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Model & Process Uncertainty in Annuitization Decisions

Kyle Rudden

Consulting Actuary & Managing Director
KR Services Limited

kyle.rudden@kr-consulting.com

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Real Life Question

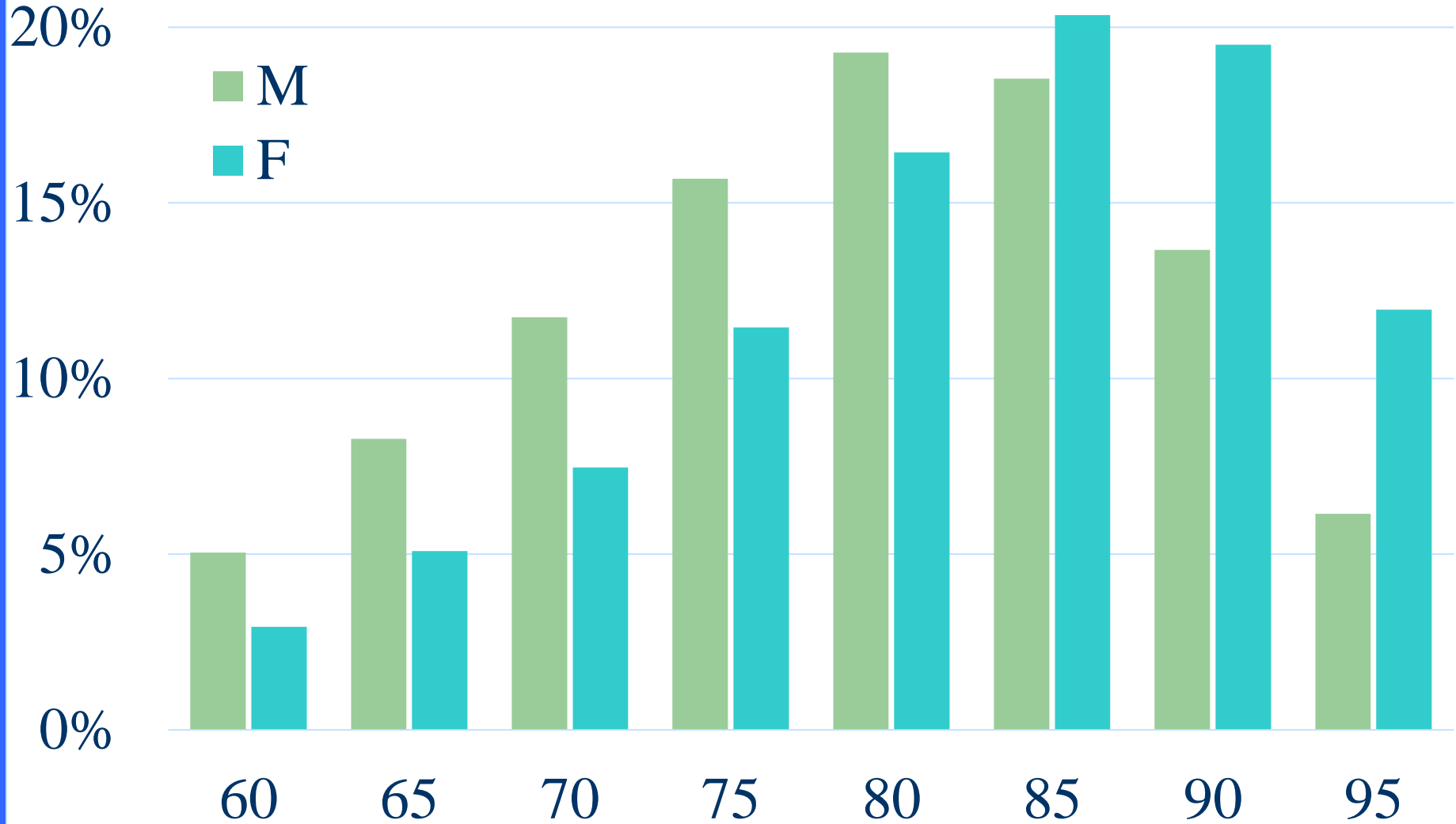
- Small Defined Contribution (DC) pension plan with mandatory annuitization at retirement.
- Non-executive director and “pensions expert”:
 - “Why are you giving your money to insurance companies? They will earn 5% and give you 3%. The pension plan should pay its pensions directly.”
- Managing Director asks you for help.

