



Bryant University

HONORS THESIS

A Correlative Analysis Between MSCI Sustainability Scores and Company Revenue

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ABSTRACT

The goal of this thesis is to analyze the relationship between a company's sustainable practices and the revenue earned in an annual reporting period. The research methodology is based on a correlation model and data was gathered from the MSCI ESG Ratings & Climate Search Tool and Calcbench to perform the analyses. A model was built to allow data input for the correlation to be ran. The results showed that many companies had highly significant relationships between their MSCI Scores and revenue for the same reporting periods. There were some companies that had negative correlations because as the score increased, the revenue decreased, and vice versa. Additionally, companies that had the same score for all reporting periods analyzed could not be included in the analysis as the correlation would result in an error.

ACRONYMS AND ABBREVIATIONS USED IN THIS PAPER

MSCI: Morgan Stanley Capital International

SDG(s): Sustainable Development Goals

ESG: Environmental, Social, Governance

UHS: Universal Health Services, Inc.

HCA: HCA Healthcare, Inc.

CVS: CVS Health Corporation

ETF(s): Exchange-traded Funds

INTRODUCTION

Sustainability has been a growing component of businesses over the last five years. Companies strive to work smarter so that they may sustain their operations for longer than normal. The United Nations has developed a list of 17 Sustainable Development Goals to help companies on their journey to be more sustainable. Additionally, consumers want companies to help them become more sustainable and environmentally conscious. In 2018, Futerra released a survey of over 1,000 USA and UK consumers that discovered how 96% of consumers believe that their own actions of recycling, donating, or making ethical purchases can make a difference in the world (Townsend). This same report also shares that 88% of the consumers from this survey want the brands they shop from the most to help them "...be more environmentally friendly and ethical..." (Townsend) in their daily lives.

Given the results of this survey and the growth of importance around sustainability, I chose to build a model to analyze a relationship between MSCI Sustainability scores and company revenue. The scores from MSCI are built on a framework that analyzes operations and external risk and consumers are what drive company revenue. The relationship between the scores and revenue indicates whether or not the revenue is influenced by the score. In understanding these relationships, investors and people of the like can find companies that are more responsible in terms of ESG. They can invest in specific companies or mutual funds comprised specifically of companies who excel at ESG policies.

LITERATURE REVIEW

About Sustainability

Sustainability is "...the ability of something to maintain or "sustain" itself over time" (Mollenkamp and Brock). This relates to not only the business itself, but also the environment in which it operates. The resources used by businesses and the rest of the world are finite, meaning they will not last forever. Companies have created policies and goals in order to better align themselves to protect these resources. "Sustainable policies place some emphasis on the future effect of any given policy or business practice on humans, the economy, and ecology" (Mollenkamp and Brock).

As sustainability grew in importance to the world, the United Nations published seventeen Sustainable Development Goals (SDGs) that many companies use to model their sustainable actions around. The goals look at various aspects of life in the world revolving around access to food, clean water, and education, to a broader scale like clean energy, the climate, and gender equality. (The United Nations). These goals are the heart of The 2030 Agenda for Sustainable Development, which was adopted by all members of the United Nations in 2015. The Division for Sustainable Development Goals within the United Nations has since been equipped with substantive support and tools to assist countries and companies in working to achieve the goals. (The United Nations).

MSCI tracks which goals companies include in their own sustainability reports (if applicable) and records how often they are used by companies included in the ESG Scoring system. The most commonly supported goals are:

1. Goal 13: Climate Action, 367 companies
2. Goal 8: Decent Work and Economic Growth, 356 companies
3. Goal 5: Gender Equality, 334 companies

Large companies like Microsoft, Nestle, and Intel are some of the top public supporters of these goals within MSCI. These companies are focused on improving the environment in which they operate, helping to develop the economy, and ensuring a fair and equal opportunity for all in their working environments. (MSCI)

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About the MSCI

Morgan Stanley Capital International (MSCI) is a “...leading provider of critical decision support tools and services for the global investment community” (MSCI). They offer a multitude of resources that allow people to analyze levels of sustainability related to performance in the market. MSCI offers solutions to analyze Factor Investing, Climate Investing, and ESG Investing.

