



WWW.JBDAI.ORG

ISSN: 2692-7977

JBDAI Vol. 3, No. 1, 2025

DOI: 10.54116/jbdai.v3i1.53

UNVEILING INDUSTRY PRESSURES: A DATA-DRIVEN ANALYSIS OF SEC FILINGS, AMENDMENTS, AND RECLASSIFICATIONS

Timothy Olsen
Gonzaga University
olsent@gonzaga.edu

ABSTRACT

This study explores the dynamics of industry behavior through an analysis of regulatory filings, providing insights into the pressures and strategies shaping various sectors. Leveraging detailed financial data from the U.S. Securities and Exchange Commission (SEC), including over 83,000 10-K filings, we examine four key indicators: the frequency of 8-K filings, amendments to 10-Ks, address changes, and industry reclassifications. These indicators serve as proxies to measure external forces such as regulatory scrutiny, competitive pressure, and economic volatility.

Our findings reveal distinct patterns of filing behavior, with certain industries, such as Pharmaceutical Preparations, Metal Mining, and Programming Services, showing high levels of address changes, amended 10-Ks, and shifts in industry size—signals of underlying industry pressures. Additionally, industries like Patent Owners, Medicinal Products, and Retail experienced significant company transitions and frequent address changes, further reflecting industry realignments.

By introducing new metrics for assessing industry pressures and demonstrating the use of the open-source data language Malloy for replicable analysis, this research contributes both to the academic understanding of industry dynamics and to the practical tools available for data exploration.

JEL: O51, G14, G11, G32.

Keywords *financial statement analysis, industry studies, industry pressures.*

1. Introduction

Understanding industry dynamics is critical for investors, regulators, and policymakers seeking to evaluate business environments and the pressures that companies face. While existing research on industry analysis has explored a

wide range of metrics, such as profitability, regulation, and market structure, there is a growing need to examine industry-specific behaviors reflected in regulatory filings. The U.S. Securities and Exchange Commission (SEC) filings, such as Forms 10-K and 8-K, contain valuable information that can shed light on the operational and strategic decisions of firms within various industries. However, the potential of these filings to serve as proxies for industry pressures remains underexplored.

This study addresses key gaps in the literature by analyzing patterns of filings, amendments, address changes, and industry reclassifications in SEC submissions. By focusing on these often-overlooked indicators, we aim to provide new insights into the external forces acting on different sectors. Specifically, we propose that the frequency of 8-K filings, 10-K amendments, address changes, and industry transitions may serve as proxy measures for identifying industries under greater regulatory, competitive, or financial pressure.

Through a detailed analysis of SEC financial datasets, this study explores five key research questions that seek to reveal underlying trends across industries. First, we provide descriptive statistics of the SEC dataset to establish a baseline understanding of the data structure and content. Next, we investigate which industries file the most 8-K forms relative to their 10-K filings, hypothesizing that frequent disclosures may correlate with heightened regulatory scrutiny or volatility. We also examine which industries amend their 10-Ks most often, suggesting potential governance or reporting challenges. Additionally, this study looks at which industries change their reported mailing or business address most frequently, a factor potentially indicative of strategic repositioning or regulatory arbitrage. Finally, we analyze industry transitions, focusing on which industries companies transition into or out of most often, revealing underlying strategic shifts or market realignments.

By addressing these questions, this research aims to contribute to both the academic understanding of industry dynamics and the practical challenges of regulatory compliance. Our findings offer new perspectives on how industry-level pressures manifest in corporate filings, while also introducing a novel methodological approach using open-source tools to analyze large-scale regulatory data.

2. Literature Review

The study of industries is an interdisciplinary endeavor. For a few decades now the Industry Studies Association (<https://www.industrystudies.org/>) has brought together scholars from dozens of disciplines to discuss and present academic research about industries from around the globe. Comparative analysis of industries is crucial for understanding economic dynamics, informing policy decisions, and guiding business strategies. Scholars have identified various factors and measures to compare industries, such as the degree of regulation, competition levels, consumer demand, investor interest, technological innovation, market structure, and barriers to entry and exit (Vanneste 2017).

Regulatory frameworks vary by industry, affecting how industries evolve and compete globally. High regulatory environments can create barriers to entry, affect competition, and influence profitability. The level of competition within an industry shapes market dynamics, pricing strategies, and innovation. Investor interest reflects an industry's attractiveness and potential for returns. High investor interest can lead to increased capital flow, facilitating growth and innovation. Industries that demonstrate strong financial performance and growth prospects typically garner more investor attention (Gompers 1997).

Profitability metrics, such as return on investment and net profit margins, are essential for comparing financial performance across industries. (Fama and French 1997) analyzed industry-specific costs of equity, revealing variations in expected returns and risks. Industries with higher profitability are often more attractive to investors and may experience greater competition as firms seek to capitalize on lucrative opportunities.

We suggest that four factors from the SEC dataset may be useful for comparing industries as proxy measures for pressures they may experience. The factors we propose to examine are the number of 8-K filings, amended returns (which includes earnings restatements), address changes, and industry transitions. Measures of these factors may be indicative of competitive or regulatory pressures facing these industries. Our reasons for choosing these factors are that they are objective and can be ascertained automatically through a simple structured query language (SQL) or Malloy query on data updated each month from the SEC. Indicators such as risk factor changes, or litigation disclosures cannot be objectively identified in the way the SEC currently structures their data.

2.1. 8-K Filings

Firms submit Form 8-K forms to comply with SEC regulations, specifically Rule 13a-11 of the Securities Exchange Act of 1934, which mandates the timely disclosure of material corporate events within four business days. These

events include earnings announcements, mergers, management changes, and legal proceedings. This requirement ensures transparency by providing all investors with access to critical information, reducing information asymmetry and preventing unfair advantages (Lerman and Livnat 2010).

Industries that submit a higher volume of Form 8-Ks often face increased scrutiny from regulators, investors, and the media. This may indicate that these sectors operate in more volatile or fast-paced environments, with frequent significant events requiring disclosure (Watkins 2022). High-profile sectors like technology and finance, marked by rapid innovation and tighter regulatory oversight, commonly issue frequent updates to maintain investor confidence (McMullin et al. 2019). In addition, industries with intense competition or higher regulatory risks often see more demand for transparency, leading to frequent filings aimed at addressing stakeholder concerns and reducing uncertainty (Ben-Rephael et al. 2022).

Starting in 2019, submissions of form 8-K were required to use an XBRL format. Given this context, our second research question arises: Which industries file the most Form 8-Ks as a percentage of total 10-K submissions? This question aims to investigate the relationship between industry characteristics and the frequency of required disclosures, providing insight into which sectors face the most regulatory or stakeholder pressure.

