

SASB – MORELL

The Effect of Management's Focus on SASB Measures on Financial Performance:  
A Study of the Health Care Supply Chain Sector

Dissertation

Prepared in partial fulfillment of the requirements for the degree of

Doctor of Business Administration

Kellstadt Graduate School of Business

DePaul University

Chicago, Illinois

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Submitted: May 9, 2022

Defense: May 18, 2022

Presented to:

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### Acknowledgments

First, I would like to acknowledge my dissertation committee: Mark Frigo, Ph.D., Committee Chair, Ray Whittington, Ph.D., and Willie Reddic, Ph.D. Dr. Frigo was instrumental in assisting me with the identification of my topic and development of my proposal for this study. He consistently challenged me to ask the next question in my thought process throughout the proposal development process. During the study writing and review processes Dr. Frigo provided content focus and guidance. Dr. Whittington brought his knowledge of the Sustainability Accounting Standards Board (SASB) and the sustainability measures published by the organization to the development of this study. He provided editorial reviews adding clarity to the text. Dr. Reddic provided guidance on approaches to writing and conducting analyses. Dr. Reddic provided insights into and recommendations for the analytic process for this study. He also provided analytic assistance as my instructor in a data mining and analytics course I took as part of my MS in Audit and Advisory Services. Thank you for your input throughout the development of this study. Your support was greatly appreciated.

Other faculty who provided the foundation for the development of this study included the following individuals: (1) Erich Dierdorff, Ph.D., for his research courses; (2) Grace Lemmon, Ph.D., for her statistics courses; (3) Sanjay Deshmukh, Ph.D., for his forecasting and prediction course; (4) Goran Kuljanin, Ph.D., for his data science and visualization course; and (5) Cindy Durtschi, Ph.D., for her contemporary topics in accounting seminar. Each of these members of the DBA program faculty provided research and writing insights that contributed to the development of this study.

A special thank you goes to Simon Hudson, Membership & Education Operations Associate at the Value Reporting Foundation (VRF). Simon provides the SASB members with

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the Corporate Reporters Monthly Digest. This report updates members on the number of organizations utilizing the SASB sustainability measures in their public sustainability reports. He explained to me how the VRF tracks the use of the SASB sustainability measures by organizations and the resulting definition of the SASB participation. In addition, Simon facilitated my obtaining a licensing agreement with the Value Reporting Foundation for this study.

Finally, I would like to thank my wife Nancy for her support and patience with all of the hours committed to the development of this study as well as the three years spent in the DBA program. The preparation for each of the twenty-six residency weekends as well as the two plus days committed to each weekend have been both an investment as well as a calendar constraint. Thank you again for your understanding and support.

## **Biography**

James C. Morell was born and raised in Cleveland, Ohio apart from two years in the San Francisco Bay area as a child. Jim graduated from Cleveland Heights High School. Upon graduation he entered Case Western Reserve University majoring in Economics and Psychology with a focus on Organization Design, and earned a Bachelor of Arts. After two years of active duty in the U.S. Army Jim entered The Ohio State University's MHA program earning a Master of Science in Hospital and Health Services Administration. Over three decades later Jim entered DePaul University's Master of Science – Audit and Advisory Services program with a focus on Forensic Accounting earning a second master's degree in preparation for entering DePaul's DBA program.

During Jim's professional career he has served in the following capacities: department manager with a national retailer; certified nursing assistant; company commander of troops/basic training; Inspector General Auditor; staff consultant at a management advisory firm; administrative resident at an academic medical center; hospital administrator at the same medical center; public accounting partner with two national practices; owner and managing director of two management advisory service firms; partner at another advisory service firm; chair of the board and executive director of a professional association; and board member of a not-for-profit health care accreditation company. The expertise developed and experiences gained from these positions opened the door for Jim's entry into the world of academia.

Jim has been teaching MBA and undergraduate business students at DePaul University, Chicago, since 2008. His focus is teaching strategy (capstone) and operations courses at both the undergraduate and graduate levels. During this period he also spent a year at North Park

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University, Chicago, advising health administration majors with their senior projects. In addition, Jim taught a course on health care regulation. This program was a one-year trial that closed after two semesters. These experiences contributed to Jim initiating a career change to academia with the cornerstone of this transition being the pursuit of a Doctorate in Business Administration (DBA) with focus on academic research techniques.

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Abstract

Publicly traded companies are coming under increasing pressure from investors and the media to demonstrate their commitment to Environmental, Social, and Governance (ESG) sustainability, and there are many ESG models competing for the attention of the board and senior management team (Burke, 2020, Fatemi, 2017, and Jebe, 2019). In response to this pressure the Sustainability Accounting Standards Board (SASB) has prepared a “Directors’ Guide to the SASB Standards” for eleven industries (Value Reporting Foundation, 2021). The objective of this study was to provide evidence to support the Sustainability Accounting Standards Board’s claim that organizational adoption and strategic focus on its ESG measures will materially improve financial performance. This was accomplished by evaluating key financial performance metrics for companies in the healthcare supply chain sector. As one of eleven industries with SASB standards, the healthcare supply chain was selected to limit the scope of the analysis of this study. This study addressed the five years before adopting SASB measures through the years following the firm’s strategic commitment. The findings in my study do not support the SASB claim that reporting companies experience improved financial performance (H1) and outperform their peers (H2). Further study is warranted.

## Introduction

There are many ESG disclosure models competing for the attention of boards, senior management, and investors. Evidence of improved financial performance is important to boards, management teams, investors, and the SASB. Since improved financial performance validates the organization's strategic decision to adopt the SASB measures, investors will look favorably on the improved financial performance, both as an immediate return on their investment and as a measure of sustainability for the organization going forward. The SASB will look favorably on the improved financial performance as a strong validation of its organizational purpose. This study was designed to provide evidence those organizations that make the strategic decision to adopt the SASB measures experience material improvement in their financial performance.

This evidence will be provided by evaluating financial performance of the companies being studied. The financial performance measures used in the study included: (1) cash flow per employee, (2) cash flow/current assets, and (3) company price-to-earnings ratio/S&P 500 price-to-earnings ratio. These financial performance measures are commonly used to measure financial performance. The first year studied was 2013 representing five years before the first health care supply chain sector company publicly disclosed adoption of at least one SASB measure (Companies Reporting with SASB Standards, 2022). Data was collected through 2021 for each company. The initial sample for this study included sixty-two organizations from the healthcare supply chain sector to limit the scope of this analysis. The health care industry, specifically the health care supply chain sector, was selected for this study as healthcare is one of the largest industries in the United States representing 19.7% of the US GDP in 2020 (Insider Intelligence, 2022). It is anticipated that this study will provide evidence of the SASB's claim of providing material financial performance information that improves performance.

The study's Literature Review section follows providing a history of the development of sustainability models beginning with Corporate Social Responsibility, followed by Environmental, Social, and Governance, then Creating Shared Value, and closing with the SASB.

## Literature Review

### **Introduction**

The SASB is an independent not-for-profit organization dedicated to the development of financially material sustainability reporting standards for use by management and investors. The SASB was formed in 2011 with the mission "...to establish and improve industry specific disclosure standards across financially material environmental, social, and governance topics that facilitate communication between companies and investors about decision-useful information" (About Us, 2021). The SASB vision states that "...global capital markets in which a shared understanding of sustainability performance enables companies and investors to make informed decisions that drive long-term value creation and better outcomes for businesses and their shareholders, the global economy, and society at large" (About Us, 2021). Arthur Levitt, a former chair of the Securities and Exchange Commission stated, "I firmly believe that the success of capital is directly dependent on the quality of accounting and disclosure systems" (Levitt, 80). The SASB effectively represents the combination of quality accounting and

disclosure systems. Since 2020, 1,577 organizations, referred to as Reporters, have reported utilizing SASB standards as part of their annual disclosures (Global Use of SASB Standards, 2022). Of the sixty-one organizations making up the initial sample for this study, fifty-two of these companies were applying SASB measures, representing 3% of the Reporters at the time of this study. All of this has occurred since the first SASB standards were published in 2015 (Companies Reporting with SASB Standards, 2022). This growth in reporting by management demonstrates their interest in and the investor support of the quality accounting and disclosure systems provided through the SASB.

