Internet Trends 2019

Mary Meeker

June 11 @ Code 2019

BOND

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1) **Users**
2) **E-Commerce + Advertising**
3) **Usage…**
4) **Freemium Business Models**
5) **Data Growth**
6) **…Usage**
7) **Work**
8) **Education**
9) **Immigration + USA Inc.**
10) **Healthcare**
11) **China** (Provided by Hillhouse Capital)

Thanks

Bond Partners

Michael Brogan & Ansel Parikh helped steer ideas & did a lot of heavy lifting. Noah Knauf, Collin Ebert, Jesse Ellingworth, Everett Randle, Nancy Xiao, Daegwon Chae, Paul Vronsky & Juliet de Baubigny also dug in & were more than on call with help.

Hillhouse Capital

Liang Wu & colleagues' contribution of the China section provides an overview of the world's largest market of Internet users.

Participants in Evolution of Internet Connectivity

From creators to consumers who keep us on our toes 24x7 & the people who directly help us prepare the report. And, Kara & team, thanks for continuing to do what you do so well.

Context…

We use data to tell stories of business-related trends we focus on. We hope others take the ideas, build on them & make them better.

At 3.8B, the number of Internet users comprises more than half the world's population. When markets reach mainstream, new growth is harder to find as evinced by declining new smartphone shipments in 2018. While E-Commerce continues to gain share vs. physical retail, growth rates are slowing. While Internet advertising growth is solid & innovation is healthy, there are areas where customer acquisition costs may be rising to unsustainable levels.

While Internet user growth is slowing, global innovation & competition continue to drive product improvements, new types of usage & monetization – especially in areas of digital video, voice, wearables, on-demand + local services & traditionally underserved markets. Outside of USA, we focus on especially high growth & innovation in data-driven / direct fulfillment & financial services. We highlight massive global usage changes related to the evolution of images & interactive gaming as communications tools & the broad emergence of freemium businesses at scale.

The rapid rise of gathered / analyzed digital data is often core to the holistic success of the fastest growing & most successful companies of our time around the world. Context-rich data can help businesses provide consumers with increasingly personalized products & services that can often be obtained at lower prices & delivered more efficiently. This, in turn, can drive higher customer satisfaction. Better data-driven tools can improve the ability for consumers to communicate directly & indirectly with businesses & regulators.

Core constituents (consumers / businesses / regulators) are increasingly drinking from a data firehose & management challenges continue to rise for all parties. Broad awareness of challenges (& related vigorous / heated debates) can be the first step in driving change.

…Context

Consumers are aware of concerns about Internet usage overload & are taking steps to reduce usage – leading USA-based Internet platforms have rolled out tools to help monitor usage & social media usage growth appears to be decelerating following a period of strong growth. Privacy & problematic content concerns are also top-of-mind & are following similar patterns.

Owing to social media amplification, reveals / actions / reactions about events can occur quickly – resulting in both good & bad outcomes. In markets where online real-time rating systems exist, accountability can be improved vs. offline options as consumers & businesses interact directly while regulators can also benefit.

Rapidly expanding connectivity has helped amplify voices of good & bad actors. This has brought new focus to an age-old challenge for regulators around the world – finding the most effective ways to amplify good & minimize bad, often resulting in different regional interpretations & strategies.

As Internet systems become increasingly sophisticated, data-rich & mission critical, so has the opportunity for cyber attacks. We are in a new era of cyber security where technology issues are increasingly intermixed with international diplomacy & defense.

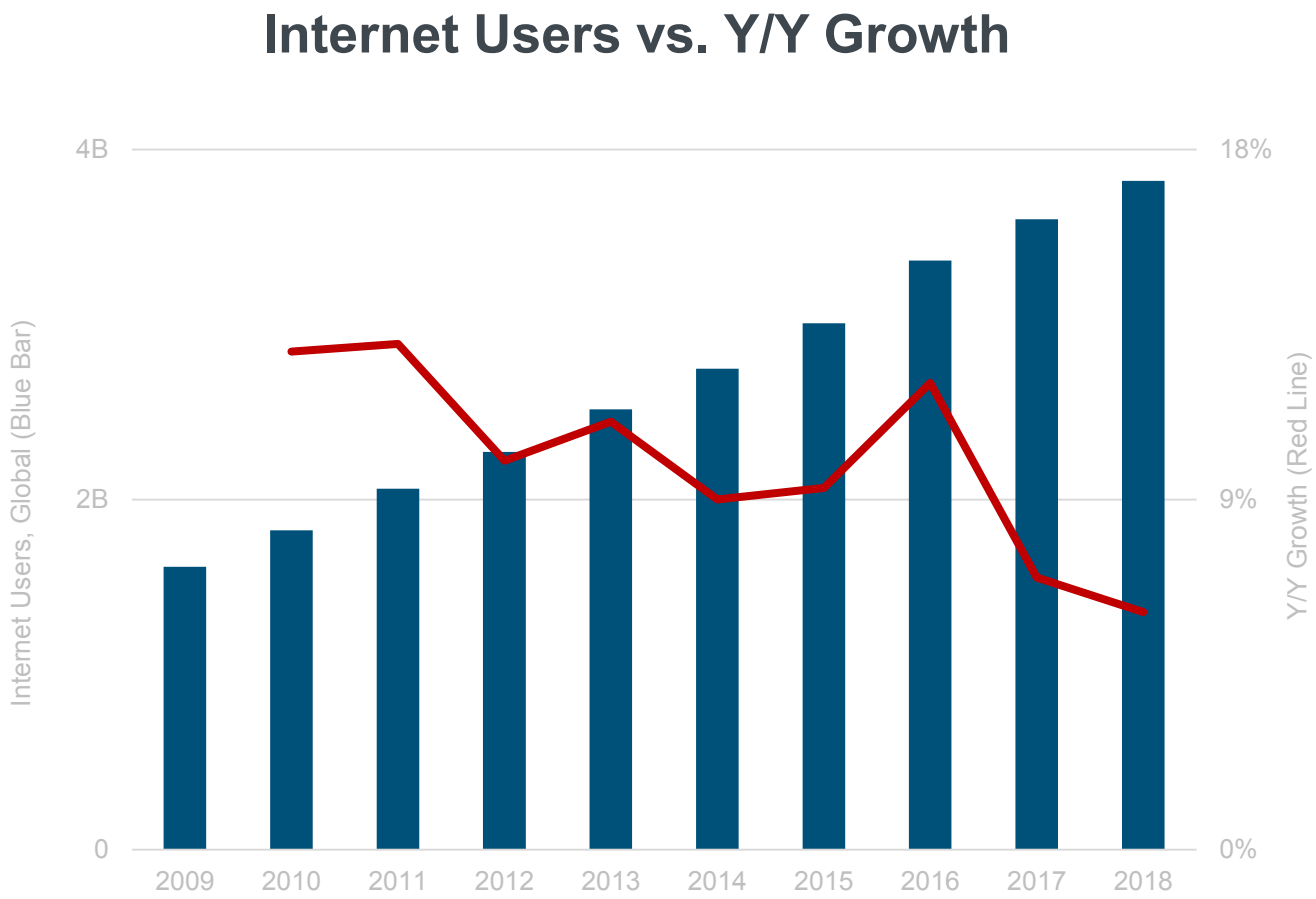
We focus on the impact of the Internet on work (via on-demand services & remote options), education & healthcare – the materiality of current trends imply inflections are occurring. We update USA trending around government finances & the importance of immigration to the technology sector.

The Hillhouse Capital team provides insights into China – the largest market of Internet users & a leader in innovation / scale.

INTERNET USERS =

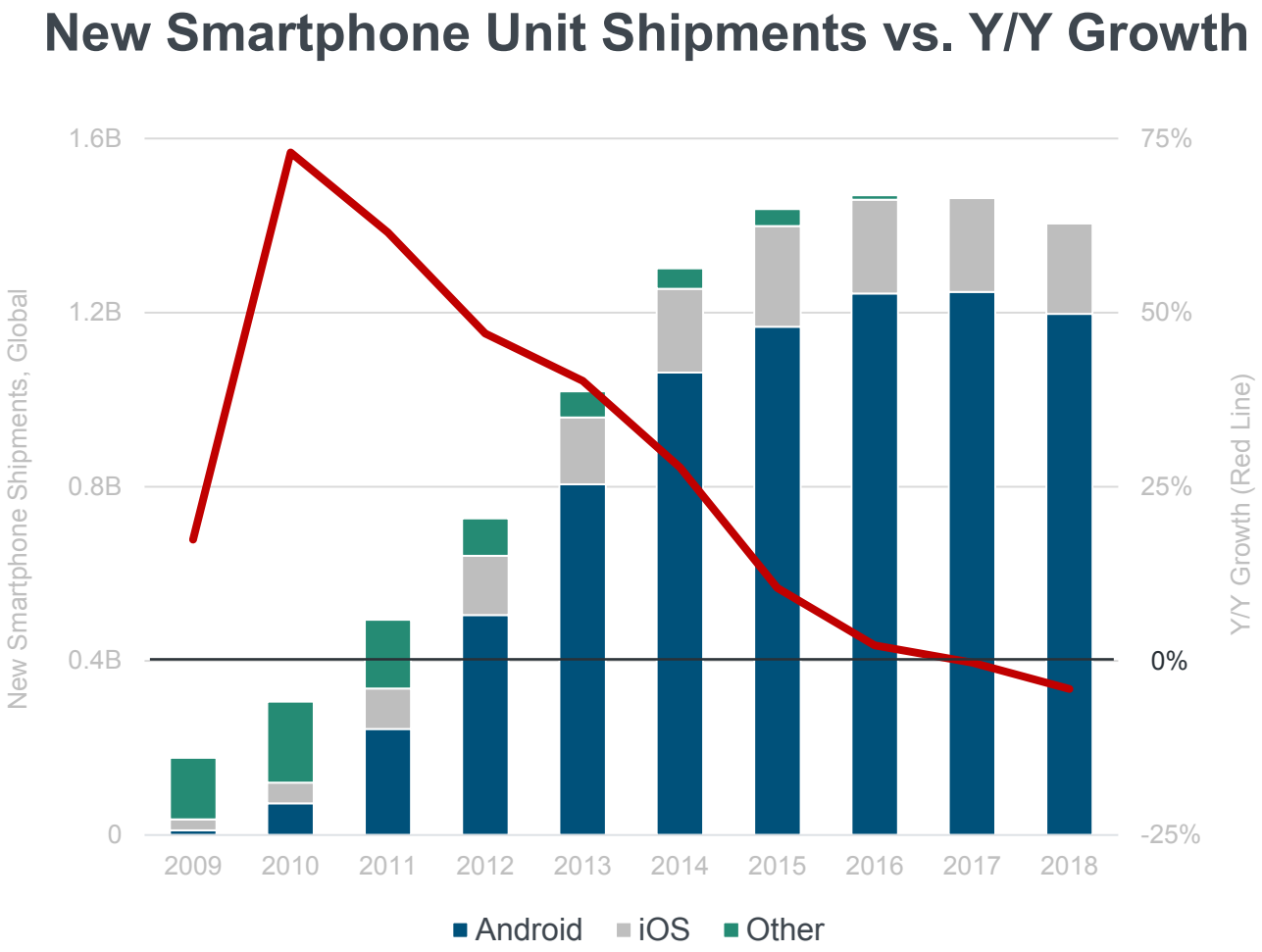
@ >50% GLOBAL PENETRATION…
NEW GROWTH REMAINS HARDER TO FIND

Global Internet User Growth = Solid But Slowing +6% vs. +7% Y/Y



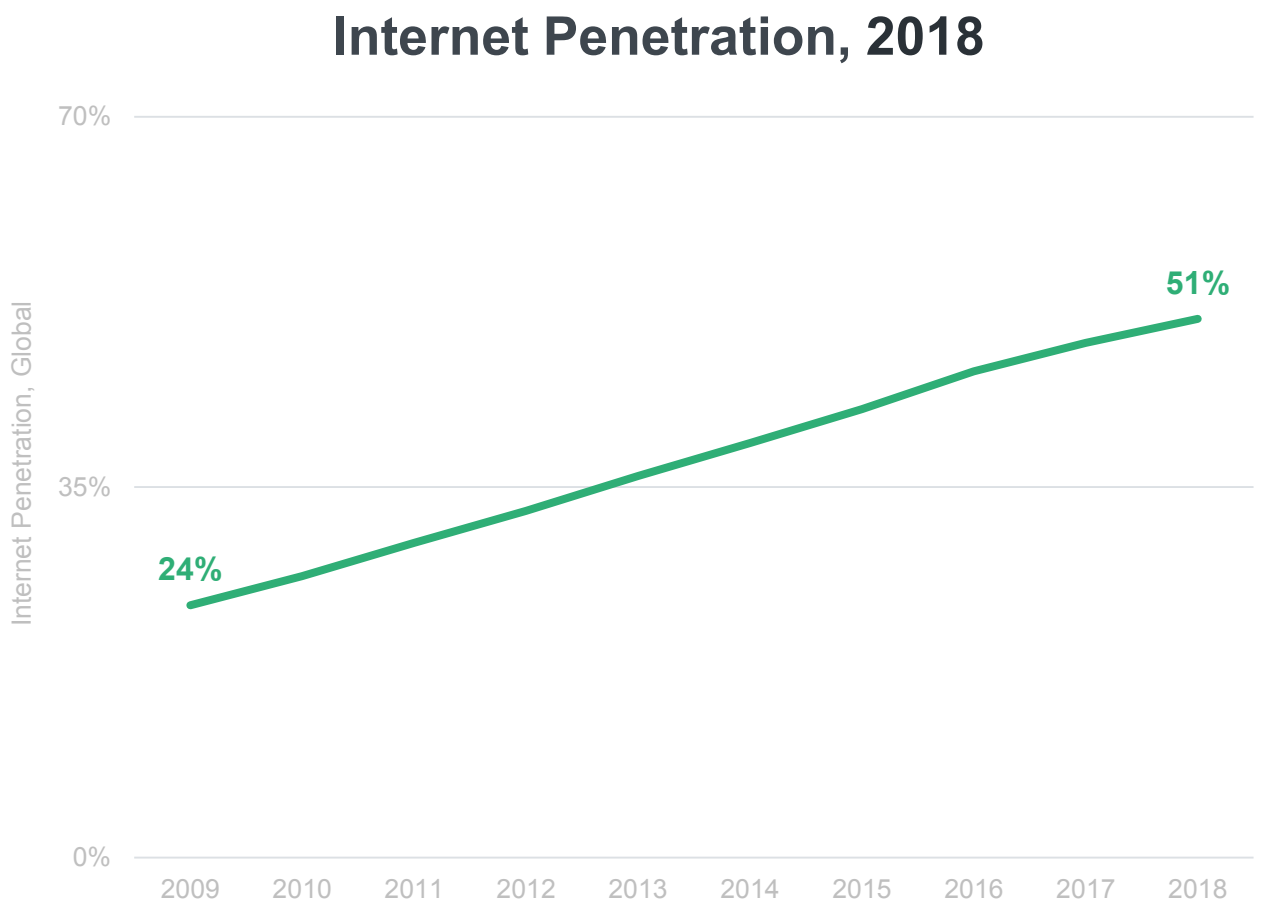
Internet user data is as of mid-year. Source: United Nations / International Telecommunications Union, USA Census Bureau. Pew Research (USA), China Internet Network Information Center (China), Islamic Republic News Agency / InternetWorldStats / Bond estimates (Iran), Bond estimates based on IAMAI data (India), & APJII (Indonesia).

Global New Smartphone Unit Shipments = Declining -4% vs. 0% Y/Y



Source: Katy Huberty @ Morgan Stanley (3/19), IDC.

Global Internet Users = 3.8B >50% of Population



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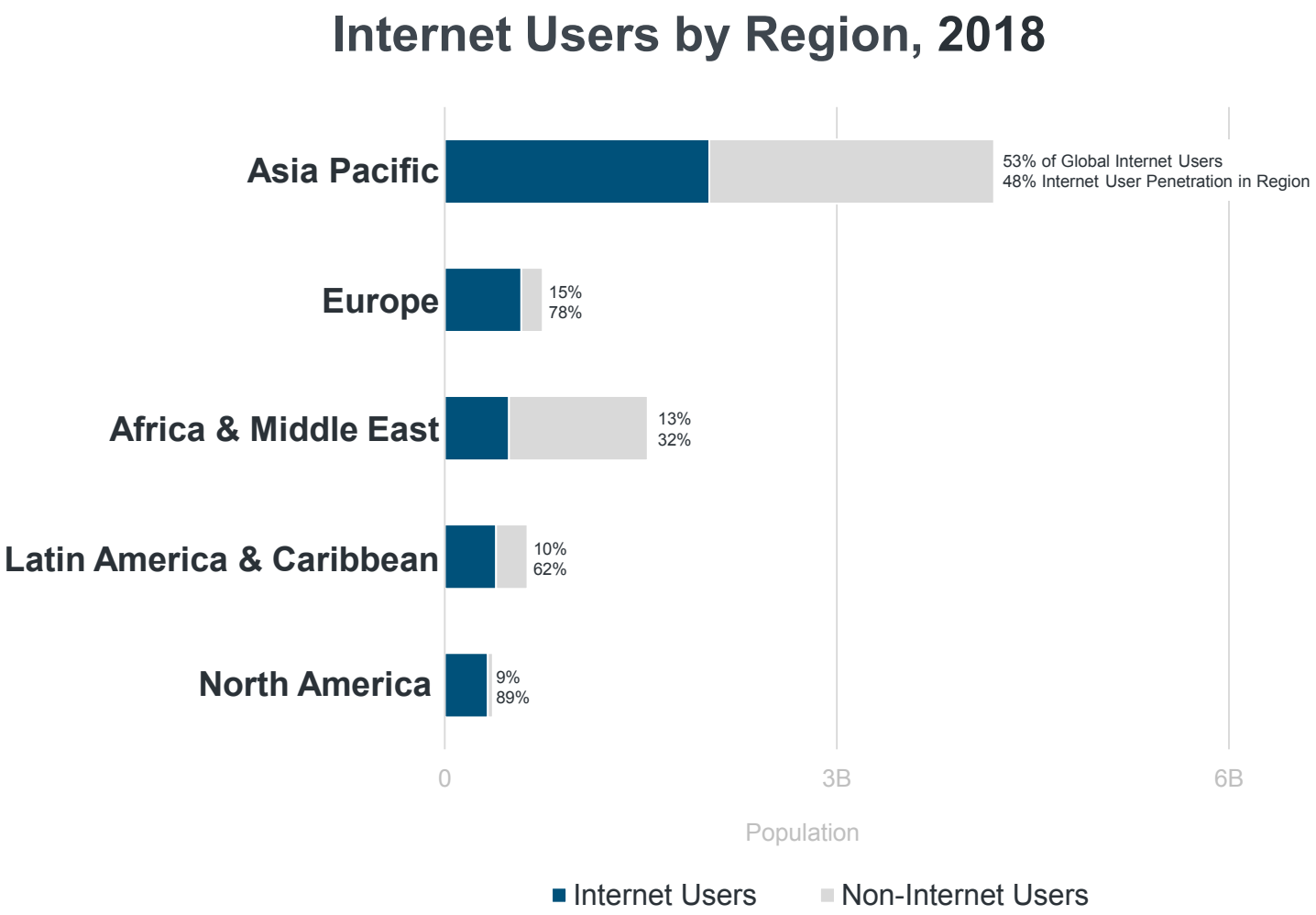
Global Internet Users =
Asia Pacific Leads in Users + Potential



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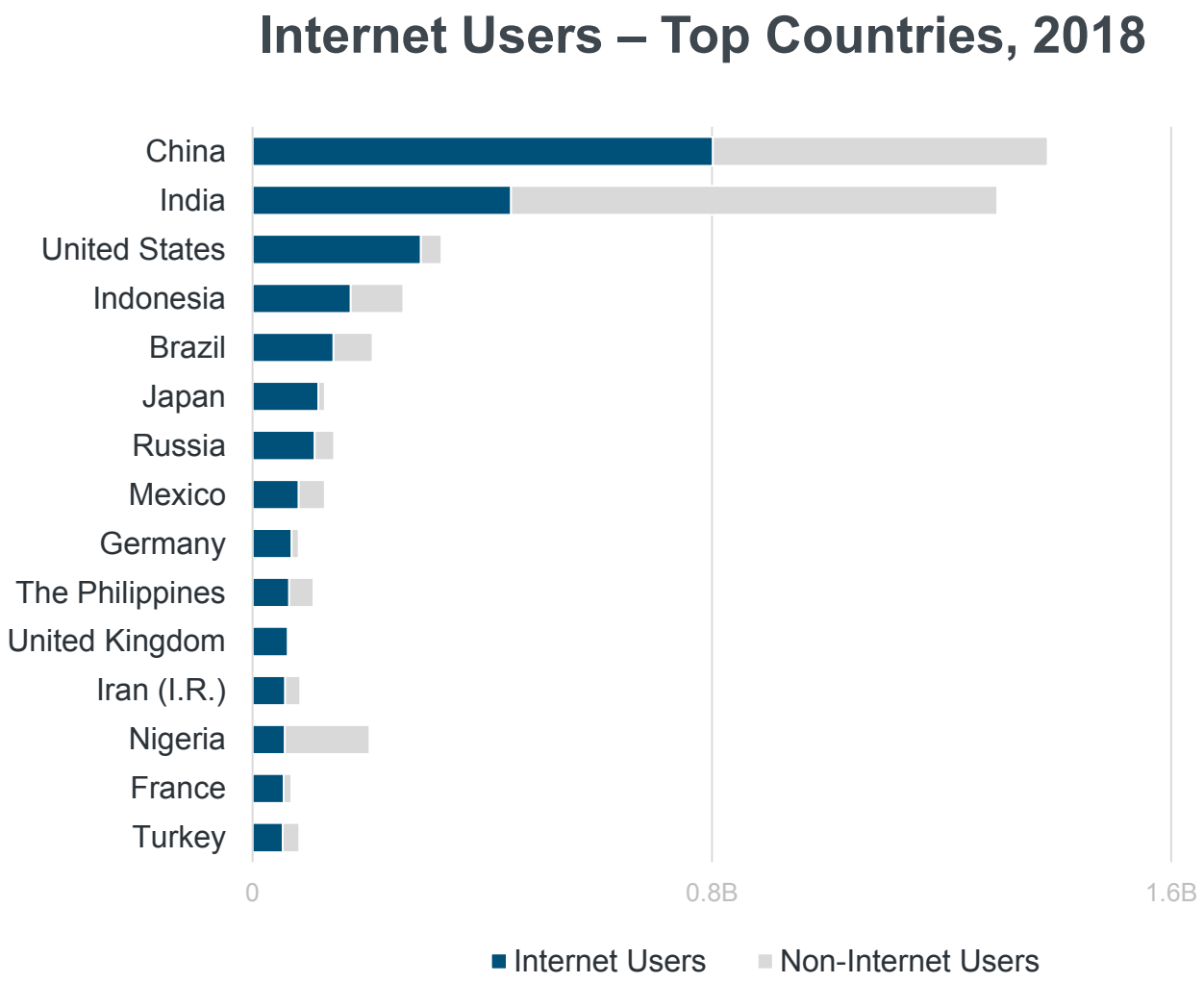
Global Internet Users = China @ 21% of Total...India @ 12%...USA @ 8%



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Global *Internet* Market Capitalization Leaders = USA Stable @ 18 of 30…China Stable @ 7 of 30

Rank 2019	Company	Region	Market Cap Value ($B) 6/7/19	6/7/16	% Change
1	Microsoft	USA	$1,007B	$410B	+146%
2	Amazon	USA	888	343	+159%
3	Apple	USA	875	540	+62%
4	Alphabet	USA	741	497	+49%
5	Facebook	USA	495	340	+46%
6	Alibaba	China	402	195	+106%
7	Tencent	China	398	206	+93%
8	Netflix	USA	158	43	+266%
9	Adobe	USA	136	50	+174%
10	PayPal	USA	134	46	+190%
11	Salesforce	USA	125	56	+123%
12	Booking.com	USA	77	67	+15%
13	Uber	USA	75	--	--
14	Recruit Holdings	Japan	52	20	+167%
15	ServiceNow	USA	51	12	+316%
16	Workday	USA	48	16	+197%
17	Meituan Dianping	China	44	--	--
18	JD.com	China	39	32	+22%
19	Baidu	China	38	60	(36%)
20	Activision Blizzard	USA	35	28	+25%
21	Shopify	Canada	34	2	+1,297%
22	NetEase	China	33	23	+44%
23	eBay	USA	33	28	+19%
24	Atlassian	Australia	32	5	+509%
25	MercadoLibre	Argentina	30	6	+388%
26	Twitter	USA	29	11	+173%
27	Square	USA	29	3	+808%
28	Electronic Arts	USA	29	23	+25%
29	Xiaomi	China	28	--	--
30	Spotify	Sweden	25	--	--
	Total		**$6,119**	**$3,064**	

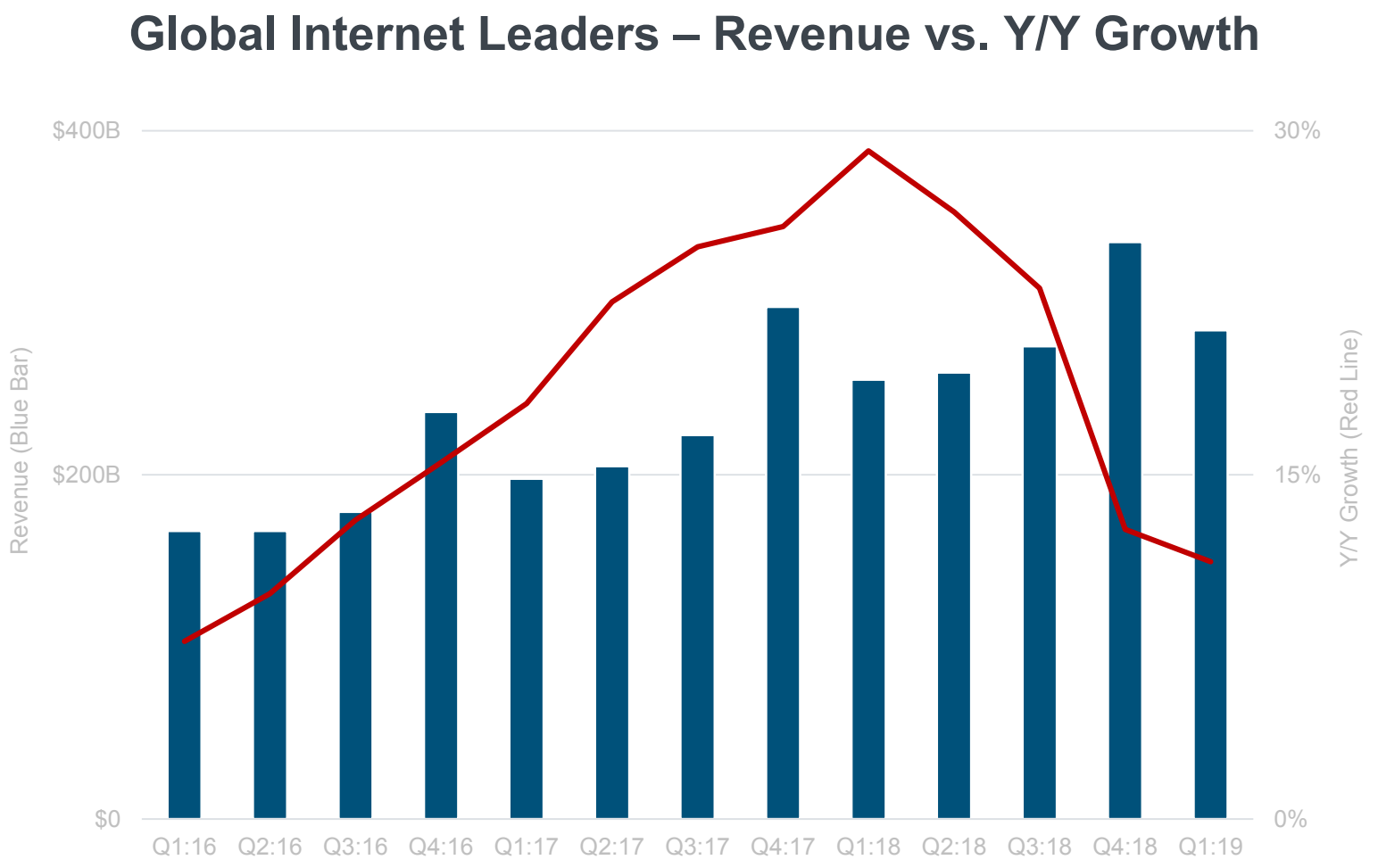
USA stable at 18 of 30 refers to the fact that 19 USA companies were in the top 30 using same parameters in 2018. China in 2018 = 8 of 30. Source: CapitalIQ data collected 6/7/19. Note: % change only applies to companies that were publicly traded on 6/7/16, private valuations not taken into account. Reflects a global list of publicly traded companies, some companies (e.g., Meituan Dianping) derive the majority of their revenue from one country. Companies selected are considered to be 'pureplay' Internet companies that do not derive a significant portion of revenues / profits from other business lines. Example companies that would be included otherwise = Reliance Industries (Refining), AT&T (Telecom), & Naspers (Television).

Global Market Capitalization Leaders = USA Stable @ 23 of 30…Technology Stable @ 9 of 30

Rank 2019	Company	Sector	Region	Market Cap Value ($B) 6/7/19	6/7/16	% Change
1	Microsoft	Technology	USA	$1,007B	$410B	+146%
2	Amazon	Technology	USA	888	343	+159%
3	Apple	Technology	USA	875	540	+62%
4	Alphabet	Technology	USA	741	497	+49%
5	Berkshire Hathaway	Financial Services	USA	505	350	+44%
6	Facebook	Technology	USA	495	340	+46%
7	Alibaba	Technology	China	402	195	+106%
8	Tencent	Technology	China	398	206	+93%
9	Visa	Financial Services	USA	372	192	+94%
10	Johnson & Johnson	Healthcare	USA	368	318	+16%
11	JPMorgan	Financial Services	USA	354	239	+48%
12	Exxon Mobil	Energy	USA	316	371	(15%)
13	Nestlé	Food / Beverages	Switzerland	306	230	+33%
14	Walmart	Retail	USA	303	221	+37%
15	ICBC	Financial Services	China	285	224	+27%
16	Procter & Gamble	Home Goods	USA	273	220	+24%
17	Mastercard	Financial Services	USA	271	106	+156%
18	Bank of America	Financial Services	USA	262	149	+76%
19	Royal Dutch Shell	Energy	Netherlands	259	198	+31%
20	Samsung	Technology	South Korea	249	166	+50%
21	Disney	Media	USA	248	160	+55%
22	Cisco	Technology	USA	239	146	+64%
23	Pfizer	Pharmaceuticals	USA	238	212	+12%
24	AT&T	Telecom	USA	237	242	(2%)
25	Verizon	Telecom	USA	237	207	+15%
26	UnitedHealth	Healthcare	USA	235	131	+79%
27	Roche	Healthcare	Switzerland	233	224	+4%
28	Chevron	Energy	USA	231	191	+21%
29	Coca-Cola	Food / Beverages	USA	220	196	+12%
30	Home Depot	Retail	USA	217	161	+35%
	Total			**$11,264**	**$7,385**	

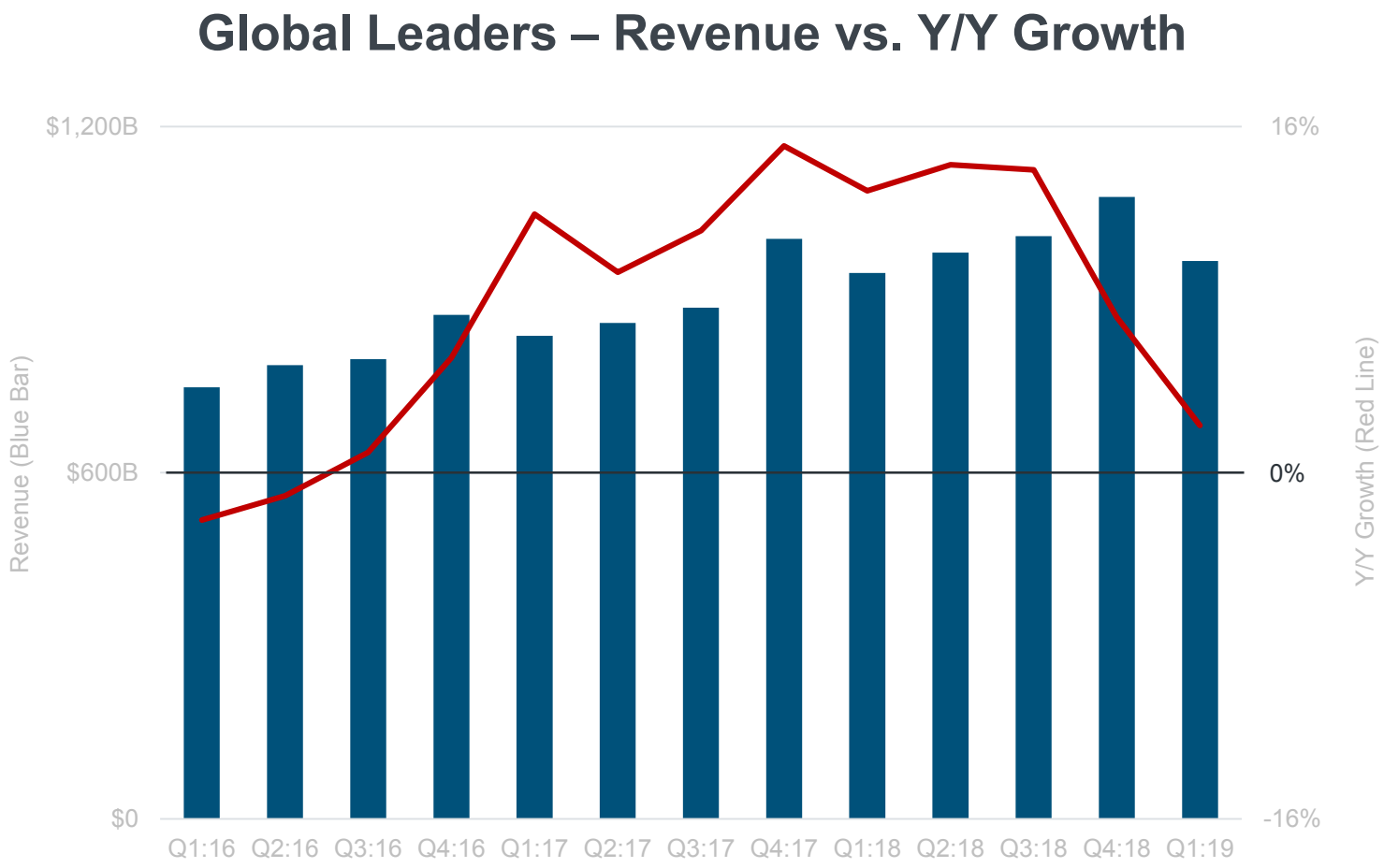
USA stable at 23 of 30 refers to the fact that 21 USA companies were in the top 30 using same parameters in 2018. Technology in 2018 = 10 of 30.
Source: CapitalIQ data collected 6/7/19. Reflects a global list of publicly traded companies, some companies (e.g., ICBC) derive the majority of their revenue from one country.

Global *Internet* Market Capitalization Leader Revenue Growth = Slowing +11% vs. +13% (Y/Y – Q1 vs. Q4)



Source: CapitalIQ. Revenue from Microsoft / Amazon / Apple / Alphabet / Facebook / Tencent / Alibaba / Netflix / Adobe / PayPal / Salesforce.com / Booking.com / Recruit Holdings / ServiceNow / Workday / JD.com / Baidu / Activision Blizzard / Shopify / NetEase / eBay / Atlassian / MercadoLibre / Electronic Arts / Twitter / Square.
Note: *Uber, Meituan Dianping, Xiaomi and Spotify which had recent IPOs that did not provide detailed financials from Q1:15-Q4:16 that are necessary to illustrate the Y/Y growth rate & are therefore excluded. Due to their revenue scale relative to the cumulative group, they have minimal impact on overall growth rate.

Global Market Capitalization Leader Revenue Growth = Slowing +2% vs. +7% (Y/Y – Q1 vs. Q4)



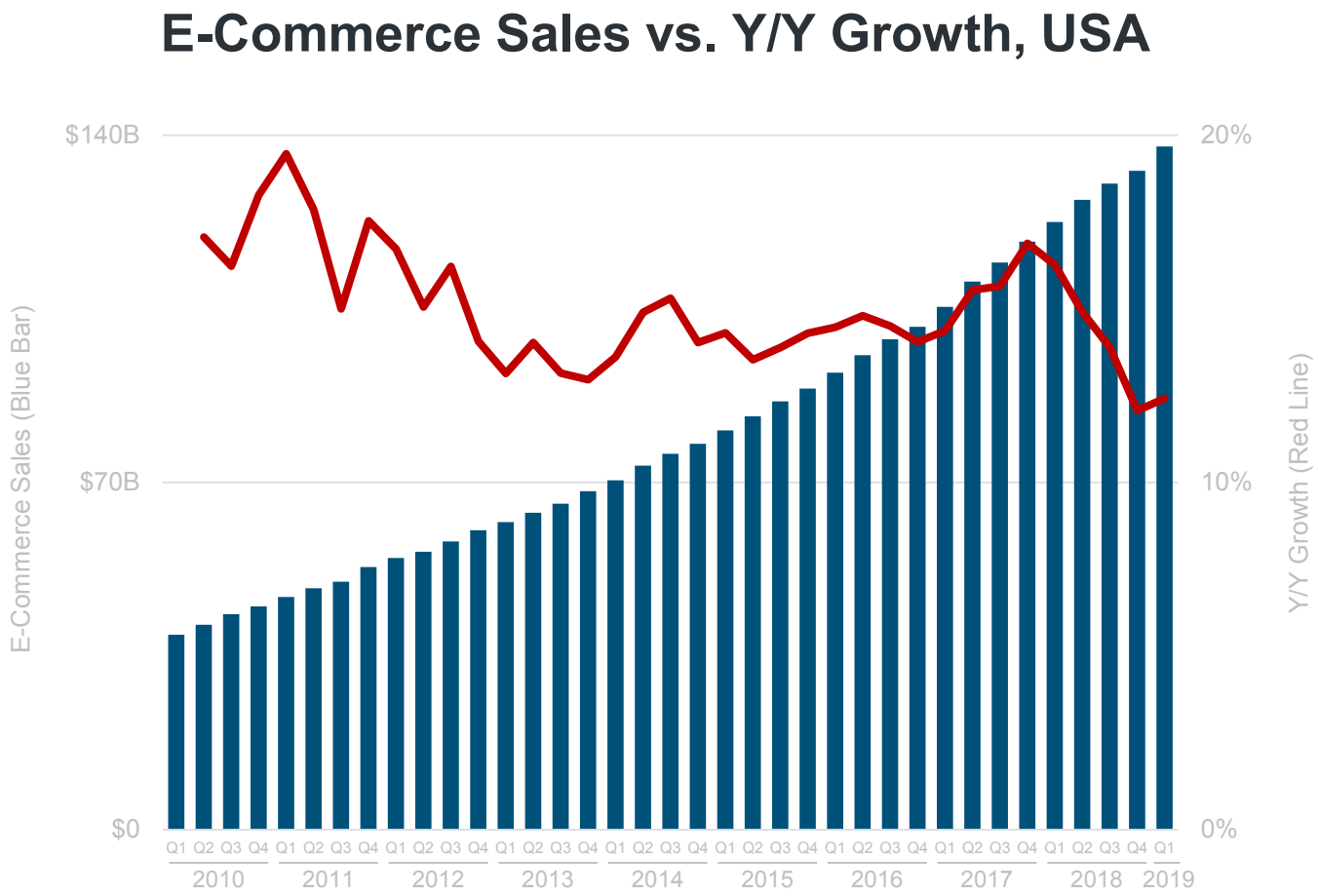
Source: CapitalIQ. Revenue from Microsoft / Amazon / Apple / Alphabet / Berkshire Hathaway / Facebook / Tencent / Alibaba / Visa / Johnson & Johnson / JPMorgan / Exxon Mobil / Walmart / ICBC / Procter & Gamble / Bank of America / Samsung / Disney / Cisco / Pfizer / AT&T / Verizon / UnitedHealth / MasterCard / Chevron / Coca-Cola / Home Depot. Nestle & Royal Dutch Shell quarterly revenue excluded due to bi-annual earnings releases.

E-COMMERCE + ONLINE ADVERTISING =

SOLID…
BUT SLOWING GROWTH

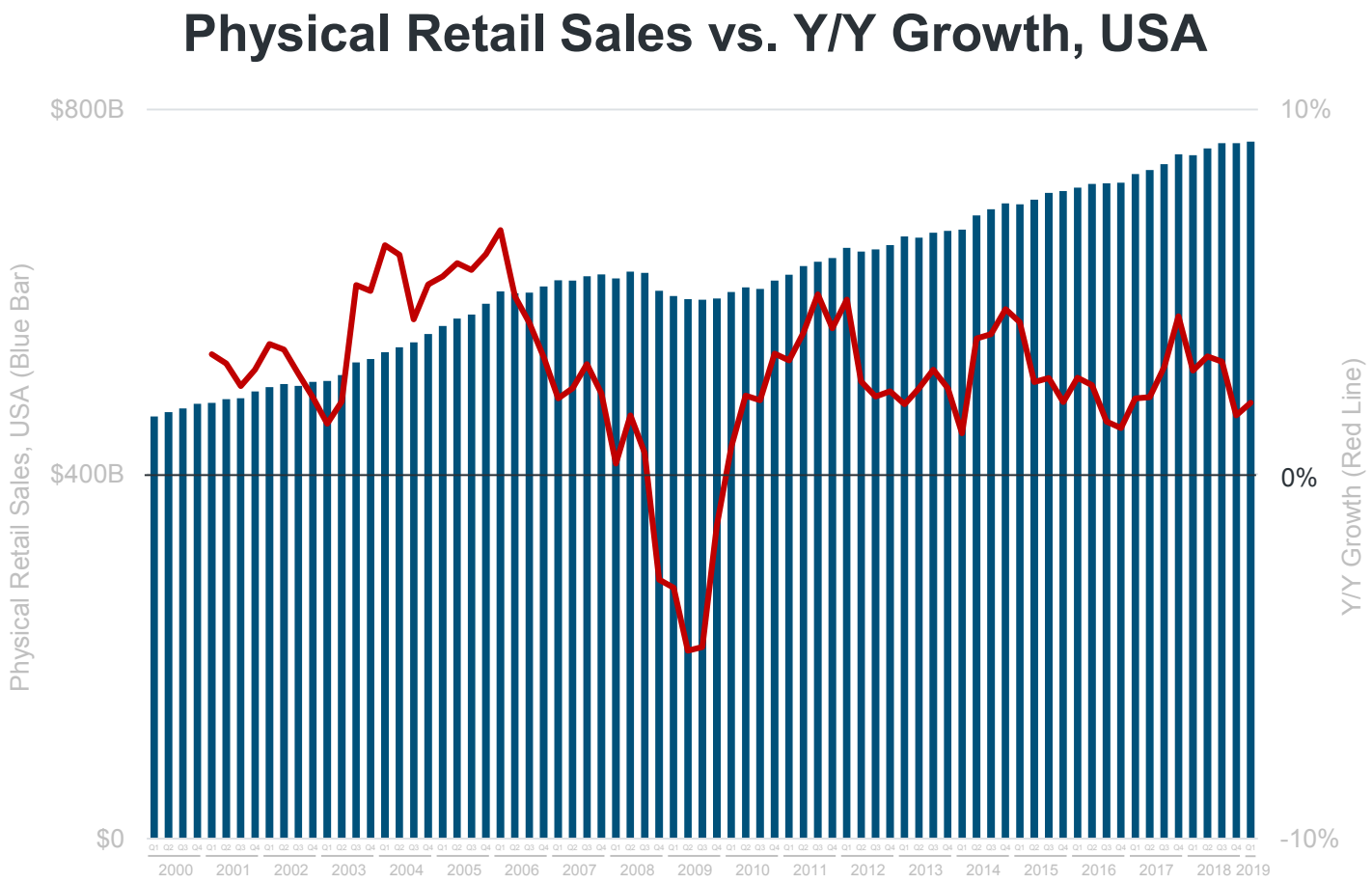
E-Commerce

E-Commerce Growth = Solid +12.4% vs. +12.1% (Y/Y – Q1 vs. Q4)



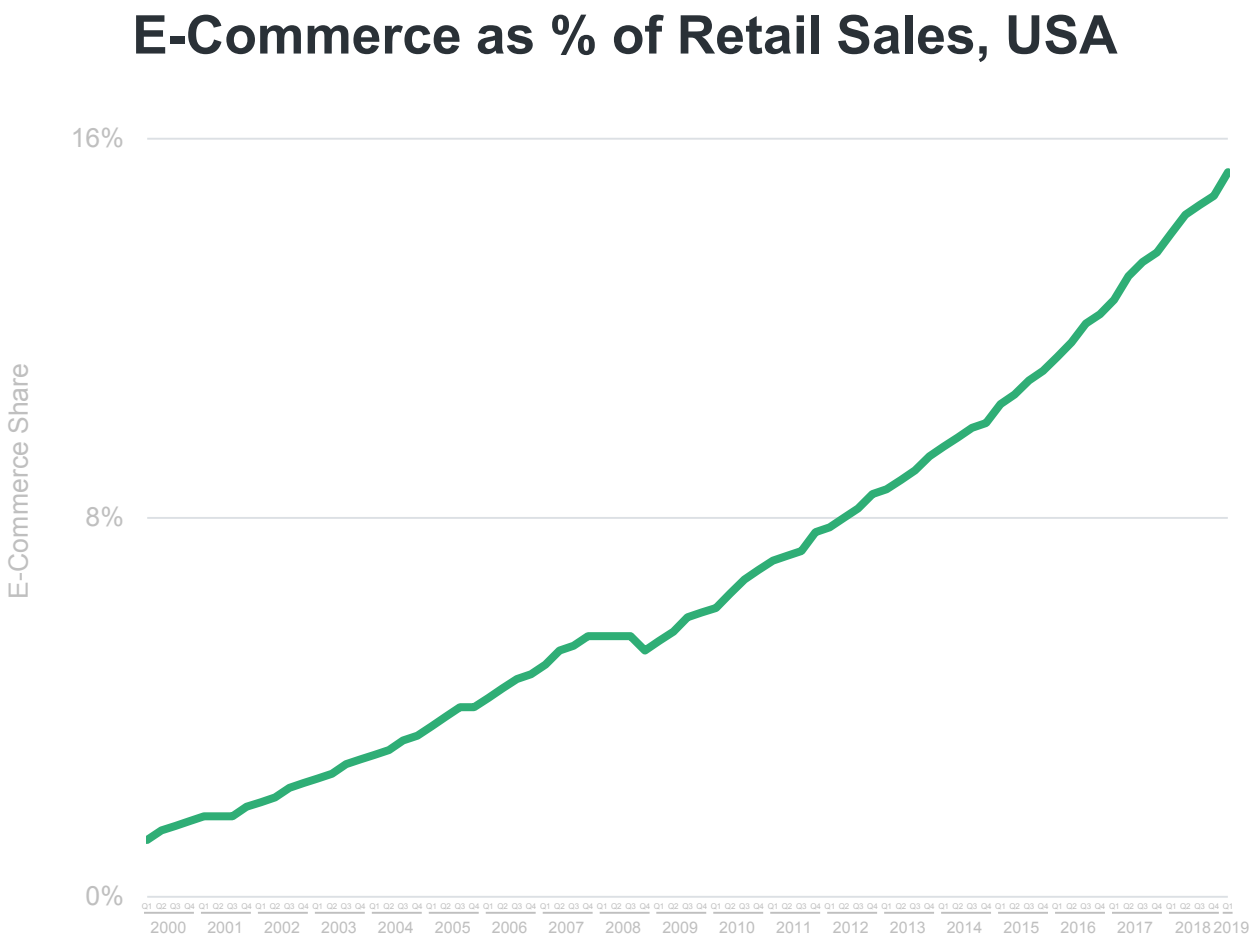
Source: St. Louis Federal Reserve FRED database. Note: Historic data (Pre-2016) adjusted / back-casted in 2017 by USA Census Bureau to better align with Annual Retail Trade + Monthly Retail Trade Survey data. Seasonally adjusted.

Physical Retail Growth = Solid +2.0% vs. +1.6% (Y/Y – Q1 vs. Q4)



Source: St. Louis Federal Reserve FRED Database. Note: Physical Retail includes all retail sales excluding food services, motor vehicles / auto parts & fuel.

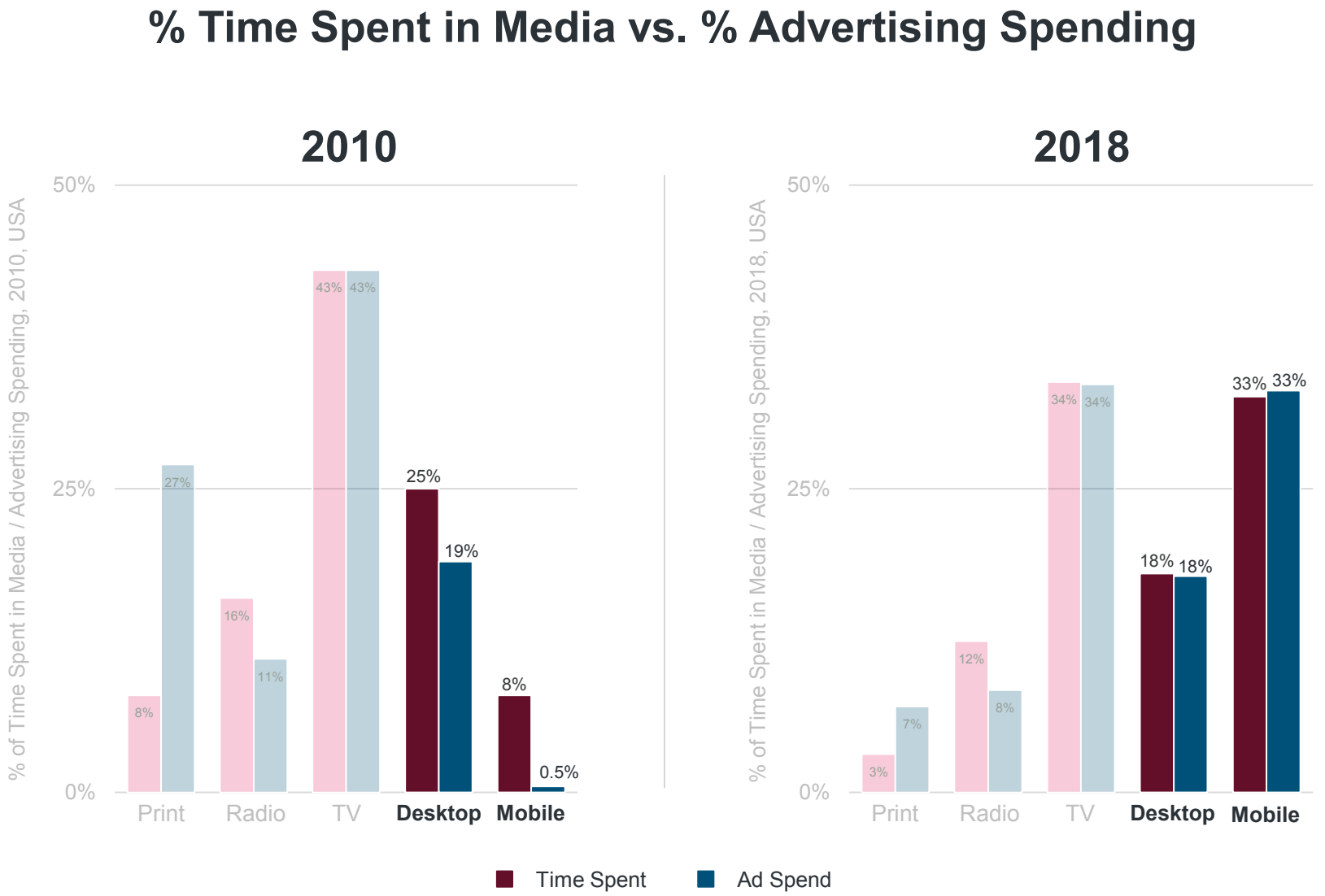
E-Commerce Share =
Gains Continue @ 15% of Retail vs. 14% Y/Y



Source: USA Census Bureau, St. Louis Federal Reserve FRED database. Note: 15% = Annualized share. Penetration calculated by dividing E-Commerce sales by "Core" Retail Sales (excluding food services, motor vehicles / auto parts, gas stations & fuel). All figures are seasonally adjusted. Per US Census Bureau, E-Commerce is ~10% of total retails sales in Q1:19, including out-of-scope channels such as gas stations, fuel dealers, etc.

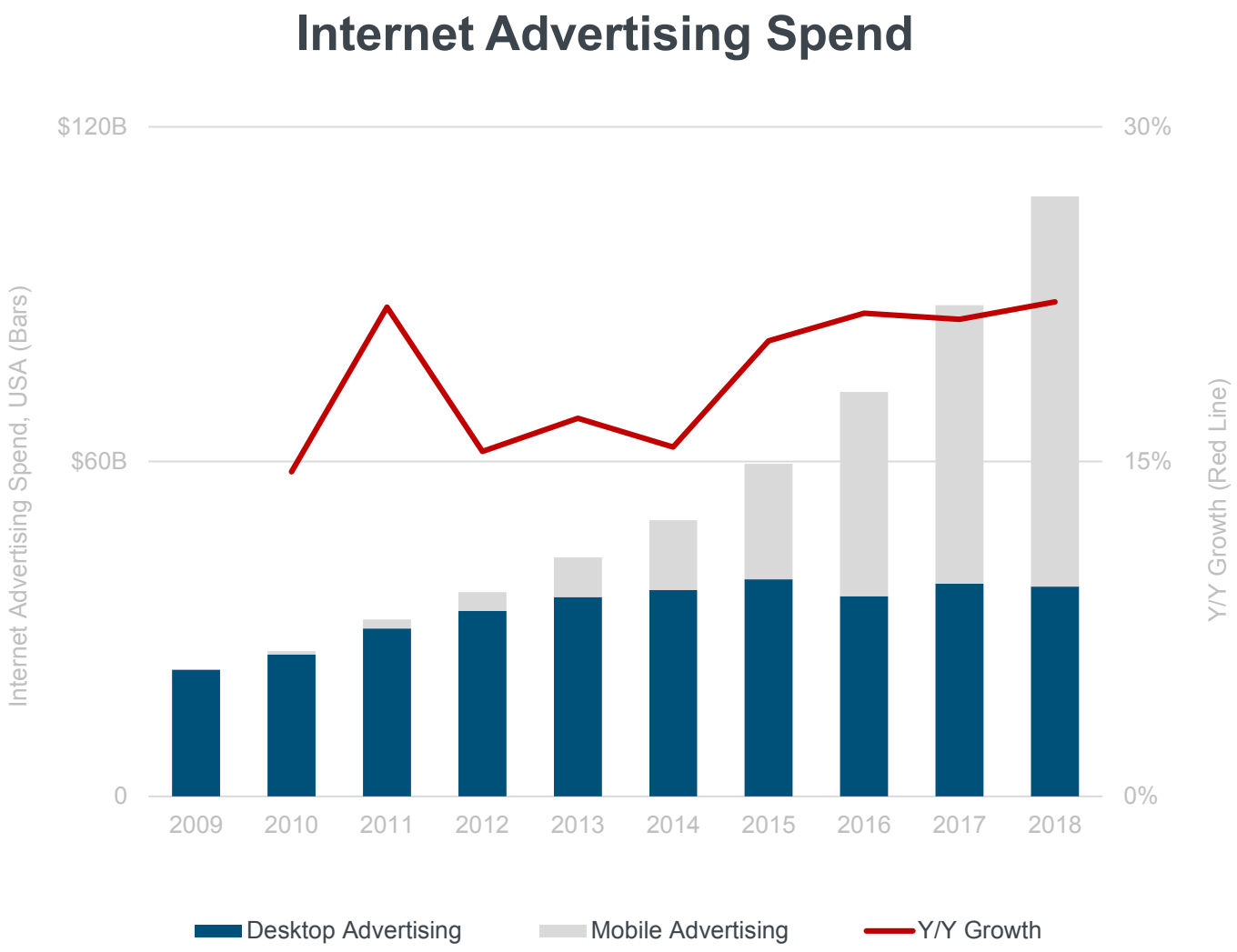
Online Advertising

Media Time vs. Advertising Spending = Mobile @ Equilibrium (2018)…Desktop (2015)



Source: Internet & Mobile advertising spend based on IAB & PwC data for full year 2018 & 2010.
Print advertising spend based on Magna Global estimates for full year 2018 & 2010. Print includes newspaper & magazine.
Time spent share data based on eMarketer (10/18). Excludes out-of-home, video game & cinema advertising.

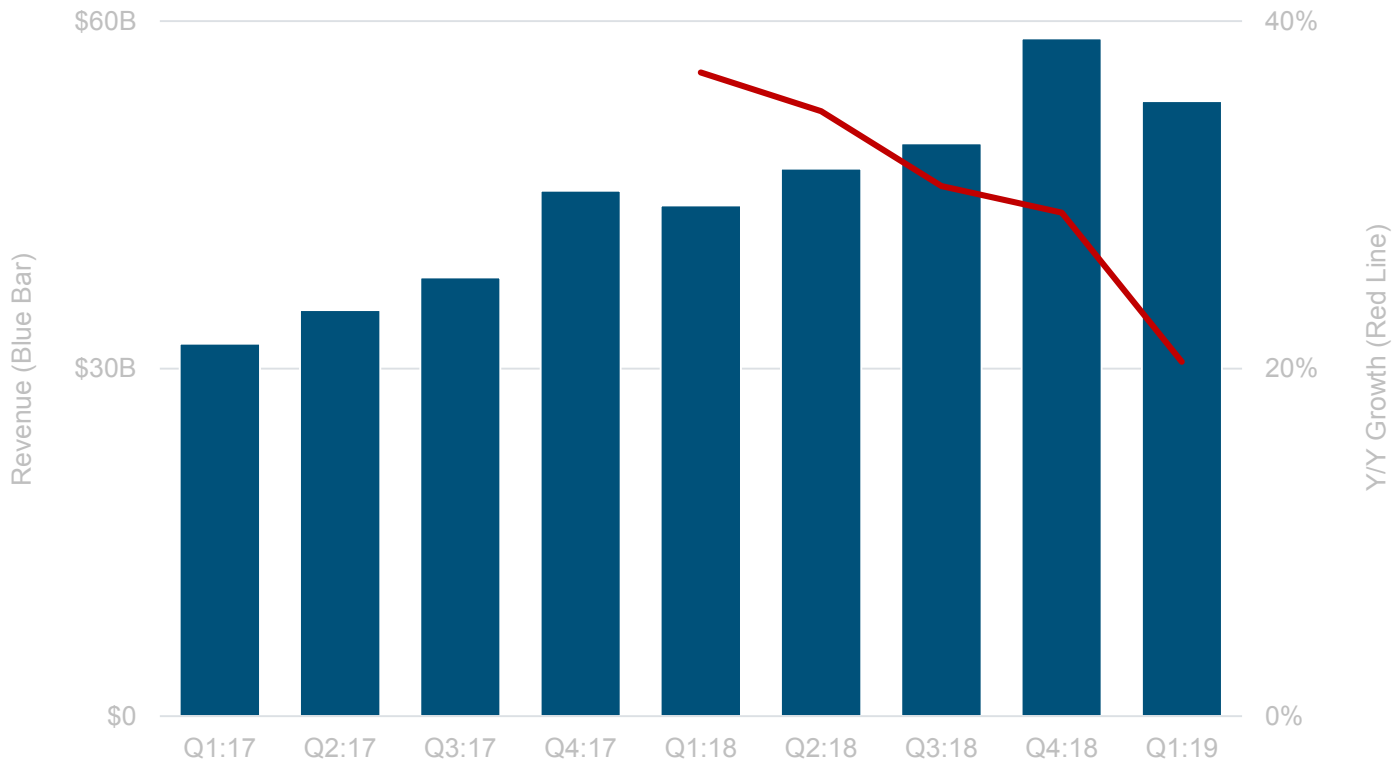
Internet Ad Spending (Annual)= Accelerated +22% vs. +21% Y/Y



Source: IAB / PWC Internet 2018 Advertising Report (5/19).

Internet Ad Revenue (Quarterly – Leading USA Platforms) = Decelerating +20% vs. +29% (Y/Y – Q1 vs. Q4)

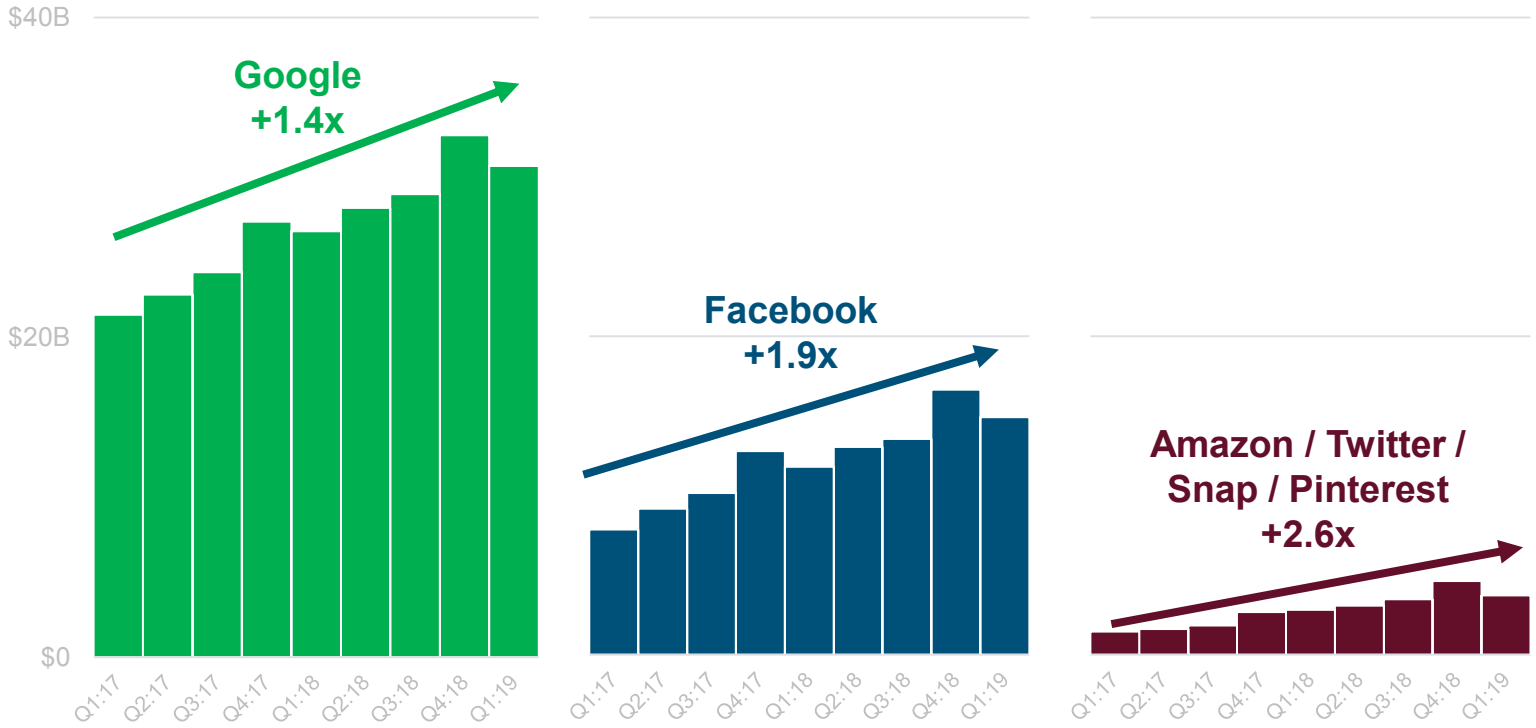
Leading USA-Based Online Ad Platform Revenue, Global



Source: Company public releases & Morgan Stanley estimates. Note: Includes Google / Facebook / Twitter / Amazon / Snapchat / Pinterest.

Internet Ad Platforms =
Google + Facebook Lead But Others Gaining Share

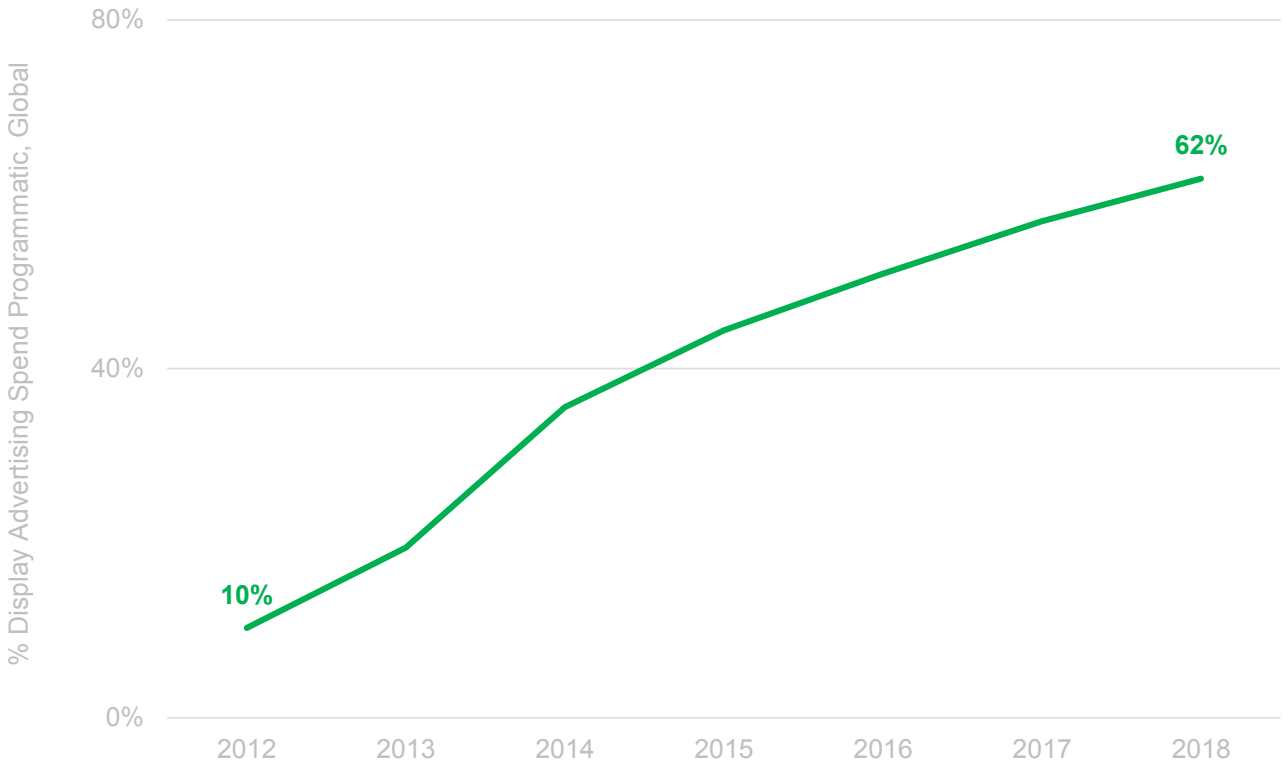
Select USA-Based Advertising Platform Revenue, Global



Source: Company public releases & Morgan Stanley estimates.

Internet Ad Buying = Programmatic Gains vs. Direct Continue… Negatively Impacting Pricing

Programmatic Buying – % Digital Display Advertising, Global



Source: Publicis / Zenith 2018 Programmatic Marketing Forecast. Note: Programmatic refers to ads bought both via real-time bidding & non real-time algorithmically-driven ad purchases. Does not include non-display advertising (e.g., Search)

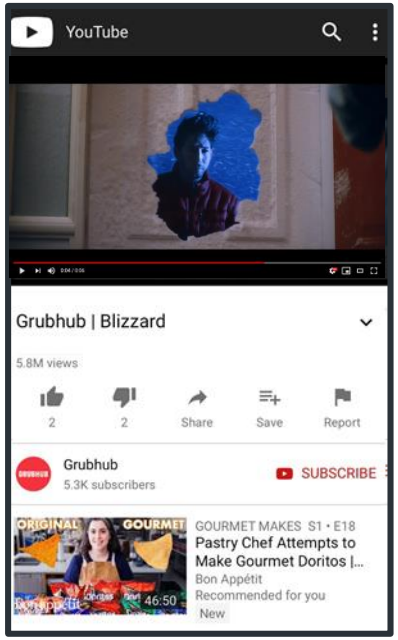
Ad Share Gain Drivers =
Better Targeting + New Creative + Commerce + High-Relevance

Facebook

Targeting
Audience Customization

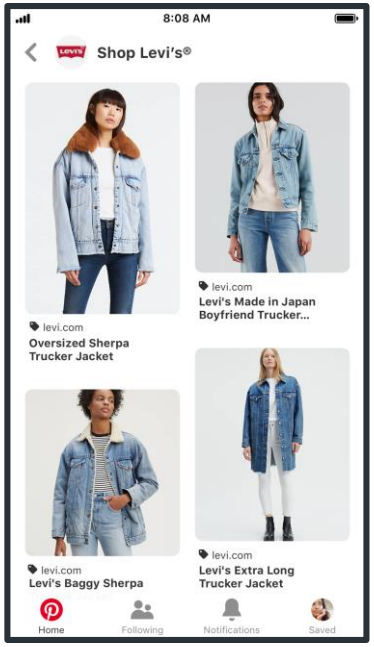
YouTube

Machine Learning
Automatically Time-Edited Clips



Pinterest

Commerce
Shoppable Catalogs



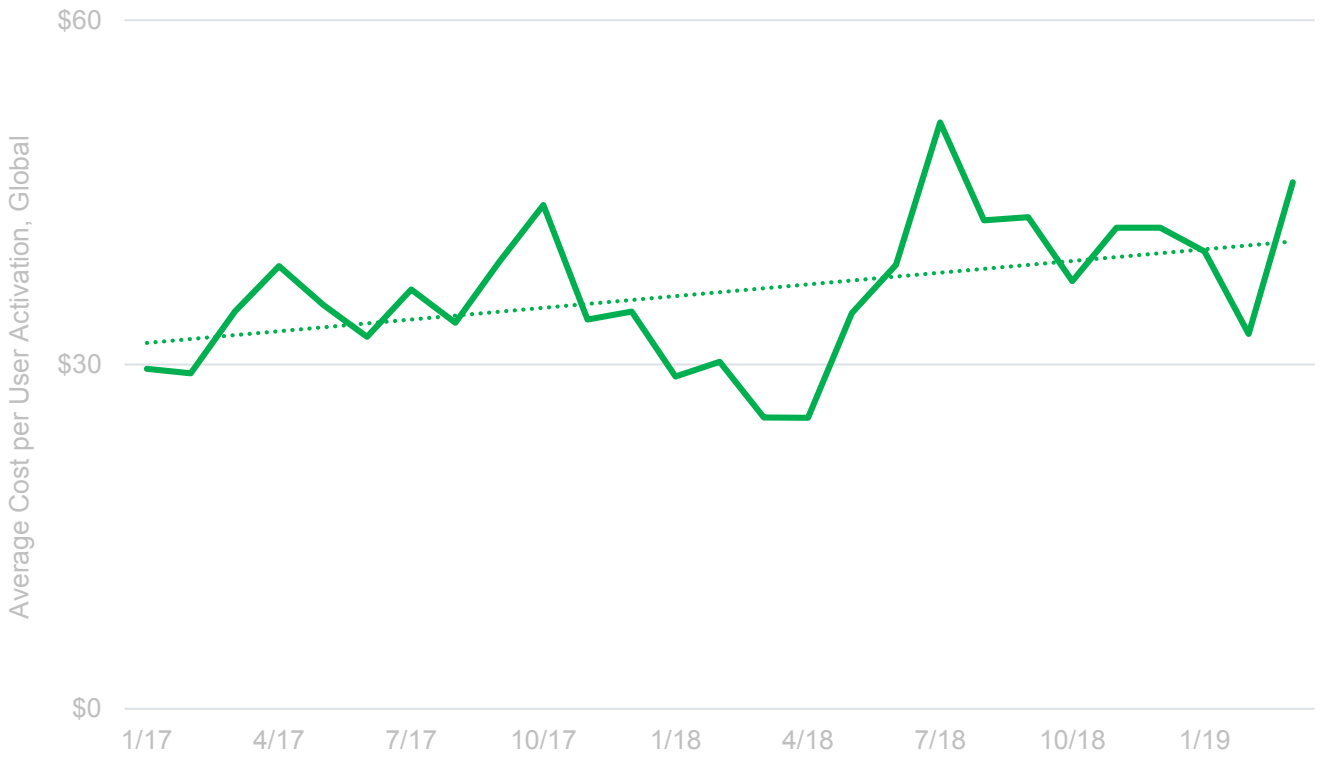
Twitter

High-Relevance
Promoted Tweets

Source: Facebook / Google / Pinterest / Twitter

Customer Acquisition Cost (CAC) = Rising in Highly Competitive / Capitalized Sectors

Cost Per User Activation – Mobile Finance Apps, Global per Liftoff



Source: Liftoff's 2019 / 2018 Mobile Finance App Report. Note: Report draws from internal Liftoff Data from 2/1/17 to 3/31/19, spanning 19B+ ad impressions across 5MM+ App installs, 270MM+ clicks & 3MM activations / registrations. Data focused on North America, Europe, Middle East, Africa & Asia Pacific.
Note: Activation = Adding & depositing funds to an account, activating a spending card, opening an equities position or starting a paid subscription.

Reality =

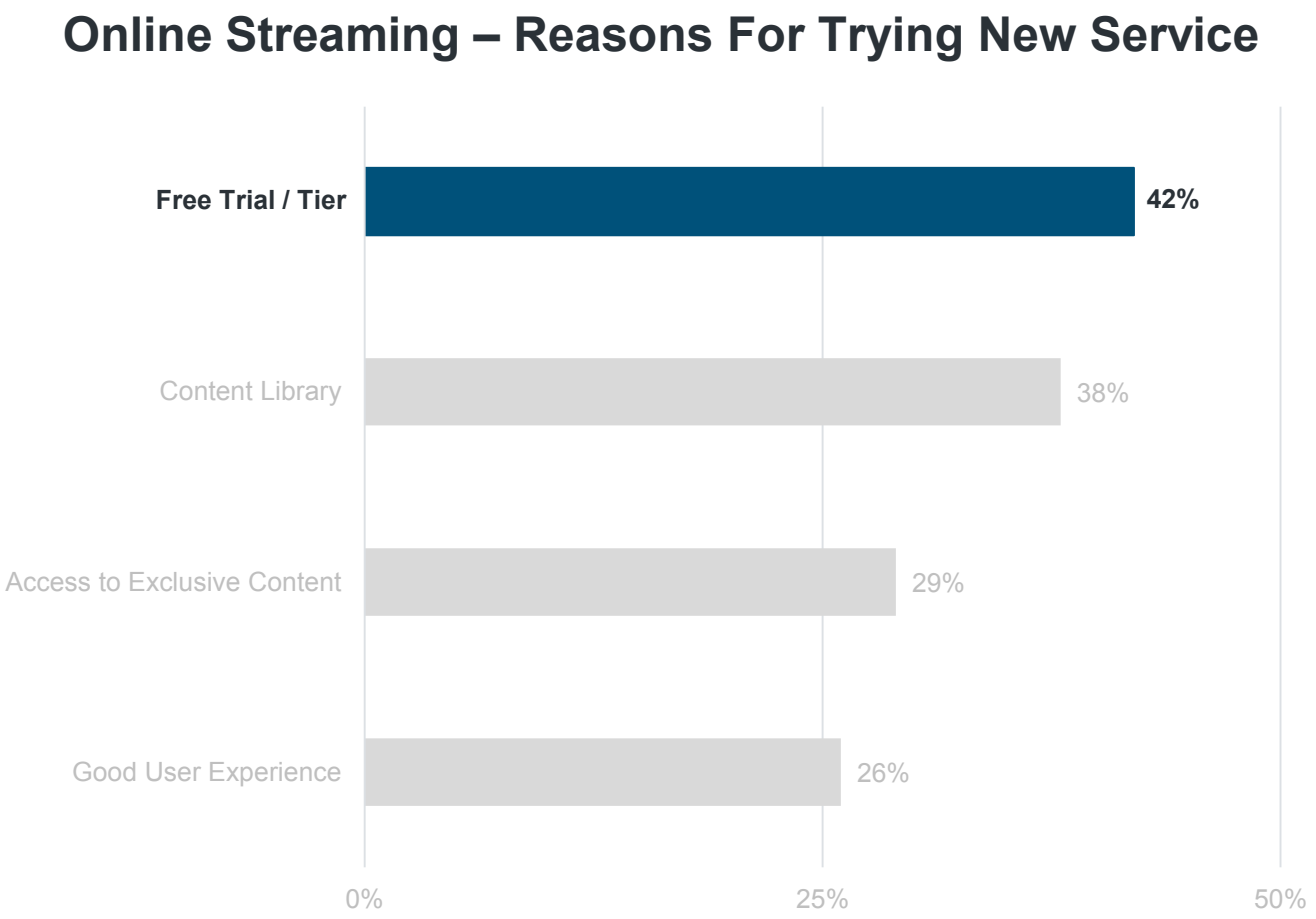
CAC Can't Exceed LTV for Very Long

CAC = Customer Acquisition Cost. LTV = Lifetime Value.

Effective + Efficient Marketing =

One's Own Product +
Happy Customers + Recommendations

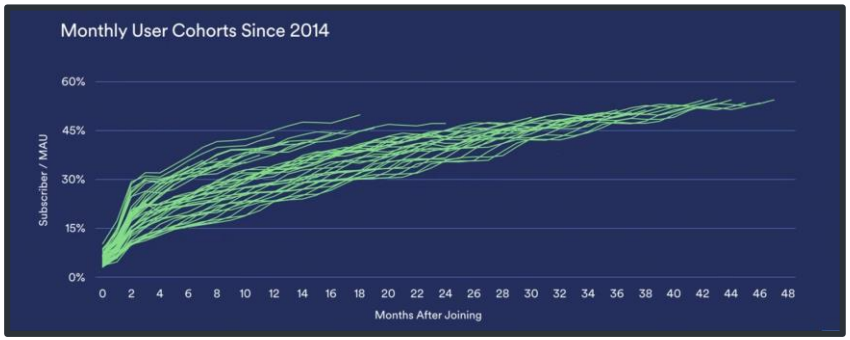
Effective + Efficient Marketing = Can Be Free Trial / Tier



Source: 2BrightCove / YouGov survey of 10,502 adults in USA, UK, France, Australia, Germany, Canada & UAE, 9/18.

Happy Customers…
Spotify = Free User Conversion to Paid Subscribers…

Free Ad-Supported Product…

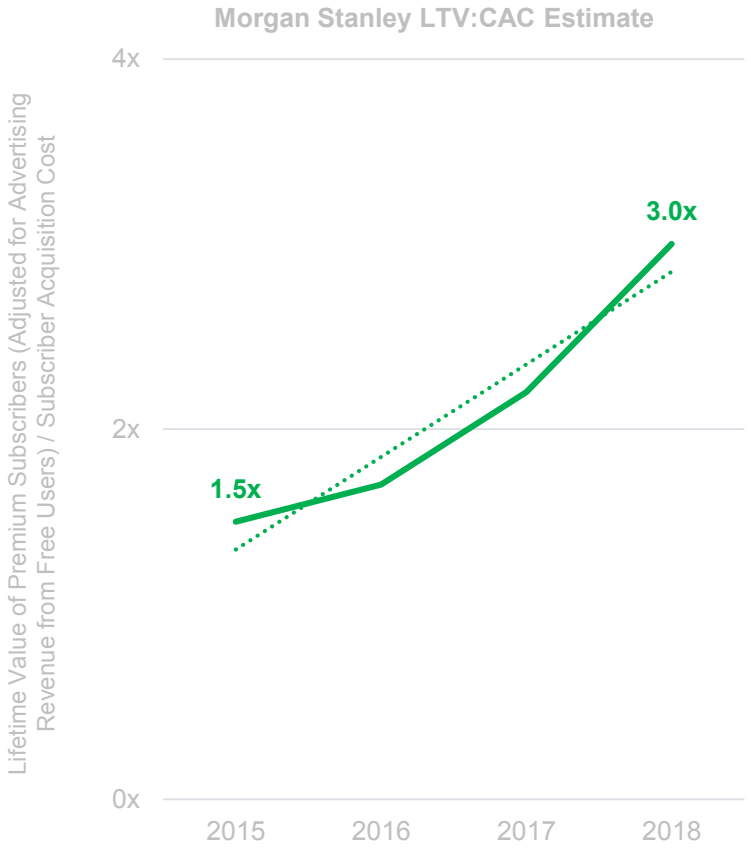


Our freemium model accounts for ~60% of our gross added premium subscribers... the ad-supported service is a subsidy program that offsets costs of new subscriber acquisition.

***Developing a better user experience produces by far the most viral effect & impact when investing in growth**. Engagement drives conversion from free consumption to paid subscription.*

Barry McCarthy – CFO, Spotify, 3/18

…Rising LTV / Subscriber Acquisition Cost Ratio



Source: Spotify releases & Morgan Stanley estimates of LTV & SAC. Barry McCarthy @ Spotify Investor Day (3/18). Note: Morgan Stanley estimates LTV by calculating the value of a subscriber (including advertising revenue they generate before they upgrade to a paid user) accounting for gross margin & churn. Subscriber acquisition cost calculated by dividing sales & marketing spend in a relevant period by the number of new subscribers in the same period.

…Happy Customers…
Zoom = Free User Conversion to Paid Subscribers

Free to Join, When Paid User Hosts…

..we really want to get customers to test our product…
It's really hard to get customers to
try Zoom without a freemium product...

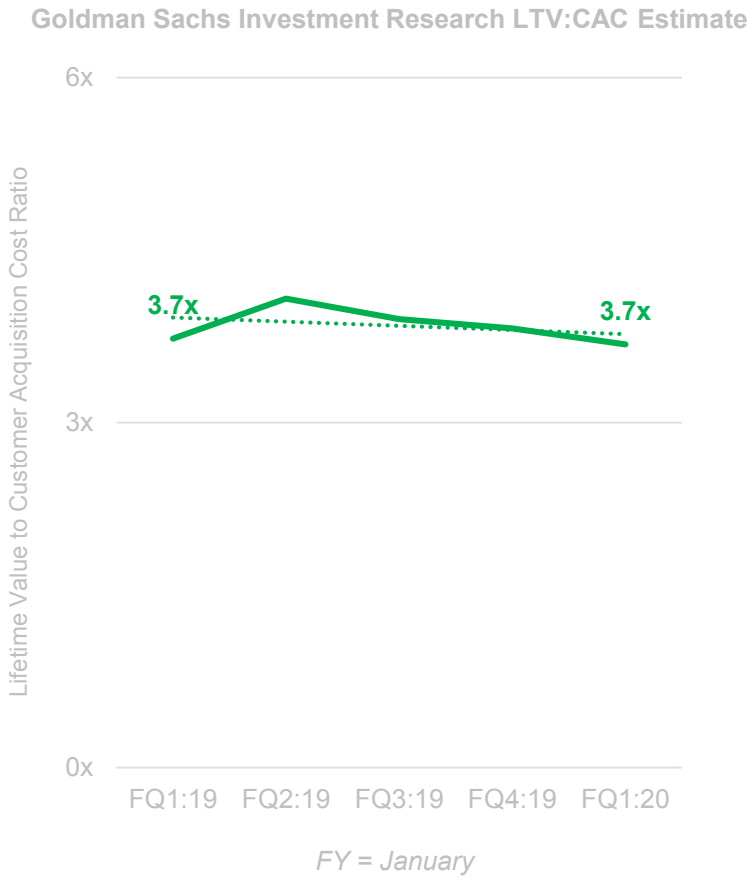
We make our freemium product work so well…
If they like our product, very soon they are going to pay for the subscription.

The most important thing is to make sure the existing customer [is] happy rather than chasing after new prospects.

Our NPS is in the 67-69 range vs. our peers in the 20's…
We do not want to spend money on [the] marketing side to generate leads.

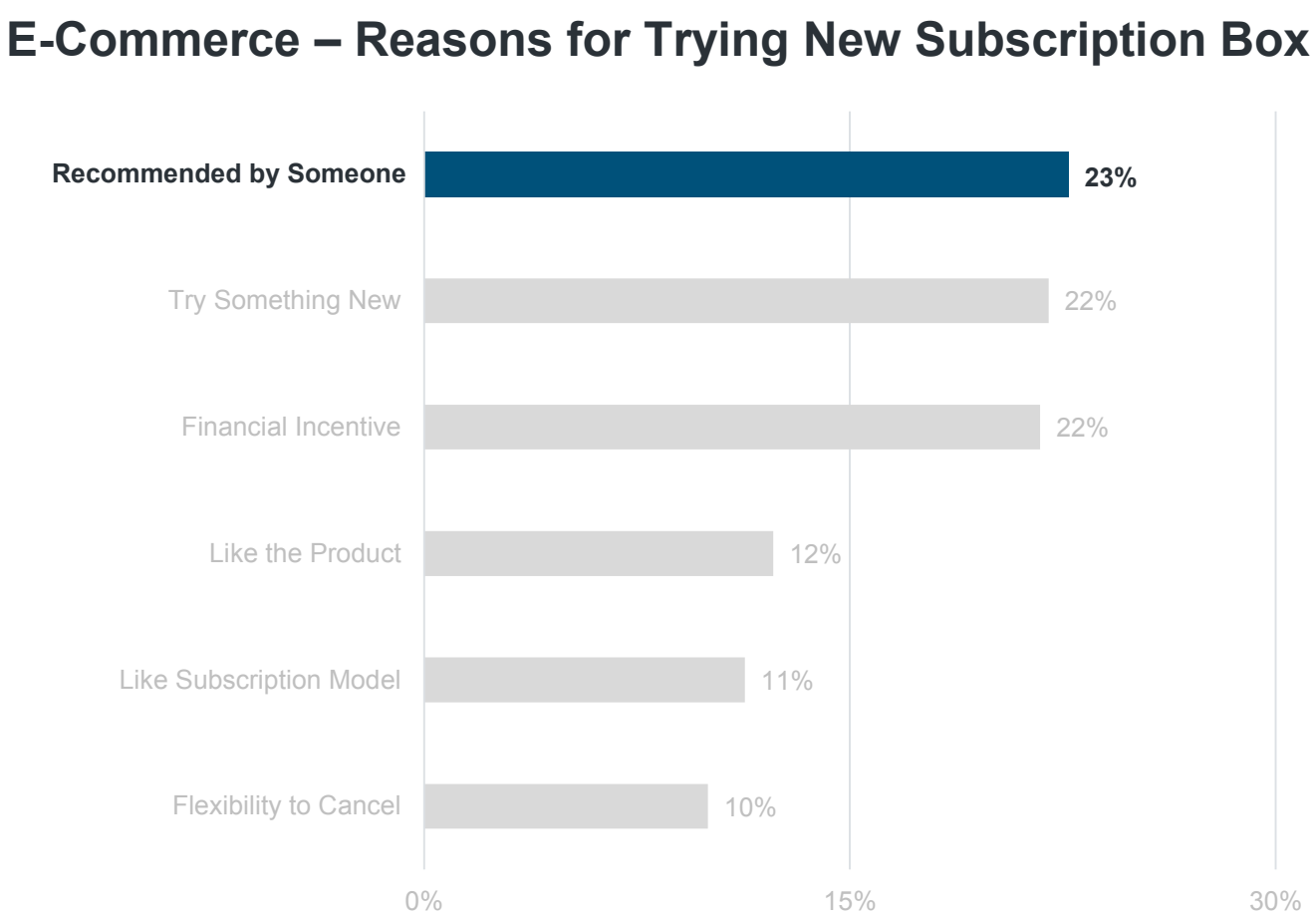
Eric Yuan – Founder / CEO, Zoom, 8/17

…High LTV / CAC Ratio*



Source: Interview with SaaStr (8/17). Zoom S-1. Goldman Sachs Investment Research estimates of LTV & CAC. Note: *Goldman Sachs Investment Research calculated LTV as the value of $1 of Annual Recurring Revenue, discounted for GAAP gross margin, Goldman Sachs Investment Research estimated Gross Churn & an 11% assumed discount rate. CAC is calculated as the amount of Sales & Marketing expense in a relevant period, divided by the gross new Annual Recurring Revenue added in the same period.

Effective + Efficient Marketing = Can Be Recommendations



Source: McKinsey Research on E-Commerce Consumers (2/18). Note: Based on online survey from November 8 to 12, 2017, with responses from more than 5,093 participants in the United States. Of those, 4,057 (80 percent) were online shoppers, defined as people who had spent at least $25 online in the past month. Of those, 607 (15 percent) had subscribed to at least one service over the past 12 months.

Happy Customers…
Stitch Fix = Recommendations Drive Growth

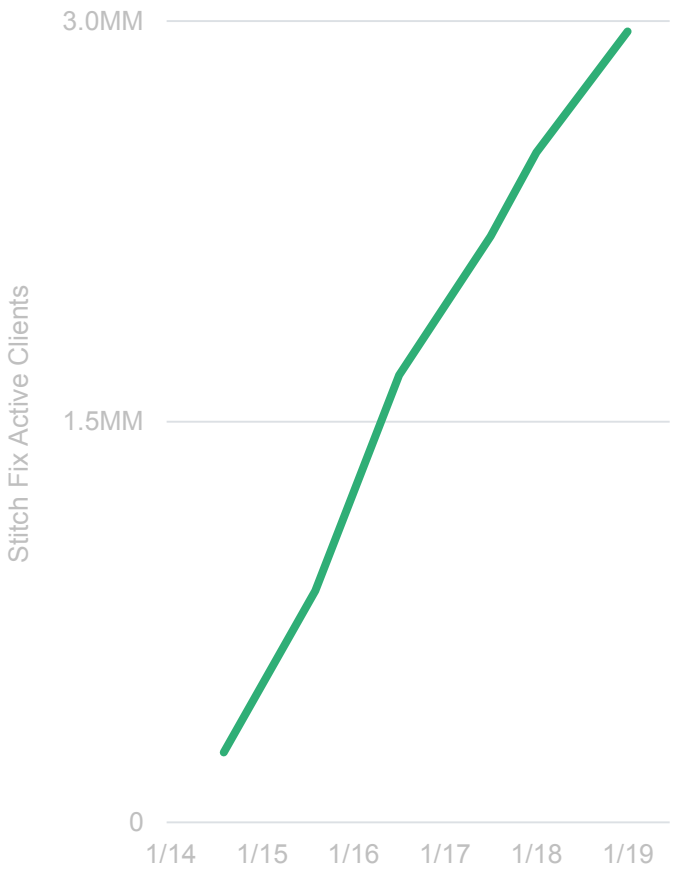
Data-Driven / Personalized Recommendations…

The better way to [sell clothing] is through personalization – get to know product, get to know people & generate really good recommendations… ***What's really special about Stitch Fix is that 100% of what we sell is based on recommendations****.*

We have over 4,000 stylists…what makes them successful is listening, empathy & delivering what the client wants & doing that without judgment…Our business is about helping people feel their best, not necessarily selling the big high-end fashion trends.

