INVESTMENT SCIENCE

SRA®…..the missing piece in the puzzle.

Disclaimer

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- This is a presentation about the Strategic Risk Allocation ("SRA") approach at the Portfolio Construction Forum.
- It is NOT personal Advice. Investment Science does not know your personal circumstances and is therefore not suggesting you adopt the SRA methodology.

Agenda

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- Back to Basics
  - *Why does a client visit a planner*
  - *Financial Insomnia*
- Is SAA up to the job?
  - *4 major problems*
- It's All About Risk
- The SRA Advisor Tool
  - Target Retirement Income (TRI)
  - Sticking to your "Risk Path".
- Summary

Back to Basics

- Why does an investor visit a planner?

- To develop & implement a plan to achieve a Targeted Retirement Income (“TRI”)

Financial Insomnia

Will I suffer a loss from which I can't recover in time?

Finding the Right Balance

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Clients want to “Eat Well” in Retirement, but “Sleep well” now and into the future.

So we must manage:

1. Return shortfall risk i.e. The gap between the TRI & potential shortfall
   a. Risk Tolerance - Emotional ability to take risks
   b. Risk Capacity - Financial Capacity to take risks.

2. Lifecycle Risk

3. Longevity Risk

So is SAA up to the Task?

Why SAA Has Failed Investors

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The SAA approach includes a series of performance damaging constraints that make it almost impossible to add value after fees, these include:

1. Market Cap weighted investing (buy high /sell low)

2. Utilising a beta 1st approach inhibits the construction of better diversified portfolio's.

3. Defensive asset classes subtract value vs. simple cash strategies

4. Equities funds subtract value vs. a simple index strategy.

No. 1. Market Cap Weighted…….

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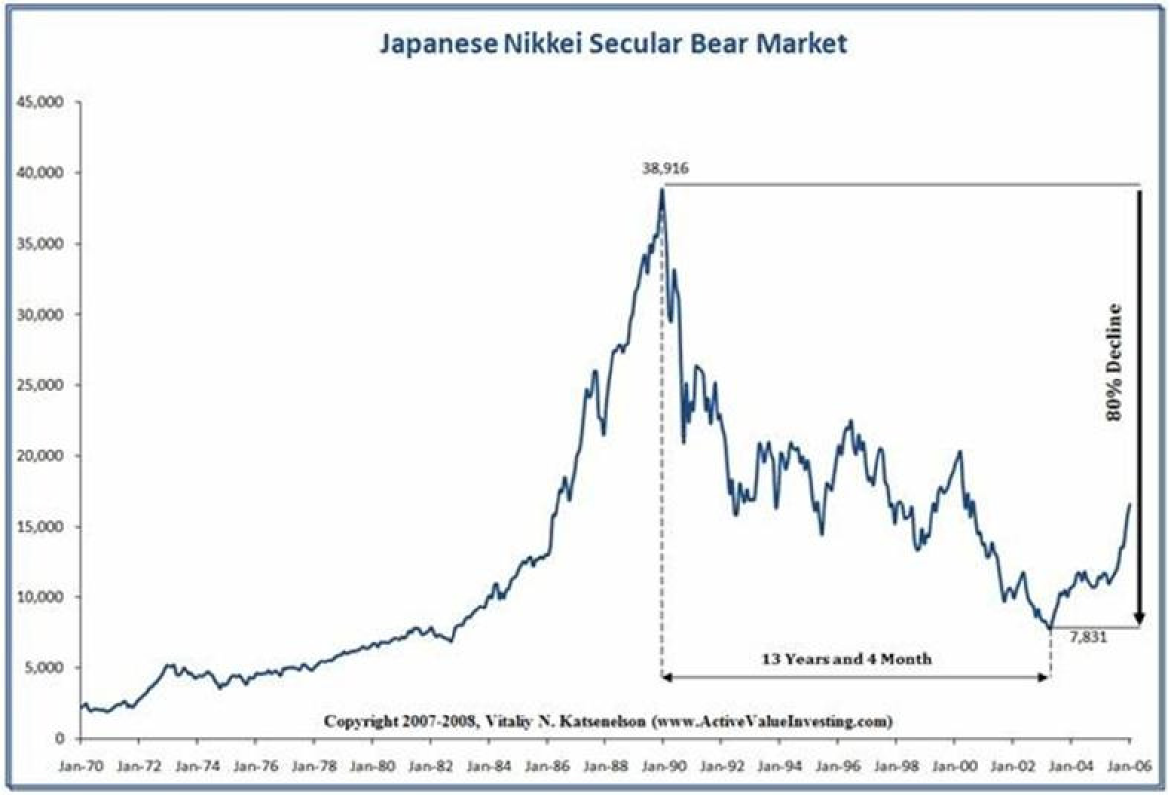

Problem No.2 Beta 1st

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"Diversification is both observed and sensible: a rule of behaviour which does not imply the superiority of diversification must be rejected both as a hypothesis and a maxim".

Markowitz (1952)

No.3 Defensive Asset Classes…

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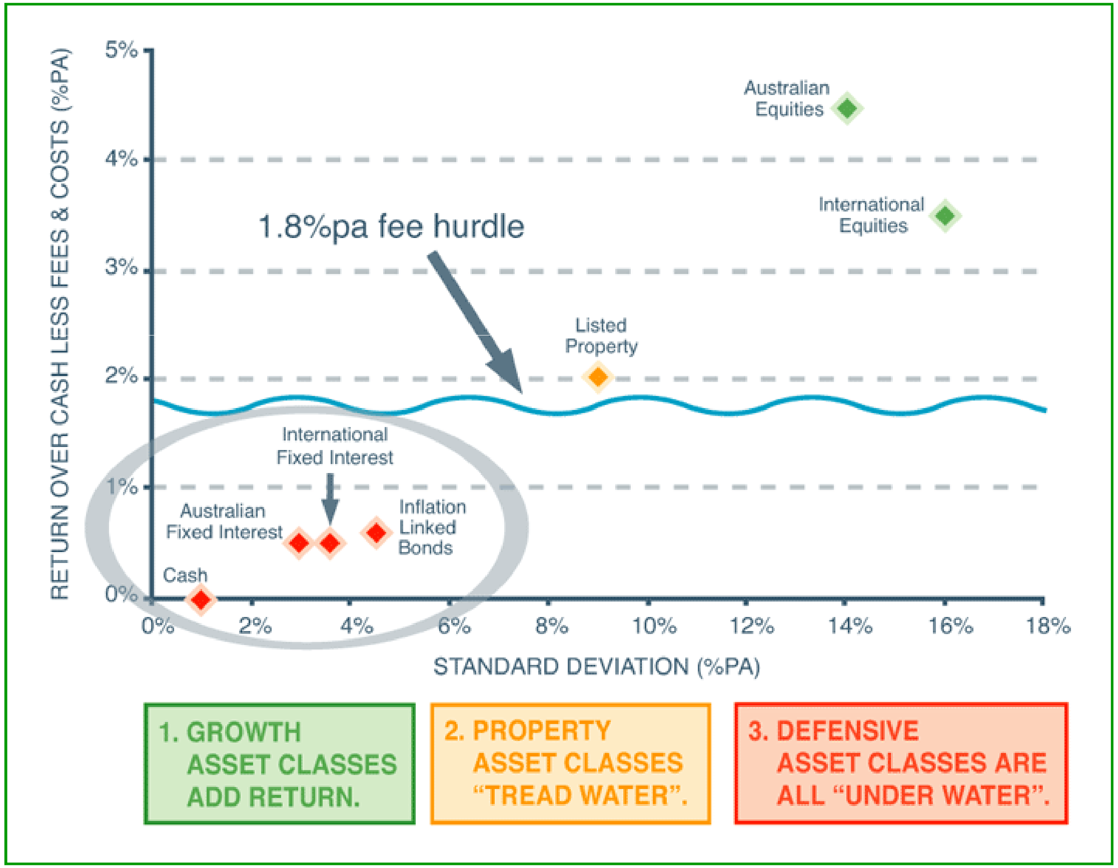

No. 4 Equities Funds subtract ….