2.2. 10-K Amendments

Academic literature identifies several reasons why companies amend their 10-K filings, often due to errors or omissions such as financial misstatements or incomplete disclosures. These errors may result from miscalculations, incorrect estimates, or the improper application of accounting standards (Thompson 2023). Amendments can also arise to incorporate new information like post-reporting events or in response to SEC comments requesting clarification (Krishnan and Zhang 2014). Frequent amendments may indicate governance issues or weak internal controls, necessitating corrections after initial filings (Cassell et al. 2019).

Amendments may include financial restatements or changes to the wording in the 10-K report. Amendments resulting from errors or missing information may indicate less competitive markets, where incumbents are less meticulous in their reporting. In contrast, amendments prompted by the SEC could signal strong regulatory oversight or a commitment to thorough auditing. In the future it may be possible to distinguish objectively the nature of amendment from our data source.

Industries with high rates of 10-K amendments may face unique pressures from stakeholders such as regulators, auditors, or investors (Curling 2006). Frequent amendments may suggest that firms in certain sectors struggle to produce accurate, timely disclosures due to the complexity and volatility of their operating environments (Cassell et al. 2019). Identifying which industries make the most amendments is significant because it highlights sectors where enhanced due diligence may be necessary for investors and where regulatory bodies might focus their oversight efforts.

This leads us to our third research question: Which industries have the highest frequency of amendments to their 10-K filings?

2.3. Changing Addresses

Academic research has analyzed the strategic motivations behind organizations changing addresses on their 10-K filings, often interpreting such moves as indicators of broader corporate strategy (Birkinshaw et al. 2006). Companies may relocate to take advantage of more favorable tax regimes, regulatory environments, or market access. In some cases, address changes occur without physical relocation, prompted by mergers, adjustments in corporate governance, or legal obligations (Baaij et al. 2015; Gregory et al. 2005). Industries that see frequent address changes often face external pressures from stakeholders, reflecting volatile or dynamic environments (Klier and Testa 2002).

This brings us to our fourth research question: Which industries change their reported mailing or business address most frequently? Understanding these patterns will help illuminate the external pressures driving such strategic decisions.

2.4. Changing Industries

Academic literature identifies several reasons why companies change the industry listed on their 10-K filings. Organizational restructuring—such as mergers, acquisitions, or divestitures—can shift a company's core operations into a different industry category (Tosun and Moon 2024; Vanneste 2017). Companies may also adjust their industry classification to better reflect evolving business models, especially in rapidly advancing sectors like Pharmaceuticals and Computer Services. Firms may change classifications to enhance investor perceptions or align their public image with their most profitable segments (Bhojraj et al. 2003; Wang and Coff 2022).

The U.S. SEC continues to utilize Standard Industrial Classification (SIC) codes for public filings within its Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. The SEC's version of SIC codes is slightly modified to suit its regulatory needs, focusing on categorizing companies based on their primary lines of business for disclosure and oversight purposes (Phillips and Ormsby 2016). Because the SEC uses a slightly modified version of SIC codes, it is difficult to cross-reference them with the standard SIC or North American Industry Classification System (NAICS) codes. Furthermore, assigning a company to a specific NAICS code from a more general SIC code is not an objective task.

Reclassification might indicate responses to market demand shifts, regulatory changes, or competitive pressures that require repositioning. Industries undergoing significant disruption, firms realign themselves to maintain strategic flexibility—a response to shareholder demands for higher returns or new regulatory standards (Li et al. 2013). Identifying which industries are most transitioned into or out of is significant because it highlights sectors experiencing dynamic changes, offering insights for investors and regulators into market trends and potential risks (Gaspar et al. 2024).

This leads us to our fifth research question: Which industries experience the highest rates of industry reclassification in consecutive 10-K filings?

3. Methodology

This study employs exploratory data analysis (EDA) as a foundational approach. EDA is a flexible and intuitive method that allows for the exploration and understanding of large and complex datasets without the constraints of predefined hypotheses. Its primary goals are to summarize the main characteristics of the data, uncover patterns, identify outliers, and visualize relationships between variables. By using EDA, we aim to derive insights from the dataset without imposing rigid assumptions. This open-ended approach is particularly well-suited to large datasets, where traditional statistical methods may overlook emerging patterns or subtle relationships that become more apparent through visual exploration (Komorowski et al. 2016).

EDA is an appropriate method for analyzing the 10-K filings due to the high dimensionality of the dataset, which includes a variety of attributes ranging from basic descriptive information to filing periods, filing dates, industry codes, and further amendments. By allowing the data to guide the discovery process, EDA serves as a valuable tool in preparing the dataset for more detailed, hypothesis-driven analysis in future research (Nielsen 2022). This method has recently been employed to analyze 10-K data (Chakri et al. 2023) credit card usage and customer churn (Chakri et al. 2023) and a comprehensive analysis looking for anomalies and trends (Schroeder and Posch 2023).

The dataset for this study was sourced from the U.S. SEC, which provides publicly available financial data on various industries and companies. The dataset includes detailed financial reports such as balance sheets, income statements, and other key performance indicators critical for analyzing industry trends and performance.

As of June 15, 2011, all SEC filers are required to submit XBRL-tagged financial statements. Later in 2019, 8-K forms were required to be submitted in XBRL format. As the SEC dataset only provides information for XBRL tagged documents, no 8-Ks appear in the data prior to 2019. These filings are available for download, and many researchers have utilized this dataset in their work. Given the dataset's size and complexity, some studies use proprietary software to format and summarize the data. However, we demonstrate how open-source software, Malloy, can be effectively used to clean, prepare, and summarize this data.

The specific dataset used in this study was drawn from the SEC's Financial Statement Notes Data Sets. This dataset includes detailed information on corporate filings, such as form types, submission and acceptance dates, and SIC codes. The data consists of multiple zip files containing tab-separated value (.tsv) files.

3.1. Data Collection and Processing

The dataset was processed in several stages to prepare it for analysis:

3.1.1. Download and extraction

Approximately 22 GB of zip files were downloaded from the SEC's Financial Statement Notes Data Sets repository. After unzipping, the dataset expanded to 221 GB. Each zip file contained eight separate .tsv files, each providing different financial data aspects. We downloaded all of the .zip files up to August 2024.

3.1.2. Data selection

For this study, we focused on the sub.tsv files within each zip archive. These files contain key submission data, such as company name, address, form type (e.g., 10-K, 10-Q), filing and acceptance dates, and SIC codes, which classify the company's industry. Other .tsv files were excluded as they did not align with our research objectives focused on industry trends and performance.

