2019 in Review

December 31, 2019

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At the beginning of 2019, a contagious view had gone viral which was that America was in a decline, the U.S. Government was led by a maniac who relished in chaos, the trade war with China coupled with the Fed raising rates was going to push the Global economy into a recession, artificial intelligence was going to replace jobs at an accelerated rate, and man-made climate change was going to destroy the Earth. The net result is that our children were going to be worse off than us for the first time in the World's history… if they existed at all.

Not a cheerful way to go into the New Year.

Stocks, working like a voting machine reflecting the mood of the masses in real time, had dropped like rocks in the fourth quarter. Public markets in December logged the worst equity performance since the Great Depression. Leading technology stocks were "deFAANGed" and were off 30% as group since August. On Christmas Eve, the 1000 point drop in the Dow put stocks officially in a "Bear Market," with stocks having fallen more than 20%. Merry Christmas!

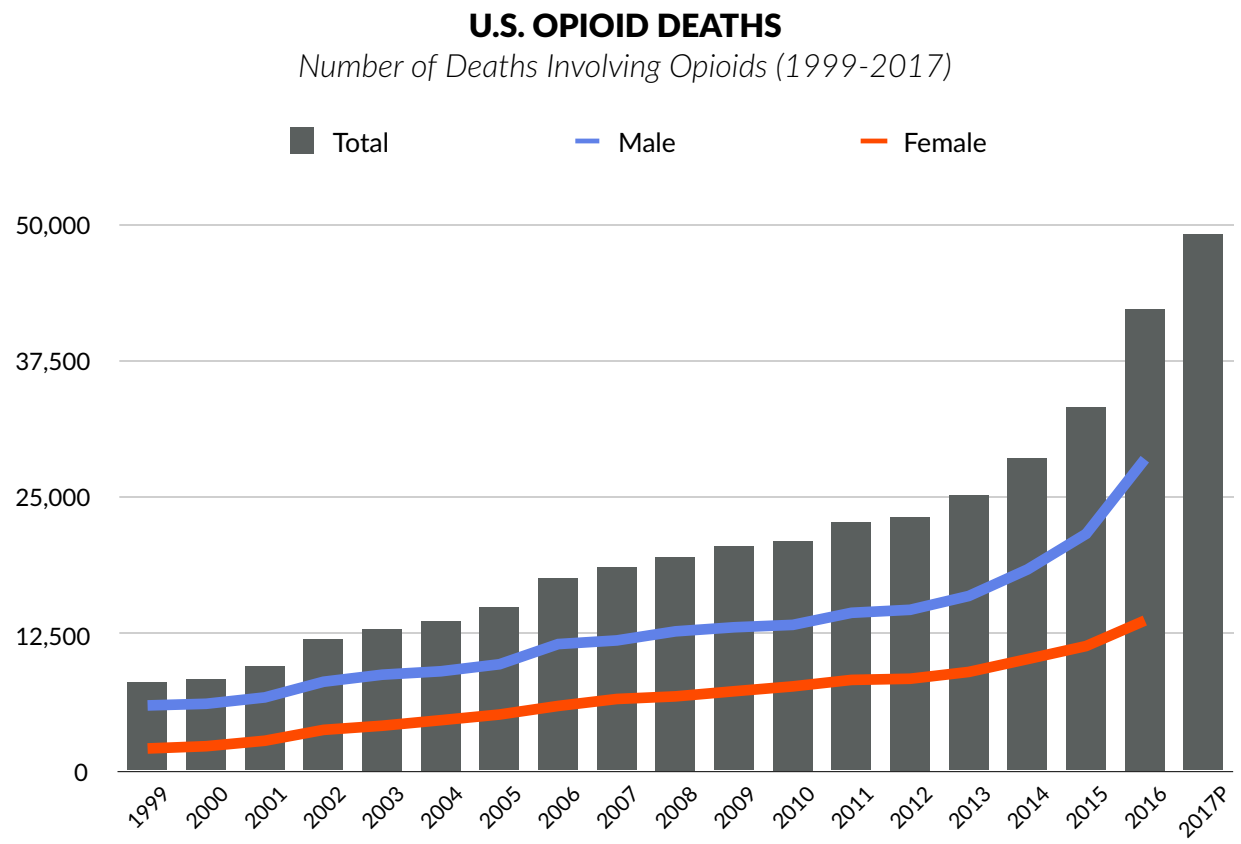
As bad as it felt in the United States with the S&P 500 down 6% for the year, around the World it was much worse. The Shanghai Exchange was off 25% and the tech heavy Shenzhen Market was down 35%. France's CAC fell 11%, Germany's DAX was down 18% and Japan's Nikko was off 12%. Only Brazil and India had positive returns for 2018, performing up 15% and 6%, respectively.

WORLD INDICES

		2018 YTD				2018 YTD	
Americas	**Index**	**12/28/18**	**YTD**	**Euro-Asia**	**Index**	**12/28/18**	**YTD**
Global	GSV 300	98.3	(17.2%)	**China**	SSE	2,493.9	(24.6%)
US	NYSE	11,349.2	(11.4%)		Heng Seng	25,845.7	(13.6%)
	Dow	23,327.4	(5.6%)	**Singapore**	Straits Times	3,068.8	(9.8%)
	NASDAQ	6,635.3	(3.9%)	**Indonesia**	JKSE	6,194.5	(2.5%)
	NASDAQ-100	6,330.0	(1.0%)	**Japan**	Nikkei 225	20,014.8	(12.1%)
	Russell 2000	1,345.2	(12.4%)	**India**	Sensex	36,068.3	5.9%
	S&P 500	2,506.9	(6.2%)	**Russia**	RTS	1,068.7	(7.4%)
Brazil	Bovespa	87,887.3	15%	**France**	CAC 40	4,730.7	(11.0%)
Mexico	IPC	41,573.9	(15.8%)	**Germany**	DAX	10,559.0	(18.3%)
Canada	S&P TSX	14,300.7	(11.8%)	**UK**	FTSE 100	6,728.1	(12.5%)

Source: Yahoo Finance, GSViQ

To make matters worse, even with remarkable advancements in medicine and essentially the highest standard of living in the World, life expectancy in the United States actually fell. The main culprit was the combination of suicides rising 30% in the past 20 years and the opioid epidemic that was responsible for the 72,000 overdose deaths in 2017. Despite relative comfort and success, people weren't feeling like their lives had meaning. In fact, the most popular class at both Yale and Harvard was the "happiness class". (See Prediction #4 for more)

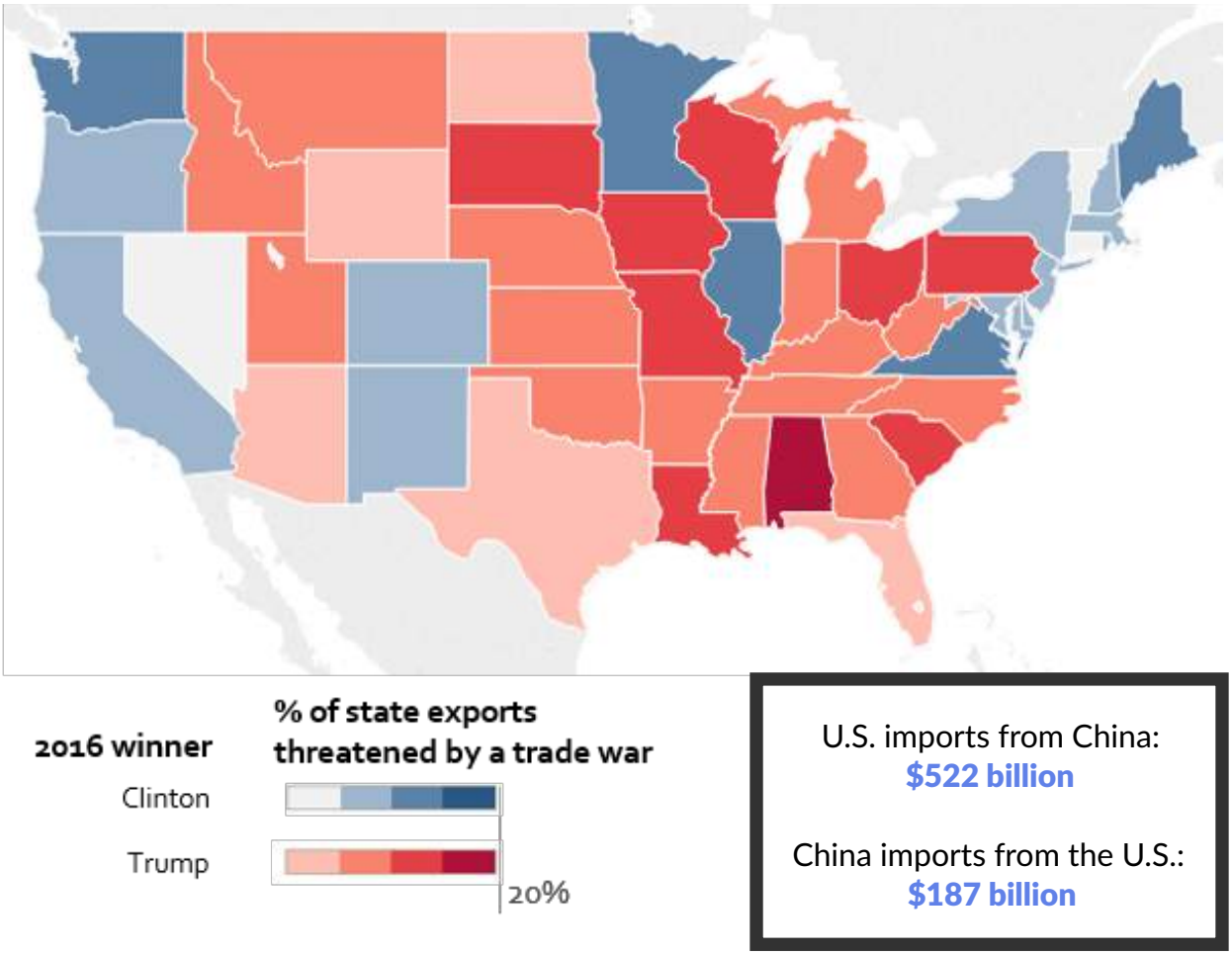


Source: CDC

Given this backdrop, it was a surprise to most people that 2019 was a ***BOOM*** year.

The trade war between the U.S. and China was a primary worry, with the two largest economies trading jabs back and forth. President Xi put tariffs on "Trump Country," while President Trump used the leverage that the U.S. imports 3x more goods from China (in comparison to Chinese imports to the U.S.) to level the playing field.

TRADE WAR LIKELY TO HIT TRUMP STATES THE HARDEST



Source: Chamber of Commerce, Bureau of Economic Analysis

The CUSA Trade Pact (China/USA) in February was a major catalyst to a resurgence in equity prices. Additionally, the "New NAFTA" between the U.S., Mexico, and Canada approved by Congress in mid-2019 also provided fuel to stocks surging positively, affecting $1.3 trillion in trade between the three countries. "One America", the region from Canada to Chile, proved to be a powerful economic trade zone, competing against China's "One Belt, One Road".

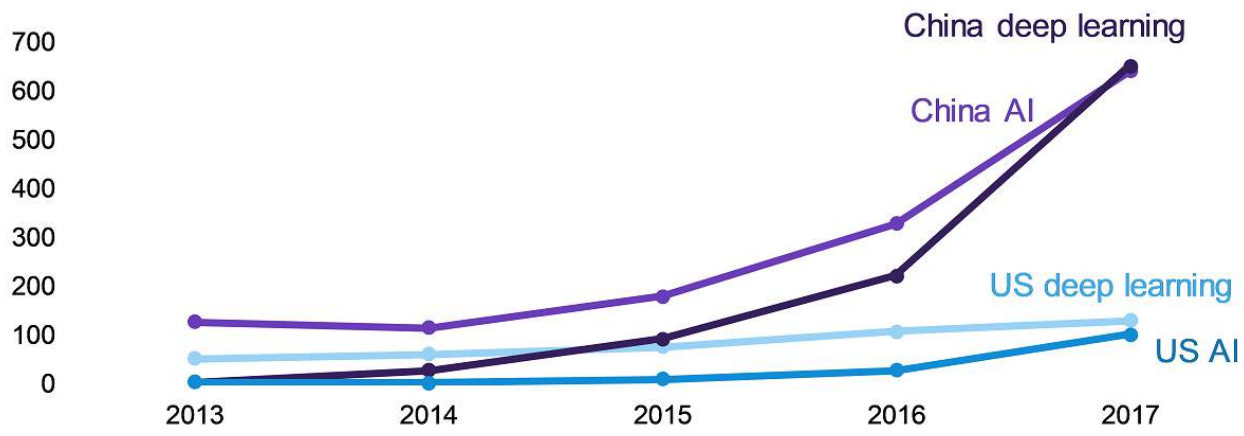
Experts had also predicted even more volatility in China given that 2019 was the 100th anniversary of the creation of the Communist Party and the 30th anniversary of the Tiananmen Square Massacre and the expected restriction on access to information.

In fact, the opposite happened.

The Chinese got rid of the forbidden "4T's" you weren't allowed to speak about (Taiwan, Tibet, Tiananmen Square, and Trump) and embraced a more open society. The "all in" bets

China had made in being the leader in artificial intelligence, education, and sustainable energy were paying off in spades. China has now surpassed the U.S. in A.I. patents by 6 to 1, has the two largest education companies in the World, and is rapidly creating alternative energy sources, including electric cars. It's now said that if "data is the new oil, China is the new Saudi Arabia".

CHINA OUTPACES THE UNITED STATES IN AI TECH PATENTS

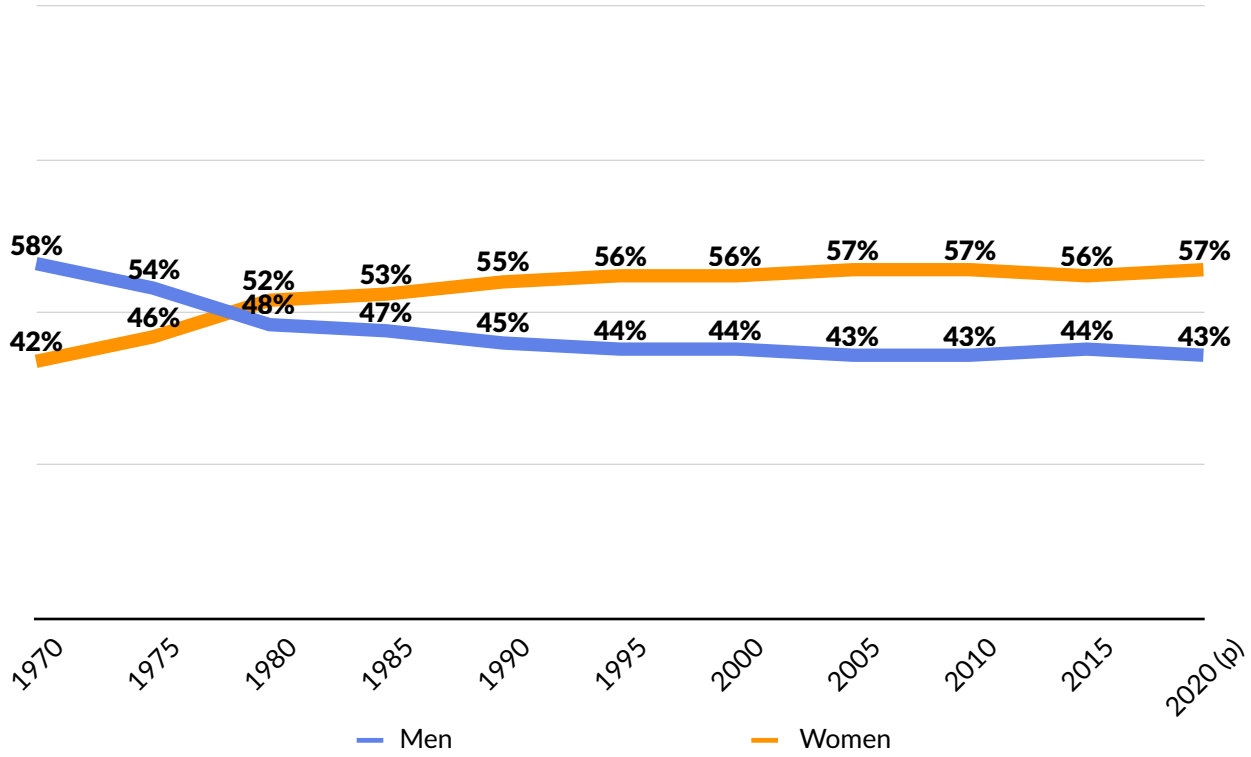


Source: CB Insights

Woman Power and its sister the #MeToo movement continued in full force in 2019. The 126 female members of Congress is the most in history. The U.K.'s Parliament is nearly 25% female — the highest in its history as well. Along with 25 female CEOs of the Fortune 500, this signaled evidence of the rising wave. The greatest sign of future strength in the knowledge economy was the fact that nearly 60% of college and graduate students were women. A #MenToo movement was attempted, trying to bring attention to the plight of uneducated white males who were increasingly unemployable, but this never got any traction.

GENDER FLIP: U.S. COLLEGE ENROLLMENT

Percentage of Females Versus Males Enrolled in Post-Secondary Education in the United States



Source: National Center for Education Statistics

Silicon Valley has replaced Wall Street and the Dallas Cowboys as the group that people love to hate. Part of the reason is because people like to root against somebody who has been too successful, but a lot of it is a result of the Valley's arrogance and greed. Privacy issues and who owns your data finally made its way into social consciousness, and progressive tech companies are starting to pay people for data that they were historically getting for free.

WORLD'S MOST VALUABLE COMPANIES: TODAY VS. 50 YEARS AGO

Rank	1967	2018
1	IBM	Microsoft
2	AT&T	Apple
3	Kodak	Alphabet (Google)
4	General Motors	Amazon
5	Standard Oil of New Jersey	Berkshire Hathaway
6	Texaco	Facebook
7	Sears Roebuck	Tencent
8	General Electric	Alibaba
9	Polaroid	Johnson & Johnson
10	Gulf Oil	JPMorgan Chase

Source: Forbes

Facebook views itself as not just "America's Team" but as "the World's Team." But "fake metrics," "fake news," and "fake contrition" have contributed to Facebook having fewer and fewer "friends". In fact, nearly 40% of college students now don't use Facebook. Network Effects result in the magic that has created exponential growth and enterprise value for many Internet leaders including Facebook. 2019 is when we saw *Reverse Network Effects*, resulting in a huge decline in value for FB shares.

2019 was also the year that **Bytedance**, the largest private company in the World that nobody had heard of, becomes a household name. Based in Beijing and valued at $75 billion, Bytedance is a mobile first company that is powered by machine learning. Toutiao is Bytedance's headline news service that doesn't employ any reporters and only uses A.I. to deliver personalized news. TikTok is Bytedance's video sharing service, which has more downloads than any Internet property anywhere.

The consolidation wave that has been thundering through TechLand continued as tech "platforms" continued to fill out their product stacks. Of particular interest was, of course, A.I., Voice Operating Systems, AR/VR, delivery services, and blockchain.

