
INTERNET TRENDS 2018

Mary Meeker

May 30 @ Code 2018



KLEINER PERKINS

Thanks

Kleiner Perkins Partners

Ansel Parikh & Michael Brogan helped steer ideas and did a lot of heavy lifting. Other contributors include: Daegwon Chae, Mood Rowghani, Eric Feng (E-Commerce) & Noah Knauf (Healthcare). In addition, Bing Gordon, Ted Schlein, Ilya Fushman, Mamoon Hamid, Juliet deBaubigny, John Doerr, Bucky Moore, Josh Coyne, Lucas Swisher, Everett Randle & Amanda Duckworth 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 3.6B, the number of Internet users has surpassed half the world's population. When markets reach mainstream, new growth gets harder to find - evinced by 0% new smartphone unit shipment growth in 2017.

Internet usage growth is solid while many believe it's higher than it should be. Reality is the dynamics of global innovation & competition are driving product improvements, which, in turn, are driving usage & monetization. Many usability improvements are based on data - collected during the taps / clicks / movements of mobile device users. This creates a privacy paradox...

Internet Companies continue to make low-priced services better, in part, from user data. Internet Users continue to increase time spent on Internet services based on perceived value. Regulators want to ensure user data is not used 'improperly.'

Scrutiny is rising on all sides - users / businesses / regulators. Technology-driven trends are changing so rapidly that it's rare when one side fully understands the other...setting the stage for reactions that can have unintended consequences. And, not all countries & actors look at the issues through the same lens.

We focus on trends around data + personalization; high relative levels of tech company R&D + Capex Spending; E-Commerce innovation + revenue acceleration; ways in which the Internet is helping consumers contain expenses + drive income (via on-demand work) + find learning opportunities. We review the consumerization of enterprise software and, lastly, we focus on China's rising intensity & leadership in Internet-related markets.

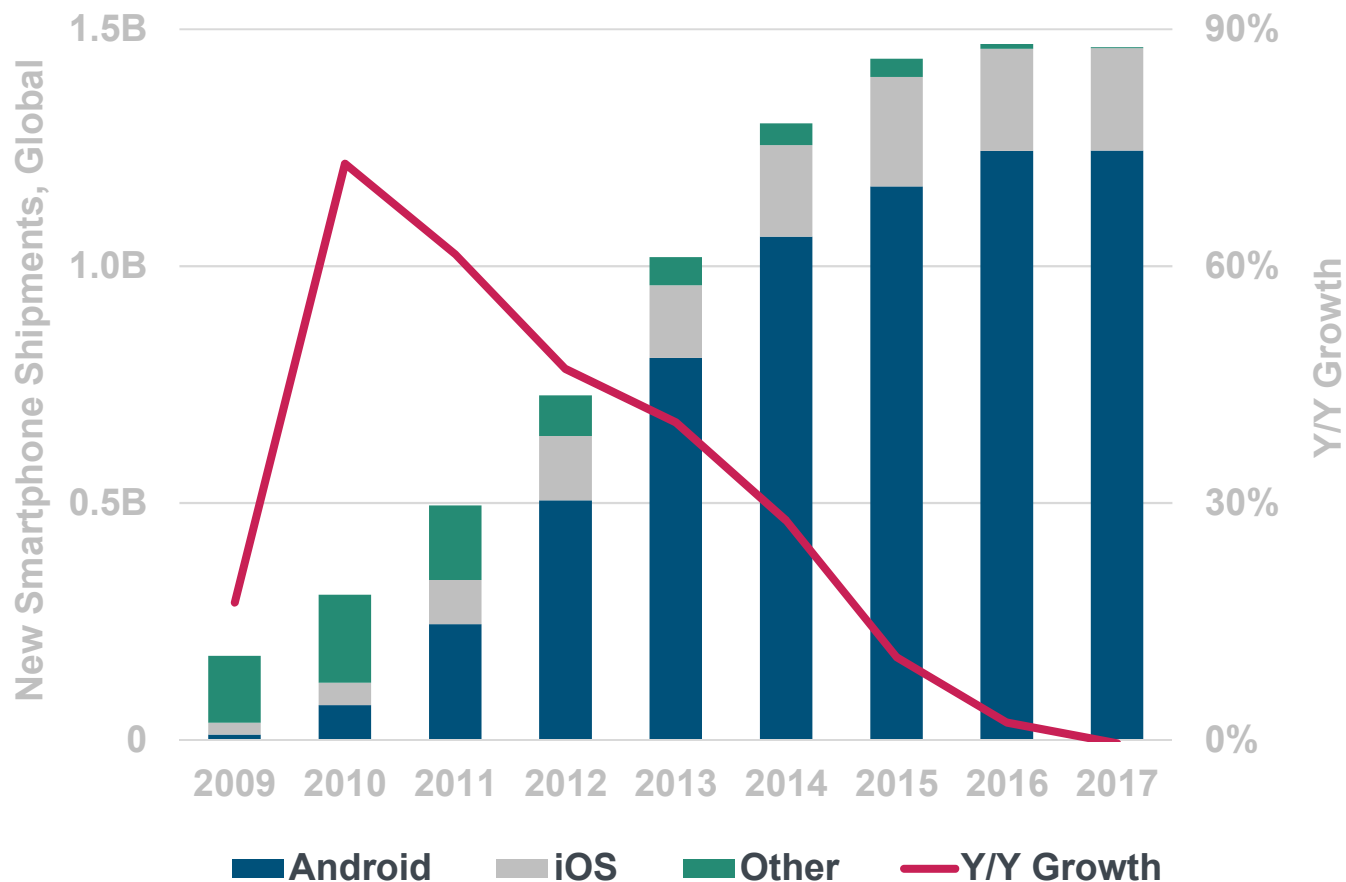
Internet Trends 2018

1) Users	5-9
2) Usage	10-12
3) Innovation + Competition + Scrutiny	13-43
4) E-Commerce	44-94
5) Advertising	95-99
6) Consumer Spending	100-140
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10) China (Provided by Hillhouse Capital)	237-261
11) Enterprise Software	262-277
12) USA Inc. + Immigration	278-291

**INTERNET DEVICES + USERS =
GROWTH CONTINUES TO SLOW**

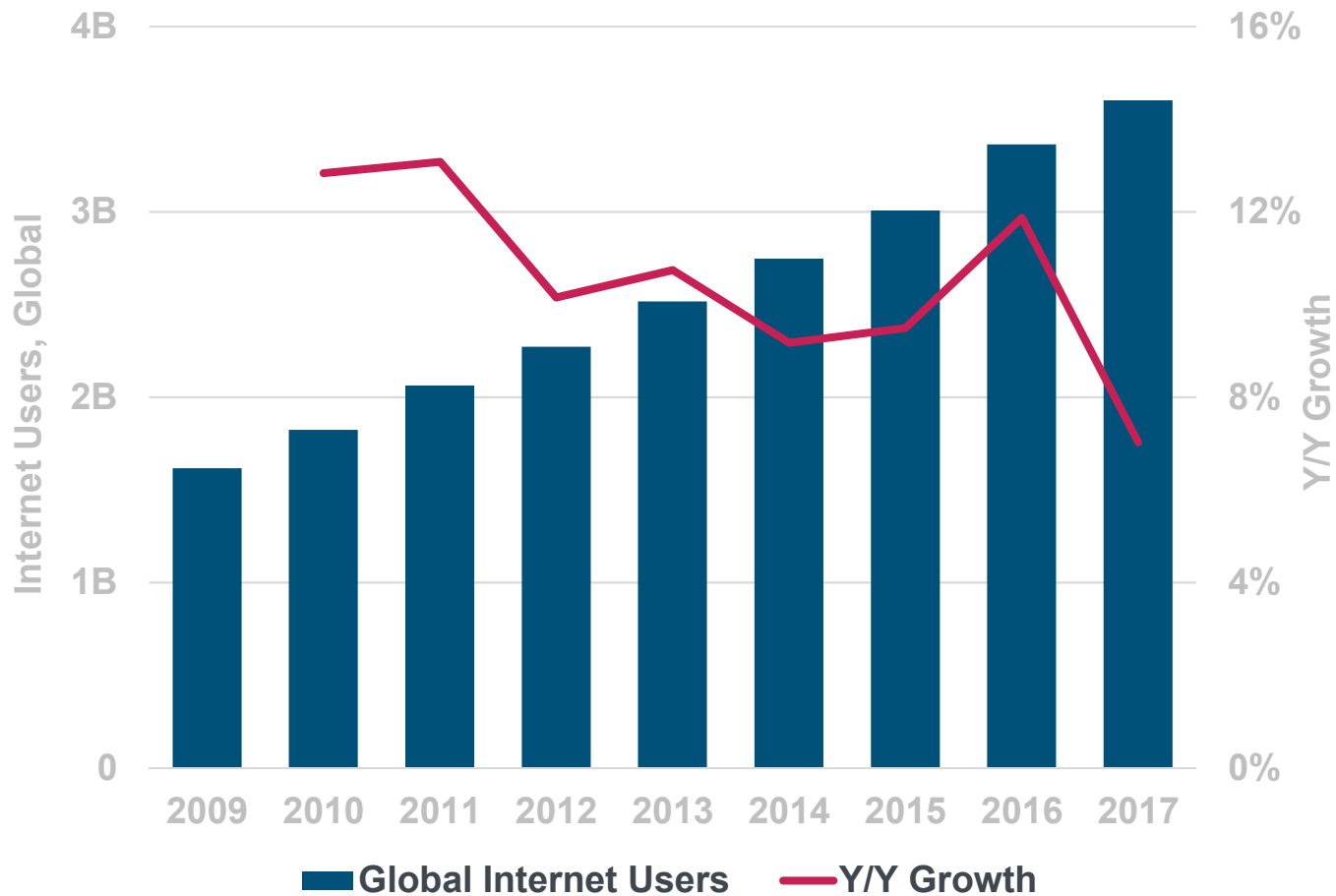
Global New Smartphone Unit Shipments = No Growth @ 0% vs. +2% Y/Y

New Smartphone Unit Shipments vs. Y/Y Growth



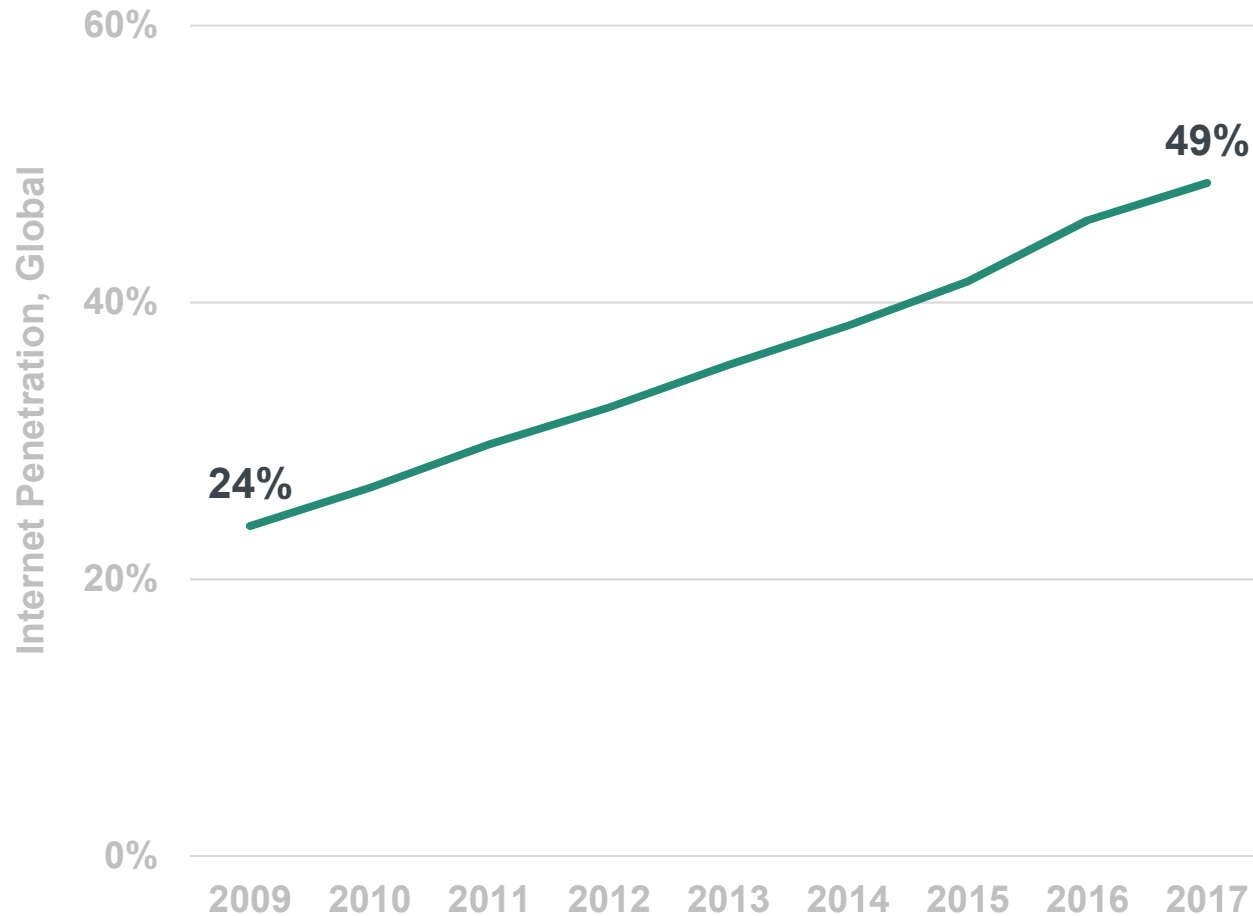
Global Internet Users = Slowing Growth @ +7% vs. +12% Y/Y

Internet Users vs. Y/Y Growth



Global Internet Users = 3.6B @ >50% of Population (2018)

Internet Penetration





Internet Users...

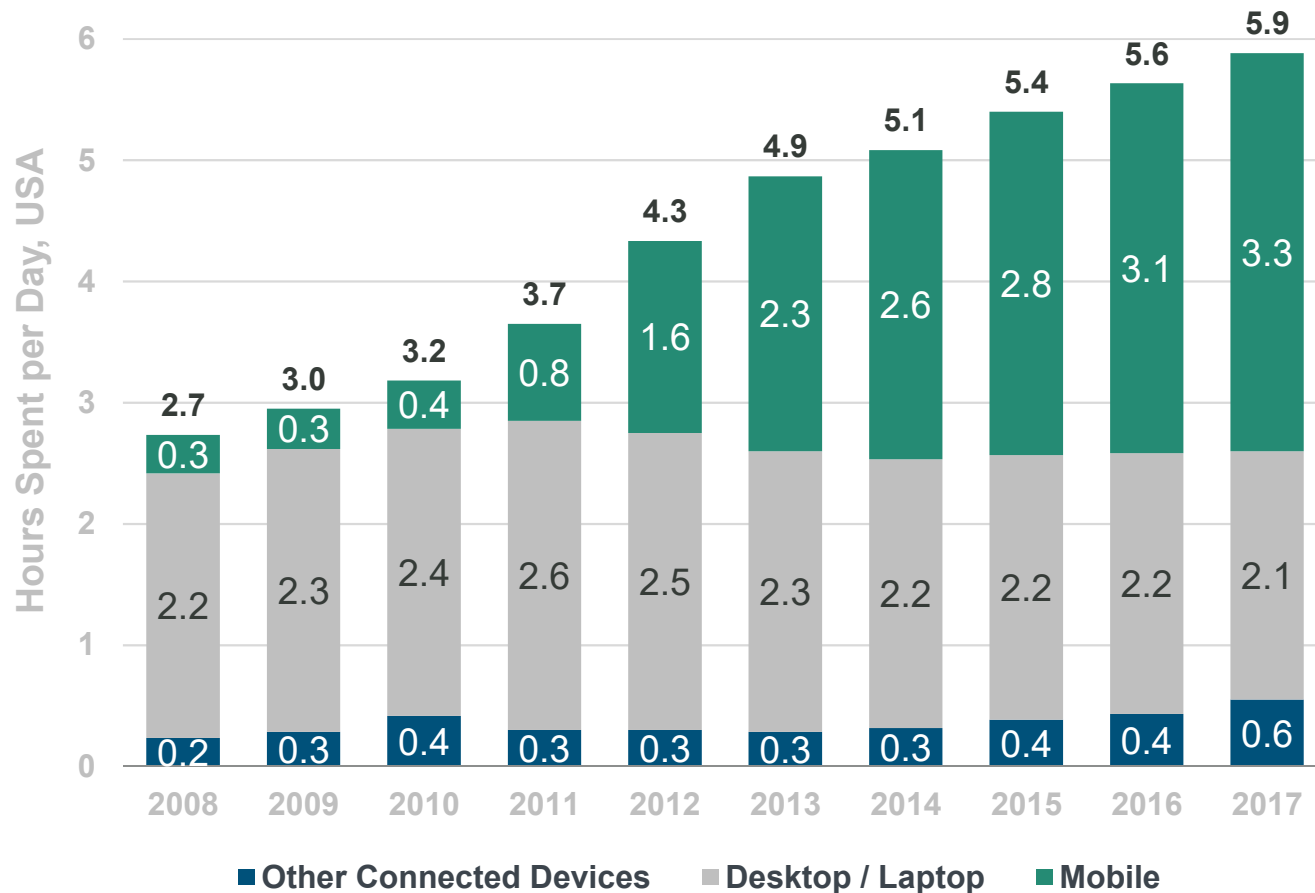
*Growth Harder to Find After
Hitting 50% Market Penetration*

INTERNET USAGE =

GROWTH REMAINS SOLID

Digital Media Usage @ +4% Growth... 5.9 Hours per Day (Not Deduped)

Daily Hours Spent with Digital Media per Adult User





Internet Usage...

