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2022 ANNUAL REPORT

Tracking Work-Related Deaths in Michigan

MICHIGAN
State FACE Program
Fatality Assessment & Control Evaluation™

2022 Annual Report

Tracking Work-Related Deaths in Michigan

A Joint Report
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Executive Summary

The Division of Occupational and Environmental Medicine (OEM) at Michigan State University (MSU) began tracking work-related fatalities in the state of Michigan in January 2001. This is the 22nd annual Michigan Fatality Assessment and Control Evaluation (MIFACE) report on acute traumatic work-related deaths in Michigan. There were **140 work-related deaths in 2022**, equal to the deaths in 2021. There were 137 separate incidents representing 138 separate employers. A narrative summary of each work-related fatality is in Appendix I. MIFACE educational material, including on-site Investigation Reports, Summaries of MIOSHA Investigations, and Hazard Alerts are located on the MIFACE webpage on the Michigan State University Division of Occupational & Environmental Medicine (MSU OEM) website. Key findings for 2022:

- The number of work-related deaths (140) in 2022 has stayed the same compared to 2021 (140 work-related deaths). The 2022 fatal injury rate of 3.0 deaths per 100,000 workers decreased from 3.1 deaths per 100,000 workers in 2021.

- Although not directly comparable, the *overall* rate of work-related deaths in Michigan is lower than the rate in the United States (3.7 deaths/100,000 full-time equivalent [FTE]s).

- The industry sector with the highest employment-based industry rate was Agriculture, Forestry, Fishing & Hunting (15.8 deaths/100,000 workers), followed by Construction (15.3 deaths/100,000 workers) and then Transportation & Warehousing (10.9/100,000 workers). Construction had the largest number of work-related deaths (28 deaths, 20% of all fatalities).

- Struck by incidents were the leading cause of work-related deaths (24 deaths, 17.1%), followed by homicide & assault (23 deaths, 16.4%) and falls (21 deaths, 15%).

- By occupational group, Transportation & Material Moving had the largest number of work-related deaths (34 deaths, 24.3%) followed by Construction & Extraction (28, 20.0%) and Management (14, 10.0%).

- Forty-five of Michigan's 83 counties (54.2%) had a work-related death. Wayne County had the largest number of deaths at 25 (17.9%), followed by Oakland with 18 deaths (12.9%), Macomb with 11 deaths (7.9%), and Kent with 8 deaths (5.7%).

- Of the 140 work-related fatalities, 41 (29.3%) were MIOSHA program-related and were investigated by a MIOSHA compliance officer.

Definitions

A **traumatic injury** is any unintentional or intentional wound or damage to the body resulting from acute exposure to energy or from the absence of such essentials as heat or oxygen caused by a specific event, incident, or series of events within a single workday or shift.

Work is defined as legal duties, activities or tasks that produce a product as a result and that are done in exchange for money, goods, services, profit, or benefit.

A **work relationship** exists if an event or exposure results in the fatal injury or illness of a person:

(1) ON the employer's premises and person is there to work; or

(2) OFF the employer's premises and person is there to work, or the event or exposure was related to the person's work, or status as an employee.

Incidence means the number of new cases of an illness, injury, or other health-related event that commence during a specified period in a specified population.

Background

In 2001, MSU OEM instituted a tracking program for all traumatic work-related deaths, first with financial assistance from the Department of Licensing and Regulatory Affairs (LARA; now LEO) and then from the National Institute for Occupational Safety and Health (NIOSH). This is a joint project of LEO/MIOSHA and MSU OEM.

The purpose of the MIFACE tracking project is three-fold:

- Identify the types of industries and work situations where workers are dying from acute traumatic incidents,
- Identify the underlying causes of the work-related fatality, and
- Formulate and disseminate prevention strategies to reduce future work-related fatalities.

MIFACE uses the National Institute for Occupational Safety and Health (NIOSH) Fatality Assessment and Control Evaluation (FACE) as a model. Since 1982, NIOSH has funded selected states to operate a state FACE program. MIFACE investigations have provided aggregate data to identify high-risk industries and work practices as well as provided the stories or "faces" necessary to make the statistics real and influence change in the workplace. Emphasis on information dissemination and translation of information into user-friendly materials is an important part of the MIFACE program.

The MSU OEM webpage has many resources available to assist employers, employees, safety and health professionals and others to understand more about work-related illnesses, injuries and deaths.

Who is Included? Any individual of any age who meets the criteria of "at work", including volunteers and prison inmates, who are exposed to the same work hazards and perform the same duties or functions as paid employees. Suicides are included, following the protocol established by the NIOSH FACE program and the Bureau of Labor Statistics (BLS), which collects the official work-related death statistics in all states.

Who is Not Included? Individuals who die while "at work" from diseases, such as a heart attack or stroke, individuals commuting to/from work, volunteers not working for a non-profit, students, and homemakers.

Methods

MIFACE utilizes multiple sources to identify work-related fatalities in Michigan: MIOSHA, Death Certificates, Newspapers, Medical Examiners, Police/Fire/EMT Departments, Workers' Compensation Agency, MSU Extension, Michigan Farm Bureau, Federal Agencies (MSHA, NTSB, etc.), Internet searches, and Michigan citizens reporting a work-related death.

IDENTIFY INDIVIDUALS

- ◊ **Receive Report of Death**
- ◊ **Determine if work-related death**
  - Paid employee, self–employed?
  - Working at job or family business?
  - Traveling "while on-the-clock" or compensated travel?
  - Volunteer?
  - In parking lot of business?

ALL work-related deaths MUST be reported to MIOSHA within 8 hours of the death.

The toll-free hotline to report a work- related death is: 1-800-858-0397

GATHER INFORMATION

- ◊ **Contact MIOSHA**
  - If fatality is program-related
- ◊ **Gather source documents**
  - Reports from agencies that investigated the death/ provided emergency services when event occurred
  - Death certificate
  - Medical examiner report and, when appropriate
  - MIOSHA fatality investigation narrative

CONTACT EMPLOYER/FARM FAMILY

- ◊ **Send MIFACE Introduction Letter and Brochure**
- ◊ **Follow-up phone contact**
  - Answer questions
  - Ask if employer and/or family will voluntarily participate
    - ➢ If Yes, schedule date and time for MIFACE site visit
    - ➢ If No, write case summary or MIFACE Summary of MIOSHA Investigation

MIFACE INVESTIGATION REPORT

- ◊ **Site Visit Report Includes:**
  - Summary statement
  - Background information
  - Detailed investigation narrative
  - Cause of death as determined by the Medical Examiner
  - Prevention recommendations, including discussion
  - References
  - Pictures, drawings, sketches
  - Review process

MIFACE SITE VISIT

- ◊ **Explain MIFACE program**
- ◊ **Complete appropriate research forms**
- ◊ **Conduct interviews with appropriate personnel**
  - Learn about process, equipment involved, work activities of deceased, training, safety programs, etc.
- ◊ **Observe area and/or equipment involved**
- ◊ **Take pictures, ensuring identifiers are removed**

MIFACE FOLLOW-UP ACTIVITIES

◊ **Identify Stakeholders**
- Internet search for similar companies and/or trade groups

◊ **Update Database**
- Information collected from each site visit and statewide tracking entered into a database

◊ **Analyze Data**
- Annual Report developed analyzing and discussing data

◊ **Educational Outreach**
- MIFACE Summary of MIOSHA Investigation if MIOSHA investigation takes place
- Hazard Alert
- Post on MSU OEM website:
  - Investigation Report
  - MIFACE Summary of MIOSHA Investigation
  - Hazard Alert
- Send notice of posted publications to MIFACE e-mail distribution list
- Guest speaker, display booths at health and safety conferences, industry trade group training programs

The level of information collected for each fatality depends on the type of incident.

For homicides, suicides and most transportation-related fatalities that occurred while the individual was at work, MIFACE collected only source documents.

For many of the remaining work-related fatalities including agricultural fatalities, MIFACE initiated contact with employers or farm family members to request permission for an on- site investigation. It is important to note that MIFACE investigators did not enforce compliance with Michigan Occupational Safety and Health Administration (MIOSHA) rules and regulations and did not assign fault or blame. However, to decrease the burden to the employer of multiple investigations, where possible, MIFACE accompanied the MIOSHA compliance officer with employer agreement. In addition, MIFACE interviewed the compliance officers about their investigation.

Results

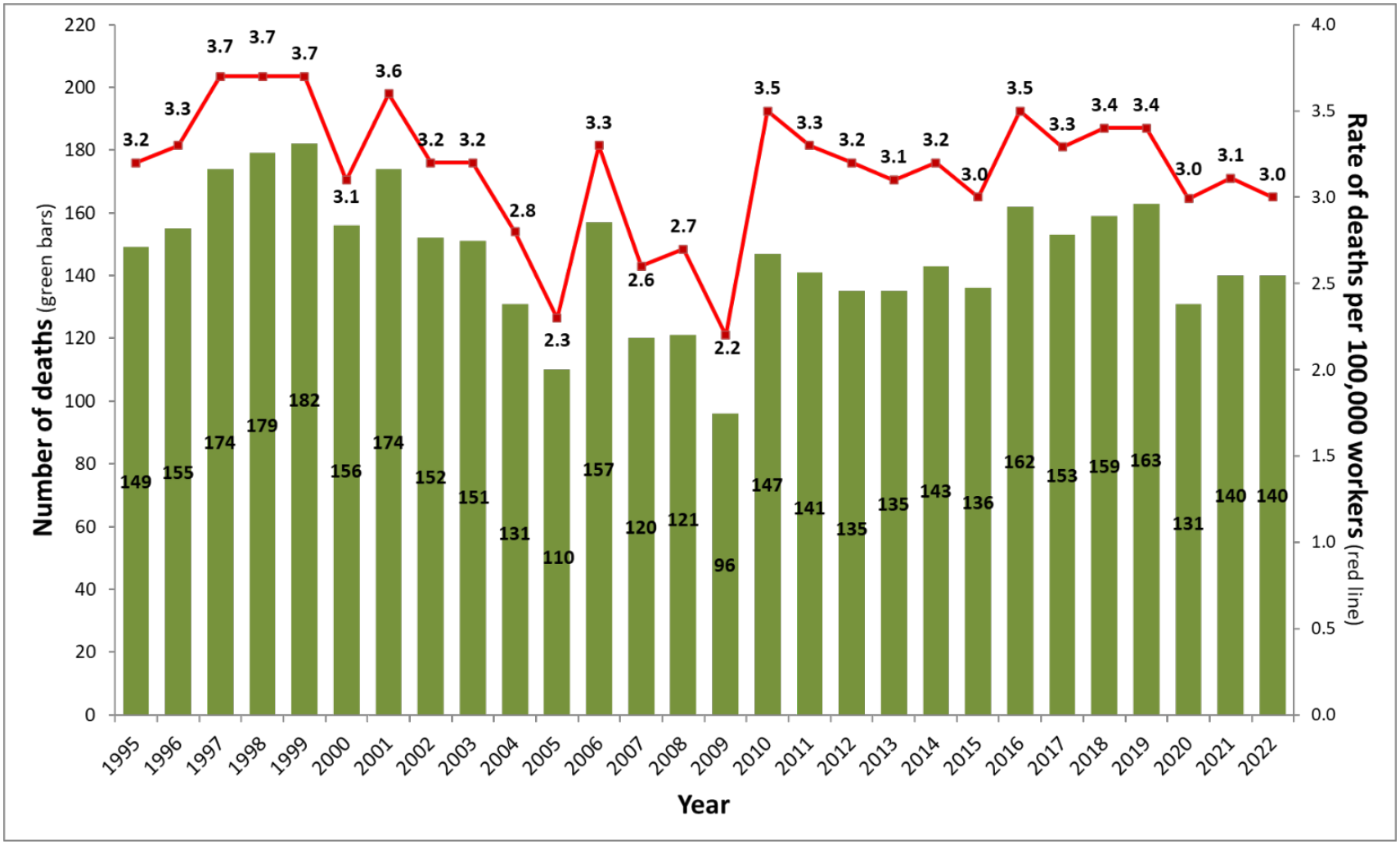
There were 140 acute traumatic work-related fatalities in 2022. One hundred thirty-four (97.1%) of the 140 work-related traumatic incidents occurred in 2022. Below is a description of the six individuals who died in 2022 due to complications from a work-related injury sustained in a previous year:

- A journeyman tool and die worker in his 80s died in 2022 from complications of a 1978 workplace head injury that caused lifelong hydrocephalus.
- A police officer in his 50s died in 2022 from complications of a gunshot wound to the head sustained in the line of duty during a 1998 pursuit.
- A pulp wood cutter in his 70s died from seizure complications linked to a traumatic brain injury caused by being struck by a tree in 2010.
- A roofing business owner in his 50s died from an epileptic seizure disorder resulting from a 40-foot fall after electrical current contact in 2010.
- A carpenter in his 50s died in 2022 from a seizure disorder caused by a traumatic brain injury sustained in a ladder fall in 2019.
- A farmer in his 80s died from complications of blunt force trauma to the chest after being struck by a 300-pound adapter while working on the farm in 2021.

The 140 individuals who died had 138 different employers and comprised 137 separate incidents. A construction owner and laborer died in a trench collapse and a pizza delivery driver and trainee died in a motor vehicle crash. One motor vehicle crash involved two different employers; a box truck driver and a semi-truck driver died in the same collision

Figure 1 shows the number of acute traumatic work-related deaths and incidence rate per year in Michigan since 1995. Incidence rates shown from 1995 to 2000 were obtained from the BLS website. Rates since 2001 were determined from MIFACE statistics.

Figure 1. Number and Incidence Rate of Work-Related Fatalities in Michigan, 1995–2022



Demographics

Table 1 shows the demographic characteristics of the 140 traumatic work-related fatalities in Michigan in 2022. Demographic characteristics were obtained from the individual's death certificate.

Race

Of the 131 males who died, 99 were White, 20 were Black, five were Hispanic, two were Asian or Pacific Islander, three were White with Hispanic origins, one was Asian Indian, and one was White with unknown ethnicity. Seven White women and two Black women died in a work-related incident.

Age

The age at time of death ranged from 7 to 86 years. The average age was 48.4 years, a similar trend from 48.8 years of age in 2021. For men, the ages ranged from 7 to 86 years, and for women, the ages ranged from 25 to 80 years. The average age for men at the time of death was 48.4 years; for women, it was 47.6 years.

Eighteen individuals were 66 years of age or older when they died in 2022 compared to the 21 individuals who died in 2021. The average age at time of death for these individuals was 73.6 years and included 16 men and two women. Seven (38.8%) of the 18 individuals aged 66 years or older died due to struck by an object, 4 (22.2%) due to a fall, 2(11.1%) were due to motor vehicle crash or transportation-related, 1 (5.6%) due to machine-related injury, 1 (5.6%) due to homicide or assault, 1 (5.6%) due to suicide, 1 (5.6%) due to aircraft, and 1 (5.6%) due to other reason.

Table 2 describes the age distribution of the victims across industry sectors.

Nationally, the hours-based fatal work injury rate per 100,000 full-time-equivalent (FTE) workers for individuals aged 65 and over was 8.8. Although not directly comparable, Michigan's employment-based fatality rate for workers aged 65 and over was 5.7 deaths per 100,000 workers in 2022. While the percentage of individuals 65 years of age and

Table 1. Demographic Characteristics of 140 Work-Related Fatalities, Michigan 2022

Demographic Characteristic*	Number	Percent
Sex		
Male	131	94
Female	9	6.4
Race/Ethnicity		
White	110	79
Black	22	16
Hispanic	5	3.6
Asian or Pacific Islander	2	1.4
Asian Indian	1	0.7
Education		
Less than High School	19	14
High School Graduate	61	44
GED	8	5.7
Some College (1-4 years)	43	31
Post College (5+ years)	5	3.6
Vocational School	1	0.7
Specialized Training	1	0.7
Not Provided	2	1.4
Age		
<20	2	1.4
20-29	11	7.9
30-39	28	20
40-49	31	22
50-59	38	27
60-69	18	13
70-79	8	5.7
80-89	4	2.9
≤90	--	--
Country of Origin		
United States	131	94
Iraq	3	2.1
Albania	1	0.7
Costa Rica	1	0.7
Guatemala	1	0.7
India	1	0.7
Macedonia	1	0.7
Mexico	1	0.7
Totals	**140**	100

* Source: Death Certificate (percent may not add to 100 due to rounding)

older who were employed (18.4%) was smaller than other age categories, this age group had the highest fatality rate of all age groups (**Table 3**).

Table 2. Traumatic Work-Related Fatalities by Age of Victim and Industry Sector, Michigan 2022				
Industry Sector (NAICS Code)	**0-17**	**18-65**	**65+**	**Total**
	Number (%)	**Number (%)**	**Number (%)**	
Agriculture, Forestry, Fishing & Hunting (11)	1 (7)	7 (50)	6 (43)	**14**
Construction (23)	--	25 (89)	3 (11)	**28**
Manufacturing (31-33)	--	15 (88)	2 (12)	**17**
Wholesale Trade (42)	--	5 (100)	--	**5**
Retail Trade (44-45)	--	6 (75)	2 (25)	**8**
Transportation & Warehousing (48-49)	--	17 (89)	2 (11)	**19**
Information (51)	--	3 (100)	--	**3**
Finance & Insurance (52)	--	1 (100)	--	**1**
Real Estate & Rental & Leasing (53)	--	1 (100)	--	**1**
Professional/Science/Technology (54)	--	3 (100)	--	**3**
Administrative & Support & Waste Management & Remediation Services (56)	--	6 (86)	1 (14)	**7**
Educational Services (61)	--	1 (50)	1 (50)	**2**
Health Care & Social Assistance (62)	--	4 (80)	1 (20)	**5**
Arts, Entertainment & Recreation (71)	--	3 (75)	1 (25)	**4**
Accommodation & Food Services (72)	--	10 (91)	1 (9)	**11**
Other Services (except Public Administration) (81)	--	5 (100)	--	**5**
Public Administration (92)	--	7 (100)	--	**7**
Totals	**1 (0.7)**	**119 (85)**	**20 (14.3)**	**140**

Table 3. Employment Number, Percent of the Civilian Non-institutional Population Employed and Fatality Rate by Age Group, Michigan 2022				
Age Range (in years)	Employment		Number of Deaths	Fatality Rate (per 100,000 workers)
	Number employed	Percent of the civilian non-institutionalized population that is employed		
15	*	*	1	--
16-19	184,000	36.1	1	0.5
20-24	435,000	68.3	5	1.1
25-34	1,016,000	77.3	26	2.6
35-44	953,000	78.8	24	2.5
45-54	917,000	76.9	30	3.3
55-64	782,000	59.8	33	4.2
65 and older	352,000	18.4	20	5.7

[a] Employment by age from the BLS Local Area Unemployment state specific report.
*No data available

Geographic Distribution

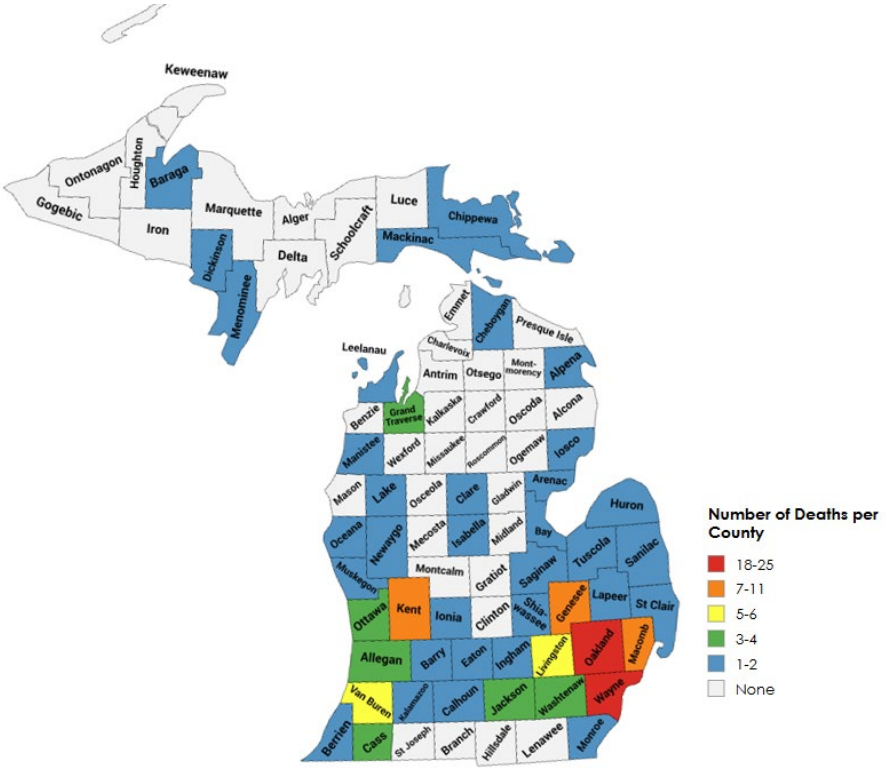
Forty-five (54%) of the 83 Michigan counties had at least one work-related injury that led to the death of the worker **(Figure 2** and **Table 4)**.

