



Transportation
Safety Board
of Canada

Bureau de la sécurité
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Presentation to National Railway Day 2018 TSB Watchlist 2018

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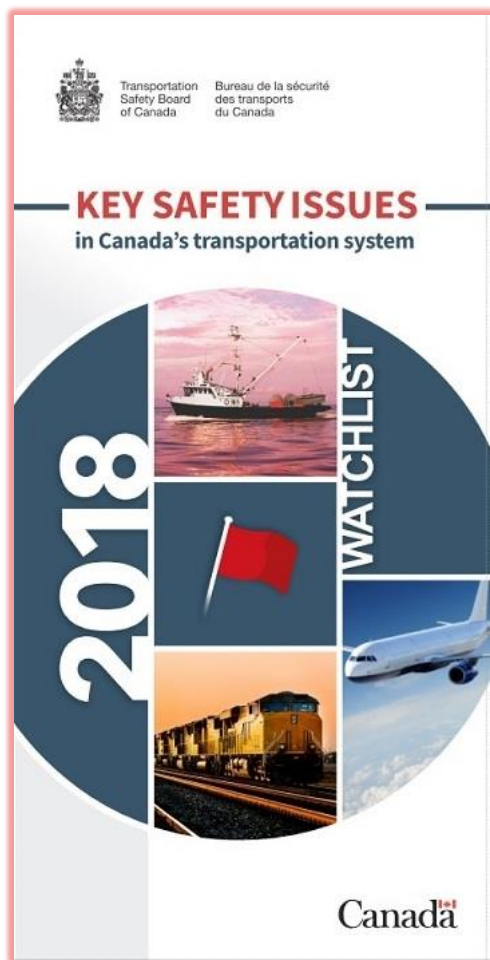
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Outline

- What's on Watchlist 2018?
- What has been removed and why?
- Watchlist 2018 Rail Issues
 - Following Signal Indications
 - Fatigue
 - Slow Progress
 - SMS
- Statistics of concern:
 - main-track collisions and derailments
 - crossing safety
- Next steps
- Emerging concerns



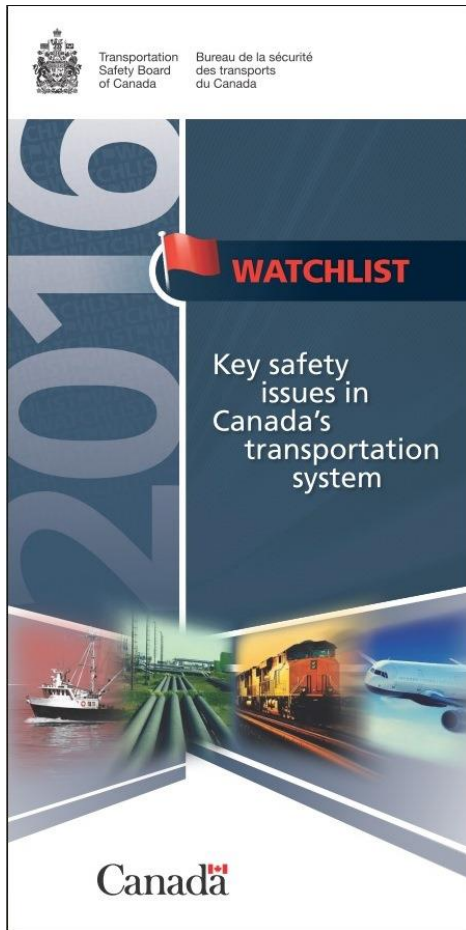
Watchlist 2018



- Fatigue management**
- Safety management and oversight**
- Slow progress on TSB recommendations**
- Following railway signals**
- Risk of collisions on runways**
- Runway overruns**
- Commercial fishing safety**



