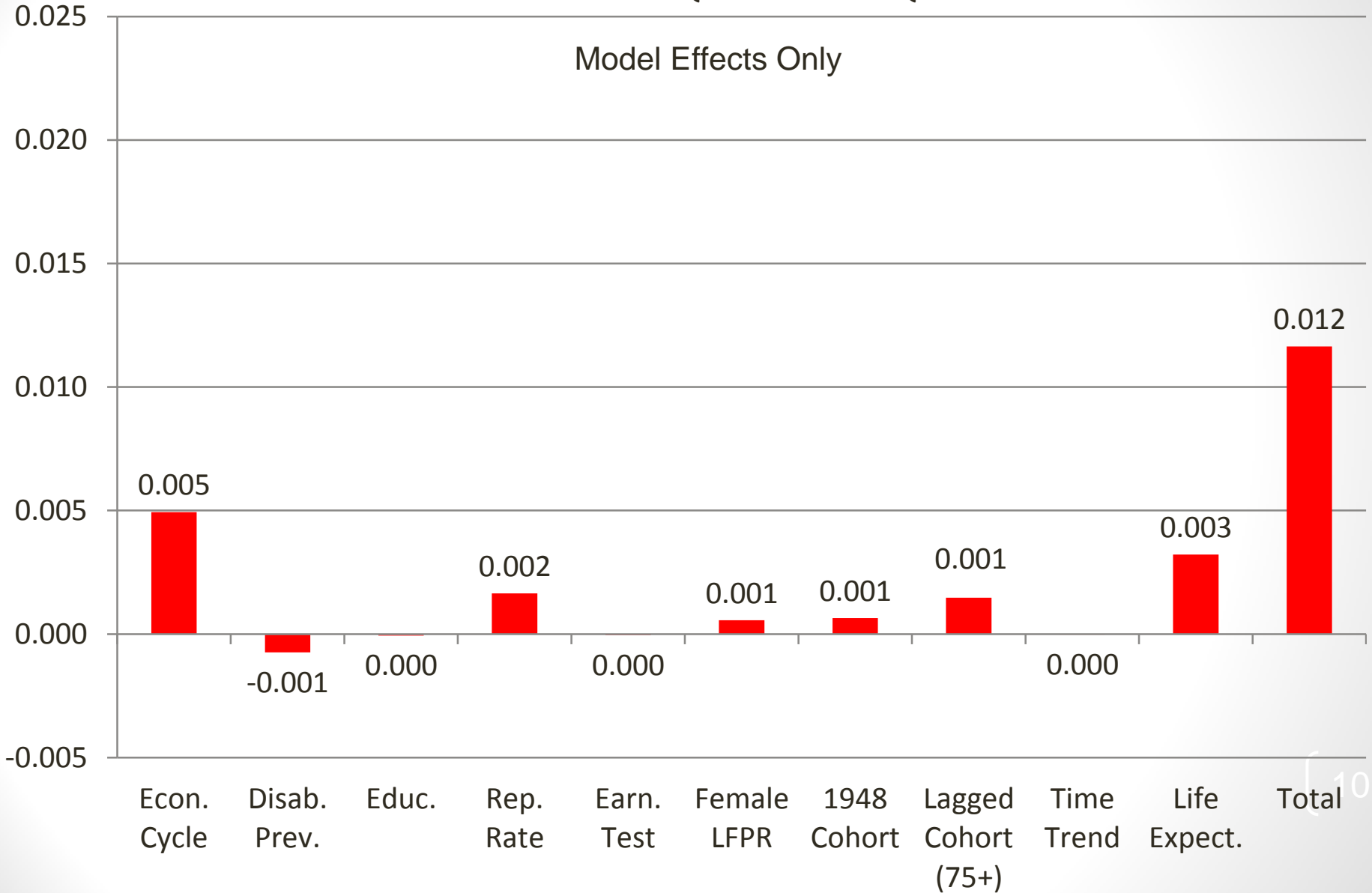
- 153 LFPR equations, 69 for males and 84 for females
  - Table 1: Males: age (55 age groups) + marital status (14 additional)
  - Table 2: Females: age (55 age groups) + marital status (14 additional) + child under age of 6 (15 additional)
- Model components include:
  - Economic cycle, disability prevalence, education, marital status, child under age 6, replacement rate, earnings test, cohort effects (females), Female LFPRs
  - Adjustments for life expectancy, aggregate LFPR



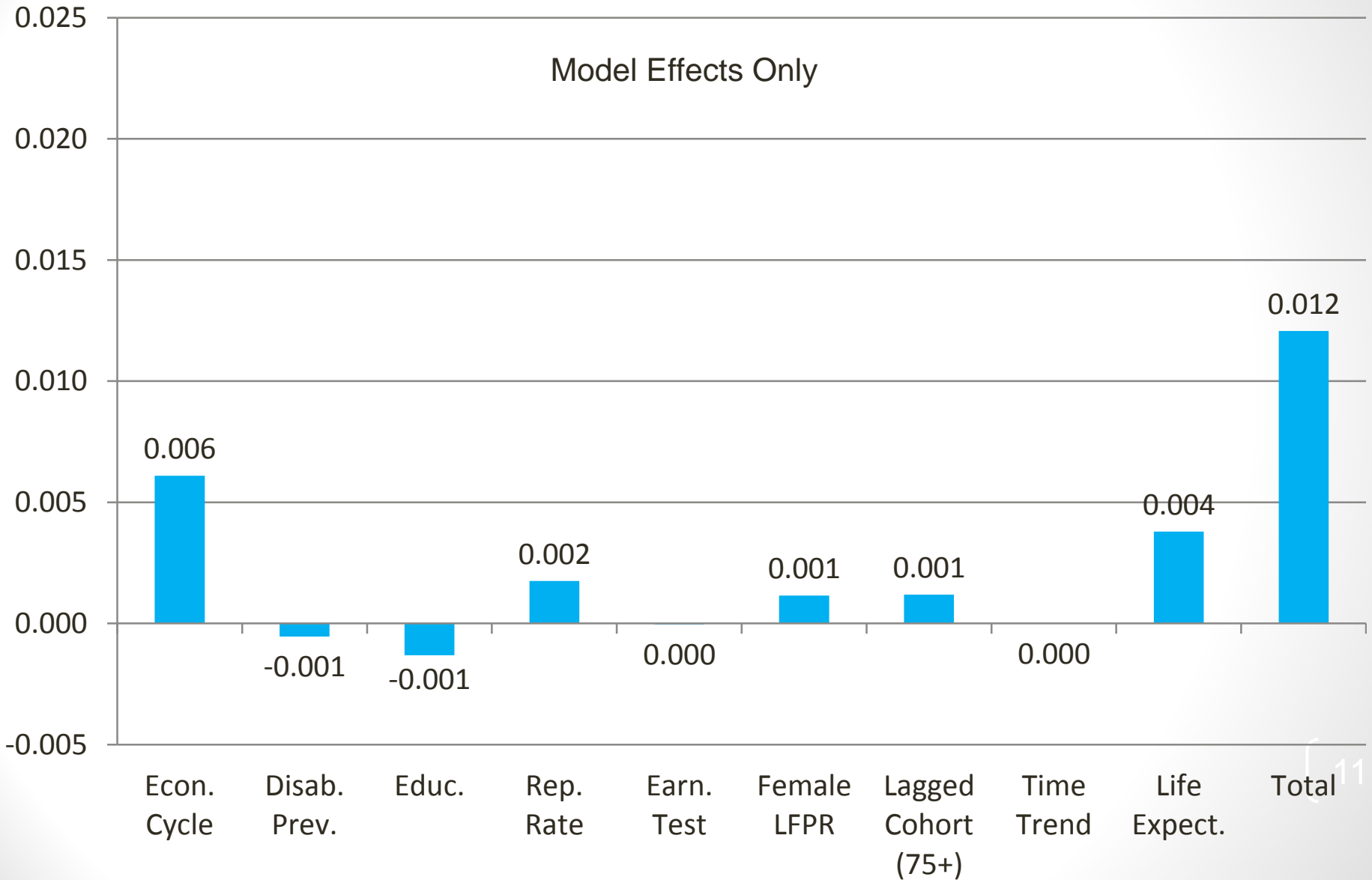
# Effect of Components LFPRs

- Table 3: 2013:Q4 to 2023:Q4: Age-sex adjusted (handout)
- Table 4: 2023:Q4 to 2088:Q4: Age-sex adjusted (handout)
- Table 5: 2023:Q4 to 2088:Q4: Gross (handout)
- Table 6: 2023:Q4 to 2088:Q4: Gross (handout)