Katrina Lake – Founder / CEO, Stitch Fix, 6/18

…Stitch Fix Active Clients



Source: Katrina Lake interview @ JPMorgan Technology, Media & Communications Conference (6/18). Stitch Fix SEC Filings.
Note: Active Client refers to a client who has checked out at least 1 recommended 'Fix' in the past 12 months.

Advertising TBDs

TBD = To Be Determined

TBD = Impact on Ad Targeting…
Privacy Changes

…privacy [concerns] are a headwind for [Facebook] in 2019. It's one of the factors that's contributing to our expected deceleration of revenue growth throughout the year.

You've got regulatory – which was GDPR in 2018…
the regulatory arc will be longer-term in playing out…

Platforms like iOS are making bigger
pushes in privacy & that has the potential impact…
then changes that we're making ourselves…

we've elected to rollout GDPR-type controls globally…

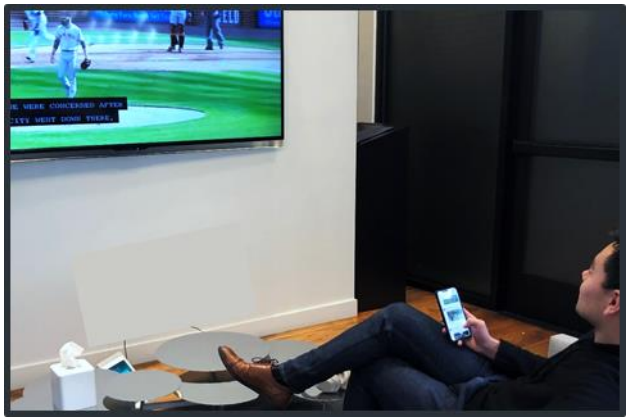
later this year, we'll be launching Clear History,
which will also affect our ability to do third-party targeting.

David Wehner – CFO, Facebook, 2/19

Source: David Wehner speaking at Morgan Stanley's Technology, Media, Telecom Conference, 2/26/2019.
TBD = To be Determined

TBD = Impact on Ad Targeting…
Digital TV-Based Ads (Aided by In-Hand Mobiles)

Multi-Platform Data Improves Relevancy…



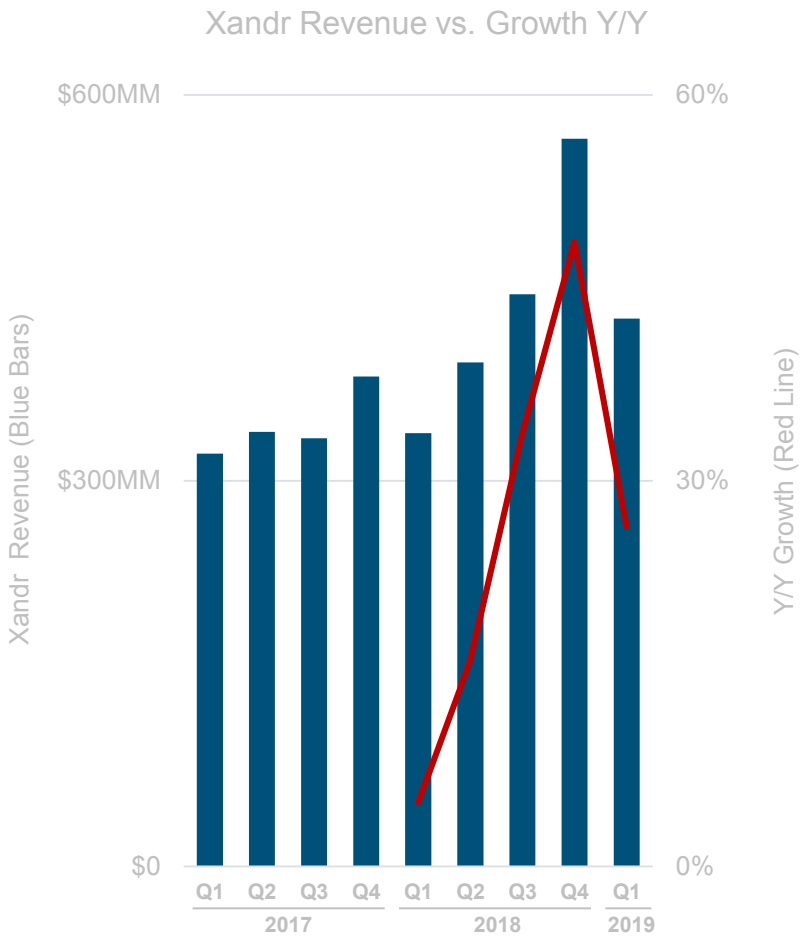
Nielsen Audience Report (USA)

88% = Use a Second Digital Device While Watching TV

71% = Look Up Content Related To Content They Are Watching

41% = Message Friends / Family About Content They Are Watching

…Creating Opportunities for Better Ad Experiences



Source: AT&T / Xandr Releases. Nielsen Q2:18 Total Audience Report (12/18). Note: Survey based on Nielsen National USA Panel data. Note: 2018 USA Mid-term elections drove above-average television advertising spend on Xandr platform.

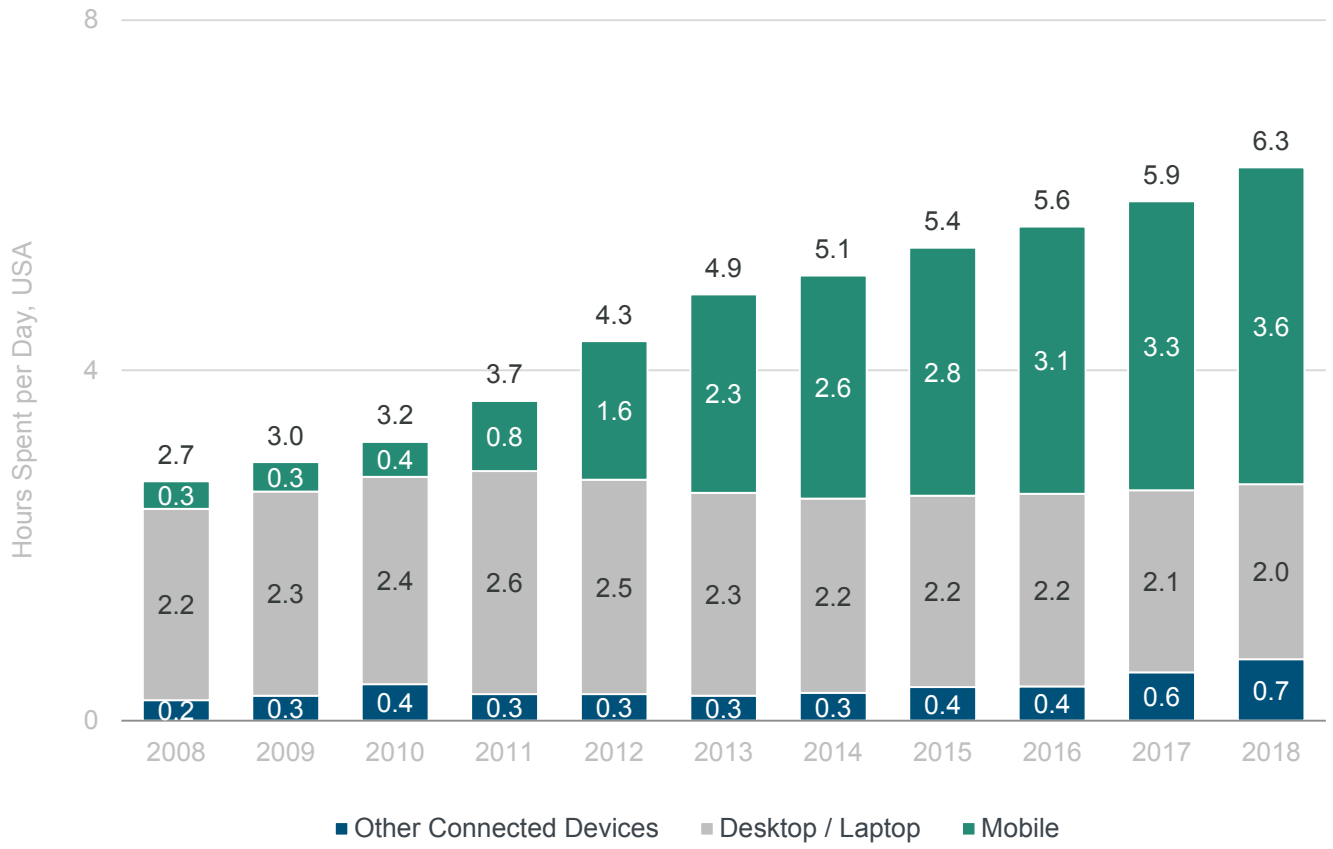
INTERNET USAGE =

SOLID GROWTH…
DRIVEN BY INVESTMENT + INNOVATION

Usage

Digital Media Usage = Accelerating +7% vs. +5% Y/Y

Daily Hours Spent with Digital Media per Adult User, USA



Source: eMarketer 9/14 (2008-2010), eMarketer 4/15 (2011-2013), eMarketer 4/17 (2014-2015), eMarketer 10/18 (2016-2018).
Note: Other connected devices include OTT & game consoles. Mobile includes smartphone & tablet. Usage includes both home & work for consumers 18+. Non deduped defined as time spent with each medium individually, regardless of multitasking.

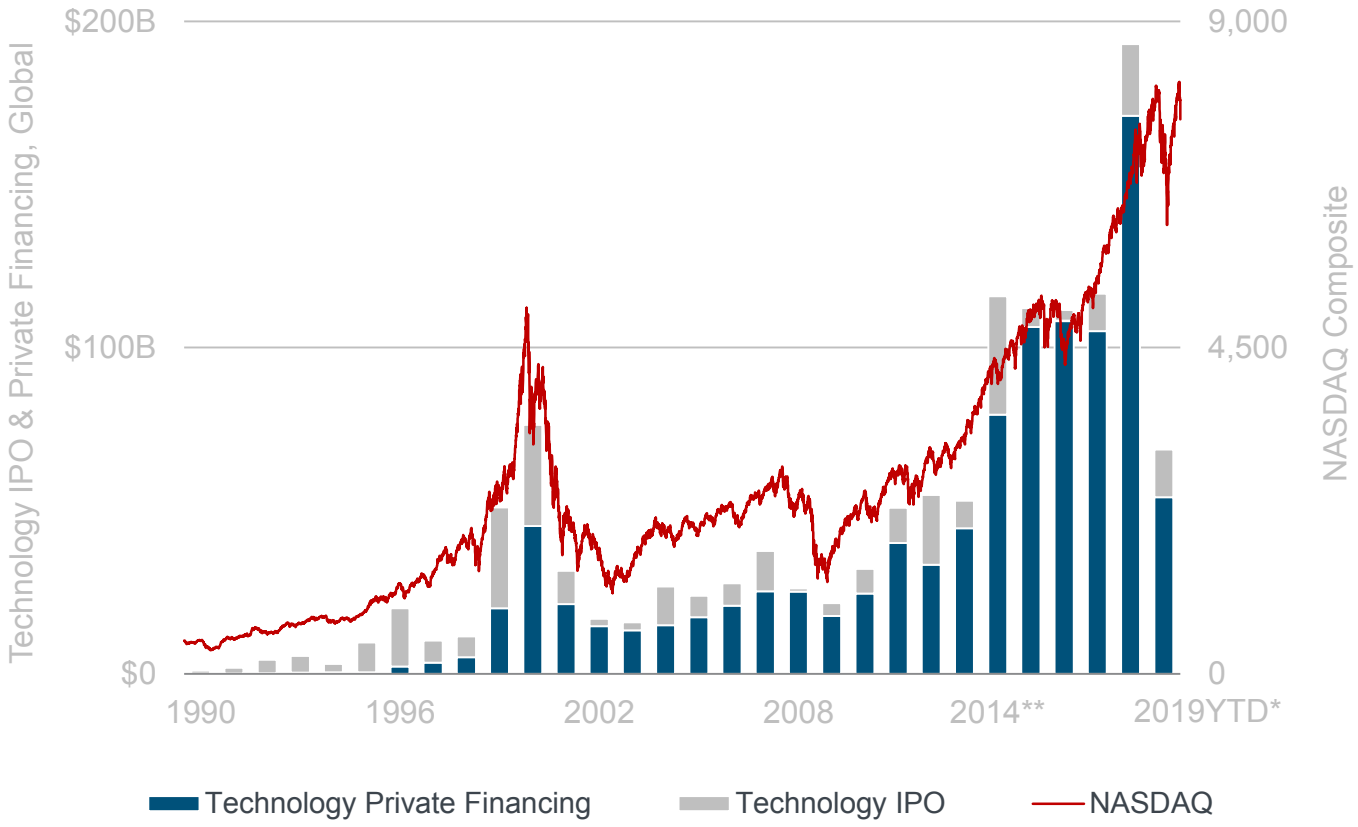
Usage Drivers

Global Internet / Technology Businesses =

Investment Remains Robust

Investment (Public + Private) Into Technology Companies = High for Two Decades

Global USA-Listed Technology IPO Issuance & Global Technology Venture Capital Financing

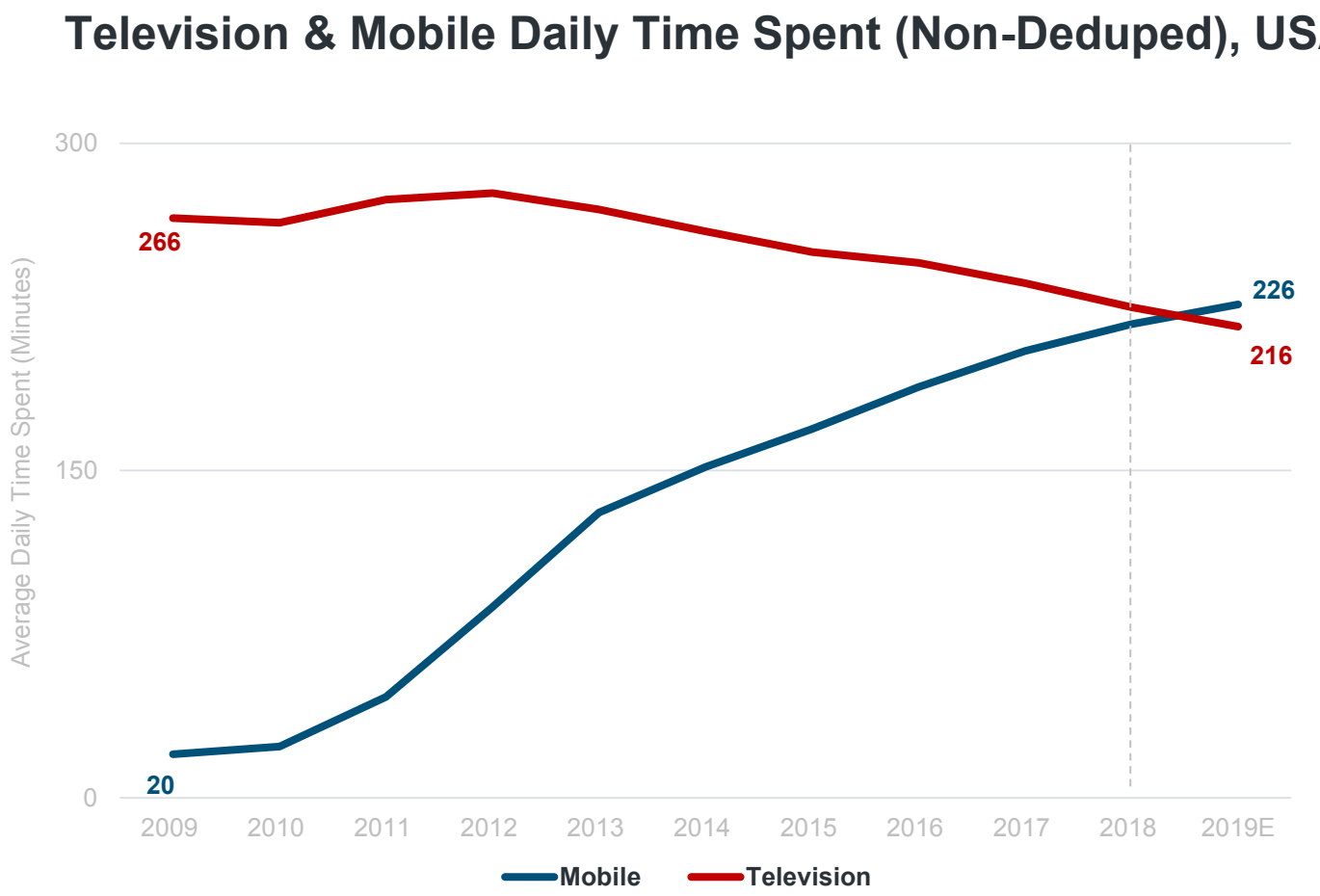


Source: Morgan Stanley Equity Capital Markets, *2019YTD figure as of 6/7/19, Thomson ONE. All global USA-listed technology IPOs over $30MM, data per Dealogic, Bloomberg, & CapitalIQ. 2012: Facebook ($16B IPO) = 75% of 2012 IPO $ value. 2014: Alibaba ($25B IPO) = 69% of 2014 IPO $ value. 2017: Snap ($4B IPO) = 34% of 2017 $ value. 2019: Uber ($8B IPO) = 56% of 2019YTD $ value.

Internet / Technology Businesses =

USA-Based
Innovation Remains Robust…

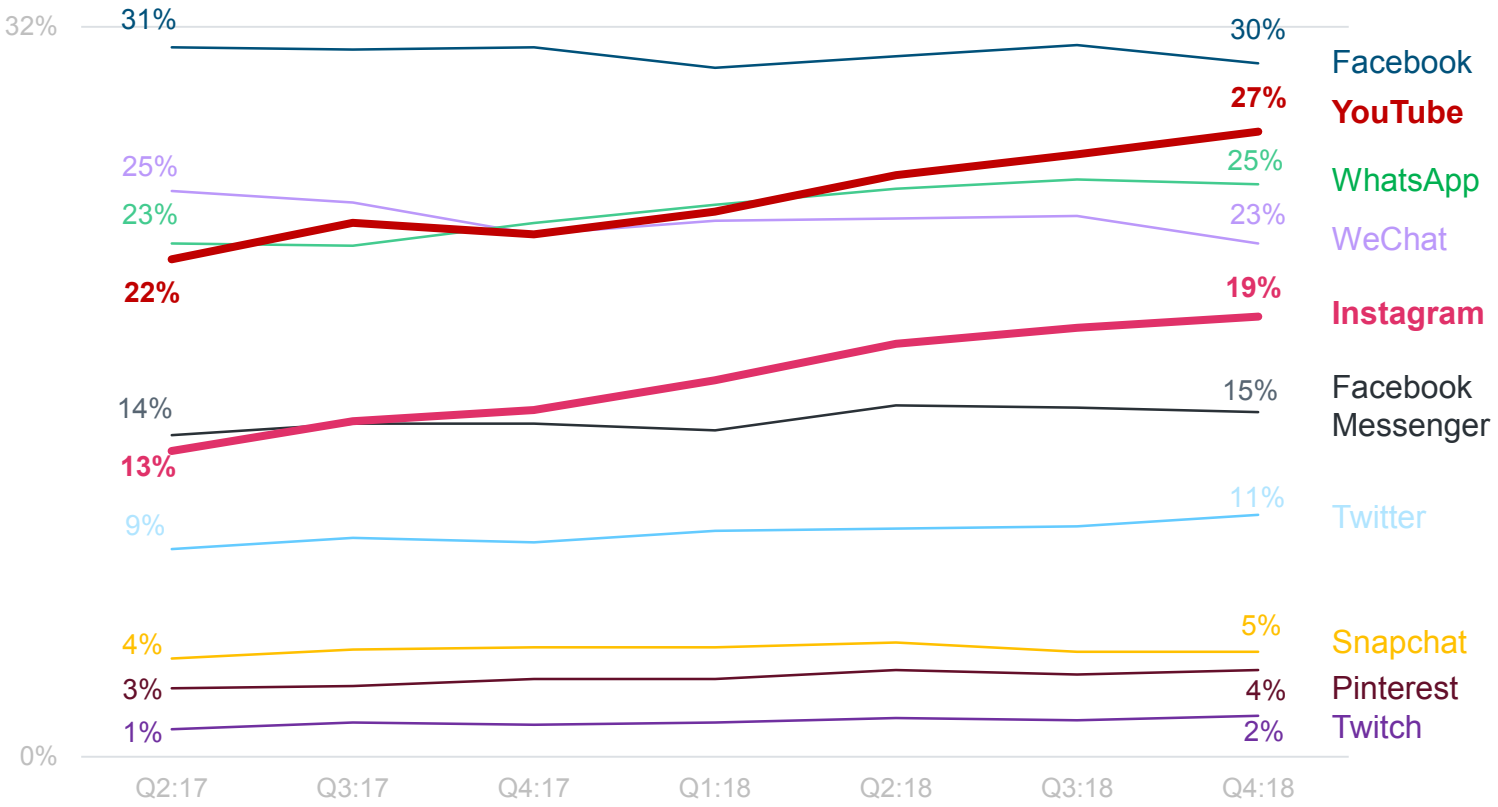
Device Time = Mobile > TV



Source: eMarketer (10/18). Usage includes both home & work for consumers 18+.
Non-deduped defined as time spent with each medium individually, regardless of multitasking. Updated from original 4/18 release in 10/18 by eMarketer

Online Platform Time = YouTube + Instagram Gaining Most

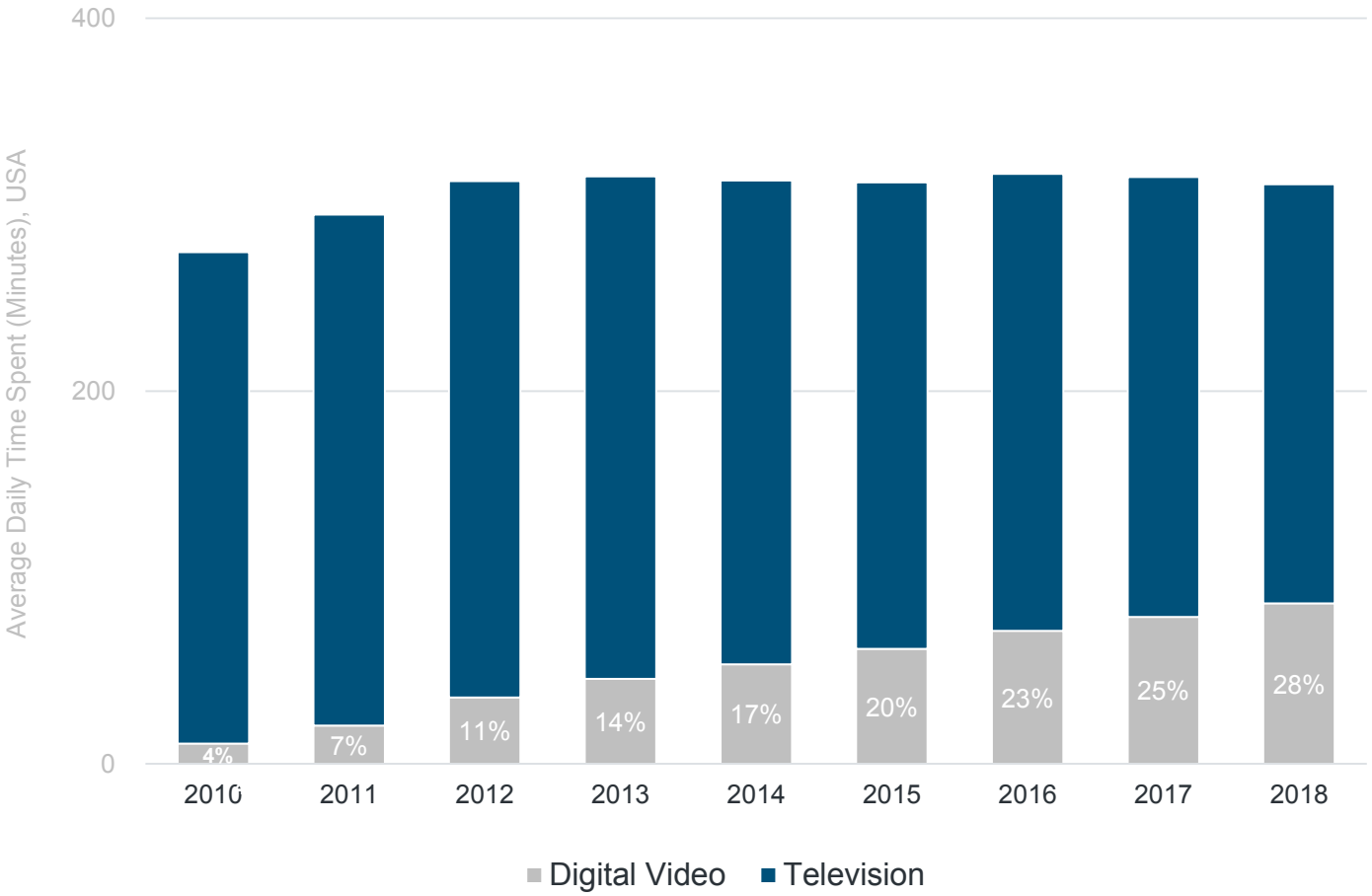
% Internet Users Using Select Platforms > 1x per Day, Global*



Source: Global Web Index Survey of 50K+ Global Internet users aged 16-64 (3/2017-12/2018). Note: WeChat is displayed as "Weixin" in China. *Countries surveyed include major Internet populations – Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Colombia, Denmark, Egypt, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UK, USA, United Arab Emirates, Vietnam. Toutiao estimate = ~4% of Internet users using Douyin in 2018….Not included owing to lack of trend data & regulatory action in period.

Video Time =
Digital +2x in Five Years @ 28% of Total (vs. TV)

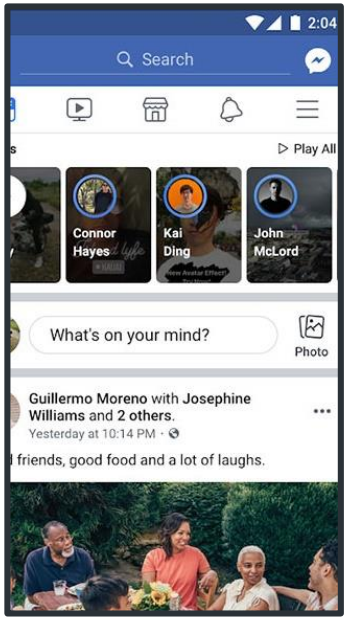
Video Watching Daily Minutes – Digital vs. TV, USA



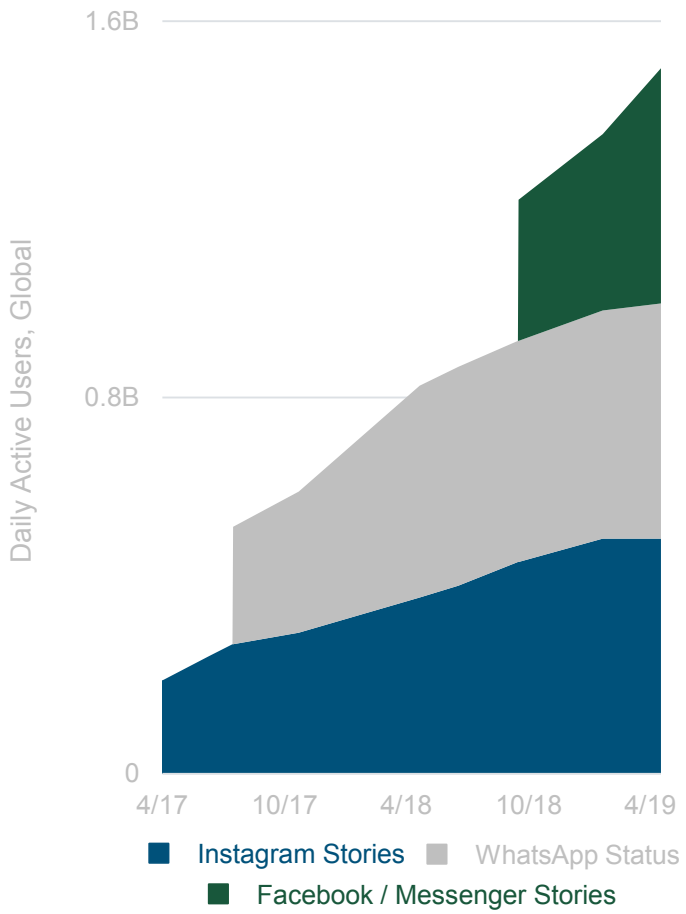
Source: eMarketer (10/18). Usage includes both home & work for consumers 18+. Non de-duplicated defined as time spent with each medium individually, regardless of multitasking.

Video Time (Short-Form – Facebook Platform) = 1.5B DAUs + ~2x in One Year

Facebook Stories



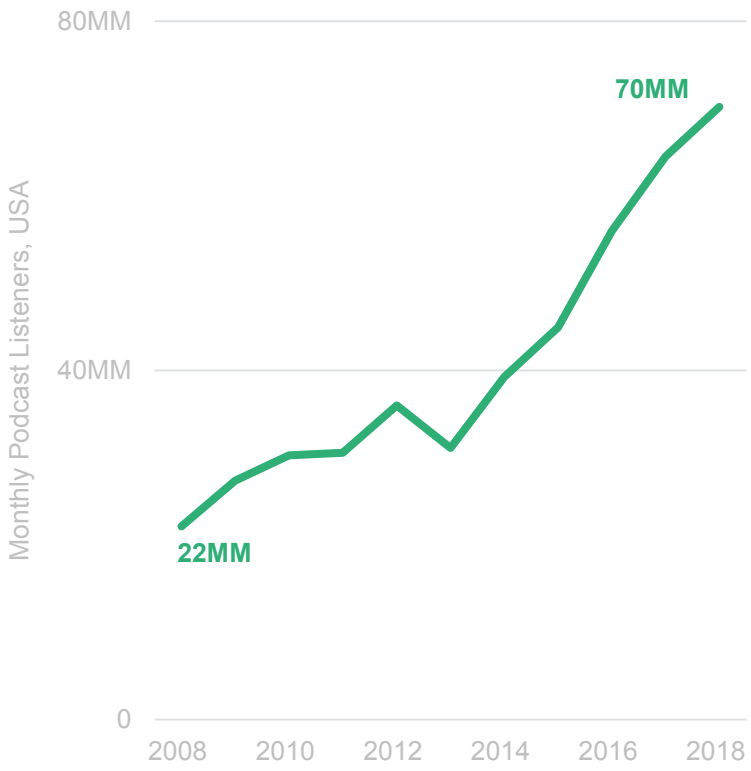
Daily Active Users, Global*



Source: Facebook (8/18,12/18). Daily Active Users (DAU) = Users that interact with a Story daily.
Vertical segments of chart = owing to first reported DAU metric for each product. *Not de-duped across platforms.

Voice =
70MM Podcast Listener MAUs + ~2x in Four Years…

Podcast Listener MAUs, USA



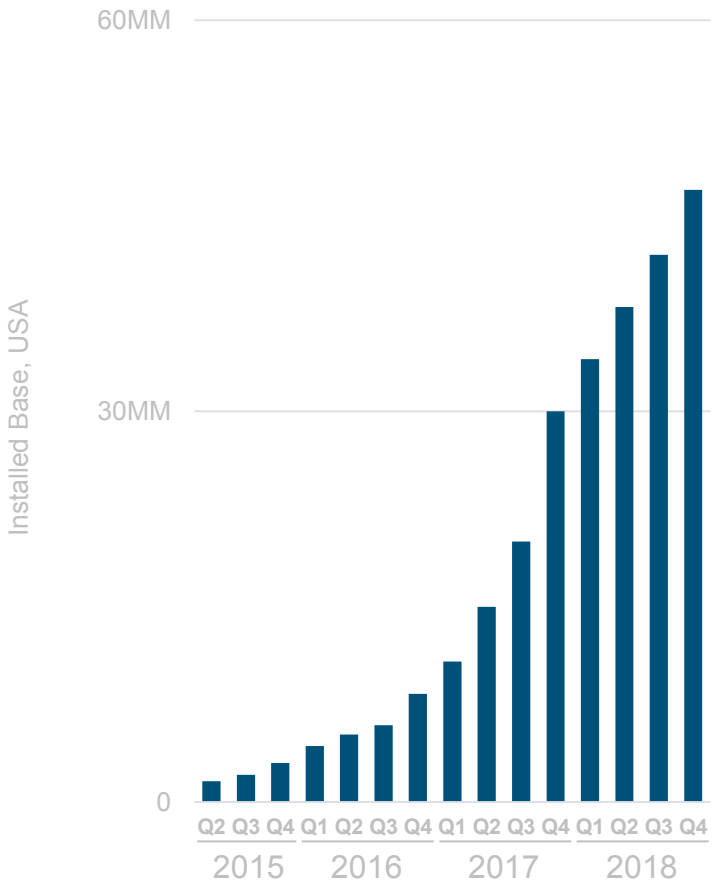
Podcasts – Most Downloaded Apple Podcasts, 2018, USA

1) **The Daily** *The New York Times*
2) **The Joe Rogan Experience** Joe Rogan
3) **Stuff You Should Know** iHeartMedia
4) **Fresh Air** National Public Radio
5) **The Dave Ramsey Show** Dave Ramsey
6) **My Favorite Murder** Exactly Right
7) **TED Talks Daily** TED
8) **Up First** National Public Radio
9) **The Ben Shapiro Show** The Daily Wire
10) **Pod Save America** Crooked Media

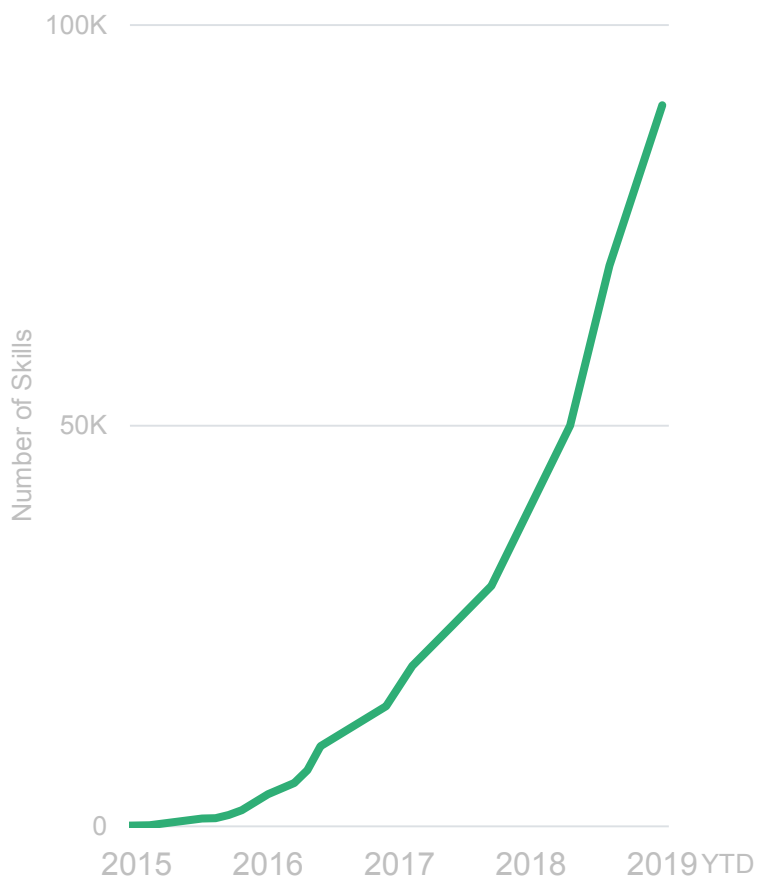
Source: The Infinite Dial 2019 by Edison Research & Triton (2/19). National survey of 1,500 people ages 12+. The estimated share of USA respondents is the n multiplied by USA population over the age 13, per USA Census Bureau. Apple.

…Voice =
47MM Amazon Echo Base + ~2x in One Year

Amazon Echo Installed Base

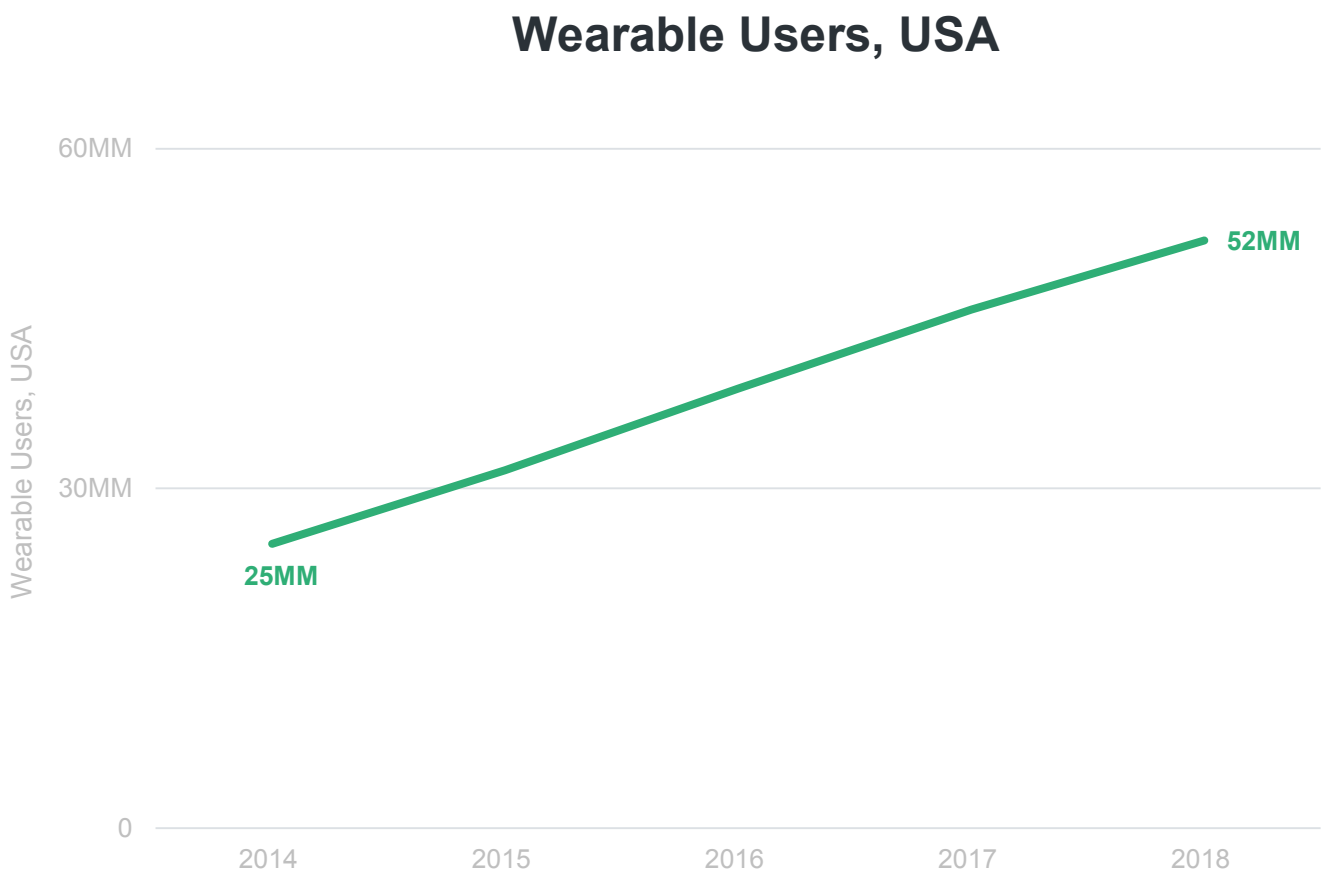


Amazon Echo Skills



Source: Consumer Intelligence Research Partners LLC (Echo install base, 2/18), Various media outlets including Geekwire, TechCrunch, & Wired (Echo skills, 4/19)

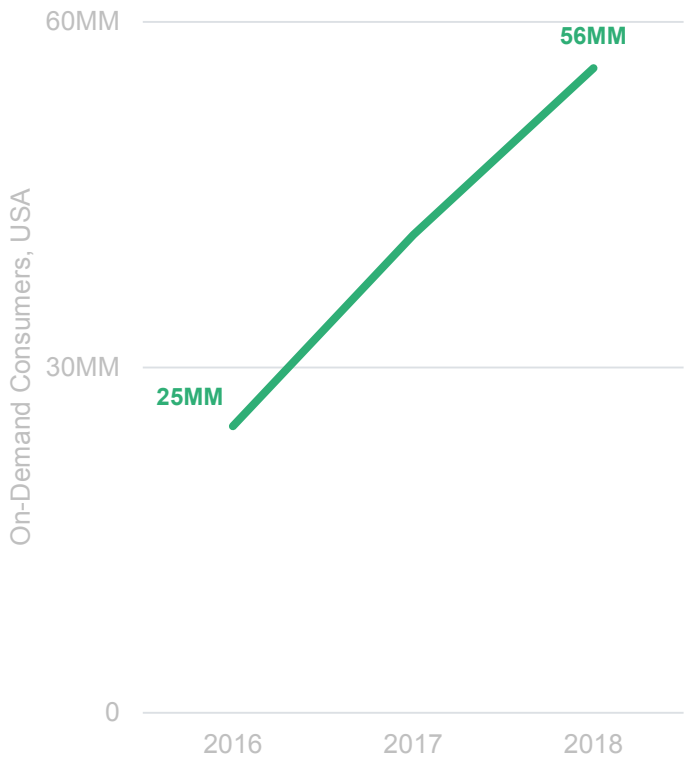
Wearables =
52MM Users + ~2x in Four Years



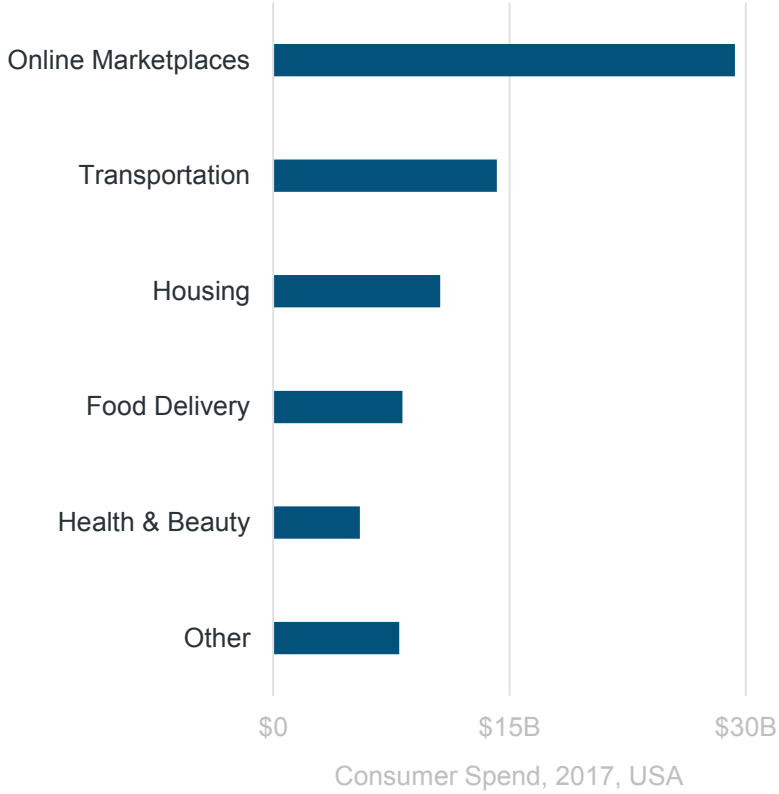
Source: eMarketer (11/18). Users = Monthly Active adults 18+ years old who wear accessories or clothing embedded with electronics, software, or sensors that have the ability to connect to the Internet (via built-in connectivity or tethering), which in turn collects & exchanges data with a manufacturer, operator, or other connected devices.

On-Demand =
56MM Consumers + ~2x in Two Years

On-Demand Consumers, USA



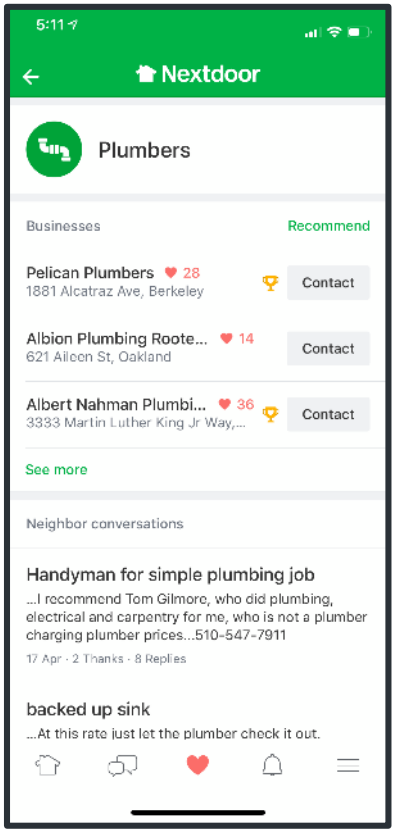
On-Demand Products / Services – Consumer Spend, 2017, USA



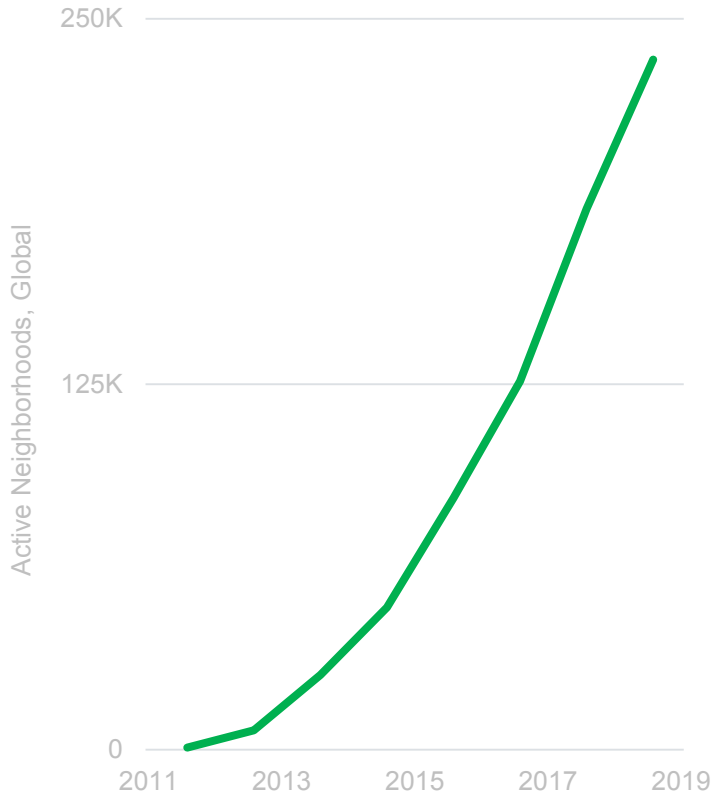
Source: National Technology Readiness Survey (4/18). Note: authored by Rockbridge Associates, Inc. & A. Parasuraman, & is co-sponsored by the Center for Excellence in Service, Robert H. Smith School of Business, University of Maryland. The study is conducted online among a representative sample of consumers in a national panel, & represents the views of U.S. adults ages 18 & older. The sample size was 1,032 in 2016 & 1,004 in 2017. The margin of error is +/- 3 percentage points. 2018 figures are estimates.

Local =
236K Nextdoor Active Neighborhoods + ~2x in Two Years

Local Business Recommendations = 29MM, +71% Y/Y



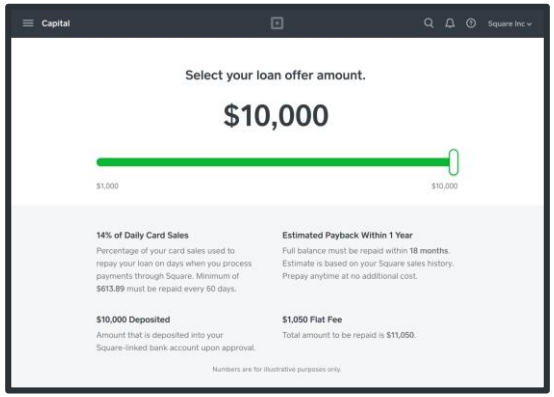
Active Neighborhoods, Global



Source: Nextdoor (5/19). 29MM = Cumulative local business recommendations on the platform, up 71% Y/Y vs. 17MM in 5/18.

Underserved Population = Square Seller Base Growing… 28% Points Faster in Lowest vs. Highest Income MSAs, USA*

Square Capital Data



$4.5B = Loans (2014-Q1:19)

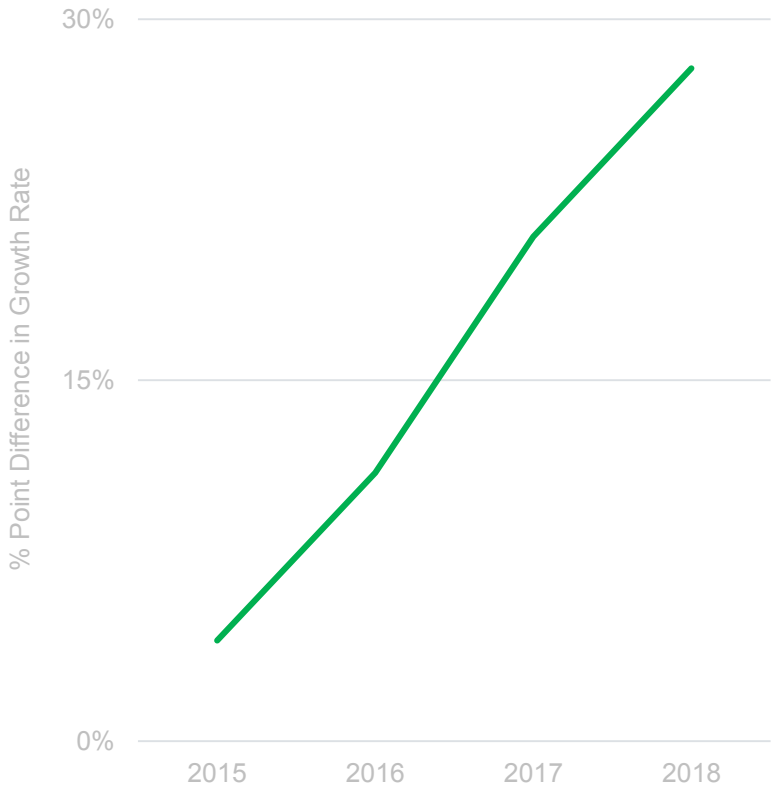
58% = Women-Owned Businesses

35% = Minority-Owned Businesses

$6K = Average Loan Size
(~18x Smaller Than Average Small Business Administration Loans)*

Growth in Number of Active Square Sellers

*Difference Between 25 Lowest Income & 25 Highest Income USA MSAs**



Source: Square (5/19). * Per Federal Reserve's "Survey of Terms of Business Lending", Aug 2017 Note: MSA = Metropolitan Statistical Areas. Active sellers are defined as those who have accepted five or more payments within the last 12 months. Square Capital Loans only available to Active Square Sellers. Data sourced from the Bureau of Economic Analysis's 2017 report on "Annual Personal Income by Metropolitan Statistical Areas". From 2014-2018, the adoption growth rate of the bottom 25 MSAs was on average 1.22x that of the top, demonstrating the utility & relevance of payment technology in less traditional areas.

…Internet / Technology Businesses =

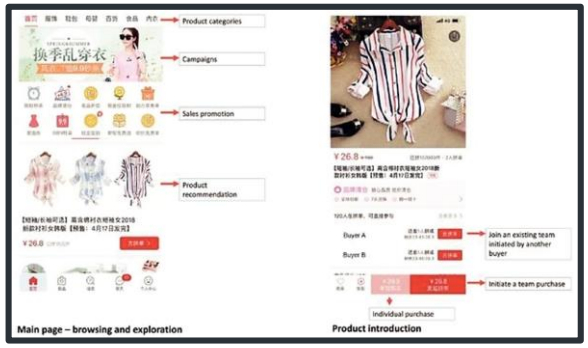
Non-USA-Based
Innovation Remains Robust…

Data-Driven / Direct
Fulfillment
Growing Rapidly…

China (Pinduoduo) = Connecting Consumer Preferences & Manufacturers… 443MM Buyers + ~2x in Five Quarters

Pinduoduo

Group Discovery / Buying

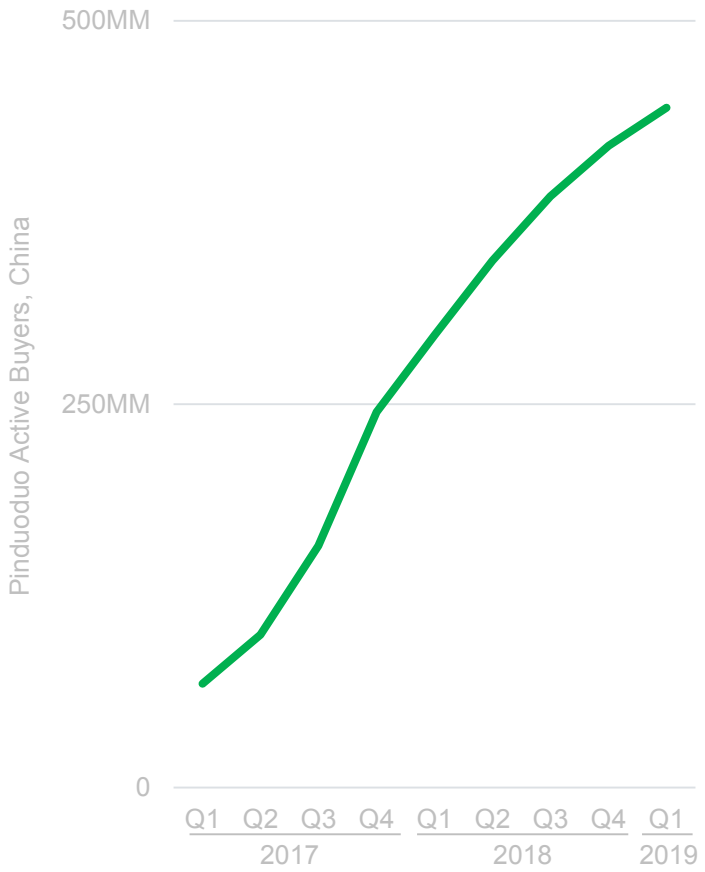


*We call it **consumer-to-manufacturer, where we understand the users' needs first & enable upstream providers, be it farmers, manufacturers, etc. to produce appropriate products for our users**. This is different from how the current system works, where upstream producers design, manufacture & sell without necessarily being in tune with the changing needs of their targeted users.*

As we add more users to the network & also gain more data points through their increasing interaction with our platform, we can further refine our engine to deliver an even better user experience that keeps up with our users' evolving preferences.

Pinduoduo – Q4:18 Earnings Call, 3/19

Active Buyers, China



Source: Pinduoduo SEC filings (2018), Q4:18 Earnings Call (3/19) & Morgan Stanley.
Note: An active buyer is a buyer who has completed at least one transaction in the past 12 months.

China (Meituan Dianping) = Connecting Consumers & Local Businesses… ~6MM Merchants + ~2x in Two Years

Meituan Dianping

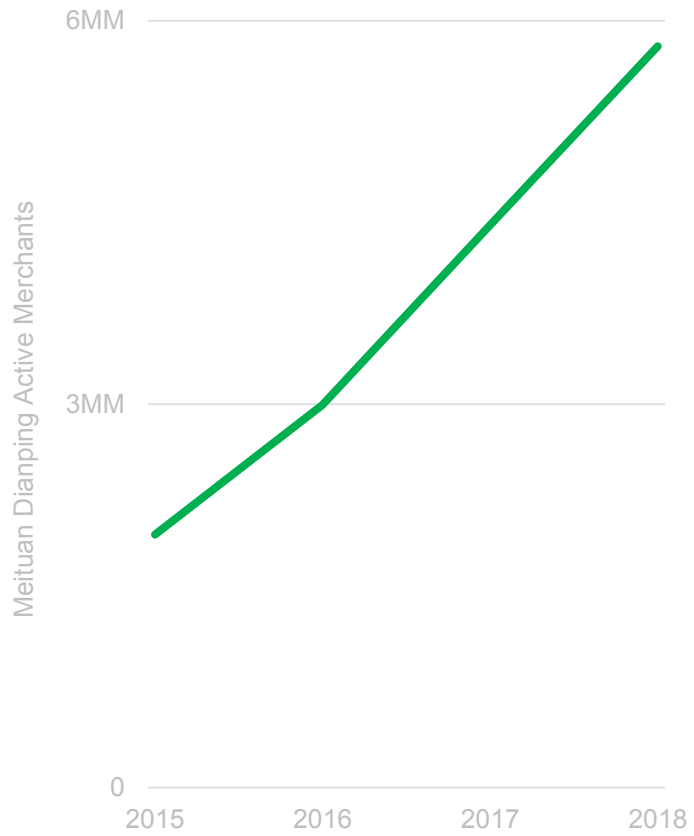
Fulfillment

Traditionally, local merchants in China – mostly micro & small businesses – have very few marketing channels available to them. We have become the go-to platform for local search & consumer service discovery.

Based on our data analytics, we leveraged user search queries to connect them with high-quality local merchants who match their preference. *We are able to help merchants reach a vast quantity of potential consumers with a low upfront cost & high conversion rates.*

Xing Wang – Co-Founder, Chairman & CEO, Meituan Dianping, 3/19

Active Merchants, China

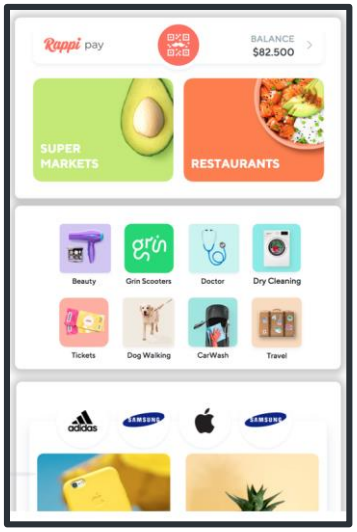


Source: Meituan Dianping Releases (2018-2019) Note: An active merchant is a merchant who has completed at least one transaction, purchased online marketing services, processed a payment through Meituan Dianping's service, or generated an order through Meituan Dianping's ERP system.

Latin America (Rappi) = Digitizing Delivery…
8MM Orders + ~2x in Four Months

Rappi

Digital Delivery Platform

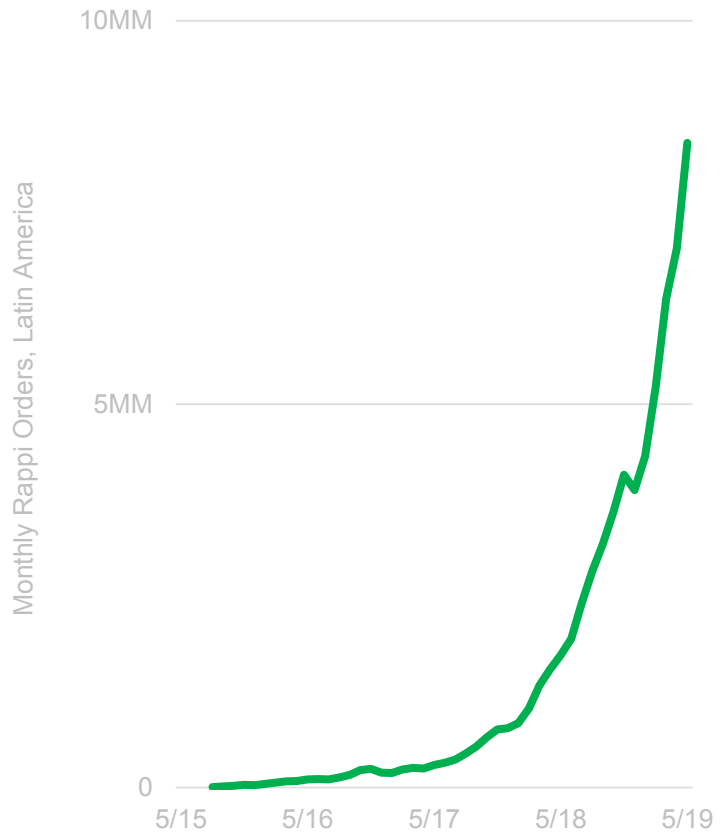


Latin America has a great delivery culture. Cities are chaotic, delivery was super manual & not all stores offered it — there was plenty of inefficiency & high costs.

We thought: what if we digitized this ecosystem & started to deliver anything in under 30 minutes for less than a dollar?

Simon Borrero, Sebastian Meija, Felipe Villanmarin, Andres Bilbao, Guillermo Plaza – Co-Founders, 6/19

Monthly Orders, Latin America

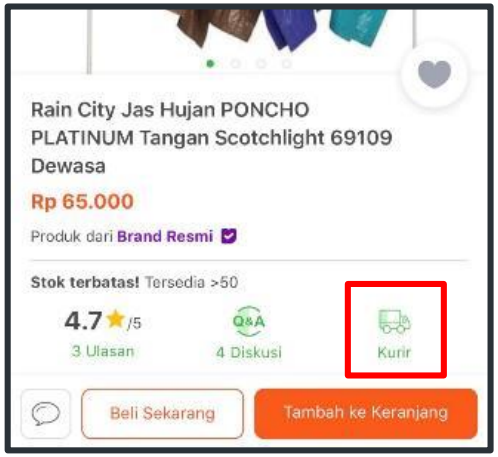


Source: Rappi (6/19).

Indonesia (Tokopedia) = Improving Product Delivery Across 17K Islands… ~6MM Merchants + ~2x in One Year

Tokopedia

Same-Day Delivery

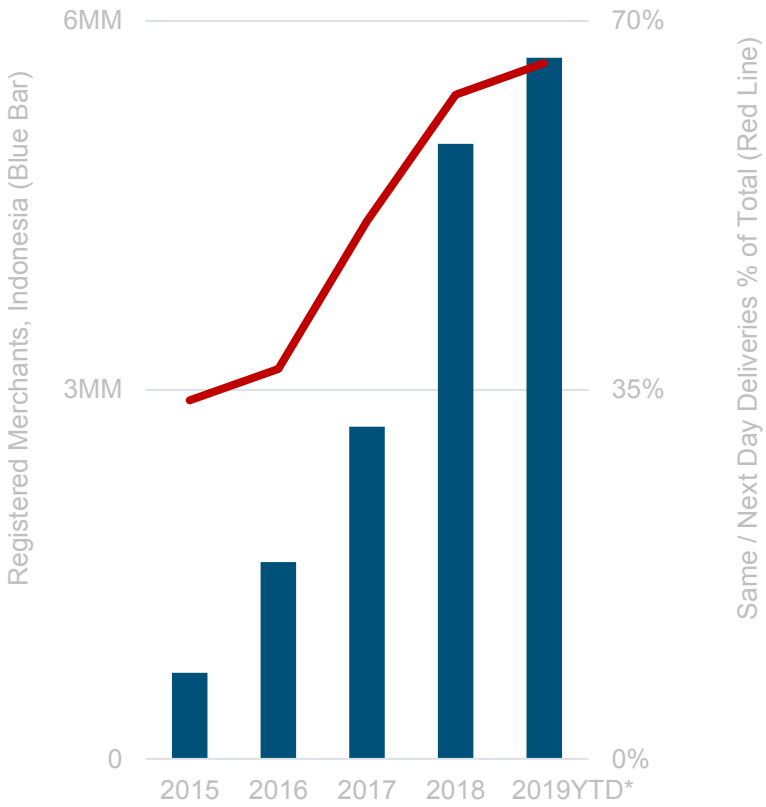


When we look at sales data...
people from [one island] sometimes don't want to buy products from sellers on [other islands].

We thought – what if we can [give] every business that joins us…a warehouse everywhere in Indonesia – ***every product bought on Tokopedia [could] be delivered same-day.***

William Tanuwijaya – Co-Founder & CEO, Tokopedia, 2/19

Merchants vs. Same / Next Day Deliveries, Indonesia

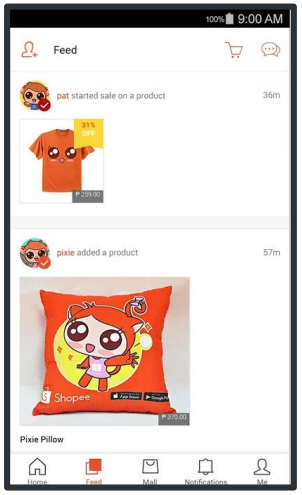


Source: Nikkei Asian Review (2/19). Tokopedia (4/19). *2019YTD = As of 4/19. Note: A registered merchant defined as an enterprise with listing on Tokopedia. 2

Southeast Asia (Shopee) = Mobile-First Social Commerce… $10B in Gross Merchandise Value + ~2x in One Year

Sea Limited / Shopee

Mobile / Social Shopping

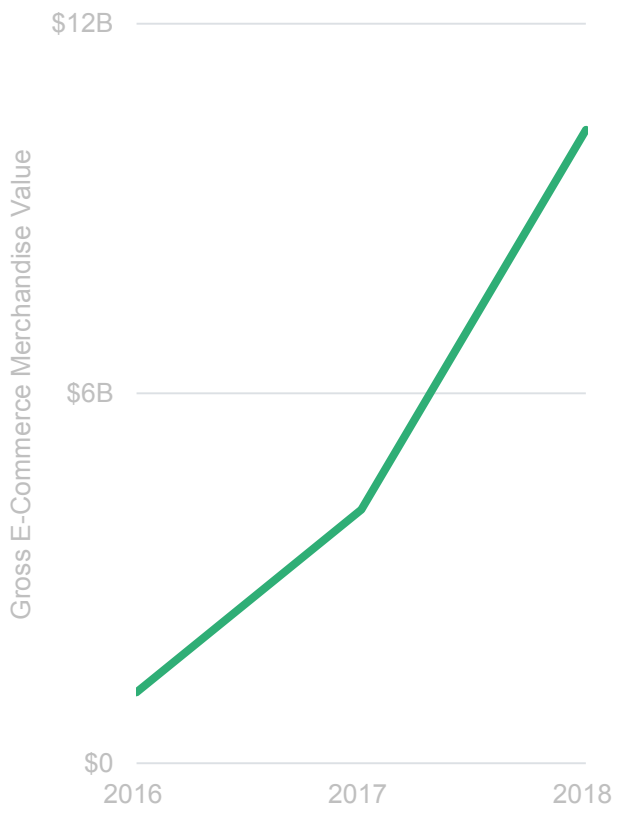


Shopee's ability to grow rapidly over a short period of time is a testament to its focus on building a mobile-centric, socially engaging marketplace with emphasis on high margin products from a highly diverse seller base.

…Shopee has combined its marketplace offering with integrated payments, logistics infrastructure & a comprehensive set of services.

Forrest Li – CEO, SEA Limited, 2/19

Gross Merchandise Value, Southeast Asia



Source: Sea Limited Q1:19 Earnings (2/19). Goldman Sachs Investment Research . Sea Limited operates commerce in Malaysia, Singapore, The Philippines, Thailand, Taiwan, Indonesia & Vietnam.

India (Reliance Jio) = Expanding Offline Access to E-Commerce… 307MM Subscribers + ~2x in One Year…

Reliance Jio

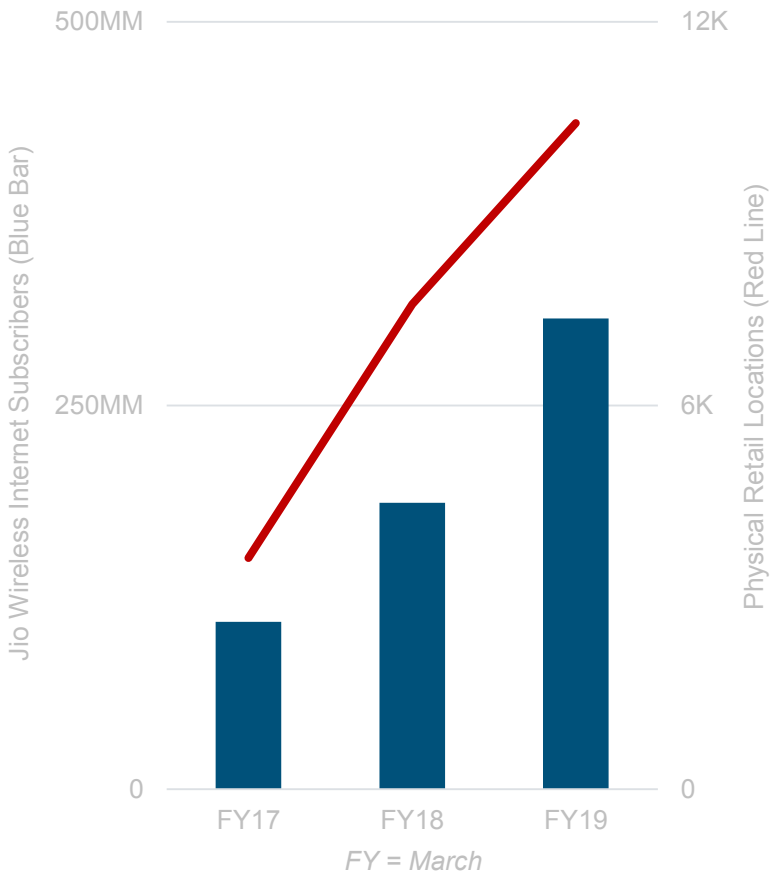
Connectivity + Retail

We are creating a hybrid, online-to-offline commerce platform by ***integrating Reliance Retail's physical marketplace with Jio's digital infrastructure & services.***

This platform will bring together 350MM customer footfalls at Reliance Retail stores, 307MM Jio connectivity customers & 30MM small merchants all over India who provide the last-mile physical market connectivity.

Mukesh Ambani – Chairman, Reliance, 7/18

Wireless Subscribers + Offline Stores, India

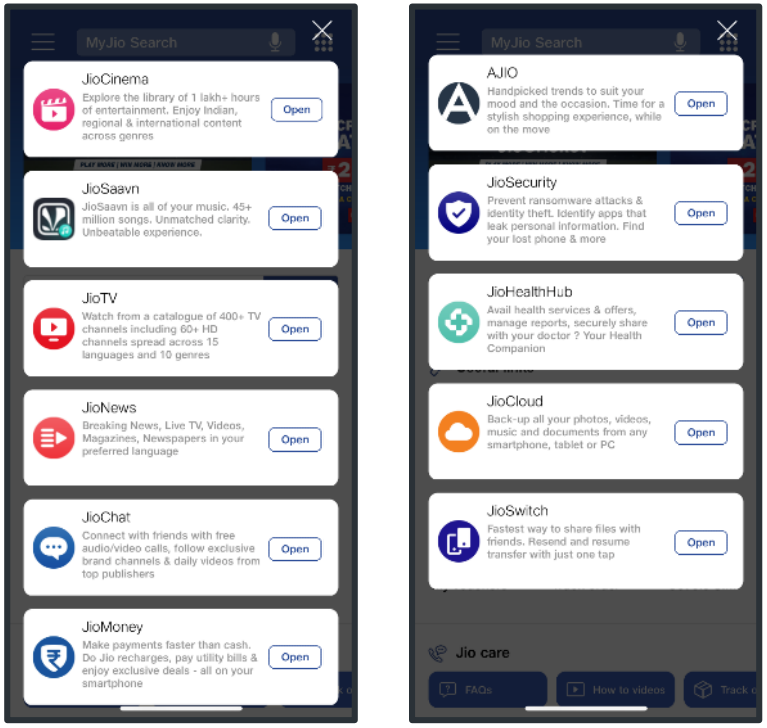


Source: Reliance Annual Report & Shareholder Meeting (7/18)

…India (Reliance Jio) = Broad Base of Jio Services for Consumers… Data Usage + ~2x in One Year

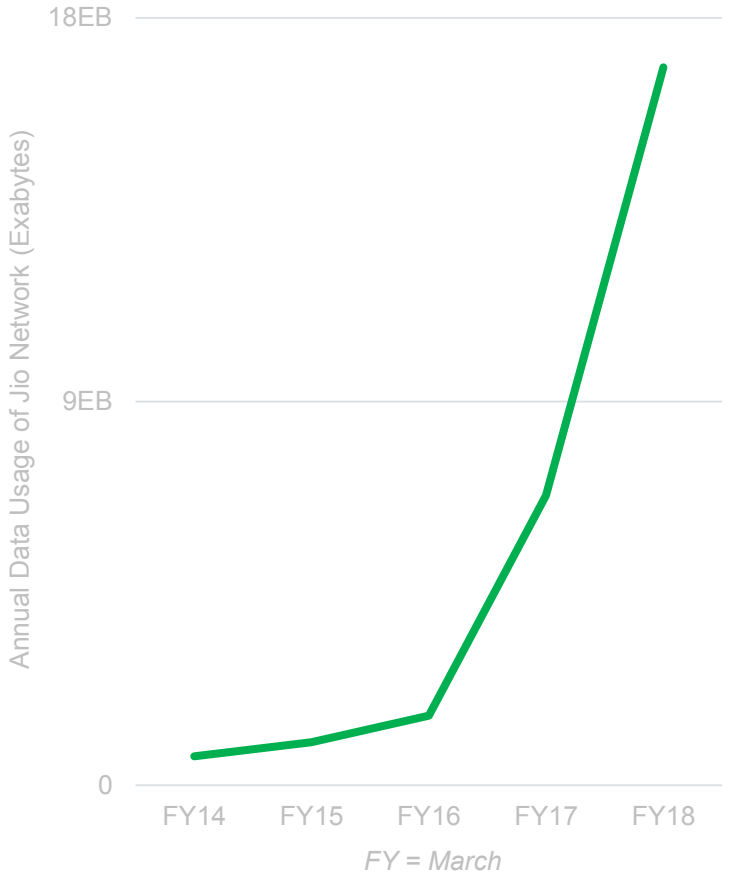
Reliance Jio

Full Suite Apps



Music…Movies…Television…News… Chat…Finance…Fashion...Security… Storage…Data Transfer

Data Usage, India



Source: Jio Releases & Morgan Stanley. Note: 1 petabyte = 1MM gigabytes. 1 Exabyte = 1,000 Petabytes.

…Internet / Technology Businesses =

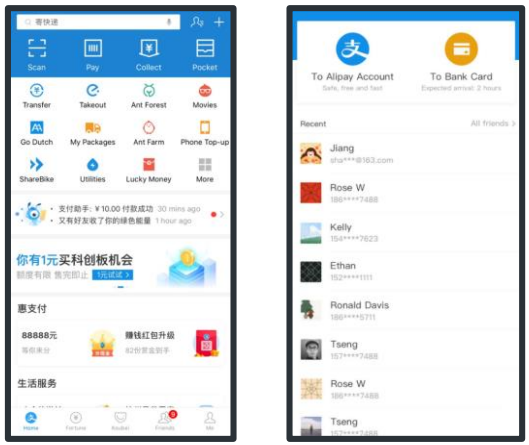
Non-USA-Based
Innovation Remains Robust…

Data-Driven / Direct
Financial Services
Growing Rapidly

China (Alipay) = Broad Online / Offline Financial Services... 1B Users + ~2x in Two Years

Alipay

Payments / Financial Services

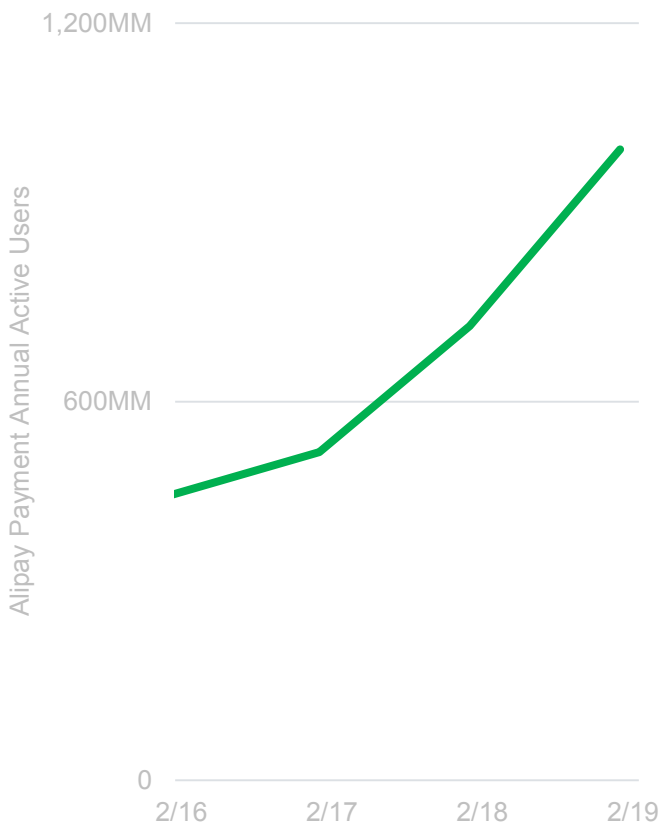


Alibaba has the most comprehensive ecosystem of commerce platforms, logistics & payment to support the digital transformation of the retail sector.

Ant Financial / Alipay is not only China's #1 mobile payments platform, but it is also a provider of financial services such as loans, wealth management & insurance products to hundreds of millions of consumers & millions of small businesses on the Alibaba platform.

Joe Tsai – Executive Vice Chairman, Alibaba, 2/18

Annual Active Users, Global

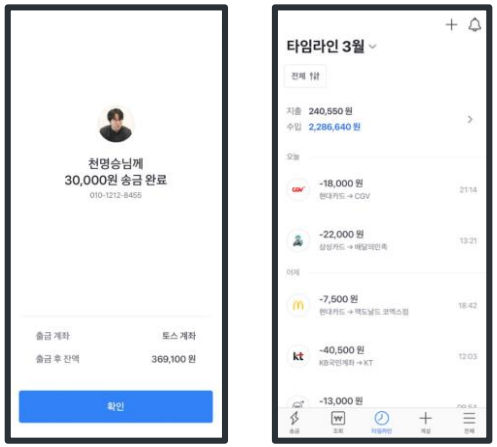


Source: Alibaba Releases. Alibaba Earnings Call transcript (2/18)

South Korea (Toss) = Digital Payments / Financial Services… ~12MM Users + ~2x in One Year

Toss

Payments / Financial Services

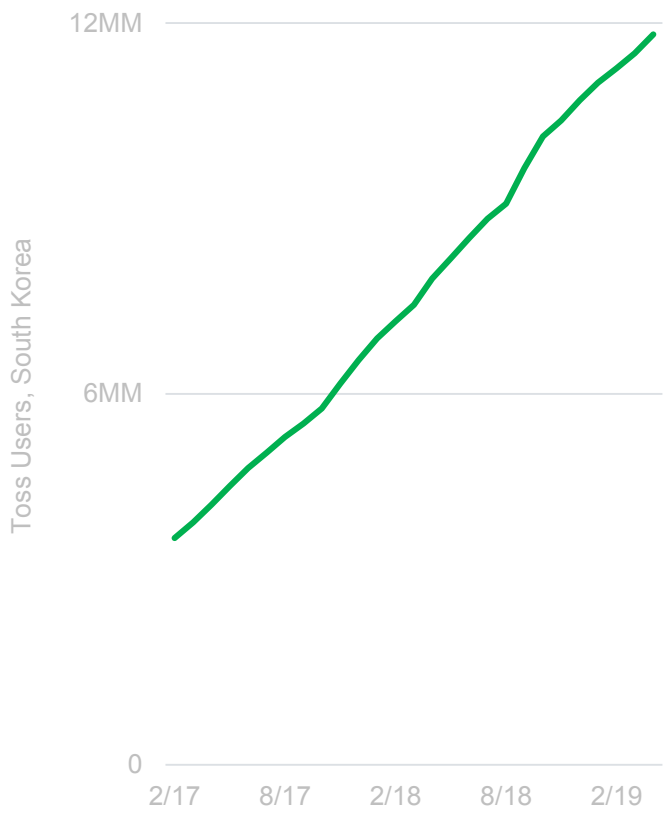


A persistent problem in Korea has been the lack of mid-level interest-rate loans.
The reason for this is because there hasn't been adequate credit evaluation on filers with mid-level credit scores or small business owners.

Data from the Toss mobile payment platform & its partners will help make better credit judgments on those filers when they are seeking loans.

SG Lee – Co-Founder & CEO, Toss, 3/19

Users, South Korea

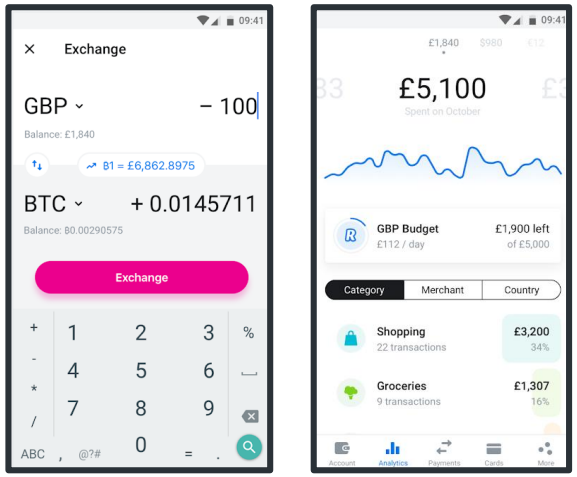


Source: Toss. Korea JoongAng Daily Interview with SG Lee (3/19)

Europe (Revolut) = Personalized Banking…
4MM Users + ~2x in Ten Months

Revolut

Money Transfer / Banking



Personalization with the help of data / technology will allow people to have all their [financial] needs covered *& what's more – they will be able to choose all those setting themselves.*

We're also heavily investing in data science & engineering to automate, accelerate & increase the quality of these decisions.

Nikolay Storonsky – Co-Founder & CEO, Revolut, 11/18

Users, Global

Source: Revolut Releases (2015-2019). Mobile Industry Eye Interview (7/18)

Brazil (Nubank) = Banking / Consumer Credit…
~9MM Unique Customers + ~2x in One Year

Nubank

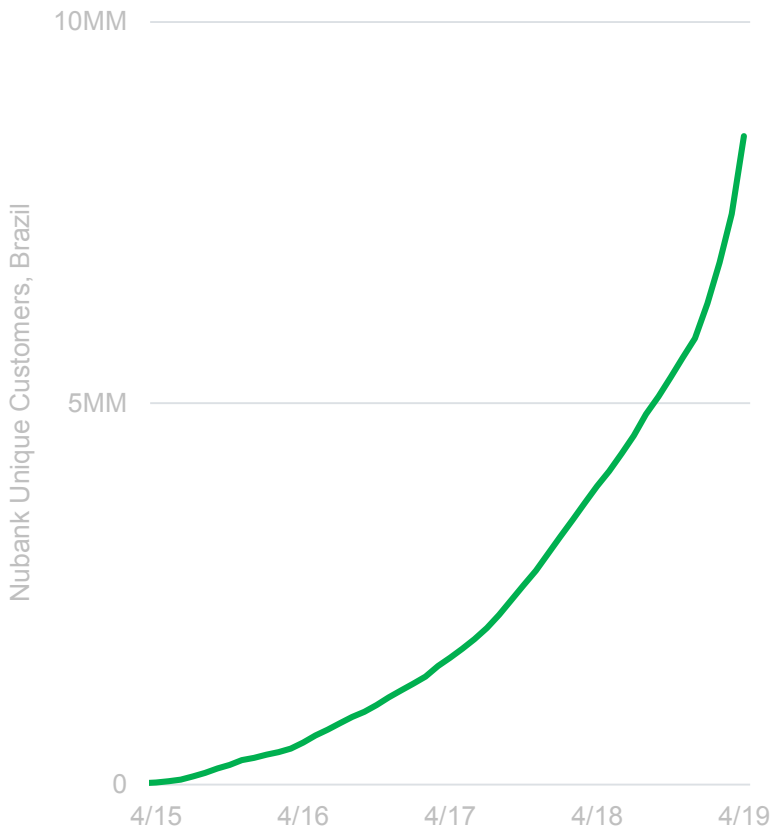
Banking / Credit

Nubank is the largest purely digital bank offering financial services for Brazil, including no fee credit cards, savings accounts (NuConta), P2P money transfer, bill payment, debit cards, salary account portability & a rewards program with real-time benefits.

Nubank also offers highly personalized loans at low prices owing to Nubank's data-driven direct customer relationship.

Nubank – 5/19

Total Unique Customers, Brazil

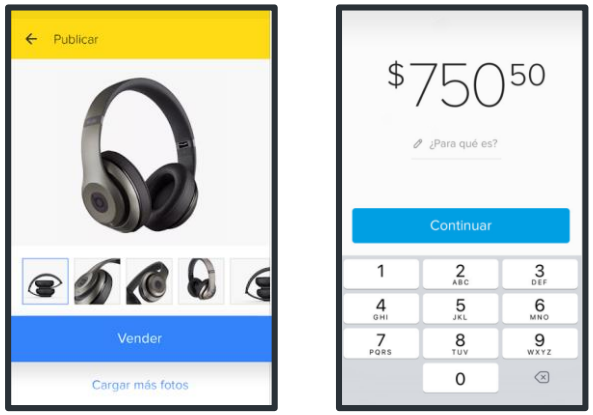


Source: Nubank (5/19)

Latin America (MercadoLibre) = E-Commerce-Driven Digital Payments… 389MM Transactions + ~2x in Two Years

MercadoLibre

Marketplace / MercadoPago Payments



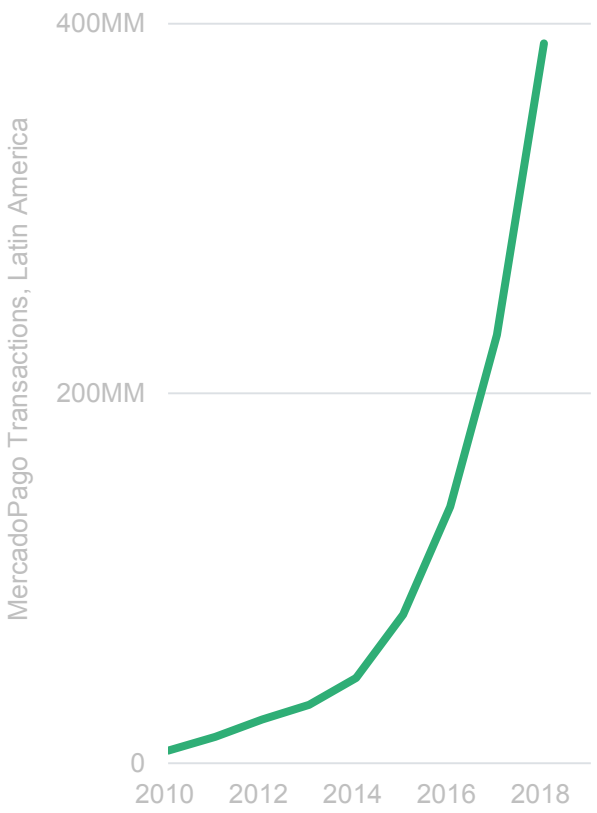
We continue to grow strongly & see tremendous potential in MercadoPago. Off-marketplace transactions already surpassed marketplace transactions.

This trend is compounded by our strong offline initiatives: building out our mobile POS network & MercadoPago's wallet-enabled payments services.

Beyond payments, we are also seeing great adoption of our Asset Management & Credits products. These products facilitate access to financial services to millions of Latin Americans who are either unbanked or underbanked.

Pedro Arnt – CFO, MercadoLibre, 5/19

Annual Transactions, Latin America

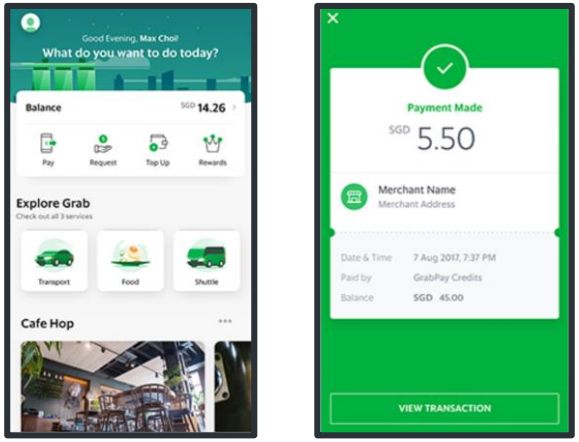


Source: MercadoLibre (5/19), Goldman Sachs Investment Research.

Southeast Asia (Grab) = Ride Share-Driven Digital Payments… Transaction Value + ~4x in One Year

Grab

GrabPay



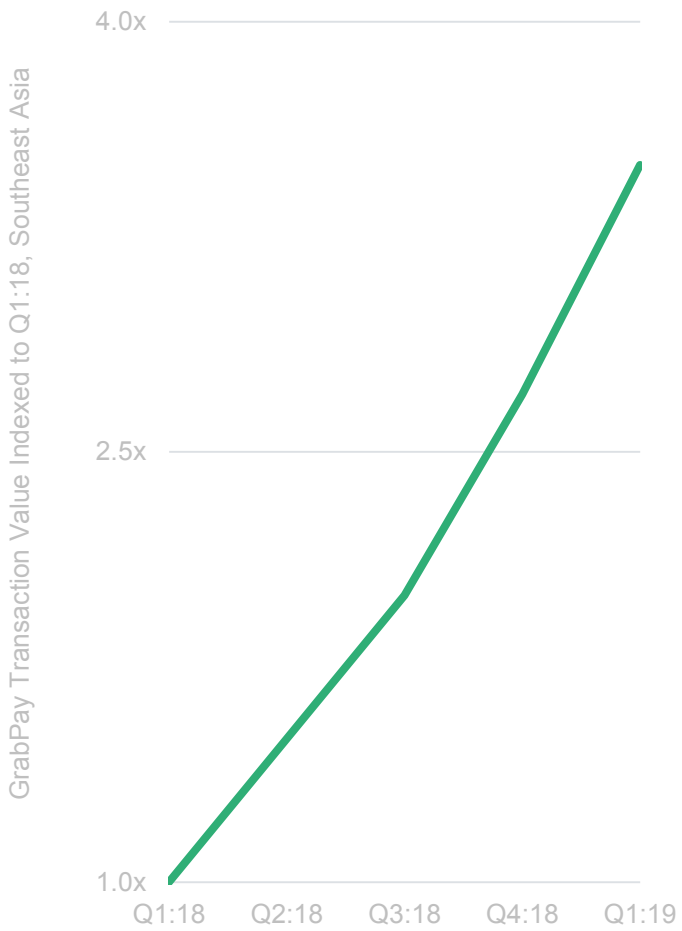
Only 27% of adults in Southeast Asia have bank accounts.