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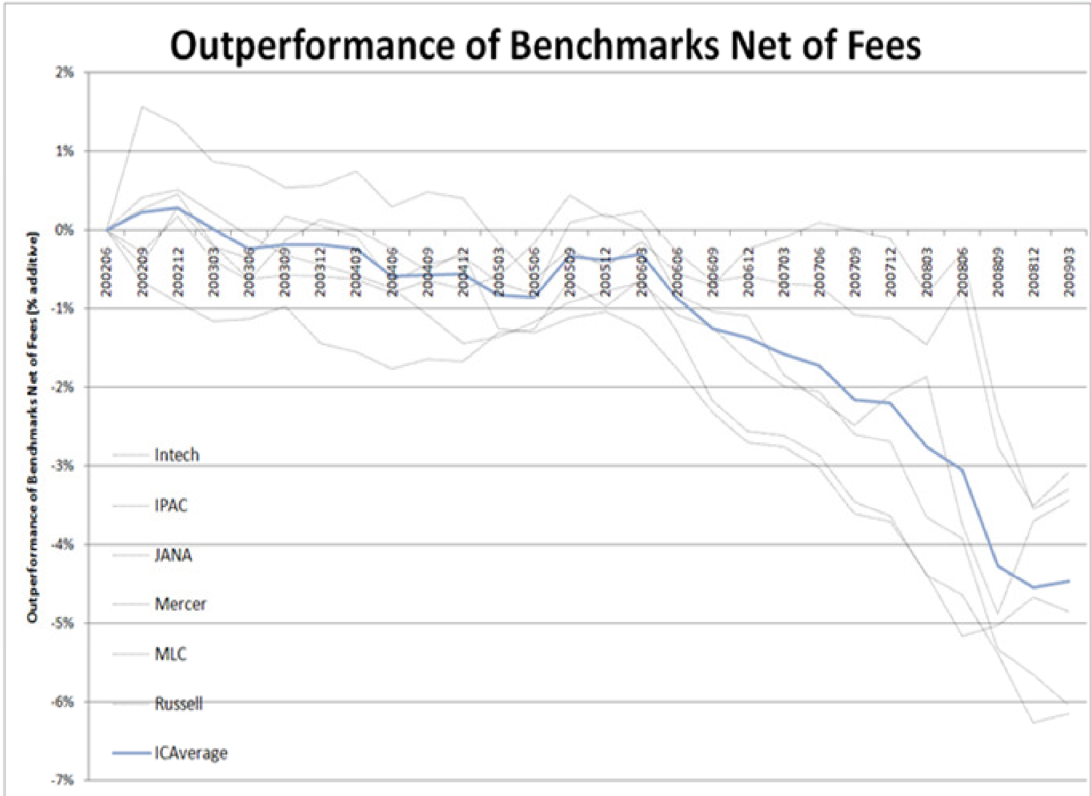
- Average Alpha: Worst: -0.91%pa, Average -0.66%pa, Best: -0.46%pa
- Confidence threshold of statistical significance of underperformance: Worst: 99.7%, Average: 99.5%, Best: 86%



Source: CPG Research & Advisory, Investment Science Asset Management

SRA® – The Missing Piece……

One linear constraint

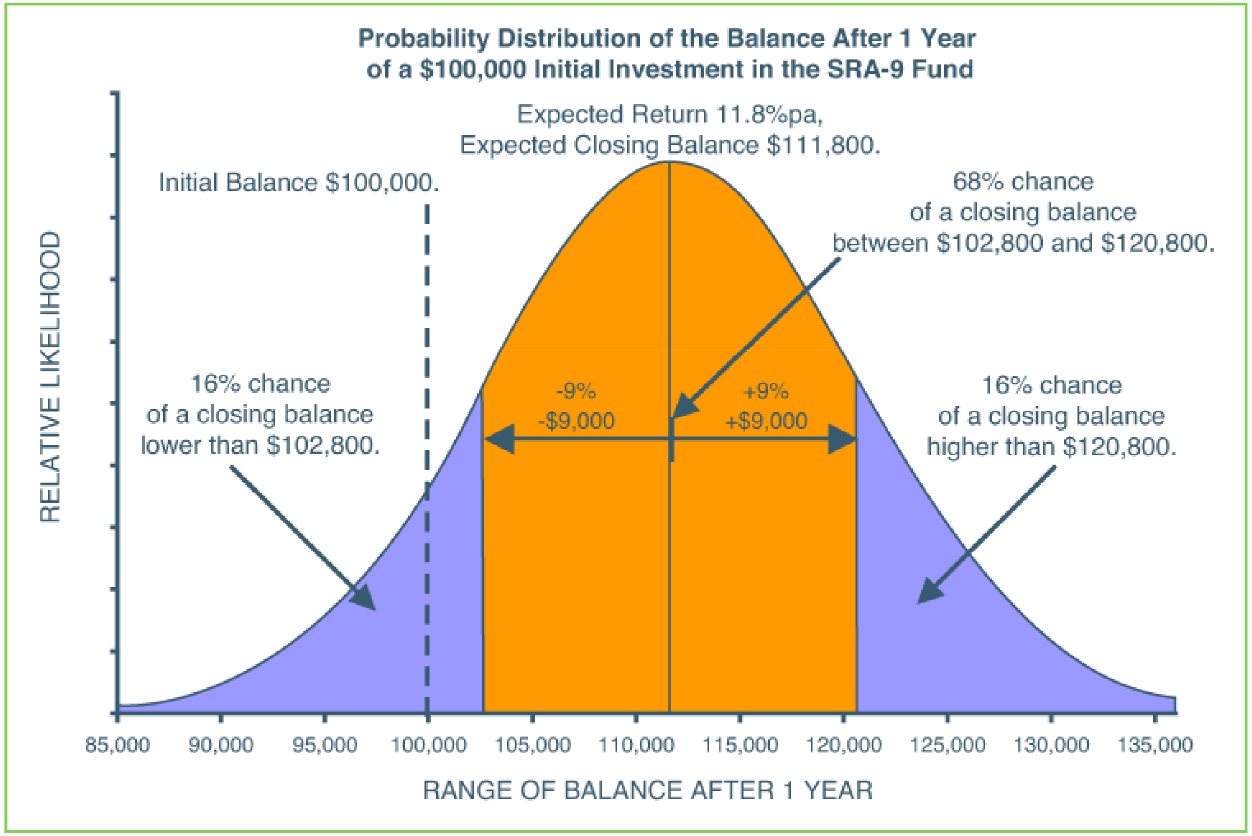
– Portfolio Risk Target

(liquidity & boundary constraints also apply)

Less Constraints Means
Higher Expected Returns.

(this logically follows as a consequence of set theory;
the set of SAA strategies is a subset of the set of SRA® strategies)

The Avg Size of the Surprise



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Turn the Process on Its Head

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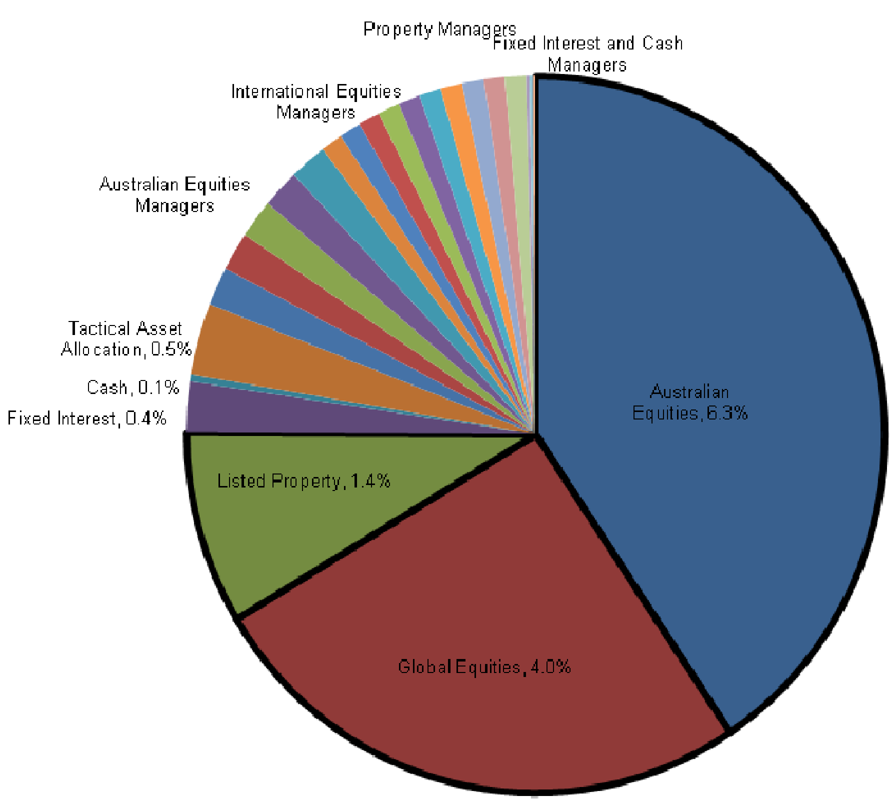
Traditional Approach ***Strategic Asset Allocation ("SAA")***	**Our Approach** ***Strategic Risk Allocation ("SRA")***
The investor chooses which category of investor they are (*eg* capital defensive up to high growth), which defines a given allocation to growth assets.	The investor chooses the level of investment risk they are comfortable with in terms of $, "the average size of the surprise".
"Beta First" **1. Determine the risk and return** of different asset classes. **2. Create an Efficient Frontier** of optimal portfolios, which shows the benefit of diversification. **3. Choose the optimal portfolio** that gives the desired risk-return characteristics for the investor.	**"Alpha First"** **1.** Look for investment products with the **right characteristics**. **2. Estimate the components of value-add** over benchmark for each investment product. **3.** Bias product selection to investment opportunities with the **highest net value-add over benchmark**.
"Alpha Second" **4. Choose managers** to manage an allocation to each asset class.	**"Beta Second"** **4. Construct diversified portfolios, and add up the asset class and factor exposures.**
	"Hedges Third" 5. **Hedge excess asset class risk using derivatives.**

Which is more Diversified?

