



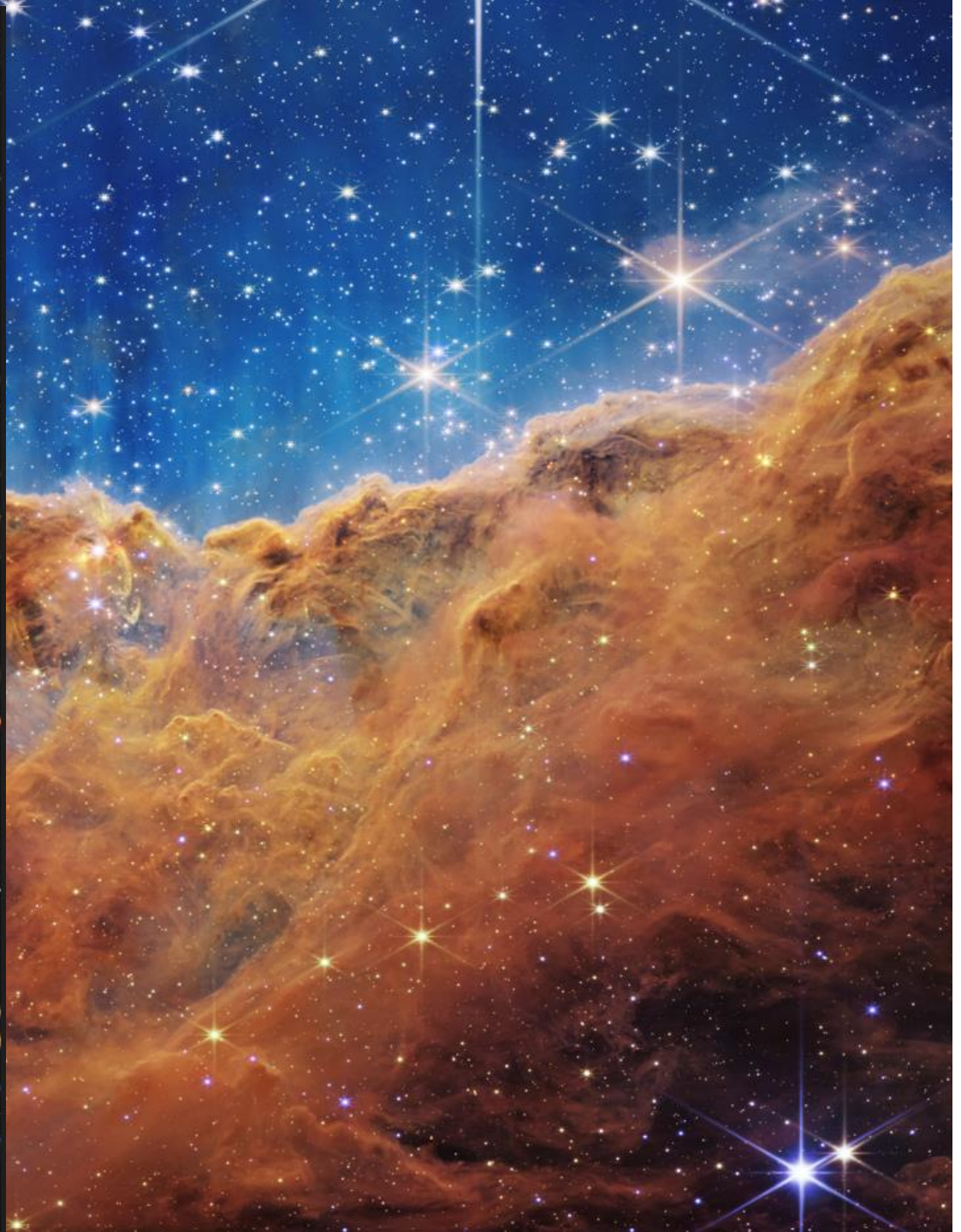
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# Remote Risk Protection

Colin Dutkiewicz



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# Asteroid

66 million years ago

20 billion A-bombs

Extinction of 75% of  
animal species

Mortality Rate 750/1000



# Slightly higher probability – 1/8, 1/21, 1/29, 7/1



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## Definition of tail/remote risk

$\frac{1}{2}$ ,  $\frac{1}{20}$ ,  $\frac{1}{200}$ ,  $\frac{1}{2000}$ ,  $\frac{1}{13.8\text{bn}}$  year