Process Risk

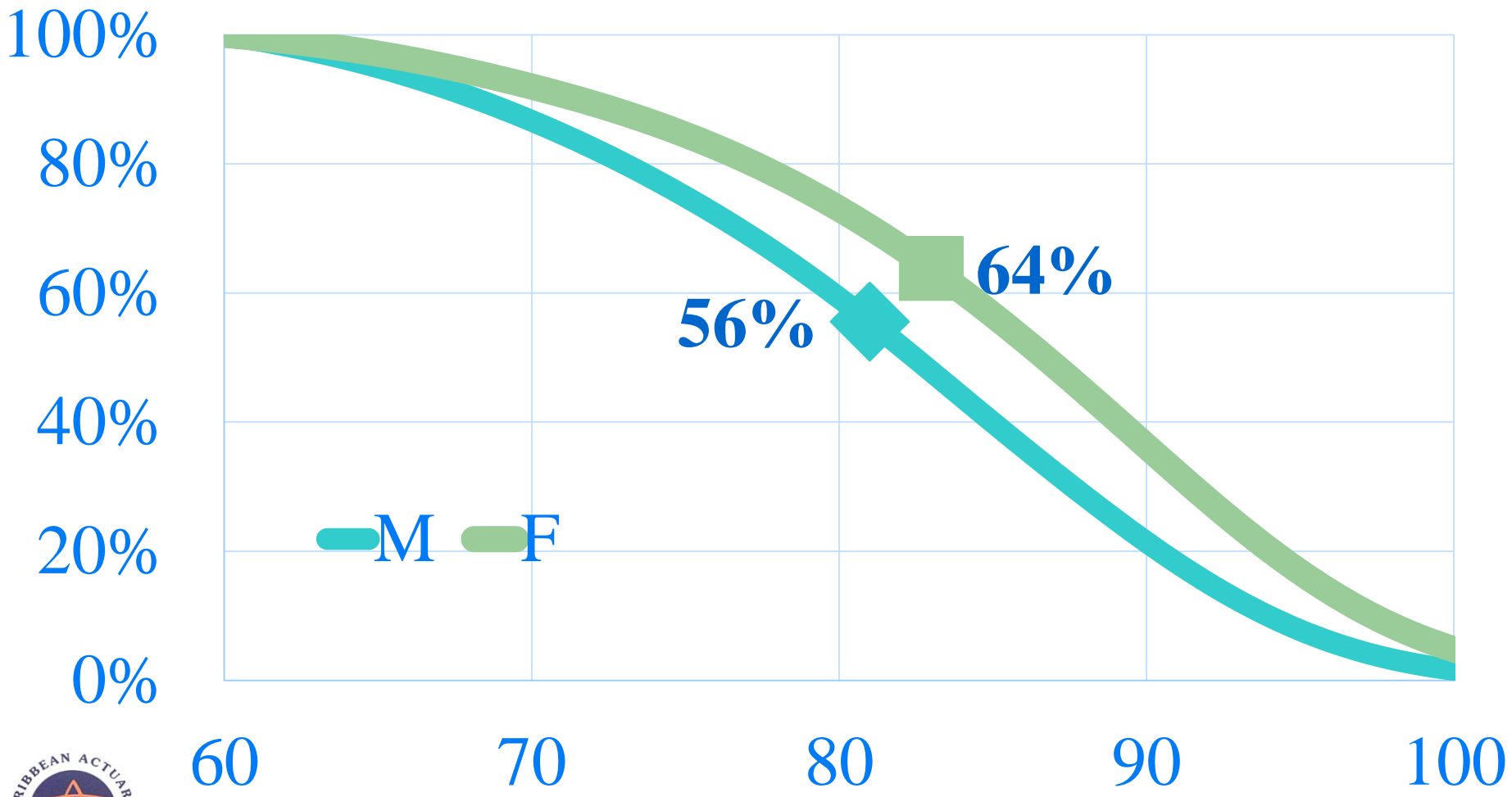
- The risk associated with the underlying random insurance process you are trying to model.
- Even if you know the underlying mortality rates are GAM 94, individual experience will vary.
- Expectation of life age 60 under GAM94 static:
 - M 81
 - F 84

