Technical Paper:

Root cause analysis of truck-yard safety in the general trucking sector in Ontario

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Introduction and Background

In 2019, in collaboration with the Ministry of Labour, Trailing and Skills Development (MLTSD), the Infrastructure Health and Safety Association (IHSA) hosted a Risk Assessment Workshop to determine the top health and safety concerns within the General Trucking Sector. Based on the results of the risk assessment, further root-cause workshops have been scheduled and facilitated to assist in providing the transportation industry with resources to support health and safety.

- Background on IHSA's collaboration with MLTSD on risk assessment and root cause workshops
- The top 10 health and safety risks in general trucking

Yard Safety Root Cause Workshop

In 2020. it was decided that a root cause analysis workshop would be facilitated by IHSA, with support from the MLTSD. Due to the COVID-19 pandemic, the workshop was delayed and ultimately scheduled for January 26th and 27th, 2021. Due to the Provincial restrictions at the time, the decision was made to facilitate the workshop virtually using Zoom.

The following people facilitated and supported the workshop:

Name	Organization	Title
Charlie Charalambous	IHSA	Coordinator, Research and Stakeholder & Public Relations
Michelle Roberts	IHSA	Director, Stakeholder & Client Engagement
Scott Laing	IHSA	Stakeholder & Client Engagement Coordinator
Dr. Sujoy Dey	MLTSD	Corporate Risk Officer
Daniela Iniguez	MLTSD	Strategic Advisor
Chelsea Zhao	MLTSD	Strategy Analyst
Bruce Outridge	Outridge Productions	Videographer

The workshop participants included peer-recognized subject matter experts from industry (employers and drivers) along with other industry stakeholders, who over the course of the two-days virtually worked together to identify and prioritize causal factors for yard safety in the trucking sector (general freight).

Note: Two of the worker participants cancelled and were replaced after the workshop with other workers from the industry. During those one-on-one sessions the replacement workers were provided with an in-depth review of the workshop and then had the opportunity to vote on the primary factors. This ensured that there was equal voting representation from management and labour.

Worker/Labour Representatives

The worker/labour participants for the workshop included representation from the following organizations:

- Contrans Group
- Ivan Armstrong Trucking
- Sharp Transportation
- SM Freight
- Unifor National

Management Representatives

The management participants for the workshop included representation from the following organizations:

- Challenger Motor Freight
- Frontier Distribution Services
- Kriska Transportation
- Manitoulin Transport
- The Rosedale Group

Industry Stakeholder Representatives

The industry stakeholder participants for the workshop included representation from the following organizations:

- Employment and Social Development Canada
- Ministry of Labour, Training and Skills Development
- Northbridge Insurance
- The Private Motor Truck Council of Canada

Pre-Workshop Background Information for Participants

Although Yard Safety was not identified as one of the Top 10 risks in general trucking, there were unfortunately an alarming number of incidents that involved traumatic fatalities in the yard within the transportation sector.

The incidents listed below (all in 2019) drew immediate attention to the ongoing hazards and risks that workers face in transportation yards. As a result, the decision was made to move forward with a root-cause analysis workshop on yard safety.

To prepare the participants, the following articles were sent in advance of the workshop to provide additional context:

- Truck News article on yard safety: Truck driver safety risks are not limited to the highway
- Sharp Transportation yard fatality: Baden truck driver dies in Cambridge workplace accident
- Kriska Transportation yard fatality: Man fatally struck by transport truck at Mississauga Logistics Company
- Bison Transport (outside of Ontario) yard fatality: Family mourning the loss of a father of two killed in a workplace accident
- Vaughan Ontario yard fatality: Man killed in an industrial accident at trucking yard
- Pickering Ontario yard fatality: Truck driver dead while being run over while working under vehicle

Participants were also asked to review an article from IHSA's Transportation Special Edition Magazine: Preventing truck yard struck-bys with effective controls

A **defined risk statement** was also shared with the participants:

"Yard related hazards can pose serious unintended and adverse effects to the safety and well-being of the driver, carrier, fellow worker, or community member."

The Root-Cause Workshop Fishbone Exercise

Day One of the workshop consisted of the group using a Fishbone diagram to help identify the reasons for imperfections, variations, defects, and failures in yard safety in the general trucking sector. The Fishbone consisted of the following categories:

1. **Tools & Machines**: Equipment, technology, tool design, maintenance
2. **Culture**: Work culture/attitudes, values, organization leadership, traditions, beliefs, interactions
3. **Processes**: Method, procedures, work instructions, policy
4. **Environment**: Working environment, work surroundings including air, noise, light, accommodation, well-being at work
5. **People**: Behaviour, experience, mental health, age
6. **Measures**: Data, indicators, evaluation, techniques/actions used to measure performance, quality

Once completed, the fishbone diagram contained **42 primary root cause factors**.

Tools and Machines:

- Truck design
- Trailer design
- Yard vehicle maintenance
- Brakes
- Not properly spec'd equipment
- Licensing of shunt drivers

Culture:

- Lack of company rules
- Organizational culture
- Financial culture
- Language barriers
- Lack of enforcement
- Attitude
- Lack of training

Processes:

- Unfamiliar policies
- Industry training standards
- Yard/traffic flow
- Yard maintenance
- No policies on yard safety
- Unclear procedures
- No job hazard analysis completed for yard
- Yard congestion

Environment:

- Decreased visibility/weather
- Noise
- Loading & securing loads
- Potholes
- Lighting
- Air quality/pollution
- Time

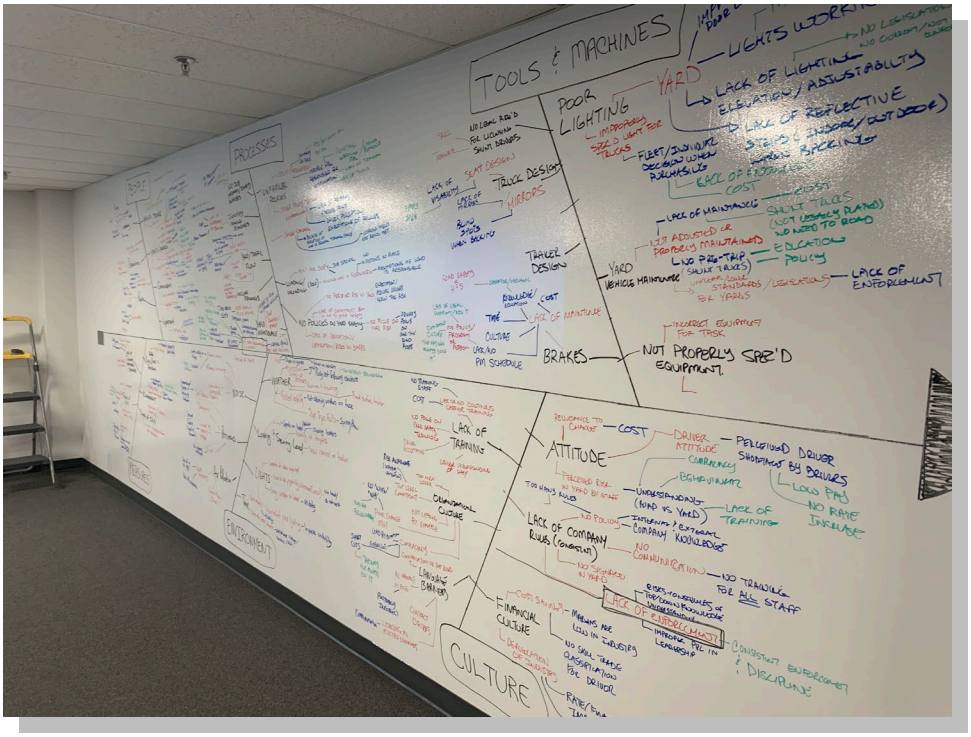
People:

- Skilled trade
- Health concerns
- Complacency
- Distractions
- Communication
- People in the yard
- Impairment

Measures:

- Yard safety rules & procedures
- Lack of industry training standards & measures
- Enforcement
- Failure of the IRS
- Lack of job hazard analysis

Completed Fishbone Diagram:



Primary Risk Factors Voting:

Worker and management participants were then asked to vote on the importance of each of the 42 identified primary factors using the following rating scale:

1. Not important
2. Low importance
3. Slightly important
4. Neutral
5. Moderately important
6. Very important
7. Extremely important/show stopper

Voting was facilitated using an app from Turning Technologies and participants were able to see the results immediately; however, individual responses remained confidential.

Note: The voting was completed by the management and labour representatives; however, the industry representatives continued to participate in any discussion during the voting process.

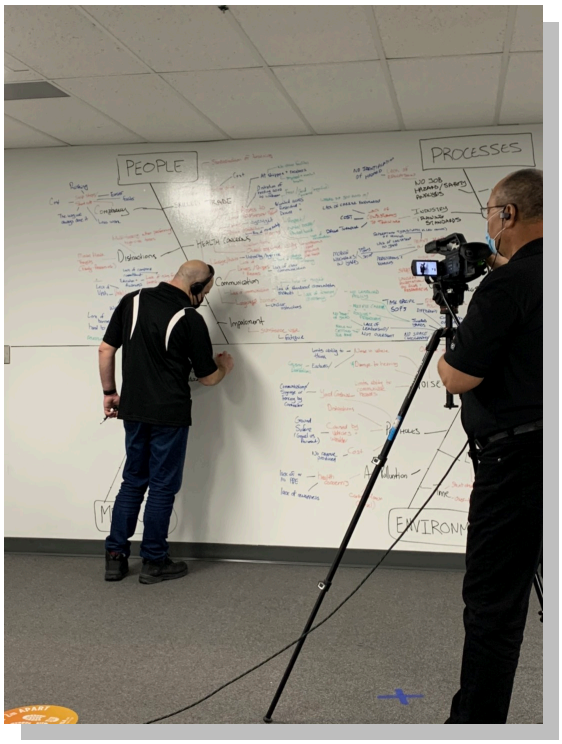
Workshop Day 2:

On Day 2 of the workshop, the results of the voting were shared with all participants who then discussed possible solutions and controls for the top 10 identified primary factors.

Note: Due to ties in the formal voting process, the list consisted of more than 10 items.

During the controls and solutions exercise, several of the primary causal factors [from different fishbone categories] were merged because they were similar in theme. These included:

- **Industry Training Standards** (Processes) with **Lack of Industry Training Standards and Measures** (Measures)
    - New category: **Lack of Industry Training Standards and Measures (Processes)**
- **Lack of Company Rules** (Culture), **Unclear Procedures** (Processes), **No Policies on Yard Safety** (Processes) and **Yard Safety Rules and Procedures**.
    - New category: **Unclear or Lack of Yard Safety Rules, Policies and Procedures (Culture)**
- **Language Barriers** (Culture) and **Communication** (People)
    - New category: **Language Barriers and Communication (Culture)**
- **Lack of Enforcement** (Culture) and **Enforcement** (Measures)
    - New category: **Lack of Enforcement (Culture)**
- **Poor Lighting** (Tools and Machines) and **Lighting** (Environment)
    - New Category: **Poor Lighting, Lighting (Tools & Machines, Environment)**



Final Top 10 List:

Priority	Category	Primary Causal Factor
1	Tools and Machines, Environment	Poor Lighting/Lighting
2	Culture	Lack of Training
3	People	Skilled Trade
	Tools and Machines	Brakes
4	Culture	Attitude
	Processes	Unclear or Lack of Industry Training Standards and Measures
	Culture	Unclear or Lack of Yard Safety Rules, Policies and Procedures
5	People	Distractions
6	Tools and Machines	Yard Vehicle Maintenance
	Culture	Language Barriers and Communication
	People	Complacency
7	People	Impairment
8	People	Health Concerns
	Environment	Time
9	People	People in the Yard
10	Processes	Yard Maintenance and Congestion
	Environment	Loading and Securing Loads
	Culture	Organizational Culture

* **Note**: Some of the ranked numbers have multiple causes listed, as they resulted in a tie during the formal voting process

Management and Labour Voting Results:

The separated voting results for both management and labour are highlighted on the next page.