The purpose of this study was to provide evidence that the SASB standards deliver on the two elements of the organization’s purpose statement: (1) “SASB standards are designed to identify a minimum set of sustainability issues most likely to impact the operating performance or financial condition of the typical company in any industry, regardless of location” (Sustainability Accounting Standard, 2018) and (2) “sustainability” means “...corporate activities that maintain or enhance the ability of the company to create value over the long term” (Sustainability Accounting Standard, 2018).

In order to provide this evidence, this study focused on the health care industry, specifically the organizations of the health care supply chain sector. The supply chain sector included (1) Biotechnology & Pharmaceuticals (32 companies), (2) Drug Retailers (2 companies), (3) Health Care Distributors (5 companies), and (4) Medical Equipment & Supplies (22 companies). As a supply chain sector, healthcare is unique relative to other supply chains with its research and development, drug development and distribution, and its unique equipment & supplies. This study excluded two health care sector industries that are not part of the supply chain (1) Health Care Delivery (healthcare providers) and (2) Managed Care (healthcare payers)

(Companies Reporting with SASB Standards, 2022). Supply chains in other industries provide an opportunity for future study.

Prior literature focused on the relationship between SASB measures and the development of the concept of corporate responsibility from Corporate Social Responsibility (CSR) to Environmental, Social, and Governance (ESG) to Creating Shared Value (CSV). Understanding the SASB measures by sector provides examples of its commitment to providing investors with financial performance information while also addressing corporate responsibility (Sustainability Accounting Standard, 2018). This literature reviewed the standards associated with each of the four health care supply chain sectors. Therefore, utilizing these SASB standards as the foundation of this study, these standards will be compared to each of the three levels of corporate responsibility.

### **Background**

In a review of the literature, there appears to be three distinct philosophies associated with sustainability. The first reference to Corporate Social Responsibility in scholarly work was in 1972 (Drotning). The title was interesting, “Why Nobody Takes Corporate Social Responsibility Seriously.” This was an interesting title for a topic that is still being studied today. The first reference to Environmental, Social, and Governance in scholarly work was in 2007 (Kiernan). The article titled “Universal Owners and ESG: Leaving Money on the Table?” Kiernan argued under the Universal Owner hypothesis that ESG provided an opportunity for institutional investors to exercise their economic power to reshape the macro-level of the economic, social, and environmental condition. In 2011 the *Harvard Business Review* published an article titled “Creating Shared Value How to Reinvent Capitalism – and Unleashing a Wave of Innovation and Growth” (Porter and Kramer), introducing the third philosophy addressing



sustainability in scholarly literature. Each of these programs introduced a different approach for addressing sustainability. “Corporate Social Responsibility” introduced the concept that sustainability is the responsibility of the organization. “Universal Owners and ESG” introduced the concept that sustainability is the responsibility of stakeholders external to the organization. “Creating Shared Value” introduced the concept that sustainability was the responsibility of both the organization and community the organization serves. These three initiatives represent a shift in responsibility for sustainability, from the organization to external stakeholders, then back to the organization teamed with the community. Each program is discussed in the following paragraphs.

### **Corporate Social Responsibility (CSR)**

An early definition of Corporate Social Responsibility (CSR) was provided by Archie Carroll (Carroll, 1979). In 1979 Carroll identified four social responsibility categories: (1) Economic Responsibilities, (2) Legal Responsibilities (including regulatory compliance), (3) Ethical Responsibilities, and (4) Discretionary Responsibilities. In a change from the 1979 article Discretionary was replaced with Philanthropic Responsibilities. This graphic was titled “The Pyramid of Corporate Social Responsibility” (Carroll, 1991).

### **Environmental, Social, and Governance (ESG)**

For a working definition of the key elements of the ESG program this study turned to Tim Mohin, a past CEO of the GRI (Global Reporting Initiative). He gave an interview for *The CPA Journal* for the News & Views Voices of the Profession (Mohin, 2018) to discuss the GRI Sustainability Reporting Standards as the CEO of the GRI. The GRI Standards were launched in October 2016. The GRI Standards were developed to allow all organizations to publicly report on their economic, environmental, and social impacts in order to show how each organization

contributes towards sustainable development. These standards focused on climate change, human rights, governance, and social well-being with “multi-stakeholder contributions and rooted in the public interest” (Mohin, 2018).

### **Creating Shared Value (CVS)**

Creating Shared Value (CSV) was introduced by Michael E. Porter and Mark R. Kramer in the *Harvard Business Review* (Porter and Kramer 2011). This article, “Creating Shared Value: How to Reinvent Capitalism-and Unleash a Wave of Innovation and Growth,” introduced a three-part initiative to accomplish this reinvention. Reconceiving products and markets represented the first part of this transformation. Rethinking products and markets to better meet market and societal needs and expectations was essential. Rethinking products and services created opportunities for collaboration and innovation. Redefining productivity in the value chain represented the second part of this transformation. Rethinking the value chain also created opportunities for collaboration and innovation. Enabling local cluster development was the third part of this reinvention uniting the organization with the community to address the needs of both the company and the community for their mutual benefit. Creating Shared Value provided a solution for bringing together the investor focus of the SASB with the stakeholder perspective of the GRI.

### **The Sustainability Accounting Standards Board (SASB)**

The SASB standards were organized by industry, by sector, by topic, by accounting metric, and by category, including discussion and quantitative analysis. Each standard contains a “minimum set” of industry and sector topics SASB believed will provide material information for investors as well as a discussion on how this topic may impact value creation. The standards also include accounting metrics represent both quantitative and qualitative variables intended to

measure performance for that topic. Technical protocols were also provided for each accounting metric addressing definitions, scope, implementation, compilation, and presentation of information for third party use. These technical protocols are not part of this study. Activity metrics are also provided for each sector, allowing each company to scale its response to the standard for normalization and comparison.

**Table 1**  
*SASB Measures - Health Care Sector Profile*

Sector	Topics	Accounting Metrics	Categories	
			Discussion	Analysis Quantitative
*Biotechnology & Pharmaceuticals (1)	9	25	9	16
*Drug Retailers (2)	5	15	3	12
*Health Care Distributors (3)	5	13	7	6
*Medical Equipment & Supplies (4)	6	16	7	9
*Totals	25	69	26	43

Note 1 - Value Reporting Foundation. *Health Care Sector, Biotechnology & Pharmaceuticals Sustainability Accounting Standard*. 2018.

Note 2 - Value Reporting Foundation. *Health Care Sector, Drug Retailers Sustainability Accounting Standard*. 2018.

Note 3 - Value Reporting Foundation. *Health Care Sector, Health Care Distributors Sustainability Accounting Standard*. 2018.

Note 4 - Value Reporting Foundation. *Health Care Sector, Medical Equipment & Supplies Sustainability Standard*. 2018.

Comparing the SASB topics for the health care supply chain sector to the Corporate Social Responsibility construct presented by Carroll provided evidence the SASB topics address the Economic, Legal, and Ethical Responsibilities of an organization across all sectors. In the Biotechnology & Pharmaceutical sector example, topics associated with Economic Responsibilities included Employee Recruitment, Development & Retention as well as Supply Chain Management. Examples of Legal Responsibilities included Drug Safety and Safety of Clinical Trial Participants. Examples of Ethical Responsibilities included Business Ethics and Ethical Marketing. For the Drug Retailers sector an example of Economic Responsibilities is the topic Drug Supply Chain Integrity. As for Legal Responsibilities in this sector an example is the topic Management of Controlled Substances. An example of Ethical Responsibilities in the Drug Retailers sector is the topic Patient Health Outcomes. For the Health Care Distributors sector an example of Economic Responsibilities is the topic Product Lifecycle Management. An example of Legal Responsibilities is the topic Product Safety. A topic example for Ethics Responsibility in the Health Care Distributors sector is the topic Business Ethics. For the Medical Equipment & Supplies sector an example of Economic Responsibilities is the topic Product Design & Lifecycle Management. A topic example for Legal Responsibilities is Product Safety. For Ethical Responsibilities a SASB topic example is Business Ethics. Philanthropic Responsibilities associated with CSR were not addressed in the SASB measures.

Comparing the SASB topics for the health care supply chain sector to the Environmental, Social, and Governance construct presented by Mohin (2018) provided evidence the SASB topics address the climate change, human rights, governance, and social well-being standards for all four sectors. However, these comparisons were different from those expressed above for CSR. Business Ethics is a topic associated with Biotechnology & Pharmaceuticals, Health Care

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Distributors, and Medical Equipment & Supplies. In each of these sectors' Business Ethics could be associated with the ESG standards associated with climate change, human rights, governance, and social well-being. The Energy Management in Retail topic for Drug Retailers and the Fleet Fuel Management topic for Health Distributors could be associated with climate change. Each of the strategic and business operations topics across all four health care sectors could be associated with governance.

