PitchBook

VC Manager Style

Using PitchBook's Private Manager Style framework to classify venture investors

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Introduction

The perennial argument around whether VC firms should vertically specialize as a point of differentiation has befuddled the industry for many years. Proponents view industry specialization as a significant value-add for entrepreneurs as the firm's partners and principals can provide sector-specific expertise and more thorough due diligence. Opponents conflate specialization with myopia as generalist firms can be more opportunistic toward investing in new and burgeoning industries.

Before determining if there is evidence to suggest that generalists or specialists are superior, however, we must first begin with a more fundamental question: What defines a generalist or specialist? There has not yet been a reliable, quantitative way to classify a specific fund manager into these groups.

To combat this data gap, we established PitchBook's Private Manager Style—a quantitative framework for classifying fund managers based on their investment style. The Private Manager Style repurposes the Herfindahl-Hirschman Index (HHI), a common measure of market concentration often used for anti-trust regulation cases during M&A transactions.[1] Essentially, the Private Manager Style calculates the proportion of an investor's collective portfolio within each sector and industry group (or other characteristics such as deal type or geography) and generates a measure of concentration. A lower HHI score indicates that the firm's investments are highly diversified across various industries, while a higher HHI score signals that the firm's investments are more concentrated. We recently published a detailed analyst note that introduces the concept and methodology, as well as a complementary analysis of how the framework can be applied to PE managers.

While a firm's past investments do not necessarily dictate its future ones, LPs and entrepreneurs can use PitchBook's Private Manager Style to identify GPs that fit a desired profile. To note, the Private Manager Style and corresponding HHI does not aim to provide a judgment about fund managers. Rather, the purpose of this style score is to give asset allocators a framework to understand a fund manager's investments using a standardized metric that allows for unilateral comparison against other managers.

1: "Herfindahl-Hirschman Index," US Department of Justice, 2018.

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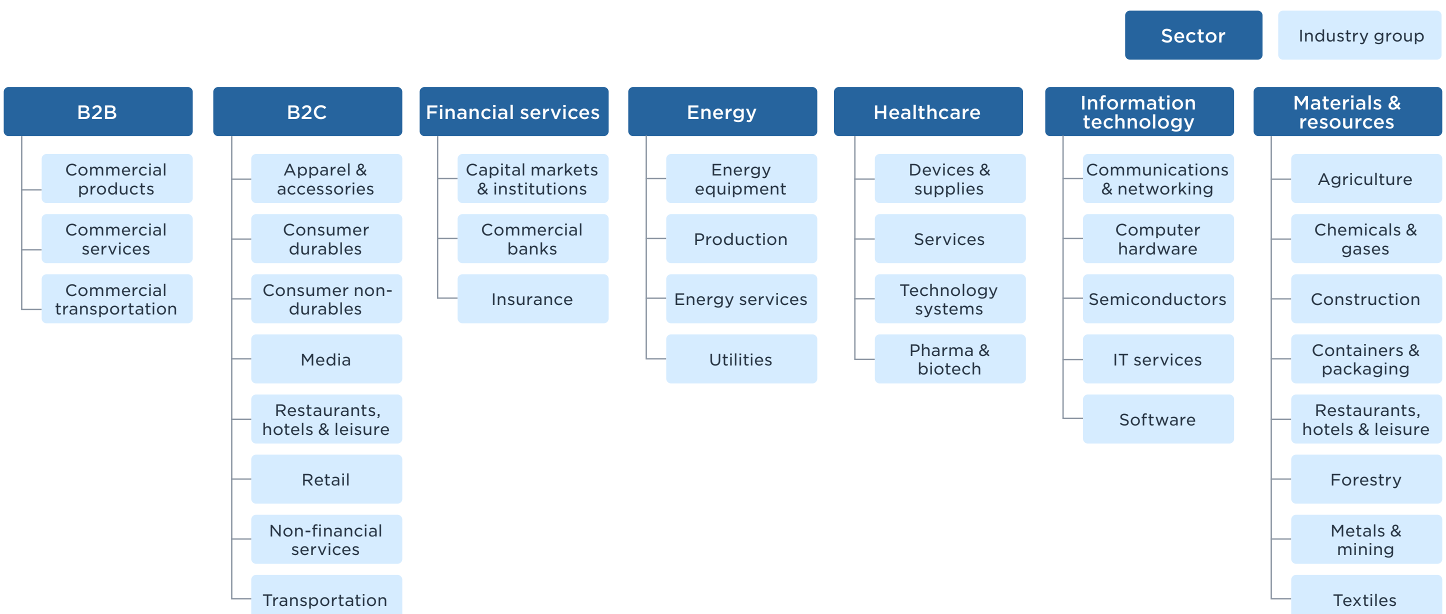
Classifying VC firms by industry HHI

This note uses the PitchBook Private Manager Style as a framework for evaluating VC fund managers. Given the vast number of managers in the VC asset class, finding points of differentiation between managers can present a challenge. By looking at the industry distribution of a manager's prior investments, we can use the Private Manager Style to determine if they skew more toward generalist or specialist approaches.

We first look at a fund manager's investments within a sector—the top-most level of classification within the PitchBook Platform—to determine the **sector HHI**. Then, we look at the same manager's investments within the industry groups to determine the **industry group HHI**. By combining these two scores at a ratio of 70% sector and 30% industry group, we are then able to calculate a composite **industry HHI**. The accompanying diagram helps illustrate our sector and industry group classifications.

