

What Actuaries Should Know About Climate Change

Speakers



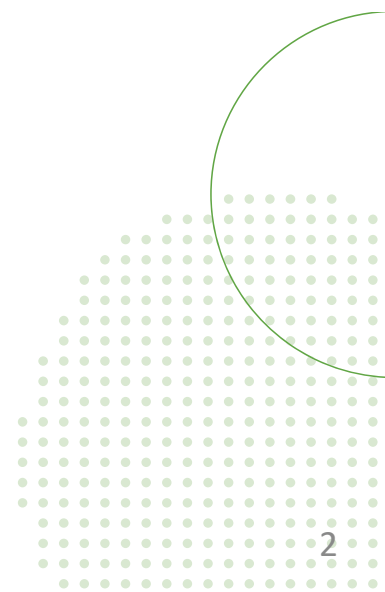
Margaret Tiller Sherwood
FCA, FCAS, FSA, MAAA,
CPCU, ARM, ERMP, CERA
Tiller Consulting Group, Inc.



Lisa Slotznick
FCAS, MAAA
Retired



R. Dale Hall, FSA, MAAA, CERA, CFA
Managing Director
Society of Actuaries Research Institute
@rdalehall



Antitrust Policy

Professional societies, including the Conference of Consulting Actuaries (CCA), are subject to federal and state antitrust laws, and must constantly monitor their activities to ensure continued compliance with all antitrust regulations.

Purpose of Antitrust Laws

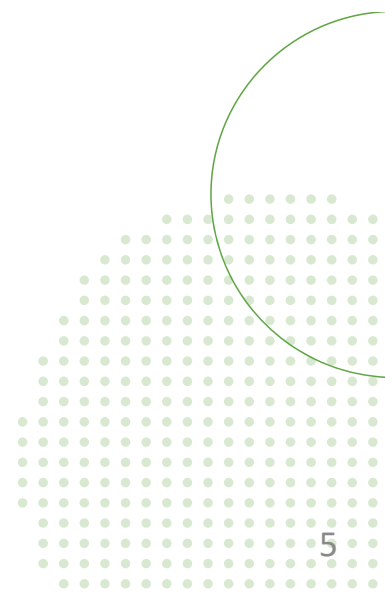
The antitrust laws prohibit any concerted activity or combination of competitors from interfering with free competition. In other words, the primary thrust of the law is to control private economic power by protecting competition. Persons and organizations are prohibited from engaging in any action which unreasonably restrains commerce or trade (i.e., competition). Per se violations (practices presumed to be inherently wrong regardless of the motivating factors) include: agreements to fix or stabilize prices, to divide markets, to allocate production, or to impose boycotts. In essence, this means any concerted action that significantly diminishes rivalry among competing firms.

Main Activities and Offerings

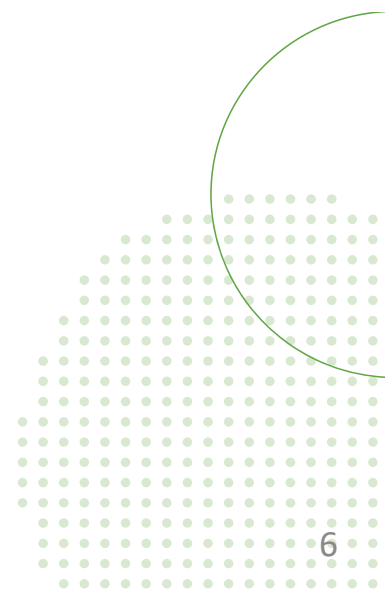


Outline

1. Climate Change and the Actuary
2. Actuaries Climate Index
3. Actuaries Climate Risk Index
4. Climate Risk Disclosures
5. Climate Risk and the Actuaries' Principals
6. IAA's Climate Issues Papers
7. Other Resources
8. Q&A



Climate Change and the Actuary



Climate Change and the Actuary

Climate Change and the Actuary

- Impact from assets shifting due to new incentives
- Need for climate-related financial disclosures
- Understanding of climate data sets and climate scenarios
 - Scenarios typically consider Representative Concentration Pathways (RCPs) that follow greenhouse gas concentrations over time

