5B – Pensions and Longevity Risk

2020 Living to 100 Symposium

ROBERT L. BROWN

5B, Pensions and Longevity Risk

Tuesday, January 14, 2020.

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J. Forman: Fully Funded Pension for Centenarians

- Work was Carefully Done
- Well Researched and Documented
- I did not check the Arithmetic

--But Some Issues

Issue #1: 70% GRR

- The Gross Replacement Rate is used widely
- But has fallen into disrepute
- Lots of literature on this
- Comparison is at a point-in-time Earnings level

Issue #1: 70% GRR

- Canadian Actuaries, Fred Vetesse and Malcolm Hamilton have looked at achieving consistent consumable income over all of life
- That is after tax and after all deductions
- Find a GRR of around 50% is correct in their model

Why is a 50% GRR Enough?

- No more deductions for Social Security, Unemployment Insurance, Workers Comp.
- No more Saving for Retirement
- Lower income taxes in Progressive System
- Kids are gone
- Now Debt Free (Hopefully)
- This does not require any attachment to Home Equity

Bonnie-Jeanne MacDonald (With SoA Support)

- Single-Point GRR does not predict living standards continuity in retirement very well at all
- Model shows a Correlation between the GRR and Actual Living Standards is 0.11
- Defines a Living Standards Replacement Rate (LSRR)
- A measure of consumable income adjusted for family size

Living Standards Replacement Rate

- Goal is a LSRR between 80% and 120%
- For those with a GRR of 65 to 75% (Forman) some 80% have a LSRR > 120%
- But the Range of Results is very wide
- Among Those with a GRR of 65 to 75%, only 22.5% actually achieved a LSRR of 80-120%

ISSUE #2: The Annuity Factor of 10

- Your model determines retirement income using an annuity factor of 10
- I cannot replicate such a value
- The non-profit Pension Plan for Ontario Colleges of Applied Arts and Technology has an age 65 annuity factor of 12.5 (has a five year guarantee).
- The best Annuity Factor on Cannex (A private sector Annuity quotation Platform) is 15.5 (5-year guarantee).

Annuity Factor of 10

- If the cost of an Annuity is 15.5, then your contribution rate of 7.27% goes to 11.27%
- And if your add on an Annuity Adjustment Factor to partially cover Inflation that adds another 1.67% (using your data) for a total of 12.94%

ISSUE #3: Fully Pre-fund Social Security

- This will Cost $13.9 Trillion (your data)
- How can you do this without imposing significant inter-generational inequities?
- Where can you invest this amount of money?
- If invested in U.S. Government bonds, you are still 100% PAYG

Does Pre-Funding Provide Greater Security for OASDI?

- The Answer is “No”

What is Social Security?

- Francisco Bayo (1988) Deputy Chief Actuary of OASDI said:

"For Social Security, you cannot accumulate assets; that is, claims from somebody else's production. If we have a large amount of money in the Social Security trust funds, we have a claim on ourselves, which does not have much meaning. The truth is, whatever is going to be consumed—be it a product that you can get a physical hold of, or services that are very difficult to hold—those products cannot be stockpiled. They have to be provided at the time of consumption. No matter what kind of financing we are going to have in our Social Security program, you will find that the benefits that will be obtained by the beneficiary in the year 2050 will have to be produced by the workers in the year 2050, or just a few years earlier."

What is Social Security?

Nicholas Barr (1993) says it even more strongly:

“The widely held (but false) view that funded schemes are inherently ‘safer’ than PAY-AS-YOU-GO is an example of the fallacy of composition. For individuals the economic function of a pension scheme is to transfer consumption over time. But (ruling out the case where current output is stored in holes in people’s gardens) this is not possible for society as a whole; the consumption of pensioners as a group is produced by the next generation of workers. From an aggregate viewpoint, the economic function of pension schemes is to divide total production between workers and pensioners, i.e. to reduce the consumption of workers so that sufficient output remains for pensioners. Once this point is understood it becomes clear why PAY-AS-YOU-GO and funded schemes, which are simply ways of dividing output between workers and pensioners, should not fare very differently in the face of demographic change.”

Lori Curtis and Doug Andrews: How Amending Old Age Security Would Improve the State of Canadian Women Living in the Alone Stage of Retirement

- While the paper seems to focus on Canadian Women Living in the Alone Stage of Retirement (ASR), the recommendations for Amendments apply to both Males and Females since the Poverty Gap is very similar.

Poverty in Retirement: Canada

- Resources Needs are “U” shaped:

  --High Early On (65-74) when Seniors are Active

  --Lower in Middle (75-84) when at home but not in need of extensive health care

  --Higher at advanced age (85+) when Active Daily Living is a Challenge

Poverty in Retirement: Canada

- Life Expectancy Gap between Men and Women is Narrowing
- Rate of Life Expectancy Improvement is Slowing

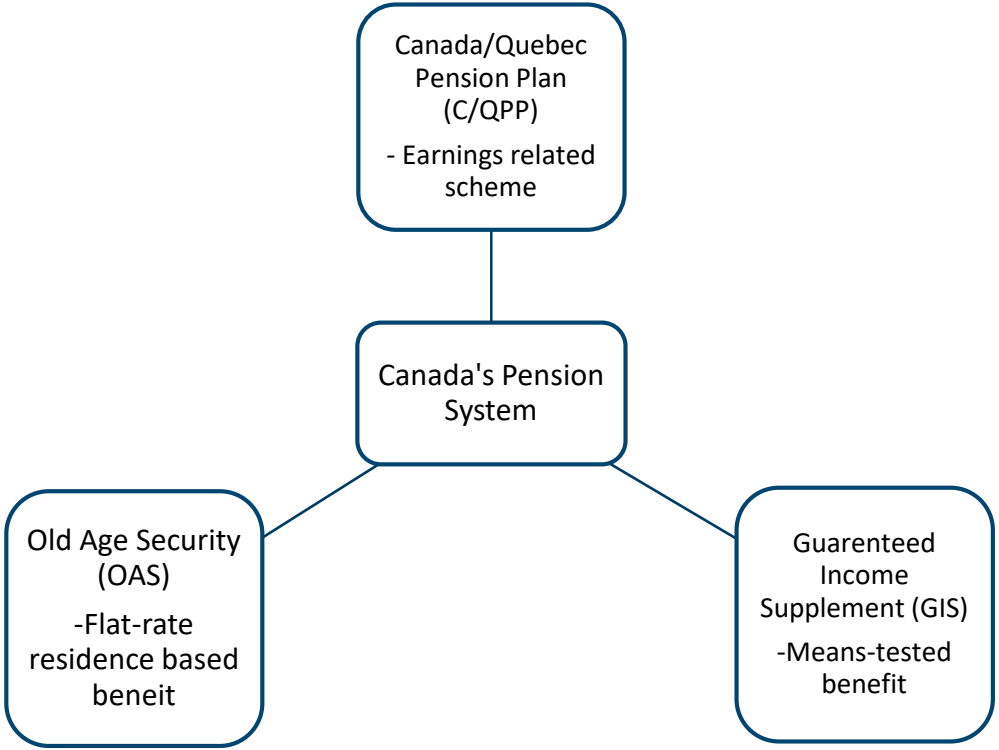
Poverty in Retirement: Canada

- GIS Payments to Individuals: 72.5% Female
- If a Full GIS: 77.8% Female
- By Age 80, 25% of Females and 70% of Males lived in Couples
- The proportion of those living alone considered low income is close to 10 times that of couples
- The number of females living in poverty is close to double that of males in the early stage, triple in the middle stage and quadruple that of males in the late stage of ASR.