The following were scored **higher by Management**:

- Poor lighting/lighting
- Attitude
- Distractions
- Complacency
- Health concerns
- People in the yard
- Yard maintenance and congestion

The following were **scored higher by Labour**:

- Lack of training
- Skilled trade
- Brakes
- Lack of industry training standards and measures
- Unclear or lack of yard safety rules, policies and procedures
- Impairment
- Yard vehicle maintenance
- Language barriers and communication
- Time
- Loading and securing loads
- Organizational culture

Management and Labour Voting Comparison Summary:

- Overall management scored items higher in the voting:
  - Highest score by management 6.80 (Poor Lighting/Lighting)
  - Highest score by labour 6.40 (Lack of Training)
- Management and labour tied (5.6) on only two of the top 10 items:
  - People in the Yard and Yard Maintenance and Congestion
- Largest variance where management scored higher was Distractions
  - Management 6.2 vs Labour 5.4
- Largest variance where labour scored higher was Impairment
  - Labour 6.2 vs management 5.2
- Overall management and labour scored closely on training related topics
  - Lack of training, Lack of industry training standards and measures and unclear or lack of yard safety rules and procedure

Management Results

	Category	Primary Root-Cause	Avg
1	Tools & Machines, Enviornment	Poor Lighting/Lighting	6.80
2	Culture	Attitude	6.20
3	People	Distractions	6.20
4	Culture	Lack of Training	6.00
5	Processes	Lack of Industry Training Standards and Measures	6.00
6	Culture	Unclear or Lack of Yard Safety Rules, Policies and Procedures	6.00
7	People	Complacency	6.00
8	People	Skilled Trade	5.80
9	Tools & Machines	Brakes	5.80
10	People	Health Concerns	5.80
11	Tools & Machines	Yard Vehicle Maintenance	5.60
12	Culture	Language Barriers and Communication	5.60
13	Environment	Time	5.60
14	People	People in the Yard	5.60
15	Processes	Yard Maintenance and Congestion	5.60
16	Environment	Loading and Securing Loads	5.40
17	Culture	Organizational Culture	5.40
18	People	Impairment	5.20

Labour Results

Avg		Category	Primary Root-Cause
6.40	1	Culture	Lack of Training
6.40	2	People	Skilled Trade
6.40	3	Tools & Machines	Brakes
6.20	4	Processes	Lack of Industry Training Standards and Measures
6.20	5	Culture	Unclear or Lack of Yard Safety Rules, Policies and Procedures
6.20	6	People	Impairment
6.00	7	Tools & Machines, Enviornment	Poor Lighting/Lighting
6.00	8	Culture	Attitude
6.00	9	Tools & Machines	Yard Vehicle Maintenance
6.00	10	Culture	Language Barriers and Communication
5.80	11	Environment	Time
5.80	12	Environment	Loading and Securing Loads
5.80	13	Culture	Organizational Culture
5.60	14	People	Complacency
5.60	15	People	Health Concerns
5.60	16	People	People in the Yard
5.60	17	Processes	Yard Maintenance and Congestion
5.40	18	People	Distractions

Legend: Management Ranked Higher

Labour Ranked Higher

Final Workshop Industry Recommendations and Conclusions:

The controls and solutions established by the yard safety working group are for the top primary causal factors that may contribute to yard safety in the trucking industry. Given recent yard fatalities in the trucking sector, along with injury/fatality data available from the Workplace Safety and Insurance Board (WSIB) for the General Trucking Rate Group, it is important that specific solutions targeting systemic weaknesses be implemented immediately.

Based on the list of controls/solutions provided by the subject matter experts from industry, research and government (regulator), the following five action items are recommended:

1. **Classify truck driving as a skilled trade (Red Seal)**
   - ✓ This needs to be implemented at the federal level

2. **Review and address critical training gaps in M.E.L.T**
   - ✓ Yard safety, shunt driver training curriculum, enforcement of training

3. **Establishment of yard safety protocols**
   - ✓ Minimum lighting requirements, yard safety maintenance, conditions, shunt vehicle standards and regulations

4. **Greater enforcement of non-compliant carriers**
   - ✓ Driver Inc., driver services, enforcement of lighting regulations, training, foreign worker program

5. **Promote mental health and wellness**
   - ✓ Provide support tailored to the driver and operations/support staff

The above five recommendations provide a systemic foundation for reduction in yard safety incidents/injuries. If ignored, the solutions listed for the top ranked primary causal factors will just serve as “band-aid” solutions. Based on the Swiss Cheese model of accident causation, risk assessment and root-cause analysis theory, we must focus on the causal factors and not just the symptoms.

Appendix

Appendix 1: Yard Safety Controls and Solutions

1. **Category:** Tools and Machines, Environment
   Primary Causal Factors: 1) Poor lighting, 2) Lighting
   i. **Poor lighting** (link to fishbone diagram)
      a) The legislation is not specific enough.
      b) Require specific legislation on lighting requirements (Federal Labour code and OHSA). Include examples of lighting and levels of lighting required.
      c) More specific legislation required with updates to building codes so that lighting is addressed (CLC). This will provide enforcement with additional tools and the ability to impact change when inspecting properties (including the yards).
      d) Use workplace health and safety committees (workers, management, HR) as part of the process when determining lighting needs (simulating the yard set-up).
      e) Lighting companies should install the lights in the evening to help with determining dim spots, darker areas, and with trailers parked in the yard to ensure proper lighting coverage of the yard.
      f) Work with neighbouring property owners to ensure lighting aligns properly for both properties.
      g) Avoid backing into poorly lit sections of the yard at night.
      h) Use a professional company when installing the lighting for the yard.
      i) Lighting installation should be just as important as the building design.
      j) When bringing in a professional company for lighting, include the municipality (depends on location) to coordinate all parties.
      k) Provide drivers with high powered flashlights (to assist them and ensure that they can perform yard tasks safely and effectively).
      l) Drivers need to be empowered to make the decision if they are comfortable parking in the yard based on the current conditions.
      m) More tools for workplace parties to be able to determine and address adequate lighting levels.
      n) Ask drivers to park in specific areas/spots during the day so that drivers parking in the evening are parking in adequately lit and safe areas.
      o) Incorporate yard lighting maintenance into company Preventative Maintenance (PM) program.
      p) Empower and remind drivers of their right to refuse unsafe work.
      q) Add more lights to trucks and trailers to increase lighting and assist drivers.
      r) Contact Hydro to see about possible rebate programs (potential savings) that may be available for using LED lights.
      s) Convert current lighting to LED lights to assist with reducing overall long term cost (investment in LED lighting will pay off over time).
      t) Ensure that lights are tested at proper angles and pointed in the correct direction.
      u) Plan and budget for lighting as part of the annual or start up budget.

v) Include yard lighting as part of the monthly health and safety inspection and facilitate inspections early in the day or in the evening when it's still dark and lighting needs can be tested.
w) Properly maintaining tree and bushes to reduce yard obstructions.
x) Have a section of the yard designated for night deliveries to assist with traffic flow.
y) Ensure proper placement of all lights in the yard.

ii. Lighting (link to fishbone diagram)

a) Ensuring ongoing inspection and maintenance of the lights to ensure that they are functioning properly (PM program).
b) Have lighting indoors so when the driver is backing into an inside dock, it will increase visibility for them.
c) Use of strips/reflectors for floor (or wall) for drivers to use as guidance when backing in.
d) Implement policy (SOP) for any high-traffic and low-visibility areas, that a guide/signaler must be used when backing in. Policy should include best practices, position of signaler etc.
e) Use clear language as part of the backing in policy.
f) Changes to regulatory requirements will include that a guide/signaler must be used when backing in (where possible).
g) Equip trailers with traffic cones that can be positioned when backing in and can be hit but will not damage the vehicle or structure.
(Note: Use of this would require the driver to get out and place the cone in position. Driver would need to exit the vehicle, survey the area and place the cone in position)
h) Facilitate a lighting survey of the yard as part of the hazard prevention program. Hazard prevention program should also include the frequency of the surveys.
i) Lighting survey results should be included as part of the Internal Responsibility System (IRS).
j) Policy for lighting survey to be done every 5 years proactively (or as part of the IRS if there is a complaint).
k) Legislation and enforcement of random inspections should be completed during non-typical hours.
l) Inspections should include standards for the lights (based on area size).
m) Provincial inspectors should conduct yard safety "Blitzes".
n) Standardization between the Federal Labour Code and Provincial. (This can be confusing for drivers understanding their rights)
o) Streamline the process for a driver to call the Labour Board. Eliminate being transferred back and forth to different departments.
p) Incorporation of a policy that drivers need to physically walk back and check (when backing) will help with drivers that are color-impaired. Require them to confirm which light is active.

q) Incorporate the words “Stop” and “Go” next to the light or use a symbol indicator (checkmark or x) to assist with color-impaired drivers.
r) Standardize dock lights so that they are always in the same position (similar to traffic lights).
s) Drivers need to confirm that the dock plate is removed and door is closed (where possible).
t) Companies need to consider yard control light placement in relation to sun and what the driver can see.
u) Used new LED heated lights.
v) Determine if new drivers are color impaired as part of the hiring process in order to provide additional support.

2. **Category:** Culture
Primary Causal Factor: Lack of training (link to fishbone diagram)
a) Increased training on yard safety (increased signage, short videos, etc.).
b) Enforcement of carriers who are not paying drivers for training time.
c) Prevent abuse of current online training.
d) Training should be delivered in English or French only.
e) Implement online observed training/testing to reduce cheating.
f) Incorporate live Q&A and knowledge verification during online training.
g) Improved verification process for online learning.
h) Increased enforcement to ensure carriers are facilitating safety training (minimum 2 times per year).
i) Utilize tools to determine where driver is completing online training.
j) Classification of a trade to include yard safety training to help mandate and enforce.
k) Development of industry approved yard safety courses.
l) Development of industry approved yard hazard assessments.
m) Increase engagement of drivers on the importance of training (regardless of format)
n) Yard safety should be part of a skilled trade program for commercial drivers.
o) Utilize virtual reality/simulation for high risk yard scenarios.
p) Provide training in the driver’s language of choice.
q) Verification/testing that the training has been completed and understood.
r) Incorporation of real life stories/scenarios into training.
s) Review and address critical training gaps in MELT to address yard safety.
t) Greater oversight or enhanced criteria on qualifications for the foreign/national worker program (i.e. language should be a priority).
u) Greater enforcement of the rules for the foreign worker program.
v) Include road tests as part of the foreign worker program.
w) Incorporate a grade 10 equivalency test (as defined in MELT) taught in English or French.
x) English/French evaluations for the foreign workers program.
y) Increased reporting of other carriers who are breaking the law/rules.

z) Changes to roadside enforcement regulation if driver cannot speak English/French.
aa) Standardized training and instructor standards.
bb) Carriers need to budget for training.
cc) More industry manuals on yard safety.
dd) Yard orientation should be included as part of "all staff" new hire training.
ee) Incorporate job review as part of pre-hire interview.
ff) Increased training required for spotters/guides/signalers.
gg) Provide additional lifestyle details to new drivers and their families as they enter the industry.

