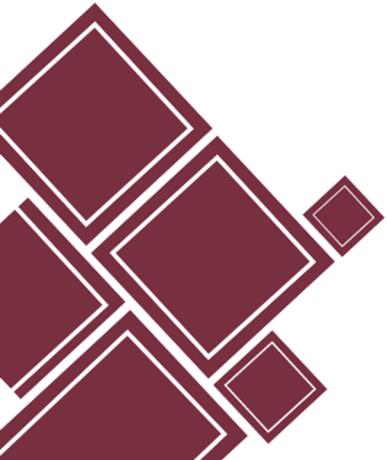
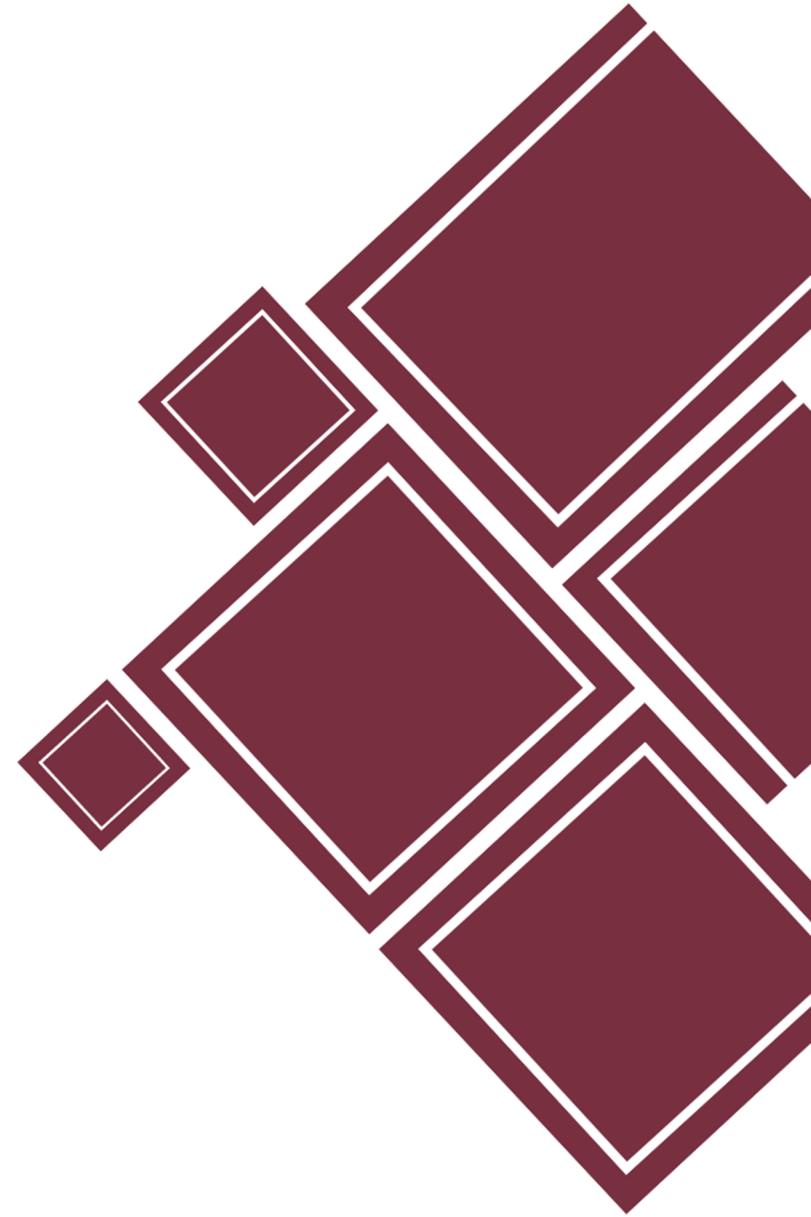


Understanding Risk

Olivia Jensen
Lee Kuan Yew School of Public Policy



Understanding Risks



A black and white photograph of a city skyline at night, with numerous skyscrapers illuminated. A network of white lines and dots is overlaid on the image, suggesting a digital or data network. A semi-transparent blue banner is positioned across the lower half of the image.

Understanding Risk

AGENDA



Why does public understanding of risk matter?



Risk perceptions



Risk communications

Why does public understanding of risk matter?



RISKS OF DISAGREEING ABOUT RISKS



UNINTENDED CONSEQUENCES

Policies can trigger behaviours which are **more** risky



IMPLEMENTATION COSTS

Policies are ineffective or more costly to enforce



CONFLICT

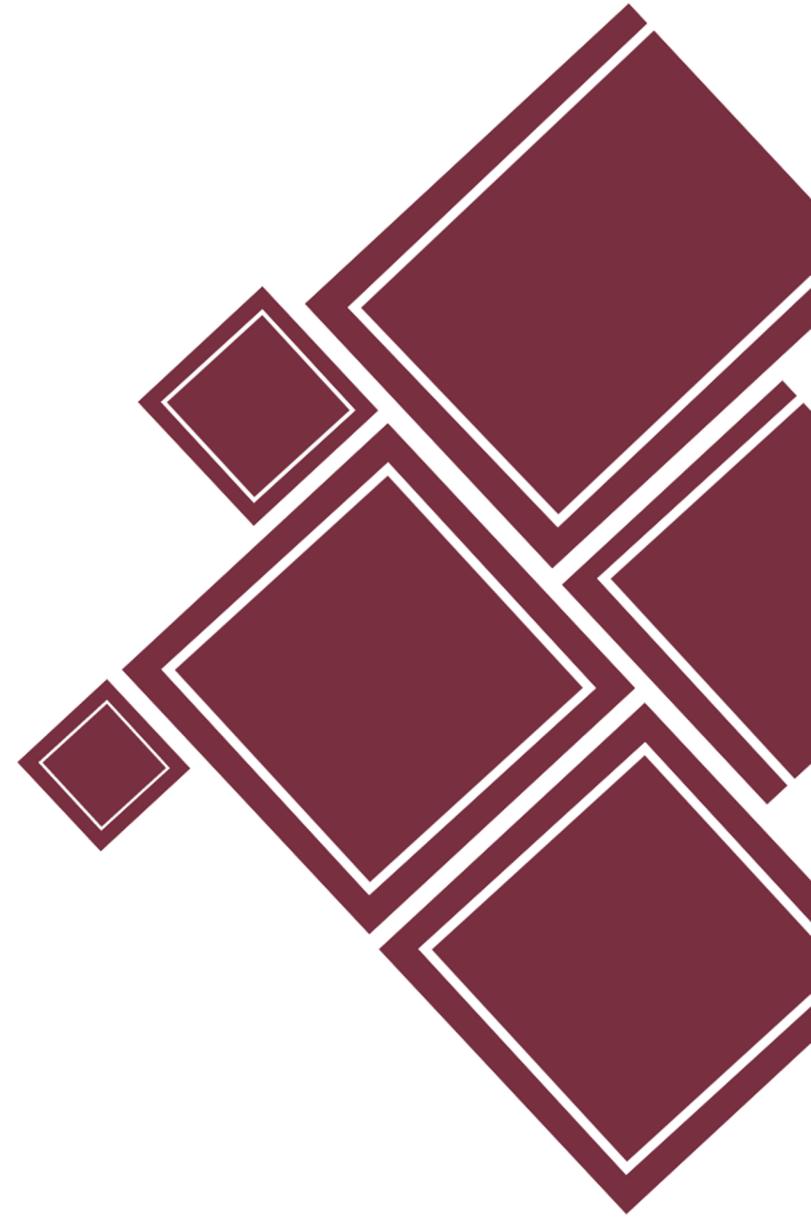
Conflict over regulations between public and authorities



DISTRUST

Fear, distrust and frustration

Risk Perceptions



A photograph of a long, narrow staircase in a narrow alleyway between stone buildings. The staircase is made of stone steps with decorative scrollwork on the risers. The alleyway is very narrow, with buildings on both sides. The lighting is somewhat dim, and the overall tone is muted. A blue banner is overlaid at the bottom of the image, containing the text "Risk Perceptions" in white.

Risk Perceptions

Why does the public get risks “wrong”?

- Experts think that the public tend to over-estimate or under-estimate many sources of risk
- The gap in expert and public risk perceptions of nuclear power prompted the development of risk perceptions as a field of study
- Is it just due to a lack of information?