PitchBook industry map

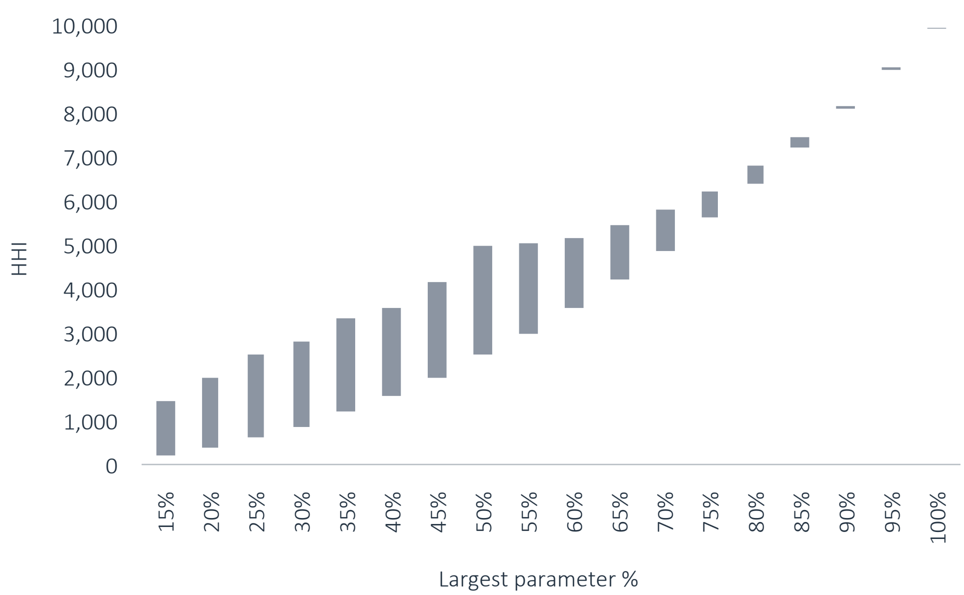


Source: PitchBook | **Geography:** Global

HHI is calculated by squaring the percentage of investments in each variable, with a maximum value of 10,000 and a minimum value determined by the number of variables (sectors, groups, geographies, and so on) involved. Since the terms in the calculation are squared, the HHI grows exponentially as concentration rises. This means that HHI values have a non-linear relationship.

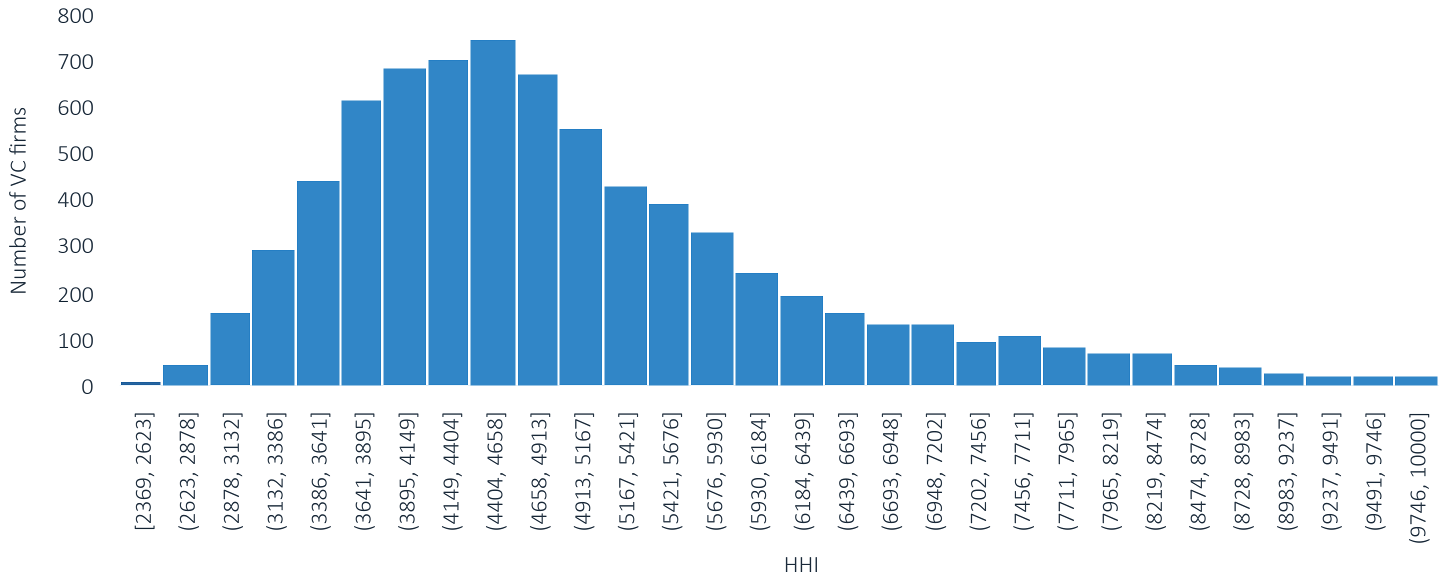
The accompanying graph shows the relationship between HHI and primary parameter weighting. For example, if a firm's largest sector comprised 40% of its investments, its sector HHI score could range anywhere from 1,600 to 3,600 depending on the allocation of its remaining investments. However, if that sector comprised 75% of a firm's investments, its sector HHI range is much tighter, ranging anywhere from 5,625 to 6,250. Furthermore, the graph illustrates that a 1,000-point difference between, say, HHI scores of 2,000 and 3,000 vary more greatly than the difference between HHI scores of 8,000 and 9,000.

Range of possible HHI scores



Source: PitchBook
For illustrative purposes only.

Composite industry HHI distribution of all VC firms with at least 15 deals*



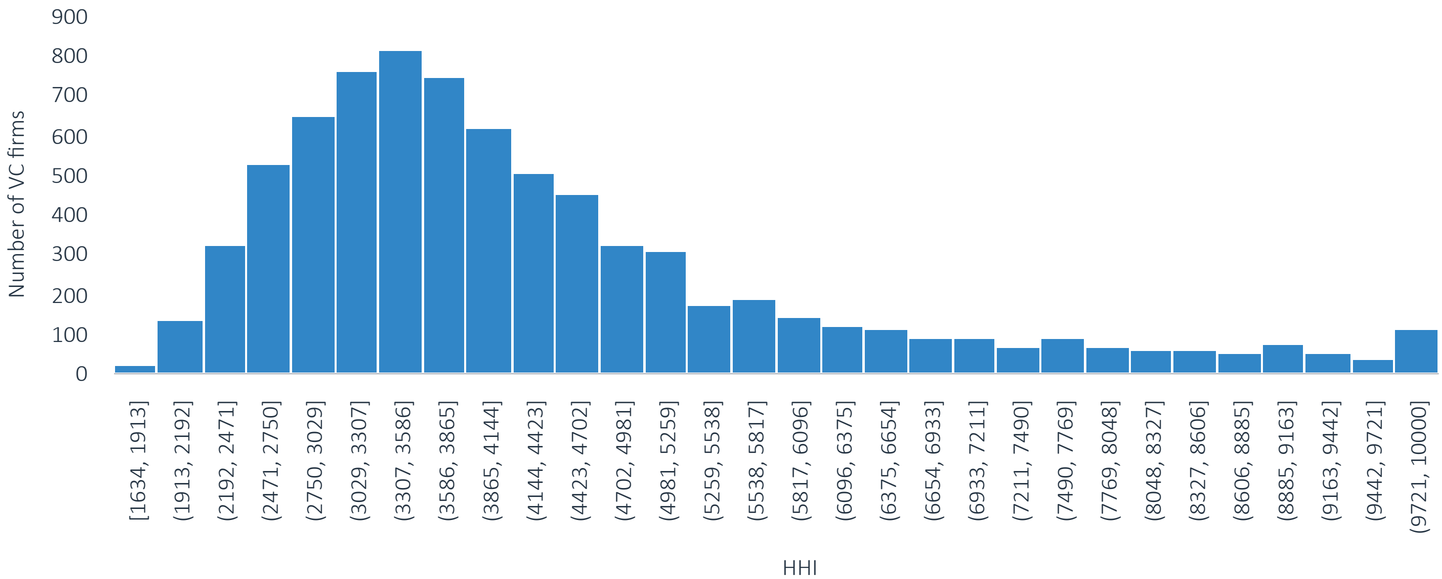
Source: PitchBook | **Geography:** Global
*As of October 15, 2020