Not having a banking history means that a consumer is invisible to traditional financial institutions - no access to capital to grow businesses or pay for houses.

By launching GrabPay on top of Grab's ride-sharing platform, Grab's millions of users have access to financial services that they could not access via traditional banks & lenders.

Reuben Lai – Senior Managing Director, Grab Financial Group, 5/19

GrabPay Transaction Value, Southeast Asia



Source: Grab Financial Group (3/18-5/19).

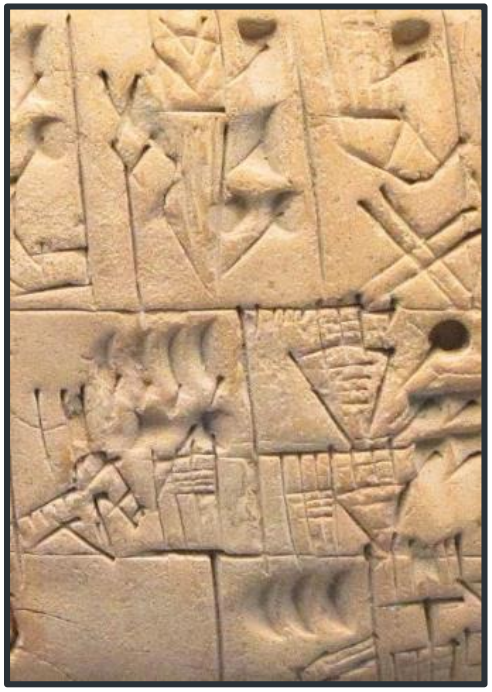
Usage =

Images…
Increasingly Relevant Way to Communicate

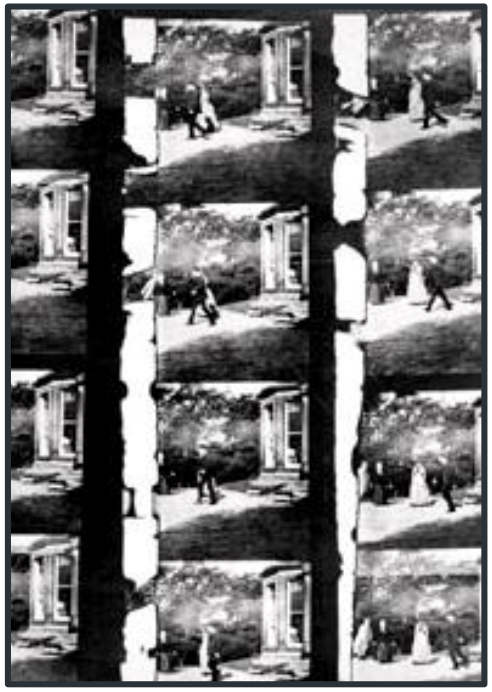
Images =
Oldest Form of Transportable Communication

40K Years Ago =
Oldest Known Image…
Painting, Indonesia

5K Years Ago =
Oldest Known Text…
Cuneiform, Mesopotamia



131 Years Ago =
Oldest Known Moving Image…
Video, United Kingdom



Source: Maxime Aubert, Griffith University, Wikimedia, National Science Museum, London.

For Centuries…

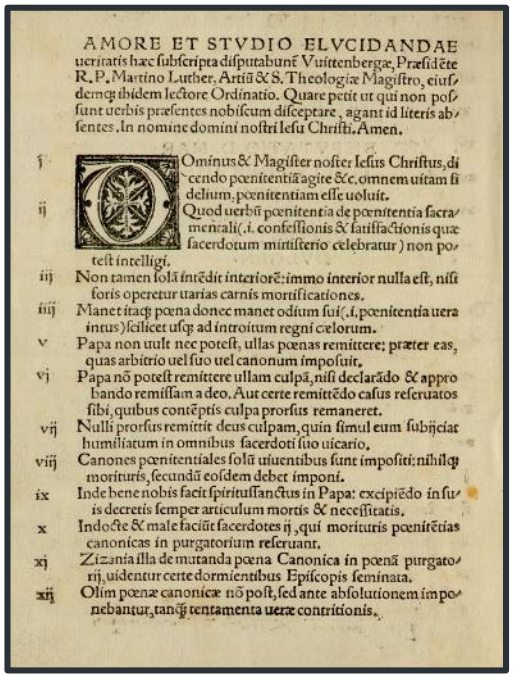
People Have Learned to Write & Share Words…

Offline & One-to-One / Some…

Communication via Text (+ Numbers) = Foundational

Makes Ideas Transportable…

Martin Luther's 95 Theses (1500s)



AMORE ET STVDIO ELVCIDANDAE ueritatis hæc subscripta disputabunt Vuittenbergæ, Præsidẽte R. P. Martino Luther, Artiũ & S. Theologiæ Magistro, eiusdemq; ibidem lectore Ordinatio. Quare petit ut qui non possunt uerbis præsentes nobiscum disceptare, agant id literis absentes. In nomine domini nostri Iesu Christi. Amen.

i Dominus & Magister noster Iesus Christus, dicendo pœnitentiã agite &c. omnem uitam fidelium, pœnitentiam esse uoluit.

ii Quod uerbũ pœnitentia de pœnitentia sacramentali (.i. confessionis & satisfactionis quæ sacerdotum ministerio celebratur) non potest intelligi.

iii Non tamen solã intẽdit interiorẽ: immo interior nulla est, nisi foris operetur uarias carnis mortificationes.

iiii Manet itaq; pœna donec manet odium sui (.i. pœnitentia uera intus) scilicet usq; ad introitum regni cælorum.

v Papa non uult nec potest, ullas pœnas remittere; præter eas, quas arbitrio uel suo uel canonum imposuit.

vi Papa nõ potest remittere ullam culpã, nisi declarãdo & approbando remissam a deo. Aut certe remittẽdo casus reseruatos sibi, quibus contẽptis culpa prorsus remaneret.

vii Nulli prorsus remittit deus culpam, quin simul eum subijciat humiliatum in omnibus sacerdoti suo uicario.

viii Canones pœnitentiales solũ uiuentibus sunt impositi: nihilq; morituris, secundũ eosdem debet imponi.

ix Inde bene nobis facit spiritussanctus in Papa: excipiẽdo in suis decretis semper articulum mortis & necessitatis.

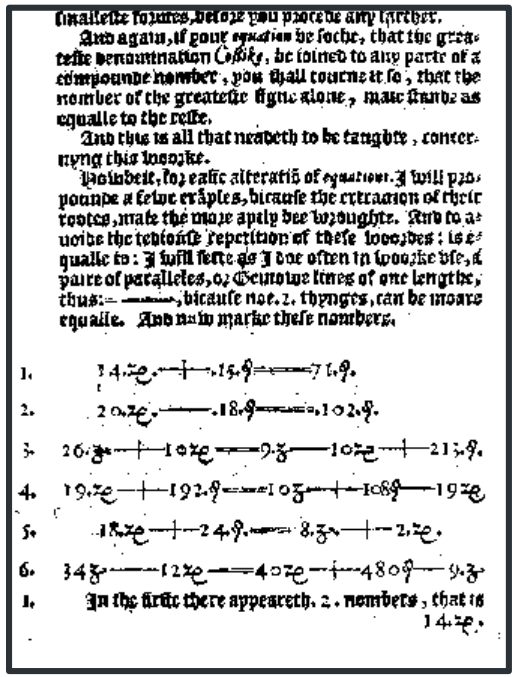
x Indocte & male faciũt sacerdotes ij, qui morituris pœnitẽtias canonicas in purgatorium reseruant.

xi Zizania illa de mutanda pœna Canonica in pœnã purgatorij, uidentur certe dormientibus Episcopis seminata.

xii Olim pœnæ canonicæ nõ post, sed ante absolutionem imponebantur, tanq; tentamenta ueræ contritionis.

…Simplifies Concepts…

Robert Recorde's invention of '=' (1500s)



smalleste formes, before you procede any farther.

And again, if your equation be soche, that the greateste denomination Cossike, be joined to any parte of a compounde nomber, you shall courne it so, that the nomber of the greateste signe alone, maie stande as equalle to the reste.

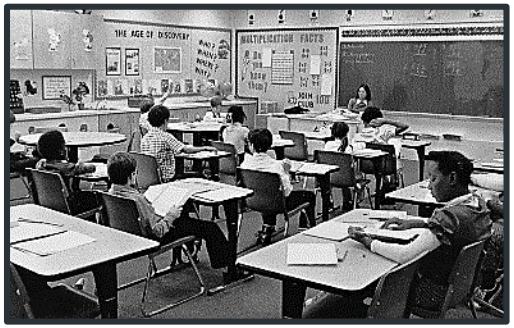
And this is all that neadeth to be taughte, concernyng this woorke.

Howbeit, for easie alteratiõ of equations. I will propounde a fewe exãples, bicause the extraction of their rootes, make the more aptly bee wroughte. And to auoide the tediouse repetition of these woordes: is equalle to: I will sette as I doe often in woorke vse, a paire of parallelles, or Gemowe lines of one lengthe, thus: = ——, bicause noe. 2. thynges, can be moare equalle. And now marke these nombers.

1. 14.ze. + .15.9 = 71.9.
2. 20.ze. — .18.9 = .102.9.
3. 26.z + 10ze = 9.z — 10ze + 213.9.
4. 19.ze + 192.9 = 10z + 108.9 — 19ze.
5. 18.ze + 24.9 = 8.z + 2.ze.
6. 34z — 12ze = 40ze + 480.9 — 9.z
1. In the firste there appeareth. 2. nombers, that is 14.ze.

…Enables Learning

Modern 'Public' Primary Schools (1800s – Present)



Source: Wikimedia Commons, Google For Education, Boston City Archives

Note: 1800s chosen as date of 'Modern Public Schools' based on Byrk et al.'s 'Catholic Schools in the Common Good.' Though public funds had been previously used to fund primary education, reforms in USA cities during the 1800s were the first to establish open, secular education, similar to contemporary 'public schools'

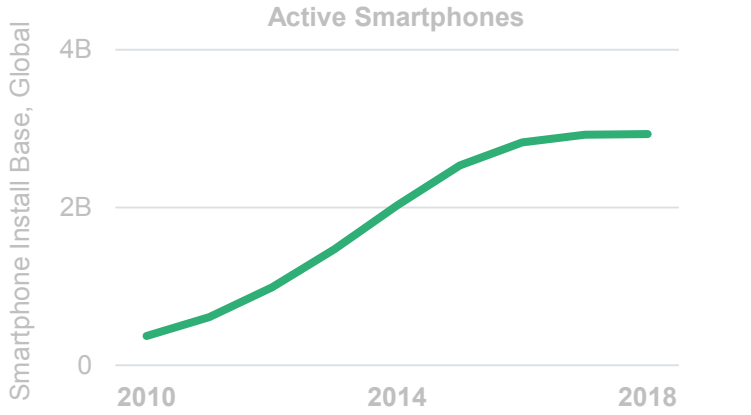
…For Two Decades…

People Ramping
Image + Video Creation / Sharing…

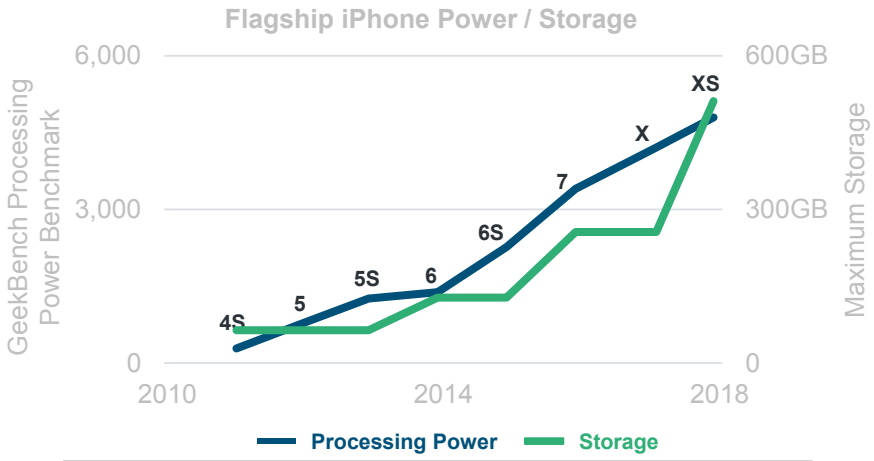
Online & Often One-to-Many

Image Creation = Foundations Continue to Ramp

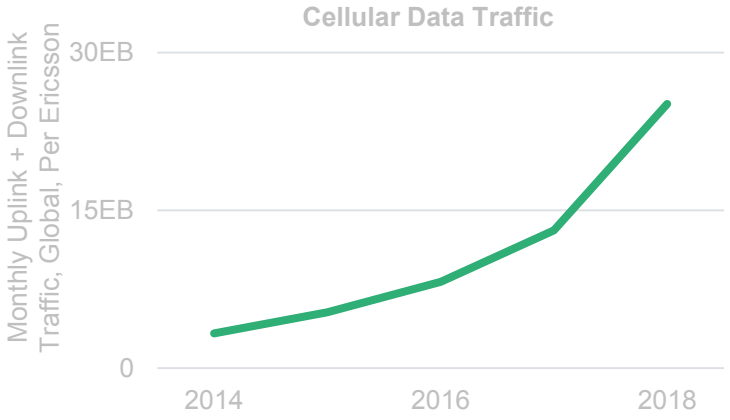
Smartphone / Camera Base…



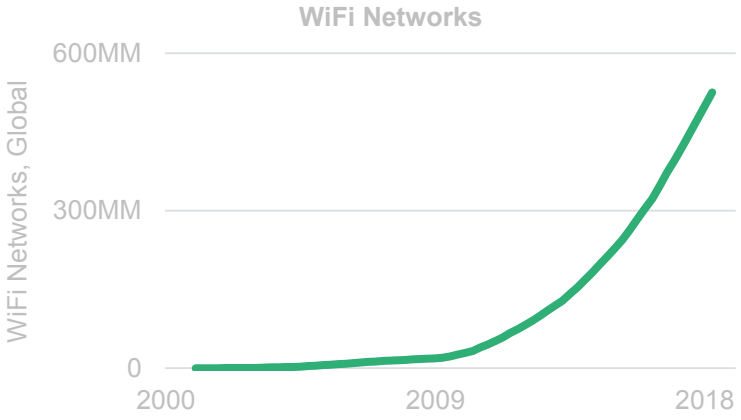
…Smartphone Power…



…Cellular Data Use…



…WiFi Reach



Source: Smartphone Installed Base Per Morgan Stanley (3/19). iPhone Power / Storage Per. GeekBench Browser, Apple. Note: Geekbench is a multi-platform benchmarking tool intended to compare the power of computer processors across generation, platform & workload. Maximum storage refers to largest storage capacity offered, as advertised. WiFi Data = WiGLE.net as of 5/29/18. Note: WiGLE.net is a submission-based catalog of wireless networks that has collected >6B data points since launch in 2001. Submissions are not paired with actual people, rather name / password identities which people use to associate their data. Ericsson Q4:18 Mobility Report.

Image Sharing = Foundations Continue to Ramp

Image Creation

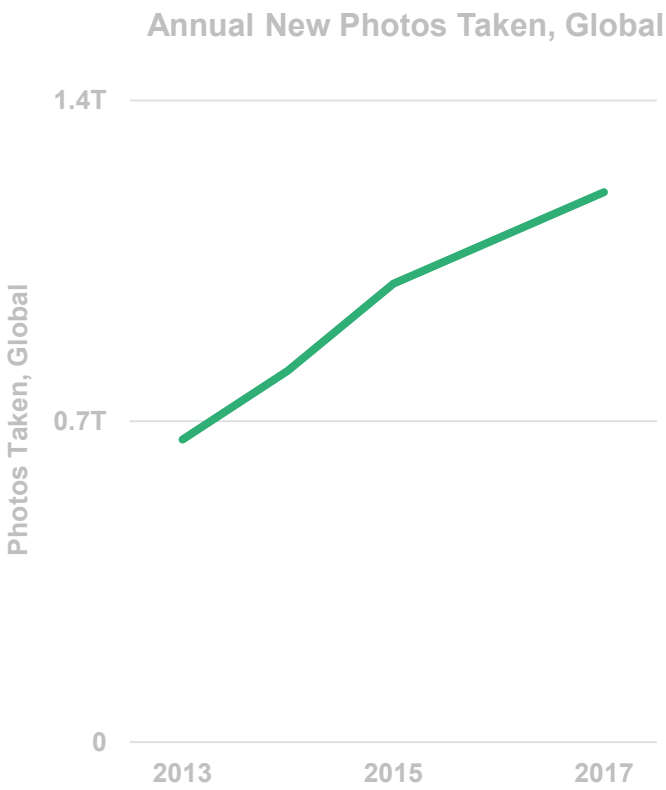
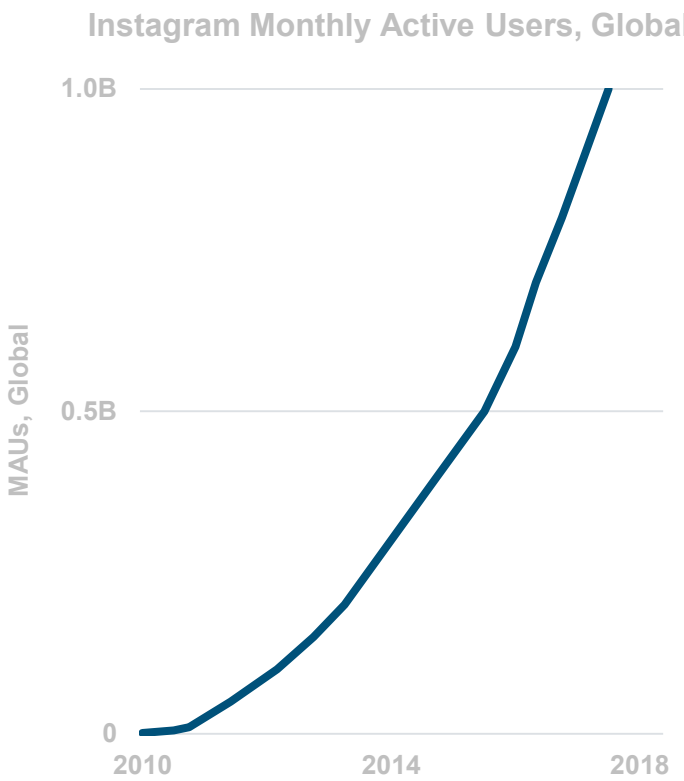


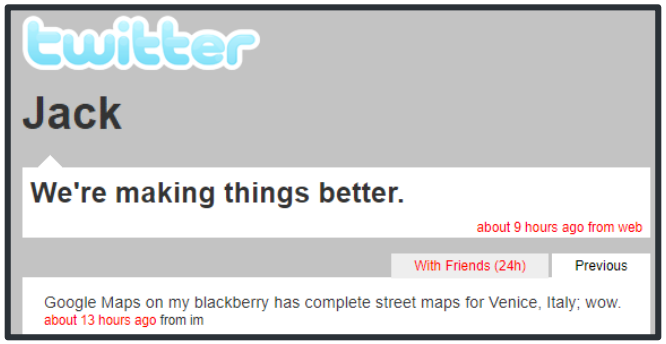
Image Sharing



Source: Photo Creation Per InfoTrends Digital Imaging Reporter's State of the Industry 2018. Instagram releases.

Image Creation + Sharing = Engagement Continues to Ramp…

Twitter (2006) = Text-Only



Twitter (2019) = Text + Images + Video

>50% of Tweet Impressions = Images / Video / Other Media

Source: Twitter. Note: Other media includes GIFs, Audio & other non image / video media types

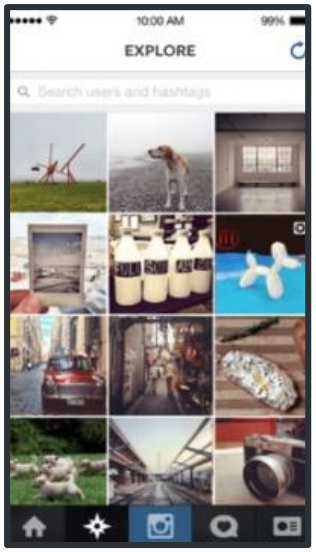
…Image Creation + Sharing = Platform Functionality + Usage Continues to Ramp…

Instagram Image Sharing Enhancement Evolution

Image Editing / Sharing → Data-Driven Discovery → Image + Video Stories → Commerce

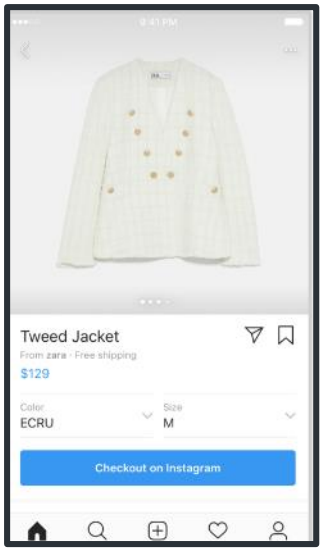
2011

2015



2016

2019

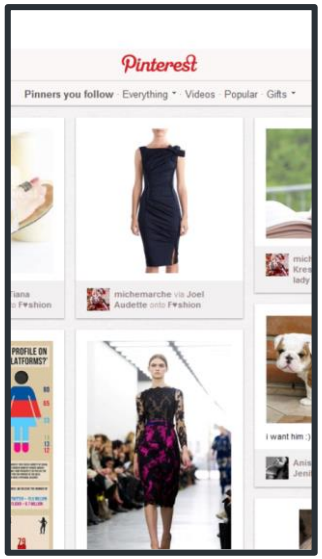


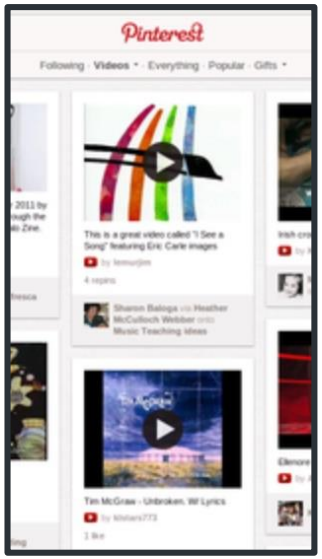
Source: Instagram Releases (2011 / 2015 / 2016 / 2019)

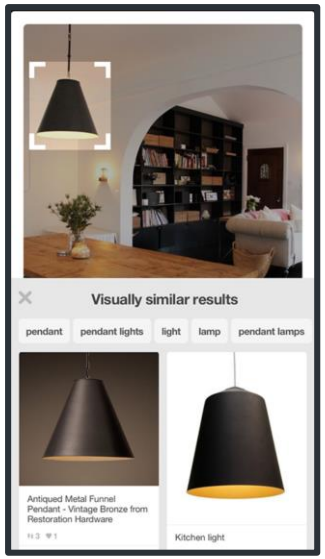
…Image Creation + Sharing = Platform Functionality + Usage Continues to Ramp

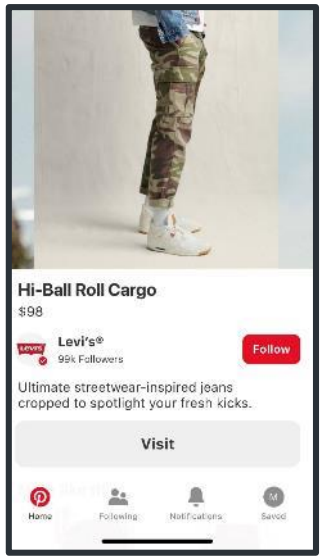
Pinterest Image Sharing Enhancement Evolution

Image Organization / Sharing	→	Video Organization / Sharing	→	Image-Powered Search	→	Image-Driven Discovery / Commerce
2011		*2012*		*2015*		*2019*









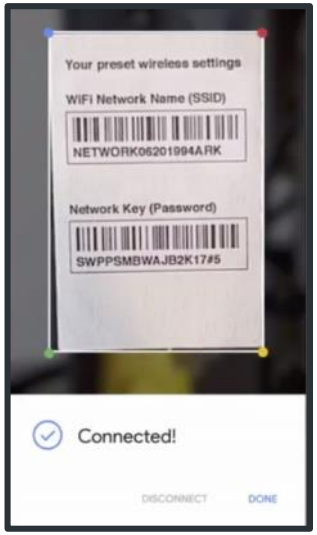
Source: Pinterest Releases (2011 / 2012 / 2015 / 2019)

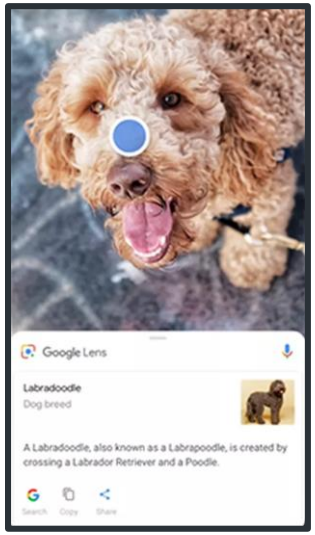
Image-Based Communication = Enabled by Computer Vision + Artificial Intelligence

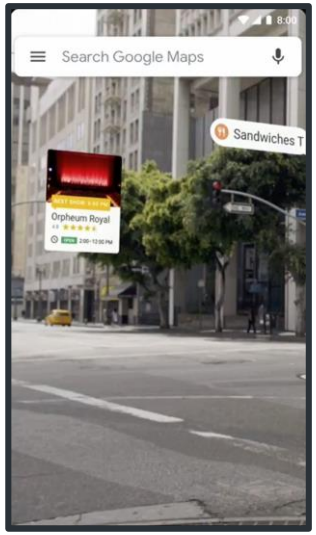
Google Lens + AR Image Analysis / Communication Evolution

Visual Text Identification / Processing → **Image Identification / Context** → **Contextual Augmented Reality** → **Real-Time Visual Text Translation**

2017 | *2017* | *2018* | *2019*







Source: Google (2017-2019)

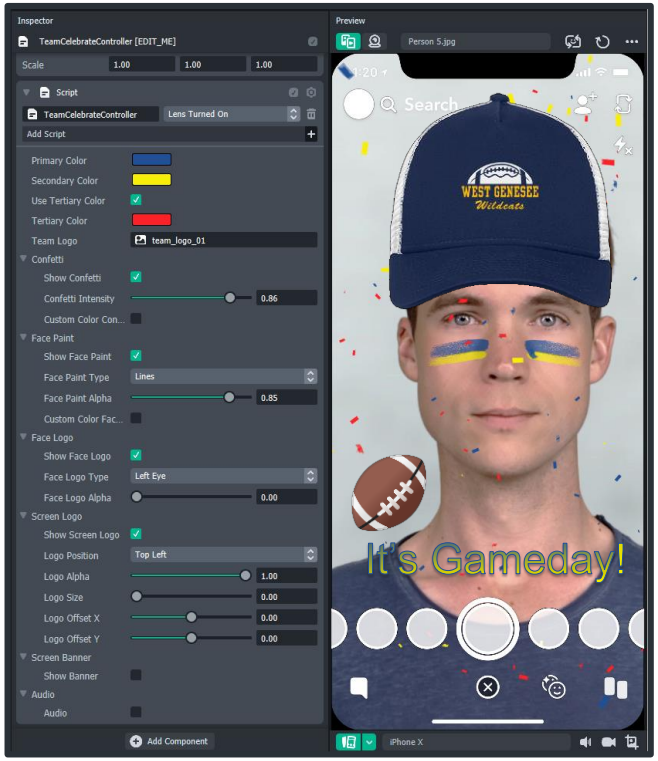
People =

Increasingly Telling Stories via Edited Images / Videos

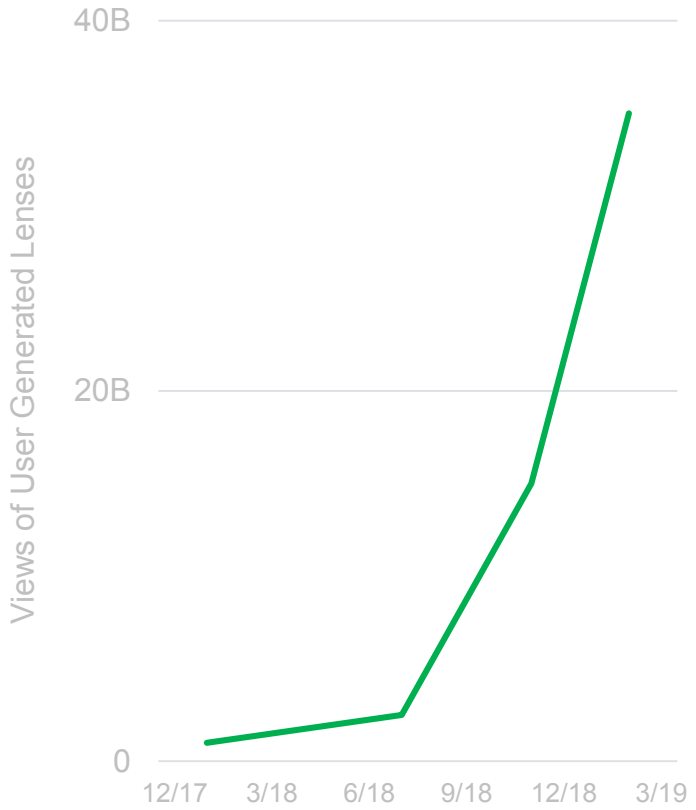
Edited Images = Growing Rapidly

Snap Lens Studio

User Generated / Custom Augmented Reality



Snap Community Lens Views



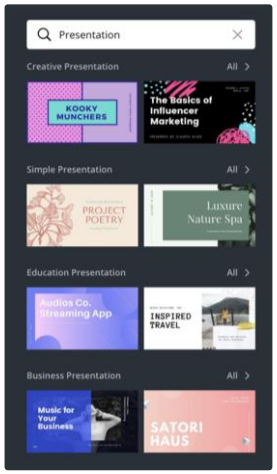
Source: Snap Inc. Q4:17 Earnings Call (2/18), Snapchat Blog Post (7/18), Adweek (11/18), Engadget (2/19)

Image-Based Design Fluency + Story-Telling =

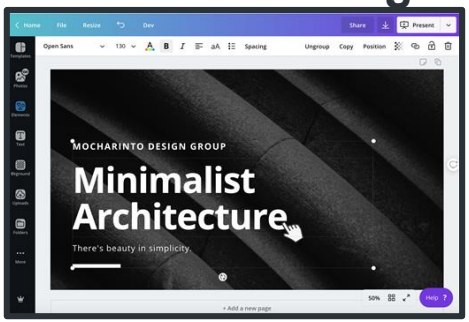
Increasingly Self-Taught + Collaborative…
Still Early Innings

Design Fluency + Story-Telling (Canva) = Simple / Collaborative / Feedback-Driven Design

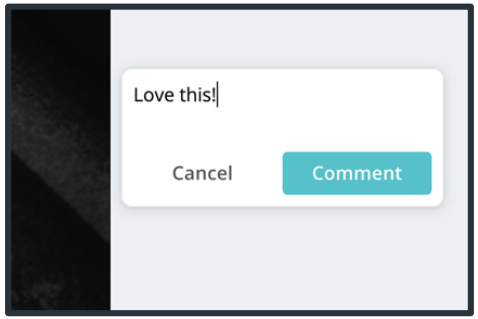
Choose Template



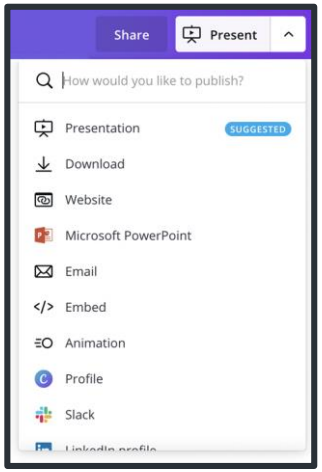
Customize Design



Collaborate in Teams



Publish Anywhere



Source: Canva (6/19)

People have always been visual – our brains are wired for images. Writing was a hack, a detour. Pictorial languages are how we all started to communicate – we are coming full circle.

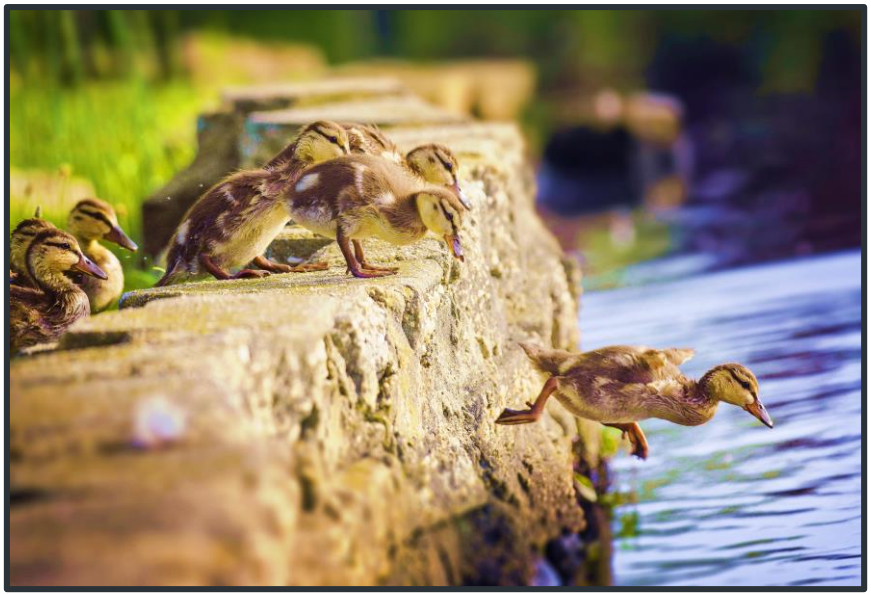
We are reverting to what is most natural. Instagram has always been a communication platform, not an image sharing tool.

Instagram challenges the notion that beauty comes in a traditional, artsy form… it's not about beauty, it's about the story you tell.

Instagram's inherent feedback systems help users continuously improve communication skills.

Kevin Systrom – Instagram Co-Founder, 5/19

Picture or 1,000 Words?



Mallard Duckling making a running leap into the water from the rock ledge at Argyle Lake, Babylon, Long Island. Mallard ducks are the most common & recognizable wild ducks in the Northern Hemisphere. They spend most of their time near natural bodies of water (ponds, marshes, streams, & lakes) where they feed on plants, invertebrates, fish, and insects. Mallards are dabbling, or surface-feeding, ducks because they eat by tipping underwater for food—head down, feet and tail in the air—rather than diving. Mallards also forage and graze for food on land. The male mallard duck, called a drake, sports a glossy green head, a white ring around its neck and a rich, chestnut-brown breast. The mallard duck's outer feathers are waterproof, because of an oil that's secreted from a gland near the tail. Soon after birth, baby ducks, called ducklings, open their eyes. A little more than a day after hatching, ducklings can run, swim, and forage for food on their own. They stay in the nest for less than a month. A group of ducklings is called a brood. Outside the nest, the brood sticks close by the mother for safety, often following behind her in a neat, single-file line. Mallard Duckling making a running leap into the water from the rock ledge at Argyle Lake, Babylon, Long Island. Mallard ducks are the most common & recognizable wild ducks in the Northern Hemisphere. They spend most of their time near natural bodies of water (ponds, marshes, streams, & lakes) where they feed on plants, invertebrates, fish, and insects. Mallards are dabbling, or surface-feeding, ducks because they eat by tipping underwater for food—head down, feet and tail in the air—rather than diving. Mallards also forage and graze for food on land. The male mallard duck, called a drake, sports a glossy green head, a white ring around its neck and a rich, chestnut-brown breast. 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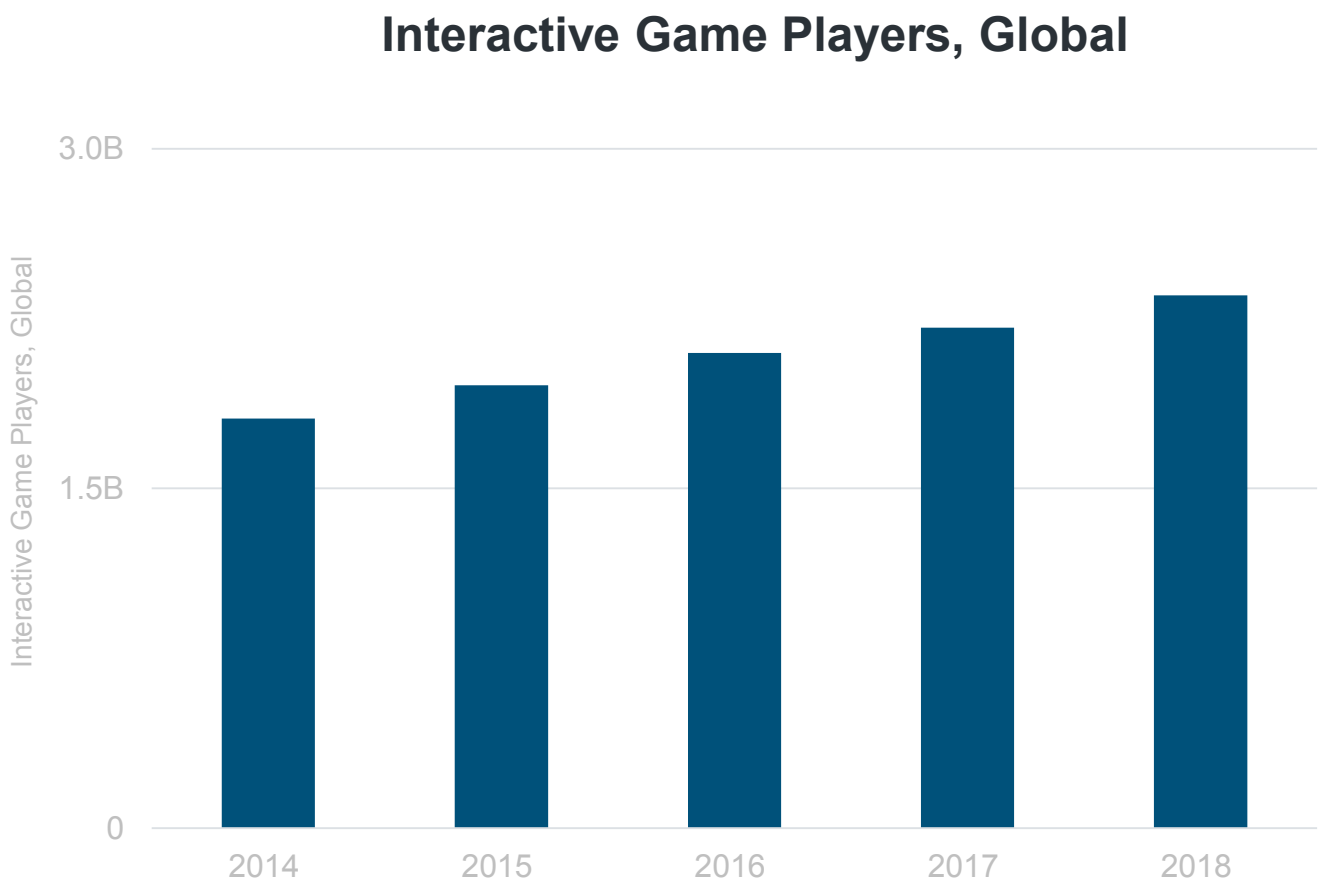
They stay in the nest for less than a month. A group of ducklings is called a brood. Outside the nest, the brood sticks close

Source: Photo Credit = Beth A Keiser, AP

Usage =

Interactive Gaming…
Increasingly Relevant Way to Communicate

Interactive Gaming Players = Accelerating @ 2.4B +6% vs. +5% Y/Y



Source: Newzoo Global Games Market Reports (2016-2018).
Interactive Game Players = People who have played a game across console / PC / mobile platforms in the past year.

Interactive Gaming Innovation = Rising…Across Platforms

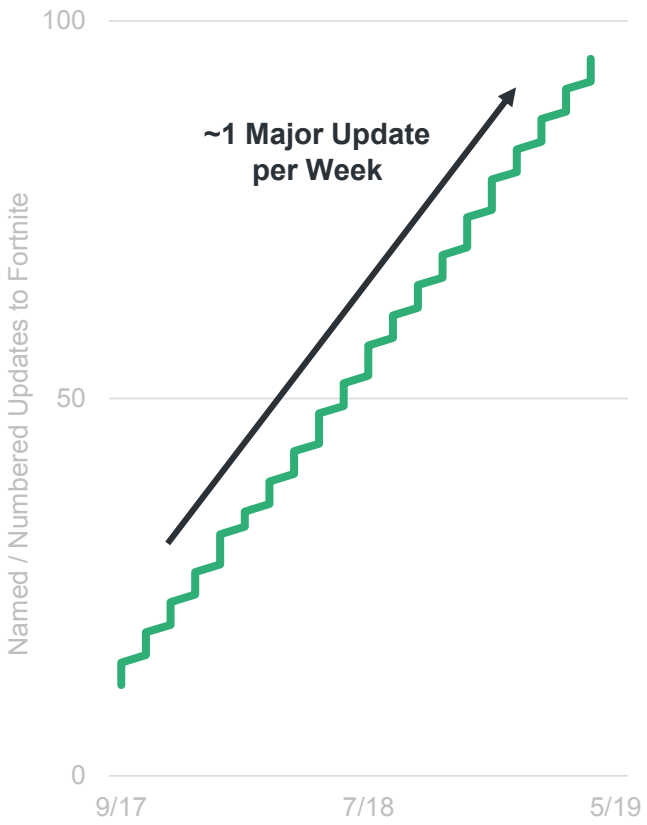
Game Engine Innovation…

Unreal Engine 4.21 continues our relentless pursuit of greater efficiency, performance & stability for every project on any platform. We made it easier to create faster…

We are always looking for ways to streamline everyday tasks so developers can focus on creating meaningful, exciting & engaging experiences...Iterate faster thanks to optimizations, run automated tests to find issues using the new Gauntlet automation framework, & speed up your day-to-day workflows...

Jeff Wilson – Unreal Engine Release Notes, Epic Games, 11/18

...Frequent Major Updates To Fortnite



Source: Epic Games. (11/18). Note: Major update = named / numbered update to Fortnite.

Interactive Gaming =

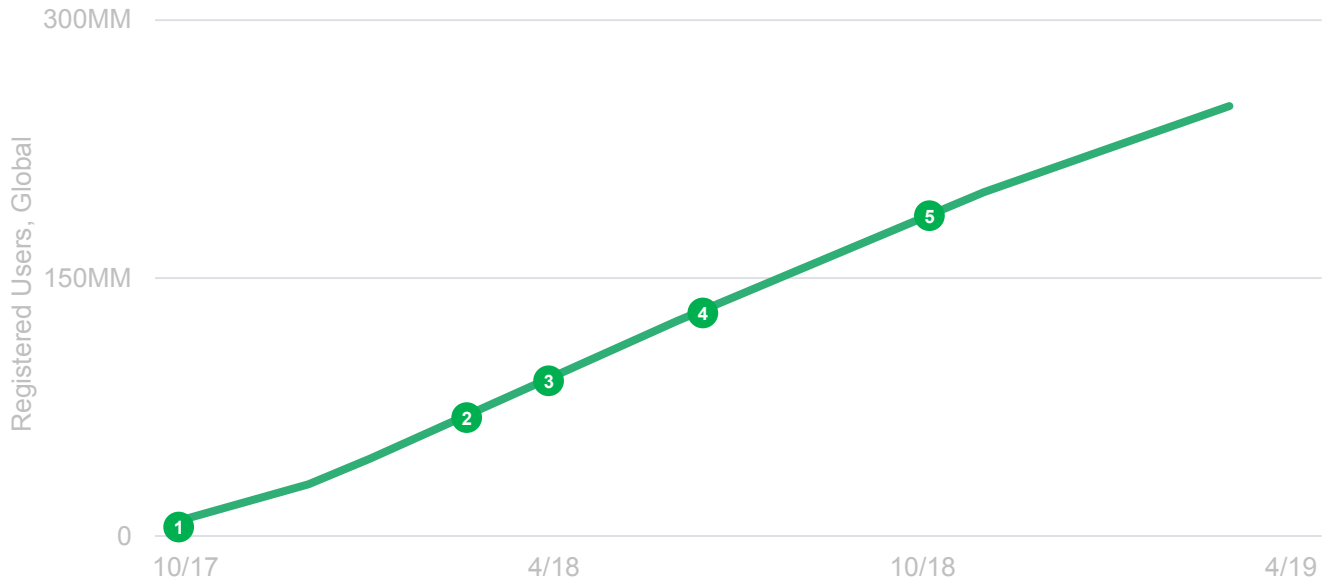
Real-Time
Play + Talk / Text + Watch…

Social in Nearly All Ways

Interactive Gaming (Play) = Fortnite @ 250MM+ Users + ~2x Y/Y Across Seven Platforms

Epic Fortnite Cross-Platform Evolution vs. Registered Users

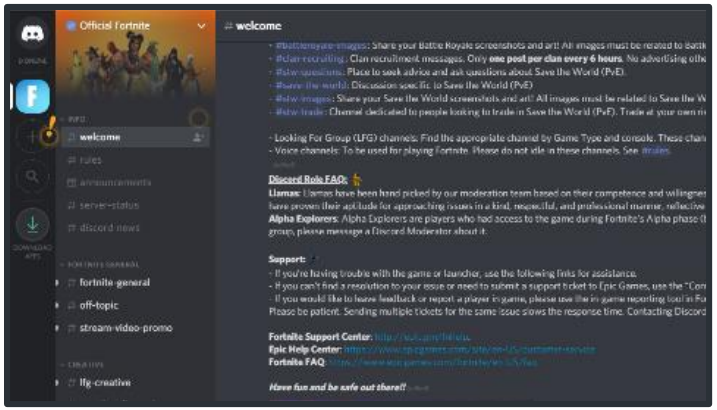
1. **September 2017** Fortnite Battle Royale Launches on PC / Mac / PS4 / Xbox One With Limited Cross Platform Support
2. **March 2018** V3.4 Patch is Released Allowing Users to Send & Receive Squad Invites Cross-Platform
3. **April 2018** Fortnite Launches to Public in iOS App Store, Allowing Cross-Platform Mobile Play
4. **June 2018** Fortnite Launches on Nintendo Switch… Available on All Major Current Generation Consoles
5. **October 2018** Fortnite for Android Launches to Public



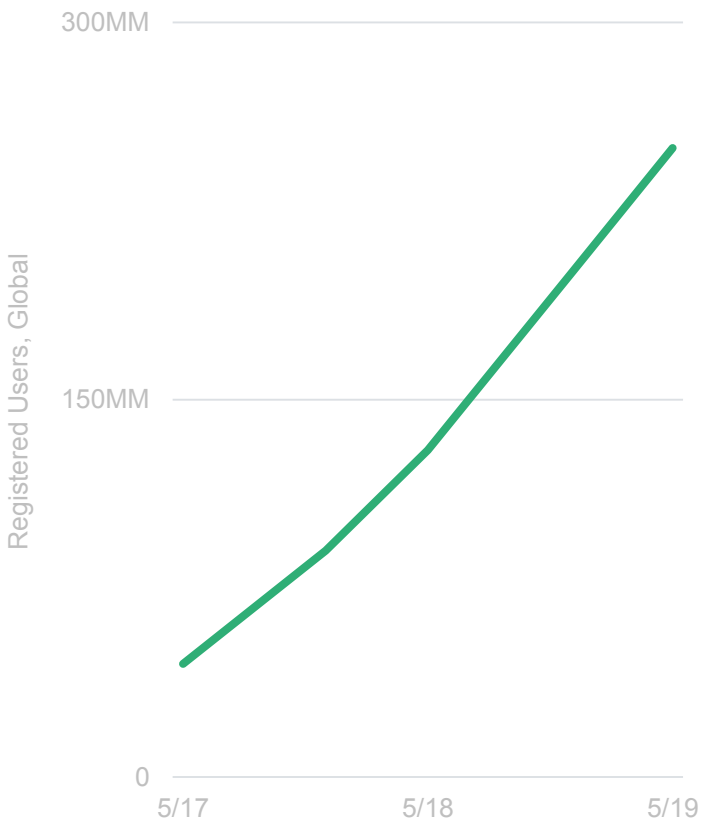
Source: Epic Games (9/17-3/19)

Interactive Gaming (Text / Talk) = Discord @ 250MM Users + ~2x Y/Y

Discord Text / Voice Chat



Discord Registered Users

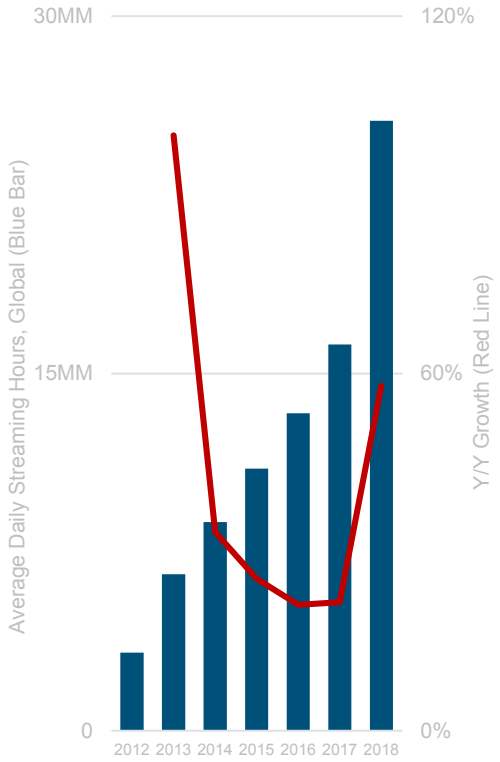


Source: Discord (5/17-4/19).

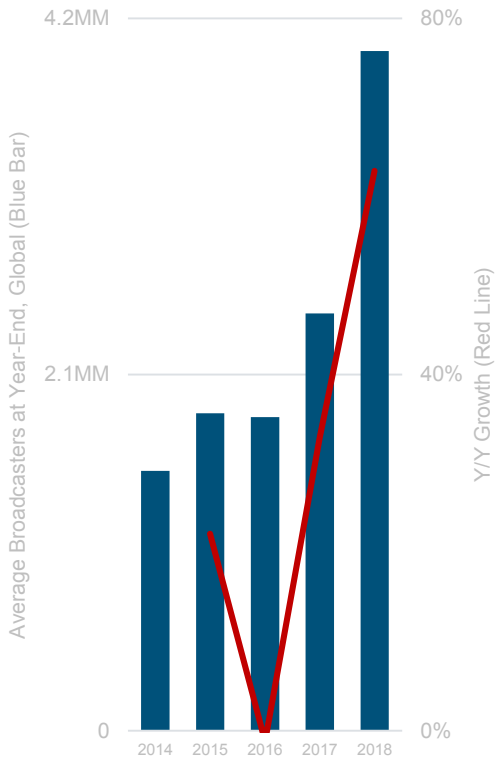
Interactive Gaming (Watch) = Twitch…Time + Viewers + ~2x in Two Years

Twitch

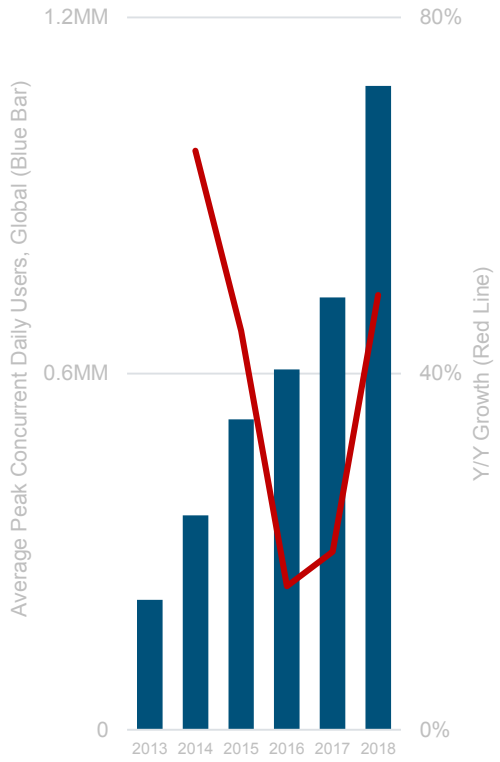
Daily Streaming Hours



Active Broadcasters*



Peak Concurrent Viewers**



Source: TwitchTracker (4/19). Note: *Active broadcasters at year end refers to the number of broadcasters who have streamed in the month of December for a given year. **Average concurrent users refers to the average daily peak of users viewing content on Twitch across a year.

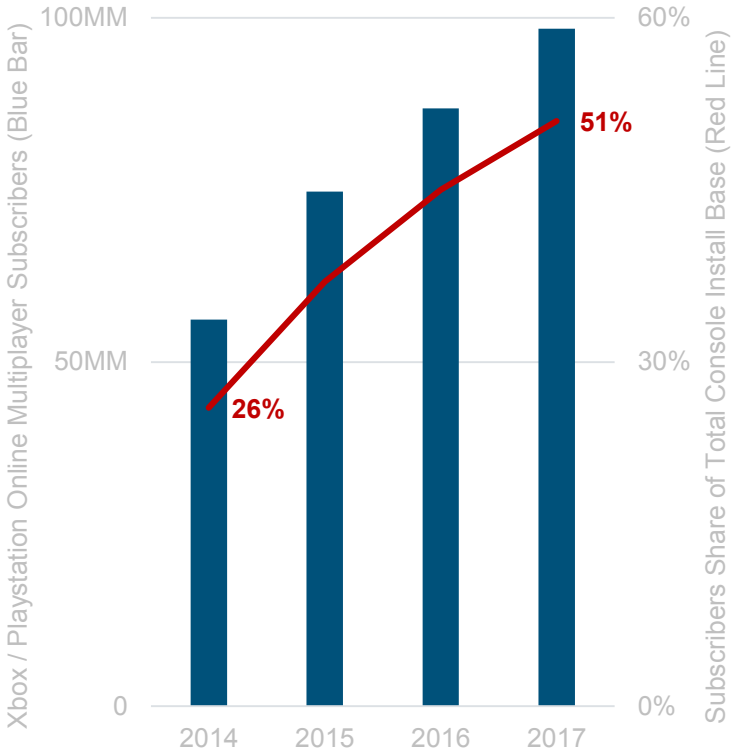
Fortnite = Battle Royale…
Game Environment Capped @ 100 Person Groups…

Multiplayer / Cross-Platform Battle Royale

100 Players in Shared World

Players Win via Discovering Items & Outlasting Others

Consoles – Multiplayer Subscribers*



Source: Morgan Stanley Research (10/18) Brian Nowak / IDC. Note: *For game consoles only (i.e. Xbox Live & Playstation Plus).
Subscription required to play online multiplayer Fortnite games on Xbox platform, but not Playstation (Fortnite is available even to non-subscribers).

…Fortnite = Events…
Shared Experiences Capped @ 100 Person Groups…

In-Game Events / Experiences

Marshmello Concert (2/19)
11MM Player-Viewers

Cube Opening (11/18)
8MM Player-Viewers

SurveyMonkey / Common Sense Media Teen Fortnite Player Survey

Has Fortnite Helped You _____?

50% = Learn Teamwork Skills

44% = Make a Friend Online

40% = Improve Communication Skills

39% = Bond with Siblings

Source: Fortnite. Common Sense Media / SurveyMonkey Survey of 766 USA Teens (13-19) who play Fortnite. Survey conducted online via SurveyMonkey Survey portal (10/18).

…Fortnite = Voice Chat…
Collaborative Communication Capped @ 16 Squadmates

To truly see the future of collaborative gameplay & social experiences, you need a large-scale community to help that happen.

We work really, really hard on Fortnite to maintain a safe experience online – for example, there's only chat between you & your squadmates.

There's no proximity-based chat, so it's not possible for one person to grief another person they don't know.

Kim Libreri – CTO, Epic Games, 3/19

Strategize / Bond With Team in Pre-Game Lobby via Voice

Real-Time In-Game Collaboration With Team via Voice

Source: Wired (3/19). Epic Games.

Interactive Gaming…

Shared Environments
With Collective Purpose / Goals =

The New Social / Friend Networks?

Recreating Reality Around
Play + Problem Solving

FREEMIUM BUSINESS MODELS =

GROWING & SCALING…
STILL EARLY DAYS IN ENTERPRISE / CONSUMER

'Freemium' coined by Fred Wilson (Union Square Ventures) & Jarid Lukin in 2006

Freemium Businesses =

Free User Experience Enables More Usage / Engagement / Social Sharing / Network Effects…

…Premium User Experience Drives Monetization / Product Innovation

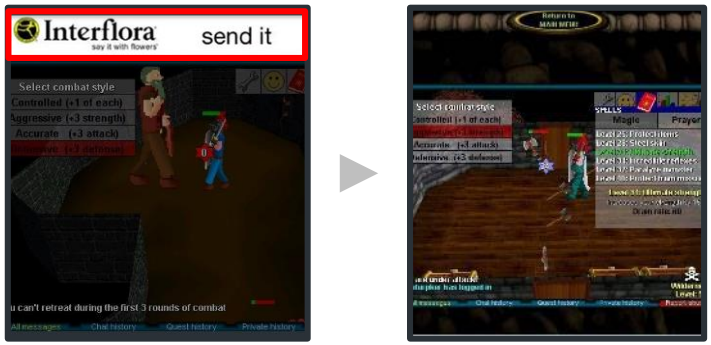
Freemium Business Model Evolution =

Gaming → Enterprise → Consumer

Freemium Gaming (2001) = Runescape…

Free

Play With Others…



*I launched [Runescape] in 2001. The basic plan was to **run it for free, but to pay for my hobby through advertising.** However, when the dot com bubble began to collapse, **advertising dried up & there was no way to pay for the game's server.***

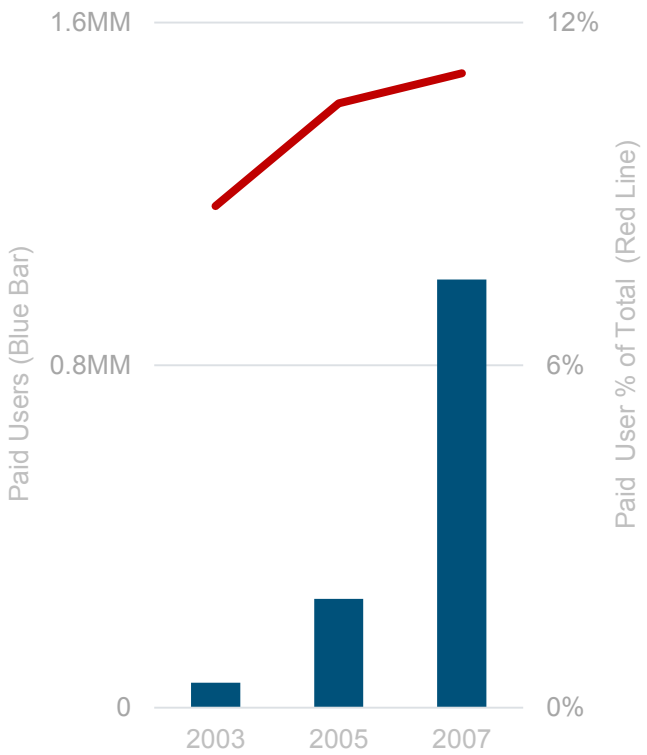
***This is how the member [subscription] came about**... once we had people paying, we were able to reinvest back into the game.*
***The more we invested, the faster it grew**.*

Andrew Gower – Runescape / Jagex, Creator, 5/07

Premium

…Improve User Experience

Paid Users + Share of Total

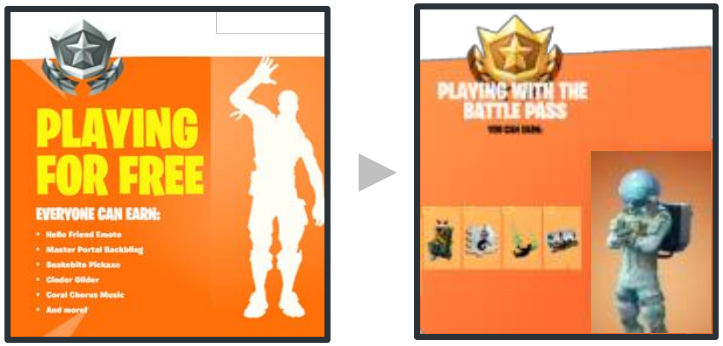


Source: Jagex releases, as compiled by The Guardian (12/03), Gameindustry.biz (2/05), Runescape Blog (5/07) & GigaOM (6/07). Andrew Gower Interview first appeared on gamasutra.com (5/07).
Note: Users refer to monthly active users. Total Users refers to active users (free + paid) in relevant period.

…Freemium Gaming (2017) = Epic Fortnite

Free

Play With Others…



I think it's a very positive trend that people are spending time in social experiences. That's the thing you have to appreciate with Fortnite. Most people are playing together in squads with their friends, they're on voice chat.

They're playing a video game, but what they're really doing is spending time with their friends & chatting all night.

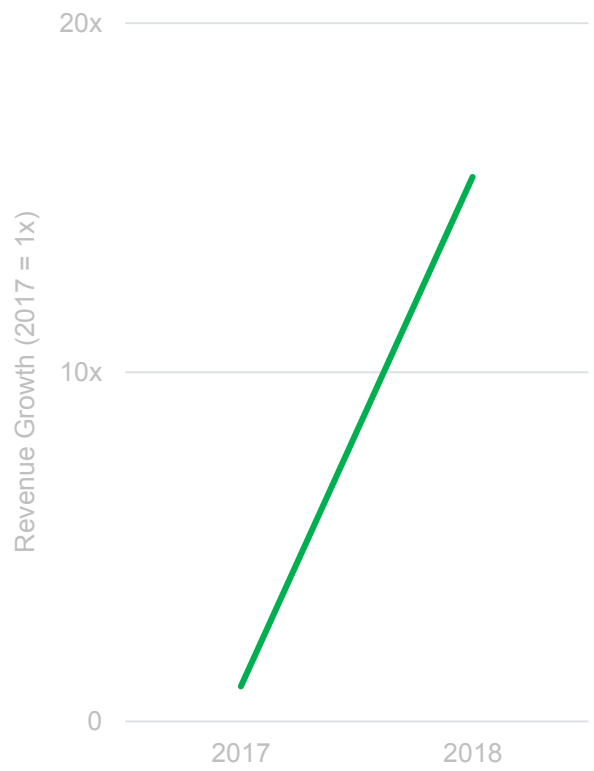
It can last as long as the developers can ***keep games fresh & fun – we're at that point where we're able to do it & there's a business model with free-to-play.***

Tim Sweeney - Epic Games, Founder / CEO, 3/19

Premium

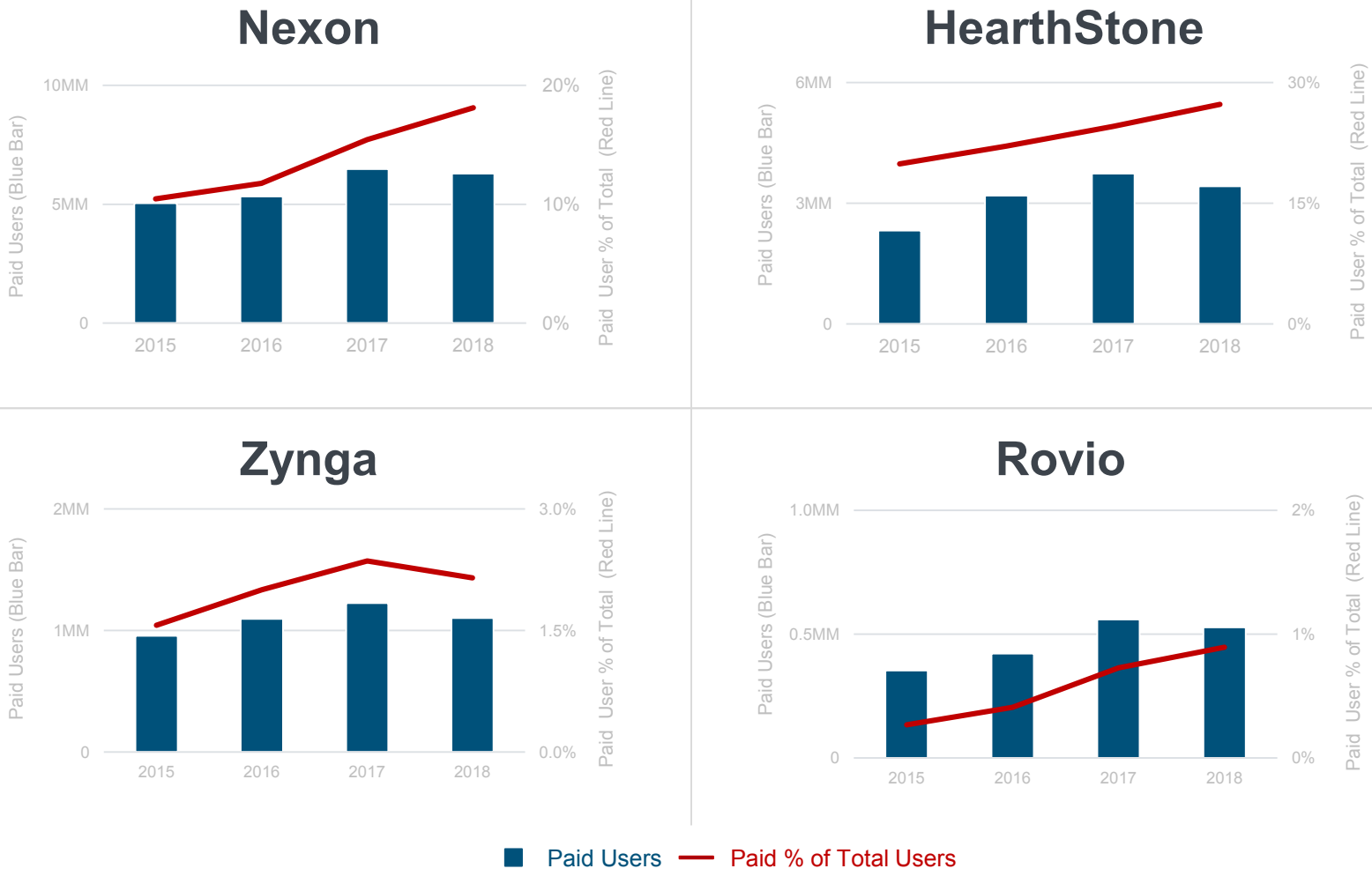
…Improve User Experience

Epic Fortnite Revenue Growth, per Nielsen Superdata*



Source: Epic Games Releases (2017-2019) The Hollywood Reporter (3/19). Nielsen Superdata (6/18 +1/19)
Note: *Revenue growth estimate based on Superdata's 3rd party estimate of ~$150MM in Epic Fortnite Revenue in 2017 & $2.4B in 2018 revenue. Fortnite launched in September 2017.

Freemium Gaming =
Social / Often Mobile / Can Be Transient



Source: Nexon = Annual Company Filings. HearthStone = Activision Blizzard Filings + Morgan Stanley estimates. Zynga = Zynga Annual Filings. Rovio = Rovio Annual Reporting. Note Paid users refers to users who upgrade to unlock premium features such as ad-free game play. Paid Users % of Total = share of payers in a period divided by total active users in the same period.

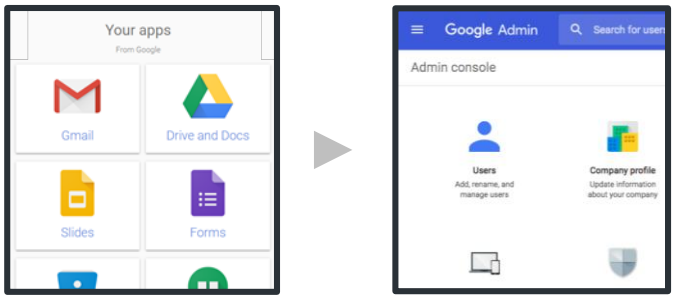
Freemium Business Model Evolution =

Gaming → Enterprise → Consumer

Freemium Enterprise (2006) = Google G Suite…

Free

Communicate With Others…



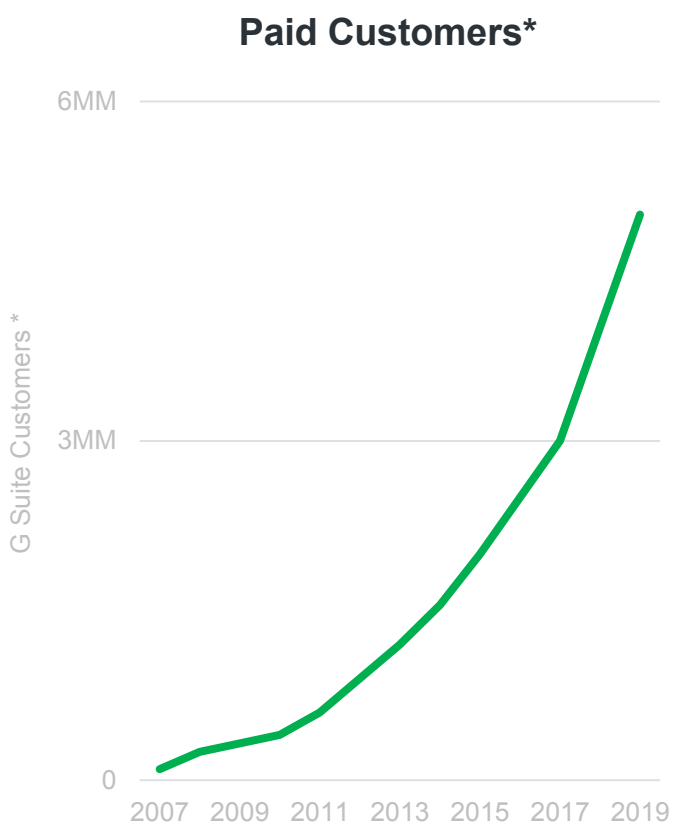
Google's many successful products deliver magical user experiences [for free] & when I joined Google, I was inspired to bring that same magic to the workplace with G Suite*...*

Building [free] products that are loved by billions of users has driven a discipline in the G Suite team for simplicity of design ***& we are bringing that billion-user experience to the workplace…you're actually seeing that workplace users are demanding it.***

Prabhakar Raghavan – Google, SVP of Engineering, 7/18

Premium

…Enterprise User Experience

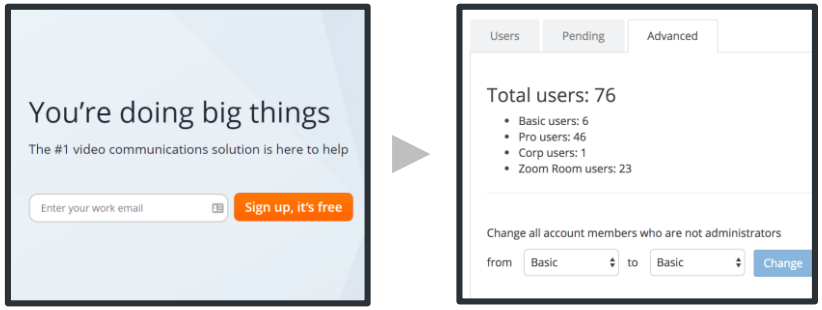


Source: Google Cloud Disclosures (2019) for G Suite Users. Google Next Conference for quote (7/18). Note: *Customers refers to the number of paying businesses using G Suite, not the number of paid users (e.g., one company with 10K employees would be counted as one customer. Google does not disclose the average G Suite customer size.)

…Freemium Enterprise (2013) = Zoom

Free

Communicate With Others…



Our rapid adoption is driven by a virtuous cycle of positive user experiences.

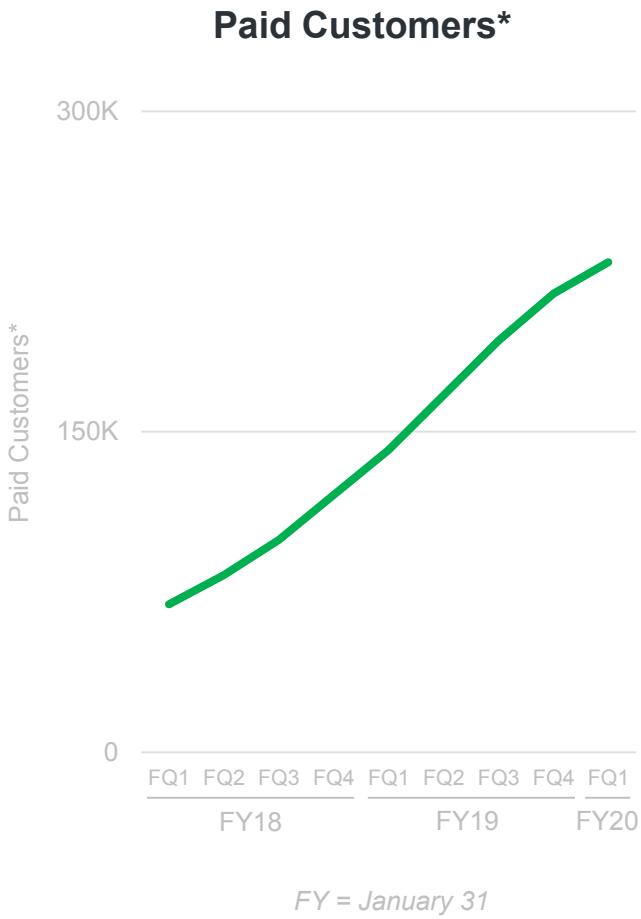
Individuals typically begin using our platform when a colleague or associate invites them to a Zoom meeting.

When attendees experience our platform & realize the benefits, ***they often become paying customers to unlock additional functionality.***

Zoom – S-1 Filing, 3/19

Paid

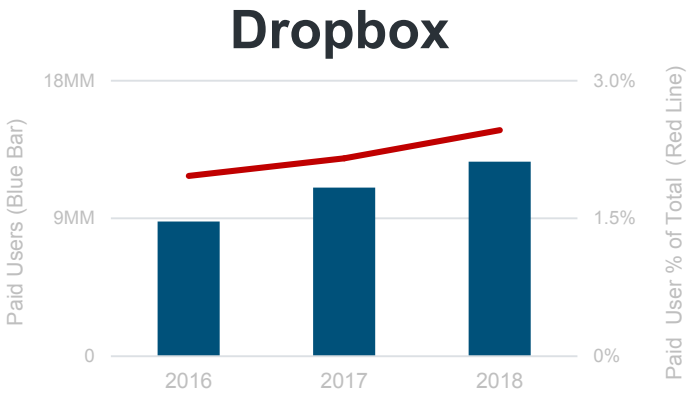
…Enterprise User Experience

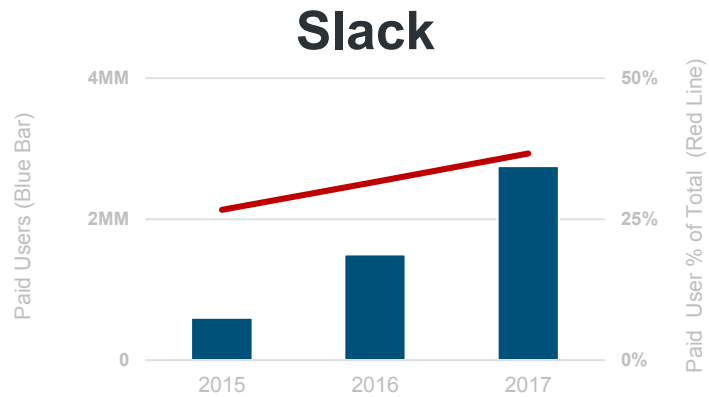


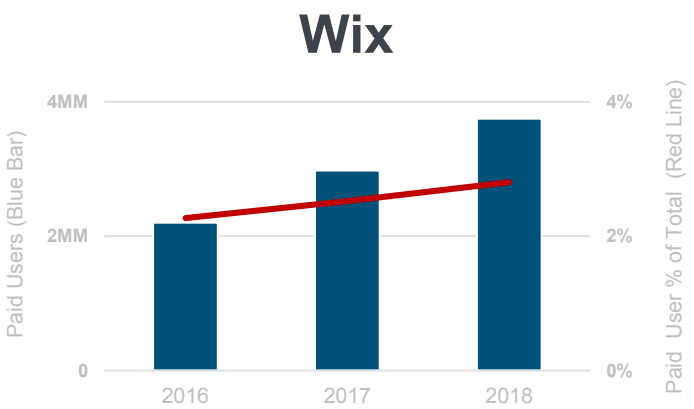
FY = January 31

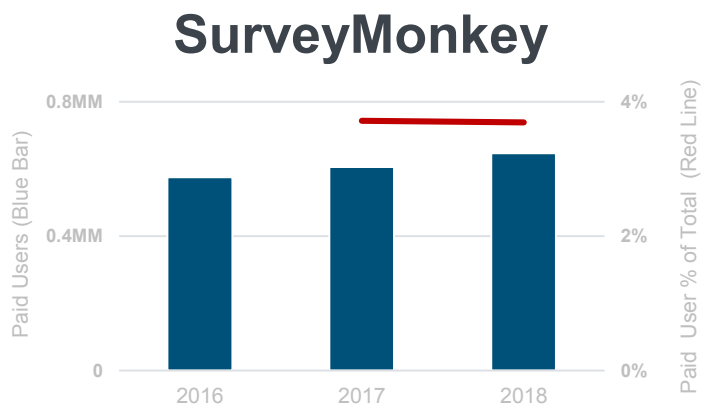
Source: Zoom. Note: *Goldman Sachs Investment Research estimate of Zoom Customers with 1-10 employees plus Zoom annual disclosure of customers with 11+ employees (5/19).

Freemium Enterprise = Collaborative / Business-Critical / Annuity-Like









Paid Users — Paid % of Total Users

Source: Dropbox = Public releases & Goldman Sachs Investment Research estimates. Slack = Public press release (05/18), SurveyMonkey = Company releases. Wix = Company presentation (3/19). Wix total users represent those with an account. Note: Paid users refers to subscribers to premium products. Paid user % of total = share of payers in a period divided by total active users in the same period.

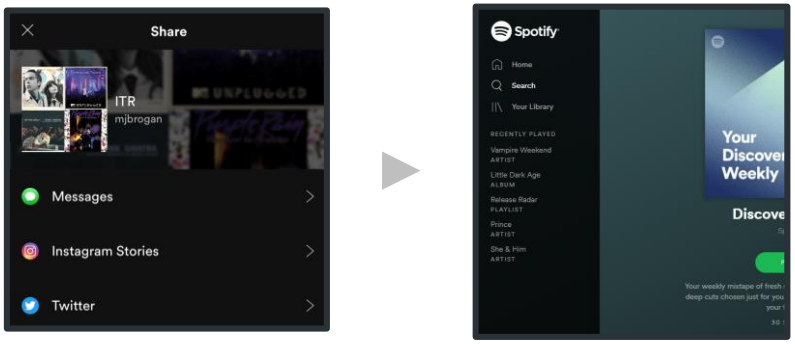
Freemium Business Model Evolution =

Gaming → Enterprise → Consumer

Freemium Consumer (2008) = Spotify…

Free

Share Music / Playlists With Others…



[Spotify] worked because we recognized…
fans wanted all the world's music for free, immediately.

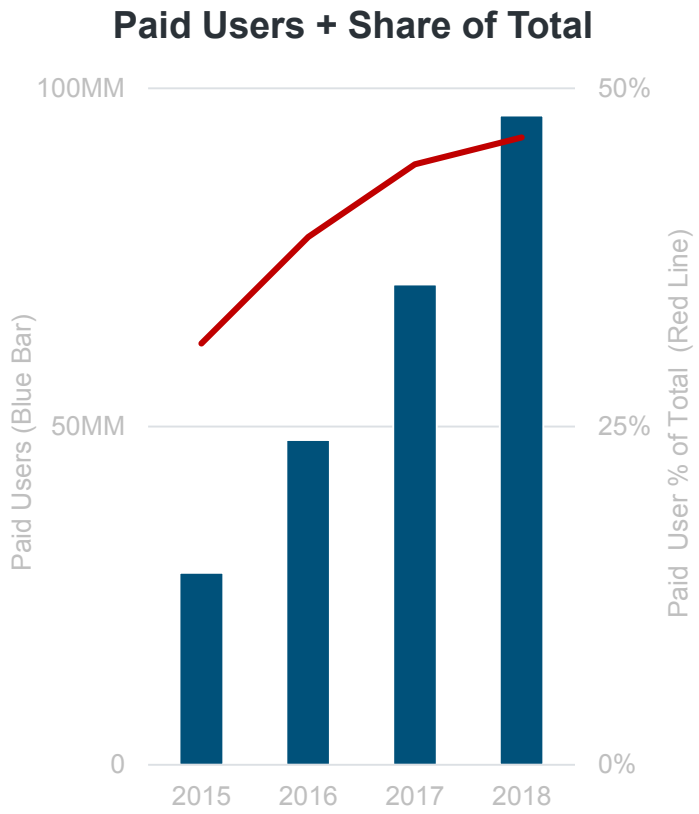
Our users share with their friends the joy of exploring music through Spotify, which creates incredible word-of-mouth for our business.

…Our free product drives premium subscription growth, that leads to better personalization & drives use among younger demographics with greater potential lifetime value.

Daniel Ek – Spotify, Founder / CEO, 3/18

Paid

…Premium User Experience



Source: Spotify Analyst Day Presentation (3/18). Spotify.

…Freemium Consumer (2015) = Canva

Free

Design With Others…

We want everyone in the world to be able to design, whether you are in marketing, sales, a teacher or student - design has become a critical part of most professions to communicate ideas.

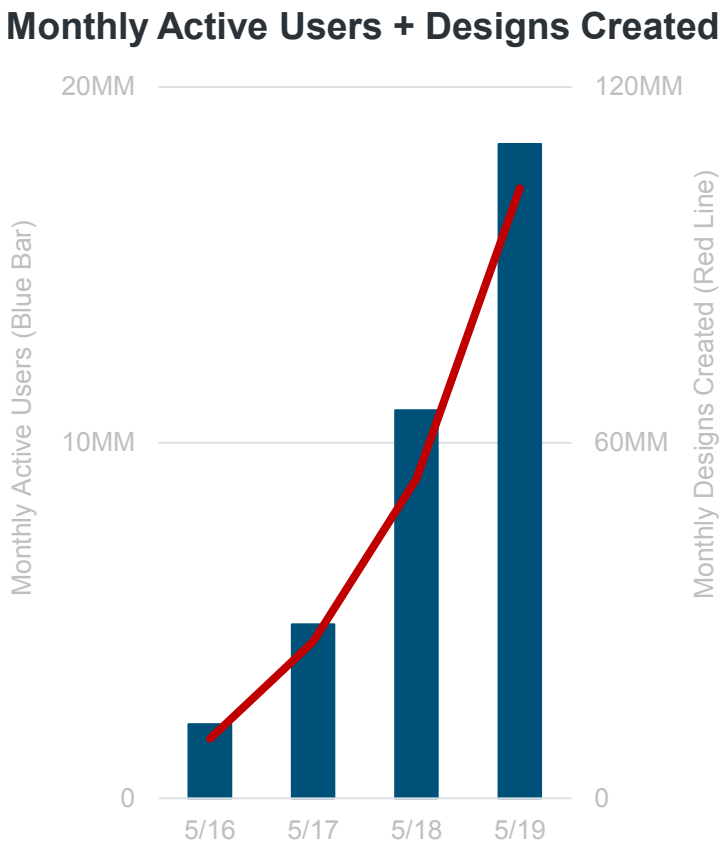
Rather than being stuck with complicated desktop based tools, we want everyone in the world to be able to create incredible designs that look professional and make them proud.

Giving people legitimate value before asking them to pay can be a really useful strategy for any company wanting widespread adoption.

Melanie Perkins – Canva, Co-Founder / CEO, 6/19

Paid

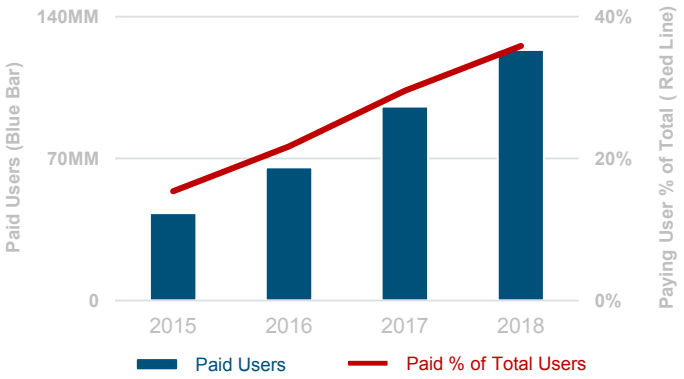
…Premium User Experience



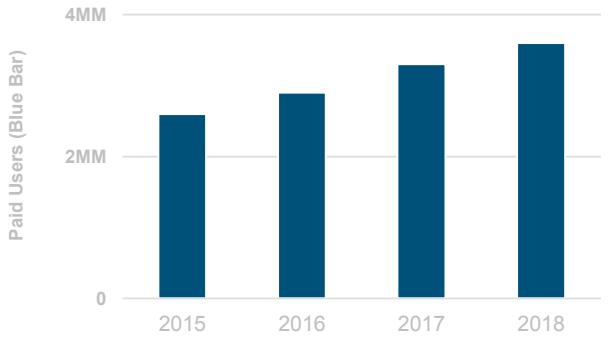
Source: Canva (6/19).

Freemium Consumer = Personalized / Efficient / Often Social / Annuity-Like

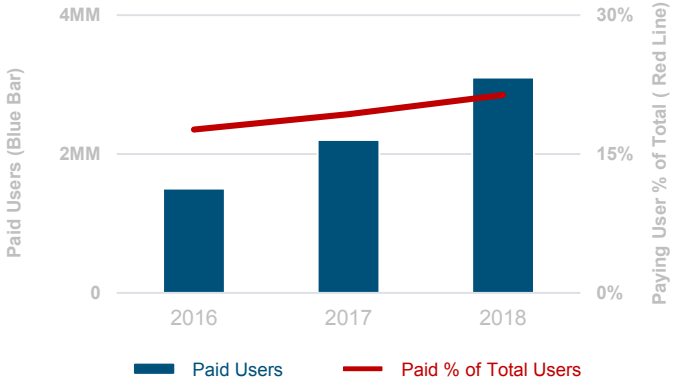
Amazon Prime



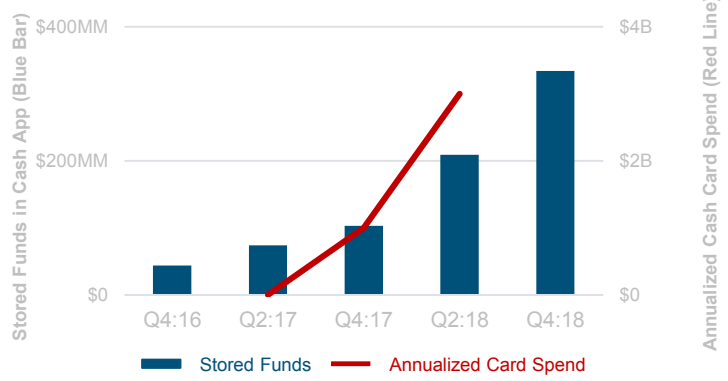
Twitch



Chegg



Cash App



Source: Amazon Prime = Morgan Stanley estimates. Twitch = Morgan Stanley estimates. Chegg = Goldman Sachs Investment Research estimates. Cash App = Square public disclosures. Note: Paying users = subscribers for Amazon Prime / Twitch / Chegg. For Cash App, stored funds represent aggregate customer balances in the app as of the last day of the quarter. For all except Cash App, paid user % of total = share of payers in a period divided by total active users in the same period. Active users for Amazon = Active Paid accounts per MS estimates.

