What Drivers of Corporate Responsibility Generate Alpha?*

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Key Findings: Just Companies Show Higher Return and Lower Risk; Leadership & Ethics and Worker Treatment Are Significant Drivers of Alpha.

This article examines the investment risk and return characteristics of JUST Capital-ranked stocks, segmented by their JUST scores, and represents a continuation of the analysis of the performance of equity indexes constructed using the JUST rankings (Cortina 2017). The motivation for this study is that the transmission channel(s) for the outperformance of the JUST indexes we found in previous research is not well understood. An original contribution of this article is to not only segment stocks using an overall ESG score, but to also use sub-scores to facilitate a more fine-grained understanding of the aspects of ESG performance that are most impactful to investors, as measured by return and risk metrics.

Research from the Environmental, Social and Governance (ESG) investment community posits that the stocks of companies with high ESG (in our case, JUST) scores are less exposed to fundamental and market risks that are not typically captured by traditional financial analysis and statistical risk models. In the U.S., (De 2015) find a significant negative correlation between Thomson Reuters ESG ratings and stock volatility. Globally, AQR (Dunn 2017) show that stocks in the highest quintile of MSCI ESG scores have significantly lower volatility and betas compared with those in the bottom quintile.

Applying a framework similar to AQR's to the Russell 1000 universe of JUST Capital-ranked stocks we find statistically significant evidence that stocks in the top quintile of JUST scores have superior return and risk attributes compared with lower-ranked companies. For instance, we find significant differences between quintile 5 (Q5) and quintile 1 (Q1) stocks in seven of eight metrics. In particular, Q5 stocks exhibit 4.8% higher three-year annualized returns, 18-22% lower volatility and 6% lower betas than Q1 stocks, a larger reduction in risk than that found by AQR for global stocks. Furthermore, Q5 stocks show 5% shallower average drawdowns, near-half the quarterly earnings-per-share volatility, and 4.5% higher ROIC than Q1 companies. These findings are also directionally consistent with those of a Merrill Lynch study covering U.S. companies over 2005-2015 (Subramanian 2016).

In the second part of this article, an analysis of the individual elements composing the overall JUST score shows that Leadership & Ethics, as well as Worker Treatment drivers may provide significant sources of risk mitigation and return enhancement. Investors, both active and passive, might also be interested in the alpha-generation potential uncovered by paying closer attention to corporate performance on the Community Wellbeing and Product Attribute drivers. Looking ahead, we expect that ESG research will advance in the direction of identifying the investor value of specific corporate sustainability behaviors.

Rapid Growth in Sustainable Investment Mandates

The investment resilience of sustainable and just companies supports the recent rapid growth in professionally-managed sustainable investment assets. For instance, the latest biennial review (GSIA 2017) from the Global Sustainable Investment Alliance (GSIA) indicates that in 2016 there were $23 trillion in assets globally managed under responsible investment guidelines, a 25% increase since 2014. In the United States, the share of sustainable investments relative to total managed assets has grown to 22% from 18% over this period. Accordingly, a better understanding of the relative resilience of stocks selected using the JUST methodology may be of interest to both asset owners and asset managers. As the pool of sustainable investment mandates grows, identifying the specific aspects of sustainability that contribute most to investment returns would likely be of interest to these investors.

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*This article is a revised and expanded version of the author's April 2017 article: *JUST Companies Exhibit Lower Investment Risk*. Investment return data has been added to the analysis and the section regarding the alpha of individual JUST drivers is new.

Russell 1000 Coverage Universe and Metrics

We analyzed the risk and return characteristics of the stocks for which JUST Capital released rankings in November 2016 according to its methodology (JUST 2016). These represent the majority of the Russell 1000 index, the full list of which, as well as the methodology, can be found on the JUST Capital website[1].

The market risk and return metrics we analyzed are:

1. Total volatility (three-year standard deviation of weekly total returns)
2. Beta versus Russell 1000 index (based on regression of three-year weekly total returns)
3. Beta-adjusted volatility, a measure of stock-specific volatility which excludes overall market movements (residual after removing beta-adjusted Russell 1000 return from item 1 above.)
4. Average drawdown (average depth of drawdowns over last three years). Drawdown defined as peak to subsequent trough percent decline, reset from every new peak.

In addition, we included measures of credit risk, earnings volatility, profitability and market return:

5. The latest Altman Z-score, as reported by Bloomberg as of March 2017 (a measure of the likelihood that a firm will go bankrupt within two years)
6. Earnings-per-share volatility (coefficient of variation in quarterly EPS over last three years)
7. Return-on-Invested Capital (5-year average of annual ROIC)
8. Annualized market return (trailing three-year total return)

All market data is sourced from Bloomberg for the period ending April 14, 2017.

The general approach to the assessment of all metrics is to divide the coverage universe into equal-sized quintiles based on their overall industry-relative JUST score and compare the within-quintile means of the eight metrics. In addition, we also divided the coverage universe into two segments, with one encompassing the JUST 100, the top-3 scoring ranked companies in each of the 32 JUST industries (and four highest fourth-places), and compared those with the remaining companies. As would be expected, the vast majority of the JUST 100 companies are in the top quintile of JUST scores (96 out 100), and could be considered representative of 'best in class' performers by industry. In the second part of this study, rather than using the overall JUST score to segment companies, we employ the JUST individual driver scores, which are sub-scores quantifying the corporate performance in ten categories such Work Pay & Benefits, Worker Treatment, or Environmental Impact. This provides insight into the aspects of corporate responsibility that are most significant from a market risk/reward perspective.

Distribution and Quintiles of Overall JUST Score

The histogram below left shows the distribution of the overall JUST score. JUST defines 50 to represent the performance of an average company relative to its industry. Higher scores represent more just performance. The bar chart below right shows the mean score by quintile - top performers are assigned to Q5 while the lowest performers are assigned to Q1.
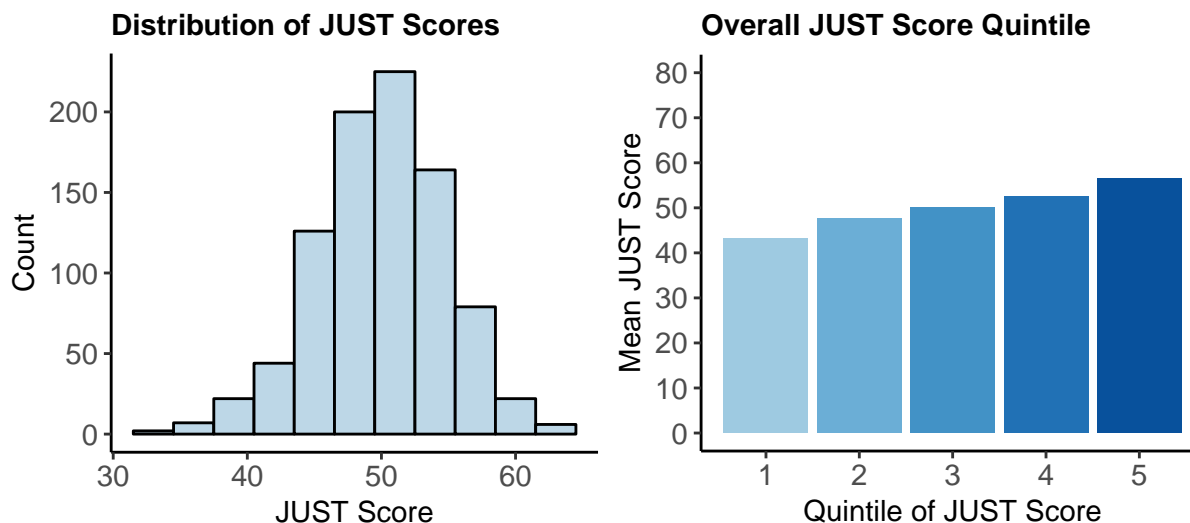
[1]Methodology: https://justcapital.com/methodology, and list of ranked companies: https://justcapital.com/ranked-companies/

Metrics Analysis by JUST Quintile and JUST 100 Membership

Table 1 shows the within-quintile mean values of the eight metrics. Overall, the results are consistent with quintile 1 companies showing the lowest historical risk, while quintile 5 companies the highest. Similarly, Table 2 shows JUST 100 exhibit lower risk compared with other ranked companies.

Table 1: Mean of Overall JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	43.2	29.5	1.12	25.8	18.3	4.34	58.0	8.7	5.89
2	179	47.6	29.7	1.15	25.8	19.4	4.54	57.0	9.4	6.09
3	179	50.1	27.1	1.11	23.1	17.4	5.54	44.4	8.9	7.38
4	179	52.6	26.9	1.11	22.8	16.5	5.08	41.1	11.5	8.39
5	180	56.5	24.1	1.05	20.1	13.4	4.98	30.0	13.1	10.66

Table 2: Mean of Overall JUST Score and Eight Metrics

JUST 100	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
FALSE	797	49.1	27.8	1.11	23.9	17.2	4.92	47.6	9.9	7.47
TRUE	100	57.5	24.5	1.09	20.2	14.9	4.74	33.3	13.6	9.39

Note: Vol, Adj Vol, Avg Drawdown, EPS Coef Var, ROIC and Return have been multiplied by 100 on Tables 1-6 for clarity.

- Total volatility: the volatility of Q1 companies is 5.4 percentage-points, or 22%, higher compared with Q5 stocks. This difference is larger than the 10-15% increase found by AQR. The rise in volatility moving through the five quintiles is nearly monotonic, with the exception of close values in Q1 and Q2.
- Beta: the regression beta of Q1 companies is 0.07, or 7%, higher compared with Q5 stocks. This difference is again somewhat larger than the 3% gap found by AQR. The progression through the quintiles is similar to the total volatility's.
- Beta-adjusted volatility: This measure is meaningful because it represents the risk that can not be hedged via overall market hedges. Q1 adjusted vol is 5.7 percentage-points, or 28% higher, than Q5's, a slightly more pronounced difference that for total volatility.
- Average drawdown: The average drawdown of Q5 stocks is 4.9 percentage points smaller than than of Q1 stocks, a significant reduction in downside exposure. The progression across quintiles is similar to above.
- Altman Z-score: The Z-scores is designed to capture the 2-year bankruptcy probability, with companies likely to face distress within two years expected to score below zero, and healthy companies above four. All quintiles in the coverage universe score above four but the progression across quintiles is not monotonic and the JUST score does not appear to capture meaningful risk of financial distress. This might be the result of the companies being drawn from the Russell 1000, a set of companies where financial distress is relatively rare given the index constituents and construction methodology.
- EPS volatility: We measure EPS volatility with the coefficient of variation (standard deviation divided by mean) of last 12 quarters. This metric shows a clear distinction and monotonic progress across the JUST score quintiles. Companies in Q1 exhibit approximately twice the EPS volatility of companies in Q5 (CVs of 58 in Q1 versus 30 in Q5).
- ROIC: While ROIC is a measure of financial performance and not typically viewed as a risk metric, it provides a measure of financial health. Q5 companies have an average ROIC of 13.1%, 4.4% higher than Q1 companies. Progression across quintiles is fairly uniform.
- Return: The three-year annualized total return of Q5 stocks is approximately 4.8% higher than for Q1 stocks, with monotonic progression across quintiles.

Significance Testing: 7 of 8 Metrics Show Significant Differences

To assess the statistical significance of the differences in risk metrics between quadrant 5 and quadrant 1, we conduct t-tests for each of the eight metrics. Table 3 shows that 7 of the 8 measures show significant differences between Q5 stocks and Q1 stocks: total and adjusted volatility, average drawdown, EPS volatility, ROIC, and Return, at the 1% significance level, and beta at the 10% level. The Altman Z-score did not show a significant Q5-Q1 difference. In addition, Table 4 shows t-tests for the JUST 100 group versus other stocks, which shows significant differences in 4 of the 7 measures. It isn't surprising that the JUST 100 shows less differentiation, as the contrast between Q1 and Q5 extremes would be sharper than between a large subset of approximately 800 stocks and a small subset.

To rule out the possibility of spurious results related to the three-year market data timeframe we also tested using 5-year and 1-year weekly prices. We found the same metrics to be significantly different using both JUST quintiles and the JUST 100.

Table 3: quintile 5 - quintile 1 t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-5.4	-0.07	-5.69	-4.85	0.64	-27.94	4.38	4.77
t-stat	-5.05	-1.76	-5.47	-2.79	1.5	-3.96	3.25	2.95
p-value	0	0.079	0	0.006	0.133	0	0.001	0.003
Significance	***	*	***	***		***	***	***

Table 4: JUST 100 - Others t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
JUST 100 mean - Others mean	-3.35	-0.02	-3.7	-2.3	-0.18	-14.31	3.65	1.92
t-stat	-3.38	-0.39	-3.94	-1.28	-0.41	-2.43	2.27	1.25
p-value	0.001	0.698	0	0.202	0.683	0.016	0.025	0.213
Significance	***		***			**	**	

Note: Welch Two Sample t-test. Significance: $p < 0.01$: *** ; $p < 0.05$: ** ; $p < 0.1$: *

