Safety Benchmarking Report

- 2022 Safety Data -

1 - Introduction

This report summarizes the responses of the 2023 CURT Annual Safety Survey submitted via the Safety Benchmarking Portal (SBP) and is comprised of responses by members of the Construction Users Roundtable (CURT), the Construction Industry Institute (CII), and other client companies of Construction Industry Resources (CIR). It presents the latest safety rates based on the reported data and provides corporate safety performance benchmarks which can be used for self-analysis. The 2023 survey was open from March through August 2023 and collected safety data from the 2022 calendar year.

The primary purpose of this report is to document the descriptive statistics obtained from the annual safety survey and avoids providing commentary regarding potential causes for specific safety statistics or trends. CURT has collected annual corporate safety performance information from its member organizations since 2001; reflecting a long-term commitment to improving safety in the construction industry. Such commitment led to CURT's development of the Owner Safety Blueprint (OSB), which is available on the CURT Website (https://www.curt.org/).

To provide a more robust report through an online benchmarking portal, the system provides two ways to present results to users: The first, this report adopts the general framework of the annual safety report. The second, the “Safety Analysis" (https://app.myclma.com/#/safety-benchmarking/safety-analysis)tool allows users to obtain rates for specific years and compare rates between any two selected years.

Note that, in most charts, the safety rates are provided for owners and contractors; this has been the traditional approach to reported safety rates over the years.

Limitations

Respondents (both owners and contractors) were asked to provide safety data for both their direct-hire employees and their contractors’ employees. However, because contractors were not uniquely identified in the owner responses, some double reporting of contractor data is possible. This overlap often presents itself in two ways:

- Owners reporting on their contractors' employees
- Contractors reporting on their direct-hire employees

In addition, the results for the building and infrastructure sectors may not be fully representative, due to small sample sizes. Consequently, readers should use caution when comparing results across sectors.

With regard to the industry sectors addressed in this report, it is important to note that the classifications used here differ from both the system OSHA currently uses, the 2002 North American Industrial Classification System (NAICS), and the Standard Industrial Classification (SIC) system that OSHA used prior to 2003. The construction industry divisions of the NAICS and the SIC system consist of three major groups:

1. General Building (NAICS 236 and SIC 15)
2. Heavy Construction except for Buildings (NAICS 237 and SIC 16)
3. Special Trade Contractors (NAICS 238 and SIC 17)

However, the data collected by the system does not address all the categories above. Most importantly, it does not include residential construction, which is included in the 'General Building' category above. Therefore, the OSHA data are not directly comparable to CURT data.

Survey Instrument

In collaboration with CIR, the safety survey is administered through an online survey instrument, which gathers the data by industry sector, location, and employee type. The main data entry fields are the following:

- Total Work Hours
- Total Recordable Incident Cases (https://www.osha.gov/laws-regs/regulations/standardnumber/1904/1904.7#1904.7(b)(5)(i))
- Days Away and Restricted or Transferred (DART) Cases
- Days Away (DA) Cases
- Total Number of Days Associated with Days Away (DA) Cases
- Total Number of Days Associated with Job Restriction or Transfer (RT) Cases
- Number of Fatalities

In addition, the survey includes questions regarding near misses, first aid cases (https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9638#1904.7(b)(5)(ii)), and fatalities. All safety terms used in the survey are aligned with OSHA definitions (https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9638) in order to allow comparisons of the survey results to the yearly safety statistics that OSHA provides on the overall U.S. construction industry.

Most importantly, this survey focuses on safety data associated with capital projects, excluding operations and maintenance (this is particularly important for owners reporting their safety data).

2 - Key Findings

This year, a total of 50 companies participated in the survey which generated the following key findings:

- The total workhours reported in 2022 calendar year decreased to 1.14 billion from 1.25 billion in 2021
- The overall TRIR rate remained steady from the 2021 rate (0.40) to 2022 rate (0.40)
- The overall DART rate increased 33% from the 2021 rate (0.15) to 2022 rate (0.20)
- For the TRIR and DART rates, the reported data outperformed the U.S. national construction industry by a substantial margin. (See Charts 1 and 2)
- Owners and contractors in the heavy industrial sector reported the best rates across all industry sectors. (See Charts 3 through 8)
- Overall, U.S. safety rates are higher than non-U.S. rates. (See Charts 9 and 10)
- Contractors in the heavy industrial sector reported the best TRIR rates for U.S. projects across all sectors, while owners in the infrastructure sector were best. (See Chart 11)
- Owners in the infrastructure sector reported the best DART rates for U.S. projects across all sectors. (See Chart 12)
- Contractors in the light industrial sector reported the best DART rates for U.S. projects across all sectors. (See Chart 12)
- The number of fatality cases increased from 6 fatalities in 2021 to 11 in 2022, and the fatality rate increased significantly (103%) to 2.01.
- “Contact with objects and equipment” was the primary cause of fatalities. (See Chart 20)

Note: beginning in 2018 (2017 Data), this report contains survey data from both CURT and CII members, as well as CIR clients and other non-members.

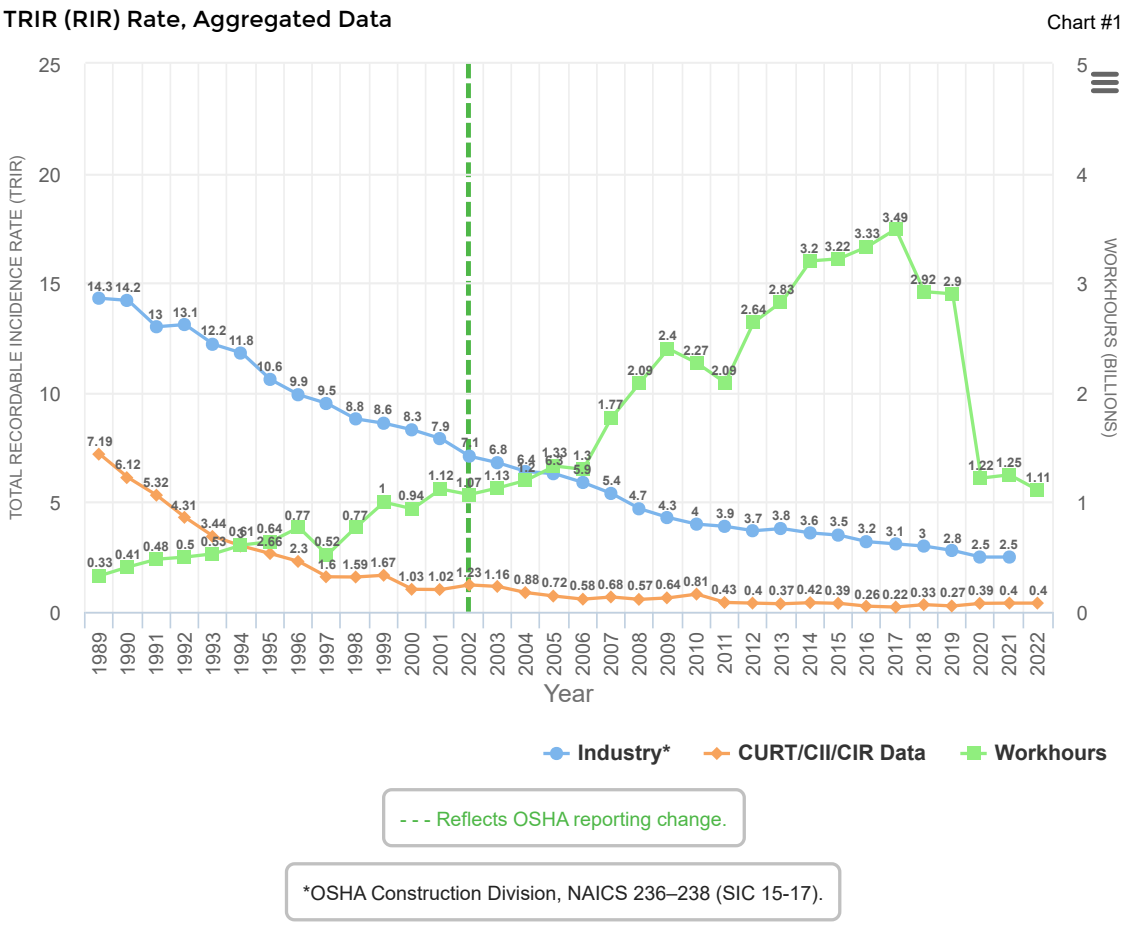
3 - Summary of Aggregated Data

The table below summarizes the data obtained from the CURT Annual Safety Survey for the most recent calendar year. The reader should note that some respondents could not provide all of the requested data or give details across all categories. For instance, an organization may report the total recordable incidents but not be able to report the DART cases, in which case, the aggregated amount of work hours for DART cases will be smaller. For this reason, the total overall work hours reported differs from many of the categories presented in Table 1. In particular, some owners had difficulty reporting information related to job restriction or transfer (RT) cases due to the short duration of the work tasks involved.

