האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

ANCHORING BIAS IN ANNUITY CHOICES: AN EXPERIMENTAL INVESTIGATION
MARCH, 2018

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Mandatory Annuities in Different Countries

- The need to ensure people have adequate savings for retirement has prompted debate among regulators and academics.

- Certain countries have implemented or are considering implementing mandatory minimum annuity laws (e.g., Singapore and Israel)

- Others have repealed or are considering repealing such legislation (e.g., the U.K.).

Mandatory Annuity

Potential advantages

- Mandatory annuitization has many potential advantages:
    - protection against longevity risk
    - shifting of investment risk
    - stability of consumption patterns
    - reduction of adverse selection (of health condition) in the annuity market.

Potential disadvantages

- Mandatory annuitization has disadvantages:
    - the risk that a retiree will lack the resources needed for an unexpected event (i.e medical shock)
    - re-distribution of wealth (due to pooling of longevity risk)
    - risk of insurer insolvency and other risks.

Methodology

Aim: Consequences of initiation and repeal of a minimum annuity law under various conditions

- DATA

- FIELD EXPERIMENT

- SURVEY

- LAB EXPERIMENT

Methodology

–Students survey

– (Age) Representative sample survey

–Controlled laboratory experiment

Why Surveys? Students + Age Representative

1. It helps us capture information regarding perceptions

2. Substantial amount of subjects

3. Verified representative sample of the population aged 50-70 that are actually close to retirement

4. Students (the more common subjects in academic research) - compare the results

Why Lab Experiment

1. Validation of the survey results.

2. Control of the information conditions and the exogenous stochastic processes.

3. Enables to repeat the decision dilemma in order to test for possible learning effect

4. Monetary rewards related to the task.

Survey

- Asked to divide a total sum of money that was saved to retirement between annuity and lump sum

- 3 conditions:
  - 1. Control
  - 2. Mandatory law
  - 3. Repealed Mandatory law

Survey Structure

Condition 1 – without mandatory annuity

*At retirement, a retiree can generally choose between an **annuity** and **a lump-sum** withdrawal from his pension savings, with respect to each retiree's conversion factor. Assume that you have saved NIS 2 million and your conversion factor is 200. What does 200 hundred mean? It means that if you choose an annuity of NIS 1,000 a month, the accumulation required for the annuity is $1,000 * 200 = 200,000$ and the remainder can be withdrawn as a lump-sum amount of NIS 1.8 million (2,000,000−200,000). In these terms, what is the **monthly** annuity you would choose if you were to retire today (you would receive the remaining amount as a lump sum today)* _____

Survey Structure

Condition 2 – with a mandatory annuity of NIS 4,000

*At retirement, a retiree can generally choose between an **annuity** and **a lump-sum** withdrawal from his pension savings, with respect to each retiree's conversion factor. Assume that you have saved NIS 2 million and your conversion factor is 200. What does 200 hundred mean? It means that if you choose an annuity of NIS 1,000 a month, the accumulation required for the annuity is $1,000 * 200 = 200,000$ and the remainder can be withdrawn as a lump-sum amount of NIS 1.8 million (2,000,000−200,000). According to State of Israel laws, there is a mandatory minimum annuity of NIS 4,000 a month. In these terms, what is the **monthly** annuity you would choose if you were to retire today (you would receive the remaining amount as a lump sum today)*

Survey Structure

Condition 3 –mandatory annuity of NIS 4,000 was repealed

*At retirement, a retiree can generally choose between an **annuity** and **a lump-sum** withdrawal from his pension savings, with respect to each retiree's conversion factor. Assume that you have saved NIS 2 million and your conversion factor is 200. What does 200 hundred mean? It means that if you choose an annuity of NIS 1,000 a month, the accumulation required for the annuity is $1,000 * 200 = 200,000$ and the remainder can be withdrawn as a lump-sum amount of NIS 1.8 million (2,000,000−200,000). In the past, State of Israel laws stated a mandatory minimum annuity of NIS 4,000 a month; these laws were recently repealed. In these terms, what is the **monthly** annuity you would choose if you were to retire today (you would receive the remaining amount as a lump sum today) _____*