*How Much = Too Much?
Depends How Time is Spent*

INNOVATION + COMPETITION =

**DRIVING PRODUCT IMPROVEMENTS /
USEFULNESS / USAGE +**

SCRUTINY

Innovation + Competition = Driving Product Improvements / Usefulness / Usage

Devices

Access

Simplicity

Payments

Local

Messaging

Video

Voice

Personalization

Devices = Better / Faster / Cheaper

Apple iPhone

2016



'Portrait' Photos
Water Resistant

2017



Face Tracking
Full Device Display
Wireless Charging

Google Android

2016



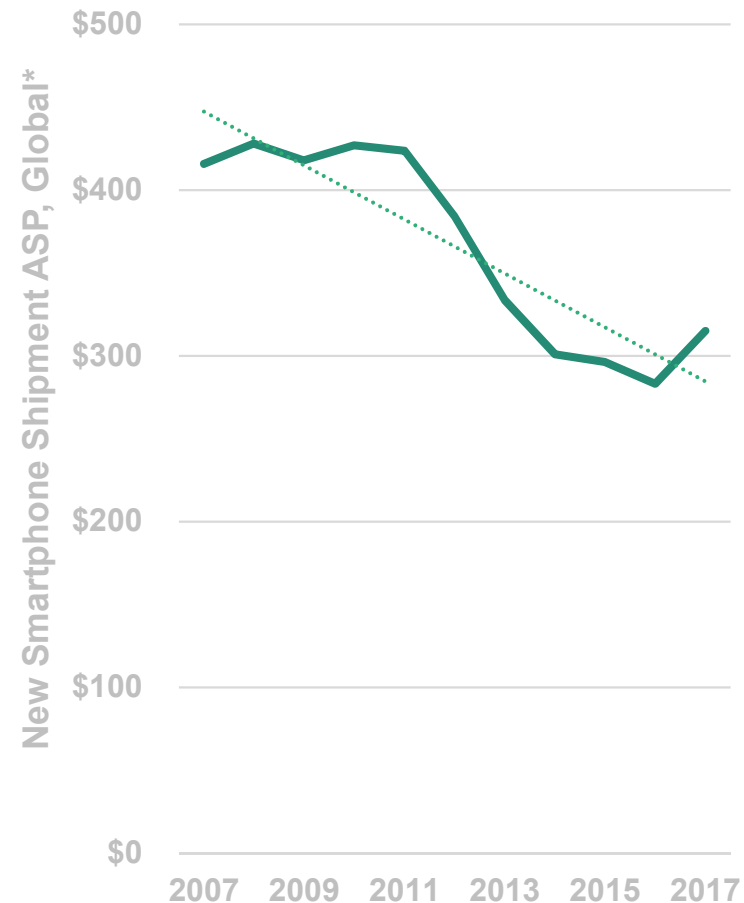
Google Assistant
'AI-Assisted'
Photo Editing

2017



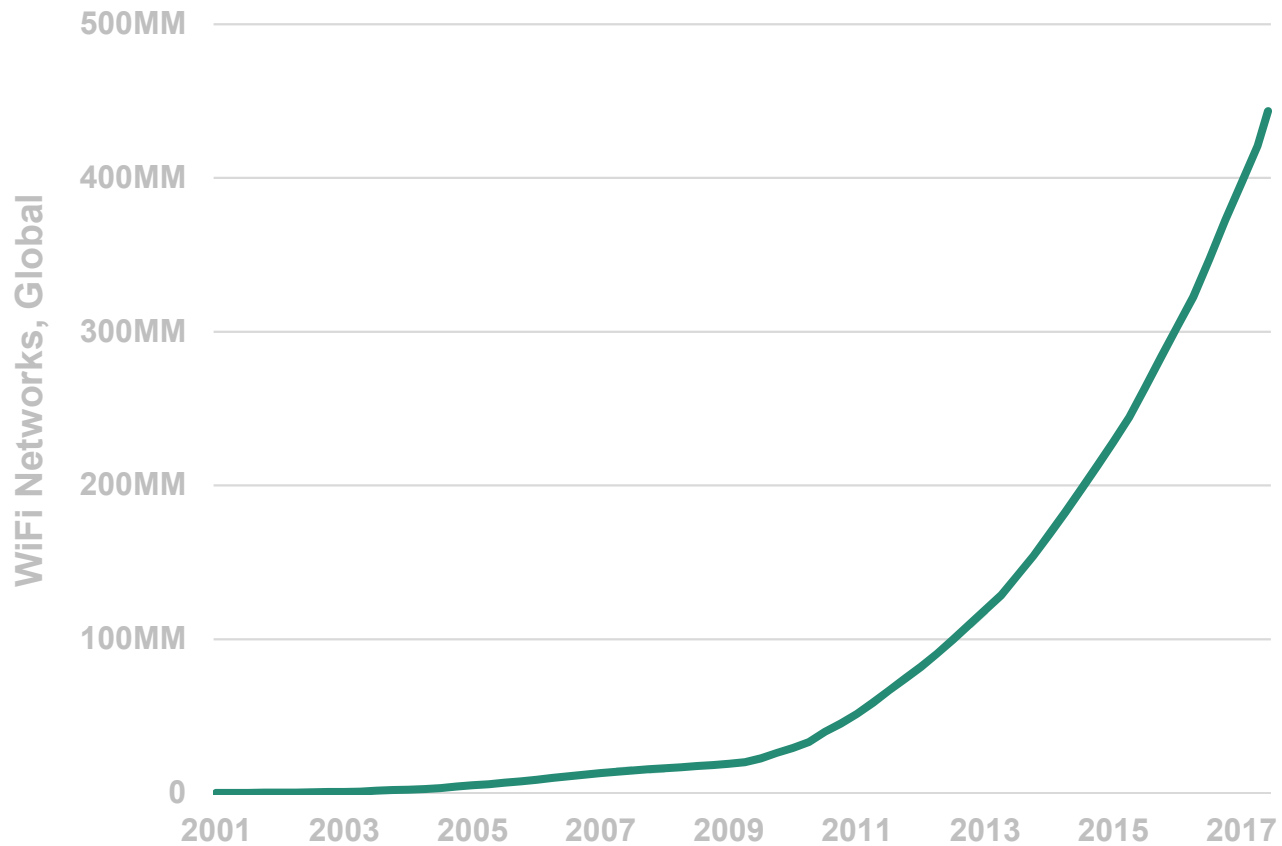
'Lens' Smart
Image Recognition
Always-On Display

New Smartphone Shipments – ASP



Access = WiFi Adoption Rising

WiFi Networks



Simplicity = Easy-to-Use Products Becoming Pervasive

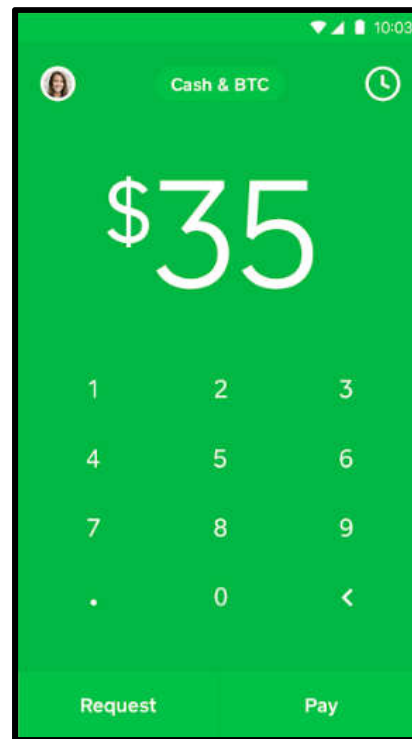
Messaging

Telegram



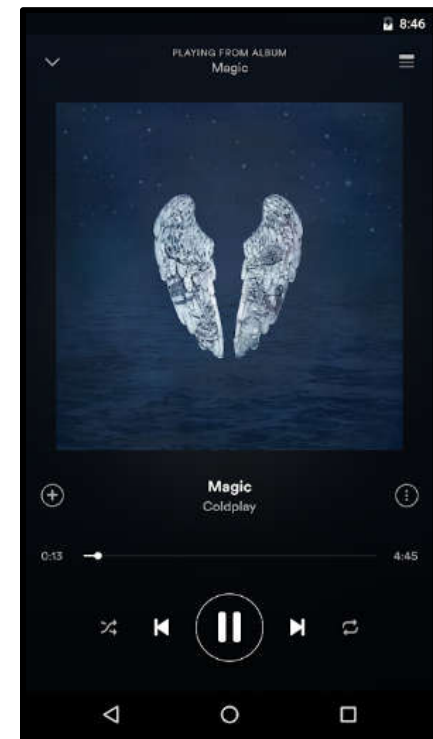
Commerce

Square Cash



Media

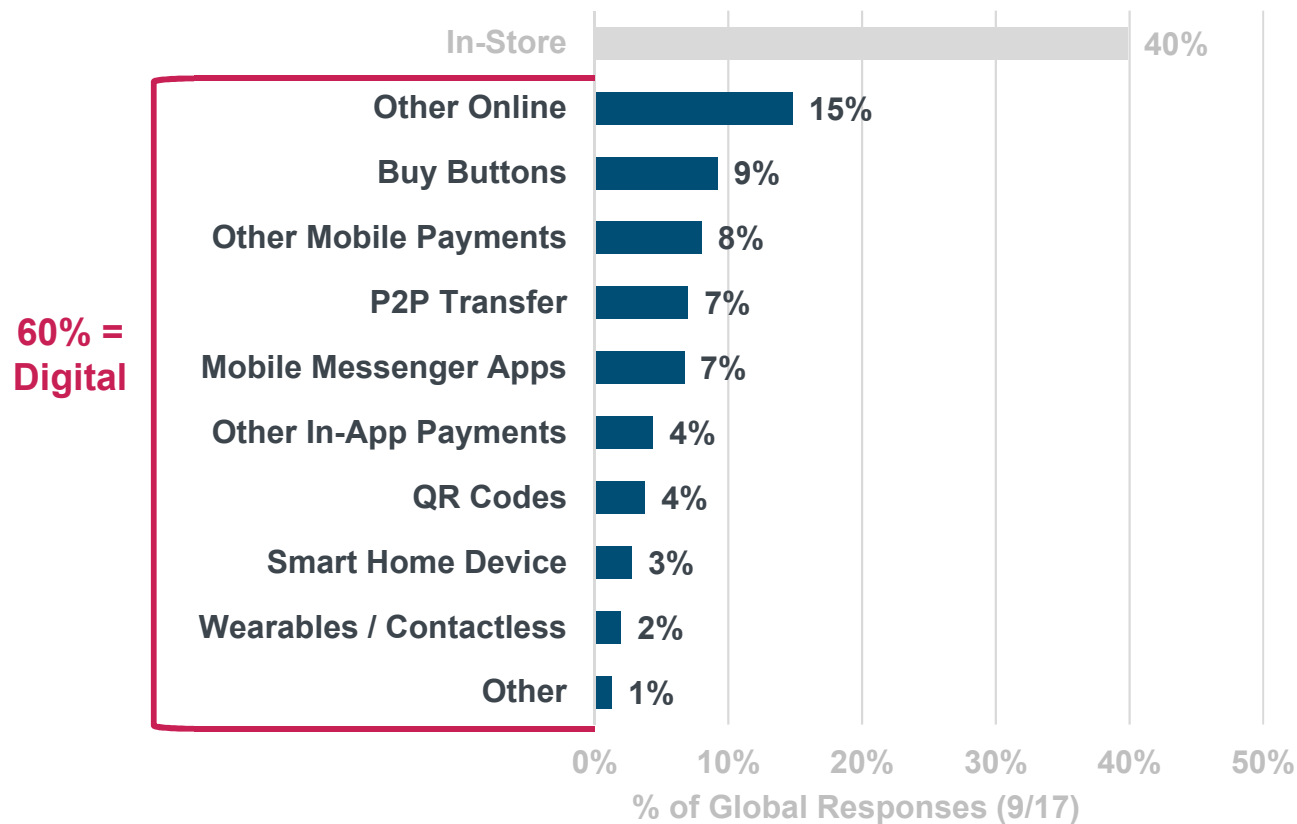
Spotify



Payments = Digital Reach Expanding...

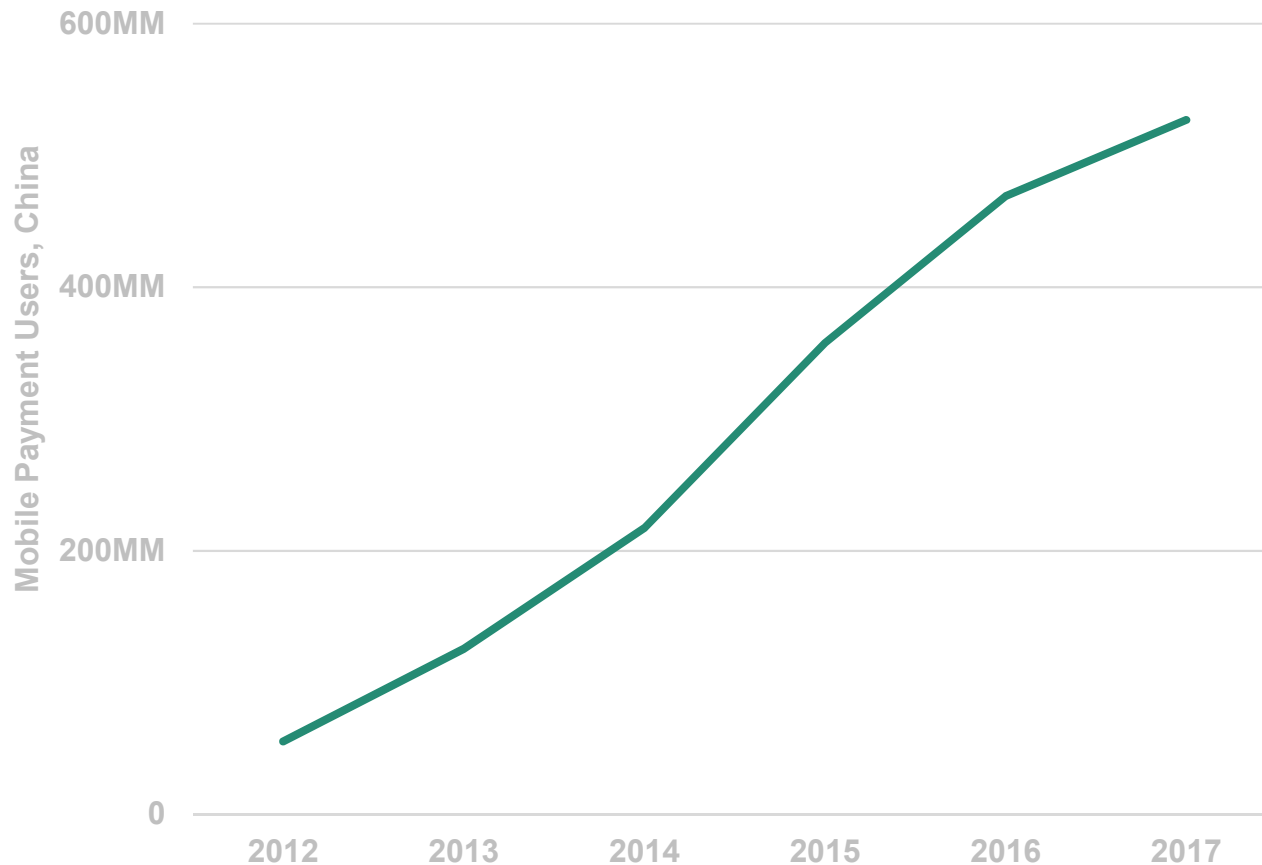
Transactions by Payment Channel

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



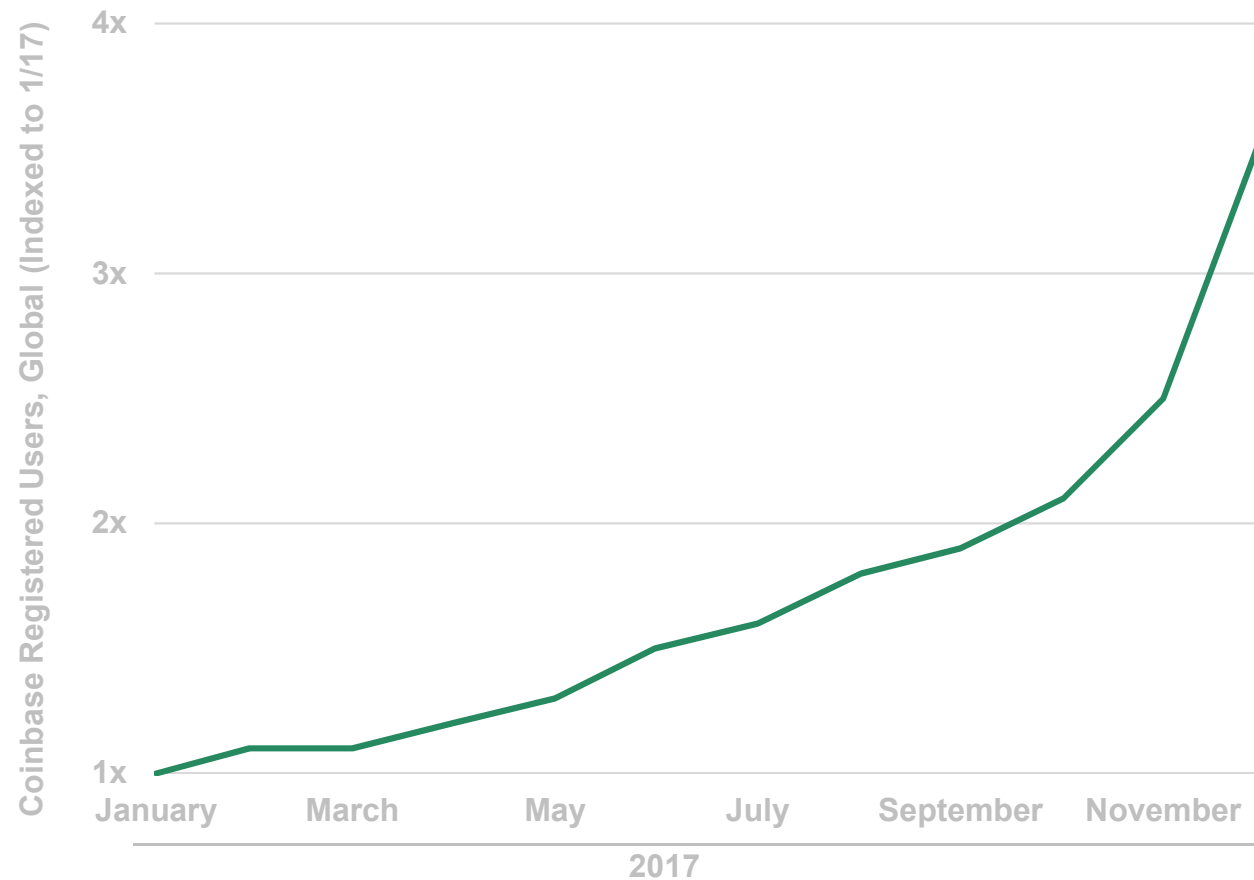
...Payments =
Friction Declining...

China Mobile Payment Users



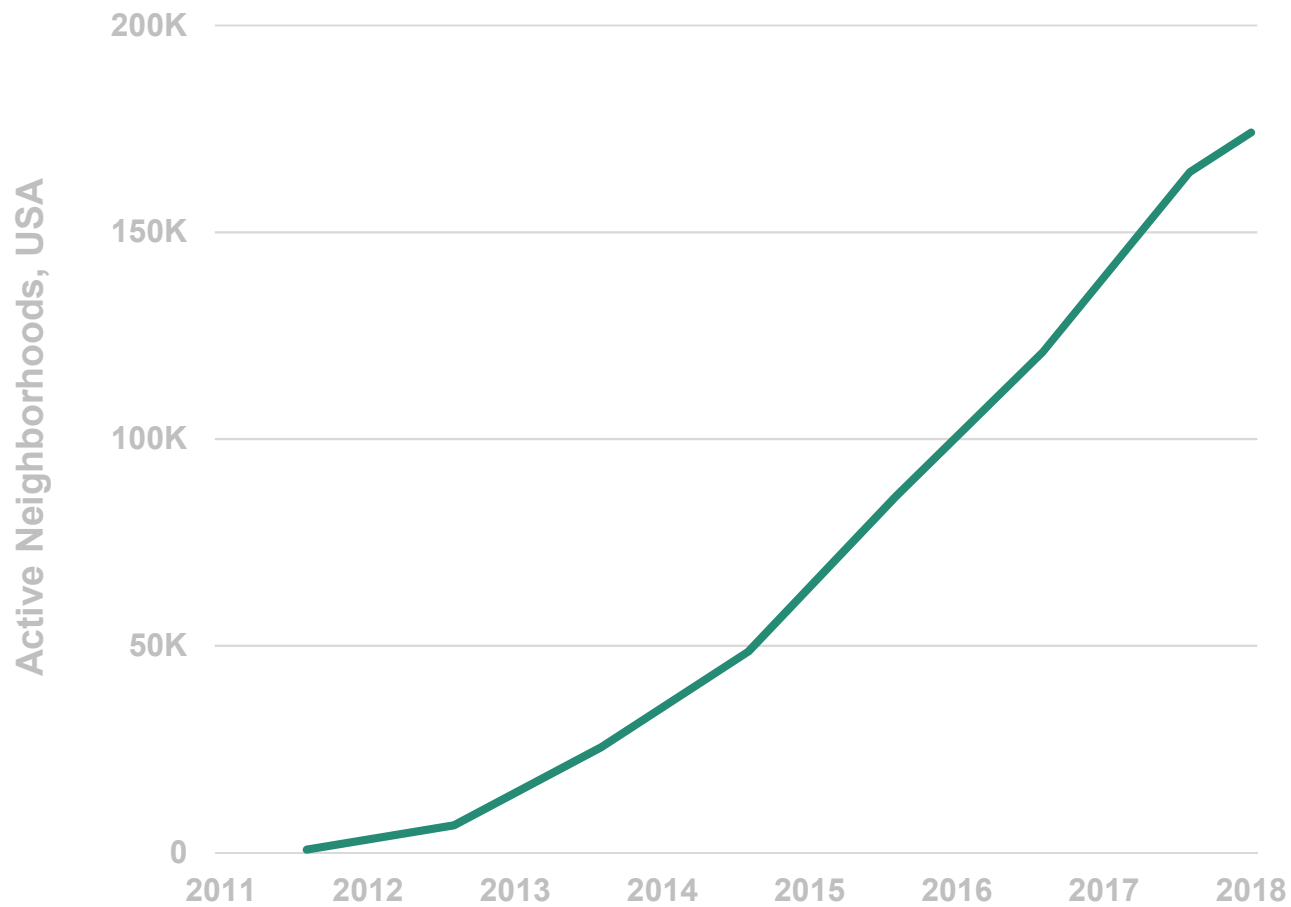
...Payments = Digital Currencies Emerging

