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# *Breaking the Sick Worker's Conundrum: An Analytical Study on the US Autoworkers' Physical and Mental Health Risks*

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***Abstract:*** Autoworkers suffer from a higher mortality rate of cancer and heart diseases compared to the public due to long-term exposure to workplace hazards and mental stress. A comparative literature review was conducted to show the influence of health-risk factors among autoworkers; a qualitative study of nine in-person interviews with autoworkers in Michigan was designed for better comprehension of their decisions regarding health risks at work. This study revealed that financial stress and mistrust towards corporations and the government play significant roles in workers' acceptance of working in hazardous environments; together, these factors contribute to people's reluctance towards using proper personal protective equipment and other means of safety practices. The author believes that a public financial aid program for autoworkers and training programs for corporate management on communication and empathy will reinvigorate the auto-manufacturing industry with a healthier and more productive labor force.

***Keywords:*** Workplace Hazards, Financial Stress, Safety Programs, Mental Health.

## 1. Introduction

Despite suffering from several major declines since the 1970s, the American manufacturing industry still greatly appeals to working-aged adults with less education and takes up 15 percent of the national employed male population as of 2018 [1]. However, recent studies pointed to an ongoing correlation between long-term employment in the automobile manufacturing industry and higher risks of contracting deadly chronological diseases, such as cancers and heart diseases, as a result of exposure to certain toxic matters during production [2]. At the same time, autoworkers who avoid such long-term exposures to toxins by leaving the job early suffer a higher mortality rate from suicide or overdose possibly due to depression and financial distress [1].

However, few studies have documented the voices and lived experiences of autoworkers, and even fewer have offered solutions to the dilemma that they face. In the hope of addressing the sociopolitical and economic repercussions of the elevated mortality rates among US autoworkers both when employed and unemployed compared to the general population, this paper argues the necessity of better preventive education programs for autoworkers on handling toxic materials and using protective gears, intervention policies that facilitate more communication and empathy between leadership and grunt workers, and insurance coverage of psychotherapy in all workers' contracts. The

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implementation of the proposed policies and programs holds the potential to yield long-term benefits, effectively disrupting the detrimental cycle of heightened mortality rates among active and early-retired autoworkers. Moreover, these initiatives could contribute to bolstering the overall stability of the manufacturing sector by reinvigorating the workforce with healthier and more resilient individuals.

## 2. Literature Review

Autoworkers come into contact with many chemicals that can impose serious health issues when not properly contained or used. Metalworking fluids (MWF) are among the most frequently studied hazardous materials that autoworkers are often exposed to. MWF are chemical compounds of various natures that are widely used in metal production and automobile manufacturing; they are known to cause various cancers in autoworkers after long-term exposures [2, 3]. For example, public health scientist Ellen Eisen and her team found that the standardized mortality ratio (SMR) for biliary/liver cancer among autoworkers hired after 1970 was 4.0, meaning that the workers' exposure to synthetic MWF made them four times more likely to die from the aforementioned cancers than the general population [3]. Furthermore, they also noticed a rise in SMR for liver cancer, Leukemia, and a few other cancers during the 1990s, the most recent decade of their study data, suggesting that an estimated sum of 1.2 million workers were continuously exposed to MWF despite previous studies pointing to the compounds' cancer-inducing property. The study's findings suggested a continuous unsafe use of toxic materials such as MWF at the automobile assembly plant due to the lack of safety awareness when handling toxic materials and difficulty in detecting post-exposure damage to a worker's health in the short run [3].

In addition to the time of employment, an intersectionality of the sociopolitical status of autoworkers also plays a role in their health. A study on the correlation between heart diseases and exposure to MWF found that black female autoworkers who died from heart diseases were much younger compared to other gender and racial groups [4]. The authors argued that, given that these black female workers in a male-dominating industry are more likely to face discrimination, receive less education and pay, and be single parents, they are less likely to replace their current job with one that exposes themselves to less MWF. They also suggested that compared to their white male counterparts, white women and black men would be more likely to suffer from job insecurities, thus resulting in higher exposure to MWF among those two groups [4].

This shared reluctance to leave work among the more vulnerable worker groups despite the exposure to toxins then introduced the *healthy worker survivor effect* that would render the measured mortality ratio lower than the actual mortality. The healthy worker survivor effect happens when the less healthy workers are not taken into account due to them dropping out before the completion of a measured time interval, despite also being affected by the exposure. In a study that focused on MWF exposures on predominantly white male autoworkers, researchers were unable to detect an association between colon cancer and exposure to MWF until the healthy worker survivor effect had been adjusted [4].