Poverty in Retirement: Canada

- Mean Gap by Poverty Measure (MBM and ATLIM) does not vary significantly by gender

Government Sources of Retirement Income



Policy Alternatives: Basic Income Guarantee

- Recent Experiments in Ontario and Finland curtailed when a “right-of-centre” party elected
- The Parliamentary Budget Office says it would cost $23B
- Liberals like it since it alleviates poverty and income inequality
- Conservatives like it if it eliminates all other welfare programs (The U.S. has 126 separate welfare programs)
- The present system is not strong enough to support people, but it is strong enough to entangle people

Policy Alternatives: Basic Income Guarantee

- Nixon tried this in the 1960's but lost in the Senate
- Swiss voters rejected this 77% to 23% in a referendum (2016)

Policy Alternatives: Increase Old Age Security

- A $290 increase to Seniors living in poverty would cost $1.2B and would alleviate poverty even in the largest poverty gap
- A $217 increase would cost $875 million and would alleviate poverty in the Alone Stage of Retirement

Policy Alternatives: Questions/Comments

- I think you should do this through the GIS system
- If GIS, then all systems to check other income are in place
- Should there also be an asset test? Should this extra payment go to those living in homes with no mortgage?
- Who could turn to Home Equity Lines of Credit or Reverse Mortgages
- Why the emphasis on females when your solution in non-gender specific?

Policy Alternatives: Will It Float?

- I believe that Ottawa is not interested in expanding OAS
- It would rather let it die as the Economy grows faster than COLA increases in OAS Benefits
- I would strongly recommend the GIS route
- But: Good Work and Good Luck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2020 Living to 100 Symposium

LORI CURTIS & DOUGLAS ANDREWS

UNIVERSITY OF WATERLOO

Session 5B- Pensions and Longevity Risk

14 January 2020

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How Amending Old Age Security Would Improve the State of Canadian Women Living in the Alone Stage of Retirement

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Introduction (references in paper)

- Canadians are living substantially longer
- Not increasing years of work (on average)
- Resourcing longer retirements with a stable working life.

- The literature recognizes 3 stages of retirement,
  - early (ages 65 - 74 years)
  - middle (ages 75 - 84 years)
  - late (ages 85 plus)

Introduction → retirement needs

- Retirement resource needs follow a U-shaped pattern.
  - High in early stage
    - while seniors are active (traveling, socializing, etc.)
  - lower in the middle stage
    - as retirees enjoy home routines
  - high in late stage
    - when health diminishes and daily living activities become more difficult.

Introduction → ASR

- Women live longer than men
- If marry tend to marry older men
- Many female baby boomers did not marry or divorced
- A growing proportion of Canadian women will be alone at end of the middle and into late stage of retirement
  - limited incomes
  - limited social support
- 'the alone stage of retirement' (ASR).

Introduction → Aging

- Those ≥ 90 most rapidly growing age group in Canada.
- ~ 8,100 centenarians living in Canada in 2015,
- projected to double by 2031
- equal numbers of men and women in the early retirement groups
- Women gradually outnumber men in the older age groups
  - account for 62.2% of those 85 to 89 and 88.4% those ≥ 100
- women's longer life expectancy leads to gender age gap
  - Conditional LE=21.7 yrs at 65 compared to men's 18.8 yrs
- Canadian men LE (3.6 months/year) increasing at a faster rate than women's (2.4 months/year) gender gap should fall

Introduction → Poverty

- Canadian senior women poverty rates increased by 3.2% for those in a family and 18.9% for singles (1995 – 2015)
- Similar changes were found for senior men
- Poverty rate for Canadian senior women living alone at 28% compared to 11% for all seniors
- Separated/divorced women face the highest poverty rates
- Separation/divorce larger negative effect on women's income replacement rates than widowhood
- women more concerned about financial security, running out of assets, and needing long term care.

This Study

- examine the level of expenditures needed to meet basic standard of living measured by Canadian gov market basket measure (MBM).
  - MBM includes necessities such as food, clothing and footwear, transportation, shelter, and other basic costs of daily living.
- compare this to income available to Canadian Seniors in the ASR
  - private pensions, Canada Pension Plan (CPP), Old Age Security (OAS), Guaranteed Income supplement (GI), and other income support programs. We examine the income from sources such as private pensions, CPP, and OAS, for individuals in this stage of retirement.
- compare the income to the internationally recognized relative poverty measure (low income measure (LIM)) to provide a longitudinal comparator (1/2 median income).
- We suggest an avenue to drastically reduce senior poverty that consistent with a basic income.

Data

- Canadian Census 2016 public use microdata file (Statistics Canada).
- primary source of demographic data in Canada – collected q 5yrs
- the long-form survey – completed by 25% of CDN in 2016
  - age, sex, relationships of household members (including marital status), housing, income and income sources, and low-income measures.
  - income data from personal income tax/benefits files (administrative data)
  - does not suffer missing data and reporting error of survey data.
  - Income data are accurate
  - study ample includes all individuals ≥65 years of age
  - who are living in a household in one of the 10 provinces.

