

Target levels of risk

Are we missing the bullseye?



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Who am I?

- BSc Transport Management
- PhD Aviation safety
- Research
 - ATC human factors
 - CRM for general aviation
 - Rescue and fire fighting
 - Human factors in airlines
 - Safety management
- Accident / incident investigation



Safety and Accident Investigation Centre



- Accident Investigation
- Safety Assessment
- Airside Safety Management
- Flight Data Monitoring
- Safety Management
- Risk Assessment

Why do individuals choose to have accidents?

- Accident / *n.* 1. An undesirable or unfortunate happening; casualty; mishap. 2. Anything that happens unexpectedly, without design or by chance.
- Stupid people do not have a monopoly on human error
- Most people are unaware they are involved in an accident until a split second before

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

The weakest link?



- Humans are often considered to be the weakest link in the system
- Most of the time, humans are in fact the strongest link
- How many accidents have staff prevented in the last 12 months?

ICAO Annex 13

OBJECTIVE OF THE INVESTIGATION

3.1 The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability.

Qualities of a good investigator



- “...a fascinating challenge, occasionally exciting but always involving patient, even monotonous examination of every aspect of the accident – the tedium of which may erode those qualities of tenacity, imagination and perseverance which are fundamental to the effective investigator. Very important, too, is the need for a sympathetic appreciation of human behaviour under conditions of stress.”

(Tench, 1985)

A test of integrity



Ansett New Zealand DHC-8 VH-NEY
Palmerston North 9th June 1995
3 fatalities

What is risk?



- “Ask ten people what risk is and you will get ten different answers”

(Transport Canada, 2001)

Risk



- “...the chance of injury or loss”
- “a chance that something is going to happen and consequences if it does”

Risk



- Consequences may also be positive
- Understanding risk needs to include the benefits as well as the costs

The 4th error type - violations

- Errors are unintended - Violations are deliberate
- Whereas errors arise primarily from information problems, violations are more generally associated with motivational problems
- Errors can be explained by what goes on in the mind of an individual, but violations occur in a regulated social context



Hang the guilty b*****s!



- Violations may be encouraged by an organisation
- Violations may be necessitated by a situation
- The difference between a violation and initiative may simply be perspective

BASI Maintenance survey

- 5,000 surveys distributed October 1998
- 1,370 returned
- 750 occurrence reports
- Information on safety attitudes, shift patterns and checklist of shortcuts and mistakes