Comparing the SASB topics for the health care supply chain sector to the Creating Shared Value construct provided by Porter and Kramer (2011) provide evidence the SASB topics address the value creating steps of reconceiving products and markets, redefining productivity in the value chain, and enabling local cluster development for all four sectors. Strategically and operationally each topic of the four health care supply chain sectors related to each of the three ways to create economic value. For example, supply chain management, a topic associated with Biotechnology & Pharmaceuticals and Medical Equipment & Supplies, could play a role in all three value creating activities. Likewise, business ethics, a topic associated with Biotechnology & Pharmaceuticals, Health Care Distributors, and Medical Equipment & Supplies, could play a role in all three value creating activities.

The comparison of SASB to CSR, ESG, and CSV provided evidence of a connection between each value creating model. The SASB health care supply chain sector topics and accounting metrics support the focal points of all three sustainability constructs. The SASB/CSR and SASB/CSV relationships appear to be the strongest at this high level of comparison. The SASB/ESG relationship appears to be less defined at this level. However, this will likely change in the coming years for the following reasons. First, in 2020 the SASB and the GRI (Value Reporting Foundation, SASB Standards & Other ESG Frameworks, 2022) announced a plan to

collaborate by utilizing their respective standards together. This collaboration will provide organizations with access to both US and global sustainability standards through one organization. Second, five sustainability standard setting organizations disclosed “a shared vision” for a corporate reporting system addressing both financial accounting and sustainability reporting. The participating reporting organizations include (1) the CDP, (2) the Climate Disclosure Standards Board (CDSB), (3) the GRI, (4) the International Integrated Reporting Council (IIRC), and (5) the SASB. Third, the SASB and IIRC merged. This merger was completed on July 10, 2021, resulting in the formation of the Value Reporting Foundation (VRF) (SASB Standards & Other ESG Frameworks, 2022). All three of these actions will enhance the SASB topics and accounting metrics by including sustainability guidelines for both U.S. and global operations. As this literature review was ending, in 2020, SASB released Proposed Changes to the SASB Conceptual Framework & Rules of Procedure: Bases for Conclusions & Invitation to Comment on Exposure Drafts. Going forward, changes resulting from the adoptions of these recommendations and comments may have an impact on the material discussed above.

**Table 2**  
*SASB, CSR, ESG, and CSV Sustainability Standards*

<u>SASB Biotechnology &amp; Pharmaceuticals (1)</u>	<u>SASB Drug Retailer (2)</u>	<u>SASB Distributors (3)</u>
*Safety of Clinical Trial Participants	*Energy Management in Retail	*Fleet Fuel Management
*Access to Medicine	*Data Security & Privacy	*Product Safety
	*Drug Supply Chain Integrity	*Counterfeit Drugs
*Affordability & Pricing	*Management of Controlled Substances	*Product Lifecycle Management
*Drug Safety	*Patient Health Outcomes	*Business Ethics
*Counterfeit Drugs		
*Ethical Marketing		
*Employee Recruitment, Development & Retention		
*Supply Chain Management		

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\*Business Ethics

SASB Medical Equipment & Supplies (4)	CSR (5)	ESG (6)
*Affordability & Pricing	*Economic Responsibilities	*Climate Change
*Product Safety	*Ethical Responsibilities	*Human Rights
*Ethical Marketing	*Legal Responsibilities	*Governance
*Product Design & Lifecycle Management	*Philanthropic Responsibilities	*Social well-being
*Supply Chain Management		
*Business Ethics		
<hr/>		
CSV (7)		
*Reconceiving Products and Markets		
*Redefining Productivity in the Value Chain		
*Enabling Local Cluster Development		

Note 1 - Value Reporting Foundation. *Health Care Sector, Biotechnology & Pharmaceuticals Sustainability Accounting Standard*. 2018.

Note 2 - Value Reporting Foundation. *Health Care Sector, Drug Retailers Sustainability Accounting Standard*. 2018.

Note 3 - Value Reporting Foundation. *Health Care Sector, Health Care Distributors Sustainability Accounting Standard*. 2018.

Note 4 - Value Reporting Foundation. *Health Care Sector, Medical Equipment & Supplies Sustainability Standard*. 2018.

Note 5 - Carroll, Archie. "A Three Dimensional Conceptual Model of Corporate Social Performance." *Academy of Management Review*, 1979, p. 499.

Note 6: Mohin, Tim. "An Interview with GRI CEO Tim Mohin." Conducted by The CPA Journal Staff, *The CPA Journal*, 2018, p. 21.

Note 7: Porter, Michael, and Mark Kramer. "Creating Shared Value: How to reinvent capitalism-and unleash a wave of innovation and growth."

*Harvard  
Business Review*, 2011, p. 6.

### Hypotheses

For each company reporting its sustainability activities using the SASB framework, this study attempts to provide evidence that the following hypotheses are true.

**Hypothesis 1** – SASB reporting companies experience improved financial performance after the company’s first filing in which they adopt SASB reporting.

**Hypothesis 2** – SASB reporting companies outperform non-SASB reporting peers after the company’s first filing in which they adopt SASB reporting.

### Method

#### **Study Sample**

Publicly traded companies were selected for this study to ensure access to financial history and organizational performance. The identification of these companies began with the review of the SASB participants. To be included in the sample an organization must have reported utilizing at least one SASB measure in their annual sustainability report. The SASB monitors publicly available sustainability reports for the use of their measures (Value Reporting Foundation, Global Use of SASB Standards, 2022). There were six databases used to identify additional organizations publishing sustainability reports: (1) GRI or the Global Reporting Initiative, (2) CDP formerly the Carbon Disclosure Project, (3) CDSB or Climate Disclosure Standard Board, (4) IIRC or International Integrated Reporting Council, (5) UNSDG or United Nations Sustainability Development Group, and (6) TCFD or Task Force on Climate-related Financial Disclosures. A finding of this review indicated that organizations distribute their annual sustainability reports to one or more of these organizations. An additional source for the development of the sample was the Gartner 2020 Healthcare Supply Chain Top 25 report.



### **Sources of Financial Data**

The dataset of performance measures was developed from three sources. Wharton Research Data Services/Compustat (WRDS), provided financial and management information collected from the SEC filings of each company. A data request was submitted electronically to WRDS to secure this information. The second source was Macrotrends LLC (2022). Their website, [www.macrotrends.net](http://www.macrotrends.net), provides historic trends of numerous data points collected from the SEC filings of publicly traded companies. The S&P 500 information is publicly available and was taken from this website. The third source was the SASB website, which provided the years each study organization utilized a SASB measure on their annual public sustainability report (Value Reporting Foundation, Companies Reporting with SASB Standards 2022).

### **Dataset Development**

The data collected for this study addressed the fiscal year ending 2013 through 2021. The rationale for this period was driven by the 2018 release of the SASB health care industry standards. This allows for a five-year pre-adoption history for the first adopters. See the Appendix for the data request submitted to WRDS.

The data source [macrotrends.net](http://www.macrotrends.net) provided annual S&P 500 price-to-earnings ratios (P/E) for this study. The yearend P/E ratios for the S&P 500 were included in the study database for the period 2013 through 2021.

The Companies Reporting with SASB Standards section of the Value Reporting Foundation website identified the health care supply chain organizations utilizing one or more of their sustainability measures in their annual sustainability reports for the period 2018 through 2021. Dummy variables were created for reporting SASB participation. These included SASB participation = 1 and non-SASB participation = 0.

The study's final dataset addressed the period 2013 through 2020. The year 2021 was not used for the study because not all organizations had files their 2021 K-10 statements by the time the dataset was finalized. The total number of healthcare supply chain sector organizations included in the dataset was 44. See Tables 9 through 14 in the Appendix for a profile of the study companies.

### **Study Strategy**

A Descriptive Statistics analysis was conducted. This analysis of the dataset included: (1) 25%, 50%, and 75% percentile distributions; (2) minimum and maximum values; (3) mean and standard deviations; (4) mean, median, and mode values; (5) skewness and standard error; (6) kurtosis and standard error; (7) a DV and IV profile of each variable; and (8) a correlation matrix.

