

# Welcome to Milliman's Virtual Lunchtime Briefing

- The briefing will begin in a few minutes.

30<sup>th</sup> April 2020



# Virtual Meeting Best Practices

- Mute: Keep yourself on mute at all times.
- Video: Keep your video turned off. Only presenters will be on video.
- Q&A: Use the chat function within the meeting for questions.

## Agenda

Time	Topic	Presenter
1:00pm – 1:02pm	Welcome	Kevin Manning
1:02pm – 1.20pm	Regulatory update	Sinead Clarke
1.20pm – 1.40pm	Modernising Actuarial Systems	Joseph Sloan
1.40pm – 1.55pm	Liquidity Risk Management	Russell Ward
1.55pm – 2.00pm	Q&A session	Kevin Manning

A stylized illustration of a diverse crowd of people, all wearing blue face masks. The people are depicted in various colors and styles, representing different ethnicities and ages. The background is a dark, muted blue. The text is overlaid on the upper left portion of the image.

# Regulatory and Market update: Covid-19

Sinéad Clarke

30 APRIL 2020

# Regulatory response

## Central Bank of Ireland

Early March

- Covid-19 surveys – financial impact and operational readiness
- Request for notification of material adverse developments

March 24

- CBI issues “Dear Compliance officer” letter
- Supervisory flexibility regarding reporting and public disclosure

March 29

- CBI issues “Dear CEO” letter to insurers
- Focus on treating customers fairly

April 2

- Launched Covid-19 Consumer Hub on website
- FAQ on dividend payments

Ongoing

- Ongoing interaction with some insurers, consistent with other regulators across Europe

<https://centralbank.ie/consumer-hub/covid-19>

## EIOPA

March 17

- Statement issued addressing business continuity and solvency capital position
- Deadline for SII 2020 Impact Assessment extended (1 June)

March 20

- Recommendations on supervisory flexibility regarding the deadline of supervisory reporting and public disclosure

April 1

- Call to mitigate the impact on consumers

April 2

- EIOPA urges that “(re)insurers temporarily suspend all discretionary dividend distributions and share buy backs aimed at remunerating shareholders”.
- Further extensions and postponements / cancellations

On-going

- Publication of relevant risk free term structures and equity risk symmetric adjustment on weekly basis

[https://www.eiopa.europa.eu/browse/covid-19-measures\\_en](https://www.eiopa.europa.eu/browse/covid-19-measures_en)

# Year End 2019 SFCRs: Covid-19

“The outbreak of the COVID-19 global pandemic during Q1 2020 has caused significant and unprecedented global uncertainty and market volatility.”

RSA

“The Company is in a strong capital and financial position and expects Solvency II coverage to remain within its target operating range.”

FBD

“...the Company is capitalised to withstand severe but plausible events, and our annual Own Risk and Solvency Assessment (ORSA) process includes multiple adverse scenarios, including from events such as a pandemic.”

New Ireland

“As part of Hannover Re’s routine business continuity management and as a response to the emergence of the crisis, Hannover Re has taken significant measures to ensure business continuity.”

Hannover Re

*“The Company is monitoring the situation closely, including carrying out stress and scenario testing..”*

Irish Life Health

“...the Board has determined to defer any decision to declare a dividend from year end retained earnings given the volatility and uncertainty arising from COVID-19.”

Irish Life

# Impact on Insurance Industry (1)



## Market Volatility

- Fall in asset values
- Impact on solvency
- Liquidity
- Credit risk
- Valuation of property investments



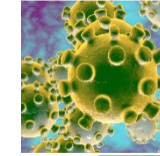
## Business Plans

- Uncertainty in sales volumes and persistency
- Update to business plans and stress tests
- Ad-hoc ORSAs



## Risk Management

- Emerging risk register
- Recovery Plans
- Reinsurance and capital management
- Pandemic modelling



## Claims experience

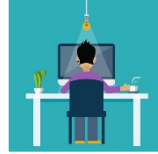
- Mortality experience
- Refunds on motor policies and health insurance
- Exclusions

# Impact on Insurance Industry (2)



## Regulatory Risk

- Increased regulatory engagement
- Dividend payments
- Treating customers fairly



## Operational Issues

- Workforce working remotely
- Outsourced providers
- Distribution network
- Consumer impact



## Reputation

- Premium refunds
- Treating customers fairly
- Exclusions
- Business interruption insurance



## Opportunities

- Digitalisation
- Pandemic cover
- Capital management
- Other?

