Projected Confusion: Simple heuristics in financial future-thinking

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Question 1

Assume that you deposit $400 every month into a retirement savings account that earns a 10% yearly rate of interest. (You never withdraw any money.)

How much money do you think you will have in your account (including interest earned):

After 10 years?
After 20 years?
After 30 years?
After 40 years?

Question 2

You owe $10,000 on your credit card and the interest rate is 12% annually.

You have destroyed the card and will not use it any more.

Suppose that you plan to pay a fixed amount of **$110 per month** until the card is completely paid off.

What is your best estimate of **how many months** it will take to totally pay off the card?

Question 3

American Consumers Bank

Payment Due Date
7/15/2010

Previous Balance $	Payment Activity $	New Activity $	Fees and Finance Charges	New Balance $	Minimum Amount Due $
(A) 10,300.00	(B) -300.00	(C) +500.00	(D) +102.58	(E) 10,602.58	(F) 212.00

Late Payment Warning: If we do not receive your Minimum Amount Due by the Payment Due Date listed above, you will have to pay a late fee of up to $39.00.

Minimum Payment Warning: If you make only the minimum payment each period, you will pay more in interest and it will take you longer to pay off your balance. For example:

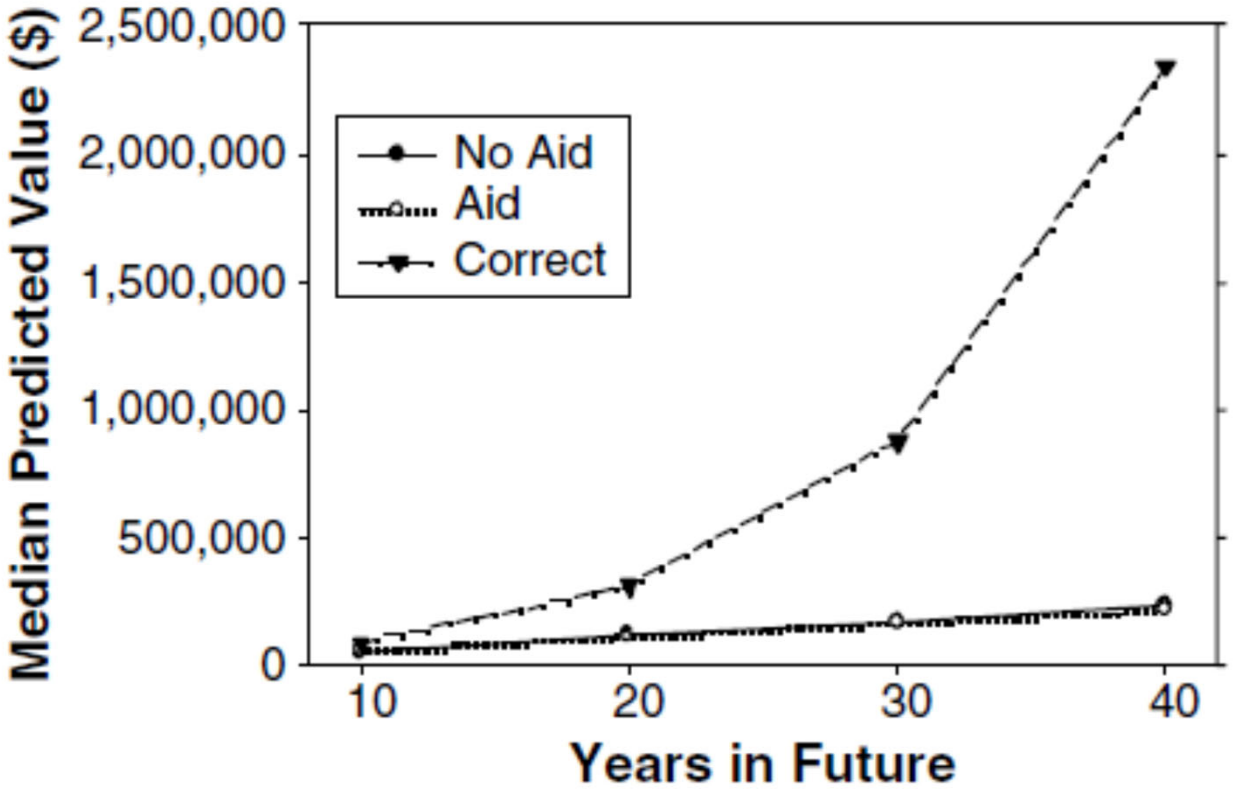
If you make no additional charges and each month you pay...	You will pay off the balance shown on this statement in about...	And you will pay an estimated total of...
(G) Only the Minimum Amount Due	(H) 22 years	(I) $20,294.97
(J) $352.16	(K) 3 years	(L) $12,677.67

(M) Annual Percentage Rate
12.0%

How long would it take to pay off the card if one were to pay $212 each month, assuming no further charges on the card?

