

Cambridge Judge Business School

Cambridge Centre for Risk Studies 2018 Risk Summit

EXAMPLE SCENARIOS WITH SYSTEMIC CONSEQUENCES

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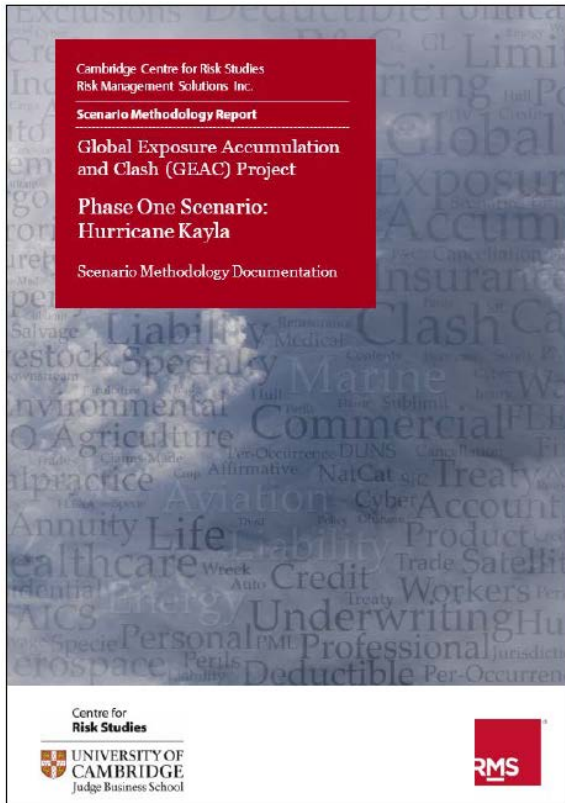
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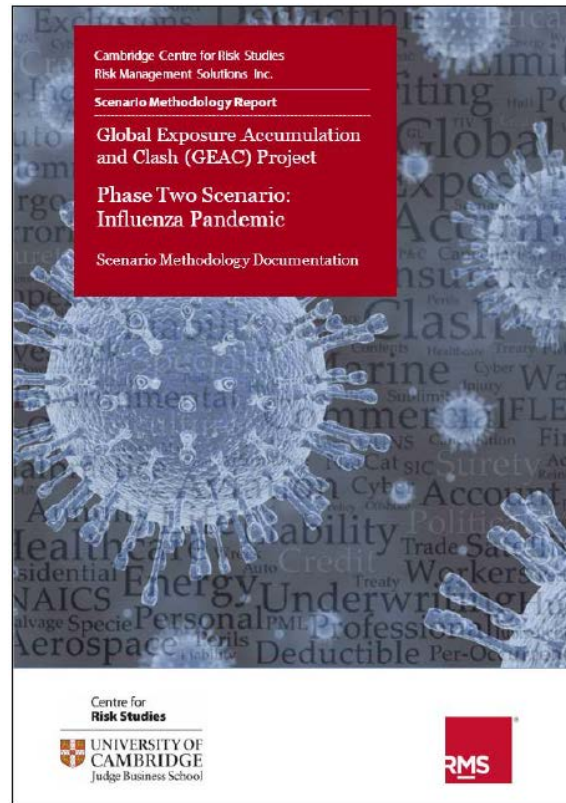
Three Scenarios to Prove the Schema

