

# Education and STEM Innovation

The educational background of founders  
and investors at STEM companies

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## Eleanor Kaye, Executive Director at Newton Venture Program

Foreword

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Science, technology, engineering and mathematics, better known as STEM, hold so much power and possibility for providing solutions for humanity, now and in the future.

Yet no great idea comes to fruition without investment and that is the gap we intend to fill and the bridge we intend to build through STEM to venture capital (VC) training and development.

### The VC world

To paint the picture, venture capital is the early-stage investment made in new startups and small businesses with great potential for long-term growth. At Newton Venture Program, a joint venture between London Business School and LocalGlobe, we are training the investors of tomorrow to back the ventures of the future.

STEM candidates make excellent specialist investors and there are numerous opportunities in deep technical areas that currently go unrecognised. This is because of the network and knowledge gaps between world-leading research at universities and investment institutions.

### The STEM world

To begin this journey, we wanted to understand more about what the STEM and investor relationship looks like and the role education plays in a STEM spinout's success. To do so, data from companies that have spun out from academic

“STEM candidates make excellent specialist investors and there are numerous opportunities in deep technical areas that currently go unrecognised.”

institutions or received large innovation grants was combined with education data on the founders of these companies and their investors.

Companies with founders with PhDs are prevalent (59.1%) but the qualification is not essential to launching innovative STEM companies. It does help if investors can speak the founder's language, so having a PhD as an investor in STEM companies is advantageous.

Life sciences companies are most likely to have a PhD founder, while undergraduate founders are better represented among companies in software areas (such as software-as-a-service and mobile apps). So, having a PhD is not a precursor to a successful STEM startup but, the research did suggest that there could be an educational barrier involved in the receipt and

allocation of capital.

### What does the future hold for STEM to VC?

STEM has huge potential and benefits from investors that have a deeper understanding of the sectors to better understand the prospects of the venture. To further the reach and impact of STEM ventures, **we need to remove barriers to help ensure capital flows to innovative companies.**

To bridge that gap and break down further barriers to getting into VC, our STEM to VC program illustrates the transferable skills STEM professionals have and gives them the new skills they need to help make STEM ventures fly.

We look forward to seeing what this looks like and building on the already vibrant and innovative world of VC!



## Henry Whorwood, Head of Research and Consultancy at Beauhurst

Executive summary

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Many of humanities' biggest problems can only be solved by overcoming significant scientific and technological hurdles. Whether it is tackling pandemics or sequestering carbon at scale, such challenges are the focus of what are termed deeptech or hardtech companies.

This report sets out to better understand the educational background of founders at 443 of these sort of science, technology, engineering and mathematics

(STEM) companies. These are companies that have incorporated since 2019 and either spun out of a university or received a large innovation grant. This diverse cohort ranges from companies developing intracellular screening technology to help treat cancer, to those developing the technology needed for quantum computing.

Of the STEM companies, 59.1% have at least one founder with a PhD, showing the importance of universities to the UK's tech ecosystem, particularly among deeptech companies. Our research shows that this level of university education also appears to be important for the investors backing these companies. Of the companies with identified investors with board positions, 40.9% had at least one investor with a PhD. It seems that supporting those working at the cutting-edge may require investors to be educated to a level that currently we rely on universities to deliver. Further investigation is needed but it seems that bringing people with different and higher educational backgrounds into the investment community will be additive to the tech sector and society's success.

### Key figures:

**443**

companies in scope; incorporated since the start of 2019 and with founder education data available