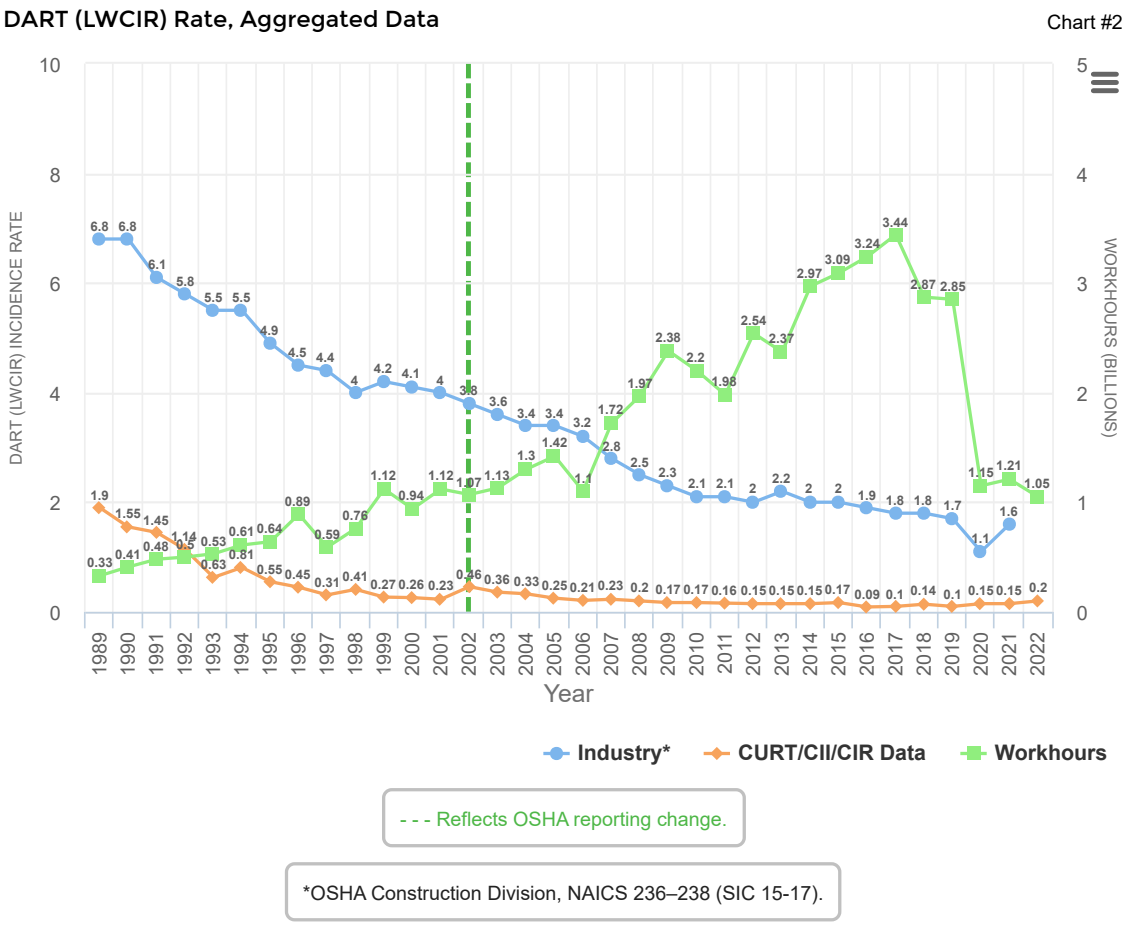
Aggregated Safety Data Table #1

	Owners	**Contractors**	**Total**
Total Number of Recordable Cases	522	1,698	2,220
Total Work Hours	251,593,355	862,375,321	1,113,968,676
Total Number of DART Cases	246	801	1,047
Total Work Hours	237,247,623	816,916,054	1,054,163,677
Total Number of DA Cases	124	580	704
Total Work Hours	251,593,355	851,447,851	1,103,041,206
Total Number of Fatalities	4	7	11
Total Work Hours	237,247,623	859,992,782	1,097,240,405

Charts 1 and 2 below display the trends of TRIR (known as RIR prior to 2002) and DART (called LWCIR prior to 2002) rates for survey respondents and for the U.S. construction industry as reported by OSHA. When OSHA changed its record-keeping rules on January 1, 2002, it altered some of the criteria that determine which injuries and illnesses are recorded. As a result, OSHA suggests that readers should use reasonable caution when comparing data produced under previous regulations with data produced under the new rules. Consequently, since 2003, the annual safety report has distinguished the safety data collected before and after the record-keeping rule changes, wherever necessary. Therefore, in Charts 1 and 2, a dashed green line marks the 2002 OSHA rule changes.



Note: In the chart above, after 2016 the data reflects survey data from both CURT and CII members, as well as CIR clients and other non-members.



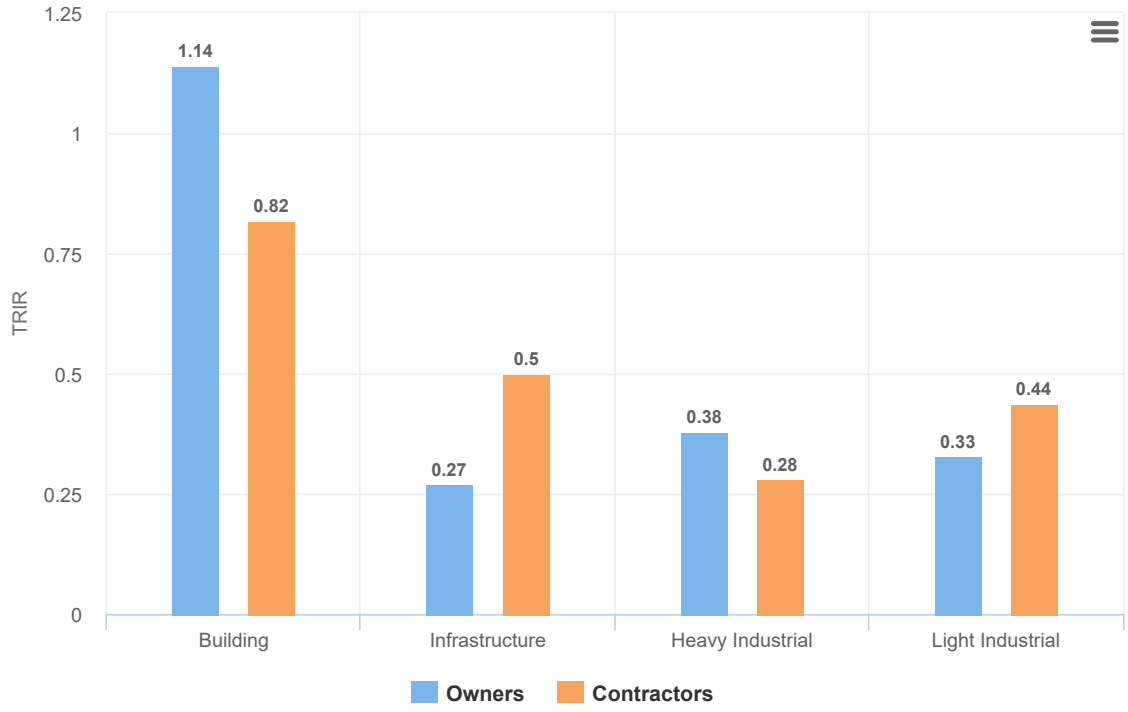
Note: In the chart above, after 2016 the data reflects survey data from both CURT and CII members, as well as CIR clients and other non-members.

4 - Industry Sector Analysis

This section presents the safety data analysis for four industry sectors: heavy industrial; light industrial; infrastructure; and buildings. Note that the building sector data does not include residential sector data.

TRIR Rate by Industry Group

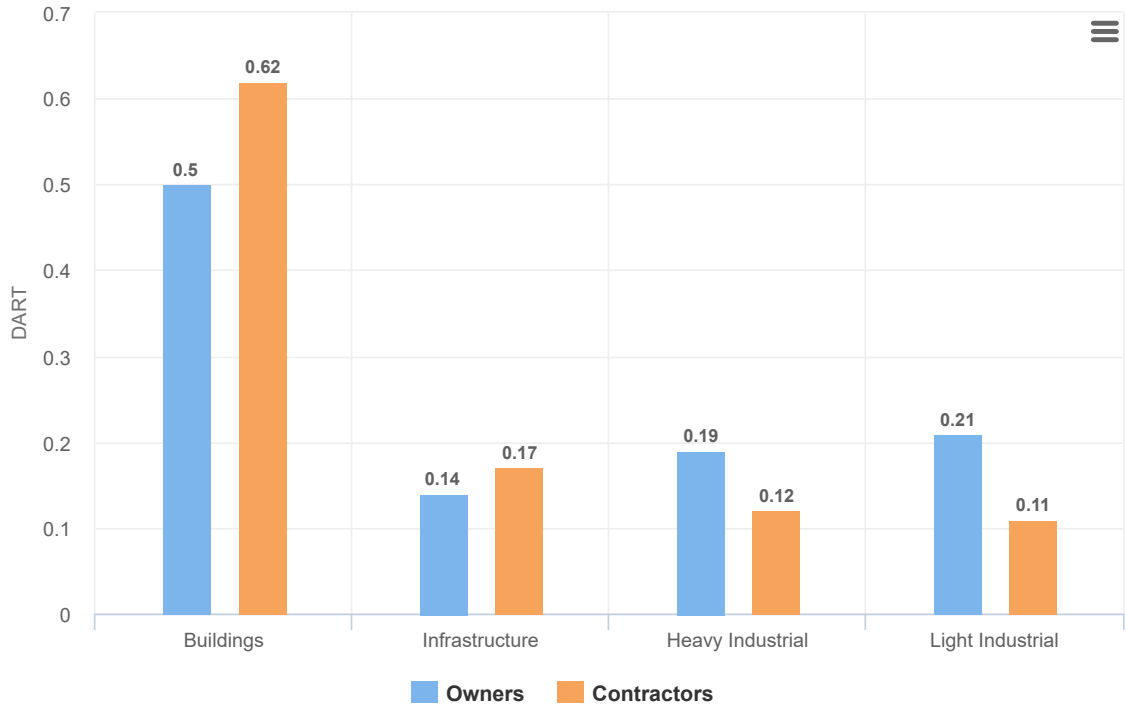
Chart #3



Industry Group		Owners	Contractors
Building	# Companies / #WH (MM)	4 / 15.49	4 / 117.81
Infrastructure	# Companies / #WH (MM)	4 / 12.62	8 / 121.9
Heavy Industrial	# Companies / #WH (MM)	12 / 203.55	26 / 555.46
Light Industrial	# Companies / #WH (MM)	3 / 19.93	9 / 67.2