Analyzing Alpha of Individual JUST Drivers

Having established a supportive relationship between the overall JUST score and the risk/return metrics consistent with prior studies, we now exploit the granularity of the JUST Capital scores to narrow the focus to individual aspects of corporate responsibility. As presented in the JUST Capital methodology, the JUST overall score is a weighted average of 10 "driver" scores, shown on Table 5. Each of the drivers incorporates specific corporate sustainability metrics, and can be used to rank companies along that dimension of sustainability. The weights of each of these drivers in the overall JUST score are derived from JUST's polling of the American public. In its 2016 polling the drivers with the highest weights were "Worker Pay and Benefits" (25.5%), "Worker Treatment" (24.0%) and "Leadership & Ethics" (17.2%). Table 6 shows the statistical significance of each of the driver scores with regard to the same risk/return metrics studied using the overall JUST score. Note that while JUST Capital presents 10 drivers we study only 9 in this analysis. We remove the "Investor Alignment" driver (3.9% weight in overall score) which includes market performance in its definition. The reason it is removed is that it would, by construction, be strongly correlated with the market metrics under study.
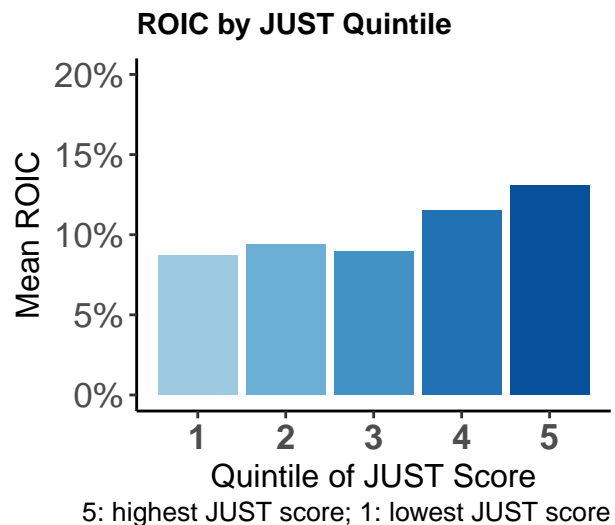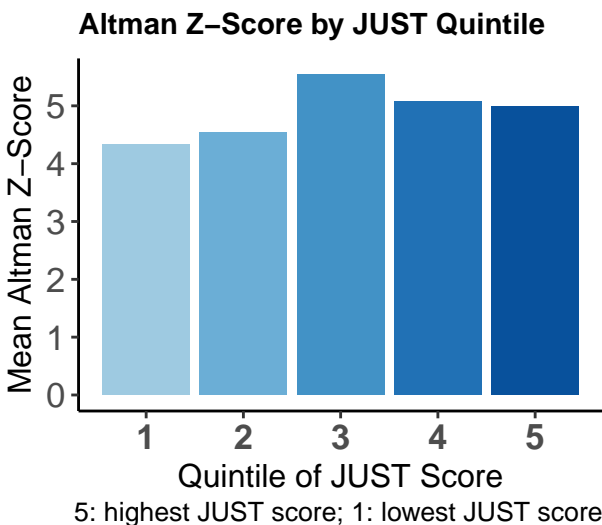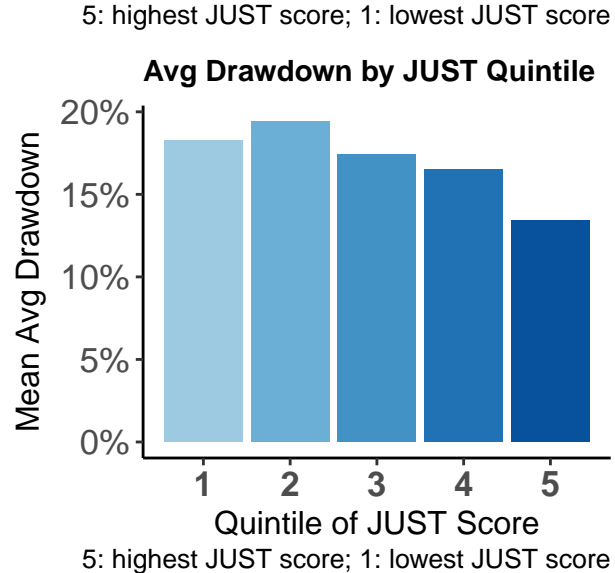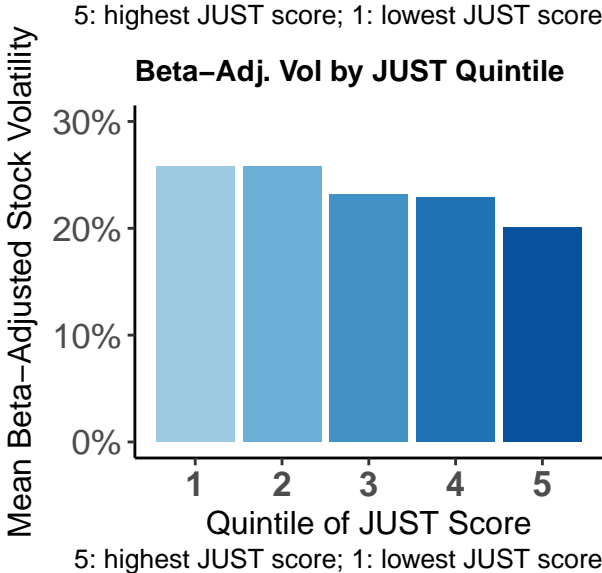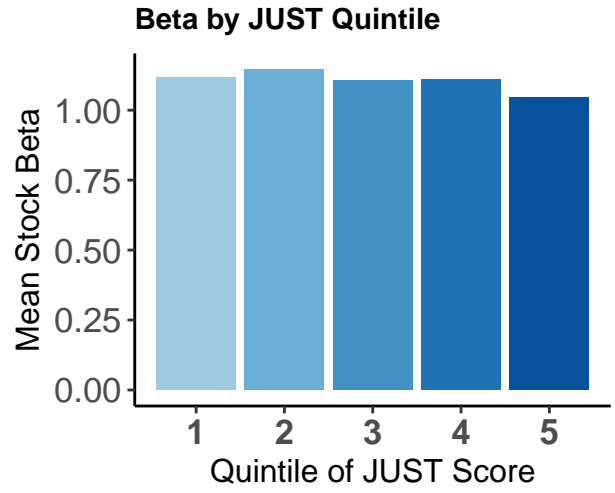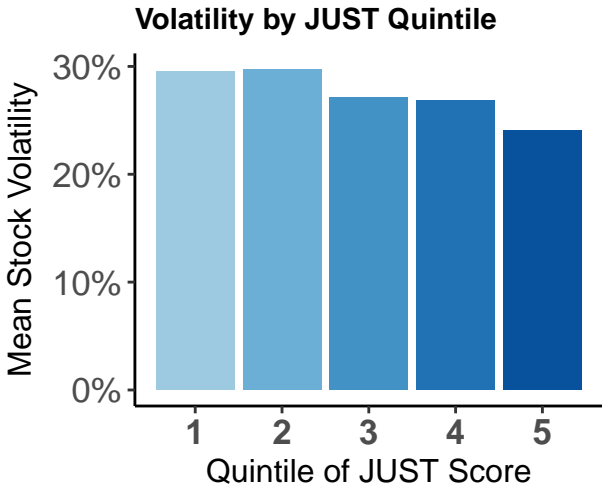
Table 6 shows that higher Leadership & Ethics scores are associated with higher investor returns at the 1% significance level, and more weakly associated with the Worker Pay and Worker Treatment drivers. ROIC is also positively associate with Worker Treatment, as well as with Supply Chain Impact. Furthermore, three of the key downside risk metrics: volatility, adjusted volatility, and average drawdowns are significantly reduced by stronger Worker Treatment and Leadership & Ethics scores. Positive Customer Treatment and Environmental Impact scores are associated with higher credit quality as measured by Altman's Z. Finally, stronger Product Attributes scores are associated with lower quarterly EPS volatility.

Examining Table 6 by driver, we find that all but two of the nine, namely Worker Pay and Job Creation, show strong relationships in the direction of higher alpha. While corporate performance in all of these drivers might be of interest to investors, Worker Treatment as well as Leadership & Ethics appear particularly valuable as sources of alpha. Product Attributes and Community Treatment may also provide somewhat unanticipated and underappreciated portfolio benefits. The Appendix visualizes the impact of each of the nine drivers on the risk and return metrics under study. It also identifies the component issues within each driver. The finding that worker treatment appears more significant than pay & benefits from an investor reward perspective is intriguing and merits further study.

Investment managers wishing to drill deeper into the performance, or change in performance, within each of these drivers can review the JUST Capital methodology to understand the specific metrics within them. Companies identified as strong or improving performers in the highlighted drivers may be promising candidates for sustainability-focused portfolios.

Visualizing Risk/Return Metrics by Quintiles of Overall JUST Score

The bar charts below illustrate the variation in the eight metrics across the quintiles of JUST scores. The last chart combines the two volatility metrics and average drawdown in one chart to show the difference in these market risk metrics.
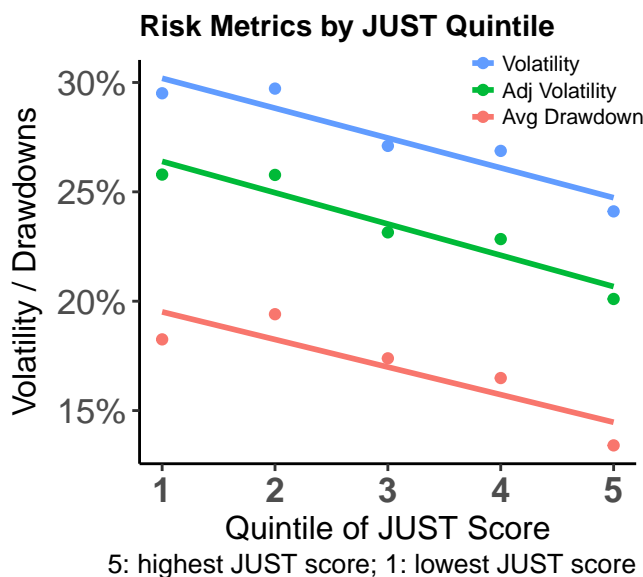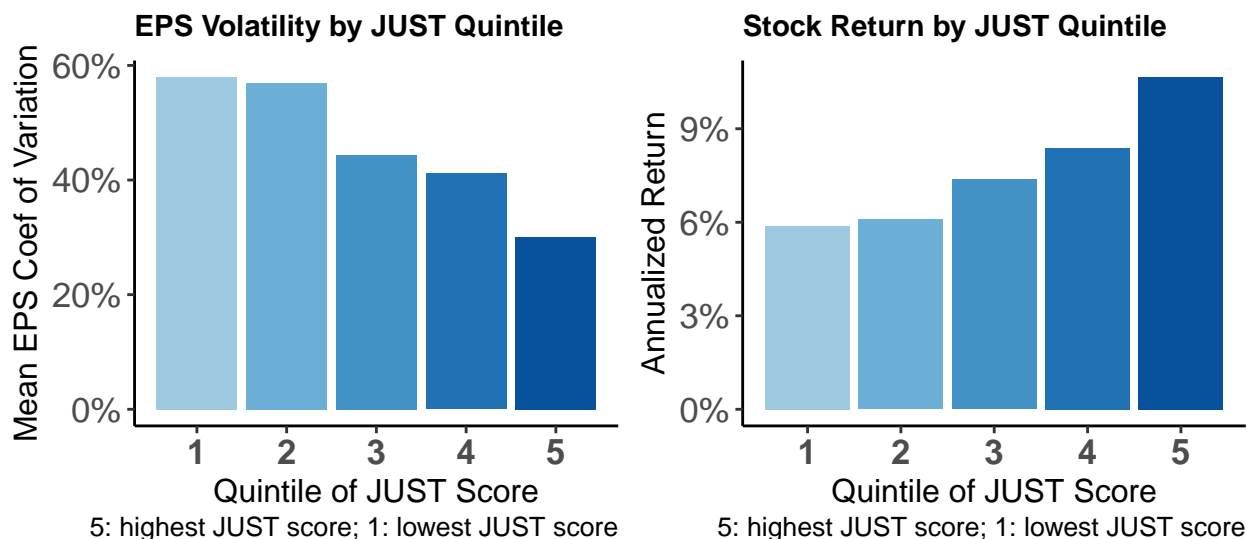
Volatility by JUST Quintile

Mean Stock Volatility

Quintile of JUST Score
5: highest JUST score; 1: lowest JUST score

Beta by JUST Quintile

Mean Stock Beta

Quintile of JUST Score
5: highest JUST score; 1: lowest JUST score

Beta−Adj. Vol by JUST Quintile

Mean Beta−Adjusted Stock Volatility

Quintile of JUST Score
5: highest JUST score; 1: lowest JUST score

Avg Drawdown by JUST Quintile

Mean Avg Drawdown

Quintile of JUST Score
5: highest JUST score; 1: lowest JUST score

Altman Z−Score by JUST Quintile

Mean Altman Z−Score

Quintile of JUST Score
5: highest JUST score; 1: lowest JUST score

ROIC by JUST Quintile

Mean ROIC

Quintile of JUST Score
5: highest JUST score; 1: lowest JUST score

EPS Volatility by JUST Quintile

5: highest JUST score; 1: lowest JUST score

Stock Return by JUST Quintile

5: highest JUST score; 1: lowest JUST score

Risk Metrics by JUST Quintile

5: highest JUST score; 1: lowest JUST score

Table 5: JUST Capital Drivers of Corporate Performance

Code	Driver	Weight in overall JUST score (%)
PAY	Worker Pay and Benefits	25.5
TREAT	Worker Treatment	24.0
LEAD	Leadership & Ethics	17.2
CUST	Customer Treatment	7.4
PROD	Product Attributes	5.6
JOBS	Domestic Job Creation	5.6
ENV	Environmental Impact	5.0
SUPPLY	Supply Chain Impact	4.1
INVEST	Investor Alignment	3.9
COMM	Community Wellbeing	1.7

Source: JUST Capital.

Table 6: quintile 5 - quintile 1 t-tests for drivers

Driver	Statistic	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
PAY	Q5 mean - Q1 mean	-1.38	0	-1.49	0.69	0.72	-1.66	0.34	2.88
	t-stat	-1.33	-0.07	-1.45	0.42	1.54	-0.17	0.24	1.8
	p-value	0.185	0.943	0.147	0.677	0.124	0.868	0.81	0.072
	Significance								*
TREAT	Q5 mean - Q1 mean	-4.94	-0.02	-5.56	-5.32	-1.02	-18.11	4.28	2.91
	t-stat	-4.44	-0.57	-5.12	-2.9	-1.84	-1.77	2.33	1.8
	p-value	0	0.572	0	0.004	0.067	0.077	0.021	0.073
	Significance	***		***	***	*	*	**	*
LEAD	Q5 mean - Q1 mean	-4.19	-0.09	-4.2	-6.42	0.75	-19.28	1.75	4.78
	t-stat	-4.23	-2.32	-4.27	-3.76	1.66	-2.39	0.97	3.08
	p-value	0	0.021	0	0	0.099	0.017	0.333	0.002
	Significance	***	**	***	***	*	**		***
CUST	Q5 mean - Q1 mean	-1.81	-0.03	-1.89	0.06	1.69	-5.91	1.2	0.88
	t-stat	-1.6	-0.72	-1.7	0.04	3.7	-0.66	0.59	0.53
	p-value	0.11	0.474	0.09	0.972	0	0.508	0.558	0.594
	Significance			*		***			
PROD	Q5 mean - Q1 mean	-4.52	-0.05	-4.81	-0.69	-0.1	-19.44	0.26	1.98
	t-stat	-4.48	-1.12	-4.9	-0.37	-0.21	-3.15	0.2	1.19
	p-value	0	0.263	0	0.713	0.831	0.002	0.842	0.237
	Significance	***		***			***		
JOBS	Q5 mean - Q1 mean	1.6	0.03	1.51	0.13	1.74	-11.2	1.44	1.2
	t-stat	1.35	0.78	1.31	0.08	2.54	-1.3	1.03	0.72
	p-value	0.176	0.433	0.19	0.939	0.012	0.196	0.303	0.471
	Significance					**			
ENV	Q5 mean - Q1 mean	1.17	0.09	0.76	0.36	1.21	-7.89	1.16	1.14
	t-stat	1.09	2.09	0.73	0.19	2.99	-0.87	0.67	0.73
	p-value	0.277	0.037	0.469	0.851	0.003	0.385	0.506	0.468
	Significance		**			***			
SUPPLY	Q5 mean - Q1 mean	-2	0.04	-2.44	0.76	-0.81	-6.19	2.73	0.4
	t-stat	-1.98	0.88	-2.5	0.42	-1.77	-1.29	2.27	0.24
	p-value	0.048	0.377	0.013	0.676	0.079	0.199	0.024	0.807
	Significance	**		**		*		**	
COMM	Q5 mean - Q1 mean	-2.93	-0.03	-3.14	-0.94	-0.24	-12.03	1.15	0.24
	t-stat	-2.38	-0.56	-2.64	-0.46	-0.51	-1.92	0.59	0.14
	p-value	0.018	0.576	0.009	0.644	0.608	0.056	0.553	0.891
	Significance	**		***			*		

Note: Welch Two Sample t-test. Significance: $p < 0.01$: *** ; $p < 0.05$: ** ; $p < 0.1$: *

Conclusion: Higher JUST Scores Add Alpha; Worker Treatment, Leadership & Ethics Key Stock Drivers

Supported by nationwide polling, JUST Capital's methodology scores companies on the issues that matter most to the American public. Not surprisingly, this holistic approach encompasses a wider breadth of issues and places a greater importance on worker pay and benefits, worker treatment, leadership and ethics, and customer treatment, than most other data providers. The analysis of risk/return measures finds significant evidence that stocks in the top-quintile of JUST scores have superior attributes compared with lower-ranked companies. In addition, the magnitude of the reduction in risk for more just companies is greater than that found by other studies using traditional ESG metrics. Top-quintile ranked JUST companies show 4.8% higher annualized returns, 18%-22% lower volatility, 6% lower beta, 5% shallower drawdowns, near-half the quarterly earnings-per-share (EPS) volatility, and 4.5% higher ROIC than Q5 companies. We also found that the JUST 100 exhibit great resilience to downside risk than lower-ranked companies. These results hold when using 1-, 3-, and 5-year market data. The analysis of individual drivers of sustainability identifies worker treatment and leadership & ethics as significant focal points of investment alpha. A company's impact in the communities in which it operates and its product attributes are also associated with desirable investor outcomes. Note that the importance of a driver to society is not diminished even if it is not significantly associated with investment alpha in this analysis. One limitation of this study is the absence of a historical series of JUST scores, which precludes analysis using a time-varying risk model.

