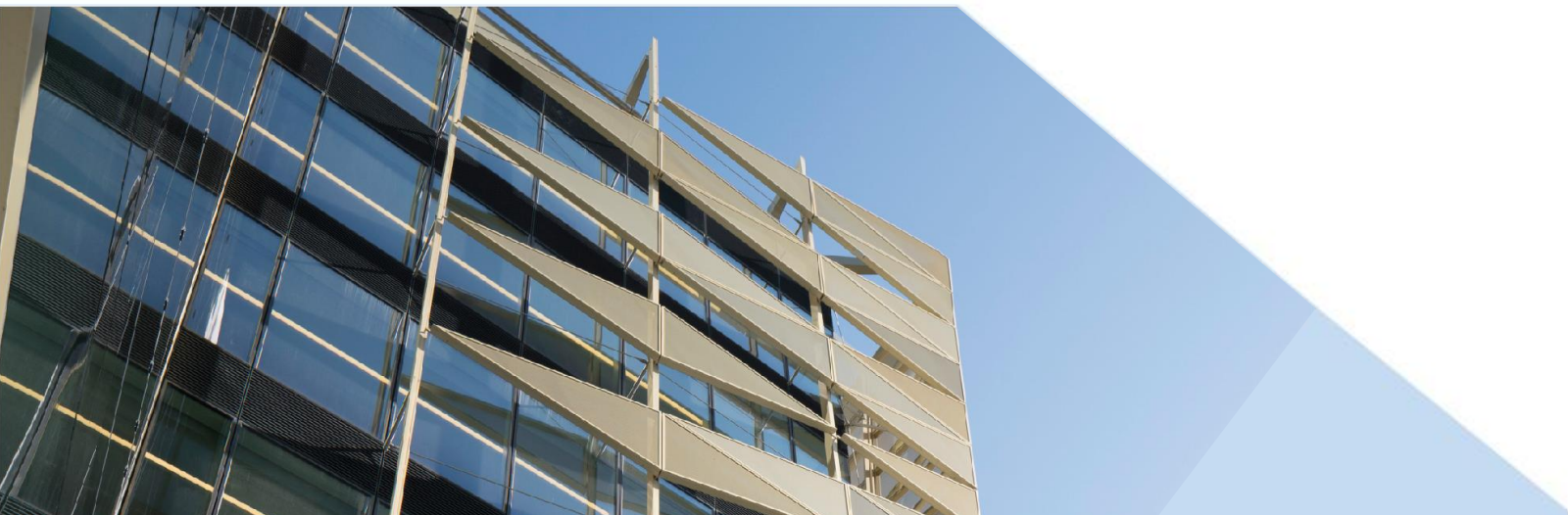




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Supervisory Analytics: Generation of insights from regulatory reporting

18 May 2018

The views expressed in this presentation are my own and do not represent the views or positions of my employer, the Central Bank of Ireland