DART Rate by Industry Group

Chart #4

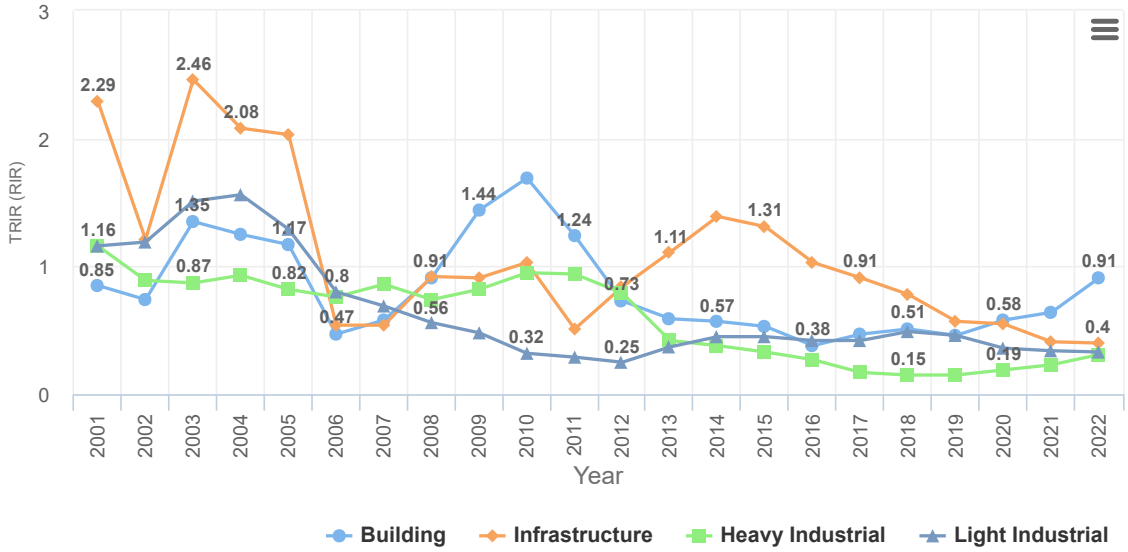


Industry Group		Owners	Contractors
Building	# Companies / #WH (MM)	4 / 15.49	4 / 117.81
Infrastructure	# Companies / #WH (MM)	4 / 12.62	6 / 106.76
Heavy Industrial	# Companies / #WH (MM)	12 / 203.55	24 / 525.14
Light Industrial	# Companies / #WH (MM)	2 / 5.59	9 / 67.2

In addition to the rates for the most recent year presented in the charts above, Charts 5 through 8 display the trends in the 3-year moving average rates. The 3-year moving average allows smoothing variations in the yearly rates and provides a better picture of long-term trends.

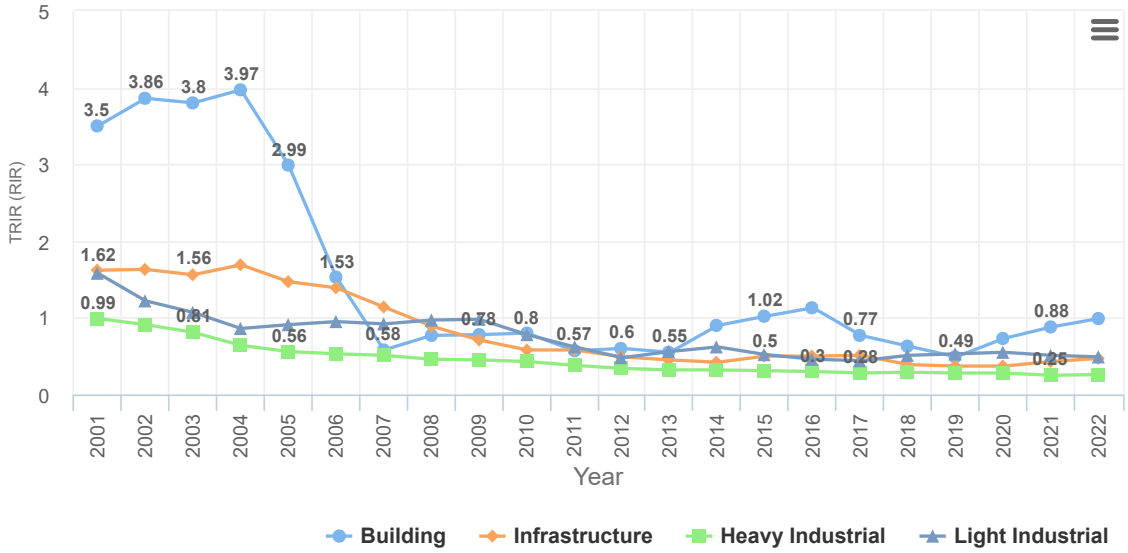
Owner TRIR Three-year Moving Average

Chart #5



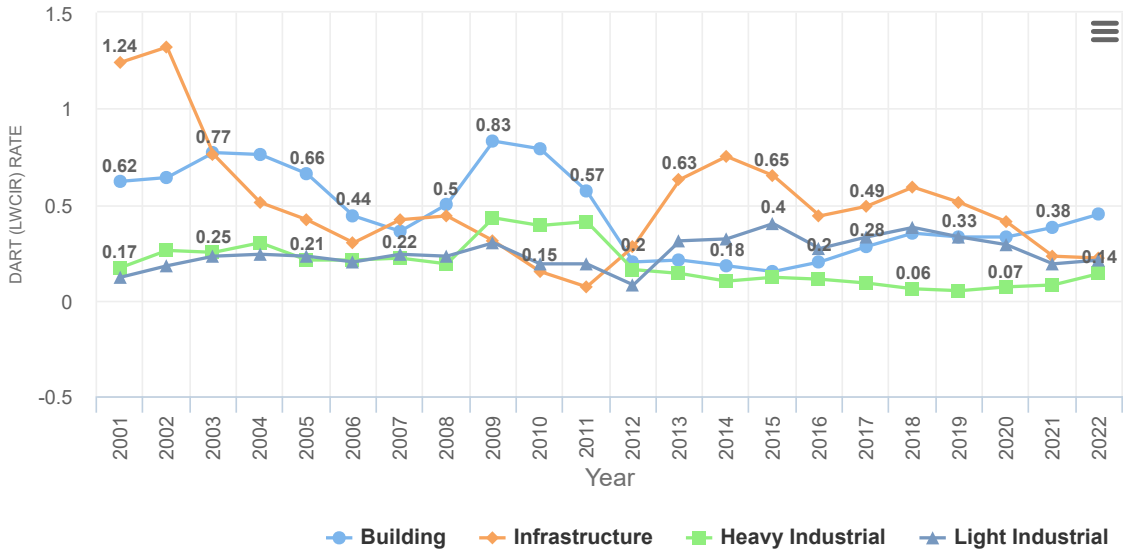
Contractor TRIR Three-year Moving Average

Chart #6



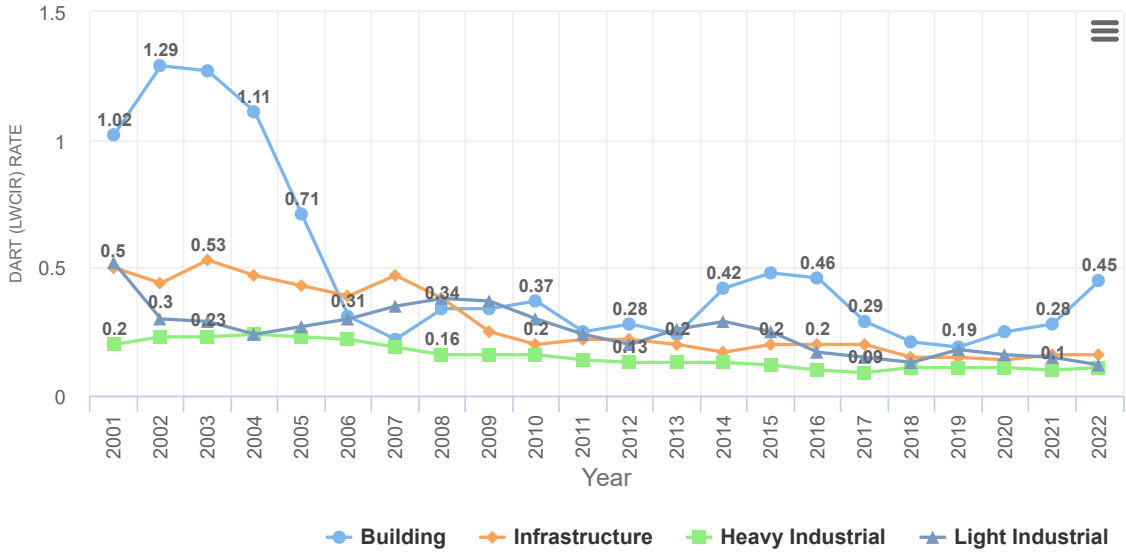
Owner DART Rate Three-year Moving Average

Chart #7



Contractor DART Rate Three-year Moving Average

Chart #8



This report also examined how safety performance differs by employee type, focusing on any differences between direct-hire employees and contractors' employees in the owner-reported data, and between direct-hire employees and subcontractors' employees in the contractor-reported data. The table below shows the rates for these cases both aggregated and disaggregated by industry sector.

Safety Performance by Employee Type and Industry Group

Table #2

	Owners				Contractors			
	TRIR		DART		TRIR		DART	
Industry Group	Contractor	Direct Hire	Contractor	Direct Hire	Subcontractor	Direct Hire	Subcontractor	Direct Hire
All	0.37	0.7	0.16	0.44	0.55	0.3	0.32	0.13
# Companies	18	15	17	15	14	31	11	29
WH(MM)	214.02	37.58	199.67	37.58	324.75	537.62	303.24	513.68
Buildings	1.12	1.21	0.39	0.91	1.09	0.3	0.84	0.18
# Companies	4	4	4	4	3	4	3	4
WH(MM)	12.18	3.31	12.18	3.31	77.7	40.11	77.7	40.11
Infrastructure	0.26	0.32	0.14	0.16	0.89	0.41	0.31	0.15
# Companies	4	3	4	3	6	7	5	5
WH(MM)	10.13	2.5	10.13	2.5	22.1	99.8	17.51	89.25
Heavy	0.32	0.69	0.15	0.42	0.3	0.26	0.13	0.11
# Companies	11	11	11	11	11	26	8	24
WH(MM)	172.33	31.22	172.33	31.22	207.05	348.41	190.14	335.01
Light	0.34	0	0.24	0	0.68	0.35	0.03	0.14
# Companies	3	1	2	1	5	9	5	9
WH(MM)	19.38	0.56	5.03	0.56	17.9	49.3	17.9	49.3