Appendix: Risk/Return Metrics for Nine Non-Financial JUST Drivers

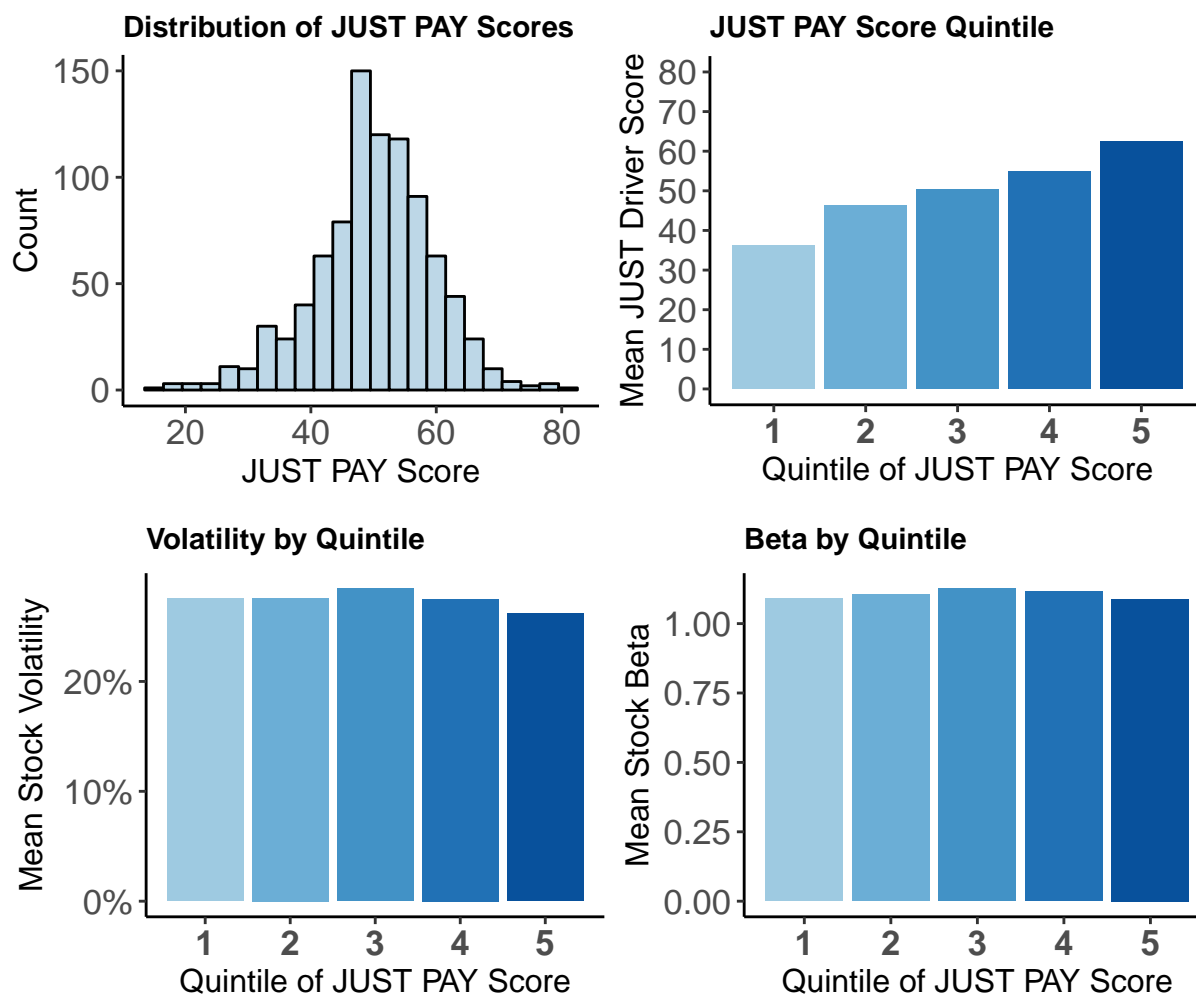### Driver 1: Worker Pay & Benefits (PAY)

Components: Sponsors health insurance; Pays a fair wage for the industry and job level; Pays workers fairly compared to CEO; Pays a living wage; Helps workers prepare for retirement; Provides paid time off; Does not discriminate in pay.
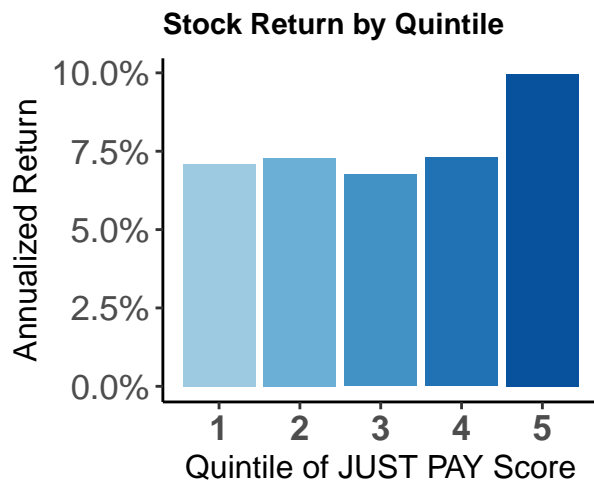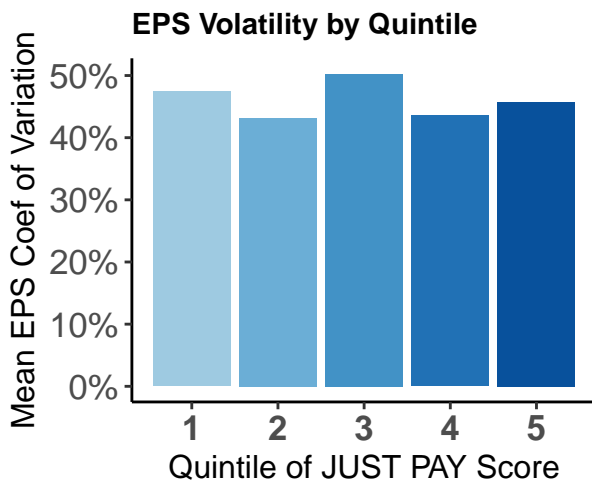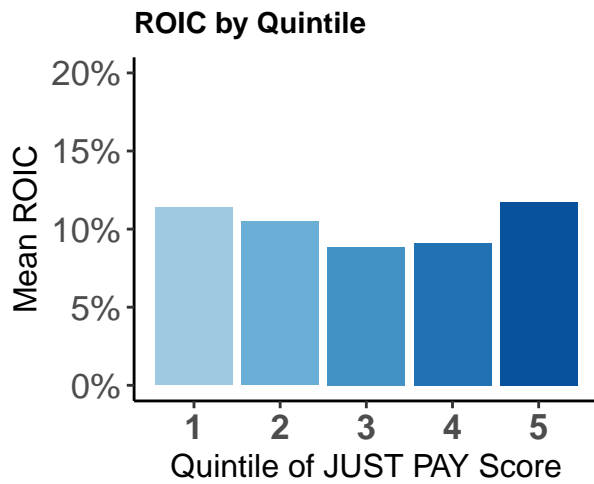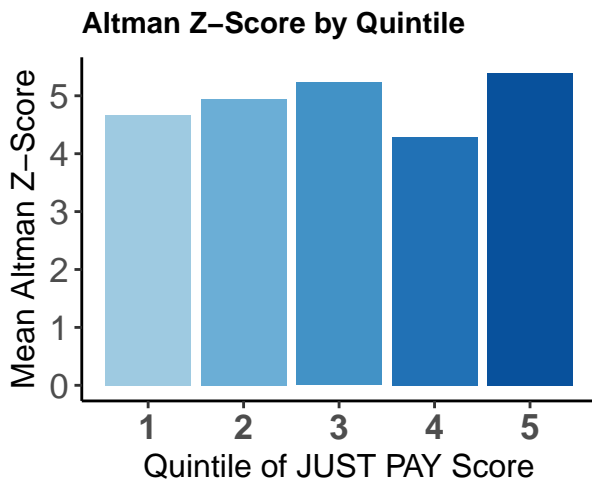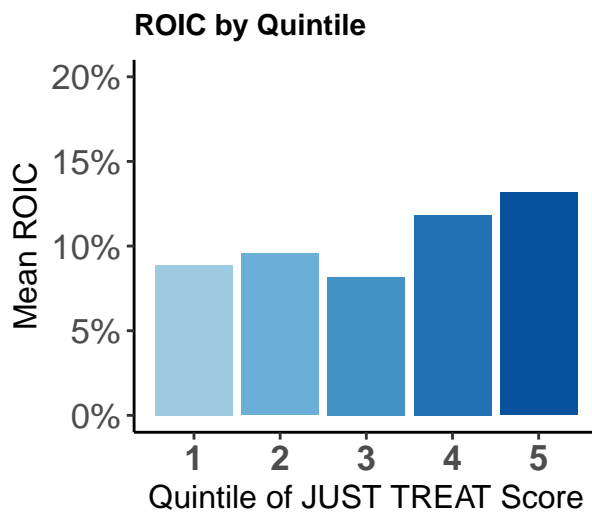
Table 7: Mean of PAY JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	36.2	27.6	1.09	23.7	15.4	4.67	47.4	11.4	7.08
2	179	46.2	27.6	1.10	23.7	18.4	4.94	43.2	10.5	7.29
3	179	50.3	28.4	1.13	24.4	17.9	5.23	50.3	8.9	6.76
4	179	54.9	27.5	1.12	23.6	17.0	4.28	43.6	9.1	7.30
5	180	62.4	26.2	1.09	22.2	16.1	5.39	45.7	11.7	9.97

Table 8: quintile 5 - quintile 1 PAY t-tests
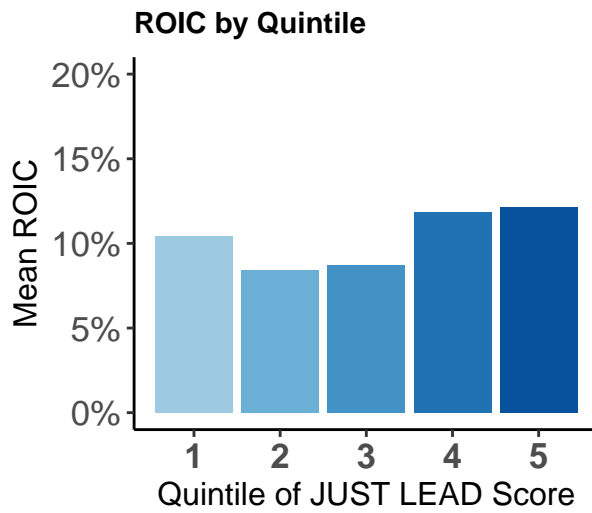
	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-1.38	0	-1.49	0.69	0.72	-1.66	0.34	2.88
t-stat	-1.33	-0.07	-1.45	0.42	1.54	-0.17	0.24	1.8
p-value	0.185	0.943	0.147	0.677	0.124	0.868	0.81	0.072
Significance								*

Distribution of JUST PAY Scores

JUST PAY Score Quintile

Volatility by Quintile

Beta by Quintile

Beta−Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z−Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile
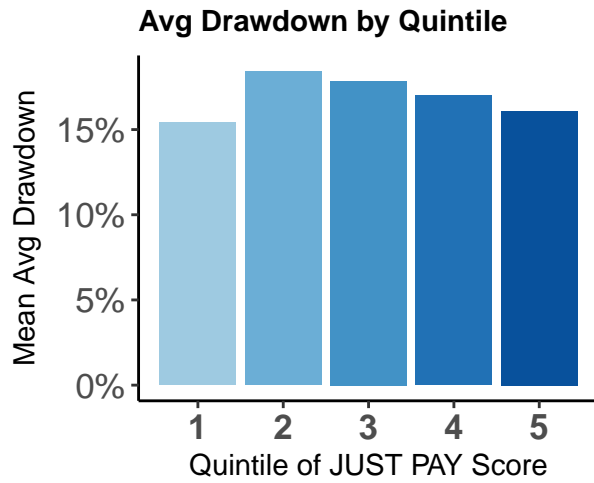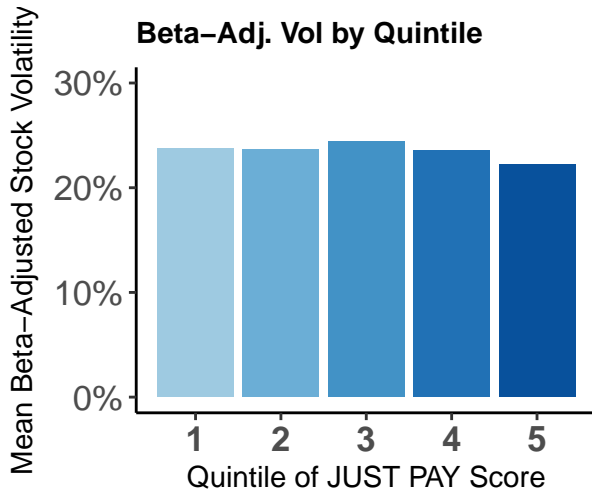
Driver 2: Worker Treatment (TREAT)

Components: Provides a safe workplace; Promotes work-life balance; Provides education and training; Does not discriminate in hiring, firing, and promotion practices; Handles grievances and layoffs fairly; Respects workers.

Table 9: Mean of TREAT JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	34.8	30.1	1.12	26.4	19.5	5.57	58.1	8.9	6.07
2	179	45.7	28.6	1.11	24.8	17.6	4.47	45.4	9.6	7.77
3	179	50.3	28.3	1.14	24.3	17.6	5.51	51.7	8.2	7.54
4	179	54.9	25.1	1.06	21.2	16.1	4.41	35.2	11.8	8.04
5	180	64.3	25.2	1.10	20.9	14.1	4.55	40.0	13.2	8.98

Table 10: quintile 5 - quintile 1 TREAT t-tests

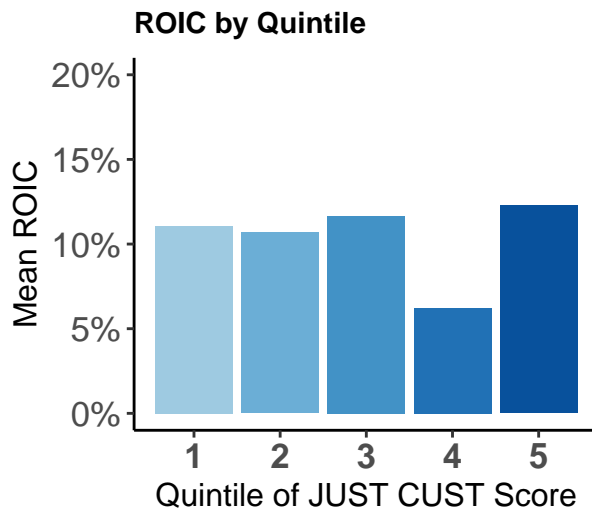|	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-4.94	-0.02	-5.56	-5.32	-1.02	-18.11	4.28	2.91
t-stat	-4.44	-0.57	-5.12	-2.9	-1.84	-1.77	2.33	1.8
p-value	0	0.572	0	0.004	0.067	0.077	0.021	0.073
Significance	***		***	***	*	*	**	*