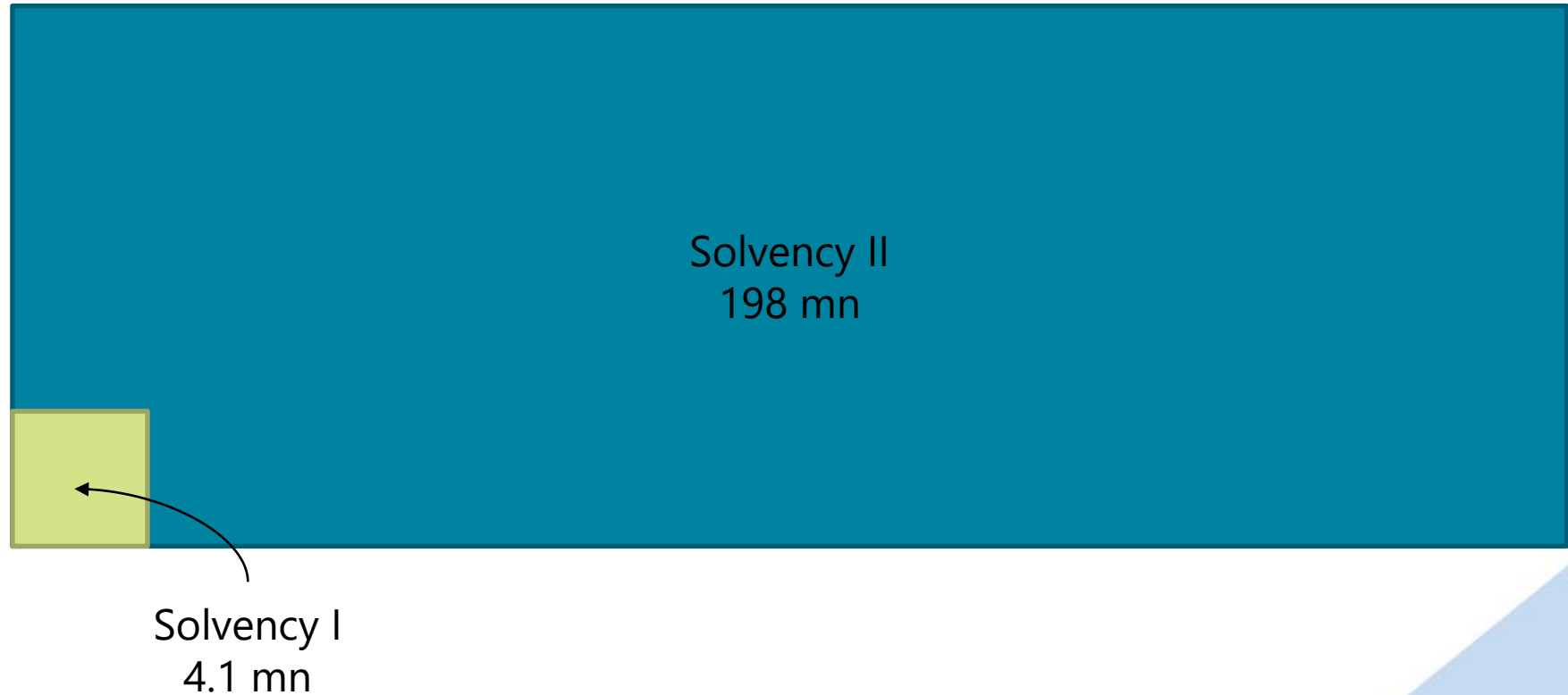


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Why analytics?

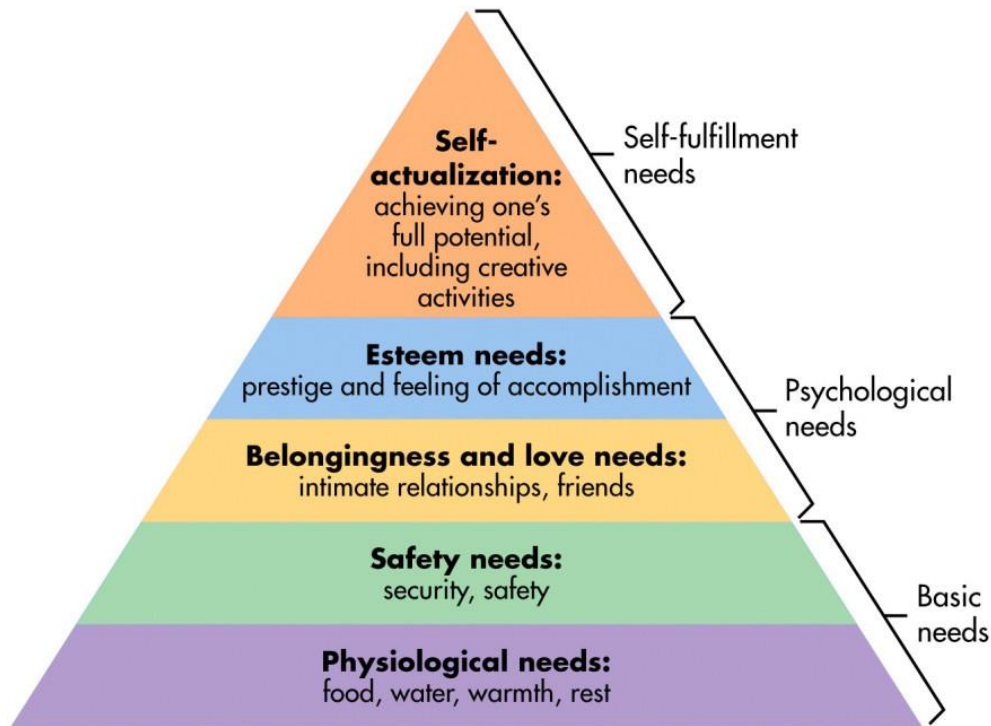
Focused on delivering an effective, intrusive, analytical and outcomes-focused approach to supervision



