



May 2022

2022 National Ready Mixed Concrete Association Safety Benchmarking Survey Report

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Introduction

The National Ready Mixed Concrete Association surveyed member companies to compile the 2022 Safety Benchmarking Survey Report. The survey is also used for the NRMCA Safety Contest, which is reported in a separate document. The Safety, Environmental and Operations (SEO) Committee has responsibility for the survey. The report is based on information contained in the OSHA 300A summary log of member companies that responded to the information request. The reliability of the data is only as accurate as those compiling the individual OSHA 300A logs; thus, users of this report must keep this in mind. The 2022 Safety Benchmarking Survey form was sent to NRMCA member companies' safety officers, financial officers, and primary contacts in January 2022 through the NRMCA E-News weekly and was also posted on NRMCA's website, www.nrmca.org. An electronic format file of the survey form was distributed via email to the NRMCA membership as well. A targeted email campaign was also initiated where all past survey applicants, the SEO Committee members and selected NRMCA database individuals were also sent electronic copies of the survey form to further participation from NRMCA members. The deadline for all survey responses was April 1, 2022 (then extended until April 15, 2022). The survey consisted of fill-in-the-blank type questions included on the OSHA 300A log, as well as information on vehicle incidents and production data. The form for 2022 was reviewed by the SEO Committee and Safety Task Group and approved for distribution. The survey response represents data for calendar year 2021.

Seventy-six member companies/divisions collectively reported 47,854,919 employee hours producing over 93 million cubic yards of concrete. This report includes 14-year averages based on all responses since calendar year 2007. Table 11 summarizes the metrics derived from this year's survey responses, along with the 13-year average of 2007 – 2009 and 2011 - 2021. The 2010 data is not available.

The companies/divisions are divided into three categories based on the number of employee hours: greater than one-million employee hours, less than one million employee hours but greater than five-hundred-thousand employee hours, and less than five-hundred-thousand employee hours. These group sizes have

been modified from previous years to better reflect current annual concrete production per company/division.

Definitions of Terms Used in Tables in this Report

(All rates are based on incidents per 200,000 employee hours (approximately 100 full time employees))

The **total case incidence rate (TCIR)** represents the number of lost day injuries/illnesses, restricted duty day injuries/illnesses and medical case injuries/illnesses.

$$\frac{\text{(lost days inj/ill + restricted duty inj/ill + medical cases)}(200,000)}{\text{Number of Employee Hours}}$$

The **days away from work injury/illness incidence rate (DAFWII)** illustrates the number of injuries/illnesses that result in the employee being away from work for one or more full day(s) of work.

$$\frac{\text{(number of lost days inj/ill)}(200,000)}{\text{Number of Employee Hours}}$$

The **lost workdays injury/illness incidence rate (LWDII)** shows the number of injuries/illnesses that result in either lost days or transfer/restricted duty days, or both.

$$\frac{\text{(number of lost days inj/ill + transfer/restricted duty inj/ill)}(200,000)}{\text{Number of Employee Hours}}$$

The **medical case incidence rate (MCIR)** is a measure of incidents where employees seek professional medical treatment and miss no workdays and have no restricted duty days.

$$\frac{\text{(number of other recordable inj/ill)}(200,000)}{\text{Number of Employee Hours}}$$

The **severity rate (SR)** is equal to the number of lost workdays times 200,000 hours divided by the number of employee hours.

$$\frac{\text{(Number of lost workdays)}(200,000)}{\text{Number of Employee Hours}}$$

Incident Rate (Total Case Incident Rate)

The primary goal of the NRMCA Safety Benchmarking Survey is to ultimately reduce the incident rate in the ready mixed concrete industry. The latest data provided by the Bureau of Labor Statistics (BLS) (as of Jan. 2022) indicates that the ready mixed concrete industries overall incident rate at 3.9 for calendar year 2021. Table 1 illustrates previous years for comparison:

Table 1 Historical BLS Incident Rate Data for Ready Mixed Concrete Production

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Avg. |
|----------------------------|------|------|------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|
| BLS Incident Rate | 5.7 | 5.2 | 5.5 | 5.0 | 5.8 | 4.8 | 4.4 | 6.3 | 4.0 | 4.1 | 3.9 | 3.9 | 4.8 | 3.9 | | 4.81 |
| NRMCA Survey Incident Rate | 7.4 | 4.99 | 4.75 | Not available | 4.65 | 4.46 | 4.7 | 5.14 | 4.76 | 5.15 | 4.28 | 4.7 | 4.9 | 4.1 | 4.3 | 4.87 |

The combined industry *Total Case Incident Rate* (TCIR) was tabulated to be 4.3, up from 4.1 reported in last year’s survey. Overall, the data shows a steady trend as the industry continues to stress safe and healthy workplaces along with the added emphasis on training and education. NRMCA, for example, conducts safety courses, safety webinars, produces safety related videos and is constantly publishing updated safety related training materials, including the Think First Monthly Safety Initiative. Collectively companies reported 4 fatalities, 994 total injuries & illnesses, with 247 listed as other illnesses.

Severity Rate

The combined industry *Severity Rate* (SR) was 53.9 indicating that injuries and illnesses on average required about the same time away from work in 2021 than in the prior year (53.0 days). This means that an average of 54 lost days occurred as a result of injury or illness in calendar year 2021 for every one-hundred-employees as compared to a 14-year average of 68.8. *Severity rate*, also known as lost-time workday rate, is used to indicate the gravity of workplace injuries or illnesses. Accident rate alone does not reflect a safe work environment. A company may have a low incident rate but have a high number of lost workdays associated with each incident. A high severity rate is like a red flag, signaling serious safety concerns. The longer it takes an employee to return to work after an accident, the more severe the accident. To compute the *severity rate*, take the total number of days away from work multiplied by 200,000 (the equivalent of 100 full-time employees working 40 hours per week, 50 weeks per year) divided by the total number of hours worked during the year equals the severity rate. All OSHA rates are expressed as a rate per 100 full-time employees. This provides a standard comparison value so that companies can compare safety performance rates whether they have 50 or 5,000 employees.

Table 2 Historical Severity Rates

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Avg. |
|----------------------------|------|------|------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|
| NRMCA Survey Severity Rate | 87.7 | 57.9 | 64.9 | Not available | 81.3 | 74.0 | 78.6 | 82.9 | 64.6 | 74.5 | 66.8 | 48.6 | 75.0 | 53.0 | 53.9 | 68.8 |

Days Away from Work Injury/Illness Incidence Rate (DAFWII)

The DAFWII case rate is the number of cases that involve days away from work per 100 full-time equivalent employees. Cases that involve only temporary transfers to another job or restricted work are not included. The combined industry Days Away from Work Injury/Illness Rate (DAFWII) was 1.30 (although up slightly from 1.23 in 2020), lowering the 14-year average to 1.59. DAWFII illustrates the number of injuries/illnesses that result in the employee being away from work for one or more full day(s) of work. To compute DAFWII, take the total number of days away from work incidences multiplied by 200,000 (the equivalent of 100 full-time employees working 40 hours per week, 50 weeks per year) divided by the total number of hours worked during the year equals DAFWII.

Table 3 Historical DAFWII Rates

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Avg. |
|---------------------|------|------|------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|
| NRMCA Survey DAFWII | 2.10 | 1.70 | 1.70 | Not available | 1.62 | 1.48 | 1.51 | 1.76 | 1.46 | 1.85 | 1.49 | 1.30 | 1.73 | 1.23 | 1.30 | 1.59 |

Lost Workdays Injury/Illness Incidence Rate (LWDII)

LWDII is the number of injury and illness cases serious enough for workers to lose time or be put on restricted work activities per 100 workers per year. The combined industry *Lost Workdays Injury/Illness Incidence Rate* (LWDII) was 3.28 as compared to a 14-year average of 3.46. LWDII shows the number of injuries/illnesses that result in either lost days or transfer/restricted duty days, or both. LWDII is often referred to as DART. To compute LWDII, take the total number of days away from work incidences plus restricted duty incidents multiplied by 200,000 (the equivalent of 100 full-time employees working 40 hours per week, 50 weeks per year) divided by the total number of hours worked during the year.