Distribution of JUST TREAT Scores

JUST TREAT Score Quintile

Volatility by Quintile

Beta by Quintile

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile
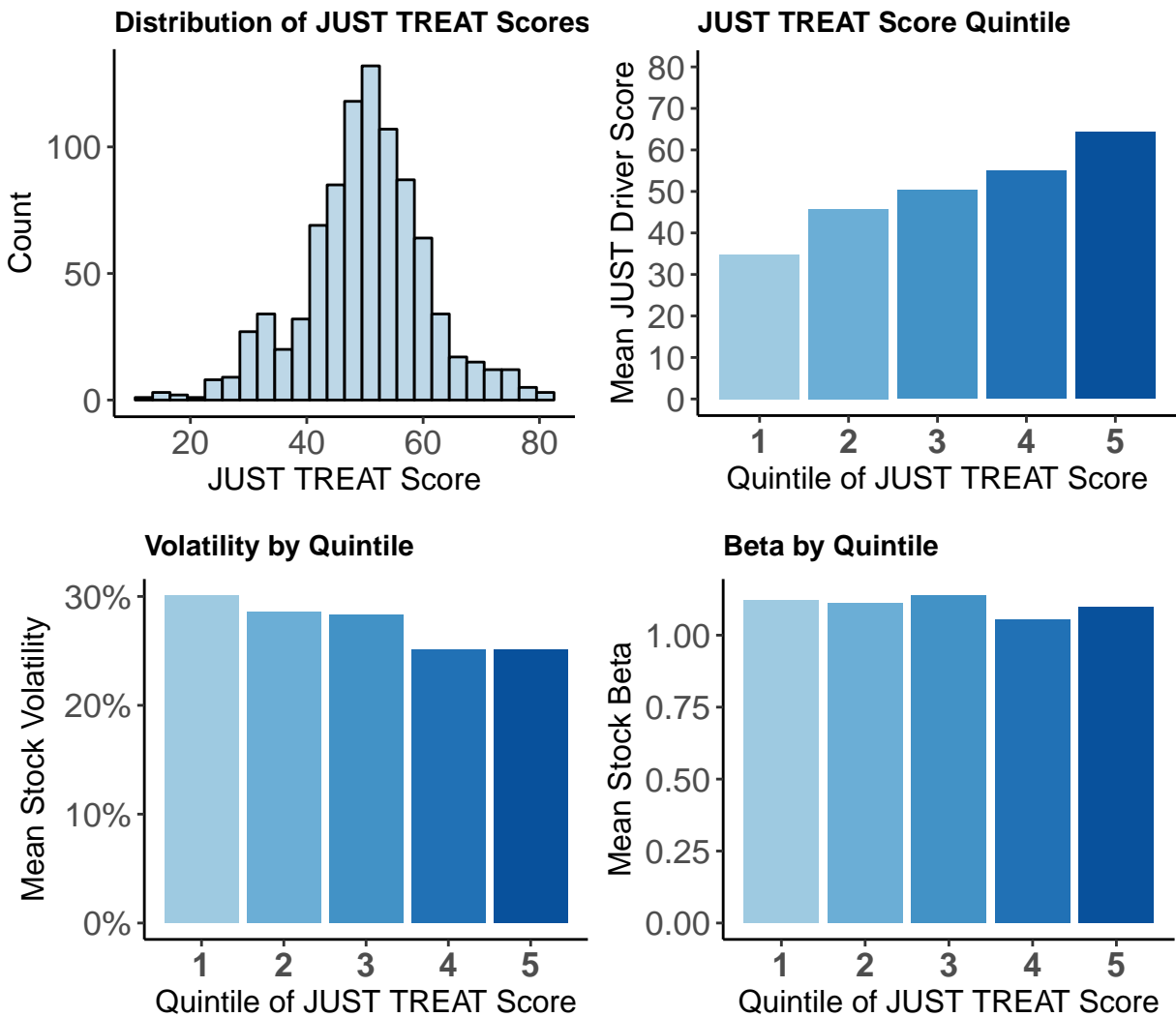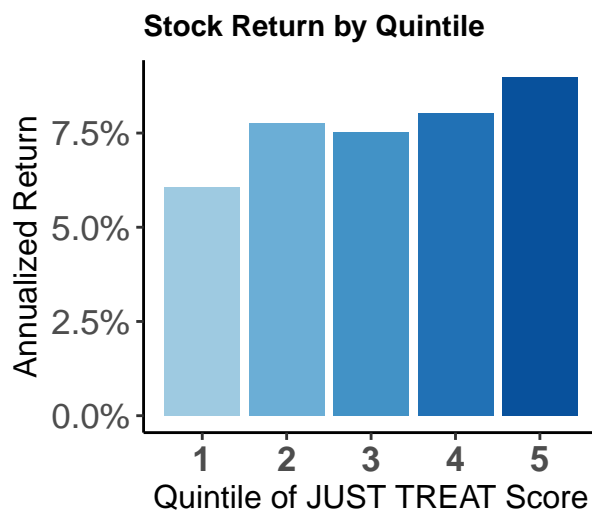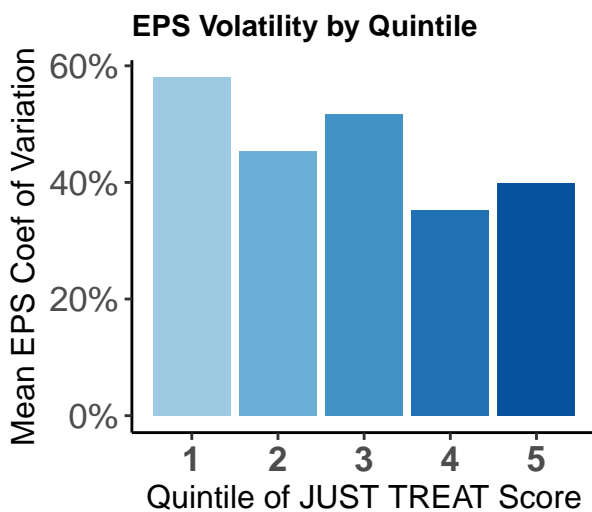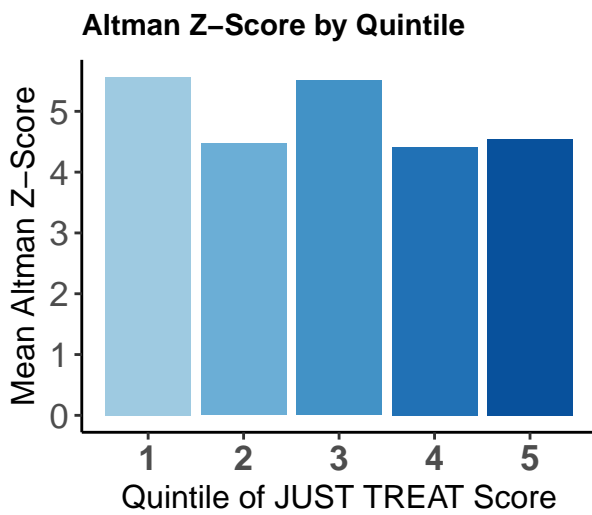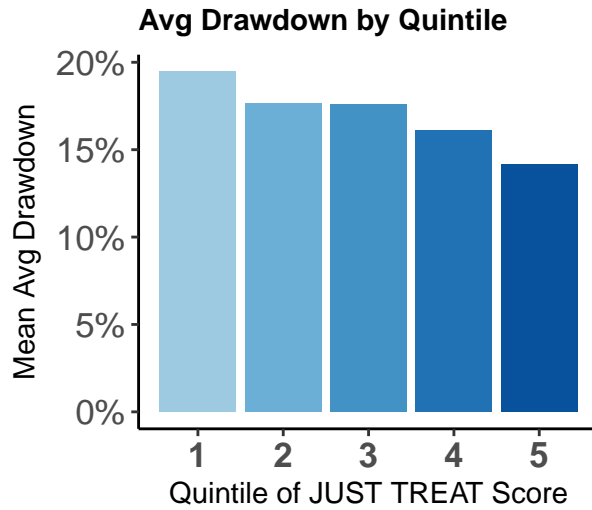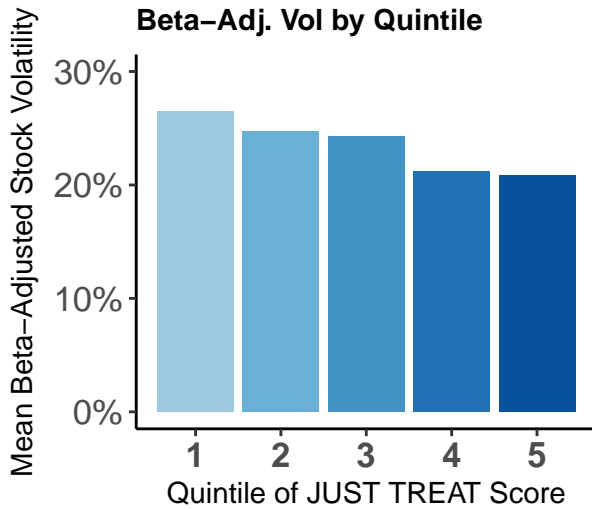
Driver 3: Leadership & Ethics (LEAD)

Components: Follows laws and regulations; Has leaders with integrity; Is truthful in advertising and labelling; Pays fair share of taxes; Minimizes political spending.

Table 11: Mean of LEAD JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	38.6	28.7	1.12	24.8	19.1	4.35	56.4	10.4	6.14
2	179	48.2	28.9	1.16	24.9	18.0	4.57	53.5	8.4	6.79
3	179	51.7	28.5	1.14	24.5	18.3	4.90	44.0	8.7	7.31
4	179	54.3	26.7	1.08	22.8	16.7	5.51	39.0	11.8	7.23
5	180	57.3	24.5	1.03	20.6	12.7	5.11	37.1	12.1	10.92

Table 12: quintile 5 - quintile 1 LEAD t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-4.19	-0.09	-4.2	-6.42	0.75	-19.28	1.75	4.78
t-stat	-4.23	-2.32	-4.27	-3.76	1.66	-2.39	0.97	3.08
p-value	0	0.021	0	0	0.099	0.017	0.333	0.002
Significance	***	**	***	***	*	**		***

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile
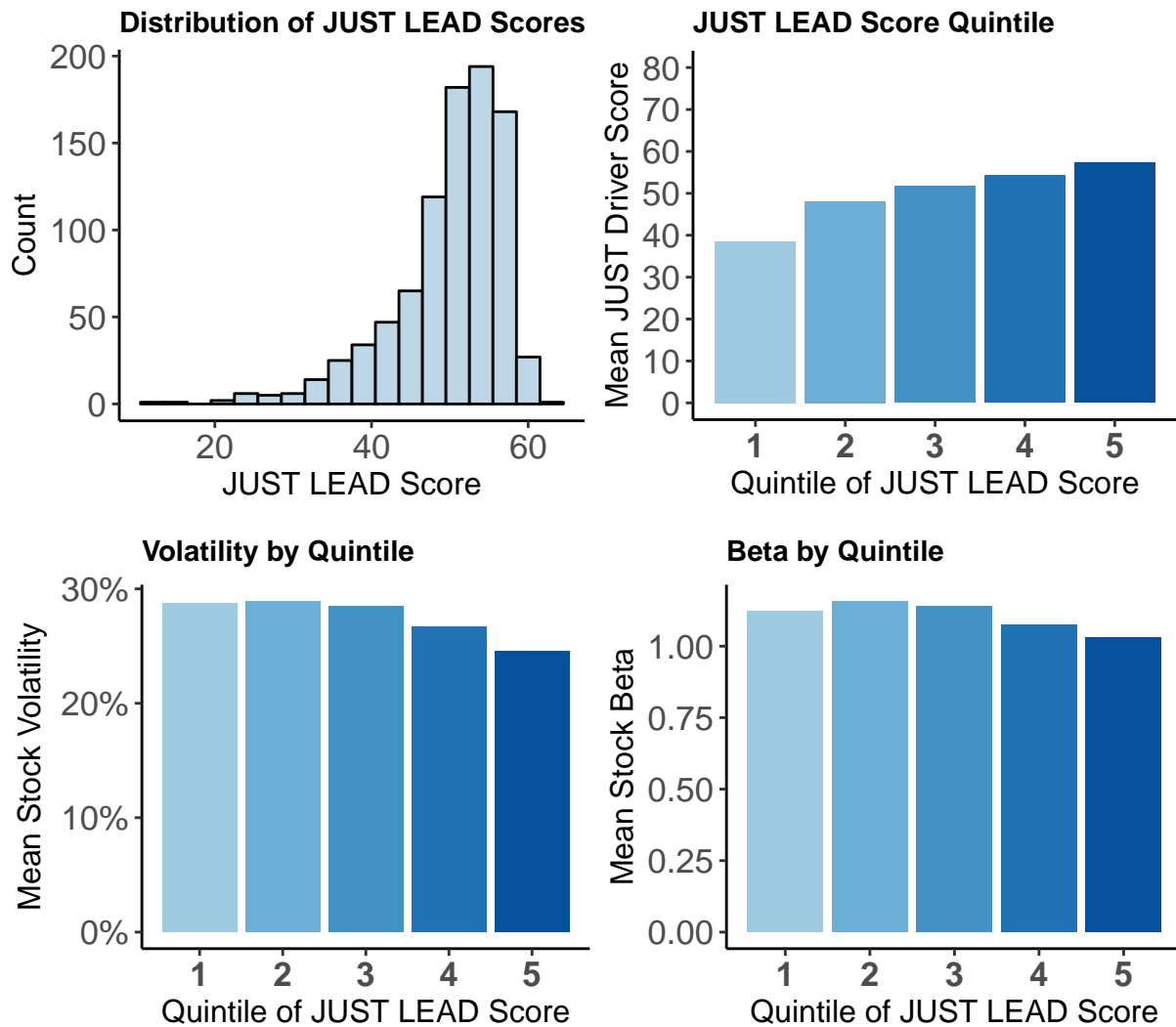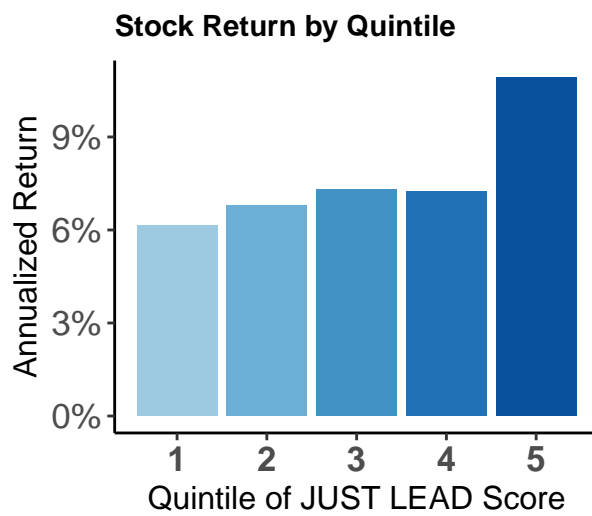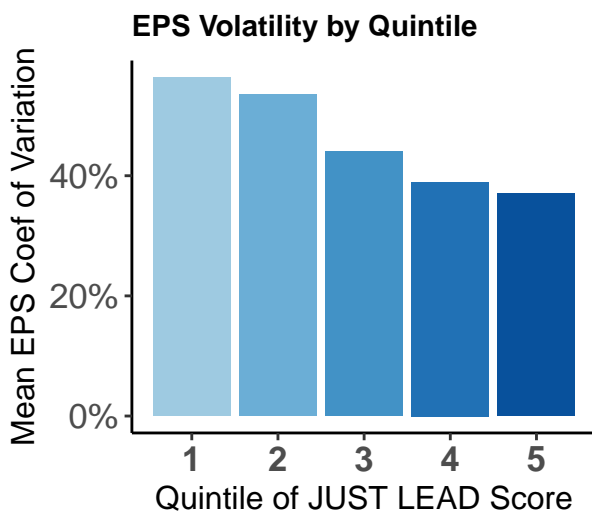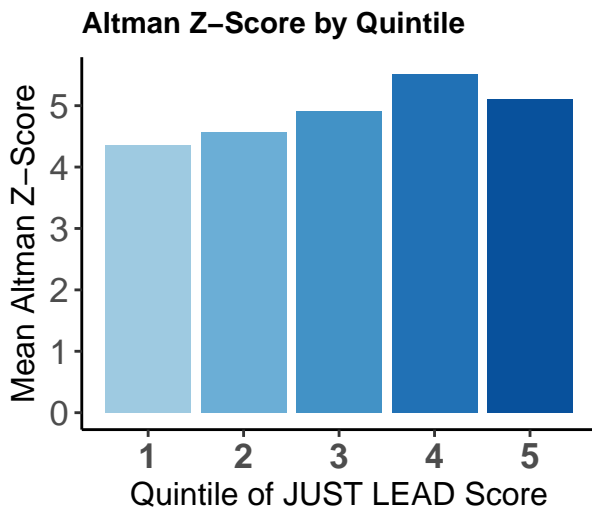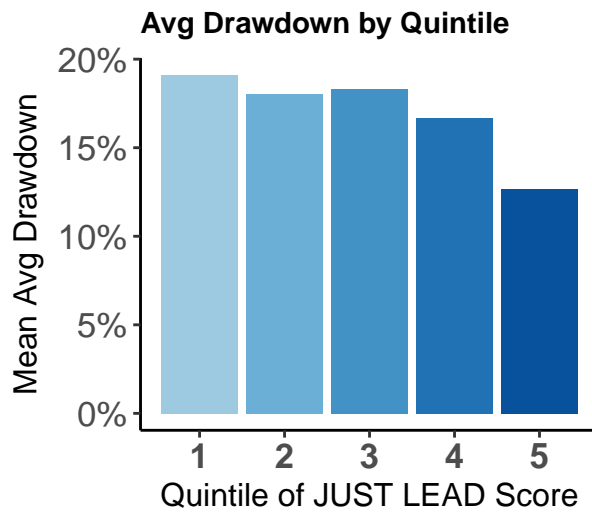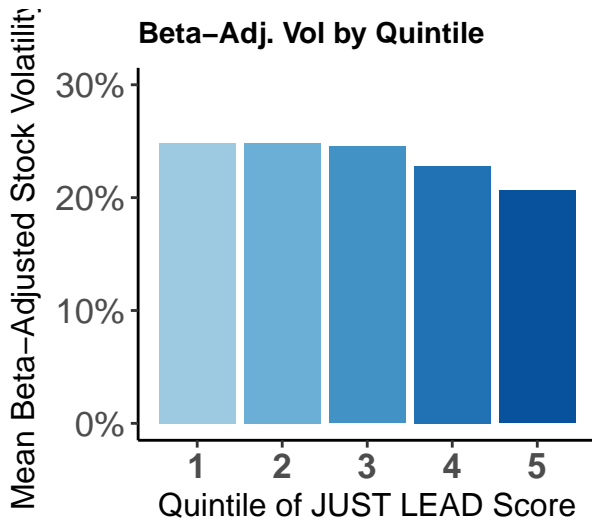
Driver 4: Customer Treatment (CUST)

