Searching for Superstars

Executive Summary
The ability to attract and retain top talent is an important yet undervalued competitive advantage. We build a graph of human capital flows and apply network analysis to identify companies winning the war for talent. Firms able to attract superstars from elite competitors and universities have outperformed. We also include a March Madness-themed bonus section!

The War for Talent

Superstars and Power Laws

“The phenomenon of Superstars, wherein relatively small numbers of people earn enormous amounts of money and dominate the activities in which they engage, seems to be increasingly important in the modern world.”
- Sherwin Rosen, The Economics of Superstars (1981)

The knowledge economy is widening the gap between the top and median employee. Information, which is infinitely scalable, provides extreme leverage to those at the top of their fields. Globalization and the internet increase the size of addressable markets but also put more people in competition for that singular prize.

Netflix makes this point in its acclaimed culture deck. They argue that creative work has much higher dispersion than procedural work. The best are ten times better than the average. They use this to justify their maniacal commitment to a high-performance culture.

Exhibit 1
High-Performance Culture

Why are we so manic on high performance?
In procedural work, the best are 2x better than the average.
In creative work, the best are 10x better than the average, so huge premium on creating effective teams of the best

Source: Netflix

While Netflix linked the superstar effect to creative work, McKinsey focused on job complexity, finding an 800% gap between high and average performers in very complex jobs.

Exhibit 2
More Dispersion in Complex Jobs

<table>
<thead>
<tr>
<th>Job Complexity</th>
<th>Gap Between High and Average Performers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>800</td>
</tr>
<tr>
<td>High</td>
<td>125</td>
</tr>
<tr>
<td>Medium</td>
<td>85</td>
</tr>
<tr>
<td>Low</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: McKinsey, Sparkline

Google's former HR head, Laszlo Bock, goes even further. He notes that a top Google engineer can be 100 times as productive as the median one. He writes that, “[like stock returns] individual performance also follows a power law distribution.”

Bock cites a study of over 600,000 researchers, entertainers, politicians and athletes, which concludes that “individual performance is not normally distributed [but] follows a Paretoian (power law) distribution.” Tom Brady has 7 Super Bowl rings, while 95%+ of NFL quarterbacks have zero. 🐐

Exhibit 3
Power Law Performance

Source: O’Boyle and Aguinis (2012), Sparkline
Athletes and entertainers offer perhaps the most extreme superstar distributions. However, all so-called “knowledge work” displays power law tendencies. This can be defined as information-intensive work requiring the use of high-level cognitive, creative, and leadership ability in an unstructured environment. In other words, it is the creative and complex work they do at Netflix and Google.

Knowledge work is not just a small niche of the economy. It includes a diverse range of occupations, such as software engineers, designers, financial analysts and managers. As discussed in A Human View of Disruption (Feb 2021), the economy is increasingly driven by knowledge workers.

Exhibit 4
Knowledge Workers

![Knowledge Workers Chart]


Work is inexorably migrating toward information-intensive, unstructured, and creative tasks. These are the fields where the best is 10 to 100 times better than the average. As a result, firms today must place a great emphasis on acquiring superstars and not settling for average.

Intangible Opportunity

In Investing in the Intangible Economy (Oct 2020), we argued that investors have not adapted their tools as the economy has evolved from industrial to intangible. Intangible assets are the primary drivers of corporate cash flow, yet are largely ignored in standard accounting and valuation practices. The only human capital metric companies are required to disclose in their 10-Ks is the number of employees (although we hope this will change due to a recent SEC rule).

Obviously, this single metric is grossly inadequate in the burgeoning knowledge economy. Power law performance implies that workforce quality matters so much more than quantity. As Steve Jobs said, “A small team of A+ players can run circles around a giant team of B and C players.”

The extreme heterogeneity in the quality of companies’ assembled workforces coupled with the extreme dearth of information on human capital presents perhaps the biggest investment opportunity available today. A superstar team is a powerful edge not fully priced by the market.

Hold Your Talent Dear

Unlike other assets, human capital is not owned by the firm. Talent walks out the door at 5 PM each day. Non-compete agreements notwithstanding, employees are generally free to quit and work for a competitor at will.

Therefore, it is extremely important to keep the talent happy. Organizations that are able to attract and retain top talent are set up to win. The Tampa Bay Buccaneers, after three consecutive losing seasons, managed to land Tom Brady and immediately won a Super Bowl.