3.1.3. Data conversion

We used the duckdb python module to combine and convert all the sub.tsv files to parquet format, an open-source columnar storage format optimized for data compression and performance during querying. This conversion reduced the dataset size back to approximately 22 GB, allowing for more efficient data access and analysis.

3.2. Querying and Analysis

After converting the dataset to a more efficient format, we used Malloy, an open-source query language that compiles to SQL, to explore various aspects of the data. Malloy simplifies reading and writing complex SQL logic, making it easier to perform iterative and exploratory queries. The code and data for this paper are available on GitHub (<https://github.dev/mrtimo/IndustryStress>).

Our exploratory, a-theoretic approach allowed flexibility in querying, adapting the analysis as patterns emerged. Key analyses involved refining Malloy queries based on initial results, especially for the more complex queries addressing Research Questions 4 and 5. These queries employed a lag function to identify changes in company address or industry in the first phase. Once identified, the results were passed to a second phase, this is also known as a subquery or nested query. In our analysis, we limited our results to industries that had at least 30 unique companies for the duration of our sample years (2012–2023).

4. Findings

In this section, we present the findings from our analysis addressing each of the research questions. The code used for these analyses is provided in the [Appendix A](#) and can also be accessed on GitHub, where it can be re-run to replicate the results. GitHub features an in-browser version of Visual Studio Code that can be launched by authenticated users by pressing the “.” key, and the code can be executed after installing the Malloy extension.

RQ 1. What are some basic descriptors of the SEC dataset?

Our first research question aims to provide a general descriptive overview of the SEC dataset. We focus on 10-K filings, as every public company is required to submit one 10-K annually. If a company needs to resubmit a corrected version, it is filed as a 10-K/A (amended 10-K).

[Figure 1](#) illustrates the number of 10-K submissions per year. The data reveal a general decline in submissions over time, with a noticeable increase in 2021. This spike is likely attributable to the rise of Special Purpose Acquisition Companies (SPACs), commonly known as “blank check” companies, which became particularly popular during the pandemic. On average, approximately 6,000 10-Ks are submitted each year.

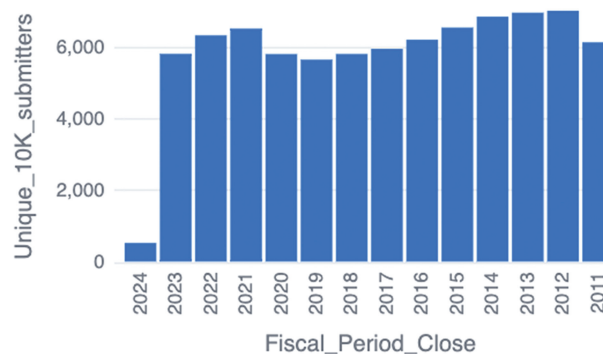


Figure 1: Unique 10-K submitters by year.

Many readers will have a good feel of what the market has been like recently, so by presenting this information first will hope to reduce their processing time. This is a reverse storytelling technique where starting with the present can aid in tracing patterns.

Figure 2 illustrates the number of unique industries reported in annual 10-K filings. Over time, there has been a slight but consistent decline in the number of unique industries, with around 400 different industries reported each year.

Figure 3 highlights the most common forms submitted to the SEC, including 11 of the most frequently filed forms in the dataset. Among them, Form 8-K, which can be submitted multiple times a year, reports significant events such as bankruptcies, acquisitions, changes in directors or officers, and shifts in financial condition. Meanwhile, 10-Qs are submitted quarterly when 10-Ks are not required for that period. As expected, the dataset reflects roughly three times as many 10-Q filings as 10-Ks.

The data also shows that 10-K/A filings (amended 10-Ks) are more common than amended 10-Q filings (10-Q/As). Specifically, 6,983 of 83,336 10-Ks were amended (8.3%), while only 11,604 of 256,934 10-Qs were amended (4.5%). This discrepancy could be attributed to the fact that 10-Ks are audited, while 10-Qs typically are not.

The breadth of information within the dataset is notable, capturing forms beyond the commonly analyzed 10-Ks and 10-Qs. For instance, data about Initial Public Offerings (Form S-1), governance structures (DEF 14 A), and international reports (Form 20-F) are also included. Interestingly, there are more amended S-1 forms (S-1/A) than

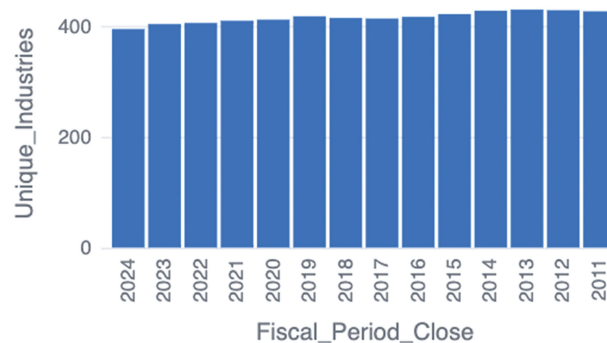


Figure 2: Unique industries by year.



Figure 3: Most common forms in SEC financial statement dataset).

initial submissions, suggesting a topic worth further investigation. Additionally, the higher rate of amended 10-Ks compared to 10-Qs may indicate that audited forms require more revisions.

Figure 4 displays the percentage growth of industries based on the number of unique companies in the dataset (as reflected in the *unique_co* column). Each company is counted only once, regardless of whether they have submitted for a single year or for multiple years over the period.

The trend column, represented by a sparkline, visualizes the growth pattern for each industry from 2011 to 2023, with the most recent years presented first. The data highlights a sharp spike in Blank Check companies in 2021, a phenomenon tied to the global pandemic and the rise of SPACs.