<https://ie.milliman.com/en-gb/coronavirus-covid-19>



# For more information:

<https://ie.milliman.com/en-gb/coronavirus-covid-19>

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# Actuarial Modelling: Python case study

Joseph Sloan

30 APRIL 2020

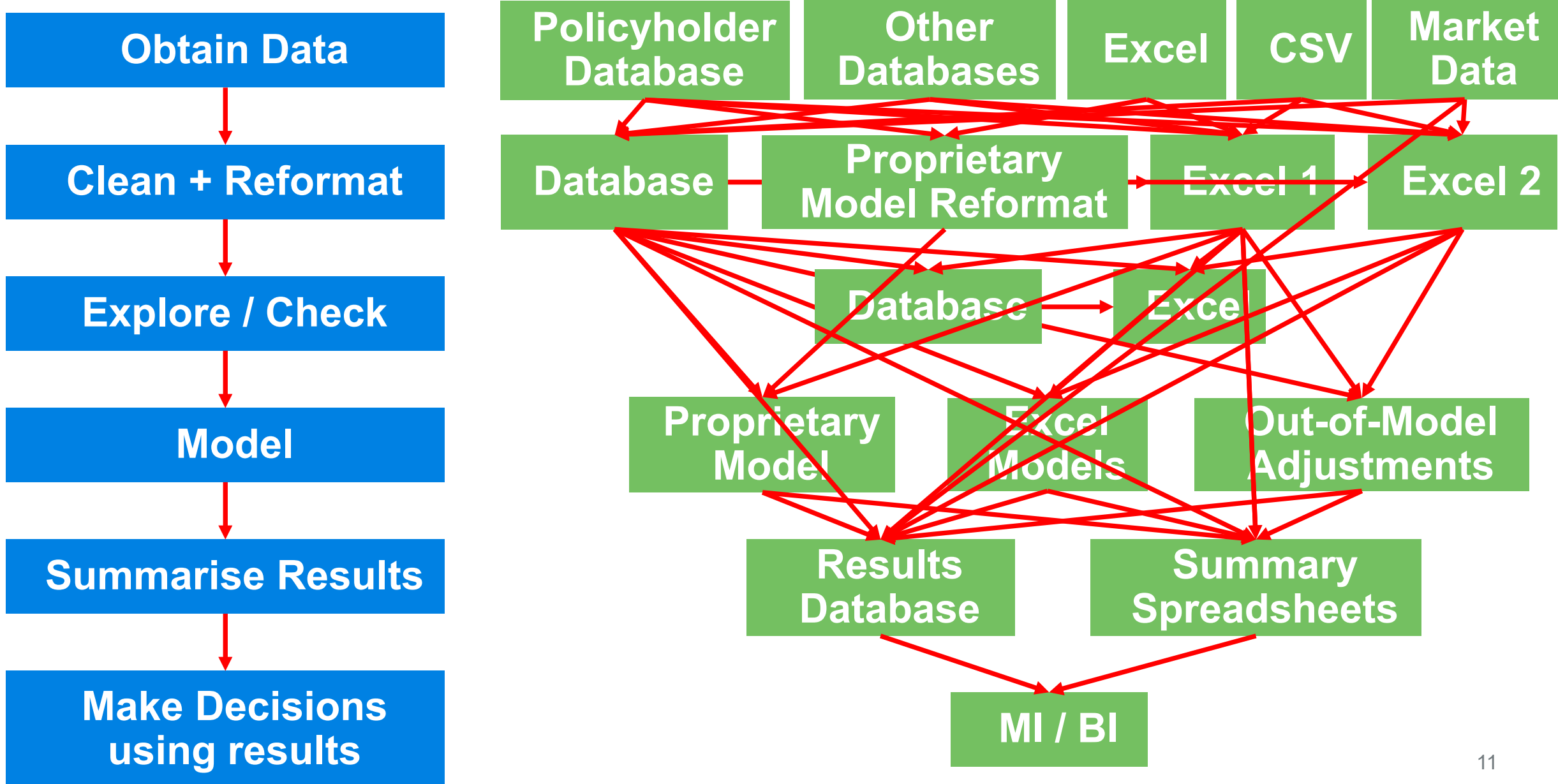


