

Ghost trains: Australian rail in the early stages of the global COVID-19 pandemic

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Abstract

The rail industry, as with all sectors worldwide, has faced disruptions due to the global COVID-19 pandemic. This commentary considers how rail organizations in Australia have engaged within the early stages of the crisis, outlining the challenges faced and how they were addressed. Relying on our observations, and anecdotes obtained from others across the Australian rail industry, we identified a range of impacts including determining service delivery levels (and the associated running of “ghost trains”), implementing hygiene measures and social distancing, managing training and medical assessments, and changes in the behavior of passengers and members of the public (including aggression toward staff and increased instances of trespass). Within rail organizations, we saw changes to communication and control structures, new challenges related to balancing priorities (managing risk of rail accidents vs. virus transmission risk), and negative impacts on job design offset by increased informal support for frontline workers. Importantly, from the crisis, we gained new insights about culture. Finally, we provide recommendations regarding how the Human Factors and Ergonomics discipline can support safe and effective rail operations in the context of both widespread crises such as pandemics as well as the less dramatic, but ever present, shifts in the physical, social, economic, and political environments in which rail organizations operate.

KEYWORDS

COVID-19, job design, rail, risk management, safety

1 | INTRODUCTION

In the rail industry, the term “ghost train” is an idiosyncrasy with meaning extending beyond “phantom vehicle.” Also called a “parliamentary train” in the United Kingdom, it has become a colloquial reference to passenger train services that often run at obscure times, usually once a week and in one direction. These trains are run to keep low-use railway lines open, because if they are not run, then train operators may be subject to a very long and cumbersome process of consultation to close the route and incur very large costs of formal closure.¹

¹“Parliamentary train” (or “Ghost train” in modern discourse) was a term given to UK passenger services that were basic and inexpensive and designed to cater for less affluent passengers in compliance with the Railway Regulation Act 1844. The legislation required at least one such service to be run daily on every route, so that privately owned railways would still be able to provide a public service, and many operators kept running them to avoid costs of closure and political fallout. While the legal requirements are now different, the pressures remain, and the term has evolved to describe substantially reduced train services motivated by the same pressures. Should the service be closed entirely but reopened later, the operator would face additional costs of maintenance, driver retraining, paperwork, and so on. More aspirational reasons for continuing to run these trains may include a hope that the line may be used again more regularly in the future, but the popular view is that they are little more than a “legal placeholder” (Ruggeri, 2015).

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Zero trains equate with zero safety risk, but in this case, there are different criteria at play. While it may seem counterintuitive, for rail operators, there is less effort and cost involved in keeping these trains running, even though it is rare to find any passengers on board (Ruggeri, 2015). The impacts and shockwaves of the novel coronavirus SARS-CoV-2 (COVID-19) outbreak have been felt in all corners of the globe and in every sector; in rail, they yielded a situation that turned every train into a different kind of “ghost train” entirely.

COVID-19 has provoked a rapid response in the face of uncertainty and encouraged teams to either match solutions to known risks and apply known controls or to adapt and respond to new risks by devising solutions and strategies with more flexibility and agility. This places a spotlight on changes to working practices and organizational response, and the role of Human Factors and Ergonomics (HF/E) approaches in the design of policies, procedures, and organizational risk management. Rail transportation was quickly labeled an “essential service” and every person working in the delivery of services in the rail environment was identified as “essential workers.” The extent of system-level disruption brought on from unprecedented scenarios such as COVID-19 has rarely featured in emergency and business continuity planning, perhaps unsurprisingly. In the rail context then, the response to COVID-19 provides an opportunity to learn and draw insights from scenarios that were previously unprecedented and have particular potency for future continuity planning.

This COVID-19-related commentary places a spotlight and critique on operations and ways of working in Australian rail,² particularly in the early disruption phase (i.e., after March 11, 2020, when the World Health Organization characterized the outbreak as a pandemic). The emphasis is placed on front-line workers in rail, though there is potential for many of these observations to be broadly applicable to analogous domains with overlapping elements (e.g., bus industry). The authors are academics with rail HF/E expertise, have strong industry-research focused backgrounds, and a broad knowledge of Australian rail operations across the country. As a commentary on the response in the early stages of disruption (March to April 2020), this article presents our own first-hand observations, and anecdotes obtained from others across the rail industry. The commentary considers how rail organizations engaged with the crisis with the aim to outline some of the challenges associated with COVID-19 disruptions and how they were addressed, along with key insights and future challenges and requirements for rail from an HF/E perspective.