Nine Ordinary Least Squares (OLS) regression models were created to study the dataset. Models 1 through 3 were IV/DV regressions with the variables: (1) cash flow/employee (IV), (2) cash flow/current assets (IV), (3) dataset company price-to-earnings ratio/S&P 500 price-to-earnings ratio (IV), and SASB participation (DV). Models 4 through 6 were IV/DV regressions with two of the IVs above referenced with SASB participation as the DV. Model 7 was a regression with all three IVs referenced above with SASB participation as the DV. Model 8 was a regression with all three IVs referenced above plus all of the other study variables with SASB participation as the DV. Model 9 was a regression of the study variables as IVs without the three IVs referenced above with SASB participation as the DV.

### **Results**

#### **Descriptive Statistics (DS)**

Three correlation pairings were identified as having statistical significance based upon the Pearson Correlation and the two-tailed significance analysis. The first pairing was SASB participation and earnings per share from operations. The second was SASB participation and price close fiscal year. The third was SASB participation and dataset company price-to-earnings ratio/S&P 500 price-to-earnings ratio. These correlation outcomes are highlighted below.

**Table 3**  
*Significant Correlation Relationships*

	Pearson Correlation	Sig. (2- tailed)	N	Total Variables
			352	20
SASB & Earnings per Share from Operations	.150**	0.005		
SASB & Price Close Fiscal Year	.182**	<.001		
SASB & S&P 500 PE Ratio	.504**	<.001		

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Ordinary Least Squares (OLS)**

The output of each of the nine OLS regression models was evaluated through the lens of R Squared, t-test, p-value, and VIF. Models 1 through 3 showed no statistical significance between cash flow/employee (IV), cash flow/current assets (IV), and dataset company price-to-earnings ratio/S&P 500 price-to-earnings ratio (IV) and the DV SASB participation. See Table 4.

**Table 4**  
*Ordinary Least Squares Model (OLS) - Models 1 through 3*

	R Square	t-test	p-value
Model 1	0.000		

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	Constant		4.863	<.001
	IV Cash Flow/Employee		0.231	0.818
DV	SASB			
Model 2		0.002		
	Constant		3.999	<.001
	IV Cash Flow/Current Assets		0.835	0.404
DV	SASB			
Model 3		0.000		
	Constant		5.057	<.001
	Dataset Company PE			
	IV Ratio/S&P 500 PE Ratio		0.336	0.737
DV	SASB			

Models 4 through 6, represented the paring of two of the focus IVs with the SASB participation (DV), and indicated no statistical significance across these relationships while multicollinearity may be a problem. See Table 5.

**Table 5**

*Ordinary Least Squares Model (OLS) - Models 4 through 6*

		R		
		Square	t-test	p-value
Model 4		0.003		VIF
	Constant		3.881	<.001
	IV Cash Flow/Employee		0.435	0.664
	IV Cash Flow/Current Assets		0.912	0.362
DV	SASB			1.795
Model 5		0.001		
	Constant		4.863	<0.001
	IV Cash Flow/Employee		0.252	0.801
	Dataset Company PE			1.004
	IV Ratio/S&P 500 PE Ratio		0.351	0.726
DV	SASB			1.004
Model 6		0.002		
	Constant		4.015	<.001
	IV Cash Flow/Current Assets		0.867	0.387
	Dataset Company PE			1.008
	IV Ratio/S&P 500 PE Ratio		0.410	0.682
DV	SASB			1.008

Model 7 represented the regression of all three IVs from Models 1 through 6 with the DV SASB participation. This regression indicated no statistical significance while multicollinearity may be a problem. See Table 6.

**Table 6**  
*Ordinary Least Squares Model (OLS) - Model 7*

		R		
		Square	t-test	p-value
Model 7		0.003		VIF
	Constant		3.897	<.001
IV	Cash Flow/Employee		-0.431	0.666
IV	Cash Flow/Current Assets		0.934	0.351
	Dataset Company PE			
IV	Ratio/S&P 500 PE Ratio		-0.406	0.685
DV	SASB			1.008

Model 8 was a regression of the three IVs from Models 1 through 7 and the DV SASB participation plus all of the other variables of this study. This regression indicated there is statistical significance with the variable S&P 500 price-to-earnings ratio. However, the regression indicated the sampled groups are different and multicollinearity may be a problem. See Table 7.

**Table 7**  
*Ordinary Least Squares Model (OLS) - Model 8*

		R		
		Square	t-test	p-value
Model 8		0.290		VIF
	Constant		-8.974	<.001
IV	Cash Flow/Employee		-0.365	0.716
IV	Cash Flow/Current Assets		-0.084	0.933
	Dataset Company PE			
IV	Ratio/S&P 500 PE Ratio		-0.658	0.511
				1.031

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IV	Current Assets	0.871	0.385	80.84
IV	Total Assets	0.150	0.881	18.42
IV	Cash	0.402	0.688	2.916
	Cash & Short-Term			
IV	Investments	-1.262	0.208	25.773
IV	Earnings Before Interest	0.489	0.625	19.936
IV	Employees	-0.893	0.372	3.234
	EPS (Diluted) Excluding			
IV	Extraordinary Items	-0.719	0.473	8.629
	Income Before Extraordinary			
IV	Items (Cash Flow	0.604	0.546	42.785
IV	Current Liabilities	-0.396	0.692	18.419
IV	Net Income (Loss)	-0.839	0.402	38.92
	Earnings per Share from			
IV	Operations	1.062	0.289	8.301
IV	Retained Earnings	0.498	0.619	4.734
IV	Operating Expenses	-0.973	0.331	10.349
IV	Closing Price Fiscal Annual	1.125	0.261	2.732
IV	S&P 500 RE Ratio	9.655	<.001	1.112
DV	SASB			

Model 9 was a regression of the study variables as IVs with the DV SASB participation.

The IVs of cash flow/employee, cash flow/current assets, and dataset company price-to-earnings ratio/S&P 500 price-to-earnings ratio were excluded from this regression. As was the case with Model 8, this regression indicated there is statistical significance with the variable S&P 500 price-to-earnings ratio. However, the regression indicated the sampled groups are different and multicollinearity may be a problem. See Table 8.

**Table 8**  
*Ordinary Least Squares Model (OLS) - Model 9*

		R Square	t-test	p- value	VIF
Model 9		0.288			
	Constant		-9.024	<.001	
IV	Current Assets		0.926	0.355	78.79

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IV	Total Assets	0.134	0.894	18.184
IV	Cash	0.347	0.729	2.846
	Cash & Short-Term			
IV	Investments	-1.288	0.199	25.139
IV	Earnings Before Interest	0.420	0.675	18.959
IV	Employees	-0.860	0.390	3.048
	EPS (Diluted) Excluding			
IV	Extraordinary Items	-0.877	0.381	7.788
	Income Before Extraordinary			
IV	Items (Cash Flow	0.585	0.559	42.635
IV	Current Liabilities	-0.350	0.727	17.964
IV	Net Income (Loss)	-0.862	0.389	38.768
	Earnings per Share from			
IV	Operations	1.039	0.299	7.734
IV	Retained Earnings	0.598	0.550	4.513
IV	Operating Expenses	-1.085	0.279	9.548
IV	Closing Price Fiscal Annual	1.325	0.186	2.369
IV	S&P 500 RE Ratio	9.683	<.001	1.110
DV	SASB			

Results Note 1: The univariate results show firms that report SASB improve firm performance.

However, there may be additional variables that confound these differences in means.

Results Note 2: In addition to OLS, Fixed Effects (FE) and Random Effects (RE) models were run and the results were quantitatively similar.

### Discussion

### Summary

The study failed to provide evidence to support hypotheses H1 and H2, warranting the need for further study. The inconclusive findings of these regressions raised the question as to whether there was a problem with the database and/or the methodology. As a result, two separate tests were conducted on the dataset. The first test looked at the SASB participation within the dataset. The second test looked at the SASB participation versus non-participation in the dataset.

