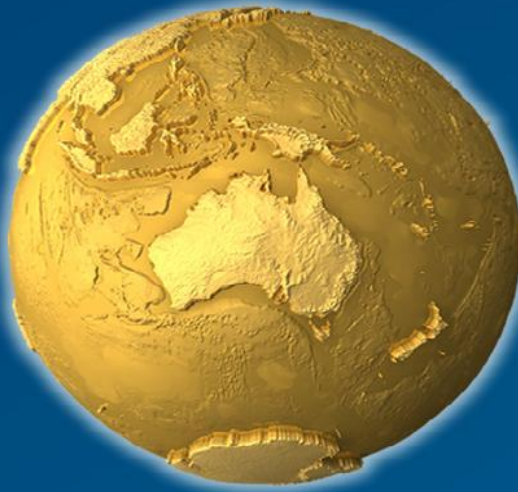




People and Quality Solutions Pty Ltd

Course in  
**Advanced Safety Awareness**  
*Level One*



**Safety Cultural Analysis**  
for

**PAPUA NEW GUINEA - MINING**

**LIHIR**

November 12, 2014

PaQS People and Quality Solutions Pty Ltd  
1/45 Bonville Ave  
Thornton, NSW 2322  
ABN: 53 070 246 427

[www.paqs.com.au](http://www.paqs.com.au)  
[safety@paqs.com.au](mailto:safety@paqs.com.au)  
02 4949 4500 ph  
02 4964 1611 fax

# SAFETY CULTURAL ANALYSIS

CONFIDENTIAL REPORT FOR

## Papua New Guinea Mining - Lihir

**Company:** Papua New Guinea Mining - Lihir  
**Report Date:** November 12, 2014  
**Participation:** 337 Employees participated in this OSCA Project.

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## A-SAT Survey Overview

The Australian Safety Awareness Training (A-SAT) Survey is a unique profiling instrument, with proven accuracy and reliability for assessing the attitudinal factors contributing to human error accidents and injuries.

Research across industries repeatedly confirms that people with lower or below average safety awareness have 3 to 4 times the number of accidents and 4 to 5 times the Workers' Compensation losses than people with higher safety awareness.

The A-SAT Survey, developed by risk assessment specialists and psychologists, measures the five core components of safety awareness that when undeveloped contribute to human error accidents and injury risks.

While the five scales are relevant to all industries and should be considered as part of a total solution, specific scales will be more highly predictive for different industries or companies depending on work force culture and environment.

### **The A-SAT Survey has two primary applications:**

- Developing a safety awareness profile of the organisation as the basis for implementing an accident risk management strategy to reduce accidents and Workers' Compensation costs (OSCA)
- Assessing existing personnel to facilitate and implement safety awareness training.

## Safety Factors of the A-SAT Survey

### **Attitudinal Safety Awareness (ASA): Overall Safety Awareness**

**Safety Control (SC)** is a measure of safety awareness, alertness and responsibility an individual believes they have for their own and other people's safety.

**Risk Avoidance (RA)** is a measure of an individual's ability to perceive and avoid safety risks, heightened workplace hazard awareness and unwillingness to engage in risk taking behaviours.

**Stress Tolerance (ST)** is a self-report measure of how the candidate perceives stress, its effect on them and their ability to avoid or manage it.

**Professional Operator / Driver (PO)** is a measure of safety awareness that provides insight into candidate thinking, attitude and motivation to driving. Driver Attitude is relevant to anyone that drives or operates machinery, and is vital for people required to drive or operate as part of their employment.

**Quality Orientation (QO)** is a self-report measure of how personally confident and committed the candidate is to achieving quality outcomes in their work.

**Internal Validity Measures: Two additional scales comprise the A-SAT Survey to ensure fairness (a level playing field) and that individuals will not be discriminated against because of poor literacy, comprehension or cultural bias.**

#### **Validity Candidness:**

Candidness measures how open, forthright and confident the candidate was in responding with what they think, rather than putting 'expected' answers.

#### **Validity Accuracy:**

Accuracy measures how able (read and comprehend) and willingly (cooperatively) the candidate was in accurately completing the assessment.

## Course in ASA: Pre-Training Benchmark Report

Level 1 post ASA Assessment comparison to Level 1 A-SATS indicates:

n=316  
See Graph A

- ◆ 20% overall decrease of Risk for Injury (RFI\*) factors.
- ◆ 251 of 316 personnel increased their Advanced Safety Awareness.

### \* RFI (RISK FOR INJURY) FACTORS

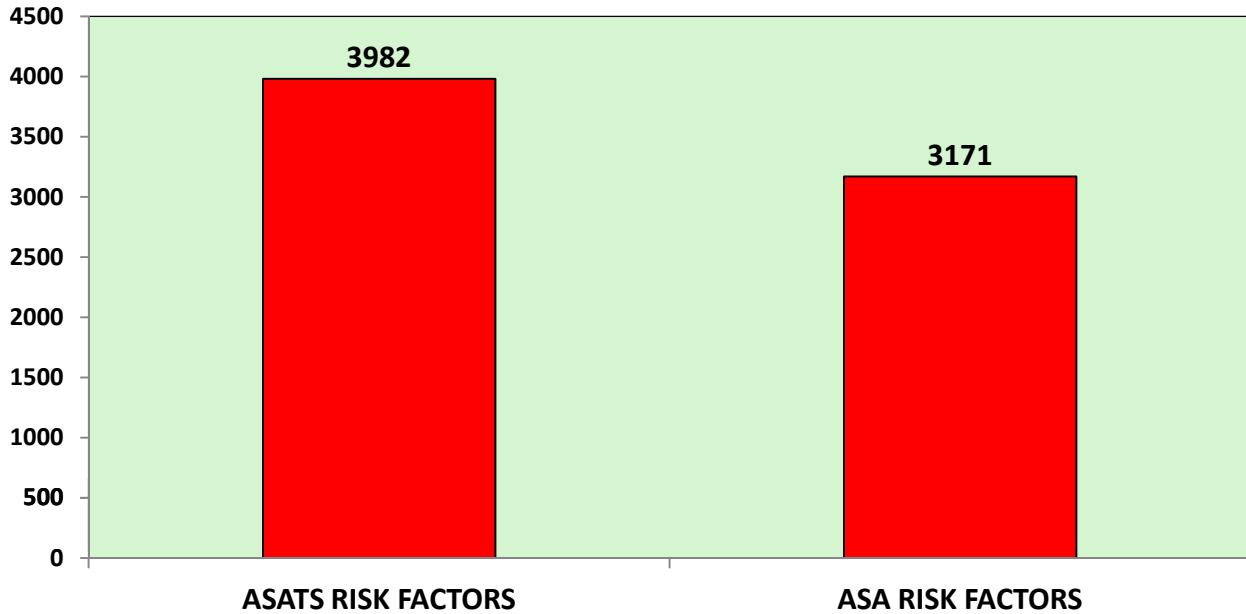
- 15% reduction in Strong RFI Indicators.
- 28% reduction in Moderate RFI Indicators.
- 21% reduction in Slight RFI Indicators.