Hurricane



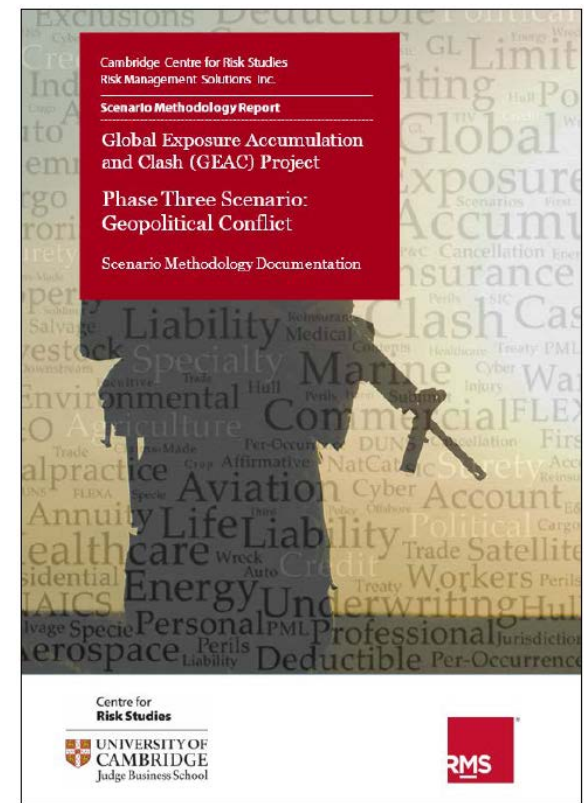
CRS Scenario – Phase One

Pandemic



CRS Scenario – Phase Two

Geopolitical Conflict



CRS Scenario – Phase Three

Clash Scenarios Across Multiple Classes of Insurance

3	High Impact
2	Impact
1	Some Impact

	Scenario 1 Hurricane	Scenario 2 Pandemic	Scenario 3 Geopolitical Conflict
Phase 1			
Casualty Liability	2	3	2
Marine	2	0	2
Energy	3	0	1
Aviation	1	0	2
Phase 2			
Agriculture		1	1
Trade Credit		1	1
Surety		1	1
Life		2	1
Health		3	1
Classes of Specialized Underwriting		1	1
Phase 3			
Political and Security Risk			3
Annuities and Pensions			
Personal Lines			1
Commercial Lines			1
Property	3	0	1

Pandemic: Baseline Event

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Virus warning for Brazil

Mystery virus spreads as government warn citizens to avoid Brazil

Wednesday, March 12

Sao Paulo (1048 GMT – 0648 BRT) - The UK Foreign & Commonwealth Office and US State Department have issued a travel advisory warning for Brazil following an outbreak of an as yet unidentified virus.



WHO specialists arrive in Brazil to investigate the mystery virus that has caused over 100 deaths.

It was reported that over 100 people have died in the last week.

Brazilian government officials have condemned the moves, calling them a "reckless, irresponsible and expensive overreaction", but UK officials point to the number of recent outbreaks and the lack of progress in identifying the

S1

- Expected
- Infection wave lasts for 7 months
- Contingent business interruption
- Consumer spending drops
- Poultry culled

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Sao Paulo Virus sweeps across globe

All populated continents report cases of the mystery virus

Thursday, April 24

Atlanta, US (1454 GMT – 0954 EST) – Fear is gripping the world as hospitals struggle to cope with increasing numbers of sick people. Researchers at the CDC are "making progress" in identifying the genetic characteristics of the Sao Paulo Flu Virus.

Much is still unknown about Sao Paulo Virus, although health officials have stated it is one of the most infectious viruses they have encountered. People reporting symptoms are immediately quarantined but the virus is still



Business and tourism is trying to continue as usual but economists say productivity is down by a significant amount.

following earlier criticism of their reluctance to restrict air travel.

S2

- Pessimistic
- Infection wave lasts for 10 months
- Medical shortfall and response failure leading to liability claims
- Higher rates of health and life insurance

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BREAKING NEWS WHO declares global pandemic

Some countries declare martial law to contain the outbreak

Saturday, May 17

Mexico City (1723 GMT – 1123 CDT) - The WHO has declared a global pandemic, requiring governments around the world to shutdown public areas and prioritise medical attention.

Critics argue that this announcement is coming weeks later than it should have done causing tens of thousands of unnecessary deaths and millions of extra infections.

Businesses have closed to minimise exposure, with experts suggesting that



Mexican army drafted in to contain virus outbreak in Mexico City

Thus far, casualties have been much lower in the west, where anti-viral medication has helped stem the severity of the virus.