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Building analytics



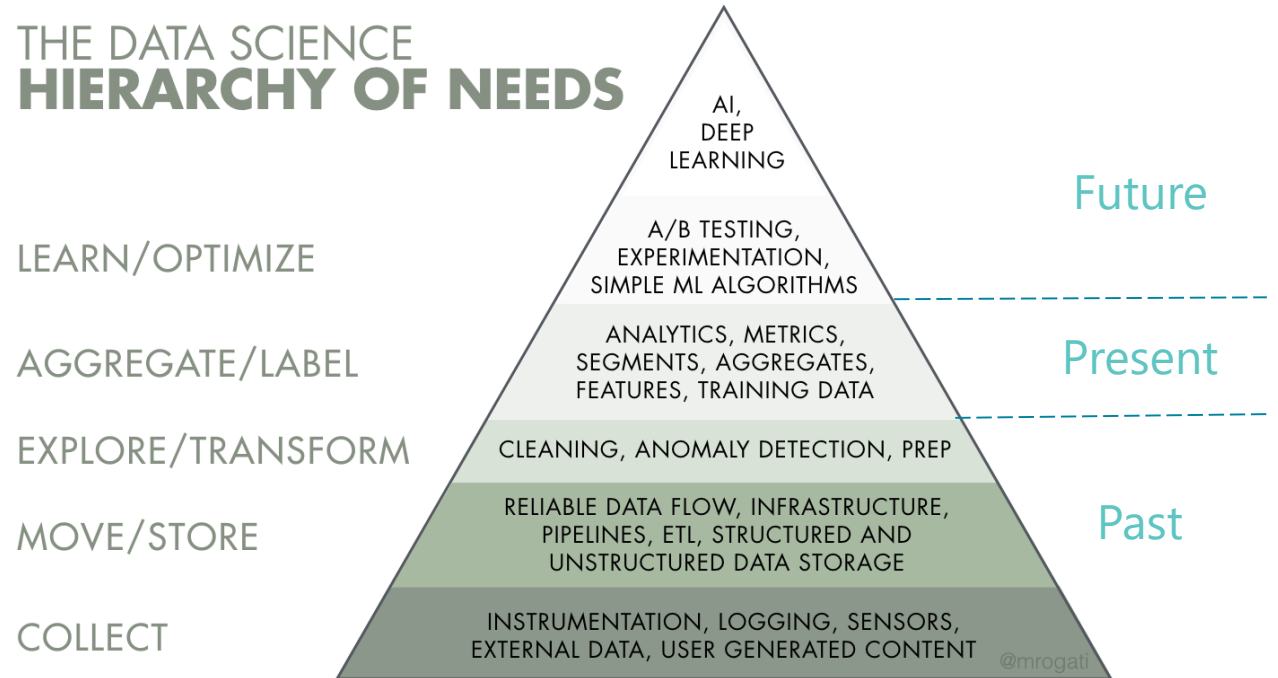
Maslow (1943)



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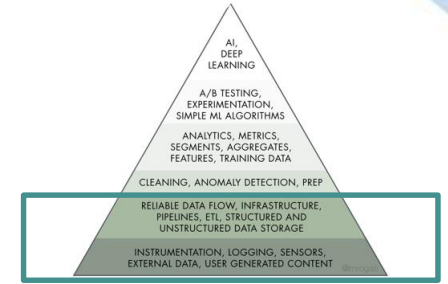
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THE DATA SCIENCE HIERARCHY OF NEEDS



Rogati (2017)

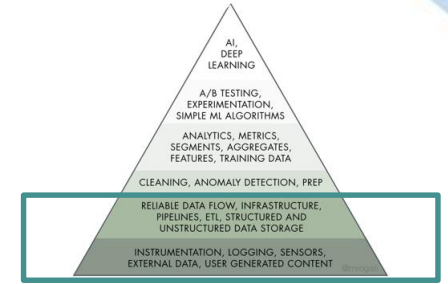
Data landscape



Solvency I returns	Risk ratings and rationale	Structured Internal model reports	Supervisory Master Data
Stress test results	FoE/FoS inwards data	Resident branch returns	Companies database
SII approvals database	Day 1 reconciliation	ORSA	Actuarial Report of Technical Provisions
Solvency II Returns	National Specific Templates	Solvency and Financial Condition Report	Regular Supervisory Report



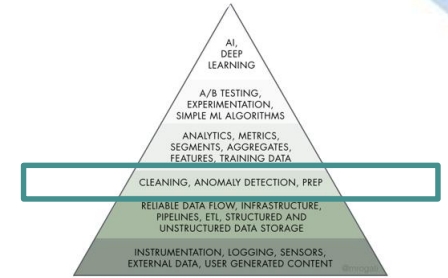
Data quality



Objective	Completeness	A regulatory return records all of the relevant, available data for the undertaking
	Validity	The extent to which existent data accurately represents reality
	Integrity	All relevant linkages to/from a record exist and are correct
	Consistency	Data that exists in multiple locations (or across multiple periods) are similarly represented
Subjective	Believability	The end-users of the data (or products derived from the data) consider the data trustworthy
	Objectivity	The data is unbiased, and not dependent on judgement/interpretation of individuals