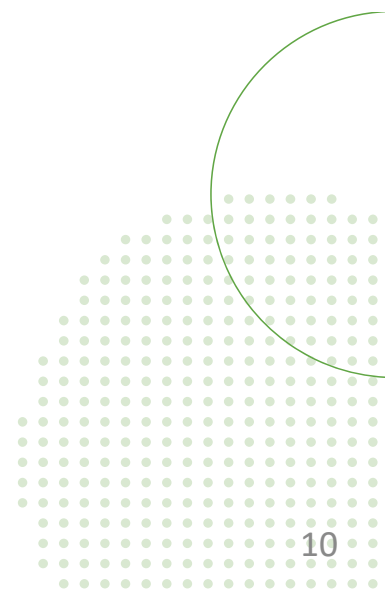
Definitions/Language of Climate Discussion – Before We Start

Risks Source	Physical - The physical risks are risks resulting from climatic events, such as wildfires, storms, and floods.	Transition - The transition risks result from policy action taken to transition the economy off of fossil fuels.
Time Horizon	Short 1 to 5 years or a bit more Medium Range from 5 to 20 years Long Term Projections to 2050 to 2100	No one definition exists for each time horizon.
ESG Source	Environmental, Social and Governance	Three key factors when measuring the sustainability and ethical impact of an investment in a business or company.
Greenhouse Gas Emissions Source	Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company.	Scope 3 includes all other indirect emissions that occur in a company's value chain.
Net Zero Source	Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance.	To keep global warming to no more than 1.5°C above pre-industrial levels – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach net zero by 2050.

Climate Change Matters to Actuaries in All Practice Areas

Considerations	Casualty	Health	Life	Pension/Retirement
Exposures	Property losses from storms, wildfire, floods and sea level rise Workers compensation from heat events Directors & Officers from transition risks	Health claim trends from extreme climate events such as heat, flood and storms. Long term respiratory issues. Claim incidence on Disability Insurance	Mortality trends from extreme climate events	Employment patterns to fund retirement. Migration patterns of retirees. Social Security impacts
Data	Does data get stale faster? What data to include?			
Assumptions	Revisit and consider speed of change			
Capital	Enterprise Risk Management (ERM) and Solvency			
Assets			Rates of Return ESG Investing	Rates of Return ESG Investing

Actuaries Climate Index



Actuaries Climate Index – the Basics

Actuaries Climate Index

<https://actuariesclimateindex.org/home/>

Six climate variables tracked across North America. Index shows how extreme observations are compared to base time period.

High temperatures

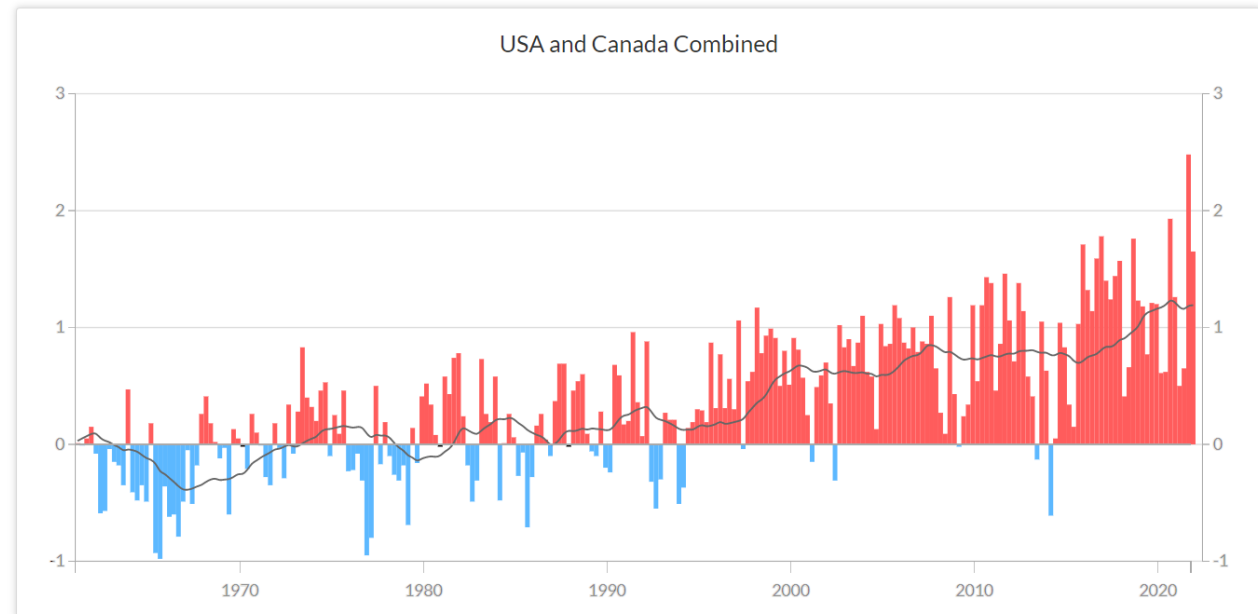
Low temperatures

Heavy rainfall

Drought (consecutive dry days)