Specifically focused on ESG Investing, the MSCI has a tool that consumers can use to analyze company sustainability. Each company in a public market is analyzed and scored based on the framework designed by the MSCI. The MSCI receives source documents from companies to generate data to process the ratings. These sources can be anything from company disclosures like 10-k's, sustainability reports, or proxy reports, to monitored media sources and specialized databases. These sources then become data. MSCI generates over 1,000 individual data points on Environmental, Social, and Governance (ESG) policies, programs, and performance. They are also able to gather data on over 100,000 individual directors and up to 20 years of shareholder meeting results. From there, the data is transformed through two categories: Exposure Metrics and Management Metrics. For Exposure Metrics, MSCI analyzes how exposed companies are to industry material issues. This question is based on more than eighty business and geographic segment metrics. For Management Metrics, MSCI analyzes how the company is managing each key issue. There are 35 Key Issues MSCI uses to perform their analyses. Not all are used for each company, but those in the same industry are evaluated on the same issues. Companies found in the Food and Beverage industry would not necessarily be evaluated on the metric of “Access to Health Care,” and companies in the Financial Services industry wouldn't be evaluated on the metric of “Packing and Material Waste.” These issues are weighted based on MSCI's mapping framework. (MSCI) The mapping framework acknowledges that different metrics hold distinct levels of significance, if any, over the different industries. After these processes have been completed, the issue scores and weights are combined to generate an overall rating for ESG relative to the industry peers. These scores range from AAA – the highest score – to CCC – the lowest score.

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The ranking full ranking from highest score to lowest score is as follows:

1. AAA
2. AA
3. A
4. BBB
5. BB
6. B
7. CCC

Companies who score AA or AAA are considered leaders in their industry. A leader is “A company leading its industry in managing the most significant ESG risks and opportunities” (MSCI). Companies who score A, BBB, or B are considered average in their industry. An average company is “A company with a mixed or unexceptional history of managing the most significant ESG risks and opportunities relative to industry peers” (MSCI). Companies who score B or CCC are considered laggards in their industry. A company considered a laggard is “A company lagging its industry based on high exposure and failure to managing significant ESG risks” (MSCI). The distributions here allow for comparison of companies within specific industries to see which companies perform better than others. (MSCI)

Other services similar to MSCI, such as Morningstar, do not offer ratings at the company level the way MSCI does for the general consumer. Morningstar provides ratings for ESG-focused mutual funds and ETFs. They do not provide ratings for each specific company that makes up those mutual funds and ETFs they analyze unless you pay for a professional profile. This professional profile gives a user access to Morningstar’s Sustainalytics which analyzes sustainability at the company level. The average consumer cannot access the specifics related to this portion of the website as not everyone will purchase a professional profile. MSCI looks at specific company operations the generate their scores, while also analyzing and scoring mutual funds and ETFs. MSCI allows any consumer to have access to a more detailed analysis of each specific company at a company *and* industry level as they do not charge or require a specific account type to access their services. This provides a simpler manner for users and consumers to access sustainability scores at a company level. When the scores for

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the companies are provided, MSCI shows the user how the specific company they are looking at ranks among their competitors in the specific market they are a part of.

About Correlation

Correlation is "...a statistical measure that expresses the extent to which two variables are linearly related" (JMP Statistical Discovery). Simply, a correlation works to show the relationship between two variables and whether it is significant or not. Correlation ranges between negative one and one. Negative one is a perfect negative correlation meaning as one variable increases, the other variable decreases at the same rate, and vice versa. One is a perfect positive correlation meaning that both variables are increasing or decreasing at the same rate. Correlation values near these two extreme ends indicate close relationships between the two variables. Zero is an important value in correlations as well as it indicates that there is no relationship between the variables being analyzed. While this is not a desirable outcome, it is still important to the analysis as it shares the lack of connection.

One thing to be conscious of when performing correlation analyses over variables is to make sure the relationship is not a spurious correlation. Correlation simply measures the association between the two variables, and association does not necessarily mean causation. Just because two variables are related to each other does not mean they should be. Tyler Vigen, a Military intelligence analyst and Harvard Law Student, created a book and website showing different forms of spurious correlations. These correlations include things such as how the Per capita consumption of mozzarella cheese correlates with civil engineering doctorates awarded. These two variables have a correlation of 0.96 – meaning the relationship between these two variables is strong and close – though there is nothing that truly connects them. Another correlation he includes is the per capita consumption of chicken and how it correlates with the total US crude oil imports. These variables have a correlation of 0.89 though there is no reason they should be related. These false relationships are at risk for occurring when two data points are compared that do not have a relationship, but can be prevented with time and knowledge of the data being used. (Vigen)

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Methodology

In order to build the model so it could run with any company, I utilized excel to store all of the data. Then, I researched companies on the MSCI website, pulling the company tickers from the S&P 500 list. MSCI houses data for many companies in the market, so this is the most efficient way to look them up. I had to be careful to make sure I was only pulling companies and their data that had one entry for each year ranging from 2017-2021. From there, I moved the score data into my excel workbook and reclassified the scores, so they were in a numerical format rather than an alphanumeric format. Correlations can only be run over numbers, not letters.

I pulled annual revenue numbers from Calcbench using the same identifying stock ticker. This data is the same that is reported on company financial statements, but it is presented in a manner that makes the necessary numbers easier to find. However, I had to be conscious that I was choosing companies that had reported their final values for 2021. These values were then brought into the excel workbook.