Watchlist 2018: rail issues progress and evolution



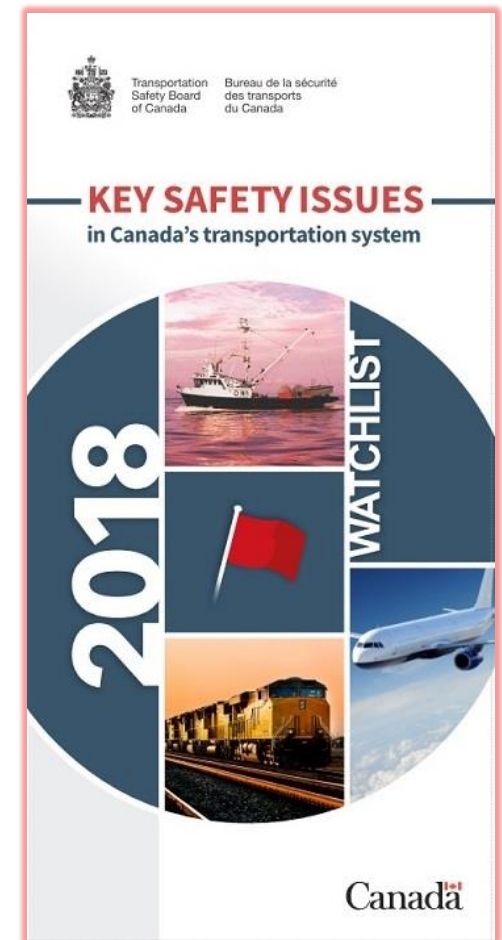
~~On-board voice and video recorders~~



~~Transport of flammable liquids~~



Fatigue management



Issue removed: Transportation of flammable liquids by rail



Transportation of flammable liquids (cont'd)

Action that was needed:

- Companies must conduct thorough route-planning and analysis, perform risk assessments, and ensure **effective risk-control measures**
- **Use more robust tank cars** when large amounts of flammable liquids are transported by rail

Progress since 2016:

- Risk-control measures taken include: track inspections before unit trains; moving crude in 20 car lots rather than unit trains
- More robust tank cars
 - In the first six months of 2018, less than 7% of crude was moving in the more vulnerable tank cars (i.e., DOT 111's, and unjacketed CP 1232's)
 - With Transport Canada's Protective Direction (September 2018), the timetable for eliminating the more vulnerable cars from crude oil moved up to 01 November 2018 (from April 2020) and for condensate to 01 January 2019 (from May 1 2025)



Transportation of flammable liquids (cont'd)

Recent accident history:

- Since the 2 CN accidents in Northern Ontario in February and March 2015, there has been 1 main track train accident and 1 non-main accident in Canada; in each case, small amounts of product were released.



Transportation of flammable liquids (cont'd)

We are still watching:

- **Are the 117 R and 117 J tank cars sufficiently robust?**
 - **Very** preliminary data on a **few cars** involved in recent accidents provides early indication that these cars perform better than the unjacketed CP 1232's. (The unjacketed CP1232's were similar in accident performance to the original DOT 111's.)
 - More accident data needed to reach a conclusion.
- **Volumes are increasing, which increases the potential risk.**



Transportation of flammable liquids (cont'd)

- **The overall main-track train accident rate (collisions and derailments) in Canada is increasing.**
- **Are the risk control measures effective?**
 - **TSB recommendation R17-01** "The Department of Transport conduct a study on the factors that increase the severity of the outcomes for derailments involving dangerous goods, identify appropriate mitigating strategies including train speeds for various train risk profiles and amend the *Rules Respecting Key Trains and Key Routes* accordingly."
 - **Current status: Satisfactory in Part**
- **The TSB will continue to investigate train accidents involving flammable liquids.**



Issue removed: On-board voice and video recorders



On-board voice and video recorders (cont'd)

Action that was needed:

- Recorders must be required on all lead locomotives operating on main track

Progress since 2016:

- Bill C-49 includes provisions requiring the installation of on-board recorders in the cab of lead locomotives for trains operating on the main track

TC still needs to get regulations in place for:

- Requirements to equip
- Requirements for how to use



On-board voice and video recorders (cont'd)

We are still watching:

- TSB will continue to monitor actions taken by Transport Canada and the rail industry
- TSB is committed to work with the regulator and the industry to ensure that:
 - LVVR is appropriately implemented; and
 - the regulatory framework balances enhancements to railway safety and the rights of workers.