Components: Provides fair pricing and sales terms; Protects customer privacy; Maintains strong relationships with customers; Does not discriminate in customer treatment.

Table 13: Mean of CUST JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	41.4	27.7	1.12	23.7	16.8	3.99	44.0	11.1	7.30
2	179	48.4	26.9	1.06	23.2	15.4	4.76	42.5	10.7	7.88
3	179	51.4	25.8	1.06	21.9	13.7	5.62	45.2	11.6	10.22
4	186	53.3	30.8	1.19	26.8	21.9	4.58	59.6	6.2	4.95
5	173	55.6	25.9	1.09	21.9	16.8	5.68	38.1	12.3	8.18

Table 14: quintile 5 - quintile 1 CUST t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-1.81	-0.03	-1.89	0.06	1.69	-5.91	1.2	0.88
t-stat	-1.6	-0.72	-1.7	0.04	3.7	-0.66	0.59	0.53
p-value	0.11	0.474	0.09	0.972	0	0.508	0.558	0.594
Significance			*		***			

Distribution of JUST CUST Scores

JUST CUST Score Quintile

Volatility by Quintile

Beta by Quintile

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile
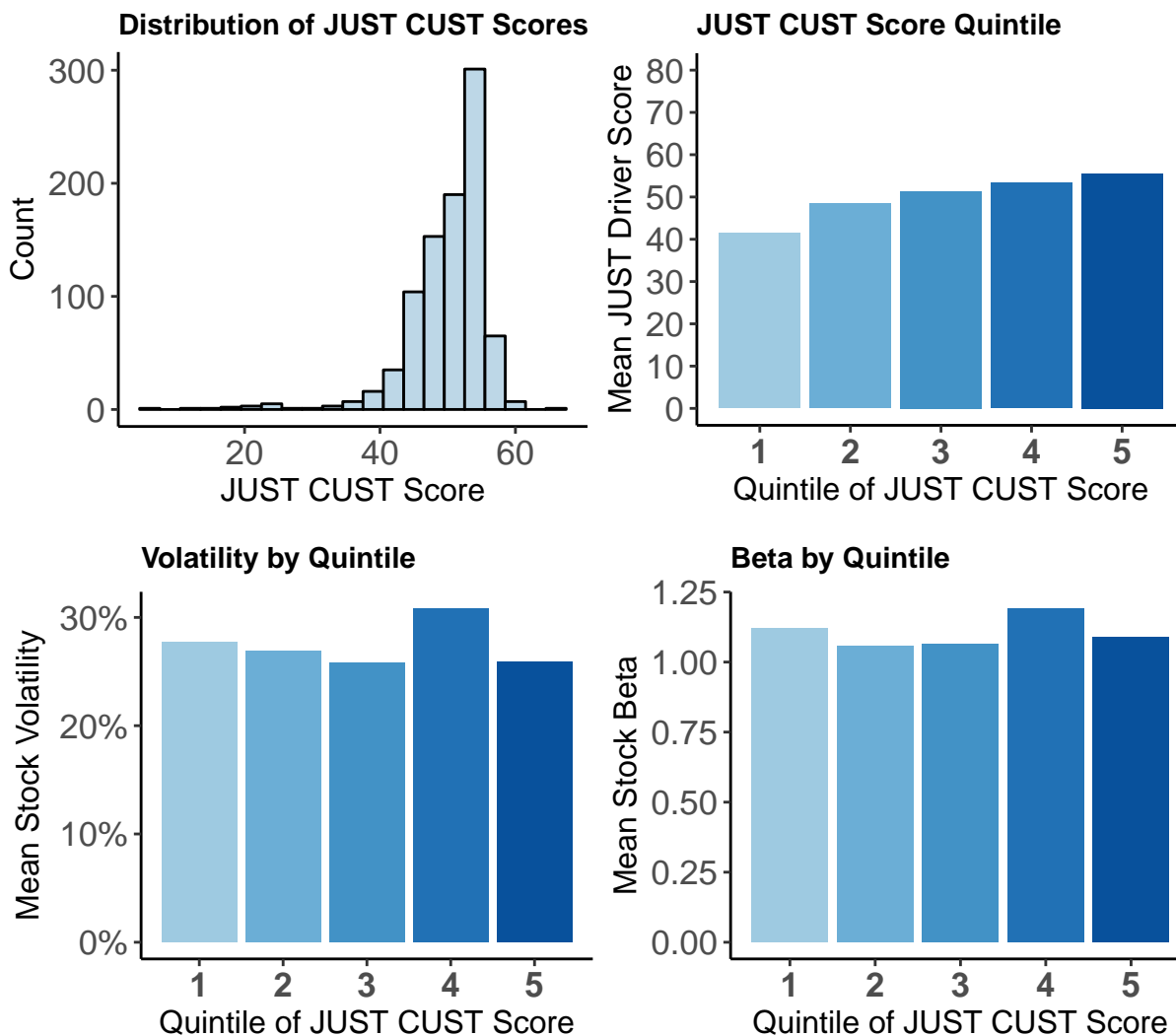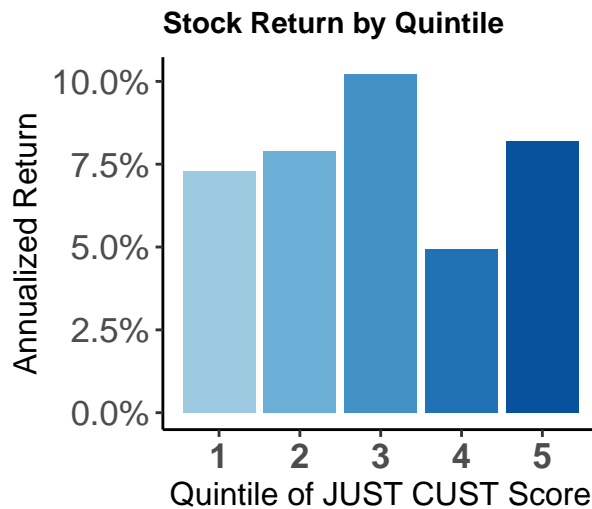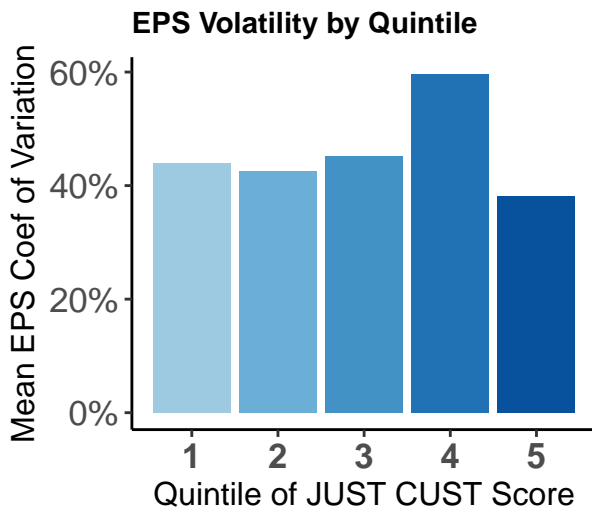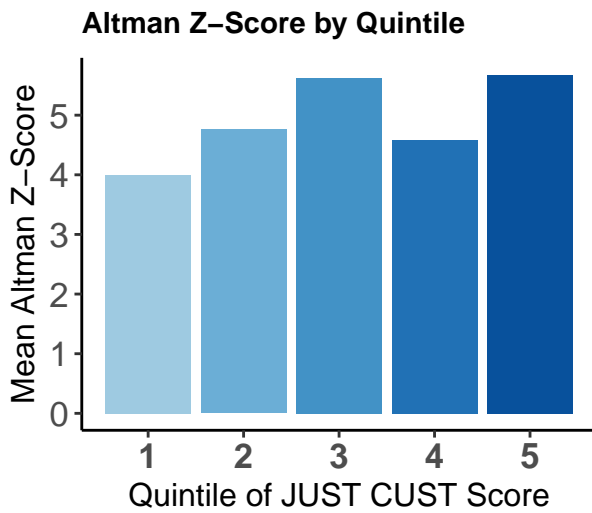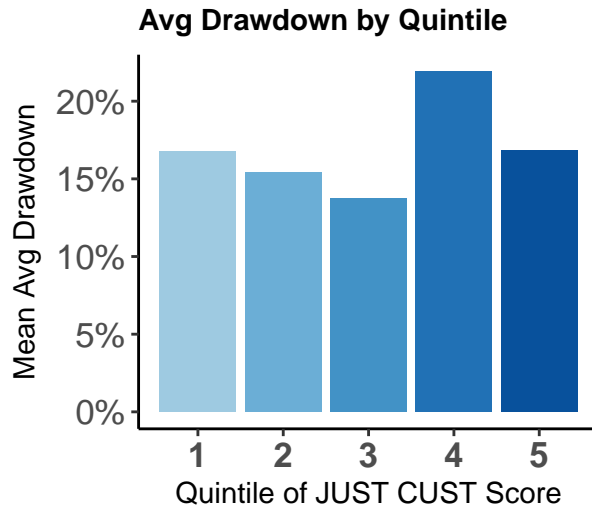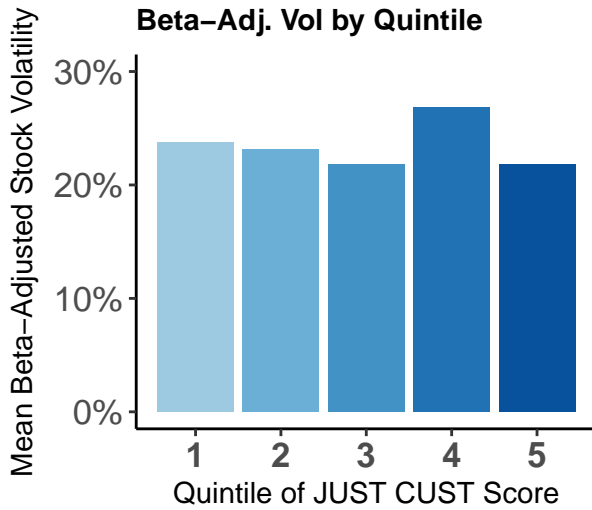
Driver 5: Product Attributes (PROD)

Components: Makes quality products; Makes products that are beneficial to health, environment, or society.
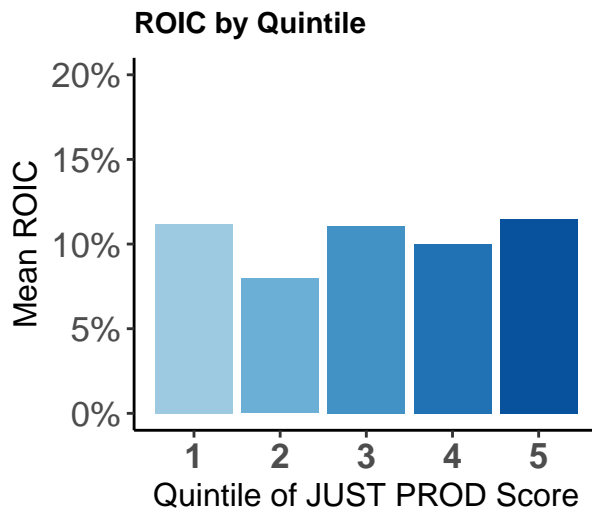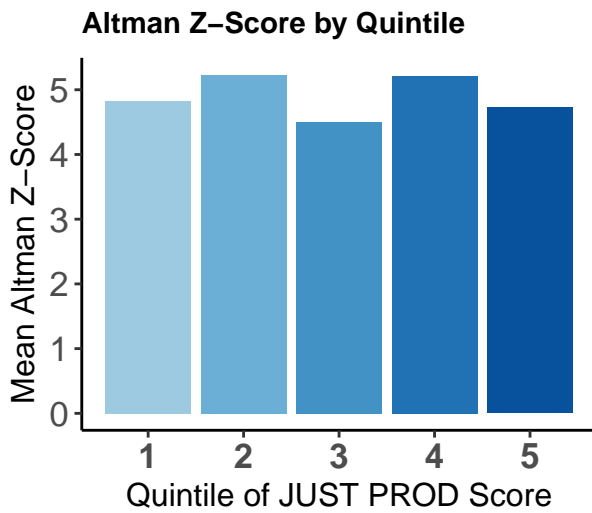
Table 15: Mean of PROD JUST Score and Eight Metrics

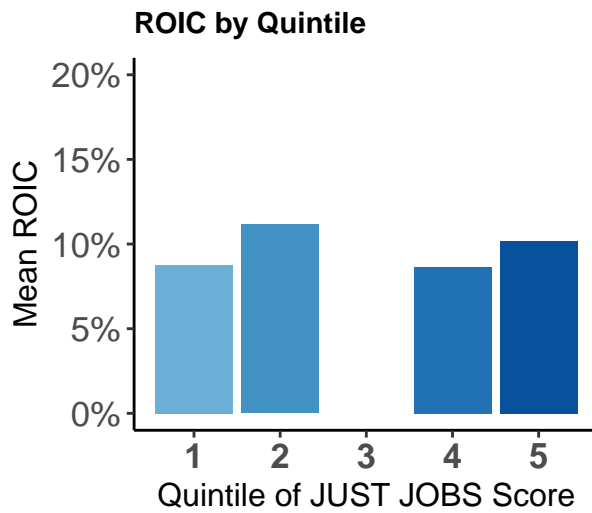| Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	33.6	29.2	1.12	25.4	17.3	4.82	49.6	11.2	6.16
2	194	42.9	28.8	1.14	24.9	18.9	5.23	50.6	8.0	6.72
3	181	48.4	27.8	1.12	23.8	15.7	4.50	51.2	11.1	8.27
4	162	55.5	26.6	1.07	22.7	16.1	5.22	48.7	10.0	9.35
5	180	70.6	24.7	1.07	20.6	16.6	4.73	30.2	11.5	8.14