3. **Category 1:** People
Primary Causal Factor 1: Skilled trade (link to fishbone diagram)
a) Recognize commercial driving as a skilled trade (e.g. Red Seal).
b) Approach insurance companies for rebates for drivers with higher skill sets, as incentives to promote higher training.
c) Audit of carriers before insurance being offered. Include pre-qualification for skilled trades.
d) Insurance incentives based at the individual driver level and not at the fleet level.
e) Continue with best practices for hiring practices, coaching programs and driver development and retraining.
f) Implementation of finishing program as part of the skilled trade (not currently included in MELT).
g) Increased regulation to get into the trucking industry for new carriers.
h) Lobby for formulation of an advocacy group to push the skilled trade agenda forward (provincially and federally). This group should include representation from all sections of the industry.
i) Work with Trucking HR Canada and the National Occupational Standards to support trucking as a skilled trade.
(References: Update on the National Occupational Classification Proposal and Update from Trucking HR Canada).
j) Work with Trucking Human Resources Sector Council Atlantic (THRSC) to review the 12-week finishing program.
k) Political will to stand up for the well-being of the industry (e.g. skill classification, support for the driver to attend to his well-being, work-life balance, awareness/advertising for the trucking industry).
l) Graduated licensing for all truck drivers.
m) Greater enforcement to prevent the "Driver Inc." model.
n) Implementation of high skills major designation (i.e. higher skills designation like hazmat and tank license endorsements similar to the CDL model in the US.).
o) Offer industry incentive for companies/fleets/carriers that are offering apprenticeship style graduation.

p) Instructor/school accreditation.
q) Oversight on training standards.
r) Evaluation and testing for certification.
s) Sector specific for the industry.
t) Long Combination Vehicle (LCV) designation.
u) Re-testing (continuous training) to maintain designation.
v) Written test every 5-years on additional license endorsements.
w) Training credit hours to maintain designation.
x) Different driver pay grades for different levels of experience/risk.
y) Accreditation printed on driver license (designation).
z) Transferrable designation (e.g., moving away from high risk/heavy haul)
aa) Ongoing testing of drivers.
bb) Companies should incorporate skills based assessments during the hiring process.

Category 2: Tools and Machines
Primary Causal Factor 2: Brakes (link to fishbone diagram)

a) Incorporate a regular PM schedule for the yard vehicles.
b) Increased yard vehicle PM schedule.
c) Daily documented vehicle and equipment inspections.
d) Documented policy for reporting defects (minor, major, out of service).
e) Set industry standards for brakes.
f) Brakes should be subject to inspection at any time.
g) Enforcement yard safety "blitz" (shunt truck blitz) with focus on brakes.
h) JHSC in the workplaces conducting internal blitzes (spot checks) to ensure enforcement.
i) Training for operators to ensure they know what they should be looking for, including equipment specific training.
j) Standardized training for shunt drivers. Include anyone operating within the distribution centre/operating hub that have large vehicles.

4. **Category 1:** Culture
   Primary Causal Factor 1: Attitude (link to fishbone diagram)
   a) Senior management should be educated on change management (how to effectively implement change management strategies and get buy-in from staff).
   b) Confront management and educate them that the "that's the way we've always done it" approach is not an appropriate answer.
   c) Work with management to change attitudes and behaviors moving forward.
   d) Educate management (carriers) about why they need to listen to drivers more.
   e) Work on driver retention strategies to educate carriers that it is more cost effective to keep an existing driver than to hire a new one. (Will assist with the perceived driver shortage).
   f) Implement change management programs to help with resistance and fear of change (from all levels). Adapting training to help reduce the fear of change (i.e. when technology changes) will help to eliminate/reduce the fear. Ensure that you are explaining "why" the change is happening (provide the reasoning) with real life examples.
   g) Ensure that there is follow-through and consequences for all staff if any (new) policies are not followed.
   h) Work with government and industry associations to promote trucking as a professional occupation with appropriate wages. Continue to campaign for trucking.
   i) Establish minimum wages for truckers and work to have it seen as a professional occupation as part of skilled trade recognition.
   j) Have companies review the role of, and invest in, safety and compliance because they are respected by the drivers.
   k) Companies should work to find ways to make safety and compliance cost effective while still getting the job done.
   l) Recognize driving as a skilled trade with minimum wage requirements– Red Seal
   m) Have industry association's work with municipalities to raise the profile of trucking through media campaigns.
   n) Ensure you have the right people in the right roles by providing detailed job descriptions and management training for people in those roles.
   o) Have a requirement for proper licensing for shunt truck drivers that is more than just a day course. (Proper training for yard drivers)
   p) Work on regulations for minimum freight rates so companies can afford to pay appropriate wages for quality people, invest in training programs and invest in upgrades to facilities (i.e. yard lighting).
   q) Front line staff need to lead by example. (As an industry, we are good as our weakest link.)
   r) Standardized/regulated training for drivers and companies.

s) Utilizing campaigns to educate public on what the supply chain is all about. (I.e. Free shipping doesn't exist; there is always a cost associated to it).
t) Publish the trucking industry and fatality statistics in more publications in order to show workplaces that this is real problem and will help to get the word out. Use media and associations for support trucking campaigns. (Top 10 most dangerous jobs in North America).
u) Start a campaign or program to combat racism in the industry.
v) Increased enforcement on Driver Inc. /Non-compliant carriers and driver services. This is having a negative impact on the industry.
w) Increased education and awareness (social media) on what Driver Inc. is (reality vs perception)
x) Educate drivers on the real impact (and lack of safety) associated with Driver Inc.
y) Education programs for new (immigrant drivers) drivers. Educate them on their rights.
z) Culture changes need to come from the top. Management/owners need to show that they believe in safety and they want their drivers to come home safe.
aa) Educate management that it costs more to do things illegally/the wrong way than to do it right way. To validate the cost of safety.
bb) Education on the true cost of dollar one.
cc) Companies need to stop dealing with shippers that do not provide a safe environment.
dd) Work on industry standards and regulations.
ee) Changes to MELT to include enhancements or changes with a greater emphasis on yard safety (MELT includes general yard safety but only as a starting point for entry level training).
ff) Carriers need to incorporate/implement proper onboarding programs for drivers. Train them to be professional drivers through a finishing program.
gg) Specific yard personnel needed to be responsible for all yard safety issues.
hh) Management commitment to positive attitude towards all employees.

Category 2: Processes
Primary Causal Factor 2: Unclear or lack of industry training standards and measures
(link to fishbone diagram)

a) Requirement for yearly continuing education requirement for drivers.
b) Increased focus on training for all staff (i.e. dock, office staff, etc.).
c) Recognize commercial driving as a skilled trade (e.g. Red Seal).
d) Regulations for freight rates with established minimums.
e) Mandated specific refresher training (i.e. Defensive Driving).
f) Increased frequency of driver testing and evaluation.
g) Yard activity road tests.
h) Mandated ride alongs with drivers (i.e. road test) every 3 years.

i) Use of onboard cameras to monitor drivers.
j) Use of onboard cameras as a training tool.
k) Advocate for certified driver instructors.
l) Advocate for driver examiners to be fully licensed drivers.
m) Insurance company requirement for ride alongs.
n) Insurance rebates for having regular/scheduled ride alongs.
o) WSIB paid delivery of yard safety courses.
p) Promotion of incentive programs targeting yard safety (i.e. WSIB Health and Safety Excellence Program).
q) Policy manual should be developed by team including owner/senior management, managers, safety, driver representative and insurance (where possible).
r) Mandatory driver safety meetings twice/year.
s) Ongoing refresher training.

Category 3: Culture

Primary Causal Factor 3: Unclear or lack of yard safety rules, policies and procedures (link to fishbone diagram)

a) Implement workplace committees to develop rules and procedures for the yard (enforced by the JHSC and includes managers, workers, drivers, etc.). Driver representation on the committee should be an active (not former) driver.
b) Facilitate a full review of the yard procedures.
c) Review yard procedures annually.
d) Update and communicate yard policy changes as they are made.
e) Clarification of the roles and responsibilities of anyone in the yard (drivers, shippers, receivers, etc.).
f) Implementation of policies regardless of where you are in the yard (i.e. use of safety shoes, glasses, high visibility safety apparel etc.).
g) Clear and documented reporting procedures and identified/enforced consequences (i.e. near misses).
h) Complete a full yard review and develop a traffic management plan.
i) Provide guidance and templates for a workplace specific traffic management plan. Including all protocols and measures (i.e. traffic flow, flow of pedestrians, signage etc.).
j) Guide (i.e. industry resource document) to support the creation of the traffic management plan to support employers.
k) Establish minimum standards to which all carriers need to adhere.
l) Documented procedures for anyone entering the yard (i.e. Contractors).
m) Create orientation videos that must be reviewed prior to entering the facility (driver specific, contractor specific etc.). Send digitally in advance.

n) Create regulations for the creation of a traffic management plan (review 2018 plans and refocus) Reference: https://www.ontariocanada.com/registry/view.do?postingId=26446&language=en)
o) Clear signage visible to anyone when entering the yard (large, well lit, reflective).
p) SOP's for all different tasks that contribute to yard safety (I.e. reversing, shunt drivers, loading and unloading, etc.).
q) Participation in WSIB Health and Safety Excellence Program.
r) Sharing of real life yard safety examples and stories with industry and media.

5. **Category:** People
Primary Causal Factor: Distractions (link to fishbone diagram)
a) Mandatory mental health first aid training for dispatchers (i.e. recognizing the signs and symptoms).
a) EAP program for drivers.
b) Mandatory mental health first aid training for managers and trainers.
c) Policy and procedures for no cell phone use in the yard (driving or not).
d) Enforcement of policy (no cell phone use while driving).
e) Use technology to limit cell phone use when driving.
f) Cell phone use signage and enforcement when entering yard.
g) Distracted driving policy for all staff.
h) Technology to limit calls when vehicle is in motion or in a geo-fenced area (i.e. yard).
i) Position of vehicle tablets so that the driver is not distracted when viewing.
j) Notifications to dispatch if technology is used when vehicle is in motion.
k) Allow drivers access for washrooms (no washroom use can be a distraction).
l) Provide drivers with a place/area to park vehicle while accessing the washroom.
m) Enforce yard policies so they are applicable to all workers in the yard (i.e. including pedestrians, other staff, etc.).
n) Development of a focus specific module as part of distracted driving training.

