Root-Cause Analysis Report

LOGGING: DISTRACTED DRIVING

January 2019

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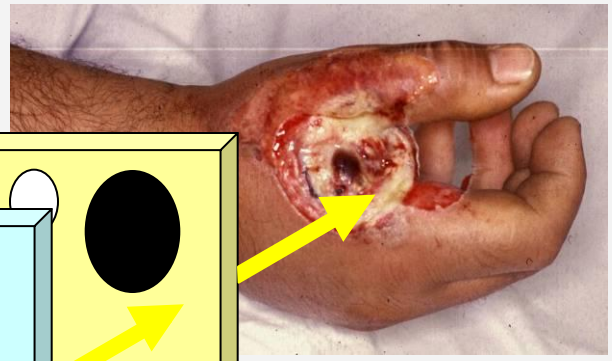
Risk Assessment Project: The Subject Of Inquiry

Examples that could lead to increased risk

Failure/absence of risk controls



ACTIVE FAILURE

LATENT FAILURE

LATENT FAILURE

LATENT FAILURE

LATENT FAILURE

Unsafe act

Shortage of key skillsets

Training material not current

Gaps in Regs.

Design issues

Worker

Simultaneous failure/absence of risk controls could cause a "catastrophic event"

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Revisiting 2018 Risk Assessment Results: Top 10 Risk Events

Risk Rank	Category	Event (Situation or Condition) that could result in Injury or Illness OR What could keep you up at night?	Risk
1	Mobile Equipment	**Distracted driving**	
2	Substance Abuse	**Under the influence of Drugs and Alcohol in the workplace**	
3	Struck By	**Danger zones infractions**	
4	Lockout	**Not properly locked out/improper equipment isolation**	
5	Training	**Employees taking shortcuts**	
6	Working Alone	**Working alone in remote location**	
7	Lockout	**Caught in/compressed by mobile equipment**	
8	Lockout	**Not locking out mobile equipment to do maintenance around blades**	
9	Regulation	**Operations directly on public access roads**	
10	Fatigue	**Fatigue induced incidents**	

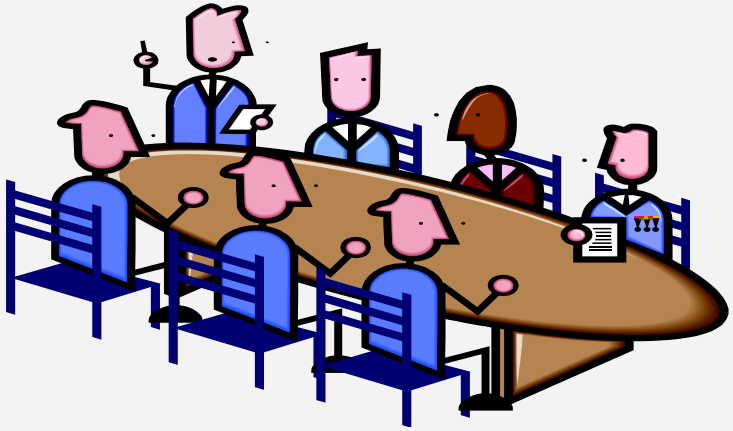
Root-Cause Analysis: Risk Statement

Based on the results of the Logging Risk Assessment, the following risk statement was selected by the Workplace Safety North Advisory Committee for Forestry, Paper, Printing & Converting for Root-Cause Analysis using the **"Fishbone"** approach:

"Distracted driving including operating vehicles/mobile equipment can have serious unintended adverse effects on the safety and well-being of the driver/operator, fellow workers and the community."

Workshop: A Bipartite and Collective Process

- Workshop participants were peer-recognized industry/system experts
- Workshop process was open, transparent and collaborative
- Workshop was face-to-face. No teleconferencing
- Ranking/prioritization of causal factors was done using Employer and Worker vote only (MOL & WSN do not vote)



