

IIC International Training Centre for Conservation

Inaugural Programme

20-25 Sep 2015 The Palace Museum, Beijing

Scientific Approaches to Preventive Conservation



UNDERSTANDING RISKS to CULTURAL PROPERTY



International Institute
for Conservation of
Historic and Artistic Works

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Protect Heritage Corp.
2015 September



This presentation

Is:

- Why a risk-based approach
- Introduction to basic concepts

Is not:

- Detailed instructions on quantifying risks
- All approaches

We all take risks every day

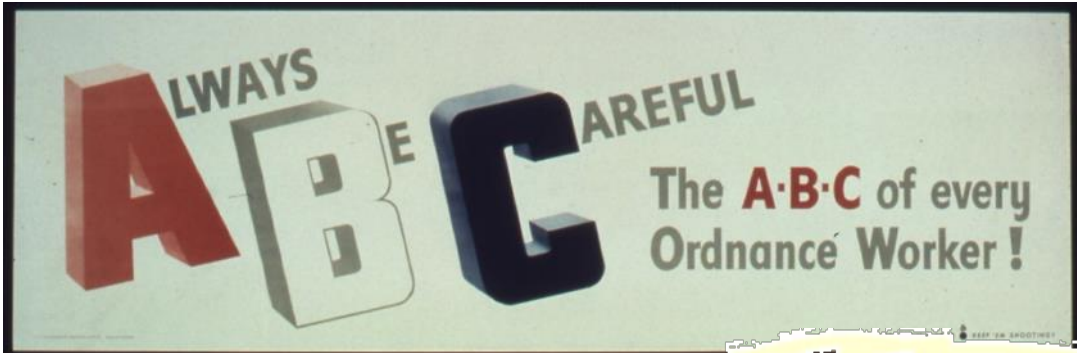


Degrees of risk awareness

- Watch out & Be careful
- Basic checklists
- Scored checklists
- Quantitative risk analysis (QRA)

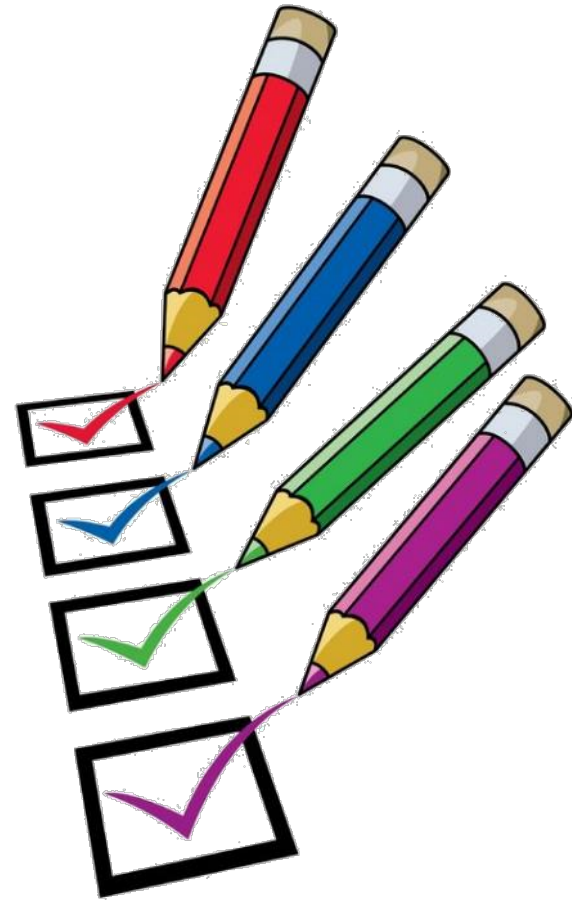
Degrees of risk awareness

- Watch out & Be careful



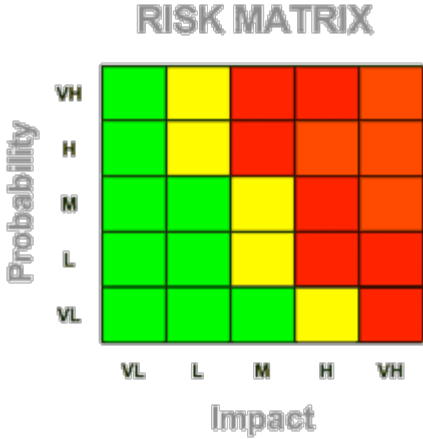
Degrees of risk awareness

- Watch out & Be careful
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- Scored checklists
- Quantitative risk analysis (QRA)



Degrees of risk awareness

- Watch out & Be careful
- Basic checklists
- **Scored checklists**
- Quantitative risk analysis (QRA or PRA)

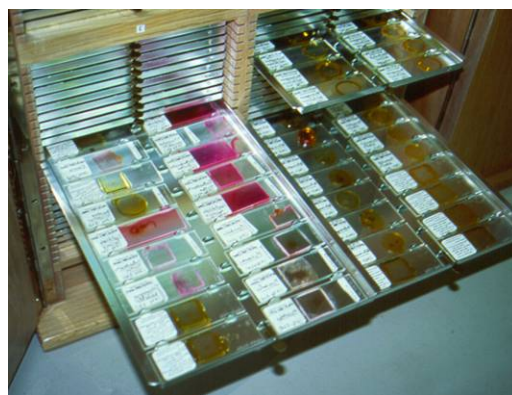
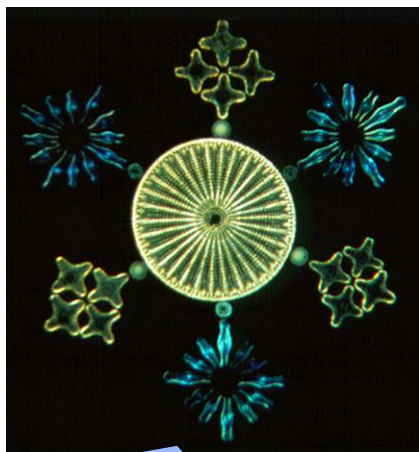


Prioritization List

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
		X						
Done	Task	Priority 1: Urgent	Priority 2: Important	Priority 1: Not Important				



Diverse Collections



My wake up moment



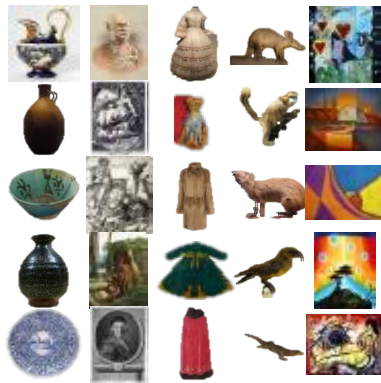
Cultural Property Risk Analysis Model

- ❑ Define context and scope
- ❑ Identify risks
- ❑ Determine expected losses
 - Evaluate risks (Thursday)
 - Manage risks (Thursday)

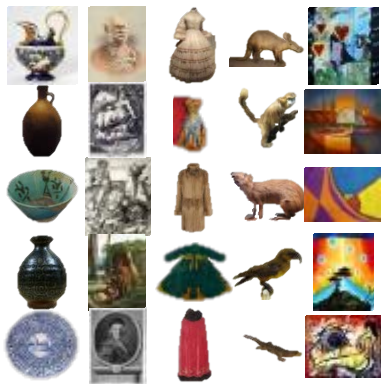
Cultural Property Risk Analysis Model

- 👉 Define context, goal, and scope
- ❑ Identify risks
- ❑ Determine expected losses
- Evaluate risks (Thursday)
- Manage risks (Thursday)

Need: A clear common goal

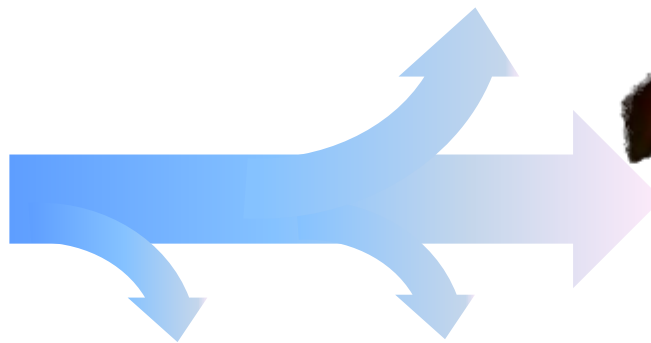


2017



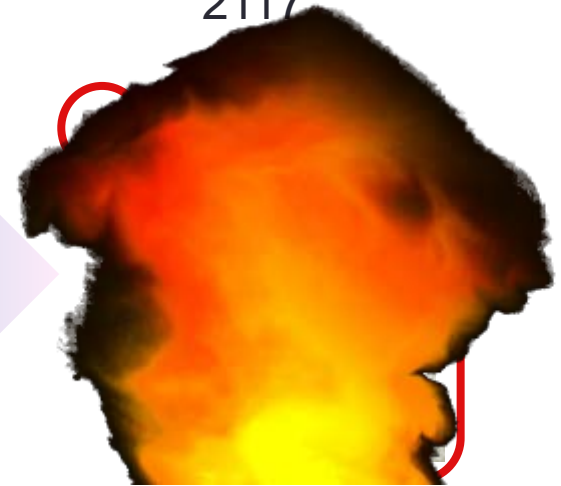
2017

THE GOAL



The Risks

2117



2117

Cultural Property Risk Analysis Model

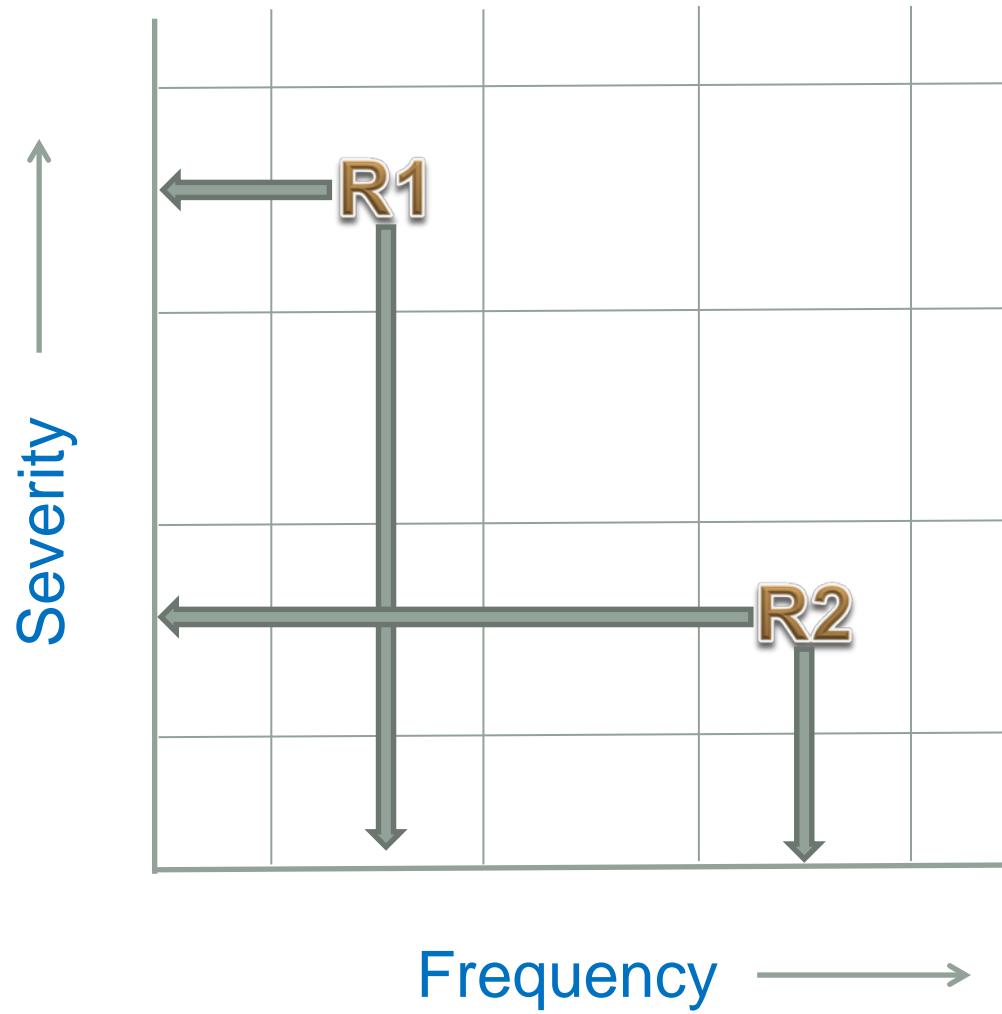
- ☑ Define context and scope
- ☞ Identify and **define** risks
- ☐ Determine expected losses
 - Evaluate risks (Thursday)
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Agents of change