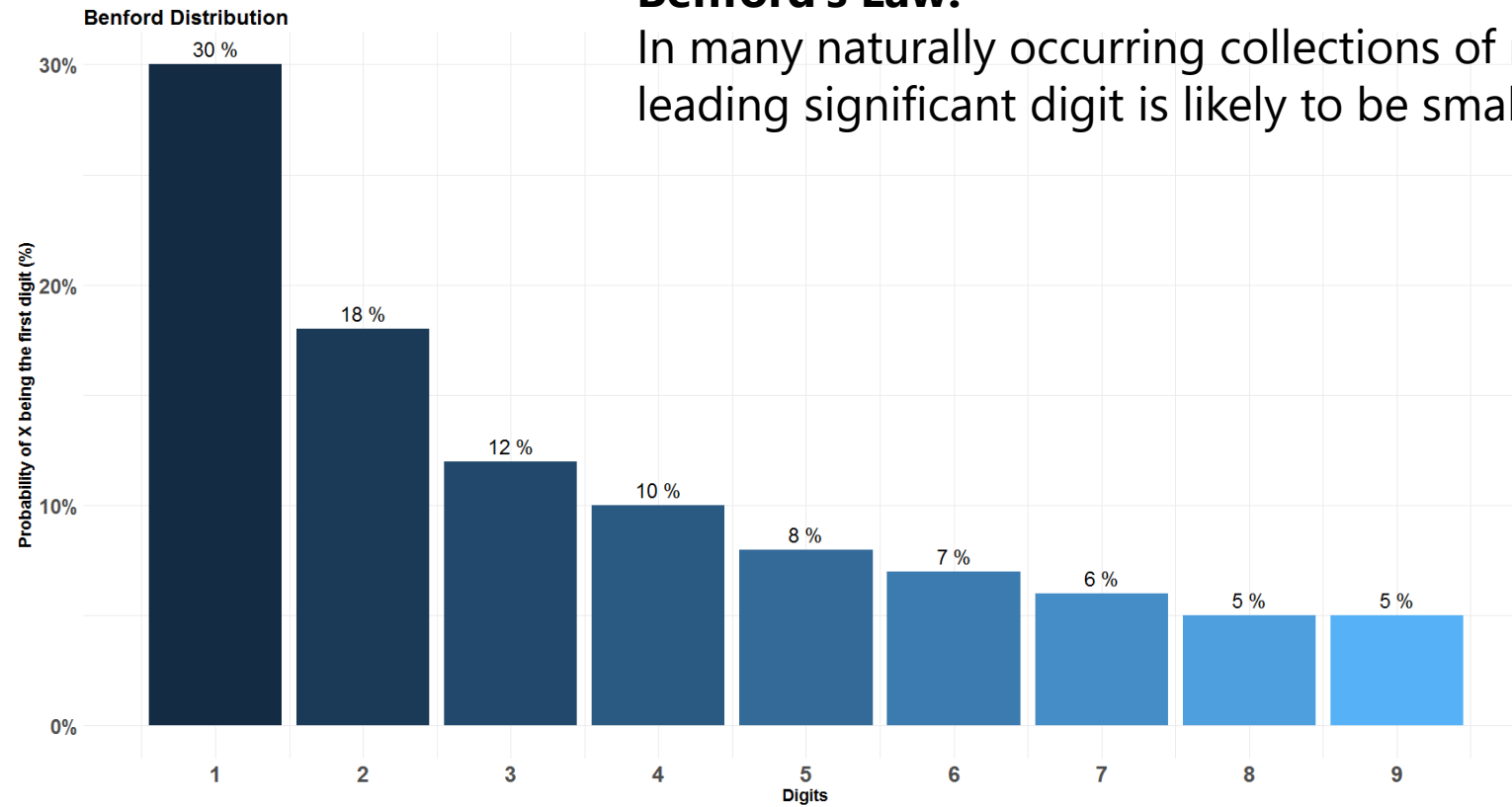


Benford analysis



Benford's Law:

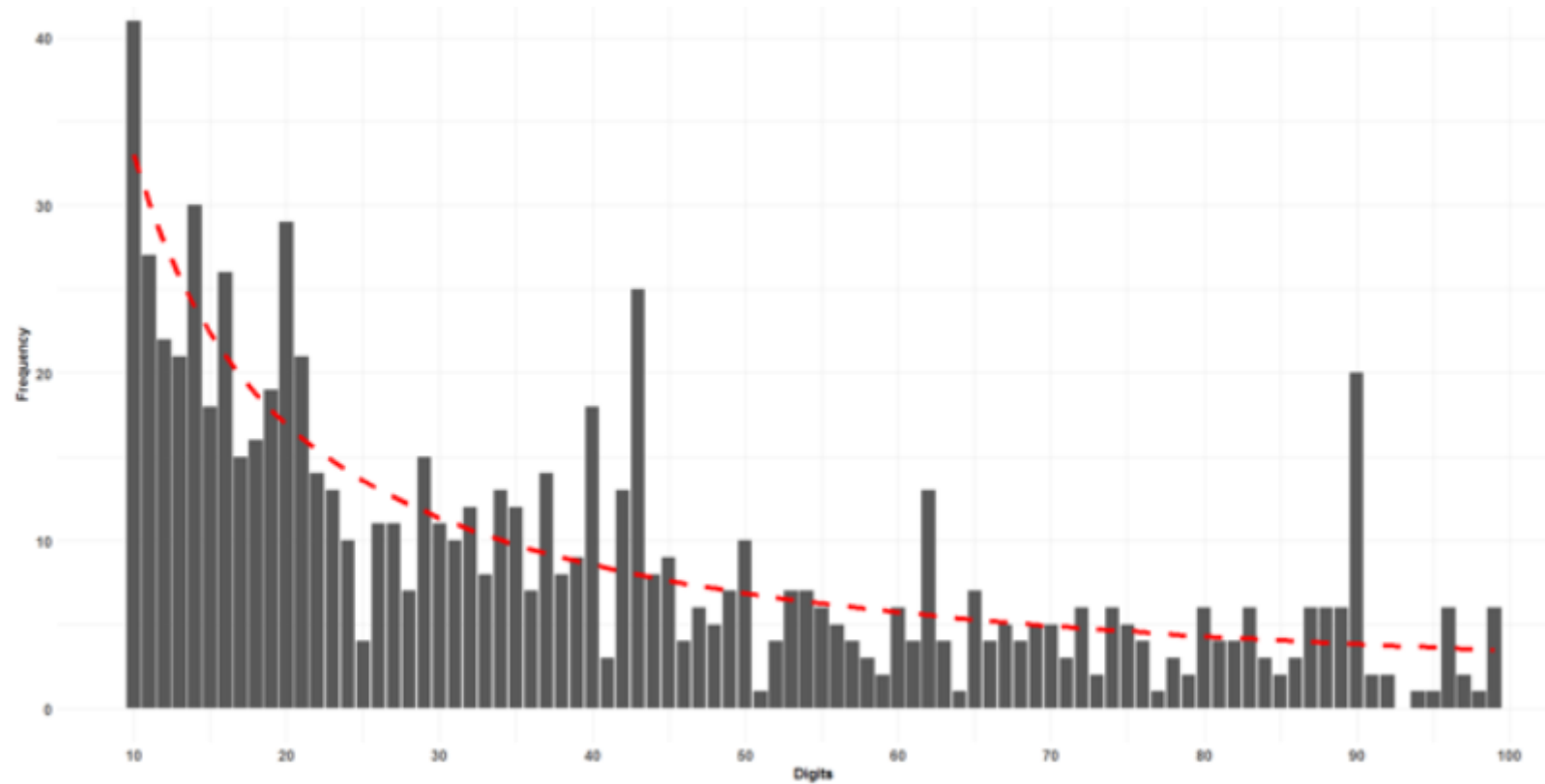
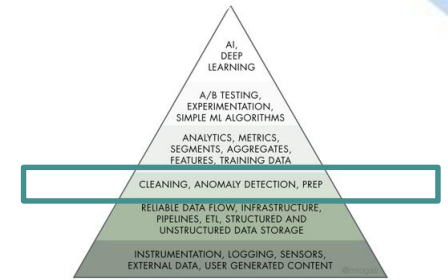
In many naturally occurring collections of numbers, the leading significant digit is likely to be small.



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Benford analysis: sample output

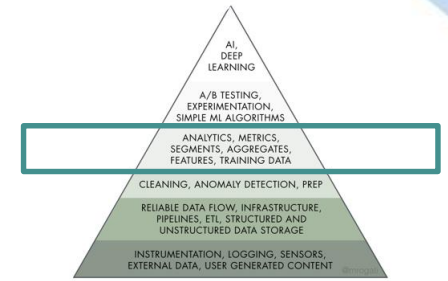


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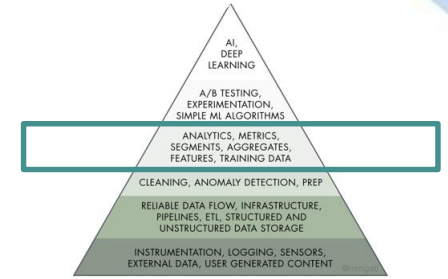
Targeted supervisory engagement

SCR review
Information request
on loss-absorbing capacity of deferred taxes
and on interest rate risk



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Impact of market events on variable annuity portfolios

German 10-year bond yields



How to assess?

