

Health & Safety Performance Indicators

Contractor Performance Benchmarking by Hiring Clients, Canada

2013 Data

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About ISN



Established in 2001, ISN is the global leader in contractor and supplier information management. We support over 425 Hiring Clients in capital-intensive industries to help manage 60,000 contractors and suppliers with operations in more than 75 countries. Headquartered in Dallas, Texas, ISN has additional offices in Calgary, Sydney, London, Los Angeles, New York and Toronto. ISN takes pride in leading efforts to improve the efficiency and effectiveness of contractor management systems and in serving as a forum for sharing industry best practices among our members.

Our innovative online contractor management platform, ISNetworld®, is continually evolving to meet ever-changing corporate and regulatory requirements while reducing unnecessary duplication associated with traditional contractor procurement processes. Our Review and Verification Services (RAVS®) group is comprised of specialized professionals with expertise in health, safety, environmental, procurement and other compliance requirements. RAVS provides an added level of due diligence to the process of reviewing contractors' self-reported information.

ISNetworld's dynamic and configurable scoring criteria assists Hiring Clients with measuring the key performance metrics relevant to them, thus promoting transparency, clear communication and an opportunity for Hiring Clients to connect with safe and reliable contractors. By identifying contractors and suppliers who meet their regulatory standards, Hiring Clients are able to drive tangible and sustainable performance improvements while strengthening their relationship with their contractors and suppliers.

For more information, visit www.isn.com or contact ISN at +1 214 303 4900 or via email at ISNTeam@isn.com.

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Disclaimer

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*Manufacturing includes Steel, Fertilizer Products, Wood & Paper

Preface

More than 425 Hiring Clients in capital-intensive industries are currently part of the ISNetworld contractor management platform, actively managing the performance and compliance of 60,000 contractors and suppliers from around the globe. The information collected and shared by ISNetworld members includes health and safety performance data representing over 11 billion work hours of contractor activity in 2013 alone. A rich and diverse network of peers across various industries and a shared source of data such as this provide an opportunity for developing industry-specific peer group benchmarking reports that are unique for their insight and comprehensiveness.

The main objective of this publication is to provide ISNetworld member Hiring Clients with industry-specific benchmarking information on how well their contractors' healthandsafetyperformance compares to that of the performance of contractors being used by their industry peers. They can use this information to help establish a data-driven, objective baseline for contractor and companywide health and safety performance targets; assess their organizations' contractor selection and management strategies; and ultimately drive the overarching goal of keeping a workplace free of injuries and illnesses.

In this publication, organizations with similar types of operations and industries are grouped together into the following four peer groups:

- Upstream Oil & Gas (Onshore)
- Midstream Oil & Gas (Pipeline)
- Utilities, Power Generation & Distribution
- Manufacturing*

(Preface continued on the next page)

^{*}Manufacturing includes Steel, Fertilizer Products, Wood & Paper

Preface - Continued

This publication is specific to the performance of contractors with operations in Canada. The health and safety key performance indicators (KPIs) collected, aggregated and presented for each industry peer group include:

- Total Recordable Frequency (TRF)
- Lost Time Frequency (LTF)
- Fatality Rate per 100,000 Employees
- Incident Severity (In Days)

The data analyzed and represented in the publication is obtained from contractors' companywide health and safety statistics as reported in their Management System Questionnaire (MSQ) within ISNetworld. All values in this publication are aggregated to preserve the anonymity of contractors and their clients. Appendices I–III provide definitions, calculations and a summary of the analysis procedures used in generating the report.

Section 1

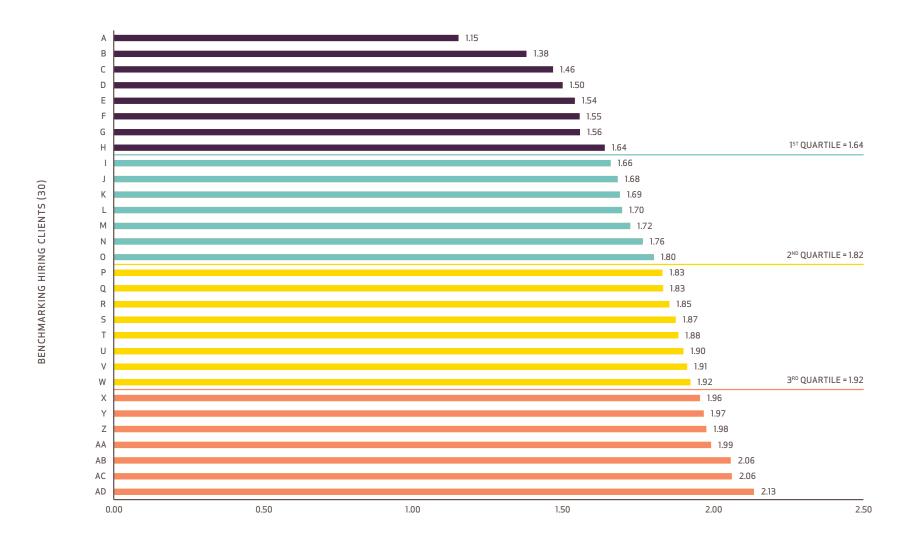
Upstream Oil & Gas (Onshore)



1.1	Total Recordable Frequency (TRF)	6	1.5	TRF vs. LTF	1(
1.2	Lost Time Frequency (LTF)	7	1.6	Incident Rates by Number of Contractors	1
1.3	Fatality Rate	8	1.7	Contractor Connection Overlap & Size Distribution	12
1.4	Incident Severity (In Days)	9			

Section 1.1

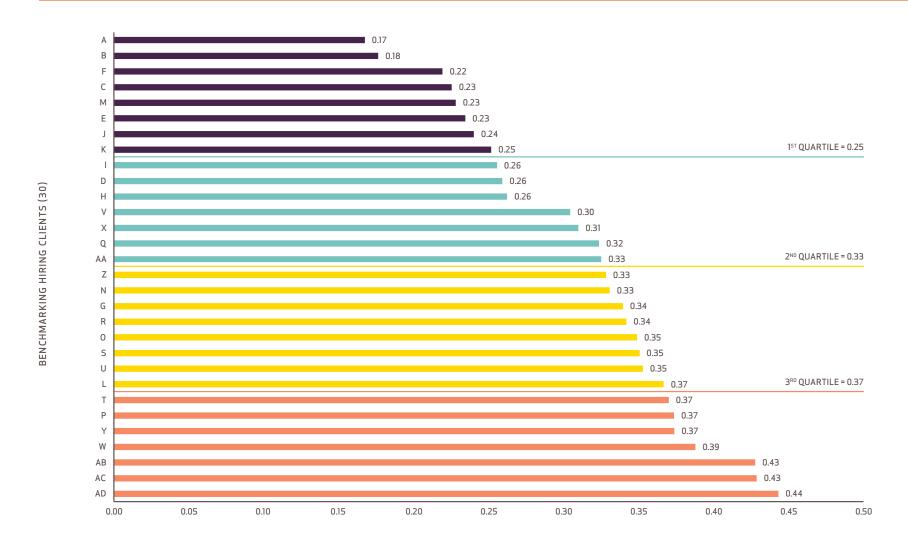
Total Recordable Frequency (TRF)



INCIDENT RATE PER 100 EMPLOYEES (TRF)

Section 1.2

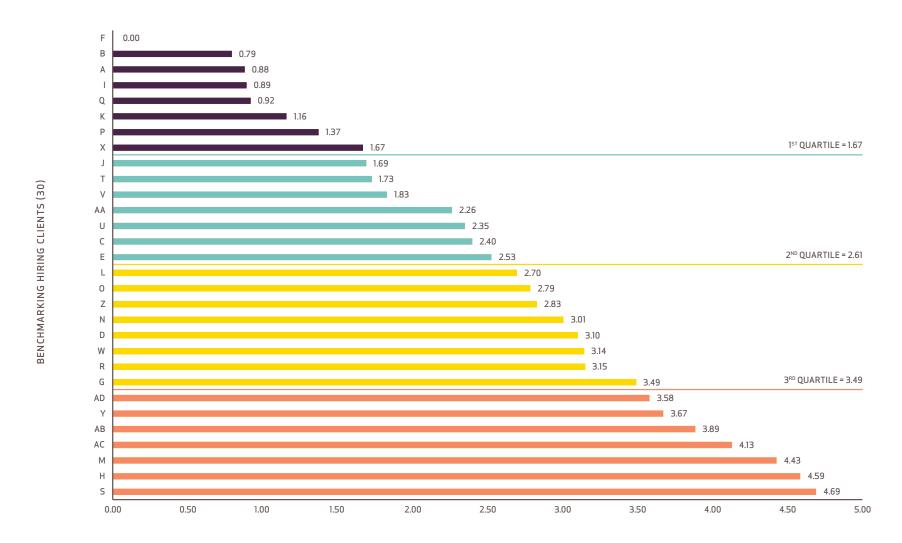
Lost Time Frequency (LTF)



