When Does Retirement Optimize Health?

*Causal Effects of Retirement Timing on Health Outcomes and Healthy Behaviors of Older Americans, Chileans, and Mexicans**

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CAC, August 25 2014, NY

* Project funded by Columbia Global Centers and Chilean National Fund for Scientific and Technological Development (FONDECYT #1140107), 2014-2017.

Outline

1. **Describing the context**: countries facing insufficient resources to finance longer retirement periods

2. **Reframing the question**: from “good or bad” to a focus on the characteristics of retirement

3. **Using quasi-experiments**: causal effects of retirement timing on subjective health in the US

4. **Exploring heterogeneity**: variations in the optimal timing for retirement by outcome, gender, race, SES, location in the trajectory, and country (US, CH, MX)

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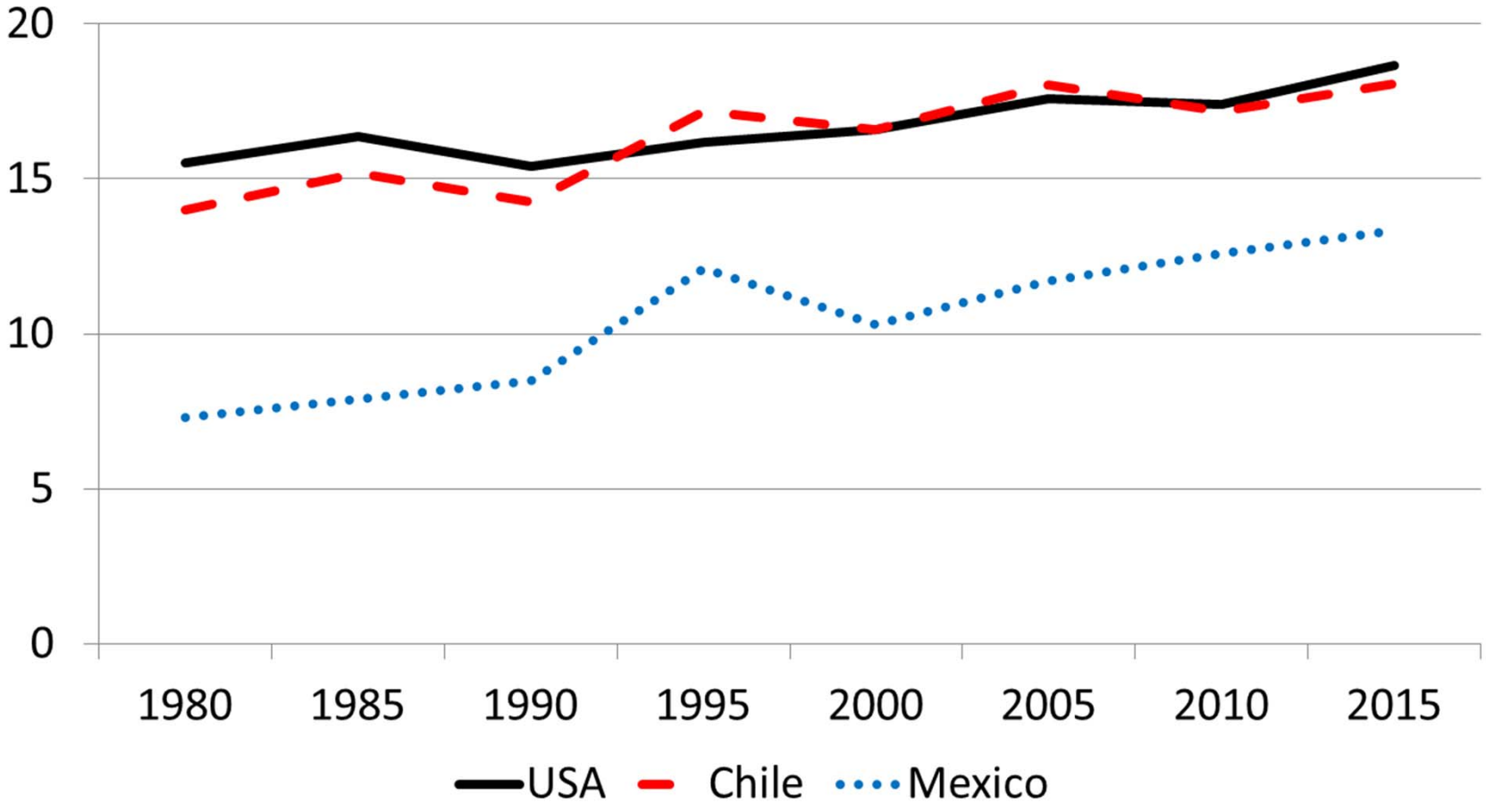
Retirement periods are increasing



* *Source*: Author's elaboration using OECD (2013).

Retirement resources are decreasing

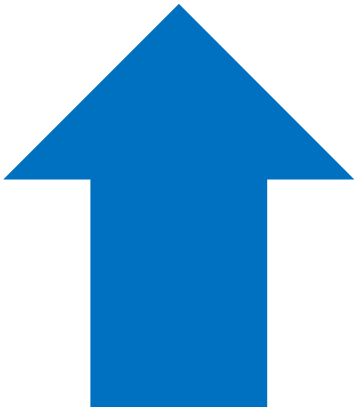
"My pension has been renegotiated, and in lieu of a monthly check I'll receive a crateful of seasonal fruit."

Retirement resources are decreasing

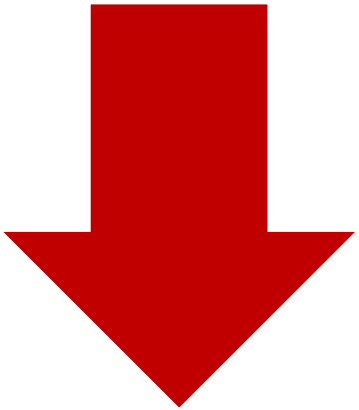
	USA	Chile	Mexico	OECD
Replacement rate, men (%)	49.9	54.1	45.3	69.1
Replacement rate, women (%)	49.9	44.1	45.3	49.9
Average worker earnings (USD)	47,600	13,000	7,300	42,700

* *Source*: Authors' elaboration using OECD (2013).

The work to retirement transition is a hot policy issue



Retirement periods are increasing



Retirement resources are decreasing

Working longer and retiring later

Retirement policy aims to secure retirement income

…but may also impact health.

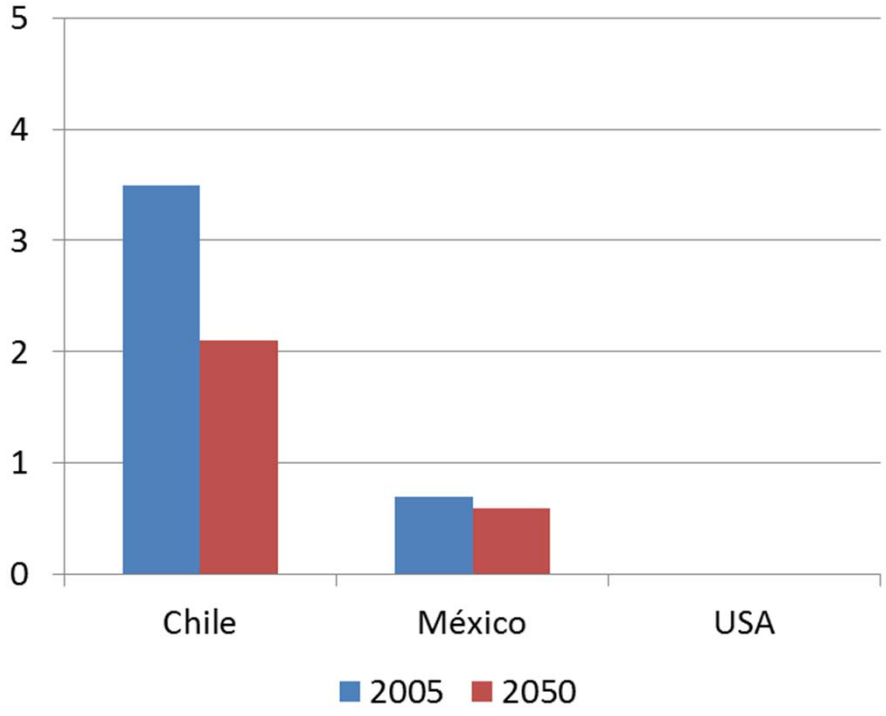
Retirement policy should also aim to improve health

...or at least not to decrease it!