**Labor Force Participation Rates (Age-Sex-Mar-Child Adjusted, Base 2011):  
2013 4th Qtr. to 2023 4th Qtr.**

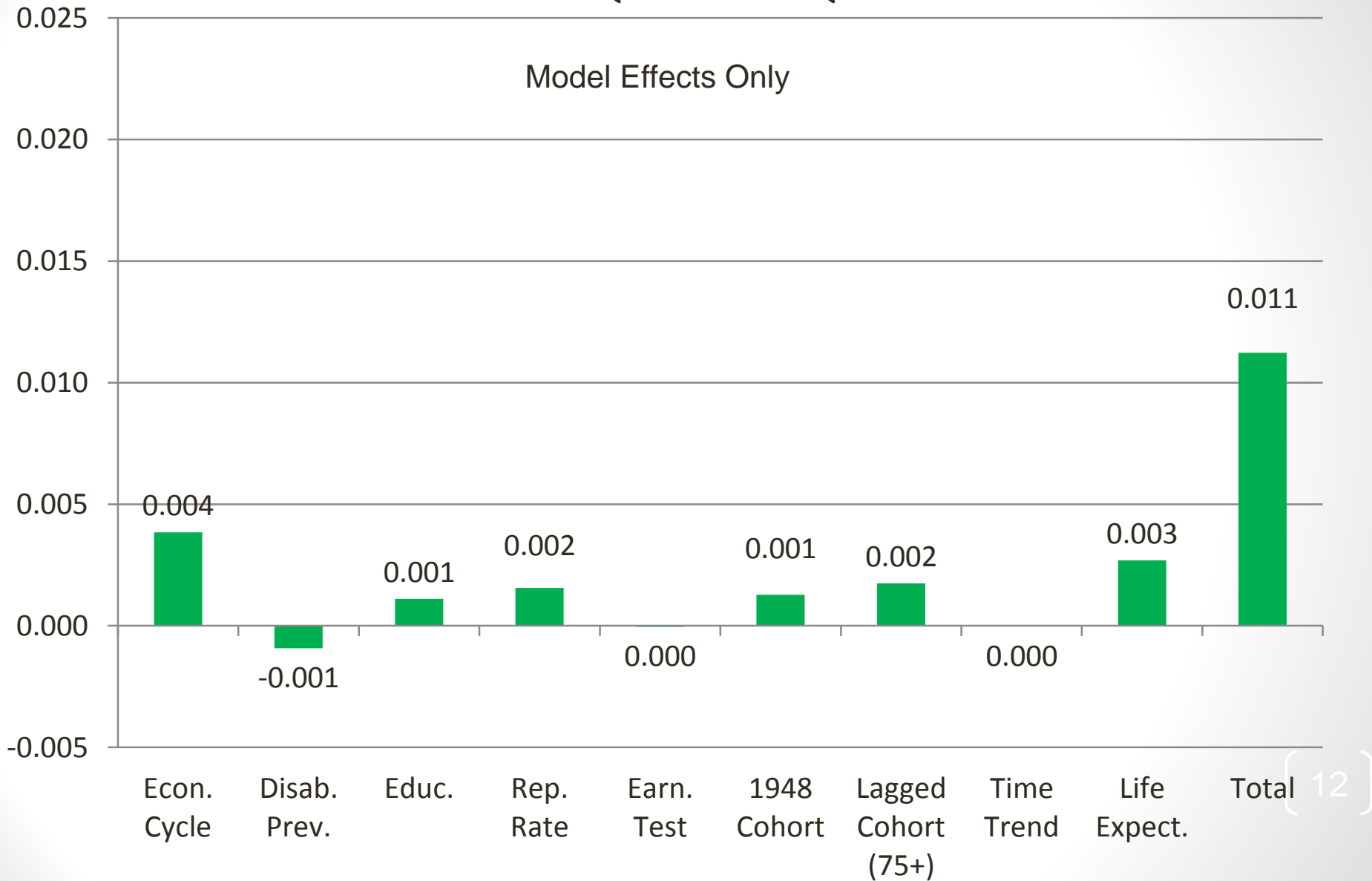


# Male Labor Force Participation Rates (Age-Mar-Child Adjusted, Base 2011: 2013 4th Qtr. to 2023 4th Qtr.)

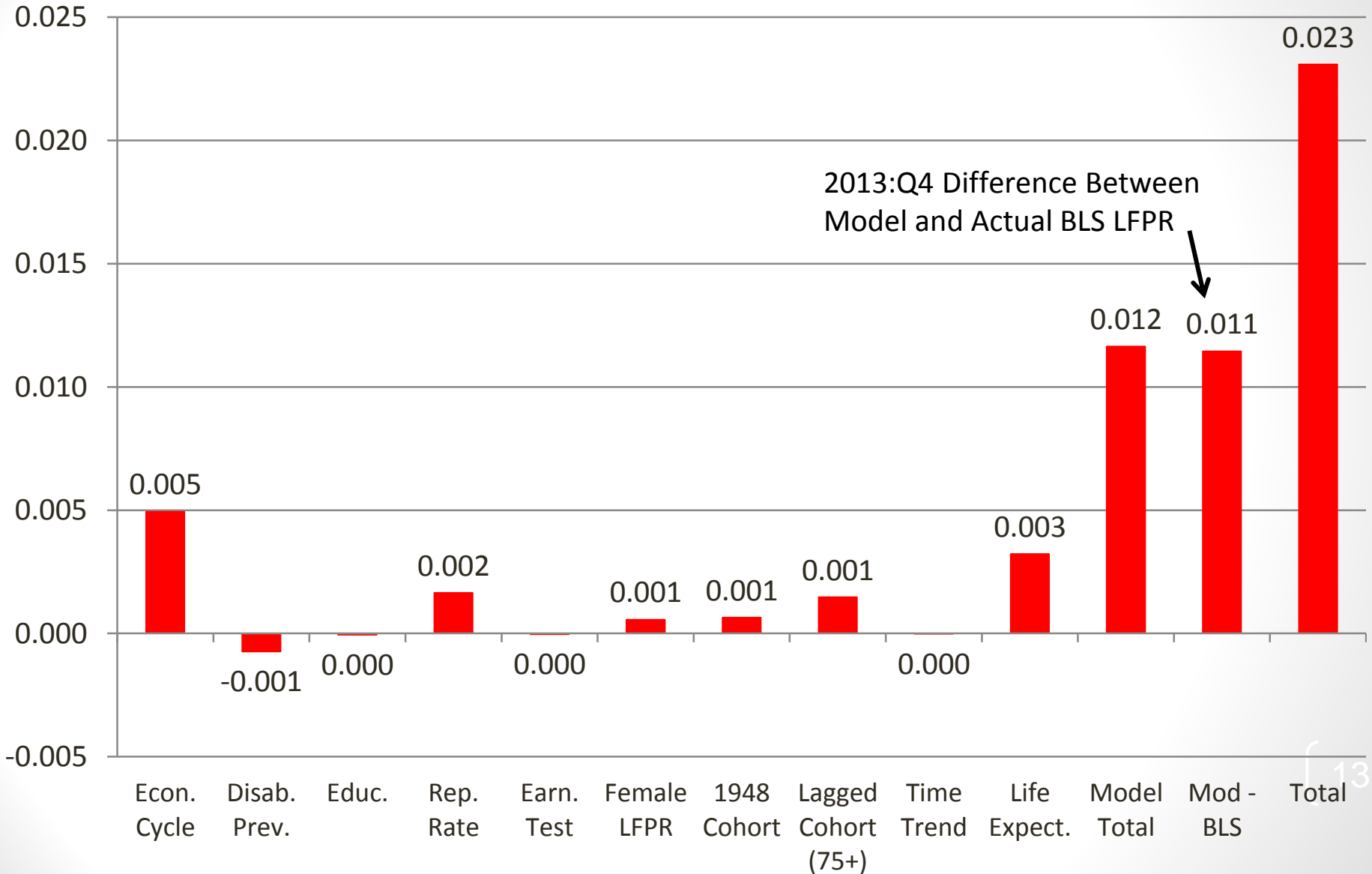


**Female Labor Force Participation Rates (Age-Mar-Child Adjusted, Base 2011):  
2013 4th Qtr. to 2023 4th Qtr.**

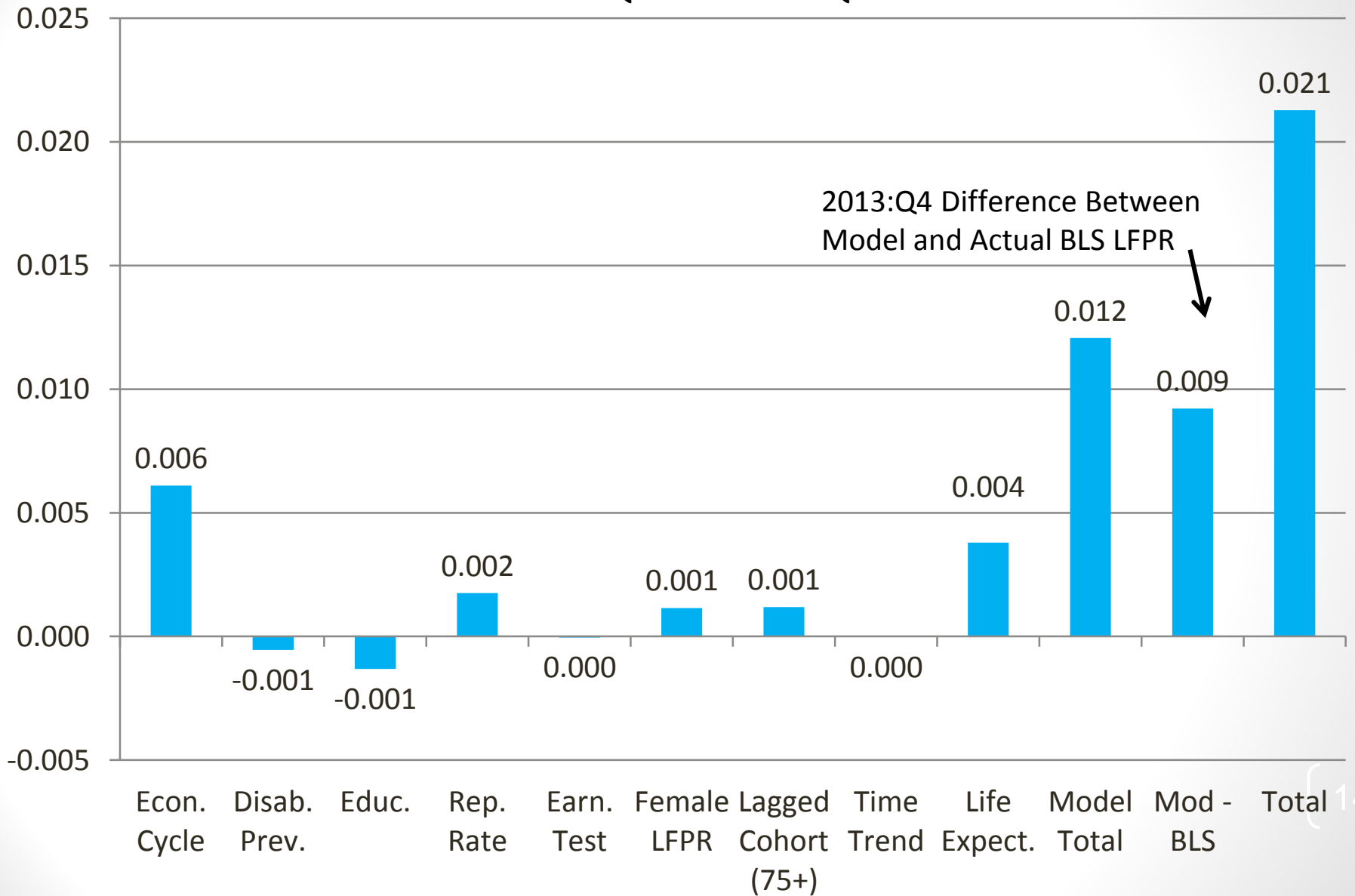
Model Effects Only



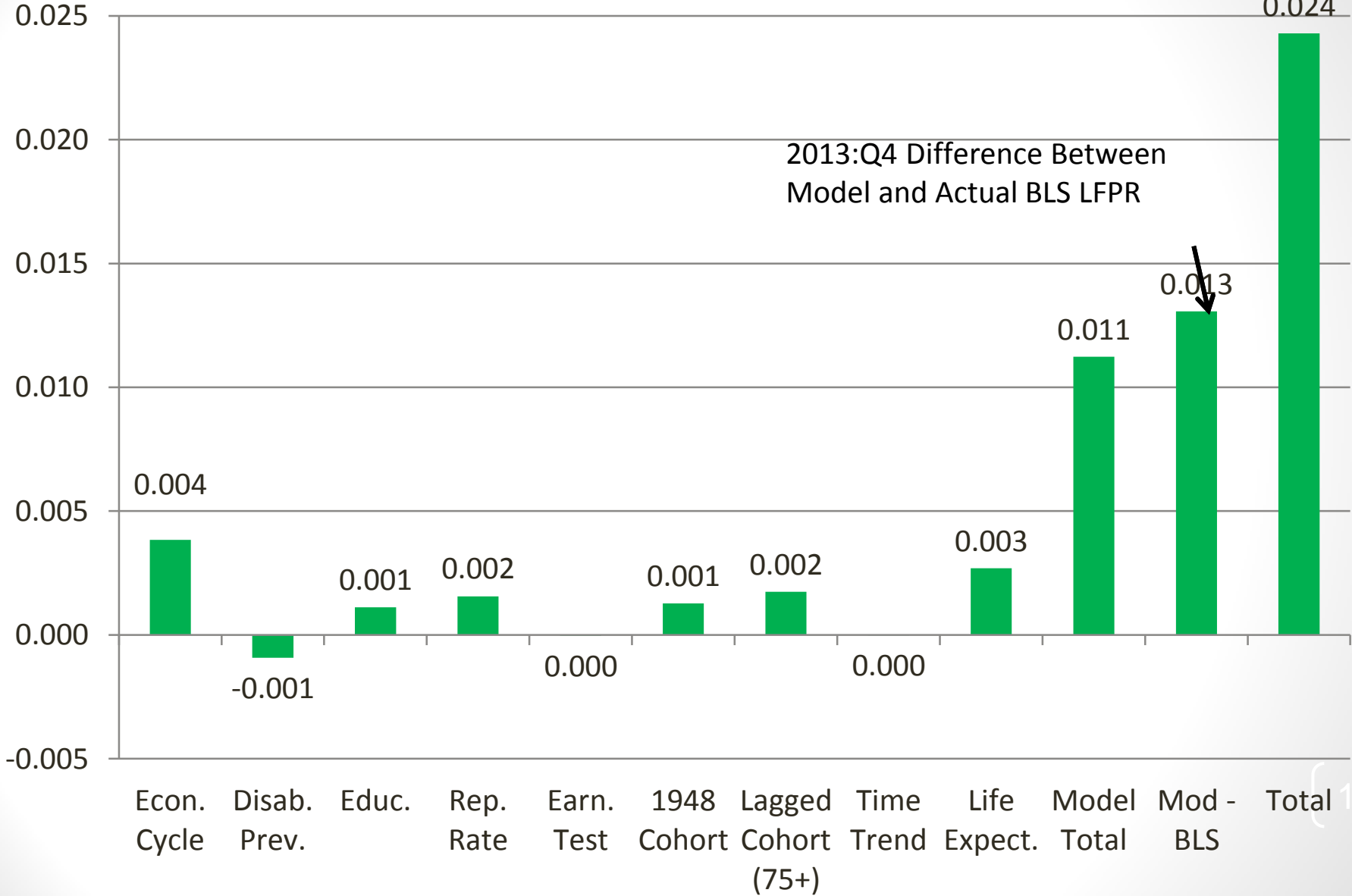
## Labor Force Participation Rates (Age-Sex-Mar-Child Adjusted, Base 2011): 2013 4th Qtr. to 2023 4th Qtr.



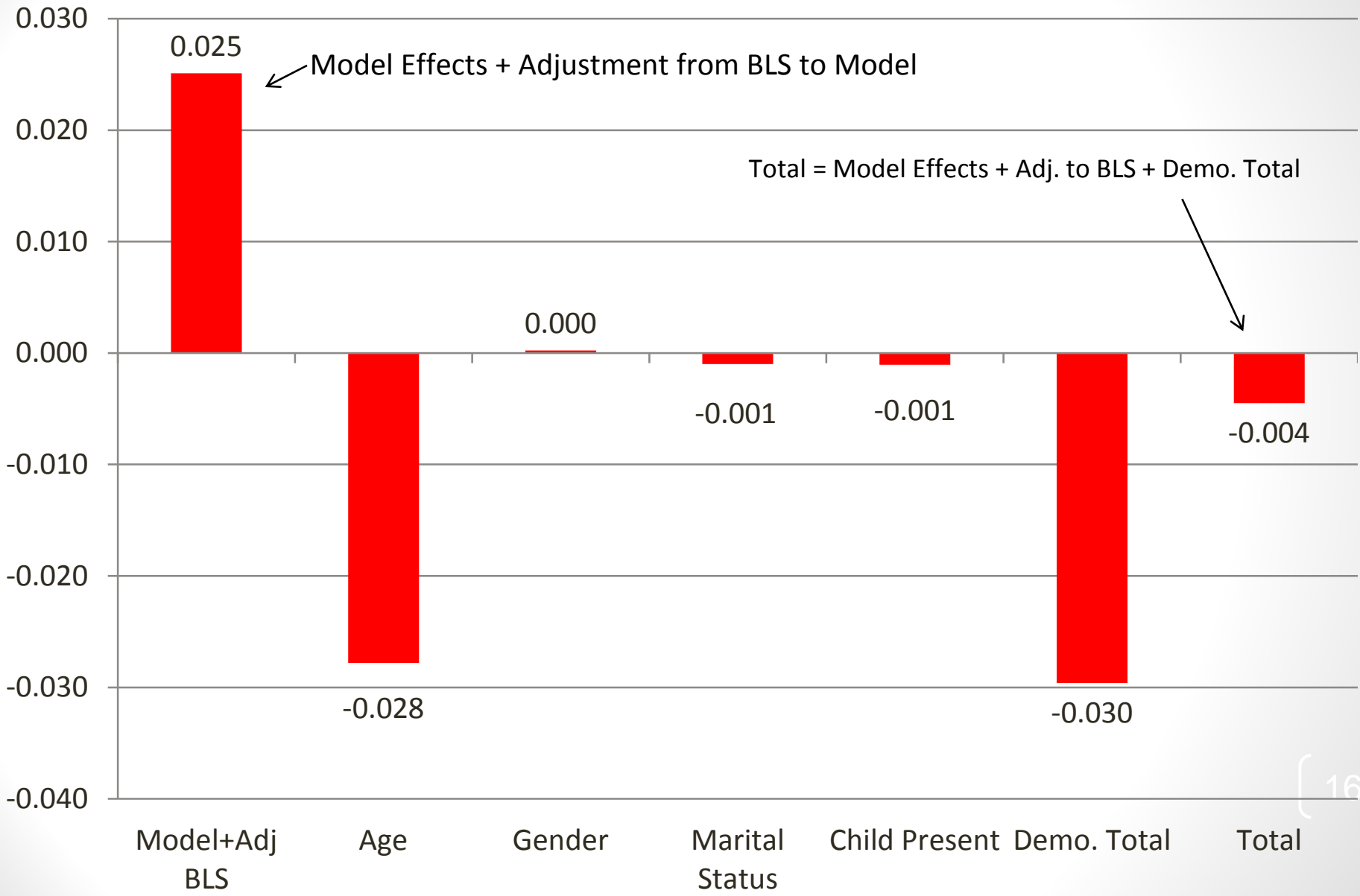
## Male Labor Force Participation Rates (Age-Mar-Child Adjusted, Base 2011): 2013 4th Qtr. to 2023 4th Qtr.



Female Labor Force Participation Rates (Age-Mar-Child Adjusted, Base 2011):  
2013 4th Qtr. to 2023 4th Qtr.