Coinbase Users



Local = Offline Connections Driven by Online Network Effects

Nextdoor Active Neighborhoods



Messaging = Extensibility Expanding

Messaging Tencent (2000 → 2018)

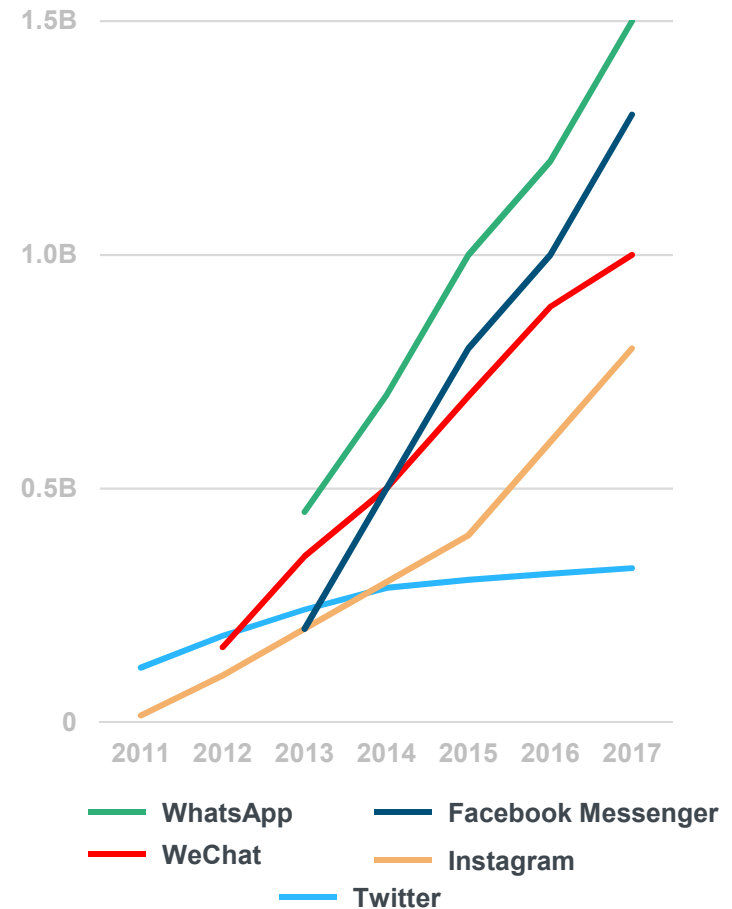
QQ



WeChat

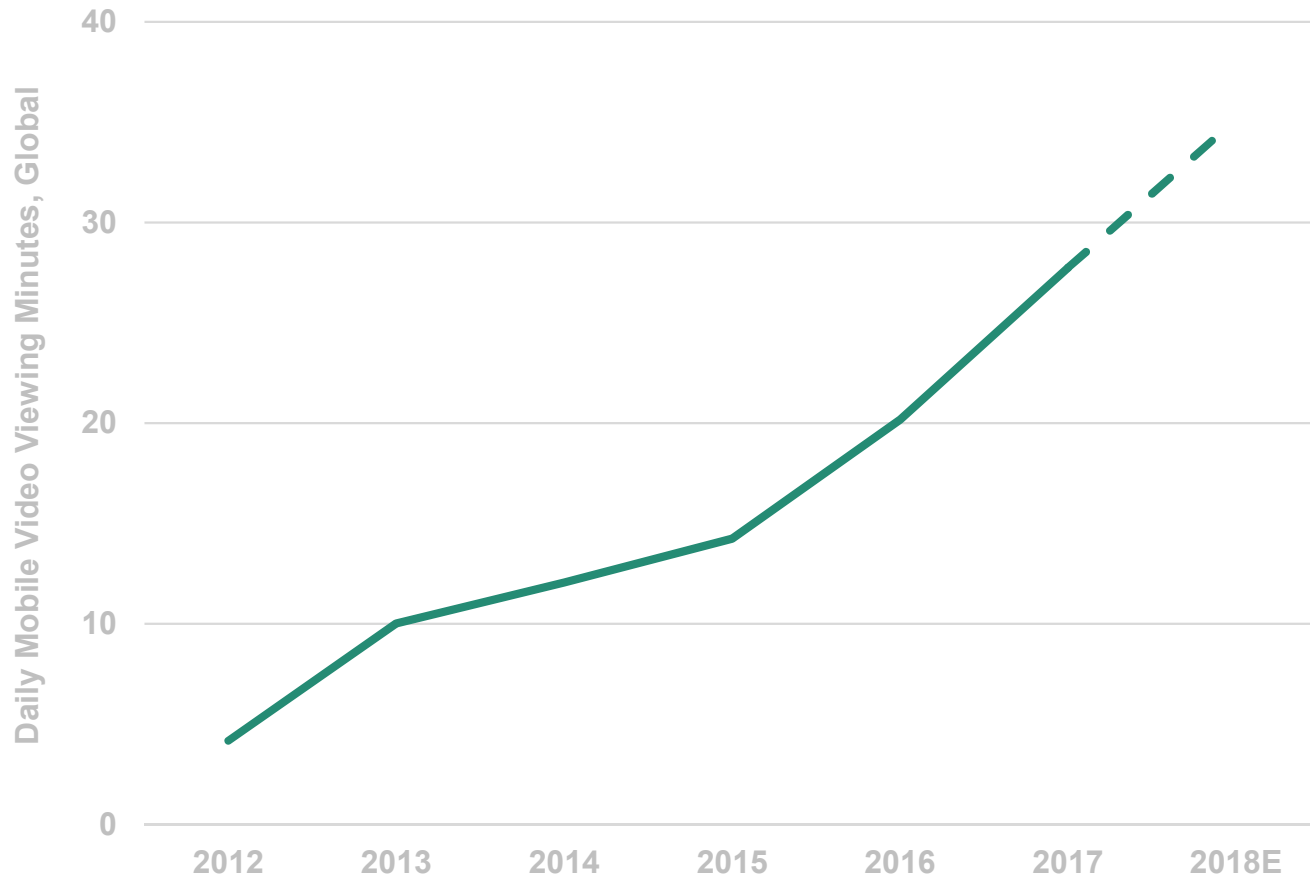


Messenger MAUs



Video = Mobile Adoption Climbing...

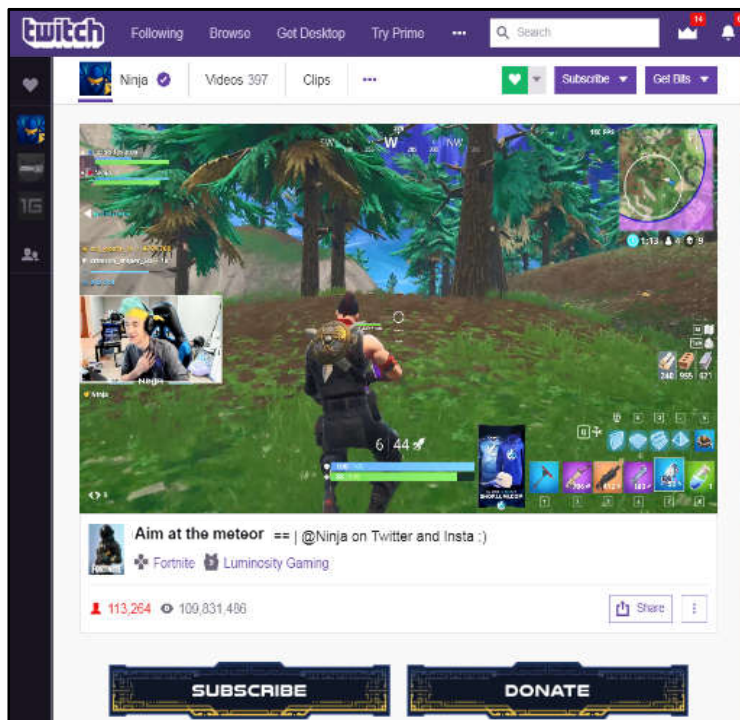
Mobile Video Usage



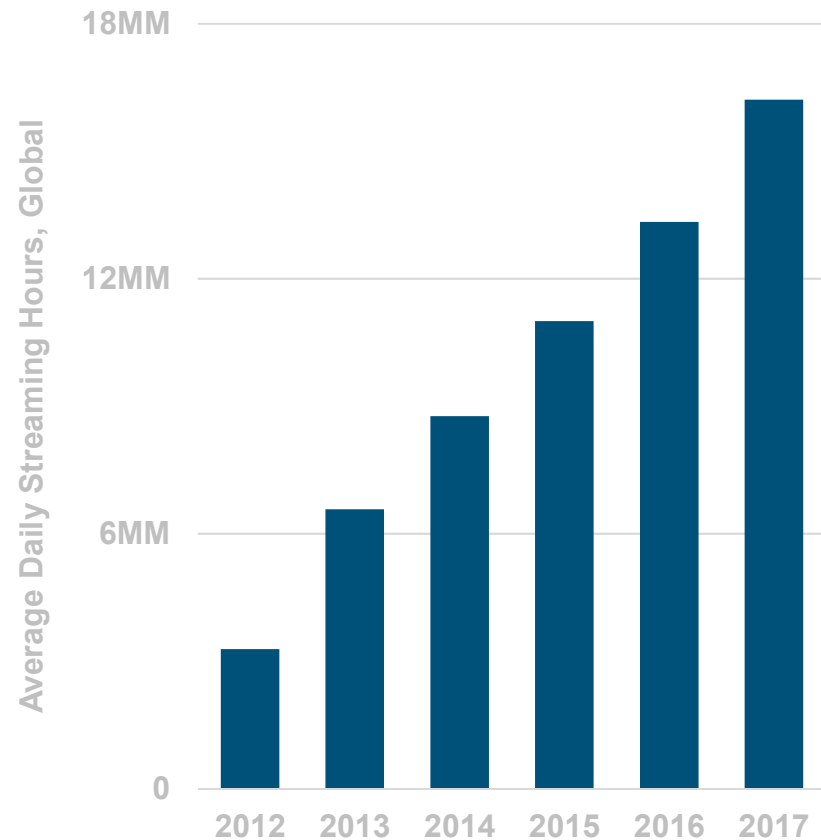
...Video = New Content Types Emerging

Fortnite Battle Royale

Most Watched Game on Twitch

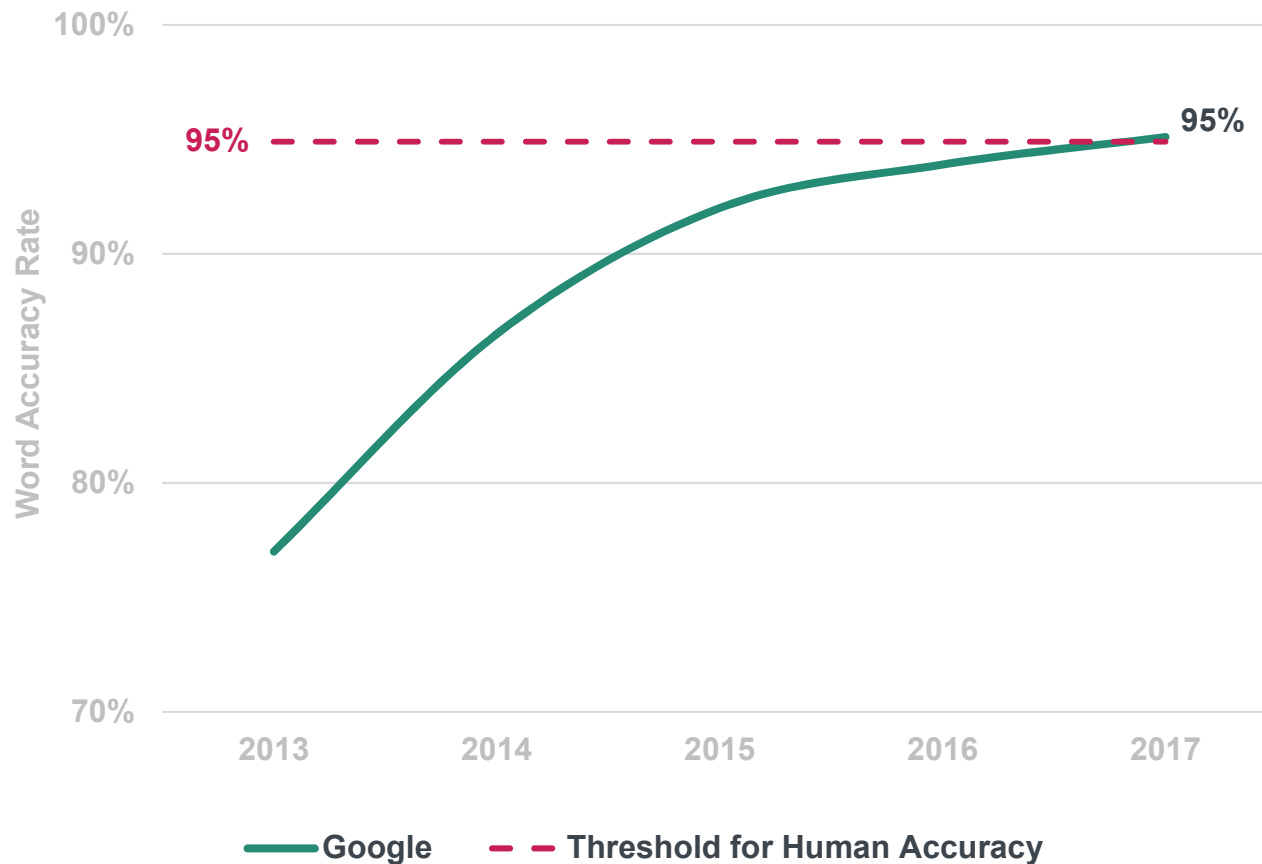


Twitch Streaming Hours



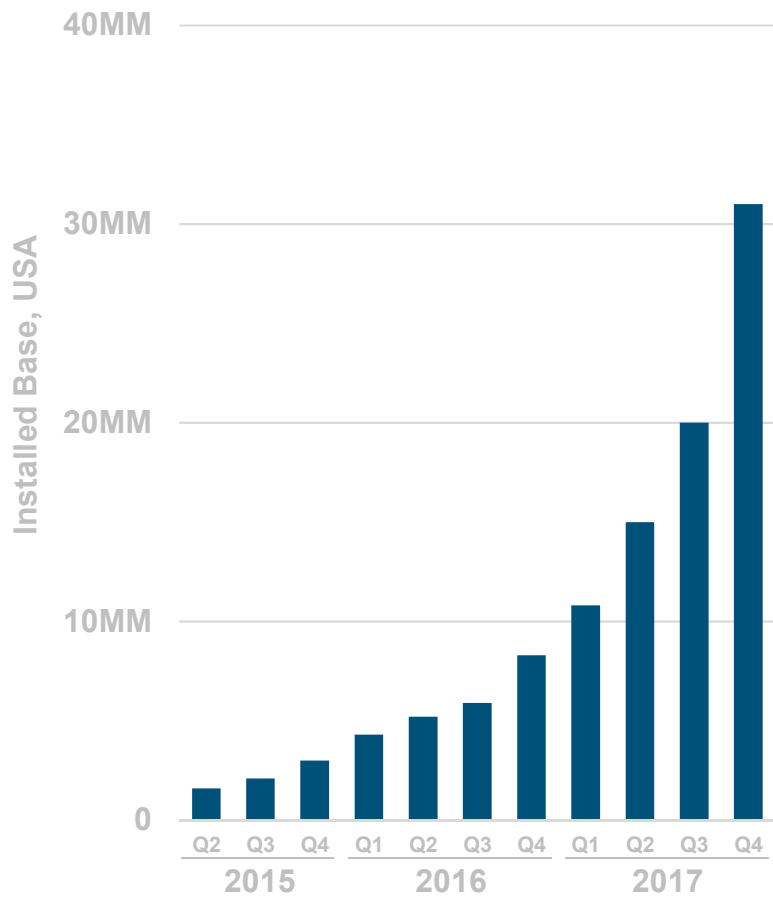
Voice = Technology Lift Off...

Google Machine Learning Word Accuracy

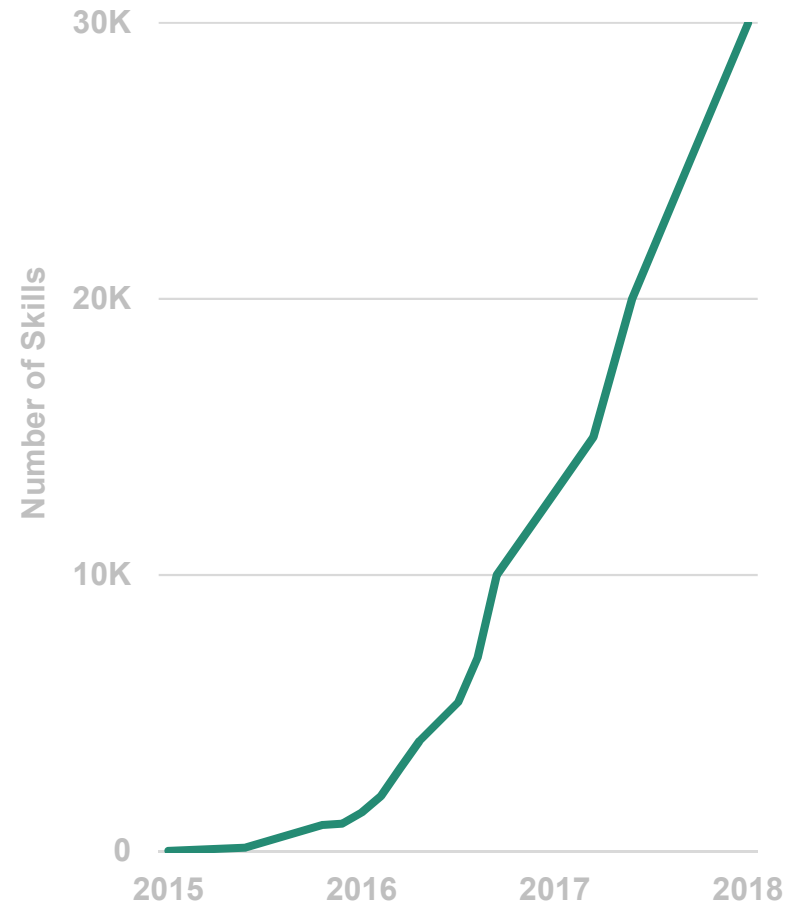


...Voice = Product Lift Off

Amazon Echo Installed Base



Amazon Echo Skills



Innovation + Competition = Driving Product Improvements / Usefulness / Usage

Devices

Access

Simplicity

Payments

Local

Messaging

Video

Voice

Personalization



Personalization =

*Data Improves
Engagement + Experiences...*

Drives Growth + Scrutiny

Personal + Collective Data = Provide Better Experiences for Consumers...