INCIDENT RATE PER 100 EMPLOYEES (LTF)

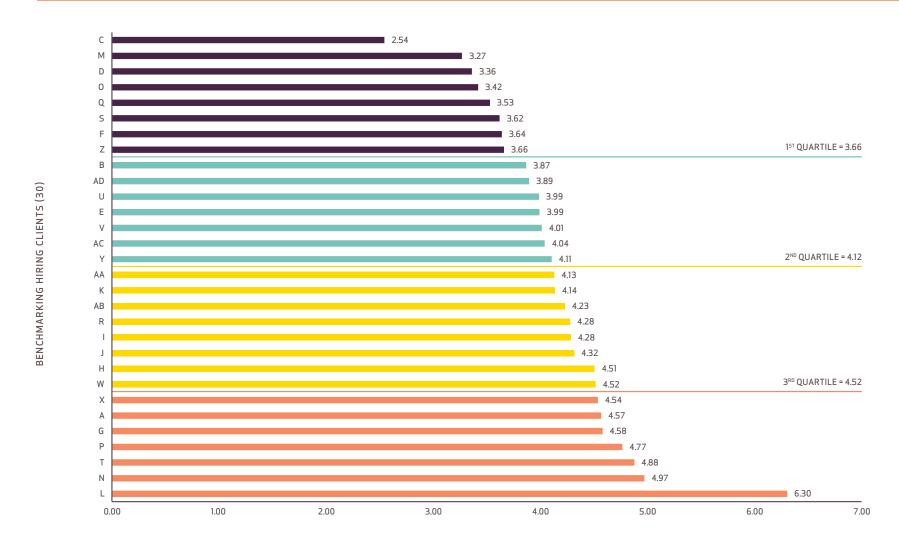
Section 1.3

Fatality Rate



FATALITY RATE PER 100,000 EMPLOYEES

Section 1.4
Incident Severity (In Days)*

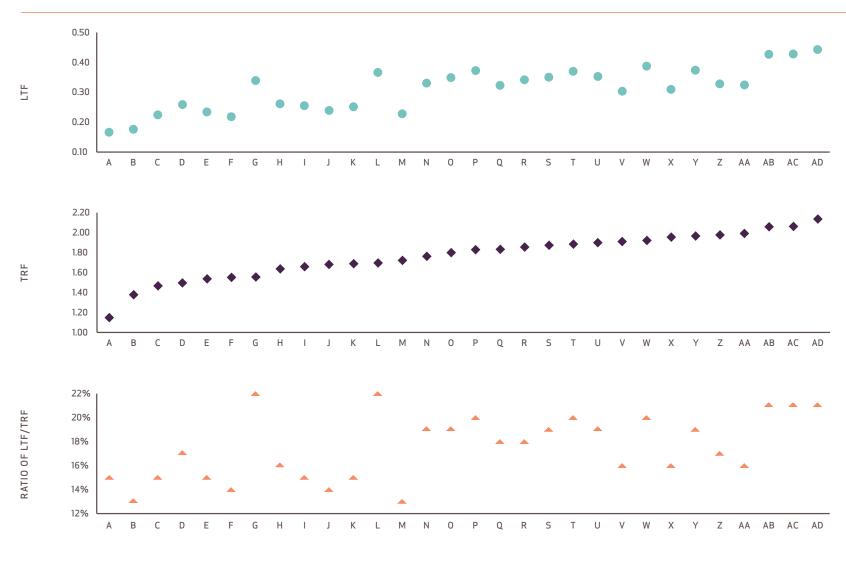


NUMBER OF DAYS

^{*}Incident Severity (In Days) = Total Number of Days Away from Work / Total Number of Recordable Incidents

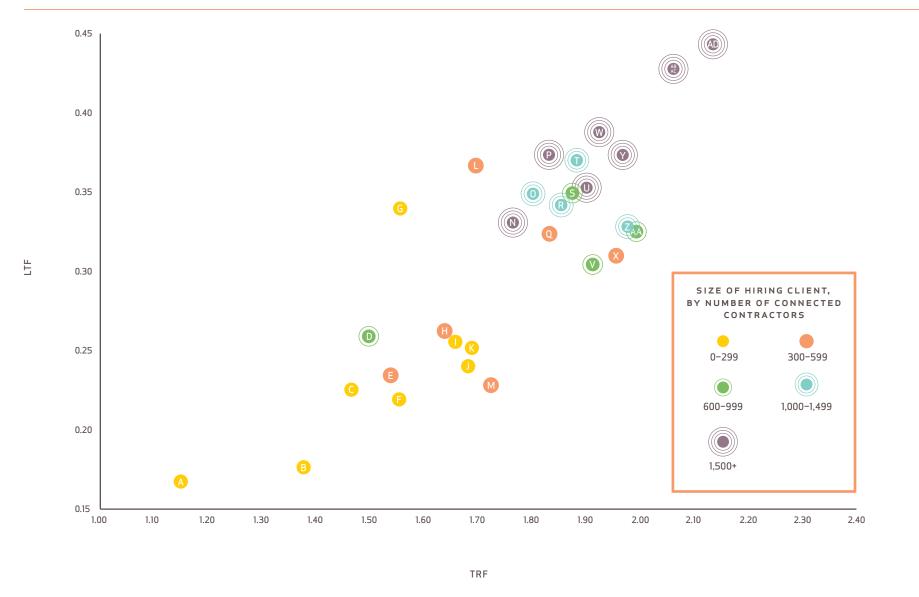
Section 1.5

TRF vs. LTF



BENCHMARKING HIRING CLIENTS (30)

Section 1.6
Incident Rates by Number of Contractors



Section 1.7

Contractor Connection Overlap & Size Distribution

Peer Group	Total Number of	f Contractor Connection Overlap (%) ^B	Employee Count Distribution (%) ^c										
Hiring Client Code	Contractors ^A		0 to 4 Employees	5 to 9 Employees	10 to 24 Employees	25 to 99 Employees	100 to 249 Employees	250 to 499 Employees	500 to 999 Employees	1,000 to 2,499 Employees	2,500+ Employees		
А	0 - 299	91%	4%	6%	11%	25%	21%	7%	13%	9%	5%		
В	0 - 299	97%	4%	7%	15%	27%	17%	10%	9%	7%	5%		
С	0 - 299	91%	2%	3%	11%	26%	27%	12%	10%	7%	2%		
D	600 - 999	91%	5%	9%	17%	29%	15%	10%	7%	7%	2%		
Е	300 - 599	95%	7%	11%	16%	27%	15%	10%	8%	5%	3%		
F	0 - 299	98%	8%	10%	16%	32%	13%	13%	7%	2%	1%		
G	0 - 299	94%	4%	8%	10%	28%	23%	11%	8%	5%	3%		
Н	300 - 599	98%	7%	8%	14%	30%	19%	8%	8%	5%	2%		
I	0 - 299	99%	7%	8%	17%	26%	17%	9%	7%	4%	3%		
J	0 - 299	94%	3%	7%	14%	26%	19%	15%	8%	6%	3%		
K	0 - 299	100%	6%	8%	14%	31%	16%	11%	6%	5%	3%		
L	300 - 599	96%	7%	14%	23%	28%	11%	7%	5%	3%	2%		
М	300 - 599	99%	10%	10%	18%	32%	13%	7%	6%	3%	2%		
N	1,500+	95%	15%	17%	23%	26%	10%	5%	3%	2%	1%		
0	1,000 - 1,499	95%	8%	10%	17%	29%	16%	8%	6%	4%	1%		
Р	1,500+	89%	15%	14%	17%	28%	12%	6%	4%	2%	1%		
Q	300 - 599	97%	11%	13%	20%	29%	11%	6%	6%	2%	2%		
R	1,000 - 1,499	95%	12%	17%	22%	27%	9%	6%	3%	2%	1%		
S	600 - 999	94%	17%	16%	21%	26%	9%	6%	3%	2%	1%		
T	1,000 - 1,499	94%	16%	17%	21%	26%	9%	6%	3%	2%	1%		
U	1,500+	95%	15%	18%	21%	27%	10%	4%	3%	1%	1%		
V	600 - 999	97%	11%	12%	21%	31%	12%	7%	4%	2%	1%		
W	1,500+	87%	14%	15%	21%	28%	11%	5%	3%	2%	1%		
Χ	300 - 599	98%	9%	13%	18%	29%	12%	8%	5%	3%	1%		
Υ	1,500+	93%	17%	20%	23%	26%	8%	3%	2%	1%	0%		
Z	1,000 - 1,499	97%	12%	15%	21%	28%	11%	6%	4%	2%	1%		
AA	600 - 999	94%	10%	16%	22%	25%	12%	6%	5%	3%	1%		
AB	1,500+	96%	15%	17%	21%	27%	9%	5%	3%	2%	1%		
AC	1,500+	96%	11%	17%	22%	28%	10%	5%	4%	2%	1%		
AD	1,500+	93%	15%	19%	23%	26%	9%	4%	2%	1%	1%		

A) Total number of contractors with valid incident rate data.

