PitchBook

Institutional Research Group

Analysis

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We have launched a [pre-seed report methodology](#) to more accurately and comprehensively capture deals from the earliest phase of venture. Going forward we will sunset "angel" as a specified stage of venture in all of PitchBook's venture-focused reports.

EMERGING TECH RESEARCH
Generative AI VC Trends
Segment and category analysis

PitchBook is a Morningstar company providing the most comprehensive, most accurate, and hard-to-find data for professionals doing business in the private markets.

Key takeaways

- **Generative AI is not exempt from the VC recession:** Outside of outlier corporate partnerships, VC investment is only on pace to match the total raised by GenAI leaders in 2021, with $7.9 billion in conventional VC rounds invested YTD.

- **A barbell is forming in GenAI startup deal flow by product type:** VC deal count is supporting the underlying AI core technologies and their ultimate vertical applications instead of general-purpose middleware across audio, language, images, and video.

- **Closed deals feature high revenue multiples:** The median late-stage valuation has accelerated 171.7% YoY to $250.0 million, while early-stage valuations have grown as well.

- **Among segments, code stands out for M&A probability:** Companies in this segment feature high-quality investors, consistent fundraising frequency, and improving headcount.

- **In IPO probability, the AI core and healthcare segments have the highest values:** Companies in these segments stand out with their scale, pace of fundraising, and high-quality investors.

Overview

Generative AI (GenAI) has created a new class of technology leaders across product segments, yielding unprecedented VC deals. The multibillion-dollar partnerships between tech giants and startups are changing the VC landscape and presenting promise for continued startup outcomes during a tech recession. Discourse around GenAI suggests that we are in the next hype cycle and that VCs are eager to fund any company building in the space. To validate this, we have been tracking the space since the emergence of diffusion models in Q3 2022, continually adding companies that are building text and image generation models to our GenAI emerging space market map. This list includes both new entrants and pre-existing AI companies developing new techniques. We believe this list has become the most comprehensive of its kind in the VC ecosystem. As a result, it has been leveraged by leading corporations to map the startup landscape. We debuted this market map in our Q1 2023 Generative AI Vertical Snapshot and have since added more than double the number of companies included to over 1,500 in our Generative AI Emerging Space. With this foundation, we can gain insight into the initial tendencies of investors in the emerging space that will shape investment opportunities going forward.

Generative AI product taxonomy

AI core

- Data
- Deployment
- Model architecture
- Orchestration

Audio

- Audio search
- Music generation
- Synthetic voice
- Voice recognition & transcription

Code

- Application development
- Coding assistants
- Data analytics
- Documentation
- Testing

Healthcare

- Biotech
- Healthtech

Natural language interfaces

- Chatbots & personal assistants
- Customer support
- Neural search
- Sales & marketing
- Translation
- Writing & editing

Vertical applications

- Corporate strategy
- E-commerce
- Edtech
- Fintech
- Industrial
- Information security
- Legal
- Proptech

Visual media

- 2D images
- 3D models
- Content suite
- Gaming
- Video

A total of $23.2 billion has been committed to generative AI startups in 2023 through October 15—already a 250.2% increase over 2022's total. Outside of outlier corporate partnerships, VC investment is only on pace to match the total raised by GenAI leaders in 2021, with $7.9 billion in conventional VC rounds invested YTD. We exclude deals made by Microsoft and Amazon for OpenAI, Anthropic, and Inflection AI given their outsized deal values and commitment of cloud computing resources over a multiyear period to stand in for cash. These commitments do not resemble traditional VC investments and come from corporate balance sheets instead of corporate venture arms. Seen this way, conventional VC investors have not exceeded their prior pace of deployment, and especially so when considering the involvement of corporate investors in these rounds. GenAI is not exempt from the overall VC recession, though the field is not facing declines seen in other categories.