2 | COMMUNICATION AND CRISIS MANAGEMENT

Early in the pandemic, and following protocols as part of their formal management structures, rail organizations set up local COVID-19 task forces and crisis management centers to coordinate the response. One of the first important decisions that needed to be made

(and would go on to shape all activity) was about how a near-vertical drop in patronage would be reflected in train services. Leading ideas were to change the working week timetable to a weekend timetable, meaning fewer services, later starts, and earlier finishes in many cities. The patronage representing a typical day for Sydney, Melbourne, Queensland,³ and elsewhere had dropped by up to 85% (Steger, 2020). However, many organizations determined that, because trains had been characterized as an “essential service,” they were needed to support the travel of “essential workers” who used trains, such as those in health care. Further, government contracts in many jurisdictions required certain levels of service delivery to be maintained. It was deemed imperative that services remained available, and so, the working week timetable remained, crew and rostering patterns were unchanged, and trains ran as normal. Except there was nothing “normal” about it. Railways had become a city-sized diorama of ghost trains and eerily empty stations, devoid of the usual throngs of commuters and schoolchildren. Trains passed to and fro with windows you could look straight through, with the odd person looking back. The question also turned to the length of trains. For example, if joining multiple modular units of car sets/carriages was normal, then why not reduce the number of modular units, given that longer units reduce rail capacity and increase the burden of risk (e.g., more caution signals, longer traversal of railway level crossings). Perhaps in view of storage constraints, issues of time-cost associated with the requisite shunting activity (en route or in shunting yards), and the uncertainty of the COVID-19 landscape, these questions remained hanging.

Previous work has conceptualized rail as a complex socio-technical system (Wilson et al., 2007), with safety managed through formal, hierarchical structures (Read et al., 2019). Contrary to this traditional hierarchical structure of control and communication, when the pandemic hit, information about COVID-19 flowed in new ways. In the case of decisions about rail transportation hazard identification and risk management, information was synthesized from a variety of sources. A strong influence was carried by media (radio, TV, etc) as well as government sources, where decisions were being made with high fluidity. Public websites focussing on rapid dissemination of customer-focused information were established.⁴ Health and safety committees representing the workers that are only required to meet “at least once every 3 months” (Work Health and Safety Act, 2011) were now meeting weekly. The experience at work was an onslaught of information, shared through bombardment of emails, additional meetings and advice, webinars, forums, and live videos (e.g., from the rail organization’s Medical Officer), orchestrated to always remain informed. Frontline staff, who seldom have time to review safety notices before commencing work (Naweed, 2016) became overloaded with large volumes of information and

²The terminologies and examples used in this paper originate in Australia, but based on discussions and observations with colleagues, we believe many may ring true to those in other countries and contexts.

³Before COVID-19, rail in Sydney, Melbourne, and Queensland each respectively experienced 1.3M, 600k, 150k, passenger journeys per weekday.

⁴For example, <https://www.stayinformed.com.au/and> <https://www.qld.gov.au/health/conditions/health-alerts/coronavirus-covid-19>

implicit requirements to stay informed through mediums they rarely accessed (e.g., intranet), creating new job demands.

3 | MANAGING RISK ON THE FRONTLINE

Frontline staff experienced as much cognitive dissonance as everybody else. The rhetoric swung widely. On the one hand, as “essential workers,” there was gratitude that there was still a job to go to, and that unlike their spouse or friends, they were not furloughed or placed on Jobkeeper allowance.⁵ On the other hand, train drivers and guards had turned into apparitions at the helm of ghost trains in an odd limbo state, and staff began questioning the point of running and driving trains when nobody was using them. In the rush to respond to the crisis, key principles of job design may have been overlooked. Seminal HF/E research on job design, such as Richard and Oldham's (1976) Job Characteristics Model and sociotechnical systems design values advocated by Cherns (1976, 1987; Read et al., 2018), has long acknowledged the importance of quality of working life. Such work provides a reasonable level of challenge for the employee, provides them with variety, incorporates scope for decision-making and choice, includes ongoing opportunities for learning, and facilitates social support and recognition of people's achievements. Further, there is a sense of meaning in the work whereby it has relevance to life outside of work and leads to some sort of desirable future. In rail specifically, there is a well-documented need for train drivers to find their role meaningful and satisfying, despite its many challenges and health and wellbeing concerns (Naweed et al., 2017, 2020).