C) Employee Count Distribution (%): For a given Hiring Client, the distribution of its contractors' size as measured by the number of employees within the specified range.



B) Contractor Connection Overlap (%): For a given Hiring Client, the percent of its contractors that are connected to at least one other Hiring Client in the peer group.

Section 2

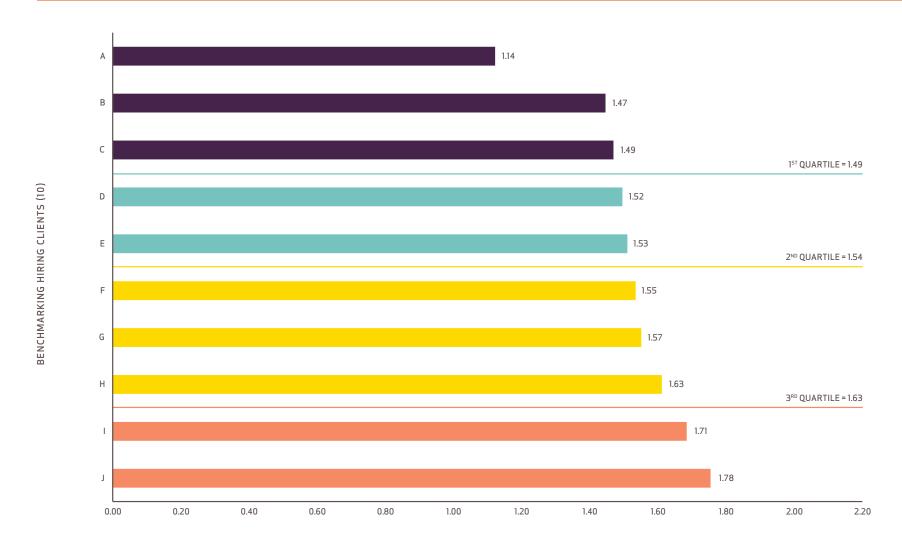
Midstream Oil & Gas (Pipeline)



2.1 Total Recordable Frequency (TRF)	14	2.5 TRF vs. LTF	18
2.2 Lost Time Frequency (LTF)	15	2.6 Incident Rates by Number of Contractors	19
2.3 Fatality Rate	16	2.7 Contractor Connection Overlap & Size Distribution	20
2.4 Incident Severity (In Days)	17		

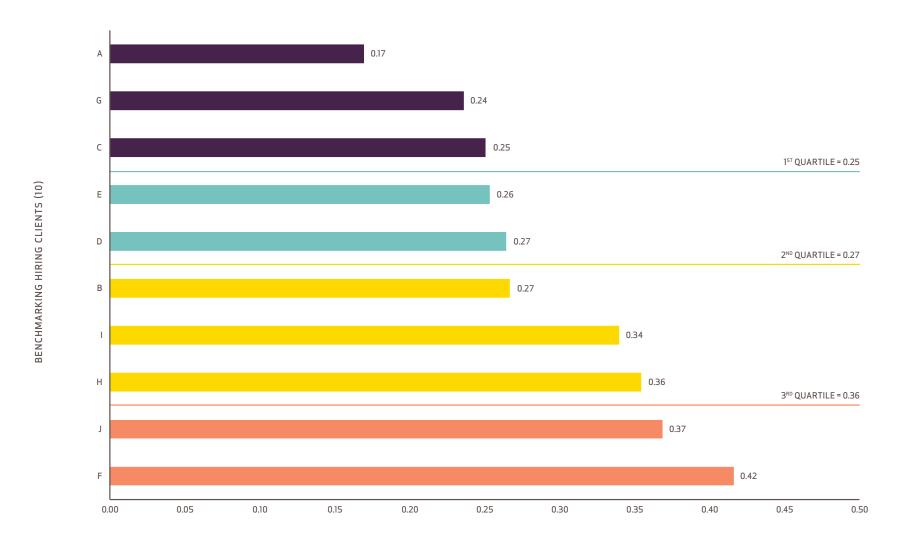
Section 2.1

Total Recordable Frequency (TRF)



INCIDENT RATE PER 100 EMPLOYEES (TRF)

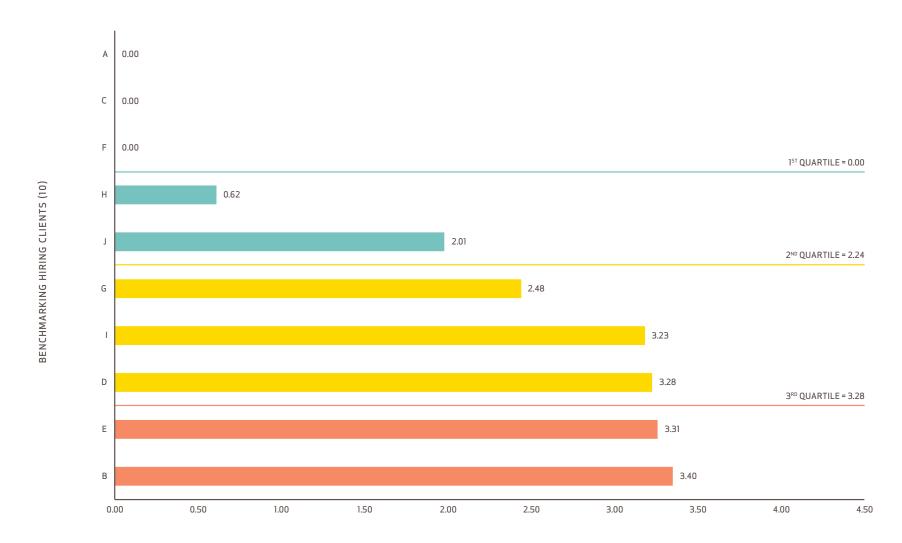
Section 2.2
Lost Time Frequency (LTF)



INCIDENT RATE PER 100 EMPLOYEES (LTF)

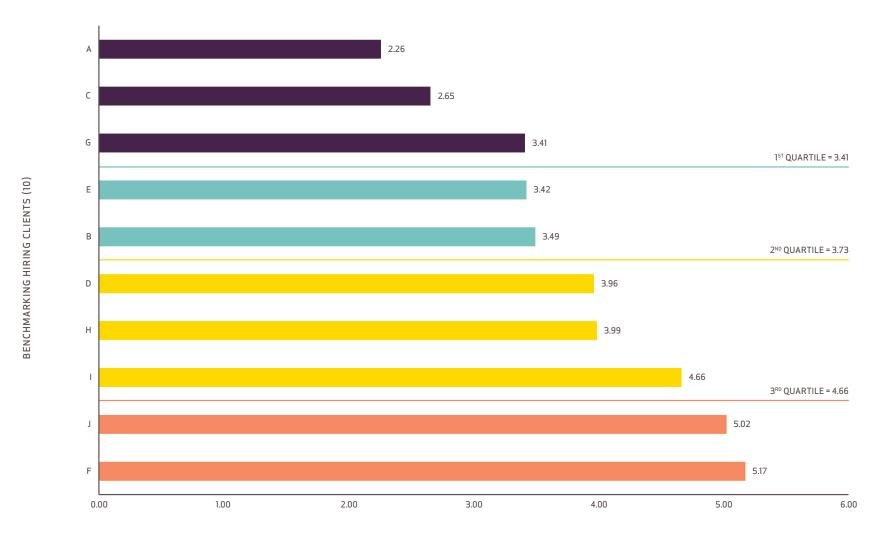
Section 2.3

Fatality Rate



FATALITY RATE PER 100,000 EMPLOYEES

Section 2.4
Incident Severity (In Days)*

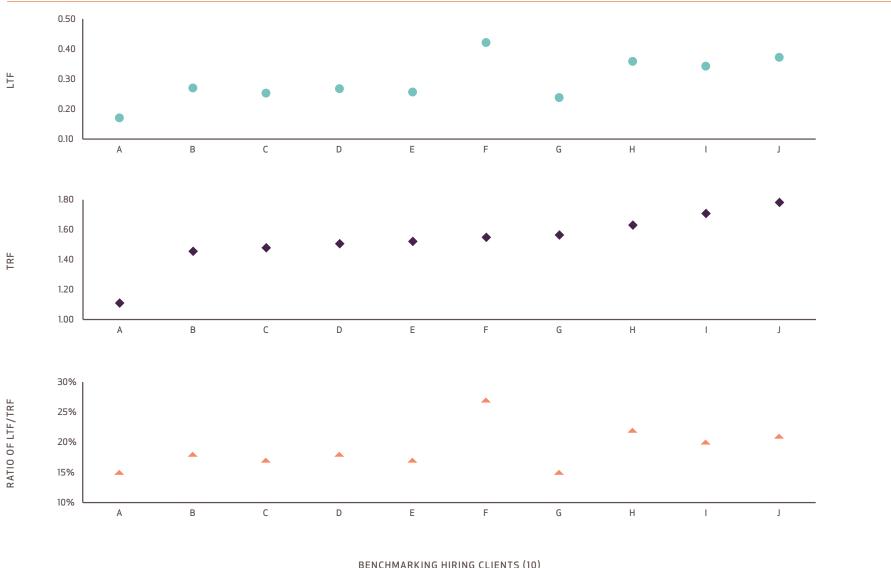


NUMBER OF DAYS

^{*}Incident Severity (In Days) = Total Number of Days Away from Work / Total Number of Recordable Incidents