Data

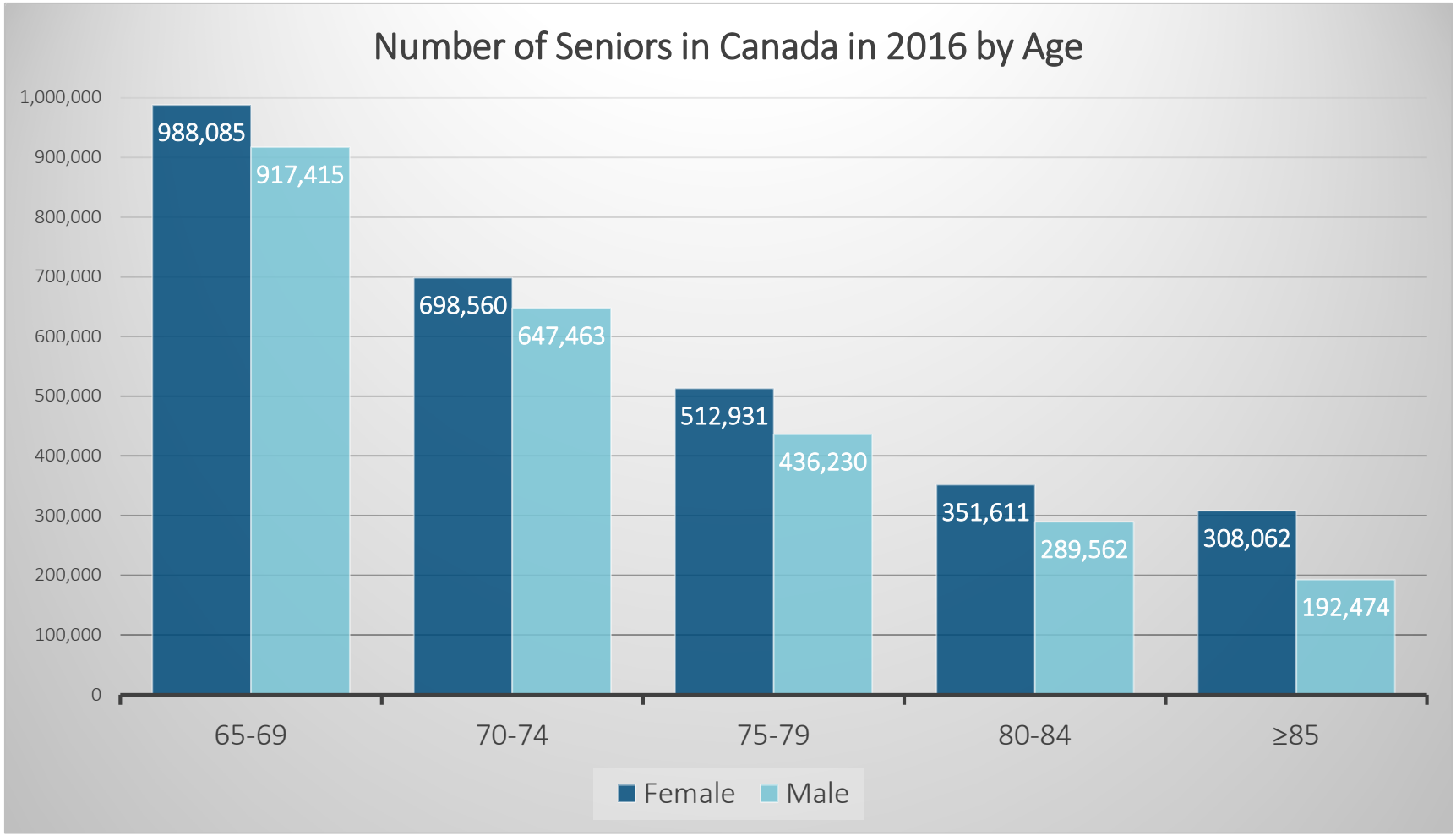
- Poverty indicators in the data (relative to after-tax (AT) LIM & MBM).
  - Used to calculate the proportions of seniors living in poverty.
- ATLIM & MBM poverty cut-off values not available in data.
- ATLIM & MBM cut-offs calculated by Statistics Canada- use HH size=1.
- ATLIM is a National statistic (1/2 median income for HH=1).
- MBM calculated for 50 geographic areas and by home ownership.
- Data contains home ownership & 22 geographical areas
  - aggregated using population weighted averages of the MBM measures

