

What does a good investigation look like?

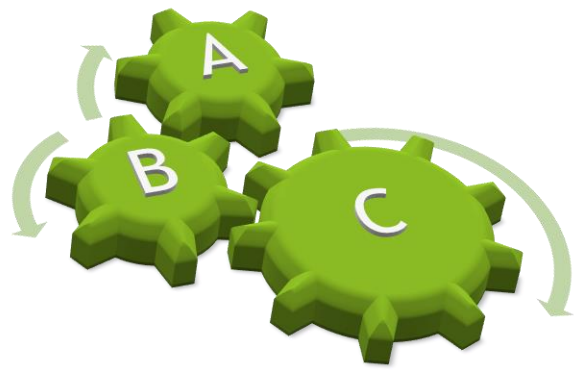
Railway Accident Investigation Seminar

Simon French, Chief Inspector, RAIB

The benefits of accident investigation

- ▶ in depth analysis of the causal chain gives new insights into the way machines, infrastructure, the actions of people and organisational factors can contribute to harm
- ▶ most accident investigations reveal how combinations of factors combined to create a dangerous event
- ▶ accident investigations provide a special insight into the vulnerability of existing risk mitigation measures and assist the design of new measures

Understanding our risk



BEFORE THE EVENT

Precursor modelling

Hazard and operability study

Risk assessment

Failure mode and effects analysis

Analysis of real-life performance

Stress testing

BEFORE THE NEXT EVENT

Investigation of system failures

Investigation of dangerous events

Accident investigation

The benefits of accident investigation

- ▶ accident investigations shine a searchlight into particular corners of the railway industry and therefore provide valuable intelligence to those with the responsibility for safety
- ▶ accident investigations demonstrate to those involved, those affected and wider society that action is being taken and lessons will be learnt

So what does good look like?

Evidence



Findings



Recommendations



Safety improvements

DEFINITION OF SCOPE AND METHODOLOGY

CAUSAL ANALYSIS

REPORT DRAFTING and CONSULTATION

COMMUNICATION

So what does a good investigation look like

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- ▶ There are no grey areas, never any doubt about 'who did it'
- ▶ Blamey
- ▶ Thinnest of evidence
- ▶ The guilty party always manages to 'give the game away'
- ▶ Legal powers?