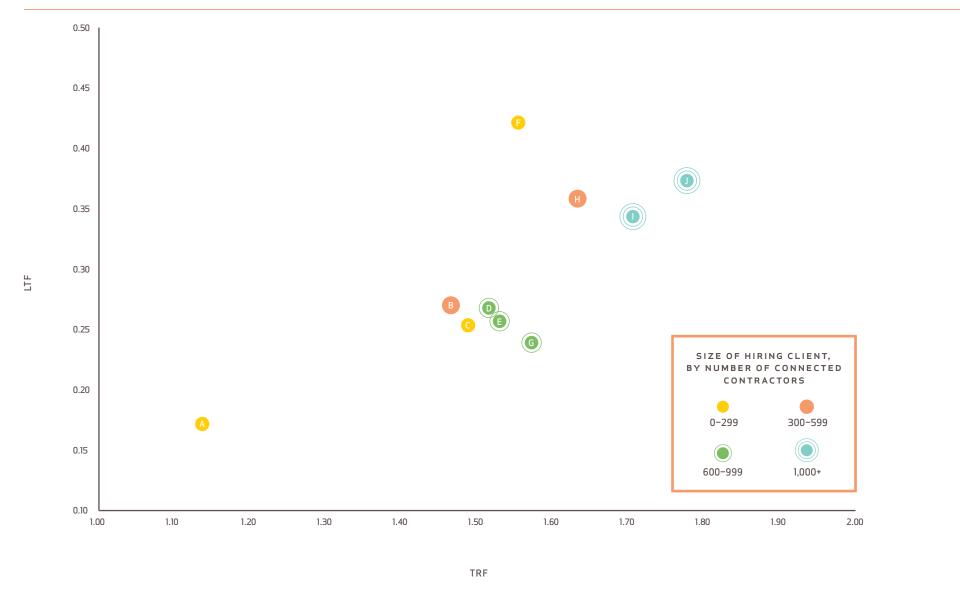
Section 2.5

TRF vs. LTF



BENCHMARKING HIRING CLIENTS (10)

Section 2.6
Incident Rates by Number of Contractors



Section 2.7

Contractor Connection Overlap & Size Distribution

Peer Group	Total Number of	Contractor Connection				Employe	e Count Distribu	tion (%) ^c			
Hiring Client Code	Contractors ^A	Overlap (%) ^B	0 to 4 Employees	5 to 9 Employees	10 to 24 Employees	25 to 99 Employees	100 to 249 Employees	250 to 499 Employees	500 to 999 Employees	1,000 to 2,499 Employees	2,500+ Employees
А	0 - 299	91%	5%	6%	12%	23%	19%	13%	10%	7%	4%
В	300 - 599	76%	7%	7%	12%	27%	18%	9%	10%	7%	3%
С	0 - 299	87%	7%	6%	18%	25%	11%	11%	12%	7%	2%
D	600 - 999	69%	11%	13%	20%	31%	11%	7%	4%	3%	2%
Е	600 – 999	66%	8%	9%	17%	29%	16%	8%	7%	4%	1%
F	0 - 299	67%	5%	7%	8%	31%	21%	10%	8%	6%	3%
G	600 - 999	77%	7%	11%	17%	31%	14%	8%	6%	4%	2%
Н	300 - 599	76%	8%	9%	17%	25%	17%	7%	9%	6%	3%
I	1,000+	66%	8%	11%	21%	27%	14%	8%	6%	3%	2%
J	1,000+	67%	7%	14%	21%	30%	13%	6%	4%	2%	1%

C) Employee Count Distribution (%): For a given Hiring Client, the distribution of its contractors' size as measured by the number of employees within the specified range.



A) Total number of contractors with valid incident rate data.

B) Contractor Connection Overlap (%): For a given Hiring Client, the percent of its contractors that are connected to at least one other Hiring Client in the peer group.

Section 3

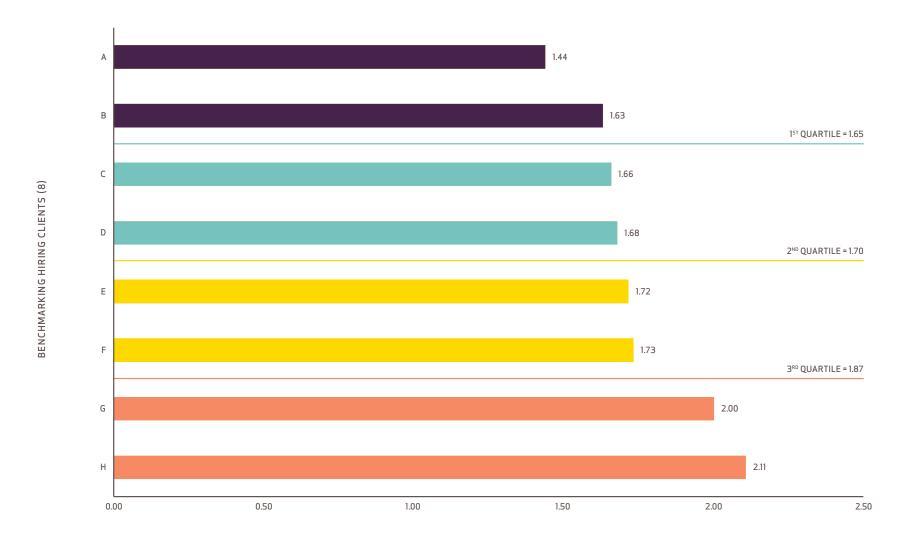
Utilities, Power Generation & Distribution



3.1	Total Recordable Frequency (TRF)	22	3.5 T	TRF vs. LTF	.20
3.2	Lost Time Frequency (LTF)	23	3.6 Ir	Incident Rates by Number of Contractors	.27
3.3	Fatality Rate	24	3.7 C	Contractor Connection Overlap & Size Distribution	. 28
3.4	Incident Severity (In Days)	25			

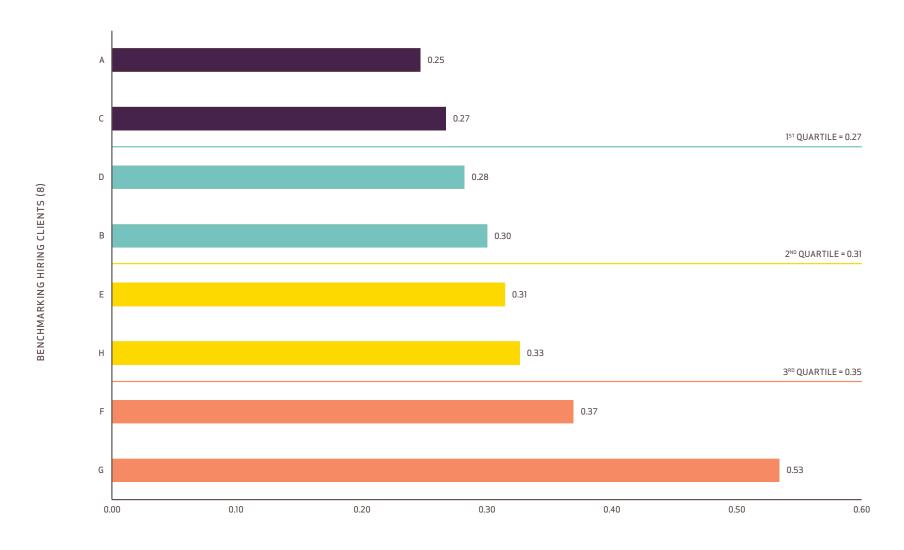
Section 3.1

Total Recordable Frequency (TRF)



INCIDENT RATE PER 100 EMPLOYEES (TRF)