Each year, the Conference Board surveys C-suite executives on their greatest business challenges. Across the world, CEOs consistently rank the “attraction and retention of top talent” as their foremost concern. Human resource challenges are even more top of mind than those related to digital disruption and innovation.

Exhibit 5
What CEOs Stress Out About

![What CEOs Stress Out About Chart]

Source: Conference Board (2020), Sparkline

More than ever, the battlelines of modern capitalism are drawn over the ranks of star engineers, elite managers, and top inventors. In sports, the best teams win. Like an NBA
franchise, long-term success in business hinges on the ability to attract and retain superstars.

**Moneyball for Business**

In the ideal world, human resource professionals would be like Billy Beane from Moneyball. In sports, we have detailed statistics on the historical performance of each athlete. This allows us to produce detailed track records and assessments of the core attributes of individual athletes.

**Exhibit 6**

**A Belichick’s-Eye View**

Unfortunately, quantifying employee performance in the business world is much more challenging. Most industries don’t have the equivalent of “free throw percentage” or the NFL Combine. With the exception of a few hard skills, the most important attributes (e.g., teamwork, interpersonal skills) are tough to measure. Of course, there have been some valiant efforts, such as by Ray Dalio.

In this paper, rather than attempt to measure employee past performance or attributes directly, we will rely mainly on the signalling value derived from workers’ employment and educational histories. This allows us to piggyback off the presumably rigorous hiring and admissions standards of top employers and universities.

We'll note that this approach has most commonly been applied to predicting CEO performance. Most studies show a weak or non-existent effect. We believe this is because such credentials are an extremely noisy proxy. We all know our fair share of incompetent Ivy League graduates!

Rather than study a few hundred CEOs, we will examine millions of rank and file employees. This should help iron out some of the noise.
Superstar Aggregators

The Human Capital Map

In *A Human View of Disruption (Feb 2021)*, we introduced digitized resumes providing the employment histories of millions of individual employees. These allow us to build a detailed map of human capital flows. Each time an employee transitions from one company to another, it creates a single link in a vast network. These links vary in strength and direction, forming an intricate web.

Exhibit 7

S&P 500 Human Capital Map

Exhibit 7 provides a visualization of our human capital map for the S&P 500. No need to squint - we’ll spend the rest of the section exploring this map in depth.

One way to simplify this massive network is to aggregate to the industry level. *Fedyk and Hodson (2017)* create a nice chord diagram to visualize industry-level employee flows from 2010 to 2017.
They find that companies often compete with firms in other industries for talent. In fact, over 60% of job transitions occur across industries. However, mobility varies by industry. Tech workers more commonly depart for other industries than those in finance and manufacturing. This reflects rising demand for technical skills in a world where “all companies are tech companies.”

Next, we’ll zoom in to explore a slice of companies. The following sankey diagram shows the flows of engineering talent between the ten largest tech companies the past ten years. Hiring flows from left to right. Each company is listed on both sides to show both outflows and inflows distinctly.

The flows clearly illustrate that Google has been the most successful aggregator of talent in recent years. Its ability to attract and retain prized Silicon Valley engineers has been a key to its success. In 2017, Google was named Fortune’s Best Company to Work For for the sixth consecutive year. Despite a competitive job market, Google has been winning the war for talent.

**Hiring Pull**

Companies’ ability to attract talent from other top firms is a strongly bullish investment indicator. Let’s quickly discuss the reasons why this might be so.

First, there are the tangible benefits. Tambe and Hitt (2015) found that tech firms freeload off the investments made by the firms from which they hire IT labor. They estimate that 20 to 30% of the value of firms’ technology investments is acquired via employees hired away from competitors.

The tangible benefit of hiring from top competitors includes more than just technical knowledge. When Uber poaches an engineer from Google, they gain access to that person’s technical skills. However, more importantly, they also gain firm-specific information on Google’s organizational best practices. This includes insights on everything from cultural practices to the organization of teams and work.

Second, such a hiring coup has positive signalling value for investors. Prestigious firms tend to have extremely selective hiring criteria. In 2015, Google received over two million applications for several thousand spots, making it 25 times more selective than Harvard, Yale or Princeton. They are known for their battery of online tests, case studies, and structured interview questions. Hiring from Google means piggybacking off this screening process.

Furthermore, the ability for firms to attract talent from highly regarded competitors speaks to their ability to offer compelling value to the incoming worker. Employees are motivated by more than just salary. Companies with great cultures, growth prospects, and leadership should have more recruiting pull, all else equal.