**LAKE CONTAINS
RECLAIMED WATER**

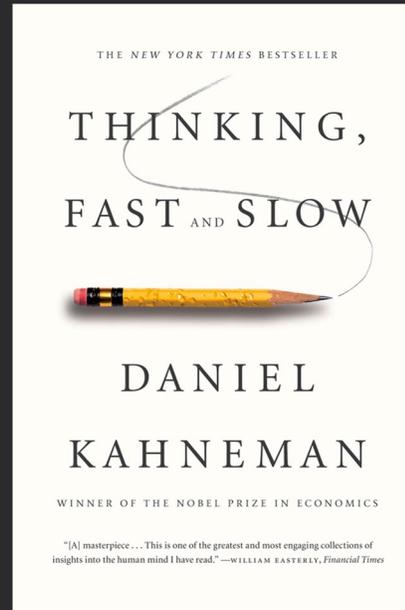




Emotions v. reason?

SYSTEM 1 HEURISTIC THOUGHT

- Fast
- Automatic
- Effortless
- Associative



SYSTEM 2 SYSTEMATIC THOUGHT

- Slow
- Learned/controlled
- Effortful
- Rule-based

Risk Perceptions Poll

<https://www.menti.com/oxf752h5g4>



Factors influencing risk judgements



Information



Characteristics
of the risk
source



Affect and
emotion



Cognitive
Biases



Social
amplification

Risk judgements involve both reason and emotion

Characteristics of Risk that Influence Risk Perception

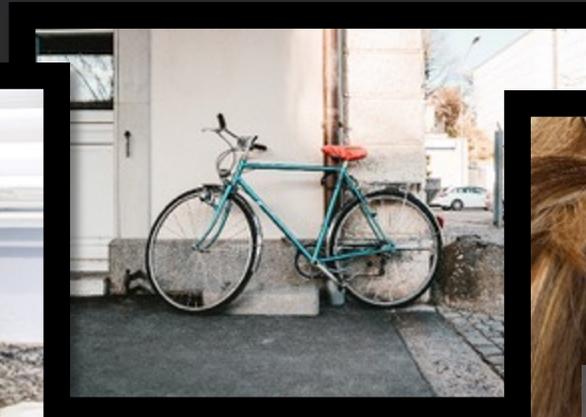


Dread Risk

- Perceived lack of control
- Involuntary
- Lethality
- Catastrophic potential
- Inequitable distribution of risks and benefits
- Impact on future generations
- Increasing



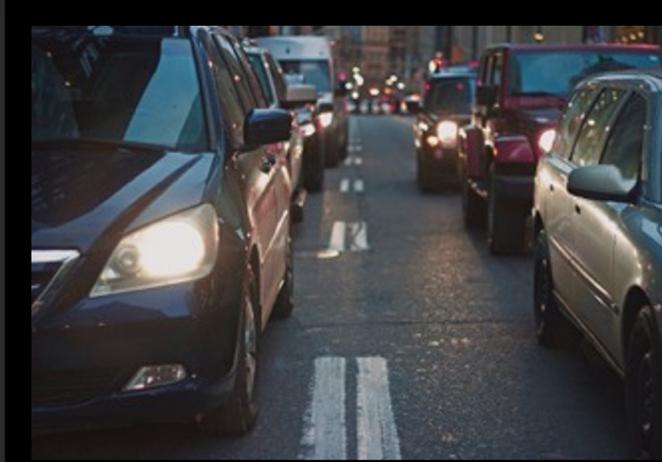
Risks high in dread



Risks low in dread

Familiarity & Exposure

- New, familiar, immediate, observable
- The number of people exposed to the risk source or activity



High degree of exposure



Limited degree of exposure



Experts' risk perceptions relate more closely to **mortality statistics**, while the general public tends to perceive risk based on **dread and how known or unknown the risk is**.

(Slovic et al. 1981, 1987)

Affect & Risk



"Nuclear power is a bad thing"

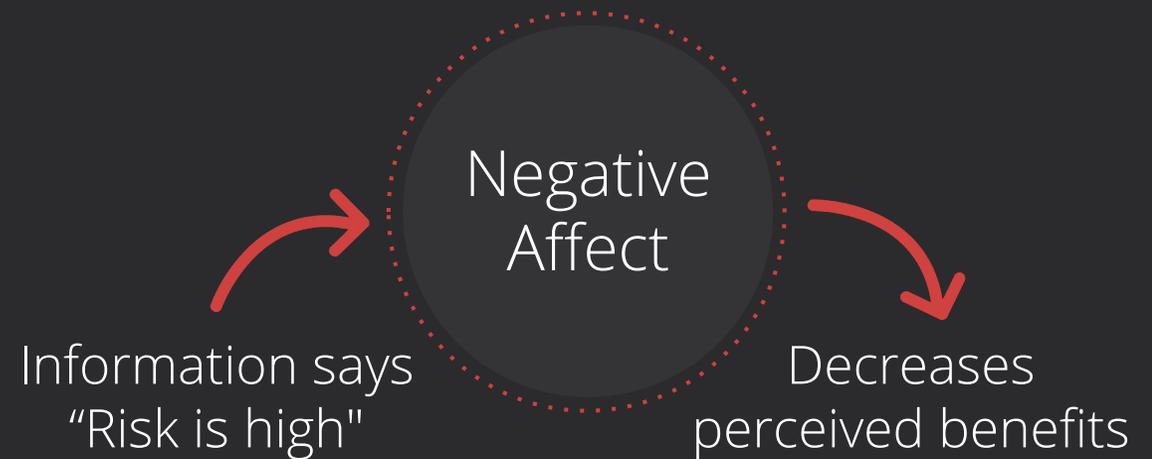
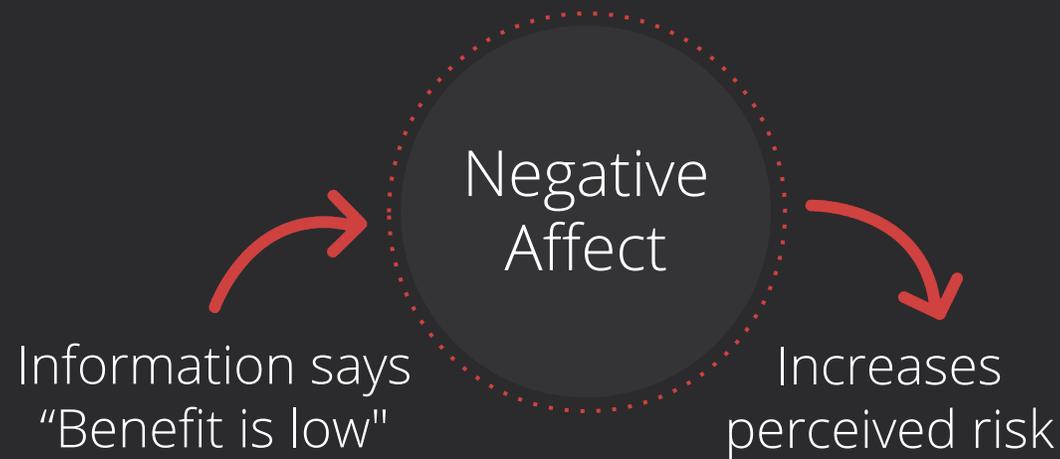
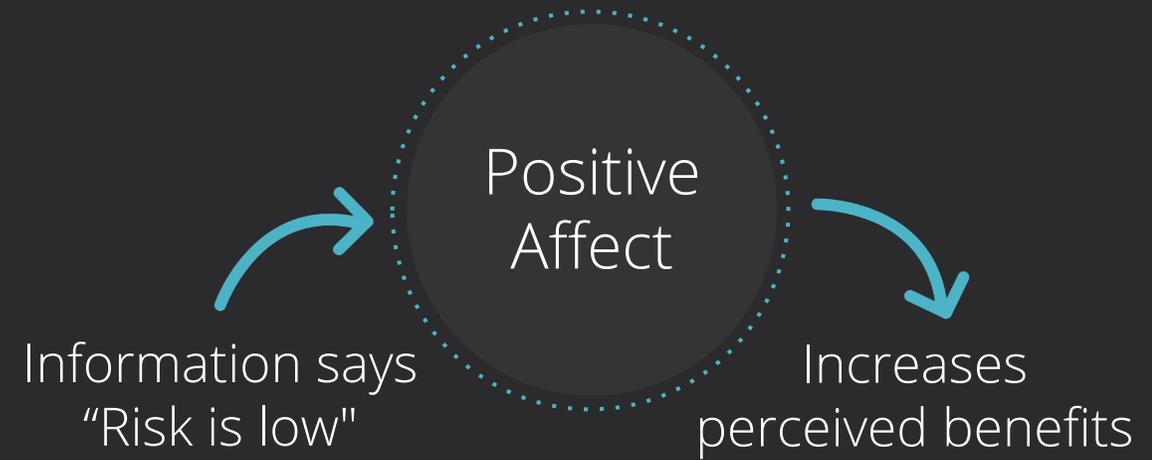
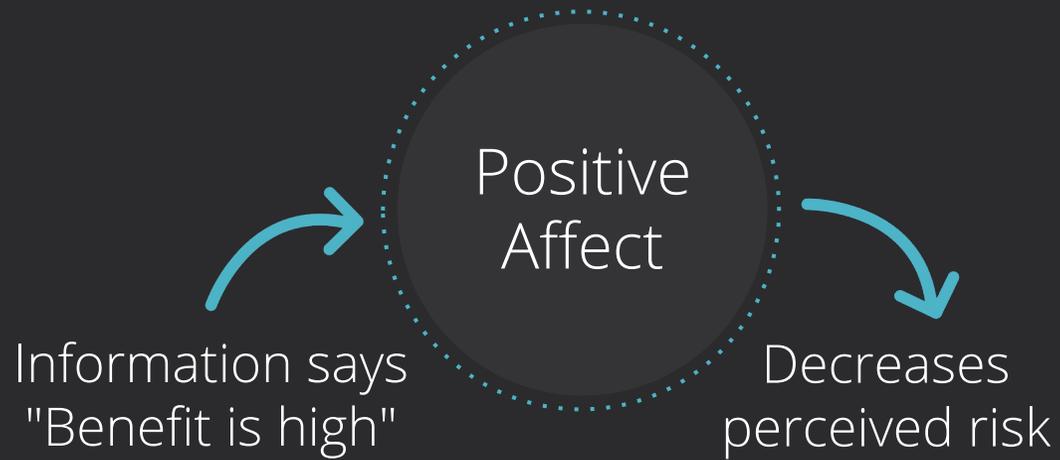
"Risk is bad"

