Retirement, Saving, Benefit Claiming and Solvency Under A Partial System of Voluntary Personal Accounts

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Research Aims

- Update a structural life cycle model of retirement and wealth.
- Simulate the retirement effects of adopting a system of personal accounts.
- Analyze effects of varying terms of personal account system.

Outcomes Examined

- Retirement
- Participation in Personal Accounts
- Benefits Taken as Lump Sum or Annuity
- Payroll Taxes Paid
- Total Benefits Received
- Course of Benefits with Age

Design Features with Large Effects

- Adoption of Personal Accounts
- Full Replacement vs. Partial Replacement of SS with Personal Accounts
- Lump Sum Payouts vs. Annuities

Highlights of Findings

Introducing partial accounts will:

- reduce 62 year olds at full time work by 22%.
- increase real (undiscounted) retirement benefits by 25%.

Complete replacement of SS with personal accounts will:

- reduce 62 year olds at full time work by 33%.
- increase real (undiscounted) retirement benefits by 75%.

Allowing lump sum payouts from partial accounts will:

- reduce not retired by 5 percentage points.
- create a large diversion of benefits to age 62, lowering benefits in 70s and 80s by 20%.

Utility Function

$$U = \int_0^T e^{-?t} \sum_{m=0}^{2} s_{m,t} \left(\frac{1}{a} C_{m,t}^{a} + h_t L_{m,t} \right) dt$$

Heterogeneity

- Time Preference Parameter – ρ
- Leisure Preferences – h_t
- Utility of Part-Time Work -- L_p

Asset Accumulation

$$A_t = (1 + r) A_{t-1} + W_t (1 - L_t) + E_t + B_t - C_t$$

$$A_t \not\geq 0$$

Estimated Results

		Coeff	t-value
α	Consumption parameter	-0.16	2.60
β_o	Constant in β Vector	-10.01	246.52
β_a	Coefficient of Age	0.084	4.78
β_h	Coefficient of Health	4.71	4.54
β_c	Coefficient of Cohort	0.03	0.28
δ_o	Constant in Distribution of L_p	-3.75	5.93
δ_a	Coefficient of Age	0.56	2.66
σ_ε	Standard deviation of ε	5.11	6.06

q value (38 df): 52.11 Observations: 2231

To Conduct Policy Simulations

- Use utility function parameters.
- Alter budget constraint.
- Current model projections:
  - Use each HRS respondent's work history.
  - Assume current law in place for full lifetime.
    - Age 67 retirement, 8% delayed retirement credit, no earnings test after normal retirement age, payroll tax contribution = 10.6%.

Baseline Personal Account System

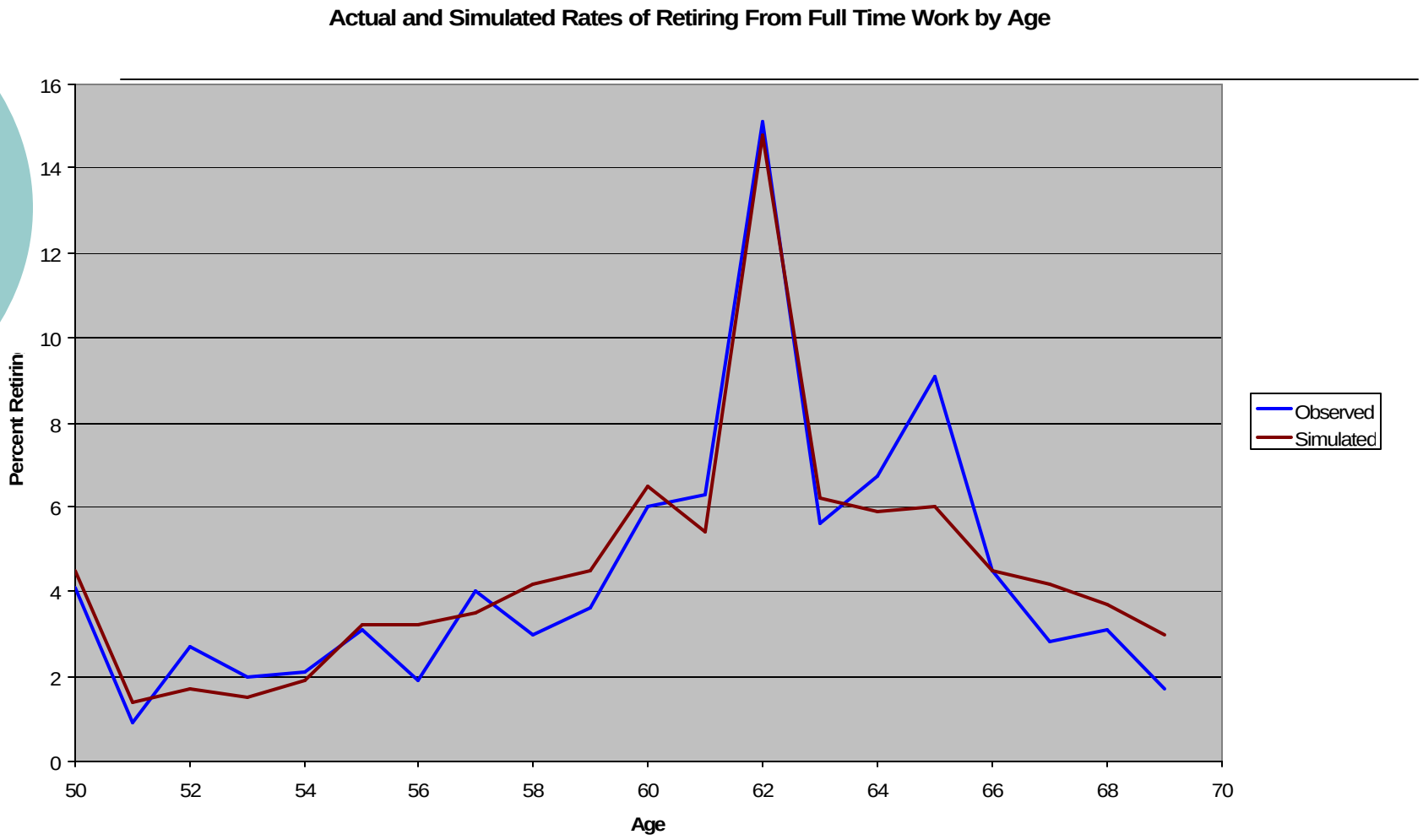
- 4% payroll tax diverted to personal accounts.
- 4.31% historical return on mixed portfolio.
- For those with personal account, reduce traditional benefit by 37.7% (4/10.6).
- Minimum required annuity equal to family poverty level.
- Earnings test applies to traditional benefit and mandatory annuity, not to lump sums.
- Lump sums available at 62.

