Housekeeping

➢ Just a few ground rules for those new to the S webinars.

➢ At this time, all participants are in a listen-only mode.

➢ We will facilitate a question-and-answer session towards the end of the presentation. Please have your questions seen by everybody posted anytime in the Q&A channel on the Zoom handle.

➢ We expect active audience interaction throughout using chat.

➢ The chat will be enabled for persons on stage and audience to comment throughout.

Housekeeping cont'd

➢ Any questions not answered in the sessions will be answered later

➢ Audience gives permission to be contacted by email for promotion and for all comments and questions to be collected for research and publication purposes but no names will be used

➢ As a reminder, this webinar is being recorded for replay purposes. The video will be shared on actuview.com.

➢ There will be 3 polls. Please ALL vote quickly when each poll is launched

Disclaimer

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Agenda

➤ Welcome

➤ Background

- ▪ Context
- ▪ Objective: webinars contribute to research

➤ Speaker order

- ▪ Cathy – background
- ▪ Rachel – polls, findings to date
- ▪ Esko – 'E' is easy for actuaries while 'S' means stress

➤ Q&A

➤ Vote of Thanks/Close

AFIR-ERM
Finance, Investment & ERM

The AFIR ERM Working Parties aim to:

■ Foster applied research related to practical and useful Risk Management topics applicable to the actuarial profession.

■ Extract value from the intellectual potential of the AFIR ERM membership and global associations/parties on Risk Management topics applicable to the actuarial profession.

■ Provide an added value of professional networking and deepening research for AFIR ERM members

2022 -2023 AFIR ERM Working Parties − Research *scope now effective*

Environmental Risk Management

14 Nov 2022

• Climate change is a long-term risk that introduces challenges when applying standard modelling practices

Research focus:
Actuarial modelling consideration of long term liabilities for climate risk.

Societal Risk Management

28 Nov 2022

• The study and management of Societal risk is relatively under-developed in actuarial science.

Research focus:
To address fundamental gaps and, especially, define the major sub-types of Societal Risk with the goal to develop path of integration towards a ERM mature framework.

Governance Risk Management

12 Dec 2022

• A robust governing system is deemed the bedrock to establish sustainable impact when exposed to ESG risks.

Research focus:
To identify key governance and ERM elements and considerations to practically address the balance between financial, operational and ESG perspectives for the Financial services sector.

C19- Pandemic

21 Dec 2022

• Lessons Learned

Research focus:
To assess financial protection/contingency plans during the pandemic

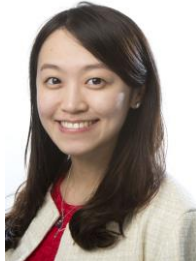To understand the limitation of models in a pandemic crisis

Webinar Team on stage

Malcolm Kemp
AFIR-ERM Board
Moderator, UK

Cathy Lyn
S WG Co-Chair
Jamaica

Rachel Chew
Speaker
S WG, UK

Esko Kivisaari
Speaker
S WG, Finland

Belén Arce
Guest Speaker
Banco Galicia, Argentina

Webinar Team off stage

Guangyao Liu
AFIR-ERM Board
S WG Co-chair, China

Antoine Chartier
S WG, Switzerland

Carolina Castro
Observer from G WG
Argentina

Tamrah Brown
Co-Administrator
S WG, Canada

Nicola Borough-Lee
Co-Administrator
S WG, Jamaica

Teboho Mabeba
Section Coordinator, IAA
South Africa

Tsejean Coley
Actuarial
S WG Volunteer, Jamaica

Yeside Kazeem
President of NAS
S WG Observer, Nigeria

Ritika Agarwal
Actuarial
S WG Volunteer, India

Background

- ➢ The S Working Group Team
- ➢ 10 meetings since inception
- ➢ Crafted Terms of Reference accepted by the AFIR-ERM Board
- ➢ Brainstormed Societal Risk
- ➢ Created Survey Questions for 2022 - 2023 global risk management research
- ➢ Planned S risk Webinar 1 to supply more research content
    - ➢ Belén sends regrets
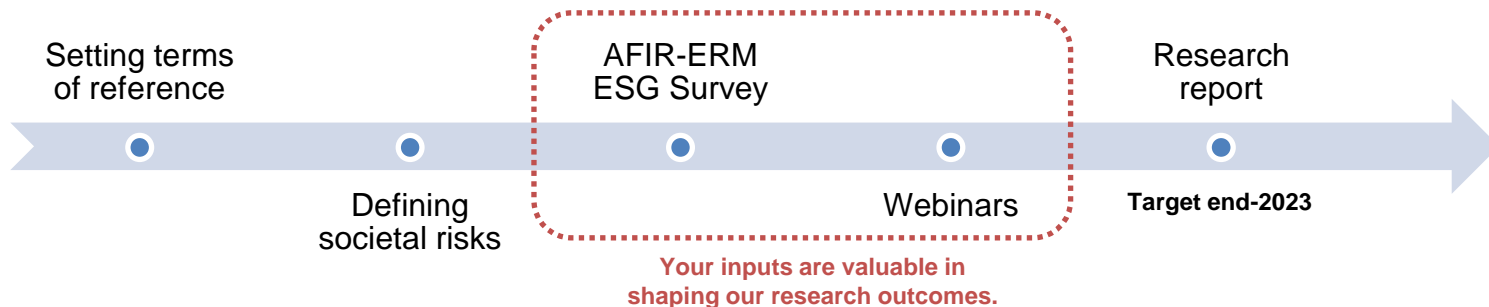- ➢ Rachel will present concept and findings

