

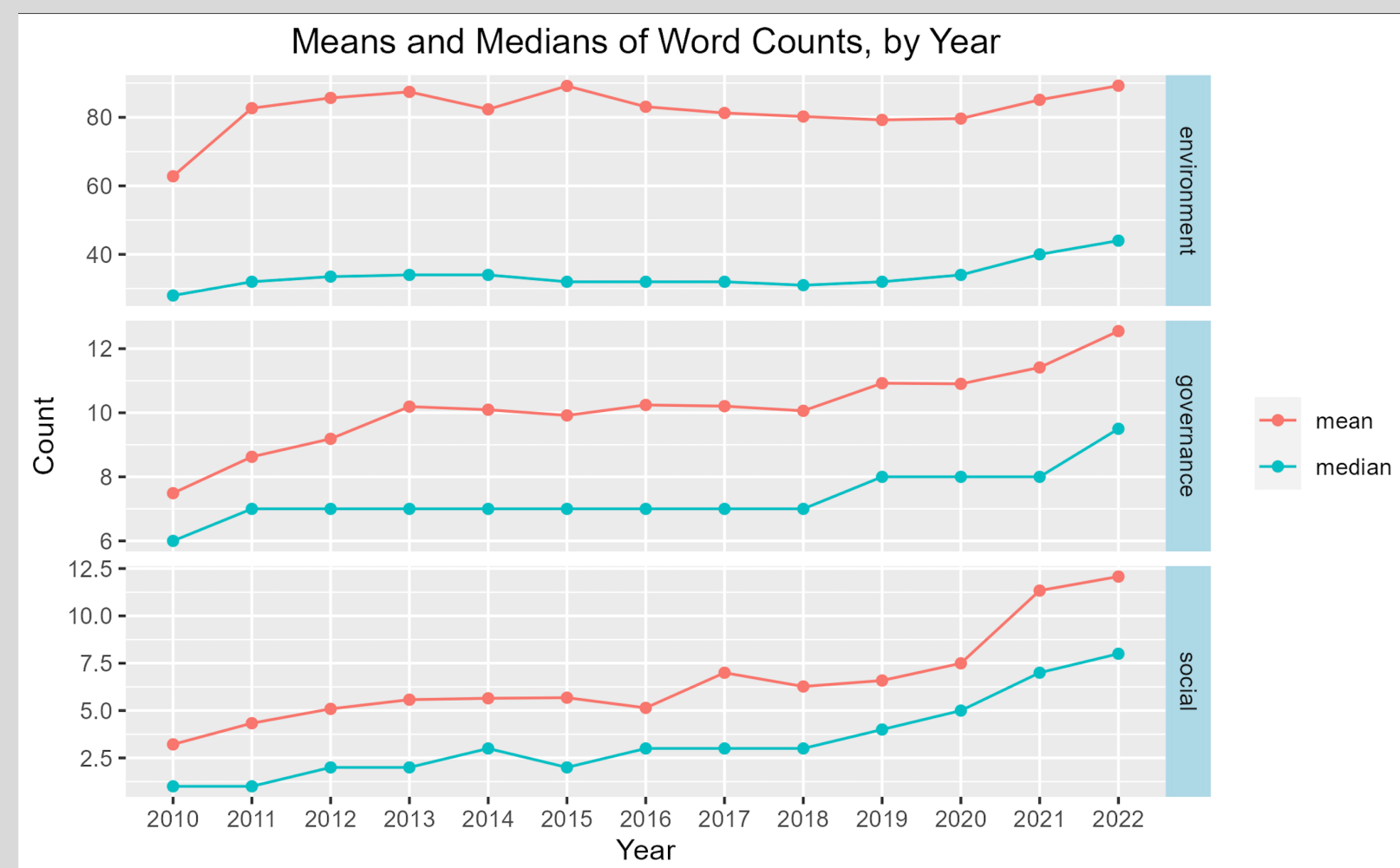