**836**

individual founder educational backgrounds examined

**59.1%**

proportion of companies with at least one founder with a PhD

**40.9%**

proportion of companies with at least one investor with a board seat with a PhD

**£395k**

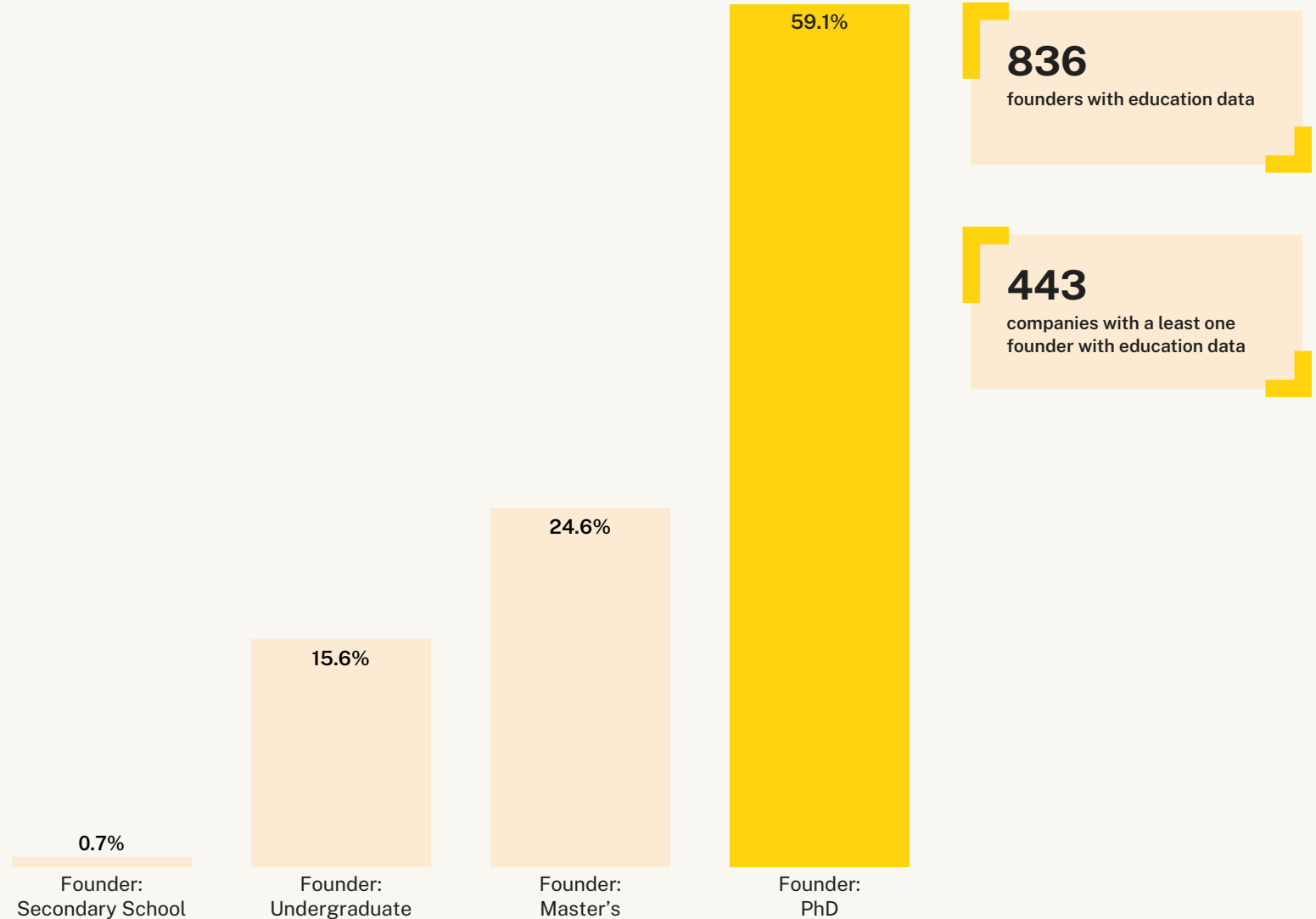
median investment raised by companies with at least one founder with a PhD (2019–2021)

## Companies by educational attainment of founders

While PhD qualifications are prevalent among founders of innovative science, technology, engineering and mathematics based companies, this level of educational attainment is not a requirement for launching innovative STEM companies. Analysis of the 555 companies incorporated since 2019 that have either received an innovation grant or spun out of a university shows that 59.1% of companies have at least one founder with a PhD. However, the remaining 40.9% of companies have founders with a highest level of education below PhD level.

The sector analysis on page 6 reveals that founders educated to a PhD-level are often concentrated in particularly knowledge-intensive and regulated areas such as life sciences. For investors seeking alignment with founders, it seems that being educated to a PhD level, while not a requirement, may be beneficial for investing in specific industries. A breakdown of companies by the educational background of investors with board positions is provided on the following page.