"So nuclear power must be very risky"

"Since it's risky, it must not be beneficial"

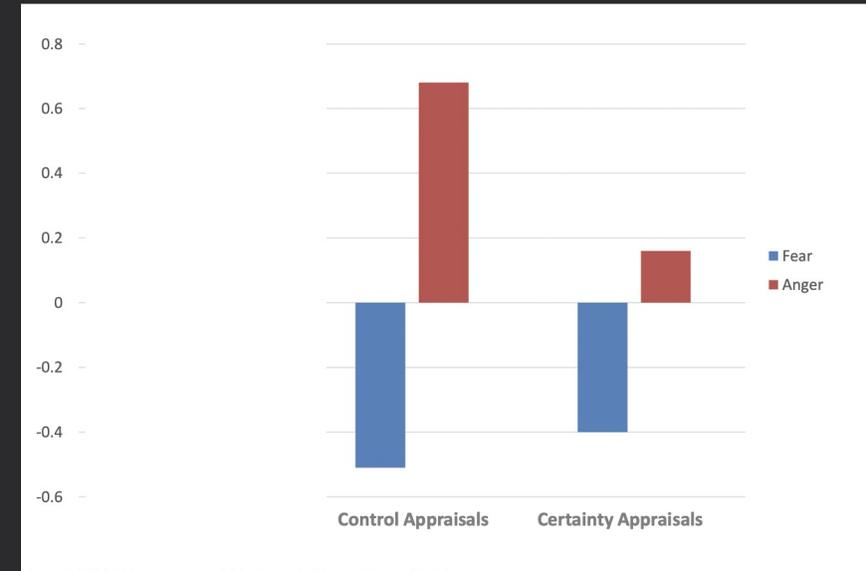
Affect in risk judgements

Source: Finucane et al. (2000)



Emotion & Risk

- Emotions are powerful and automatic and associated with action
- Fear and anger don't explain risk perceptions in themselves
- These emotions exert opposite influences on control and certainty which in turn affect behaviour.

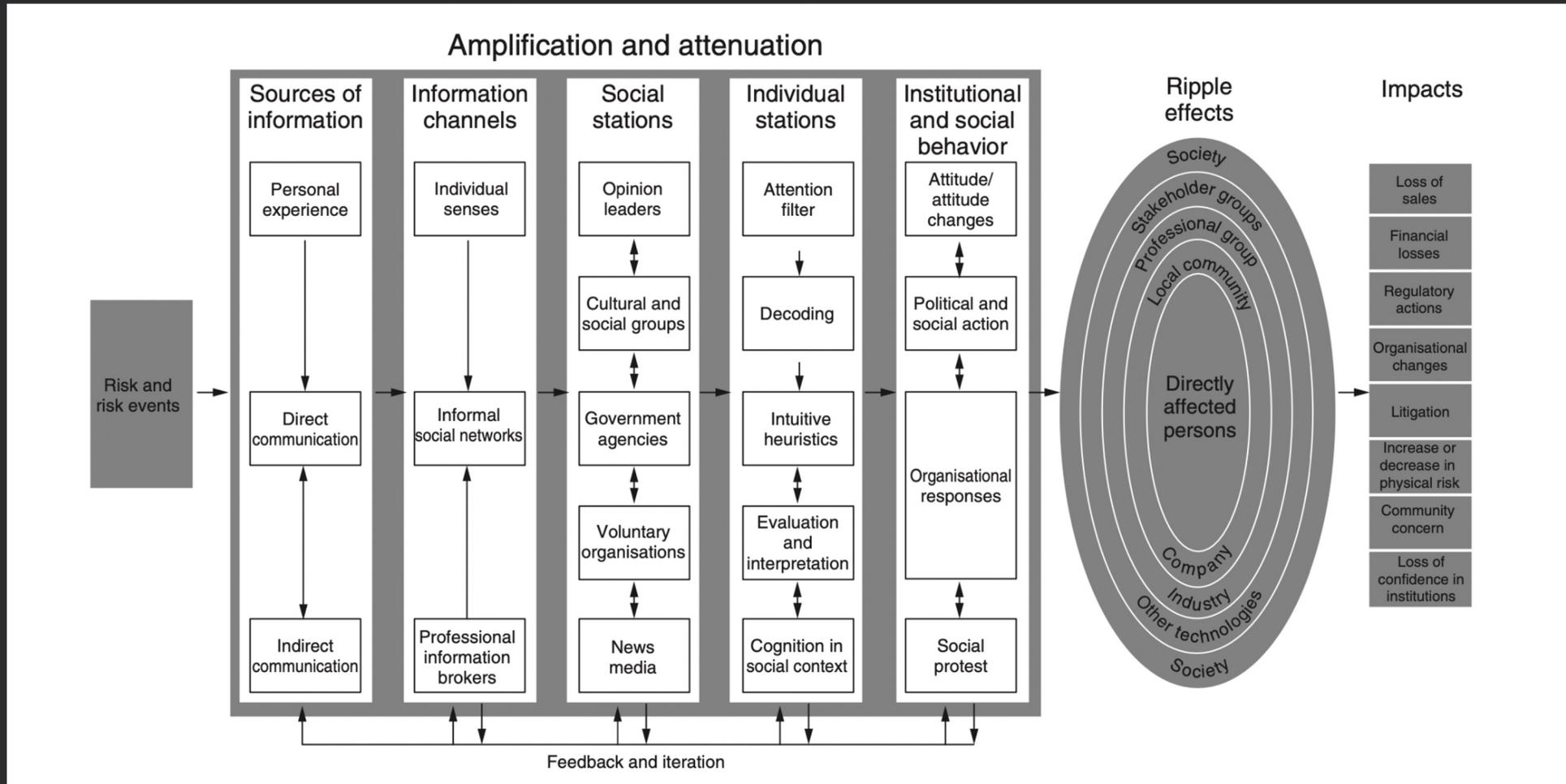




Risk and Society

Identification and evaluation of risks are shaped by social factors

“Social amplification of risk “ framework draws attention to the feedback loops between sources, channels, ‘stations’ and institutions



For which risks are differences in risk perceptions likely to be widest?

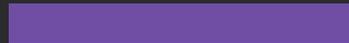


- In some domains, experts perceive high risks but do not seek to communicate these to the general public.
- In other domains, experts diverge widely among themselves in assessing risks.