Table 4. County of Fatal Work-Related Injury, Michigan 2022

County	Number	(%)	County	Number	(%)	County	Number	(%)	County	Number	(%)
Alcona	--	--	Dickinson	2	1.4	Lake	1	0.7	Oceana	2	1.4
Alger	--	--	Eaton	1	0.7	Lapeer	2	1.4	Ogemaw	--	--
Allegan	3	2.1	Emmet	--	--	Leelanau	1	0.7	Ontonagon	--	--
Alpena	2	1.4	Genesee	7	5	Lenawee	--	--	Osceola	--	--
Antrim	--	--	Gladwin	--	--	Livingston	5	3.6	Oscoda	--	--
Arenac	1	0.7	Gogebic	--	--	Luce	--	--	Otsego	--	--
Baraga	1	0.7	Grand Traverse	3	2.1	Mackinac	1	0.7	Ottawa	3	2.1
Barry	1	0.7	Gratiot	--	--	Macomb	11	7.9	Presque Isle	--	--
Bay	1	0.7	Hillsdale	--	--	Manistee	1	0.7	Roscommon	--	--
Benzie	--	--	Houghton	--	--	Marquette	--	--	Saginaw	2	1.4
Berrien	2	1.4	Huron	1	0.7	Mason	--	--	St. Clair	2	1.4
Branch	--	--	Ingham	2	1.4	Mecosta	--	--	St. Joseph	--	--
Calhoun	1	0.7	Ionia	1	0.7	Menominee	1	0.7	Sanilac	1	0.7
Cass	--	--	Iosco	1	0.7	Midland	--	--	Schoolcraft	--	--
Charlevoix	--	--	Iron	--	--	Missaukee	--	--	Shiawassee	1	0.7
Cheboygan	1	0.7	Isabella	1	0.7	Monroe	2	1.4	Tuscola	1	0.7
Chippewa	1	0.7	Jackson	4	2.9	Montcalm	--	--	Van Buren	5	3.6
Clare	1	0.7	Kalamazoo	2	1.4	Montmorency	--	--	Washtenaw	4	2.9
Clinton	--	--	Kalkaska	--	--	Muskegon	1	0.7	Wayne	25	17.9
Crawford	--	--	Kent	8	5.7	Newaygo	1	0.7	Wexford	--	--
Delta	--	--	Keweenaw	--	--	Oakland	18	12.9	Unknown	1	0.7

Collectively, the three southeast Michigan counties of Macomb, Oakland, and Wayne, comprising the Detroit Tri-County area, had 54 (38.6%) of all work-related deaths. Wayne County had the highest number of deaths (25 deaths, 17.9%), followed by Oakland (18 deaths, 12.9%), Macomb (11 deaths, 7.9%), and Kent (8 deaths, 5.7%).

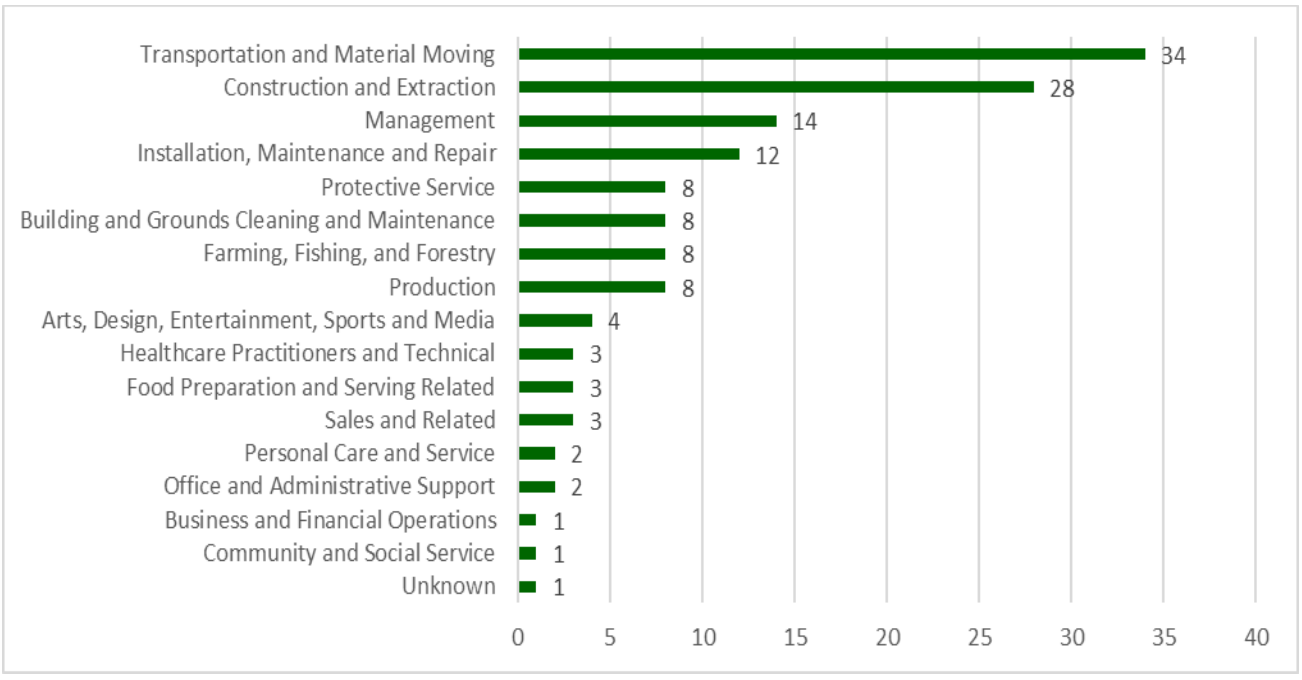
Figure 2. County of Fatal Work-Related Injury, Michigan 2022



Occupation

Among the 140 deaths, **Figure 3** shows the occupation distribution of the 139 work-related deaths with known occupation utilizing the 2018 Standard Occupational Classification (SOC) categories. Occupation was determined from the reporting source data. The SOC categories are divided into 23 major groups. These major groups combine occupations according to the nature of the work performed, placing all people who work together into the same group regardless of their skill level.

Figure 3. Number of Deaths by Standard Occupational Classification (SOC), Michigan 2022



The Transportation & Material Moving group had the largest number of deaths at 34 (24.3%). Transportation & Material Moving occupations are varied, such as air traffic controllers, airline and commercial pilots, bus drivers, delivery truck drivers and driver/sales workers, flight attendants, hand laborers and material movers, heavy and tractor-trailer truck drivers, material moving machine operators, railroad workers, taxi drivers, shuttle drivers, and chauffeurs and water transportation workers.

Construction & Extraction occupations had the second highest number of deaths at 28 (20%). Management occupations, which includes farmers, has the third highest number of deaths at 14 (10%).

Seven of the 23 SOC major groups did not have a death in 2022: Computer & Mathematical, Architecture & Engineering, Life, Physical & Social Science, Military Specific, Legal, Education Instruction & Library, and Healthcare Support Occupations.

Working Status of the Decedent

The 140 individuals who died had 138 different employers. The employer/employee status was known for 139 of the 140 (99.3%) work-related deaths. One-hundred and twelve (112; 80%) individuals were employees with seven of those individuals known to be a temporary/contract worker. Twenty-five (17.9%) were self-employed or the owner/co-owner of the business and two (1.4%) individuals were volunteer workers. One individual (0.7%) was listed as unknown.

The decedent was working alone in 69 (49.3%) incidents, with a coworker in 68 (48.6%) incidents and the work status was unknown in 3 (2.1%) incidents. For the 11 homicides, the decedent was working alone in seven (63.6%) incidents and with a coworker in three (27.3%) incidents. For one homicide, it was unknown if the decedent was working alone or with a coworker at the time of the incident.

Illegal Drug/Alcohol/Medication Use

Of the 110 individuals whose death was not a suicide (14 deaths) or a drug overdose (16 deaths), 29 (26.4%) individuals had detectable levels of alcohol, marijuana, illegal drugs or medications in their system. All 29 of these in turn had levels that were considered on review to possibly have contributed to the fatal incident (**Table 5**).

Several states have adopted a legal limit of 5 µg/l (5 ng/ml) for marijuana (THC) in blood for being impaired while driving. Although this level does not directly correlate with impairment as does blood alcohol levels, the THC level of 5 µg/l was used to define that marijuana use was possibly related to the death. It was unknown if the presence of hydrocodone, oxycodone, fentanyl, amphetamine, and morphine was from the use of a prescribed medication or from illegal use.

Table 5. Type of Work-Related Fatal Incident and Drug Found in Toxicological Analysis Among 29 Individuals Where the Substance Detected was Considered a Possible Contributor to the Individual's Death, Michigan 2022

Incident Type	Blood Alcohol Content (%)	Prescription	Cocaine, Heroin, or Other Illegal	Unknown Prescription/ Non- Prescription
Asphyxiation	0.11	Alprazolam		Amphetamine
Drowning	2.9		Cocaine	
Fall	0.043			
Fall				Marijuana
Fall			Methamphetamine	Marijuana
Fall		Phentermine, Gabapentin		Marijuana
Fall	0.157	Benzodiazepines		
Fire/Explosion	0.225			
Homicide/Assault				Marijuana
Homicide/Assault				Marijuana
Homicide/Assault				Marijuana
Homicide/Assault				Marijuana
Homicide/Assault	0.089			Marijuana
Homicide/Assault				Morphine, Dihydrocodeine, Hydrocodone, Marijuana
Machine				Marijuana
Machine				Hydrocodone, Dihydrocodeine, Marijuana
Machine	0.075			Marijuana
Machine	0.23			
Medical		Gabapentin	Methamphetamine	Methadone, Fentanyl, Amphetamine, Marijuana
Motor Vehicle				Marijuana
Motor Vehicle				Marijuana
Motor Vehicle			Midazolam	
Motor Vehicle		Benzodiazepines		Codeine
Motor Vehicle	0.42			
Motor Vehicle				Amphetamine, Marijuana
Struck-By	1.4	Metoprolol, Flecainide		
Struck-By		Clonidine		Morphine-Free, Codeine, Hydrocodone-Free
Struck-By				Dihydrocodeine, Hydrocodone, Hydromorphone
Other				Marijuana

Work-Related Fatality Incidence Rates by Industry

Employment-based incidence rates measure the risk of fatal injury for those employed during a given period, regardless of hours worked.

Hours-based incidence rates measure fatality risk per standardized length of exposure. Hours-based rates use the average number of employees at work and the average hours each employee works (40 hours/week, 50 weeks/year).

The BLS uses hours-based incidence rates to measure fatality risk for industry sectors.

Employment-based and hours-based incidence rates will be similar for industries which tend to have full-time employees. However, differences will be observed for industries that tend to have a high percentage of part-time workers, such as in the fast-food industry.

The number of hours worked was not available for several industry sectors. When provided, MIFACE calculated the hours-based work-related fatality incidence rate (See **Table 6**).

Michigan data shows that in industry sectors with many part-time workers (30 hours or less), the work-related fatality hours-based rate is higher than the employment-based incidence rate, such as in Retail Trade and Accommodation & Food Service. When the number of hours worked is 40 hours or more, the hours-based incidence rate is similar to or lower than the employment-based incidence rate, such as in Construction and Manufacturing.

Industry Highlights, Michigan 2022

Table 6 shows the number of traumatic work-related fatalities and Michigan's annual incidence rate by industry sector for number of employees and hours worked.

Highlights from Table 6

Six industry sectors had fewer work-related deaths and a lower employment-based incidence rate in 2022 compared to 2021:

Industry	Decrease in Number of Deaths from 2021	Number of 2022 WR Deaths	2022 Incidence Rate	Number of 2021 WR Deaths	2021 Incidence Rate
Agriculture	6	14	15.8	20	23.1
Construction	1	28	15.3	29	16.5
Transportation & Warehousing	3	19	10.9	22	13.5
Other Services	2	5	3.1	7	5.7
Admin & Support & Waste & Remediation	7	7	2.6	14	5.4
Educational Services	1	2	0.6	3	0.9
Mining	2	--	--	2	40.8
Utilities	2	--	--	2	9.7

Seven industry sectors had a higher number of work-related deaths and a higher employment-based incidence rate in 2022 compared to 2021:

Industry	Increase in Number of Deaths from 2021	Number of 2022 WR Deaths	2022 Incidence Rate	Number of 2021 WR Deaths	2021 Incidence Rate
Information	3	3	5.3	--	--
Accommodation & Food Services	6	11	3.1	5	1.6
Wholesale Trade	3	5	2.9	2	1.2
Public Administration	6	7	2.7	1	0.4
Retail Trade	3	8	1.8	5	1.1
Healthcare & Social Assistance	2	5	0.8	3	0.5
Finance & Insurance	1	1	0.6	--	--

Three industry sectors had the same number of work-related deaths in 2022 compared to 2021 (although the Incidence Rate varies due to fluctuating levels of employment):

Industry	Number 2021 & 2022 WR Deaths	Incidence Rate 2022	Incidence Rate 2021
Arts, Entertainment, & Recreation	4	7.9	9.4
Manufacturing	17	2.8	2.9
Real Estate & Rental & Leasing	1	1.8	1.9
Professional, Scientific, & Technical Services	3	1.0	1.0

The industry sector with the highest employment-based industry rate was Agriculture (15.8 deaths/100,000 workers), followed by Construction (15.3/100,000 workers), and then Transportation & Warehousing (10.9/100,000 workers). The Transportation & Warehousing and Agriculture, Forestry & Hunting industry sectors had the highest overall subsector incidence rates. While the number of deaths were small, Scenic & Sightseeing Transportation (NAICS 487) and Forestry & Logging (NAICS 113) had an incidence rate of 226.2 and 149.7 deaths per 100,000 workers, respectively.

Table 7 compares the employment-based and hours-based work-related fatality incidence rates by industry in Michigan to national hours-based rates for 2022 as computed by the Bureau of Labor Statistics (BLS). When calculating the fatal injury rates for the United States, BLS excludes workers under the age of 16 years, volunteers, and the resident military.

In 2022, the overall employment-based fatality rate of 3.0 per 100,000 workers, calculated by the MIFACE program, was lower than the BLS-calculated hours-based fatality incidence rate (3.7/100,000 FTEs) in the United States.

However, caution should be used when comparing hours-based and employment-based fatal injury rates because of the differences in the denominators used. When available, MIFACE used Michigan-specific hourly rates from Michigan Department of Technology, Management and Budget (DTMB)

CES; when unavailable, MIFACE used the BLS Census of Fatal Occupational Injuries (CFOI) State-based hourly rate for Michigan.

Overall, Michigan's CFOI calculated hours-based work-related fatality rate of 3.2 deaths per 100,000 FTEs was lower than the United States national rate of 3.7 deaths per 100,000 FTEs. For the industries for which MIFACE or BLS calculated a Michigan-specific hours-based rate and for which BLS also calculated a nationwide hours-based rate, most Michigan industry groups had a higher hours-based rate than the United States rate for that industry. The exceptions to this were in the Wholesale Trade sector (3.0 vs 5.4) and Other Services sector (2.7 vs 2.9) (**Table 7**).

Table 6. Number of Traumatic Work-Related Fatalities by Industry and Incidence Rates by Number of Employees and by Hours Worked, Michigan 2022						
Industry Sector (NAICS Code)	**Number**	**Percent**	**Employment-Based**		**Hours-Based**	
			Number Employees[a]	**Rate**[d]	**Number Hours**[e]	**Rate**[g]
Agriculture, Forestry, Fishing & Hunting (11)	**14**	**10.0**	**88,780**	**15.8**	**	**
Crop Production (111) (Owners/Operators)	6	4.3	53,164[b]	11.3	**	**
Crop Production (111) (Hired Workers)	1	0.7	52,371[b]	1.9	40.7[f]	2.9
Animal Production (112) (Hired Workers)	1	0.7	16,579[b]	6.0		
Animal Production (112) (Owners/Operators)	0	**	29,384[b]	**	**	**
Forestry & Logging (113)	3	2.1	2,004	149.7	**	**
Support Activities for Agriculture (115)	2	1.4	4,013	49.8	**	**
Farm - 3rd digit unknown (11)	1	0.7	**	**	**	**
Construction (23)	**28**	**20.0**	**182,888**	**15.3**	**39.5**	**15.5**
Construction of Buildings (236)	9	6.4	46,105	19.5	36.2	21.6
Heavy & Civil Engineering Construction (237)	2	1.4	20,444	9.8	**	**
Specialty Trade Contractors (238)	17	12.1	116,339	14.6	40.2	14.5
Manufacturing (31-33)	**17**	**12.1**	**603,361**	**2.8**	**42.1**	**2.7**
Food Manufacturing (311)	3	2.1	40,543	7.4	**	**
Wood Product Manufacturing (321)	2	1.4	10,371	19.3	**	**
Plastics & Rubber Products Manufacturing (326)	2	1.4	39,576	5.1	**	**
Primary Metal Manufacturing (331)	1	0.7	18,612	5.4	**	**
Fabricated Metal Products Manufacturing (332)	1	0.7	71,326	1.4	39.7	1.4
Machinery Manufacturing (333)	1	0.7	68,775	1.5	42.9	1.4
Electrical Equipment, Appliance, & Component Manufacturing (335)	1	0.7	13,898	7.2	**	**
Transportation Equipment Manufacturing (336)	6	4.3	186,659	3.2	43.1	3.0
Wholesale Trade (42)	**5**	**3.6**	**171,120**	**2.9**	**39.2**	**3.0**
Merchant Wholesalers, Durable Goods (423)	3	2.1	105,710	2.8	40.4	2.8
Merchant Wholesalers, Non-durable Goods (424)	2	1.4	50,964	3.9	**	**
Retail Trade (44-45)	**8**	**5.7**	**454,336**	**1.8**	**28.9**	**2.4**
Motor Vehicle & Parts Dealers (441)	1	0.7	62,791	1.6	35.4	1.8
Building Material & Garden Equipment & Supplies Dealers (444)	1	0.7	48,237	2.1	**	**
Food & Beverage Stores (445)	1	0.7	76,685	1.3	**	**
Gasoline Stations (447)	2	1.4	26,719	7.5	**	**
Clothing & Clothing Accessories Stores (448)	1	0.7	18,465	5.4	**	**
Sporting Goods, Hobby, Musical Instrument, Book, & Miscellaneous Retailers (459) *	2	1.4	43,773	4.6	**	**

Table 6. Number of Traumatic Work-Related Fatalities by Industry and Incidence Rates by Number of Employees and by Hours Worked, Michigan 2022, Continued						
Industry Sector (NAICS Code)	**Number**	**Percent**	**Employment-Based**		**Hours-Based**	
			Number Employees[a]	**Rate**[d]	**Number Hours**[e]	**Rate**[g]
Transportation & Warehousing (48-49)	**19**	**13.6**	**174,777** [c]	**10.9**	**	**
Truck Transportation (484)	11	7.9	49,198	22.4	**	**
Transit & Ground Passenger Transportation (485)	2	1.4	8,761	22.8	**	**
Scenic & Sightseeing Transportation (487)	1	0.7	442	226.2	**	**
Support Activities for Transportation (488)	1	0.7	17,603	5.7	**	**
Couriers & Messengers (492)	4	2.9	22,070	18.1	**	**
Information (51)	**3**	**2.1**	**56,466**	**5.3**	**36.6**	**5.8**
Motion Picture & Sound Recording Industries (512)	2	1.4	5,143	38.9	**	**
Publishing Industries (513)	1	0.7	14,124	7.1	**	**
Finance & Insurance (52)	**1**	**0.7**	**158,700**	**0.6**	**37**	**0.7**
Credit Intermediation & Related Activities (522)	1	0.7	80,227	1.2	**	**
Real Estate & Rental & Leasing (53)	**1**	**0.7**	**56,369**	**1.8**	**	**
Rental and Leasing Services (532)	1	0.7	12,696	7.9	**	**
Professional, Scientific, & Technical Services (54)	**3**	**2.1**	**314,639**	**1.0**	**36**	**1.1**
Professional, Scientific, & Technical Services (541)	3	2.1	314,639	1.0	**	**
Administrative & Support & Waste Management & Remediation Services (56)	**7**	**5.0**	**273,232**	**2.6**	**	**
Administrative & Support Services (561)	7	5.0	259,604	2.7	**	**
Educational Services (61)	**2**	**1.4**	**354,993** [c]	**0.6**	**	**
Educational Services (611)	2	1.4	354,993 [c]	0.6	**	**
Health Care & Social Assistance (62)	**5**	**3.6**	**611,286** [c]	**0.8**	**31.8**	**1.0**
Ambulatory Health Care Services (621)	3	2.1	209,996	1.4	**	**
Hospitals (622)	1	0.7	232,097 [c]	0.4	35.8	0.5
Social Assistance (624)	1	0.7	78,955	1.3	**	**
Arts, Entertainment, & Recreation (71)	**4**	**2.9**	**50,369**	**7.9**	**20.3**	**15.6**
Performing Arts & Spectator Sports (711)	2	1.4	9,217	21.7	**	**
Amusement, Gambling, & Recreation Industries (713)	2	1.4	37,094	5.4	**	**
Accommodation & Food Services (72)	**11**	**7.9**	**351,059**	**3.1**	**22.9**	**5.5**
Accommodation (721)	3	2.1	37,872	7.9	**	**
Food Services & Drinking Places (722)	8	5.7	313,187	2.6	**	**
Other Services (except Public Administration) (81)	**5**	**3.6**	**130,168**	**3.1**	**	**2.7**[j]
Repair & Maintenance (811)	4	2.9	43,853	6.8	**	**
Personal & Laundry Services (812)	1	0.7	39,563	2.5	**	**
Public Administration (92)	**7**	**5.0**	**261,600**[c]	**2.7**	**	**
Executive, Legislative, & Other General Governmental Support (921)	2	1.4	**	**	**	**
Justice, Public Order, & Safety Activities (922)	5	3.6	**	**	**	**
Totals	**140**	**100**	**4,653,000**[i]	**3.0**	**	**3.2**[j]

[a] Employment numbers from Michigan Department of Technology, Management and Budget (DTMB), Bureau of Labor Market Information and Strategic Initiatives, QCEW Industry Employment and Wages unless otherwise noted.