Issue: Following signal indications



Following signal indications (continued)

Train crews do not consistently recognize and follow railway signals. This poses a risk of train collisions or derailments, which can have catastrophic consequences.

Outstanding recommendations

R00-04: Additional backup safety defences

R13-01: Physical fail-safe train controls

The rail system conundrum

Compared to Air and Marine, where the human piloting a vessel or an airplane is assisted by various systems that provide alarms and warnings, humans in the cab of a locomotive are the **last and only** line of defense for trains. Systems that have a single point of failure (the humans) are vulnerable.



Following signal indications (continued)

Action required:

- Additional physical safety defences must be implemented to ensure that signal indications governing operating speed or operating limits are consistently recognized and followed.

Any progress?

- Freight railways and the regulator remain firmly in “study mode”.
- Metrolinx planning to install computer-based train control on GO commuter trains.
- VIA Rail in early stages of testing new GPS-based technology



Issue: Fatigue (now multi-modal)

Fatigue poses a risk to the safety of freight train, marine, and air operations because of its potential to degrade several aspects of human performance.

Any progress?

- Still awaiting a comprehensive approach based on fatigue science

Action required:

- TC to develop a policy framework to manage fatigue based on a review of fatigue-management systems, fatigue science, and best practices.
- TC to work with industry, employee representatives, and fatigue-science specialists to develop a comprehensive approach to fatigue management.
- TC to complete amendments to Work/Rest Rules for Railway Operating Employees, 2011, based on fatigue science.



Issue: SMS and oversight (multi-modal)

Some transportation operators are not managing their safety risks effectively, and many companies are still not required to have formal safety management processes in place. Transport Canada's oversight and intervention are not always effective at changing unsafe operating practices.

Any progress?

- TC, RAC co-hosted an SMS workshop → sharing ideas, best practices
- TC helping companies implement SMS regulations
- TC completed at least one comprehensive audit for each federally regulated railway.

Action required:

- If you have an SMS, you must **demonstrate that it works**
 - **Risk assessments MUST be done when operating changes are contemplated, with a particular emphasis on how the change affects the people working in the system.**
- When TC intervenes, it must change unsafe operating practices.
- Recommendation R14-05 on SMS following Lac-Mégantic is still active.



Issue: Slow progress on TSB recommendations

Actions taken to fix long-standing, high-risk safety deficiencies in the air, marine, and rail modes of transportation have been too few and too slow.