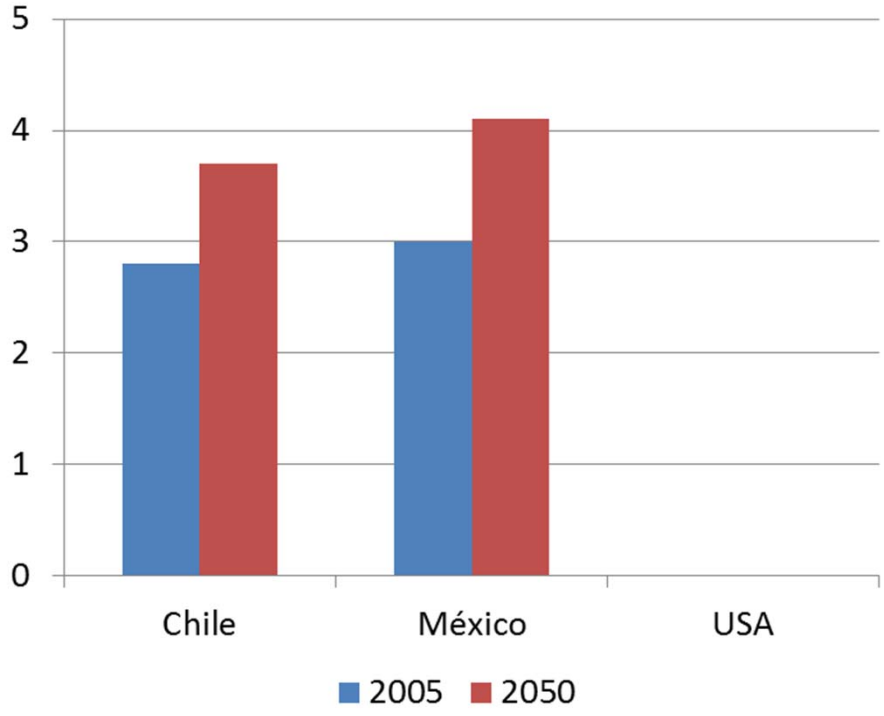
Retirement policy should also aim to improve health

Public expenditures associated with aging (% of GDP)

Pensions



Health



* *Source*: Authors' elaboration using Miller, Mason, and Holz (2011).

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Is retirement good or bad for health?

Difficulties	No impact	Opportunities
(Almeida and Wong 2009)	(Kasl and Jones 2000)	(Westerlund et al. 2009)

. . .

"Does working longer make you healthier and happier?" (Calvo 2006)

"Is retirement depressing?" (Charles 2004)

"Does retirement kill you?" (Coe and Lindeboom 2008)

Need theorizing on life course transitions (Mayer 2009)

What are the characteristics of the transition?

Speed
(gradual/abrupt)

Control
(wanted/forced)

Anticipation
(expected/unexpected)

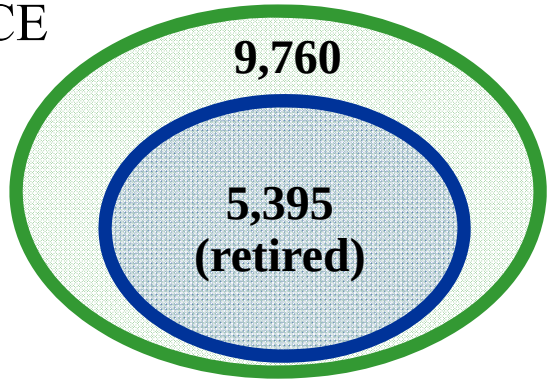
Timing
(earlier/later)

Synchronicity
(focal/overlapping)

Methods

- **HRS Data**
  - HRS cohort: 9,760 individuals born between 1931-1941
  - Observed every other between 1992-2006

- **Change Score and Heckman correction**
  - Change in health, OLS, clustering, two-stage MICE
  - Propensity to retire (insurance, pension, controls)



- **Controls:**
  - Demographics (gender, race/ethnicity, education)
  - Job characteristics (occupation, job demands, hours, self-employment)
  - Baseline well-being (CES-D, health scale, income, social contacts)

$$\Delta y = a + \sum b^{*}\text{characteristics} + e$$

Average change

Compensated
Exacerbated
Reverted

Psychological
CES-D scale
(-8,8)

Physical
Multiple-item scale
(-23.30,18.22)

Speed
(gradual/abrupt)

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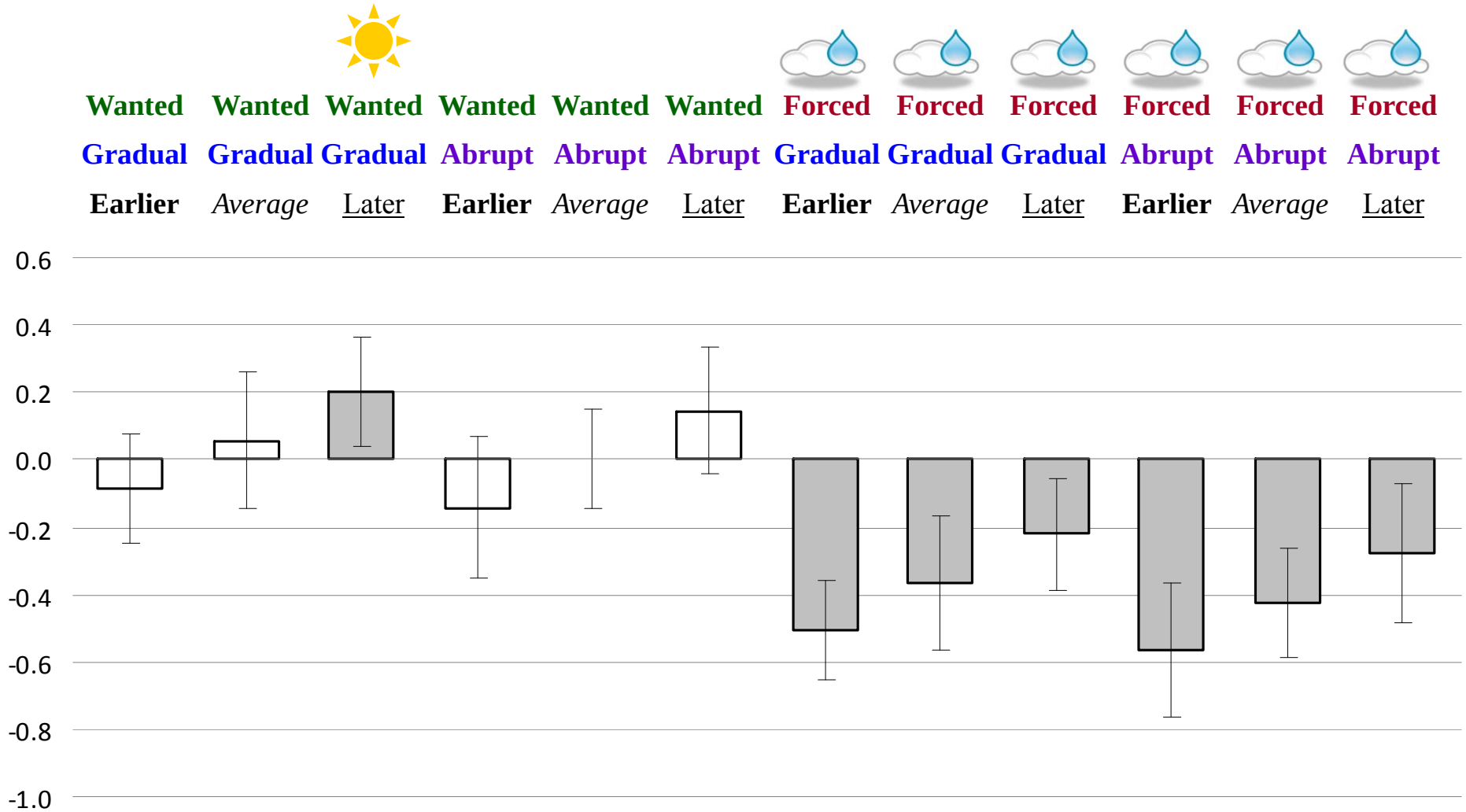
Change in health depends on characteristics