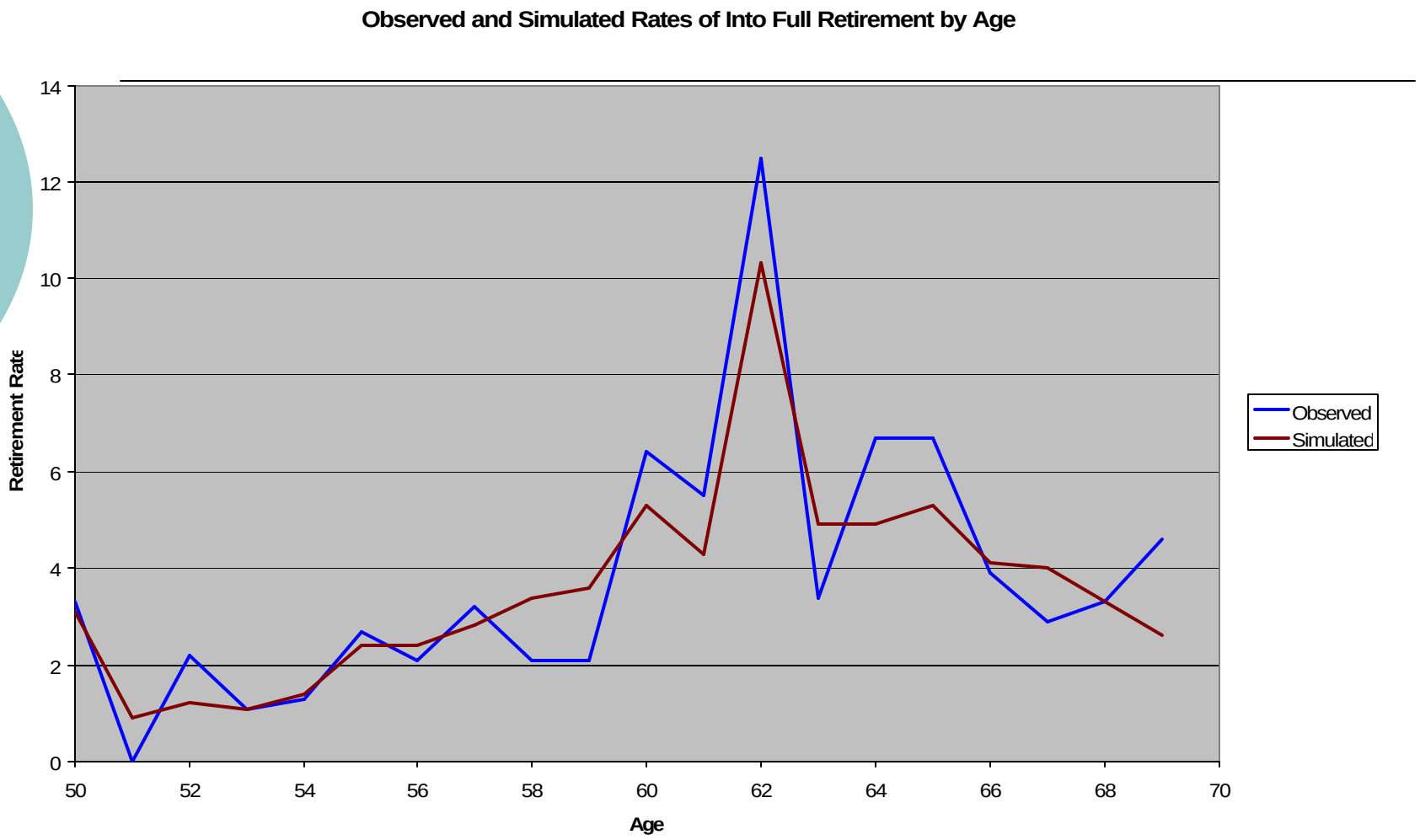
Economic Incentives Created by Personal Accounts

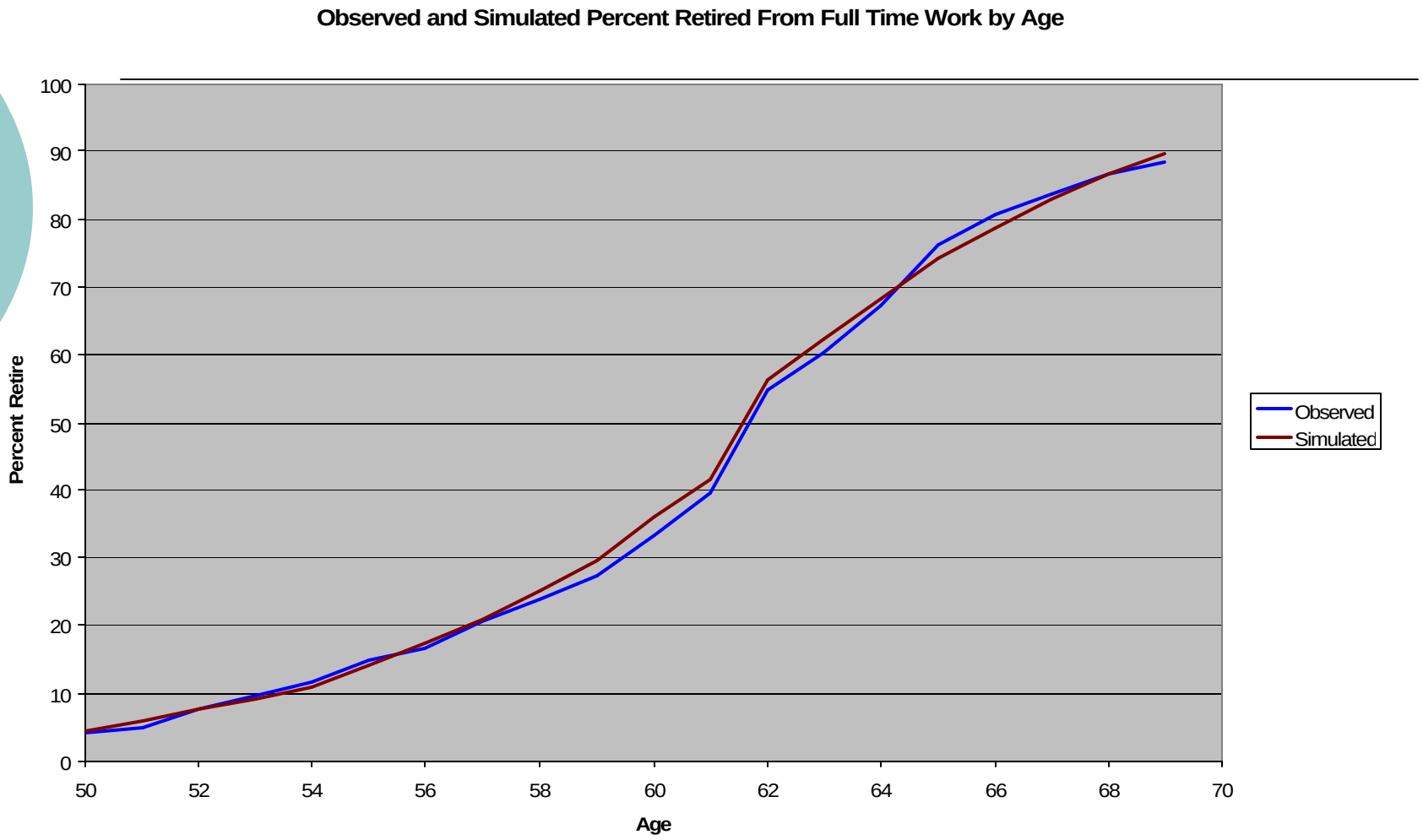
- Personal accounts increase wealth in retirement and thus encourage earlier retirement.
- For those with high time preference rate, lump sum always preferred to annuity.
- Taking a lump sum cash out and consuming it over the next couple of years reduces the marginal value of consumption at age 62, encouraging less work and earlier retirement.
- Substitution effect favors later retirement with personal accounts:
  - for high earners additional work increases later benefits more than under traditional system.