Students Survey

Summary Statistics by Condition, Student Sample

| Condition	N	Gender (% male)	Mean age (years)	Mean education (years)	% single	% very good health
1	109	50	25.87	14.10	86	76
2	118	56	27.03	14.98	76	74
3	135	49	25.59	13.71	90	82

Representative Sample Survey

Summary Statistics by Condition, Representative Sample

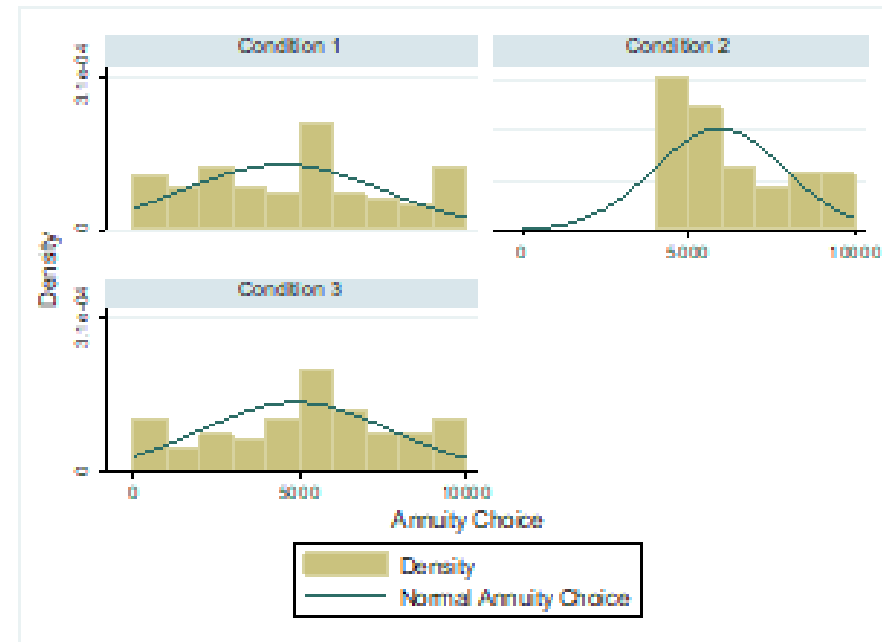| Condition	N	Gender (% male)	% age 50–60 years	% age 61–70 years	% with academic education	% married	% with good or very good health
1	324	41	54	46	47	76	89
2	258	46	57	43	50	72	87
3	304	42	58	42	51	70	88