# Actuarial Models

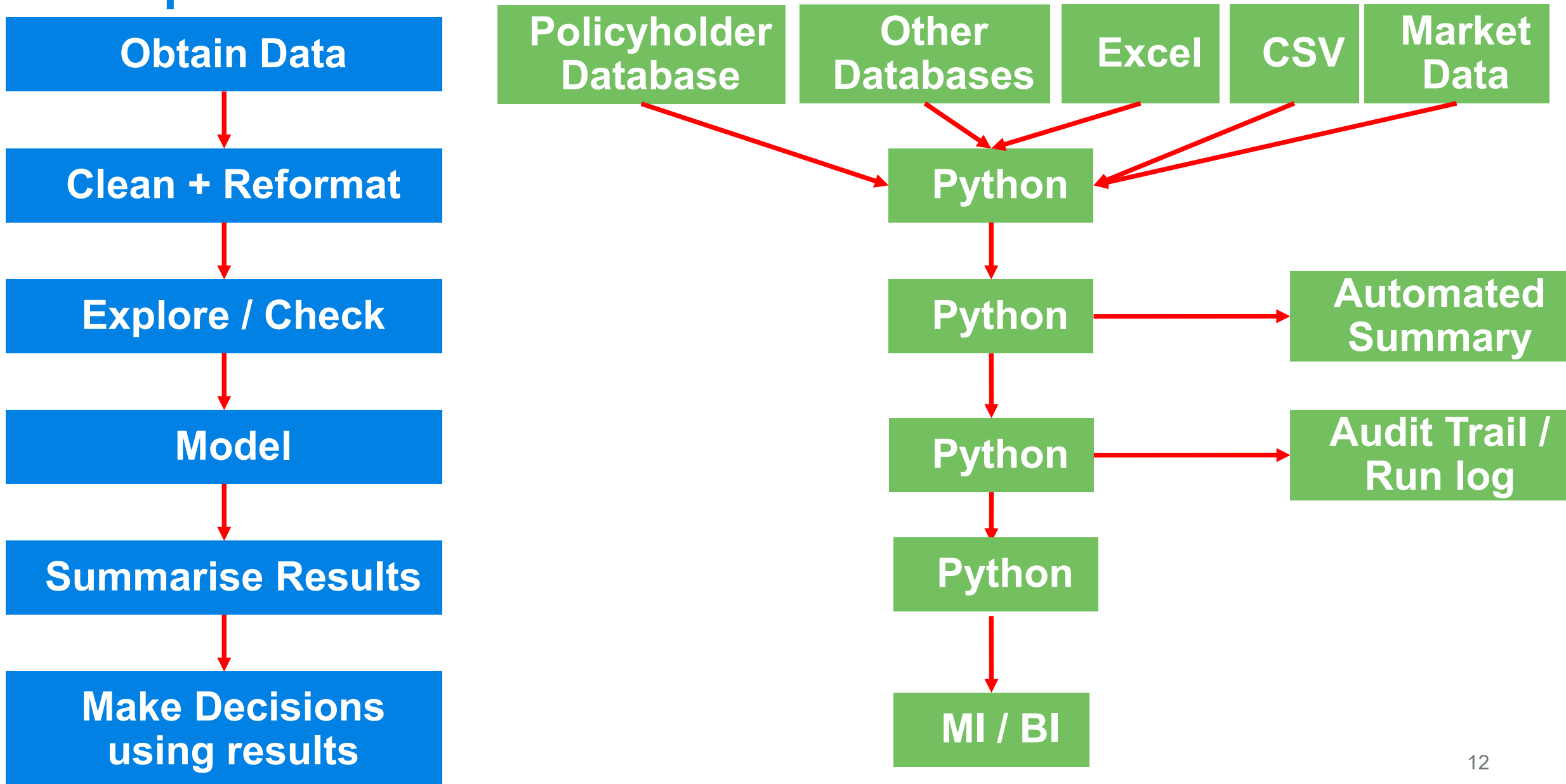


- **Benefits of enhancing Actuarial models:**
  - Reduce costs through automation and harmonisation
  - Risk mitigation
  - Allow for high value resources to do high value work
  - Ability to meet demands from regulators
  - Access to information faster
  - Improved accuracy

