



Engineering Risk Benefit Analysis

1.155, 2.943, 3.577, 6.938, 10.816, 13.621, 16.862, 22.82
ESD.72J, ESD.721

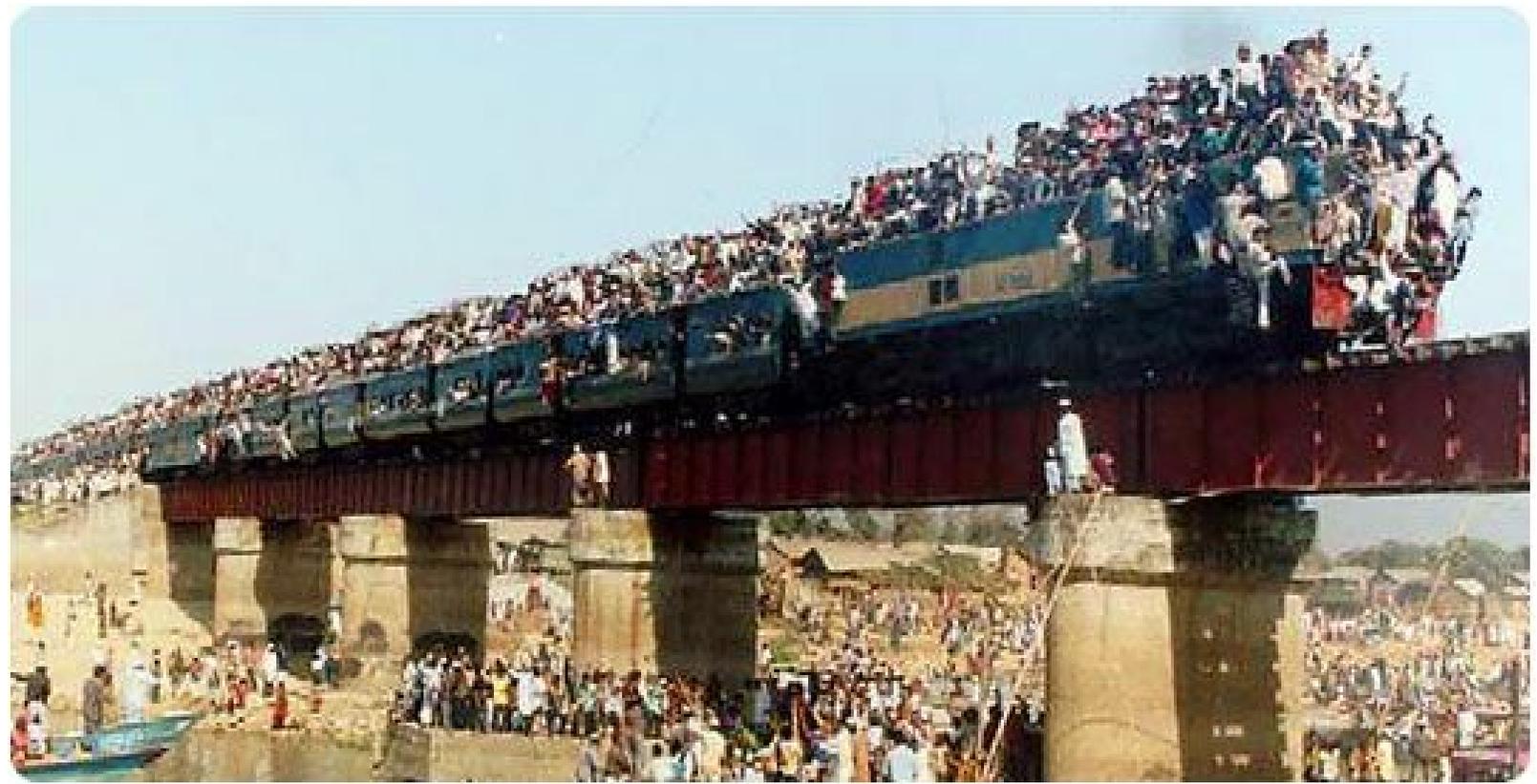
Introduction

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Risk-Benefit Tradeoffs





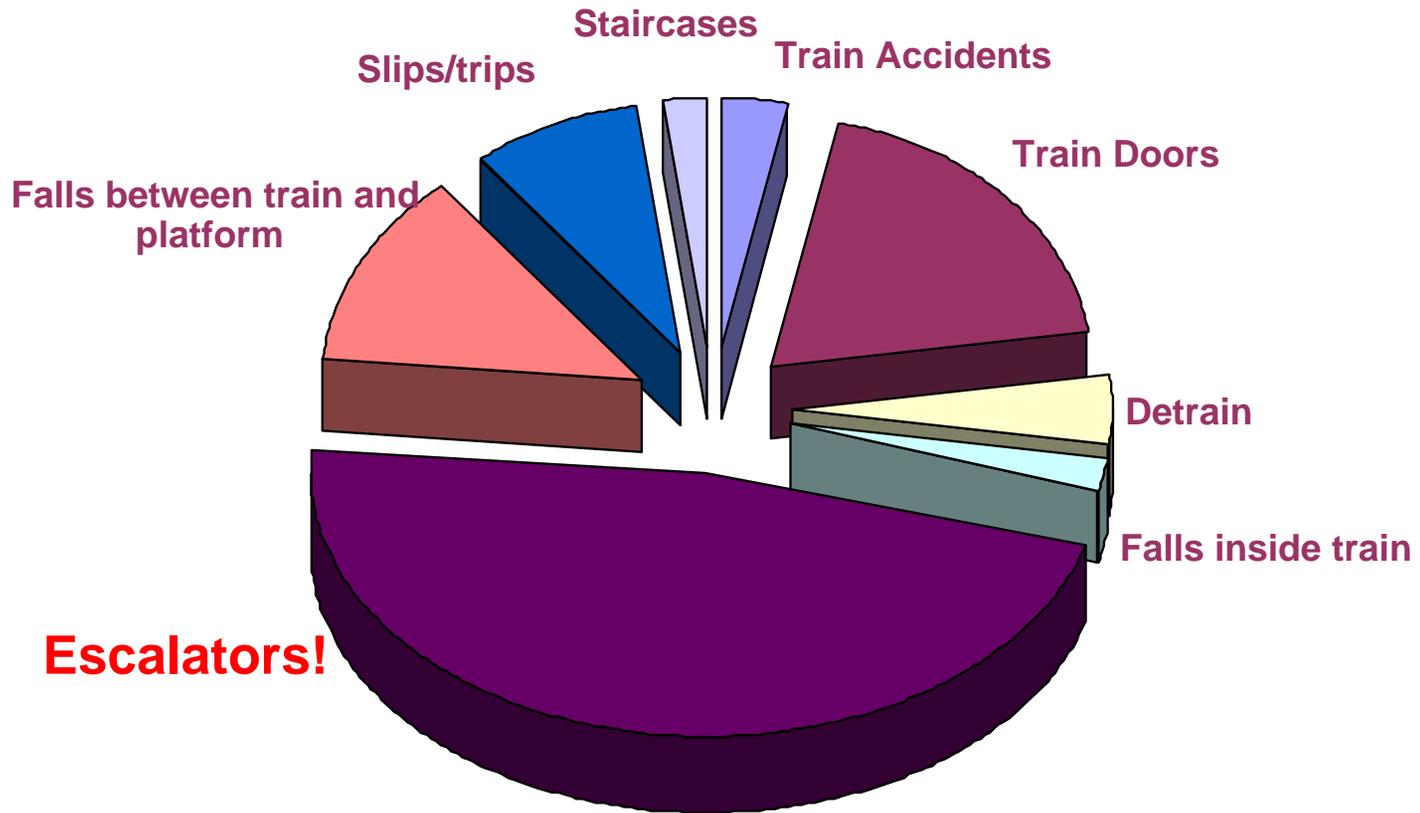
Dealing with Uncertainty

- **Risk management of large technological systems**
- **Choosing among alternative decision options**
- **Cost-benefit tradeoffs**



Sometimes the historical record is surprising...

Typical Metro Railway Accidents



From: Vincent Ho, The Applications of Quantitative Risk Assessment in the Railway Industry, INER presentation, December 2004



ERBA

- **Make informed decisions concerning engineering projects that include important elements of technological or financial risk.**
- **The quantification of uncertainty is a key element.**
- **Three main topics to be covered:**
 - **Reliability and Probabilistic Risk Assessment (RPRA) (includes a review of elementary probability theory)**
 - **Decision Analysis (DA)**
 - **Cost-Benefit Analysis (CBA) (except in ESD.721)**



Level of Coverage

- **Broad Survey**
- **Emphasis on:**
 - **standard terminology**
 - **fundamental issues**
 - **strengths and weaknesses**