S Working Group – Updates

The study and management of Societal Risk is relatively under-developed in actuarial science.
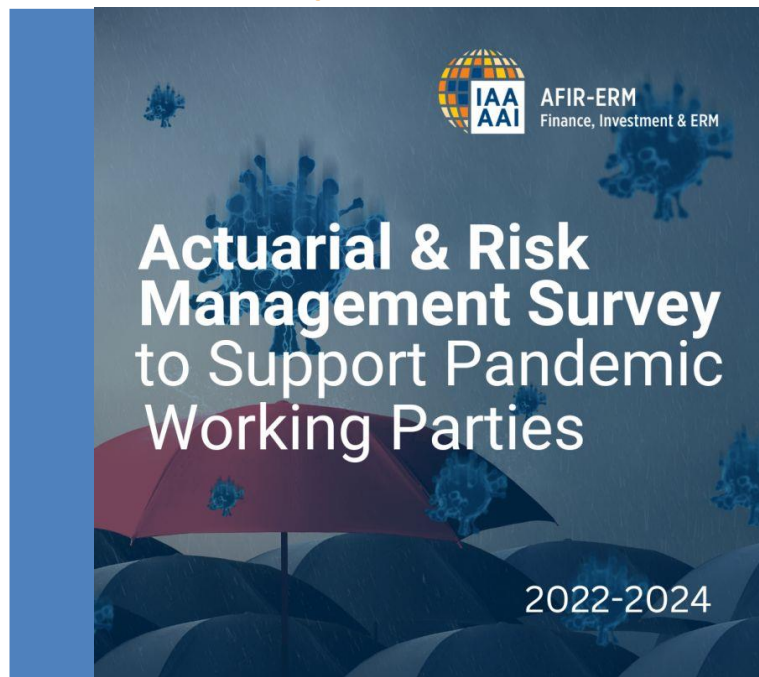
Objectives

- To address fundamental gaps and, especially, define the major sub-types of Societal Risk with the goal to develop path of integration towards an ERM mature framework.
- Designing the approach to manage risks manifesting from social disruptions and sustainability risk to financial services business activities, with actuarial considerations.
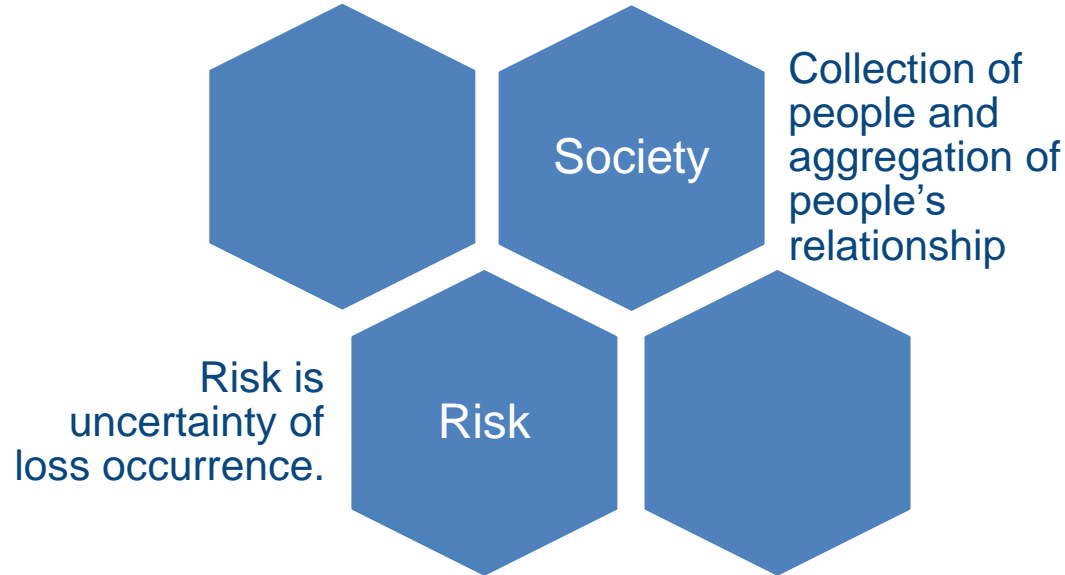
Our work is live and evolving

Setting terms of reference

Defining societal risks

AFIR-ERM ESG Survey

Webinars

Research report

Target end-2023

Your inputs are valuable in shaping our research outcomes.