Activities in the immediate aftermath of COVID-19's characterization were frantic and panicked. Immediate activity around risk assessment and action was not unlike the reactive responses observed within the public. There was an urgent need to procure hand sanitizer. Hand sanitizers have typically always been available to staff as part of their standard personal protective equipment (PPE), but were rarely used. Now, staff began demanding their own portable supply and hand sanitizers quickly became a headlining agenda item for many a meeting. Rail organizations explored non-traditional options in the heavily strained supply chain by obtaining hand sanitizers directly from local gin distilleries.⁶ Ordinarily, such material would arrive in the workplace with a safety data sheet, meet with follow-up risk assessment, staff consultation, identification of issues around storage facilities, risk mitigations for leakage and spillage, and so on. But such activities in the broader safety management system were rendered into a luxury, eclipsed by time pressures. Thus, rail organizational managerial functions demonstrated some flexibility in devising solutions to adapt to risk, even if such responses were fundamentally reactive.

There were also clear challenges around introducing hand sanitizer for customers. What were the HF/E considerations? How large should the dispenser units be and at what height should they be placed? Should they be encased in some of stand or housing? What were the safety management system requirements for compliance? What new safety hazards would be introduced? Would the units be top-heavy? What if they toppled onto small children? What if they were stolen or vandalized? Should they be screwed to the ground? What were the labeling requirements? Where should units be placed, how should locations be prioritized? All of these were new and emerging issues in the course of hazard and risk assessment. But once a risk mitigation resource had been rapidly procured, decisions about its application deferred back to application of known solutions and controls, and compliance against safety management system requirements.

Disinfecting train cabins became an overriding control measure. Contract cleaners were brought in to offer cab cleaning at all turnaround locations, but in practice, this control measure met with some resistance. Drivers and guards were, for example, reluctant to invite a potential “COVID-19 carrier” into their own personal workspace, perhaps because it conflicted with feelings of control in the face of a threat (Habersaat et al., 2020), and a sense of autonomy in a situation of increasing restrictions and constraints on how they could perform their work. In this sense, workers were perhaps taking control of their own job design where they would have greater decision making and choice (Cherns, 1976, 1987). Thus, hygiene/presentation service attendants began “haunting” deserted platforms—wiping and cleaning potential customer areas. Procurement and distribution of disinfecting wipes became important so that drivers and guards could wipe down train surfaces themselves.

Mandatory social and physical distancing to contain community transmission was implemented through health and safety communication, and rail organizations enforced this control measure, though there were confusion and variability on its parameters (Ciric, 2020), aided by the considerable and growing political contention on the issue (Lewnard & Lo, 2020). Signage was posted in public areas, in trains, and on steps, reminding people to maintain the distance. Handrails, a key control for slips, trips, and falls, were now out of bounds and not to be used. Entrances to rooms had notices indicating the (calculated and measured) minimum number of people capable of maintaining safe distance requirements. Like everywhere, “X marked the spot” but it appeared to mean different things. On floors and entrances to constrained areas, combinations of lines and X markers meant “stand here,” but on the seats of chairs and benches on platforms and trains, “X” meant “don't sit here.” Before long, green ticks/checkmarks entered into the picture to provide clarity.

Face masks were a highly contentious topic in relation to the COVID-19 pandemic (Feng et al., 2020). Through the aid of media commentary, face masks found themselves at the epicenter of talk around the politicization and bureaucratization of rail safety; this included debate on the effectiveness of masks against COVID-19, surgical masks versus cloth masks, and indeed, whether they can be considered PPE. In the early days of disruption, the topic appeared to

⁵A temporary Australian Government scheme designed to cover the costs of employees' wages of COVID-19 affected businesses (Australian Taxation Office, 2020).