Freemium Business Evolution =

Started in Gaming
Evolving / Emerging in
Enterprise + Consumer…

All In…Just Getting Started

Freemium Business Models = All In…Just Getting Started

Select Publicly Traded *Pure-Play* Freemium Businesses*

>10MM Paid Subscribers (3/19)

Gaming	**Epic Games** (Private Company)	27MM**
Enterprise	**Dropbox**	13MM
Consumer	**Spotify**	100MM

>$1B Annual Revenue (2018)

		$1B+ Revenue 1st Year	Primary Monetization Drivers
Gaming	Nexon	2011	Paid Items / Ads / Subscriptions
	King Digital	2013	Paid Items / Ads / Subscriptions
	Supercell	2014	Paid Items / Subscriptions
	Mixi	2015	Paid Items
	Netmarble	2016	Paid Items
	Epic Games (Private Company)	2018	Paid Items / Subscriptions
Enterprise	**Dropbox**	2017	Subscriptions
Consumer	**Spotify**	2014	Subscription / Ads
	Pandora	2015	Subscription / Ads
	Match Group	2016	Subscription / Ads

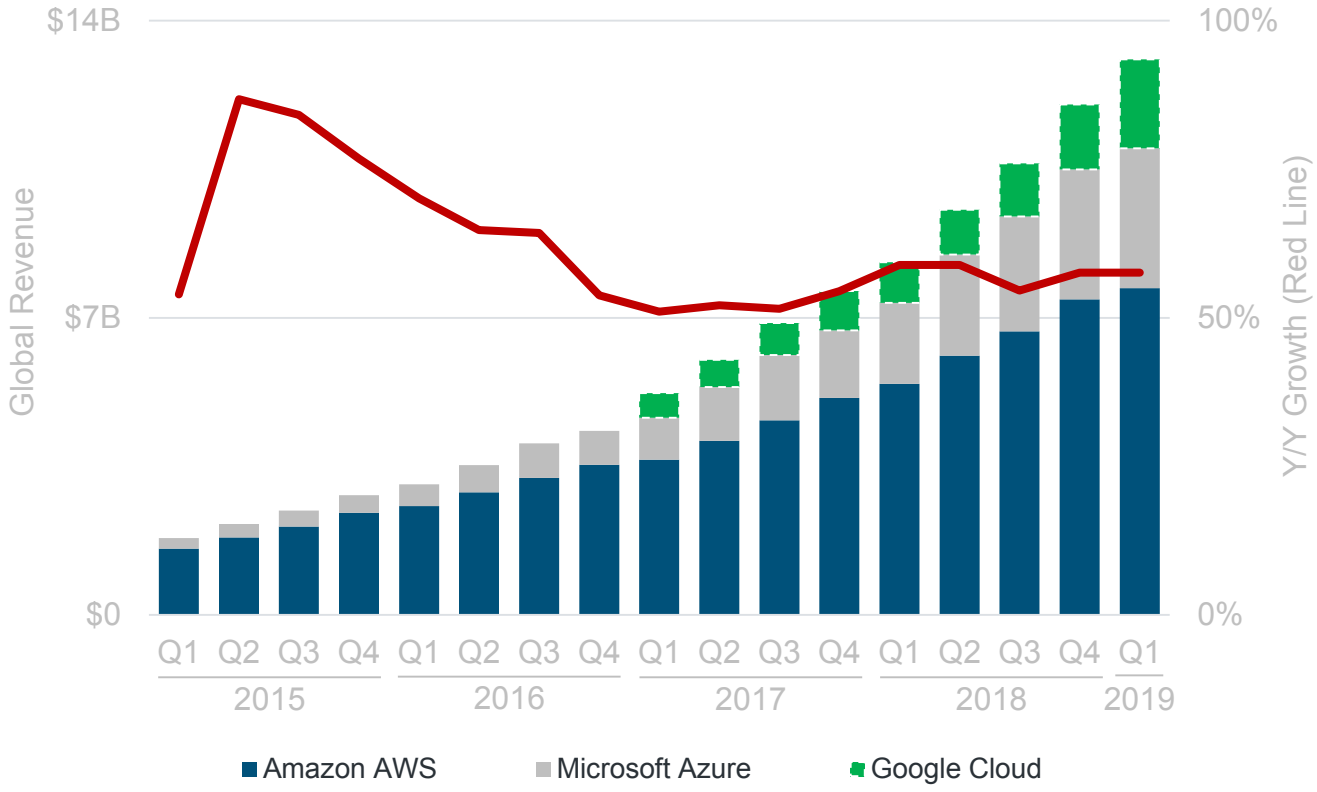
*Excluding China companies where Freemium business models are more mature owing to higher maturity of digital payments, particularly microtransactions / Excludes diversified companies (such as Apple / Amazon / Microsoft) owing to significant revenue contribution from non-freemium businesses / Includes private company Epic owing to scale.
**Epic = Midpoint of 23-31MM estimate for Battle Pass subscribers per Timothy O'Shea @ Jeffries (3/19)…not confirmed by Epic Games. Source: CapitalIQ (including currency conversion) = Nexon / King (2018 Revenue as part of Activision) / Pandora / Mixi / Match Group / Dropbox / Netmarble. Spotify = Wall Street Journal / Company reports. Supercell = Venture Beat.

Freemium Business Model Enabler =

Cloud Deployment…

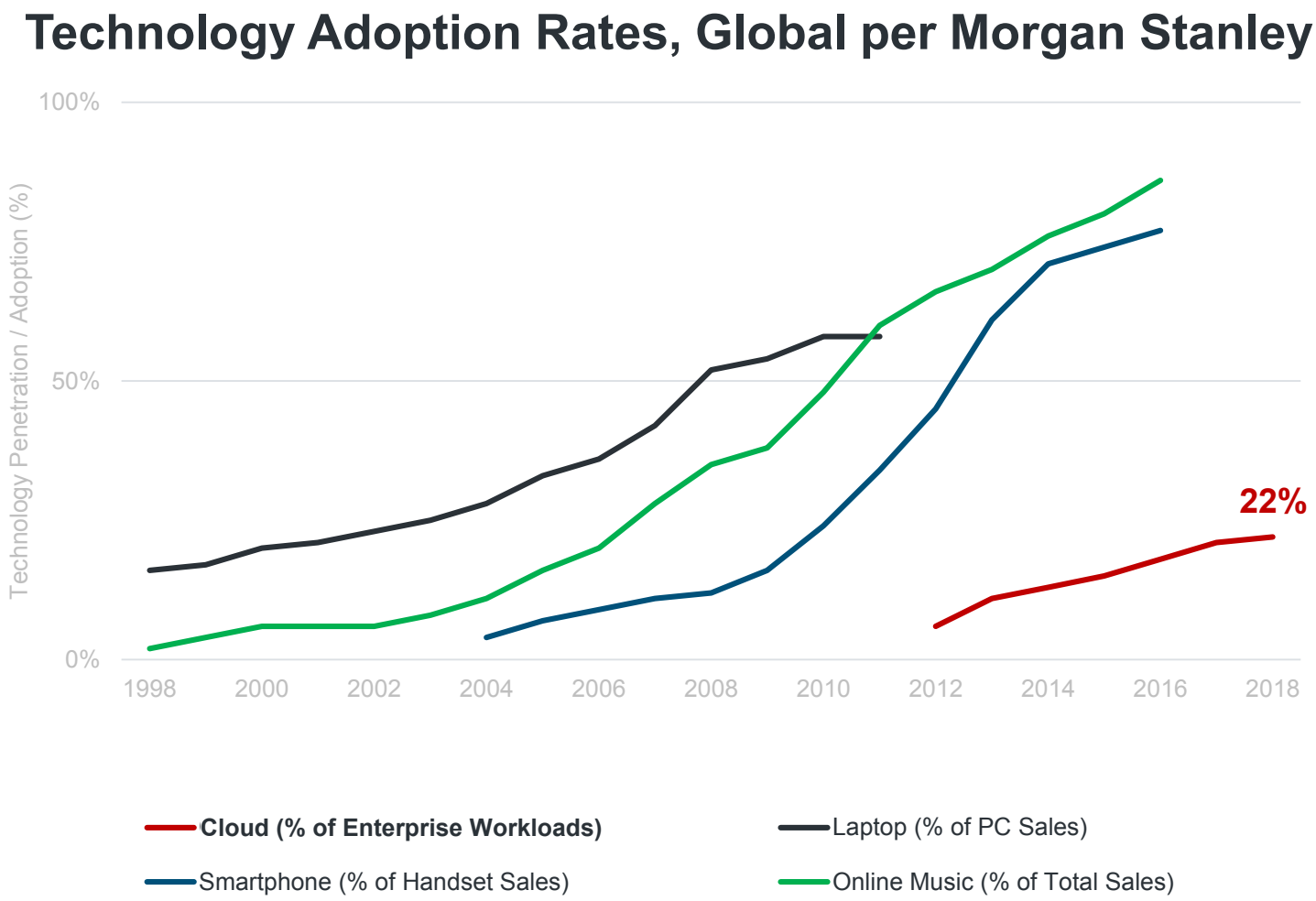
Cloud Deployment = Revenue +58% Y/Y…

Cloud Service Revenue – Amazon + Microsoft + Google



Source: Amazon AWS = Company filings, Microsoft Azure = Keith Weiss @ Morgan Stanley (4/18), Google Cloud = Brian Nowak @ Morgan Stanley (5/18). Note: Google Cloud revenue based on MS annual estimate, applied to quarters using the seasonality trends on 2018. Google only included in 2019 growth rates owing to lack of estimates before 2018.

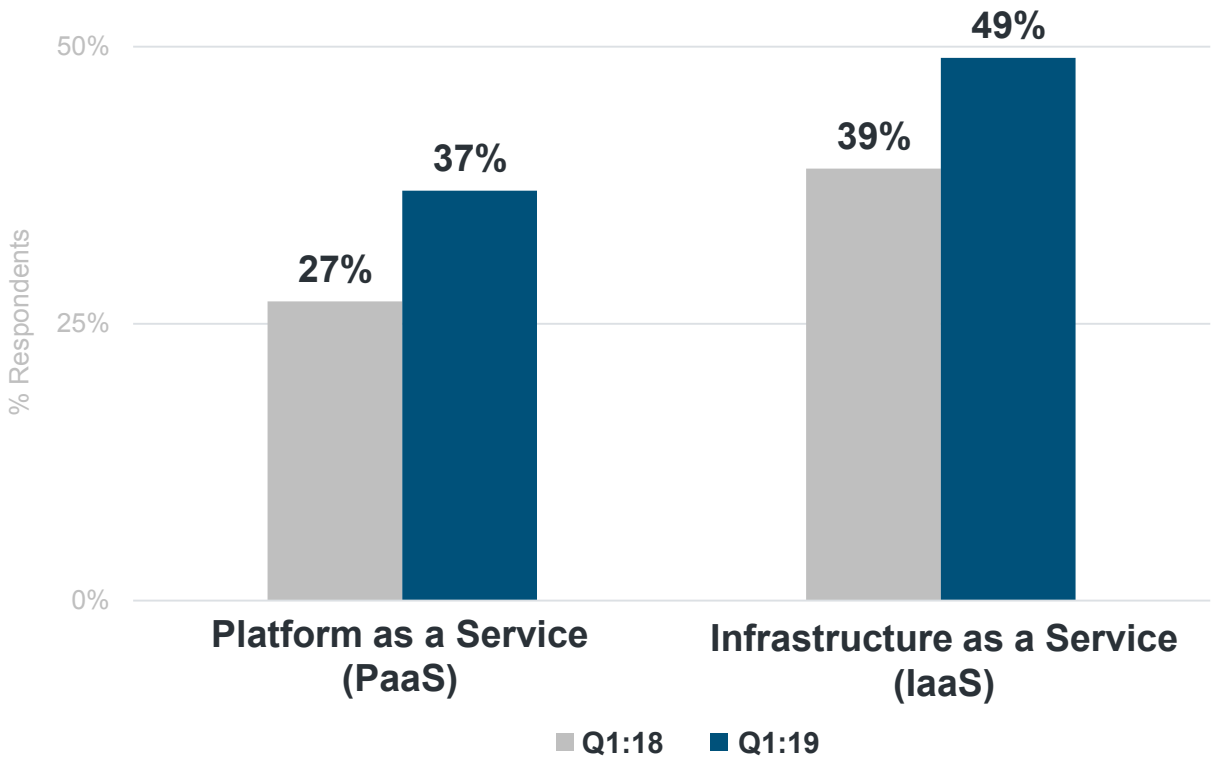
…Cloud Deployment = 22% of Workloads +2x vs. Five Years Ago



Source: Morgan Stanley (5/18-3/19). Note: Estimate of Cloud workload penetration based on Morgan Stanley CIO survey in Q4 of each year.

…Cloud Deployment = Interest Continues to Rise

Cloud Usage – CIO Survey, USA / EU per Morgan Stanley



Source: Morgan Stanley Q1:19 CIO Survey. N= 100 USA / EU CIOs of major companies. Infrastructure as a service defined as cloud computing that uses virtualized resources in the cloud (i.e. processing, storage, etc.), but not software or other value add services. Platform as a service defined as cloud based hardware / software platforms, such as managed middleware.

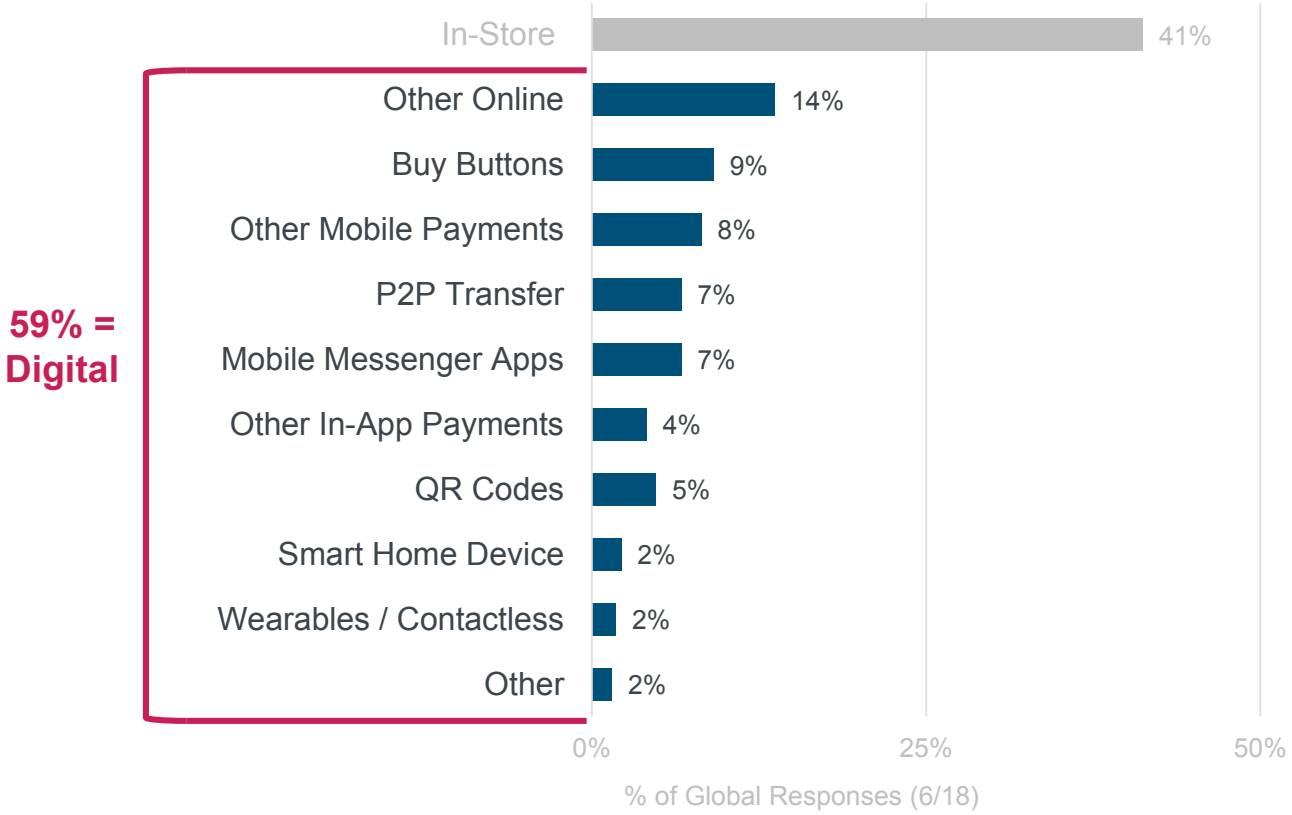
…Freemium / Subscription Business Model Enabler =

Efficient Digital Payments

Digital Payments = >50% of Day-to-Day Transactions

Transactions by Payment Channel

Thinking of your past 10 everyday transactions, how many were made in each of the following ways?



Source: Visa *Global Commerce Unbound 2018* (2/19). Note: Full question was 'Please think about the payments you make for everyday transactions (excluding rent, mortgage, or other larger, infrequent payments). Thinking of your past 10 everyday transactions, how many were made in each of the following ways?', GfK Research conducted the survey with n = 8,127 across 20 countries (USA, Canada, UK, France, Poland, Germany, Sweden, Mexico, Brazil, Argentina, Colombia, Australia, China, India, Japan, South Korea, Russia, UAE, Kenya), between 5/31/18 – 6/29/18. All respondents do not work in Financial Services, Marketing, Marketing Research, Advertising, or Public Relations, own & currently use a smartphone, have a savings or checking account; own/use a computer or tablet, & own a credit or debit card.

DATA GROWTH =

CHANGING WAYS THINGS WORK…
RAPIDLY & GLOBALLY

Data
Collection + Analysis + Utilization =

Evolving From
Humans to Humans / Computers

Pre-1995
Winning Businesses =

*Use **Human** Data / Insights*
To Improve Customer Experiences…

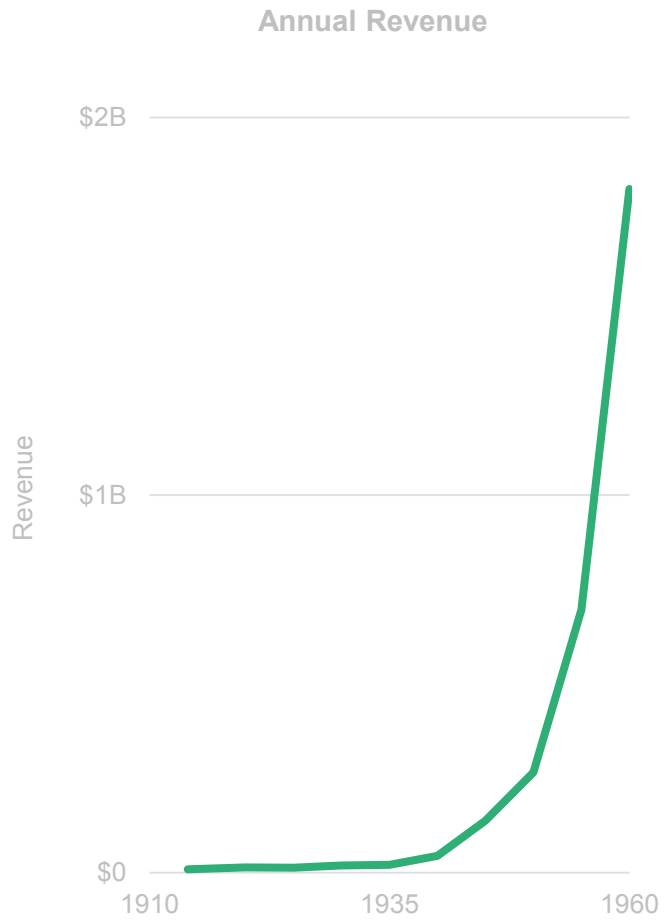
Product Development (1890s-1950s)…
IBM = Feet-on-Street Customer Input

Sales Force + Customers

IBM developed a sales force that became deeply knowledgeable about their customers' operations & could explain benefits specific to each organization. ***Customers became highly engaged with IBM employees to explain what product innovations they needed*** *to better use these [tabulation machines] that had become so essential to their operations.*

Research & development at IBM depended on this interaction between engineers & customers.

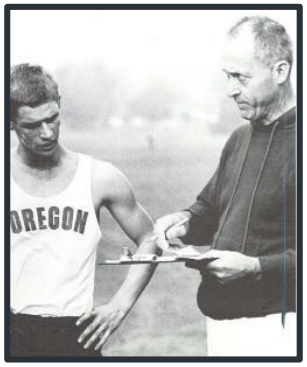
James Cortada – *Change & Continuity at IBM,* 3/18

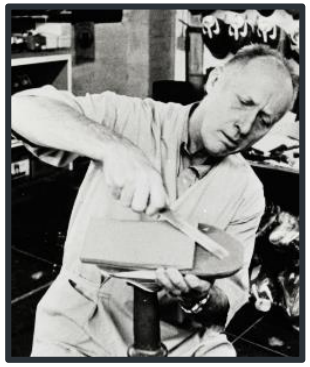


Source: IBM Revenue per IBM Online History Archives (Collected 2019). James W. Cortada's 'Change & Continuity' at IBM: Key Themes in Histories of IBM (Cambridge Press, Spring 2018 edition). Cimarron City Library Digital Archives. Note: Image contains a mixture of IBM sales people, engineers & customers gathered @ IBM Corporation School for collaborative working sessions. Photo taken 1951.

Product Development (1970s)…
Nike = Employee / User Input

Employee / User





All our employees were runners,
we understood the consumer very well…
We & the consumer were one & the same.

We got to know the players at the top of the game & did everything we could to understand what they needed, both from a technological & a design perspective.

Our engineers & designers spent a lot of time talking to the athletes about what they needed both functionally & aesthetically.

Phil Knight – Nike, Founder, 7/92

Source: Nike revenue from 1981 Nike Annual Report Quote: High-Performance Marketing: An Interview with Nike's Phil Knight (HBR July/August 1992 issue)
Image: Nike. Note: Image Depicts Oregon Track Coach / Trainer Using Nike Shoes in Training & Improving New Models Using His Learnings.

Product Development (1980s)…
Chrysler = Focus Group Research

Focus Groups

Business Day
The New York Times
FEBRUARY 7, 1984
Minivan a Hit for Chrysler

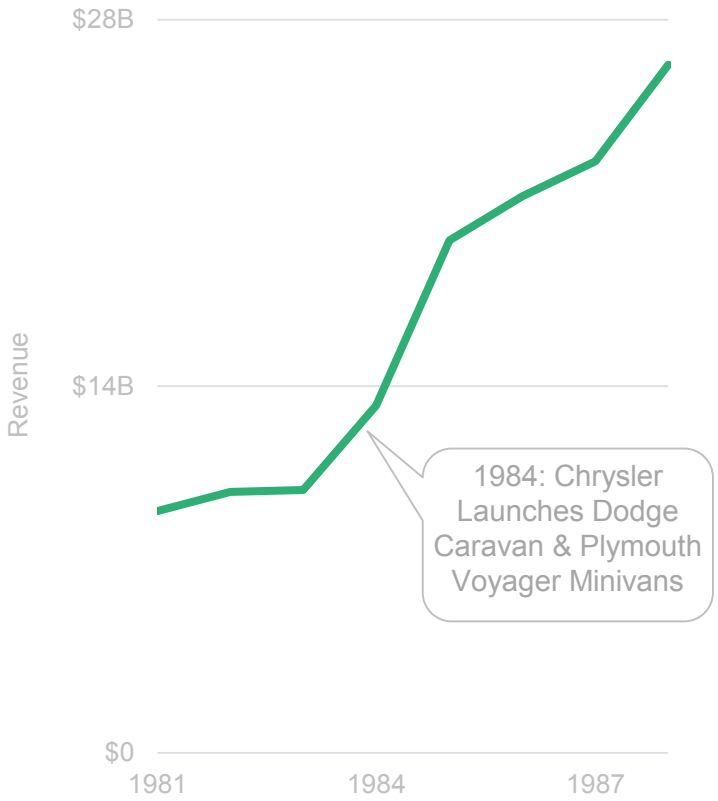
1978 clinics in Atlanta, Denver & San Diego showed that customers wanted –

The ability to park in a standard garage,
a side door opening at least 30 inches wide…
seating for 3 people across, a flat interior floor,
removable seats & the ability to
walk from one end of the van to another.

David Zatz – Hemmings Magazine */ 'Mopar Minivans,'* 2/19

Chrysler

Annual Revenue



Source: Chrysler revenue as reported in *The New York Times* in each year. Data does not include pro-forma revenue from acquisition of American Motors Corp. Quote: David Zatz's 'Mopar Minivans: Creating the first 20 years of Dodge, Chrysler, & Plymouth "magic wagons' as excerpted in Hemming's Magazine (2019) Image: New York Times Digital Archives (1984)

Product Development (1980s)…
Intuit = All-In Focus on Customer Testing

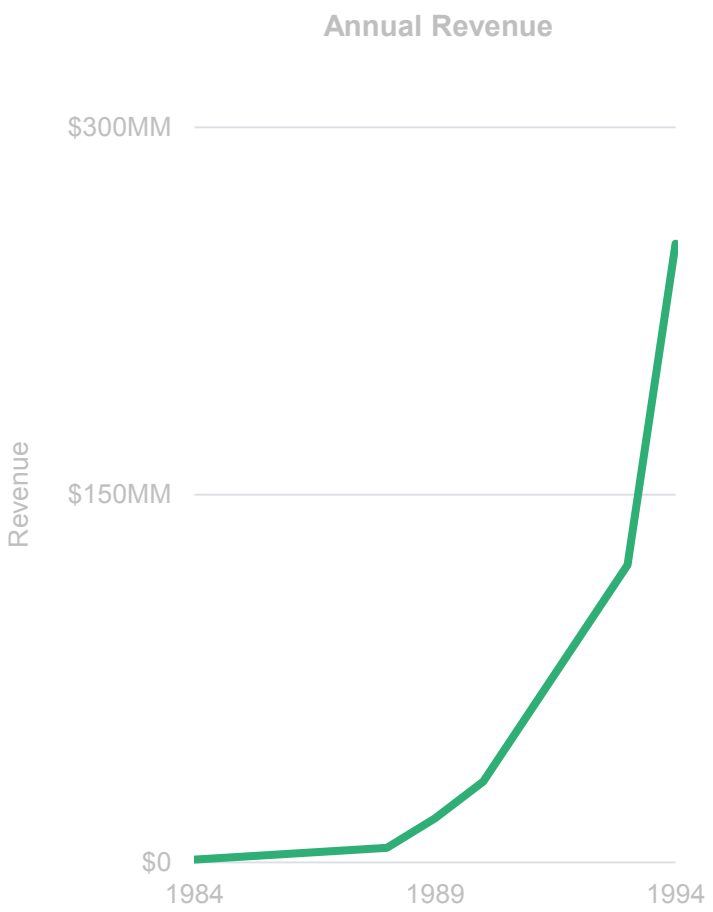
User / Usability Testing

Kwik-Chek User Testing @ Palo Alto Junior League (Inside Intuit, Taken 1984)

***We recruited people off the streets & timed their Kwik-Chek (Quicken) usage with a stopwatch**. After every test, programmers worked to improve the program.*

We did usability testing in 1984, five years before anyone else, there's a big difference between doing it & having marketing people doing it as part of their design…a very big difference between doing it & having it be the core of what engineers focus on.

Scott Cook – Intuit, Co-Founder, 9/03



Source: *Inside Intuit*, Suzanne Taylor, 2003 Photo courtesy of Virginia Boyd as presented by Inside Intuit. Revenue as reported in 'Inside Intuit' for 1988-1990 & as reported to the SEC for 1993/1994. Intuit released its first revenue-generating product, Kwik-Chek in 1984.

…1990s-2000s…

Internet + Mobile Devices + Cloud

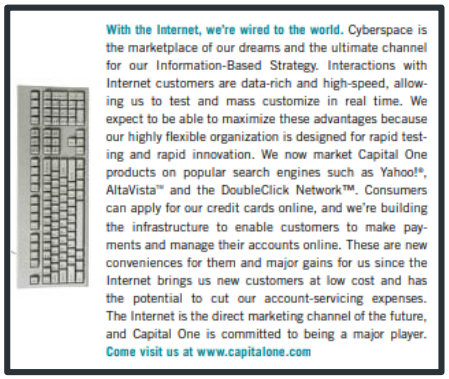
Netscape Web Browser – 1994
Amazon Web Services (AWS) – 2006
Apple iPhone – 2007
Apple App Store – 2008

…Post-1995
Winning Businesses =

*Use **Digital** Data / Insights*
To Improve Customer Experiences…

Marketing Optimization (Post-1995)…
Capital One = Customer Data

Digital Information Capture



With the Internet, we're wired to the world. Cyberspace is the marketplace of our dreams and the ultimate channel for our Information-Based Strategy. Interactions with Internet customers are data-rich and high-speed, allowing us to test and mass customize in real time. We expect to be able to maximize these advantages because our highly flexible organization is designed for rapid testing and rapid innovation. We now market Capital One products on popular search engines such as Yahoo!®, AltaVista™ and the DoubleClick Network™. Consumers can apply for our credit cards online, and we're building the infrastructure to enable customers to make payments and manage their accounts online. These are new conveniences for them and major gains for us since the Internet brings us new customers at low cost and has the potential to cut our account-servicing expenses. The Internet is the direct marketing channel of the future, and Capital One is committed to being a major player. **Come visit us at www.capitalone.com**

*…the technology & information revolution had transformed the **credit card business into an information business…allowing the capture of information on every customer interaction & transaction**.*

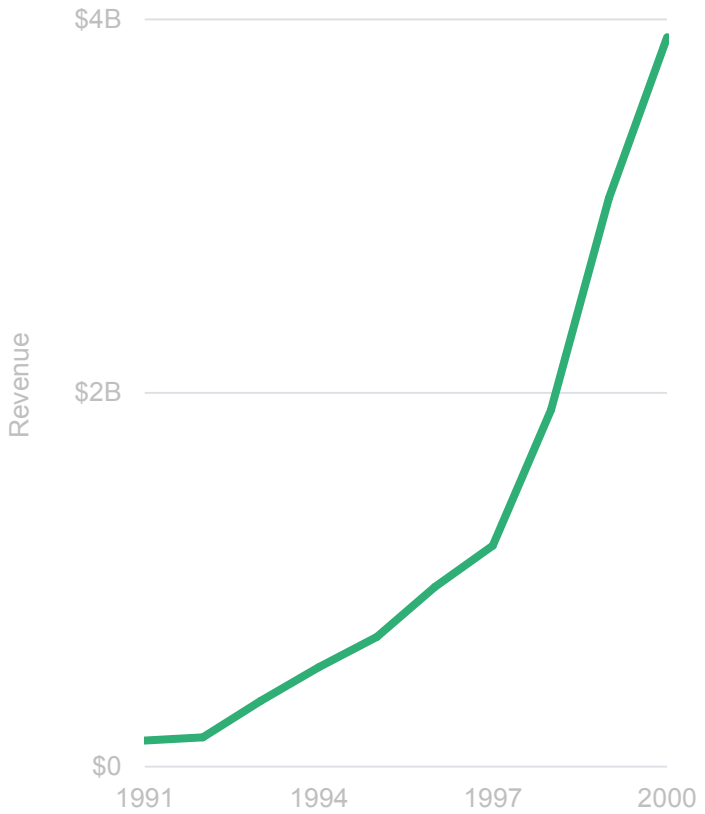
*With this information, we can conduct scientific tests; build actuarially-based models of consumer behavior & **tailor products**, pricing, credit lines & account management **to meet the individual needs & wants of each customer**.*

By exploiting this insight, we have transformed the one-size-fits-all credit card industry & created one of the fastest growing companies in America.

Capital One Annual Report – 1996

Capital One

Annual Revenue



Source: Capital One Revenue From CapitalIQ (Collected 2019) Quote: 1996 Capital One Annual Report Image: 1998 Capital One Annual Report

User Experience + Sales Optimization (Post-1995)… Amazon = Customer Data

Real-Time Digital Information Capture

This is Day 1 for The Internet –
& if we execute well – for Amazon.com.

Today, online commerce saves customers money & precious time. Tomorrow, through personalization, online commerce will accelerate the very process of discovery.

Amazon.com uses the Internet to create real value for its customers &, by doing so, hopes to create an enduring franchise.

This year, we maintained a dogged focus on improving the shopping experience…we now offer...vastly more reviews, content, browsing options & recommendation features.

Amazon Annual Report – 1997

Amazon

Annual Revenue

Source: Amazon Revenue from CapitalIQ (Collected 2019) Quote: 1997 Amazon Annual Report Image: Amazon.com (2019)

…2000s
Winning Businesses =

Build / Use
Data Plumbing Tools

To Use Digital Data / Insights
To Improve Customer Experiences

Data Plumbing Tools = Helping Businesses Real-Time…

Collect Data…

Understand Customer Wants & Improve Business Processes
Increase Customer Input / Improve Products
Manage Direct Customer / Subscriber Relationships
Improve Consumer Decision Making

…Manage Connections…

Organize Internal + External Communication
Communicate with Customers via Multiple Channels
Organize Customer Data Across IT Systems

…Optimize Data

Improve Analytics / Recommendations / Personalization
Respond To Customer Events at Scale
Discover Business Insights + Optimize Fulfillment
Manage Data Growth & Eliminate Inefficiencies

Qualtrics + FabFitFun = Collect Data to… Understand Customer Wants & Improve Business Processes

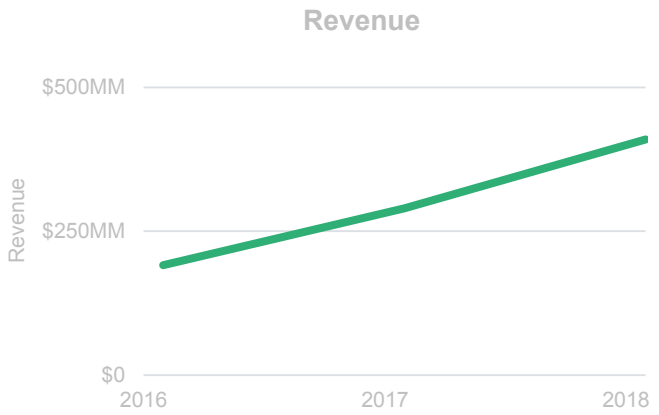
Qualtrics = Experience Management

Every organization in the world needs to collect experience data to close the massive gaps between the experiences they think they are delivering & what is really happening, both internally & externally.

Collecting experience data through Qualtrics allows companies to make adjustments in real time & adapt to fast-paced, changing circumstances. This allows those companies to quickly close experience gaps with their customers & enables employees to work more efficiently to serve those customers.

Ryan Smith – Qualtrics, Co-Founder, 6/19

Qualtrics



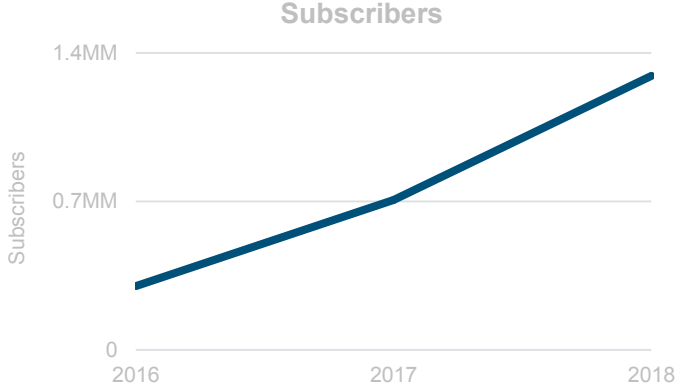
FabFitFun = Community Input

We're constantly tapping our members for real-time feedback to better understand the products & trends they like, the ingredients & formulations that get them excited, & the categories that connect them back to the FabFitFun brand & community.

We've aggregated millions of data points about consumer product & brand preferences allowing us to precisely forecast satisfaction with personalized curations & enable a flywheel between deeper understanding & an improved member experience.

Daniel Broukhim– FabFitFun, Co-Founder / Co-CEO, 6/19

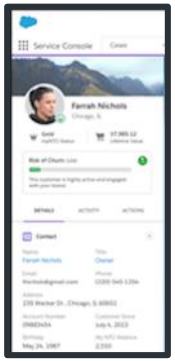
FabFitFun



Source: Qualtrics S-1 Filing (10/18). Morgan Stanley Estimate of 2018 Revenue (as part of SAP). FabFitFun (6/19)

Salesforce + Adidas = Collect Data to… Increase Customer Input / Improve Products

Salesforce = Customer Engagement



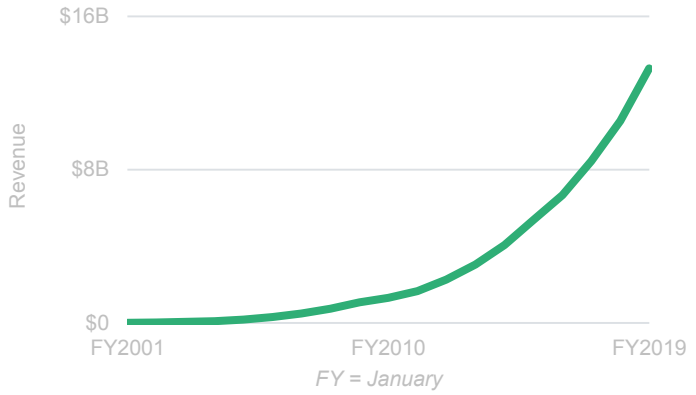
…as every company transforms their relationships with their customers…they're fundamentally changing how they sell & how they service, how they market & innovate.

***They're connecting with their customers in a whole new way. They're building incredible new intelligent 360-degree views of their customers, & they're using extraordinary new tools to get faster, more informed decisions** & at the heart of all this transformation is Salesforce.*

Marc Benioff – Salesforce, Co-Founder / Co-CEO, 8/18

Salesforce

Annual Revenue



Adidas = Customer Co-Creation

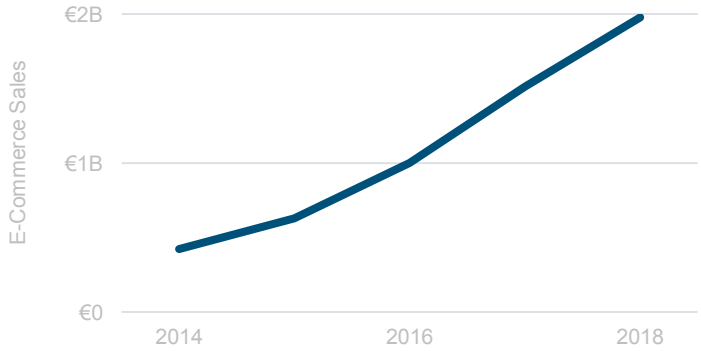
We need to be able to respond to consumer expectations immediately. ***The relationship between Adidas & Salesforce allows us to be proactive in our designs*** *– our ability to roll out new products & influence trends is amazing...*

Our direct connection with customers through Salesforce basically makes it happen overnight.

Kasper Rorsted – Adidas, CEO, 6/18

Adidas

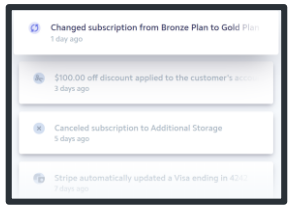
E-Commerce Sales



Source: Salesforce SEC Filing. Goldman Sachs Investment Research. Marc Benioff @ FQ2:19 Salesforce.com Earnings Call (8/18). Salesforce Connections 2018 Keynote Address, Adidas Annual Report (2018)

Stripe + Slack = Collect Data to… Manage Direct Customer / Subscriber Relationships

Stripe = Transaction Management



…the most innovative companies are establishing recurring relationships with their customers. *As these businesses iterate to find the best pricing & sales strategy, they're often unnecessarily constrained by what their billing system allows.*

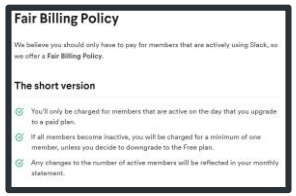
[Customers] needed to do more than just simple subscription management. Based on feedback from many of our customers & others, we built Stripe Billing to provide fast-growing businesses the tools to move quickly & design billing around customer experience.

Noah Pepper – Stripe, Engineering & Product Management, 4/18

Stripe

Stripe Billing

Slack = Effective Billing of Users



Slack recently launched Fair Billing Policy & it makes our customers say 'Wow, that's amazing.'

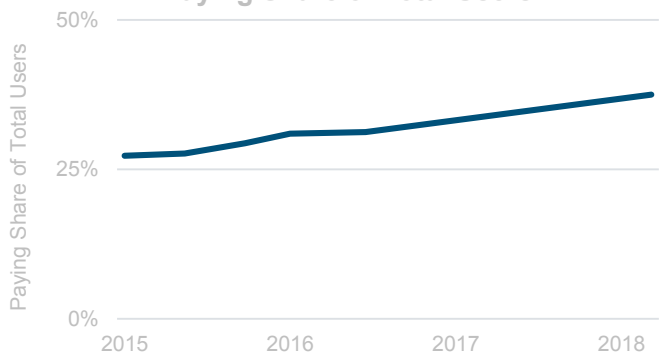
They'll tweet about it, tell their friends about it. They'll be very happy with us. They'll be much more likely to renew. They have a positive impression.

That positive impression, obviously, makes a huge difference.

Stewart Butterfield – Founder / CEO, Slack, 7/15

Slack

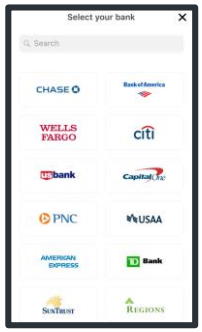
Paying Share of Total Users



Source: Stripe blog post (4/18). Stripe (6/19). Slack public disclosures (2015-2018). Stewart Butterfield Interview with SaaStr (7/15).

Plaid + Betterment = Collect Data to… Improve Consumer Decision Making

Plaid = Financial Data Access

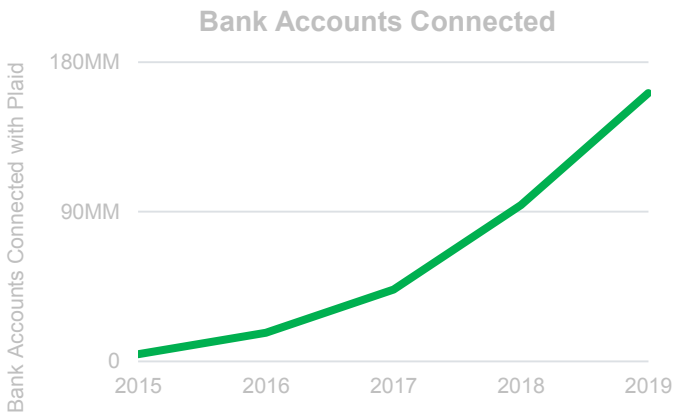


In the past, financial services were organized geographically – a bank would serve a local population & offer whatever services it thought that area needed – which often meant many consumers were underserved. Today, a new class of user-centric financial services companies are emerging that use data to tailor their services to the specific needs of individual consumers.

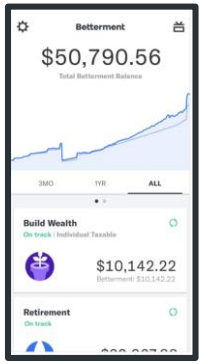
Our goal at Plaid is to build the infrastructure that enables consumers to easily & securely share their financial data with any financial services app that helps them live healthier financial lives.

Zach Perret – Plaid, Co-Founder / CEO, 6/19

Plaid



Betterment = Automated Financial Management

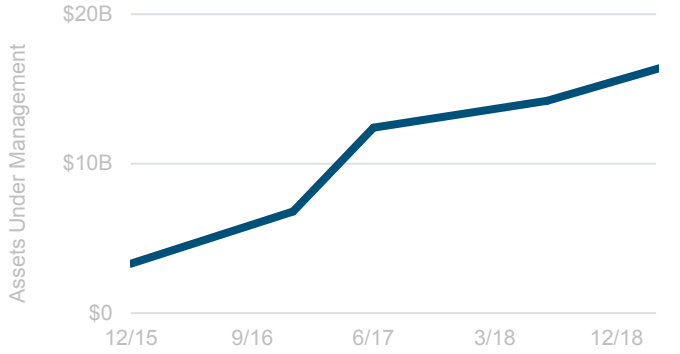


Emotions drive human behavior, especially when it comes to money – people often engage in sub-optimal behaviors like trying to time the market.

Delivering high quality automated financial advice in real-time at scale requires access to consumers' financial data. We're able to use data from Plaid and other sources to deliver personalized, low-cost financial advice to more than 450,000 customers.

Jon Stein – Betterment, CEO, 6/19

Betterment



Source: Plaid (6/19). Betterment disclosures and press releases (3/16-6/19).
Bank accounts connected refers to accounts connected to 3rd party services via Plaid.

Slack + HelloFresh = Manage Connections to… Organize Internal + External Communication

Slack = Communication Channels

What Google is doing for the web, we're trying to structure by channel.

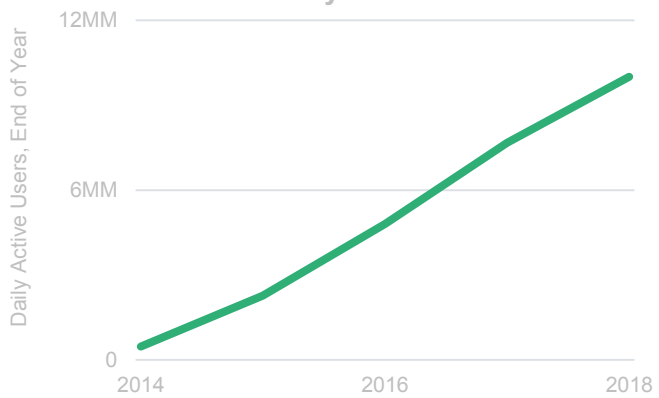
Team-first, organization-first approach to messages as opposed to individual first.

As individual productivity increases, it's the handoff between people that gets more complicated. The talking to other people is the actual work.

Stewart Butterfield – Slack, Founder / CEO, 5/18

Slack

Daily Active Users



HelloFresh = Feedback Mentoring

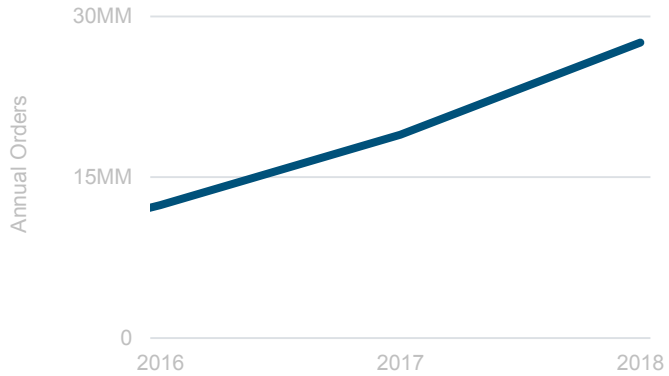
HelloFresh uses Slack bots to monitor social media.

Whenever someone mentions HelloFresh, the bot pushes these notices into a Slack channel. They're similarly alerted whenever they get a review of their app on the Apple Store or Google Play.

HelloFresh – 9/17

HelloFresh

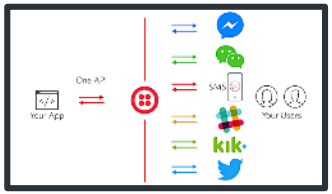
Annual Orders



Source: Slack Public Press Releases, Stewart Butterfield Interview With Inc. (5/18). Slack Public Case Study, Twitter (4/19) Hello Fresh Annual Reports.

Twilio + Shopify = Manage Connections to… Communicate with Customers via Multiple Channels

Twilio = Customer Communication

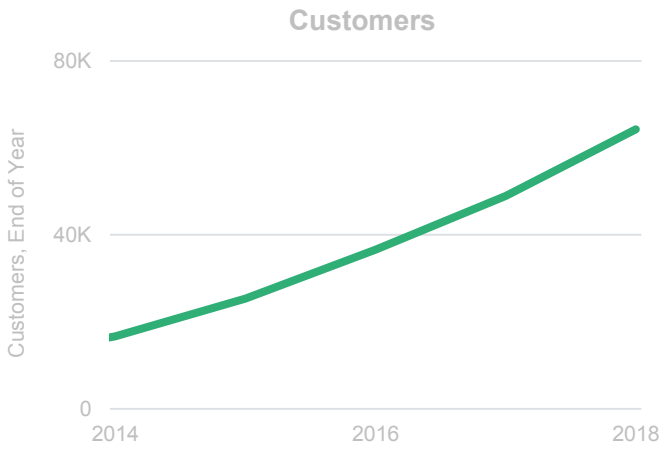


15 years ago, talking to customers meant you had a phone number & customers could call it. Now, you've got text messaging, chat, mobile apps with push notifications, WeChat, WhatsApp, Facebook Messenger.

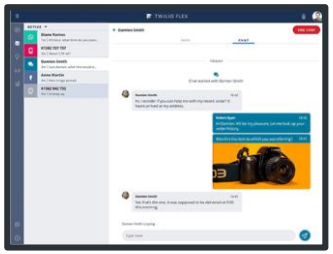
We want to provide one system that allows companies to keep up with this rapidly changing landscape & constantly iterating on those customer experiences with easy to use tools & infrastructure that they don't have to worry about scaling.

Jeff Lawson – Twilio, Founder / CEO. 11/17

Twilio



Shopify = Multi-Channel Dialog

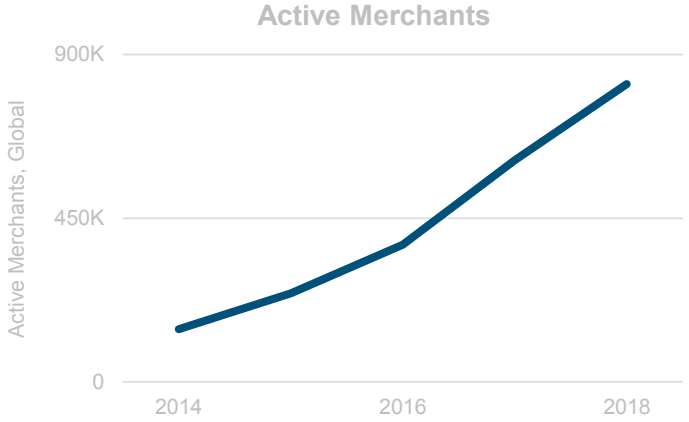


We want to create an easy experience for our customers…we want to establish trust & form a human relationship with our customers *[merchants] when they reach out for support on our platform.*

It is essential to give our team the tools to cultivate those relationships from anywhere in the world on the channels that our customers want to use.

Chris Wilson – Shopify, Merchant Operations, 11/18

Shopify



Source: Twilio Releases / Case Study (11/18). Jeff Lawson interview with BlogGeek.me (11/17).
Shopify active merchants per Brian Essex @ Morgan Stanley.

Segment + Meredith = Manage Connections to… Organize Customer Data Across IT Systems

Segment = Customer Data Infrastructure

Today's customers expect highly relevant, contextualized experiences wherever they interact with a business. However, this is an extremely difficult technology problem to solve.

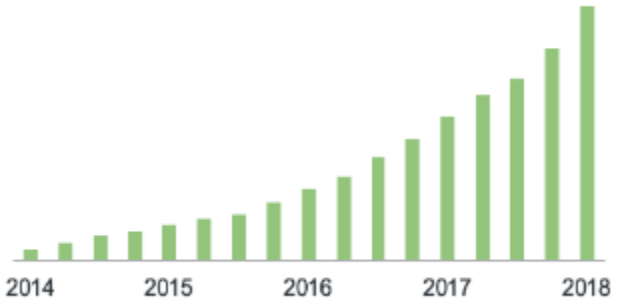
Businesses are interacting with customers across dozens of digital channels, leading to a tangled mess of data that is siloed throughout their organization.

Customer Data Infrastructure solves this problem. It allows companies to collect, manage & easily route their first-party data to whichever application requires it, ensuring customer experiences are consistent and relevant.

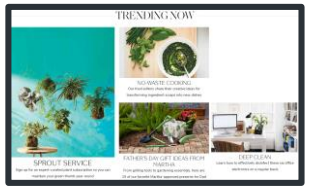
Peter Reinhardt – Segment, Co-Founder / CEO, 6/19

Segment

Annual Recurring Revenue



Meredith = Content Recommendation



Segment has enabled us to streamline the customer data capture process, while maintaining flexibility to customize for each of our 36+ magazine brands as needed.

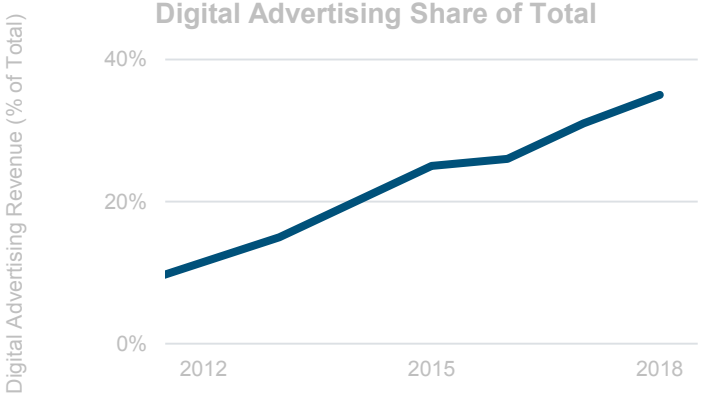
Before adopting Segment, we were spending far too much money on disjointed analytics & we had no way to look at the entire network at scale…

We now look across the entire organization to make sure we're best serving all of these groups.

Grace Preyapongpisan & Kerry-Anne Doyle –
Meredith, Business Intelligence, 1/18

Meredith

Digital Advertising Share of Total



Source: Segment, Peter Reinhardt Blog Post (9/18). Segment Release (2018) Meredith Annual Reports (2012-2018). Note: Meredith digital advertising reflects National Media segment.

Snowflake + Instacart = Optimize Data to…
Improve Analytics / Recommendations / Personalization

Snowflake = Broad Data Access

There's a lot of value in business data, but most companies struggle to extract that value.

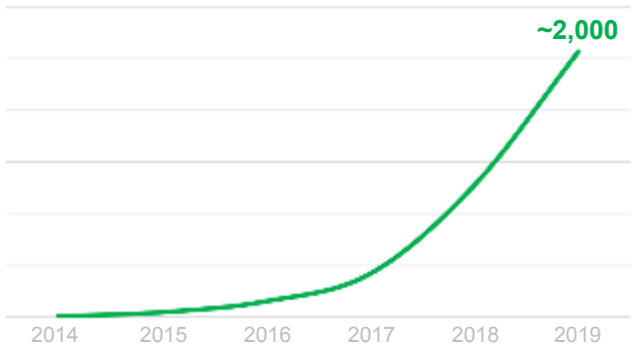
The issue is with existing technology. The list of challenges we hear from our customers is consistent: ***Data is segregated into separate silos, significant energy goes into managing infrastructure, concurrency & resource limitations get in the way of business needs & overall the tools are hard to work with****.*

Snowflake's unique architecture solves these problems being built from the ground up to leverage the scale, performance & elasticity of the cloud.

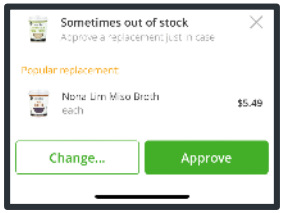
Frank Slootman – Snowflake, CEO, 6/19

Snowflake

Monthly Active Customers



Instacart = Product Replacements



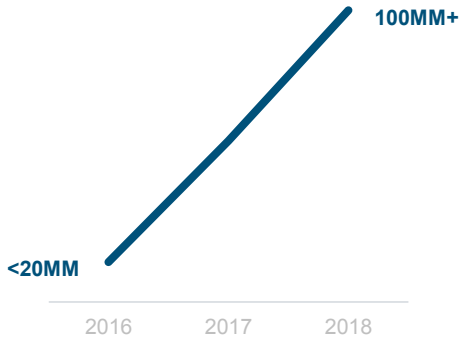
Every time an Instacart shopper scans an item into their cart or marks an item as "not found," we get information that helps us make granular predictions of an item's in-store availability. This helps us recommend appropriate replacements for items likely to be out-of-stock.

Among other improvements, performing complicated feature engineering in our Snowflake data warehouse instead of python, this new [item replacement] tool, which scores 15x more items than previous tools, was built with 1/5 of the resources in 1/4 of the time*.*

Instacart – 12/18

Instacart

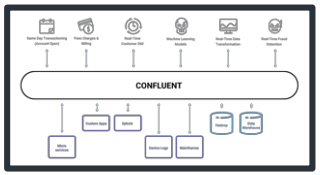
Households Covered



Source: Snowflake (5/19). Instacart (12/18).

Confluent + Accor = Optimize Data to… Respond to Customer Events at Scale

Confluent = Data / Event / Response



Companies are still running on tech from batch-process era, yet their ***customers expect experiences with real-time, contextual information.***

Companies are now re-architecting their businesses around real-time data with a new kind of data infrastructure called event streaming platforms.

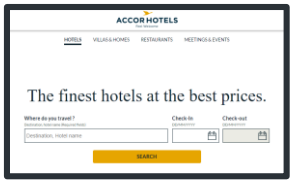
With Confluent, companies can connect all of their systems & power applications with live data sources. ***Now, they can engage their customers based on real-time events.***

Jay Kreps – Confluent, CEO, 6/19

Confluent

Annual Bookings

Accor = Availability Request Processing



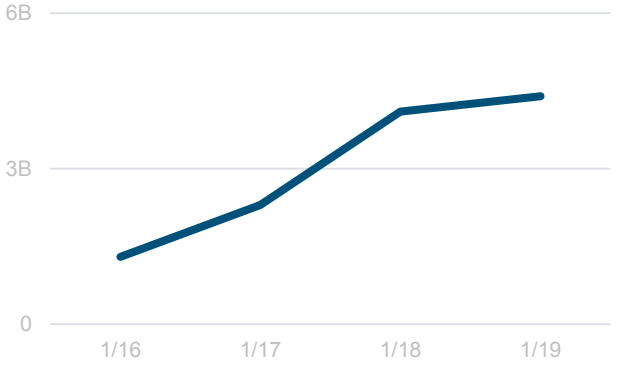
Accor's augmented hospitality offerings include 4,800 hotels, resorts, & residences across 100 countries.

As part of a shift to a more connected, real-time future, Confluent is helping simplify & transform the booking lifecycle, connecting the data & event streams that are triggered the second a customer clicks 'book,' from processing the payment & fraud detection to adding dietary requirements & room preferences from previous bookings.

Julien Ramakichenin – VP Distributed & Intelligent Systems, Accor, 6/19

Accor

Monthly Requests for Lodging Availability



Source: Confluent (6/19), Accor (6/19)

Looker + FarFetch = Optimize Data to…
Discover Business Insights + Optimize Fulfillment

Looker = Business Intelligence

Looker helps companies better understand all the data they have & I think this has been a holy grail for a long time.

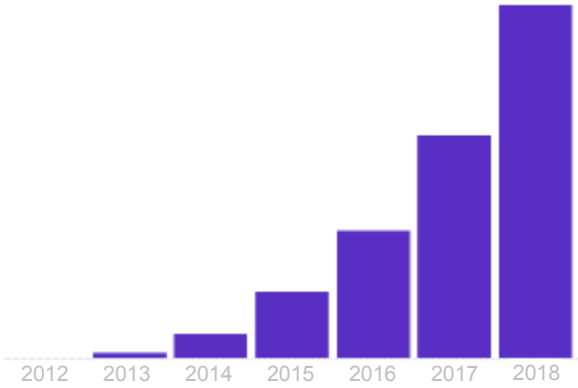
Companies want to be data-driven. They want their employees to be able to ask questions & get factual answers.

When we started out, companies didn't understand the lifetime value of their customers completely, & there was this chaos going – we wanted to bring data into the reach of any company so it could use it more effectively.

Frank Bien – Looker, President & CEO, 8/18

Looker

Customers



FarFetch = Optimize Order Fulfillment

In luxury fashion, there is often a mismatch between supply & demand...Emerging brands typically have no route to the global market & their distribution is limited.

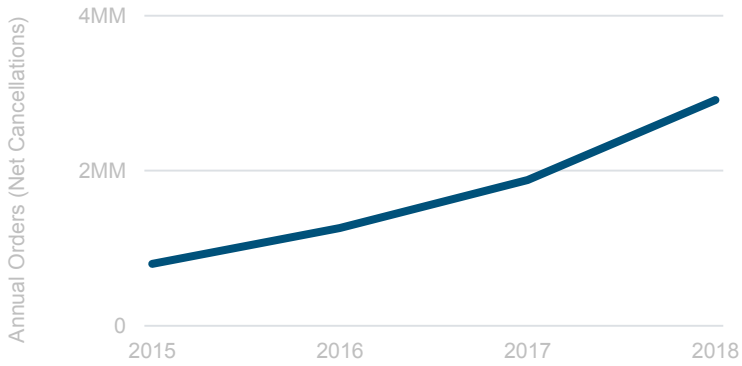
Farfetch has more supply / demand data than anyone else in the luxury fashion industry & is now supplementing it with even more market data.

Over time, Farfetch will turn that data into strategic commercial insights to form the basis of advisory for the fashion industry (starting with the luxury brands) through the development of a disruptive insights platform.

Farfetch – 3/19

FarFetch

Annual Net Orders



Source: Looker (6/19) San Jose Mercury News (8/18). Farfetch release (3/19).

UiPath + Sumitomo Mitsui = Optimize Data to… Manage Data Growth & Eliminate Inefficiencies

UiPath = Data-Driven Process Automation

UiPath Computer Vision Training

…[Robotic Process Automation's (RPA)] benefits compound as employees are freed from the burden of routine, monotonous manual work, enabling them to focus on high-value tasks such as improving customer service, enabling front-line staff to retrieve more data at a faster rate & enhancing every aspect, from the booking experience to customer service support.

This leads to greater employee satisfaction & more productive staff who deliver better customer service experience & positive feedback from customers.

Daniel Dines – UiPath, Founder / CEO, 4/18

UiPath

Customers

Sumitomo Mitsui = Increase Support Capacity

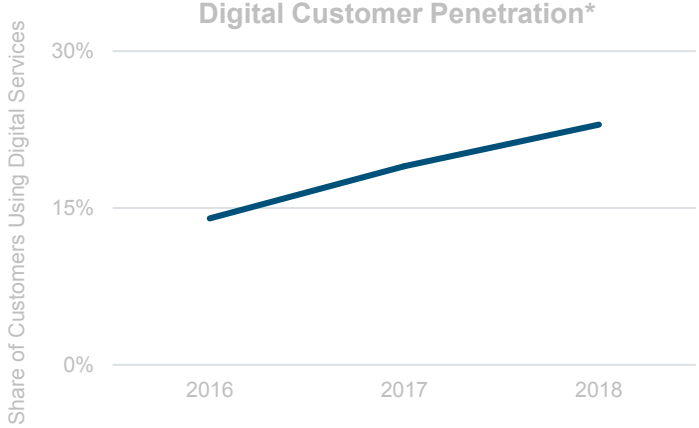
Our key areas of RPA implementation include – information gathering processes used to enhance sales & planning capabilities (customer transaction / industry data) & supporting branch operations (customer performance reports / mortgage loan brochures).

The anticipated 3MM person-hours of productivity to be generated over the next 3 years [by using RPA] will be used to expand value-add operations, *like enhancement of sales capacity through improved customer proposals.*

Sumitomo Mitsui Financial Group

Sumitomo Mitsui

Digital Customer Penetration*



Source: UiPath. Daniel Dines interview with Aviation & Defense Universe (4/18). Sumitomo Mitsui Banking Corporation press release (11/17) & 2017 annual report (5/18). Digital penetration defined as share of customers using any digital channel to conduct banking operations.

…Data Plumbing Tools = Helping Businesses Real-Time

Collect Data…

Understand Customer Wants & Improve Business Processes
Increase Customer Input / Improve Products
Manage Direct Customer / Subscriber Relationships
Improve Consumer Decision Making

…Manage Connections…

Organize Internal + External Communication
Communicate with Customers via Multiple Channels
Organize Customer Data Across IT Systems

…Optimize Data

Improve Analytics / Recommendations / Personalization
Respond To Customer Events at Scale
Discover Business Insights + Optimize Fulfillment
Manage Data Growth & Eliminate Inefficiencies

Data is now fundamental to how people work & the most successful companies have intelligently integrated it into everyone's daily workflow…

Data is the new application.

Frank Bien – CEO & President, Looker, 6/19

Data / Artificial Intelligence

– Used Properly –

Can Improve Customer Satisfaction

Retail Customer Satisfaction = Can Rise With Data + Personalization

Survey of Retail Customers

91%
Prefer Brands that Provide
Personalized Offers / Recommendations

83%
Willing to *Passively* Share Data in
Exchange for Personalized Experiences

74%
Willing to *Actively* Share Data in
Exchange for Personalized Experiences

Accenture (Global*)

Source: *Accenture survey of 8,000 consumers in Canada, France, Germany, Italy, Spain, Sweden, The UK, & USA (2018).
Note: Passively sharing data includes things like purchase history, etc. Active sharing data would include brand preference, favorite fabrics, etc.

People around the world have called for comprehensive privacy regulation in line with the European Union's General Data Protection Regulation, & I agree…

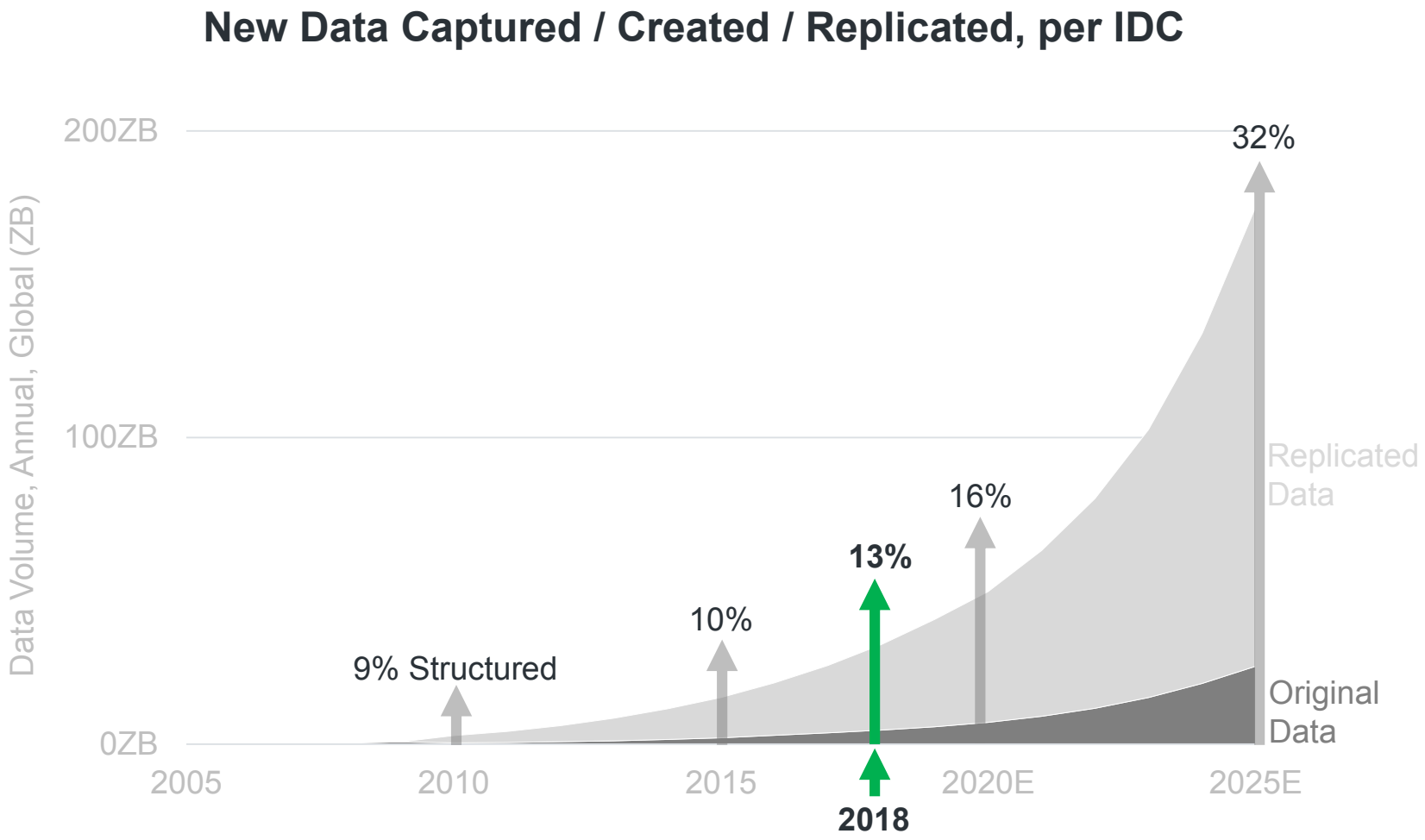
…[New Regulation] should protect your right to choose how your information is used — while enabling companies to use information for safety purposes & to provide services.

Mark Zuckerberg – Co-Founder / CEO, Facebook, 3/19

Data Volume + Utilization =

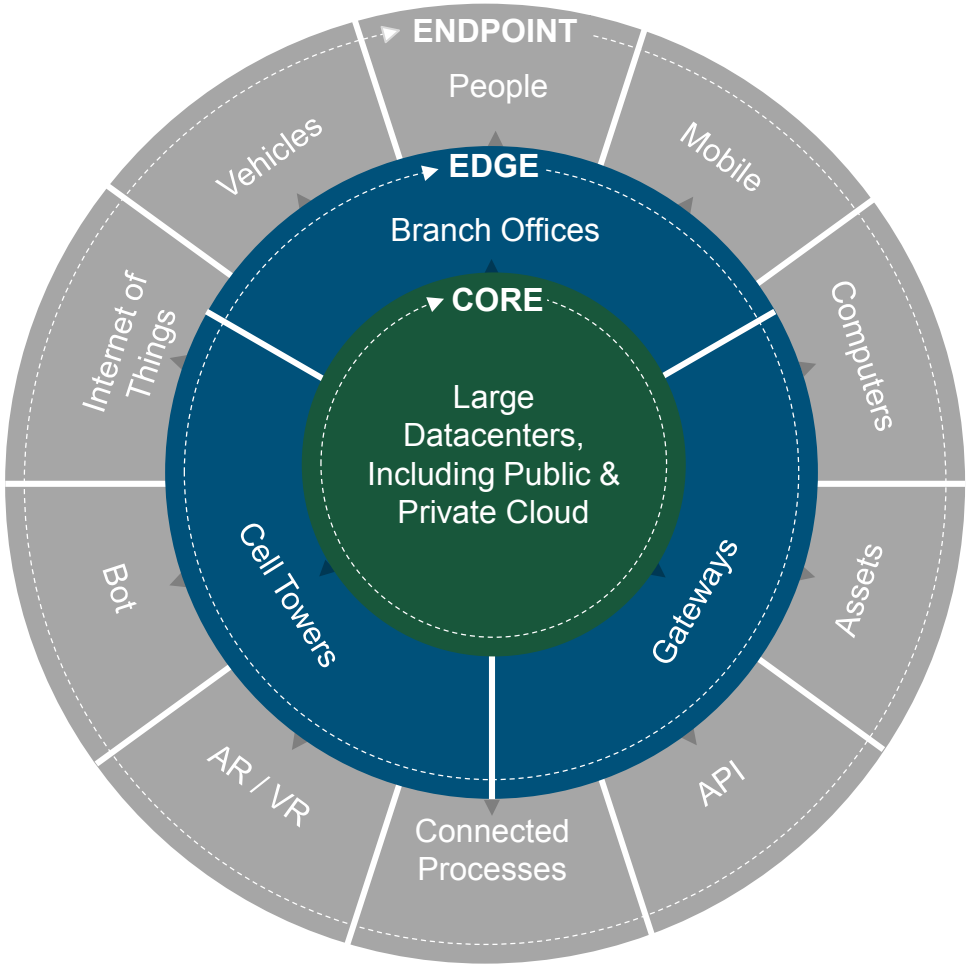
Evolving Rapidly / Broadly

Data Volume = Extraordinary Growth…
~13% Structured / Tagged & Rising Rapidly



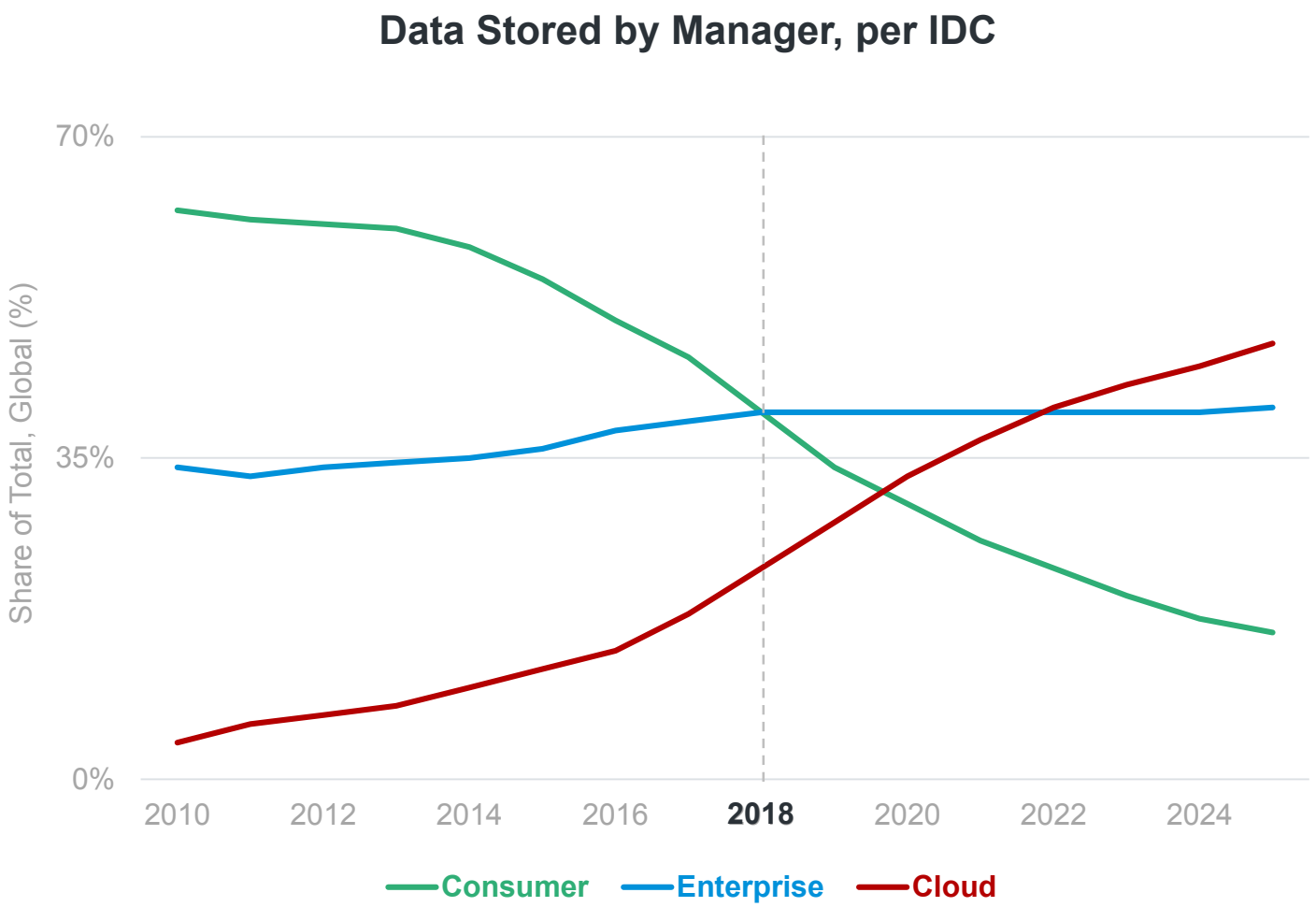
Source: IDC 'Digitization of the World From Edge to Core White Paper' developed in collaboration with Seagate (11/18), IDC DataSphere. Note: 1 petabyte = 1MM gigabytes, 1 zeta byte = 1MM petabytes of new data created / captured each year. The grey area in the graph represents data generated, not stored. Structured data indicates data that has been organized so that it is easily searchable & includes metadata & machine-to-machine (M2M) data. Replicated data = data that is a copy of the original..

Data Propagation = Expanding…
Endpoints ⇋ Edge ⇋ Core



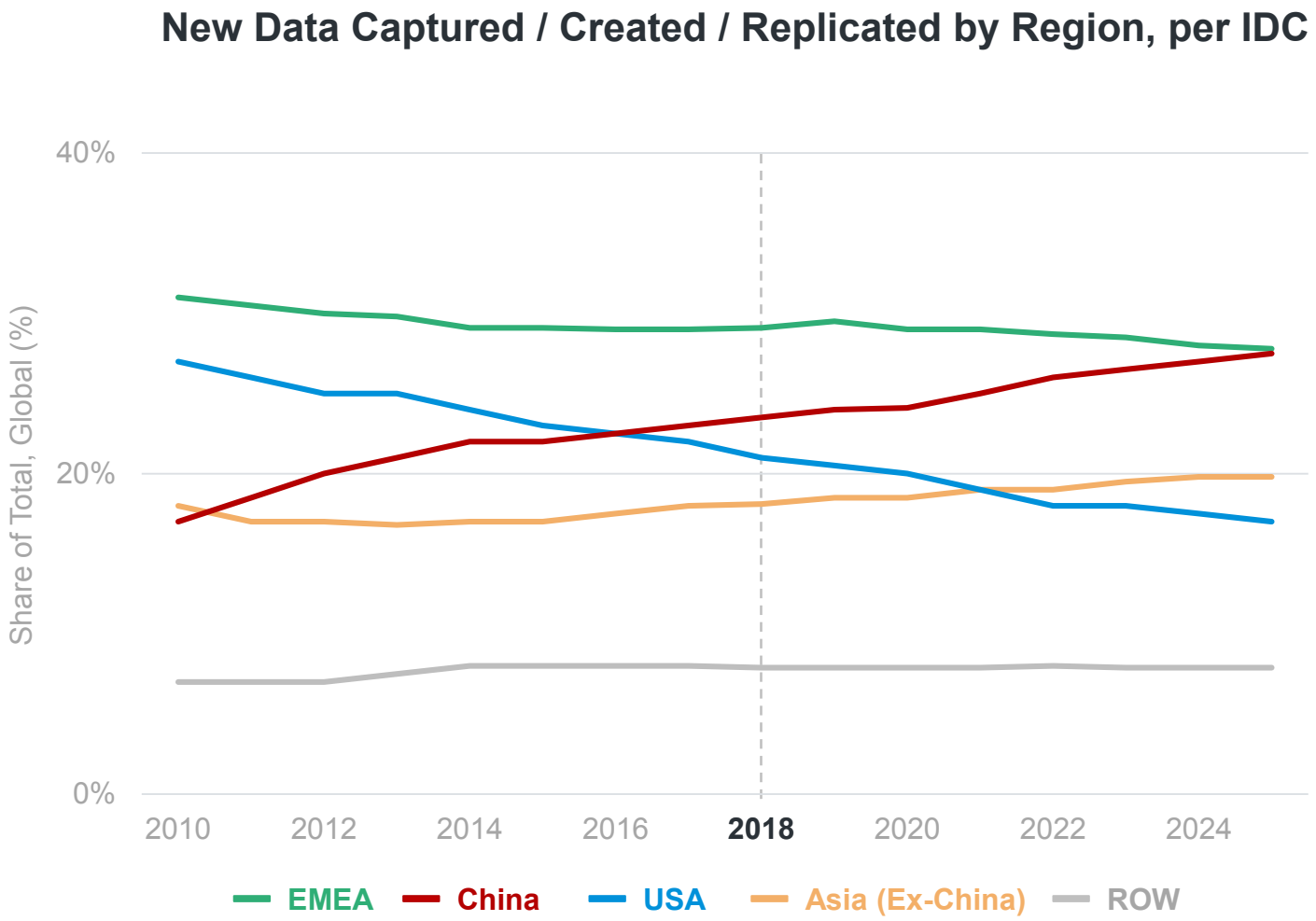
Source: Adapted from Graphics presented in IDC 'Digitization of the World From Edge to Core White Paper' developed in collaboration with Seagate (11/18), IDC DataSphere.

Data Stewardship = Evolving…
Enterprise Surpassed Consumer…Cloud Overtaking Both



Source: IDC 'Digitization of the World From Edge to Core White Paper' developed in collaboration with Seagate (11/18), IDC DataSphere.
Note: Consumer refers to devices owned by end users, such as smartphones, computers, external hard drives, etc. Enterprise refers to data stored by businesses, often in on-premise data centers. Public cloud refers to services such as Amazon Web Services, Microsoft Azure, Google Cloud, etc. Note: 2018 = last full year before release of report. 2019-2025 are estimated from current trends.

Data Volume Share = EMEA Leads…
Followed by Fast Rising China…USA Falling



Source: IDC 'Digitization of the World From Edge to Core White Paper' developed in collaboration with Seagate (11/18), IDC DataSphere. IDC estimates that China's Data captured / created / replicated will grow 30% annually for next 7 years owing to more Internet users creating more data in China & China's above average usage of video surveillance – video is by far the most data-intensive type of data commonly captured / created / replicated today. EMEA's datasphere is the largest in the world today owing, in part, to their mature use of video surveillance technology. Note: EMEA = Europe, Middle East & Africa. ROW = Rest of World. Note: 2018 = last full year before release of report. 2019-2025 are estimated from current trends.

The data-driven world will be always on, always tracking, always monitoring, always listening & always watching – because it will be always learning*.*

What we perceive to be randomness will be bounded into patterns of normality by sophisticated artificial intelligence algorithms that will deliver the future in new & personalized ways.

Artificial intelligence will drive even more automation into businesses & feed processes & engagements that will deliver new levels of efficiency & products that are tailored to business outcomes & individual customer preferences.

Today, companies are leveraging data to improve customer experiences, open new markets, make employees & processes more productive & create new sources of competitive advantage…

Traditional paradigms will be redefined (like vehicle or white goods ownership) & ethical, moral & societal norms will be challenged*…*

David Reinsel / John Gantz / John Rydning – IDC, *The Digitization of the World – From Edge to Core,* 11/18

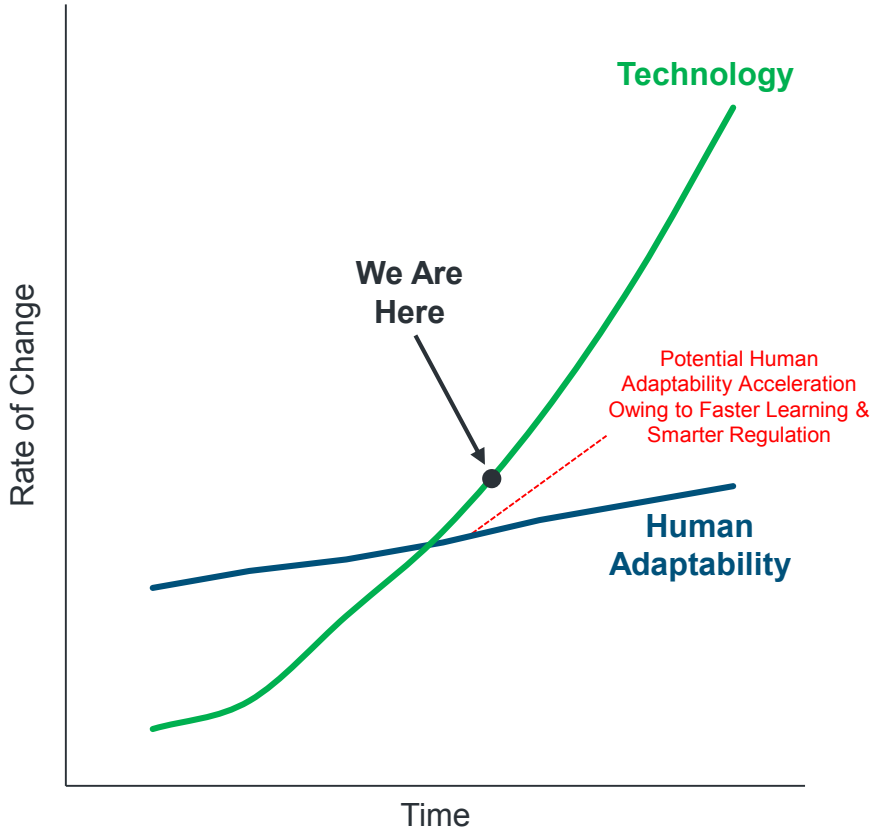
Data Volume + Utilization…
Technology Change > Human Adaptability

Humans' ability to adapt to technological change is increasing, but it is not keeping pace with the speed of scientific & technological innovation.

To overcome the resulting friction, humans can adapt by developing skills that enable faster learning & quicker iteration & experimentation.

Developing these skills is particularly important for policy makers & regulators who are looking to protect the public interest. They need to be ready to try new approaches, iterate & change with the times so tech progress goes hand in hand with public benefit.

Astro Teller – X, The Moonshot Factory
Adapted from Thomas Friedman's *Thank You For Being Late,* 2016



Source: Adapted from quotes originally appearing in '*Thank you For Being Late*' by Thomas Friedman, 2016. Updated in June 2019 by Astro Teller.

Consumers + Businesses + Regulators = Increasingly Drinking from Data Firehose

Source: The Canadian Press

…INTERNET USAGE =

THERE ARE CONCERNS…THERE IS GOODNESS

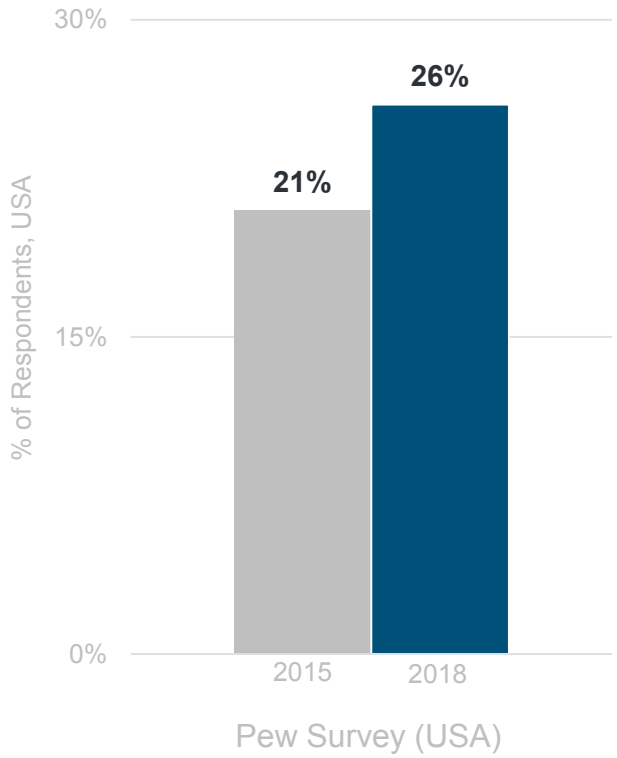
Usage Concern =

Overload…

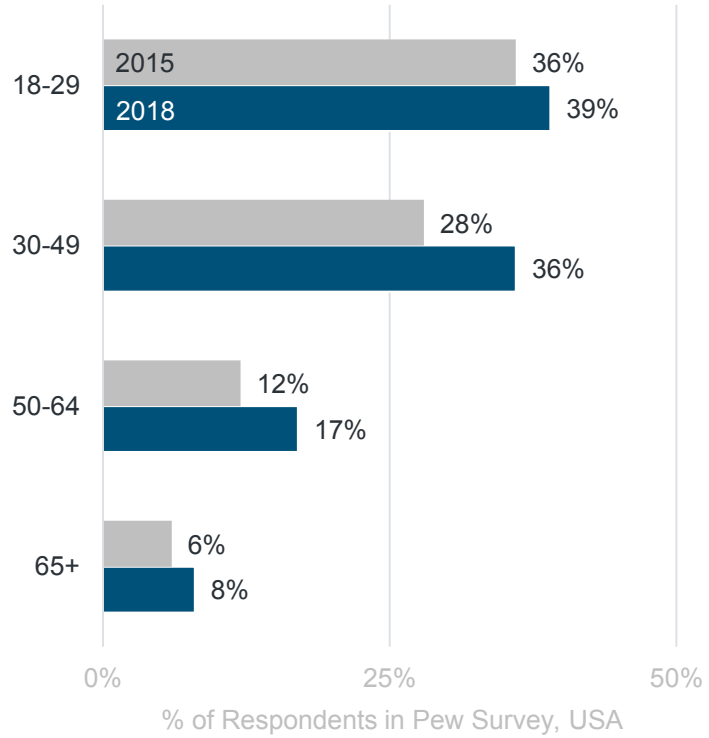
Adults 'Almost Constantly' Online = 26% vs. 21% Three Years Ago

% of Adults Online 'Almost Constantly'

Overall



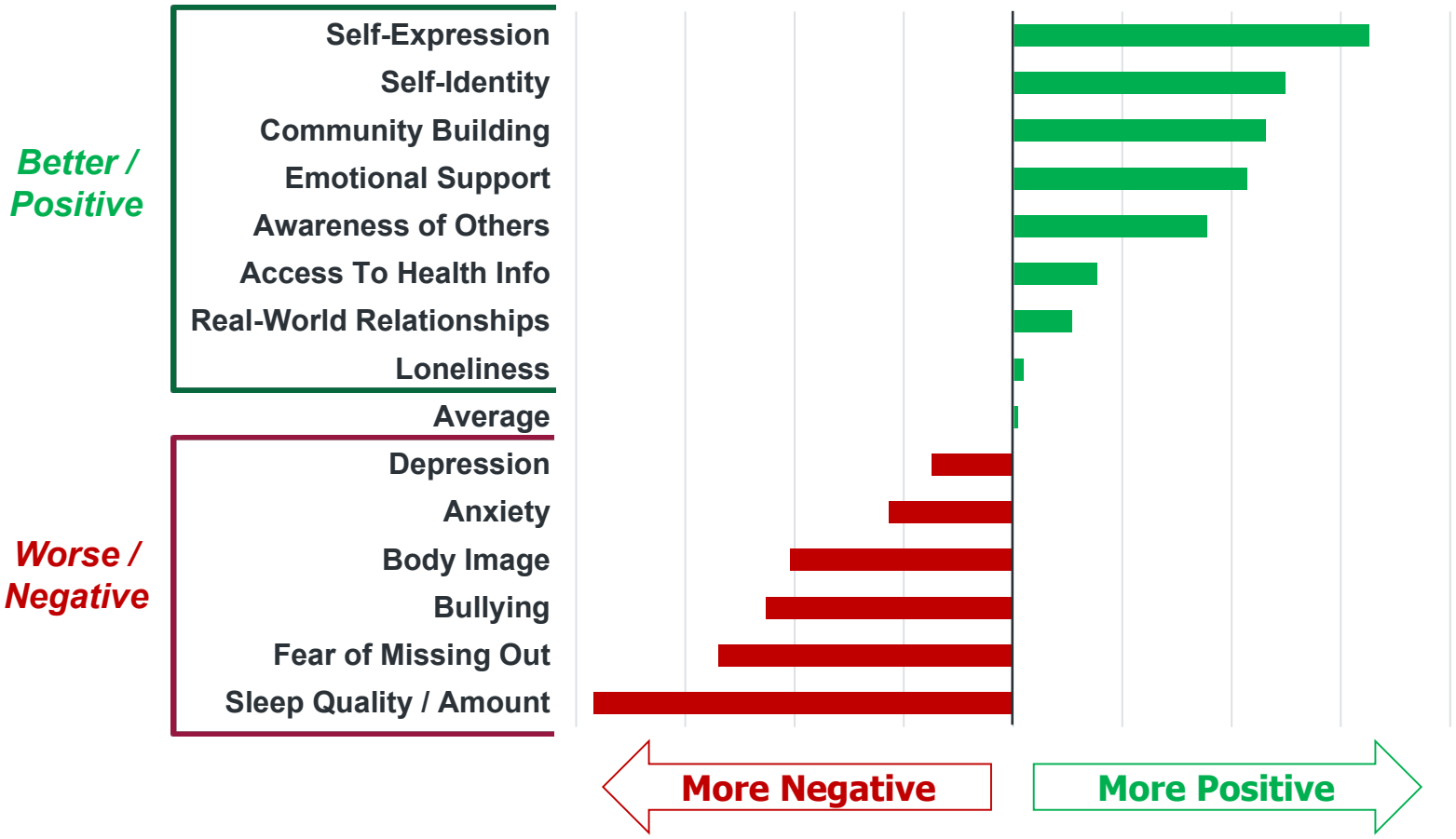
By Age Group



Source: Pew Research (7/15 + 1/18)

Social Media = Positive & Negative

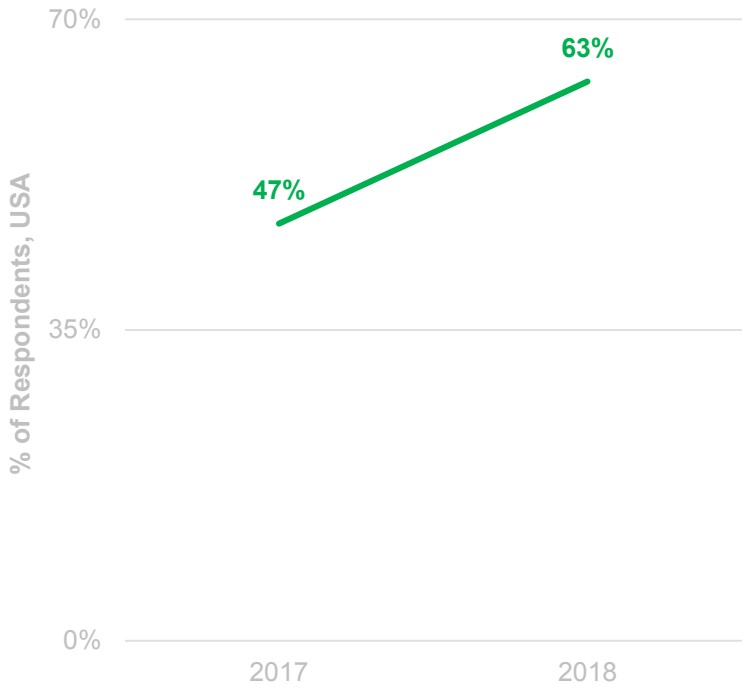
Do Social Media Platforms You Use Make These Health-Related Factors Better or Worse?