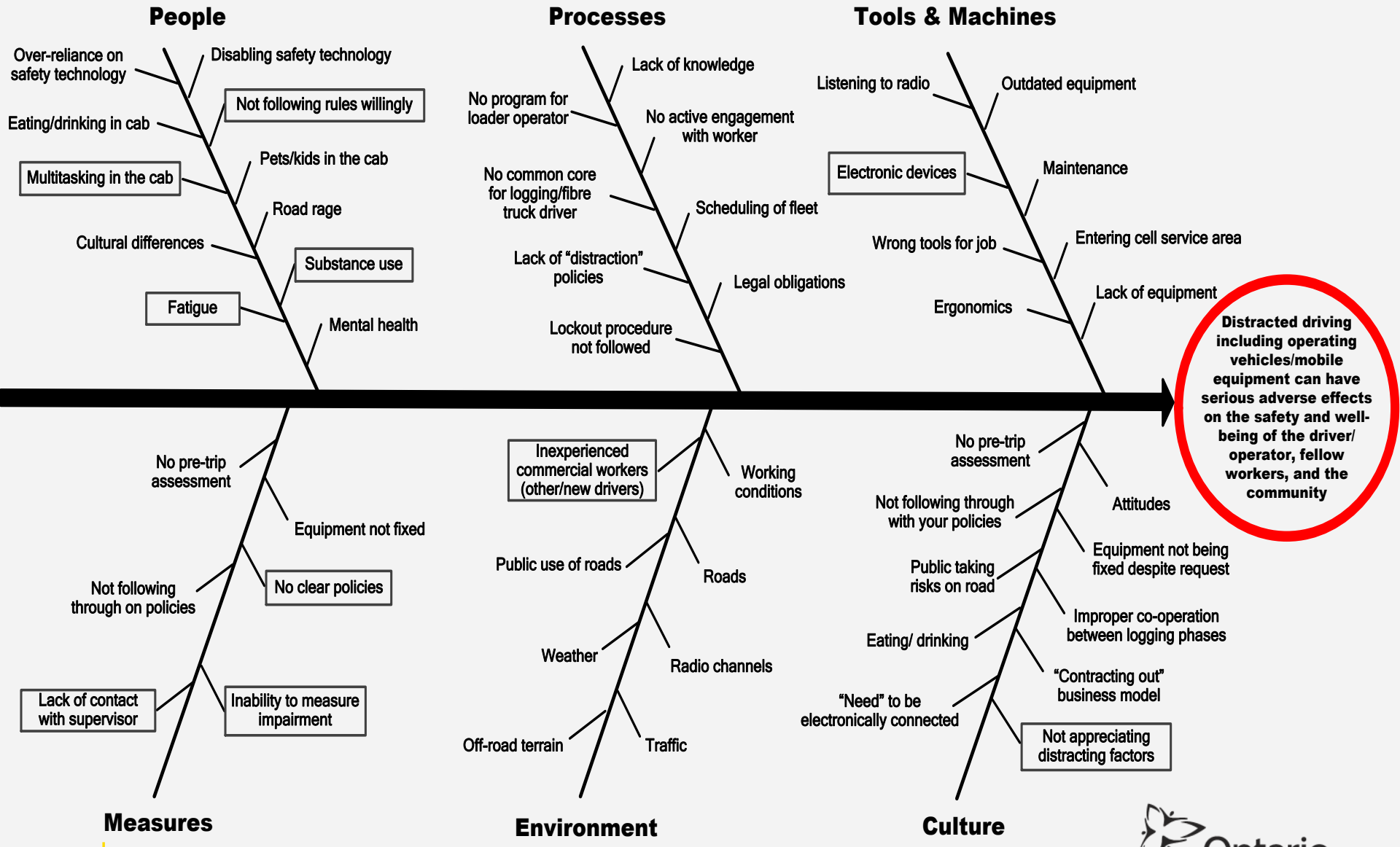
Subject Matter Experts: Industry, Research & System Partners Consulted

#	Name	Company/Representation
1	**Ron Isaac***	Rayonier
2	**Ted Frisby***	Resolute Forest Products
3	**Steve Munro***	Westwind Forest Stewardship
4	**Francis Archibald***	Bizhiki Management
5	**Paul Cloutier***	Rayonier
6	**Russell Height***	Renewable Forest Products
7	**Jan Michaelson**	FP Innovations

#	Name	Company/Representation
8	**Tom Welton**	Workplace Safety North
9	**Lorraine Champagne**	Workplace Safety North
10	**Bernie Stockermans**	Workplace Safety North
11	**Allen Armstrong**	Ministry of Labour (Operations)
12	**Erica Arsenault**	Ministry of Labour (Operations)
13	**Sujoy Dey**	Ministry of Labour (Prevention) & Workshop Facilitator

*** Voting participants**

"Fishbone" Diagram: Primary Causal Factors



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Primary Causal Factors: Top 10 (out of 51)

1. Electronic devices (E.g. Phones, FM/2-way radios)
2. Fatigue
3. Not appreciating distracting factors
4. Lack of contact with supervisor
5. Substance use
6. Inability to measure impairment (E.g. Drug tests)
7. Multitasking in the cab
8. No clear policies
9. Inexperienced commercial workers (other/new drivers)
10. Not following rules willingly

List of controls for the Top 10 primary root-causes

Note:

- ✓ Scope of this exercise does not include assessment of listed Controls
- ✓ This list provides information on specific controls and/or activities that support a control
- ✓ Control performance should be specified, observable, measureable and auditable

1. Electronic devices (E.g. Phones, FM/2-way radios)

a. Understanding that electronic need may be an addiction
b. Involve the worker in the development of a distracted driving policy
c. Enforce cell phone policy and legislation (including 2-way radio)
d. Ability to get the message through via good policy delivery. Cutting through the monotony (dullness, boring) of training on the policy
e. Proper engagement and involvement of the worker and management on safety (E.g. Policy/ guideline/ training development, messaging). High practicality and quality in a 2-way conversation with worker and management
f. Re-enactment of real situations/conditions and consequences
g. Using HSA (Workplace Safety North) to reinforce training on an ongoing basis
h. Understand that using typical classroom training for hands-on/outdoor workers (truckers) does not really work
i. Supervisor buy-in and involvement in the messaging
j. Cannot manipulate GPS while moving
k. Hands-free system for 2-way radio. Key it on the steering wheel

Note: Control list not in any order of priority

1. Electronic devices (Contd.)

l. Industry to focus investment on required technology to mitigate this TOP risk for distracted driving (Budget this in!)
m. Permanent line item for budgeting safety in organizations
n. Invest in research, data and analytics to demonstrate need
o. No “band-aid” response to a near-miss/incident. Understand why it happened and proactively make an educated response to mitigation
p. App for disabling technology (E.g. phone calls, texts, social media notifications are blocked)
q. Access to cell phone records and drug testing for any workplace incident/damage
r. Load check stations/pulling off the road to allow cell phone use when stopped
s. Need research on determining distraction on driver assistance system
t. Recognize upfront that effective intervention early is a value-added cost to the operation (Cost-benefit)

Note: Control list not in any order of priority

2. Fatigue

a. Effective anti-impairment policy program (to include cumulative effects due to stress, fatigue, trauma, medication, time management)
b. Basic awareness training for everyone in the workplace (including how to recognize impairment)
c. Specific training for supervisors, scalers, mill security, health & safety representatives and key personnel (E.g. Understanding substance use, recognizing and dealing with impairment)
d. Use of electronic log-books
e. Need recognize fatigue related to commuting to work (additional driving)
f. Availability of mental health training and support (understanding “mental health first-aid”)
g. Awareness that fatigue can affect cognitive function
h. Good communication regarding fatigue (clear, concise, know-your-audience, practical and trustworthy)
i. Give people ability to talk without fear (Multiple communication avenues)
j. Supervisors should be approachable and proactive