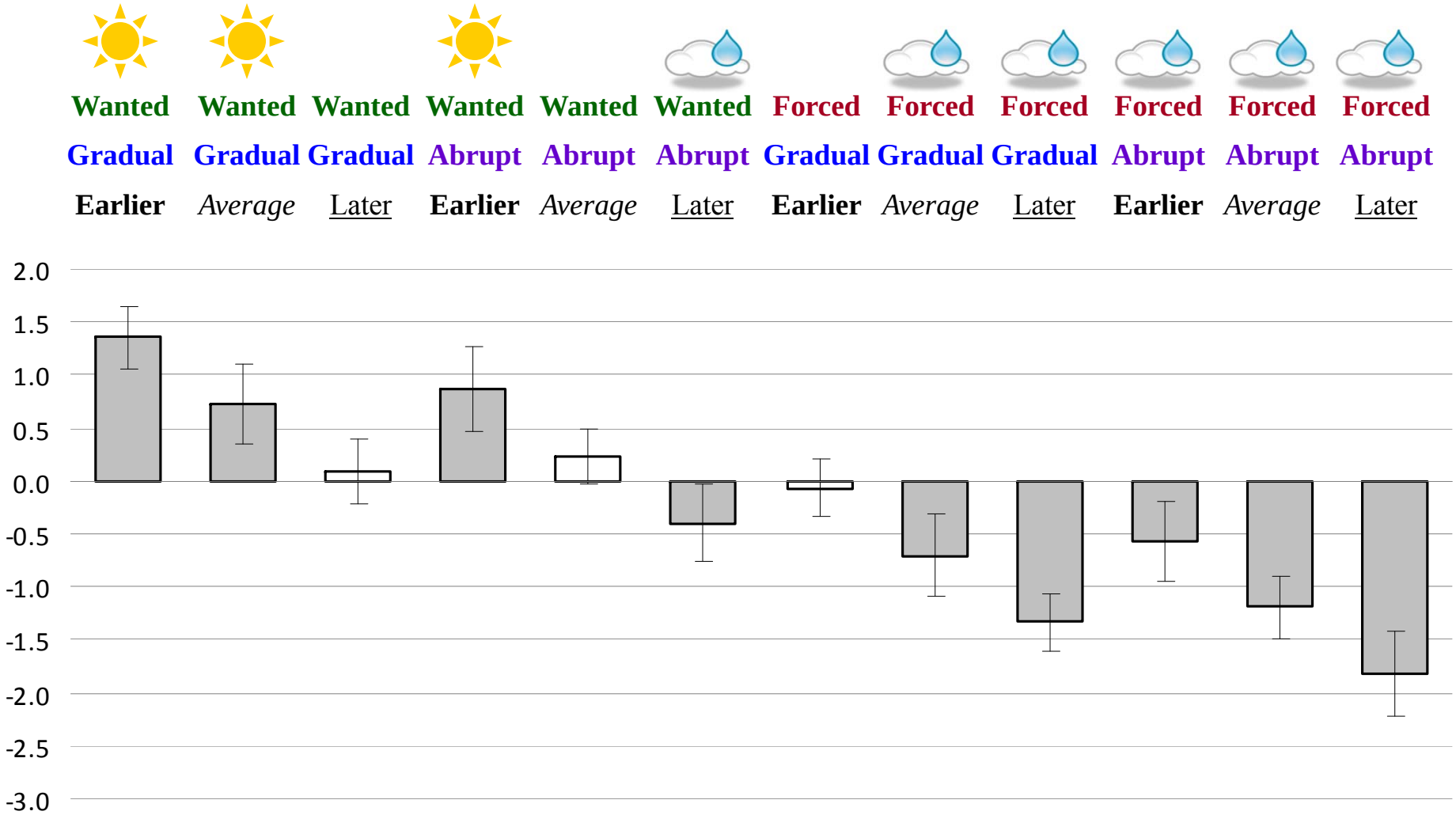
	b 95%CI Psychological	b 95%CI Physical
Average change	**-0.42 [-0.62, -0.23]**	**-1.94 [-1.57,-0.82]**
Gradual transition	0.06 [-0.07,0.18]	**0.49 [0.25,0.73]**
Wanted or partly wanted transition	**0.42 [0.27,0.58]**	**1.43 [1.11,1.74]**
Unexpectedness	-0.03 [-0.08,0.03]	-0.08 [-0.18,0.29]
Retirement age (timing)	**0.04 [0.02,0.06]**	**-0.17 [-0.20,-0.14]**
Death of a relative	-0.20 [-0.41,0.02]	**-0.39 [-0.75,-0.03]**
Loss of a spouse	**-1.04 [-1.50,-0.57]**	0.06 [-0.60,0.73]
New marriage	**0.47 [0.06,0.89]**	0.10 [-0.51,0.71]
Residential mobility	0.07 [-0.07,0.22]	-0.13 [-0.39,0.14]
Change in household size	0.02 [-0.13,0.10]	-0.18 [-0.43,0.08]

Predicted change in **psychological** health



Reframing the question

Predicted change in **physical** health



Reframing the question

Focus on characteristics of transitions

Research on *adolescence*

has been more attentive to

the **characteristics of transitions**

than research on *retirement*.