Conversely, the data shows steady growth in the Pharmaceutical Preparations industry, reflecting its increasing prominence. In contrast, several industries, including Crude Petroleum and Natural Gas, State and National Commercial Banks, Real Estate Investment Trusts, Metal Mining, and Savings Institutions, have experienced steady

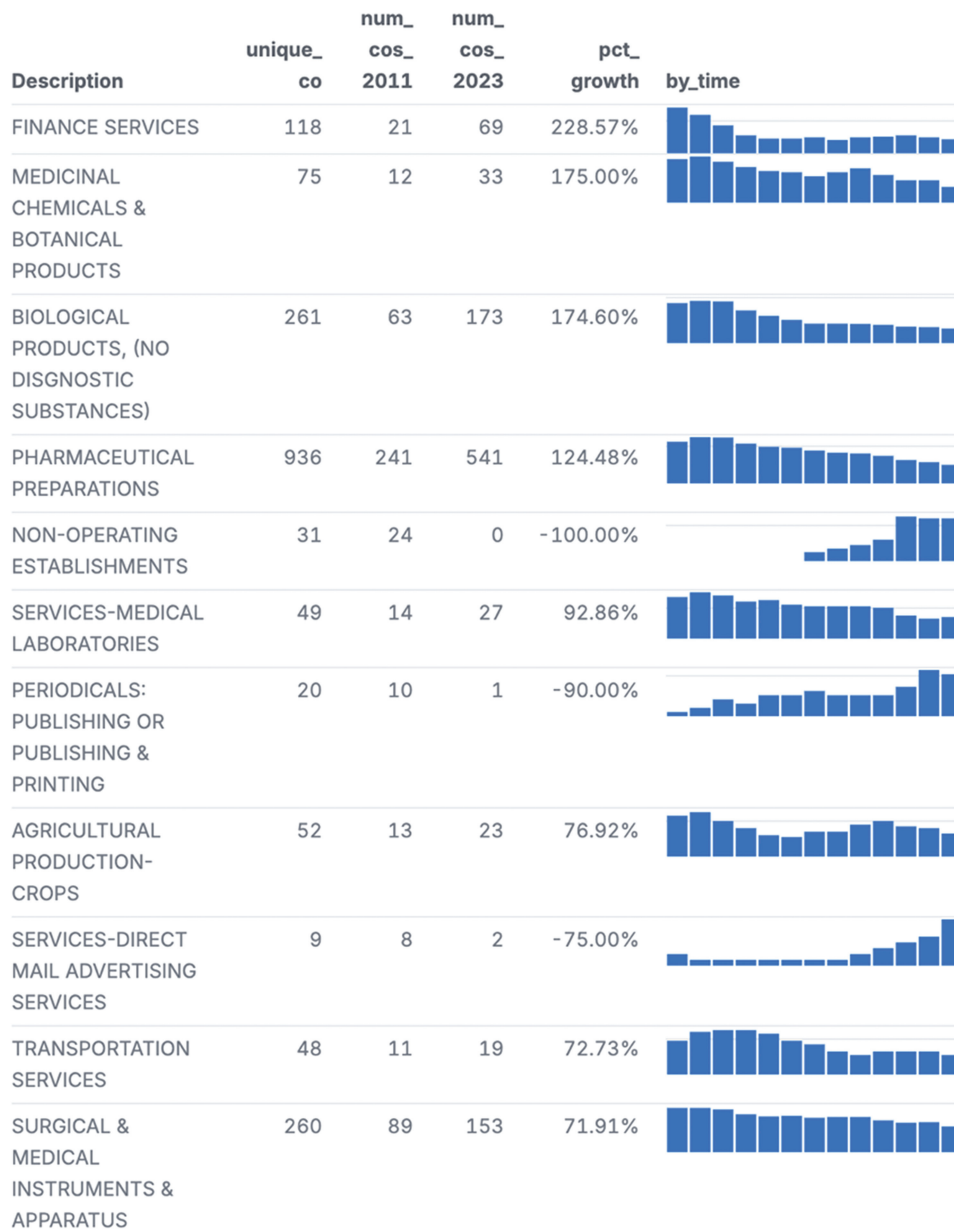


Figure 4: Industries by absolute percentage growth.

declines. Additionally, the last line in the figure points to a recent trend of companies submitting 10-K filings with a missing standard industry code, which warrants further exploration.

RQ 2: Which industries file the most 8-Ks?

Figure 5 presents the industries with the highest ratio of 8-K filings per 10-K submission. Companies are required to file a Form 8-K within four business days of any event deemed material to investors. The data reveal a significant spike in 8-K filings for the Air Transportation industry during the pandemic, likely due to the volatile nature of the sector at that time. The number of unique companies group in the industry is shown (num_orgs), followed by the total number of 8-Ks submitted by members of the industry (num_8ks), followed by the number of 10-Ks for that industry between 2012 and 2023 (num_10ks), and the average number of 8-Ks submitted per company (per_co_8k), followed by a recent trendline of the number of 8-Ks for the past five years (by_8k_per_). For context, we found that 7,987 companies submitted 277,136 8-K forms, averaging almost 35 submissions between 2019 and 2024. We found that 5,625 companies submitted no 8-K forms.











Description	num_ orgs	num_ 8ks	num_ 10ks	per_ co_8k	trend_2024_2019
AIR TRANSPORTATION, SCHEDULED	25	1,022	176	42.583	
ELECTRIC & OTHER SERVICES COMBINED	56	1,597	398	36.295	
MOTOR VEHICLES & PASSENGER CAR BODIES	42	1,291	236	31.488	
WATER TRANSPORTATION	20	626	147	31.3	
TRUCKING (NO LOCAL)	25	763	227	30.52	
PIPE LINES (NO NATURAL GAS)	28	810	226	28.929	
RETAIL-AUTO DEALERS & GASOLINE STATIONS	41	1,184	267	28.878	
HOSPITAL & MEDICAL SERVICE PLANS	22	626	160	28.455	
INVESTMENT ADVICE	74	2,052	574	28.11	
NATURAL GAS DISTRIBUTION	30	815	201	28.103	

Figure 5: Industries with most 8-Ks per 10-K.

Additionally, the SEC began mandating 8-K filings in XBRL format for large filers starting in 2019, with all filers required to comply by 2021. This shift in reporting requirements explains why earlier data reflects relatively few filings before 2019.

RQ 3. Which industries make the most amendments to their 10-Ks?

Figure 6 illustrates the trend in amended 10-K filings over time. The surge in amended returns after 2019 may be attributed to both the challenges of operating during the pandemic and increased regulatory scrutiny. Figure 7 ranks industries by the percentage of amended 10-K filings in 2023, listing both the number of companies in each industry (unique_co), the total number of 10-Ks filed in that industry (total_filed_10Ks), the number of companies in the industry in 2023 (ind_size_2023), the percentage of companies that amended their return in 2023 (pct_a_2023) and the percentage of firms that have amended at least one return (pct_a_all).

Notably, Gold, Silver, and Mining companies exhibit a consistent level of amendments across the years, while the Pharmaceutical Preparations industry shows a more recent and sustained increase in amendments. This pattern may suggest heightened pressures in these industries, such as regulatory challenges or complex reporting environments.

RQ 4. Which industries change their reported mailing or business address most frequently?

We identified a company as having moved if they changed the street address, city, state, zip code, or country listed under either their “business address” or “mailing address” on their 10-K filings from one year to the next. Table 1 provides details on these address changes, revealing 6,223 address changes across 4,529 unique public companies.

