



CORPORATE SOCIAL RESPONSIBILITY METRICS

in S&P 500 Firms' 2017
Sustainability Reports

Jingwei Maggie Li
Shirley Lu
Salma Nassar

ABOUT THE RUSTANDY CENTER

The Rustandy Center for Social Sector Innovation is the destination at the University of Chicago Booth School of Business for people committed to helping solve complex social and environmental problems. As Chicago Booth's social impact hub, the Rustandy Center offers hands-on learning opportunities, supports innovative courses, and pursues research—all with the goal of developing people and practices with the potential to solve the world's biggest problems. Learn more at: ChicagoBooth.edu/research/rustandy

Authors

Jingwei Maggie Li, Research Professional, Rustandy Center for Social Sector Innovation at the University of Chicago Booth School of Business; Shirley Lu, PhD Candidate, Chicago Booth; and Salma Nassar, Director of Research Initiatives, Rustandy Center

Acknowledgments

We would like to thank Marianne Bertrand and Rob Gertner for the valuable feedback and comments they provided from the idea stage throughout the development of the dataset and accompanying report. Many thanks to Beamlak Lefebbo and Tobel Ezeokoli for their excellent research assistance, and thanks to Patience Baach for her project management and attention to detail.

Contents

1	Executive Summary	2
2	Introduction	4
3	CSR Report Overview	6
3.1	Firms with CSR Reports	7
3.2	Audited CSR Reports	9
3.3	Reporting Standards	10
4	Social Metrics	11
4.1	Diversity	12
4.2	Safety	15
4.3	Community Engagement	18
4.4	Suppliers	21
5	Environmental Metrics	24
5.1	Greenhouse Gas	25
5.2	Energy	28
5.3	Water	31
5.4	Waste	34
5.5	Accidents and Fines	37
6	Benchmarking	40
6.1	External Data Sources	41
6.2	Accuracy and Completeness of Selected Variables	42
6.3	Environmental Score Analysis	45
7	Conclusion	53
8	Appendix	54
8.1	Variables	55
8.2	Data Collection Process	57
8.3	Industry Representation	58
8.4	Industry Concordance	60
	List of Tables	63
	List of Figures	64
	References	65

1 EXECUTIVE SUMMARY

“You can’t manage what you can’t measure.”

—Anonymous

With the growing interest in corporate social responsibility (CSR) comes the growing need to measure a firm’s CSR performance. Investors, such as the signatories of the Principles for Responsible Investment (PRI) with collectively more than \$90 trillion assets under management, rely on CSR metrics to evaluate firm performance. Academic research finds that investors, consumers, and employees consider a firm’s CSR activities when making informed purchase and career decisions.¹ Regulators may also consider CSR metrics when considering the development of rules and regulations related to firm behavior. Yet to many of these stakeholders, CSR metrics are still a black box. As such, we embarked on a data collection project to understand the CSR metrics that S&P 500 firms disclose directly through their CSR reports. Our report provides a detailed account of the commonly disclosed CSR metrics across the 2017 set of S&P 500 firms.²

Through our data collection and analysis, we focus on shedding light on the following questions:

- What are the most commonly disclosed metrics across S&P 500 firms?
- Which industries disclose more metrics?
- Which metrics are best to leverage in comparing behavior across firms?
- How does a firm’s disclosure in annual CSR reports compare with commonly used ESG (environmental, social, and corporate governance) scores?

We hand collected data from S&P 500 firms’ 2017 CSR reports, gathering 69 metrics across two categories: social and environmental. The social metrics category includes four subcategories: diversity, safety, community engagement, and suppliers. The metrics in the environmental category are grouped into five subcategories: greenhouse gas, energy, water, waste, and accidents and fines.

We propose that there is value in identifying the most commonly disclosed metrics that companies highlight in their CSR reports. Our project differs from other datasets in two ways. First, we provide an objective list of the most commonly disclosed metrics, whereas there exist discretion with the choice of metrics used by ESG data providers. For example, Asset4, an ESG data provider owned by Thomson Reuters, does not collect metrics related to workforce ethnic diversity, while we identify 129 firms that provide metrics on minority employees. Second, majority of the existing ESG datasets compile data from multiple sources, leaving the consumer unable to identify aspects that are informed by firm disclosure, media, surveys, interviews, and/or analyst interpretation.

We aim to provide a transparent and easy-to-understand guide on these CSR metrics. Although many investors rely on ESG scores, a recent study shows that while the correlation between credit ratings is around 99 percent, the correlation between industry ESG scores is only around 60 percent³. The researchers find that this discrepancy across ESG scoring systems is influenced by different ways of

¹ E.g., Greening and Turban (2000), Drozdenko et al. (2011), Hedblom et al. (2016), Barrage et al. (2019), Krueger et al. (2020).

² We use data collected from 2017 for a more complete set of CSR reports, since some firms disclose CSR reports a year or two after the fiscal year end.

³ Berg et al. (2020).

ESG weighting as well as the reliance on different metrics to measure ESG. As such, the CSR metrics are presented here directly, without interpretation on how to aggregate or weight issues. We believe learning about the metrics directly may help inform ESG evaluation.

While this report studies metrics disclosed for 2017, we believe the most commonly disclosed metrics are similar today. For example, in September 2020, the World Economic Forum (WEF) and the big four accounting firms released a white paper proposing a set of ESG metrics⁴. Many of our metrics overlap with the metrics proposed in this white paper, and our report sheds light on how common these proposed metrics are already being voluntarily provided by firms in CSR reports.

We highlight three key findings:

- In seven out of the nine CSR categories, there is at least one metric that more than 100 firms disclose in a comparable way.
- We observe a general trend that industries with a larger negative environmental impact tend to have higher disclosure rates in the environmental CSR category. This seems to be consistent with the idea that industries disclose more on the metrics that are more material to them.
- We find that ESG scores are positively associated with the number of metrics disclosed, but not associated with the performance ranking of the metrics within industry.

We hope our readers will find this report useful in the following ways:

- **Firms** can use the data as a benchmarking tool to learn about which metrics to gather to align with peers.
- **Investors** can develop a better sense about what is behind ESG scores and which metrics to consider when comparing CSR performance across firms or industries.
- **Regulators** who want to standardize certain metrics can gain insight on existing metrics that are already widely used to represent a variety of CSR issues.
- **Researchers** can make use of this alternative way to measure CSR performance, which goes beyond existing ESG scores and identifies the CSR metrics that firms publicly disclose.

⁴ World Economic Forum (2020).

2 INTRODUCTION

With the growing demand for CSR information, companies are voluntarily disclosing their CSR reports with greater frequency. A tremendous amount of information is embedded in these reports, and is valuable to investors, peer firms, researchers, and regulators. We want to help stakeholders process these reports by identifying the most commonly disclosed metrics, so that these parties know what metrics to look for when comparing firms' CSR performance.

The CSR metrics dataset contains information disclosed in company-issued CSR reports⁴ by S&P 500 firms for 2017.⁵ Given that the publication of such reports is voluntary in nature and there is a divergence in reporting standards for CSR disclosure, we construct a new dataset by carefully examining the content of each report.⁶ We gather these company-issued CSR reports via company websites, the Global Reporting Initiative (GRI) database, and web searches.⁷

The CSR metrics dataset provides a comprehensive set of variables frequently disclosed in company-issued CSR reports by S&P 500 firms. We start by

⁴ Throughout this report, we use the term "CSR reports" to denote all the reports that disclose CSR metrics, including sustainability reports and reports with similar names.

⁵ A few companies used the standard calendar year for their CSR reports. Given that the information contained in those CSR reports aligned with the reporting year, we treated calendar-year and fiscal-year reporting methods the same and examined the information provided by an S&P 500 firm as a unit.

⁶ Due to the hand-collected nature of our dataset, we may have inadvertently included errors in it.

⁷ In some cases, the company's fiscal 2017 data was included in their 2016 or 2018 CSR report. In those instances, aiming to include metrics pertaining to 2017, we included data from 2016 and 2018 CSR reports, when necessary.

⁸ We do not include metrics that are only relevant to a specific industry to keep this project containable, since the goal is to understand the most frequently used metrics for S&P 500 firms.

⁹ Asset4 data provides environmental, social, and governance (ESG) information for more than 3,000 firms and scores them based on their ESG information.

¹⁰ Compustat is a comprehensive database of financial and market information for every public company since 1962.

manually reading the reports from a diverse set of industries to define an initial list of metrics, and then group the metrics by broader categories.⁸ We benchmark this list of metrics to data available in Asset4,⁹ and add metrics if we find them frequently disclosed within the reports. We go through this process multiple times and discuss potential new metrics to include or exclude during the data collection process to come up with the most representative list of metrics.

The dataset comprises four parts: **Company Profile** contains basic information obtained from Compustat¹⁰ for S&P 500 firms as of the end of 2017. **CSR Report Overview** focuses on general characteristics of CSR reports, such as the use of standards and audits. **Social Metrics** and **Environmental Metrics** contain information related to social and environmental disclosure, respectively, as revealed in these reports.

Table 1 shows the structure of the CSR metrics data.

Table 1: Components of the CSR Metrics Data

Part	Part Description	Number of Variables
Company Profile	Information about a company	6
CSR Report Overview	Basic information of a CSR report	17
Social Metrics	Information related to social disclosure	40
Environmental Metrics	Information related to environmental disclosure	29

Figures 1 and 2 display the most commonly disclosed metrics for each category related to social and environmental issues, respectively. The **Appendix** contains more information on the data collection process, a comprehensive list of variables, and underlying measurements for variables, when applicable.

Figure 1: Social Metrics

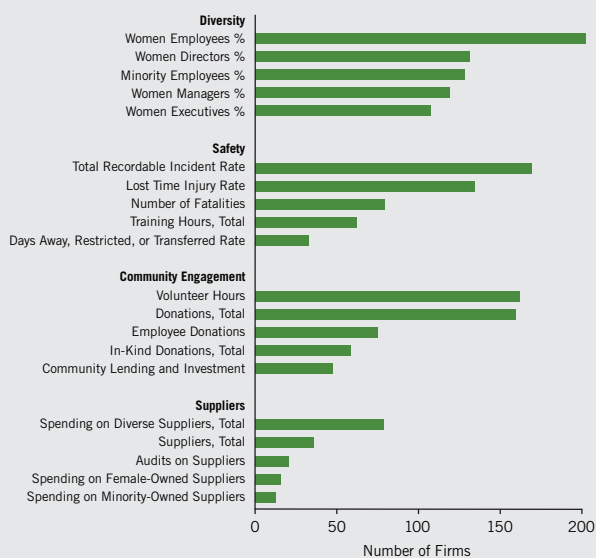
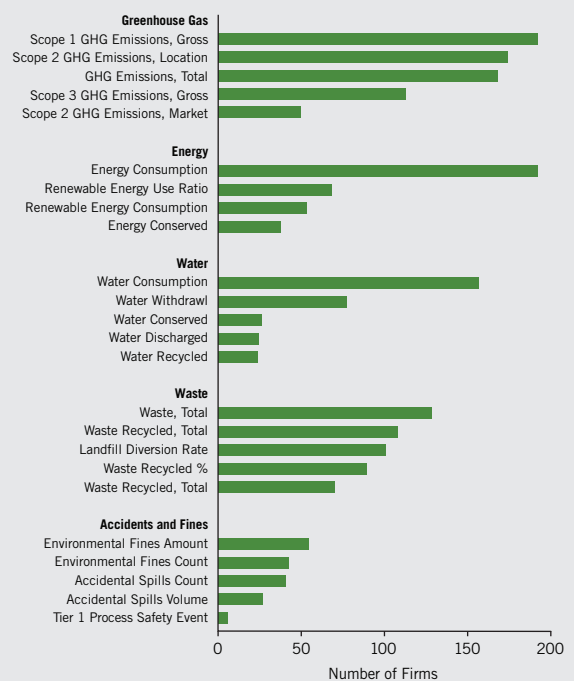


Figure 2: Environmental Metrics



3 CSR REPORT OVERVIEW

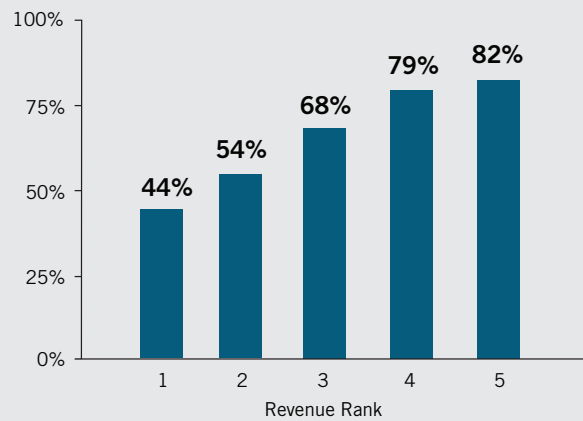
3.1 Firms with CSR Reports

The CSR disclosure data measures CSR disclosure behaviors for the 2017 set of S&P 500 firms. Given that the production of a CSR report is voluntary, firms may elect not to publish one. On the other hand, with increasing awareness of and demand for sustainability and societal impacts, firms may be incentivized to publish a CSR report by perceived benefits, such as attracting and retaining investors and customers. Out of 500 S&P 500 firms, 327 (65.5 percent) produced a CSR report disclosing metrics for fiscal 2017.

To better understand the characteristics of disclosure firms, we group firms by revenue and industry. Firm revenue is taken from Compustat, and we separate the firms into five revenue groups, with 100 firms in each group, as shown in **Table 2**. Companies in higher revenue groups are more likely to produce a CSR report, with 82 percent of S&P 500 firms issuing a report in the highest revenue group, compared with 44 percent in the lowest income group. (See **Figure 3**.) The average CSR report is 54.3 pages and discloses 14.8 metrics. Firms with higher revenue are also more likely to issue lengthier CSR reports with more metrics. The lowest revenue group produces reports with 39 pages and 12.6 metrics (on average), whereas the highest revenue group issues reports with 72 pages and 17.6 metrics (on average).

Figure 3: Firms with a CSR Report, by Revenue Rank

n=500



We also investigate industries in which firms are more likely to issue a CSR report. We use the Fama French 48 (FF48) industry classification system because it provides a more equal number of firms in each industry group.¹¹

¹¹ Eugene F. Fama and Kenneth R. French, "Industry Costs of Capital," *Journal of Financial Economics* 43, No. 2 (February 1997): 153–93. See the Appendix for a full list of Fama French 48 industry classification.

Table 2: S&P 500 Revenue Groups

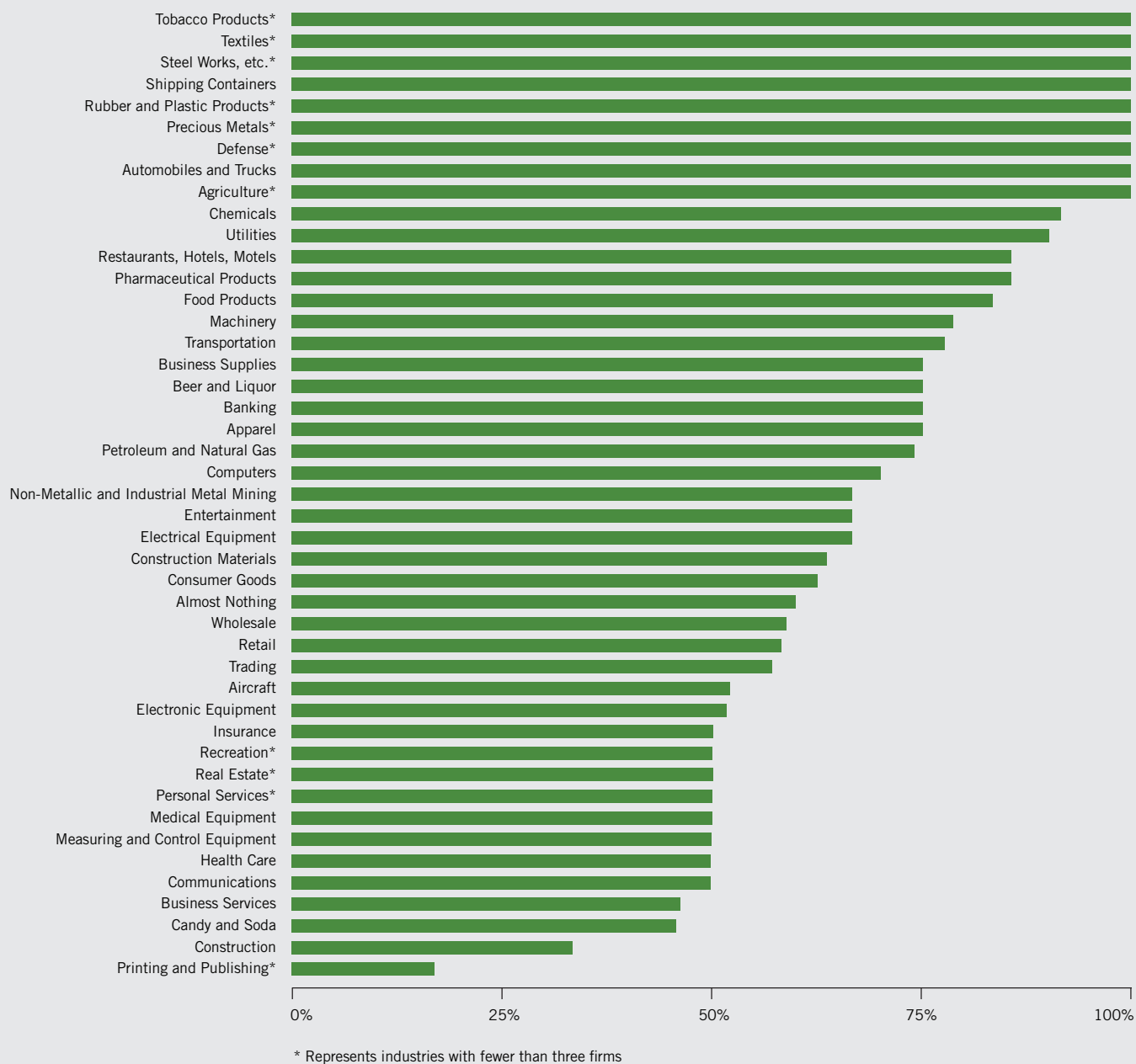
Revenue Group	Min. (in \$ Millions)	Max. (in \$ Millions)	# of Firms with a CSR Report	Average # of Pages in CSR Report	Average # CSR Metrics
1	857.4	3,980.8	44	39	12.6
2	3,993.4	7,196.0	54	41	11.9
3	7,256.4	12,461.5	68	54	15.5
4	12,491.0	25,896.9	79	54	14.6
5	26,107.0	496,785.0	82	72	17.6

Note: We classify firms into five revenue groups on the basis of their fiscal 2017 revenue from Compustat. Group one has the lowest revenue and group five has the highest revenue. The table shows the revenue range of each group, the number of CSR reports, and the average number of pages.

Figure 4 illustrates the percent of firms with a CSR report in each industry, ranked with the highest percent at the top. For better comparability, we focus on industries with more than two firms. Out of 48 industries (in the FF48) with more than two firms, the five industries with the highest CSR publication rate are shipping containers, automobiles and trucks, chemicals, utilities, and pharmaceutical products.