Surveys

Actuarial & Risk Management Survey to Support Pandemic Working Parties

2022-2024

IAA AAI AFIR-ERM Finance, Investment & ERM

ESG

AFIR-ERM ESG Survey

2022

IAA AAI AFIR-ERM Finance, Investment & ERM

Pandemic Risk : Access the survey at: https://bit.ly/3QLYv64

ESG: Access the survey at : https://bit.ly/3C2WYTy

What is your impression of societal risk?

- Please answer in the Chat

Society

Collection of people and aggregation of people's relationship
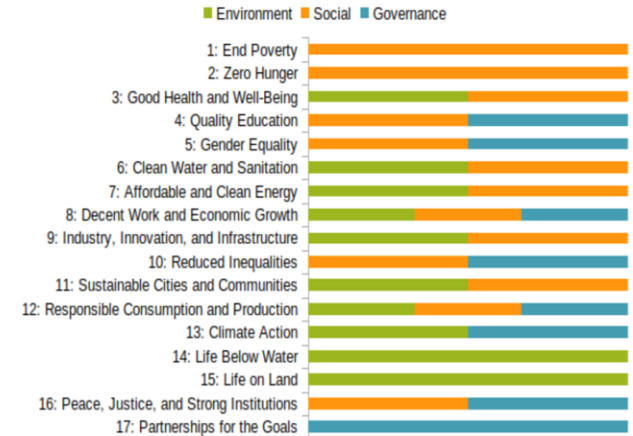
Risk is uncertainty of loss occurrence.

Risk

Defining the S Risk in ESG

Societal risk is abstract and difficult to define. Our research will focus on the risks that have the potential to grow exponentially and result in a social crisis.
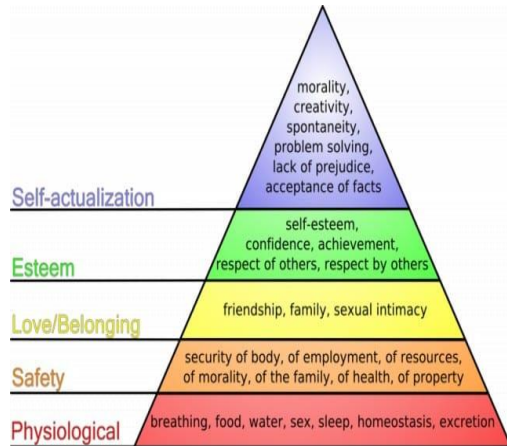
Maslow's hierarchy of needs classifies five categories of human being's needs.

- Self-actualization: morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts
- Esteem: self-esteem, confidence, achievement, respect of others, respect by others
- Love/Belonging: friendship, family, sexual intimacy
- Safety: security of body, of employment, of resources, of morality, of the family, of health, of property
- Physiological: breathing, food, water, sex, sleep, homeostasis, excretion

Societal risk:
- Risk of harm to a human population / survival
- Risk of not meeting the UN SDGs
- Social disruption and social crisis
- Environmental risk
- Risk to human basic needs

Legend: Environment, Social, Governance

1: End Poverty
2: Zero Hunger
3: Good Health and Well-Being
4: Quality Education
5: Gender Equality
6: Clean Water and Sanitation
7: Affordable and Clean Energy
8: Decent Work and Economic Growth
9: Industry, Innovation, and Infrastructure
10: Reduced Inequalities
11: Sustainable Cities and Communities
12: Responsible Consumption and Production
13: Climate Action
14: Life Below Water
15: Life on Land
16: Peace, Justice, and Strong Institutions
17: Partnerships for the Goals

United Nations Sustainable Development Goals (UN SDGs) and the association with the E, S and G elements

Poll 1

Please select 3 of the United Nations Sustainable Development Goals (UN SDG) that have the potential to give the most economic value to your Portfolio.
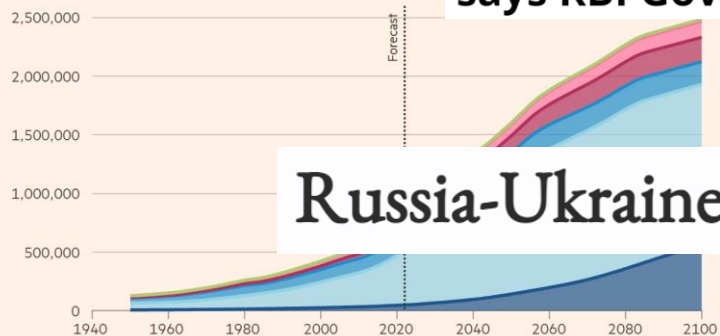
Societal impact on financial service activities

Societal risks can be mapped into standard risk types.