### **The SASB Participation**

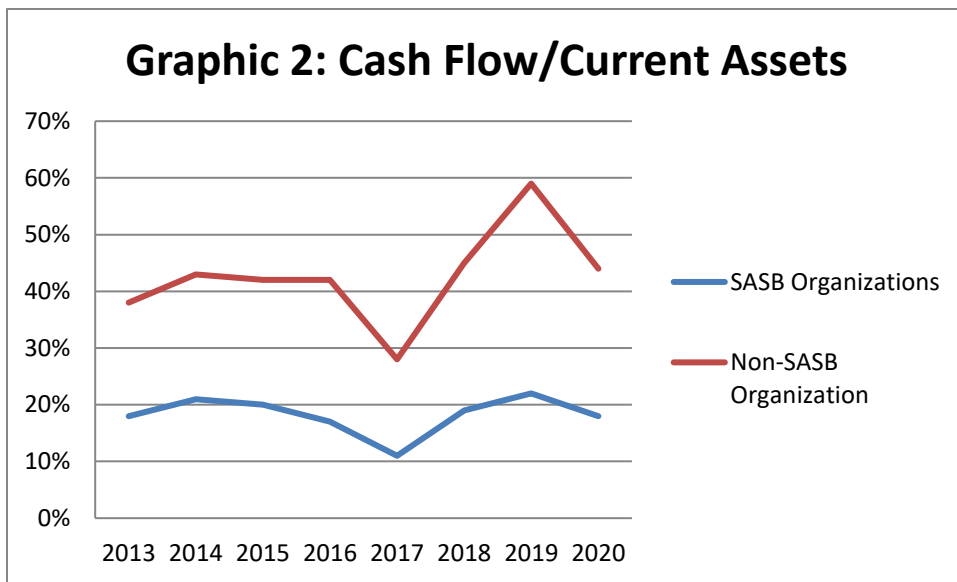
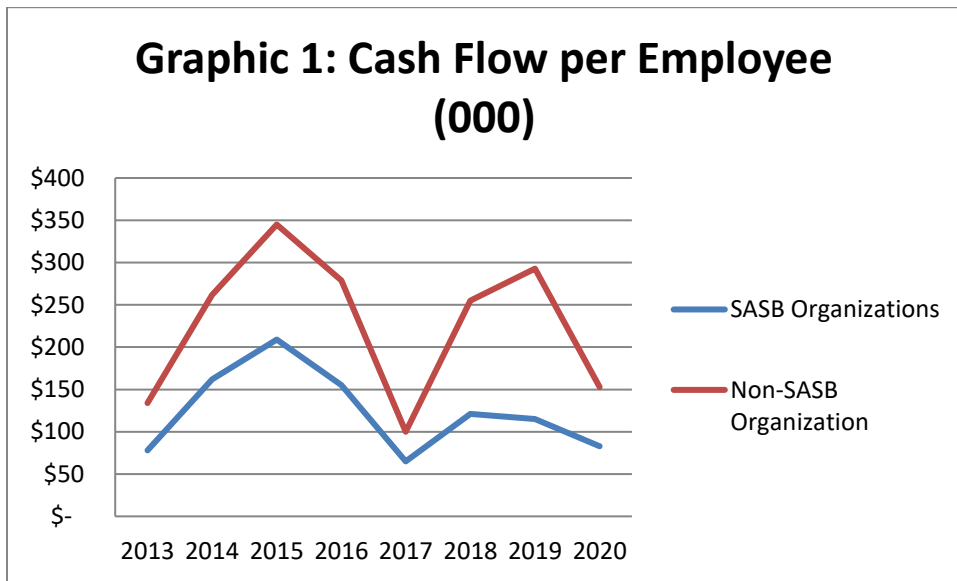
SASB participation was the driver of this study as the DV. The SASB released its first standards in 2014 with reports posted in 2015. For the first adopters this represented 5 to 6 years of SASB participation depending on the filing of their 2021 financial statements. The health care standards were released in 2018. This release year created a study period of 3 to 4 years of SASB participation depending on company 2021 financial statement filings. Twenty companies in the dataset were SASB participants during the period 2018 through 2020. The five-year pre-adoption period was decided upon to provide a history of financial performance. These decisions generated the following dataset profile: (1) 8 years x 44 companies = 352 years, (2) SASB participation years in the dataset = 24 years, and (3) percentage of SASB participation years in the dataset = 15%. This percentage of participation may contribute to the lack of clear statistical significance in the regression analysis.

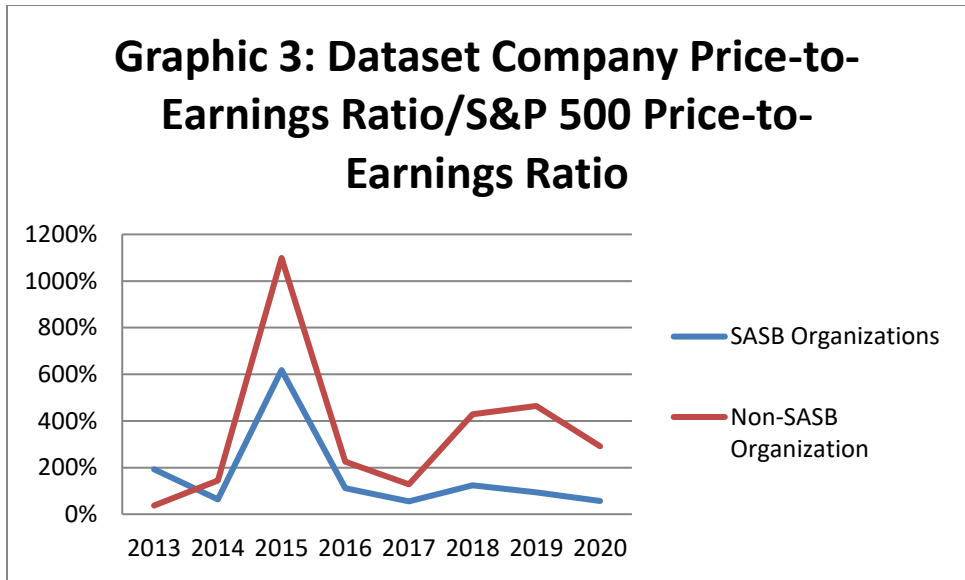
### **The SASB Participation versus Non-participation**

This analysis separated the dataset into SASB participating and non-participating organizations. These two subsets of the dataset were analyzed utilizing the three that were the foundation of the regressions: (1) cash flow per employee, (2) cash flow/current assets, and (3) dataset company price-to-earnings ratio/S&P 500 price-to-earnings ratio. These comparisons were conducted for all eight years of the dataset, 2013 through 2020. In all three analyses the non-participating organizations out-performed the SASB participating companies. These results raised two questions. Did these organizations begin adopting the SASB standards for a competitive advantage? If a competitive advantage was the goal, then how long does it take to see the advantage materialize? Both are critical questions, considering adopting the SASB



standards for a competitive advantage, including improved financial performance and wealth creation.





### Conclusion

Based upon the findings of this study, the following recommendations are provided for future studies, with the focus of finding evidence that the adoption of the SASB measures contributes to improved financial performance and wealth creation. First, for a study of the health care industry, study should be conducted in three to four years to increase the number of years of SASB participation in the dataset. Second, the study should increase the number of focus variables, for example company Credit Suisse HOLT CFROI and Valens Research ROA Prime ratings as financial performance and wealth creation variables. Third, this study should omit the common sizing of the sample organizations, which did not make a statistical impact on the study, and was therefore, unnecessary. Fourth, to test this methodology including the above recommendations an industry should be selected that was a 2014 adopter of the SASB measures reporting in 2015. These early adopters will provide the longest history for study. Fifth, the size of the N may affect the outcome, and if so, a study of an industry with a sample of more than 44 organizations would be important to address this question. Sixth, a study that reduces the number of pre-adoption years from five to three could increase the SASB participation percent within the

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dataset while reducing the historic performance record of the study participants. This trade-off may or may not have a statistical impact on the study. Seventh, a multiple sector and industry study may make a statistical difference in the outcome of the analysis. Eighth, include a qualitative analysis to better understand the results of the study. Table 31 in the Appendix reports SASB participation by year. Based upon the number of organizations reporting SASB participation by year, 2020 was the first year with significant participation, 587 reporting organizations as compared to 136 in 2019.

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Note 1: The literature reviewed was selected through Business Source Complete and the DePaul University Library using these search parameters Sustainability Accounting Standards Board, or SASB, and Environmental, Social, and Governance or ESG for the period January 1, 2014, through December 31, 2021. An additional search was conducted through Google Scholar to identify the articles published by Archie B. Carroll related to Corporate Social Responsibility or CSR. The third source of articles on this topic was identified by the Dissertation Chair, Dr. Mark Frigo. The Reference section provided a list of the documents noted in the text. The Bibliography section listed the findings of these searches.