[b] 2022 United States Department of Agriculture Census of Agriculture, Michigan-level data, Table 75. Summary by North American Industry Classification System. Number of owners/operators are defined as the number of "producers" in Table 75 summed by industry group (crop or animal). Hired workers are defined as the number of "hired farm labor" in Table 75 by industry group. Total number of employees in NAICS Sector 11 defined as total number of producers (owner/operators) for

crop and animal production added to the number of employees in sectors 113 to 115 from Michigan DTMB QCEW data, excluding the count of "hired workers". See the Agriculture section for discussion.

[c] Includes federal, state, or local workers obtained from Michigan DTMB, Bureau of Labor Market Information and Strategic Initiatives, Current Employment Statistics (CES) found under the classification Public Administration NAICS 92.

[d] Employment-based incidence rates calculated per 100,000 workers.

[e] Average number of hours worked per week by industry taken from Michigan DTMB CES estimates unless otherwise noted.

[f] Number of hours worked per week by hired farm workers in the Lake Region for 2022 as reported in the Quick Stats Search Option from the USDA National Agricultural Statistics Service. Corresponding hours-based rate is calculated using the number of hired farm worker fatalities from the Crop and Animal production sectors combined.

[g] Hours-based incidence rates calculated as (N/EH)*200,000,000, where N is the number of fatalities, EH is the total employee-hours (number of employees * average number of hours worked per week * 50 weeks), and 200,000,000 is the benchmark number of hours worked by 100,000 FTE (40 hour/week) employees in one year.

[h] The number of workers in the Public Administration sector was calculated as the sum of Federal, State, and Local government employees in Michigan, minus the number of U.S. Postal Service workers, state and local hospital workers, and state and local education workers. All numbers from Michigan DTMB CES estimates.

[I] Total 2022 state employment taken from Michigan DTMB LAUS report.

[j] Michigan CFOI 2022 hours-based incidence rate..

*The 2017 NAICS code 453 (Miscellaneous Store Retailers) and 454 (Non-store Retailers) seen in prior annual reports were recoded in the 2022 NAICS. All of 2017 NAICS 453 was recoded to 2022 NAICS 459 and part of 454 was recoded to 2022 NAICS 459.

** No data available from corresponding sources.

Table 7. Traumatic Work-Related Fatalities by Industry Sector, Michigan Incidence Rates Compared to US Incidence Rates, 2022

Industry Sector (NAICS Code)	Number of Fatalities	2022 MI Employment-based Rate[a]	2022 MI Hours-Based Rate[a]	2022 US Hours-Based Rate[b]
Agriculture, Forestry, Fishing & Hunting (11)	14	15.8	27.6[c]	18.6
Construction (23)	28	15.3	15.5	9.6
Manufacturing (31-33)	17	2.8	2.7	2.6
Wholesale Trade (42)	5	2.9	3.0	5.4
Retail Trade (44-45)	8	1.8	2.4	2.1
Transportation & Warehousing (48-49)	19	10.9	**	14.1
Information (51)	3	5.3	5.8	1.9
Finance & Insurance (52)	1	0.6	0.7	0.2
Real Estate & Rental & Leasing (53)	1	1.8	**	2.9
Professional, Scientific, & Technical Services (54)	3	1.0	1.1	0.6
Administrative & Support & Waste Management & Remediation Services (56)	7	2.6	**	**
Educational Services (61)	2	0.6	**	0.8
Health Care & Social Assistance (62)	5	0.8	1.0	0.8
Arts, Entertainment, & Recreation (71)	4	7.9	15.6	3.3
Accommodation & Food Services (72)	11	3.1	5.5	2.6
Other Services (except Public Administration) (81)	5	3.1	2.7[c]	2.9
Public Administration (92)	7	2.7	**	**
Total	**140**	**3.0**	**3.2** [c]	**3.7**

[a] From Table 6, unless otherwise noted

[b] From U.S. BLS CFOI, National hours-based fatal injury rates by industry, occupation, and selected demographic characteristics, 2022.

[c] Michigan Hours-based rate taken from BLS state CFOI data

** No rate available from either MIFACE or CFOI

Means of Work-Related Death

In 2022, the means of death was known for 140 work-related Michigan deaths with one death being categorized as other **(Table 8)**. Struck by incidents were the leading cause of work-related death (24, 17.1%). The next leading causes of work-related death were homicide & assault (23 deaths, 16.4%), followed by falls (21 deaths, 15%), motor vehicle crashes (20 deaths, 14.3%), drug overdoses (16 deaths, 11.4%), and suicides (14 deaths, 10%).

Struck by incidents were the, or one of the leading means of death in 4 of 17 industry sectors (23.5%), including Agriculture, Forestry, Fishing, & Hunting (8 of 14 deaths, 57.1%), Manufacturing (5 of 17 deaths, 27.8%), Arts, Entertainment, & Recreation (1 of 4 deaths, 25%), and Other Services (2 of 5 deaths, 25%).

Homicide/assault were the, or one of the leading means of death in 6 of 17 industry sectors (41.2%), including Retail Trade (3 of 8 deaths, 37.5%), Information (2 of 3 deaths, 66.7%), Finance & Insurance (1 of 1 death, 100%), Administrative & Support & Waste Management & Remediation Services (2 of 7 deaths, 37.5%), Accommodation & Food Services (5 of 11 deaths, 45.5%), and Public Administration (2 of 7 deaths, 28.6%).

Falls were the, or one of the leading means of deaths in 2 of 17 industry sectors (11.8%), including Construction (15 of 28 deaths, 53.6%) and Educational Services (1 of 2 deaths, 50%).

Motor Vehicle Crashes were the, or one of the leading means of death in 4 of 17 industry sectors (29.4%), including Transportation & Warehousing (6 of 19 deaths, 31.6%), Professional, Science, and Technology (2 of 3 deaths, 66.7%), Arts, Entertainment, & Recreation (1 of 4 deaths, 25%), and Public Administration (2 of 7 deaths, 28.6%).

Drug Overdoses were the, or one of the leading means of deaths in 2 of 17 industry sectors (11.8%), including Wholesale Trade (2 of 5 deaths, 40%) and Arts, Entertainment, & Recreation (1 of 4 deaths, 25%).

Suicides were the, or one of the leading means of deaths in 1 of 17 industry sectors—the Healthcare & Social Assistance (2 of 4 deaths, 50%).

Drowning was one of the leading means of death in 1 of the 17 industry sectors—the Arts, Entertainment, & Recreation (1 of 4 deaths, 25%).

Medical-Related was one of the leading means of death in 1 of the 17 industry sectors—the Real Estate, Rental & Leasing (1 of 1 death, 100%).

Table 9 displays the number of fatalities across leading means of death by year from 2001–2022. There are variations in the means of death each year and because of small numbers in any given means of death, it is difficult to identify any temporal trends.

In 2018, a review of the MIFACE database was performed to standardize the categorization of death by motor vehicle. All motor vehicle entries were reviewed. If the death was a result of the deceased being a driver or passenger in a motor vehicle crash, the death was categorized as a motor vehicle crash. If the death was caused by a motor vehicle striking a pedestrian or a worker on a machine,

then the categorization of the death was changed from motor vehicle to struck by.

Between 2021 and 2022, 2022 had the highest number of fatal drug overdoses at Michigan workplaces with 16 overdose deaths. Overdose deaths increased from 7 cases in 2020 to 14 cases in 2021 and 16 cases in 2022. In the 21 years between 2002 and 2022, 2018 to 2022 accounts for 57.9% of all drug overdoses in the workplace (55 of 95 deaths). This increase mirrors national trends during this time period of increasing opioid (e.g., fentanyl, heroin, hydrocodone), stimulant (e.g., cocaine, methamphetamine) and alcohol use both at home and at work.

Table 8. Traumatic Work-Related Fatalities by Means of Death and Industry Sector, Michigan 2022

Industry Sector (NAICS)	Aircraft	Animal	Asphyxiation	Drowning	Drug Overdose	Fall	Explosion/ Fire	Homicide/ Assault	Machine	Medical	Motor Vehicle	Struck by	Suicide	Toxic Exposure	Other	Total
Agriculture, Forestry, Fishing & Hunting (11)	--	--	1	--	--	1	--	--	1	--	1	8	1	--	1	**14**
Construction (23)	--	--	1	--	4	15	--	1	1	--	2	4	--	--	--	**28**
Manufacturing (31-33)	--	--	--	--	3	1	1	2	3	--	--	5	2	--	--	**17**
Wholesale Trade (42)	--	--	--	--	2	--	--	--	--	--	1	1	1	--	--	**5**
Retail Trade (44-45)	--	--	--	--	2	--	--	3	--	--	2	--	1	--	--	**8**
Transportation & Warehousing (48-49)	--	--	--	--	2	1	--	3	2	--	6	--	4	1	--	**19**
Information (51)	--	--	--	--	--	--	--	2	--	--	1	--	--	--	--	**3**
Finance & Insurance (52)	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	**1**
Real Estate, Rental, & Leasing (53)	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	**1**
Professional, Scientific, & Technical Services (54)	--	--	--	--	1	--	--	--	--	--	2	--	--	--	--	**3**
Administrative & Support & Waste Management & Remediation Services (56)	--	--	2	1	--	1	--	2	--	--	--	1	--	--	--	**7**
Educational Services (61)	1	--	--	--	--	1	--	--	--	--	--	--	--	--	--	**2**
Health Care & Social Assistance (62)	--	--	1	--	--	--	--	1	--	--	--	1	2	--	--	**5**
Arts, Entertainment, & Recreation (71)	--	--	--	1	1	--	--	--	--	--	1	1	--	--	--	**4**
Accommodation & Food Services (72)	--	--	--	--	1	1	--	5	--	--	2	--	1	1	--	**11**
Other Services (except Public Administration) (81)	--	--	--	--	--	--	1	1	--	--	--	2	1	--	--	**5**
Public Administration (92)	--	1	--	--	--	--	--	2	--	--	2	1	1	--	--	**7**
Total	**1**	**1**	**5**	**2**	**16**	**21**	**2**	**23**	**7**	**1**	**20**	**24**	**14**	**2**	**1**	**140**

Table 9. Leading Means of Death by Year, 2002–2022

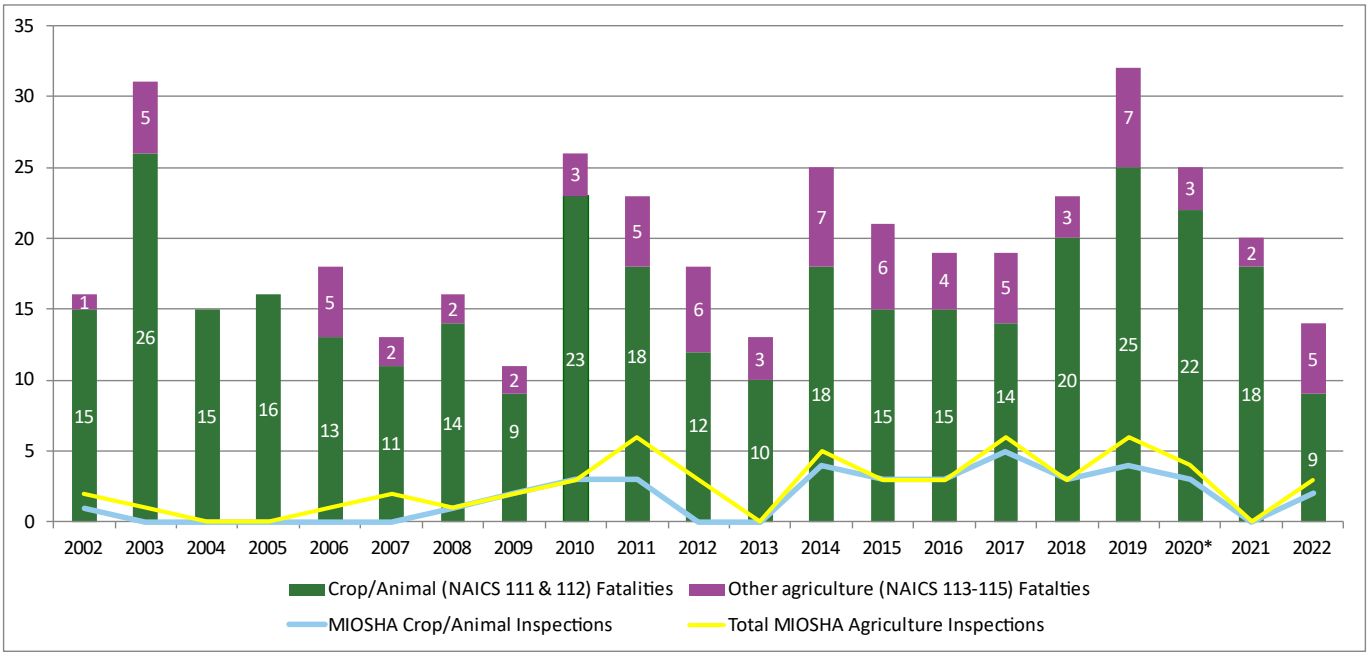
Year	Motor Vehicle	Struck by	Fall	Homicide/ Assault	Machine	Suicide	Electrocution	Aircraft	Toxic Exposure	Fire/Explosion	Drug Overdose	Drowning	Asphyxiation	Animal	Heat/Cold
2002	28	21	21	22	20	11	8	5	4	4	--	2	1	2	2
2003	27	20	19	15	36	5	10	2	3	4	3	1	4	2	1
2004	26	16	16	22	26	4	7	4	4	3	1	--	1	1	--
2005	23	11	20	16	18	2	4	6	2	4	3	1	--	--	--
2006	32	34	24	11	14	8	10	8	6	4	1	2	1	2	--
2007	26	19	17	21	16	6	4	--	4	1	2	--	--	2	1
2008	22	23	26	14	12	9	5	--	2	3	2	1	1	1	--
2009	18	19	14	11	7	12	5	2	--	1	4	--	1	2	--
2010	23	20	24	26	16	11	7	4	6	3	2	2	--	--	1
2011	22	16	21	15	20	16	7	7	4	3	1	1	2	2	2
2012	31	19	18	28	14	12	3	--	--	--	2	3	--	--	--
2013	24	27	19	17	10	22	2	2	1	3	3	--	1	--	1
2014	26	30	24	19	11	9	5	5	--	1	4	3	3	3	--
2015	25	23	18	22	15	12	2	3	4	3	3	2	2	1	--
2016	28	19	32	22	19	13	5	1	9	2	5	3	1	1	1
2017	28	27	26	25	9	17	5	--	--	4	4	6	1	--	--
2018	24	36	21	22	10	15	5	3	2	4	10	2	4	1	--
2019	31	21	19	11	19	23	5	9	6	4	8	1	2	3	1
2020	21	27	21	11	10	14	3	2	--	2	7	2	7	0	3
2021	24	23	21	7	12	8	5	4	2	5	14	2	8	3	--
2022	20	24	21	23	7	14	--	1	2	2	16	2	5	1	--
Total	**529**	**475**	**442**	**380**	**321**	**243**	**107**	**68**	**61**	**60**	**95**	**36**	**45**	**27**	**13**

Highlights and Discussion by Select Industries and Means of Death

Agriculture, Forestry, Fishing & Hunting (NAICS 11)

Figure 4 shows the number of fatalities in the Agriculture, Forestry, Fishing & Hunting sector by year for 2002–2022. Work-related deaths in the Crop and Animal raising industries (NAICS 111 and 112, respectively) have been combined and separated from the Other agricultural industries (NAICS 113–115). The figure also shows the number of fatalities which were investigated by MIOSHA by year.

Figure 4. Number of Agriculture Fatalities and MIOSHA Inspections, 2002–2022



*In 2020 MIOSHA conducted 1 inspection related to COVID-19 (no citations issued) on a crop farm. This inspection is not included in the MIOSHA inspection numbers reported in graph.

The federal Appropriations Act exempts small farming operations from federally-funded activities. Only State funds can be used by MIOSHA for interventions at farming operations when a farm operation:

- Employs 10 or fewer employees currently and at all times during the preceding 12 months; and
- Has not had an active temporary labor camp during the preceding 12 months.

It is important to note that immediate family members of farm employers are not counted when determining the number of employees. Most agricultural work-related deaths in Michigan have occurred on family farms with fewer than 10 employees and who did not have an active temporary labor camp. Therefore, few MIOSHA work-related fatality inspections on family farm operations have been performed.

The average age of those who died working in Agriculture in 2022 was 52.1 years, with a range of under 10 years old to 80's. **Table 10** shows the average age at the time of death for the past 20 years for those employed in Agriculture. In 18 of the 20 previous years (90%), the average age of the individual was in their 50's or 60's.

Table 10. Age at Time of Death, Agriculture, Michigan 2003–2022			
Year	Age (in years)	Year	Age (in years)
2003	58.1	2013	55.8
2004	59.7	2014	46.8
2005	54.9	2015	55.3
2006	49.9	2016	60.4
2007	54.2	2017	52.5
2008	67.9	2018	58.4
2009	51.5	2019	58.5
2010	53.0	2020	62.4
2011	56.6	2021	60.2
2012	52.2	2022	52.1

Special Considerations Regarding Employment Estimates in Agriculture

Traditional farm operations (Crop and Animal Production) accounted for 8 of the 14 (57.1%) deaths in 2022 while Logging accounted for 3 of the 14 (21.4%) deaths. Nine of the 14 (64.3%) known work-related deaths were identified as an owner/operator, while five (35.7%) were identified as hired labor/worker.

Hired labor includes paid family members, bookkeepers, office workers, maintenance workers, etc., if their work was primarily associated with agricultural production on the operation. Hired labor excludes contract (migrant) laborers. Unpaid workers likely make up a significant portion of the agricultural workforce – the 2022 USDA Census of Agriculture reports 68,950 hired workers and 39,369 unpaid workers. The number of migrant workers was not noted on the 2022 Agricultural Census, only the number of farms utilizing migrant labor. The 2013 Michigan Migrant and Seasonal Farmworker Enumeration Profiles Study estimated 49,135 migrant and seasonal farm laborers in 2013 (a more recent enumeration has not been completed). Seasonal farm labor was described as "an individual whose principal employment is in agriculture on a seasonal basis, who has been so employed within the last twenty-four months".