Wind speeds

Sea level

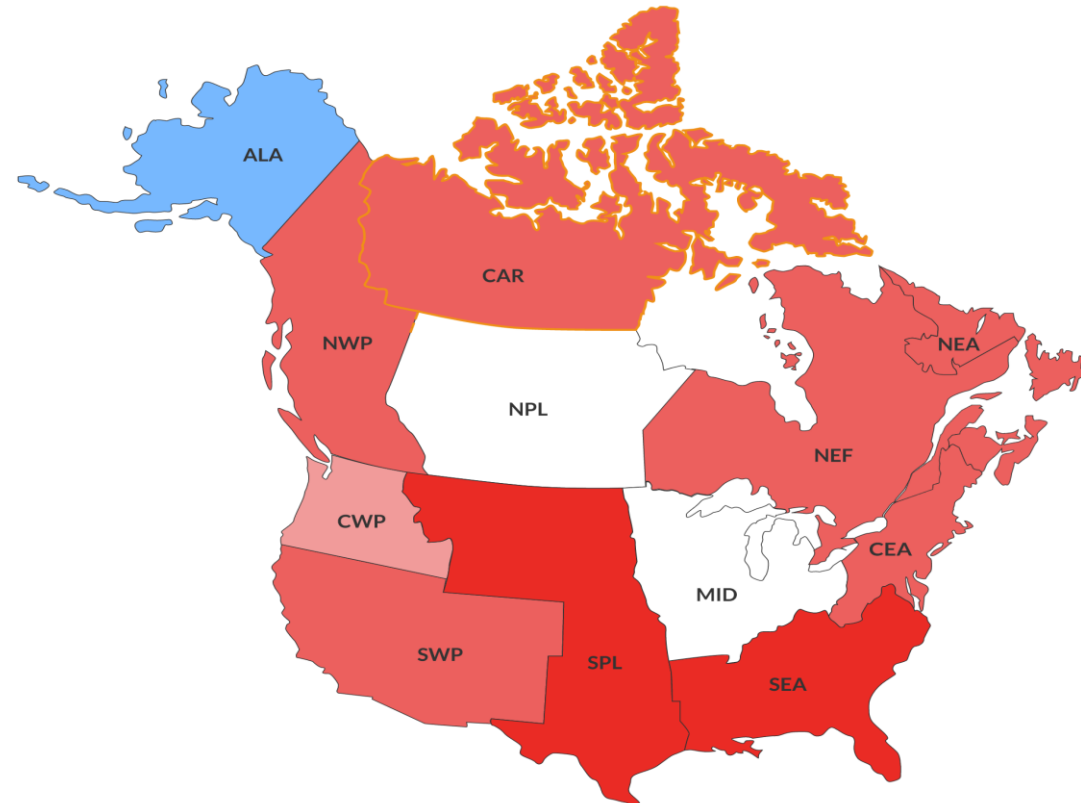


Actuaries Climate Index – Who sponsors it? What is it?

- The ACI is jointly sponsored by the American Academy of Actuaries, Canadian Institute of Actuaries, Casualty Actuarial Society and Society of Actuaries
- [Actuaries Climate Index](https://actuariesclimateindex.org/home/) focuses on extremes of weather – temperature highs and lows, rainfall, drought, wind – as well as sea level change for US and Canada including 12 subregions
- Graphics and data available on website with quarterly updates
- Version 1.1 live, 2.0 in development