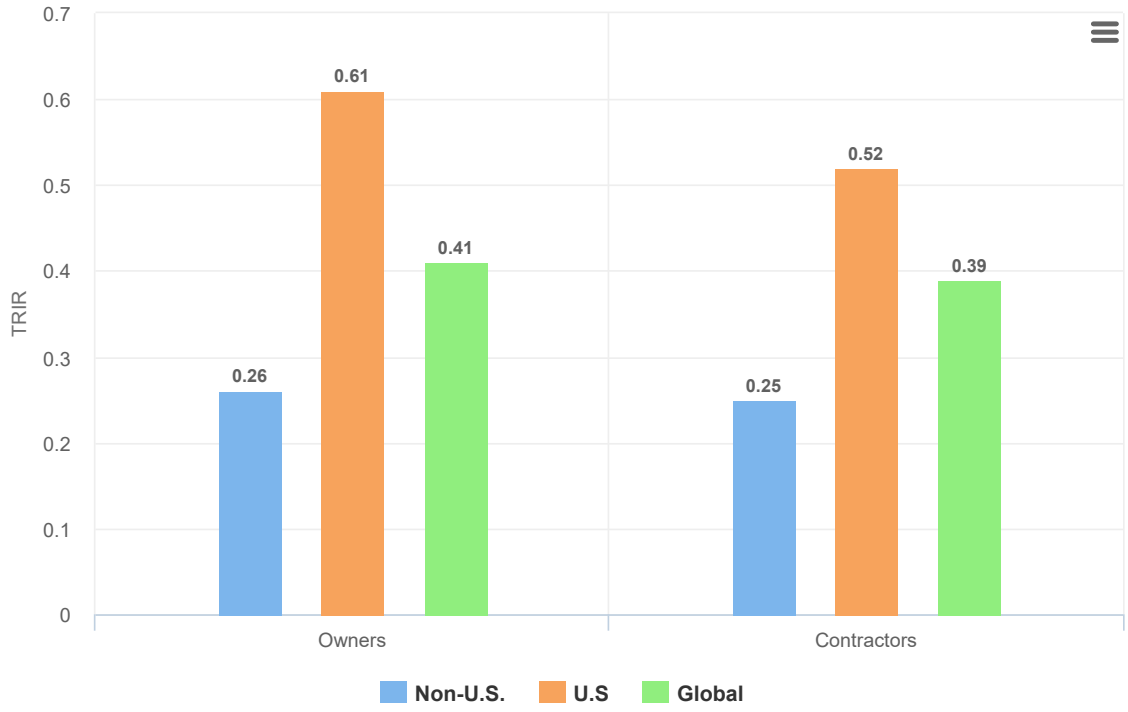
5 - Project Location Analysis

Survey respondents are involved in capital projects around the world. To address the differences between U.S. and non-U.S. projects, this chapter compares the safety performance of these two groups of projects. Note that, ideally, the non-U.S.& number should be further broken down by geographic region. But the availability of data is limited to most regions and, therefore, this report aggregated all non-U.S. data under the non-U.S. group. The Global group represents the set of all collected data.

Note that, in principle, the Global represents the aggregation of the U.S. and the non-U.S. project in terms of Work Hours. In the case of mismatching between the Global Work Hour and the sum of U.S. and non-U.S. Work Hours, it indicates that there are companies reported their data by merging the U.S. and non-U.S. project information.

TRIR Rates for U.S.-based and Non-U.S. Projects

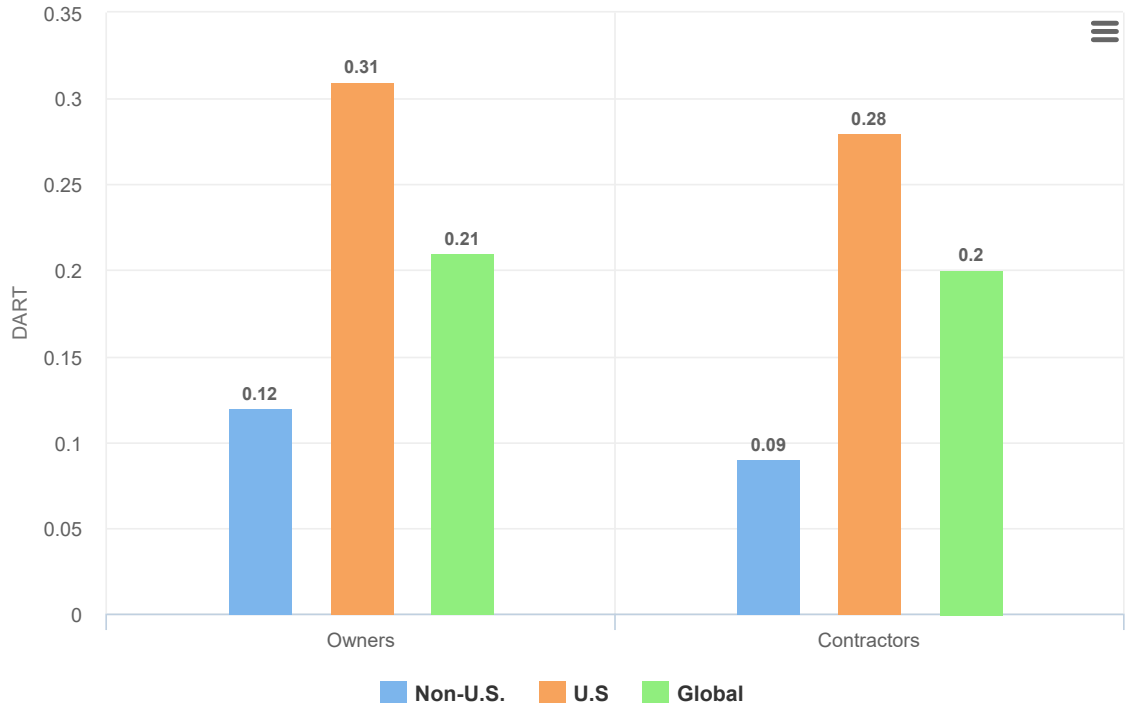
Chart #9



		Owners	Contractors
Non-U.S.	# Companies / #WH (MM)	9 / 127.08	14 / 403.39
U.S.	# Companies / #WH (MM)	16 / 117.1	30 / 458.99
Global	# Companies / #WH (MM)	19 / 251.59	31 / 862.38

DART Rates for U.S.-based and Non-U.S. Projects

Chart #10



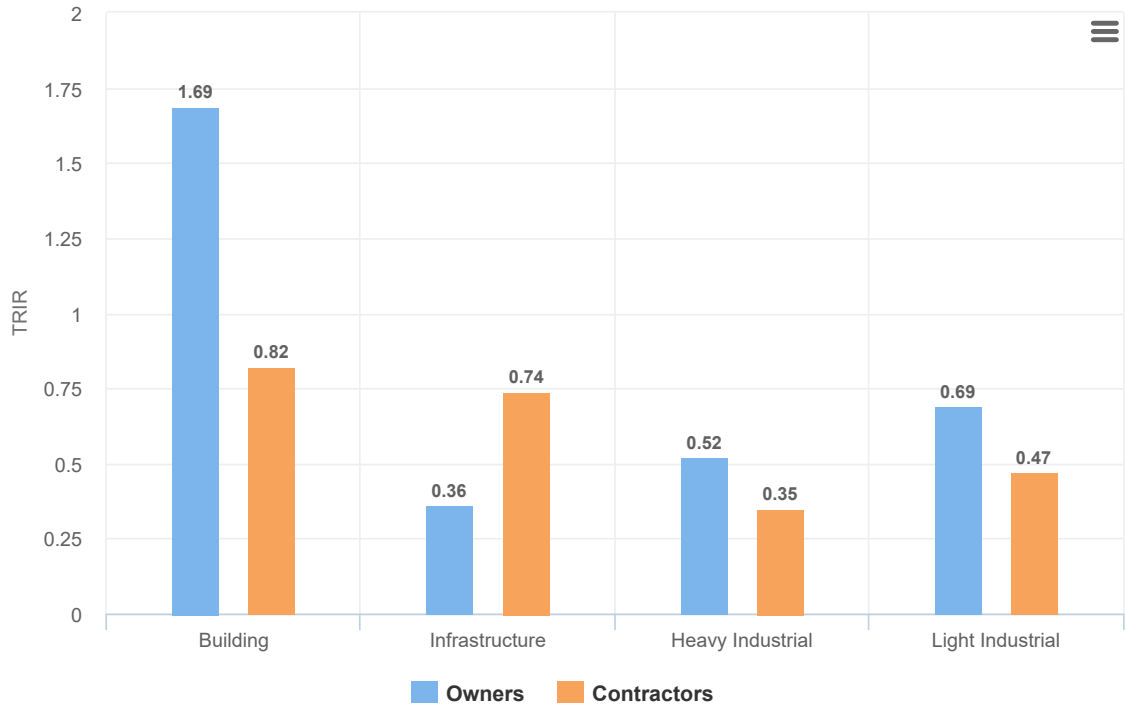
		Owners	Contractors
Non-U.S.	# Companies / #WH (MM)	8 / 116.97	13 / 369.09
U.S.	# Companies / #WH (MM)	15 / 112.85	29 / 447.82
Global	# Companies / #WH (MM)	18 / 237.25	29 / 816.92

Charts 11 through 14 show international and U.S. rates by sectors and by respondent type (owners and contractors). Results should be interpreted with caution given the small number of owner companies reporting data across all sectors (but particularly in the light industrial and building sectors).

CURT is aware of the perception that data reported for international projects might result from different reporting standards compared to the data reported for U.S. projects. These differences might result from different reporting culture and local regulatory requirements. In this survey, CURT asks for aggregated data reported according to the definitions provided by OSHA. The reported data is reviewed for consistency, and these data are assumed to reflect the actual safety events experienced on projects. However, given that such discrepancies might be present, the reader is encouraged to use caution when examining the results presented here, considering that relative trends (e.g., trends regarding U.S. or non-U.S. data separately) are less susceptible to differences in reporting cultures, unlike absolute rates.