Interestingly, 24.8% of these changes occurred within the same zip code, likely reflecting minor adjustments such as standardizing street abbreviations (e.g., “Blvd” to “Boulevard”). Overall, 66% of address changes remained within the same state, while 20% involved moves to a different state. Additionally, 2.4% of changes were from a U.S. address to an ex-U.S. location, while 3.4% reflected the reverse—ex-U.S. to U.S. Furthermore, 8% of address changes involved moves between two non-U.S. locations.

Next, we examined address changes by industry. Table 2 shows the industries with the highest percentage of cross-state address changes (out_state_moves). It also shows other metrics like in-state address changes, address change to the U.S. (to_usa), address changes out of the U.S. (out_of_usa, and ex_US_to_ex_US) Notably, industries such as Miscellaneous Retail, Agricultural Production, and Gold and Silver Ores show a high percentage of moves between non-U.S. locations, reflecting potential global mobility in these sectors.

We also assessed which industries change their business or mailing address most frequently. To do so, we calculated the percentage of 10-K filings that reported a change in business or mailing address by dividing the total number of address changes in each industry by the total number of 10-K filings in that industry. These results, limited to industries with at least 20 companies, are presented in Table 3 and Table 4 showing industries with both frequent and infrequent address changes. Both figures show the total number of unique companies in the industry, the number of address changes by industry, and the total number of submitted 10-Ks by industry. The last column shows the percent of 10-Ks that showed a change of address for the industry. A number of 14% would mean that 14 percent of 10-Ks submitted in that industry showed a change in address. We can see that Medicinal Chemicals and Retail-Misc are the industries that have recorded the highest percentages of address changes as reported on their 10-Ks.

The data reveal that banks, real estate, and insurance companies tend to report fewer address changes, while industries such as medicinal chemicals, pharmaceutical preparations, mining, retail, and various service sectors exhibit

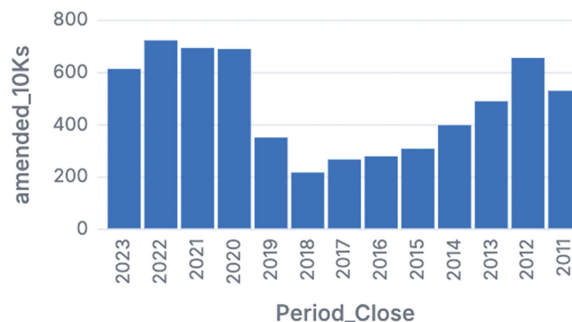


Figure 6: Amended 10-Ks by fiscal year.

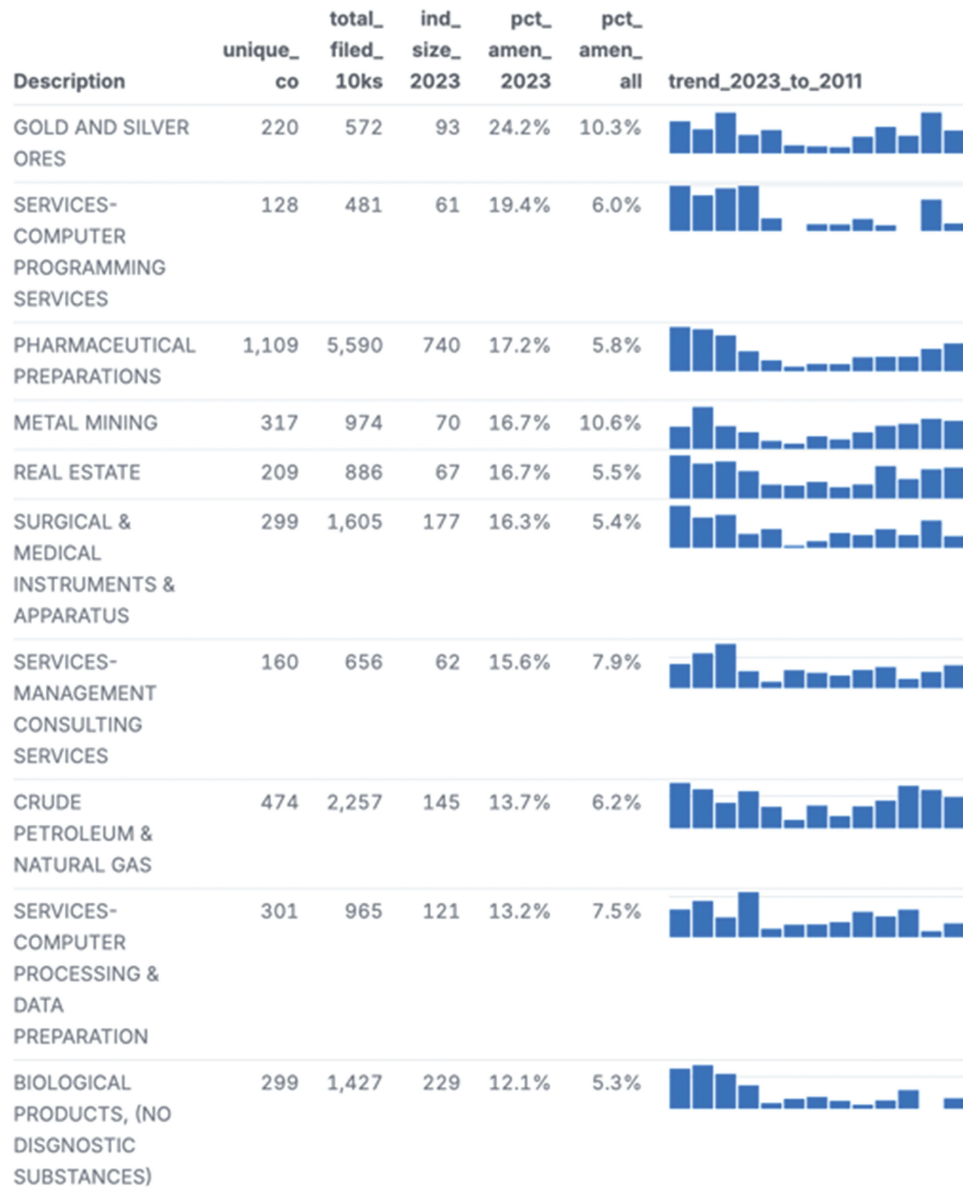


Figure 7: Industries highest number of amended 10-Ks.

Table 1: Details on address changes on 10-Ks.

total_moves	unique_orgs_ moving	pct_within_ zip_us	pct_in_ state_moves	pct_out_ state_moves	to_usa	out_of_ usa	ex_US_to_ ex_US
6,230	4,530	24.8%	66.2%	20.0%	3.4%	2.4%	8.0%

more frequent changes. This discrepancy may reflect the different strategic needs or regulatory environments across industries, with sectors like banking and insurance being more stable in terms of location compared to more dynamic sectors like pharmaceuticals and retail.