Distribution of Annuities

Students Survey
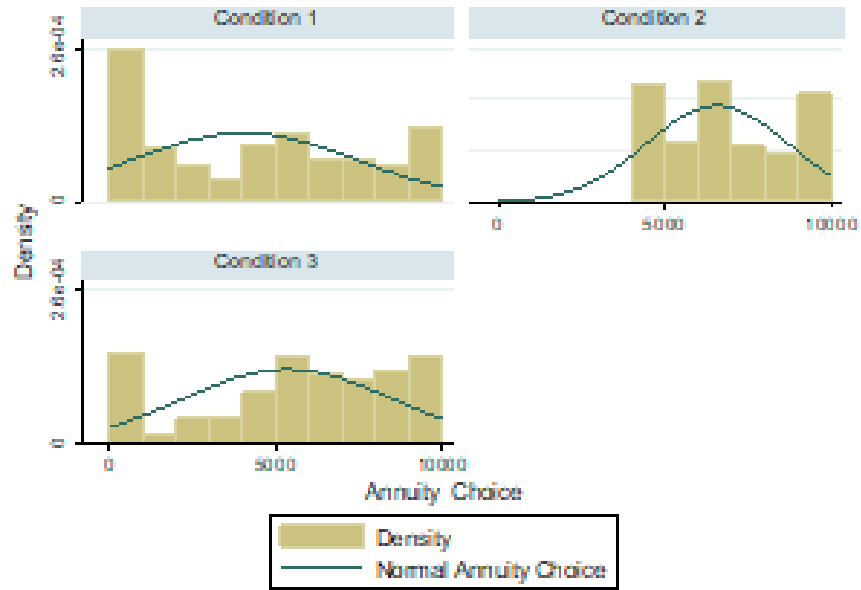
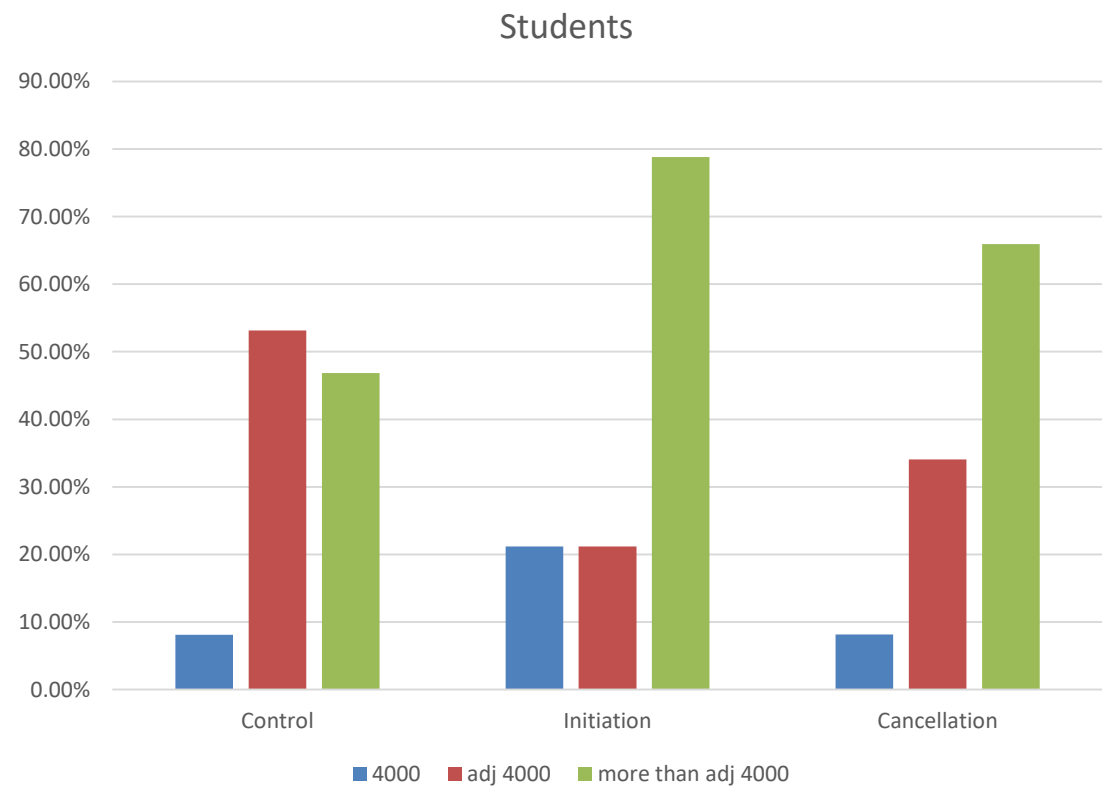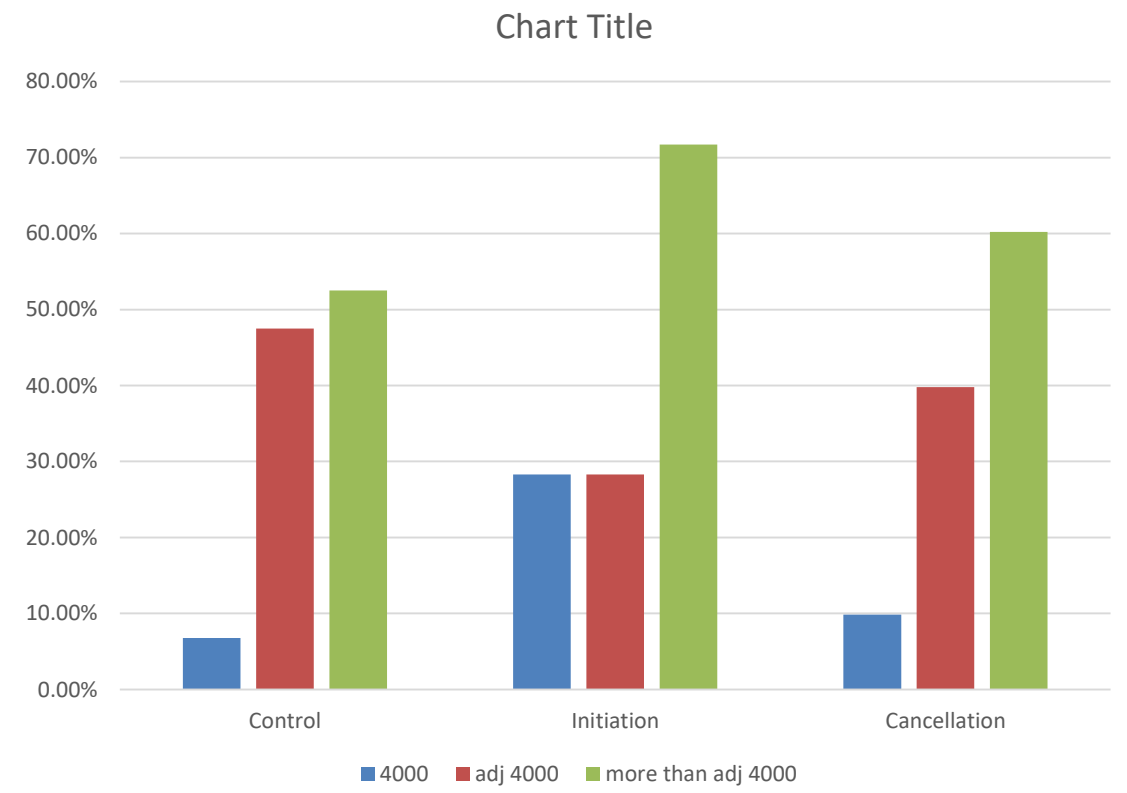**Representative Sample Survey**