# Traditional Actuarial Process



# Example of a Modernised Actuarial Process



# What is Python?

General  
purpose  
programming  
language

High level &  
concise

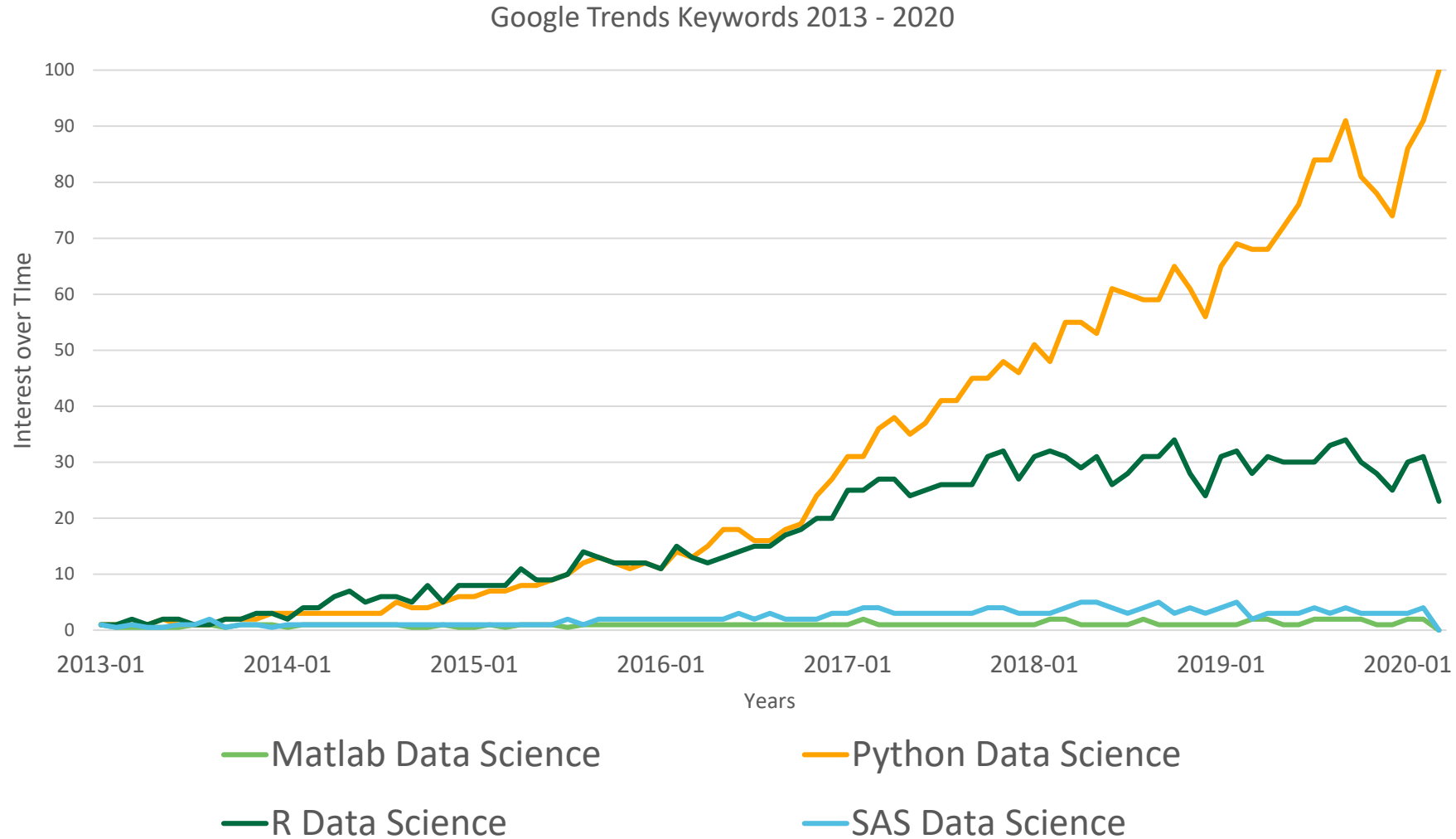
Batteries  
Included

Relatively easy  
to learn

Highly  
Extensible

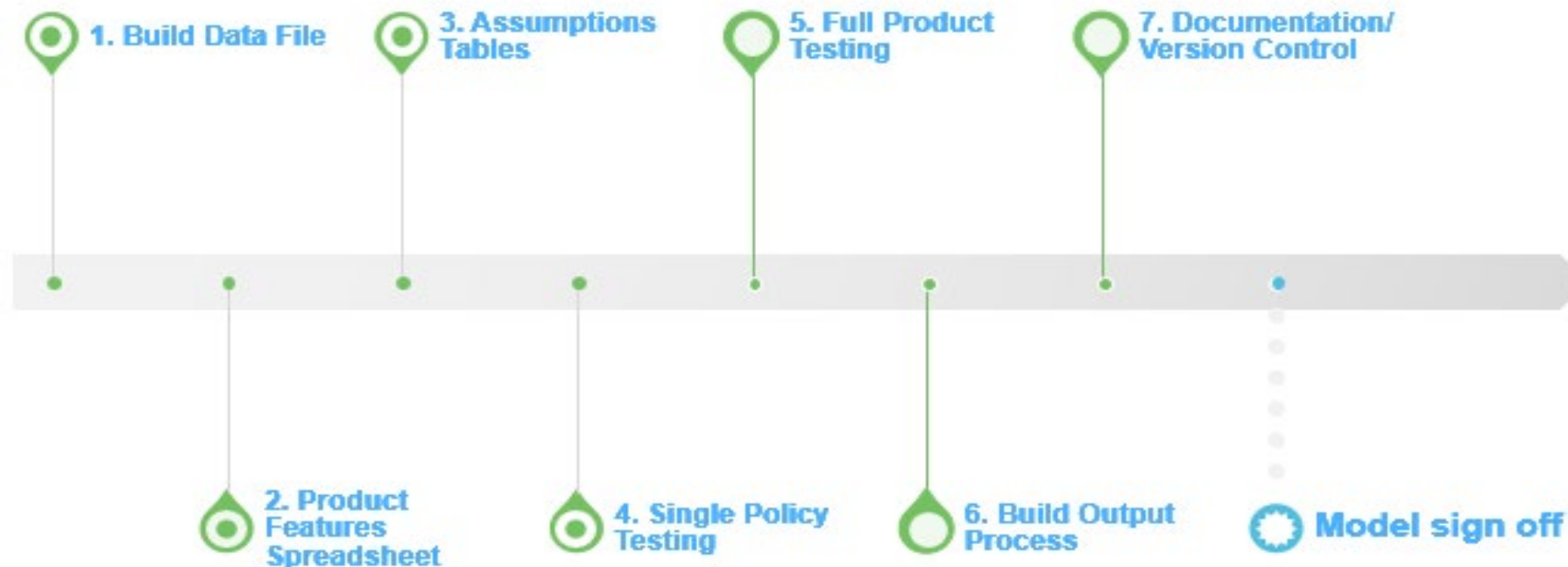
Open-Source

# Trends



# Case Study 1: Replacing an existing IFRS valuation process using Python

- **Previous process:**
  - Discounted cash-flow model, Access database and Excel
  - 4 days to complete monthly valuation
- **Steps involved in the migration**



# Case Study 1: IFRS Model on Python: Main Features (1/2)

- **Fully automated workflow for monthly valuation**

- Extracts > data file > DCF model > results > reports

“BM” – Before Migration  
“AM” – After Migration

- **Time to produce monthly results:**



- **80% reduction in discounted cash flow model run times**

- Pandas
- Numba



# Case Study 1: IFRS Model on Python: Main Features (2/2)

- **Fast model build:**
  - Reduction in lines of code (1000 lines of Python vs 8000 in original model)
- **Accessible data file**
- **Automated checks and analysis reports**
- **Interaction with other languages & software** e.g. SQL, Microsoft Excel/Access
- **Data storage**
  - File sizes are very small – save large volumes of policy-level data without overloading servers