U.S. TRIR Rate by Industry Group

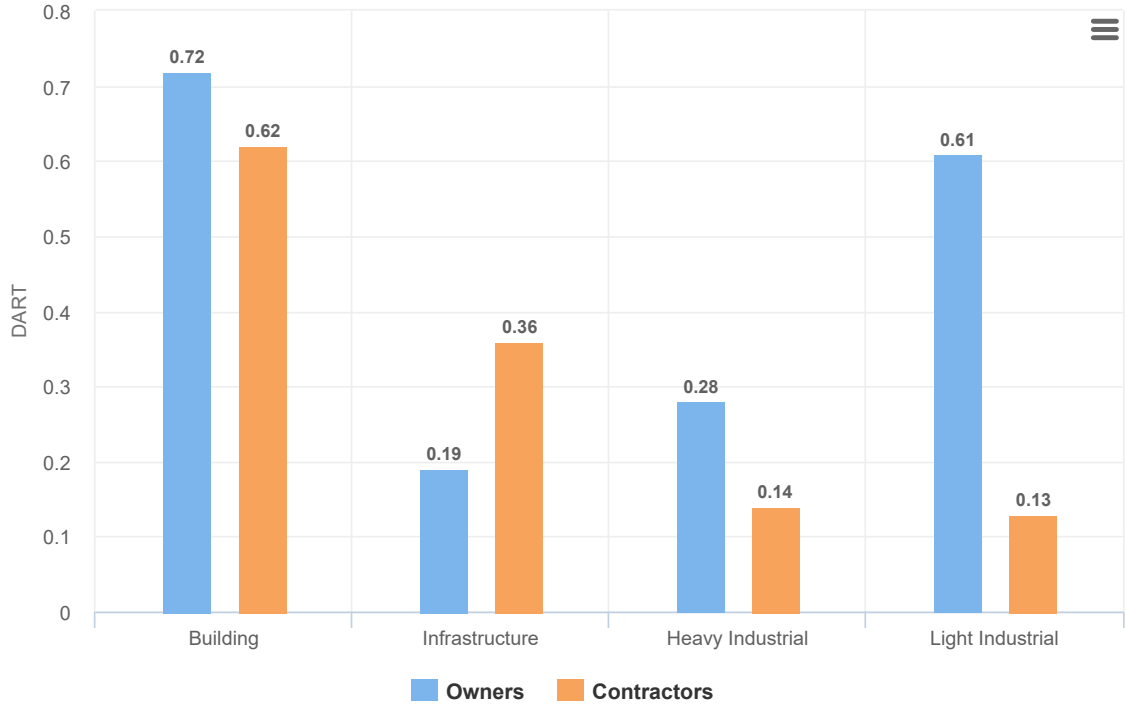
Chart #11



Industry Group		Owners	Contractors
Building	# Companies / #WH (MM)	4 / 9.46	4 / 117.81
Infrastructure	# Companies / #WH (MM)	4 / 9.42	6 / 38.25
Heavy Industrial	# Companies / #WH (MM)	9 / 92.67	25 / 245.33
Light Industrial	# Companies / #WH (MM)	3 / 5.55	9 / 57.6

U.S. DART Rate by Industry Group

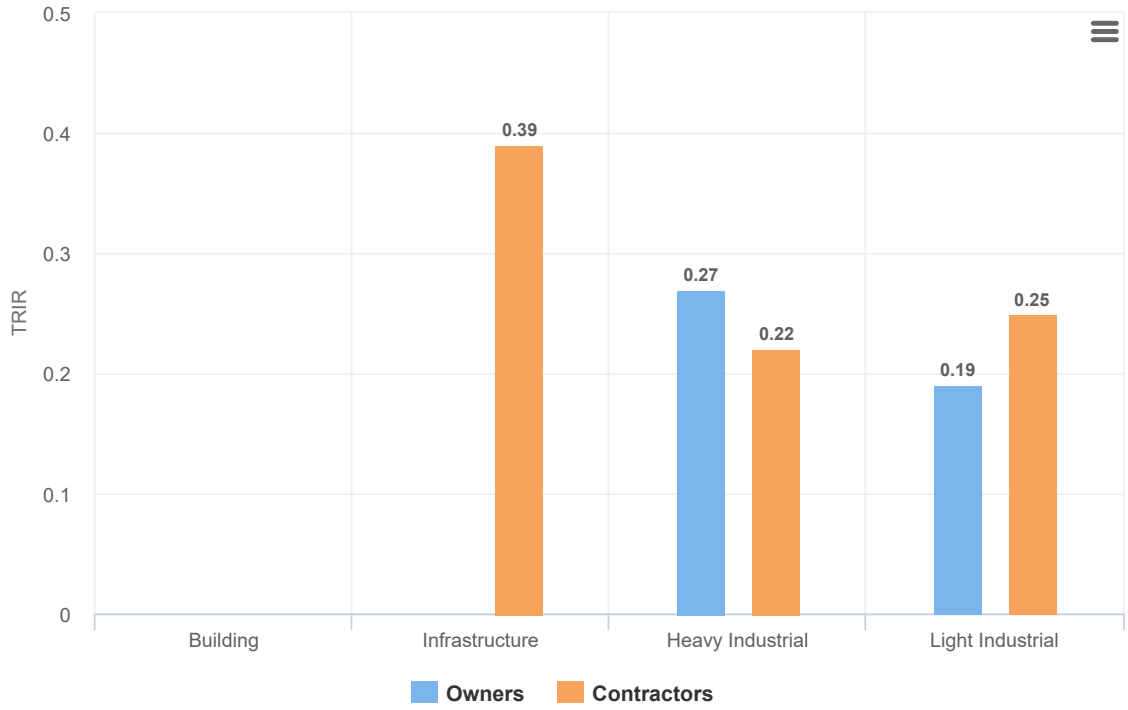
Chart #12



Industry Group		Owners	Contractors
Building	# Companies / #WH (MM)	4 / 9.46	4 / 117.81
Infrastructure	# Companies / #WH (MM)	4 / 9.42	5 / 38.02
Heavy Industrial	# Companies / #WH (MM)	9 / 92.67	24 / 234.4
Light Industrial	# Companies / #WH (MM)	2 / 1.3	9 / 57.6

Non-U.S. TRIR Rate by Industry Group

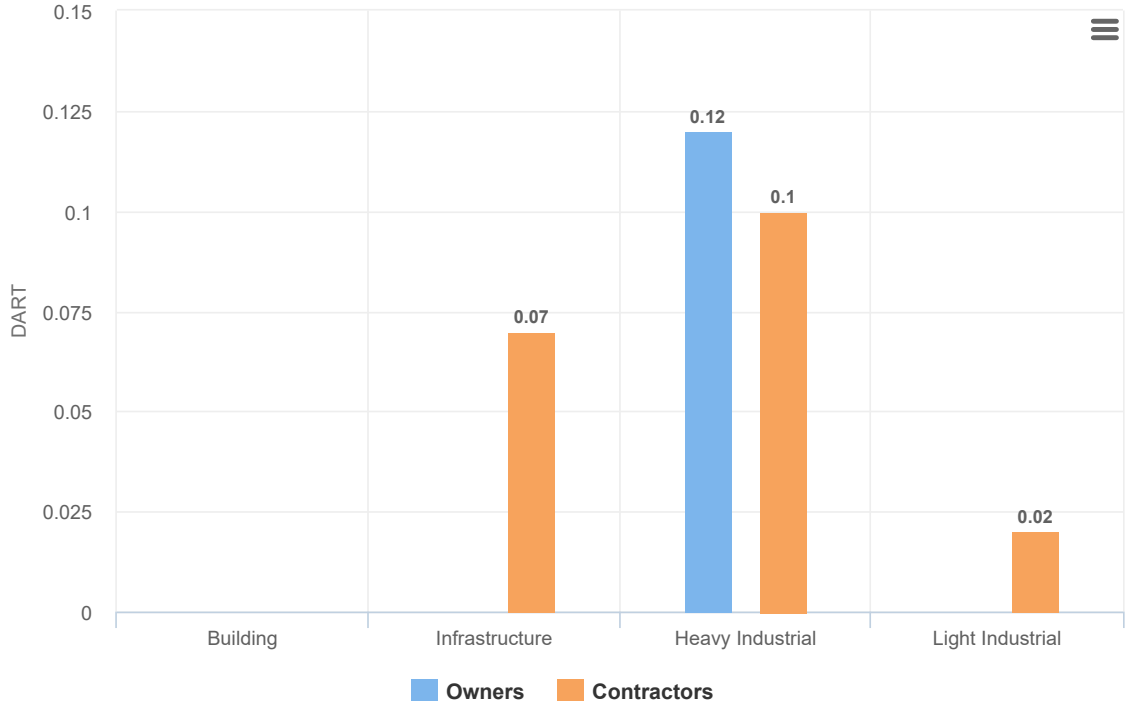
Chart #13



Industry Group		Owners	Contractors
Building	# Companies / #WH (MM)	2 / 6.03	N/A
Infrastructure	# Companies / #WH (MM)	1 / 3.2	6 / 83.65
Heavy Industrial	# Companies / #WH (MM)	6 / 103.46	12 / 310.14
Light Industrial	# Companies / #WH (MM)	3 / 14.39	4 / 9.6