A histogram of all VC firms with at least 15 deals shows a positively skewed industry HHI distribution. This indicates that VC firms tend to lean more generalist in nature with greater portfolio diversification. Given the breadth and creativity of startups, it is unsurprising that most GPs within the VC universe tend to invest more broadly across industries. With that said, the fat right tail indicates that the VC ecosystem includes a substantial number of specialists as well.

When we dive deeper into the industry HHI, we see a divergence between the sector HHI and the industry group HHI distributions (shown on the following pages). While the sector HHI distribution exhibits a positive skew and a median of 3,827, interestingly, the industry group HHI distribution shows a slight negative skew and a median of 6,516. Notably, the industry group HHI distribution also displays much less kurtosis when compared to the sector HHI distribution. We attribute this to the tendency for VCs to gravitate to one of two areas: tech and healthcare. Because many VC firms are concentrated within the tech and healthcare sectors, the industry group HHI scores are particularly significant. And while most VCs lean generalist at the sector level, there tends to be more specialization at the industry group level. Additionally, the last bucket in the industry group HHI distribution indicates that several investors only invest in one industry group per sector.

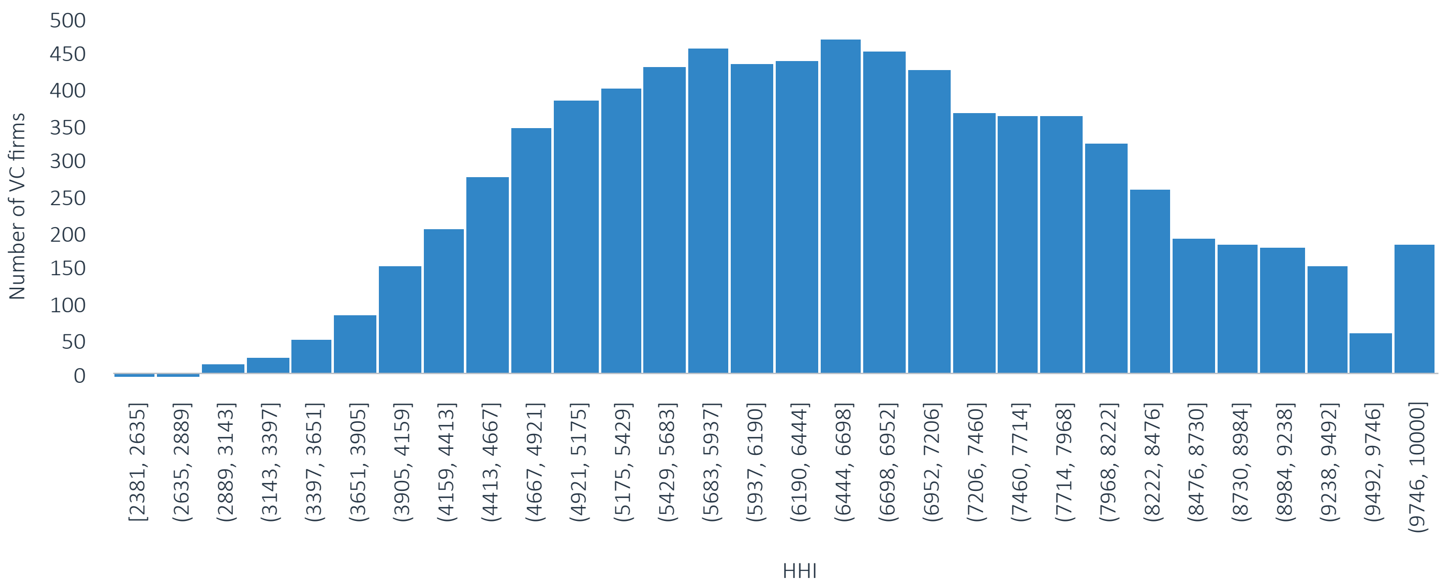
While our recent PE manager style analysis focuses mainly on sector, we believe juxtaposing sector and industry group HHI scores provides better insight into a VC's underlying strategy. In the chart on page 6, we compare the sector and industry group HHI for the top 500 VC firms by deal count. In addition, we label some notable VC firms and where they sit within our Private Manager Style framework.