# Case Study 2: Solvency II Asset Look-through on Python

- **Previous process**

- 500+ asset files to look through the asset data and calculate the appropriate standard formula shocks to use
- Manual and time-consuming process in Excel – 1 week to complete

- **Revised process**

- Single Python script
- 1 hour to do the full end-to-end calculation

- **Python is a great tool for this type of work:**

- Large data set
- Identifying data quality issues
- Speed
- One location for calculations
- Informative output

# Benefits and Challenges of using Python for Actuarial Models

## Benefits

- Time improvements
- Greater end-to-end capability
- Faster run times
- Handle much more data
- Better output
- Risk mitigation
- Flexibility with working with other systems and software

## Challenges

- Investment in skills
- Development time
- Less user-friendly interface
- Solutions can require “outside of the box” thinking

# Improving Actuarial Models

## BENCHMARKING

- Modelling best practices
- Assessing model maturity
- Model gap analysis
- Technical reviews

## MODEL BUILD

- New products and portfolios
- Change in regulation
- Mergers and consolidation
- Replace legacy systems
- Internal model design and build

## GOVERNANCE AND CONTROL

- Control data input and output
- Monitor assumptions
- Creating objective modelling frameworks
- Control existing and emerging model risks
- Model change control

## MODEL VALIDATION

- First- and second-line model validation/testing
- Data validation and quality assessment
- System and process validation
- Internal model validation

## AUTOMATION

- Model performance and efficiency review
- Data analytics solutions
- End-to-end process build
- Efficient profit attribution and analysis of change



# For more information:

<https://ie.milliman.com/en-gb/insurance/financial-transformation>

<https://www.milliman-mind.com/>

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# Liquidity Risk

## Recent Developments

Russell Ward

30 APRIL 2020



# Liquidity Risk - why now?

## Past experience

- Fortunately, history does not provide many examples of insurers suffering material liquidity related problems, but
- Past performance is not necessarily a reliable guide to the future!

## Looking ahead

- EMIR (central clearing and broader margin requirements)
- Changes in the liquidity of underlying investment markets
- Pressures in the banking sector
- Shift of business mix towards unit-linked
- Greater investment in illiquid assets

# Open-ended funds - recent events

Event	Points to note
June 2019 – LF Woodford Equity Income Fund	<p>Fund had invested significantly in illiquid assets. Poor performance resulted in redemptions that depleted the liquid holdings making further redemptions increasingly difficult to satisfy.</p> <p>Trading in the fund suspended on 3 June 2019, initial indications were for a month but trading is not now expected to reopen until December – a suspension of 6 months<sup>1</sup></p>
June 2019 - H2O Asset Management	<p>Significant exposure (cEUR1.4bn) to illiquid private debt – Morningstar suspended its Bronze rating on H2O’s Allegro fund citing liquidity concerns and there were subsequently significant redemptions across the fund range.</p>
July 2019 – Lindsell Train UK Equity	<p>The £7.1 billion LF Lindsell Train UK Equity, the largest managed UK shares fund, would require 13 working days to sell 20 per cent of its portfolio if trading conditions were poor, according to Morningstar, a financial analyst<sup>3</sup></p>

1) Source various e.g. Morningstar 29 July 2019

2) Source FT Alphaville – “H2O Asset Management: Lars, liquidity and lingerie” - 24 June 2019

3) Source The Times – “Woodford fiasco turns spotlight onto fund liquidity” – July 6 2019



# The regulatory response

**IAIS** - Public Consultation Document: Holistic Framework for Systemic Risk in the Insurance Sector (November 2018)

**PRA** – PS18/19: Liquidity Risk Management For Insurers (September 2019)

**FCA** – PS19/24: enhanced liquidity reporting and risk management requirements for open-ended funds classed as an FIIA<sup>1</sup> (September 2019)

**BoE/FCA** - review of the liquidity risk posed by open-ended funds (July 2019)

1. Funds Investing in Inherently Illiquid Assets

# PS18/19 - recap

## Structure

- Liquidity risk management framework
- Sources of liquidity risk
- Stress testing
- Liquidity buffers
- Risk monitoring and reporting
- Liquidity contingency plan