Migrant farm workers were defined as meeting the seasonal farm labor definition but "establishes for the purposes of such employment a temporary abode" (U.S. Code, Public Health Services Act, "Migrant Health"). Migrant farm workers include both individuals who met the definition of a migrant but only travel within the state of Michigan (intrastate migrants) and others who come from outside the state to work in Michigan (interstate migrants). The 2022 Agricultural Census reports that 10,269 farms in Michigan reported using hired labor, while only 1,208 reported using migrant labor.

If the total number of Agricultural operators (82,548), hired farm labor (68,950), and unpaid workers (39,369) identified in the 2022 Agriculture Census are added to the above estimate for migrant and seasonal farm laborers (49,135), as well as to the number of employees working in Forestry & Logging (2,004), Fishing, Hunting & Trapping (215), and Agricultural Support Activities (4,013) estimated by the Michigan DTMB in 2022, the total number of workers in Agriculture was 246,234. The increase in the number of workers would dramatically lower the NAICS 11 Agriculture, Forestry, Fishing & Hunting work-related fatality incidence rate from 15.8 deaths per 100,000 workers to 5.7.

Both rates are appreciably lower than the BLS CFOI hours-based rate for Michigan of 27.6 per 100,000 FTEs, which only includes hired employees. If only employment estimates from the Michigan DTMB Industry Employment and Wages report are used, the number of workers in agriculture totals only 34,554 which would drive the employment-based rate up to 40.5 per 100,000 workers.

The transient nature of crop production complicates the picture of Agricultural employment. A single farm may produce several crops utilizing hired labor to harvest. Workers may come and go (leave the state) to harvest other crops. Given that many of these work stints may be for durations significantly shorter than a year, it is possible that many hired and/or migrant workers will work at multiple farms in a year, each of which may count the worker in their reported number of hired workers, leading to overestimation of total employment in the industry.

Due to uncertainties regarding the true total number of hired, unpaid, and seasonal/migrant workers, and which of these categories may be overlapping or enveloped by others, the employment-based incidence rate of work-related fatalities across Agriculture (15.8/100,000 workers) utilizes only the total number of operators in Crop and Animal Production reported by the 2022 USDA Census of Agriculture combined with employee counts for Forestry & Logging, Fishing, Hunting & Trapping, and Agricultural Support Activities from the Michigan DTMB. It is likely that the most accurate employment-based incidence rate lies somewhere between this number and the rate given when all possible counts of hired, unpaid, and migrant labor are combined (5.7/100,000 workers).

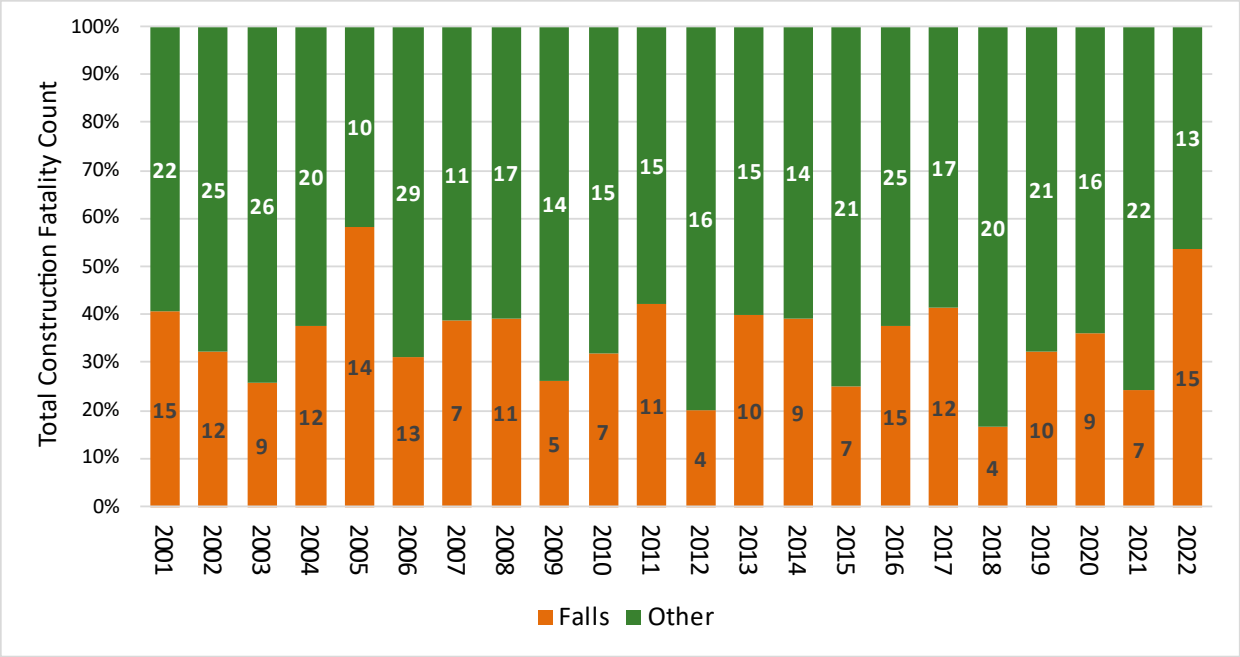
Construction (NAICS 23)

The number of deaths in the Construction industry sector decreased by 1 compared to the prior year (29 deaths in 2021 compared to 28 deaths in 2022). Deaths in two subsectors increased from 2021 to 2022, respectively: Specialty trade contractors group subsector (NAICS 238) from 15 to 17 deaths and Construction of buildings (NAICS 236) from 6 to 9 deaths. Heavy and civil engineering construction subsector (NAICS 237) had a decrease from 8 deaths in 2021 to 2 deaths in 2022. Development and general contracting subsector (NAICS 233) had no deaths in 2021 nor in 2022.

Falls were the primary cause of death in the Construction sector (15 of 28 deaths, 53.6%) in 2022. Eleven of the 15 falls occurred in the Specialty trade contractor's subsector (NAICS 238), including three roofers, three framing contractors, three painters, one finish carpentry contractor, and one electrical contractor. **Figure 5** shows the number of fatal falls in the Construction sector by year and the percentage of construction work-related deaths the fatal falls represent.

Between 2001 and 2022, the number of fatal falls in the Construction industry sector ranged from a low of four falls in 2012 and 2018 to a high of 15 falls in 2001, 2016, and 2022. During the 22 years, falls were the leading means of death for 17 years and the secondary means of death for four years, with a low of 16.7% in 2018 (secondary means of death) to a high of 58.3% in 2005 (leading means of death).

Figure 5. Fatal Falls as Percent of Total Construction Deaths by Year, 2001–2022



Retail Trade (NAICS 44-45)

During the time period 2001 to 2022, homicides & assaults were the leading means of death in the Retail Trade industry sector (NAICS 44-45) accounting for 47% (102 deaths) of all 217 fatalities. Furthermore, each year during this time-period, homicides were the leading means of death within Retail Trade. The Retail Trade industry sector accounts for a quarter (25.0%) of all 404 homicides from 2001–2021, the largest proportion of all industry sectors, followed by Accommodation and Food Services (52 deaths, 12.9%). Within Retail Trade, the next three most common means of death during the 22-year period were motor vehicle crashes (32 deaths, 14.7%), suicides (31 deaths, 14.3%), and falls (26 deaths, 12.0%).

Transportation and Warehousing (NAICS 48–49)

Motor vehicle crashes were the most common means of death in the Transportation and Warehousing industry sector in 2022 (6 of 19 deaths, 31.6%). These reflect overall trends for 2001–2022, in which motor vehicle crashes comprise the most common means of death in the Transportation and Warehousing industry sector (142 of 361 deaths, 39.3%), with struck by incidents being the next highest means of death (58 deaths, 16.1%). Furthermore, this industry accounts for a quarter (25.4%) of all 559 motor vehicle crash deaths from 2001–2021, the largest proportion of all industry sectors, followed by Construction (71 deaths, 12.7%) (**Table 11**).

Table 11. Number of Motor Vehicle Crash Work-Related Deaths by Industry Sector, Michigan 2001–2022	
Industry (NAICS Code)	*Number MV-related deaths (%)*
Agriculture, Forestry, Fishing & Hunting (11)	36 (6.5)
Mining	3 (0.5)
Utilities	3 (0.5)
Construction (23)	71 (12.7)
Manufacturing (31-33)	27 (4.8)
Wholesale Trade (42)	36 (6.5)
Retail Trade (44-45)	32 (5.7)
Transportation & Warehousing (48-49)	142 (25.4)
Information (51)	19(3.4)
Finance & Insurance (52)	6 (1.1)
Real Estate, Rental, & Leasing (53)	1 (0.2)
Professional, Scientific & Technical Services (54)	17 (3.0)
Administrative & Support & Waste Management & Remediation Services (56)	38 (6.8)
Education Services (61)	12 (2.2)
Health Care & Social Assistance (62)	22 (3.9)
Arts, Entertainment, & Recreation (71)	17 (3.0)
Accommodation & Food Service (72)	9 (1.6)
Other Services (except Public Administration) (81)	24 (4.3)
Public Administration (92)	43 (7.7)
Total	**558 (100)**

Comparisons to MIOSHA and CFOI Fatalities

MIOSHA Fatality Investigations

In 2022, MIOSHA personnel conducted a work-related fatality program-related compliance investigation for 41 (29.3%) of the 140 deaths. A fatality was recorded as a MIOSHA "Program-Related" fatality if the deceased party was employed in an occupation included under MIOSHA jurisdiction as defined in Public Act 154 of 1974, as amended, and the fatality appeared to be related to one or more of the following conditions:

- The incident was found to have resulted from violations of MIOSHA safety and health standards or the "general duty" clause.
- The incident was considered the result of a failure to follow a good safety and health practice that would be the subject of a safety and health recommendation.
- The information describing the incident is insufficient to make a clear distinction between a "Program-Related" and "non-Program-Related" incident, but the type and nature of the injury indicated that there was a high probability that the injury was the result of a failure to adhere to one or more MIOSHA standards, the "general duty" clause, or good safety and health practice.

Table 12 shows the number of work-related fatalities in Michigan in 2022 by industry sector and the number of MIOSHA work-related fatality compliance inspections for each industry sector. MIOSHA issued a violation citation to the firm at the conclusion of the fatality investigation in 28 of the 41 (68.3%) investigations. Citation penalties assessed at the conclusion of the compliance inspection (not the penalties decided after appeal) ranged from $500 to $33,000. Two citation penalties were extremely higher than the rest at $78,000 and $154,000.

Table 12. Work-Related Fatalities and Number of MIOSHA Work-Related Fatality Compliance Inspections, Michigan 2022		
Industry (NAICS Code)	Number of Work- Related Fatalities	Number of Work-Related Fatality MIOSHA Compliance Inspections (%)
Agriculture, Forestry, Fishing & Hunting (11)	14	3 (21.4)
Construction (23)	28	16 (57.1)
Manufacturing (31-33)	17	7 (41.2)
Wholesale Trade (42)	5	1 (20.0)
Retail Trade (44-45)	8	1 (12.5)
Transportation & Warehousing (48-49)	19	2 (10.5)
Information (51)	3	0
Finance & Insurance (52)	1	0
Real Estate & Rental & Leasing (53)	1	0
Professional, Science, & Technical Services (54)	3	0
Administrative & Support & Waste Management & Remediation Services (56)	7	4 (57.1)
Educational Services (61)	2	0
Health Care & Social Assistance (62)	5	1 (20.0)
Arts, Entertainment, & Recreation (71)	4	1 (25.0)
Accommodation & Food Services (72)	11	2 (18.2)
Other Services (ex. Public Administration) (81)	5	1 (20.0)
Public Administration (92)	7	2 (28.6)
Total	**140**	**41 (29.3)**

Number of 2022 Deaths Compared to Michigan CFOI

The Census of Fatal Occupational Injuries (CFOI) is the surveillance system funded in most states by the US Department of Labor, Bureau of Labor Statistics. The Michigan CFOI program reported 140 work-related deaths in 2022.

Sensitivity of "Injury at Work" Box on Death Certificate

The "injury at work" box (Box 41d) on the death certificate is completed by the Medical Examiner when the manner of death (Box 39) on the death certificate indicated accident, suicide, homicide, indeterminate or pending. The Medical Examiner may select "Yes", "No", or "Unknown" for the "injury at work" box. "Yes" signifies that the fatal injury occurred at work, "No" signifies it did not occur at work, and "Unknown" signifies that the Medical Examiner did not know if the injury occurred at work. As described in the Methods Section, MIFACE determined a death to be work-related by compiling multiple source documents, including the following: Workers' Compensation forms; Police/Fire/EMT Department reports; MIOSHA 24-hour fatality log; hospital records; newspaper reports; family interviews; and Federal agencies (OSHA, NTSB, MSHA, etc.).

Table 13. Sensitivity of Death Certificate "Injury at Work" Box Predicting Fatal Injury at Work, Michigan 2002-2022

Year	Number Deaths	DC Coded as at work (%)	DC not coded at work (%)
2002	151	126 (86.9%)	19 (13.1%)
2003	152	110 (74.3%)	38 (25.7%)
2004	131	93 (74.4%)	32 (25.6%)
2005	110	88 (83.0%)	18 (17.0%)
2006	157	122 (79.2%)	32 (20.8%)
2007	121	99 (85.3%)	17 (14.7%)
2008	121	100 (84.0%)	19 (16.0%)
2009	96	72 (75.8%)	23 (24.2%)
2010	147	102 (70.3%)	43 (29.7%)
2011	141	95 (69.3%)	42 (30.7%)
2012	135	74 (55.2%)	60 (44.8%)
2013	134	82 (62.6%)	49 (37.4%)
2014	143	89 (62.7%)	53 (37.3%)
2015	136	89 (67.9%)	42 (32.1%)
2016	158	99 (62.7%)	59 (37.3%)
2017	153	85 (55.5%)	68 (44.4%)
2018	152	91 (59.9%)	61 (40.1%)
2019	163	95 (58.2%)	68 (41.8%)
2020	131	82 (62.6%)	49 (37.4%)
2021	140	89 (63.6%)	51 (36.4%)
2022	140	106 (75.7%)	34 (24.3%)

Table 13 shows that from 2002–2022 13.1% to 44.8% of the work-related deaths would have been missed if MIFACE had solely relied on the "Injury at Work" box being completed with "Yes".

Table 14 shows that in 2022, the "Injury at Work" box on the death certificate was misidentified at the highest rate in the designation of an injury at work in for those in the Finance & Insurance industry (100% of deaths misidentified; 1 death), however the highest number of misidentified work-related deaths was the Agriculture, Forestry, Fishing & Hunting industry (57.1%; 8 deaths) followed by Transportation & Warehousing industry (26.3%; 5 deaths) and Construction (17.9%; 5 deaths). There were zero misidentified deaths in the following industries: Information, Retail Trade, Real Estate & Rental & Leasing, Administrative & Support & Waste Management & Remediation Services, Educational Services, Other Services (excluding Public Administration), and Public Administration.

Table 14. Industry and Number of Deaths and Number and Percent of Misidentified Deaths*, Michigan 2022		
Industry (NAICS Code)	Number of Deaths	Number of Misidentified Deaths (%)
Agriculture, Forestry, Fishing & Hunting (11)	14	8 (57.1)
Construction (23)	28	5 (17.9)
Manufacturing (31-33)	17	4 (23.5)
Wholesale Trade (42)	5	2 (40.0)
Retail Trade (44-45)	8	2 (25.0)
Transportation & Warehousing (48-49)	19	5 (26.3) *
Information (51)	3	0
Finance & Insurance (52)	1	1 (100)
Real Estate & Rental & Leasing (53)	1	0
Professional & Business Services (54)	3	1 (33.3)
Administrative & Support & Waste Management & Remediation Services (56)	7	0
Educational Services (61)	2	0
Health Care & Social Assistance (62)	5	1 (20.0)
Arts, Entertainment & Recreation (71)	4	2 (50.0)
Accommodation & Food Service (72)	11	4 (36.4)
Other Services (ex. Public Administration) (81)	4	0
Public Administration (92)	7	0
Total	140	34 (24.3)
*For 1 death the injury at work box on the death certificate was marked "Unknown" for Transportation and Warehousing.		

MIFACE Activities

Importance of Using Multiple Data Sources

MIFACE used multiple data sources to ascertain if a fatal injury was work-related. Reliance on just the information in the "Injury at Work" box on the individual's death certificate would have missed 34 (24.3%) of the 140 work-related deaths in 2022, particularly with causes of death from motor vehicle crashes, homicides, struck-by incidents, and work-related suicides. That MIFACE can capture these work-related fatalities that would otherwise be missed when relying solely on the "Injury at Work" box supports the utility, and need, for surveillance programs that bring together fatality information from multiple sources.

Prevention Material Dissemination

On the MSU OEM website (http://www.oem.msu.edu/) are copies of the completed MIFACE Investigation Reports, Hazard Alerts, and MIFACE Summaries of MIOSHA Investigations (work-related fatality compliance inspection) conducted by MIOSHA personnel.

MIFACE Investigation Reports, MIFACE Summaries of MIOSHA Investigations, Hazard Alerts, and the annual MIFACE Data Fact sheet were posted on the MSU OEM website and distributed to

stakeholders. MIFACE Summaries of MIOSHA Investigations included a summary of the work- related fatality and the citations issued to the employer by MIOSHA compliance personnel at the conclusion of the fatality investigation. Hazard Alerts are 1- to 3-page documents that review work-related fatalities and provide prevention recommendations that target specific industrial sectors or repeated work-related fatality incidents. The MIFACE Data Fact Sheet summarizes information received regarding the state's work-related deaths and was updated periodically when new information was received. The most current MIFACE Data Fact Sheet can be found here.

For each MIFACE Investigation Report, MIFACE Summary of a MIOSHA Investigation, and Hazard Alert there was a dissemination plan to maximize awareness of the Report and Alert. Investigation Reports and Hazard Alerts were sent via email to appropriate trade associations, unions, trade journals, employers who did the same type of work, and to employers who have expressed interest in receiving the reports.

MIFACE presentations are regularly given to trade groups ranging from health and safety professionals in construction, agriculture, and general industry.

Case Narratives

Based on the information collected during MIFACE on-site investigations and/or from source documents, a brief narrative summary organized by industry of each of the 140 acute traumatic work-related deaths in 2022 is included in Appendix I.

Table 15 provides the narrative case number and cause of death by NAICS code found in the Appendix. Each combination of industry and cause of death is hyperlinked to the beginning of the corresponding narratives. Additionally, each cause of death label is hyperlinked to its corresponding heading in the Appendix.

When the brand name of equipment was known, MIFACE included this information in the narrative. Unless noted, the inclusion of the brand does not signify that there was a defect or other problem with the equipment. Where available, the case narrative is hyperlinked to its MIFACE Summary of MIOSHA Investigation (MIFACE Summary) on the MSU OEM/MIFACE webpage. If a MIFACE Investigation Report was written, the MIFACE Investigation number is hyperlinked to its corresponding report on the MSU OEM/MIFACE website.

Table 15. Narratives for 2022 Work-Related Fatalities

Industry Sector (NAICS)	Aircraft	Animal	Asphyxiation	Drowning	Drug Overdose	Electrocution	Fall	Fire/ Explosion	Homicide/ Assault	Machine	Medical	Motor Vehicle	Struck-By	Suicide	Toxic Exposure	Other
Agriculture (11)			1				2			3		4	5-12	13		14
Construction (23)			15		16-19		20-34		35	36		37-38	39-42			
Manufacturing (31-33)					43-45		46	47	48-49	50-52			53-57	58-59		
Wholesale Trade (42)					60-61							62	63	64		
Retail Trade (44-45)					65-66				67-69			70-71		72		
Transportation & Warehousing (48-49)					73-74		75		76-78	79-80		81-86		87-90	91	
Information (51)									92-93			94				
Finance & Insurance (52)									95							
Real Estate, Rental, & Leasing (53)											96					
Professional, Scientific, & Technical Services (54)					97							98-99				
Admin. & Support & Waste Management & Remediation			100-101	102			103		104-105				106			
Educational Services (61)	107						108									
Health Care & Social Assistance (62)			109						110				111	112-113		
Arts, Entertainment, & Recreation (71)				114	115							116	117			
Accommodation & Food Services (72)					118		119		120-124			125-126		127	128	
Other Services (81)			129						130				131-132	133		
Public Administration (92)		134							135-136			137-138	139	140		

Conclusion

Traumatic occupational fatalities are an important public health issue in Michigan and throughout the United States. These deaths are not random events, and information about the settings and circumstances in which work-related deaths occur is necessary to prevent their occurrence in the future. There were the same number of deaths occurring in Michigan in 2022 compared to 2021. The numbers and rates of these acute traumatic fatalities have fluctuated from year to year, and there has not been a clear downward trend over multiple years. The increase in 2021 and 2022 is probably secondary to resumed work activity from the stay-at-home work order and increased commuting related to the COVID-19 pandemic in 2020. The MIFACE program will continue to monitor work-related deaths to determine if there is a return to pre-pandemic levels. However, further efforts are needed to have a meaningful reduction of the occurrence of these tragedies.