After entering the data, I used the (=CORREL) function in excel to run a correlation on the revenue data and numerical score data. The independent variable (X variable) in my analysis is the MSCI Sustainability Scores. The dependent variable (Y variable) in my analysis is the annual company revenue. The function allows for numerical output into the cell(s) directly adjacent to the table with the data inputs. Additionally, I ran a regression analysis over my data to determine the significance of the MSCI Sustainability score in predicting annual company revenue in a similar or future analysis. I utilized the P – Value from my regression results to determine the significance of the variable. The P – Value represents the percent chance an analyst would be incorrect in determining the variable as significant in a similar or future analysis. Typically, analysts and statisticians use benchmarks of 0.05 or 0.01 for their P – Values to determine significance because this limits the chance of incorrectly determining the significance of a variable to 5% or 1% respectively. This value has the room to change because it is subjective to the analysis it is being included in. For my analysis, given the new concept and my limited knowledge on the subject, I adopted a significant P – Value of 0.3 to allow myself more room for error.

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In order to have an effective analysis of the relationship between my variables and the results of the regression, I chose to focus on one company sector so that each result would be influenced by the same key issues of analysis. I chose to focus specifically on the Health Care Providers and Services Sector. This sector is a part of the larger Health Care industry. Through the MSCI, this sector contains forty-five of the companies that make up the Health Care sector. I analyzed six companies of varying correlative relationships to understand the relationship between the variables.

The final piece of my analysis focused on the Key Issues that the companies in this sector are evaluated on by the MSCI to create their scores. This allowed for a deeper understanding of a given company's performance as well as the relationship derived from the correlation.

Issues Found Within the Data

Despite the ease of being able to locate a variety of companies on the MSCI website, not all of the data found was perfect for the analysis. First I needed to reclass the alphanumeric scores to be purely numeric. I took care to ensure they matched the original scores with 1 = CCC, following an appropriate range to have 7 = AAA. The numerical values used by the MSCI to become associated with these alphanumeric scores are ranges. This prevented use of these specific values because a score of BBB has a numerical range of 4.286 – 5.714. (MSCI) There is no straightforward way to use these ranges as the numerical driver in the correlation. Some companies had multiple scores reported in the same year during different months. With a goal to use year-end revenue for my research and model, these companies became unusable as it would have required me to use quarterly revenue results. Lastly, not all companies had reported their year-end data for 2021 since it was only February 2022 when the data was being gathered.

Results

The first company included in my analysis is Universal Health Services, Inc. (UHS). UHS had a consistent sustainability score of CCC for the five years included in my analysis. This led the correlation between the score and the revenue to result in an error because the slope of the line related to the company revenue could not be divided by the slope of zero related to the sustainability scores. However, the P – Value result from the regression indicated that the

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sustainability score is a highly significant predictor for revenue. In examining the key issues that UHS is evaluated on to craft their score, it is seen that they are not considered to be a leader with any of the key issues on which they are evaluated. This means they are highly exposed to risks related to their key issues and do not have things in place to help successfully mitigate the risks. The P – Value being significant in this model indicates that, should another analysis similar to this one be performed on UHS in the future, their sustainability score will be a key predictor related to their annual revenue. (See Appendix A for more details)

The second company I included in my analysis is HCA Healthcare, Inc. (HCA). While HCA achieved sustainability scores in the high average range, they did not achieve a significant correlation. The results of this analysis generated a correlation of 0.11, meaning there is a small relationship between the score and the revenue, but the relationship is not strong enough to determine it as significant. The P – Value from the regression run over HCA’s data reported as 0.34, meaning there would be a 34% chance of the variable not being significant in a similar analysis. While this is in line with the benchmark I created for myself, it would not be considered overly significant in general. In diving deeper to understand the results of the correlation, I analyzed HCA’s key issue breakdown. Similar to UHS, HCA is considered to be a laggard in the majority of the key issues, meaning they too are highly exposed to the risks associated with these issues. However, HCA is considered to be a leader in two of the key issues they are evaluated on: Corporate Behavior and Privacy and Data Security. This means they are effectively mitigating the risks associated with these key issues and having greater success than their peers; this also allows them to generate some sort of correlative relationship between their sustainability score and revenue unlike UHS. (See Appendix B for more details)

A third company I included in my analysis is Quest Diagnostics Incorporated. Quest achieved a correlation of 0.44. While this also does not indicate a strong correlation between the sustainability score and revenue, it is a stronger relationship than is held by UHS and HCA. Despite this correlation being more prominent than its aforementioned peers, Quest’s P – Value result from the regression came to equal 0.99. This shows that the sustainability scores are not significant predictors of the company’s revenue. While this is not an admirable result for my analysis, it is still worth discussing to show that no two companies will have the same

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outcome despite having a similar line up of key issues. Quest only has one key issue where they are considered to be a laggard, and the majority fall into them being average, meaning they are doing an okay job mitigating some of the risks surround those key issues. Compared to UHS and HCA, they are much better at mitigating risks associated with their key issues.