So what does a good investigation look like



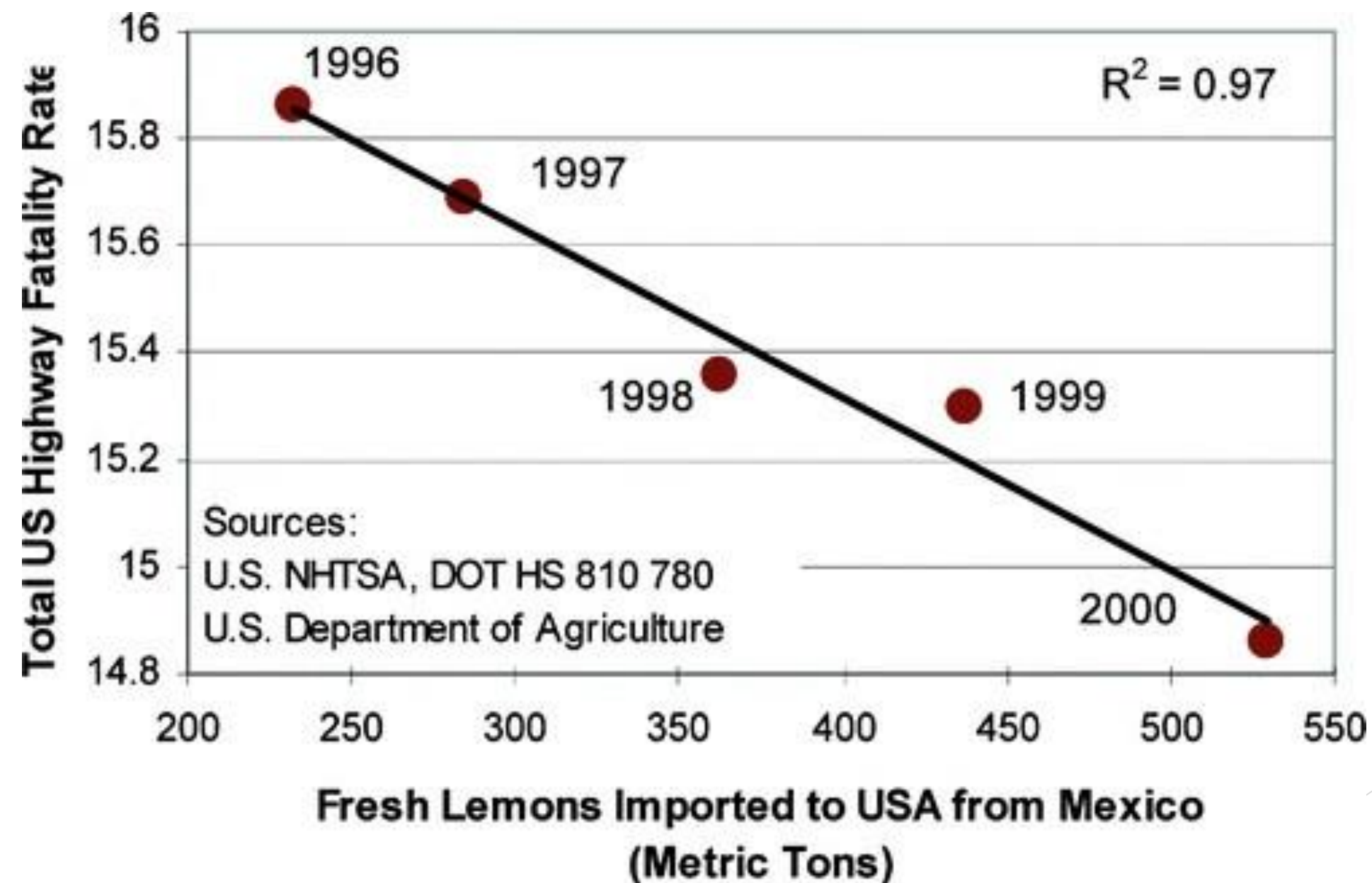
- ▶ Accuracy and detail
- ▶ Openness to new evidence
- ▶ Analysis focused on understanding the cause of the event
- ▶ Good cooperation with the police and other investigators
- ▶ Story-telling based on factual evidence

Advice to new investigators

- ▶ Be clear about the scope of your investigation and your methodology
- ▶ Always aim to be thorough, yet proportionate to the potential safety learning
- ▶ Avoid apportioning blame, but do not shrink from presenting all of the relevant facts
- ▶ Focus on understanding the causal links rather than pursuing a particular safety issue

Advice to new investigators

- ▶ An interdependence between the activities of A and B does not prove causality
- ▶ Similarly, correlation is not proof of causation