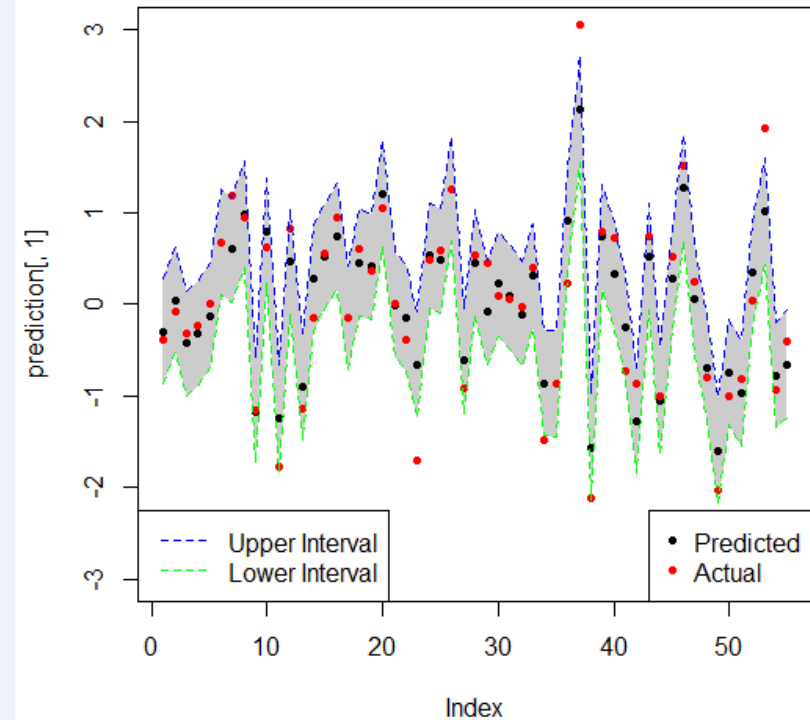
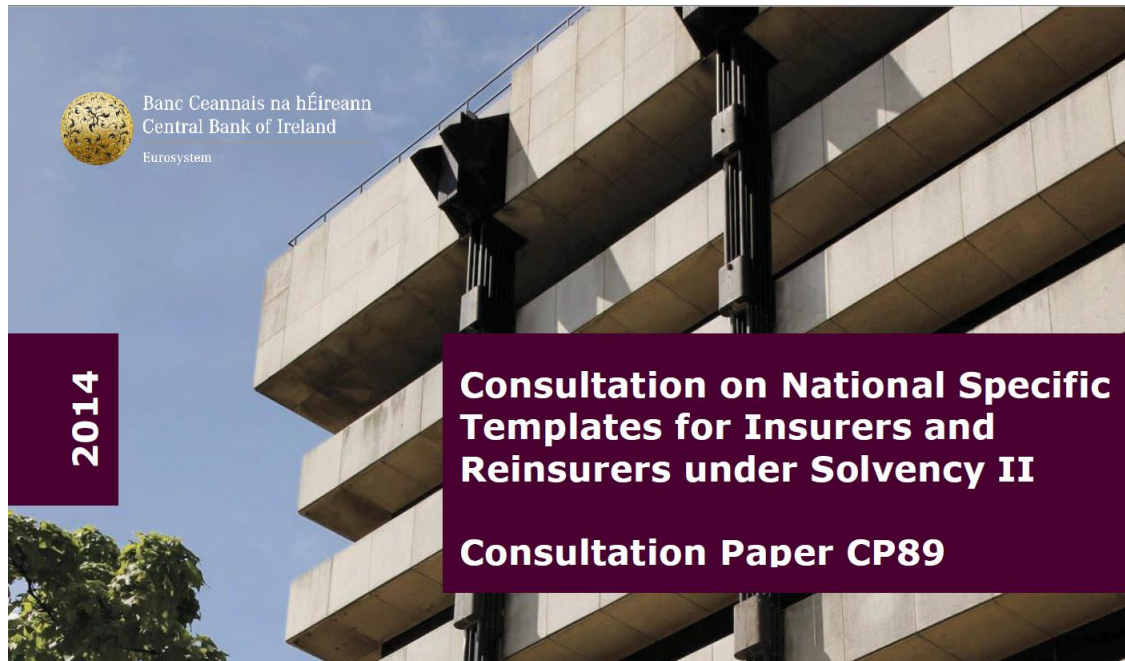
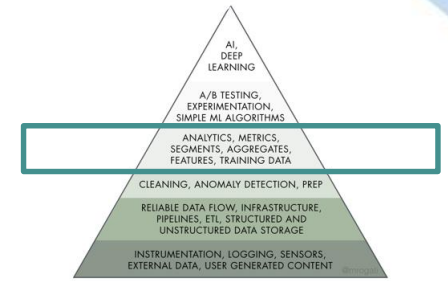
- Stress test results?
- Hedging reports?
- Engage with firms?



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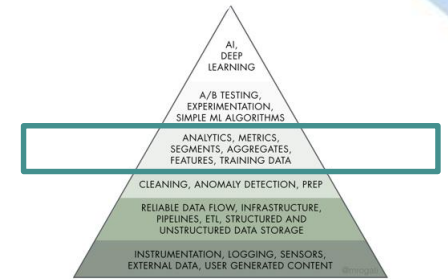
Impact of market events on variable annuity portfolios