The lack of a consistent and lasting decrease in the number and incidence rate of work-related fatalities, both nationally and in Michigan, is likely a result of many factors and continued investigation of the causal factors of work-related fatalities is necessary to understand and effect a meaningful reduction in these deaths. Understanding the root cause(s) of these tragic events and sharing this information with stakeholders, from individuals to groups, employees to employers, makes these information-gathering efforts worthwhile. If what we learn from any of these deaths can help prevent further tragedies, then the surveillance program has been successful in its goal. An awareness of the hazards of one's job and an attitude of safety-mindfulness on the part of labor and management is critical to prevent future fatal events.

Some important points highlighted by the deaths:

- The workforce aged 65 and older continues to grow as individuals put off retirement and part-time workers enter the workforce due to economic or other reasons. Older workers have unique health and safety challenges, including resistance to change long standing work practices that may not be safe, medical issues, or strength issues, all likely contributing to the higher work-related fatality rate in this age group. Federal OSHA and NIOSH, among other agencies, have developed resources which can help employers address the challenges faced by older workers and provide a safe working environment for this population group.

- Fatalities from falls remain a major concern, particularly in construction. Information regarding the National Construction Fall Prevention Campaign can be found here. The campaign's goal is to prevent fatal falls from roofs, ladders, and scaffolds by encouraging construction contractors to:
  - ✓ PLAN ahead to get the job done safely.
  - ✓ PROVIDE the right equipment.
  - ✓ TRAIN everyone to use the equipment safely.

- Homicides in the Retail trade and Accommodations and food services sectors and workplace violence in the Health care sector have been recognized as important workplace risks. OSHA and NIOSH have both developed extensive resources for employers and employees to use to address the risks associated with workplace violence, especially within certain workplaces such as hospitals.

- Motor vehicle crashes are a major cause of work-related fatalities. This should not be a surprise in the Transportation and Warehousing industry sector given the nature of work tasks within this industry sector, but it is also true for many industry sectors. Employers should create and maintain safe driving policies and offer driver safety training (including defensive driving) as part of their safety program and training. MIFACE has created a hazard alert containing recommendations and resources for employers to develop motor vehicle safety policies and programs.

- Drug abuse/overdose in the workplace is a challenging issue for employers. Solutions are not straightforward. Stakeholders, including the medical, legal, insurance, safety, and regulatory community must collaborate to develop state-specific interventions and resources that Michigan's employers and employees can utilize to address this issue. NIOSH Opioids in the Workplace webpage offers resources related to opioid use. Resources to address prescription drug use and misuse in the workplace can be obtained from the Substance Abuse and Mental Health Services Association and National Safety Council.

Each of the 140 deaths in this report could have been prevented, whether through installation of engineering controls, development and implementation of health and safety plans, changes to work practices, or the identification and assistance of individuals seeking and receiving mental health counseling so they can better cope with both work and personal stressors. The descriptions of the acute traumatic work-related deaths in Appendix I highlight these tragedies and the need to act to prevent them.

Acknowledgements

We are extremely appreciative of the support of the Michigan OSHA Safety and Health personnel, the employers, the families, and the experts who have worked with us to improve work conditions in Michigan.

We are also appreciative of our Advisory Board who provided constructive comments on each MIFACE Report and assisted us by providing thoughts on developing MIFACE policies and educational outreach activities, and their promotion of the MIFACE program to their employees and constituents.

MIFACE is a research effort and relies on the voluntary cooperation of employers and for the self-employed, and their family members. We have received funds from the National Institute for Occupational Safety and Health to continue this program through 2026 and look forward to identifying ways to prevent work-related traumatic deaths and sharing what we have learned with those who may benefit from this knowledge.

APPENDIX I - Narratives

AGRICULTURE, FORESTRY, FISHING & HUNTING (NAICS 11) (14 deaths)

ASPHYXIATION

1. A male farmer in his 50s died from mechanical asphyxia due to compression of chest/upper torso by heavy machinery. The incident was unwitnessed. The decedent was found pinned upright between the boom arm and cab of an excavator. He was declared dead at the scene.

FALL

2. A male farmer in his 70s died from complications of a 10-foot fall from a trailer in the Winter of 2021. He was on the ladder attempting to pull back/remove a tarp from a trailer when the tarp suddenly gave way, causing him to fall from the ladder. The decedent went to an urgent care and then was transported to a hospital. He died from complications of the fall in 2022.

MACHINE

3. A male farmer in his 30s died of blunt force injuries due to entanglement in a corn combine auger. The decedent, after having 3-4 beers, left his home around 8:00 p.m. to harvest corn. He did not return home and when his wife awoke the next morning, she attempted to contact him. When he did not answer his cell phone, his spouse saw the combine in the field, not running. She drove to the site and then called 911. Responding police noted the combine key was in the "On" position with the auger controls engaged. Divots in the ground behind the combine indicated the unit had become plugged. A partially consumed beer can was near the driver's seat. Postmortem toxicology indicated his blood alcohol level was 0.23%. He was declared dead at the scene.

MOTOR VEHICLE CRASH

4. A male field worker in his 30s died from multiple blunt force injuries after falling off the back of a tractor-towed trailer and landing on a concrete roadway. One field worker was driving a Ford Utility Farm Tractor, Model 5640, and six field workers were riding on the 25-foot-wide by 4-foot-long trailer loaded with seven unsecured 20-bushel containers filled with zucchini. While transporting the trailer from one area of the field to another for loading onto a truck, using a public roadway adjacent to the field, the tractor driver stated that he turned the tractor to avoid clipping a roadside mailbox with the trailer. He quickly swerved back to get out of the way of an oncoming car. The tractor hit a dip in the road, causing the load on the trailer to shift and two of the field workers to fall off the trailer. The decedent was standing on the trailer on the street side. He was thrown forward off the trailer. Autopsy findings potentially pointed to the decedent having been struck by the trailer after falling. The decedent was driven from the incident scene to a local hospital where he was declared dead. MIFACE Summary of MIOSHA Investigation Case 2022-031.

STRUCK BY

5. A male dairy head milker in his 30s died from craniocerebral injuries when he was struck from behind by a front-end loader driven by a coworker. The decedent was walking at night on a driveway toward a barn while carrying a container of diesel fuel, wearing earmuff stye headphones and non-reflective clothing. The loader was driving forward carrying a bucket of waste feed raised about 3 feet off the ground when the decedent was struck. The loader's 4 forward facing headlights were on but obstructed by the elevated bucket. After dropping off his load and making his return trip to the waste feed barn, the loader operator noticed the head milker lying in the driveway. He was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-010

6. A male logger in his 30s died from blunt impact injuries to his head when an 8-inch diameter dead ash tree broke and struck him on the top of his head. The decedent and his coworker were cutting maple trees and using horses to haul the trees from the woods. It is unknown why the ash tree broke and fell in the direction of the decedent. He was declared dead at the scene.
7. A male farmer in his 80s died from complications of blunt force trauma to his chest when he was struck by a 300-pound adapter while working on his farm in 2021. The sequence of events causing the adaptor to strike him was unknown. Another person on scene transported him to the hospital in a private vehicle. Prior to the incident, the decedent had an automatic internal cardiac defibrillator (AICD) placed with no complications until the farm equipment came down on his chest and appeared to have shifted the device. Approximately one month after the injury, EMS was called and noted redness and discharge at the injury site. The decedent was transported to the hospital. Approximately three weeks after hospitalization he succumbed to injury complications.
8. A male child under 10 years of age died from blunt impact trauma to the head after falling from the front of a flatbed trailer and run over by a malfunctioning tracked, John Deere 650G Crawler/Dozer. The decedent and his two siblings were assisting their parent in bringing a trailer load of wood from the tree line of the farm. The bulldozer had a history of slipping gears/jumping into reverse. The decedent was sitting on top of some of the cut wood on the trailer, which was stacked three to four feet high over most of the trailer. He was a few feet back from the front of the trailer. While driving in fourth gear (highest) forward up a slight incline in the field, a mechanical error caused the bulldozer to shift into reverse. His parent stated to responding police that this had happened multiple times before, but never while in fourth gear. It has only happened when frequently shifting between first gear and reverse. When the bulldozer shifted into reverse, it lurched to a stop causing the trailer to jerk, the decedent to fall forward off the trailer and to be crushed by the reversing bulldozer. The driver was thrown up over the steering wheel and by the time he gathered himself and sat down, the bulldozer was moving backwards. He looked back and saw that the decedent was not on the trailer. While looking backwards, he pulled forward slightly and saw the decedent's legs and realized that he was under the bulldozer track, and that he would have to pull forward further to free him. He pulled the bulldozer forward a few more feet and shut it down. He instructed one of his sons to call for emergency response. When emergency response arrived, he was declared dead.
9. A male farmer in his 60s died from blunt force injury of the head when he was run over by the left rear wheel of an Allis-Chalmers Model A-C7030 diesel tractor weighing 12,434 pounds. The decedent and two coworkers were preparing the tractor and hooking up an implement to plow a field. The two coworkers had left the incident site, and the decedent was working alone. The incident was unwitnessed; however, it appeared the decedent was on the ground in front of a tire perhaps reaching under the running tractor. A hydraulic fluid 5-gallon container and dark fluid ground stain were found near the rear tractor tire prints at the beginning of path of travel. Unidentified hoses on the tractor were found disconnected. The presence of a 5-gallon hydraulic fluid container, hydraulic fluid on the ground, and disconnected hoses suggested that the farmer was working on the hydraulic system. After running over the victim, the tractor continued for an additional 25–30 feet before the front of the tractor impacted a tree, where it eventually stalled with its gears engaged and tractor controls in the run position. When one coworker returned, he found the decedent on his left side in the tire tread path. A large green hitch pin, normally used to connect implements to the rear hitch, was near his hand against his left arm. Emergency response was called, and he was declared dead. MIFACE Investigation Report 22MI179.
10. A male horse breeder/trainer in his 70s died from blunt force injuries when he was thrown from a horse in an arena located in a barn. The incident was witnessed by a family member. The family member reported to EMS that the horse bucked him off and then landed on him. The decedent lost and then regained consciousness. When EMS arrived, he was non-verbal and appeared confused. EMS transported him to the hospital where he died in the emergency room.
11. A male logging company owner in his 70s died from a cardiac arrest due to intracranial hemorrhage from accidental blunt head trauma when an oak tree he was felling "barber-chaired" and struck his head. The decedent left home in the morning to cut trees and hunt on his 109 acres. When he did not return home at night, his wife looked for him. She found his truck but being unfamiliar with the property, she called police. Police utilized a police dog in the immediate area and could not locate him. Search and rescue personnel and

drones were utilized and several hours later, the decedent was located. It appeared that the oak tree split vertically up its trunk and the top part of the tree kicked back during his back cut (barber chair) due to significant rot. As the decedent tried to get away, a large branch struck him. The decedent's hard hat was nearby. He was declared dead at the scene.

12. A male pulp wood cutter in his 70s died from complications of seizure disorder due to complications of traumatic brain trauma sustained when he was struck by a tree in 2010. A relative indicated that, at the time of the 2010 injury, the decedent had been "out in the woods working and he was supposed to be home around 11:00. He did not come home. When he finally did come home, it was around midnight, and he was confused, had raccoon eyes and a hole in his head." It is unknown what happened as the decedent could not say. The head injury resulted in seizures for which he had been taking medication. His family member indicated the seizures had been "getting worse". He was found deceased on his bathroom floor.

SUICIDE

13. A male farmer in his 20s died from a self-inflicted hanging at the farm.

OTHER

14. A female hay farmer in her 60s died from a fracture to T9 with cord compression and compression deformity at T11 and metastatic cancer. She was moving 90-pound bales of hay on her farm. As she was lifting a bale, she felt sharp chest and back pain. Two days later she went to the doctor and x-rays showed T9 vertebral fracture and was prescribed pain medication. After leaving the doctor she fell and felt weak. She went to the hospital and was admitted. In addition to her injuries from her fall it was discovered she had metastatic cancer to her spine and ribs. She died in the hospital 11 day after her fall.

CONSTRUCTION **(28 deaths)**

ASPHYXIATION

15. A male owner of an irrigation company in his 40s died from positional asphyxia when he was found face down, covered in dirt in a 5- to 6-foot hole while fixing a broken water line. The water line supplied outbuildings on the property and had broken near the basement wall. The decedent had dug down the wall to access the pipes. The walls of the hole collapsed, burying the decedent face down in the hole against the foundation of the home. His feet were at ground level. When the homeowners returned, they found the decedent and called for emergency response. After resuscitative measures were taken, he was declared dead at the scene. Postmortem toxicology determined that his blood alcohol level was 0.11%.

DRUG OVERDOSE

16. A male carpenter/window installer in his 40s died from intoxication by the combined effects of alcohol and mitragynine (kratom). The shop owner, another coworker and the decedent finished work for the day. Afterward, they drank alcoholic beverages to the point of intoxication. The decedent told the group he was going outside to urinate. While outside, he fell several times indicated by blood stain locations near his van and outside the shop. He was able to re-enter the shop and collapsed. Later, the owner proceeded to go outside through the shop and discovered the decedent on the floor. He began chest compressions while emergency responders were called. Emergency responders assumed care and he was declared dead at the scene. The decedent's girlfriend indicated he was consuming kratom. Postmortem toxicology identified a blood alcohol concentration of 0.335%.

17. A male sheet metal worker in his 30s died from the combined toxic effects of fentanyl, amphetamine and clonazepam on the jobsite he was working. He was declared dead at the scene.

18. A male laborer for a railroad construction, maintenance and removal company in his 30s died from fentanyl

intoxication. When the decedent did not return from break a coworker found him in a restroom of a business located at their worksite. He was declared dead at the scene.
19. A male handyman in his 40's died from fentanyl, para-fluorofentanyl and cocaine intoxication. The decedent was found unresponsive by a coworker on the floor of a store-front jobsite where he had been working. He was declared dead at the scene.

FALL

20. A male master electrician in his 60s died from blunt force head and chest trauma due to a fall from a 10-foot stepladder. The decedent was advancing low voltage wiring above the 10-foot drop ceiling. To access the area above the drop ceiling he was using a Werner 10-foot fiberglass stepladder. The Werner ladder had a 300-pound capacity and a top standing level of 7 feet 8 inches, giving the ladder a maximum reach of about 14 feet. He was working alone at the time of the incident. It is suspected that the ladder was not fully opened at the time of the incident. While working above the ceiling, he fell backwards off the ladder and struck his head on the corner of a table before coming to rest on the marble floor. He was found unconscious by a bystander. There were no witnesses to the fall. Emergency response was called and provided care. EMS transported him to the hospital where he was declared dead in the emergency room. MIFACE Summary of MIOSHA Investigation Case 2022-008.
21. A male carpenter in his 60s died from blunt force injuries when he fell 20 feet from the 3rd floor of a new home under construction. On the day of the incident the carpenter and a coworker were the only two onsite. The plan for that morning was to begin sheeting the home's 3rd floor roof. The carpenter and the coworker were working on straightening the roof overhang. The coworker left the roof, where he was working with the decedent to better visualize the straightness of the roof overhang from the perspective of a lower level. The carpenter was standing on the exterior wall between the roof trusses; he was not wearing fall protection. The carpenter's fall was not witnessed. The coworker heard a crash and observed the carpenter lying on the ground. The coworker ran down the stairs out of the home and to where the carpenter was laying on the compacted dirt. He called 911 and began CPR, continuing to perform chest compressions until the Fire Department arrived. The Fire Department and EMS continued to render medical aid until the carpenter was declared dead on the scene. MIFACE Summary of MIOSHA Investigation Case 2022-006.
22. A male roofer in his 30s died from blunt impact injuries to his head when he fell 10 feet from an aluminum extension ladder. The decedent was tasked with getting materials from the ground up to the crew on the roof using the extension ladder. He was descending the ladder after handing off some materials to the crew on the roof and lost his balance. He fell about 10 feet striking part of a metal dumpster and landing on a concrete surface. EMS transported him to the hospital where he was declared dead. MIFACE Summary of MIOSHA Investigation Case 2022-016.
23. A male construction laborer in his 40s died from blunt force head trauma after falling with an unsecured debris container elevated 16 feet. The debris container was approximately 4 feet wide, 8 feet long, and 42 inches high and was elevated, unsecured, on the forks of a Pettibone B-66 Telehandler. The decedent was an independent contractor working for a residential remodeling company. He was a mason by trade but was also performing demolition and interior carpentry. He was onsite with the residential remodeling company owner and another laborer. Together they were remodeling a second-floor apartment above a retail establishment. The decedent was removing demolition debris from the apartment through a 2nd story window. The apartment window's lower sash had been opened leaving an approximately 30- by 34-inch opening that was 28 inches above the floor. The debris container was set on the telehandler forks and was positioned 2 feet below the window opening pressed up against the building. The decedent crawled through the window opening into the debris container to rearrange materials. The container tipped and both the container and the decedent fell 16 feet to the concrete below. Police and EMS arrived on the scene. He was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-018.
24. A male painter in his 40s died from blunt force head trauma from an approximate 20- to 30- foot fall from an extension ladder. The decedent was painting an area to the right of a chimney on the exterior of a residence. His coworker was working below him. The coworker stated that when the decedent fell from the ladder, he landed partially on him and that the decedent's feet were entangled in the ladder. EMS reported that the ladder

gave way, causing the decedent to fall headfirst from the ladder, landing on the painter below him. Emergency response transported the decedent to the hospital. Medical intervention was attempted but due to the severity of his injuries, comfort care was initiated. He died several hours later.

25. A male carpenter in his 50s died from multiple blunt force injuries and complications thereof when one side of a scaffold he was working from collapsed and he fell 20 feet to the ground. The decedent was working on a non-guardrail protected metal platform supported by a piece of lumber on one end. Police described the lumber as a long, newer looking 2"x 8" piece of wood with numerous knots that appeared to be nailed to the structure being built. The knots gave way under the weight of the work platform, the decedent and his tools. The lumber support broke into two pieces causing the work platform to move and the decedent to lose his balance and fall to the ground. Emergency response was called and EMS transported him to the hospital where he died the following day.

26. A male framer in his 30s died from multiple blunt force injuries after falling 40 feet onto the foundation of a construction project. The company for which the decedent worked was contracted to install fascia on a new home construction project. The decedent and a coworker, for reasons unknown, exited the SkyPower 600SC Telescopic Boom lift platform from which they had been working. The coworker indicated that the decedent was using a 2" x 6" kick board to brace himself while working on the roof surface when it broke, and he began to fall. The coworker attempted to grab the decedent as he fell, but both workers fell from the building roof to the ground below. The coworker landed in sand and suffered a hip injury. The decedent fell into an area where an egress window was installed which provided approximately 15 more feet of fall. He appeared to have landed head-first onto cement. A nail gun was lying near him. Neither worker was wearing a fall protection harness at the time of the incident. He was declared dead at the scene.

27. A male flooring store business owner in his 60s died from craniocerebral trauma when he fell from a 4-foot step ladder while replacing fluorescent bulbs in an overhead light fixture at the showroom entrance from the shop/warehouse. A nearby wooden step from the shop/warehouse floor up to the landing leading to the showroom was 8-10 inches high. He utilized a well-maintained 4-foot Werner fiberglass stepladder with a 225-pound capacity to reach the ceiling level lightbulbs positioned 87 inches (7.25 feet) above the landing. The length of the fluorescent light spanned some of the landing, the step leading to/from the shop/warehouse floor, and the shop/warehouse floor. The rated load of the ladder was adequate for the weight of the victim, tools, and equipment. Additionally, the step ladder had a maximum reach distance of 8 feet. He fell from the ladder and struck his head on the concrete floor. A bystander found him unconscious, and there were no witnesses to the fall. It was hypothesized that the decedent may have overreached on the ladder while changing the bulb, and/or that he may have placed the feet of his ladder too close to the edge of the concrete landing leading to the outside door. Emergency medical services were called and transported to the hospital. He died the following day. MIFACE Summary of MIOSHA Investigation Case 2022-033.