**Xooglers**

Before we get into the full quantitative analysis, let’s do a quick case study. We’ll use Google, as it has been one of the most successful superstar aggregators in recent years.
Our goal is to find companies that have been particularly successful hiring Google alumni (called Xooglers). Below is the current share of Xooglers at a handful of random firms.

Exhibit 10
Oh the Places You'll Goo-Go!

We will run a simple backtest to see if these Xoogler magnets have actually outperformed. Each month, we build a portfolio of companies with high Google alumni share and calculate the next month's performance compared to the market. We also build a strategy that neutralizes industry exposure to control for Xooglers’ tendency to stay in the software and media industries. As a final check, we create a strategy that simply excludes tech companies.

The companies to which Google alumni have migrated have gone on to beat both the market and their industry peers. This result even holds up for firms in other industries, such as finance and industrials. While we won’t get into the many potential explanations for this effect, this result provides some encouraging anecdotal evidence for our hypothesis.

There’s an Algo for That

This example involves just a single company. In order to test our idea more broadly, we need a more general way to rank companies based on their recruiting prowess.

Recall that our objective is to identify top companies based on their ability to recruit from other top companies. The problem is that this is circular. Google is a top company because it is able to hire from Facebook and Facebook is a top company because it is able to hire from Google.

Fortunately, there’s an algo for that! We will repurpose the famous PageRank algorithm that Google uses to rank web pages in its search engine. According to Google:

“PageRank works by counting the number and quality of links to a page to determine a rough estimate of how important the website is. The underlying assumption is that more important websites are likely to receive more links from other websites.”

The most important websites have lots of links from other high-quality websites. The key is that this algorithm is more about quality than quantity. Getting a link from the Wall Street Journal is way more valuable than from a random Reddit user.

While this algorithm was designed to rank websites based on hyperlink structures, it works just as well as a tool to rank companies based on human capital inflows. Simply replace “links” with “hires” and “pages” with “companies” and we are good to go!

We’ll illustrate the algorithm by returning to our Big Ten tech companies example from the prior section. The next exhibit shows the results of our PageRank algorithm alongside our earlier sankey diagram for context.
For each company, PageRank provides a score from zero to one, corresponding to the probability that a random job hire would be by this company. The sum of all companies’ PageRanks is one. Google and Facebook have excelled at hiring over this period, with scores of 23% and 20%.

We can redraw this chart as a network diagram, setting node size proportional to PageRank and filtering out lesser flows for visual clarity. Google occupies a central position in this network. As we will see later, network centrality is another way to think about our hiring ranking.

The Wolf of Silicon Valley

Now we will apply our hiring PageRank algorithm to all companies. The left panel of the next exhibit shows the firms with the highest score over the past five years. Yes, this is the same list as before! The Big Five dominate not just the tech industry but the entire economy. But take a look at the right panel, which shows scores from ten years ago. Back then, the top ranked employers were all banks!

We can expand this analysis beyond just the top five companies. The next exhibit shows the total score for all companies in the banking and tech sectors. Remember that these must add up to 100%, so a score of 30% indicates a sector is a fairly dominant part of the economy.
These results underscore the tectonic shift that has occurred in the war for talent over the past decade. In 2007, Wall Street was the envy of the world. Banks threw lavish parties, traders took home huge bonuses, and top college students clamored for spots in investment bank analyst programs.

But the financial crisis burst this bubble (literally). And while Wall Street lost its luster, the tech industry recovered from the 2001 dot-com bust and began an epic ascent. Now, it is the tech bros that throw lavish parties, and top college and business school graduates flock to jobs in tech and VC.

Superstar Aggregators

Let’s now return to the idea that the superstar aggregators winning the war for talent outperform the stock market. Our hiring score provides a quantitative assessment of how successful firms are at attracting talent.

We can backtest the predictive power of these rankings. As we saw, these rankings change over time. Each month, we re-run the algorithm over a rolling five-year period. To control for the massive industrial shifts, we also create strategies that neutralize industry exposure and exclude technology stocks. Finally, we make some adjustments for the fact that big firms hire more people.

Exhibit 16
Talent Magnets

All three portfolios have outperformed. The historical ability to attract and retain top talent has indeed predicted future stock outperformance. We also confirm that this effect is not simply due to human capital flows anticipating growing industries. Companies that have been able to hire well have also outperformed their industry competitors.

Company Social Networks

Our human capital map is essentially a social network for companies. Superstar aggregators are the Instagram influencers of the business world. Kylie Jenner has 221 million Instagram followers, many of whom are other celebrity influencers. In social network theory, Kylie and Google both score high on “network centrality.”