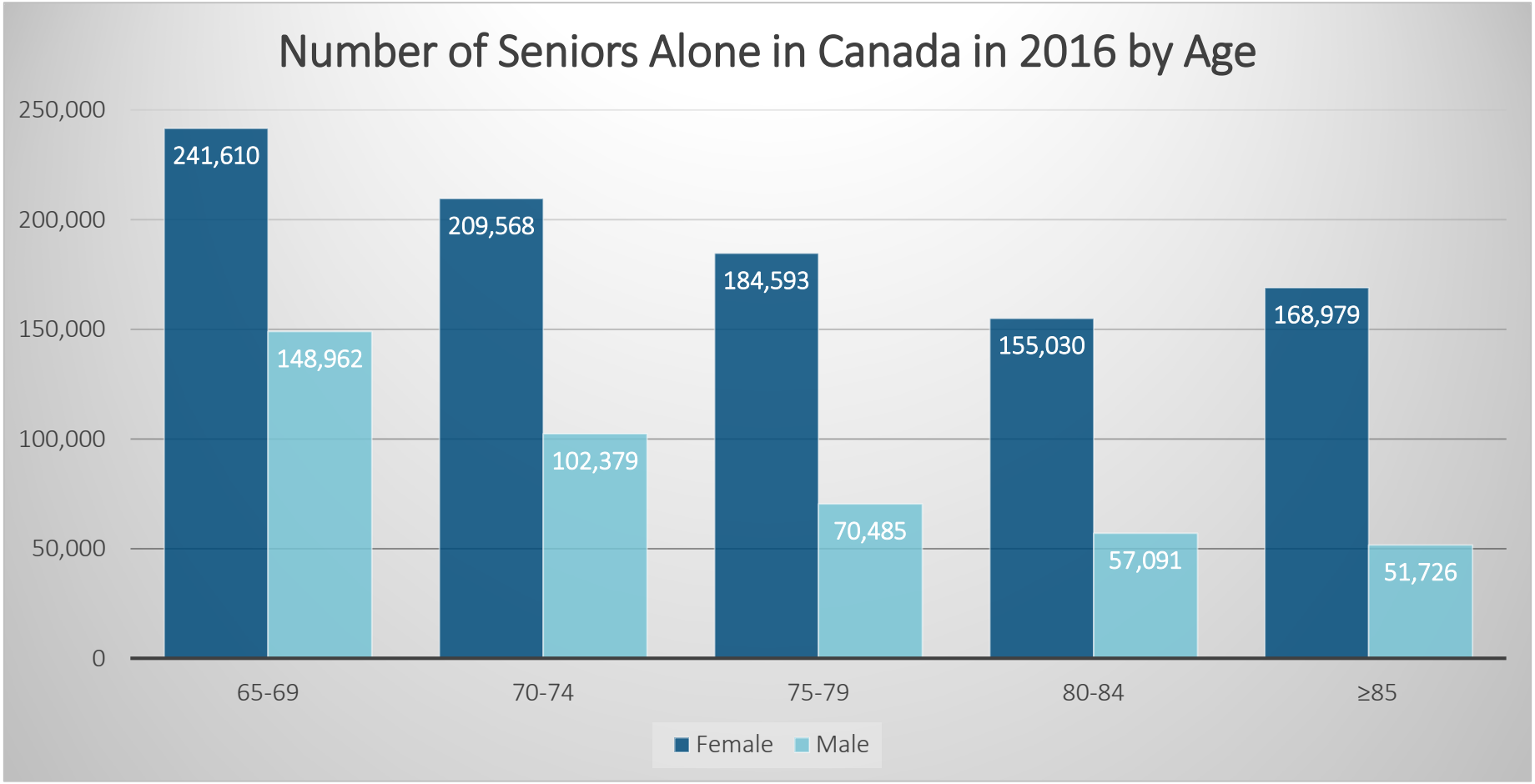
Methodology

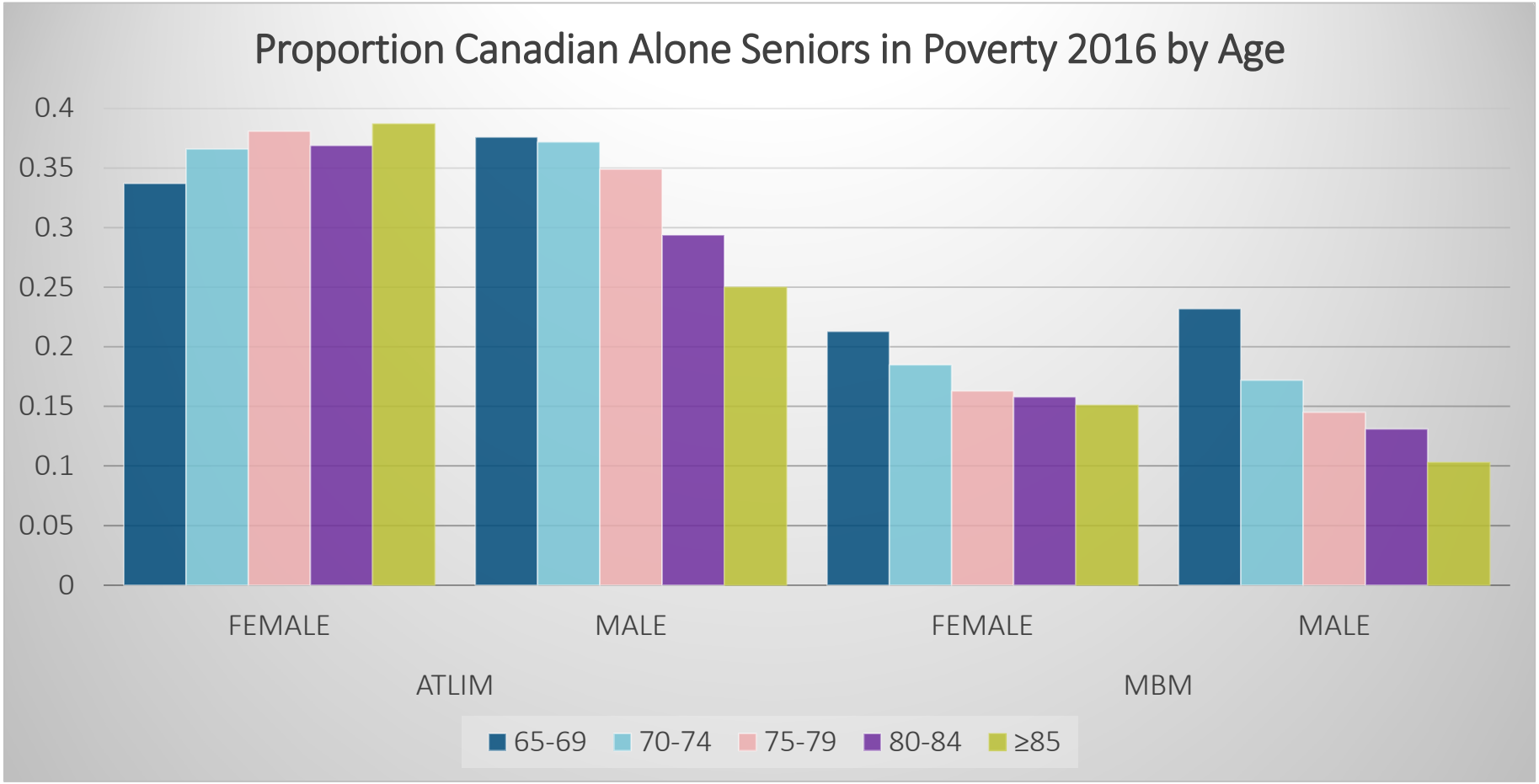
- income from all sources reported in the data.
- gov uses ‘disposable income’ to calculate MBM
  - disposable income excludes expenditures on **non-insured** but medically-prescribed health-related expenses such as dental and vision care, prescription drugs and aids for persons with disabilities. Could be substantial for some. Approximately 7% of the seniors in our sample would have higher gaps with disposable income (footnote 6).
- calculate poverty gap → total income – poverty cut-off
  - how much need to move out of poverty.
- analyze program to alleviate poverty in the ASR.

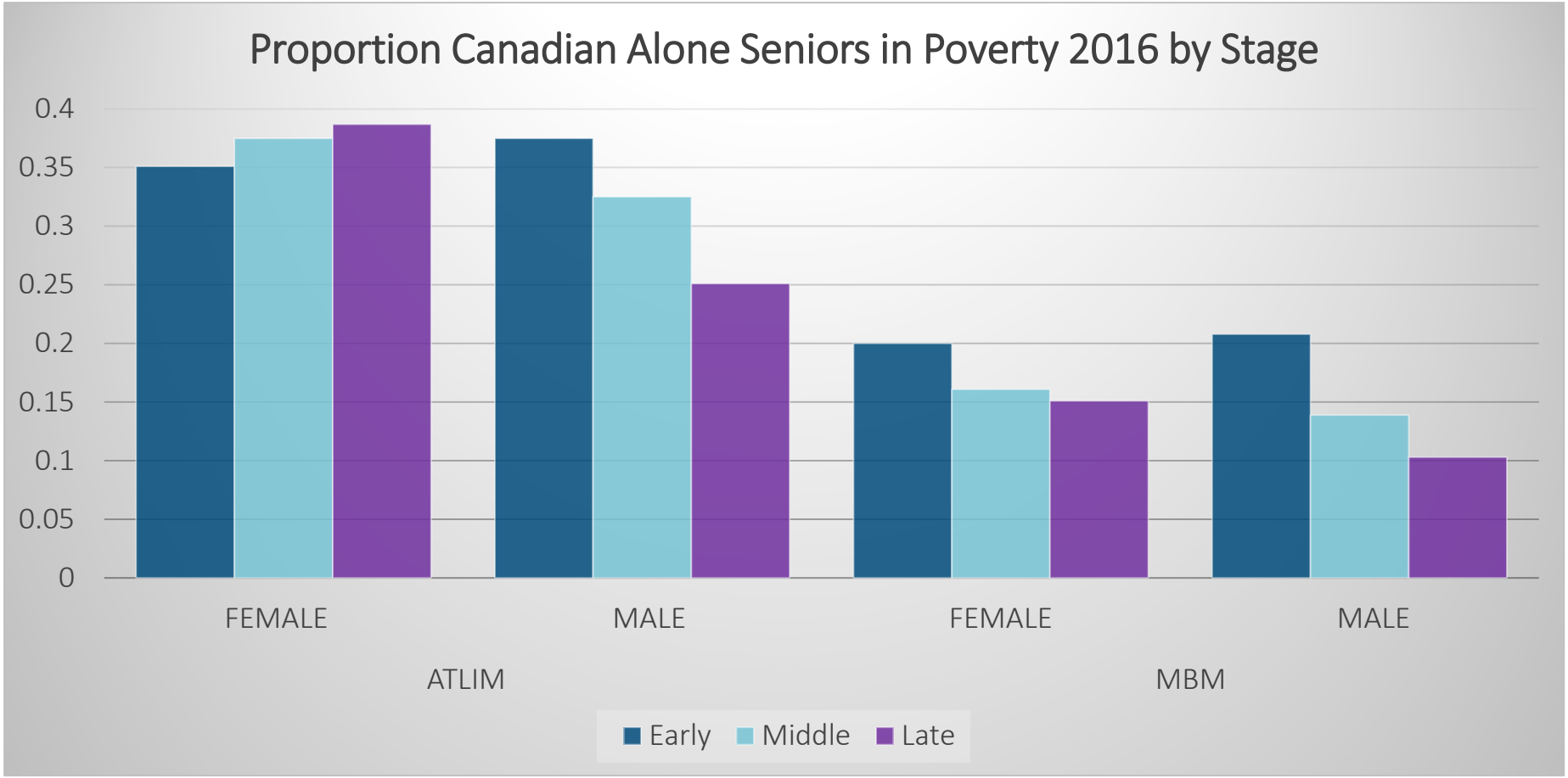
Income sources available to those ≥ 65 years