Distribution of Annuities

Students

Representative Sample

Survey Results

- Students Survey

Condition	N	Monthly annuity value (new Israeli shekels)					
		0	4,000	Adjusted 4,000[a]	10,000	Mean	Median
1	111	19.82%	8.11%	53.15%	9.91%	4,042.79	4,000
2	118	0%	21.19%	21.19%	19.49%	6,572.03	6,000
3	135	11.11%	8.15%	34.07%	12.59%	5,346.22	6,000

- Representative Sample Survey

Condition	N	Monthly annuity value (new Israeli shekels)					
		0	4,000	Adjusted 4,000[a]	10,000	Mean	Median
1	324	7%	6.79%	47.5%	12.3%	4,479.9	5,000
2	258	0%	28.3%	28.3%	10.8%	5,922.5	5,000
3	304	7.5%	9.86%	39.8%	9.54%	4,871.2	5,000

Choosing an annuity
Lower or Equal to 4,000

- $\text{annuity}_{\leq 4,000} = \alpha + \beta_1 \text{Condition2} + \beta_2 \text{Condition3}$
  $+ \beta_4 \text{age}_{61-70} + \beta_5 \text{male} + \beta_6 \text{single} + \beta_7 \text{married}$
  $+ \beta_8 \text{divorced} + \beta_9 \text{widowed} + \beta_{10} \text{smoker} + \beta_{10} \text{past smoker}$
  $+ \beta_{11} \text{chance85} + \beta_{12} \text{chance95} + \beta_{13} \text{income}$
  $+ \beta_{14} \text{very good health} + \beta_{15} \text{good health} + \epsilon_i$