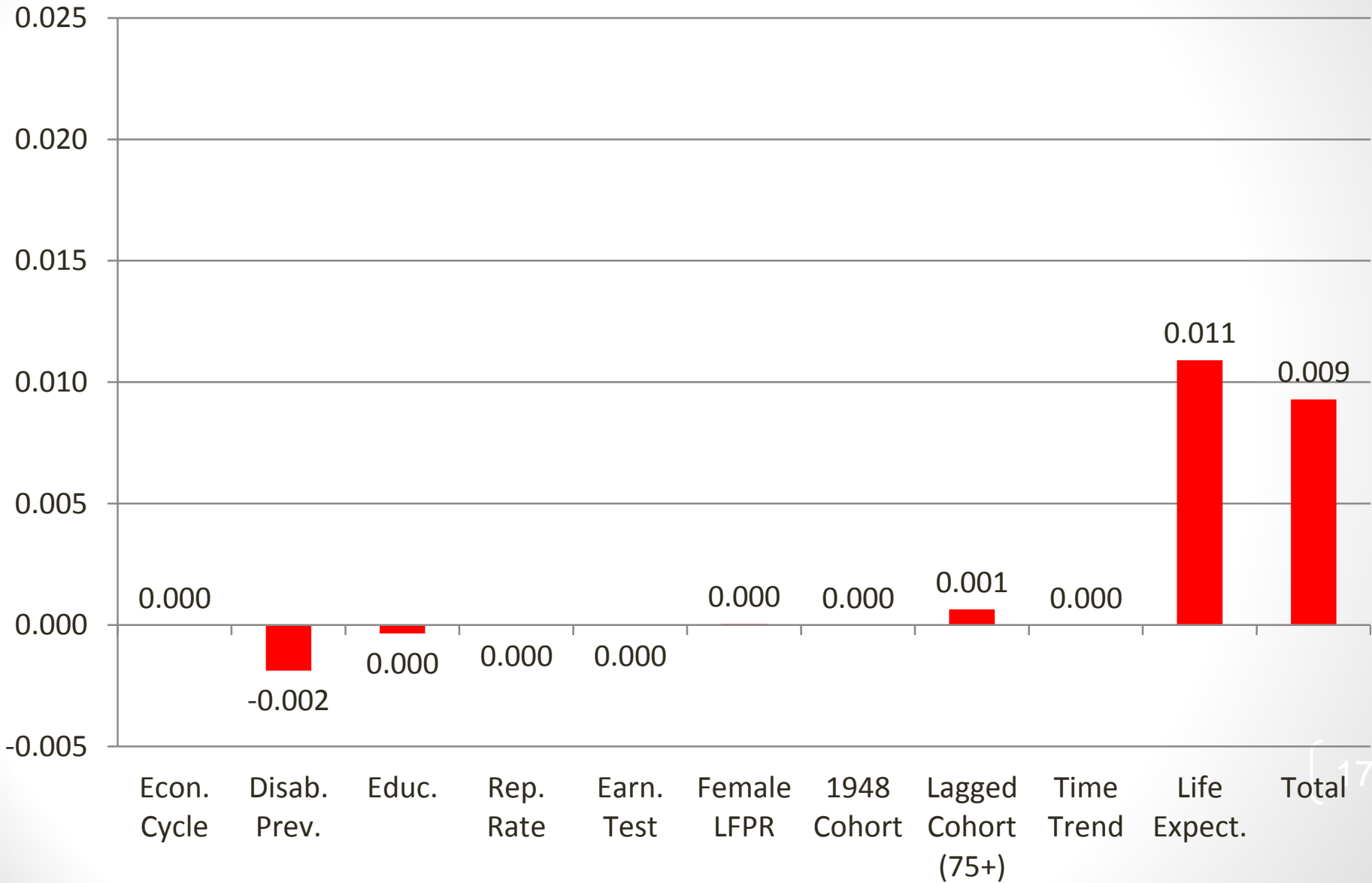


# Effects of Demographic Factors on Gross Labor Force Participation Rates

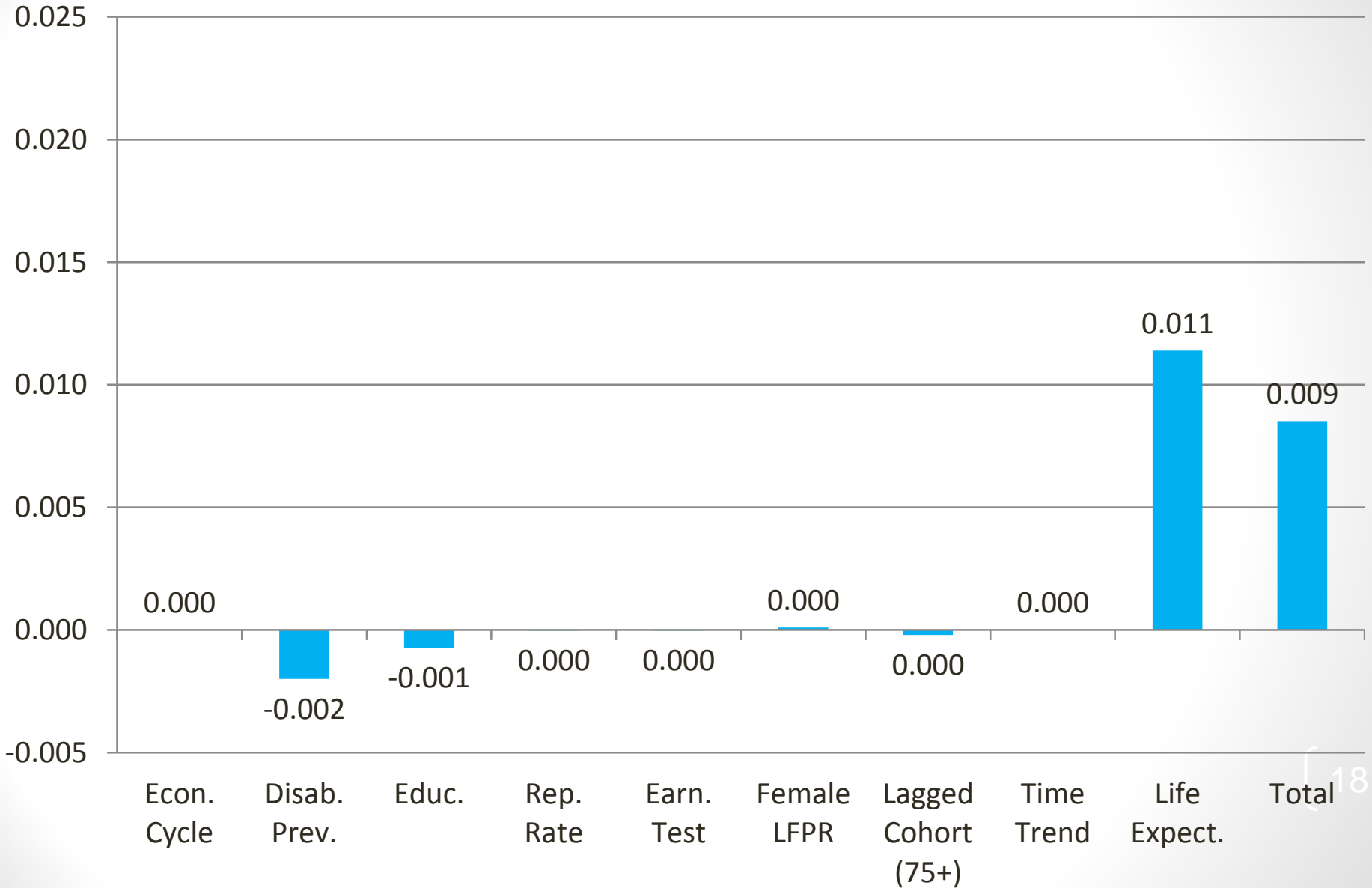




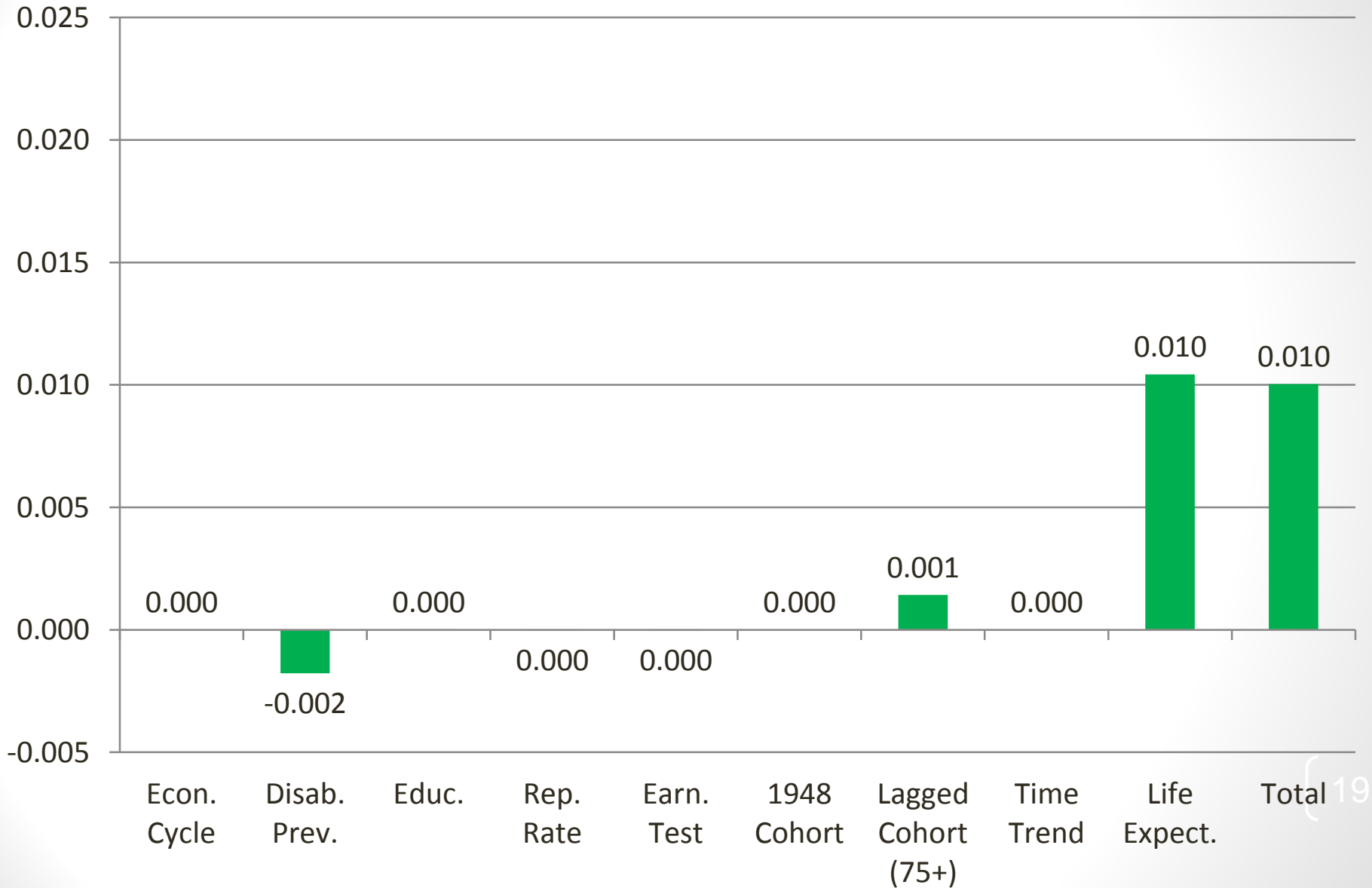
**Labor Force Participation Rates (Age-Sex-Mar-Child Adjusted, Base 2011):  
2023 4th Qtr. to 2088 4th Qtr.**



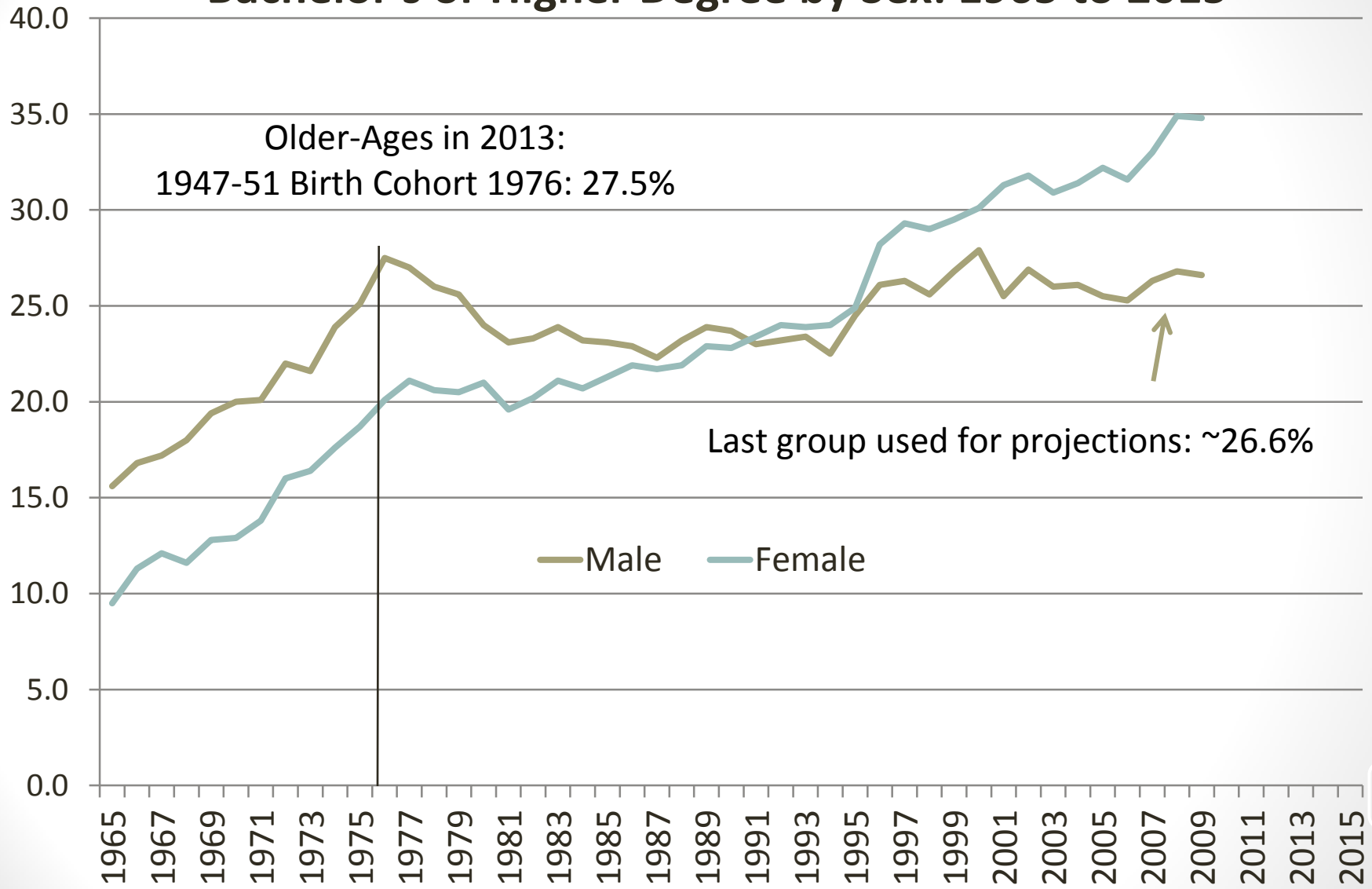
# Male Labor Force Participation Rates (Age-Mar-Child Adjusted, Base 2011): 2023 4th Qtr. to 2088 4th Qtr.



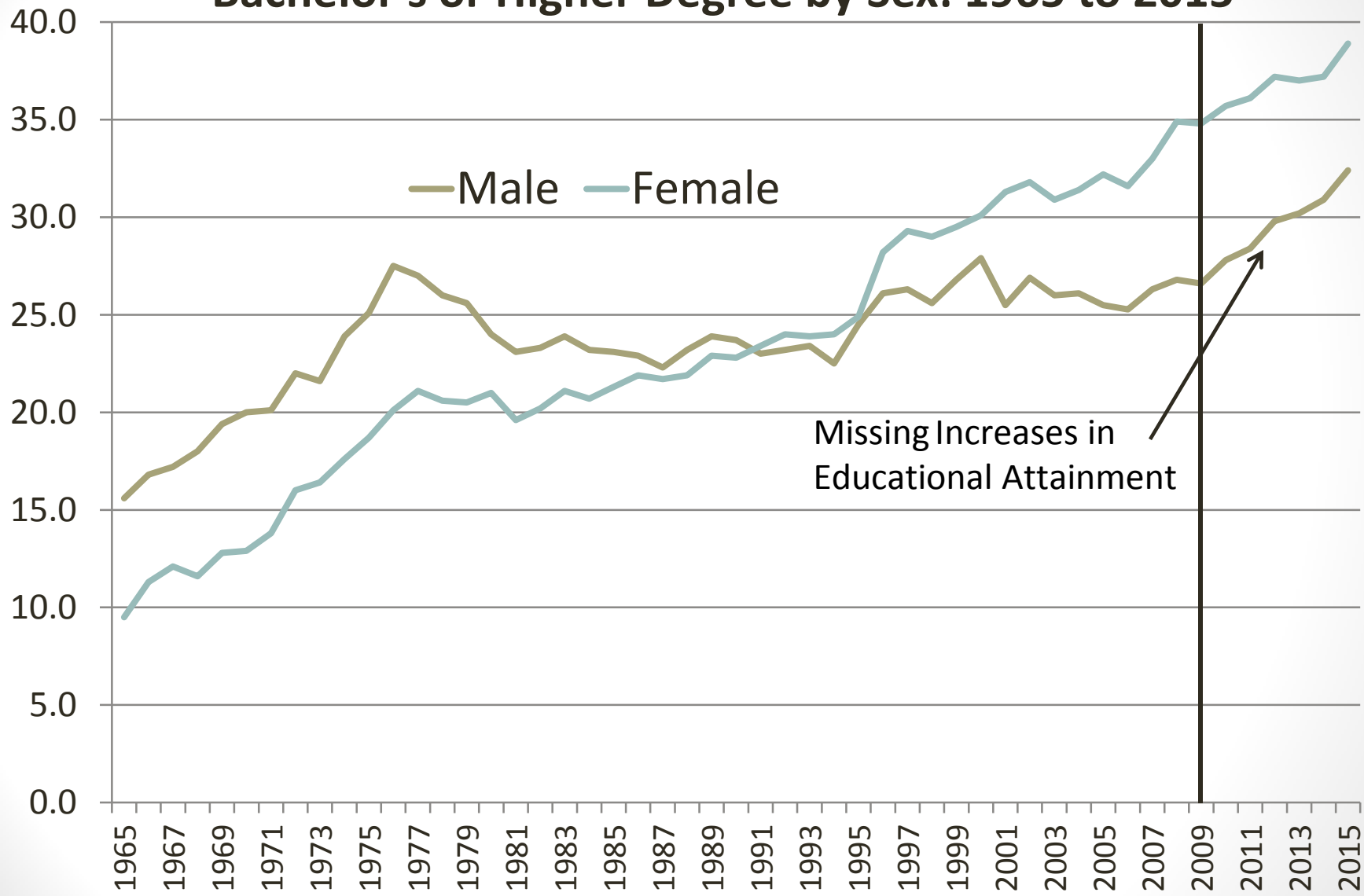
**Female Labor Force Participation Rates (Age-Mar-Child Adjusted, Base 2011):  
2023 4th Qtr. to 2088 4th Qtr.**