Table 4 Historical LWDII Rates

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Avg. |
|--------------------|------|------|------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|
| NRMCA Survey LWDII | 2.50 | 3.66 | 4.42 | Not available | 3.09 | 3.31 | 3.40 | 3.83 | 3.45 | 3.72 | 3.27 | 3.66 | 3.74 | 3.16 | 3.28 | 3.46 |

Medical Case Incident Rate (MCIR)

The combined industry *Medical Case Incident Rate* (MCIR) was 1.03, which lowered the 14-year average results of the survey to 1.34. MCIR is a measure of incidents where employees seek professional medical treatment and miss no workdays and have no restricted duty days. To compute MCIR, take the total number of other incident cases from the 300A log multiplied by 200,000 (the equivalent of 100 full-time employees working 40 hours per week, 50 weeks per year) divided by the total number of hours worked during the year.

Table 5 Historical Medical Case Incident Rates

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Avg. |
|-------------------|------|------|------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|
| NRMCA Survey MCIR | 2.80 | 1.26 | 1.68 | Not available | 1.48 | 1.14 | 1.27 | 1.31 | 1.29 | 1.43 | 1.00 | 0.99 | 1.12 | 0.96 | 1.03 | 1.34 |

Vehicle Accidents

Mixer accidents that meet the definition of DOT Recordable Accidents are also tracked. The definition of a DOT Recordable Accident is an occurrence involving a commercial motor vehicle on a public road in intrastate or interstate commerce, which results in: 1) a fatality; 2) injury to a person requiring immediate treatment away from the scene of the accident; or 3) disabling damage to a vehicle, requiring it to be towed. We can take this data one step forward and compute the cubic yards of concrete produced per DOT recordable accident which normalizes the data. The higher the yards of concrete per recordable, the less frequent the accident rate. The 2022 survey data (395,608/DOT Recordable) ranks approximately 3% above the 10-year survey historical average.

Table 6 Mixer Truck Accident Data for 2012-2021

| Calendar Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Avg. |
|--------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|---------|
| # Mixer Truck DOT Accidents | 100 | 103 | 116 | 106 | 104 | 134 | 135 | 207 | 239 | 236 | |
| Cubic Yards | 47,021,415 | 42,318,185 | 46,696,913 | 50,323,649 | 34,236,650 | 48,303,663 | 40,260,835 | 70,792,631 | 86,180,588 | 93,363,595 | |
| Cubic Yards Per DOT Recordable | 470,214 | 410,856 | 402,560 | 474,749 | 329,199 | 360,475 | 298,229 | 341,993 | 360,588 | 395,608 | 384,447 |

Vehicle Accidents Cont'd.

The 2022 survey included a question for “*Number of vehicle accidents with damage to company vehicle or civilian vehicle*”. Since this type of accident is not required by federal law to track, it is sometimes more difficult data to obtain. Some companies do not track such incidents while others use minimum dollar amounts before they record the incident. A more understandable metric is cubic yards delivered per accident which can be calculated by dividing the number of yards produced by the number of accidents. Table 7 includes survey responses for the past 10 years for accidents that result in damage to a vehicle.

Table 7 Accidents Resulting in Vehicle Damage Data

| Calendar Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Avg. |
|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------|
| # Accidents | 713 | 699 | 688 | 775 | 797 | 926 | 1,042 | 1,426 | 1,107 | 1,615 | |
| Cubic Yards | 47,021,415 | 42,318,185 | 46,696,913 | 50,323,649 | 34,236,650 | 48,303,663 | 40,260,835 | 70,792,631 | 86,180,588 | 93,363,595 | |
| Cubic Yards per Accident | 65,949 | 60,541 | 67,873 | 64,933 | 42,956 | 28,153 | 38,638 | 49,644 | 77,850 | 57,810 | 55,435 |

Discussion of Rates of Companies/Divisions Reporting:

Greater than One-Million Employee Hours

Fourteen companies/divisions reported greater than 1 million employee hours. These companies reported an average annual concrete production of 3.14 million cubic yards per company, thus producing 2.16 yards per employee hour. There were 134 injuries/illnesses that incurred days away from work that resulted in 4,811 days lost. Two hundred cases resulted in the employee being either transferred to another job or on restricted duty totaling 10,272 days. There were 99 incidents that required professional medical treatment but incurred no time away from work.