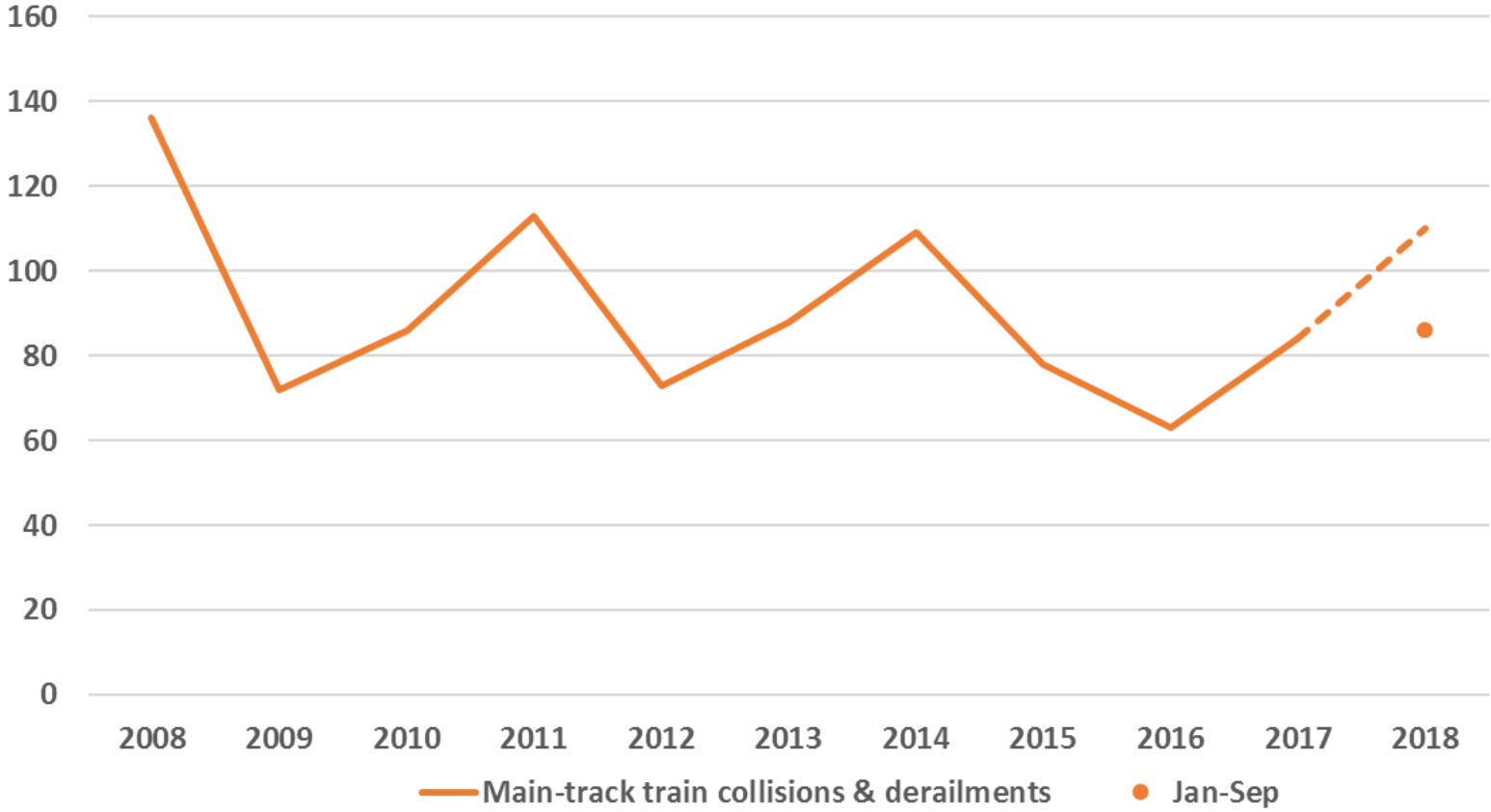
Mode	10-14 years	15-20 years	20+ years
Aviation	13	17	15
Marine	4	2	6
Rail	1	3	1
Total	18	22	22

Action required:

- Backlog of active recommendations must decrease
- Change agents must demonstrate that residual risk is reduced
- Government: improve processes to expedite action