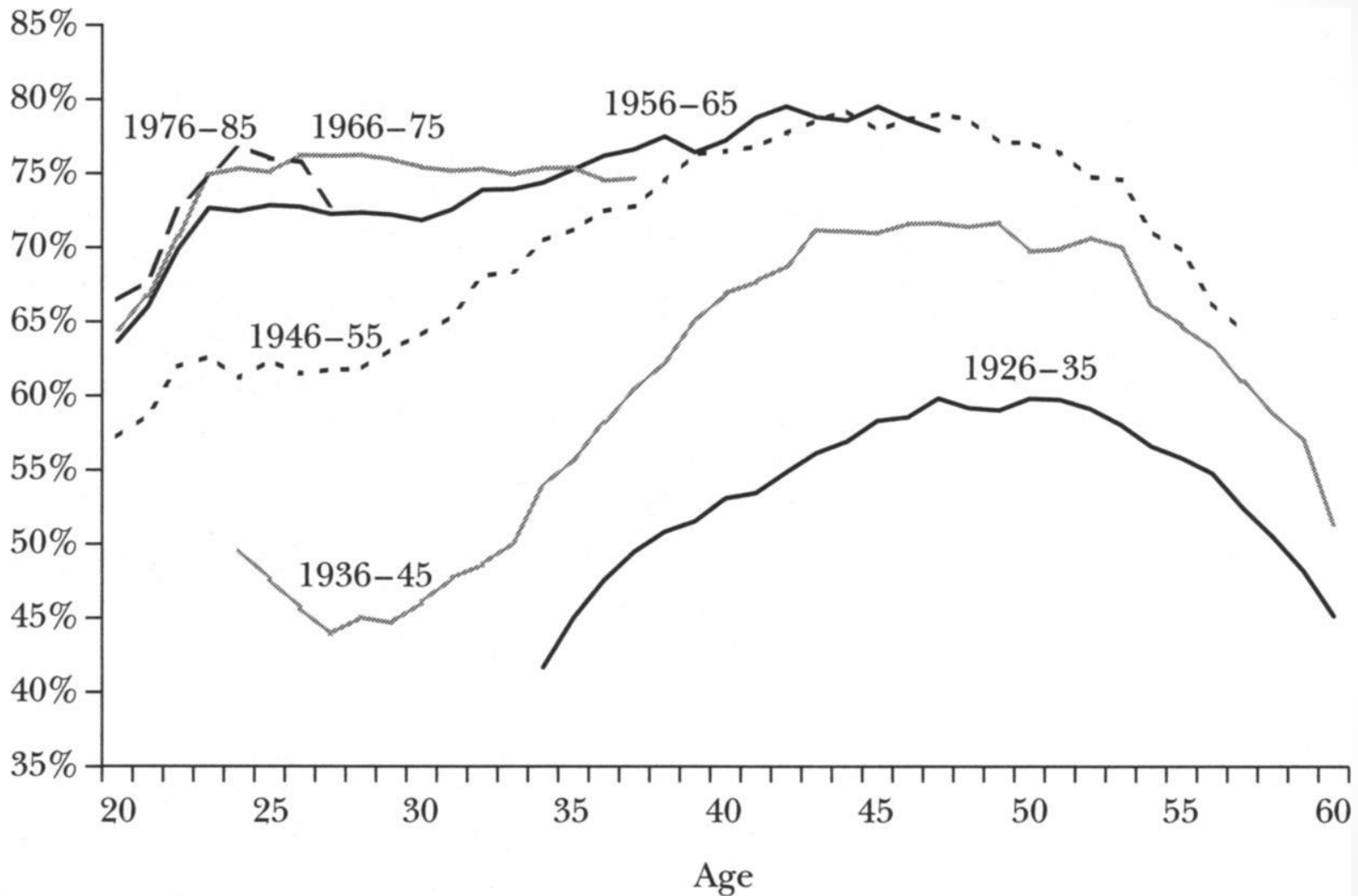
# Percentage of Population Aged 25 to 29 With a Bachelor's or Higher Degree by Sex: 1965 to 2015



# Percentage of Population Aged 25 to 29 With a Bachelor's or Higher Degree by Sex: 1965 to 2015



# OCACT 1948 Female Birth Cohort Effect is Consistent with the Data



Source: Juhn and Potter, 2006 JEP

# Comparatives

- SSAB Technical Panel:
  - Felt Trustees Report LFPR projections were too low
  - Believed significant economic pressures will lead to more work effort
  - Believed increases in educational attainment would boost LFPRs
  - Recommended greater uncertainty with LFPR projections
- Relative to 2014 Trustees LFPR projections to 2024
  - 2013 BLS projections are lower, particularly at young ages
  - 2014 CBO projections are similar (omitting ACA assumption)
  - 2014 CEA Mid-Session Review projections are similar
  - 2014 Aaronson et al projections
    - 2007 based are similar
    - 2014 based are lower
- Questions: How do the projections differ? Why?

# Factors Affecting LFPR Projections

- Demographics factors
  - Age-sex (TR, BLS, CEA, Aaronson)
  - Marital status (TR, Aaronson)
  - Fertility (TR, Aaronson)
  - Race and ethnicity (BLS)
- Cyclical factors (TR, BLS, CEA, Aaronson)
  - Great recession temporary distortion (TR, CEA, Aaronson 2007)
  - Great recession permanent effect (BLS, Aaronson 2014)
- Structural factors: education, disability prevalence, social security generosity, life expectancy, etc. (TR, Aaronson)
- Cohort effects (TR, Aaronson)
  - Aaronson for almost all birth-year cohorts
  - TR for some female birth year cohorts
- Time trends (BLS)
  - BLS for all age-sex-race/ethnicity subgroups
  - TR for some age-sex subgroups
- Labor Demand factors
  - How will global factors affect the domestic production of goods and services?
  - How has it already affected labor demand and how will it affect it in the future?
  - Are there other demand side factors that we should be incorporating in our models?



# BLS Methodology (Toosi, 2011;2013)

- Uses historical LFPR trends within 136 detailed age (17), sex, race and ethnicity (4) categories
- Extrapolates past participation rates after a process of smoothing and filtering
- Does not directly take into account the behavioral aspects, economic factors, structural changes, and dynamic conditions of the labor market

# CEA Methodology

- Uses 2007 age-sex specific LFPRs for ultimate
- Applies cyclic adjustment to change from current to full employment
- Does not directly take into account the behavioral aspects
- Phases out the residual by about 2023

# Aaronson et al (2006, 2014)

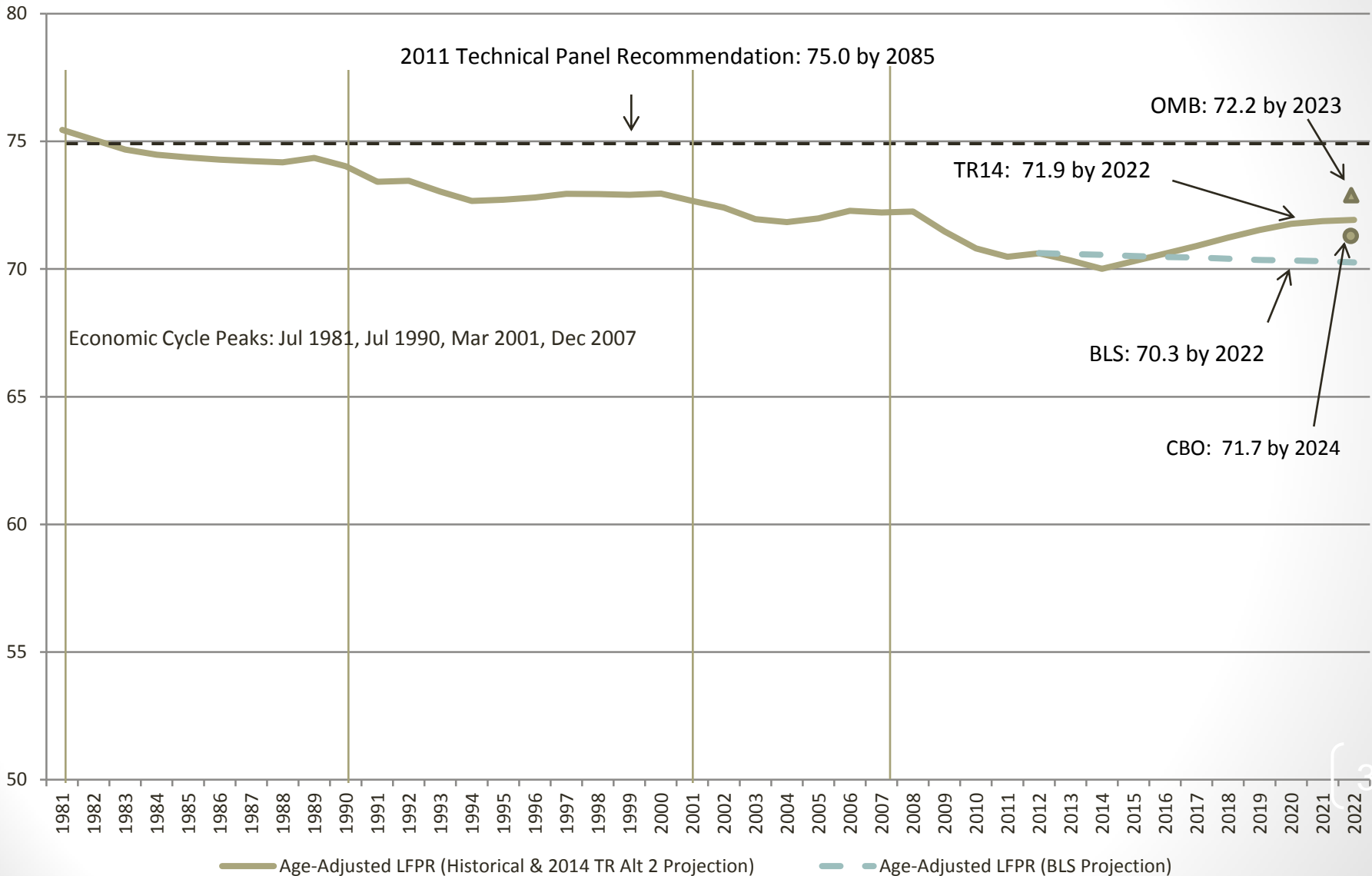
- Build LFPR model reflecting:
  - Aging, business cycle, life expectancy, educational attainment, Social Security generosity, marriage and fertility rates, birth-cohort specific effects
- Largest effect on change in LFPR between 2007-2014 attributed to birth-cohort effects when fitted through 2014 data
- Model fitted through 2007:Q2 has excessively strong econ cyclic response, but at full employment matches 2014TR closely
- Model fitted through 2014:Q2
  - greatly diminishes response to econ cycle and appears to attribute recent recession to cohort shift
  - carries forward 2013 reduced LFPR to 2022-24
  - concern over model projection post 2024 from evolving cohort effect

# CBO Methodology

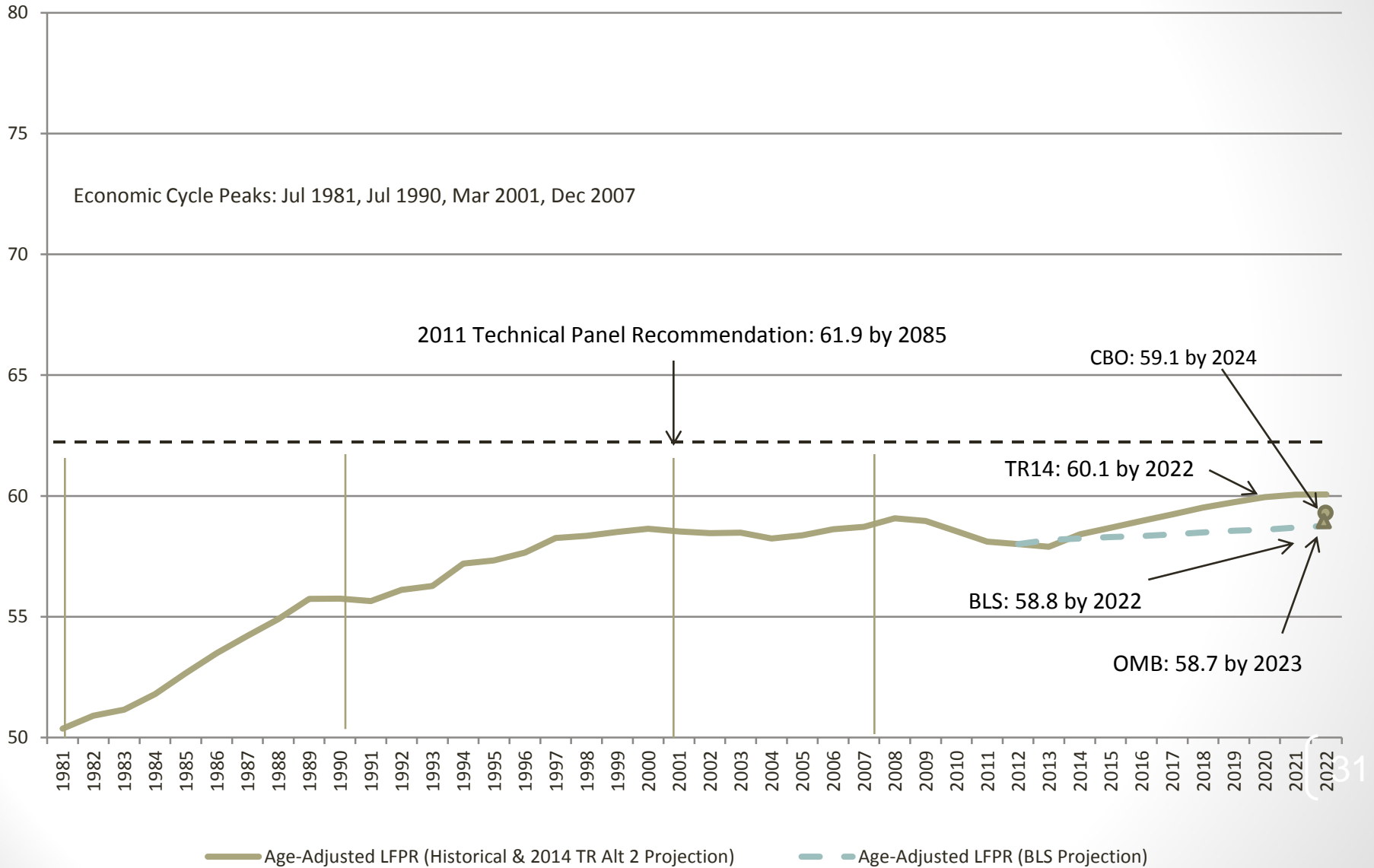
- Constructs age-sex specific LFPRs, to obtain aggregate LFPR and Labor Force estimates
  - Methodology for labor force projections not provided
- Add in immigration to the aggregates:
  - Increases labor force and population
  - No net change in LFPR
- Reduce aggregate LF estimates for “fiscal policies”
  - Assume ACA subsidies will reduce LFP
  - Assume tax code “bracket creep”
  - These assumptions reduce 2024 LFPRs from 61.7 to 60.9
- CBO “fiscal policy” assumptions inconsistent with TR (e.g., LFPR vs. hours worked)
  - Without fiscal policy assumptions CBO (61.7 percent) is closer to TR 62.4 percent by 2024
  - Differences are for young and old age groups for both men and women (under 30, 70+)