2.2B
Facebooks

200MM
Pinterests

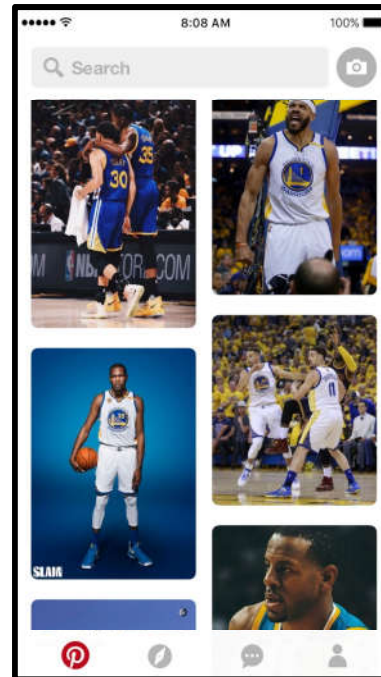
170MM
Spotifys

125MM
Netflixes

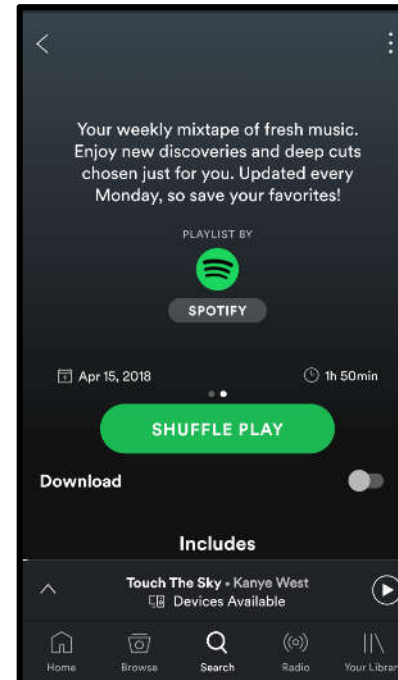
Newsfeed



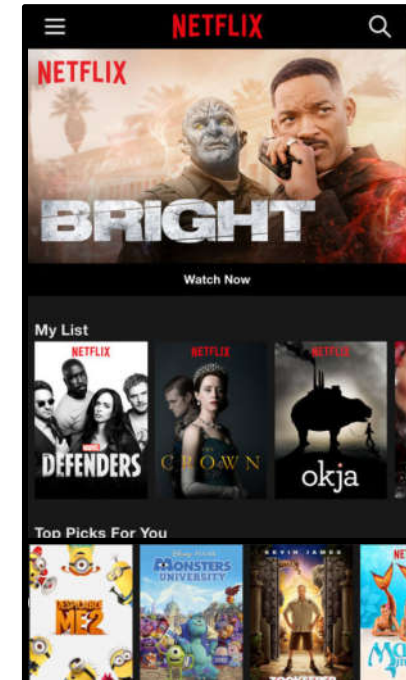
Discovery



Music



Video



...Personal + *Collective* Data = Provide Better Experiences for Consumers

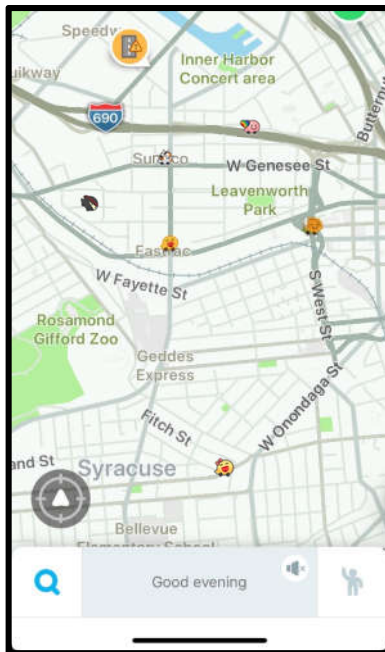
100MM+
Waze
Drivers

20%
UberPOOL Share of All
Rides, Where Available*

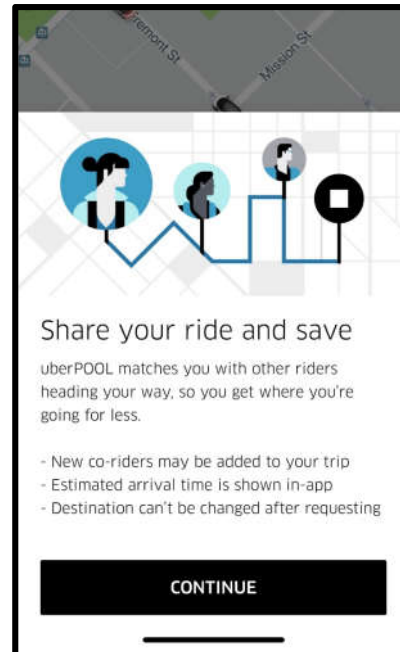
100MM+
Snap Map
MAUs

17MM**
Nextdoor
Recommendations

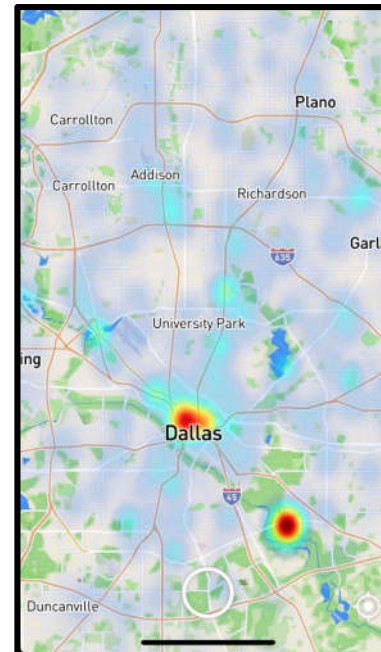
*Real-Time
Navigation*



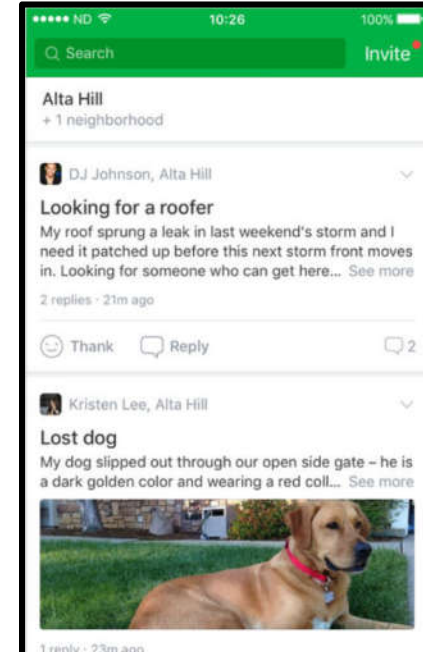
*Real-Time
Transportation*



*Real-Time
Social Stories*



*Often Real-Time
Local News*



Privacy Paradox

Internet Companies

Making Low-Priced Services Better, in Part, from User Data

Internet Users

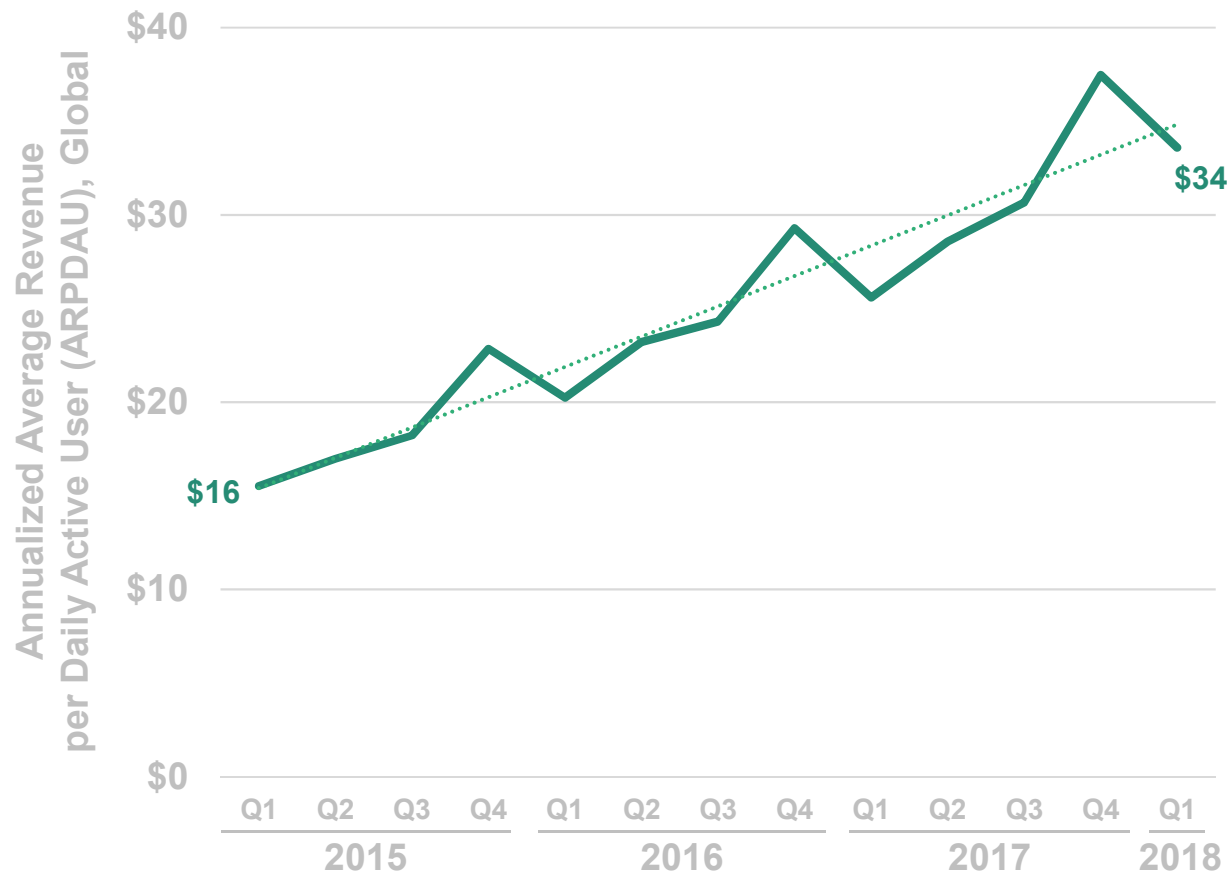
Increasing Time on Internet Services Based on Perceived Value

Regulators

Want to Ensure User Data is Not Used 'Improperly'

Rising User Engagement = Drives Monetization + Investment in Product Improvements...

Facebook Annualized Revenue per Daily User



...Rising Monetization + Data Collection = Drives Regulatory Scrutiny

Data / Privacy

The European Data Protection Regulation will be applicable as of May 25th, 2018 in all member states to harmonize data privacy laws across Europe.

- European Union, 5/18

Facebook's collection & use of data from third-party sources is abusive.

- German Federal Cartel Office, 12/17

Competition

Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to its own comparison shopping service.

- European Commission, 6/17

Commission approves acquisition of LinkedIn by Microsoft, subject to conditions.

- European Commission, 12/16

Safety / Content

The Germany Network Enforcement Act will require for-profit social networks with >2MM registered users in Germany to remove unlawful content within 24 hours of receiving a complaint.

- German Federal Ministry of Justice & Consumer Protection, 10/17

Taxes

Commission finds Luxembourg gave illegal tax benefits to Amazon worth around €250 million.

- European Commission, 10/17

Internet Companies = Key to Understand Unintended Consequences of Products...

*We're an idealistic & optimistic company.
For the first decade, we really focused on all the good that
connecting people brings.
But it's clear now that we [Facebook] didn't do enough.*

***We didn't focus enough on preventing abuse & thinking
through how people could
use these tools to do harm as well.***

- Mark Zuckerberg, Facebook CEO, 4/18

...Regulators = Key to Understand Unintended Consequences of Regulation

This month, the European Union will embark on an expansive effort to give people more control over their data online...

As it comes into force, Europe should be mindful of unintended consequences & open to change when things go wrong.

- Bloomberg Opinion Editorial, 5/8/18



*It's Crucial To Manage For
Unintended Consequences...*

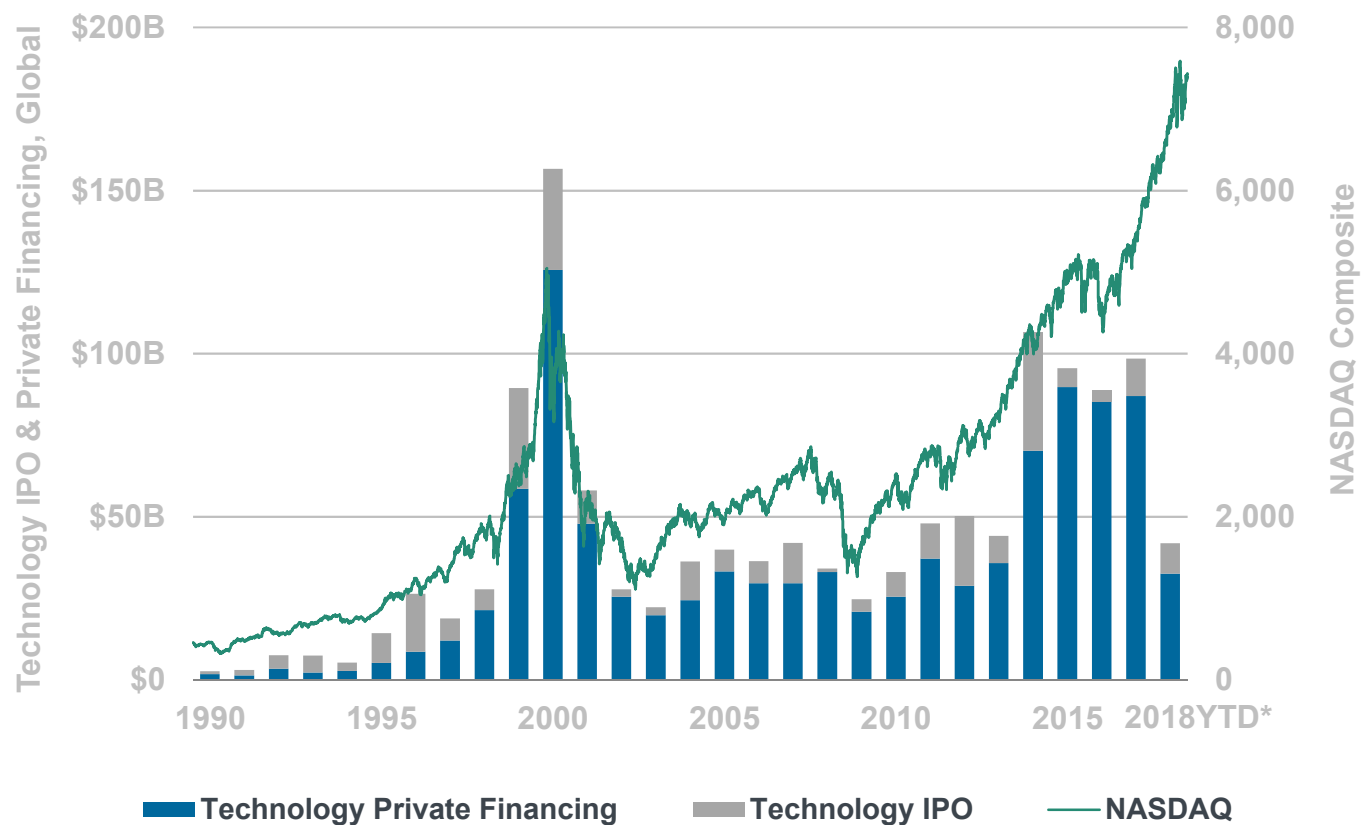
*But It's Irresponsible to Stop
Innovation + Progress*



***USA Internet Leaders =
Aggressive + Forward-Thinking
Investors for Years***

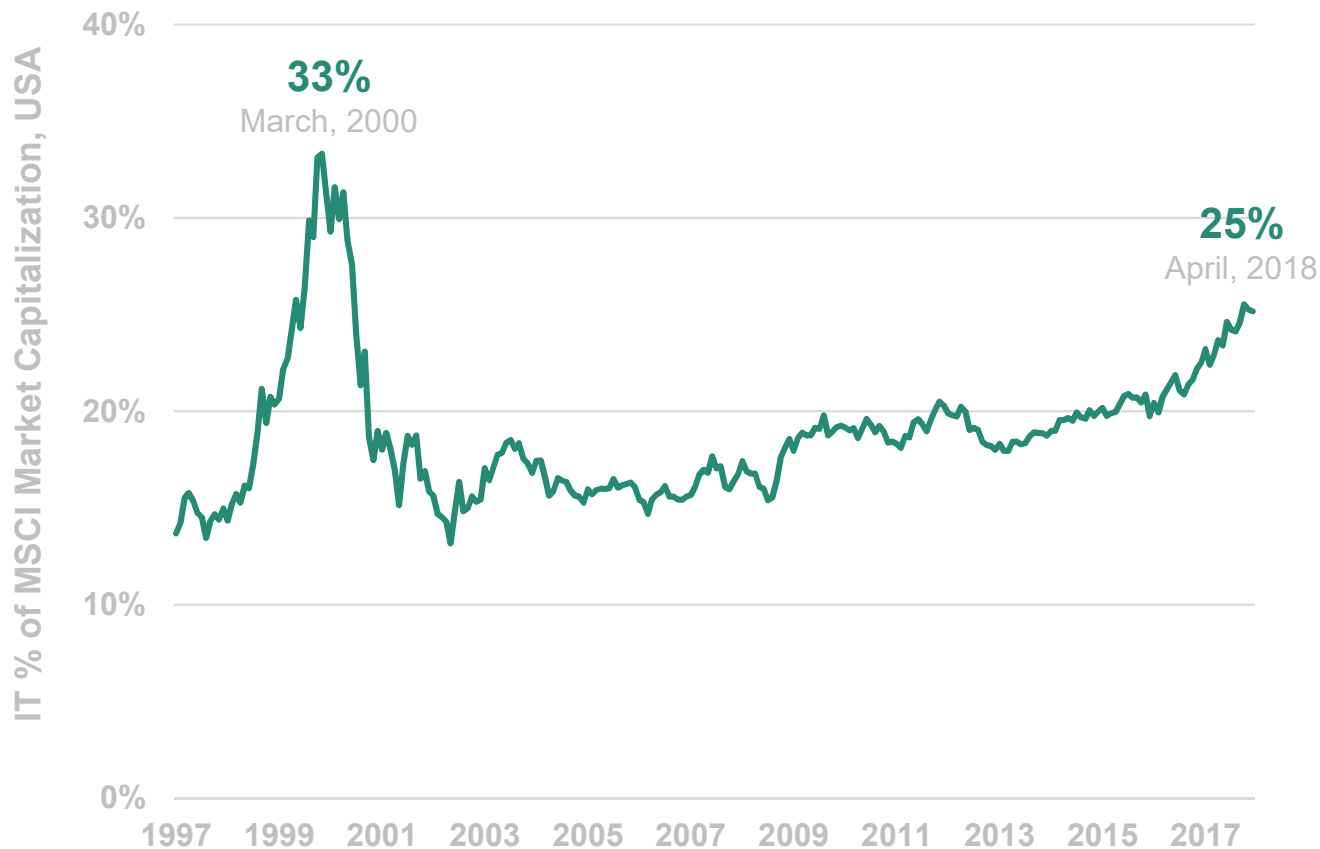
Investment (Public + Private) Into Technology Companies = High for Two Decades

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



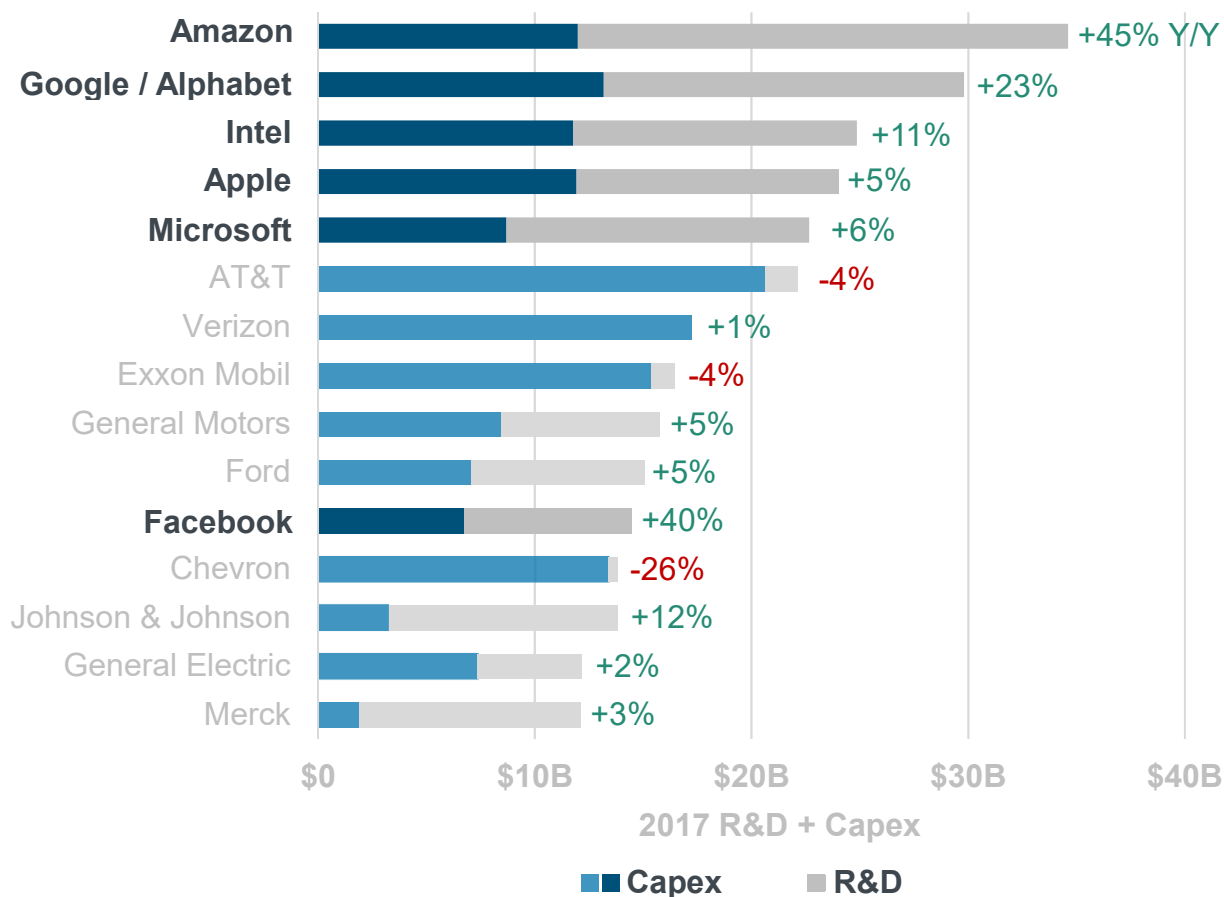
Technology Companies = 25% & Rising % of Market Cap, USA