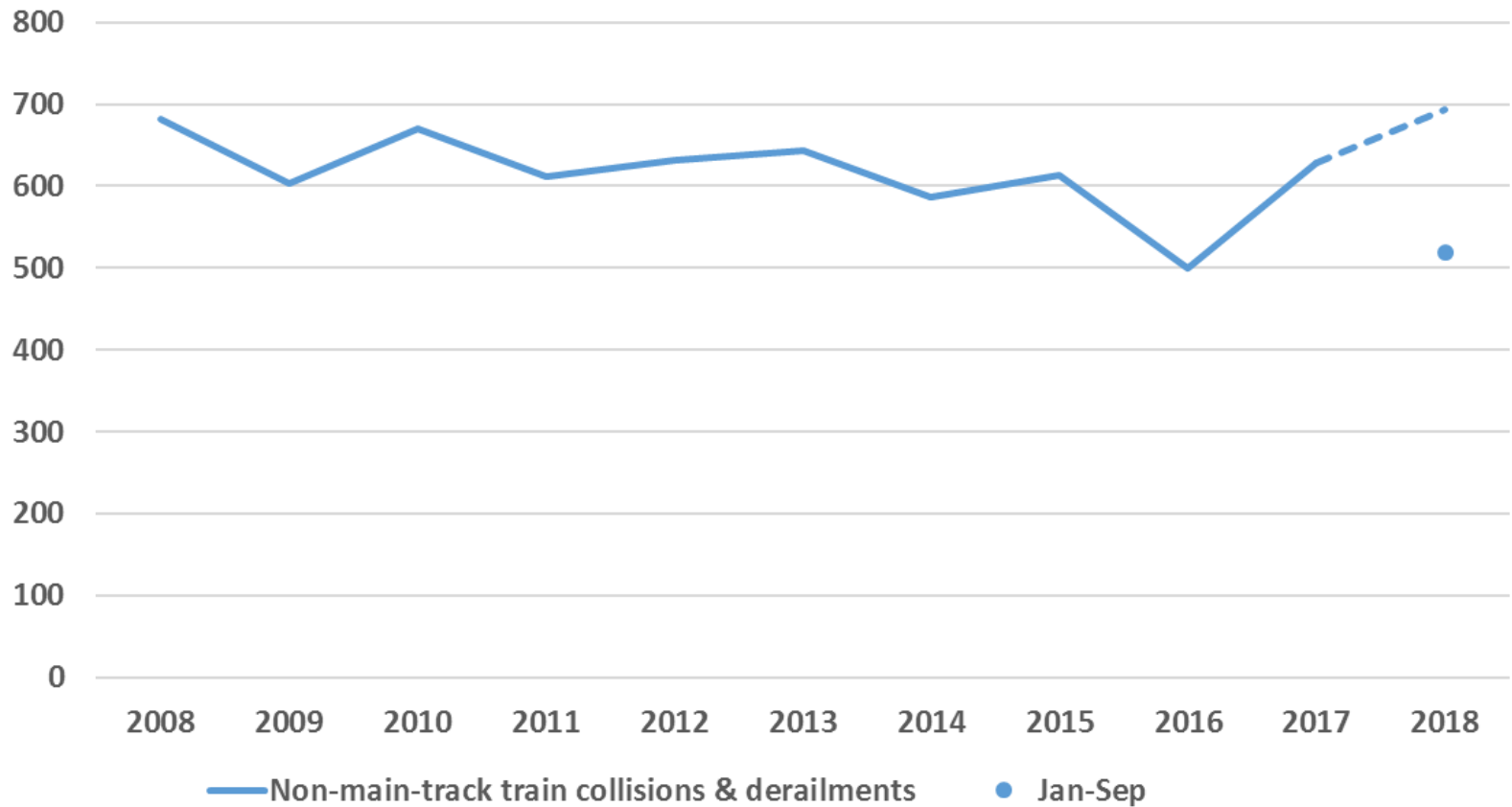


Main-track train collision and derailment accidents 2008-2018



2018 total (dashed line) estimated from Jan-Sep data

Non-main-track train collision and derailment accidents 2008-2018