Focus on characteristics of transitions

- Health effect of retirement is complex
- Can be both beneficial and detrimental
- Depending on specific characteristics
- Limitations: heterogeneity, endogeneity, and non-linearity

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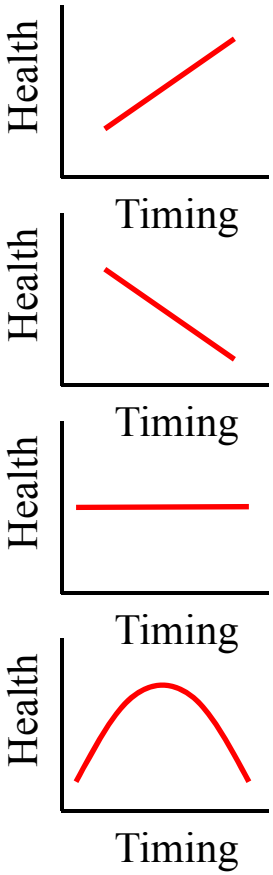
Main theoretical approaches

Endogeneity
Non-linearity

When to retire?	Explanation	Mechanism
Later	Psychosocial Materialist	Identity Resources
Earlier	Psychosocial Environmental	Stress Risks
Anytime	Bio-psychological	Genes Personality
On time	Cultural-institutional	Norms Policies



Health and Retirement Study (HRS)

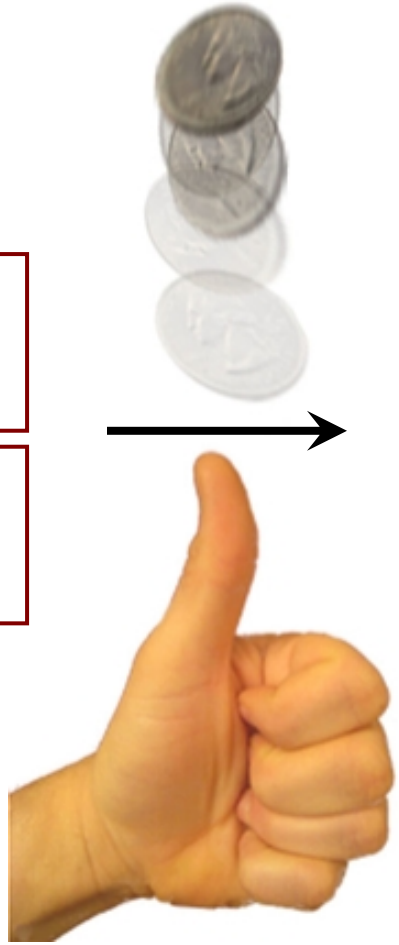
N=9,753

1992 1994 1996 … 2010

- **N=5,724**
  (excluding 1,640 retired W1,
  1,489 out LBF not retired, and
  996 never retired)

- **Physical and emotional health**
  (subjective report; SRH 1-5;
  CESD 0-8; 0-1)

Instrumental variables (IVs)