Note: Control list not in any order of priority

2. Fatigue (Contd.)

k. Supervisors should embrace and enforce “safety first”
l. Employer develops outreach program as part of training
m. Promote healthy lifestyle and safe culture
n. Fatigue Management Systems (E.g. Eye-scan monitoring devices)
o. Peer support system in the workplace

Note: Control list not in any order of priority

3. Not appreciating distracting factors

a. "Safety first" company values: "Walk the talk"
b. Proper engagement and involvement of the worker and management on safety (E.g. Policy/guideline/training development, messaging). High practicality and quality in a 2-way conversation with worker and management
c. Top-down leadership to demonstrate safety first values (E.g. Production does NOT trump safety)
d. Supervisors should be approachable and proactive
e. Supervisors to embrace and enforce "safety first"
f. Macho culture (attitudes) cannot trump risk assessments
g. Proper risk assessment: Cumulative effects of "minor" transgressions lead to a higher risk (E.g. Coffee drinking not a high risk by itself, but a "risk" when driving in an ice storm)
h. Foster culture that recognizes risks of distracted driving (E.g. Drinking coffee when negotiating a curve/in an ice storm)
i. Workplan and schedule to minimize "lone worker" or high-risk times (E.g. Family celebrations & emergencies, vacation, electronic devices, etc.)
j. Recognize that differences in distractions that can affect all jobs (E.g. Heavy equipment operators as well as drivers)

Note: Control list not in any order of priority

4. Lack of contact with supervisor

a. Competent supervision: Ability to judge, gauge or measure safety issues with the worker and take corrective actions/plan for intervention
b. Recognize upfront that effective supervision is a value-added cost to the operation
c. Routine engagement with worker (frequency of contact)
d. Risk Assessment of hazard situation/conditions (E.g. New worker) to determine frequency of contact with worker
e. Actual contact required (face2face or remote) for “supervisory role” and not just to discuss production issues
f. Task review to check if workload and expectations for supervisor is reasonable, relevant and effective (E.g. An owner-supervisor)
g. Proper engagement and involvement of the worker and management on safety (E.g. Policy/guideline/training development, messaging). High practicality and quality in a 2-way conversation with worker and management
h. Supervisors should be approachable and proactive
i. Trained woodlands supervisors (someone with operational experience)
j. Supervisor succession planning/supervisor mentorship program available and implemented
k. Workplan and schedule to account for time with supervisor

Note: Control list not in any order of priority

5. Substance use

a. Effective anti-impairment policy program (to include cumulative effects due to stress, fatigue, trauma, medication, time management)
b. Basic awareness training for everyone in the workplace (including how to recognize impairment)
c. Specific training for supervisors, scalers, mill security, health & safety representatives and key personnel (E.g. Understanding substance use, recognizing and dealing with impairment)
d. Availability of mental health training and support (understanding “mental health first-aid”)
e. Awareness that substance use can affect cognitive function
f. Good communication regarding substance use (clear, concise, know-your-audience, practical and trustworthy approach)
g. Recognize that upfront investment in mental health programs is a value-added cost to the operation
h. Workplan and schedule to minimize “lone worker” or high-risk times (E.g. Family celebrations & emergencies, vacation, electronic devices)
i. Random drug/alcohol testing
j. Give people ability to talk without fear (multiple communication avenues)
k. Support/resources availability (E.g. Community support, crisis counselling)
l. Promote healthy lifestyle and safe culture

Note: Control list not in any order of priority

6. Inability to measure impairment

a. Clearly defined, effective, well-written and well-communicated policies
b. Policy should be inclusive of all substances (alcohol, prescription and recreational drugs)
c. Basic awareness training for everyone in the workplace (including how to recognize impairment)
d. Specific training for supervisors (E.g. Recognizing and dealing with impairment)
e. Understanding the impact of human rights with regards to workplace impairment policies
f. Needs assessment/survey for employees at the worksite
g. Availability of mental health training and support (understanding “mental health first-aid”)
h. Random drug/alcohol testing
i. Good communication regarding substance use (clear, concise, know-your-audience, practical, and trustworthy approach)
j. Research on root-cause (statistics) factors affecting impairment at the workplace

Note: Control list not in any order of priority

7. Multitasking in the cab

a. Address multitasking in your distracted driving policy
b. Proper engagement and involvement of the worker and management on safety (E.g. Policy/ guideline/ training development, messaging). High practicality and quality in a 2-way conversation with worker and management
c. Eliminate unnecessary tasks (E.g. Checking phones, any pre-trip tasks) using proper work/trip planning

Note: Control list not in any order of priority

8. No clear policies

a. Proper engagement and involvement of the worker and management on safety (E.g. Policy/ guideline/ training development, messaging). High practicality and quality in a 2-way conversation with worker and management
b. Support for the policy (buy-in) needs worker engagement and involvement (See previous point)
c. Understanding on the purpose of the policy
d. Proper implementation plan (clear, concise, know-your-audience, practical and trustworthy)
e. Effective execution of the policy (clear, concise, know-your-audience, practical and trustworthy)
f. Enforcement of the policy (clear, concise, know-your-audience, practical and trustworthy)
g. Auditing accuracy and compliance of the policy (clear, concise, know-your-audience, practical and trustworthy)
h. Modelling/ demonstration of the policy by supervisor (show and lead by example)