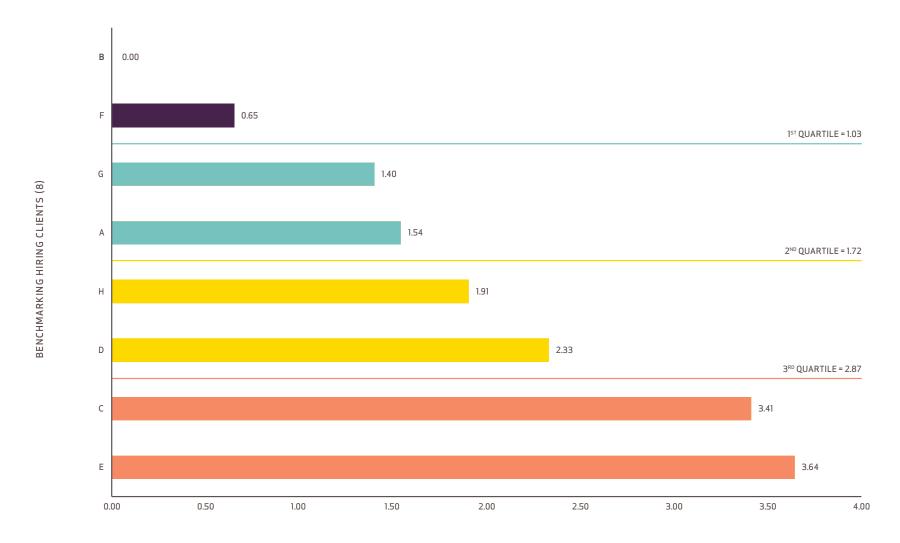
Section 3.2
Lost Time Frequency (LTF)



INCIDENT RATE PER 100 EMPLOYEES (LTF)

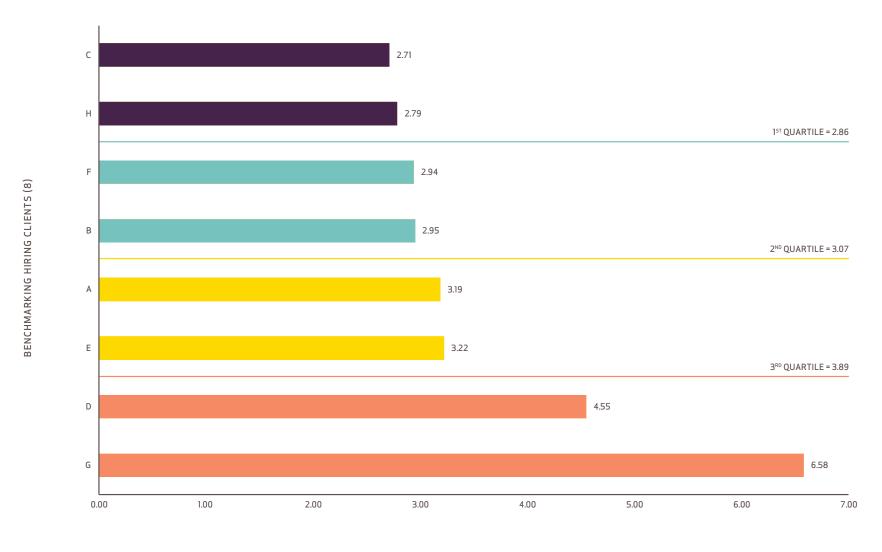
Section 3.3

Fatality Rate



FATALITY RATE PER 100,000 EMPLOYEES

Section 3.4
Incident Severity (In Days)*

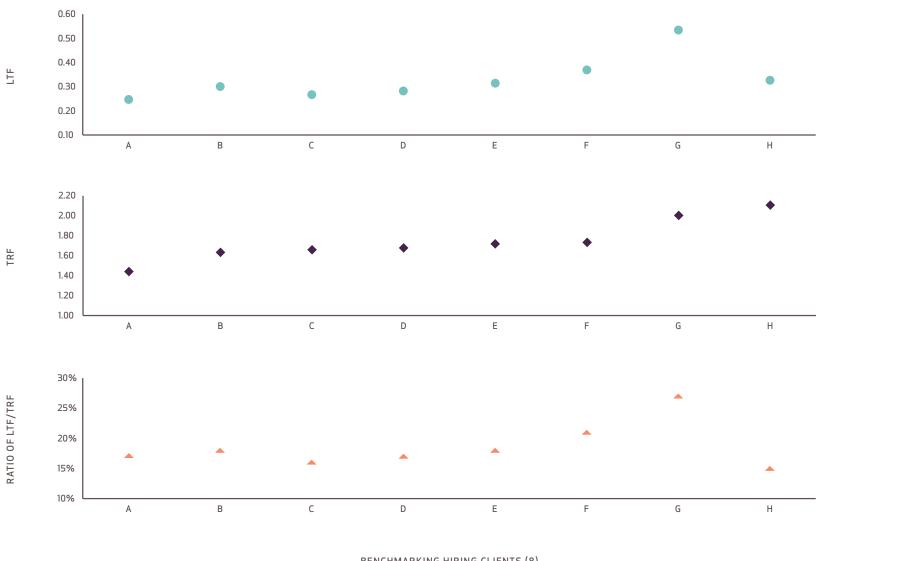


NUMBER OF DAYS

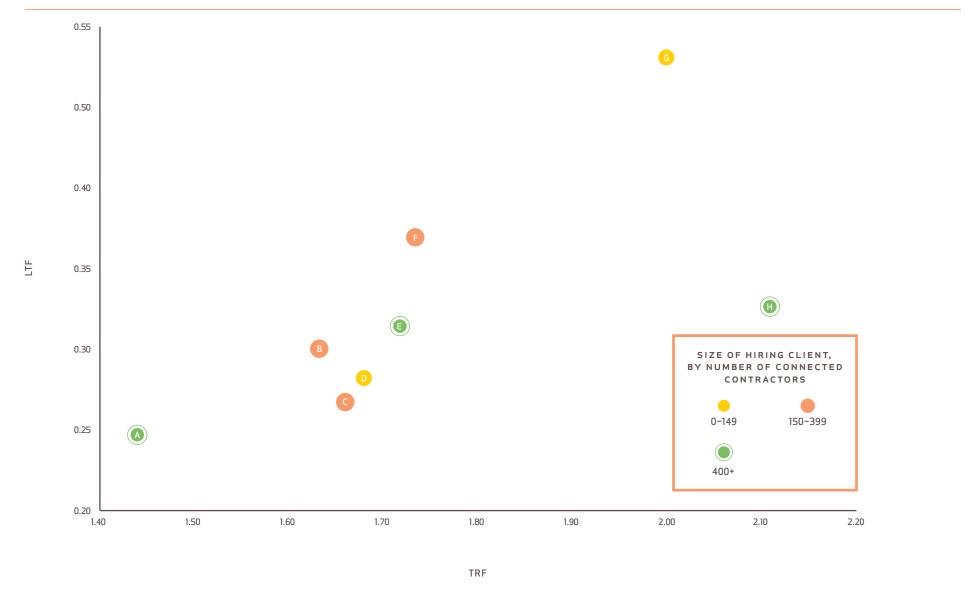
 $[\]hbox{``Incident Severity (In Days) = Total Number of Days Away from Work/Total Number of Recordable Incidents).}$

Section 3.5

TRF vs. LTF



Section 3.6
Incident Rates by Number of Contractors



Section 3.7

Contractor Connection Overlap & Size Distribution

Peer Group	Total Number of	Contractor Connection				Employe	e Count Distribu	tion (%) ^c			
Hiring Client Code	Contractors ^A	Overlap (%) ^B	0 to 4 Employees	5 to 9 Employees	10 to 24 Employees	25 to 99 Employees	100 to 249 Employees	250 to 499 Employees	500 to 999 Employees	1,000 to 2,499 Employees	2,500+ Employees
A	400+	60%	8%	9%	12%	28%	16%	11%	8%	5%	3%
В	150 - 399	67%	5%	5%	10%	24%	20%	13%	12%	8%	2%
С	150 - 399	41%	17%	15%	12%	19%	14%	6%	7%	6%	3%
D	0 – 149	56%	1%	5%	16%	23%	21%	13%	13%	5%	2%
Е	400+	24%	8%	12%	20%	32%	14%	6%	5%	3%	2%
F	150 - 399	66%	4%	8%	13%	29%	17%	10%	10%	5%	3%
G	0 – 149	50%	6%	10%	14%	22%	16%	10%	9%	6%	7%
Н	400+	37%	8%	11%	19%	29%	13%	6%	7%	4%	2%

C) Employee Count Distribution (%): For a given Hiring Client, the distribution of its contractors' size as measured by the number of employees within the specified range.



A) Total number of contractors with valid incident rate data.

B) Contractor Connection Overlap (%): For a given Hiring Client, the percent of its contractors that are connected to at least one other Hiring Client in the peer group.