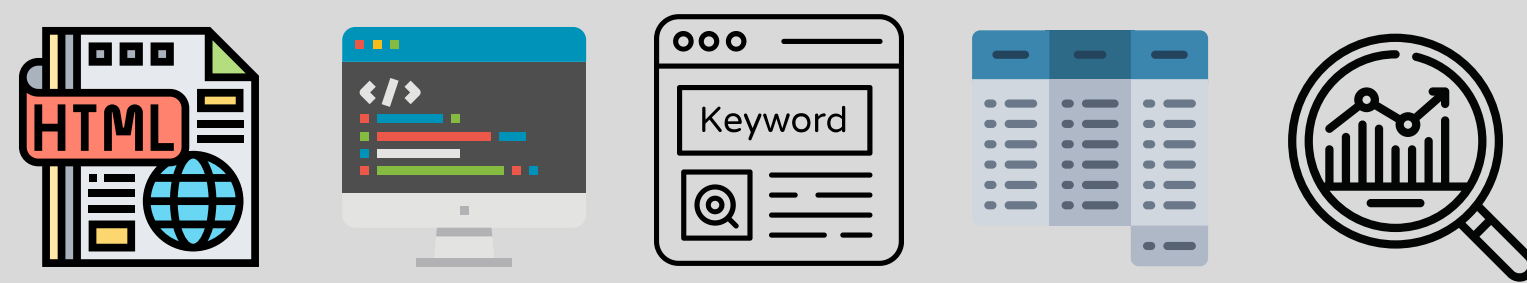
PUTTING SUSTAINABILITY UNDER SPOTLIGHT