Note: Control list not in any order of priority

9. Inexperienced commercial workers (other/new drivers)

a. More organized, structured and formalized training program for new recruits
b. Government to better understand and recognize the special needs of the forestry industry in order to tailor certification to meet those needs
c. Address the specific needs in training program for forestry related jobs (E.g. Log haul, float operator)
d. Driver training courses to include off-road driving, not just highway operation
e. Better collaboration between industry and trades towards providing programs that have emphasis on a “safety culture”
f. Greater awareness in the industry to collectively address this issue
g. Clear communication of risks due to distracted driving
h. Customize communication (to fit driver needs) of rules and procedures
i. Refresher training
j. Better highway signage
k. Use of in-cab coaching initiation phase or tag along truck with experienced driver

Note: Control list not in any order of priority

9. Inexperienced commercial workers (other/new drivers): (Contd.)

l. Assign to simple routes
m. Guide to in-vehicle (dashboard, console) controls if unfamiliar truck model
n. Rules limiting use of VHF or CB radio to safety and operational needs (no chatting)
o. Give clear and concise directions to loading sites (new drivers not familiar with road names and landmarks experienced drivers may use)
p. Familiarization with seasonal driving conditions
q. If available, provide truck with automated transmission (driver does not need to worry about clutch and shifting)
r. Guide to in-vehicle (dashboard, console) controls if unfamiliar truck model

Note: Control list not in any order of priority

10. Not following rules willingly

a. Consistency in a progressive discipline program
b. Having a personal commitment to safety like reporting near-misses, other incidents that compromise safety
c. Recognizing and rewarding safe work practices/innovations/performance
d. Proper engagement and involvement of the worker and management on safety (E.g. Policy/guideline/training development, messaging). High practicality and quality in a 2-way conversation with worker and management
e. Promote worker-worker intervention culture in the workplace
f. Measurement comparison of time needed to do the work (E.g. How much time does it take to travel from point A to point B when following all the rules?)
g. Effective training program for workers and supervisors
h. Organized labour/unions and management support safe work including fair and consistent progressive discipline
i. Supervisors to be approachable and proactive
j. Supervisors to embrace and enforce “safety first”

Note: Control list not in any order of priority

Next Steps: What should we focus on immediately?

✓ ***Based on a scan of controls identified for the Top 10 primary causal factors, it would be beneficial, as a start, to focus right away on the following 5 common systemic weaknesses)***

A. **Proper engagement of, and involvement of the worker and management on safety (E.g. Policy/guideline/training development, messaging). High practicality and quality in a 2-way conversation with worker and management**

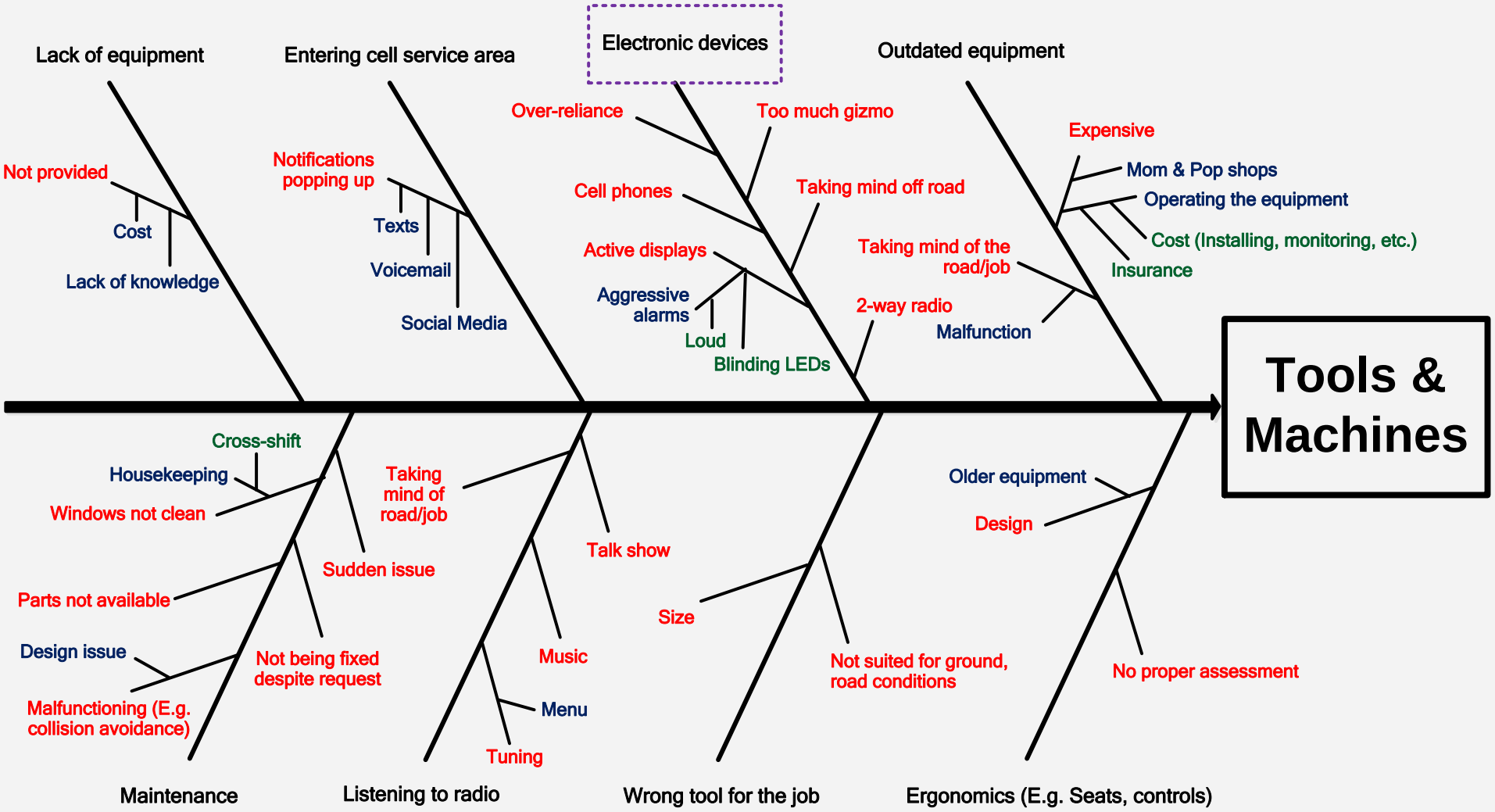
B. **Availability of mental health training and support (understanding "mental health first-aid")**