TECHNOLOGY PLATFORM ARMS RACE

👍 - Leader/Competitive ⏳ - Emerging/Developing ❌ - Not Competitive/No Capability

	Alphabet (Google)		amazon		Tencent	Microsoft	SAMSUNG	NASPERS	Alibaba.com
Phone	👍 Pixel	👍 iPhone	⏳ Ice (rumored)	❌	❌	⏳ Lumia	👍 Galaxy	❌	⏳ Invested in phone maker Meizu
Operating system	👍 Android	👍 iOS	👍 Alexa	❌	⏳ Tencent Operating System	⏳ Windows Phone 8	⏳ Tizen	❌	⏳ Yun Operating System
App store	👍 Android	👍 iOS	⏳ Amazon App Store	⏳ Facebook for Developers	👍 Tencent App Store	⏳ Windows Apps	⏳ Samsung Galaxy Apps	❌	❌
Home delivery	👍 Google Express, Enjoy	❌	👍 Amazon Prime/ Fresh/Air	❌	⏳ Stake in Ele.me	❌	❌	⏳ Thru Delivery Hero, Swiggy	👍 Major stake in Ele.me
Transport/Self-driving technology	👍 Waymo, stake in Lyft	⏳ Self-driving (project Titan)	👍 Amazon Air Drone Delivery	❌	👍 Investments in Gojek, Ola	❌	❌	❌	👍 Investments in Lyft, DiDi
Voice Automation	👍 Google Home	👍 Siri	👍 Alexa	⏳ Working on Jarvis	⏳ Wechat Speech Recognition	👍 Cortana	👍 Samsung Smart TV	❌	❌
Social	👍 Gmail, YouTube	⏳ iMessage	❌	👍 FB/Merssenger, Instagram Whatsapp	👍 Wechat, QQ	👍 LinkedIn, Xbox Live	❌	⏳ Stake in Tencent	⏳ Investment in Snap
Music	👍 YouTube	👍 Apple Music	⏳ Prime Music	❌	👍 Tencent Music, Spotify stake	❌	⏳ Milk Music, Spotify Partnership	👍 Thru MultiChoice SA	❌
Education	👍 Google; Google Education	⏳ iTunes U, iPad	⏳ AWS, Amazon Education	👍 Facebook Groups	👍 JV with New Oriental; VIPkid	👍 Microsoft Education	⏳ Samsung Education Solutions	⏳ Stake in Udemy, Brainly	❌
Fitness/health	⏳ Google Fit	👍 Apple Watch	❌	❌	⏳ WeRun	⏳ Microsoft Band	👍 Gear Fit	❌	❌
Content	👍 YouTube Red originals	👍 Apple TV, Apple Music	👍 Amazon Prime Video	👍 Facebook Live Events	👍 Wechat	❌	❌	👍 Thru MultiChoice SA, Olx	❌
Commerce	❌	❌	👍 Amazon.com	⏳ Facebook/ Instagram	👍 Large stake in JD.com	❌	❌	👍 Multiple investments	👍 Alibaba.com
News	👍 Google.com/ Google News	⏳ News app	❌	👍 Facebook Feeds	👍 Wechat/QQ	❌	❌	❌	❌
Messaging	👍 Hangouts	👍 iMessage	❌	👍 Messenger/ Whatsapp	👍 Wechat/QQ	⏳ Windows Live	⏳ Socializer	❌	❌
Collaboration	👍 G Suite/Docs	⏳ iCloud	❌	👍 Workplace	👍 Wechat	⏳ LinkedIn, Yammer	⏳ Samsung Square	❌	❌

	Alphabet (Google)		amazon		Tencent	Microsoft	SAMSUNG	NASPERS	Alibaba.com
Robots	Google Brain, Google Home	✗	Drones Warehouses	✗	Minor stake in Robot Entertnmnt	✗	Powerbot VR7000	✗	✗
Space	Skybox/Google Sky	✗	Jeff Bezos' Blue Origin	✗	✗	✗	✗	✗	✗
Digital Wallet	Google Wallet	Apple Pay	Amazon Payments	Messenger Mobile Wallet	Wechat Payment	Microsoft Wallet	Samsung Pay	PayU	Stakes in Ant Financial, Paytm
Artificial intelligence	Google Brain/AI	Siri	Echo/Alexa	FAIR	Internal group	Bing/Cortana AI	AI Assistant for Galaxy S8	✗	Aliyun AI
Corporate VC Arm	GV	✗	Alexa Fund	Chan Zuckerberg	No VC arm but very active	Microsoft Ventures	Samsung Ventures	Naspers Ventures	Alibaba Capital
Accelerator Program	Google for Entrepreneurs	Design and Development Accelerator	Alexa Accelerator with Techstars	FbStart	Expected to launch center in SW China	Microsoft Accelerator	Samsung NEXT	✗	GET in india
Digital Assistant	Google Home	Siri	Alexa	Facebook Portal	✗	Cortana	Bixby	✗	✗
Connected Home	Google Home	HomeKit/ HomePod	Echo/Alexa	Facebook Portal	✗	Home Hub	Samsung SmartThings	✗	Smart Home Division
AR/VR	Tango; Magic Leap	ARKit	✗	Spaces; Oculus VR	Tencent VR Suite	Microsoft HoloLense	Gear VR	✗	✗
Cloud services	Google Cloud	iCloud	AWS	Internal infrastructure	Tencent Cloud	Azure	Samsung Cloud	✗	Aliyun
Blockchain	DeepMind; invested in Blockchain	✗	✗	Facebook Stablecom	✗ Working on platform with Intel	✗ Working on Coco Framework	✗	✗	✗
Big data/ machine learning	Cloud Machine Learning	Internal group, and investments	Amazon Machine Learning	Applied Machine Learning group	Grata chatbot platform	Azure/Cortana	✗	✗	Stream Compute
Micro-Mobility	Lime Investment	✗	✗	✗	✗	✗	✗	✗	✗

Source: GSV Asset Management

The autonomous future became very visible in 2019. Studies showed that autonomous cars could reduce 90% of the 1.3 million annual automobile deaths. As such, the World accelerated the adoption of the new technology. China, with 265,000 automobile accidents a year, was once again leading the charge. In the United States, the trucking industry, which employs 10% of the U.S. workforce, was shocked at how fast autonomous technology was disrupting its business. Doctors, lawyers, and teachers started to grasp that robots were either going to be their friend or be their foe.

It was becoming harder and harder for many — especially technologists — to imagine a future where humans could compete with A.I. and robots to have productive jobs. The answer was to dust off the old and failed concept of Universal Basic Income (UBI), a model where the government would essentially give everybody an allowance.

The flawed logic with UBI is that the government doesn't make money… it takes money. And if it doesn't have enough people to take money from, the concept falls flat on its face. Failed experiments in places such as Finland put the nail in the UBI coffin. This, coupled with the fact that for the first time in modern history there were more open jobs than unemployed people, made the real answer obvious. We needed to provide people with skills and knowledge they needed to participate in the future.

GLOBAL UBI EXPERIMENTS

Country	Detail
Finland	Finland launched a nationwide three year pilot on January 1, 2017. 2,000 participants, who were randomly selected among those receiving unemployment benefits aged 25–58, became entitled to an unconditional income of €560 per month. While it sounded enticing, many Finnish backed off, balking at the idea of getting free money without work. It's no surprise that one of the most educated countries in the World figured out that the logic didn't work. Finland ended their UBI trial after two years April 2018.
Canada	In Ontario, Canada, a three year UBI pilot was launched in three separate regions in 2017. The participants of the project were randomly selected among residents of the regions aged 18–64, who were living on low income. Ontario experimented with using UBI to reduce poverty to improve human health, which would in turn reduce the country's health-care costs. The pilot project was cancelled on July 31, 2018 stating simply it was 'unsustainable' without citing data.
United States	In January 2016, Y Combinator announced plans to launch a five-year long UBI study in Oakland. As part of the program, 100 Oakland residents would entitled to an unconditional guaranteed minimum income for a period of six to twelve months to cover their basic needs. The program is scheduled to officially launch in 2019 after initial pilots in Oakland caused delays.
Kenya	In 2016, GiveDirectly, one of the highest ranking charities in the World, announced the launch of a 10-year, $30 million pilot on UBI in Kenya. GiveDirectly spent years studying and researching UBI studies in Kenya. From these studies which began in 2008, the organization decided to try to permanently end extreme poverty across dozens of villages and thousands of people in Kenya by guaranteeing them an ongoing income high enough to meet their basic needs.

Source: GSV Asset Management

Interestingly, one answer to how to compete with technology was to use technology to allow people to obtain the knowledge and education they need in a cost-effective and time-efficient manner. Rapidly scaling education technology companies called "Weapons of Mass Instruction" became wildly popular with companies such as **Coursera** and **Course Hero** becoming core apps that people used on a daily basis. (Disclosure: GSV owns shares in Coursera and Course Hero)

While coding jobs were still in high demand, it became obvious that pretty soon, technology was going to replace the technologist. What people needed to know to participate in the future had to be reconceptualized. The Three R's of Reading, Writing and Arithmetic were being augmented by the Seven C's: Communication, Critical Thinking, Collaboration, Civic Engagement, Cultural Fluency, Character, and Creativity. Learning to learn was foundational and the University of California San Diego's "Learning How to Learn" class becoming the most popular in the World. Learning English became an even larger megatrend, especially in Asia where English has become the language of business.

Source: GSV Asset Management

Politics cast a very dark shadow over society with Populists gaining power as a direct response to a World that seemed out of control. Conventional wisdom was that the newly elected Democratic-controlled House was going to spend 2019 prosecuting President Trump for all of his alleged misdeeds with impeachment being inevitable. Actually, Congress was persuaded by the greater good to focus on solving existing problems as opposed to creating new ones.

The 2020 Presidential Race, which began during the Kavanaugh hearings, was in full swing in 2019 when Elizabeth Warren announced her candidacy on New Years Eve, with Michael Bloomberg soon following. Others rapidly jumped in alongside them. If elected, Bloomberg would be almost 79 at his inauguration. Age wasn't a liability in the field where leading contenders such as Bernie Sanders and Joe Biden would be 79 and 78, respectively, at inauguration.

The freshest blood in the field was Beto O'Rourke who, at an age 30 years younger than his competitors, showed his prowess in raising money. While it was expected that other Republicans would challenge President Trump, nobody emerged as 2019 came to an end. But strong rumors surrounded Utah's Senator Mitt Romney, who people remembered was the only person who called Russia right.

Geopolitics went well beyond the main show featuring China versus the United States. Brexit reminded observers of the "dog that caught the fire truck"… now what do you do? The Middle East remained predictably unpredictable. India, the largest democracy in the World was able to reelect Narendra Modi despite his sinking popularity. Those watching India were relieved as progress under Modi's leadership became noticeable, as evidenced by the brand new and impressive Mumbai International Airport.

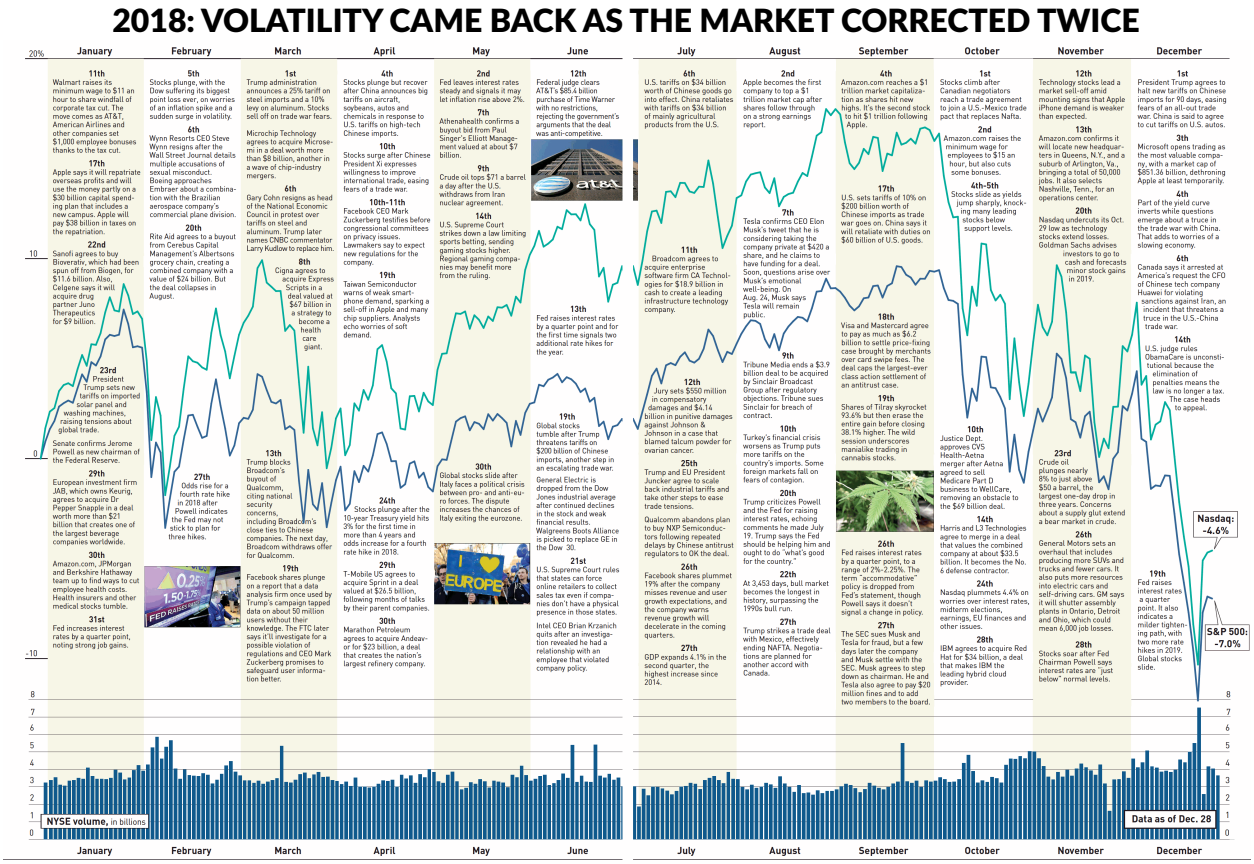
All in all, 2019 was a year where the World advanced, met many of the challenges it faced with progressive solutions, and continued to become more integrated.

Here's to an even better 2020!

Now let's reverse the clock back to December 31, 2018…

FIVE TO WATCH FOR 2019

Despite a strong start to the year in 2018, public markets plummeted as investors around the world became more and more spooked by global events. For the year, the S&P 500 was down 6.2%, NASDAQ was off 3.9%, and the Dow Jones was down 5.6%. The GSV 300, an index of the World's 300 fastest growing public companies and a barometer for the broader Global growth economy, fell 17.2%.



Source: Investor's Business Daily

Historically, when you have corrections in the Market, what's changed investor sentiment were hot technology IPOs. **Netscape** (1995 IPO), **eBay** (1998 IPO), and **Facebook** (2012 IPO) were prime examples of this dynamic.

The Stock Market reflects the confidence investors have in the future, and the IPO market is an even more acute indicator. If investors are pessimistic, new issues shut down. If investors are optimistic, they treat IPOs like fresh oxygen that they can't get enough of.

Following a strong 2017, the IPO market continued thriving in 2018, with 199 companies going public raising a combined $53.7 billion in proceeds. Compare that to 2016, where only 102 companies listed and IPO proceeds were a paltry $18.8 billion. In the past 15 years, there has been an average of 108 IPOs annually, down from the decade of the 90s, which had an average of 406 IPOs annually.

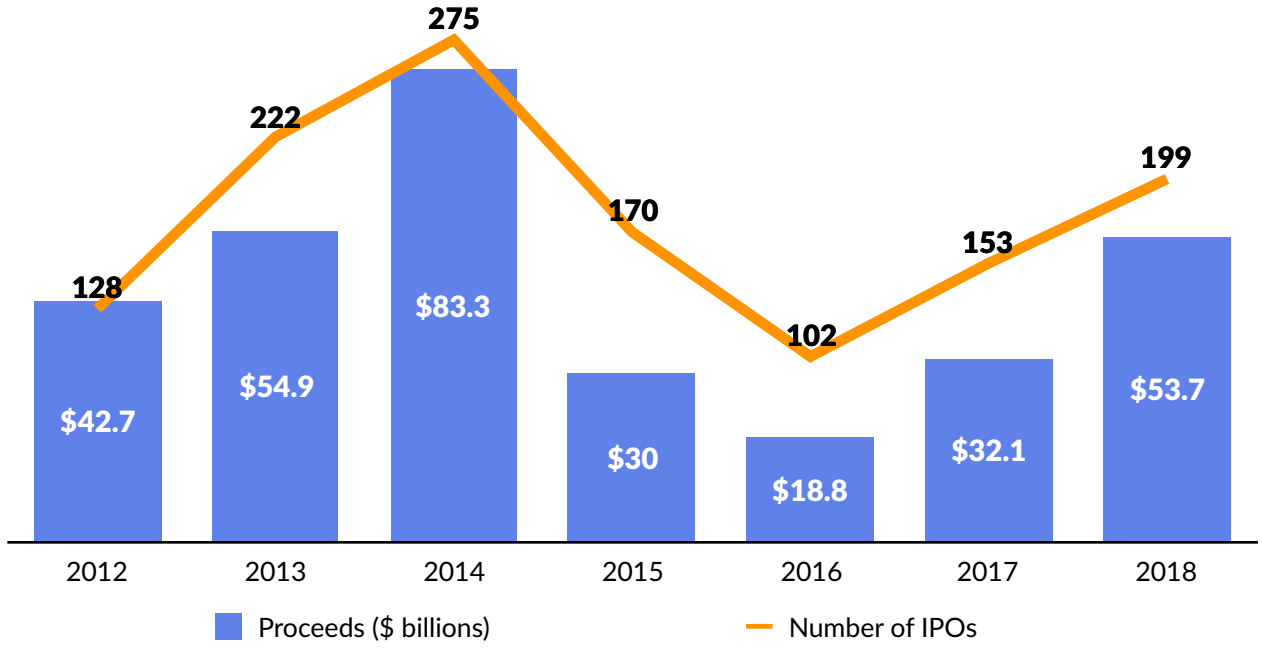
IPOS: 2018 vs. 2017

Metric	2018	2017
# of IPOs	199	153
Avg Total Proceeds	$270 million	$210 million
Median Total Proceeds	$101 million	$116 million
Avg Market Cap	$1.6 billion	$1.26 billion
Median Market Cap	$510 million	$557 million
Priced Above	18%	16%
Priced In Range	64%	61%
Priced Below Range	18%	22%
Avg 1-Day Pop	15%	13%
Performance (YTD)	(6%)	26%
VC Backed	93	64

Source: GSViQ, GSV Asset Management

IPO REBOUND

Number of IPOs and IPO Proceeds by Year, 2012-2018



Source: GSViQ, GSV Asset Management

While we were pleased to see improving IPO activity in 2018, the recent trend points to a broader opportunity for the best names to break through an IPO backlog that has been building over the last fifteen years.

NEW IPO FUNDAMENTALS

New Fundamentals Have Led to an IPO Backlog that Has Been Building for 15+ Years

Trend	Description
1. Limited IPO Supply	• The supply of rapidly growing, small companies with the potential for large IPOs is a fraction of what it has been historically. • From 1990 to 2000, there was an average of 406 IPOs in the United States per year. • From 2001 to 2016, there has been an average of 108 IPOs.
2. Staying Private Longer	• Private companies are staying private much longer. • The time from initial Venture Capital investment to monetization has gone from an average of three years in 2000 to approximately ten years today.
3. "Digital Tracks" = Rapid Growth Opportunities	• "Digital Tracks" have been laid over the last twenty years, with over 3.5 billion Internet users, 2.6 billion smartphone users, and more than 250 billion apps downloaded. • This allows technology entrepreneurs to go from an idea to reaching tens of millions of people at breathtaking speeds, with corresponding growth. • Uber and Lyft, for example, were founded in 2009 and 2012. Today, Uber and lyft have delivered over 10 billion and 1 billion rides, respectively.
4. VCs Keep Up the Pace	• Not surprisingly, despite the IPO market being weak for much of the past fifteen years, Venture Capitalists haven't stopped investing. • VCs have invested in an average of 3,800 companies per year from 2001-2016. • We estimate that there are over 2,000 VC-backed private companies with a market value of $100 million or greater. • This new combination of fundamentals puts some context around the recent rise of "Unicorns" — private companies valued at $1 billion or greater — which are quickly becoming "Ubercorns." In 2000, there was one Unicorn. Today, there are over 200.