Figure 4: Firms with a CSR Report, by Industry

n=500



3.2 Audited CSR Reports

A company can choose whether to have its CSR report audited, similar to how it might a financial report. An audit may demonstrate that the information presented in the CSR report was verified either by an internal source (i.e., through an internal audit) or by an independent, external source (i.e., through an external audit). Among the 327 firms with CSR reports, 106, or 32.4 percent, had either an internally or externally audited CSR report.

In some cases, firms may choose not to have the entire report audited but instead elect to audit only specific measurements included in their CSR report. We construct a measure specifically for this purpose, called “audited with KPI.” For those companies that have a CSR report, 73 firms, or 22.3 percent, fall under this audited with KPI category.

We further investigate the relationship between a firm’s revenue and its likelihood of having an audited report. As shown in **Figure 5**, companies in the higher revenue group tend to perform audits. Thirty-seven percent of firms conducted an audit in group five, compared with only 11 percent in group one.

Table 3 shows that on average, firms with audited CSR reports issue lengthier CSR reports with more metrics. Another observation is that many of the CSR auditors are not the Big Four financial accounting auditors. For example, the two largest auditors, Lloyd’s Register Quality Assurance (LRQA) and Bureau Veritas North America (BVNA), both specialize in sustainability auditing. **Table 4** shows the frequently used auditors, including the four commonly used external firms.

Figure 5: Audited CSR Reports, by Revenue Rank

n=327

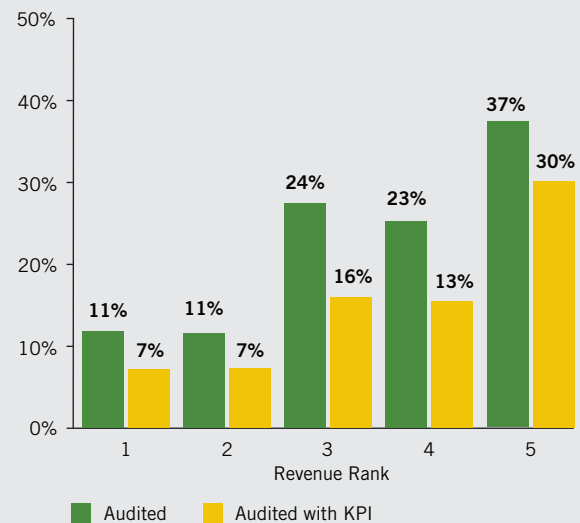


Table 3: Audited CSR Reports

Audit	# of Firms with a CSR Report	Average # of Pages in CSR Report	Average # of CSR Metrics
Audited	106	71.8	19.8
Audited with KPI	73	76.7	21.6
None	221	45.7	12.4
Note: Audited contains Audited with KPI.			

Table 4: Frequently Used Auditors

Auditor	Number of Firms	Percent
LRQA	14	14.74%
BVNA	13	13.68%
Internal Audit	12	12.32%
ERM CVS	7	7.37%
EY	7	7.37%
Note: The full names of the auditors are as follows: Lloyd’s Register Quality Assurance (LRQA), Bureau Veritas North America (BVNA), Environmental Resources Management Certification and Verification Services (ERM CVS), and Ernst & Young (EY).		

3.3 Reporting Standards

While there is no one standard for how a company reports its CSR metrics, three standards are most common:¹² the GRI reporting standard, CDP reporting standards, and the United Nations sustainable development goals (SDGs).¹³ In contrast, we only observe eight CSR reports that reference the integrated reporting framework.

Table 5 shows which common reporting standards are used by firms in CSR reports.

The choice of reporting standard does not seem to vary significantly across revenue groups, with GRI getting wide usage among all revenue groups.

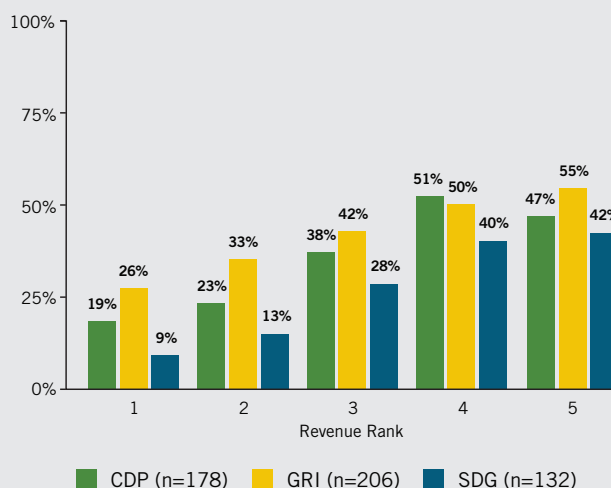
Figure 6 demonstrates reporting standards by revenue group.

Table 5: CSR Reporting Standards

CSR Reporting	# of Firms with a CSR Report	Average # of Pages in CSR Report	Average # of CSR Metrics
GRI	206	67.0	18.1
SDG	132	72.2	18.4
CDP	178	63.3	17.4

Figure 6: CSR Reporting Standards, by Revenue Rank

n=327



¹² We do not include more recent standards such as those of the Sustainability Accounting Standards Board (SASB) and the Task Force on Climate-Related Financial Disclosures (TCFD) as they are not as common in fiscal 2017 reporting.

¹³ The Global Reporting Initiative is an independent, international organization that seeks to provide a global common language for measuring companies' impacts on the economy, environment, and society. See globalreporting.org/how-to-use-the-gri-standards/resource-center

CDP is a nonprofit organization that seeks to provide a global disclosure system for investors, companies, and various regions. It particularly focuses on environmental impacts. See cdp.net/en/info/about-us/what-we-do

SDGs are the 17 sustainable development goals adopted in 2015 by all United Nations member states seeking to end poverty, protect the planet, and improve the lives and prospects of everyone, everywhere. See un.org/sustainabledevelopment/sustainable-development-goals

4 SOCIAL METRICS

The social metrics category includes frequently reported metrics related to people and society. In our data, 40 out of 69 variables relate to social metrics. We divide the social metrics into four subcategories: diversity, safety, community engagement, and suppliers. A detailed analysis of each subcategory appears below.



4.1 Diversity

Definition: Diversity and equal opportunity at work for employees and board members

Standards: GRI: 401; 405 / SDG: 5; 8; 10

Good Performance: Higher rate of diverse representation among workforce and corporate boards

We identify a total of 16 variables in the diversity category that are frequently reported by the S&P 500 firms in our sample. As shown in **Table 6**, the percent of female employees is the most commonly disclosed measure. Four out of five of the top metrics report on a dimension of female employees, and one metric reports on the percent of minority employees. Out of 327 firms with reports, 201 companies disclose the percent of female employees in their labor force. In our data, the average percent of female employees at a firm is 39.7.

Table 6: Most Commonly Disclosed Metrics—Diversity

Variable	Definition	Firms	Mean	St. Dev.
Female Employees	Percent of female employees	201	39.7%	16.9%
Female Directors	Percent of women director positions	132	28.2%	9.8%
Minority Employees	Percent of ethnic minority employees	129	34.8%	13.7%
Female Managers	Percent of female managers	120	35.6%	14.5%
Female Executives	Percent of female executives	108	27.8%	10.4%

Table 7: Industries with the Highest Percent of Female Employees

Industry	Firms*	Mean	St. Dev.
Retail	11 (64.7%)	62%	17.1%
Apparel	4 (66.7%)	61.3%	8.8 %
Insurance	11 (73.3%)	59.4%	13.2%
Consumer Goods	4 (57.1%)	54.3%	20.3%
Banking	18 (85.7%)	54.2%	8.7%

Table 8: Industries with the Highest Percent of Minority Employees

Industry	Firms*	Mean	St. Dev.
Apparel	3 (50%)	56.4%	0.8%
Retail	10 (58.8%)	48.7%	10.8%
Electronic Equipment	5 (41.7%)	45.1%	14.7%
Communications	4 (66.7%)	42.7%	1.2%
Food Products	3 (30%)	41.7%	9.1%

* The firms column includes the number of firms that disclose the percent of female employees. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

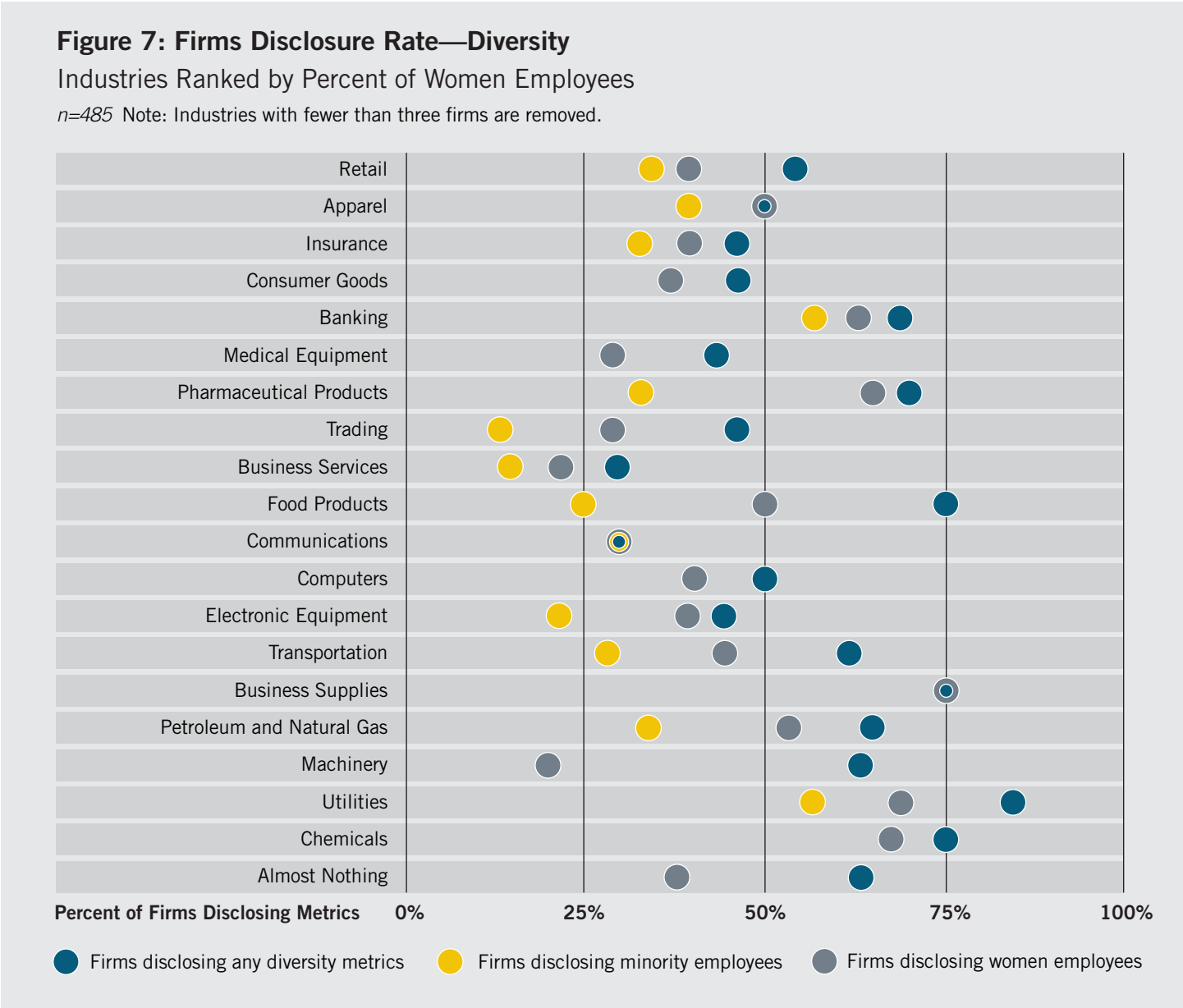
To compare performance across industries, we further look into the percent of female and minority employees. To provide better comparability, we include industries with more than two firms that provide a corresponding metric. For the percent of female employees, this results in 20 industries.

Table 7 illustrates the top five industries with the highest percent of women employees.

Table 8 illustrates the top five industries with the highest percent of minority employees. The retail industry ranks highest on women employees, with an average of **62 percent**. The apparel industry has the highest percent of minority employees, at **56.4 percent**.

Which industries disclose the most diversity metrics?

Figure 7 shows the disclosure rate of various diversity metrics ranked by industries with the highest percent of female employees. Overall, there seems to be a slightly higher disclosure rate among industries with worse diversity figures. The business supplies industry has the highest disclosure rate of female employees: **75 percent** of firms in the industry disclose this metric. In the utilities industry, **54.8 percent** of firms report the percent of minority employees metric in their CSR reports, which is the highest disclosure rate in the CSR metrics data. The utilities industry also has the highest disclosure rate of any diversity metrics, which is **83.9 percent**. The utilities industry happens to rank second to last in the percent of female employees.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.



4.2 Safety

Definition: Occupational health and safety relating to work incidents and training

Standards: GRI: 403 / SDG: 8

Good Performance: Fewer incidents of injury or fatality, and more training hours

For the safety metric, we identify 8 frequently reported and related metrics. Many, such as the most commonly disclosed one—the total recordable incident rate (TRIR)—are based on standard definitions from OSHA (the Occupational Safety and Health Administration).

Table 9 describes the five most commonly reported safety measures.

Table 9: Most Commonly Disclosed Metrics—Safety

Variable	Definition	Unit	Firms	Mean	St. Dev.
Total Recordable Incident Rate (TRIR)	Number of injuries and illnesses per 200,000 work hours	Rate	169	0.966	1.011
Lost Time Injury Rate	Amount of lost time due to injuries occurring in a workplace per 200,000 work hours	Rate	135	0.37	0.418
Fatalities	Number of fatalities	Count	81	0.400	1.026
Training Hours Total	Total hours of training	Hours	64	1,159,319	2,259,911
Days Away, Restricted, or Transferred Rate (DART)	Number of cases of employee-related incidents	Rate	35	1.081	1.984

In **Table 10** and **Table 11**, we further examine TRIR reporting rates by industry, showing the five industries that rank highest and lowest in this area, respectively. We keep the industries with three or more firms that provide this measure for more accurate comparison. Among these industries, the retail industry has the highest TRIR, whereas the computers industry has the lowest TRIR.

Table 10: Industries with the Highest Total Recordable Incident Rate (TRIR)

Industry	Firms*	Mean	St. Dev.
Retail	3 (17.6%)	4.783	1.714
Trading	5 (17.9%)	2.022	1.904
Transportation	5 (35.7%)	1.811	1.415
Food Products	8 (80%)	1.691	1.547
Construction Materials	4 (100%)	1.633	0.828

Table 11: Industries with the Lowest Total Recordable Incident Rate (TRIR)

Industry	Firms*	Mean	St. Dev.
Computers	4 (57.1%)	0.160	0.090
Business Services	7 (33.3%)	0.227	0.286
Petroleum and Natural Gas	20 (100%)	0.366	0.262
Electronic Equipment	9 (75%)	0.407	0.308
Pharmaceutical Products	15 (71.4%)	0.543	0.415

* The firms column includes the number of firms that disclose TRIR. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

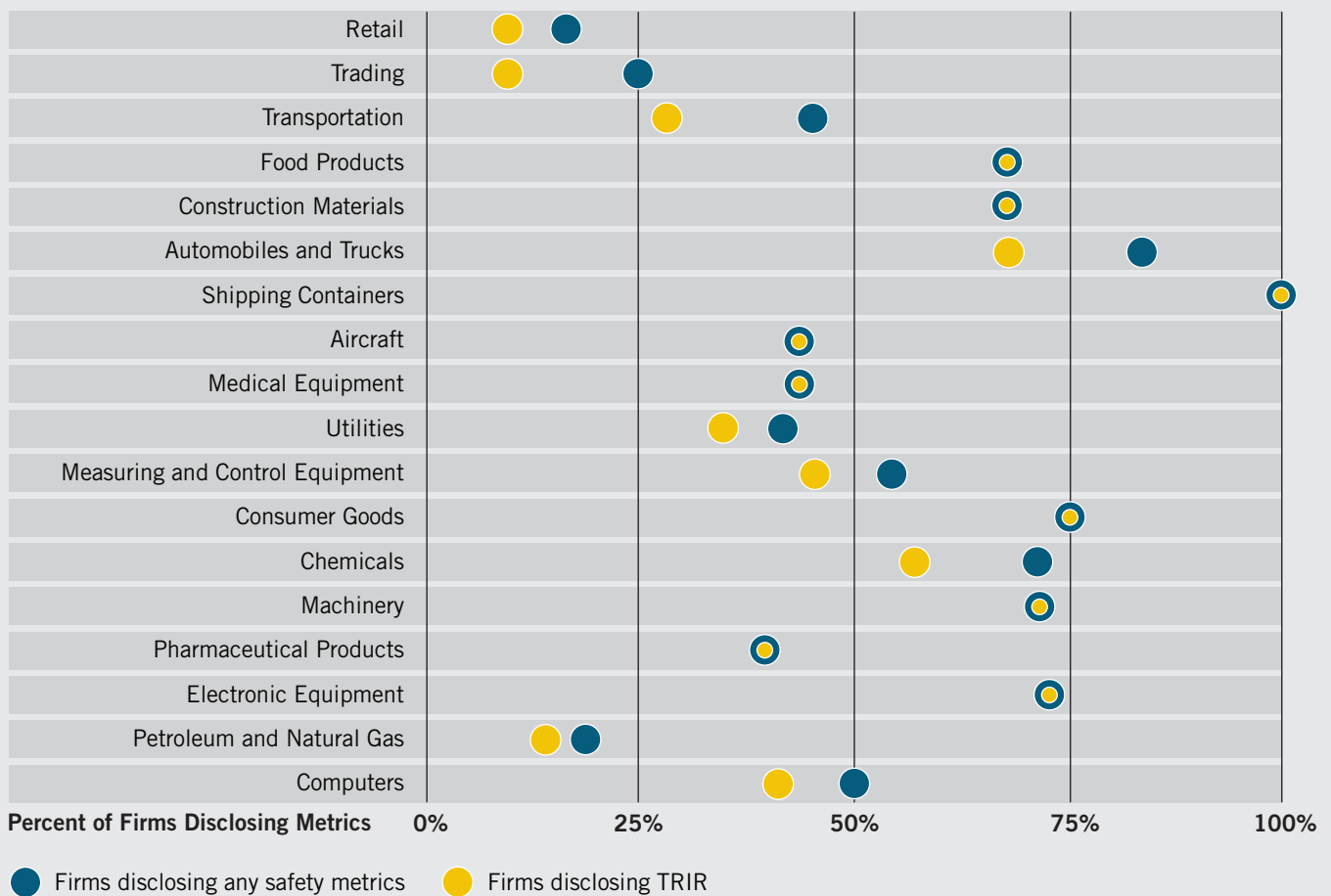
Which industries disclose the most safety metrics?

Figure 8 shows the disclosure rate of TRIR and any safety metrics ranked by industries with the highest TRIR at the top of the chart. Overall, there is not much pattern between disclosure rates and TRIR performance. The shipping containers industry has the highest disclosure rate for both the TRIR and any safety metrics, with all three shipping container firms making such disclosure. In contrast, the retail industry has the lowest disclosure rate of TRIR, at **10.3 percent**.