X1

- Extreme
- Infection wave lasts for 12 months
- Anti-microbial resistance
- 30 million deaths globally
- Class-action lawsuits

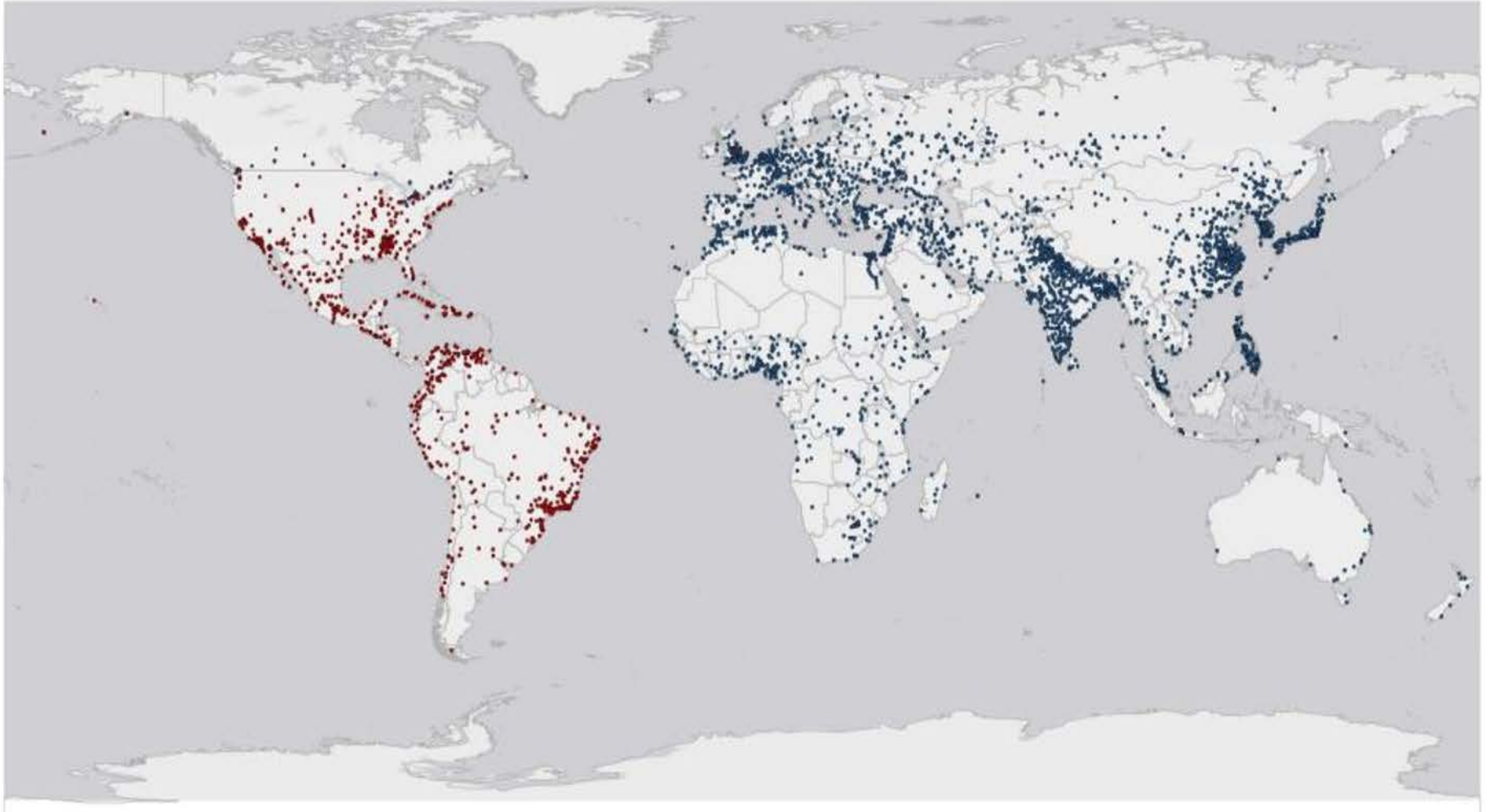
Anti-Microbial Resistance

- Microorganisms stop antimicrobials from working against it
 - Occurs naturally over time
 - Standard treatments become ineffective
 - Infections persist and may spread
 - Increases cost of healthcare
-
- Resistance to the first-line treatment for malaria in 5 countries
 - In 2016, 490 000 people developed multi-drug resistant TB globally
 - People with a resistance to Staph infections are 64% more likely to die