The social network analogy implies another way to use our human capital map. One of the most common uses of social network data is to segment users into distinct groups. Examples include assigning Twitter users into topic clusters like “finance” and “liberal politics” or grouping Facebook friends into those from high school, college, and work.

The next chart shows our human capital map for the S&P 100 only. We use a community detection algorithm to assign companies to one of several clusters (colors) and use network centrality (PageRank) to size nodes. For visual clarity, we prune weak ties and dangling nodes and manually add industry labels.
Companies naturally form cliques based on their industry membership. Some industries are quite insular. Drug development requires highly specialized skills, so workers tend to stay within this community. Other groups, such as software and media, have stronger ties to other industries.

Connectors are companies who act as central nodes in the social network. Connectors often (but not always) serve as bridges between industry clusters. Amazon, Facebook, and Goldman Sachs serve this role in their respective industries.

In *A Human View of Disruption (Feb 2021)*, we used labor market data to cluster companies with similar workforce compositions (e.g., skills, occupations). This provides a useful alternative to industry classifications (e.g., GICS), given that many firms, such as Tesla and Amazon, straddle the line between industries (autos, retail, and tech).

Using community detection on company social networks provides another way to cluster companies based on human capital. This approach tracks actual labor flows between companies, opposed to inferring overlap from workers having similar skills or job titles. These two approaches complement each other, helping us analyze companies on the increasingly important dimension of human capital.

**Educational Pedigree**

**College Admissions**

For better or worse, college degrees have essentially become a requirement to participate in the knowledge economy. Each year, more and more high school students apply for a limited number of spots. This has led to both an increasingly competitive admissions process and spiraling tuition costs.

Admissions rates have been broadly declining, but this trend is especially pronounced among the most elite colleges. In 2020, the average acceptance rate for the Ivy League was a mere 7.2%. This admissions season has been crazier than ever. Harvard received a record 57,000 freshman applications, implying a ridiculous ~3.5% acceptance rate.

There is no need to rehash the problems with the U.S. higher education system. Many qualified applicants are unfairly passed over or simply unable to afford the high cost of private college. Furthermore, many people with dependents cannot afford to set aside these responsibilities to attend a top full-time four-year college.

That being said, the data do show that graduates of more selective colleges tend to earn higher incomes. Of course, correlation is not causation. While elite colleges may provide educational and networking advantages, it is also plausible that the admissions process merely selects for inherently talented, hard-working, and privileged students that would have done well regardless.

We emphasize that this relationship applies on average but has weak explanatory power for any individual. So while the
subsequent analysis may have statistical significance for a sample of millions of professionals, it says nothing about any individual. Attending an elite college is by no means a requirement for success.

For investors, the important question is whether this benefit accrues to the employer as well as the employee. It’s possible that these employees capture 100% of any excess value created, or, even worse, that companies overpay for educational pedigree.

**Stanford University**

The question before the house is whether companies that hire more graduates from top colleges produce excess stock market returns.

We’ll use Stanford University as an example. We build an investment strategy that buys companies with high shares of Stanford alumni. As earlier, we rebalance the portfolio each month based on data available at that point in time. The next chart shows the performance of this strategy compared to the market.

**Exhibit 20**

**Stanford Alumni**

Companies employing lots of Stanford graduates have outperformed. But before we jump to conclusions, let’s take a look at the companies with the highest concentration of Stanford graduates.

**Exhibit 21**

**Companies That Like Stanford Alumni**

<table>
<thead>
<tr>
<th>Company</th>
<th>Stanford %</th>
<th>STEM %</th>
<th>Industry</th>
<th>HQ City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palantir</td>
<td>4.2</td>
<td>39</td>
<td>Software</td>
<td>Denver, CO*</td>
</tr>
<tr>
<td>Asana</td>
<td>2.2</td>
<td>30</td>
<td>Software</td>
<td>San Francisco, CA</td>
</tr>
<tr>
<td>Google</td>
<td>2.0</td>
<td>43</td>
<td>Media</td>
<td>Mountain View, CA</td>
</tr>
<tr>
<td>Nvidia</td>
<td>2.0</td>
<td>54</td>
<td>Semiconductors</td>
<td>Santa Clara, CA</td>
</tr>
<tr>
<td>Pinterest</td>
<td>2.0</td>
<td>31</td>
<td>Media</td>
<td>San Francisco, CA</td>
</tr>
<tr>
<td>Snap</td>
<td>1.8</td>
<td>35</td>
<td>Media</td>
<td>Santa Monica, CA</td>
</tr>
<tr>
<td>KLA</td>
<td>1.8</td>
<td>51</td>
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<td>Lam Research</td>
<td>1.3</td>
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<tr>
<td>Keysight</td>
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<td>45</td>
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<td>Apple</td>
<td>1.2</td>
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<td>Twitter</td>
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<td>Square</td>
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<td>Adobe</td>
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<tr>
<td>ANSYS</td>
<td>1.0</td>
<td>52</td>
<td>Software</td>
<td>Canonsburg, PA</td>
</tr>
</tbody>
</table>