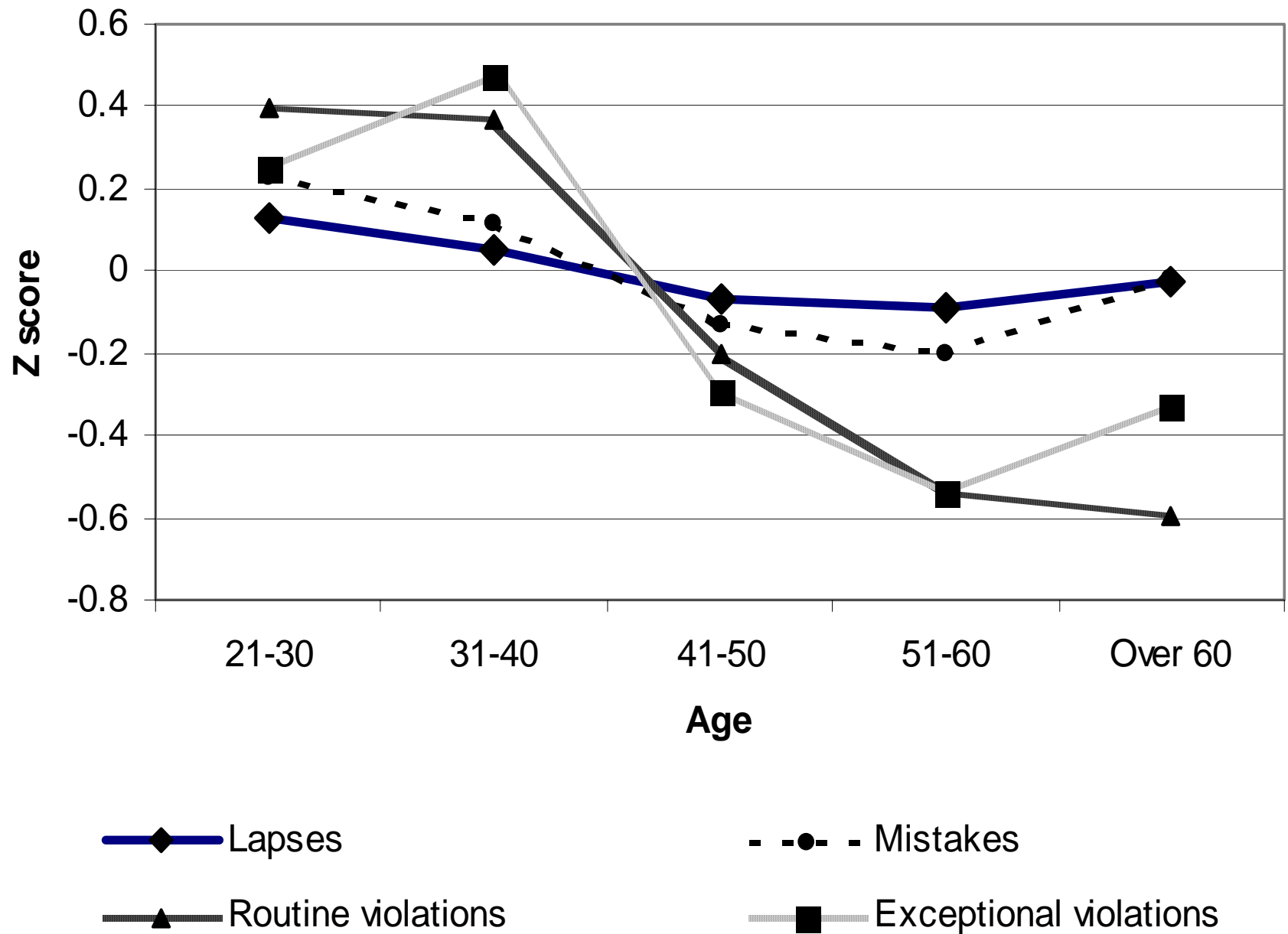


'Error' types

■ Memory lapse	18%
■ Violation	15%
■ Lack of knowledge	10%
■ Failure to check	8%
■ Failure to see	6%
■ Unclassifiable	26%