Highest founder educational attainment by company, n=443

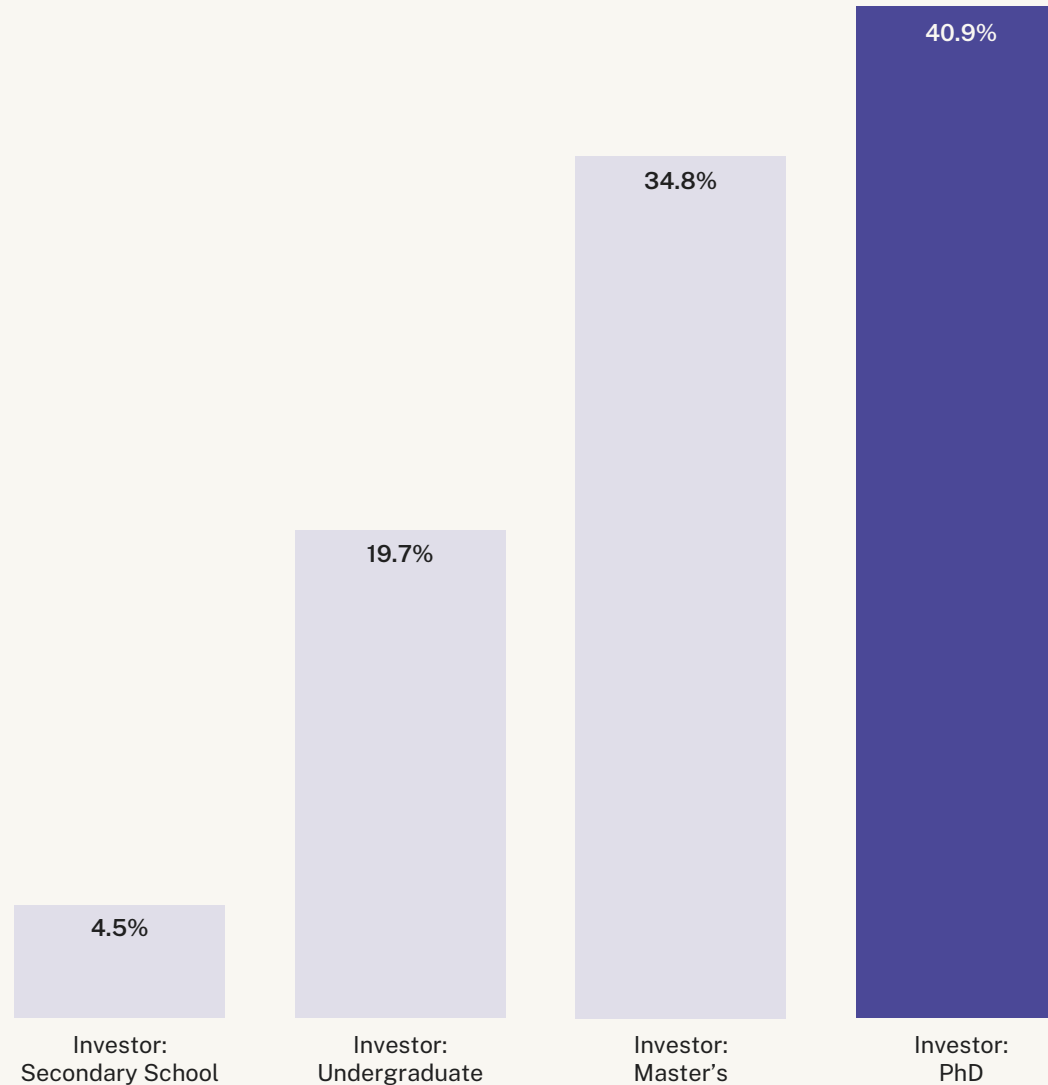


## Companies by educational attainment of investors with board seats

The educational data for the 93 companies with identified investors with board seats shows that a PhD-level of education is likely to be important for investing in STEM companies but may be less important than it is for founders. As the chart shows, 40.9% of the companies have at least one investor with a board seat and a PhD. The remaining 59.1% of companies have investors with lower levels of educational attainment. This suggests that leaders at many companies feel comfortable that non-PhD educated investors can understand the STEM components of their business models and serve on their boards.