⁶Many gin distilleries adapted their businesses to produce alcohol-based hand sanitizer during the pandemic, given supply shortages.

cause widespread discussion and distress. Antisocial behavior is a real problem in the public transport context (Miles, 2020; Thompson et al., 2012) and instances of people spitting on rail staff (Murray, 2020; The Lancet, 2020) was an obvious concern for many. The managerial response to frontline staff who wanted masks, such as those working at stations (and therefore interfacing directly with people), was to pass the responsibility onto somebody else—a behavioral tendency linked with unattractive outcomes, avoidance of blame for negative outcomes, and delegation to people of equal or higher power who can officially assume responsibility for these choices (Steffel et al., 2016). In this case, referrals were made to the local organizational medical officer who invariably referred to guidance at the ministerial level from the office of the Chief Medical Officer of Australia at which point it encountered a brick wall; the presiding view was that masks were ineffective and therefore not needed. A constraining consideration here was that if facemasks were to become part of the standard PPE, then training would be required on how to use them correctly (Work Health and Safety Regulations, 2011). Thus, any staff-member requesting a face mask to ameliorate substantive health concerns (e.g., respiratory conditions and asthma) was advised to speak to their doctor or line manager with a view that their concern could be progressed or escalated to the local health office for advice. Gradually the narrative evolved, forced in-part by other issues, for example, customers returning from COVID-19 stricken cruise ships (Walker, 2020)⁷ and international flights who required rail transit and transfer. For this cohort, it was prudent to provide and offer face masks if they were requested, and in a climate where such items were in critically short supply, impressively, face masks were somehow procured, though in view of the presiding rhetoric, were not necessarily P2/N95⁸ compliant. However, this created conflicts for operational tasks in a way that compromised their integrity as PPE. For example, use of a whistle when giving “right of way” at a station required staff to remove their mask/touch their face each time they blew the whistle.

4 | BALANCING RISKS TO SAFETY: CONTAGION OR COLLISION?

In COVID-19, rail organizations have faced obstacles challenging the traditional approaches that they draw on to manage safety. In practice, they have encountered new trade-offs between preventing accidents and risks to personal health. Procedures and policies have been getting in the way and what was once a control has turned into a risk. In the case of two-driver freight operations, for example, a second person is used to verify upcoming signals (to manage Signal Passed at Danger [SPAD]-risk), perform administrative/

communication tasks (to manage crew workload), and passing train inspection checks (to manage maintenance issues). But a second person in a confined cabin is now a potential source of transmission for COVID-19. Similarly, having multiple people in a passenger cab to carry out track inspections, deliver training, and so on, now presents the risk of contagion. Such issues have been dealt through strict policy around who can/cannot be granted a cabin pass and under what conditions multiple people are allowed, though any control is only a reflection of a current understanding of how the virus travels. For example, in some rail organizations, the policy changed to a maximum of two people at any time and these restrictions remain in place. Pre-COVID-19, four persons (including the driver) were allowed in crew compartments, in some cases more depending on the purpose (e.g., training).

In general, training activity was reduced across the board, whether it was training for front-line staff, trauma training for support staff, or training for personal development. The disruption caused by COVID-19 coupled with the reactivity and time poverty pushed skills development down the list of priorities. As a case in point, driver training was placed on-hold or reduced substantially, furthering looming issues around ongoing workforce development (Australasian Railway Association, 2018). Some training may have occurred remotely, via videoconferencing or even in social-distance compliant meeting rooms, but what about the skills that have traditionally been acquired from nonclassroom-based activity? The long-standing issue of the viability of rail simulators as a substitute for “footplate experience” (e.g., Naweed & Balakrishnan, 2012) suddenly has renewed relevance.⁹

Long-standing wicked and perennial safety issues such as fatigue and SPADs (e.g., Filtness & Naweed, 2017; Naweed et al., 2015, 2017) were (and remain) overshadowed by the focus on auditing and compliance around control measures for COVID-19. This included ongoing exhaustive checks for signage and marking for social distancing requirements (internally and externally) within buildings, on platforms, and trains. The issue has also created confusion in relation to the process and procedures for managing the cardiometabolic health of rail workers. A topic that has already been subject of much scrutiny in terms of ways of working (Naweed et al., 2018), advice/requirements issued by the Chief Medical Officers Council for health assessments was identified as “*contrary to the requirements of the Rail Safety National Law*” (Office of the National Rail Safety Regulator, 2020, p.2).

Elsewhere on the rail network, COVID-19 had other impacts. For example, rates of trespassing increased, which may seem odd at first given the decrease in patronage. Working from home, the closure of gyms, restrictions around travel, general isolation, and other factors produced a boom of walking for leisure. A spike was seen in trespass at active level crossings, but also over mainline rail corridors to reach

⁷The *Ruby Princess* docked in Sydney, NSW, on March 19, 2020, and 2647 passengers disembarked into the city.