Table 16: quintile 5 - quintile 1 PROD t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-4.52	-0.05	-4.81	-0.69	-0.1	-19.44	0.26	1.98
t-stat	-4.48	-1.12	-4.9	-0.37	-0.21	-3.15	0.2	1.19
p-value	0	0.263	0	0.713	0.831	0.002	0.842	0.237
Significance	***		***			***		

Distribution of JUST PROD Scores

JUST PROD Score Quintile

Volatility by Quintile

Beta by Quintile

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile
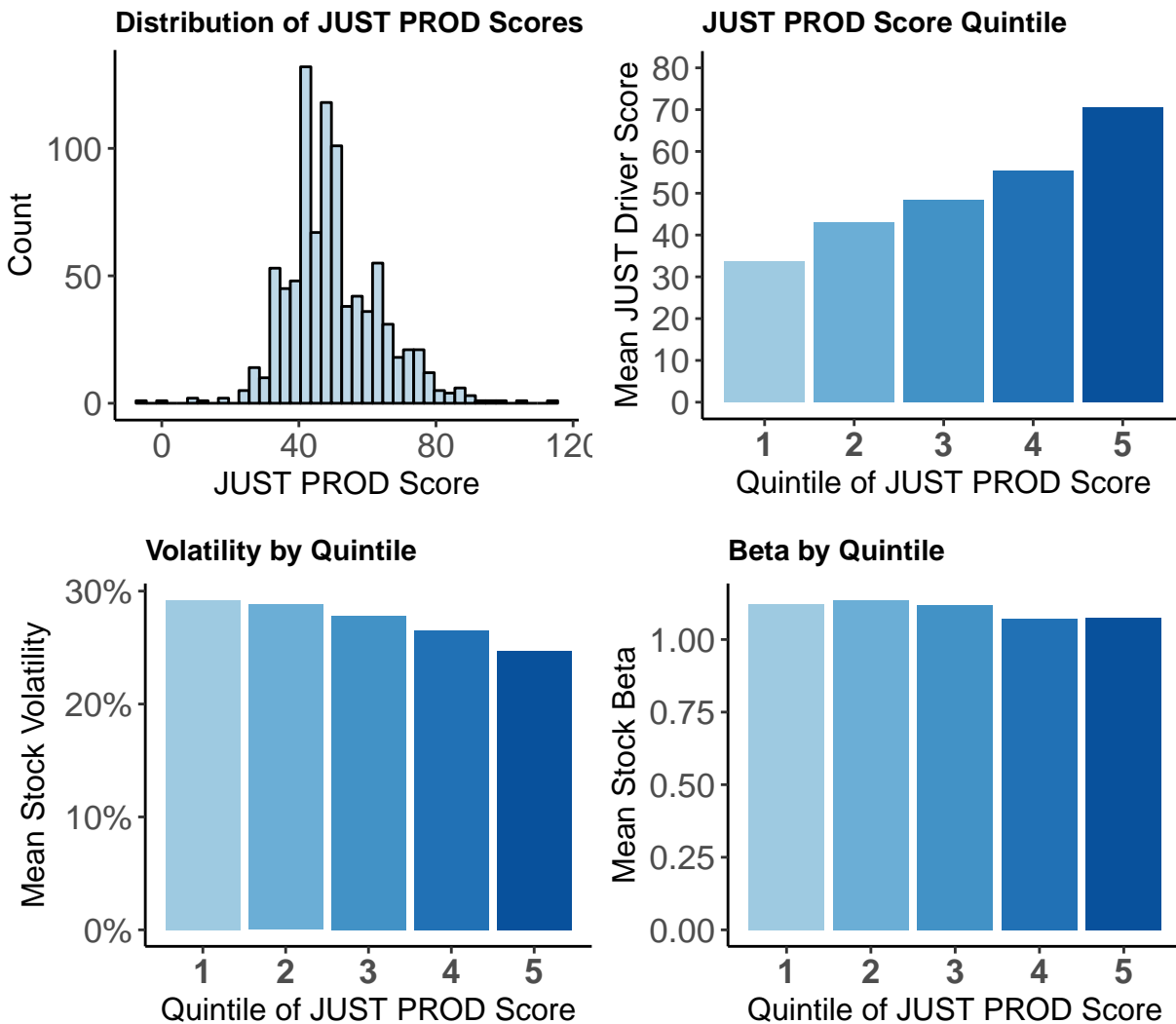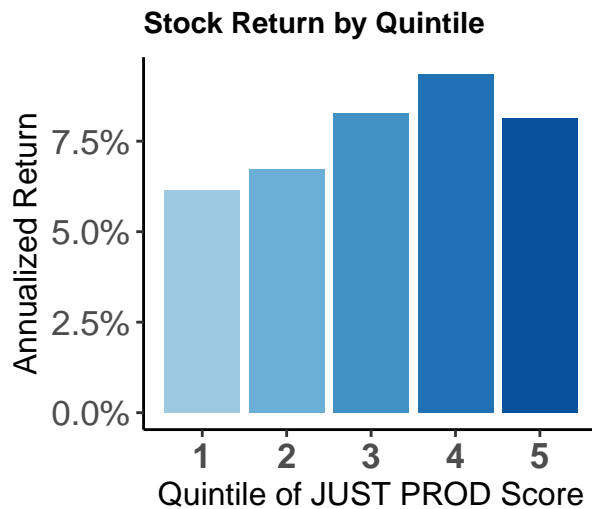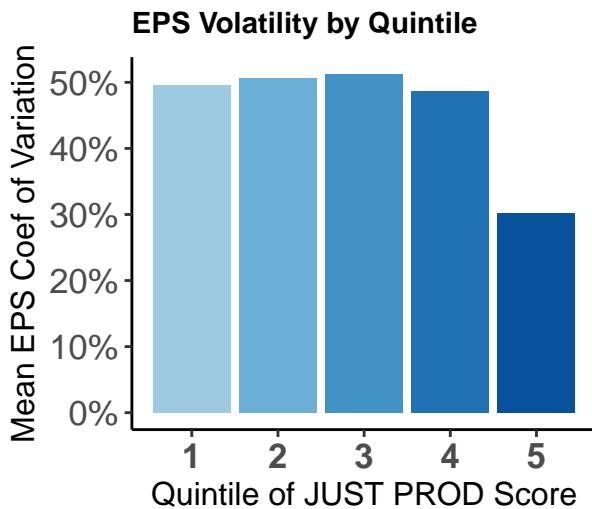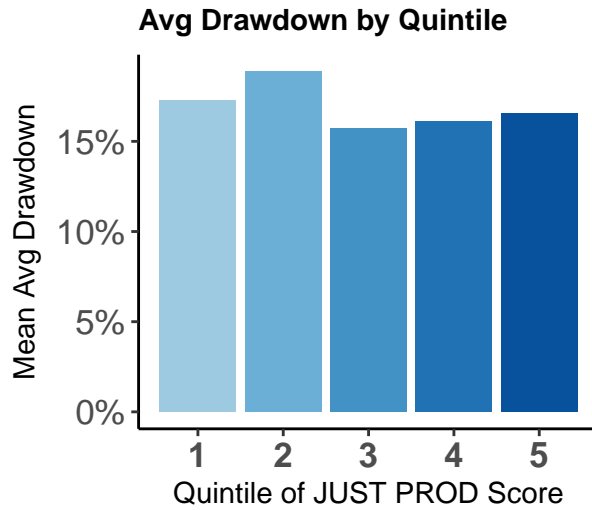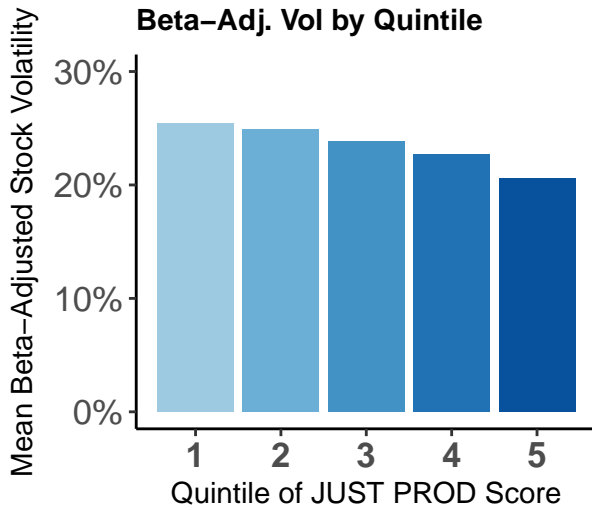
Driver 6: U.S. Job Creation (JOBS)

Component: Creates jobs in the U.S. Note: Because a large number of companies score 50 on JOBS due to missing data, these scores can not be evenly divided by quintile. In this case Q1 & Q5 have the usual number of companies while Q2 & Q4 are sized differently and Q3 is removed. This allows the Q5-Q1 t-tests to continue to be performed consistently.

Table 17: Mean of JOBS JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	29.9	26.8	1.06	23.2	16.0	3.90	49.9	8.7	7.16
2	480	49.1	27.1	1.13	23.0	17.6	4.99	46.4	11.2	8.00
4	57	52.6	29.5	1.12	25.7	17.1	4.90	52.8	8.7	4.52
5	180	71.6	28.4	1.09	24.7	16.1	5.64	38.7	10.2	8.36

Table 18: quintile 5 - quintile 1 JOBS t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	1.6	0.03	1.51	0.13	1.74	-11.2	1.44	1.2
t-stat	1.35	0.78	1.31	0.08	2.54	-1.3	1.03	0.72
p-value	0.176	0.433	0.19	0.939	0.012	0.196	0.303	0.471
Significance					**			

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

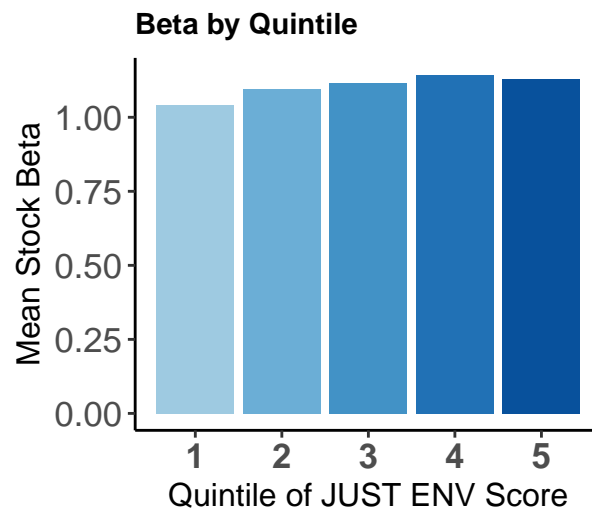**Stock Return by Quintile**
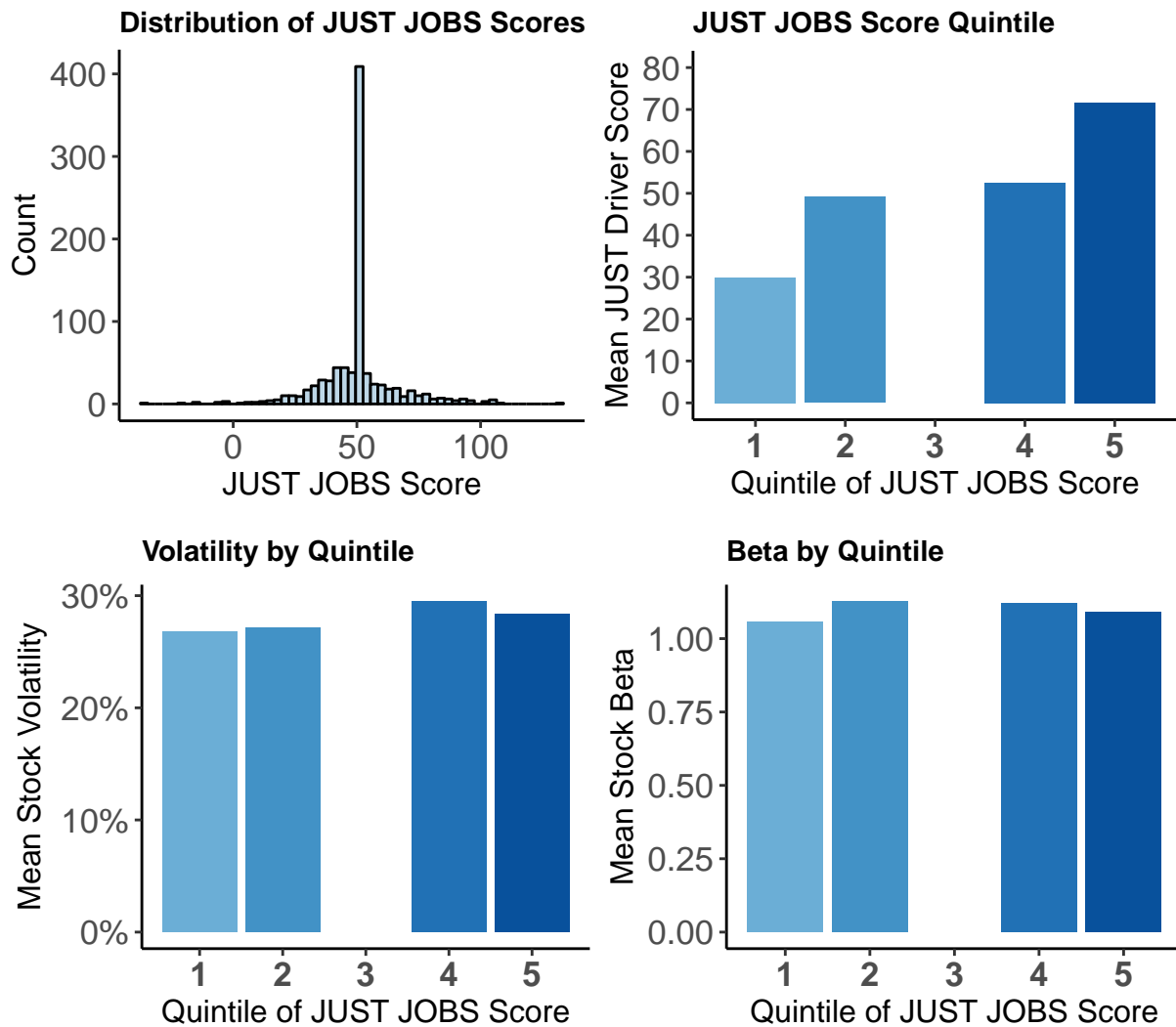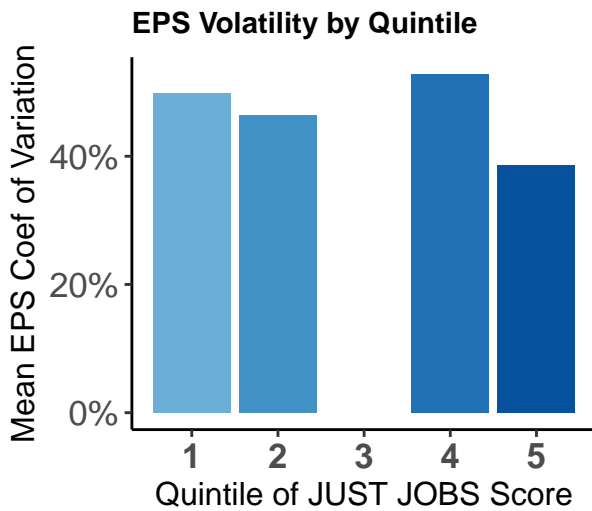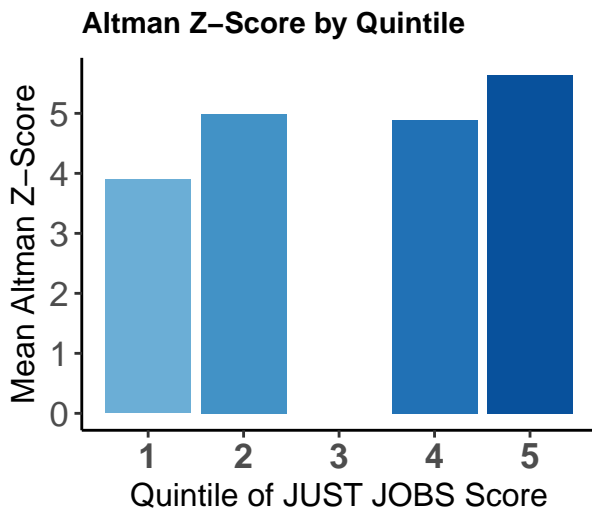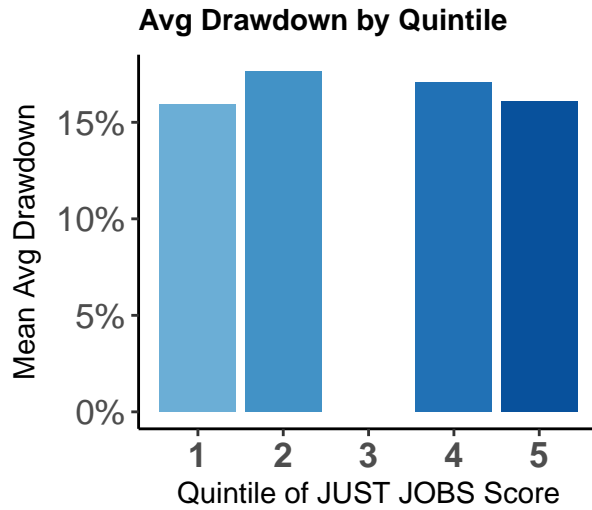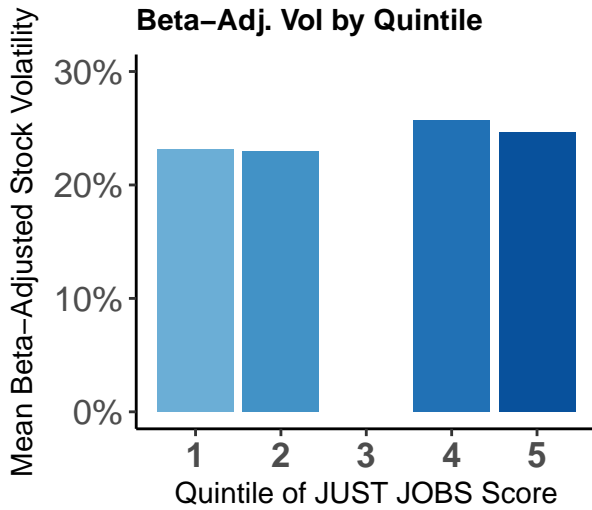
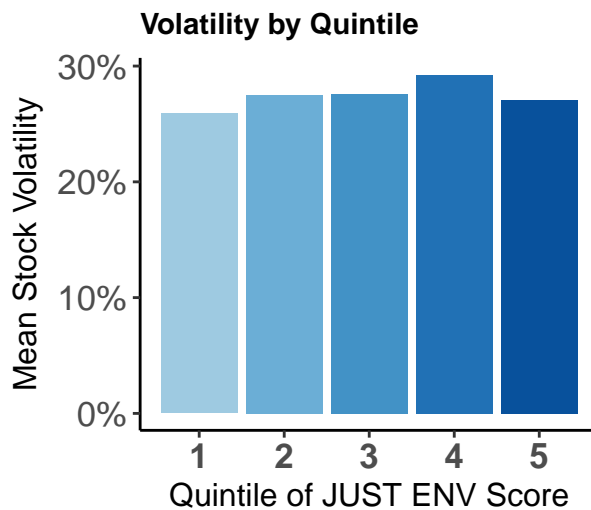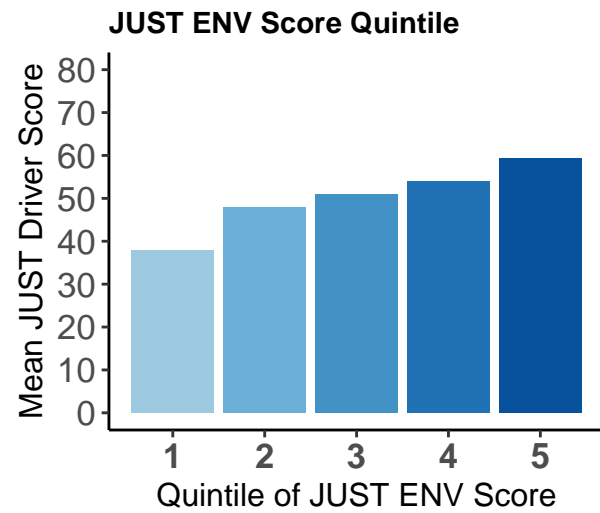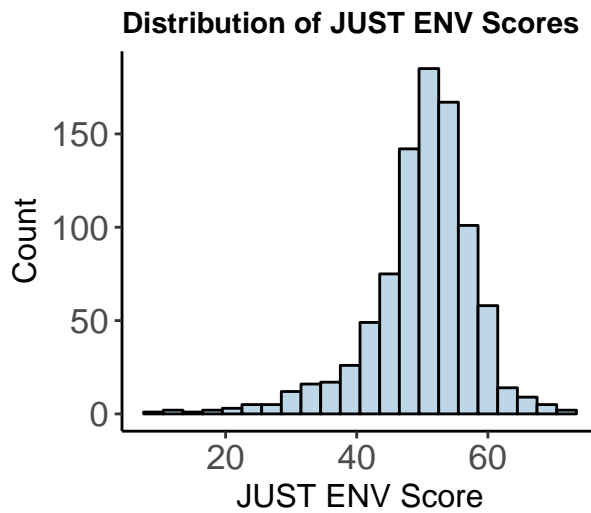*Driver 7: Environmental Impact (ENV)*

