2021 Software Report

Benchmarking data for 132 public software companies

Version 2021-1.1

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Welcome

Welcome to the 2021 Software Report. This report is designed for software professionals with an interest in understanding software company operations. The report also provides management and boards with a useful data set for comparison and discussion. This information can be very helpful in developing an operating model specific to your goals within your specific competitive context.

This effort started in earnest in 2019 in the last year of an epic decade for software. The software business entered 2020 with the tailwinds of this momentum but, like the rest of the world's economy, the software business has quickly been upended by the coronavirus pandemic. I am hesitant to publish a report in the middle of a global crisis in which foundations of society are being shaken to their core. Individuals, businesses, and governments are reacting to the crisis and at the same time are wondering what things will look like once we reach the other side. In the midst of fear, uncertainty, and the fog of war, it is difficult to think longer term. That said, it is inevitable that there is an other side; the collective power, ingenuity, and perseverance of humankind will allow us to not just get through the crisis but will enable us to create a future that is stronger and more resilient. Software will be a key ingredient to this strength and resilience.

Like many things, this endeavor started out with a simple curiosity. As one curiosity has led to another, this report has grown in breadth and has turned into a research project that will publish on a regular basis. Future versions will provide more depth and insights, making the data more useful to practitioners. This research also provides input into a forthcoming book.

This report is based solely on public companies for which key data are readily available. The report considers public software companies with market valuations greater than $500M, for which data are available through the US SEC EDGAR database. Since market caps fluctuate (and have fluctuated considerably during the first part of this year), a number of companies are likely to periodically dip below the $500M threshold. The list of companies is evaluated regularly based on companies going public, companies going private, and company capitalization changes.

There are other reports under the SaaS banner that are generated using many of the same companies. However, none of the other reports include some of the information necessary for managers running software companies to make informed decisions on things like balancing growth, profit, and cash generation and aligning investing decisions accordingly. Furthermore, it is incorrect to think that all software companies are "SaaS" companies. There is a spectrum, with some companies completely SaaS, some in transition to SaaS (subscription plus perpetual license) and a mix of different business models that mix perpetual license, subscription, cloud, and on-premise. This and future reports will provide insights into these various business models.

Robert Smith, founder of Vista Equity Partners, says that "software companies taste like chicken. They're selling different products, but 80% of what they do is pretty much the same." We agree with that assertion, to a point. Where things differ considerably is in the "how" part of what software companies do. How software companies go about executing their strategies can differ dramatically based on a host of factors, including their product portfolio, market position, architectural strength, and capital structure. Making the right decisions and investments depends on correctly assessing the company's position across a number of variables. While this report does not address the different situations and possible decisions, it does offer information that could be important to your particular situation and in your associated decision-making process. Our aspiration is to continuously add to this information in each future report and to provide increasingly tangible insights that are directly useful to a broad set of specific situations. This is just the start. Please provide feedback and suggestions. If you would like additional analyses or insights, please send your thoughts to info@worldlocity.com.

What's New in 2021?

- New in 2021
  - The first version of this report in 2021 is simply an update of the financials and market capitalization information as of the date on the cover. Companies will be added and deleted in the May/June timeframe and all financials will updated at that time.
- New in 2020
  - Starting in 2020, the analysis makes use of Calcbench as the foundational data sourcing and analysis tool. Calcbench (www.calcbench.com) is an excellent tool for pulling XBRL-tagged financial data directly from financial reports contained in the US EDGAR database. It has full support for XBRL tags and allows for rapid cross-referencing between data points and their sources embedded in financial documents.
  - The 2020 report contains a number of new reports and analyses:
    - Ten year historical analysis for all variables for 2010-2019
    - IPO analysis for companies that went public 2010-2014
    - Overall market growth rate analysis
    - Capital expenditures
    - Property, plant, and equipment
    - Goodwill
    - Remaining performance obligations
    - Sales efficiency
    - Return on assets
    - Revenue per employee

Notes

- This report only includes companies that sell software as their principal source of revenue. Thus, it does not include companies such as Google and Facebook, which sell advertising as their principal source of revenue. These companies may be considered software companies, but their economic ecosystem is very different from the companies in this report, which sell software directly.
- It's important to note that the many of the averages found in this report are averages of percentages. For example, to calculate the average investment in sales and marketing as a percentage of revenue, it simply takes the sum of all the percentages for all 132 companies and then divides by 132. This contrasts with what the overall industry is spending on sales and marketing as a percentage of revenue, which is obtained by summing up the sales and marketing investment numbers for all companies and dividing it by the sum of all the revenues in a given year.
  - This report provides both views – an average of the percentages view, which provides percentages for each company; and a summed view, which is a market level view of absolute dollars.
  - This is particularly important when looking at growth rates, since the large companies with large revenue streams are growing at much lower rates than smaller companies with smaller revenue streams. Thus, the overall market growth rate based on a sum of revenues is much less than the average of the percentages growth rate. This also shows that many smaller companies are capturing market share from the larger players.
  - This report also provides distribution charts for all companies. This negates distortions that may be caused by averages of percentages, by showing each individual company percentage, along with quartile analysis.
- This report includes information on revenue sub-classes: cloud subscription, license, maintenance, and professional services. There is some judgement involved in attributing revenue sub-classes because, among the companies that report revenue sub-class information, it is not uniformly reported. For example, some such companies will group together maintenance and services, or license and maintenance. Furthermore, subscription could mean cloud subscription or on-premise subscription, which have very different gross margins. Where it is unclear, attribution judgement has applied based on an understanding of the company's underlying business and operating models.
- This document is versioned as follows: YYYY.N.n, where YYYY is the year, N is the major release number, and n is the minor release number. A major release is when the number of companies changes and/or reports and analyses change. A minor release is an update to the numbers based on most recent data retrieved from the database as of the date of the report and/or formatting and data error fixes.

Version

VERSION	NOTES
2020-1.1	Initial version, dated 04.24.20
2020-1.2	Fixed minor editing problems and minor problems with deferred revenue distribution. Updated report with new financial and market cap data as of the date on the cover. This includes updated financials for companies that reported their fiscal year results between the date of the last report and the date on the cover of this version. One of the companies in the previous report (Symantec) was split into two, with half of the company becoming part of Broadcom and the other half becoming NortonLifeLock (NLOK). No attempt has been made to normalize previous period revenue for NLOK.
2021-1.1	Updated with the latest financials and market capitalization information as the date on the cover of this report. This is the first version for 2021. No companies were deleted based on going private or added based on going public or satisfying market cap size requirements. Information for companies that have gone private is based on last public information.

Contents

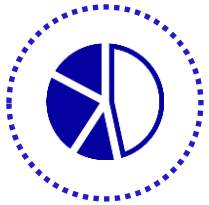
2021 Software Report: Key Takeaways

- The software market grew by 11% in 2019, which is 2-3 times global GDP. The average growth rate of a software company is 20.2% (the difference between the 11% and the 22.5% is because large companies grew slowly and smaller companies grew faster).
- The average software company has gross margins of 69.6%, invests 34.7% of revenue in sales and marketing, 20.9% in research and development, 14.8% in general and administrative expenses, and generates a 17.8% adjusted EBITDA margin.
- The software market continues to be very dynamic and is still relatively young. Because of this, software companies employ a wide range of operating models, with widely-different investments in sales and marketing, research and development, and general and administrative. That said, a reasonable general long-term operating model would follow a 30:20:10 rule with 30% investment in sales and marketing, 20% investment in research and development, and 10% investment in general and administrative (all percentages of revenue). The degree to which companies vary from this general model depends on many factors including lifecycle stage, product and market, and competition.
- Software companies are very well capitalized, with an average cash position of 81.6% of revenue on their balance sheets.
- As is well known, software companies are asset-light businesses, with a physical asset base (PP&E, net) of 11.0% of revenue.
- Software companies generate an average of $283,948 of revenue per employee.
- Acquisitions are a key ingredient to software company growth. A proxy for this is goodwill. Balance sheet goodwill has grown in lockstep with revenue for the past decade, and stands at 52.5% of revenue for the average software company.
- Historical analysis of the ten years from 2010 to 2019 shows remarkable consistency in the average value of operational variables from year-to-year. Averages for YOY growth, gross margins, sales and marketing investment, R&D investment, G&A, and operating margin are all consistent across the ten years, with the following exception:
  - In 2010 and 2011 (and to a lesser extent in 2012 and 2013) software companies ran significantly higher operating margins (10-13 percentage points) by investing less in sales and marketing, R&D, and G&A. This is consistent with companies emerging from the great recession of 2008-2010. It may also be a harbinger of things to come as companies start the 2020s with a significant shock caused by the coronavirus pandemic.
- Historical analysis of IPO companies shows significant changes to their operating models towards higher levels of operating profit and cash flow as they evolve in the years after IPO. This validates the thesis that young software companies will evolve towards profitability.
- Growth rate and cash position are the only reliable statistical predictors of market cap multiple. All other variables have weak to no statistical correlation, indicating current market valuation analysis must include consideration of a complex set of intangibles, including problem set, product, industry, brand, ecosystem, lifecycle stage, and many others.
- Software market cap leaders are growing 2 times faster than laggards, generate gross margins 9 percentage points higher, have cash positions 4 times higher, employ twice as much stock-based compensation, and enjoy market cap multiples 10 times higher.
- There are 62 companies out of the 132 in this report that satisfy the “Rule of 40,” defined here as 1-year growth% plus adjusted EBITDA% greater than or equal to 40%. These companies have an average market cap multiple that is 22% higher than the average for all software companies.
- Very few software companies run a balance of high growth and high EBITDA. Only 16 of the 132 companies in this report had a growth rate of 20% or higher and adjusted EBITDA of 20% or higher. These companies have an average market cap multiple that is 51% higher than the average for all software companies.

Data Set

Information on the companies and the data set used in the analysis.

Data Set



COMPANIES

The data set includes **132** publicly-traded software companies.

132

REVENUE

Aggregate revenue for companies in the data set is **$397** billion for the latest reporting fiscal year as of the date on the cover of this report.

$397B

MARKET CAPITALIZATION

Aggregate market cap for companies in the data set is **$4.9** trillion as of date on the cover of this report.

$4.9T

Notes:

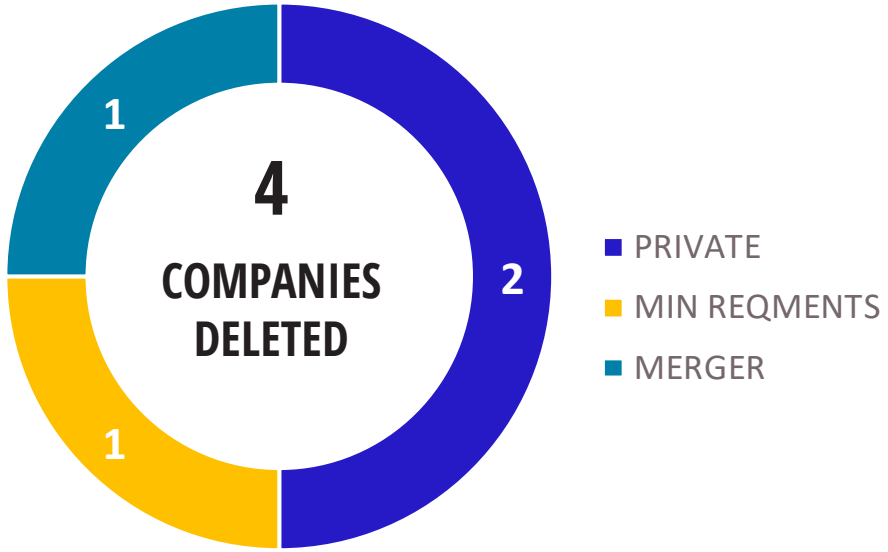
1. Unless otherwise noted, all data are based on the most recent fiscal year (MRY) as of the date on the cover of this report, and as reported in a company 10-K or 20-F and published in the SEC EDGAR database.
2. B=billion; T=trillion.

Data Set

Changes from version 2019-2 to 2020-1; no changes yet for 2021

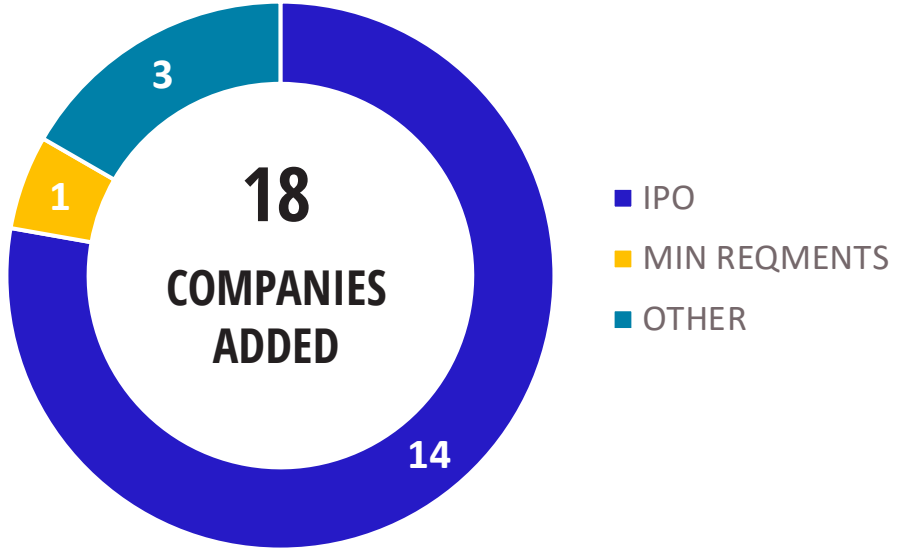
Version 2020-2 updates all financials to the most-recent fiscal year (MRY) for all companies as of the date on the report cover. There were no company additions or deletions between versions 2020-1.1 and 2020-1.2 (the below reflects changes between 2019-2 and 2020-1).

COMPANY DELETIONS



2 companies were deleted as a result of being taken private, 1 as a result of not meeting minimum market cap, and 1 as a result of a merger

COMPANY ADDITIONS



14 companies were added as a result of IPOs, 1 as a result of meeting minimum market cap, and 3 from other sources

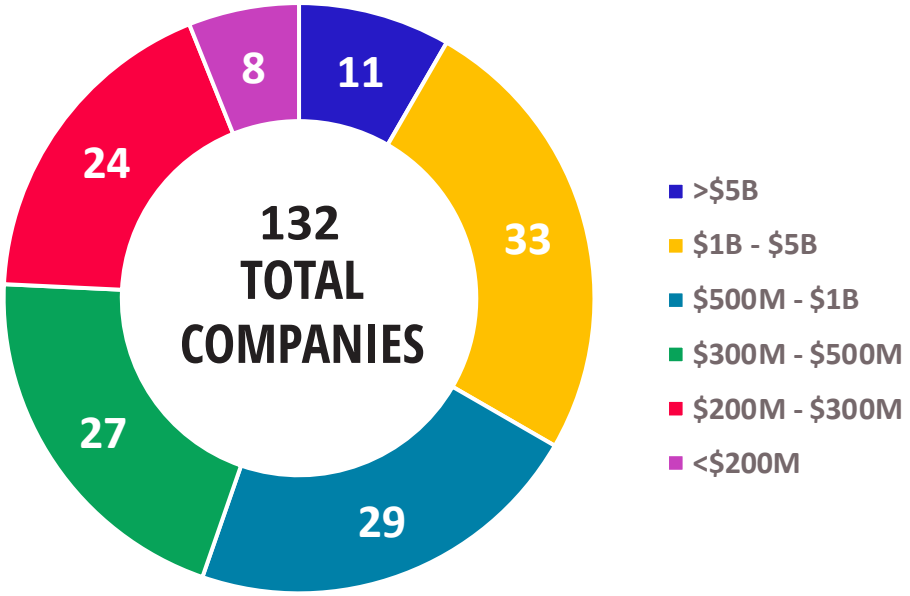
Notes:

1. Private = companies that were taken private for which there is public information going forward; Min Requirements = companies with market caps greater than or equal to $500M; Merger = companies that merged and for which there is now only one resultant company; IPO – companies that were added as a result of an IPO and for which public financial information is now available; Other = companies discovered through other means, including research.

Data Set

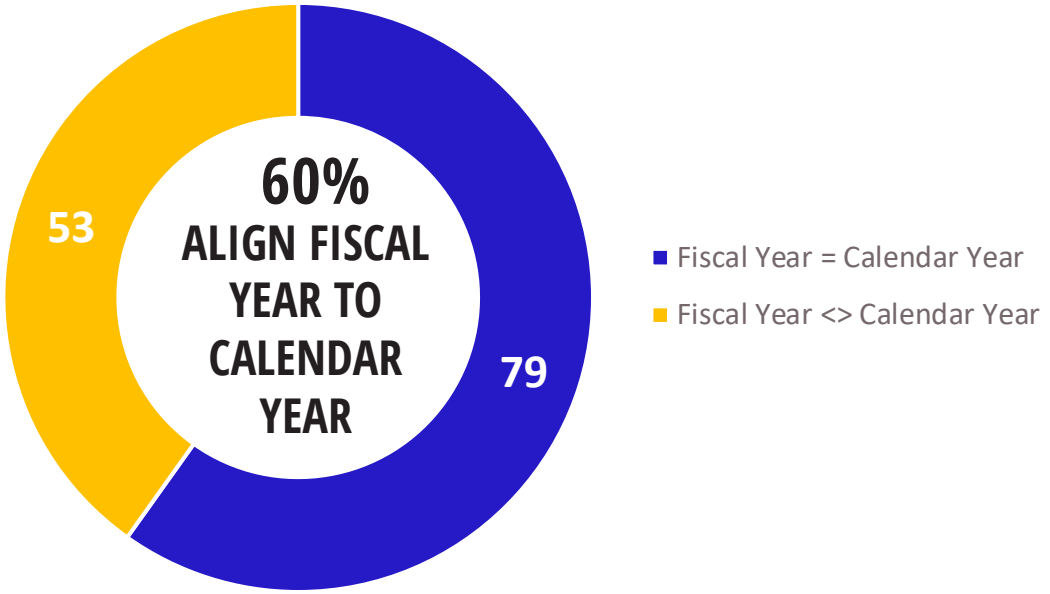
Company distribution by annual revenue

BY ANNUAL REVENUE



MEDIAN REVENUE = $586 M

FISCAL YEAR TIMING



Notes:

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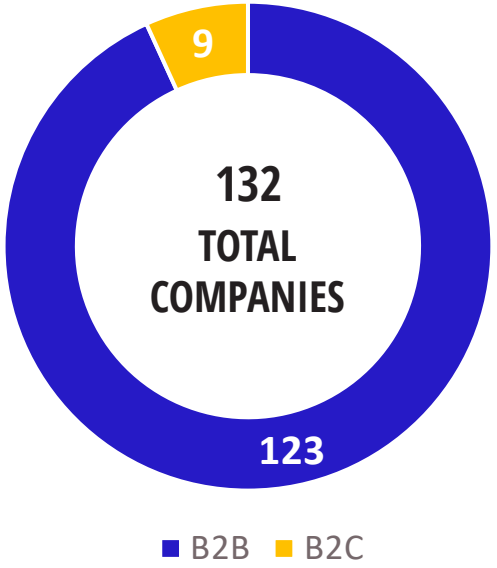
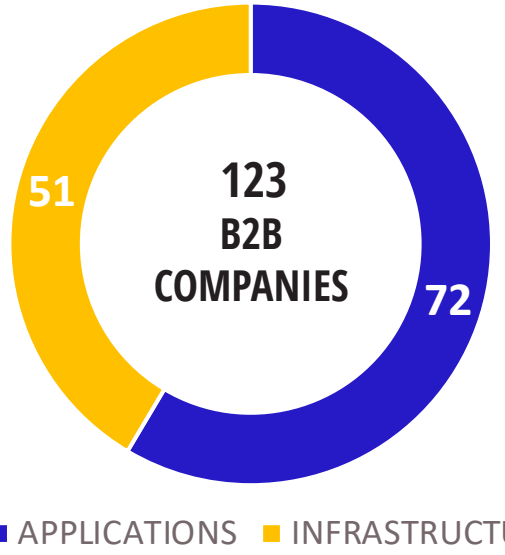
Data Set
Company distribution by type

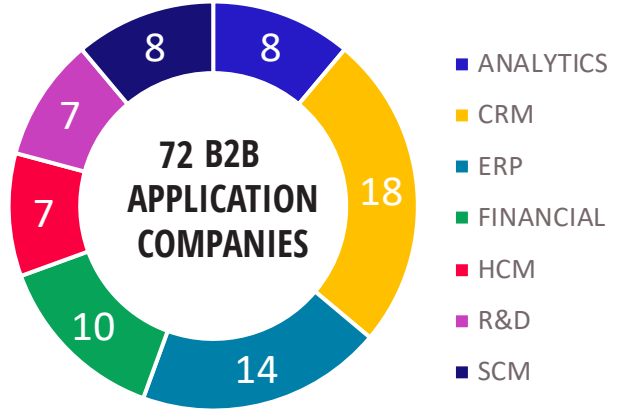
PRIMARY COMPANY TYPE



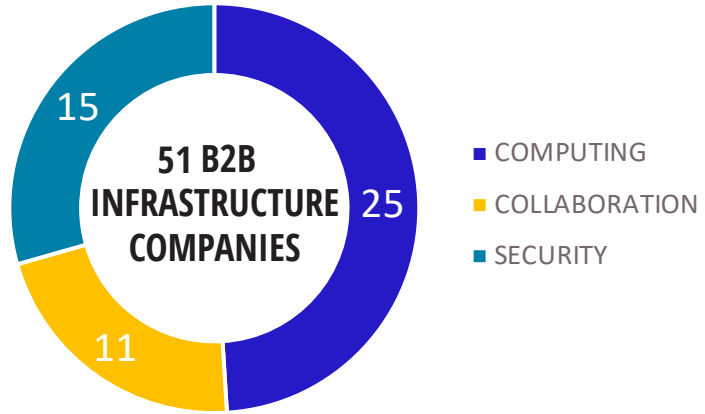
B2B COMPANIES



B2B APPLICATION COMPANIES



B2B INFRASTRUCTURE COMPANIES

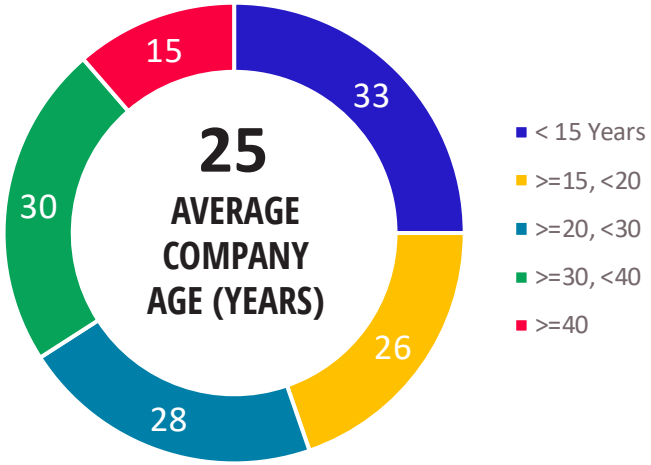


Notes:
1. Unless otherwise noted, all data are based on the most recent fiscal year (MRY) as of the date on the cover of this report, and as reported in a company 10-K or 20-F and published in the SEC EDGAR database.

Data Set

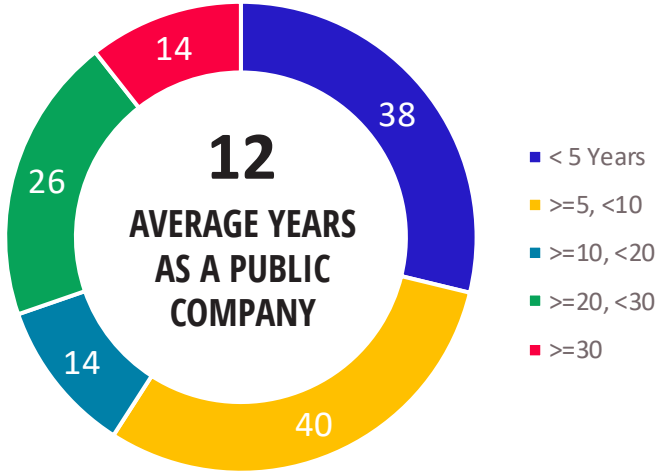
Company distribution by age and IPO

COMPANY AGE



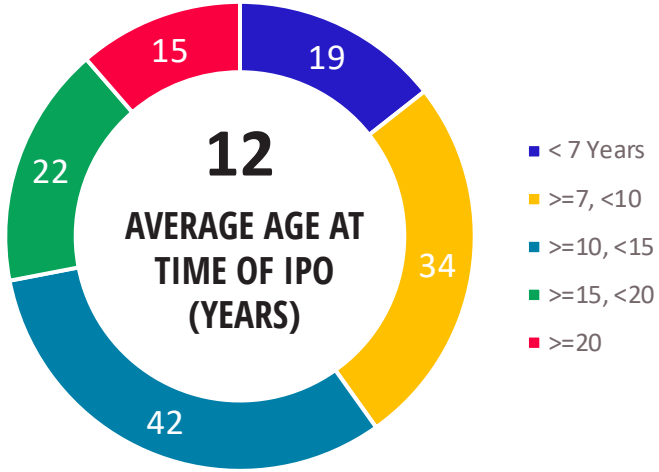
52% of companies are greater than 20 years old

YEARS SINCE IPO



59% of companies have been public less than 10 years

YEARS FROM FOUNDING TO IPO



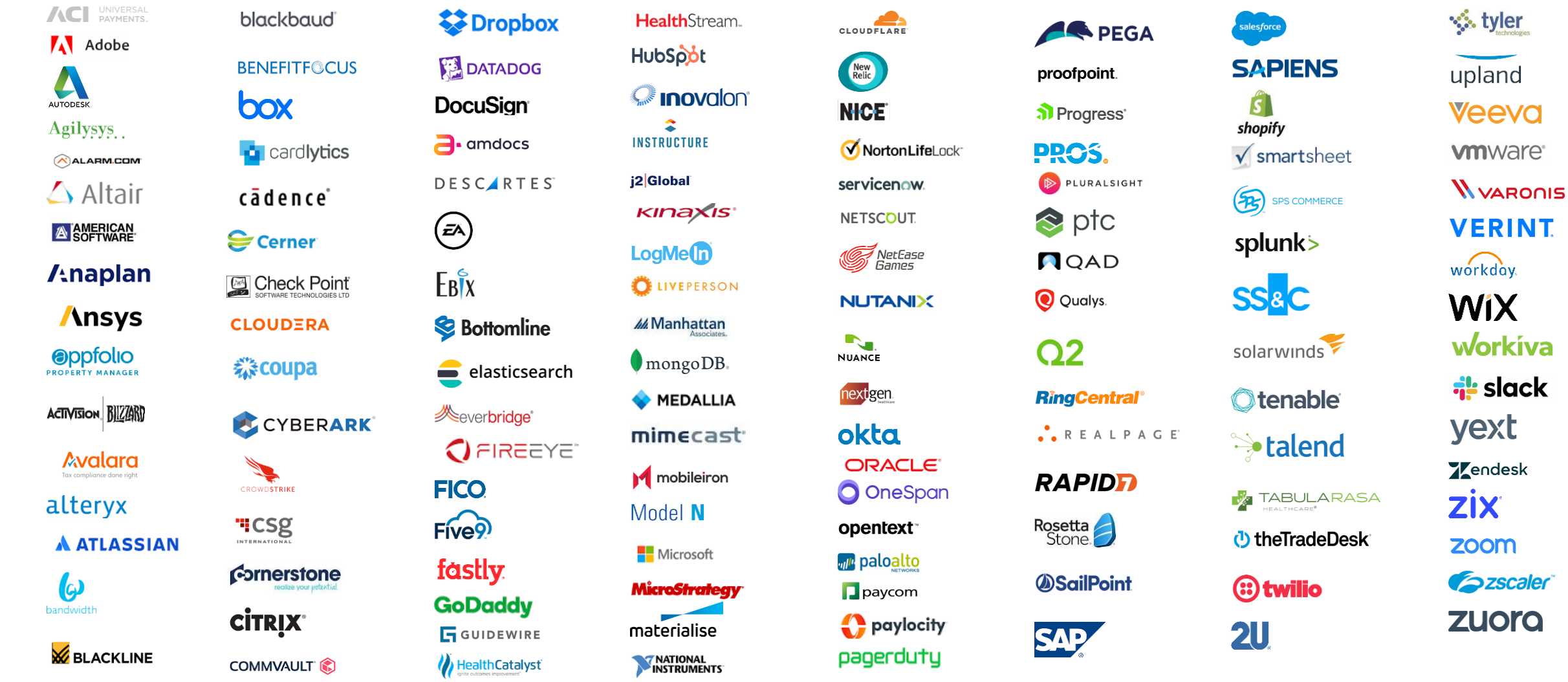
40% of companies took less than 10 years to go public

Notes:

1. Company age is calculated as the current year minus the year in which each company was founded (day and month precision is not used in the calculation). Source of the founding date is the company website (some companies are actually older because they were formed from previous companies). In the case of companies formed from mergers, the oldest company is used to designate the resultant company founding year.

Data Set

Companies included in this report



Data Set
Index of key variables included in this report

This report provides analysis of the following variables (and derivatives) for the most recent fiscal year (MRY) and for the ten-year period from 2010-2019.

REVENUE

GROWTH RATE

GROSS MARGIN

SALES & MARKETING

RESEARCH & DEVELOPMENT

GENERAL & ADMINISTRATIVE

OPERATING PROFIT

NET PROFIT

FREE CASH FLOW

STOCK COMPENSATION

CASH

DEBT

NET CASH

EBITDA

ADJUSTED EBITDA

CAPITAL EXPENDITURES (CAPEX)

PROPERTY, PLANT, AND EQUIPMENT (PP&E, NET)

GOODWILL

DEFERRED REVENUE

REMAINING PERFORMANCE OBLIGATIONS (RPOS)

SALES EFFICIENCY

RETURN ON ASSETS (ROA)

CAPITALIZATION TO REVENUE RATIO (CAP RATIO)

ENTERPRISE VALUE TO REVENUE RATIO (EV RATIO)

DAYS SALES OUTSTANDING (DSO)

REVENUE PER EMPLOYEE

SUBSCRIPTION GROSS MARGIN

LICENSE GROSS MARGIN

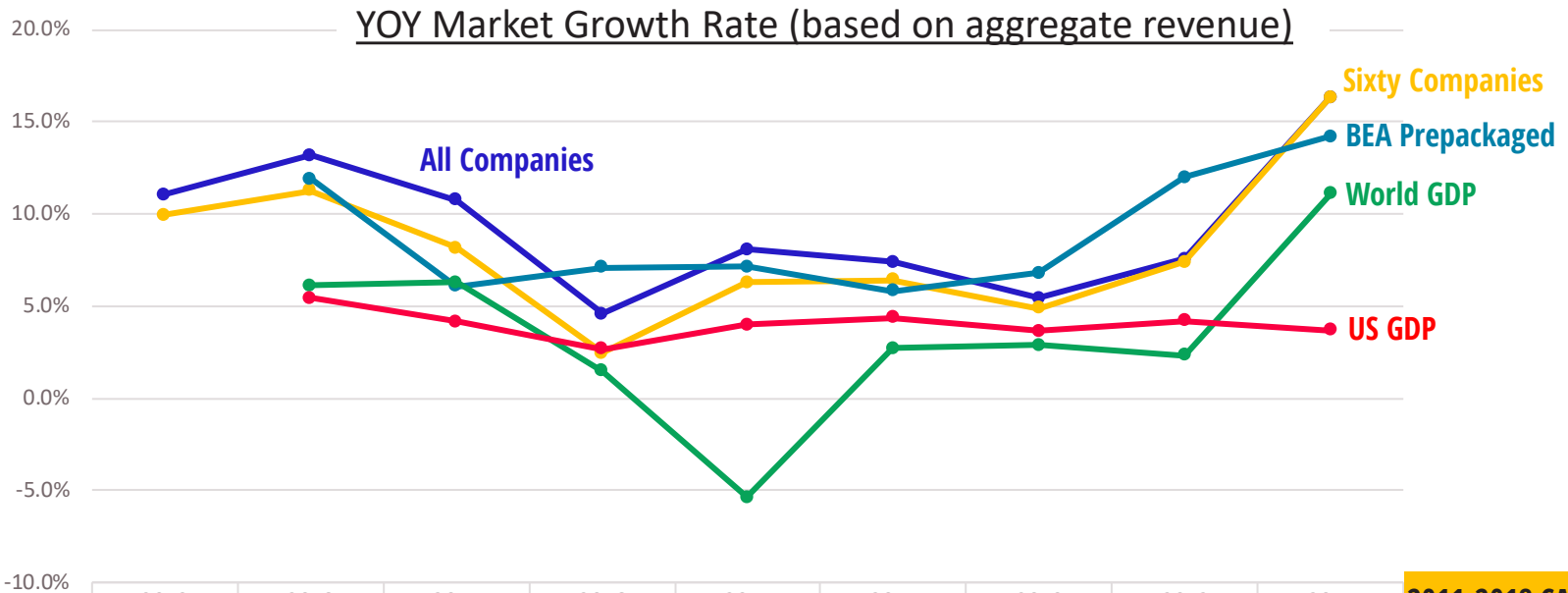
MAINTENANCE GROSS MARGIN

PROFESSIONAL SERVICES GROSS MARGIN

Overall Market

Summary of the market using the companies in this report as a proxy for the overall software market.