However, while continuous exposure to chemicals at work could lead to various health risks, autoworkers who leave their jobs before retirement age have a higher risk of committing suicide or overdosing. Eisen et al. noted a possible association between this increased mortality among autoworkers and lack of higher education: they argued that the increased difficulty in seeking new employment and mobility for workers without a college degree, combined with the diminishing manufacturing industries in the neighborhood, created financial distress for the workers' families [2]. Historically, a great source of autoworkers' stress is unemployment as a result of sudden layoffs. Such sudden layoffs could result from a serious workplace accident that required a production plant shutdown. For example, on August 21$^{st}$, 2024, a factory in Toledo, Michigan with more than 4,600

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autoworkers was immediately shut down for investigation after one of the technicians suffered a fatal incident while working on site [5].

The health risks from long-term exposure to toxic chemicals as an autoworker and from "death of despair" [2] due to excessive socioeconomic stress from unemployment created a conundrum for the autoworkers' health: whereas working on site leads to a higher chance of chronological diseases and early deaths, not working also produces higher risks for early deaths. And yet, few previous studies have suggested solutions to the conundrum posed by the auto-manufacturing industry. However, designing a feasible program to change a community's attitude to health risks requires not only statistics from quantitative studies but also an understanding of the personal logic behind individual workers' engagement in risky activities during production. To fill this gap in the current research literature, this paper hopes to shed light on the reasons and potential solutions to autoworkers' health issues and encourage future studies to honor the lived experiences of autoworkers.

## 3. Methods

The present study uses qualitative interviews and literature reviews as its methods. In-depth interviews can help supplement the analysis of previous studies (which had been largely quantitative) with personal stories and clearer demonstrations of the factors that could influence autoworkers' health, as well as their opinions on these risks. The author's current employment in Michigan's autowork industry provided accessibility to up-to-date information and experiences of autoworkers in the region. Eight individual interviews were conducted with autoworkers from different sectors of the production. The interviews were semi-structured and each lasted around 30 to 40 minutes. The interview protocol consisted of 5 core questions, such as "How would you describe your COVID working experience?" and "What are the common workplace hazards you experience or witness your coworker(s) experience?" The interviews were conducted in the interviewees' first languages; interviews that were not conducted in English were later translated and documented accordingly. All participants are assigned pseudonyms in order to protect their anonymity.

## 4. Results

Among the eight autoworkers interviewed, two of them are Chinese workers on working visas, two are African Americans, and the other four are respectively Asian American, African/Native American, white American, and Norwegian American. While all of these workers have at least 5 years of experience working in the manufacturing industry, only one of them who worked for more than 15 years (the longest) has witnessed accidental deaths at their workplace. On the other hand, all eight participants have experienced and/or witnessed other people at work experiencing numerous injuries, ranging from muscular and tissue damage to bone fractures. All participants had expressed concerns regarding risks to health at the workplace, such as loud noises, repetitive flashes, and strong smells from toxic materials, but only the one with most years of work experience demonstrated knowledge of how to safely handle dangerous materials. "Before they (the workers) get hurt or sick, they won't even wear gloves because they don't buy into safety protocols, believing that it is a way for the company to hinder their production to fire them. A wrongful death is less common, but one of them and your production is done for." Commented Simon Johnson, the Norwegian veteran safety specialist (Interview, Oct. 17, 2024).

Mike, the Caucasian maintenance technician, also mentioned his concerns regarding production safety. "Our electric driving modules are not like traditional motors, they require precision in the process -- one wrong step and you'll get arcing from the motherboards!" Mike was frustrated with the complex process in production and found it "daunting" how often his work would be interrupted by random tasks labeled as priorities (Interview, Nov. 6, 2024). At the same time, he believed that

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the current level of "disorganization is creating much more stress than necessary" and could be easily resolved if leadership would communicate with each other and "provide consistency at work projects instead of letting them clutter (Interview, Nov. 6, 2024)."

All participants also reported having experienced or witnessed workplace harassment that ranged from sexual harassment to rank bullying, which they all felt negative towards. All but one recently promoted Chinese worker also felt mistrust towards their company's management and/ or fear of being laid off. Simon Johnson argued that this low work stability of the bottom operators at the production line and their inaccessibility to psychotherapy sessions due to financial incapability created a bad combination that would increase risks to mental and behavioral problems (Interview, Oct. 17, 2024). Des Moli also described that his financial difficulty amplified his stress from bad weather and waking up to alarms every day (Interview, Oct. 17, 2024).

Divine and Bless are operators in a cleanroom laboratory. They both had experienced workplace violence but expressed different opinions towards the management. Bless had a dispute with a former director and suffered from facial injuries; she was satisfied with how the human resource (HR) department of the factory handled the case and believed that HR was all she needed for her problems at work (Interview, Nov. 6, 2024). Divine, on the other hand, was verbally abused by his previous supervisor. Even though his abuser had been laid off, Divine still found the work environment somewhat unsafe and believed he could benefit greatly from counseling (Interview, Nov. 6, 2024).