Choices Made Based on Utility Maximization

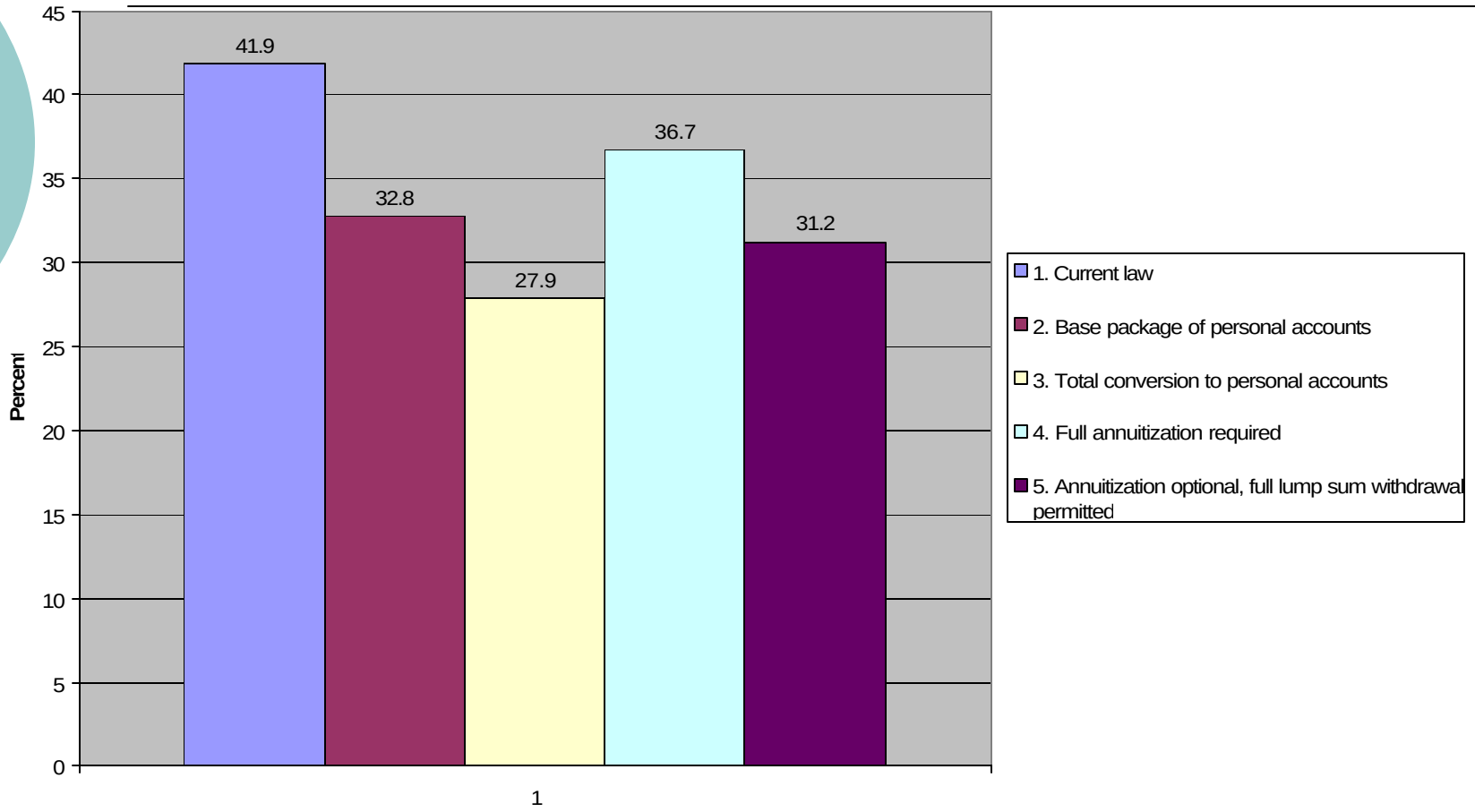
- Participate in personal account or fully rely on traditional benefits.
- When to leave long term job.
- When to partially retire.
- When to fully retire.
- When to claim benefits.
- Take benefit as lump sum or annuity.