6. **Category 1:** Tools and Machines
Primary Causal Factor 1: Yard vehicle maintenance (link to fishbone diagram)
a) Shunt trucks should have age limits similar to road vehicles (required safety and certification).
b) Proper/increased maintenance of shunt vehicles.
c) Shunt trucks should be included in PM schedule/review (i.e. semi-annual, annual, etc.).
d) Signage identifying yard activities (snow clearing equipment in use etc.).
e) Proper lighting on snow cleaning equipment for easy identification.
f) Implement standards (HTA, OHSA etc.) for all yard vehicles to ensure they meet basic safety measures (lighting, brakes etc.).
g) Yard equipment should meet safety standards (similar to road vehicles).

h) Documented pre-trip inspections on yard vehicles daily or with every driver change.
i) Shunt truck operator qualification and license criteria.
j) Customized inspections specific to each unique piece of equipment (i.e. Day cab vs long-haul).
k) Internal enforcement/accountability to ensure that pre-trips and inspections completed.
l) Use of technology with image capabilities to enforce inspections.
m) Internal inspections with detailed inspection reports (detailed summary) based on manufacturers' recommendations.
n) Sleep apnea testing for drivers.
o) Licensing and ongoing re-licensing for shunt truck drivers.
p) Documented shunt truck maintenance schedule.

Category 2: Culture
Primary Causal Factor 2: Language Barriers and Communication (link to fishbone diagram)

a) Training for all employees about yard safety.
b) Training must be completed in the official languages of Canada (training in other languages could lose impact in translation).
c) Standardize signage used in yards with pictograms or symbols.
d) Develop clear SOP's and ensure they are communicated to all employees.
e) Clear and visible signage in the yard to direct traffic flow and speed.
f) In person training for certain training programs such as TDG, PDIC…
g) Final test/exam must be completed in person once on-line training is completed.
h) Eliminate other license testing languages, except for two official languages of Canada.
i) Open communication lines with drivers, management and operations.
j) Increased communication with company and customer to ensure that yard safety is a priority for drivers while they are delivering.

Category 3: People
Primary Causal Factor 3: Complacency (link to fishbone diagram)

a) ELD will allow better oversight for those shippers/consignees who are delaying the process causing drivers to rush.
b) Using telematics to monitor driver behavior such as speeding/hard braking.
c) Proper training to ensure the message – that short cuts are not accepted is clear, and the dangers they present to everyone's health and safety.
d) Establish and consistently enforce clear processes and procedures for workers.
e) Have pay rate based on an hourly rate, not by mileage or percentage.
f) Using Companies in-yard camera system to monitor yard safety & enforcement.
g) Management to work with customers to ensure they understand HOS and impact to road safety.
h) Regular Training such as PDIC.

i) Industry needs to adjust "just in time" philosophy because drivers feel pressure and rushed.
j) Management/operations should communicate realistic expectations of timing to drivers

7. **Category:** People
Primary Causal Factor: Impairment (link to fishbone diagram)
a) Political will to stand up for the well-being of the industry (e.g. skill classification, support for the driver to attend to his well-being, work life balance, awareness/advertising for the trucking industry).
b) Open communication lines with driver.
c) Recognize commercial driving as a skilled trade (E.g. Red Seal).
d) Have a clear alcohol policy and provide testing at the company facilities Encourage/motivate driver to learn and gain knowledge and understanding of health; practical strategies for the driver to help maintain their health.
e) Training front line staff and supervisors on Drug & Alcohol signs.
f) U.S. Drug and Alcohol testing rules should apply to Canadian drivers (with random testing).
g) Screening for factors that contribute to fatigue (e.g. sleep apnea, medication, alcohol).
h) Supports for workers seeking assistance to resolve issues – counselling, medical help, etc., through benefit programs and paid time from work for treatment.
i) Better training on Hours of Service rules (I.e., most training concentrates on the legal requirements, but does not deal with recognizing fatigue and how to combat it, just because your legal does not mean you are not tired and drowsy).
j) Developing a fit-to-work policy and using tools to measure fit-to-work.
k) Provide info on lifestyle factors that can lead to fatigue impairment.
l) Transport Canada to mandate Drug and Alcohol testing for commercial drivers.
m) Employee Assistance Program (EAP); hotline for the driver to reach anybody.
n) If a prescription medicine is known to impair, do not work while on this medication.
o) Consult with physician about job requirements when things are being prescribed.
p) Promote and support mental health and wellness programs.
q) U.S. Drug and Alcohol testing rules should apply to Canadian drivers (with random testing) Incorporate health conversation as part of driver performance.
r) Improve recognition training for managers and supervisors.

8. **Category 1:** People
Primary Causal Factor 1: Health concerns (link to fishbone diagram)
Health conditions/unhealthy lifestyle:
a) Provide drivers with access to washrooms.

b) Incorporate health checks at the start of the day to make sure drivers are ok.
c) Political will to stand up for the well-being of the industry (e.g., skill classification, support for the driver to attend to his well-being, work life balance, awareness/advertising for the trucking industry).
d) Recognize commercial driving as a skilled trade (e.g. Red Seal).
e) Connect with research centres (e.g., Toronto Rehab) and other experts.
f) Having a true understanding of health concerns and being able to address them.
g) Budget time to share health concerns with driver.
h) Employee Assistance Program (EAP); hotline for the driver to reach anybody as required.
i) Encourage/motivate driver to learn/gain knowledge and understanding of health and diet; practical strategies for the driver to help maintain their health (e.g., engage local programs from places like diabetes associations and other health organizations, walk or do isometric exercises during rest breaks, pack healthy lunches rather than eating out).
j) Incorporate health conversation as part of a driver's performance.
k) Opening up communication lines with driver (actual conversations), not telling them to "read a book".
l) Encourage company to be more open to suggestions from experts.
m) Allow time for drivers to attend to their medical needs and get proper breaks and meals on the road.
n) Financial support/benefit plan for drivers with medical conditions.
o) Provide drivers with technology to monitor health in real-time (e.g. Fitbit, etc.) to help them get interested in good health.
p) Incentivize: Pay hourly to exercise. No exercise; no pay (benefits, points etc.).
q) Educate companies on prevention/safety return on investment (e.g. Research).
r) Incentivize keeping good health for all kinds of drivers (independent owner-operator, company).
s) Voluntary screening for cognitive testing? Part of job task analysis? Fit for duty?
t) Address stigma of sleep apnea as a system.
u) Connect impacts of fatigue with other major health conditions.
v) Develop fact sheets or information sheets for drivers to take to physician about habits and signs, symptoms and risks associated with fatigue and driver occupation to assist with screening or early detection.
w) Consider mandatory medical tests for certain classes of licenses and prescribed intervals.
x) Regulators should consider healthy options and proper medical clinics at truck stops.
y) Provide online healthy lifestyle support tools for staff.
z) Email healthy lifestyle communications/reminders for all staff.
aa) Campaign to educate general public on the driver washroom issue.
bb) Provide driver only washrooms.

Work-life balance:

a) No political will to stand up for the well-being of the industry (e.g., skill classification, support for the driver to attend to his well-being, work-life balance, awareness/advertising for the trucking industry).
b) Recognize commercial driving as a skilled trade (e.g. Red Seal).
c) Promote and support mental health and wellness programs.
d) Greater enforcement to prevent the "Driver Inc." model.
e) Compassionate family support (e.g., during any emergency) policy or best practice.
f) Artificial Intelligence (new technology) solutions to scheduling.
g) Scheduling consistency: Knowing your driver's roster, long-haul, etc.
h) Personal paid flex-days.
i) Shift management.
j) Pay driver an hourly rate and not by mileage.
k) Determine reporting/disclosing criteria for second job and or volunteer activities that could impact rest time.
l) Education for family members on impact of rest/break and off duty hours/activities on drivers.
m) Education for drivers on quality of rest.
n) Provide vehicles that have access to Wi-Fi and technology, such as Face Time etc., to connect with family while away from home.
o) Create awareness and workplace culture that supports work life balance, time off, rest, etc.
p) Do not overschedule/overbook loads so that you have options to allow drivers time off.
q) Consider having some local drivers to do pickups and deliveries for highway drivers, allowing highway drivers more home time.
r) Develop plans that allow drivers to be able to take time for personal appointments, commitments self-cate etc. and not have to miss several days' work.
s) Be honest with drivers about delivery times or expected issues so that they can plan accordingly.
t) Develop financial planning training sessions and connect workers with financial planners so that they can learn to live within their means and plan for the future. These steps help drivers have the funds to take time off or slow down when they need to.
u) Workers should notify the company in advance when they know they may need time off to allow time for planning.
v) Workers should understand that driving for a living is a lifestyle choice and work to plan things/adjust as necessary.

Stress:

a) Political will to stand up for the well-being of the industry (e.g., skill classification, support for the driver to attend to his well-being, work life balance, awareness/advertising for the trucking industry).

b) Recognize commercial driving as a skilled trade (e.g., Red Seal).
c) Greater enforcement to prevent the “Driver Inc.” model.
d) Promote and support mental health and wellness programs.
e) Revisit aspects of deregulation that may compromise driver safety.
f) Education and awareness on stress (e.g., identify the stressors).
g) Allow drivers time to deal with the stress.
h) Improve the pay structure.
i) Promotion & education of EAP services in workplaces.
j) Develop a stress release travel kit, package (healthy trucker).
k) Plan routes in a manner that does not put undue stress on drivers.
l) Figure out how to build the relationship between dispatch and drivers to alleviate the “us vs. them” mentality.
m) Communicate with drivers and have contingency plans for drivers to be able to take time when necessary. Have a way for drivers to be able to privately notify the company of personal stressors so work can be accommodated where necessary.
n) Develop financial planning training sessions and connect workers with financial planners so that they can learn to live within their means and plan for the future. These steps help drivers have the funds to take time off or slow down when they need to.
o) Workers should not make promises at home that work may interfere with. For example, if they are working that day, they should not make commitments close to the time they expect to get back, as there may be delays, breakdowns or other issues that may arise and place undue stress upon them.
p) Workers should have a financial plan and not live beyond their means so that they can afford time off when needed.
q) Workers should focus on exercise, such as having a regular exercise routine helps to alleviate stress (to provide an outlet when you experience stress).
r) Stress management training.