Components: Minimizes pollution; Has environmentally responsible management; Uses resources efficiently.

Table 19: Mean of ENV JUST Score and Eight Metrics
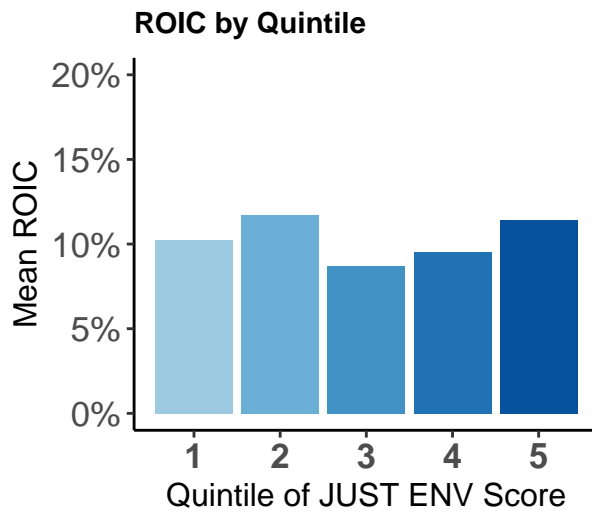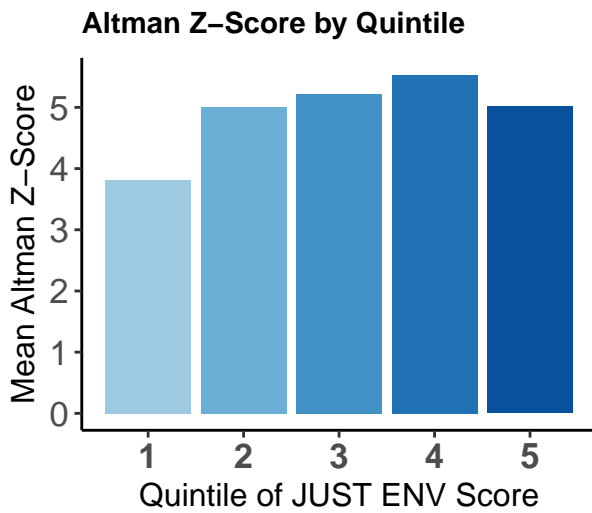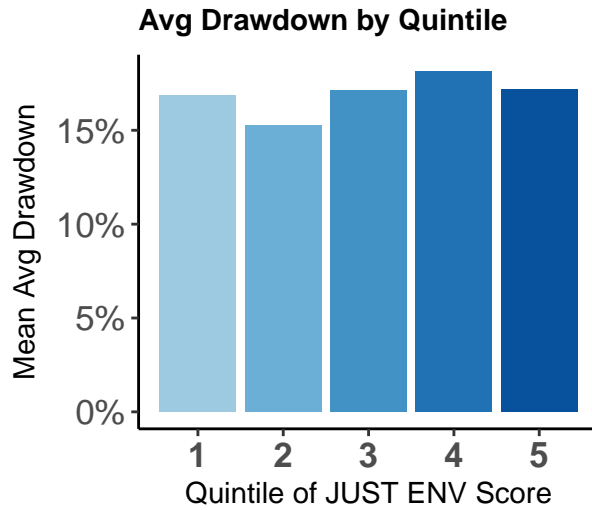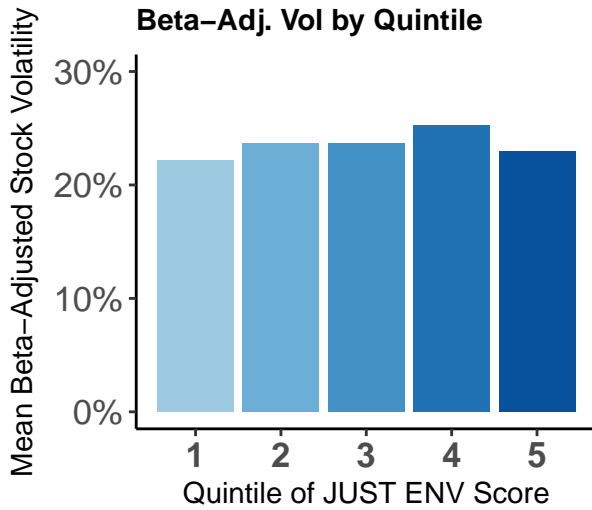
Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	180	37.9	25.9	1.04	22.2	16.8	3.81	47.0	10.2	6.90
2	179	47.8	27.5	1.10	23.6	15.3	5.00	36.7	11.7	8.18
3	179	51.0	27.6	1.12	23.6	17.1	5.22	52.3	8.7	7.43
4	179	54.1	29.2	1.14	25.3	18.1	5.53	54.9	9.5	7.85
5	180	59.2	27.1	1.13	22.9	17.2	5.02	39.1	11.4	8.04

Table 20: quintile 5 - quintile 1 ENV t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	1.17	0.09	0.76	0.36	1.21	-7.89	1.16	1.14
t-stat	1.09	2.09	0.73	0.19	2.99	-0.87	0.67	0.73
p-value	0.277	0.037	0.469	0.851	0.003	0.385	0.506	0.468
Significance		**			***			

Distribution of JUST ENV Scores

JUST ENV Score Quintile

Volatility by Quintile

Beta by Quintile

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile
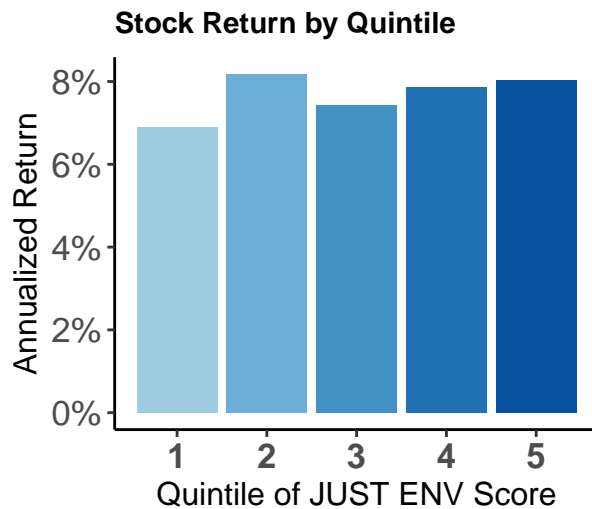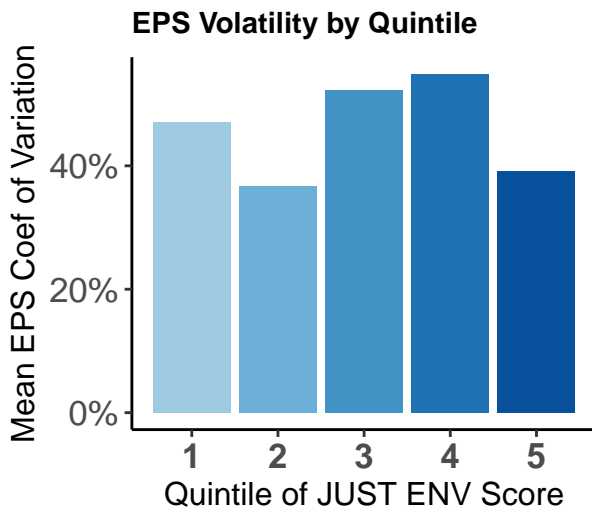
Driver 8: Supply Chain (SUPPLY)