Generative AI VC deal value ($B)
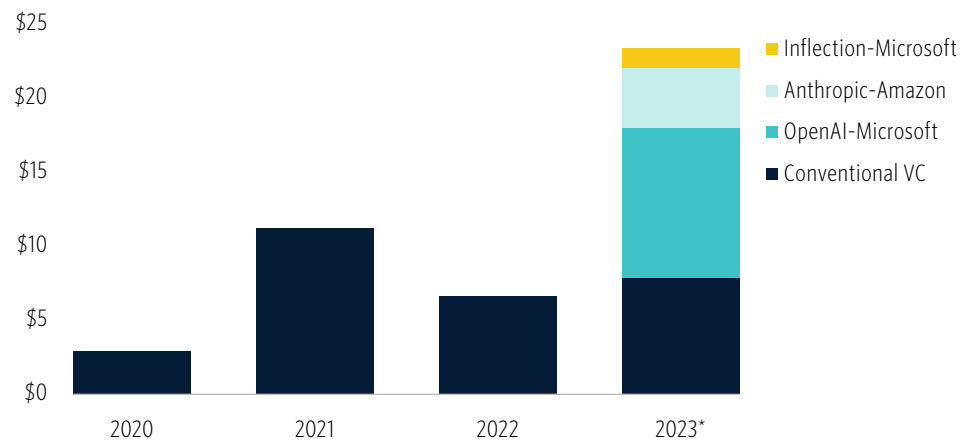
Source: PitchBook • Geography: Global
*As of October 15, 2023

YTD fundraising and deal count by segment

A barbell is forming in GenAI startup product types, with VC deal count supporting the underlying AI core technologies and their ultimate vertical applications instead of general-purpose middleware across audio, language, and video. In 2022, visual media broke out in deal count with the success of Stable Diffusion and Midjourney in image generation. In 2023, leading innovator Midjourney has not required VC funding, and deal count is not on pace to surpass 2022's total. AI-core deals have broken out this year, with more than 100 deals completed after barely surpassing 80 in 2021 and 2022. This, in part, owes to the influx of new startups formed to orchestrate large language models (LLMs) and a consistent flow of megadeals for foundation model training labs. Vertical applications have grown the most as new use cases emerge in fields including corporate strategy, edtech, fintech, and legal. GenAI-native startups in corporate strategy and fintech have raised 23 rounds in 2023, after only raising four in 2022, demonstrating the novelty of use cases in financial planning.

Lagging categories demonstrate challenges to closing rounds in smaller markets. Deal counts in audio recognition, music generation, and video have fallen precipitously YoY. While models in these spaces have improved, they have not attracted as much attention as text synthesis and knowledge search. Deal counts are also not growing quickly in large categories such as data preparation, neural search, and sales & marketing—areas in which incumbents have strong and fast-developing offerings. Of the 33 categories in our taxonomy, only 18 have reached their deal count from 2022, suggesting that investors are exercising discretion when faced with new use cases.

Annual generative AI VC deal count by segment
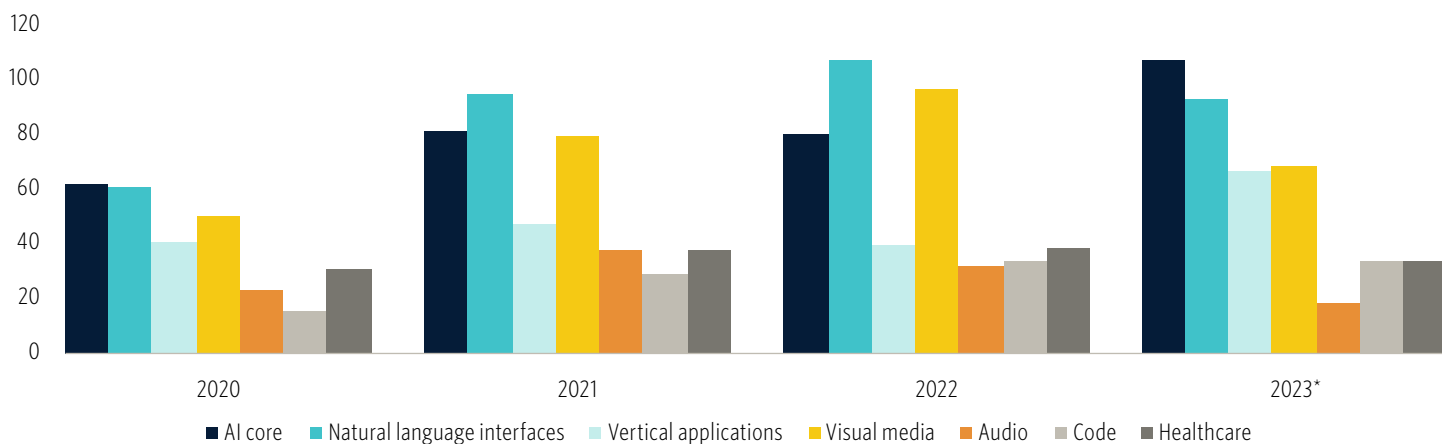
Source: PitchBook • Geography: Global
*As of October 15, 2023

