Predicting the Labor Force Participation of the Older Population

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Beginning in early 1990s, labor force participation rates in U.S. increased at older ages...not at younger

Labor force participation, men

![Graph showing labor force participation rates by age group from 1990 to 2012. The graph includes age groups 40-44, 45-49, 50-54, 55-59, 60-64, and 65-69. Participation rates increase for older age groups and remain relatively stable for younger age groups.](image-url)
Labor force participation, women

- 40-44
- 45-49
- 50-54
- 55-59
- 60-64
- 65-69
Labor force participation, men, 70-74 and 75+

Graph showing labor force participation rates for men aged 70-74 and 75+ from 2002 to 2013.
Will these increases at older ages continue?
Any explanations for trends.
Use Health and Retirement Study (HRS) from 1992 to 2012

1. Trends in retirement hazards or labor force retention rates
   - Isolate retirement hazards from changes in incoming population
   - Ages most affected
2. Subjective probabilities of working
   - Trends
   - Predictive validity
3. Simulations of labor force participation based on two-year labor force transitions
4. Predictions of labor force participation based on two-year labor force transitions and subjective probabilities.

5. Some data to explain past changes
Figure 3. Two-year labor force retention rate, men, initial ages 60-64, panel data. $P(LF_{t+2} \mid LF_t)$

Slope = 0.002 or 0.04 over 20 years 1992 to 2010
Two-year labor force retention rate, women, initial ages 60-64, panel data

Slope = 0.003 or 0.06 over 20 years
Summary of increases in labor force retention rates
Average annual increase in the two-year retention rate by initial age, men

No trend at younger ages.
Average annual increase in the two-year retention rate by initial age, women

Increasing for women at all ages
These were successive two-year cross sections

Following a cohort in panel gives same pattern
Retirement hazards $P(NLF_{t+2} \mid LF_t)$ estimated in panel. Birth cohorts 1936 and 1941.
Subjective probability of working

Thinking about work in general and not just your present job, what do you think the chances are that you will be working full-time after you reach age 62?

P62

P65
Subjective probability of working past 62 (P62), men

Smallish increased: e.g. age 55-56 from 53% to 58%;
Large increases: e.g. age 55-56 from 42% to 51%

Would predict increase in labor force participation of 9ppts
P65, women

Age 55-56 increase from 21% to 40% at age 65
Predictive accuracy in panel P62 among workers 51-55, labor force participation rates at 62 and 63, men and women combined.
Simulating labor force participation

Begin with observed labor force participation rates by single years of age 51...55

Use HRS labor force participation transition rates

\[ P(LF_{t+2} \mid LF_t) \text{ and } P(LF_{t+2} \mid NLF_t) \]

Simulate out to age 92
Simulated labor force participation in HRS and observed in the CPS, men and women combined. Five-year age bands, centered
Predictions based on P62


\[
\frac{d\ln s_t}{dt} = -h_t \theta
\]

\[s_t = \exp(-\theta \int h_t dt)\]

\[h_t\] from HRS data (retirement hazards \(P(NLF_{t+2} | LF_t)\))

\[s_{62} = P62\] average over 51-55 year-olds

\[\theta\] chosen to satisfy \(P62 = \exp(-\theta \int h_t dt)\)

\[\theta = \text{Cox factor} = 0.98\]
2. Modify Cox factor so that simulated labor force participation at ages 62/63 equals P62 as stated at ages 51-55 in 2010.

   Cox factor = 0.90
   Retirement hazards reduced by 10%

\[ P(LF_{t+2} \mid NLF_t) \] unchanged: little trend.

Age 67, labor force rate increased by 3.4 ppts. Work life from age 53 increased from 11.4 to 12.2 years, about 7%
Alternative to P62 is P65

Much larger increase in P65

P62 ages 51-55:
   1992, 48.3%
   2010, 52.3%, an increase of 3.9 ppts. or 8%

P65 ages 51-55
   1992, 26.5%
   2010, 36.9%, an increase 10.4 ppts. or 39%

Labor force participation rate increased by 8.2 percentage points age 66. Work life increased from 10.4 to 12.3 years.
Explanation for trends

• Health
• Survival
• Joint retirement
• Decline of Defined Benefit pensions
• Decline of physical demanding jobs
• Increase in normal retirement age in Social Security
• Expectations of Social Security benefit cuts
• Wealth
Better health
Makes work less onerous
Percent with poor or fair self-rated health

![Bar chart showing the percent with poor or fair self-rated health by age group and year: 1992, 1998, 2004, 2010.](chart.png)
Percent with one or more ADL limitation

![Bar chart showing the percent with one or more ADL limitation for different age groups and years: 1998, 2004, 2010. The chart includes age groups 51-56, 57-61, 75-79, 80-84, and 85+. The data points are represented by bars in blue, red, and green for each year.]
Percent with diabetes

![Bar chart showing the percentage of people with diabetes by age group and year. The age groups are 51-56, 57-61, 75-79, 80-84, and 85+. The data is represented for the years 1992, 1998, 2004, and 2010. The chart indicates a trend with higher percentages in older age groups and across the years.]
Percent with BMI 30+
Greater survival prospects

Need more wealth to finance a longer retirement.

Average subjective survival to age 75, males
Average subjective survival to age 75, females
Joint retirement

- Increased labor force participation of wives induced husbands to remain in labor force longer
- But what caused increased labor force participation of wives?
Decline of DB pensions

DB pensions have strong incentives to retire at specific ages, often prior to age 62.
Fraction of worker with DB pension on current job

![Chart showing the fraction of workers with a DB pension on their current job over the years 1992 to 2012 for males and females. The chart indicates a decreasing trend in the fraction of workers with DB pensions for both males and females, with a steeper decline for females.]
Fewer physically demanding jobs
Changes in the Social Security system.

Increase in Full Retirement Age from 65 to 66 which took place over a six year period

But trend began before Social Security change
Expectations about future Social Security generosity

Average subjective probability that Social Security will be reduced, 51-56 year-olds
Wealth

Household wealth of couples age 57-60

[Graph showing the wealth of couples age 57-60 from 1992 to 2012, with lines indicating mean and median values. The graph shows fluctuations in wealth over time.]
Household wealth of single persons age 57-60
Summary

Large change in subjective probability of working, especially past age 65.


Participation predicted to be 8.2 ppts (age 66) higher than participation of those who were 51-55 in 1992 (age 66 in 2005).
<table>
<thead>
<tr>
<th></th>
<th>Predicted labor force participation rates from simulations</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>60-64</td>
<td>65-69</td>
</tr>
<tr>
<td>2006</td>
<td>46.7</td>
<td>29.9</td>
</tr>
<tr>
<td>2020 or 2025</td>
<td>53.8</td>
<td>38.0</td>
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<tr>
<td>Change</td>
<td><strong>7.1</strong></td>
<td><strong>8.1</strong></td>
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</tbody>
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|                       | Labor force participation rates from CPS                  |                          |
|                       | 60-64                                                      | 65-69                     |
| 2006                  | 52.8                                                      | 29.3                      |
| 2013                  | 55.3                                                      | 32.4                      |
| Change                | **2.5**                                                   | **3.1**                   |
But reasons for increase not obvious from broad population trends.

Widespread discussion of “inadequate preparation for retirement”

- Difficult for people to understand whether prepared
- Reliance on media
- Possible reaction by working longer
- But not easy to measure importance of this explanation