Source: GSV Asset Management
Disclosure: GSV owns shares in Lyft

This March, **Dropbox** made its public debut, pricing above the range and popping 36%. Dropbox is the fastest Software-as-a-Service business to reach a $1 billion revenue run-rate according to IDC. 2017 revenues were $1.1 billion, up from $845 million in 2016 and $604 million in 2015 – a 35% CAGR for the period. A few weeks later, all eyes — and ears — were on **Spotify** as the Stockholm-based music streaming platform made its anticipated public debut via a direct listing. The company priced well above the price of most recent private transactions. (Disclosure: GSV owns shares in Dropbox and Spotify)

2018: NOTABLE TECHNOLOGY IPOS

Company	HQ	Description	Notable Private Investors	IPO Performance
Adyen (2006)	Amsterdam, The Netherlands	Multichannel (online, mobile, and physical) payment platform	Felicis Ventures, General Atlantic, Index Ventures, ICONIQ Capital, Temasek	+90% Pop +98% YTD
DocuSign (2003)	San Francisco, CA	Cloud-based electronic signature collection platform	Accel, KPCB, Salesforce, Bessemer, GV, Intel Capital, Wellington, Visa, Samsung Ventures,	+37% Pop +38% YTD
Dropbox (2007)	San Francisco, CA	Cloud consumer and enterprise file sharing platform	GSV, Accel, Index Ventures, Sequoia Capital, Greylock, IVP, Benchmark, Goldman Sachs, Morgan Stanley, T.Rowe Price	+36% Pop -3% YTD
Pinduoduo (2015)	Shanghai, China	E-commerce platform that allows uses to participate in bulk purchases	Tencent, Cathay Innovation, Sequoia Capital China	+41% Pop +18% YTD
Pluralsight (2004)	Salt Lake City, Utah	Online professional technology learning platform	GSV Accelerate, Insight Venture Partners, Felicia Ventures	+33% Pop +57% YTD
Spotify (2006)	Stockholm, Sweden	Music streaming platform	GSV, Tiger Global, TPG, Tencent Music Group, Goldman Sachs, TCV, DST, KPCB, Accel, Fidelity, Wellington	*N/A* *Direct Listing* -14% YTD
Survey Monkey (1999)	San Mateo, CA	Online survey development cloud-based SaaS	T. Rowe Price, Salesforce Ventures, CapitalG, Fidelity, Morgan Stanley, Tiger Global, TPG, Goldman Sachs	+44% Pop 2% YTD

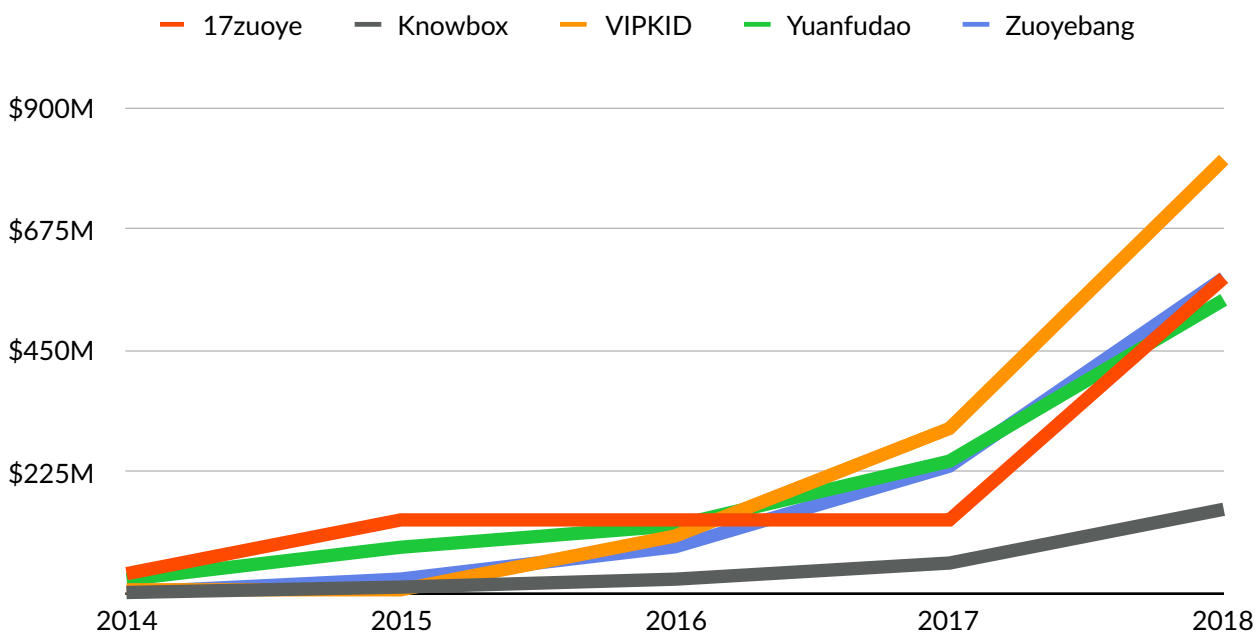
Company	HQ	Description	Notable Private Investors	IPO Performance
Tencent Music (2016)	Shenzhen, China	Music streaming platform for the Chinese market	Tencent, Sony/ATV Music Publishing, Spotify	+8% Pop +2% YTD

Source: GSViQ, GSV Asset Management

Hong Kong was the **top IPO market** in the World in 2018, with 125 companies raising a total of $36.5 billion (up 175% year-over-year). This is well ahead of the second-place New York Stock Exchange, which had 64 companies raise a combined $28.9 billion. Hong Kong hosted three of Asia's top five IPOs, including smartphone maker **Xiaomi**, telecommunications operator **China Tower**, and on-demand food delivery platform **Meituan-Dianping**.

All in all, across Asia companies raised a total of $109 billion in public offerings, up 27% from 2017, with the Middle Kingdom accounting for almost one-third of issues. Notable Chinese IPOs include bulk-discount commerce platform **Pinduoduo** and Chinese music platform **Tencent Music Group.** For the year, 15 Chinese education companies went public. More notably, Chinese education technology companies continue to thrive in the private markets, raising a significant amount of capital in the past few years.

CHINESE EDUCATION STARTUPS CONTINUE TO RAISE MASSIVE FUNDING ROUNDS



Source: Crunchbase

Entering into 2019, all eyes will be on the anticipated public debuts of **Lyft** and **Uber**, who both confidentially filed within a week of each other to go public. The rivals' competition now extends beyond domestic ride-sharing, to a race to be first to market. The anticipated IPOs place both Uber and Lyft's offering ahead of schedule, especially for Uber who had previously indicated plans to go public the second half of 2019. (Disclosure: GSV owns shares in Lyft)

The success of Uber Eats could be a driver in Uber's upcoming public offering. But its core ride-share business creates a challenge for the company to justify an anticipated $100B valuation with $10.5 billion in net revenue over the last twelve months. In the third quarter, Uber's overall gross revenue grew +34%, but its ride share business decelerated to +23%, down from 33% in Q2 and 50% in Q1 2018.

UBER VS. LYFT

Metric	Uber	Lyft
IPO Timing	1H 2019	1H 2019
Last Private Valuation	$76 billion	$15.1 billion
Anticipated Valuation at IPO	$100 billion	$19 billion
Capital Raised to Date	$24.2 billion	$4.9 billion
Rides Completed to Date	10+ billion	1+ billion
Geographic Footprint	International (70 Countries)	United States & Canada
U.S. Market Share	87% (2016) <65% (2018)	12% (2016) >35% (2018)
Food Delivery Presence	Uber Eats	N/A
Micro-Mobility Presence	Jump Bikes (bike-sharing) & Lime Partnership	Motivate (bike-sharing), Lyft Scooters
Q3 2018 Growth Rate (YoY)	38%	>60%

Source: Company Disclosures, Crunchbase, CB Insights, GSV Estimates

A major cause of Uber's ride share deceleration in the U.S. has been Lyft's ongoing success in attracting both drivers and Millennial riders. Lyft's market share has grown

from 12% in 2012 to over 35% today. Meanwhile, Uber's has shrunk from 89% to less than 65% today.

Lyft has become a competitor in the micro-mobility space and is the largest bike-sharing service operator in North America, following its acquisition of Motivate this Summer. Aside from a partnership and investment in Lime and ownership of Jump Bikes, Uber's plans in the micro-mobility space are still unclear.

Aside from Uber and Lyft, the list of IPO candidates goes on.

NOTABLE POTENTIAL VC-BACKED TECHNOLOGY IPOS FOR 2019

Company	Description	Total Funding	Investors
Airbnb (2008)	Hospitality platform with over 150 million users, 4.8 million listings, and over 300M guest arrivals since 2008	$4.4 billion **Valuation:** $31 billion	Sequoia Capital, KPCB, Greylock, a16z, Brand Capital, General Catalyst, Founders Fund, GGV, TCV, Tiger Global, Temasek, General Atlantic
Coursera (2012)	Online learning platform offering courses and degrees with over 36 million learners	$210 million **Valuation:** $800 million	GSV, NEA, KPCB, The World Bank, Learn Capital
DiDi Chuxing (2012)	Global ridesharing platform with over 550 million users and 21 million drivers completing over 30 million rides daily	$19.7 billion **Valuation:** $56 billion	Tencent, SoftBank, Temasek, GGV, Alibaba, DST, Foxconn, Coatue, Mudabala, CITIC, Ant Financial, China Merchant Bank, Piing An, Apple, CIC
Lyft (2012)	Ridesharing platform covering 95% of the United States and has run over 1 billion rides to date	$4.9 billion **Valuation:** $15.1 billion	GSV, a16z, Founders Fund, FLOODGATE, Tencent, KKR, DiDi Chuxing, Alibaba, Fidelity, Rakuten, Coatue, Fortress
Palantir (2004)	Data platform for integrating, visualizing, and analyzing information	$2.1 billion **Valuation:** $20 billion	GSV, Founders Fund, In-Q-Tel, Khazanah, Ulu Ventures
Peloton (2012)	World's largest fitness platform offering physical products and a digital fitness platorm	$995 million **Valuation:** $4 billion	KPCB, GGV, Tiger Global TCV, Fidelity, True Ventures, NBCUniversal, L Catterton, Felix Capital

Company	Description	Total Funding	Investors
Slack (2009)	Enterprise software platform for team communication and collaboration	$1.2 billion **Valuation:** $7.1 billion	Andreessen Horowtiz, KPCB, T. Rowe Price, General Atlantic, Wellington, Atlassian, Accel, Softbank, GGV, Thrive Capital, DST, Dragoneer
Stripe (2010)	Online payment infrastructure used by millions of small businesses across 100 countries	$685 million **Valuation:** $20 billion	KPCB, Khosla Ventures, Tiger Global, General Catalyst, Andreessen Horowtiz, GV, Goldman Sachs, CapitalG, JP Morgan, Visa
WeWork (2011)	Global network of co-working spaces with over 200 offices in 50 countries	$12.1 billion **Valuation:** $45 billion	SoftBank, Benchmark, Goldman Sachs, T. Rowe Price, JP Morgan, Wellington, Fidelity, Hony Capital, Legend Holdings

Source: GSV Asset Management, Crunchbase, Wall Street Journal
Disclosure: GSV owns shares in Coursera, Lyft, Palantir

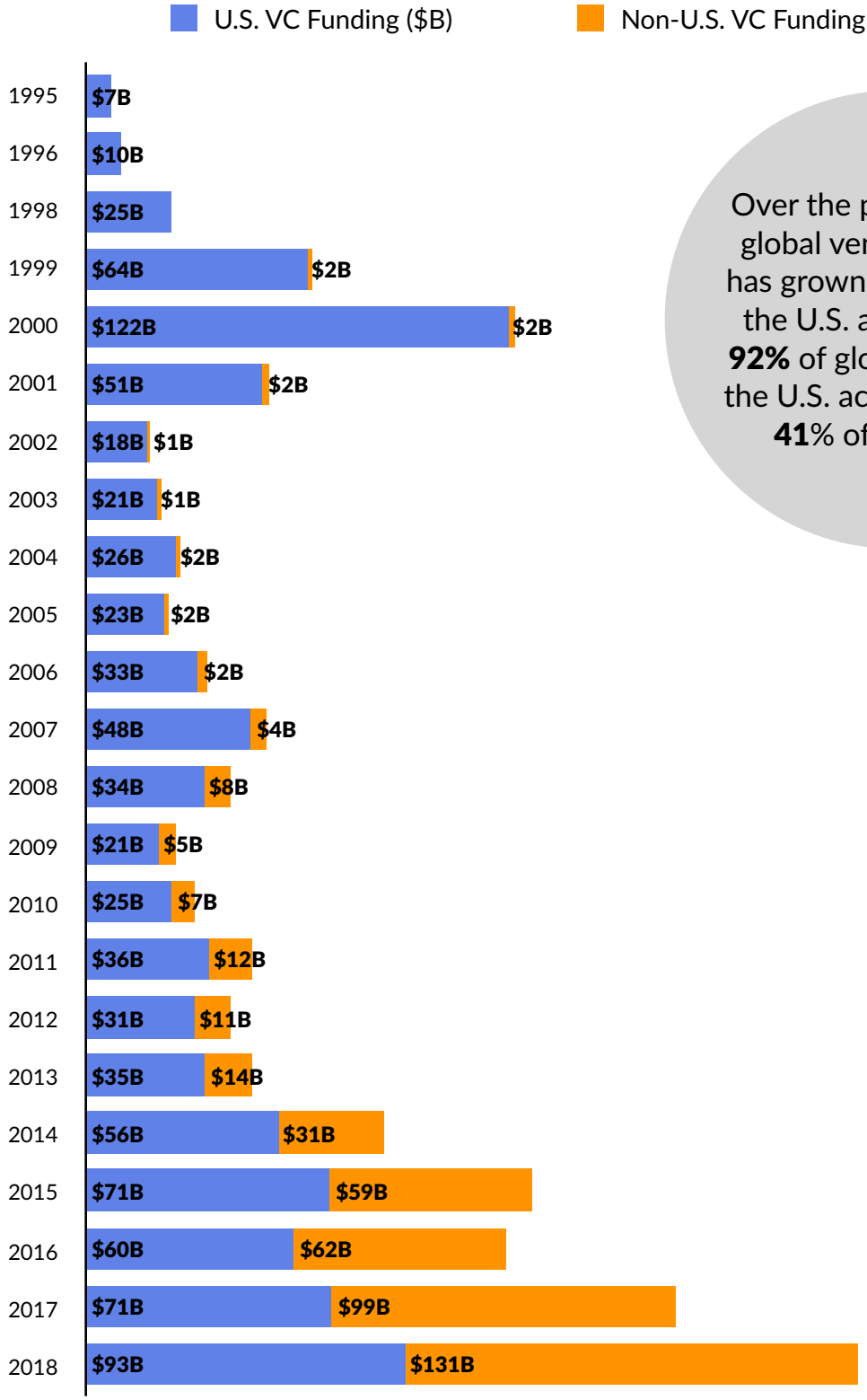
2019 PREDICTION #2

Global Silicon Valley: From Austin to Boston, Chicago to Sao Paulo, Shanghai to Mumbai to Dubai, the Global Silicon Valley has emerged. Look for the Stars of Tomorrow to emerge from outside the United States as Global innovation continues to boom.

The Fall of the Berlin Wall in 1989 opened the flood gates for global connectivity, partnerships, and democracy. In 1900, only 12% of the world lived in a democracy, compared to 56% today. Airline travel has boomed, with the number of international travelers going from 1 billion in 1990 to 4 billion today. By 2036, there is expected to be 8 billion airline travelers.

When looking at global financial markets, in 1990 only 15% of S&P 500 revenue came from outside the United States. Today, that number has risen to 43%. Over the past ten years, global venture funding has grown 4.3x. In 2007, the U.S. accounted for 92% of global VC. Today the U.S. accounts for just 41% of global VC.

GLOBALIZATION OF VENTURE CAPITAL INVESTMENTS (1995 - 2018)



Over the past ten years, global venture funding has grown **4.3x**. In 2007, the U.S. accounted for **92%** of global VC. Today the U.S. accounts for just **41**% of global VC.

Source: CB Insights, GSV Asset Management

To us, the magic of Silicon Valley and what has made the sixty miles between San Francisco and San Jose special is not about bits, bytes, and chips. The entrepreneurial mindset is alive and thriving. And what excites us the most is that the magic of Silicon Valley has gone Global and it's gone viral. From Austin to Boston, Chicago to Sao Paulo, Shanghai to Mumbai to Dubai… a *Global Silicon Valley* has emerged.

In 2019, look for the continued surge in innovation coming from Global markets, especially from the VChIIPs (Vietnam, China, India, Indonesia, Philippines), Europe, and Latin America.

VChIIPs

Looking in the rearview mirror, the world's economic engine for the last 100 years was the United States, Europe, Japan, and Canada.

In 2000, with just 9% of the global population, these countries contributed nearly 75% of global GDP. But over the last 15 years, GDP growth in these countries has been flat-to-negative. Today they contribute just 53% of Global GDP. A key driver behind this change has been aging populations. Over 26% of these populations are over the age of 60 while just 16% are under the age of 15. In Japan last year, there are more adult diapers sold than baby diapers.

These dynamics are not changing anytime soon. The average (weighted) fertility rate in Canada, the United States, Europe, and Japan is 1.6. At a fertility rate under two, you're essentially dying.

Where is the growth and opportunity as we look ahead? We call it the **VChIIPs** — Vietnam, China, India, Indonesia, and the Philippines.

These countries are home to over 41% of the global population and command 20% of global GDP, growing at 10.8%. If you look at the demographics, they are effectively the mirror opposite of what you see in the developed countries. Just 12% the VChIIP population is older than 60, 23% is younger than 15, and the fertility rate is 2.1, driving organic growth.