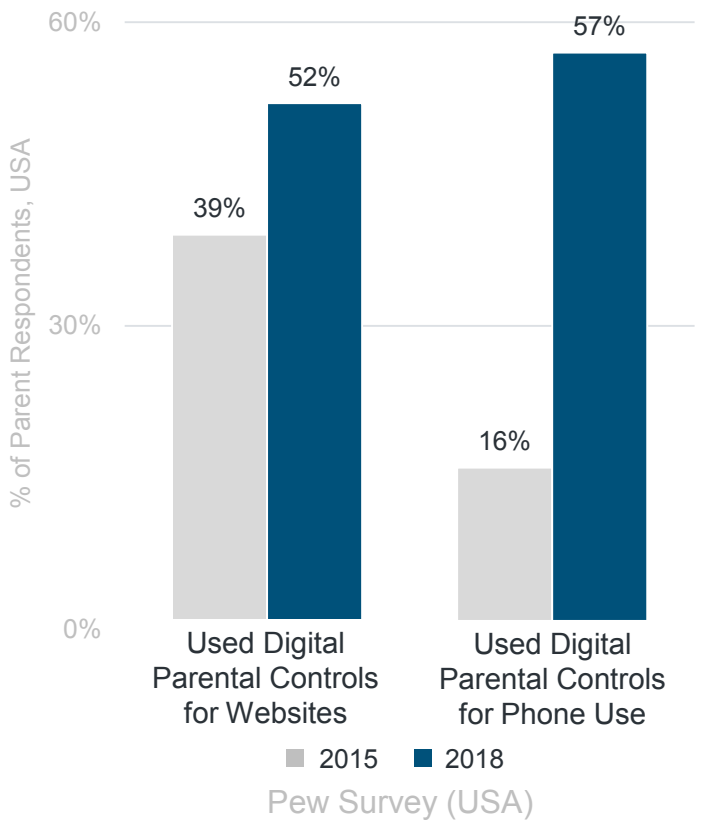
Source: Royal Society For Public Health Survey of 1,479 British teens in 'early-2017' Each teen was asked to rate 5 of the most popular social networks (YouTube, Facebook, Twitter, Snapchat & Instagram) on each dimension. Data presented = average of scores for each social network.

Digital Media =
Users Taking Action to Reduce Usage

% of Adults Trying to Limit Personal Smartphone Use, USA



Parent Actions to Regulate Children's Internet / Phone Usage

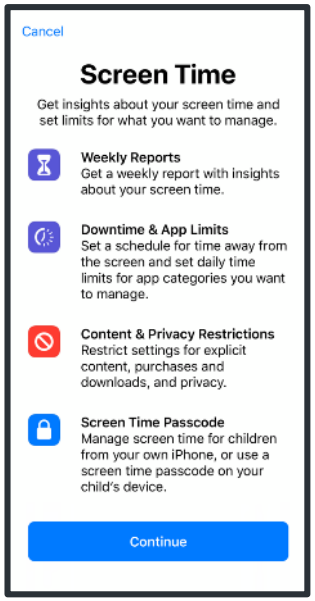


Source: Deloitte Mobile Consumer Survey, US (11/18) Pew Research (7/15 + 1/18)

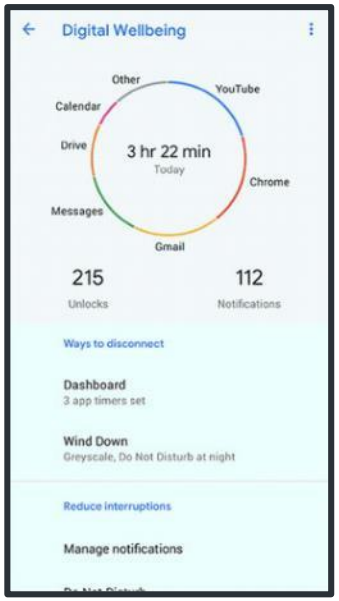
Digital Media =
Businesses Taking Action to Help Users Monitor Usage

2018
Major Platforms Launched Wellness / Time Tracking Features

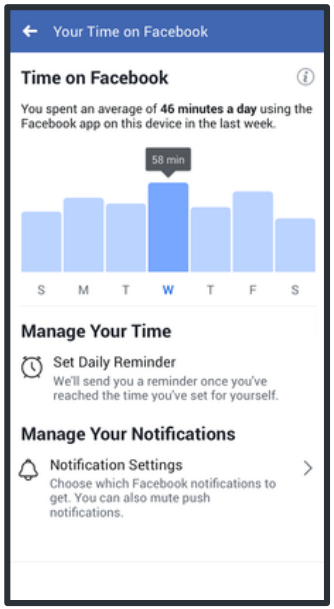
Apple
Screen Time



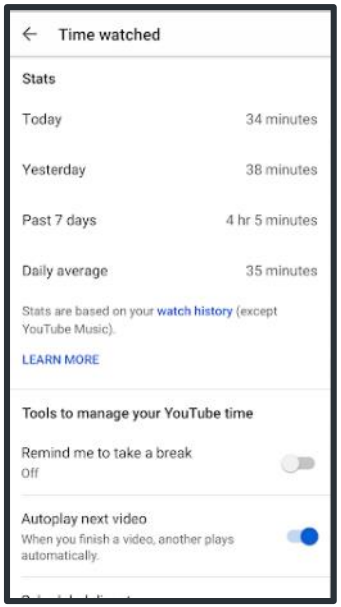
Google
Digital Wellbeing



Facebook
Your Time on Facebook



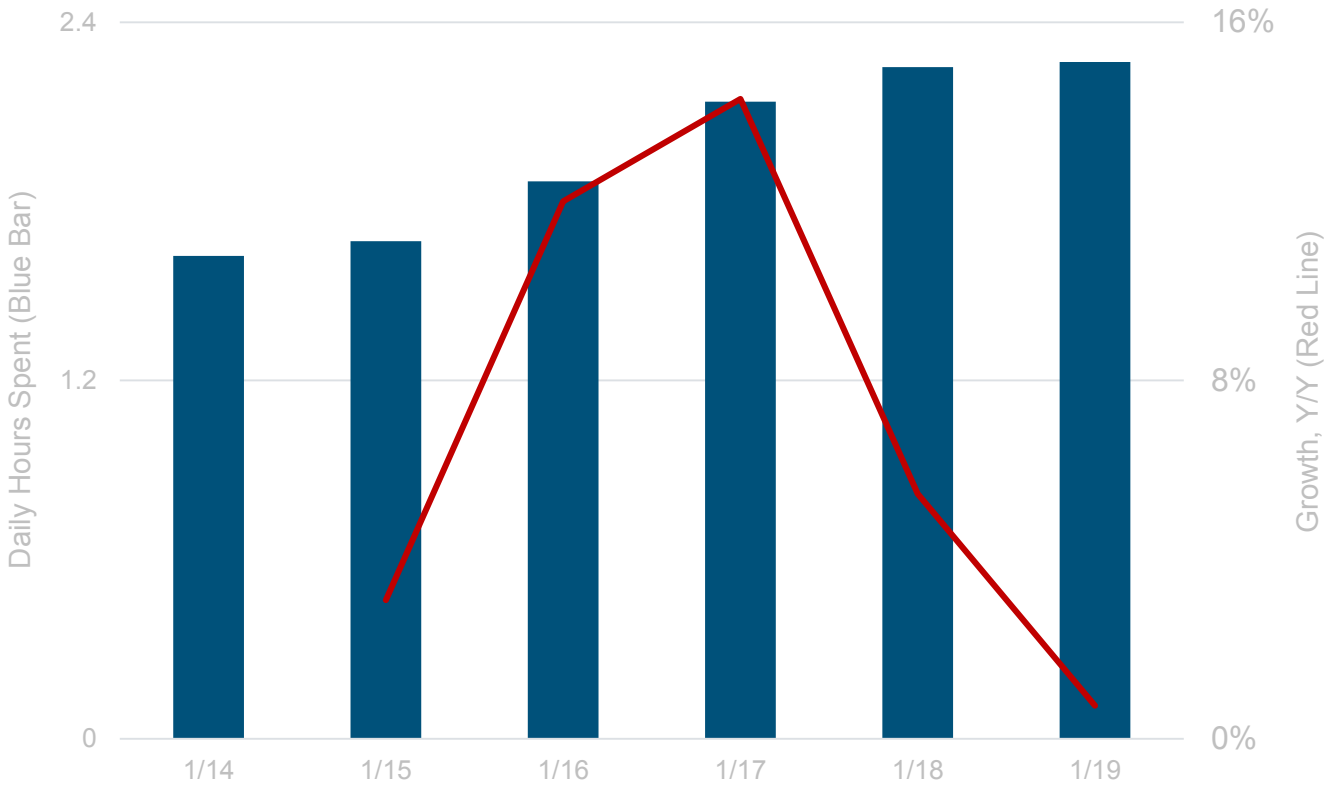
YouTube
Time Watched



Source: Apple, YouTube, Google, Facebook

Social Media Usage = Decelerating…
+1% vs. 6% Y/Y

Daily Time Spent on Social Media, Global



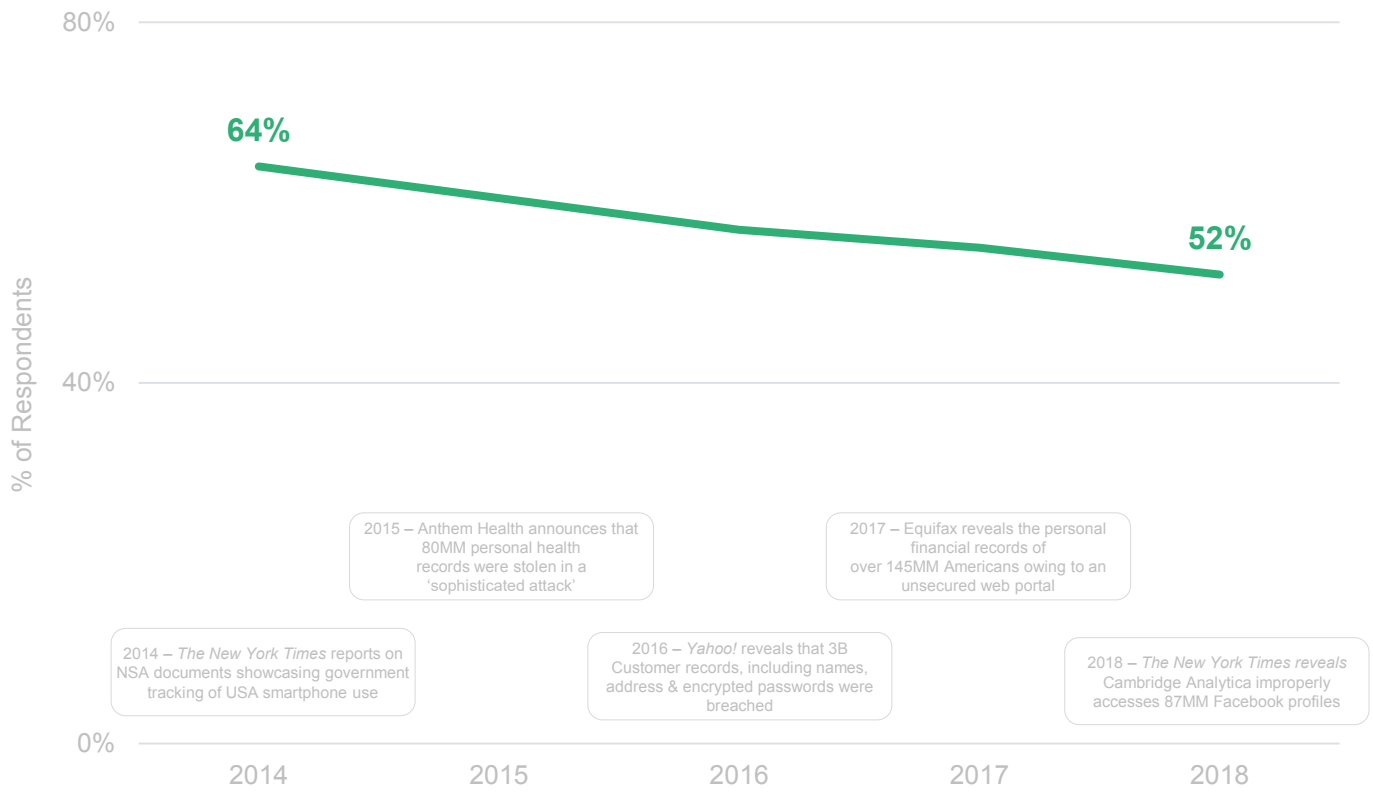
Source: Hootsuite & WeAreSocial Digital 2019 report (1/19). Note: 2019 Estimate owing to the fact that users were surveyed in January 2019, before they have completed the year 2019.

…Usage Concern =

Privacy…

Digital Media = Privacy Concerns High But Moderating

People More Concerned About Internet Privacy vs. One Year Ago, Global



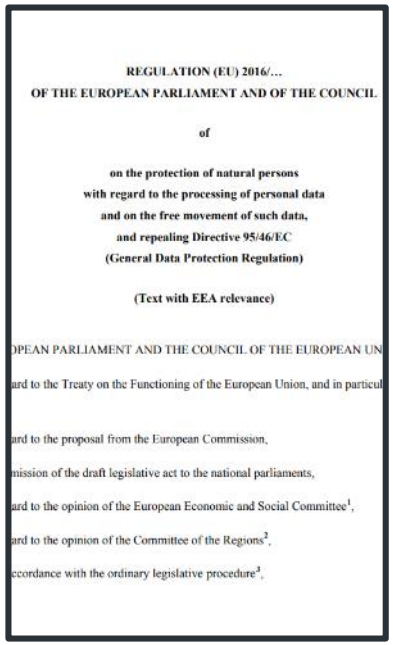
Source: CIGI-IPSOS Global Survey on Internet Security & Trust 2014, 2016, 2017, 2018. 2018 = 24,750 Internet users from 12/29/17-3/5/18. 2017 = 24,225, 2016 = 24,143, 2014 = 23,376.

Regulators / Businesses = Improving Consumer Privacy Control

Regulators Mandating Privacy Rules / Policies

EU - GDPR

Passed – 2016
Effective – 2018



REGULATION (EU) 2016/...
OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of

on the protection of natural persons
with regard to the processing of personal data
and on the free movement of such data,
and repealing Directive 95/46/EC
(General Data Protection Regulation)

(Text with EEA relevance)

OPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UN

ard to the Treaty on the Functioning of the European Union, and in particul

ard to the proposal from the European Commission,

mission of the draft legislative act to the national parliaments,

ard to the opinion of the European Economic and Social Committee[1],

ard to the opinion of the Committee of the Regions[2],

ccordance with the ordinary legislative procedure[3],

California State

Passed – 2018
Effective – 2020

Assembly Bill No. 375

CHAPTER 55

An act to add Title 1.81.5 (commencing with Section 1798.100) to Part 4 of Division 3 of the Civil Code, relating to privacy.

[Approved by Governor June 28, 2018. Filed with Secretary of State June 28, 2018.]

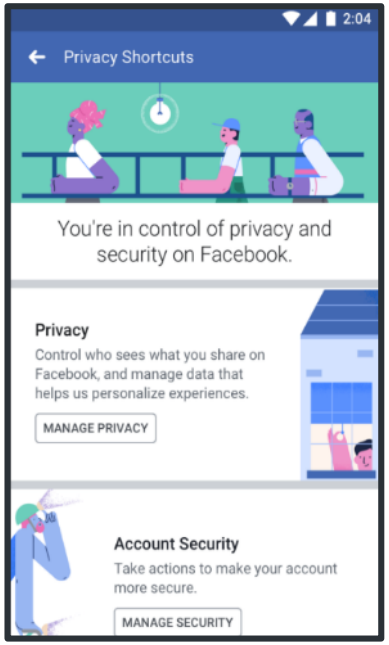
LEGISLATIVE COUNSEL'S DIGEST

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

Businesses Improving Privacy Management

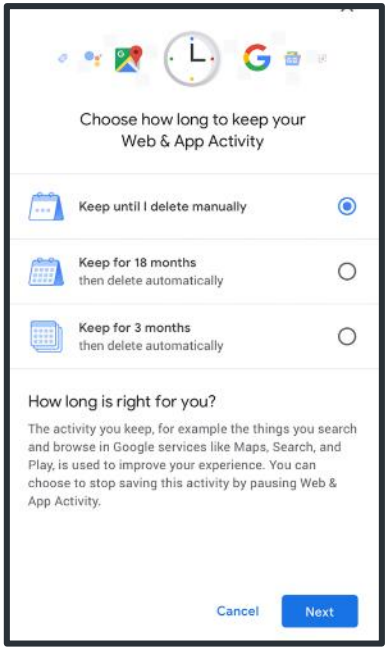
Facebook

2018



Google

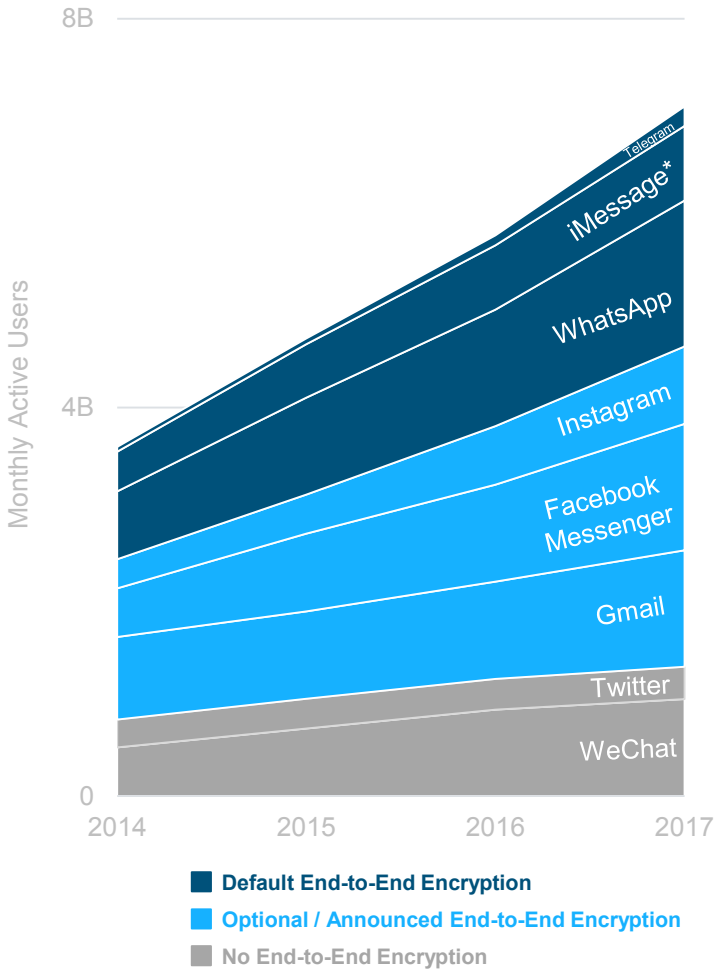
2019



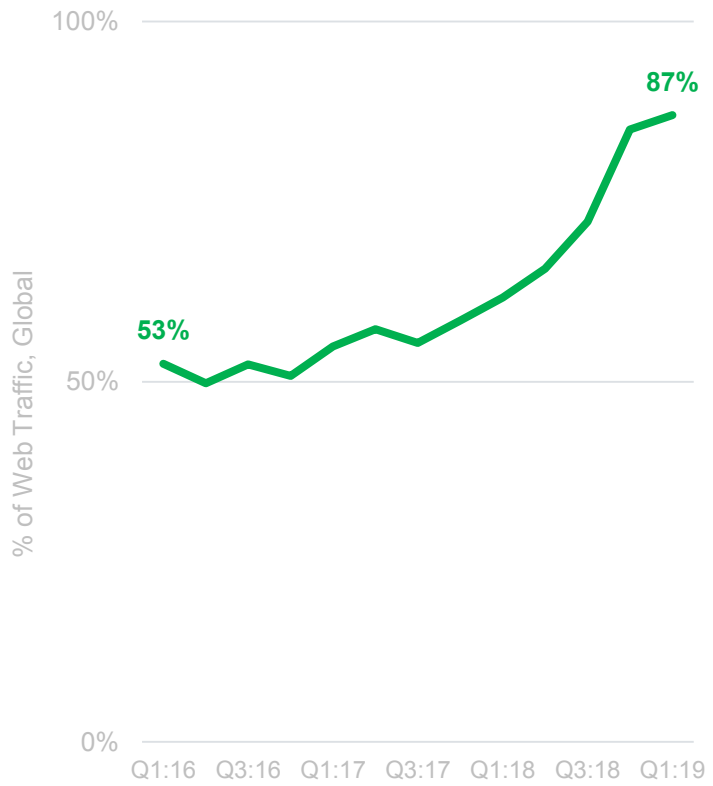
Source: Facebook (5/18). Google (4/18). EU – (3/18) State of California (6/18)

Digital Media = Encrypted Messaging / Traffic Rising Rapidly

Select Messenger MAUs



% of Web Traffic Encrypted

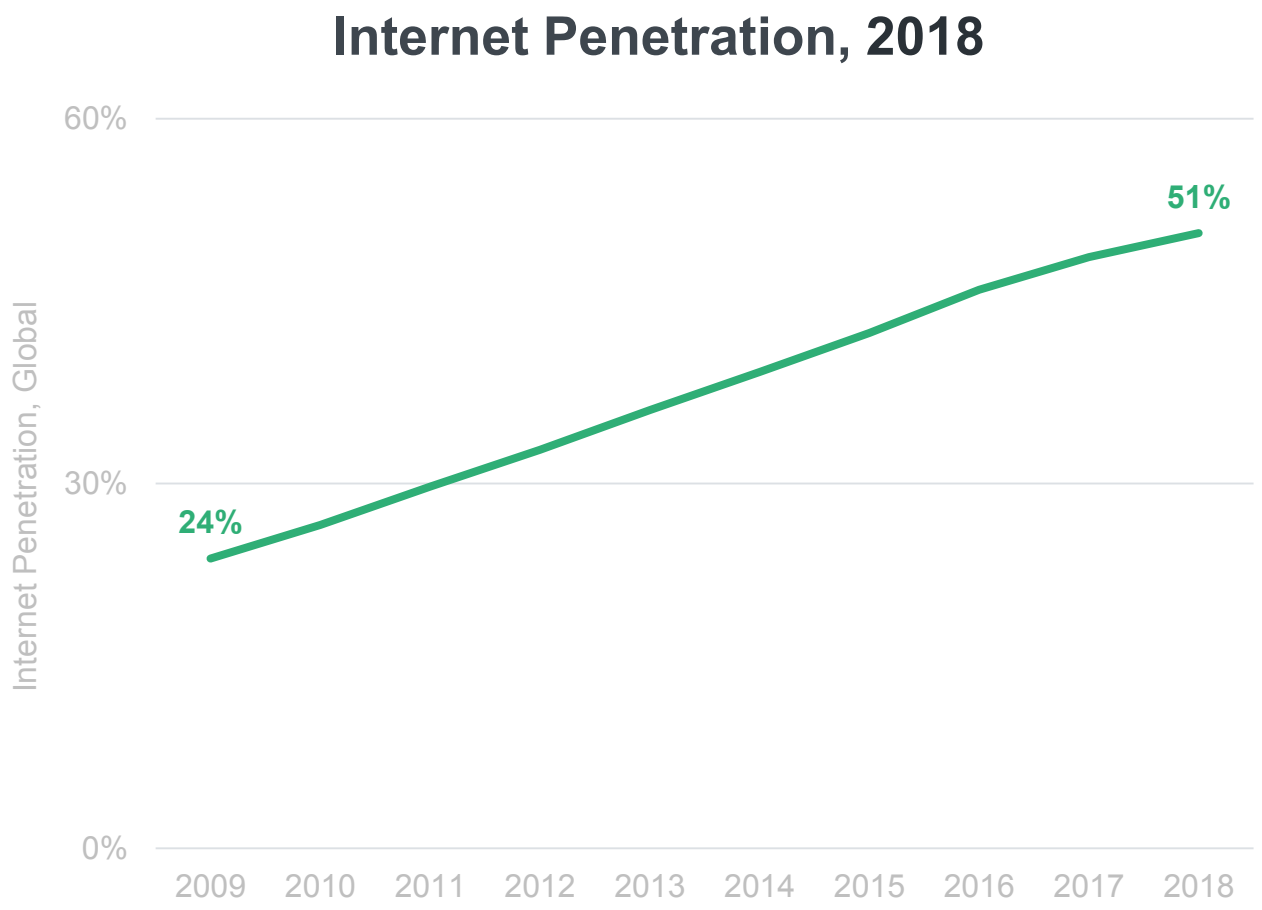


Source: Google, Tencent, Twitter, Facebook, Apple, Telegram releases & Morgan Stanley estimates. Note: *iMessage2 MAUs calculated by install base of Apple iPhones, as estimated by Credit Suisse (2014-2017). WhatsApp employs end-to-end encryption by default. Facebook Messenger has end-to-end encryption capabilities but users have to manually enable them. Instagram does not have end-to-end encryption but Facebook is planning to add that feature & make Facebook Messenger encrypted by default (1/19). All Gmail messages are encrypted at rest and in transit. Fortinet Q3:18 Quarterly Threat Landscape Report (11/18). HTTPS = Hyper Text Transfer Protocol Secure is the secure protocol over which data is sent between the browser and the website the user is connected to.

…Usage Concern =

Problematic Content / Activity

More Than Half of Humanity (& Rising) = Online



Source: CIA World Factbook, United Nations / International Telecommunications Union, USA Census Bureau. Internet user data is as of mid-year. Internet user data: Pew Research (USA), China Internet Network Information Center (China), Islamic Republic News Agency / InternetWorldStats / Bond estimates (Iran), Bond estimates based on IAMAI data (India), & APJII / GlobalWebIndex (Indonesia).

Media Maxim =
People Prefer Negative News (2014)…

We use a lab experiment to capture participants' news selection biases, alongside a survey capturing their stated news preferences…

regardless of what participants say, they exhibit a preference for negative news content.

Marc Trussler & Stuart Soroka – *Consumer Demand for Cynical & Negative News Frames, 3/14*

Source: The Journal of Media Economics (11/14) & The International Journal of Press / Politics (12/15).

…Media Maxim =
People Prefer Negative News (1909)

No one attempting to derive an estimate of the present conditions in New York from the front page contents of our many newspapers could be blamed for concluding that society is on the verge of deplorable anarchy.

James E. Rogers – University of Chicago Press**,** Quoting *The Evening Post in The American Newspaper*, 1909

Problematic Content on Internet =

Can Be Less Filtered + More Amplified

Images / Streaming = Can Be More Powerful Than Text

Then
News via Edited Text

The Call–Chronicle–Examiner

SAN FRANCISCO, THURSDAY, APRIL 19, 1906.

EARTHQUAKE AND FIRE: SAN FRANCISCO IN RUINS

60 DETECTIVES SEEK STOLEN 'MONA LISA'

But No Clue Has Yet Been Discovered to Whereabouts of Lionardo's Masterpiece.

Now
News via Live Images

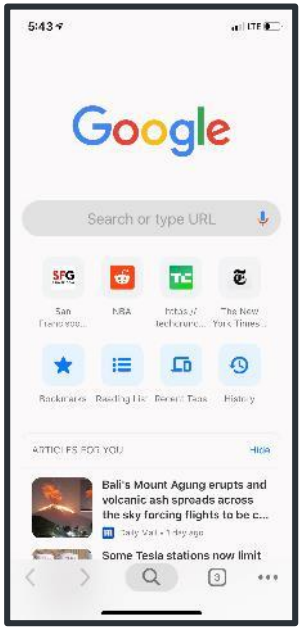
Source: The Library of Congress, *The New York Times*, Pixabay, Ring

Algorithms =
Can Amplify Users Own Patterns

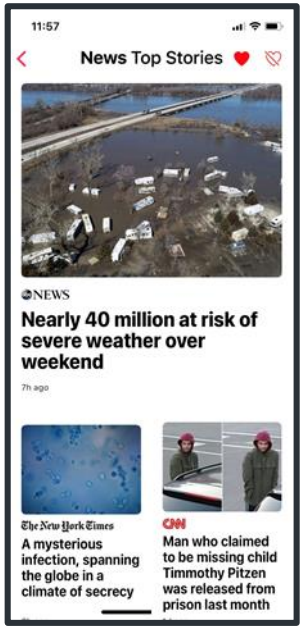
Newsfeeds Curated Using…

Search History	*Reading History*	*Followed Accounts*	*App Interactions*	*Followed Interests*

Google



Apple



Twitter

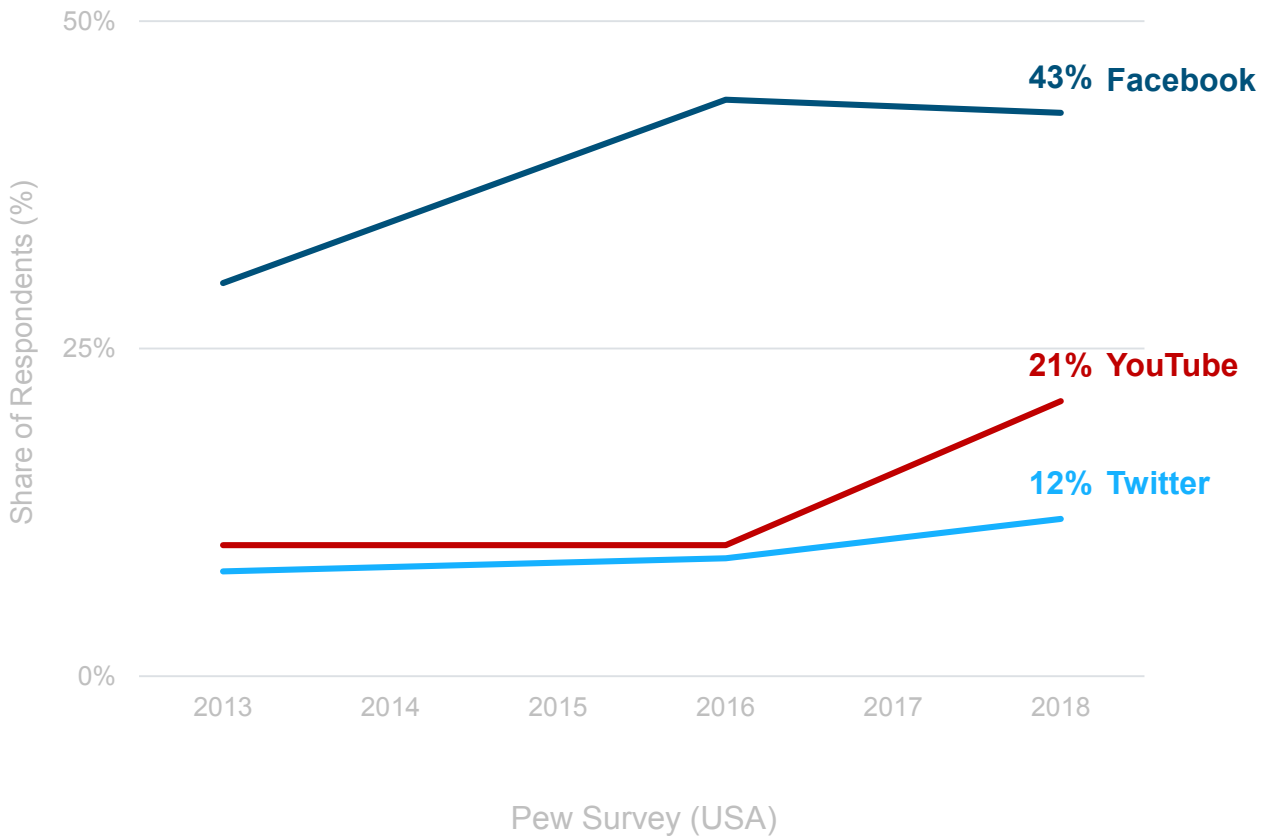
Toutiao

Reddit

Source: Google, Apple, Twitter, ByteDance, Reddit

Social Media =
Can Amplify Trending Topics

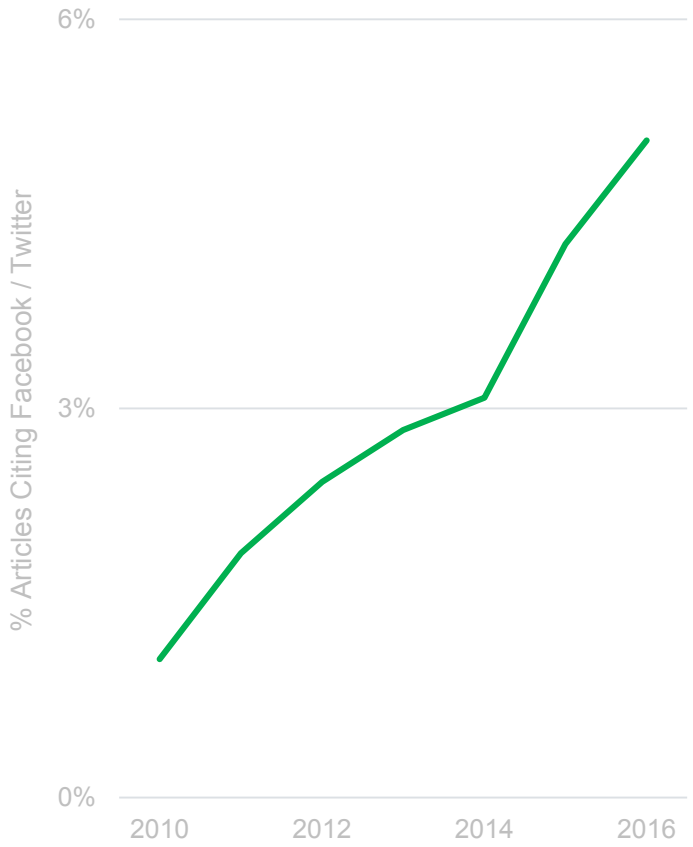
Do You Ever Get News or News Headlines from ____ ?



Source: Pew Research (9/18). Note Survey = 4,581 respondents interviewed between 7/30/18 & 8/12/18 vs. historical data from 2016 & 2013.
Note: Instagram / LinkedIn / Reddit / Snapchat / WhatsApp / Tumblr not shown owing to less than 10% of respondents using them to get news in 2018.

Traditional Media Platforms = Can Amplify Social Media Trending Topics

% Articles Citing Content Originally Posted To Facebook / Twitter (Leading Newspapers*)



The topics for which Facebook & Twitter are most commonly sourced [in newspaper articles] are similar across all countries – among them are soft news topics as well as hard news topics such as ***domestic & international politics, breaking-news events or reporting on movements, the last of which highlights the relative advantages of social media as a source for journalists.***

Gerret von Nordheim et al. – *Sourcing the Sources,* 6/18

Source: Sourcing the Sources – Bournemouth University. *An analysis of the use of Twitter & Facebook as a journalistic source over 10 years in The New York Times, The Guardian, & Süddeutsche Zeitung (leading newspapers in USA / UK / Germany). Analysis conducted by collecting articles from 2006-2016 across all 3 newspapers & running natural language processing models on the text to identify articles that mention Facebook or Twitter as sources

Social Media =
Can Amplify Bad Behavior

I Have Experienced _____ Online

42% = Offensive Name-Calling

32% = Spreading of False Rumors

16% = Physical Threats

Pew Survey (USA Teens)

Source: Pew Research (9/18). Note: survey = 731 respondents age 13-17 interviewed between 3/7/18 & 4/10/18

Motivated Bad Actors = Can Amplify Ideologies

The main terrorist problem in the United States today is one of individuals radicalized by a diverse array of ideologies absorbed from the Internet.

Peter Bergen & David Sterman – *The Real Terrorist Threat in America - Foreign Affairs,* 10/18

Unintended Bad Actors = Can Amplify Misinformation

The Internet plays a role in fostering distinct & polarized online communities among conspiracy theory believers...

Believers share their opinions & 'evidence' with other believers but are less willing to share with people who are critical of conspiracy theories –

with the Internet, conspiracy groups become more homogeneous & their beliefs become stronger over time.

Karen Douglas – *Professor of Social Psychology, The University of Kent Writing for The Conversation,* 6/18

Extreme Views = Can Amplify Polarization

Polarization has been abetted by many factors. Americans are sorting themselves out geographically, living in increasingly politically homogeneous neighborhoods.

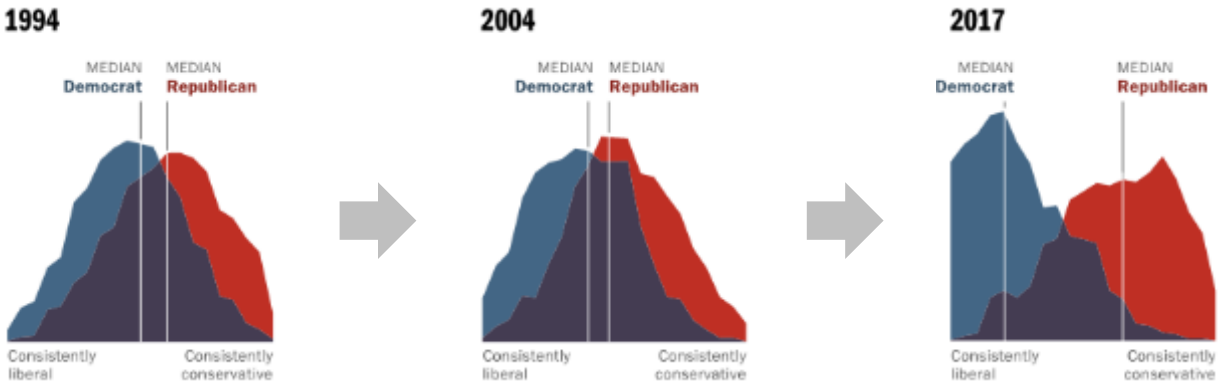
Social media & the proliferation of media channels via the Internet & TV has played a role, allowing people to communicate exclusively with people like themselves.

Identity & the growth of identity politics have also played a role – People have gravitated toward groups that feel they are in a zero-sum competition against one another.

Francis Fukuyama – Stanford University, Professor of Political Science, 12/18

Distribution of Democrats & Republicans

On 10-item Scale of Political Values, per Pew Research, USA



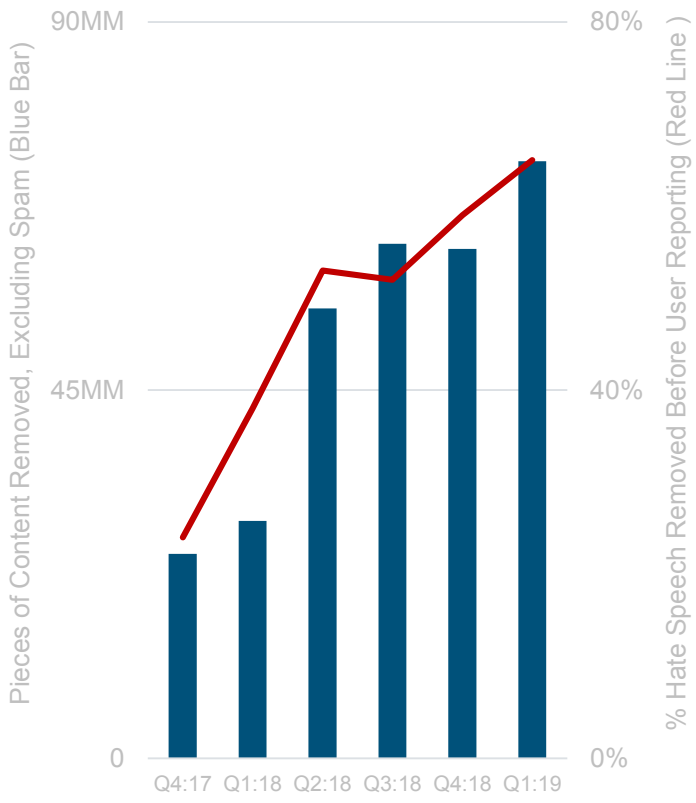
Pew Survey (USA)

Note: Ideological consistency based on a scale of 10 political values questions (see methodology).The blue area in this chart represents the ideological distribution of Democrats & Democratic-leaning independents; the red area of Republicans & Republican-leaning independents. The overlap of these two distributions is shaded purple. Source: Pew Surveys conducted 1994-2017. Stanford release.

Internet Platforms = Driving Efforts to Reduce Problematic Content

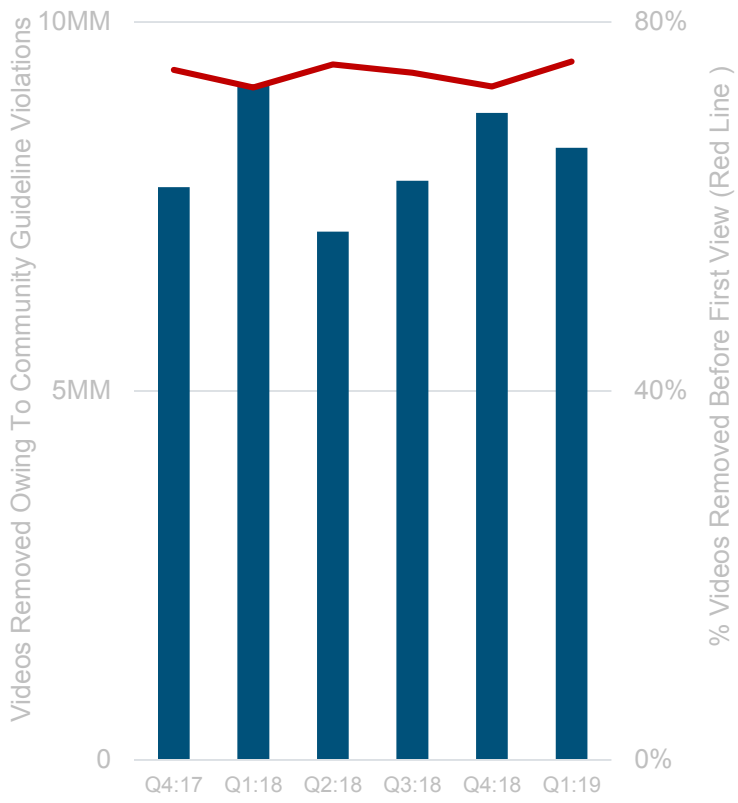
Facebook

Content Items Removed vs.
% Hate Speech Identified / Removed Before User Report



YouTube

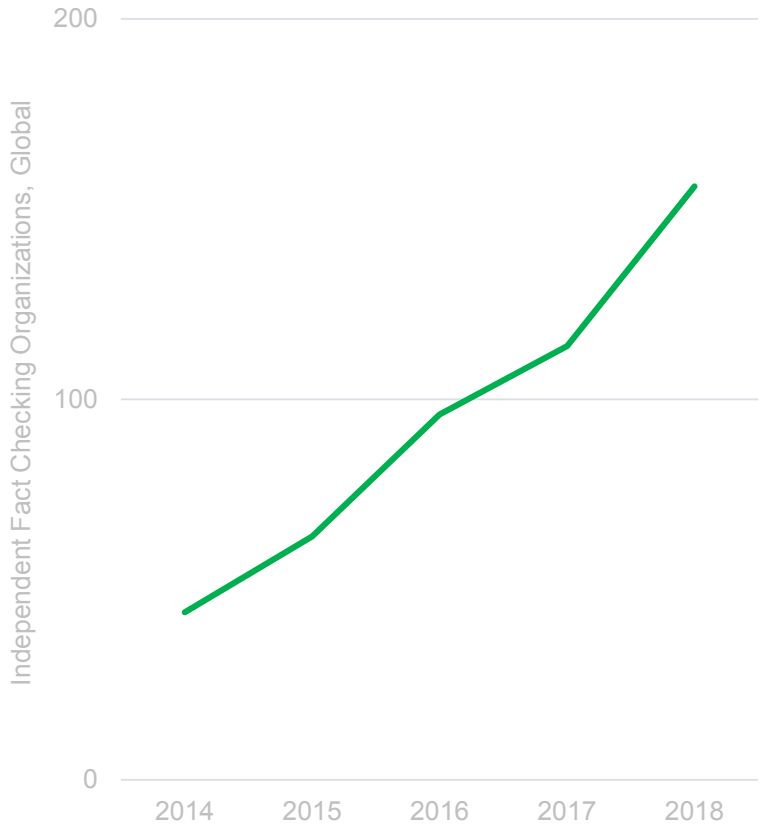
Videos Removed for Community Guideline Violations vs.
Share Flagged / Removed Before First View



Source: Facebook Community Standards Enforcement Report (5/19). Pieces of content include posts, photos, videos or comments that were taken down due to violation of community guidelines. Taking action could include removing a piece of content from Facebook, covering photos or videos that may be disturbing to some audiences with a warning, or disabling accounts. Spam not included due to the scale (Billions of pieces of content removed quarterly. YouTube Community Guidelines enforcement Report (5/19). YouTube Community Guideline Violations can include sexual content, graphic / violent content, harassment, etc.

Consumers + Businesses = Driving Efforts to Moderate Problematic Content

Global Independent Fact-Checking Organizations



The number of media outlets focused on fact-checking & political accountability reporting has grown rapidly. Bolstered by new partnerships & technology, more fact-checking took place during the 2016 election than in previous elections.

Media organizations including NPR & The Washington Post report record-breaking readership of their fact-checking work.

Alan Greenblatt – The American Press Institute, 4/17

Source: Duke Reporter's Lab Research (8/18). The Future of Fact-Checking: Moving Ahead in Political Accountability Journalism, published by the American Press Institute (4/17)

We can definitely continue to improve how we manage the YouTube platform…

I see how much improvement we've already made…If you look back 2 years, there were a lot of articles about how we handled violent extremism… if you talk to experts in this field today, you can see we've made tremendous progress.

We are an information company - we committed last year to having >10,000 people moderating content… I see how much progress we've already made. We just made changes to our recommendation algorithms for borderline content & we've announced we've seen a 50% reduction in the views coming from recommendations on that content.

If you combine much better policies with technology to do that at scale, I think you can be at a much better place.

Susan Wojcicki – CEO, YouTube, Interview @ Code Conference, 6/19

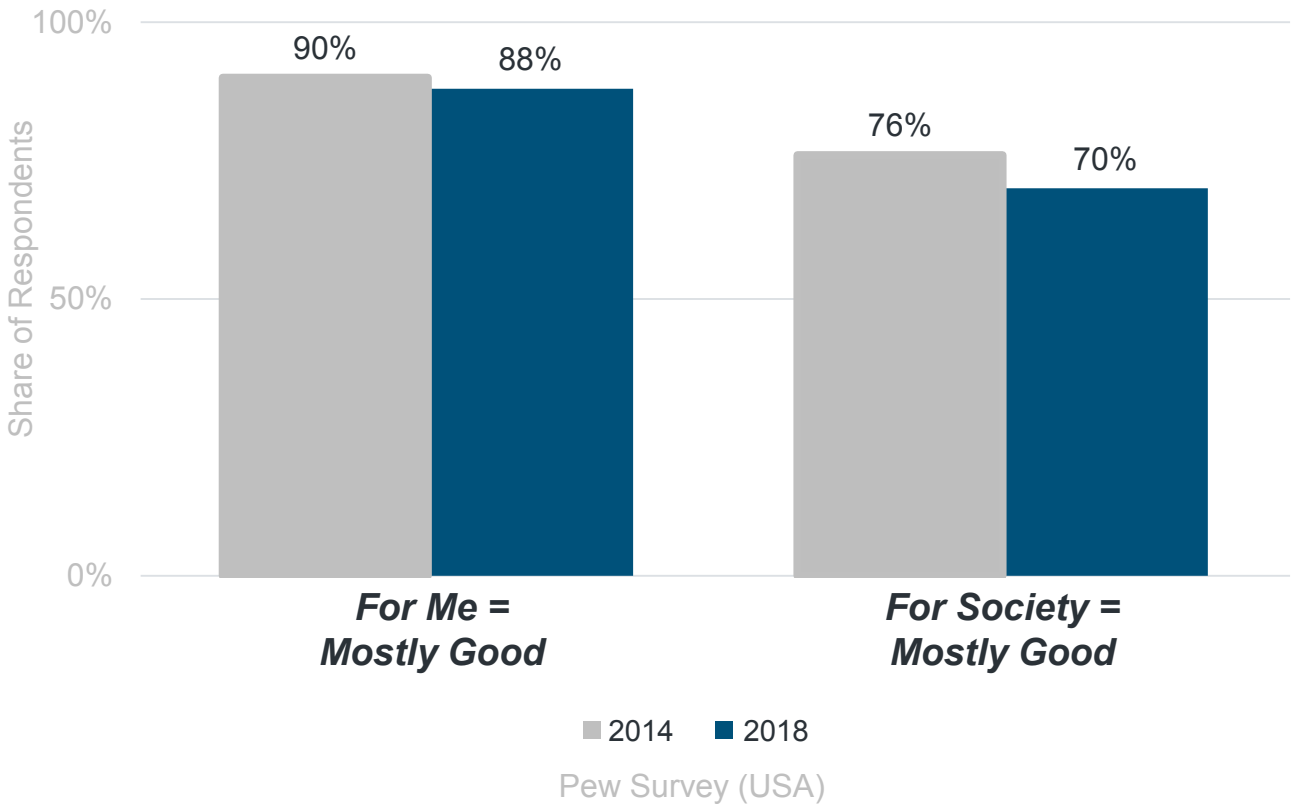
The Department of Homeland Security has engaged with major social media companies to encourage them to continue to police their websites…

We do see that those efforts are bearing some fruit – I think we have a long way to go & we look forward to continue to engage with social media companies in that environment.

Brian Murphy – Principal Deputy Undersecretary, Department of Homeland Security, Testimony to USA Congress, 5/19

Perception of Internet (USA) = Largely Positive for Individuals + Society

When You Add Up Internet Advantages & Disadvantages of The Internet, It Has Been _____ for Me / Society



Source: Pew Research. Poll of 1,785 USA Internet users from 1/3/18-1/10/18 & 2015, released on 4/30/18.

Age-Old Challenge of
Amplifying Good + Minimizing Bad =

Taking Rapid Twists & Turns

Global Relationships
Related to
Information + Data =

Evolving Differently / Rapidly

In a sense, the World Wide Web as we know it is over… in its place is something altogether different: a Balkanized 'splinternet'…where your experience online is determined by local regulation.

Mark Scott – Chief Technology Correspondent, Politico, 12/17 & 2/18

We need a new generation of laws to govern a new generation of tech.

Brad Smith – President & Chief Legal Officer, Microsoft, 2/18

There's a paradigm shift going on… Governments are moving from a position of non-interference to a realization that if we want to keep a cross-border Internet going, then we [need] a new system of governance.

Paul Fehlinger – Co-Founder, Internet & Jurisdiction Policy Network, 2/18

Note: 'Splinternet' originated by Clyde Wayne Crews Jr. writing for the Cato Institute in 2001.

Global Internet Freedom…
Partly-Free = Rising…Free / Not-Free = Falling

Freedom House – Freedom on the Net (Global, 2018)

Internet Users Live in a Country Where _____

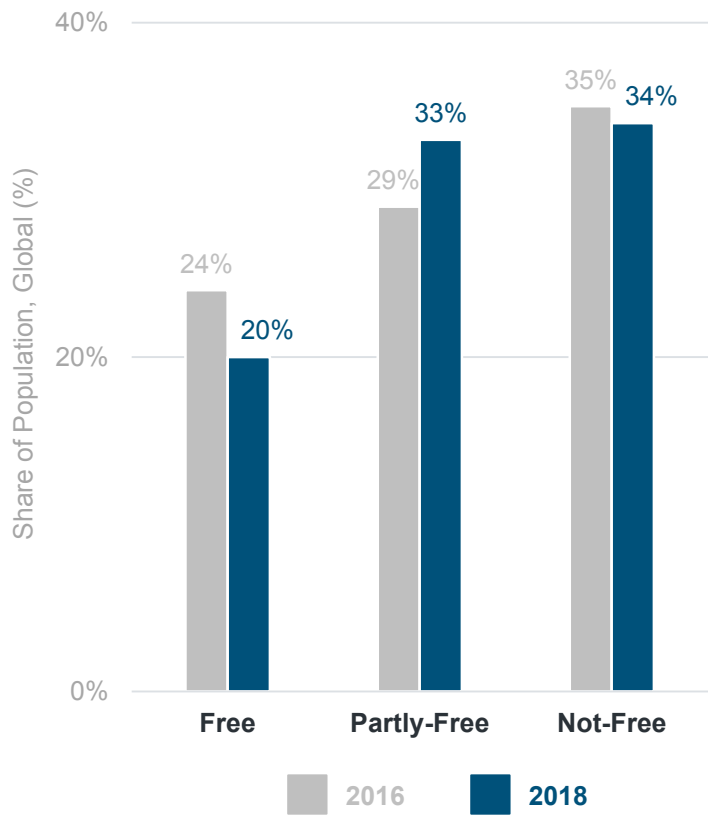
55%
Political, social, or religious content is censored / blocked

47%
Government Internet surveillance powers have increased over past year

47%
Access to certain social media / messaging platforms have been blocked

42%
Government has disconnected Internet / mobile networks often for political reasons

Internet Population 'Internet Freedom Status'



Source: Freedom on The Net Reports 2016 + 2018. Note: Freedom on the Net measures the level of Internet & digital media freedom in 65 countries. Each country receives a numerical score from 0 (the most free) to 100 (the least free), which serves as the basis for an Internet freedom status designation of FREE (0-30 points), PARTLY FREE (31-60 points), or NOT FREE (61-100 points). Ratings are determined through an examination of three broad categories – Access (Assesses infrastructural & economic barriers to access). Content Limits (Examines filtering & blocking of websites) & User Rights (Measures legal protections & restrictions on online activity; surveillance; privacy; & repercussions for online activity, such as legal prosecution, imprisonment, physical attacks, or other forms of harassment. Scores do not add to 100 owing to non-analyzed countries.

Global Internet Freedom Framework (Freedom House)

Freedom House *Freedom on The Net Index*

Measures a country's level of Internet / digital media freedom, using questions derived from Article 19 of UN's Universal Declaration of Human Rights:

Everyone has the right to freedom of opinion & expression; this right includes freedom to hold opinions without interference & to seek, receive & impart information & ideas through any media regardless of frontiers.

Countries are given points for: 1) Obstacles to Access; 2) Limits on Content; 3) Violations of User Rights

---

Free
Countries with low economic / infrastructural / regulatory barriers to Internet access…
minimal blocking / filtering of content / information…strong privacy protections

Partly-Free
Countries with some barriers to Internet access (like state-owned providers handicapping competition)…
some blocking of content / information (like news sites or temporary blocks on social media)…
some privacy violations (like data collection requirements with weak judicial oversight)

Not-Free
Countries with strong barriers to Internet access (like cutting off the internet to certain regions)
…strong blocking of content (news sites, opposition figures, permanent blocks on social media)…
rampant privacy violations (like data localization requirements with low judicial independence, unchecked surveillance)

Source: Freedom House's Freedom on The Net Reports 2016-2018. Note: Freedom on the Net is a collaborative effort between a small team of Freedom House staff & an extensive network of local researchers & advisors in 65 countries. Freedom on the Net's in-country researchers have diverse backgrounds—academia, blogging, traditional journalism, & tech— & track developments from their country of expertise. In the most repressive environments, Freedom House takes care to ensure researchers' anonymity or, in exceptional cases, works with foreign nationals living outside their home country.

World Wide Web = Webs of Worlds Driven by Local Regulation…

	USA	7 Largest EU Economies*	India	China
Global Internet User %	8%	8%*	12%	21%
Internet Access	• Diverse regulatory bodies with varied / distinct powers • Privately-owned telecom infrastructure accessible to nearly all residents	• Diverse regulatory bodies with varied / distinct powers • Privately-owned telecom infrastructure accessible to nearly all residents	• Diverse regulatory bodies, many with power to regulate access • Government initiative to increase Internet access & usage as a 'public good'	• Central government bodies with strong regulatory power • High government ownership / control of network infrastructure with ability to regulate access
Content Regulation	• Virtually no content filtering & strong free speech protections • No political censorship, strong protection for hosts of user-generated content	• Limited content filtering & free speech protections • Limited political censorship, some liability for hosts of user-generated content	• Event-driven content filtering often without direct public input with some speech protection • Some censorship, generally to remove 'insulting content'	• Strong content regulation & no expectation of speech protection • Regulation to 'create a more harmonious digital society'
User Regulation	• Some legal privacy protections related to government collection of user data • Limited regulation on encryption / secure communication	• Strong legal privacy protections related to any collection of user data • Limited regulation on encryption / secure communication	• Some legal privacy protections related to government collection of user data • Required government approval for encryption / secure communication	• Ability to collect user data for regulatory purposes • Required government approval for encryption / secure communication

Legend

Limited Regulation | Moderate Regulation | Strong Regulation

Note: *Based on analysis of Germany / UK / France / Italy / Spain / The Netherlands / Sweden – 7 largest economies in The European Union, representing >70% of The EU GDP in 2018 & a majority of votes in the EU Parliament…Individual policies vary across The EU, in particular, some eastern European Union countries (e.g., Hungary) significantly limit Internet freedom in stark contrast to more open EU nations. Analysis also takes into account EU-wide directives, such as GDPR. Source: Adapted from Freedom House *2018 Freedom on the Net Report*. Global Internet User % as of 2018 per CIA World Factbook, United Nations / International Telecommunications Union, USA Census Bureau. Internet user data is as of mid-year. Internet user data: Pew Research (USA), China Internet Network Information Center (China), estimates based on IAMAI data (India).

…World Wide Web = Webs of Worlds Driven by Local Regulation

Global Internet Regulatory Observations per *Foreign Affairs* (9/18)

USA

In 1997, USA negotiated an agreement through the World Trade Organization that committed 67 signatory countries to 'procompetitive regulatory telecommunications principles'…

As the Internet grew more centralized & as its role expanded, policymakers failed to keep up. *When it came to updating regulations for online activities…the Internet was treated as a special realm that did not need regulation & the bad guys took notice.*

Karen Kornbluh – Senior Fellow for Digital Policy, Council on Foreign Relations

European Union

*The GDPR has…**created a blueprint that other states & organizations will study closely** as they, too, seek to **properly balance individuals' rights to data protection with their other rights & with the legitimate interests of business & government.***

The law's main innovation is to establish a bedrock principle of accountability. It places responsibility for properly collecting & processing personal data squarely on organizations & extends to individuals the right to prevent their data from being collected or processed. The GDPR also gives individuals the right to insist that their data be deleted.

Helen Dixon – Data Protection Commissioner, Ireland

India

When a service provider sends an authentication request to Aadhaar (India's National Identity System), the purpose of the authentication is not revealed; all the government knows is when someone uses his Aadhaar number, not where or why.

[Aadahaar shows] India's approach to the Internet is simple – empower users with the technical & legal tools required to take back control of their data.

Nandan Nilekani – Founding Chair of Unique Identification Authority of India

China

***Chinese leaders want to ensure a harmonious Internet** – one that guides public opinion, supports good governance & fosters economic growth but also is **tightly controlled**…*

***China has promoted 'cyber-sovereignty' as an organizing principle of Internet governance**…China envisions **a world of national Internets**, with government control justified by the sovereign rights of states.*

Adam Segal – Chair, Emerging Technologies & National Security, Council on Foreign Relations

Source: 'World War Web,' *Foreign Affairs*, September / October Edition 2018

Open Internet =

Can Benefit All Constituents

Open Internet =
Core Constituent Motivations

Consumers

Want to Get What They Want Efficiently & Inexpensively

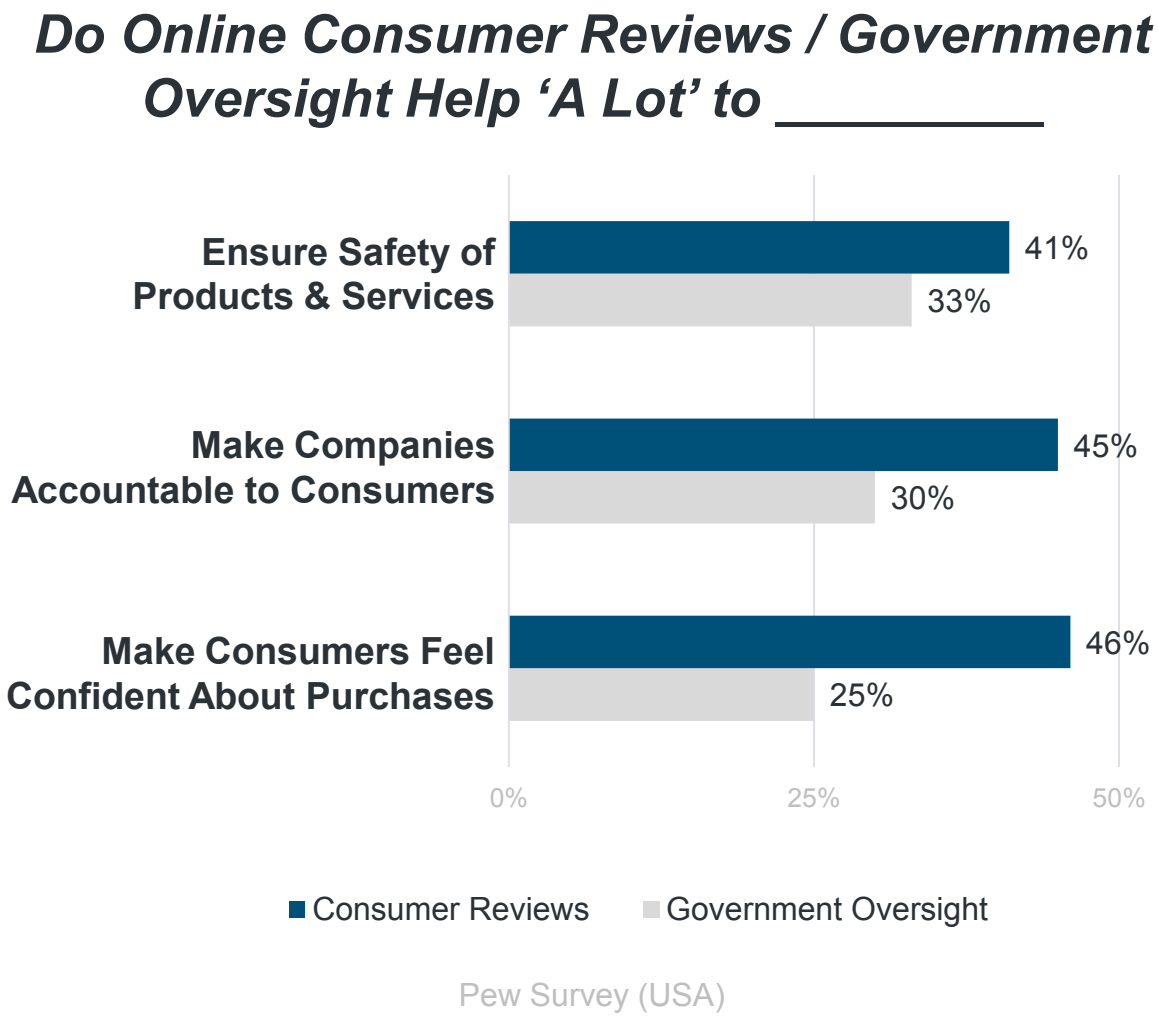
Businesses

Want to Sell Products & Services Profitably

Regulators

Want to Protect Consumers / Businesses / Social Institutions

Open Internet =
Online Reviews Can Boost Multi-Sided Accountability…



Source: Pew Research Survey (12/15). N = 4,787 USA Consumers.

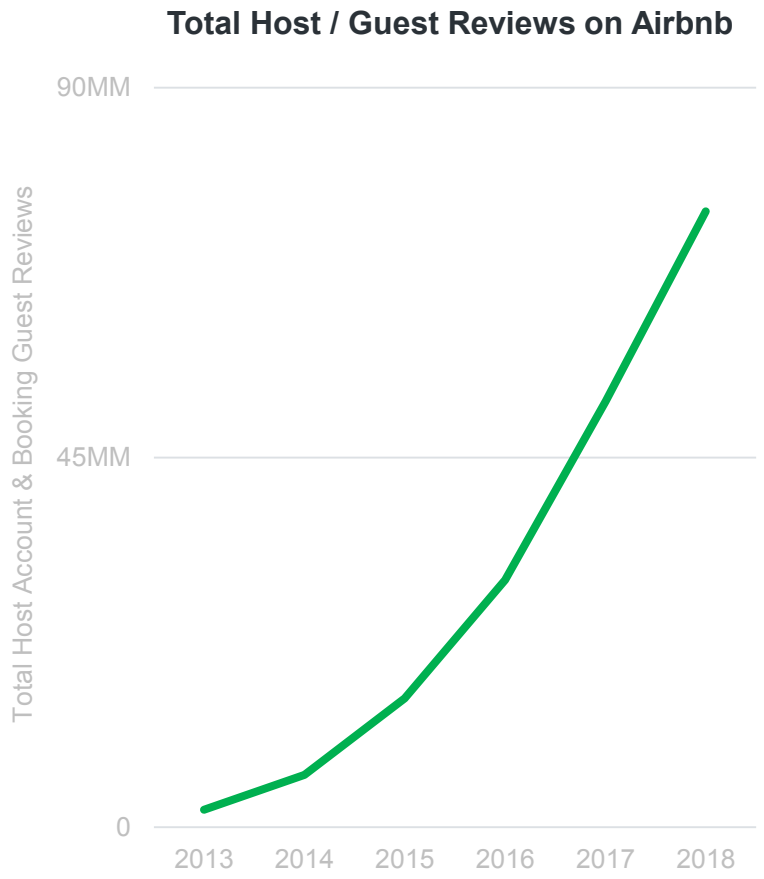
…Open Internet =
Online Reviews Can Boost Multi-Sided Accountability

Airbnb

Safety is our number one principle at Airbnb, the whole thing only works if you feel safe – we have a few hundred people on our Trust & Safety Team who really work with the Airbnb community to facilitate that.

70% of guests – when they stay on Airbnb – leave a review, which means we've built a system that allows the community to review properties on Airbnb & build trust.

Brian Chesky – CEO, Airbnb, 4/19



Source: Total host / guest reviews per Airbnb (6/19). Each booked trip taken on Airbnb can have 0-2 reviews depending on if the host account and/or booking guest writes a review. Brian Chesky quote per interview on CBS News (4/19)

Reveals / Actions / Reactions
Amplified on Internet =

Can Drive Transparency + Rapid Change for
Consumers / Businesses / Regulators

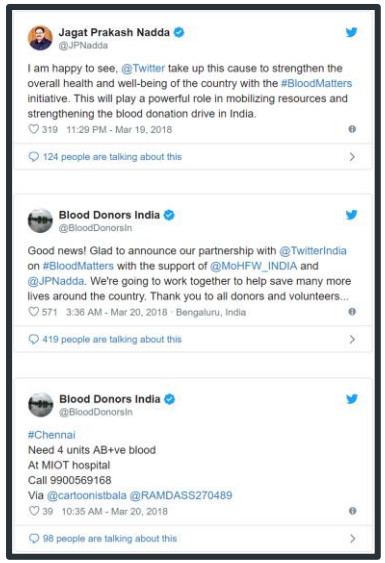
Reveal / Action / Reaction…
Twitter = Communication Tool for Citizens…

Humanitarian Concerns

JJ Watt Hurricane Harvey Relief

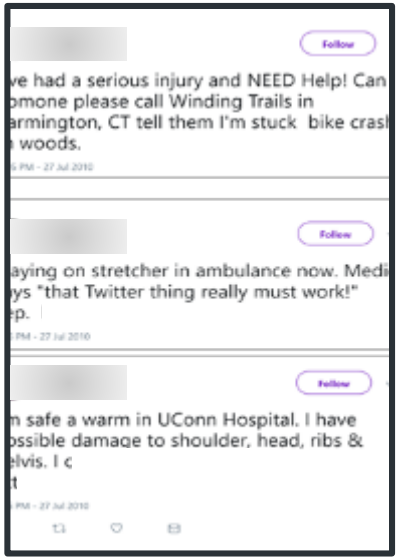
$42MM Raised…
1 Year
(2017)

Blood Donors India



…11K Donations…
1 Year
(2017)

Emergency Rescue



…Accident -> Safety
<3 Hours
(2010)

Source: Twitter (7/10-8/17)

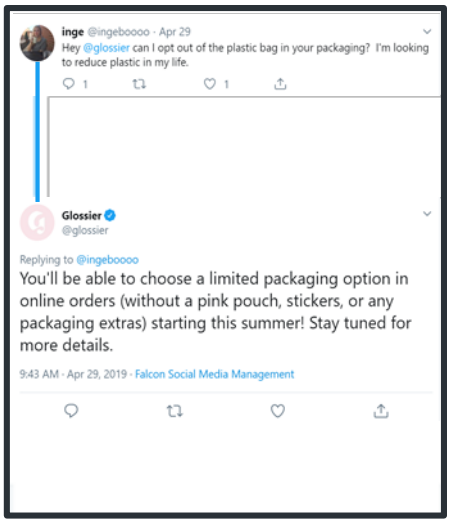
…Reveal / Action / Reaction…
Twitter = Communication Tool for Consumers + Businesses

Consumer / Business Concerns

Starbucks

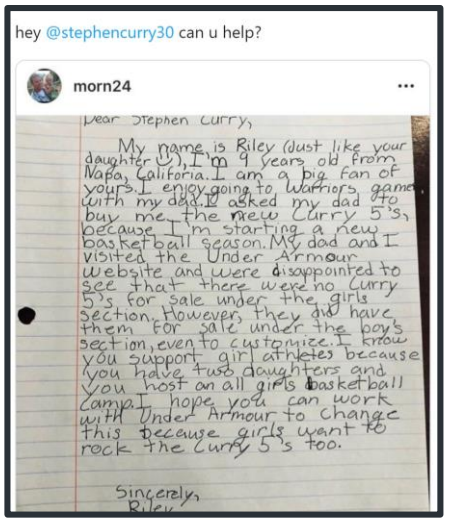
Starbucks Security Policy…
<2 Days
(2018)

Glossier



…New Packaging…
<1 Day
(2019)

Under Armour



…New Steph Curry Shoe Sizes
<1 Week
(2018)

Source: Twitter (4/18-4/19) Note: Under Armour included 'Curry 5' shoes in the 'Girl's Shoes' section of their website & updated sizing nomenclature to "Grade School" rather than 'Boys.'

Reveal / Action / Reaction…
Social Media = Communication Tool for Citizens + Regulators

Social Media is Important For _____

69%
Getting Government Officials to Pay Attention to Issues

67%
Creating Sustained Movements for Social Change

58%
Influencing Government Policy Decisions

Pew Survey (USA)

Source: Pew Survey of 4,594 USA adults (6/18). Note: Percentages = respondents who responded 'very important' or 'somewhat important'

Open Internet =
Can Be Messy, But Effective…

Consumer / Business / Regulators =
Key to Work Together to
Amplify Good + Minimize Bad

During the first two-decades of the Internet's growth, too much faith was put in the technology itself.

Not enough was done to address challenges such as the spread of surveillance technologies, abuse of online platforms & the general undermining of trust.

…[governments] should work to establish better baselines & metrics to assess the Internet's true impact, as well as the kinds of actions that enable the good & mitigate the bad.

***Advocates for the open Internet should acknowledge that regulation can help, while remaining vigilant to unintended consequences**.*

…all of these stakeholders should continue to forge coalitions that work across borders in support of flexible, focused & rights-compliant efforts to improve freedom online.

Jason Pielemeier – Policy Director, The Global Network Initiative, *Council on Foreign Relations Blog*, 7/18

First Step in Long Journey = An Algorithmic Bill of Rights?

Crowdsourced Algorithmic Bill of Rights, per Sigal Samuel @ Vox

1) Transparency
2) Explanation
3) Consent
4) Freedom from Bias
5) Feedback Mechanisms
6) Data Portability
7) Redress
8) Algorithmic Literacy
9) Independent Oversight
10) Federal / Global Governance

Source: In early 2019, Vox reached out to 10 experts (including Kartik Hosanagar – original proposer of an Algorithmic Bill of Rights) at the forefront of investigating how Artificial Intelligence risk is creeping into multiple aspects of life. Vox reporter Sigal Samuel asked them each to name a protection the public needs enshrined in law, resulting in a crowdsourced, proposed Algorithmic Bill of Rights.
Full detail available - https://www.vox.com/the-highlight/2019/5/22/18273284/ai-algorithmic-bill-of-rights-accountability-transparency-consent-bias

Highly Regulated Internet =

Can Favor State Control

A fundamental First Amendment principle is that all persons have access to places where they can speak & listen & then, after reflection, speak & listen once more.

Today, one of the most important places to exchange views is cyberspace, particularly social media, which offers relatively unlimited, low-cost capacity for communication of all kinds.

Anthony Kennedy – Former USA Supreme Court Justice – Majority Opinion, *Packingham v. North Carolina,* 6/2017

If there be time to expose through discussion the falsehood & fallacies, to avert the evil by the processes of education, the remedy to be applied is more speech, not enforced silence.

Louis Brandeis – Former USA Supreme Court Justice – Concurring Opinion, *Whitney v. California,* 5/1927

I urge improving the governance capacity in cyberspace & developing a governing network led by the [Communist Party of China].

Internet media should spread positive information, uphold the correct political direction & guide public opinion & values towards the right direction.

Internet service providers should take responsibility to prevent cyberspace from degrading into a platform full of harmful, false & provocative information.

Xi Jinping – President of The People's Republic of China, As Translated by Xinhua, 4/2018

Source: USA Supreme Court (6/17). As translated to English by official China State media (Xinhua, 4/18)

Cyber Attacks =

Sophistication + Scope Continue to Rise

Cyber Attacks = Evolving Sponsors / Targets / Asks / Detection

1) **State-Sponsored Actor Attacks = Rising**
   USA / UK / The Netherlands / Germany Have Publicly Indicted State-Actors

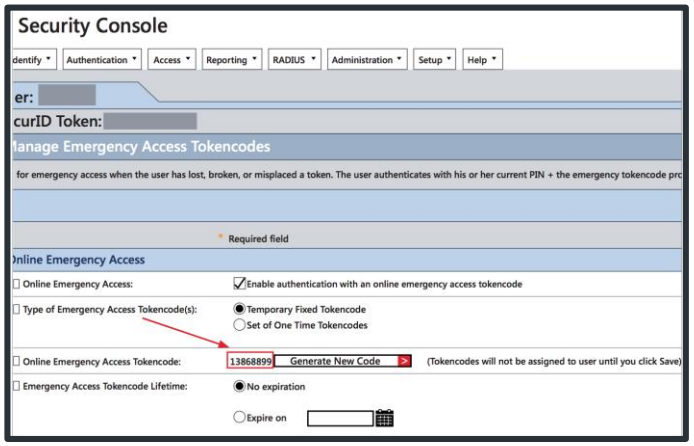
2) **Large-Scale Data Provider Attacks = Rising**
   Cloud Providers / Telecoms / Data Brokers Seeing Elevated Attack Activity

3) **Monetary Extortion Cases = Rising**
   Non-Attributable Currencies (e.g., Crypto) Enabling Anonymous Ransom Payments

4) **Attack-to-Detection Dwell Time = Continues To Fall**
   Average Days = 78 (2018)…101 (2017)…416 (2011)

Source: FireEye M-Trends Report 2019

Cyber Attacks = Opportunities Created by Online System Weaknesses



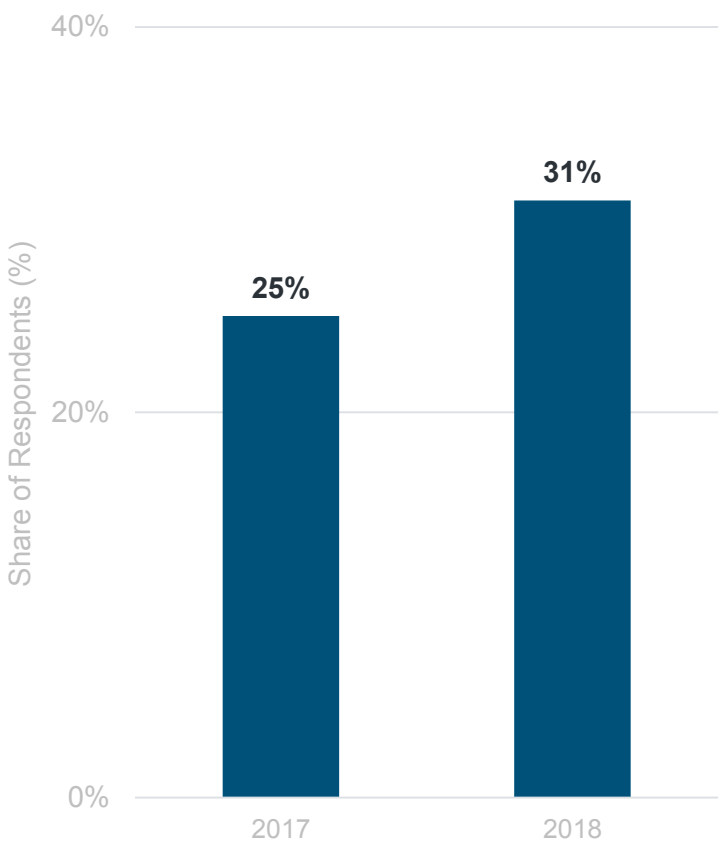
A financial services firm engaged a Mandiant Red Team to evaluate the effectiveness of its information security team's detection, prevention & response capabilities. The team was able to obtain full administrative control of the company domain & compromise all critical business applications without any software or operating system exploits.

Instead, the team focused on identifying system misconfigurations, conducting social engineering attacks & using the client's internal tools & documentation.

FireEye Threat Research, 4/19

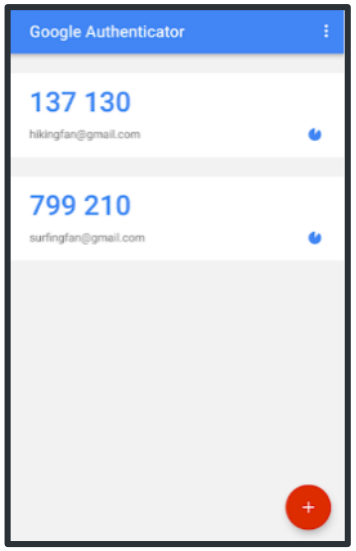
Data Center Operators – Downtime Experienced in Past Year

per Uptime Institute



Source: Uptime Institute 2018 Report. FireEye Note: Uptime Institute is a professional services organization best known for its data center tier standards for data center uptime. Each year, it conducts a survey of 900 data center operators on a variety of topics, including data center outages.

2-Factor Authentication = Incomplete Adoption Limits Effectiveness

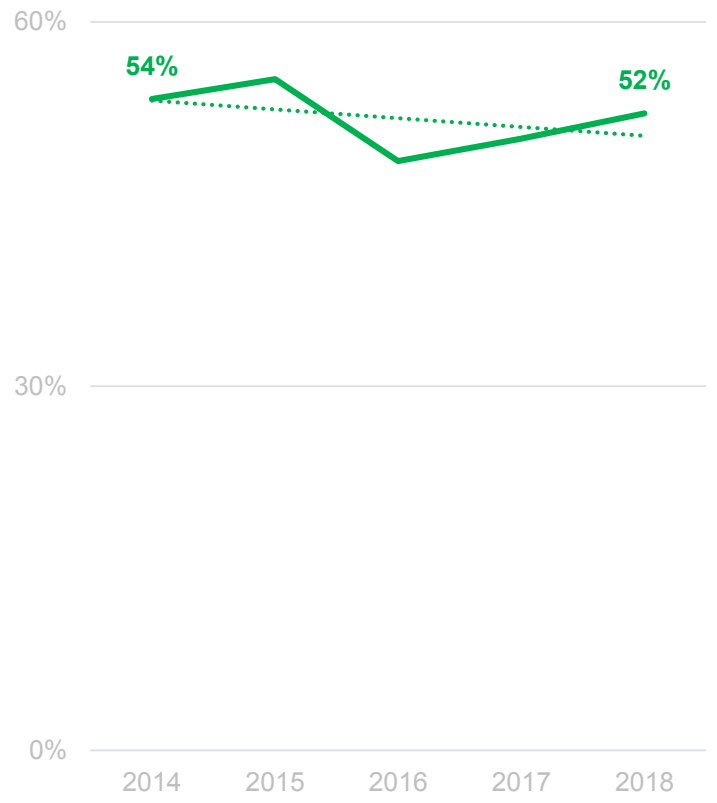


Security experts have seen a significant uptick in the number of clients securing their VPN or remote access infrastructure with multi-factor authentication.

However, there is frequently a lack of multi-factor authentication for applications being accessed from within the internal corporate network.

FireEye Threat Research, 4/19

% Sites Supporting 2-Factor Authentication, Global*



Source: Elie Bursztein (Security & Anti-Abuse Lead @ Google). analysis of dongleauth.info database data (12/18). FireEye (4/19)

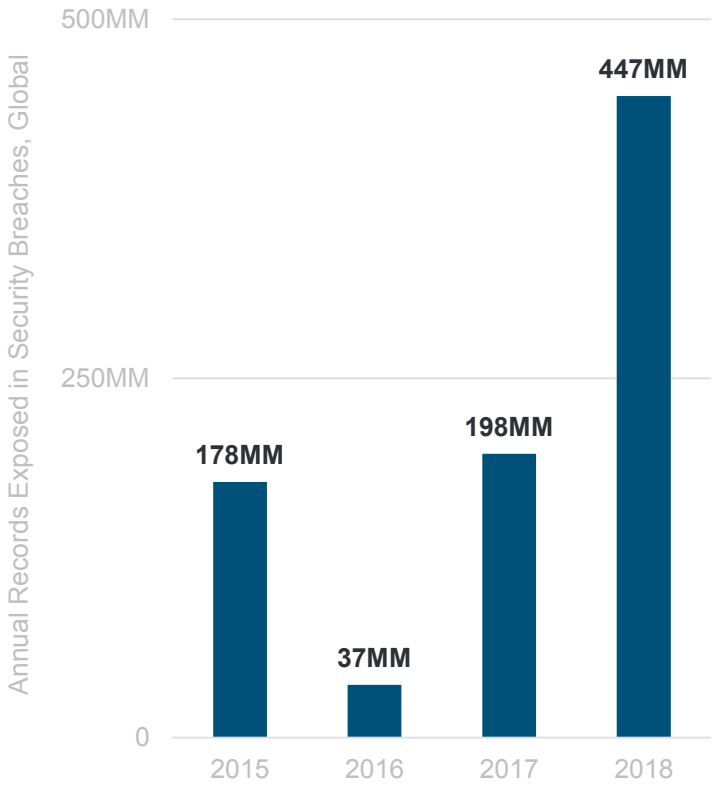
Cyber Attacks = Increasingly Focused on Sensitive Data

As more & more customers move to software as a service & cloud, attackers are following data.

Attacks against cloud providers, telecoms & other organizations with access to large amounts of data… increased in 2018.

FireEye M-Trends Report 2018

Sensitive Records Exposed in Security Breaches



Source: Identity Theft Resource Center (2014-2018). MalwareBytes 2019 State of Malware Report. Note: Trojan malware = malware specifically designed to evade detection by security software. Observed volume calculated as an average of monthly observations for a quarter. A sensitive record defined as personal information that could be used to commit a crime against a victim exposed due to an online security breach (e.g., bank credentials being accessed illicitly). Variation in number of records often driven by large individual breaches. In 2015, Anthem Health revealed 78MM personal records via breach. In 2017 Equifax exposed ~150MM personal records via breach. In 2018, Marriott International exposed ~383MM records via breach.

Cyber Attacks =
Effects Amplified by State Sponsorship

States are using the tools of cyberwarfare to undermine the very foundation of the Internet: trust. They are hacking into banks, meddling in elections, stealing intellectual property & bringing private companies to a standstill.

The result is that an arena that the world relies on for economic & informational exchange has turned into an active battlefield.

Cyber-operations are emblematic of a new style of competition…

In operation after operation, many of them hardly registered by the wider world, states are weaponizing the Internet.

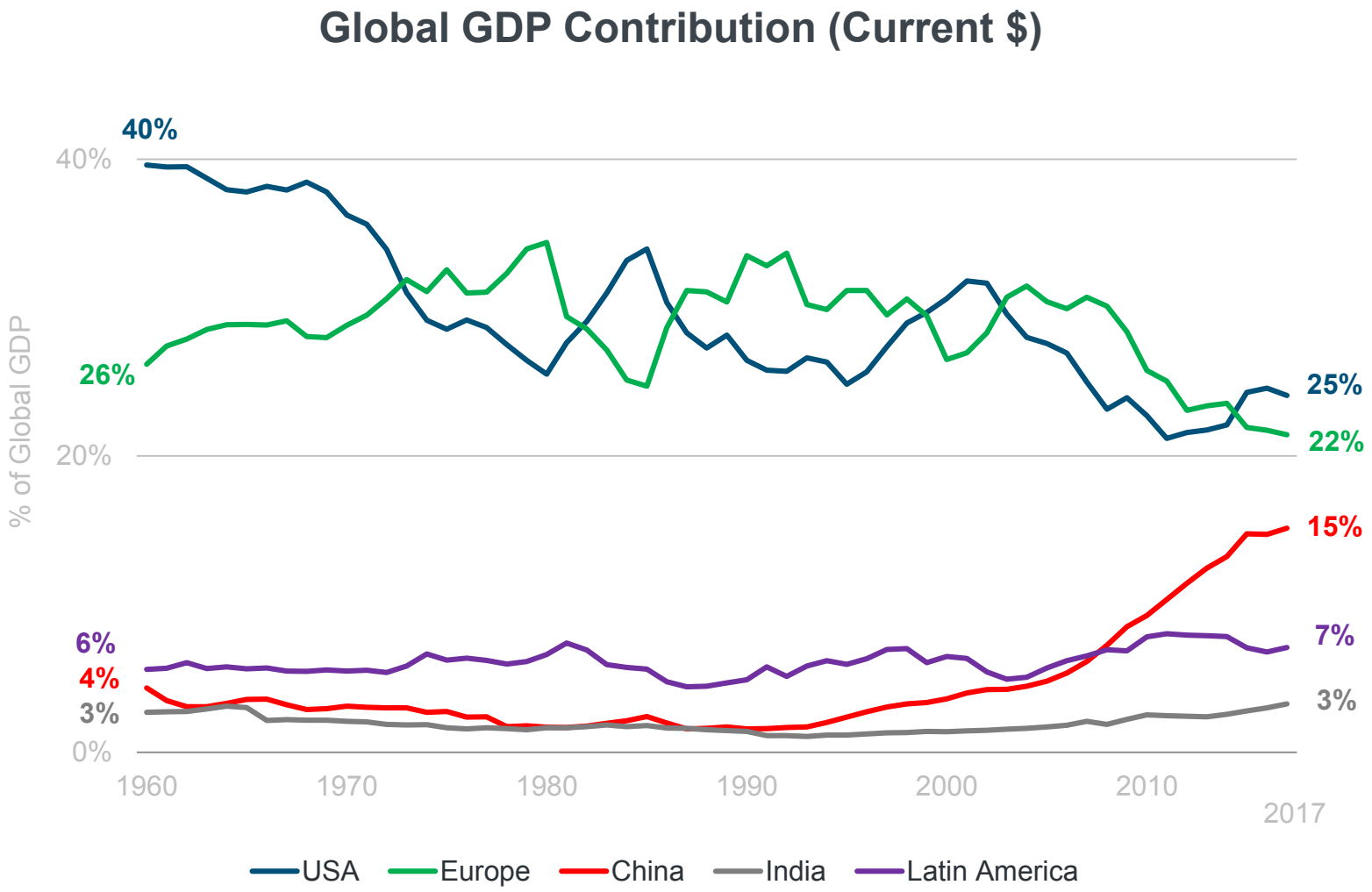
All these incidents occurred in a gray zone of conflict – below the threshold of outright war but above that of purely peacetime behavior.