28. A male roofer and crew leader in his 40s died from multiple blunt force trauma after falling 18 feet onto concrete while ascending 32-foot Werner aluminum extension ladder. The decedent and crew were installing a metal roof on a home. The decedent was climbing the ladder while carrying a 10-foot-long piece of metal trim when he was called to by another worker. When the decedent turned to respond to his coworker, the metal trim contacted a live electrical line (voltage unknown). The metal trim conducted the current and shocked the decedent, causing him to lose his grip on the ladder and fall to the concrete driveway below. The decedent was transported to the hospital where he died several hours later. MIFACE Summary of MIOSHA Investigation Case 2022-030.

29. A male laborer in his 50s died from multiple blunt force trauma when he fell 25- to 30-feet from the top of an ice-covered metal silo to a concrete surface. The decedent and his coworker were doing sealant work on grain bins of the property. The company owner stated that the firm was hired to put a sealant on the bottom of the grain bin to prevent any leaking and/or moisture from entering. Responding police noted that there was a large amount of snow on top of the grain bin. The decedent was pushing off snow on top of the grain bin so it would not drip down as they were applying the sealant to the bottom. His coworker was at the work truck getting a ladder and heard the fall but did not witness it. He found the decedent and checked to see if he was breathing. He did not believe so and ran across the street to call 911 as he did not have a cell phone. He was declared dead at the scene.

30. A male carpenter in his 20s died from multiple blunt force trauma when he was thrown from the platform

of a LULL telehandler (boom lift) that overturned to its side. The decedent was elevated in a boom lift that was extended approximately 25 feet, installing a small window on a gable of a new 2.5 story residential home under construction. The boom platform had a safety railing where it was attached to the telehandler. There was no side or front railing on the platform. A gate on the platform was tied in the open position with a rope tied to the rear safety railing. The boom lift driver indicated that he could not lower the boom due to its position. He backed the boom lift and then began to pull forward and to the left when the machine began to lean/tip to the left. The driver was able to jump from the machine to safety. As the machine tipped, the platform hit a large tree in a wooded area, breaking several branches. The decedent was thrown approximately 20 feet from the resting place of the platform. Emergency response transported him to a nearby hospital where he was declared dead.

31. A male carpenter in his 50s died from seizure disorder due to a traumatic brain injury sustained in a fall from a ladder in 2019. Medical records indicated that bystanders on scene stated that he was working on a ladder that lost footing and he fell 8 feet to the ground striking the back of his head. While bystanders administered first aid, emergency response was called. He was transported to a local hospital and following treatment and stabilization, discharged to home, where he died in 2022.

32. A male roofing business owner in his 50s died from an epileptic seizure disorder caused by blunt force head trauma when he fell 40 feet in 2010 from a roof following contact with electrical current. While at home, his spouse witnessed a seizure, called emergency response and began CPR. Emergency response assumed care upon arrival and transported him to the hospital where he was declared dead.

33. A male construction contractor in his 60s died from complications of a rib fracture sustained in a fall from a ladder, per the death certificate. A coworker found the decedent and called for emergency response. The coworker stated to emergency responders that the decedent fell from the roof, didn't know how long he was down or how long he may have lost consciousness. The EMS report indicated that the decedent fell 10- to 12-feet from or through the roof and landed on the 2nd story floor. When EMS arrived, they found the decedent sitting upright, leaning against the wall, complaining of left side chest pain. The decedent, who was alert, stated to emergency responders he was on blood thinners due to a recent surgery. Emergency responders transported him to a local hospital. He died one month later as an inpatient in the hospital.

34. A male construction worker in his 40s died from multiple injuries sustained in a fall, presumably from an 2nd story unfinished loft area that lacked a railing and had an open staircase; acute and chronic alcoholism were contributing factors. The homeowner noticed that a van the decedent had been driving had not been moved for several days. Walking over to the home, the homeowner noticed a sleeping bag recently purchased by the decedent outside the home and the homeowner placed the sleeping bag in the van. The homeowner then went into the home and saw the decedent, laying on his back on a stairwell landing connecting the stair access for both upstairs to the loft and to the basement. The homeowner checked the decedent, and seeing he was deceased, called for police and emergency response.

HOMICIDE/ASSUALT

35. A male dock installer in his 20s died from a gunshot wound. The decedent had a confrontation with his supervisor at work. Later that day the supervisor and some coworkers traveled to the decedent's home to retrieve a work vehicle where a second confrontation occurred, and the decedent was shot multiple times by his supervisor. EMS transported him to a local hospital where he later died.

MACHINE

36. A male steel worker in his 20s died from mechanical asphyxia and blunt force injuries when he was caught between the deck and boom of a telehandler. The decedent had moved and staged insulated metal panels using a Genie® GTH™-1056 telehandler at a building site. The decedent stopped the telehandler and set the e-brake but did not turn the machine off. With his left leg between the steering wheel and seat, and right leg kneeling on the seat, he reached out to the right of the operator's seated position placing his body between the deck and boom of the machine. While reaching, he contacted the boom control joystick pushing it forward and to the right which lowered and fully extended the telehandler's telescopic boom crushing his head and chest between

the deck and boom. He was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-001.

MOTOR VEHICLE CRASH

37. A male construction manager in his 50s died from a blunt force head injury sustained in a motor vehicle crash. The crash occurred at an intersection posted with a Stop sign. The 3-lane roadway was dry and had a posted speed limit of 55 m.p.h. The crash involved three vehicles: a dump truck, an SUV, and the decedent's pickup truck. The dump truck was northbound, stopped at the Stop sign. The SUV was stopped behind the dump truck. The SUV driver noticed the decedent's pickup truck traveling northbound, coming up to the Stop sign at a high rate of speed. The SUV attempted to veer to the right but was struck by the decedent's pickup causing the SUV to spin out and strike a guardrail. The decedent's pickup truck then struck the dump truck, causing the pickup truck to become airborne and land on its side. The decedent was pinned in the pickup and was declared dead at the scene. Responding police indicated the deceased "unable to stop in assured clear distance". The decedent was wearing a lap and shoulder belt. The pickup truck's airbags deployed.
38. A male excavating company owner/operator in his 80s died from blunt force trauma to his head and chest sustained in a motor vehicle crash. The crash occurred on the right shoulder of a dark, unlit, dry 2-lane roadway with a posted speed limit of 55 m.p.h. A tow truck facing eastbound was parked on the shoulder loading a disabled vehicle. The decedent was westbound driving straight ahead in his full-size truck, when he crossed the centerline, left the roadway to his right and struck the tow truck head-on. The decedent was found in the front seat of his truck, not wearing a lap and shoulder belt. The vehicle's airbags deployed. Emergency response was called, and he was transported to the hospital where he was declared dead.

STRUCK BY

39. A male construction laborer in his 30s died from multiple blunt force and crush injuries when he was run over by a bulldozer operated in reverse. The decedent was assigned to load material onto a truck and was within the vicinity of a bulldozer grading the area. The bulldozer operator stopped for short time. As the decedent walked behind the bulldozer, the operator backed up and turned the bulldozer a little bit. The bulldozer's left rear-side tracks caught the decedent and pulled him under. Witness statements indicated that the decedent did not make eye contact with the bulldozer operator. The decedent was wearing a high visibility company-provided coat. He was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-003.
40-41. A male construction owner in his 50s and a male construction laborer in his 60s both died from multiple blunt force injuries when the west side of a 10-foot-deep trench they were in collapsed. A New Holland E57C Compact Excavator was used to dig the trench in the loamy soil to install drainpipes for a pole barn project. The trench was one bucket width wide. The sides were straight up and down (not appropriately sloped or supported) and the spoil piles were placed immediately next to both sides of the trench (not placed at least two feet from the edge). On the day of the incident the homeowner, after returning home at approximately 8:15 pm and seeing the company truck still onsite, went to check on them. He found the excavator running and the west side of the trench collapsed. He noticed a baseball cap lying on the dirt and when he approached it, he discovered one of the victims buried underneath. After approximately 3 hours the company owner and laborer were recovered. The owner was found buried in a standing position while the laborer was found lying on his left side. Both individuals were declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-013 and 2022_014.
42. A male truck driver in his 50s died from multiple blunt force and crush injuries when he was run over by a backing Caterpillar Bulldozer, 30-805, Cat D-87. The decedent arrived at the construction site in a 1997 Kenworth T800 quad axle trailer dump truck. The bulldozer operator watched the decedent dump his load of broken concrete in a pile and pull his truck forward. The bulldozer was positioned a distance away and between the just unloaded concrete pile and the dump trailer; when he backed the bulldozer, it would fit between the concrete pile and the trailer. The bulldozer operator stated to responding police that drivers typically exit the truck and clear off debris. The dozer operator waited several minutes but did not see the

decedent exit his truck and assumed that the decedent was on his cell phone. The dozer operator placed the bulldozer in reverse and began to back up. Seeing a "flash" of green, the operator stopped the bulldozer, dismounted and saw that the decedent had been struck and run over by the driver's side bulldozer track. The bulldozer back-up alarm was functional and audible. The decedent was not wearing a high visibility vest or a hard hat. Emergency response was called, and he was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-022.

MANUFACTURING (17 deaths)

DRUG OVERDOSE

43. A male maintenance supervisor in his 40s died from acute fentanyl toxicity while at work. The deceased told one of his employees he was not feeling well. After meeting with his team, he would normally go to his office, but when a team member looked for him, he was not there. The team member indicated he tried calling the deceased's cell phone, but he did not respond. Team members went looking for him in the facility and found him in the maintenance and repair tool crib. He was found unresponsive on the floor with foam, vomit and blood in his mouth. Coworkers applied an AED and no shock was indicated. The decedent then stopped breathing and coworkers performed CPR until police arrival. Police administered Narcan and took over performing CPR. Emergency responders assumed care and he was declared dead at the scene.
44. A male light truck and utility vehicle assembler in his 30s died from fentanyl toxicity. The decedent was found unresponsive in the bathroom by coworkers. Coworkers on scene stated that they performed 30 minutes of CPR and gave him 4mg of Narcan intranasally prior to EMS arrival. EMS assumed care, and despite medical intervention, he was declared dead at the scene.
45. A male agricultural cooperative laborer in his 50s died from a fentanyl drug overdose in an outhouse on the business property. EMS transported him to the hospital where he was declared dead.

FALL

46. A male assembly line worker in his 50s died from complication of a left quadricep tendon tear sustained at work. He tripped and fell in the bathroom at work, landing on his knees. The decedent indicated that shortly after this first fall, he twisted his left knee again, causing him to fall again and this time he could not get up. Coworkers called EMS at this time. The decedent requested transport to a hospital for further evaluation. He was an inpatient in the hospital when he died 6 weeks after the falls.

FIRE/EXPLOSION

47. A male production operator in his 40s died of carbon monoxide toxicity and thermal injuries. The decedent had clocked out and was in his vehicle in the business parking lot. The ignition key was in the Run position. It appears that a fire started in the engine compartment and spread from the front to the rear. The decedent was sitting in the back passenger seat of the vehicle. He was declared dead at the scene.

HOMICIDE/ASSAULT

48. A male powered industrial truck driver in his 20s died from multiple gunshot wounds. The decedent and a coworker had a physical altercation in the building. The decedent left the building and got into his car. The individual with whom he had the altercation, and another coworker, exited the building and walked to the first coworker's car. The decedent pulled up behind the coworker's car and began to walk toward both individuals. The coworker (not the individual with whom he had the physical altercation) shot him multiple times. Emergency services were called, and he was declared dead at the scene.
49. A male automotive machine operator in his 40s died due to a gunshot wound. He was involved in an altercation with a coworker in the parking lot of the business when the coworker shot him. He was declared

dead in the hospital emergency room.

MACHINE

50. A male loader operator in his 60s died from a crush injury to his chest when he was caught between the loader arms and frame of a Komatsu WA320-7 front-end loader. The front-end loader was in the maintenance shop where the decedent and a coworker (another loader operator) had the boom raised to access and replace a broken hydraulic line. Replacing lines was part of routine maintenance of the front-end loader. His coworker stepped away to get a maintenance worker to take over assisting with the repair. When the maintenance worker arrived at the scene, he found the decedent pinned between the boom and the frame. It was concluded that the loader operator loosened the wrong hydraulic line causing the boom to lower. He was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-002.

51. A male mechanic in his 50s died from blunt force head and neck injuries after he was caught in a gondola conveyor system. The conveyor system was routed in a serpentine fashion, with 3 pairs of sprockets at the bottom, 3 pairs at the top, and 4 pairs in the middle. Wound around these sprockets were chains, one on each side of the system. These chains carried 84 gondolas. The conveyor system experienced a malfunction in which both the infeed and outfeed sides of the chains became misaligned. The mechanics, as part of the facility's Lockout/Tagout program, placed their locks on the machinery's secondary lockout point, which deenergized the mechanical parts of the system while not disabling the system's computers. The realignment of the infeed side of the system was performed by loosening the taper lock safety devices, moving the chain around the sprockets, and then retightening the sprocket bearings. The infeed taper lock safety devices were not retightened. The outfeed side of this sprocket was blocked by the motor and electrical wiring on the external side of the enclosure. The decedent opted to loosen the sprocket from the inside of the conveyor system enclosure. To do this, he had to position his body in the travel path of the gondolas. The decedent and a coworker walked to the front side of the machine where plexiglass interlock doors were located and entered the interlocked enclosure to loosen the outfeed sprocket bolts to move the chain. As he loosened the bolts, the conveyor system began to quickly move upward and caught his body between the machinery framing and a gondola. Emergency response was called, and he was declared dead at the scene.

52. A female powered industrial truck (PIT) driver in her 20s died from multiple blunt force trauma when she was pinned under the overhead guard frame and the cement floor when the PIT overturned and ejected her. The decedent, who had been hired through a temporary service, was operating a Toyota model 8FGCU30 S/N C0052 PIT. She executed a quick and tight left turn at a high rate of speed with the forks elevated, causing the PIT to overturn. She was not wearing her seat belt. She was declared dead at the scene.

STRUCK BY

53. A male truck driver in his 50s died from crush injuries to his chest during the unloading of roof trusses from a trailer. The decedent had removed the tie down straps and tilted the roller bed trailer. The trusses slid down the truck bed and contacted the ground. Most of the load was on the trailer bed. The driver was observed placing 6-foot-long 2x8 boards on the ground on both sides of the truck which put him between the unsecured load and the ground. The customer became concerned after not seeing the driver and the driver was found underneath the trusses. He was declared dead at the scene. MIFACE Investigation Report 22MI027.

54. A male maintenance technician in his 50s died from blunt force trauma to his chest and abdomen when he was crushed during the installation of a conveyor motor assembly weighing approximately 1,800 pounds. He was working alongside the site-maintenance lead operating a Toyota LP Model 8FGU30 powered industrial truck (PIT) with a manufacturer-specified maximum load capacity of 5,620 pounds and a coworker to level and anchor the new conveyor motor assembly to the floor. Several pieces of 4x4 lumber attached to the base from shipping needed removal. The motor assembly was equipped with designated fork channels for lifting but due to a crane blocking the PIT from accessing the assembly from the proper angle, the lifting channels were not used. Rather, the forks were placed at an angle in-between the channels on the crossbars. When the PIT lifted the motor assembly, the decedent's coworker removed one of the 4x4s. As soon as the decedent removed his 4x4, the motor assembly shifted and began to fall. He attempted to stop it from falling but the

force of the impact knocked him to the ground. The motor assembly followed, landing on top of him. The PIT lifted the unit from him. EMS was called, and he was transported to the hospital where he was declared dead in the emergency room. MIFACE Summary of MIOSHA Investigation Case 2022-019.

55. A male construction/maintenance technician in his 40s died from multiple blunt impact injuries when a 16- to 20- foot-long by 30-inch-wide by 10-inch-high fresh air ductwork containing "backing shot" weighing approximately 6000–7000 pounds fell during removal and pinned him against the floor. The air duct was attached to a decking platform above by approximately 12 bolts around the perimeter of each end and two (2) support bars that were bolted perpendicular to the duct on the bottom side. A Hyster Model #E80XL powered industrial truck (PIT) equipped with 10-foot fork extensions to support the duct during removal. The air duct was centered between fork extensions and clamped to the end of the left fork extension; the bottom of the duct was supported at eye level, just over 5 feet. The decedent, working beneath the duct was removing the bolts of the last support bar. The weight of the duct work resting on the end of the PIT's 10-footfork extensions caused the PIT to tip forward and the decedent to be pinned under the ductwork. Emergency response arrived while coworkers were rendering aid. Emergency responders transported him to a local hospital where he was declared dead. MIFACE Summary of MIOSHA Investigation Case 2022-017.

56. A male journeyman for a tool and die manufacturing firm sustained a head injury at work in 1978 that resulted in a subdural hematoma which then resulted in lifelong hydrocephalus with shunts and its many issues. He was in his 80s when he died in 2022 from complications of this injury.

57. A male shipping/receiving material handler in his 30s died from mechanical asphyxia when an approximate 2000-pound bag of plastic pellets fell on him. The 4-foot-wide by 4-foot-deep by 5-foot-high sacks, made of a woven synthetic fabric, were palletized and were stored in rows within one foot of each other and two or three sacks high. The decedent was operating a powered industrial truck moving and stacking the palleted bags. It appeared that the decedent was attempting to seal a leaking bag of plastic media that was underneath a second 2000-pound bag of plastic media. He was found under the upper sack of the stack, crouched near the base of the stack. A roll of tape typically used to seal sacks that had been cut or torn was found near him as well as a partially taped cut in the bottom sack. He was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-029.

SUICIDE

58. A male maintenance technician in his 40s died from a self-inflicted hanging at his place of employment.

59. A male electrician in his 60s died from multiple blunt traumatic injuries when he jumped from the roof of his workplace.

WHOLESALE TRADE (5 deaths)

DRUG OVERDOSE

60. A male steel industry skilled tradesman in his 50s died due to probable cocaine intoxication. He was found by coworkers slumped in a chair, unresponsive. EMS gave him a Narcan dose and transported him to a local hospital where he died nine days later from medical complications.

61. A female powered industrial truck driver in her 50s died from intoxication by the combined effects of fentanyl, hydrocodone and diazepam. She was found by coworkers in the bathroom/rest area. Emergency responders declared her dead at the scene.

MOTOR VEHICLE CRASH

62. A male food sales route sale delivery driver in his 50s died from multiple blunt force injuries sustained in a motor vehicle crash. The decedent was traveling southbound when his box truck was struck by a northbound pickup truck which had crossed the center line after sideswiping a southbound semi-tractor trailer. The box truck overturned and the decedent was found restrained by a lap belt hanging upside down. Emergency

response transported him to a local hospital and despite resuscitative efforts, he was declared dead. It is unknown if the box truck was equipped with an airbag.

STRUCK BY

63. A male blueberry farm laborer in his 20s died from multiple blunt force injures when a 40-foot-tall dead tree fell on him while awaiting the weighing of his blueberry tote. Field workers were paid by the pound of picked blueberries. The picked blueberries were placed in totes and taken to a location on the edge of the field near the wood line to be weighed. The decedent was a member of an 18-person crew picking blueberries in a field where harvesting rights had been purchased by a berry buyer. He had worked for about 1 hour and 40 minutes and was in the process of getting his tote weighed when at approximately 6 p.m., one of the other field workers yelled "Look out!". A 40-foot-tall dead tree fell, striking his head and chest. He was transported to a local hospital by emergency medical services where he was hospitalized. He was declared dead two days later. MIFACE Summary of MIOSHA Investigation Case 2022-028 (Spanish version).

SUICIDE

64. A male granite installer in his 30s died from a self-inflicted hanging at his place of business.

RETAIL TRADE (8 deaths)

DRUG OVERDOSE

65. A male gas station attendant in his 30s died from fentanyl toxicity. The gas station doors were locked when the manager and another individual, who usually gave the decedent a ride to and from work, arrived. They attempted to reach the decedent by cell phone but were unsuccessful. The manager called 911. The gas station's live view camera footage showed that the decedent went into the bathroom approximately an hour and a half prior to their arrival and never came out. Emergency responders found him deceased in the bathroom.
66. A male retail millwork specialist in his 60s died from fentanyl intoxication. He was found unresponsive in his vehicle in the business' parking lot by a passerby. The passerby called for emergency response and was performing chest compressions when emergency responders arrived and assumed care. Emergency responders discovered he was in diabetic shock and transported him to a local hospital where he died the next day.