2018 total (dashed line) estimated from Jan-Sep data

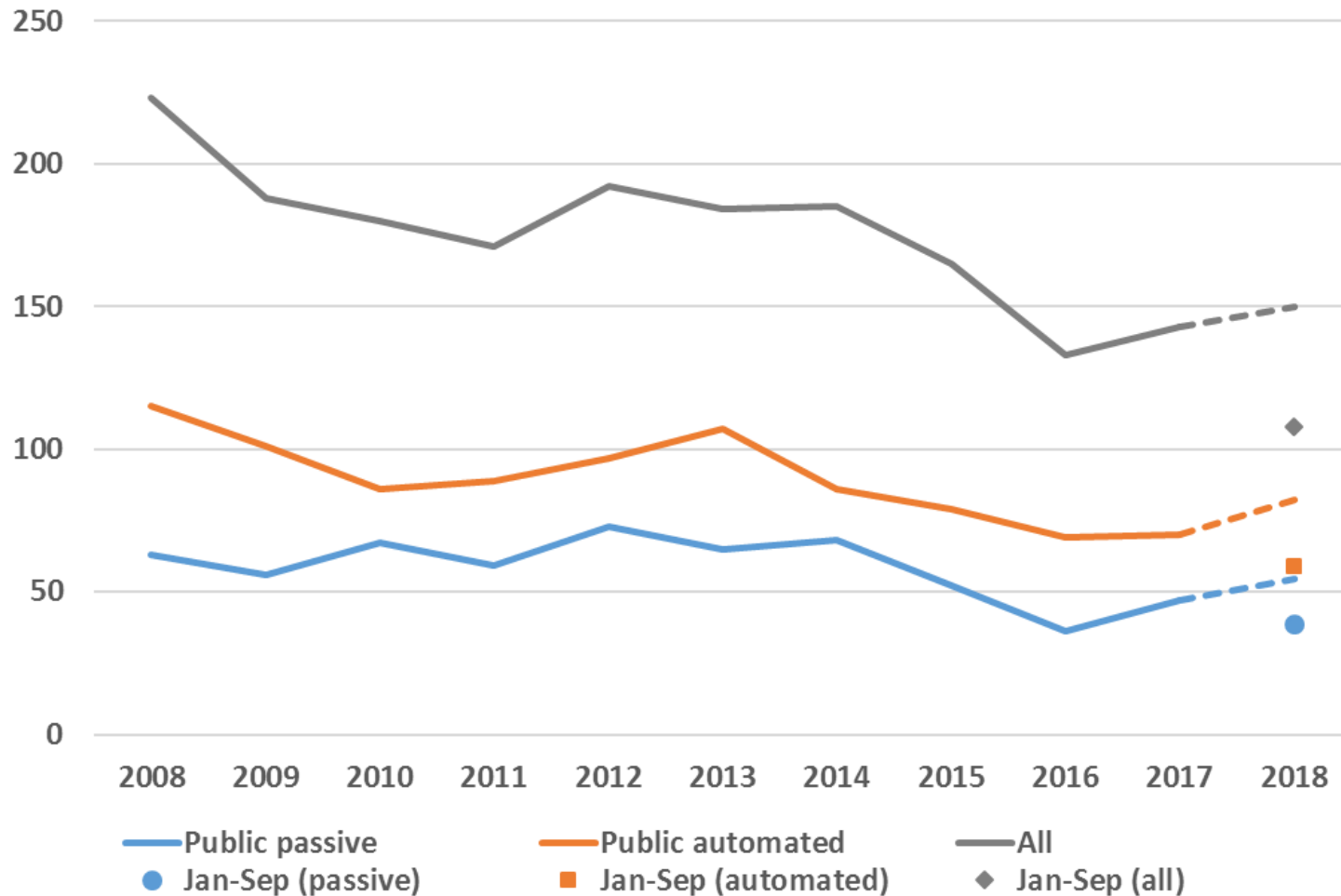


Statistics: crossing safety

- When we took this issue off the Watchlist in 2016, we said we'd monitor it
- And now...?