Condition 2 is significant

Choosing an annuity Lower or Equal to 4,000

Variable	Less than or equal to NIS 4,000				Exactly NIS 4,000	
	Total sample (N = 886)		Uneducated sample[a] (N = 216)		Total sample (N = 886)	
	Estimate	Odds ratio	Estimate	Odds ratio	Estimate	Odds ratio
Condition 2	-0.818***	0.441***	-1.444***	0.236***	1.754***	5.777***
	(0.182)	(0.0801)	(0.388)	(0.0917)	(0.266)	(1.535)
Condition 3	-0.317*	0.729*	-0.906**	0.404**	0.432	1.540
	(0.166)	(0.121)	(0.356)	(0.144)	(0.296)	(0.456)
Age 61–70 years	0.159	1.172	0.0114	1.012	-0.0898	0.914
	(0.146)	(0.172)	(0.316)	(0.320)	(0.211)	(0.192)
Male	-0.368**	0.692**	-0.0707	0.932	-0.282	0.754
	(0.154)	(0.107)	(0.341)	(0.318)	(0.222)	(0.168)
Single	0.268	1.308	-0.338	0.713	-0.126	0.881
	(0.657)	(0.859)	(1.289)	(0.919)	(0.801)	(0.706)
Married	0.457	1.580	-0.445	0.641	-0.751	0.472
	(0.578)	(0.913)	(1.053)	(0.675)	(0.715)	(0.337)
Divorced	0.505	1.656	-0.417	0.659	-0.972	0.378
	(0.596)	(0.988)	(1.104)	(0.727)	(0.746)	(0.282)
Widowed	0.236	1.266	-0.753	0.471	-0.609	0.544
	(0.667)	(0.845)	(1.369)	(0.645)	(0.825)	(0.449)
Smoker	0.285	1.329	-0.0927	0.911	0.501	1.651
	(0.251)	(0.333)	(0.476)	(0.434)	(0.338)	(0.558)
Past smoker	-0.0796	0.923	0.00909	1.009	-0.153	0.858
	(0.167)	(0.155)	(0.364)	(0.367)	(0.242)	(0.208)
Subjective chance of reaching age 85	0.0120	1.012	0.0200	1.020	0.0681	1.070
	(0.0444)	(0.0449)	(0.0893)	(0.0911)	(0.0641)	(0.0686)
Subjective chance of reaching age 95	-0.00473	0.995	-0.0644	0.938	-0.0611	0.941
	(0.0346)	(0.0345)	(0.0744)	(0.0697)	(0.0488)	(0.0459)
Income	-0.112*	0.894*	-0.134	0.875	-0.00414	0.996
	(0.0670)	(0.0599)	(0.158)	(0.138)	(0.0952)	(0.0948)
Very good health	-0.775***	0.461***	-0.456	0.634	-0.358	0.699
	(0.259)	(0.119)	(0.543)	(0.345)	(0.361)	(0.252)
Good health	-0.534**	0.587**	-0.735	0.480	-0.117	0.889
	(0.237)	(0.139)	(0.471)	(0.226)	(0.330)	(0.293)
Constant	0.347	1.415	1.807	6.091	-1.797**	0.166**
	(0.649)	(0.919)	(1.232)	(7.502)	(0.834)	(0.138)
Pseudo R^2	0.0426		0.075		0.094	

Note. N = Number of observations in the models. Standard errors in parentheses. Main explanatory variables are gender, marital status, smoking decisions, subjective survival probability, income, and health. *$p < 0.1$. **$p < 0.05$. ***$p < 0.01$. [a]Participants with less than a high school diploma.
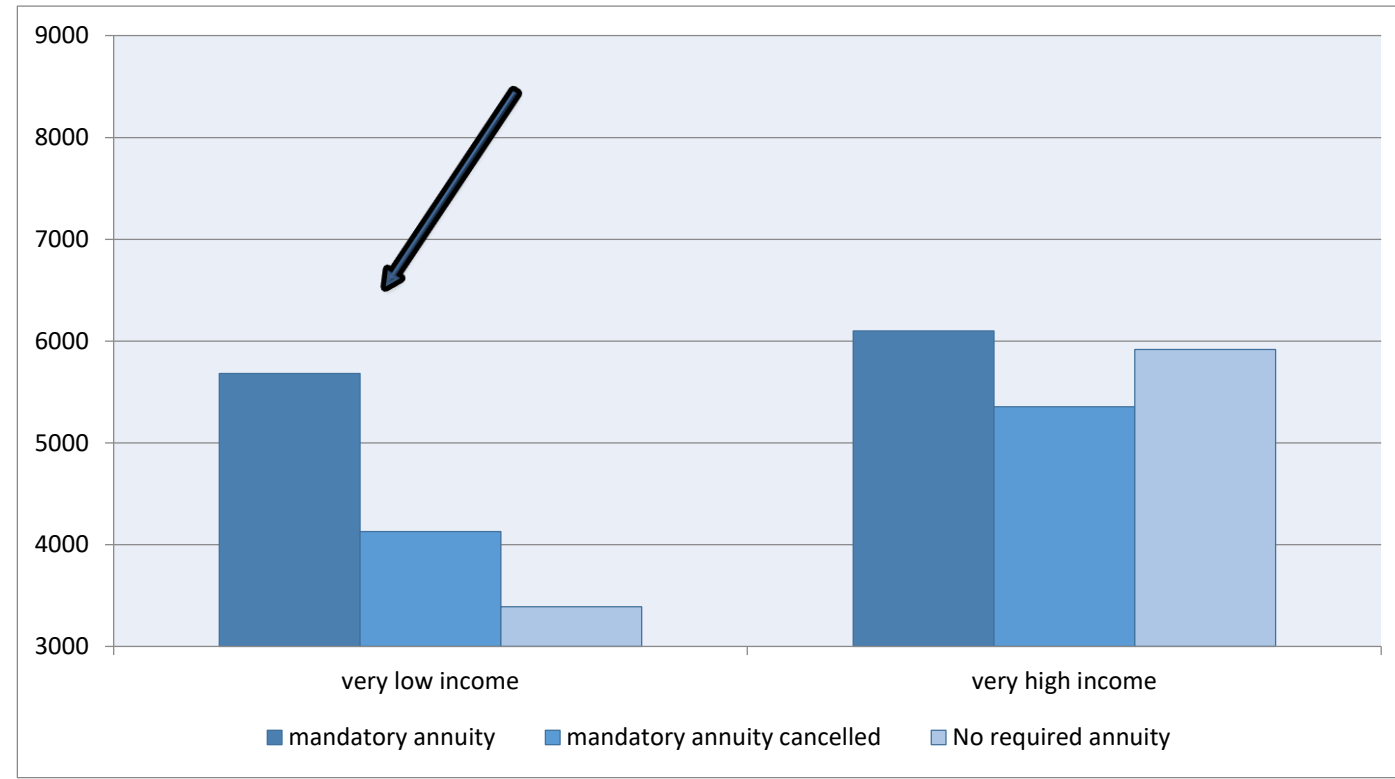
Sum - Survey Results