Divergence between risk perception and action



EVERYDAY
NEEDS



RESOURCE
CONSTRAINTS



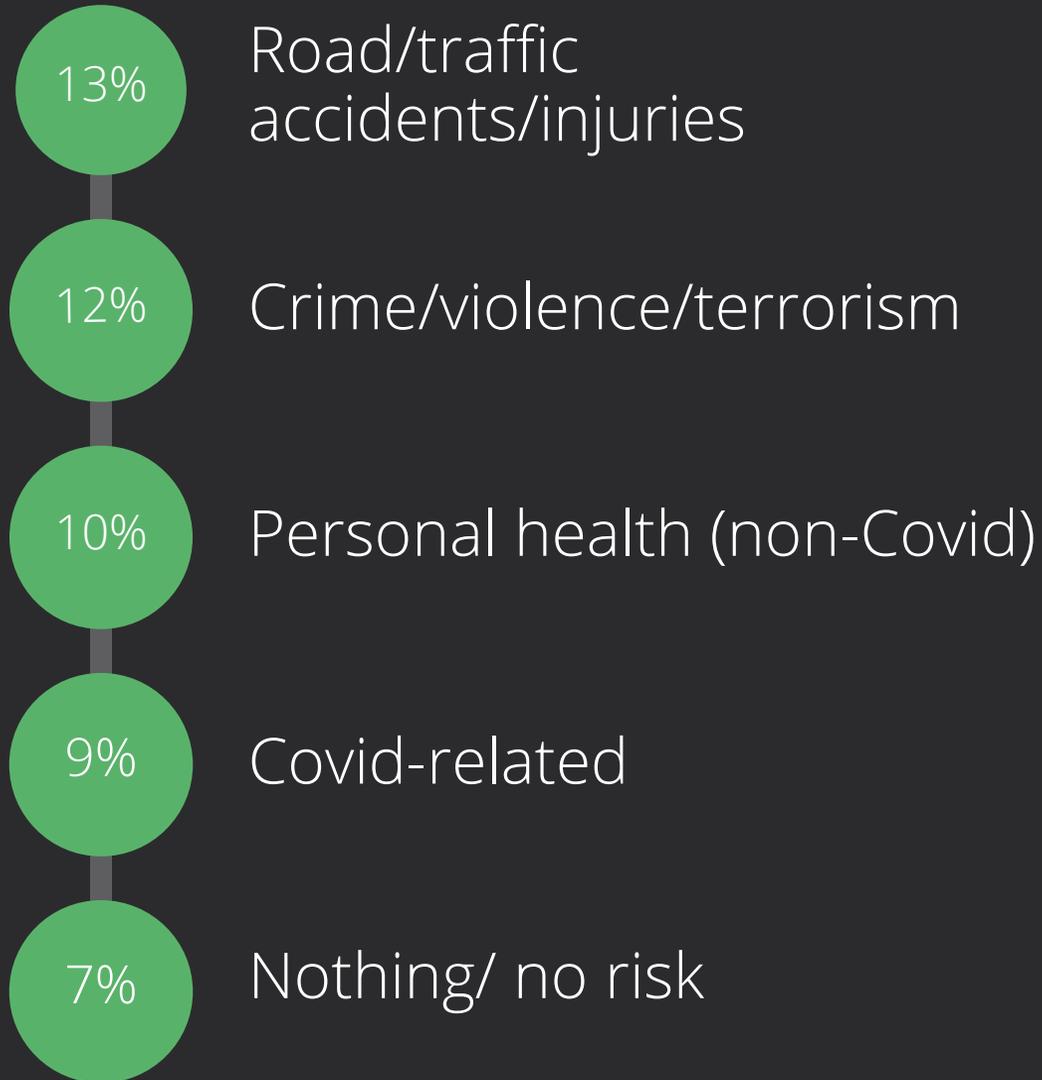
TRADE-OFFS



What do individuals perceive to be the top risks?

“Greatest Source of Risk in Your Everyday Life”

LRF World Risk Poll



Percentage worldwide who named each as their greatest source of risk

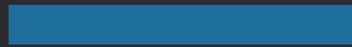
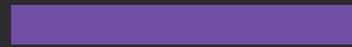
	% Covid-19/ coronavirus related	% Personal health, non- Covid-19	% Road- related accidents/ injuries	% Crime/ violence	% Financial: not having enough money	% Economic: unemploy- ment, high prices	% Cooking or other household accidents/ injuries	% Nothing/ no risks
Eastern Africa	3	17	7	18	13	4	<0.5	2
Central/Western Africa	1	10	17	22	11	3	<0.5	1
Northern Africa	16	15	6	10	10	8	1	10
Southern Africa	10	6	7	42	2	3	<0.5	1
Central Asia	7	14	5	2	3	3	<0.5	16
Eastern Asia	7	16	25	5	1	3	<0.5	16
Southeastern Asia	16	12	14	8	7	6	1	9
Southern Asia	8	9	9	4	7	6	1	10
Northern America	5	6	29	11	2	2	<0.5	1
Latin America & Caribbean	3	6	10	43	1	3	1	3
Middle East	8	7	9	12	6	11	1	16
Eastern Europe	5	17	12	9	7	8	<0.5	3
Northern/Western Europe	4	11	21	8	3	4	4	4
Southern Europe	4	13	19	9	4	9	2	5
Australia & New Zealand	7	7	33	11	2	3	11	2

0-5 6-10 11-15 16-20 21-25 26-30 31-35 36-40 41-45

<https://wrp.lrfoundation.org.uk/2021-report-a-changed-world-perceptions-and-experiences-of-risk-in-the-covid-age/>

How do we find out how the public perceive risks? The Toolbox

SURVEYS



Local, regional/national, global

- National polling firms e.g. Pew
- LRF World Risk Poll, Edelman Trust Barometer, World Values Survey
- Online surveys: Qualtrics, PureProfile, YouGov

BIG DATA

- Internet search trend data: Google Trends
- Social media monitoring: Twitter, Wei Bo, Reddit, Facebook etc.: <https://voyant-tools.org>
- Smartphone-based data collection: <https://ethicadata.com>

"SMALL" DATA

PROS AND CONS OF SOCIAL MEDIA DATA

ADVANTAGES

- Volume – lots of evidence
- Velocity – high temporal resolution longitudinal data
- Rapid perception of messaging effectiveness and reaction duration in groups
- Variety – possibility to triangulate between sources
- Veracity – avoids problems of self-reporting
- Social media shapes opinion as well as reflecting it
- Effective targeted social marketing tool

DRAWBACKS

- Need to safeguard user information and feelings of privacy by:
 - Anonymising and aggregating data
 - Identify and stick to concrete use cases
- Need to pre-process social media data
- Pay attention to ambiguity & obfuscation in posts
- Disinformation, non-individual accounts
- Consider differences in platform use by different demographics to avoid bias



PROS AND CONS OF SMARTPHONE DATA

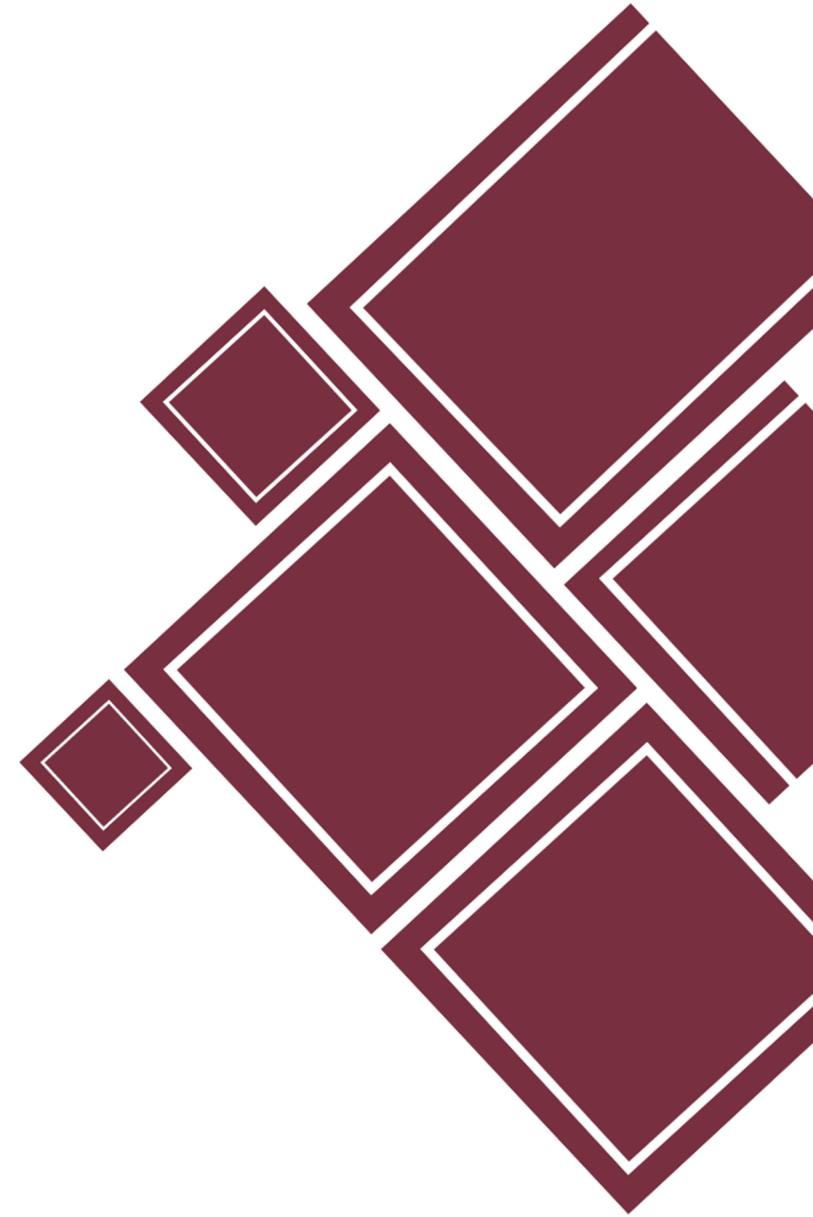
- Smartphone data: location, motion, environment sensors e.g. light, temperature, contact network, app usage
- Cross-analyse user data with other spatial data e.g. air pollution, water pollution, access to services, weather data
- Challenges in recruiting and retaining participants due to user fatigue and dropout
- Data feedback to users/"sentinels" to improve opt-in, compliance, and trigger behaviour change, enhances trust and transparency, user learning and empowerment
- Need to filter out irrelevant data and analyse data to get a high-level understanding – significant time and skills required to process data