HOMICIDE/ASSAULT

67. A male liquor store owner in his 60s died from a gunshot wound to his head. The shooter entered the store to buy some alcohol. The decedent stepped out from behind the counter when he was shot. The shooter then pointed the gun at another employee and ran off with two drawers from the cash register. He was declared dead at the scene.
68. A male jewelry store owner in his 40s died from multiple gunshot wounds. The decedent had left his store and was seated in his vehicle, when he was shot by an associate multiple time. The deceased was allegedly targeted over business dealings. EMS transported him to the hospital where he was declared dead.
69. A male clerk in his 50s died from multiple blunt force injuries when a driver deliberately ran over him with his car. The decedent had an altercation in the store with a customer about allegedly stealing merchandise. He followed the customer to his car parked at a gas pump. He was at the front of the vehicle, approaching from the driver's side when the driver turned the car towards him, accelerated, and ran over him. The decedent was dragged approximately 10- to 15-feet. EMS transported him to the hospital where he died several weeks later from injury complications.

MOTOR VEHICLE CRASH

70. A male newspaper carrier in his 40s died from blunt force trauma sustained in an unwitnessed vehicle crash. The decedent was an unrestrained passenger in a SUV that struck an unoccupied flatbed tow truck parked on the shoulder of the road. The crash occurred in the very early morning on a dark, unlit, dry 2-lane roadway with a posted speed limit of 25 m.p.h. The SUV driver's newspaper route had concluded and was driving the vehicle to help deliver the newspapers for the decedent's newspaper route. The SUV driver, who was also unrestrained, was travelling at 33 m.p.h. when the SUV struck the rear of the tow truck on the driver's side, lodging beneath it. Both the driver and the decedent struck the SUV windshield. On the passenger side of the SUV, directly in line with a puncture hole in the windshield was the left rear corner of the flatbed; the decedent's fatal head trauma was caused by contacting the corner of the flatbed during the crash. The SUV's airbags did not deploy. He was declared dead in the hospital emergency room.
71. A male vehicle driver for a dealership in his 70s died from multiple blunt injuries and thermal burns in a motor vehicle crash. The decedent was driving the pickup to an out-of-state buyer. The incident involved four vehicles near an exit ramp. There were three lanes of travel on the interstate with a posted speed limit of 70 m.p.h. The roadway was dry. The decedent and the driver of a double-axle gravel hauler were traveling in the center travel lane. The driver of the gravel hauler stated to responding police that it was "stop and go" traffic, and traffic had started moving again. The gravel hauler driver removed his glasses, wiped his face, and while placing his glasses back on his face saw traffic come to a complete stop in front of him. He applied his brakes but could not stop the hauler in time. The gravel hauler struck the rear of the decedent's pickup truck. The decedent's vehicle then struck the rear end of a tanker truck causing his pickup truck to burst into flames. The tanker truck rolled over the top of another vehicle which was stopped in traffic in the right lane. It is unknown whether the decedent was wearing a shoulder and lap belt. The airbags deployed. He was declared dead at the scene.

SUICIDE

72. A male mechanic in his 50s died from a self-inflicted hanging at his place of employment. He was declared dead at the scene.

TRANSPORTATION AND WAREHOUSING (19 deaths)

DRUG OVERDOSE

73. A male truck driver in his 40s died from acute cocaine toxicity. He was supposed to be on his way to another city to make a delivery. He was found in a wooded area. EMS transported him to the hospital where he died in the emergency room.
74. A male semi-truck driver in his 30s died from anoxic encephalopathy due to cocaine abuse. Multiple calls were made to local authorities alerting them to the decedent's stopped semi-truck blocking traffic in the far-right lane of an expressway. When police arrived, an MDOT driver was setting out cones; the MDOT driver stated that he did not make contact with the decedent. The responding police officer approached the semi and discovered the decedent on the floor between the driver and passenger seat, not moving or responding. The officer immediately checked for breathing/ pulse, but none was present, and positioned the decedent on his back as best as possible in the tight area and performed CPR. Other officers, as well as EMS arrived. EMS assumed care and transported him to the hospital. He was declared dead 4 days later.

FALL

75. A male trucking company owner in his 70s died from hypoxic-ischemic encephalopathy. The decedent was washing a truck with a raised gravel hauler parked on a larger white rock gravel-type groundcover. The decedent had set up a ladder next to the gravel hauler just behind the driver door. Responding police found a

power washer near the ladder with the hose and handle draped over the side of the raised hauler and shoe impressions on the truck frame underneath the raised hauler. Company employees found the decedent laying on his back, unconscious and called for emergency response. Emergency responders found him lying on his back with his arm next to the power washer and his right foot against the third set of tires on the driver's side. According to the scene investigation and autopsy findings it was unknown as to what caused his fall. He died two days later in the hospital from medical complications from the fall injuries.

HOMICIDE/ASSAULT

76. A male food delivery driver in his 20s died from multiple gunshot wounds fired from a vehicle. It was his first day on the job. He had stepped out of his vehicle when the shooter first shot him in the foot, then circled around and shot him multiple times. It is unknown why this may have happened. He was declared dead at the scene.
77. A female ride share driver in her 40s died from a gunshot wound to her head. The decedent had picked up a passenger at a store in the early morning. Travelling to the destination, the passenger shot the driver in the back of her head. The vehicle crashed into a pole and the shooter fled the scene and eventually apprehended. The decedent was declared dead on arrival at the hospital.
78. A male courier in his 40s died from multiple gunshot wounds in the parking lot of the business. The decedent was arguing with another individual. Witness statements indicated that the decedent threw a bottle at the individual and then shots rang out. He was declared dead at the scene.

MACHINE

79. A male truck driver for an automobile carrier trucking firm in his 70s died from multiple blunt force injuries when he was struck by a car hauler liftgate that fell to the ground. The decedent and his coworker each arrived at their destination. The liftgate acted as a ramp for unloading vehicles on the carrier and were electrically controlled. The decedent backed his truck to the loading area at the destination and unloaded the vehicles on his carrier without any problems. His coworker's liftgate experienced an electrical problem; the gate would not function properly. The decedent, his coworker, and an employee at the destination fixed the issue by hooking up an electrical jump box to the gate to power it up. The decedent and his coworker did not check that both safety chains were connected to the liftgate before lowering it. In addition, the fall shadow of the liftgate was not identified. When power was applied, due to the improper safety chain connections, the liftgate fell uncontrolled to the ground as the decedent walked through the fall shadow. The decedent was struck and pinned to the ground. A destination employee witnessed the incident and obtained a hi-lo to lift the liftgate from the decedent. Emergency response was called, and he was declared dead at the scene.
80. A male semi-truck driver in his 50s died from multiple blunt force trauma when a 3500-pound bundle of 4-foot by 8-food plywood sheets fell from a semi-trailer and struck him. The decedent had a double trailer and was kneeling on the ground near the center of his lead trailer on the passenger side, folding up load securement straps. A forklift had removed several plywood bundles from the driver's side of the trailer without incident. The center of the trailer had three stacked bundles of plywood. As the decedent was folding the straps, the forklift operator picked up one stack containing two bundles from the front of the trailer, passenger side. The forklift reversed with his load. The forklift operator stated to responding police that as he was backing and turning with the load, that the load must have caught the edge of the center load, causing it to fall. He was declared dead at the scene.

MOTOR VEHICLE CRASH

81. A male box truck driver in his 50s (see narrative 94) and a male semi-truck driver in his 20s both died from thermal injuries sustained in a motor vehicle collision. The incident occurred on a dark, unlit, dry 3-lane interstate expressway with a posted speed limit of 70 m.p.h. The semi-truck was entering the eastbound interstate via the entrance ramp when his semi-truck and trailer overturned, and skidded to a stop on the driver's side, blocking all three eastbound lanes. The semi-truck trailer's undercarriage was facing the

incoming eastbound traffic. The box truck was travelling in the right lane and struck the trailer undercarriage. At some point, both trucks caught fire. Both drivers were declared dead at the scene.

82. A male truck driver in his 50s died from hemoperitoneum due to blunt abdominal trauma sustained in a motor vehicle crash. Coronary Atherosclerosis contributed to the death. The crash occurred on a dry, 2-lane divided highway with a posted speed limit of 55 m.p.h. The decedent was driving a semi-tractor-trailer to deliver office furniture to another state. The decedent's passenger indicated to responding police that while picking up the load from the distribution center, the decedent complained of chest pain and thought it might have been indigestion or anxiety. He took an antacid and used his inhaler, which provided him some relief and they left the distribution center soon after. As they were on the road, they were talking and everything seemed normal. A few minutes into the drive, the passenger looked over to the decedent and he appeared to be falling asleep. In-cab video captured the decedent visibly wince in pain while driving and appear to lose consciousness. The semi left the roadway to the right, struck a ditch and several trees, coming to rest against a large tree that impacted the cab front, driver's side, causing extensive damage and pinning him in the cab. Responding police did not observe any physical indication that he applied the brakes. The decedent was wearing a seat belt. Medical personnel arrived on scene, and he was declared dead at the scene.

83. A male parcel service delivery driver in his 50s died from multiple blunt force injuries sustained in a motor vehicle collision. The decedent was driving a box truck traveling straight ahead on a southbound, dry, 2-lane roadway with a posted speed limit of 55 m.p.h. The box truck veered off to the right, struck a fence and then struck a tree causing it to catch fire. Witness statements said the decedent did not apply the brakes. Witnesses attempted to remove the driver from the truck but were unsuccessful. The decedent was wearing a shoulder and lap belt. The truck was not equipped with an airbag. He was declared dead at the scene.

84. A male truck driver in his 30s died from multiple blunt force injuries to his head resulting from a motor vehicle crash. The crash occurred on a dry, 4-lane divided highway with a posted speed limit of 70 m.p.h. and 65 m.p.h. for trucks. Both the northbound and southbound lanes of travel were divided by a recessed grass median and a Gilbrator cable barrier system. The cable system was located on the west side of the median nearest the southbound lanes of travel. The driver of the semi-truck and trailer was traveling northbound when the driver fell asleep. The semi-truck and trailer crossed the grass median, broke through the Gilbrator cable system and entered the southbound lanes of travel, striking Vehicle 1 traveling in the right lane. After striking Vehicle 1, the semi's trailer spanned both southbound lanes of travel. The decedent, driving a semi-truck and trailer was southbound in the right lane. The decedent applied the semi's brakes but was unable to stop in time and struck the trailer spanning the southbound lanes. Other vehicles were involved in this incident; the drivers did not sustain serious injuries. The decedent and the driver of Vehicle 1 were declared dead at the scene. The decedent was not wearing a lap and shoulder belt. Airbag deployment is unknown.

85. A male delivery driver in his 20s died from multiple injuries sustained in a motor vehicle crash. The crash occurred at a traffic signal-controlled intersection of a dry, 4-lane highway divided highway without a barrier. The posted speed limit was 45 m.p.h. The crash involved three vehicles; a semi-tractor-trailer travelling northbound, the decedent's step van with a sliding door (<10,000 pounds) traveling west in the right lane, and a car, travelling southbound and was stopped at the red light in the right lane. The traffic signal for traffic traveling north and south had been red for approximately 7-8 seconds. The semi did not stop at the red light and entered the intersection. The decedent was unable to stop his truck in time and struck the passenger side of the semi-tractor. Video from the decedent's truck showed him securing the lap portion of the belt in place behind him and not across his lap and then sliding the shoulder belt over his left chest. He had not closed the driver's side door prior to his trip. The decedent was ejected from the truck when it struck the semi and became attached to it. The semi tractor and trailer continued through the intersection veering to the left (west) and struck the southbound car in the right lane at the stop light. The semi continued in a northwest direction hitting several small structures before coming to rest against a tree. At some point after the semi crashed into the stopped car, and before coming to rest at the tree, the decedent had fallen off and had been run over by one or more of the semi's truck tires. He was found between the roadway and right rear of the trailer. He was declared dead at the scene.

86. A male truck driver/operations manager in his 30s died from craniocerebral trauma sustained in a motor vehicle crash. The crash occurred on a dry, paved, straight 2-lane road that was not physically divided. The speed limit was 55 m.p.h. but not posted. The decedent was driving a semi tractor with a full dumpster. The

decedent had been running loads from a house being worked on to and from a landfill. As the truck was not on the way to the landfill, but near the business, the company owner postulated that the decedent was headed there because he was too tired to continue working. The decedent's truck was southbound when the tractor/dumpster crossed the center line and left the roadway to the left. The truck ran over a mailbox in a yard, glanced off a large tree, and then came to rest after hitting another tree head on. The truck's transmission, engine and front axle were all separated from the truck. Responding police did not find tire marks indicative of hard braking or swerving on the roadway or on the grass after leaving the roadway. An off-duty firefighter came upon the scene and he immediately responded. He found the decedent hanging from the front of the truck where the windshield had been. The decedent had been nearly fully ejected from the cab. The off-duty firefighter pulled the decedent from the truck and began CPR until EMS arrived and assumed care. The decedent was wearing a lap belt and shoulder harness. The truck's airbags deployed. EMS transported him to the hospital where he was declared dead in the emergency department.

SUICIDE

87. A male moving company freight handler in his 20s died from a self-inflicted hanging at his place of business.
88. A male boat tour owner/operator in his 60s died from a self-inflicted gunshot wound. He was declared dead in the business's office
89. A female rideshare driver in her 30s died following a self-inflicted gunshot wound in her vehicle near her home. She was declared dead at the scene.
90. A male packer in his 30s died from a self-inflicted gunshot wound to his head in the parking lot of the business.

TOXIC EXPOSURE

91. A male truck driver in his 50s died from acute carbon monoxide (CO) poisoning from an external gas-powered generator utilized to power space heaters in the truck cab. The decedent and his driving companion had been sleeping in the semi-tractor with the engine off after parking the tractor-trailer at a truck stop. Instead of using the heat generated by the truck's diesel engine, they were utilizing electric space heaters powered by an external gas-powered generator mounted on the truck frame, behind the cab, with extension cords leading under the cab to the inside. His driving companion explained to responding police that they use the generator to heat the inside of the semi when it is cold outside; because of the temperature in the high teens, they had the generator running continually. Because of the wind direction out of the South, and the back of the truck facing South, the wind was blowing the generator exhaust fumes directly toward the sleeper portion of the truck, which had ventilation holes on the backside of the cab. The generator, which was covered by a tarp, was still running when responding police arrived on scene. The tarp forced the exhaust fumes to exit the bottom of the generator, concentrating the fumes toward the bottom of the sleeper. The decedent was positioned in the sleeping compartment with his head closest to the exterior vents on the south side of the semi. When the companion awoke and was unable to rouse the decedent, the companion ran to the truck stop and summoned help. Emergency response arrived and the decedent declared deceased. On scene, the companion's carbon monoxide blood level was 29%. Due to the high level, the companion was transported to a local hospital. The decedent's carbon monoxide blood level was 40.1%. Responding fire department personnel tested for carbon monoxide in the cab utilizing a handheld CO detector. Initial readings indicated a CO level of 60 after the cab door had been open for several minutes.

INFORMATION (3 deaths)

HOMICIDE/ASSAULT

92. A male entrepreneur in his 30s died from multiple gunshot wounds while he was in his sound studio. The shooter has not been identified. He was declared dead at the scene.

93. A male music/music video producer in his 40s died from a gunshot wound to his back. Another individual was also shot but survived. Per preliminary investigation, an appointment arrived at the studio, pulled out a handgun from his waistband and shot the decedent and coworker. He was declared dead upon arrival at the hospital.

MOTOR VEHICLE CRASH

94. A male box truck driver in his 50s and a male semi-truck driver in his 20s (see narrative 81) both died from thermal injuries sustained in a collision. The incident occurred on a dark, unlit, dry 3-lane interstate expressway with a posted speed limit of 70 m.p.h. The semi-truck was entering the eastbound interstate via the entrance ramp when his semi-truck and trailer overturned, and skidded to a stop on the driver's side, blocking all three eastbound lanes. The semi-truck trailer's undercarriage was facing the incoming eastbound traffic. The box truck was travelling in the right lane and struck the trailer undercarriage. At some point, both trucks caught fire. Both drivers were declared dead at the scene.

FINANCE & INSURANCE (1 death)

HOMICIDE/ASSAULT

95. A male owner of a check cashing business in his 50s died from a gunshot wound. The decedent was shot following a confrontation inside the store. He was declared dead at the scene.

REAL ESTATE, RENTAL AND LEASING (1 death)

MEDICAL

96. A male crane operator in his 40s died from medical complications of craniocerebral trauma. The decedent was found seizing in a factory-based crane and had sustained head trauma. It was unknown whether the head trauma occurred before or during the seizure. He died 11 days later from complications of the head injury.

PROFESSIONAL, SCIENTIFIC, AND TECHNICAL SERVICES (3 deaths)

DRUG OVERDOSE

97. A male welder in his 40s died from fentanyl and para-fluorofentanyl toxicity. He was found unresponsive by coworkers in the bathroom and declared dead at the scene.

MOTOR VEHICLE CRASH

98. A male delivery driver in his 50s died from multiple blunt force injuries sustained in a motor vehicle crash. The crash occurred in the right lane on a southbound dry, 3-lane expressway with a posted speed limit of 70 m.p.h. Michigan Department of Transportation (MDOT) message boards were warning drivers of traffic backups ahead. The incident involved three vehicles: the decedent's cargo truck and two semi-tractor trailers (Vehicle A and Vehicle B). Vehicle A was traveling between 5 and 10 m.p.h. approaching the backup. The driver had activated the tractor-trailer's 4-way flashers and had a foot on the brake. Dashcam video from a witness's vehicle showed the decedent had been driving erratically for several miles approaching the backup, weaving in and out of the right travel lane and into the center lane and crossing the fog line. The decedent did not apply his brakes prior to striking Vehicle A's trailer. Responding police determined that the decedent failed to stop in an assured clear distance and struck Vehicle A's trailer, causing Vehicle A to be pushed forward into Vehicle

B's trailer. The police report indicated that when the decedent was extricated from the vehicle, two cell phones were located near his body. One of the cell phones was resting on his arm, which indicated to the police that he was using it at the time of the crash. The decedent was wearing a shoulder and lap belt. The cargo truck was not equipped with airbags. He was declared dead at the scene.

99. A male veterinarian in his 50s died from multiple injuries in a motor vehicle crash. The decedent ran a mobile vet clinic serving multiple animal shelters. The crash occurred on a dry, 2-lane roadway with a posted speed limit of 55 m.p.h. as he was traveling to a site to provide care. The decedent's cargo van crossed the centerline and struck a semi-tractor trailer head-on. The cargo van spun 180-degrees and was then struck by another vehicle traveling southbound, causing the van to leave the roadway and come to rest in a yard. He was wearing a shoulder and lap belt. The van's airbags deployed. Emergency response arrived and he was declared dead at the scene.

ADMINISTRATIVE AND SUPPORT AND WASTE MANAGEMENT AND REMEDIATION SERVICES (7 deaths)

ASPHYXIATION

100. A male tree trimmer in his 40s died from compression asphyxia when he was crushed while performing maintenance on a trailer-mounted woodchipper. His regular job responsibilities were to work as a ground crew member while the owner trimmed trees. The decedent met the owner at a self-storage lot where the woodchipper was located to conduct maintenance. He was tasked with removing the wheel, fixing the tire, and placing the wheel back on the trailer. Simultaneously, the owner was changing the oil. To remove the wheel, a Pittsburgh Heavy Duty 12-ton Bottle Jack was placed under the trailer frame and the trailer was jacked up enough to remove the wheel. The ground underneath the trailer was composed of stones and gravel. After the wheel was removed, the decedent got under the raised trailer to place a cement cinder block as an extra support. While under the trailer, the bottle jack shifted, and the trailer fell fatally crushing him. The owner called emergency services and attempted to lift the woodchipper off the decedent using the mechanical dump bed on his work truck, which was unsuccessful. Emergency services arrived, lifted the trailer, and he was transported to a local hospital where he was later declared dead. MIFACE Summary of MIOSHA Investigation Case 2022-021.

101. A male tree trimmer in his 60s died from hypertensive atherosclerotic cardiovascular disease; a contributory cause was positional asphyxia due to a prolonged upside down "V" position. The decedent was approximately 45- to 50-feet up in the tree and his coworker was on the ground. The coworker reported that they were cutting down trees in the area. Per the coworker, the decedent, who was wearing a safety harness, had cut a large branch that became entangled in his equipment and placed him in a spin. The decedent was unable to get back to the tree or lower himself. The coworker called for emergency response as he was trying to explain or help the decedent the best he could from the ground, and the decedent was responding. After a while, the decedent ceased to respond. When emergency responders arrived, they found the decedent in an upside down "V" like position. Due to the decedent's height in the tree, a ladder truck was dispatched, and a prolonged high angle rescue was initiated. Emergency responders, when reaching the decedent in the tree, found that he did not have a pulse nor was he breathing. After getting the decedent to ground level, emergency care was initiated, and he was transported to a local hospital where he was declared dead.