C. **Clear, concise, know-your-audience, practical and trustworthy policies (purpose, implementation, execution, enforcement)**

D. **Supervisors to embrace and enforce "safety first"**

E. **Supervisors to be approachable and proactive**

Appendix I: Tools & Machines



Top 10 Primary Root-Cause
Primary Root-Cause
Second level Root-Cause
Third level Root-Cause
Fourth level Root-Cause

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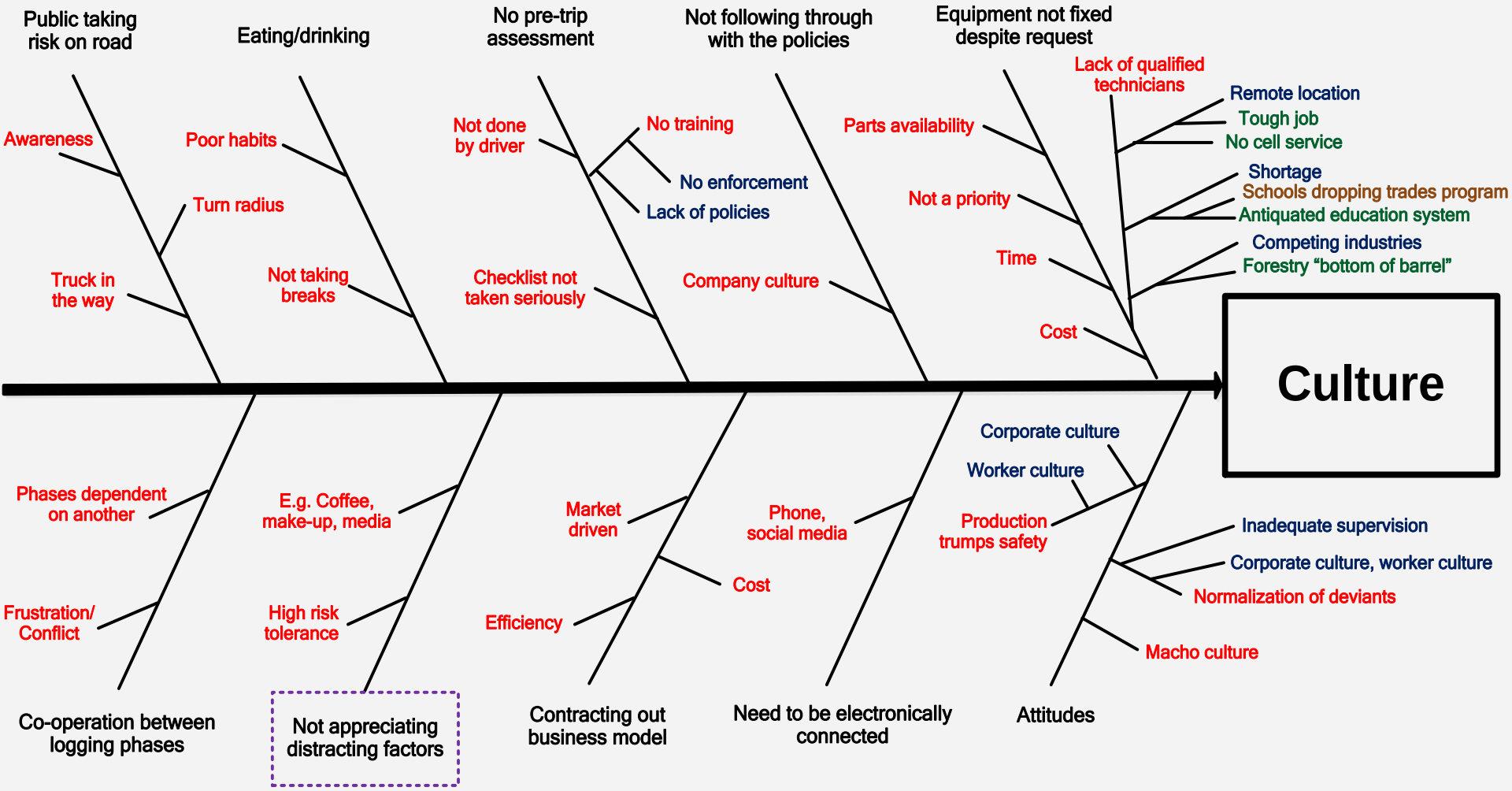
Appendix II: Culture



Top 10 Primary Root-Cause
Primary Root-Cause
Second level Root-Cause
Third level Root-Cause
Fourth level Root-Cause
Fifth level Root-Cause