Source: Hobbs, 2001





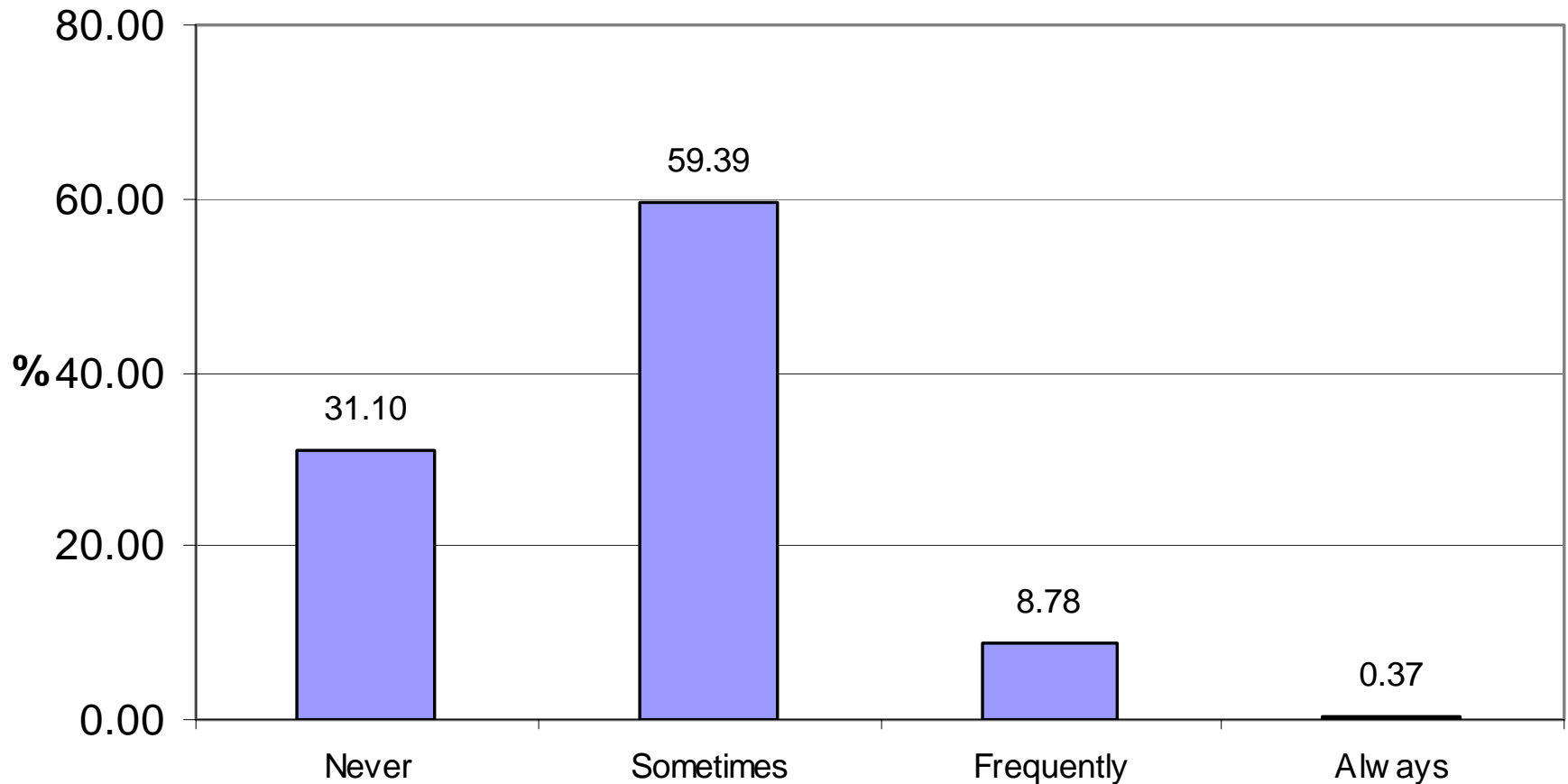
Why do young people violate more?



- Lack of experience?
- Better things to do?
- Thrill-seeking?
- Showing off?

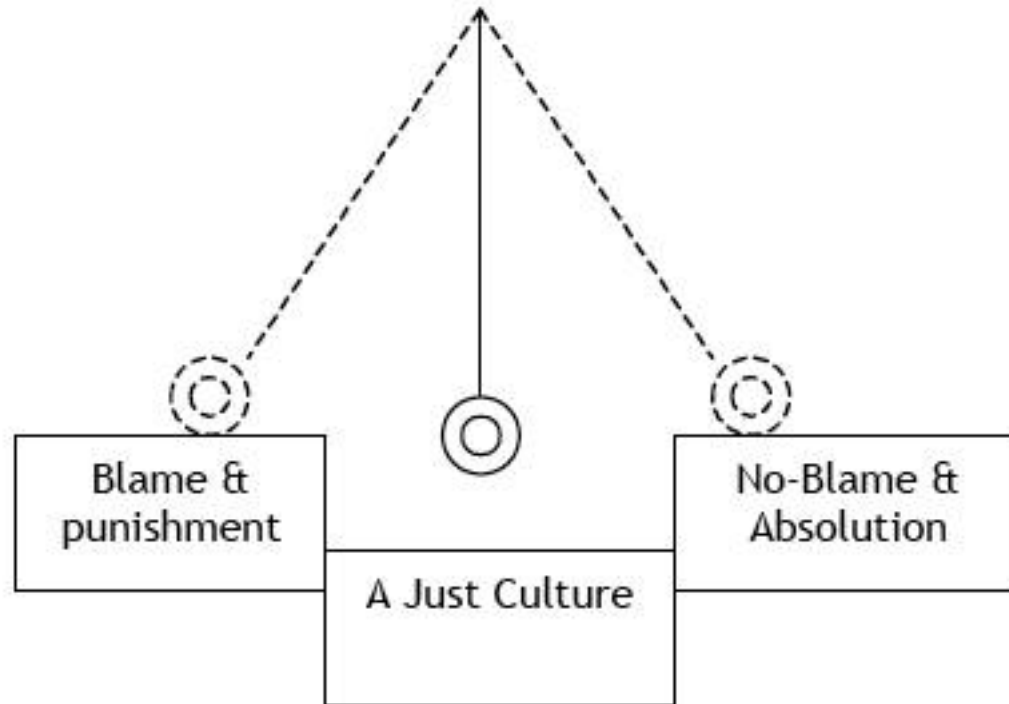
How often?

