



Innovative Strategies for the Road Ahead

## ANALYSING AND INVESTIGATING ROAD TRAFFIC CRASHES

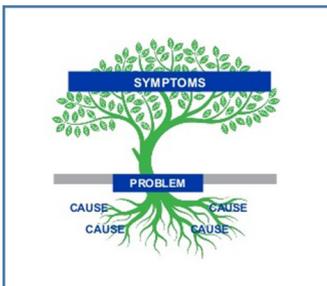


### Crash Investigation and Root Cause Analysis

Road traffic crashes have many causes. What may appear to be bad luck (being in the wrong place at the wrong time) can, on analysis, be seen as a chain of failures and errors that lead almost inevitably to the road crash. This is often known as the Domino effect.

These causes can be classified at 3 levels:

- Immediate;
- Underlying and
- Root Causes.



A root cause analysis allows an organisation to discover the underlying or systemic, rather than the generalized or immediate, causes of an incident. Correcting only an immediate cause may eliminate a symptom of a problem, but not the problem itself.

### The importance of What, How and Why

Consider the following situation: A vehicle rolls over and ends up in a ditch. As a result, two staff members are injured. A traditional investigation might conclude that the vehicle ended up in the ditch because the driver was speeding. The manager of the driver might issue a warning against the driver to not speed again and that is it.

An organisation conducting root cause analysis would learn that the speeding is merely a symptom of a more fundamental problem in the organisation. An organisation conducting a root cause analysis to determine whether there are systemic reasons for crashes should ask questions such as:

- Why was the driver speeding in the first place?
- Were there changes in conditions, processes, or the operating environment?
- What control mechanisms were in place to avoid the speeding?
- Why did these mechanisms not work?
- What tasks were underway?
- Has the organisation seen similar incidents in the past?
- What measures did the organisation take at that time?

It is important to consider all possible “what,” “why,” and “how” questions to discover the root cause(s) of an incident. In this case, a root cause analysis may have revealed that the root cause of the speeding was a failure to have an effective time management program that would prevent late departure.

To prevent crashes from happening in future, organisations need to put measures and controls in place at the underlying and root causes. If, in the above simple example, no measures are taken to improve time management, the staff member will continue to work under stress and speeding is likely to continue.

**Methods to identify causes of crashes**

We cannot stress it enough: no crash happens for a single reason only. There are often multiple gaps in the organisations’ safety approach that lead to crashes or near-misses. In order to get insight in the causes for crashes the following methods are advised:

Level of cause	Investigation and analysis method
<b>Immediate</b>	<ul style="list-style-type: none"> <li>- Crash / Incident Reports</li> <li>- Police Reports</li> <li>- Technical investigation at the crash scene</li> <li>- Interviews with the staff members involved</li> </ul>
<b>Underlying</b>	<ul style="list-style-type: none"> <li>- Interviews with the staff members involved</li> <li>- Interviews with managers / supervisors to identify why the unsafe act or condition could happen</li> <li>- Observation of adherence to policies and procedures</li> <li>- Observation of technical state of vehicles</li> <li>- Data analysis from systems (such as vehicle tracking systems)</li> <li>- Assessment of the level of implementation of the Safe Systems Elements or Fleet Safety Management System</li> </ul>
<b>Root</b>	<ul style="list-style-type: none"> <li>- Analysis of job, personal or organisational factors that contributed to the crash (through observation and interviews)</li> <li>- Analysis of culture in the organisation (through observation and interviews)</li> </ul>



**A management process to continuously learn from crashes.**

Crash investigation and root cause analysis should not be a ‘blame finding exercise’ but instead should be used to learn and prevent future crashes from happening. By applying a management process organisations can, step-by-step, work towards a safer workplace.

The following table describes the Fleet Forum approach:

	Step	Explanation
	<b>Data sharing and analysis</b>	Crash data is shared with Fleet Forum. This data can be vehicle insurance reports, data from security departments or data from HR / Occupational Health and Safety departments. Fleet Forum will analyse the direct causes through desk research.
	<b>Hypothesizing underlying and root causes</b>	Based on the direct causes, Fleet Forum will hypothesize the underlying and root causes for the crashes as well as suggested control and mitigation measures.
	<b>Presenting mitigation and control measures</b>	The hypothesized underlying and root causes including control and mitigation measures will be presented to the country offices that have a high crash rate.
	<b>Implementing mitigation and control measures in country office</b>	Country offices will implement the control and mitigation measures and collect data / evidence if the measure has a positive result. Fleet Forum will conduct regular follow up with the country offices.
	<b>Sharing results with wider organisation</b>	Control measures that have a positive result at underlying or root cause level will be shared with the wider organisation for implementation.

**A simple technique to understand root causes of near misses**

A near miss is an incident in which no property was damaged and no personal injury was sustained, but where, given a slight shift in time or position, damage or injury easily could have occurred. We also refer to them as ‘close calls’, ‘narrow escapes’ or ‘nasty moments’.

**Today’s near miss could  
become tomorrow’s crash**

Near miss incidents often precede loss producing events but are largely ignored because nothing (no injury, damage or loss) happened. Staff members are not enlightened to report these close calls as there has been no disruption or loss in the form of injuries or property damage. Thus, many opportunities to prevent the crash that the organisation has not yet had are lost. Recognizing and reporting near miss incidents can make a major difference to the safety of staff within organisations and should be encouraged. Once a reporting system is in place, the near-misses can then be analysed using the '5 Why' technique.

The problem: A vehicle almost rolls over but the driver gains back control and nothing happens.



**WHY?**

- 1: The driver was speeding
- 2: The mission departed too late
- 3: Programme staff were not ready at the departure time
- 4: Programme staff does not respect the agreed departure time
- 5: The organisation does not correct mismanagement of time

In theory it takes five "whys" to get to the root causes, but in practice there will be cases where you may use more or fewer than five "whys". Keep in mind that also with this technique you can find multiple root causes.



### Benefits of using the '5 Why method'

- Simplicity: Easy to use and requires no advanced mathematics or tools.
- Effectiveness: Helps to quickly separate symptoms from causes and identify the root causes.
- Comprehensiveness: Helps to determine relationships between various problem causes.
- Flexibility: Works well alone and when combined with other methods.
- Engaging: Fosters teamwork.
- Inexpensive: A guided, team-focused exercise with no additional costs.

For more information on Crash Analysis and Root Cause Investigation contact us on: [info@fleetforum.org](mailto:info@fleetforum.org)