Overall Market
YOY growth rates, 2011-2019



	2019	2018	2017	2016	2015	2014	2013	2012	2011	2011-2018 CAGR
All Companies	11.1%	13.2%	10.7%	4.6%	8.1%	7.4%	5.4%	7.6%	16.3%	**9.5%**
Sixty Companies	10.0%	11.3%	8.2%	2.4%	6.3%	6.4%	4.9%	7.4%	16.3%	**8.1%**
BEA Prepackaged Software		11.9%	6.1%	7.1%	7.1%	5.8%	6.8%	12.0%	14.2%	**8.8%**
World GDP (current $)		6.1%	6.3%	1.5%	-5.4%	2.7%	2.9%	2.3%	11.1%	**3.3%**
US GDP (current $)		5.4%	4.2%	2.7%	4.0%	4.4%	3.6%	4.2%	3.7%	**4.0%**

NOTES & INSIGHTS

- Software market CAGR for the decade of the 2010s was about 9.5%, which is about 2X-3X global and US GDP
- Software growth in the past three years (2017-2019) has accelerated to greater than 10%.
- Growth rates in the early part of the decade were higher, probably due to the rebound from the great recession of 2009-2010.
- Growth rates in the middle part of the decade were lower. This is possibly due to very large companies and much of the industry transitioning from the traditional perpetual license to the subscription model and the associated revenue air pocket this causes.

Notes:

1. "All Companies" represents all companies in the data set for which there are year-over-year revenue numbers. This is 126 of the 132 companies (the other 6 companies are new IPOs). Growth rates are calculated based on the change in aggregate revenue from year to year.
2. The "Sixty Companies" are the companies that were public for all years from 2010 to 2019.
3. "BEA Prepackaged Software" growth rates are calculated from from the US Bureau of Economic Analysis (https://apps.bea.gov/iTable/iTable.cfm?ReqID=10&step=2), Table 2.7. Investment in Private Fixed Assets, Equipment, Structures, and Intellectual Property Products by Type
4. World GDP and US GDP numbers are sourced from The World Bank (data.worldbank.org)
5. BEA, World GDP, and US GDP are not available for 2019.
6. World GDP and US GDP growth rates are based on *current* dollars. This means they have not been adjusted for inflation. *Current* numbers are used to ensure apples-to-apples comparisons with software growth rates. Note that GDP growth rates are typically reported in constant dollars pegged to a certain year in order to account for the effect of price inflation. Thus, GDP growth rates commonly reported in media are typically lower than those shown here.

Overall Market

Based on aggregate revenues, costs, and market caps

A composite view of the market can be attained by adding up revenues and costs for all companies and then looking at ratios using the aggregate data. This provides a different view from the "averages of the percentages" view in the next and subsequent sections of this report. This is a more reliable view of the overall dollars available in the market, while the views in later sections provide a more reliable view of the competitive environment. In this case, very large companies, which are growing more slowly, have an out-sized impact on the numbers, particularly revenue and profit numbers. The top ten revenue companies make up ***70.9%*** *of the total revenue for all 132 companies.*

Composite (132 Companies)	Total
Revenue	$397,300,205,801
Cost of Revenue	$114,137,251,668
Operating Income	$89,494,957,904
Adjusted EBITDA	$155,526,947,535
Free Cash Flow	$96,161,263,670
Sales & Marketing	$93,066,120,221
R&D	$66,329,481,412
G&A	$28,149,375,073
Stock Compensation	$26,329,999,938
Market Capitalization	$4,917,541,690,997

Ratio	Value
Gross Margin	71.3%
Operating Margin	22.5%
Adjusted EBITDA	39.1%
Free Cash Flow	24.2%
Sales & Marketing	23.4%
R&D Investment	16.7%
G&A	7.1%
Stock Compensation	6.6%
1-Year Growth 2019/18	11.1%
Market Cap / Revenue	12.4
Market Cap / EBITDA	54.9

This dollar growth rate is consistent with the prepackaged software growth rate for 2018/17 found in US Bureau of Economics data (previous slide). This is an indication that this data set is a good proxy for the entire market.

Notes:

1. All revenue and cost numbers are aggregate values for all companies for the most recent fiscal year (MRY) as of the date on the cover of this report.
2. Market capitalization is aggregate market capitalization for all companies as of the date on the cover of this report.
3. Adjusted EBITDA is operating income plus depreciation, amortization, and stock compensation.

Analysis Summary

Charts that summarize key variables in the report.

Analysis Summary

Average and median for different variables, most recent fiscal year (MRY)

The table below contains the average and median values for the 132 companies investigated. This shows that the average software company operates with a gross margin of 69.6% , spends 34.7% of revenue on sales and marketing, 20.9% on R&D, and 14.8% on G&A, with an operating income of minus -2.4% and free cash flow of 7.9% .

	REVENUE		OPERATIONS				PROFIT AND CASH			
	Annual Revenue[1]	Growth Rate (1YR)[2]	Gross Margin[3]	Sales & Mktg[3]	R&D[3]	G&A[3]	Operating Income[3]	Adjusted EBITDA[3]	Free Cash Flow[3]	Company Age (Years)[4]
Average	$3,009,850,044	20.2%	69.6%	34.7%	20.9%	14.8%	-2.4%	17.8%	7.9%	25
Median	$586,219,500	15.9%	72.3%	30.7%	19.3%	14.1%	0.7%	18.3%	9.9%	21

Notes:

1. MRY = most recently reported fiscal year for each company, as of the date on the cover of this report.
2. Growth rate is based on the most recent fiscal year's revenue minus the previous fiscal year.
3. All percentage numbers are a percentage of revenue. Average is the average of all the percentages for each of the companies.
4. Adjusted EBITDA is calculated as operating income plus depreciation, amortization, and stock-based compensation.
5. Company age is calculated as the current year minus the year of company founding.

Analysis Summary

Average values by revenue quartile, MRY[1]

Market cap multiples for smaller companies are larger than larger companies. Sales and marketing and G&A costs are also higher. Profit and cash flow are linearly correlated to revenue, reflecting operating leverage in sales and marketing and general and administrative expenses. Research and development investment is consistent across the quartiles. The top revenue quartile provides a reasonable long-term target operating model for smaller software companies.

All numbers are averages within each quartile

		REVENUE		OPERATIONS				PROFIT AND CASH				
	#	Revenue[1]	1-Year Growth	Gross Margin[3]	Sales & Mktg[3]	R&D[3]	G&A[3]	Operating Income[3]	Adjusted EBITDA[3]	Free Cash Flow[3]	Mkt Cap Multiple[4]	Age[5]
Quartile 4	33	$10,442,058,939	12.8%	73.1%	27.2%	18.6%	9.4%	14.6%	32.8%	21.7%	10.6	31
Quartile 3	33	$932,887,212	20.7%	70.8%	36.0%	22.3%	14.3%	0.0%	23.5%	14.0%	17.5	24
Quartile 2	33	$427,250,485	27.1%	69.9%	38.9%	21.7%	16.7%	-9.7%	11.2%	-1.3%	19.8	22
Quartile 1	33	$237,203,539	26.6%	64.8%	36.8%	21.1%	18.7%	-14.5%	3.7%	-2.9%	13.5	21

REVENUE QUARTILES

Quartile 4 >= $1,319,065,250
Quartile 3 >= $586,219,500 , < $1,319,065,250
Quartile 2 >= $315,375,500 , < $586,219,500
Quartile 1 < $315,375,500

Notes:

1. MRY = most recently reported fiscal year for each company, as of the date on the cover of this report.
2. Growth rate is based on the most recent fiscal year's revenue minus the previous fiscal year.
3. All percentage numbers are a percentage of revenue. Average is the average of all the percentages for each of the companies. Adjusted EBITDA is calculated as operating income plus depreciation, amortization, and stock-based compensation.
4. Market capital multiple is market cap (as of the date on the cover of this report) divided by trailing twelve months (TTM) revenue (past four reported quarters as of the date on the cover of this report).
5. Company age is calculated as the current year minus the year of company founding.

Analysis Summary

Average values by market cap quartile, MRY[1]

Large cap companies have higher gross margins and significantly higher operating margins and cash flow. Interestingly, there is consistency in growth rates and investments in sales and marketing and research and development across the market cap quartiles.

All numbers are averages within each quartile

		REVENUE		OPERATIONS				PROFIT AND CASH			
Market Cap	#	Revenue[1]	1-Year Growth[2]	Gross Margin[3]	Sales & Mktg[3]	R&D[3]	G&A[3]	Operating Income[3]	Adjusted EBITDA[3]	Free Cash Flow[3]	Company Age (yrs)
Quartile 4	37	$8,997,808,243	28.8%	75.3%	34.3%	23.2%	12.2%	4.7%	27.2%	19.9%	24
Quartile 3	34	$1,027,735,882	21.2%	68.4%	33.9%	20.1%	14.2%	-2.7%	17.5%	8.4%	24
Quartile 2	34	$606,126,912	17.7%	71.9%	40.9%	21.0%	17.3%	-6.2%	15.8%	4.9%	23
Quartile 1	27	$327,035,770	18.1%	60.5%	28.5%	18.7%	15.8%	-6.9%	7.6%	-5.5%	28

MARKET CAP QUARTILES ($M)

Quartile 4 >= $18,975
Quartile 3 >= $6,212 , < $18,975
Quartile 2 >= $2,670 , < $6,212
Quartile 1 < $2,670

Notes:

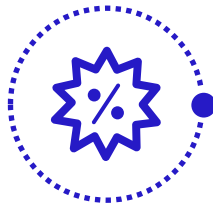
1. MRY = most recently reported fiscal year for each company, as of the date on the cover of this report.
2. Growth rate is based on the most recent fiscal year's revenue minus the previous fiscal year.
3. All percentage numbers are a percentage of revenue. Average is the average of all the percentages for each of the companies.
4. Adjusted EBITDA is calculated as operating income plus depreciation, amortization, and stock-based compensation.
5. Company age is calculated as the current year minus the year of company founding.

Analysis Summary

Average numbers for the entire data set, MRY[1]

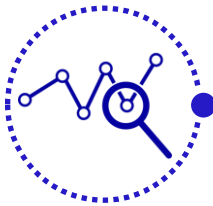
1-YEAR GROWTH[2]

20.2%



GROSS MARGIN

69.6%



MARKET CAP[3]

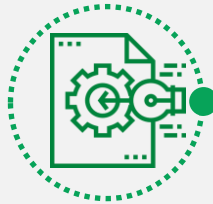
15.4X

ADJ EDITDA[4]

17.8%

SALES & MKTG

34.7%



R&D

20.9%

G&A

14.8%

STOCK COMP[5]

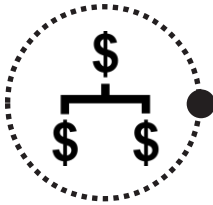
10.9%

OP INCOME

-2.4%

FREE CASH FLOW

7.9%



CASH[6]

81.6%

NET CASH[6]

43.4%

Notes:

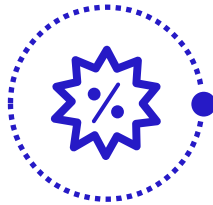
1. MRY = most recently reported fiscal year for each company, as of the date on the cover of this report. All percentage numbers are a percentage of revenue (except growth rate). Average is the average of all the percentages for each of the companies.
2. Growth rate is based on the most recent fiscal year's revenue minus the previous fiscal year. Since some companies have only recently gone public, not all companies are included.
3. Market cap is expressed as a multiple of annual revenue and is based on market capitalizations as of the date on the cover of this report. For market cap multiple calculations, trailing twelve months (TTM) revenue is used.
4. Adjusted EBITDA is calculated as operating income plus depreciation, amortization, and stock-based compensation.
5. Stock comp = stock compensation as a percentage of revenue.
6. Cash = total cash on hand as a % of revenue. Net cash = cash on hand minus total debt. Cash includes cash, cash equivalents, and marketable securities.

Analysis Summary

Average numbers for the top-quartile market cap[3] multiple leaders

1-YEAR CAGR[2]

37.3%



GROSS MARGIN

72.5%

MARKET CAP[3]

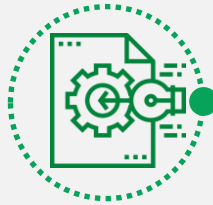
35.9 X

ADJ EDITDA[4]

10.1%

SALES & MKTG

43.5%



R&D

24.8%

G&A

17.8%

STOCK COMP[5]

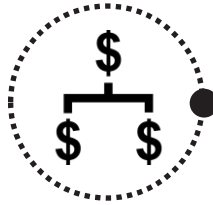
16.0%

OP INCOME

-14.5%

FREE CASH FLOW

5.0%



CASH[6]

137.1%

NET CASH[6]

129.3%

Notes:

1. MRY = most recently reported fiscal year for each company, as of the date on the cover of this report. All percentage numbers are a percentage of revenue (except growth rate). Average is the average of all the percentages for each of the companies.
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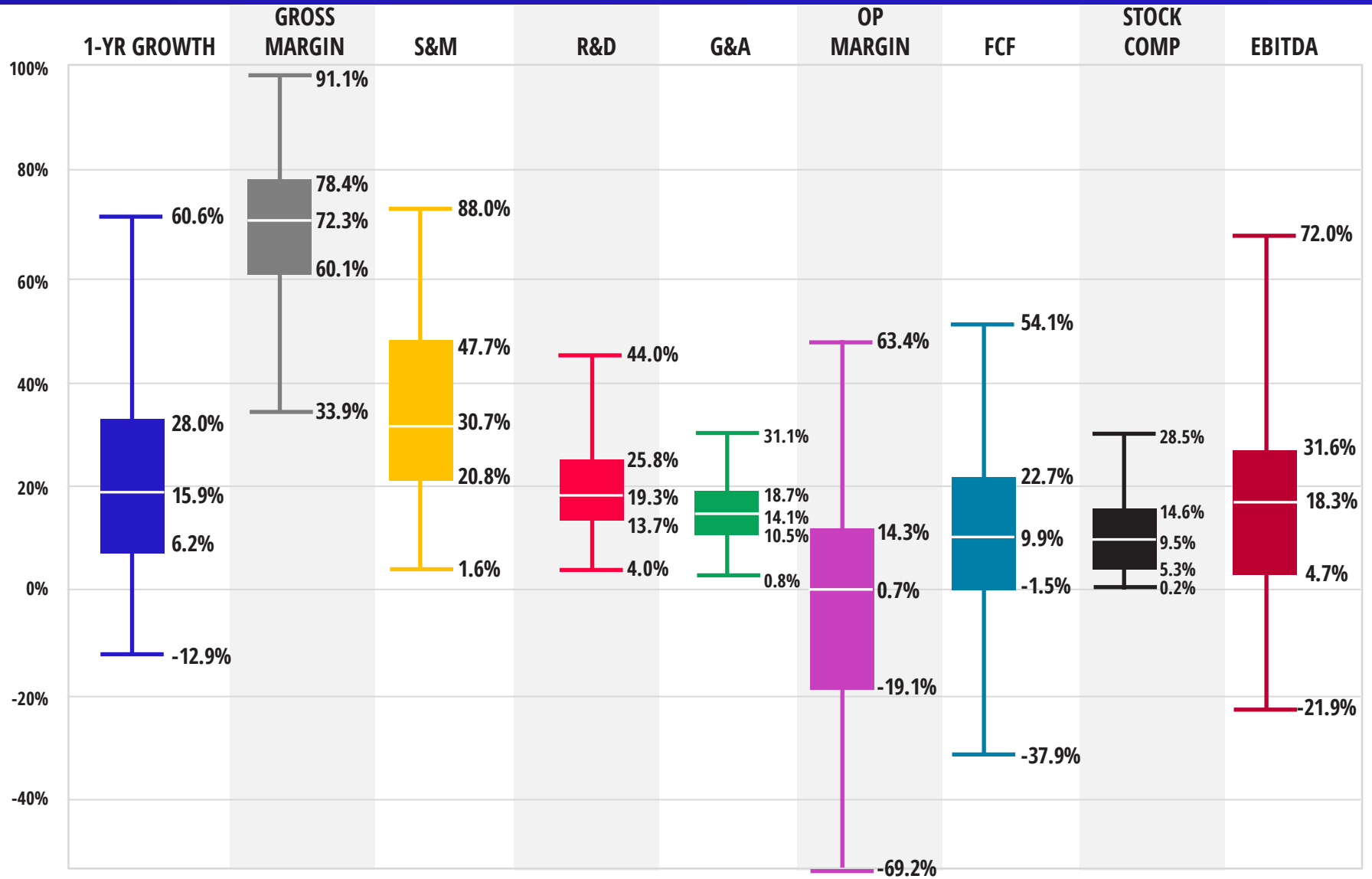
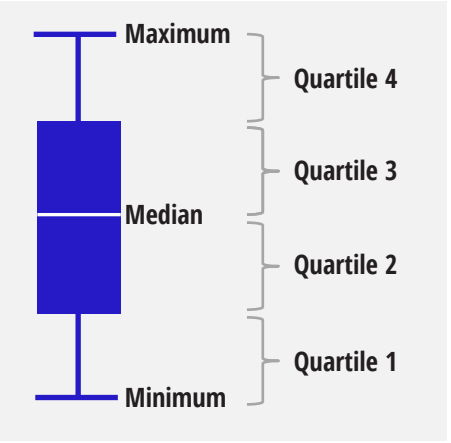
5. Stock comp = stock compensation as a percentage of revenue.
6. Cash = total cash on hand as a % of revenue. Net cash = cash on hand minus total debt. Cash includes cash, cash equivalents, and marketable securities.

Analysis Summary

Quartile summary, key variables[1]



LEGEND



Notes:

1. Outliers have been eliminated to improve chart readability. Outliers are calculated as 1.5X the inner quartile range (Q3 value minus Q1 value).
2. S&M=sales and marketing; G&A=general and administrative; R&D=research and development; FCF=free cash flow; OP=operating; stock comp=stock compensation.
3. CAGR is a growth rate; all other percentages are percentages of revenue.
4. EBITDA is adjusted EBITDA = EBITDA + stock compensation.

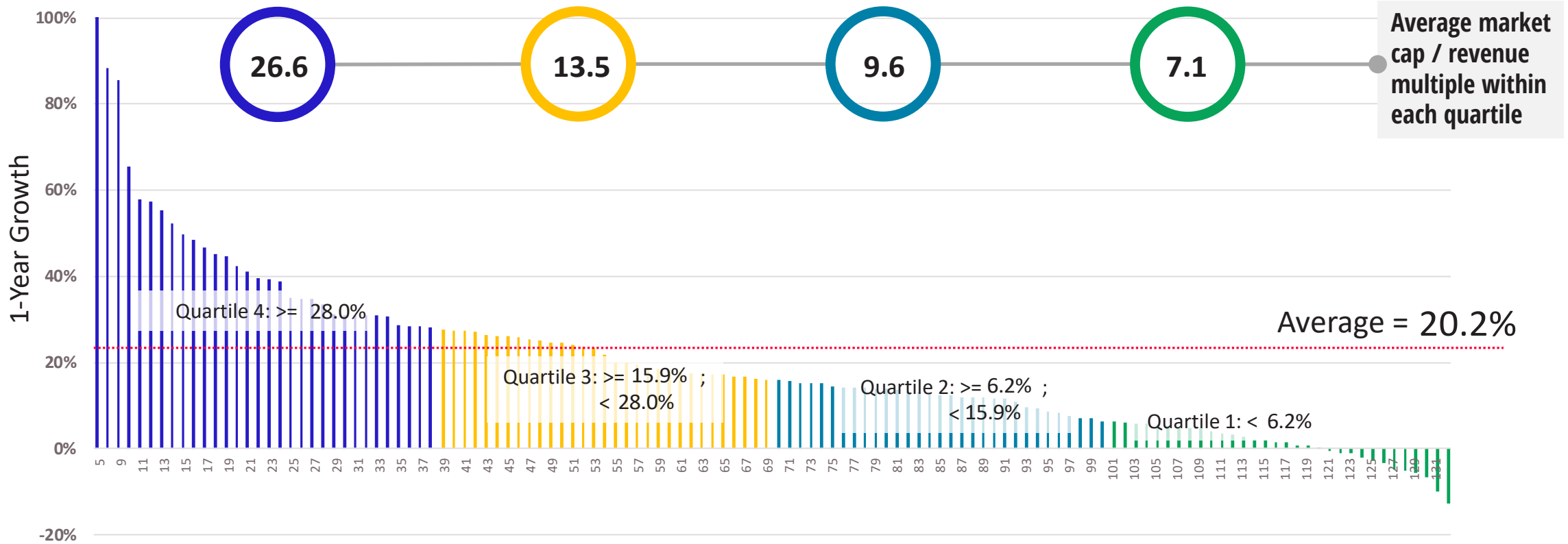
Operational Analysis

Charts that provide analysis and distribution for key variables for the most recent fiscal year for all companies.

Operational Analysis
1-year growth rate

*Software is a high growth business. The average 1-Year growth rate is **20.2%** . The median is **15.9%**. Only six companies had negative growth. Growth rate is one of the few statistical predictors of market cap multiple. In general, high growth companies have **4X** the market cap multiple of slower growth companies.*

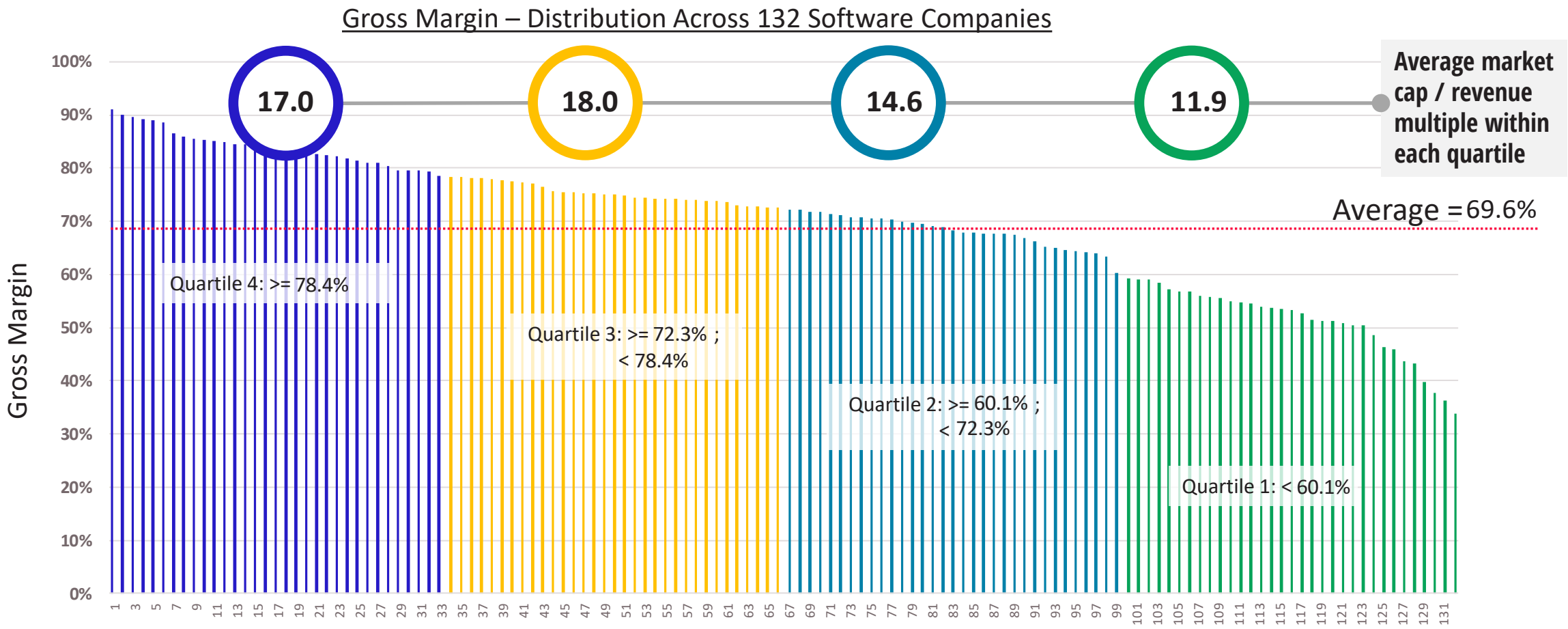
1-Year Growth – Distribution Across 126 Software Companies[1]



Notes:
1. Chart is truncated for readability.
2. Average = average of the percentages.
3. Sample size is 126 versus 132 because 6 companies only have one year of public information.

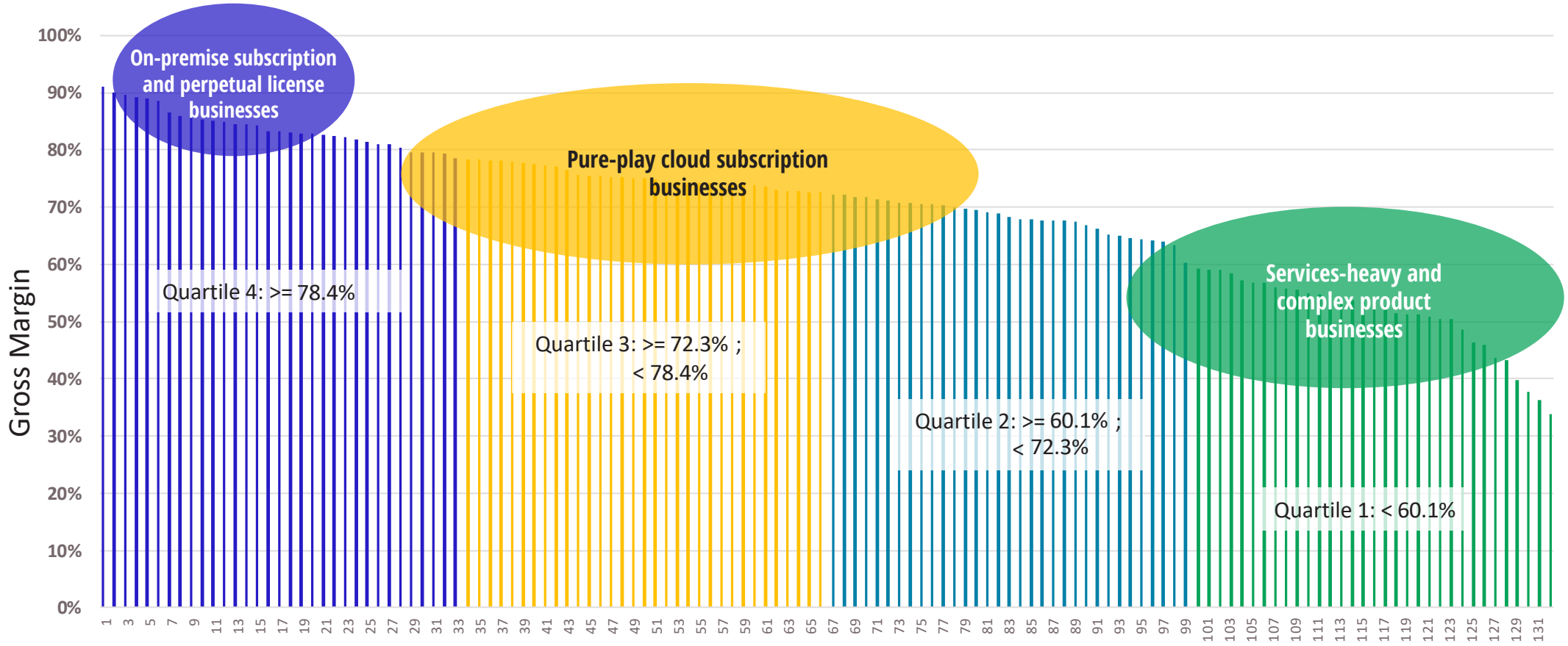
Operational Analysis
Gross margin

*Software is a high gross margin business, owing to its high IP content and essentially zero material-intensity. The average gross margin is **69.6%**. The median is **72.3%**. The lowest quartile is **60.1%** and below. Software companies also provide services, which are dilutive to gross margin.*



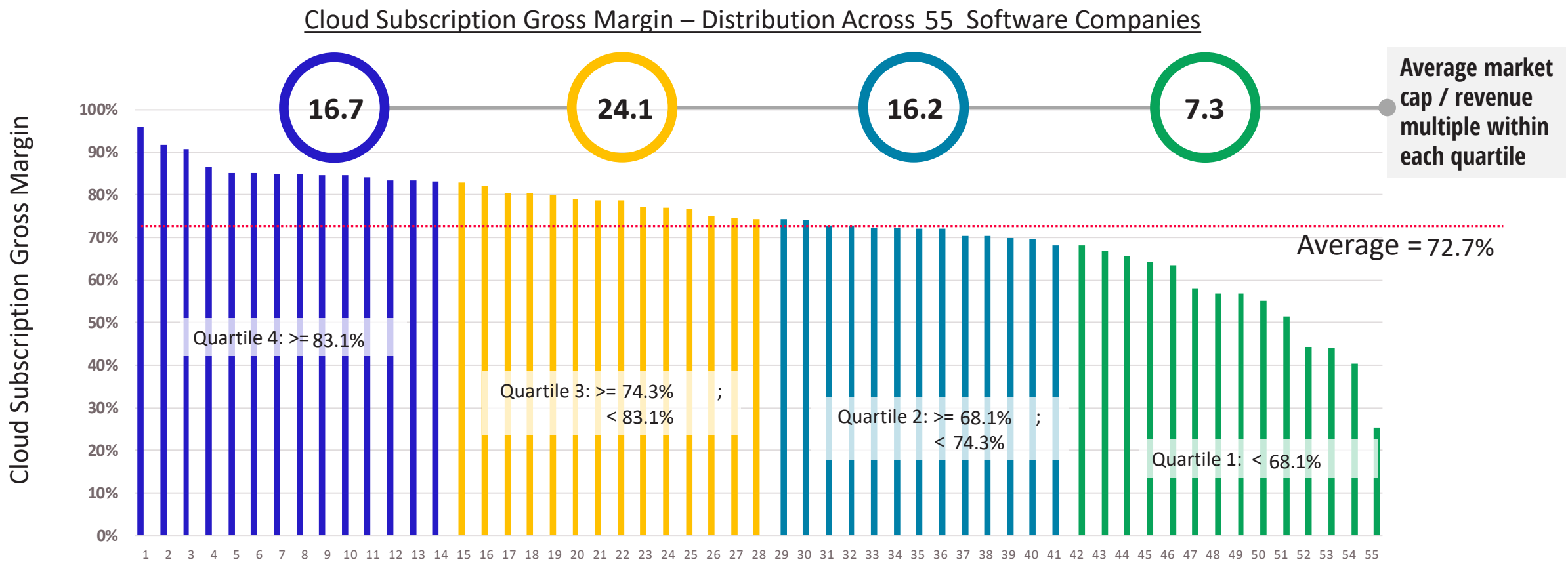
Operational Analysis
Gross margin – business model insights

Gross margin provides insights into the business and operating models of a software company. In general, the lower the gross margin, the higher the amount of services that a software company takes on to operate and deliver its software. On-premise subscription and traditional perpetual license businesses operate with the highest gross margins, since the customer takes on operational services, eliminating their dilutive effect.