Figure 8: Firms Disclosure Rate—Safety

Industries Ranked by Total Recordable Incident Rate (TRIR)

n=485 Industries with fewer than three firms are removed.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.



4.3 Community Engagement

Definition: Firm activities to engage with the community, such as through donations, employee volunteer programs, or community lending and investments

Standards: GRI: 201; 413 / SDG: 17

Good Performance: Higher amounts of donations and volunteering hours

We collect 10 measures related to the community engagement metric.¹⁴ As shown in **Table 12**, the most reported measure is the number of employee volunteer hours, a measure that 161 firms include

in their CSR report. On average, firms volunteered for 189,408 hours in 2017, which translates to 14.5 hours per employee who opted to volunteer. At the industry level, 19 out of 48 industries report more than two firms that provide volunteer hours in their CSR report. The transportation industry has the highest volunteer hours, driven by UPS, which is the firm with the highest volunteer hours overall. We also examine the industries with the highest total donations and find that the utilities industry reports the highest level of donations. This is followed by the pharmaceutical products industry, where Merck & Co. and Johnson & Johnson donate the most overall, with the majority being product donation.

Table 12: Most Commonly Disclosed Metrics—Community Engagement

Variable	Definition	Unit	Firms	Mean	St. Dev.
Volunteer Hours	Number of employee volunteer hours	Hours	161	189,408	426,504
Donations Total	Total donations (in dollars)	Dollars	159	192,242,022	1,453,586,607
Employee Donations	Donations made by employees (in dollars)	Dollars	76	6,381,130	11,806,478
In-Kind Donations Total	In-kind donations (in dollars)	Dollars	60	193,827,634	536,968,227
Community Lending and Investment	Funds provided for community lending and investment (in dollars)	Dollars	50	408,127,331	1,115,639,686

¹⁴ We also collect data on lobbying and political spending. While some of these data involve mandatory disclosure, the inclusion of these metrics in CSR reports is voluntary. As very few firms do this, both metrics are not listed in the top-five metrics table but can be found in the full data.

Table 13 and **Table 14** show the five industries ranked by the highest volunteer hours and total donations, respectively.

Table 13: Industries Reporting the Highest Number of Volunteer Hours

Industry	Firms*	Mean	St. Dev.
Transportation	7 (50%)	678,207	1,117,793
Communications	5 (83.3%)	519,057	742,613
Retail	8 (47.1%)	516,963	461,584
Banking	17 (81%)	317,105	545,886
Business Services	9 (42.9%)	289,174	446,581

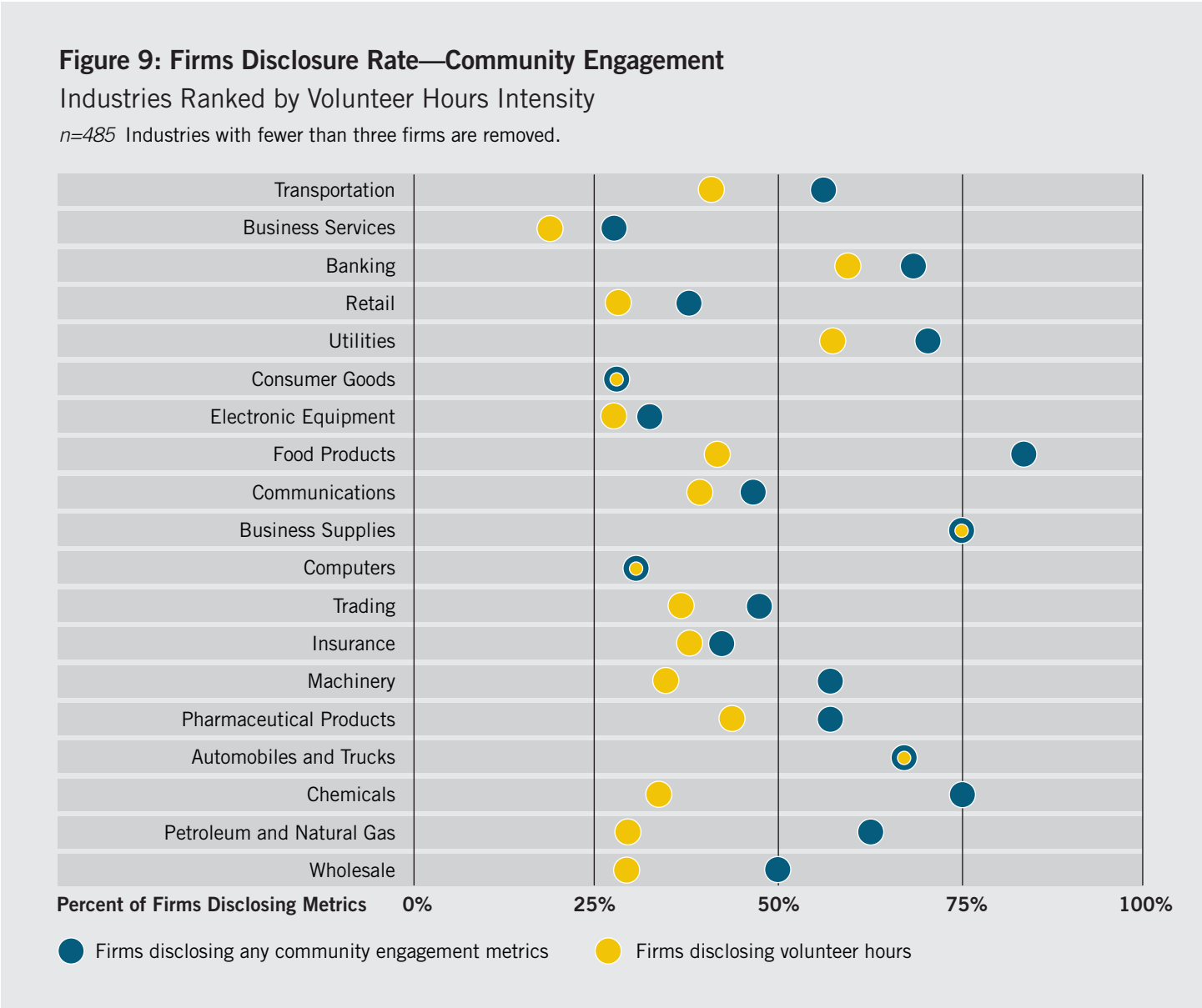
Table 14: Industries Reporting the Highest Total Donations, in Dollars

Industry	Firms*	Mean	St. Dev.
Utilities	18 (64.3%)	1,158,248,901	4,382,534,139
Pharmaceutical Products	6 (33.3%)	701,186,095	1,140,054,950
Communications	3 (50%)	284,866,667	111,604,002
Retail	9 (52.9%)	231,421,875	477,145,954
Business Services	8 (38.1%)	67,036,857	118,976,681

* The firms column includes the number of firms that disclose volunteer hours. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

Which industries disclose the most community engagement?

To further understand volunteering and volunteer hours at the industry level, we calculate volunteer hours intensity, a measurement that considers the number of volunteer hours reported on the basis of firm size, as measured by revenue.¹⁵ **Figure 9** shows the disclosure rate of volunteer hours and any community engagement metrics ranked by industries with the highest volunteer hours intensity. Overall, there is not much pattern between disclosure rates and volunteer hours. The automobiles and trucks industry has the highest disclosure rate of volunteer hours, whereas the business services industry reports the lowest.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.

¹⁵ Intensity is constructed at the firm level. Volunteer hours intensity is calculated as the number of volunteer hours divided by a firm's revenue. The reason we use revenue as opposed to number of employees is because we have more complete data for firm revenue.



4.4 Suppliers

Definition: Due diligence on supply chain and supporting the supply chain and diverse suppliers

Standards: GRI: 414 / SDG: 8; 12

Good Performance: Higher rate of supply chain audits and more spending on diverse suppliers

We collect six metrics related to suppliers. **Table 15** shows the five most frequently disclosed metrics. The most commonly disclosed variable is the total spending on diverse suppliers, with 80 firms reporting this metric in their CSR reports.¹⁶ At the industry level, we find that 11 industries out of 48 have more than two firms that provide the spending metric on diverse suppliers.

Table 15: Most Commonly Disclosed Metrics—Suppliers

Variable	Definition	Unit	Firms	Mean	St. Dev.
Total Spending on Diverse Suppliers	Procurement spent on diverse suppliers	Dollars	80	8,719,343,646	57,106,876,469
Total Suppliers	Total number of suppliers	Count	38	24,966.170	29,343
Audits on Suppliers	Number of suppliers that were audited on either social or environmental standards	Count	23	966	1,450
Spending on Female-Owned Suppliers	Procurement spent on female-owned suppliers	Dollars	18	563,279,672	1,253,855,374
Spending on Minority-Owned Suppliers	Procurement spent on minority suppliers	Dollars	15	280,743,376	458,694,239

¹⁶ Firms subject to the California Transparency in Supply Chains Act of 2010 are required to provide certain supplier disclosures. However, the choice to include such information in CSR reports is voluntary.

Firms in the retail industry report the highest spending on diverse suppliers, both on total spending and on spending scaled by total revenue, as shown in **Table 16** and **Table 17**.

Table 16: Industries with the Highest Total Spending on Diverse Suppliers, in Dollars

Industry	Firms*	Mean	St. Dev.
Retail	4 (23.5%)	226,650,000,000	315,864,599,156
Pharmaceutical Products	5 (27.8%)	8,453,000,000	13,026,216,911
Communications	4 (66.7%)	2,716,350,000	3,229,568,802
Utilities	14 (50%)	1,076,830,000	892,079,431
Petroleum and Natural Gas	5 (25%)	992,250,000	631,989,649

Table 17: Industries with Total Spending on Diverse Suppliers—Intensity

Industry	Firms*	Mean	St. Dev.
Retail	4 (23.5%)	466,870	620,775
Pharmaceutical Products	5 (27.8%)	403,025	525,525
Utilities	14 (50%)	71,966	49,356
Communications	4 (66.7%)	23,760	22,503
Business Services	4 (19%)	21,665	16,220

* The firms column includes the number of firms that disclose total spending on diverse suppliers. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

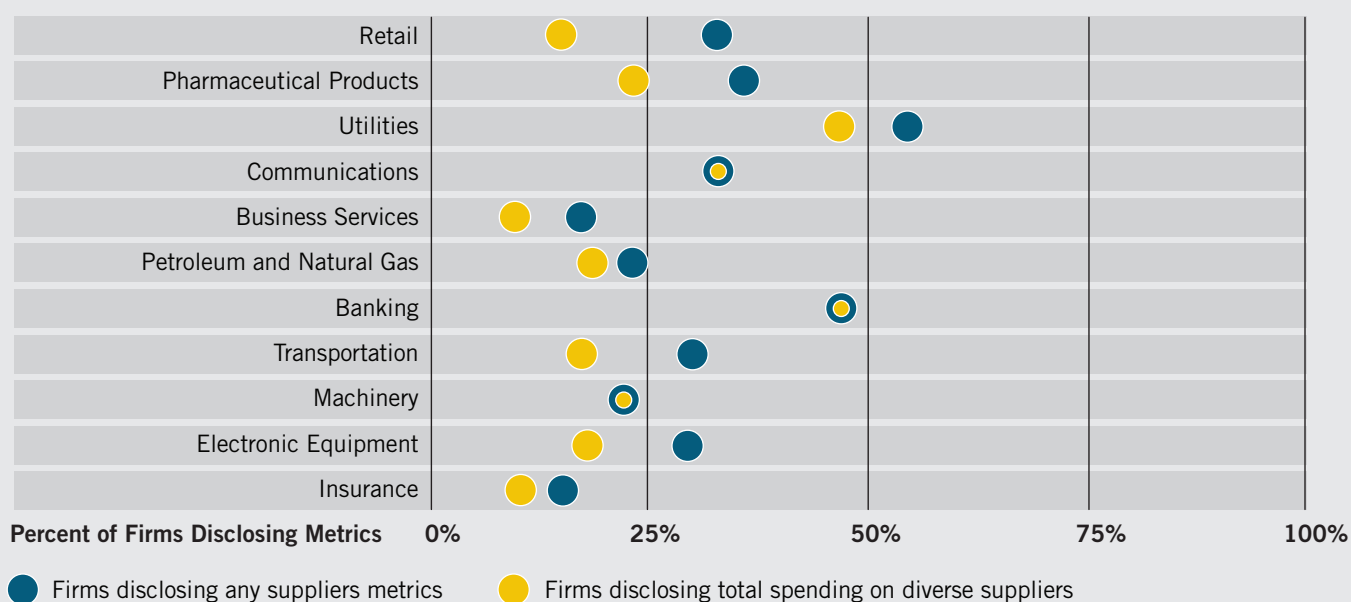
Which industries disclose the most diverse supplier data?

Figure 10 ranks industries with the highest total spending on diverse suppliers scaled by revenue. Given that relatively few industries have more than two firms disclosing such metrics, it is difficult to identify any patterns. The utilities industry has the highest rate of disclosing any supplier metrics. The banking industry has the highest rate of disclosing total spending on diverse suppliers.

Figure 10: Firms Disclosure Rate—Suppliers

Industries Ranked by Total Spending on Diverse Suppliers Intensity

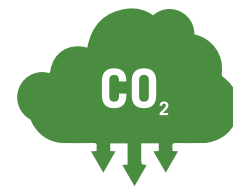
n=475 Industries with fewer than three firms are removed.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.

5 ENVIRONMENTAL METRICS

The environmental metrics category in our dataset includes metrics related to environmental resources and incidents. In our data, 29 out of 69 variables fall into five subcategories: greenhouse gas, energy, water, waste, and accidents and fines. A detailed analysis of each subcategory follows.



5.1 Greenhouse Gas

Definition: Firm's emission of greenhouse gases

Standards: GRI: 305 / SDG: 13

Good Performance: Lower greenhouse gas emissions

Thanks to the Greenhouse Gas (GHG) Protocol, a global standard to measure greenhouse gas emissions, this category contains some of the most comparable metrics. The GHG Protocol classifies greenhouse gas emissions into three scopes. Scope 1 represents direct emissions through firm operation. Scope 2 represents indirect emissions through energy usage and can be calculated using a location- or a market-based measure. The location-

based measure is calculated using the average emissions produced in the local energy grid, whereas the market-based measure is calculated using emissions from custom-made energy contracts. Scope 3 represents other indirect emissions.

As shown in **Table 18**, among the five most commonly disclosed variables, firms tend to reveal information on Scope 1 GHG emissions. For better comparability, we focus on the 23 industries with more than two firms disclosing Scope 1 GHG emissions. Not surprisingly, the petroleum and natural gas industry and the utilities industry rank highest in Scope 1 GHG emissions, and remain the top emitters when ranking by Scope 1 GHG emissions scaled by total revenue.

Table 18: Most Commonly Disclosed Metrics—Greenhouse Gas

Variable	Definition	Unit	Firms	Mean	St. Dev.
Scope 1 GHG Emissions	Total amount of GHG emissions that directly occurred from company-owned or controlled sources	Metric tons CO ₂ e	184	4,260,724	12,322,429
Scope 2 GHG Emissions, Location-Based	Indirect emission intensity of grid on which energy consumption occurs	Metric tons CO ₂ e	167	1,070,980	2,371,561
Total GHG Emissions	Total amount of GHG emissions	Metric tons CO ₂ e	161	10,110,081	48,700,298
Scope 3 GHG Emissions	All indirect emissions (not included in scope 2) for a firm in the value chain	Metric tons CO ₂ e	109	10,135,394	47,188,559
Scope 2 GHG Emissions, Market- Based	Indirect emissions from electricity that a company has chosen	Metric tons CO ₂ e	49	648,643	1,114,385

Table 19 and **Table 20** show the five industries ranked by the highest Scope 1 GHG emissions and emissions intensity, respectively.

Table 19: Industries with the Highest Scope 1 GHG Gross Emissions

Industry	Firms*	Mean	St. Dev.
Petroleum and Natural Gas	13 (65%)	19,733,441	33,789,880
Utilities	14 (50%)	17,517,593	15,160,737
Transportation	10 (71.4%)	13,657,586	14,599,872
Chemicals	4 (36.4%)	12,061,104	7,097,691
Business Supplies	3 (100%)	5,286,667	4,027,361

Table 20: Industries with the Highest Scope 1 GHG Gross Emissions—Intensity

Industry	Firms*	Mean	St. Dev.
Utilities	14 (50%)	2,194	1,863
Chemicals	4 (36.4%)	1,914	1,731
Transportation	10 (71.4%)	544	319
Petroleum and Natural Gas	13 (65%)	510	305
Business Supplies	3 (100%)	230	191

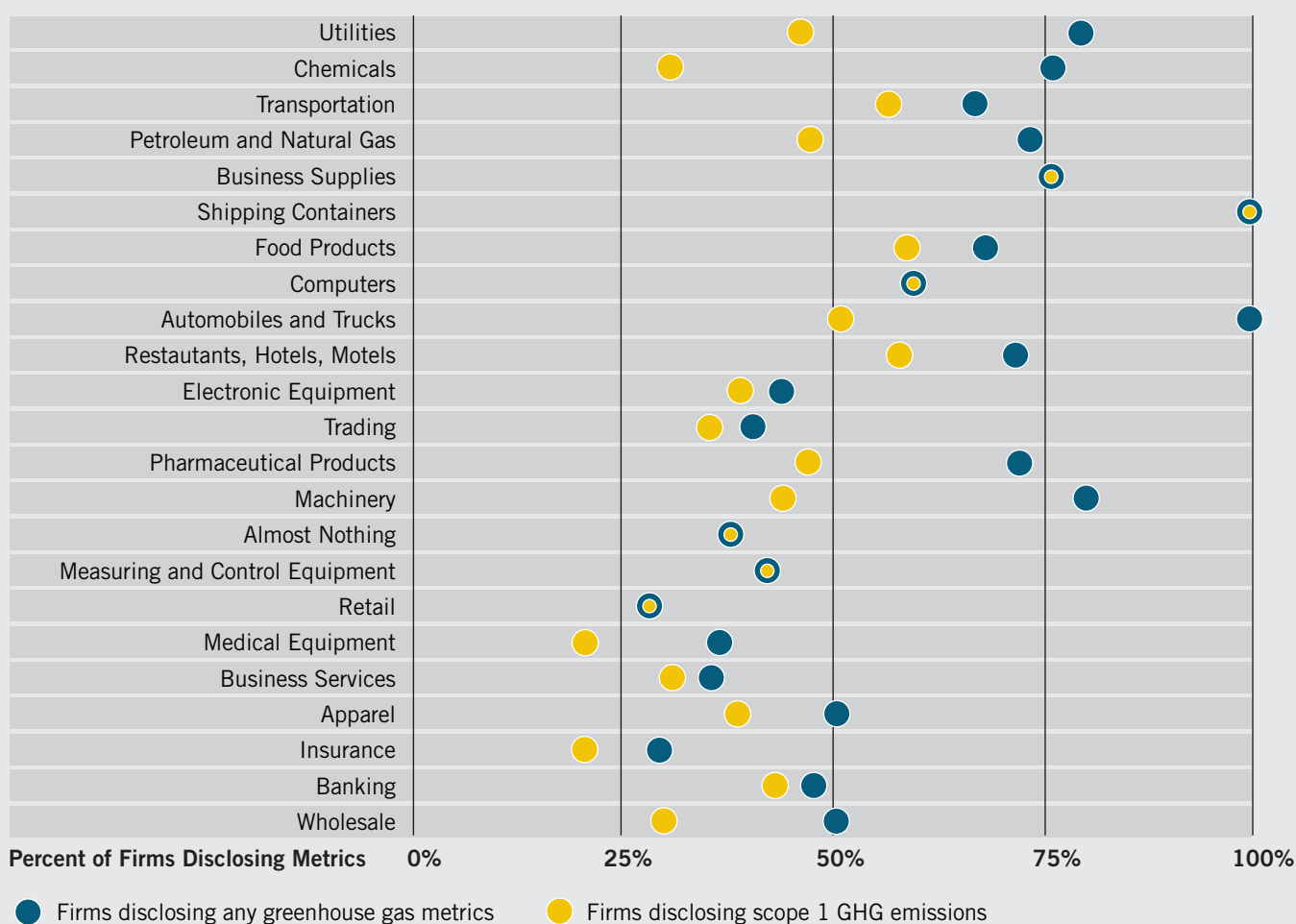
* The firms column includes the number of firms that disclose Scope 1 GHG emissions. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

Which industries disclose the most greenhouse gas metrics?