⁸The Australian Government advocated surgical masks compliant to the P2/N95 standard as PPE for essential workers in health care and separate advice for others, including how to make cloth masks. In both cases, it is conveyed as a preventive measure (Department of Health, 2020a, 2020b).

⁹Simulators are a way of reproducing familiar situations or recurring experiences, while reducing the scale and number of factors involved. Rail simulators tend to come in all shapes and sizes, many with remote instructor pods that may aid social-distancing requirements, and trainers would be considered essential workers.

other paths, and commonly used shortcuts. At one particular network, reported trespass cases rose exponentially from 2 incidents in March, to 13 in April, and 30 in May. Such cases were perhaps partly an issue of exposure—there were many more people walking but just as many trains as before. From a behavioral perspective, this may be due to a reduced sense of being observed by those in authority (Felson et al., 2020) or perhaps a sense of entitlement around being able to venture wherever one wishes to go, given that other freedoms have been taken away (Nowak et al., 2020).

5 | SUPPORTING FRONTLINE WORKERS

The Australian Minister of Transport indicated that the transport sector would be one of the last sectors to resume “normal” operations post-COVID-19, that is, return to the working arrangements that were in-place in pre-COVID-19. This meant that rail staff that were not on the front-line or had no need to work within the office, would be able to continue to work from home. The acute issue for home workers became equipment supply, set-up and support, and dealing with behavioral stigmas of working from home. However, this paved the way for the notion and emergent feeling that, by being able to work from home, office staff were fundamentally protected while operational/front-line workers were being left having to deal with the public and placing themselves and/or their families at risk. Recognizing this issue, those who interacted directly with drivers (e.g., health and welfare staff and line managers) appeared to have spent more time on the rail concourse engaging in (socially distanced) conversation. More communication also appeared to happen on the phone than in person with nonwork-related chatter focused on Easter plans, COVID-19 impacts on children, school holidays, friends, family, and so on. Talking became important and a lifeline to air worries and concerns. These informal conversations were positive in the sense of providing social support (Cherns, 1976, 1987), and their emergence had the effect of perhaps balancing out some of the negative impacts on job design in terms of having meaningful work and autonomy of decision-making. Nonetheless, front-line workers remain at-risk. Although the restriction of travel and activities suppressed a significant rise in the rate of COVID-19 transmission and infection in Australia in the early days (Beck et al., 2020), the statistics from hard-hit countries paint a sobering picture. In New York City, for example, 120 employees of the Metropolitan Transport Authority were reported to have died due to COVID-19 before June 2020, with ~4000 having tested positive (The Lancet, 2020).

6 | AN INSIGHT INTO CULTURE

As has been the case in many industries, it would appear that the crisis management procedures that were in place in rail organizations did not cover all of what would be required in a pandemic scenario. This is not so much a critique of their inadequacy as a commentary on the way how organizations have dealt with the planning and

development around subsequent ways of working. In crisis, people have a tendency to feel justified about letting things go, and the more embedded cultural values drive decision making. Much of what we have observed in the Australian rail sector has been a mix of reactivity where rapid decisions amenable to more flexible boundaries of risk (O’Keeffe et al., 2015) have been required, but also a struggle to adapt quickly elsewhere, including on the frontline, given a long-standing rule-based culture. Observations about the way that rail organizations have dealt with COVID-19 since its characterization as a pandemic has revealed much about their levels of cultural maturity. In the case of rail organizations within Australia, processes were overlooked and eclipsed by the urgency and fear of COVID-19, for example, focussing on the procuring of hand sanitizer overrode any thought around how it would be handled, risk assessed, and stored. Approaches have vacillated over uncertainty. Some approaches have tried to match and enact uncertain risks with known solutions and strategies and apply known controls from the existing safety management system. Others have responded with more agility and engaged uncertain risks by devising solutions and strategies in ways that have been more adaptive and responsive to risk. It may be that the relatively hierarchical, prescriptive structure of safety management implemented within the rail industry had the effect of reducing the capacity to adapt and identify new and emerging sources of risk. The integration of organizational mindfulness (Weick & Sutcliffe, 2001) may provide some stability and support rail systems to achieve a balance between control and flexibility to adapt and evolve to environmental constraints (Lintern & Kugler, 2017).