Non-U.S. DART Rate by Industry Group

Chart #14

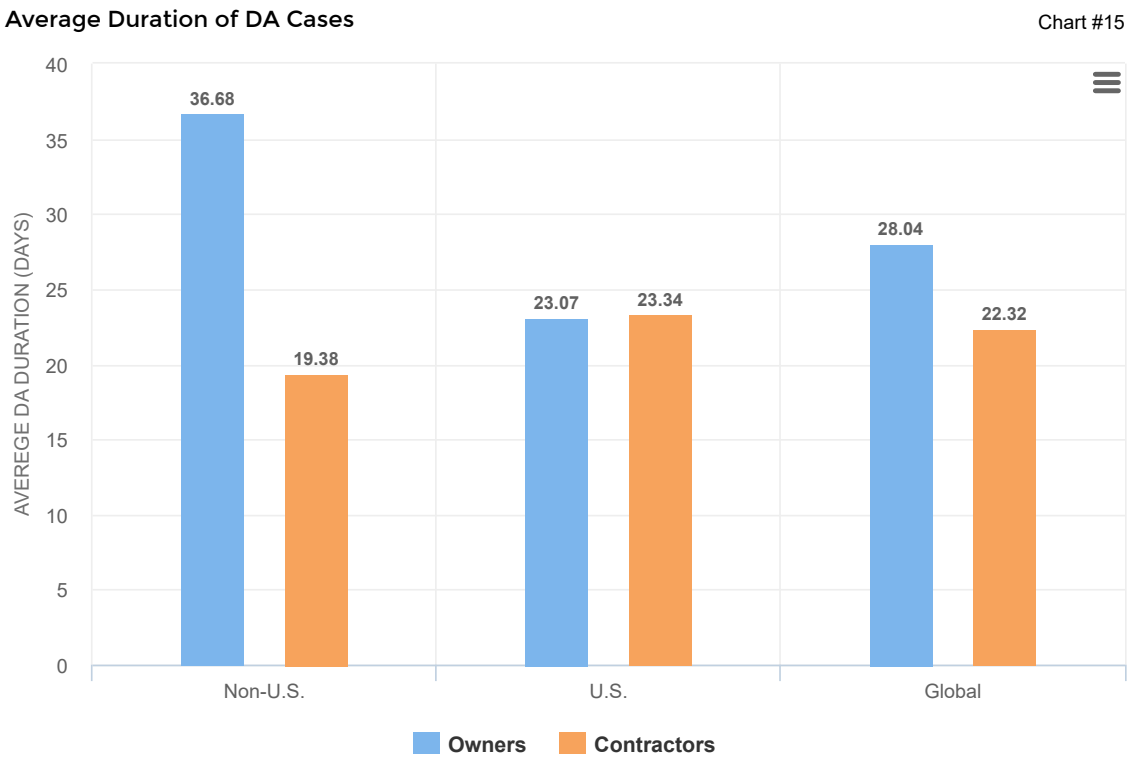


Industry Group		Owners	Contractors
Building	# Companies / #WH (MM)	2 / 6.03	N/A
Infrastructure	# Companies / #WH (MM)	1 / 3.2	5 / 68.74
Heavy Industrial	# Companies / #WH (MM)	6 / 103.46	11 / 290.75
Light Industrial	# Companies / #WH (MM)	2 / 4.29	4 / 9.6

In this report, missing bars in the charts indicate that the data were suppressed because of an insufficient sample size (i.e., fewer than three companies reporting safety data for the category).

6 - Duration of DA and RT Cases

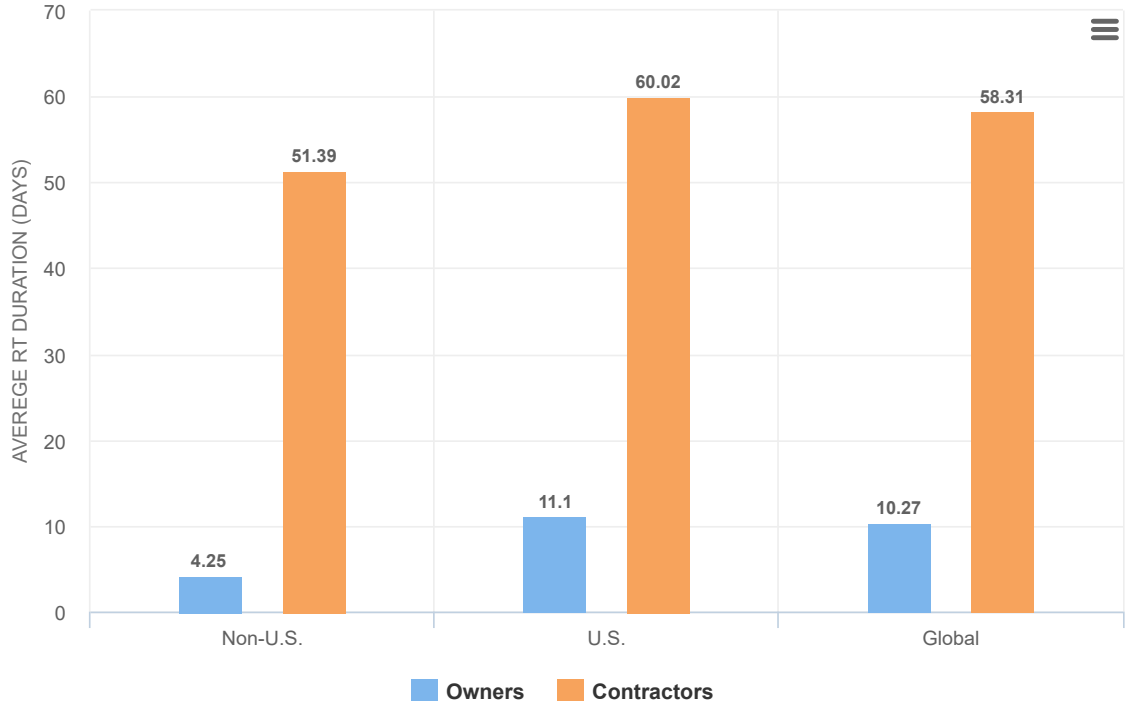
While safety rates measure the frequency of safety incidents, their severity is also an important consideration. This section uses the duration of the Days Away (DA) and Restricted and Transfer (RT) cases as a proxy for incident severity. The charts below show the average duration of DA and RT cases of U.S. and non-U.S. projects.



		Owners	Contractors
Non-U.S.	# Companies / #WH (MM)	8 / 73.16	14 / 403.39
U.S.	# Companies / #WH (MM)	15 / 79.13	28 / 443.11
Global	# Companies / #WH (MM)	18 / 159.71	29 / 846.49

Average Duration of RT Cases

Chart #16

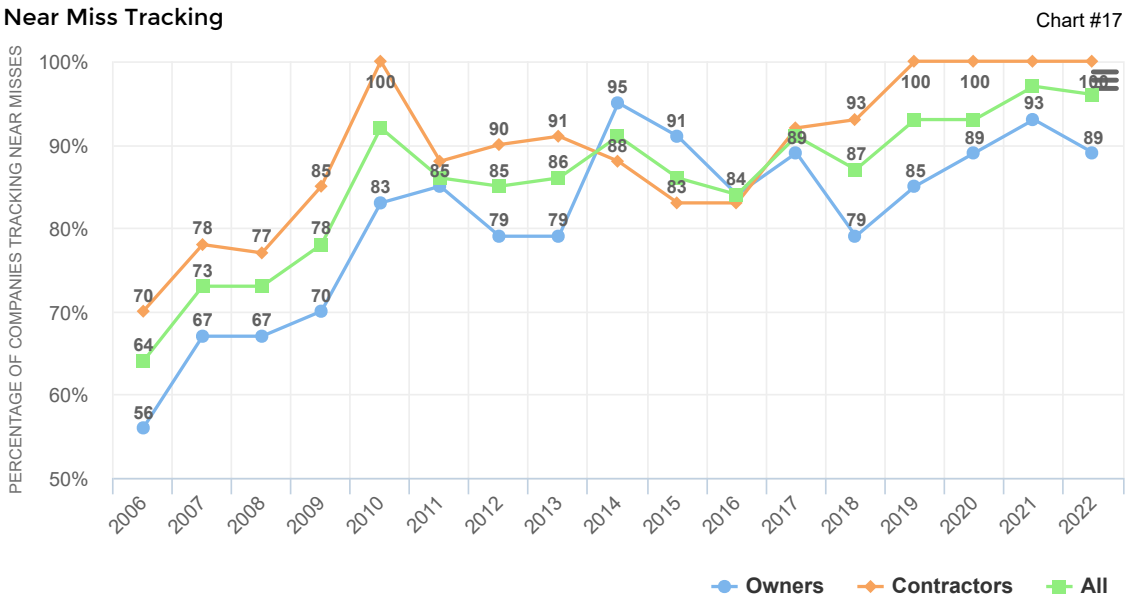


		Owners	Contractors
Non-U.S.	# Companies / #WH (MM)	7 / 63.05	13 / 369.09
U.S.	# Companies / #WH (MM)	13 / 56.37	28 / 443.11
Global	# Companies / #WH (MM)	16 / 126.84	28 / 812.2

7 - Near Misses and First Aid Cases

OSHA does not require organizations to record near misses and first aid cases. However, tracking and investigating these events enables organizations to identify the risks of potential accidents and take proactive steps to prevent them. (To learn more, see the CII report on Using Near Miss Reporting to Enhance Safety Performance (https://www.construction-institute.org/resources/knowledgebase/knowledge-areas/using-near-miss-reporting-to-enhance-safety-performance-(best-practice)/topics/rt-301/pubs/rr301-11).)

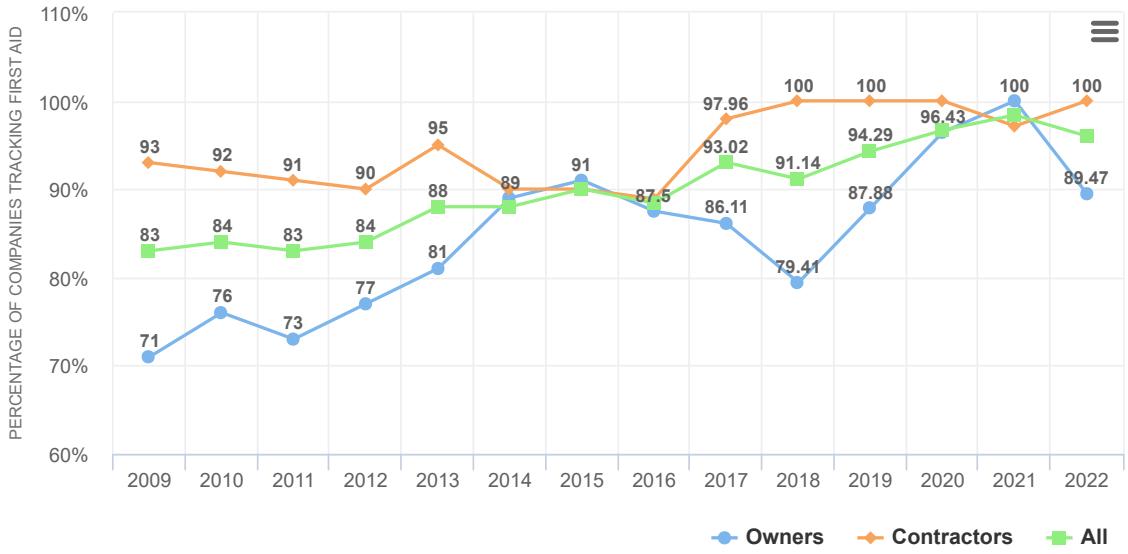
Chart 17 shows the percent of respondents that indicated that they track near misses (regardless of the action they perform on the identified cases). A near miss is defined, for the purposes of this report, as an incident in which no property was damaged and no personal injury was sustained, but in which—given a slight shift in time or position—damage and/or injury likely could have occurred. Since 2007, this survey has requested near miss tracking and data.