AI core drives the bulk of funding given the megadeals for foundation-model training labs and database enablers, including Databricks. Looking past that category, we see that VC funding is not breaking out across segments above historical totals. Most segments are not on pace to exceed the level of funding committed to the space in 2021, with exceptions in code and vertical applications. The record-breaking performance of GPT-4 on code prediction tasks has led to an expansion of VC investment in code tools, along with the creation of new categories in data analytics coding and automated testing. Coding-assistant VC funding has increased 457.4% YoY to $369.1 million. In vertical applications, fast-growing applications include edtech, fintech, legal, and industrial, all of which are on pace to more than double VC funding YoY. In slower-growing segments, such as natural language interfaces and healthcare, 2021's high funding enabled some companies to develop new GenAI products with existing runway, lowering their need or ability to raise further VC funding in 2023. These totals suggest that large companies will be created in AI core and code.

Lagging categories demonstrate that VCs have not supported all use cases equally and have left opportunity for new startups. We have tracked YoY declines in large categories including data preparation, customer support, voice recognition & transcription, video, and multimedia content suites. Some concern may arise due to the rapidly improving capabilities of competitors and the high valuations of companies already addressing these opportunities. We believe that investors may not fully appreciate the data needs of fine-tuned custom models and the market size of customer support, both of which will encourage larger deals in the future.

Annual generative AI VC deal value ($M) by segment
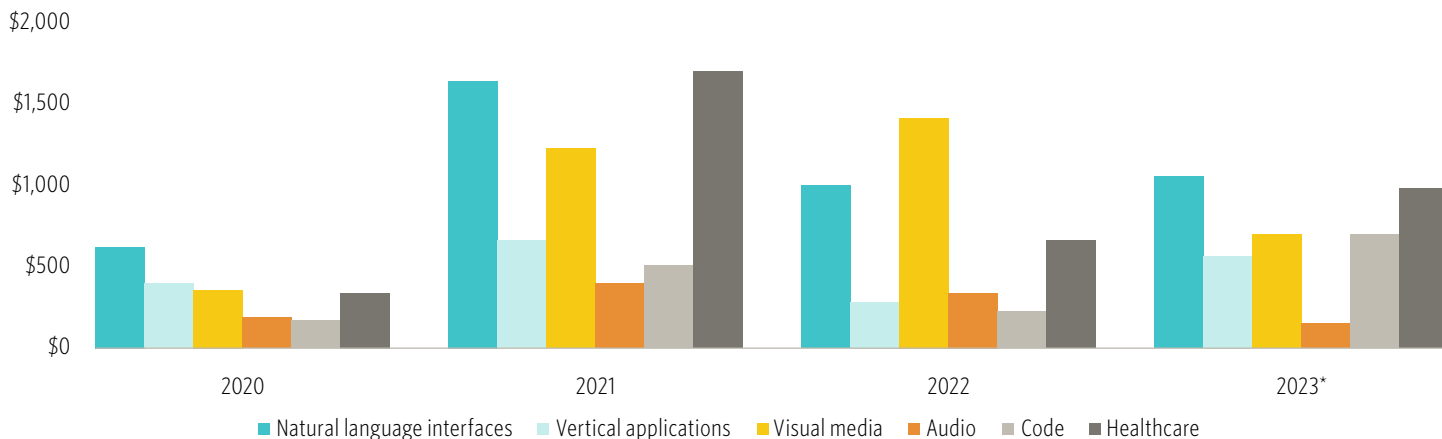
Source: PitchBook • Geography: Global
*As of October 15, 2023