Environmental issues
Economic downturn
Poor health and mental health
Energy crisis
Supply and resource issues
Ageing population
Uncontrolled AI
Poor education
Poverty

Market risk
Credit risk
Liquidity risk
Underwriting risk
Operational risk
Strategic risk
Reputational risk
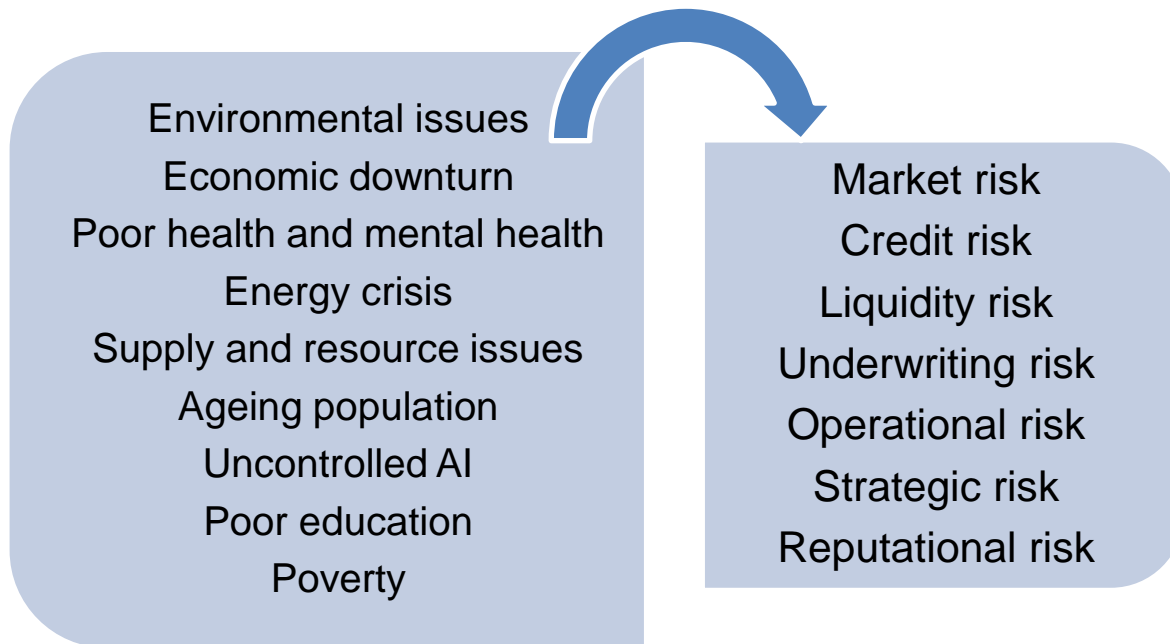
Poll 2

In your opinion, which absolute risk type below is likely to be most impacted by societal risks?

Select up to 3 risk types

Poll 3

Please provide your impression to the following statement:

The portfolio policies embed social risk or social credit in business activities

Answers range from Strongly Disagree to Strongly Agree or N/A

In ESG, 'E' is easy for actuaries while 'S' means stress

Esko Kivisaari, 28 November, 2022

According to the IAA, actuaries

- Evaluate the likelihood of future events;
- Design creative ways to reduce the likelihood of undesirable events;
- Decrease the impact of undesirable events that do occur;
- Assist in the scientific analysis and quantification of risks;
- Measure, manage, and mitigate risks;
- Establish premiums, policy and claim liabilities, and appropriate capital levels;
- Assess financial security systems;
- Evaluate pension plan liabilities; and
- Determine the level of contributions required to finance pension, health care, and social insurance programs

Basis for responsible actuarial practice in the future?

- United Nations Sustainable Development Goals: https://sdgs.un.org/goals

- The UNEP FI Principles for Sustainable Insurance: https://www.unepfi.org/psi/the-principles/

  - We will embed in our decision-making environmental, social and governance issues relevant to our insurance business

  - We will work together with our clients and business partners to raise awareness of environmental, social and governance issues, manage risk and develop solutions

  - We will work together with governments, regulators and other key stakeholders to promote widespread action across society on environmental, social and governance issues