# Age-Sex Adjusted Comparisons

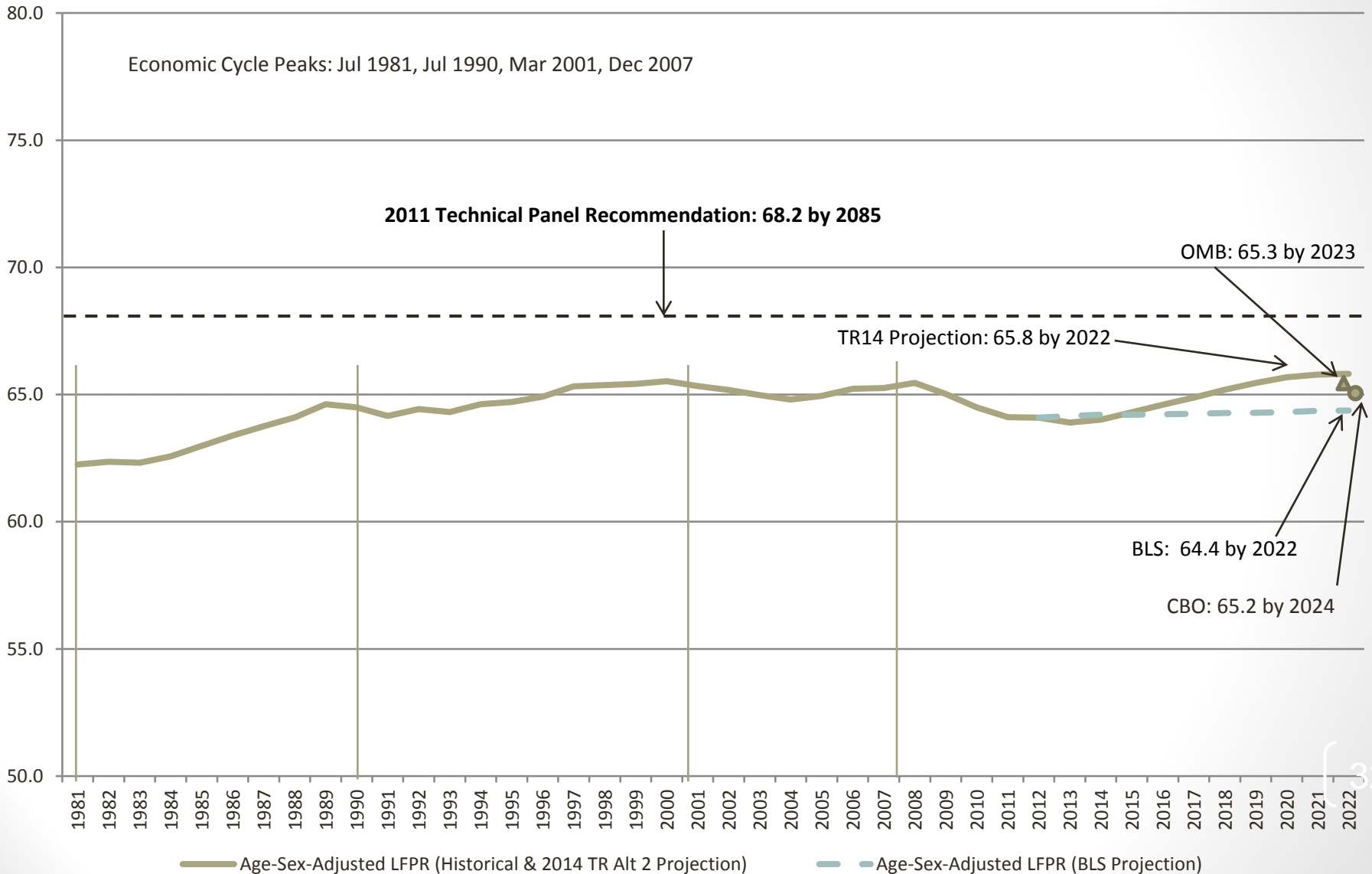
# Male Age-Adjusted LFPRs 1981-2022



# Female Age-Adjusted LFPRs 1981-2022



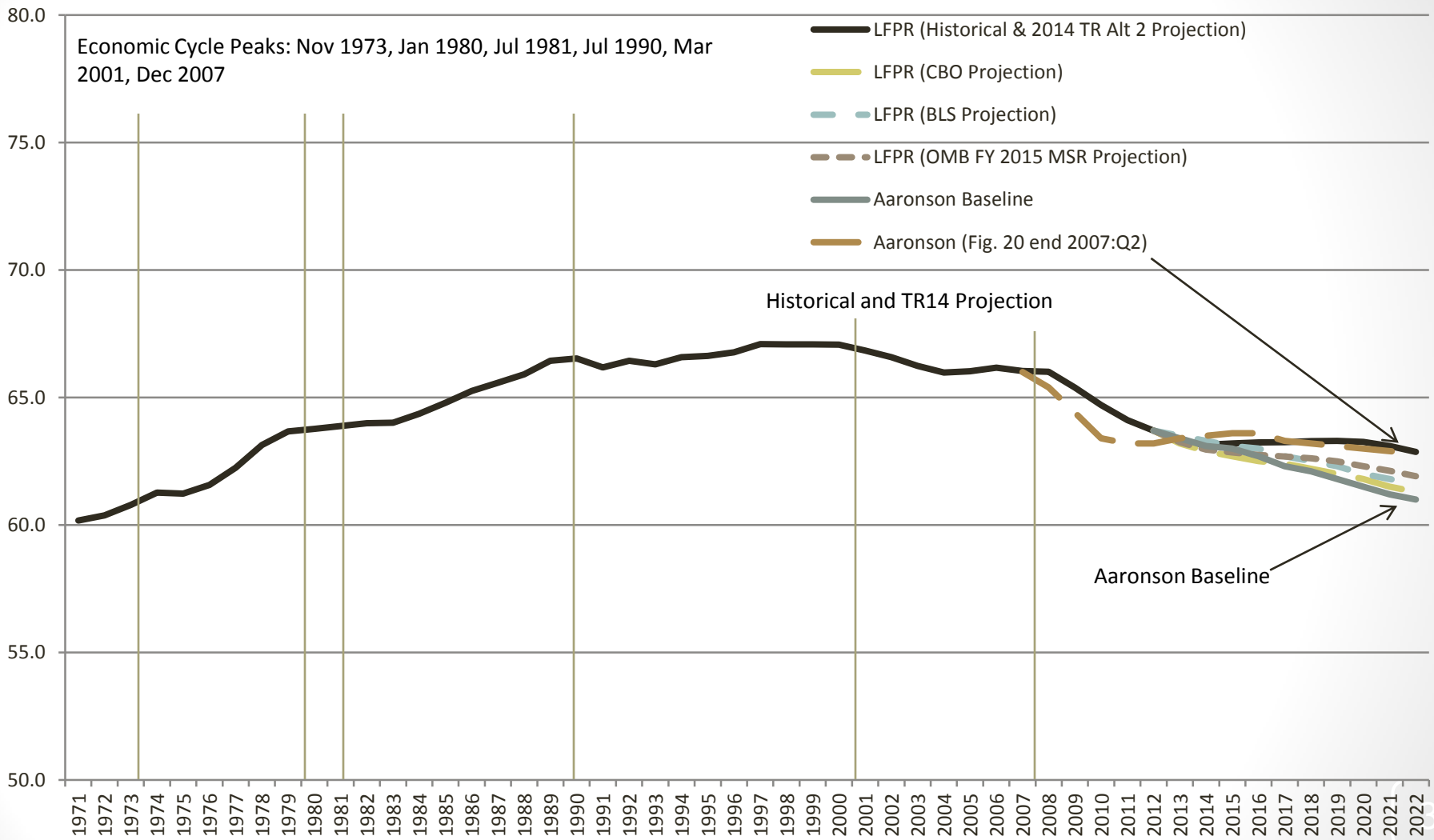
# Age-Sex-Adjusted Total LFPRs 1981-2022



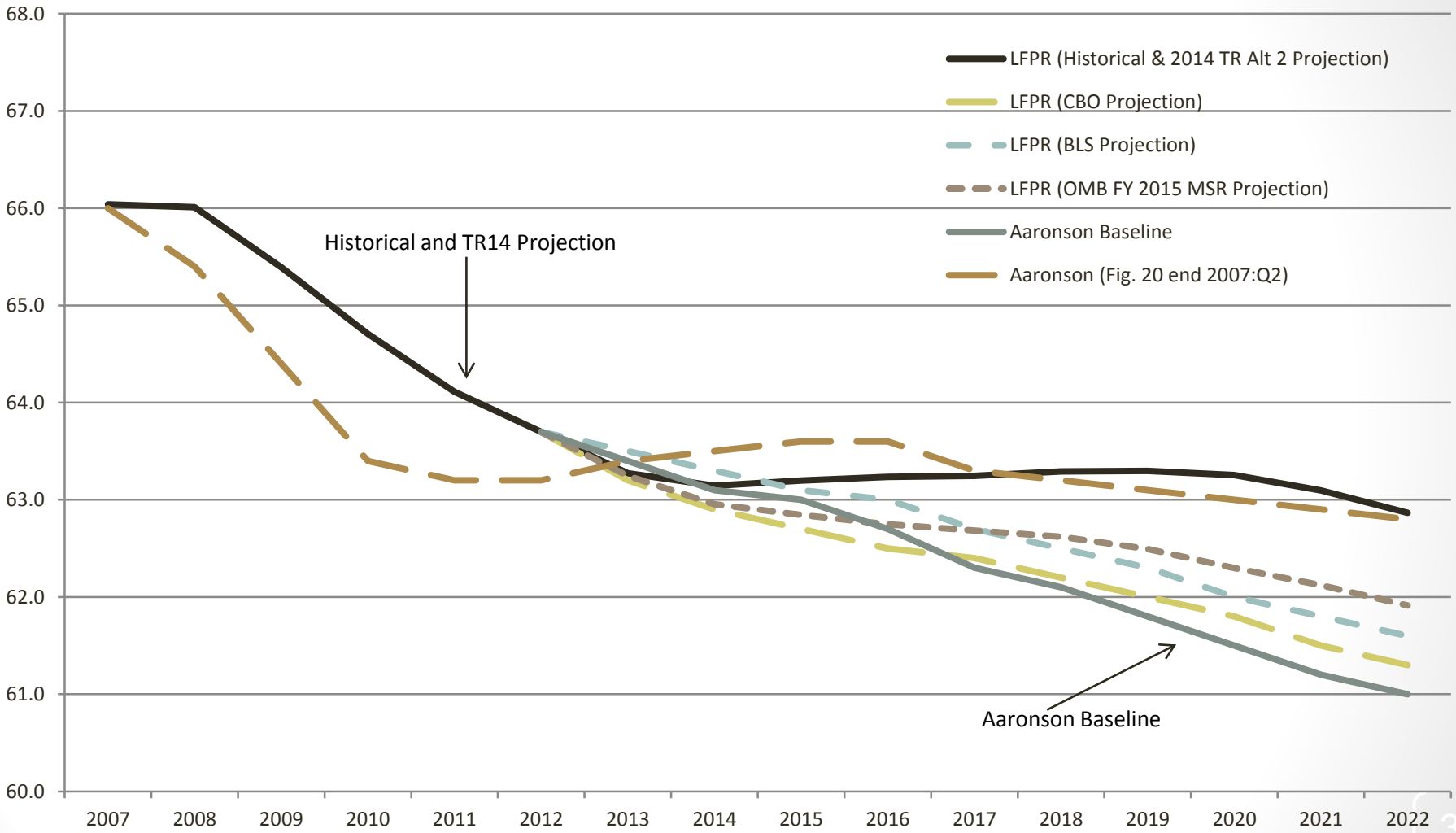


# Gross Comparisons

# Gross Total LFPRs 1971-2022

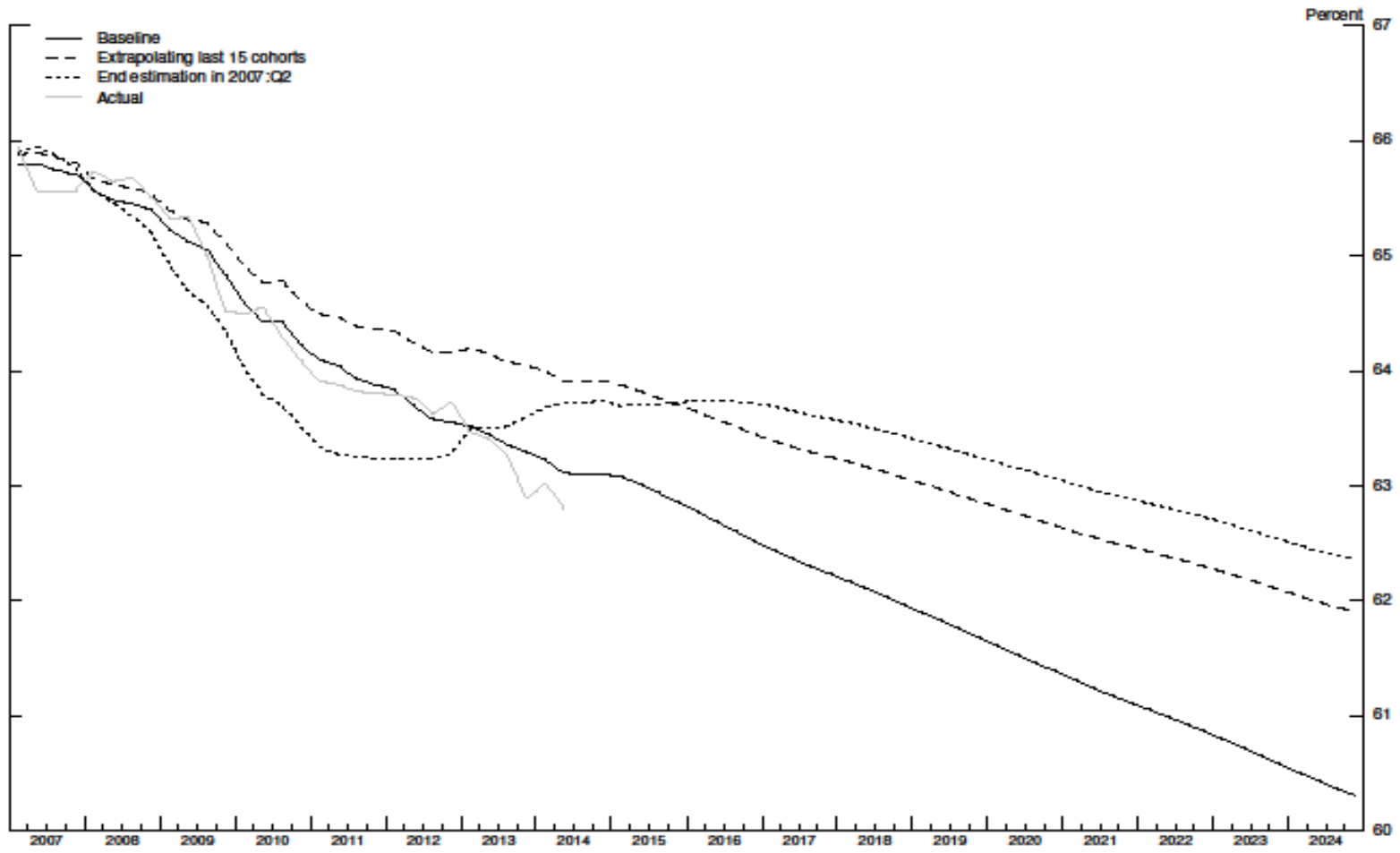


# Gross Total LFPRs 2007-2022



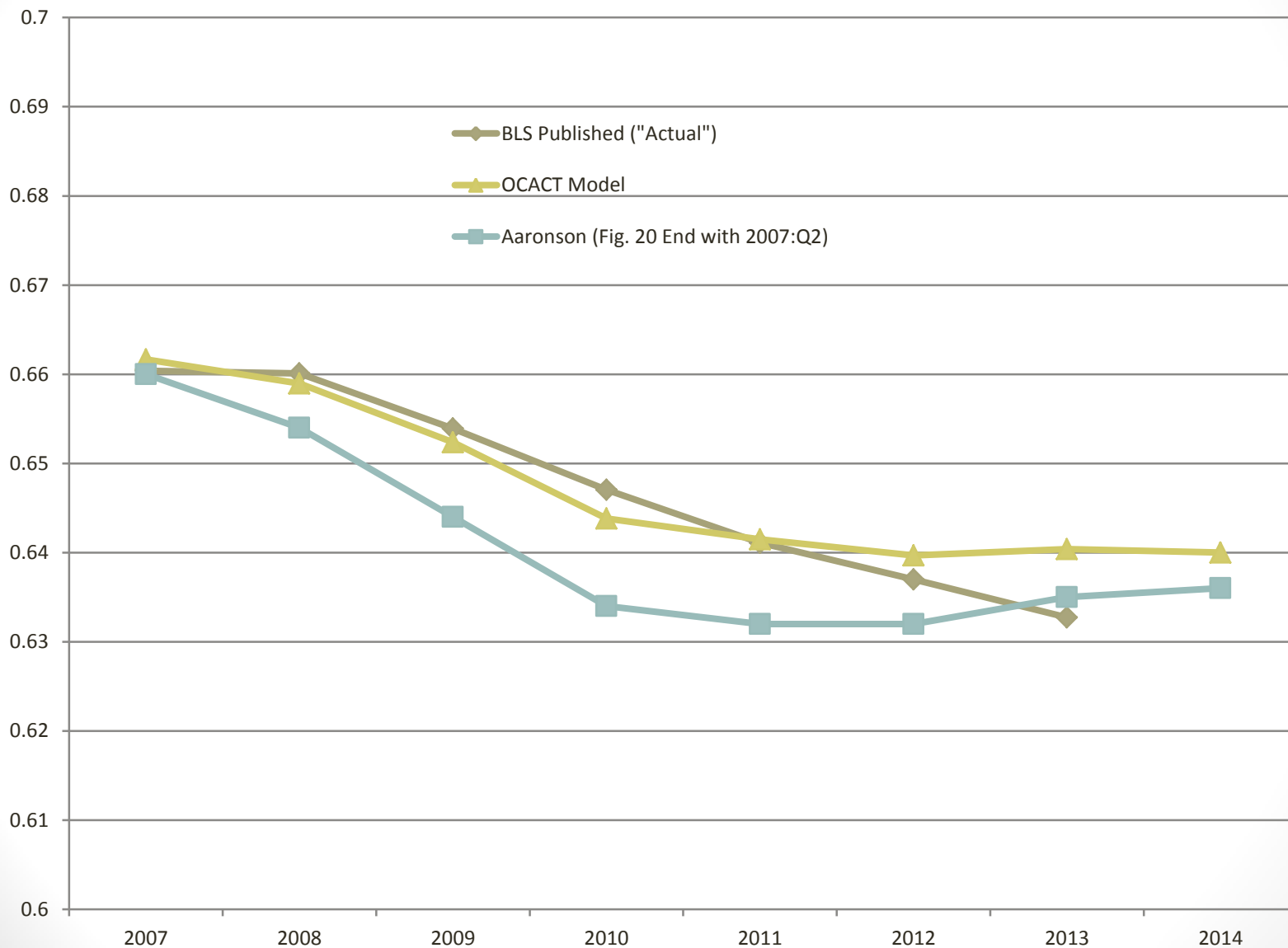
# Aaronson et al Alternative LFPR Projections

Figure 20: Alternative Model Projections for the Labor Force Participation Rate



Source: Authors' calculations.