YTD valuations

For the deals that are completed, valuations have increased rapidly in 2023. The median late-stage valuation has accelerated 171.7% to $250.0 million, while early-stage valuations have grown as well. Pre-seed/seed valuations are not necessarily outlandish, with a median valuation of $14.6 million, while the highest early-stage valuations have been in Series B rounds for pre-established companies with leading alumni from research labs, including Google Research and OpenAI. The high median late-stage valuation owes to the prevalence of unicorn creation, with 12 companies reaching a $1.0 billion valuation, while we tracked only four down rounds. High valuations stem from large deal sizes, with outstanding AI core companies outside of OpenAI and Anthropic raising $150 million to $300 million to pursue aggressive model training and inference roadmaps. These valuations are not directly predicated on revenue, though 100x annual recurring revenue (ARR) multiples have presented a rough upper bound in the sample of companies we have heard about. Applications have been limited to ARR multiples of 50x to 75x at the high end. Clustering occurs around 15x to 25x ARR for most application companies, according to VC investor Kelvin Mu at TransLink Capital, who has exposure to over 50 closed deals.[1] This guideline is supported by our conversations with investors.

1: "Here is what I'm seeing in terms of valuations," LinkedIn, posted by Kelvin Mu, October 20, 2023.

Generative AI median VC pre-money valuation ($M) by stage
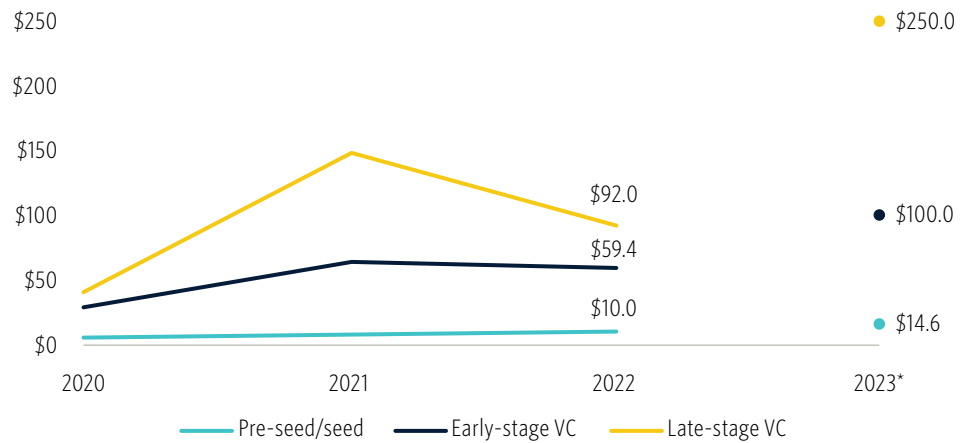
Source: PitchBook • Geography: Global
*As of October 15, 2023

Early-stage companies have been able to grow their valuations based on outsized expectations from AI insiders, while late-stage companies have experienced more muted growth. The top 10 valuation step-ups in our dataset excluding pre-seed/seed deals come from across all segments, except visual media. The top valuation step-up came from synthetic-voice startup ElevenLabs, led by AI heavyweights Andreesen Horowitz, Nat Friedman, and Daniel Gross. Daniel Gross and Nat Friedman co-created the AI Grant program while also raising a joint fund to support AI startups. Other specialist investors granting outsized valuations include Radical Ventures, Redpoint Ventures, and Scale Venture Partners. We believe these funds have unique perspectives on the future of AI that give them confidence assigning high valuations to early-stage companies while winning deals with the most promising startups. The founders that receive these high-end valuations stand out for their experience in AI.