  - We will demonstrate accountability and transparency in regularly disclosing publicly our progress in implementing the Principles
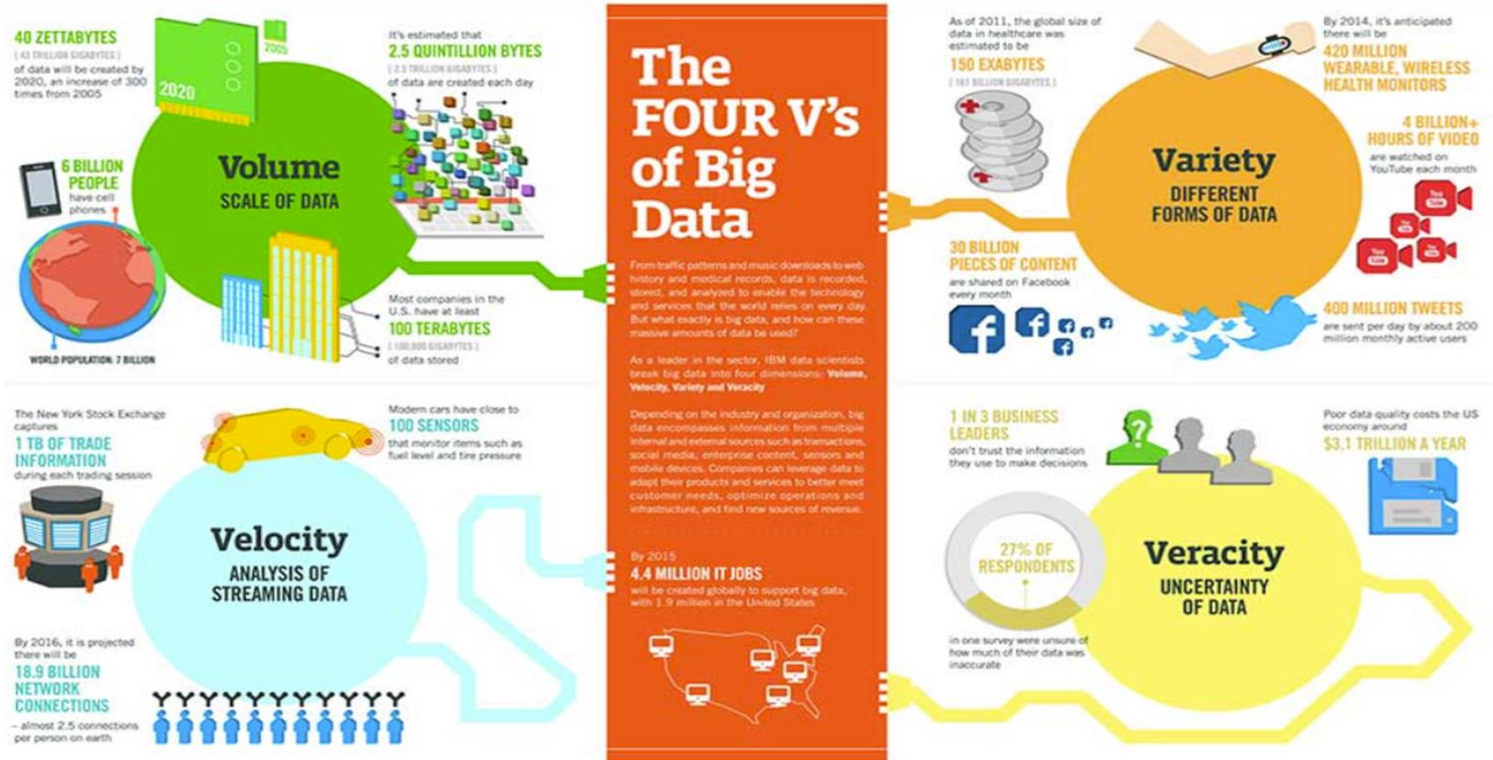
Source:Stockholm
Resilience Centre

Are we part of the problem or part of the solution?

- For insurers, when we talk of **ESG, E is easy** but **S means stress**
- **A good example** is mental health where underwriting practices have been dismal, based on an outdated understanding of the phenomenon and available therapies
- There will always be tension between the protection of an insured pool and the fair treatment of an **individual customer** – but up-to-date science is the only rational basis for managing this tension
- Insurers need to engage with the NGO's early enough – own science-based action is better than waiting for politicians to act

Case in point: Social inclusion in the world of modern predictive analytics

What modern data science and artificial intelligence mean for social exclusion?

- The four V's (Volume, Velocity, Veracity and Variability) of Big Data connected to advanced analytical methods make it possible to categorise individuals in increasingly advanced ways,
  - often creating problems, see e.g. 'Weapons of Math Destruction' by Cathy O'Neill
- Often the problems are not intentional, but as actuaries we should recognise also unintended and erroneous situations where the models used are wrong, e.g., because correlation is thought to mean causality

Opportunities with data

- The volume of digital data is increasing by around 61 % annually.

- The rapidly developing techniques of predictive analytics make it possible to use this data in underwriting and pricing of insurers.

- These novel technologies present huge opportunities for societies to utilize pooling of risks better and better.

- For insurers better techniques help not only to cover risks more efficiently but also to better manage adverse selection and moral hazard, and also to combat insurance fraud.

But threats as well

- With these benefits we also have threats.
  - Does increasingly exact risk-based underwriting lead to a decrease in the inherent solidarity, existing not only in mandatory or social insurance but also in voluntary insurance?
  - Do we end up in a situation where lack of insurance leads to a larger part of the population being socially excluded (recognizing that modern techniques, when used responsibly, can also reduce exclusion)?
- This presentation is connected to the thinking of the Consultative Expert Group on Digital Ethics set up by EIOPA, where the author was chairing one of the three workstreams.

Social inclusion/exclusion and protecting vulnerable individuals/groups?