Operational Analysis
Cloud subscription gross margin

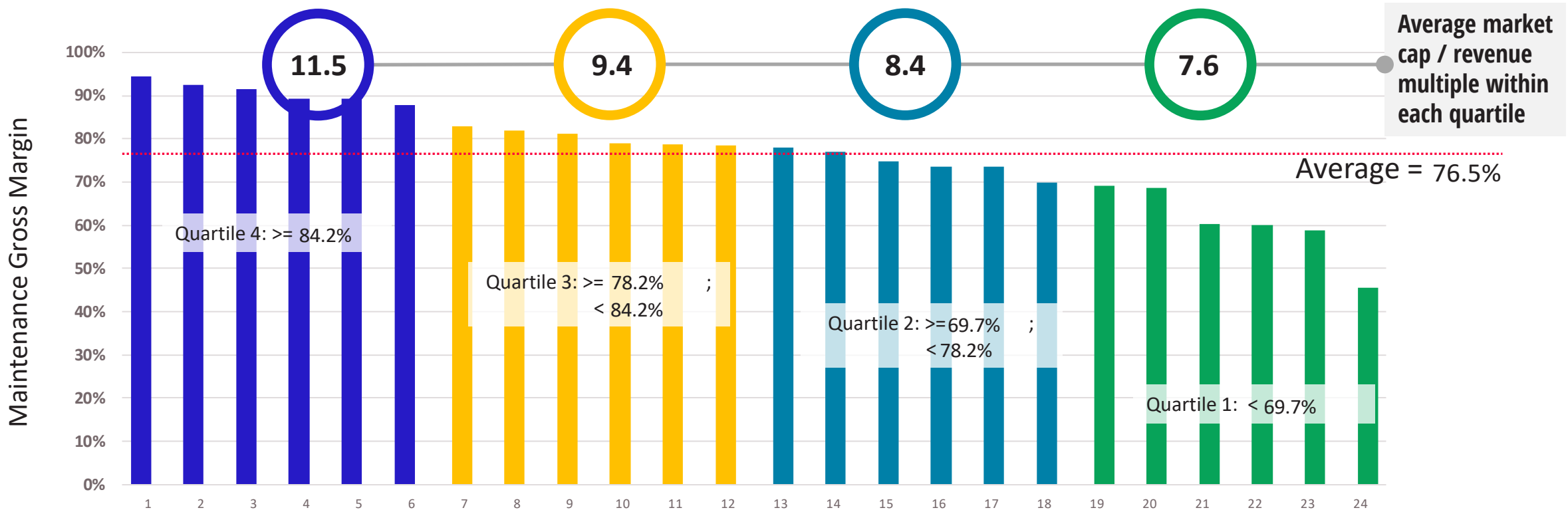
*A number of software companies provide granular revenue and cost detail for subscription, license, maintenance, and professional services. This chart shows gross margin for the **55** companies that provide detail on **subscription** revenue. Note that this subscription revenue could include some element of on-premise subscription. This is true of the higher gross margin performers on this chart. The average subscription gross margin for this cohort is **72.7%** .*



Operational Analysis
Maintenance gross margin

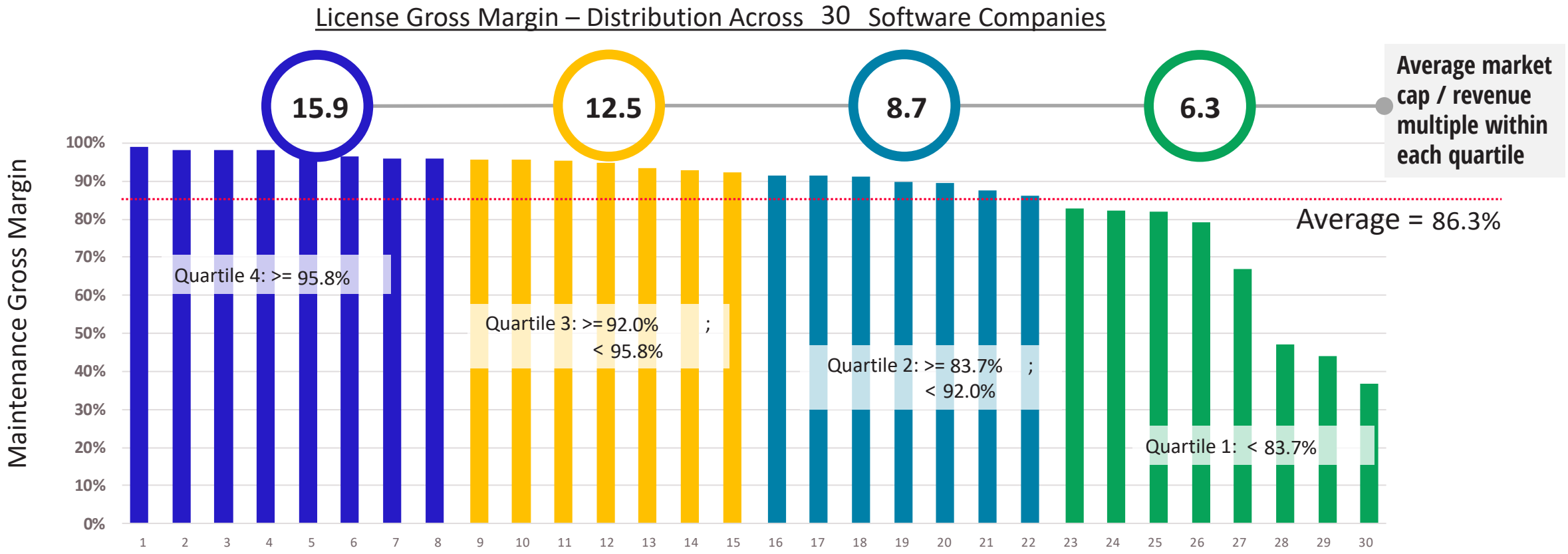
A number of software companies provide granular revenue and cost detail for subscription, license, maintenance, and professional services. This chart shows gross margin for the ***24*** *companies that provide detail on* ***maintenance****. Maintenance revenue may be separated out as a result of an historical perpetual license business or as a result of on-premise subscription business (which new accounting standards require separating maintenance). The average maintenance gross margin for this cohort is* ***76.5%*** *.*

Maintenance Gross Margin – Distribution Across 24 Software Companies



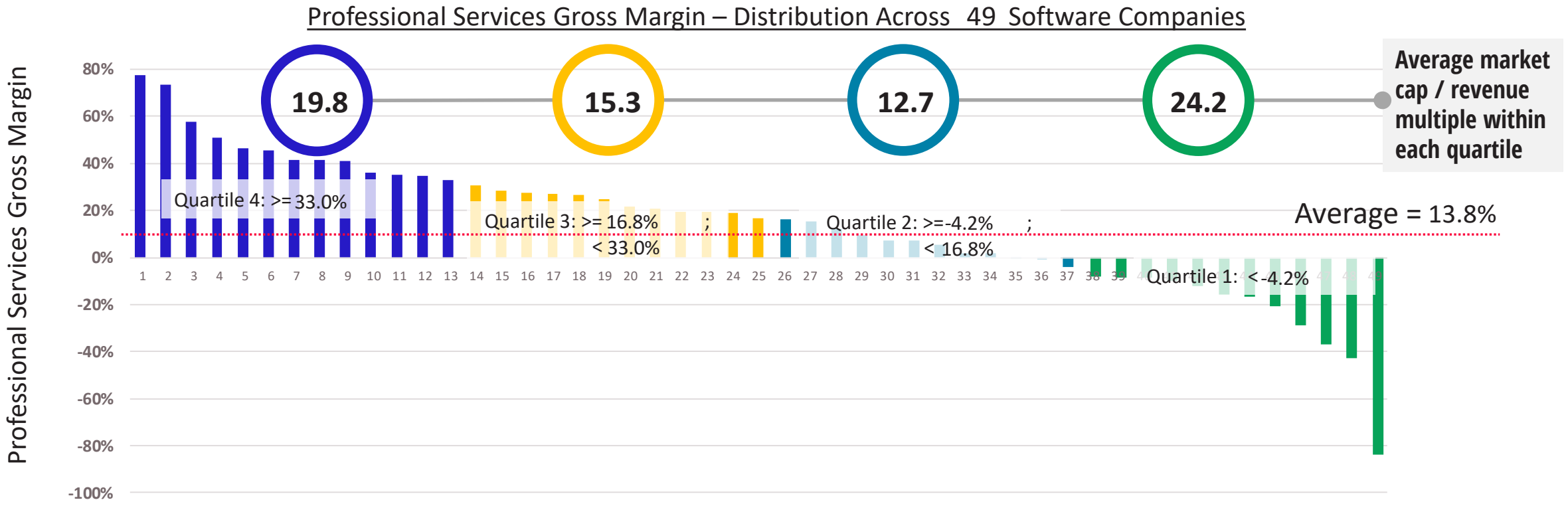
Operational Analysis
License gross margin

A number of software companies provide granular revenue and cost detail for subscription, license, maintenance, and professional services. This chart shows gross margin for the ***30*** *companies that provide detail on* ***license*** *revenue. The historical definition of license is perpetual license, which provides a customer with access to a version of software, and comes with a maintenance contract, providing access to bug fixes and future versions. License gross margin is typically very high, since there are typically not a lot operational costs associated with licenses. However, different companies may associate different costs to their license revenue. The average gross margin across this group is* ***86.3%****.*



Operational Analysis
Professional services gross margin

A number of software companies provide granular revenue and cost detail for subscription, license, maintenance, and professional services. This chart shows gross margin for the ***49*** *companies that provide detail on* ***professional services*** *revenue. The average professional services gross margin is* ***13.8%*** *.*
The median is ***16.8%*** *. In general, professional services is a loss leader, with many successful companies leveraging partners for a large part of this business. That being said, larger, well-established software companies deliver substantial gross margins from their services business.*

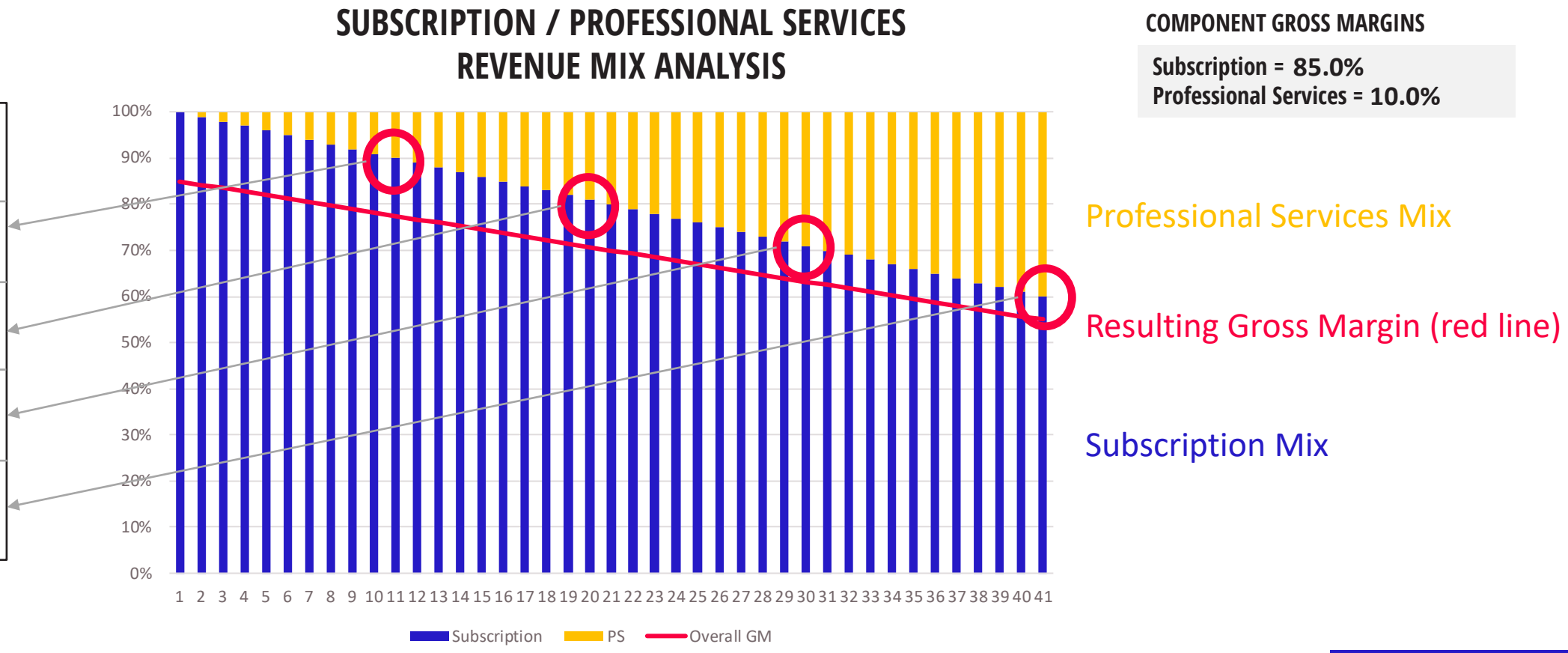


Operational Analysis

Gross margin subscription/professional services mix analysis

In general, the higher the gross margin of a software company, the more of a pure software company it is. Professional services are critical to success, but should be managed through a mix of in-house and ecosystem partners. This chart shows the sensitivity of gross margin to different revenue mixes of software and professional services.

MIX	GROSS MARGIN
90/10	**77.5%**
80/20	**70.0%**
70/30	**62.5%**
60/40	**55.0%**



COMPONENT GROSS MARGINS

Subscription = 85.0%
Professional Services = 10.0%

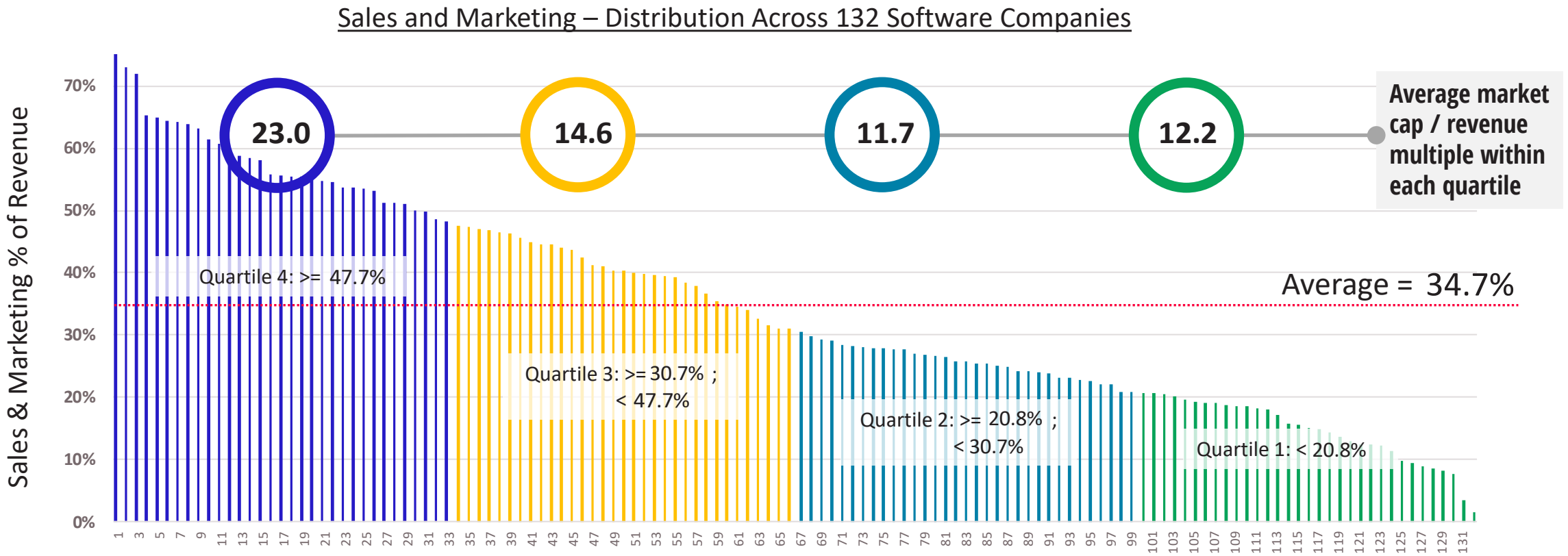
Professional Services Mix

Resulting Gross Margin (red line)

Subscription Mix

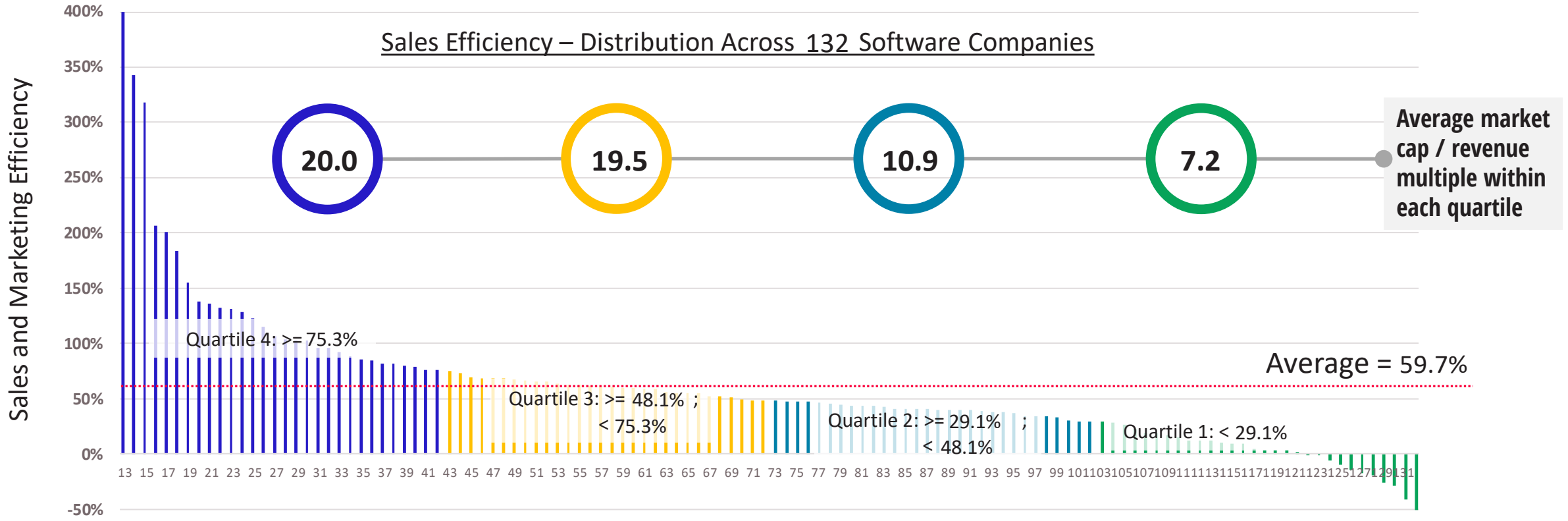
Operational Analysis
Sales and marketing % of revenue

*Software companies invest heavily in sales and marketing. The top quartile spenders are spending **47.7%** of revenue and above. The average spend is **34.7%** of revenue. The median is **30.7%**.*



Operational Analysis
Sales and marketing efficiency

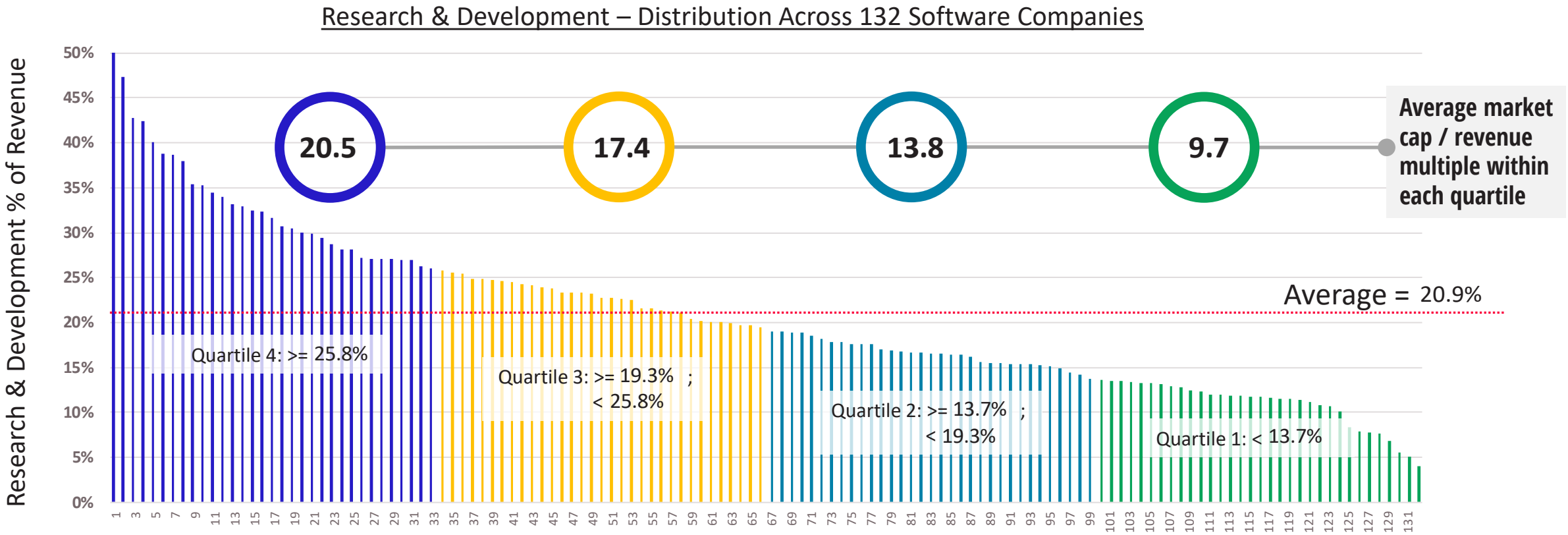
*This chart provides a simple measure of sales efficiency – defined as incremental annual revenue divided by the investment in sales and marketing in the year which the revenue was attained. This chart shows revenue in 2019 minus revenue in 2018 divided by sales and marketing investment in 2019. The chart shows results for **132** of the 132 companies, because some companies did not have public revenue reports for 2018. The average is **59.7%**. The median is **48.1%** . This means that $1 investment in sales and marketing delivers about 60 cents of incremental annual revenue.*



Notes:
1. Chart is truncated for readability.
2. Sales efficiency = 2019 fiscal year revenue minus 2018 fiscal year revenue divided by sales and marketing investment in 2019.

Operational Analysis
R&D % of revenue

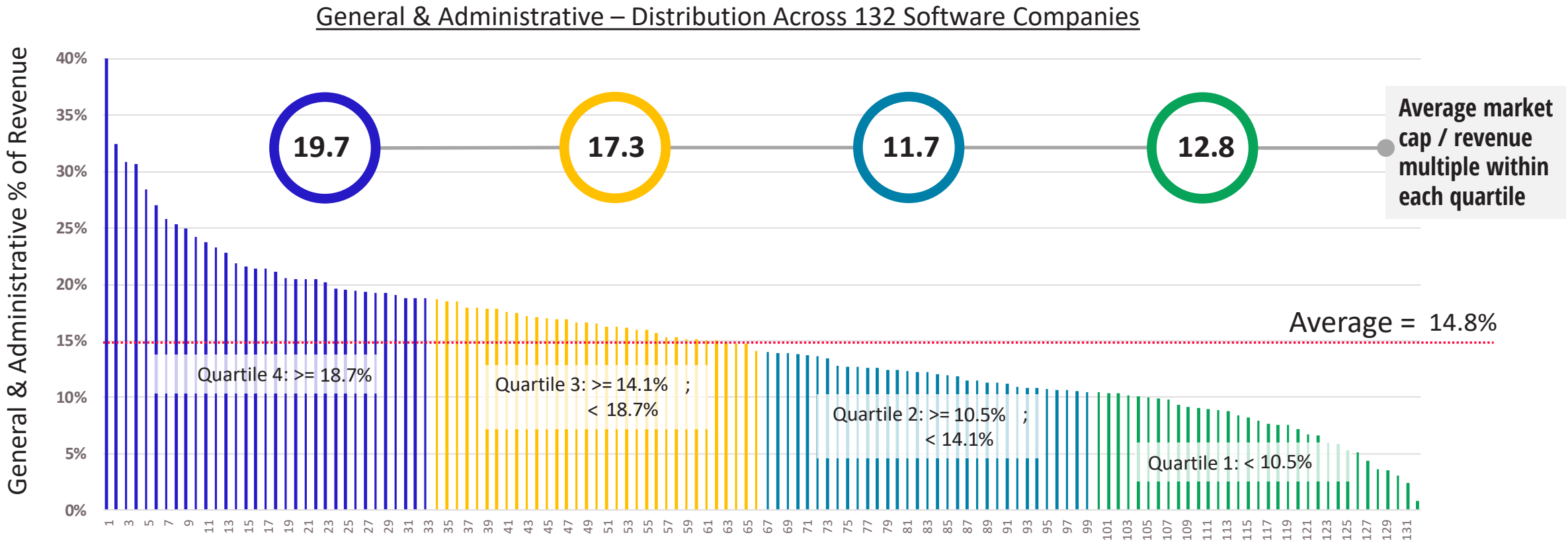
*Software is an R&D-intensive business. The average R&D investment as a percent of revenue is **20.9%** . The median is **19.3%** . The lowest quartile is **13.7%** and below. The top two quartiles of R&D spend have significantly higher market cap multiples.*



Notes:
1. Chart is truncated for readability.

Operational Analysis
G&A % of revenue

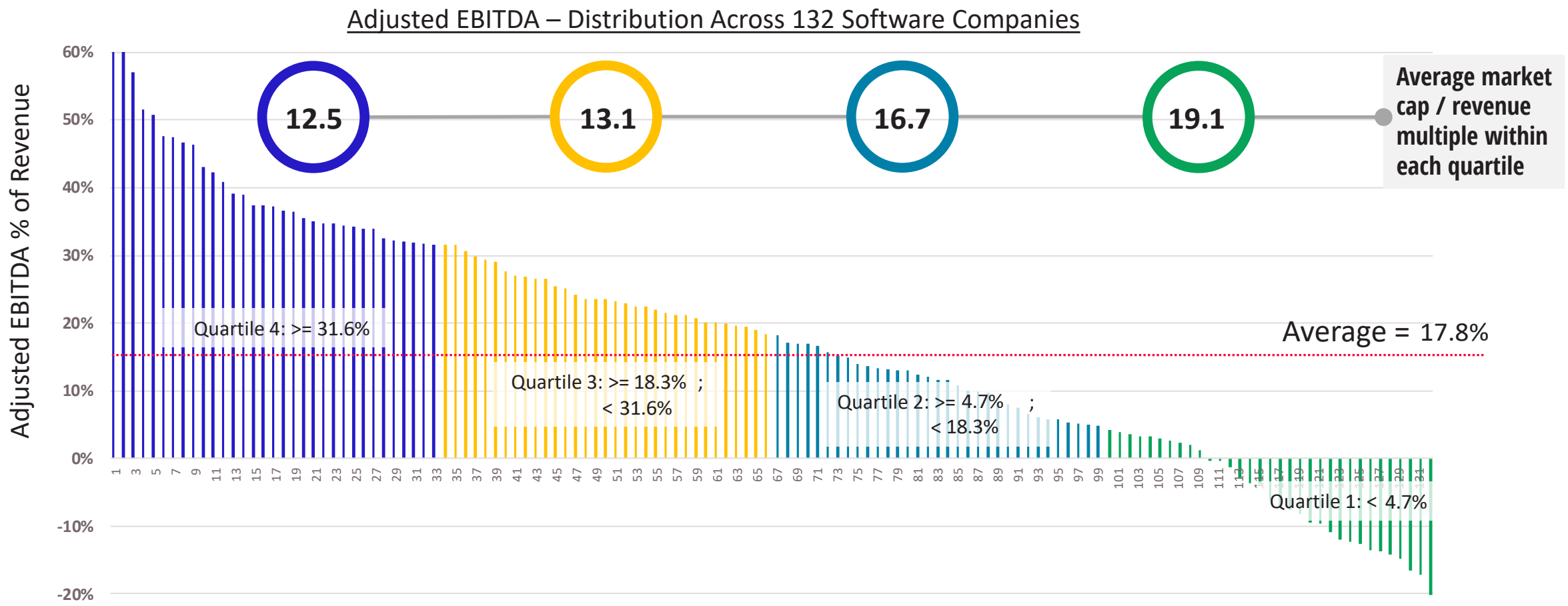
*The average G&A spend is **14.8%** of revenue. The median is **14.1%** . Smaller companies tend to spend significantly more on G&A as a percentage of revenue, indicating administrative leverage is gained with scale.*



Notes:
1. Chart is truncated for readability.

Operational Analysis
Adjusted EBITDA % of revenue

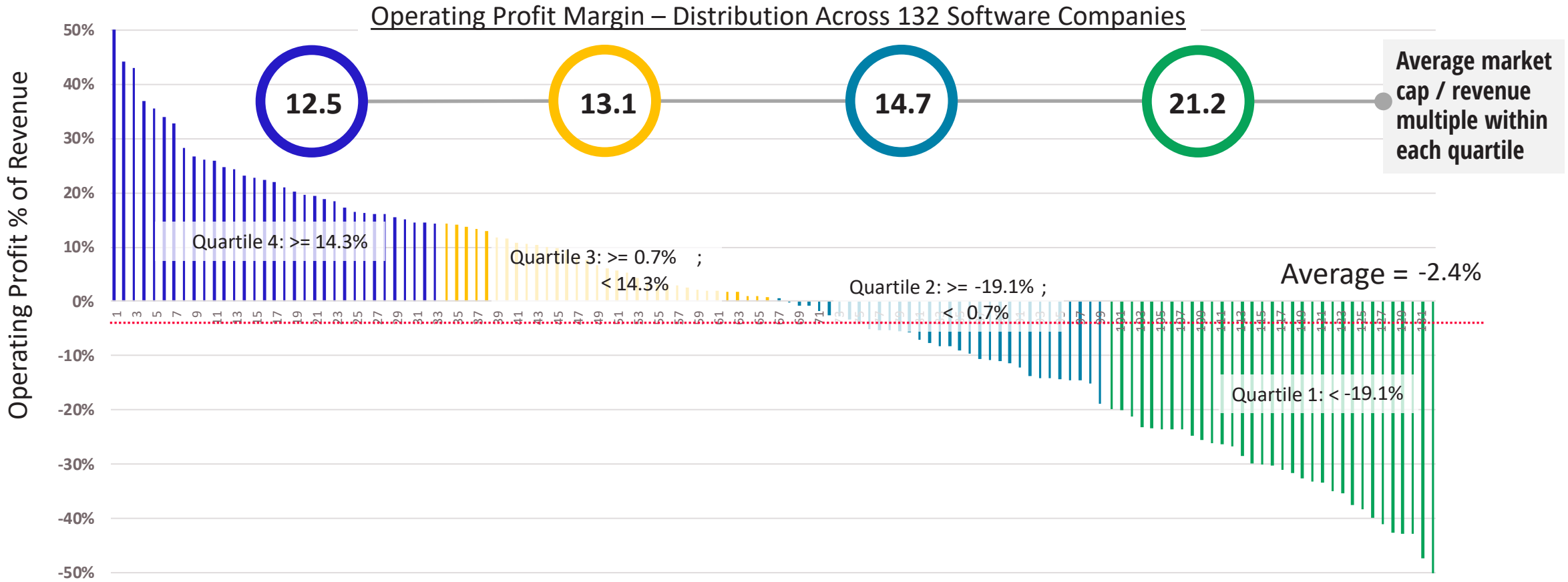
*The range of adjusted EBITDA is large – from positive **101.9%** to minus **-21.9%** . The average is **17.8%** and the median is **18.3%**.*



Notes:
1. Adjusted EBITDA is calculated as operating profit plus depreciation, amortization, and stock compensation.