RQ 5: Which industries are transitioned into most often? Which industries are transitioned out of most often?

We identified 1,154 instances where companies changed their industry classification (SIC code) from one year to the next, representing 1.38% of the 83,518 total 10-K filings in our sample (Table 5). This provides insight into the frequency of industry transitions, allowing us to examine which industries experience the most shifts.

Table 2: Industries with highest percentage of cross-state address changes.

Industry	Total mvs	unique_ cos	in_state_ mvs	out_sta te_mvs	to_ usa	out_of_ usa	ex_US_to_ ex_US
Communications Equipment. NEC	35	21	48.6%	48.6%	2.9%	0.0%	0.0%
Services—Educational Services	39	29	53.8%	35.9%	2.6%	2.6%	5.1%
Patent Owners & Lessors	37	24	51.4%	35.1%	5.4%	5.4%	2.7%
Electromedical & Electrotherapeutic Apparatus	40	28	65.0%	35.0%	0.0%	0.0%	0.0%
Telephone Communications (No Radiotelephone)	34	27	52.9%	32.4%	2.9%	5.9%	5.9%
Retail—Miscellaneous Retail	45	26	42.2%	31.1%	6.7%	2.2%	17.8%
Services—Advertising	37	27	51.4%	29.7%	2.7%	5.4%	10.8%
Electric Services	48	34	56.3%	29.2%	0.0%	4.2%	10.4%
Blank Checks	159	133	50.9%	28.9%	3.1%	4.4%	12.6%
Agricultural Production—Crops	28	21	42.9%	28.6%	0.0%	0.0%	28.6%
Services—Computer Processing & Data Preparation	101	84	61.4%	26.7%	4.0%	2.0%	5.9%
Services—Computer Integrated Systems Design	54	39	66.7%	25.9%	1.9%	1.9%	3.7%
Gold and Silver Ores	51	39	33.3%	25.5%	9.8%	7.8%	23.5%
Commodity Contracts Brokers & Dealers	99	77	73.7%	25.3%	0.0%	1.0%	0.0%
Beverages	28	21	67.9%	25.0%	0.0%	7.1%	0.0%

Table 3: Industries with frequent address changes.

Industry	unique_cos	num_mvs	num_10ks	pct_10k_w_mv
Medicinal Chemicals & Botanical Products	34	46	317	14.5%
Retail—Miscellaneous Retail	26	45	315	14.3%
Agricultural Production—Crops	21	28	220	12.7%
Communications Services. NEC	31	42	337	12.5%
Patent Owners & Lessors	24	37	305	12.1%
Services—Help Supply Services	22	38	321	11.8%
Metal Mining	74	115	988	11.6%
Pharmaceutical Preparations	429	617	5651	10.9%
Services—Management Consulting Services	56	72	663	10.9%
Biological Products. (No Disgnostic Substances)	110	149	1447	10.3%
Services—Computer Processing & Data Preparation	84	101	984	10.3%
Services—Computer Programming. Data Processing. Etc.	49	63	619	10.2%
Communications Equipment. NEC	21	35	349	10.0%
Perfumes. Cosmetics & Other Toilet Preparations	22	27	278	9.7%
Services—Business Services. NEC	135	189	1967	9.6%
Services—Advertising	27	37	386	9.6%
Oil & Gas Field Services. NEC	27	34	357	9.5%

When submitting a 10-K, companies can change their SIC code annually. [Table 6](#) highlights the most common industry transitions, presenting both the prior (Old Industry) and new industry classifications (New Industry) for companies that reclassified. The data shows that approximately 10% of all SPACs transitioned into the Pharmaceutical Preparations industry. Often, SPACs change their name and receive a new unique identifier, which

Table 4: Industries with infrequent address changes.

Industry	unique_cos	num_mv	num_10ks	pct_10k_w_mv
Savings Institution. Federally Chartered	25	27	1,126	2.4%
State Commercial Banks	81	91	2,983	3.1%
National Commercial Banks	50	58	1,605	3.6%
Investment Advice	25	28	574	4.9%
Life Insurance	24	26	518	5.0%
Motor Vehicle Parts & Accessories	24	30	573	5.2%
Blank Checks	133	159	2,882	5.5%
Real Estate	36	51	889	5.7%
Electric Services	34	48	784	6.1%
Retail—Eating Places	36	47	758	6.2%
Fire. Marine & Casualty Insurance	45	59	893	6.6%
Telephone Communications (No Radiotelephone)	27	34	509	6.7%
Semiconductors & Related Devices	70	92	1,348	6.8%
Industrial Organic Chemicals	27	39	569	6.9%
Real Estate Investment Trusts	206	264	3,820	6.9%
Electromedical & Electrotherapeutic Apparatus	28	40	542	7.4%
Natural Gas Transmission	26	32	420	7.6%

Table 5: Number of industry transitions.

total_10Ks	num_sic_changes	pct_10ks_w_change
83,518	1,154	1.4%

Table 6: Common industry transitions from left description to right description.

Old Industry	num_industry_change	New Industry	unique_co
Blank Checks	212	Pharmaceutical Preparations	20
		Services—Prepackaged Software	14
		Services—Business Services NEC	12
Services—Business Services. NEC	52	Pharmaceutical Preparations	5
		Services—Computer Processing & Data Preparation	4
		Personal Credit Institutions	3
Services—Prepackaged Software	32	Services—Management Consulting Services	3
		Finance Services	3
		Surgical & Medical Instruments & Apparatus	3
Services—Computer Processing & Data Preparation	29	Finance Services	11
		Retail—Miscellaneous Retail	3
		Medicinal Chemicals & Botanical Products	2
Metal Mining	29	Pharmaceutical Preparations	4
		Services—Prepackaged Software	2
		Crude Petroleum & Natural Gas	2

would be recorded in the data as a new company rather than an industry transition. Additionally, 38% (11 out of 29) of companies in the Computer Processing & Data Preparation industry reclassified into the Finance Services industry, suggesting that some firms may transition to industries where they are perceived as more attractive investments.

We further examined which industries companies transitioned out of most frequently (Table 7) and which industries they transitioned into most often (Table 8). Unsurprisingly, Non-Operating Establishments frequently transitioned into operational industries, changing their SIC code accordingly. Similarly, Investors Not Elsewhere Classified (NEC) tended to reclassify their industry to better align with their business activities. SPACs often transitioned into a new industry after acquiring a company, although many changed their name and unique identifier in the process, which in some cases might be recorded as the end of reporting under their previous identity.