- ❖ Physical forces
- ❖ Fire
- ❖ Water
- ❖ Criminals
- ❖ Pests
- ❖ Contaminants
- ❖ Light, UV, radiation
- ❖ Incorrect temperature
- ❖ Incorrect relative humidity
- ❖ Dissociation

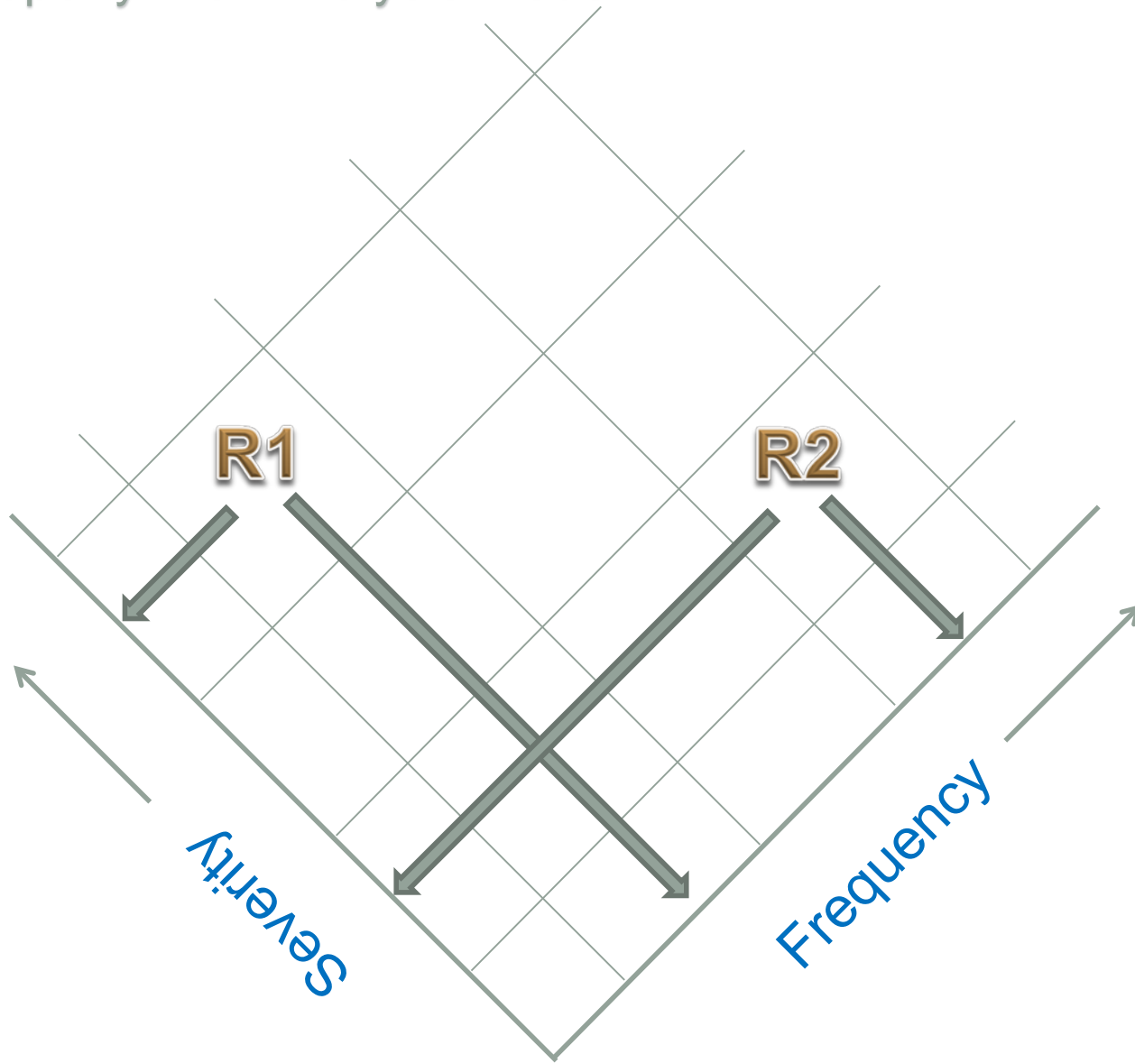


Cultural Property Risk Analysis Model

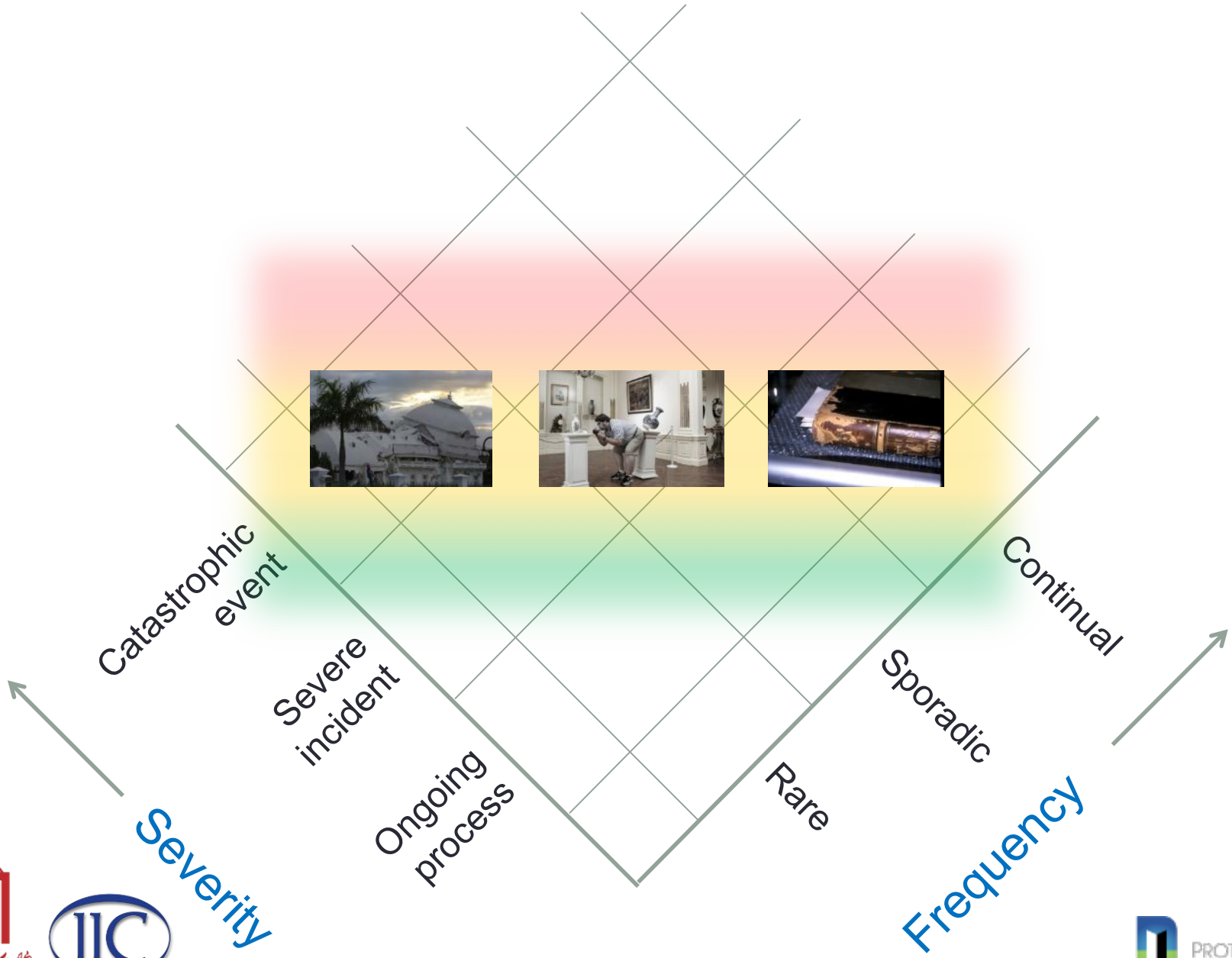




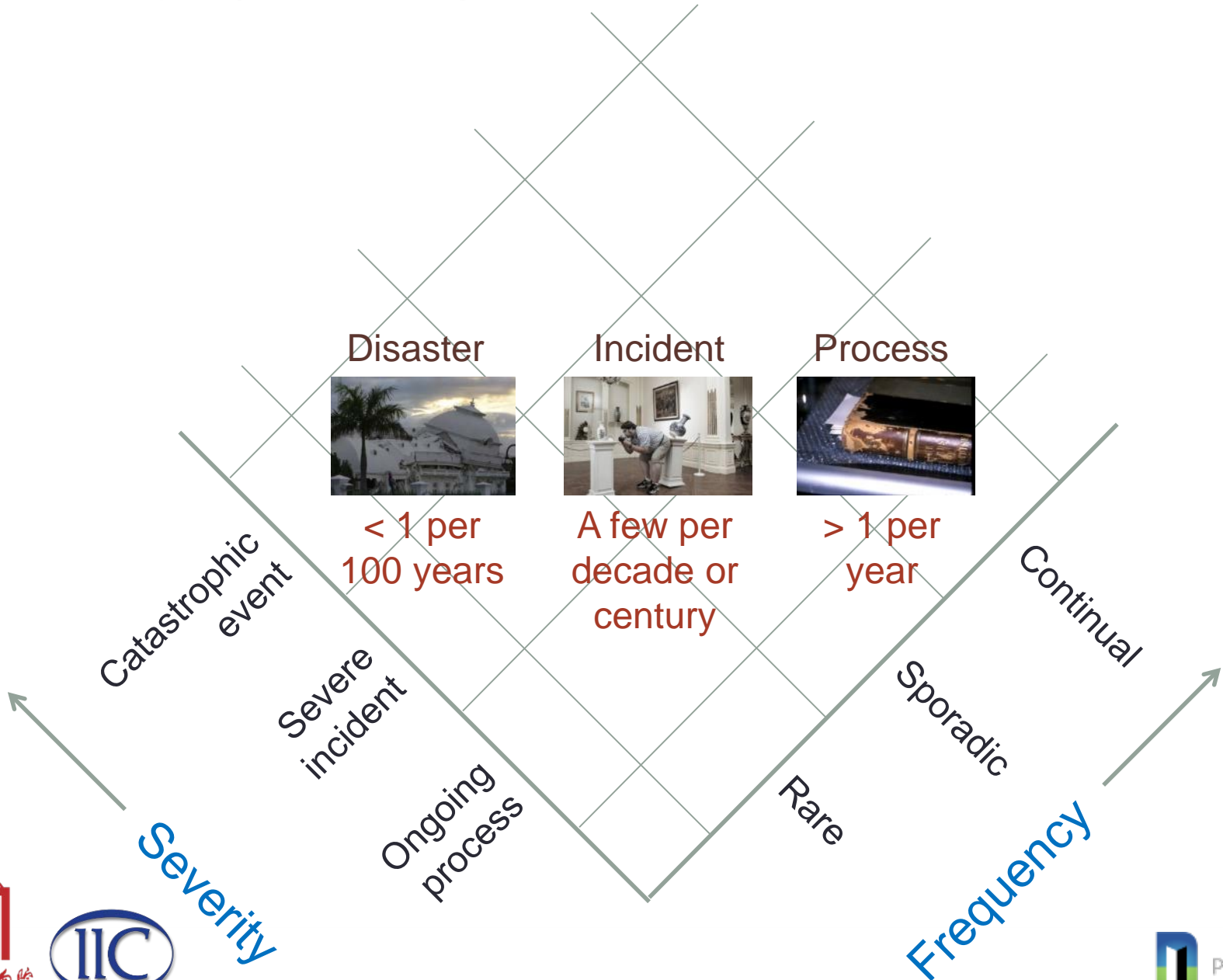
Cultural Property Risk Analysis Model



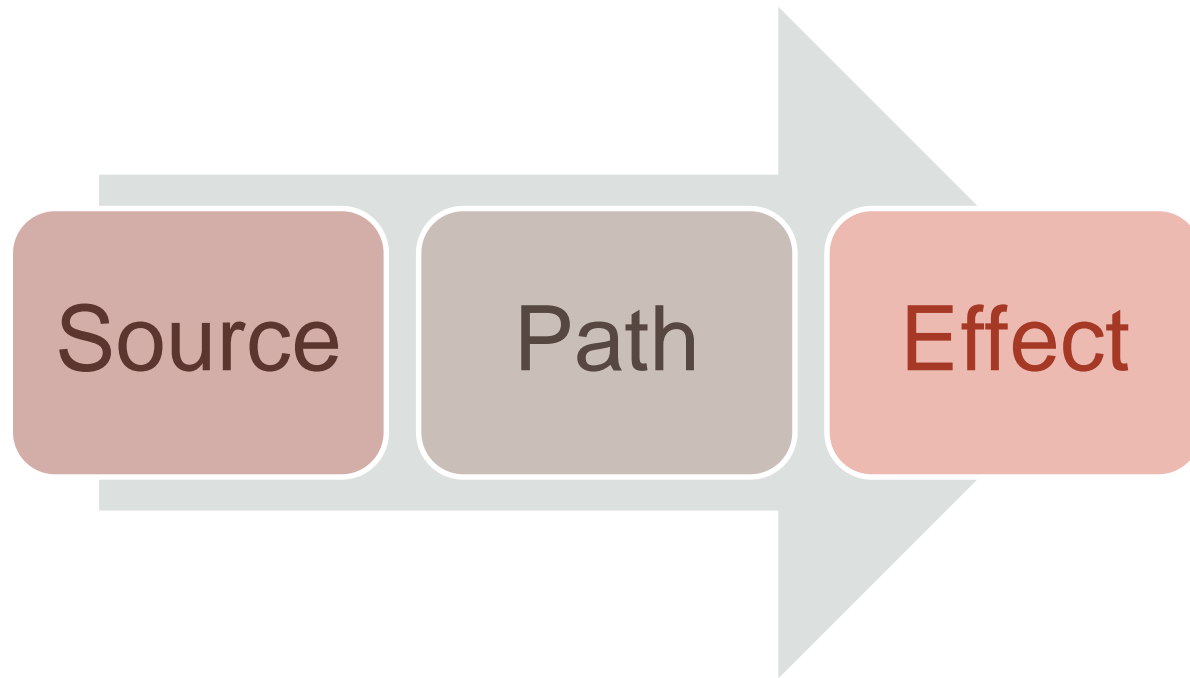
Cultural Property Risk Analysis Model



Cultural Property Risk Analysis Model



Identify risks: define clearly



Specific Risks Considered

- ❖ Earthquake → Shelf collapse → Breakage
- ❖ Earthquake → Toppling object → Breakage
- ❖ Handling in use → Accident → Physical damage
- ❖ Gravity → Poor support → Distortion

Cultural Property Risk Analysis Model

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What do I think the chances are?

- Coin toss – heads or tails?
- Probable
- Slight chance
- Unlikely
- Highly probable



Unlikely

“**unlikely** that an accidental surface or subsurface oil spill would occur from the proposed activities.”

BP's 52-page exploration plan for the Deepwater Horizon Well
Filed with the federal Minerals Management Service



Quantify risk

$$MR(\text{Risk}) = FS \times LV \times P \times E$$

where:

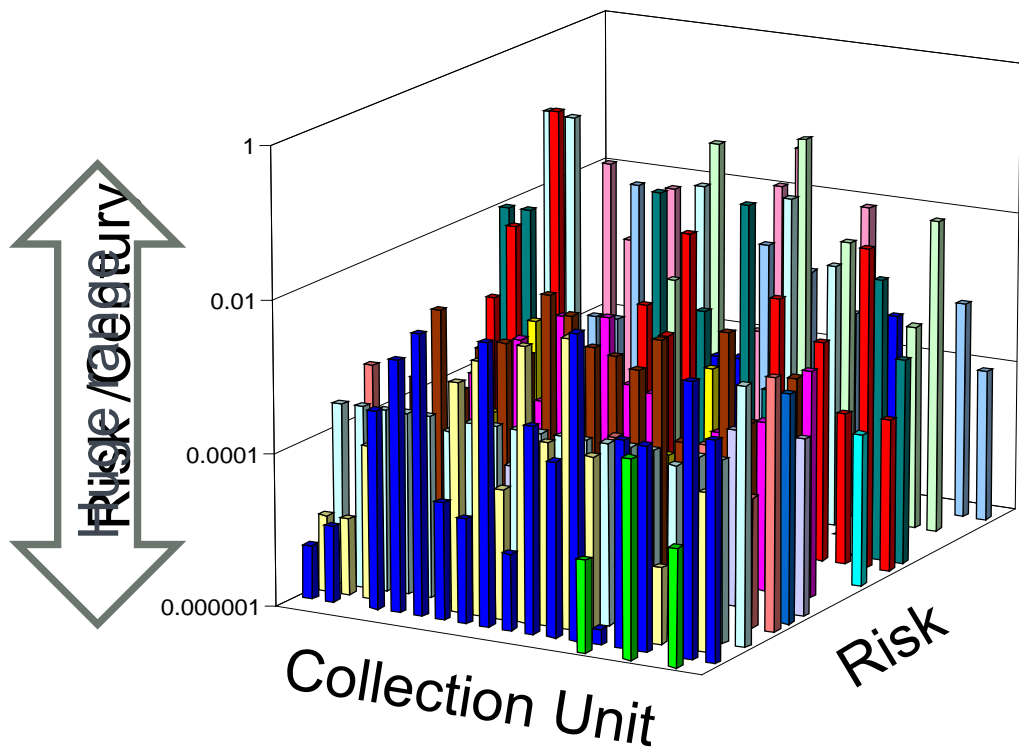
FS \Rightarrow Fraction Susceptible

LV \Rightarrow Loss in Value

P \Rightarrow Probability

E \Rightarrow Extent

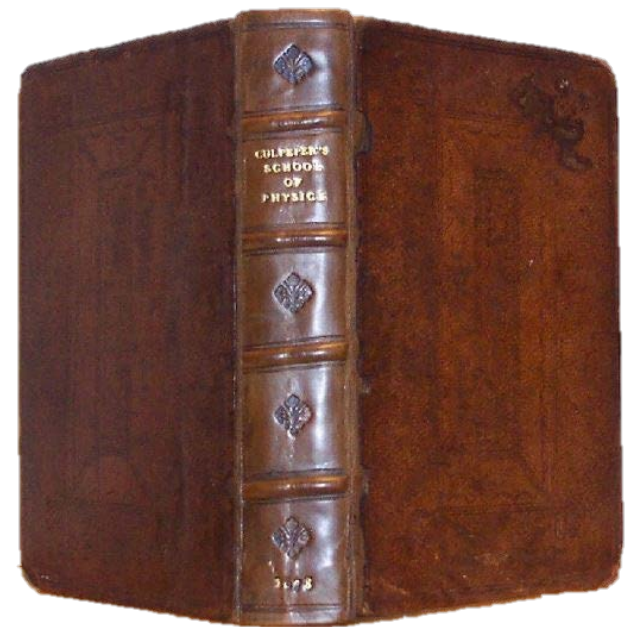
Cultural Property Risk Analysis Model