USA Information Technology % of MSCI Market Capitalization



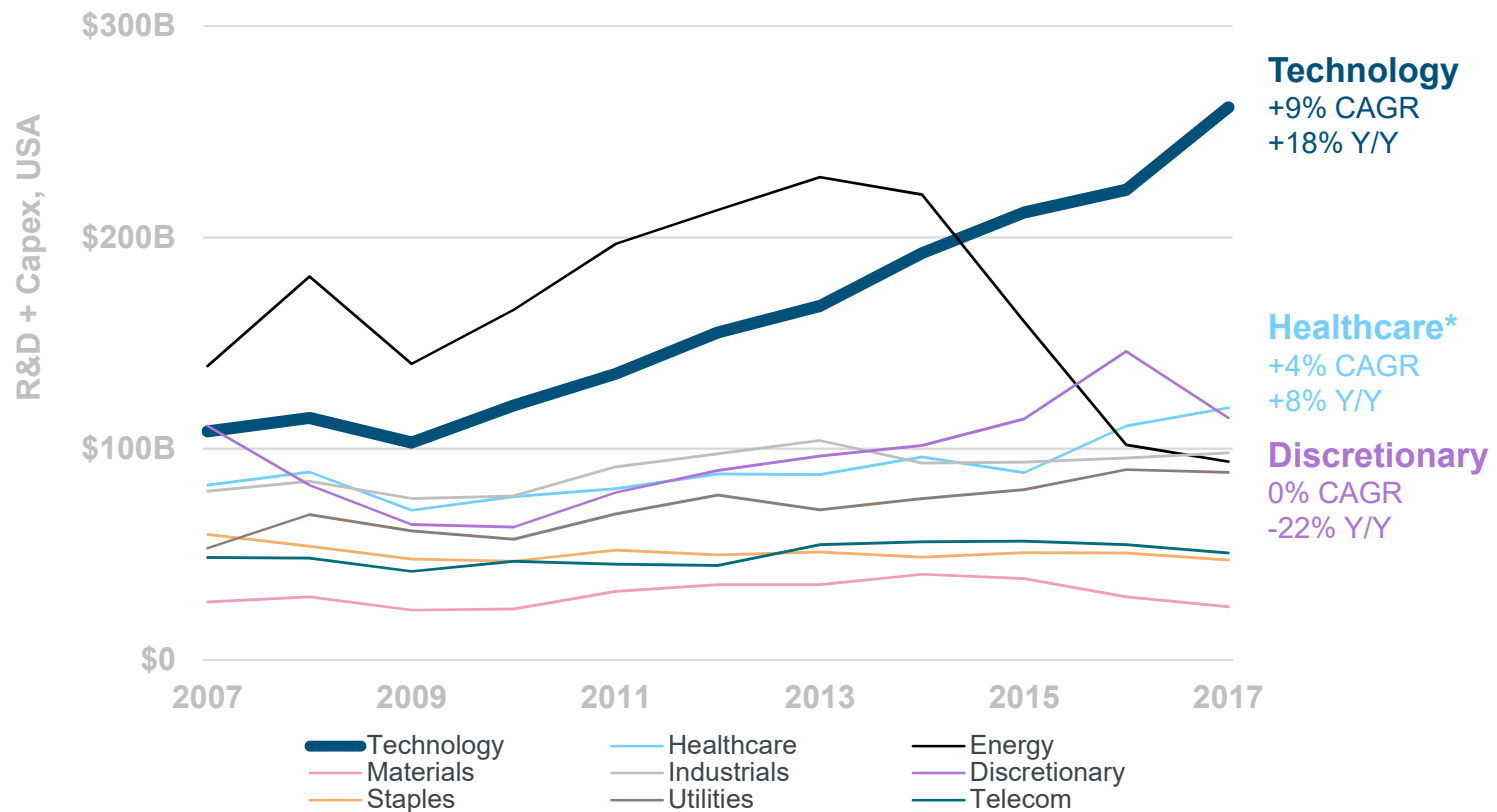
Technology Companies = 6 of Top 15 R&D + Capex Spenders, USA

USA Public Company Research & Development Spend + Capital Expenditures (2017)



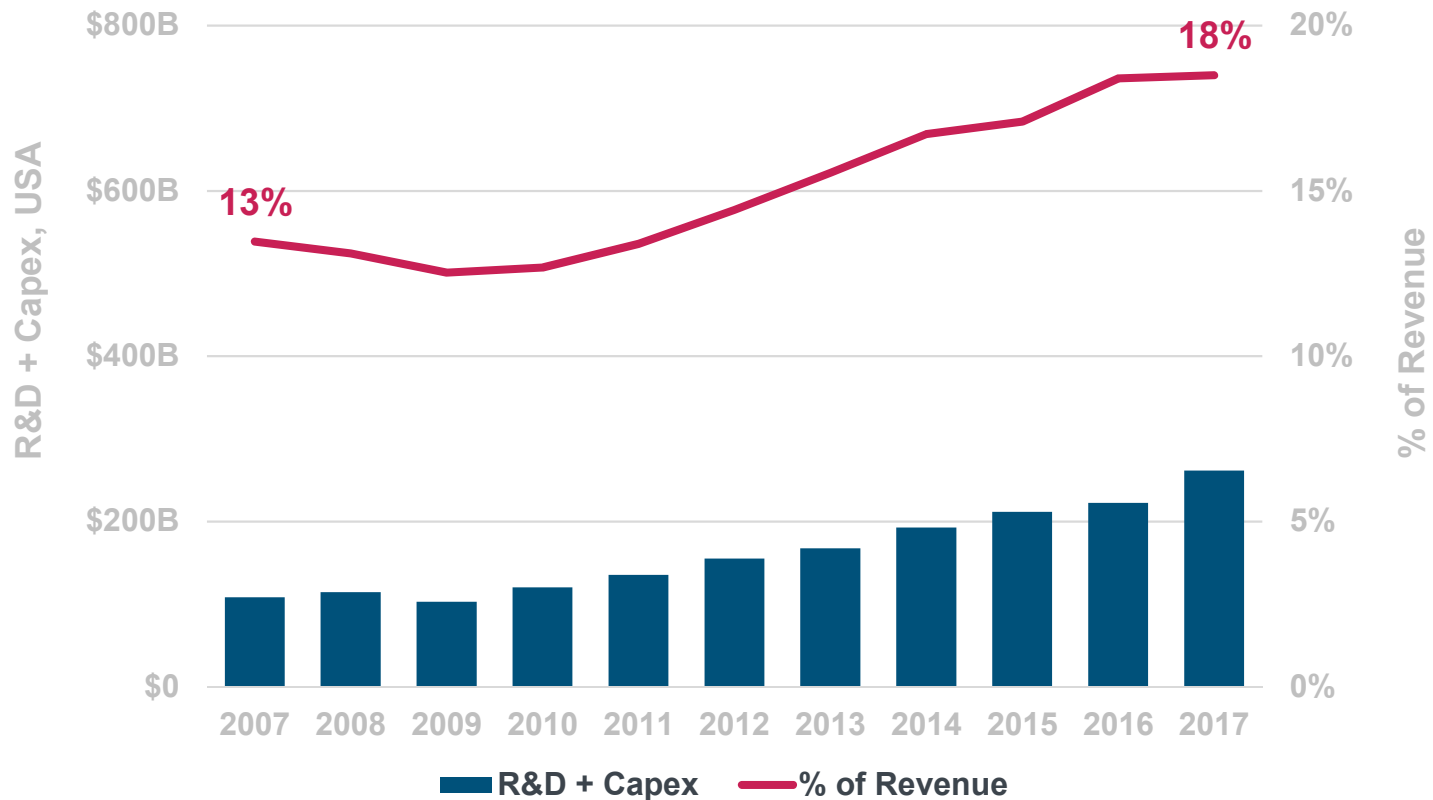
Technology Companies = Largest + Fastest Growing R&D + Capex Spenders, USA

Research & Development Spend + Capital Expenditures – Select USA GICS Sectors



Technology Companies = Rising R&D + Capex as % of Revenue...18% vs. 13% (2007)

USA Technology Company Research & Development Spend + Capital Expenditures vs. % of Revenue





USA Tech Companies...

*Aggressive Competition +
Spending on R&D + Capex =*

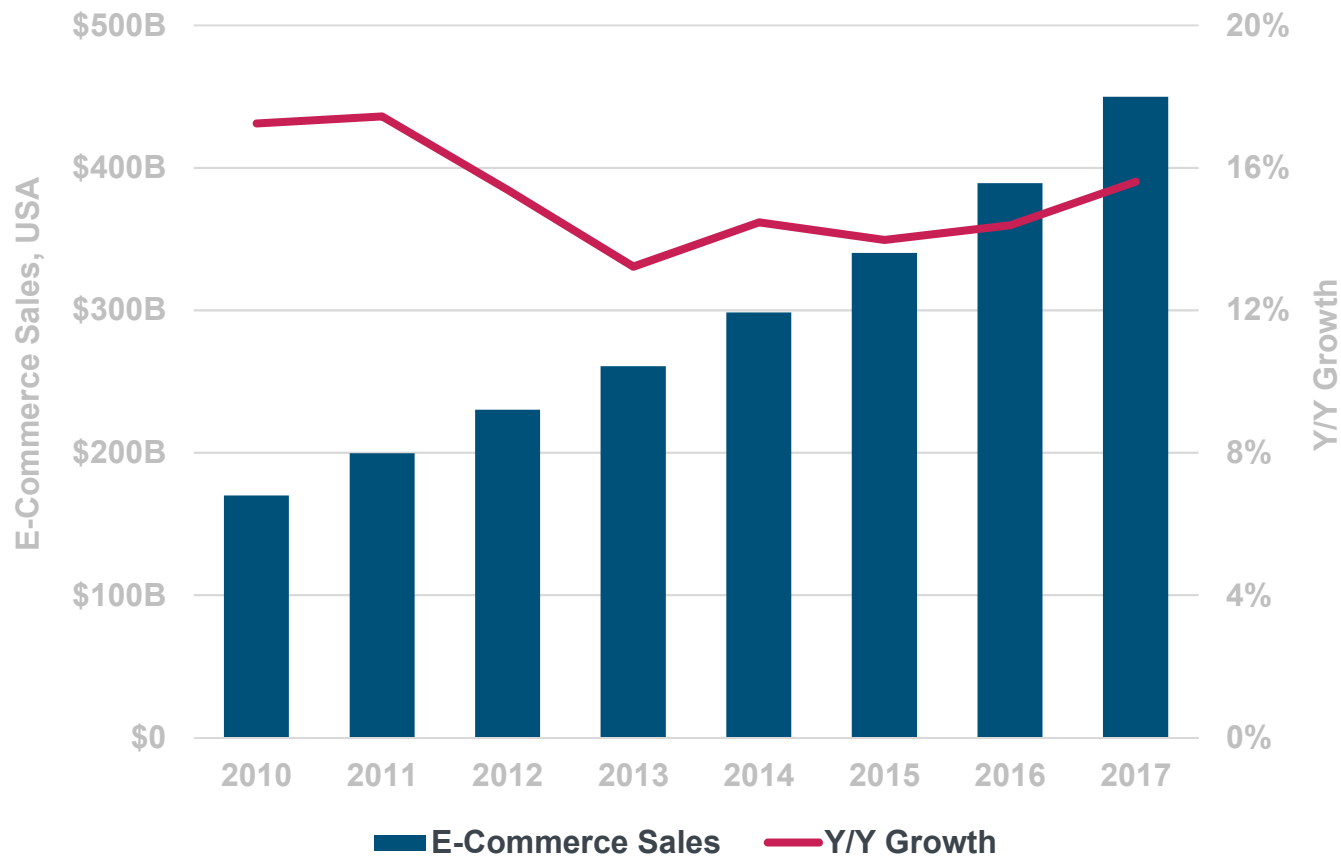
Driving Innovation + Growth

E-COMMERCE =

TRANSFORMATION ACCELERATING

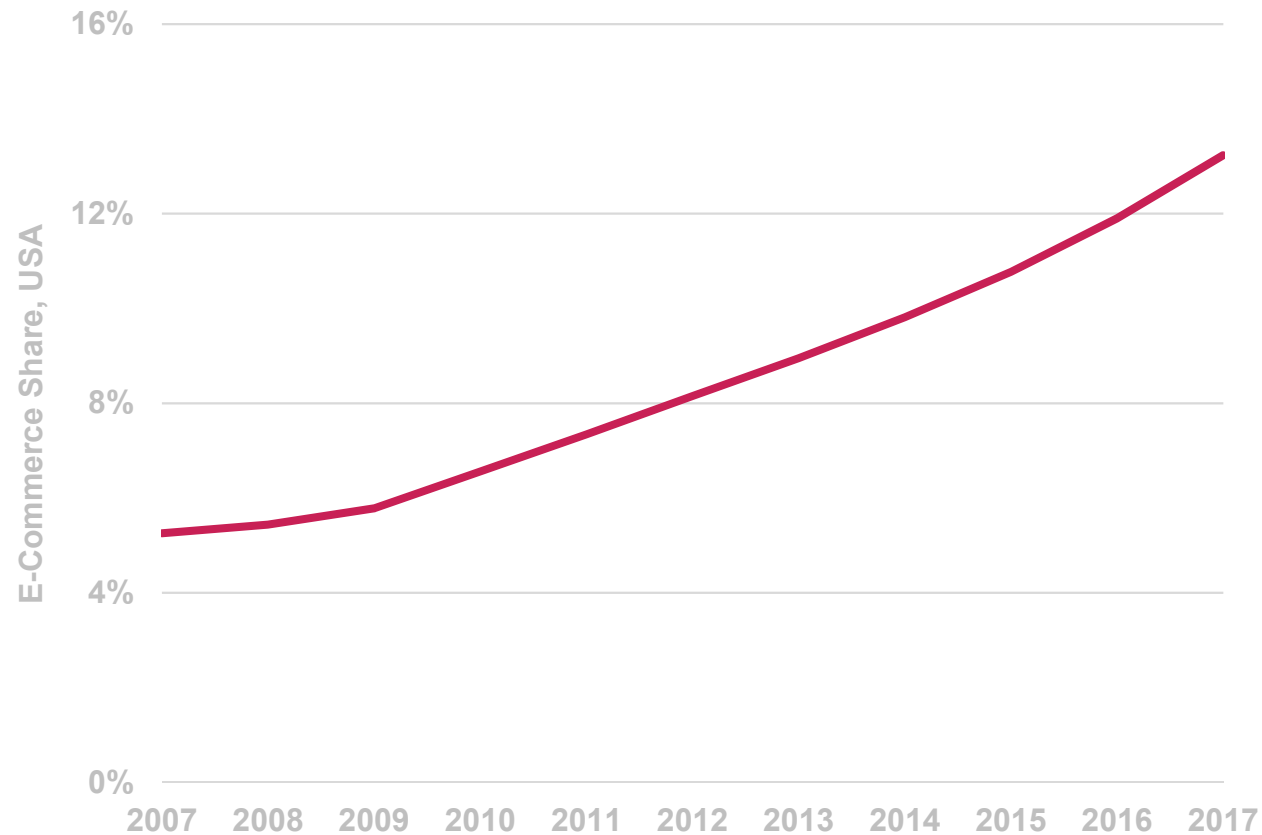
E-Commerce = Acceleration Continues @ +16% vs. +14% Y/Y, USA

E-Commerce Sales + Y/Y Growth



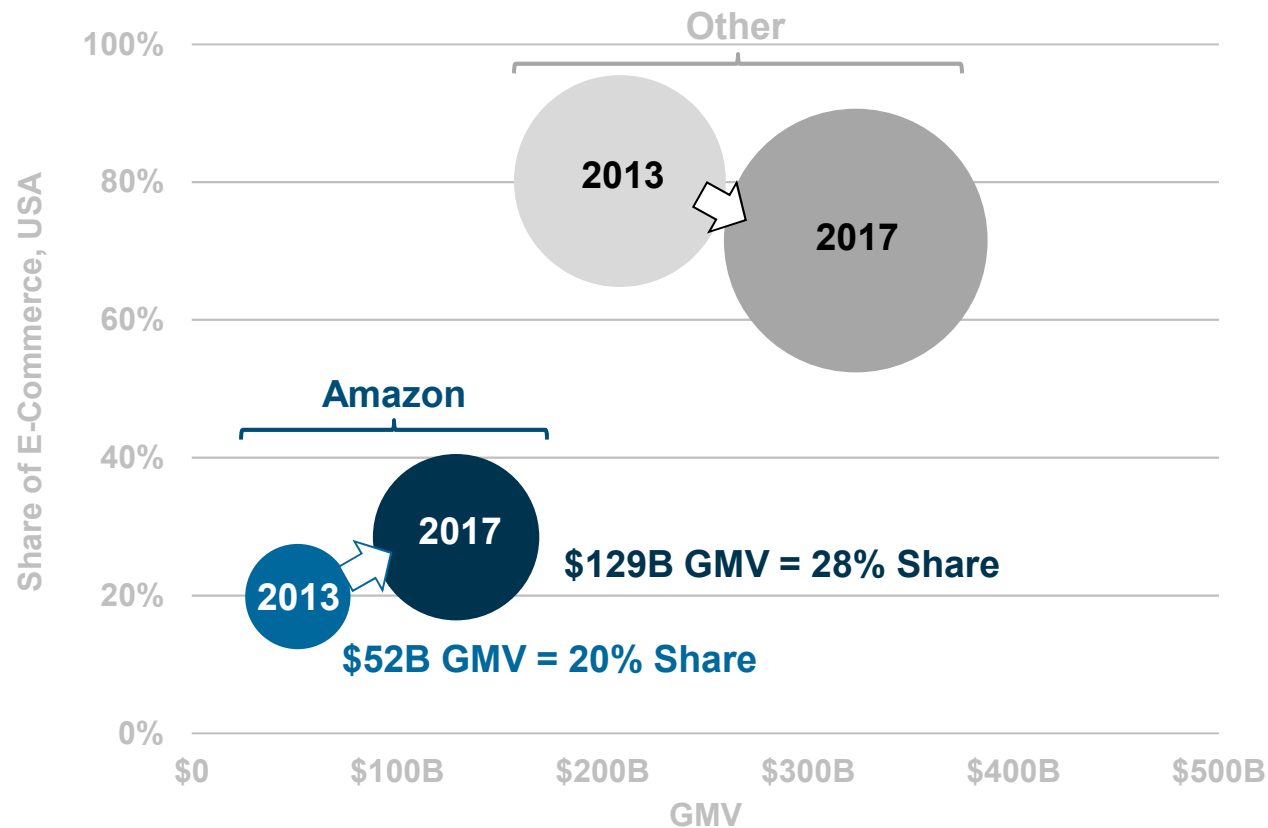
E-Commerce vs. Physical Retail = Share Gains Continue @ 13% of Retail