Companies with investors that have a master's degree as their highest level of education account for 34.9% of the sample, which compares favourably to the 40.9% of companies with investors with a PhD. The similarity between the number of investors with a master's or a PhD suggests that investing skills can be built successfully upon either educational foundation.

Highest investor educational attainment by company, n=67



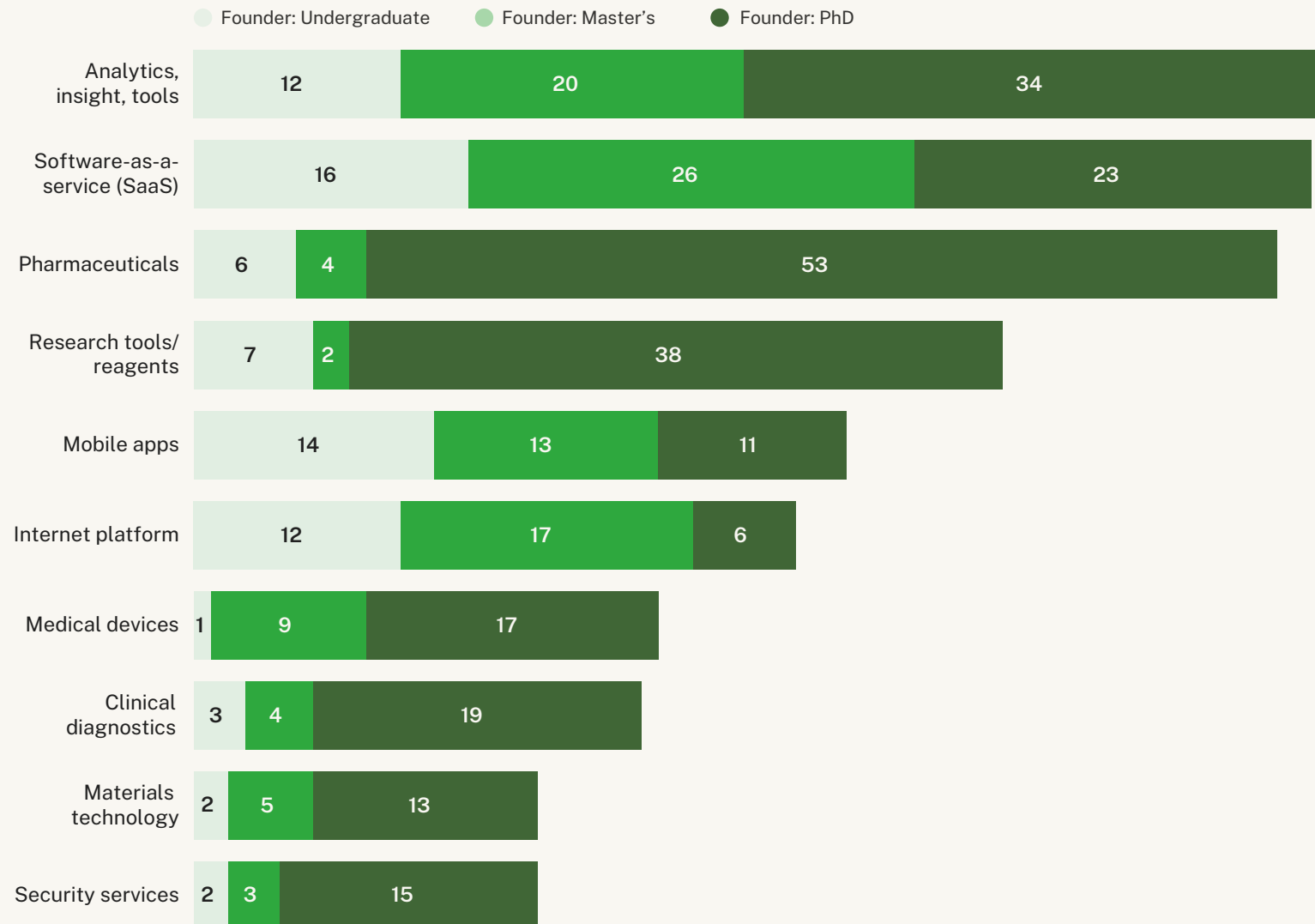
**67**  
companies with at least one investor with a board seat

## STEM company sectors by founder education

In many of the most populous sectors, there are companies with a range of founder educational backgrounds developing innovative products. Software sectors in particular seem to have a better representation of companies where the highest founder education level is undergraduate. Consider SaaS, mobile apps, and internet platforms where these companies are well represented.