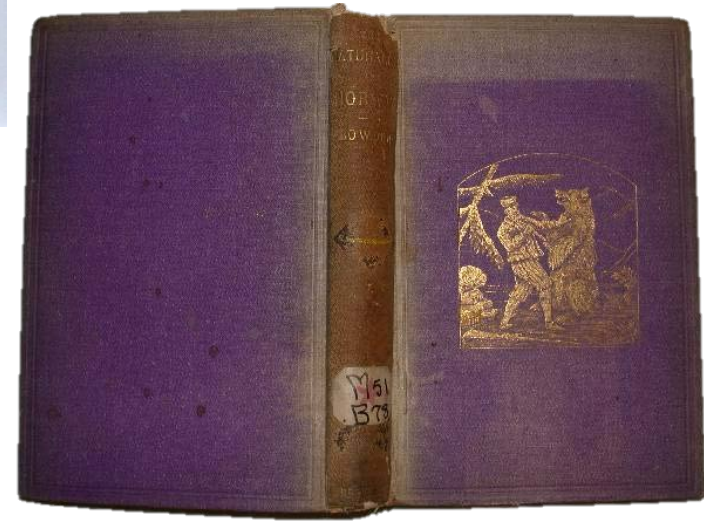
✗ 27.1234
or
27.1232

✓ 1/1,000
or
1/1,000,000

$$MR = FS \times LV \times P \times E$$



MR = FSxLVxPxE



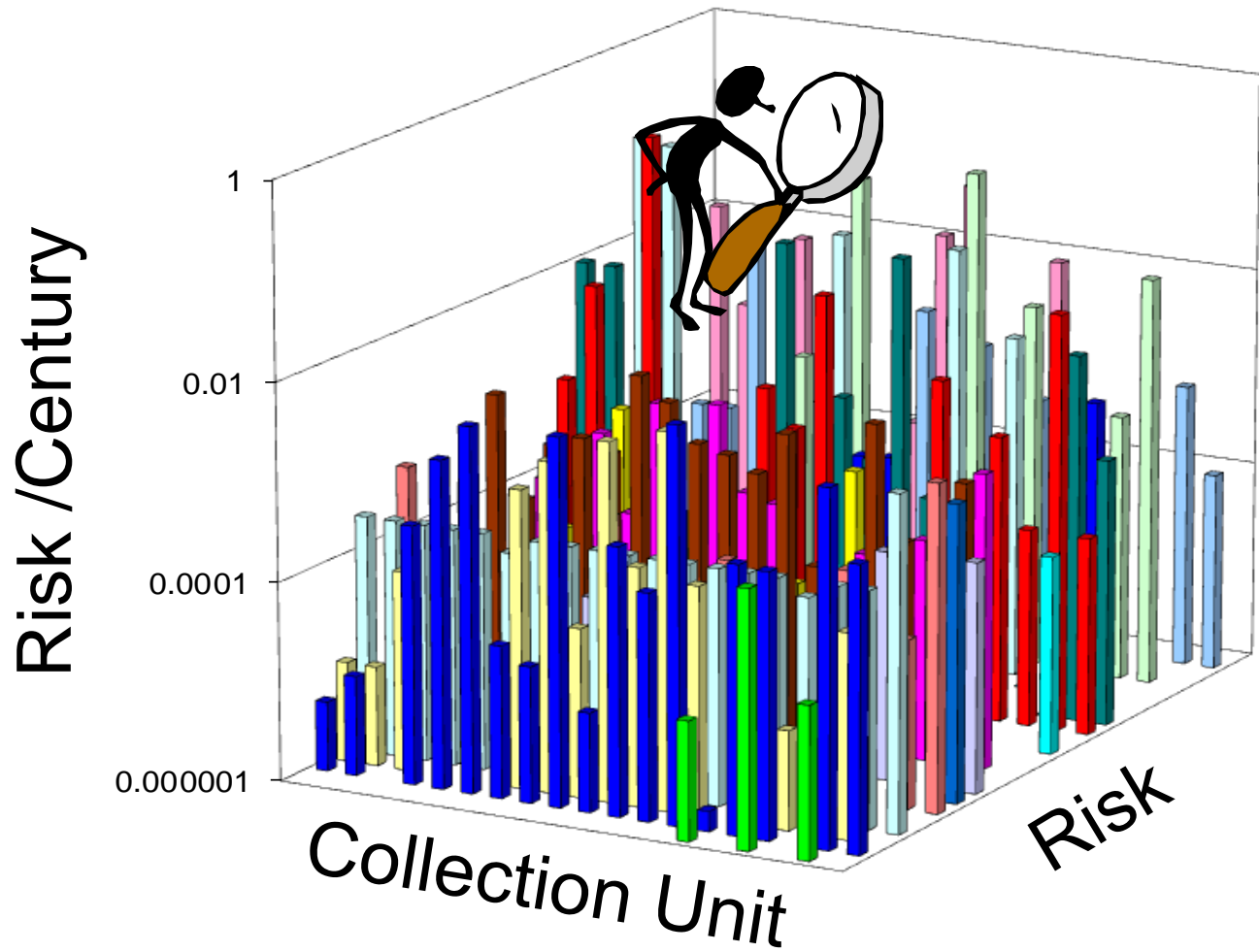
MR = FSxLVxPxE



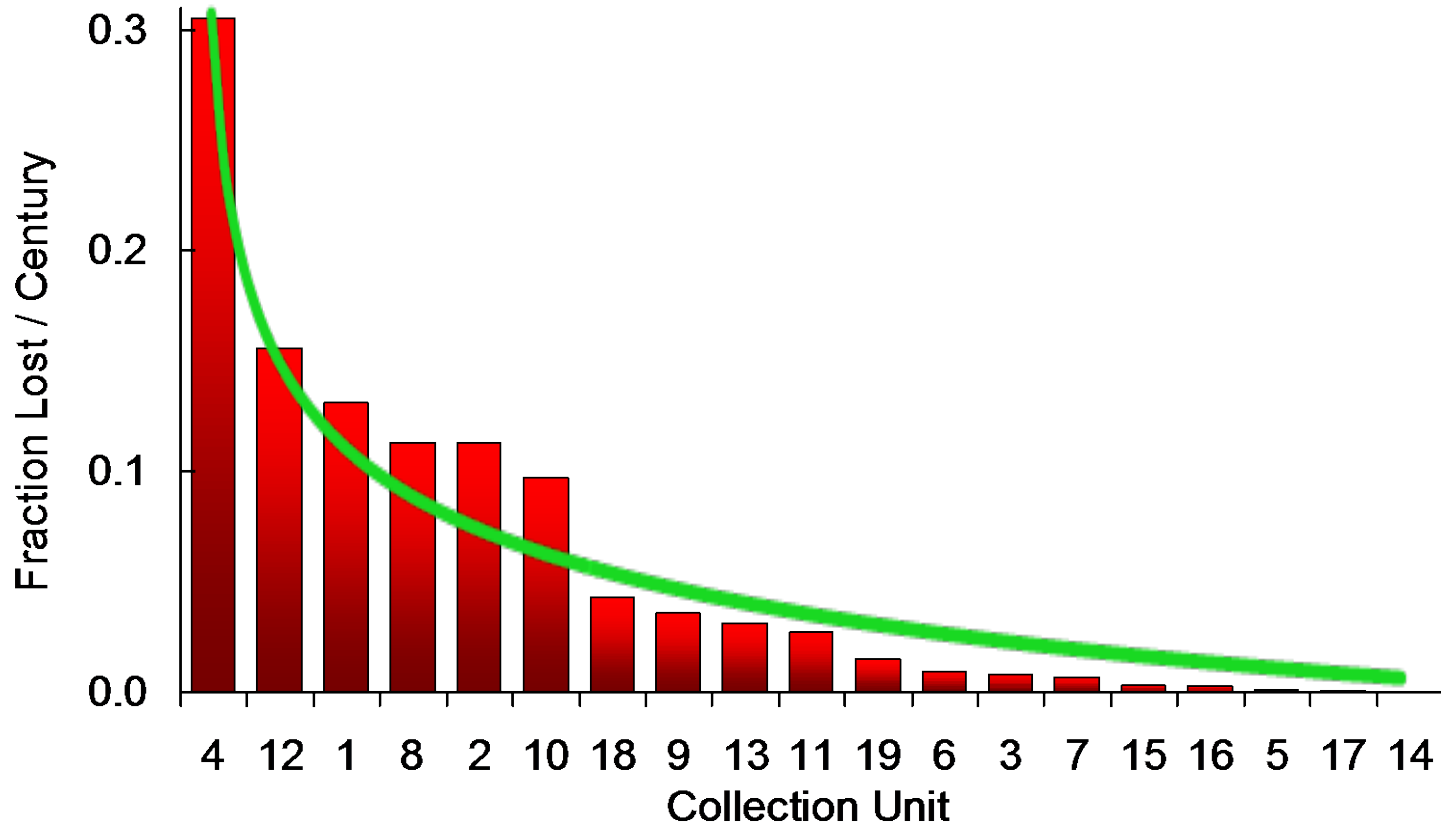
MR = FSxLVxPxE