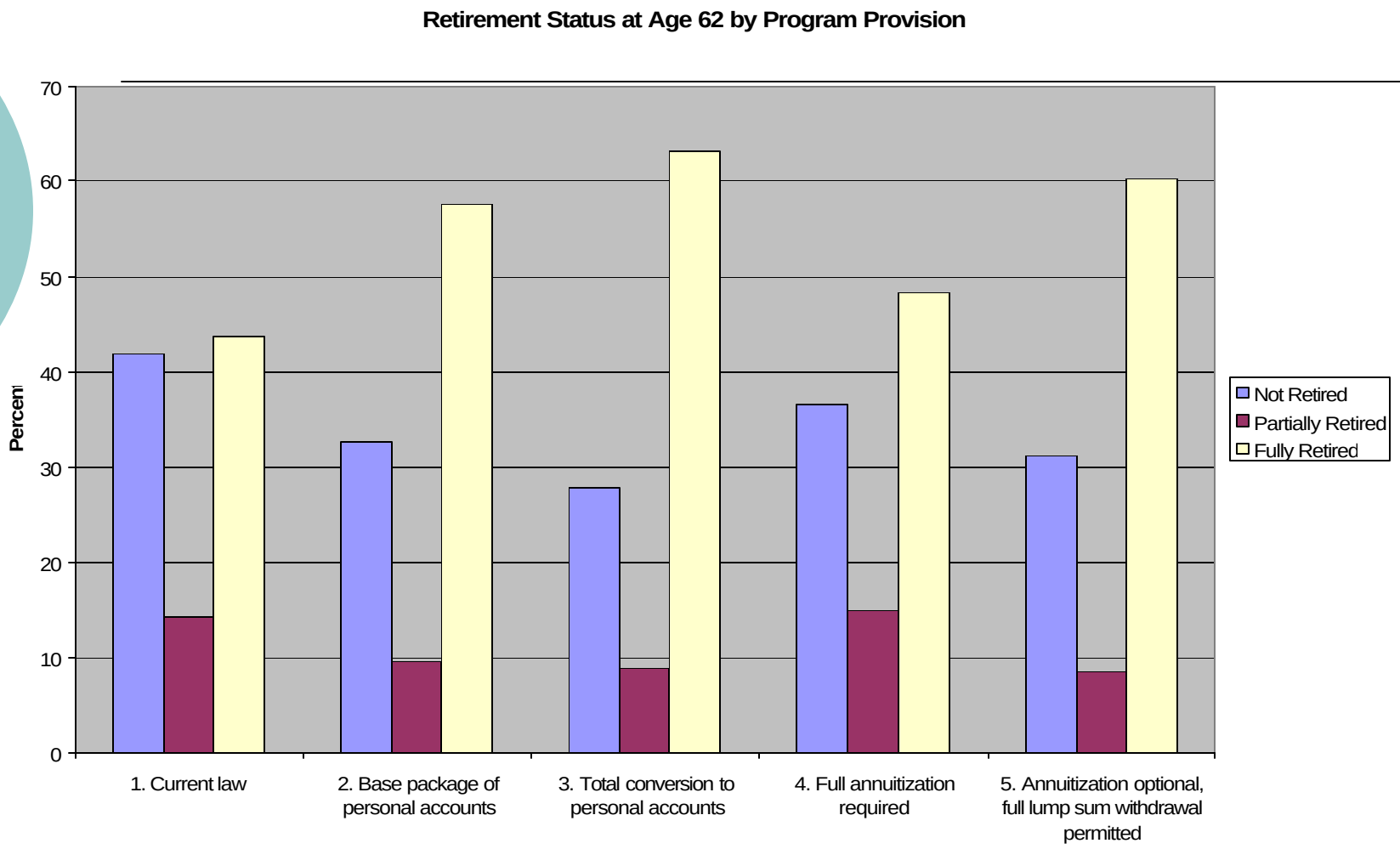

Actual and Simulated Rates of Retiring From Full Time Work by Age
Percent Retirin
16
14
12
10
8
6
4
2
0
50
52
54
56
58
60
62
64
66
68
70
Age
Observed
Simulated

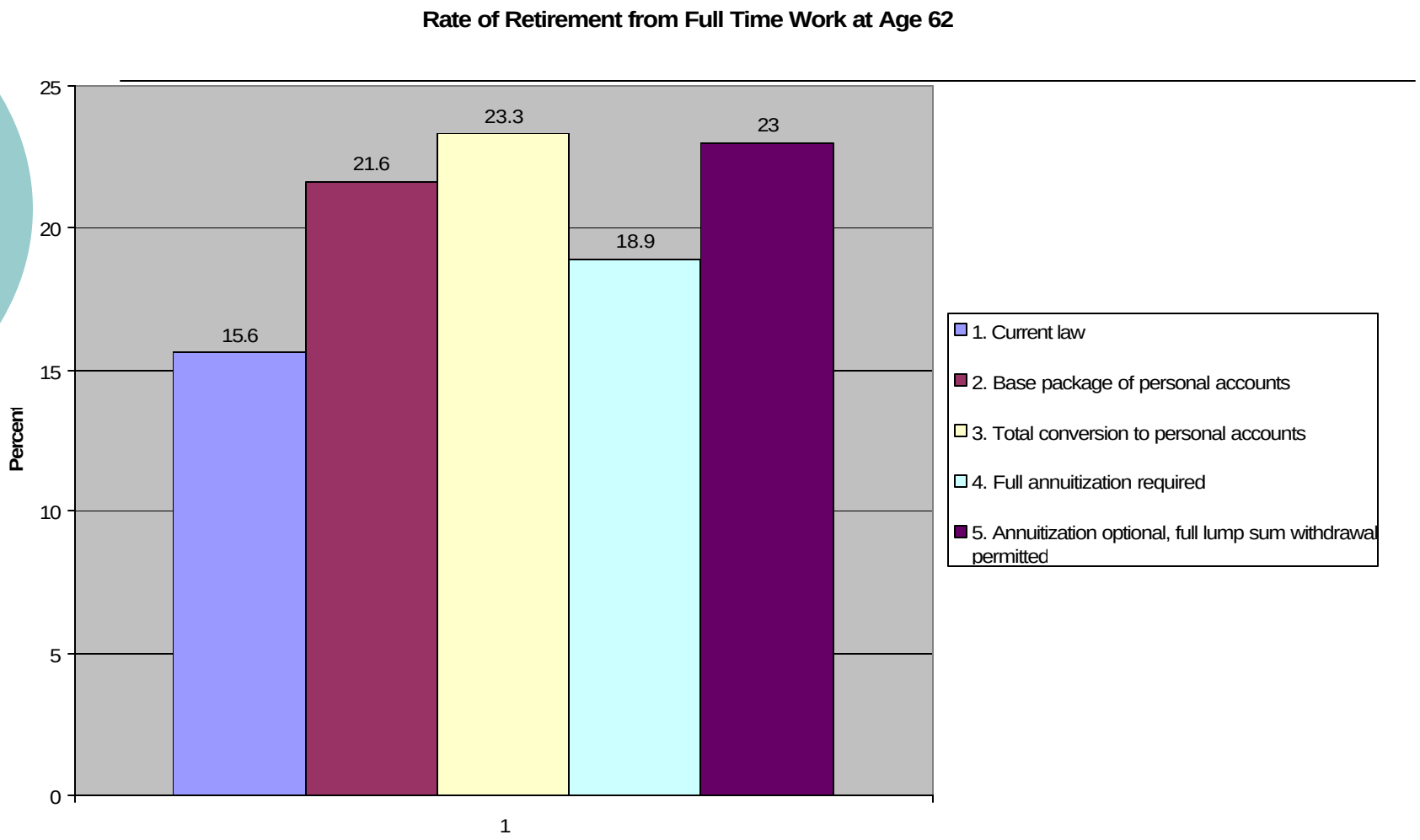

Observed and Simulated Rates of Into Full Retirement by Age
Retirement Rate
0
2
4
6
8
10
12
14
50
52
54
56
58
60
62
64
66
68
70
Age
Observed
Simulated