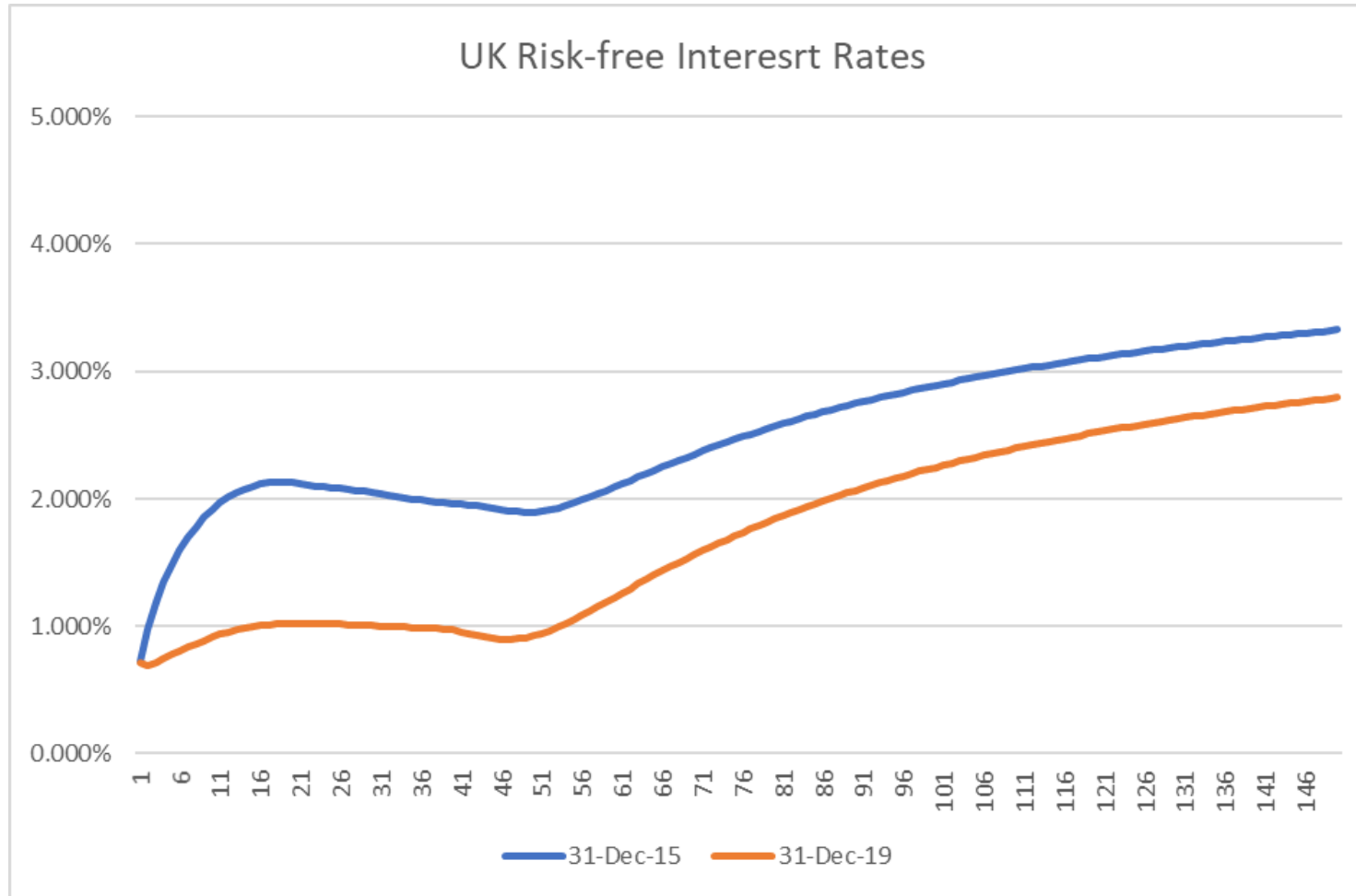
SII 1-year var, SST tail var, ORSA 3 year

# Events causing remote risks to materialise

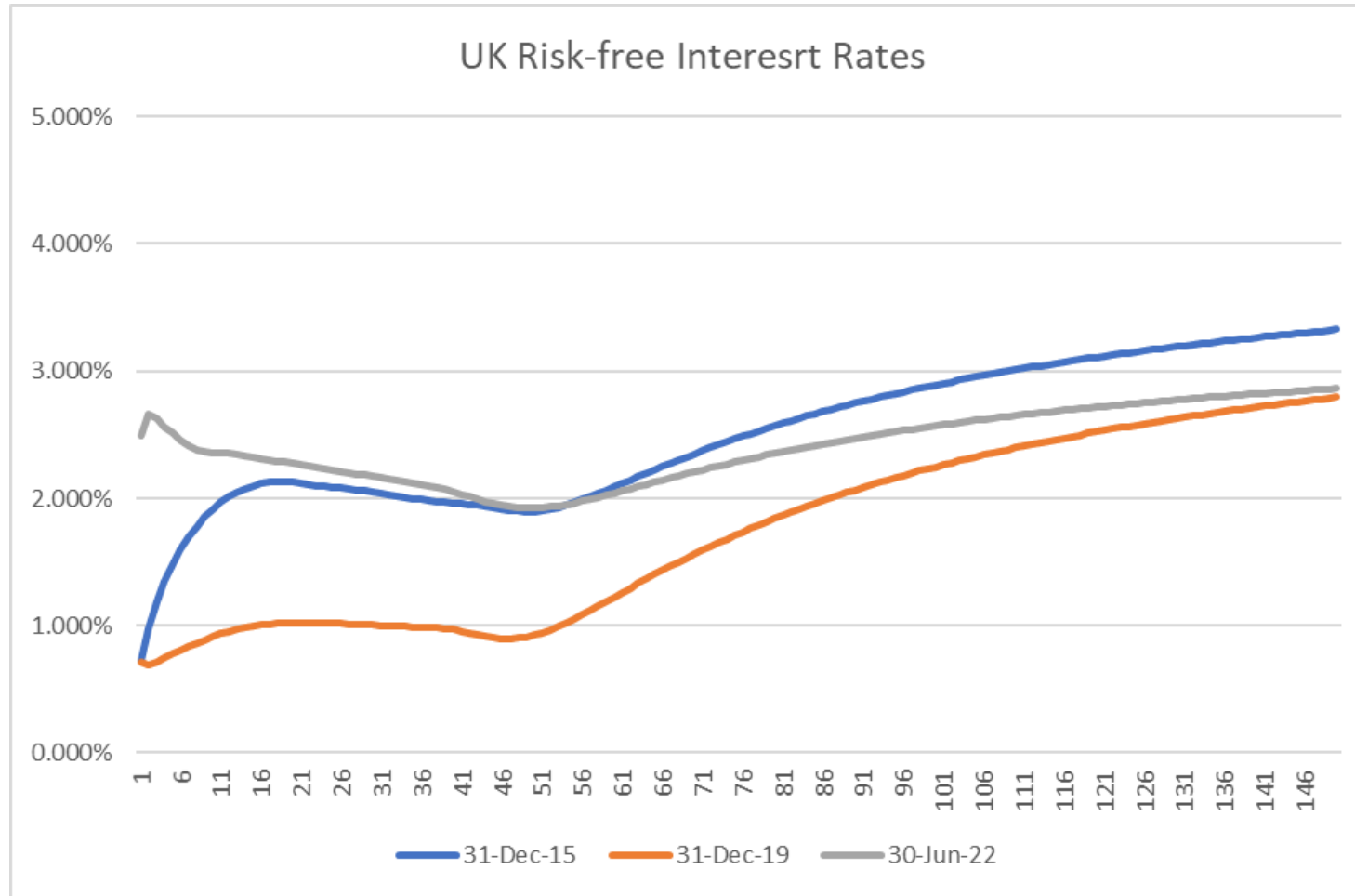
- Historic events vs Scenario planning vs Reverse Stress Test
- Knock on events
  - World War I → Spanish Flu
  - COVID → Inflation Event → Fiscal Error Event
  - House price bubble → Great Financial Crisis
- Interconnectedness of biometric event and market event and interest rate impact