Advice to new investigators

- ▶ Understand cause and effect; and be open to alternative possibilities



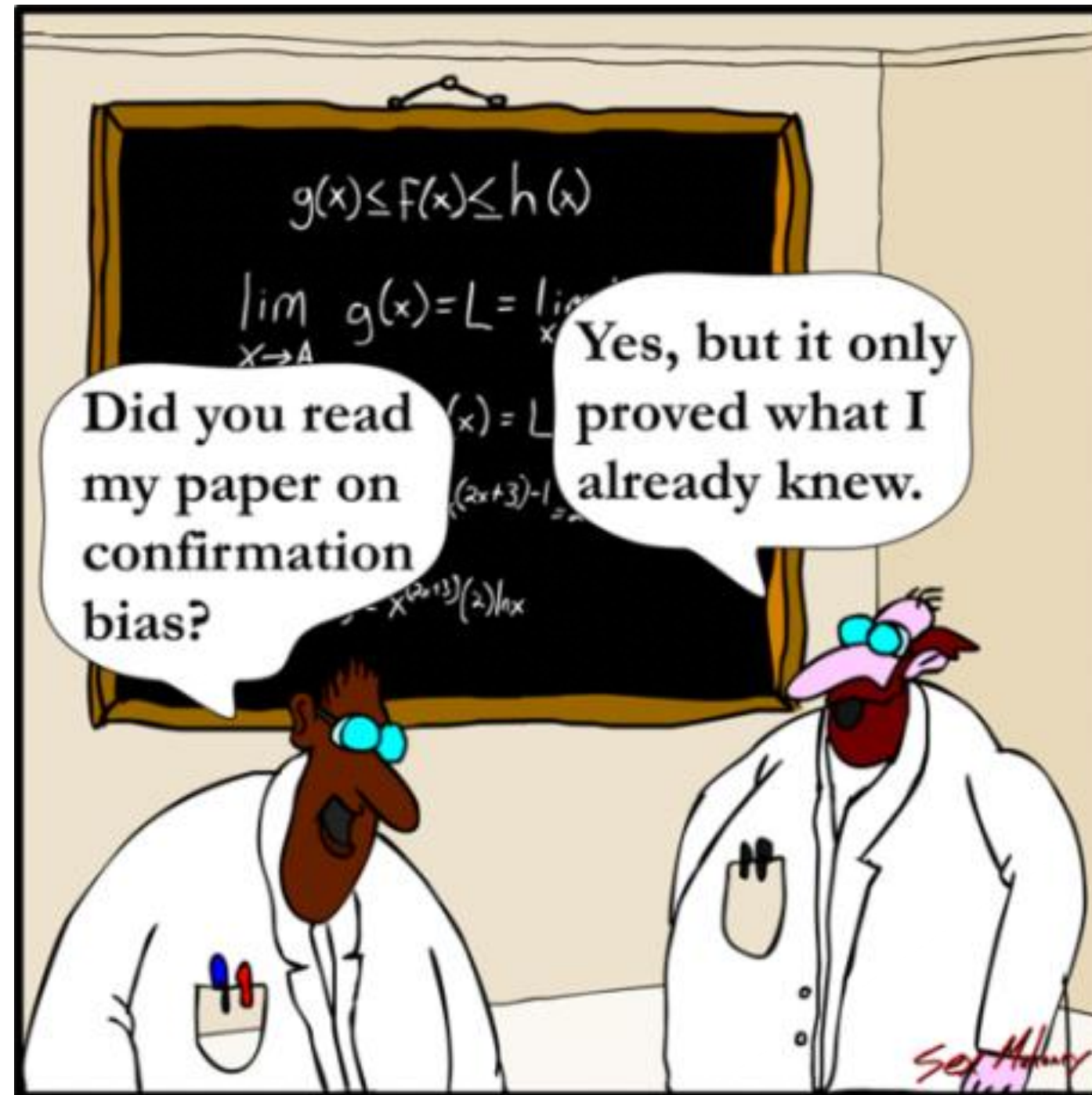
Advice to new investigators

- ▶ Residual uncertainty about cause is a normal outcome of a competent investigation and should never be seen as failure - the duty of investigators is to be clear about areas that remain unclear



Advice to new investigators

- ▶ The simplest explanation is often, but not always, the best
- ▶ Beware confirmation bias