OSHA defines first aid as "using a non-prescription medication at nonprescription strength (for medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed healthcare professional to use a non-prescription medication at prescription strength is considered medical treatment for recordkeeping purposes)." Chart 18 shows the percentage of reporting organizations that track first aid as per OSHA's definition.

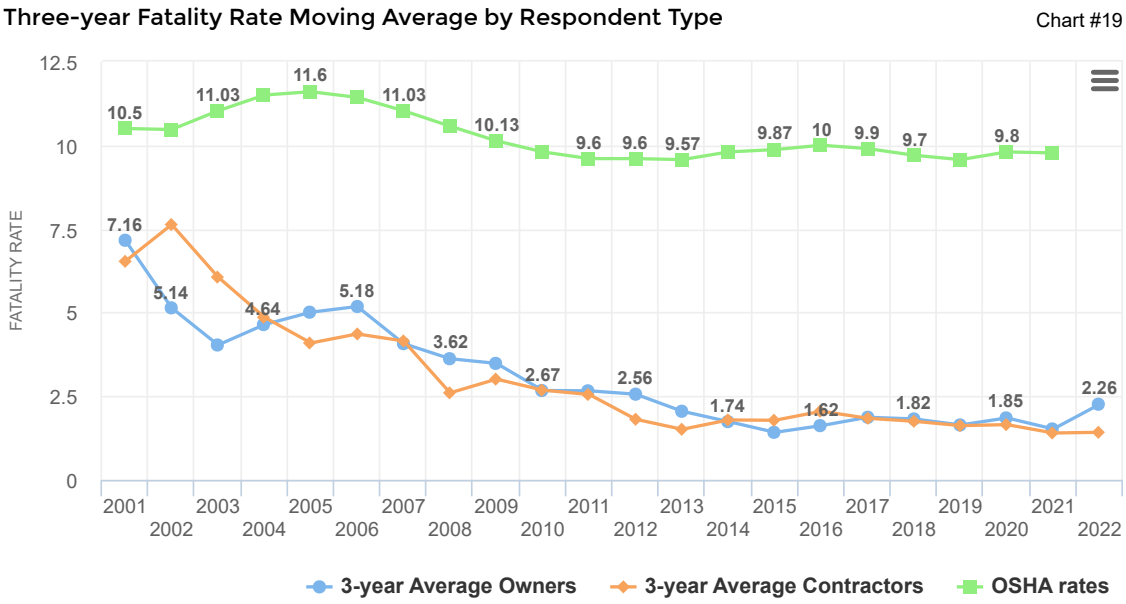
First Aid Tracking

Chart #18



8 - Fatalities

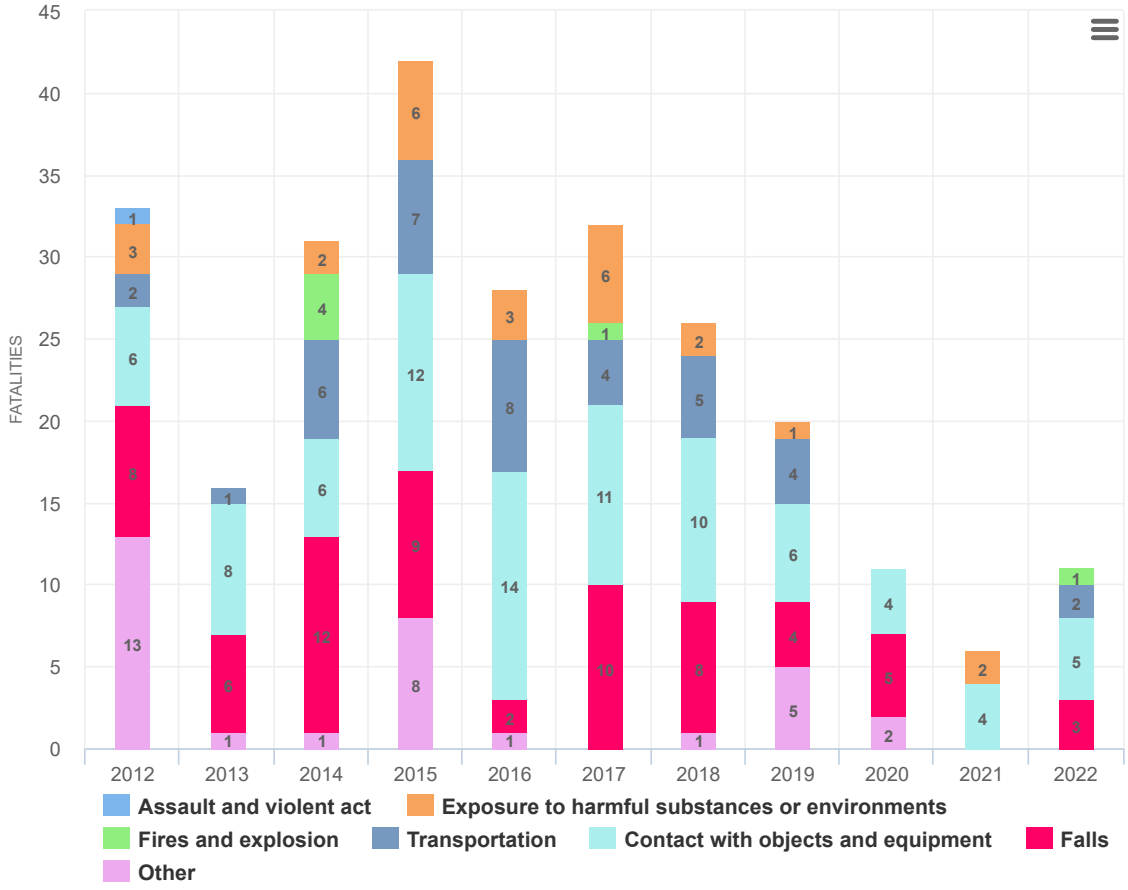
The U.S. Department of Labor's Bureau of Labor Statistics (BLS) reports the fatality rates by industry sectors (https://www.bls.gov/news.release/cfoi.t04.htm) and, for a number of years, it has ranked construction as the industry with the highest **absolute** number of fatalities. The chart below shows the BLS and CURT fatality rates since 2001. Note that the fatality rate is defined as the number of fatalities per 100,000 full-time workers, whereas the TRIR and DART rates are based on 100 full-time workers. The 2022 overall fatality rate based on the data collected in the CURT survey was 2.01. This represents a 103% increase with respect to the 2021 rate of 0.99. The chart below shows the 3-year average fatality rate.



In 2022 data, "Contact with objects and equipment" ranks as the top fatality category. These data can be compared to those published by the BLS (see Fatal occupational injuries for selected events or exposures (https://www.bls.gov/news.release/cfoi.t02.htm)).

Fatal Occupational Injuries by Cause

Chart #20



9 - Corporate Safety Benchmarks

The previous sections presented safety rates based on aggregated project data. This means that all the data is treated as a single company: rates are based on the sum of all incidents and the sum of all workhours. This provides a macro view of the construction sector's safety performance. An organization can use these rates to compare its performance to the overall performance of the sector.

This section uses individual organizations' safety performance to analyze safety data. The rates presented here are based on the individual rates of each company. Organizations can benchmark their corporate safety performance against the results of these analyses. The information presented in this section allows users to determine more precisely where they stand relative to other organizations.

Table 3 presents the corporate level descriptive statistics of the latest Annual Safety Survey based on the individual company TRIR, DART, DA, and Fatality rates. For instance, if an organization had a TRIR of 0.20 in 2022, its safety performance fell in the second quartile, between 0.12 and 0.25. This means that the organization's TRIR rate is worse than at least 25 percent of responding organizations but better than at least 50 percent of them.