Figure 11 shows the disclosure rate of Scope 1 GHG emissions and any greenhouse gas metrics ranked by industries with the highest Scope 1 GHG emissions scaled by revenue. Overall, firms in industries with higher Scope 1 GHG emissions intensity are more likely to provide metrics on greenhouse gas, which is consistent with the notion that firms are disclosing metrics that are more material. Some of the highest rates of disclosure belong to industries with the highest Scope 1 GHG emissions intensity, such as the utilities and chemicals industry. The lowest disclosure rate of this metric is the insurance industry, at **20.7 percent**.

Figure 11: Firms Disclosure Rate—Greenhouse Gas
Industries Ranked by Scope 1 GHG Emissions Intensity

n=479 Industries with fewer than three firms are removed.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.



5.2 Energy

Definition: Firm's usage and management of energy

Standards: GRI: 302 / SDG: 7

Good Performance: Lower energy consumption; higher use of renewable energy

Table 21 captures the four variables we collect that relate to energy metrics. Out of 327 firms with a CSR report, energy consumption is the most commonly disclosed variable, with 184 firms disclosing the total energy used by the firm, a metric that captures both purchased and produced energy. For better comparability, we focus on the 20 industries with more than two firms disclosing energy consumption. In the rankings, the petroleum and natural gas and the chemicals industries generate the highest energy consumption.

Table 21: Most Commonly Disclosed Metrics—Energy

Variable	Definition	Unit	Firms	Mean	St. Dev.
Energy Consumption	Total energy used by a firm, including purchased and produced	MWh	184	16,814,663	53,267,208
Renewable Energy Use Ratio	Percent of energy used by a firm from renewable sources	Percent	66	29.3%	32.2%
Renewable Energy Consumption	Total energy used by a firm from renewable sources	MWh	52	535,505	1,017,201
Energy Conserved	Energy conserved as a result of energy conservation and efficiency initiatives	MWh	37	896,123	3,624,315

Table 22 denotes the five industries with highest energy consumption. The ranking changes when we scale total energy consumption using revenue, in which case, the computers industry has the highest energy consumption intensity. **Table 23** shows the top five industries with the highest energy consumption intensity.

Table 22: Industries with the Highest Energy Consumption

Industry	Firms*	Mean	St. Dev.
Petroleum and Natural Gas	9 (45%)	85,408,074	148,013,256
Chemicals	8 (72.7%)	55,266,866	47,358,286
Computers	5 (71.4%)	50,869,616	111,347,669
Transportation	8 (57.1%)	41,558,482	48,212,934
Shipping Containers	3 (100%)	37,549,921	37,092,914

Table 23: Industries with the Highest Energy Consumption—Intensity

Industry	Firms*	Mean	St. Dev.
Computers	8 (72.7%)	9,979	22,227
Chemicals	3 (100%)	6,726	8,667
Shipping Containers	3 (100%)	3,452	2,639
Utilities	11 (39.3%)	2,726	4,376
Petroleum and Natural Gas	9 (45%)	2,234	1,361

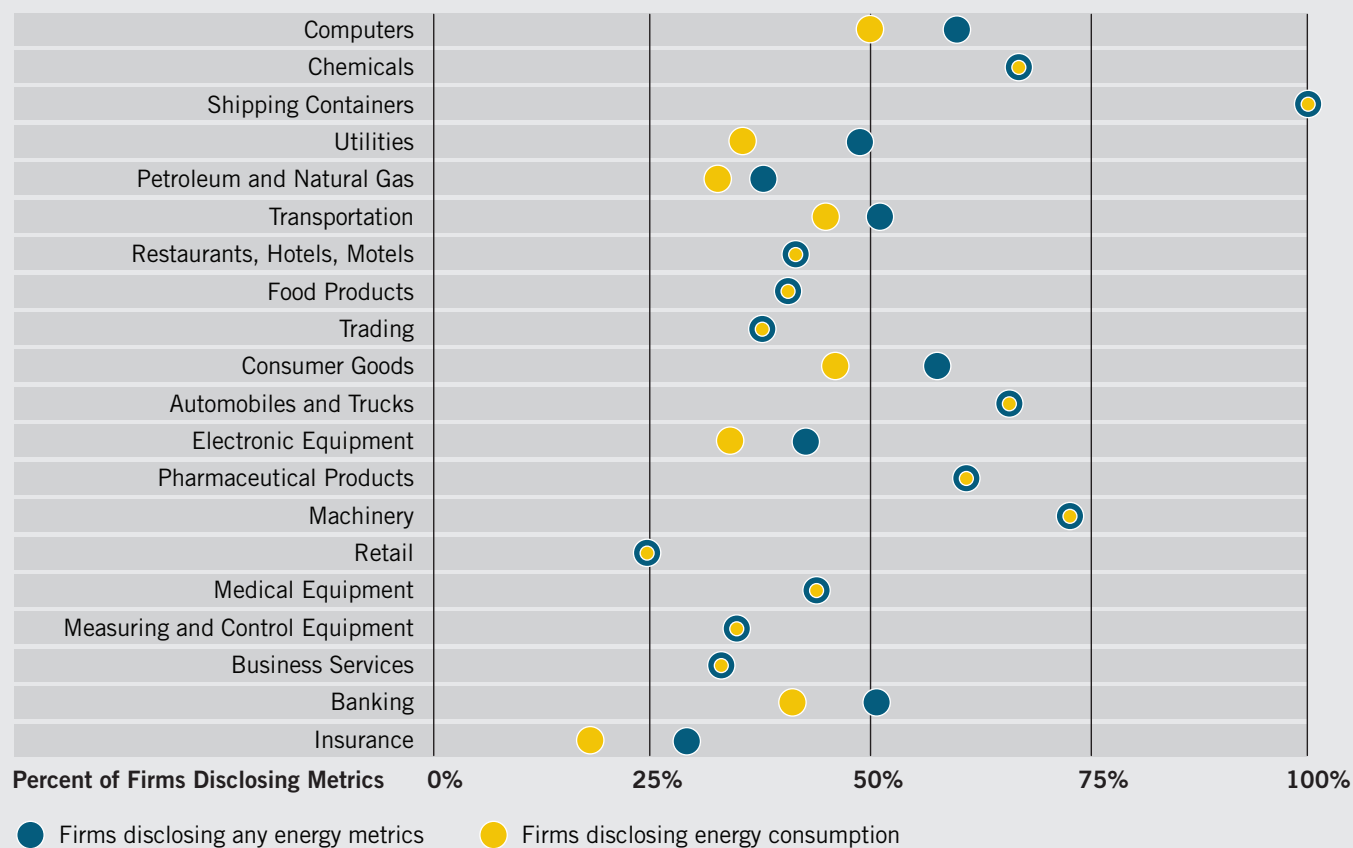
* The firms column includes the number of firms that disclose energy consumption. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

Which industries disclose the most energy consumption data?

Figure 12 shows the disclosure rate of energy consumption and any energy metrics ranked by industries with the highest energy consumption scaled by revenue. Overall, firms in industries with higher energy consumption intensity are more likely to provide metrics on energy, which is consistent with the notion that firms are disclosing metrics that are more material. The shipping containers industry has the highest rate of disclosing energy consumption, with all three shipping container firms with CSR reports providing this metric. On the other hand, only **17.2 percent** of firms in the insurance industry disclose the energy consumption metric, which makes the industry the lowest in reporting energy consumption.

Figure 12: Firms Disclosure Rate—Energy
Industries Ranked by Energy Consumption Intensity

n=479 Industries with fewer than three firms are removed.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.



5.3 Water

Definition: Firm's use and management of water

Standards: GRI: 303 / SDG: 6

Good Performance: Lower water consumption; higher water conservation and recycling

The water metrics relate to how firms manage water resources, including consumption, withdrawal, conserved, discharged, and recycled metrics.

Table 24 shows the five most commonly disclosed variables in water metrics, with 150 firms disclosing water consumption, which is twice the amount of firms disclosing the second most common metric, water withdrawal.

For better comparability, we focus on the 19 industries with more than two firms disclosing water consumption. Ranking these 19 industries, the petroleum and natural gas industry has the highest water consumption and the utilities industry has the highest water consumption scaled by revenue.

Table 24: Most Commonly Disclosed Metrics—Water

Variable	Definition	Unit (in mil)	Firms	Mean	St. Dev.
Water Consumption	Total amount of water consumed	Cubic meters	150	167	1,470
Water Withdrawal	Total amount of water withdrawn	Cubic meters	75	110,548	930,093
Water Conserved	Total amount of water conserved as a result of water conservation efforts	Cubic meters	26	1.330	2.851
Water Discharged	Total amount of water that is withdrawn but discharged without consuming it	Cubic meters	25	2,027	7,687
Water Recycled	Water that was consumed and recycled for other uses	Cubic meters	24	100	283

Table 25 and **Table 26** show the five industries ranked by the highest water consumption total and intensity, respectively.

Table 25: Industries with the Highest Water Consumption, in Cubic Meters

Industry	Firms*	Mean	St. Dev.
Petroleum and Natural Gas	13 (65%)	89,566,529	124,379,410
Utilities	16 (57.1%)	64,991,563	102,510,881
Chemicals	6 (54.5%)	61,738,485	59,796,570
Consumer Goods	5 (71.4%)	17,518,762	29,805,673
Food Products	4(40%)	16,108,673	11,388,284

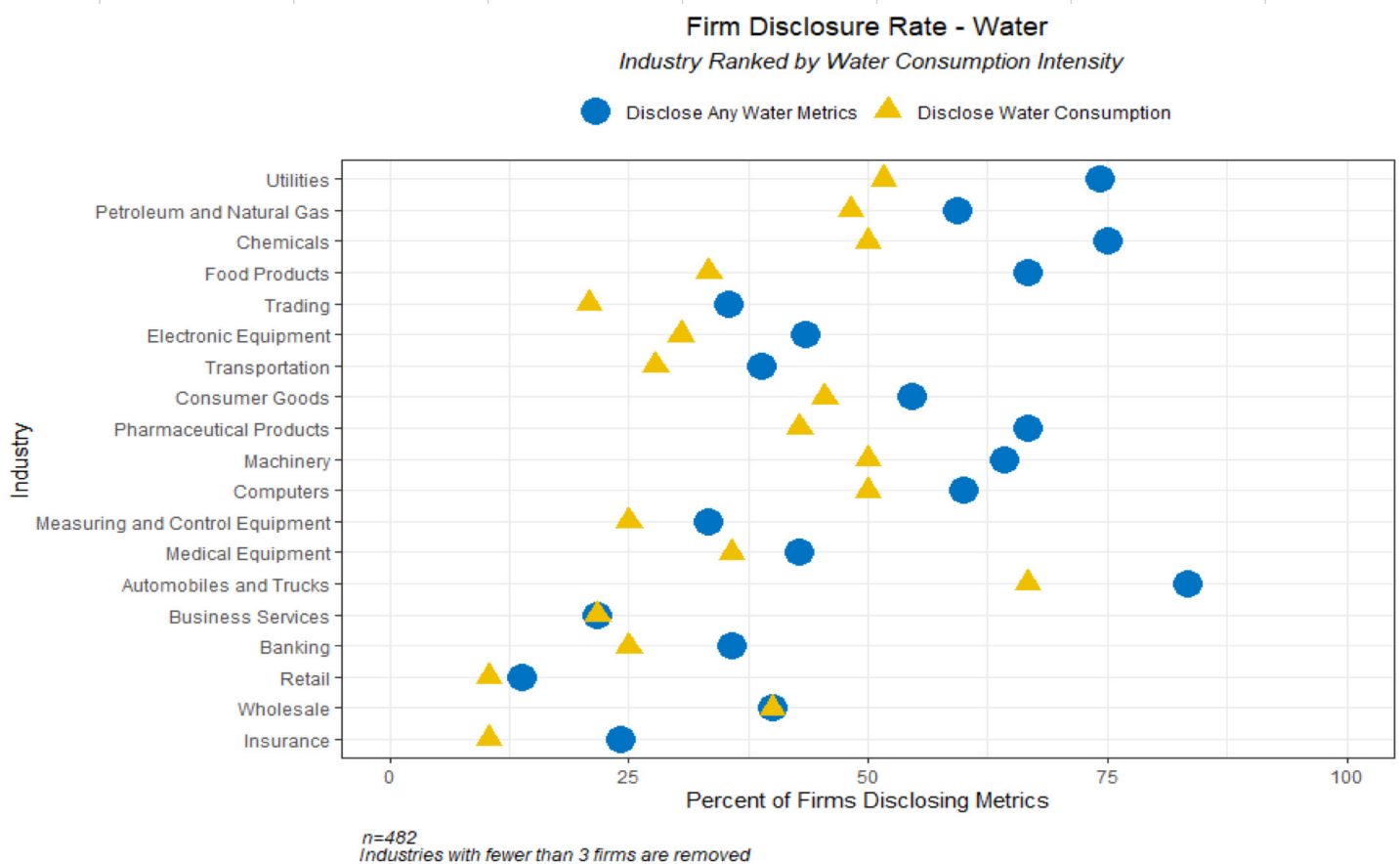
Table 26: Industries with the Highest Water Consumption—Intensity, in Cubic Meters per Million Dollars

Industry	Firms*	Mean	St. Dev.
Utilities	16 (57.1%)	6,431	9,901
Petroleum and Natural Gas	13 (65%)	6,024	10,475
Chemicals	6 (54.5%)	4,444	2,128
Food Products	4 (40%)	1,891	1,529
Trading	10 (35.7%)	1,756	1,601

* The firms column includes the number of firms that disclose water consumption. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

Which industries disclose the most water usage and management data?

Figure 13 shows the disclosure rate of water consumption and any water metrics ranked by industries with the highest water consumption scaled by revenue. Overall, firms in industries with higher water consumption intensity are more likely to provide any metrics on water, which is consistent with the notion that firms are disclosing metrics that are more material. According to this analysis, the automobiles and trucks industry has the highest rate of disclosure in water consumption: **66.7 percent** of firms release this information in their CSR reports. The industry that has the lowest rate of disclosure in water consumption is the insurance industry, with **10.3 percent** of firms documenting the water consumption metric in their CSR reports.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.



5.4 Waste

Definition: The nature and treatment of waste produced by the firm

Standards: GRI: 306 / SDG: 12

Good Performance: More recycling, less waste going to landfills (higher landfill diversion rate), and less hazardous waste

Waste metrics can be classified by the nature of waste and its treatment, including its categorization

as hazardous or nonhazardous.¹⁷ Waste treatments include recycling it or sending it to landfills, as frequently reported in CSR disclosures. Firms also often disclose the landfill diversion rate, which captures the ratio of waste not sent to landfills, such as by recycling or reuse. Among the top five metrics shown in **Table 27**, the most commonly disclosed is the total amount of waste, with 123 firms providing this metric, followed by the amount of waste being recycled.

Table 27: Most Commonly Disclosed Metrics—Waste

Variable	Definition	Unit	Firms	Mean	St. Dev.
Waste Total	Total amount of waste produced	Metric tons	123	207,038	393,010
Waste Recycled Total	Total amount of waste being recycled	Metric tons	104	117,006	391,712
Landfill Diversion Rate	Percent of waste diverted from landfills	Percent	97	66.9%	24.2%
Waste Recycled Percent	Percent of waste recycled over total waste	Percent	86	55.1%	25.4%
Hazardous Waste Total	Total amount of hazardous waste produced	Metric tons	68	44,971	216,953

¹⁷ Hazardous wastes are formally defined by the United Nations Environment Programme. See wedocs.unep.org/handle/20.500.11822/9176

For better comparison, we focus on the 16 industries with more than two firms disclosing total waste. Ranking these 16 industries by the highest waste production, the retail industry generates the most, at 785,844 metric tons. **Table 28** denotes the five industries with the highest waste totals. The ranking changes when we scale total waste using revenue, in which case, the trading industry has the highest waste total intensity. Looking further into these trading firms, the high intensity is mainly driven by real estate companies. **Table 29** shows the top five industries with the highest waste total intensity.