Answer 1

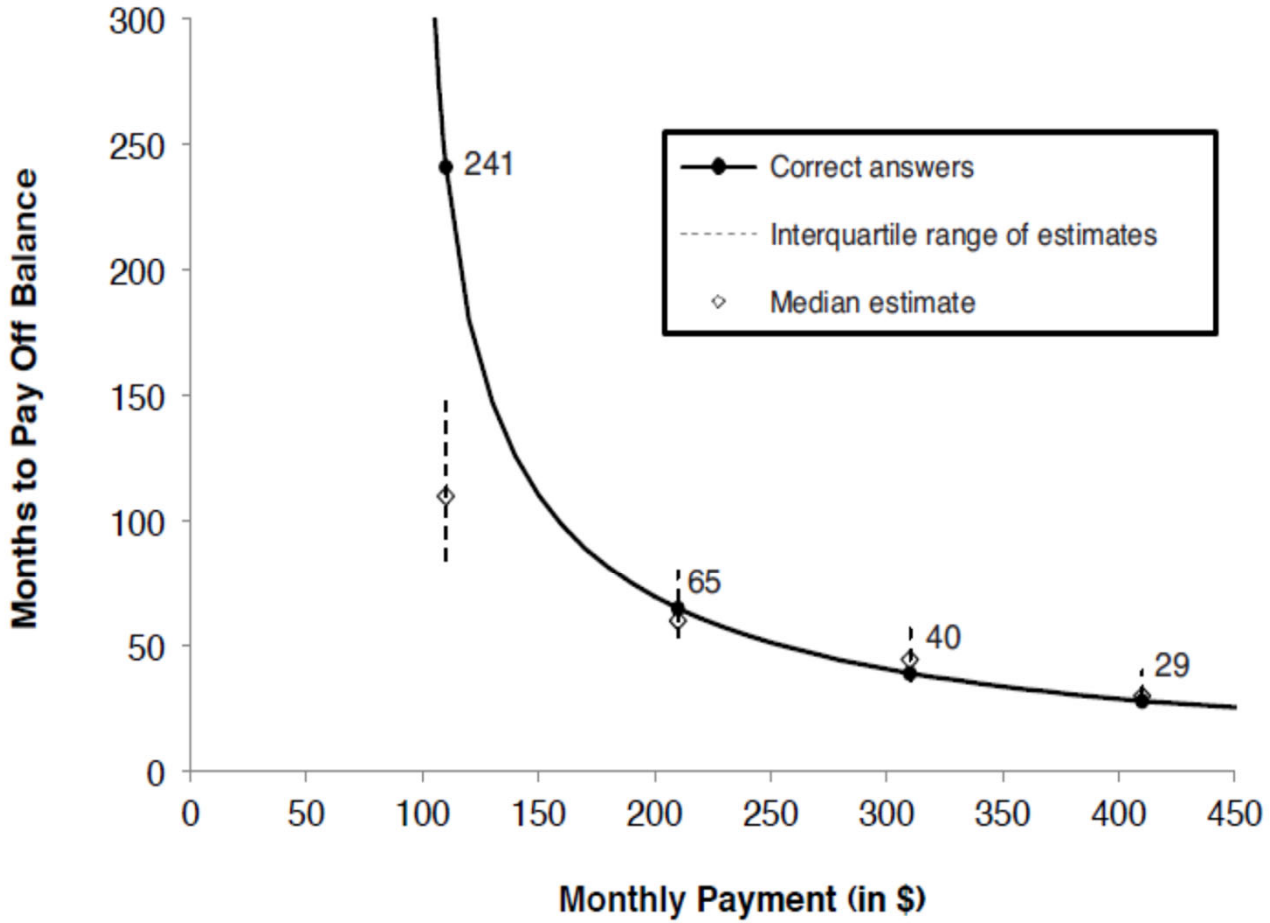
A: *When $400 Is Deposited Each Month at 10% Annual Compound Interest*



McKenzie & Liersch, 2011

Answer 2

Figure 2. Participants' Estimates of Time to Pay Off a $10,000 Credit Card Balance with an Annual Interest Rate of 12%, as a Function of the Monthly Payment



Soll et al., 2013

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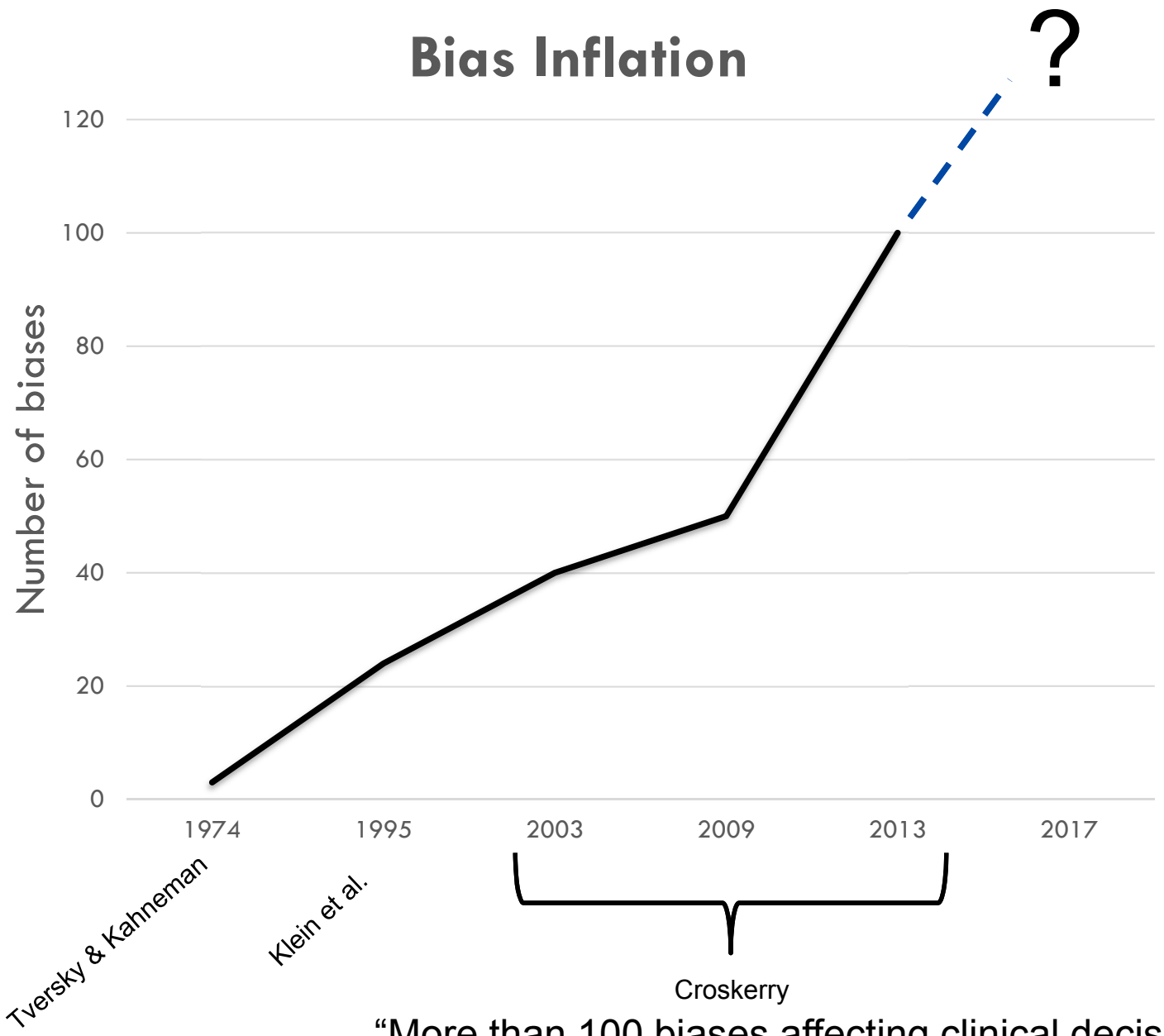
Soll et al., 2013

“Exponential growth bias”



"More than 100 biases affecting clinical decision making have been described" NJEM, 2013