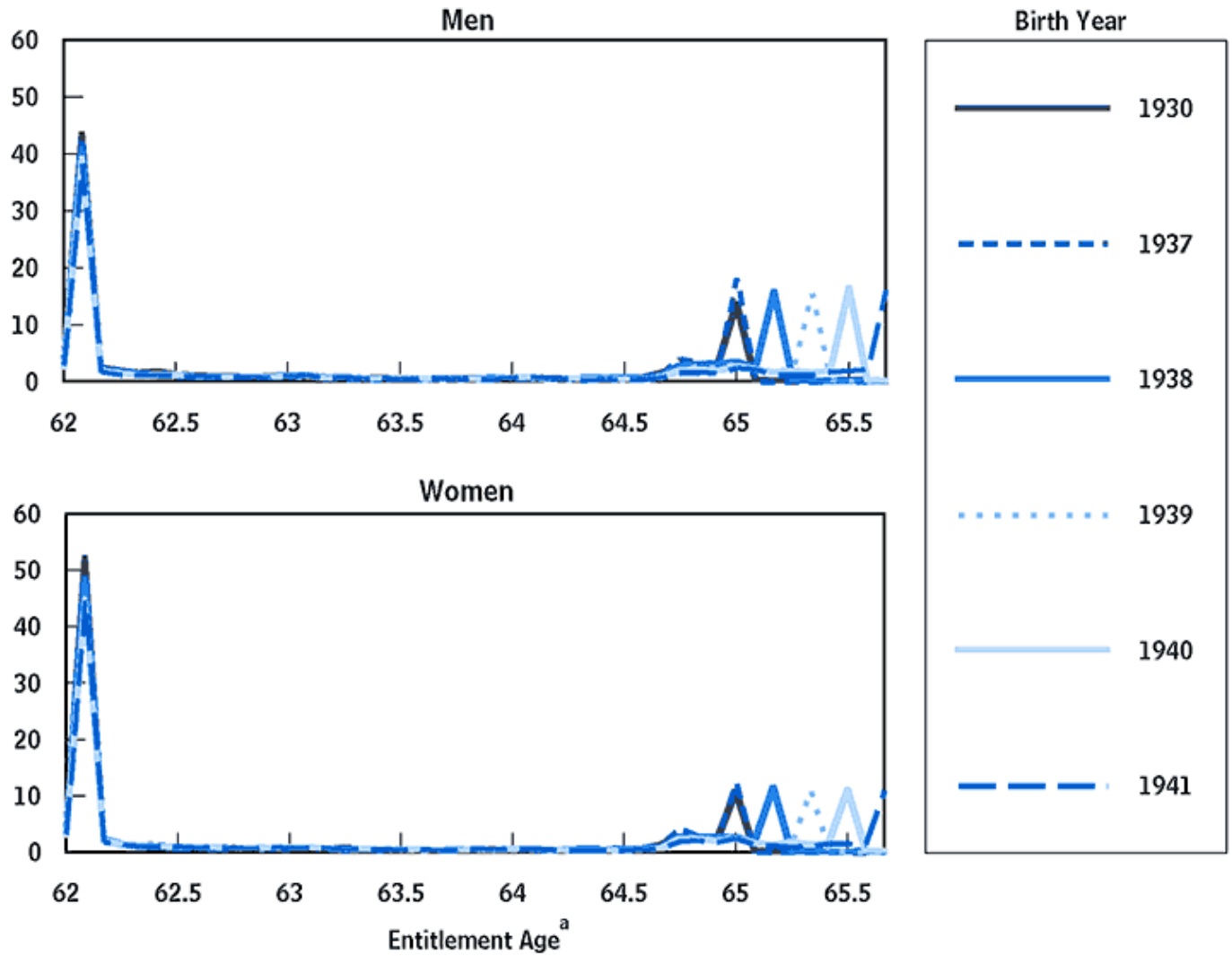
Early retirement window offer

Increase in full retirement age

Timing → **Health**

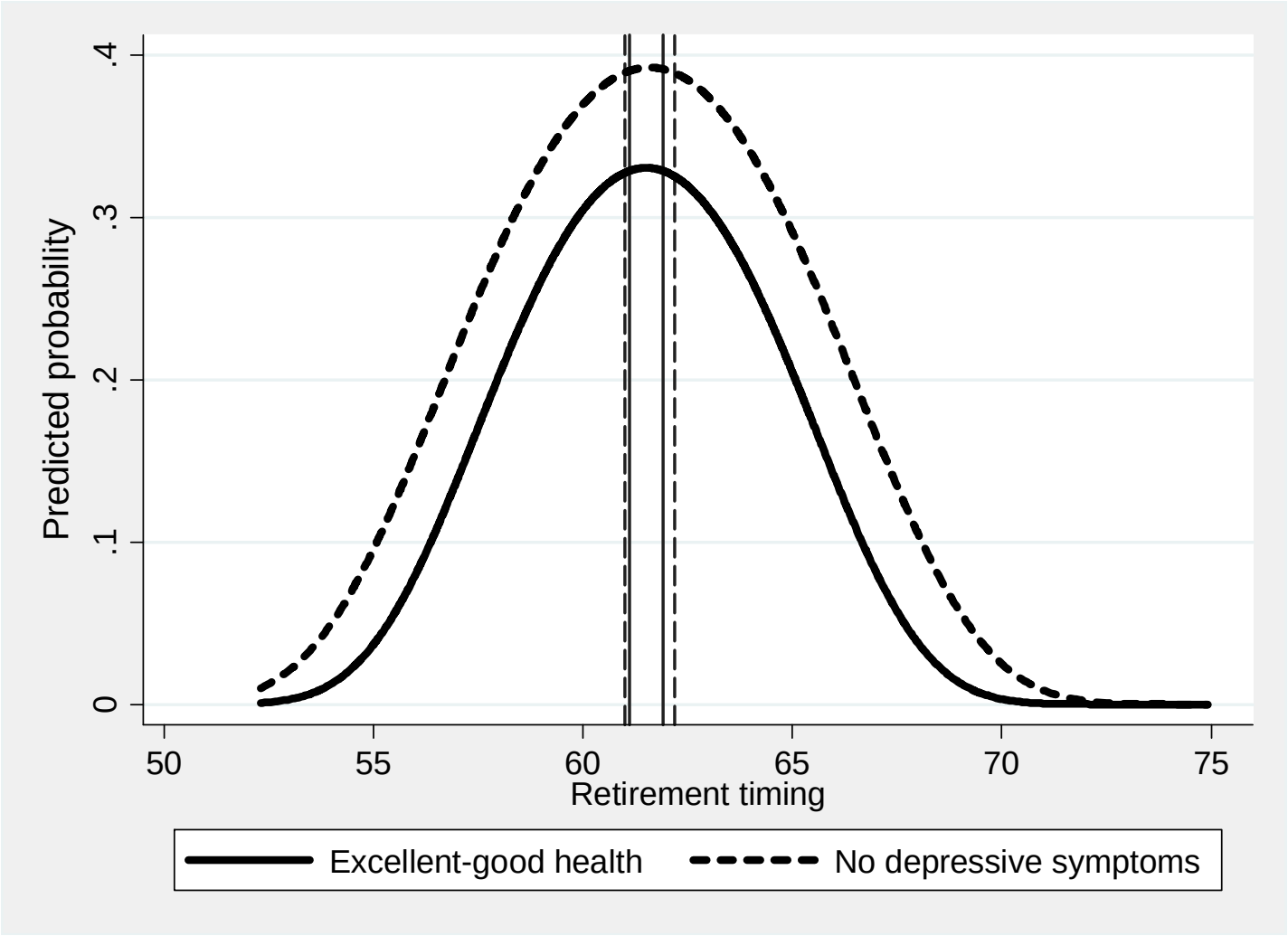
Controls: wealth, income, marital status, spouse employment, gender, race/ethnicity, education, occupation

Age distribution of retirement by YOB*



* Source: Song and Manchester (2008: Figure 7).

Retiring either too early or too late can be detrimental to health (change score model)



Retirements that happen

during institutionally and culturally expected periods of time

have more beneficial effects on health.

Main theoretical approaches

Change
Age
Selection

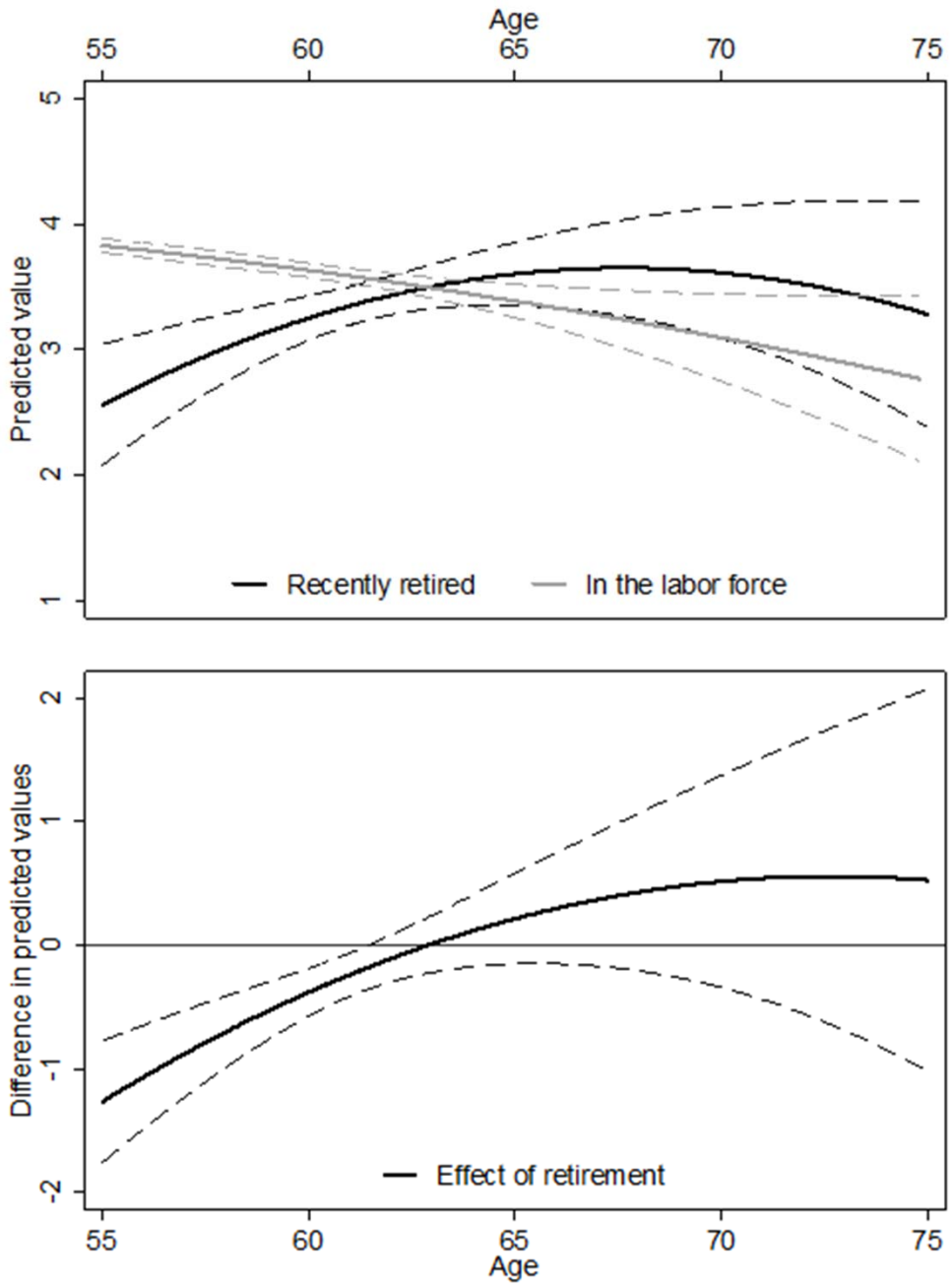
Endogeneity
Non-linearity

When to retire?	**Explanation**	**Mechanism**
Later	Psychosocial Materialist	Identity Resources
Earlier	Psychosocial Environmental	Stress Risks
Anytime	Bio-psychological	Genes Personality
On time	Cultural-institutional	Norms Policies

Limitations	Improvements
Change score models	Fixed and random effect
Dichotomous outcomes	Continuous outcomes
Retirement timing = Retirement age	Age, Retirement status, Age*Retirement status
Excluding 996 never retired	Including 996 never retired (only 210 died before)
N=5,724	N=6,624