DESIGNING A DATA COLLECTION STRATEGY

- All methods have advantages and drawbacks
- Aim to develop a CROSS-PLATFORM STRATEGY
- Combine methods depending on:
 - Time-criticality
 - Differentiation among sub-populations
 - Budget etc.

Risk Communication

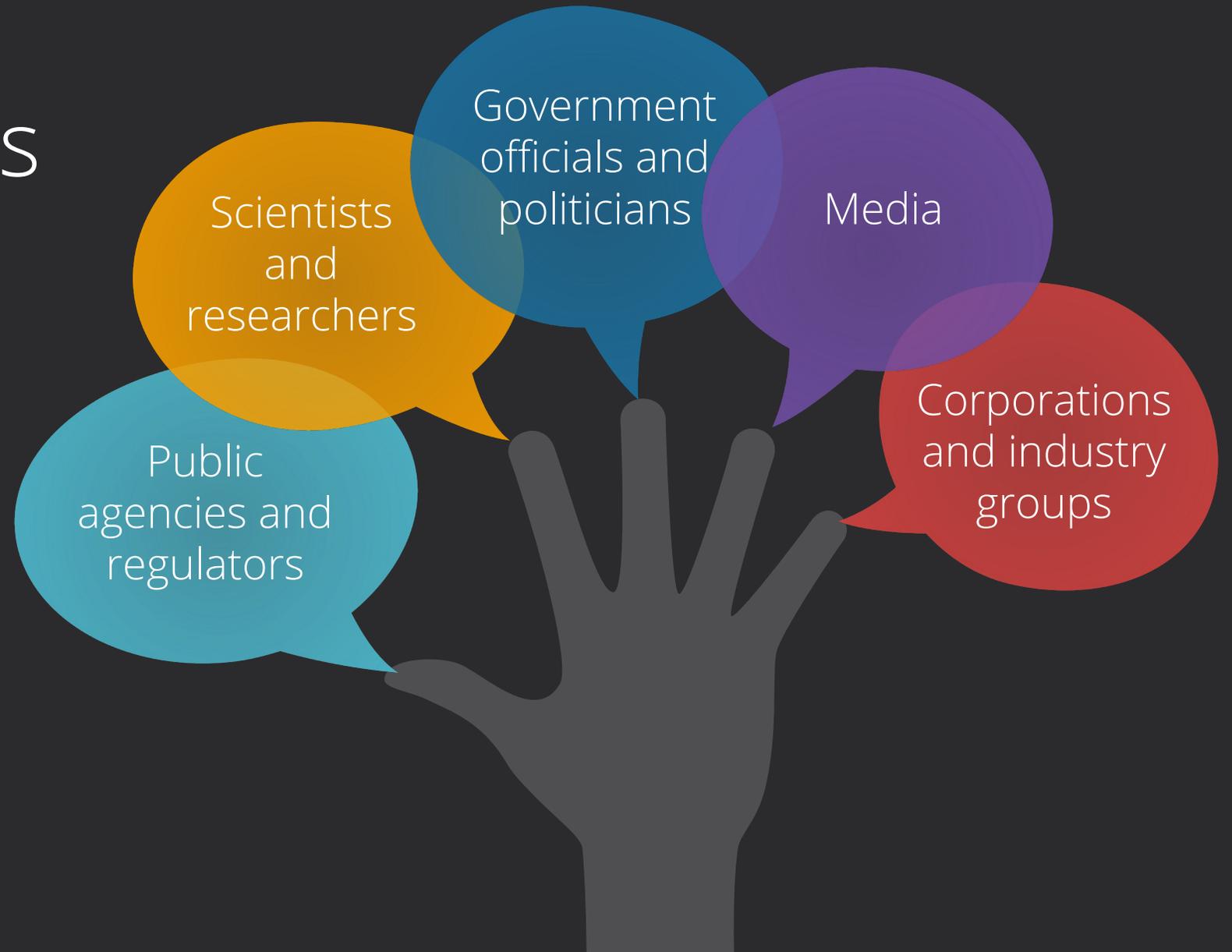




Risk Communication



Who communicates risk and to whom?



Purposes of risk communication



Enlightenment/
increase
knowledge



Right to know



Attitude change



Inform
decisions



Behaviour
change



Emergency
preparedness



Participation



Public
involvement



Risk Communication

Accurate



Actionable



Elements of risk communication content

```
graph LR; A((Elements of risk communication content)) --- B(Level of risk: how likely is it to happen); A --- C(Population at risk); A --- D(Severity of the consequences or harm); A --- E(Actions to control the risk);
```

Level of risk: how likely is it to happen

Population at risk

Severity of the consequences or harm

Actions to control the risk

Conveying Risks – What to Avoid



Misunderstood terms
& indicators



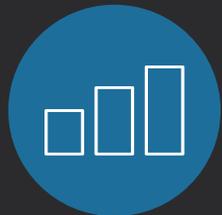
Expressions of
probability



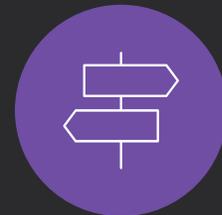
Denominator
neglect



Unhelpful
comparisons



Confusing visuals



Deceptive framing



Risk metrics



“We had a 1 in a 100-year flood two years in a row
– how can that be?”



Alternatives:

- Flood stage/ height
- Flood which has a 1 in a 100 chance of happening in any given year