Mental health:

a) Political will to stand up for the well-being of the industry as a whole (e.g., skill classification, support for the driver to attend to his well-being, work life balance, awareness/advertising for the trucking industry).
b) Recognize commercial driving as a skilled trade (e.g., Red Seal).
c) Greater enforcement to prevent the “Driver Inc.” model.
d) Educate workers on EAP and have EAP plans available for workers. Hotline for the driver to reach anybody as required.
e) Training to recognize fatigue signs (include in M.E.L.T).
f) Companies provide benefits which cover mental health issues.
g) Run awareness campaigns in the company to help erase the stigma of mental health, so people aren’t afraid to deal with issues.
h) Provide counselling for drivers/staff involved in traumatic incidents.

i) Workers need to seek help early and have someone to talk to. Spending the amount of "alone time" that drivers do could affect their mental health.
j) Have check-in procedures with drivers and codes and/or safe words or messages to trigger conversations.
k) Identify an ambassador or advocate for driver mental health.
l) Work on scheduling through Artificial Intelligence solutions to reduce stress and increase predictability in work hours.
m) Fleets have active promotion and support of healthy habits and choices by drivers, including food and physical exercise.
n) Promote sense of belonging/reduce isolation; drivers should feel sense of proprietorship or power to influence, within the company and with clients.
o) Organize truly beneficial external relationships (e.g., obtaining better rates at Credit Unions, Costco memberships, etc.) to reduce stress arising from financial issues.
p) Recognize when your head isn't in the game. Know when to say no.
q) Be assertive. You (driver) are the "captain of the ship" and in complete control of your safety decisions.
r) Don't succumb to a pushy dispatcher/manager who is not in your shoes.
s) Seek help. Don't let a bad feeling fester.
t) Always put your health first and don't be bullied by anyone.
u) Connect with research centres (e.g. Toronto Rehab) and other experts.
v) Encourage/motivate driver to learn/gain knowledge and understanding of mental health; practical strategies for the driver to help maintain their mental health.
w) Incorporate health conversation as part of driver performance.
x) Opening up communication lines with driver (actual conversations), not telling them to "read a book".
y) Encourage company to open up to suggestions from the experts.
z) Time for driver to attend to medical needs.
aa) Providing drivers with technology to monitor health in real-time (e.g. Fitbit, etc.) to help them get interested in good health.
bb) Mental health training for operations staff.
cc) Hire specific individual to address mental health and lifestyle with staff.

Category 2: Environment
Primary Causal Factor 2: Time (link to fishbone diagram)

a) Better scheduling of arrivals/departures to spread out the number of trucks in the yard.
b) Licensing of shunt drivers.
c) Remove any financial penalties or incentives for timing – instead reward safe work.
d) Increased communication with drivers to coordinate and plan more effectively to reduced perception of rushing.

e) Message from senior management- Support starts at the top.
f) Industry's needs to adjust to "just-in-time" not effective with too much pressure to cut corners. Add time into "Just in Time" deliveries so that drivers don't feel they have to rush. Make sure the true expectations and timing are communicated to and known by the driver.
g) Drivers communicate early to dispatch and provide realistic arrival time to allow for any yard planning.
h) Create awareness and workplace culture that supports work life balance, time off, rest, etc.

9. **Category:** People
Primary Causal Factor: People in the yard (link to fishbone diagram)
a) Properly placed lighting.
b) Limit access to the yard.
c) Develop a yard master plan that involves all departments within the company to ensure. the design is workable and to ensure a cohesive plan
d) Lighting.
e) Separate any vehicular traffic from pedestrian traffic with barriers.
f) High visibility safety apparel.
g) Ensure that those who do not follow the rules are reported, retrained and disciplined if necessary.
h) Implement safety vest policy.
i) Enforce yard speed to 15 KM or less.
j) Walkways.
k) Proper yard lighting to increase visibility.
l) Increased signage in the yard applicable to everyone (drivers, staff, 3rd party etc.).
m) Implement policy for use of a guide/signaler whenever when in the yard.

10. **Category 1:** Processes

Primary Causal Factor 1: Yard maintenance & congestion (link to fishbone diagram)

a) Required traffic management plan (space, flow, layout etc.).
b) Yard planning process. Plan for busy peaks, congestion problems, etc.
c) Asset management. Understanding space limitations in yard for trucks and trailers. Do not put yard into overcapacity.
d) Assign ownership/responsibility of the yard (maintenance, contacts, line markings, lights, etc.).
e) Planning for overflow of trailers (i.e. long weekends) with contingency plans
f) Enforcement of a yard plan with defined spots for trucks and trailers and dedicated spacing.
g) Daily yard check with defined actions.
h) Budgeting for yard maintenance.
i) Snow removal plan or program. Ensure that all of the supplies required are obtained in advance, contracts signed, storage of snow plows so they do not impact visibility, etc.
j) Planned lighting and yard maintenance inspections.
k) Use of reflective tape on solid surfaces (barriers and obstructions).
l) IHSA to create daily yard check inspection checklist for industry.
m) Dock area snow removal plan and policy.
n) Use of technology to manage all yard activities (arrivals, maintenance, etc.).
o) Use specific trailer drop points.
p) Use of painted pavement lines.
q) Provide drivers with yard maps (where applicable).

Category 2: Environment

Primary Causal Factor 2: Loading and securing loads (link to fishbone diagram)

a) Have yard personnel to watch over activities in the yard.
b) Recognize commercial driving as a skilled trade (e.g. Red Seal).
c) Proper yard lighting.
d) Cargo securement training for anyone who will be responsible for securing a load or checking on its securement.
e) Provide proper tools to ensure staff can safely comply with the regulations (i.e., for snow removal, provide a catwalk and a scraper for drivers/yard staff).
f) Install access walkways that trailers can pull alongside of, for access to loads on flatbed trailers for securing.
g) Use any rolling tarp system while securing loads on flatbeds to reduce the chance of falling off the side of the trailer.
h) Protection from wind.
i) Designate or have a designated area for loading/tarping.
j) Provide drivers with ice cleats.
k) Working at heights training.

l) Snow removal plan and policy.

Category 3: Culture
Primary Causal Factor 3: Organizational culture (link to fishbone diagram)

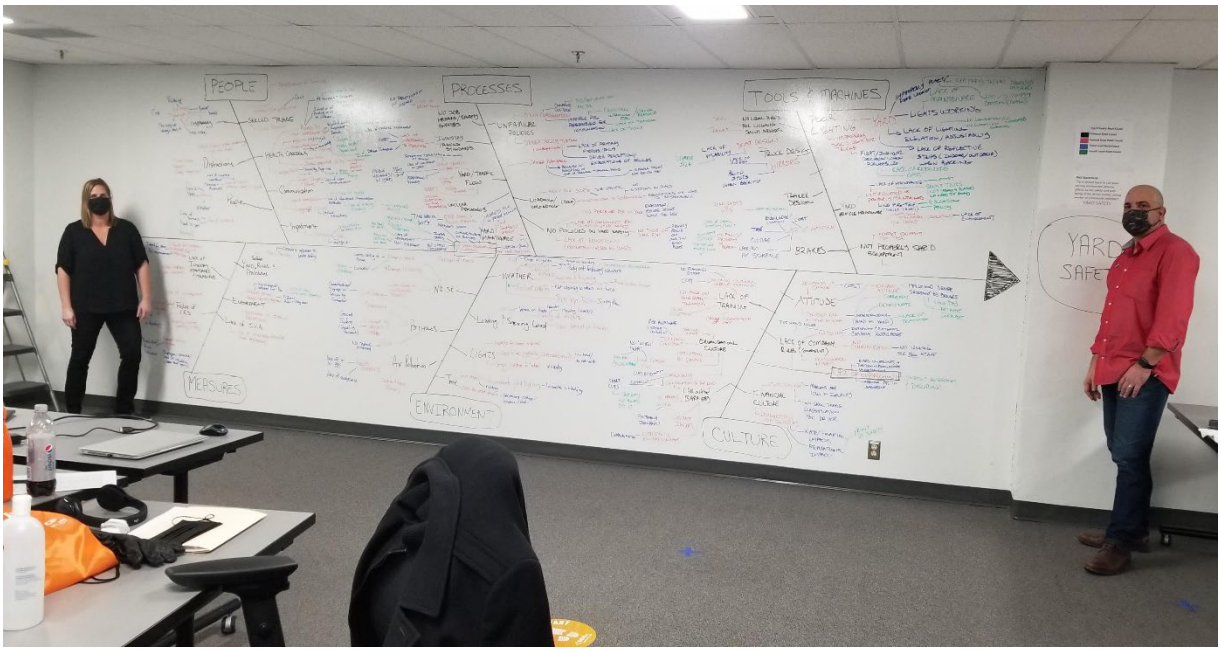
a) Yard Safety Training for all management.
b) Provide yearly training on yard rules.
c) Make safety a priority and ensure that the company is adhering to the safety standards and regulatory requirements – People first.
d) Operations and safety departments should be in sync on safety.
e) Promote and support mental health and wellness programs.
f) Review yard rules on an annual basis and change policy/guidelines as needed.
g) Seek input from workers and let them know that their ideas are important.
h) Ensure proper reporting procedures are in place and understand, and that non-compliance of these rules is followed up on.
i) Senior Management to be involved in Health & Safety programs.
j) Lead by example.
k) Communication and practice by senior management that the core values of the organization apply to everyone.
l) Make yard safety a priority and ensure company is adhering to the set standards.

Additionally discussed controls: As part of the controls and solutions portion of the workshop the following controls were discussed in relation to decreased visibility and weather. Although this did not factor into the top 10 it was decided to include the list for possible consideration in the future.

Category: Environment
Primary Causal Factor: Decreased visibility /weather (link to fishbone diagram)

a) Awareness training (i.e. Weather conditions, expected hazards, etc.).
b) Drivers need to be educated of the right to refuse unsafe work.
c) Engineering solutions (i.e. walls to block winds, location, direction, etc.).
d) Mandatory sweeping devices for trucks as they leave the yard, to clear snow and ice off the roof of the trailers.
e) Use of proper PPE and footwear to deal with the weather conditions of the yard.
f) Management support for contracts regarding snow removal from trailers.
g) Industry support/cooperation to install sweeping devices at offsite locations.
h) Documented snow removal plan.