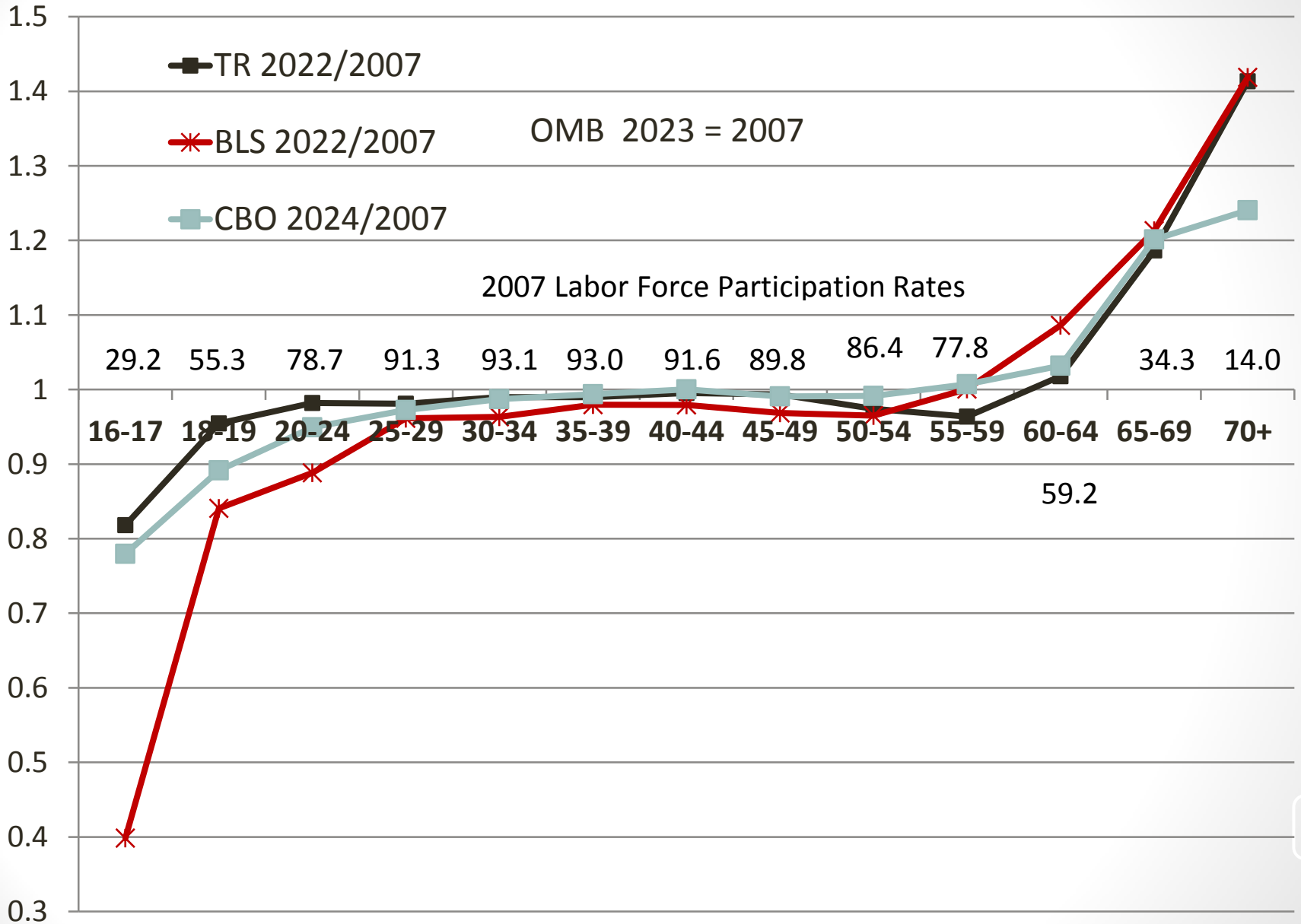
## Comparison of Model-Based LFPR Estimates



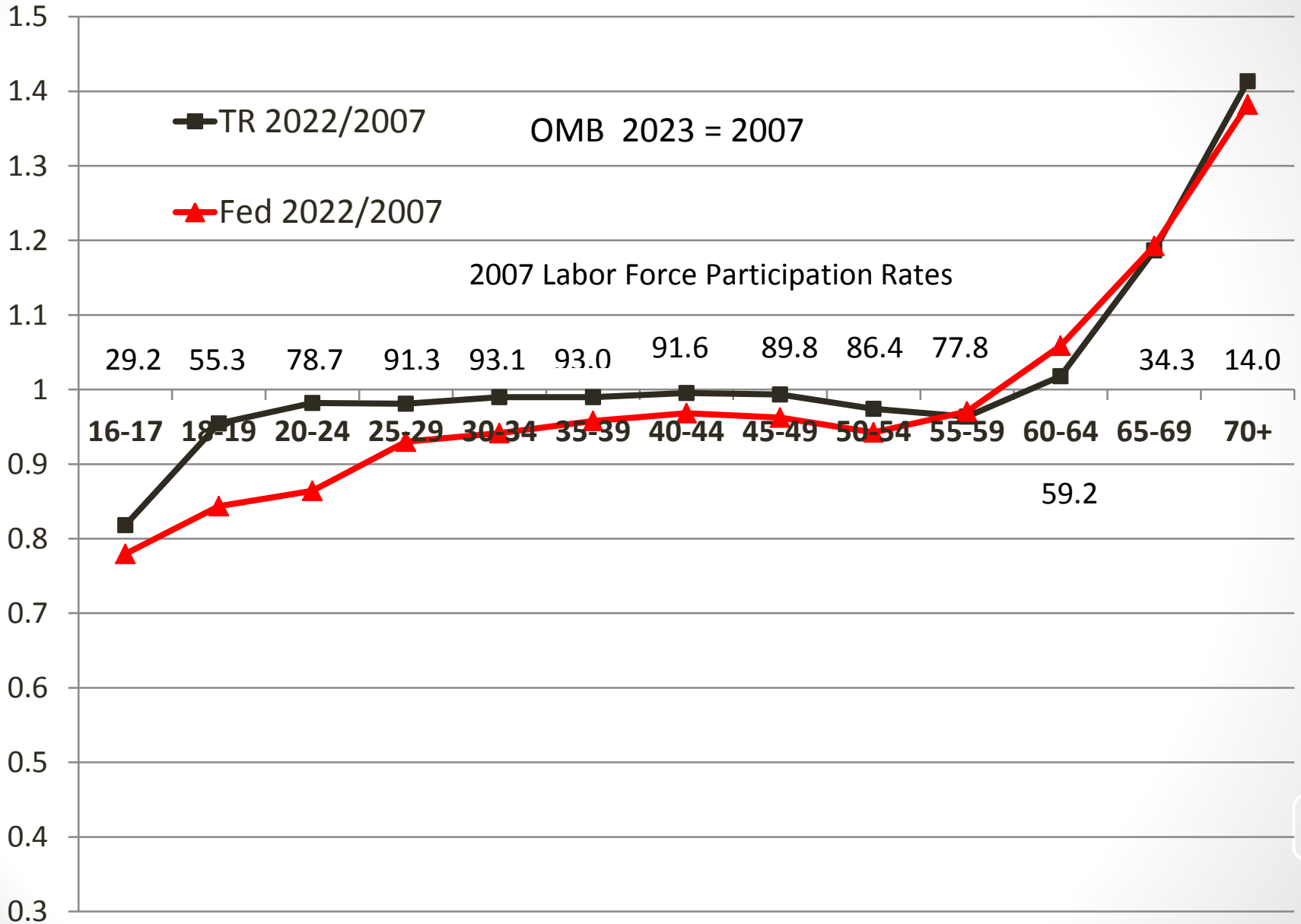
# Within Group Comparisons

- Differences relative to 2007 by age and sex
  - OMB returns to 2007 age-sex rates by about 2023
- Historical trends & projections
  - Can LFPRs for younger groups continue to decline?
  - Will economic pressures lead to a LFPR rebound?