Sector HHI distribution of all VC firms with at least 15 deals*



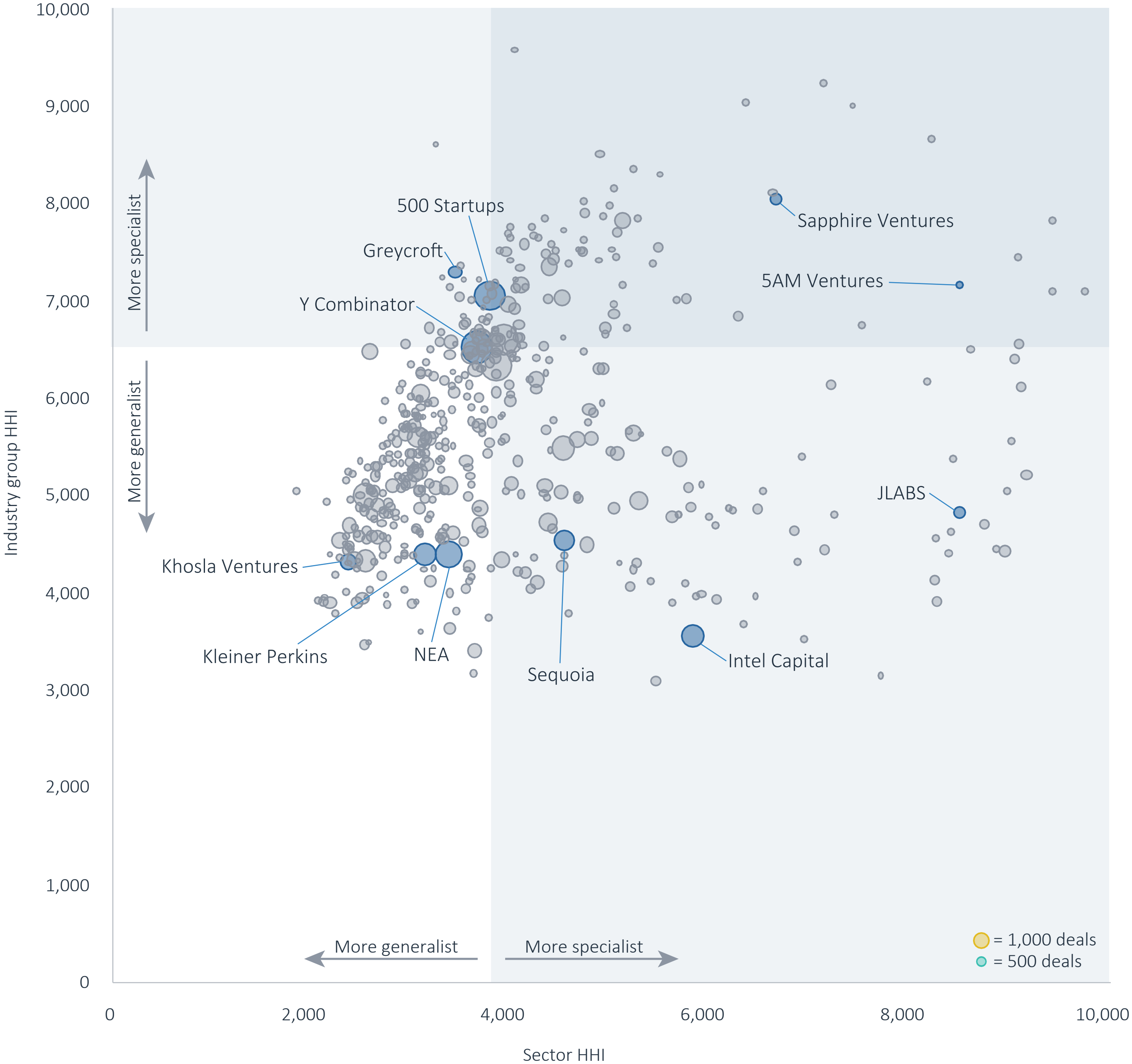
Source: PitchBook | **Geography:** Global
*As of October 15, 2020

Industry group HHI distribution of all VC firms with at least 15 deals*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

Comparing sector and industry group HHI scores for the top 500 VC investors by deal count*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020
Note: Bubble area represents total deal count. Representative medians are calculated using the entire dataset.

Real-world examples

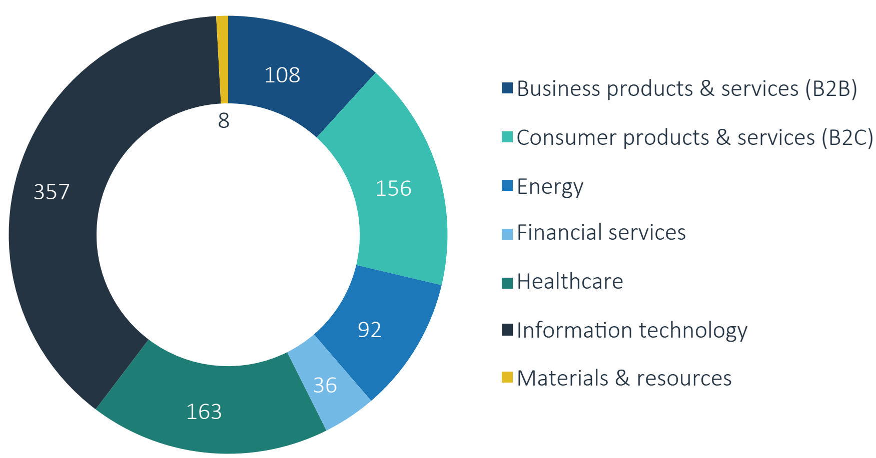
In this section, we selected a few well-known VC firms. We calculate a sector and industry group HHI score for each manager and discuss how the distribution of a manager's investments affects these scores.

Case study #1: Khosla Ventures

Khosla Ventures is a VC firm based in Menlo Park, CA with $7.2 billion in assets under management, and is widely viewed as a generalist firm. With over 900 investments to date, Khosla Ventures invests across a range of industries—with rounds ranging from pre-seed to the late stage. Based on our methodology, Khosla Ventures currently has a sector HHI score of 2,366 and an industry group HHI score of 4,313. The firm sits well below both medians and in the first quartiles for both HHIs, indicating that Khosla Ventures' investments are thoroughly diversified across different sectors and industry groups relative to other VC investors.