Corporate Safety Benchmarks of All Projects

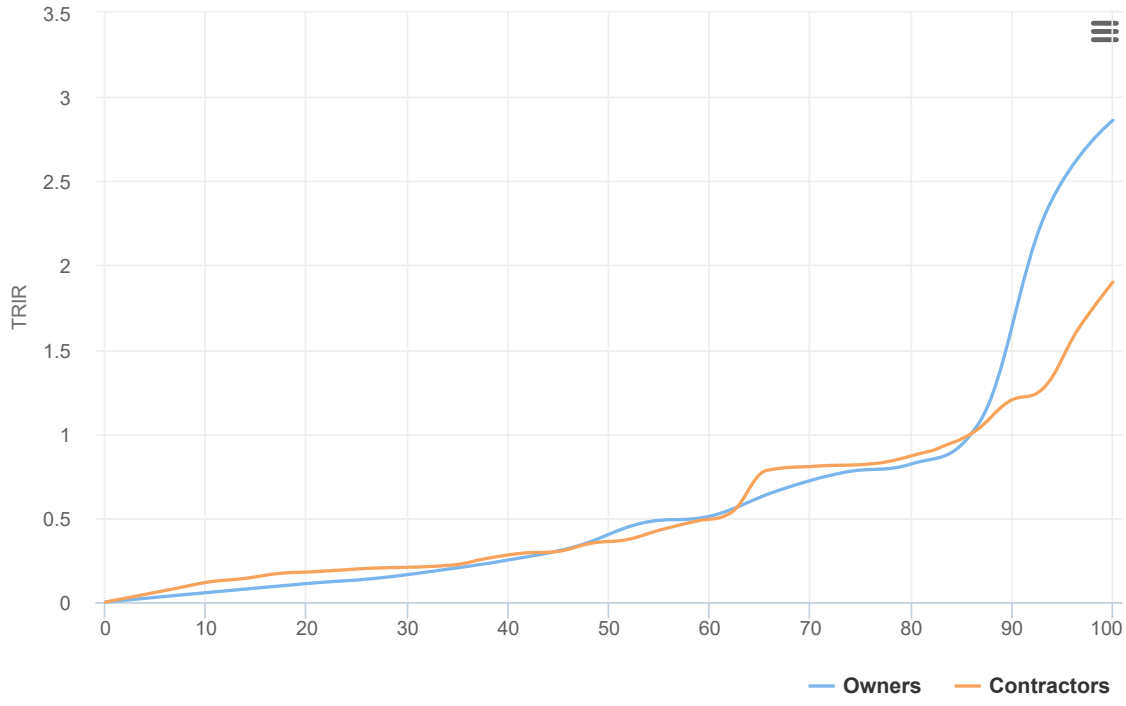
Table #3

	All				Owners				Contractors			
Percentile	**TRIR**	**DART**	**DA**	**Fatality**	**TRIR**	**DART**	**DA**	**Fatality**	**TRIR**	**DART**	**DA**	**Fatality**
100th	2.86	1.28	0.93	192.57	2.86	1.28	0.93	192.57	1.9	0.76	0.55	11.72
75th	0.72	0.45	0.16	0	0.52	0.3	0.16	0	0.81	0.45	0.16	0
50th	0.35	0.13	0.05	0	0.33	0.14	0.05	0	0.37	0.11	0.05	0
25th	0.19	0.05	0	0	0.14	0.05	0	0	0.19	0.05	0.01	0
0th	0	0	0	0	0	0	0	0	0	0	0	0
Mean	0.51	0.24	0.12	4.58	0.55	0.28	0.14	11.46	0.48	0.22	0.11	0.58
S.D	0.57	0.29	0.18	27.5	0.77	0.38	0.24	45.26	0.41	0.23	0.15	2.16
n	50	47	50	49	19	18	19	18	31	29	31	31

Charts 21 through 23 show percentiles charts, which are another way to allow organizations to benchmark their safety rates. The charts show the percentile ranks associated with an organization's TRIR, DART, and DA rates for U.S. projects only. For example, if a contractor had an overall corporate TRIR rate of 1.0, Chart 21 indicates that approximately 75% of contractors participating in this survey achieved a better TRIR rate.

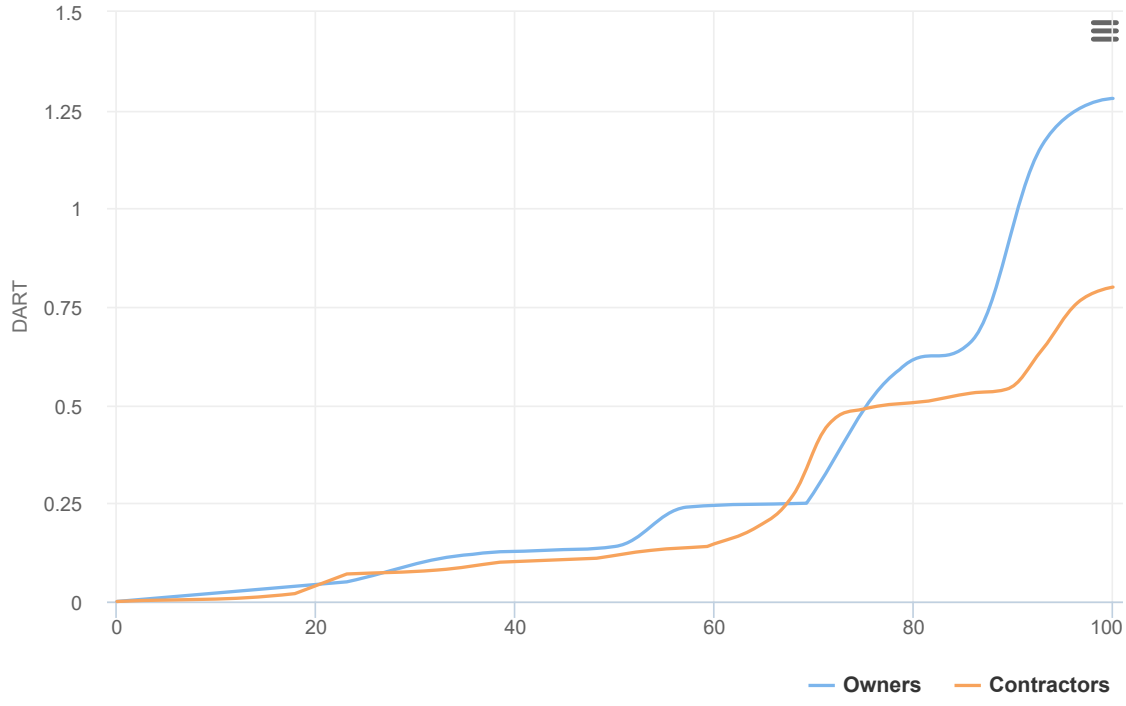
Corporate Safety Statistics – TRIR Rate of U.S. Projects

Chart #21



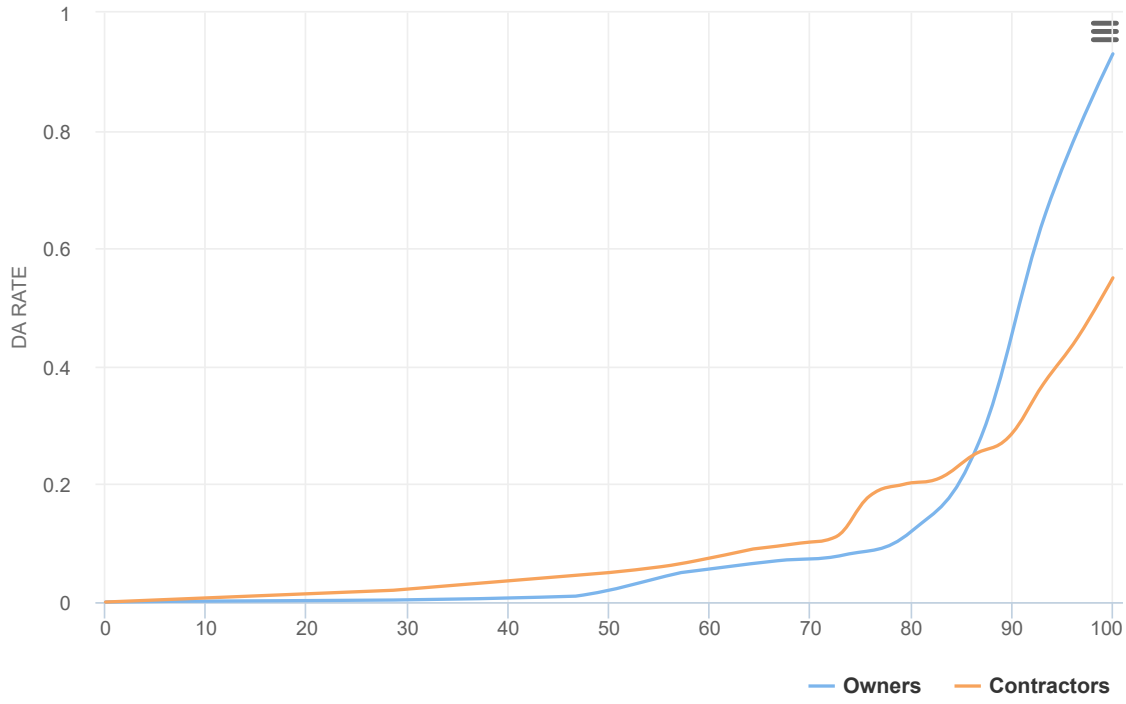
Corporate Safety Statistics – DART Rate of U.S. Projects

Chart #22



Corporate Safety Statistics – DA Rate of U.S. Projects

Chart #23



10 - Conclusion

For the 2022 calendar year in general, there is a moderate decrease in total workhours reported, no change in overall TRIR, a significant increase in DART, and a significant increase in the Fatality Rate. CURT members and other companies must continue to stress the importance of working safely and providing robust safety and workforce tools and equipment training. This annual survey allows capturing the progress towards zero accidents. It is important that organizations do not settle for the currently improved safety rates but rather take these rates as a challenge and a reference for further improvement.

Metrics and benchmarking drive improvement. To assist with this, CURT and CIR provide the Safety Benchmarking Portal, which is a confidential, centralized application for tracking and measuring safety performance. These metrics facilitate peer benchmarking to help all stakeholders reach the shared, ultimate goal: ZERO. However, the closer an organization gets to zero, the more imperative benchmarking becomes to help overcome complacency. Safety and workforce training together creates a safer workforce, improves productivity, and lowers risk. Safety improvement is a perpetual journey which begins by measuring progress and then constantly improving and eliminating the causes of safety incidents on projects.

(https://app.myclma.com)

Notes

All the rates presented in this report follow OSHA's definitions, which are available in the OSHA 300 form: Injury & Illness Recordkeeping Forms - 300, 300A, 301 (https://www.osha.gov/recordkeeping/RKforms.html)

TRIR: The Total Recordable Incident Rate (TRIR) is the number of recordable injuries occurring annually among 100 full-time workers (i.e., 2,000 hours per worker per year).

- TRIR = (Number of Recordable Cases) × 200,000 / (Total Work Hours by All Employees)

DART Rate: The Days Away, Restricted, or job Transfer (DART) rate is the number of DART cases occurring annually among 100 full-time workers (i.e., 2,000 hours per worker per year).

- DART = (Number of DART Cases) × 200,000 / (Total Work Hours by All Employees)

Fatality Rate: The number of fatal work injuries occurring annually among 100,000 full-time workers (i.e., each worker works 40 hours per week for 50 weeks per year, or 200,000,000 hours per year).

- Fatality Rate = (Number of Fatality Cases) × 200,000,000 / (Total Work Hours by All Employees)

Prepared by **Construction Industry Resources (CIR)** (https://www.ciranalytics.com) and **Construction Users Roundtable (CURT)** (https://www.curt.org/)

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