Hypothetical SAA Portfolio converted to Risk

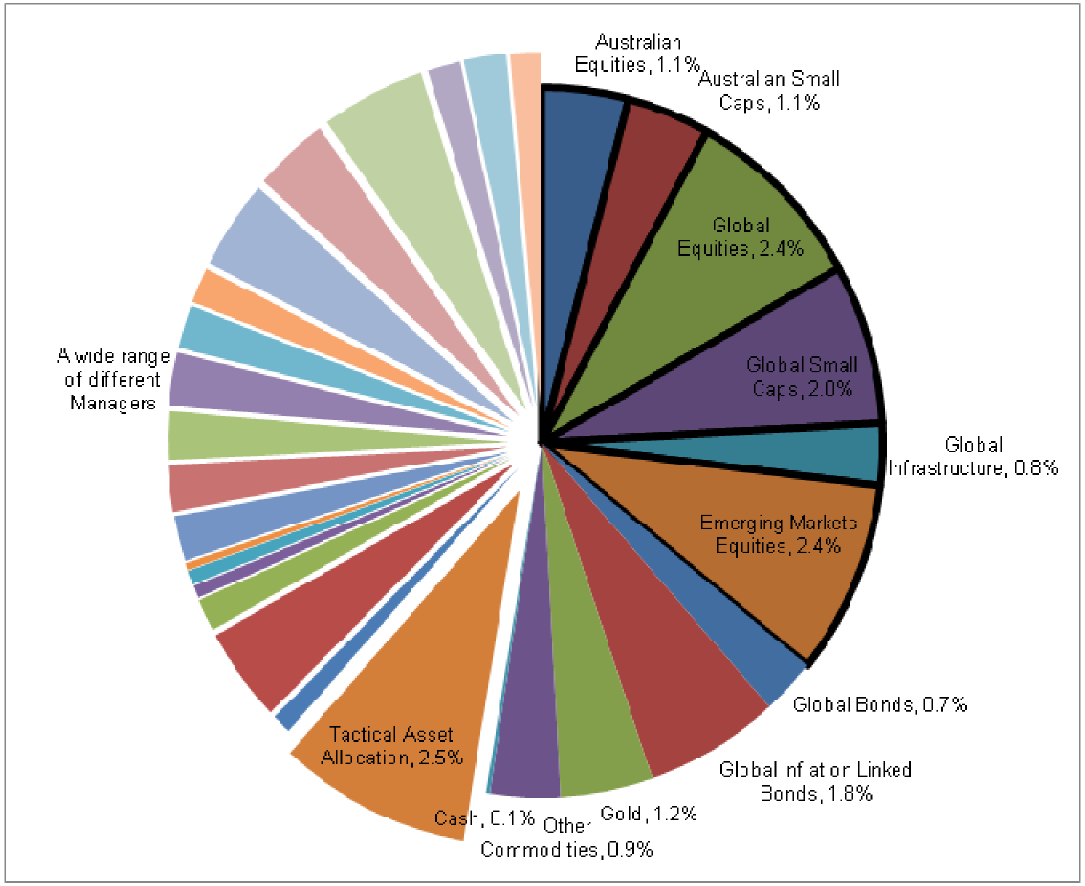


Risk = Allocation x Standard Deviation

e.g. Global Equities 4.0% = Allocation 25% x Standard Deviation 16%

Which is more Diversified

Hypothetical SRA® Portfolio - same risk

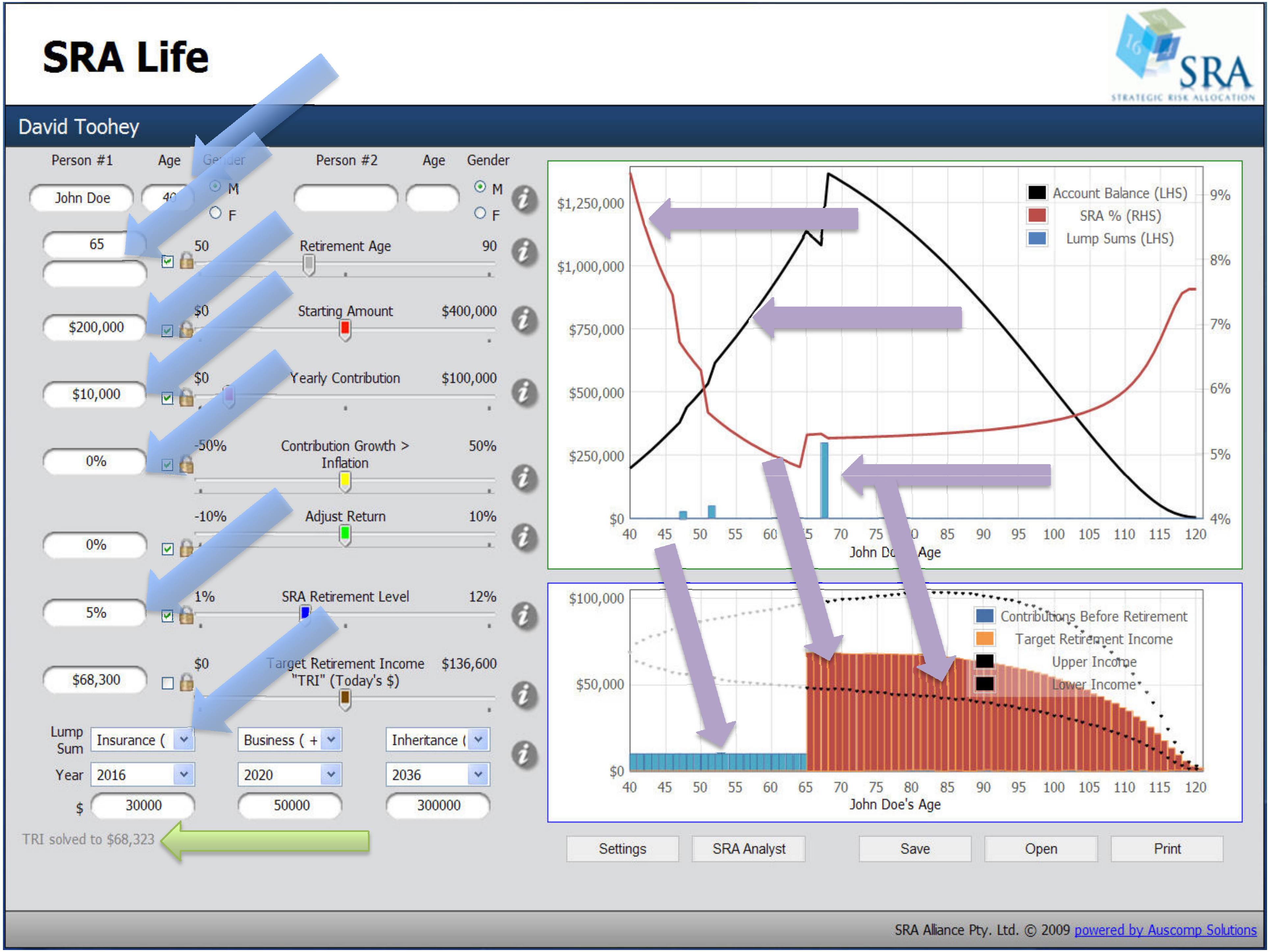


Risk = Allocation x Standard Deviation

e.g. Global Equities 4.0% = Allocation 25% x Standard Deviation 16%

Working Backwards

- Start with developing a TRI
  - Consider risk level at retirement
  - Address
    - Return shortfall risk
    - Lifecycle Risk
    - Longevity Risk