# Bank / FCA reviews

***“Open-ended investment funds globally play an increasing and important role in the provision of finance. The FPC continues to judge that the mismatch between redemption terms and the liquidity of some funds’ assets has the potential to become a systemic issue”***

The review will consider:

- how funds’ redemption terms might be better aligned with the liquidity of their assets
- the effectiveness of measures that are already used to deal with misalignment of redemption terms and asset liquidity

AND

***“In 2019, the Bank will conduct a biennial exploratory exercise to explore the implications of a severe and broad-based liquidity stress affecting major UK banks simultaneously”***

- Results are expected to be published in mid-2020 (*exercise deferred due to Covid-19*)

Source: Financial Stability Report (July 2019) Bank of England

# Food for thought - risks from other sectors

PS18/19 encourages the development of early warning indicators and stress tests:



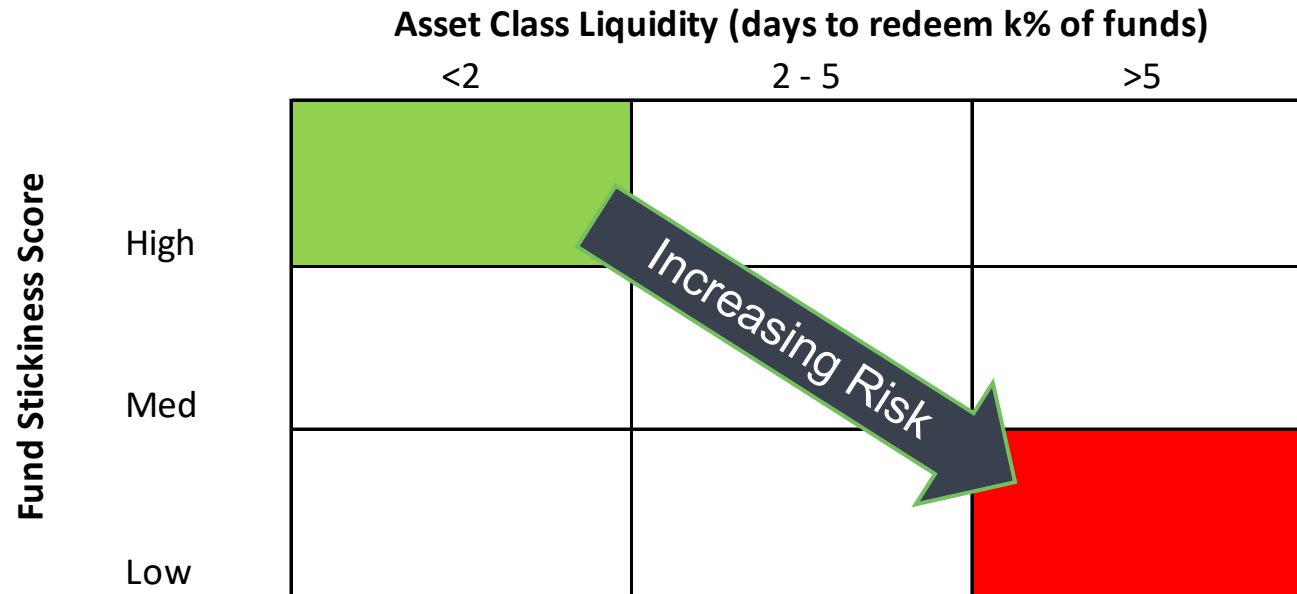
Milliman analysis using Bloomberg data

- Banking business models have been under pressure for some time from the low interest rate environment – and it just got worse.
- What are the possible liquidity implications for insurers?

Should there be a sector wide liquidity stress testing programme for insurers too?

# Food for thought - risks from open-ended funds

PS18/19 encourages the development of early warning indicators and stress tests:



Monitor exposures to open-ended funds according to underlying asset class liquidity and a measure of expected customer resilience in the face of financial market stress

# Covid-19 liquidity impacts to date

Open-ended funds

Drawdown

OIS - LIBOR

Dividends



# For more information:

<https://www.milliman.com/en/insight/liquidity-risk-management-an-area-of-increased-focus-for-insurers>

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