- Employment income (if still in employment)
- Canadian Pension Plan (if contributed through employment) - Federal
- Old Age Security (OAS) - Federal
- Guaranteed Income Supplement to the OAS pension - Federal
- Private pensions (related to employment) - personal
- Private savings (perhaps related to employment) - personal
- Some provinces offer the possibility of additional benefits (usually for those in poverty)
  - e.g., Ontario offers Ontario Works and from Ontario Disability Support Program (ODSP) (like welfare in US) and Ontario Guaranteed Annual Income System (if total income is very low).
- Data includes after-tax total income including all of the income sources from personal, and Provincial, and Federal government sources

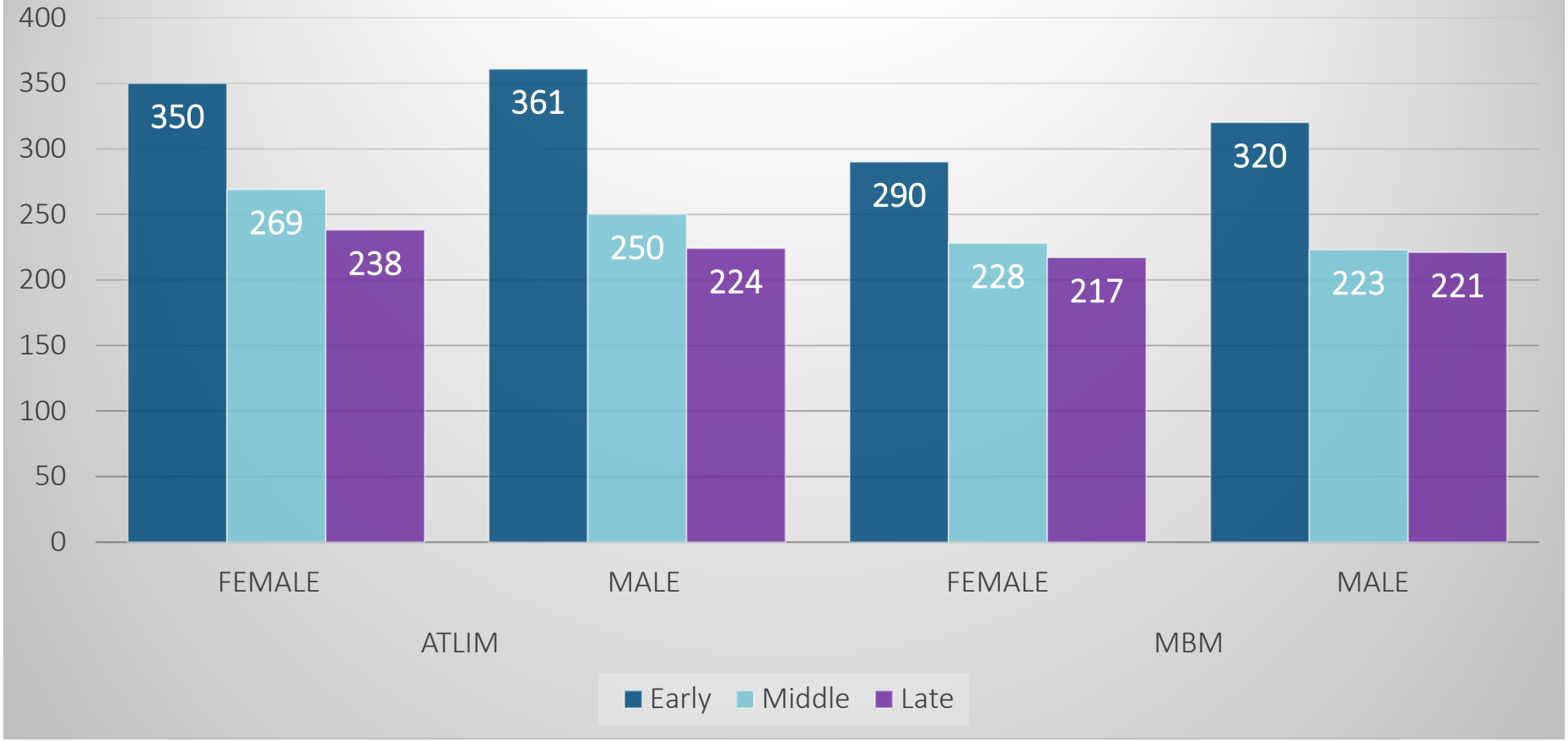

Number of Seniors in Canada in 2016 by Age
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
988,085
917,415
698,560
647,463
512,931
436,230
351,611
289,562
308,062
192,474
65-69
70-74
75-79
80-84
≥85
Female
Male