SRA Life
SRA
STRATEGIC RISK ALLOCATION
David Toohey
Person #1
Age
Gender
Person #2
Age
Gender
John Doe
40
M
F
M
F
65
50
Retirement Age
90
$200,000
$0
Starting Amount
$400,000
$10,000
$0
Yearly Contribution
$100,000
0%
-50%
Contribution Growth > Inflation
50%
0%
-10%
Adjust Return
10%
5%
1%
SRA Retirement Level
12%
$68,300
$0
Target Retirement Income "TRI" (Today's $)
$136,600
Lump Sum
Insurance (
Business (+
Inheritance (
Year
2016
2020
2036
$
30000
50000
300000
TRI solved to $68,323
$1,250,000
$1,000,000
$750,000
$500,000
$250,000
$0
9%
8%
7%
6%
5%
4%
Account Balance (LHS)
SRA % (RHS)
Lump Sums (LHS)
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
$100,000
$50,000
$0
Contributions Before Retirement
Target Retirement Income
Upper Income
Lower Income
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
Settings
SRA Analyst
Save
Open
Print
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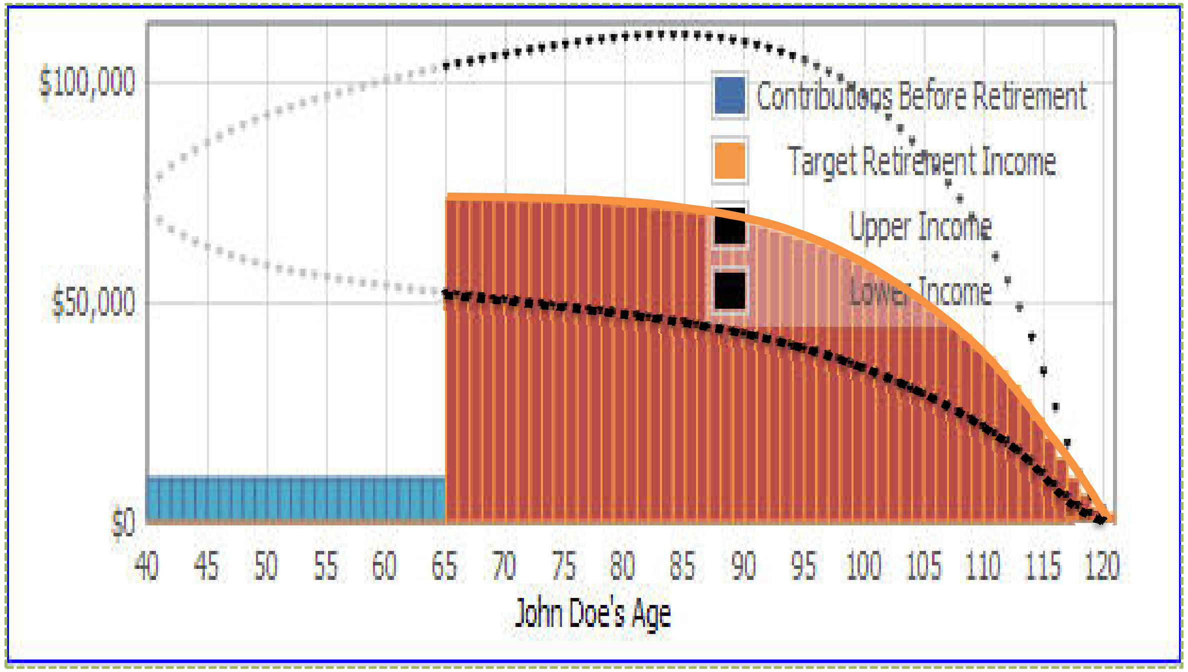
Return Risk- Managing the Gap

1. No point targeting a given TRI *(Thick orange line)* and not knowing how bad things can get *(Thick black dotted line).*

2. Need best portfolio construction method to ensure highest return for risk taken. Is SAA up to the task?



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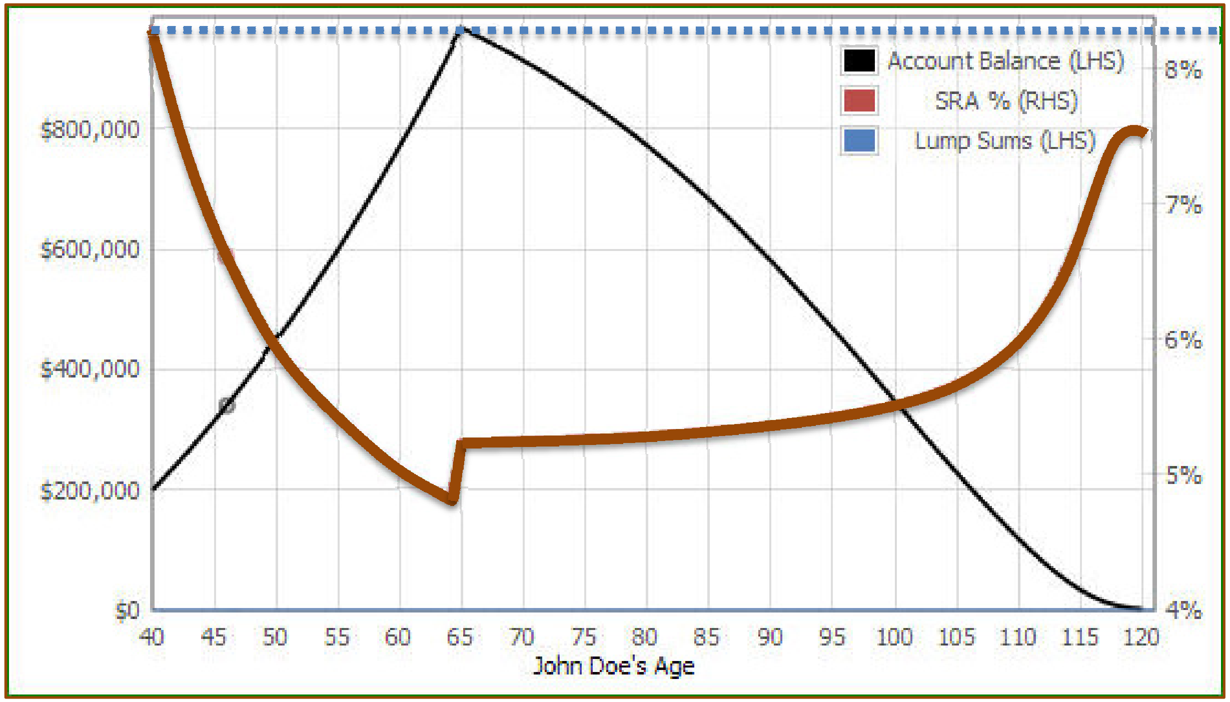
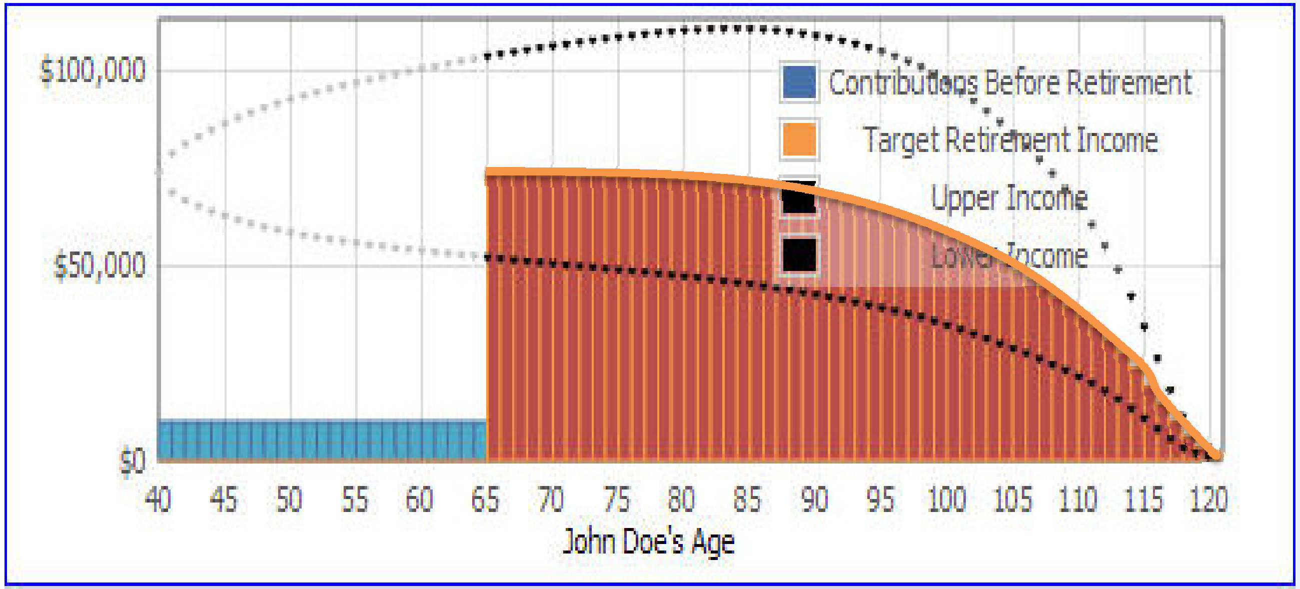
LifeCycle (Glidepath) Risk