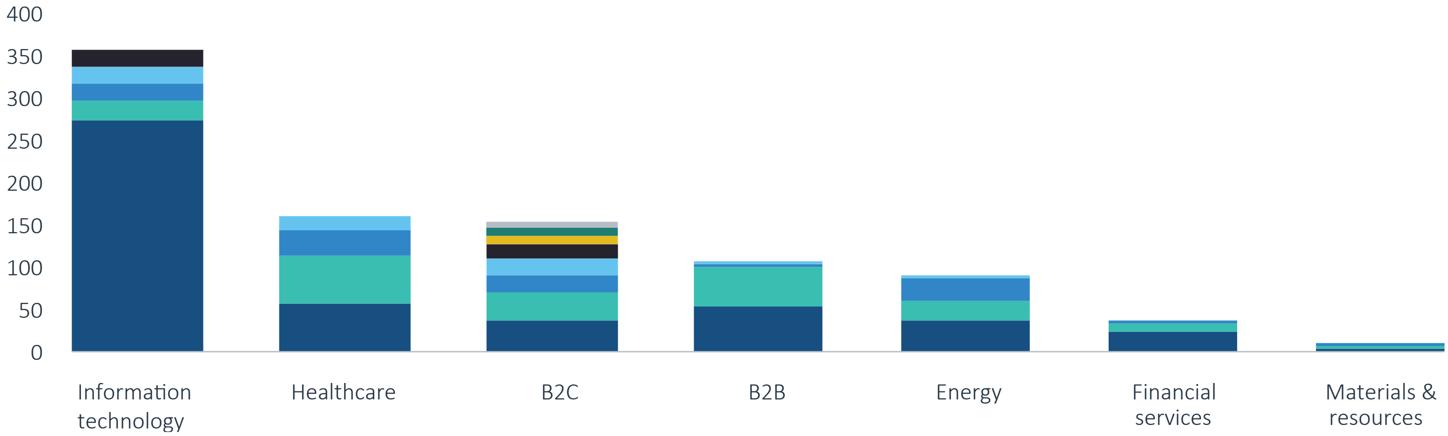
Based on the distribution of Khosla Ventures' investments across the seven PitchBook sectors, no single industry sector comprises more than 50% of its total deal count. Currently, information technology is the manager's most frequent industry, making up 38.8% of its total investments. Yet, Khosla Ventures also has a substantial number of investments in healthcare, consumer products and services (B2C), business products and services (B2B), and energy. This level of diversification is particularly evident in the firm's last 15 investments, which include a range of industry groups such as pharma & biotech (healthcare sector), retail (B2C sector), and communications and networking (information technology sector).

Khosla Ventures' VC investments (#) by sector*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

Khosla Ventures' VC investments (#) by sector and industry group*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020
Note: Colors represent the myriad industry groups within each sector. Each sector type (healthcare, B2C, etc.) has distinct groups within it, so we have not represented them all with a legend here. Please refer to the diagram on page 2 for a more detailed breakdown.

Khosla Ventures' last 15 investments

Company name	Deal date	Deal type	Sector	Industry group
Advanced Chemotherapy Technologies	October 29, 2020	Late-stage VC (Series A)	Healthcare	Pharma & biotech
Atmos	October 29, 2020	Seed	Consumer products & services (B2C)	Services (non-financial)
Hermeus	October 29, 2020	Early-stage VC (Series A)	Business products & services (B2B)	Commercial products
Faire	October 27, 2020	Late-stage VC (Series E)	Consumer products & services (B2C)	Retail
Tarana	October 20, 2020	Late-stage VC	Information technology	Communications and networking
Siren	September 30, 2020	Early-stage VC (Series B)	Healthcare	Healthcare devices and supplies
AREVO	September 24, 2020	Early-stage VC (Series B)	Business products & services (B2B)	Commercial services
Siolta Therapeutics	September 22, 2020	Early-stage VC (Series B)	Healthcare	Pharma & biotech
Coda	September 17, 2020	Late-stage VC (Series C)	Information technology	Software
Invoy	September 15 ,2020	Late-stage VC (Series A1)	Healthcare	Healthcare devices and supplies
Zycada	August 14, 2020	Early-stage VC (Series A)	Information technology	Software
Nooma Bio	August 11, 2020	Seed	Healthcare	Pharma & biotech
Vicarious Surgical	August 7, 2020	Late-stage VC (Series A3)	Healthcare	Healthcare devices and supplies
Zibo	August 5, 2020	Seed	Information technology	Software
IgGenix	August 4, 2020	Early-stage VC (Series A)	Healthcare	Pharma & biotech

Source: PitchBook | **Geography:** Global

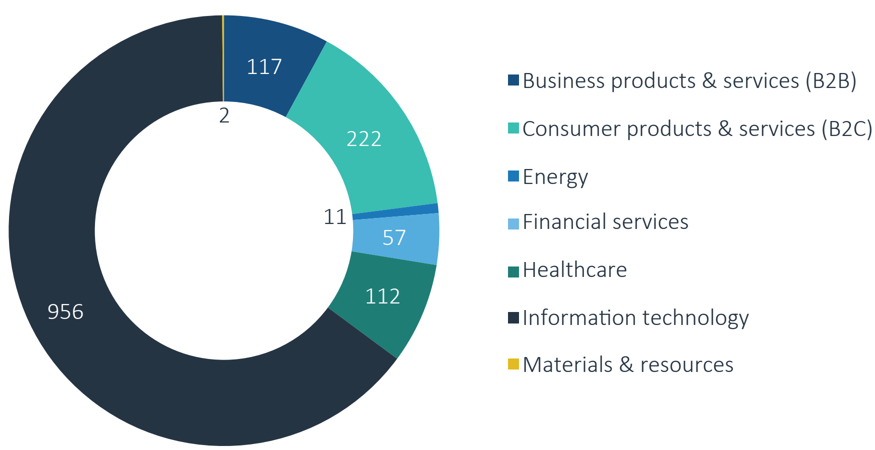
Case study #2: Sequoia Capital

With over 1,500 investments to date, Sequoia also invests across a wide range of industries and deal stages. While Sequoia maintains a reputation as a generalist, our Private Manager Style methodology labels them with a sector HHI score of 4,526 and an industry group HHI score of 4,534. The firm's sector HHI sits between the 60th and 70th percentile, indicating that the firm is moderately more specialized at the sector level when compared to the median, but its industry group HHI sits just under the 10th percentile, meaning the firm is much more generalized at the industry group level.

When compared with Khosla Ventures' sector HHI of 2,366, Sequoia's higher score illustrates more specialization within sectors. Indeed, 64.5% of the firm's investments are in the information technology sector, while the remainder of its investments are diversified across consumer products and services (B2C), healthcare, business products and services (B2B), and financial services.