Mang Sans, a teardown technician stationed in Oakland, MI., stated that he was sticking around "because it's a stable job with acceptable pay" and would only consider changing job "if the factory is shutting down" despite having to work under the exposure of MWF (interview, Aug. 20, 2024). On the other hand, Daniel Chang, the newly promoted production director in Detroit, expressed that his attachment to his job in the factory stemmed from family pressure -- his wife and son relied on his remittance for school and daily expenses. This constant pressure led him to a chain smoking and drinking habit, and he developed insomnia working for that promotion (interview, Aug. 20, 2024).

Carrey Jun, an Asian American process engineer, complained about bright flashes and foul smells from production, but refused to wear a mask and goggles. He believed wearing said equipment would hinder his production speed and result in disciplinary measures from the management (interview, Oct. 17, 2024). Safety Specialist Simon Johnson argued that this failed compliance in properly handling hazardous materials at work stemmed from two reasons: workers' lack of regard for the long-term damage from toxin exposure and their mistrust towards the historically unsympathetic administrators in the autowork industry (interview, Oct. 17, 2024).

The work experience during COVID times also varied among participants: the four workers of higher ranks/pay had expressed favorable work experience during the pandemic, enjoying perks such as working remotely, more free time, and well-designed company COVID protocols; the lower ranked technicians and operators, however, had been more skeptical to the COVID policies and even demonstrated disbelief to whether "COVID is real":

"I don't really believe in COVID, it was designed to help the government conduct economic propaganda," remarked Des Moli, who also stated minutes later that they had suffered a nasty case of high blood pressure after recovering from a COVID infection (Interview, Oct. 17, 2024).

"I worked for this startup company for two and half years now, and yesterday this new quality engineer reported me for 'doing nothing?' When I took the medical leave they had to shut down the whole teardown department because I was the one doing all the quality checks every day!" exclaimed Des Moli, the biracial quality technician (Interview, Oct. 17, 2024). From September to October of 2024, Des Moli had to leave work early due to his high blood pressure on three different occasions.

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## 5. Discussion

Many of the interviewees expressed a sense of urgency of their productivity over the long-term health impacts. Moreover, Chang and many others' deteriorating health from the financial stress of supporting their families supported Eisen et al.'s comment on the struggles of autoworkers without college degrees [2]; Des Moli's refusal to acknowledge his COVID symptoms also shed light on the difficulty to address health risks to undereducated workers. The combination of lack of health awareness and financial immobility among autoworkers entraps them in a career that generates long-term health issues for their bodies. Therefore, in order to break from this dilemma, institutional support should be introduced. A straightforward yet long-term form of help for an industry with a negative health impact on society is building social health awareness—for example, the 1999 Tobacco Settlement in Hawaii [6]. This master settlement between the tobacco industry and the Hawaiian government granted the latter an aggregated $1.3 billion reparation in the next 25 years. Knowing very well that the negative health impacts on the population will be a recurring pattern if the smoking culture is not discouraged, the Hawaiian government designed social programs, such as affordable access to healthier food and physical activities, and anti-smoke education in schools, in hopes of creating a sustainable healthy culture [6]. The Hawaiian government's efforts in promoting community health practices have seen great success over the last decades: adult smokers have decreased by 33 percent from 2000 to 2013; young smokers decreased by 63 percent from 1999 to 2013 [7]. The anti-smoking education sustainably prevented the growth of the smoker population, and turned Hawaii's smoking rate into the third-lowest nationwide by 2015. With the current health risks in auto-manufacturing having similar effects on the population as tobacco use, the Hawaiian government's community-oriented health programs could provide inspiration for public policy on autoworkers in Michigan.

For one, the author believes that better education programs on occupational hazards and the use of equipment that protects workers from toxic materials should be implemented with matching supervision in practice, similar to how the Hawaiian government provided its people with more means to do physical activities and anti-smoking programs [6]. However, for such education programs to be effective, auto companies must first understand their employees' lived experiences and logic that led to their lack of regard for unsafe exposure at work. Indeed, the interviews showed that autoworkers with higher financial stress pay less attention to workplace hazards despite acknowledging and recognizing them. In Mang's case, the potential health risks from chemical exposures are unavoidable if he wishes to resolve the constant and urgent problem of feeding his family. For many like him who did not even complete high school education, factories with ideal working environments and good pay are difficult to get in, and the risk of unemployment is very high. The rising financial need to support his family forced Mang to ignore the toxic waste and strong noises from nearby workstations.