7 | IMPLICATIONS FOR HF/E IN RAIL

The COVID-19 pandemic has created a new kind of “ghost train.” Unlike the elusive parliamentary ghost train, the COVID-19 ghost train is ubiquitous while the pandemic is in full force. It also has empty carriages, but not because it runs at obscure times, and not because of effort to keep a rail line viable. A COVID-19 ghost train is empty because its regular patrons are not using it, and the effort is being made to keep the country itself viable—to ensure that the essential worker relying on their rail service is still able to travel. Like parliamentary ghost trains, the COVID-19 ghost train is, however, also a symbol of increased risk, of poor balance between control and flexibility to adapt.

Safety-critical industries like rail are not unfamiliar with the need to balance trade-offs between competing goals. Rasmussen’s (1997) model of migration argues that organizational behaviors are influenced by gradients toward efficiency and least effort. These gradients push a system toward the boundary of acceptable performance where it is then at risk of experiencing an accident or adverse outcome. Two other boundaries constrain behavior: the boundary to economic failure, and the boundary to unacceptable workload. COVID-19 has shifted these boundaries for rail organizations. They faced potential loss of revenue and thus the risk of shifting toward economic failure, there has been higher tolerance

for additional workload and around cleaning and sanitizing (although these behaviors may drift over time), and the boundary of acceptable performance is now concerned with virus transmission, as well as traditional safety risks. In addition to the notions of migration and drift, Rasmussen's work proposed that the diffusion of top-down control mechanisms and effectiveness of bottom-up feedback mechanisms to management are key to managing risk. Such mechanisms support vertical integration whereby there is alignment in the decisions and actions of actors across a socio-technical system.

Drawing together key threads of HF/E from job design and providing meaningful work to culture and risk management, the following key areas are proposed in how the discipline can contribute in planning for, and responding to, widespread disruptions such as global pandemics:

- **Job design:** Ensuring that workers at all levels continue to have quality work, including mechanisms to ensure social connection and social support are available where traditional avenues may have been lost.
- **Operational task design:** Ensuring that workers are able to coordinate their tasks with PPE in ways that do not compromise the integrity of PPE or attract further risk. Monitoring the use of PPE and the challenge in its sustained use where risk may be perceived as low.
- **Design of fitness for duty and personnel support mechanisms:** Ensuring that hardships outside of work (i.e., concern for unwell family/friends) and within work (i.e., concern for own health, increased trespass events) are managed and do not lead to risks in service. Avenues for support should consider platforms beyond the intranet, and alternatives to the Employee Assistance Program.
- **Design of top-down communication processes:** Ensuring information is clear, concise, consolidated, and relevant to the end-user and provided in a format that is easy to access, read, and understand and recognizes system constraints (e.g., short amount of time to read during shift, easy access to intranet, difficulty of reading on work phone, technological literacies).
- **Design of feedback mechanisms:** Ensuring that management have insights into emerging issues being faced on the ground, allowing adaptation of risk control strategies.
- **Design of administrative processes:** Ensuring procurement safety requirements are reviewed and designed in ways that increase efficiencies.
- **Design of new safety initiatives:** Assisting to ensure the user and stakeholder needs are addressed, that designs are usable, and inclusive design and participatory/codeign processes are supported where possible.
- **Culture change:** Developing and implementing programs and structural changes to enhance the cultural maturity of the organization. Efforts to facilitate improved organizational mindfulness as well as a sense of trust and openness between staff and management should be considered to increase the adaptive

capacity of the organization. Such changes are beneficial whether the next challenge is a pandemic, other widespread disruption, or even the day-to-day shifts in the physical, social, economic, and political environments in which rail organizations operate.

Anecdotally, many people are talking about the so-called silver-lining of COVID-19, and how it has created more opportunity. In the context of rail (and this may also apply to many other industry settings), it may be more useful to frame COVID-19 as not an opportunity to regress but to overhaul the cultural and structural maturity of the organization. A worry around what is being lost and not gained may return us back to former, less-developed and inflexible states where safety is overtly bureaucratized—and where such bureaucracy introduces “ghost trains” as a work-around solution despite expending valuable resourcing and attracting additional safety risks.

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