See Graph B  
See Graph C  
See Graph D

## SAFETY AWARENESS - RISK REDUCTION

A-SATS (PreCoaching) to ASA (PostCoaching)

GRAPH A

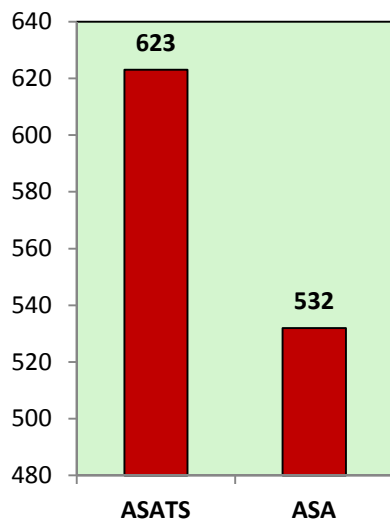


## SAFETY AWARENESS RISK LEVELS - FACTOR ANALYSIS

### STRONG RISK FACTORS

RISK REDUCTION = 15%

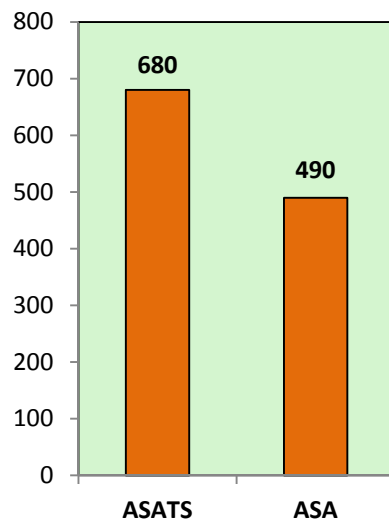
GRAPH B



### MODERATE RISK FACTORS

RISK REDUCTION = 28%

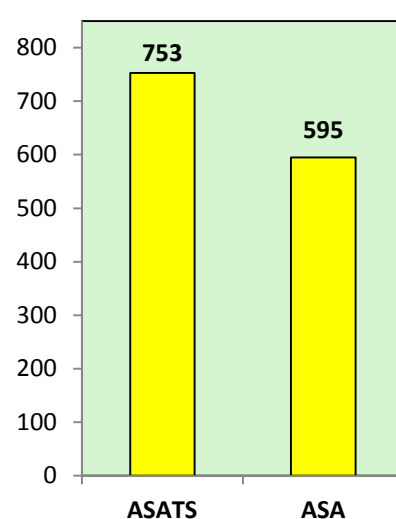
GRAPH C



### SLIGHT RISK FACTORS

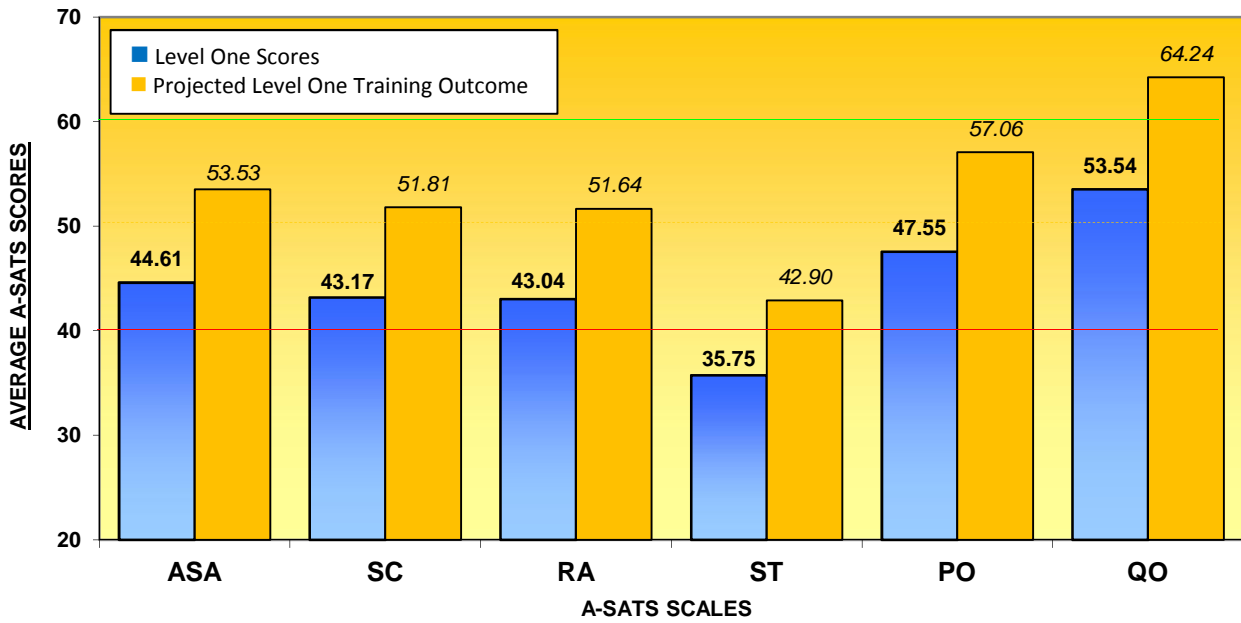
RISK REDUCTION = 21%

GRAPH D

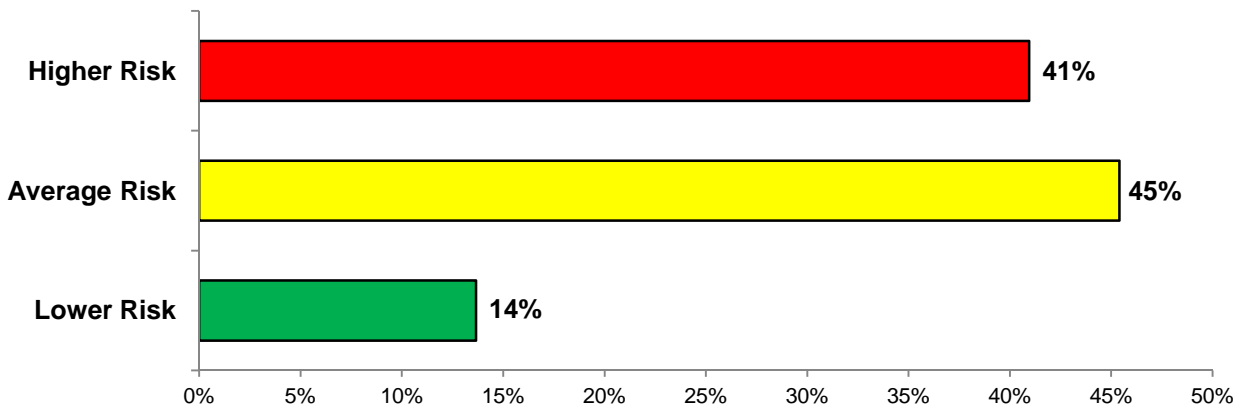


**Level One A-SATS Actual Scores with Projected Outcome**

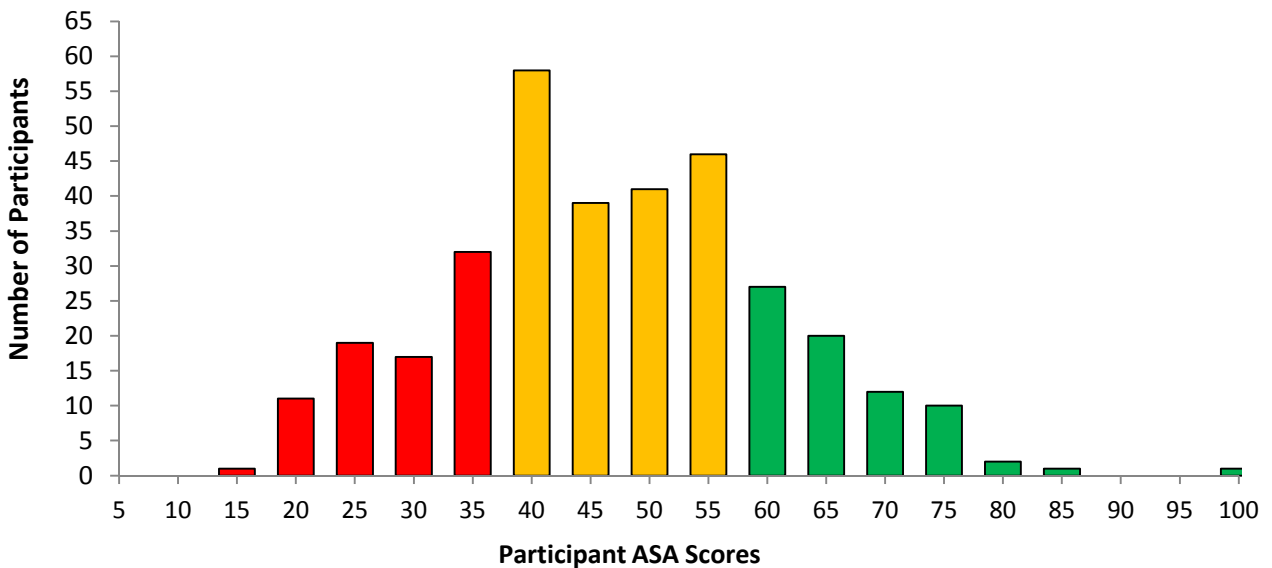
A-SATS actual scores on 50% of the population contrasted with a projected 20% improvement



**PRE-TRAINING SAFETY AWARENESS - RISK REPRESENTATION**



**OVERALL SAFETY AWARENESS - PARTICIPANT SCORE DISTRIBUTION**



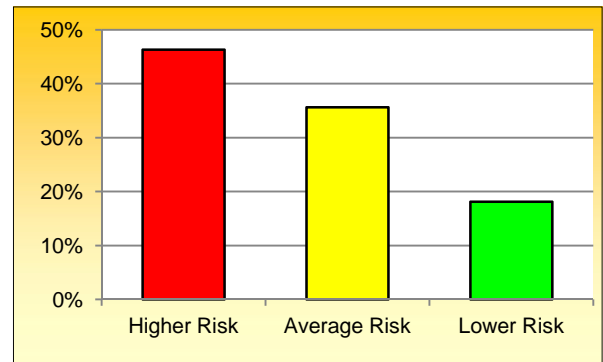
**Core Safety Construct:**

- \* **Personal Responsibility and Safety**

**Safety Indicators (Attitudes):**

- \* Willingness to accept personal responsibility
- \* Rational decision making and judgment

Safety Control is a measure of safety awareness, alertness and responsibility an individual believes they have for their own and other people's safety.



Average Score = 43.17

n= 337

**Risk Distribution:**  
Participant's commitment to accept personal responsibility for their own and workmates safety.

**46.3%**

Participants in the **Higher Risk** category are more likely to have a higher external locus of control, and place blame on others, fate, chance or luck for accidents at work. These people are also less likely to assume full responsibility for own safety on-the-job.