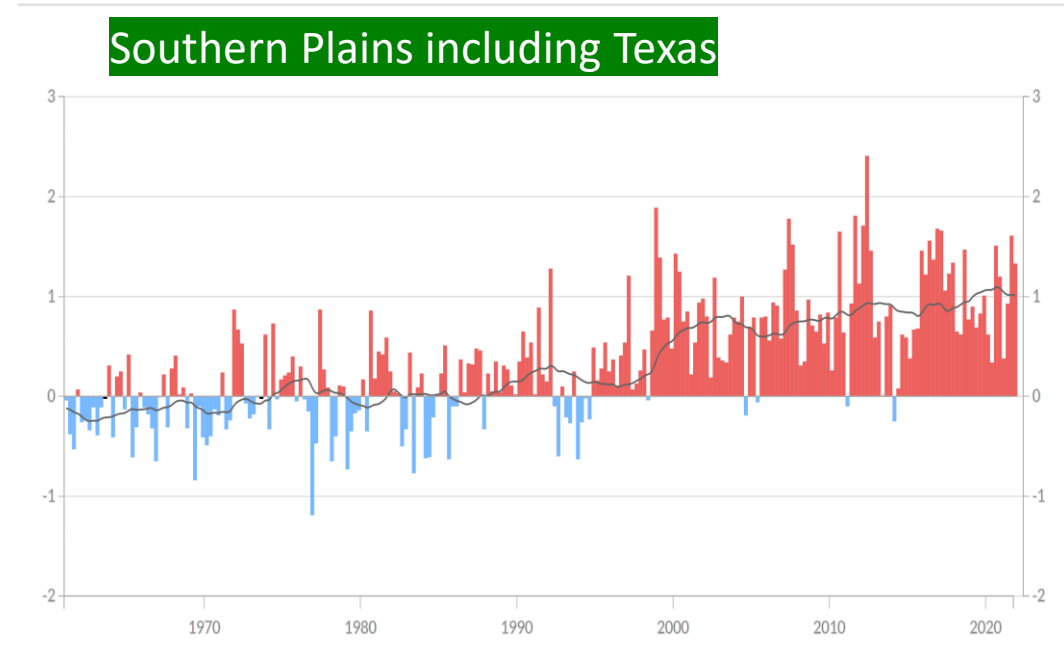
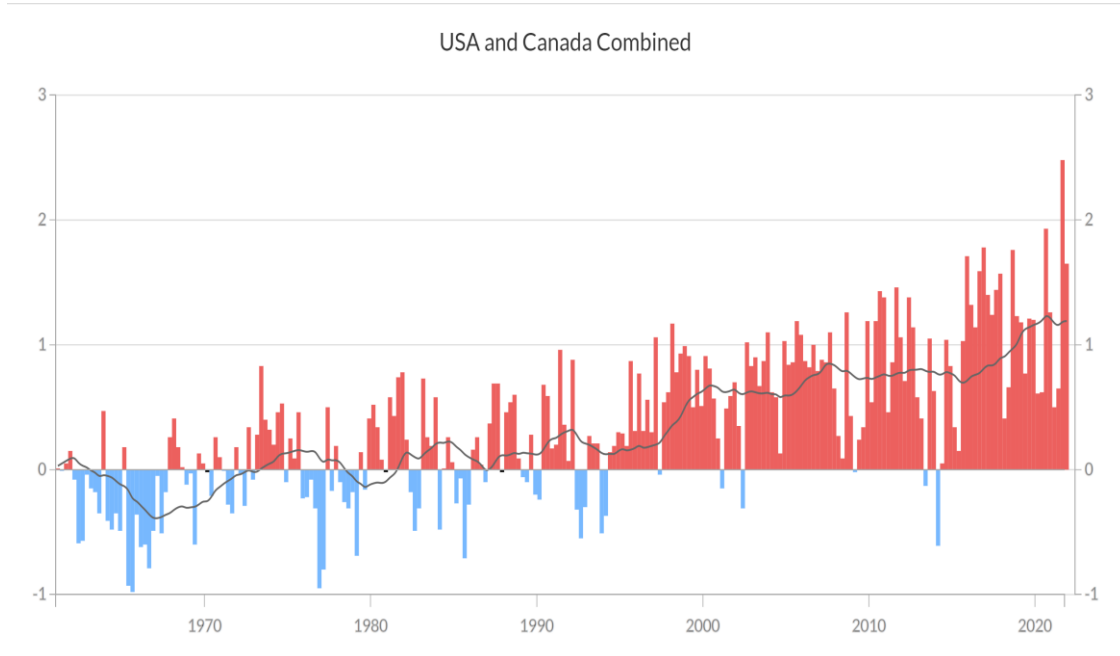
<https://actuariesclimateindex.org/home/>

ACI Regions



Index of High Temperature, Low temperatures, Heavy rainfall, Drought (consecutive dry days), High Wind and Sea Level
[Actuaries Climate Index Site 7 21 22](#)