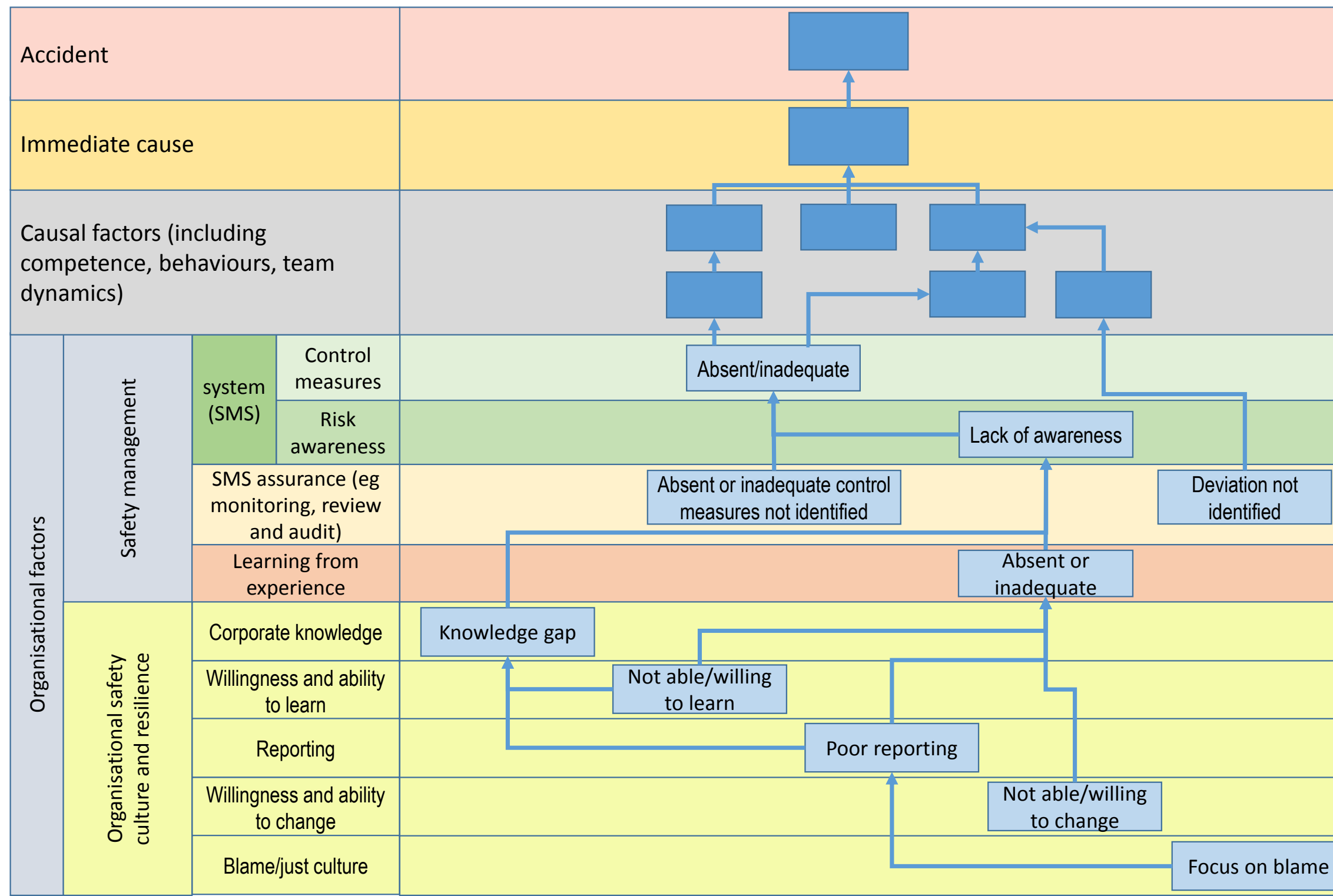


Advice to new investigators

- ▶ Accuracy is everything - never take the trust for granted, it has to be earned
- ▶ Keep track of your evidence
- ▶ Keep people informed as best you can, especially those who were directly involved in the accident and the bereaved
- ▶ Never forget the impact that serious accidents can have on industry workers and management teams

Advice to new investigators

- ▶ A good investigation integrates direct causal factors with underlying management and organisational factors



Advice to new investigators

- ▶ Consult with those who understand the system best, they may have better ideas
- ▶ To understand what went wrong, you need to first understand how a safe outcome is normally delivered
- ▶ A good investigation report must tell the story as clearly as possible - never lose safety learning in poor English and waffle

Advice to new investigators

- ▶ Remember why we are investigating, and the huge potential for improving railway safety