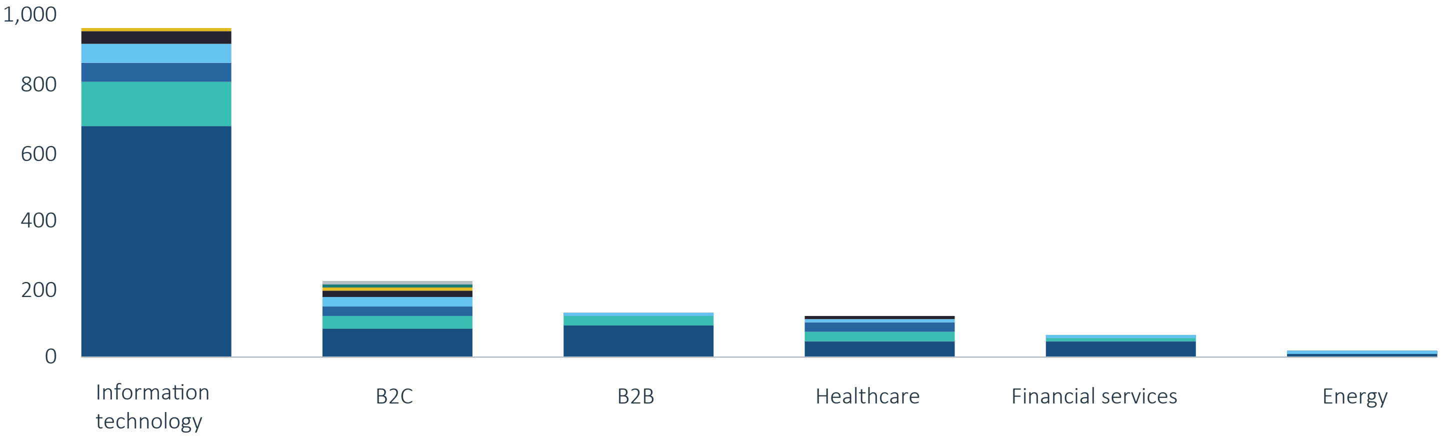
This manager clearly has a preference for allocating capital to companies in the information technology space; however, because the remainder of Sequoia's collective portfolio includes a number of other sectors, the firm has a more diversified sector HHI score. When comparing only the composite industry HHI, Sequoia's 4,528 implies more specialization than Khosla Ventures' 2,950; however, only by looking at the individual sector and industry group HHIs do we glean more detail on their investments.

Sequoia Capital's VC investments (#) by sector*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

Sequoia Capital's VC investments (#) by sector and industry group*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020
Note: Colors represent the myriad industry groups within each sector. Each sector type (healthcare, B2C, etc.) has distinct groups within it, so we have not represented them all with a legend here. Please refer to the diagram on page 2 for a more detailed breakdown.

Sequoia Capital's last 15 investments

Company name	Deal date	Deal type	Sector	Industry group
Stairwell	October 28, 2020	Seed	Information technology	Software
Faire	October 27, 2020	Late-stage VC (Series E)	Consumer products & services (B2C)	Retail
Rockset	October 27, 2020	Early-stage VC (Series B)	Information technology	IT services
strongDM	October 27, 2020	Early-stage VC (Series A)	Information technology	Software
Robust Intelligence	October 21, 2020	Early-stage VC (Series A)	Information technology	Software
Retool	October 20, 2020	Early-stage VC (Series B)	Information technology	Software
Cribl	October 15, 2020	Early-stage VC (Series B)	Information technology	Software
Temporal Technologies	October 15, 2020	Early-stage VC (Series A)	Information technology	Software
Whisper	October 15, 2020	Early-stage VC (Series B)	Healthcare	Healthcare devices and supplies
Alkira	October 13, 2020	Early-stage VC (Series B)	Information technology	IT services
SnapDocs	October 13, 2020	Late-stage VC (Series C)	Information technology	Software
mmhmm	October 7, 2020	Early-stage VC (Series A)	Information technology	Software
Attentive	September 23, 2020	Late-stage VC (Series D)	Information technology	Software
Robinhood	September 22, 2020	Late-stage VC (Series G)	Information technology	Software
Playco	September 21, 2020	Early-stage VC (Series A)	Information technology	Software

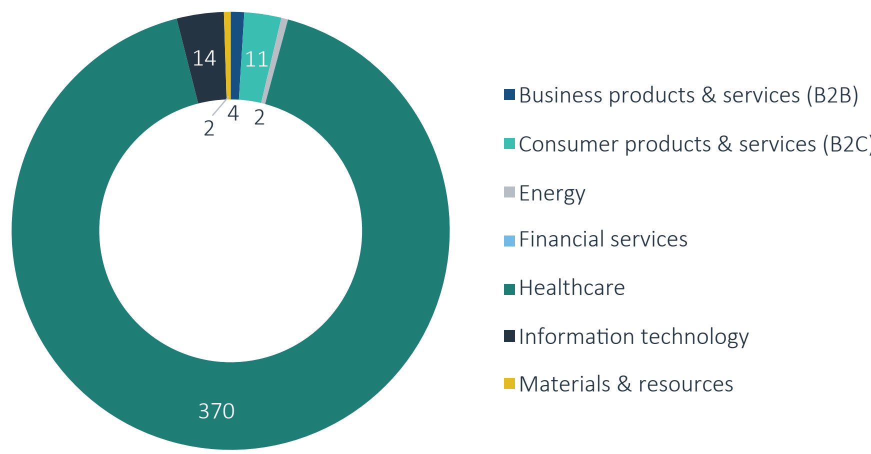
Source: PitchBook | **Geography:** Global

Case study #3: JLABS

JLABS is a global network of innovation ecosystems run by Johnson & Johnson. With over 500 investments to date, JLABS acts as an incubator/accelerator for healthcare startups tackling a broad range of problems. We assumed JLABS would prove quite the specialist. However, our methodology labels JLABS with a sector HHI score of 8,487 and an industry group HHI score of 4,829.

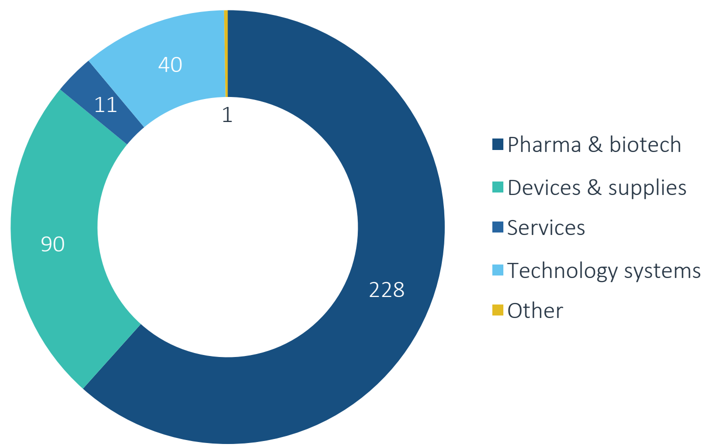
This bifurcation in HHI scores is particularly interesting and provides valuable detail that JLABS' composite industry HHI score of 7,390 masks. JLABS' high sector HHI indicates a strong degree of specialization—indeed, 92.0% of JLABS' investments are in the healthcare sector. On the other hand, the low industry group HHI indicates diversification among the industry groups within healthcare, such as healthcare technology systems, pharma & biotech, and so on.