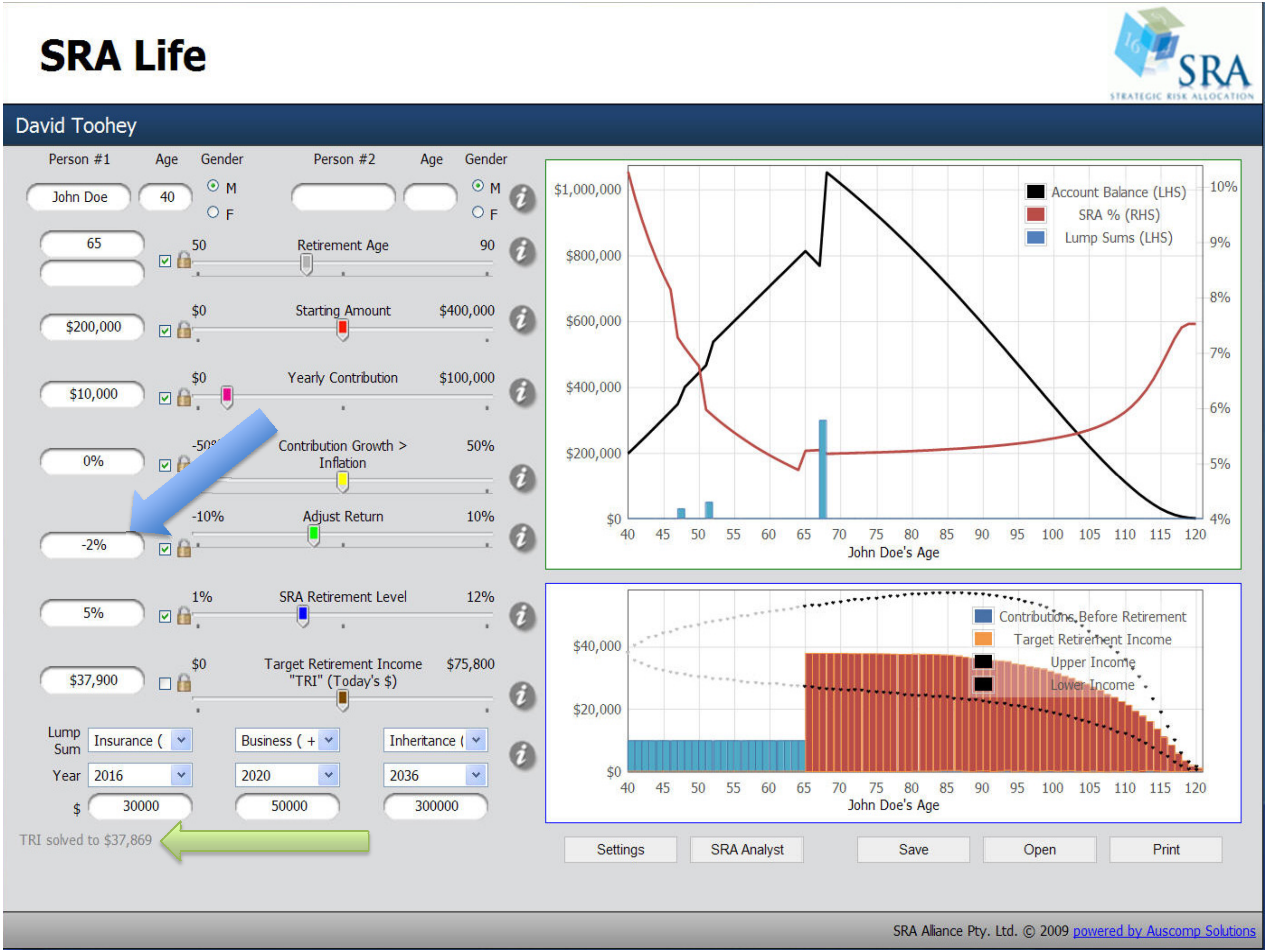
- SAA approach assumes a static risk profile (e.g. high growth).
- Exposes clients to a loss of wealth that cannot be recovered
- Overestimates likely retirement income.
- A dynamic risk path needs to be modeled.



Longevity Risk

Longevity Risk: A TRI profile must be adopted that the client doesn't run out of funds.