DROWNING

102. A male self-employed landscaper in his 30s drowned in a 10-foot-deep pond while using a weed-whacker to trim grass along the edge of the pond. The incident was unwitnessed. The decedent began working and requested a drink from the homeowner. About an hour after the request, the homeowner did not see the decedent and did not see the weed whacker. The homeowner left on a trip and returned 5 days later. The homeowner found the decedent floating in the pond. The weed-whacker was also in the pond very close to the edge. He was declared dead at the scene.

FALL

103. A male tree trimmer in his 60s died from multiple blunt force injuries when he fell from a tree. The decedent was trimming branches with a chainsaw. It is suspected that the decedent unintentionally cut through the climbing rope resulting in him falling to the ground. It is believed that an additional safety strap was not in use at the time of the incident. Police and emergency medical services arrived on scene. He was declared dead at the scene. Case 2022-007.

HOMICIDE/ASSAULT

104. A male custodian in his 40s died from multiple blunt force injuries following an altercation with a coworker. The decedent was a contract janitor and working at a client's facility when a coworker and the decedent got into an altercation. An unidentified item was used to strike the decedent. He was declared dead at the scene.

105. A male security guard in his 60s died from multiple gunshot wounds with complications while providing security services at a gas station. The decedent argued with a gas station customer, pushing and shoving occurred, and the customer left the store. Upon returning to the store, the customer and the decedent argued and again pushing and shoving occurred. The shooter pulled a gun from his holster and shot the decedent several times. Gas station employees called for emergency responders. Police arrested the customer. Emergency responders transported him to the hospital where he died three weeks later from medical complications caused by the gunshots.

STRUCK BY

106. A male janitor in his 50s died from blunt force trauma to his torso when he was struck by a bale of cardboard weighing more than 2000 pounds. At the time of the incident, the decedent was speaking with a forklift driver while standing near a stack of two bales of cardboard stacked by different forklift driver. The topmost bale began to slide off the lower bale. The bale then fell onto the decedent and pinned his lower body to the ground and his upper body against the forklift. The forklift driver worked with six other coworkers to move the bale by hand. After their initial attempts were unsuccessful, the forklift driver found and piloted another forklift to successfully remove the bale from the decedent. After the decedent was freed, EMS was called and he was transported to the hospital, where he died 11 days later. The forklift driver theorized that the cause of the incident was that a heavier bale was stacked on a bale weighing less. The driver had reported this improper stacking method as a safety issue to their manager two months prior to the incident. Case 2022-027.

EDUCATIONAL SERVICES (2 deaths)

AIRCRAFT

107. A male flight instructor in his 70s died in a plane crash. The purpose of the flight was to certify another pilot in his Smith Aerostar 600 twin engine, six-seater aircraft by conducting three touch-and-go landings. The flight instructor was seated in the left seat, and the copilot, who was also the owner of the place, was seated in the right seat. This was the first flight since the copilot had purchased the airplane about five years before and had been working on it since then. The plane was found in a heavily wooded area about one mile away from the airport the day after it was reported missing. There were no witnesses to the incident. The NTSB determined the probable cause of the crash was "a loss of power to the left engine due to contamination of the fuel system. Contributing to the accident was the pilots' failure to properly configure the airplane for flight with one engine inoperative." He was declared dead at the scene.

FALL

108. A female accountant in her 40s died from an acute pulmonary blood clot due to left leg deep vein thrombosis due to complications of blunt force injury to the left leg. The decedent fractured her left leg while at work and was treated with casting, crutches and pain medication. Approximately one month later, after staying seated for approximately 3 hours, she stood up and became acutely short of breath, then laid down on the ground, and became unresponsive. Emergency response was called, and she was transported to a hospital, and approximately one month later she died.

HEALTH CARE AND SOCIAL ASSISTANCE (5 deaths)

ASPHYXIATION

109. A male hospital maintenance technician in his 30s died from positional and compressive asphyxia with complications when he was pinned between a New Holland skid steer cab and the bucket support arm while trying to fix a hydraulic oil leak. The incident occurred in the firm's maintenance garage. The decedent and a coworker were trying to remove a rusted bolt so they could open a side panel to fix the leak. The decedent lifted the bucket of the skid steer to the ceiling of the garage to gain better access to the side panel. Based on the height of the garage ceiling, the arms partially blocked the egress from the unit. With the unit turned off, the arms could be activated to lower if the pedal was depressed but could not be raised. A safety feature of the skid steer required the seat belt to be buckled to turn the skid steer on and the arms to the raised and lowered. The decedent shut off the skid steer and was exiting via the side door when the incident occurred. He had one foot out of the door and the bucket came down. The decedent's position blocked his coworker from gaining access to the cab to fasten the seat belt so the skid steer could be turned on and the bucket could be raised. His coworker ran to get another skid steer to try to lift the bucket from the decedent. As he ran for the skid steer, he called out to other coworkers to assist. When he arrived with the skid steer, he tried to lift the bucket but was unsuccessful. The coworkers broke the skid steer windows and were then able to fasten the seat belt and raise the skid steer's arms. Emergency response was called, and he was transported to a local hospital where he was declared dead.

HOMICIDE/ASSAULT

110. A male mental health technician (MHT) in his 30s died from multiple gunshot wounds. The individual who attacked the MHT was known to the staff at the facility and had been banned from the facility due to previous behavior/incidents (some including violence.) The decedent and another MHT were called to escort this individual off the premises and during the confrontation, the decedent was shot. He was declared dead at the scene. MIFACE Summary of MIOSHA Investigation Case 2022-024.

STRUCK BY

111. A female church volunteer in her 80s died from multiple blunt force injuries when she was struck and run over by a vehicle. Just at dark the decedent was walking in a church parking lot to put trash in a dumpster. Emergency services were called, and she was declared dead at the scene.

SUICIDE

112. A male chiropractor in his 50s died from a self-inflicted wound to his neck. He was declared dead at his place of business.
113. A physician in his 40s died from a self-inflicted hanging in the storage/utility room at his medical office.

ARTS, ENTERTAINMENT AND RECREATION (4 deaths)

DROWNING

114. A male maritime mechanic in his 50s died from asphyxiation due to drowning. A pontoon boat with its passengers was pulling into a slip just before midnight when they observed what they thought to be a dead animal floating in the water in the slip next to theirs. Upon closer examination, they saw the decedent and immediately contacted emergency response. His fall into the water was unwitnessed. Postmortem toxicology indicated a blood alcohol concentration of 0.340%.

DRUG OVERDOSE

115. A male boat mechanic in his 40s died from acute fentanyl intoxication. The decedent had responded to cell phone contact earlier in the day. Investigation found that when he should have finished work, the caller did not get a response from him so went to his workplace and found him deceased. The decedent had been working on the air conditioner of a 30-foot boat that was outdoors next to a building where it had been stored for the winter. There was no evidence for electrocution.

MOTOR VEHICLE CRASH

116. A male jet-truck driver in his 40s died from multiple blunt force injuries when he was involved in a motor vehicle crash. The decedent was driving a jet-engine propelled semi-truck tractor traveling approximately 325 miles per hour. He was racing two airborne jet airplanes on an unused airport runway as part of a festival demonstration. During the run, the left side rear tire ruptured and debris from the tire either ruptured a fuel line or fuel tank causing a fire that fully engulfed the truck. The driver lost control of the truck, causing it to go off-road and roll multiple times. The decedent was wearing restraints. He was declared dead at the scene.

STRUCK BY

117. A male racetrack employee in his 60's died from blunt force trauma to his head, torso and extremities when he was struck by a race car. The decedent was acting as a flagman and standing beyond the protective barriers surrounding the track near the side of the pit row exit. He was responsible for flagging on cars entering the back stretch after pit stops. The raceway was a ⅓-mile asphalt paved oval track where cars could reach speeds up to 100 miles per hour. Two racecars bumped coming out of the corner near the pit causing one of the racecars to lose control. As the car spun it left the asphalt track towards the pit exit where it struck the decedent at a high rate of speed. He was transported by EMS to a nearby hospital but was declared dead en route. MIFACE Summary of MIOSHA Investigation Case 2022-015.

ACCOMMODATION AND FOOD SERVICES (11 deaths)

DRUG OVERDOSE

118. A female worker at a fast-food restaurant in her 30s died from mixed drug toxicity (recent cocaine use, morphine, hydrocodone, and methamphetamine). Prior to her succumbing to the drug effects, she was observed by coworkers as stumbling around the kitchen and eventually falling to the floor. The coworkers called for emergency response. She was declared dead at the scene.

FALL

119. A male delivery driver in his 70s fell while walking on a client's aisleway floor while at work for a food service/delivery company. Initial reports indicated he tripped on items on the floor. He sustained head trauma

but did not seek medical attention. A few days later, he fell again to a concrete surface at home. His death certificate stated he died from traumatic multicompartmental intracranial hemorrhages and skull fracture from an injury at work.

HOMICIDE/ASSAULT

120. A male building manager in his 40s died from multiple gunshot wounds. The decedent was in the process of locking up a customer's room for overdue rent when the customer shot him. He was declared dead at the scene.
121. A male security guard in his 30s died from multiple gunshot wounds. The decedent was attempting to remove a patron who was fighting with establishment employees. The patron produced a gun and shot the decedent. EMS transported the decedent to a local hospital where he was declared dead in the emergency room.
122. A male security guard in his 30s died from multiple injuries when he was involved in an altercation with a patron. The altercation started at the decedent's place of employment and spilled over to a near-by parking lot where the security guard was struck by the patron's car. EMS transported him to the hospital where he died six days later from the injuries sustained.
123. A male pizza delivery driver in his 60s died from a single gunshot wound to his back. News reports indicate that his last delivery was to a vacant house, where he was ambushed, robbed and then shot. When emergency response arrived, the decedent, who was lying on the sidewalk, was receiving chest compressions from a bystander. The pizza warming box was nearby. He was transported to the hospital where he was declared dead on arrival.
124. A male hotel clerk in his 50s died from multiple gunshot wounds inflicted by a hotel guest.

MOTOR VEHCILE CRASH

125-126. A male pizza delivery driver and a male pizza delivery trainee, both in their 50s died from multiple blunt force trauma sustained in a motor vehicle crash. The crash occurred on a dark, unlit, icy, 2-lane roadway with a posted speed limit of 55 m.p.h. Weather data indicated light to moderate snow and blowing snow with visibility at 3-5 miles. Responding police described the roadway as "extremely slippery from the freshly fallen snow that had been driven over and frozen." The vehicle involved was a 1997 Chevrolet S-10 pickup truck. Police described the truck as extremely compromised by its poor structural integrity. The frame was severely rusted as was the lower bed and cab areas. The pickup left the paved roadway and entered the dirt shoulder on the right side of the road. Upon entering the dirt shoulder and adjacent yards, the vehicle started to slide sideways. As it was sliding sideways through the yards, it slid off an older, unused driveway approach and into a ditch, causing the truck to tip onto its driver side. Once it tipped on its driver side, the bed and cab area contacted two trees. The smaller tree contacted the bed area, and the larger tree contacted the cab area. The force in which the truck struck the tree while on its side, caused severe damage to the cab area and had a crushing effect of the cab towards the driver and passenger. Once the vehicle struck the trees, the weight of the engine in front of wrapped the pickup around the tree. EMS transported both individuals to the hospital. The trainee was declared dead in the emergency room. The driver was admitted to the hospital but succumbed to his injuries 8 days after the crash. Both individuals were unrestrained per the EMS report; the police report indicated that it was unknown if both individuals were wearing restraints. The vehicle airbags did not deploy.

SUICIDE

127. A male deli shop worker in his 50s died from a self-inflicted gunshot wound to the head after shooting his gun from his vehicle in the parking lot into the deli where he worked. A coworker was outside cleaning tables and the decedent told him to move. He then shot multiple times into the deli and wounded a coworker. He drove away and made a threatening phone call to the manager. He was identified by coworkers. Police located his vehicle and as the officers were initiating the traffic stop, they heard a shot inside of the vehicle. He was declared dead at the scene.

TOXIC EXPOSURE

128. A male hotel maintenance worker in his 40s died from carbon monoxide (CO) toxicity in the hotel's boiler room. The room housed an old boiler that was out of service and disconnected and an operational gas-fired furnace. The decedent was found slouched against the wall by police and firefighters after being notified by his family that he did not come home that night. When fire department personnel arrived, their air monitoring device registered a reading of 500 PPM (max meter's capabilities) of CO at the boiler room door. Fire department personnel contacted the energy supplier to the hotel (due to the hotel being a commercial system) and their air monitoring device registered 1000 PPM (max meter's capabilities) at the door. It was discovered that the furnace's roof exhaust vent had a makeshift metal plate covering it and may have been rigged with a piece of wood to keep it partially open. It appeared that the makeshift cover had been there for some time. Additionally, the cold air intake on the roof was covered from the inside by a garbage bag that prevented the flow of fresh air into the boiler room. Both conditions contributed to CO buildup in the room. He was declared dead at the scene.

OTHER SERVICES (5 deaths)

FIRE/EXPLOSION

129. A male mechanic in his late 50's died from exposure to combustion products. The decedent had been working on a diesel truck in which they had performed a transmission repair. It was noted that the universal joint on the drive shaft had ceased. The victim tried to free the universal joint with a hammer to no avail, so a torch was used. During this process, a fire ignited in the building. There were flammable materials in the garage area where the torch was used that most likely resulted in the fire. A coworker who had exited the building heard a "sizzling" sound and then observed smoke coming from the garage. The coworker attempted to enter the building but was unable to open a building door. A building camera captured the decedent entering a hallway and his unsuccessful attempt to open a building door. Fire department personnel found him in the hallway. EMS transported him to the hospital where he was declared dead. The contents of the building were classified as high hazard, and there was only one adequate exit from the building (there should have been at least two exits). The decedent was working in a room that had only one way of escape and the door of that single fire exit did not swing in the direction of exit travel from the building as required. The ceiling of an exit route shall be at least 7 feet 6 inches (2.3 m) high. Any projection from the ceiling shall not reach a point less than 6 feet 8 inches (2.0 m) from the floor. The second potential exit route had a height of approximately five feet. Additionally, this potential exit route had two locks and was blocked by two wooden 2x4's nailed across the top and middle of the door.

HOMICIDE/ASSAULT

130. A male barber in his 40s died from multiple gunshot wounds. He was found in his barbershop. EMS transported him to the hospital where he died after medical intervention.

STRUCK BY

131. A male master automotive mechanic in his 30s died from complications of sharp force injuries to his face. Five days prior to his hospitalization, the decedent indicated to medical personnel that while at work, he had metal shard/shavings embedded in his face. The shavings were not removed, although he attempted to remove them with a magnet the evening prior to his hospitalization. Infection ensued, causing hospitalization and ultimately complications resulting in death.

132. A male maintenance worker in his 40s died from traumatic asphyxia and blunt abdominal injuries when he was pinned between a double axel, 26-foot box truck and a loading dock. The incident occurred in the early morning. The loading dock area was dimly lit. The loading dock had four lanes/bays for trucks to back into.

Bay 1 was at the east end of the building and Bay 4 was at the west end closest to the employee entrance. The decedent, who was wearing dark clothing, was standing on the ground in front of Bay 3 oiling/greasing an area near the Bay 3 doors. The dock overhead door was closed. Two cans of spray grease were found on top of the dock. The maintenance cart assigned to the decedent was located at the decedent's workstation inside the building. The cart contained tools and cones that were to be placed in front of the dock that was being serviced. The box truck driver waited for a 53-foot semi-truck cargo trailer to back into Bay 4. The box truck driver, after opening the rear doors, slowly backed into Bay 3, located approximately 3-4 feet north of Bay 4. The driver felt the truck contact the building and exited the cab. The driver then saw the decedent had been struck, pulled the truck forward and then ran into the building for assistance. Coworkers assisted keeping the decedent calm until emergency response arrived and assumed care. Coworkers caring for him reported that the deceased was using headphones when they arrived. Emergency response transported him to a local hospital where he was declared dead.

SUICIDE

133. A male car care company business owner in his 50s died from a self-inflicted hanging in the business's repair garage.

PUBLIC ADMINISTRATION (7 deaths)

ANIMAL

134. A female volunteer mounted division deputy in her 30s died from a traumatic brain injury sustained while dismounting her horse. A fairgoer had fallen from a ramp and had been injured. As she was dismounting her the horse reared and fell on top of her. The decedent sustained serious head injuries. She was not wearing a helmet. EMS transported her to a local hospital where she died 4 days later.

HOMICIDE/ASSAULT

135. A male police officer in his 40s died from multiple gunshot wounds. The decedent and a fellow police officer had responded to a scene where gunshots had been fired. It is unknown why the gunman opened fire on the decedent. EMS transported him to the hospital where he was declared dead in the emergency room.
136. A male police officer in his 50s died from complications of a gunshot wound to his head sustained in the line of duty in 1998. An unmarked police cruiser and a marked patrol car, each with two officers, were in pursuit of a van wanted in connection with an abduction that occurred earlier in the day. As the police officers attempted to stop the vehicle, a suspect in the back opened fire on the cruisers with a semi-automatic gun. The decedent was driving the unmarked police cruiser and the police officer seated in the marked patrol car passenger seat were both struck in the head by the gunfire. Two officers were injured by shrapnel. All officers were transported to the hospital and were treated. The patrol officer died in the hospital the next day. The decedent was treated and released to 24-hour rehabilitative care. He was hospitalized again in 2022 where he died from complications of the 1998 injuries.

MOTOR VEHICLE CRASH

137. A male police captain in his 50s died from multiple injuries when he was involved in head-on motor vehicle crash while on duty and driving a work issued vehicle. The crash occurred on a dark, unlit, not physically divided 2-lane roadway with an unposted speed limit of 55 m.p.h. The road surface was snow-covered and icy. An SUV traveling southbound at a high rate of speed attempted to pass two vehicles. The SUV driver veered back into the southbound lane and lost control on the snow-covered, icy road. The SUV entered the northbound lane, striking the decedent's vehicle head-on. The decedent was wearing a lap and shoulder belt, and the front and side air bags were deployed. The decedent was transported to the hospital where he

was declared dead.

138. A seasonal crewman in his teens died from multiple blunt force injuries when a vehicle struck the rear of the John Deere XUV 625i Gator™ Utility Vehicle Off-Road Vehicle (ORV) he was operating stopped in the roadway at an intersection Stop sign. The crash occurred on a straight, dry 2-lane roadway with a posted speed limit of 35 m.p.h. The John Deere ORV was purchased in 2015 and was equipped with turn signals, seat belts, a strobe light, a horn, a roll-over protection structure (ROPS), and headlights. He was assigned the task of clearing out vegetation from a drainage ditch on the south-side of the road and hand dig holes so that the gas main in the area could be properly marked by Miss Dig (Utility Notification Center). The decedent drove the ORV to the job site with his equipment from the Public Works Department less than a mile away. The manager left him alone at the site to complete the task after providing instructions. It is believed that after the manager left, the decedent left the site in the ORV to retrieve a walk behind weed-whacker. Returning to the jobsite, the decedent stopped at an intersection facing southbound and activated the ORV's left turn signal. He was waiting to make the left-hand turn when the driver of a passenger car failed to stop, striking the rear of the ORV. The decedent was not wearing the seatbelt and was thrown from the ORV upon impact. A witness to the crash administered first aid immediately following the collision. He was pronounced deceased at the scene by EMS. MIFACE Summary of MIOSHA Investigation Case 2022-025.

STRUCK BY

139. A male county road department lead worker in his 50s died from multiple blunt force injuries sustained when he was struck by a motor vehicle while attempting to remove a downed tree branch that was blocking a public roadway. The dry, 2-lane roadway had a posted speed limit of 50 m.p.h. A resident reported that a fallen tree was blocking lanes of the road causing driver to drive around it onto the road edge and private property. It was early afternoon. The 24-inch diameter oak branch was located approximately 200 yards from a curve. The decedent arrived and parked his work truck with the flashers activated in the northbound lane on the south side of the tree and positioned traffic cones on both the north and south sides of the tree. While the decedent worked on clearing smaller branches with his chainsaw while awaiting heavy equipment, a passenger car traveling southbound drove through the reflective traffic cones on the north side of the tree, collided with the tree branch, and then struck the decedent. He was declared dead at the scene. The victim wore a yellow shirt adorned with reflective strips, steel-toed boots, gloves, and safety glasses. MIFACE Summary of MIOSHA Investigation Case 2022-023.

SUICIDE

140. A male firefighter in his 40s died from a self-inflicted hanging at the fire station.