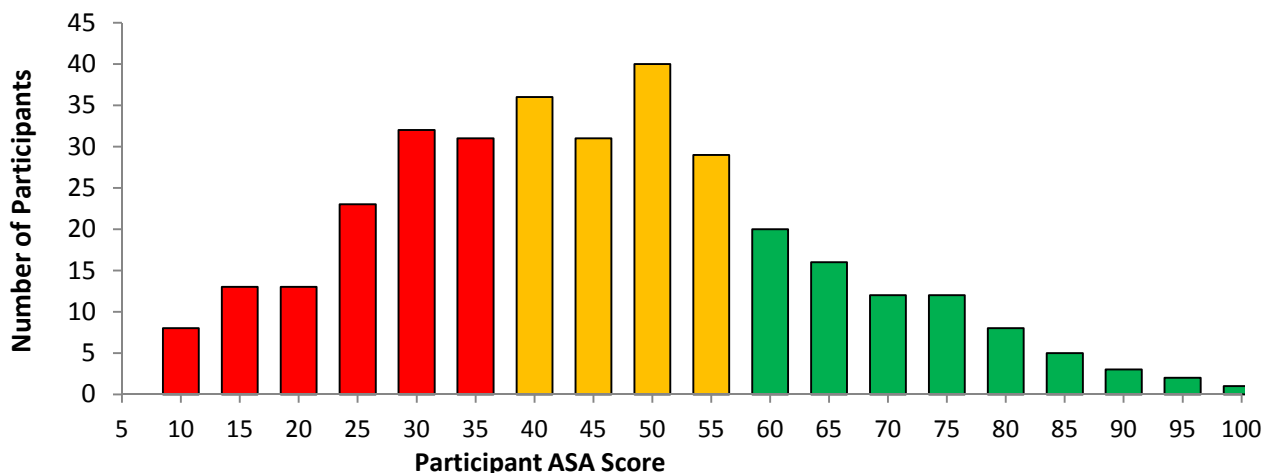
**35.6%**

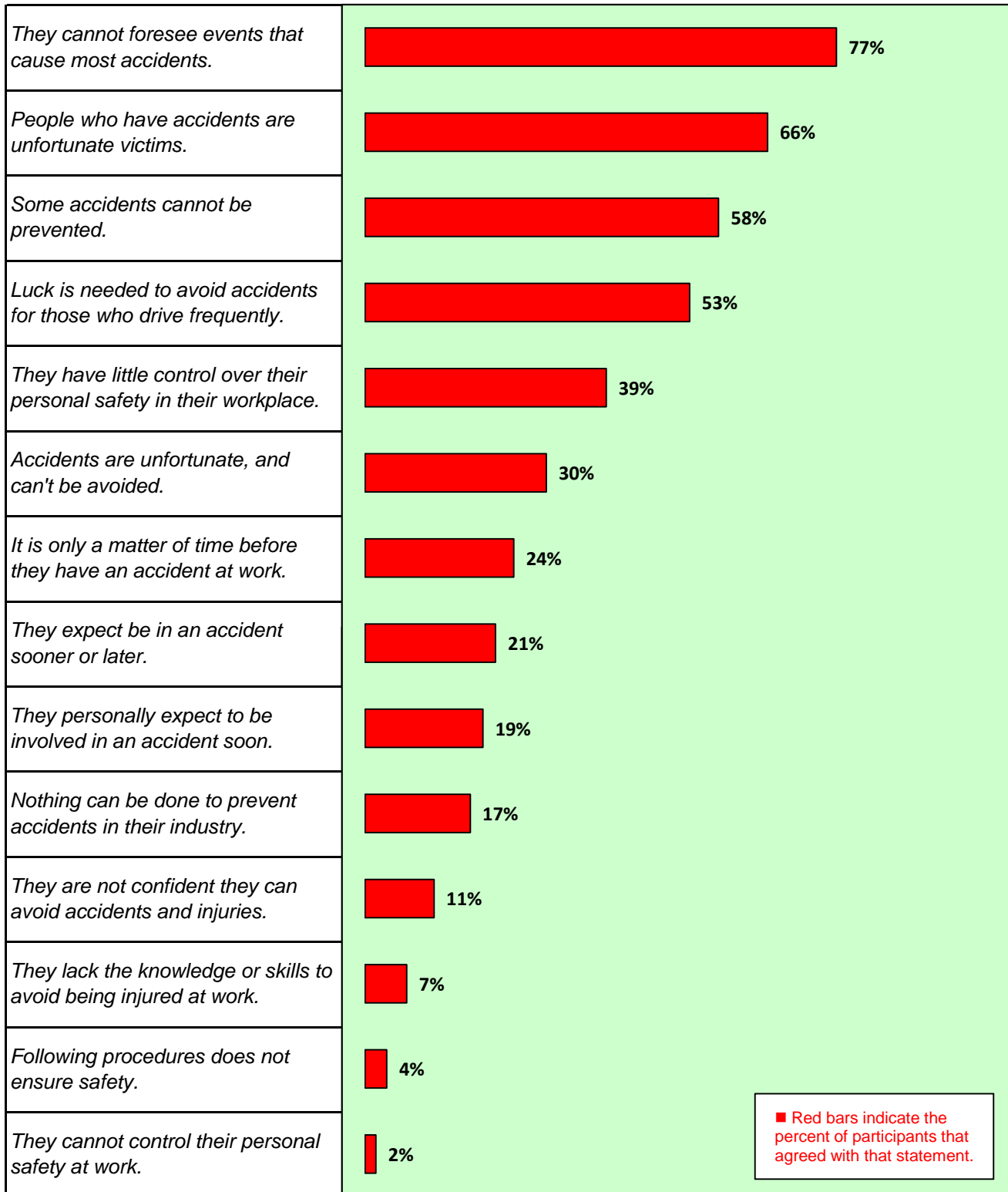
Participants in the **Average Risk** category are neither 'internal' nor 'external' in orientation, and may sometimes blame others, fate, chance or luck for accidents at work. These people may assume personal responsibility for accident prevention and safety practices.

**18.1%**

Participants in the **Lower Risk** category have a higher 'internal' locus of control and assume personal responsibility for accident prevention and safety practices. These people do act responsibly in high-accident-risk jobs.

SAFETY CONTROL DISTRIBUTION



**% of Employees Agreed ...**

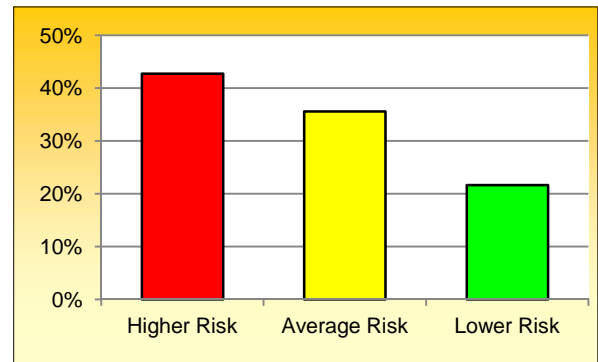
**Core Safety Construct:**

- \* Risk Awareness and Avoidance

**Safety Indicators (Attitudes):**

- \* Developing risk perception
- \* Personal safety commitment

A measure of an individual's ability to perceive and avoid safety risks, heightened workplace hazard awareness and unwillingness to engage in risk taking behaviours.



Average Score = 43.04

n= 337

**Risk Distribution:  
Participant's commitment to avoid risks and follow safety procedures.**

42.7%

Participants in the **Higher Risk** category are more likely to prefer unnecessarily risky, dangerous or thrill seeking behaviours on-the-job. May engage frequently in "risky" on-the-job behaviours such as not complying with company safety policies. Often becomes bored and inattentive at work.