SRA Life
SRA
STRATEGIC RISK ALLOCATION
David Toohey
Person #1
Age
Gender
Person #2
Age
Gender
John Doe
40
M
F
M
F
65
50
Retirement Age
90
$200,000
$0
Starting Amount
$400,000
$10,000
$0
Yearly Contribution
$100,000
0%
-50%
Contribution Growth > Inflation
50%
-2%
-10%
Adjust Return
10%
5%
1%
SRA Retirement Level
12%
$37,900
$0
Target Retirement Income "TRI" (Today's $)
$75,800
Lump Sum
Insurance (
Business (+
Inheritance (
Year
2016
2020
2036
$
30000
50000
300000
TRI solved to $37,869
Account Balance (LHS)
SRA % (RHS)
Lump Sums (LHS)
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
10%
9%
8%
7%
6%
5%
4%
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
Contributions Before Retirement
Target Retirement Income
Upper Income
Lower Income
$40,000
$20,000
$0
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
Settings
SRA Analyst
Save
Open
Print
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SRA Life
SRA
STRATEGIC RISK ALLOCATION
David Toohey
Person #1
Age
Gender
Person #2
Age
Gender
John Doe
40
M
F
M
F
65
50
Retirement Age
90
$200,000
Starting Amount
$400,000
12000
$0
Yearly Contribution
$24,000
0%
-50%
Contribution Growth > Inflation
50%
0%
-10%
Adjust Return
10%
5%
1%
SRA Retirement Level
12%
$73,300
$0
Target Retirement Income "TRI" (Today's $)
$146,600
Lump Sum
Insurance (
Business (+
Inheritance (
Year
2016
2020
2036
$
30000
50000
300000
TRI solved to $73,283
Account Balance (LHS)
SRA % (RHS)
Lump Sums (LHS)
$1,250,000
$1,000,000
$750,000
$500,000
$250,000
$0
10%
9%
8%
7%
6%
5%
4%
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
Contributions Before Retirement
Target Retirement Income
Upper Income
Lower Income
$100,000
$50,000
$0
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
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SRA Analyst
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Open
Print
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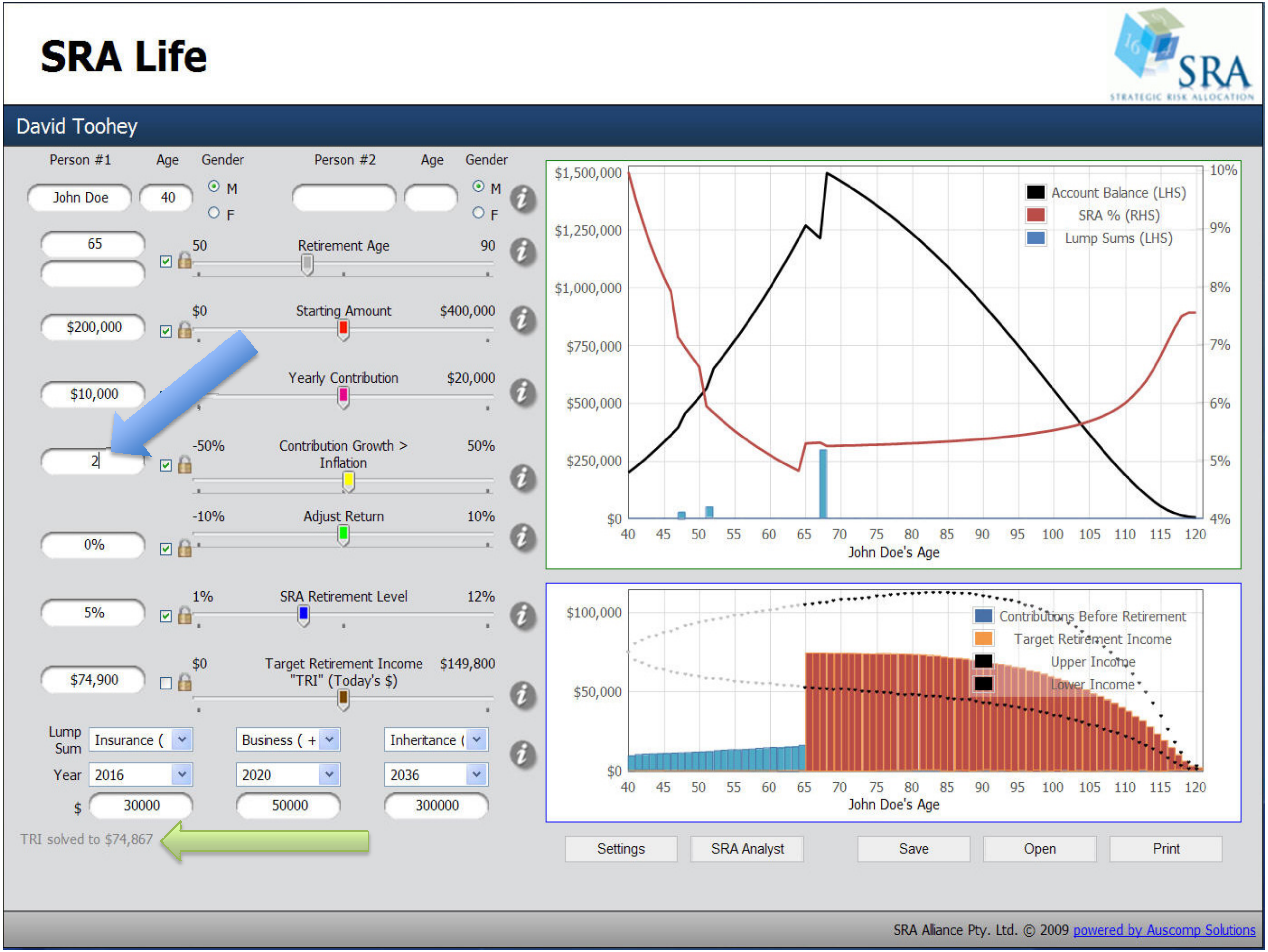
SRA Life
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STRATEGIC RISK ALLOCATION
David Toohey
Person #1
Age
Gender
Person #2
Age
Gender
John Doe
40
M
F
M
F
65
50
Retirement Age
90
$200,000
$0
Starting Amount
$400,000
$10,000
Yearly Contribution
$20,000
2
-50%
Contribution Growth > Inflation
50%
0%
-10%
Adjust Return
10%
5%
1%
SRA Retirement Level
12%
$74,900
$0
Target Retirement Income "TRI" (Today's $)
$149,800
Lump Sum
Insurance (
Business (+
Inheritance (
Year
2016
2020
2036
$
30000
50000
300000
TRI solved to $74,867
$1,500,000
$1,250,000
$1,000,000
$750,000
$500,000
$250,000
$0
10%
9%
8%
7%
6%
5%
4%
Account Balance (LHS)
SRA % (RHS)
Lump Sums (LHS)
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
$100,000
$50,000
$0
Contributions Before Retirement
Target Retirement Income
Upper Income
Lower Income
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
Settings
SRA Analyst
Save
Open
Print
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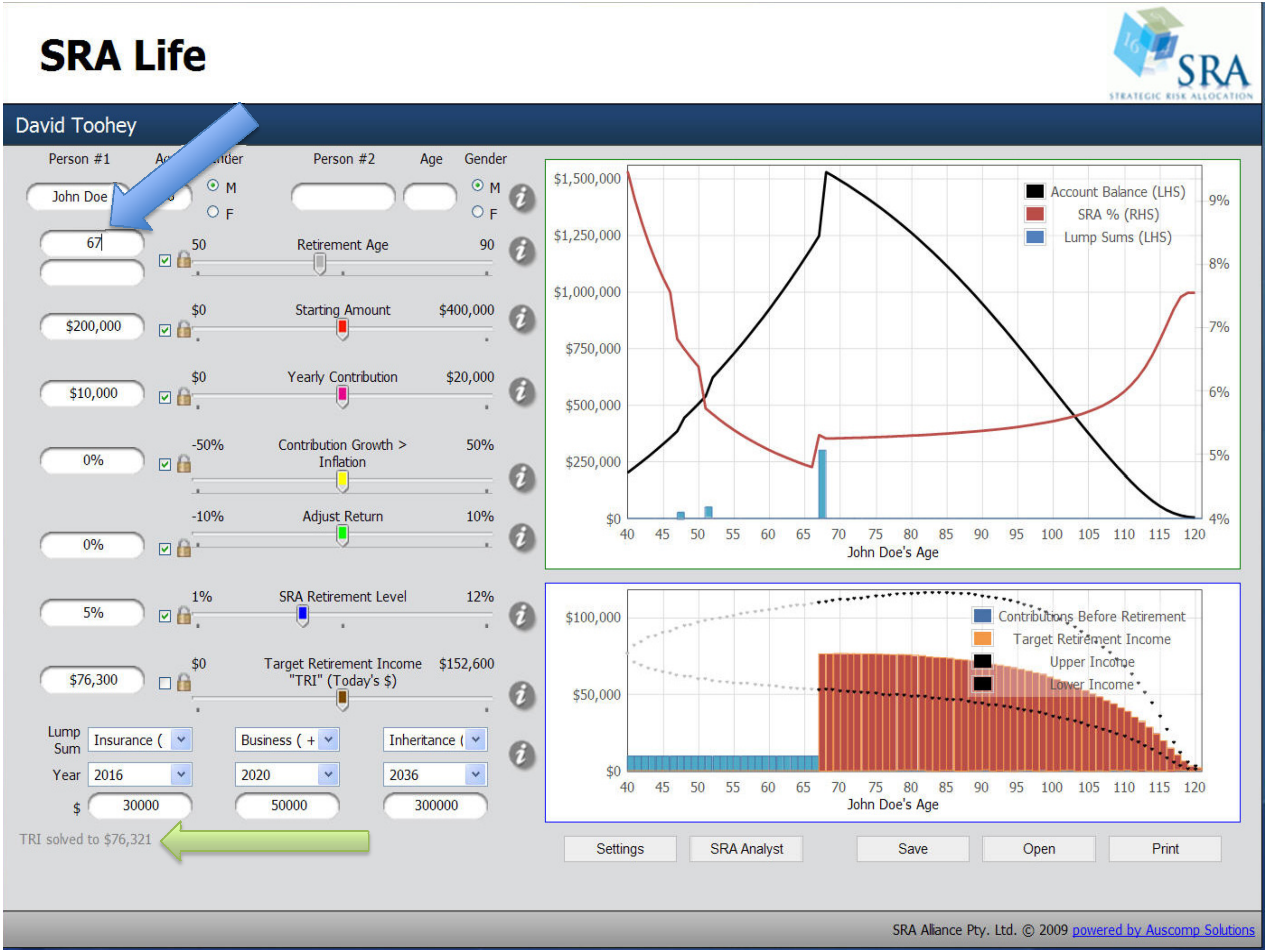
SRA Life
SRA
STRATEGIC RISK ALLOCATION
David Toohey
Person #1
Gender
John Doe
M
F
Person #2
Age
Gender
M
F
67
50
Retirement Age
90
$200,000
$0
Starting Amount
$400,000
$10,000
$0
Yearly Contribution
$20,000
0%
-50%
Contribution Growth > Inflation
50%
0%
-10%
Adjust Return
10%
5%
1%
SRA Retirement Level
12%
$76,300
$0
Target Retirement Income "TRI" (Today's $)
$152,600
Lump Sum
Insurance (
Business (+
Inheritance (
Year
2016
2020
2036
$
30000
50000
300000
TRI solved to $76,321
$1,500,000
$1,250,000
$1,000,000
$750,000
$500,000
$250,000
$0
Account Balance (LHS)
SRA % (RHS)
Lump Sums (LHS)
9%
8%
7%
6%
5%
4%
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
$100,000
$50,000
$0
Contributions Before Retirement
Target Retirement Income
Upper Income
Lower Income
40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
John Doe's Age
Settings
SRA Analyst
Save
Open
Print
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Action

- Plot a dynamic risk path
- Stick to the path, even when the portfolio value falls.
- Allocate a risk budget to the investment manager
- The investor should either increase contributions or extend the target retirement age, or both.