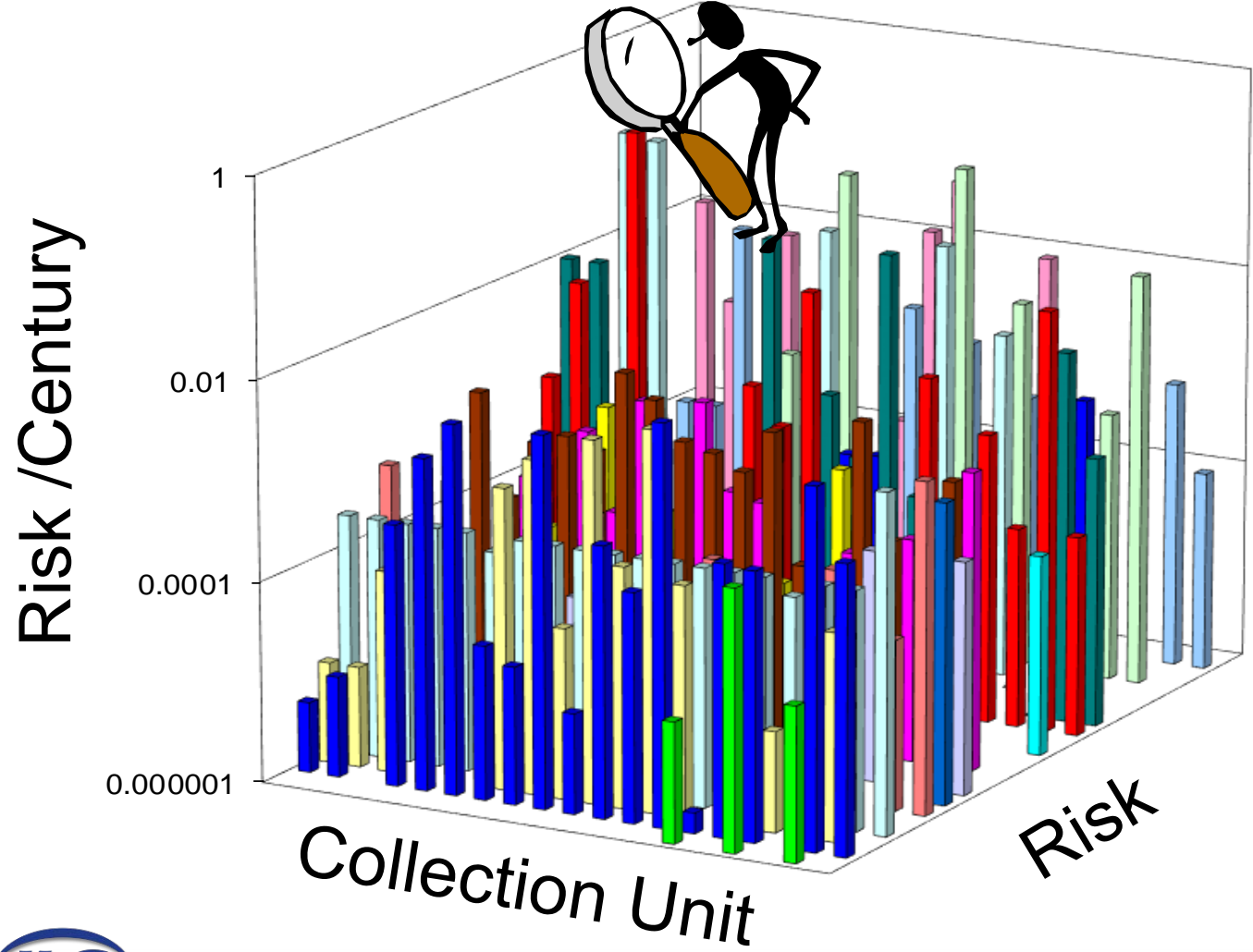
The Forest



Risk profile by collection units

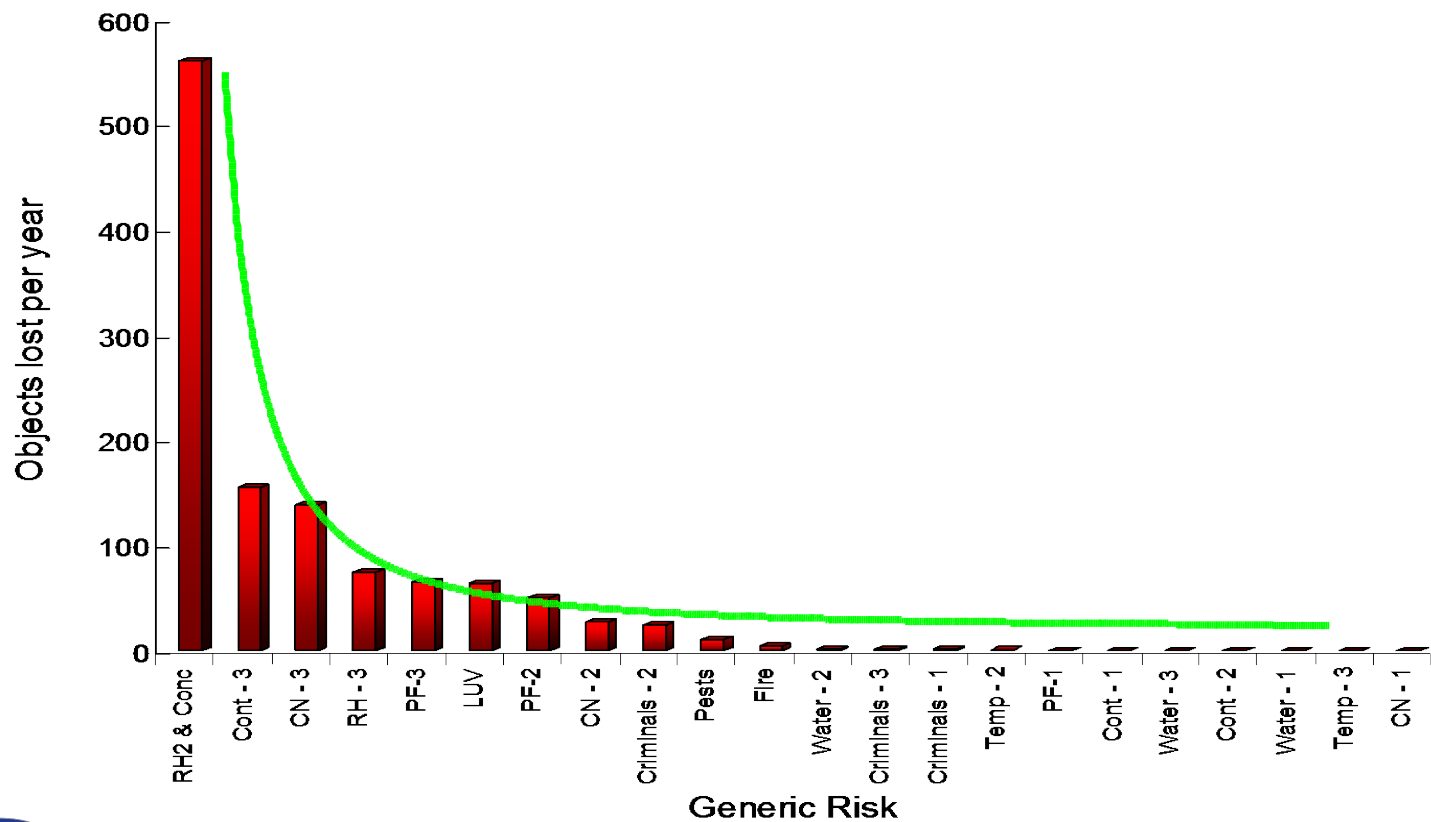


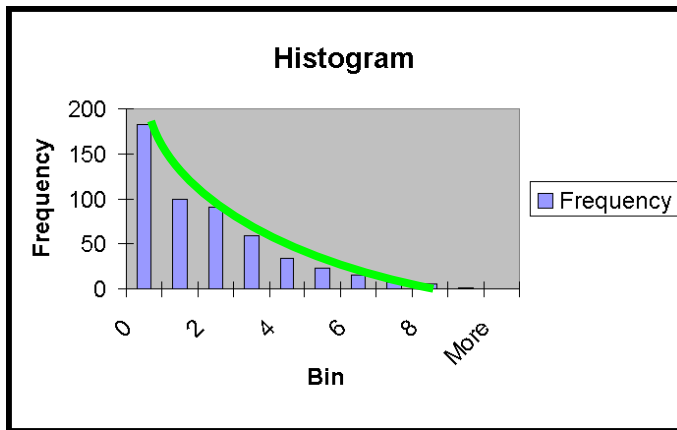
The Forest



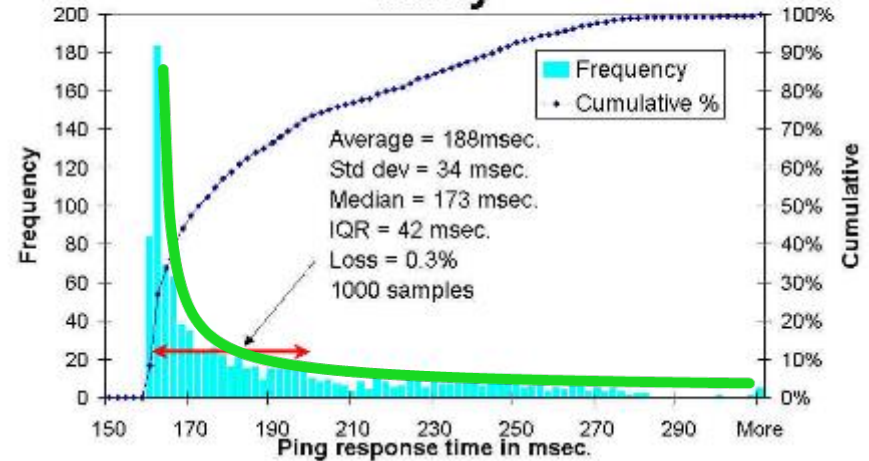
Risk profile by generic risk