# The Event vs all future cash flows

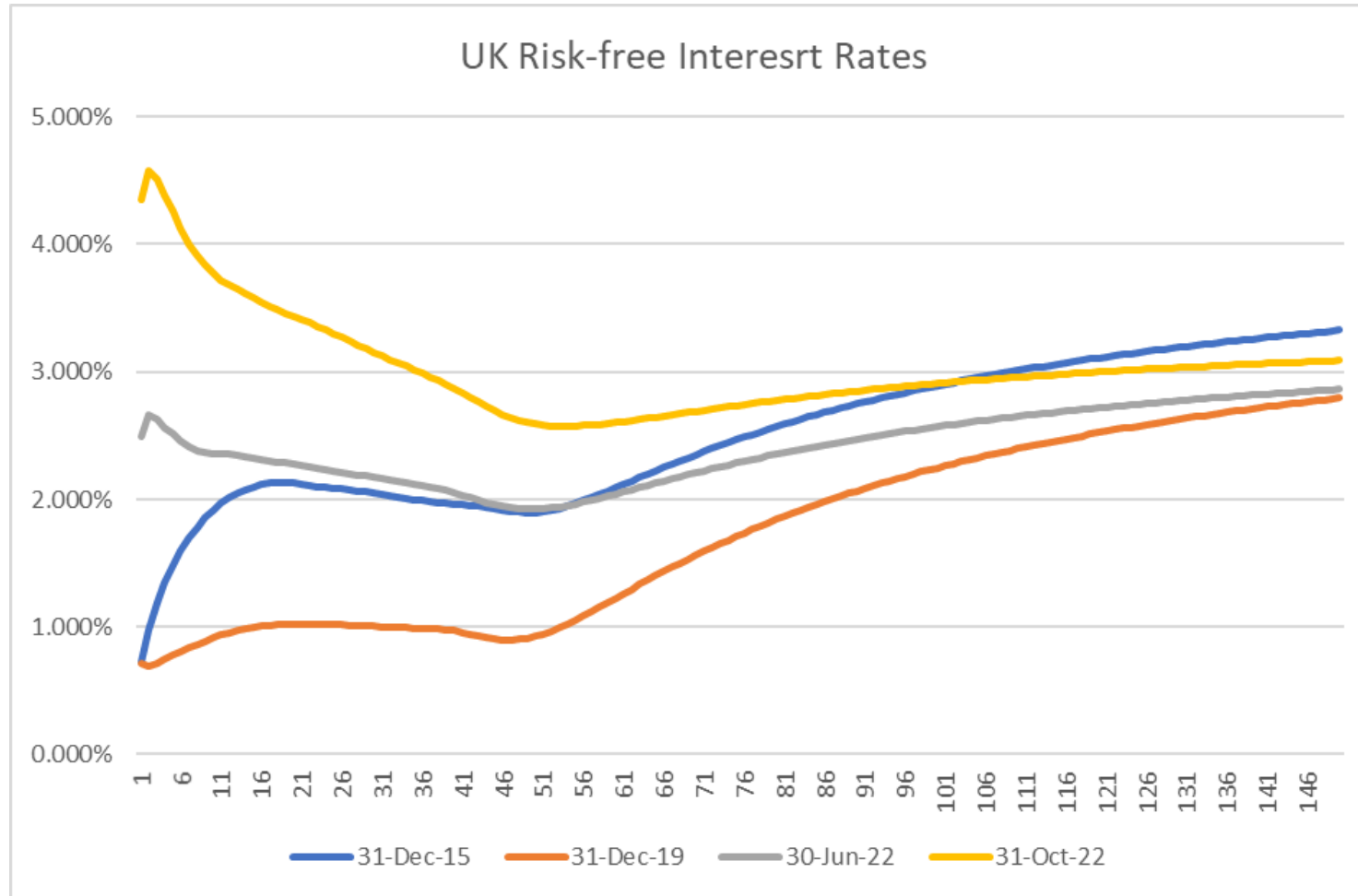


# The Event vs all future cash flows





# The Event vs all future cash flows



# Risks relevant to life insurers

- Mortality
- Longevity
- Morbidity
- Lapse
- Market Risk
- Non-pooling risks





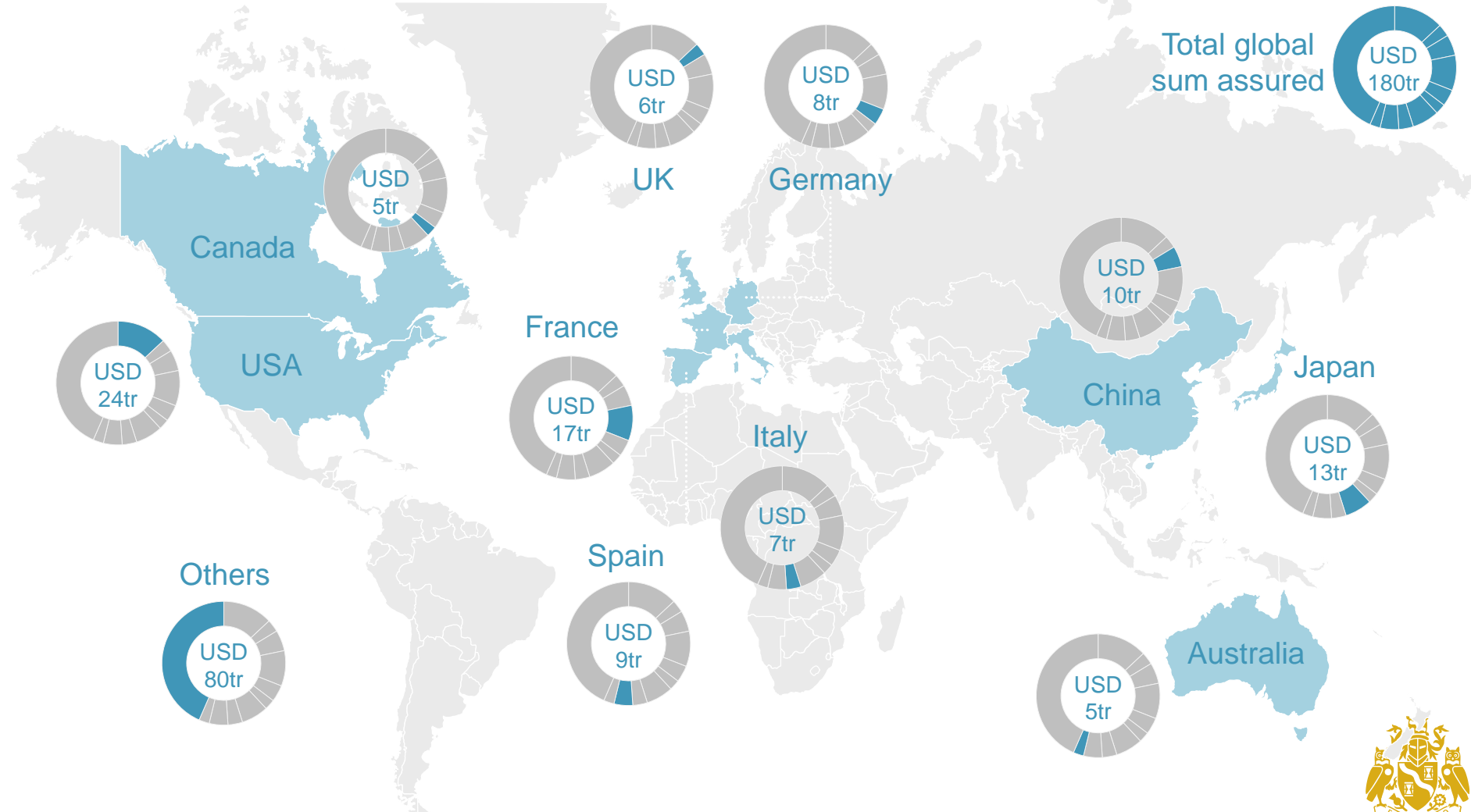
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# Mortality Risk



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# Global Life Sum Assured / Face Amount



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# Hiroshima & Nagasaki Bombings

~200,000  
deaths over 4  
months

Mortality rate of  
~30% across both  
cities  
Mortality: 300/1000