# Male Ratio of Projection to 2007 LFPR Rate

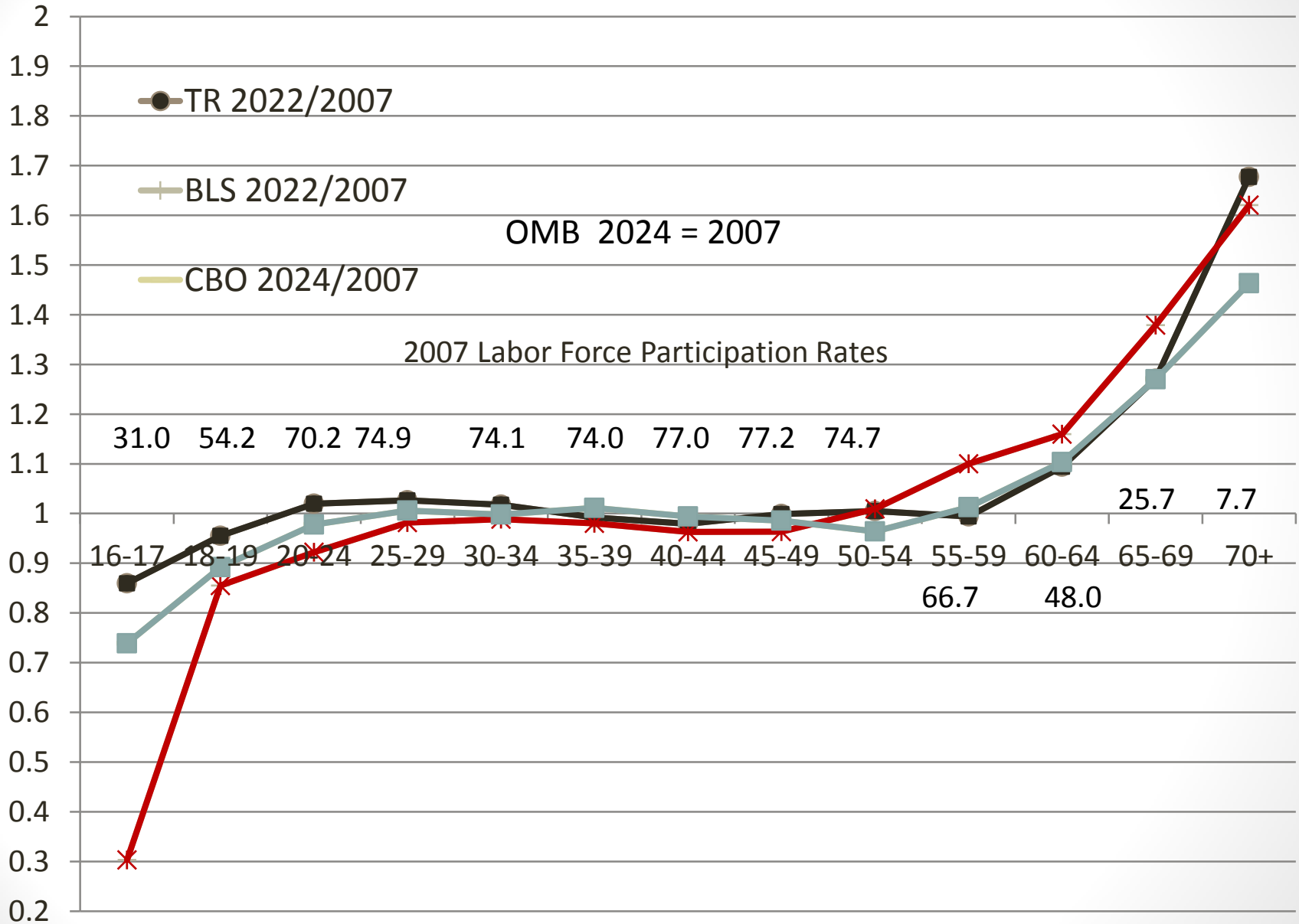


# Male Ratio of Projection to 2007 LFPR Rate

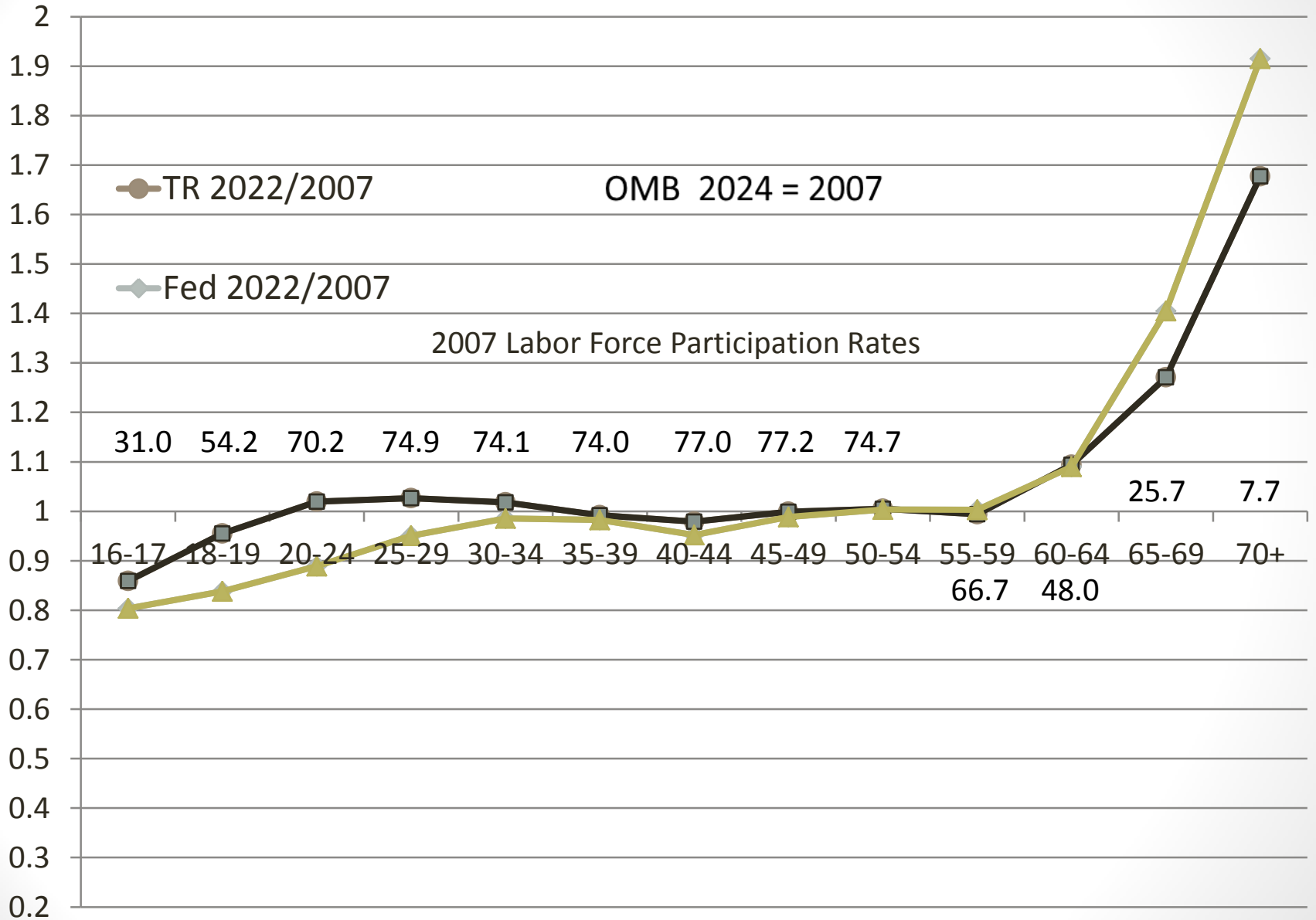




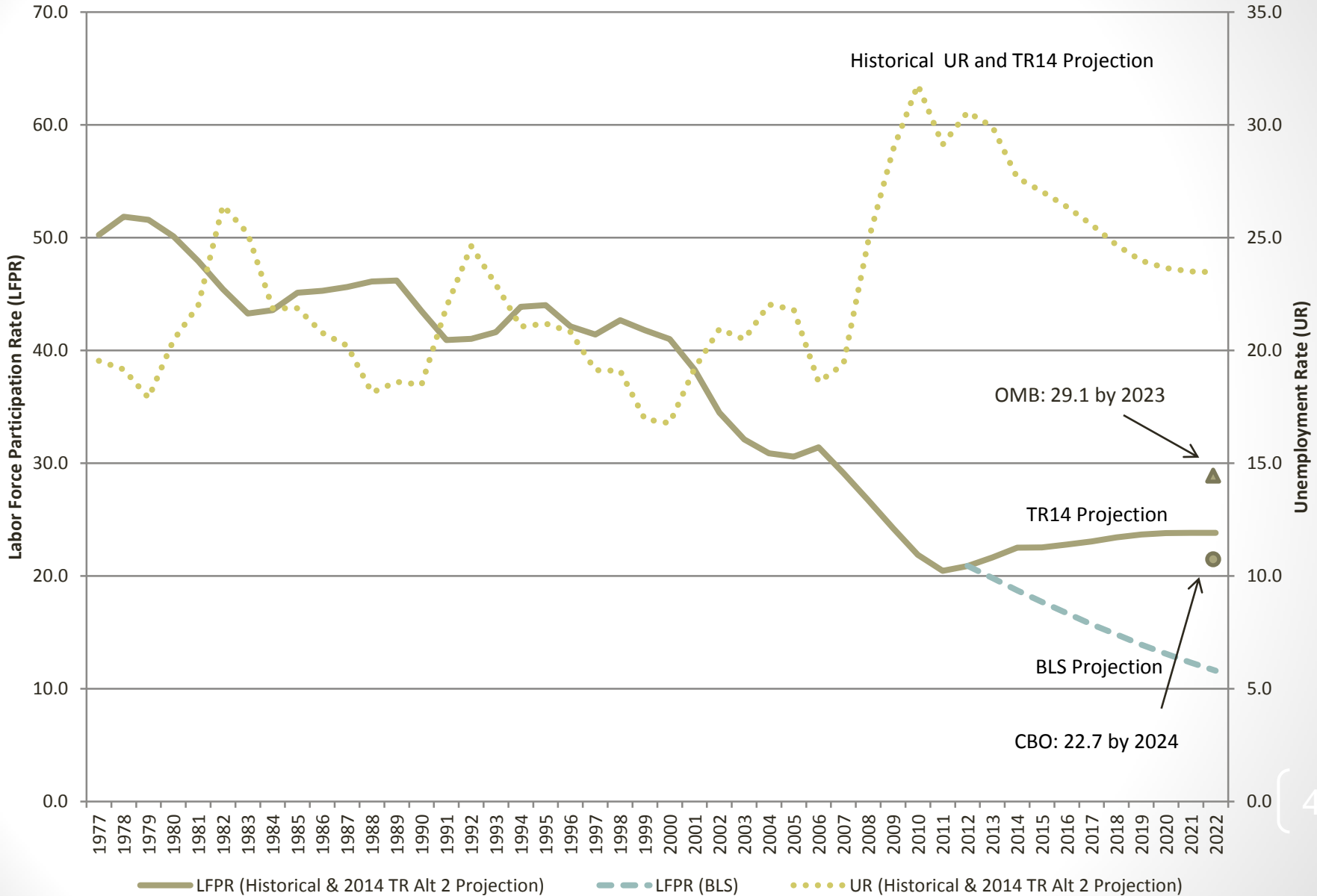
# Female Ratio of Projection to 2007 LFPR Rate



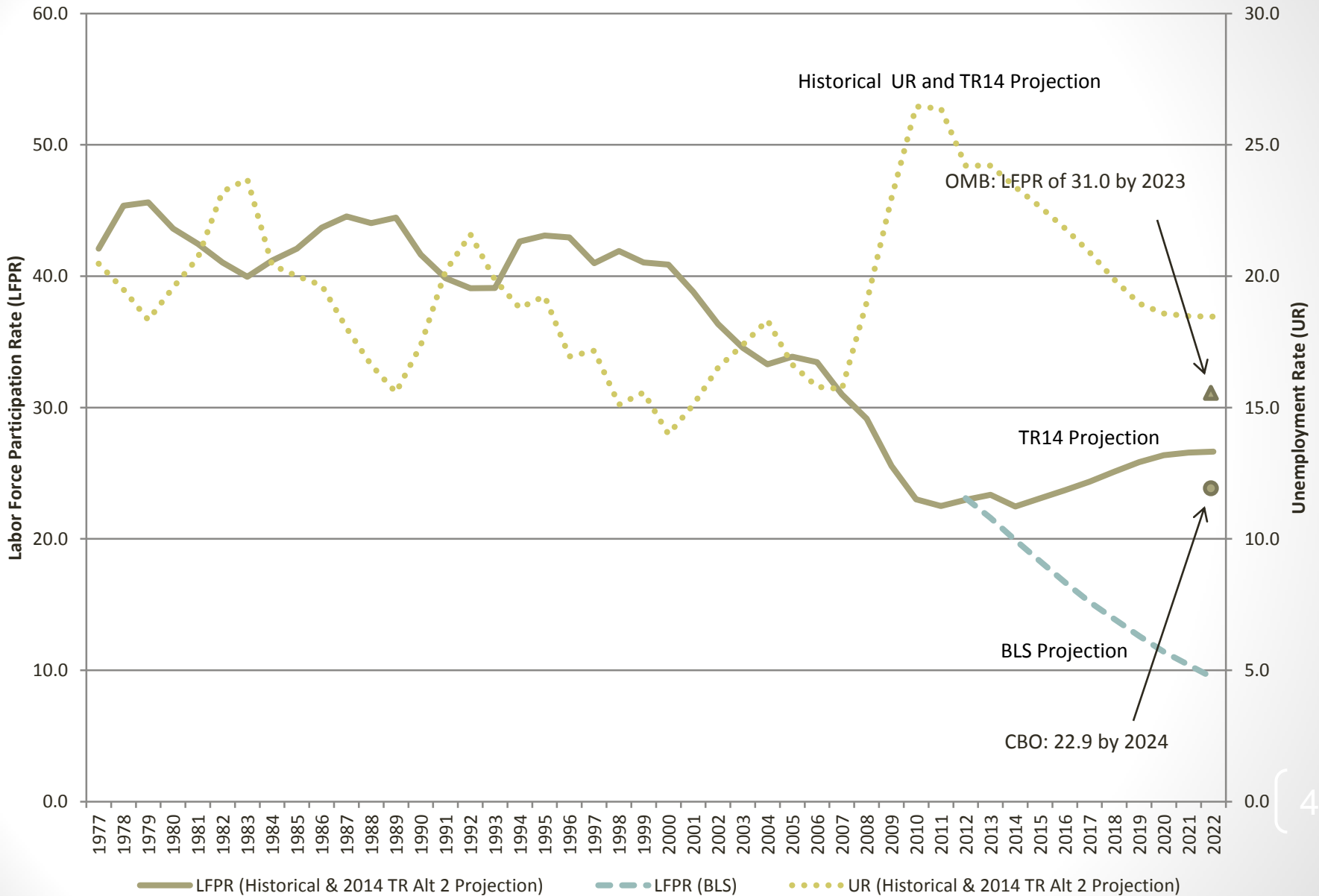
# Female Ratio of Projection to 2007 LFPR Rate



