

Evidence-Based Risk Communication and Pipeline Public Awareness

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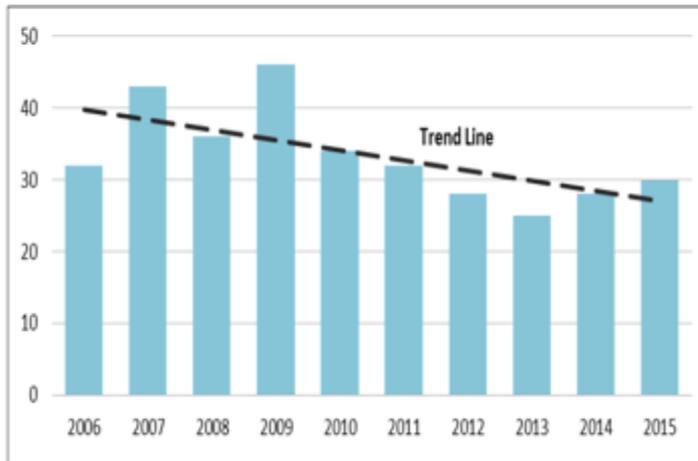
Pipeline Safety Trust - Annual Conference
November 2, 2017

Today's Presentation

1. Challenges and importance of successful risk communication
2. Evidence-based design and evaluation of risk communication
3. Initial recommendations related to RP 1162

Perceptions of risks and contexts differ

Figure 1. Accidents Causing Injuries or Fatalities, 10-Year Trend
Annual "Serious" Incidents



Source: Parfomak, P.W. (2016). DOT's federal pipeline safety program



Complex systems → more groups,
wider differences in perceptions of risk



“Public awareness of where pipelines are located and an understanding of the safety concerns and risks associated with pipeline transmission are vital to the continued safe operation of pipelines”

- PHMSA PAPWG Report

2016

<https://www.phmsa.dot.gov/safety-awareness/pipeline/safety-awareness-overview>

Risk communications can have different goals

Type of Communication	Description	Example Pipeline Safety Communication
1. Crisis	Emergency situation Requires action right away	Evacuation announcements related to a pipeline failure
2. Care	Agreement on risk Agreement on what to do about risk	Advisory notices regarding One-Call Systems/811/"Call-Before-You-Dig"
3. Consensus	Less agreement on risk Less agreement on what to do about risk	Advising communities on the "benefits of pipelines and the risks associated with pipeline failures"

Inducing action



Informing decision making

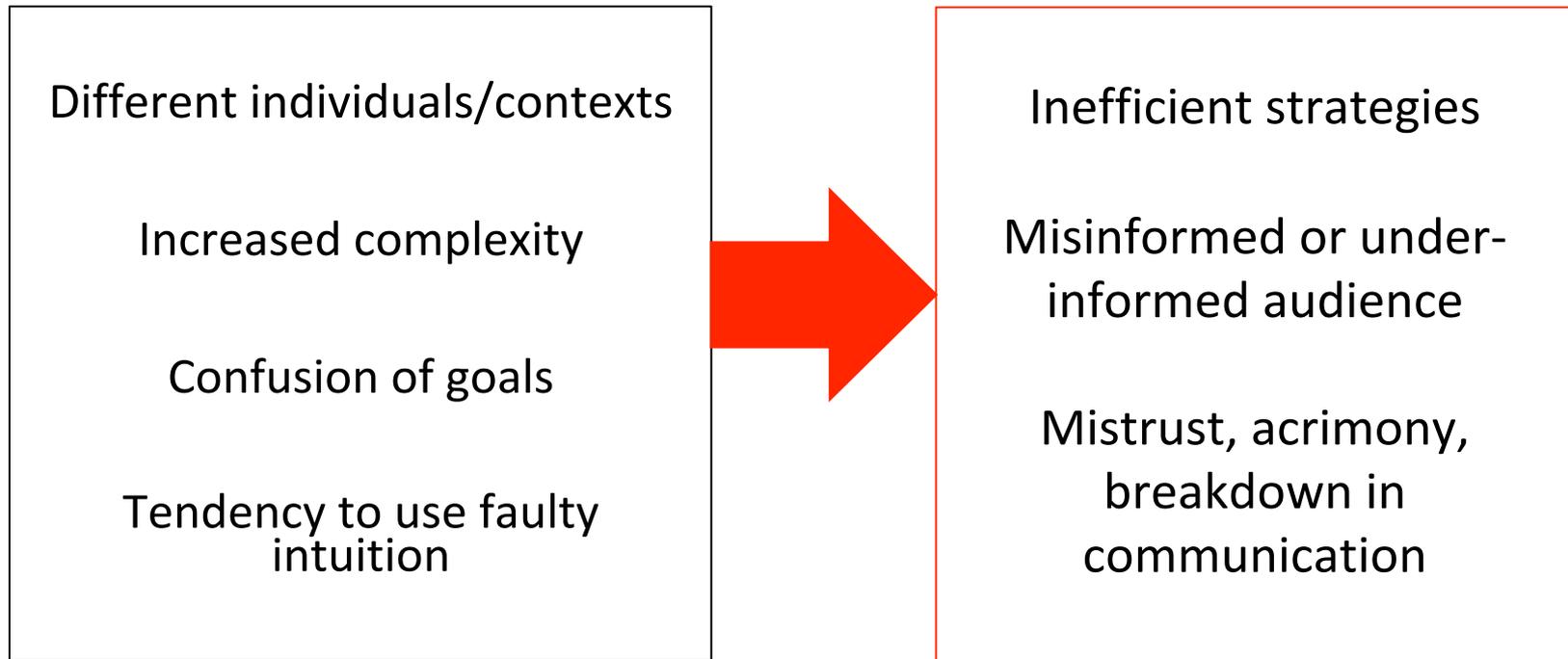
Another wrinkle: we assume we are better at communicating than we are