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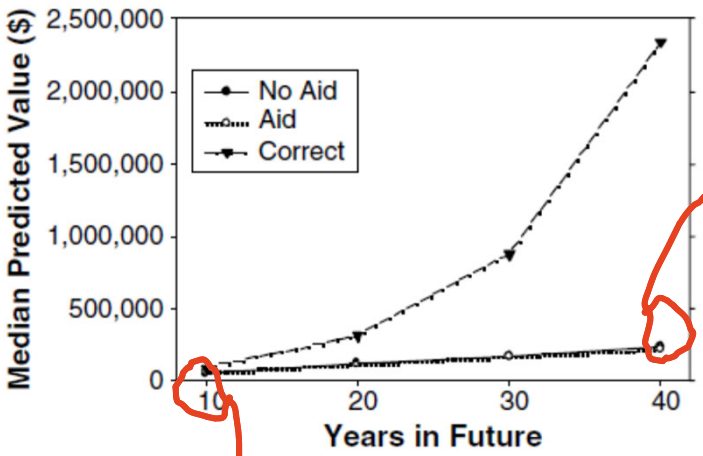
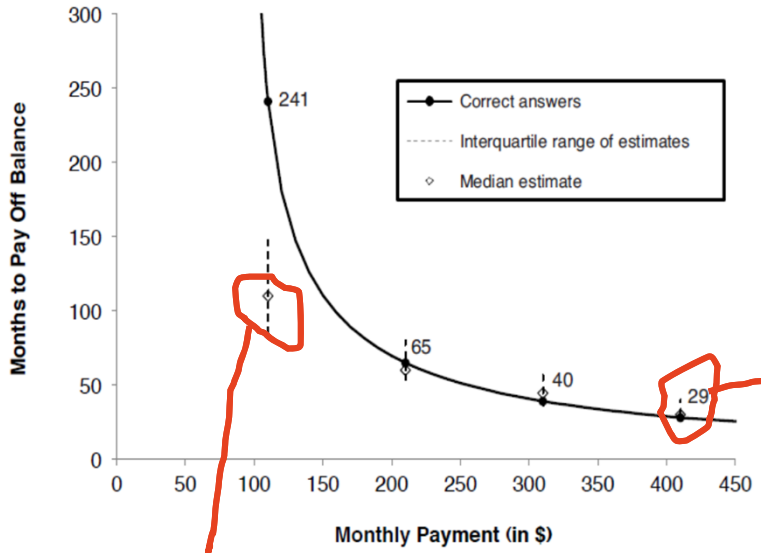


$400 x 12 (months per year) x 40 (years) x 1.1 = $211,200

$400 x 12 (months per year) x 10 (years) x 1.1 = $52,800

Figure 2. Participants' Estimates of Time to Pay Off a $10,000 Credit Card Balance with an Annual Interest Rate of 12%, as a Function of the Monthly Payment



$10,000 / $400
= 25 mths +
"interest" =
35mths

$10,000 / $100 = 100 mths
+ "interest" = 110mths

"Principal-plus-adjustment heuristic"

Soll et al., 2013

What's next?

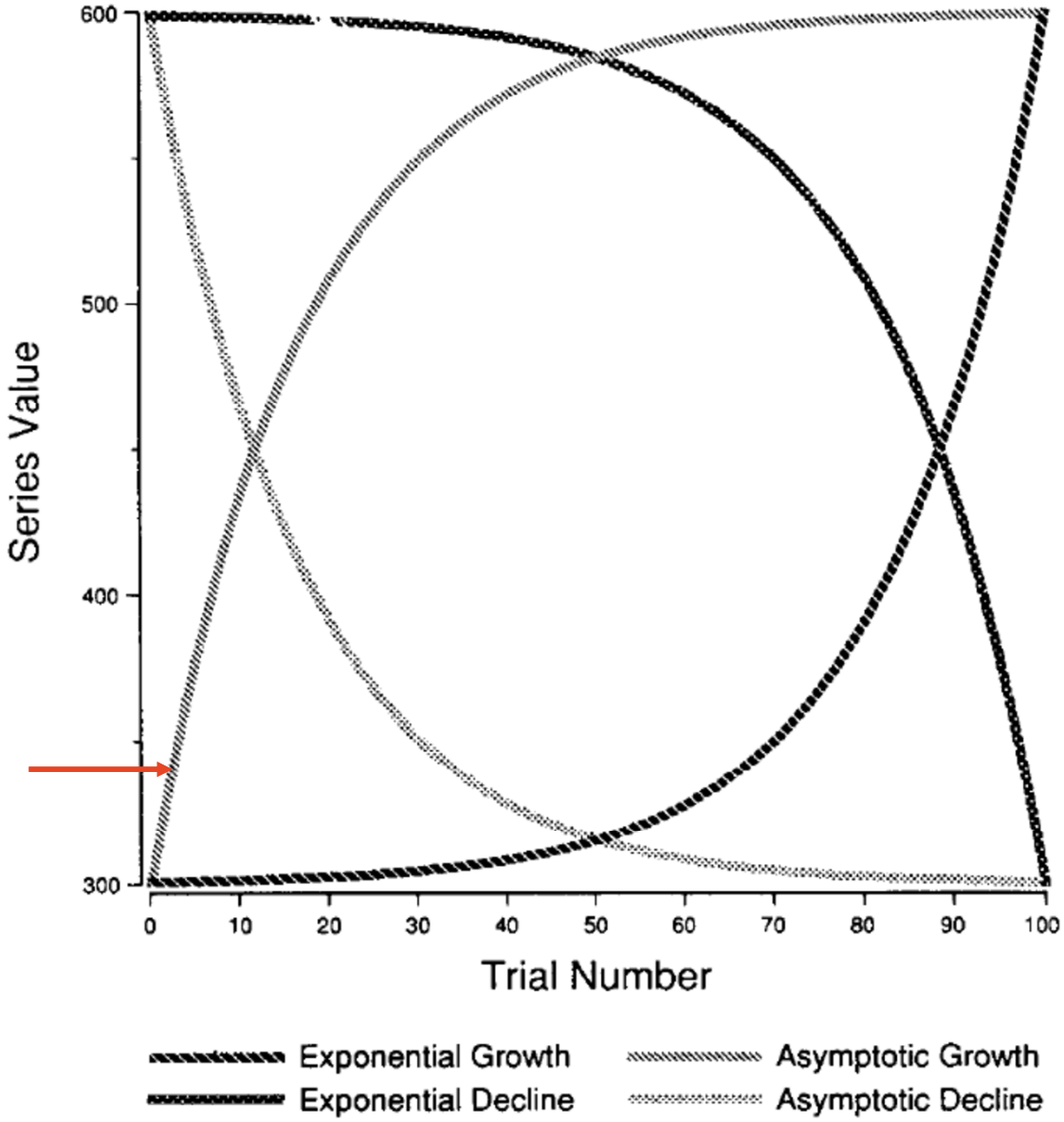


Fig. 1. Four types of simple exponential change.