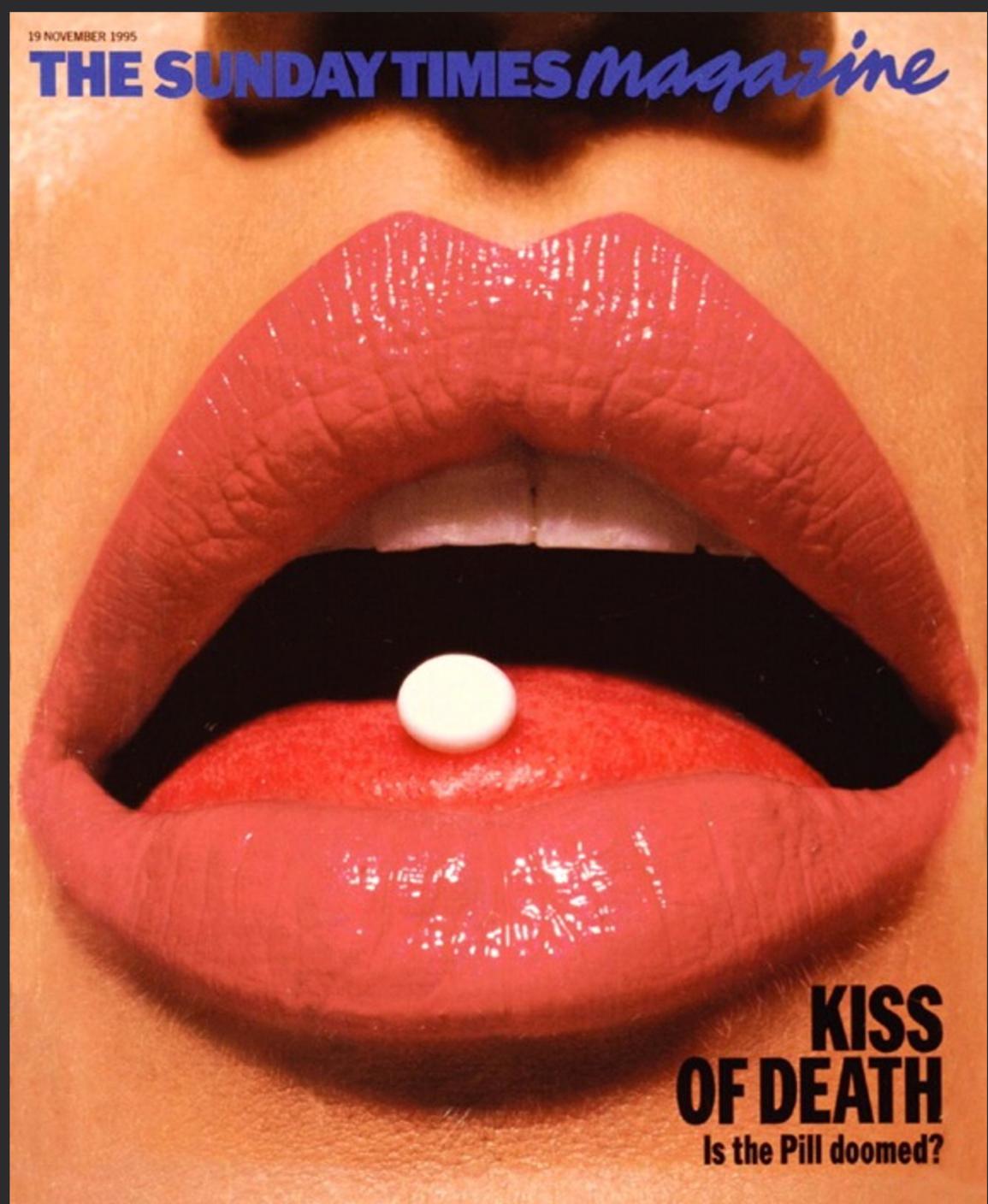
Communicating an *increase* in risk

The third generation
contraceptive pill "doubles the
risk" of fatal thrombosis

10,000 additional abortions
30,000 additional conceptions

2nd generation pill:
1 in 7000 per year

3rd generation pill:
2 in 7000 per year



Breast Screening in Women

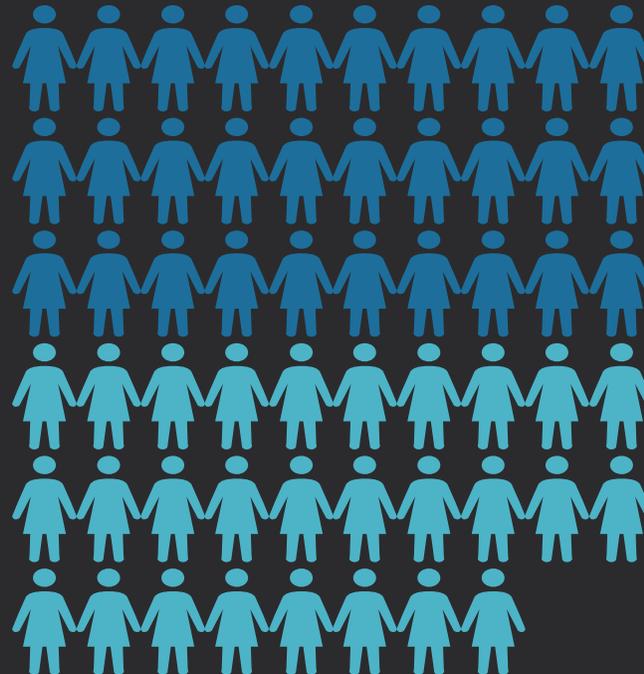
The benefits and harms of breast cancer screening of 1,000 women aged 50-70 without any symptoms

Without screening

58 will be diagnosed breast cancer

21 will die of breast cancer

37 will be treated and survive their cancer



Breast Screening in Women

The benefits and harms of breast cancer screening of 1,000 women aged 50-70 without any symptoms

Without screening

58 will be diagnosed breast cancer

21 will die of breast cancer

37 will be treated and survive their cancer



Due to screening, 5 lives will be saved but around 17 women will be diagnosed with cancers that would not have caused them any harm

With screening

75 will be diagnosed breast cancer

16 will die of breast cancer

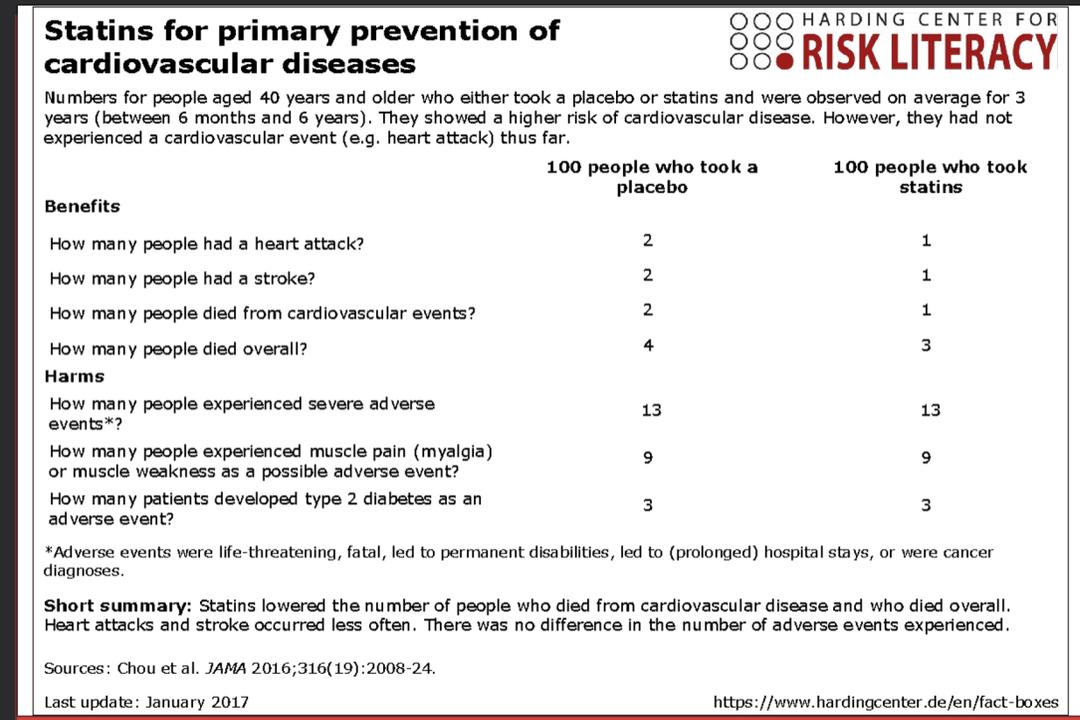
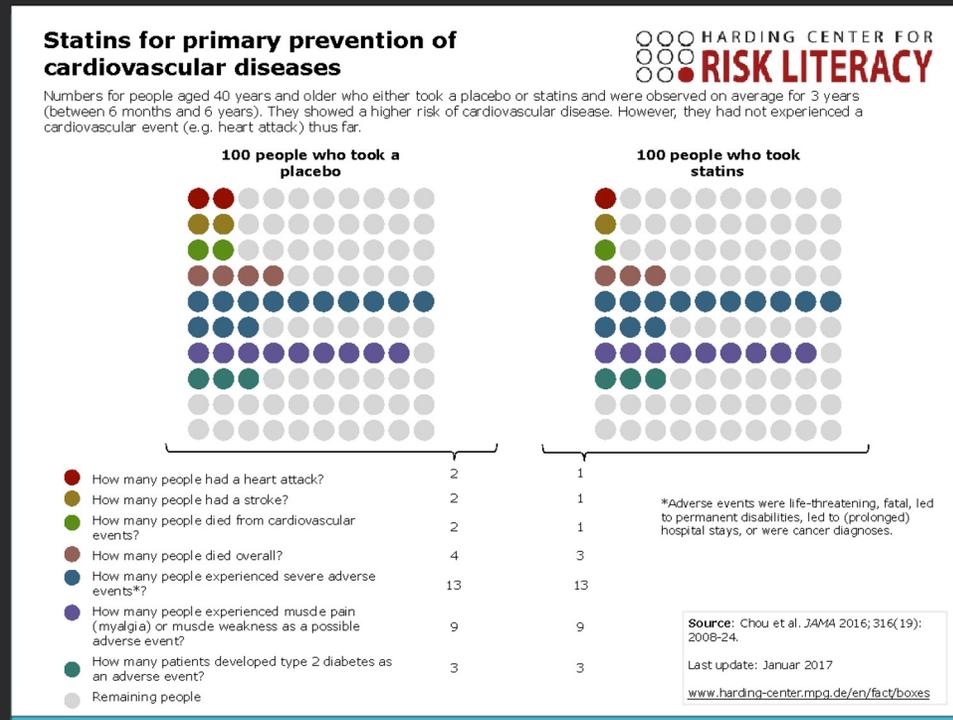
59 will be treated and survive their cancer



17 of the 59 will be over-diagnosed. These are cancers that wouldn't have caused any harm.