Section 4

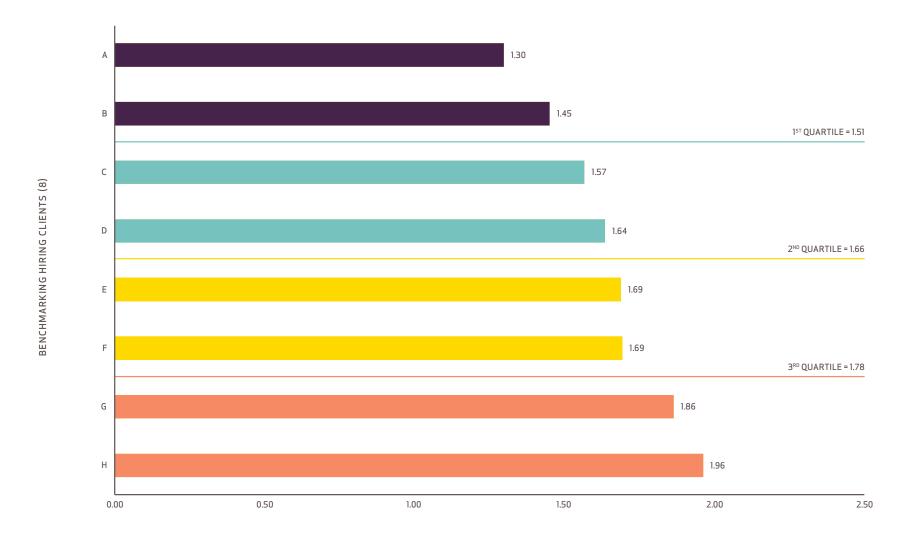
Manufacturing*



4.1	Total Recordable Frequency (TRF)	30	4.5 TRF vs. LTF	34
4.2	Lost Time Frequency (LTF)	31	4.6 Incident Rates by Number of Contractors	3!
4.3	Fatality Rate	32	4.7 Contractor Connection Overlap & Size Distribution	36
4.4	Incident Severity (In Days)	33		

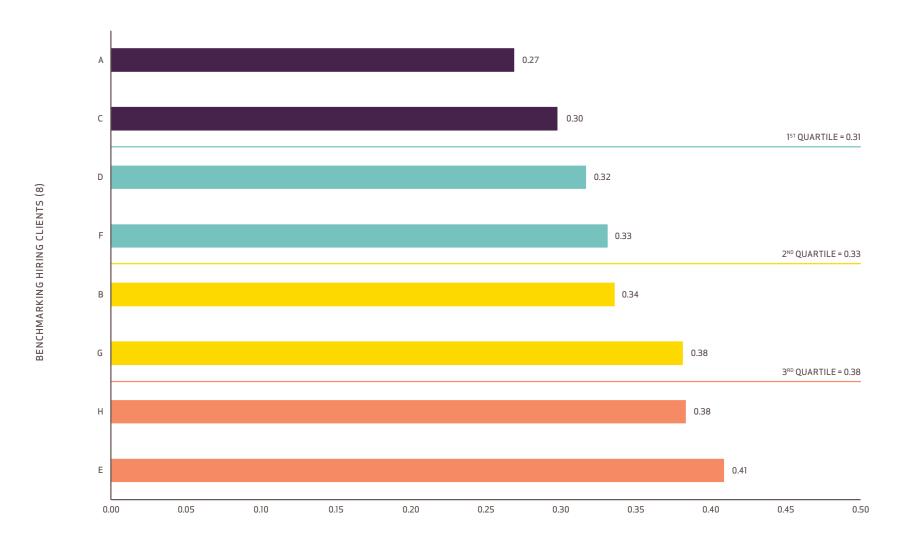
Section 4.1

Total Recordable Frequency (TRF)



INCIDENT RATE PER 100 EMPLOYEES (TRF)

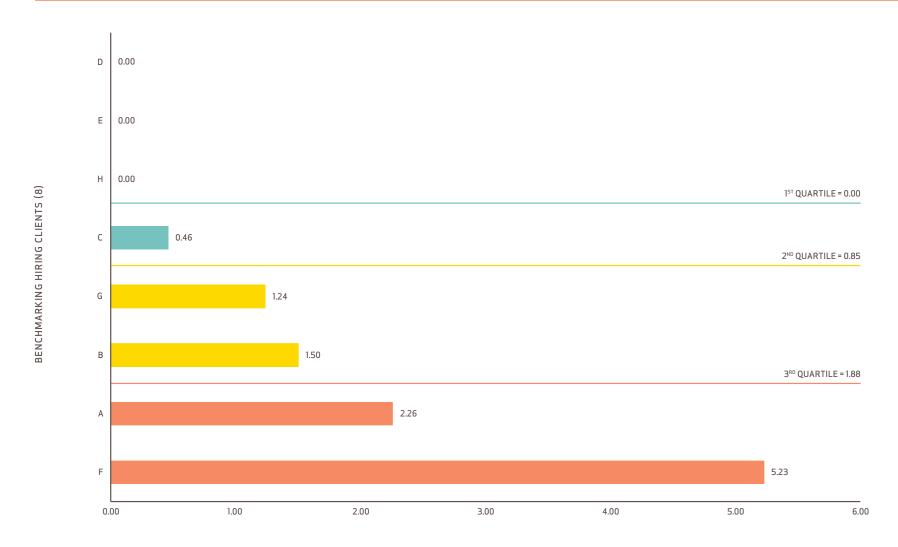
Section 4.2
Lost Time Frequency (LTF)



INCIDENT RATE PER 100 EMPLOYEES (LTF)