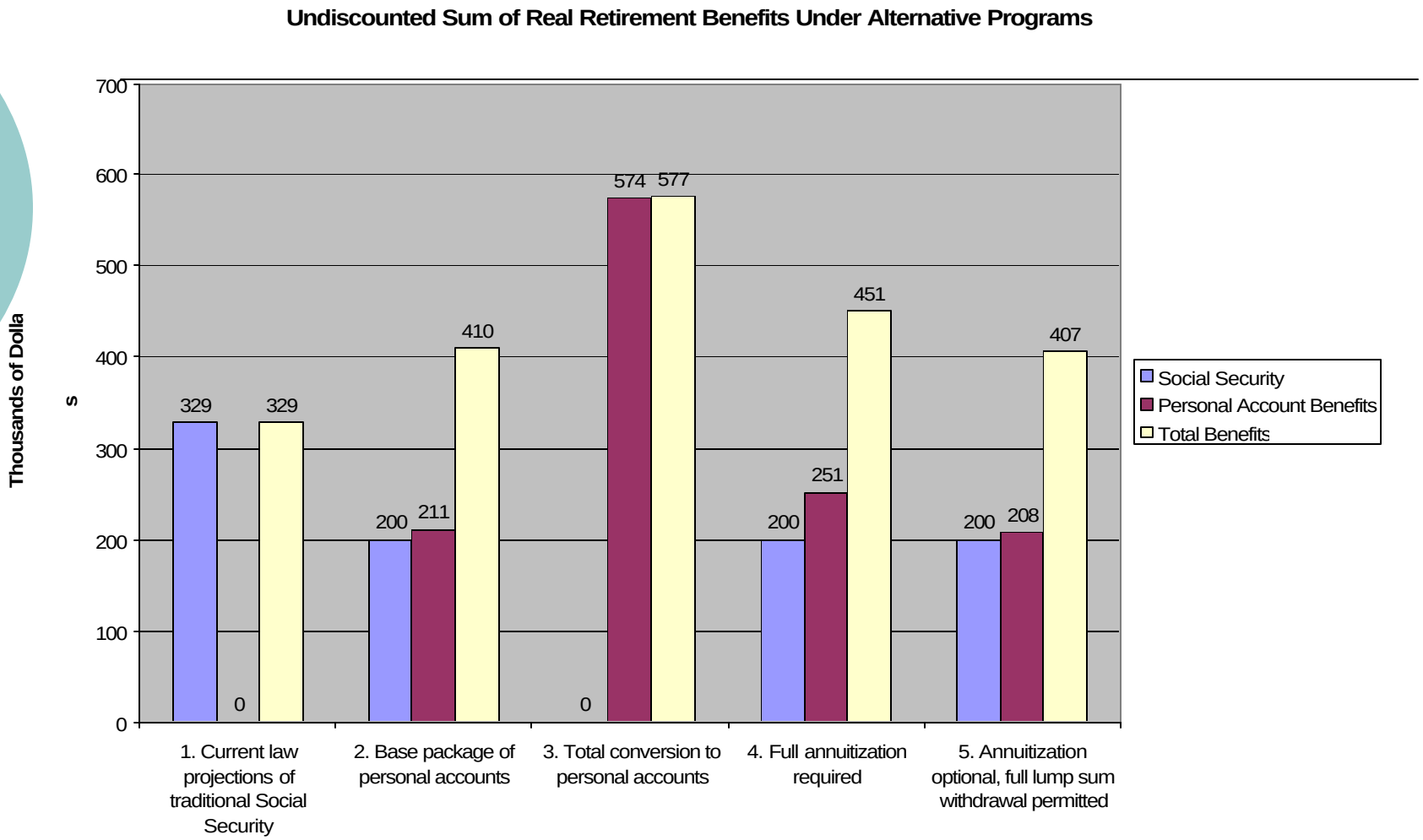

Observed and Simulated Percent Retired From Full Time Work by Age
Percent Retire
100
90
80
70
60
50
40
30
20
10
0
50
52
54
56
58
60
62
64
66
68
70
Age
Observed
Simulated

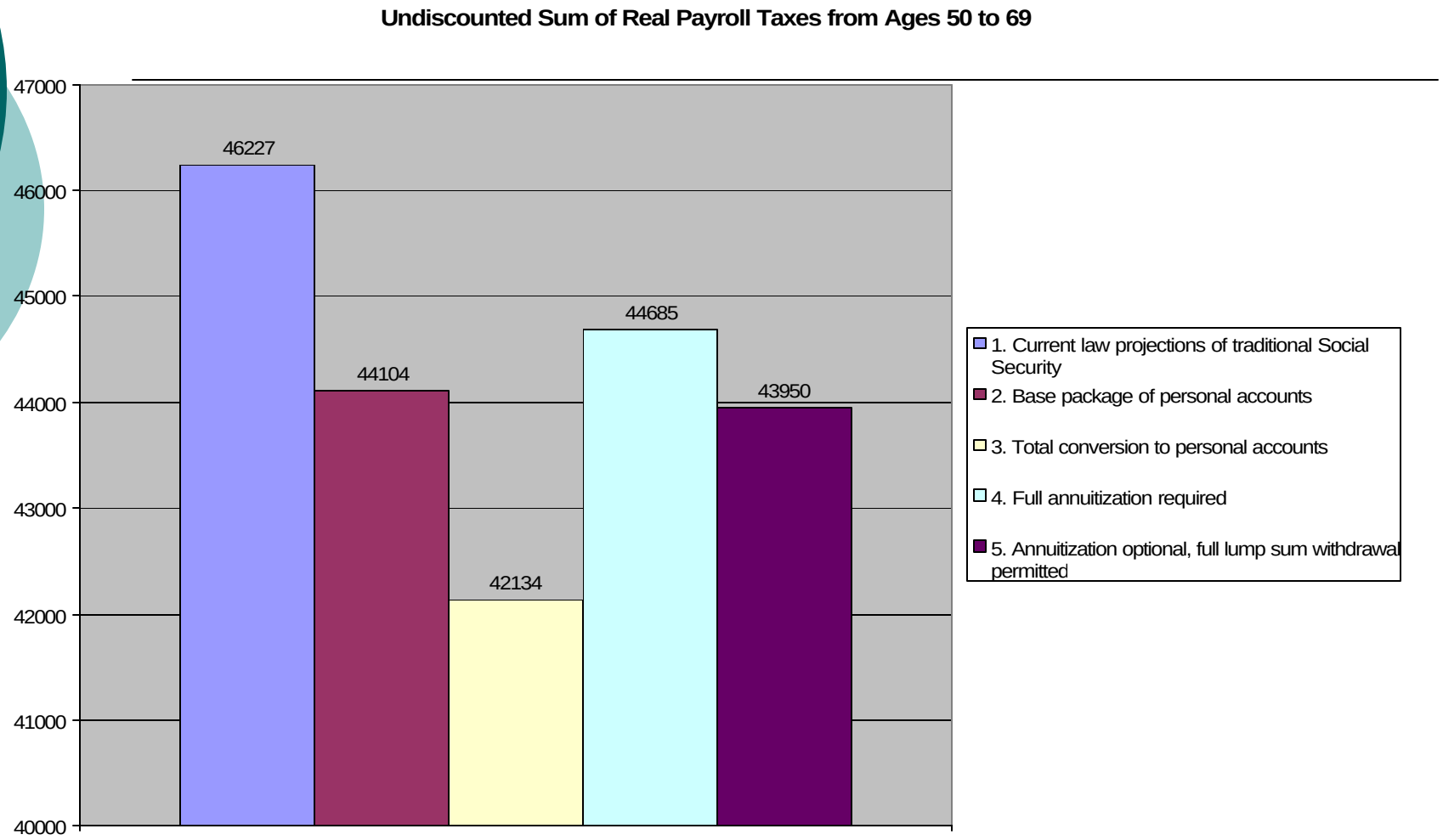
Percent Not Retired at Age 62 by Program Provision