Mackinnon & Wearing (1991)

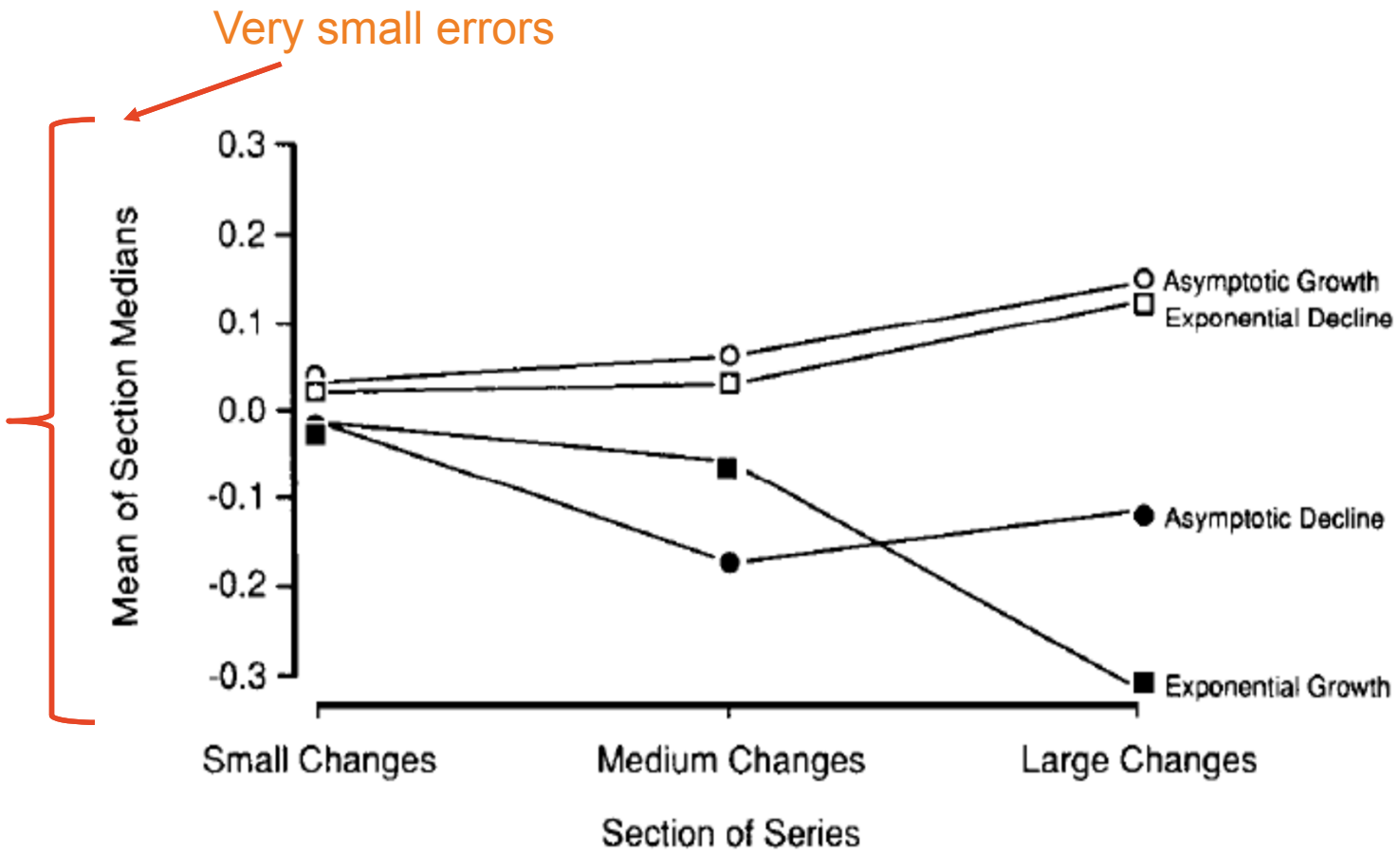


Fig. 3. Mean of section medians as a function of condition and change occurring in the section for experiment 1.

Solutions?

Tell people the answer (nudge)

Let people experience the impact of decisions (boost)

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Retirement Income Experiment (RIE): FIELD

The 2013 RIE presented members with both a projected account balance and income stream at retirement (1 & 2). Further, the RIE gave members three calls to action: (i) contacting Cbus (3); (ii) increasing retirement contributions (4); and choosing different investment options (4).

Your Personal Retirement Income Estimate
Prepared 30 June 2013

Step 1. What will my Cbus account balance be at retirement?

Your account balance: $25,000 at age 39 in 2013

Your estimated account balance: $198,000 if you retire at age 67 in 2041

If you don't like the estimate, call the Cbus Advice Team to work out a plan for you.

What this estimate means

The projection is just an estimate, not a guarantee. The actual money you get in your retirement may be very different from this estimate.

How this is worked out

This is the super you may have when you retire, based on your account activity over the past 12 months. Your estimate is based on the contributions and deductions that occurred last financial year that we project (according to assumptions and rules defined by the Government) what you will have at age 67. The result is in today's dollars, which means it includes increases in the cost of living.

Step 2. How much income will this pay me when I finish work?

Yearly income (when retired)

See page 4 for other assumptions used to calculate this estimate.

$11,200 pa Cbus account

+

$13,600 pa Your half of the Government age pension

+

Other potential sources

$24,800 pa Your yearly income in retirement

This is calculated to last 25 years. This is in today's dollars.

Adding up your income

To work this out, we've brought together two 'incomes' you could get in retirement. These incomes are from your Cbus account and the Government age pension.

About the Government age pension

The Government age pension shown is half of the maximum amount a couple can currently receive. You may not be eligible for some or all of this age pension amount if you (or your partner) have income or assets in addition to this super fund. Pension rates and eligibility rules may change between now and when you retire.

Your other sources income

This estimate doesn't include any other super you may have or income you may get. This could be from shares, interest from savings or investment properties. These investments can support you in retirement.

We can help you get a clearer picture

The Cbus Advice Team can answer your questions about super and planning for retirement. Their tools can produce simple but accurate personal estimates that consider your whole financial situation, not just your Cbus account. And while they're phone based, they're fully qualified to work out a plan for you.

Step 3. What can I do to improve my estimate?

Contact the Cbus Advice Team

If you have questions, the Cbus Advice Team can give you answers you need to improve your estimate.