JLABS' VC investments (#) by sector*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

JLABS' healthcare VC investments (#) by industry group*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

JLABS' last 15 investments

Company name	Deal date	Deal type	Sector	Industry group
Gabi SmartCare	August 27, 2020	Accelerator/incubator	Healthcare	Healthcare technology systems
Glyscend	February 7, 2020	Early-stage VC (Series A)	Healthcare	Healthcare devices and supplies
Vivante Health	January 20, 2020	Early-stage VC (Series A1)	Healthcare	Healthcare technology systems
Aro Biotherapeutics	December 27, 2019	Early-stage VC	Healthcare	Pharma & biotech
CARsgen Therapeutics	December 5, 2019	Accelerator/incubator	Healthcare	Pharma & biotech
HERO Medical	November 11, 2019	Grant	Healthcare	Healthcare devices and supplies
Clairways	October 17, 2019	Accelerator/incubator	Healthcare	Healthcare devices and supplies
Algometrx	September 10, 2019	Accelerator/incubator	Healthcare	Healthcare devices and supplies
Frontier Medicines	August 1, 2019	Accelerator/incubator	Healthcare	Pharma & biotech
Eagle Genomics	July 30, 2019	Accelerator/incubator	Healthcare	Healthcare technology systems
Beijing SyngenTech	July 23, 2019	Accelerator/incubator	Healthcare	Pharma & biotech
Helios Bioelectronics	July 23, 2019	Accelerator/incubator	Healthcare	Healthcare technology systems
HighTide Therapeutics	July 23, 2019	Accelerator/incubator	Healthcare	Pharma & biotech
Prohibix	July 18, 2019	Accelerator/incubator	Healthcare	Pharma & biotech
Asiabiome	July 3, 2019	Accelerator/incubator	Healthcare	Pharma & biotech

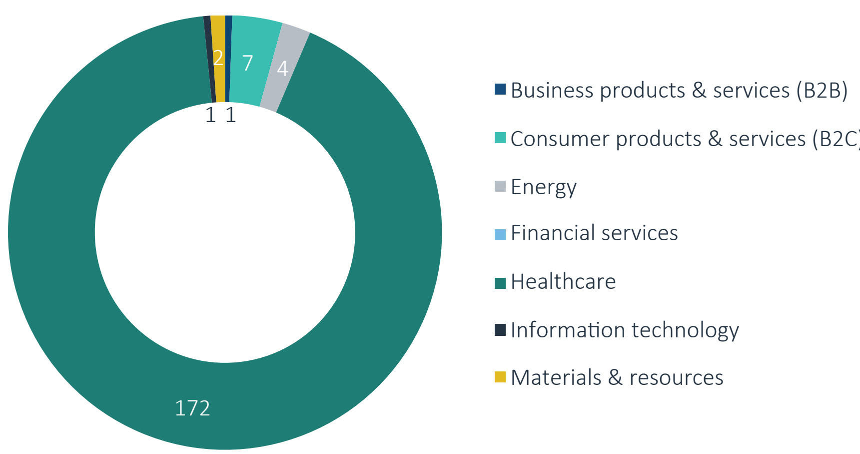
Source: PitchBook | **Geography:** Global

Case study #4: 5AM Ventures

5AM Ventures is a VC firm based in San Francisco with $1.5 billion in assets under management. With just under 200 investments to date, the firm invests in healthcare startups focused on using biotechnology and drug delivery technologies to solve unmet medical problems. Our methodology labels 5AM Ventures with a sector HHI score of 8,488 and an industry group HHI score of 7,155, with both numbers sitting well above the median. This fund manager is a life sciences venture firm and, as such, the overwhelming majority—91.6%—of their investments are in the healthcare sector. The firm only invests a tiny fraction of its portfolio in other industries. Indeed, the manager's last 15 investments are predominantly in the healthcare sector—more specifically, in the pharma & biotech industry group.

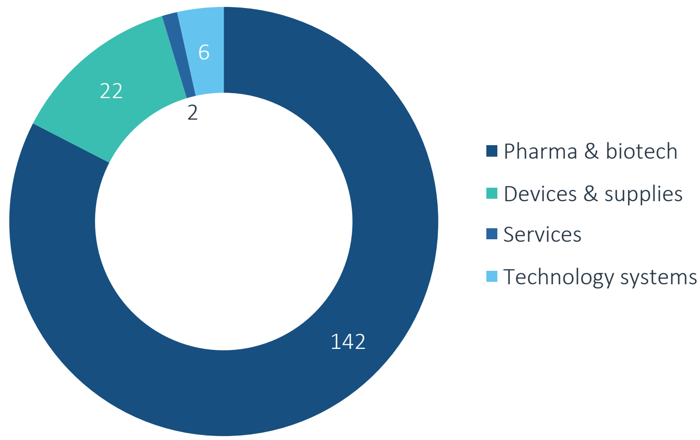
When compared with JLABS, 5AM Ventures has a similar sector HHI but a notably different industry group HHI score because 5AM Ventures tends to only invest within the pharma & biotech industry group while JLABS invests across all healthcare groups. Because of this, the firms' respective composite scores vary slightly—5AM Ventures has an industry HHI score of 8,088 compared with JLABS' industry HHI score of 7,390. However, as discussed earlier in the note, due to the exponential nature of HHI calculations, the disparity here is less meaningful. Yet, these nuances still matter; both firms—5AM Ventures and JLABS—appear to be healthcare specialists, but digging a little deeper reveals key differences in their respective investment strategies.