Source: [http://www.atomicarchive.com/Doss/MED/med\\_chp10.shtml](http://www.atomicarchive.com/Doss/MED/med_chp10.shtml)



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# Protracted Mortality Event - HIV / AIDS

Estimates 32 million  
deaths from 1980s to date

37.9 million people are  
living with HIV



Source: ["Global HIV & AIDS statistics — 2019 fact sheet"](#). www.unaids.org. UNAIDS. [Archived](#) from the original on December 4, 2019. Retrieved December 21, 2019.



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# World War I

~20 million deaths

Overlap with  
Spanish Flu

2% of global  
population

Mortality 20/1000

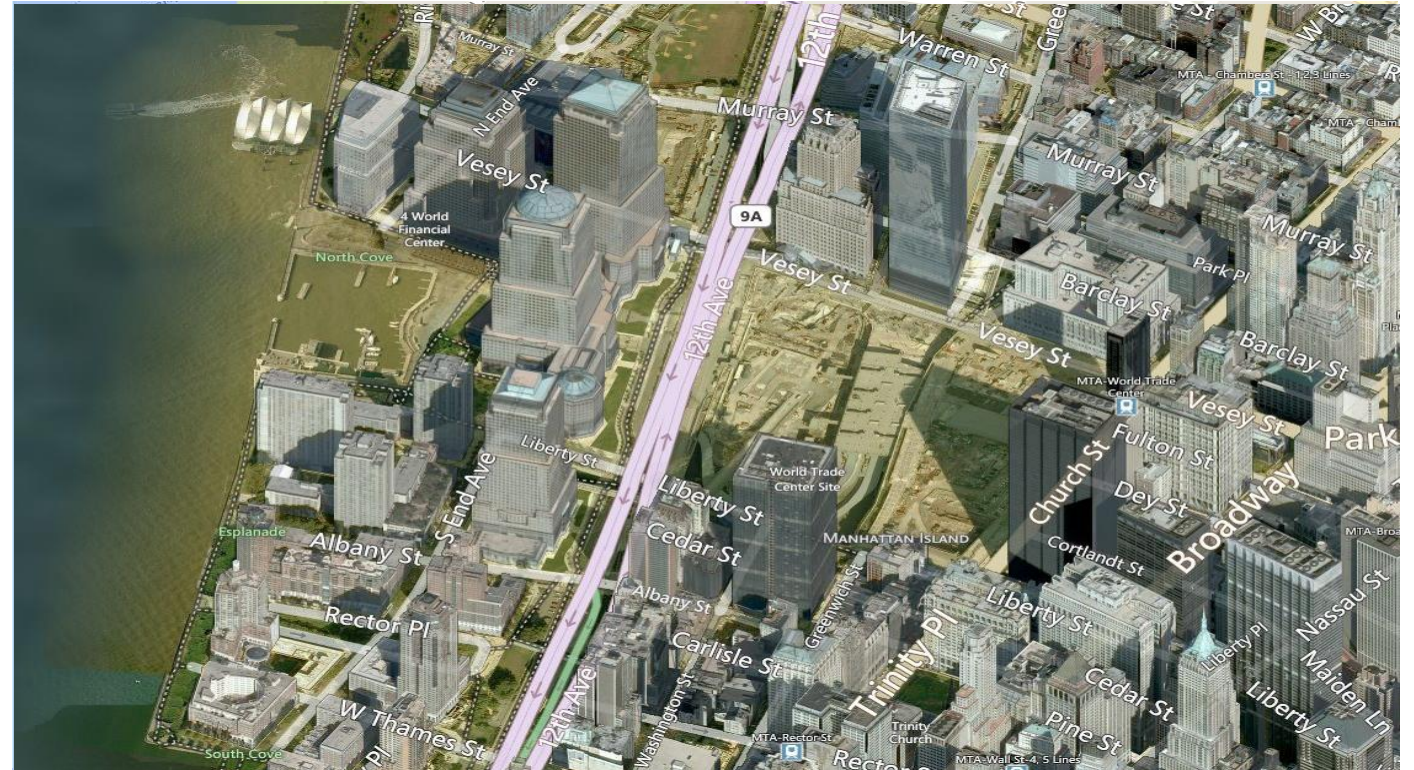
Source: Haythornthwaite, Philip J., The World War One Source Book pp. 382–383, Wikipedia.