5 lives will be saved due to screening

Communicating both sides of the story: Fact Boxes



The Communications Medium



Information materials:
posters, pamphlets



Traditional media:
newspapers, TV and radio



Technology-assisted
communication



Social media



Face to face



Stakeholder participation

Risk communication as a two-way process



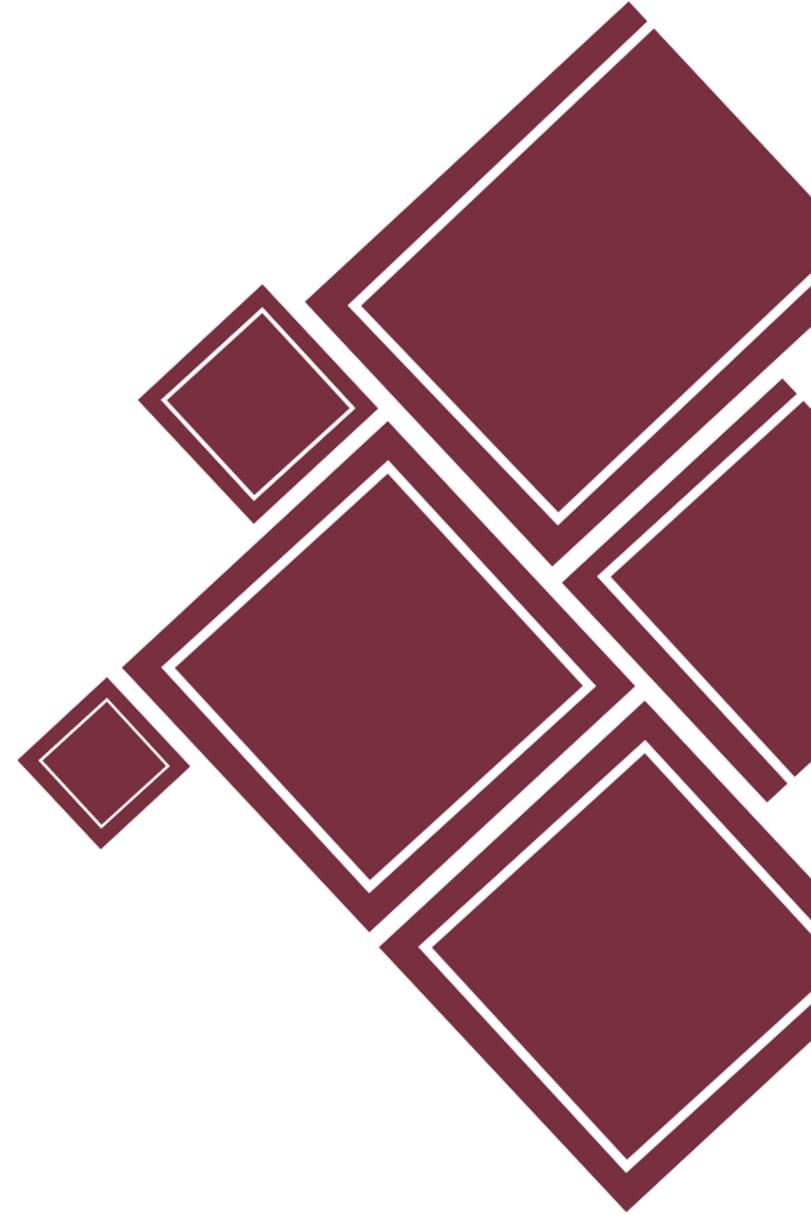
Audience

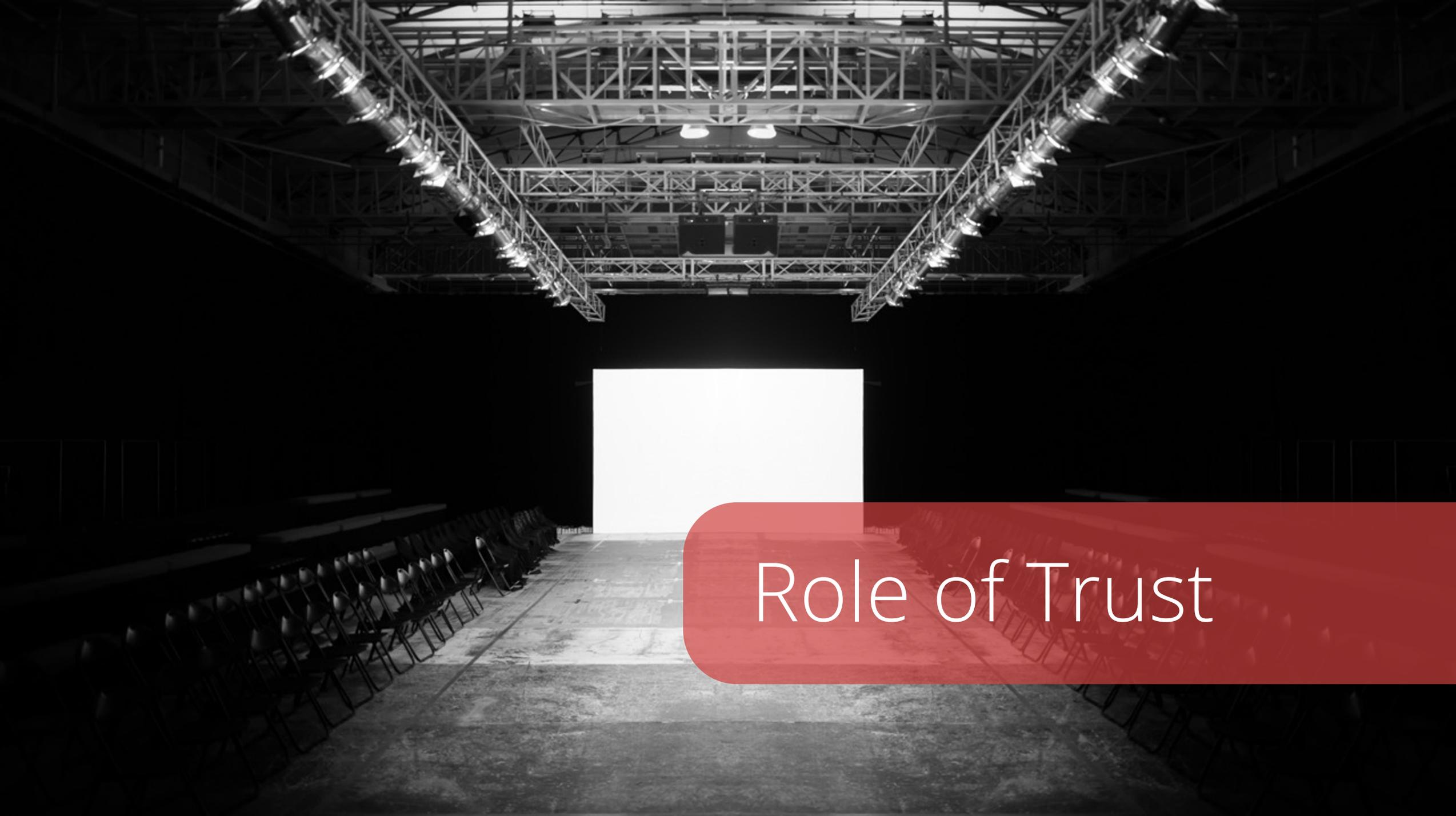
Experts

Communicating risk to policy-makers

- Investing in risk mitigation is often a difficult decision for political leaders to make.
 - Competing priorities
 - Complex, inter-connected risk landscape – both problems and solutions cross borders
 - Public may not have a good understanding of the riskscape or the costs and effectiveness of actions
- Risk identification and assessment and assessment of the feasibility and effectiveness of mitigation options are *expert* judgements.
- Investment in mitigation is a *political* judgement.
- Risk advice to policy-makers needs BROKERS to:
 - Synthesize and interpret information
 - Present a compelling narrative framed in terms of the *values* of the decision-maker and affected groups
 - Honesty about types and extent of uncertainty
- Brokers need to speak the languages of science, policy and politics and have diplomatic skills.