Probability of Death By Age

GAM94 Static, Current Age 60

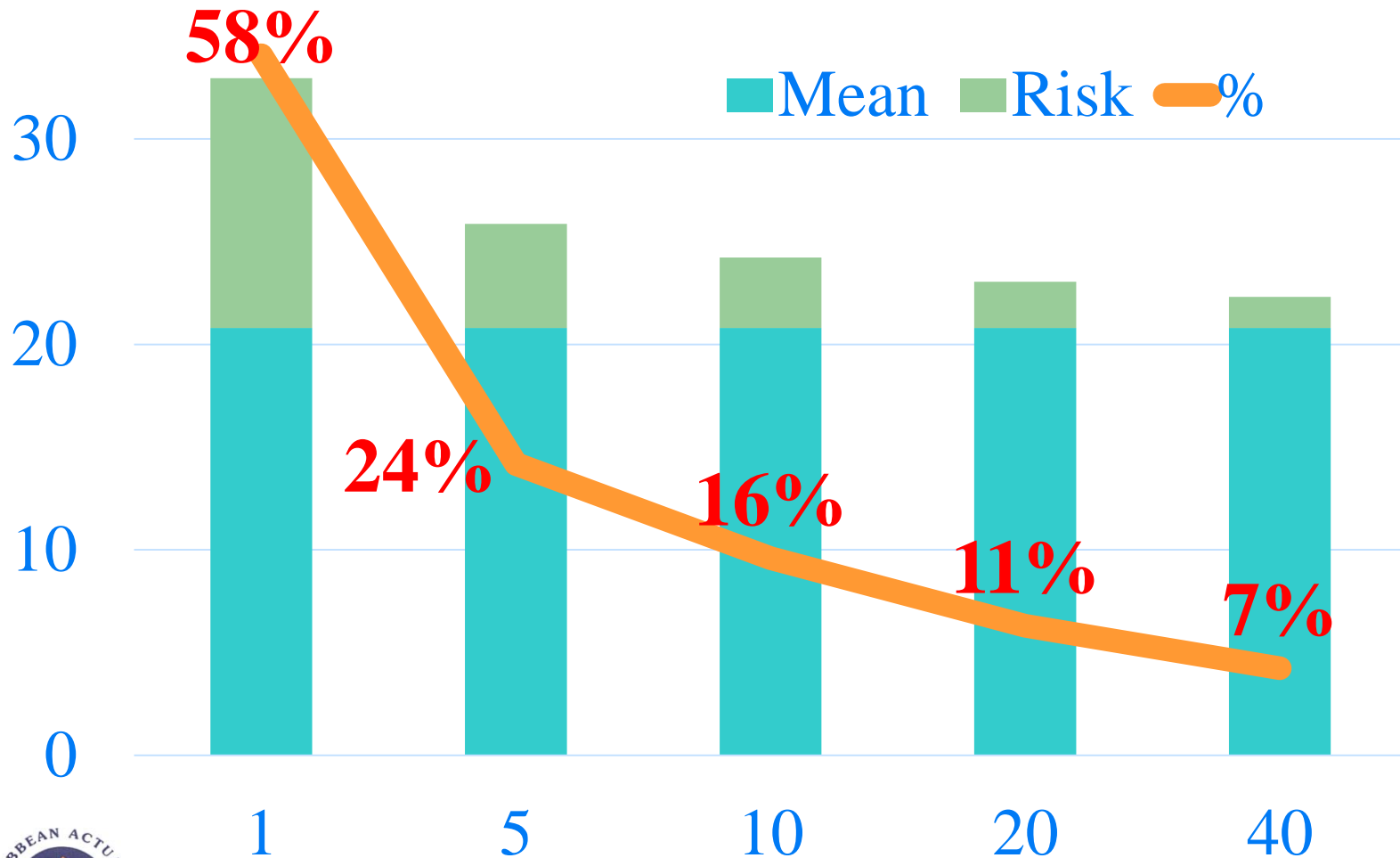


Probability of Death Above Age x



Life Expectancy + 90% Risk Margin

Average vs # independent lives



Caribbean Background

- Most tax approved retirement savings systems in the English speaking Caribbean have mandatory annuitization requirements.
- Unlike Canada, UK and US, there are limited cash conversion or income drawdown options.
- Typically, 75% of an accumulated fund / accrued pension at retirement must be annuitized.
- Jurisdictions with low income taxes tend not to have mandatory annuitization.

Some Research

- Lifespan uncertainty => **a rational consumer should invest in annuities** over other investments.
 - **Menachem Yaari** in 1965 and many papers since, including several by **Jeffery R Brown**
- The absence of annuities is “ill-understood”
 - **Franco Modigliani**, 1998 Nobel Prize acceptance speech

Some More Research

- Decision Complexity as a Barrier to Annuitization
Brown, Kapteyn, Luttmer, Mitchell, 2013:
 - “... **people have difficulty valuing annuities**, and this, instead of a preference for lumpsums, helps explain observed low annuity demand. ... many consumers do not make optimizing decisions, ...”
- **Annuitization decisions are highly susceptible to “framing”** i.e. how you present the information.