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# Event Footprints

- Pandemic Footprint  
Earth is ~ 57 million sq. mi
- Earthquake  
10k sq. mi
- Terrorism  
A couple of city blocks



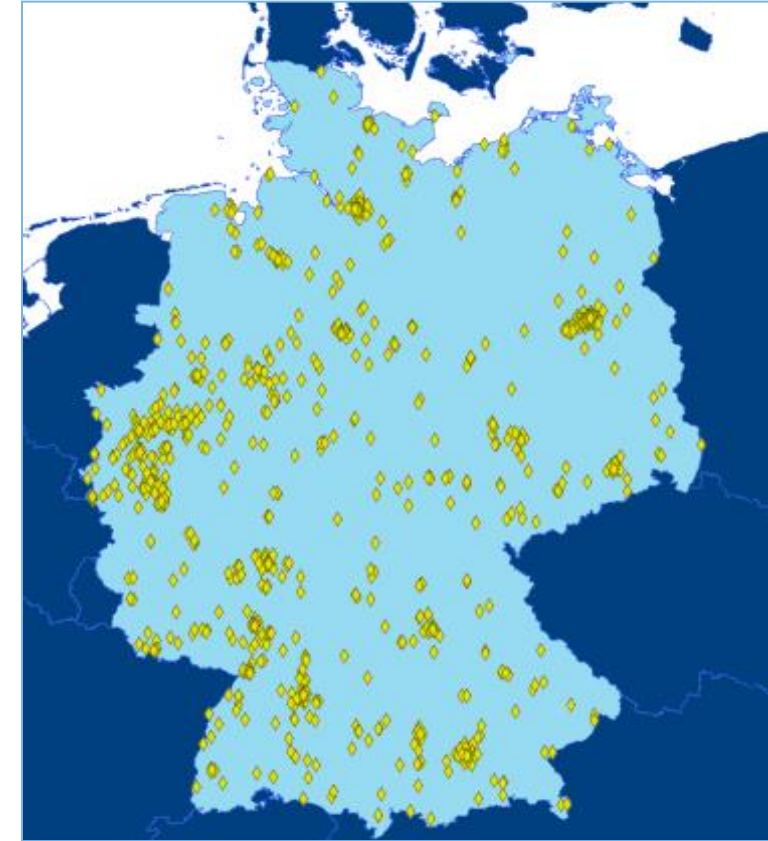
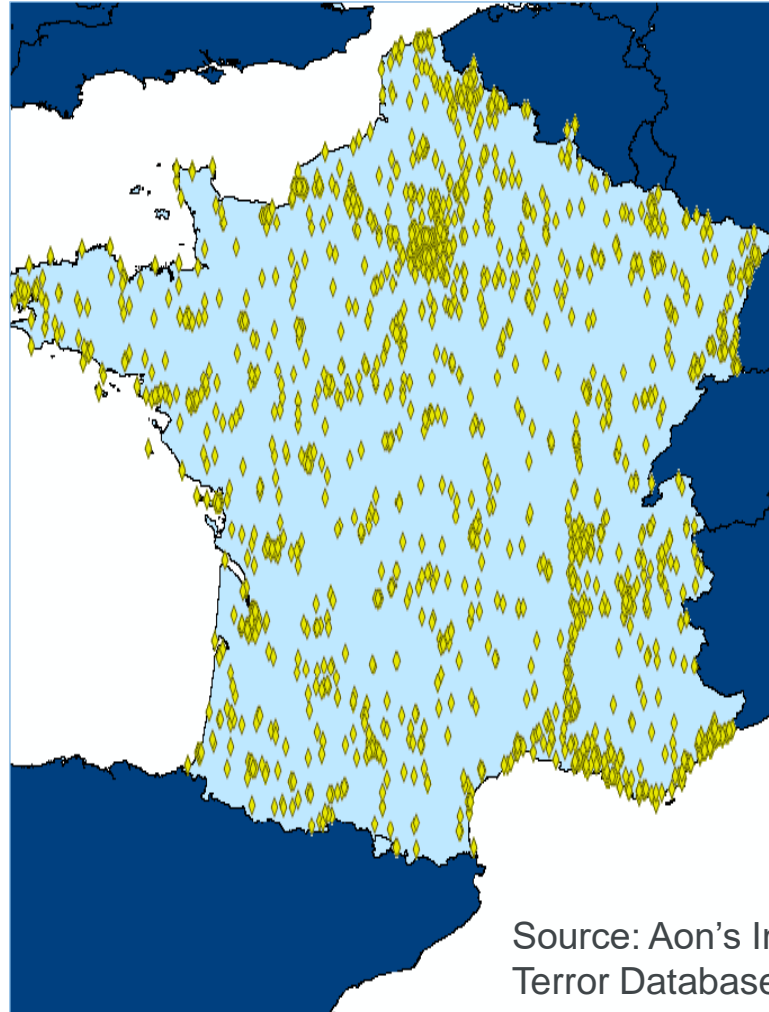
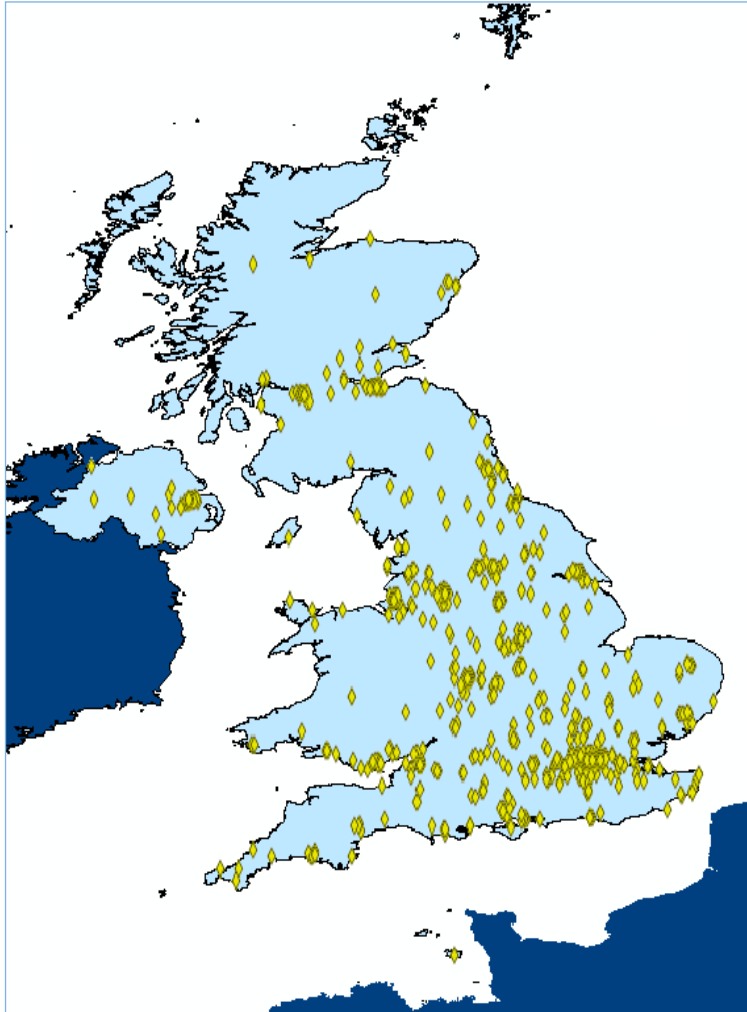
Source: Aon ImpactOnDemand