Table 28: Industries with the Highest Total Waste, in Metric Tons

Industry	Firms*	Mean	St. Dev.
Retail	6 (35.3%)	785,844	964,551
Business Supplies	3 (100%)	721,263	693,620
Food Products	5 (50%)	482,330	507,878
Transportation	8 (57.1%)	296,511	434,026
Petroleum and Natural Gas	7 (35%)	284,337	373,476

Table 29: Industries with the Highest Total Waste—Intensity, in Metric Tons per Million Dollars

Industry	Firms*	Mean	St. Dev.
Trading	11 (39.3%)	50.6	74.1
Business Supplies	3 (100%)	36.8	41.8
Food Products	5 (50%)	27.7	19.5
Transportation	8 (57.1%)	19.1	19.5
Petroleum and Natural Gas	7 (35%)	15.0	22.0

* The firms column includes the number of firms that disclose total waste. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

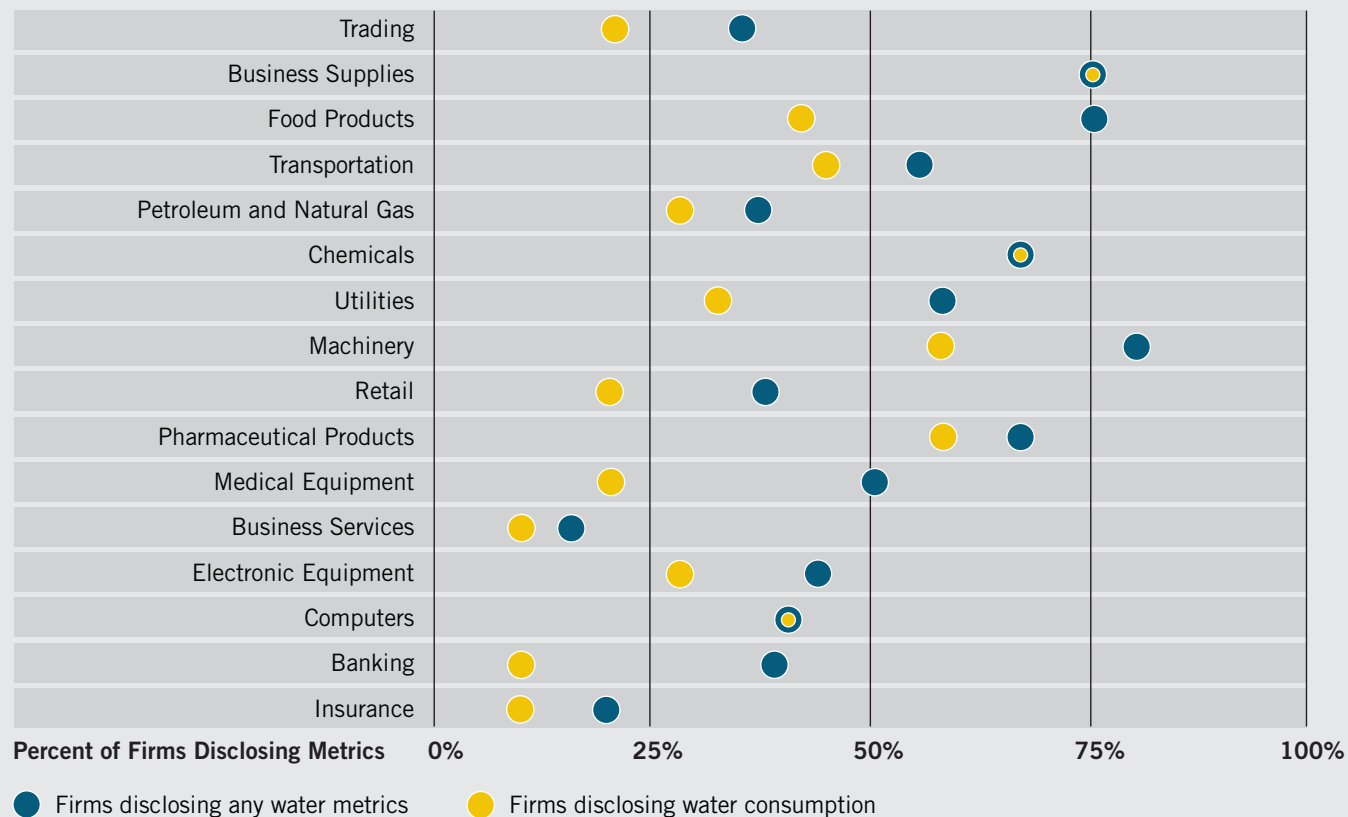
Which industries disclose the most waste metrics?

Figure 14 shows the disclosure rate of total waste and any waste metrics ranked by industries with the highest total waste scaled by revenue. Overall, firms in industries with higher total waste intensity are more likely to provide any metrics on waste, which is consistent with the notion that firms are disclosing metrics that are more material. In this analysis, the business supplies industry has the highest percent of firms disclosing the waste total metric: **75 percent** of firms in the business supplies industry report this metric. In comparison, only **10.3 percent** of firms in the insurance industry document information on the waste total metric.

Figure 14: Firms Disclosure Rate—Waste

Industries Ranked by Total Waste Intensity

n=479 Industries with fewer than three firms are removed.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in **Section 6.1** on a subset of metrics to understand if these values are representative.



5.5 Accidents and Fines

Definition: Environmental accidents and fines that reflect a firm's compliance with local environmental regulations

Standards: GRI 307

Good Performance: Lower cases of environmental accidents and fines

With concerns regarding the excessive disposal of harmful materials, many governmental agencies have established regulatory actions to prevent

violations of environmental laws. We incorporate this set of measures in our data as the accidents and fines metrics. **Table 30** shows the five most commonly disclosed metrics, with 53 firms reporting the amount of environmental fines they received, making that the most widely disclosed variable under the accidents and fines metrics. Note, however, that not all firms that have received a citation disclose this information in CSR reports, and that among the 53 firms, 18 disclose fines of \$0.

Table 30: Most Commonly Disclosed Metrics—Accidents and Fines

Variable	Definition	Unit	Firms	Mean	St. Dev.
Environmental Fines Amount	Amount of environmental, health, and safety fines paid	Dollars	53	1,750,433	7,901,021
Environmental Fines Count	Number of environmental, health, and safety fines paid	Count	42	11	22
Accidental Spills Count	Number of accidental spills	Count	40	131	313
Accidental Spills Volume	Volume of accidental spills	Thousand barrels	27	6,596	21,299
Tier 1 Process Safety Event	Number of unplanned or uncontrolled release of any material, including nontoxic and nonflammable materials	Metric tons	7	26	28

We further examine industries with more than two disclosures of environmental fines, which includes only eight out of 48 industries. Among these, the petroleum and natural gas industry displays the highest amount of environmental fines. **Table 31** shows the five industries with the highest environmental fines. We also construct environmental fines amount intensity, which scales the total fine by revenue. At the industry by revenue level, the transportation industry has the highest environmental fines amount intensity, as demonstrated in **Table 32**.

Table 31: Industries with the Highest Environmental Fines, in Dollars

Industry	Firms*	Mean	St. Dev.
Petroleum and Natural Gas	5 (25%)	10,982,627	19,680,870
Transportation	4 (25.6%)	10,080,414	20,157,629
Utilities	12 (42.9%)	319,791	749,123
Food Products	3 (30%)	160,068	135,317
Chemicals	3 (27.3%)	29,200	12,445

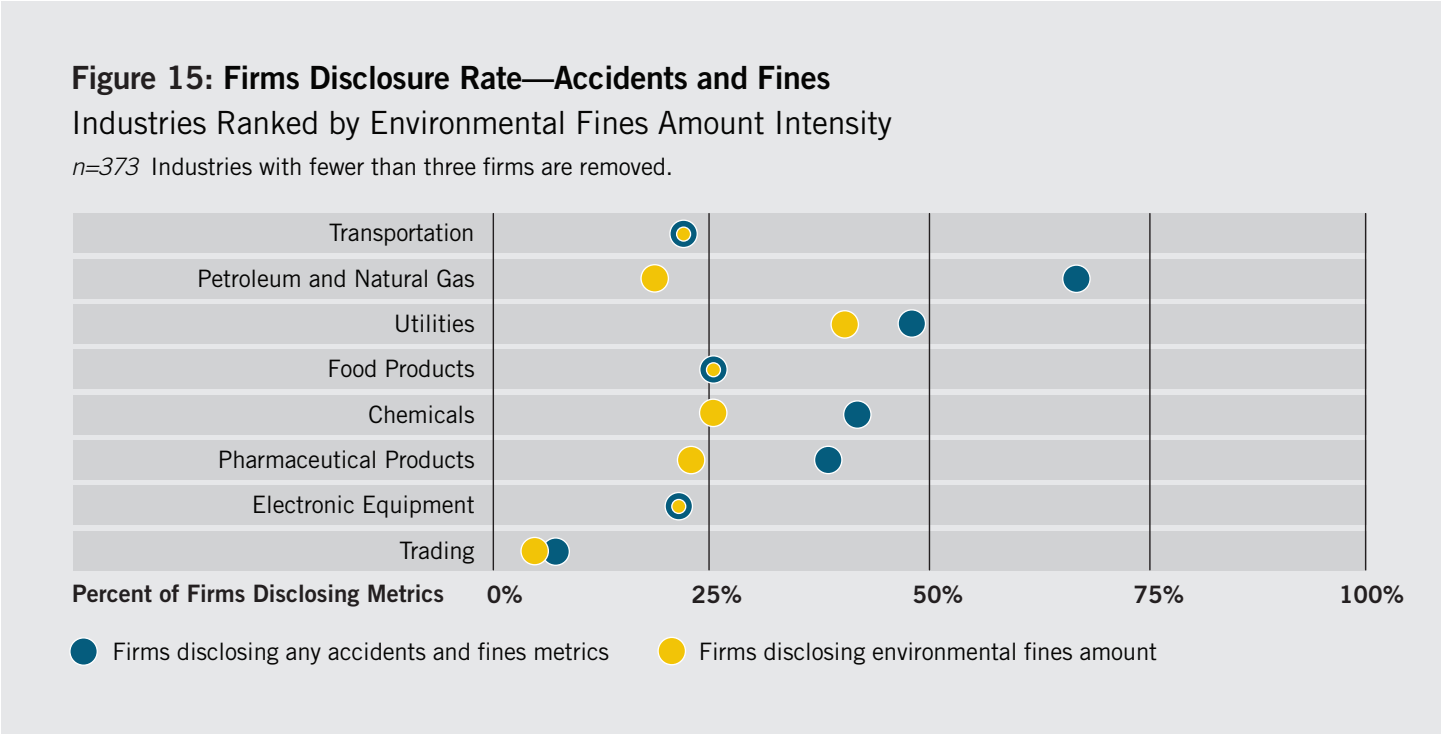
Table 32: Industries with the Highest Environmental Fines Amount Intensity, in Dollars

Industry	Firms*	Mean	St. Dev.
Transportation	4 (28.6%)	575.7	1151.2
Petroleum and Natural Gas	4 (25%)	155.2	128.2
Utilities	12 (42.9%)	27.1	59.3
Food Products	3 (30%)	13.2	17.5
Chemicals	3 (27.3%)	7.4	7.0

* The firms column includes the number of firms that disclose amounts of environmental fines. The percents in parentheses denote the share of firms that have CSR reports disclosing this metric in a given industry.

Which industries disclose the most accidents and fires metrics?

Figure 15 shows the disclosure rate of environmental fines and any accidents and fines metrics. These are ranked by industries with the highest environmental fines scaled by revenue. Given the relatively few industries with more than two firms disclosing such metrics, it is difficult to define any patterns. We do observe that the highest disclosure rate goes to the two industries with the highest environmental fines or intensity: petroleum and natural gas, and transportation.



The ranking here is merely based on firms that voluntarily disclose the metric. We conduct a benchmark exercise with external data sources in Section 6.1 on a subset of metrics to understand if these values are representative.

6 BENCHMARKING

Our data is unique in that it identifies the metrics that firms disclose through their own CSR reports. Other existing datasets that capture CSR metrics use a combination of sources. While there is value in seeking information from multiple sources, we provide transparency and a narrow look to understand how firms are aiming to represent their CSR approaches to their investors, employees, and customers. To better understand how the metrics in our CSR dataset compare with similar variables in existing CSR datasets and government datasets, we conduct a series of benchmarking exercises.

First, we benchmark the most common social and environmental metrics to external datasets. For social metrics, we compare the reporting of the percent of women employees and the percent of minority employees metrics in the CSR reports with the same metrics reported in the Asset4 dataset and the employment data from the US Census Current Population Survey.¹⁸ For environmental metrics, we compare the Scope 1 GHG emissions metric in our CSR dataset with the same metric in the Asset4 dataset. The external data sources are discussed in Section 6.1. Second, we compare our data to the ESG scores from Asset4, Sustainalytics, and RobeccoSAM. Using our data from the environmental categories, we create a disclosure and a performance ranking within an industry for each firm. We then compare our rankings to the ESG scores to gauge what the ESG scores reflect.

¹⁸ Source: bls.gov/cps/aa2017/cpsaat18.xlsx

6.1 External Data Sources

One of the data sources we use for the benchmark analysis is the Asset4 dataset.¹⁹ Asset4 has been collecting ESG information since 2002 and was acquired by Thomson Reuters in 2010. It collects ESG information from a variety of publicly available sources and has been recognized widely and used extensively by parties evaluating socially responsible investing. Asset4 data contains 2017 ESG information for the S&P 500 firms, which allows us to conduct a direct comparison with variables collected in our dataset at the firm level.

For ESG score benchmarking, we use the 2017 environmental scores from Asset4, Sustainalytics, and RobecoSAM. Sustainalytics is a Morningstar company that focuses primarily on valuing a company's sustainable activities. RobecoSAM is an investment specialist company focused on sustainability investing. The RobecoSAM ratings are retrieved from Bloomberg.

We also assess our data against employment information in the 2017 Current Population Survey, which is conducted jointly by the US Census Bureau and the US Bureau of Labor Statistics. One issue of such benchmarking is that the shares of employment by gender and by ethnicity provided by the census are at the industry level. Another potential concern is the classification of industry. In our dataset, we classify the S&P 500 firms using the Fama French 48 industry classification system, while the census utilizes the North American Industry Classification System (NAICS).

To address the first concern, instead of providing benchmarking analysis at the firm level, we conduct a cross-examination of our data against the Asset4 data and the census data at the industry level. Additionally, to alleviate the issue of possible incomparability of the FF48 and the NAICS, we manually match the 48 industries in our data with the 10 industries using the NAICS in the census data.²⁰

¹⁹ We also conduct the benchmarking exercises using other data sources such as Bloomberg and Sustainalytics and find similar results. We elect to use Asset4 for detailed analysis in this report since it contains more firms and investigates broader perspectives of ESG.

²⁰ For more information on our manual matching process, please see the Appendix for the concordance.

6.2 Accuracy and Completeness of Selected Variables

In investigating the percent of women employees metric from the social metrics category of our data against the Asset4 data and the census data, we find that our information is generally consistent. We compare our data with the census data, which covers the population of firms within the industry, and the Asset4 data covers a subset of the industry, including S&P 500 firms. Ranking industries according to the census data, **Figure 16** shows the benchmarking results for the women employees percent metric. The blue dots in the figure represent

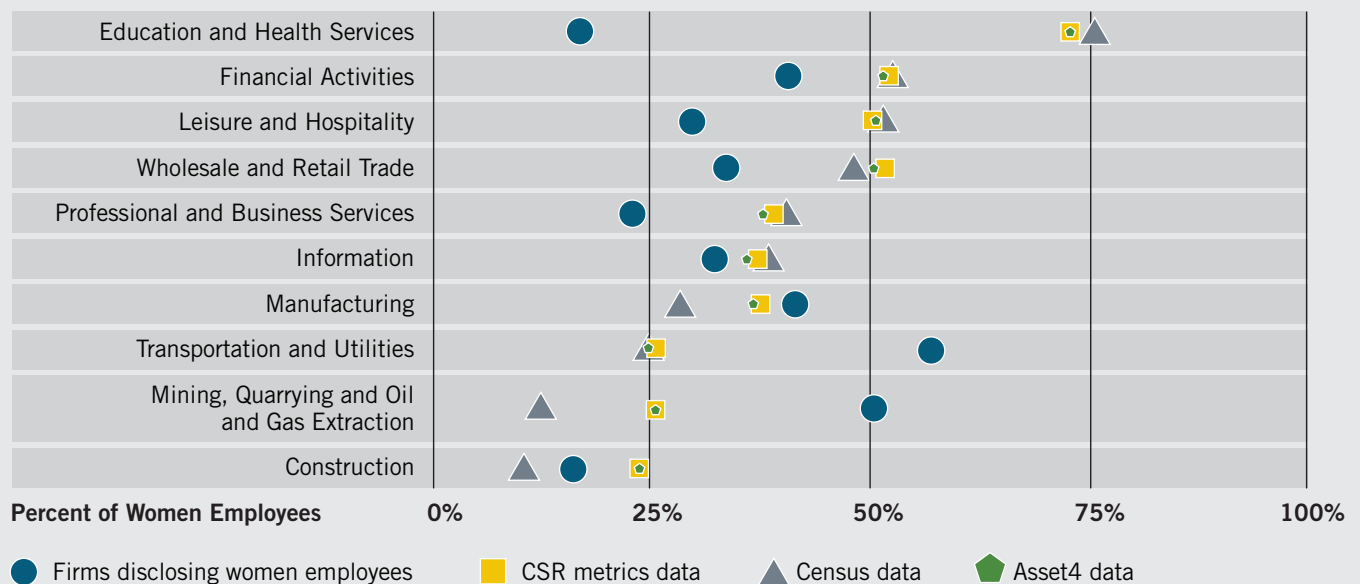
the percent of women employees recorded in our data, and the gray and green dots denote the percent of women employees shown in the census and the Asset4 data, respectively.

While the census data includes all firms, our data contains only the S&P 500 firms.²¹ Overall, our data aligns quite well with the census data, providing some support that our data is reliable. **Figure 16** reiterates the observation in **Figure 7** that firms in industries with more female representation are less likely to disclose this metric.

Figure 16: Benchmarking for the Women Employees Percent Metric

NAICS Industries Ranked by Census Data

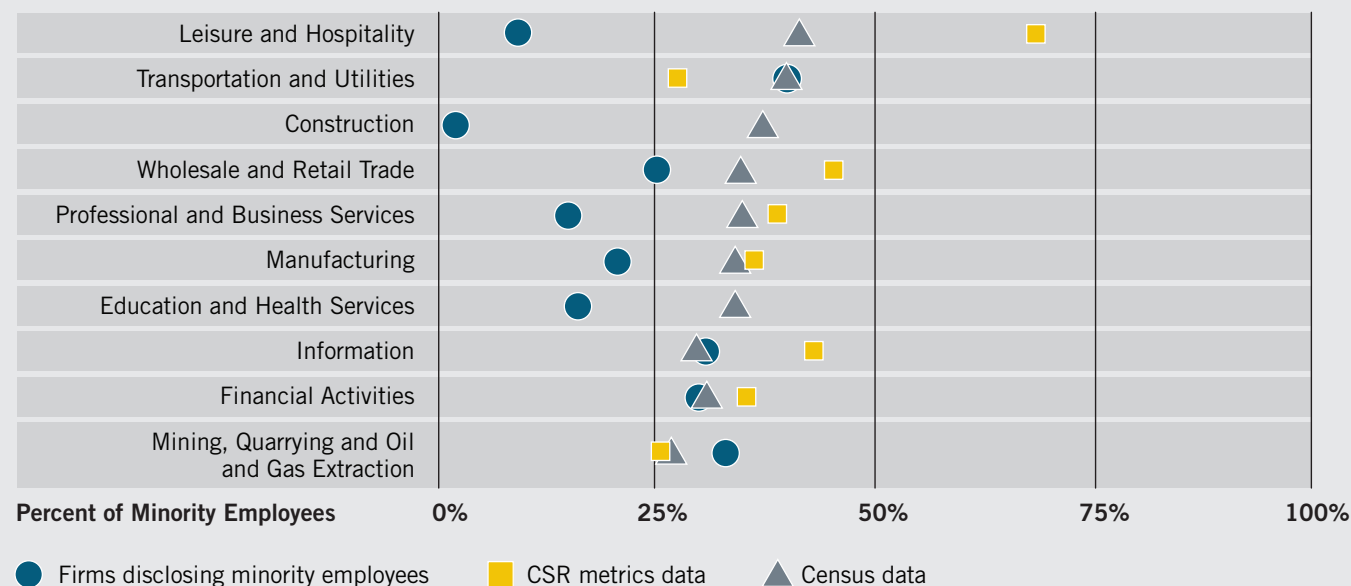
n=492



²¹ A few companies use the standard calendar year for their CSR reports. Given that the information contained in those CSR reports aligns with the reporting year, we treat calendar-year and fiscal-year reporting methods the same and examine the information provided by an S&P 500 firm as a unit.