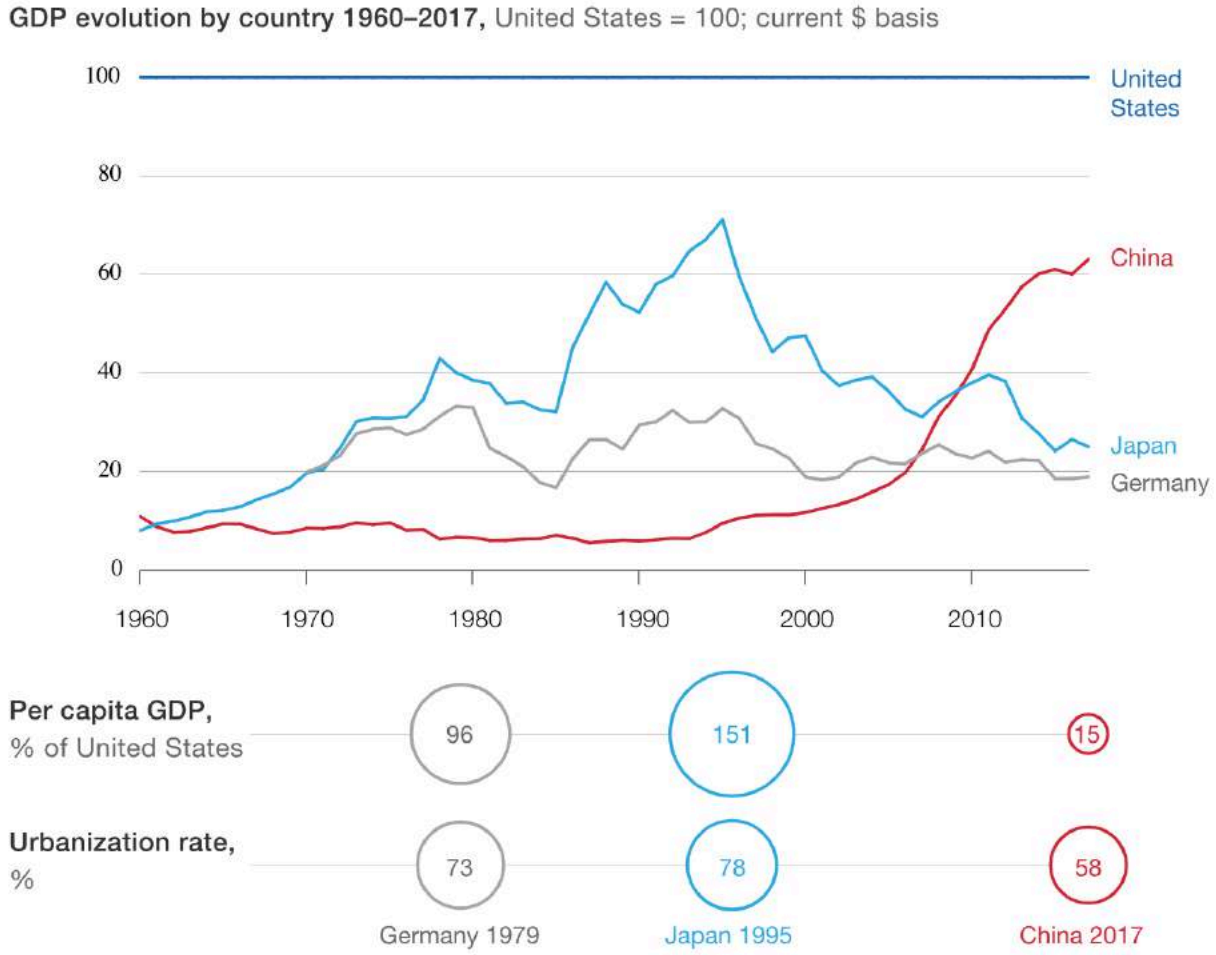
SHIFTING CENTER OF GRAVITY: DEVELOPED LEADERS TO VChIIPs

Country	GDP Per Capita	GDP Growth Rate*	% Global GDP	% Global Population	% Pop. Under 15	% Pop. Over 60	Fertility Rate
Canada	$45,032	0.7%	2.0%	0.5%	16.0%	23.5%	1.6
European Union	$33,715	(1.1%)	21.4%	6.8%	15.4%	26.0%	1.5
Japan	$38,428	(0.4%)	6.0%	1.7%	12.9%	33.4%	1.4
U.S.	$59,532	3.1%	24.0%	4.3%	18.9%	21.5%	1.9
Developed Leaders	**$44,269** *Weighted Avg.*	**0.9%** *Weighted Avg.*	**53.5%**	**12.8%**	**16.3%** *Weighted Avg.*	**26.4%** *Weighted Avg.*	**1.6** *Weighted Avg.*
Vietnam	$2,343	9.5%	0.3%	1.3%	23.1%	11.1%	2.1
China	$8,827	11.5%	15.2%	18.4%	17.7%	16.2%	1.6
India	$1,940	9.1%	3.2%	17.8%	27.8%	9.4%	2.3
Indonesia	$3,847	7.9%	1.3%	3.5%	27.4%	5.3%	2.6
Philippines	$2,989	6.8%	0.4%	1.4%	31.7%	7.6%	3.0
VChIIPs	**$7,229** *Weighted Avg.*	**10.8%** *Weighted Avg.*	**20.3%**	**41.1%**	**23.4%** *Weighted Avg.*	**12.4%** *Weighted Avg.*	**2.1** *Weighted Avg.*
Sub-Saharan Africa	**$1,553**	**5.0%**	**2.0%**	**14.1%**	**42.7%**	**4.8%**	**4.8**

Source: The World Bank, GSV Asset Management
** GDP Growth Rate Calculated as the Compound Annual Growth Rate (CAGR) from 2008 to 2017*

Surprisingly, conventional wisdom holds that the China growth story is yesterday's news. But if you look at the Middle Kingdom's profound technological innovations in recent years, coupled with a relentless pace of infrastructure investment, President Xi's "Chinese Dream" is becoming a Chinese Reality. This growth story is just beginning.

CHINA HAS STRONG ECONOMIC TAILWINDS TO PROPEL DOMESTIC GROWTH



Source: The World Bank, McKinsey Global Institute

A key catalyst is massive urbanization that is pervasive around the World but explosive in China. Take Shenzhen as an example.

In the 1970s, Shenzhen was a small fishing village. But in 1980, it became China's first "Special Economic Zone," which sparked breakneck growth for the next two decades. In less than a generation, Shenzhen has gone from being a backwater to the financial backbone of southern China. It is home to the Shenzhen Stock Exchange, as well as the headquarters of **Ping An Insurance**, **Huawei**, and **Tencent**. It has one of the busiest ports in the World.

BEFORE + AFTER: SHENZHEN

Satellite View of Shenzhen in 1980 (left) and 2008 (right)

If you look at the United States, there are 10 cities with a population of one million or more. In China, there are 160. Importantly, Chinese urban behemoths are clusters of young people who are embracing technology, brands, and digital commerce. These are young people who are getting ready to change the World. Accordingly, we're seeing innovation abound. Transformative businesses are being created. Venture investment activity is accelerating. In 2017, startups in Beijing and Shanghai raised more venture funding than startups in Silicon Valley.

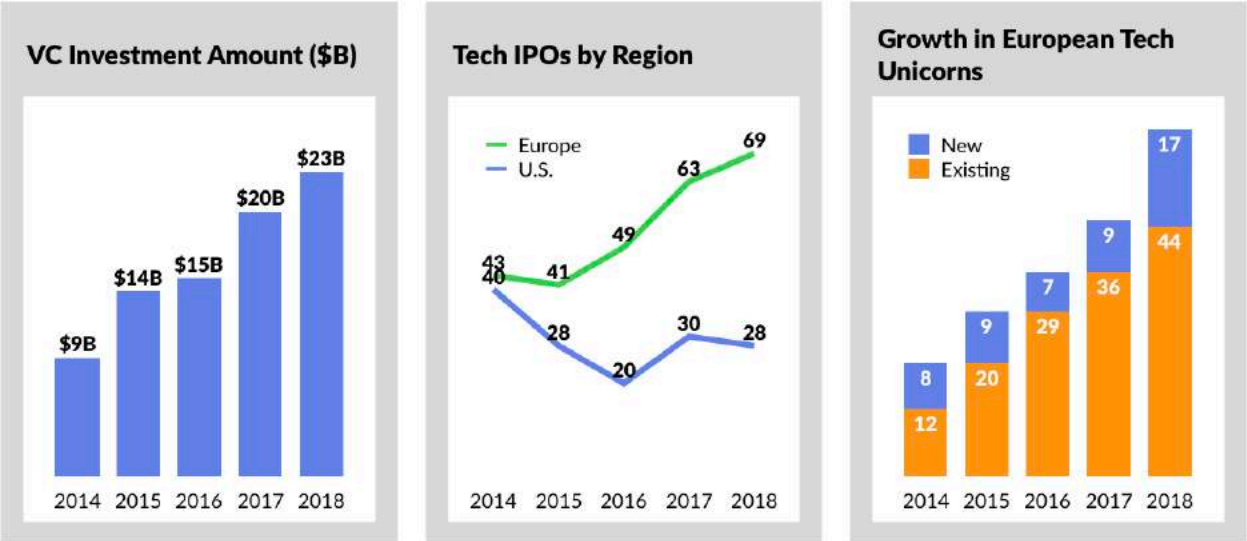
Europe

Several key catalysts have been fueling the European innovation ecosystem in recent years. Governments have been shifting heightened attention towards developing technology and artificial intelligence and have changed tax and immigration laws to incentivize tech talent.

Already, Europe has more tech developers than the U.S. — 5.7 million compared to 4.4. million. And most importantly, that talent wants to stay in Europe. In Atomico's recent **survey** of European entrepreneurs and startups, 83% of entrepreneurs state that they would choose to stay in Europe to build their startup. In comparison, only six percent stated that they wanted to move to Silicon Valley. Not surprisingly, Europe's tech industry is currently growing five times faster than the overall EU economy.

Accordingly, there has been a strong inflow of venture capital investments, which is expected to hit $23 billion this year. In comparison, European venture investments in 2014 was only $9 billion. In parallel, the number of tech IPOs and unicorns coming out of Europe has been growing steadily every year.

EUROSTARS: FUELED BY INNOVATION



Source: Atomico, The State of the European Tech Survey (2018)

Already, notable success stories are showing up across Europe. **Spotify's** public listing this Spring was a major landmark for the continent. The Stockholm-based streaming leader has been fending off competitors in **Apple**, **Amazon**, and **Google** for years, and continues to grow at a solid pace. Spotify currently counts 87 million paid users, which is up 40% year-over-year.

This summer, online payment provider **iZettle** was acquired for $2.2 billion by **PayPal**. Prior to its acquisition, iZettle was planning to list first in Stockholm at a $750 million valuation and then in the United States at a $1 billion valuation. In the Netherlands, payment processing platform **Adyen** went public, bursting into Europe's tech scene when its market value doubled to $14 billion following its IPO. As one of the World's leading payment platforms, Adyen counts companies such as **Netflix**, **Facebook**, **Uber** and **Spotify** as users. The company was one of the 2018's top IPOs performing up 98%.

Romania's capital Bucharest may not be the first place to associate with innovation, but that notion is changing quickly. Romania's **UiPath** is an emerging leader in the robotics process automation (RPA) industry. UiPath creates AI-based robots that handle the flow and integration of back office applications. The software uses computer vision to understand and to automate repetitive tasks, freeing up employee's time to focus on more complex work. Founded in 2012 and currently valued at $3 billion, UiPath has raised $448 million to date from blue-chip investors including Kleiner Perkins, Accel, and CapitalG.

Looking ahead, we're focused on the growing list of disruptive companies coming from across the pond.

EMERGING STARS IN EUROPE

Company	Description	Total Raised	Investors
Deliveroo *U.K*	Restaurant food delivery service to households or offices	$860M	Accel, General Catalyst, Index Ventures, T. Rowe Price, DST, H14, Fidelity, Bridgeport, Rancillo Cube
TransferWise *U.K.*	Money transfer service that allows individuals and businesses to transfer money abroad	$480M	SV Angel, Index Ventures, Andreessen Horowitz, Seedcamp, Virgin Group, JP Morgan, Kleiner Perkins
UiPath *Romania*	AI-powered robotic process automation (RPA) software	$448M	CapitalG, Sequoia Capital, Meritech Capital Parters, Accel, Madrone, IVP, Seedcamp
Revolut *U.K*	Digital banking alternative with a multi-currency card and currency exchange	$336M	Seedcamp, Index Ventures, Balderton Capital, Global Founders Capital, Greyhound, Venrex
Glovo *Spain*	On-demand delivery service for local goods and food	$180M	Rakuten, Idinvest Partners, Bonsai Venture Capital, Keyword Venture Capital
Taxify *Estonia*	Europe's largest peer-to-peer ride-sharing platform in 25 countries with 10M riders and 500K drivers	$177M	Didi Chuxing, TMT Investments, Daimler, Korelya Capital

Company	Description	Total Raised	Investors
GoEuro *Germany*	Travel search engine for European destinations	$146M	Kleiner Perkins, Temasek, NEA, Battery Ventures, Hillhouse, Kinnevik, Atomico
Grammarly *Ukraine*	AI-powered grammar editing tool	$110M	SignalFire, Spark Capital, IVP, Breyer Capital, General Catalyst
Doctolib *France*	Online booking platform to find and schedule doctor and dentist appointments	$100M	Accel, Bpifrance, Eurazeo, Kerala Ventures
KRY *Sweden*	App-based healthcare service that provides on-demand doctor video calls	$88M	Accel, Index Ventures, Creandum, Project A
ManoMano *France*	Online marketplace for gardening and DIY tools	$85M	Bpifrance, General Atlantic, Partech, Piton Capital, CM-CIC Capital Prive
Front *France*	Collaboration app that unifies email, customer communication channels, and apps	$79M	Y Combinator, Sequoia, Index, DFJ, Slow Ventures, Social Capital
Algolia *France*	Search API technology platform to accelerate user experience	$74M	Y Combinator, 500 Startups, Accel, Index, Storm, Point Nine, Alven
OpenClassroom *France*	Online education platform with 1M users and 1,000 online courses	$70M	Bpifrance, General Atlantic, Alven Capital, Citizen Capital, Xavier Niel
Believe Digital *France*	Digital music distributor and label services for artists and labels	$60M	TCV, Ventech, XAnge, GP Bullhound
MessageBird *Netherlands*	Cloud communication customer support platform for companies	$60M	Y Combinator, Accel, Atomico
Backmarket *France*	Marketplace for professionally refurbished goods, tech products, and appliances	$55M	Groupe Arnault, Eurazeo, Daphini, Aglae Ventures
Citymapper *U.K*	AI-powered public transportation mapping and routing app	$50M	Benchmark, Index Ventures, Balderton, LocalGlobe, Connect Ventures
Alan *France*	Digital health insurance platform focused on the consumer experience	$41M	Index Ventures, Partech, AGRANOV, Xavier Niel
Musixmatch *Italy*	World largest song lyric catalog that is powered by AI	$10M	P101, United Ventures, Micheli Associati

Source: Crunchbase, GSV Asset Management

Latin America

The historic Silk Road which connected Central Asia, India, and China was as much about an exchange an ideas than of physical goods. The trade route was catalyst for cultural development across China, India, Persia, Europe, and the African continent. It catapulted China to economic and geo political dominance. President Xi's "One *Belt*, *One Road Initiative*" aims to create the modern Silk Road, focused on creating connectivity and cooperation between Eurasia and China.

THE OLD AND NEW SILK ROAD

All in all, the "One Belt, One Road" network connects two-thirds of the World's population and 31% of the World's GDP. A corresponding global network that we are

focused on is “One America”, which connects North America and South America… bringing together 14% of the World’s population and 31% of global GDP.

Brazil was once the darling of the emerging market, with investors clamoring for a spot in the economy, but it has quickly fallen from good graces. While the middle class is still expanding and the economy may still boom, the optimism in the country has fallen and political corruption is a serious problem.

But despite all this, the tricky labor laws, and hefty taxes, the hype began for a reason. São Paulo and Brazil have never stopped growing, the startup infrastructure is worlds ahead of where it used to be, and no one can complain about the energetic Brazilian culture, the World Cup in 2014, and the Olympics in 2016. The potential in Brazil has yet to be tapped, and Brazils remains as Latin America’s epicenter for innovation.

But all throughout the region, from Mexico to Peru and Chile, and Columbia to Argentina, innovation hotspots are emerging as the next generation of entrepreneurs tackle the continent’s most pressing issues. Chile has been dubbed “Chilecon Valley” for the number of foreign entrepreneurs the country has attracted with its robust offerings for startups.

LATIN AMERICAN INNOVATION CLUSTERS

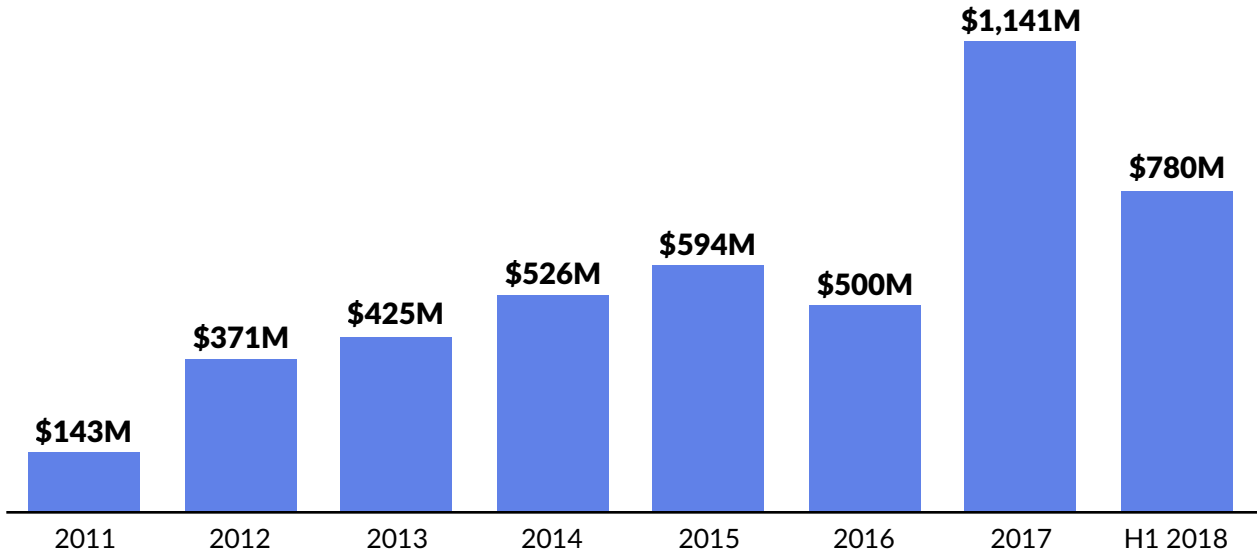
Venture Investment to Startups (2017 - H1 2018)

Source: LAVCA

The first half of 2018, Latin American startups raised a record amount of venture funding, with Fintech, Marketplaces, and AgTech being the hottest sectors.

LATIN AMERICA STARTUP VENTURE FUNDING (2011 - 2018)

H1 2018 Was a Record-Breaking Semester for VC Investment in Latin America



Source: LAVCA

In the past two years, a number of Latin American startups have raised megarounds or matured to Unicorn status.

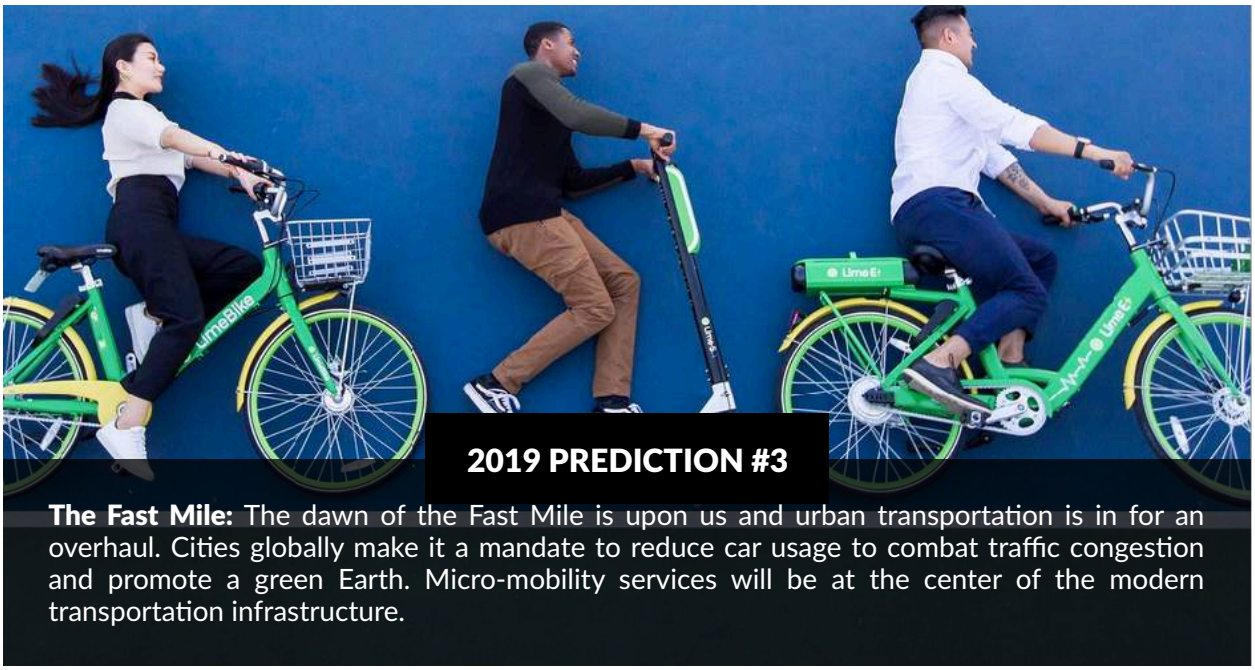
Columbian on-demand delivery startup **Rappi** raised $130 million this January and $200 million this August from a syndicate of investors including DST, Delivery Hero, Sequoia Capital, Andreessen Horowitz, and Redpoint Ventures. Founded in 2015, the company reached Unicorn status, joining the elite club alongside Brazil's **Nubank**.