- A **vulnerable person** is either a minor or someone who, for physical or mental reasons, is unable to look after him-/herself or his/her finances.

- **Social exclusion** or **social marginalisation** is the social disadvantage and relegation to the fringe of society:
  - the process in which individuals are blocked from, or denied full access to, various rights, opportunities and resources that are normally available to members of a different group, and which are fundamental to social integration, e.g. housing, employment, healthcare, civic engagement, democratic participation, and due process.

Essential & non-essential insurance

Depending on the jurisdiction concerned, different types of insurance are more or less essential when we talk of vulnerability – criteria mentioned already before:

- 'individuals are blocked from, or denied full access to, various rights, opportunities and resources that are normally available to members of a different group, and which are fundamental to social integration, e.g. housing, employment, healthcare, civic engagement, democratic participation, and due process'

Consequences of exclusion

- Anyone who appears to deviate in any way from perceived norms of a population may thereby become subject to coarse or subtle forms of social exclusion.

- The outcome of social exclusion is that affected individuals or communities are prevented from participating fully in the economic, social, and political life of the society in which they live. This may result to resistance in form of demonstrations, protests, or lobbying from the excluded people.

What is insurance – two possible ways to understand insurance?

Two ways to understand insurance have existed through the whole history of insurance

- Insurance can be understood as a product sold by wealthy institutions or individuals to cover financial consequences of realised risks covered by an insurance contract, or

- Insurance can be understood as a mechanism where a community of insureds agrees to mutually cover large risks encountered by few members of the community, by paying premiums ex ante or ex post

These aspects exist in all insurance also today – irrespective of whether we talk of insurers as mutuals or limited companies

Solidarity in insurance – insurance & society

- Insurance always contains a certain amount of solidarity – already in the idea of those few suffering a loss getting compensation from the many who fared better
- The idea of (private/voluntary) insurance is that all the insureds pay a premium corresponding correctly to their risk – in this sense there is no solidarity, however
  - There can be unintended solidarity when premiums etc. are calculated based on uncertain or incorrect data
  - There can be intended solidarity when certain data (e.g. gender) is not used because of legislation or other considerations (like corporate social responsibility)

Conclusions

- Actuaries, due to their education and code of conduct, are well-placed to develop responsible, innovative, advanced and reliable ways of using modern data analytics to the benefit of our communities

- Actuaries need to be careful as the techniques present, along with great opportunities, grave threats

- Actuaries should always check their models so that they foster social inclusion

Case in point: Insuring Individuals with Mental Health Problems

- How do psychiatric disorders affect mortality?
- How and how well do psychiatric treatment
- methods work?
- Are health declarations currently adequate from the viewpoint of modern psychiatry?
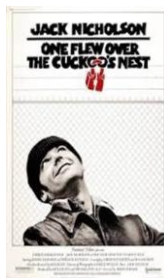
Based on a study by Hasse Karlsson, MA, MD, PhD, Professor of Integrative Neuroscience and Psychiatry, University of Turku, Chief Physician, Hospital District of Southwest Finland, Department of Psychiatry, Director, Turku Brain and Mind Center, for Finance Finland

ICD-10 main categories of mental and behavioural disorders

- Organic, including symptomatic, mental disorders

- Mental and behavioural disorders due to psychoactive substance use

➡ Schizophrenia, schizotypal and delusional disorders

➡ Mood disorders

- Neurotic, stress-related and somatoform disorders

- Behavioural syndromes associated with physiological disturbances and physical factors

- Disorders of adult personality and behaviour

- Mental retardation

- Disorders of psychological development

- Behavioural and emotional disorders with onset usually occurring in childhood and adolescence

A wide range of very different disorders that cannot be grouped into a single category!

How do psychiatric disorders affect mortality?

- Like other disorders and diseases, most increase mortality

- All-cause mortality is 2.2 compared to the general population

- Median years of potential life lost: 10 (15–20 years for psychosis patients)

- Natural causes 63.7%, unnatural causes 17.5%

Walker et al. 2015

FIGURE 1. Comparison of survival estimates among patients with different mental disorders.

- Most common causes of death among psychiatric patients: cardiovascular diseases 33.9%, cancer 21% and pulmonary diseases 13.5%. Only 5.4% of the deaths were unnatural (4.7% among persons without a diagnosed psychiatric disorder).