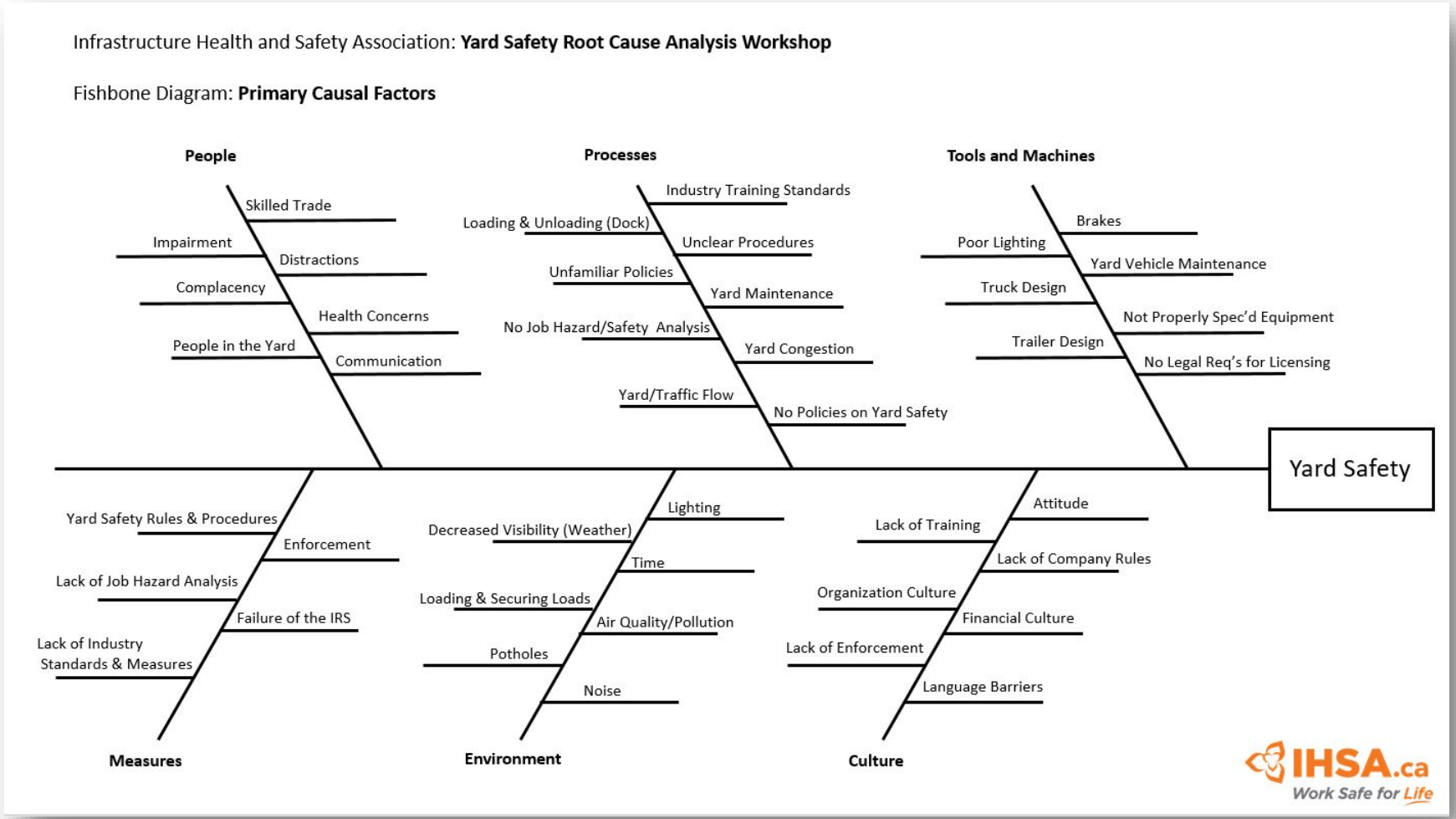
Full Fishbone Wall



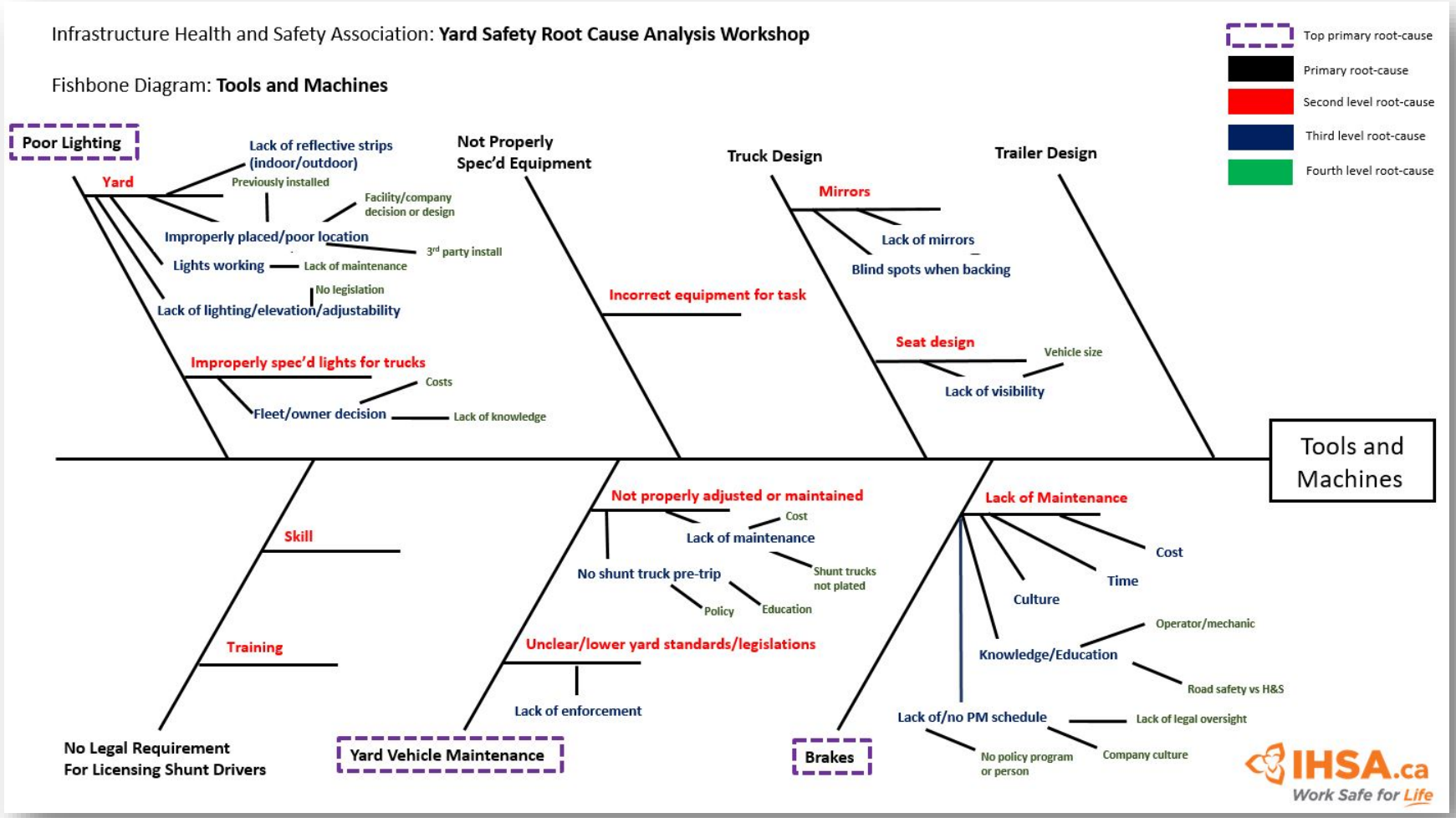
Full image of the completed Yard Safety Fishbone with Michelle Roberts (IHSA, Director, Stakeholder & Client Engagement) and Charlie Charalambous (IHSA, Coordinator, Research and Stakeholder & Public Relations)