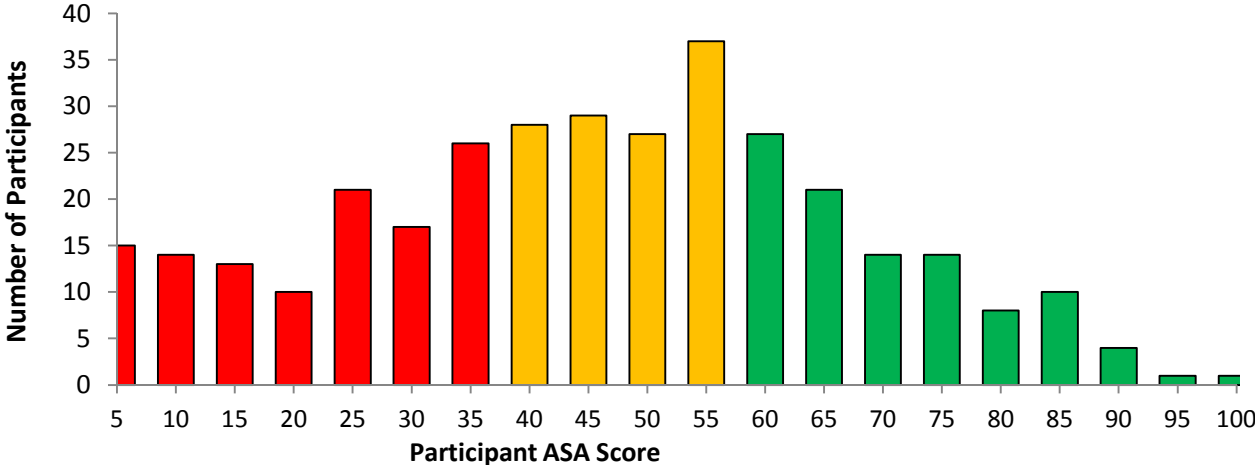
35.6%

Participants in the **Average Risk** category are sometimes tempted to consider risky, dangerous or thrill seeking behaviours on-the-job. They are also tempted to engage in "risky" on-the-job behaviours such as not wearing safety equipment, and may show counter productive behaviours.

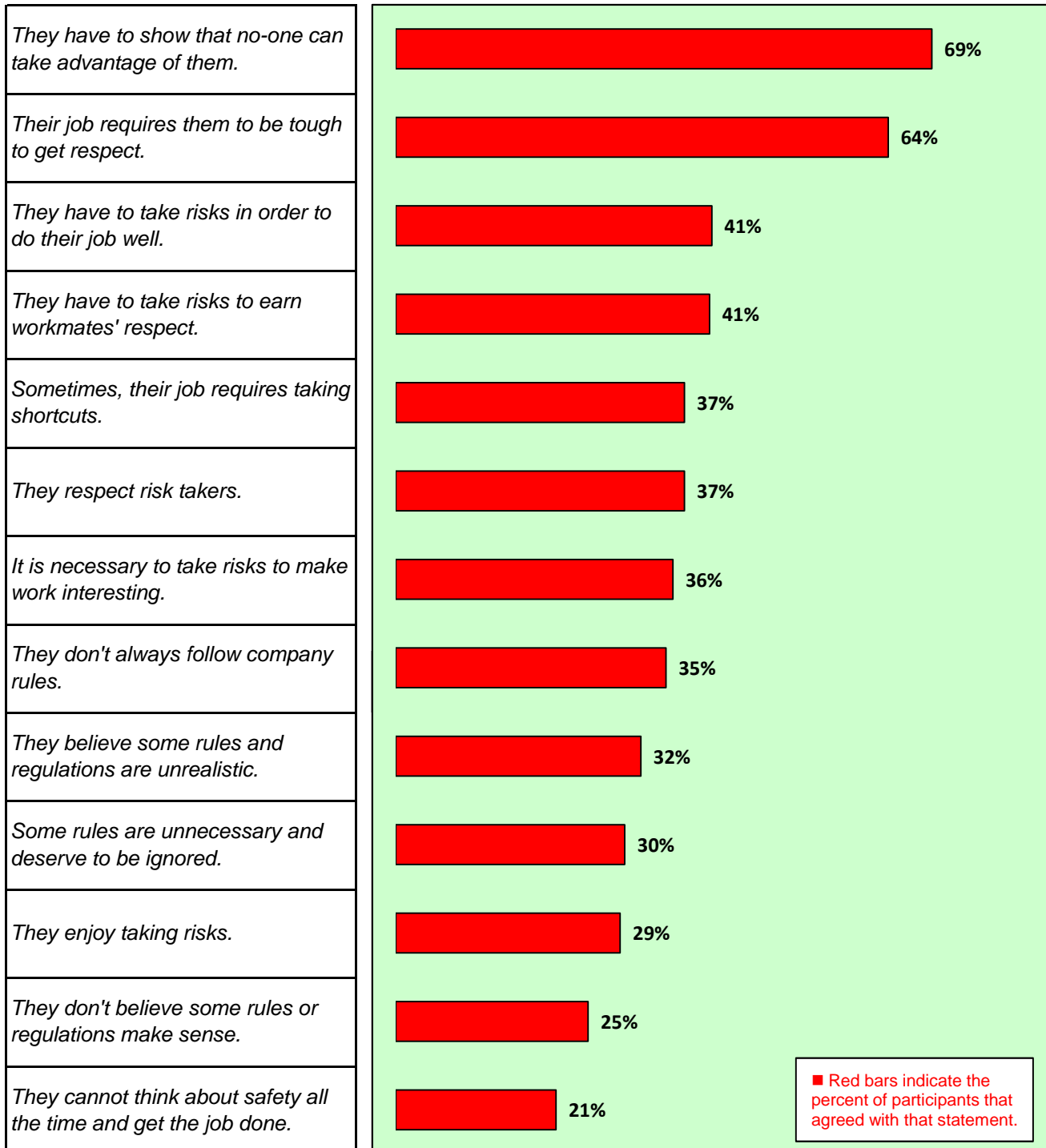
21.7%

Participants in the **Lower Risk** category avoid unnecessarily risky or dangerous behaviours on-the-job, and comply with company safety policies and procedures. These people use caution in high accident risk jobs.