Why?

- **Common knowledge effect** → assume others have the similar understanding as us
- **False consensus effect** → assume others will make the same decision as us
- Other **biases** and **myths**



Summary of challenges



Hard to do in complex contexts →
need evidence-based strategies

Assume only one Audience



“Know”/Assume your
Audiences



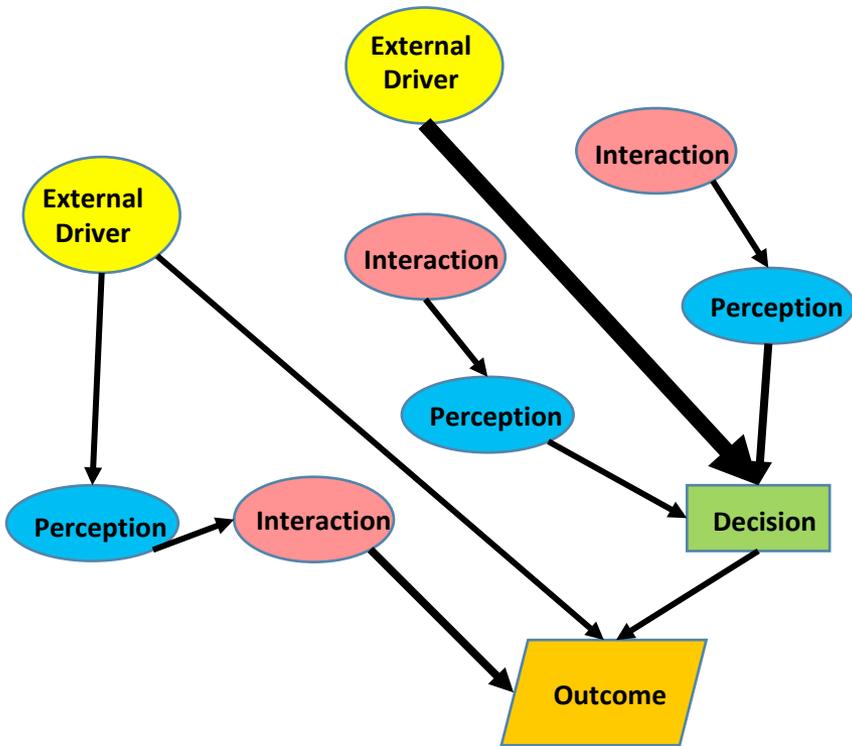
Listen to, **Work** with, and
Know your Audiences