In contrast, sectors that are heavily focused on life sciences, such as pharmaceuticals, research tools/reagents, and medical devices have proportionally more companies with PhDs as the highest level of founder education. While it seems likely that these sectors do legitimately require a higher degree of knowledge than others, there may also be an aspect of signalling at play given that the nature of life science companies makes them more capital intensive and hence higher risk in the eyes of many investors. **As a result, investors may be more likely to back those who — at least on paper — have the most comprehensive qualifications.**

Sector ranking by company's highest founder educational attainment, n=443

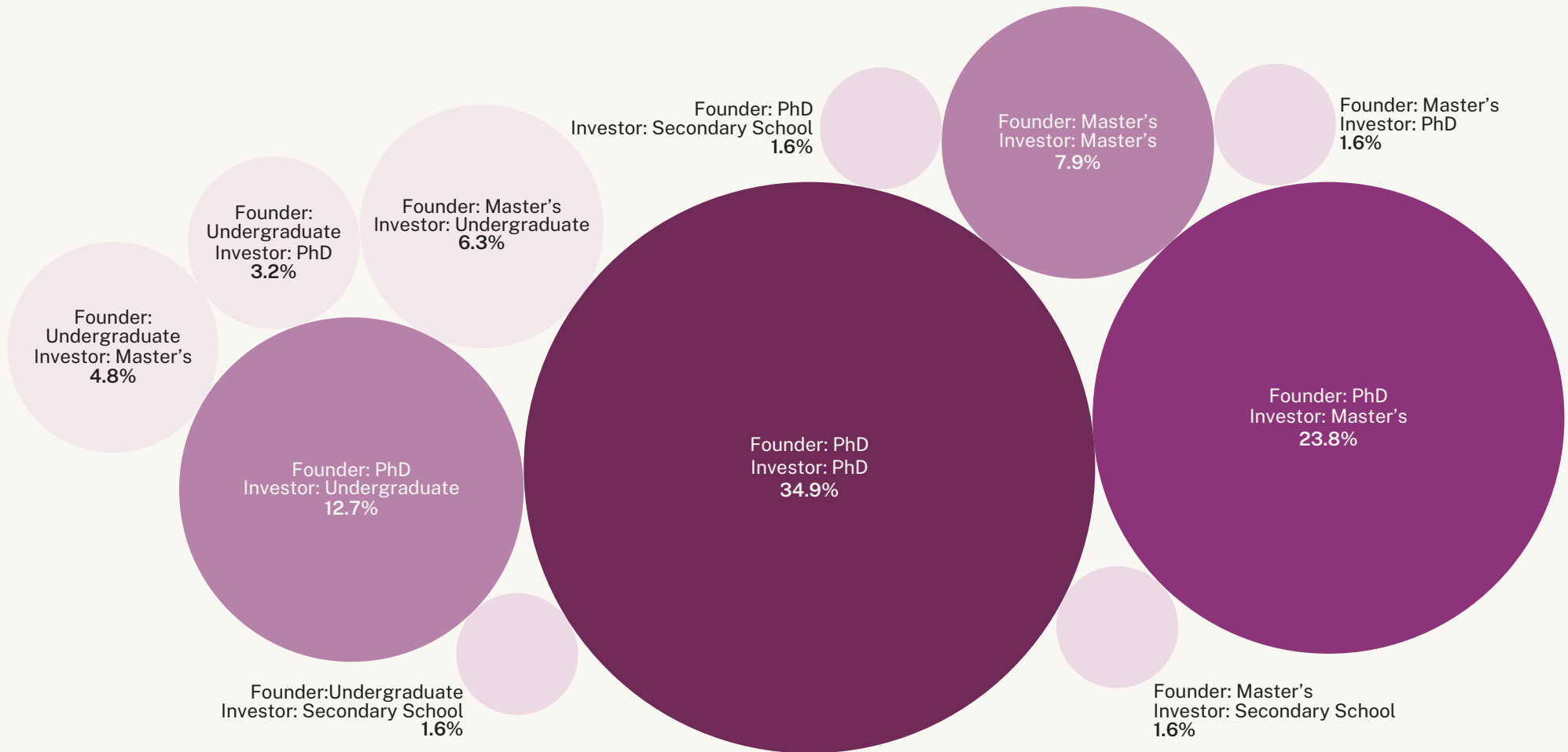


## Founder-investor educational pairings

The founder-investor educational pairings show that companies with at least one founder and one investor that have a PhD are the most prevalent in the sample. This may reflect that the underlying cohort of companies is made up of academic spinouts and innovation grant recipients, both types of companies where more PhDs may be more prevalent among founders and investors.

However, the data also suggests that there could be an educational barrier involved in the receipt and allocation of capital. This is an area that needs further investigation as reducing barriers can help ensure that capital can flow to more STEM companies.