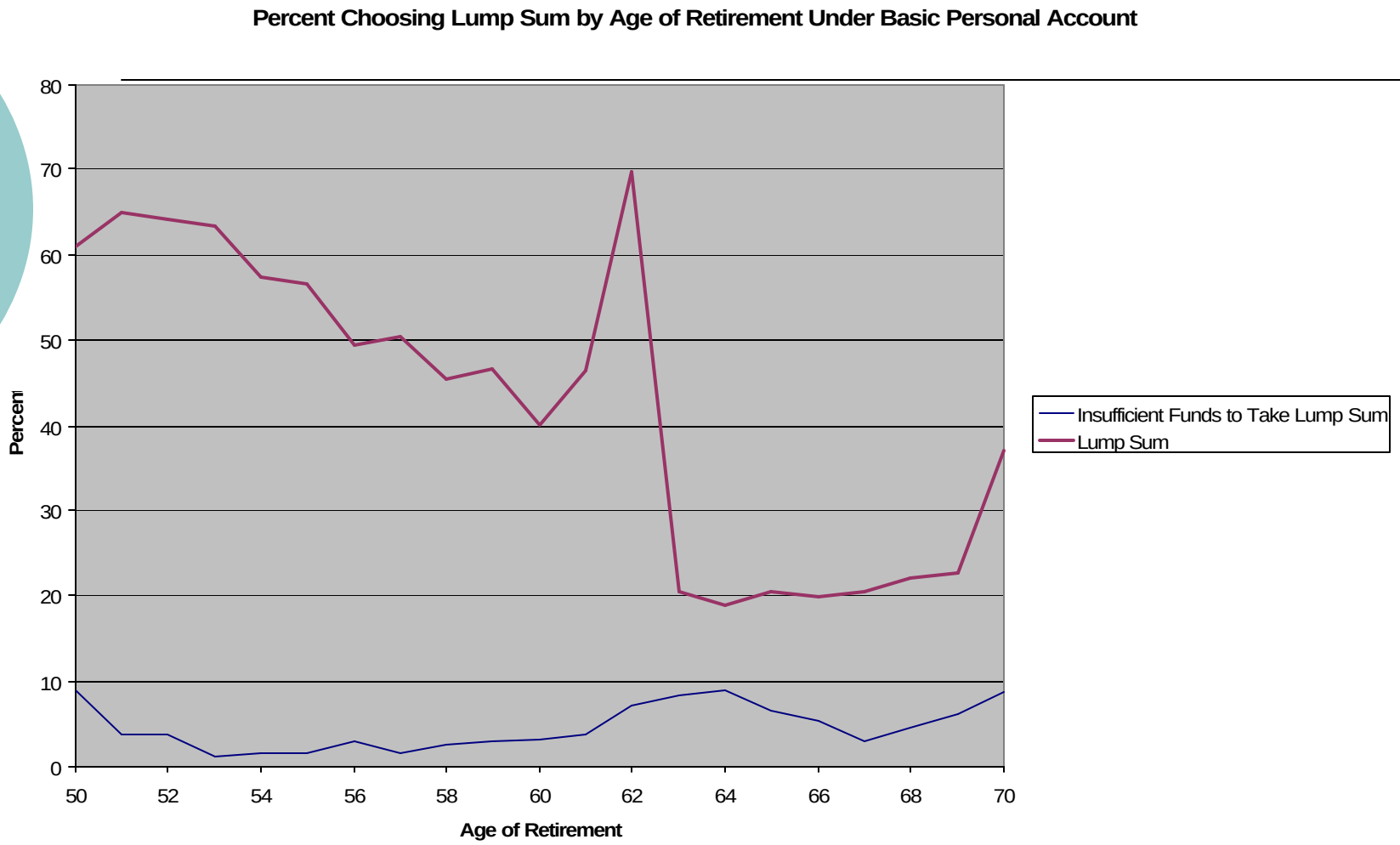


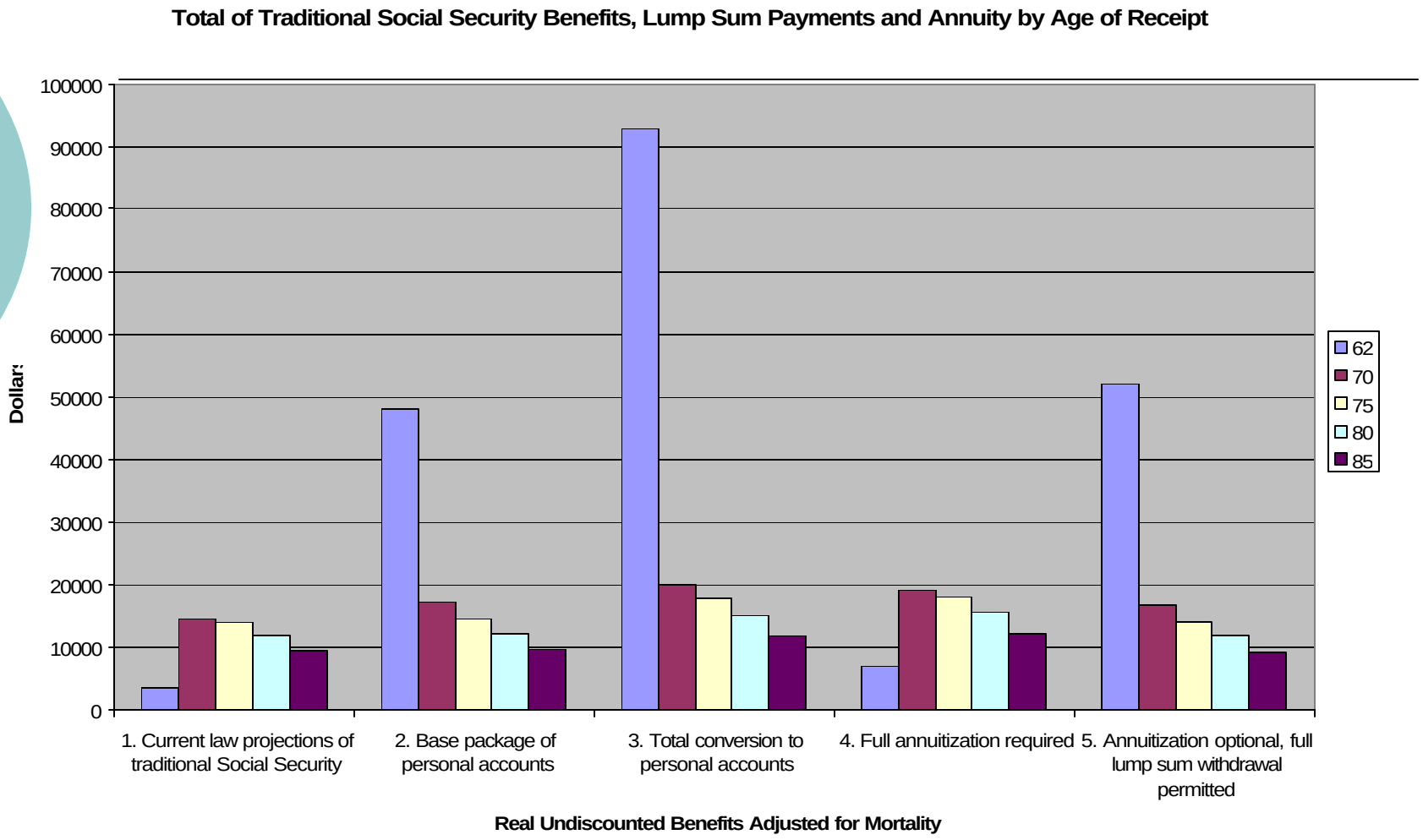

Retirement Status at Age 62 by Program Provision
70
60
50
40
30
20
10
0
Not Retired
Partially Retired
Fully Retired
1. Current law
2. Base package of personal accounts
3. Total conversion to personal accounts
4. Full annuitization required
5. Annuitization optional, full lump sum withdrawal permitted

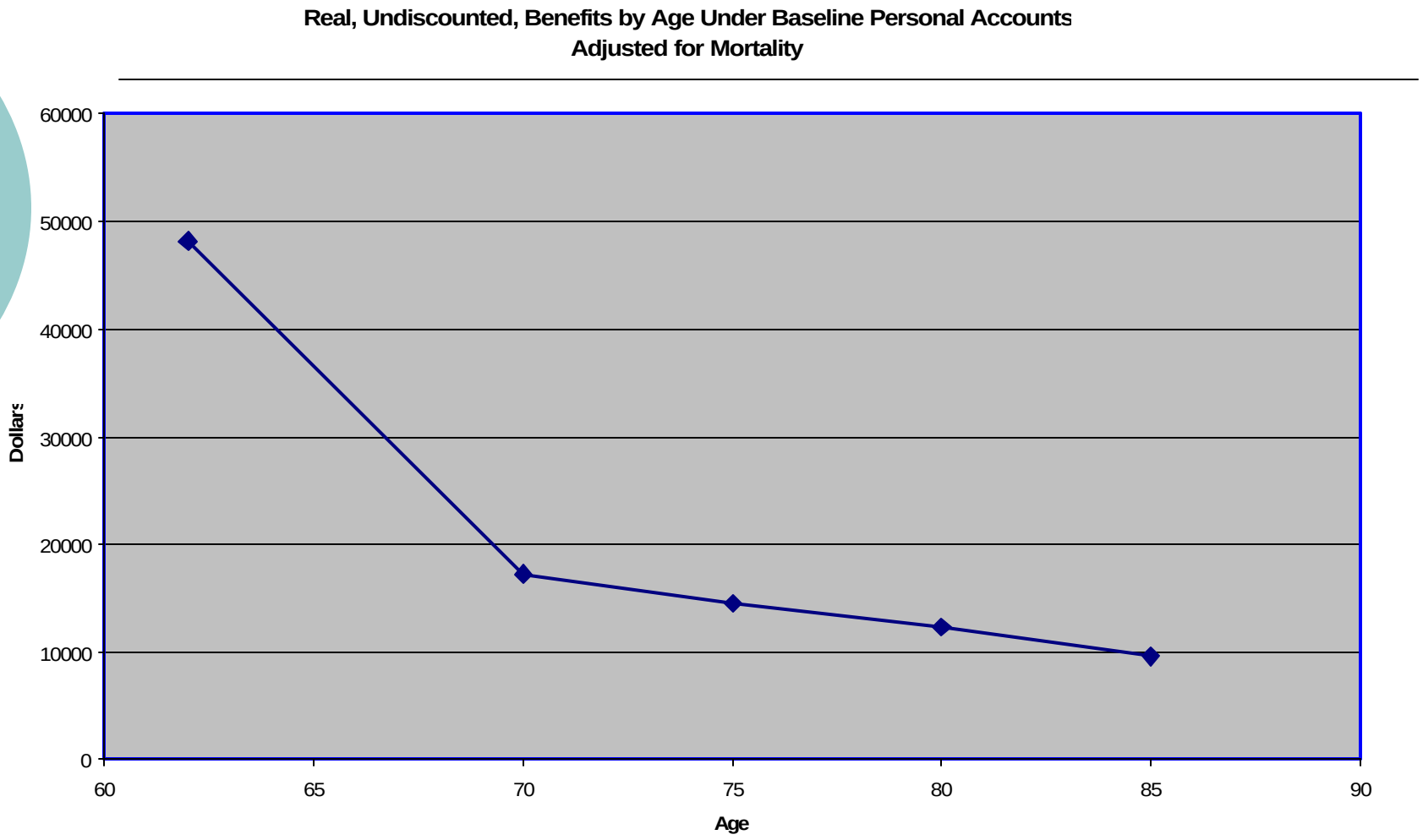

Rate of Retirement from Full Time Work at Age 62
25
20
15
10
5
0
Percent
15.6
21.6
23.3
18.9
23
1
1. Current law
2. Base package of personal accounts
3. Total conversion to personal accounts
4. Full annuitization required
5. Annuitization optional, full lump sum withdrawal permitted


Undiscounted Sum of Real Retirement Benefits Under Alternative Programs
Thousands of Dollars
700
600
500
400
300
200
100
0
329
0
329
200
211
410
0
574
577
200
251
451
200
208
407
Social Security
Personal Account Benefits
Total Benefits
1. Current law projections of traditional Social Security
2. Base package of personal accounts
3. Total conversion to personal accounts
4. Full annuitization required
5. Annuitization optional, full lump sum withdrawal permitted