Top post-seed generative AI valuation step-ups YTD*

Company	Close date (2023)	Segment	Category	Deal value ($M)	Post-money valuation ($M)	Lead investor(s)	Valuation step-up (post to pre)
ElevenLabs	May 1	Audio	Synthetic voice	$18.5	$100.0	Andreessen Horowitz, Daniel Gross, Nat Friedman	10.2x
Reka AI	June 27	AI core	Platform	$58.0	$315.0	DST Global, Radical Ventures	8.0x
Typeface	June 29	Natural language interfaces	Sales & marketing	$165.0	$1,000.0	Salesforce Ventures	6.6x
Yurts	September 19	AI core	Infrastructure	$16.0	$70.0	Nava Ventures	5.4x
Modal Labs	October 10	AI core	Infrastructure	$18.0	$156.0	Amplify Partners, Redpoint Ventures	5.1x
Robin AI	January 7	Vertical applications	Legal	$12.0	$39.4	Plural Platform	4.8x
Regie.ai	February 9	Natural language interfaces	Sales & marketing	$16.0	$64.0	Foundation Capital, Khosla Ventures, Scale Venture Partners	4.6x
Opus	May 25	Vertical applications	Edtech	$8.8	$34.8	Gutter Capital, Stage 2 Capital	4.3x
Moderne	February 7	Code	Testing	$15.0	$75.0	Intel Capital	4.0x
Inceptive Nucleics	September 7	Healthcare	Biotechnology	$100.0	$500.0	Andreessen Horowitz, NVentures	4.0x

Source: PitchBook • Geography: Global
*As of October 15, 2023

Corporate VC activity

Corporate venture capital (CVC) participation has driven valuations overall, with corporate investors striking round-trip deals that promise cloud usage in exchange for upfront commitments. AI is the most computationally intensive workload that a startup can bring to market, making support for the community a leading priority for cloud growth. As a result, CVC-involved deals have accounted for 89.7% of deal value after only reaching 41.2% in 2022, showing the chokehold that corporate investors have on the market. CVCs have only participated in 26.7% of deals, down YoY, focusing on the market leaders that can contribute significant cloud spending. CVCs have invested at least $365.9 million across all segments except for audio YTD, leaving little greenfield for conventional VC investors. The involvement of these investors creates challenges for traditional VCs to lead rounds and offer value without computing resources.

Share of generative AI deal activity with CVC participation
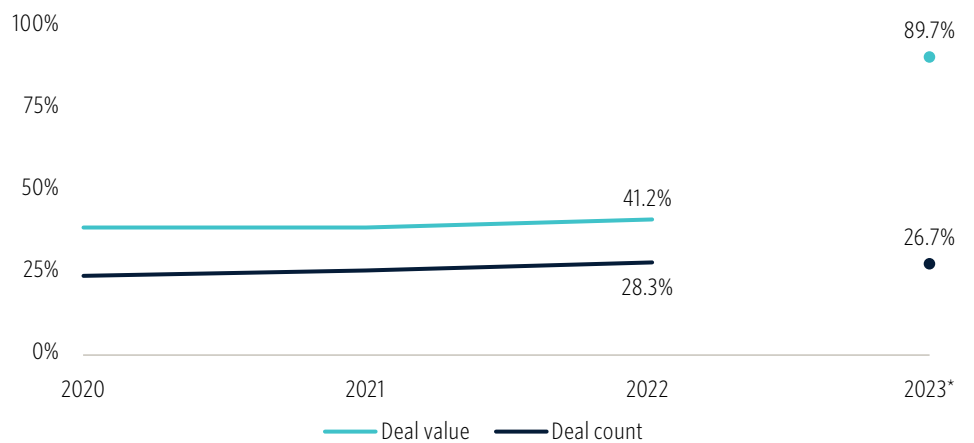
Source: PitchBook • Geography: Global
*As of October 15, 2023

Corporations rank among the most active VC investors. Alphabet, Microsoft, and Nvidia have all made at least 10 post-seed VC investments, ranking among the top investors by deal count along with Andreesen Horowitz and SV Angel. This count includes all affiliated venture arms for each corporation. Other leading VC investors have defined investment theses in the space and feature AI insiders as partners, including Sequoia Capital, Khosla Ventures, Madrona Venture Group, and Coatue Management. Solo GPs are essential parts of early-stage investing, including Nat Friedman and Elad Gil, among others. The high participation of corporate investors shows the depth of their commitment to startups when VCs are struggling to raise fresh funds.