An Analysis of ESG Disclosing Trends in SEC Filings

Do companies prioritize and communicate their sustainability-related practices?

Let us investigate how S&P 500 companies disclose ESG in their 10-k filings!

- 1 Find the list of S&P 500 companies from Wikipedia
- 2 Scrape companies' annual 10-k filings from SEC EDGAR website
- 3 Use natural language processing technique to count the occurrences of keywords from each filing
- 4 Conduct statistical analysis



The frequency of the words "environment", "social", and "governance" in the 10-K filings of S&P 500 companies has **steadily increased** over time, with a noticeable acceleration in the past few years.



Moving forward, we plan to use advanced natural language processing techniques, such as sentiment analysis and topic modeling, to more accurately assess the extent and quality of corporate disclosure of ESG-related issues, and help investors and other stakeholders make more informed decisions.

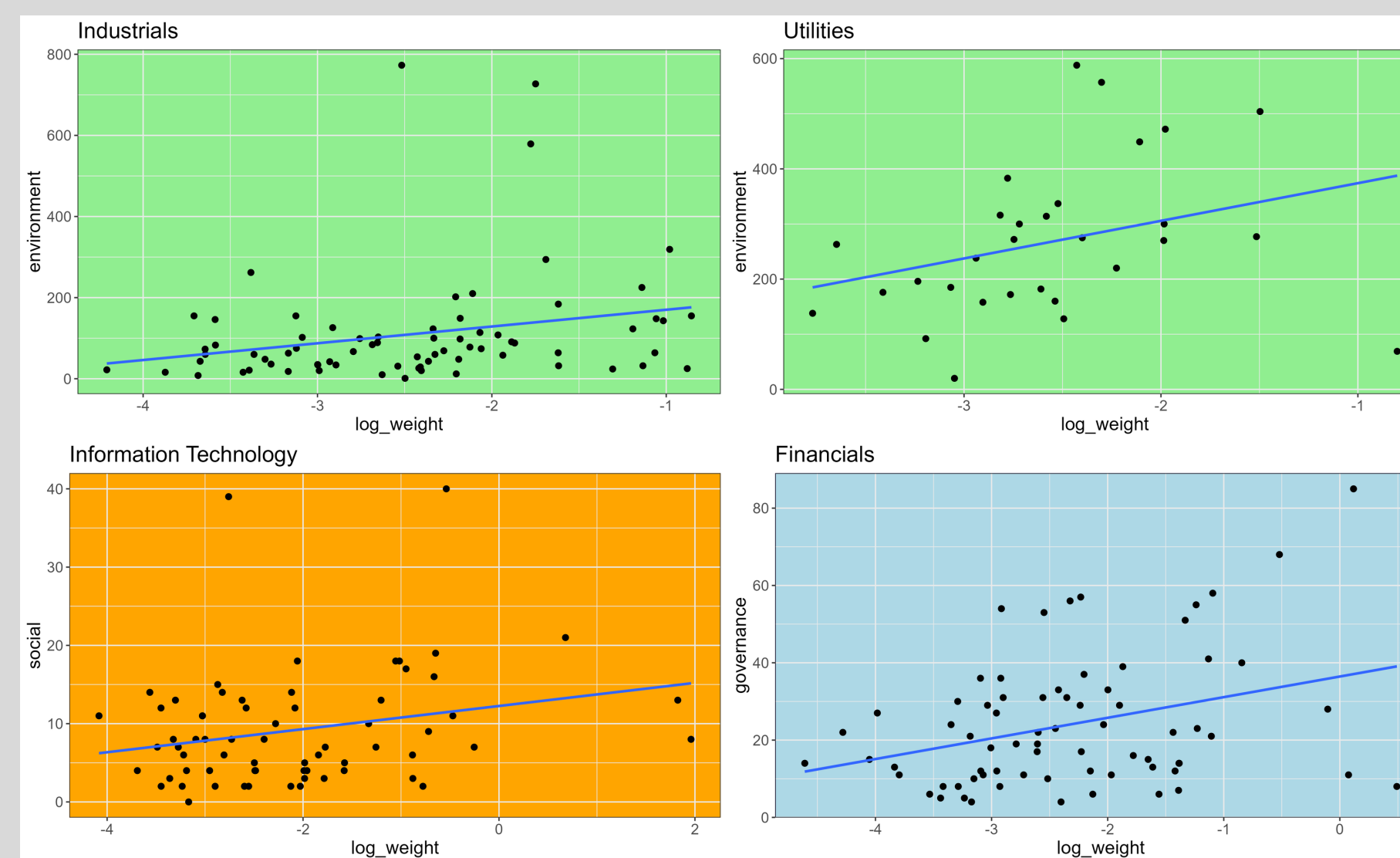
WHAT is ESG?

ESG (Environmental, Social, and Governance) provides a **framework** for investors to evaluate a company's long-term **sustainability**, potential **risks** and **opportunities**.

- | | | |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| ENVIRONMENTAL FACTORS | SOCIAL FACTORS | GOVERNANCE FACTORS |
| <ul style="list-style-type: none"> Carbon emissions Waste management Resource depletion | <ul style="list-style-type: none"> Employee Community Customers | <ul style="list-style-type: none"> Transparency Board of directors Executive compensation |