Actuaries Climate Index In Total and Region including Texas

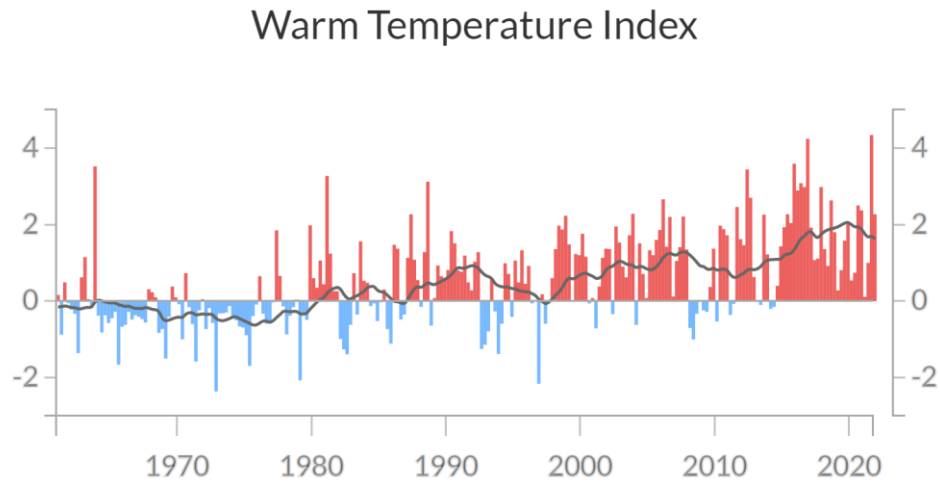


Index of High Temperature, Low temperatures, Heavy rainfall, Drought (consecutive dry days), High Wind and Sea Level

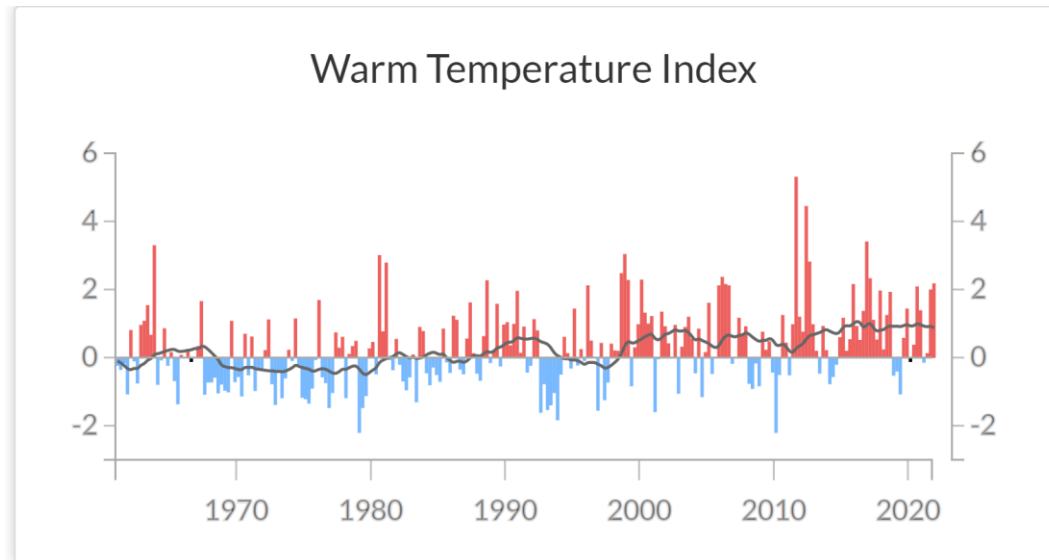
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Actuaries Climate Index – Warm Temperature Index