Call 1300 361 784 Mon to Fri, 8am to 8pm

Email advice@cbussuper.com.au

Visit www.cbussuper.com.au/future

How much income will I need?

Decisions you make now can change outcomes. The Government age pension provides a basic safety net in retirement. It's your super (and any other savings and investments) that helps you achieve a higher standard of living.

There are two simple ways we can help you decide if your estimated income is enough:

- **Replacement rate:** This compares a person's spending power before and after retirement (eg 60 to 70% of your working income), and
- **Budget standard:** This is based on working out income needed, on average, to live at a certain standard in retirement.

Get your own answers

Whatever your situation, the Cbus Advice Team can help you get a view of what's enough for you and your family. They can talk you through your options over the phone and provide you with all the detail you need.

Longevity

Around one in six men and one in four women who retire at 67 years old will live longer than 25 years after retirement

Average age of retirement

Men 'retire' at 57.9 years old and women at 49.6 years old

Four facts that will change the way you plan for retirement

Pension

77% of Australians over 65 years old received income support

Pension rate

Current full fortnight rate (including supplements) is $808.40 a for a single and $1,218.80 for a couple

Sources: ABS (2011) 'Retirement and retirement intentions, Australia, Commonwealth of Australia (2008) Pension Review, www.centrelink.gov.au

Some of the strategies Justin discussed

- Combining his super into one account
- Choosing a different investment option
- Adjusting his super contribution levels

Case study:

What Justin thought about

Justin, 38, works as an Account Manager in a construction company. He is married with two kids.

He received his Cbus Personal Retirement Income Estimate and thought he'd have more for his retirement.

Looking through it, it was clear to Justin that the estimate didn't cover his full financial position. For instance, he had another super account.

So Justin called the Cbus Advice Team to get answers to his questions. They were able to help him see his financial options clearly, and take appropriate action.

1

2

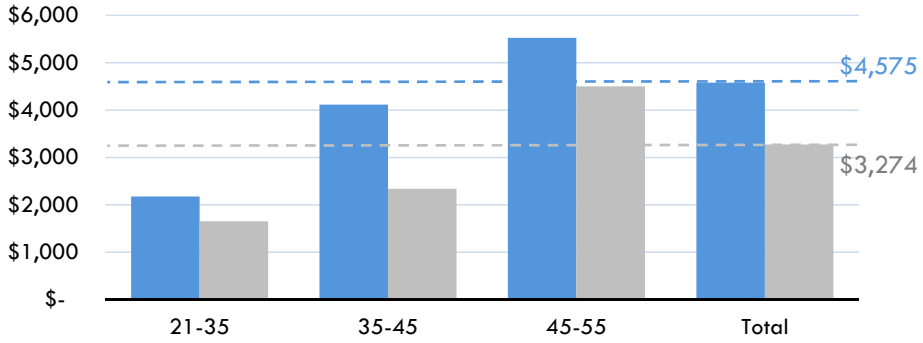
3

4

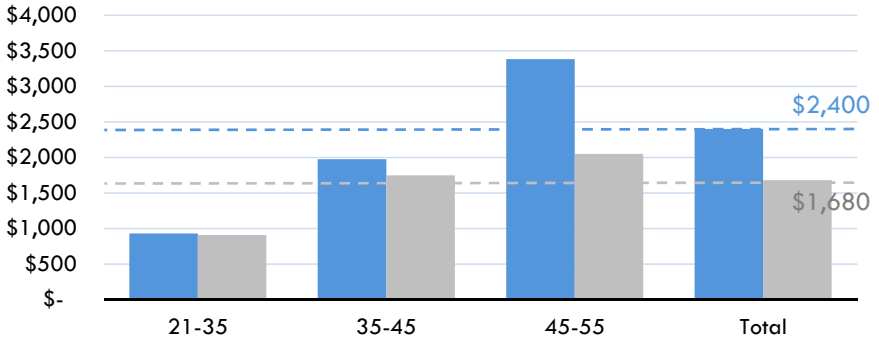
RIE Results – Contributions

The RIE had significant effects upon the retirement saving decisions of Cbus members. These effects were generally more pronounced for older members and in relation to salary sacrificing.

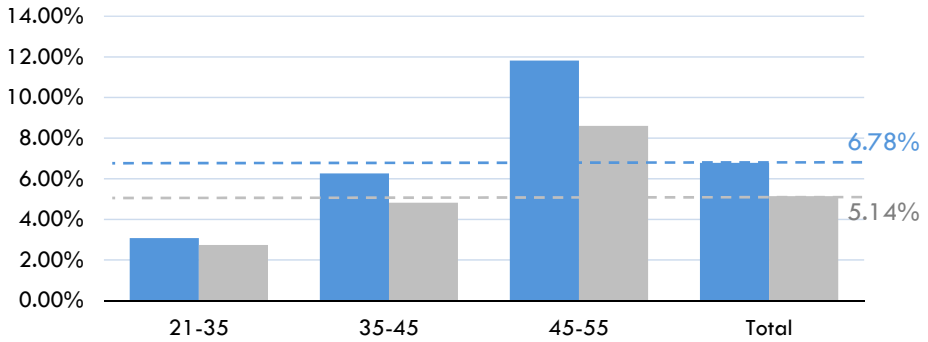
1 Higher salary sacrifice in ($AUD)



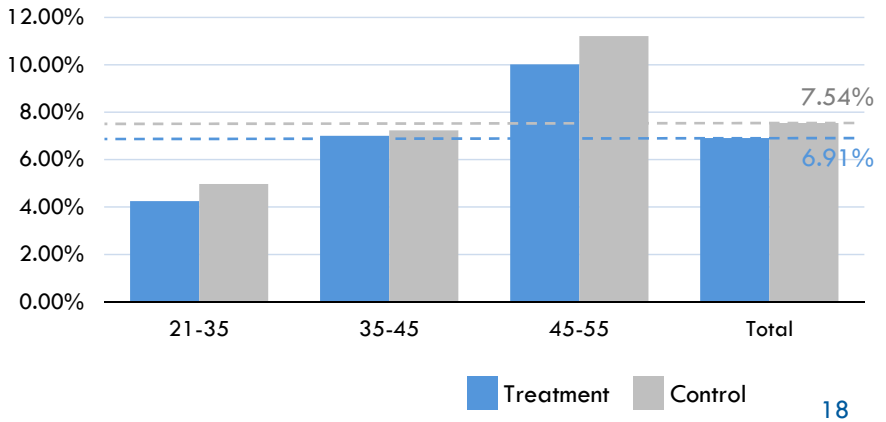
2 Higher NC saving in ($AUD)