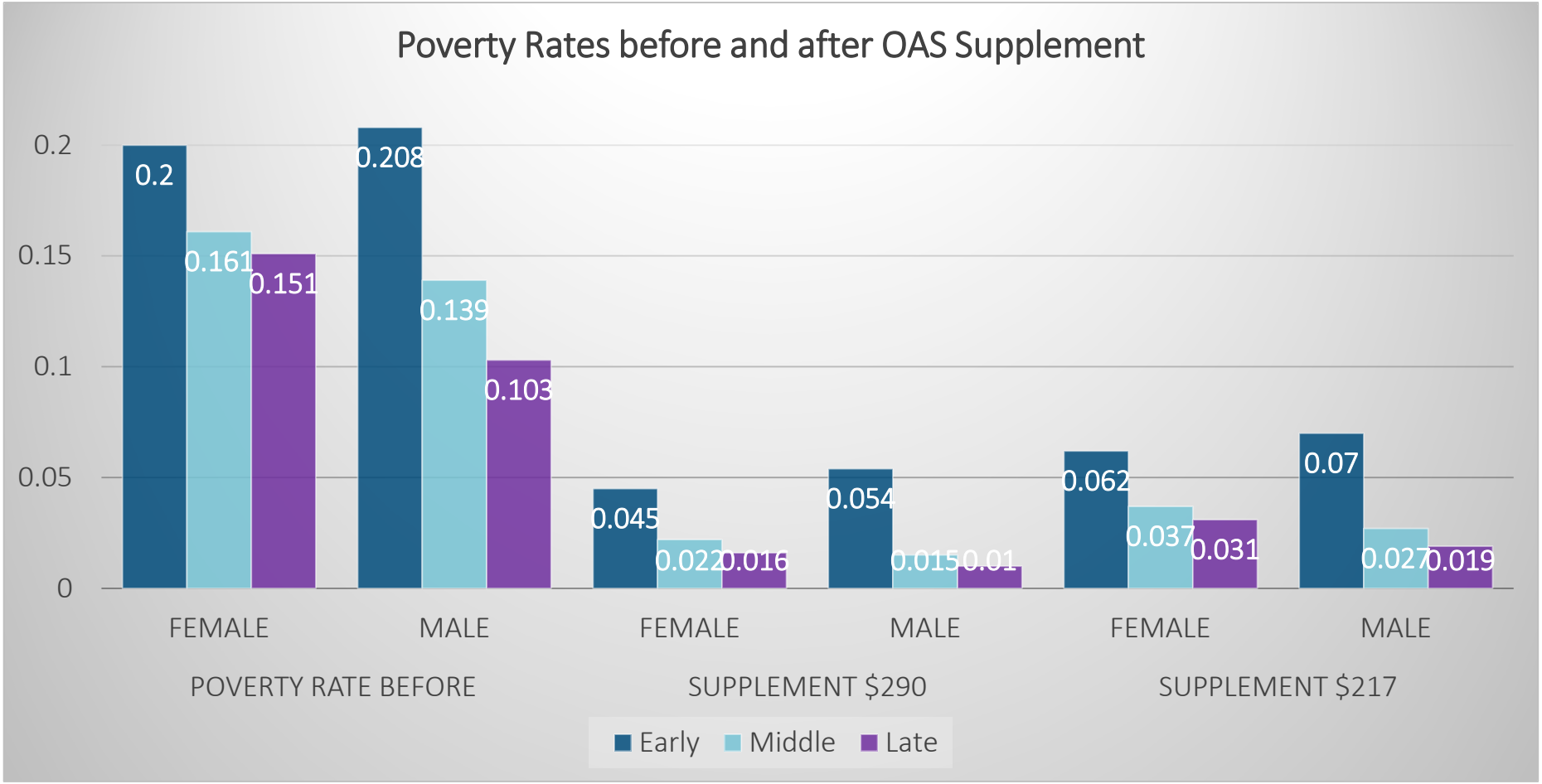

Number of Seniors Alone in Canada in 2016 by Age
250,000
200,000
150,000
100,000
50,000
0
241,610
148,962
209,568
102,379
184,593
70,485
155,030
57,091
168,979
51,726
65-69
70-74
75-79
80-84
≥85
Female
Male


Proportion Canadian Alone Seniors in Poverty 2016 by Age
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
FEMALE
MALE
FEMALE
MALE
ATLIM
MBM
65-69
70-74
75-79
80-84
≥85


Proportion Canadian Alone Seniors in Poverty 2016 by Stage
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
FEMALE
MALE
FEMALE
MALE
ATLIM
MBM
Early
Middle
Late

Mean Monthly Poverty Gap Canadian Seniors by stage of ASR, 2016




Poverty Rates before and after OAS Supplement
0.2
0.15
0.1
0.05
0
0.2
0.161
0.151
0.208
0.139
0.103
0.045
0.022
0.016
0.054
0.015
0.01
0.062
0.037
0.031
0.07
0.027
0.019
FEMALE
MALE
FEMALE
MALE
FEMALE
MALE
POVERTY RATE BEFORE
SUPPLEMENT $290
SUPPLEMENT $217
Early
Middle
Late

What would it Cost?

- 2016 Census approximately 4.8 million Canadians receiving OAS/GIS in 2015
- 380,000 had incomes below the MBM poverty line
- $290/month to all OAS recipients →cost federal government $16.7 billion/year
- $290/month to recipients in poverty →cost the federal government $1.17 billion/year.
- $217/month → $12.5 billion & $875 million for all & poor OAS recipients, respectively.

- In perspective:
- gov spent $48 billion on elderly benefits and $22 billion on children's benefits in 2016.
- Canadian GDP in 2016 was approximately $2.24 trillion
- the proposals to increase income for seniors in poverty would be a marginal increase in the cost of benefits & a relatively small addition.
- costs would be higher for basic income addition for all but we were unable to calculate resulting claw backs which would lead to smaller costs than calculated….

Acknowledging Our Partners

- Society of Actuaries
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Research Team and other Contributors

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The University of Oklahoma College of Law

Fully Funded Pensions

Professor Jonathan Barry Forman

University of Oklahoma College of Law

for the panel on

Pensions and Longevity Risk

Living to 100 Symposium

Orlando, FL

January 14, 2019

Lifetime Income

- Retirees aim to replace 70−80% of preretirement earnings
- Social Security typically replaces ~ 35%
- *Pensions could replace another 40%*
  - This Paper develops two simplified model pension plans that are designed to replace 40% percent of preretirement earnings:
    - a model Defined Benefit plan; &
    - a model Defined Contribution plan

Centenarians Need Fully Funded Pensions

- 65-year-old man can expect to live to 84
- 65-year-old woman to 86.6
- 65-year-old couple
  - 50% chance that at least one 65-year-old spouse in a nonsmoking heterosexual couple in average health will live 27 years to age 92
  - 25% chance at least one will live 31 years to age 96
  - 10% chance at least one will live 35 years to age 100

*Social Security Administration, *Benefits Planner/Live Expectancy*, https://www.ssa.gov/planners/lifeexpectancy.html (last visited Dec. 17, 2019); Society of Actuaries, *Actuaries Longevity Illustrator* (2096), http://www.longevityillustrator.org/ (last visited Dec. 17, 2019)

The Model Defined Benefit Plan

- Each worker
  - will earn a pension benefit (B) equal to **one percent times years of service** (yos) **times final pay** (fp) (B = 1% × yos × fp)
  - Starts work at 25, **works from 25–64**
  - **Retires at 65** and collects a pension equal to 40 percent of final pay
    - E.g., final pay = $100,000; pension benefit = $40,000 a year for life = 1% × 40 yos × $100,000 fp