Communication

- How do you **communicate** the risks inherent in an annuitization decision?
- Communication =
 - Understand how others will receive information
 - Adjust your delivery accordingly – make it relevant, practical, useful, understood ...
 - The main challenge to actuaries becoming business leaders / trusted advisors

Model Risk

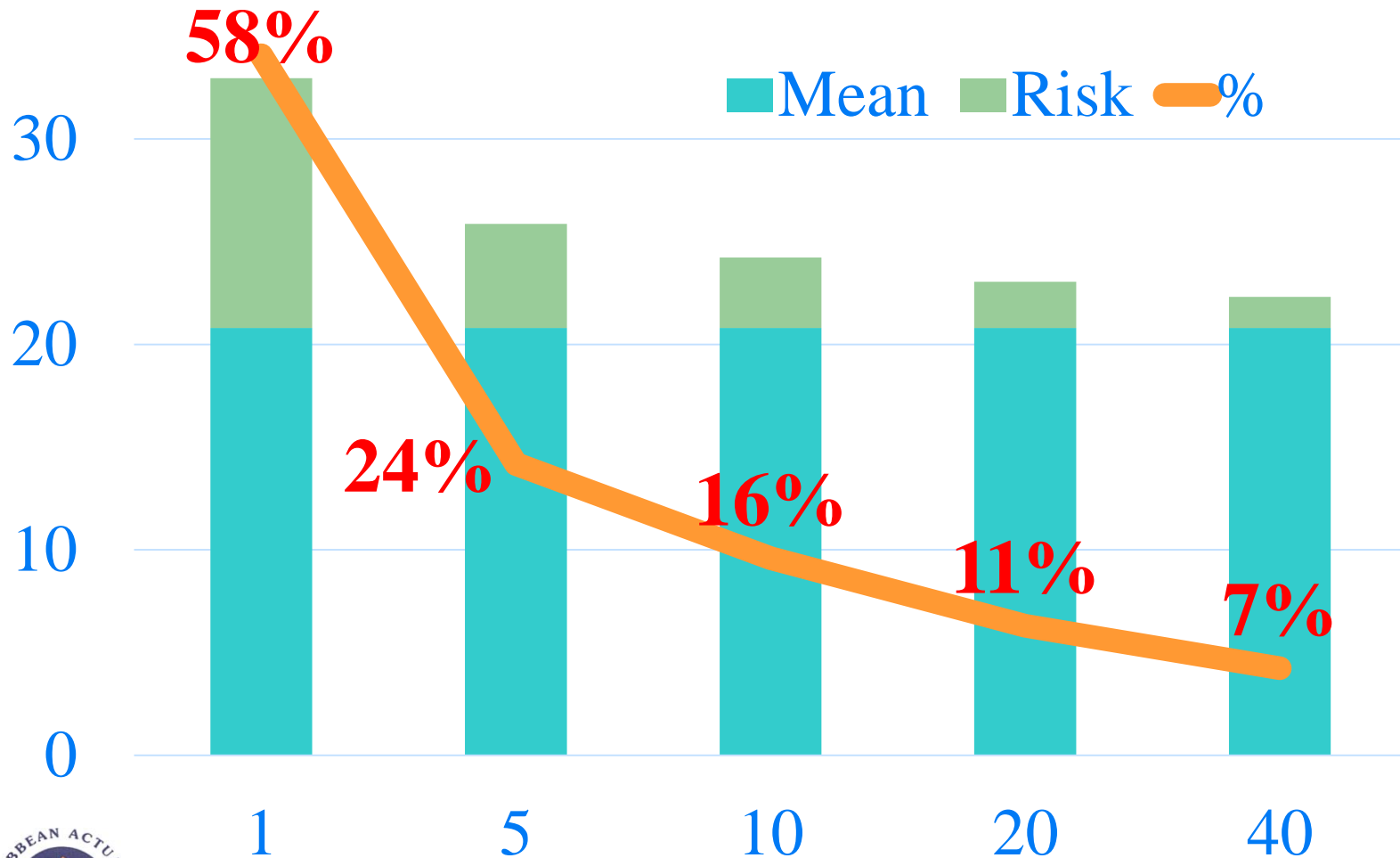
- The risk that the model you are using is wrong.
- Example – parameter specification risk
- The underlying mortality rates are not GAM 94!
 - Cohort effects
 - Non-homogeneous data
 - Changing mortality over time.
- Increases risk!