Also part of this industry is Cigna Corporation. Cigna is the first company in my analysis to achieve a correlation greater than 0.5, coming in with a correlation of 0.64. This shows an increased relationship between the sustainability scores and Cigna's annual revenue.

However, Cigna's P – Value result from the regression analysis yielded a 0.43, showing that the sustainability score is not a significant variable in predicting annual revenue for Cigna. In looking at the Key Issue breakdown for Cigna, we see the appearance of a new, company – specific issue brought into the analysis: Insuring Health and Demographic Risk. With this Key Issue, “insurance companies are evaluated on their management of emerging social risks and their development of insurance products to address emerging needs that may arise from major public health and demographic trends” (MSCI). Cigna's recent merger with Express Scripts, a company that works to make medications more affordable for all those who need it, allows them to be considered a leader in their industry because now, Cigna can offer medications at a more reduced price to consumers, allowing them to reach a wider market and solve more health issues for people. UHS, HCA, and Quest are not evaluated on this issue, setting Cigna and other companies evaluated on this issue apart from their competition.

CVS Health Corporation (CVS) generated a correlation of 0.78. This level of correlation shows a strong relationship between the sustainability scores and annual revenue. The P – Value from CVS's analysis reported as 0.165, meaning there is only a 17% chance of incorrectness in determining the significance of the sustainability scores in predicting revenue. In analyzing their Key Issues, we can see that CVS has the majority of the Key Issues falling into the leader and laggard category. This increased success in mitigate risks compared to competitors helps CVS to have a stronger relationship with their sustainability scores and revenue. CVS is also evaluated on the Key Issue of Insuring Health and Demographic Risk similar to Cigna. This means they are successful in mitigating risks related to public health and providing the proper materials for dealing with health crises in the world. (See Appendix E for more details)

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The last company I included in my analysis is Anthem, Inc. Out of all the companies in my analysis, Anthem had the most successful results related to their correlation and P – Values being of equal positivity and significance. Anthem achieved a correlation of 0.93 and a P – Value of 0.02. These numbers are highly significant in showing not only the relationship between the scores and the revenue, but also how significant the sustainability score would be in predicting future revenue values. In analyzing the Key Issues that Anthem is evaluated on, it can be seen that they are not considered to be a laggard in any of the Key Issues they are evaluated on. Anthem has success in mitigating the majority of the risks associated with their Key Issues, and while there are only two that are falling into their leader category, they are not lagging behind their peers. (See Appendix F for more details)

Conclusions and Further Applications

Overall, I determined through my analyses that the relationship between MSCI Sustainability Scores and Annual Company revenue is subjective to how the company is performing in their key issues. Companies like UHS and HCA are considered to be a laggard in their industry, and do not perform highly in any of their key issues. This lead UHS to have an error in generating their correlation and HCA to have an insignificant correlation. Conversely, companies like CVS and Anthem are performing more admirably in their industry compared to their peers in my analysis. This lead them to have stronger correlative relationships between their MSCI Sustainability Scores and Annual company revenue.

The takeaway that has the largest connection to the current market is related to mutual funds and their investors. In 2020, mutual funds focused specifically on sustainability outperformed their traditional peers by a return of 4.3%. Sustainable bonds had a higher return than their traditional counterparts by 0.9%. (Morgan Stanley). This analysis was performed over more than 3,000 mutual funds and exchange-traded funds (ETFs). These funds and ETFs consist of companies that excel in sustainable practices. This is important for a takeaway from the correlative analyses because these performance numbers came from the year of a pandemic where our economy was in a recession. Investors were more apt to put their money in sustainable options rather than traditional counterparts.

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Dozens of other reports have been issued discussing this type of fund performance as well. Morningstar issued a report titled *Sustainable Funds US Landscape Report* in 2021 that discussed more on the outperformance of sustainable funds over the traditional. They shared that “The returns of 69 percent of sustainable funds ranked in the top half of their Morningstar Category, and 37 percent in the top quartile returns” (US SIF). The funds that make up the traditional counterparts to these sustainable funds did not rank as highly in Morningstar’s analysis.

The Morgan Stanley Institute for Sustainable Investing published *Sustainable Reality: Analyzing Risk and Returns of Sustainable Funds*. This report was published in 2019 and analyzed the risk and return of ESG-focused mutual funds and ETFs. While they shared that they found no evidence of financial trade-off for sustainable funds compared to traditional, “...during a period of extreme volatility, the study found “strong statistical evidence that sustainable funds are more stable” (US SIF)

A 2015 study by Oxford University led to the creation of a report titled *From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance*. This study analyzed over two hundred sources, comprised of academic journals, company reports, and newspaper articles. The results of their study determined that “88 percent of reviewed sources find that companies with robust sustainability practices demonstrate better operational performance, which ultimately translates into cash flows” and “80 percent of the reviewed studies demonstrate that prudent sustainability practices have a positive influence on investment performance” (US SIF). This study and those aforementioned are just a few of many that have analyzed the performance of ESG-related endeavors compared to the traditional counterparts.