Note 2: Keywords included: Sustainability Accounting Standards Board and SASB; Corporate Social Responsibility and CSR; Environmental, Social, and Governance and ESG; and Creating Shared Value and CSV.

## Appendix

**Table 9**  
*Dataset Variables*

SASB (1)	Variables Used
SASB Participant	SASB Participant Company Name
Wharton Research Data Services/Compustat (2)	Cash Flow per Employee Cash Flow/Current Assets Dataset CO PE Ratio/S&P 500 PE Ratio
Company Name	Current Assets - Total
Ticker Symbol	Assets - Total
Current Assets - Total	Cash
Assets - Total	Cash and Short-Term Investments
Cash	Earnings before Interest
Cash and Short-Term Investments	Employees
Earnings before Interest	EPS (Diluted) - Excluding Extraordinary Items
Employees	Income Before Extraordinary Items (Cash Flow)
EPS (Diluted) - Excluding Extraordinary Items	Current Liabilities - Total
Income Before Extraordinary Items (Cash Flow)	Net Income (Loss)
Current Liabilities - Total	Earning Per Share from Operations
Net Income (Loss)	Retained Earnings
Earning Per Share from Operations	Operating Expenses - Total
Retained Earnings	Price Close - Annual - Fiscal
Operating Expenses - Total	S&P 500 Price-to-Earnings Ratio (3)
Price Close - Annual - Fiscal	
S&P 500 Price-to-Earnings Ratio (3)	Created Variables
	Cash Flow per Employee
	Cash Flow/Current Assets
	Dataset CO PE Ratio/S&P 500 PE Ratio

Note 1: Value Reporting Foundation. *Companies Reporting with SASB Standards. 2022.*

Note 2: Wharton Research Data  
Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 10**  
*Study Participants*

Biotechnology & Pharmaceuticals	Distributors
Agios Pharmaceuticals Inc. Alkermes PLC Amgen Inc. Arena Pharmaceuticals Inc. AstraZeneca PLC	AmerisourceBergen Corp. Cardinal Health Inc Owens & Minor Inc.
Biogen Inc. Charles River Laboratories International Inc. Eli Lilly & Co Endo International PLC Gilead Sciences Inc.	<b>Medical Equipment &amp; Supplies</b>
GlaxoSmithKline PLC Incyte Corp Jazz Pharmaceuticals Johnson & Johnson Merck & Co Inc.	Abbott Laboratories  Agilent Technologies Inc. Baxter International Inc. Becton Dickinson and Co. Boston Scientific
Novo Nordisk A/S Pfizer Inc Regeneron Pharmaceuticals Inc. United Therapeutics Vertex Pharmaceuticals Viatris	Danaher Corp Dentsply Sirona Inc. Edwards Lifesciences Corp. Henry Schein Hologic Inc.
Drug Retailers	IDEXX Laboratories Inc. Illumina Inc. Insulet Corp. Koninklijke Philips NV Medtronic PLC
CVS Health Corp. Walgreens Boots Alliance Inc.	Mettler- Toledo Stryker Corp. Zimmer Biomet

Source: Value Reporting Foundation. *Companies Reporting with SASB Standards*. 2022.  
 Source: Gartner Healthcare Supply Chain Top 25 for 2020.

**Table 11**  
*Dataset Profile by Sector*

Sectors	Dataset Data Request	Minus			Study Final Dataset
		Core Business	Merger & Acquisition	Missing Data	
Biotechnology & Pharmaceuticals	33	32	29	21	21
Drug Retail	2	2	2	2	2
Distributors	5	5	5	3	3
Medical Equipment & Supplies	22	21	21	18	18
Total	62	60	57	44	44

Source: Value Reporting Foundation. *Companies Reporting with SASB Standards*. 2022.

Source: Gartner Healthcare Supply Chain Top 25 for 2020.

**Table 12**  
*Dataset Development - Biotechnology & Pharmaceuticals*

Biotechnology & Pharmaceuticals	Dataset	Minus			Study
	Data Request	Core Business	Merger & Acquisition	Missing Data	Final Dataset
Agios Pharmaceuticals Inc.	*	*	*	*	*
Alexion Pharmaceuticals Inc. (see AstraZeneca)	*	*			
Alkermes PLC	*	*	*	*	*
Amgen Inc.	*	*	*	*	*
Arena Pharmaceuticals Inc.	*	*	*	*	*
AstraZeneca PLC	*	*	*	*	*
Bayer AG (See Roche)	*	*	*		
Biogen Inc.	*	*	*	*	*
Catalent Inc.	*	*	*		
Charles River Laboratories International Inc.	*	*	*	*	*
Eli Lilly & Co	*	*	*	*	*
Endo International PLC	*	*	*	*	*
Genmab A/S	*	*	*		
Gilead Sciences Inc.	*	*	*	*	*
GlaxoSmithKline PLC	*	*	*	*	*
Grifols SA	*	*	*		
Incyte Corp	*	*	*	*	*
Jazz Pharmaceuticals	*	*	*	*	*
Johnson & Johnson	*	*	*	*	*
Lonza Group AG	*	*	*		
Merck & Co Inc.	*	*	*	*	*
Mylan NV (See Viatris)	*	*			
Novartis AG	*	*	*		
Novo Nordisk A/S	*	*	*	*	*
Pfizer Inc	*	*	*	*	*
Regeneron Pharmaceuticals Inc.	*	*	*	*	*
Revance Therapeutics, INC.	*	*	*		
Roche (See Bayer)	*	*			
Teva Pharmaceuticals Ltd	*	*	*		
United Therapeutics	*	*	*	*	*
Vertex Pharmaceuticals	*	*	*	*	*
Viatris	*	*	*	*	*
Zoetis Inc. (Animal Healthcare only)	*		*		
Total	33	32	29	21	21

Source: Value Reporting Foundation. *Companies Reporting with SASB Standards*. 2022.

Source: Gartner Healthcare Supply Chain Top 25 for 2020.

**Table 13***Dataset Development - Drug Retailers & Distributors*

Drug Retailers	Dataset Data Request	Minus			Study Final Dataset
		Core Business	Merger & Acquisition	Missing Data	
CVS Health Corp.	*	*	*	*	*
Walgreens Boots Alliance Inc.	*	*	*	*	*
Total	2	2	2	2	2
<hr/>					
Distributors					
AmerisourceBergen Corp.	*	*	*	*	*
Cardinal Health Inc	*	*	*	*	*
LG Household & Healthcare Ltd.	*	*	*		
McKesson	*	*	*		
Owens & Minor Inc.	*	*	*	*	*
Total	5	5	5	3	3

Source: Value Reporting Foundation. *Companies Reporting with SASB Standards*. 2022.

Source: Gartner Healthcare Supply Chain Top 25 for 2020.



**Table 14**  
*Dataset Development - Medical Equipment & Supplies*

Medical Equipment & Supplies	Dataset Data Request	Minus			Study Final Dataset
		Core Business	Merger & Acquisition	Missing Data	
Abbott Laboratories	*	*	*	*	*
Agilent Technologies Inc.	*	*	*	*	*
Alcon Inc.	*	*	*		
Baxter International Inc.	*	*	*	*	*
Becton Dickinson and Co.	*	*	*	*	*
Boston Scientific	*	*	*	*	*
Cooper Cos Inc.	*				
Danaher Corp	*	*	*	*	*
Dentsply Sirona Inc.	*	*	*	*	*
Edwards Lifesciences Corp.	*	*	*	*	*
Envista Holdings Corp.	*	*	*		
Henry Schein	*	*	*	*	*
Hologic Inc.	*	*	*	*	*
IDEXX Laboratories Inc.	*	*	*	*	*
Illumina Inc.	*	*	*	*	*
Insulet Corp.	*	*	*	*	*
Koninklijke Philips NV	*	*	*	*	*
Medtronic PLC	*	*	*	*	*
Mettler- Toledo	*	*	*	*	*
Sonova Holding AG	*	*	*		
Stryker Corp.	*	*	*	*	*
Zimmer Biomet	*	*	*	*	*
	22	21	21	18	18

Source: Value Reporting Foundation. *Companies Reporting with SASB Standards*. 2022.

Source: Gartner Healthcare Supply Chain Top 25 for 2020.