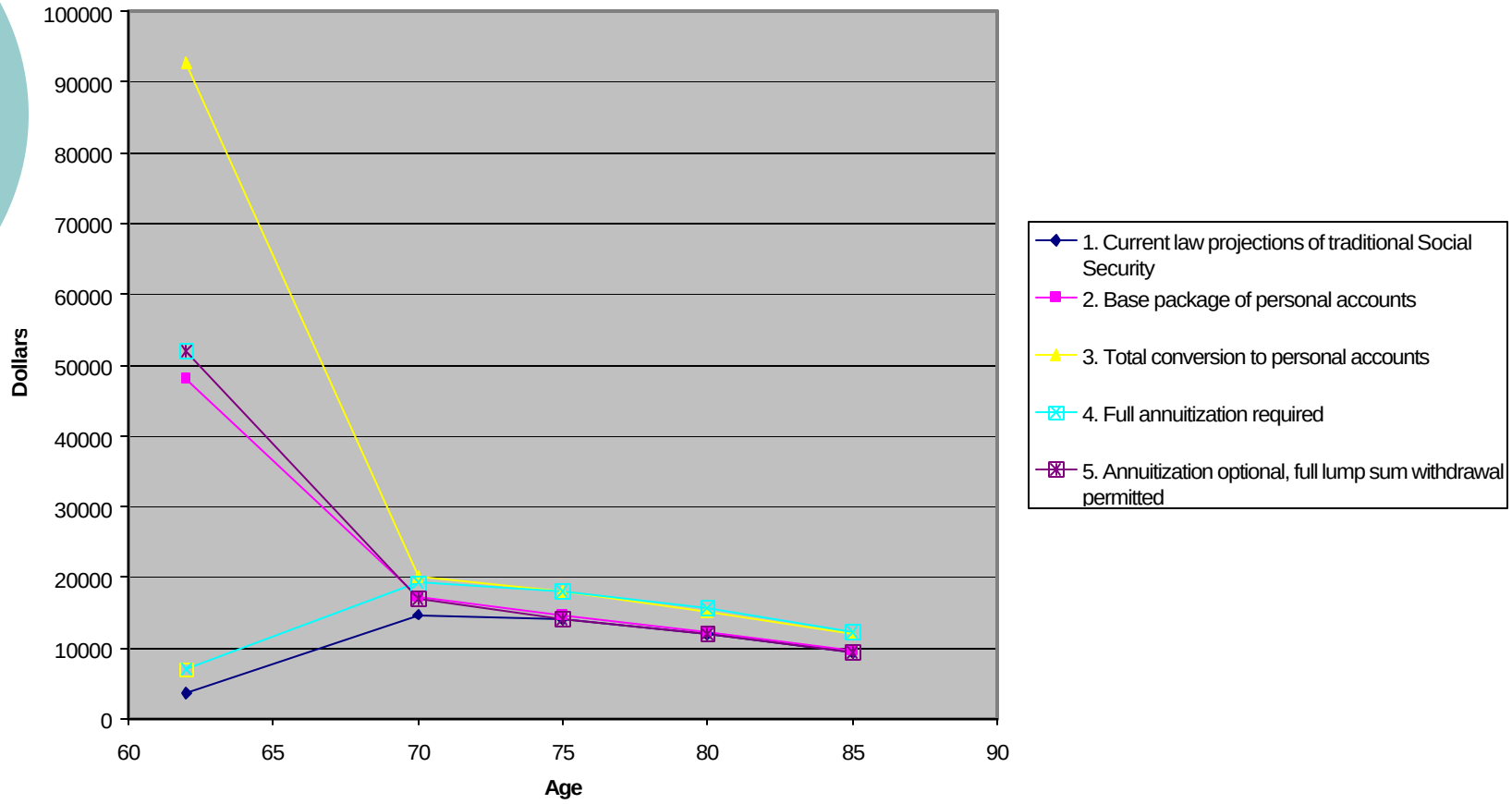

Undiscounted Sum of Real Payroll Taxes from Ages 50 to 69
47000
46000
45000
44000
43000
42000
41000
40000
46227
44104
42134
44685
43950
1. Current law projections of traditional Social Security
2. Base package of personal accounts
3. Total conversion to personal accounts
4. Full annuitization required
5. Annuitization optional, full lump sum withdrawal permitted


Percent Choosing Lump Sum by Age of Retirement Under Basic Personal Account
80
70
60
50
40
30
20
10
0
50
52
54
56
58
60
62
64
66
68
70
Age of Retirement
Insufficient Funds to Take Lump Sum
Lump Sum


Total of Traditional Social Security Benefits, Lump Sum Payments and Annuity by Age of Receipt
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
62
70
75
80
85
1. Current law projections of traditional Social Security
2. Base package of personal accounts
3. Total conversion to personal accounts
4. Full annuitization required
5. Annuitization optional, full lump sum withdrawal permitted
Real Undiscounted Benefits Adjusted for Mortality


Real, Undiscounted, Benefits by Age Under Baseline Personal Accounts
Adjusted for Mortality
60000
50000
40000
30000
20000
10000
0
Dollars
60
65
70
75
80
85
90
Age

Real, Undiscounted, Benefits by Age and by Program Adjusted for Mortality



Also Examined

- Pro rata vs. offset method of President's Commission proposal.
  - Limited effects on outcomes examined.
  - With offset method, individual with personal account not insured against further changes in conventional benefits.
- Sensitivity to amount of required annuity.
  - Individual poverty level.
  - Single vs. joint and survivors annuity.
- Voluntary vs. mandatory annuity

Caveats

- Did not require benefits and taxes to be in balance for each policy.
- Model includes uncertain lifetime, but not uncertain returns.
  - Our model with uncertain returns does not yet include partial and full retirement.
- No adjustment for perceived political risk when choosing between personal accounts and traditional benefits, or date of claiming.

Value of Leisure

$$h_t = e^{ßX_t + e}$$

$$ßX_t = ß_o + ß_a \text{ Age} + ß_h \text{ Health} + ß_c \text{ Cohort}$$

L_p and ε are random effects

$$e_t \sim N(0, s_e^2)$$

$$f(L_p) = k\, e^{d L_p}$$

$$d = d_o + d_a \text{ Age}$$

ρ is treated as a fixed effect

Method of Estimation -- GMM

$$q = m' w^{-1} m$$

$$w = \sum_{i=1}^{n} m_i m_i'$$

$$\mathrm{Var}(?) = \left[G' w^{-1} G \right]^{-1}$$

Moments Used

At ages 54-66:

- Percent working full time

At ages 55, 58, 60, 62 & 65:

- Percent fully retired
- In poor health, percent working full time
- Born < 1934, percent working full time
- Born > 1938, percent working full time
- With Y < $1.25M, percent working FT
- With Y > $1.90M, percent working FT

Utility Function

$$U = \int_0^T e^{-\rho t} \sum_{m=0}^{2} \{ s_{m,t} [\tfrac{1}{\alpha} C_{m,t}^{\alpha} + h_t \tfrac{1}{\gamma} L_{m,t}^{\gamma}] \} dt$$

Heterogeneity

- Time Preference Parameter – ρ
- Leisure Preferences – h_t
- Utility of Part-Time Work -- L_p