Role of Trust



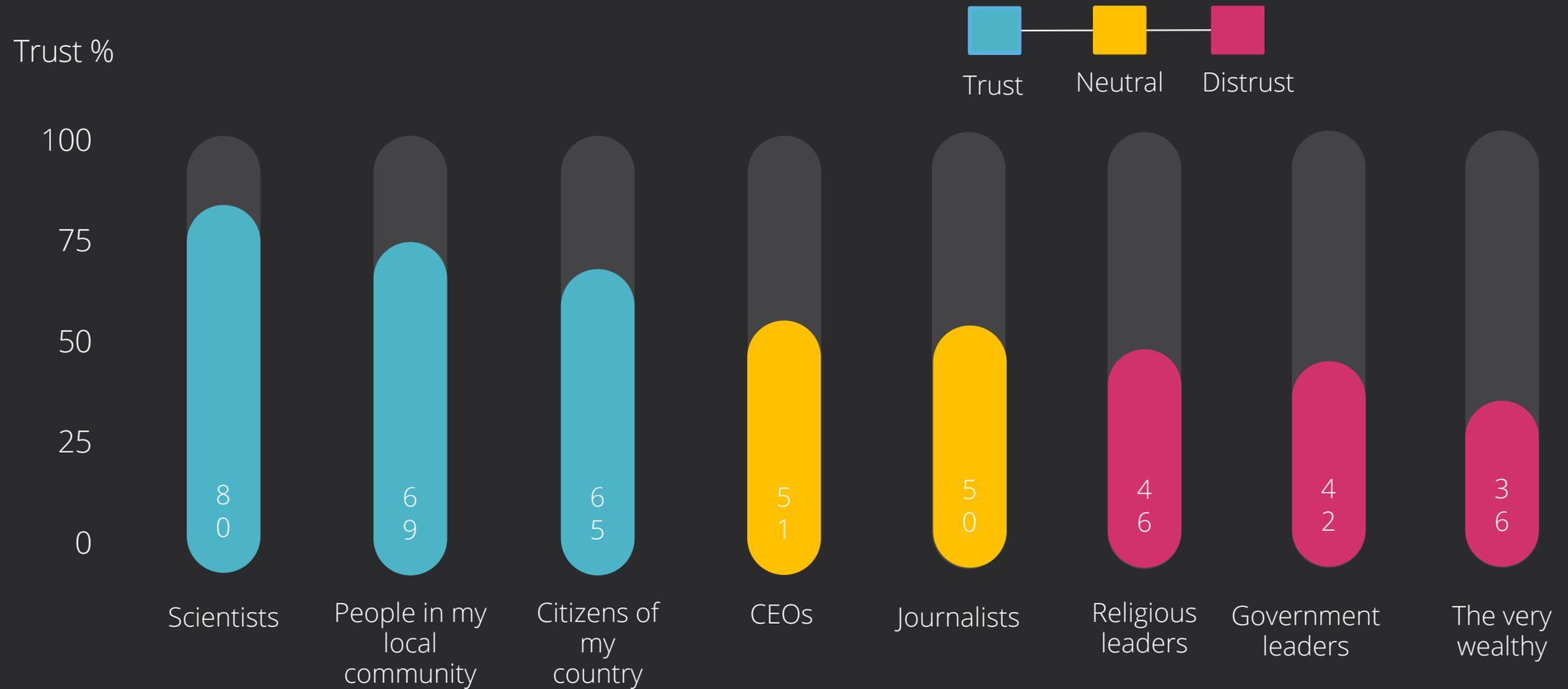


Role of Trust

Levels of Trust



Generalised Trust



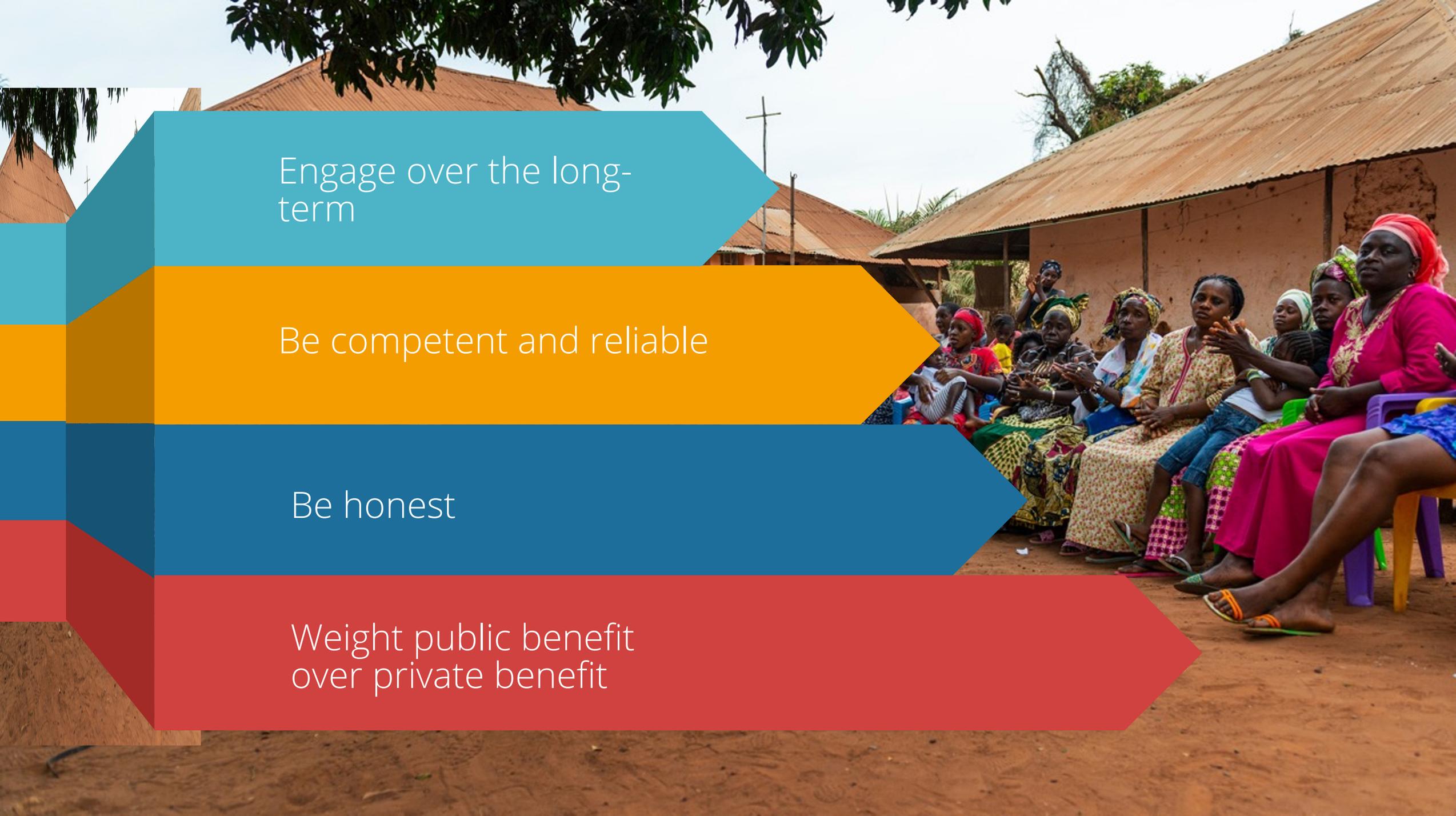
Source: 2020 Edelman Trust Barometer
<https://www.edelman.com/trust/2020-trust-barometer>

Trust in the Individual Communicator





Be trustworthy



Engage over the long-term

Be competent and reliable

Be honest

Weight public benefit over private benefit

The “Don’t Look Up” Risk Communication Challenge

There is a massive “planet-killer” comet heading towards the earth. A respected scientist from a top university has entrusted you with this information. What do you do?



- What information do you seek to gather from the scientist, their team or other experts?
- Who is the priority audience to whom you try to communicate this information?
- What is the core message you try to convey?
- How will you frame the message?
- Which barriers do you think you might face when trying to get your message across?

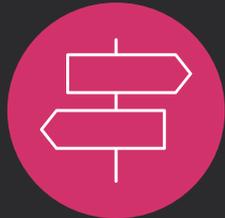
Key points



Be clear about the goals of risk communication



Listen to your audience: understand the values, needs and constraints of affected groups



Map out a strategy: test, evaluate, recalibrate



The ultimate risk communicator: a scientist-diplomat-comms professional



Resources



LRF Institute for the Public
Understanding of Risk

<https://ipur.nus.edu.sg>

EdX Online Course: Understanding
and Communicating Risk

<https://www.edx.org/course/understanding-and-communicating-risk?index=product&queryID=5f92a1d651af3effa57fee83c6dddb14&position=3>



Winton Centre for Risk and Evidence
Communication

<https://wintoncentre.maths.cam.ac.uk>

Harding Centre for Risk Literacy

<https://www.hardingcenter.de/en>

Centre for Informed Futures

<https://informedfutures.org/high-impact-risks/>

BBC Media Action

<https://www.bbc.co.uk/mediaaction>

<https://www.youtube.com/watch?v=PJgcKpK3V>

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