Retiring too early is detrimental to **physical** health

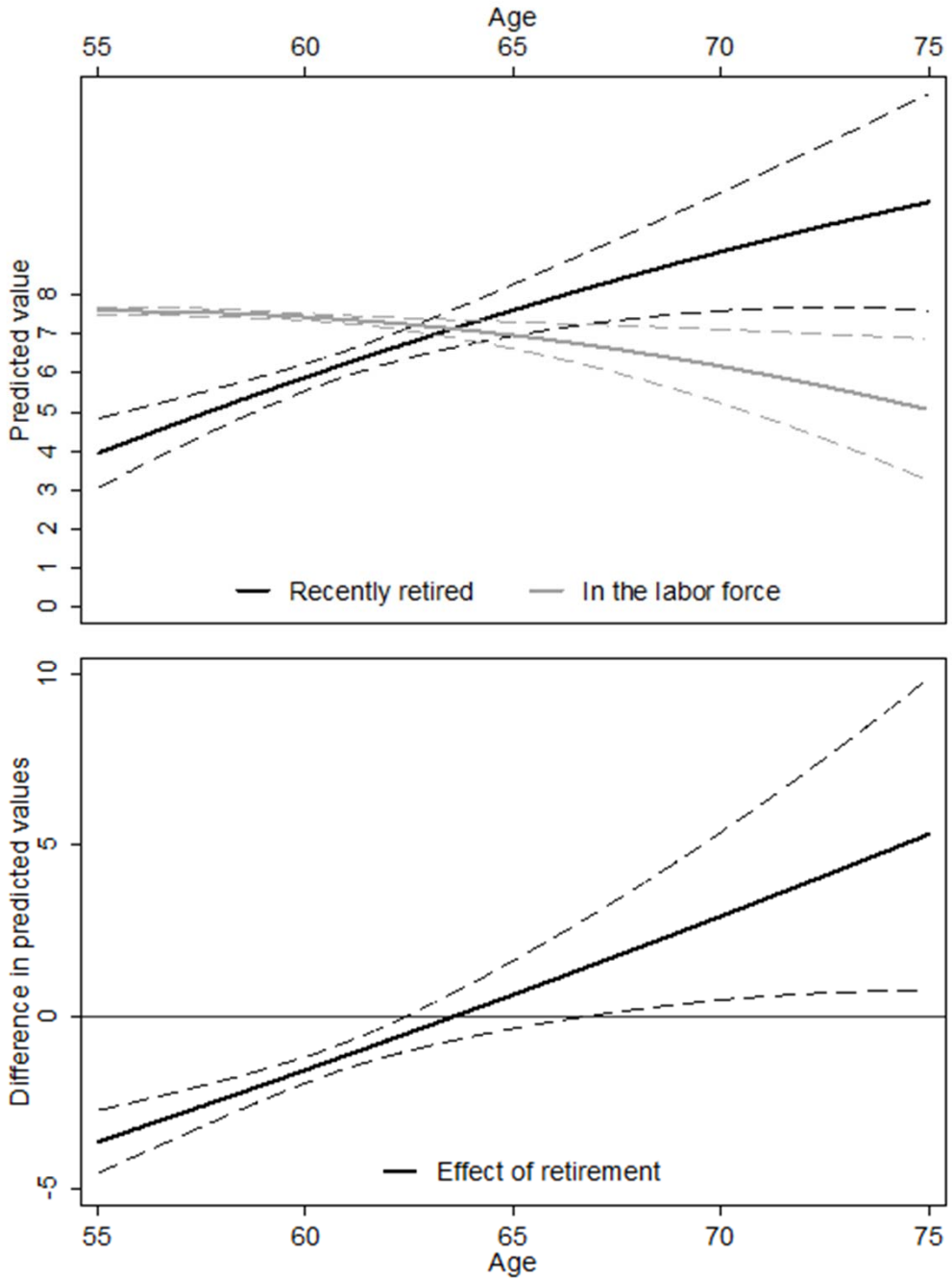
No health benefits of working beyond the expected age



Retiring too early is detrimental to **emotional** health

Some benefits of working beyond the expected age

Effect washes out in long term models



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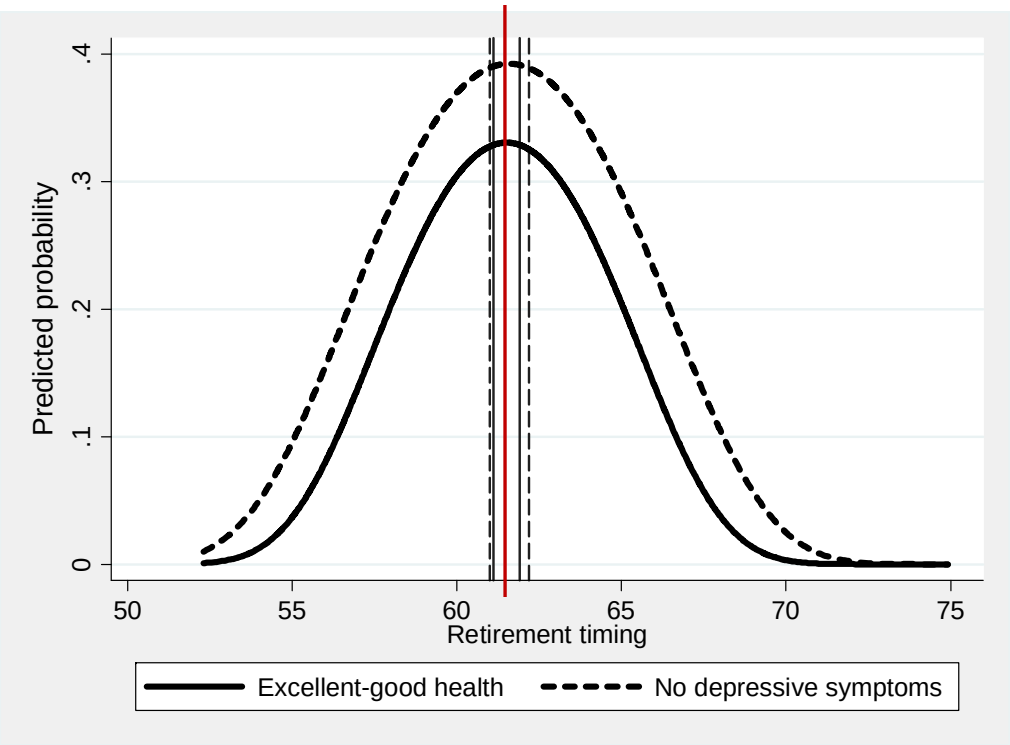
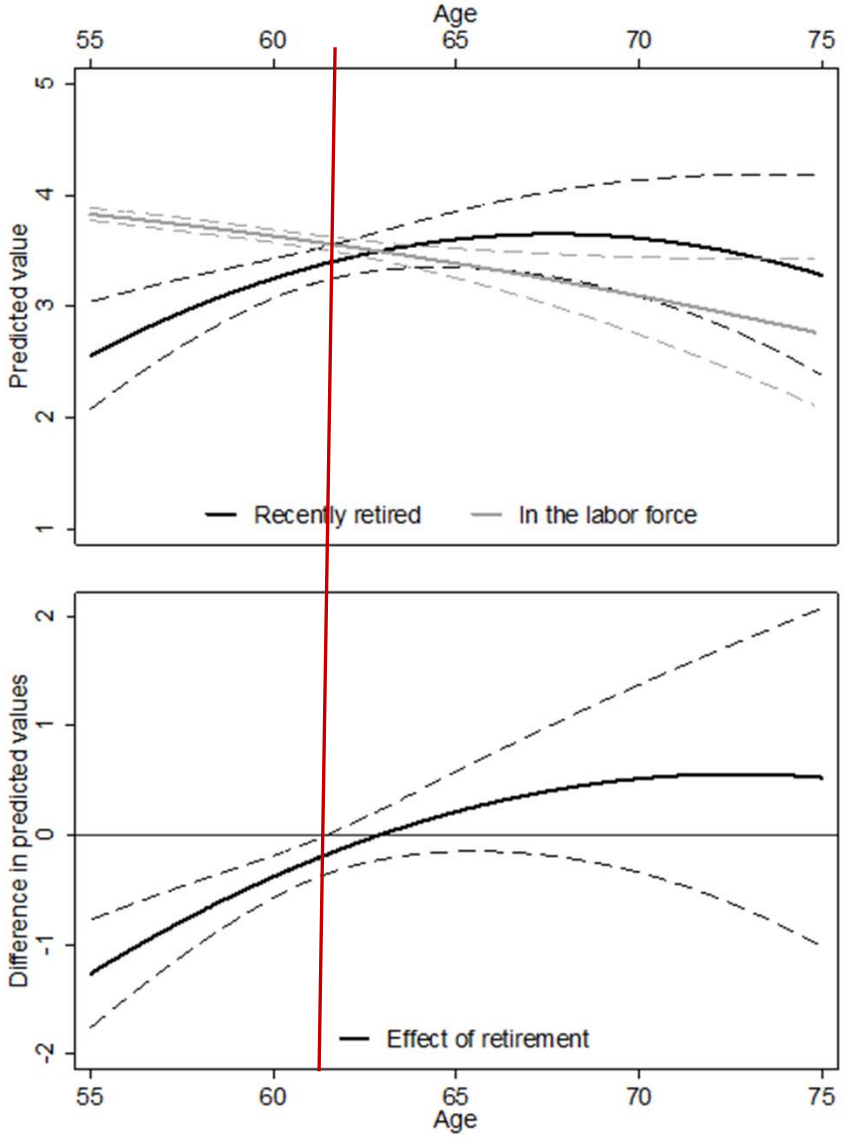
- **Improve understanding of how cultural-institutional forces operate**