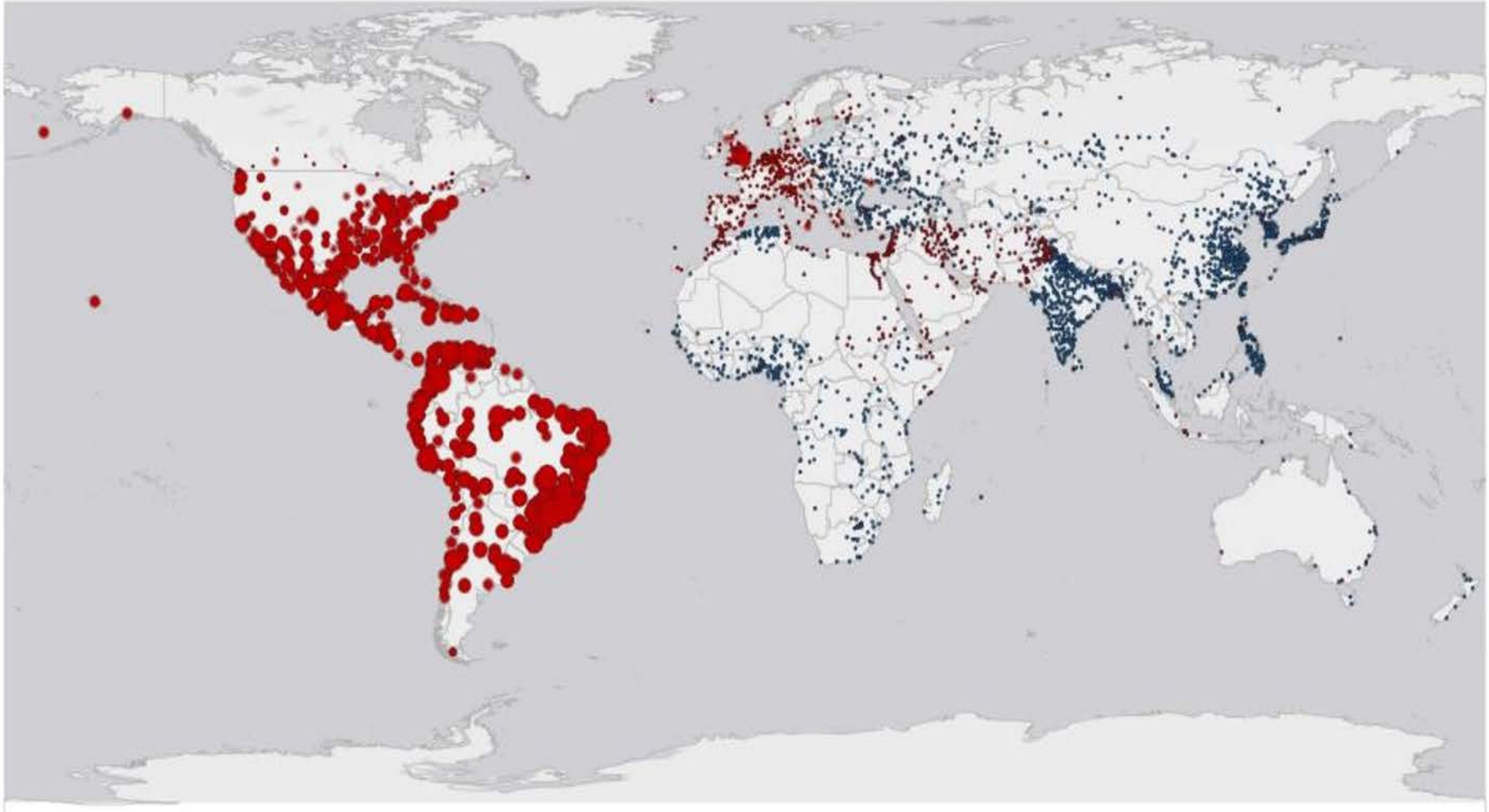
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Pandemic Spread