Founded in 2014, Nubank has democratized access to banking solutions for people that traditionally could not or did not have access to physical banks. Since its launch, the company has launched a series of products ranging from low-interest rate credit cards to high-yield savings accounts, while making the process simpler for everybody to have access to a financial provider. This October, Nubank raised $180 million from Tencent at a $4 billion valuation. In total, Nubank has raised $707 million from investors including DST, Founders Fund, Sequoia Capital, Fortress, Goldman Sachs, and Tiger Global.

EMERGING STARS IN LATIN AMERICA

Company	Description	Total Raised	Investors
99 *Brazil*	On-demand ride booking service	Acquired by Didi Chuxing for $1B	*Acquired by Didi Chuxing for $1B*
CargoX *Brazil*	Shipping and cargo services based on blockchain technology	$95M	Goldman Sachs, Qualcomm Ventures, Valor Capital Group, Lumia Capital
Creditas *Brazil*	Platform for digital lending for home equity and auto loans	$88M	e.ventures, Google Launchpad, Amadeus Capital Partners, IFC, QED Investors, Redpoint eventure, Naspers
Movile *Brazil*	Mobile commerce platform with products in content, food ordering and delivery, ticketing, and logistics	$395M	Naspers, Innova Capital Consultoria Ltda, MIH, Rio Bravo
Nubank *Brazil*	App-based fintech company that democratizes access to financial institutions	$708M	Sequoia Capital, Goldman Sachs, Redpoint, Founders Fund, Tencent, Tiger Global Management Thrive Capital, QED Investors, Kaszek Ventures, DST
Passei Directo *Brazil*	Academic social network and platform for university students to share study materials	$13.9M	Redpoint eventures, Bozano Ivestimentos, Valor Capital Group, Grupo Xango
Rappi *Columbia*	On-demand delivery service for food and goods	$392M	Y Combinator, Sequoia Capital, Andreessen Horowitz, Foundation Capital, FundersClub, Floodgate, DST, Redpoint eventures
Ualá *Argentina*	Personal finance management app linked with a MasterCard	$44M	Bessemer, Goldman Sachs, General Catalyst, Ribbit Capital, Soros Fund Management, Jefferies, Greyhound Capital
Yellow *Brazil*	Bike and e-scooter sharing platform	$75M	GGV, Grishin Robotics, Greyhound Capital, Base10 Partners, Class 5 Global

Source: Crunchbase, GSV Asset Management



Movement is in our DNA. Until about 10,000 years ago — or 99% of human history — there were few, if any homes or villages. People were nomadic, chasing food and gentler climates.

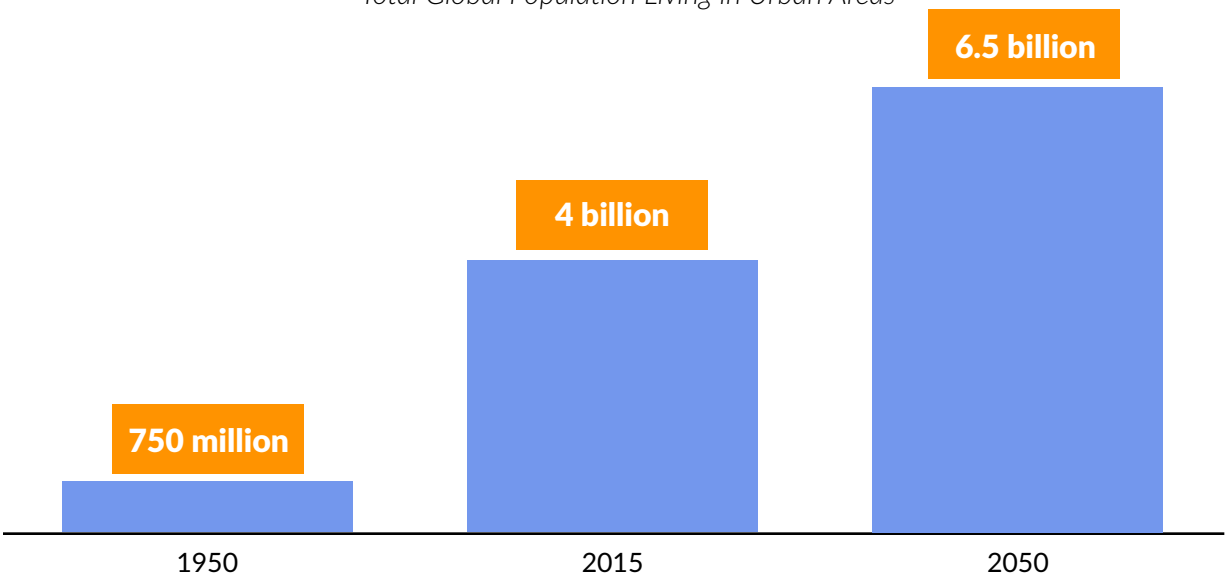
While we couldn't change the weather, we learned how to domesticate plants and animals in what is now called the Neolithic Revolution. And when the food stopped moving, so did we.

In the next 10,000 years, historians might look back and name our era the "Metropolis Revolution."

Today, the United Nations estimates that four billion people, or 54% of the World's population, live in cities. In the next 15 years, the *Economist* projects that urbanization will increase average city density by 30%. By 2050, the ranks of urban dwellers will swell by 2.5 billion to nearly two-thirds of Global population.

THE POPULATION OF GLOBAL CITIES IS SURGING

Total Global Population Living in Urban Areas



Source: The Economist, United Nations

Around 80 million people annually move from rural to urban areas and the number of megacities — cities with a population 10 million or greater — has **doubled** in the past two decades, from 14 in 1995 to 31 in 2017. It's **estimated** that by 2100, over 80 cities across the World will have a population over 10 million.

The rise of Global urbanization, coupled with a corresponding increase in the number of vehicles on the road, has pushed city traffic to the limit. In Mexico City, for example, the city with the most traffic congestion in the World, drivers spend two-thirds of their time in the car in gridlock. And with a population of eight million, Mexico City isn't even considered to be a "megacity" (10+ million population).

MOST CONGESTED CITIES IN THE WORLD

10 of the 25 Most Congested Cities Are in China

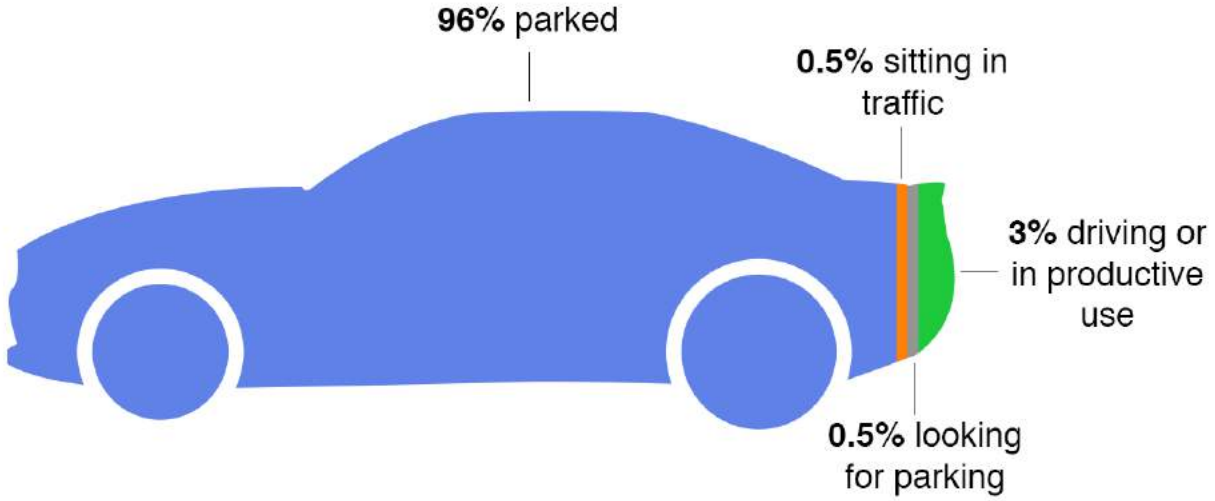
	City	Country	Population	Driving Time in Congestion
1	**Mexico City**	Mexico	8.9 million	66%
2	**Bangkok**	Thailand	8.3 million	61%
3	**Jakarta**	Indonesia	9.6 million	58%
4	**Chongqing**	China	8.1 million	52%
5	**Bucharest**	Romania	1.9 million	50%
6	**Istanbul**	Turkey	14.8 million	49%
7	**Chengdu**	China	14.4 million	47%
8	**Rio de Janeiro**	Brazil	6.3 million	47%
9	**Tainan**	Taiwan	1.9 million	46%
10	**Beijing**	China	24.9 million	46%
11	**Changsha**	China	7.4 million	45%
12	**Los Angeles**	United States	4 million	45%
13	**Moscow**	Russia	11.9 million	44%
14	**Guangzhou**	China	14 million	44%
15	**Shenzhen**	China	11.9 million	44%
16	**Hangzhou**	China	9.2 million	43%
17	**Santiago**	Chile	5.2 million	43%
18	**Shijiazhuang**	China	10.7 million	42%
19	**Buenos Aires**	Argentina	2.9 million	42%
20	**Kaohsiung**	Taiwan	2.8 million	41%
21	**Saint Petersburg**	Russia	5 million	41%
22	**Shanghai**	China	34.9 million	41%
23	**Tianjin**	China	15.5 million	41%
24	**Taipei**	Taiwan	2.7 million	40%
25	**London**	United Kingdom	8.8 million	40%

Source: TomTom Traffic Index, United Nations, U.S. Census, World Bank, GSV Asset Management

Americans spend over $2 trillion per year on car ownership — more than what we shell out for food. But shockingly, the 250 million cars in the United States spend 96% of the day parked. In other words, there are 240 million cars parked at all times. As Lyft co-founder John Zimmer has observed, BMW doesn't make the "Ultimate Driving Machine" — it makes the "Ultimate Parking Machine".

ULTIMATE PARKING MACHINE: AMERICAN CARS ARE PARKED 96% OF THE DAY

Percentage of Time U.S. Cars Are Used for Key Activities



Source: Dr. Stefan Heck (4/1 Presentation: Driving Growth with Big Ideas — Private Capital and Global Innovation), GSV Asset Management

As is often the case, the greatest problems create the greatest opportunities — the bigger the problem, the bigger the opportunity.

And thats where the "Fast Mile" comes in. Arising at the intersection of several megatrends — the sharing economy, smartphones, urbanization, sustainability, and on-demand services — the Fast Mile encompasses solutions that will add efficiency to the problem of last mile transportation in congested cities.

THE FAST MILE: COLLIDING MEGATRENDS

Source: GSV Asset Management

In a few short years, bike-sharing emerged as the fastest growing sector of the on-demand "Sharing Economy." Venture funding for bike-sharing startups exploded in 2017, largely driven by the mega-rounds raised by Chinese early-movers **Ofo** and **Mobike** ($1.9 billion in combined 2017 financings).

In even shorter time, bike-sharing suddenly became the fastest dying sector… Ofo is struggling to maintain payroll, Mobike sold to **Meituan** and was discontinued in most locations, **Jump** (under Uber) has been underperforming, and **Lime** transitioned from bikes to scooters.

What happened?

In China, which is home to over 20 million shared bikes, over-saturation, vandalism and theft (often at the behest of competitors), as well as general disregard on behalf of consumers, led to the proliferation of bike graveyards. **Wukong** reportedly lost 90% of its bikes the first six months after it launched in January 2017. Additionally, the global launch of scooters and their surging popularity worldwide quickly wiped out demand for bike-sharing services.

BIKE SHARING STARTUPS

Company	HQ	Capital Raised	Major Markets	Status	Key Investors
Lime (2017)	San Mateo, CA	$467M	USA, Europe	Thriving; Transitioned to scooters	Andreesen Horowitz, DCM Ventures, GGV Capital, Coatue, IDG, Uber
Spin (2016)	San Francisco, CA	$8M	USA	Alive	Grishin Robotics, Exponent.VC, CRCM
Youon Bike (2010)	Changzhou, China	N/A	China	Alive	*IPO in August 2017 on the Shanghai Stock Exchange*
Motivate (2009)	New York City, NY	N/A	USA	Acquired by Lyft July 2018	N/A
Mobike (2015)	Beijing, China	$928M	China, Singapore, USA	Acquired by Meituan Dianping for $2.7B August 2018	Sequoia Capital, Qiming Venture Partners, Warburg Pincus, Tencent, Temasek, TPG, Hillhouse
JUMP Bikes (2010)	New York, NY	$12M	USA	Acquired by Uber April 2018	Menlo Ventures, SOSV
Hellobike (2016)	Shanghai, China	$502M	China	Acquired by Youon Bike October 2017	Fosun Group, Ant Financial, GGV
Bluegogo (2016)	Tianjin, China	$90.4M	China, USA	Shut Down + Acquired by Didi Chuxing January 2018	ZhenFund, Sinovation Ventures, Black Hole Capital
GoBee.Bike (2017)	Hong Kong, Hong Kong	$9M	Hong Kong	Shut Down July 2018	Alibaba, Grishin Robotics
oBike (2016)	Singapore, Singapore	$45M	Singapore	Shut Down June 2018	Grishin Robotics, Zhizhuo Capital

Company	HQ	Capital Raised	Major Markets	Status	Key Investors
Ofo (2014)	Beijing, China	$2.2B	China, Singapore, Malaysia, USA, Australia	Shut Down U.S. Operations July 2018	Alibaba, DST, Didi, Hony Capital, Ant Financial, Coatue, Xiaomi, CITIC PE, ZhenFund

Source: CB Insights, Crunchbase, Company Disclosures, GSV Asset Management

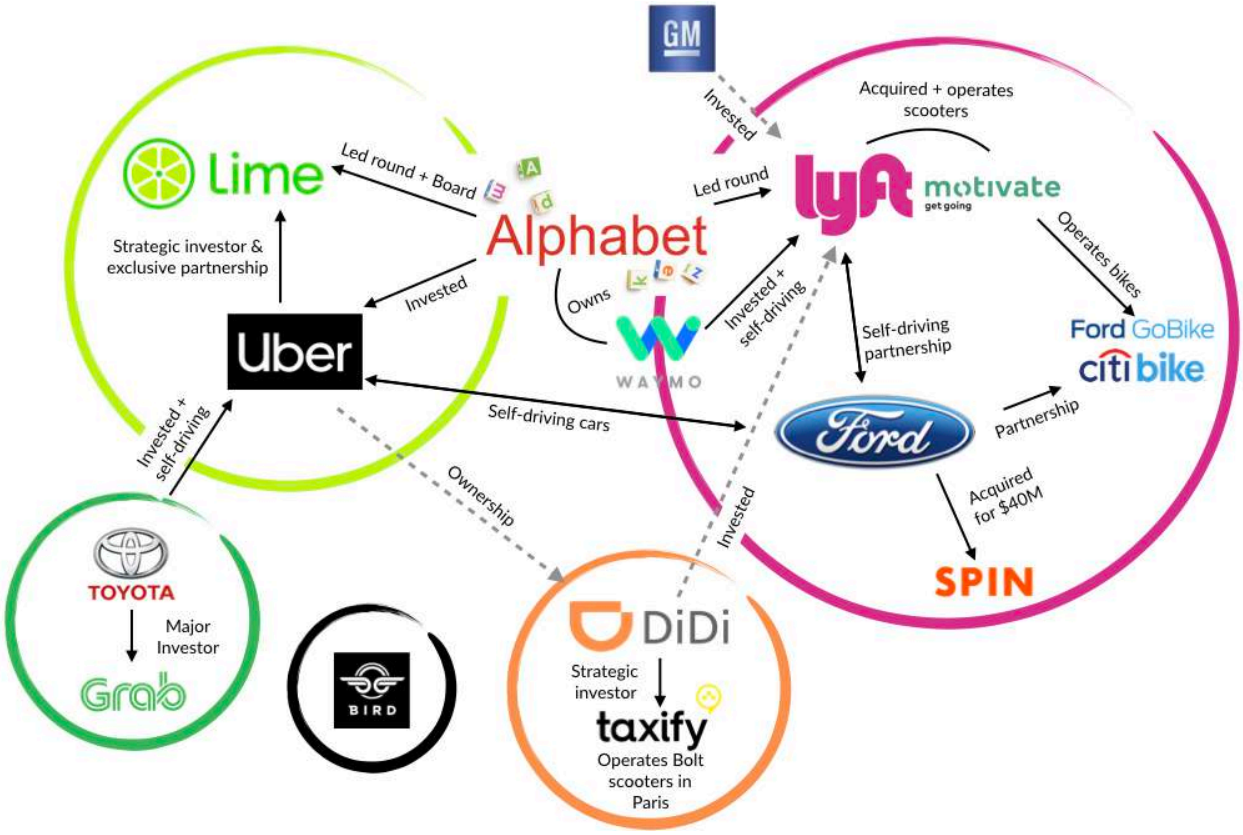
The scooter feeding frenzy began in Spring 2018 when **Bird** and **Lime** started dropping motorized scooters with top speeds of 15 mph all over cities, unannounced. Scooters have quickly gone from fad to fixture, with people from all walks of life using them to get from A to B on workdays and weekends alike.

SCOOTERS IN ACTION

Source: Fortune

Scooters have quickly become the new — and perhaps most popular — disruptor in urban transportation. They are grabbing market share from bike-sharing and even ride sharing services. Even Uber and Lyft have hopped onto the scooter band wagon, launching their own scooter services this Fall. This July, Uber also invested in Lime's Series C alongside Google Ventures.