- Retiring too early can be problematic

- Unclear advantages of working beyond expected ages

Raising the retirement age could reduce health





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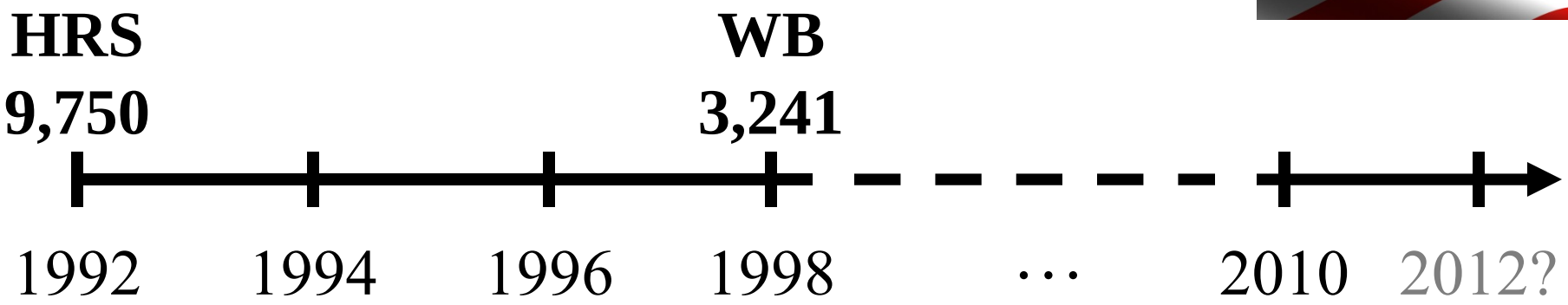


- **N=8,503** (after excluding retired FW and out LBF not retired)
- **Quasi-experiment** (retirement windows and legal retirement age)
- **Cohort dummy** (HRS 1931-1941, WB 1942-1947)
- **Health:** psychological, subjective, functional, and physical
- **Lifestyle:** BMI, weight, drinking, and smoking

Social Protection Survey (EPS)

2004 = 16,994

2002 2004 2006 2009 11?

- **18+ in 2004** (pension system affiliates in 2002)
- **N=3,638** (after excluding retired FW, out LBF not retired, and <50)
- **Quasi-experiment** (changes in minimum benefits, financial crisis, matching?)
- **Harmonization** (similar, but not identical measures)

Mexican Health and Aging Study (MHAS)

N=15,201

2001 2003 2012

- **50+ and spouses** (new 50-60 age cohort in 2012)
- **N=7,774** (after excluding retired FW, out LBF not retired, and age ineligible spouses)
- **Quasi-experiment** (changes in system regulation, financial crisis, matching?)
- **Harmonization** (similar, but not identical measures)

Country characteristics

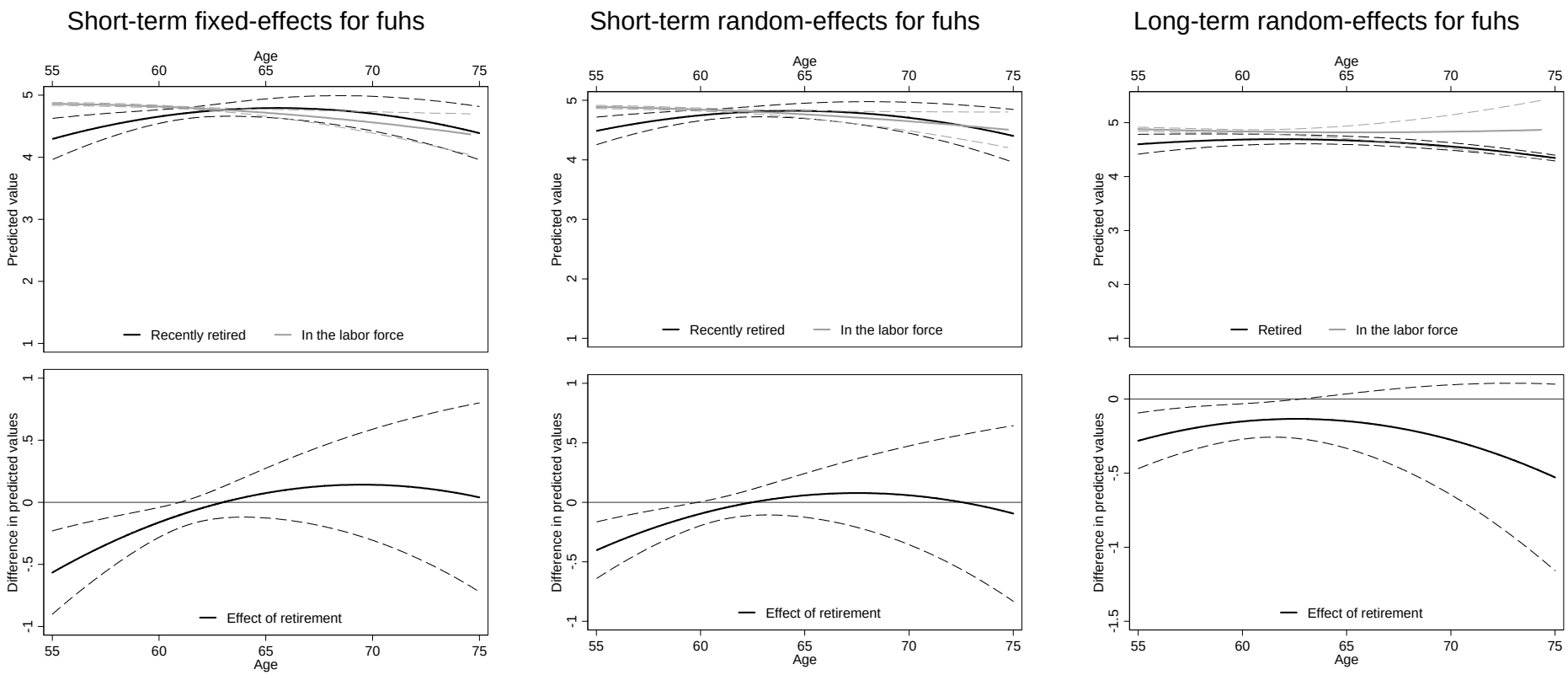
	USA	Chile	Mexico
Type if system	Social insurance	IRA, social assistance	IRA, social insurance
Retirement age	62 ERA 65-67 FRA	60 F 65 M	60 ERA 65 FRA
Average retirement age*	65	70	69