Source: Sparkline (*Palantir moved from Palo Alto to Denver in 2020)

The Stanford alumni body has a unique composition. The average alumna tends to have a STEM degree, work in the tech industry, and be employed in Silicon Valley. Companies with these three characteristics have outperformed recently, potentially explaining these results.

To test this, we can decompose the excess returns of our Stanford alumni strategy into these three components plus a residual. We find that Stanford’s industry, geographic and STEM tailwinds explain 70% of its outperformance. That said, the strategy still produces a more modest but quite meaningful 1.4% annual residual alpha.

**Exhibit 22**

**Stanford Return Decomposition**

Source: Sparkline
The Ivy League

Another way to verify this result is to study schools with less strong compositional biases. We’ll look at the Ivy League. While these schools are highly ranked, only 33% of alumni have STEM degrees. Furthermore, they are all located in the northeast, 3,000 miles from Silicon Valley. The employers with the greatest shares of Ivy League alumni are below.

Exhibit 23
The Ivy Tower

Ivy League graduates seem to populate a more diverse range of industries. We can verify this by aggregating to the industry group level. The next chart compares the industry composition of Ivy League alumni to that of the S&P 500.

Exhibit 24
Ivy League Industries

Ivy League alumni favor jobs in finance, media & software, and health care. Conversely, they tend to avoid icky physical things such as hardware, energy, and materials!

We next compare the share of Ivy League graduates working in the tech and communications sectors to those in finance. Graduates of top universities are increasingly eschewing Wall Street for Silicon Valley. While the data and methods differ substantially, the conclusions line up closely with our earlier results from employment histories.

Exhibit 25
The Great Migration, Part 2

Compared to Stanford alumni, Ivy League graduates are “short tech and long finance.” This has been a losing trade over the past decade. However, even though employers of Ivy League alumni do not benefit from Stanford’s industry tailwinds, they have produced similar industry-adjusted outperformance.

Exhibit 26
Stanford and the Ivy League

Source: Sparkline
We are starting to see a pattern. Companies able to attract and retain talent from top universities have delivered great stock returns compared to their industry competitors.

**U.S. News & World Report**

These results extend to a broader universe of top colleges. Since 1983, the U.S. News & World Report has published an annual ranking of American colleges. While the richness of the college experience cannot truly be collapsed into a single dimension, these rankings are widely followed and their deep history is useful for creating a nice backtest.

The U.S. News & World Report creates separate rankings for four categories of colleges. The main category consists of “national universities” (e.g., Princeton, Harvard), research universities offering a full range of bachelor’s, master’s and doctoral degrees.

These rankings are for the most part stable over time. Princeton and Harvard have never dropped below the top four spots. However, there has been some notable turnover. For example, over the past 25 years, Columbia, UFlorida, and USC have each climbed 12 spots or more.

The next exhibit assigns the top fifty universities into three tiers based on their rankings. We rebalance each year when the list is updated. As a control, we also include a category for anyone with a bachelor’s degree. We calculate the performance of companies based on their share of alumni from each group compared to the market.

**Exhibit 27**
**Top Universities**

Companies able to attract graduates of the top 50 colleges did well. Interestingly, there doesn’t appear to be much differentiation within the top 50. However, keep in mind that the U.S. has 2,679 4-year tertiary institutions. Thus, even the 50th best college is still in the elite top 1.8% percentile. While not shown, the industry-neutral results are similar.

U.S. News & World Report also produces a separate list for “national liberal arts colleges” (e.g., Williams, Amherst). In this case, we’ll present the industry-neutral performance so as not to disadvantage these schools with lower STEM share.

**Exhibit 28**
**Top Liberal Arts Colleges**

While liberal arts schools sometimes get a bad rap for not teaching “hard skills,” firms targeting graduates of top liberal arts colleges have also outperformed. However, this effect drops off after the top 10 schools. This makes sense since the universe of liberal arts colleges is much smaller.