Companies may reclassify for a variety of reasons, including becoming more attractive to investors. The Patent Owners, Medicinal Chemicals, and Finance Services industry is a common destination, where 25% percent of the industry reclassified there from a previous industry. Likewise, the Patent Owners and Medicinal Chemicals industries saw a high percentage of companies transitioning into them, reflecting broader trends in these sectors.

Table 7: Industries transitioned away from (sorted by percent of companies that switched out of that industry).

old_desc	num_ 10ks	unique_ cos	num_switching_ out	pct_switched_ out	totalcos_ 2011	totalcos_ 2023
Non-Operating Establishments	111	50	11	22.0%	8	2
Investors NEC	180	69	11	15.9%	12	9
Short-Term Business Credit Institutions	148	43	6	14.0%	8	8
Services—Motion Picture & Video Tape Production	193	95	13	13.7%	25	7
Services—Commercial Physical & Biological Research	335	107	14	13.1%	15	15
Agricultural Services	132	49	6	12.2%	6	12
Blank Checks	2,882	1,946	212	10.9%	324	240
Communications Services NEC	337	129	14	15.9%	22	24
Construction—Special Trade Contractors	180	65	7	10.8%	11	9
Computer Peripheral Equipment NEC	212	67	6	15.9%	13	15
Oil & Gas Field Exploration Services	314	95	8	8.4%	31	14
Services—Miscellaneous Business Services	196	72	6	8.3%	15	12
Services—Amusement & Recreation Services	259	110	9	8.2%	18	17
Retail—Drug Stores and Proprietary Stores	132	49	4	8.2%	14	7
Arrangement of Transportation of Freight & Cargo	142	37	3	8.1%	13	9
Plastics Products NEC	195	51	4	7.8%	14	12
Real Estate Agents & Managers (For Others)	193	78	6	7.7%	12	14
Retail—Eating & Drinking Places	144	53	4	7.5%	9	9
Instruments for Meas & Testing of Electricity & Elec Signals	190	41	3	7.3%	10	10
Refuse Systems	150	41	3	7.3%	7	11

Table 8: Industries transitioned into (sorted by percent of companies that switched into the industry from another industry).

Industry	num_ 10ks	unique_ cos	num_ switching_in	pct_ switched_in	totalcos_ 2011	totalcos_ 2023
Patent Owners & Lessors	305	50	14	28.0%	24	16
Medicinal Chemicals & Botanical Products	317	76	19	25.0%	12	33
Finance Services	412	118	29	24.6%	21	69
Mining & Quarrying of Nonmetallic Minerals (No Fuels)	295	49	10	20.4%	21	19
Retail—Miscellaneous Retail	315	63	12	19.0%	21	19
Construction—Special Trade Contractors	180	37	7	18.9%	10	12
Transportation Services	228	48	8	16.7%	11	19
Services—Miscellaneous Amusement & Recreation	268	63	10	15.9%	15	25
Beverages	296	66	10	15.2%	20	24
Services—Medical Laboratories	285	49	7	14.3%	14	27
Services—Advertising	386	78	11	14.1%	24	21
Communications Services NEC	337	72	10	13.9%	36	20
Cable & Other Pay Television Services	318	51	7	13.7%	27	15
Oil & Gas Field Services NEC	357	60	8	13.3%	23	21
Insurance Agents Brokers & Service	249	39	5	12.8%	19	21
Services—Management Consulting Services	663	135	17	12.6%	34	45
Petroleum Refining	288	40	5	12.5%	23	15

5. Discussion

5.1. Strengths and Weaknesses

This study leverages a large dataset comprising over 83,000 10-K filings from a publicly available source, providing a strong foundation for analysis. The use of both the public dataset and the open-source data language Malloy enhances the transparency and replicability of the research, enabling future studies to build on or validate the findings. Our research offers a novel perspective by examining address changes and industry reclassifications as proxies for industry pressure or turbulence—areas that are underexplored in current literature. By focusing on trends over time, we uncover patterns in industry behavior and highlight emerging topics of interest. For practitioners, such as investors, regulators, and policymakers, these findings offer critical insights into industry dynamics and the evaluation of business environments.

However, the data used in this study only covers a 12-year period (2012–2023), which may limit the generalizability of the findings, as industries and national economies follow growth cycles. Another limitation is the focus on basic descriptive information about the 10-K submitters, without getting into more detailed financial concepts, such as Net Income or Assets. Additionally, SIC codes, which are self-reported, may not always accurately reflect a company's business activities.

6. Future Research

One potential avenue for future research is the development of an “Industry Stress Index.” This index could aggregate multiple factors—such as address changes, industry reclassifications, 8-K filing frequency, and 10-K amendment rates—into a comprehensive measure of industry pressure and volatility. Further studies could explore how to weight these factors in the index and assess its predictive power for industry performance and trends. Additionally, since SIC codes are hierarchical, future research could extend the analysis by investigating trends at higher levels of classification, rather than focusing solely on the lowest (four-digit) level.

Future studies may examine these concepts in markets outside of the U.S., as the concept of industry pressures should exist in any capitalist market. If other markets provide well-structured data, as the SEC does, the same analysis should be possible.

Future research could also explore the broader capabilities of Malloy in data analysis, either with this dataset or others. This might include comparative studies of Malloy's performance and usability against other tools, investigations into its applications across various research domains, and the establishment of best practices for its effective use.

We observed that certain industries contain a high proportion of companies that have reclassified themselves into those sectors. Further research could examine the drivers of such transitions, including mergers and acquisitions, technological innovation, regulatory shifts, and changes in consumer demand. Understanding these dynamics would provide valuable insights for investors, policymakers, and businesses in these evolving industries. While we do not attempt to uncover the nature, severity, or genesis of the 10-K amendment, this is a ripe area for future research. Advanced SQL or Malloy queries should be able to identify precise differences between the original and amended submissions.

Similarly, some industries show a greater frequency of address changes. Future research could explore the strategic factors behind these changes, such as tax optimization, regulatory arbitrage, market expansion, and talent acquisition. Further research is necessary on the mechanisms causing address changes and how this differs across industries. In some industries address changes may signal growth, while in other it may signal times of stress. Further research is necessary to tease out these differences. This could offer deeper insights into the decision-making processes behind corporate relocations and their broader implications.

7. Conclusion

Several key trends emerge from the analysis, particularly the overlap between industries that frequently transition into new classifications and those that often change their addresses. Industries such as Patent Owners, Medicinal Products, and Miscellaneous Retail are commonly transitioned into and exhibit frequent address changes, which may suggest a high level of mergers and acquisitions in these sectors. Similarly, industries like Metal Mining, Gold and Silver Ores, Pharmaceutical Preparations, and Services – Programming also report frequent address changes alongside a high number of amended returns, further indicating potential industry pressures or volatility.