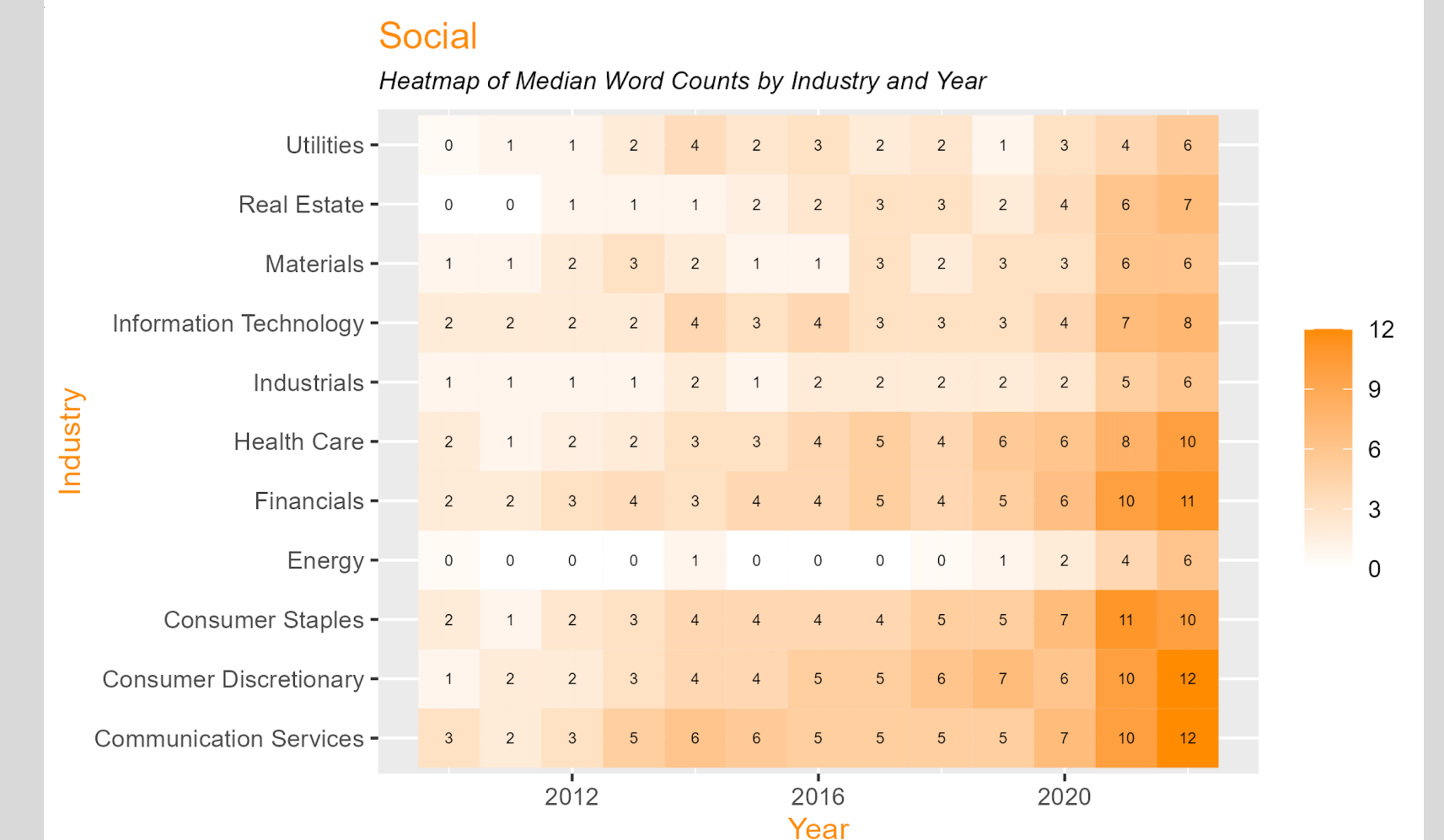
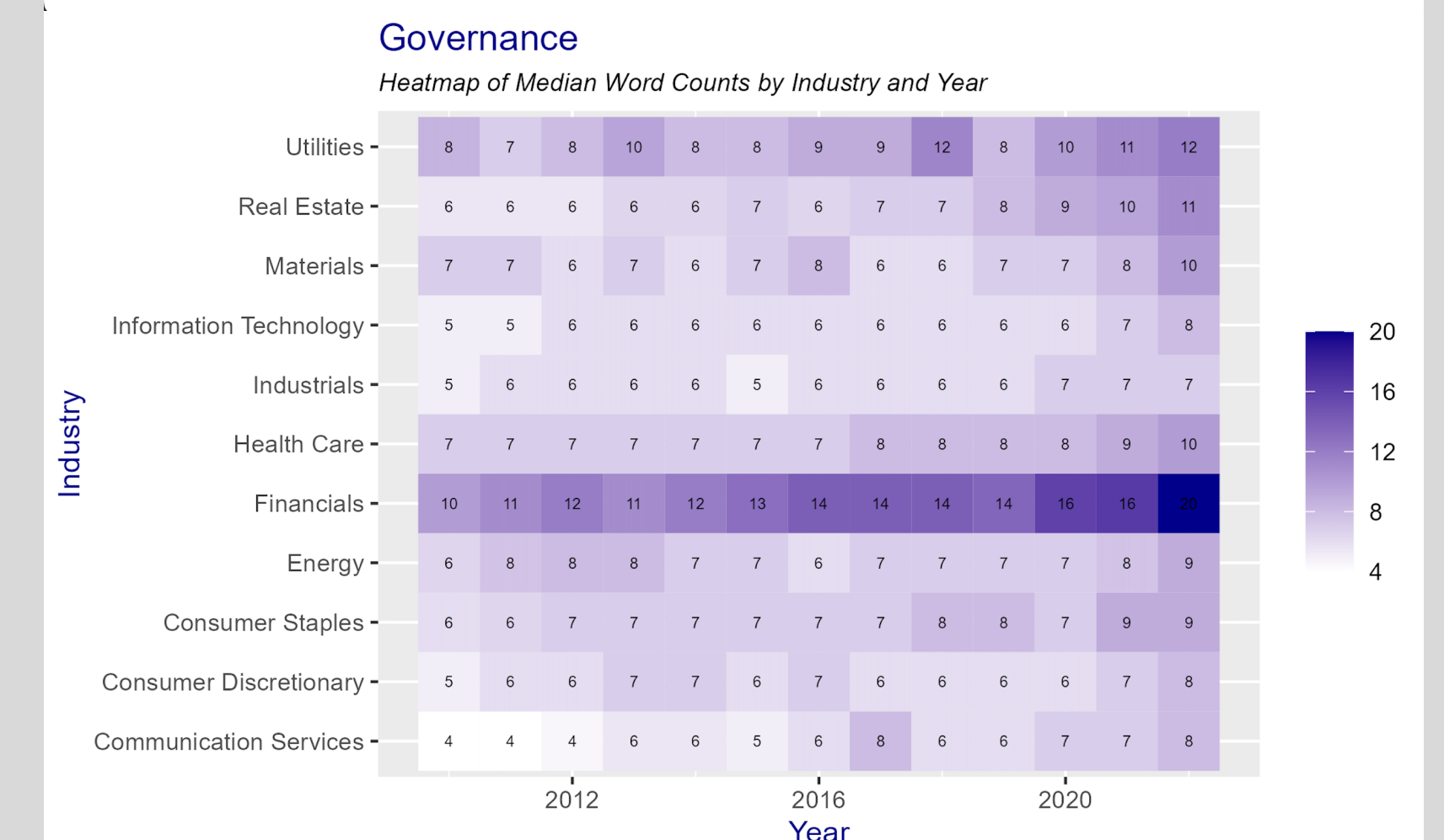
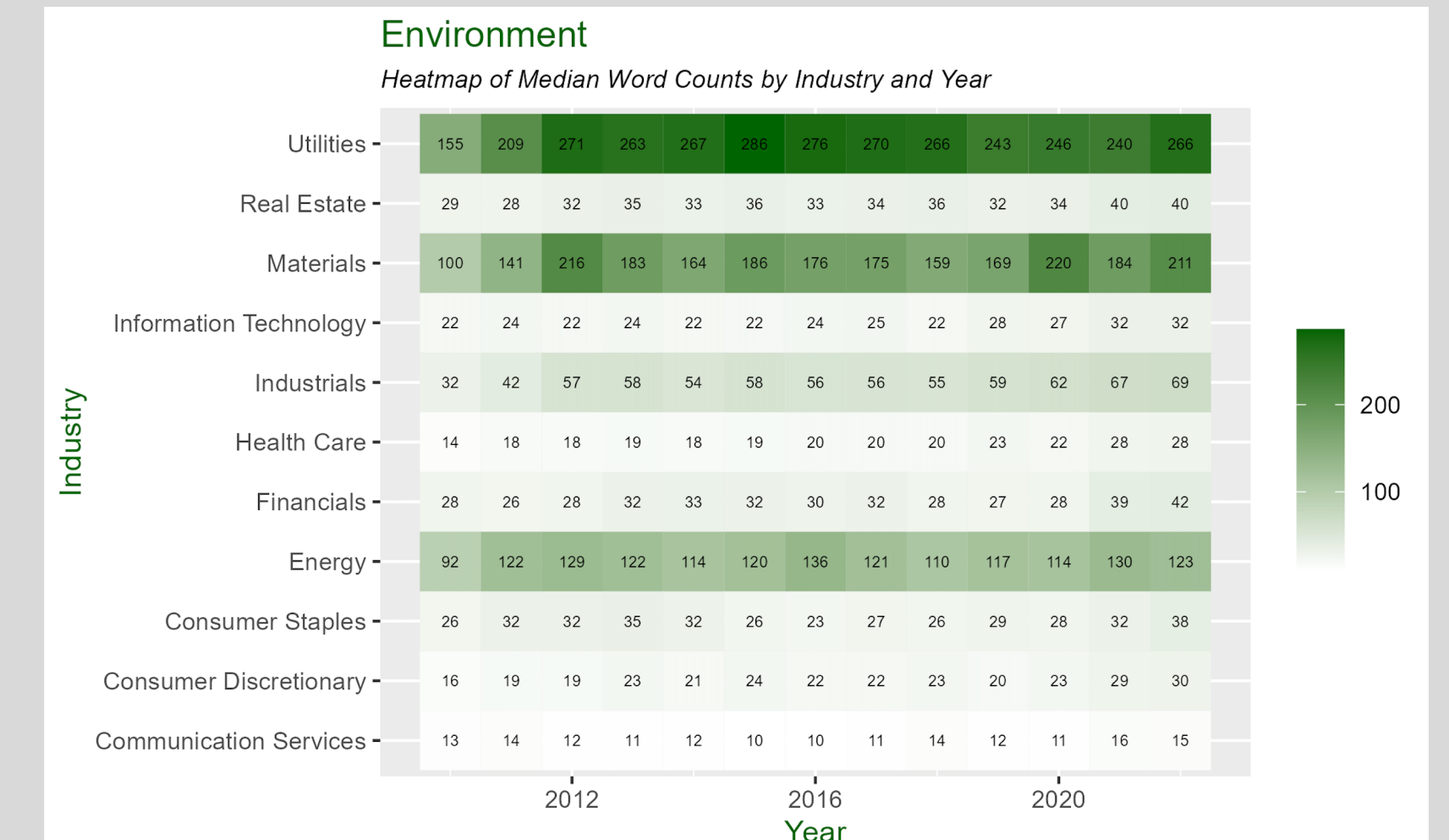
WHERE do companies disclose their ESG related information?

To evaluate companies' ESG performance, investors often turn to the **10-K filings** - the comprehensive annual reports that publicly traded companies must file with the **Securities and Exchange Commission (SEC)**.



Note: "Weight" is the component weight of S&P 500 index, determined by market capitalization, or the total market value of a company's outstanding shares. Log-transformation was used to reduce the skewness of weight.

Linear regression analysis shows that, in specific industries, **larger firms** prioritize **more** on **disclosing** ESG-related issues.



The frequency of ESG-related language varies by **industry**. For example, **utilities, energy** and **materials** exhibit a **higher** frequency of **environmental**-related terms.