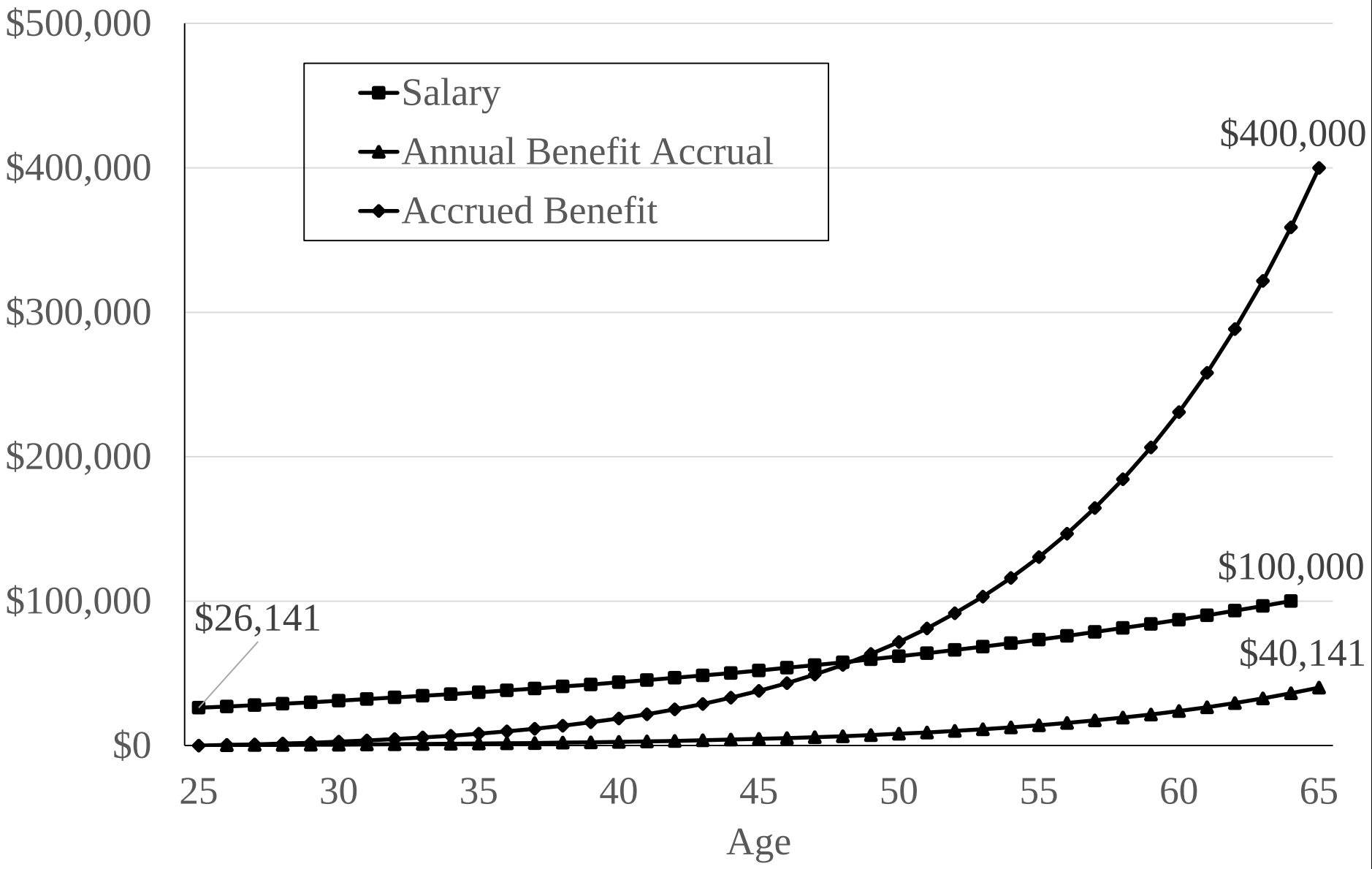
Key Assumptions

Variable	*Model Assumption*
Economic Assumptions	
Interest Rate	5.0%
Inflation Rate	2.5%
Salary Growth Rate	3.5%
Worker Assumptions	
Entry Age	25
Retirement Age	65
Career Length	40 years (i.e., 25−64)
Age at Death	85
Length of Retirement	20 years (i.e., 65−84)
Longevity at Entry Age	60 years (i.e., 25−85)
Final Salary at Age 64	$100,000
Plan Design Assumptions	
Benefit Based On	Final Pay
Benefit Accrual Rate	1.0%
Vesting Period	Immediate
Benefit Form	Single-life Annuity
Annuity Factor	10

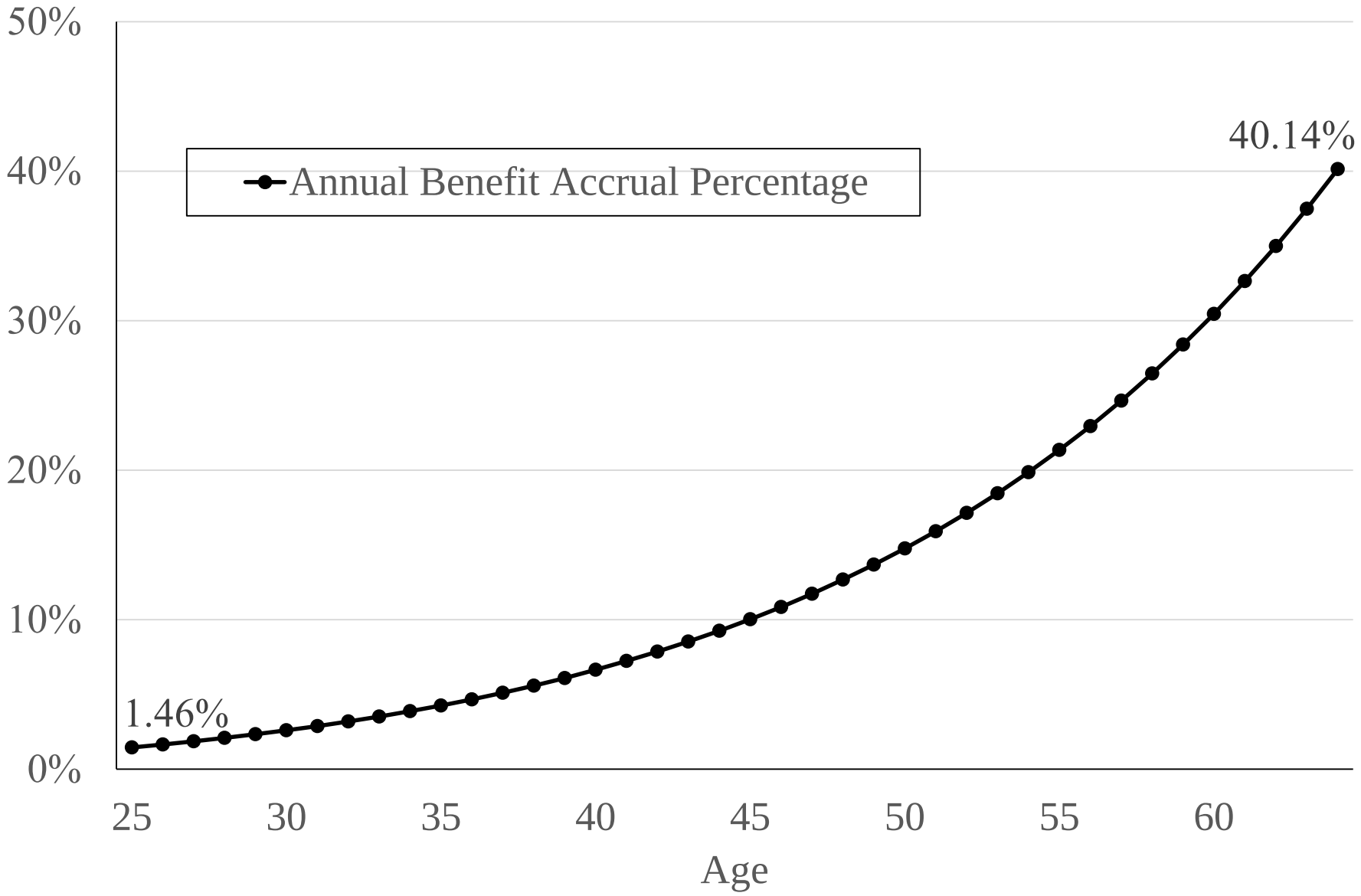
Benefit Accrual in the Model Defined Benefit Plan