Company founder-investor education pairings, n=63



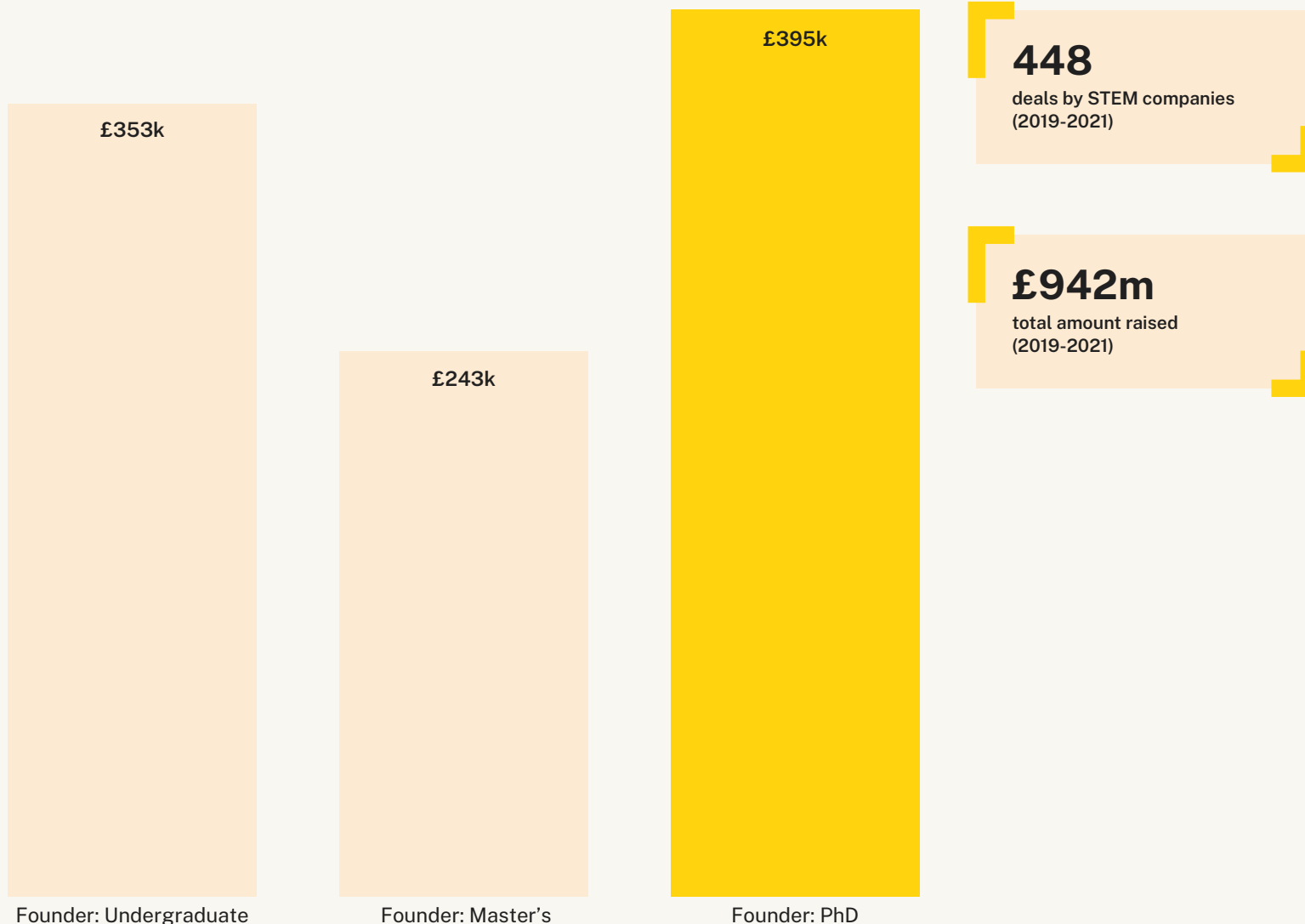


## Median deal values

Companies with an undergraduate degree as the highest founder education level had a median deal size of £352k since the start of 2019. This compares favourably with the median deal size of £395k raised by companies with at least one founder with a PhD. While companies with a founder educational level of undergraduate raised fewer deals (87) than those with a PhD as the highest level of education (236), there was reasonable parity in terms of deal size.

The lower median deal size secured by companies with master's degrees as the highest educational level is an unusual finding. While the number of deals was reasonable (125), these were largely smaller deals than those secured by companies in the undergraduate or PhD categories.

Median equity deal values by company founder highest educational attainment (2019-2021)