Additionally, the model built for the analysis portion of my thesis is widely transitional, meaning it can be applied to any industry or company found within the MSCI and has published their revenue for general access. Investors have the option to take this process into their own hands and analyze companies they want to invest in for themselves. This will also allow them to not only compare potential investment companies on their correlation, but see how companies in the same industry meet on the key issues on which they are evaluated.

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They would be able to know what types of sustainable measures the companies are leaders in, average in, or are laggards in compared to their peers.

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APPENDICES

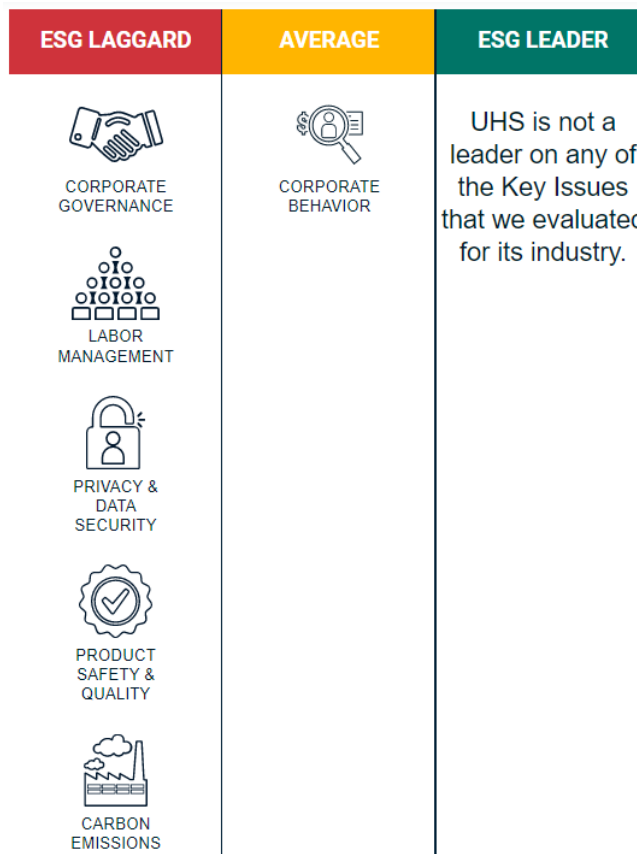
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Appendix A – Universal Health Services, Inc. Results and Key Issue Breakdown

Company Name: Universal Health Services, Inc.			
Identifier: UHS			
Reporting Period	MSCI Score	Binary Re-Code	Revenue
2017	CCC	1	\$ 10,409,865,000.00
2018	CCC	1	\$ 10,772,278,000.00
2019	CCC	1	\$ 11,378,259,000.00
2020	CCC	1	\$ 11,558,897,000.00
2021	CCC	1	\$ 12,642,117,000.00

Correlation
 #DIV/0!

P-value
 0.000124063



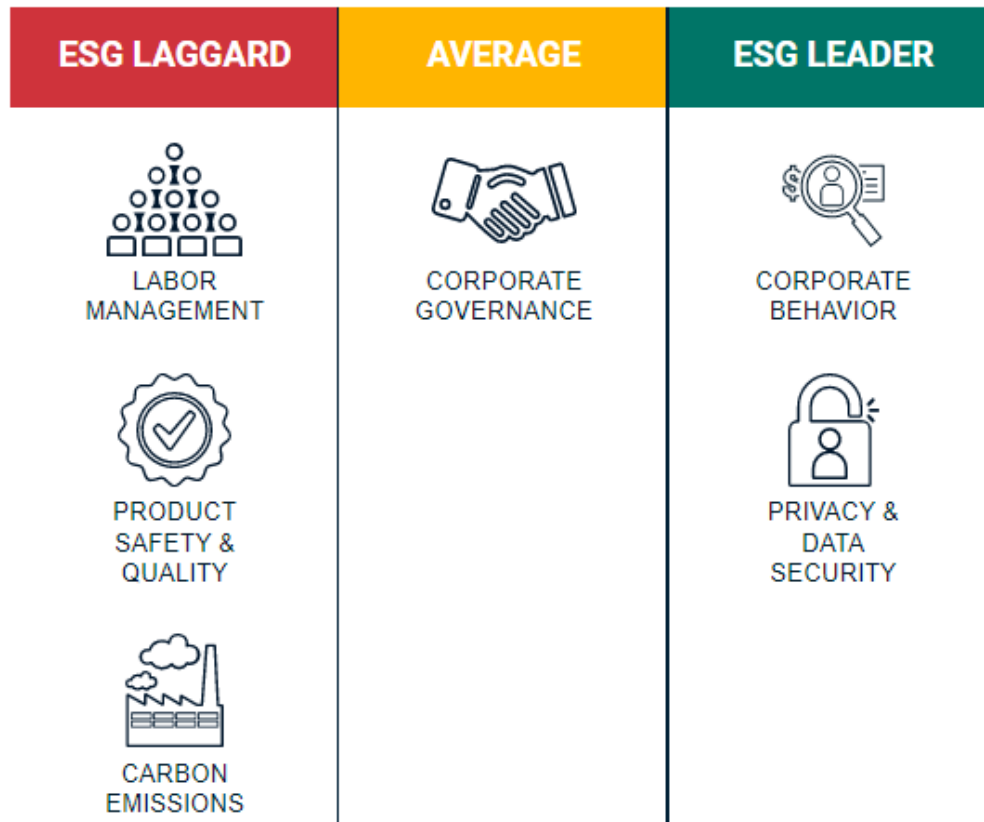
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Appendix B – HCA Healthcare, Inc. Results and Key Issue Breakdown