Operational Analysis
Operating profit margin % of revenue

Operating profit is typically gross margin minus the operating costs of sales and marketing, research and development, and general and administrative expenses. It also typically includes depreciation, amortization, and stock-based compensation, which are non-cash charges. The average operating profit margin for software companies is ***-2.4%****.* ***73*** *of the companies lose money on an operating basis.*

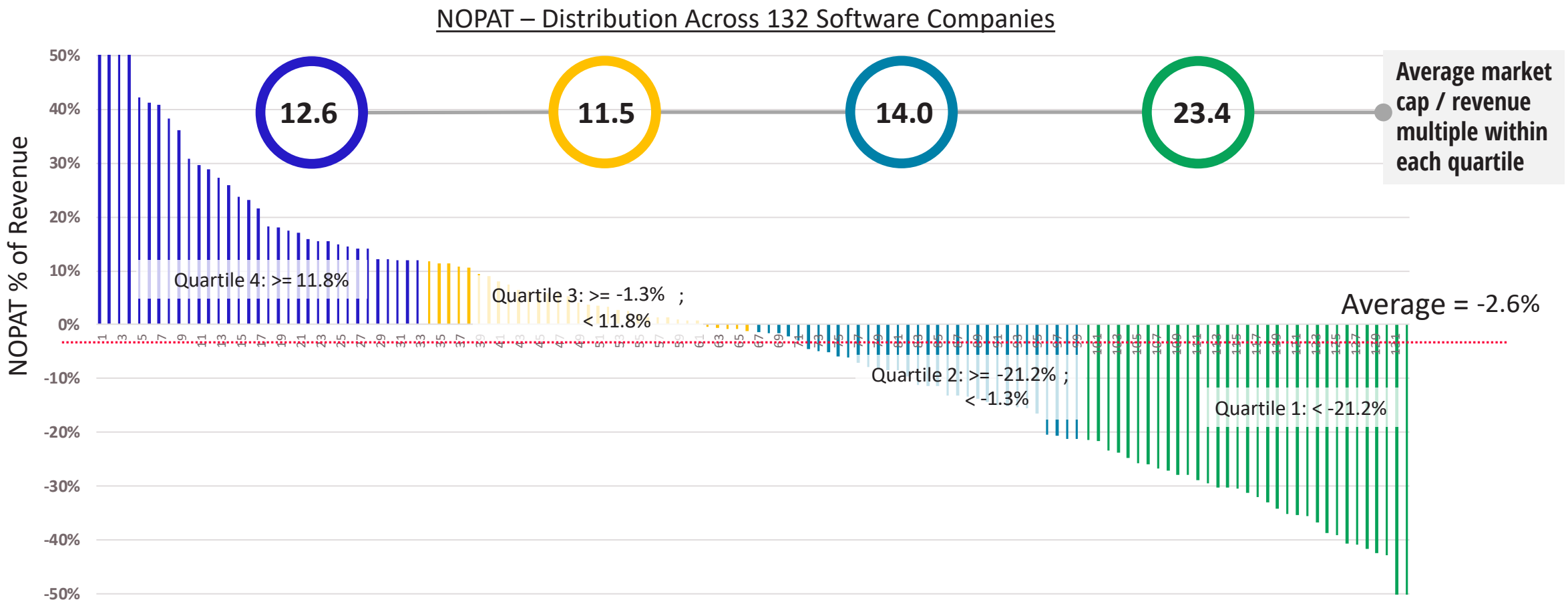


Notes:

1. Adjusted EBITDA is calculated as operating profit plus depreciation, amortization, and stock compensation.

Operational Analysis
Net profit margin

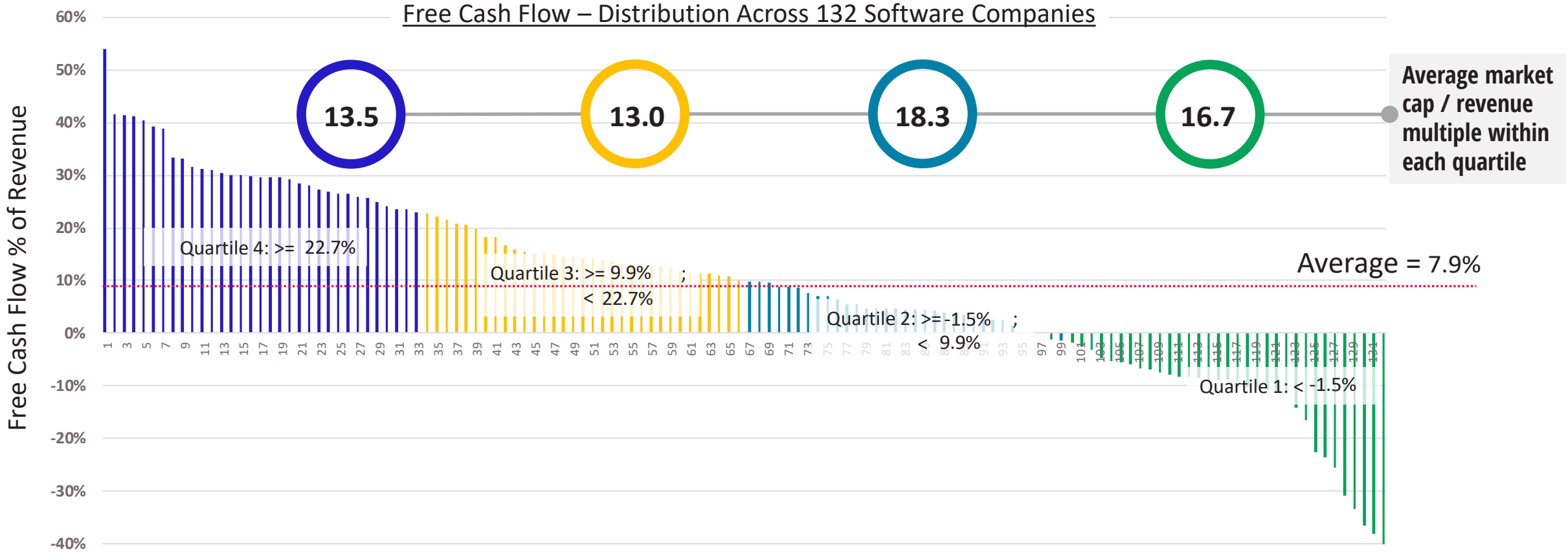
Net profit is seldom discussed in the context of software companies. The range of net profit is large, from greater than +50% to less than -50%. ***78*** *of the companies lose money using this traditional measure.*



Notes:
1. Chart is truncated for readability.

Operational Analysis
Free cash flow % of revenue

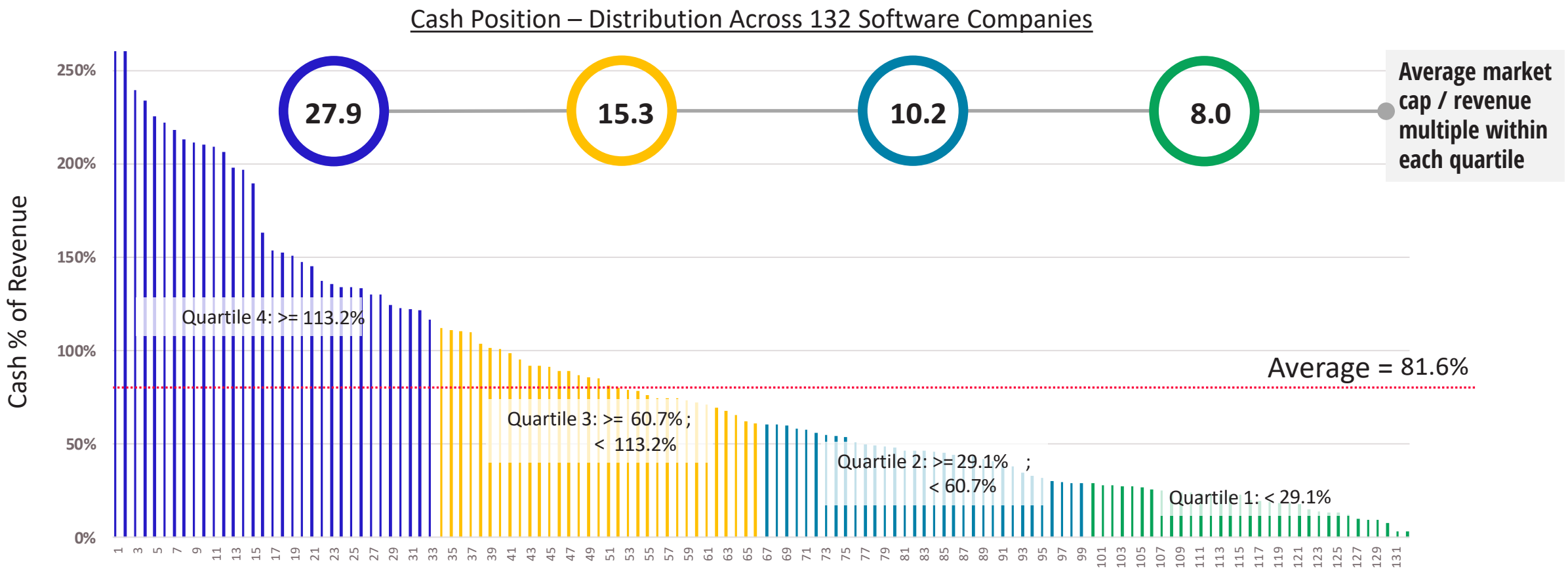
Software companies, in general, are good at generating cash. Average free cash flow is ***7.9%*** *of revenue. The median is* ***9.9%*** *. However,* ***38*** *of the companies operate with negative free cash flow.*



Notes:
1. Free cash flow = cash flow from operations minus CAPEX.

Operational Analysis
Cash % of revenue

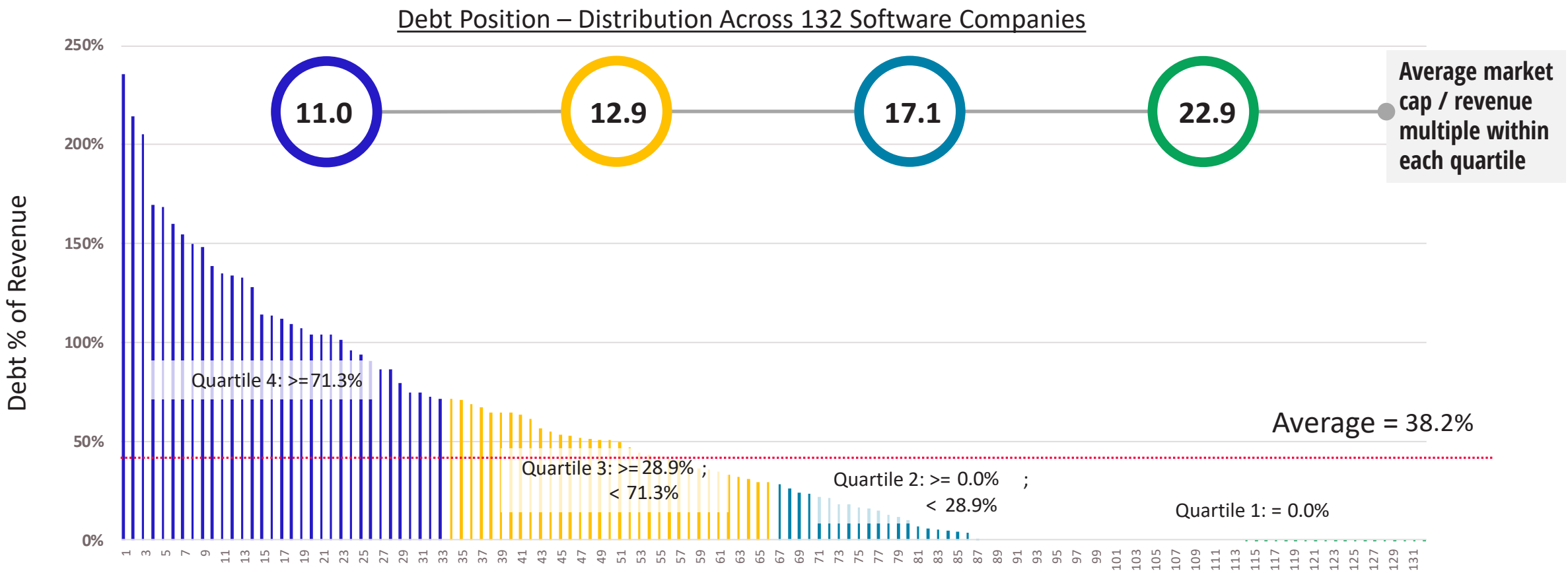
*In general, software companies are very well capitalized. The average cash position is **81.6%** of revenue. Cash position is one of the few statistical predictors of market cap multiple. Companies with strong cash positions have 3X the market cap multiple of those with weak cash positions.*



Notes:
1. Cash includes cash, cash equivalents, and marketable securities.

Operational Analysis
Total debt % of revenue[1]

*In general, software companies do not carry a lot of debt. The average debt position is **38.2%** of revenue. **33** of the companies have **zero** debt.*

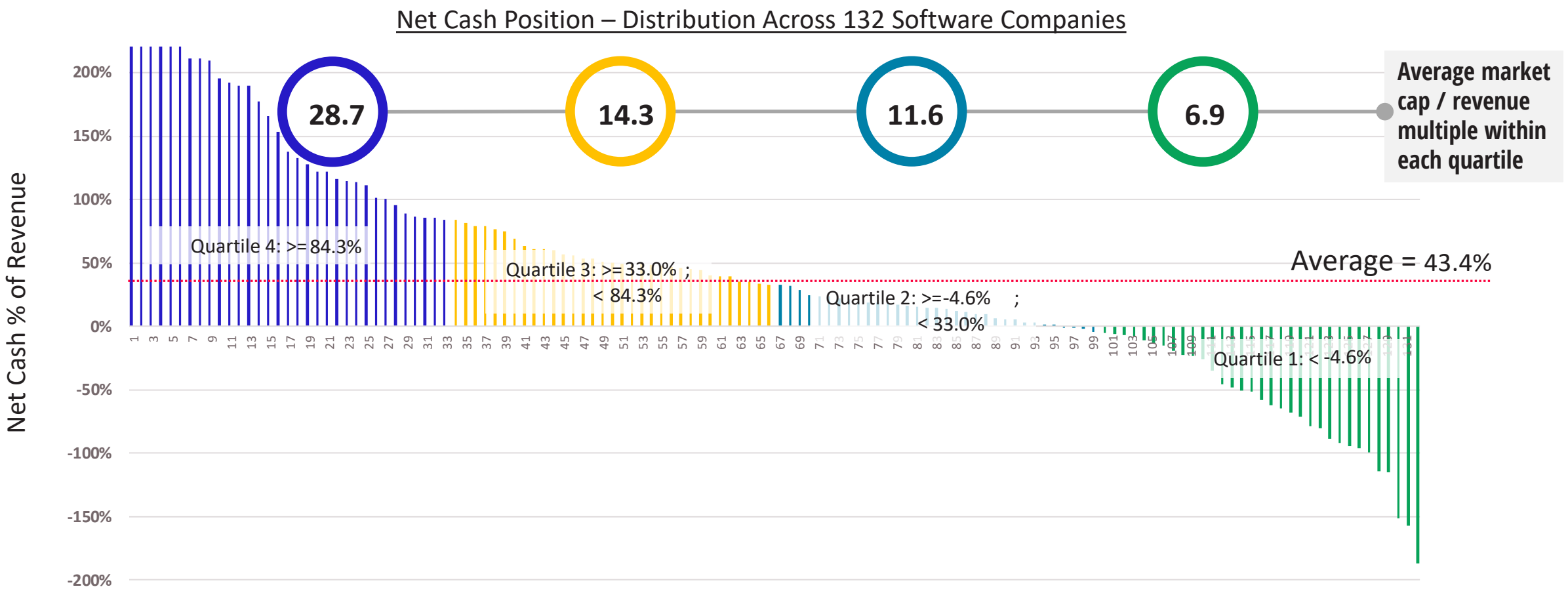


Notes:

1. Total debt = long-term debt plus short-term debt plus current long-term debt.

Operational Analysis
Net cash % of revenue

*In general, software companies are very well capitalized. The average net cash (cash minus debt divided by revenue) position is **43.4%** of revenue. Companies with strong net cash positions have 3X the market cap multiple of those with weaker net cash positions.*

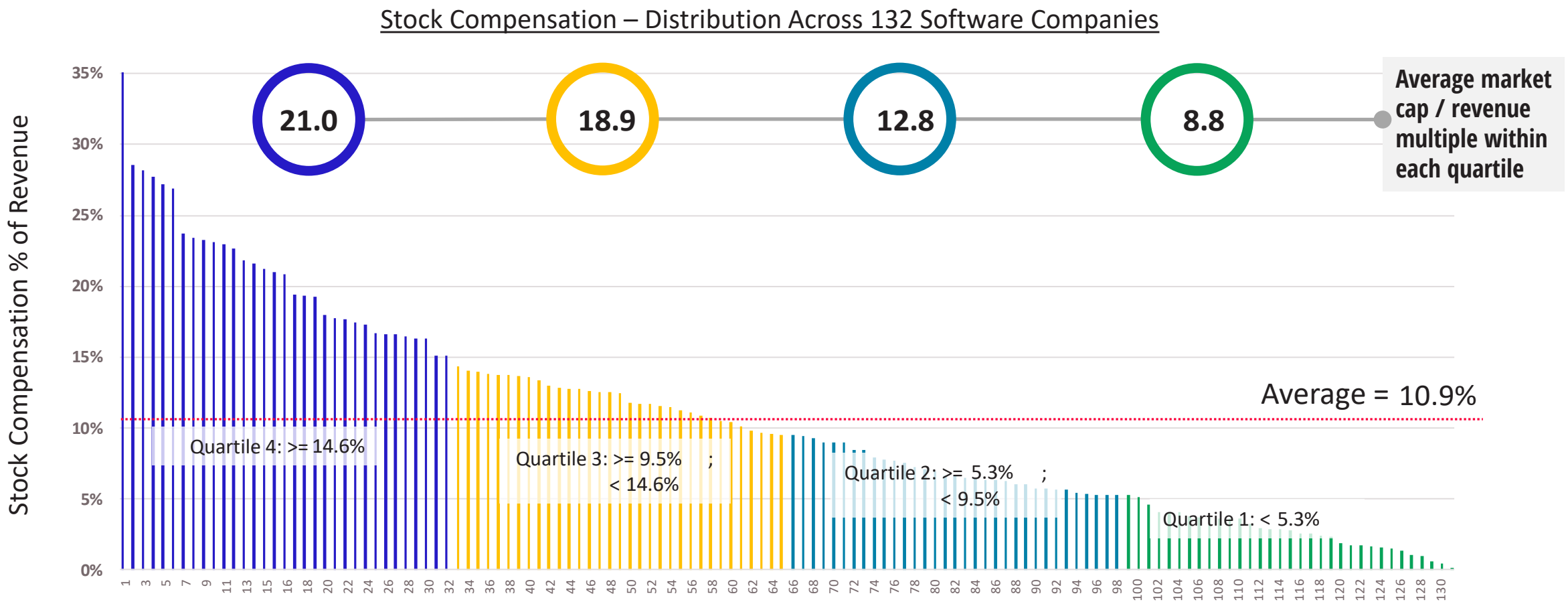


Notes:

1. Net cash = cash on hand minus total debt. Cash includes cash, cash equivalents, and marketable securities.

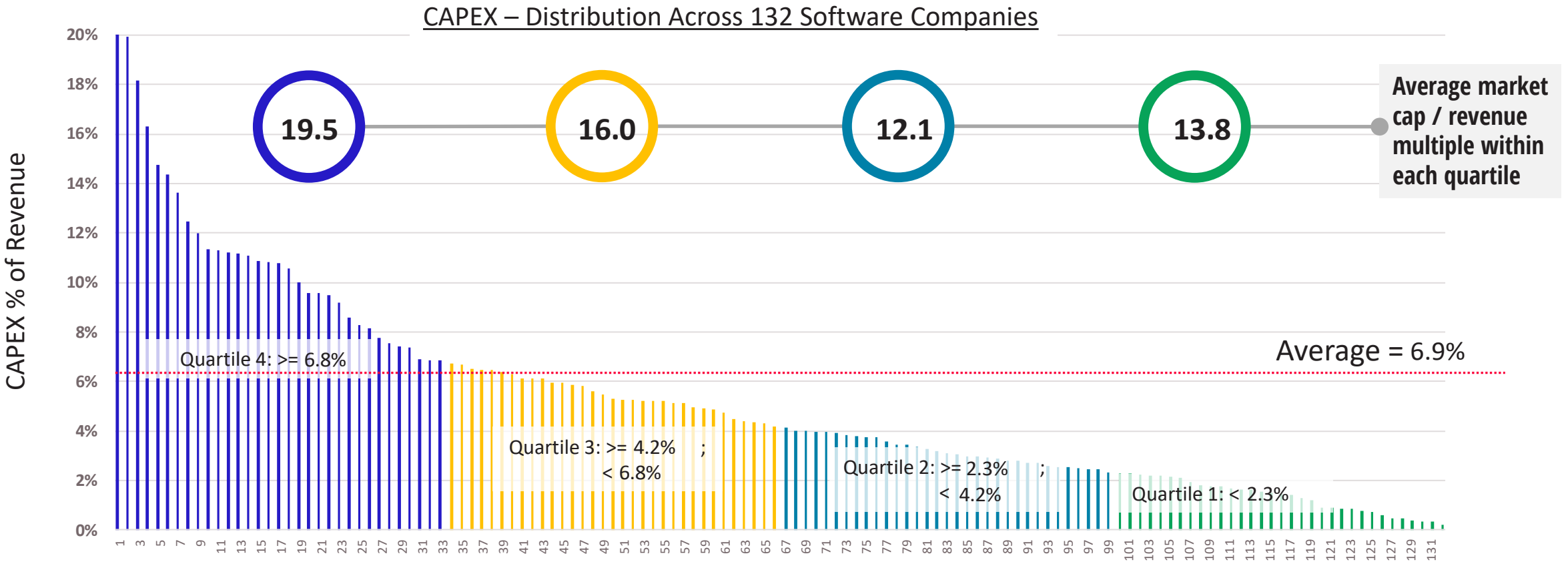
Operational Analysis
Stock compensation % of revenue

*Software companies employ a large amount of stock compensation. Average stock compensation as a percentage of revenue is **10.9%** . The median is **9.5%** . Stock compensation is considered a non-cash charge but is included in the cost buckets of the income statement. Companies in the upper two quartiles of stock compensation have market cap multiples 3X of those of the lowest quartile.*



Operational Analysis
Capital expenditure (CAPEX) % of revenue

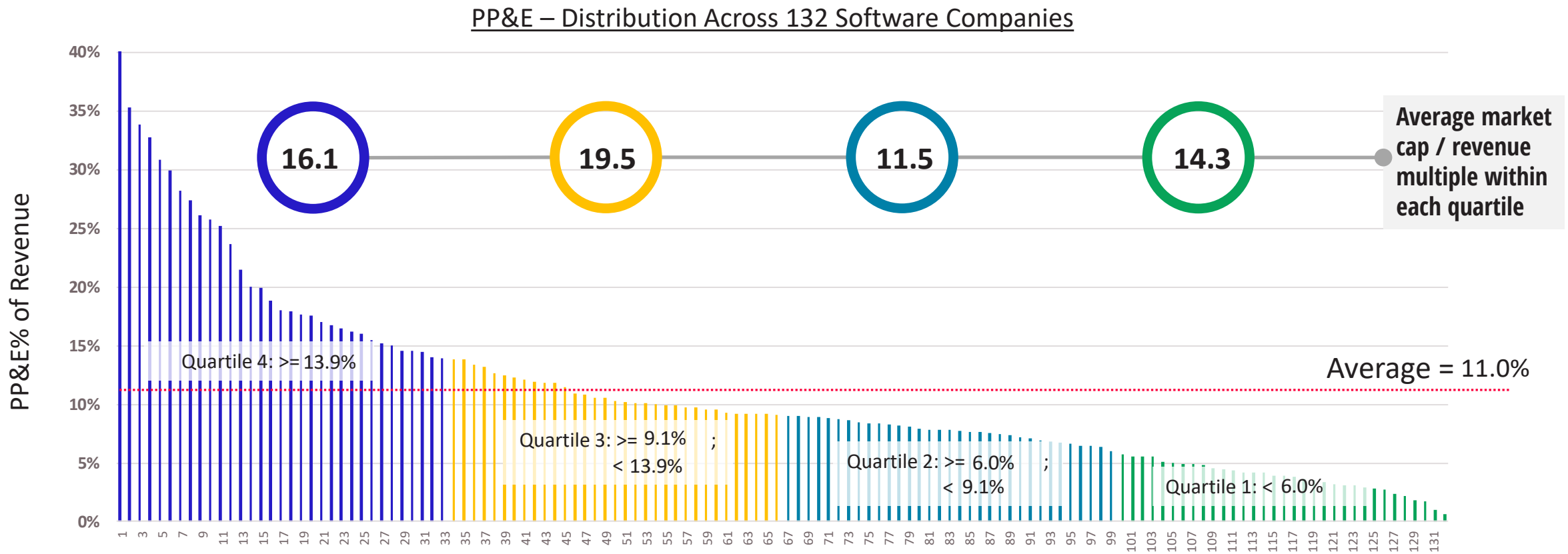
Software companies have average capital expenses of ***6.9%*** *of revenue on an annual basis. Most of this goes towards computer equipment, offices, and data centers.*



Operational Analysis

Property, plant, and equipment (PP&E) % of revenue

Software companies are asset-light businesses. Average PP&E investment as a percentage of revenue is ***11.0%*** *. This compares with traditional industries that must invest 30% to 300% of revenue in PP&E.*

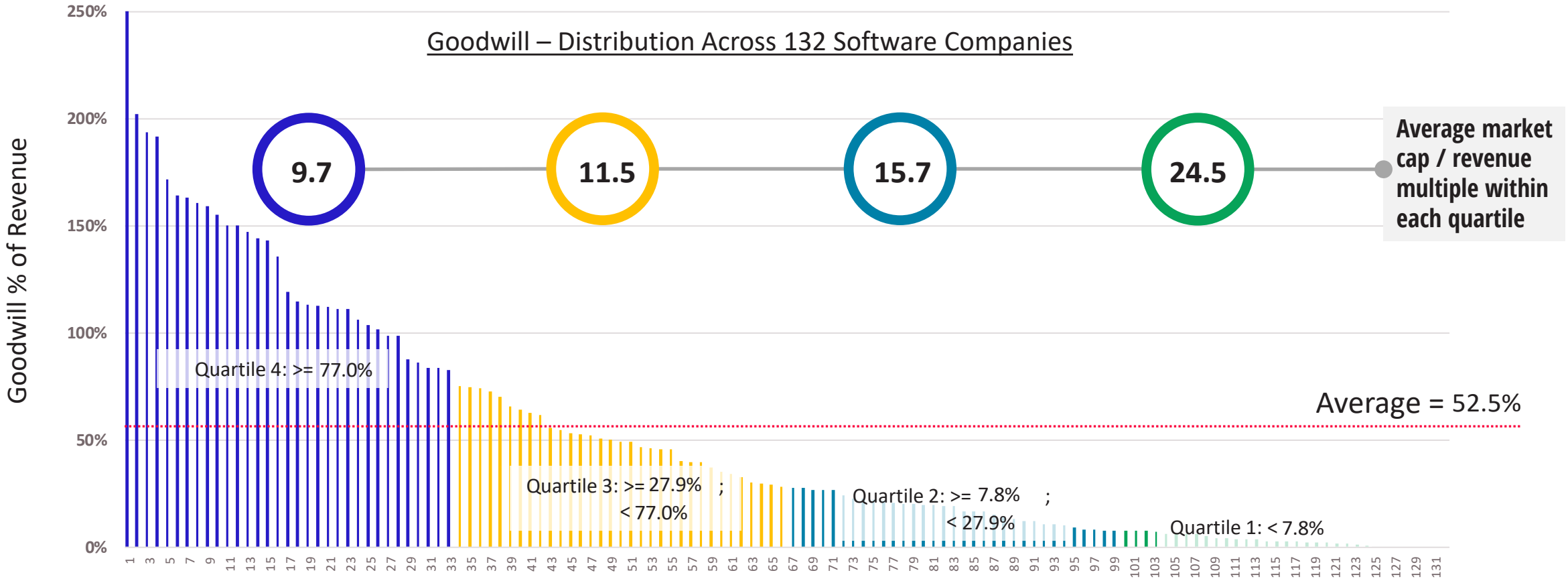


Notes:

1. Chart is truncated for readability.

Operational Analysis
Goodwill % of revenue

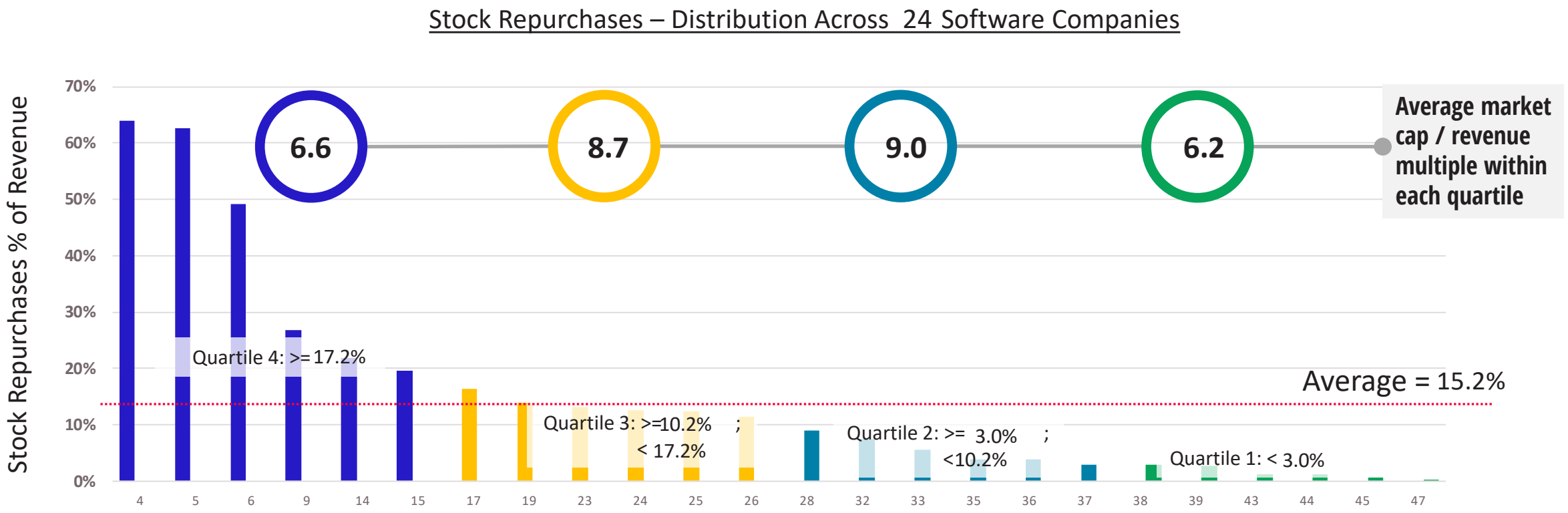
Goodwill as a percentage of revenue is a proxy for the acquisition intensity of a company. As software companies grow larger, a higher percentage of their revenue and growth comes through acquisition. Average goodwill as a percentage of revenue for the 132 companies is ***52.5%*** *. Only* ***8*** *of the companies have zero goodwill, indicating that group has never made acquisitions.*



Notes:
1. Chart is truncated for readability.

Operational Analysis
Stock repurchases % of revenue

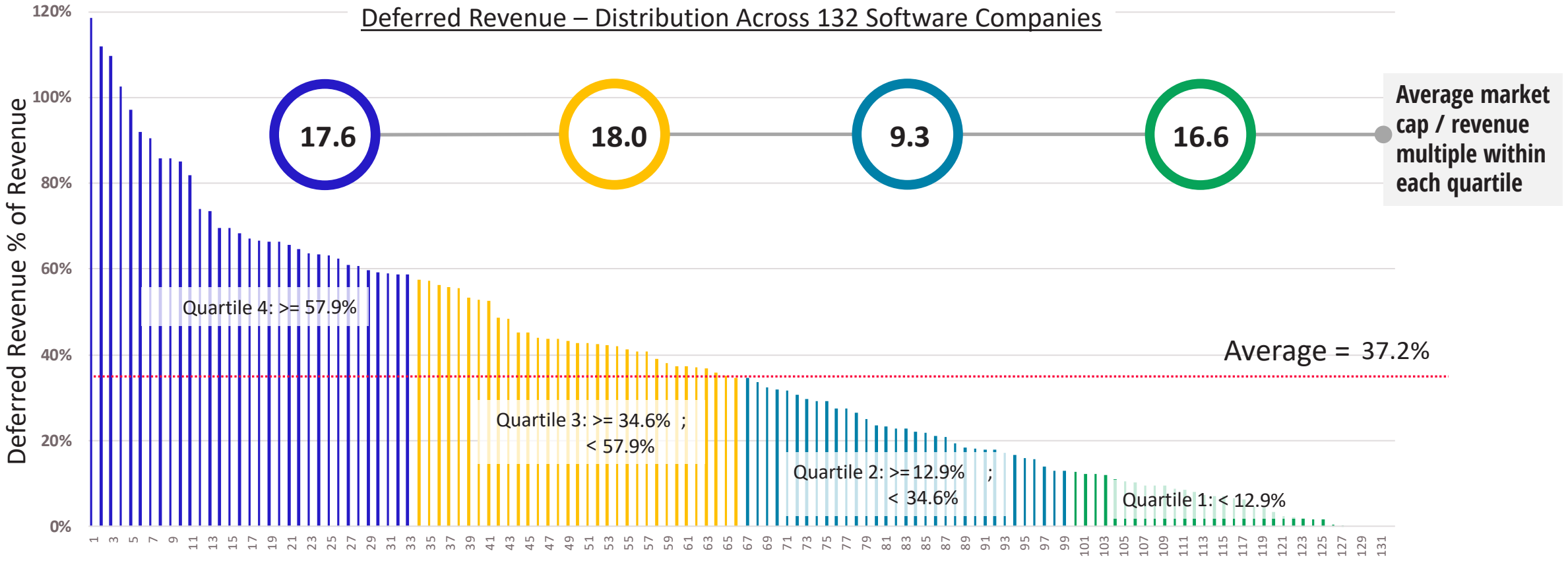
24 *of the companies executed stock repurchases in their most recent fiscal year. For this cohort, average repurchases were* ***15.2%*** *of revenue. Some companies with high levels of repurchases issued debt to execute the repurchases . Companies in this group tend to be larger companies and have market cap multiples below the average for software companies.*



Notes:
1. Chart is truncated for readability.