RISK AVOIDANCE DISTRIBUTION





**% of Employees Agreed ...**

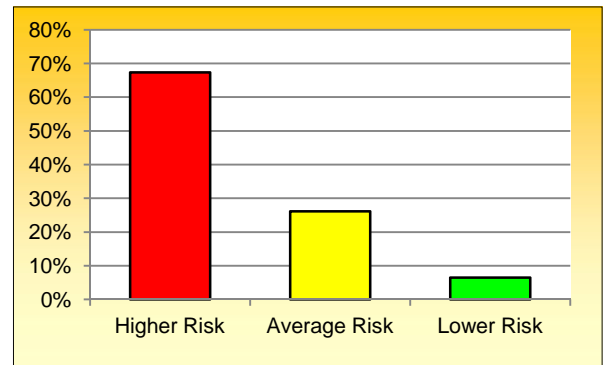
**Core Safety Construct:**

- \* **Stress and Fatigue Tolerance**

**Safety Indicators (Attitudes):**

- \* Personal stress awareness
- \* Stress avoidance strategies

A self-report measure of how the participants perceive stress, its affect on them and their ability to avoid or manage stress. Stress Tolerance covers the three primary stress types, Tension, Depression, Conflict leading to distraction or fatigue as factors contributing to stress related incidents.



Average Score = 35.75

n= 337

**Risk Distribution:  
Participant's confidence in their ability to tolerate stress.**

**67.4%**

Participants in the **Higher Risk** category show continuing inability to cope with stress, and may not be fully alert to attend to details of job safety procedures or may cut corners. May also be chronically fatigued during work hours.

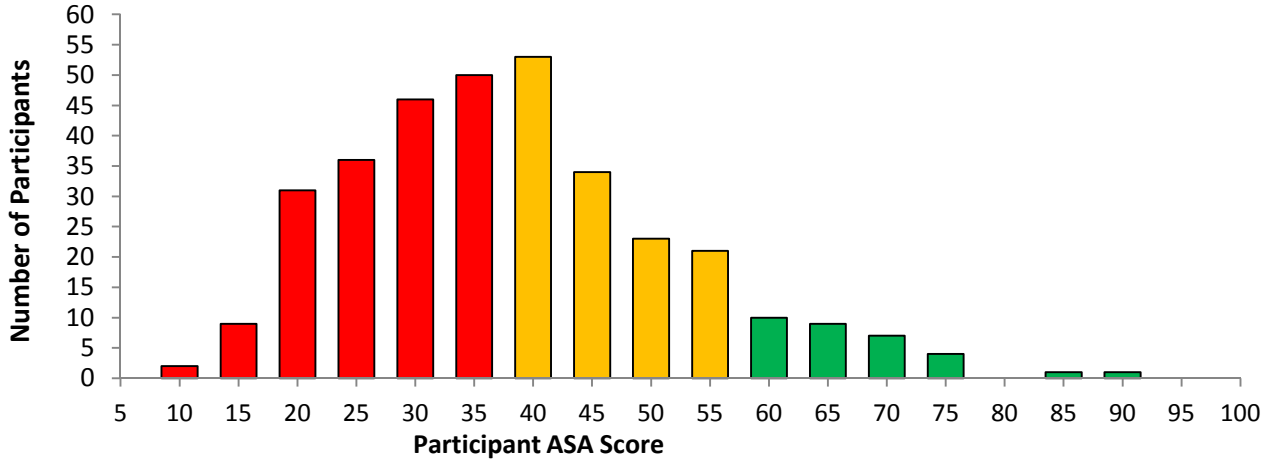
**26.1%**

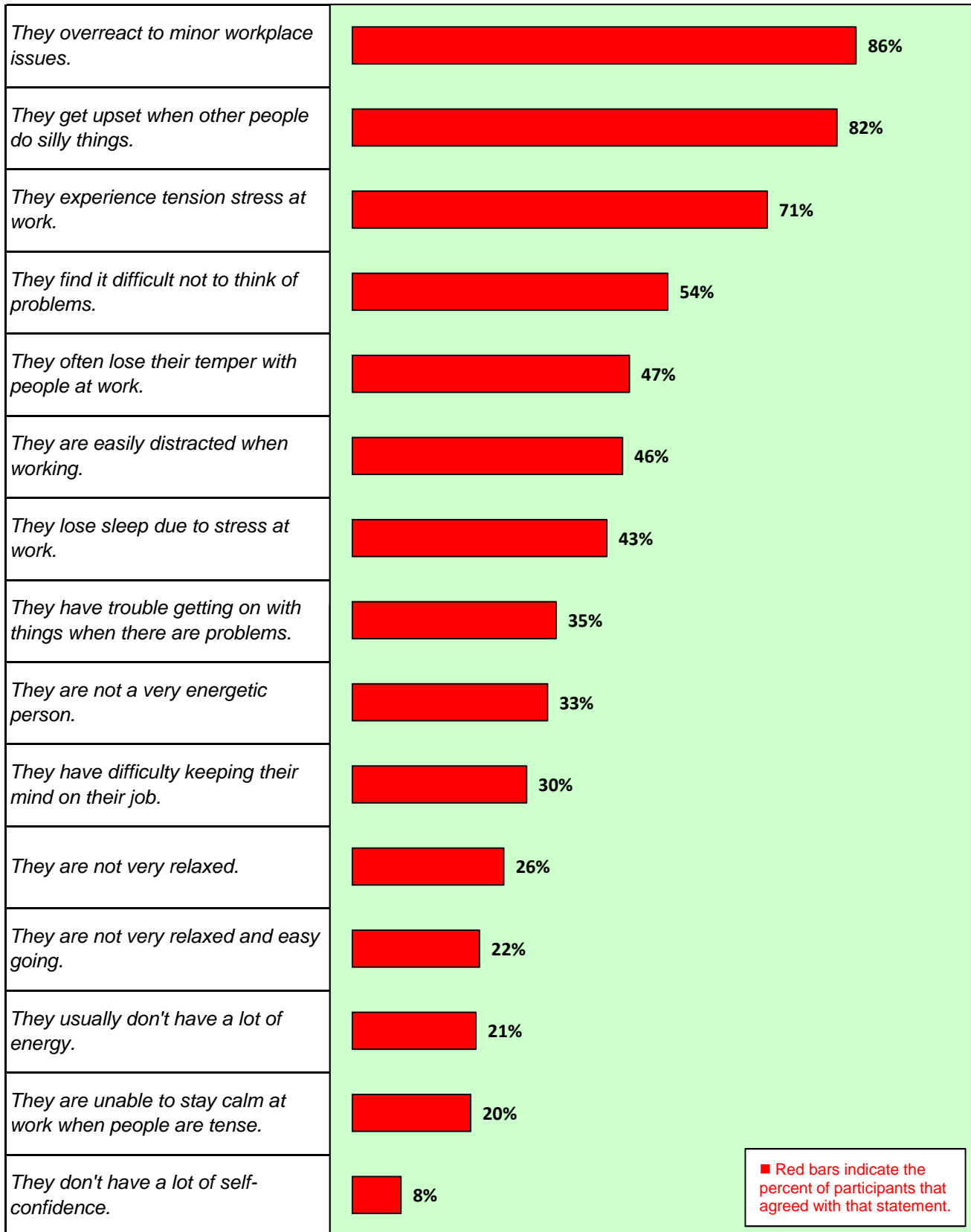
Participants in the **Average Risk** category are typically able to cope with stress, however they may sometimes fail to attend to details of safety procedures or may cut corners. May sometimes be fatigued during work hours.