Figure 17: Benchmarking for the Minority Employees Percent Metric
NAICS Industries Ranked by Census Data

n=492



We also assess the percent of minority employees metric at the firms and compare our CSR metric dataset with Asset4 and census data. It is worth noting that the census data further identifies minority employees across three racial groups: Black or African American, Asian, and Hispanic or Latino. Since most firms only highlight the percent of minority employees overall, we construct a new variable for the census data that aggregates the three racial groups into one metric capturing percent of minority employees.

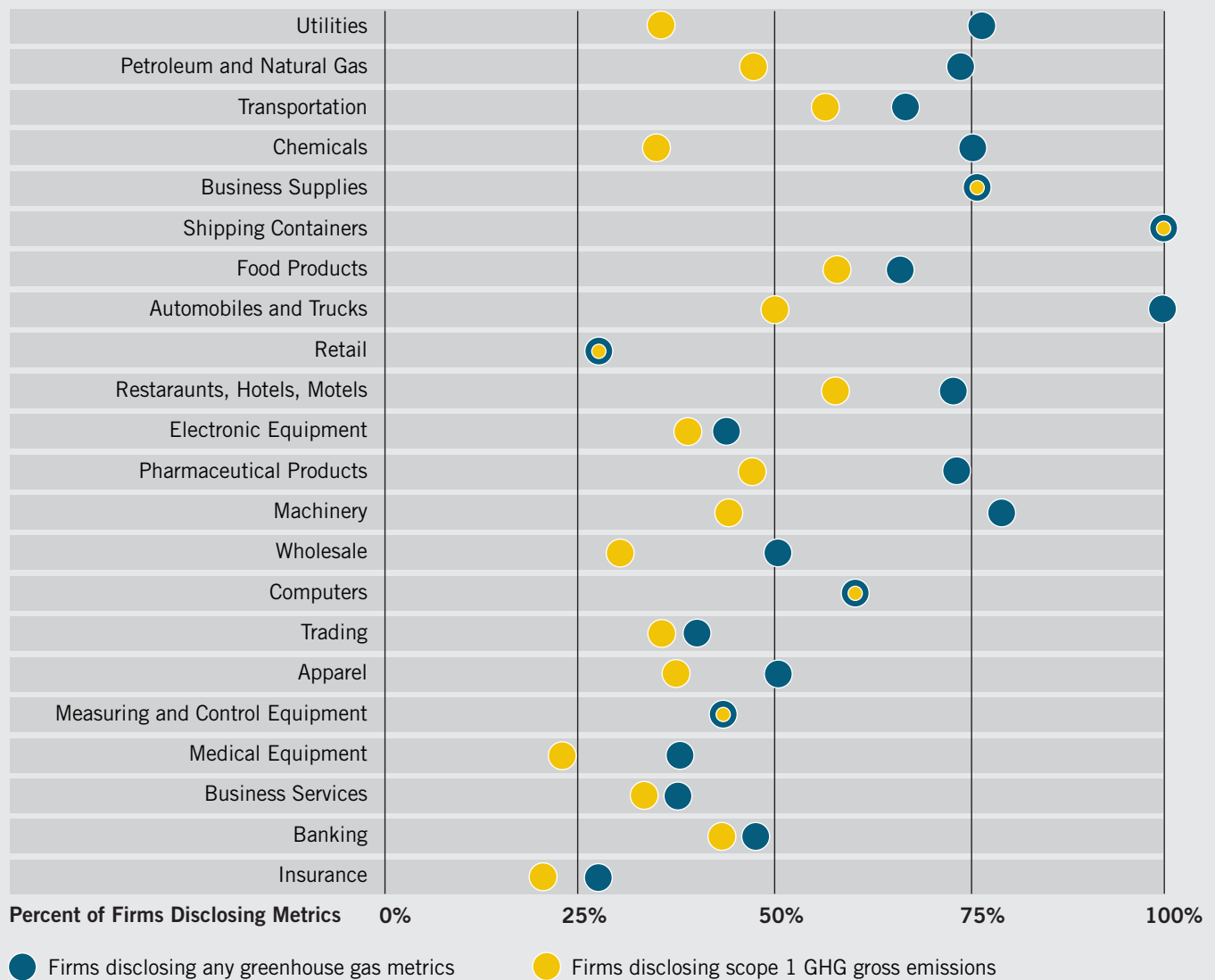
As shown in **Figure 17**, most of the industries report a higher percent of minority employees in our dataset compared with the census data. **A note about the comparison with the Asset4 data:** The result can suggest that S&P 500 companies that choose to disclose are closer to achieving racial parity in their labor force and that these companies exceed their respective industry standards. However, the variance could be the contribution of varying methods for defining minority employees.

We also conduct a benchmarking analysis for the Scope 1 GHG emissions metric at the industry level. Ranked by the Asset4 data, as shown in **Figure 18**, the utilities industry has the highest Scope 1 GHG emissions, and the insurance industry has the lowest. This ranking is similar to that in **Figure 11**, which provides some support that our collected metrics are reliable. For the utilities industry, 45.2 percent of firms disclose the metric,

while only 20.7 percent of firms disclose it in the insurance industry. The overall observation in **Figure 18** is similar to that in **Figure 11**, where firms in industries with higher Scope 1 GHG emissions are more likely to disclose this metric.

Figure 18: Benchmarking for the Scope 1 Greenhouse Gas Emissions Metric
Industries Ranked by Asset4 Data

n=471 Industries with fewer than three firms are removed.



6.3 Environmental Score Analysis

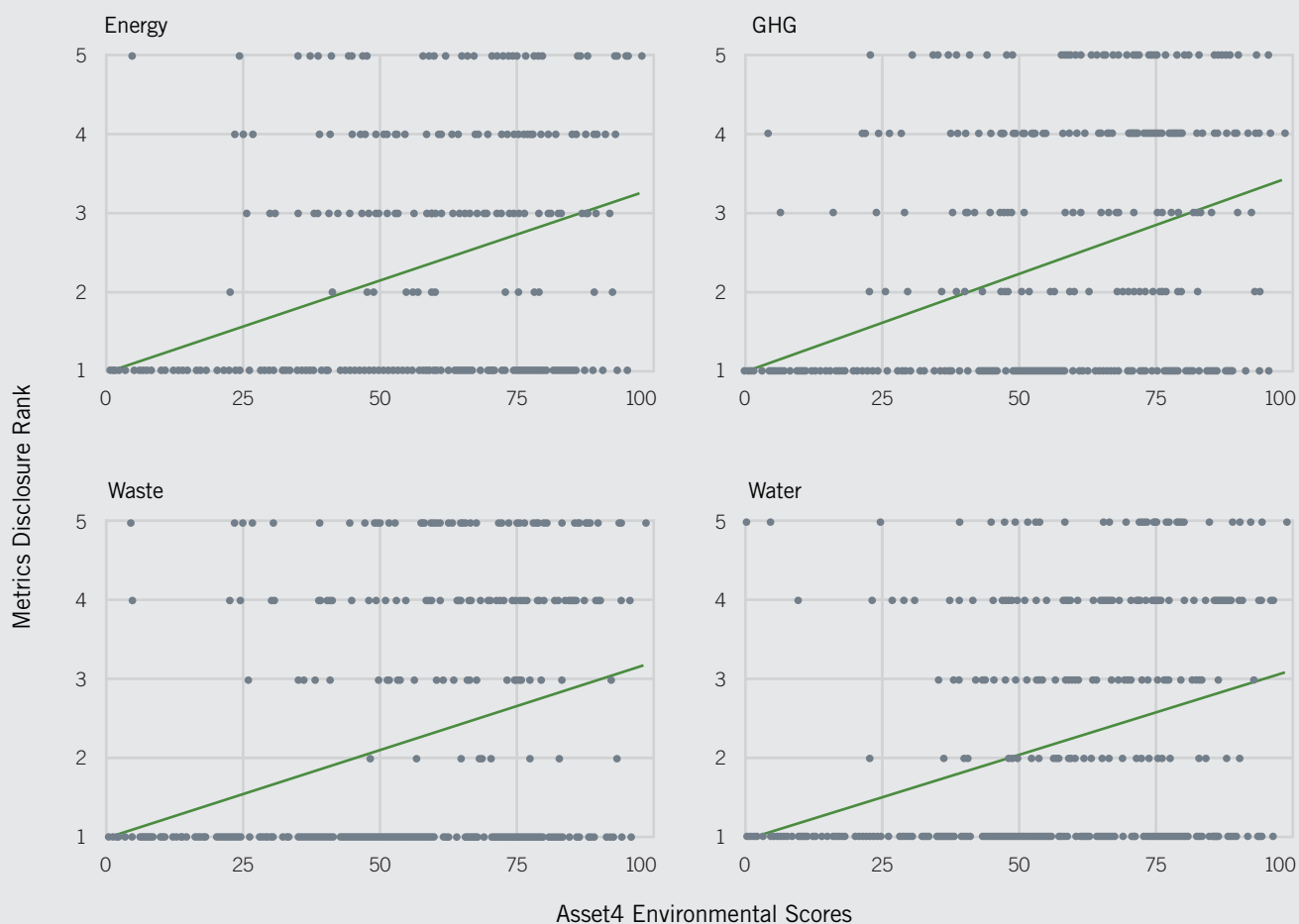
These days, many companies create ESG scores for investors to evaluate companies' sustainability efforts. To shed some light on how the S&P 500 firms perform in our data, we develop scores for the firms' disclosure and actual performance of environmental metrics. In particular, we focus on four environmental subcategories: energy, GHG, waste, and water. We then compare our environmental ratings with the scores from Asset4, Sustainalytics, and RobecoSAM.

In constructing our rating of firms' environmental metrics disclosures, we first sum the number of metrics being disclosed and create a rating within industries. For example, there are four metrics under the energy subcategory, and we assign each metric

a disclosure indicator of either zero or one. A zero represents that a firm does not disclose information on the metric in its CSR report and a one shows that a firm does disclose the information. Then we add up the values of disclosure and generate a summation for each subcategory. In the case of the energy subcategory, the minimum value for the summation is zero and the maximum value is four. On this basis, we assign a rating ranging from one to five within each industry, where five represents the highest quintile with the highest number of disclosed metrics and one represents the lowest.

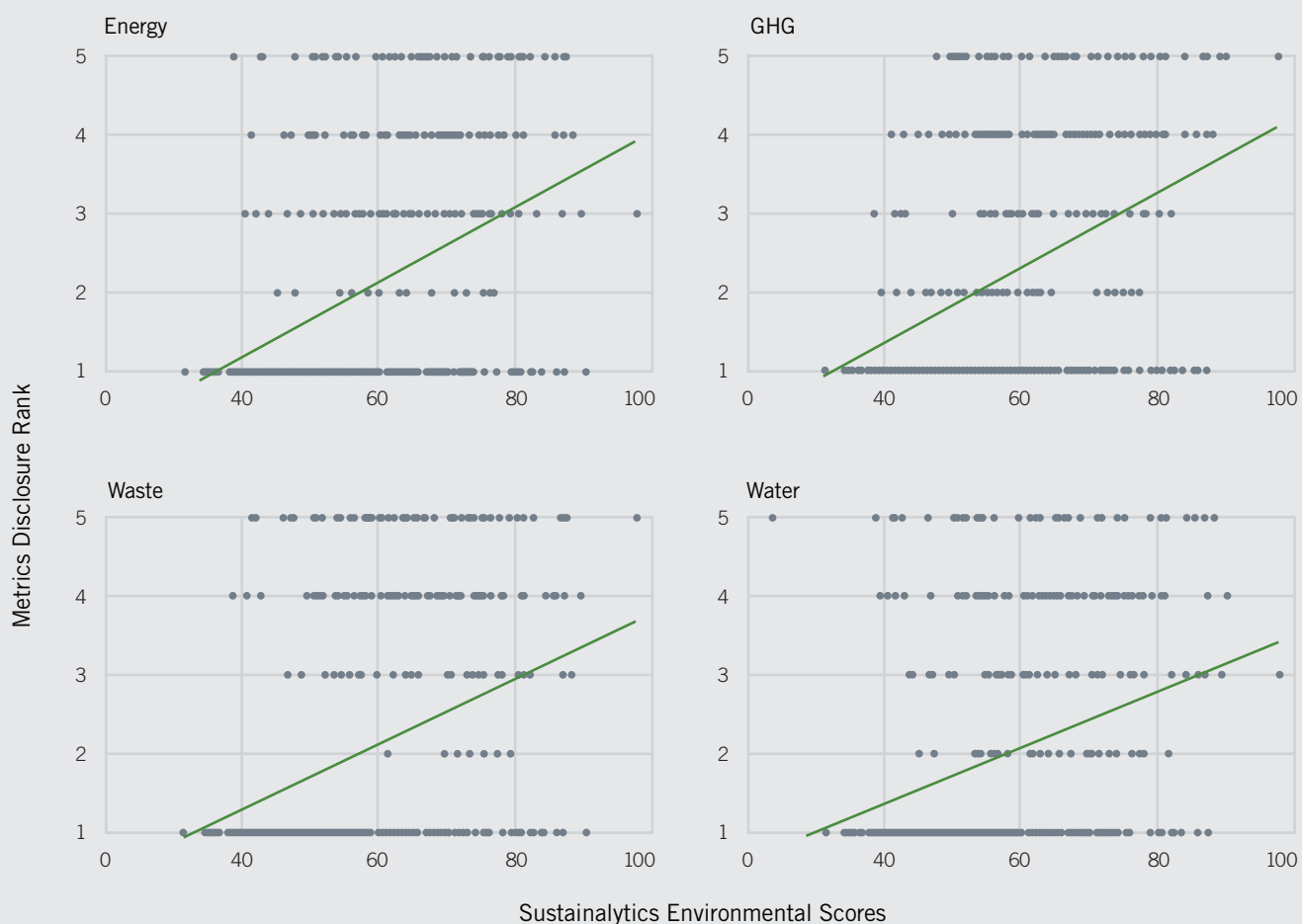
As shown in **Figures 19 to 21**, the environmental disclosure rank created by our CSR metrics data is positively correlated with the environmental score assigned in all three external ratings. The positive correlations across the four environmental subcategories suggest that the external ratings are influenced by the number of environmental metrics disclosed by firms.

Figure 19: Asset4 Environmental Score Compared with the CSR Metrics Data Disclosure Rank By Industry



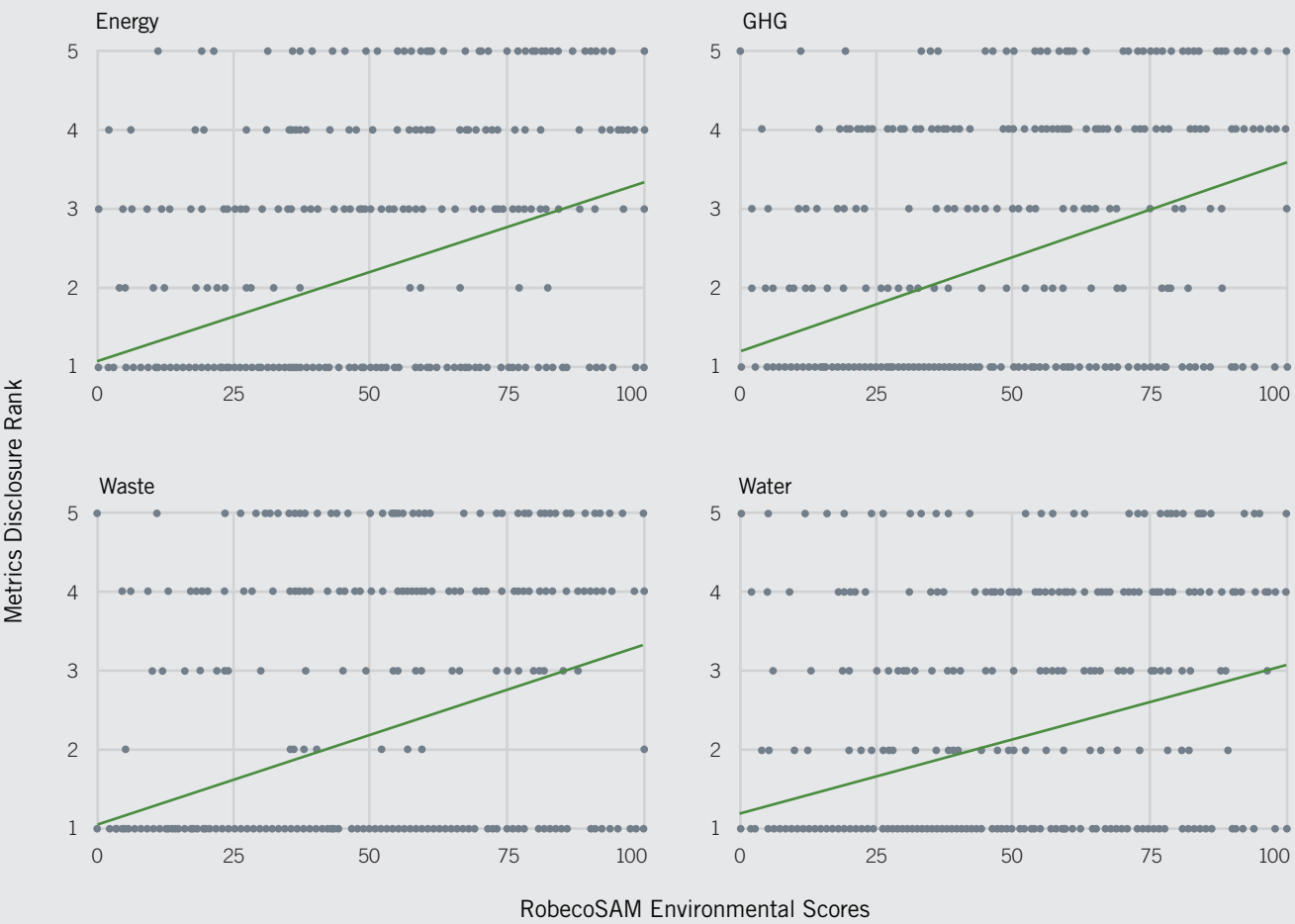
Note: We plot the metrics disclosure rank within industry against the Asset4 environmental score for the four environmental subcategories: energy, GHG, waste, and water. Each grey dot represents a firm, and the green line indicates the relationship between our metrics disclosure rank and Asset4 environmental score.

Figure 20: Sustainalytics Environmental Score Compared With the CSR Metrics Data Disclosure Rank
By Industry



Note: We plot the metrics disclosure rank within industry against the Sustainalytics environmental score for the four environmental subcategories: energy, GHG, waste, and water. Each grey dot represents a firm, and the green line indicates the relationship between our metrics disclosure rank and Sustainalytics environmental score.

Figure 21: RobecoSAM Environmental Score Compared With the CSR Metrics Data Disclosure Rank
By Industry



Note: We plot the metrics disclosure rank within industry against the RobecoSAM environmental score for the four environmental subcategories: energy, GHG, waste, and water. Each grey dot represents a firm, and the green line indicates the relationship between our metrics disclosure rank and RobecoSAM environmental score.