Components: Does not have suppliers with abusive conditions; Does not cause or contribute to conflict abroad; Does not do business with repressive governments.
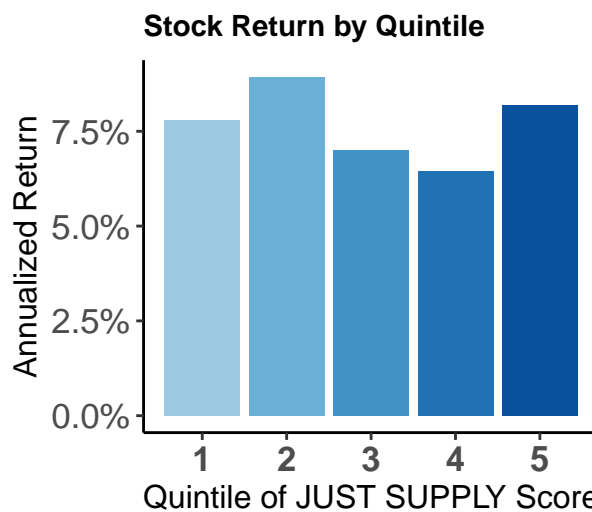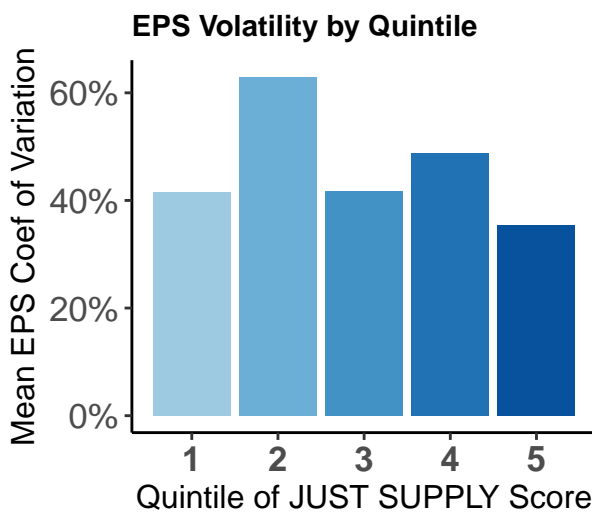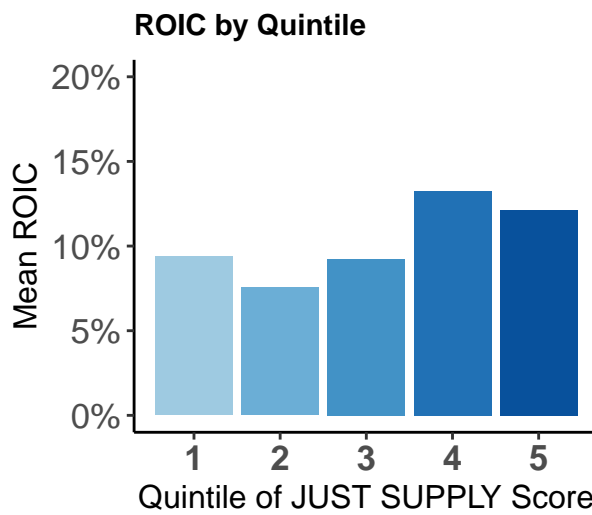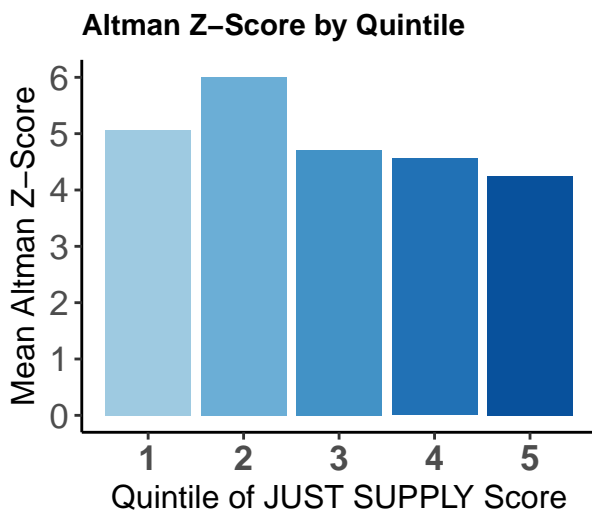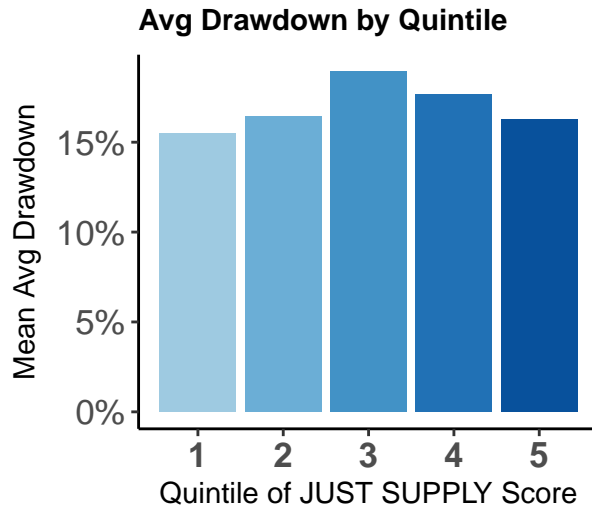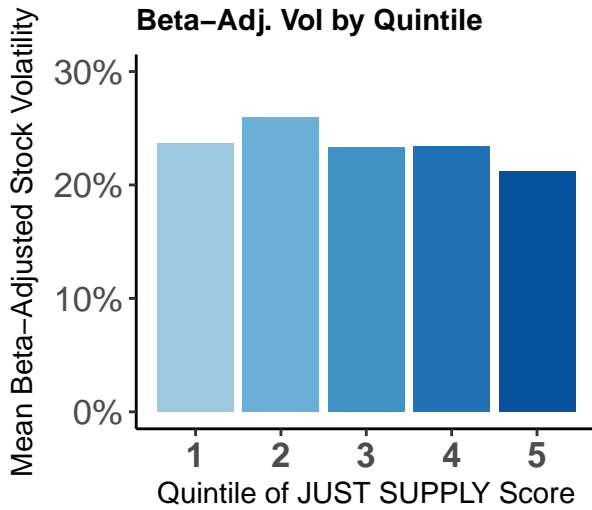
Table 21: Mean of SUPPLY JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	186	39.6	27.3	1.06	23.6	15.5	5.06	41.5	9.4	7.78
2	182	47.2	29.7	1.12	26.0	16.5	6.01	62.9	7.5	8.93
3	170	49.3	27.4	1.11	23.4	18.9	4.71	41.6	9.3	7.00
4	179	53.6	27.6	1.14	23.4	17.6	4.56	48.7	13.2	6.45
5	180	60.7	25.3	1.09	21.2	16.3	4.25	35.4	12.1	8.18

Table 22: quintile 5 - quintile 1 SUPPLY t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-2	0.04	-2.44	0.76	-0.81	-6.19	2.73	0.4
t-stat	-1.98	0.88	-2.5	0.42	-1.77	-1.29	2.27	0.24
p-value	0.048	0.377	0.013	0.676	0.079	0.199	0.024	0.807
Significance	**		**		*		**	

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile
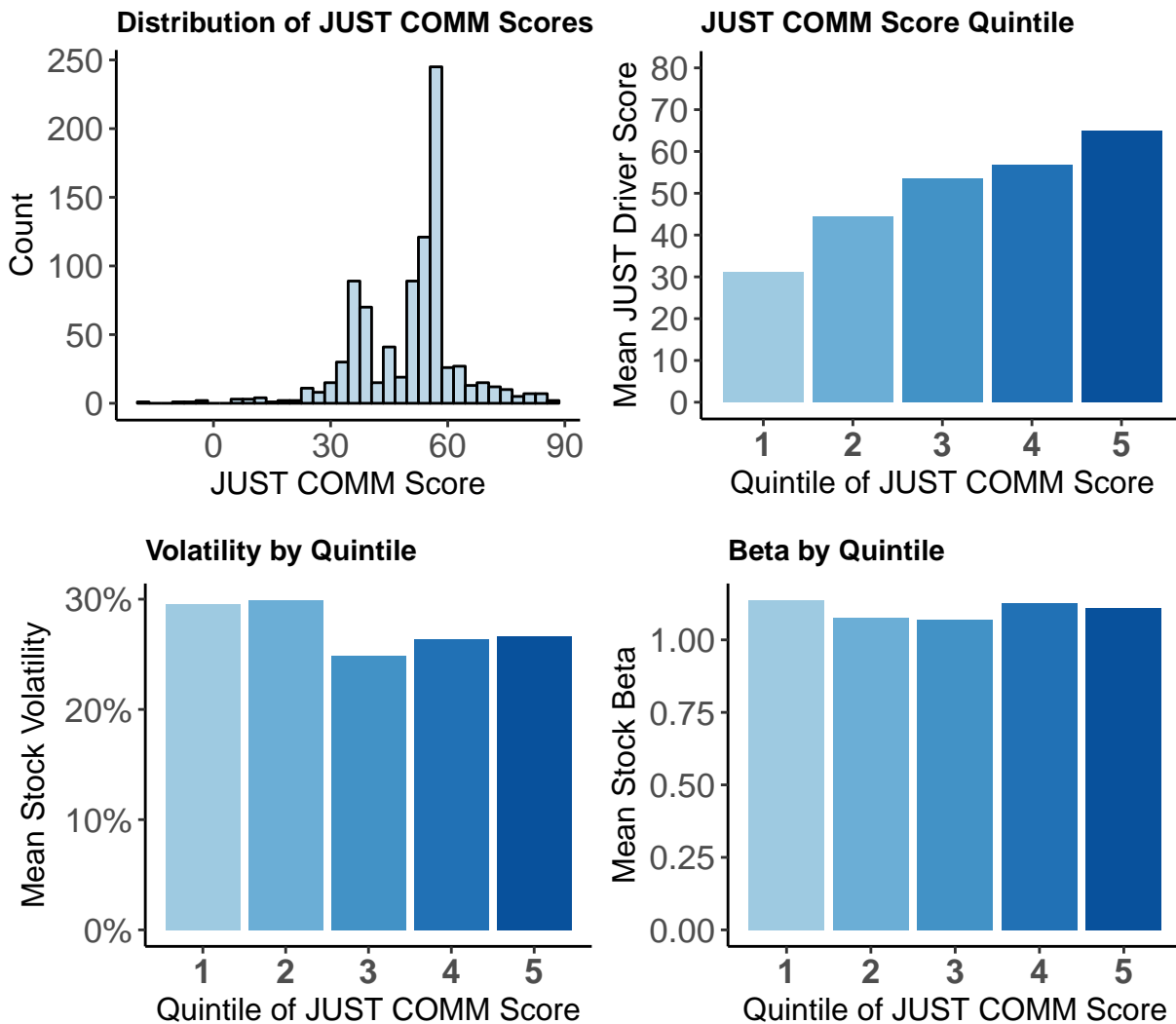
Driver 9: Community Wellbeing (COMM)

Components: Maintains strong relationships with communities; Contributes to charitable causes.

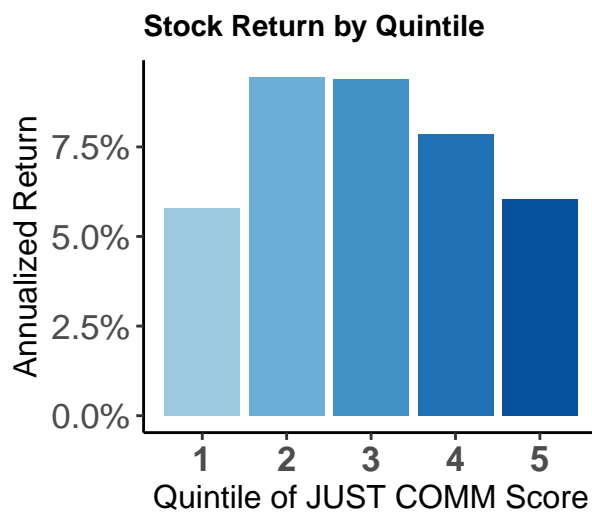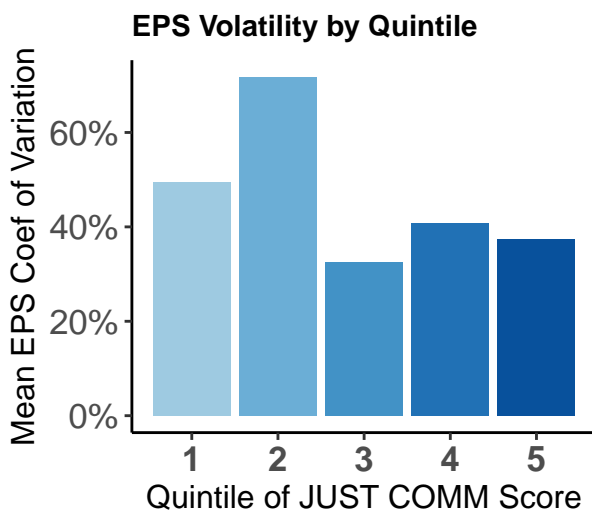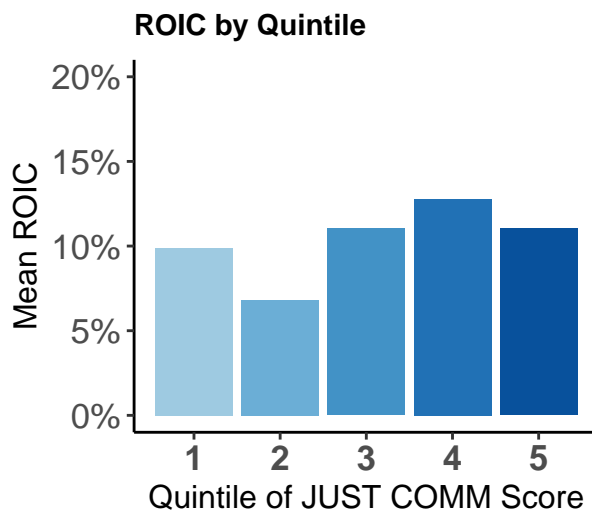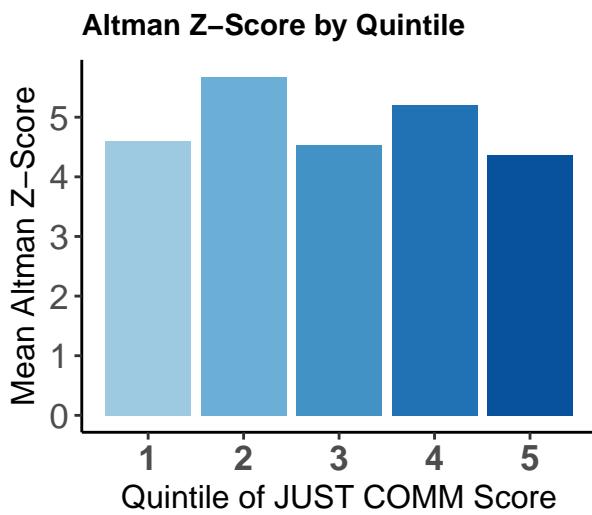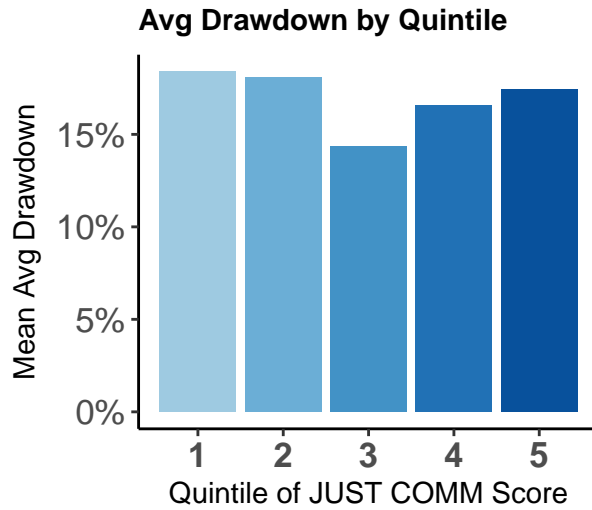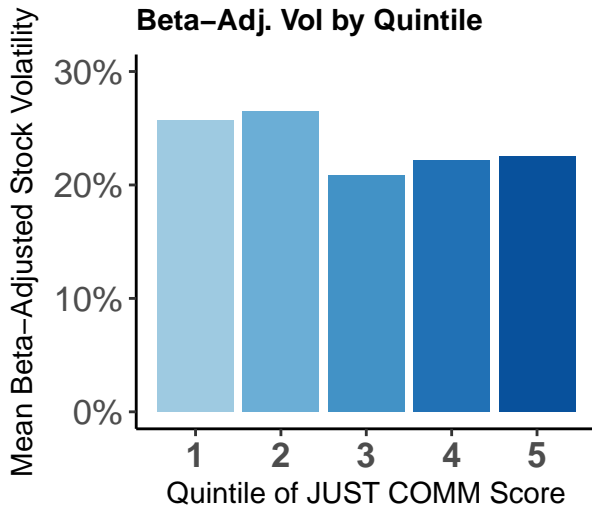### Table 23: Mean of COMM JUST Score and Eight Metrics

Quintile	Count	JUST Score	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
1	186	31.0	29.5	1.14	25.7	18.4	4.60	49.4	9.9	5.80
2	174	44.3	29.9	1.08	26.5	18.1	5.68	71.7	6.8	9.45
3	178	53.5	24.8	1.07	20.8	14.4	4.53	32.4	11.0	9.38
4	180	56.8	26.4	1.13	22.2	16.6	5.21	40.8	12.8	7.86
5	179	65.0	26.6	1.11	22.5	17.4	4.36	37.4	11.0	6.04

Table 24: quintile 5 - quintile 1 COMM t-tests

	Vol	Beta	Adj Vol	Avg Drawdown	Altman Z	EPS Coef Var	ROIC	Return
Q5 mean - Q1 mean	-2.93	-0.03	-3.14	-0.94	-0.24	-12.03	1.15	0.24
t-stat	-2.38	-0.56	-2.64	-0.46	-0.51	-1.92	0.59	0.14
p-value	0.018	0.576	0.009	0.644	0.608	0.056	0.553	0.891
Significance	**		***			*		

Distribution of JUST COMM Scores

JUST COMM Score Quintile

Volatility by Quintile

Beta by Quintile

Beta–Adj. Vol by Quintile

Avg Drawdown by Quintile

Altman Z–Score by Quintile

ROIC by Quintile

EPS Volatility by Quintile

Stock Return by Quintile

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