However, the decision to ignore potential health risks at the workplace is not exclusive to the operators with lower pay. The preexisting mistrust between autoworkers and their employers seems to also play a significant role in the workers' chemical exposures even when training programs and personal protective equipment are provided. Carrey Jun's prioritizing of production efficiency over his personal safety in the process sheds light on the competitive nature of manufacturing and its workers' insecurities with their careers regardless of their ranks. Even though he had the means and training to protect his eyes and respiratory system, Jun believed that these protective measures were designed to lower his productivity for the company to dismiss him from bonuses. Similarly, Daniel Chang's deteriorating health and mental conditions from competing for promotion depicted how auto-manufacturing companies use productivity-oriented measures to evaluate their employees, which often rewards workers who punish their personal health the most. In order for companies to reestablish

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trust with their employees at all ranks, they should seek means to provide stability in work and promotion.

Unfortunately, the instability of employment still affects many auto workers. The Aug 21st incident in the Toledo factory showed how the preexisting safety flaws in corporations and rigid public safety policy together contributed to further safety breaches by autoworkers during production. Shutting down the factory for investigation is not only a punishment for the corporation but also for every worker. Not only did all the operators get laid off due to the production being terminated, but they also lost their means to support their family and themselves without any warning due to the nature of the accident. Because of their poor experience with government intervention, it is likely that these workers will then extend their mistrust to the government safety policies and training programs, even if these policies aim to protect their health and rights.

Therefore, before implementing new public safety policies, the government should consider making amends to the work environment of auto-manufacturing where safety regulations are often seen as obstacles to production and are only followed upon inspections. While shaping the behaviors of autoworkers could take a long time, a shortcut for the government would be to address the mistrust between the management and grunt workers in the industry. For example, mandatory communication training among leadership could help the supervisors devise more effective production processes and reduce unsafe and competitive practices at the workplace.

Simultaneously, the automobile company and workers' union should co-establish a fund in support of its workers' healthcare, re-employment, and relocation. This fund should aim to address the urgent financial needs of the lower-working class autoworkers, because much of the autoworkers' health risks also stem from their socioeconomic stress, such as not being able to financially support their family. Having an emergency fund would ease their burden, discourage them from engaging in less healthy actions like working while being sick, and benefit all parties in the long run by avoiding paying for the workers' health deterioration. In fact, similar to tobacco use, working in an automobile manufacturing factory also generates negative externalities to one's health. For example, Daniel Chang's stress from work had also led to an unhealthy lifestyle of smoking cigarettes and drinking alcohol. These unhealthy behaviors should not be solely seen as personal decisions, but also a result of a poorly managed work environment and process as well as a reaction to the discomfort caused by his already declining health. Indeed, as Mike argued, much of the work-related stress could be resolved via an improved production plan and process.

The unhealthy mode of competition could lead to further health deterioration among competitive autoworkers like Chang, and inconsistent production performances as a result. By reserving optional subsidies for the workers to prevent them from entering a downward spiral on personal health, the economy would be able to maintain its balance and maybe even retain stability for the manufacturing industry with better worker retention as a result of a healthier community environment and cultures [6].

Moreover, the correlation between unemployment among autoworkers and a higher suicide and overdose mortality rate warns us of the importance of the workers' mental health as well as physical health. The government should promote social programs that focus on the lower-working-class workers' mental health and mandate that automobile manufacturers include psychotherapies in their insurance coverage for employees should they need such services.

The conundrum of an increasingly sick autoworker in the US can only be solved through gradual intervention at the government level across medical, economic, and political sectors. The example of the 1998-1999 Tobacco Settlement in Hawaii tells the story that, in order to effectively alter a risk behavior conducted by the entire community, the corresponding interventions must produce systematic changes [6]. In the case of automobile manufacturing, the health of both employed and unemployed workers must be ensured in order for the community to reshape its behaviors from the

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vicious cycle of getting sick. Whereas the investment may prove costly at first, the resilient, healthy, and productive workers may retain the growth of the industry in the long run.

## 6. Conclusion

The health of US autoworkers is a continuing struggle, stemming from financial and work-related stress, exposure to hazardous materials and environment, and difficulty in communication. Even when new social programs aiming at building trust among autoworkers' hierarchies, increasing communication effectiveness, and providing financial subsidies become implemented, we expect new challenges unforeseen in this study to emerge alongside. This study is limited by its geographical scopes, boasting little cross analysis to auto-manufacturing operations outside of the US and their management styles; this paper also did not include any long-term health effects of autoworkers in its qualitative study due to a lack of matching candidates among known contacts. We recommend future works to conduct comparative case studies between autoworkers in different regions as well as delve further into the effectiveness of public safety and financial policies once they are implemented.

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