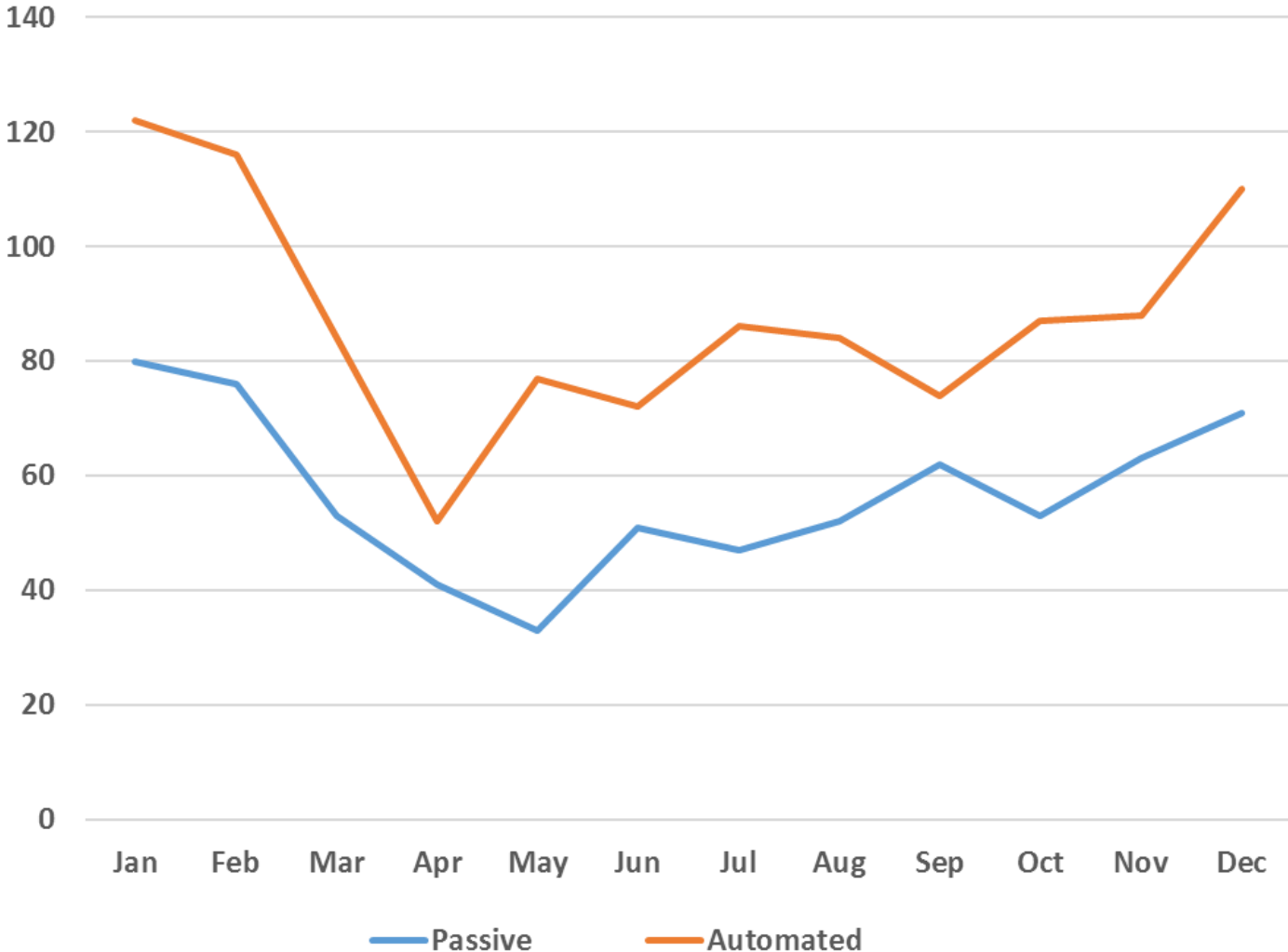


Crossing accidents by year 2008-2018



2018 totals (dashed lines) estimated from Jan-Oct data

Crossing accidents by month 2007-2017



Next steps

The TSB is committed to:

- Engaging stakeholders in dialogue.
- Ensuring that the call to action is heard —and heeded —by everyone.
- Monitoring progress.
- Reporting publicly on what change agents promise and what they deliver ... *and what they don't*.
- Further engagement with stakeholders to assess progress at the mid-point mark (Fall 2019).



Emerging concerns


Crossing safety:

- Ongoing commitment and funding required.
- What are ***you*** doing about it?

Main track collisions and derailments:

- We will be monitoring the situation
- We'd like ***you*** to seriously consider technology to assist the operator
- "More rules" is **NOT** the answer.






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QUESTIONS?



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