**March Madness 🏀**

In order to fill the void from the just completed NCAA March Madness tournament, let’s spin up a little more friendly collegiate competition. We’ll build a bracket of top colleges and have them compete head-to-head. The tournament winner will be the school whose alumni have generated the most stock market alpha.

The hallmark of March Madness is its tournament bracket. The bracket pre-determines the path teams must take to advance to the championship. Tens of millions of Americans participate in bracket pools each year. The tournament begins with 68 teams. In our version, we qualify teams based on their rankings and data availability.
We build our bracket using hierarchical clustering. The algorithm clusters teams based on the correlation of their portfolio returns. We illustrate this procedure on a small subset of teams below.

Exhibit 29
Hierarchical Clustering 101

Source: Sparkline

Harvard and Yale send their graduates to similar companies, resulting in high return correlations (left) and a close grouping. Conversely, alumni of the UC system and Ivy League work for a more different set of companies. Thus, they are assigned to two separate branches in the dendrogram (right). The length of each branch denotes the distance between schools or clusters.

The March Madness tournament is organized around four regional conferences. Within each conference, the order of play is based on teams' seedings. For our version, we let the structure emerge organically from the data. First, we do not enforce equal-sized conferences, so not all teams are required to win the same number of games to reach the championship. Second, instead of using seeding to decide who plays whom, we have the most similar schools compete with each other first. For example, the Harvard-Yale and Army-Navy rivalries occur in the first round.

The next exhibit shows our full tournament bracket, which is really just a cleaned up version of the above dendrogram.
While we do not explicitly enforce regional conferences, they emerge naturally in the clustering procedure. This is due to home-court bias in alumni’s tendency to work for local employers. Field of study is another important dimension. The graduates of MIT are more similar to those of CalTech than their Cantabrigian neighbor, Harvard.

Now that we have created our tournament bracket, we will advance teams based on their head-to-head performance. Each match will be decided by a horse race of industry-neutral returns from 2005 to 2020. Before you peek at the next exhibit, feel free to place your bets! 🏇
And the champion is … UC San Diego! From downtown basketball! A look at the top holdings of this 26th seeded bracket-buster reveals strong ties with several successful local biotech and pharma firms. Honorable mentions go to the rest of the Final Four: Brandeis, Rice and William & Mary.

Like a game decided by a single possession, many of these individual results are not really statistically significant. That said, it is the “any given Sunday” nature of sports that make them so entertaining! Also, apologies to teams in the East & West Coast for a tough draw. The division was extremely competitive, with top contenders such as Harvard, Stanford and Duke falling in the first round to other top seeds.
Conclusion

As the economy becomes increasingly interconnected and information-intensive, the gap between the best and average employee is widening. As a result, companies that are able to attract and retain superstars have a growing advantage over their competitors.

However, as with other intangible assets, there is a dearth of information on human capital. This leads most investors to ignore this essential company asset. The few investors who are able to quantify firms’ widely varying talent levels will have a big advantage.

We tackle this challenge by building a map of human capital flows using millions of employment histories. We apply a network centrality algorithm to identify companies that are winning the war for talent. We find that these companies outperform both the market and their industry competitors.

We can extend our human capital map to include not only employers but also universities. Firms that employ a high share of alumni of elite universities have also outperformed the market and their industry competitors. We also show how hierarchical clustering can be used to organize colleges into a March Madness-style tournament bracket.

In conclusion, firms with superstar talent are well positioned to flourish in the modern era. Human capital flows provide a powerful tool for identifying these firms.

Kai Wu
Founder & CIO, Sparkline Capital LP

Kai Wu is the founder and Chief Investment Officer of Sparkline Capital, an investment management firm applying state-of-the-art machine learning and computing to uncover alpha in large, unstructured data sets.

Prior to Sparkline, Kai co-founded and co-managed Kaleidoscope Capital, a quantitative hedge fund in Boston. With one other partner, he grew Kaleidoscope to $350 million in assets from institutional investors. Kai jointly managed all aspects of the company, including technology, investments, operations, trading, investor relations, and recruiting.

Previously, Kai worked at GMO, where he was a member of Jeremy Grantham’s $40 billion asset allocation team. He also worked closely with the firm’s equity and macro investment teams in Boston, San Francisco, London, and Sydney.

Kai graduated from Harvard College Magna Cum Laude and Phi Beta Kappa.

Disclaimer

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