**Table 15**  
*Descriptive Statistics - Percentile Distribution*

Variable (1)	25th Percentile	50th Percentile	75th Percentile
SASB Participation	0%	0%	0%
Cash Flow per Employee (\$000)	11	33	95
Cash Flow/Current Assets	4%	16%	27%
Dataset CO PE Ratio/S&P 500 PE Ratio	62%	96%	126%
Current Assets (\$000)	1,736	5,982	18,040
Total Assets (\$000)	3,709	16,780	47,537
Cash (\$000)	384	1,271	3,364
Cash & Short-Term Investments (\$000)	563	1,782	4,472
Earnings Before Interest (\$000)	693	2,281	6,473
Employees (000)	6.2	18.3	60.8
EPS (Diluted) Excl. Extraordinary Items (\$)	1	2	5
Cash Flow (\$000)	148	719	2,940
Current Liabilities (\$000)	728	2,988	10,973
Net Income (Loss) (\$000)	151	720	3,072
Earnings per Share from Operations (\$)	2	3	6
Retained Earnings (\$000)	(93)	3,640	11,914
Operating Expenses (\$000)	1,809	7,699	17,582
Price Close Fiscal Year (\$)	46	75	128
S&P 500 Price-to-Earnings Ratio (2)	19	23	24

Note 1 - Source: Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 16**  
*Descriptive Statistics - Minimum and Maximum*

Variable (1)	<u>Minimum</u>	<u>Maximum</u>
SASB Participation	0	1
Cash Flow per Employee (\$000)	(1115)	2,263
Cash Flow/Current Assets	-124%	100%
Dataset CO PE Ratio/S&P 500 PE Ratio	-81%	115%
Current Assets (\$000)	120	65,032
Total Assets (\$000)	169	230,715
Cash (\$000)	14	20,927
Cash & Short-Term Investments (\$000)	57	42,239
Earnings Before Interest (\$000)	(549)	28,318
Employees (000)	0.1	360
EPS (Diluted) Excl. Extraordinary Items (\$)	(17)	31
Cash Flow (\$000)	(3,693)	21,353
Current Liabilities (\$000)	30	62,017
Net Income (Loss) (\$000)	(3,696)	22,003
Earnings per Share from Operations (\$)	-8	32
Retained Earnings (\$000)	(22,393)	98,648
Operating Expenses (\$000)	63	250,291
Price Close Fiscal Year (\$)	1	1,140
S&P 500 Price-to-Earnings Ratio (2)	18	38

Note 1 - Source: Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 17**  
*Descriptive Statistics - Mean and Standard Deviation*

Variable (1)	Mean	Standard Deviation
SASB Participation	0.1	0.3
Cash Flow per Employee (\$000)	68	280
Cash Flow/Current Assets	15%	26%
Dataset CO PE Ratio/S&P 500 PE Ratio	118%	814%
Current Assets (\$000)	11,425	13,373
Total Assets (\$000)	33,773	42,442
Cash (\$000)	2,669	3,693
Cash & Short-Term Investments (\$000)	4,581	7,407
Earnings Before Interest (\$000)	4,556	5,870
Employees (000)	43	65
EPS (Diluted) Excl. Extraordinary Items (\$)	3	5
Cash Flow (\$000)	2,177	3,552
Current Liabilities (\$000)	7,641	10,020
Net Income (Loss) (\$000)	2,229	3,693
Earnings per Share from Operations (\$)	4	5
Retained Earnings (\$000)	10,330	19,476
Operating Expenses (\$000)	20,963	39,899
Price Close Fiscal Year (\$)	110	115
S&P 500 Price-to-Earnings Ratio (2)	24	6

Note 1 - Source: Wharton Research Data  
 Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-  
 Earnings Ratio.

**Table 18**  
*Descriptive Statistics - Mean, Median, and Mode*

Variable (1)	Mean	Median	Mode
SASB Participation	0.1	0.0	0.0
Cash Flow per Employee (\$000)	68	33	(1,115)
Cash Flow/Current Assets	15%	16%	-124%
Dataset CO PE Ratio/S&P 500 PE Ratio	118%	96%	-8054%
Current Assets (\$000)	11,425	5,982	120
Total Assets (\$000)	33,773	16,780	169
Cash (\$000)	2,669	1,270	217
Cash & Short-Term Investments (\$000)	4,581	1,782	57
Earnings Before Interest (\$000)	4,556	2,281	(549)
Employees (000)	43	18	35
EPS (Diluted) Excl. Extraordinary Items (\$)	3	2	0
Cash Flow (\$000)	2,177	719	719
Current Liabilities (\$000)	7,641	2,988	4,400
Net Income (Loss) (\$000)	2,229	719	1,233
Earnings per Share from Operations (\$)	4	3	2
Retained Earnings (\$000)	10,330	3,640	(22,393)
Operating Expenses (\$000)	20,963	7,699	63
Price Close Fiscal Year (\$)	110	75	35
S&P 500 Price-to-Earnings Ratio (2)	24	23	18

Note 1 - Source: Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 19**  
*Descriptive Statistics - Skewness*

Variable (1)	Skewness	Standard Error
SASB Participation	3.440	0.130
Cash Flow per Employee	2.298	0.130
Cash Flow/Current Assets	-0.871	0.130
Dataset CO PE Ratio/S&P 500 PE Ratio	5.187	0.130
Current Assets (\$000)	1.655	0.130
Total Assets (\$000)	1.967	0.130
Cash (\$000)	2.620	0.130
Cash & Short-Term Investments (\$000)	2.834	0.130
Earnings Before Interest (\$000)	1.923	0.130
Employees (000)	2.937	0.130
EPS (Diluted) Excl. Extraordinary Items (\$)	1.511	0.130
Cash Flow (\$000)	2.416	0.130
Current Liabilities (\$000)	1.890	0.130
Net Income (Loss) (\$000)	2.517	0.130
Earnings per Share from Operations (\$)	2.061	0.130
Retained Earnings (\$000)	2.583	0.130
Operating Expenses (\$000)	3.100	0.130
Price Close Fiscal Year (\$)	3.832	0.130
S&P 500 Price-to-Earnings Ratio (2)	1.668	0.130

Note 1 - Source: Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 20**  
*Descriptive Statistics - Kurtosis*

Variable (1)	Kurtosis	Standard Error
SASB Participation	9.897	0.259
Cash Flow per Employee	18.050	0.259
Cash Flow/Current Assets	3.454	0.259
Dataset CO PE Ratio/S&P 500 PE Ratio	137.538	0.259
Current Assets (\$000)	2.501	0.259
Total Assets (\$000)	4.125	0.259
Cash (\$000)	7.723	0.259
Cash & Short-Term Investments (\$000)	8.547	0.259
Earnings Before Interest (\$000)	3.512	0.259
Employees (000)	9.802	0.259
EPS (Diluted) Excl. Extraordinary Items (\$)	6.853	0.259
Cash Flow (\$000)	6.850	0.259
Current Liabilities (\$000)	4.087	0.259
Net Income (Loss) (\$000)	7.597	0.259
Earnings per Share from Operations (\$)	7.214	0.259
Retained Earnings (\$000)	7.411	0.259
Operating Expenses (\$000)	9.856	0.259
Price Close Fiscal Year (\$)	23.090	0.259
S&P 500 Price-to-Earnings Ratio (2)	1.785	0.259

Note 1 - Source: Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 21**  
*Descriptive Statistics - DV & IV Profile 1*

Variable (1)	SASB Participation	Cash Flow per Employee (\$1,000)	Cash Flow/Current Assets	Dataset CO PE Ratio/S&P 500 PE Ratio (2)
Mean	0.07	68	0.15	1.18
Median	0.0	33	0.16	0.96
Mode	0.0	(1,115)	(1.24)	(81)
Standard Deviation	0.252	280	0.262	8.1
Skewness	3.441	2.298	(0.871)	5.187
Standard Error of Skewness	0.130	0.130	0.130	0.130
Kurtosis	9.897	18.050	3.454	137.538
Standard Error of Kurtosis	0.259	0.259	0.259	0.259
Minimum	0.0	(1,115)	(1)	(81)
Maximum	1.0	2,263	1	115
25th Percentile	0.0	11	0.04	0.62
50th Percentile	0.0	33	0.16	0.96
75th Percentile	0.0	95	0.27	1.26

Note 1 - Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.