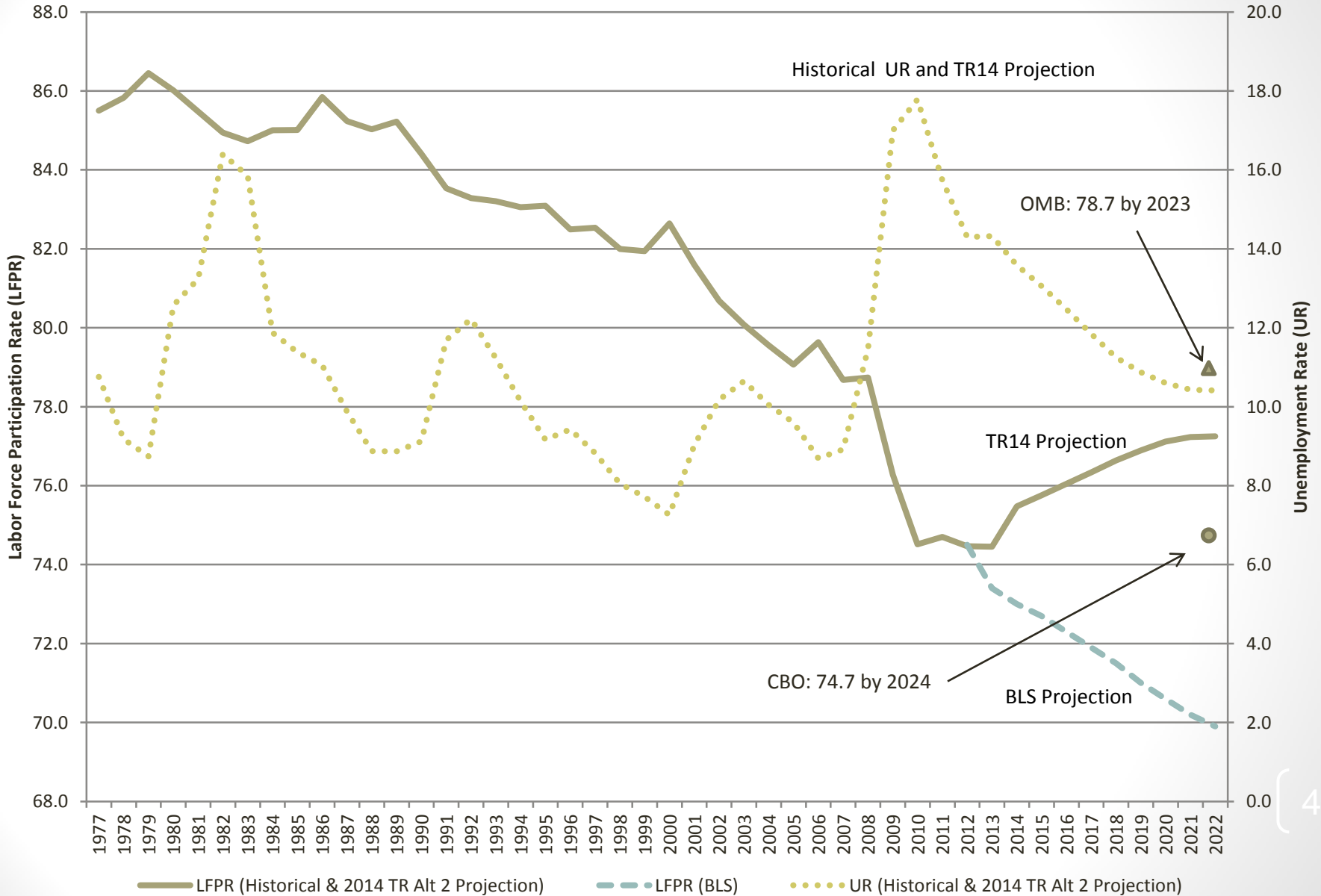
# Males 16-17



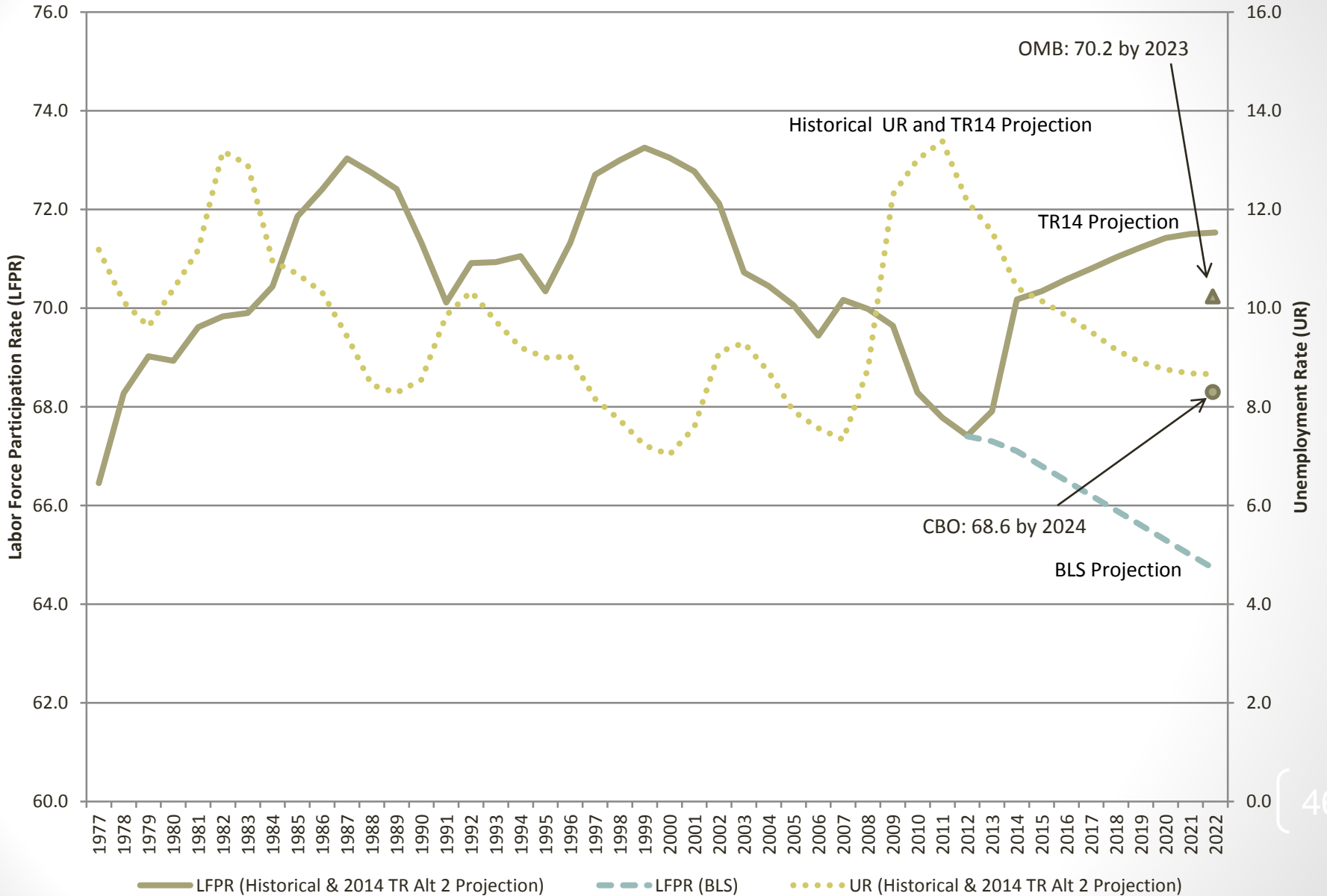
# Females 16-17



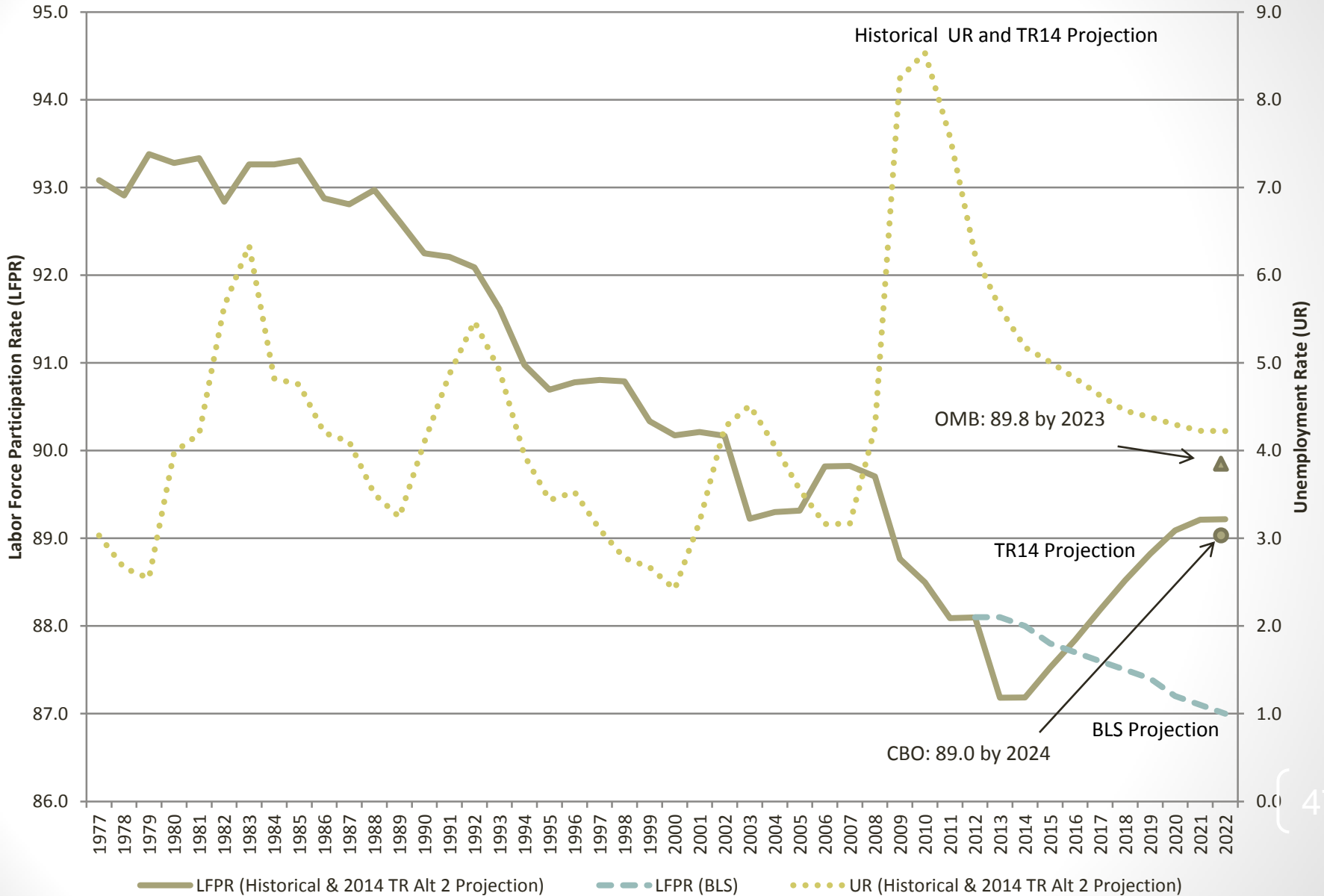
# Males 20-24



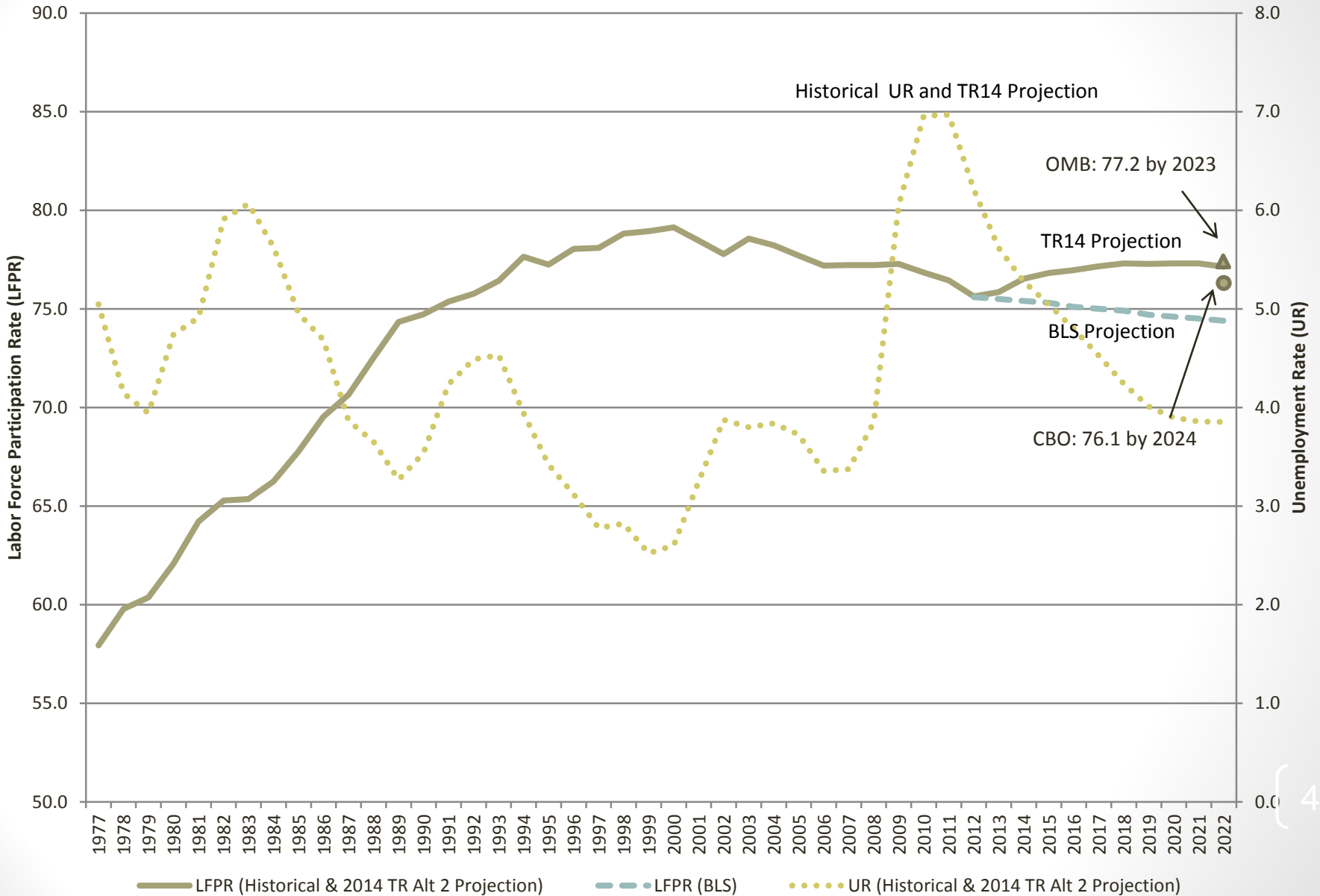
# Females 20-24



# Males 45-49

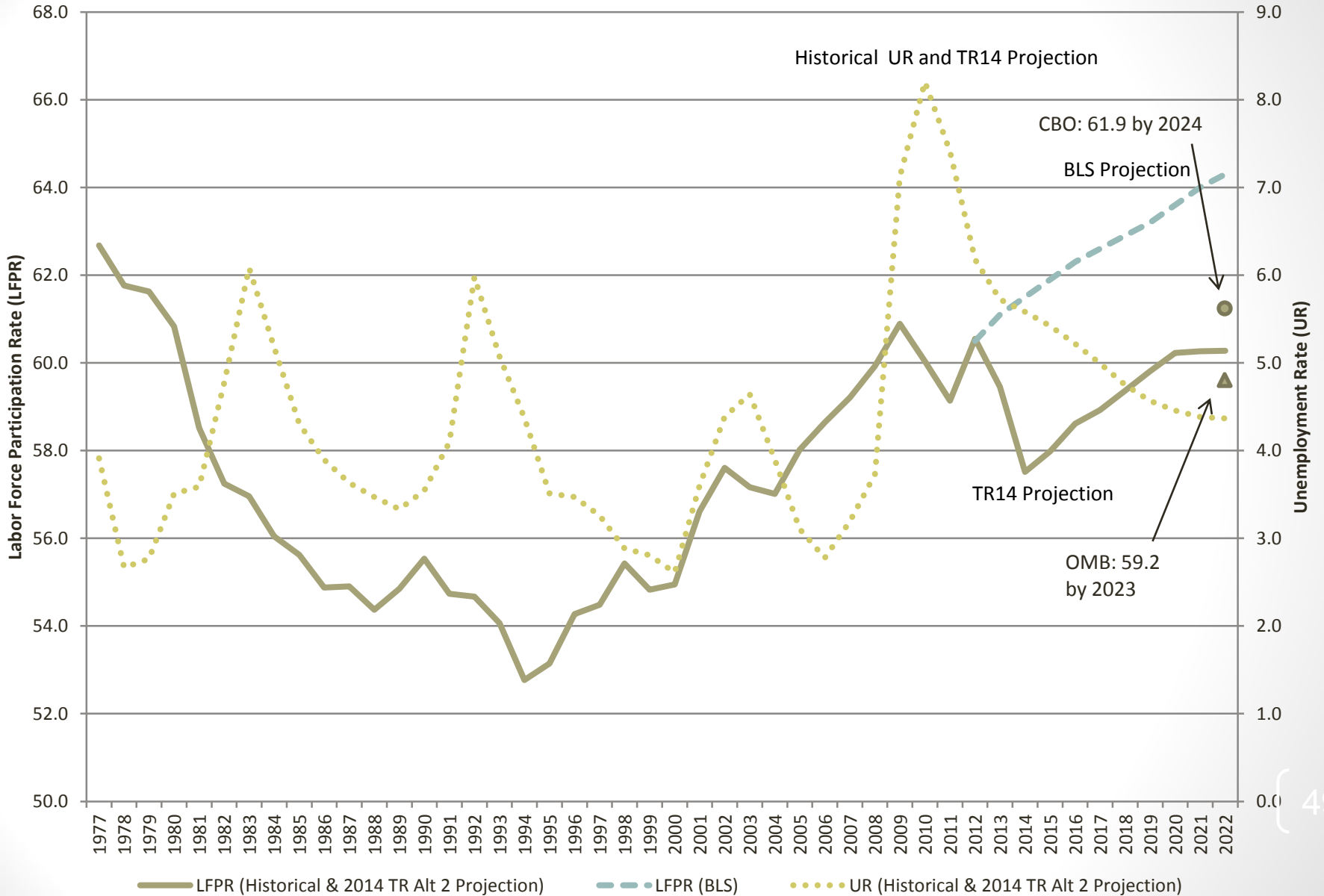


# Females 45-49

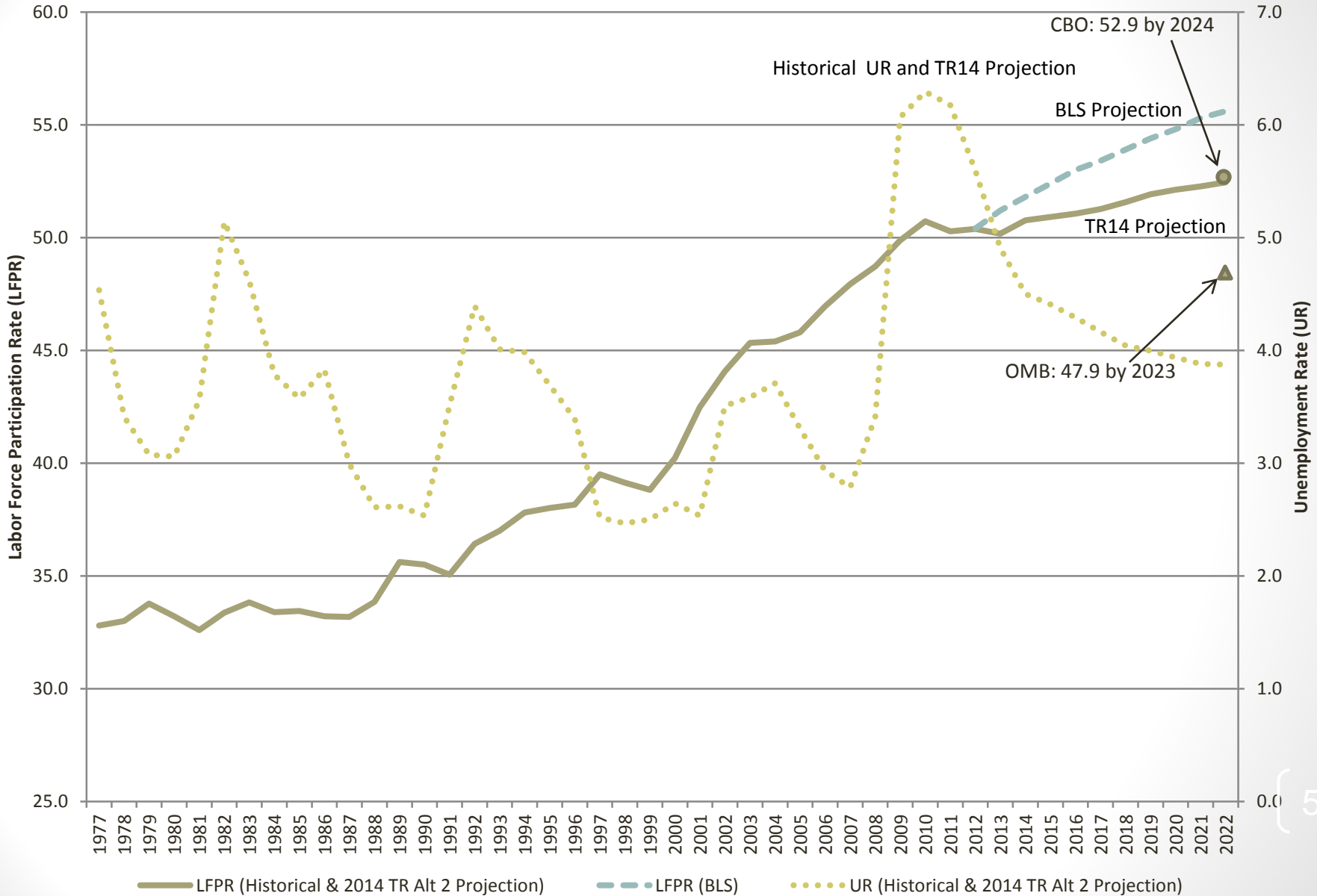




# Males 60-64



# Females 60-64



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# Technical Panel Recommendations

- Educational Attainment
- Labor Demand
- Sensitivity Analysis
- Variation in Alternatives 1 and 3

# Other Enhancements

- Shift in Pensions from DB to DC Plans, Retirement Planning
- Incorporating Increases in Life Expectancy Directly Into the Model
- Business Cycle: Unemployment Rate Gap or Other Measures of Labor Market Slack

# Takeaways

- OCACT uses age-sex specific LFPRs for projections of the financial status of the trust funds
- OCACT age-sex specific LFPRs are reasonable when compared to historical record and increases in life expectancy
- Model changes must consider the purpose of the LFPR model for OCACT projections