E-Commerce as % of Retail Sales



Amazon = E-Commerce Share Gains Continue @ 28% vs. 20% in 2013

E-Commerce Gross Merchandise Value (GMV) – Amazon vs. Other





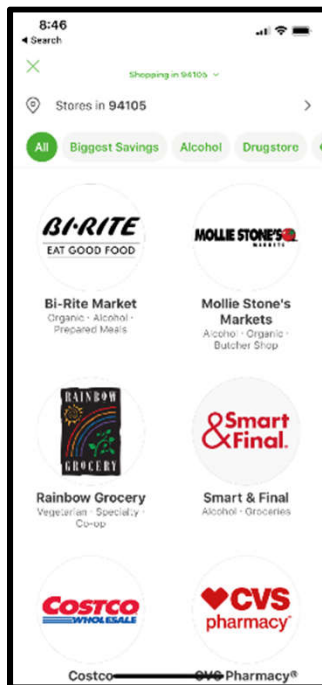
E-Commerce =

Evolving + Scaling

E-Commerce = Mobile / Interactive / Personalized / In-Feed + Inbox / Front-Doored

Instacart

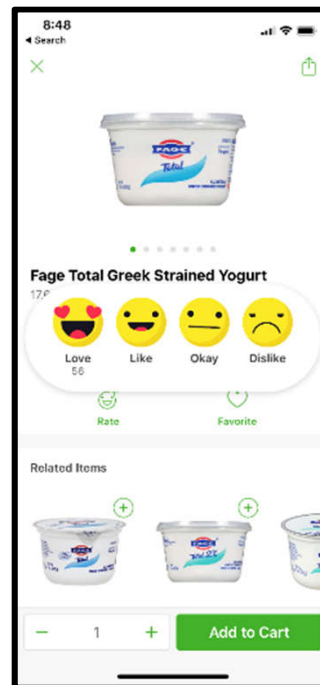
Find
Local Store



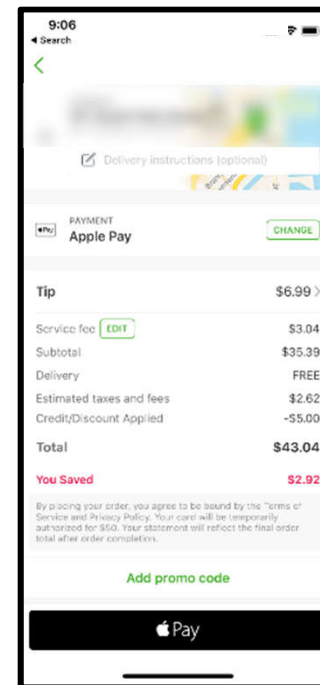
Explore
Custom Savings



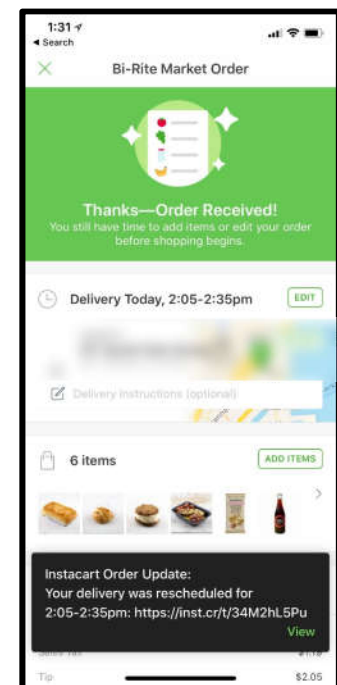
View + Share
Recommendations



Pay
Seamlessly



Update



E-Commerce = A Look @ Tools + Numbers...

Payment

Online Store

Online Payment

Fraud Prevention

Purchase Financing

Customer Support

Finding Customers

Delivering Product

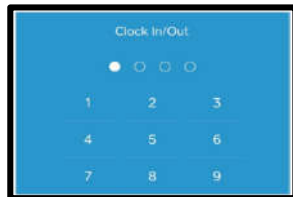
Offline Merchants = Set Up Payment System...

Square Points of Sale (POS)

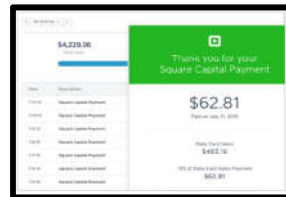


Software Services

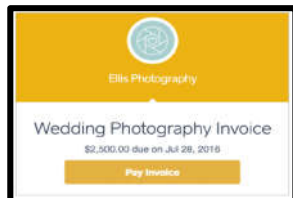
Payroll



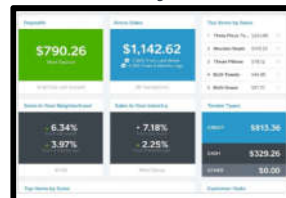
Loans



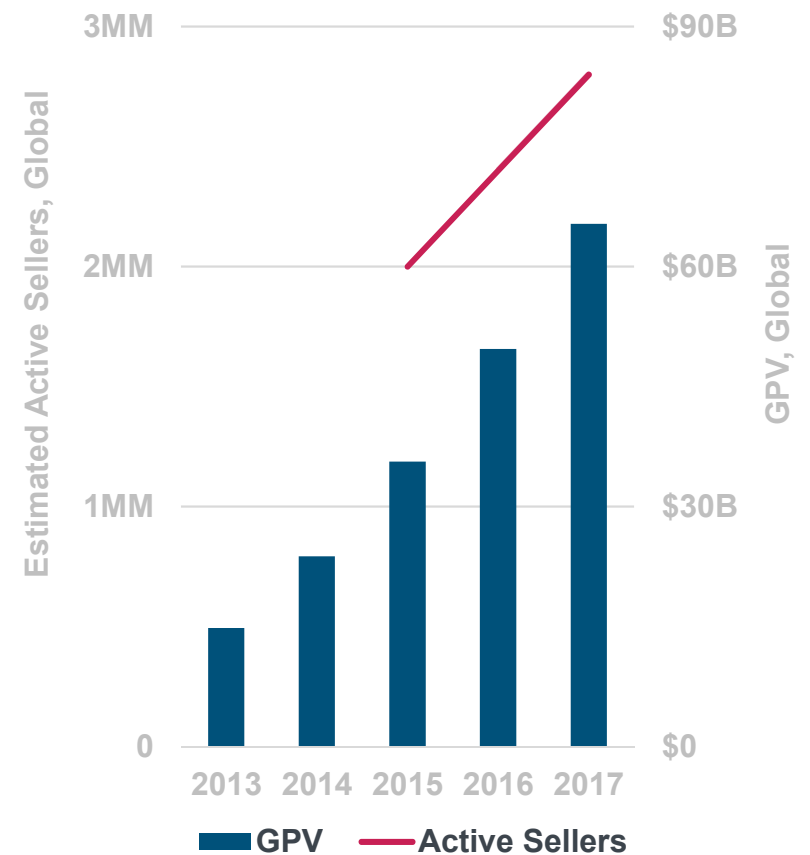
Invoices



Analytics

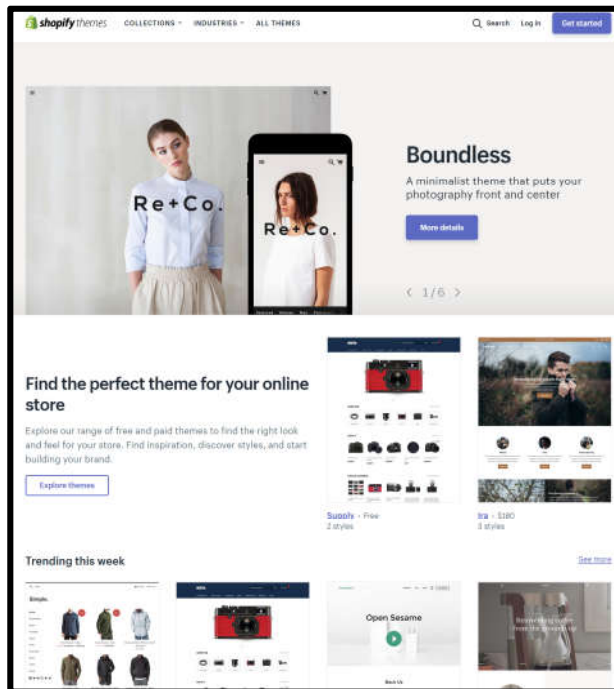


Estimated Active Sellers & Gross Payment Volume (GPV)

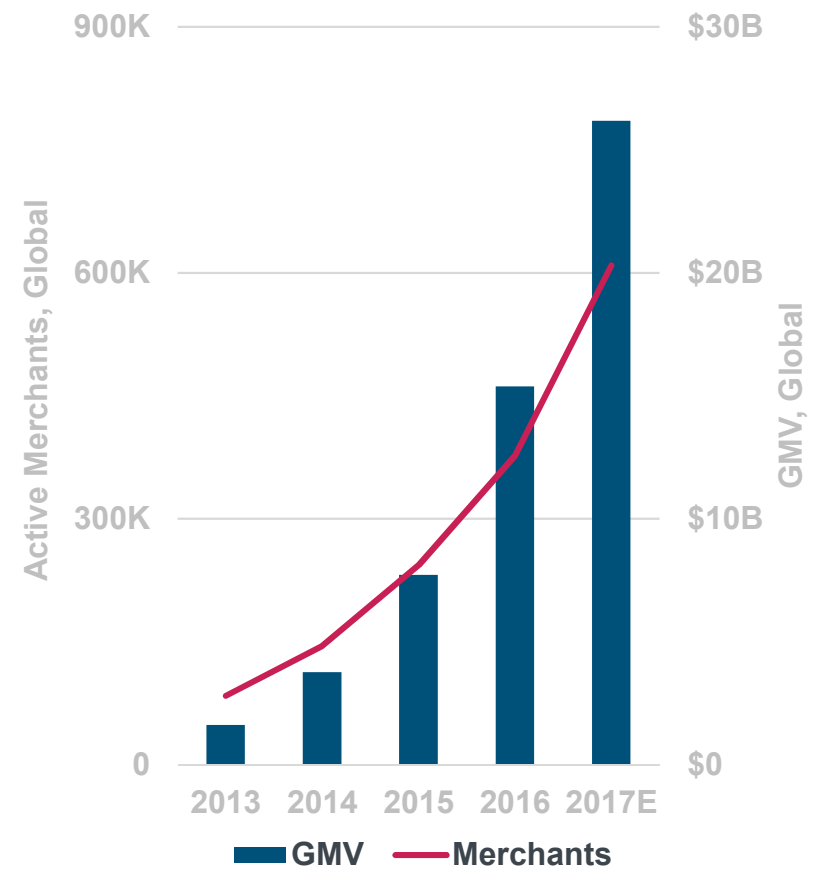


...Build Online Store...

Shopify Online Stores



Active Merchants & Gross Merchandise Volume (GMV)



...Integrate Online Payment System...

Stripe Payment API Implementation

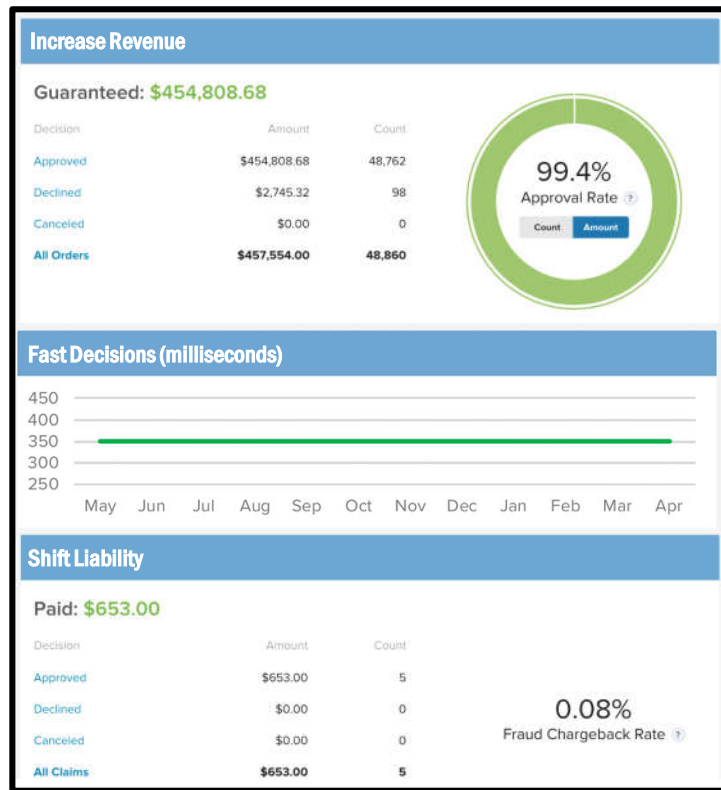
```
<form action="your-server-side-code" method="POST">
  <script
    src="https://checkout.stripe.com/checkout.js" class="stripe-button"
    data-key="pk_test_6pRNASCoBOKtlshFeQd4XMUh"
    data-amount="999"
    data-name="Stripe.com"
    data-description="Example charge"
    data-image="https://stripe.com/img/documentation/checkout/marketplace.png"
    data-locale="auto"
    data-zip-code="true">
  </script>
</form>
```



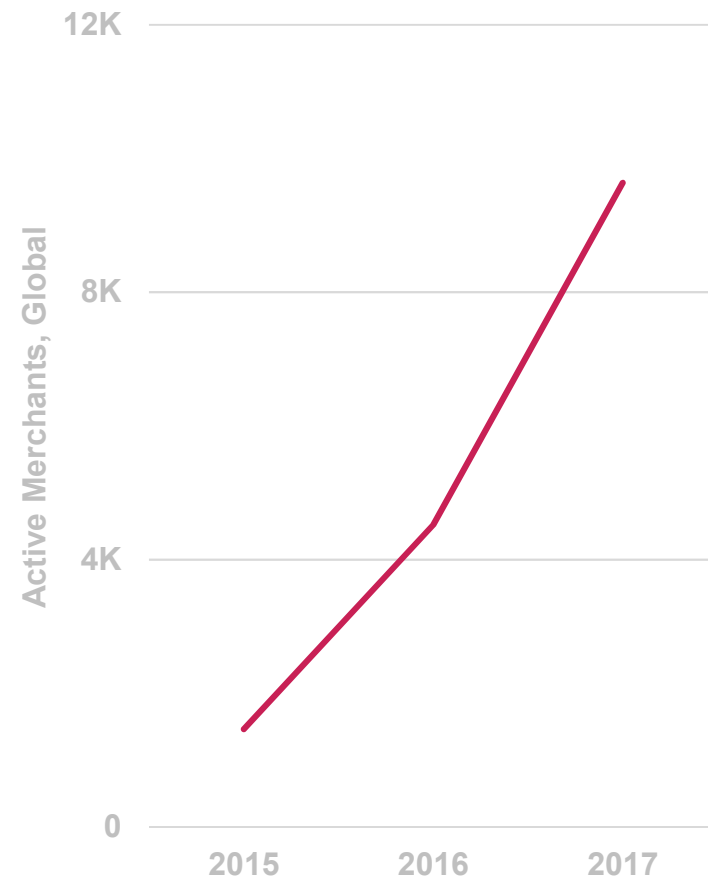
The screenshot shows a mobile checkout interface for Stripe.com. At the top, there is a green Stripe logo and the text "Stripe.com Widget". Below this, there are several input fields: "Email" with an envelope icon, "Card number" with a card icon, and "MM / YY" and "CVC" with their respective icons. There is also a "Remember me" checkbox. At the bottom, there is a prominent blue button labeled "Pay \$9.99".

...Integrate Fraud Prevention...

Signifyd Fraud Prevention



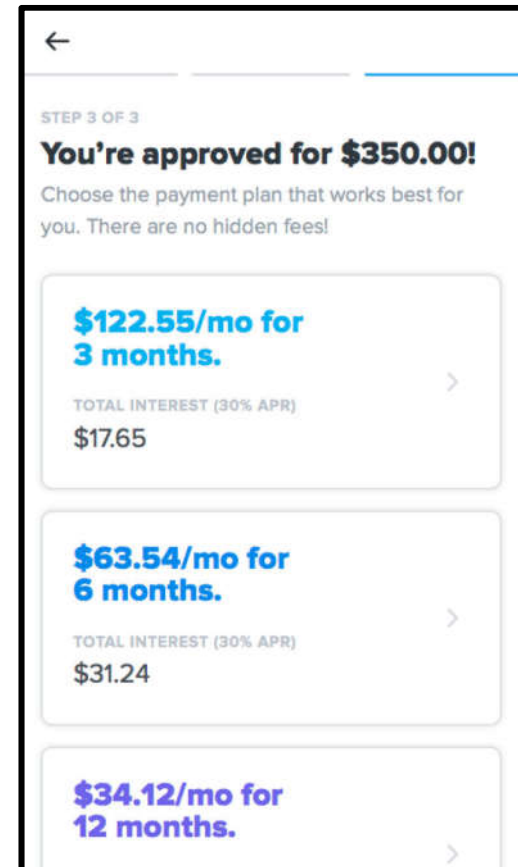
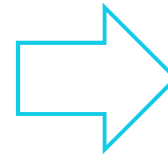
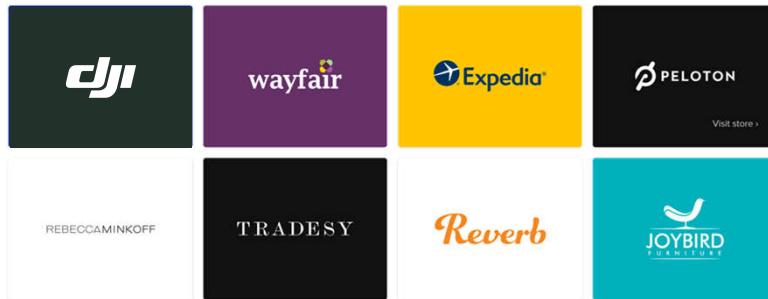
Merchants



...Integrate Purchase Financing...

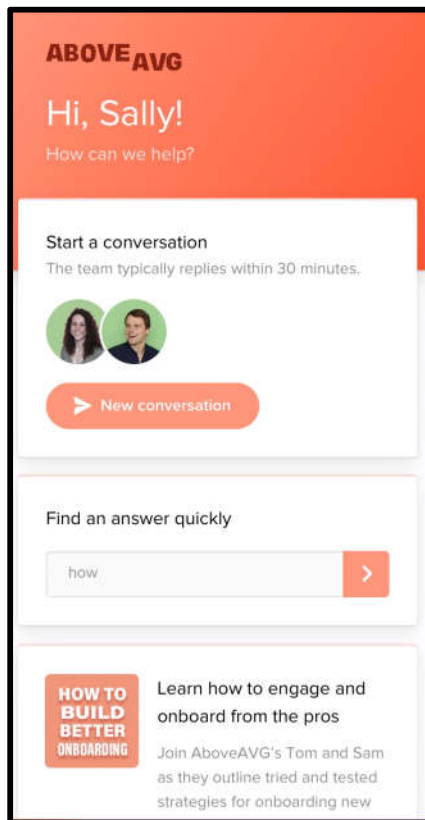
Affirm Financing

1,200+ = Merchants

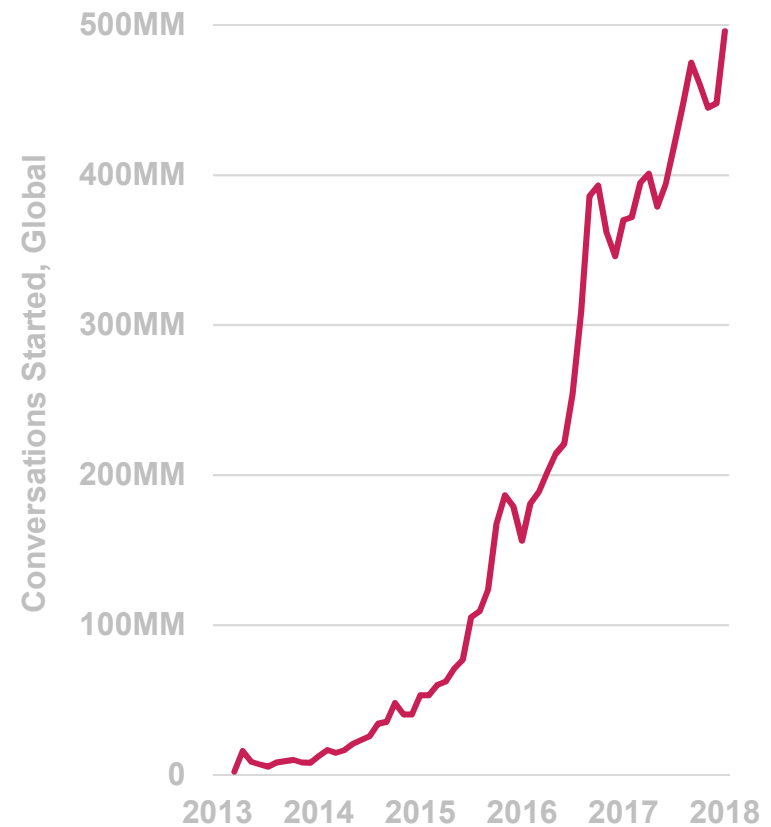


...Integrate Customer Support...