- Controlling for demographic variables, SES, physical condition and access to healthcare services, the mortality of psychiatric patients reduced to 82% and their hazard ratio dropped to 1.19.
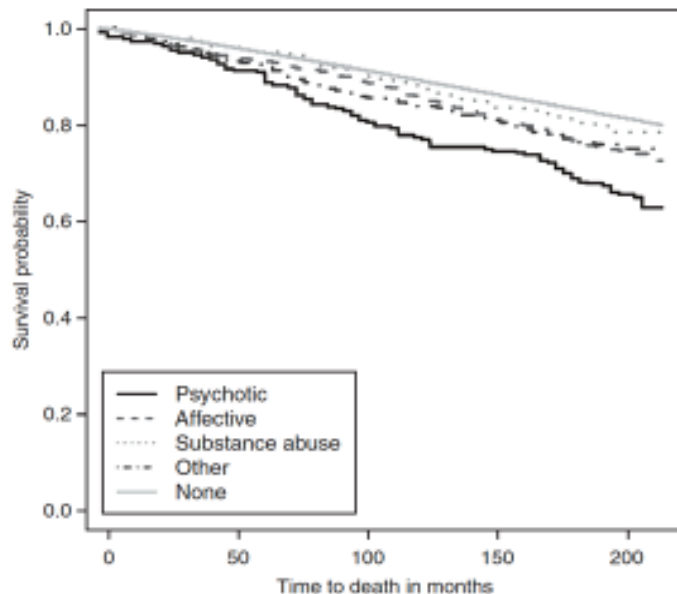
Personal responsibility

- Anxiety disorders frequently involve an inflated sense of responsibility (Sugiura & Fisak 2019)

- The same usually applies for persons suffering from depression (Pozza & Déttore 2014), although the loss of initiative associated with the disorder may mitigate this tendency

- Psychotic disorders often affect cognitive processes and consequently also decision-making capacity and responsibility (Mosiolek et al. 2016)

- Only a few psychiatric disorders reduce a person's capacity to lead a responsible life

How many are healed with psychotherapy?

HONORARY PAPER

The effects of fifteen evidence-supported therapies for adult depression: A meta-analytic review

PIM CUIJPERS [1], EIRINI KARYOTAKI[1], LEONORE DE WIT[1], & DAVID D. EBERT[1,2]

[1]Department of Clinical, Neuro and Developmental Psychology, Amsterdam Public Health Research Institute, Vrije Universiteit Amsterdam, Amsterdam, Netherlands & [2]Clinical Psychology and Psychotherapy, Institute for Psychology, Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany

Combined effect size of psychotherapy = 0.72
NNT (number needed to treat to benefit one person) = 4.04

| Relative size	Effect size	% of control group below the mean of experimental group
	0.0	50%
Small	0.2	58%
Medium	0.5	69%
Large	0.8	79%
	1.4	92%

NNT values of pharmacotherapeutic treatments for comparison

- Blood pressure medication (prevented death) 125
- Blood pressure medication (prevented stroke) 67
- Metformin for diabetes (prevented death) 14
- Antibiotics for acute sinusitis (resolution of symptoms) 17
- PPIs for acute peptic ulcer bleeding (preventing rebleeding) 15
- Sumatriptans for acute migraine attacks (pain-free) 4

Are health declarations currently adequate from the viewpoint of modern psychiatry?

- Psychiatric disorders are a heterogenic group of diseases

- Their treatment is relatively effective

- If the health declaration only addresses the subject with one or two questions that only seek to establish whether the person has ever suffered from a mental disorder (panic disorder, psychosis, depression, …), the broad range of diverse disorders and effectivity of treatments is neglected

FROM MENTAL DISORDER INTO A HIGHER INSURANCE RISK
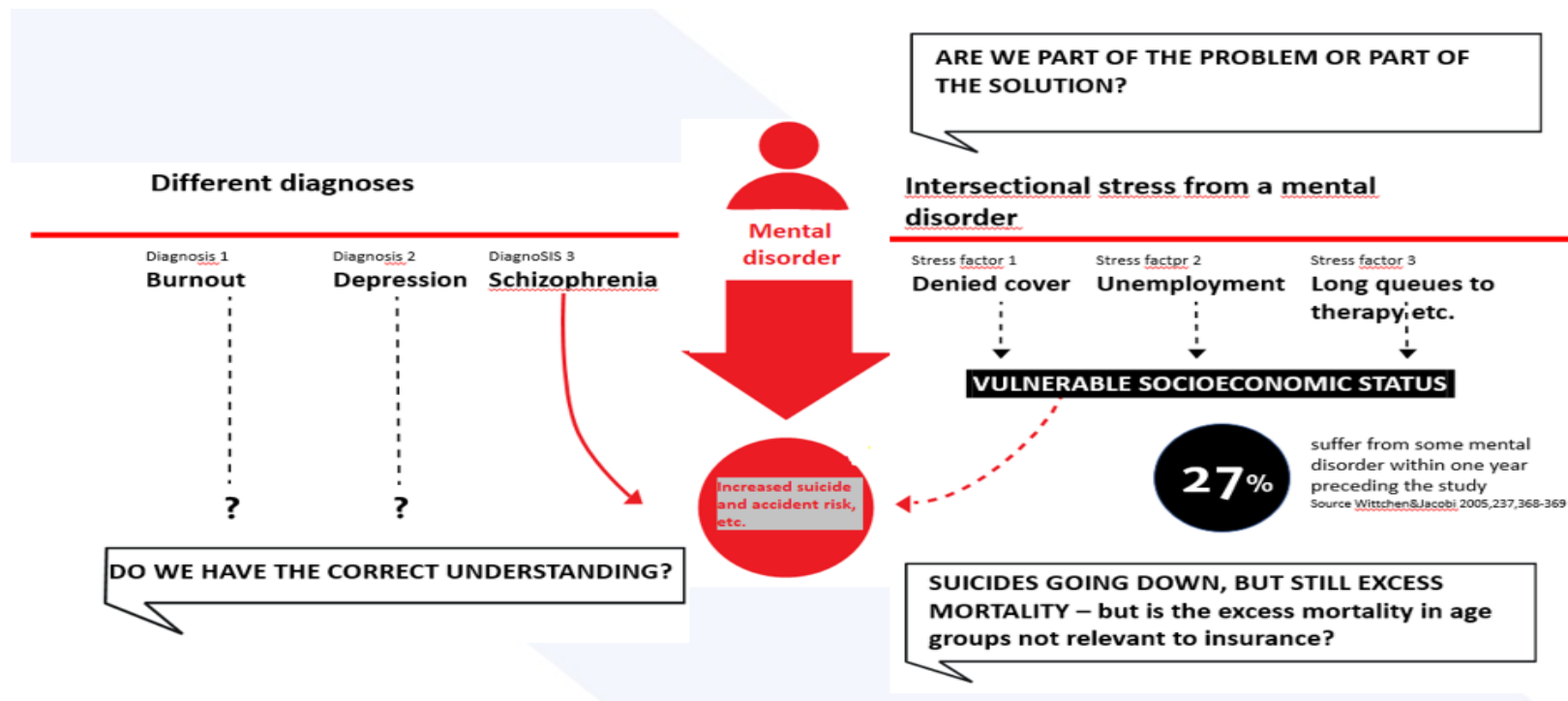
The IAA's Membership in 2018