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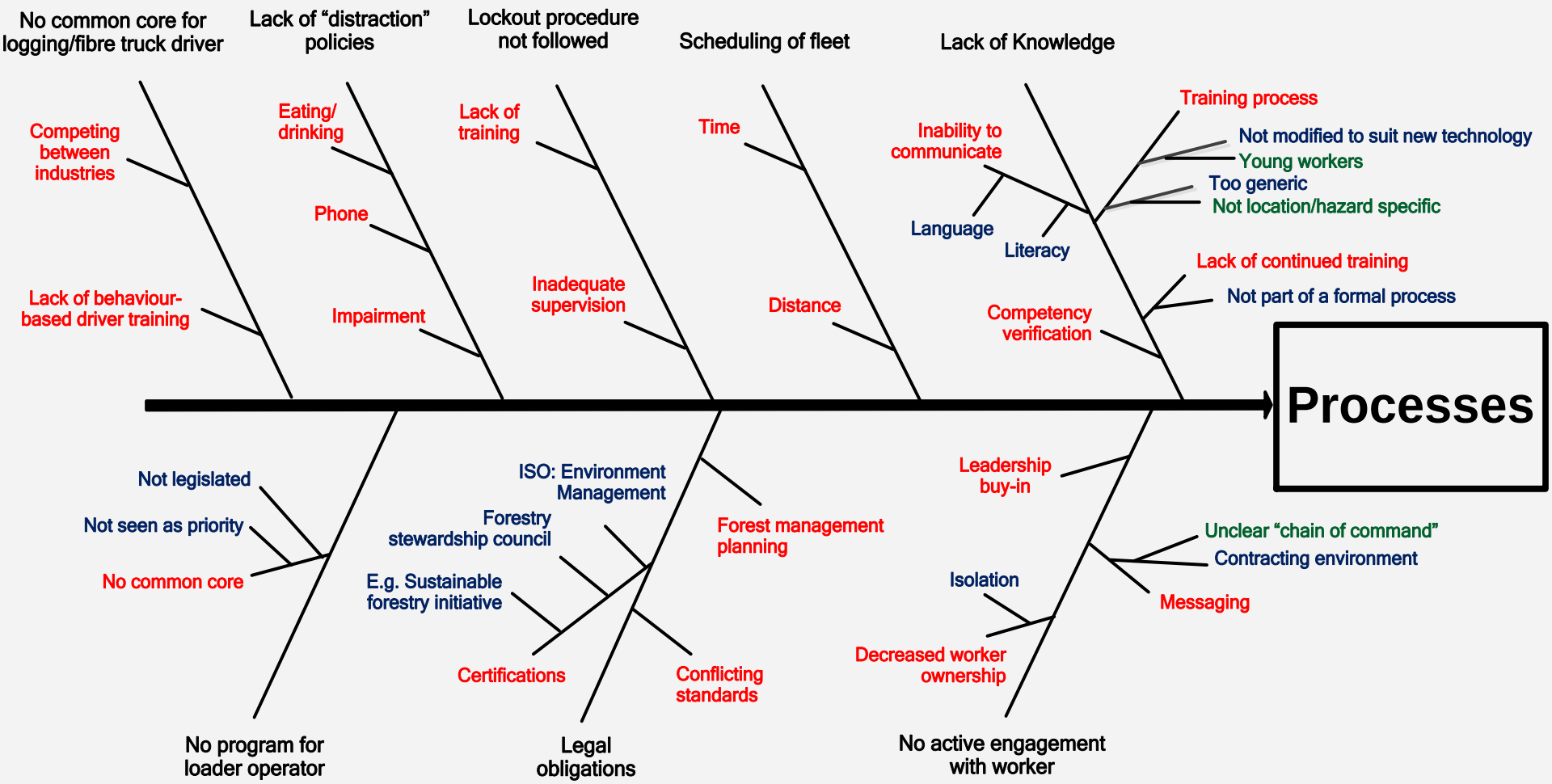
Appendix III: Processes



Top 10 Primary Root-Cause

Primary Root-Cause

Second level Root-Cause

Third level Root-Cause

Fourth level Root-Cause

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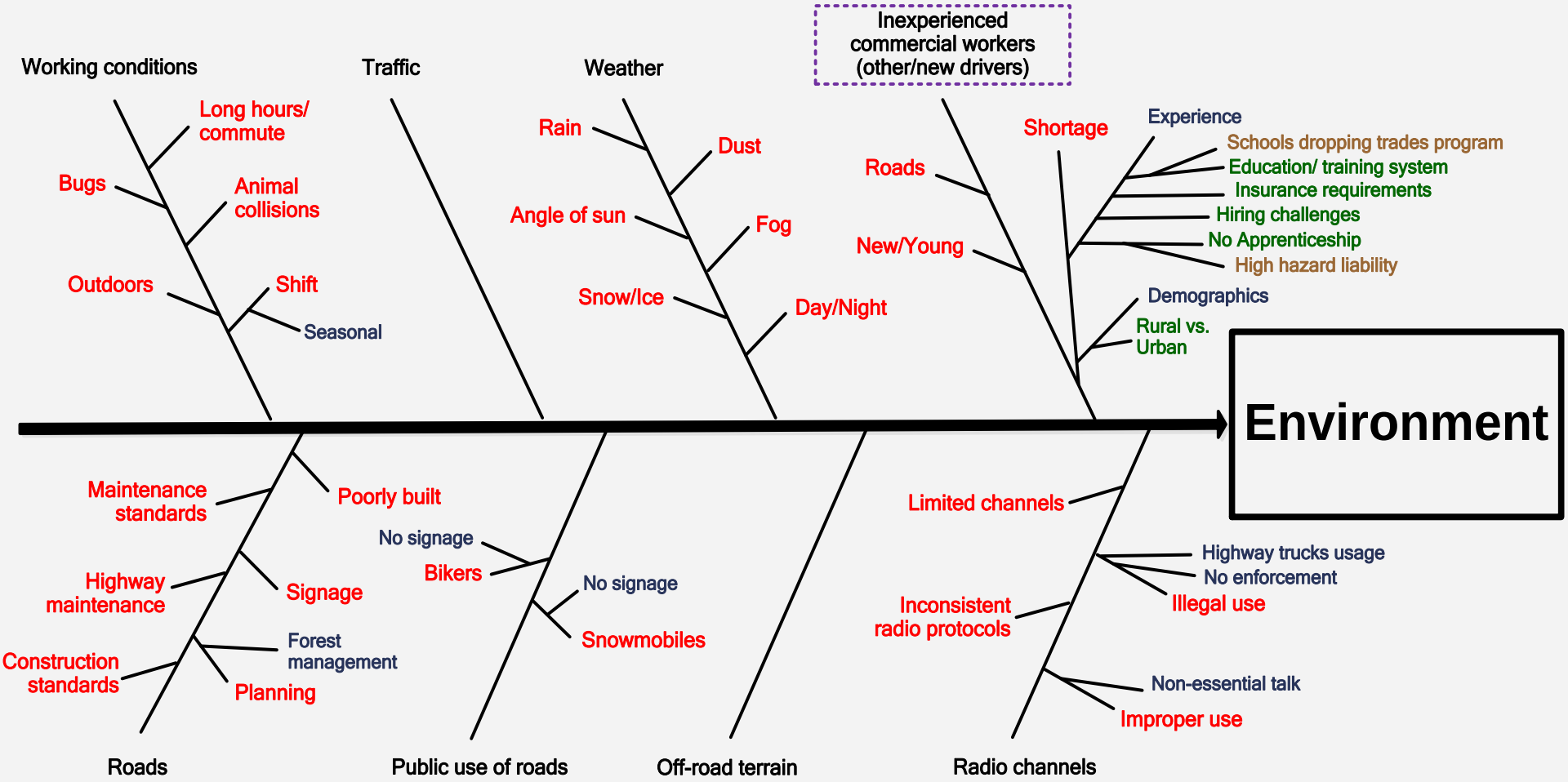
Appendix IV: Environment