In addition to comparing the rate of disclosure for the environmental metrics, we also construct a rating for the actual performance of each such metric from the S&P 500 firms and compare our rating with the rating created by the external rating companies. To construct a performance rating for each firm and environmental metric, we first generate a performance score ranging from one to five within each industry, where five represents the quintile with the best performance and one represents the worst.²² We define performance as better if a firm uses fewer environmental resources, has a higher ratio of recycling, or has a higher usage of renewables. We then create a performance rating for each subcategory by averaging the assigned performance scores. For metrics for which a firm does not provide disclosure information, we assign a missing performance score and do not include it in the average calculation.

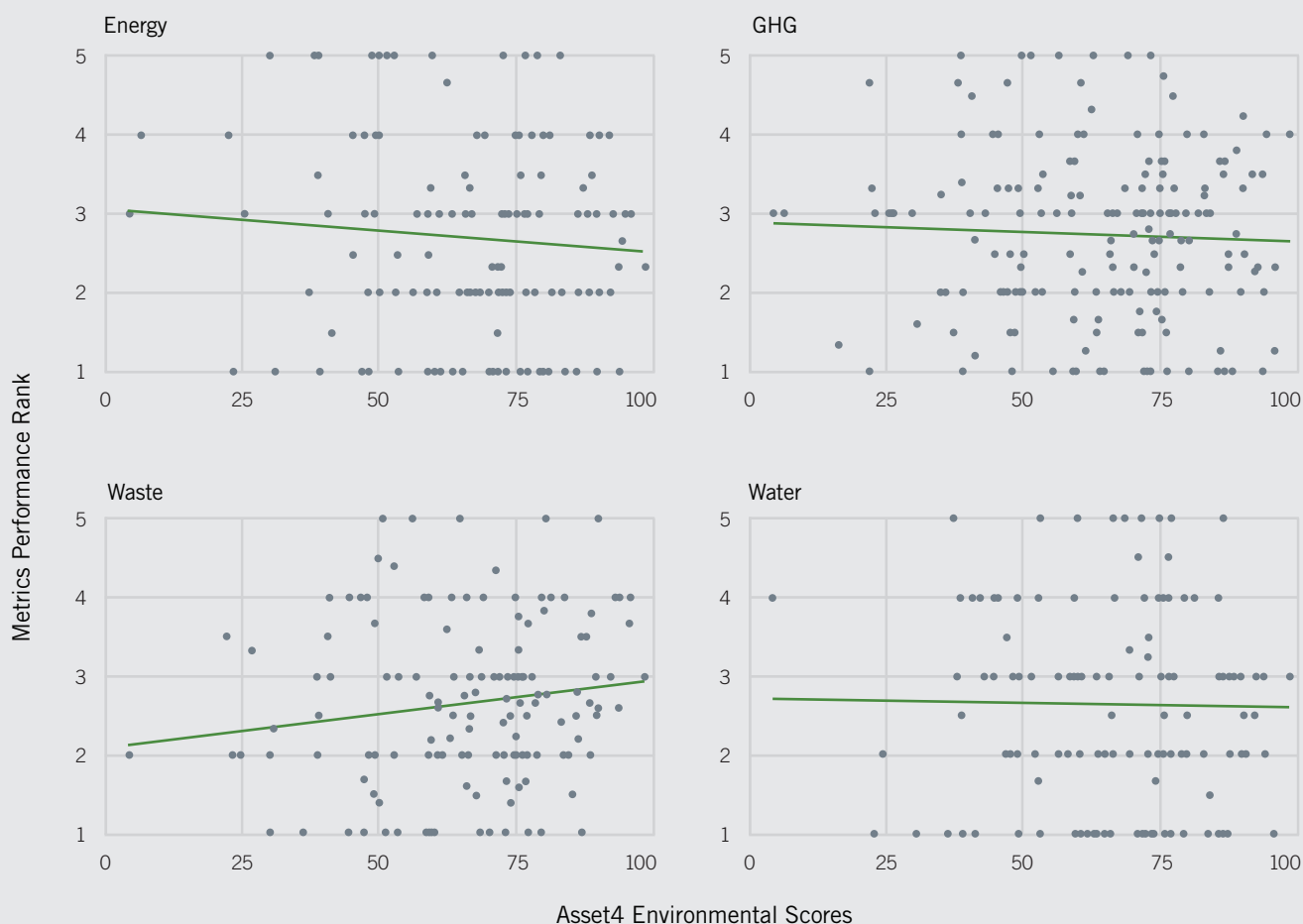
We plot the metrics performance rank against the external rating agencies' environmental scores for the four environmental subcategories: energy, GHG, waste, and water. The four panels are combined/arranged as faceted plots.

There are a few caveats to keep in mind for this analysis. First, it is not clear that equal-weighting of the performance ranking in each metric is the right way to capture true performance. Second, we ignore missing variables and do not take them into consideration when creating the average performance scores. In an untabulated analysis, we give these missing variables a performance score of 1 (lowest) or 3 (medium), and find that the final scores fluctuate heavily depending on the assumption we use. Missing values are a challenge for understanding CSR performance, and in the **Conclusion**, we provide more thoughts on this issue.

²² Industries with fewer than five firms are removed from our analysis. For each metric, performance scores are not calculated for industries with fewer than three firms disclosing the metric.

Figures 22 to 24 show the graphs for each environmental subcategory when plotting our performance rating against the environmental scores from external rating companies. The dispersed dots and relatively straight regression lines for each environmental subcategory seem to suggest that the environmental scores do not correlate much with the performance score created using our CSR metrics data²³.

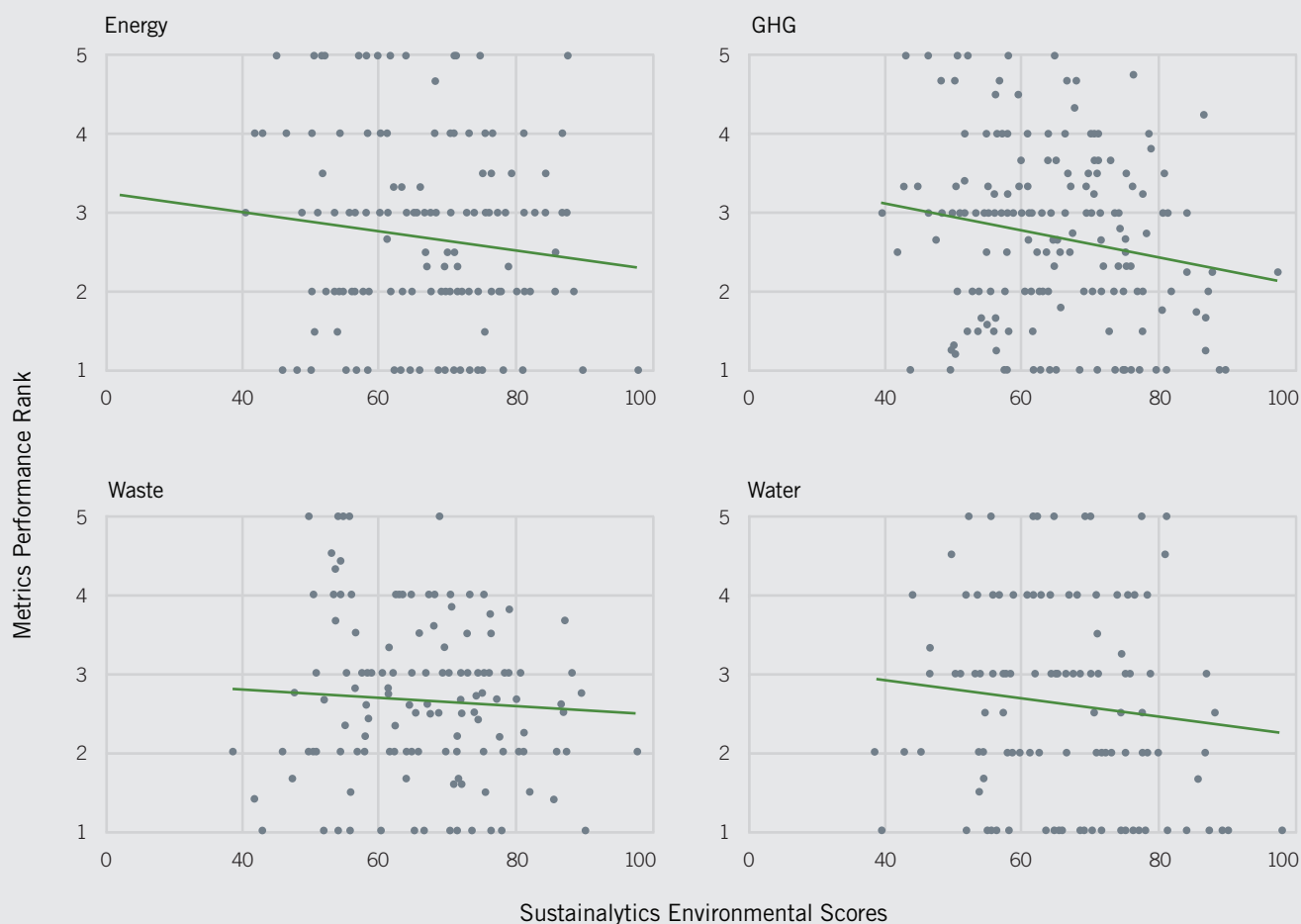
Figure 22: Asset4 Environmental Score Compared With the Metrics Performance Rank
By Industry



Note: This figure shows the plots for each environmental subcategory when plotting our performance rank against the environmental scores provided by Asset4 data. Each grey dot represents a firm, and the green line indicates the relationship between our metrics performance rank and Asset4 environmental score.

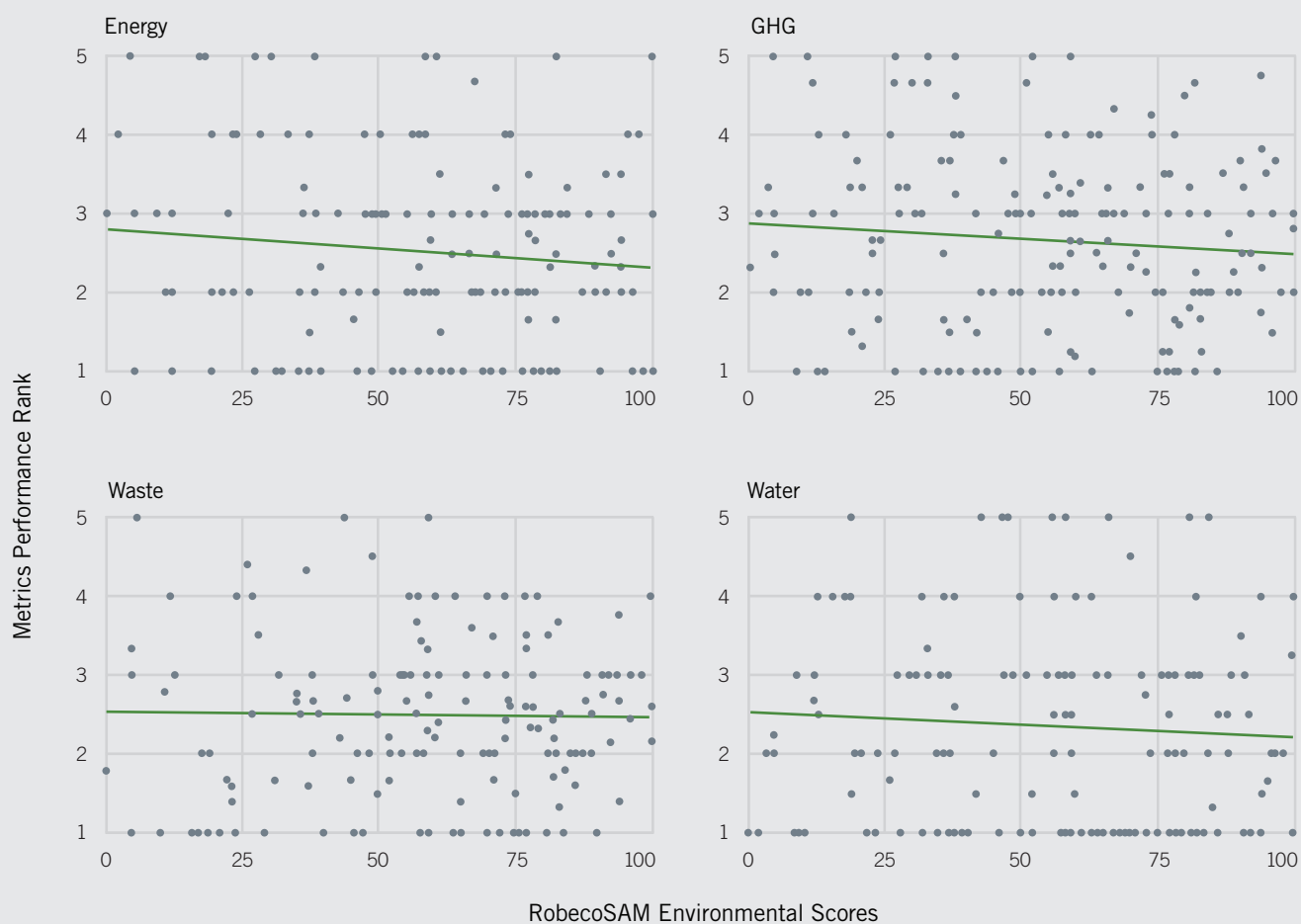
²³ We also repeat this analysis by creating performance ranking across all firms, instead of comparing within industry. The resulting graphs look similar, where our performance rankings do not correlate with the external rating agency's environmental scores

Figure 23: Sustainalytics Environmental Score Compared With the Metrics Performance Rank
By Industry



Note: This figure shows the plots for each environmental subcategory when plotting our performance rank against the environmental scores provided by Sustainalytics data. Each grey dot represents a firm, and the green line indicates the relationship between our metrics performance rank and Sustainalytics environmental score.

Figure 24: RobecoSAM Environmental Score Compared With the Metrics Performance Rank
By Industry



Note: This figure shows the plots for each environmental subcategory when plotting our performance rank against the environmental scores provided by RobecoSAM data. Each grey dot represents a firm, and the green line indicates the relationship between our metrics performance rank and RobecoSAM environmental score.

7 Conclusion

Our report provides a starting point for people interested in learning about firms' corporate social impact. The metrics analysis shows that for each social or environmental category, there are common metrics disclosed by most firms. Imagine: if all firms disclose on the same few key metrics, we will have a clearer picture of all firm's CSR performance.

Metrics alone are not the solution to better ESG evaluation, but they are the starting point. With consistent and comparable metrics, we may not immediately know which firms are performing better, but we will have the tools to facilitate more conversation. We then need independent analysts to evaluate and ask questions: Why is one metric higher for a firm? Is it due to the business model, or does it relate to measurement assumption? Or why is there a year-over-year increase? Is it driven by changes in strategy or a result of measurement change? In the absence of comparable metrics, we are flying blind.

In the **Appendix**, we list the key metrics in each category, representing our view of the minimum set of metrics all firms should disclose. Most firms already disclose these variables, which suggests all firms could choose to participate. We hope this information is useful to policymakers when considering what metrics to mandate. Recently, BlackRock also urged all firms to disclose Scope 1 and Scope 2 GHG emissions, which are

on our list of key metrics.²⁴ Further, individuals can foster more consistent disclosure by asking the following questions:

- **To firms:** Why don't they disclose the most commonly used metric?
- **To investors and financial managers:** Which metrics are being used to evaluate ESG performance and to make investment decisions?
- **To ESG raters:** How are missing values treated when creating ESG scores?

Finally, we face a few caveats in compiling this report. While we comment on materiality on the basis of industries with the most negative impact, this industry performance is mostly derived from averages of firms that voluntarily disclose the information. As such, this measure is subject to self-selection bias. Again, if all firms disclose these same metrics, we can also better determine which issues are more material to which industries. Second, during our data collection process, we encountered challenges in standardizing the data. In some cases, the terminology and definition of variables are not clearly explained, and we make assumptions about what metric they belong to. There is also the possibility of human error in collecting this data. We discuss more about these limitations in the **Appendix**.

²⁴ [blackrock.com/corporate/literature/publication/blk-commentary-climate-risk-and-energy-transition.pdf](https://www.blackrock.com/corporate/literature/publication/blk-commentary-climate-risk-and-energy-transition.pdf).

8 Appendix

Table 33: Suggested Variables in the CSR Metrics Dataset

Subcategory	Variable	Unit	Firms	Disclosure Rate
Diversity	Women employees %	Rate	201	61%
	Minority employees %	Rate	129	39%
Safety	Total recordable incident rate (TRIR)	Rate	169	52%
Community Engagement	Volunteer hours	Hours	161	49.2%
	Donations total	Dollars	159	48.6%
Suppliers	Total spending on diverse suppliers	Dollars	80	24.5%
Greenhouse Gas (GHG)	Scope 1 GHG emissions	Metric CO ₂ e	184	56.3%
	Scope 2 GHG emissions, location	Metric CO ₂ e	167	51.1%
	Scope 2 GHG emissions, market	Metric CO ₂ e	49	15%
	Scope 3 GHG emissions	Metric CO ₂ e	109	13.3%
Energy	Energy consumption	MWh	184	56.3%
Water	Water consumption	Cubic meter	150	45.9%
Waste	Waste total	Metric tons	123	37.6%
	Waste recycled total	Metric Ttns	104	31.8%
Accidents and Fines	Environmental Fines Amount	Dollars	53	16.2%

8.1 Variables

These tables outline all frequently reported variables in S&P 500 CSR reports (2017), across the social and environmental categories in our dataset.