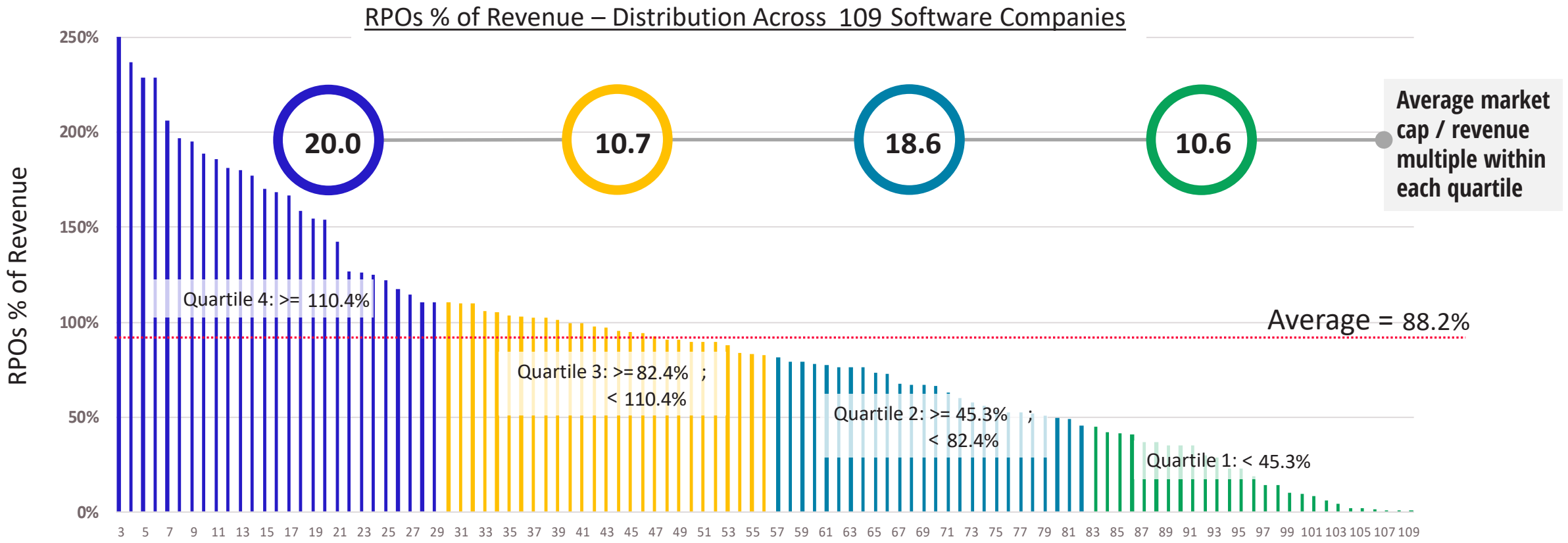
Operational Analysis
Deferred revenue % of revenue

Deferred revenue is revenue that has been booked for which work has not yet been completed and thus cannot yet be include in the income statement. It is sometimes confused with backlog, but cannot be equated with backlog. The average deferred revenue as a percentage of total revenue is ***37.2%*** *. The median is* ***34.6%*** *. The wide range of values could mean that different software companies are running different models, with some completely in the SaaS category and some still in the perpetual license (or on-premise subscription) category.*



Operational Analysis
Remaining performance obligations (RPOs) % of revenue

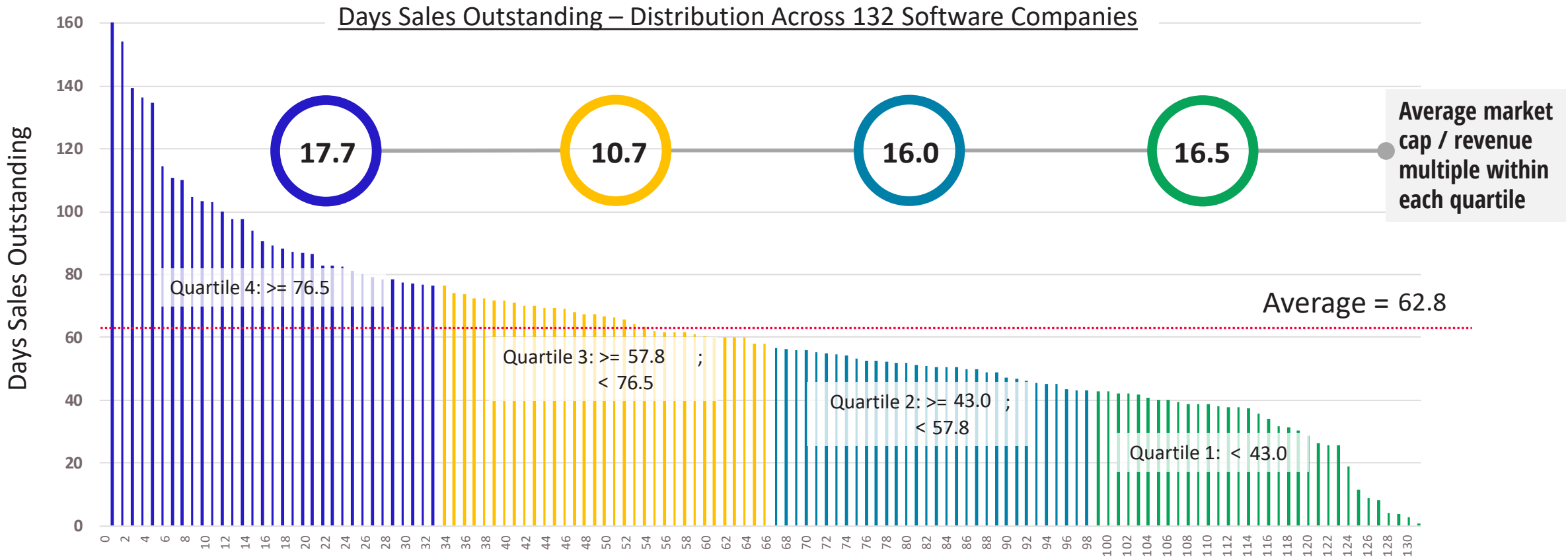
Remaining performance obligations are a measure of the backlog of business that a company has booked but not yet delivered. This is essentially the amount of future revenue that has already been booked. Software companies have started disclosing RPOs in the past couple of years as part of compliance to new accounting standards. RPO information is available for ***109*** *of the companies in the analysis. Average RPOs as a percent of revenue is* ***88.2%*** *.*



Notes:
1. Chart is truncated for readability.

Operational Analysis
Days sales outstanding (DSO)

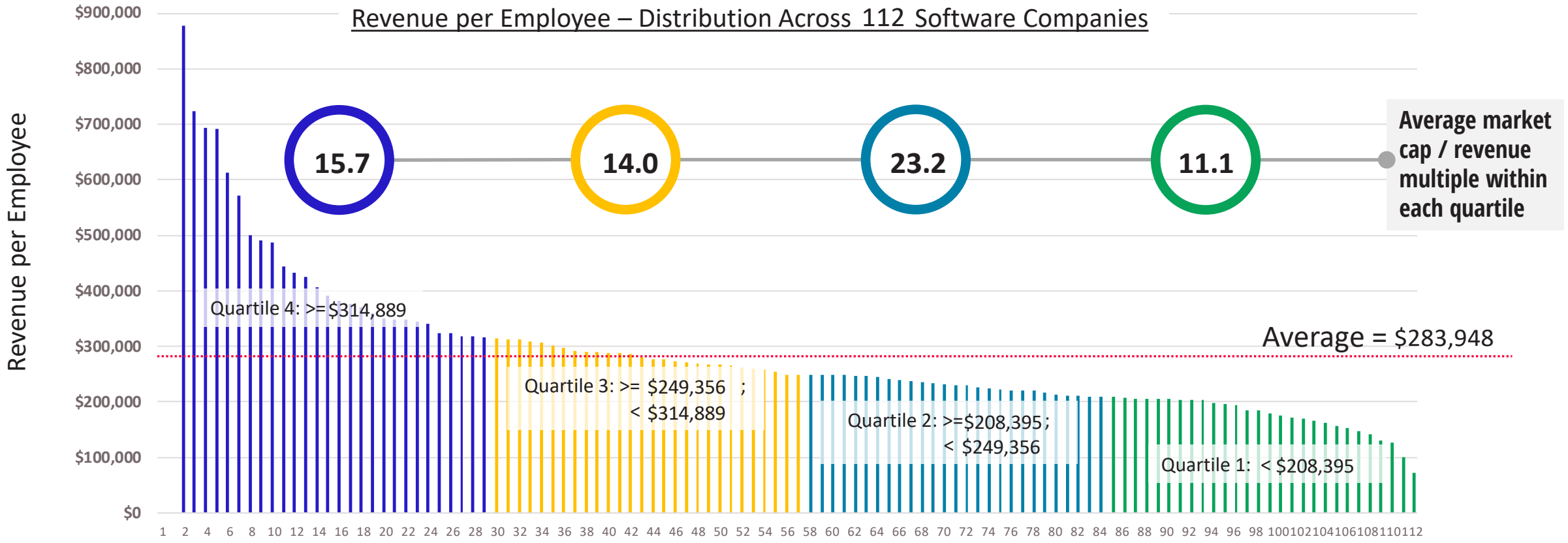
Days sales outstanding is an operational measure of cash collection. It represents the number of days it takes to get paid once a PO is raised. The average is ***62.8*** *days; the median is* ***57.8*** *days. In many software companies, DSO is highly seasonal, with measurements at the end of a fiscal year significantly higher than normal due to seasonally high end-of-year bookings performance. The numbers shown here are taken at the middle of the year to minimize seasonality issues.*



Notes:
1. Chart is truncated for readability.

Operational Analysis
Revenue per employee

Revenue per employee is the amount of annual revenue that is generated per full-time employee (not including contractors). Not all companies publish number of employees in their financial statements; ***112*** *of the companies in the data set provide this information. The average revenue per employee across these software companies is* ***$283,948*** *. The median is* ***$249,356*** *.*



Historical Analysis

Charts that provide analysis of key variables across all companies for the ten years from 2010 to 2019.

Historical Analysis

Summary table of all variables, 2010-2019

AVERAGES	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Growth Rate (YOY)	24.4%	24.6%	24.3%	22.2%	26.2%	25.1%	26.0%	22.5%	19.3%	13.2%
Gross Margin%	69.4%	69.2%	68.8%	68.3%	67.7%	67.6%	68.1%	69.0%	70.1%	68.8%
Sales & Marketing%	35.2%	35.7%	36.0%	36.6%	35.5%	36.4%	33.8%	33.8%	30.9%	29.0%
R&D%	20.6%	20.8%	19.9%	19.7%	18.1%	18.5%	17.5%	17.1%	15.5%	15.2%
G&A%	14.9%	15.1%	14.6%	14.4%	14.3%	14.1%	13.2%	12.6%	11.6%	11.6%
Operating Margin%	-2.7%	-4.3%	-3.6%	-4.7%	-1.7%	-2.9%	1.9%	3.7%	10.1%	11.2%
NOPAT%	-4.3%	-6.1%	-6.6%	-7.8%	-5.4%	-6.0%	-0.9%	0.8%	7.1%	8.5%
Free Cash Flow%	9.3%	8.8%	7.8%	6.5%	8.6%	7.3%	8.6%	11.7%	15.9%	18.2%
Stock Compensation%	9.9%	10.1%	8.0%	7.6%	6.6%	6.1%	4.5%	4.2%	3.6%	3.5%
Cash%	74.9%	66.7%	58.7%	62.0%	68.2%	71.2%	66.3%	58.0%	51.4%	56.3%
Debt%	31.9%	26.7%	24.7%	20.3%	23.7%	21.0%	17.0%	12.2%	9.8%	10.5%
Net Cash%	43.0%	38.4%	32.1%	41.8%	44.5%	50.3%	48.5%	45.7%	41.6%	44.9%
EBITDA%	6.2%	4.0%	4.7%	2.8%	5.0%	3.4%	7.9%	9.8%	15.4%	16.8%
adjEBITDA%	16.0%	14.2%	12.7%	10.4%	11.6%	9.6%	12.4%	14.5%	19.0%	20.3%
CAPEX%	5.3%	5.1%	4.9%	5.5%	5.2%	5.8%	5.7%	4.9%	4.8%	3.4%
PP&E%	11.5%	11.3%	11.3%	11.2%	11.3%	11.4%	10.7%	10.0%	9.1%	9.0%
Goodwill%	51.5%	44.5%	46.0%	45.4%	41.5%	41.6%	42.3%	38.7%	42.7%	45.5%
Deferred Revenue%	37.8%	36.8%	34.3%	32.0%	32.1%	30.3%	29.0%	27.5%	26.7%	20.7%
RPO%	86.4%	90.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sales Efficiency%	57.8%	69.3%	59.5%	56.9%	72.3%	61.5%	57.2%	53.0%	63.6%	50.6%
ROA%	-1.6%	-2.2%	-2.5%	-1.1%	-0.5%	-1.2%	0.9%	3.4%	7.4%	9.0%
Cap Ratio(end of year)	9.2	8.0	6.6	5.8	5.8	6.2	7.6	4.9	4.6	5.0
DSO%	63.0	63.5	59.4	54.2	53.4	56.0	59.8	62.8	57.8	54.3
Revenue per employee	$276,522	$277,553	$263,758	$256,996	$249,274	$242,115	$286,117	$273,773	$322,171	$320,692
Subscription GM%	72.3%	71.5%	70.0%	70.8%	N/A	N/A	N/A	N/A	N/A	N/A
License GM%	86.3%	88.4%	88.2%	87.8%	N/A	N/A	N/A	N/A	N/A	N/A
Maintenance GM%	77.1%	76.7%	75.7%	73.5%	N/A	N/A	N/A	N/A	N/A	N/A
Prof Services GM%	9.9%	12.8%	13.8%	25.6%	N/A	N/A	N/A	N/A	N/A	N/A
Number of companies	131	132	126	119	106	99	91	82	68	60

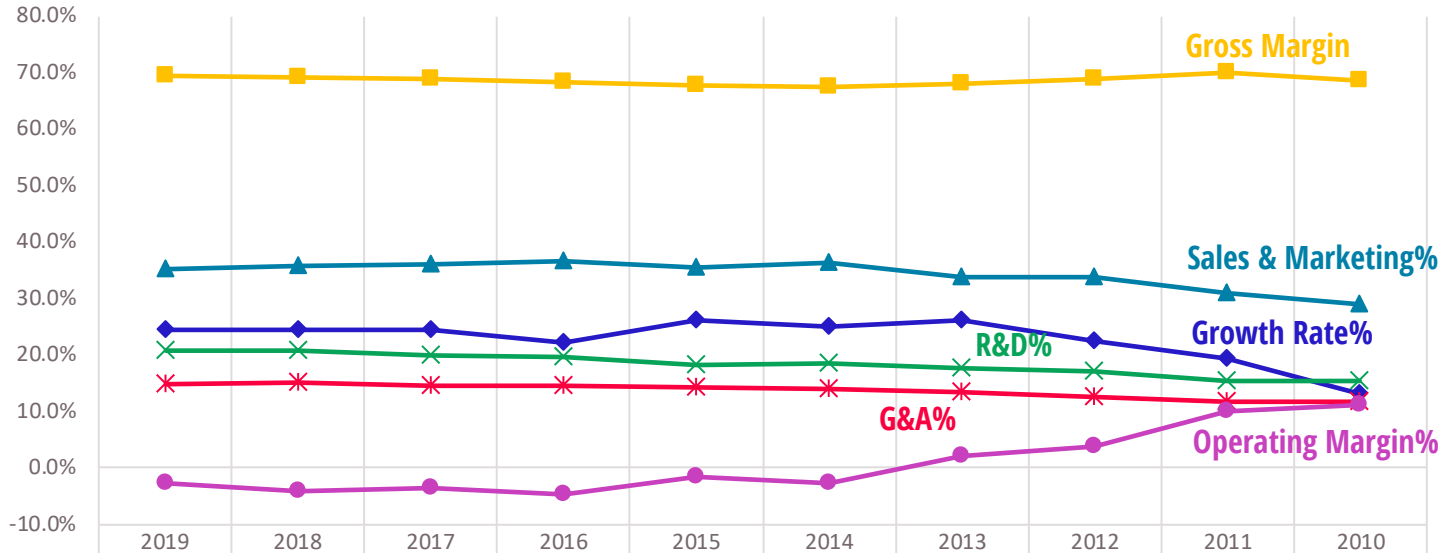
NOTES & INSIGHTS

- This chart shows the average of the percentages for all variables for all companies for the years 2010-2019.
- Note at the bottom of the chart the number of companies that are included in the view each year. The number of companies starts with 60 in 2010 and grows to 128 in 2019 as new companies are added through IPOs, making their results public and available. (An additional 4 have been added in 2020, making the total number of companies in the data set 132.
- All percentages are percentages of revenue. NOPAT= net operating profit after taxes; EBITDA is operating income plus depreciation and amortization. Adjusted EBITDA is EBITDA plus stock compensation.
- PP&E is property, plant, and equipment and is intended to show the asset-light (or asset intensity) of software companies for comparison to other industries.
- Goodwill is intended to act as a proxy for the acquisition-intensity of the industry.
- RPO = remaining performance obligations and is a measure of the backlog of business that has been booked for which revenue will be generated in the future. RPO has just started being reported in the past couple of years due to the introduction of new accounting standards (IFRS 15 and ASC 606)
- Sales efficiency is a simple measure calculated as revenue in the current year minus revenue in the previous year divided by the investment in sales and marketing in the current year.
- Subscription gross margin, license gross margin, maintenance gross margin, and professional services gross margin show the gross margin for those revenue streams for those companies that break out this information separately on their income statements. These data are not available before 2016 due to a change in XBRL tagging. This may be fixed in future versions of this report
- The number of companies is the number of companies in the data set in any given year. Most variables have values for all companies in a give year, but a small subset do not, thus the smaller number is used for those variables in those years.

Historical Analysis

Income statement yearly averages, 2010-2019[1]

INCOME STATEMENT YEARLY AVERAGES, 2010-2019



	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Growth Rate (YOY)	24.4%	24.6%	24.3%	22.2%	26.2%	25.1%	26.0%	22.5%	19.3%	13.2%
Gross Margin%	69.4%	69.2%	68.8%	68.3%	67.7%	67.6%	68.1%	69.0%	70.1%	68.8%
Sales & Marketing%	35.2%	35.7%	36.0%	36.6%	35.5%	36.4%	33.8%	33.8%	30.9%	29.0%
R&D%	20.6%	20.8%	19.9%	19.7%	18.1%	18.5%	17.5%	17.1%	15.5%	15.2%
G&A%	14.9%	15.1%	14.6%	14.4%	14.3%	14.1%	13.2%	12.6%	11.6%	11.6%
Operating Margin%	-2.7%	-4.3%	-3.6%	-4.7%	-1.7%	-2.9%	1.9%	3.7%	10.1%	11.2%
Number of companies	131	132	126	119	106	99	91	82	68	60

NOTES & INSIGHTS

- Remarkable year-to-year consistency in all variables for the six years 2014-2019.
- In the years 2010-2011 the industry operated with significantly higher operating margins, with lower growth rates and lower investments in sales and marketing, R&D, and G&A. This may indicate a different economic environment emerging from the great recession.
- 2011-2012 seem to be transition years, as the industry started to invest significantly more in sales and marketing, R&D, and G&A and run lower operating margins. This also is the beginning of a period of significant number of IPOs, increasing the number of companies in the data set.
- The average software company in 2019 operated with thirteen percentage points more investment in sales and marketing, R&D, and G&A than in 2010.

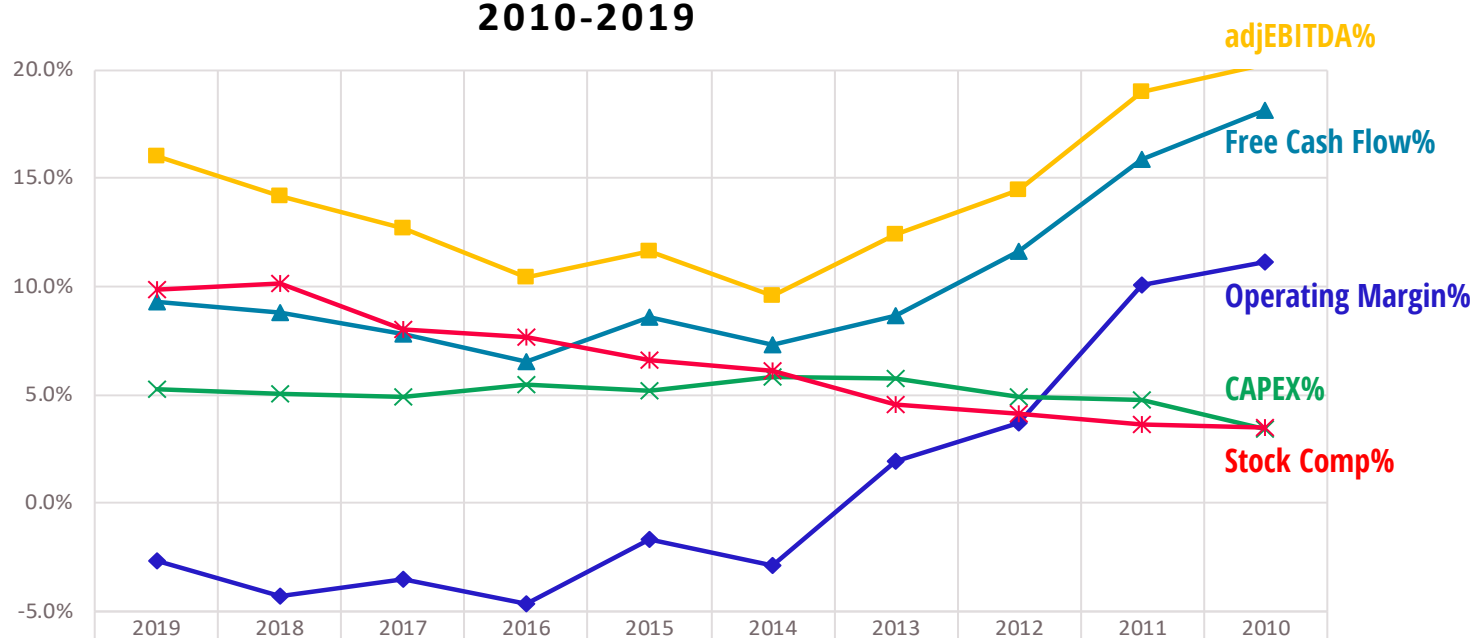
Notes:

1. Yearly averages represent the average of the percentages for all companies in a given year. The number of companies changes as time goes on and additional companies become public.

Historical Analysis

Profit, cash flow, stock comp, CAPEX, yearly averages, 2010-2019

PROFIT, CASH FLOW, STOCK, CAPEX: YEARLY AVERAGES, 2010-2019



	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Operating Margin%	-2.7%	-4.3%	-3.6%	-4.7%	-1.7%	-2.9%	1.9%	3.7%	10.1%	11.2%
adjEBITDA%	16.0%	14.2%	12.7%	10.4%	11.6%	9.6%	12.4%	14.5%	19.0%	20.3%
Free Cash Flow%	9.3%	8.8%	7.8%	6.5%	8.6%	7.3%	8.6%	11.7%	15.9%	18.2%
CAPEX%	5.3%	5.1%	4.9%	5.5%	5.2%	5.8%	5.7%	4.9%	4.8%	3.4%
Stock Compensation%	9.9%	10.1%	8.0%	7.6%	6.6%	6.1%	4.5%	4.2%	3.6%	3.5%
Number of companies	131	132	126	119	106	99	91	82	68	60

NOTES & INSIGHTS

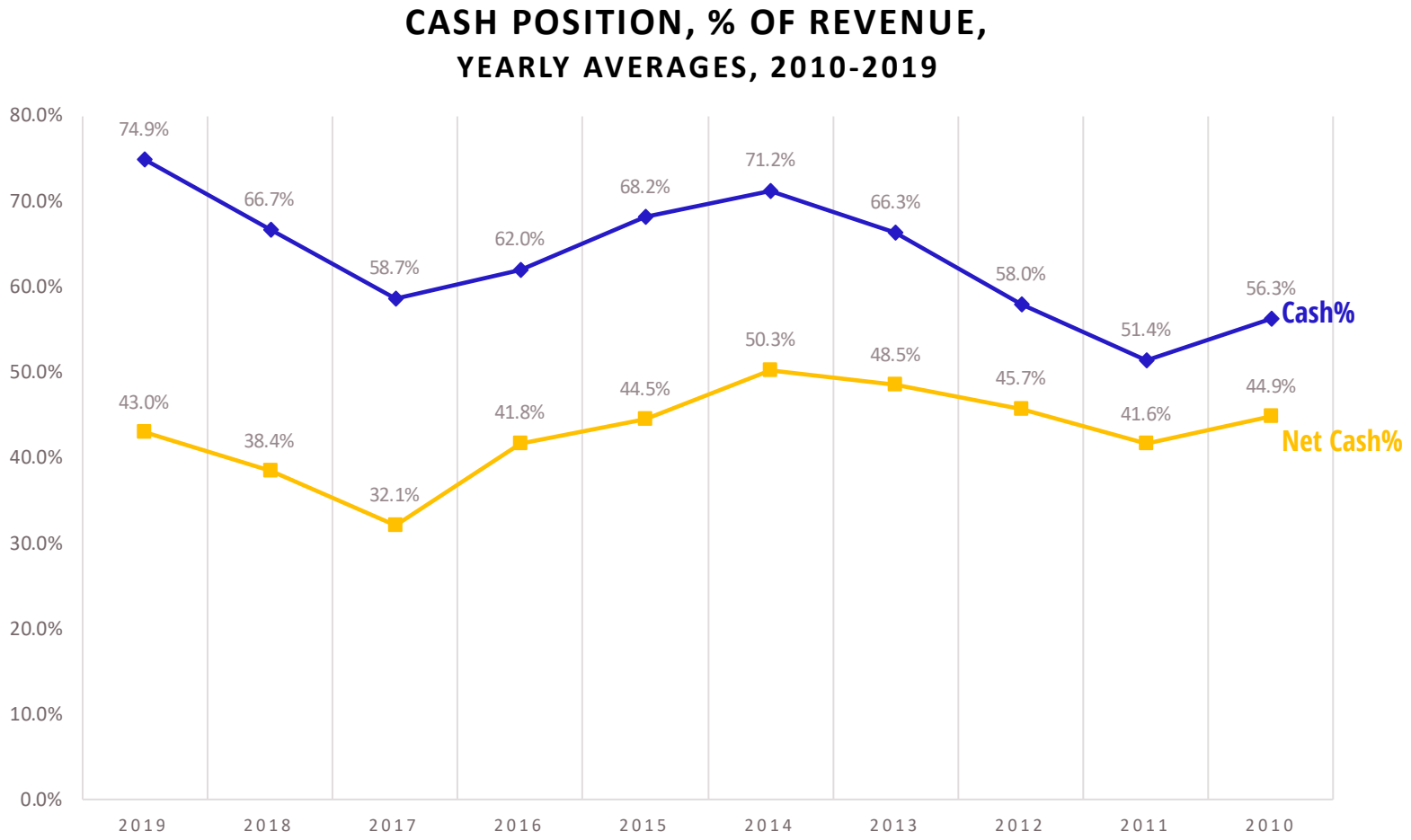
- Average operating margins have declined steadily over the decade, as investment increased in sales and marketing, R&D, and G&A. About half of this decline can be explained by a concurrent steady rise in stock-based compensation.
- Average adjEBITDA ranges from roughly 10% of revenue to 20% of revenue. Free cash flow ranges from 7% to 18% and follows the same curve as adjEBITDA, as one might expect.
- Average CAPEX across the years is remarkably consistent at about 5% of revenue.

Notes:

1. All numbers are the averages of all the percentages of all the companies in a given year.
2. adjEBITDA = operating income plus depreciation and amortization and stock-based compensation.
3. Free cash flow = cash from operations minus CAPEX.

Historical Analysis

Cash and net-cash yearly averages, 2010-2019



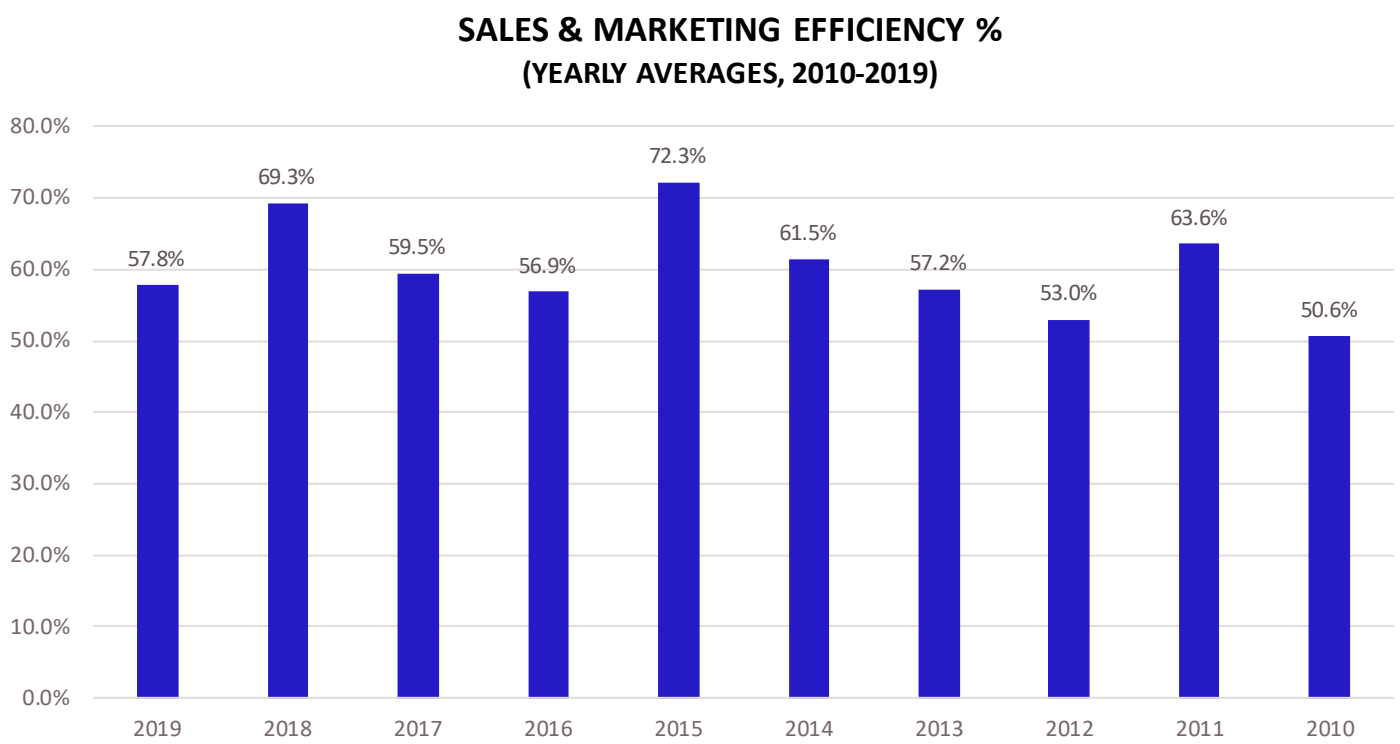
NOTES & INSIGHTS

- Software companies have been consistently well-capitalized over the ten years from 2010-2019.
- Average cash position as a percentage of revenue ended 2019 at 75% of revenue, the highest in the decade.
- Average cash position at the beginning of the decade was lower, which may be an result of emerging from the great recession. Cash position started growing in 2012, which may be the result of the data set growing significantly due to IPO companies, with strong starting capital positions.

Notes:

1. Yearly averages represent the average of the percentages for all companies in a given year. This does not necessarily represent the capital structure of the overall industry since larger companies may have larger absolute amounts of debt but their percentage is equivalent to all other percentages in this view.
2. Net cash = Total cash minus total debt. Cash includes cash, cash equivalents, short-term investments.

Historical Analysis
Sales and marketing efficiency, 2010-2019



NOTES & INSIGHTS

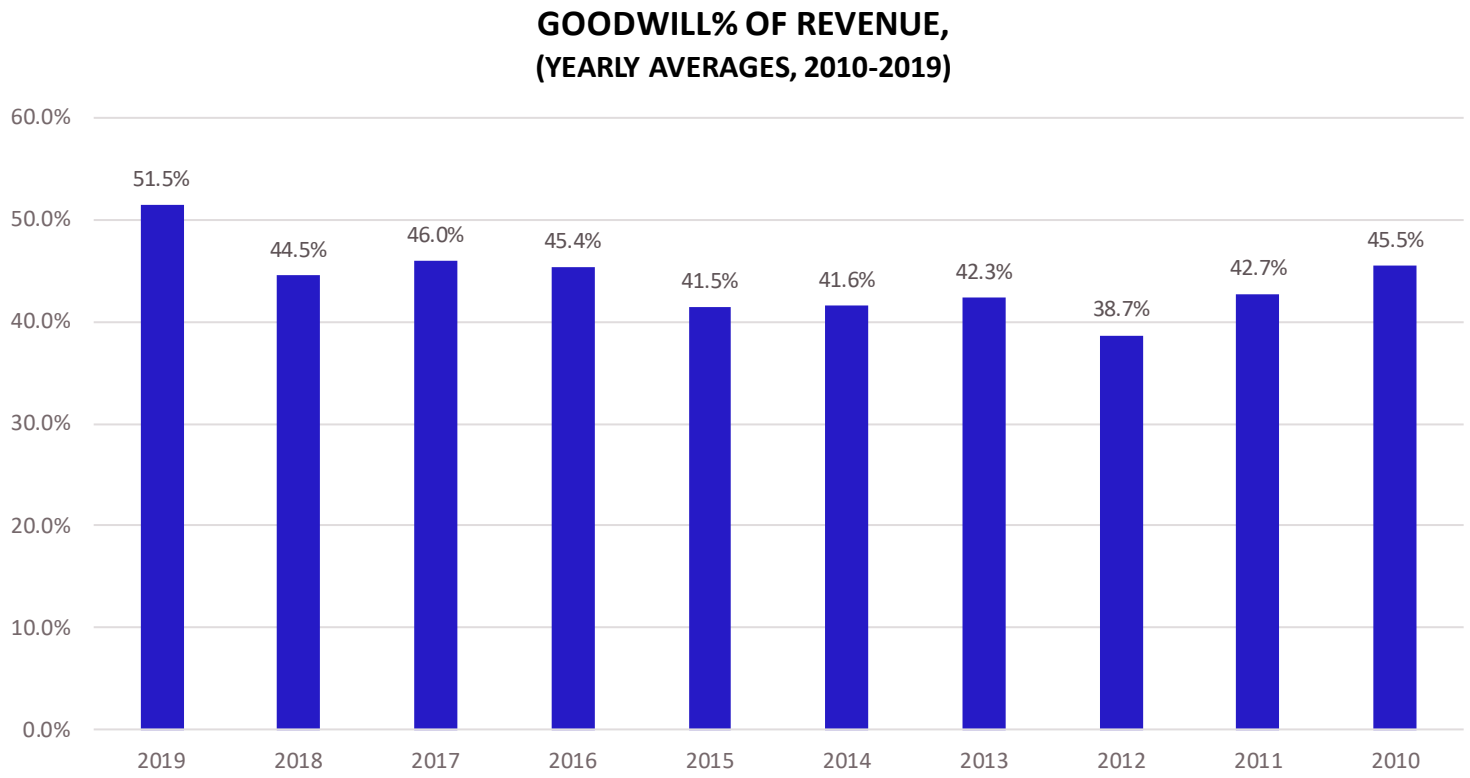
- Software company sales efficiency has been reasonably consistent across the decade from 2010-2019.
- In general, it takes $1 of investment in sales and marketing to generate about 60 cents of new annual revenue. With a multi-year subscription model with high retention rates, this level of performance is sufficient to create a strong business and operating model (details on this will be further explored in future reports).