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# Terror Target Database

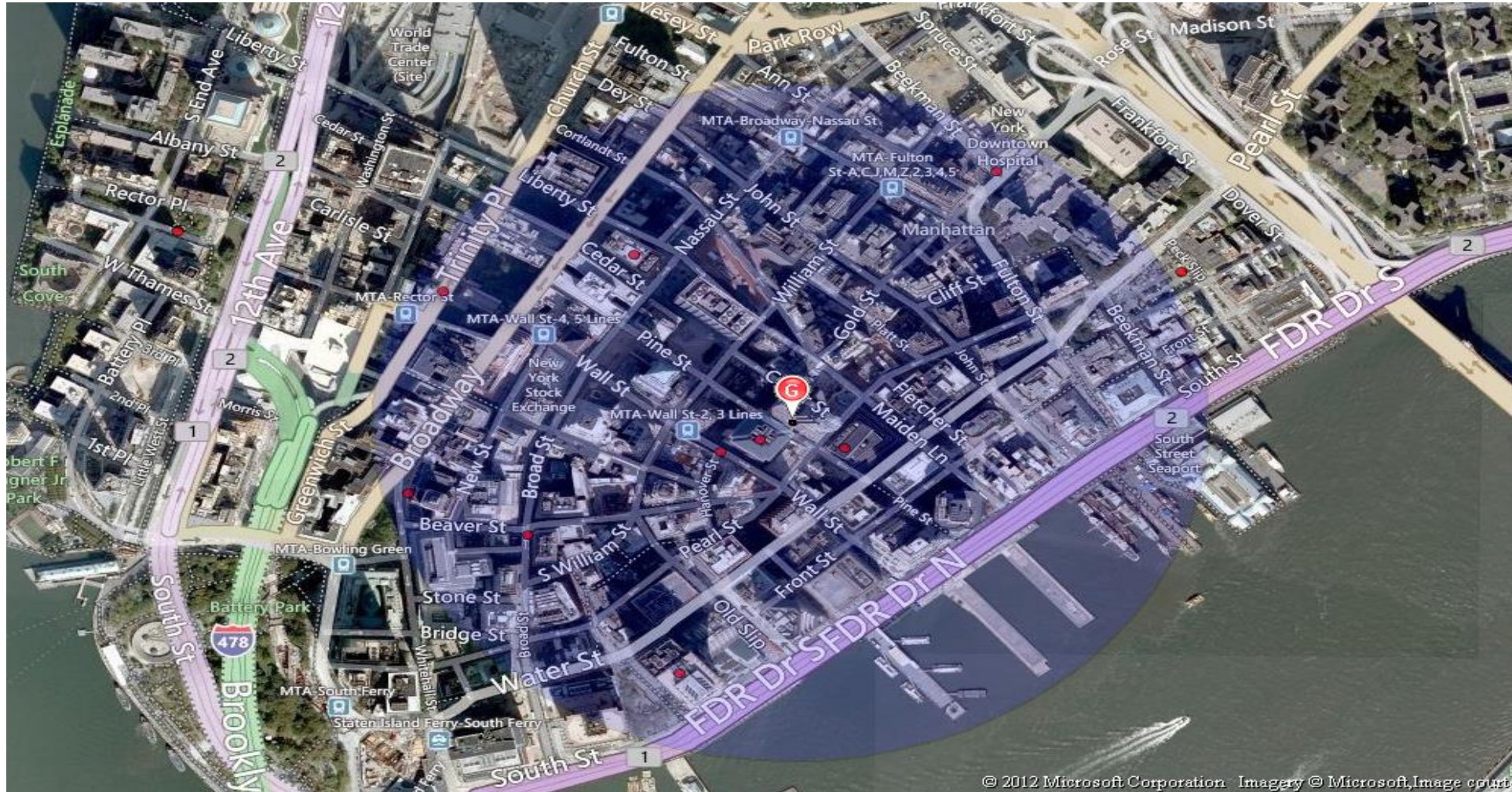


Source: Aon's Impact Forecasting  
Terror Database



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# Before Home to Work Distribution – Wall Street Client



Source: Aon ImpactOnDemand software. Image Microsoft Imagery



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# After Home to Work Distribution – Wall Street Client