Top post-seed generative AI investors by deal count in 2023*

Investor	Deal count	Early-stage VC	Late-stage VC	Venture growth	Investor type
Andreessen Horowitz	12	6	5	1	VC
Nvidia (including CVC)	12	5	5	2	Corporation
Alphabet (including CVC)	11	5	4	2	Corporation
Microsoft (Including CVC)	10	7	3	0	Corporation
SV Angel	10	6	3	1	Angel group
Sequoia Capital	9	8	1	0	VC
Khosla Ventures	8	4	4	0	VC
Nat Friedman	7	6	1	0	Angel (individual)
Firestreak Ventures	6	3	3	0	VC
Elad Gil	6	6	0	0	Angel (individual)
Madrona Venture Group	6	2	4	0	VC
Coatue Management	6	2	4	0	PE/buyout

Source: PitchBook • Geography: Global
*As of October 15, 2023

YTD exits

VC exits have demonstrated bimodal outcomes, where some promising initial traction can redeem the valuations granted by VCs, yet other research groups without traction may experience a low-value acquisition. We have tracked three acquisitions over $500.0 million so far this year, led by Databricks committing to open-source AI leader MosaicML for a $1.3 billion headline price. The acquisition was justified by the open-source downloads of MosaicML's compressed LLMs, along with technical progress on LLM inference acceleration. We believe that infrastructure innovation will bring additional large acquisitions from tech leaders.

Not all segments are experiencing great outcomes, with only one vertical application yielding an acquisition—legal. Search and AI core have seen the greatest demand, with tech challengers acquiring generative AI startups that can efficiently parse customer data. Tech giants remain content to strike partnerships with leading startups and host smaller startups on their cloud marketplaces, though the back-and-forth between cloud hyperscalers and startups may encourage takeover offers in a favorable regulatory environment.

TTM generative AI VC exits*

Company	Close date (2023)	Segment	Category	Exit value ($M)	Acquirer(s)	ARR multiple	MOIC
Casetext	August 17	Vertical applications	Legal	$650.0	Thomson Reuters	65x	9.6x
InstaDeep	July 31	AI core	Platform	$680.9	BioNTech	N/A	6.3x
MosaicML	July 12	AI core	Platform	$1,300.0	Databricks	65x	38.5x
Light Year Beyond	June 29	AI core	Platform	$285.0	Meituan	N/A	1.2x
Cardina	June 26	Natural language interfaces	Chatbots & assistants	N/A	Ramp	N/A	N/A
Diagram	June 21	Visual media	2D images	N/A	Figma	N/A	N/A
Neeva	May 24	Natural language interfaces	Neural search	$185.0	Snowflake	N/A	2.4x
Valence Discovery	May 16	Healthcare	Biotechnology	$35.1	Recursion Pharmaceuticals	N/A	3.4x
Codiga	April 4	Code	Coding assistants	N/A	Datadog	N/A	N/A
ClipDrop	March 8	Visual media	2D images	N/A	Stability AI	N/A	N/A