Audience-Focused Design of Risk Communications

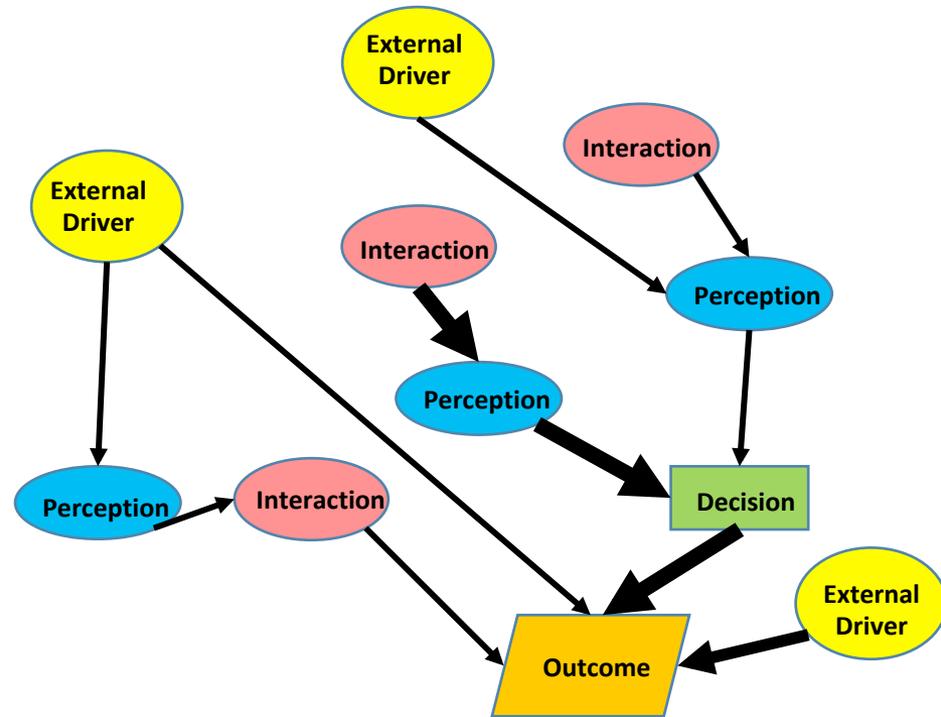
- 1. Analyze** information people need to know
- 2. Assess** what they currently believe
- 3. Address** the gaps between 1 and 2

Mental Models Approach

Expert



“Lay”/Expert



Requirements for Successful Risk Communications

1. The communication contains the information needed for effective decision making.
2. The communication connects users to that information.
3. The communication is understood by users.

some evidence -----> more evidence

No/Low Expense	Moderate Expense	Substantial Expense
<p>Ask friends, family, coworkers, and staff to review and say what they think.</p> <p>“Think-Aloud” process with convenience sample focused on opinions on:</p> <ul style="list-style-type: none"> - comprehension - completeness -bias <p>Ask internal experts to review communication</p> <p>Some focus groups</p> <p>Search of public data</p>	<p>Strategies from No/Low Expense category plus:</p> <p>One-on-one structured interviews</p> <p>Transcript/text analysis of interviews and focus groups</p> <p>Some survey approaches</p> <p>Search of less available data</p>	<p>Strategies from Moderate Expense category plus:</p> <p>Randomized control experiments</p> <p>Surveys with representative samples and pre/post testing</p>

Summary of research guidance

- Evidence-based design and evaluation
- Includes and requires more interaction with audiences
- Resources upfront + understanding audience context → efficiency, effectiveness, trust

Initial Recommendations re: RP 1162

Stakeholders/Participation

Involve additional experts and public stakeholders in development of future guidance → close gap between groups

Goals

Clarify when the goal of the public awareness program is to improve decision making and when is the goal to induce behaviors

Initial Recommendations re: RP 1162

Design of Risk Communications

- Emphasize understanding audience as first step and clarify enhanced/baseline

Evaluation of Risk Communications

- Emphasize effectiveness in addition to implementation

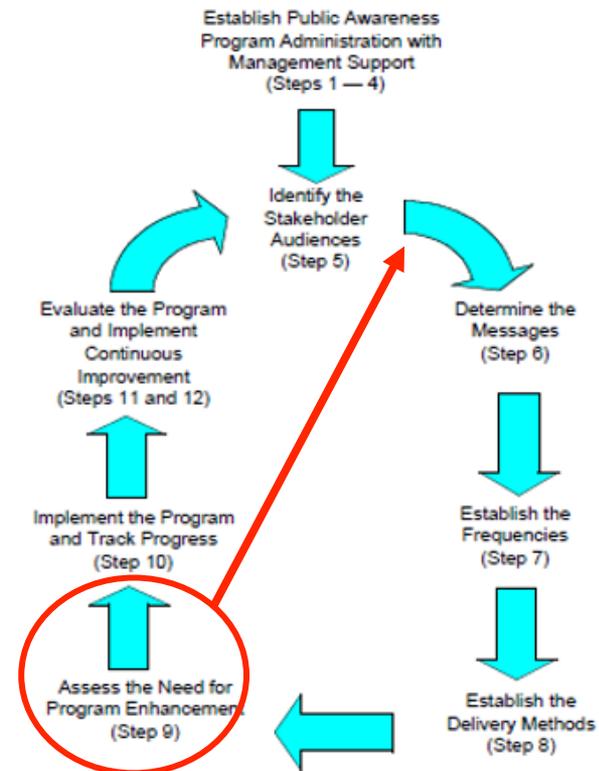


Figure 2-1—Public Awareness Program Process Guide
API RP 1162 (2nd ed.)

Thank you.

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Original Risk Communication Strategy

“All we have to do is get the numbers right” and

“All we have to do is tell them the numbers”

(Probability of an Event) x (Magnitude of Harm) =
Expected Outcome

If the Expected Outcome is worse for Option A, go
with Option B.