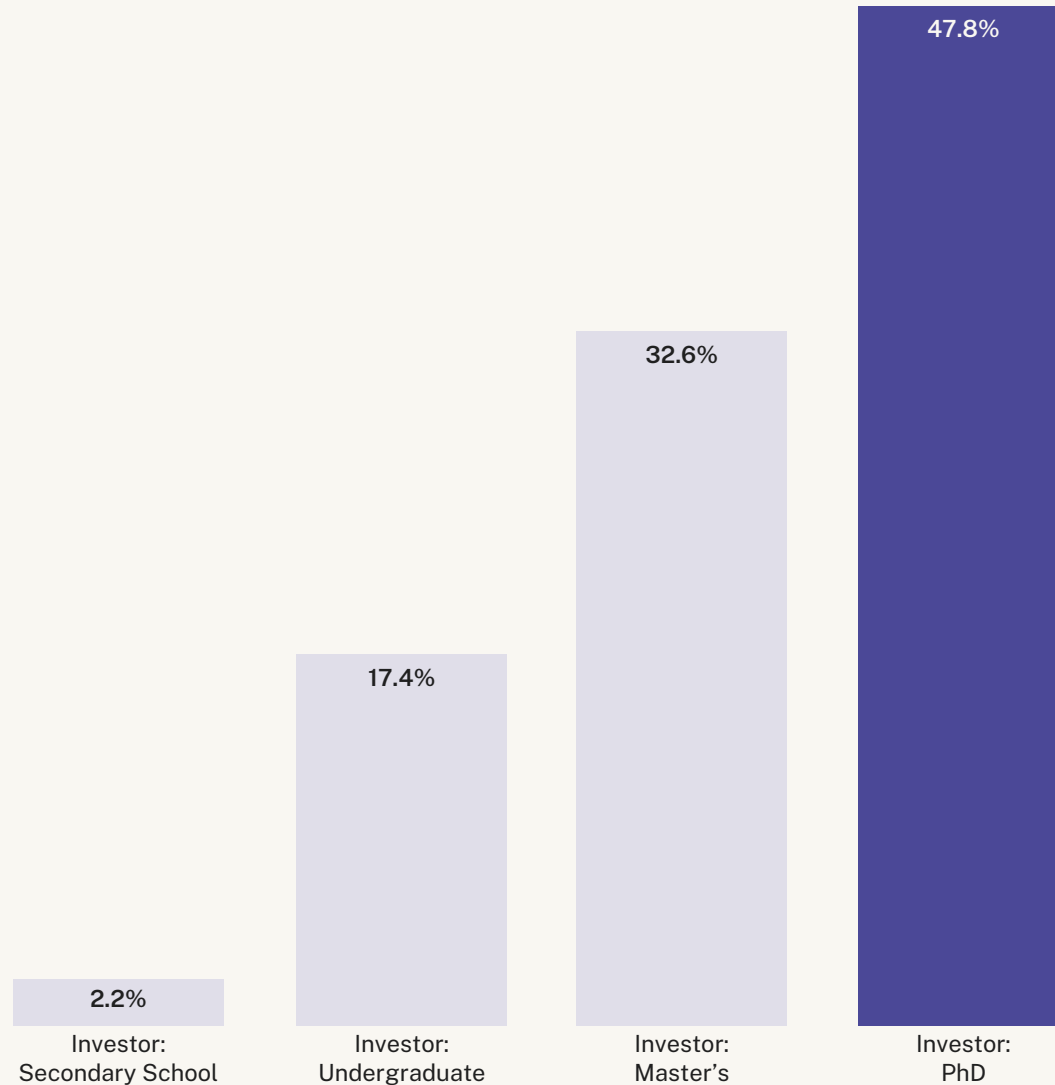


## Companies with a PhD founder: investor educational attainment

Of the companies with at least one founder with a PhD, 47.8% also have an investor with a PhD. Though there are benefits to this alignment in education attainment, there are more investors without PhDs, suggesting it is not a prerequisite to a successful partnership.

However, this is an opportunity for those with PhDs to become investors. **Their specific skills and training can help bridge the knowledge and network gap that exists in the ecosystem.** Over time, this may unlock additional investment for more STEM ventures, helping them to innovate and scale.

Companies with a PhD founder: investor educational attainment, n=46



**22**  
companies with at least one investor with a PhD

**15**  
companies with at least one investor with a Master's degree

# Methodology

## Companies in scope

This report analyses high-growth science, technology, engineering and mathematics (STEM) companies based on the educational attainment of their founders.

To be considered in scope, companies must have incorporated since the start of 2019 and be either an academic spinout or an innovation grant recipient in a STEM sector. Both spinning out of a university or receiving a large innovation grant are among Beauhurst's eight high-growth tracking triggers which are outlined opposite.

There were 555 companies in scope as of June 2022. Of these, there were 443 companies where the company had a least one identifiable founder for whom education data could be sourced. Companies with no identifiable founder, or where no

founder education data was available, were omitted from the sample.

The report also includes data on 67 companies where there was at least one investor with a board seat for whom educational data could be sourced.

## Educational data

The founder and investor education data was obtained from a range of sources including company websites, professional profiles, web and press articles, and director qualifications filed at Companies House. Founders and investors were assigned to four education categories based on their most-advanced level of educational attainment using the following categories: Secondary School, Undergraduate, Master's, and PhD.