3 More members salary sacrificing

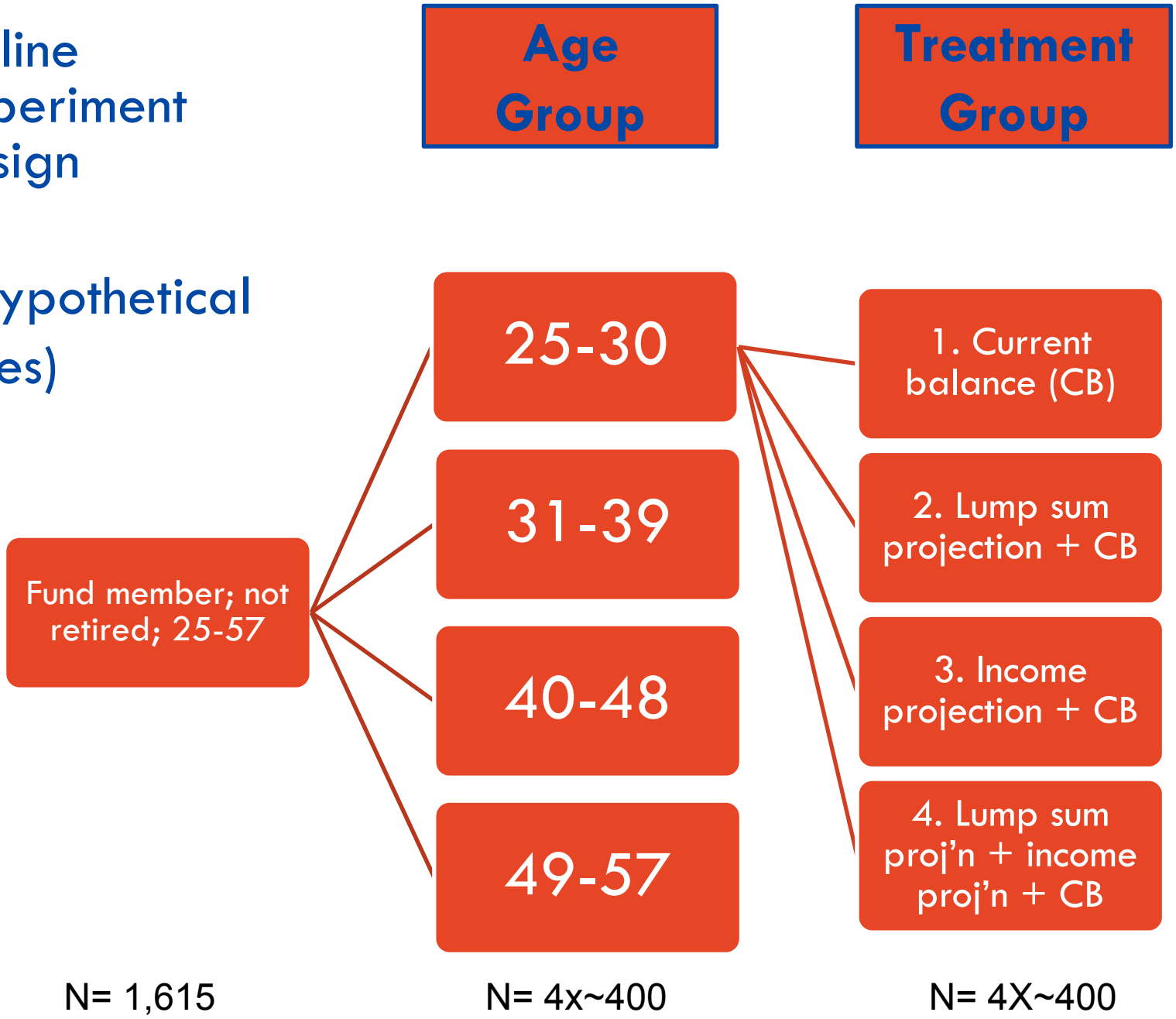


4 Fewer members with NC saving



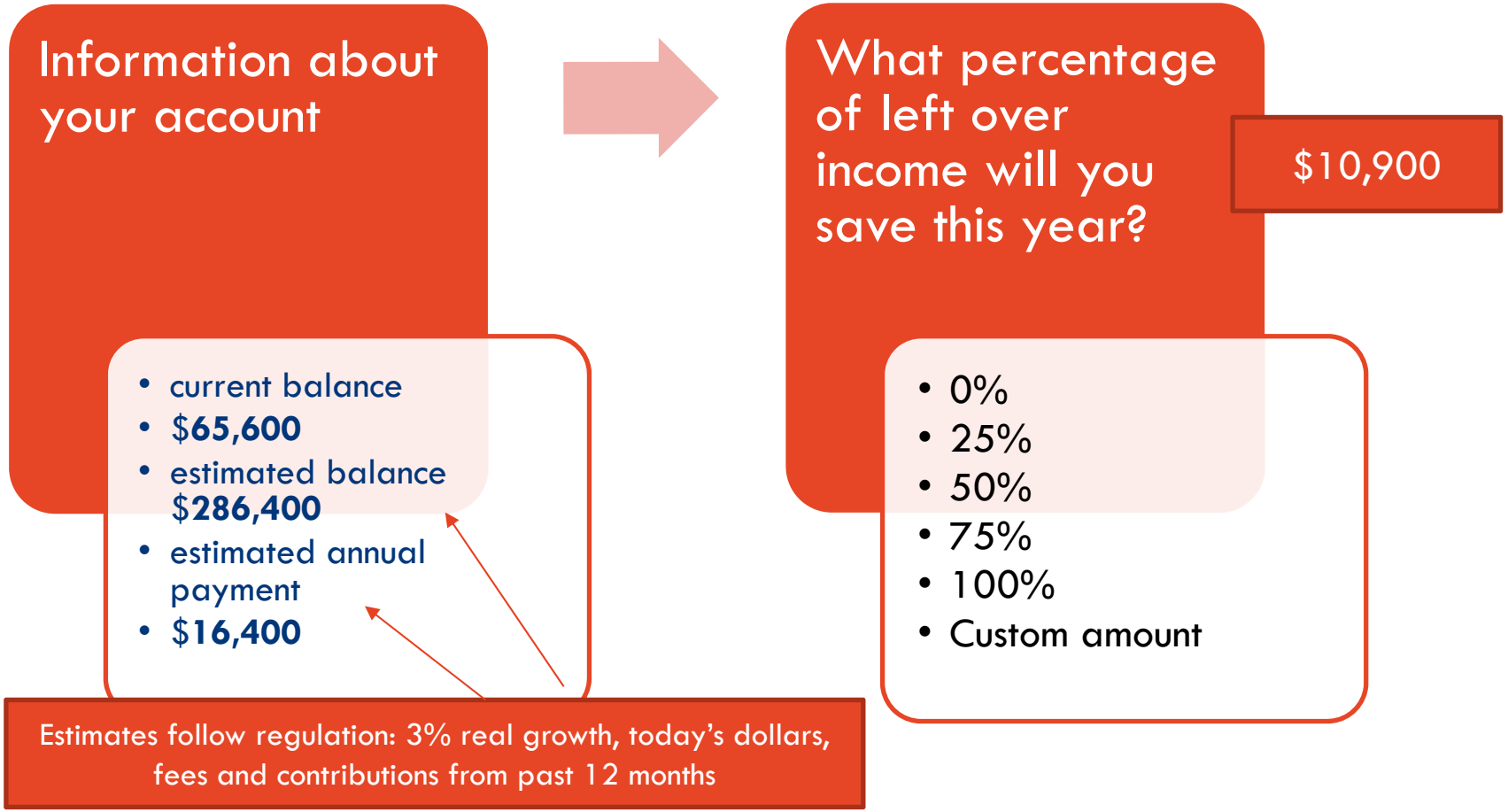
Online experiment design

(All hypothetical choices)



Current Balance + Balance + Income Estimate

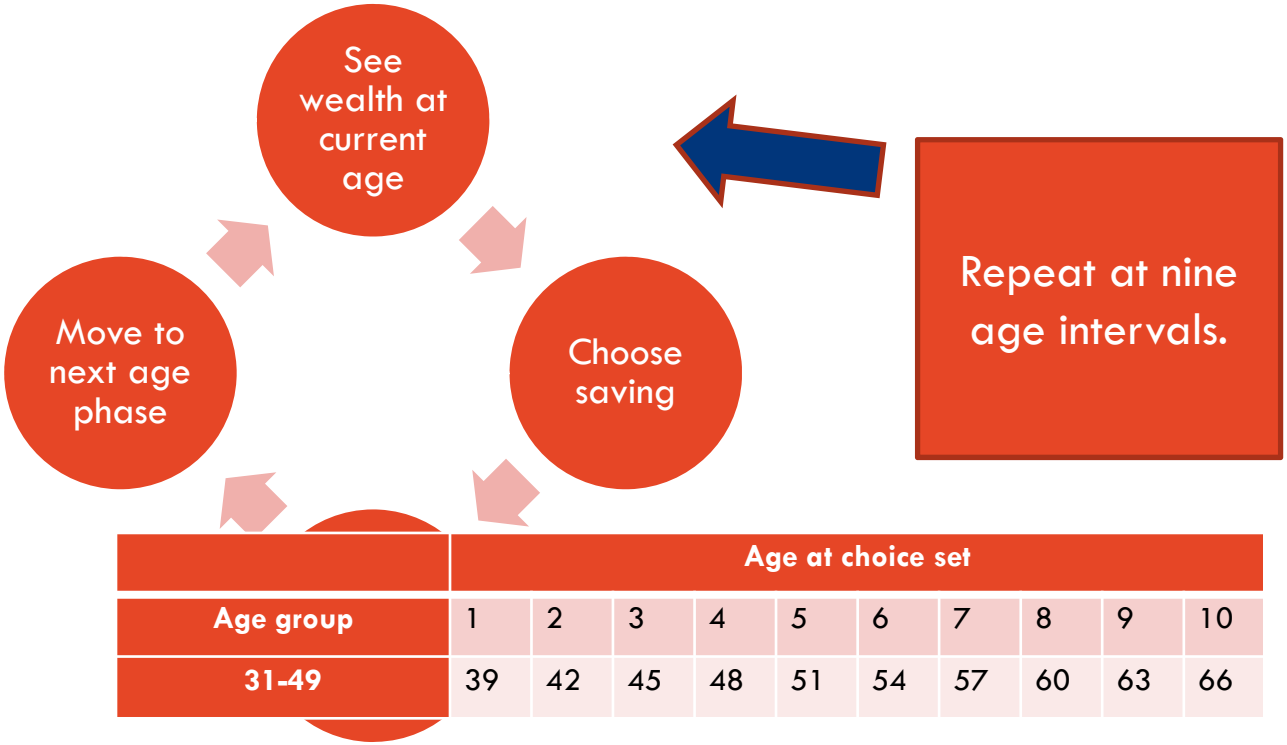
Participants choose % of "left over" income to save.