US and Canada



Southern Plains Including Texas

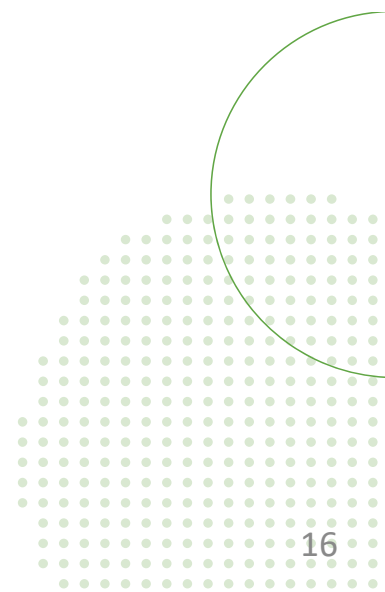


Index of Warm Temperatures

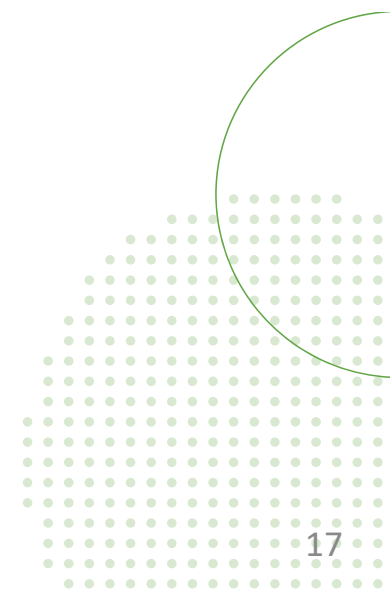
[Actuaries Climate Index Site 7 21 22](#)

How is the ACI used?

- Independent and objective measure of climate change
- Leading indicator of change
- Exposure management
- Inform public policy
 - Use in resiliency studies
 - Cost of climate change relative to proposed programs
 - Targets for mitigation efforts
- Academic Research



Actuaries Climate Risk Index



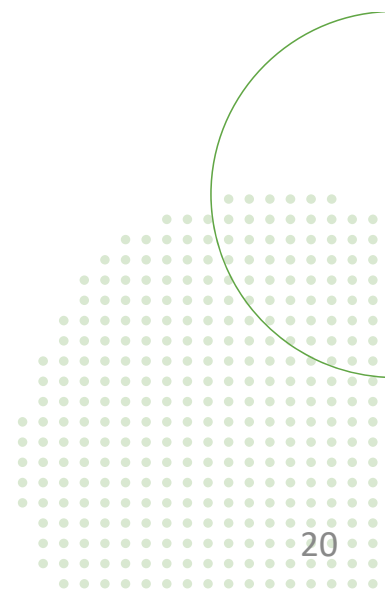
Actuaries Climate Risk Index

- Preliminary [ACRI](#) released January 2020
- ACRI incorporates
 - Actual loss data
 - Considers changes in exposure to loss
 - US only
- ACRI 1.0 shows as of 2016 relatively small additional losses controlling for exposure, consistent with other results
- ACRI 1.0 used data that had limitations over large regions

Actuaries Climate Index 2.0 and Actuaries Climate Risk Index 2.0

- **ACI Data for next version**
 - More complete data – Use of reanalysis sets versus stationary data
 - More granular data - Expand to smaller regions such as state and county
- **ACRI Data for next version**
 - More complete and granular data including Canada
 - Move to additional robust sources of data for extreme events and potential aggregation of smaller events

Climate Risk Disclosures



- Financial Stability Board's Task Force on Climate-related Financial Disclosures
<https://www.fsb-tcfd.org/>
- Released 2017, and becoming more routinely adopted by regulators around the world
- Large adoption in Asia-Pacific and European markets
- Physical Risks and Transition Risks described
- Data, Scenario Analysis and Disclosures