Intercom Real-Time Support

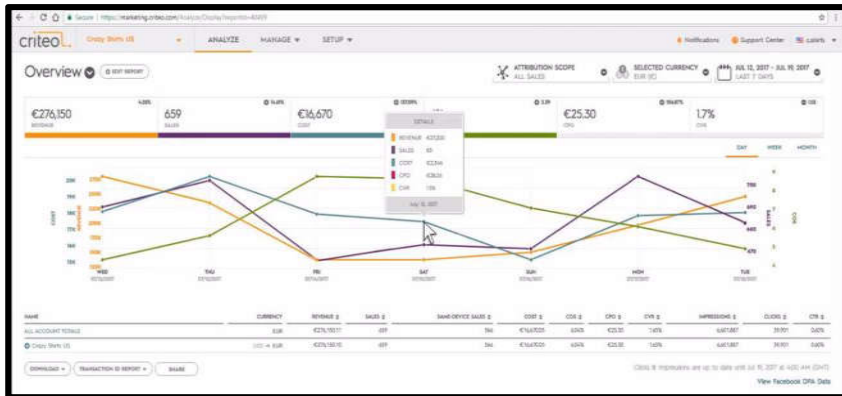


Customer Conversations

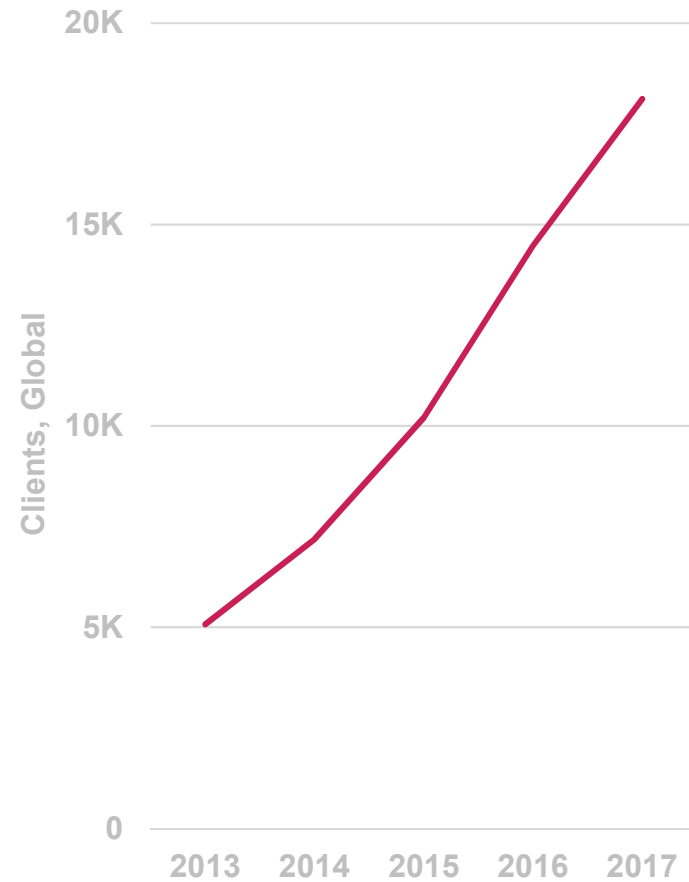


...Find Customers...

Criteo Customer Targeting



Marketing Clients

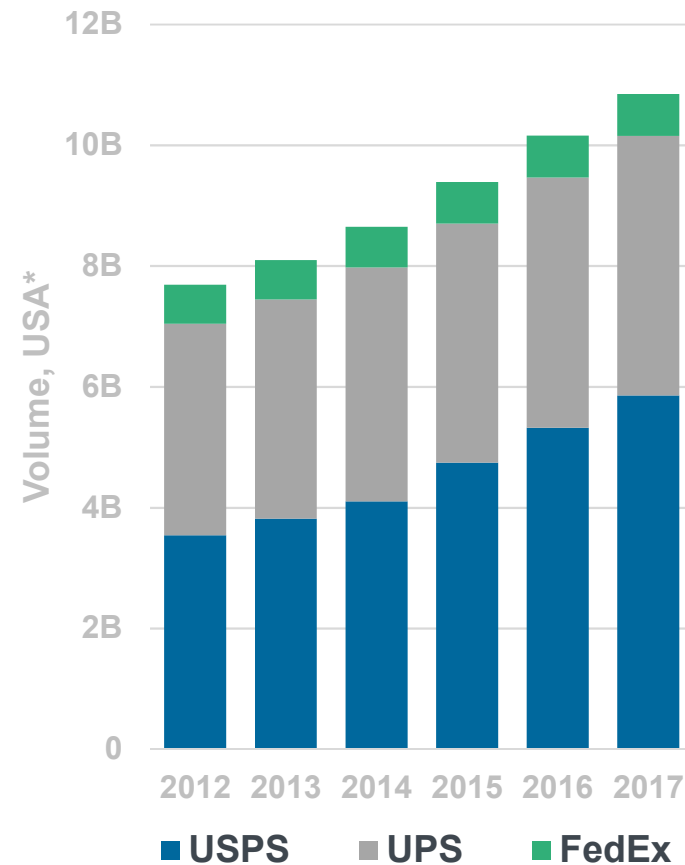


...Deliver Products to Customers

Product Delivery



Parcel Volume UPS + FedEx + USPS*



...E-Commerce = A Look @ Tools + Numbers

Payment

Online Store

Online Payment

Fraud Prevention

Purchase Financing

Customer Support

Finding Customers

Delivering Product

Building / Deploying Online Stores = Trend Evinced by Shopify Storefront Exchange

Shopify Storefront Exchange (Launched 6/17)

BROWSE BUSINESSES FOR SALE

Fuel your business ambitions

Exchange is Shopify's marketplace to buy and sell businesses for entrepreneurs like you.

Price Revenue Age Business Type Industry

Established stores for sale
Use your expertise to grow a business to the next level

Business Name	Category	Revenue (USD)*	Traffic*	Profit (USD)*	Inventory Value (USD)	Price
STOOFs stoofs.com Electronics and gadgets	Electronics and gadgets	\$18.3K	25.0K	\$35.0K	n/a	\$50,000 USD
Loopies.com loopies.com Health and beauty	Health and beauty	\$4.9K	5.5K	\$1.6K	n/a	\$75,030 USD
Nabee Socks nabeesocks.com Fashion and apparel	Fashion and apparel	\$4.8K	2.8K	\$2.7K	\$60.0K	\$150,000 USD
Canadian Made Company canadianmade.co Fashion and apparel	Fashion and apparel	\$4.8K	2.2K	\$9.6K	\$24.3K	\$49,000 USD



Online Product Finding Evolution =

Search Leads...

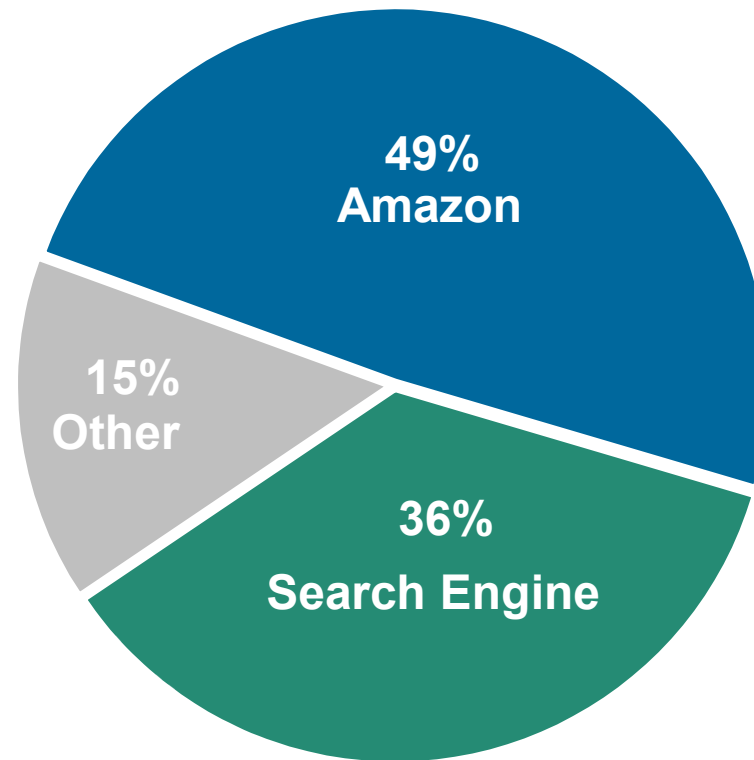
Discovery Emerging

Getting More...

Data Driven / Personalized / Competitive

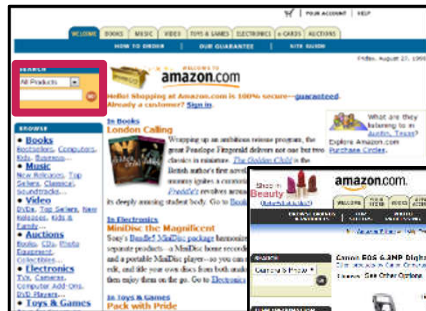
Product Finding = Often Starts @ Search (Amazon + Google...)

Where Do You Begin Your Product Search?

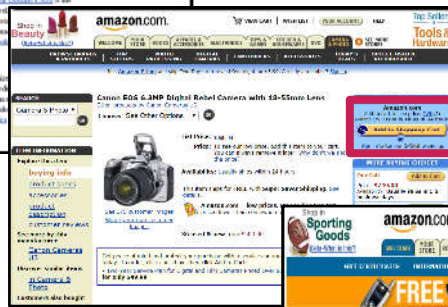


Product Finding (Amazon) = Started @ Search...Fulfilled by Amazon

Product Search



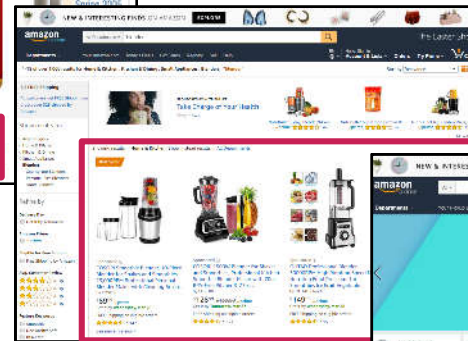
1-Click
Purchasing



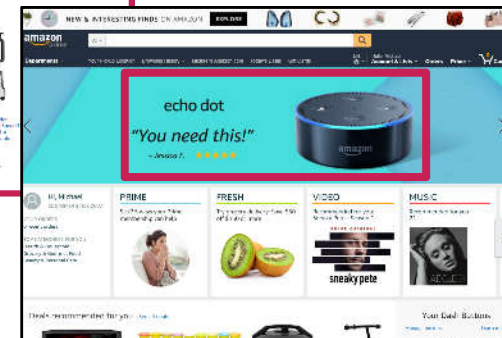
Prime
Fulfillment



Sponsored
Product Listings



Voice
Search + Fulfillment



Product Finding (Google) = Started @ Search...Fulfilled by Others

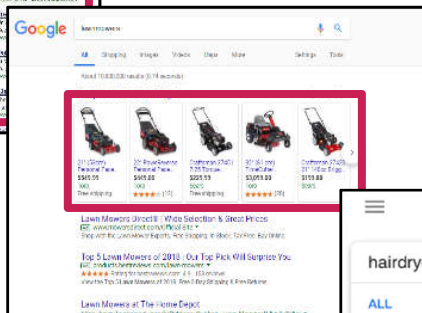
Organic Search



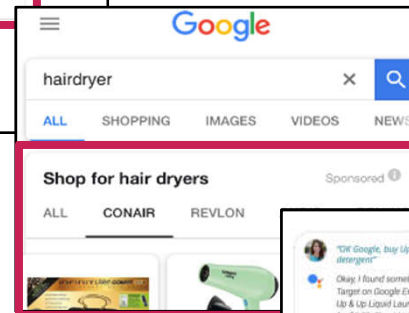
Paid Search



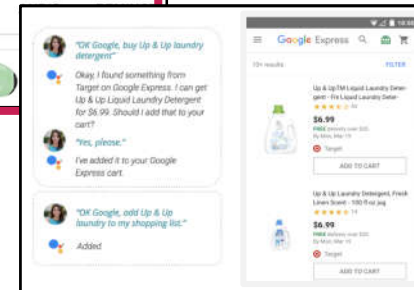
Google Shopping



Product Listing Ads



Shopping Actions





Online Product Finding Evolution =

Search Leads...

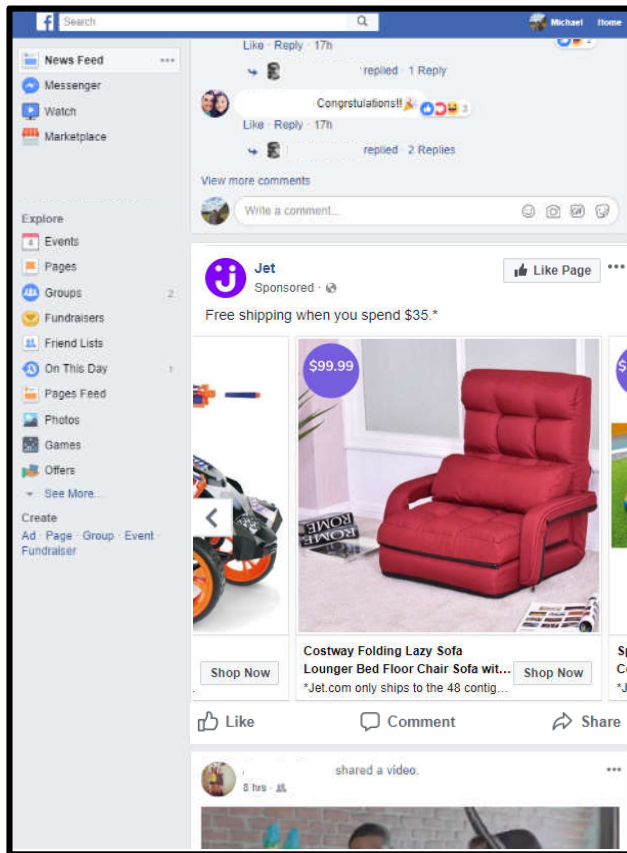
Discovery Emerging

Getting More...

Data Driven / Personalized / Competitive

Product Finding (Facebook / Instagram) = Started @ Personalized Discovery in Feed

Facebook



Instagram





Online Product Finding Evolution =

Search Leads...

Discovery Emerging

Getting More...

Data Driven / Personalized / Competitive

Google = Ad Platform to a Commerce Platform... Amazon = Commerce Platform to an Ad Platform

1997...2000

2018

AdWords

Google Home Ordering

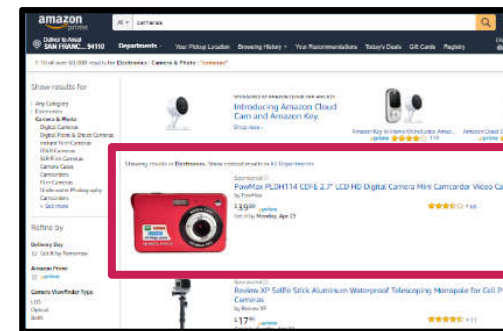
Google



1-Click Checkout

Sponsored Products

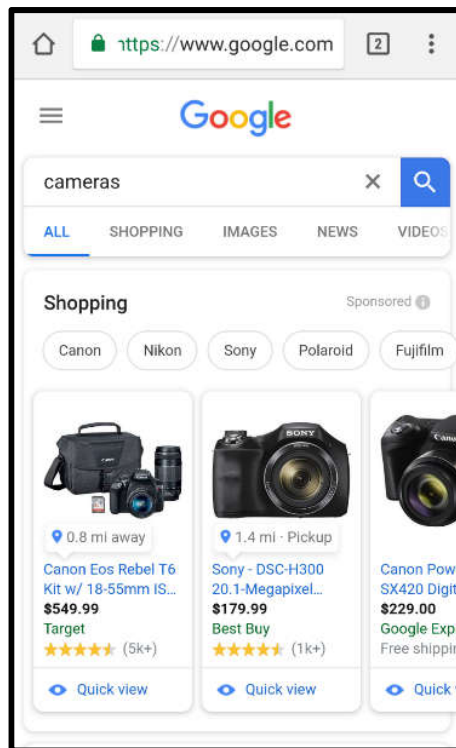
Amazon



E-Commerce-Related Advertising Revenue = Rising @ Google + Amazon + Facebook

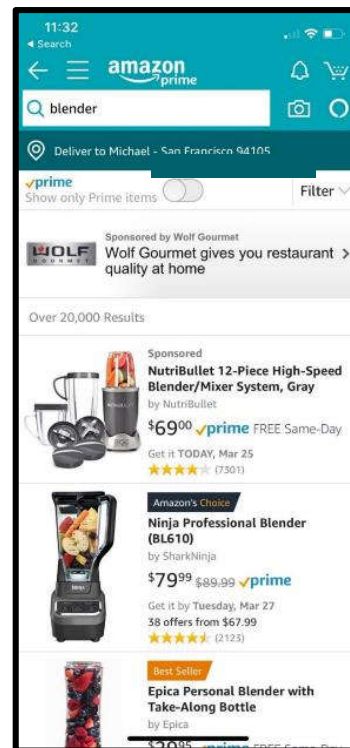
Google

3x = Engagement Increase
For Top Mobile Product Listing Ad*



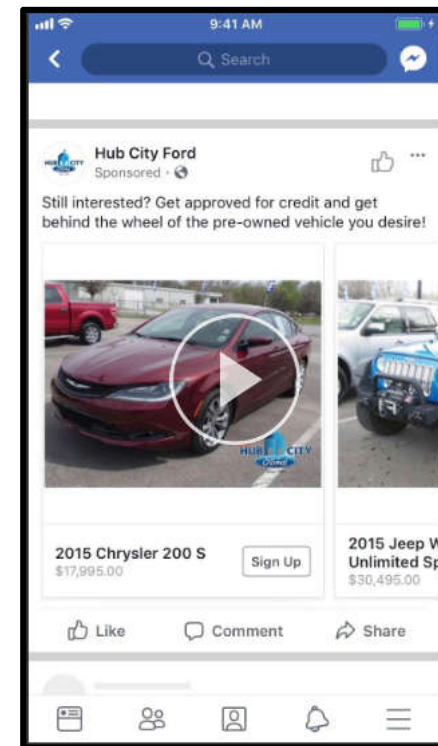
Amazon

\$4B +42% Y/Y =
Ad Revenue



Facebook

>80MM +23% Y/Y =
SMBs with Pages



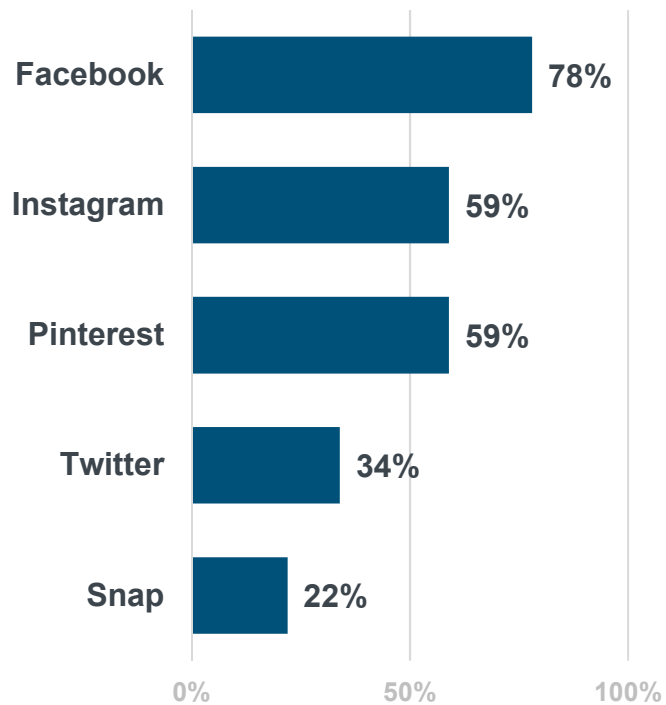


Social Media =

*Enabling More Efficient
Product Discovery / Commerce*

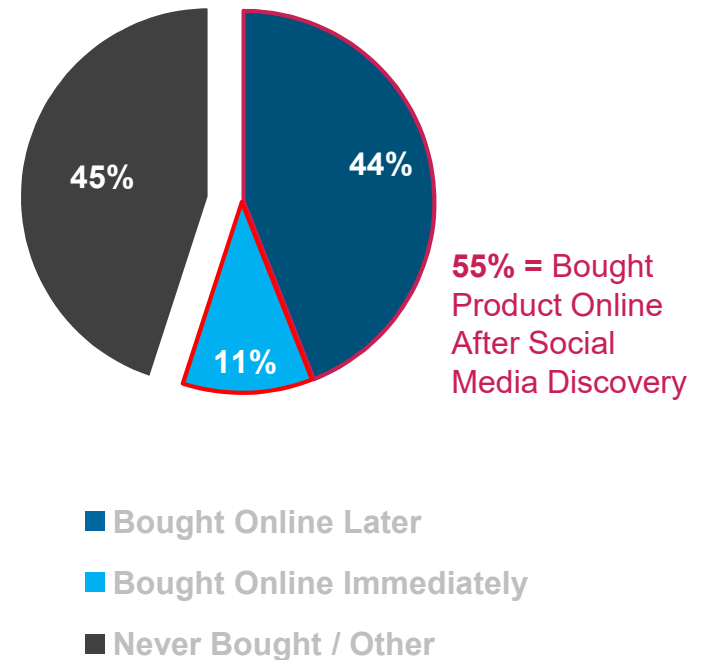
Social Media = Driving Product Discovery + Purchases

Social Media Driving Product Discovery...