THE FAST MILE: COMPETITIVE LANDSCAPE



Source: GSV Asset Management

TOP FUNDED MICRO-MOBILITY COMPANIES

Company	Founded	HQ	Capital Raised	Market Value	Major Markets	Investors
Lime	2017	San Mateo, CA	$467M	$1.1B	USA, Europe	Andreesen Horowitz, DCM Ventures, GGV Capital, Coatue, IDG, Uber
Bird	2017	Santa Monica, CA	$415M	$2.0B	USA, Europe, Mexico	Accel, Sequoia Capital, Index Ventures, CRV, Greycroft
Lyft	2012 *(Launched Scooters in 2018)*	San Francisco, CA	$5.1B	$15.1B	USA	GSV Capital, A16Z, Floodgate, Founders Fund, Coatue, Rakuten, Didi Chuxing, Alibaba, Tencent, GM, CapitalG (Alphabet), Icahn Holdings, Fidelity, KKR
Uber	2009 *(Launched Scooters in 2018 via Jump)*	San Francisco, CA	$21.7B	$72B	USA	NEA, KPCB, Goldman Sachs, Benchmark, GV, SoftBank, Morgan Stanley, Brand Capital, Microsoft, TPG, Fidelity, Wellington, BlackRock, Softbank
Cityscoot	2014	Paris, France	$63M	N/A	Europe	RATP Capital Innovation, Inventure Partners, Avolta Partners
Scoot	2011	San Francisco, CA	N/A	N/A	USA	SeedInvest, Scout Ventures, Joanne Wilson
Skip Scooters	2017	San Francisco, CA	$31M	N/A	USA	Accel, SV Angel, Y Combinator, Menlo Ventures
Spin	2016	San Francisco, CA	$8M	$100M	USA	*Acquired by Ford in November 2018*

Source: CB Insights, Pitchbook, Crunchbase, Company Disclosures, GSV Asset Management

In an environment where many bike and scooter-sharing services have struggled to maintain momentum, **Lime** stands out.

The California-based company (formerly LimeBike) was founded in 2017 and launched as a dockless bike-sharing service, painting the streets of the United States with fleets of bright green bikes. It quickly followed with electric scooters, sensing an opportunity to develop a portfolio of last mile services. It currently operates in over 120 cities globally and recently surpassed 26 million scooter and bike rides delivered since inception.

Company Snapshot

Founded:
2017

Capital Raised:
$467 million

Key Investors:
Andreessen Horowitz, GV (*Google Ventures*), Alphabet (*Google*), Fidelity, GIC, Coatue Management, Uber, Franklin Templeton, GGV Capital

Milestones:
26 million rides completed (*as of November 2018*); Operates in 120+ cities around the World; Raised a $335M Series C led by GV (*Google Ventures*), IVP and Uber at a $1.1 billion valuation

Overview:
Lime is an on-demand scooter and bike sharing platform that offers convenient micro-mobility transportation services. Users are able to access and ride scooters and bikes through the Lime mobile app at their convenience, allowing them to get to their destination in urban areas more quickly and efficiently.

GSV THESIS

Lime lies at the center of the "Fast Mile" megatrend. Arising at the intersection of several megatrends — the sharing economy, smartphones, urbanization, sustainability, and on-demand services — the Fast Mile encompasses solutions that will add efficiency to the problem of last mile transportation in congested cities. As city congestion worsens — with over 60% of the population expected to be be in urban areas by 2030 — people will need to increasingly turn towards micro-mobility services to easily go from point A to B. Aided by the smartphone and rise of on-demand services, Lime's Fast Mile solution will have a significant impact in how people commute.

GSV 4Ps Analysis

People

Brad Bao (*Executive Chairman*) and Toby Sun (*CEO*) co-founded Lime in 2017. Brad was formerly the VP of Business Development at Tencent and Managing Partner at Kinzon Capital (*Fosun's VC arm*). Toby was formerly and Investment Director at Kinzon Capital. Rounding out the leadership team are David Richter (*Chief Business Officer + Former Head of Global Business, Uber*) and Joe Kraus (*COO + Former General Partner, GV*).

Product

Lime allows riders to pick up and drop off scooters and bikes wherever they want, whenever they want. Riders are able to unlock scooters and bikes remotely using Lime's mobile app, ride the vehicle to their destination, and then leave it there for the next rider to use. Since 2017, Lime has launched three last-mile solutions: bikes, electric bikes, and electric scooters. Lime will soon add Electric pods to its fleet.

Potential

By 2030, more than 60% of the world's 8 billion people will live in urban areas. Accordingly, people increasingly turn towards alternative micro mobility solutions, such as bikes and scooters, to avoid traffic congestion. Last Mile transportation has been largely unaddressed with 50% of car traffic in the U.S. being less than three miles. Lime's micro mobility services addresses a significant market opportunity in urban transportation, especially in congested cities.

Predictability

In an environment where many bike and scooter-sharing services have struggled to maintain momentum, Lime stands out. Lime has been an early innovator in the micro-mobility market, launching dock-less bikes and scooters as products to anticipate market demand. Since inception, Lime has completed over 26 million rides and has launched three product lines (Bikes, E-Bikes, Scooters).

The short-term impact on Fast Mile mobility services has been significant. Micro-mobility services like Bird and Lime have replaced walking, public transportation and car trips (owned, ride-sharing, or taxi) approximately one-third of the time each.

In Lime's case, the company is significantly helping reduce the reliance of personal cars. Approximately 20% of Lime riders globally use the service to connect to or from public transit. Additionally, Lime successfully helps connect riders to local businesses, with 32% of urban riders using Lime to travel to or from a dining or entertainment. 40% of riders in major urban networks rely on Lime to travel to or from work, school or appointments.

LIME: GLOBAL IMPACT

City	Detail
 **Paris** *France*	- **315,000+** unique riders *(as of December 2018)* - **2+ million** rides completed after six months of operation - **45**% of Lime riders use Lime to commute to or from work and school - **25**% of riders use Lime to travel to or from entertainment and dining - Paris quickly became Lime's **#1** city by number of rides and revenue, in just three months after launch - By the fourth month of operation, some **250,000** miles had been ridden on Lime scooters
 **Los Angeles** *USA*	- **435,000+** unique riders *(as of December 2018)* - **40%** of Lime riders reported replacing a trip by automobile during their most recent Lime trip - **30%** of Lime riders use Lime to commute to or from work and school - **35**% of riders use Lime to travel to or from entertainment and dining
 **Seattle** *USA*	- **350,000+** unique riders *(as of December 2018)* - **2+ million** rides completed - **30**% of Lime riders reported replacing a trip by automobile during their most recent Lime trip - **34**% of Lime riders use Lime to commute to or from work and school - **31**% of riders use Lime to travel to or from entertainment and dining - **74%** of Seattle residents have a favorable opinion of dock-free bike sharing.
 **San Francisco** *USA*	- **300,000** total rides on Lime-S electric scooters *(as of July 2018)* - **53%** of riders said they might have used a car if they hadn't taken a Lime-S for their most recent trip. - **39%** of riders use Lime to connect to or from public transit

City	Detail
 **Austin** *USA*	- **275,000+** unique riders *(as of December 2018)* - **40**% of Lime riders reported replacing a trip by automobile during their most recent Lime trip - **38**% of Lime riders use Lime to commute to or from work and school - **42**% of riders use Lime to travel to or from entertainment and dining
 **Auckland** *New Zealand*	- **105,000+** unique riders less than three months after launching *(as of December 2018)* - **22**% of Lime riders reported using Lime to replace a trip by automobile during their most recent Lime trip - **56**% of Lime riders use Lime to commute to or from work and school - **21**% of riders use Lime to travel to or from entertainment and dining
 **Lisbon** *Portugal*	- **53,000+** unique riders after two months of operation *(as of December 2018)* - **27**% of Lime riders reported replacing a trip by automobile during their most recent Lime trip - **57**% of Lime riders use Lime to commute to or from work and school - **21**% of riders use Lime to travel to or from entertainment and dining

Source: Lime Company Announcements

The City of Lights has become the largest market for scooters in the World and is Lime and BIrd's largest market. As Paris continues its focus on limiting car traffic — which is a growing epidemic worldwide — the city is turning towards scooters and other micro-mobility services to help pedestrians commute.

With early consumer feedback being extremely positive and coupled with strong momentum, look for major metropolitans globally to continue their embrace of micro-mobility services. The dawn of the Fast Mile is upon us and urban transportation is in for an overhaul.

2019 PREDICTION #4

Don't Worry... Be Happy: As happiness continues to fall, there's never been a more important moment to focus on human happiness and finding meaning. People will turn towards seeking meaning above all else, driven largely by Millennial and Generation Z habits.

500 years ago, people were born, grew up and died within a five mile radius. Effectively, your parent's past was your future.

Then came a wave of innovation which connected people around the world in many different ways, starting with the Gutenberg Press in 1439. Other inventions such as the steam engine (1756), locomotive (1804), telephone (1876), automobile (1888), and airplane (1903) brought the world closer together one step at a time.

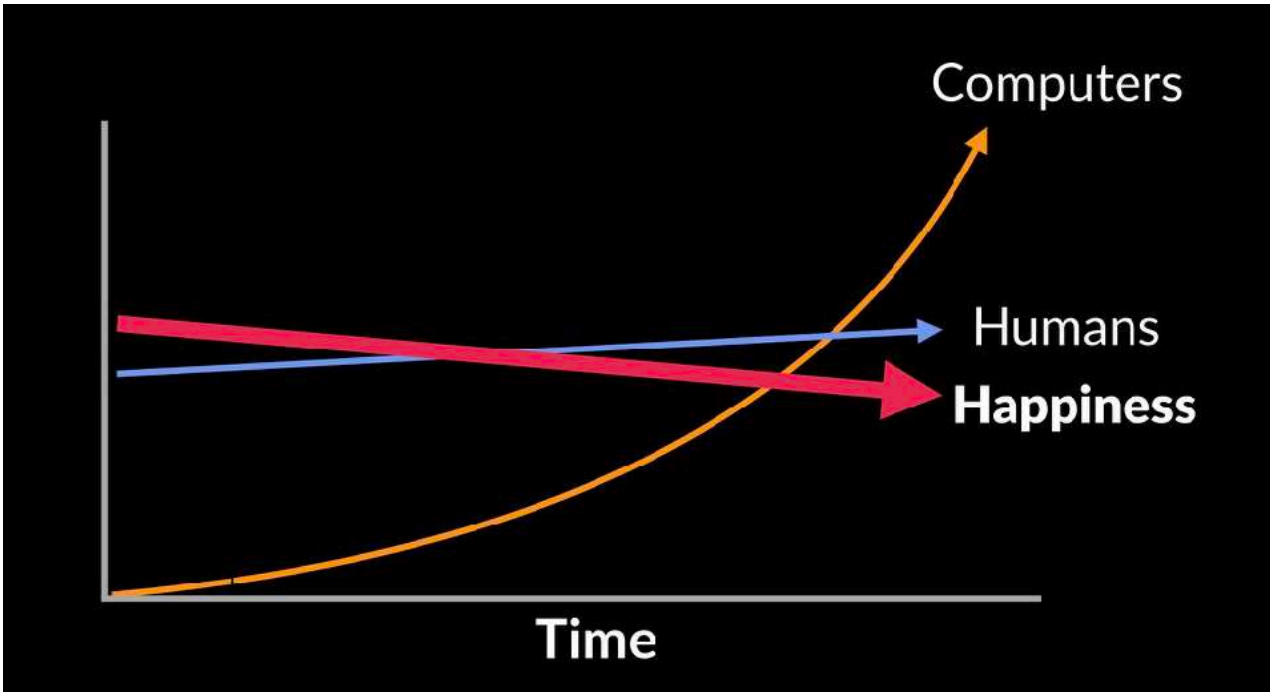
Moore's Law, which was postulated in 1965, changed the pace of innovation and paved the way for massive adoption of technological improvements.

AN EXPONENTIAL FUTURE: ACCELERATING INNOVATION

Number of Years it Took Technologies To Reach 50 Million Users

And while technology has been on a technology upgrade cycle — the original iPhone is virtually unrecognizable now — human capabilities and happiness have stalled. Despite the incredible advancements in technology and unfathomable improvements through technology upgrades, people's lives aren't keeping pace and in fact, people's happiness is falling.

TECHNOLOGICAL PROGRESS VS. HUMAN HAPPINESS

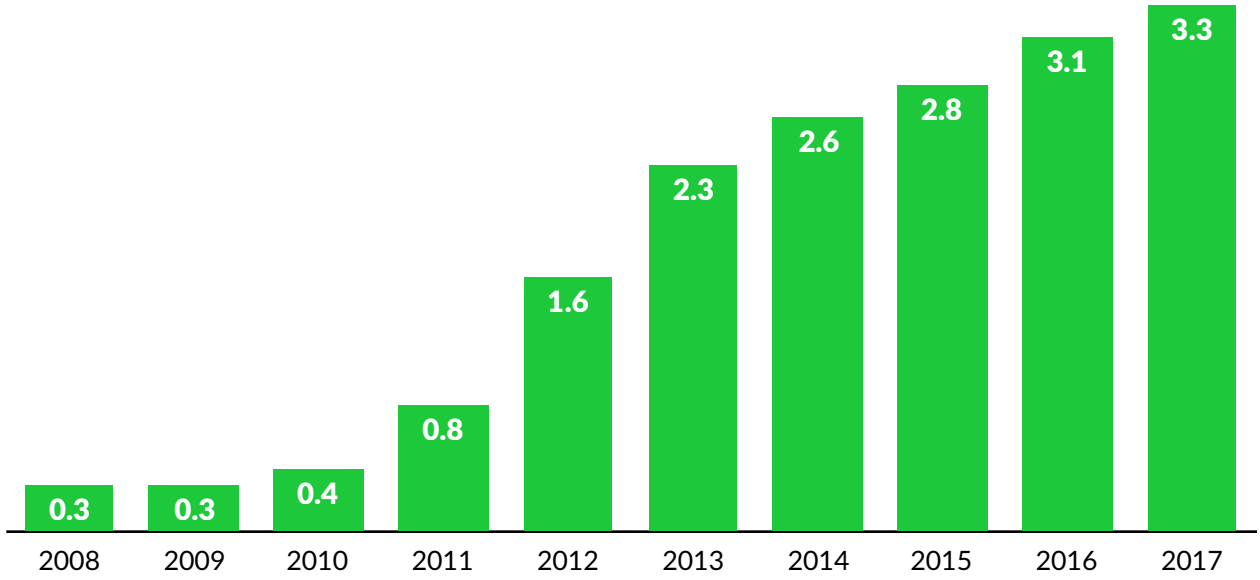


A major cause of unhappiness and stress is from the anxiety tied to always being connected to our mobile device. Hyperconnectivity as a result of technology has been attributed to increased levels of anxiety, depression, and stress.

Time spent on mobile devices has gone from 20 minutes in 2008 to over three hours today. This is starting to have such a negative impact on society, that even kids are beginning to take notice. When a class of third graders from an elementary school in Boston was asked to design the perfect playground, their number one rule was “no cell phones.”

TIME SPENT ON MOBILE DEVICES: 2008 TO TODAY (HOURS)

Time Spent on Mobile Devices Has Gone From 20 Minutes in 2008 to Over Three Hours Today



Source: KPCB

In the United States, suicide rates are up 30% over the past twenty years. Opioid deaths increased 45% to 75,000 casualties last year alone. That's more than the number of people who died in traffic accidents. Add it up, and life expectancy for U.S. citizens actually **fell** last year.

As a direct reaction to this, the #1 class at both Harvard and Yale is on how to find happiness. It's stunning that the best and brightest students are searching for more than how to become a "Captain of Industry" and actually want to find meaning to their lives.

But what is the path to happiness? Find ways out of this "default mode" where we're consumed with identifying risks and the implications of mistakes we've made in the past. In other words, ***live in the moment***.

MONEY DOESN'T BUY HAPPINESS… AT LEAST NOT FOR LONG

Three Core States of Happiness, In Order of Increasing Durability

Happiness State	Description
1. Pleasant Life	The Pleasant Life is the first "level" of happiness and the most common form of happiness that people focus on… fine wine, good food, driving nice cars, enjoying luxury. Everything that provides a sensual pleasure can be considered a part of the Pleasant Life. Many people focus on this type of happiness and this type alone. The problem is that the pleasant life isn't sustainable. It's fleeting.
2. Good Life	The Good Life is a sense of fulfillment based on engaging in tasks that are interesting and aligned to your skill-set. Living the Good Life means finding a job that matches your talents and ambitions. Work effectively becomes a state of meditation, a dynamic described by leading psychology academic Mihaly Csikszentmihalyi as "Flow". In the state of Flow, you are temporarily lost in your work. You remain oblivious to time, your physical needs, and worries.
3. Meaningful Life	The most durable form of happiness is the Meaningful Life. To find it, you must pursue a higher purpose. The essence of the Meaningful Life is to forget your sense of self by engaging in work you're good at in support of a mission you care about. Effectively, helping others will make you happier.

Source: Martin Seligman (Director, Positive Psychology Center, University of Pennsylvania)

In an ever-changing and uncertain world, the important of a purposeful and meaningful life will be increasingly important. At the core of a happy life is a finding meaningful purpose. To echo the simple wisdom Steve Jobs shared in a ten minute commencement address to Stanford University students in 2005:

> *"Sometimes life hits you in the head with a brick. Don't lose faith. I'm convinced that the only thing that kept me going was that I loved what I did. You've got to find what you love. And that is as true for your work as it is for your lovers. Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to love what you do. If you haven't found it yet, keep looking. Don't settle. As with all matters of the heart, you'll know when you find it. And, like any great relationship, it just gets better and better as the years roll on. So keep looking until you find it."*

A megatrend creating huge opportunities is a phenomenon we call "Mind, Body, Soul" — businesses with a value proposition and customer experience at the intersection of healthy living and mental and spiritual well-being… allowing people to live happier, healthier, and more fulfilled lives.

Today, the ancient practices of yoga and meditation are the **most popular** alternative health approaches in the United States, each used by around 35 million adults. Since 2012, the number of Americans who meditate has tripled and the number of Americans who do yoga is up 55%.

At the center of the megatrend is the Millennial generation, who have grown up in a world with information at their finger tips during the rise of smartphones and technology. As such, this generation is quite different than those that came before them.

U.S. GENERATIONS BY THE NUMBERS

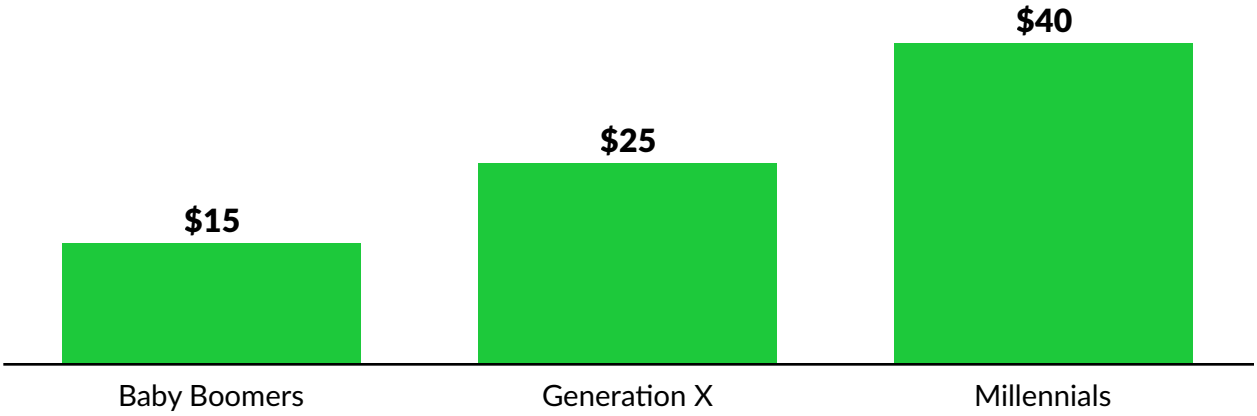
Breakdown	Baby Boomers	Generation X	Millennials	Generation Z
Birth Years	1946-1964	1965-1980	1981-2004	2004-Today
Current Age	54-72	38-53	22-37	1-21
Total Population	80 million	65 million	85+ million	60 milion
Key Characteristics	Led the fitness revolution in 1968; Used fitness as a utility to become physically healthier	More likely to be consumers of gym memberships any other generation	More likely to take part in fitness activities; Fitness is attached to lifestyle	Place a greater emphasis on wellness than fitness; Have a heightened focus on "feeling good"

Source: Goldman Sachs, Pew Research Center, GSV Asset Management

Millennials uniquely take part in fitness activities more than any other generation. Approximately half of adults who exercise are millennials. As such, it's not a surprise that Millennials spend the most on fitness and health when compared to other generations.