Company Name: HCA Healthcare, Inc.			
Identifier: HCA			
Reporting Period	MSCI Score	Binary Re-Code	Revenue
2017	A	5	\$ 43,614,000,000.00
2018	A	5	\$ 46,677,000,000.00
2019	A	5	\$ 51,336,000,000.00
2020	AA	6	\$ 51,533,000,000.00
2021	A	5	\$ 58,752,000,000.00

Correlation
0.112042048

<i>P-value</i>
0.345388439



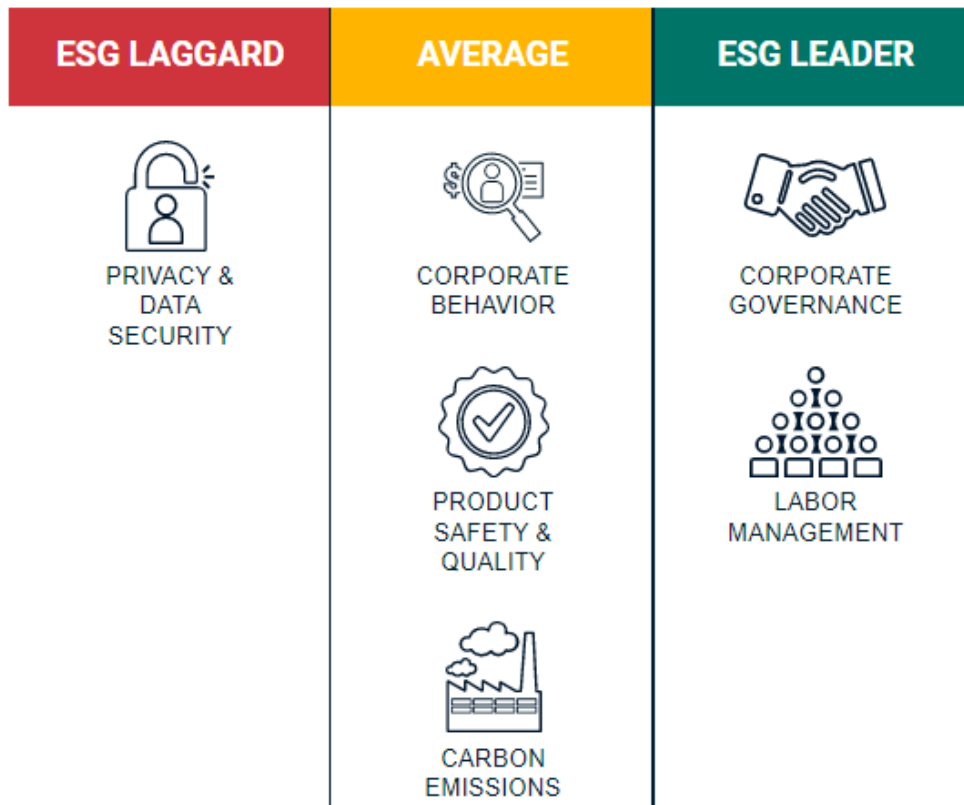
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Appendix C – Quest Diagnostics Incorporated Results and Key Issue Breakdown

Company Name: Quest Diagnostics Incorporated			
Identifier: DGX			
Reporting Period	MSCI Score	Binary Re-Code	Revenue
2017	A	5	\$ 7,402,000,000.00
2018	AA	6	\$ 7,531,000,000.00
2019	AA	6	\$ 7,726,000,000.00
2020	AA	6	\$ 9,437,000,000.00
2021	AA	6	\$ 10,788,000,000.00