Notes: .

1. Sales efficiency = revenue in a given year minus revenue in the previous year revenue divided by sales and marketing investment in the given year.

Historical Analysis

Goodwill % of revenue, yearly averages, 2010-2019

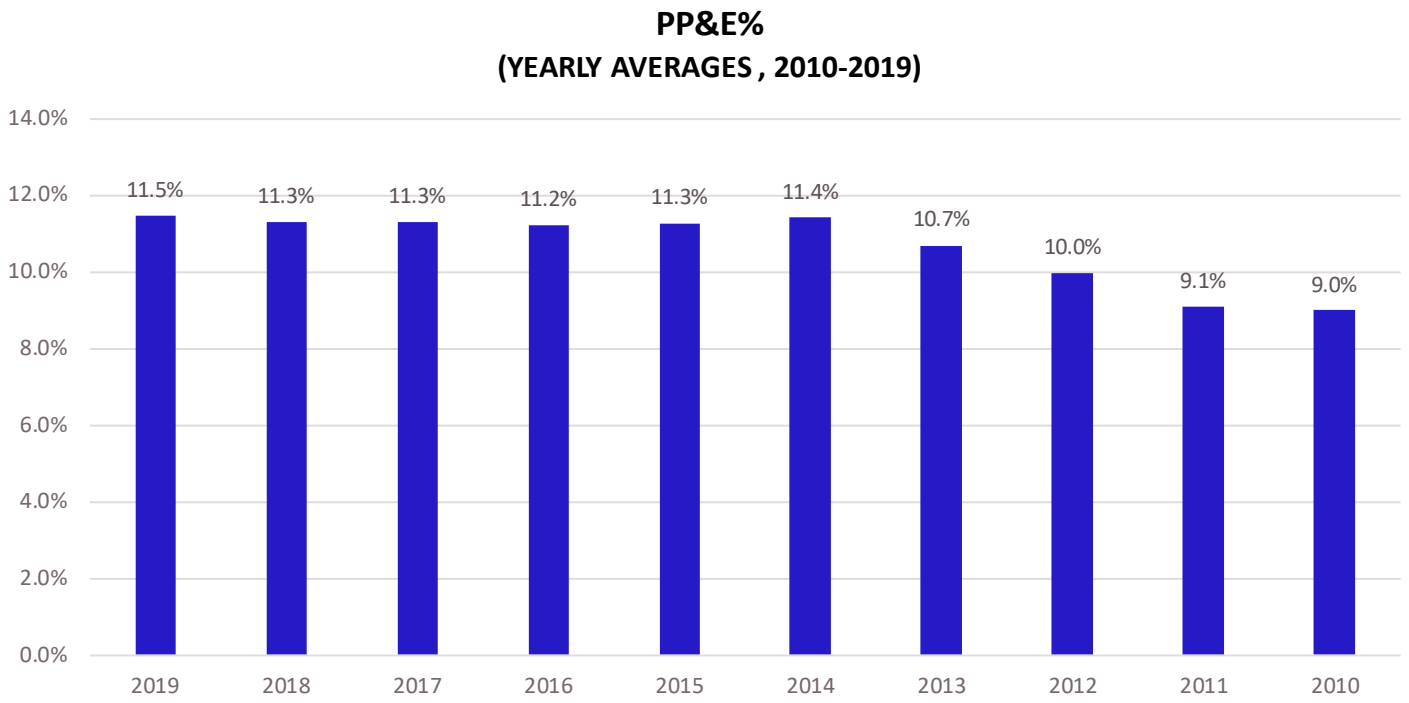


NOTES & INSIGHTS

- Goodwill as a percentage of revenue is a proxy for the acquisition intensity of a company and of an industry overall.
- Average goodwill % of revenue has remained relatively constant at about 50% of revenue. This is somewhat surprising since as companies get larger and older, they tend to increase their acquisitions. However, this is offset by the IPO companies, which start out with very little to no Goodwill. Furthermore, this indicates that goodwill is growing in lockstep with revenue growth, meaning acquisitions provide a relatively consistent contribution to revenue growth across the years.

Historical Analysis

Property, plant, and equipment (PP&E), 2010-2019



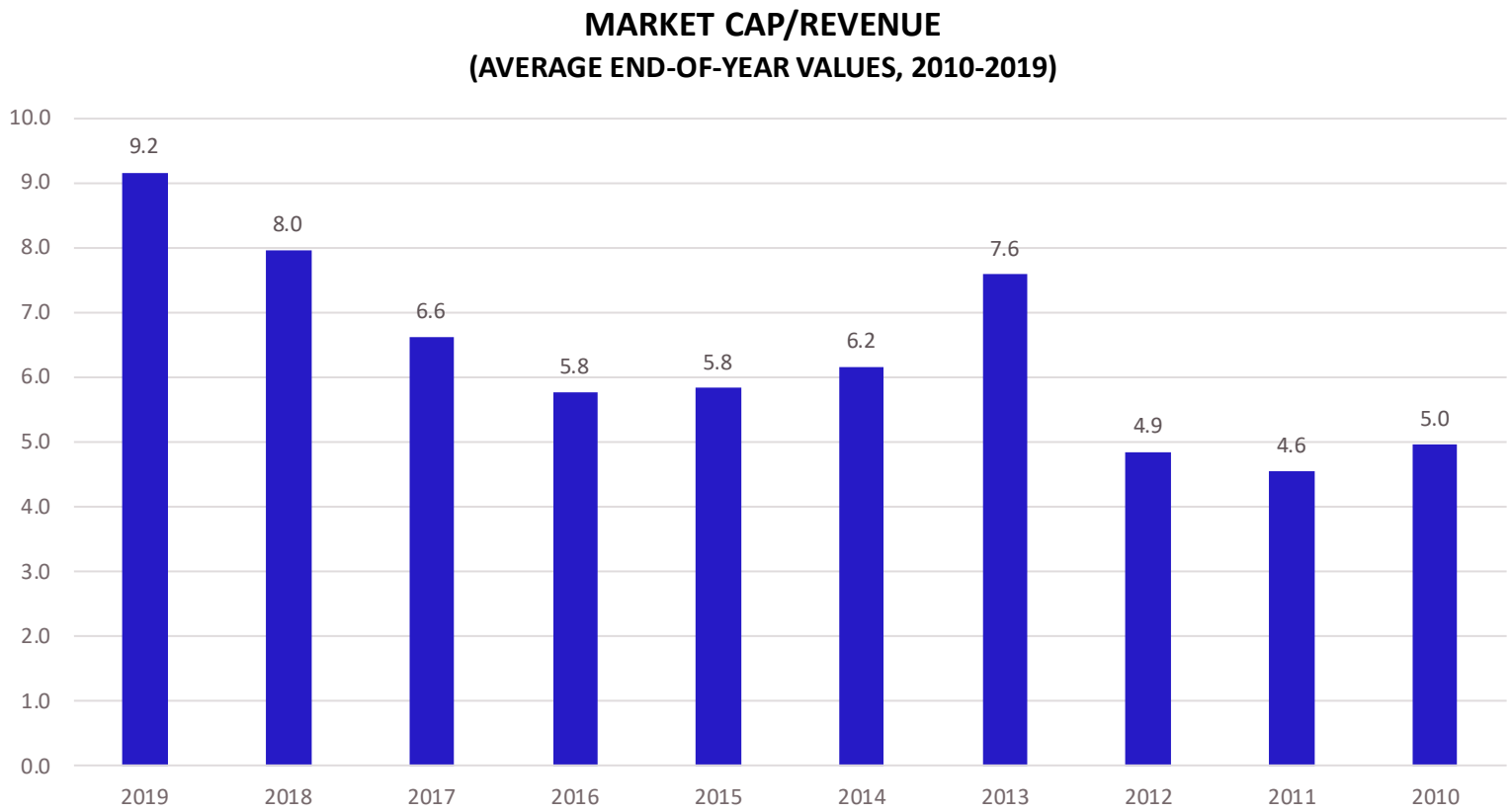
NOTES & INSIGHTS

- PP&E as a percentage of revenue is a measure of the asset intensity of a business.
- As expected, this chart shows that software companies remain consistently asset-light across the years from 2010-2019.
- PP&E (net of depreciation) is about 10% of revenue, making software one of the asset lightest industries.

Notes:

1. PP&E% is property, plant, and equipment (on the balance sheet) as a percentage of revenue. The averages for each year are averages of all the percentages for all the companies in the given year.

Historical Analysis
Market cap revenue multiple, 2010-2019



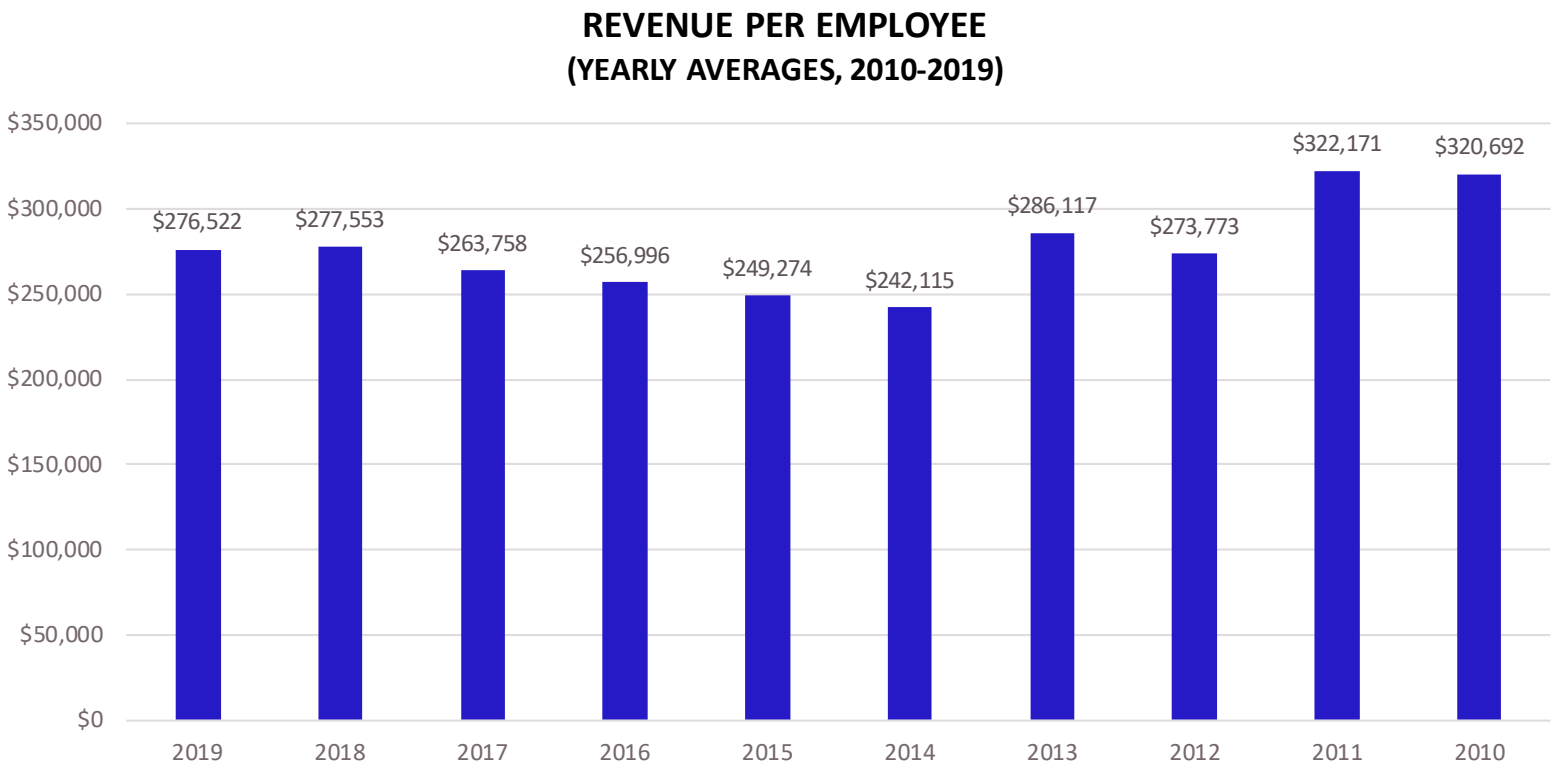
NOTES & INSIGHTS

- This chart shows the average end-of-year market capitalization revenue multiple for all companies in the data set in that given year. Market capitalization is taken for each company on the last trading year of each year.
- Average market cap multiple (market capitalization divided by annual revenue) started the decade of the 2010s at around 5 and finished the decade at a level of almost double that, with continued growth from 2016 through 2019.

Notes: .

1. Market capitalization is taken from the last trading day of each year. Multiple is calculated by taking this value and dividing it by that year's revenue for each of the companies in the data set.

Historical Analysis
Revenue per employee, 2010-2019



NOTES & INSIGHTS

- This chart shows average revenue per employee for all companies for the years 2010-2019. Note that not all companies publish their number of employees. This analysis includes about 70% of the companies in any given year.
- Revenue employee over the course of the decade averaged between about $240K and $320K and ended at about $280K. Note that the early decade numbers included fewer companies, so the end-of-decade numbers are likely to more accurately reflect the overall industry average.

IPO Analysis

Charts that show operating model evolution in the years after companies go public. 33 companies in the data set executed IPOs in the years 2010-2014. This analysis shows how the operating models of these 33 companies evolved in the years after IPO (2014-2019).

IPO Analysis
Summary table of all variables, 2014-2019

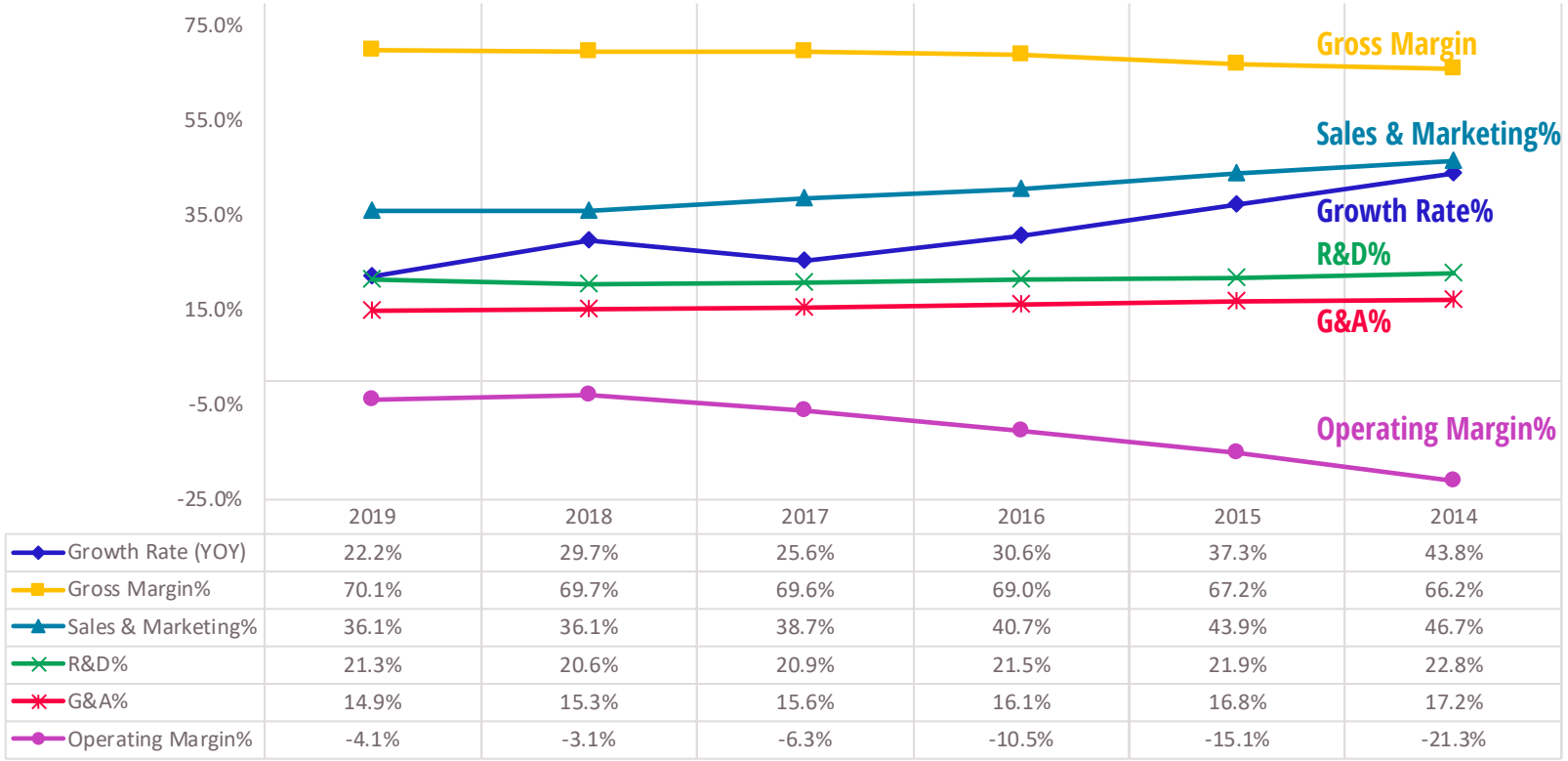
AVERAGES	2019	2018	2017	2016	2015	2014	
Growth Rate (YOY)	22.2%	29.7%	25.6%	30.6%	37.3%	43.8%	↓ Growth rate down by 50%
Gross Margin%	70.1%	69.7%	69.6%	69.0%	67.2%	66.2%	↑ Gross margin up by 4 percentage points
Sales & Marketing%	36.1%	36.1%	38.7%	40.7%	43.9%	46.7%	↓ Sales and marketing down by 10 percentage points
R&D%	21.3%	20.6%	20.9%	21.5%	21.9%	22.8%	↔ R&D relatively flat
G&A%	14.9%	15.3%	15.6%	16.1%	16.8%	17.2%	↓ G&A down by 2+ percentage points
Operating Margin%	-4.1%	-3.1%	-6.3%	-10.5%	-15.1%	-21.3%	↑ Operating margin up by 17 percentage points
NOPAT%	-5.8%	-4.7%	-8.2%	-13.2%	-18.2%	-23.2%	
Free Cash Flow%	10.4%	11.7%	9.5%	6.2%	3.2%	-3.3%	↑ Free cash flow up by 13 percentage points
Stock Compensation%	12.7%	12.4%	12.3%	12.4%	12.0%	10.0%	↑ Stock compensation up by 3 percentage points
Cash%	83.6%	81.2%	73.2%	74.8%	95.2%	101.3%	
Debt%	45.7%	36.9%	25.0%	22.2%	26.7%	20.8%	↑ Debt up substantially, possibly due to acquisitions
Net Cash%	37.9%	44.3%	48.2%	52.6%	68.5%	80.5%	
EBITDA%	5.6%	5.2%	1.6%	-3.0%	-8.0%	-14.8%	
adjEBITDA%	18.2%	17.6%	13.9%	9.4%	4.0%	-4.8%	↑ Adjusted EBITDA up by 24 percentage points
CAPEX%	6.4%	5.9%	6.7%	6.4%	6.0%	7.3%	
PP&E%	13.0%	13.7%	14.6%	13.4%	13.5%	13.7%	
Goodwill%	39.4%	31.8%	29.7%	24.3%	26.0%	23.4%	↑ Goodwill up substantially, reflecting acquisitions
Deferred Revenue%	40.1%	39.9%	42.0%	39.7%	38.5%	39.1%	
RPO%	86.1%	94.6%	N/A	N/A	N/A	N/A	
Sales Efficiency%	61.2%	89.2%	59.8%	67.9%	70.4%	64.3%	↔ Sales efficiency relatively stable
ROA%	-3.4%	-3.4%	-6.5%	-9.3%	-11.0%	-15.0%	
Cap Ratio(end of year)	9.3	8.6	7.9	7.0	8.0	8.9	↔ Cap ratio relatively stable
DSO%	49.1	51.5	47.7	47.7	45.9	50.5	
Revenue per employee	$252,206	$246,270	$231,902	$223,643	$207,535	$191,235	↑ Sales per employee up >25%
Subscription GM%	74.4%	74.4%	74.3%	N/A	N/A	N/A	
License GM%	N/A	N/A	N/A	N/A	N/A	N/A	
Maintenance GM%	N/A	N/A	N/A	N/A	N/A	N/A	
Prof Services GM%	-13.2%	-9.3%	-7.2%	N/A	N/A	N/A	
Number of companies	32	33	33	33	33	32	

NOTES & INSIGHTS

- 33 of the companies in the data set executed IPOs in the years 2010-2014. This analysis tracks the evolution of key operating variables for these companies in the six years after their IPO (2014-2019).
- This analysis validates that IPO companies evolve their operating models significantly in the years after they go public. In general, growth slows, and there is a much higher focus on all forms of profitability.
- Some of the key points are summarized in the comments on the left (to the right of the table).
- This analysis shows that growth slows substantially to closer to the average for all companies in the analysis, but that all forms of profitability increase substantially:
  - Operating margin increases by 17 percentage points
  - Free cash flow increases by 13 percentage points
  - Adjusted EBITDA increases by 24 percentage points
- A big part of the increase in profitability is due to lower operating investments:
  - Sales and marketing investment decreases by 10 percentage pints
  - G&A decreases by 2+ percentage points
- Interestingly, investment in R&D stays relatively the same as the companies evolve
- This also shows that companies increase their acquisition-intensity, with goodwill as a percentage of revenue increasing by about 17 percentage points

IPO Analysis

Income statement yearly averages, 2014-2019[1]



	2019	2018	2017	2016	2015	2014
Growth Rate (YOY)	22.2%	29.7%	25.6%	30.6%	37.3%	43.8%
Gross Margin%	70.1%	69.7%	69.6%	69.0%	67.2%	66.2%
Sales & Marketing%	36.1%	36.1%	38.7%	40.7%	43.9%	46.7%
R&D%	21.3%	20.6%	20.9%	21.5%	21.9%	22.8%
G&A%	14.9%	15.3%	15.6%	16.1%	16.8%	17.2%
Operating Margin%	-4.1%	-3.1%	-6.3%	-10.5%	-15.1%	-21.3%

NOTES & INSIGHTS

- 33 companies in the data set went public from 2010 to 2014. This chart shows how key variables changed after their IPOs.
- Summary of changes:
  - Gross margin increased by 4 percentage points
  - Sales and marketing investment decreased by 10 percentage points
  - Growth rate decreased by 20 percentage points
  - G&A decreased by 3 percentage points
  - R&D held relatively steady
  - Operating margin increased by 17 percentage points

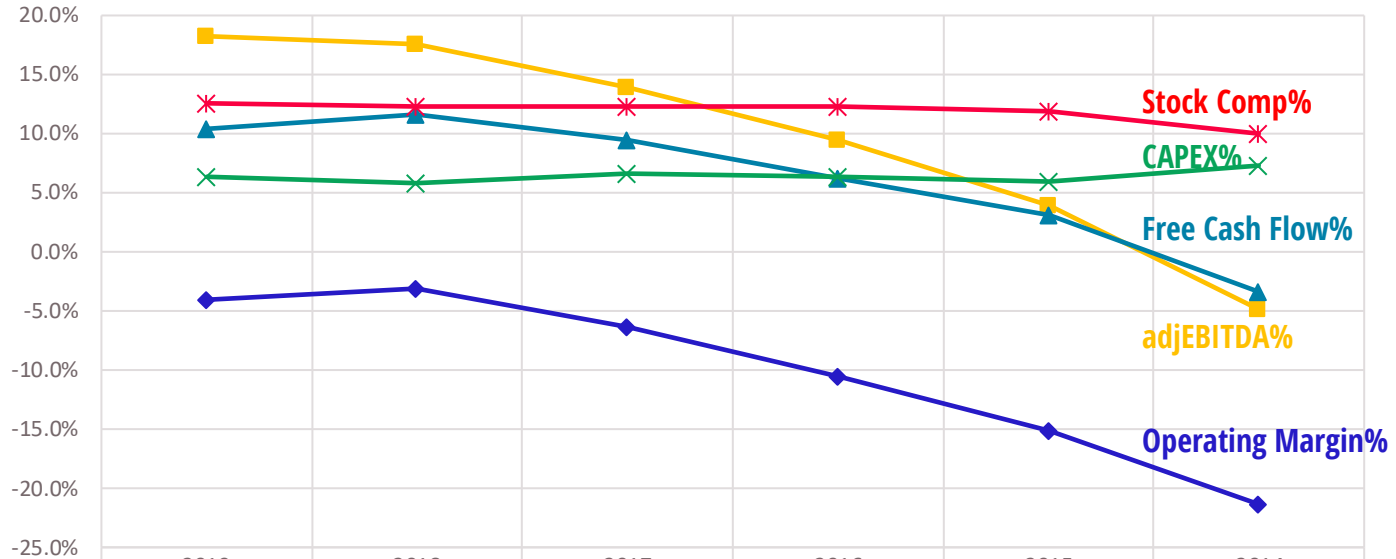
Notes:

1. Yearly averages represent the average of the percentages for all companies in a given year. The number of companies changes as time goes on and additional companies become public.

IPO Analysis

Profit, cash flow, stock comp, CAPEX, yearly averages, 2014-2019

PROFIT, CASH FLOW, STOCK, CAPEX: YEARLY AVERAGES, 2014-2019



	2019	2018	2017	2016	2015	2014
Operating Margin%	-4.1%	-3.1%	-6.3%	-10.5%	-15.1%	-21.3%
adjEBITDA%	18.2%	17.6%	13.9%	9.4%	4.0%	-4.8%
Free Cash Flow%	10.4%	11.7%	9.5%	6.2%	3.2%	-3.3%
CAPEX%	6.4%	5.9%	6.7%	6.4%	6.0%	7.3%
Stock Compensation%	12.7%	12.4%	12.3%	12.4%	12.0%	10.0%

NOTES & INSIGHTS

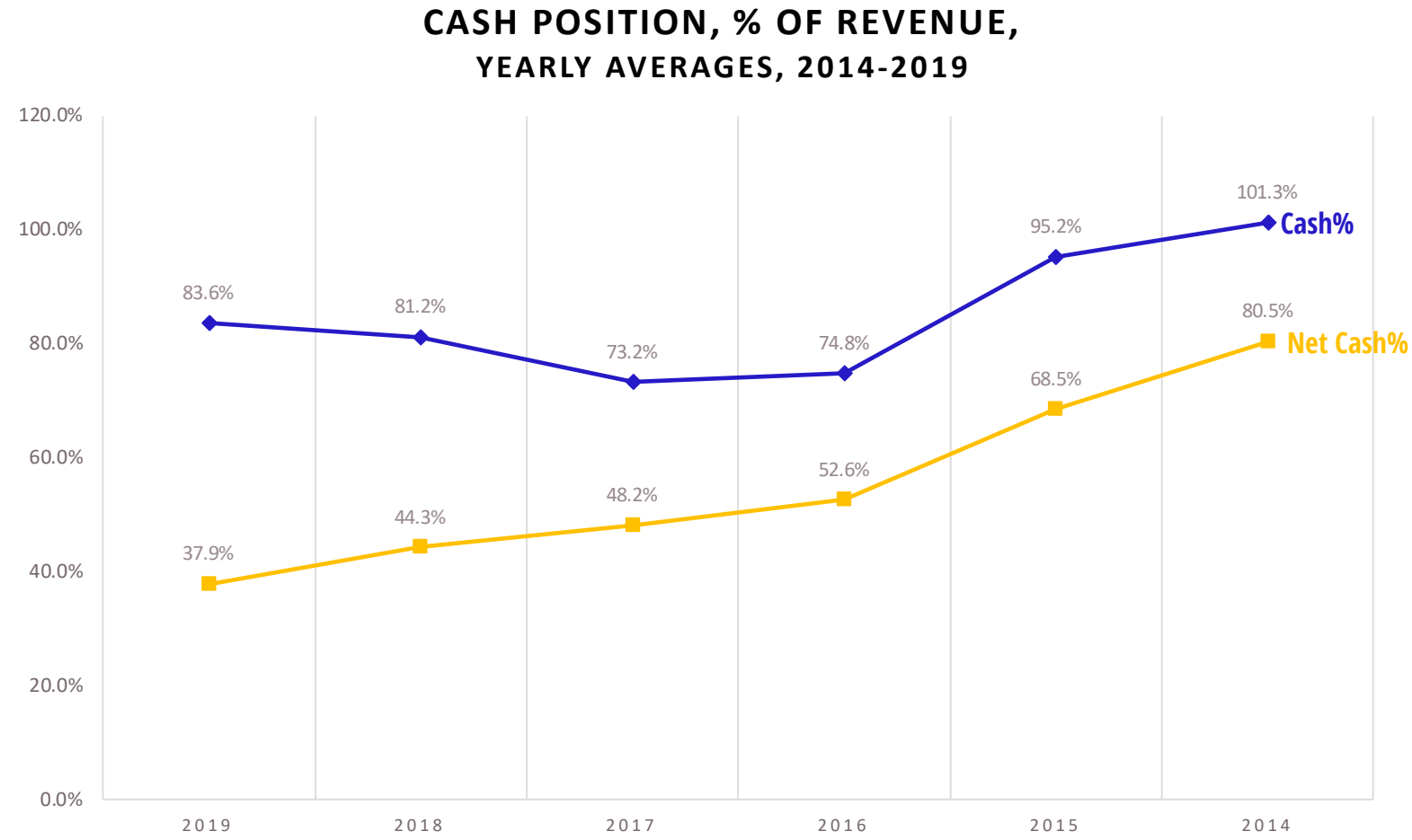
- 33 companies in the data set went public from 2010 to 2014. This chart shows how key profitability, cash flow, and investment variables changed over time after their IPOs.
- Summary of changes:
  - Operating margin increased by 17 percentage points
  - Adjusted EBITDA increased by 24 percentage points
  - Free cash flow increased by 14 percentage points
  - CAPEX held relatively steady
  - Stock compensation increased by 3 percentage points
- This chart adds credence to the thesis that while many IPO companies lose money, they do evolve over time to dramatically improve their profit and cash flow measures.

Notes:

1. All numbers are the averages of all the percentages of all the companies in a given year.
2. adjEBITDA = operating income plus depreciation and amortization and stock-based compensation.
3. Free cash flow = cash from operations minus CAPEX.