Real Life Question

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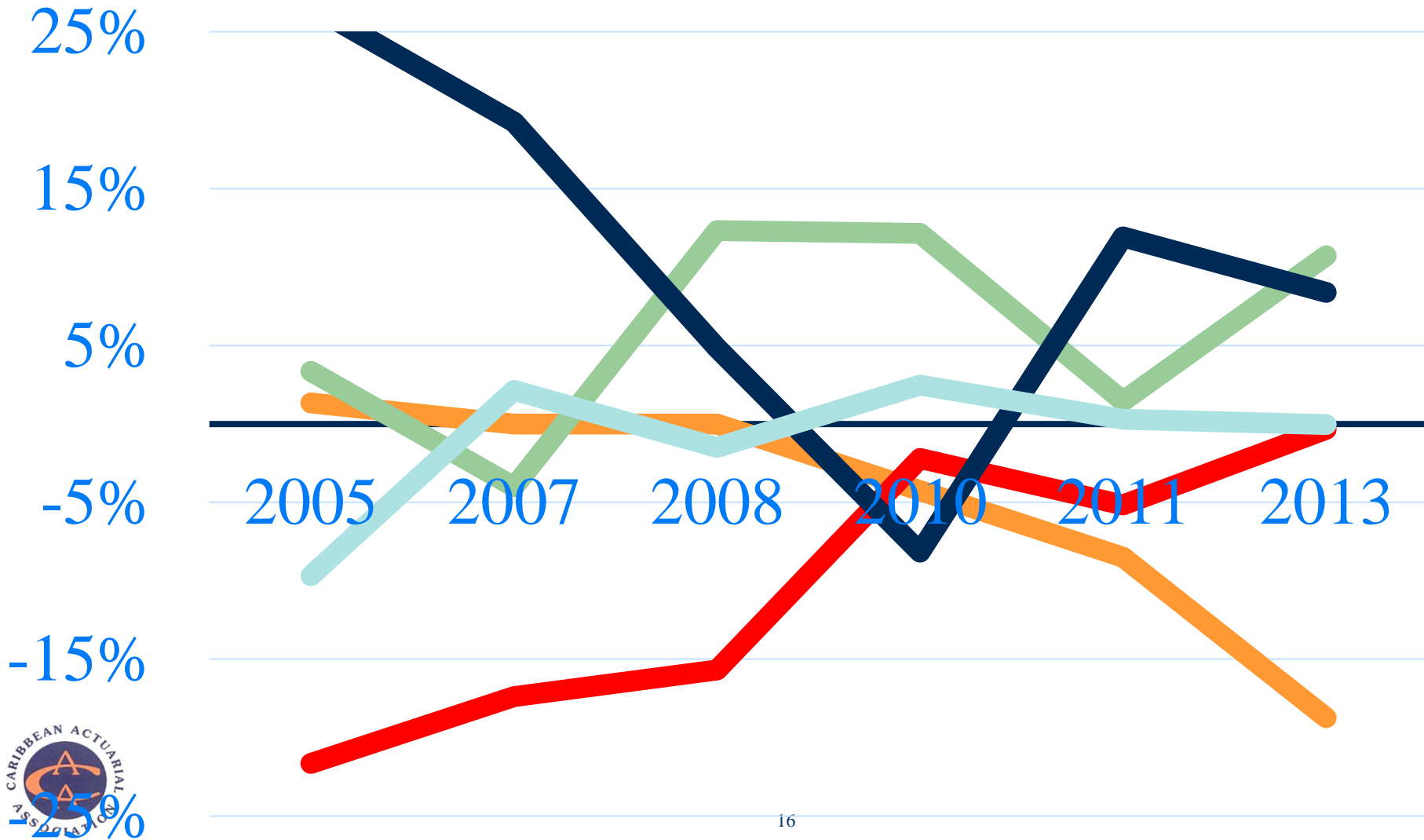
Life Expectancy + 90% Risk Margin

Average vs # independent lives



Annuity Purchase Rates 2005-2013

Trinidad Company % of Average



Summary

- Individuals given annuitization options are not well equipped to understand the risks involved.
- Relatively small number of annuitants can pool to deal with process risk.
- Model risk is far harder to deal with.
- These are difficult concepts to communicate in a way that is useful to our clients.

Discussions & Questions





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