Michèle Flournoy & Michael Sulmeyer – Co-Founders, WestExec Advisors, *Foreign Affairs,* 9/18

WORK =

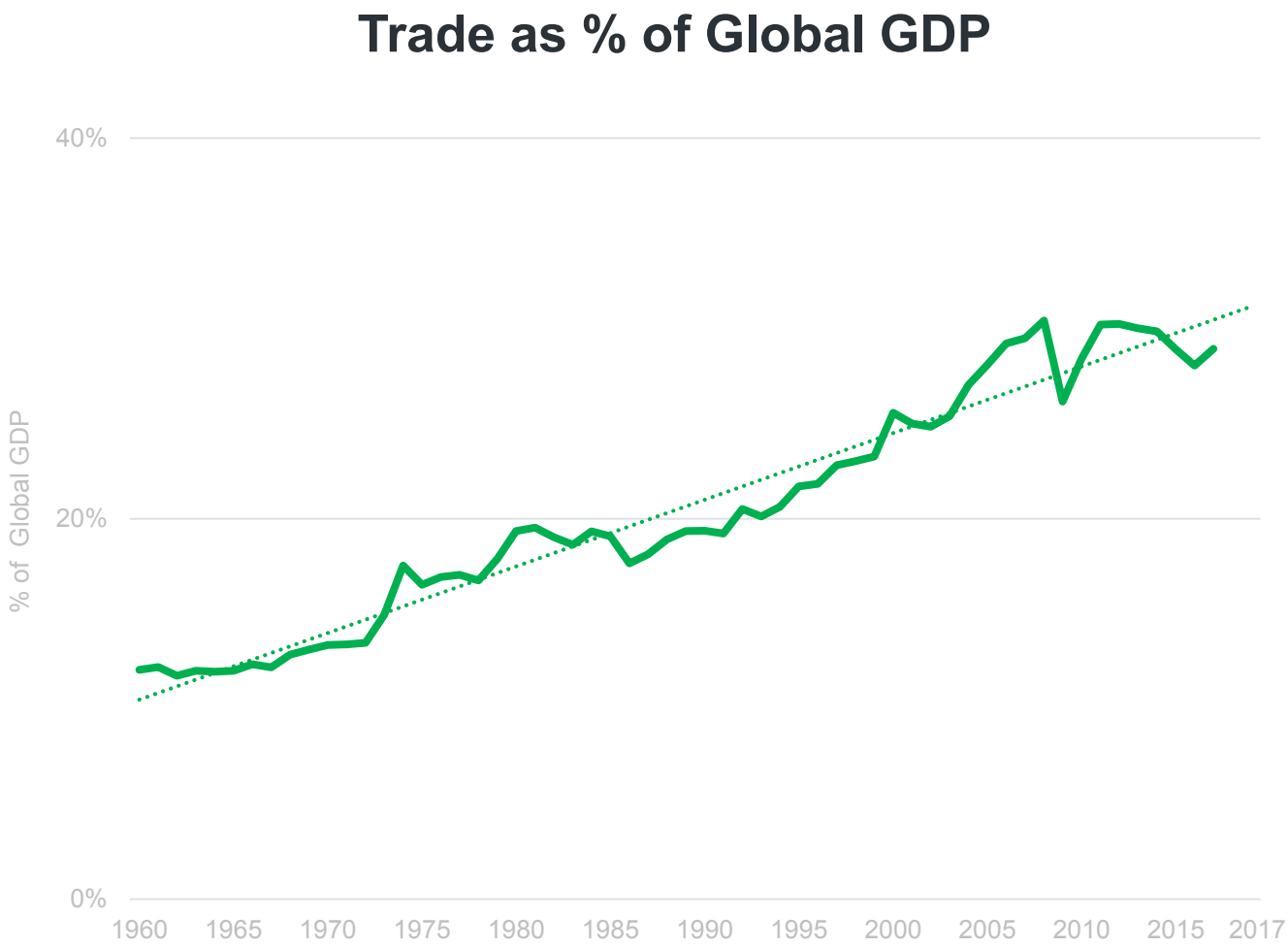
STRONG ECONOMIC INDICATORS…
INTERNET-ENABLED SERVICES / JOBS HELPING

Global Relative GDP (Current $) = China + USA + India Rising…Europe Falling



Source: World Bank (GDP in current $). Other countries account for ~30% of global GDP.

Cross-Border Trade = 29% of Global GDP… Foundational to Global Economy

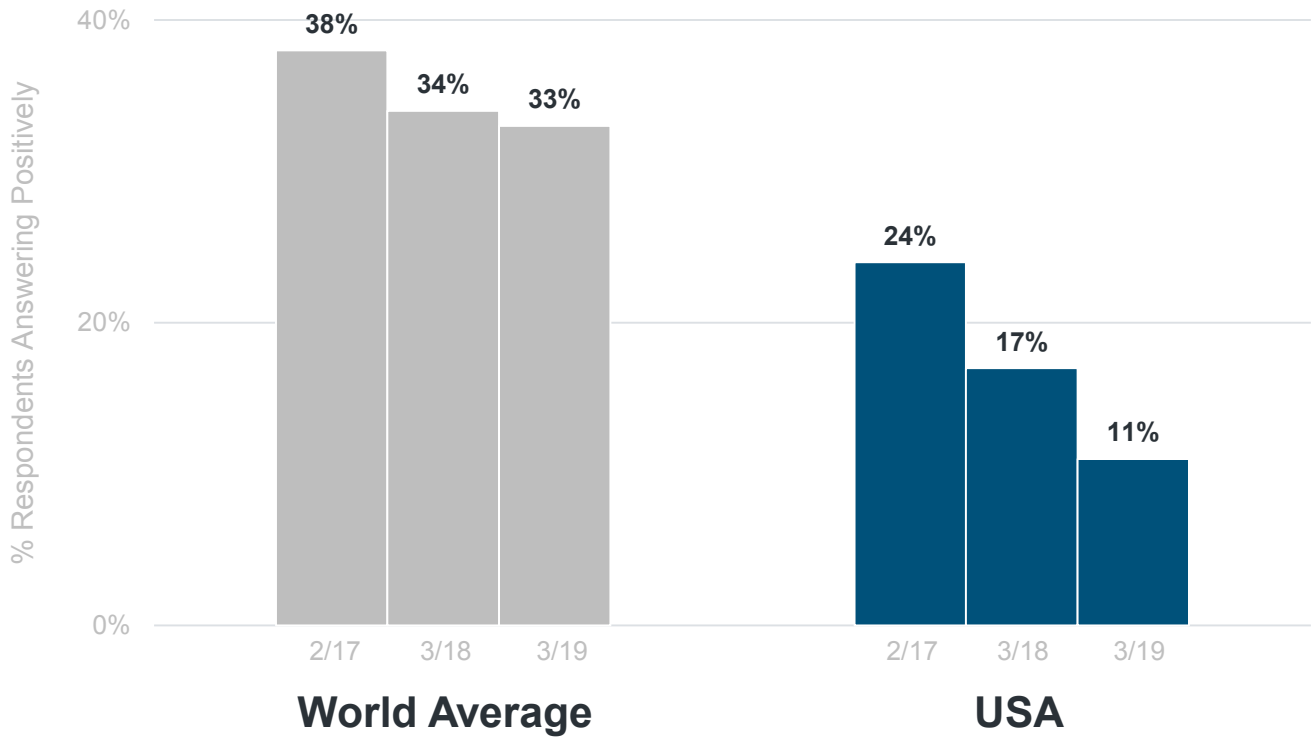


Source: World Bank. Note: 'World Trade' refers to the average of Imports & Exports (to account for goods in-transit between years) for all nations.

Global Relative Unemployment Concern = High… USA = Low…

Are unemployment & jobs among top three worries for your home country?

Ipsos / Reuters Surveys



Source: Ipsos Survey Data of ~20K global respondents. Ipsos conducts this survey on a monthly basis, asking the same questions of a statistically representative sample of >1K people in 28 representative countries. February 2017 included owing to lack of published March 2017 report. World average reflects average of Germany, Israel, UK, USA, Belgium, Japan, Poland, Sweden, China, Hungary, Peru, Turkey, India, Australia, Canada, Mexico, Brazil, Russia, France, Argentina, Saudi Arabia, South Africa, South Korea, Italy & Spain.

…Global Relative Unemployment Concern… USA = Materially Below Other Countries…

Are unemployment & jobs among top three worries for your home country?

Ipsos / Reuters Survey (3/19)

Rank	Country	Share
1	Italy	69%
2	South Korea	66
3	Spain	61
4	South Africa	57
5	Argentina	49
6	India	44
7	Turkey	44
8	Mexico	38
9	Brazil	35
10	Saudi Arabia	34
11	Russia	33
12	France	32
13	Australia	30

Rank	Country	Share
14	China	29%
15	Canada	27
16	Belgium	24
17	Peru	22
18	Japan	19
19	Israel	18
20	Hungary	17
21	Sweden	15
22	Poland	15
23	UK	14
24	Germany	11
25	**USA**	**11**

Source: Ipsos Survey Data of ~20K global respondents. Ipsos conducts this survey on a monthly basis, asking the same questions of a statistically representative sample of >1K people in USA & other countries. Note: Percentages do not add to 100% because respondents were allowed to pick 3 choices. . .'

…USA Relative Unemployment Concern = Low & Falling

Which of following are top three worries for your home country (USA)?

Ipsos / Reuters Surveys

February 2017

Rank	Concern	Share
1	Healthcare	36%
2	Crime & Violence	33
3	Terrorism	31
4	**Unemployment & Jobs**	**24**
5	Financial/Political Corruption	22
6	Immigration	21
7	Moral Decline	20
8	Poverty & Social Inequality	19
9	Taxes	17
10	Education	16
11	Climate Change	13
12	Extremism	12
13	Environmental Threats	9
14	Maintaining Social Programs	7
15	Inflation	6
16	Childhood Obesity	3
17	Access To Credit	2

March 2018

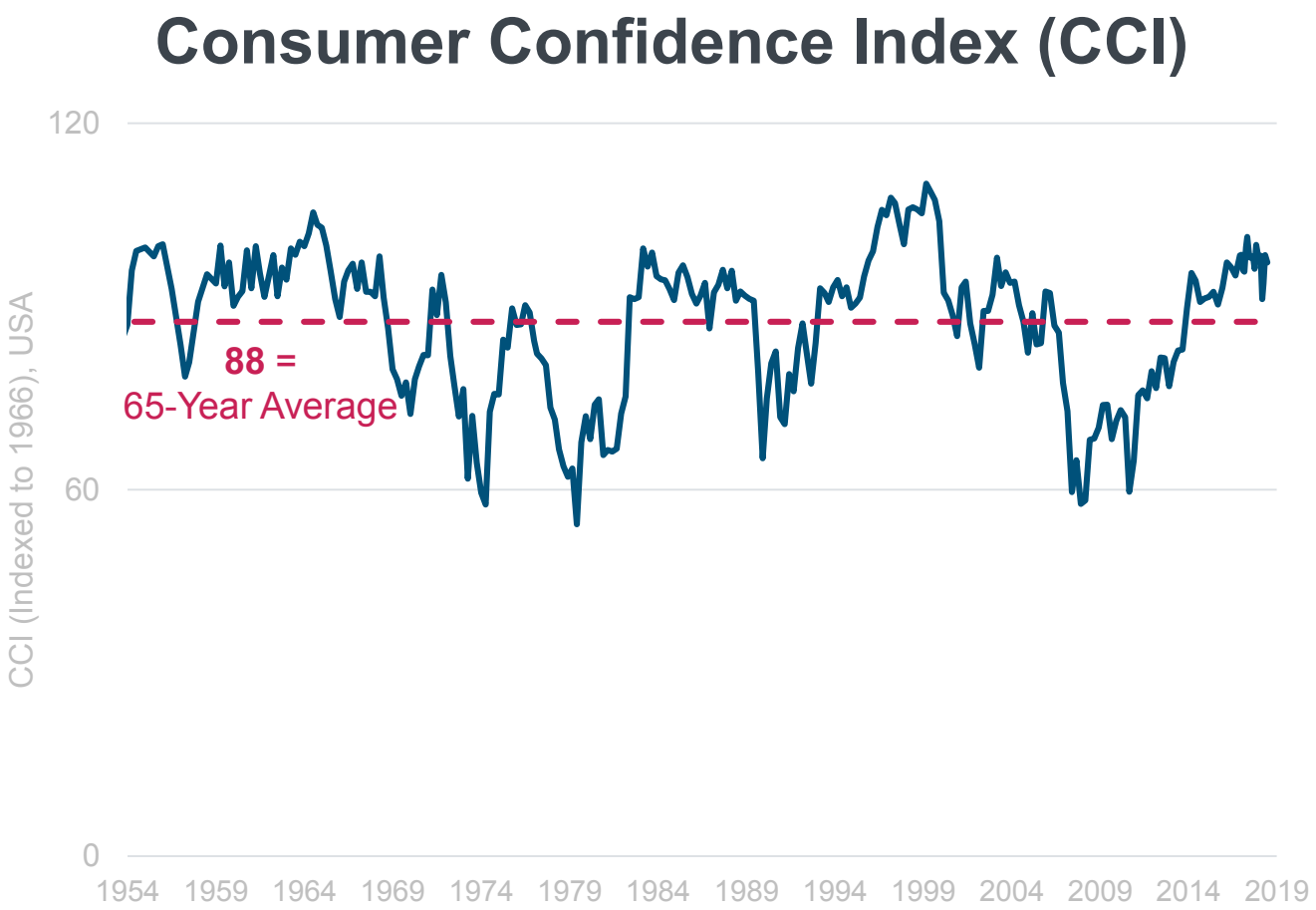
Rank	Concern	Share
1	Crime & Violence	35%
2	Healthcare	33
3	Terrorism	29
4	Financial/Political Corruption	23
5	Immigration	23
6	Moral Decline	23
7	Poverty & Social Inequality	19
8	**Unemployment & Jobs**	**17**
9	Extremism	15
10	Education	15
11	Taxes	14
12	Climate Change	12
13	Environmental Threats	10
14	Inflation	7
15	Maintaining Social Programs	5
16	Childhood Obesity	2
17	Access To Credit	2

March 2019

Rank	Concern	Share
1	Healthcare	39%
2	Financial/Political Corruption	28
3	Immigration	28
4	Moral Decline	26
5	Crime & Violence	22
6	Poverty & Social Inequality	21
7	Climate Change	21
8	Extremism	19
9	Terrorism	18
10	Education	15
11	Taxes	15
12	**Unemployment & Jobs**	**11**
13	Environmental Threats	10
14	Inflation	6
15	Maintaining Social Programs	6
16	Childhood Obesity	4
17	Access To Credit	0

Source: Ipsos Survey Data of ~20K global respondents. Ipsos conducts this survey on a monthly basis, asking the same questions of a statistically representative sample of >1K people in USA. Note: Percentages do not add to 100% because respondents were allowed to pick 3 choices.

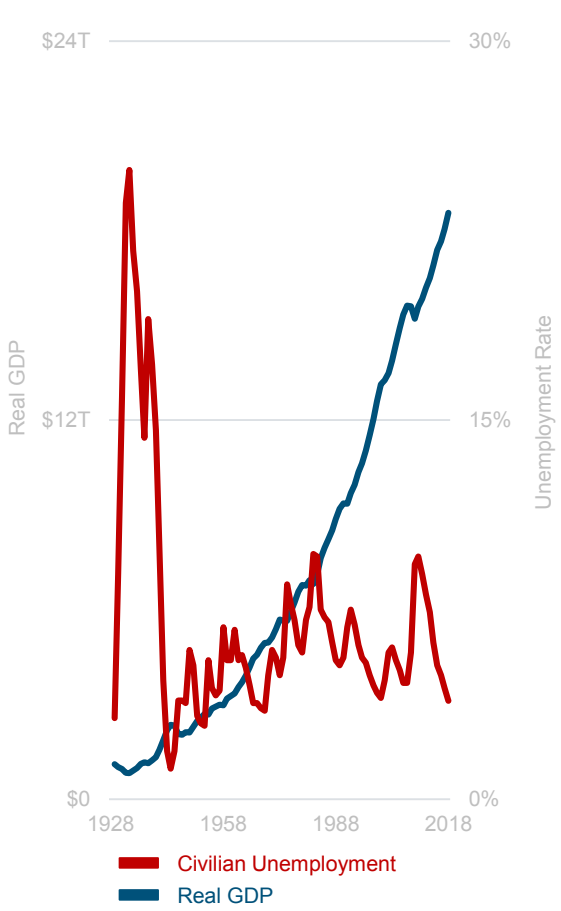
Consumer Confidence Index (USA) = High & Rising… @ 97 vs. 88 Sixty-Five Year Average



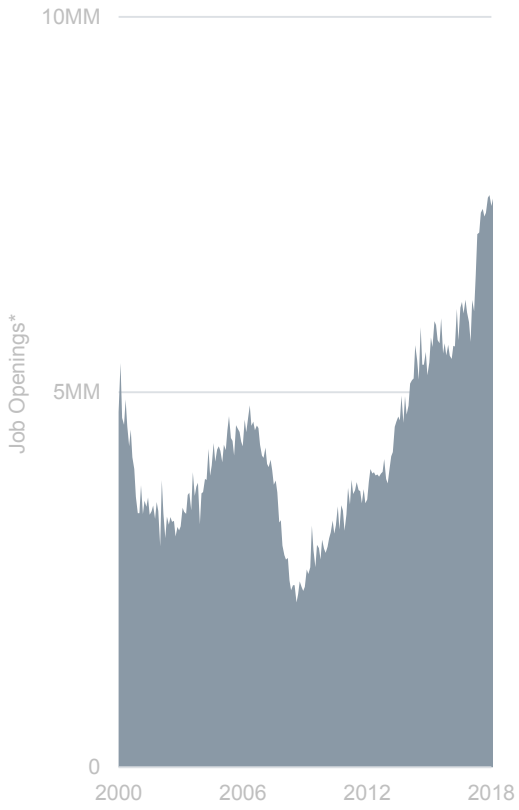
Source: St. Louis Federal Reserve FRED Database. Note: Indexed to Q1:66 = 100. Consumer Confidence Index (Michigan Consumer Sentiment Index) is a broad measure of American consumer sentiment, as measured through a 50-question telephone survey of at least 500 USA residents each month.

Economy / Employment (USA) = Unemployment @ 19 Year Low… Job Openings @ All-Time High…Wages Rising

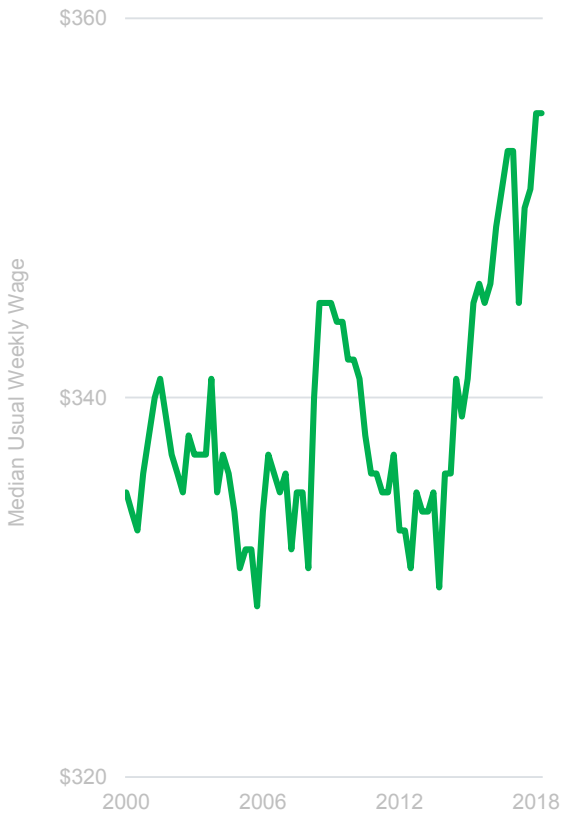
Real GDP vs. Unemployment Rate, USA



Job Openings, USA



Median Real Weekly Earnings, All Workers Over 16, USA



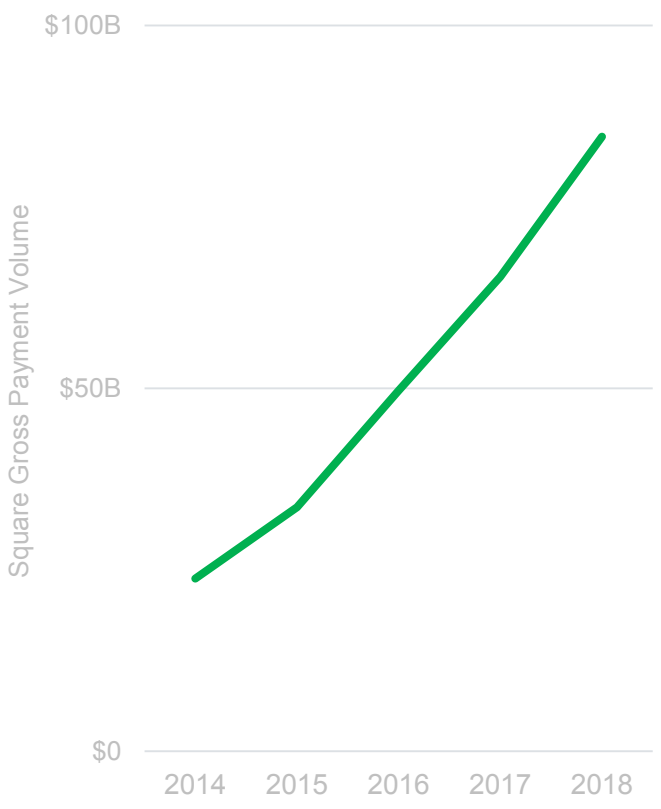
Source: St. Louis Federal Reserve FRED Database, Bureau of Economic Analysis, BLS. Note: Real GDP based on chained 2012 dollars. Unemployment rate = annual average. *A job opening is defined as a non-farm specific position of employment to be filled at an establishment. Conditions include the following: there is work available for that position, the job could start within 30 days & the employer is actively recruiting for the position. Wages refers to usual weekly earnings of wage & salary workers. Usual weekly earnings represent earnings before taxes & other deductions & include any overtime pay, commissions, or tips usually received (at the main job in the case of multiple jobholders). Usual definition per discretion of interviewee.

On-Demand Work =

Creating Internet-Enabled Opportunities + Efficiencies

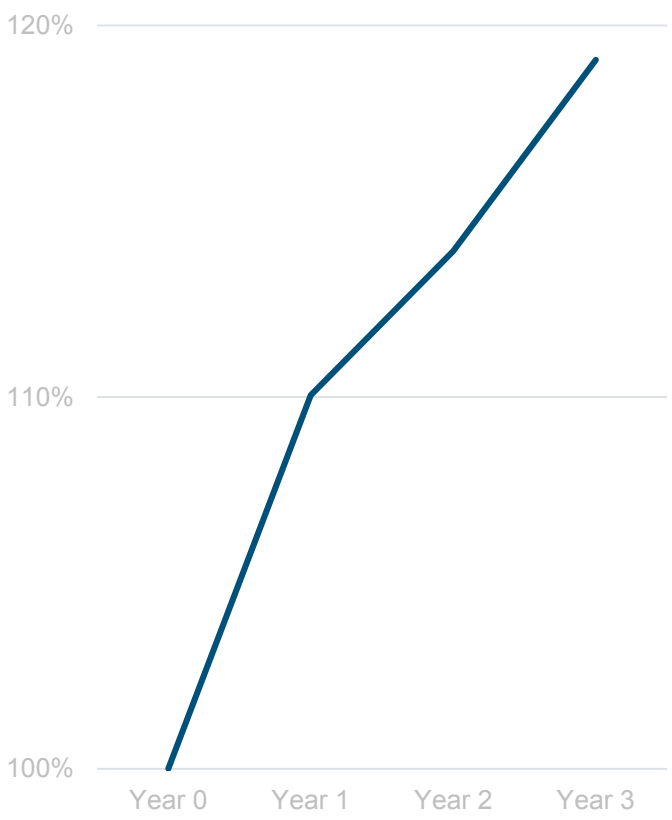
Small Business Enabling Payment Processors = Strong Growth

Square Gross Payment Volume, Global



Stripe Connect – Marketplace Volume Impact*

Per Forrester



Source: Square SEC filings. Forrester Total Economic Impact Survey on Stripe Connect (Stripe's Marketplace Product) (7/18). Note: A Total Economic Impact Study is a framework to identify the cost, benefit, flexibility & risk factors for an investment decision. Forrester took a multistep approach to evaluate the impact that Stripe Connect can have on an organization, including stakeholder interviews, customer interviews, the development of a composite organization based on the characteristics of interviewed Stripe customers & a financial model that incorporates the effects / risks of Stripe Connect, as identified by Stripe's customers. Based on interview feedback, Forrester determined that a composite organizations would likely have $475MM in annual transaction volume prior to using Stripe Connect & that Stripe Connect's features (e.g., improved seller settlement) would result in increased volume of $47.7MM in Year 1, $66.1MM in Year 2 & $90.6MM in Year 3.

On-Demand Services = Growing Rapidly…Benefitting Local Merchants

~5% of [USA] restaurant business's $800B in annual sales is delivered – we're still in the very early innings of the development of on-demand delivery & services.

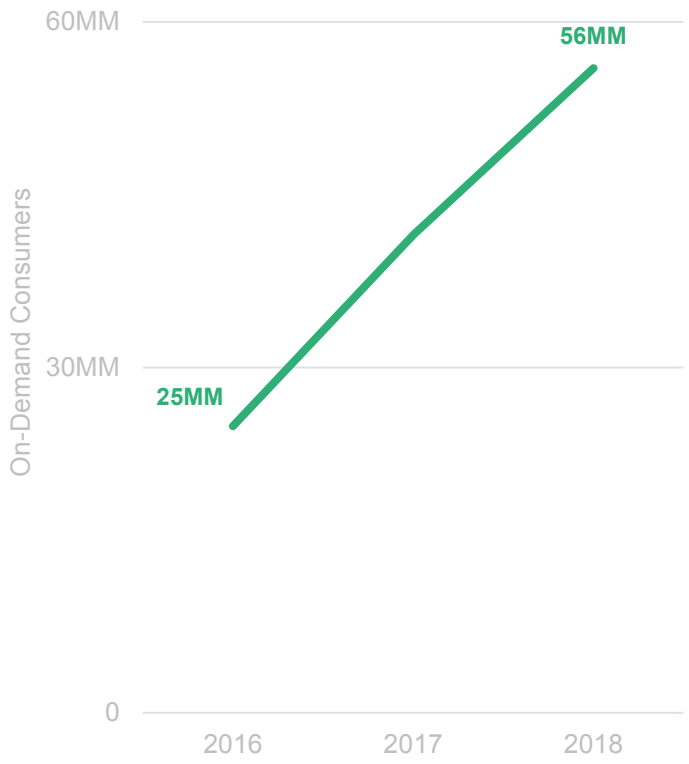
We started DoorDash to help local businesses…
'local' has long been the promise of E-Commerce but no one has found a way to help local merchants thrive online – that is the space we focus on.

We do this by enabling local merchants to participate in selling convenience. There are a lot of merchants who are ready to make the transition from selling experiences to also selling convenience, which can often reduce their costs. I think this is the biggest business model change in commerce.

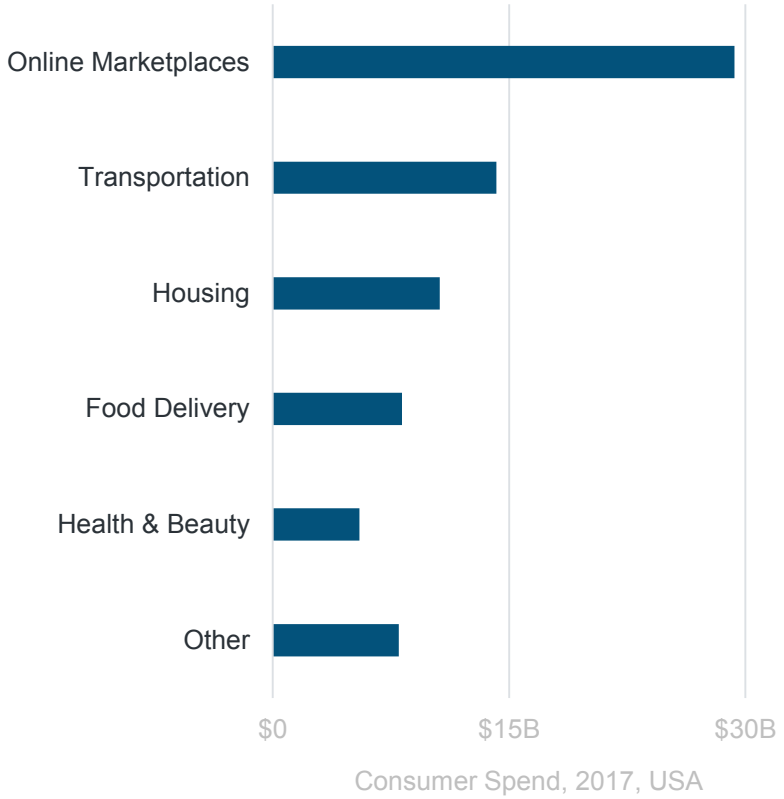
Tony Xu – Founder / CEO, DoorDash, 6/19

On-Demand Consumers = 56MM + ~2x in Two Years

On-Demand Consumers, USA

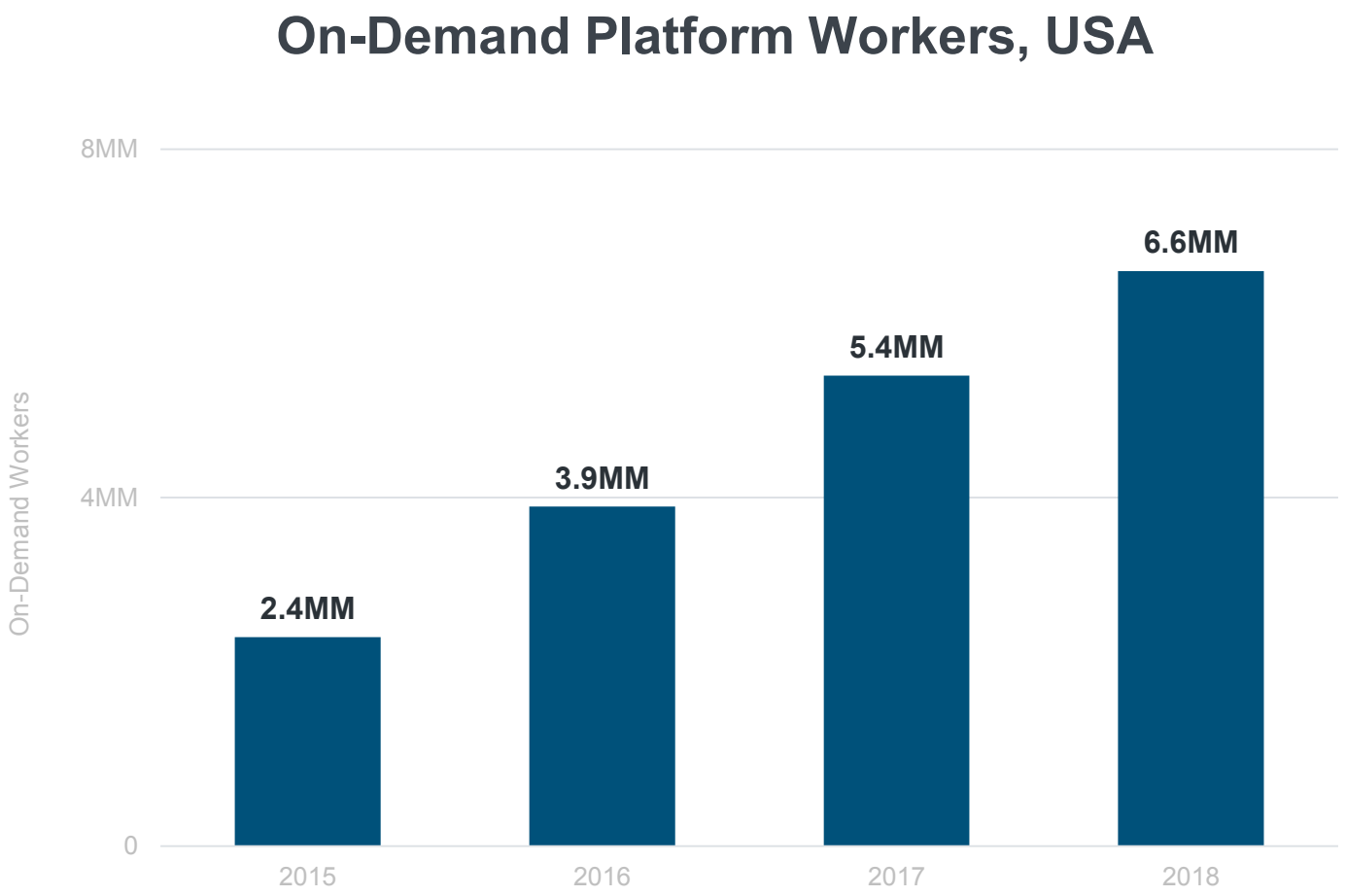


On-Demand Products / Services – Consumer Spend, 2017, USA



Source: National Technology Readiness Survey (4/18). Note: authored by Rockbridge Associates, Inc. & A. Parasuraman & is co-sponsored by the Center for Excellence in Service, Robert H. Smith School of Business, University of Maryland. The study is conducted online among a representative sample of consumers in a national panel & represents the views of U.S. adults ages 18 & older. The sample size was 1,032 in 2016 & 1,004 in 2017. The margin of error is +/- 3 percentage points. 2018 figures are estimates.

On-Demand Workers = ~7MM +22% Y/Y



Source: Emergent Research (2015-2018) + Intuit (2017). Note: On-demand workers defined as online marketplace workers including transportation and/or logistics for people or products, online talent marketplaces, renting out space. Providing other miscellaneous consumer & business services (e.g. TaskRabbit, Gigwalk, Wonolo, etc.). Workers defined as 'active' employees that have done 'significant' on-demand work within the preceding 6 months.

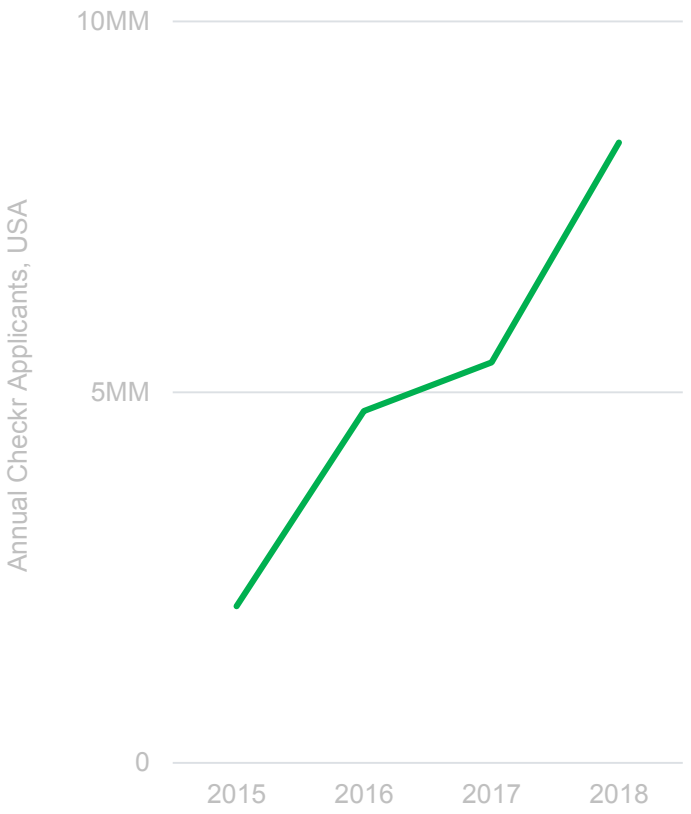
On-Demand Workers = >20MM Applicants on Checkr Platform Since 2015, USA

As the on-demand economy continues to evolve & transform the world around us, we're seeing a rapid increase in new & supplemental job creation. Increasingly, this type of work has become a key driver of economic growth.

Checkr has a front row seat in the on-demand economy, not only to watch the changes unfold, but also to provide solutions that shape & strengthen it. Our technology is designed to give employers the information they need to make informed decisions about their candidates, while helping them scale & grow their business.

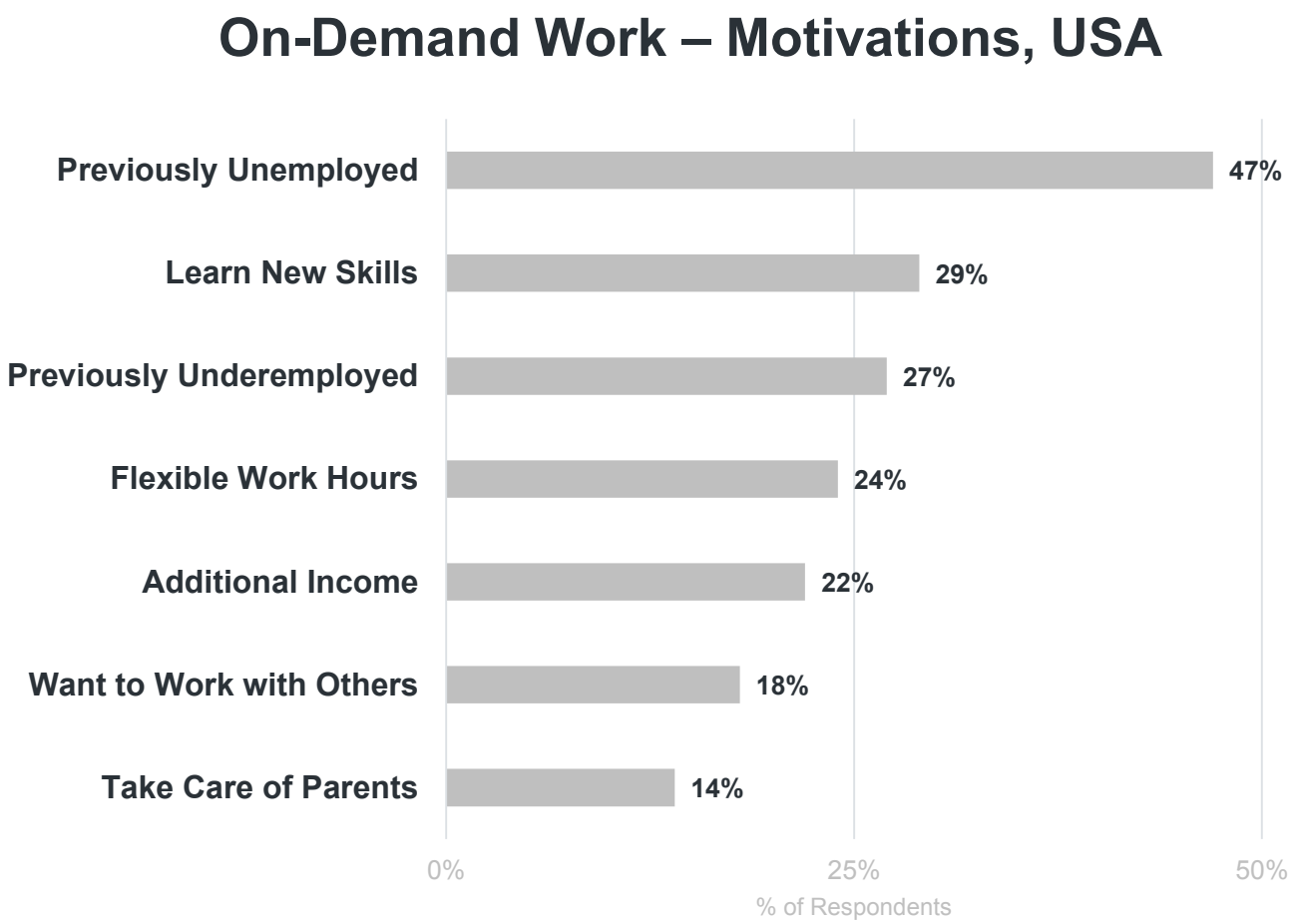
Daniel Yanisse – Co-Founder / CEO, Checkr, 6/19

Checkr On-Demand Platform Applicants, USA



Source: Checkr (2019)

On-Demand Work = Creating Internet-Enabled Benefits

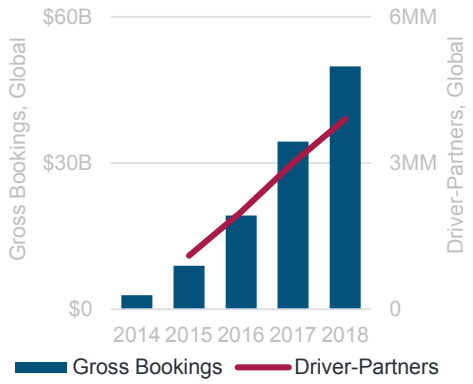


Source: Wonolo (7/18). N = 1,400 survey respondents

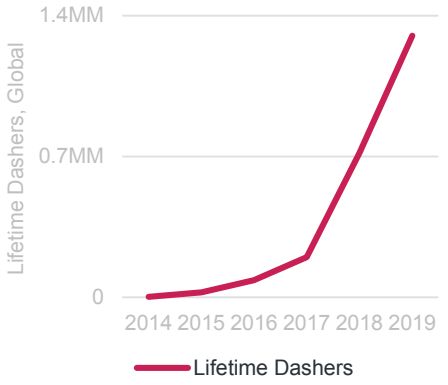
On-Demand Platforms = Big Numbers + High Growth

Real-Time Platforms

Uber @ 4MM Driver-Partners

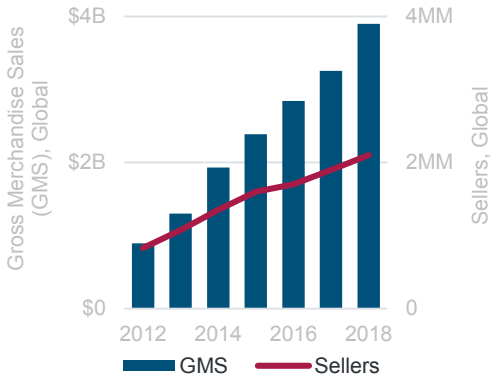


DoorDash @ 1.3MM Dashers

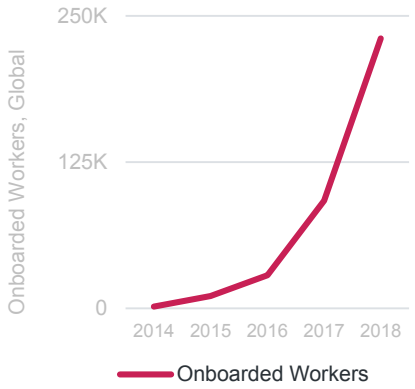


Internet-Enabled Marketplaces

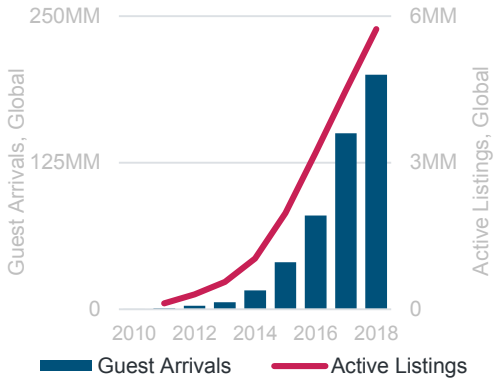
Etsy @ 2MM Sellers



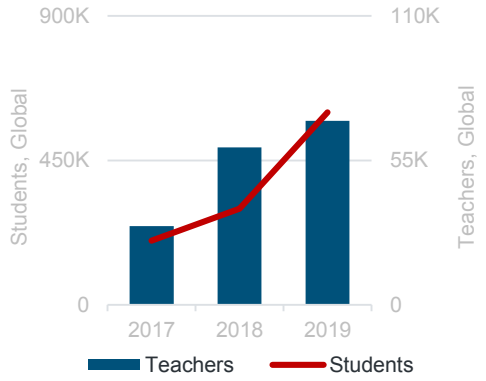
Wonolo @ 230K Workers



Airbnb @ 6MM Listings



VIPKid @ 70K Teachers

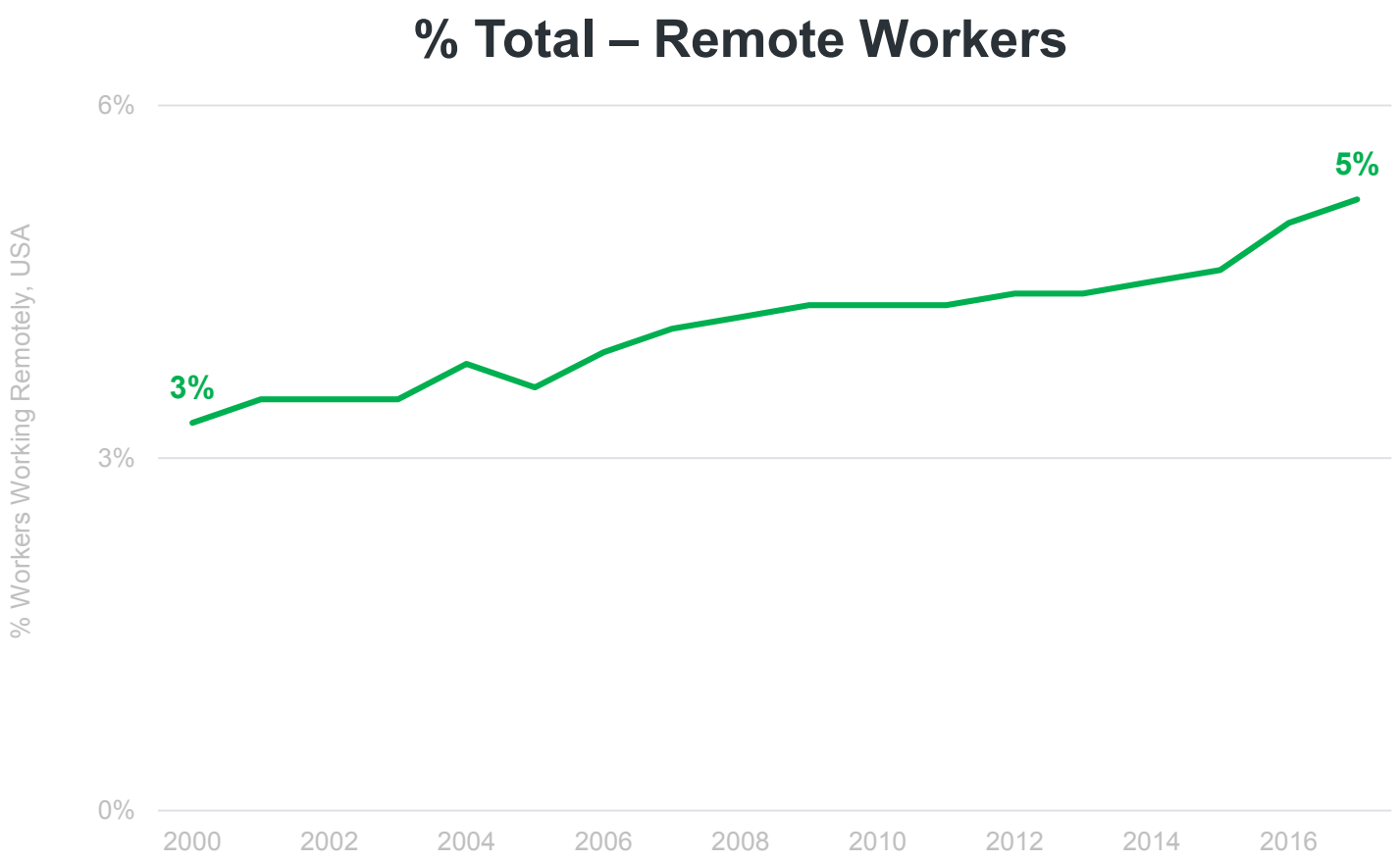


Uber Source: Uber DoorDash Source: DoorDash. Note: Lifetime Dashers defined as the total number of people that have dashed on the platform through the end of each year. 2019 figures are as of 5/19. Etsy Source: Etsy. Airbnb Source: Airbnb, Note: Airbnb 2017 & 2018 Guest arrivals based on estimates from total guest arrivals disclosures in 2018 & 2019. 500MM guest arrivals have occurred via Airbnb as of 2019. VIPKid Source: Company Press Releases (3/19). Wonolo Source: Wonolo.

Remote Work =

Creating Internet-Enabled Work Opportunities + Efficiencies

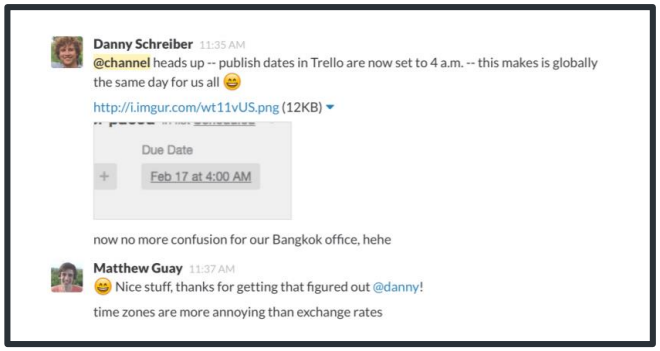
Remote Workers = Rising…
~5% of Americans vs. ~3% in 2000



Source: USA census Bureau American Community Survey (ACS) (2000-2017). Note: The US Census releases the ACS survey results in September for the previous year. ACS = Survey of ~3.5MM Americans over the course of a year.

Remote Workers = Enabled by Online Collaboration Tools

Remote Workforce (Zapier)



At Zapier, we've found that by using a stack of collaboration tools that work well together, our 100% remote team is able to work more efficiently, regardless of where they're located.

It's important for us to have the ability to instantly access a folder, collaborate on a shared document, or chat in real time.

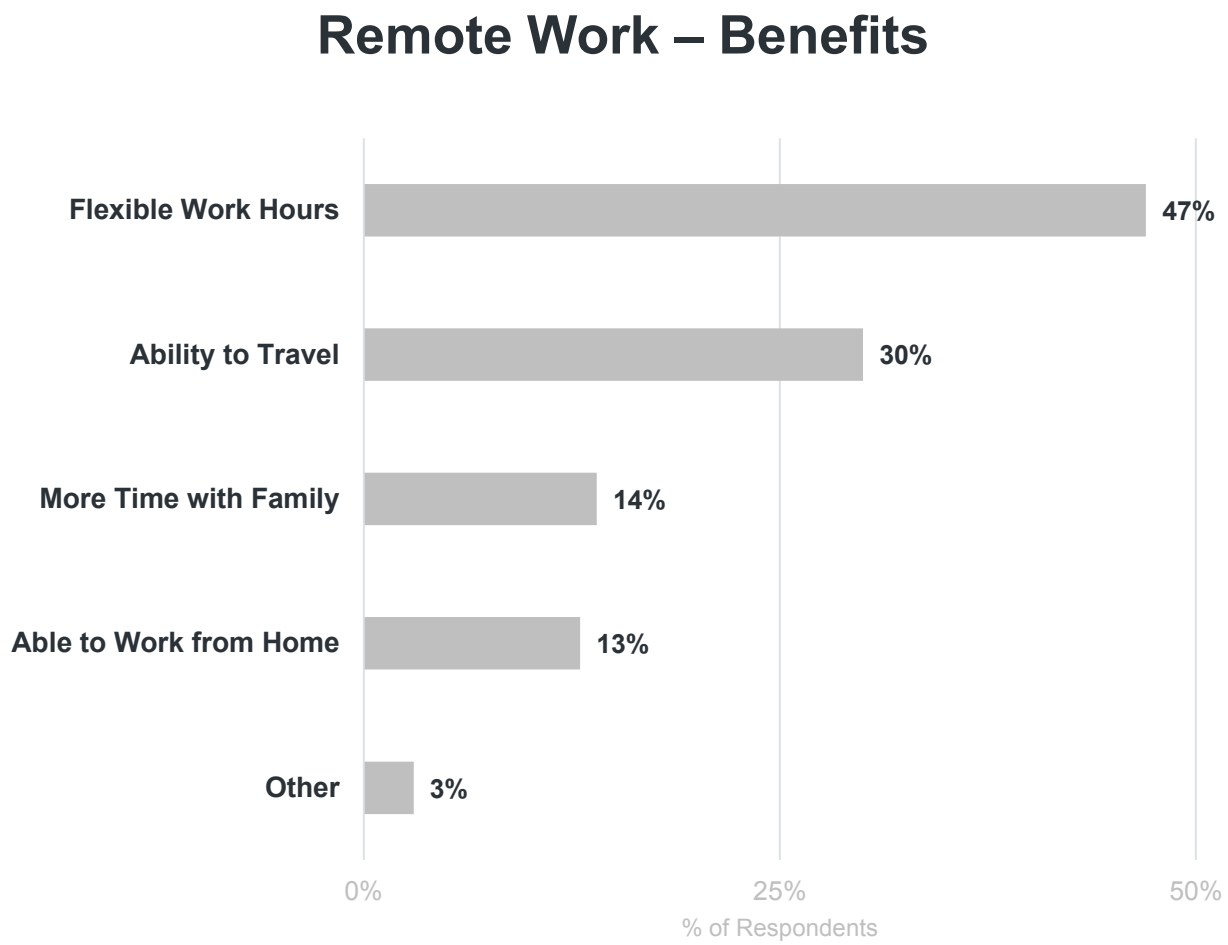
With well-connected tools & processes, any remote employee can feel more focused, productive & in control of their time.

Wade Foster – Co-Founder / CEO, Zapier, 6/19

Highest-Use Apps on Zapier By Remote Teams	Y/Y Growth 1/18-1/19
1) Slack	+42%
2) Google Sheets	+59%
3) Airtable	+37%
4) Help Scout	+101%

Source: Zapier (6/19). Note Y/Y growth refers to growth in engagement with productivity tools from January 2018 to January 2019 specifically at remote teams who use Zapier for automation.

Remote Work =
Creating Internet-Enabled Benefits



Source: Buffer in partnership with Doist, Hubstaff, Remote-How, RemoteYear, Trello, Workfrom & We Work Remotely, State of Remote Work 2019. N = 2,471 respondents globally.

Zoom by Day…Fortnite by Night?

Work (via Zoom)…

…Play (via Fortnite)

Source: Canva (Pixabay). Nintendo.

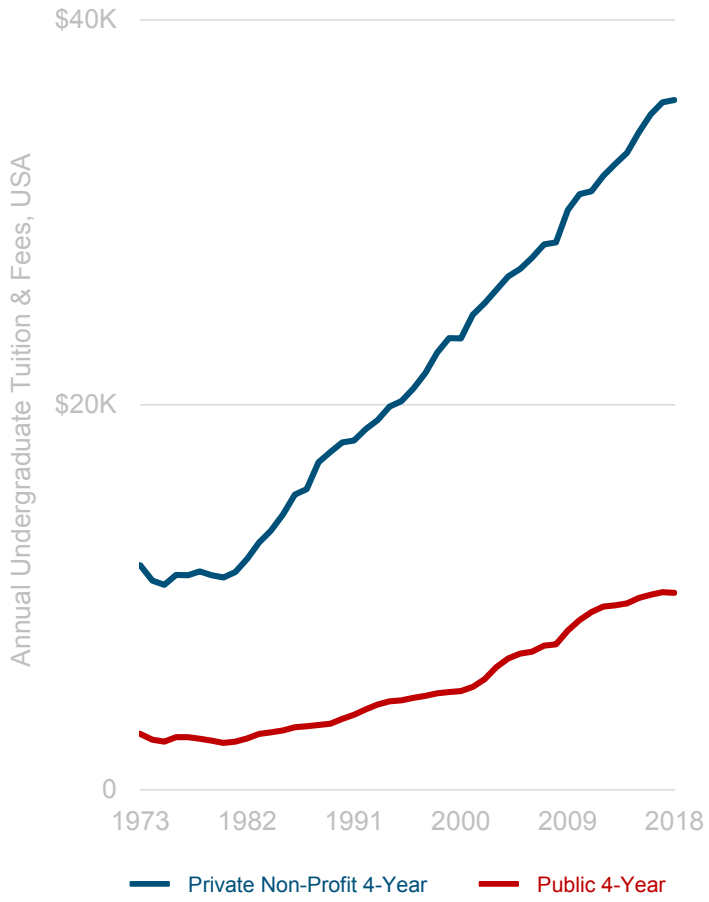
ONLINE EDUCATION =

BIG NUMBERS + BIG GROWTH

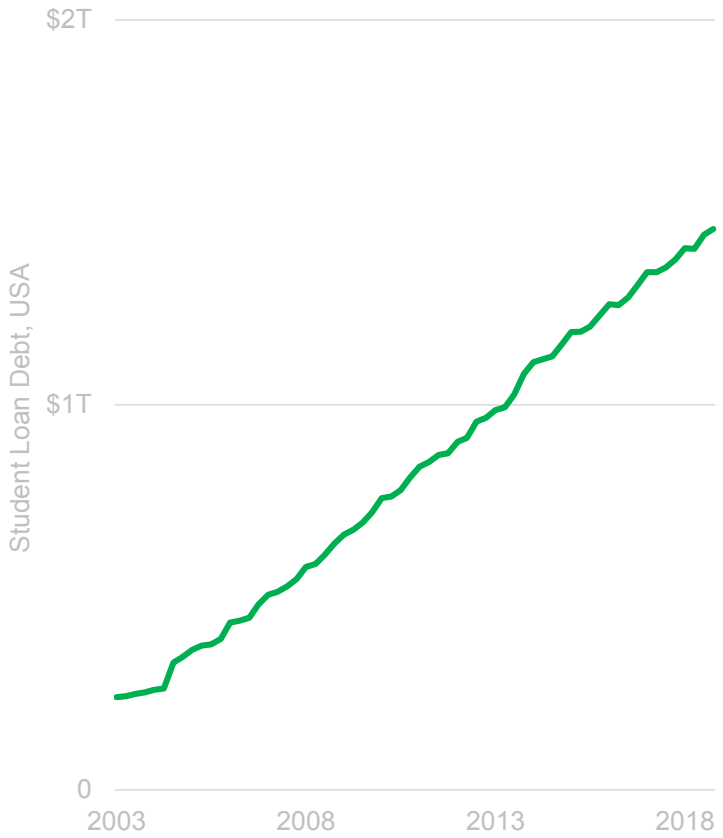
Education Costs (USA)

Education Costs = Rising

Undergraduate Tuition & Fees



Student Loan Debt

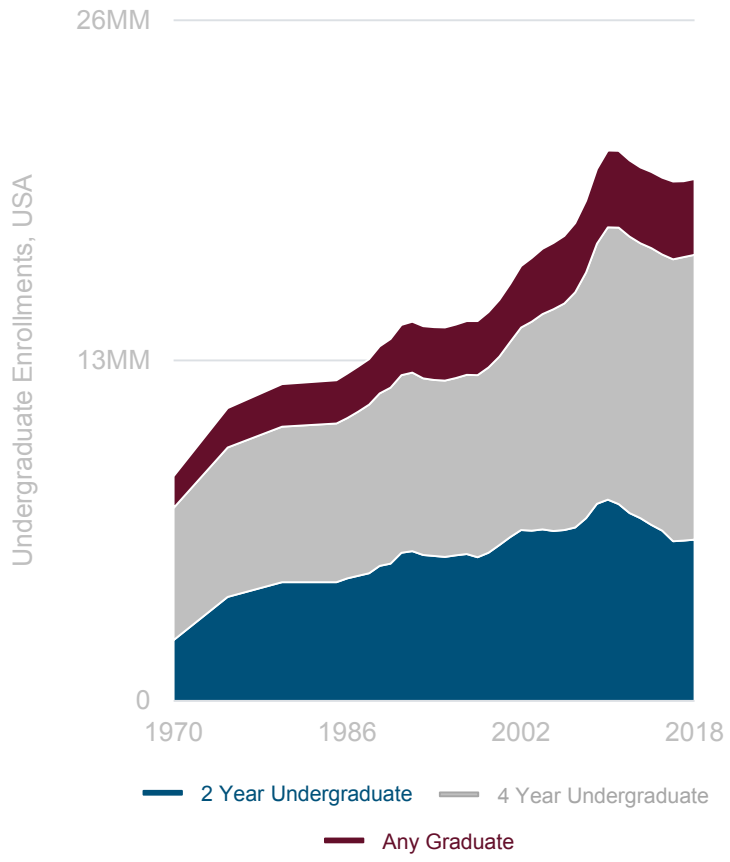


Source: Tuition & Fees = College Board, Annual Survey of Colleges; NCES, IPEDS Fall Enrollment data. Average tuition & fee prices reflect in-district charges for public two-year institutions & in-state charges for public four-year institutions. All figures in 2018 dollars. Debt = College Board, Annual Survey of Colleges; NCES, IPEDS Fall Enrollment data. Average tuition & fee prices reflect in-district charges for public two-year institutions & in-state charges for public four-year institutions. All figures in 2018 dollars.

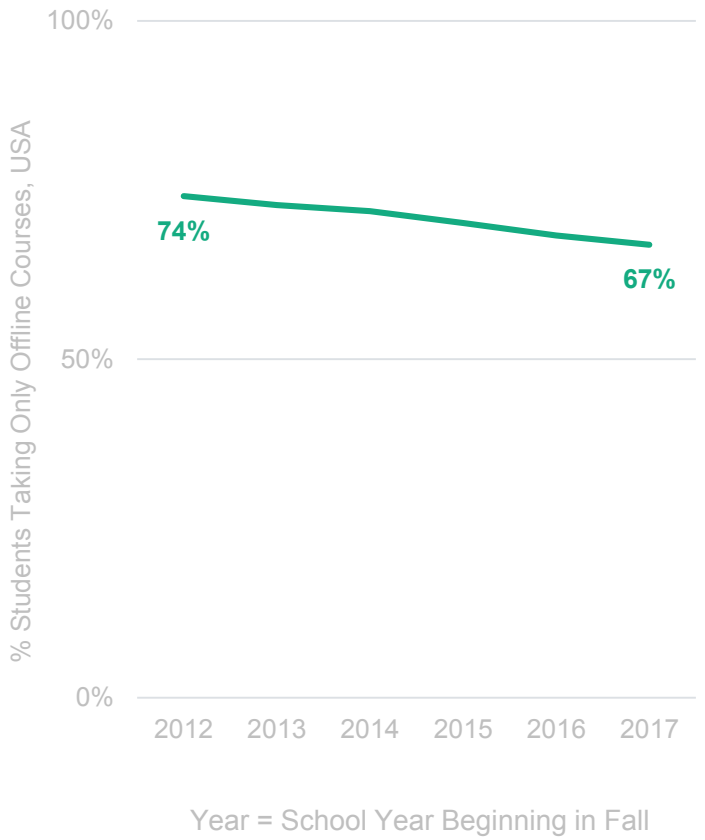
Post-Secondary Education Enrollment (USA)

Offline Education Enrollment = Slowing

Post-Secondary Education – Enrollments*



Post-Secondary Students – % in Only Offline Courses



Source: National Center for Education Statistics (3/18). 2017-2018 are estimates supplied by Chegg. *Note: Decline in Post-Secondary Students only taking offline courses partly driven by student demographics (e.g., an older student base more likely to be employed while at school). Data through 1995 are for institutions of higher education, while later data are for degree-granting institutions. Degree-granting institutions grant associate's or higher degrees & participate in Title IV federal financial aid programs. The degree-granting classification is very similar to the earlier higher education classification, but it includes more 2-year colleges & excludes a few higher education institutions that did not grant degrees. Some data have been revised from previously published figures.

Online Education / Learning =

Offline Institutions Expanding Reach

Online Education Enrollment = High Across Diverse Base of Universities

Top 50 USA Post-Secondary Online Enrollment Leaders (2017)

Public

Institution	Enrollment
University of Maryland	51K
University of Central Florida	36
Ivy Tech Community College	35
Arizona State University	31
University of Florida	31
Florida International University	30
Lone Star College System	23
University of South Florida	22
University of Texas Arlington	21
Houston Community College	19
Valencia College	18
California State – Northridge	17
St Petersburg College	16
Texas Tech University	16
Penn State University – Main	16
College of Southern Nevada	15
Kent State University	15
Florida State University	15
University of Houston	15
University of Cincinnati	14
University of Illinois at U-C	14
Ohio State University – Main	14
Penn State University – World	13
University of North Texas	13
Utah State University	13
N. Virginia Community College	13
University of Arizona	13
Northern Arizona University	13
California State – Fullerton	13
Total Enrollment	**576K**

Private – For Profit

Institution	Enrollment
University of Phoenix – Arizona	129K
Grand Canyon University	69
Walden University	53
American Public University System	49
Ashford University	41
Capella University	38
Kaplan University – Davenport	37
Colorado Technical University	25
Chamberlain College of Nursing	24
Columbia Southern University	23
Full Sail University	21
DeVry University-Illinois	19
Total Enrollment	**528K**

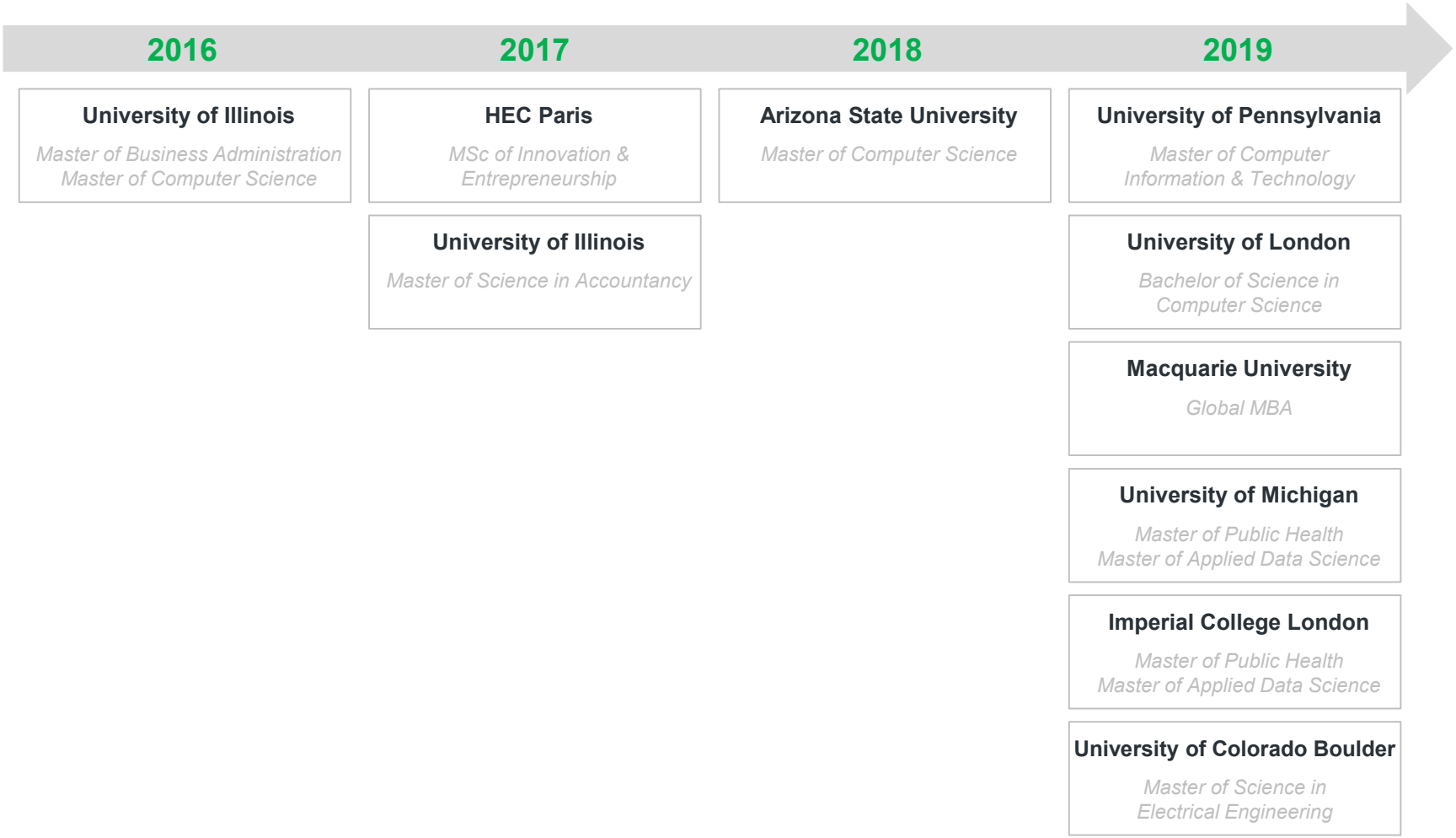
Private – Not For Profit

Institution	Enrollment
Western Governors University	84K
Liberty University	68
Southern New Hampshire U.	64
Excelsior College	42
Brigham Young University	36
Ultimate Medical Academy	16
Embry-Riddle	13
National University California	13
Total Enrollment	**336K**

Source: Babson Survey Research Group Grade Increase: Tracking Distance Education in the United States (2018)

Online Education Courses = Top Offline Institutions Ramping Online Offerings

Degree Programs @ Top Institutions Moving Online via Coursera



Source: Coursera (6/19). Note: Data reflects first year of program offering of active programs on Coursera.

…Online Education / Learning Platforms =

Scaling…Different Shapes & Sizes

Online Education Program Managers = 2U

2U – Post-Secondary (USA)

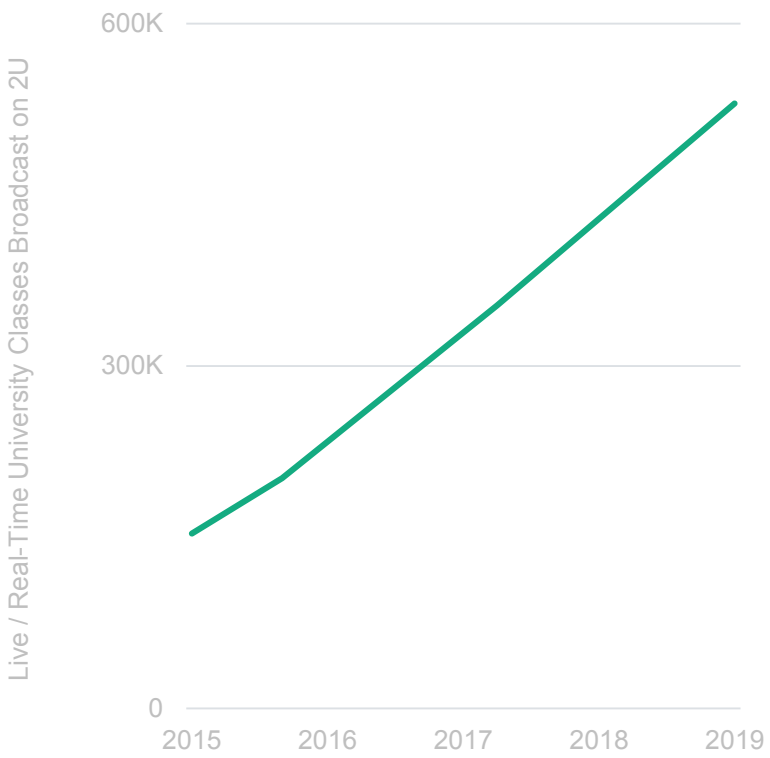
Online Graduate Programs

Why should you pick up your life, quit your job & move to attend school if you can get everything you would receive normally from that experience over the Internet…
but not sacrifice either quality or the level of relationships – between students & faculty or students & fellow students.

[You can] become a full member of that community, getting the same degree & the same level of access.

Christopher Paucek – Co-Founder & CEO 2U, 11/18

Cumulative Classes Broadcast



Source: Goldman Sachs Investment Research (5/18). Christopher Paucek Interview with Code (11/18).

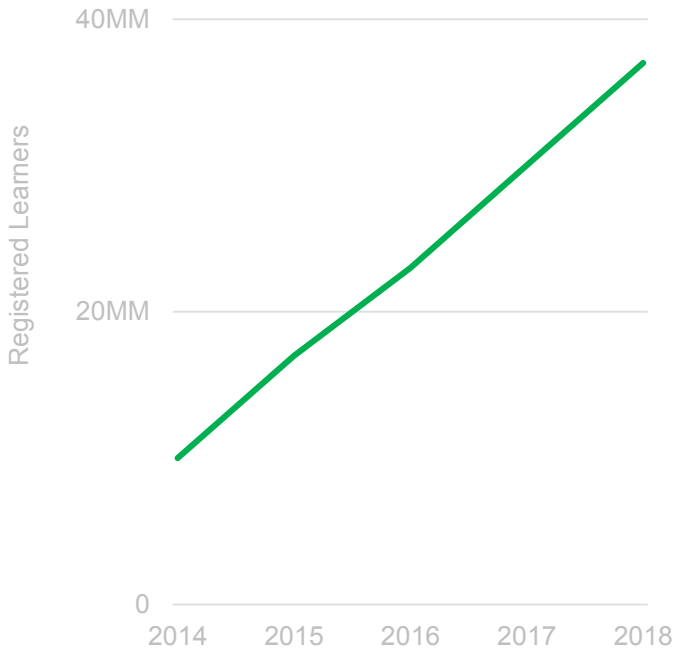
Online Education Marketplaces = Coursera…

Coursera – Post-Secondary (Global)

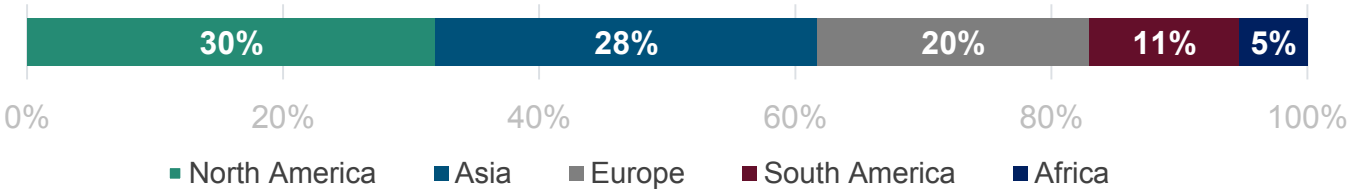
Top Courses, 2018

- **Machine Learning** Stanford
- **Learning How to Learn: Powerful Mental Tools to Help You Master Tough Subjects** UC San Diego
- **The Science of Well-Being** Yale
- **Bitcoin & Cryptocurrency Technologies** Princeton
- **Algorithms, Part I** Princeton
- **English for Career Development** University of Pennsylvania
- **Financial Markets** Yale
- **Introduction to Psychology** University of Toronto
- **Cómo Hacer una Tesis** Universidad Nacional Autónoma de México
- **Chinese for Beginners** Peking University

Learners



Learners by Geography



Source: Coursera. Note: Course popularity based on average daily enrollments. Graph shows learners as of 12/18.

…Online Education Marketplaces = Udemy

Udemy – Continuing Education (Global)

Education Marketplace

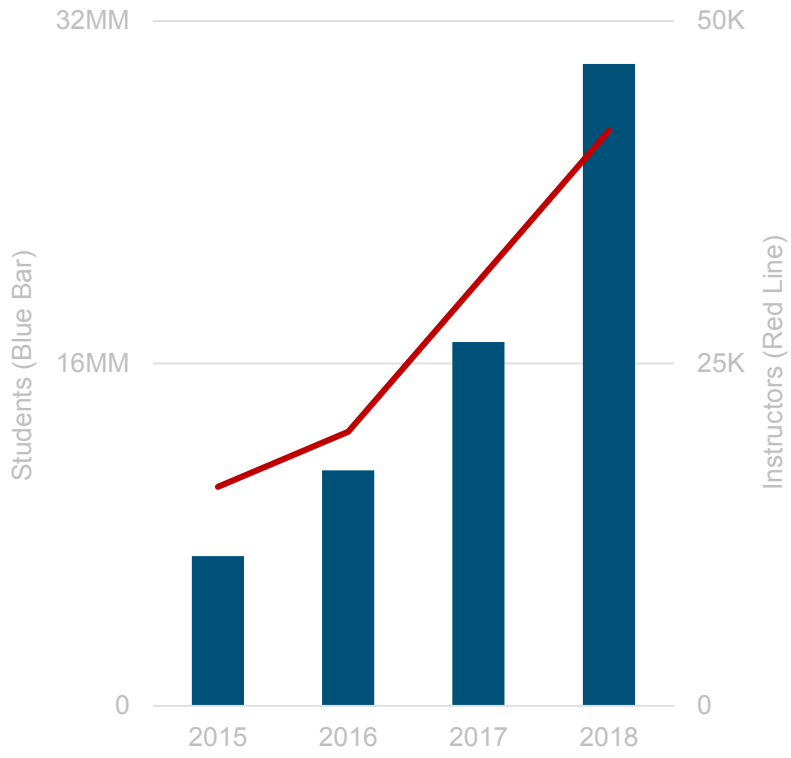
200MM+ Enrollments in 100K+ Courses

From day one, we wanted to create a destination where anyone could learn skills to improve their life at an affordable price.

Since most of our students learn in order to advance at work, we have also focused on building an enterprise solution with over 3,000 curated courses that focus on business-relevant skills. This has been one of the fastest-growing portions of our business, with customers growing +13x since 2015.

Eren Bali – Co-Founder, Udemy, 5/19

Instructors + Students



Source: Udemy (5/19).

Online Education (Post-Graduation Income Sharing) = Lambda School

Lambda School – Post-Secondary (Global)

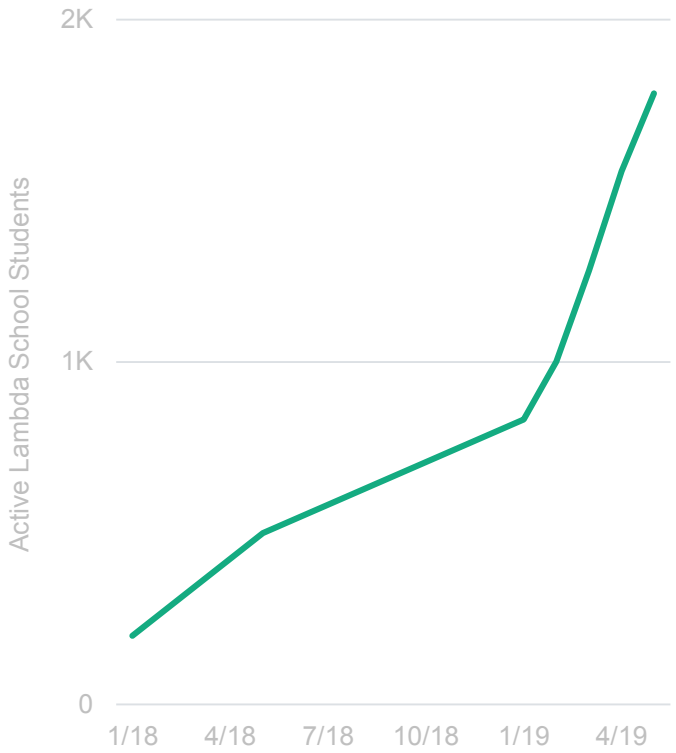
Income Share Agreements

The traditional higher education model downloads the financial risks to the students. Universities aren't incentivized to help students succeed because tuition is paid up front. Not at Lambda School.

We only succeed when our students do – with our ISA model, students pay no tuition until they have landed a job earning $50K or more. By aligning the incentives of Lambda School with those of the student, we eliminate the financial risk. *Ultimately, we help people with raw talent refine their skills & match them with great, high-paying careers they love.*

Austen Allred – Co-Founder & CEO, Lambda School, 6/19

Students

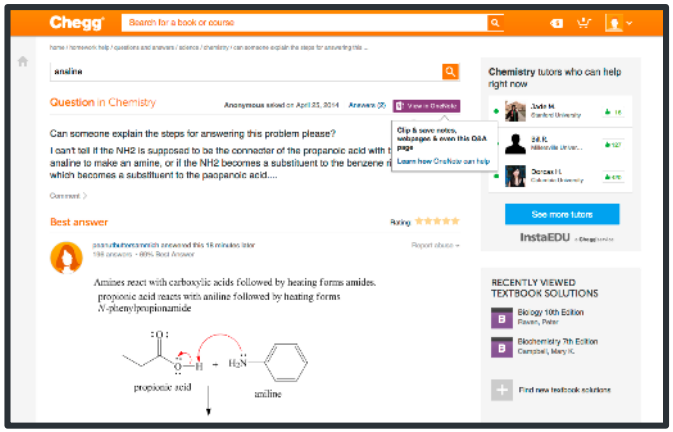


Source: Lambda School (6/19).

Online Education Learning Tools = Chegg…

Chegg – Post-Secondary (USA)

Subscription Education Support

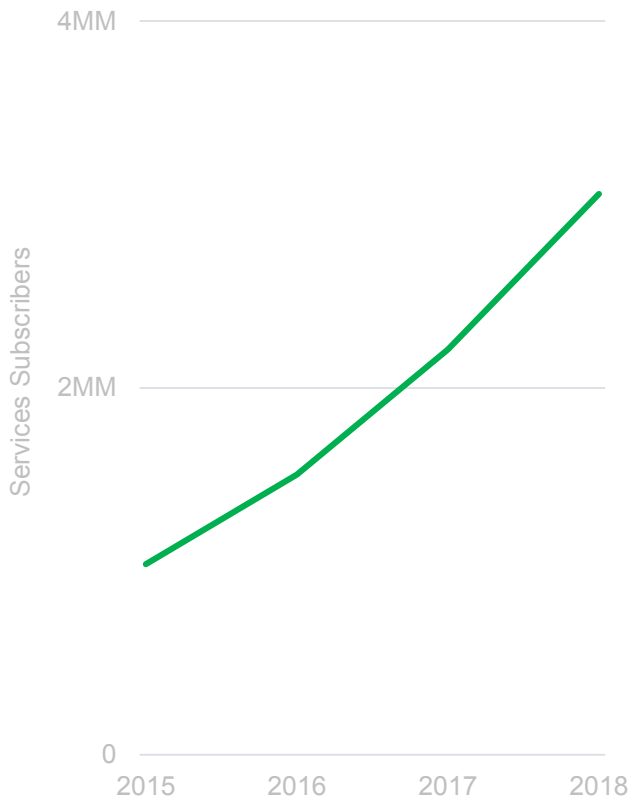


If you learn better by just walking through the steps, if you learn better by asking questions, if you learn better by watching videos, we teach you that way.

We are constantly expanding the way we can teach you & the subjects that we're available for, the speed in which we can get you the answer back, the format in which you can consume it.

Dan Rosensweig – CEO, Chegg, 2/19

Services Subscribers

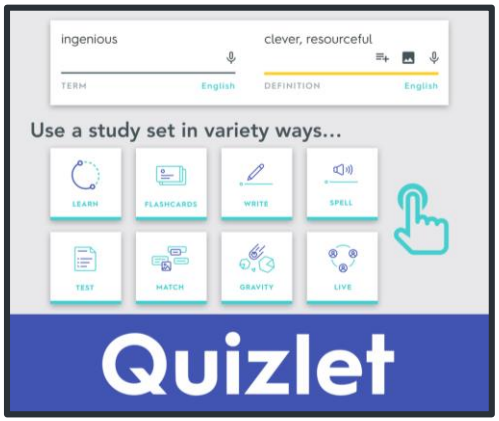


Source: Chegg, Dan Rosensweig presenting @ Morgan Stanley Technology, Media, Telecom Conference (2/19).

…Online Education Learning Tools = Quizlet…

Quizlet – Consumer Learning (Global)

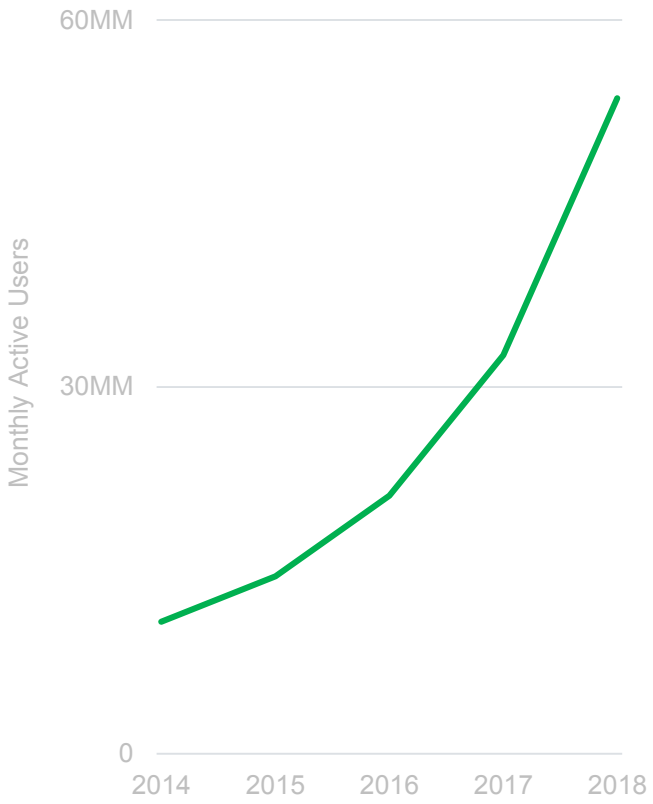
Customizable Learning Tools



We recognize that technological innovation will continue to evolve jobs of the future. Educators have the power to equip students with evergreen skills that will always be necessary in a career, like learning how to learn & fostering a sense of curiosity to take throughout life. Students can really benefit from teachers setting a precedent that ongoing learning is normal & healthy so that incoming employees are agile & able to take on whatever comes their way.

Matthew Glotzbach – CEO, Quizlet, 4/19

Monthly Active Users

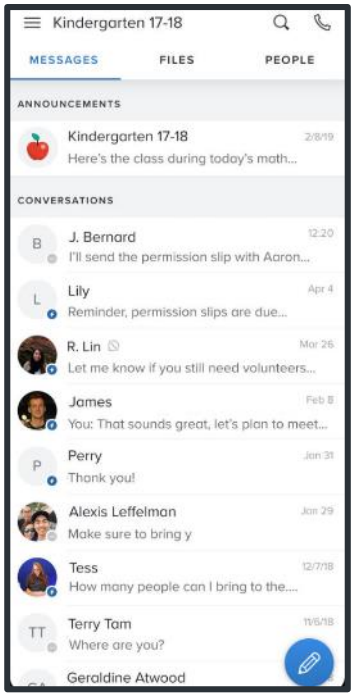


Source: Quizlet eCampus News Interview (4/19).

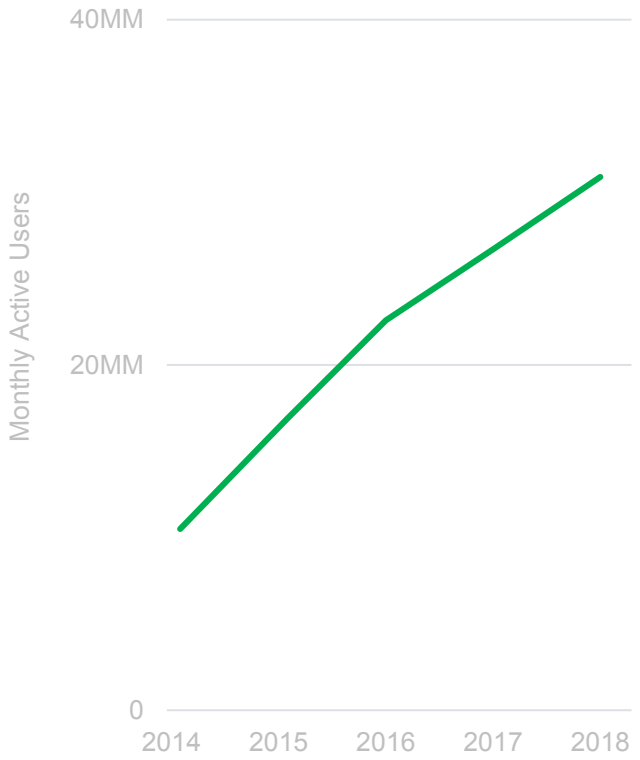
…Online Education Learning Tools = Remind

Remind – K-12 + Post-Secondary (North America)

Teacher-Student-Parent Communication



Monthly Active Users



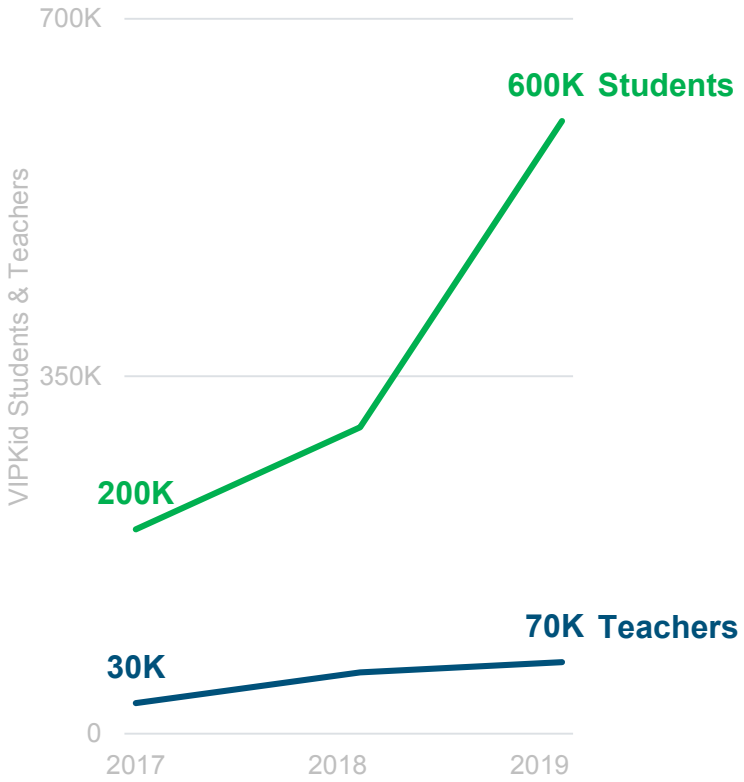
Source: Remind (6/19). Peak total monthly active users. Consists primarily of USA + Canada users.

Online Education (Remote Video Chat) = VIPKid

VIPKid – Students Age 4-15 (China) + Teachers (North America)

Remote Language Instruction

Students + Teachers



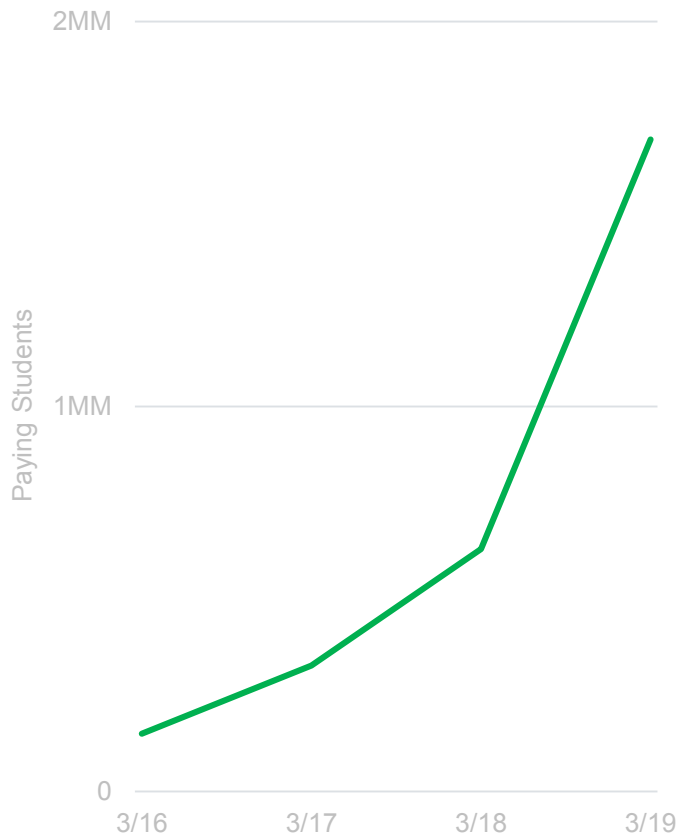
Source: VIPKid (3/19).

Online Education (Virtual Classrooms) = Byju's

Byju's – Students Age 9-17 (India)

Video-Based Classes

Paying Students



Source: Byju's (5/19).