**Table 22**  
*Descriptive Statistics - DV & IV Profile 2*

Variable (1)	SASB Participation	Total Assets (\$000)	Current Assets (\$000)	Cash (\$000)	Current Liabilities (\$000)
Mean	0.07	33,773	11,425	2,669	7,641
Median	0.0	16,780	5,985	1,271	2,988
Mode	0.0	169	120	217	4,400
Standard Deviation	0.252	42,442	13,373	3,693	10,020
Skewness	3.441	1.967	1.655	2.620	1.890
Standard Error of Skewness	0.130	0.130	0.130	0.130	0.130
Kurtosis	9.897	4.125	2.501	7.723	4.087
Standard Error of Kurtosis	0.259	0.259	0.259	0.259	0.259
Minimum	0.0	169	120	14	30
Maximum	1.0	23,075	65,032	20,927	62,017
25th Percentile	0.0	3,709	1,736	384	728
50th Percentile	0.0	16,780	5,982	1,270	2,988
75th Percentile	0.0	47,537	18,040	3,364	10,973

Note 1 - Wharton Research Data  
 Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-  
 Earnings Ratio.

**Table 23**  
*Descriptive Statistics - DV & IV Profile 3*

Variable (1)	SASB Participation	Cash & Short-Term Investments (\$000)	Cash Flow (\$000)	Net Income/Loss (\$000)	Employees (000)
Mean	0.07	4,581	2,177	2,229	43
Median	0.0	1,782	719	720	18
Mode	0.0	57	719	1,233	35
Standard Deviation	0.252	7,407	3,552	3,693	65
Skewness	3.441	2.834	2.416	2.517	2.937
Standard Error of Skewness	0.130	0.130	0.130	0.130	0.130
Kurtosis	9.897	8.547	6.850	7.597	9.802
Standard Error of Kurtosis	0.259	0.259	0.259	0.259	0.259
Minimum	0.0	57	(3,693)	(3,696)	0.096
Maximum	1.0	42,239	21,353	22,003	360
25th Percentile	0.0	563	148	151	6
50th Percentile	0.0	1,782	719	720	18
75th Percentile	0.0	4,472	2940	3072	1,861

Note 1 - Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 24**  
*Descriptive Statistics - DV & IV Profile 4*

Variable (1)	SASB Participation	Earnings before Interest (\$000)	Earnings per Share (\$)	EPS from Operations (\$000)
Mean	0.07	4,556	3	4
Median	0.0	2,281	2	3
Mode	0.0	(549)	(0)	2
Standard Deviation	0.252	5,870	5	5
Skewness	3.441	1.923	1.511	2.061
Standard Error of Skewness	0.130	0.130	0.130	0.130
Kurtosis	9.897	3.512	6.853	7.140
Standard Error of Kurtosis	0.259	0.259	0.259	0.259
Minimum	0.0	(549)	(17)	(8)
Maximum	1.0	28,318	31	32
25th Percentile	0.0	693	1	2
50th Percentile	0.0	2,281	2	3
75th Percentile	0.0	6,473	5	6

Note 1 - Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 25**  
*Descriptive Statistics - DV & IV Profile 5*

Variable (1)	SASB Participation	Retained Earnings (\$000)	Price Close Fiscal Year (\$)	S&P 500 PER Annual (\$)
Mean	0.07	4,556	3	24
Median	0.0	2,281	2	23
Mode	0.0	(549)	(0)	18
Standard Deviation	0.252	5,870	5	6
Skewness	3.441	1.923	1.511	1.668
Standard Error of Skewness	0.130	0.130	0.130	0.130
Kurtosis	9.897	3.512	6.853	1.785
Standard Error of Kurtosis	0.259	0.259	0.259	0.259
Minimum	0.0	(549)	(17)	18
Maximum	1.0	28,318	31	38
25th Percentile	0.0	693	1	19
50th Percentile	0.0	2,281	2	23
75th Percentile	0.0	6,473	5	24

Note 1 - Wharton Research Data Services/Compustat.

Note 2 - [www.macrotrends.net](http://www.macrotrends.net) S&P 500 Price-to-Earnings Ratio.

**Table 26**  
*Descriptive Statistics - Correlation 1*

	SASB Participation	Cash Flow per Employee (1,000 Dollars)	Cash Flow/Current Assets	Dataset CO PE Ratio per S&P 500 PE Ratio
SASB Participation Pearson Correlation	1			
Sig. (2- tailed)				
Cash Flow per Employee Pearson Correlation	0.012	1		
Sig. (2- tailed)	0.818			
Cash Flow/ Current Assets Pearson Correlation	0.045	.666**	1	
Sig. (2- tailed)	0.404	<.001		
Dataset Company PE Ratio per S&P 500 PE Ratio Pearson Correlation	-0.018	0.064	0.087	1
Sig. (2- tailed)	0.737	0.234	0.104	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Table 27**  
*Descriptive Statistics - Correlation 2*

	SASB Participation	Total Assets (\$000)	Current Assets (\$000)	Cash (\$000)	Current Liabilities (\$000)
SASB Participation Pearson Correlation Sig. (2- tailed)	1				
Total Assets (\$000) Pearson Correlation Sig. (2- tailed)	0.095 0.074	1			
Current Assets (\$000) Pearson Correlation Sig. (2- tailed)	0.060 0.265	.914** <.001	1		
Cash (\$000) Pearson Correlation Sig. (2- tailed)	0.078 0.142	.620** <.001	.723** <.001	1	
Current Liabilities (\$000) Pearson Correlation Sig. (2- tailed)	0.077 0.151	.873** <.001	.856** <.001	.552** <.001	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Table 28**  
*Descriptive Statistics - Correlation 3*

	SASB Participation	Cash & Short-Term Investments (\$000)	Cash Flow (\$000)	Net Income/Loss (\$000)	Employees (000)
SASB Participation Pearson Correlation	1				
Sig. (2- tailed)					
Cash & Short-Term Investments (\$000) Pearson Correlation	0.033	1			
Sig. (2- tailed)	0.539				
Cash Flow (\$000) Pearson Correlation	0.049	.693**	1		
Sig. (2- tailed)	0.355	<.001			
Net Income/Loss (\$000) Pearson Correlation	0.041	.699**	.985**	1	
Sig. (2- tailed)	0.445	<.001	<.001		
Employees (000) Pearson Correlation	0.000	.254**	.392**	.383**	1
Sig. (2- tailed)	0.995	<.001	<.001	<.001	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Table 29**  
*Descriptive Statistics - Correlation 4*

	SASB Participation	Earnings before Interest (\$000)	Earnings per Share (\$)	EPS from Operations (\$)	Operating Expenses (\$000)
SASB Participation Pearson Correlation	1				
Sig. (2-tailed)					
Earnings before Interest (\$000) Pearson Correlation	0.094	1			
Sig. (2-tailed)	0.079				
Earnings per Share (\$) Pearson Correlation	0.083	.150**	1		
Sig. (2-tailed)	0.118	0.005			
EPS from Operations (\$) Pearson Correlation	.150**	.162**	.895**	1	
Sig. (2-tailed)	0.005	.,001	<.001		
Operating Expenses (\$000) Pearson Correlation	0.000	.341**	-0.051	0.036	1
Sig. (2-tailed)	0.999	<.001	0.336	0.502	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).



**Table 30***Descriptive Statistics - Correlation 5*

	SASB Participation	Retained Earnings (\$000)	Price Close Fiscal Year (\$)	S&P 500 PER
SASB Participation Pearson Correlation Sig. (2- tailed)	1			
Retained Earnings (\$000) Pearson Correlation Sig. (2- tailed)	0.085	1		
Price Close Fiscal Year (\$) Pearson Correlation Sig. (2- tailed)	.182**	-0.068	1	
S&P 500 PER Pearson Correlation Sig. (2- tailed)	.504**	0.021	.159**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Table 31**  
*SASB Participation by Year*

	2015	2016	2017	2018	2019	2020	2021	2022
Consumer Goods	0	1	1	4	16	42	83	28
Extractives & Minerals Processing	0	3	2	9	23	122	212	47
Financials	0	1	1	2	17	66	187	73
Food & Beverage	0	1	0	2	4	31	76	22
Health Care	2	1	1	2	4	25	75	31
Infrastructure	0	0	2	10	29	106	221	52
Renewable Resources & Alternative Energy Resource	0	0	0	0	1	7	20	10
Transformation	0	0	0	3	8	68	163	57
Services	0	0	1	1	5	21	65	29
Technology & Communications	1	2	4	6	10	57	176	49
Transportation	0	0	1	4	19	42	100	28
Total	3	9	13	43	136	587	1,378	426

Source: Value Reporting Foundation. *Companies Reporting with SASB Standards. 2022.*