SRA Analyst

SRA STRATEGIC RISK ALLOCATION

David Toohey

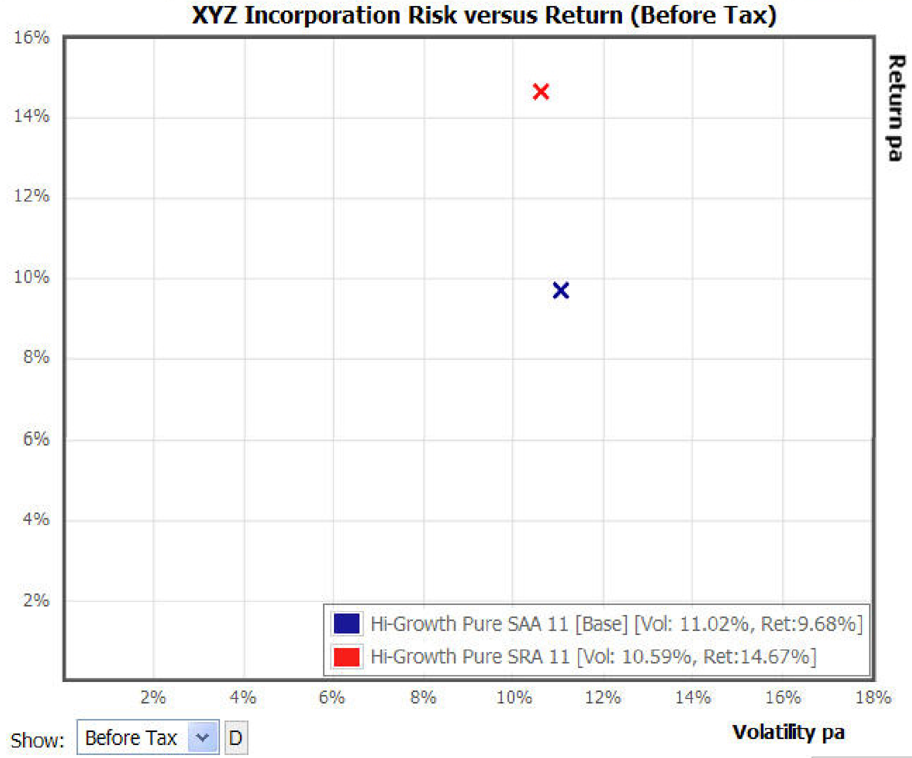
Risk Profile	Hi-Growth Pure SAA 1		Hi-Growth Hybrid 11		Hi-Growth Pure SRA 1	
	%	$	%	$	%	$
Aust Eq:	45	$450,000	35	$350,000	0	$0
Intl Eq:	35	$350,000	0	$0	0	$0
Property:	15	$150,000	0	$0	0	$0
High Yield:	0	$0	0	$0	0	$0
Fixed Int.:	0	$0	0	$0	0	$0
Cash:	5	$50,000	5	$50,000	5	$50,000
SRA-4:	0	$0	0	$0	5	$50,000
SRA-9:	0	$0	20	$200,000	50	$500,000
SRA-16:	0	$0	40	$400,000	40	$400,000
Total:	100	$1,000,000	100	$1,000,000	100	$1,000,000
Borrow:	0	$0	0	$0	0	$0
Net:	100	$1,000,000	100	$1,000,000	100	$1,000,000

Compare Base Case with: ☐ ☑

Summary	**Base Case** *Hi-Growth Pure SAA 11*	**Selected** *Hi-Growth Pure SRA 11*	**Difference**
Expected Return Bef.Tax %pa:	9.68	14.67	4.99
Expected Return Aft.Tax %pa:	8.77	12.71	3.93
Volatility (SRA) %pa:	11.02	10.59	-0.43
Prob[1 year Return Bef.Tax < 0]:	19.46	7.71	-11.75
Effective Alloc. To Aust.Equities %:	70.38	31.7	-38.68
Effective Allocation To SRA-16:	0	48	48
Fees (Dealer Grp + Funds) %pa:	2.4	2.43	0.03
Exp'd Franking Credits %pa:	0.63	0.14	-0.49
Exp'd Disc'ed Capital Gains %pa:	4.48	1.94	-2.53

Selected Risk Profile: *Hi-Growth Pure SRA 11*		SRA:	$105,867
		SRA%:	10.59

Return vs Risk | **Probability of Poor Return** | **Cumulative Return Projection**