Age	*Salary*	*Years of Service*	*Benefit Factor*	*Future Annual Pension At Age 65*	*Accrued Benefit*	*Annual Benefit Accrual*	*Benefit Accrual as a Percentage of Salary*
25	$26,141	1	1%	$0	$0	$380	1.46%
34	$35,628	10	10%	$3,098	$6,827	$1,382	3.88%
44	$50,257	20	20%	$9,226	$33,115	$4,652	9.26%
54	$70,892	30	30%	$19,863	$116,137	$15,699	19.86%
64	$100,000	40	40%	$37,681	$358,868	$40,141	40.14%
65				$40,000	$400,000		

Salary, Annual Benefit Accrual, and Accrued Benefit in the Model Defined Benefit Plan



Annual Benefit Accrual in the Model Defined Benefit Plan, as a Percentage of Current Salary



Defined Benefit Plan Funding Methods

- Over a 40-year career, our hypothetical worker earned the right to a pension that would pay her $40,000 a year from retirement at age 65 until her death at age 85: Worth around $400,000 at age 65
- Entry Age Normal Cost: Level-percentage-of-salary Method
  - Actuary calculates contributions as a level 7.27% salary over the worker's career

Entry Age Normal Cost: Level-percentage-of-salary Method

Age	*Salary*	*Contributions*	*Value of the Accrued Benefit at the End of the Year*	*Contributions as a Percentage of Current Salary*
25	$26,141	$1,900	$1,947	7.27%
34	$35,628	$2,590	$28,341	7.27%
44	$50,257	$3,654	$86,141	7.27%
54	$70,892	$5,154	$196,707	7.27%
64	$100,000	$7,270	$399,961	7.27%
65	(Annuity ~ $40,000/year)			

The Model Defined Contribution Plan

- Same worker assumptions
- Again accumulate ~ $400,000 by age 65
  - Two heroic assumptions
    - interest rate is still 5%
    - annuity factor is still 10
- Level-Percentage-of-Salary model DC Plan
  - 7.27% of salary; $1,900 at 25; $7,270 at 64

Benefit Accrual in a Level-Percentage-of-Salary Model DC Plan

Age	*Salary*	*Contribution Rate*	*Contributions*	*Value of the Accrued Benefit at the End of the Year*
25	$26,141	7.27%	$1,900	$1,947
34	$35,628	7.27%	$2,590	$28,341
44	$50,257	7.27%	$3,654	$86,141
54	$70,892	7.27%	$5,154	$196,707
64	$100,000	7.27%	$7,270	$399,961
65	(Annuity ~ $40,000/year)			

Real World Considerations

- Underfunding
- Inflation and COLAs
- Working Careers and Benefit Accumulation
- Social Security Replacement Rates Vary with Lifetime Income
- Spousal Issues
- Variability in Economic & Demographic Variables

Underfunding

- DC plans—not many workers save 7.27% of their salaries over a 40-year career
- DB plans—even if these plan are designed to provide pensions that replace at least 40% of preretirement earnings, they often fall short of that target
  - Few workers stay with 1 employer for 40 years
  - Many companies & their plans fail
  - Many sponsors undercontribute to pensions

Inflation in the Real World

- In the real world, retirees face inflation that will erode the real value of level-dollar benefits
- Greater savings are needed
  - Note that Social Security benefits are adjusted for post-retirement inflation

Postretirement Inflation, from Age 65 to Age 110

Age	*Nominal Pension*	*Inflation Rate*	*Real Value of a $40,000 Pension*	*Nominal Pension with a Constant Real Value of $40,000*
65	$40,000	2.5%	$40,000	$40,000
70	$40,000	2.5%	$35,354	$45,256
80	$40,000	2.5%	$27,619	$57,932
90	$40,000	2.5%	$21,576	$74,158
100	$40,000	2.5%	$16,855	$94,928
110	$40,000	2.5%	$13,167	$121,515

Cost of Living Adjustment (COLA)?

- For 2.5% inflation (postretirement)
  - Need to accumulate ~ $523,000 by age 65
    - 23% more
- Level-Percentage-of-Salary model DC Plan
  - 9% of salary (not 7.27%)
    - 8.94% = 1.23 × 7.27%

Working Careers & Benefit Accumulation in the Real World

- Few people work 40 years
- Few workers accrue benefits every year
- Workers do not always vest in all of their accrued benefits
- Few workers annuitize retirement savings
- Workers may need to save more than 9%

Social Security Replacement Rates Vary with Lifetime Income

- Social Security replaces a larger percentage of the preretirement earnings of workers with low lifetime earnings
  - They can save a lower percentage of their salaries to replace 75% of their preretirement earnings
- High-income workers need to save a higher percentage of their salaries

Spousal Issues

- The model pensions assume that pension benefits will be paid in the form of a single-life annuity, but the models could easily be enhanced to pay benefits in the form of a qualified joint and survivor annuity

Variability in Economic & Demographic Variables

- The model pensions could easily accommodate simple alternative assumptions about economic and demographic variables

Options for Reform

- Fully fund Social Security
- Fully fund pensions for all workers
  - Add-on Social Security accounts?
  - A universal pension system
    - Mandatory? like Australia, Singapore, Chile & Israel
  - Voluntary?
    - Individual pension accounts
    - Autoenrollment
    - Auto-portability

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  - *Removing the Legal Impediments to Offering Lifetime Annuities in Pension Plans*, 23(1) CONNECTICUT INSURANCE LAW JOURNAL 31 (Fall 2016), http://insurancejournal.org/wp-content/uploads/2017/03/2-Forman-1.pdf;
  - *Survivor Funds*, 37(1) PACE LAW REVIEW 204 (Fall 2016) (with Michael J. Sabin), http://digitalcommons.pace.edu/plr/vol37/iss1/7/; &
  - *Tontine Pensions*, 163(3) UNIVERSITY OF PENNSYLVANIA LAW REVIEW 755 (2015) (with Michael J. Sabin), http://www.pennlawreview.com/print/index.php?id=468.