While industries have been compared using a variety of metrics in previous research, this study introduces two new indicators—address changes and industry reclassifications—that have not been widely explored in the literature. These factors provide valuable insights into industry-level pressures and may serve as proxies for understanding external pressures. Future research could build on this work by integrating multiple factors to create an industry stress index.

Additionally, this study showcases a novel methodological tool, Malloy, which has yet to be widely adopted in academic research. Malloy offers significant advantages for replicating analyses over traditional software like Tableau or PowerBI, as its code can be easily shared and re-executed. Future research is needed to further explore and demonstrate the full capabilities and utility of Malloy for large-scale data analysis.

References

- Baaij, M. G., T. J. M. Mom, F. A. J. Van den Bosch, and H. W. Volberda. 2015. "Why Do Multinational Corporations Relocate Core Parts of Their Corporate Headquarters Abroad?" *Long Range Planning* **48**, no. 1: 46–58.
- Ben-Rephael, A., Z. Da, P. D. Easton, and R. D. Israelsen. 2022. "Who Pays Attention to SEC Form 8-K?" *The Accounting Review* **97**, no. 5: 59–88.
- Bhojraj, S., C. M. C. Lee, and D. K. Oler. 2003. "What's My Line? A Comparison of Industry Classification Schemes for Capital Market Research." *Journal of Accounting Research* **41**, no. 5: 745–774.
- Birkinshaw, J., P. Braunerhjelm, U. Holm, and S. Terjesen. 2006. "Why Do Some Multinational Corporations Relocate Their Headquarters Overseas?" *Strategic Management Journal* **27**, no. 7: 681–700.
- Cassell, C. A., L. M. Cunningham, and L. L. Lisic. 2019. "The Readability of Company Responses to SEC Comment Letters and SEC 10-K Filing Review Outcomes." *Review of Accounting Studies* **24**, no. 4: 1252–1276.
- Chakri, P., Pratap, S. Lakshay, Gouda. and S. K. 2023. "An Exploratory Data Analysis Approach for Analyzing Financial Accounting Data Using Machine Learning." *Decision Analytics Journal* **7**: 100212.

- Curling, M. L. 2006. Mandatory 10-K amendments and strategic disclosure: An examination of firms under review by the Securities and Exchange Commission [Ph.D., The Pennsylvania State University]. <https://www.proquest.com/docview/305247997/abstract/E66A6A17526C40A0PQ/1>
- Fama, E. F., and K. R. French. 1997. "Industry Costs of Equity." *Journal of Financial Economics* **43**, no. 2: 153–193.
- Gaspar, J.-M., S. Wang, and L. Xu. 2024. "Digitalization and the Performance of Non-Technological Firms: Evidence from the COVID-19 and Natural Disaster Shocks." *Journal of Corporate Finance* **89**: 102670.
- Gompers, P. A. 1997. "Optimal Investment, Monitoring, and the Staging of Venture Capital." In *Venture Capital*. Routledge: London, United Kingdom.
- Gregory, R., J. R. Lombard, and B. Seifert. 2005. "Impact of Headquarters Relocation on the Operating Performance of the Firm." *Economic Development Quarterly* **19**, no. 3: 260–270.
- Klier, T., and W. Testa. 2002. "Location Trends of Large Company Headquarters during the 1990s." *Economic Perspectives* **26**, no. 2: 12–27.
- Komorowski, M., D. C. Marshall, J. D. Saliccioli, and Y. Crutain 2016. "Exploratory Data Analysis." In *Secondary Analysis of Electronic Health Records*, 185–203. Springer International Publishing: Cham, Switzerland. https://doi.org/10.1007/978-3-319-43742-2_15
- Krishnan, G. V., and Y. Zhang. 2014. "Is There a Relation Between Audit Fee Cuts During the Global Financial Crisis and Banks' Financial Reporting Quality?" *Journal of Accounting and Public Policy* **33**, no. 3: 279–300.
- Lerman, A., and J. Livnat. 2010. "The New Form 8-K Disclosures." *Review of Accounting Studies* **15**, no. 4: 752–778.
- Li, F., R. Lundholm, and M. Minnis. 2013. "A Measure of Competition Based on 10-K Filings." *Journal of Accounting Research* **51**, no. 2: 399–436.
- McMullin, J. L., B. P. Miller, and B. J. Twedt. 2019. "Increased Mandated Disclosure Frequency and Price Formation: Evidence from the 8-K Expansion Regulation." *Review of Accounting Studies* **24**, no. 1: 1–33.
- Nielsen, S. 2022. "Management Accounting and the Concepts of Exploratory Data Analysis and Unsupervised Machine Learning: A Literature Study and Future Directions." *Journal of Accounting & Organizational Change* **18**, no. 5: 811–853.
- Phillips, R. L., and R. Ormsby. 2016. "Industry Classification Schemes: An Analysis and Review." *Journal of Business & Finance Librarianship* **21**, no. 1: 1–25.
- Schroeder, J., and P. N. Posch. 2023. "Anomalies, Trends and Patterns in Disclosure Activities: Understanding EDGAR." (SSRN Scholarly Paper No. 4664431). Social Science Research Network. <https://doi.org/10.2139/ssrn.4664431>
- Thompson, R. A. 2023. "Reporting Misstatements as Revisions: An Evaluation of Managers' Use of Materiality Discretion." *Contemporary Accounting Research* **40**, no. 4: 2745–2784.
- Tosun, O. K., and S. K. Moon. 2024. "Socially Responsible Investment Funds and Firm Performance Improvement." *Review of Quantitative Finance and Accounting*.
- Vanneste, B. S. 2017. "How Much Do Industry, Corporation, and Business Matter, Really? A Meta-Analysis." *Strategy Science* **2**, no. 2: 121–139.
- Wang, H., and R. Coff. 2022. "On the Matter of How Much Industry Matters." *Strategic Management Review* **3**, no. 2: 295–323.
- Watkins, J. 2022. "Consequences of Prescribed Disclosure Timeliness: Evidence from Acceleration of the Form 8-K Filing Deadline." *The Accounting Review* **97**, no. 7: 429–463.

Appendix A

All Code is available here: <https://github.dev/mrtimo/IndustryStress>

Queries can be run by using this method: https://docs.malloydata.dev/documentation/user_guides/basic.html

1. Logging into GitHub
2. Go to the repository: <https://github.dev/mrtimo/IndustryStress>
3. Press the period key – “.”
4. Install the Malloy Extension
5. Open the .malloynb file and press “Play” on the first cell