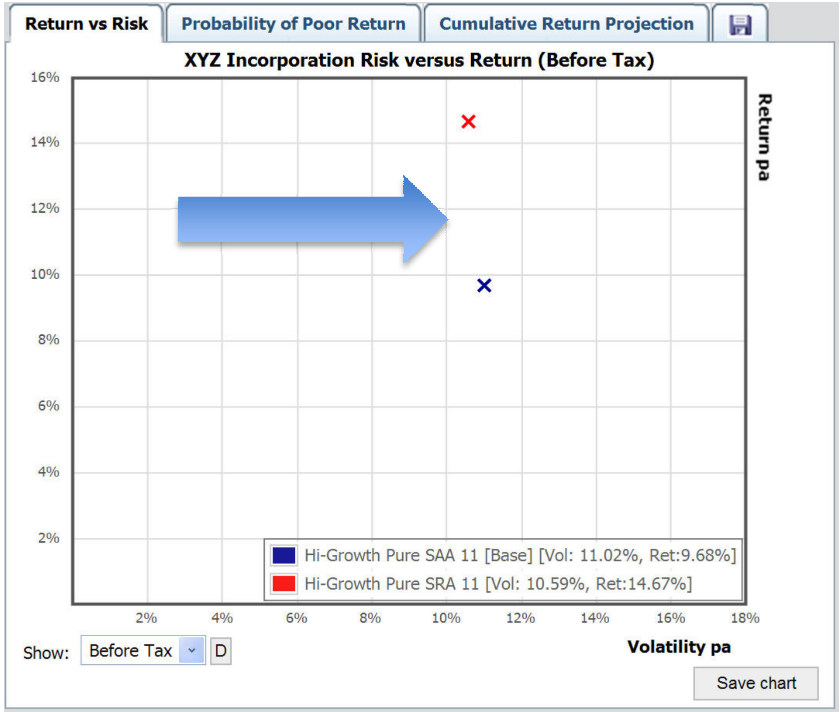
Show: Before Tax D

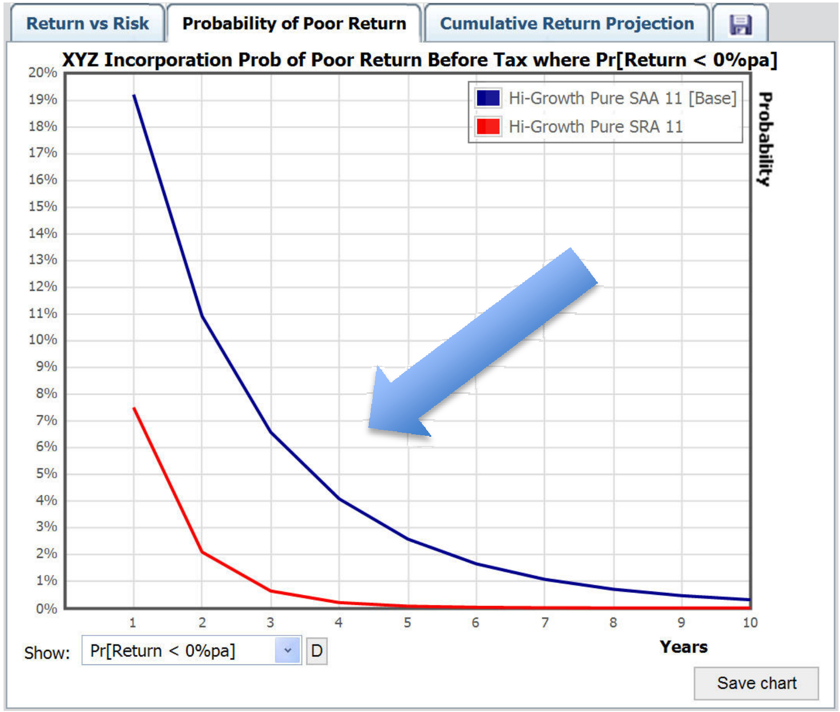
Save chart

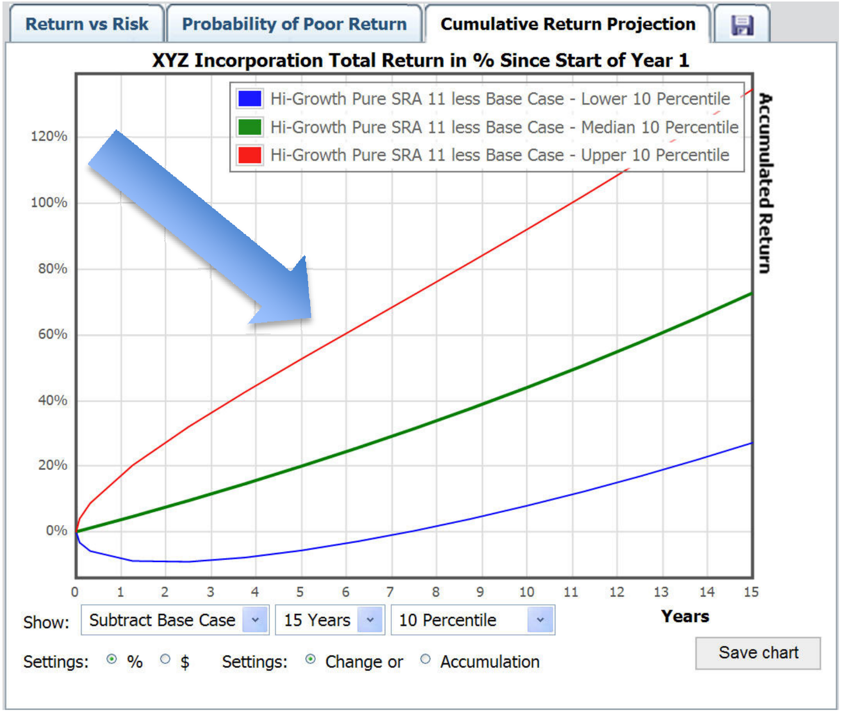
Expected return is shown on the y-axis (how high the X is), and risk is shown on the x-axis (how far to the right the X is). Expected returns are calculated entirely from user inputs; volatilities are calculated from the SRA 2008 Assumptions.

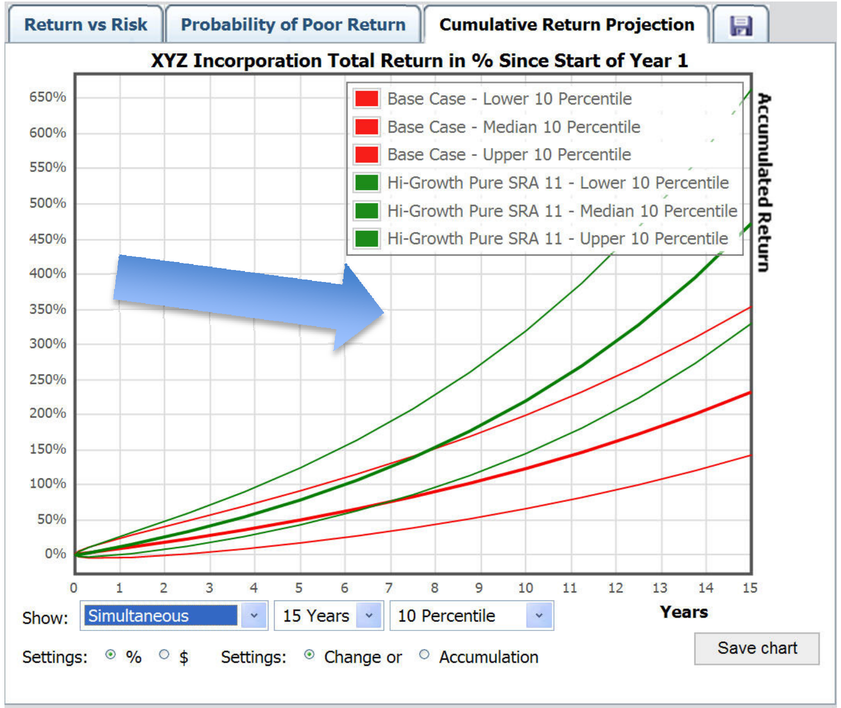
Short | Medium | Long — *Short Tour, page 1 of 12. Paused.*

Settings | SRA Life | Save | Print | Open


Return vs Risk
Probability of Poor Return
Cumulative Return Projection
XYZ Incorporation Risk versus Return (Before Tax)
16%
14%
12%
10%
8%
6%
4%
2%
Return pa
Hi-Growth Pure SAA 11 [Base] [Vol: 11.02%, Ret:9.68%]
Hi-Growth Pure SRA 11 [Vol: 10.59%, Ret:14.67%]
2%
4%
6%
8%
10%
12%
14%
16%
18%
Show:
Before Tax
D
Volatility pa
Save chart


Return vs Risk
Probability of Poor Return
Cumulative Return Projection
XYZ Incorporation Prob of Poor Return Before Tax where Pr[Return < 0%pa]
20%
19%
18%
17%
16%
15%
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Hi-Growth Pure SAA 11 [Base]
Hi-Growth Pure SRA 11
Probability
1
2
3
4
5
6
7
8
9
10
Show:
Pr[Return < 0%pa]
D
Years
Save chart


Return vs Risk
Probability of Poor Return
Cumulative Return Projection
XYZ Incorporation Total Return in % Since Start of Year 1
Hi-Growth Pure SRA 11 less Base Case - Lower 10 Percentile
Hi-Growth Pure SRA 11 less Base Case - Median 10 Percentile
Hi-Growth Pure SRA 11 less Base Case - Upper 10 Percentile
120%
100%
80%
60%
40%
20%
0%
Accumulated Return
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Show:
Subtract Base Case
15 Years
10 Percentile
Years
Save chart
Settings:
%
$
Settings:
Change or
Accumulation


Return vs Risk
Probability of Poor Return
Cumulative Return Projection
XYZ Incorporation Total Return in % Since Start of Year 1
650%
600%
550%
500%
450%
400%
350%
300%
250%
200%
150%
100%
50%
0%
Base Case - Lower 10 Percentile
Base Case - Median 10 Percentile
Base Case - Upper 10 Percentile
Hi-Growth Pure SRA 11 - Lower 10 Percentile
Hi-Growth Pure SRA 11 - Median 10 Percentile
Hi-Growth Pure SRA 11 - Upper 10 Percentile
Accumulated Return
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Show:
Simultaneous
15 Years
10 Percentile
Years
Save chart
Settings:
%
$
Settings:
Change or
Accumulation

SRA Adviser Tool

SRA
STRATEGIC RISK ALLOCATION

David Toohey preference settings ...

General

Adviser Name:	David Toohey	D
Borrowing Margin over RBA Cash Rate (%pa):	2	D
RBA Cash Rate (%pa):	7.25	D
Average Alpha (excl. Cash) (%pa):	1	D

Reset Details | Save Client Details | Open Client Details

Client

Client Name:	XYZ Incorporation	D
Client's Net Funds Under Advice (FUA):	1000000	D
Borrowing (% of FUA):	0	D
Client's Gross Funds Under Advice:	$1,000,000	
Selection Advantage in Direct Aust Eq:	0	D
Client's Tax Status:	SMSF-Pension	D
Aust Eq held directly as a % of total Aust Eq:	100	D

Expected Returns

Enter the Expected Return (%pa Over Cash Before Tax & Fees)

Aust Equities:	4.9	D	Cash:	0	D
Int'l Equities:	3.5	D			
Property:	2	D	SRA-4:	4	D
High Yield:	1.5	D	SRA-9:	7	D
Fixed Int.:	0.5	D	SRA-16 (after fees):	15	D

Fees

Net GST rate (%):	2.5	D
Fees (Total MER)- SRA-4 and SRA-9 (%pa+GST):	1.25	
Fees - Discount For Managed Fund (%pa+GST):	0.8	D
Fees - To Dealer Group (%pa+GST):	2.42	
☐ Over-Ride Automatic Fee Calculation (%pa+GST):	2	D
% of Portfolio on Admin Platform:	100	D

I have set these preferences consistent with my "Fitzpatrick" dealer group directions

No | Yes, Start SRA Analyst | Yes, Start SRA Life

Key Points

INVESTMENT SCIENCE

Targeting TRI – It's the clients true benchmark

SAA Has Failed Investors

SRA – Reducing constraints lifts returns.

SRA Analyst / SRA Life - "Sticking to your risk path" is the "new buy & hold"