Table 34: Comprehensive List of Variables in the CSR Metrics Dataset

Subcategory	Variable	Units	Firms	Disclosure Rate
Diversity	Women directors	Percent	132	40%
	Minority directors	Percent	77	24%
	Total employees	Percent	224	69%
	Women employees	Percent	201	61%
	Women managers	Percent	120	37%
	Women executives	Percent	108	33%
	Minority employees	Percent	129	39%
	Minority managers	Percent	78	24%
	Minority executives	Percent	61	19%
	New women employees	Percent	44	13%
	New women managers	Percent	9	2.8%
	New minority employees	Percent	20	6.1%
	New minority managers	Percent	3	0.9%
	Employee turnover	Percent	73	22%
	Minimum wage	Dollars	9	2.8%
	Gender pay gap	Ratio	19	5.8%
Safety	Employee health and safety training hour	Hours	13	4.0%
	Total recordable incident rate (TRIR)	Percent	169	52%
	Number of fatalities	Count	81	25%
	Lost time injury rate	Percent	135	41%
	Days away, restricted, or transferred rate (DART)	Percent	35	11%
	Training hours, total	Hours	64	20%
	Training costs, total	Dollars	15	4.6%
	Training employees	Count	25	7.6%
Community Engagement	Political contributions	Dollars	44	13.5%
	Lobbying contributions	Dollars	20	6.1%
	Donations, total	Dollars	159	48.6%
	Cash donations, total	Dollars	46	14.1%
	In-kind donations, total	Dollars	60	18.3%
	Community lending and investment	Dollars	50	15.3%
	Employee donations	Dollars	76	23.2%
	Charities supported	Dollars	42	12.8%
	Volunteer hours	Hours	161	49.2%
	Volunteer employees	Count	47	14.4%
Suppliers	Suppliers, total	Count	38	11.6%
	Spending on diverse suppliers, total	Dollars	80	24.5%
	Spending on female-owned suppliers	Dollars	18	5.5%
	Spending on minority-owned suppliers	Dollars	15	4.6%
	Audits on suppliers	Count	23	7%
	Audits on suppliers	Percent	7	2.1%

Chart continues on next page

Table 34: Comprehensive List of Variables in the CSR Metrics Dataset (Continued)

Subcategory	Variable	Units	Firms	Disclosure Rate
Greenhouse Gas	GHG emissions, total	Metric CO ₂ e	161	49.2%
	Scope 1 GHG emissions, gross	Metric CO ₂ e	184	56.3%
	Scope 2 GHG emissions, location	Metric CO ₂ e	167	51.1%
	Scope 2 GHG emissions, market	Metric CO ₂ e	49	15%
	Scope 3 GHG emissions, gross	Metric CO ₂ e	109	33.3%
	Carbon credits originated or purchased	Metric CO ₂ e	14	4.3 %
Energy	Energy consumption	MWh	184	56.3%
	Energy conserved	MWh	37	11.3%
	Renewable energy consumption	MWh	52	15.9%
	Renewable energy use ratio	Percent	66	20.2%
Water	Water withdrawal	Cubic meter	75	22.9%
	Water consumption	Cubic meter	150	45.9%
	Water discharged	Cubic meter	25	7.6%
	Water conserved	Cubic meter	26	8.0%
	Water recycled	Cubic meter	24	7.3%
	Water recycled	Percent	16	4.9%
Waste	Waste, total	Metric CO ₂ e	123	37.6%
	Waste reduced	Metric CO ₂ e	11	3.4%
	Waste recycled, total	Metric CO ₂ e	104	31.8%
	Waste recycled	Percent	86	26.3%
	Landfill, total	Metric tons	58	17.7%
	Landfill diversion rate	Metric tons	97	29.7%
	Hazardous waste, total	Metric tons	68	20.8%
	Hazardous waste	Percent	52	15.9 %
Accidents and Fines	Accidental spills	Count	40	12.2%
	Accidental spills volume	Thousands barrels	27	8.3%
	Tier 1 process safety event	Count	7	2.1%
	Environmental fines count	Count	42	12.8%
	Environmental fines amount	Dollars	53	16.2%

8.2 Data Collection Process

The research team at the Rustandy Center for Social Sector Innovation collected CSR reports from S&P 500 companies and went through a process of identifying common metrics across the reports. Since there is no mandatory framework for CSR reports, we made various decisions when attempting to standardize the data collection process. These decisions fall under two categories: collection of CSR reports and standardization of CSR metrics.

For the collection of CSR reports, research assistants were tasked with finding the 2017 CSR reports for S&P 500 companies by using various resources: a company's website, the GRI database, and through search engine. We include three types of CSR reports: stand-alone CSR reports, integrated reports (CSR reports combined with annual reports), and CSR reports on websites that relate to fiscal 2017. Since firms can label the year of CSR reports based on the fiscal year, calendar year, or even calendar time of publication, we manually checked and only considered reports that contain metrics relating to fiscal year 2017 or calendar year 2017.

The standardization of CSR metrics involves two components. The first is the creation of a list of metrics to collect. We start by manually reading the reports from a diverse set of industries to define an initial list of metrics, and then group the metrics by broader categories. We benchmark this list of metrics to data available in Asset4, and add metrics if we find them frequently disclosed

within the reports. We complete this process multiple times and assess potential new metrics to include or exclude during the data collection process to come up with the most representative list of common metrics.

Second, we make a few assumptions when collecting the metrics since firms disclose the metrics using different units. In some cases, we can easily convert the unit, such as converting gallons of water to cubic meters of water. Similarly, some firms disclose the number of female employees and total employees, in which case we do a simple calculation to convert to the percent of female employees when collecting this data. In other cases, we are not able to convert the disclosed metric to align with our metrics' definition. One such example is when a firm only discloses the greenhouse gas emissions intensity scaled by production, and if production is not disclosed in the CSR report, we cannot convert this metric to total greenhouse gas emissions. These examples show some of the judgements involved when collecting the CSR metrics. Whenever there are uncertain cases, we analyze frequency and comparability and discuss among the team to decide whether or not to include the metric with the goal of including metrics that are comparable across firms in our sample.

8.3 Industry Representation

The research team at the Rustandy Center for Social Sector Innovation collected CSR reports from S&P 500 companies and went through a process of identifying common metrics across the reports. Since there is no mandatory framework for CSR reports, we made various decisions when attempting to standardize the data collection process. These decisions fall under two categories: collection of CSR reports and standardization of CSR metrics.

For the collection of CSR reports, research assistants were tasked with finding the 2017 CSR reports for S&P 500 companies by using various resources: a company's website, the GRI database, and through search engine. We include three types of CSR reports: stand-alone CSR reports, integrated reports (CSR reports combined with annual reports), and CSR reports on websites that relate to fiscal 2017. Since firms can label the year of CSR reports based on the fiscal year, calendar year, or even calendar time of publication, we manually checked and only kept reports that contain metrics relating to fiscal year 2017 or calendar year 2017.

The standardization of CSR metrics involves two components. The first is the creation of a list of metrics to collect. We start by manually reading the reports from a diverse set of industries to define an initial list of metrics, and then group the metrics by broader categories. We benchmark this list of metrics to data available in Asset4, and add metrics if we find them frequently disclosed within the

reports. We complete this process multiple times and assess potential new metrics to include or exclude during the data collection process to come up with the most representative list of common metrics.

Second, we make some assumptions when collecting the metrics since firms disclose the metrics using different units. In some cases, we can easily convert the unit, such as converting gallons of water to cubic meters of water. Similarly, some firms disclose the number of female employees and total employees. We do a simple calculation to convert to the percent of female employees when collecting this data. In other cases, we are not able to convert the disclosed metric to align with our metrics definition. One such example is when a firm only discloses the greenhouse gas emissions intensity scaled by production, and if production is not disclosed in the CSR report, we cannot convert this metric to total greenhouse gas emissions. These examples show some of the judgments involved when collecting the CSR metrics. Whenever there are uncertain cases, we analyze frequency and comparability and discuss among the team to decide whether or not to include the metric with the goal of including metrics that are comparable across firms in our sample.

This table highlights the industry representation of the S&P 500 firms in the CSR metrics data.

Table 35: Representation of Industries Issuing a CSR Report

Industry	# of Firms in an Industry	# of Firms with a CSR Report	Disclosure Rate
Trading	48	28	58.3
Business Services	46	21	45.7
Utilities	31	28	90.3
Insurance	29	15	51.7
Retail	29	17	58.6
Banking	28	21	75.0
Petroleum and Natural Gas	27	20	74.1
Electronic Equipment	23	12	52.2
Pharmaceutical Products	21	18	85.7
Transportation	18	14	77.8
Medical Equipment	14	7	50.0
Machinery	14	11	78.6
Communications	13	6	46.2
Measuring and Control Equipment	12	6	50.0
Food Products	12	10	83.3
Chemicals	12	11	91.7
Consumer Goods	11	7	63.6
Wholesale	10	6	60.0
Computers	10	7	70.0
Almost Nothing	8	5	62.5
Apparel	8	6	75.0
Aircraft	7	4	57.1
Restaurants, Hotels, Motels	7	6	85.7
Construction	6	1	16.7
Health Care	6	3	50.0
Construction Materials	6	4	66.7
Automobiles and Trucks	6	6	100.0
Beer and Liquor	4	3	75.0
Business Supplies	4	3	75.0
Candy and Soda	3	1	33.3
Electrical Equipment	3	2	66.7
Entertainment	3	2	66.7
Non-Metallic and Industrial Metal Mining	3	2	66.7
Shipping Containers	3	3	100.0
Personal Services	2	1	50.0
Real Estate	2	1	50.0
Recreation	2	1	50.0
Tobacco Products	2	2	100.0
Printing and Publishing	1	0	0.0
Agriculture	1	1	100.0
Defense	1	1	100.0
Precious Metals	1	1	100.0
Rubber and Plastic Products	1	1	100.0
Steel Works, etc.	1	1	100.0
Textiles	1	1	100.0

8.4 Industry Concordance

For the majority of our analysis, we make use of the Fama French 48 (FF48) industry classification system and divide the firms in our dataset into 48 industries. In making our data comparable with data provided by the US Census Bureau when conducting benchmarking exercises, we also utilize the North American Industry Classification System (NAICS). Since there is no existing concordance mapping the relationship between the FF48 and the NAICS, this

document details the structure of each system and the concordance we construct for the purpose of our analysis.

The FF48 has been widely used in financial research. Fama and French²⁵ constructed an industry classification system according to the four-digit Standard Industry Classification (SIC),²⁶ which resulted in 48 industries. The table below shows the industries' classifications in the FF48.

Table 36: Fama French 48 Industry Classification System

Industry Code	Industry Name	Industry Code	Industry Name
1	Agriculture	2	Food Products
3	Candy and Soda	4	Beer and Liquor
5	Tobacco Products	6	Recreation
7	Entertainment	8	Printing and Publishing
9	Consumer Goods	10	Apparel
11	Health Care	12	Medical Equipment
13	Pharmaceutical Products	14	Chemicals
15	Rubber and Plastic Products	16	Textiles
17	Construction Materials	18	Construction
19	Steel Works, etc.	20	Fabricated Products
21	Machinery	22	Electrical Equipment
23	Automobiles and Trucks	24	Aircraft
25	Shipbuilding Railroad Equipment	26	Defense
27	Precious Metals	28	Non-Metallic and Industrial Mental Mining
29	Coal	30	Petroleum and Natural Gas
31	Utilities	32	Communications
33	Personal Services	34	Business Services
35	Computers	36	Electronic Equipment
37	Measuring and Control Equipment	38	Business Supplies
39	Shipping Containers	40	Transportation
41	Wholesale	42	Retail
43	Restaurants, Hotels, Motels	44	Banking
45	Insurance	46	Real Estate
47	Trading	48	Almost Nothing

²⁵ Fama and French 1997.

²⁶ The Standard Industry Classification (SIC) has been used since the 1930s by governmental agencies of the United States to classify industries. It was replaced by the North American Industry Classification System in 1997.

NAICS is a hierarchical system that has been widely used by federal statistical agencies of the United States to classify economic activities by industry. It was introduced in 1997, replacing the SIC. In measuring business establishments and demographics of the American people, the US Census Bureau adopted the NAICS industry classification system.

The NAICS uses a hierarchical structure when organizing sectors and industries. The number of digits represents the NAICS hierarchy and includes two-digit, three-digit, four-digit, five-digit, and six-digit codes. The organization of the NAICS is shown in the table below.

Table 37: Organization of the NAICS

Level	Number of Industry Code Digits
Sector	Two-digit code
Subsector	Three-digit code
Industry Group	Four-digit code
NAICS Industry	Five-digit code
National Industry	Six-digit code

In our data, we are particularly interested in the sectoral level of the NAICS, since we conduct our benchmarking exercise using the US Census Bureau’s American Community Survey and current employment statistics, which detail the industry workforce by gender and race.

The table below shows the sectoral-level classification in the NAICS.

Table 38: NAICS Codes at the Sectoral Level

Sector Code	Description
11	Agriculture, Forestry, Fishing, and Hunting
21	Mining, Quarrying, and Oil and Gas Extraction
22	Utilities
23	Construction
31–33	Manufacturing
42	Wholesale Trade
44–45	Retail Trade
48–49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)
92	Public Administration

One of our analyses is to benchmark the employment shares by gender and by race in the CSR metrics data with the information provided by the US Census Bureau. Since the industry classification system used by the Census Bureau is the NAICS and the one used in the CSR metrics data is the FF48, it is necessary to map the FF48 onto the NAICS to allow direct comparability of both data. To the best of our knowledge, there is no existing

concordance between the FF48 and the NAICS. In generating the concordance between the FF48 and the NAICS, we manually match the FF48 with the sector-level codes of the NAICS on the basis of industry description. The table below specifies the direct concordance of the FF48 and the two-digit codes of the NAICS that is implemented in our data and analyses.²⁷

Table 39: Concordance Between the FF48 and the NAICS

NAICS	FF48
Transportation and Utilities	Utilities Transportation Automobiles and Trucks
Wholesale and Retail Trade	Wholesale Retail Beer and Liquor Construction Materials Business Supplies
Professional and Business Services	Business Services
Leisure and Hospitality	Restaurants, Hotels, Motels Entertainment
Information	Communications
Construction	Construction
Education and Health Services	Health Care
Financial Activities	Banking Consumer Goods Insurance Trading
Mining, Quarrying, and Oil and Gas Extraction	Non-Metallic and Industrial Metal Mining Petroleum and Natural Gas
Manufacturing	Aircraft Apparel Candy and Soda Chemicals Computers Electrical Equipment Electronic Equipment Food Products Machinery Measuring and Control Equipment Medical Equipment Pharmaceutical Products Shipping Containers

Note: We remove the firms under the category “Almost Nothing” in the FF48 when conducting the benchmarking analysis.

²⁷ Some of the mappings are not one to one because we constructed the concordance according to the industry classification used in the data provided by the US Census Bureau on the workforce by gender and by race. The amalgamation of industries is employed.

List of Tables

Table 1:	Components of the CSR Metrics Data	4
Table 2:	S&P 500 Revenue Groups	7
Table 3:	Audited CSR Reports	9
Table 4:	Frequently Used Auditors	9
Table 5:	CSR Reporting Standards	10
Table 6:	Most Commonly Disclosed Metrics—Diversity	12
Table 7:	Industries with the Highest Percent of Female Employees	13
Table 8:	Industries with the Highest Percent of Minority Employees	13
Table 9:	Most Commonly Disclosed Metrics—Safety	15
Table 10:	Industries with the Highest Total Recordable Incident Rate (TRIR)	16
Table 11:	Industries with the Lowest Total Recordable Incident Rate (TRIR)	16
Table 12:	Most Commonly Disclosed Metrics—Community Engagement	18
Table 13:	Industries Reporting the Highest Number of Volunteer Hours	19
Table 14:	Industries Reporting the Highest Total Donations, in Dollars	19
Table 15:	Most Commonly Disclosed Metrics—Suppliers	21
Table 16:	Industries with the Highest Total Spending on Diverse Suppliers, in Dollars	22
Table 17:	Industries with Total Spending on Diverse Suppliers—Intensity	22
Table 18:	Most Commonly Disclosed Metrics—Greenhouse Gas	25
Table 19:	Industries with the Highest Scope 1 GHG Gross Emissions	26
Table 20:	Industries with the Highest Scope 1 GHG Gross Emissions—Intensity	26
Table 21:	Most Commonly Disclosed Metrics—Energy	28
Table 22:	Industries with the Highest Energy Consumption	29
Table 23:	Industries with the Highest Energy Consumption—Intensity	29
Table 24:	Most Commonly Disclosed Metrics—Water	31
Table 25:	Industries with the Highest Water Consumption, in Cubic Meters	32
Table 26:	Industries with the Highest Water Consumption— Intensity, in Cubic Meters per Million Dollars	32
Table 27:	Most Commonly Disclosed Metrics—Waste	34
Table 28:	Industries with the Highest Total Waste, in Metric Tons	35
Table 29:	Industries with the Highest Total Waste— Intensity, in Metric Tons per Million Dollars	35
Table 30:	Most Commonly Disclosed Metrics—Accidents and Fines	37
Table 31:	Industries with the Highest Environmental Fines, in Dollars	38
Table 32:	Industries with the Highest Environmental Fines Amount Intensity, in Dollars	38
Table 33:	Suggested Variables in the CSR Metrics Dataset	51
Table 34:	Comprehensive List of Variables in the CSR Metrics Dataset	52
Table 35:	Representation of Industries Issuing a CSR Report	56
Table 36:	Fama French 48 Industry Classification System	57
Table 37:	Organization of the NAICS	56
Table 38:	NAICS Codes at the Sectoral Level	58
Table 39:	Concordance Between the FF48 and the NAICS	59

List of Figures

Figure 1:	Social Metrics	5
Figure 2:	Environmental Metrics	5
Figure 3:	Firms with a CSR Report, by Revenue Rank	7
Figure 4:	Firms with a CSR Report, by Industry	8
Figure 5:	Audited CSR Report, by Revenue Rank	9
Figure 6:	CSR Reporting Standards, by Revenue Rank	10
Figure 7:	Firm Disclosure Rate—Diversity	14
Figure 8:	Firm Disclosure Rate—Safety	17
Figure 9:	Firm Disclosure Rate—Community Engagement	20
Figure 10:	Firm Disclosure Rate—Suppliers	23
Figure 11:	Firm Disclosure Rate—Greenhouse Gas	27
Figure 12:	Firm Disclosure Rate—Energy	30
Figure 13:	Firm Disclosure Rate—Water	33
Figure 14:	Firm Disclosure Rate—Waste	36
Figure 15:	Firm Disclosure Rate—Accidents and Fines	39
Figure 16:	Benchmarking for the Women Employees Percent Metric	42
Figure 17:	Benchmarking for the Minority Employees Percent Metric	43
Figure 18:	Benchmarking for Scope 1 Greenhouse Gas Emissions Metric	44
Figure 19:	Asset4 Environmental Score Compared with the CSR Metrics Data Disclosure Rank	46
Figure 20:	Sustainalytics Environmental Score Compared with the CSR Metrics Data Disclosure Rank	47
Figure 21:	RobecoSAM Environmental Score Compared with the CSR Metrics Data Disclosure Rank	48
Figure 22:	Asset4 Environmental Score Compared with the Metrics Performance Rank	50
Figure 23:	Sustainalytics Environmental Score Compared with the Metrics Performance Rank	51
Figure 24:	RobecoSAM Environmental Score Compared with the Metrics Performance Rank	52

References

- Barrage, Lint, Eric Chyn, and Justine Hastings. "Advertising and Environmental Stewardship: Evidence from the BP Oil Spill." *American Economic Journal: Economic Policy* 12, no. 1 (2020): 33–61.
- Berg, Florian, Julian F. Koelbel, and Roberto Rigobon. "Aggregate Confusion: The Divergence of ESG Ratings." MIT Sloan School of Management, 2019.
- "Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation." White Paper. In *World Economic Forum*. 2020.
- Drozdenko, Ronald, Marlene Jensen, and Donna Coelho. "Pricing of Green Products: Premiums Paid, Consumer Characteristics and Incentives." *International Journal of Business, Marketing, and Decision Sciences* 4, no. 1 (2011): 106–116.
- Fama, Eugene F., and Kenneth R. French. "Industry Costs of Equity." *Journal of Financial Economics* 43, no. 2 (1997): 153–193.
- Greening, Daniel W. and Daniel B. Turban. "Corporate Social Performance as a Competitive Advantage in Attracting a Quality Workforce." *Business & Society* 39, no. 3 (2000): 254–280.
- Hedblom, Daniel, Brent R. Hickman, and John A. List. "Toward an Understanding of Corporate Social Responsibility: Theory and Field Experimental Evidence." No. w26222. National Bureau of Economic Research, 2019.
- Krueger, Philipp, Zacharias Sautner, and Laura T. Starks. "The Importance of Climate Risks for Institutional Investors." *The Review of Financial Studies* 33, no. 3 (2020): 1067–1111.

The University of Chicago Booth School of Business
5807 S. Woodlawn Ave., Chicago, IL 60637
Phone: 773.834.2716