IPO Analysis

Cash and net-cash yearly averages, 2014-2019



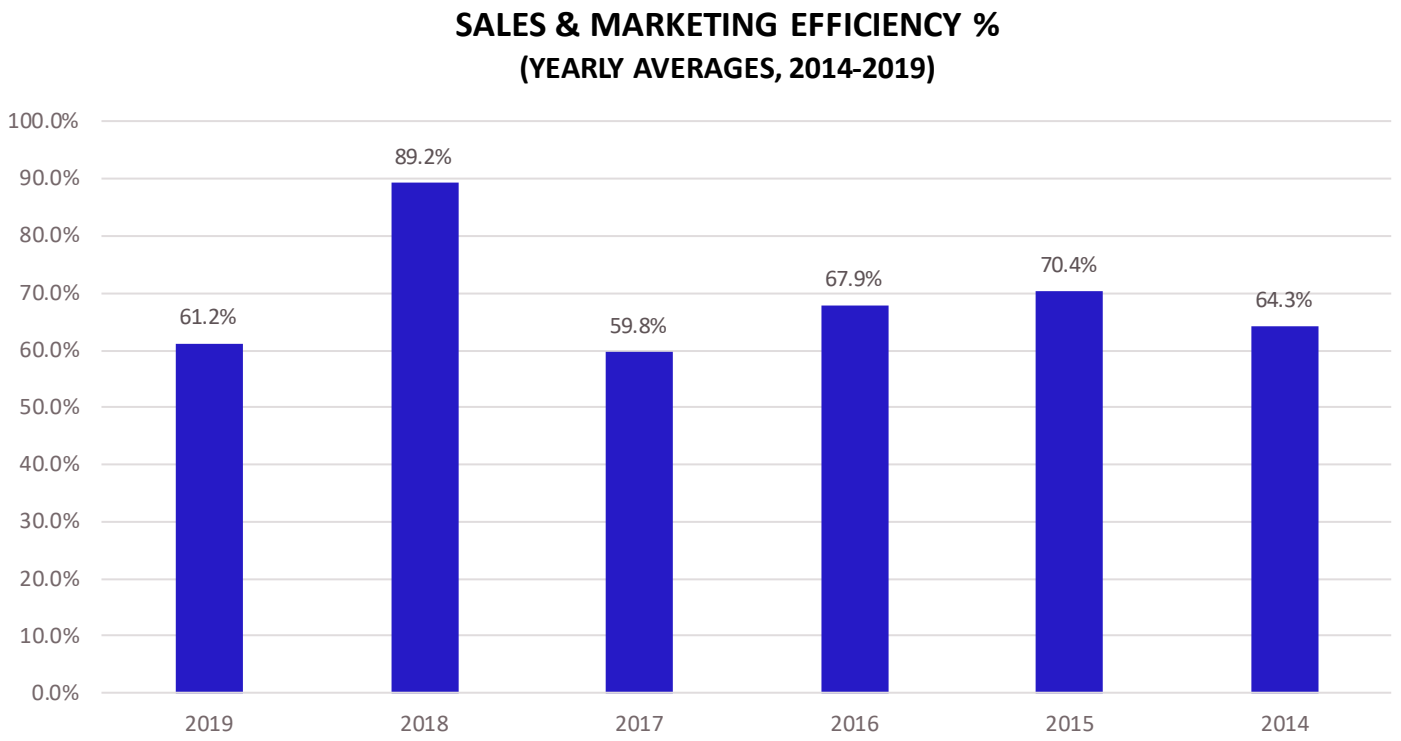
NOTES & INSIGHTS

- 33 companies in the data set went public from 2010 to 2014. This chart shows how their cash and net cash positions changed in the years after their IPOs.
- Summary of changes:
  - Cash position declined by 15 percentage points but was still very robust.
  - Net cash position (cash minus debt as a percentage of revenue) declined significantly, indicating companies took on debt to execute acquisitions.

Notes:

1. Yearly averages represent the average of the percentages for all companies in a given year. This does not necessarily represent the capital structure of the overall industry since larger companies may have larger absolute amounts of debt but their percentage is equivalent to all other percentages in this view.
2. Net cash = Total cash minus total debt. Cash includes cash, cash equivalents, short-term investments.

IPO Analysis
Sales and marketing efficiency, 2014-2019



NOTES & INSIGHTS

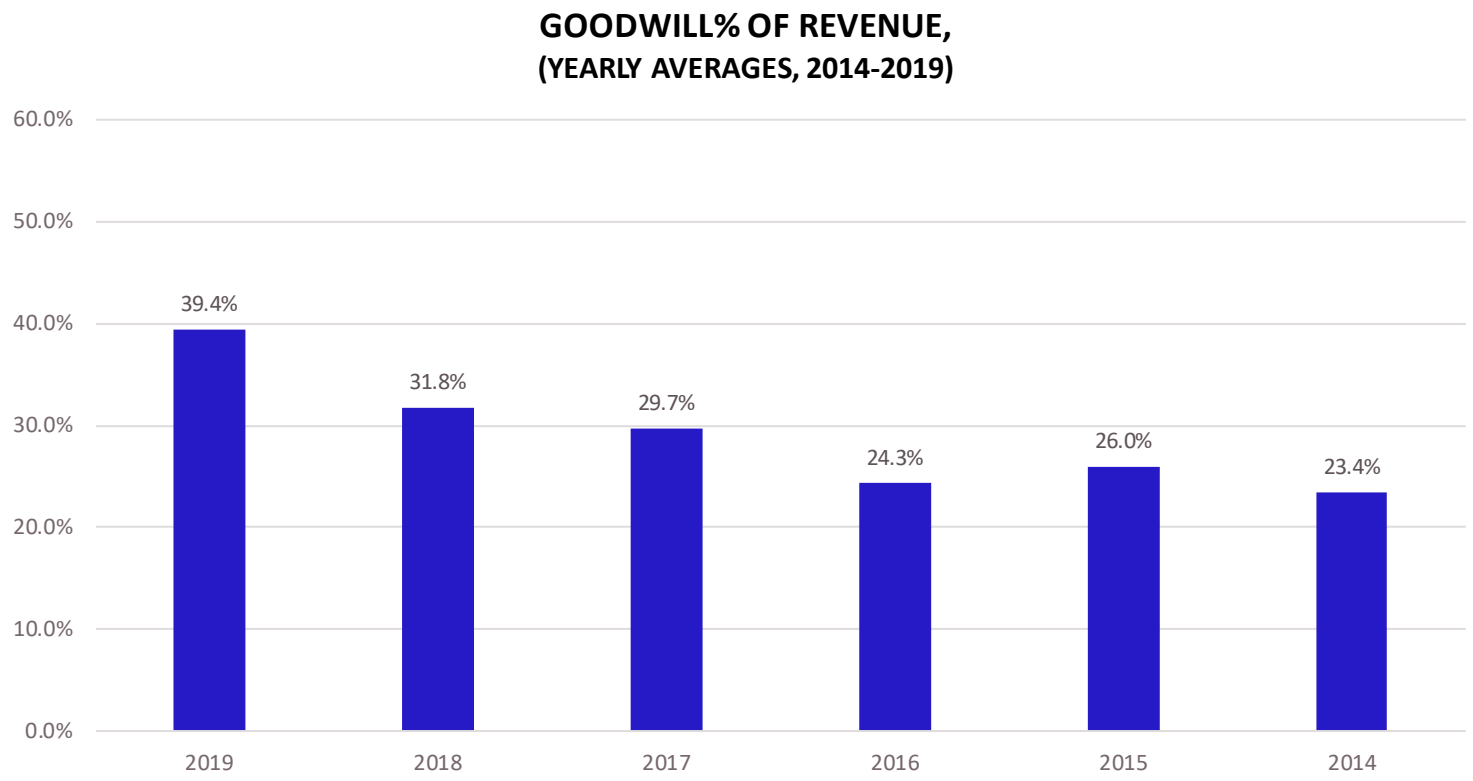
- 33 companies in the data set went public from 2010 to 2014. This chart shows how their sales and marketing efficiency changed in the years after their IPOs.
- This chart shows that sales and marketing efficiency held pretty steady over the six years after IPO. (2018 is distorted by one data point due to an acquisition).

Notes: .

1. Sales efficiency = revenue in a given year minus revenue in the previous year revenue divided by sales and marketing investment in the given year.

IPO Analysis

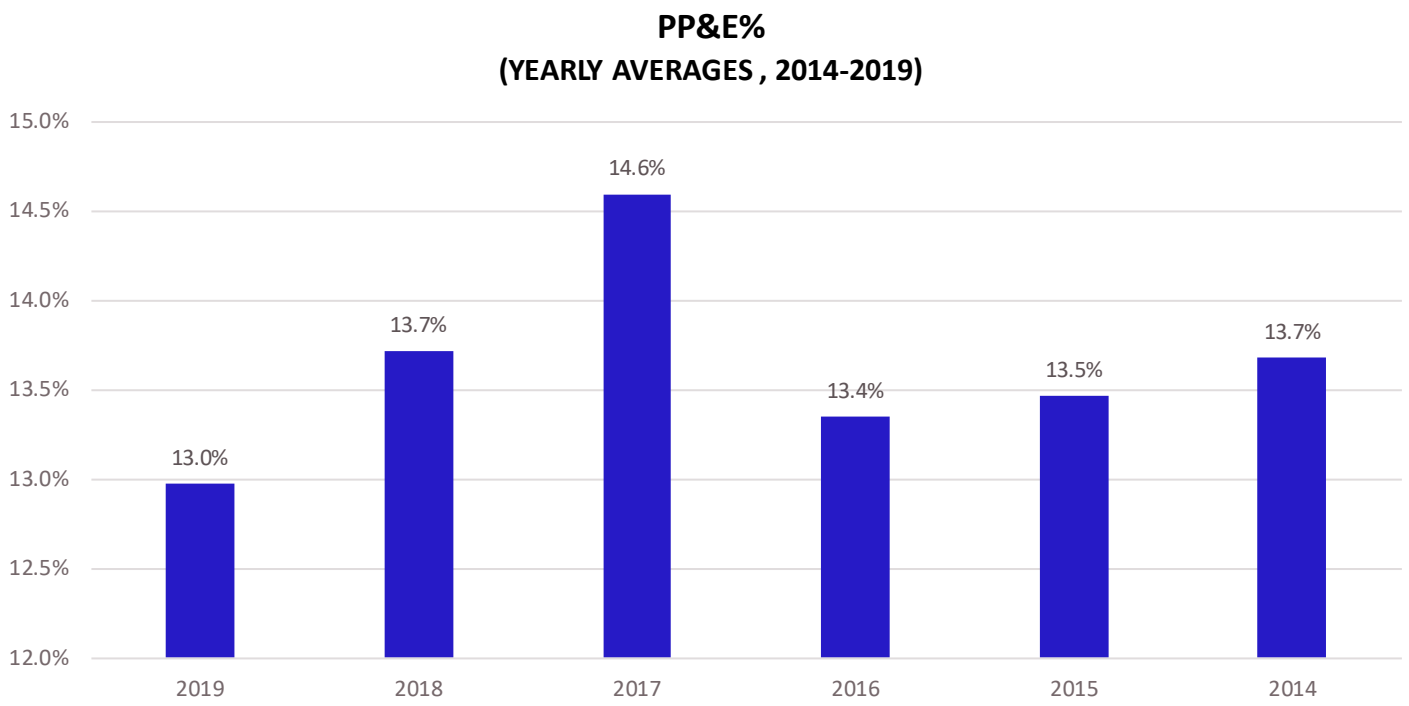
Goodwill % of revenue, yearly averages, 2014-2019



NOTES & INSIGHTS

- 33 companies in the data set went public from 2010 to 2014. This chart shows how their goodwill as a percentage of revenue changed in the years after their IPOs.
- Goodwill as a percentage of revenue is a proxy for the acquisition intensity of a company and of an industry overall.
- Goodwill increased steadily over the six years, indicating an increasing propensity for acquisitions.

IPO Analysis
Property, plant, and equipment (PP&E), 2014-2019



NOTES & INSIGHTS

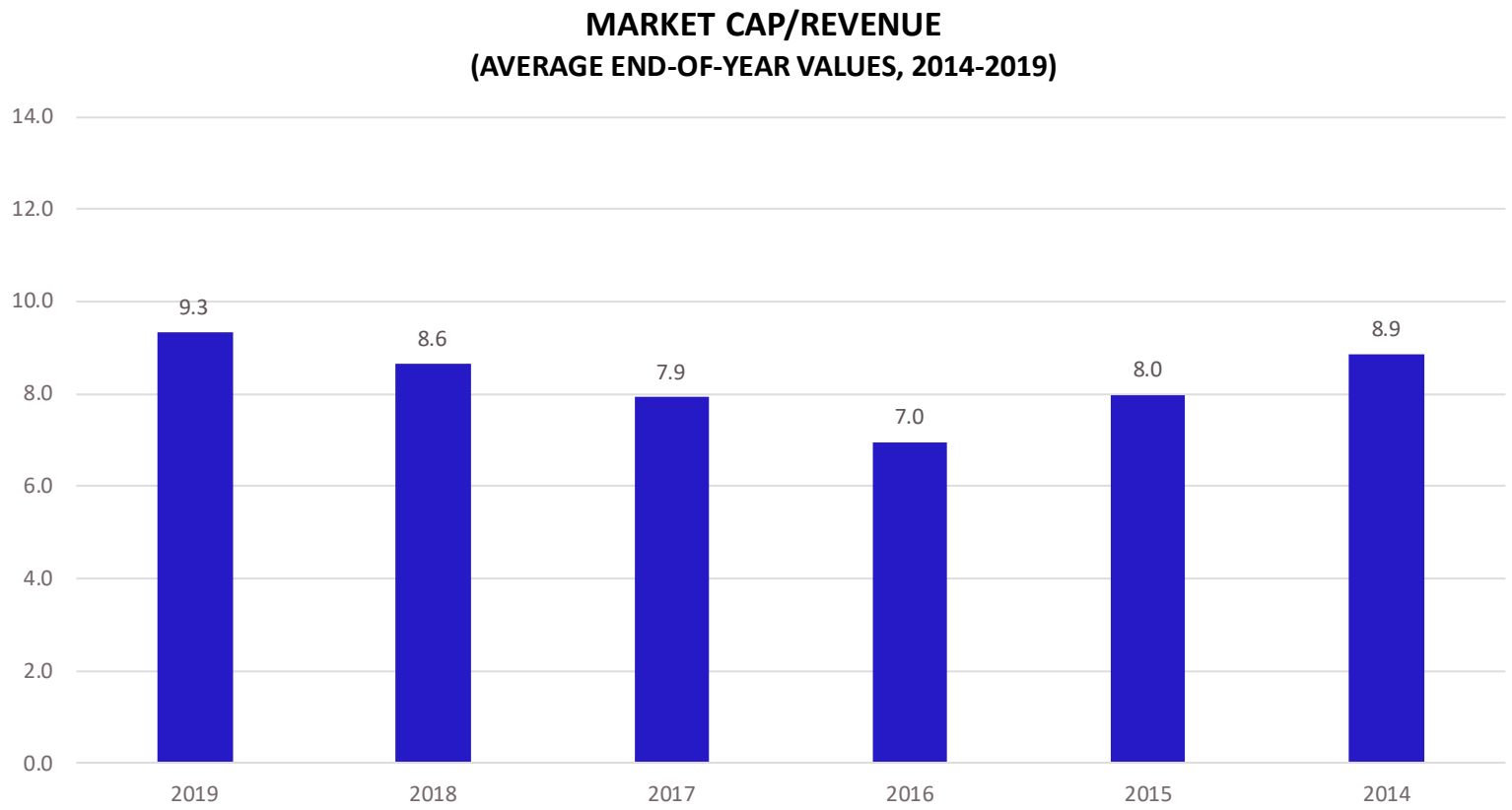
- 33 companies in the data set went public from 2010 to 2014. This chart shows how their asset intensity changed in the years after their IPOs.
- This chart indicates that asset intensity stayed relatively steady over the six years.
- It's interesting to note that the asset intensity of this IPO cohort is slightly higher than the average for the entire data set. This is possibly due to higher data center investment for pure SaaS companies (which most of the newer companies would be).

Notes:

1. PP&E% is property, plant, and equipment (on the balance sheet) as a percentage of revenue. The averages for each year are averages of all the percentages for all the companies in the given year.

IPO Analysis

Market cap revenue multiple, 2014-2019



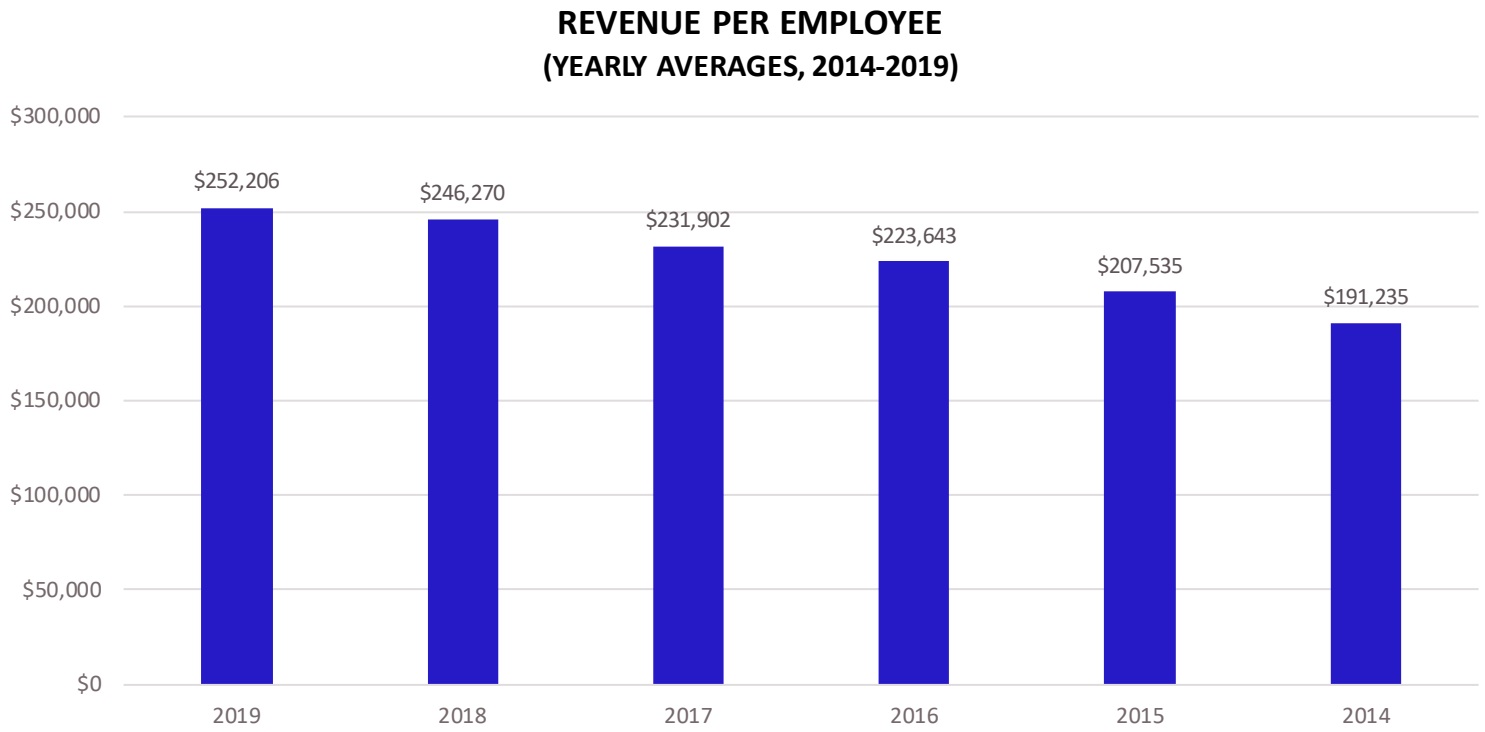
NOTES & INSIGHTS

- 33 companies in the data set went public from 2010 to 2014. This chart shows how their market capitalization to revenue multiples changed in the years after their IPOs.
- This chart shows that multiples were high in the start, dipped, and then steadily increased, which is consistent with all software companies. Furthermore, this cohort has an average multiple that are very similar to the multiples for the overall data set.

Notes: .

1. Market capitalization is taken from the last trading day of each year. Multiple is calculated by taking this value and dividing it by that year's revenue for the 33 companies in this cohort of the data set.

IPO Analysis
Revenue per employee, 2014-2019



NOTES & INSIGHTS

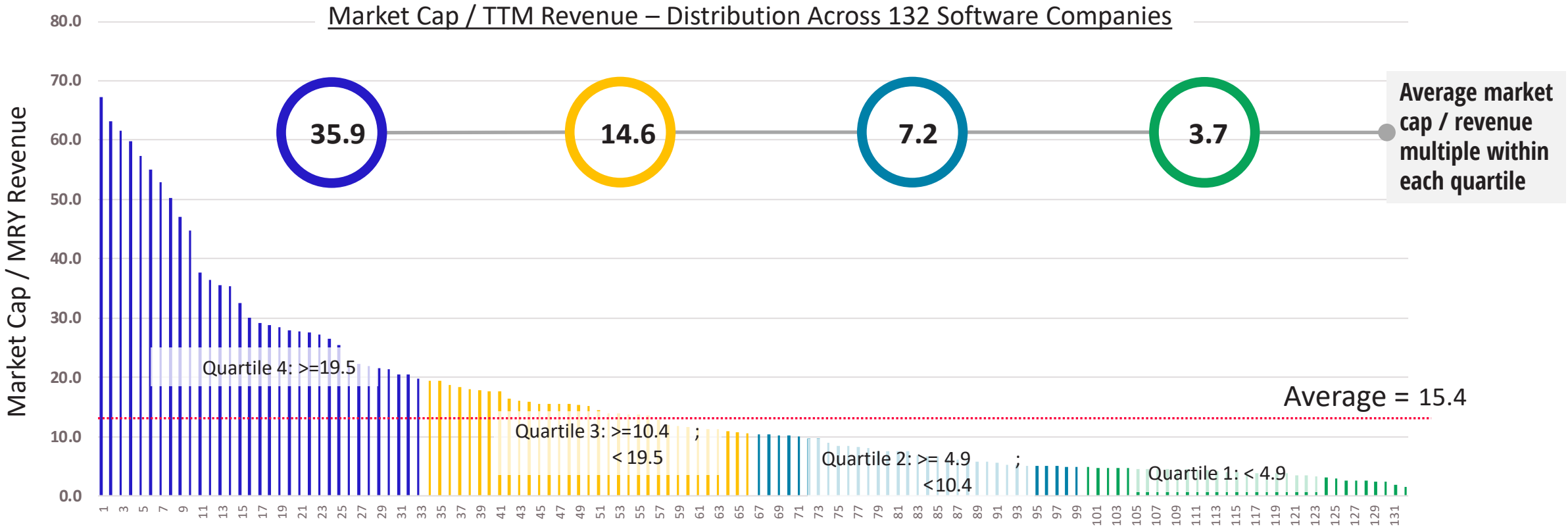
- 33 companies in the data set went public from 2010 to 2014. This chart shows how their revenue per employee changed in the six years from 2014 to 2019.
- For this IPO cohort, average revenue employee increased by more than 25% over the six year period.

Market Cap Analysis

Charts that provide analysis of market capitalization and market capitalization to revenue ratios for all companies for their most recent fiscal year.

Market Cap Analysis
Market cap / TTM revenue distribution

*The average market cap to revenue across the data set is **15.4** . The median is **10.4** . However, the average for the highest quartile is **35.9** and for the lowest quartile is **3.7** , indicating a wide range of market caps based on a wide range of company performances, lifecycle stages, and business models.*

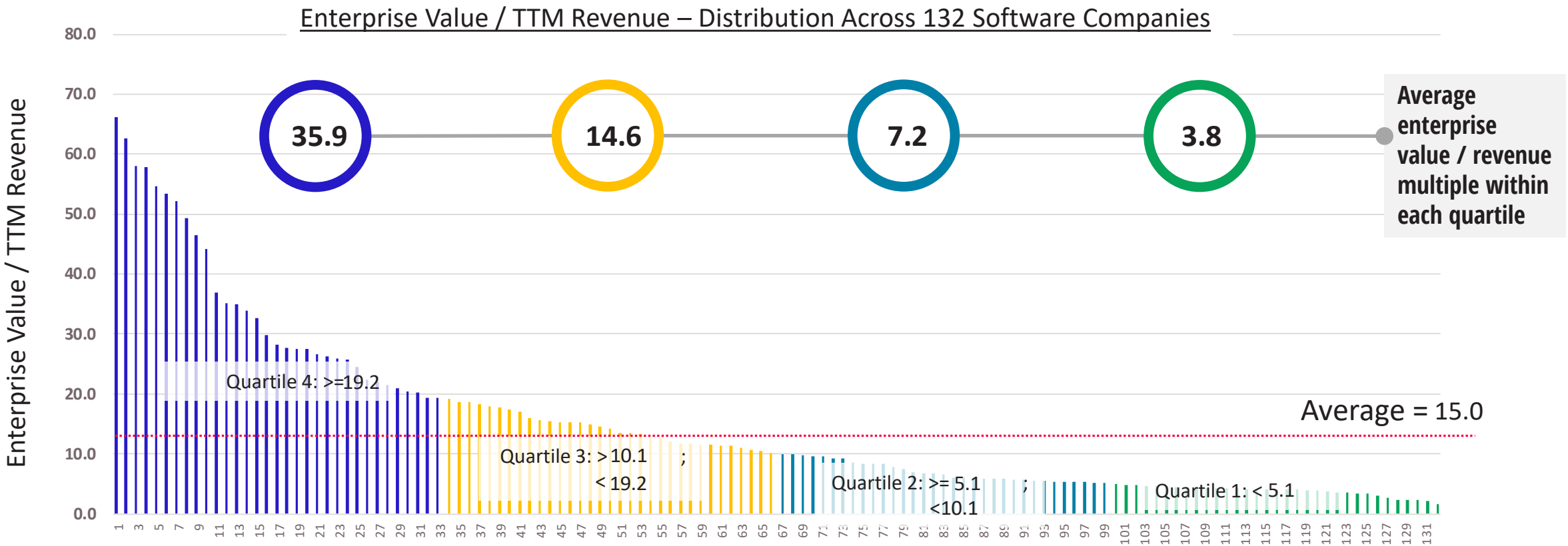


Notes:

1. Market cap multiple is market capitalization divided by trailing twelve months (TTM) of revenue for each company (as reported in most recent four quarters of public statements), as of the date on the cover of this report.

Market Cap Analysis
Enterprise Value / TTM revenue distribution

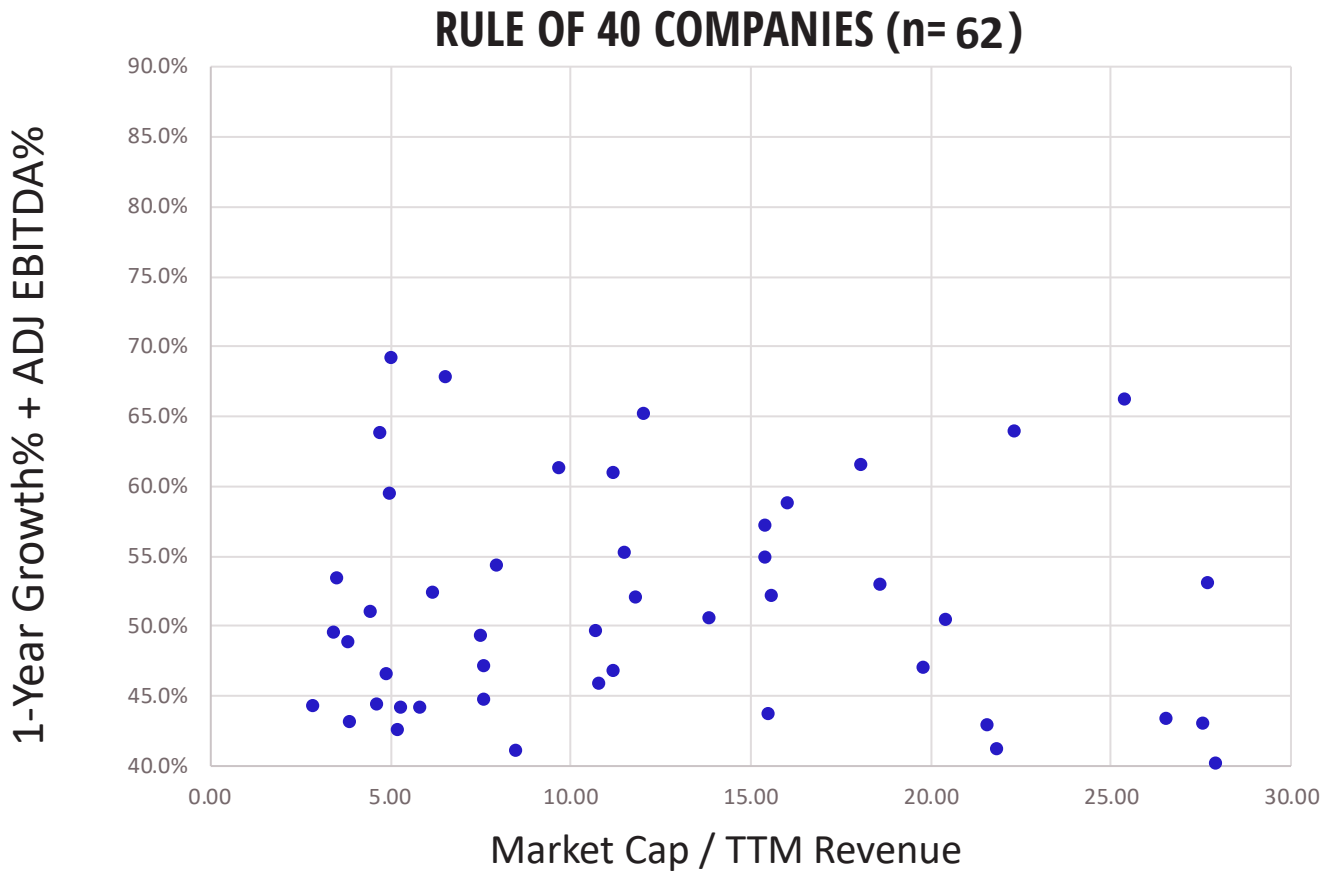
Enterprise values (market cap plus debt minus cash) are not significantly different from market cap values. The average EV revenue multiple is ***15.0*** *. The median is* ***10.1*** *.*



Market Cap Analysis

Rule of 40: 1-year growth + adjusted EBITDA% >=40%

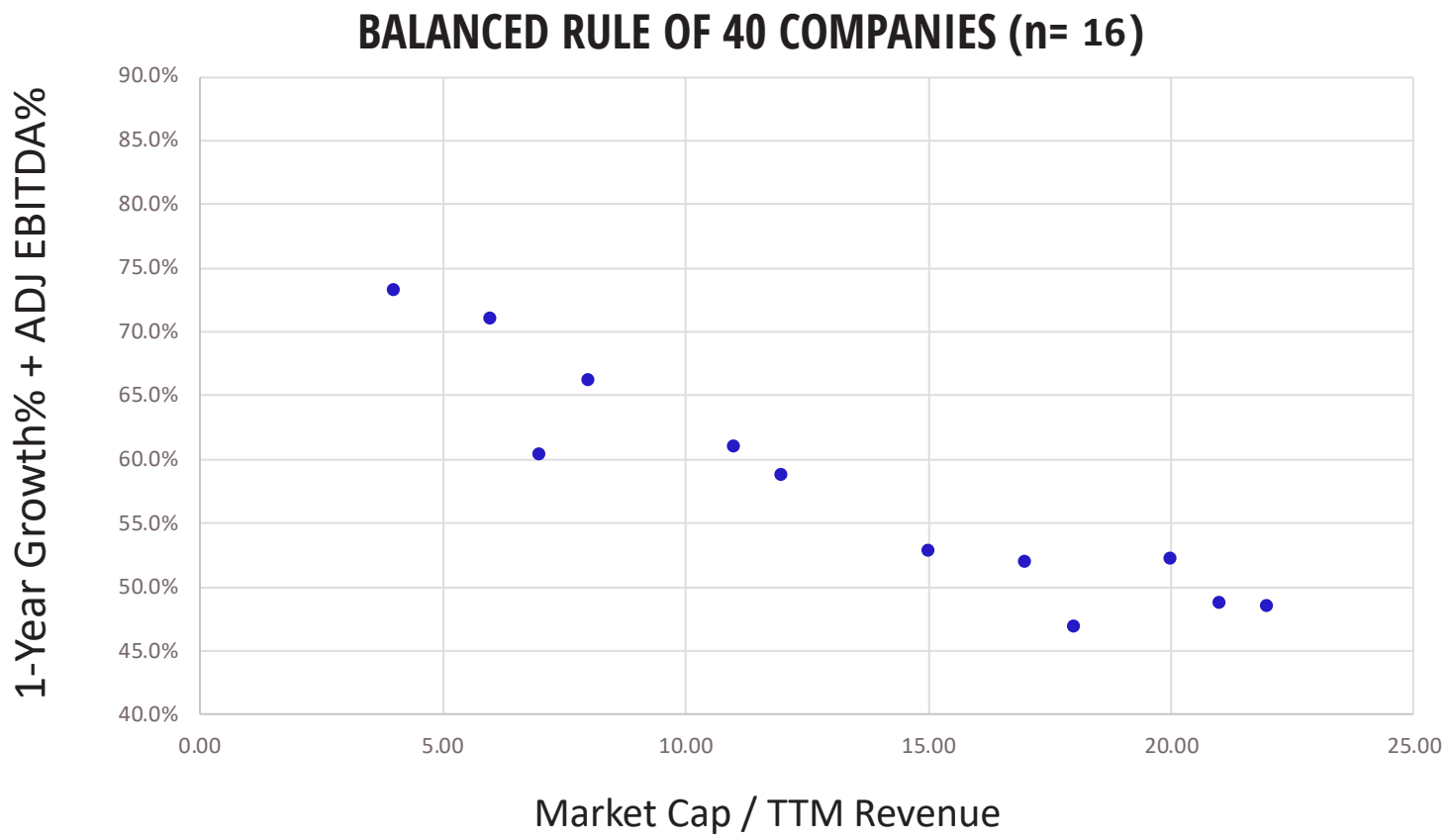
"Rule of 40" analysis adds growth rate and adjusted EBITDA together and determines which companies equal or exceed 40%. For the 132 companies in this report, ***62*** *satisfy this requirement. The average market cap / revenue multiple for this group is* ***18.8*** *. The median is* ***12.3*** *.*



Market Cap Analysis

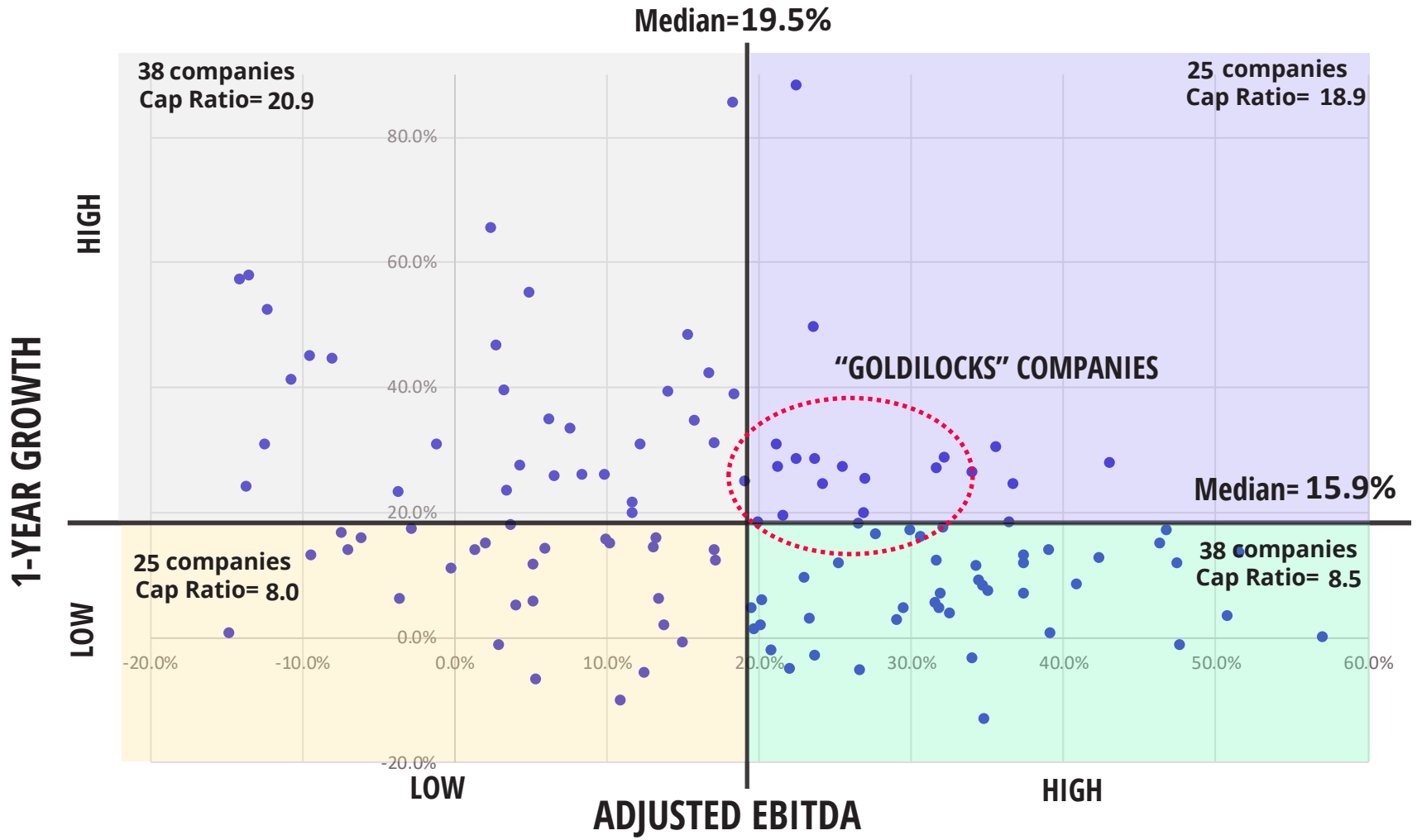
Balanced rule of 40: 1-Year growth>=20% AND adjEBITDA >=20%

*Companies that satisfy the balanced "rule of 40" form a more **selective** group. In this case, the companies satisfy the rule of 40, but do so by exceeding growth of 20% AND adjusted EBIDTA of 20%. To meet this criteria, companies cannot achieve the rule of 40 by overachieving in one variable or the other; they must excel in both. For the 132 companies in this report, **16** satisfy this requirement. The average market cap / revenue multiple for this group is **23.2** . The median is **17.1** .*



Market Cap Analysis

Operating models: growth versus EBITDA



NOTES & INSIGHTS

- This is a scatter chart for 126 companies showing where they stand on 1-year growth versus adjusted EBITDA.
- It splits the chart into a 2x2 by dividing each dimension at its median.
- The upper right hand quadrant yields the highest cap multiple. This is a slight shift from past reports in which the upper left hand quadrant has had the highest multiples. This may show a slight market shift towards greater focus on profitability.
- The "goldilocks companies" represent a group of companies that performs at or just above the median for both measures. They are growing not too fast and not too slow, while still delivering strong EBITDA returns. It remains to be seen how these will perform over time, but their operating models may be more durable across business cycles.