* *Source*: Authors' elaboration using OECD (2013).

Average effects in the US

1. Retiring too early is detrimental to psychological and subjective health, as well as to **functional health and smoking behavior**.
2. **Age guidelines**:
    1. Some short-term benefits of working beyond early retirement-age for subjective and psychological health.
    2. No clear benefits of working beyond full-retirement age.
3. **Variation in the optimal retirement age**:
    1. Outcome specific: in the short-term, ~61 for functional, ~64 for subjective, and ~67 for psychological health.
    2. Distance to the transition: in the long-term, continued employment at older ages can be beneficial too.
4. **Mechanisms**: cultural-institutional (optimal range ERA-FRA), environmental (functional) > psychosocial (psych/subjective).

Functional health index (short)



Beneficial effects of continued employment cumulate over time
In the short-term, the optimal retirement age is ~61, but in the long-term is ~64
Need to explore more nuanced duration of the effects (duration models per se are not feasible)

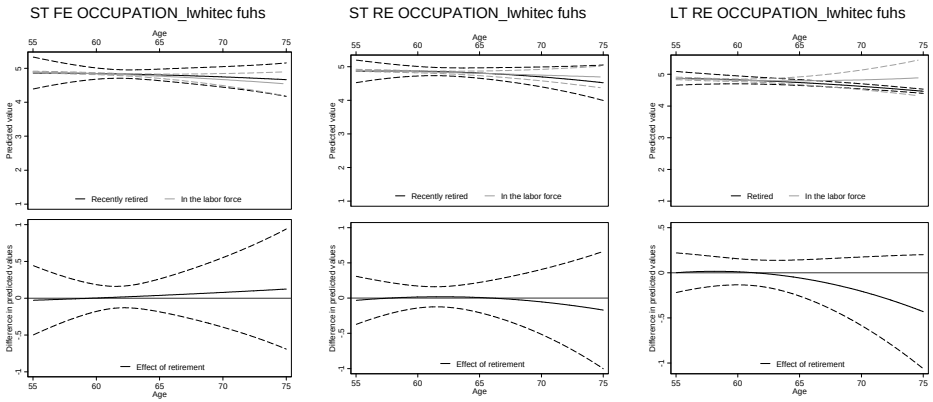
Group-specific effects in the US (preliminary)

1. Continued employment can be beneficial to everybody, but:
   1. **Men** benefit more than women (optimal age +2-4)
   2. **Pink-collar** benefit more than white- or blue-collar workers
   3. **White non-Hispanic** benefit more than other race/ethnicities

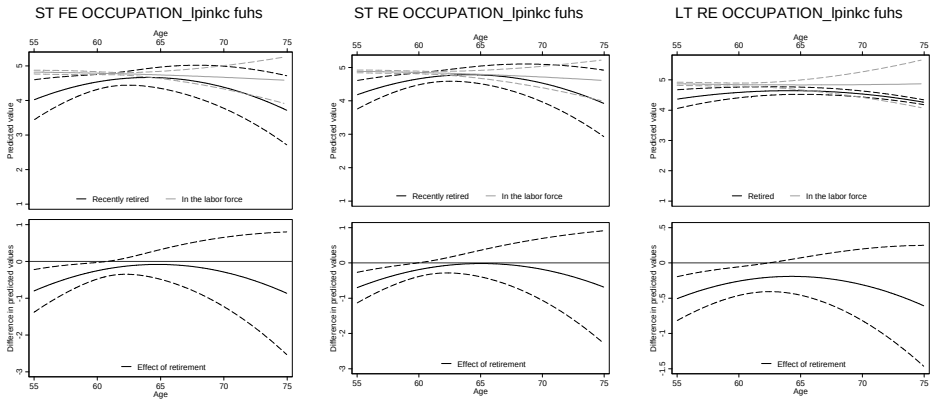
2. Mechanisms:
   1. **Gender**: cultural (male provider), psychosocial (social relationships), and materialist (wage gap)
   2. **Occupation**: psychosocial (pink-collars have less work related stress), and materialist (lack retirement resources)
   3. **Race/ethnicity**: psychosocial-materialist (better jobs and job centered identities)

Functional health index (short)

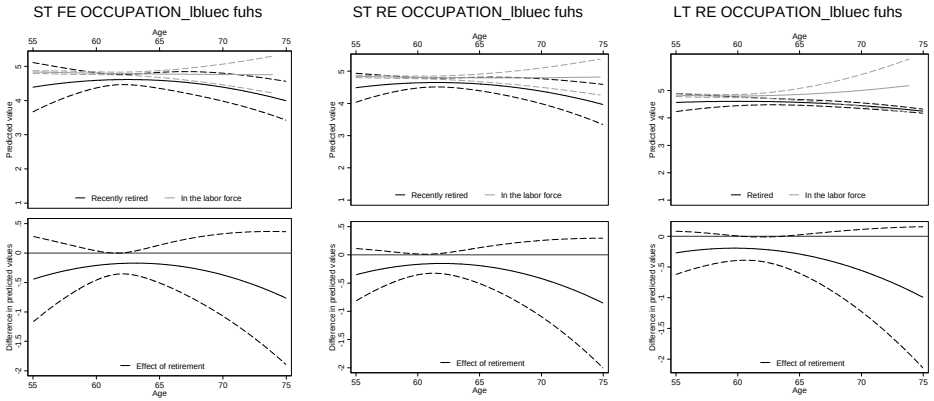
Professional/managerial worker



Clerical/sales/service worker



Blue-collar worker



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Future developments

1. Alternative model specifications for problematic outcomes
    1. Early retirements reduce drinking (ordered)
    2. Contradictory effects on physical health (dichotomies)
    3. Weak instrument for BMI and weight (obese and overweight)
2. Replicate
    1. Using more nuanced duration (<2, 2-3, 4-5, 6+)
    2. Exploring further SES differences (income and education)
    3. Excluding partly retired
    4. In Chile and Mexico
3. New collaborations and additional funding
    1. Additional outcomes (openness, cognitive health, mortality, health care utilization and expenditures, physical measures and biomarkers)
    2. Go fully cross-national (Americas, Europe, and Asia)