Account and income information set at population averages.

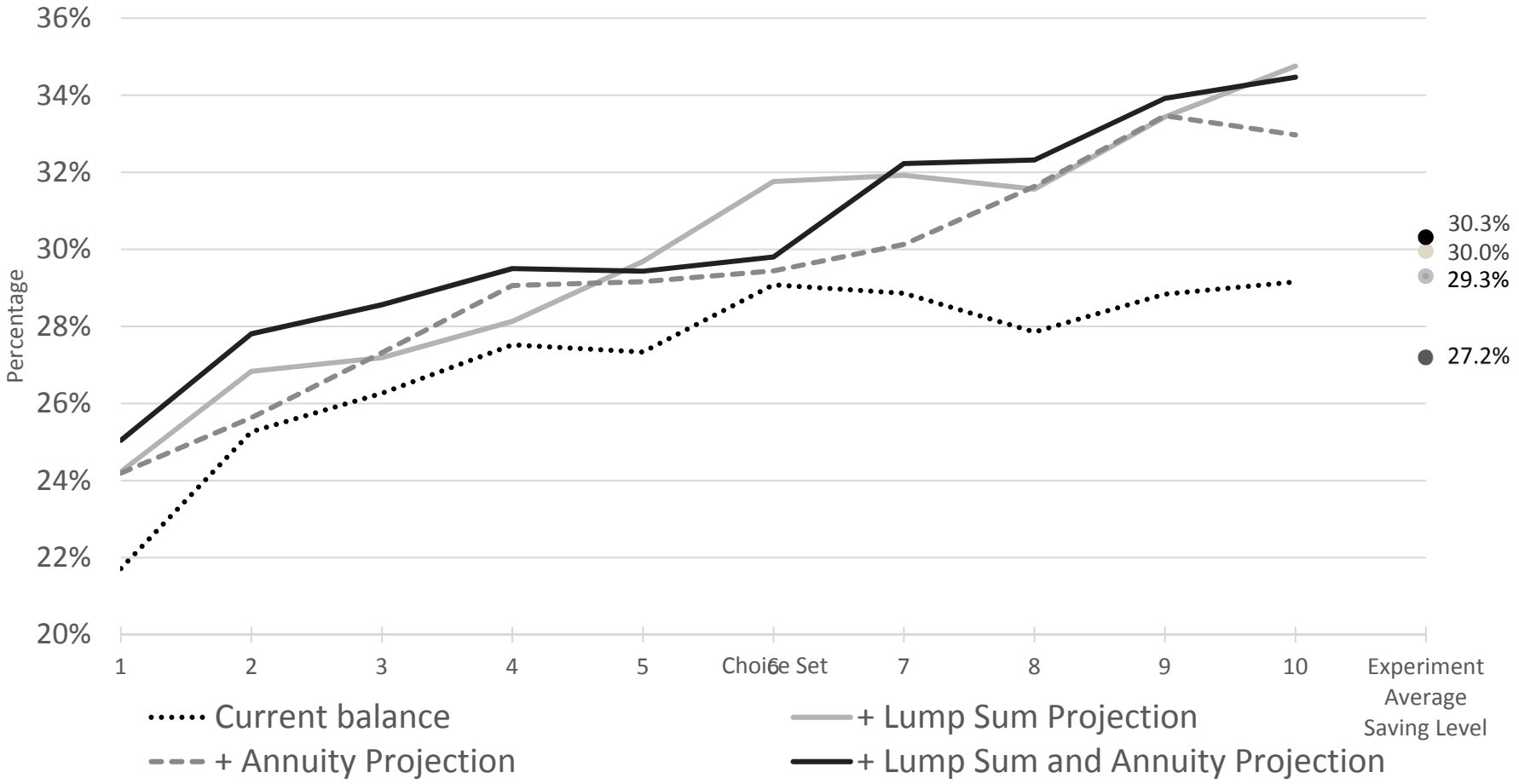
First choice set	45-54 years
Starting age	48 yrs
Annual gross income	$77,000
Annual net income	$60,400
Annual living expenses	$49,500
Income left over	$10,900
Current plan balance	$65,600
Estimated retirement balance	$286,400
Estimated 25 yr payment	$16,400