- Whether participants were told that the mandatory minimum annuity law was in effect (Condition 2) or repealed (Condition 3), their demand for annuities were higher compared to the control group (Condition 1).

Annuities, Consumption and Income

Lab Experiment Design

- Choosing an annuity, out of "zuz" 2 Million.

- Incentives: participants were told that their life expectancy will be drawn from a set ranging from 0 to 360 months with an average of 200 months and the outcome of the draw would be revealed only after they chose their annuity.

- The consumption will distributed between the values:
  - Low consumption condition – 3000, 4000, 5000 "zuz" per month.
  - High consumption condition - 8000, 9000, 10000 "zuz" per month.

Lab Experiment Design

- Conditions:
  - No required annuity
  - Mandatory annuity (4000)
  - Mandatory annuity was cancelled (4000)

- Amounts saved were paid to participants:
  - Monthly savings (annuity chosen less consumption).
  - Chosen Lamp-Sum (after using it to pay for consumption).

- Payment for participants – from $8 to $40.

- 2 rounds – same condition.

קבלת החלטה

בהנתן ההסבר לעיל (כלומר שצברת 2,000,000 זוזים) שאותם יש לחלק בין הון לקצבה. מה היא הקצבה החודשית שתבחר?

הקצבה החודשית המבוקשת

אישור

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שים לב: אתה מחויב על פי חוק לקצבה מינימלית של 4,000 ₪

אישור

Descriptive Statistics

- 277 students participated in the experiment:

Mean Chosen Annuity in Each Condition and in Each Round of the Laboratory Experiment

Condition	High-consumption group			Low-consumption group		
	Mean	SD	N	Mean	SD	N
Round 1						
1. No manipulation (control)	8,275.54	1,847.77	46	5,739.28	2,772.02	53
2. Mandatory minimum annuity	7,120.35	1,691.81	40	6,421.86	1,372.48	49
3. Mandatory minimum annuity repealed	7,543.53	2,782.83	45	6,097.73	1,724.58	44
Round 2						
1. No manipulation (control)	7,791.30	2,364.72	46	5,215.79	2,819.58	53
2. Mandatory minimum annuity	7,700.25	1,830.90	40	6,500.00	1,555.63	49
3. Mandatory minimum annuity repealed	7,351.11	3,120.83	45	6,176.14	2,164.18	44