Correlation
0.442090147

<i>P-value</i>
0.995626552



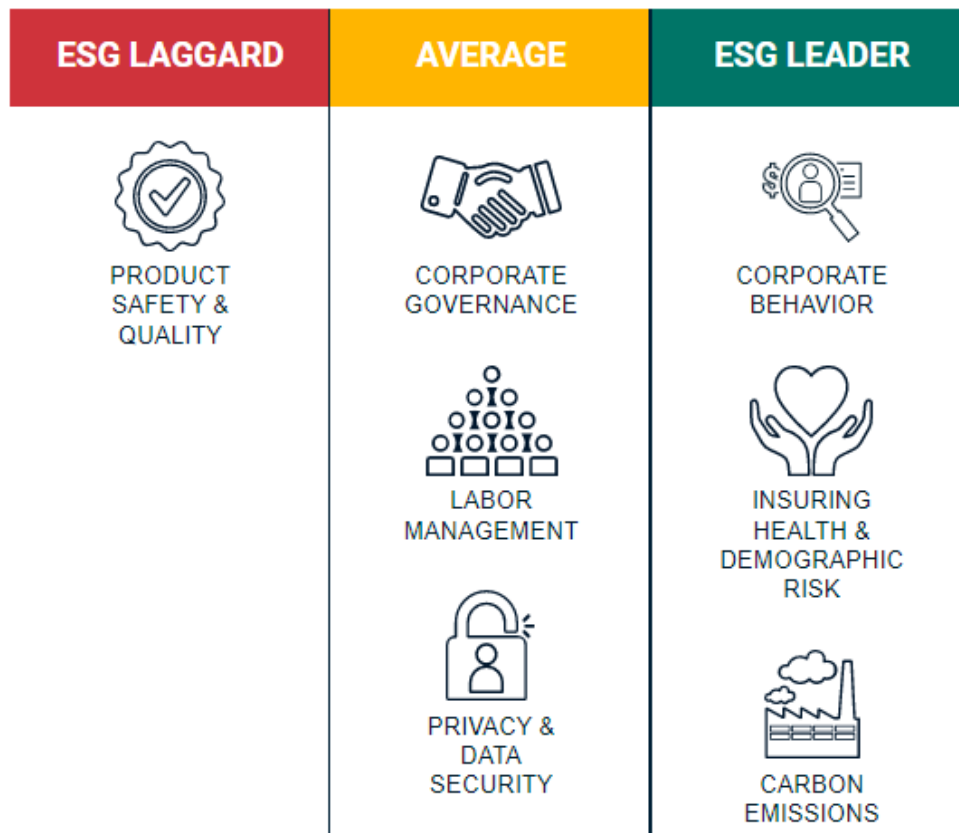
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Appendix D – Cigna Corporation Results and Key Issue Breakdown

Company Name: Cigna Corporation			
Identifier: CI			
Reporting Period	MSCI Score	Binary Re-Code	Revenue
2017	BBB	4	\$ 41,806,000,000.00
2018	A	5	\$ 48,650,000,000.00
2019	A	5	\$ 153,566,000,000.00
2020	AA	6	\$ 160,401,000,000.00
2021	A	5	\$ 174,078,000,000.00

Correlation
0.647065226

P-value
0.439378382



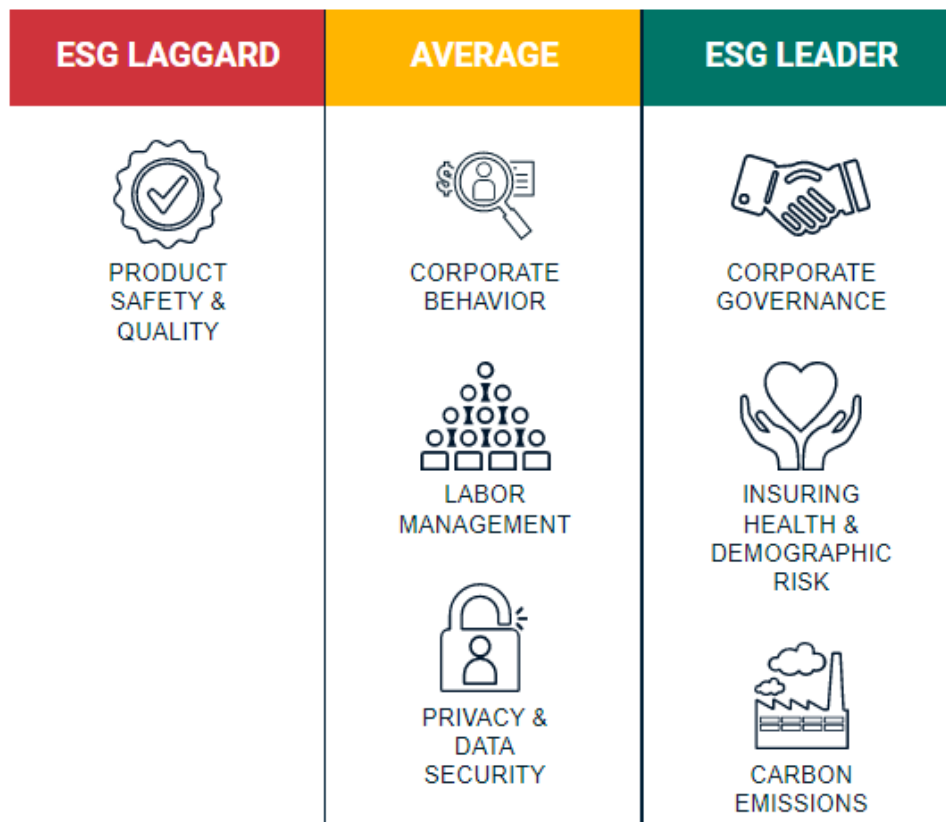
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Appendix E – CVS Health Corporation Results and Key Issue Breakdown