6 weeks

Pandemic Spread



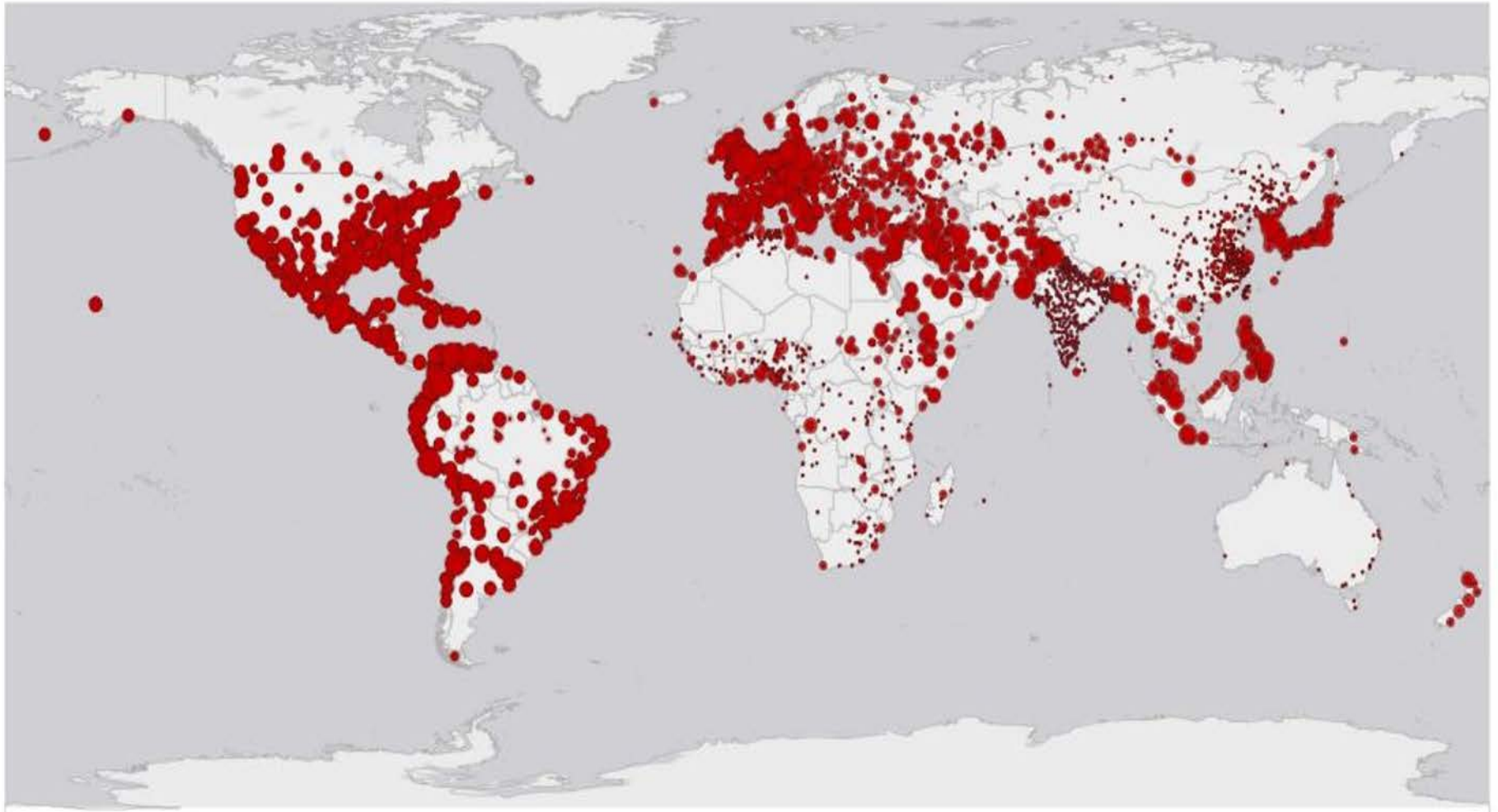
10 weeks



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Pandemic Spread



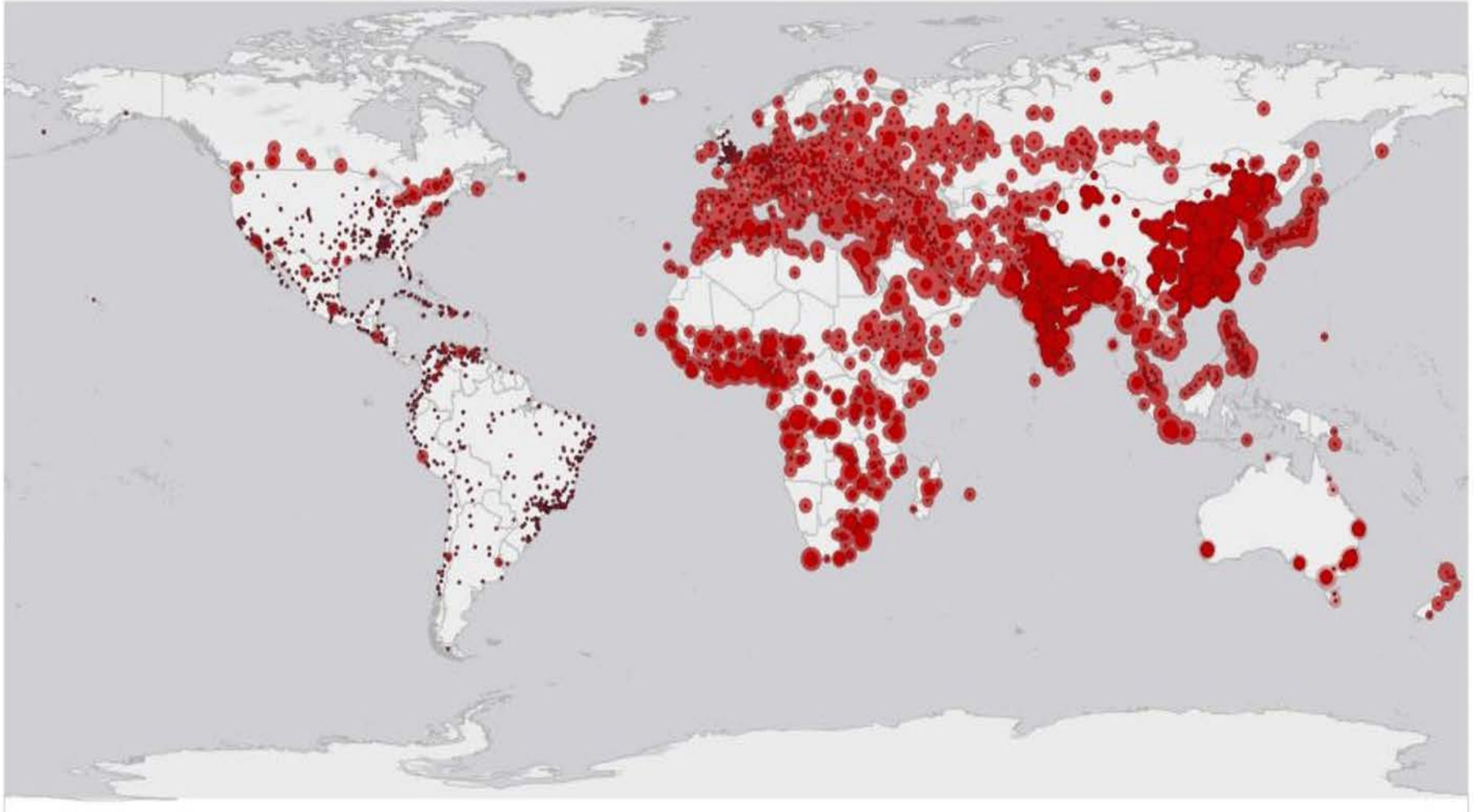
16 weeks