1998 Total Risk to CMN Collection

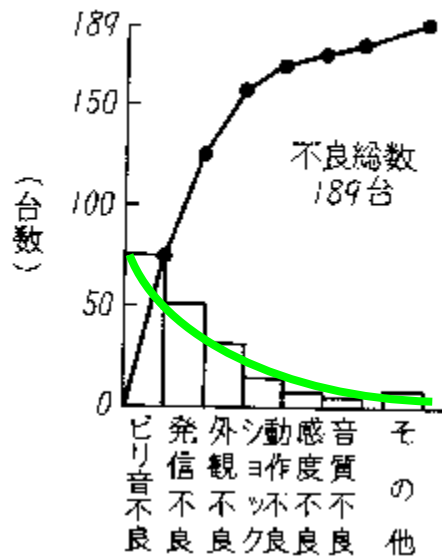




SLAC <=> CERN round trip delay

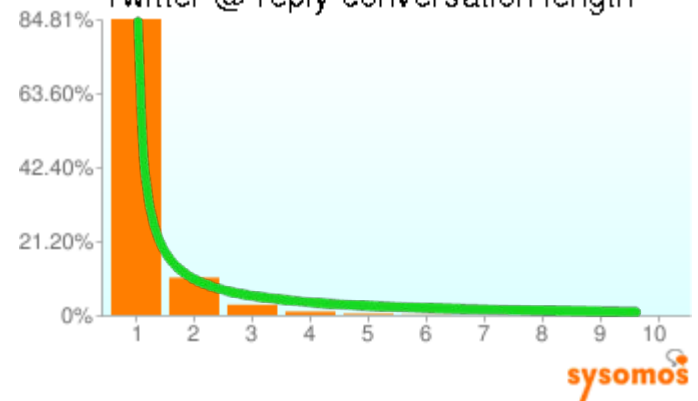


パレート図の一例

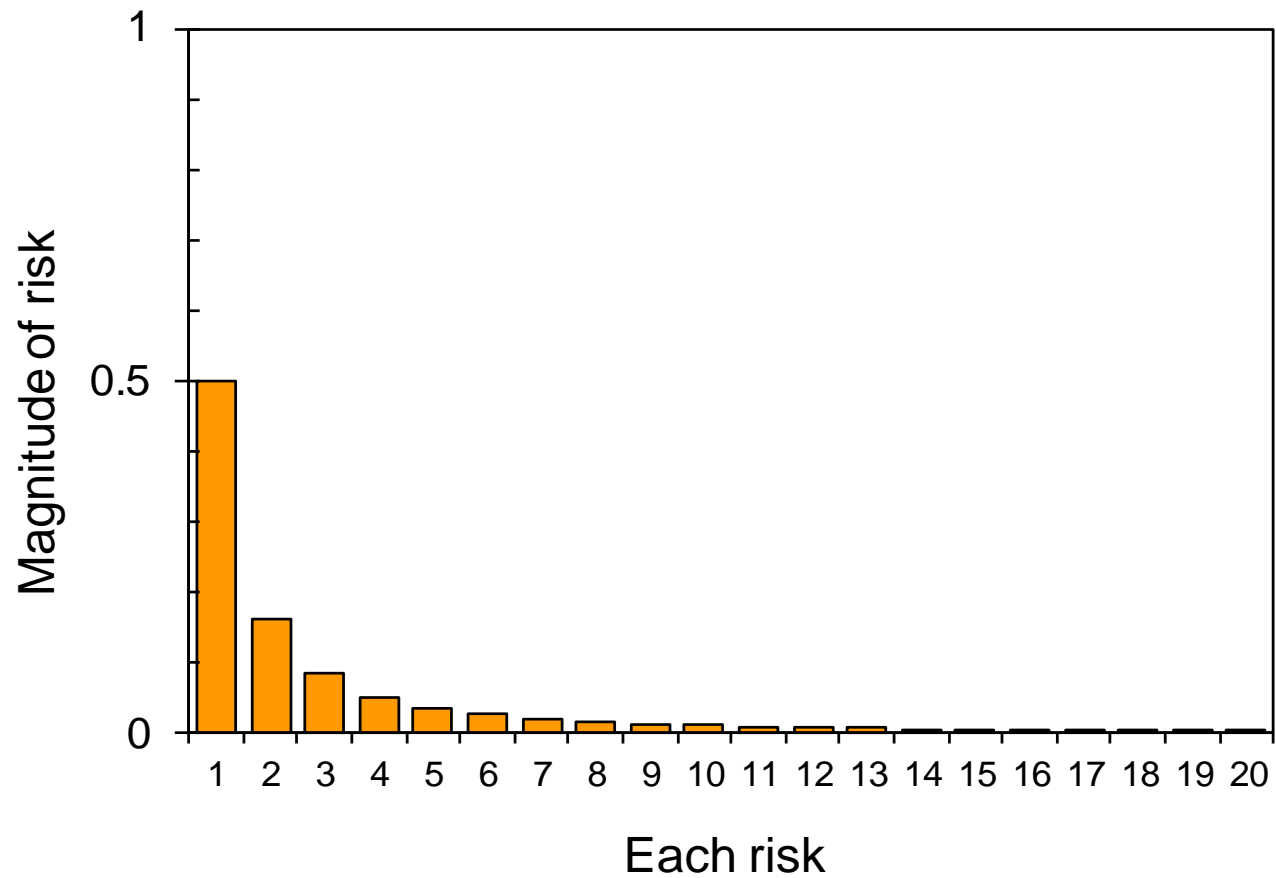


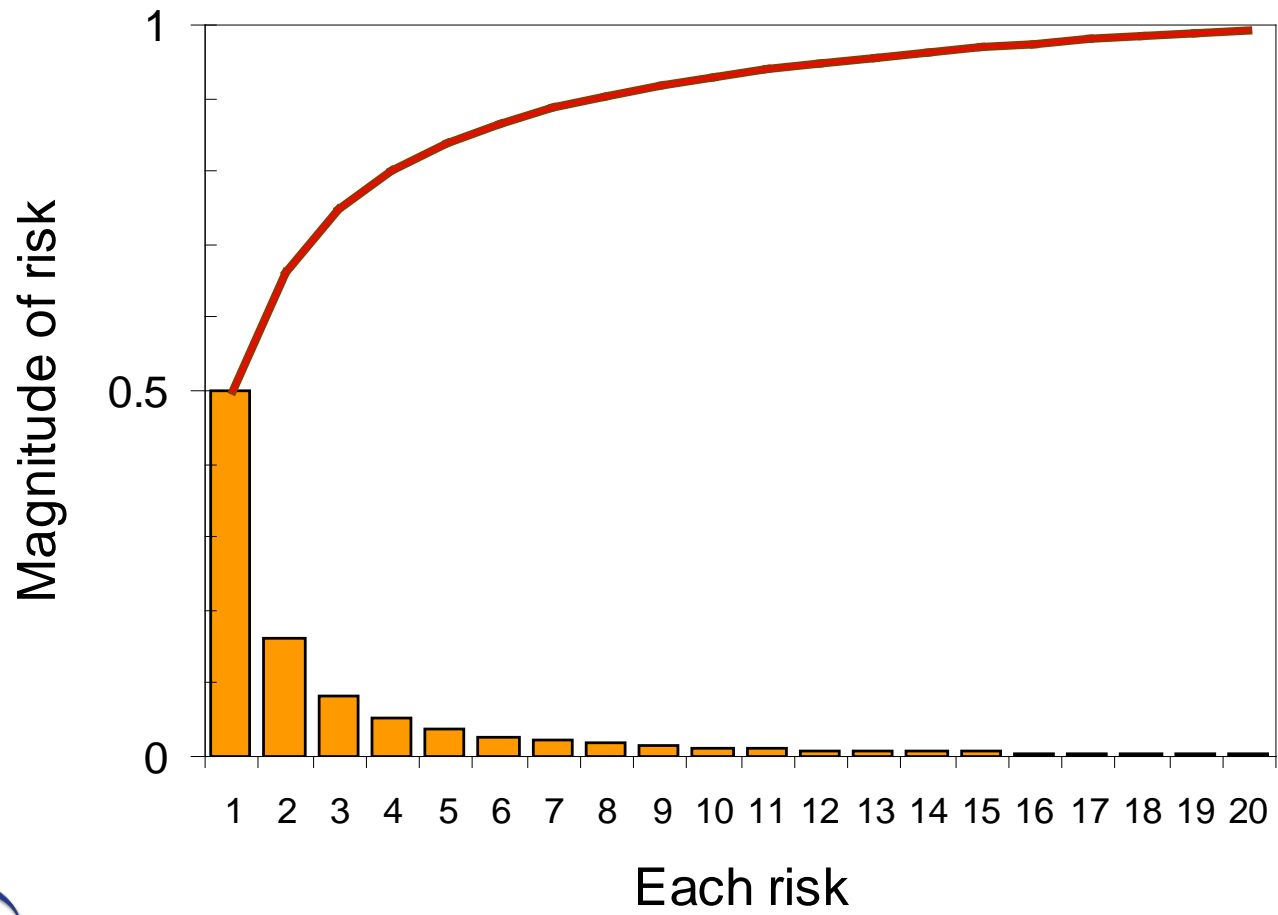