© 2012 Microsoft Corporation Imagery © Microsoft, Image courtesy



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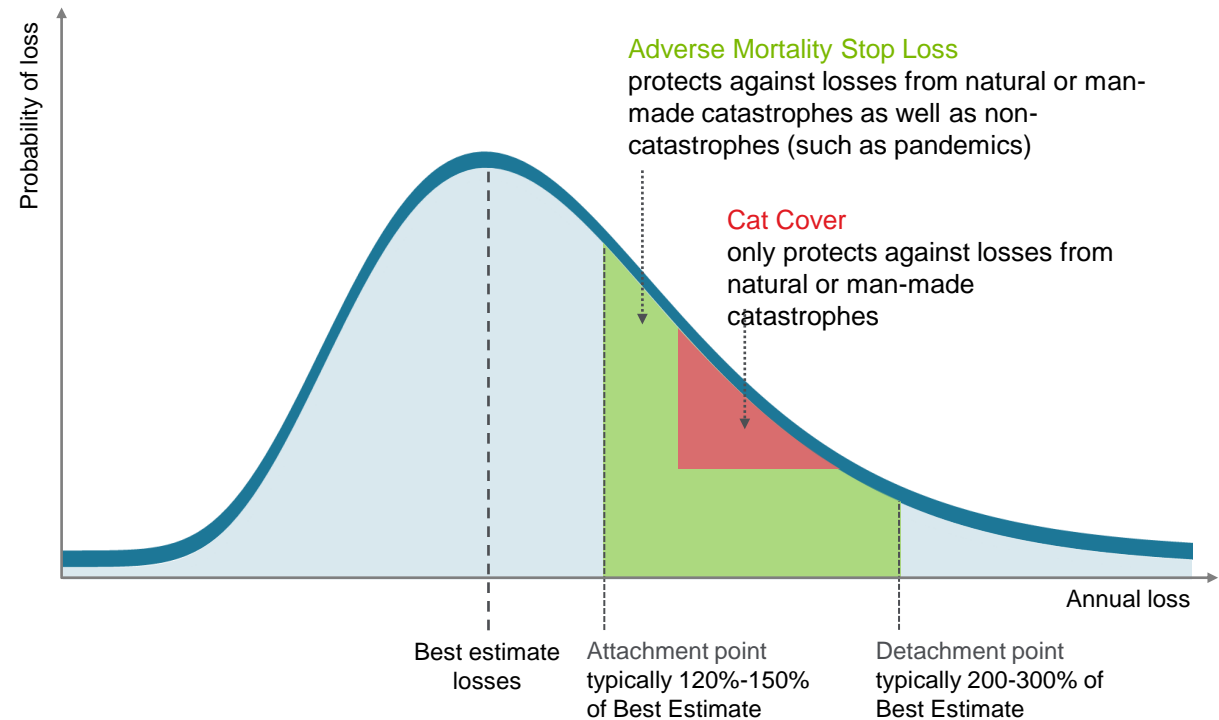
# Adverse Mortality - Isn't that what CAT cover is for?

## What to call it?

- Pandemic Cover
- Aggregate Excess of Loss (AXL)
- Adverse Mortality Stop Loss (AMSL)

## What's it for?

- Capital Management
- Risk Management
- Liquidity Management



# The Carrie Fisher Event

## Before Carrie Fisher

- Capacity \$100m+
- Stated Benefit Basis
- Placed through an MGA with minimal checks coming to London



## After Carrie Fisher

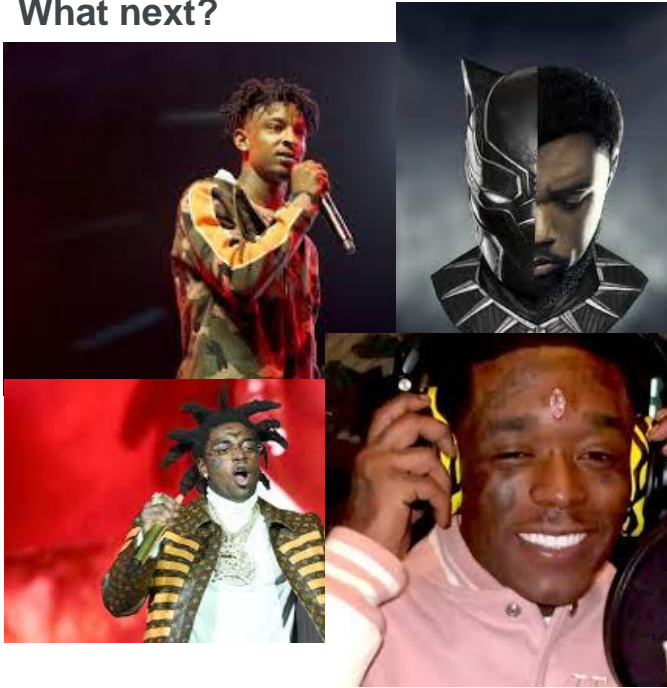
- Capacity reduced to between \$30m-\$50m
- Preferred NAL basis
- Referrals to London
- JOSI checks
- Exclusions
- Medicals



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# Keyman and FTS, CCP, CPI, CAP

What next?



## Common Exclusions

- Drugs/ Alcohol
- Mental and Nervous
- Suicide
- Criminal Acts/ Incarceration

Bespoke Exclusion are also now being included  
(Cancer etc following the Chadwick Boseman claim)