## Defining growth

Beauhurst identifies ambitious businesses using eight triggers (outlined at the bottom of this page) that we believe suggests a company has high-growth potential. More detail on Beauhurst's tracking triggers is available via the [Beauhurst website](#).

## Equity investment

To be included in our analysis, any investment must be:

- Some form of equity investment
- Secured by a non-listed UK company
- Issued between 1 January 2012 and 31 December 2021

## High-growth tracking triggers



Equity investment



Academic spinouts



Scaleups



High-growth lists



Accelerator attendances



Major grant recipients



MBOs/MBIs



Venture debt

## About the contributors

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Beauhurst is a searchable database of the UK's high-growth companies.

Our platform is trusted by thousands of business professionals to help them find, research and monitor the most ambitious businesses in the UK. We collect data on every company that meets our unique criteria of high growth; from equity-backed startups to accelerator attendees, academic spinouts and fast-growing scaleups.

Our data is also used by journalists and researchers who seek to understand the high-growth economy, and powering studies by major organisations – including the British Business Bank, HM Treasury and Innovate UK – to help them develop effective policy.

For more information and a free demonstration, visit [beauhurst.com](http://beauhurst.com)



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Newton Venture Program is a leading executive education provider with a mission to level the playing field for people from typically and structurally overlooked and underestimated backgrounds - ensuring that the next generation of investors represent the world we live in.

Newton is a joint venture between London Business School and LocalGlobe VC. With our unique blend of faculty and practitioner teaching, we are training the investors of tomorrow to back the ventures of the future.

Our robust training programs ensure that everyone has an equal opportunity to break into venture capital to create a more accessible and diverse ecosystem.



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