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Market risk analysis



InstitutionName QuarterAndYear

EUR

Reporting Currency

New KRI alerts this quarter

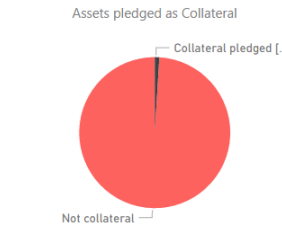
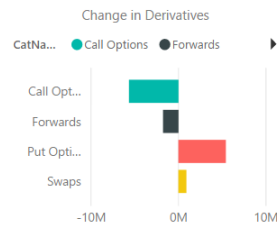
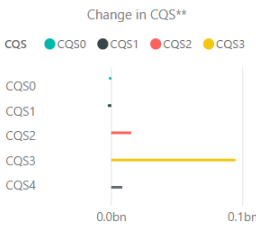
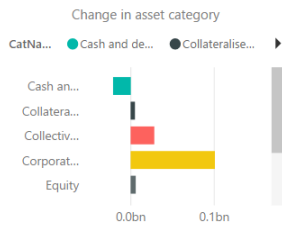
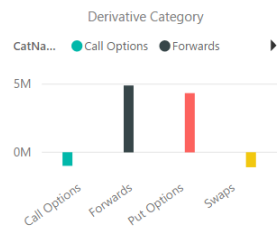
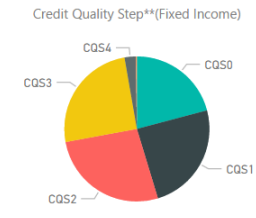
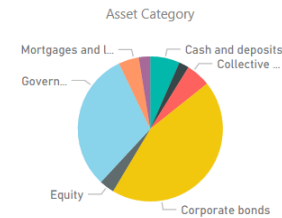
Area	KRI	new red level	new amber level	new red change	new amber change
Security and quality	KRI11.5	100.00%		100.00%	
Security and quality	KRI9	100.00%			
Security and quality	KRI12		11.08%		

All KRI Alerts

Area	KRI	red level alert	amber level alert	red change alert	amber change value
CIUs	KRI33	96.45%	121.37%		5.81%
Diversification	KRI26		57.59%		
Diversification	KRI27		57.32%		
Diversification	KRI28		107.60%		
Diversification	KRI29	185.23%			
Liquidity	KRI17	33.59%			
Security and quality	KRI11.5	100.00%		100.00%	
Security and quality	KRI12		11.08%		
Security and quality	KRI6		26.89%		
Security and quality	KRI9	200.00%			

Asset overview and KRI Alerts

Detailed descriptions of key risk indicators



Credit Quality Step (CQS)** - S&P equivalent

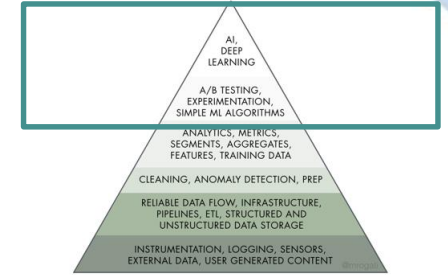
Credit quality step 0 : AAA+/AAA/AAA-
 Credit quality step 1 : AA+/AA/AA-
 Credit quality step 2 : A+/A/A-
 Credit quality step 3 : BBB+/BBB/BBB-
 Credit quality step 4 : BB+/BB/BB-
 Credit quality step 5 : B+/B/B-
 Credit quality step 6 : C/CC/D
 Not Rated : Not Rated



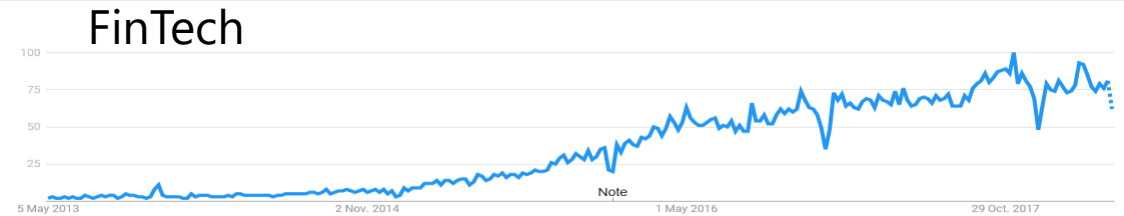
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Innovation and supervisory analytics