MILLENNIALS OVERSPEND OTHER GENERATIONS ON HEALTH AND FITNESS

Reported Average Spending Per Month (in US Dollars)

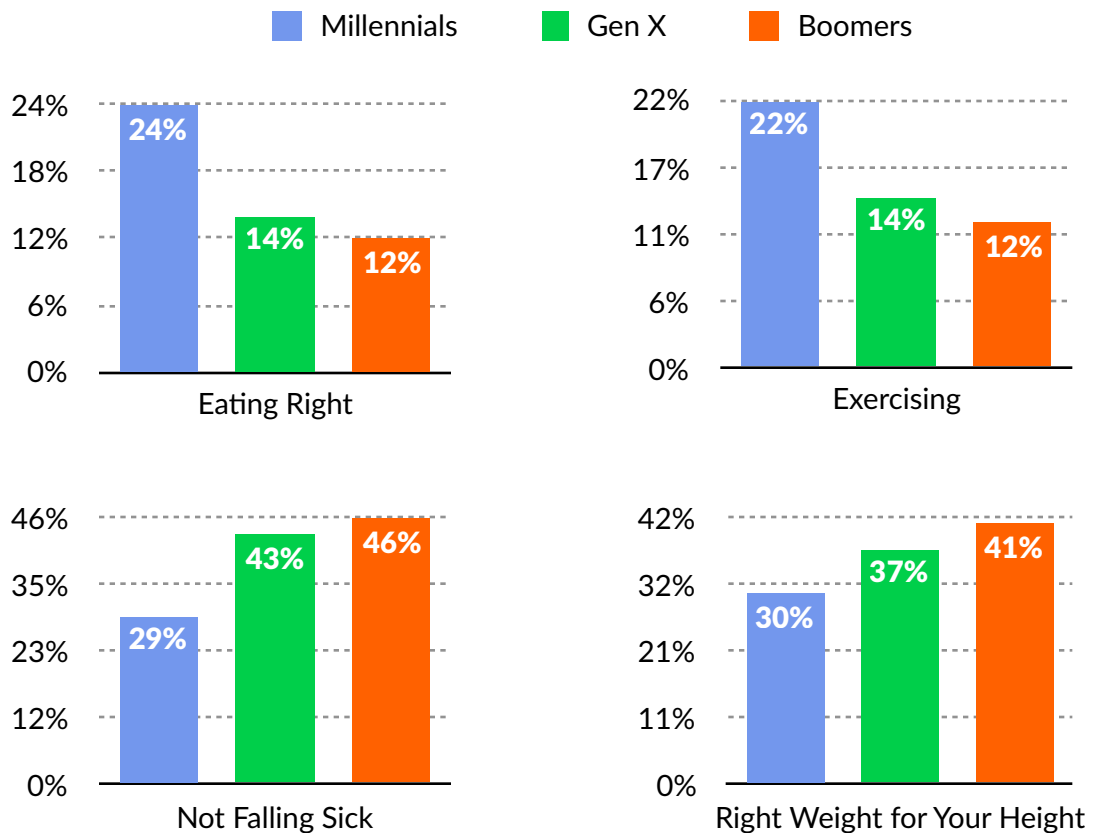


Source: McKinsey

To Millennials, fitness is about community and to them, exercising is table stakes. Wellness is a fundamental priority and their solution for long-term happiness and wellbeing is eating right and staying active.

With Millennials, Health = Lifestyle

How Different Generations Define Being Healthy



Source: Brookings Institution, Goldman Sachs, Nielsen

KEY TAKE-AWAYS

For Millennials, "healthy" doesn't just mean "not sick." It means a daily commitment to eating right and exercising. This mindset stands in stark contrast with that of prior generations, who care less about lifestyle and more about simply avoiding bad health outcomes.

Being healthy is no longer about being in physical shape. It's also about being healthy mentally and spiritually to reach a harmonious balance between the Mind, the Body and the Soul.

SoulCycle is a leader in the Mind, Body, Soul megatrend, combining a fitness experience with the mindfulness of meditation in a consumer brand people love. There is nothing about what SoulCycle does that can be patented. The casual observer might even mistake it for a "spinning class." But when you study SoulCycle, you realize that its monster success derives from doing a hundred little things better than anybody else.

PIONEERING COMPANIES: MIND, BODY, SOUL

Company	Description
SOULCYCLE	**Founded**: 2006 **Capital Raised**: N/A (*Acquired by Equinox*) **Investors**: N/A There is nothing about what SoulCycle does that can be patented. The casual observer might even mistake it for a "spinning class." But when you study SoulCycle, you realize that its monster success derives from doing a hundred little things better than anybody else. The bikes are specially designed for SoulCycle to develop your "core." The program emphasizes every muscle in your body, so that after 45 minutes, you're wiped. The instructors are trained to be both inspirational and aspirational. The music is perfectly choreographed. Despite the heavy sweat, SoulCycle studios sparkle and smell fresh. And there is plenty of cool SoulCycle swag, so you can proudly display that you're a member of the tribe.
sweetgreen	**Founded**: 2007 **Capital Raised**: $528.6 million **Investors**: Franklin Templeton, Fidelity, Revolution, T. Rowe Price, Signatures Capital, LDR Ventures sweetgreen founders started the company out of necessity — they had no where to eat that provided a fun experience and fit their values. What they did was build a line of salad shops nationwide that sought to combine convenience with an aspirational brand. Everything about sweetgreen's salads is meticulously selected — the company is involved in every step of the supply chain, working only with partners and farmers they know and trust. What sweetgreen has become is the destination for healthy fast food that makes diners feel good about themselves and the community while eating.
Aspiration Do Well. Do Good.	**Founded**: 2013 **Capital Raised**: $67.5 million **Investors**: GSV Capital, Renren, Allen & Company, Joe Lonsdale, Dan Rosensweig, Capricorn Investment Group, David Bonderman Aspiration CEO Andrei Cherny grew up watching his family struggle with a banking system that largely catered to the wealthy and saw his parents follow financial advice that was unsuitable for the middle class. Inspired by this, Cherny founded Aspiration, a financial institution that empowers people to make better economic choices with a business model that emphasize social good, as much as turning a profit. Aspiration customers pay the company what they think is fair, and through this racial new model, Aspiration seeks to live by its "Do Well. Do Good" motto and be the first financial firm that people can fall in love with.

Company	Description
Casper	**Founded**: 2013 **Capital Raised**: $240 million **Investors**: IVP, Lerer Hippeau Ventures, NEA, Norwest Venture Partners, Pritzker Group, Leonardo DiCaprio, Target Casper CEO Neil Parikh didn't understand why mattress buying had to be a terrible experience inside a large warehouse with thousands of options. He started Casper with the mission to make purchasing a mattress as painless as possible by delivering their sleep products directly to the consumer. More importantly, in a world where people are trained to perceive sleep as a negative thing and boast of sleeping only minimally, Casper is unwinding that psychology to convince people that they should be proud to sleep eight hours a night.
THE WING	**Founded**: 2015 **Capital Raised**: $117.5 million **Investors**: KPCB, NEA, Sequoia, Upfront Ventures WeWork, Elizabeth Cutler, Julie Rice, Steve Case, Harvey Speak The Wing is an all-women, social, working and networking club in the United States, and everything about the space is designed to make it feel like home. The space is warm and bright — usually painted with shades of "millennial pink" and mint — and is decorated to perfection, as if a Pinterest came to life. The Wing offers an experience that is designed to fit the modern women's needs, offering amenities including a library, workspace, drinks and food, shower, blowouts and make up on-demand, and a lactation room for busy mothers. The brand makes a stand for female empowerment, bringing together a coven of sturdy, upstanding, and forward-thinking women — it's a company for women, by women.
CHOBANI	**Founded**: 2005 **Capital Raised**: $750+ million **Investors**: TPG Chobani's founder Hambi Ulukaya immigrated to the United States from Turkey and found that American yogurts weren't as tasty as the ones he grew up with. He believed that everyone deserved better yogurt options, and in 2005, took a risk and bought a defunct yogurt factory in New York. For the next two years, Ulukaya built a team at Chobani with the core goal to make the best Greek yogurt. Chobani's yogurt is made without preservatives, and Ulukaya invested time and money on the product's packaging to ensure its design and coloring stood out from other yogurts. Nine years after Chobani started, it has become the number one Greek yogurt brand in America.

Source: Crunchbase, Company Disclosures, GSV Asset Management

Riding on this megatrend is New York-based **Peloton**. Founded in 2012, Peloton is building the World's largest fitness platform without owning a single gym. Unlike traditional boutique fitness shops, Peloton strategically avoids costs of maintaining physical sites and hosting live classes at numerous studios. Instead, Peloton hosts classes at its flagship class in New York City, digitizes the instruction, and makes the class

available on its digital platform for hundreds of thousands of subscribers, who can access the class on demand.

PELOTON: RIDING WITH THE BEST

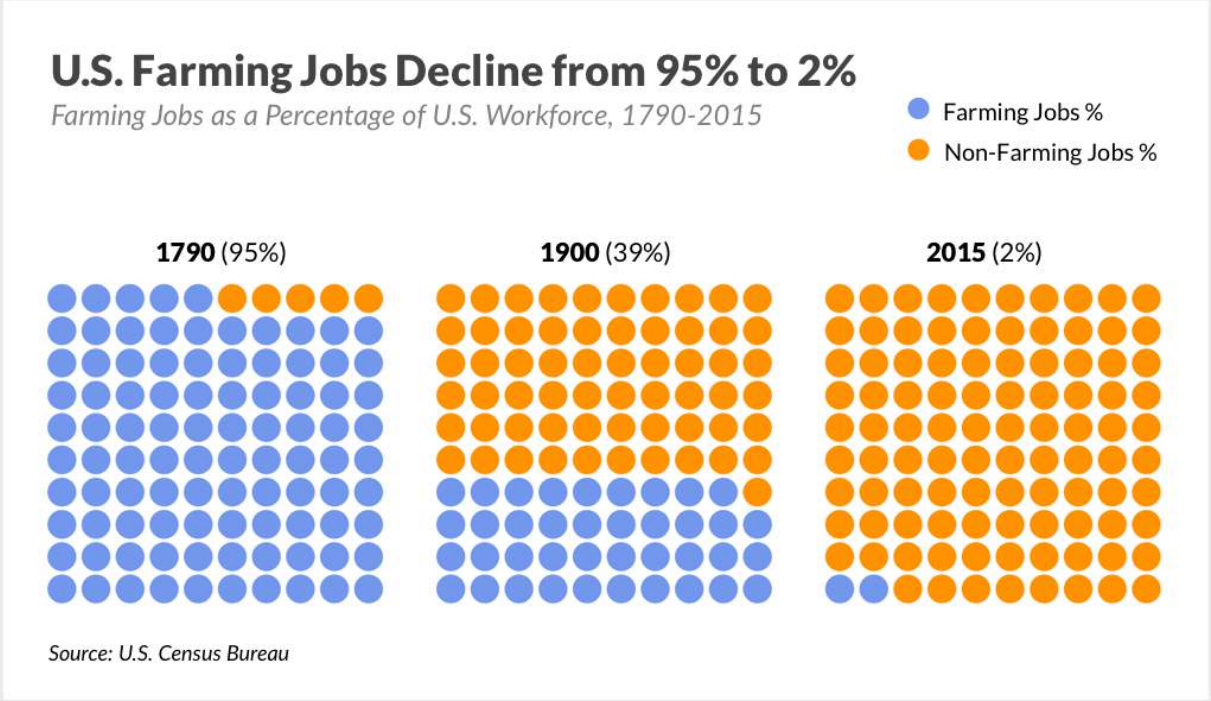
Source: Wall Street Journal

Since its founding in 2012, New York-based **Peloton** has built its own tribe of Peloton fanatics. Peloton's flagship product is a high-end fitness bike that is equipped with a touchscreen that allows riders to access spin classes on demand. In 2018, Peloton announced its second product, Peloton Tread, a high-end treadmill.

Riders enjoy the experience so much that there is virtually zero churn and the company's monthly subscription retention rate is 99%. As of the beginning of 2018, Peloton had sold over 200,000 bikes and has over 600,000 subscribers paying $39/month to access live classes. With a NPS of 91 — the second highest after Tesla — Peloton has created a highly engaging product which people love and will continue to use.

Throughout history, whether in pre-industrial or industrial times, great nations developed based on their access to physical resources or their ability to surmount physical barriers. England and Spain crossed oceans, Germany turned coal and iron into steel, and the United States exploited a wealth of agricultural and industrial resources to become the World's breadbasket and industrial superpower.

But the advent of the personal computer, the Internet, and the digital delivery of information shifted the World's focus from physical capital to human capital. The most valuable resources in a physical economy are commodities like coal, iron, and oil. Their value is judged by metrics like purity and volume. In a knowledge economy, the most valuable resource is talent. Talent is valued based on brainpower, and the ability to acquire, deliver, and process information effectively.



KEY TAKE-AWAYS

In 1790, when America was formed, 95% of the U.S. workforce was in farming jobs. At the time, in a letter to George Washington, Thomas Jefferson wrote, "Agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals, and happiness." By 1900, farming had dropped to 39 percent of the workforce, and in 2015, it was just 2 percent.

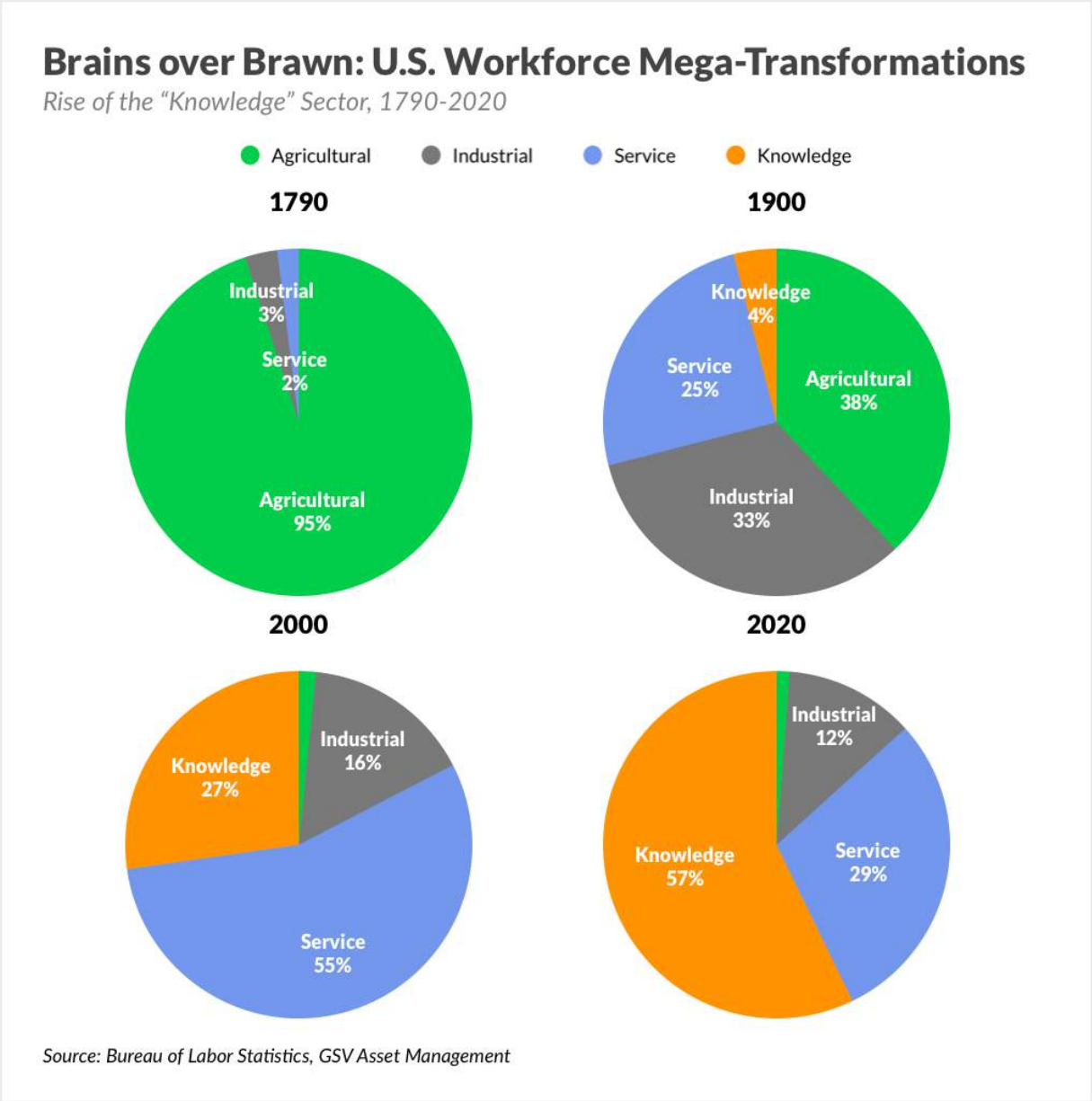
The Service Economy that developed after World War II started to shift education requirements. If you wanted to participate in the service industry — in jobs ranging from accounting to retail sales to entertainment — some formal education was required. Brains started to win out over brawn.

Gaining knowledge was worthwhile; these jobs were safer, less strenuous, and often better paid. Nevertheless, the education demands were still fairly low: in 1950, roughly 20% of the rising U.S. workforce had some college education by age 30, and only 20% of jobs required a postsecondary credential.

The Personal Computer revolution that began in the mid-1970s displaced a wide range of manual labor, administrative, and clerical jobs — many that were lucrative and desirable. The World changed again when **Netscape** debuted on Wall Street in 1995. Broad Internet connectivity transformed communication, making an individual's actual workplace less relevant.

Now, U.S. workers faced competition not only from computers, but also from low-cost talent pools thousands of miles away. One click and you were connected to your service

representative in Mumbai. In developed countries, knowledge work became the new area of opportunity.