**6.5%**

Participants in the **Lower Risk** category consistently cope with stress and are likely to attend to details of job safety procedures. These people are most likely to be alert in high-accident-risk jobs.

**STRESS TOLERANCE DISTRIBUTION**



**% of Employees Agreed ...**

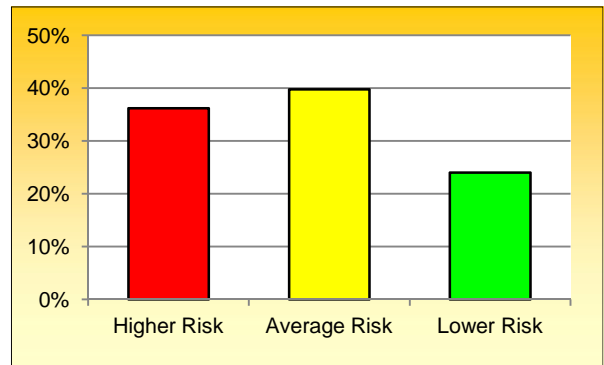
**Core Safety Construct:**

- \* Driver Attitude

**Safety Indicators (Attitudes):**

- \* Safety responsibility
- \* Safety awareness
- \* Safety control
- \* Driver alertness

A measure of safety awareness that provides insight into participant thinking, attitude and motivation to driving. PO is relevant to anyone that drives but is vital for people required to drive as part of their employment. PO applies to driving or operating all types and sizes of vehicles from forklifts, boats and mowers, all road vehicles to heavy cranes, bulldozers, trains, planes or ships.



Average Score = 47.55

n= 337

**Risk Distribution:**  
Participant's motivation to operate and drive machinery professionally and safely.

**36.2%**

Participants in the **Higher Risk** category have driver/equipment operating attitudes that could jeopardise safety. More likely to be involved in driving accidents and may violate rules of the road and have driving violations.

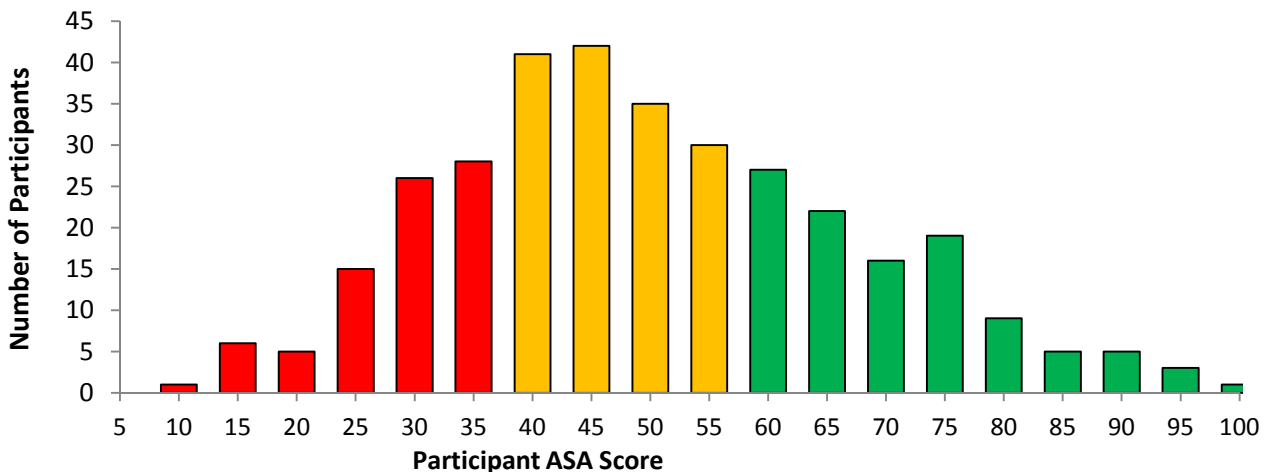
**39.8%**

Participants in the **Average Risk** category have driver/equipment operation attitudes that may enhance workplace and road safety. May sometimes be involved in driving mishaps and occasionally violate rules of the road.