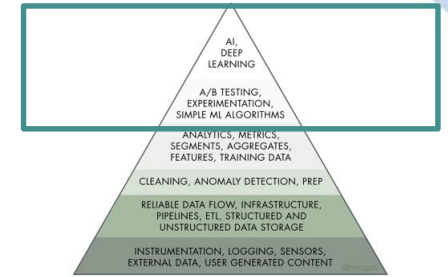
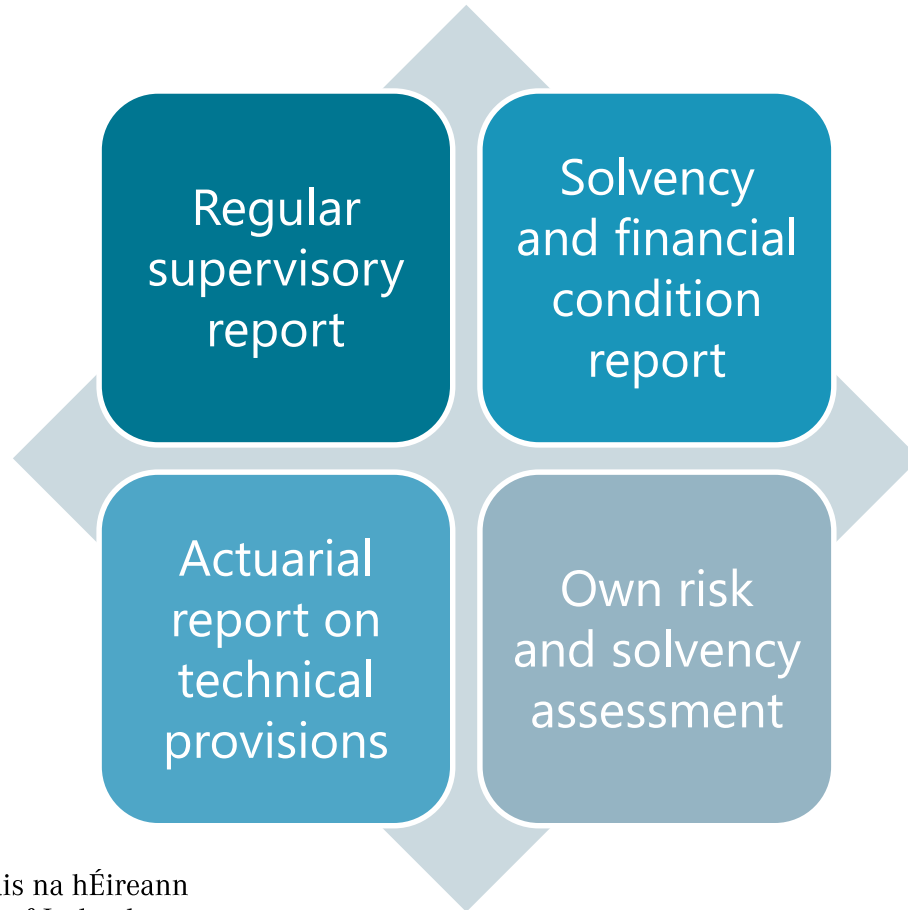
[Insert]Tech



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Analysis of non-quantitative data?



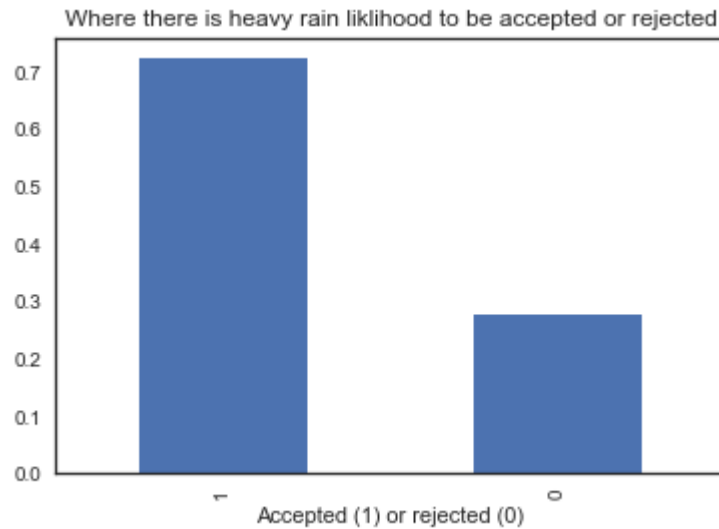
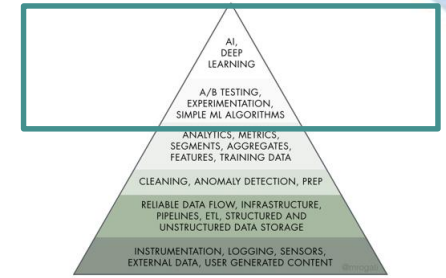
What is the role of analytics for narrative reporting?



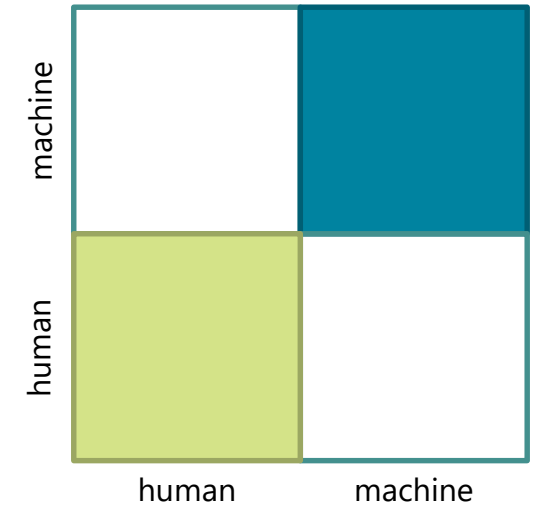
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The future of data collection?



Key finding of on-site inspection:
Over-reliance on manual processes



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