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Pandemic Spread



20 weeks

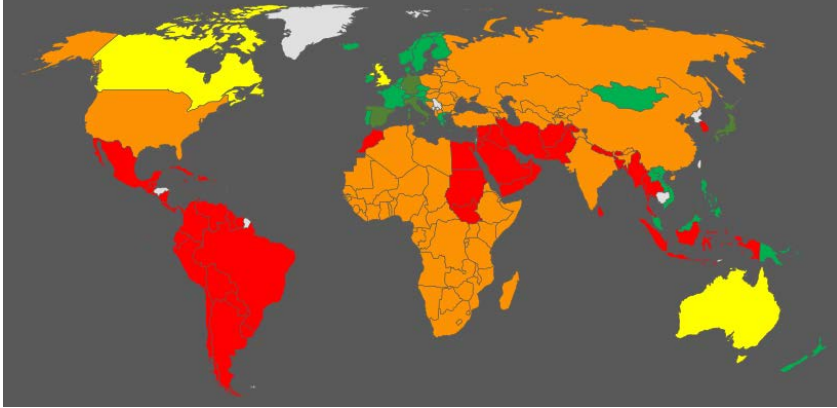


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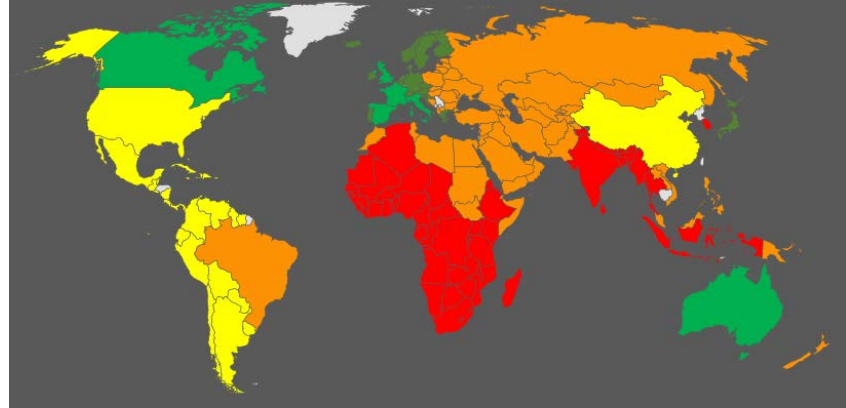