Vilfredo Pareto
1848 - 1923

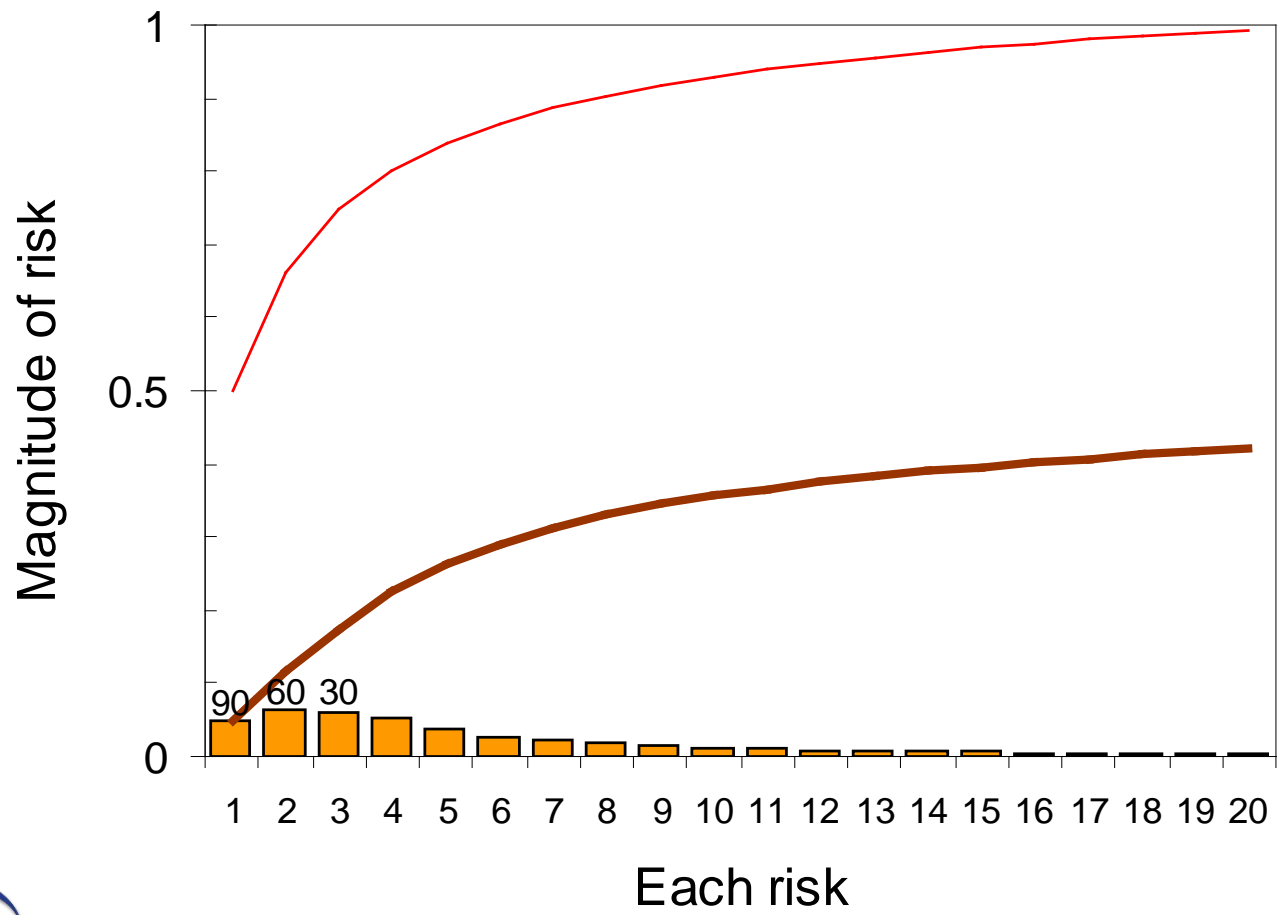
Twitter @ reply conversation length

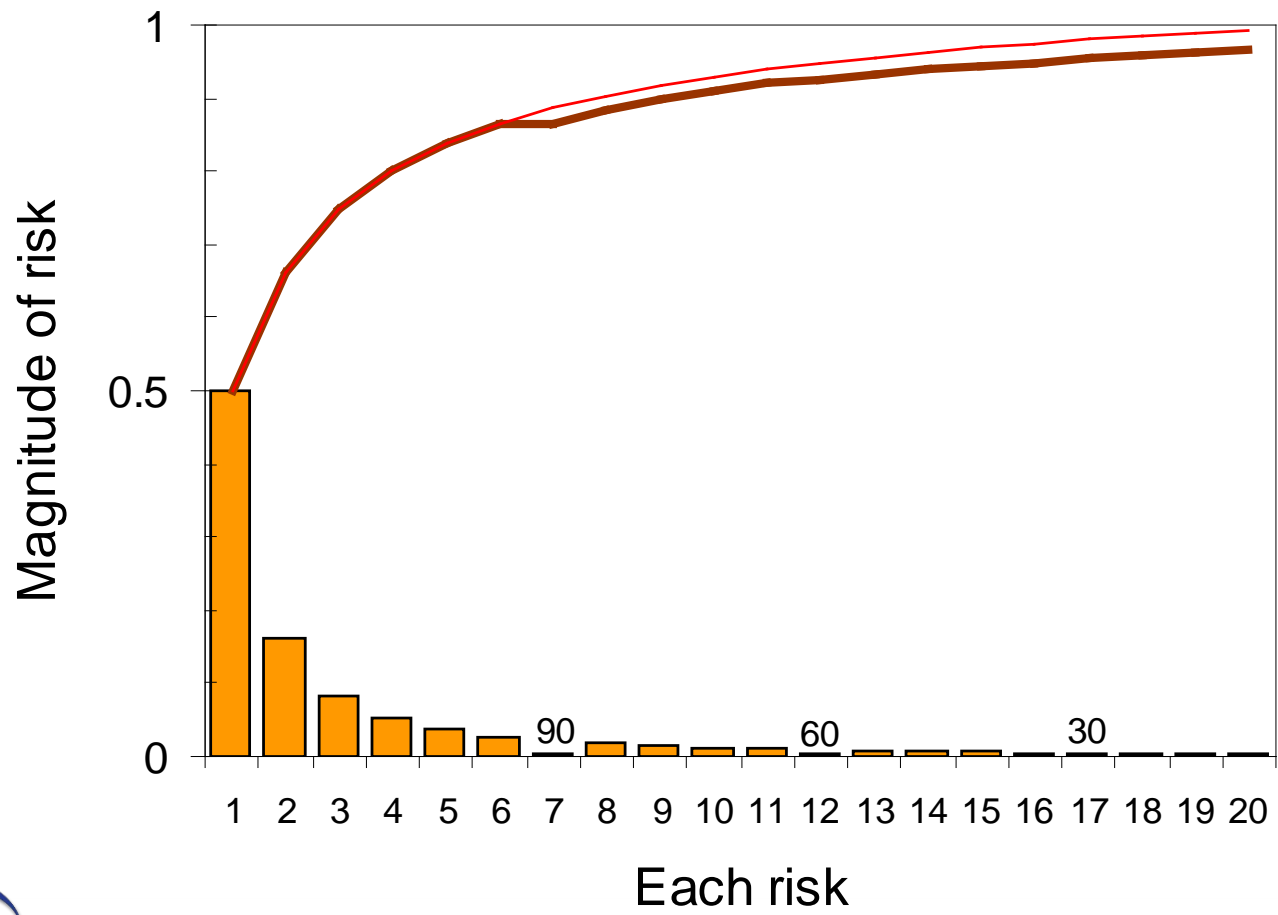


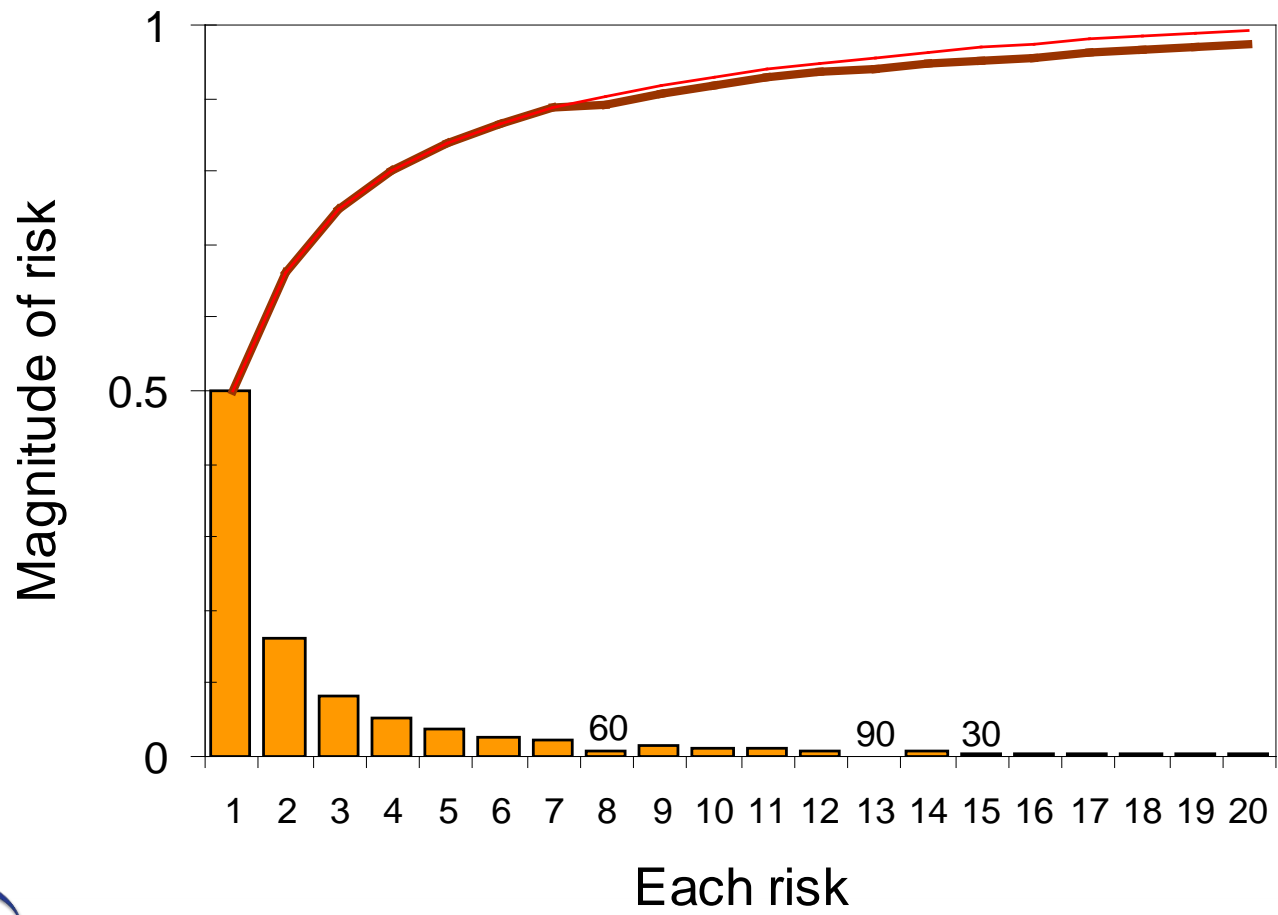
Pareto distribution

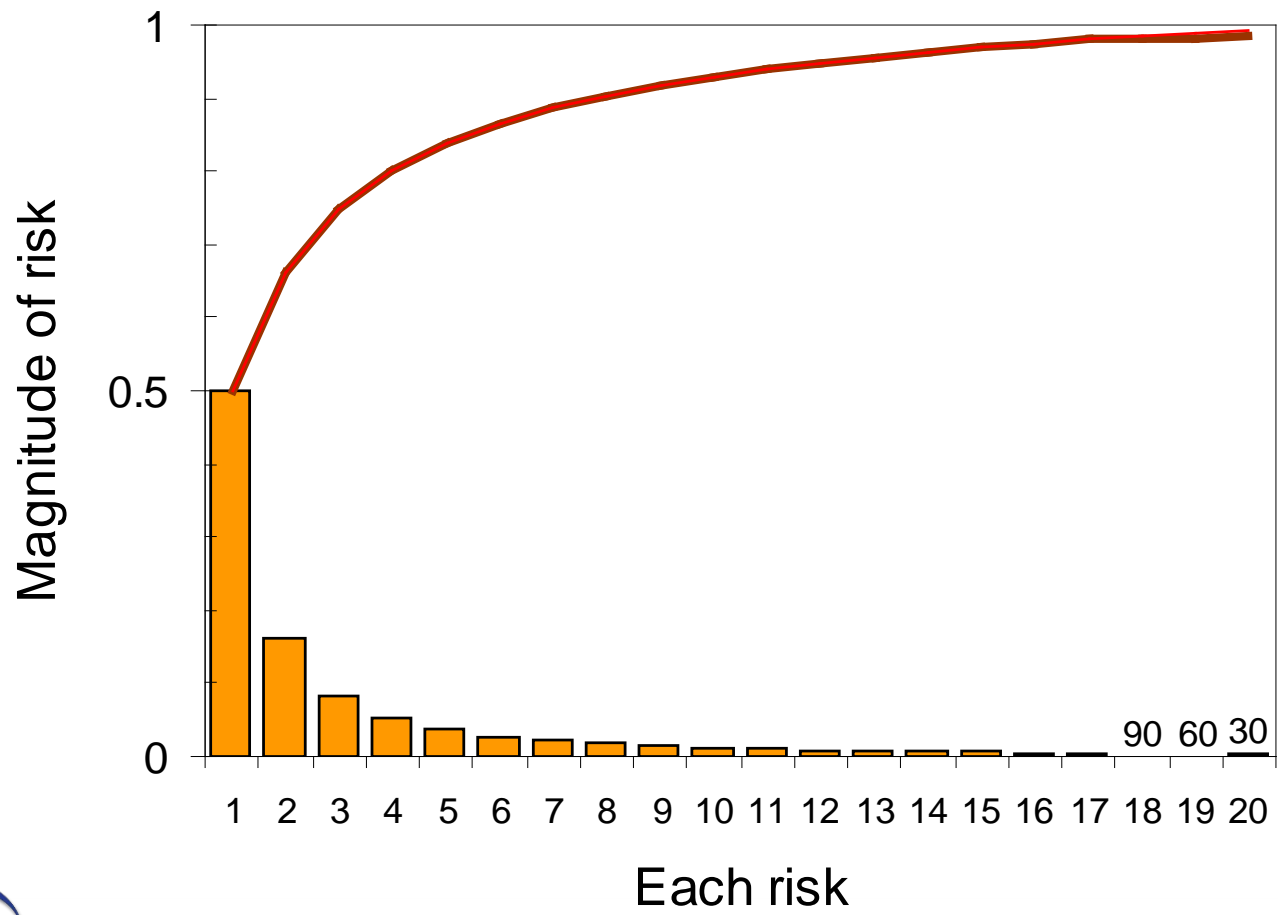