Online Learning (Broad-Based Video) = YouTube Educational Content

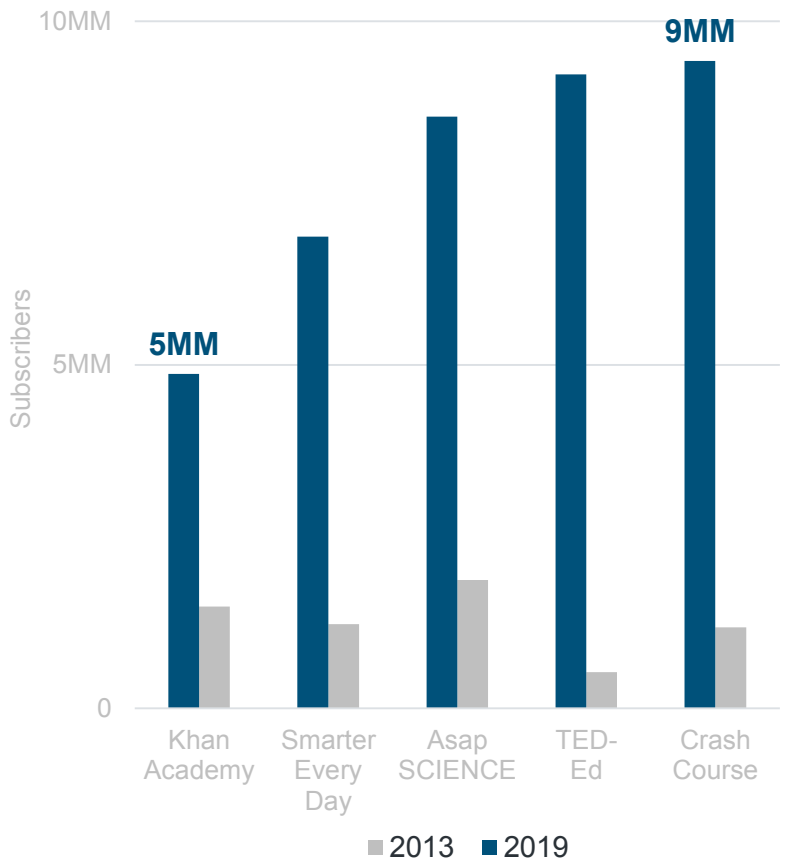
YouTube

4.5B
Annual Hours of 'How-To' Video Viewership

200MM+
Views on Booktuber Content

59%
Gen Z Users Cite YouTube as Preferred Learning Tool

Selected Education Channel Subscribers



Source: Google / YouTube (5/19), Pearson / The Harris Poll Beyond Millennials: the Next Generation of Learners survey (8/18). Survey includes 2,587 USA respondents ages 14-40 years old. Note: Hours of 'How-To' videos are for the year 2017 and represent videos with 'How-To' in the title. Booktubers are content creators that share book reviews & discussion groups on YouTube. Views are cumulative.

Online Education (Job-Relevant Skills)…
Google = Certifications for In-Demand Jobs...

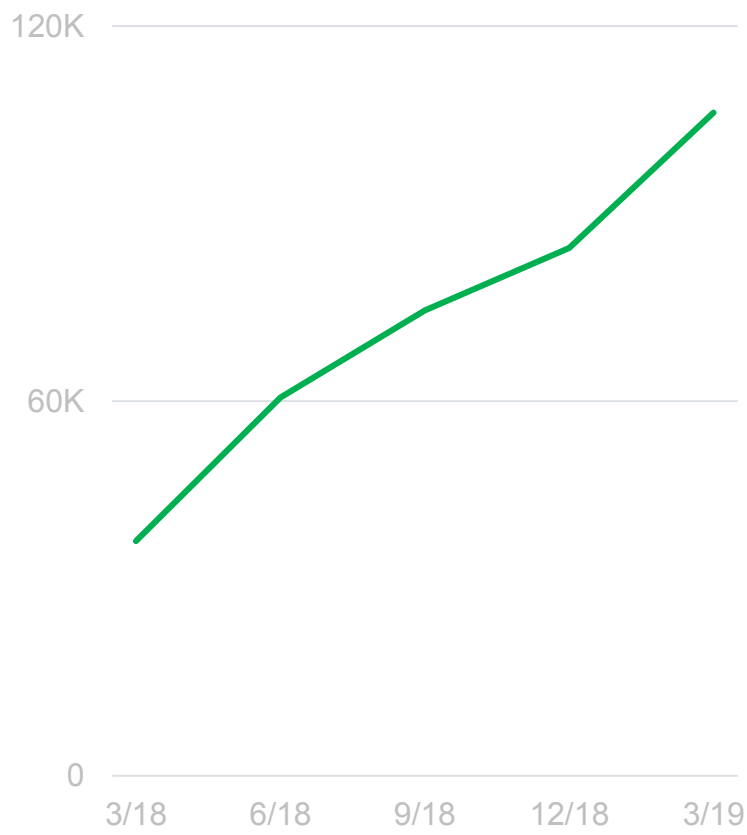
‘Grow With Google’ IT Support Professional Certificate

$49
Monthly Cost of Coursera Program Courses

8 Months
Average Time Needed to Complete Program

10K+
Learners Who Have Received
Financial Support from Google

Coursera = Cumulative Program Enrollments



Source: Coursera (6/19).

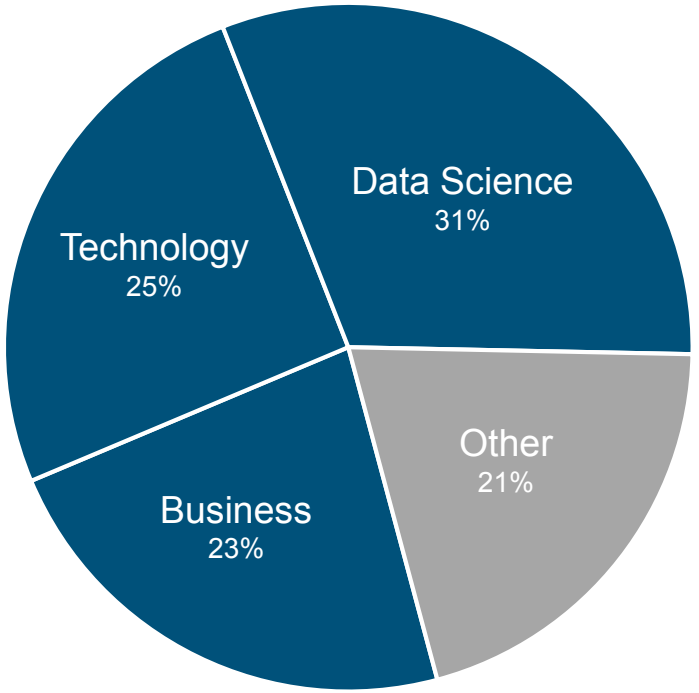
…Online Education (Job-Relevant Skills)… Coursera = ~80% Revenue…Business / Tech / Data Science…

Coursera

Top Specializations, 2018

Deep Learning	deeplearning.ai
Python for Everybody	University of Michigan
Data Science	John Hopkins University
Applied Data Science from Python	University of Michigan
Google IT Support Professional Certificate	Google
Advanced Machine Learning	National Research University Higher School of Economics
Improve Your English Communication Skills	Georgia Institute of Technology
Business Foundations	University of Pennsylvania
Architecting with Google Cloud Platform	Google Cloud
Excel Skills for Business	Macquarie University

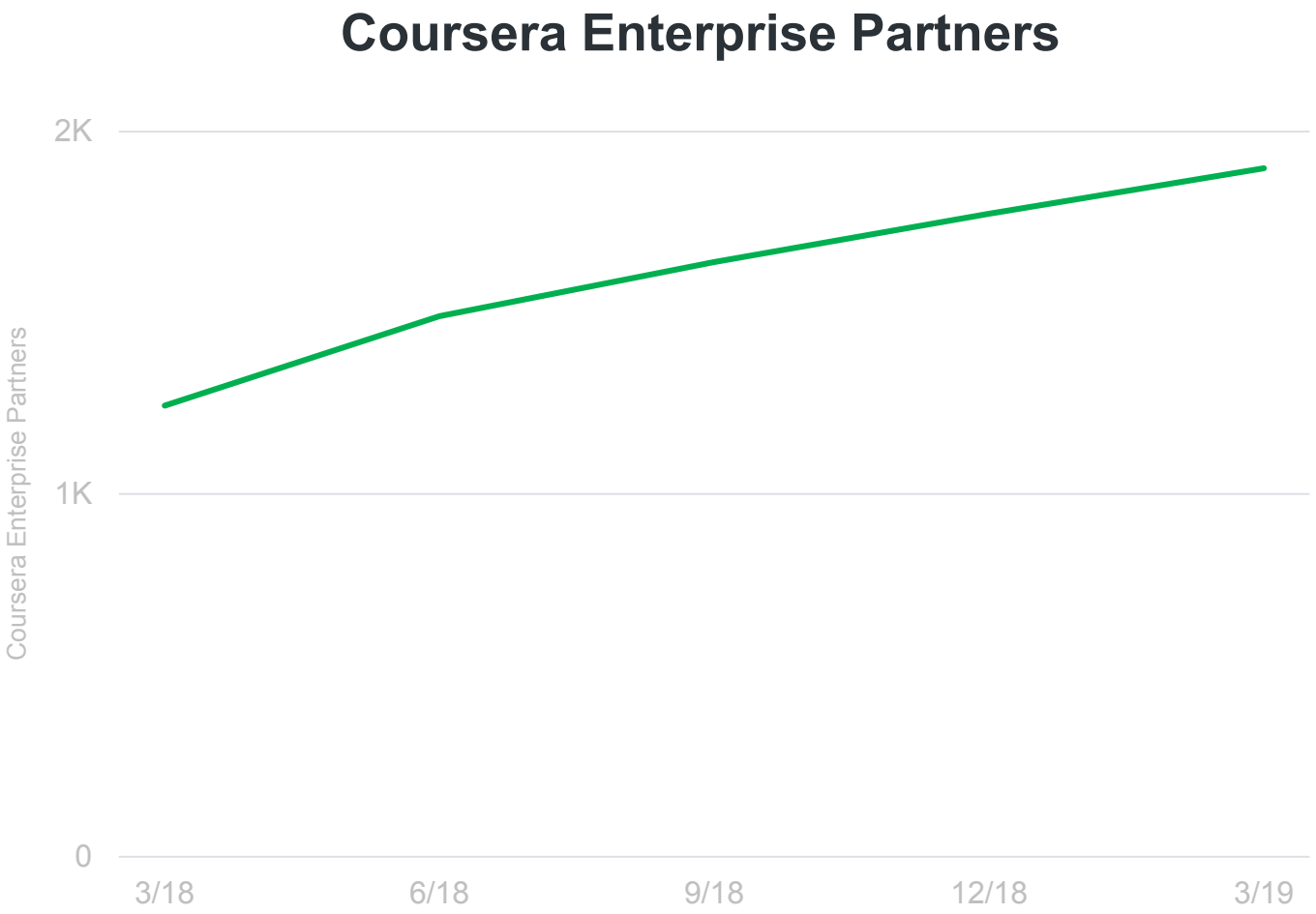
Consumer Learner Revenue by Course Domain, 2018



Job-Relevant Skills, per Coursera*

Source: Coursera (6/19)

…Online Education (Job-Relevant Skills)…
Skill Building = Increasingly Offered by Employers



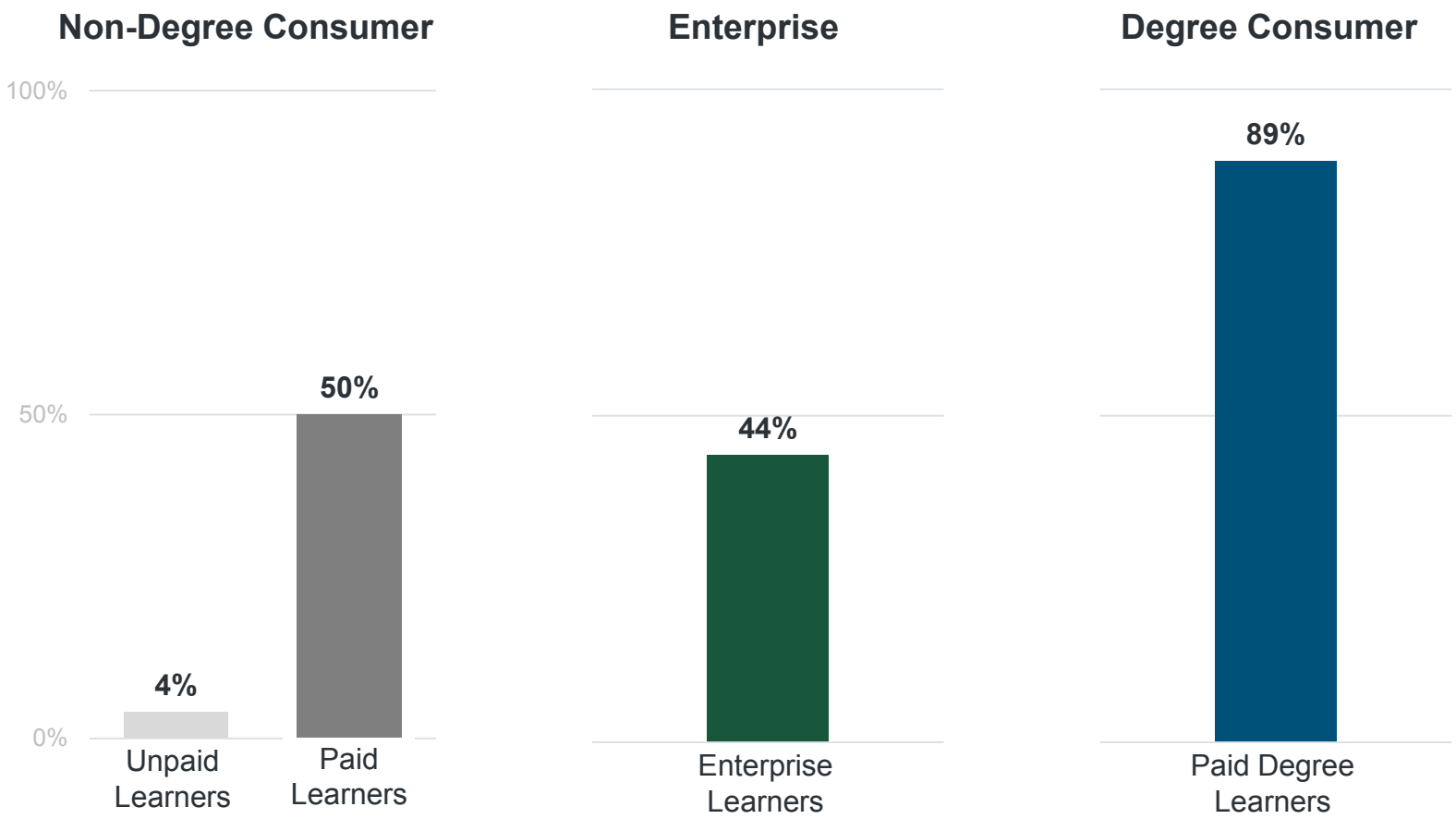
Source: Coursera (6/19). Note: a Coursera enterprise partner is a company engaged with Coursera to provide employee skillbuilding programs based on Coursera content

Online Education =

High Interest…
Retention / Completion Rates Vary

Online Learning (Massive Open Online Courses – MOOCs) = Strong Growth…Completion / Retention Rates Vary

Coursera – Course Completion Rate, 2018



Source: Coursera (6/19). Note: Completion rate refers to the number of students that finish a course vs. the number that began the course.

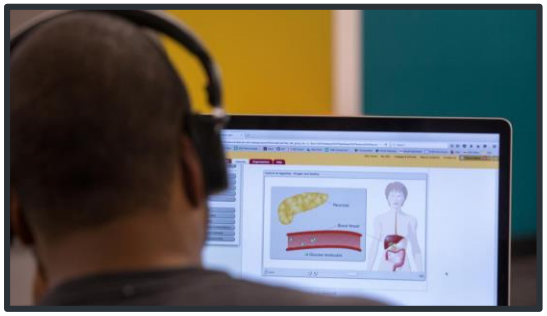
Online Education =

More Growth + More Users + More Choice…
Lower Cost for Consumers

Online Education Costs = Can Be Lower vs. Offline

Arizona State University

Online Education Programs / Tool



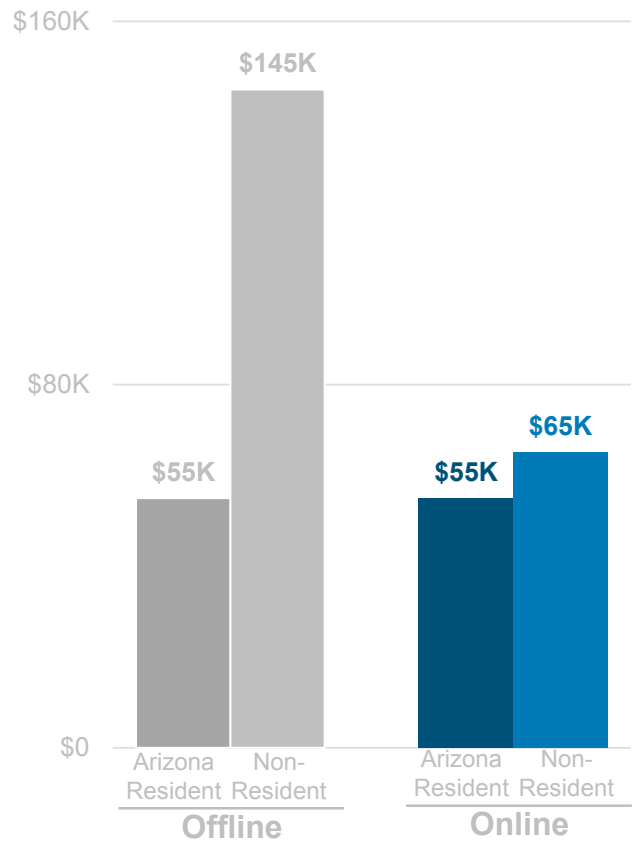
The key to lowering cost is the introduction of technology & new methods that help student success.

The key to stimulating [this] innovation is to change the focus of the culture at a university from the faculty to the students. If you change the focus from faculty-centric to student-centric, you realize you need more tools to achieve certain objectives.

At Arizona State, we need tools for active learning, adaptive learning (advising tools, artificial intelligence-based simulation tools & gaming tools) all in addition to the faculty & advisors that we have. Innovation is absolutely essential when you start thinking about the success of every student.

Michael Crow – President, Arizona State University, 6/16

Undergraduate Degree Tuition / Fees (4 Years)



Source: Arizona State University (5/19). Wiley Online Library Interview (6/16)

IMMIGRATION =

IMPORTANT TO USA TECHNOLOGY LEADERSHIP

USA = 60% of Most Highly Valued *Tech* Companies Founded By… 1st or 2nd Generation Americans…1.9MM Employees, 2018

Immigrant Founders / Co-Founders of Top 25 USA Valued Public *Tech* Companies, Ranked by Market Capitalization

Rank	Company	Mkt Cap ($B)	LTM Rev ($B)	Employees (K)	Founder / Co-Founder (1st or 2nd Gen Immigrant)	Generation
1	Microsoft	$1,007B	$122B	131K	--	--
2	Amazon	888	242	648	Jeff Bezos	2nd, Cuba
3	Apple	875	258	132	Steve Jobs	2nd, Syria
4	Alphabet / Google	741	142	99	Sergey Brin	1st, Russia
5	Facebook	495	59	36	Eduardo Saverin	1st, Brazil
6	Cisco	239	51	74	--	--
7	Intel	206	71	107	--*	--
8	Oracle	182	40	137	Larry Ellison / Bob Miner	2nd, Russia / 2nd, Iran
9	Netflix	158	17	7	--	--
10	Adobe	136	10	21	--	--
11	PayPal	134	16	22	Max Levchin / Luke Nosek / Peter Thiel / Elon Musk***	1st, Ukraine / 1st, Poland / 1st, Germany / 1st, South Africa
12	Salesforce	125	14	35	--	--
13	IBM	118	79	351	Herman Hollerith	2nd, Germany
14	Texas Instruments	104	16	30	Cecil Green / J. Erik Jonsson	1st, UK / 2nd, Sweden
15	NVIDIA	89	11	13	Jensen Huang	1st, Taiwan
16	Qualcomm	84	21	35	Andrew Viterbi	1st, Italy
17	Booking.com	77	14	25	--	--
18	Uber	75	12	22	Garrett Camp	1st, Canada
19	Automatic Data Processing	73	14	57	Henry Taub	2nd, Poland
20	VMware	69	9	23	Edouard Bugnion	1st, Switzerland
21	Intuit	67	7	9	--	--
22	ServiceNow	51	3	8	--	--
23	Workday	48	3	11	Aneel Bhusri	2nd, India
24	Micron	38	30	36	--	--
25	Cognizant	36	16	282	Francisco D'Souza / Kumar Mahadeva	1st, India** / 1st, Sri Lanka

Source: CapIQ as of 6/7/19. *While Andy Grove (from Hungary) is not a co-founder of Intel, he joined as COO on the day it was incorporated. **Francisco D'Souza is a person of Indian origin born in Kenya. ***Max Levchin / Luke Nosek / Peter Thiel's startup Confinity merged with Elon Musk's startup X.com to form PayPal in 3/00.

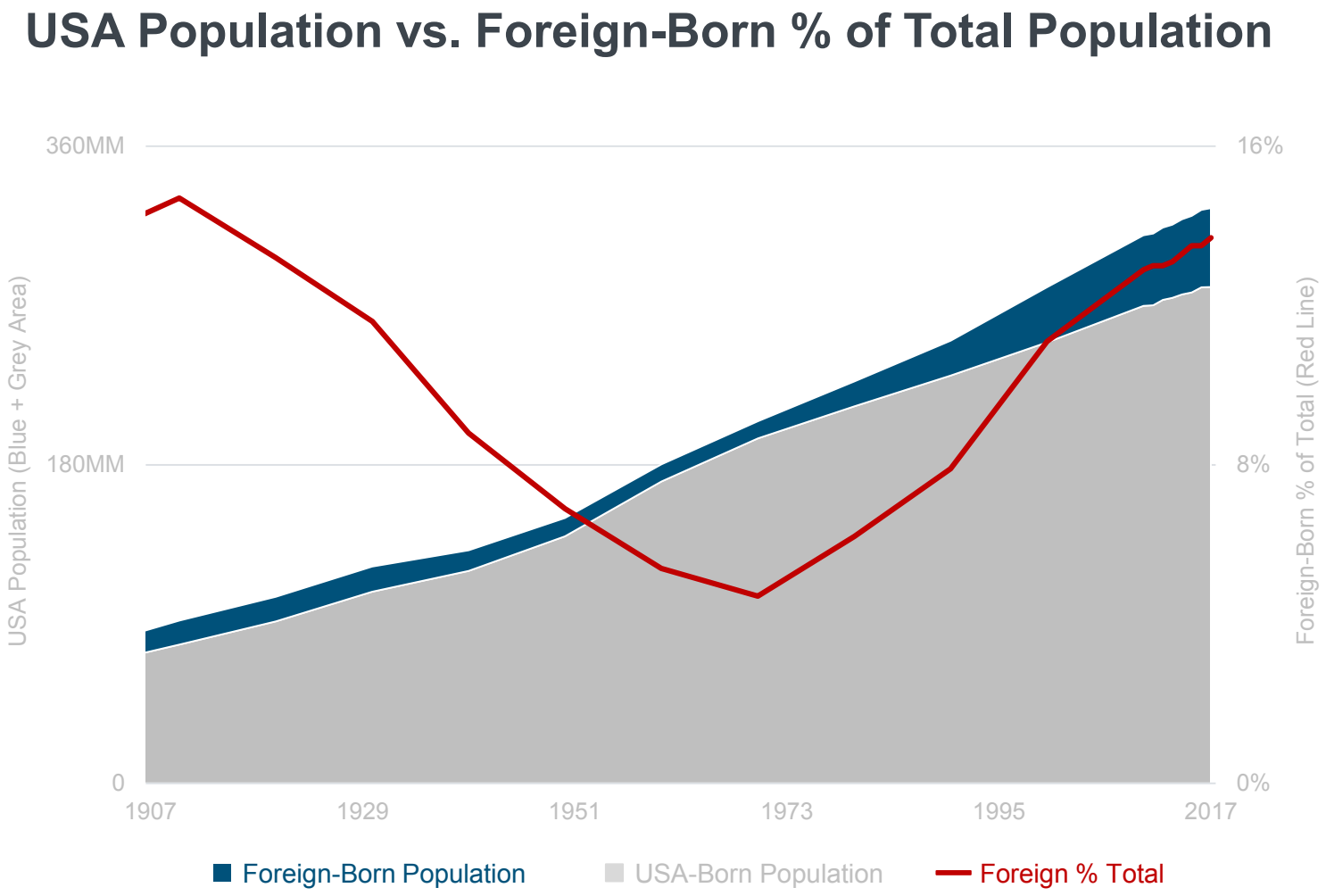
USA = Many Highly Valued Private Tech Companies Founded By… 1st Generation Immigrants

Company	Founder / Co-Founder	Country of Origin	Valuation ($B)
WeWork	Adam Neumann	Israel	$47B
SpaceX	Elon Musk	South Africa	31
Stripe	John Collison Patrick Collison	Ireland	23
Palantir	Peter Thiel	Germany	21
Epic Games	Mark Rein	Canada	15
DoorDash	Tony Xu	China	13
Wish	Peter Szulczewski Danny Zhang	Canada	9
Instacart	Apoorva Mehta	India	8
Slack	Stewart Butterfield Serguei Mourachov Cal Henderson	Canada Russia UK	7
UiPath*	Daniel Dines Marius Tirca	Romania	7
Tanium	David Hindawi	Iraq	7
Unity Technologies	David Helgason Nicholas Francis Joachim Ante	Iceland Denmark Germany	6
Robinhood	Baiju Bhatt Vlad Tenev	India Bulgaria	6
Compass	Ori Allon	Israel	4
Credit Karma	Kenneth Lin	China	4
Houzz	Adi Tatarko Alon Cohen	Israel	4
Snowflake	Marcin Zukowski Benoit Dageville Thierry Cruanes	Netherlands France France	4
Rubrik	Bipul Sinha Arvind Nithrakashyap Arvind Jain Soham Mazumdar	India India India India	3
Zoox	Tim Kentley-Klay	Australia	3
Oscar Health	Mario Schlosser	Germany	3

Company	Founder / Co-Founder	Country of Origin	Valuation ($B)
Crowdstrike	Dmitri Alperovitch	Russia	$3B
Affirm	Max Levchin	Ukraine	3
Databricks	Ali Ghodsi Matei Zaharia Ion Stoica	Sweden Romania Romania	3
Nuro	Jiajun Zhu Dave Ferguson	China New Zealand	3
Automation Anywhere	Ankur Kothari Mihir Shukla Neeti Metha Shukia Rushabh Parm	India India India India	3
Confluent	Jun Rao Neha Narkhede	China India	3
Roblox	David Baszucki	Canada	2
Medallia	Borge Hald	Norway	2
Lime	Toby Sun Brad Bao	China	2
Zume Pizza	Alex Garden	Canada	2
Gusto	Tomer London	Israel	2
Lemonade	Shai Wininger Daniel Schreiber	Israel	2
LegalZoom	Brian Lee	South Korea	2
Avant	Al Goldstein John Sun Paul Zhang	Uzbekistan China China	2
Apttus	Krik Krappe	UK	2
Postmates	Bastian Lehmann	Germany	2
Sprinklr	Ragy Thomas	India	2
Cloudflare	Michelle Zatlyn	Canada	2
Carta	Manu Kumar	India	2
ZocDoc	Oliver Kharraz	Germany	2
Warby Parker	Dave Gilboa	Sweden	2
Carbon3D	Alex Ermoshkin	Russia	2
Pony.ai	James Peng Tiancheng Lo	China	2
ServiceTitan	Ara Mahdessian Vahe Kuzoyan	Iran Armenia	2
Segment	Ilya Volodarsky	Russia	2
Quanergy	Tianyue Yu	China	2

Source for Valuation & Founders Backgrounds: Based on analysis by Pitchbook, Wall Street Journal, CB Insights, Forbes, Business Insider, & the National Foundation for American Policy. *UiPath is headquartered in New York, NY but was originally founded in Romania.

USA = 14% of Population Foreign-Born & Rising… Near All-Time High (1910) @ 15%



Source: Migration Policy Institute (MPI) tabulation of data from U.S. Census Bureau, 2010-2017 American Community Surveys (ACS) & 1970, 1990 & 2000 Decennial Census. All other data are from Campbell J. Gibson & Emily Lennon, "Historical Census Statistics on the Foreign-Born Population of the United States: 1850 to 1990" (Working Paper no. 29., U.S. Census Bureau, Washington, DC, 1999). Note: The term "immigrants" (also known as the foreign born) refers to people residing in the United States who were not U.S. citizens at birth. This population includes naturalized citizens, lawful permanent residents (LPRs), certain legal nonimmigrants (e.g., persons on student or work visas), those admitted under refugee or asylee status & persons illegally residing in the United States. Population growth figures from St. Louis FRED database.

USA INC.* =

WHERE YOUR TAX DOLLARS GO

*USA, Inc. Full Report – bondcap.com/report/usa/

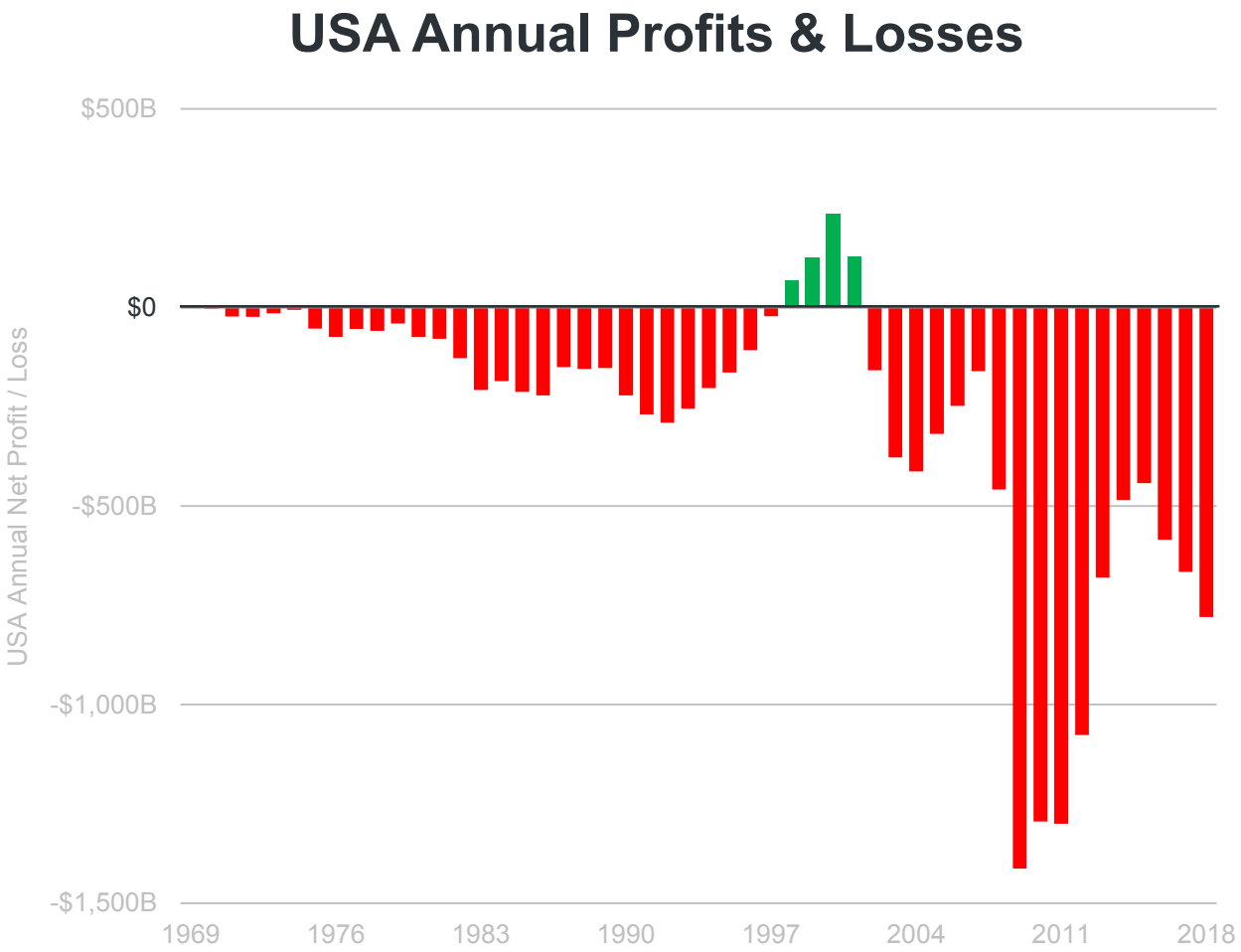
USA Income Statement = -18% Average Net Margin Over 30 Years

USA Income Statement

	F1988	F1993	F1998	F2003	F2008	F2013	F2018	Comments
Revenue ($B)	**$909**	**$1,154**	**$1,722**	**$1,782**	**$2,524**	**$2,775**	**$3,330**	
Y/Y Growth	***6%***	***6%***	***9%***	***(4%)***	***(2%)***	***13%***	***0%***	**+5% Y/Y average, 1988-2018**
Individual Income Taxes*	$401	$510	$829	$794	$1,146	$1,316	$1,684	Largest driver of revenue
% of Revenue	*44%*	*44%*	*48%*	*45%*	*45%*	*47%*	*51%*	
Social Insurance Taxes	$334	$428	$572	$713	$900	$948	$1,171	Social Security & Medicare payroll tax
% of Revenue	*37%*	*37%*	*33%*	*40%*	*36%*	*34%*	*35%*	
Corporate Income Taxes*	$95	$118	$189	$132	$304	$274	$205	Fluctuates with economic conditions
% of Revenue	*10%*	*10%*	*11%*	*7%*	*12%*	*10%*	*6%*	
Other	$79	$99	$133	$144	$174	$237	$271	Estate & gift taxes, duties / fees…
% of Revenue	*9%*	*9%*	*8%*	*8%*	*7%*	*9%*	*8%*	
Expense ($B)	**$1,064**	**$1,409**	**$1,652**	**$2,160**	**$2,983**	**$3,455**	**$4,109**	
Y/Y Growth	***6%***	***2%***	***3%***	***7%***	***9%***	***(2%)***	***3%***	
Entitlement / Mandatory	$448	$671	$859	$1,182	$1,595	$2,032	$2,522	Risen owing to rising healthcare costs + aging population
% of Expense	*42%*	*48%*	*52%*	*55%*	*53%*	*59%*	*61%*	
Non-Defense Discretionary	$174	$247	$282	$419	$522	$577	$639	Education / law enforcement / transportation / general government…
% of Expense	*16%*	*18%*	*17%*	*19%*	*18%*	*17%*	*16%*	
Defense	$291	$292	$270	$405	$612	$626	$623	2008 increase driven by War on Terror
% of Expense	*27%*	*21%*	*16%*	*19%*	*21%*	*18%*	*15%*	
Net Interest on Public Debt	$152	$199	$241	$153	$253	$221	$325	Recent benefit of historic low interest rates
% of Expense	*14%*	*14%*	*15%*	*7%*	*8%*	*6%*	*8%*	
Surplus / Deficit ($B)	**($155)**	**($255)**	**$69**	**($378)**	**($459)**	**($680)**	**($779)**	**-18% average net margin, 1988-2018**
Net Margin (%)	***(17%)***	***(22%)***	***4%***	***(21%)***	***(18%)***	***(24%)***	***(23%)***	

Source: Congressional Budget Office, White House Office of Management & Budget. *Individual & corporate income taxes include capital gains taxes. Note: USA federal fiscal year ends in September. Non-defense discretionary includes federal spending on education, infrastructure, law enforcement, judiciary functions.

…USA Income Statement = Net Loses in 45 of 50 Years



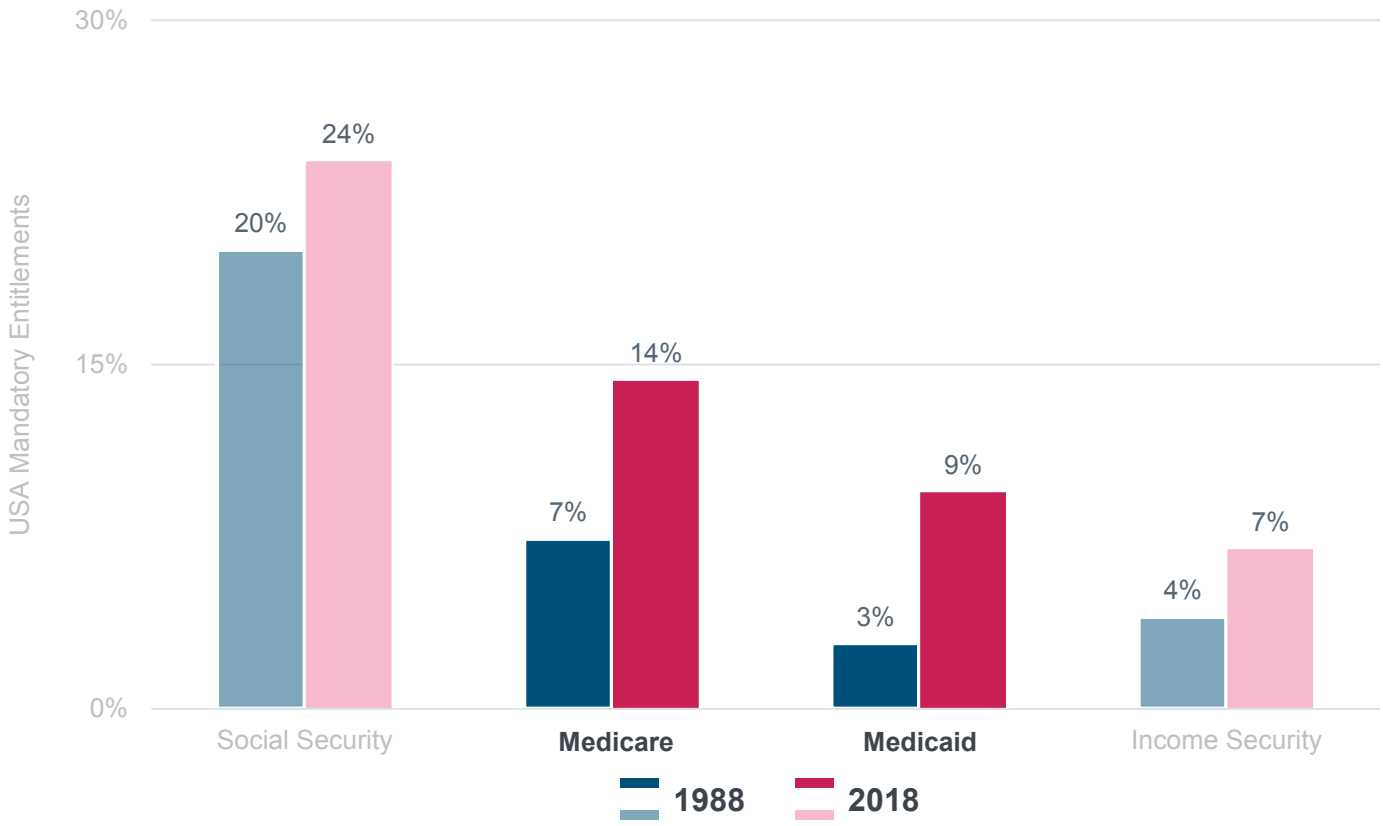
Source: Congressional Budget Office, White House Office of Management & Budget. Note: USA federal fiscal year ends in September.

USA Entitlements = Medicare + Medicaid Driving Most Spending Growth…

USA Entitlements by Category

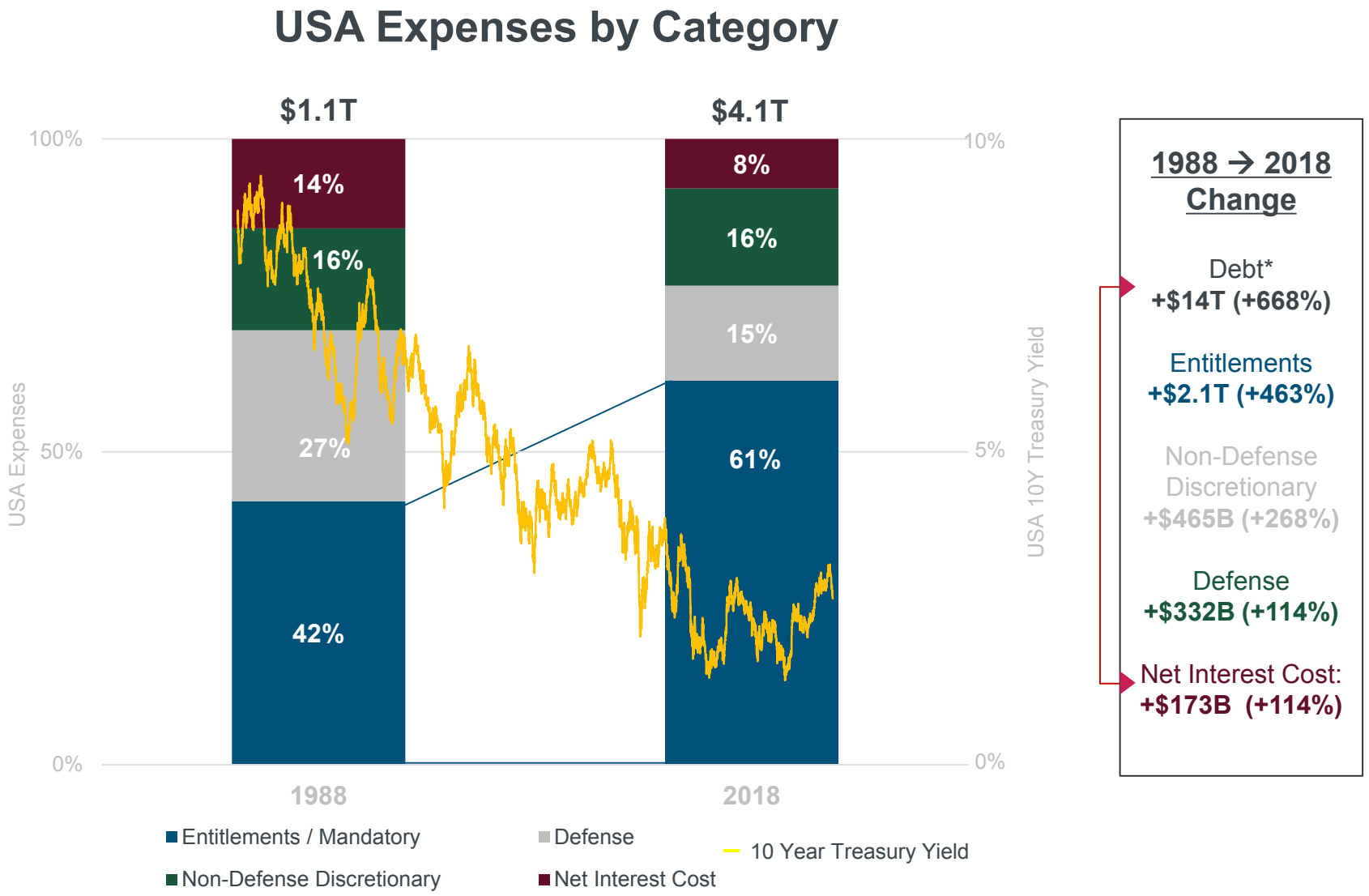
1988 Entitlements* = **$367B / 34% of Expenses**

2018 Entitlements* = **$2.2T / 54% of Expenses**



Source: Congressional Budget Office, White House Office of Management & Budget. *1988 Income Security programs defined as Food Stamps + SSI + Family Support + Child Nutrition + Earned Income Tax Credit + Other. 2018 Income Security defined as Earned Income Tax Credit + SNAP + SSI + Unemployment + Family Support + Child Nutrition. In 2018, there was an additional ~$302B in mandatory spending, including Veterans' pensions & ~$81B in 1988.

…USA Entitlements = 61% vs. 42% of Government Spending Thirty Years Ago



1988 → 2018 Change

Debt*
+$14T (+668%)

Entitlements
+$2.1T (+463%)

Non-Defense Discretionary
+$465B (+268%)

Defense
+$332B (+114%)

Net Interest Cost:
+$173B (+114%)

Source: Congressional Budget Office, White House Office of Management & Budget, USA Treasury
*Debt reflects net debt (i.e. excludes debt issued by The Treasury & owned by other Government accounts)
Note: Yellow line represents yield on 10-year USA Treasury bill from 12/31/87 to 12/31/18.

USA Entitlements Growth Over 30 Years = Looking @ Numbers…Closer to Home

2017…

$61K =
Median USA Household Income

$17K =
Average Entitlement Payout per Household from Federal Government…
Scale = Equivalent to 28% of Household Income

…1987

$26K =
Median USA Household Income

$4K =
Average Entitlement Payout per Household from Federal Government…
Scale = Equivalent to 15% of Household Income

Source: Congressional Budget Office, White House Office of Management & Budget, US Census Bureau

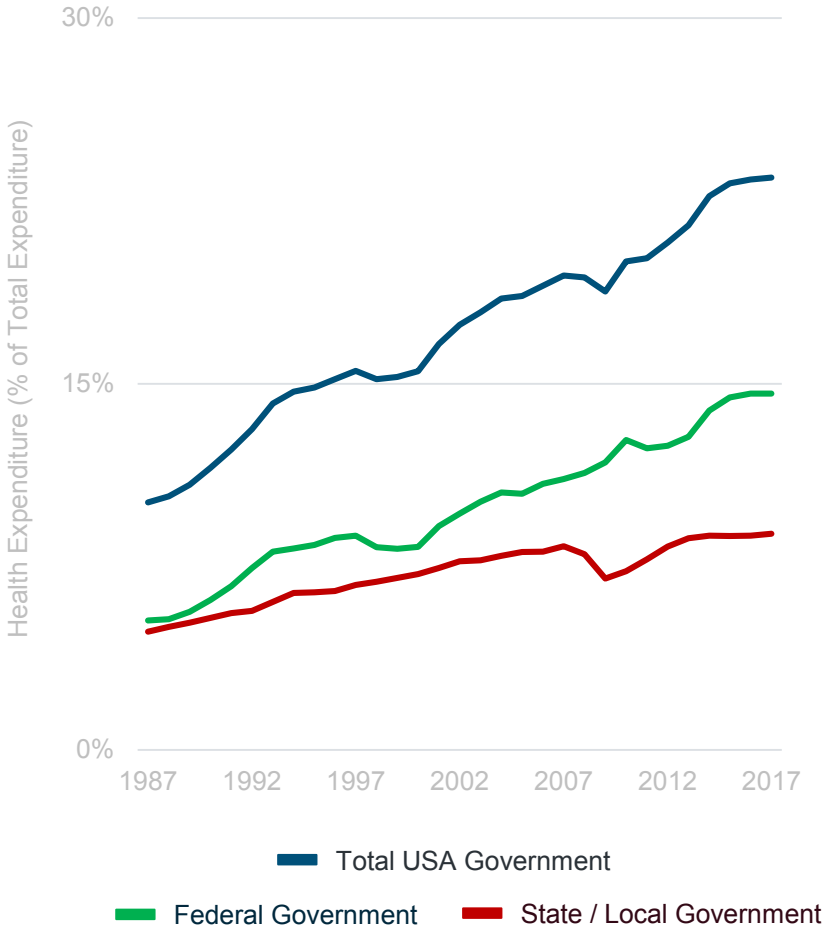
HEALTHCARE (USA) =

DIGITAL IMPACT EXPANDING ACROSS ECOSYSTEM

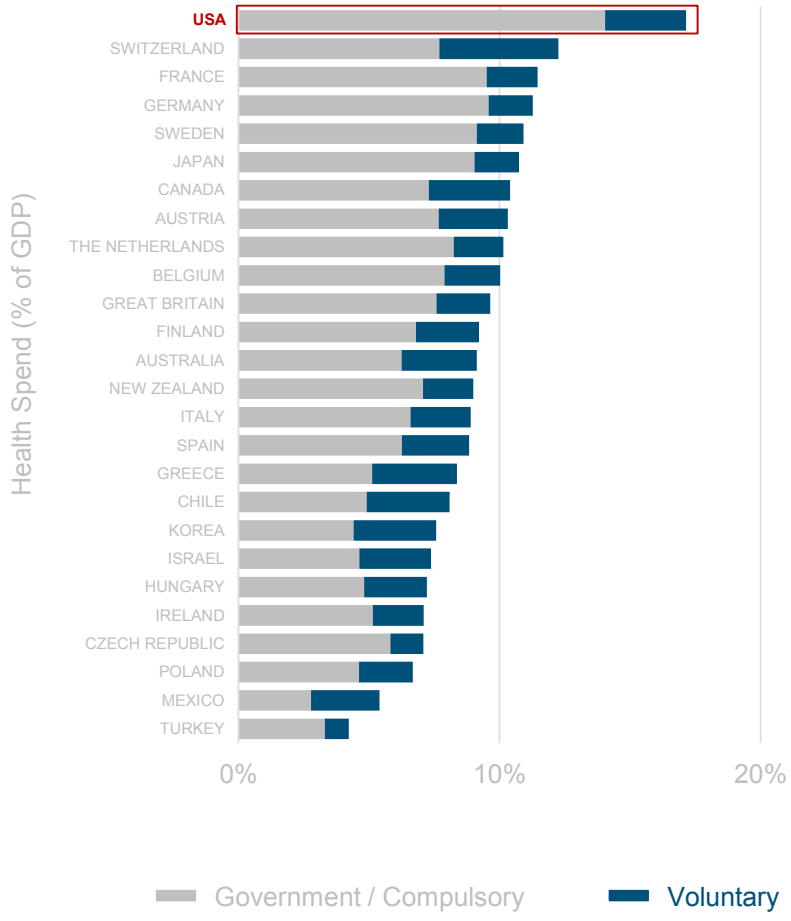
CREATED BY NOAH KNAUF @ BOND

Healthcare Cost =
High + Rising for Government / Consumers

Health Expenditures – % of Government Total, USA

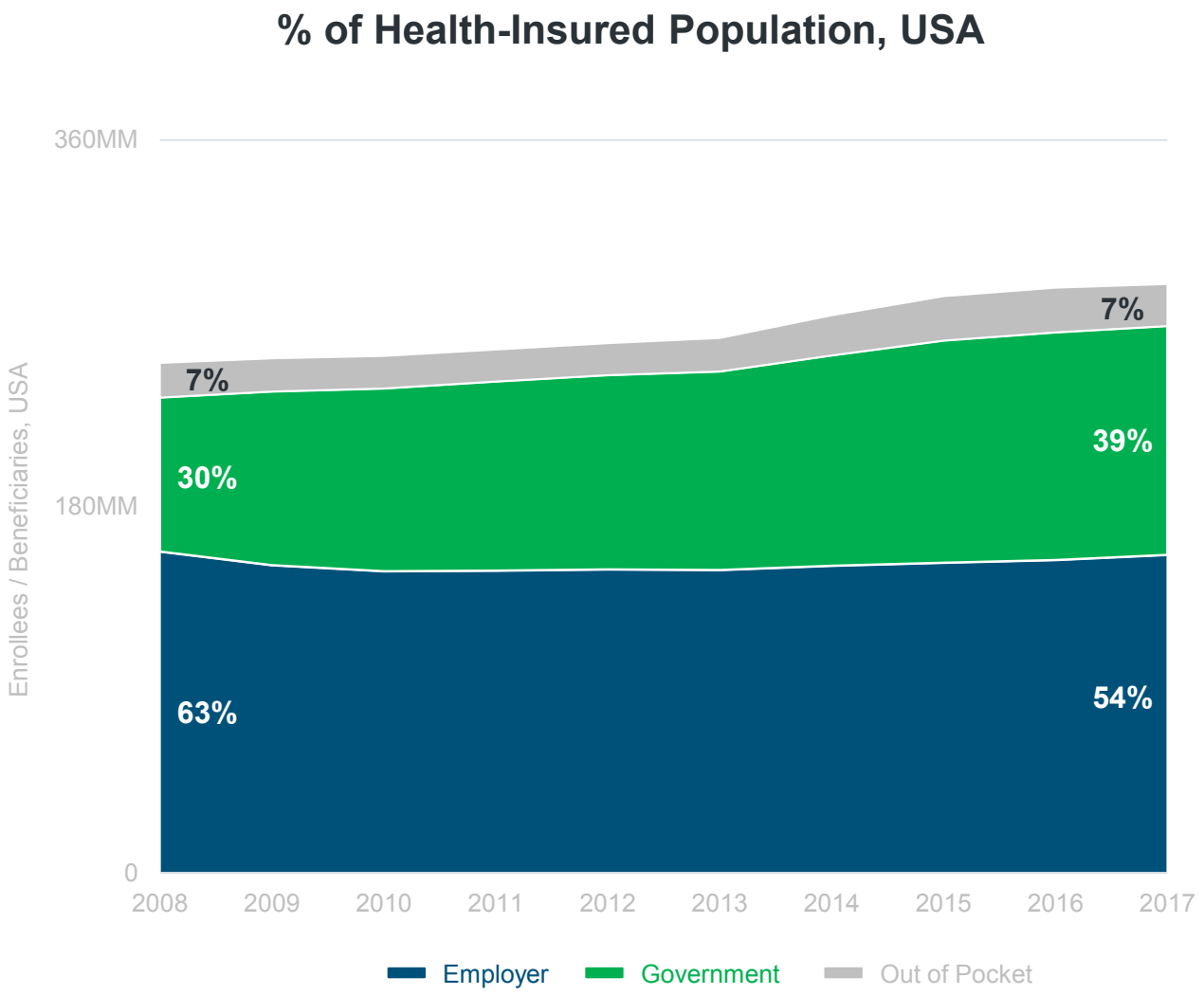


Health Expenditures – % of GDP, 2017, per OECD



Source: USA Federal + State & Local Healthcare expenditures per the Center for Medicare / Medicaid Studies. Total USA Government expenditures per USA Bureau of Economic Analysis Data. Total Health expenditure per OECD data includes all public / private healthcare spend for the year 2017 (some data subject to future revision per OECD).

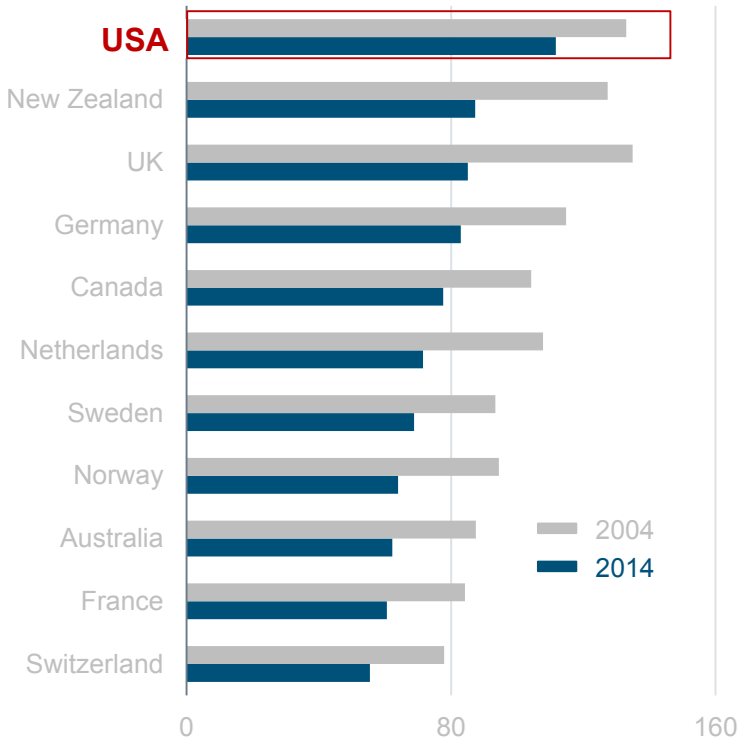
Healthcare Insurance Coverage = Increasingly from Government vs. Employer



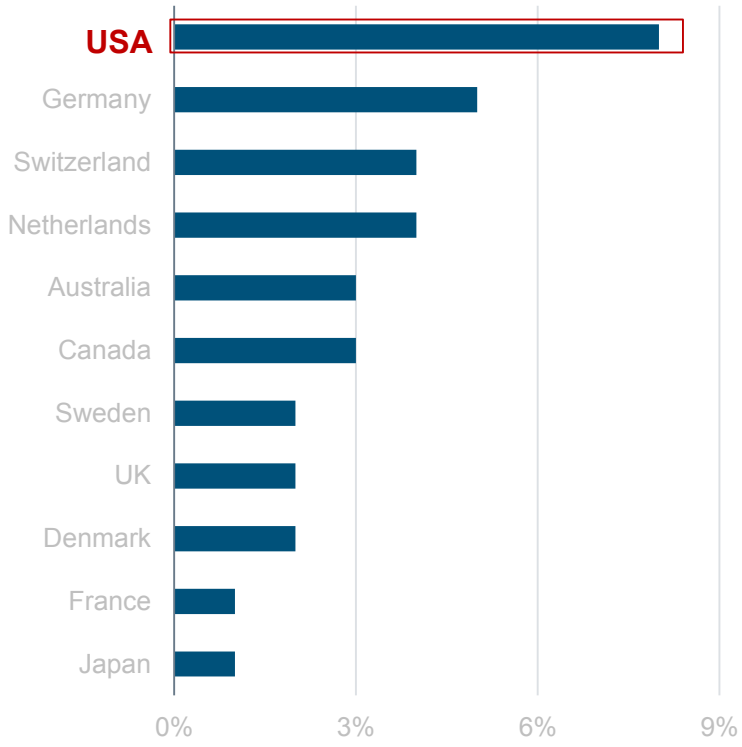
Source: Kaiser Family Foundation analysis of Census Bureau's American Community Survey (2008-2017). Note: Government = Those covered by Medicare, Medicaid, or Military / Veteran Coverage. Employer = those covered through a current or former employer or union. Out of Pocket = Those covered by a policy purchased directly from an insurance company, either as policyholder or as dependent.

Healthcare Preventable Deaths / Efficiency = USA Worse vs. Peers

Preventable Deaths per 100K People

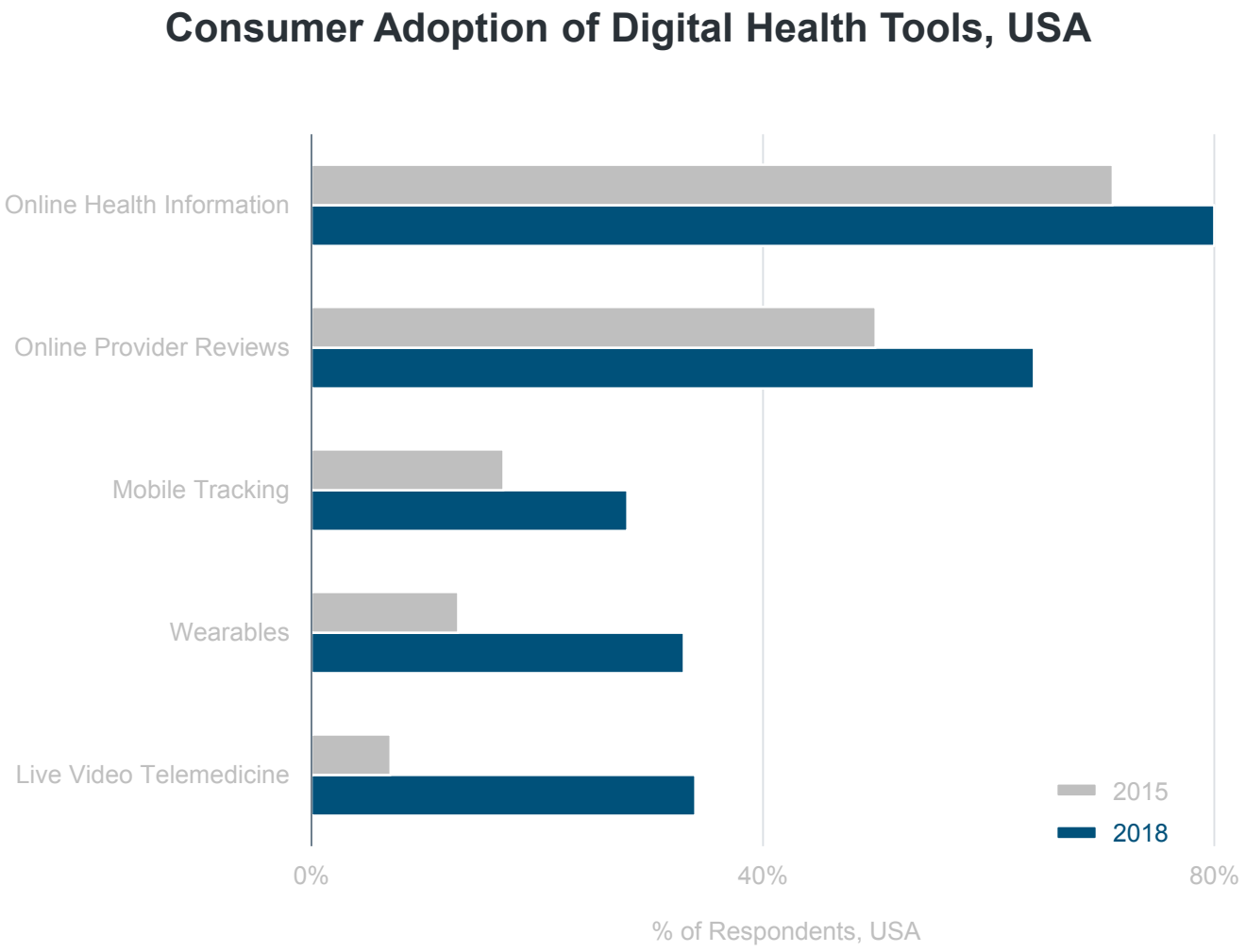


Administrative Healthcare Spend % Total, 2016



Source: Commonwealth Fund Analysis (2017). Preventable deaths defined as deaths due to illnesses that are considered non-fatal with timely formal healthcare treatment, such as hepatitis, renal failure, thyroid disorder & other chronic illnesses. Administrative spend defined as non-care giving roles, such as billings & collections.

Healthcare =
Steadily Digitizing…Driven by Consumers



Source: Rock Health Digital Health Consumer Adoption Survey. 2018: n = 4,000, 2015: n = 4,017 Americans ages 18+.

Healthcare (USA) =

Strong Digital Usage / Adoption

Data Pools = Unlocking Deeper Research Insights

Internet Research = Increasing Access to Data / Decision-Making Tools

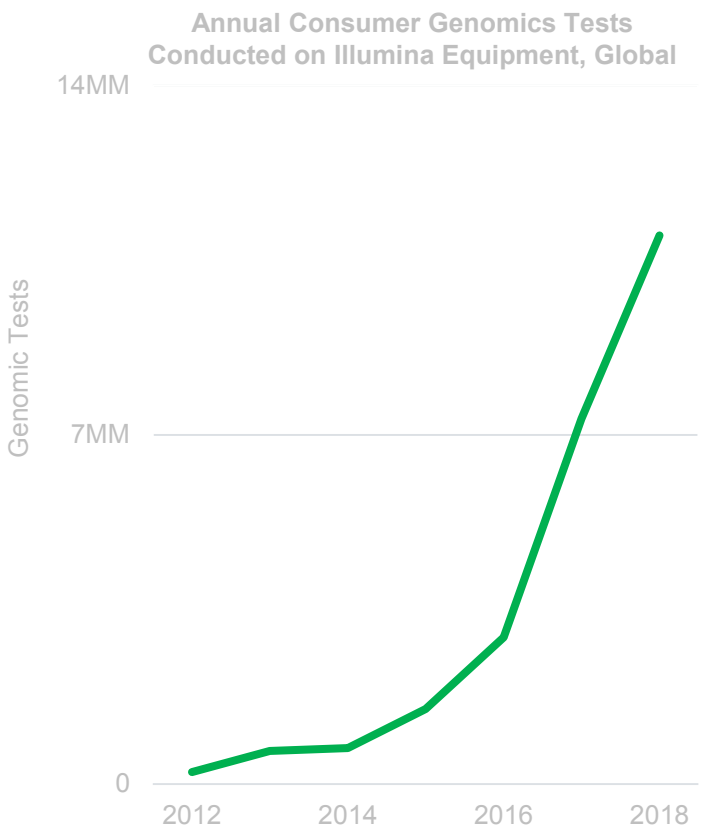
Patient engagement in decision-making has been associated with increased patient satisfaction & improved health outcomes

The study analyzed cross-sectional data from 1,945 participants of the [USA] National Health & Aging Trends Study

Internet use was found to be associated with active decision-making preference in older adults. Similarly, ***health-related Internet use was positively associated with decision-making involvement in older adults.***

Cajita, Whitehouse, et al.
Association Between Internet Use & Decision-Making Preference in Older Adults (2/17)

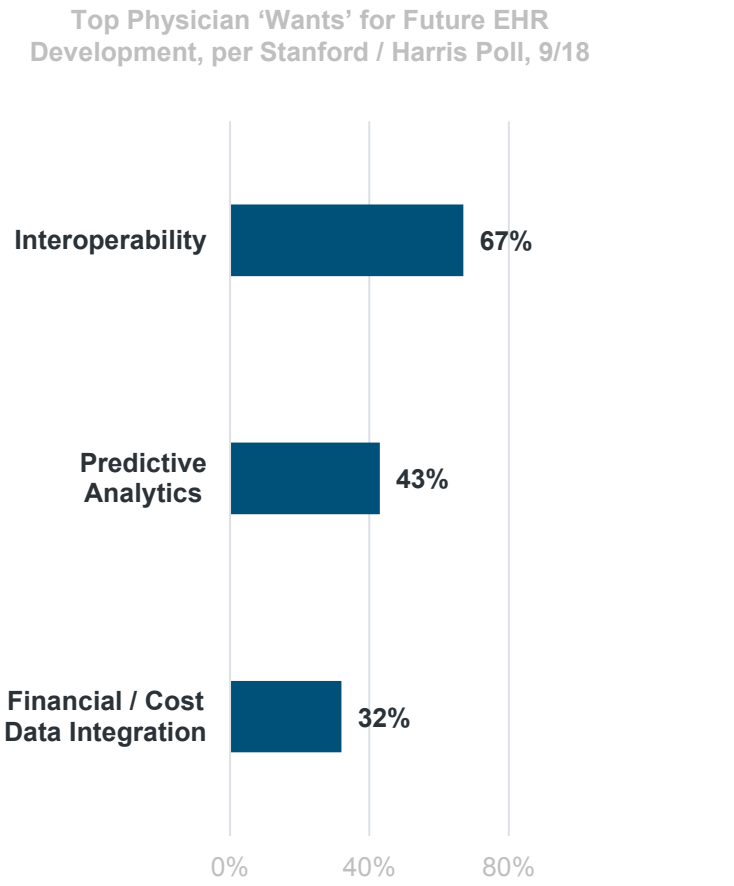
Genomic Testing = Growing Base of Personal Genetic Data



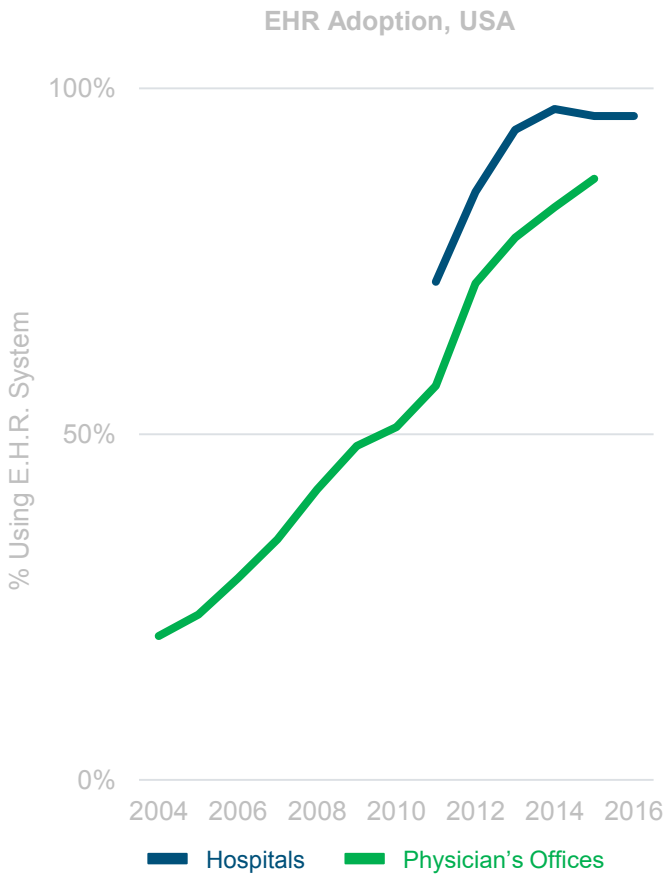
Source: Illumina @ JPMorgan Healthcare conference (1/18). National Center for Biotechnology Information (USA, 2/17)

Electronic Health Records (EHR) = Organizing Patient Data

…EHR Usage = Still Early Innings



EHR Adoption = Nearing 100%…



Source: Office for National Coordination of Health Information Technology. Stanford / Harris poll of 521 Primary Care physicians in USA (Family Practice, General Practice, or Internal Medicine) recruited through the American Medical Association. All have been using EHR for at least 1 month
Note: Adoption of EHR refers to any EHR system being used by Office-based physicians or hospitals, does not imply all records are kept electronically.

Health Networks = Aligning Provider Teams Across Organizations

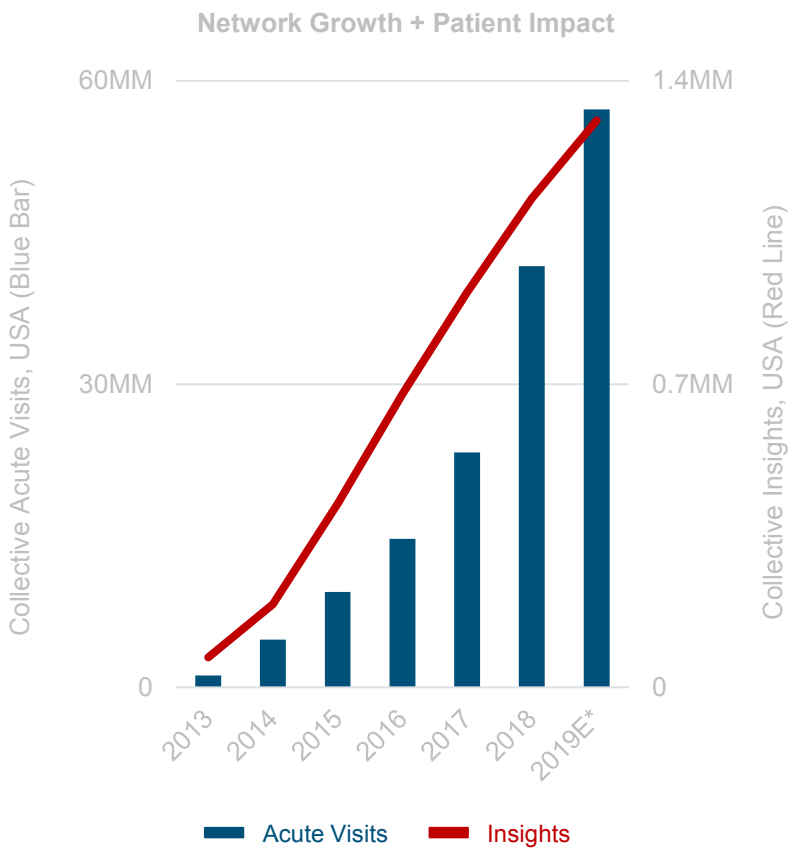
Aligned Care Teams = Improving Outcomes @ Lower Cost

We strive to empower a distributed care team to act with aligned purpose, aware of what each individual member is doing – even if representing differing organizations – all united by their shared stewardship for the patient.

You can either throw a tremendous number of expensive, scarce bodies at the problem – which isn't scalable – or you can use technology. I'm not talking about mere notifications that an encounter has occurred, which we also do, but a deeper level of collaboration.

Chris Klomp – CEO, Collective Medical, 6/19

Collective Medical = Real-Time Collaborative Health Network



Source: Collective Medical Technologies Inc. (6/19). *2019E represents annualized data as of 6/19. Note: Acute Visits = Patient-Provider interactions (ED visit, IP stay). Insights = Unique provider-provider actions taken to optimize patient care

Online Discovery = Improving Accessibility + Availability of Care

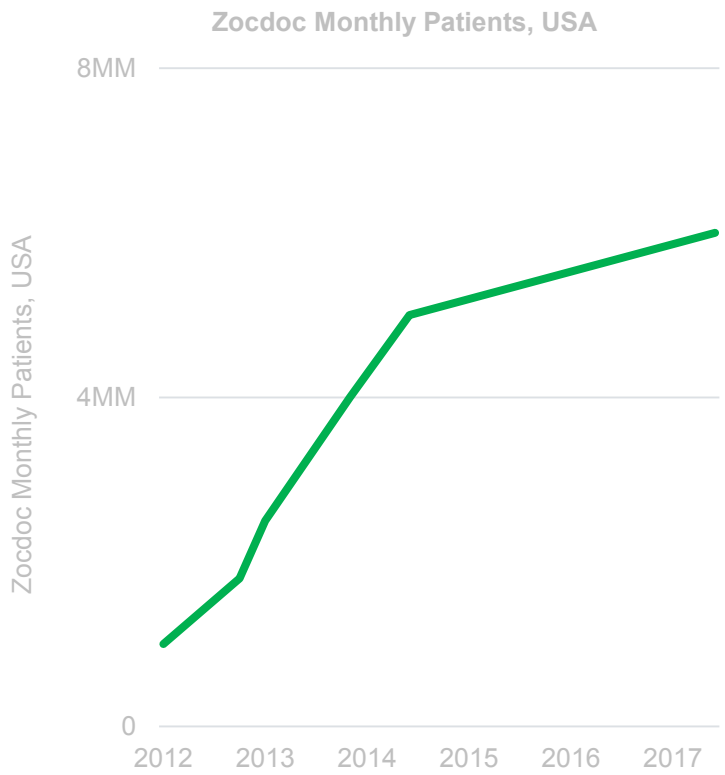
Optimizing Perishable Inventory = Accelerating Access to Care

Healthcare providers partner with Zocdoc to fill their 20-30% unused, perishable inventory.
This dramatically accelerates access to care for patients.

While patients who call wait an average of 24 days to get in to see a doctor, when booking online via Zocdoc, the typical appointment happens within 24-72 hours.
Because of this win/win, in our first market NYC, one in five new patient-doctor relationships is established via Zocdoc.
Our other markets are following the same trajectory.

Oliver Kharraz M.D. – CEO / Founder, Zocdoc, 6/19

Zocdoc = Digital Healthcare Marketplace



Source: Zocdoc (6/17, 6/19)

On-Demand Urgent Care = Reducing Time to Receive Treatment

On-Demand Access = Combining Convenience + Speed

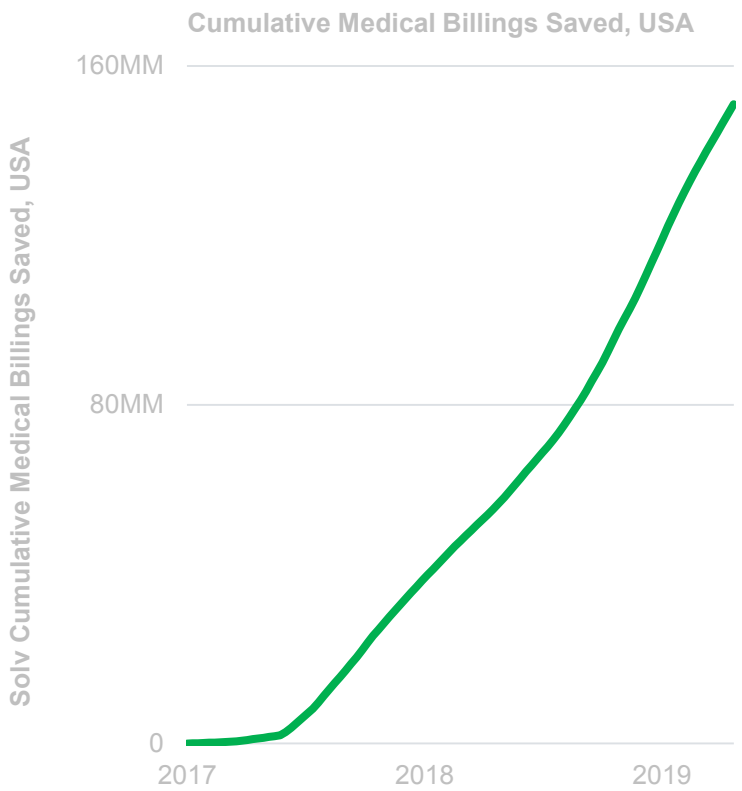
No longer are patients okay with waiting as many as 24 days to see a doctor.

Solv is putting patients in front of a provider who can treat their symptoms in as little as 15 minutes. The benefit this provides consumers is real.

We've already given ~20 years back to consumers who typically spend 2 hours between booking an appointment & getting their issue resolved.

Heather Fernandez – CEO / Co-Founder, Solv, 6/19

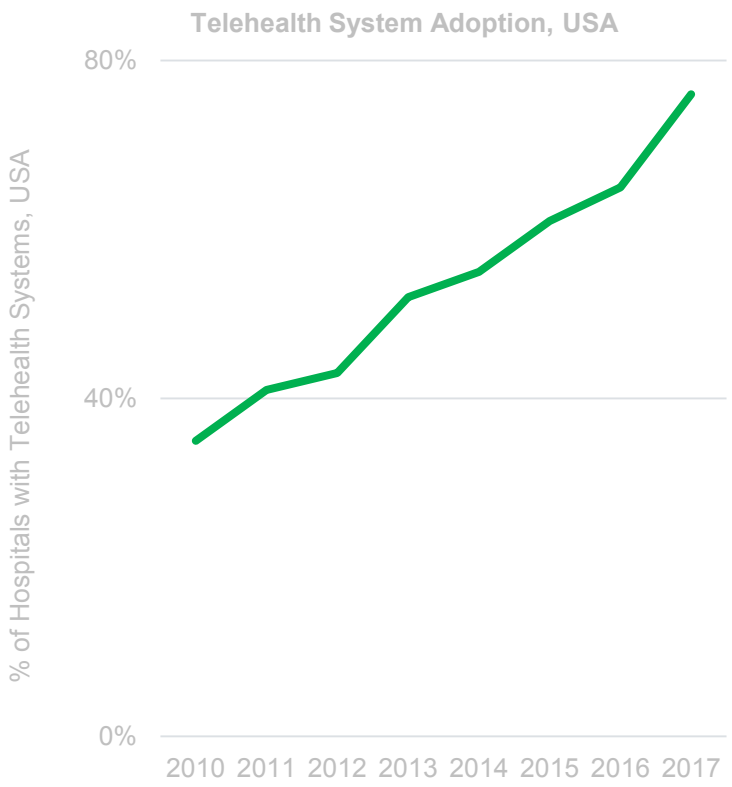
Solv = Convenient Care Marketplace



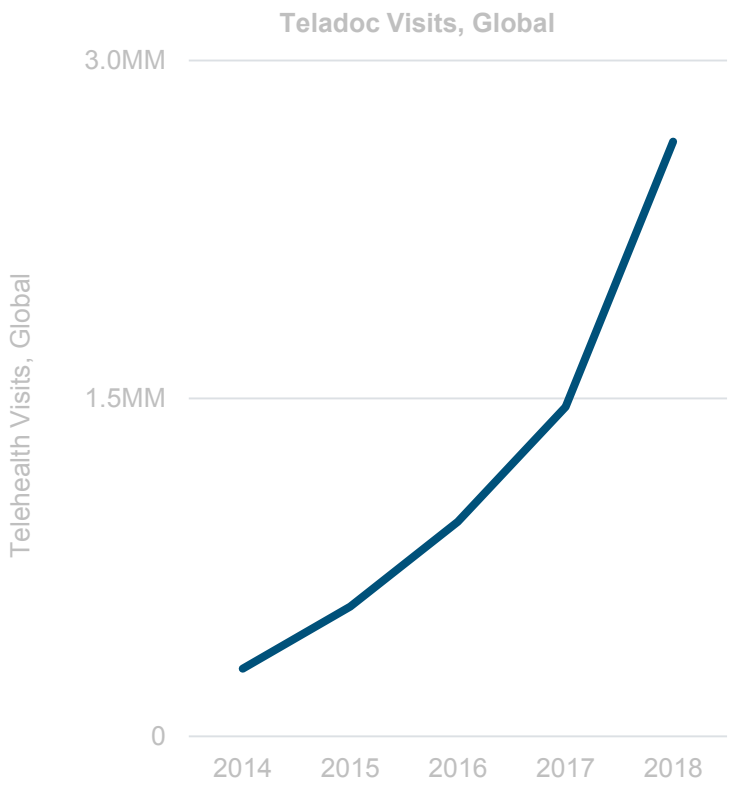
Source: Solv (6/19, 6/17-5/19). Note: Medical Bills Saved = Online appointments scheduled through Solv multiplied by 14% (Proportion of patient reported would have gone to the ER multiplied by $800 net savings…ER $1,000 vs urgent care $200). Savings could either be out of pocket for consumers or split between the consumer and insurance company.

Telehealth / Telemedicine = Strengthening Patient <> Practitioner Relationships

Telehealth Systems = Increasing Hospital Implementation



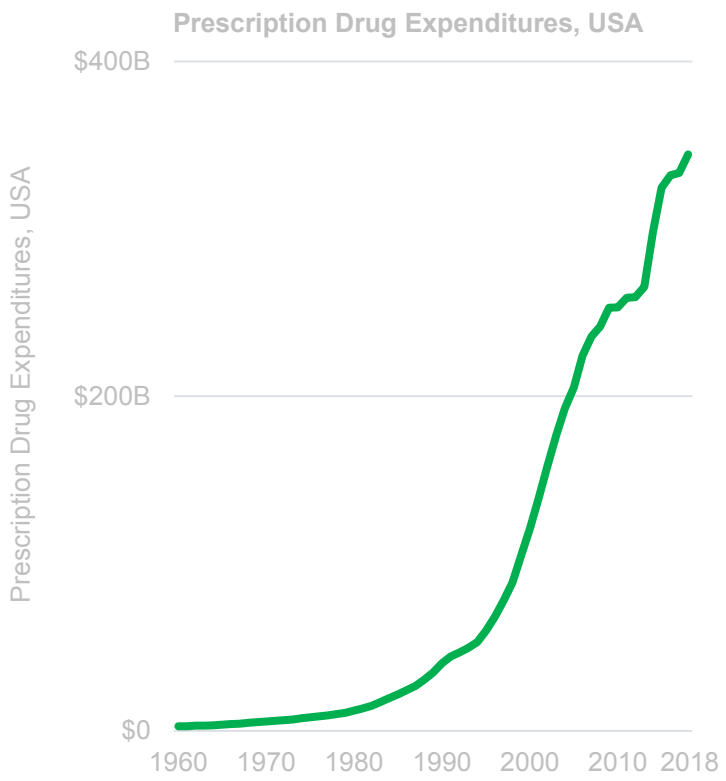
Teladoc = Remote Medical Care



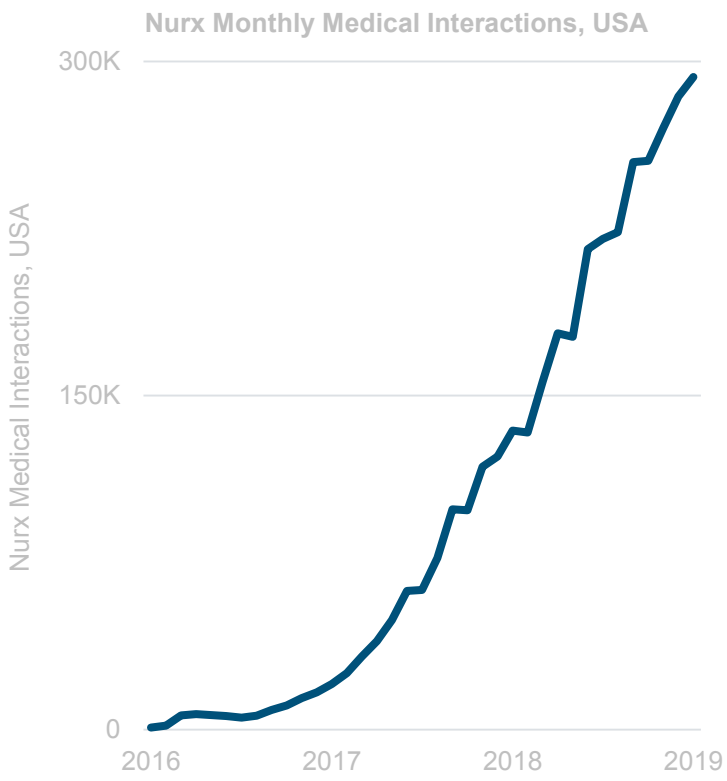
Source: American Hospital Association Fact Sheet: Telehealth (2/19), Teladoc SEC Filings.

Prescription Delivery = Improving Convenience + Affordability

Prescription Drug Expenditures = Rapidly Rising



Nurx = On-Demand Drug Delivery



Source: Centers for Medicare & Medicaid Services (CMS) National Health Expenditures (5/19), Nurx (5/19). Note: Medical Interactions = medical questions & ongoing fulfillment

Communication / Professional Community = Extending Knowledge Base to Practitioners

Communication = Increasing Ability to Address Unique Cases

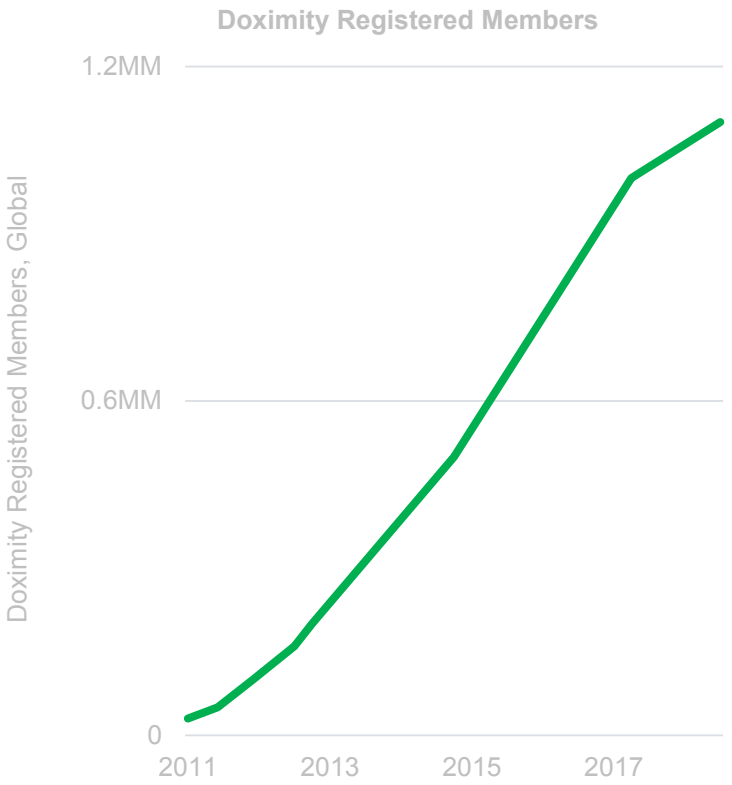
[A patient] was bitten by a Macaque monkey & as a result, came down with a rare form of encephalitis. A potentially fatal brain inflammation. His physician used Doximity to find one of the rare specialist who could treat this condition.

There are only about 20 doctors in the entire U.S. that are expert in this area. The patient was referred & treated successfully.

Most people don't realize that referring patients to the appropriate specialist isn't always easy for physicians & our network makes that process seamless, even in the toughest cases.

Jeff Tangney – CEO / Co-Founder, Doximity, 12/17

Doximity = Physician Social Network



Source: Doximity (5/19), Thrive Global (12/17). Members include physicians, physician assistants, nurse practitioners & medical students.

Health Insurance Management = Simplifying + Centralizing User Experience

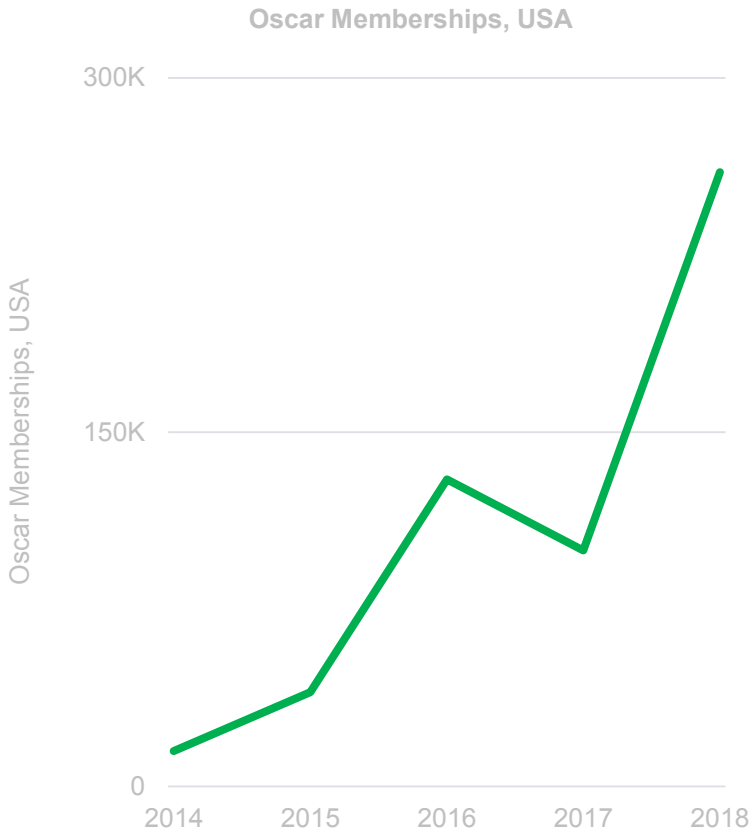
Modernized Management = Re-Imagining Legacy Systems

We have our own claims system we've been building, we have our own clinical management system, we built our networks ourselves – pretty much everything that we do internally to manage people's healthcare was reinvented & rebuilt from a technology perspective & so that's what we can now go faster toward.

We can hire more engineers, we can hire more data scientists, more product designers, more smart clinicians who can think about health care a different way.