To get the job done, it is _____ necessary to bend the rules.



Source: Hobbs, 2001

Investigative culture



An investment in trust...



- A faulty air-powered jack would not operate
- Attempts to fix it were in vain
- A replacement was called for
- The entire shift took an early lunch
- The jack started unattended and damaged a client aircraft's wing...

Generation 1 Investigation

- Find guilty bastard
- Sack him
- Write report - matter closed
- Return to daily life



Generation 2 Investigation

- Find guilty bastard
- Convene Board of Inquiry
- Sack him
- Write report - matter closed
- Return to daily life



New Generation?

- A mature SMS would advocate a systemic investigation to examine why the accident occurred rather than just how
- This may reveal a number of failed or absent defences as well as unsafe acts and organisational factors
- The best people often make some of the worst mistakes
- The intentions of the employees are generally found to be 'good'

Are violations encouraged?



- Performance related pay

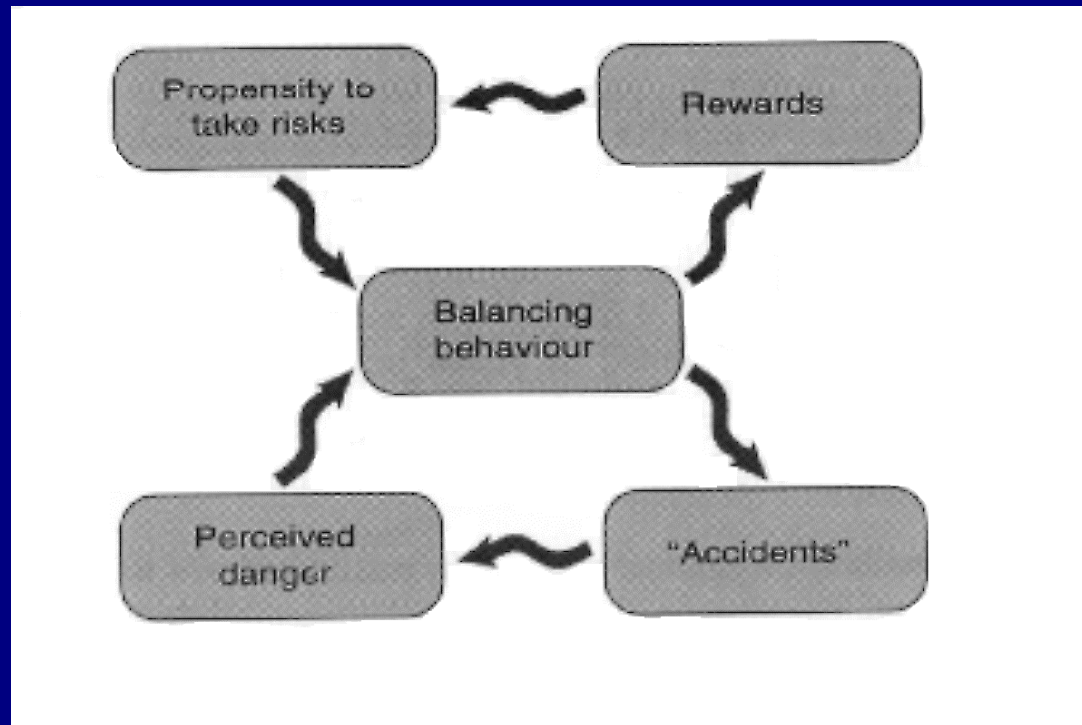
Does more safety = more safety



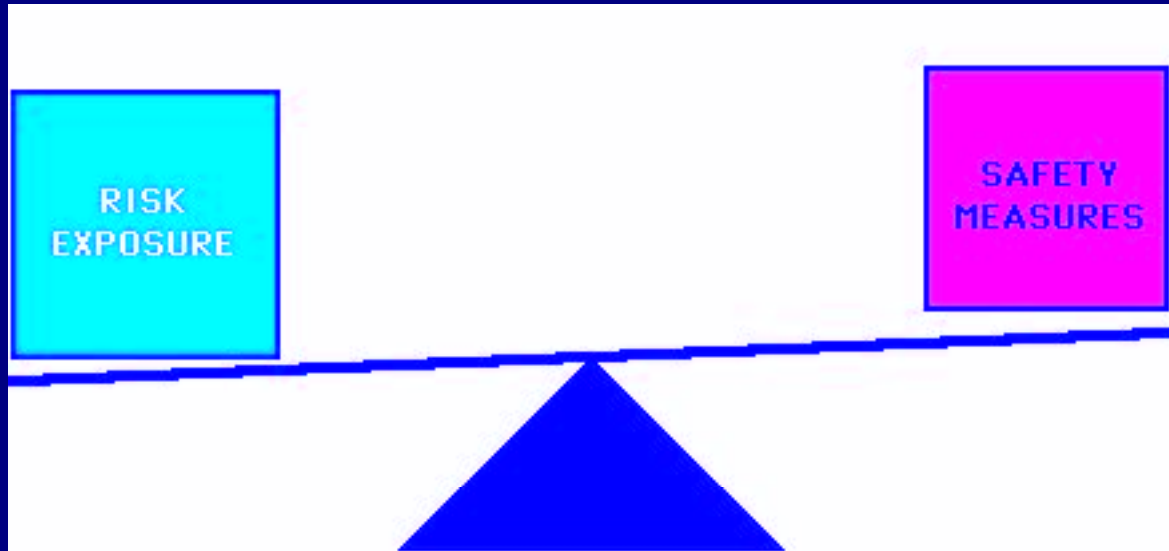
- Consider driving a car...

The Risk Thermostat

(Adams, 1995)



Personal risk management



- Maintaining an acceptable level of risk by balancing safety measures and (perceived) risk

Risk homeostasis



- “...the degree of risk-taking behaviour and the magnitude of loss due to accidents are maintained over time, unless there is a change in the target level of risk.”

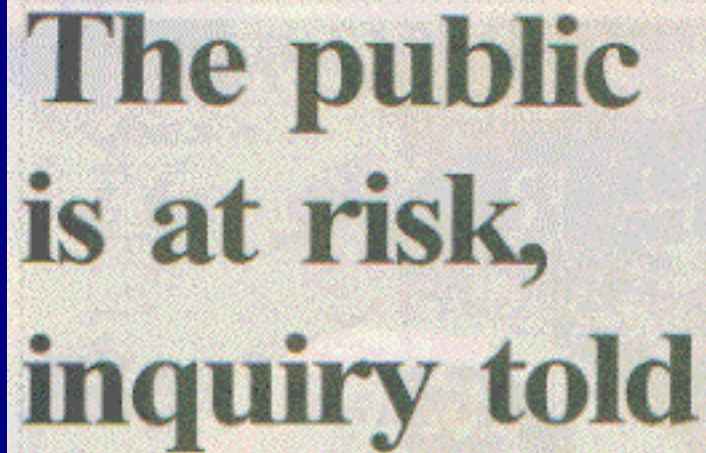
Wilde, 1994

Influences on risk taking...

- Voluntariness
- Chronic vs acute
- Cost vs benefits
- Familiarity
- Group behaviour
- Fatigue etc.



Target level of risk



The public
is at risk,
inquiry told

- If the target level of risk remains the same, what is the effect of adding safety measures?

Communicating risk



- Not 'be safer' campaigns
- Focus on perceptions
- Consider rewards
- Consider whether employee has any choice

Questions



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