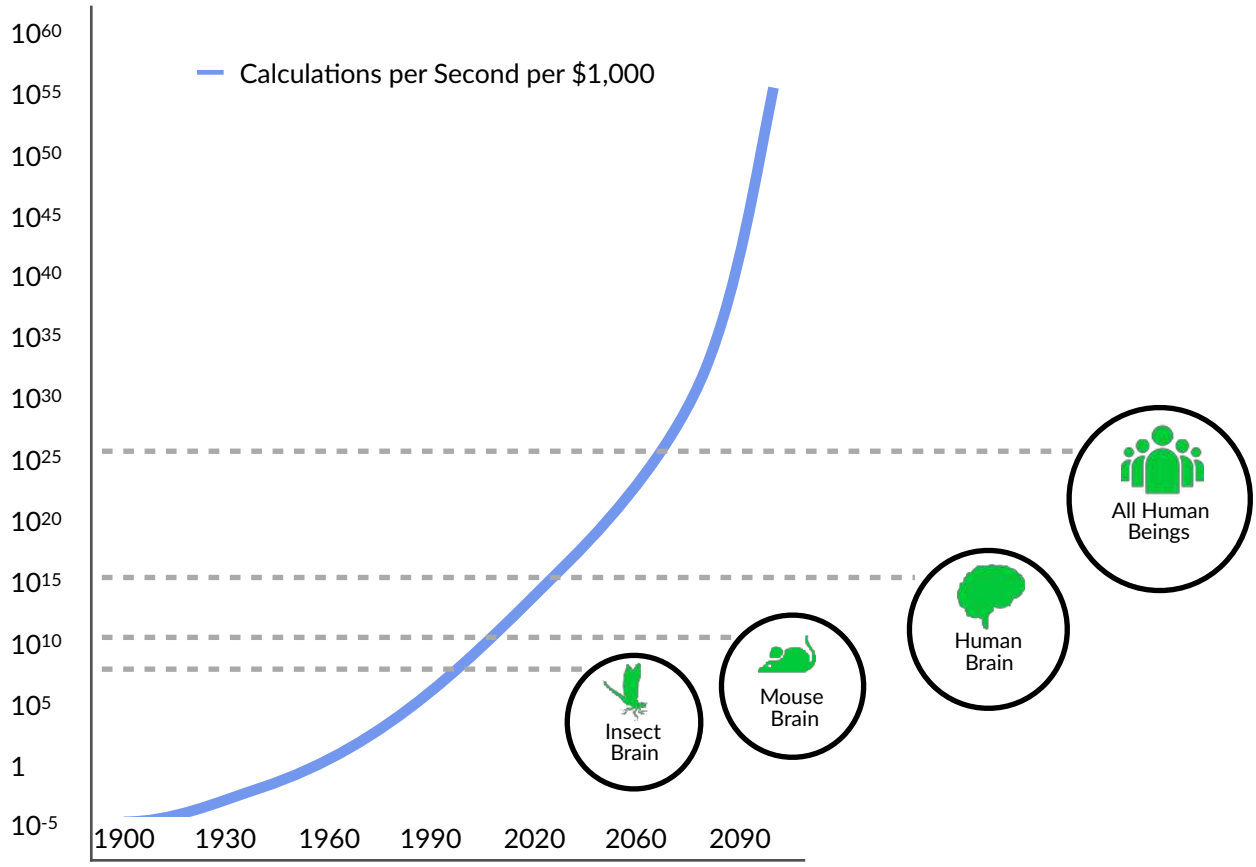
KEY TAKE-AWAYS

From 1790-1900, the U.S. economy flipped from an agrarian to an industrial workforce, supported by a variety of "skill-lite" services. The rise of personal computing and the Internet ushered in a service economy, powered by automation and connectivity. By 2020, rapid technology advances will have created a "Knowledge" economy that values critical thinking, creativity, and the ability to learn.

Today there is a prevailing sense that rapidly accelerating digitization and automation is triggering an economic shift unlike any we have seen before. As MIT scholars Erik Brynjolfsson and Andrew McAfee observe in *The Second Machine Age*, an unsettling future is taking shape characterized by massive unemployment and economic disruption stemming from the fact that as computers get more powerful, companies will have less need for workers of any kind.

Oxford researchers have projected that 47% of American jobs are at "high risk" of being automated in the next 20 years. McKinsey estimates that 12 million U.S. "middle skill" jobs will be eliminated by 2025. A White House economic report predicted that 83% of jobs that pay less than $20 an hour will be eliminated by automation.

EXPONENTIAL GROWTH OF COMPUTING POWER, 1900-2100



Source: Ray Kurzweil, GSV Asset Management

Through the automation eliminating traditional jobs, Bank of America Merrill Lynch predicts that there will be a $9 trillion reduction in employment costs. Additionally, AI technologies could reduce $8 trillion of costs in the manufacturing and healthcare industry and creating $2 trillion of efficiency gains through autonomous vehicles and drones. All in all, the annual disruptive impact of AI technologies could amount to up to $33 trillion.

What does that all add to? According to the McKinsey Global Institute, The AI revolution is transforming society 10x faster, at 300x the scale, and approximately 3000x the impact of the Industrial Revolution.

White collar jobs of all types are up against major challenges. By 2025 it's estimated that $7 trillion will be managed by robo-financial advisors by 2025. The *Associated Press* is already using Artificial Intelligence to produce over 3,000 financial reports per quarter. Effectively, robots are managing money and reporting financial results.

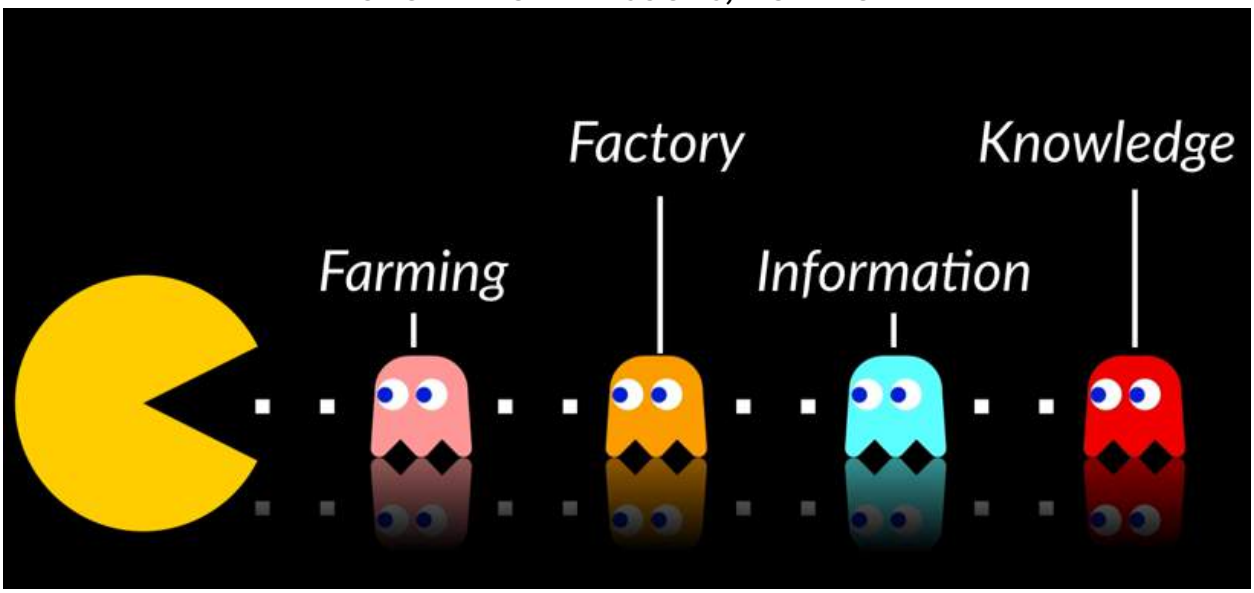
For many, it feels like technology jobs are an Alamo.

It's why Mark Zuckerberg said. "Our policy is to hire as many talented computer engineers as we can find. There aren't enough people who have these skills today." It's why the U.S. Department of Labor projects there will be 1.2 million computer science related job openings by 2020. No less an authority than the *Harvard Business Review* called Data Science, "The sexiest job of the 21st century."

The problem is that we are living in exponential times. The computer capability curve is getting steeper. Technology replaces the technologist. Automation is going from Blue Collar, to White Collar, to "No Collar".

We don't think that we've reached the end of history. We just need to think differently and reimagine reality. As Albert Einstein once said, "imagination is more important that knowledge." One thing we know is that as sure as the Sun comes up in the East, automation will dominate to eat jobs. ***But it doesn't eat work***.

AUTOMATION EATS JOBS, NOT WORK



Source: GSV Asset Management

The story of the past few years is that "AI is going to eliminate all jobs." It's predicted that 50% of jobs are at risk of replacement in the next twenty years due to artificial intelligence and automation.

Renowned data scientist and Coursera chairman Andrew Ng has said that Artificial Intelligence is the new electricity. And what he means by that is that artificial intelligence will be ubiquitous, invisible, and change life as we know it.

2017 in particular was a watershed year for AI. First, people saw AlphaGo defeating Ke Jie, the number one ranked Go player in the World. Coupled with the fact that robots can now do **backflips**, and people are terrified and scared.

MAN VS. MACHINE: ALPHAGO DEFEATS KE JIE IN GO

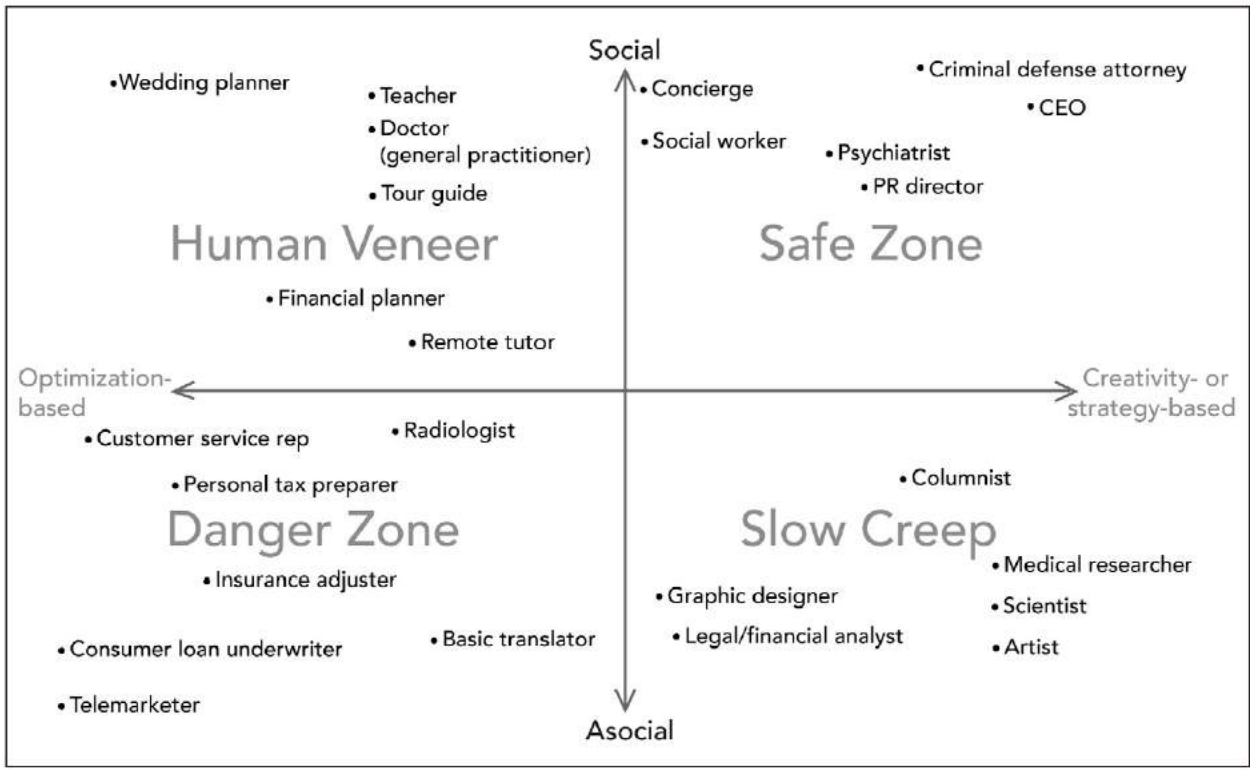
But people forget that humans have been doing backflips for millennia — football players do backflips for **showmanship** — and also that cats **jump** two meters with little effort. No one is afraid of a cat taking away jobs. So, while a horse that can count to ten is an exceptional horse… it isn't a great mathematician.

There is a huge opportunity for automation to augment and improve the way we live. Already, we're seeing autonomous vehicles on the road from companies including **Tesla**, **Waymo**, **Lyft,** and **Uber**. There are approximately 1.3 million car accident deaths annually. With autonomous driving, it is expected that there will be a reduction in 90% of road accidents… saving over a million lives. With personalized learning and autonomous teaching, how many children's lives can be saved and prevented from being left behind in an exponential future?

What we know is that AI is a double edged sword. On one hand, AI will continue to eliminate jobs and displace workers. On the flip side, there is tremendous untapped upside in the value that the technology will create in society.

Artificial Intelligence is unlocking business efficiencies that were previously untapped, transforming what we do and how we do it. In *AI Superpowers*, Kai Fu Lee depicts the likelihood of automation in day-to-day jobs. The punchline is that artificial intelligence is great at completing menial and narrow tasks that are based on data… but not so great at completing tasks that require cross-domain strategy, human creativity, or complexity.

RISK OF REPLACEMENT



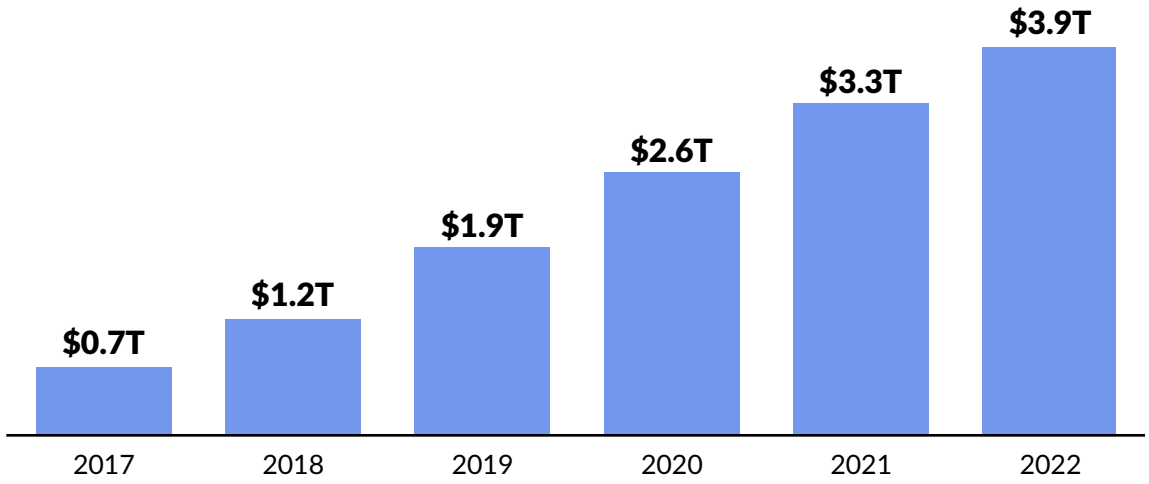
Source: Kai Fu Lee, AI Superpowers

While we won't expect a robot to complete complex surgeries in the next decade, the AI creates an open ended opportunity to help existing doctors and surgeons complete their diagnosis and jobs more effectively. For example, doctors diagnose lung cancer accurately approximately 50% of the time. Meanwhile, IBM's Watson has been able to diagnose lung cancer accurately 90% of the time.

All in all, Gartner estimates that AI-driven business value will be nearly $4 trillion by 2022, increasing at a 35% CAGR over the next four years.

BUSINESS VALUE DRIVEN BY ARTIFICIAL INTELLIGENCE IMPROVEMENTS

Estimated $4 Trillion of Value will be Created by AI by 2022



Source: Gartner

Already, we've seen AI venture capital investment balloon from $810 million in 2012 to $14.4 billion in 2017. And PwC **predicts** that AI will add $15.7 trillion to the global economy by 2030. To put that in context, $15.7 trillion is larger than the size of the Chinese economy.

As we enter 2019, AI will become increasingly integrated in our daily lives. What was nearly unimaginable a decade ago, today millions of Siris, Alexas, and Googles have joined U.S. households. The facial recognition technology that was only seen in science fiction movies is in our everyday iPhone X. Self driving cars are flooding roads around the World and students are learning from personalized robot tutors in the cloud.

The futuristic world depicted in the Jetsons might not be so far away.

ARTIFICIAL INTELLIGENCE MEETS REAL INTELLIGENCE

Innovation	Notable Examples
Commerce	According to *Business Insider*, as much as 85% of customer interactions will be managed without a human by as soon as 2020. Commerce is increasingly digitized and personalized with powerful algorithms powering and recommending consumer decisions at **Amazon**, **Alibaba** and other e-retailers. **Facebook** and **Google** utilize their AI to successfully personalize advertisements. Combined, the two companies command 60% of the U.S. digital advertisement industry.
Education	In a survey we conducted with 1,000 leaders in education and talent, 48% believed that AI will play the largest role in providing individuals improved access to the future. Personalized learning, powered by AI, will combine the adaptive technologies (as seen in **Netflix**, **Spotify** or **Amazon**) and the diagnostic technologies (found in **23andMe** and **IBM** Watson) to result in a powerful new way for people to learn. But AI is a double edged sword, as automation continues to eat blue collar jobs, white collar jobs, and soon… no collar jobs.
Facial Recognition	**Megvii's** *Face++* and **Sensetime** are two of the World's largest face-recognition technology platforms. The technology built by both Chinese companies use AI to discern individuals from one another in images or videos, using deep learning to become increasingly smarter. Sensetime, which is valued at $4.5 billion in its last round of financing, reportedly tripled revenues to $300 million this year.
Hardware	**Nvidia's** core hardware — a graphics processing unit used in machine learning technologies — acts as the lifeblood for all AI-powered companies and products. Nvidia has customers ranging from **Facebook** and **Google**, to companies working on self-driving cars, and China's largest technologies companies. The company is also heavily invested in deep learning and is able to recreate fake videos using image recognition AI-powered algorithms.
Manufacturing	Leading artificial intelligence expert Andrew Ng — the former Chief Scientist at **Baidu** and co-founder of **Coursera** — launched his new venture, **Landing.ai** last December**.** The company focuses on bringing artificial intelligence to the manufacturing industry, working with manufacturers—including **Foxconn**, the World's largest contract manufacturer and maker of **Apple's** *iPhones* — to figure out how AI can help with product yield and quality control.

Innovation	Notable Examples
Media + Entertainment	**Spotify** and **Netflix** were pioneers in this industrying, using powerful AI and machine learning algorithms to determine and adapt to their customer's preferences. In fact, more than 80% of the TV shows people watch on Netflix are discovered through the platform's recommendation system. Chinese company **Bytedance**, which uses predictive technology to curate news is the largest private company in the World. Valued at $75 billion, Bytedance is one of China's most-used apps with over 200 million users.
Moonshot Discoveries	Last year **Google** and **NASA** announced the discovery of a new planet solar system *Kepler 90*. Using only machine learning algorithms, Google's AI helped find the first solar system outside our own with 8 planets. More impressively, the AI found the solar system by examining only 670 stars out of the 200,000, meaning that many more discoveries are possible in the future. AI technology has been used to scour through 400 terabytes of data to discover numerous radio signal bursts coming from other galaxies.
Smart Assistants	This week, **Amazon** announced number of voice-activated orders placed via its virtual personal assistant *Alexa* were three times greater during the 2018 holiday season than in 2017. Alexa is a prime example of the AI-driven World we could be living in, adding ease and convenience in everyday lives. The company recently announced that Alexa now has 50,000 distinct "skills" in her toolkit — up from 1,000 in June 2016. **Google's** *Assistant* and **Apple's** *Siri* also join Amazon's Alexa as the newest addition to U.S. households.
Transportation	With Waymo cars driving autonomously on the road today and other self-driving cars being tested Worldwide, it has increasingly become clear that self-driving cars are within our grasp. And everyone is taking notice. From car manufacturers (**GM**, **Ford**), to technology corporations (**Waymo**, **Baidu, Apple**), ridesharing platforms (**Uber**, **Lyft**, **DiDi Chuxing**) and startups (**Drive.AI, Zoox**), all companies are working on merging AI with hardware to piece together the puzzle of autonomous vehicles.
Workforce Automation	It's estimated that 50% of jobs will be displaced by 2020 by automation. While daunting, there's a clear opportunity for AI to augment work to allow for a more productive workforce. One of the most promising applications of AI is Robotics Process Automation (RPA), which enables anyone to configure a "human robot" to complete obscure and mundane workflows. RPA creates efficiencies around mental tasks to clear time for workers to focus on other pressing issues. Examples of AI companies building the future of work include Romanian **UiPath** (workflow process automation) and **AirTable** (cloud workflow automation platform).

Source: GSV Asset Management, MIT Technology Review, Company Disclosures

IMPORTANT DISCLOSURES

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