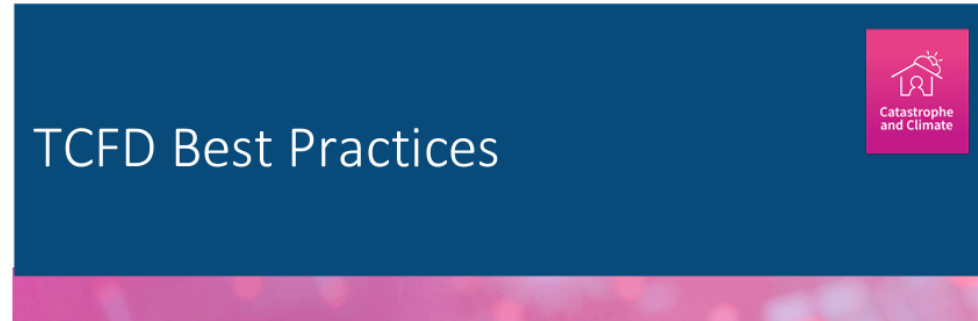




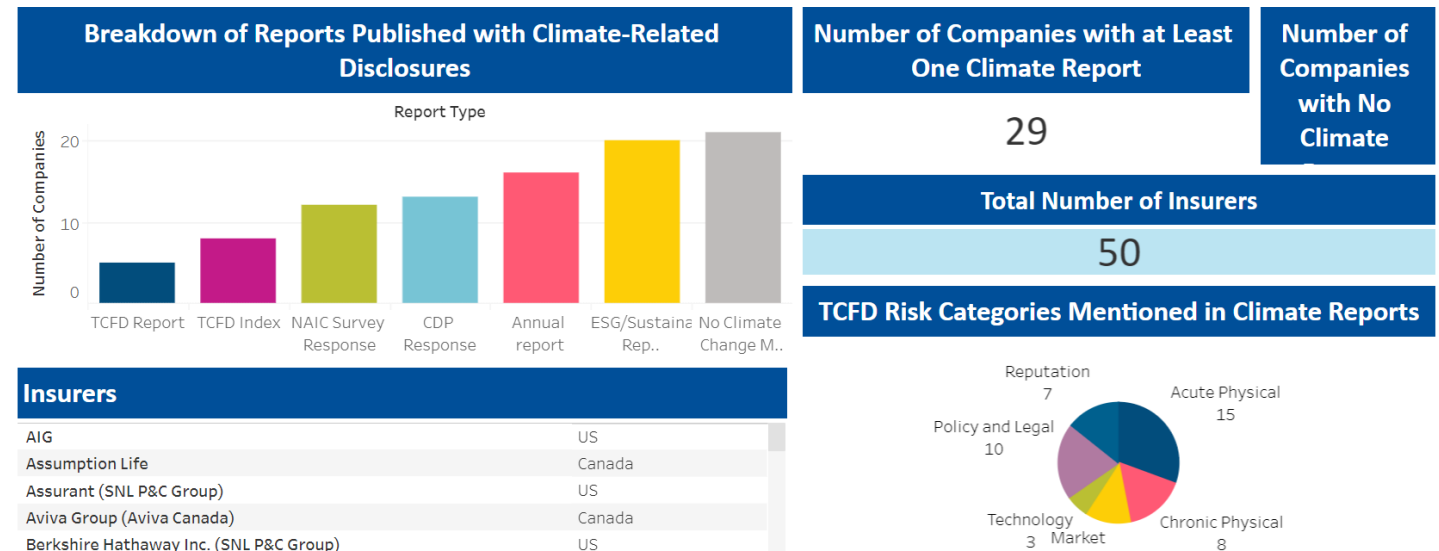
- Reports and white papers growing on how financial services companies are implementing TCFD and ways actuaries are getting involved in the process

- <https://www.soa.org/resources/research-reports/2022/tcfd-best-practices/>

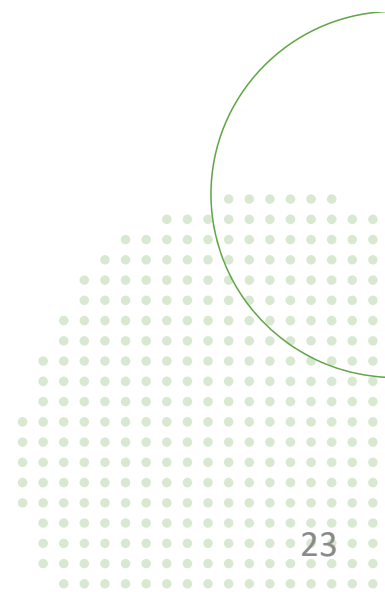
- <https://www.pwc.com/gx/en/about-pwc/assets/network-tcfd-report-2021.pdf>



SOA TCFD Best Practices - Research Dashboard



Climate Risk and the Actuaries' Principals

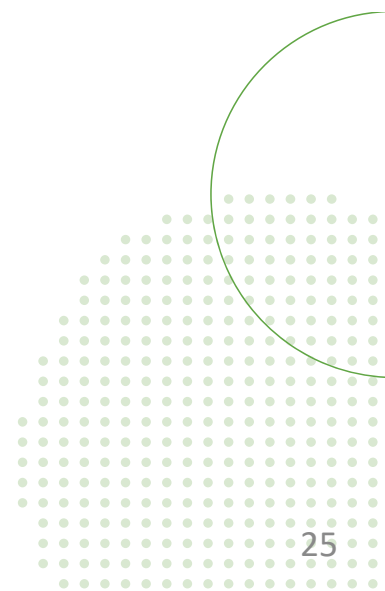


Addressing Climate Change Publicly

- Many entities both in the corporate world and government agencies prepare resiliency and sustainability reports outside of financial reporting
 - [TVA Sustainability Report](#)
 - [Social Security Climate Action Plan](#)
 - [Disney 2021 Sustainability Report](#)
 - [Allianz 2021 Sustainability Report](#)