Table 8 Data for Companies Reporting Greater than 1,000,000 Employee Hours

| Employee Hours | Total Injuries/Illnesses | Lost Workdays Injuries/Illnesses | Restricted Duty Days Injuries/Illnesses | TCIR | DAWFII | LWDII | Medical Case Incidence Rate | Severity Rate |
|----------------|--------------------------|----------------------------------|---|------|--------|-------|-----------------------------|---------------|
| 20,328,655 | 422 | 134 | 200 | 4.26 | 1.32 | 3.29 | 0.97 | 47.3 |

Five Hundred Thousand – One Million Employee Hours

Twenty-one companies/divisions reported less than one million but more than five-hundred-thousand employee hours. These companies reported an average annual concrete production of approximately 1.2 million cubic yards per company thus producing 1.71 yards per employee hour. There were 99 injuries/illnesses that incurred days away from work that resulted in 4,2423 days lost. One hundred-six cases resulted in the employee being either transferred to another job or on restricted duty totaling 5,271 days. There were 77 incidents that required professional medical treatment but incurred no time away from work.

Table 9 Data for Companies Reporting 500,000 – 1,000,000 Employee Hours

| Employee Hours | Total Injuries/Illnesses | Lost Workdays Injuries/Illnesses | Restricted Duty Days Injuries/Illnesses | TCIR | DAWFII | LWDII | Medical Case Incidence Rate | Severity Rate |
|----------------|--------------------------|----------------------------------|---|------|--------|-------|-----------------------------|---------------|
| 14,521,749 | 276 | 99 | 106 | 3.90 | 1.36 | 2.82 | 1.06 | 58.16 |

Less than Five-Hundred-Thousand Employee Hours

Forty-one companies reported less than 500,000 employee hours. These companies reported an average concrete production of approximately 419,384 cubic yards per company, thus producing 1.93 yards per employee hour. There were 71 reported cases that incurred lost days that resulted in 3,340 days away from work. One hundred-eighteen incidents resulted in job transfer or restricted duty totaling 4,075 days. There were 56 reported medical cases with zero lost workdays.

Table 10 Data for Companies Reporting less than 500,000 Employee Hours

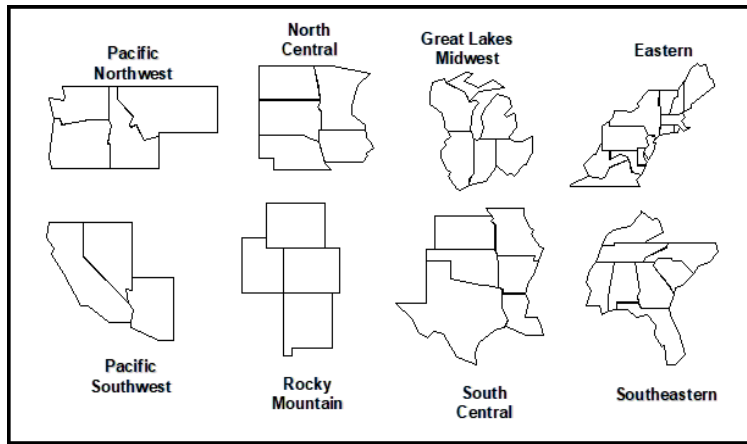
| Employee Hours | Total Injuries/Illnesses | Lost Workdays Injuries/Illnesses | Restricted Duty Days Injuries/Illnesses | TCIR | DAFWII | LWDII | Medical Case Incidence Rate | Severity Rate |
|----------------|--------------------------|----------------------------------|---|------|--------|-------|-----------------------------|---------------|
| 17,194,758 | 225 | 71 | 118 | 5.54 | 1.59 | 4.24 | 1.26 | 74.9 |

Acknowledgements

The authors would like to thank all the companies and individuals who spent the time to voluntarily participate in the survey. It is due to their efforts that this data can be used by the entire industry to benchmark valuable industry specific safety information. While the participation level has grown, the reliability of these industry benchmarks can improve by increasing the sample size. Readers of this report are encouraged to submit responses for the 2023 survey. Forms will be available on or about January 1, 2023, at www.nrmca.org.