Top 10 Primary Root-Cause
Primary Root-Cause
Second level Root-Cause
Third level Root-Cause
Fourth level Root-Cause
Fifth level Root-Cause

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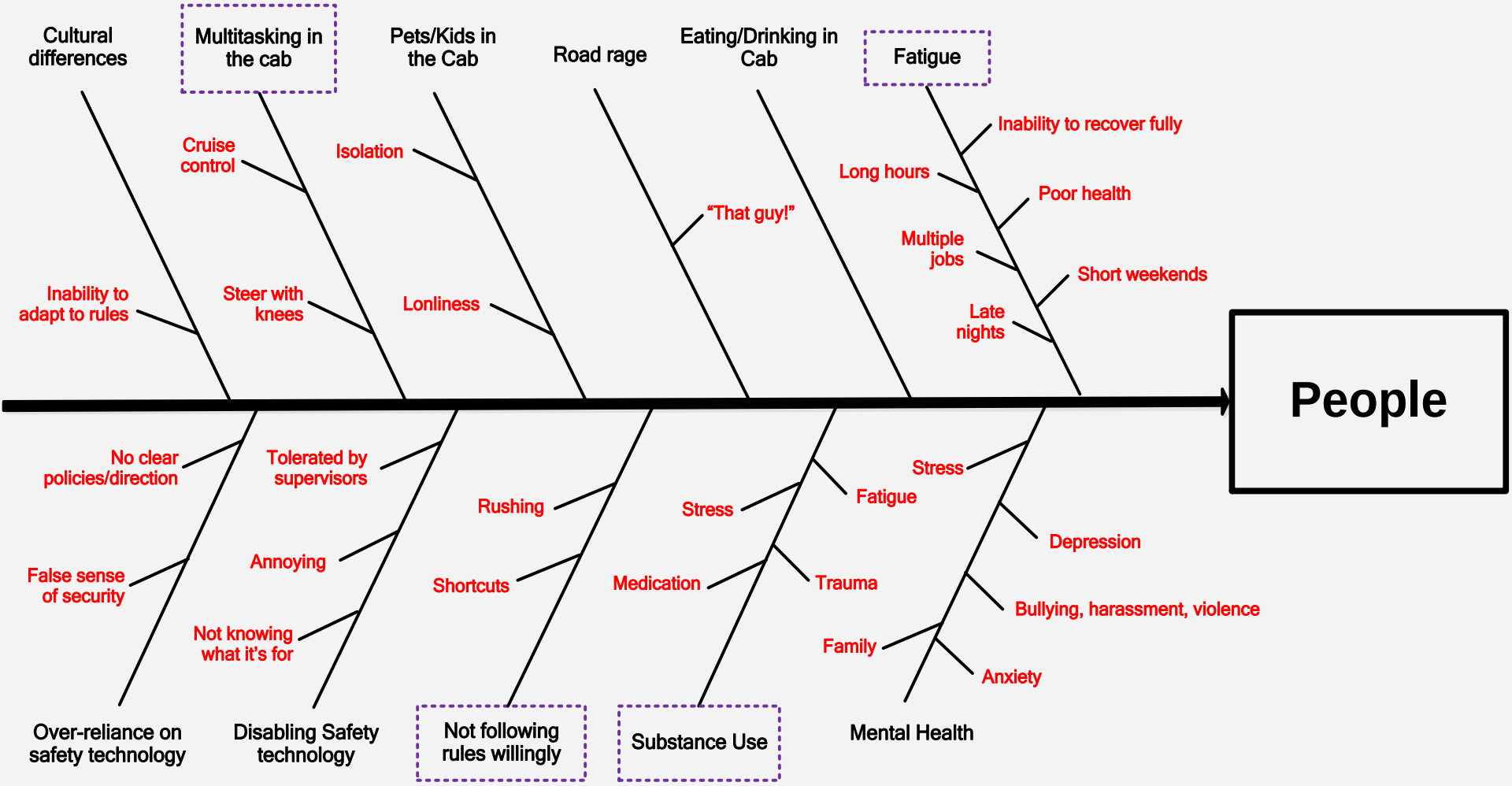
Appendix V: People



Top 10 Primary Root-Cause
Primary Root-Cause
Secondary Root-Cause
Tertiary Root-Cause