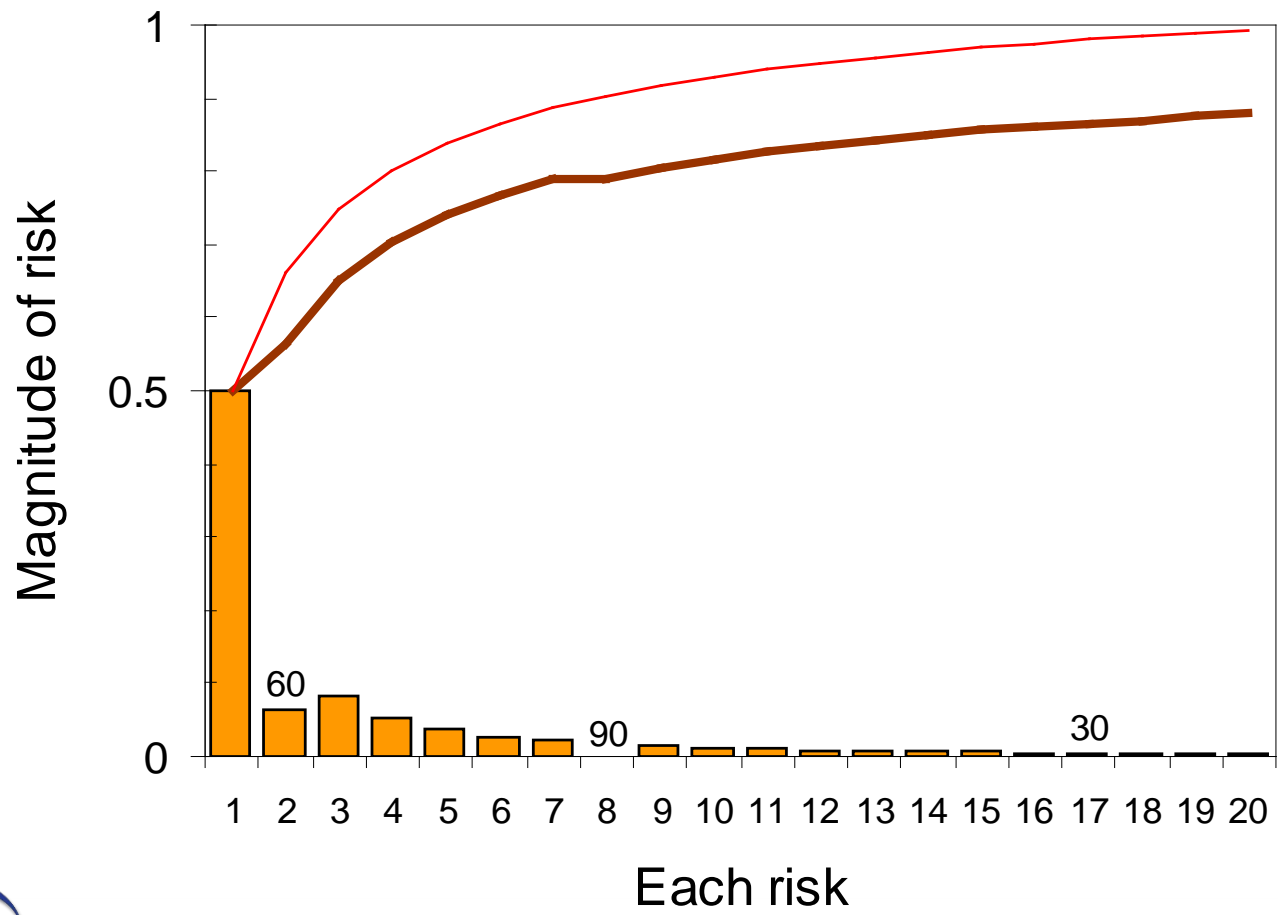


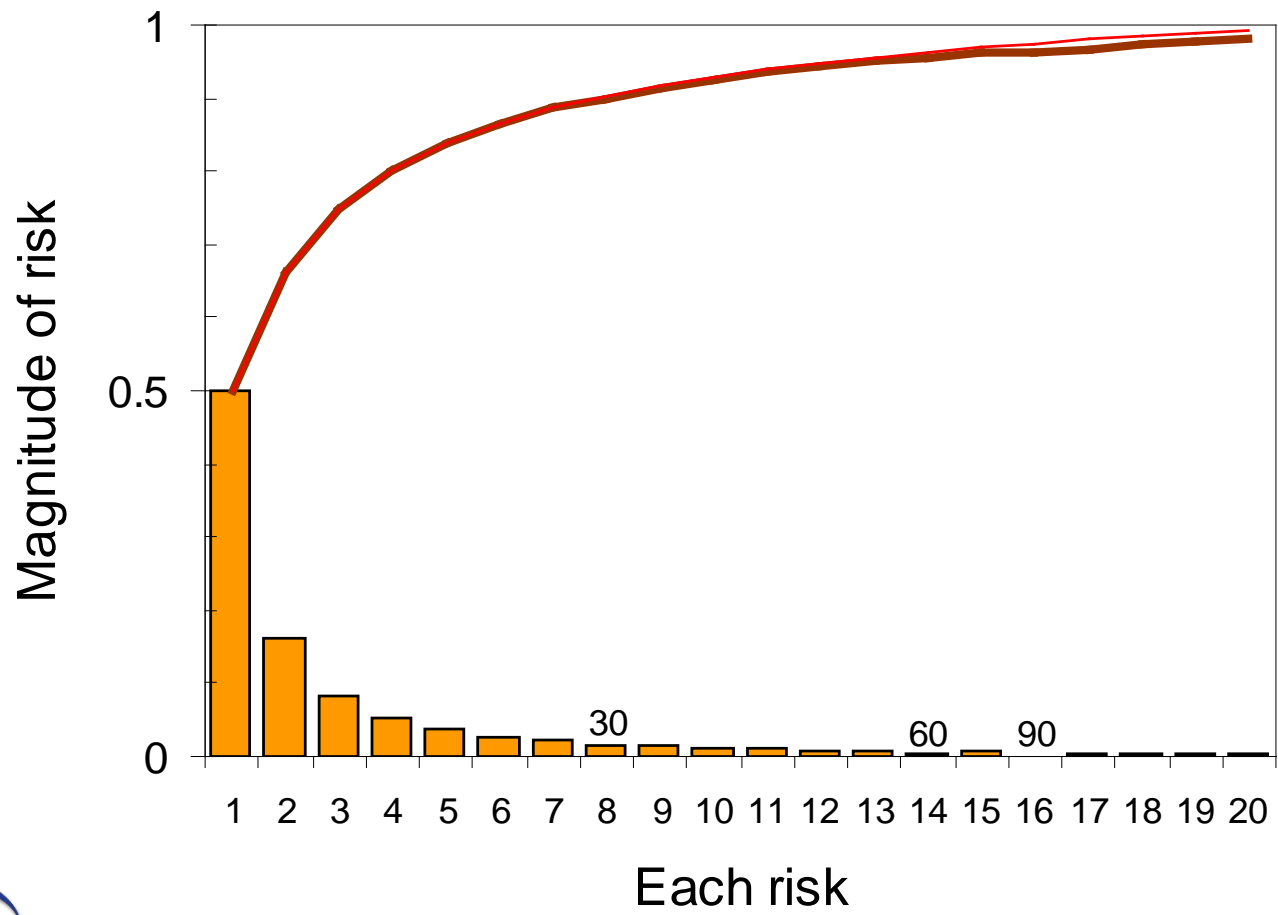


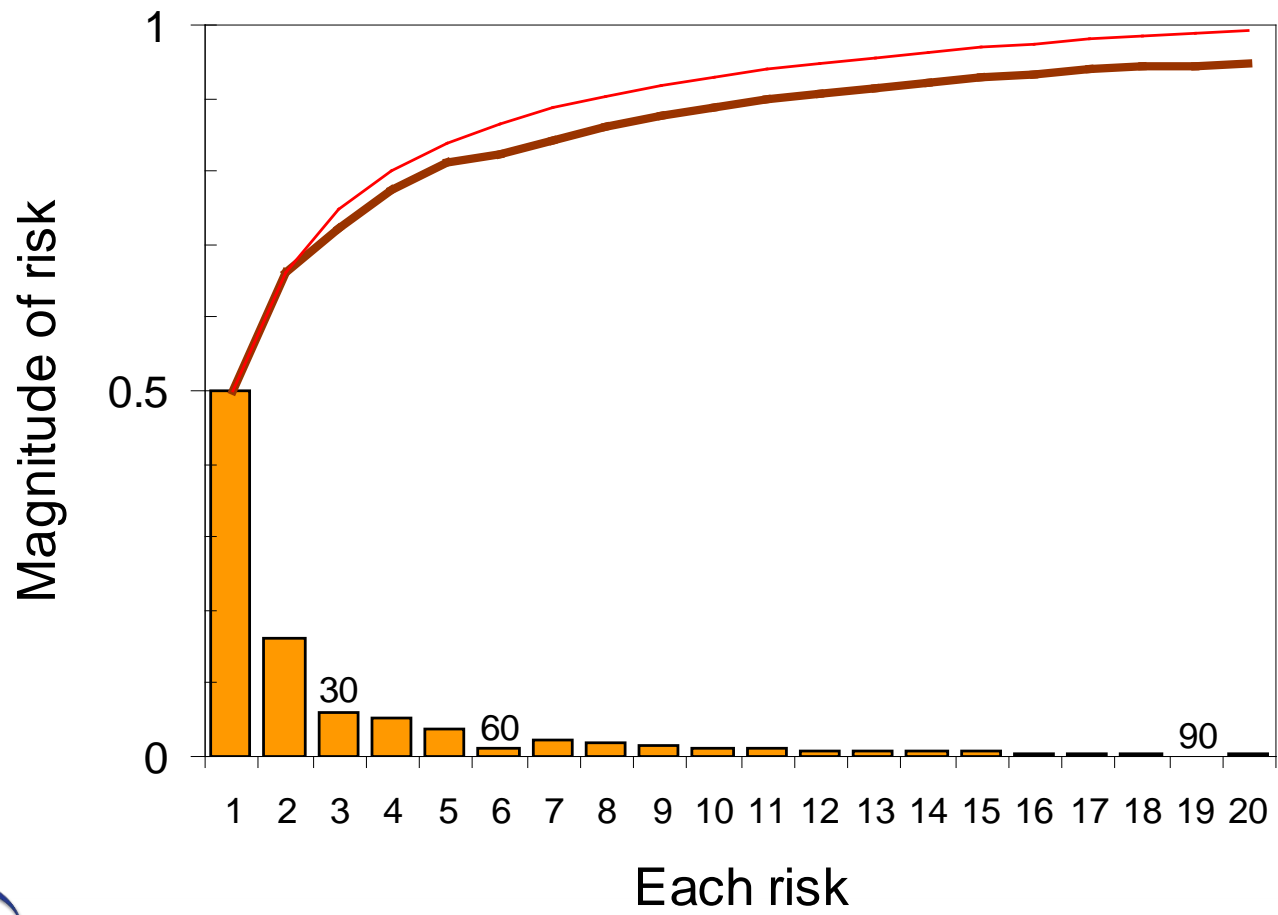


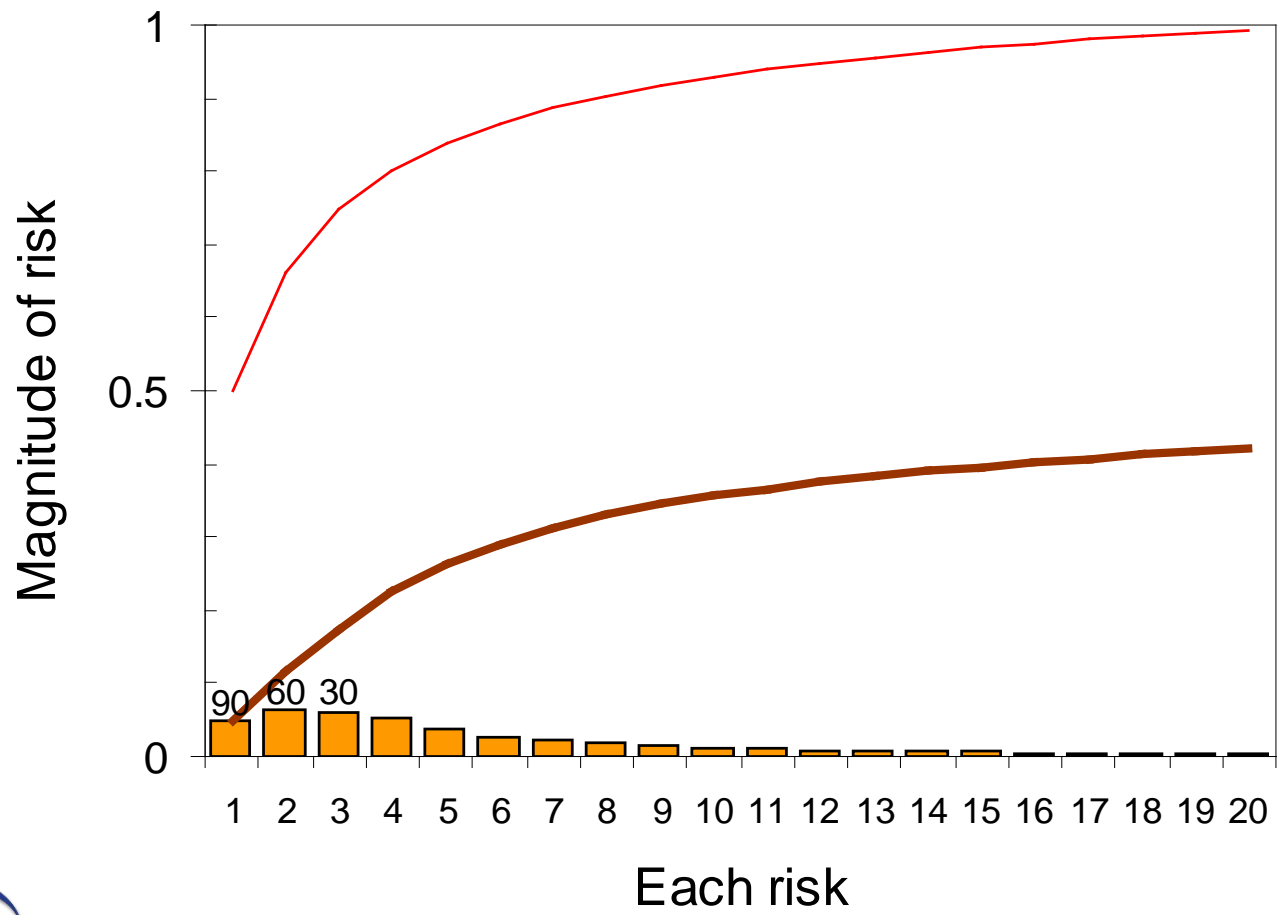












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