Results – round 1
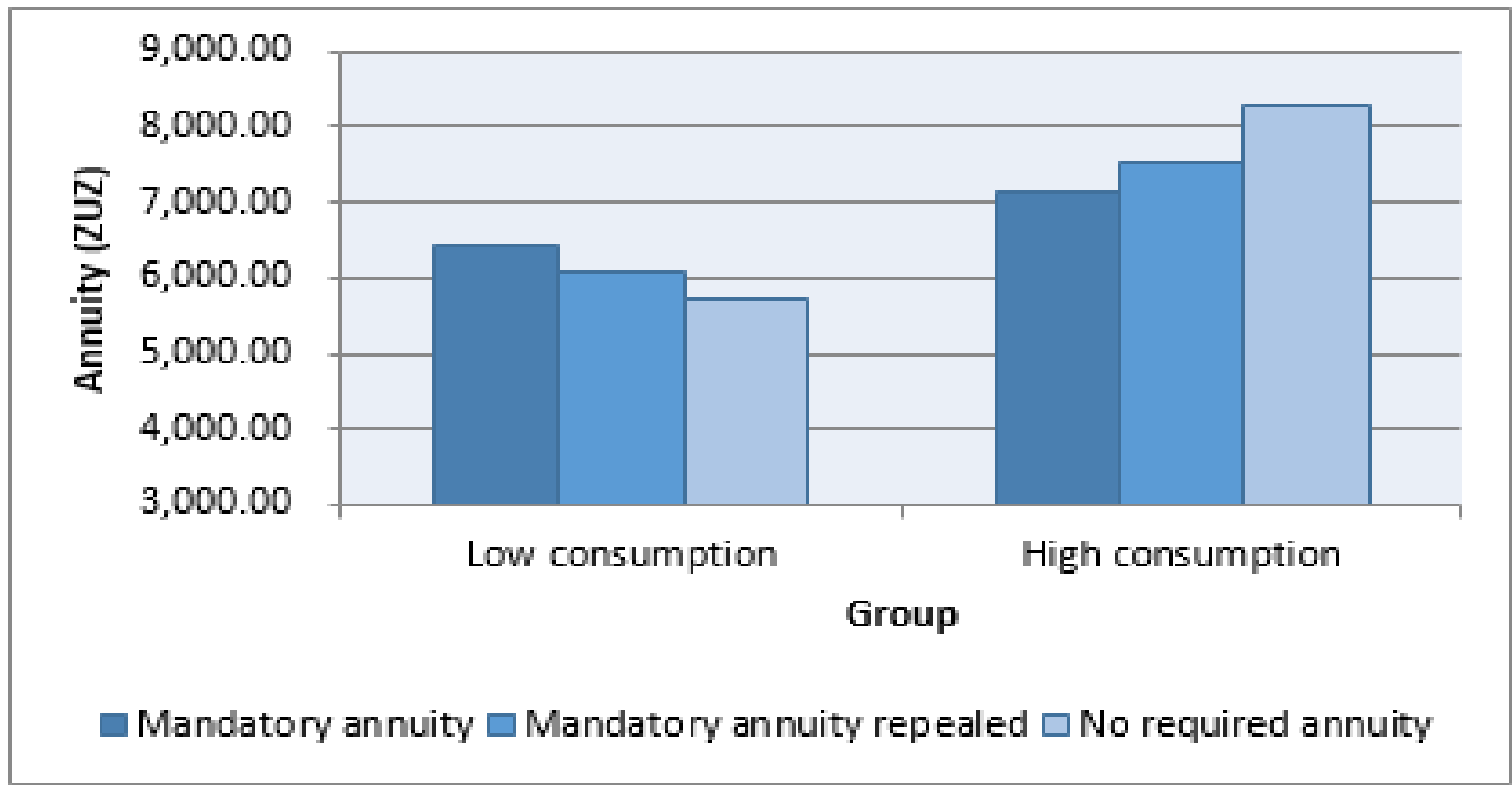
Experiment Results

- Regulatory requirements might serve as a signal that leads to anchoring on the regulatory minimal values.

- Mandatory minimum annuity will not necessarily increase the annuity amount people choose.

- A repeal of the constraint can be expected to weaken the effect but not necessarily to cancel it.

Implications

- We conjecture that merely mentioning a minimum annuity level as a recommended level for withdrawal might be sufficient to create a behavioral change without imposing it as a regulation.

- The results are of impact for other policy discussions, such as speed limits and health recommendations.