Appendix 2: Fishbone diagrams

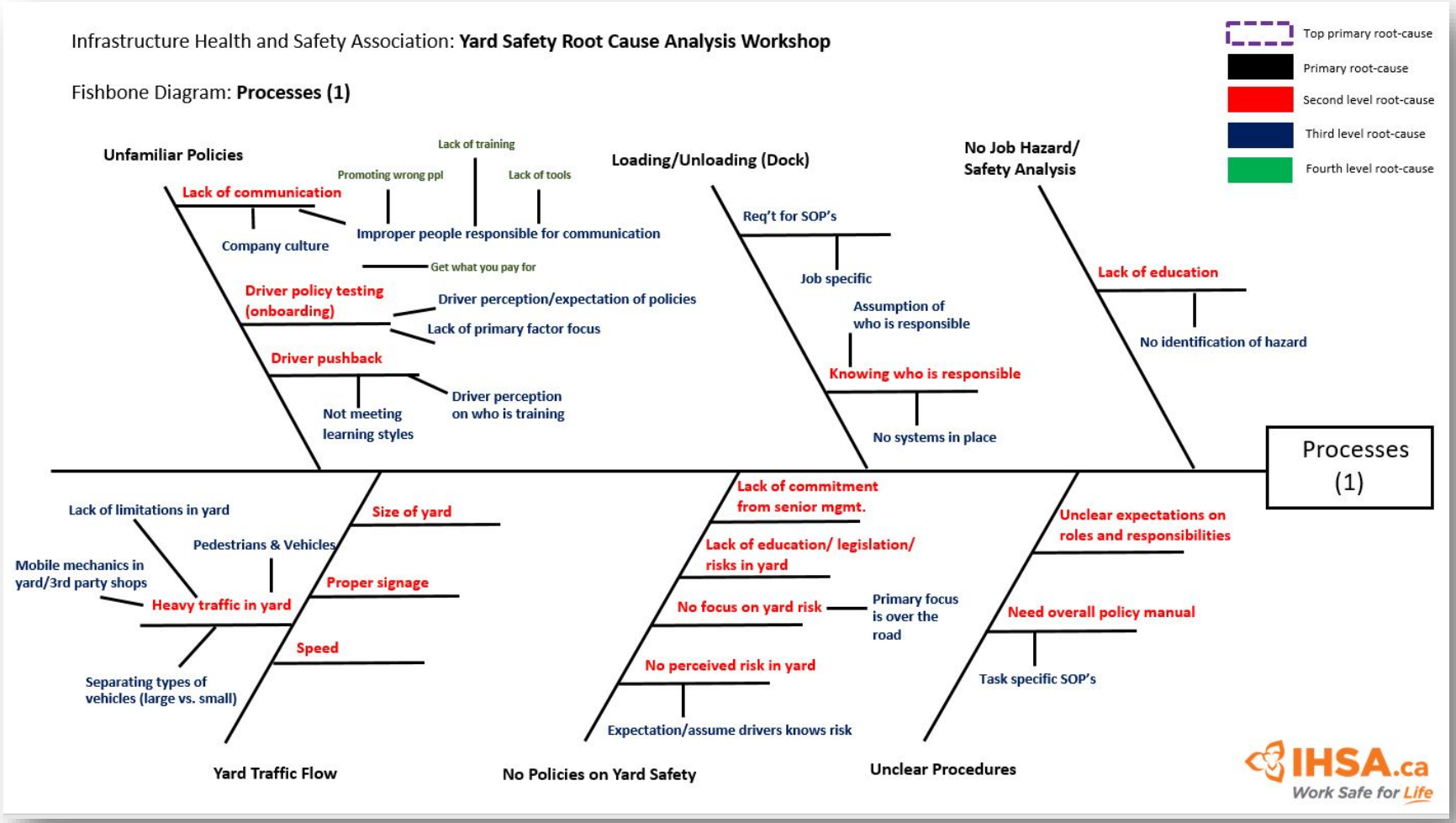
Full Fishbone Diagram



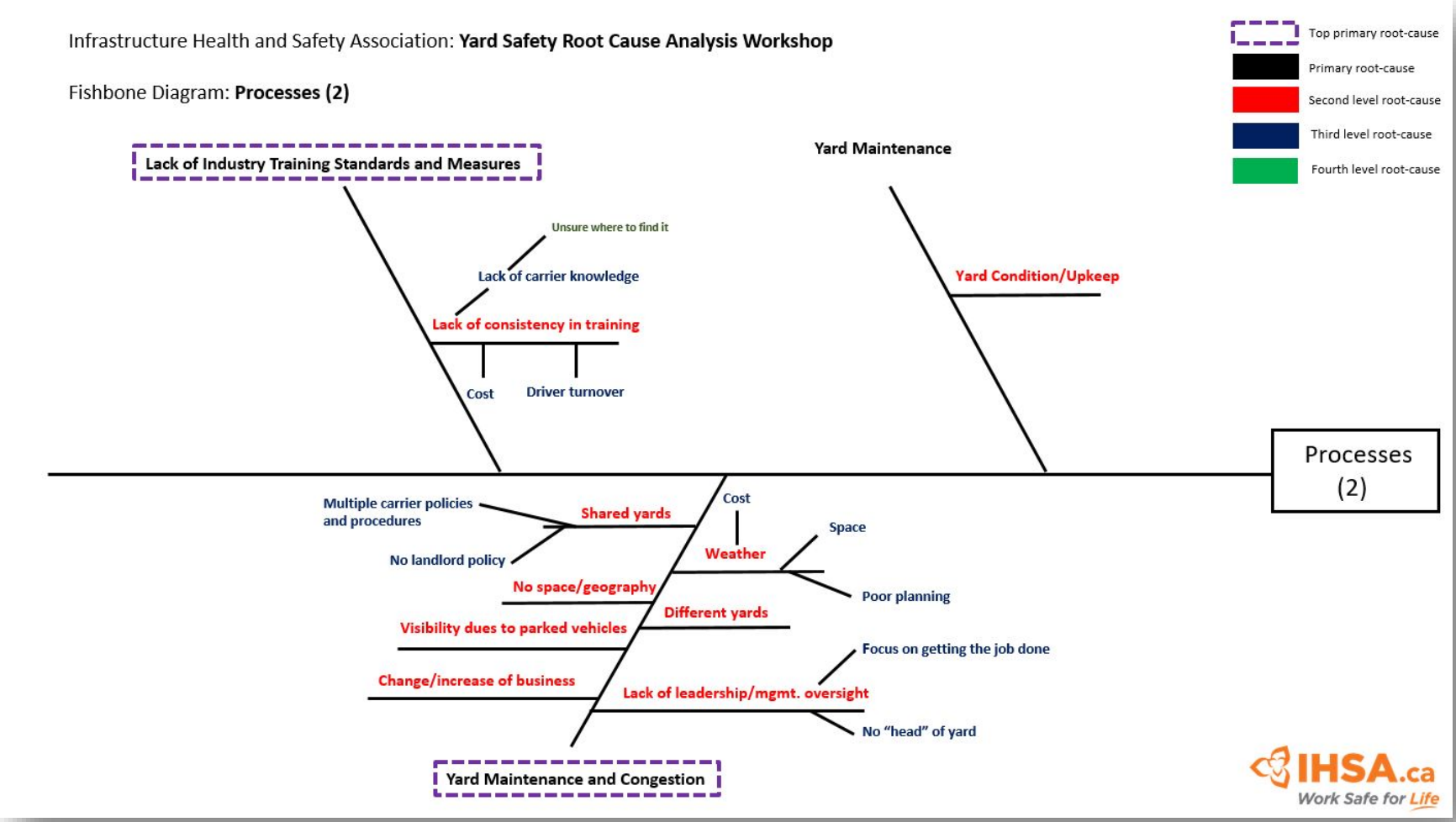
Fishbone Diagram: Tools and Machines



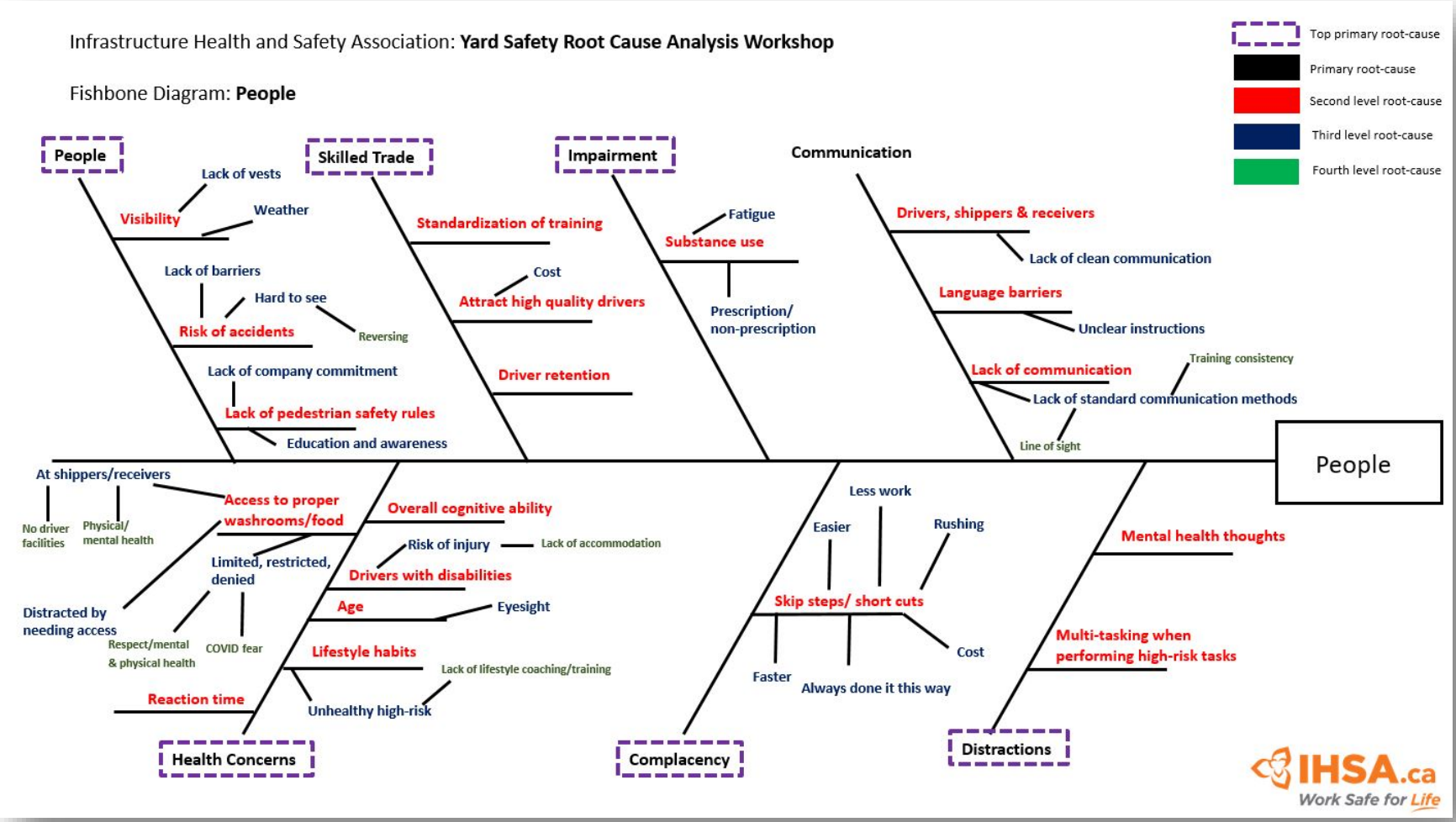
Fishbone Diagrams: Processes (1 of 2)



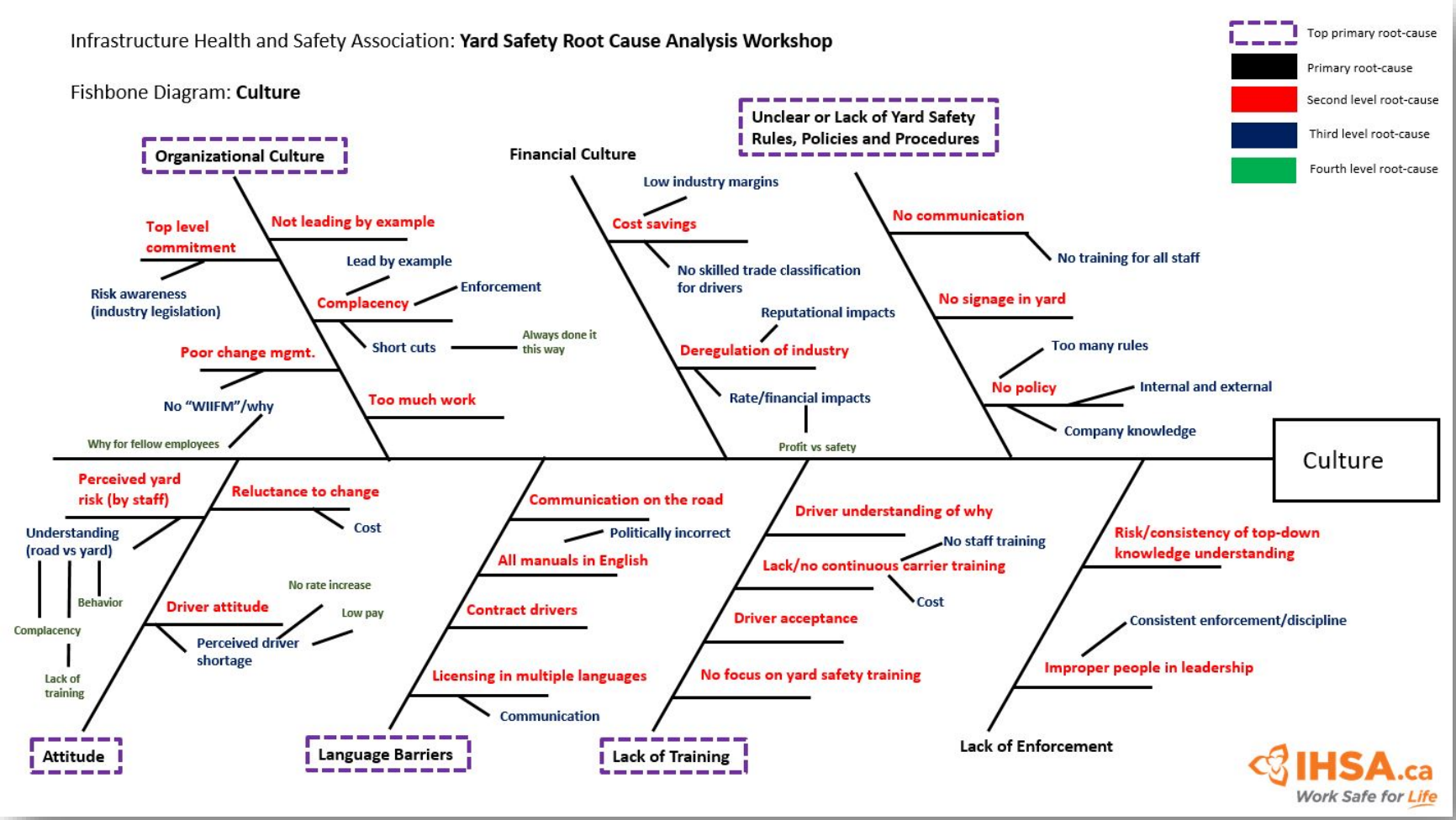
Fishbone Diagrams: Processes (2 of 2)