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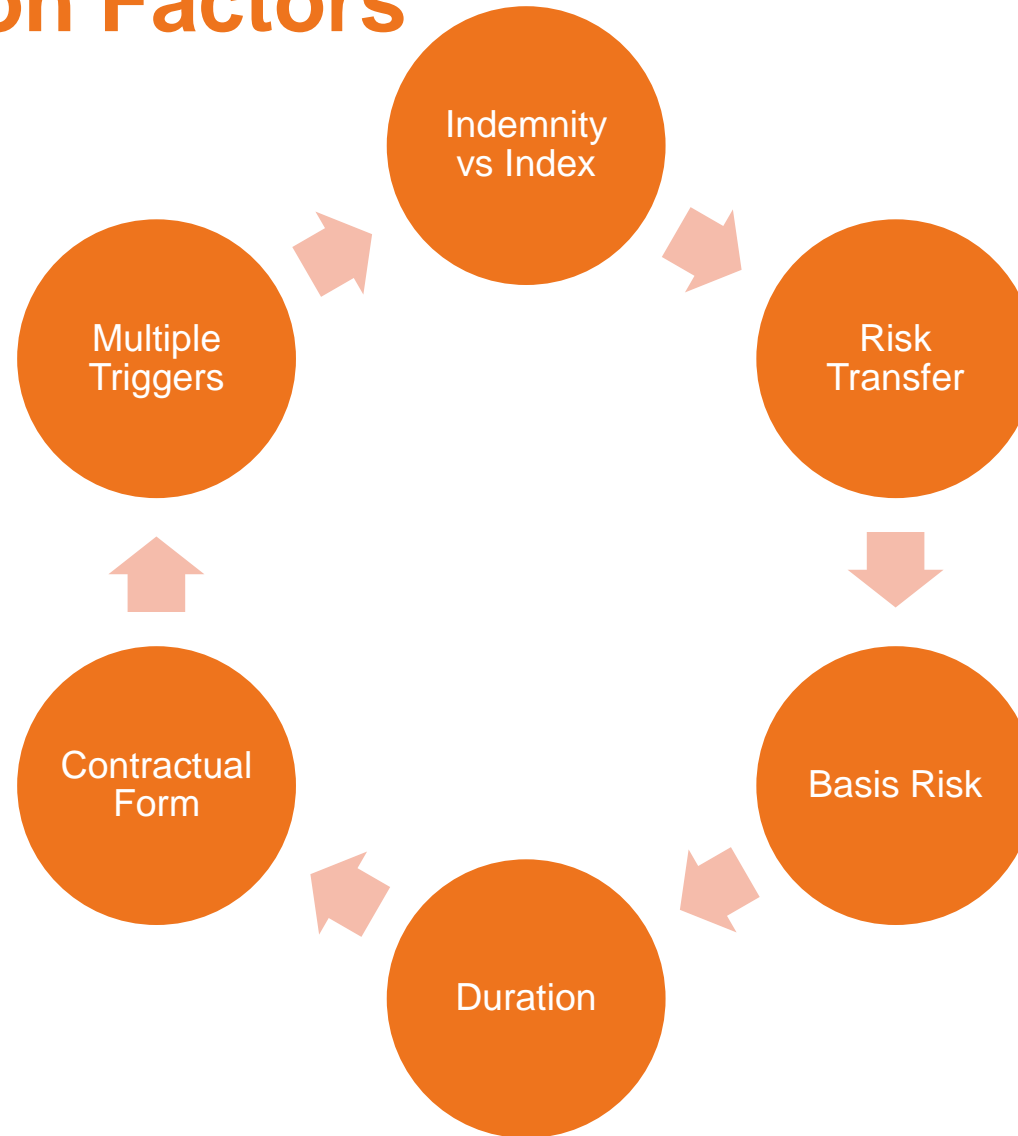
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# Tail Risk Solutions



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# Generic Solution Factors



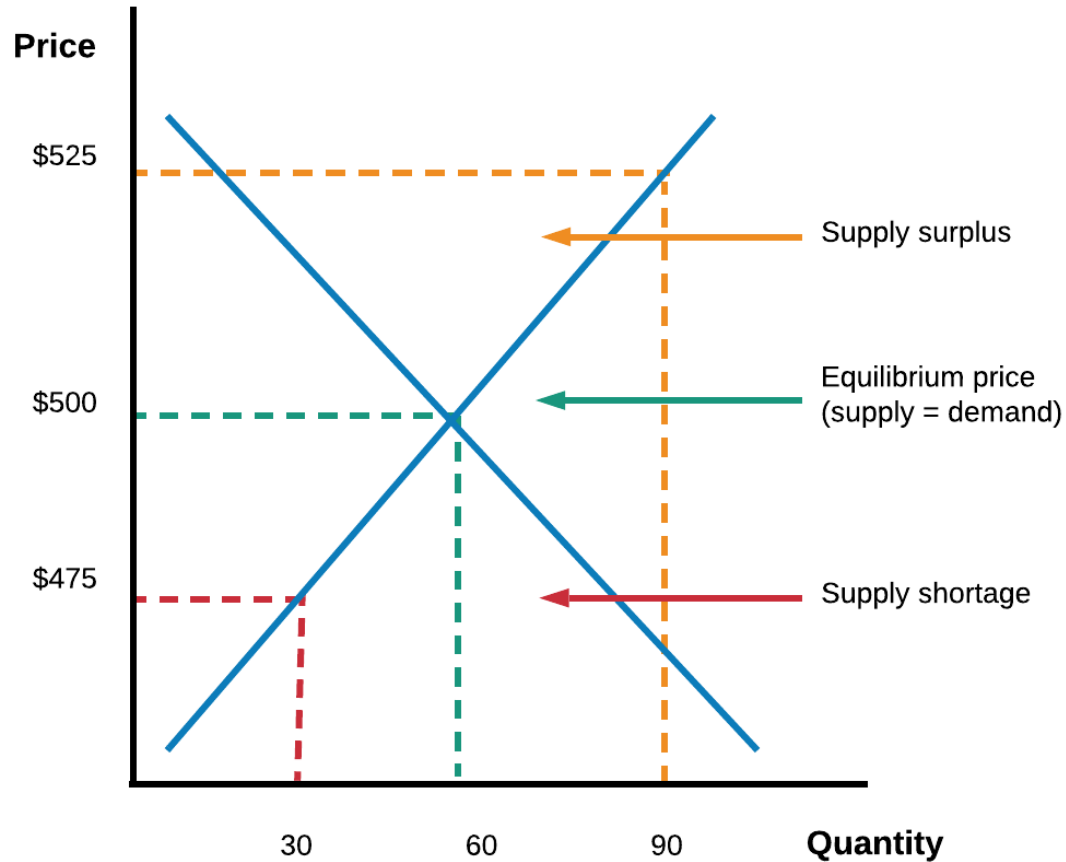


# Market efficiency

1. **Deep** and **liquid** market
2. **Balance** between buyers and sellers to stabilise price
3. Absorb **large number of orders** without significant price movement
4. Low transaction **costs**
5. **Quick** trading
6. **Standardised** product
7. Small **spread**
8. **Trade** in and out
9. Transfer to **cash** quickly



# Which remote risk transfer markets are efficient?



Pandemic Stop Loss

Mass Lapse Stop Loss

Longevity Swap/Stop Loss

GAO stop loss

Life Cat Market



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# Conclusions

- Markets are not efficient – not deep and liquid
- Pricing is inefficient – possibly too high or too low
- Reinsurers not providing what the market wants





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# Thank you

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