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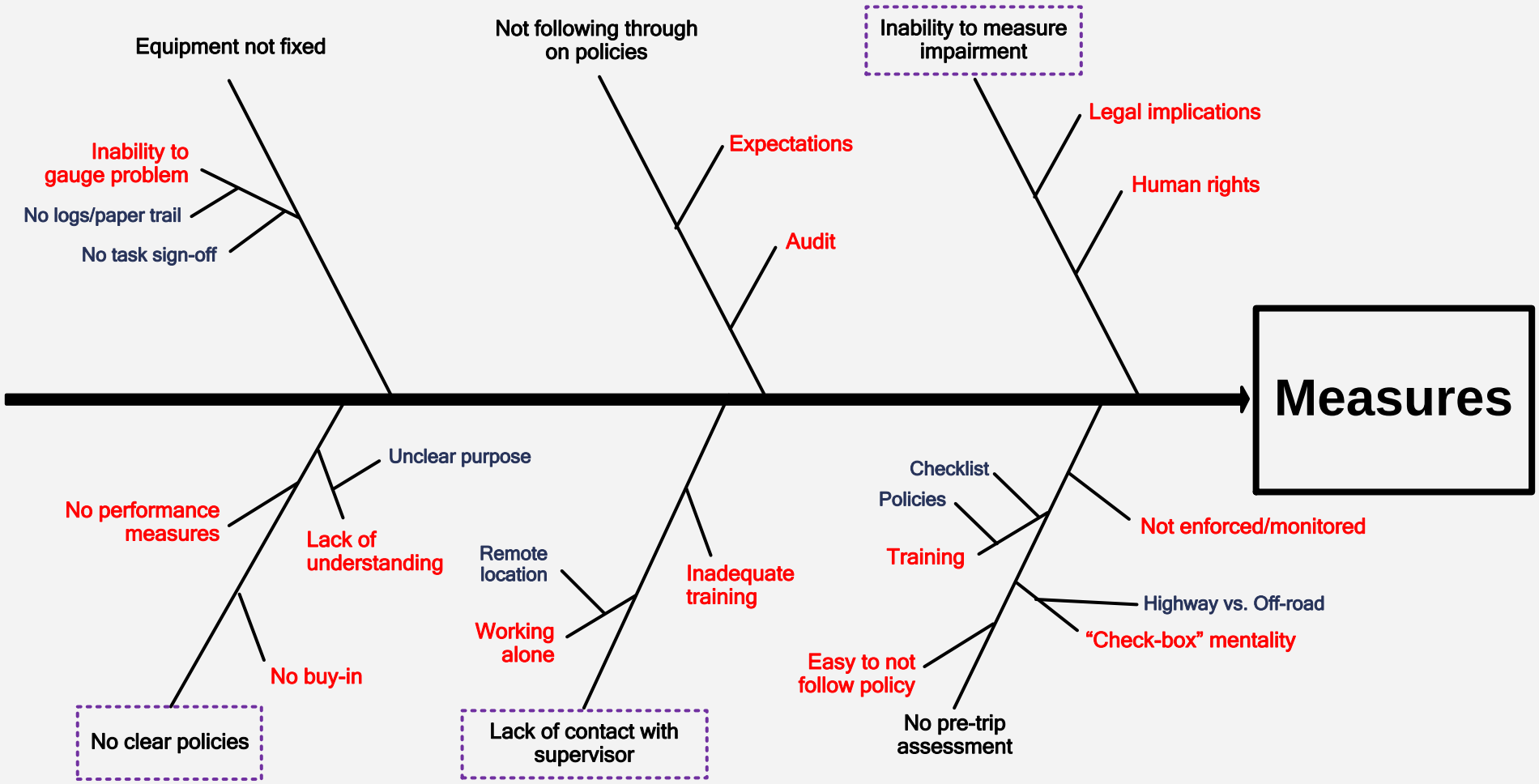
Appendix VI: Measures



Top 10 Primary Root-Cause
Primary Root-Cause
Secondary Root-Cause
Tertiary Root-Cause

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Appendix A: Risk Assessment Methods/Standards*

1. Bayesian Analysis
2. Bow-tie analysis
3. Brainstorming (e.g. what-if)
4. Business impact analysis
5. Cause and effect analysis
6. Checklists
7. Computer Hazard and Operability Studies (CHAZOP)
8. Consequence Analysis (or Cause-Consequence Analysis)
9. Likelihood/Consequence matrix
10. Construction Hazard Assessment and Implication Review (CHAIR)
11. Decision tree
12. Delphi technique
13. Energy Barrier Analysis (or Energy Trace Barrier Analysis)
14. Environmental risk assessment
15. Event tree analysis
16. Failure Mode and Effect Analysis (FMEA)
17. Failure mode, effect and criticality analysis
18. Fault Tree Analysis
19. Fishbone (Ishikawa) Analysis
20. Hazard analysis and critical control points
21. Hazard and Operability studies (HAZOP)
22. Human Error Analysis (HEA)
23. Human reliability analysis
24. Job Safety Analysis (JSA)
25. Level of Protection Analysis (LOPA)
26. Markov analysis
27. Monte Carlo Analysis
28. Preliminary Hazard Analysis (PHA)
29. Reliability centered maintenance
30. Scenario analysis
31. Sneak circuit analysis
32. Structured/semi-structured interviews
33. SWIFT (i.e. structured what-if)
34. Systemic Cause Analysis Technique (SCAT)
35. Workplace Risk Assessment and Control (WRAC)

Risk Management Standards:

1. Risk Management Principles and Guidelines (ISO 31000:2018)
2. Risk Assessment Techniques (ISO/IEC 31010:2009)
3. OH&S Hazard Identification and Elimination and Risk Assessment and Control (CSA Z1002)
4. Process Safety Management (CSA Z767-17)
5. Enterprise Risk Management (COSO 2004)
6. Global Minerals Industry Risk Management (GMIRM)
7. International Council on Mining & Metals (ICMM)

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*** Not an exhaustive list**

Appendix B: Workshop Contacts

- For additional information or questions, please contact:

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