Congresses: every 4 years (in Congress year, Section Colloquia held in conjunction with Congress)

2017
- Full Members
- Associate Members
- Non-member Association
- Actuaries, No Association
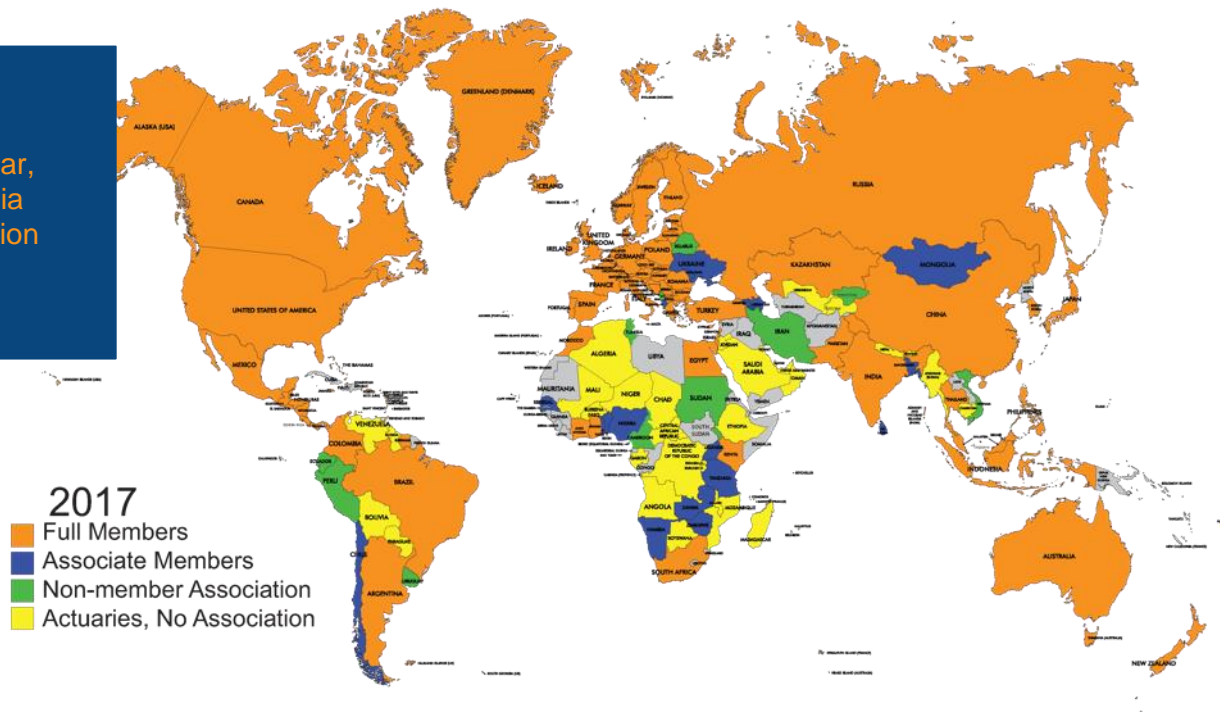
Takeaways
Questions and Comments

Thank you

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IAA AAI