Mario Schlosser – CEO / Co-Founder, Oscar Health, 8/18

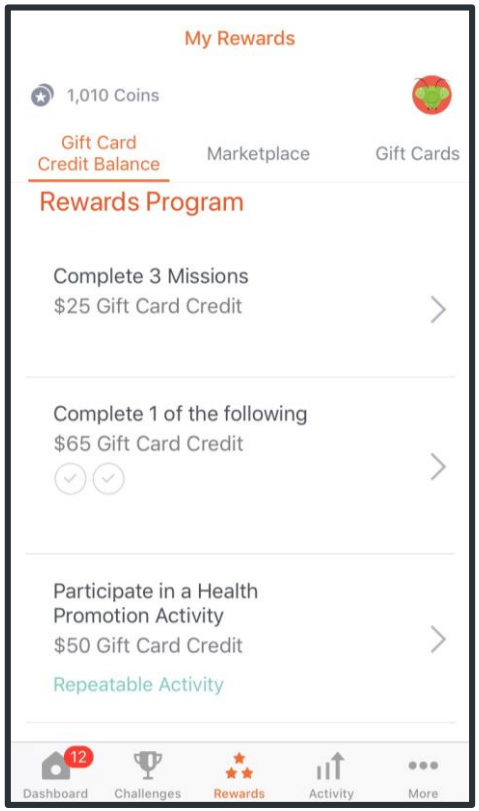
Oscar = Digital Health Management



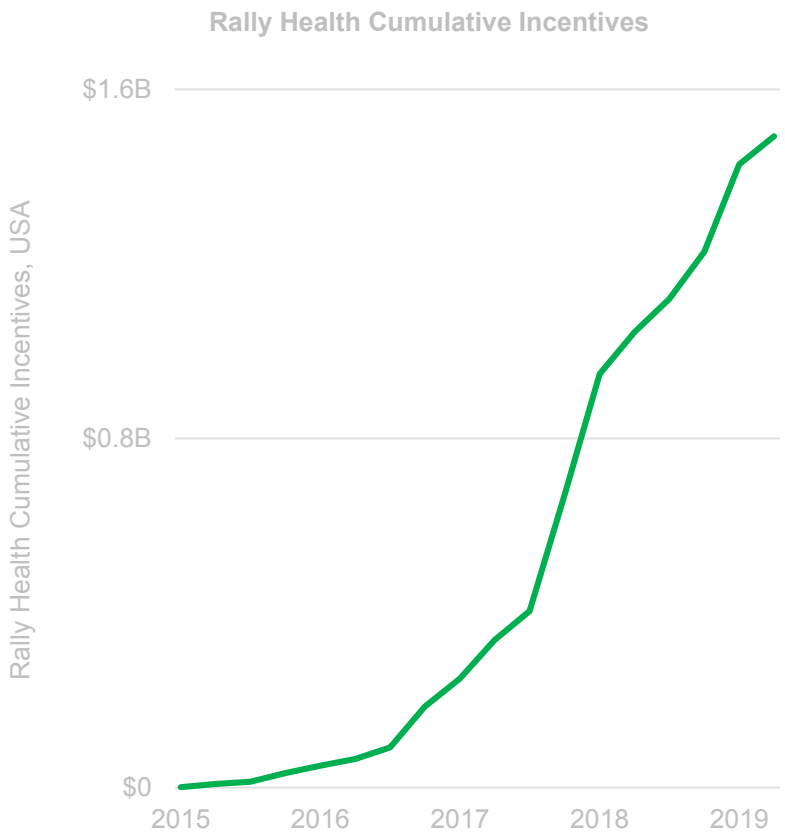
Source: Oscar Health, Mario Schlosser Interview with Wired (8/18). Note: Oscar data as of the first month of each year based on enrollments timing.

Health Incentive Tools = Driving Positive Choices via Savings + Personalized Rewards

Rewards = Building + Reinforcing Positive Habits



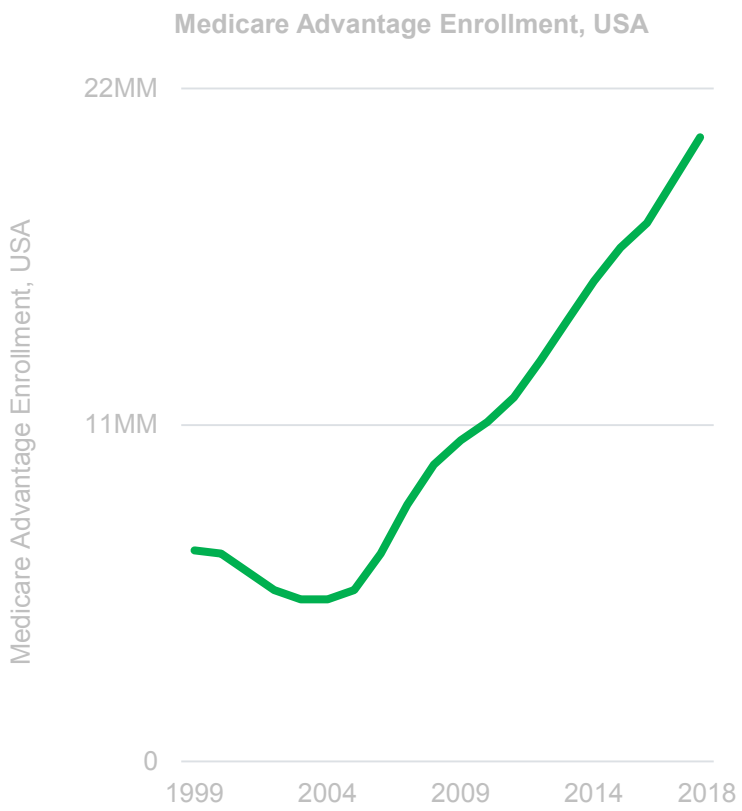
Rally Health = Incentivizing Healthy Living



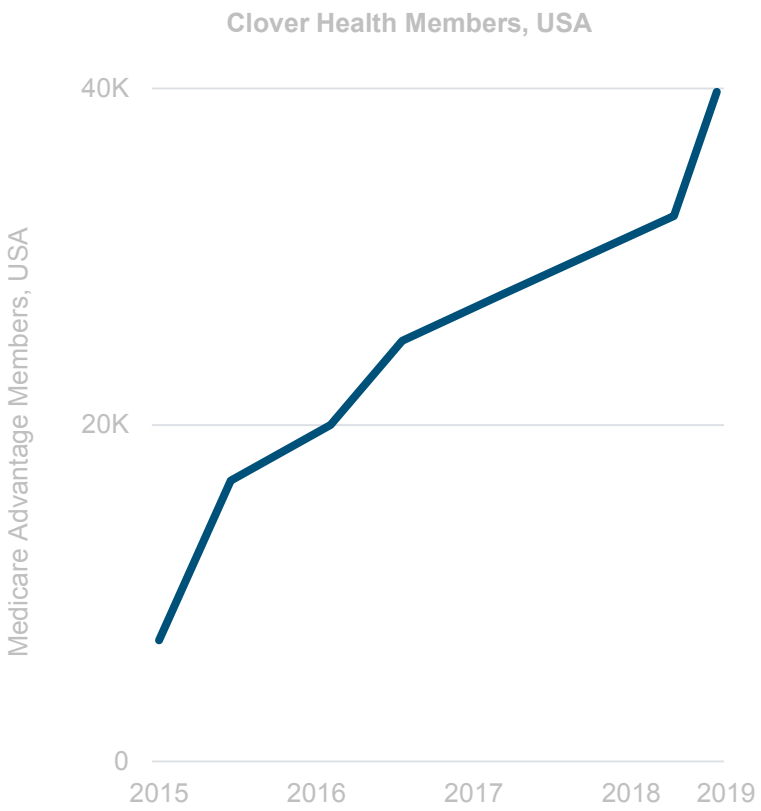
Source: Rally Health / UnitedHealth Group (6/19)

Medicare Plan Management = Personalizing Coverage + Costs

Medicare Advantage Enrollments = On the Rise



Clover Health = Matching Plans with Members' Needs



Source: Kaiser Family Foundation analysis of CMS Medicare Advantage enrollment files (2008-2018) & MPR numbers (1999-2007) from March of the respective year, with the exception of 2006, which is from April (11/18). Clover Health (3/19). Note: Enrollment includes cost plans & Medicare Advantage Plans. Approximately 61MM people are enrolled in Medicare in 2018.

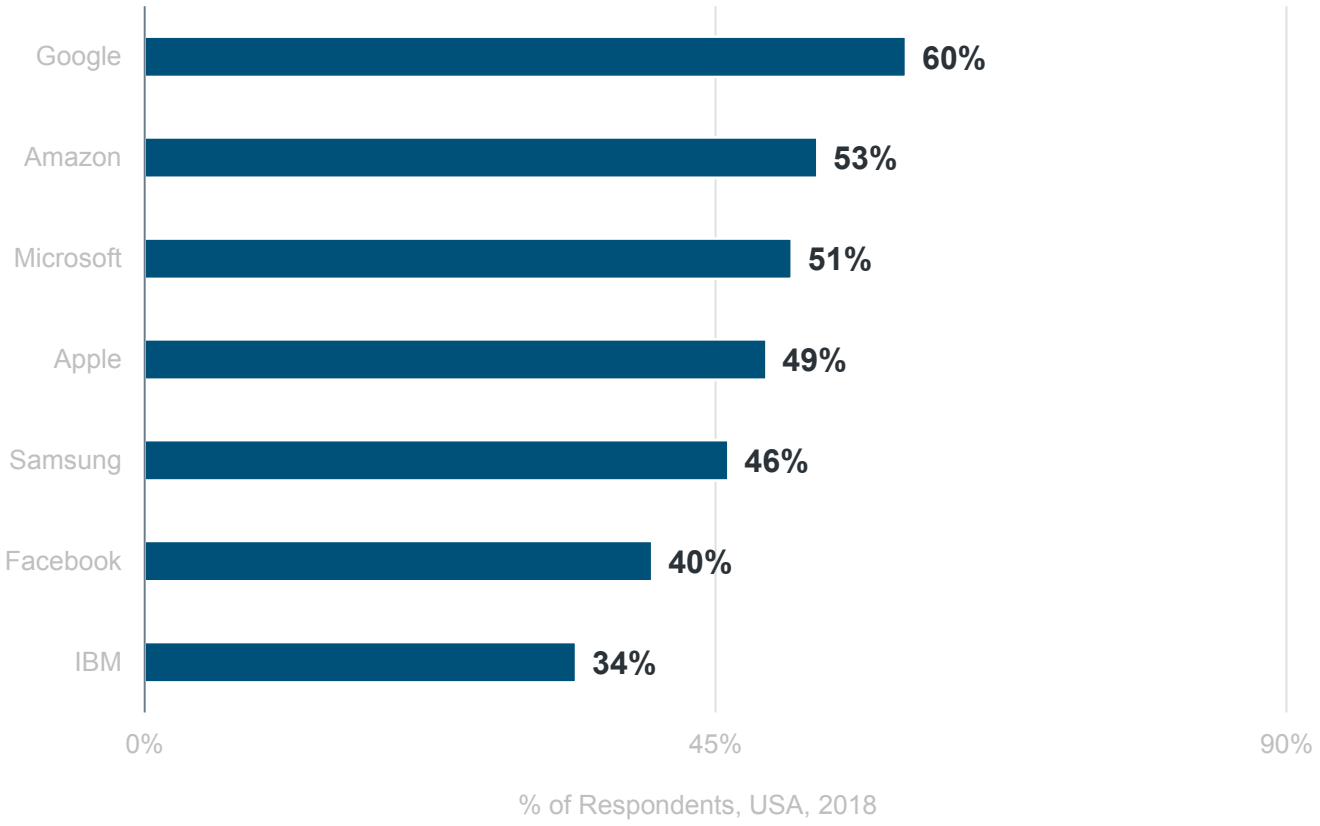
Healthcare Innovation =

Internet Leaders Building Capabilities

Healthcare Innovation = Internet Leaders Poised to Capture Data

Internet Leaders = Increasingly Trusted with Healthcare Data

*With which tech company would you share your health data?**



Source: Rock Health Digital Health Consumer Adoption Survey. 2018: n = 4,000. *Note this question was only asked to the 11% of total respondents that answered 'yes' to the question asking whether they'd be willing to share their health data with a tech company.

Healthcare Innovation = Apple…
Hardware + App Store Leveraging Research For Consumers

Apple = Democratization of Healthcare

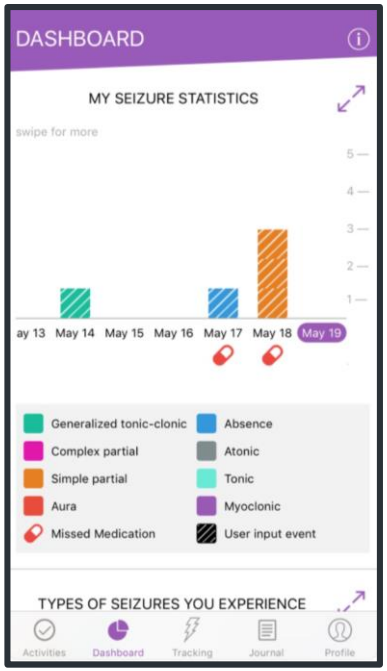
If you zoom out into the future & you look back, & you ask the question,
'What was Apple's greatest contribution to mankind,'
it will be about health.

Because our business has always been about enriching people's lives. We've gotten into healthcare more & more through the Watch, other features created with ResearchKit & CareKit & including medical records on the iPhone. This a huge deal.

[Healthcare] is very important for people. We are democratizing it. We are taking what has been with the institution & empowering the individual to manage their health. We're just at the front end of this.

Tim Cook – CEO, Apple, 1/19

Apple ResearchKit = Medical Research Technology for Consumers



Source: Apple. Tim Cook Interview with CNBC (1/19). Morgan Stanley estimates that 70MM Apple Watch units have been sold from 4/15-3/19.

Healthcare Innovation = Google / Alphabet…
Artificial Intelligence Unlocking Insights for Practitioners

Google =
AI Enabled Healthcare

If AI can shape healthcare, it has to work through the regulations of healthcare. In fact I see that as one of the biggest areas where the benefits will play out for the next 10-20 years.

We had recently done work on diabetic retinopathy, it's a cause for blindness, but using AI machine learning we can detect it much better than humans can.

Sundar Pichai – CEO, Google, 10/17

DeepMind Streams =
AI Assistant for Doctors + Nurses

Source: DeepMind (11/18), Google. Sundar Pichai Interview with NDTV (10/17).

Healthcare Innovation = Microsoft Healthcare…
Enabling Healthcare's Move to the Cloud with AI Solutions

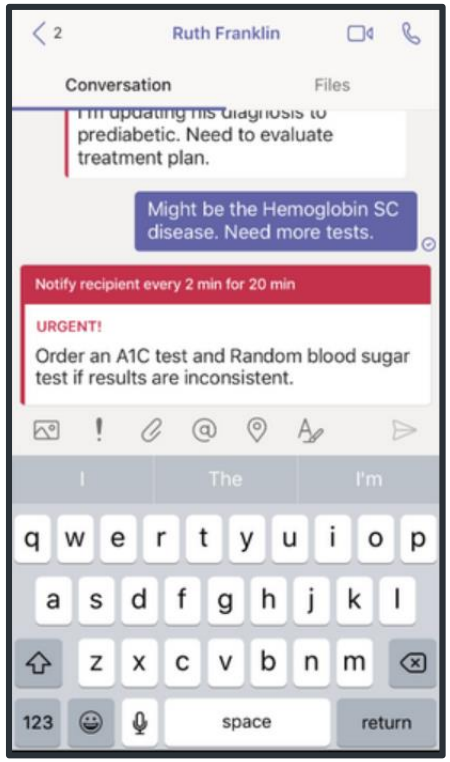
Microsoft = Intelligent Healthcare

The healthcare industry has made great strides over the last decade in helping digitize healthcare & so the next ten will be about turning those assets into better health insights, experiences & outcomes. This is where we can make a big contribution. Cloud, AI & research capabilities will play a fundamental role towards the future. At Microsoft, we're continuing to learn & grow every day from the extensive set of partnerships that we have had in healthcare: over 168,000 healthcare organizations in 140 countries.

Health & wellbeing are central to our daily lives. New inventions developed with our partners using Microsoft AI & machine learning can create a better future & make healthcare delivery more personal, affordable & accessible.

Peter Lee – CVP, Microsoft Healthcare, 4/19

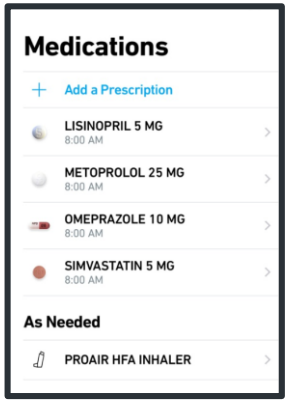
Microsoft Health Bot = Troubleshooting Health Issues

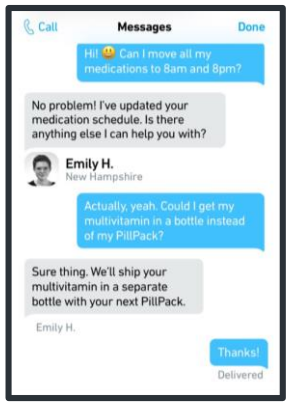


Source: Microsoft Industry Blog (4/19)

Healthcare Innovation = Amazon / PillPack… Consumer-Centric Approach to Medication Management

PillPack = Consumable Healthcare

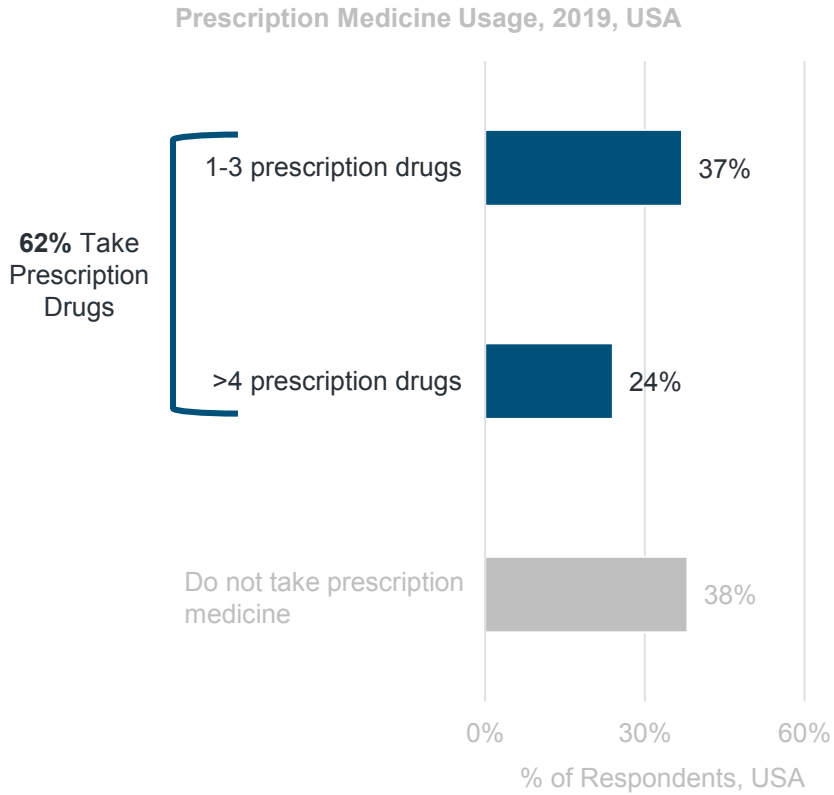




*PillPack is meaningfully improving its customers' lives & we want to help them continue making it easy for people to **save time, simplify their lives, & feel healthier**. We're excited to see what we can do together on behalf of customers over time.*

Jeff Wilke – CEO, Amazon Worldwide Consumer, 7/18

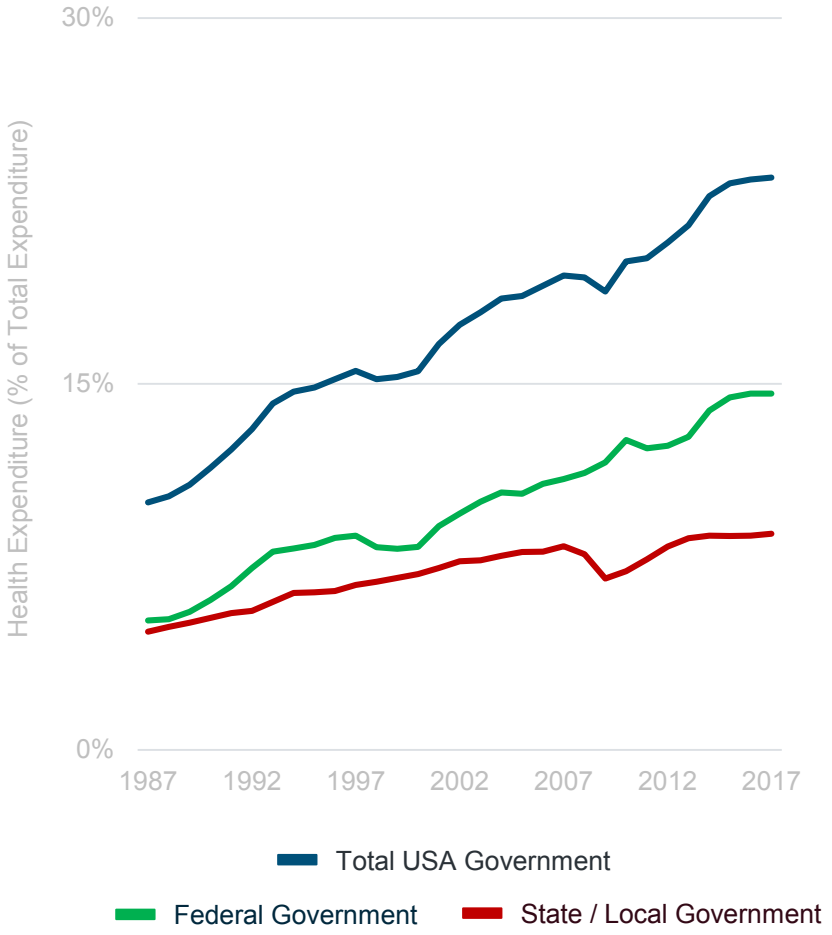
Prescription Medicine Usage = Increasingly Common



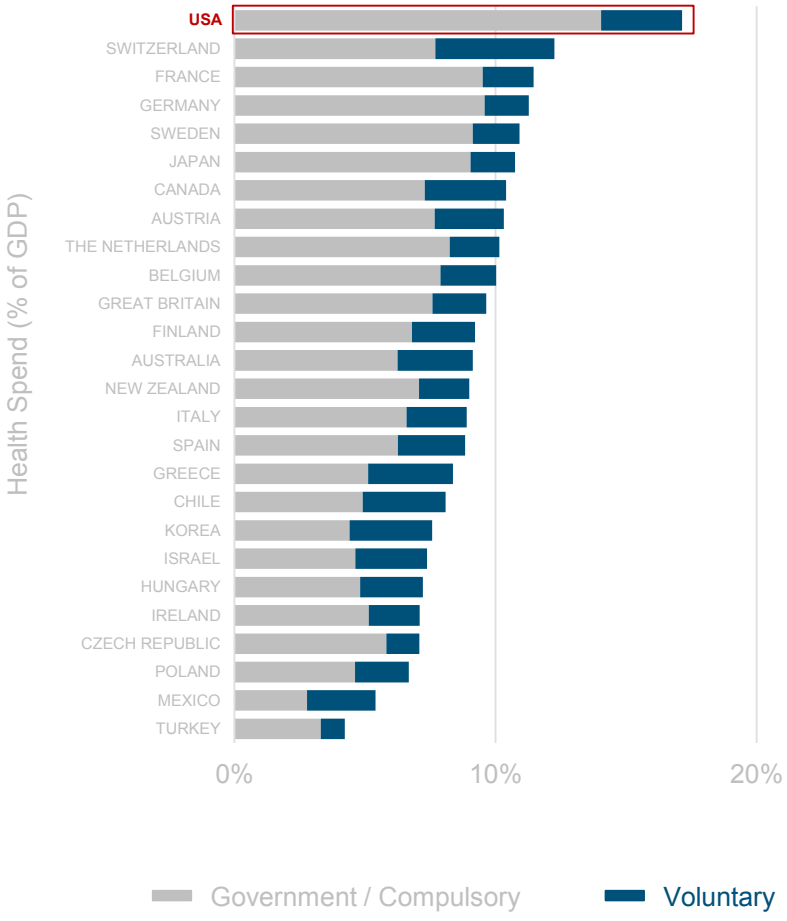
Source: Kaiser Family Foundation Health Tracking Poll (2/19). Survey of 1,400 USA adults over the age of 18, including 606 over the age of 65, conducted from 2/14-2/19/19. Respondents were asked the question: 'Do you currently take any prescription medicine or not? IF YES: How many different prescription drugs do you take?'. PillPack press release (7/18).

Healthcare Cost =
High + Rising for Government / Consumers

Health Expenditures
% of Government Total, USA



Health Expenditures,
% of GDP, 2017, per OECD



Source: USA Federal + State & Local Healthcare expenditures per the Center for Medicare / Medicaid Studies. Total USA Government expenditures per USA Bureau of Economic Analysis Data. Total Health expenditure per OECD data includes all public / private healthcare spend for the year 2017 (some data subject to future revision per OECD).

CHINA INTERNET =

INNOVATIVE PRODUCTS + BUSINESSES CONTINUE TO IMPRESS

PREPARED BY HILLHOUSE CAPITAL

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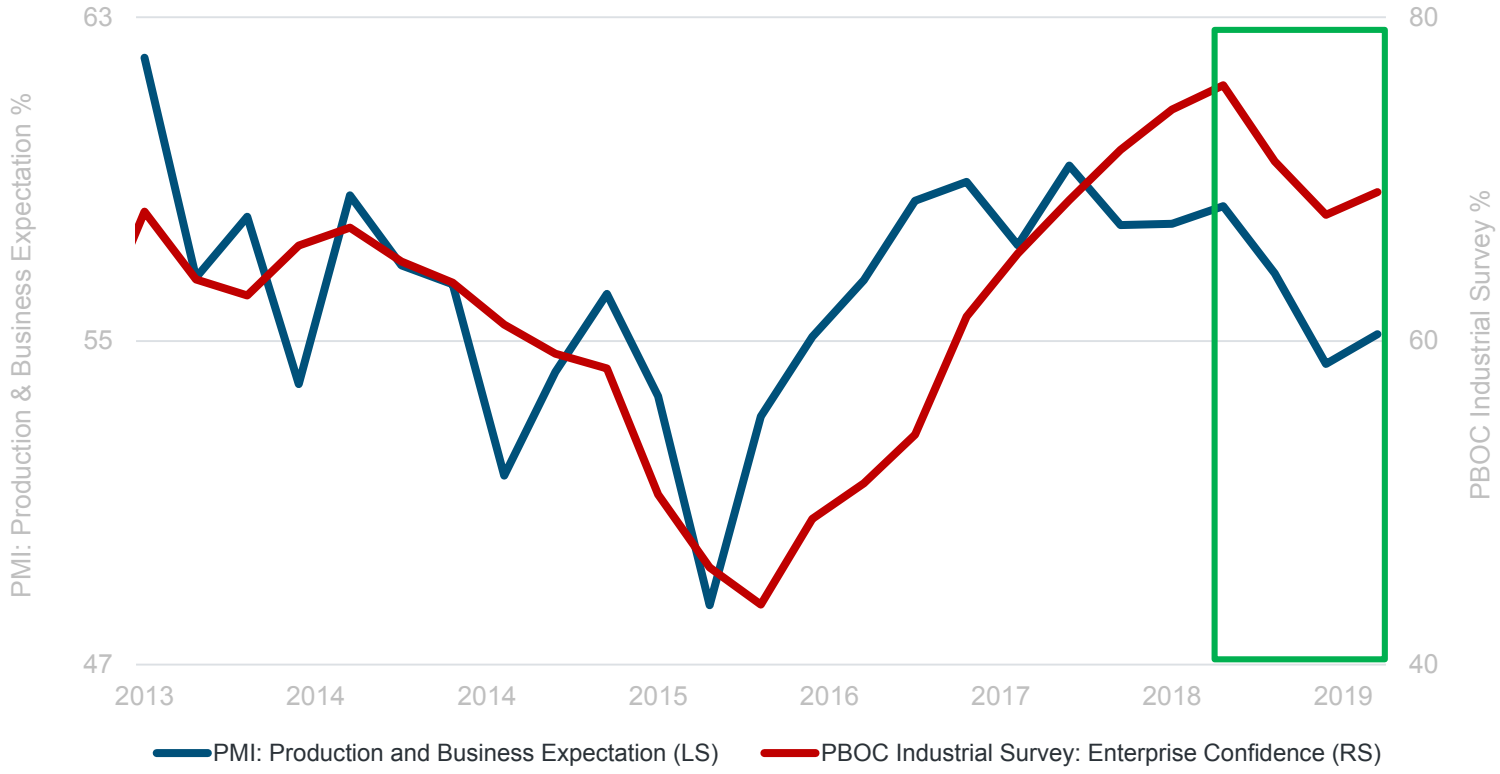
China Macro Trends

China Near-Term *Business* Confidence = Fluctuating…

China PMI Business Index + Enterprise Confidence Index (%)

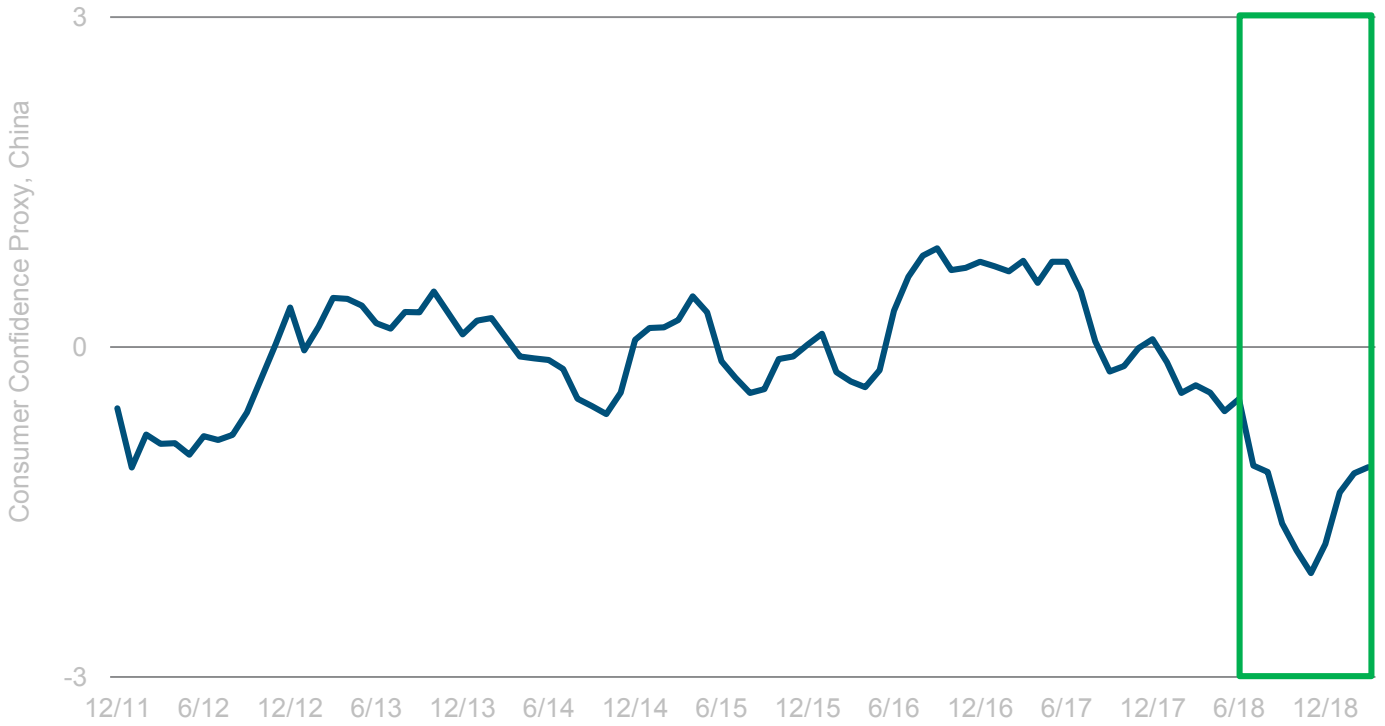


Source: CEIC, Morgan Stanley Research

…China Near-Term *Consumer* Confidence = Fluctuating

China Consumer Confidence Proxy

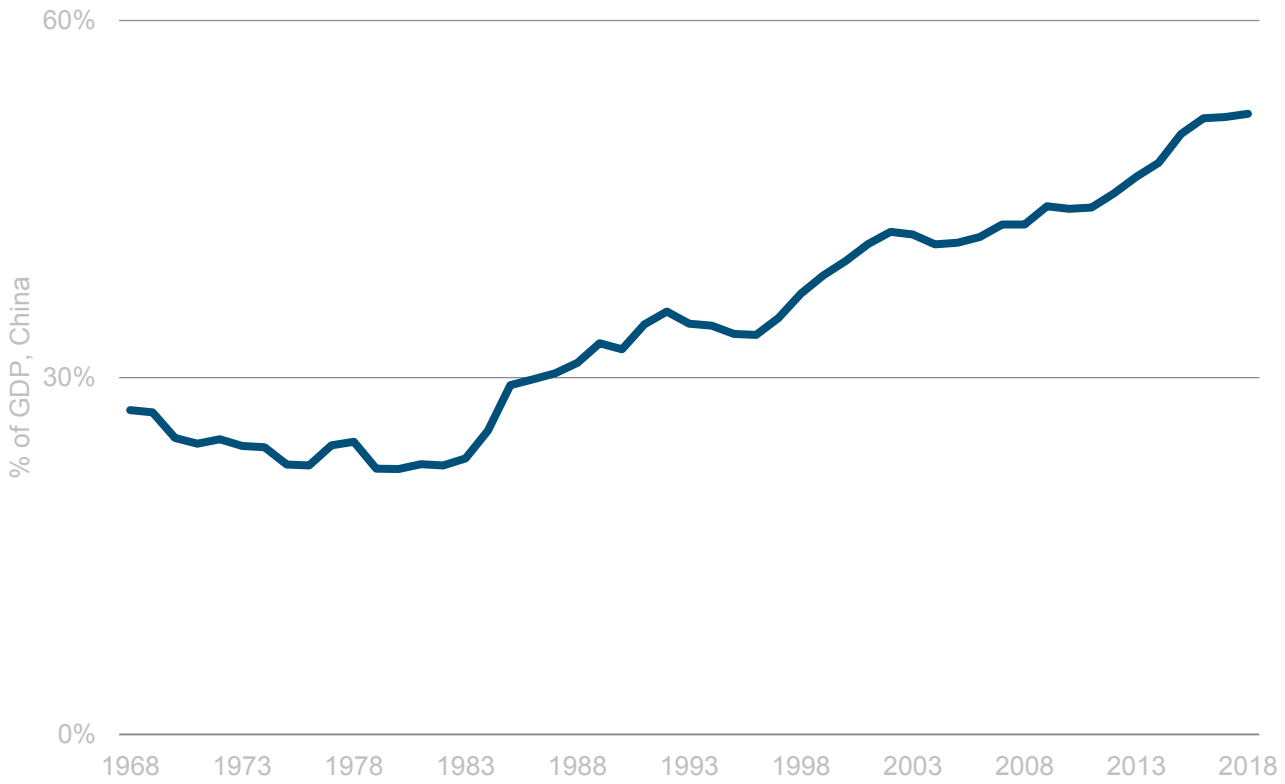
Based on Average Z-Score of Household Loans, Consumer Confidence Index, Passenger Car Sales, Air Passenger Traffic & Catering Consumption*



Source: CEIC, Morgan Stanley Research.
*A z-score measures how many standard deviations above or below the historical average a data point is.

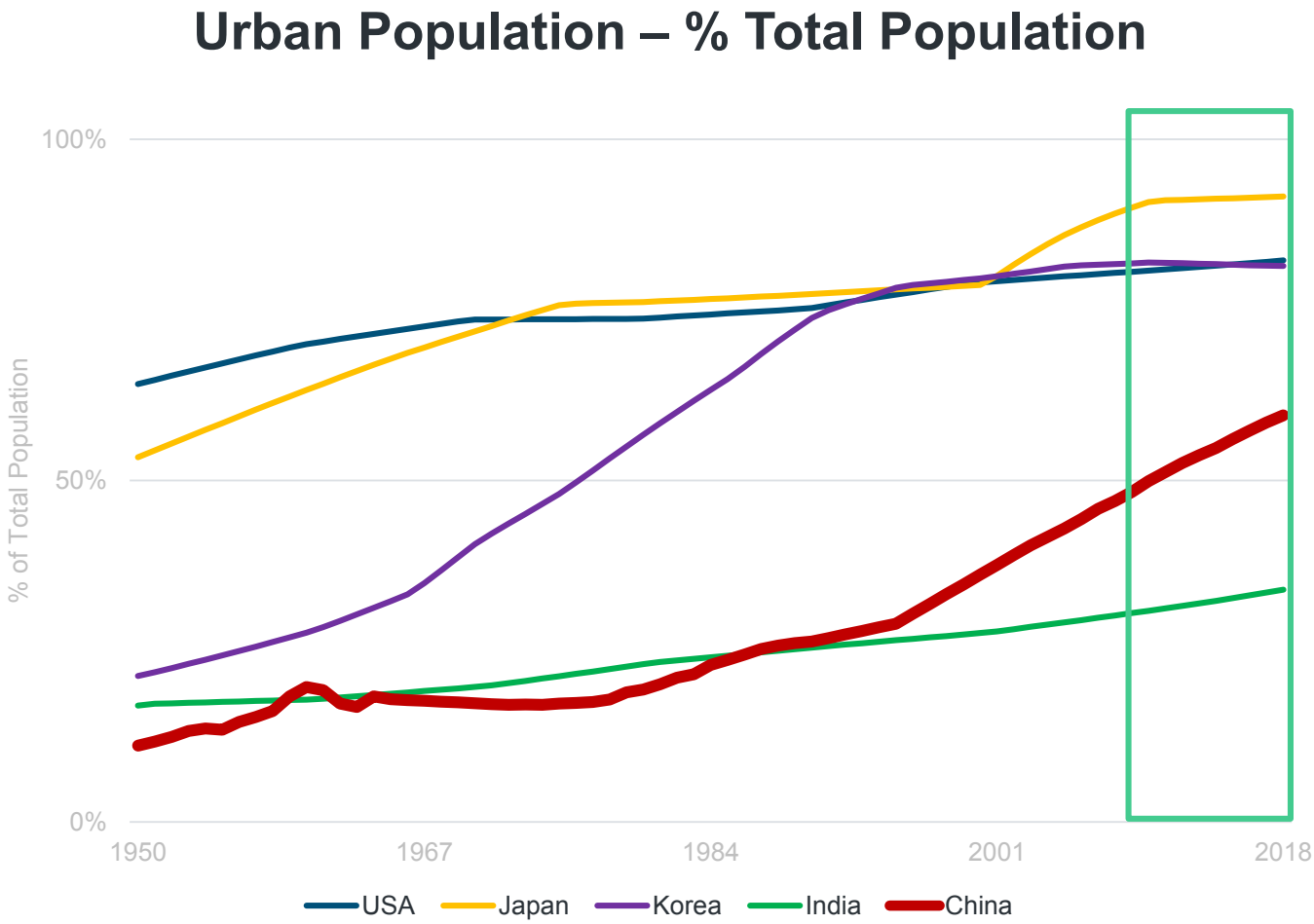
China Service Sector =
Continues to Drive Economic Growth

China Service Sector Output as % of Nominal GDP



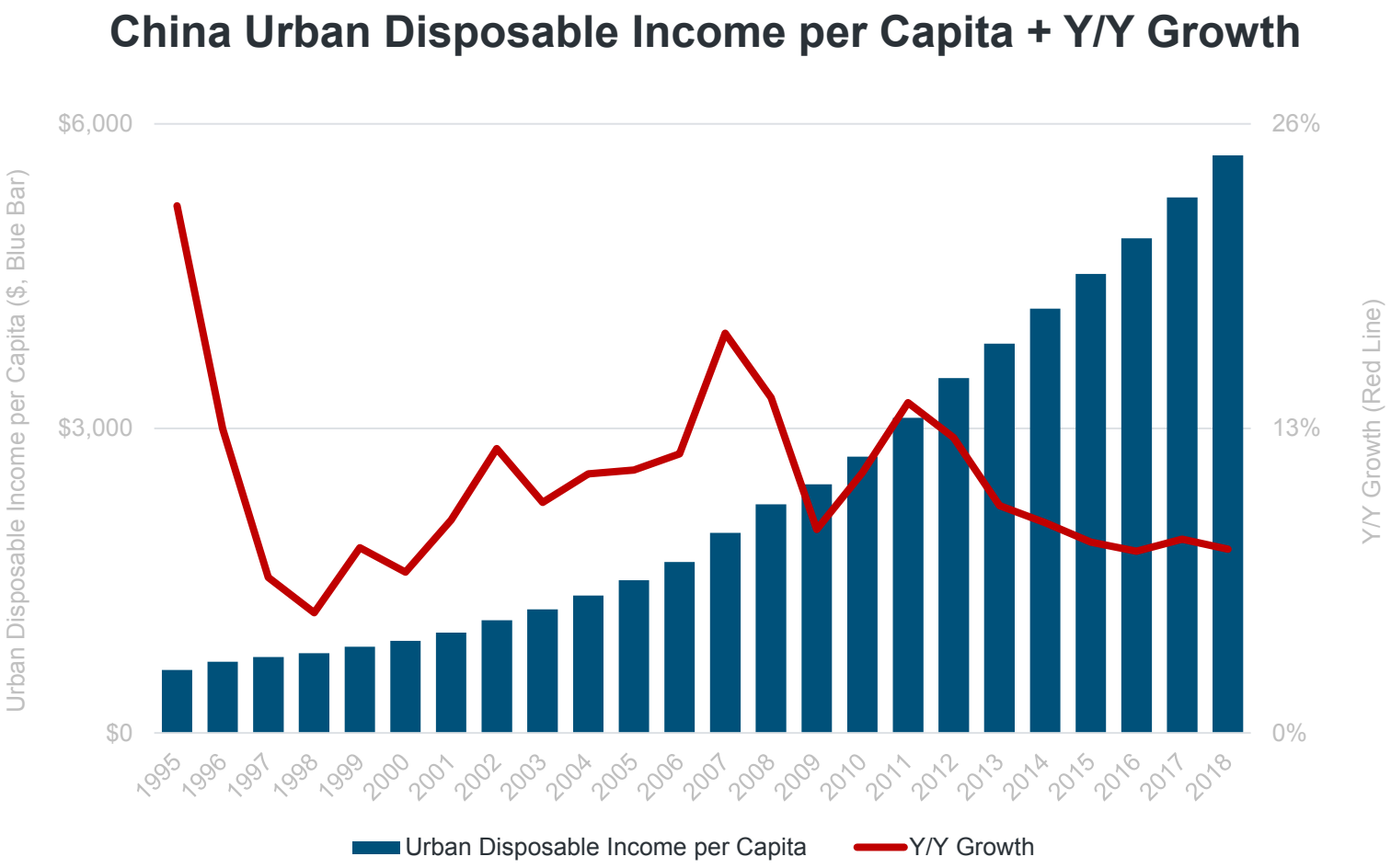
Source: China National Bureau of Statistics, Morgan Stanley Research
Note: Service sector defined as all industries outside of agriculture, forestry, animal husbandry & fishery industries (except support services to agriculture, forestry, animal husbandry & fishery industries), mining (except auxiliary activities of mining), manufacturing (except repairs for metal products, machinery & equipment), production & supply of electricity, steam, gas, water, & construction.

China Urbanization = Rising Rapidly…Room to Grow



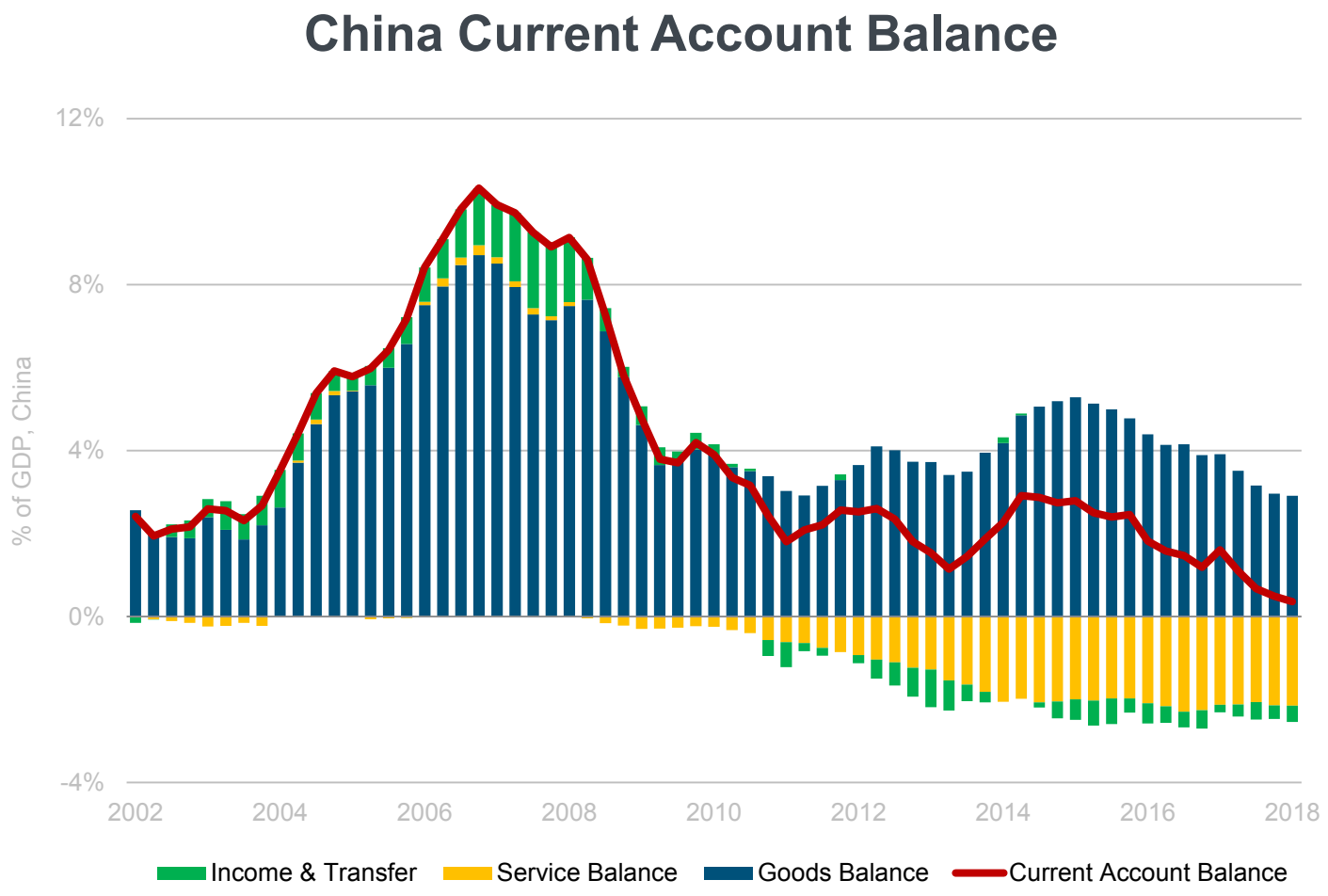
Source: CEIC, UN, Morgan Stanley Research

China Urban Disposable Income Per Capita = Solid +8% Y/Y



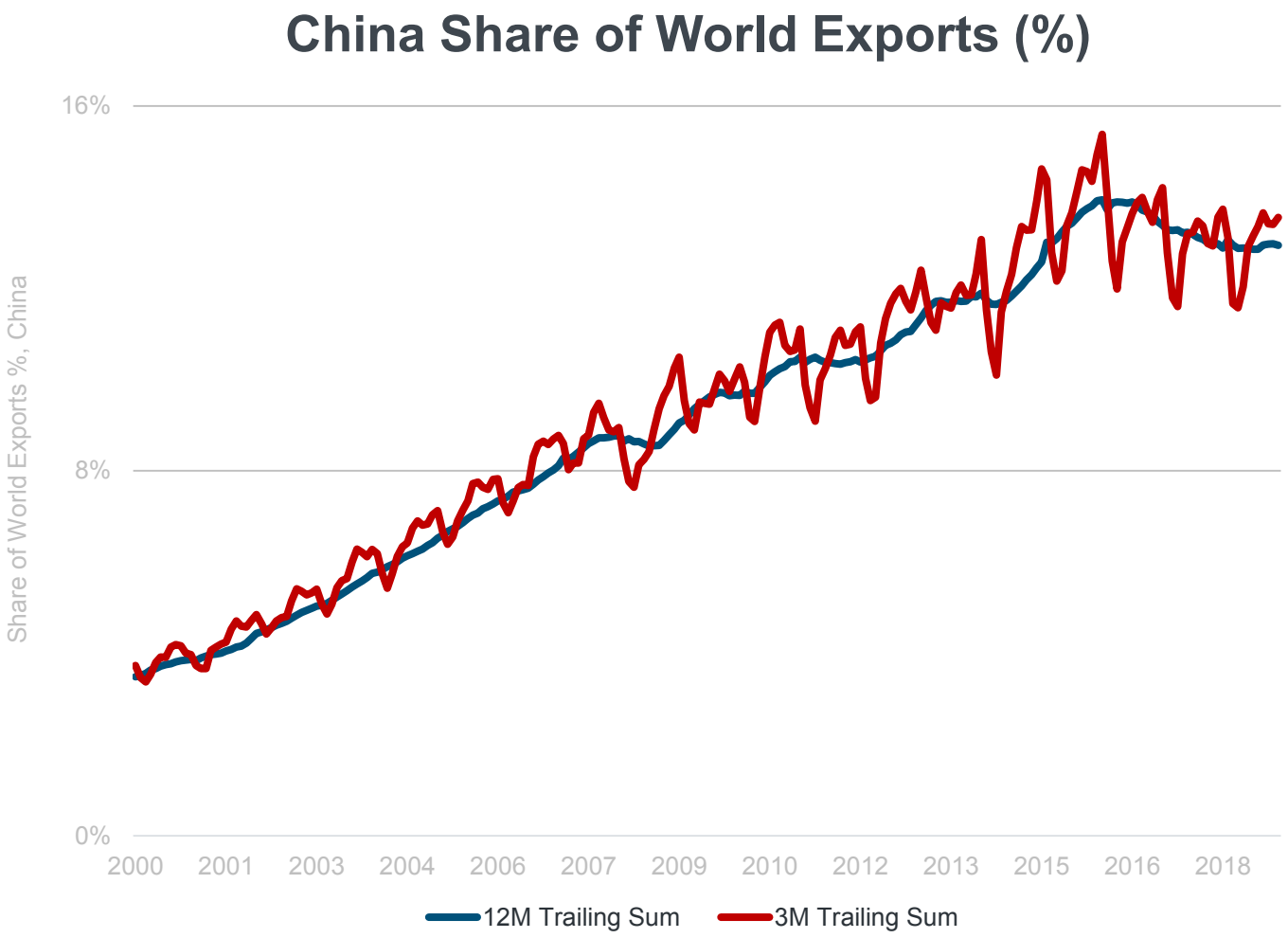
Source: CEIC, assumes constant exchange rate of 1USD = 6.9RMB.

China Trade Balance = Current Account Surplus Narrowing… Rising Outbound Tourism Offsetting Decreasing Net Exports



Source: SAFE, Morgan Stanley Research

China Share of World Exports = Declining Since 2016 Due to Rising Wages + Aging Labor Force

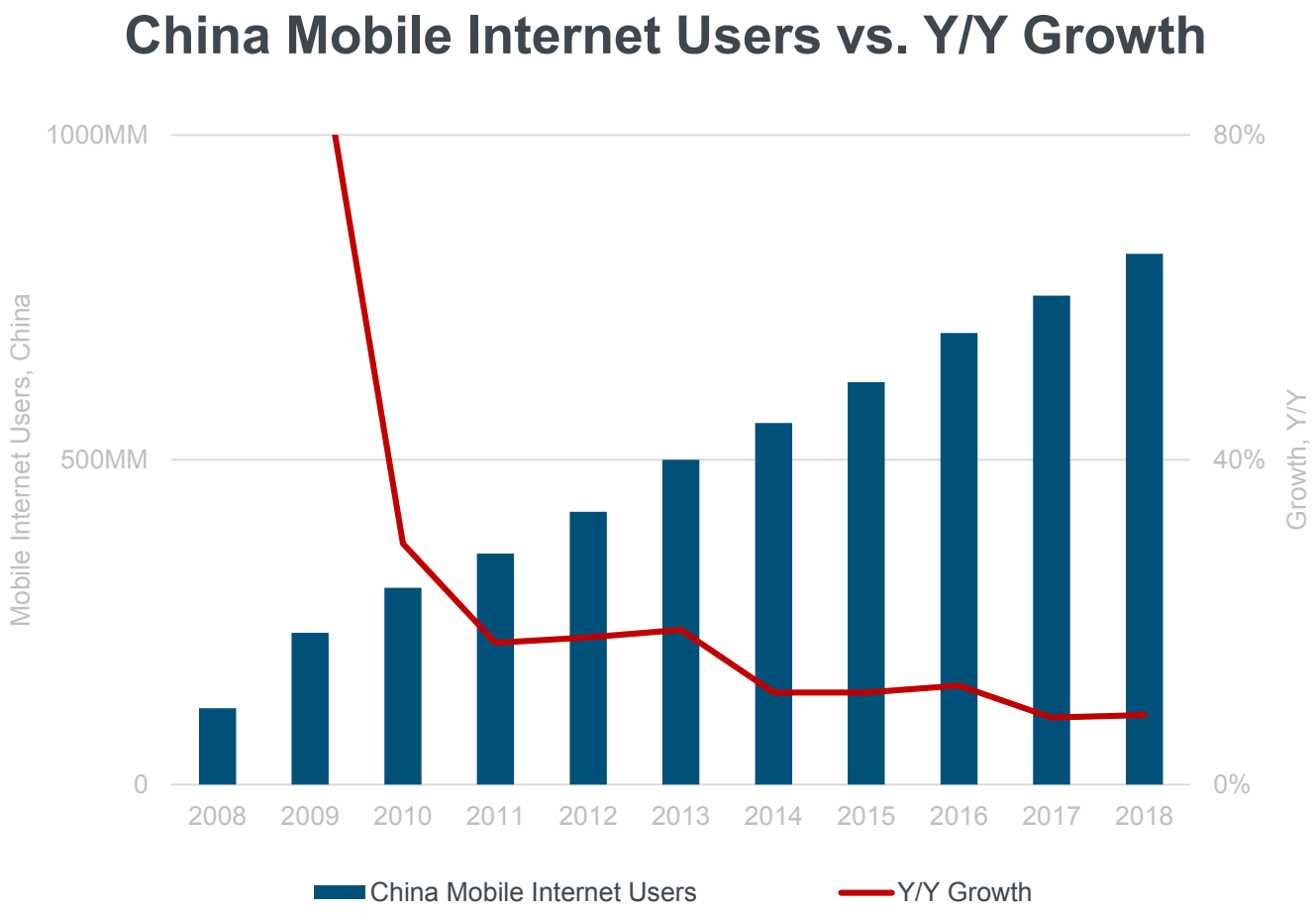


Source: Haver Analytics, Morgan Stanley Research

China Internet User / Usage Trends =

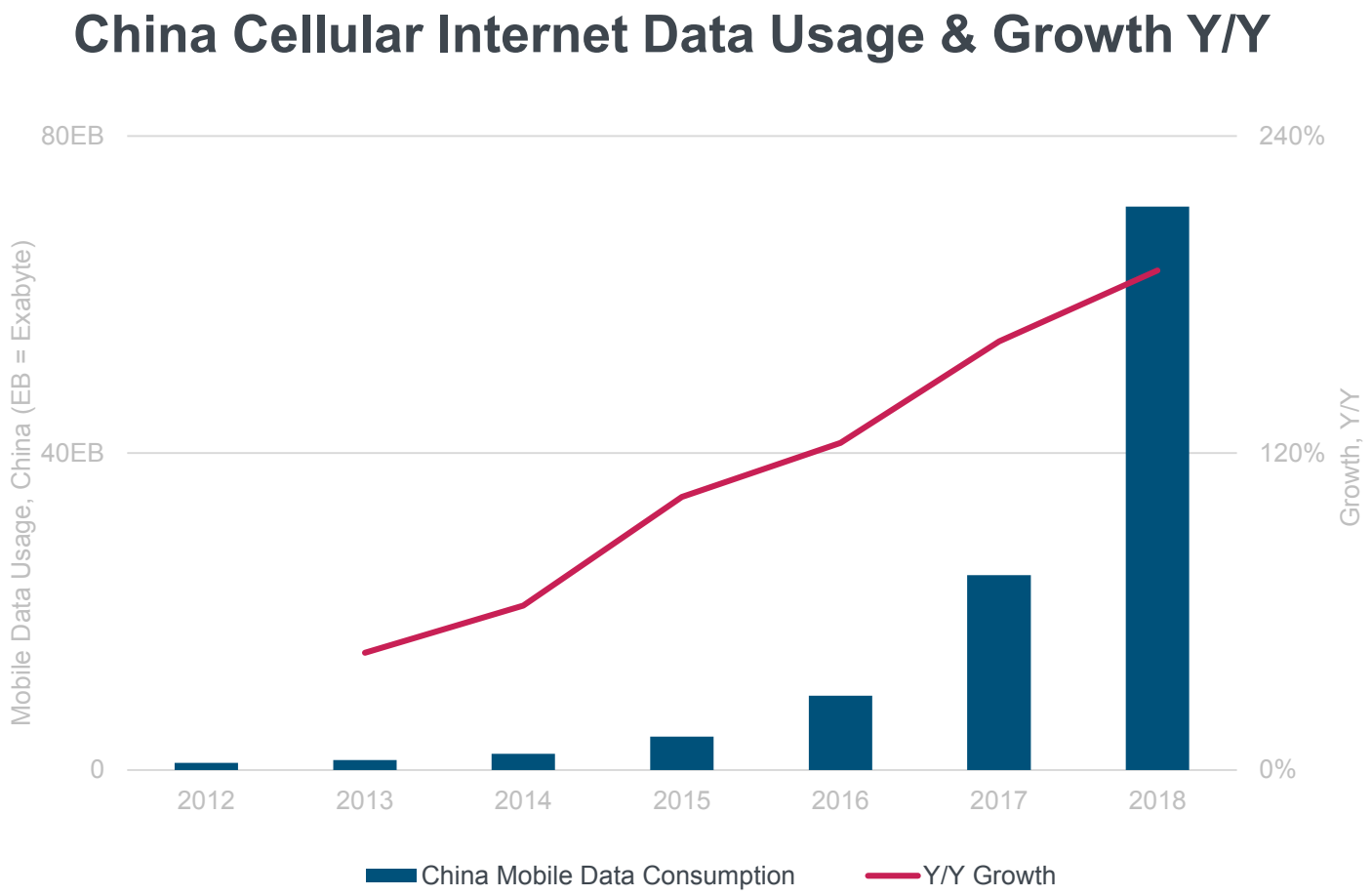
Robust Usage Growth
Primarily Driven by Short-Form Video

China Mobile Internet Users = 817MM…+9% vs. +8% Y/Y



Source: China Internet Network Information Center
Note: Mobile Internet User Data is as of Year-End.

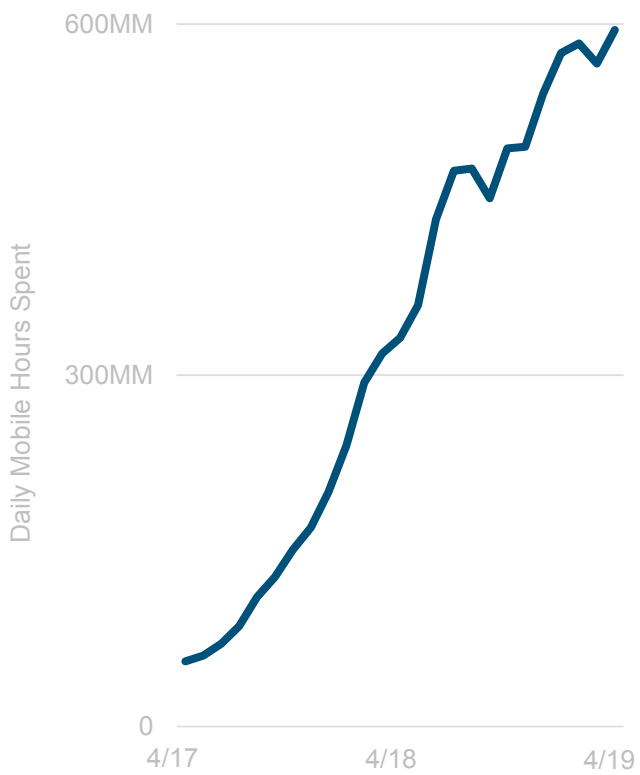
China Mobile Internet Usage (Data) = Continues to Accelerate +189% vs. +162% Y/Y



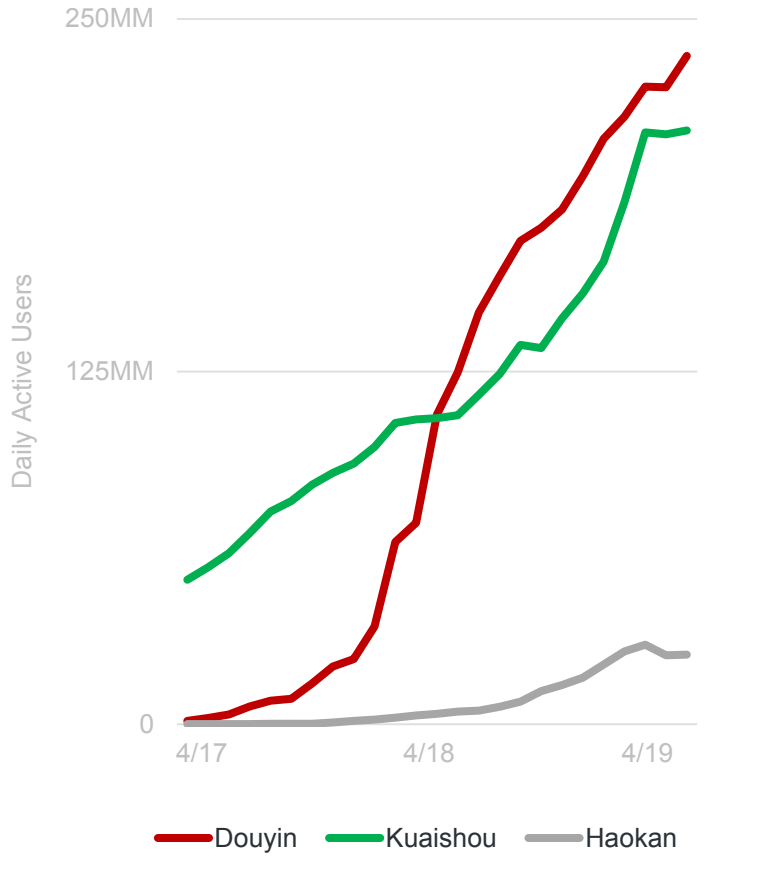
Source: China Ministry of Industry & Information Technology.
Note: Cellular Internet Refers to 3G/4G Network data.

China Short-Form Video = Leading User + Usage Growth Across All App Categories

China Short-Form Video – Daily Time Spent

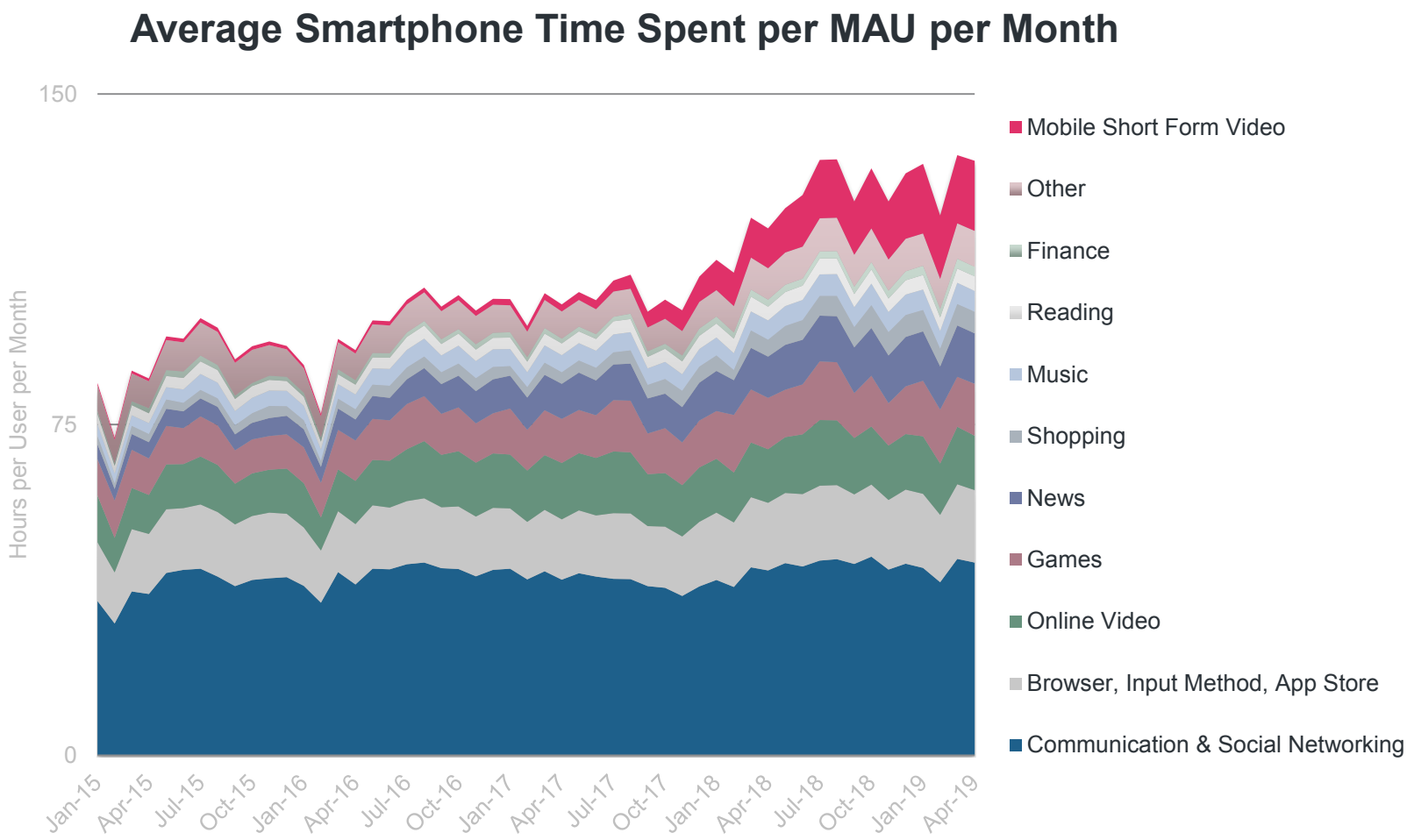


Leading Short-Form Video Platforms – DAUs



Source: QuestMobile (4/19). Note: Short-Form Form Videos are typically <5 Minute in Length & include companies such as Kuaishou, Douyin, Baidu Haokan,etc

China Short-Form Video = Driving *Incremental* Mobile Time Spent Growth



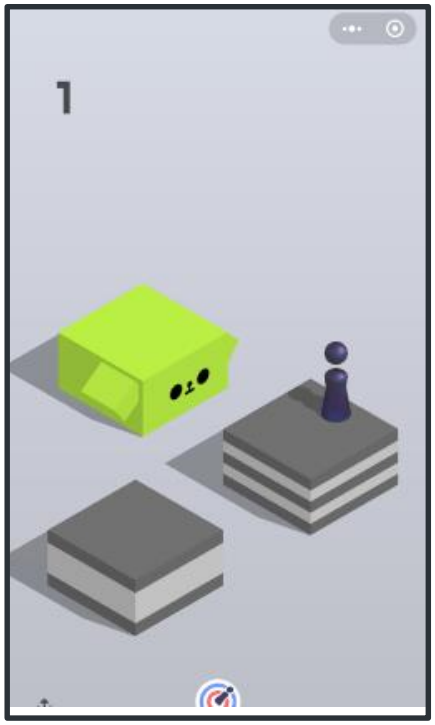
Source: QuestMobile (4/19)

China Innovation =

Games Driving Transformation of…
Payments / E-Commerce / Retail / Education

WeChat Jump Jump =
Simple Game Helped Create Ecosystem of Mini-Programs

Tiao yi tiao (Jump Jump)
First Mini-Program Game
100MM+ DAUs in two weeks



Uniqlo
Brand
~3x Conversion vs. Industry

Pinduoduo
eCommerce
89MM+ MAUs

Tongcheng-Elong
Travel Booking
169MM+ MAUs

WeSing
Entertainment
73MM+ MAUs

QR Code
Public Transit
48MM+ MAUs

Xiaoniangao
Photos
214MM+ MAUs

Source: WeChat Open Class PRO 2019(01/19), Tencent Global Digital Ecosystem Summit(05/19), MAU per QuestMobile Mini-Programs 4/19.

Alipay Ant Forest = Gamified Philanthropy Can Drive Consumer Engagement

Ant Forest

Accumulate green energy points by completing tasks that reduce carbon emission or paper waste (walking / biking / public transit / online & offline payment / recycling / used goods…)

Protect your virtual tree green energy points or 'collect' friends' points by waking up early & checking in often

Ant Financial & other charity partners turn virtual tree green energy points into real trees to combat deforestation

500MM

Cumulative Users of Ant Forest within Alipay*

100MM

*Real Trees Planted**

~4x

*Average Alipay Sessions per User per Day***

Source: *Ant Financial as of 4/19, **QuestMobile as of 4/19.

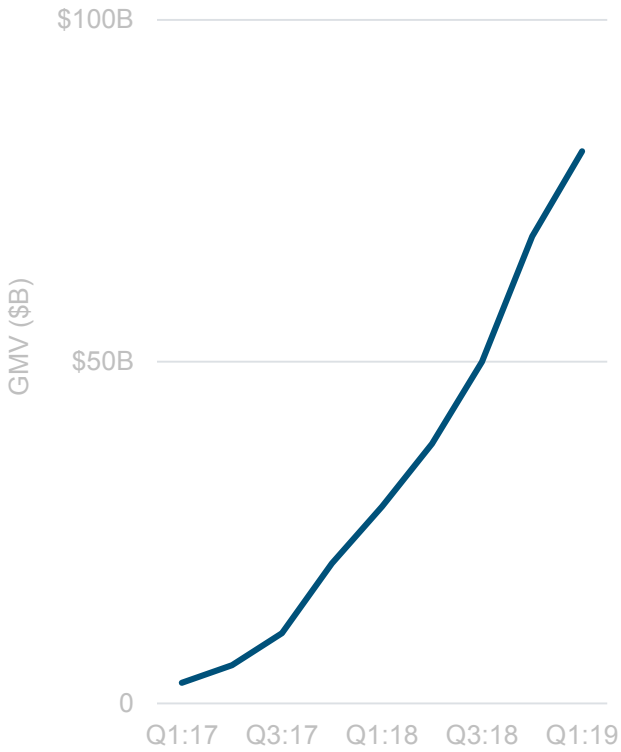
Pinduoduo = Group Buying…
Social Shopping + Gamified Discounts Drive Growth

Pinduoduo

Get Cheaper Price by Sharing with Friends

Friends Can Play Game & Help Reduce Prices

Trailing 12-Month GMV



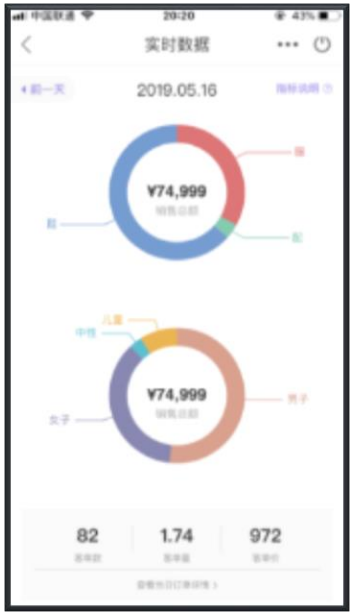
Note: Assume FX 1USD=6.9RMB.

Belle / TopSports = Digitization + Gamification Can Drive Same-Store-Sales Lift

Belle / TopSports

Store Managers

Real-time Sales by Category & SKU



Employee KPIs & Peer Rankings

Store Associates

Gamified Rewards to Complete KPIs

Competitive Sales Games vs. Peer Stores

Source: Belle.

Online Education = Structured Fun Games Drive Learning

TAL (XRS) Online
Turning Math Learning Into Games

Coding Cat
Games of Codes

Cartoon + Students PK
Enhanced Learning Experience

China Innovation =

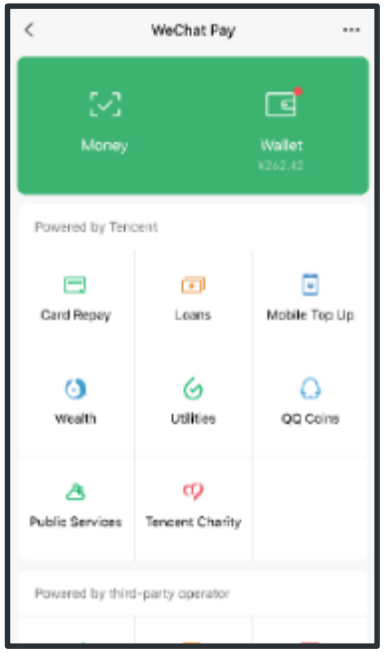
Internet-Based
Products + Business Models

China Chat =

Enabler of Transactions & Services

WeChat Innovation = Evolution from Chat to Mini-Programs / Payments

1	2	3	4
WeChat Public Account	WeChat Mini-Programs	WeChat Mini-Programs	WeChat Integrated Payment
Following	***Browsing Items***	***Placing Order***	***Finishing Payment***



Global Rollouts =
Kakao / Line / Facebook Incorporate Transaction Features

Kakao

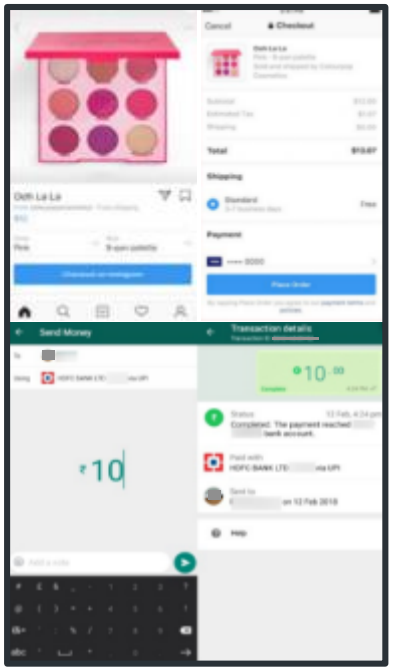
Chat / Music / Payment /
Games / Transportation…

Line

Chat / Payment /
Food / Coupons…

Instagram / WhatsApp

Chat / Shopping /
Money Transfer…



China Local Services =

Becoming 'Super Apps'

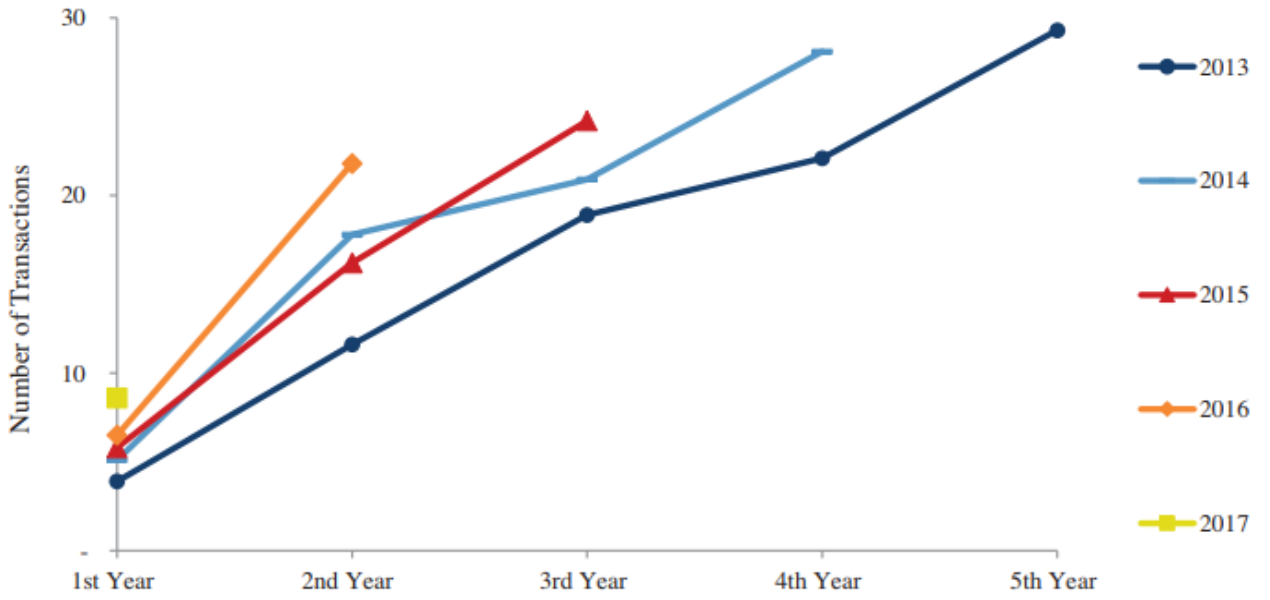
Meituan = From Group Buying to Super App…
30+ Services…412MM Annual Transacting Users, +26% Y/Y…

Meituan Mobile App Functions vs. Relevant US Peers

Source: Company Material.

…Meituan Super App…
Growing Consumer Engagement + Transaction Frequency

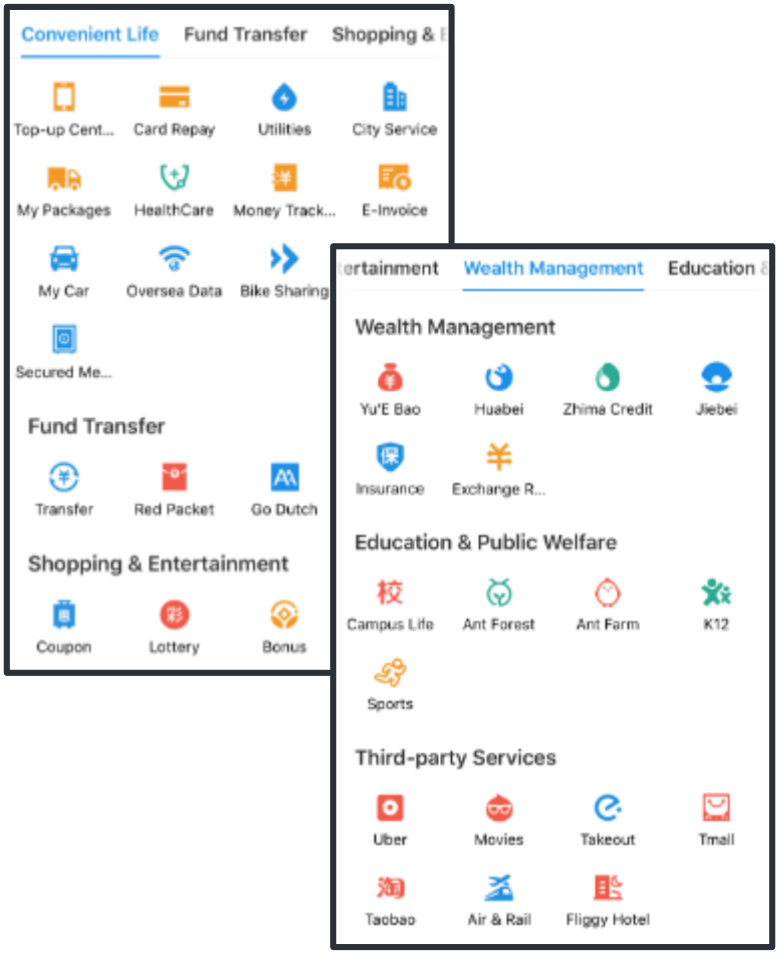
Meituan # of Transactions per User per Year by Cohort

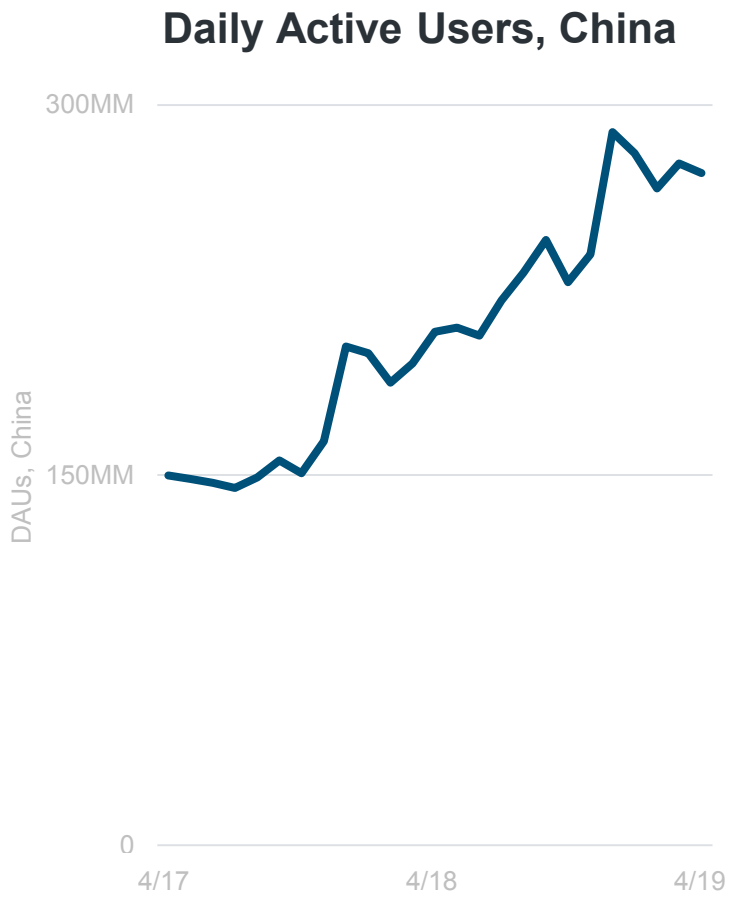


Source: Meituan IPO prospectus

Alipay = From Payments to Super App…
200K+ Mini-Programs…1B+ Users…70% Use 3+ Financial Services*

Alipay



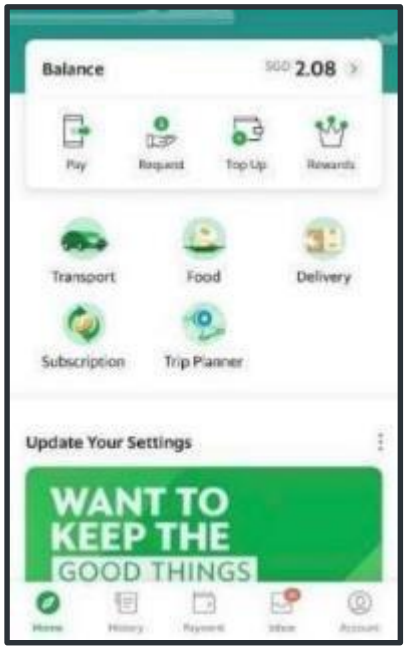


Source: China DAU per QuestMobile (4/19), * Categories of financial services provided by Ant Financial include payment, wealth management, financing, insurance & credit system.

Global Rollouts =
Grab / Rappi / Uber Incorporate 'Super App' Features

Grab

Transport / Food / Payment / Logistics…

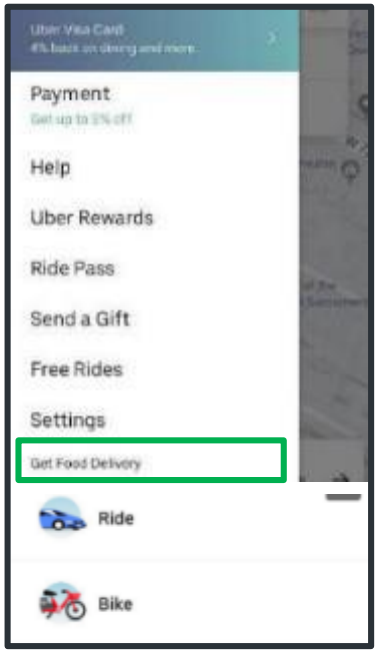


Rappi

Food / Grocery / More…

Uber

Transport + Food + e-Bikes + Freight…



China Retail =

Online / Offline / Omni-Channel

Live-Streaming + E-Commerce = Can Increase… Transparency + Interactivity + Influencer Engagement

Taobao Live

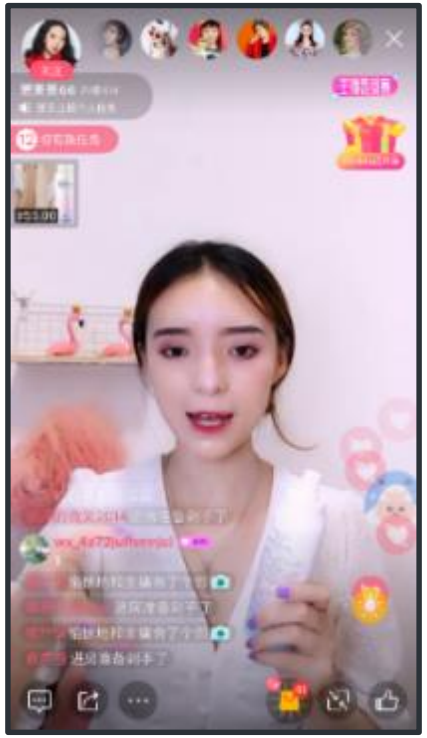
$14B+ Live-Streaming GMV in 2018

Kuaishou

Live-Streaming Shopping

MOGU

Live-Streaming = 24% of GMV
4x Repeat Purchase Rate



Source: Alibaba, MOGU.
Note: MOGU GMV for the year ended March 31, 2019

Various Online Grocery Retail Formats = Competing For Consumer Wallet Share

Freshippo (Hema) / 7Fresh …	Miss Fresh / Dingdong Maicai / Pupu Shengxian…	Xingsheng Youxuan / Songshu Pinpin / Dailuobo…	Meituan / Ele.me / Taoxianda / JD Daojia…
• Owned & operated stores • Pick-up or delivery • Freshippo – 135+ stores	• Order in app • 30min delivery to home • Owned & operated inventory + fulfillment	• Order in app or groupbuy in WeChat mini-programs • Next day delivery to neighborhood sorting station + self pick up • Franchised community partner owner	• Order in app • 30min delivery to home • Fulfilled by partner stores, delivered by Meituan / Ele.me / Taoxianda /JD

Alibaba ‘New Retail’ Strategy = Digitizing Various Offline Retail Verticals

Freshippo / Hema
135+ Grocery Stores

Sun Art
470 Supermarkets Digitized

Suning JV
Consumer Electronics

Intime
Fashion & Department Stores

Easy Home
Home Improvement

Eleme & Koubei
On-demand Delivery for 2,100+ Starbucks Stores

Tmall Store
Rural Omni-Channel Stores

LingShouTong
1MM+ Mom-&-Pop Stores Digitized

Source: Company Materials

WeChat Groups & Mini-Programs = Improving Customer Relationship Management (CRM) for Retail

Belle / TopSports WeChat Groups & Mini-Programs

Scan QR Code in Store to Join WeChat Group → **Receive Latest Product Info via Sales Associates** → **Receive Latest Brand Info via Public Accounts** → **Purchase + Checkout via WeChat Mini Programs**

Source: Belle.

Yonghui Superstores = Creating Digital Grocery Experience @ Offline Stores

Yonghui Superstores

Home Delivery = ~15% of Sales in Pilot Stores

50% of Home Delivery Ordered via WeChat Mini-Program

Red Packets Shared in Group Chats to Drive Engagement

Source: Tencent Global Digital Ecosystem Summit (05/19)

China Education =

Spreading from Offline to Online

China K-12 Education = Online Augmenting Offline Learning Experience

Xueersi Online (TAL)

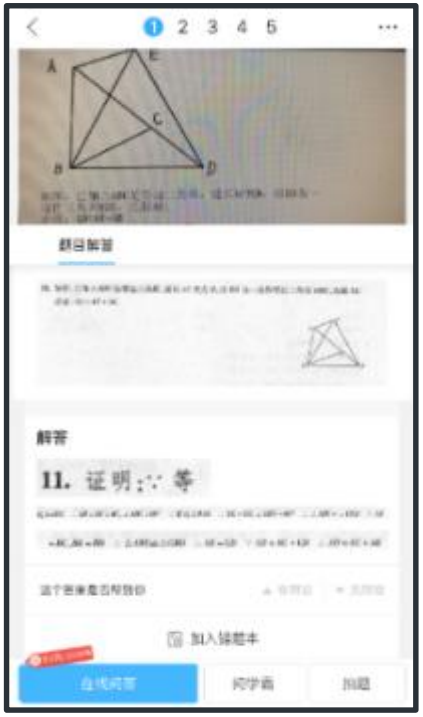
K-12 Live-streaming Group Courses

Xueersi Shuangshi (TAL)

Online Lecturer + Offline Tutor / Teaching Assistant

Zuoyebang

K-12 Homework Help (take photos to get answer help) + Live-streaming Group Courses



China Kids (Ages 3-10) Education = Increasing Online Platform Usage Outside of School Hours

VIPKid

English 1-on-1 & Small Group Live-Streaming Online Courses

Hetao Coding

Coding Recorded Courses

Code Mao

Coding Live-streaming Courses

China Government Services =

Online Access Rising

WeChat / AliPay = Digitizing Government Services… 500MM+ Consumers

YueShengShi WeChat Mini Program

10MM+ Verified Users in Guangdong Province
500+ Government Services

AliPay Public Services

~500MM Cumulative Consumers
Served Across 300+ Cities

Service	Covered Cities	Wait Time Before	Wait Time After
Utility Bill Pay	300+	~1 Hour	~1 Minute
Social Security Application	240+	~1 Hour	~1 Minute
Traffic Violation	200+	~30 Min	~1 Minute
Hospital Appointment	250+	--	50% Reduction

Source: Tencent as of 4/19. Ant Financial.

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