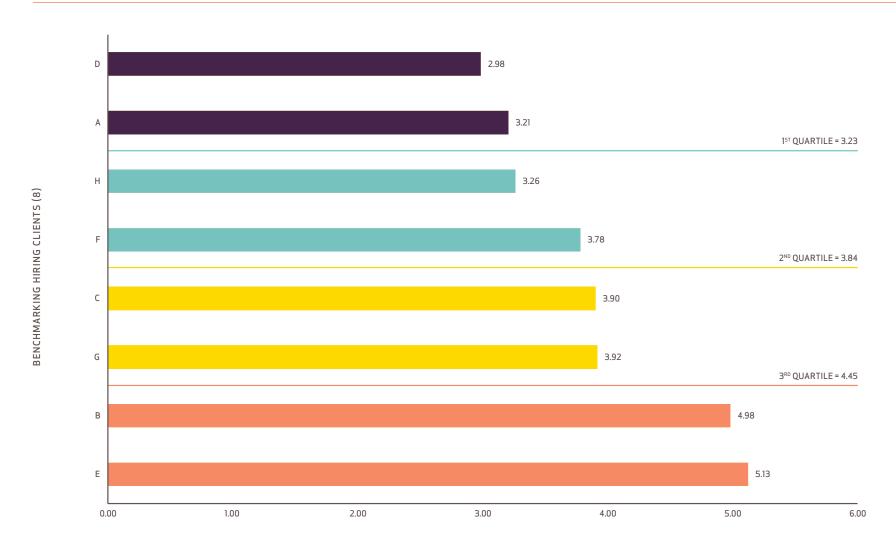
Section 4.3

Fatality Rate



FATALITY RATE PER 100,000 EMPLOYEES

Section 4.4
Incident Severity (In Days)*

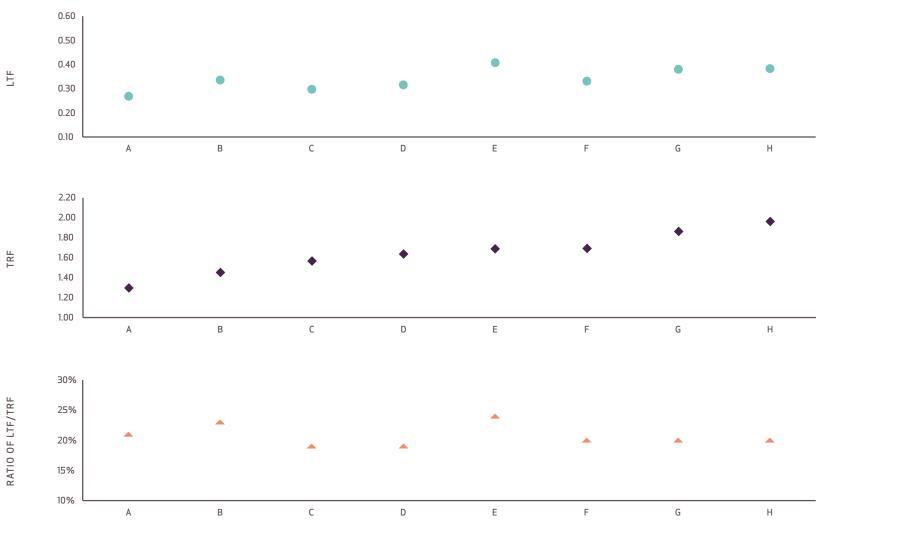


NUMBER OF DAYS

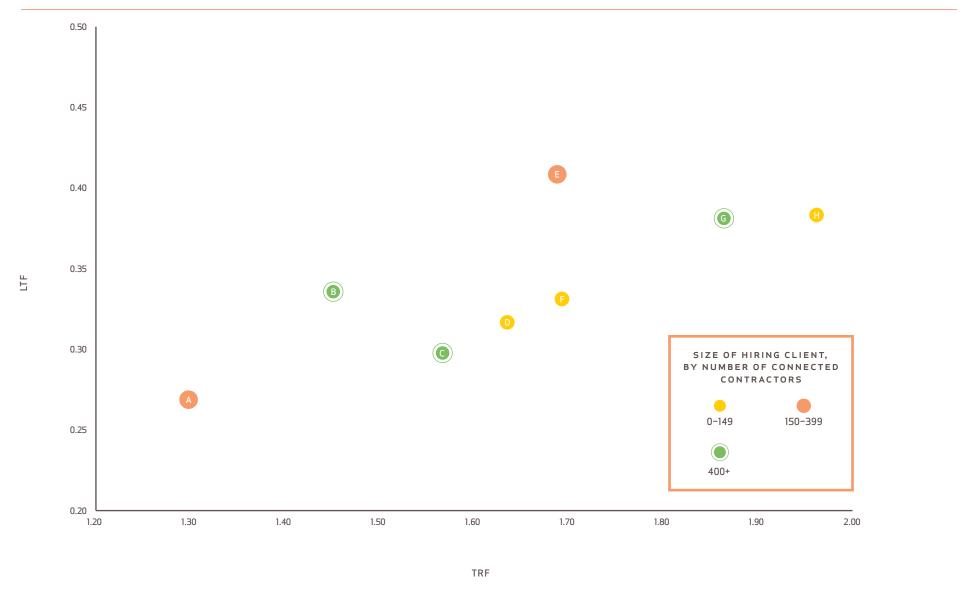
^{*}Incident Severity (In Days) = Total Number of Days Away from Work / Total Number of Recordable Incidents

Section 4.5

TRF vs. LTF



Section 4.6
Incident Rates by Number of Contractors



Section 4.7

Contractor Connection Overlap & Size Distribution

Peer Group	Total Number of Contractors ^A	Contractor Connection Overlap (%) ^B	Employee Count Distribution (%) ^c								
Hiring Client Code			0 to 4 Employees	5 to 9 Employees	10 to 24 Employees	25 to 99 Employees	100 to 249 Employees	250 to 499 Employees	500 to 999 Employees	1,000 to 2,499 Employees	2,500+ Employees
A	150 - 399	87%	7%	7%	17%	23%	19%	10%	8%	4%	5%
В	400+	53%	8%	11%	18%	27%	14%	8%	8%	4%	2%
С	400+	74%	9%	9%	19%	24%	16%	9%	7%	5%	3%
D	0 - 149	81%	4%	9%	19%	22%	16%	16%	9%	3%	1%
E	150 - 399	51%	4%	10%	12%	31%	13%	10%	9%	8%	3%
F	0 - 149	51%	11%	14%	16%	20%	13%	6%	8%	7%	5%
G	400+	63%	7%	10%	20%	27%	15%	8%	7%	4%	2%
Н	0 - 149	55%	7%	15%	16%	30%	15%	5%	7%	3%	2%

C) Employee Count Distribution (%): For a given Hiring Client, the distribution of its contractors' size as measured by the number of employees within the specified range.



A) Total number of contractors with valid incident rate data.

B) Contractor Connection Overlap (%): For a given Hiring Client, the percent of its contractors that are connected to at least one other Hiring Client in the peer group.

Section 5

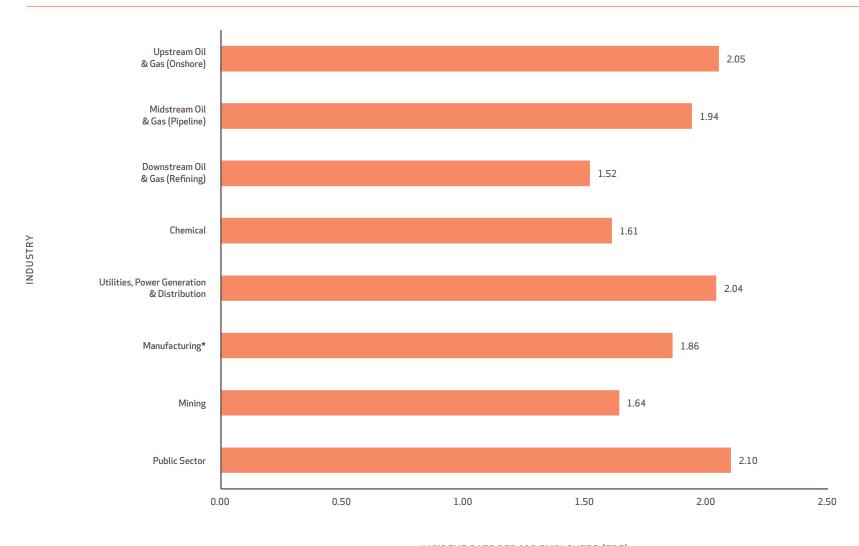
Cross-Industry Summary



5.1	Total Recordable Frequency (TRF)	38	5.3 Fatality Rate	4(
5.2	Lost Time Frequency (LTF)	39	5.4 Incident Severity (In Days)	.4

Section 5.1

Total Recordable Frequency (TRF)



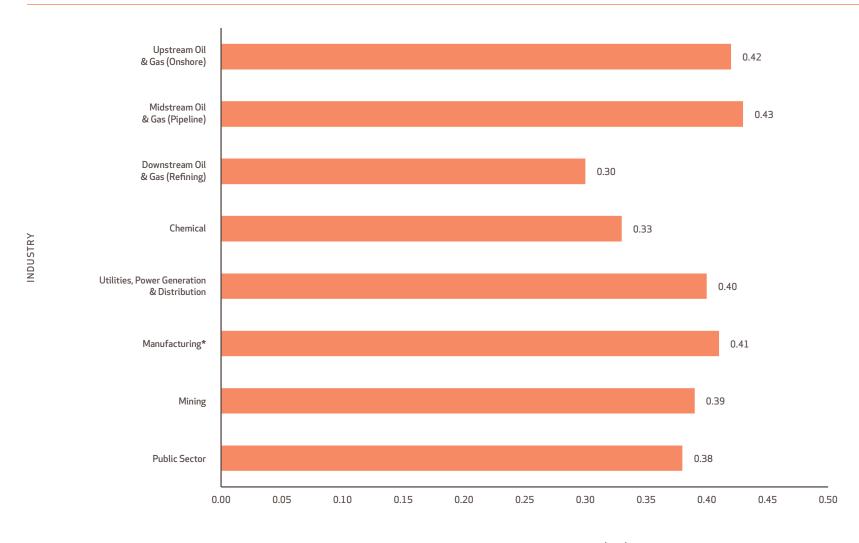
INCIDENT RATE PER 100 EMPLOYEES (TRF)

*Manufacturing includes Steel, Fertilizer Products, Wood & Paper



Section 5.2

Lost Time Frequency (LTF)

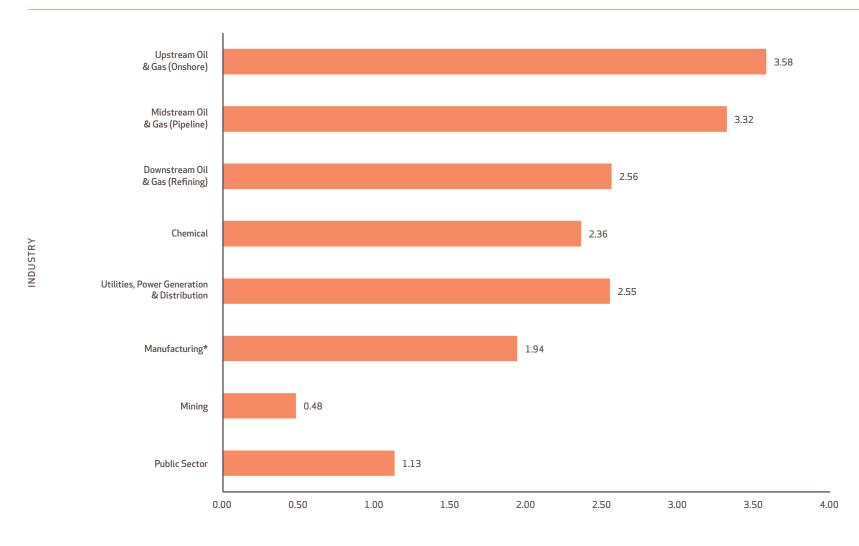


INCIDENT RATE PER 100 EMPLOYEES (LTF)