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Life & Health Impacts

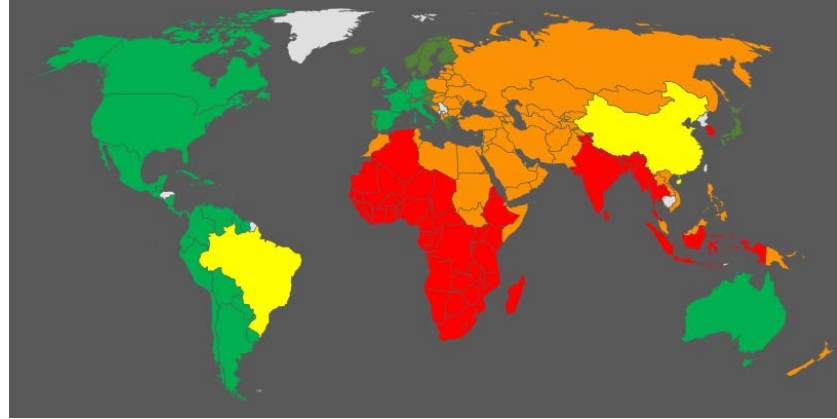
Percent of Population Requiring Medical Treatment



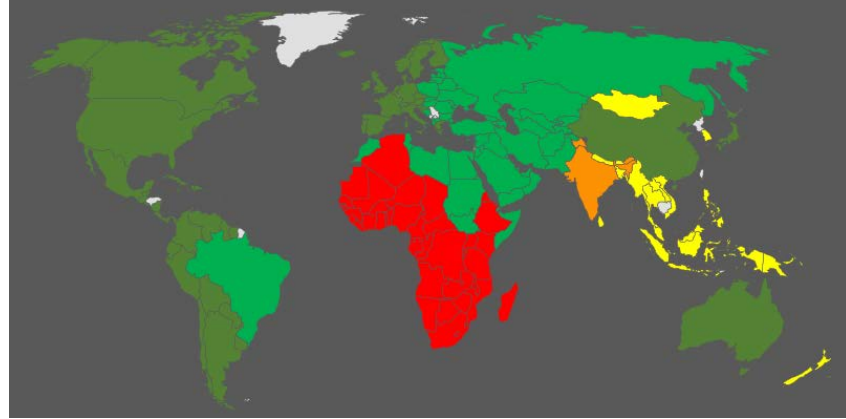
Percent of Population Requiring Hospitalisation