Company Name: CVS Health Corporation			
Identifier: CVS			
Reporting Period	MSCI Score	Binary Re-Code	Revenue
2017	B	2	\$ 184,786,000,000.00
2018	BBB	4	\$ 194,579,000,000.00
2019	BBB	4	\$ 256,776,000,000.00
2020	BBB	4	\$ 268,706,000,000.00
2021	A	5	\$ 292,111,000,000.00

Total Correlation
0.782100319

<i>P-value</i>
0.165347807









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Appendix F – Anthem, Inc. Results and Key Issue Breakdown

Company Name: Anthem, Inc.			
Identifier: ANTM			
Reporting Period	MSCI Score	Binary Re-Code	Revenue
2017	BB	3	\$ 90,040,000,000.00
2018	B	2	\$ 92,105,000,000.00
2019	BB	3	\$ 104,213,000,000.00
2020	BBB	4	\$ 121,867,000,000.00
2021	A	5	\$ 138,639,000,000.00

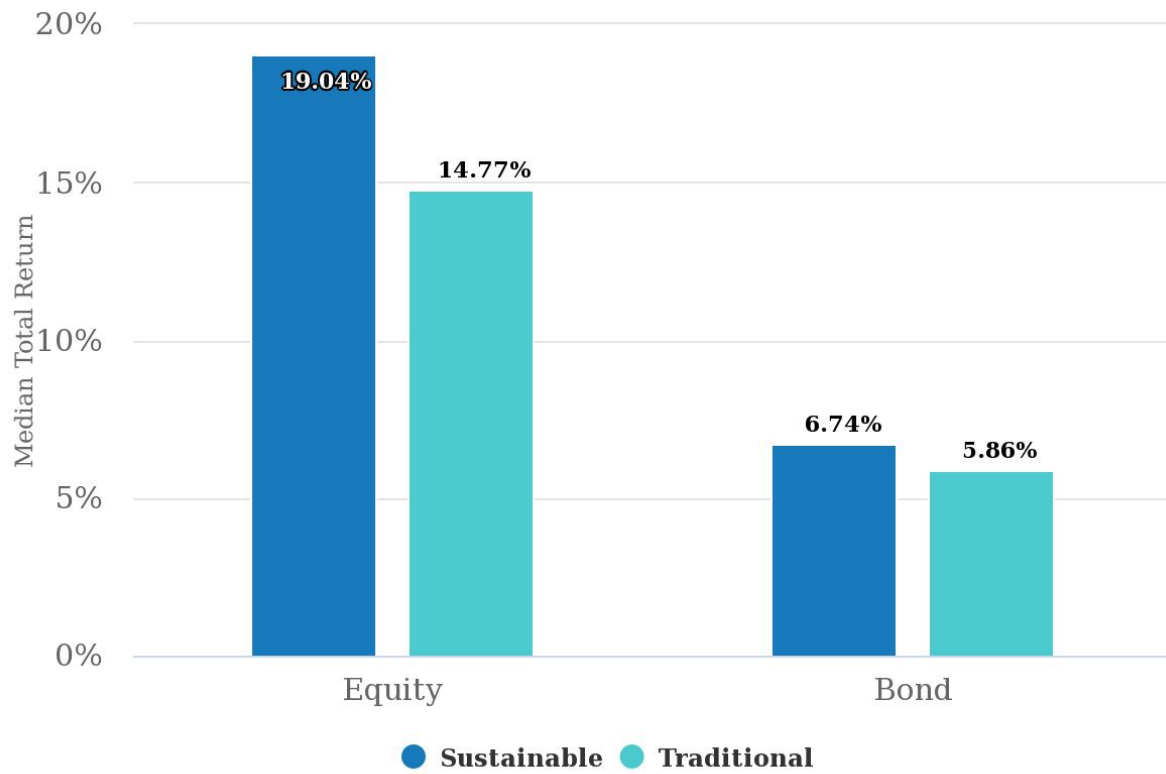
Correlation
0.936018678

<i>P-value</i>
0.029005

ESG LAGGARD	AVERAGE	ESG LEADER
Anthem is not a laggard on any of the Key Issues that we evaluated for its industry.	 CORPORATE GOVERNANCE	 CORPORATE BEHAVIOR
	 PRIVACY & DATA SECURITY	 CARBON EMISSIONS
	 PRODUCT SAFETY & QUALITY	
	 INSURING HEALTH & DEMOGRAPHIC RISK	

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Appendix G – Median Return Graphs on Mutual Funds from Morgan Stanley



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