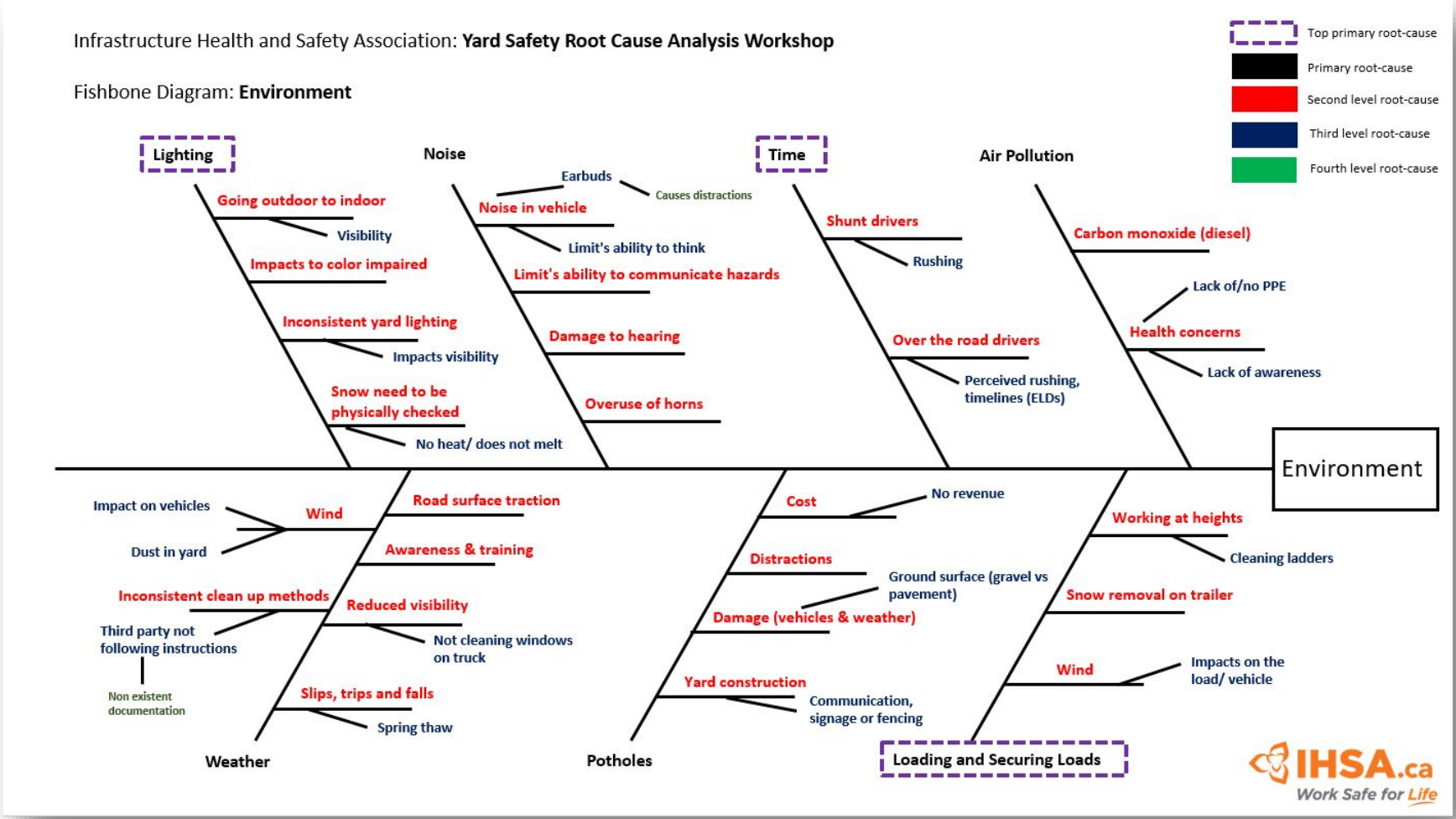
Fishbone Diagrams: People



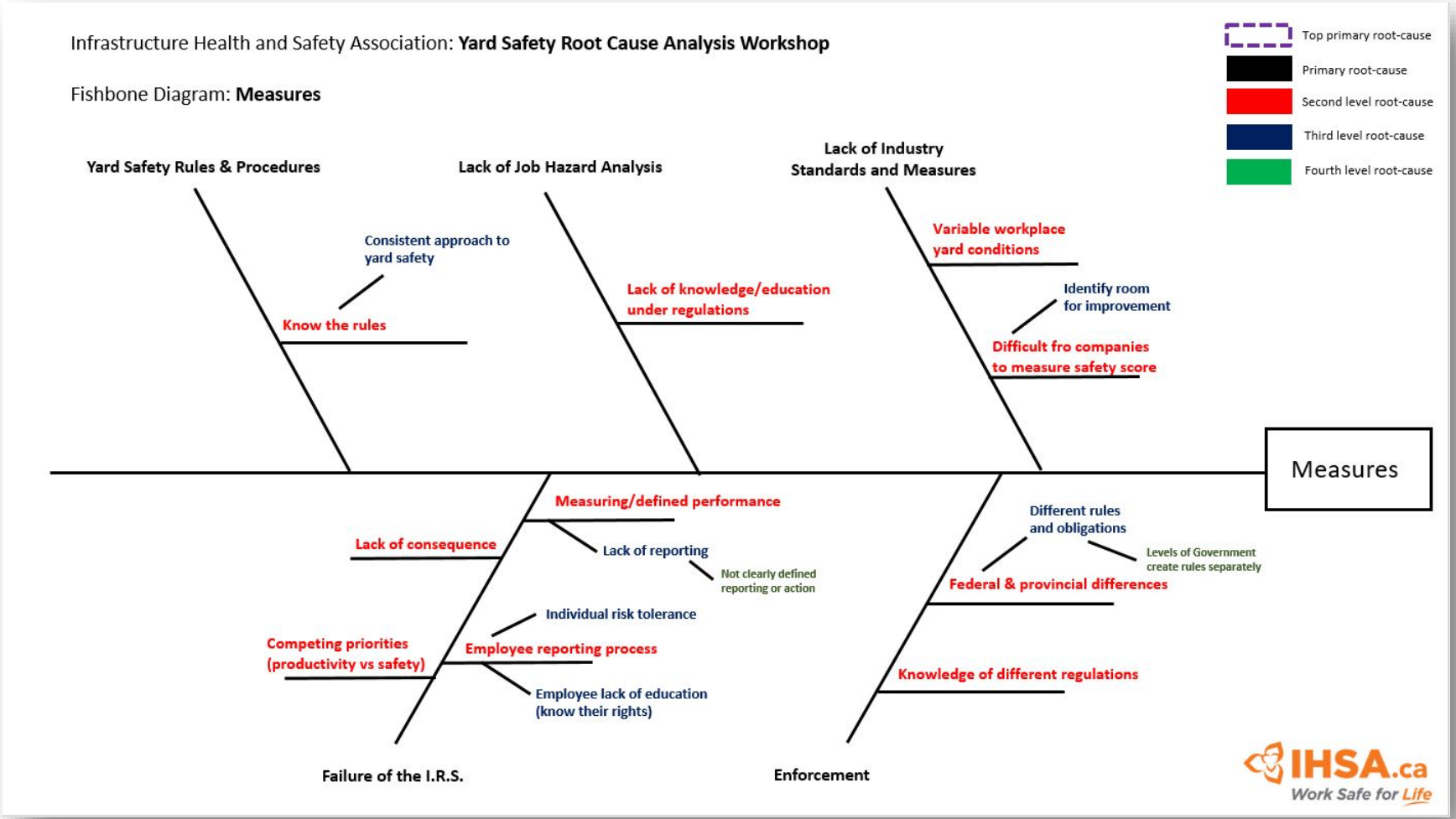
Fishbone Diagrams: Culture



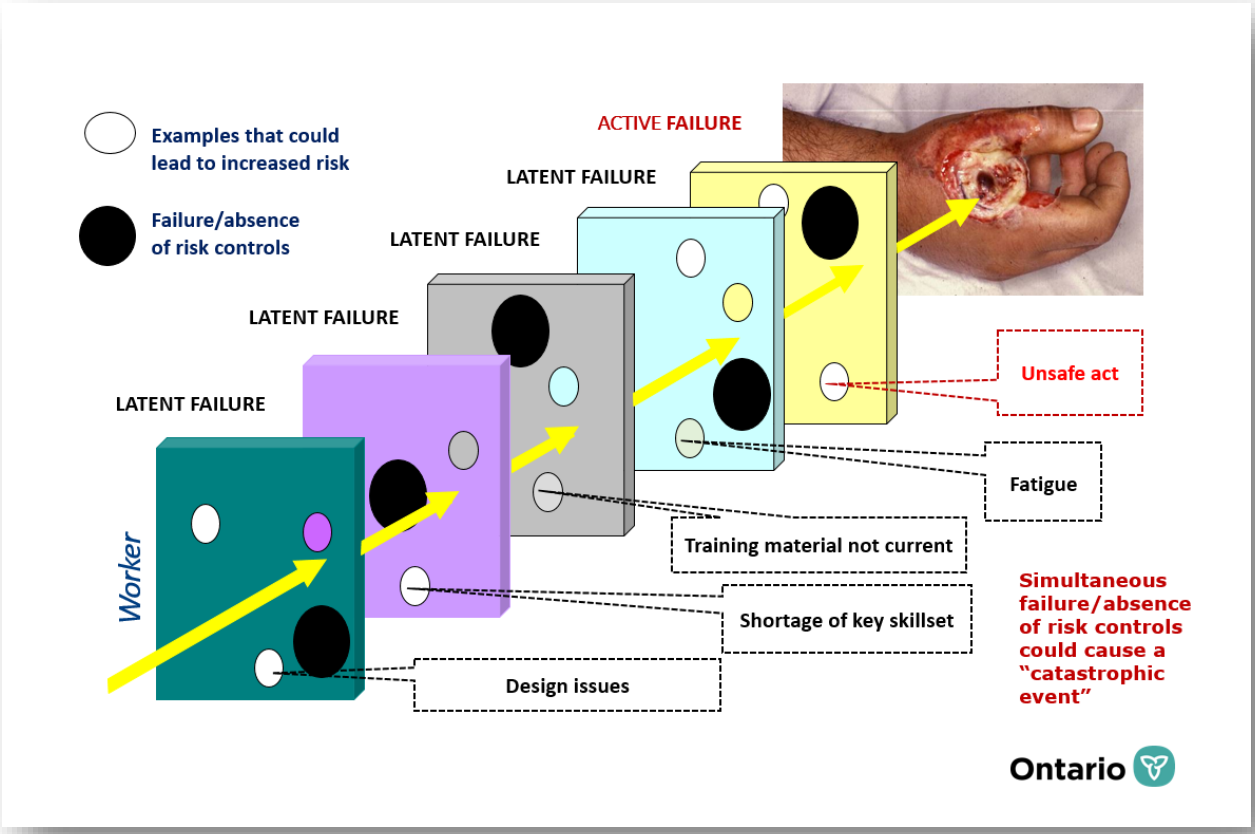
Fishbone Diagrams: Environment



Fishbone Diagrams: Measures



Appendix 3: The Swiss Cheese Model of Accident Causation



Pictured above: The "Swiss cheese" model of simultaneous failure or absence of risk controls that could cause a "catastrophic event." In this model, when there are latent failures in design, gaps in regulation, outdated training material, shortage of skillsets, and an unsafe act, all the "holes" in the system line-up to potentially cause a critical injury or fatality.