5AM Ventures' VC investments (#) by sector*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

5AM Ventures' healthcare VC investments (#) by industry group*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

5AM Ventures' last 15 investments

Company name	Deal date	Deal type	Sector	Industry group
Escient Pharmaceuticals	August 25, 2020	Early-stage VC (Series B)	Healthcare	Pharma & biotech
Vor Biopharma	July 7, 2020	Late-stage VC (Series B)	Healthcare	Pharma & biotech
Artiva Biotherapeutics	June 26, 2020	Early-stage VC (Series A)	Healthcare	Pharma & biotech
NodThera	June 3, 2020	Early-stage VC (Series B)	Healthcare	Pharma & biotech
Rallybio	May 19, 2020	Early-stage VC (Series B)	Healthcare	Pharma & biotech
TMRW Life Sciences	May 19, 2020	Early-stage VC (Series B)	Healthcare	Healthcare technology systems
Diagon	May 18, 2020	Early-stage VC	Business products & services (B2B)	Commercial services
Akouos	March 3, 2020	Early-stage VC (Series B)	Healthcare	Pharma & biotech
Ivenix	February 14, 2020	Late-stage VC	Healthcare	Healthcare technology systems
Novome Biotechnologies	January 6, 2020	Early-stage VC (Series A1)	Healthcare	Pharma & biotech
Entrada Therapeutics	December 26, 2019	Early-stage VC (Series A)	Healthcare	Pharma & biotech
RareCyte	December 19, 2019	Late-stage VC (Series F)	Healthcare	Pharma & biotech
Wildcat Discovery Technologies	October 15, 2019	Late-stage VC (Series C)	Energy	Energy services
Nido Biosciences	September 10, 2019	Seed	Healthcare	Pharma & biotech
Cleave Therapeutics	June 17, 2019	Late-stage VC	Healthcare	Pharma & biotech

Source: PitchBook | **Geography:** Global

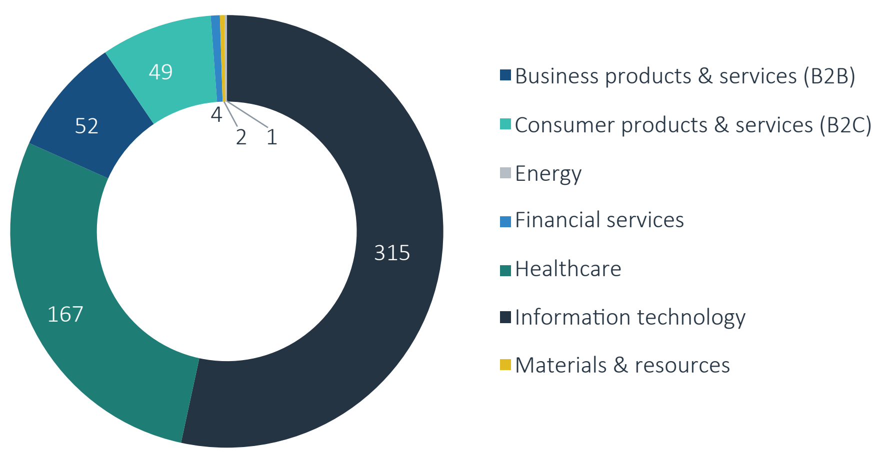
Case study #5: Atlas Venture

One interesting facet of the Private Manager Style is that it classifies an investor at a point in time based on its entire universe of investments since founding up until that date. But what if a manager shifts their investment style over time? In this case study, we look at Atlas Venture and how the direction of its investments has shifted over the last decade.

Atlas Venture is a VC firm based in Cambridge, MA with $1.6 billion in assets under management. Atlas was originally founded in 1980, and with over 700 investments to date, the firm has historically invested in both the information technology and the healthcare sectors. Due to this dual-sector investment strategy, Atlas Venture currently has a sector HHI score of 3,662 and an industry group HHI score of 5,709.

However, in October 2014, the firm split its life sciences and technology franchises into two separate entities, with the life sciences division retaining the Atlas brand.[2] Indeed, when we consider only investments made from 2015 onwards, we see that Atlas Venture's sector HHI shifts to 7,718 and its industry group HHI shifts to 9,337, indicating that it no longer diversifies its investments and is very much specialized within the healthcare sector. Understanding style drifts in managers is particularly useful as it potentially indicates where a firm's future investments may lie.

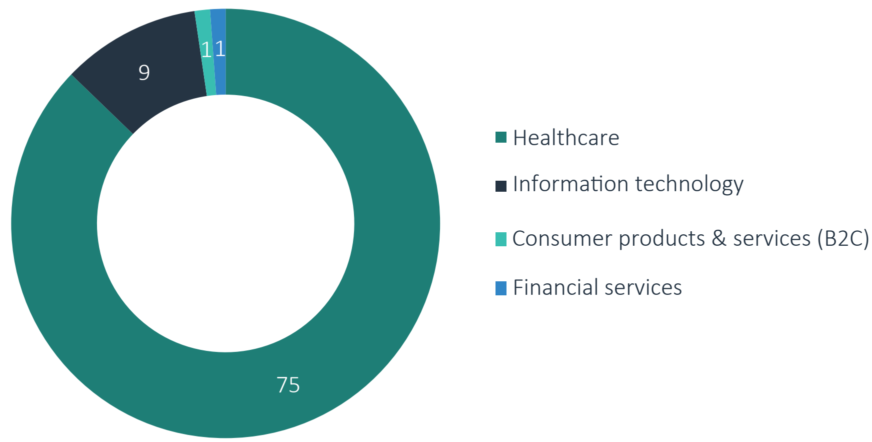
Atlas Venture's VC investments (#) by sector (1980-2014)



Source: PitchBook | **Geography:** Global

2: "Exclusive: Atlas Venture is Splitting Up," Fortune, Dan Primack, 2014.

Atlas Venture's VC investments (#) by sector (2015-2020)*



Source: PitchBook | **Geography:** Global
*As of October 15, 2020

Conclusion

Ultimately, PitchBook's Private Manager Style framework gives capital allocators and operators a unique tool to identify GPs and managers that align with their own investment preferences. We believe providing a quantitative method to determine a VC firm's investment style will aid in the due-diligence process and specify a metric for investor comparisons.

An investor's industry preference is not simply black and white, nor is it written in stone. An investor's style constantly evolves based on a variety of factors such as macroeconomic opportunities, fund performance, LP-GP relationships, and more. By providing a framework to classify the universe of VC investors, we can now utilize this Private Manager Style methodology to look at fund performance metrics in future analyst notes.