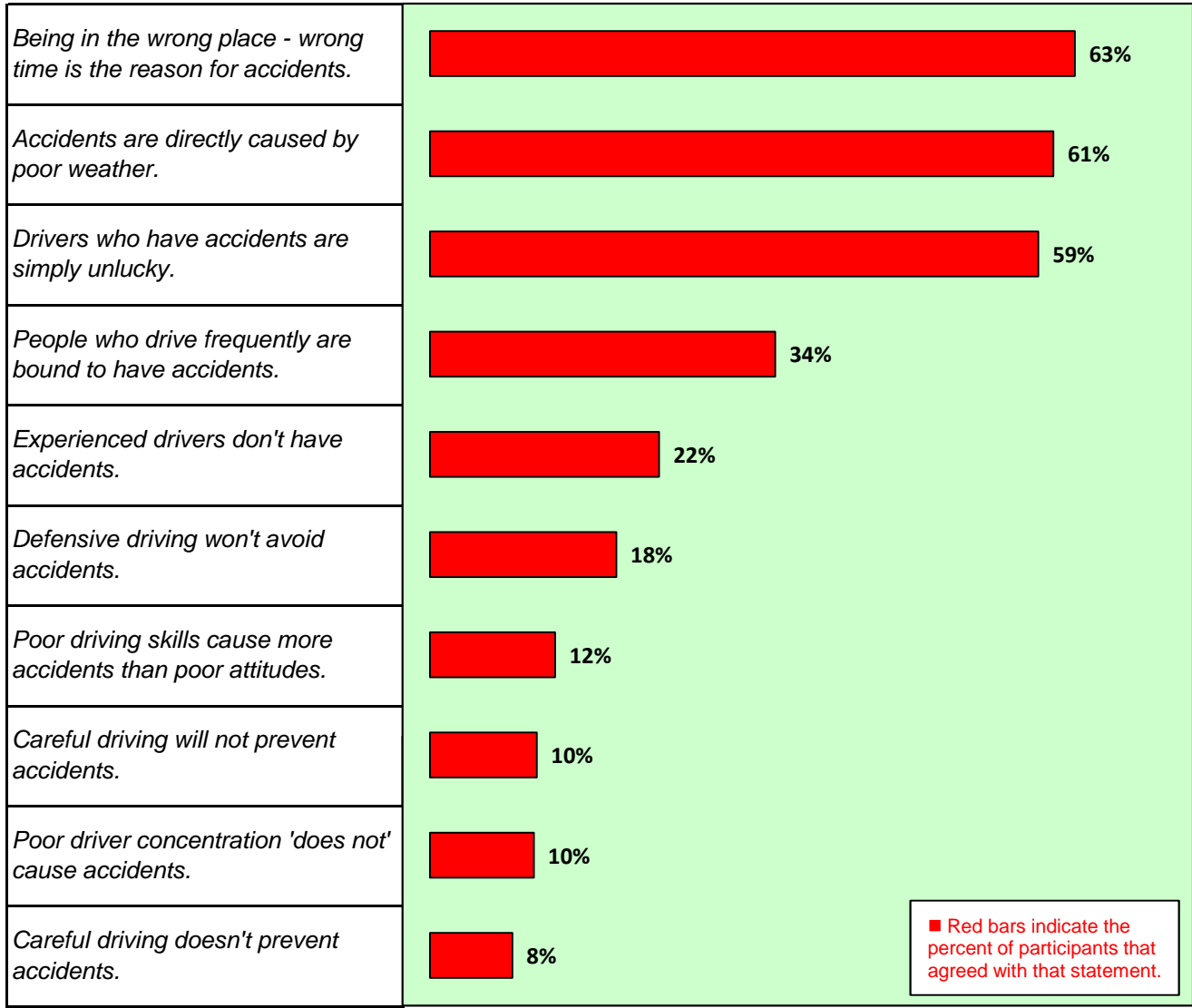
**24.0%**

Participants in the **Lower Risk** category have driver/equipment operating attitudes likely to enhance workplace/road safety. Less likely to be involved in driving accidents and are more likely to follow the rules of the road.

PROFESSIONAL OPERATOR/DRIVER DISTRIBUTION



**% of Employees Agreed ...**



**Core Safety Construct:**

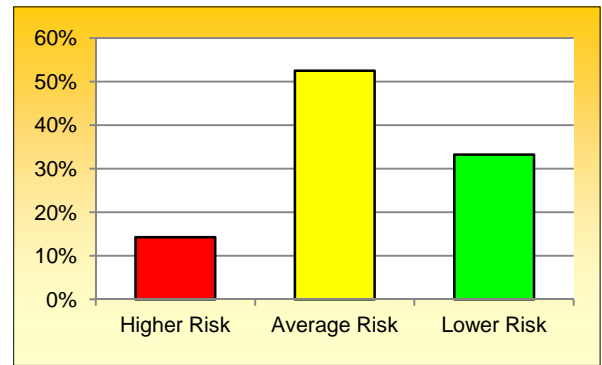
- \* **Quality Orientation**

**Safety Indicators (Attitudes):**

- \* Quality Control      \* Error Avoidance
- \* Quality Skills        \* Continuous Improvement

Having quality systems and procedures and a QO workforce is a critical safety issue in all workplaces today. QO is a self-report measure of how personally confident and committed participants are to achieving quality outcomes in their work. QO measures participant's perceptions across four self-managing quality dimensions.

See safety indicators above.



Average Score = 53.54

n= 337

**Risk Distribution:**  
Participant's care and commitment to quality products, work and services.

**14.2%**

Participants in the **Higher Risk** potential are less likely to accept responsibility for providing quality service, and are less likely to double check work for accuracy. These people are also wasteful of materials and have poor equipment maintenance habits.

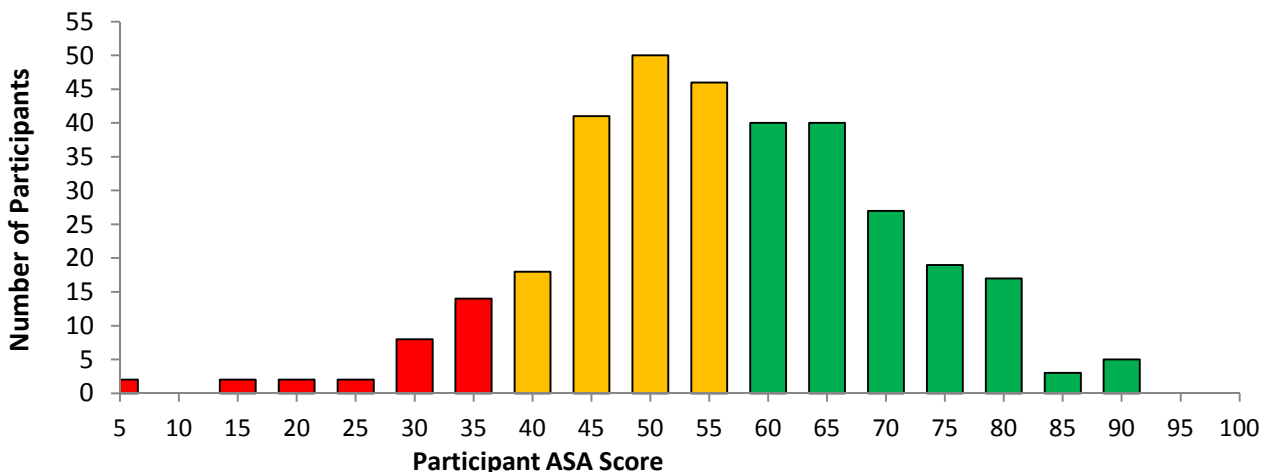
**52.5%**

Participants in the **Average Risk** category have behaviours that may vary in respect to checking own work and accepting responsibility for quality service.

**33.2%**

Participants in the **Lower Risk** category are more likely to check their own work and that around them, for errors and strive to continually improve self and work habits.

QUALITY ORIENTATION DISTRIBUTION



**% of Employees Agreed ...**