Resiliency Reports

- These reports vary in focus and depth sometimes including
 - Plans for continuing operations if exposed to natural disaster and acknowledging the geographic spread of operations along with specific physical risks
 - Net Zero Goals and approaches for getting there
 - Corporate Citizenship
- These reports are generally not regulated nor comparable
- The focus is not on Climate Change alone



Financial Statements of Actuaries' Principals and Climate Risk

- Reflect the current view of profitability and solvency
- May include Disclosures related to Climate Risk
 - Most SEC Registrants have a section of their 10Ks devoted to a description of the material risks to their operations
 - Some entities may currently include Climate related risks in these sections
- Larger principals also use ERM analyses to understand and measure risk to the entity by modeling the impact to future financial statements of various risks.
 - These ERM analyses may be the basis for selecting which risks are material enough to include in various disclosures
 - There may be a relationship between the ERM analyses and Climate disclosures and Sustainability Reports

Regulators and Climate Risk

- Regulators are seeking to understand the impacts of climate change on risk/solvency and profitability of entities in their scope through reporting with the goals of improving accountability and comparability
 - National Association of Insurance Commissioners (NAIC)
 - Climate Disclosure Survey
 - Federal Insurance Office (FIO) [Academy Response to FIO](#)
 - Securities and Exchange Commission (SEC) [Academy Response to SEC](#)
 - Employee Benefits Security Administration (EBSA) [Academy DOL](#)

Disclosures – who puts them together

- Responsibility for Disclosures Varies by Entity
- April 2022: NAIC adopts Task Force on Climate Risk Financial Disclosures (TCFD) methodology
- Some Disclosures include the Results of Modeling
- Use of Actuaries in Preparing Disclosures
 - Within insurers, actuaries currently have roles
 - Potential increased use of actuaries for all entities

IAA's Climate Issues Papers

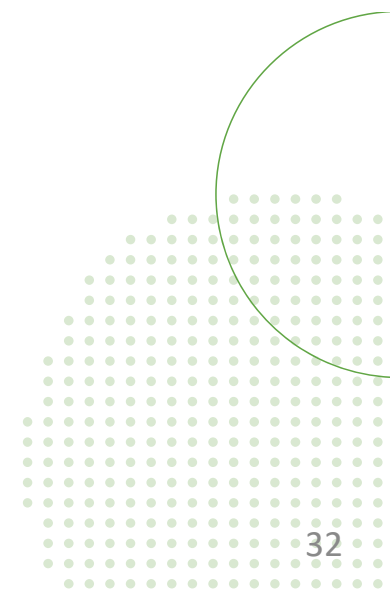
Currently released papers from IAA on Climate Risk Analysis

- Importance of Climate-Related Risks for Actuaries - September 2020
- Introduction to Climate-Related Scenarios - February 2021
- Climate-Related Scenarios Applied to Insurers and Other Financial Institutions - August 2021
- Application of Climate-Related Risk Scenarios to Asset Portfolios - April 2022
- https://www.actuaries.org/iaa/IAA/Publications/Papers/Climate_Issues/IAA/Publications/Climate_Issues.aspx

Current and upcoming papers from IAA on Climate Risk Analysis

- Climate-Related Disclosures and Risk Management – Standards and Leading Practices – Fall 2022
Effects of transition and adaptation
- Links between climate-related risk scenarios and social security systems
- Review of existing IAA publications (e.g., model standards, educational materials) relating to IFRS and IAIS topics to identify and address any climate risk related gaps

Other Resources



Other Resources - Getting Educated about Climate

- Within the Actuarial Community (beyond the ACI and Disclosures)
 - American Academy of Actuaries [Research](#), [Climate](#)
 - Casualty Actuarial Society [Climate Change Research Library](#)
 - Society of Actuaries recently started research projects
 - [Climate Change and Investments: Making the Process Transparent](#)
 - [Climate Risk Assessment and Scenario Analysis](#)
 - International Actuarial Association
- Additional resources
 - [New Tools Needed to Assess Climate-Related Financial Risk](#) (White House Brief)

Questions?