“Big Dog” Recognition

Additionally, for the 2022 Safety Benchmarking Report, the 3rd ever “Big Dog Plants” are listed below. Using the data supplied in the report, “Big Dog” recognition is based on cubic yardage produced in a single plant from each of the eight following geographical regions. Large facilities are especially vulnerable to accidents due to the sheer number of employees and number of activities that occur every day and these plants are recognized for their outstanding performance. Actual production yardages are not shown in accordance with the NRMCA Safety Contest and Benchmarking confidentiality policy.



| <i>Region</i> | <i>Company</i> | <i>Plant Name</i> | <i>City</i> | <i>State</i> |
|----------------------|-------------------------------|----------------------------------|--------------------|---------------------|
| Eastern | Titan America | Dulles/Sterling | Sterling | Virginia |
| Southeastern | Ernst Enterprises | Lawrenceville | Lawrenceville | Georgia |
| Great Lakes/Midwest | VCNA Prairie LLC | Yard 8 | Des Plaines | Illinois |
| South Central | Geiger Ready Mix | Plant 7 | Olathe | Kansas |
| North Central | Lyman-Richey Corporation | Ready Mixed Concrete Co. Elkhorn | Elkhorn | Nebraska |
| Rocky Mountain | Jack B. Parson, A CRH Company | Beck Street | Salt Lake City | Utah |
| Pacific Northwest | CalPortland | Duwamish RM | Seattle | Washington |
| Pacific Southwest | CalPortland | Range Road | Las Vegas | Nevada |

Table 11 – Summary of All Industry Data 2022 Survey

| Number of Employee Hours | Category by Company Size | Total Number of Injuries/Illnesses | Number of Lost Workdays | Number of Lost Workday Injuries/Illnesses ¹ | Number of Restricted Duty Injuries/Illnesses ² | Total Case Incidence Rate (TCIR) ³ | DAFWII ⁴ | LWDII ⁵ | Medical Case Incidence Rate ⁶ | Severity Rate |
|--------------------------|--|------------------------------------|-------------------------|--|---|---|---------------------|--------------------|--|---------------|
| 47,854,919 | All Survey Data | 994 | 12,902 | 311 | 473 | 4.32 | 1.30 | 3.27 | 1.03 | 52.8 |
| 20,328,655 | More than One- Million Employee Hours | 422 | 4,811 | 134 | 200 | 4.26 | 1.32 | 3.29 | 0.97 | 47.3 |
| 24,833,333 | Five- Hundred- Thousand to One- Million Employee Hours | 276 | 4,223 | 99 | 106 | 3.90 | 1.36 | 2.82 | 1.06 | 58.2 |
| 17,194,758 | Less than Five- Hundred- Thousand Employee Hours | 225 | 3,340 | 71 | 118 | 5.54 | 1.59 | 4.24 | 1.26 | 74.9 |
| Not available | <i>BLS Statistical Data for NACIS 327320 in 2020</i> | Not Available | Not Available | Not Available | Not Available | 3.9 | 1.7 | 1.2 | 1.1 | Not available |
| 349,916,071 | All Industry Data – CY 2007-2010, 2012-2021 | Not Available | Not Available | Not Available | Not Available | 4.87 | 1.59 | 3.46 | 1.34 | 68.8 |

¹ Lost workday injuries and illnesses are those cases where the individual employee was away from work for one day or more excluding the day of injury.

² Restricted duty injuries/illnesses occur when an employee cannot perform his/her normal work activities for one day or more excluding the day of injury.

³ The total case incidence rate is calculated by summing fatalities, lost day injuries/illnesses, restricted duty injuries/illnesses and medical cases, multiplying by 200,000, and then dividing by employee hours for the period of time, in this case for calendar year 2021

⁴ DAFWII = (#cases with days away from work) (200,000)/employee hours in calendar year 2021.

⁵ LWDII = (#cases with days away from work plus those with job transfer, restricted duty, or both) (200,000)/employee hours in calendar year 2021

⁶ Medical Case Incidence Rate = (# of cases that required professional medical attention with no lost days or restricted duty) (200,000)

Employee hours, in this case for calendar year 2021