Notes:

1. The chart shows data for 126 companies (versus 132 for the entire data set) because 6 of the companies are new and have only one year of public data (no growth data).
2. Adjusted EBITDA = operating income plus depreciation, amortization, and stock compensation.
3. Market cap multiple is market capitalization divided by trailing twelve months (TTM) of revenue for each company (as reported in most recent four quarters of public statements), as of the date on the cover of this report.

Market Cap Analysis

Ranked table of correlations between variables and market cap multiple

There have been many reports over the years that show high correlations between certain operational variables and software company market cap multiples. Most of these have focused on growth rate and free cash flow. The broader data set in this report simply do not support those conclusions. It's possible that a subset of the data could find those high correlations, but that would be choosing the data to fit the narrative. That said, while there are no variables with high correlations, there are some that are statistically significant and it is also useful to see variable correlations relative to each other. The tables below shows all variables in this report and their correlation coefficients (R) for market cap multiple.

MODERATE AND LOW CORRELATIONS

VARIABLE NAME	CORREL COEFF (R)
CASH	0.62
GROWTH RATE	0.59
NET CASH	0.59
LICENSE MARGIN	0.50
MAINTENANCE MARGIN	0.35
STOCK COMPENSATION	0.32
SALES & MARKETING	0.24
SUBSCRIPTION MARGIN	0.24
RESEARCH & DEVELOPMENT	0.22
GENERAL & ADMIN EXPENSE	0.19
REMAINING PERF OBLIG	0.18

MIN OR NO CORRELATION

VARIABLE NAME	CORREL COEFF (R)
SALES EFFICIENCY	0.16
OPERATING LEASE	0.16
GROSS MARGIN	0.16
PROPERTY, PLANT, AND EQUIPMENT	0.14
DAYS SALES OUTSTANDING	0.11
DEFERRED REVENUE	0.09
CAPEX	0.08
RETURN ON EQUITY	0.00
STOCK REPURCHASES	-0.02
FREE CASH FLOW	-0.06
RETURN ON INVESTED CAPITAL	-0.07
YEARS SINCE IPO	-0.09
RETURN ON ASSETS	-0.10
SERVICES GROSS MARGIN	-0.13
ADJUSTED EBITDA	-0.16
NET OPERATING PROFIT AFTER TAXES	-0.18
OPERATING PROIFT MARGIN	-0.21
EBITDA	-0.22
DEBT	-0.25
GOODWILL	-0.26

Market Cap Analysis

Market cap / TTM revenue correlation to individual variables

All individual variables show weak statistical correlation to market cap multiple. The two variables that show moderate correlation to market cap for the entire data set are growth rate and cash position. All other variables show weak to no correlation.

Correlation coefficients (R) associated with single variable correlations to market cap / revenue multiple

1-YEAR GROWTH	GROSS MARGIN	R&D	SALES & MKTG	OP MARGIN	FCF	ADJ EBITDA	CASH
0.59	0.16	0.22	0.24	-0.21	-0.06	-0.16	0.62

Only CAGR and Cash show moderate correlation. That said, they only predict a small part of the variation in market cap multiple.

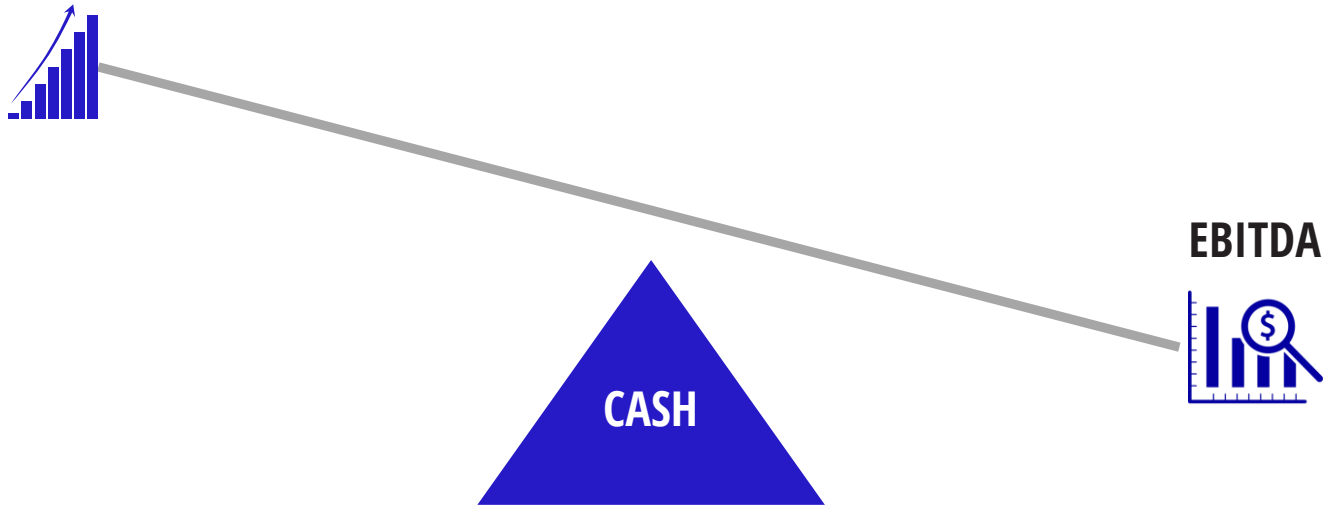
Cash may be a proxy for the ability of a company to maintain its growth. This makes it closely tied to growth, and also has the effect of making profitability less important (at least in the near term)

Market Cap Analysis
Balanced scorecard variables

In the current market, growth is rewarded more than EBITDA. Longer term, these two will likely come more into balance in terms of importance.

GROWTH RATE

Growth rate is king when it comes to valuation, as investors bet on future winners. This variable has the highest correlation to market cap. Consistent performance is just as important.



EBITDA

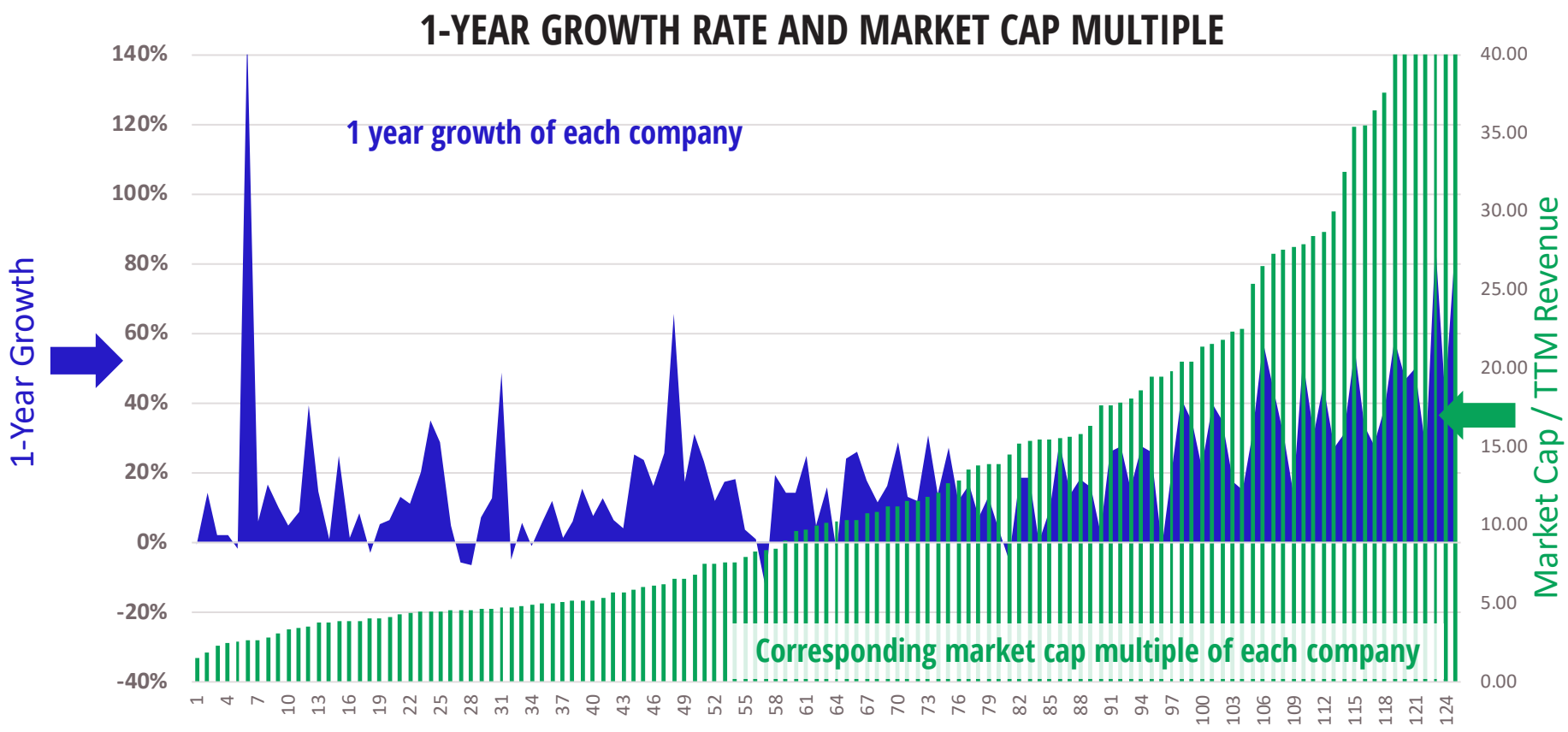
EBITDA exhibits very little statistical correlation to market cap multiple. This is likely due to a current market that values growth significantly above profitability. However, EBITDA is still widely viewed as an important determinant of long-term performance.

Cash appears to be a key lever, allowing companies to grow faster.

Market Cap Analysis

Market cap multiple and 1-year growth for each company

These charts show a visual of the relationship between a key variable and market cap multiple for each company. The intention is to show visually how correlated or not correlated the data are.



NOTES & INSIGHTS

- Growth rate is the one of the best predictors of market cap multiple
- That said, there is significant noise in the data, with some high growth rates yielding relatively lower multiples
- Despite noise at the bottom of the chart, there is a general joint upward trend for multiples of five and higher

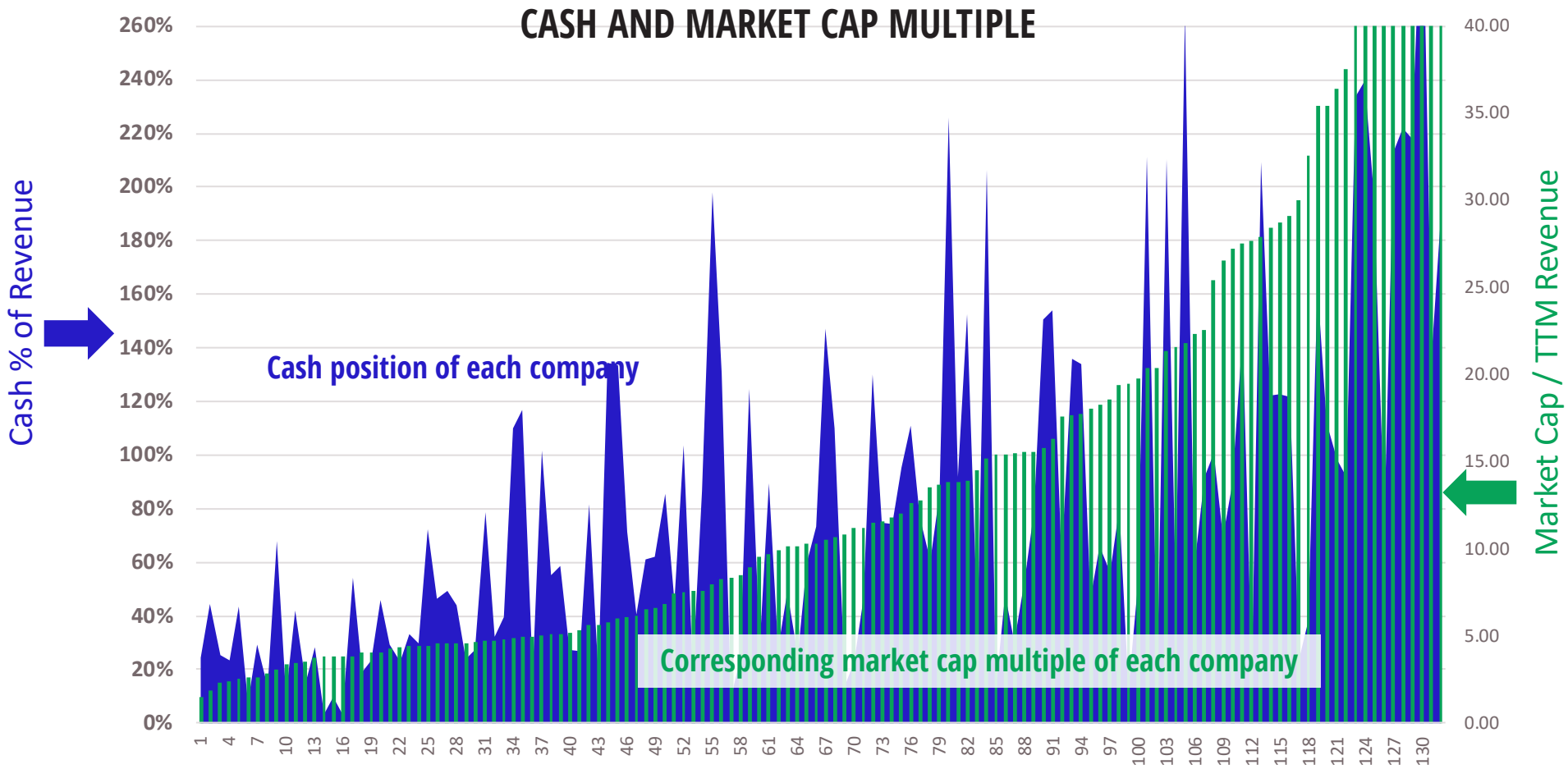
Notes:

1. Chart is truncated for readability.
2. Sample size is 126 versus 132 because 6 companies only have one year of public information.

Market Cap Analysis

Market cap multiple and cash position for each company

These charts show a visual of the relationship between a key variable and market cap multiple for each company. The intention is to show visually how correlated or not correlated the data are.



NOTES & INSIGHTS

- Cash position is the one of the best predictors of market cap multiple
- That said, there is significant noise in the data, with some high cash positions yielding relatively lower multiples
- Despite noise at the bottom of the chart, there is a general joint upward trend for multiples of five and higher

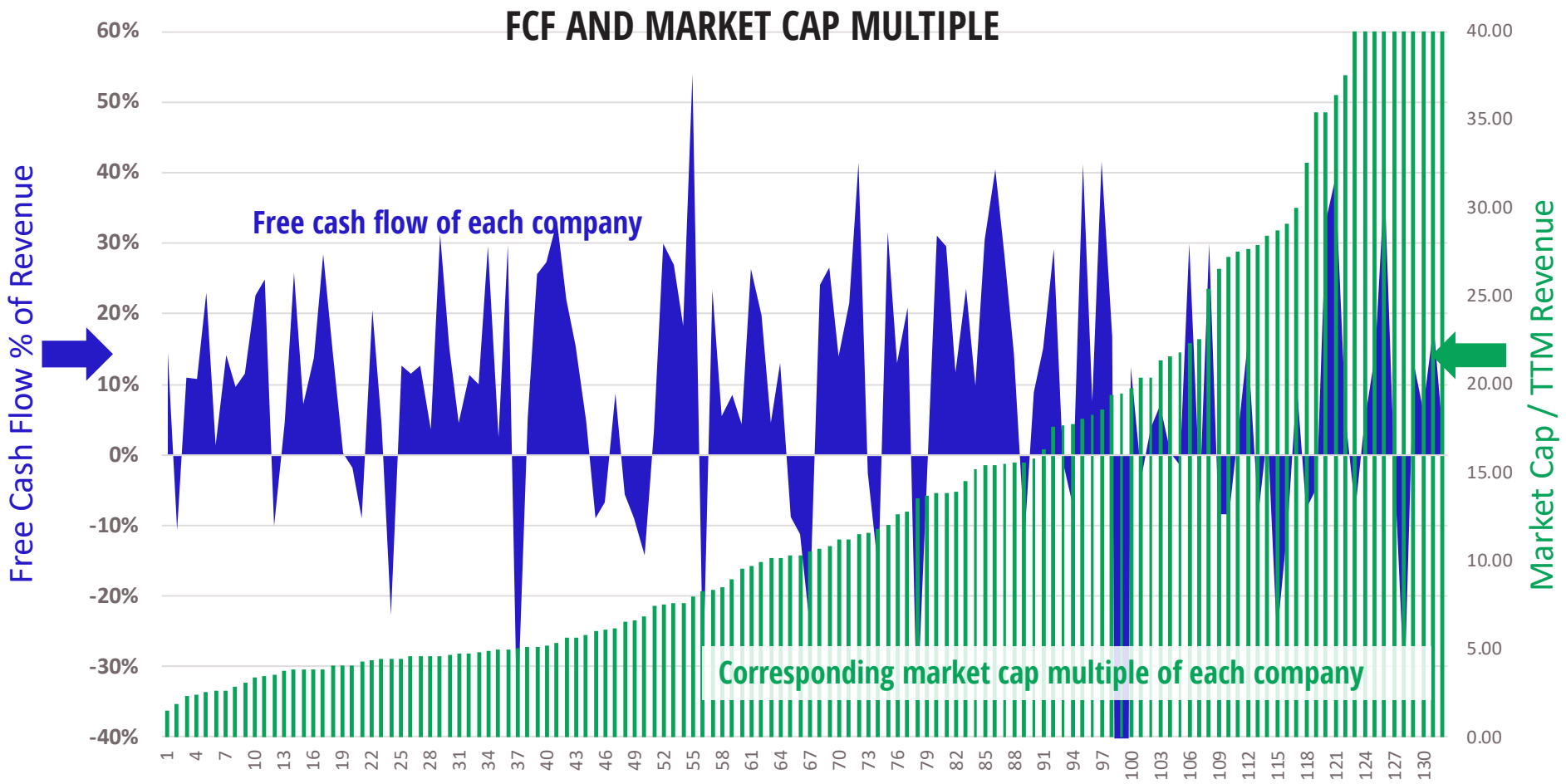
Notes:

1. Cash position is calculated as cash, cash equivalents, and marketable securities divided by MRY revenue

Market Cap Analysis

Market cap multiple and FCF for each company

These charts show a visual of the relationship between a key variable and market cap multiple for each company. The intention is to show visually how correlated or not correlated the data are.



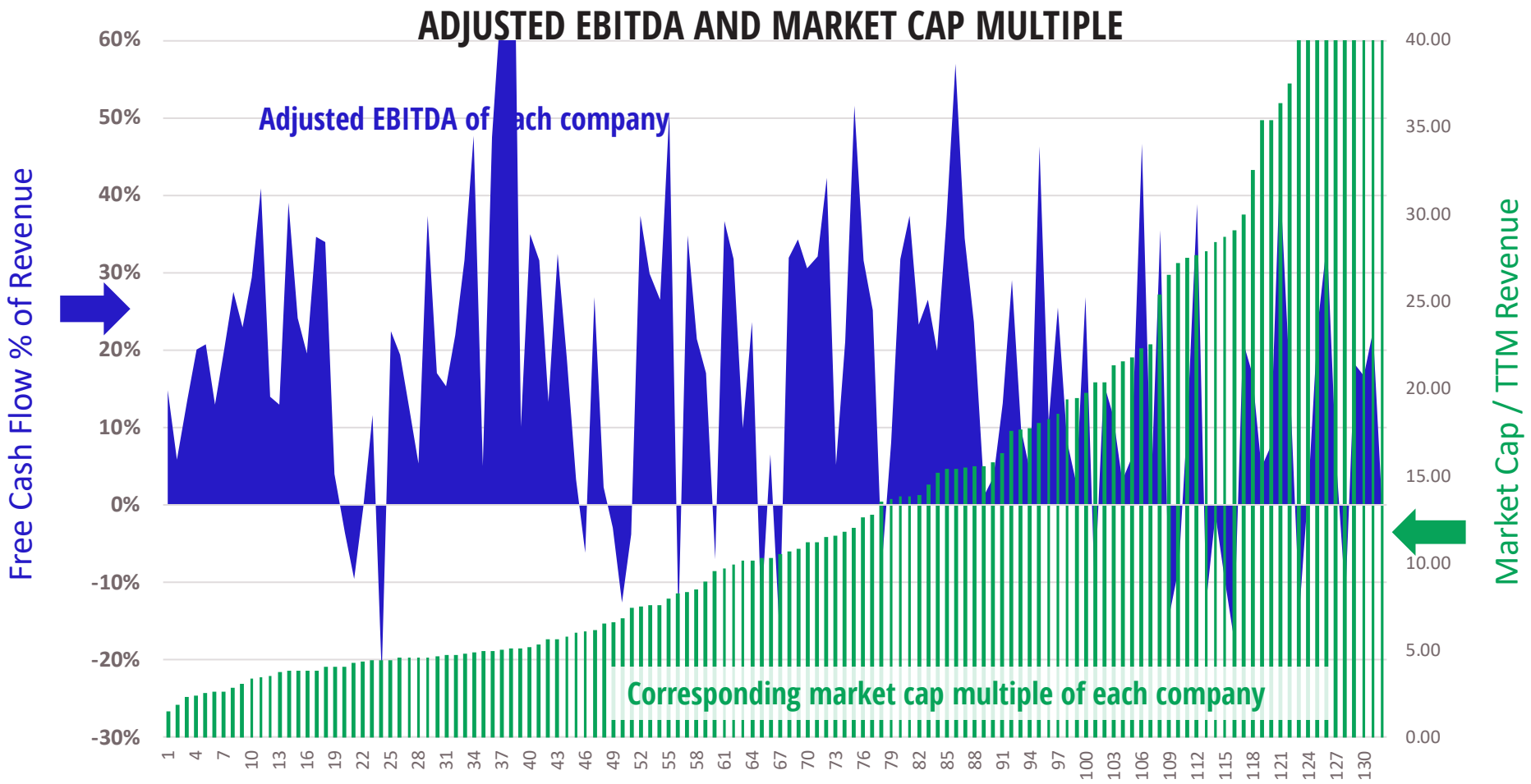
NOTES & INSIGHTS

- There is no statistical correlation between free cash flow and market cap multiple
- The chart shows free cash flow numbers fluctuating, with no apparent correlation to market cap multiple

Market Cap Analysis

Market cap multiple and Adjusted EBITDA for each company

These charts show a visual of the relationship between a key variable and market cap multiple for each company. The intention is to show visually how correlated or not correlated the data are.



NOTES & INSIGHTS

- There is no statistical correlation between adjusted EBITDA flow and market cap multiple
- The chart shows adjusted EBITDA numbers fluctuating, with no apparent correlation to market cap multiple

Market Cap Analysis

Comparison of top quartile to bottom quartile

Since there is too much noise in the data to derive any statistical conclusions, perhaps the best insights can be gained by comparing averages for the top quartile market cap multiple performers to those of the bottom quartile market cap performers. (Differences other than market cap multiple are expressed in basis points).

VARIABLE	QUARTILE TOP	QUARTILE BOTTOM	DIFFERENCE
Market Cap Multiple	35.9	3.7	968%
1-Year Growth	37.3%	15.2%	22.1
Gross Margin	72.5%	63.9%	8.6
Adjusted EBITDA	10.1%	17.3%	-7.2
Sales & Marketing	43.5%	28.6%	14.9
R&D	24.8%	15.5%	9.3
G&A	17.8%	14.1%	3.8
Stock Compensation	16.0%	6.1%	9.9
Operating Income	-14.5%	2.1%	-16.6
Free Cash Flow	5.0%	9.7%	-4.7
Cash	137.1%	32.2%	104.9
Net Cash	129.3%	-21.0%	150.3

10 X the multiple against revenue

2X the growth rate

3 X the stock compensation

Larger gross margin of leaders is invested, resulting in lower op margin

4 X the cash position

Notes:

1. All quartile numbers are averages within the quartiles. All quartile percentage numbers are a percentage of revenue.
2. Market cap multiple is based on market capitalizations for each company divided by their most recent fiscal year (MRY) revenue, both as of the date on the cover of this report.
3. Adjusted EBITDA is calculated as operating income plus depreciation, amortization, and stock-based compensation.
4. Cash = cash, cash equivalents, and marketable securities. Net cash = cash on hand minus total debt.

Appendix

Additional supporting material and notes.

Appendix
World and US GDP 2000-2018[1]

The following chart provides global and US GDP information for comparison with software growth rates. GDP information is provided in current US$ and constant 2010 US$. This report uses current US$ to ensure apples-to-apples comparisons.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
World GDP (current US$)	$60,334,107,287,213	$66,051,180,948,591	$73,393,151,742,720	$75,085,087,909,756	$77,236,276,160,204	$79,332,625,229,255	$75,049,412,247,228	$76,163,840,829,220	$80,950,587,981,544	$85,909,727,209,569
US GDP (current US$)	$14,448,933,025,000	$14,992,052,727,000	$15,542,581,104,000	$16,197,007,349,000	$16,784,849,190,000	$17,521,746,534,000	$18,219,297,584,000	$18,707,188,235,000	$19,485,393,853,000	$20,544,343,456,937
World GDP (constant 2010 US$)	$63,328,727,683,832	$66,051,180,948,591	$68,120,551,479,749	$69,828,765,432,176	$71,682,273,959,188	$73,713,165,230,762	$75,781,513,686,934	$77,662,032,001,558	$80,076,400,995,796	$82,457,593,609,264
US GDP (constant 2010 US$)	$14,617,299,295,858	$14,992,052,727,000	$15,224,554,803,721	$15,567,038,144,850	$15,853,795,607,833	$16,242,526,401,218	$16,710,459,044,262	$16,972,347,893,377	$17,348,626,599,471	$17,856,476,888,950
World GDP Growth (current US$)	-5.2%	9.5%	11.1%	2.3%	2.9%	2.7%	-5.4%	1.5%	6.3%	6.1%
US GDP Growth (current US $)	-1.8%	3.8%	3.7%	4.2%	3.6%	4.4%	4.0%	2.7%	4.2%	5.4%
World GDP Growth (constant 2010 US$)	-1.7%	4.3%	3.1%	2.5%	2.7%	2.8%	2.8%	2.5%	3.1%	3.0%
US GDP Growth (constant 2010 US$)	-2.5%	2.6%	1.6%	2.2%	1.8%	2.5%	2.9%	1.6%	2.2%	2.9%

Notes:
1. Source is The World Bank (databank.worldbank.org)

Appendix
Notes

1. Unless otherwise noted, all data are based on the most recent fiscal year (MRY) for each company, as reported in the SEC EDGAR database as of the date on the cover of this report.
2. Historical data is for fiscal years 2010-2019 for all companies. The number of companies grows for each year in the historical analysis, as more companies became public across the decade.
3. Company age is calculated as the current year (2020) minus the year in which each company was founded (day and month precision is not used in the calculation). Source of the founding date is the company website (some companies are actually older because they were formed from previous companies). In the case of companies formed from mergers, the oldest company is used to designate the resultant company founding year.
4. Growth rate in the operational analysis is based on the most recent fiscal year (MRY) compared to the previous fiscal year for each company.
5. Market capitalization is based on the stock prices as of the date on the cover of this report for each company. Market cap to revenue ratios are market capitalization divided by trailing twelve months (TTM) revenue through the most recently reported fiscal quarter as of the date on the cover of this report.
6. Adjusted EBITDA is calculated as operating income plus depreciation, amortization, and stock-based compensation. Adjusted EBITDA generally includes all forms of depreciation and amortization as reflected in the cash flow statement.
7. Cash = cash, cash equivalents, and marketable securities.
8. Total debt includes short-term debt, the current portion of long-term debt, long-term debt, borrowings under credit facility, capital lease obligations, convertible notes, and deferred rent.
9. CAPEX = gross CAPEX, in other words it does not net out the sale of assets.
10. Enterprise value (EV) = market cap plus total debt minus cash.
11. Most companies allocate depreciation and amortization costs to individual cost buckets, including cost of revenue, sales and marketing, G&A, and R&D. Some subset of companies explicitly show depreciation and amortization costs on the income statement after the other cost buckets. No attempt was made to reallocate these costs for this subset of companies. This has the effect of understating COGS, sales and marketing, G&A, and R&D for those companies.
12. Individual company YOY numbers may be distorted due to mergers and acquisitions. For example, sales efficiency can be distorted significantly up or down because of a significant acquisition or divestiture. No attempt has been made to normalize for mergers, acquisitions, and divestitures.

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