Choice set information updates after each saving decision.



	Age at choice set									
Age group	1	2	3	4	5	6	7	8	9	10
31-49	39	42	45	48	51	54	57	60	63	66

Average percentage of discretionary income saved by treatment



Combined projections: reference dependence and positive feedback.

- Lump sum feedback is large relative to income
- Lump sum + income feedback = carrot + stick?
- Projections affect younger respondents more than older
  - Younger get the benefit of longer compounding periods

Growth in projections: 35 years; saves 100% of "left-over" income			
	Choice 1	Choice 5	Choice 10
Income projection	$22,200	$28,600	$30,900
Lump sum projection	$386,200	$497,700	$538,500

Inertia & Friction Costs?

Version 1

Would like to save any of your left over income this year?

YES

NO

What percentage of left over income will you save this year?

- 25%
- 50%
- 75%
- 100%
- Custom amount

Version 2

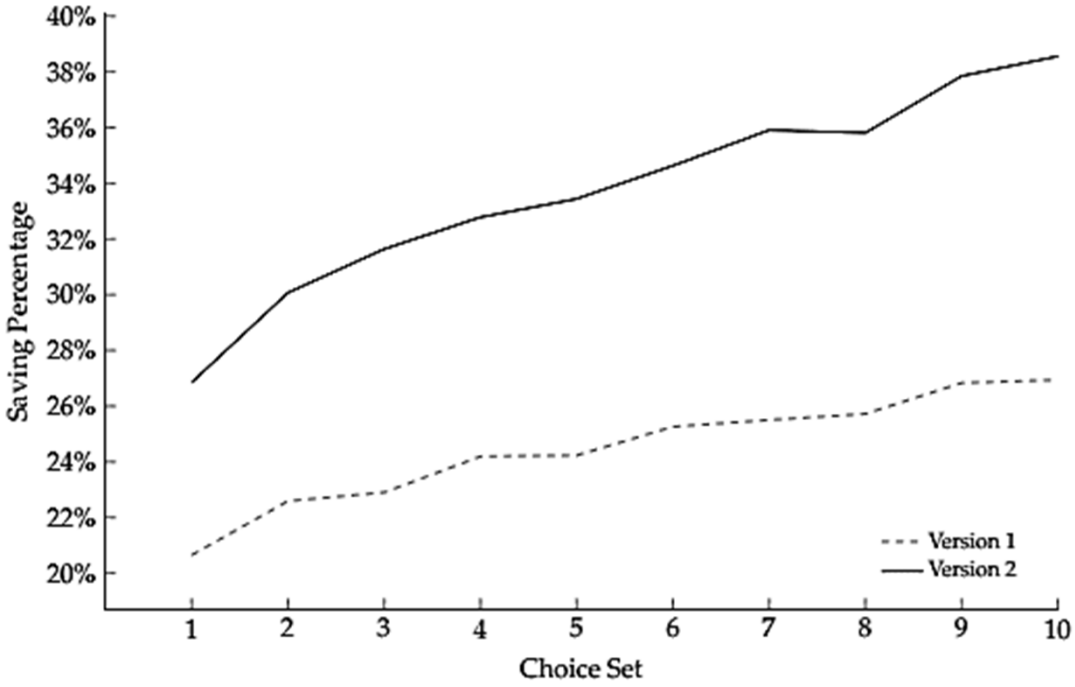
What percentage of left over income will you save this year?

- 0%
- 25%
- 50%
- 75%
- 100%
- Custom amount

Inertia & Friction Costs?

We found the sequential, two-stage choice architecture (survey version 1) results in significantly lower saving, due largely to more respondents answering "No" (0% saving) to the first question.

Average percentage of discretionary income saved by version



Percentage increase in retirement balance

	Choice 1	Choice 10
Version 2	0.40***	3.06***

Marginal effect over Version 1 experimental design. p<0.1 *; p<0.05 **; p<0.01 ***

General Discussion Points

- The need to shift away from enumerating biases to providing solutions
- Focus on changing the choice architecture or improving competence/education?
- Is it competence or engagement?
- Should we target arithmetic problems or conceptual problems? (Does it matter if you know the answer even if you don't know why?)
- Can simulators/calculators/forecasters solve misunderstanding (and engagement)? Does it matter if they can't (as long as people do the "right thing")

Retirement Specific Discussion Points

- How much do people think they need for retirement? How much do they think they can spend in retirement?
- Why do people not save enough, but then spend too slowly in retirement? Discount rate changes? "Exponential Decline Bias"?
- Why does EPG bias not lead to *lower savings intentions?* (People tend to under-estimate how much they will have which could lead them to save less…).