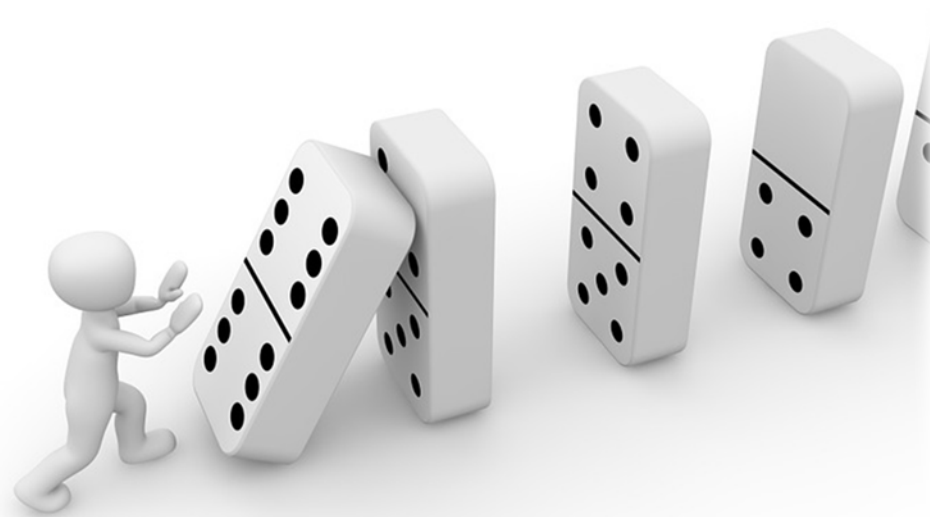
Percent of Population Requiring Critical Care



Percent of Population that Dies



Coverage Trigger Pathways



- We want to identify the various ways that types of insurance and their coverages could suffer loss under various circumstance in the scenario
- Could additional things go wrong that make these assumptions more severe?
- Provides a systematic approach to going through all of the schema coverages to ensure that all potential CTPs are identified and modelled

Pandemic Coverage Trigger Pathways - Liability

Type of Insurance	Coverage Trigger Pathway	Coverage	Who (Insureds)
1 Directors and Officers (D&O)	Company's stock price drops as a result of inadequate plans or complete lack of strategy for coping with a flu pandemic. Directors of seriously impacted companies are being sued for loss of shareholder value.	Duty of care to shareholders	Companies without contingency plans
2 Commercial General Liability (CGL)	Liable for customer injury due to lack of planning / inability to protect from harm	Liability – Third party injury	Owners / Employees
3 Commercial General Liability (CGL)	Hospitals and Nursing Homes not providing enough care during pandemic, workers will not be working at full force	Liability – Failure of duty of care	Hospitals and Nursing Homes
4 Professional Liability/Errors and Omissions (E&O)/Professional Indemnity	Medical Malpractice for prescribing antibiotics / Doctors' ignorance and insufficient knowledge - Releasing patients due to lack of beds /available resources etc.	Duty of care to patients	Physicians, Healthcare Cos.
5 Workers Compensation	Employees suing the company for lack of planning compared to other companies - More impacted industries are the ones requiring face to face interaction	Injury in the workplace	Employers with strong personal interaction e.g. health care
6 CGL - Products	Liable for the spread of the disease due to faulty air-conditioning systems / Vaccination side effects	Defective products	Manufacturers of ventilation systems/Pharmaceutical companies
7 Public Liability	Liable for client injury in a CDC shelter - Potentially liable for the cleanliness of the facilities	Third party injury	Owners

Coverage Trigger Pathway – Medical Malpractice

Type of Insurance: Professional Liability; Errors & Omissions (E&O); Professional Indemnity

Coverage: Damages and defence costs for medical malpractice claims

The Insured: Medical practitioners; Care facilities (e.g. hospitals, nursing homes)

Coverage Trigger: Patient suffers bodily/personal injury or damage as a result of a breach in duty by a medical provider

Common Exclusions:

- Intentional acts
- Illegal acts
- Hospital administration errors

Examples of Medical Negligence:

- Unnecessary surgery
- Surgical errors
- Improper medication or dosage
- Premature discharge
- Disregarding patient history
- Failure to order proper testing
- Failure to recognize symptoms



Pixabay

Loss Estimates

Scenario / Insurance	S1 (\$ Billions)	S2 (\$ Billions)	X1 (\$ Billions)
Hurricane	97	152	219
Commercial Lines	23	31	45
Personal Lines	47	62	87
Casualty Liability	6	11	19
Energy	17	41	48
Marine	1	2	9
Aviation	1	4	8
Pandemic	94	123	159
Life	10	15	21
Health	77	98	119
Livestock	4	6	9
Trade Credit	3	4	10
Liability	0.4	0.6	0.08
Geopolitical Conflict	335	1,576	5,398



Summary

- Data definition document fit for purpose
- Developed a liability model
- Developed a legal settlement model
- Developed a first-stage model for unmodeled lines of business
- Enhanced CCRS methodology

Future

- More people producing models for multi-line insurance clash
- Community of scenario builders

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