^{*}Manufacturing includes Steel, Fertilizer Products, Wood & Paper

Section 5.3

Fatality Rate

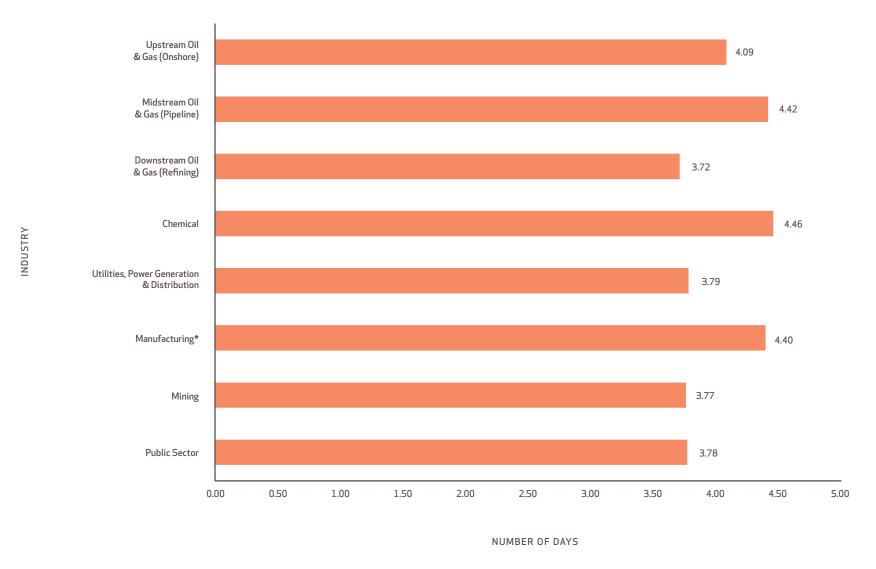


FATALITY RATE PER 100,000 EMPLOYEES

*Manufacturing includes Steel, Fertilizer Products, Wood & Paper



Section 5.4
Incident Severity (In Days)



^{*}Manufacturing includes Steel, Fertilizer Products, Wood & Paper

^{**}Incident Severity (In Days) = Total Number of Days Away from Work / Total Number of Recordable Incidents

Appendices

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Appendix I: Definitions

1. ISN Industry Classifications:

Industry classifications organize companies into industrial groupings based on similar markets, products or services. A contractor's industry grouping is based on its respective Hiring Client's industry classification.

2. Peer Group:

A group of at least eight Hiring Clients, each with 75 contractors or more, that belong to the same industry classification. Each Hiring Client has to be a member of ISNetworld for at least one year from the date of report generation.

3. Recordable Incident:

A work-related injury or illness which requires medical treatment beyond first aid and/or results in lost time and/or restricted/modified work.

4. Lost Time Incident:

A work related injury or illness which results in the employee being off work beyond the day of the incident.

5. Quartile:

In descriptive statistics, the quartiles of a set of values are the three points that divide the data set into four equal groups, each representing a fourth of the data set being sampled. The 2^{nd} quartile is the same as the median.

6. Incident Severity (In Days):

Average number of days away from work as a result of each recordable incident.

Appendix II: Incident Rate Calculations

All data used in this report is obtained directly from contractors, as reported in the Management System Questionnaire (MSQ) in ISNetworld.

- 1. Incident Rate Calculations for Individual Contractors
 - I.1 Total Recordable Frequency [TRF] represents the number of recordable incidents per 100 full-time workers and is calculated as:

$$TRF = (N/EH) \times 200,000$$

Where:

N = Total number of recordable incidents.

EH = Total exposure hours, i.e. total hours worked by all employees during the calendar year.

200,000 = Base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

1.2 Lost Time Frequency [LTF] represents the number of recordable incidents resulting in lost work days or fatalities per 100 full-time workers and is calculated as:

LTF =
$$((N_{ITI} + N_{FATAI})/EH) \times 200,000$$

Where:

 $N_{\mbox{\tiny LTI}}$ = Total number of recordable incidents resulting in lost work days.

 N_{FATAL} = Total number of fatal work injuries.

EH = Total exposure hours, i.e. total hours worked by all employees during the calendar year.

200,000 = Base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

1.3 Fatality Rate represents the number of fatal work injuries per 100,000 full-time workers and is calculated as:

Fatality Rate =
$$(N_{FATAI}/EH) \times 200,000,000$$

Where:

 N_{FATAI} = Total number of fatal work injuries.

EH = Total exposure hours, i.e. total hours worked by all employees during the calendar year.

200,000,000 = Base for 100,000 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

1.4 Incident Severity (In Days) represents the number of days away from work per recordable incident and is calculated as:

Incident Severity (In Days) =
$$(N_{DAYS}/N)$$

Where:

 N_{DAYS} = Total number of days away from work.

N = Total number of recordable incidents.

Appendix II: Incident Rate Calculations - Continued

2. Incident Rate Calculations for Groups of Contractors (per Hiring Client)

2.1 TRF, LTF and Fatality Rate are calculated by summing the exposure hours and number of incidents across all contractors in the group before computing the rate. The rate calculations for a group of contractors will be:

RATE = $(\Sigma, N/\Sigma, EH) \times BASE INTEGER$

Where:

RATE = One of the three rates presented in section 1 (TRF, LTF or Fatality Rate) that represents an exposure hour weighted rate.

 $\Sigma_{\rm i}$ N=N₁+N₂+...+N_n, where N¹ is equal to the total number of incidents for a contractor, and the summation formula is the sum of the values of the n contractors in the group (i.e. the sum of the total number of recordable incidents across all contractors in the group).

 $\Sigma_{\rm i}$ EH= EH₁+ EH₂+...+ EH_n, where EH is equal to the total exposure hours for a contractor, and the summation formula is the sum of the values of the n contractors in the group (i.e. the sum of the total exposure hours across all contractors in the group).

BASE INTEGER = 200,000 for TRF and LTF calculations and 200,000,000 for the Fatality Rate calculation.

2.2 Incident Severity (In Days) is calculated by summing the number of days away from work and number of total recordable incidents across all contractors in the group before computing the rate. The rate calculation for a group of contractors will be:

Incident Severity (In Days) = $(\Sigma_i N_{DAYS})/(\Sigma_i N)$

Where:

 $\Sigma_{\rm i}$ N_{DAYS} = The sum of the total number of days away from work across all contractors in the group.

 Σ_i N = The sum of the total number of recordable incidents across all contractors in the group.

Includes only the incidents used to calculate the specified rate: for TRF, N is the total number of recordable incidents; for LTF, N is the total number of incidents resulting in lost work days or fatalities; for Fatality Rate, N is the total number of fatal work injuries.

Appendix III: Analysis Procedure Summary

1. Data Cleaning and Preparation

- 1.1 Remove records where the total number of exposure hours or the average number of employees is missing or equal to zero.
- **1.2** Identify invalid records due to missing data (such as missing Total Number of Recordable Incidents) for each Incident Rate calculation.
- **1.3** Remove records where Exposure Hours (EH) per employee is fewer than 250 or more than 5.000.
- 1.4 For each valid record, calculate Incident Rates according to the formulas for individual contractors in Appendix II.

2. Incident Rates for Hiring Clients in the Same Industry

- **2.1** Identify each contractor's industry classifications by the Hiring Clients' sites they are connected to.
- 2.2 For each industry (peer group), calculate TRF, LTF, Fatality Rate and Incident Severity (In Days) for each Hiring Client within the same industry according to the formulas for groups of contractors in Appendix II.
- **2.3** Remove Hiring Clients who have fewer than 75 contractors or have less than one year of membership in ISNetworld.

- **2.4** Disregard the industries where there are fewer than eight Hiring Clients.
- 2.5 Assign letters in an alphabetical order (A-Z) to Hiring Clients within each industry peer group based on the TRF ranking. Letters are assigned to anonymize the benchmarking information. The Hiring Client with the lowest TRF among the peer group is assigned with the letter A.

3. Incident Rates for Cross-Industry Comparisons

- **3.1** Identify each contractor's industry classifications by the Hiring Clients' sites they are connected to.
- **3.2** For each industry, calculate TRF, LTF, Fatality Rate and Incident Severity (In Days) across all contractors according to the formulas for groups of contractors in Appendix II.
- **3.3** Disregard the industries where there are fewer than 500 contractors for the cross-industry comparisons.

Additional ISN Publications



WHITE PAPERS

Authored by industry experts, ISN white papers provide a helpful resource to both Hiring Clients and contractor companies and address industry best practices in training, insurance compliance and contractor management.



BENCHMARKING REPORTS

ISN benchmarking reports deliver analyses of health and safety performance data across capital-intensive industries, allowing Hiring Clients and contractors to assess how their performance compares to that of their industry peers.



CASE STUDIES

ISN produces case studies that use measurable data to demonstrate how ISNetworld addresses common challenges for both Hiring Clients and contractor companies.

To request a copy of these publications, visit www.isn.com/publications.aspx.