Source: PitchBook • Geography: Global
*As of October 15, 2023
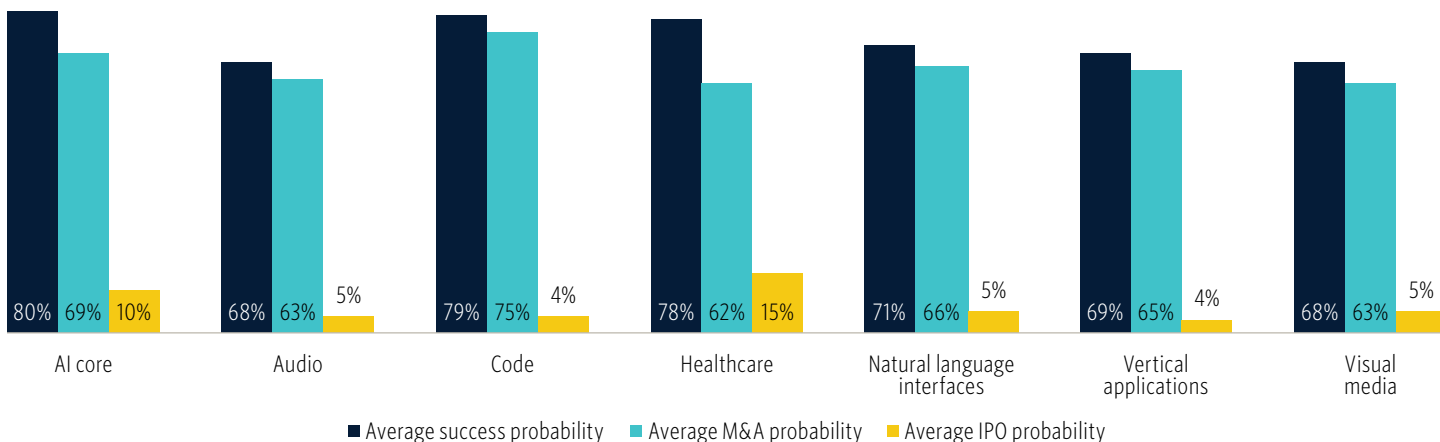Note: Annual recurring revenue multiples are approximate.

Exit prediction

The ability of GenAI to produce investor returns will be conditioned by the scale companies can achieve and the suitability of their business models for public markets. We have covered the individual market sizes of AI categories in our 2023 Artificial Intelligence & Machine Learning Overview, which will be a determining factor in the addressable markets for new AI startups. We are seeing some GenAI infrastructure and vertical application startups find product-market fit, yet GenAI rollouts remain in their infancy and enterprise-wide spending remains far-off. The initial progress of VC funding in the space provides us with enough data to compare new startups against prior waves of software startups. While the current economy differs from that during the last wave of AI exits, we believe that consumer interest can support similar outcomes as monetary policy improves in the medium term.

Among segments, code stands out for its M&A probability. Companies in this space have raised significant funding yet have not grown into independently large companies. Our model's predictions are driven by factors including high-quality investors, regular fundraising, and improving headcount. We have begun to see M&A activity in coding automation with Datadog's acquisition of Codiga and Amazon Web Services' acquisition of Fig. GitHub itself looms as a high watermark for private developer tools after its $7.5 billion sale to Microsoft. The success of GitHub Copilot should encourage IT companies to make similar inroads into coding automation, with Microsoft presenting a potential buyer as well.

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In IPO probability, AI core and healthcare have the highest values. Our model sees foundation-model unicorns as probable to achieve IPOs given their scale, pace of fundraising, and high-quality investors. The continued valuation growth of OpenAI in secondary transactions is not factored into the model, yet it underscores the potential of a public listing in its future. Biotech is one of most mature use cases for generative AI, given the progress in molecular design, and has already supported multiple high-value IPOs such as those of Recursion Pharmaceuticals and Exscientia.

Generative AI VC exit predictions by segment*

	AI core	Audio	Code	Healthcare	Natural language interfaces	Vertical applications	Visual media
Average success probability	80%	68%	79%	78%	71%	69%	68%
Average M&A probability	69%	63%	75%	62%	66%	65%	63%
Average IPO probability	10%	5%	4%	15%	5%	4%	5%

Source: PitchBook • Geography: Global
*As of October 15, 2023
Note: Probability data based on PitchBook VC Exit Predictor methodology

Investing outlook

VC enthusiasm for GenAI will be tested by competition from tech giants and high variable costs for basic research. Already, we are seeing a lack of momentum for startups building new AI techniques in video, audio, and copywriting, given the rapidly improving models from generalist competitors. Investor encouragement will come from outstanding exits, which will not likely be distributed across all segments based on the data we are seeing. Code, healthcare, and AI core are on pace to produce the best exits in the space, which will encourage sustained late-stage VC activity. GenAI appears primed to continue positive VC exits overall and produce some winners, even if not offering opportunities to the entire VC community. We expect 2024 to further clarify the winning segments and companies among this initial wave of LLM deployment.