% of Respondents that Have Discovered Products on Platform, USA (18-34 Years Old)

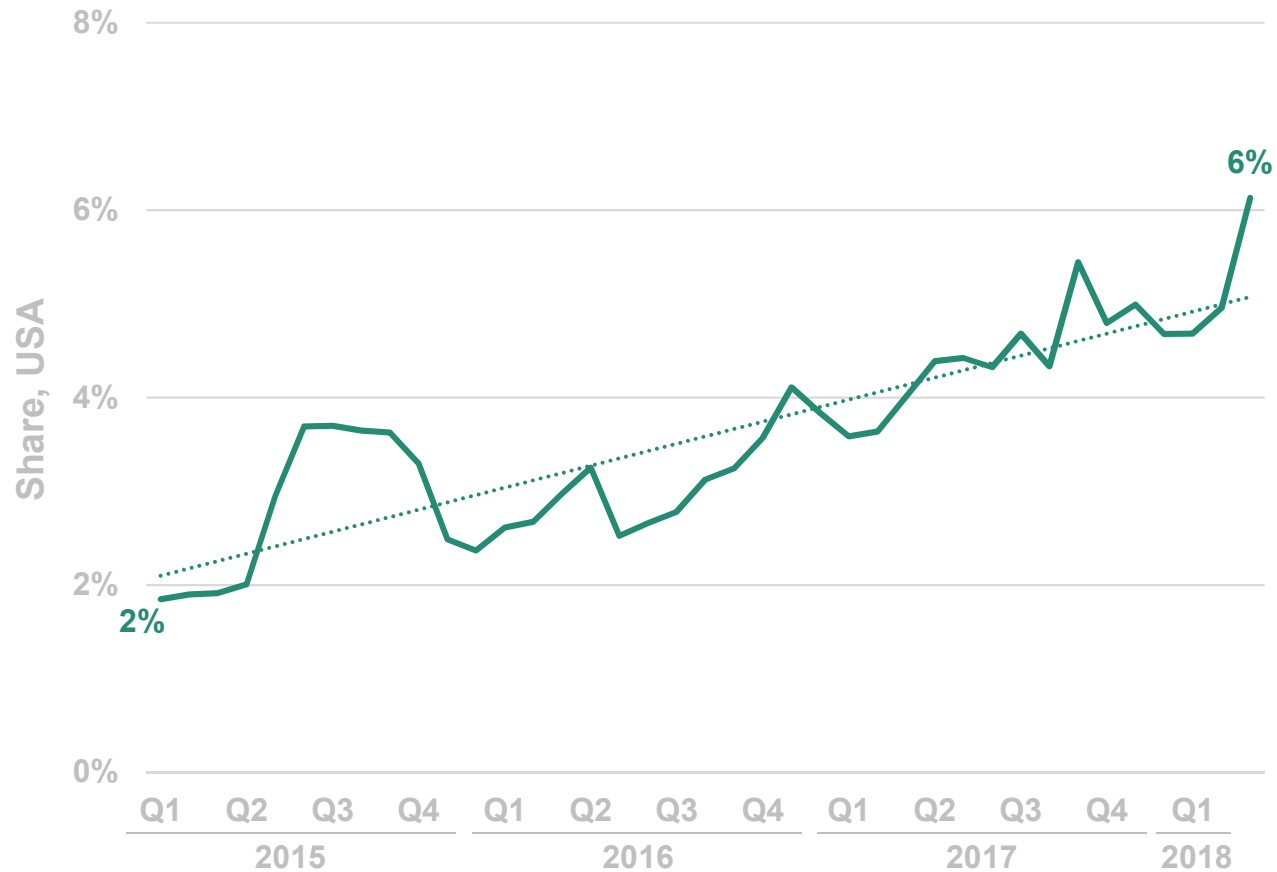
...Social Media Discovery Driving Purchases



% of Respondents, USA (18-65 Years Old)

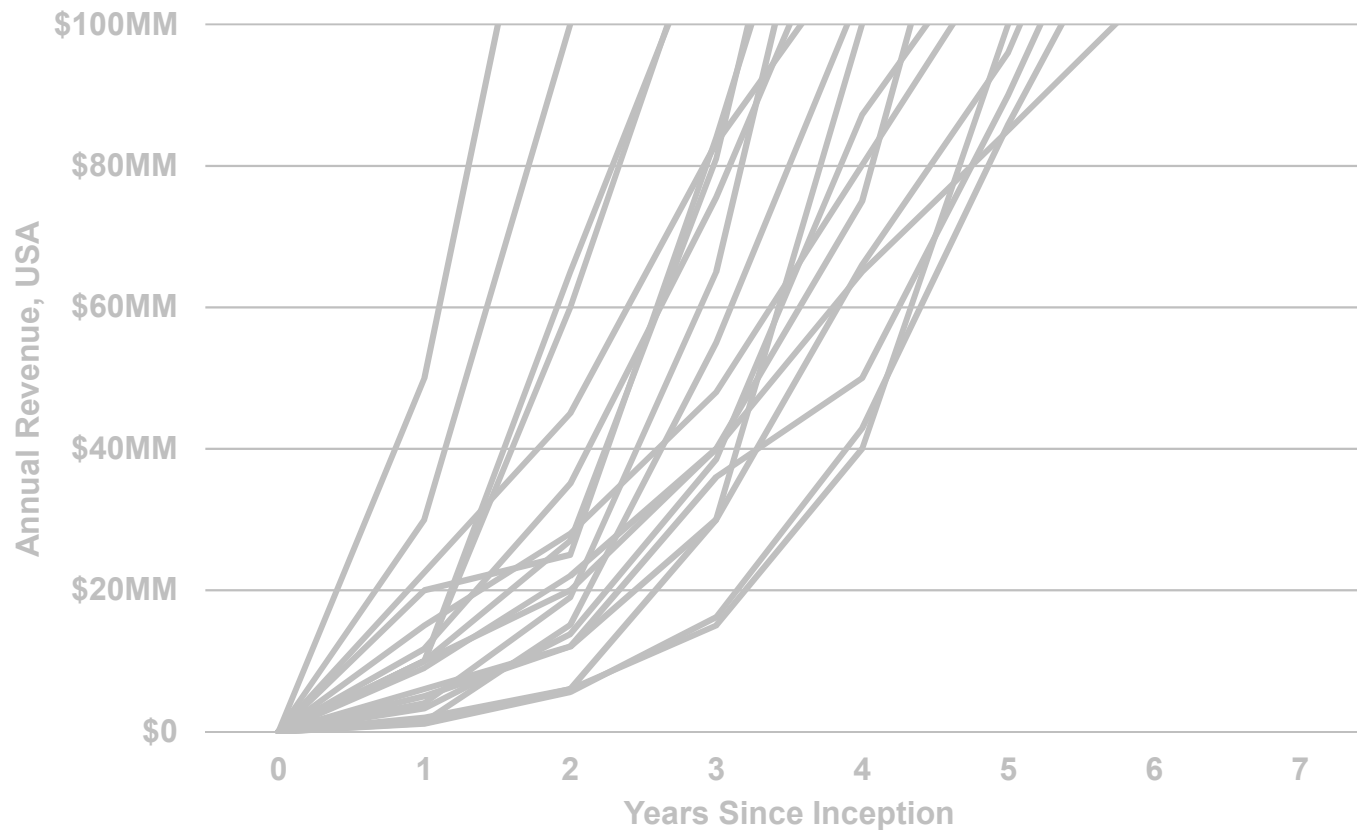
Social Media = Share of E-Commerce Referrals Rising @ 6% vs. 2% (2015)

Social / Feed Referrals to E-Commerce Sites



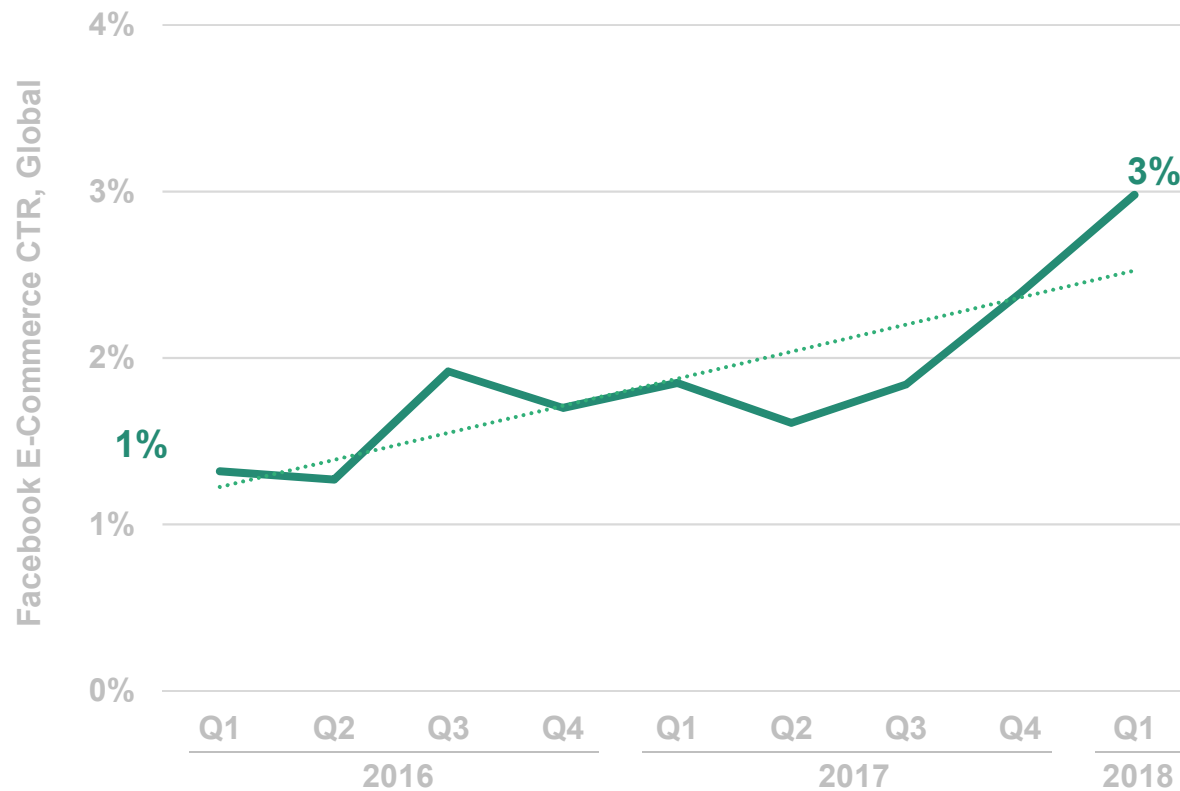
Social Media = Helping Drive Growth for Emerging DTC Retailers / Brands

Select USA Direct-to-Consumer (DTC) Brands – Revenue Ramp to \$100MM Since Inception*



Social Media = Ad Engagement Rising...Facebook E-Commerce CTRs Rising

Facebook E-Commerce CTRs (Click-Through Rates)

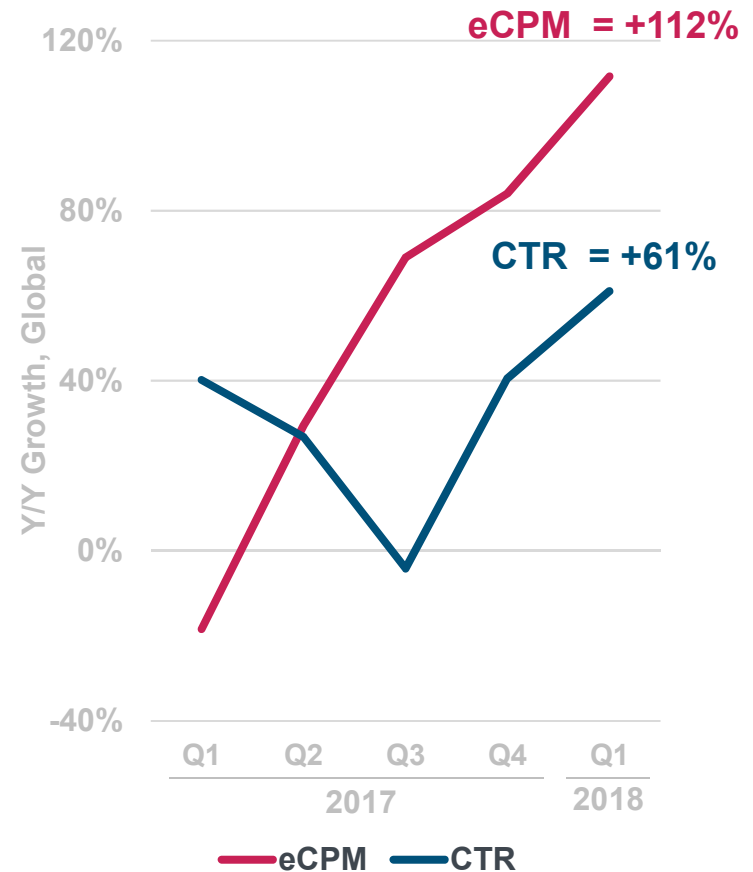


Return on Ad Spend = Cost Rising @ Faster Rate than Reach

In performance-based [digital advertising] channels, competition for top placement has reduced ROIs over the years & been a source of margin pressure...

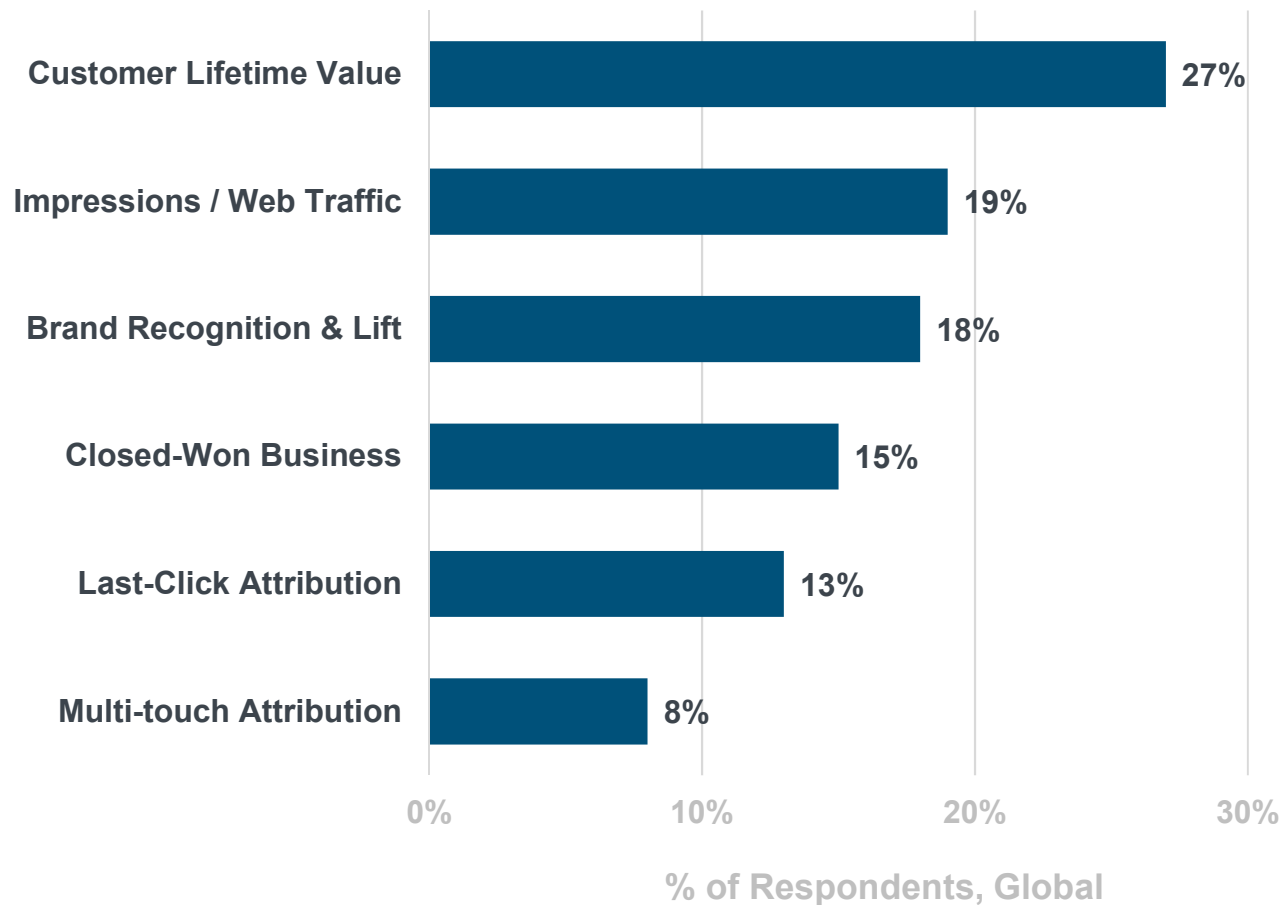
- Glenn D. Fogel, CEO & President, Booking Holdings
Q3:17 Earnings Call, (11/17)

Facebook E-Commerce eCPM vs. CTR Y/Y Growth



Customer Lifetime Value (LTV) = Importance Rising as... Customer Acquisition Cost (CAC) Increases

What Do You Consider To Be Important Ad Spending Optimization Metrics?



Lifetime Value / Customer Acquisition Cost (LTV / CAC) = Increasingly Important Metric for Retailers / Brands

Facebook Ad Analytics Tools LTV Integration

The screenshot shows a dialog box titled "Create a Value-Based Custom Audience" with a close button (X) in the top right corner. The main heading is "Get Better Performing Lookalikes with LTV". Below this, a paragraph explains: "When you include customer value in your audience, our system uses it to weight your customers. Creating a lookalike from an audience with LTV allows our system to find people more similar to your highest value customers." A three-step process flow is shown: 1. Add LTV to your Custom Audience, 2. Create a lookalike, and 3. Measure performance against goals like return on ad spend (ROAS). Below the flow, there are three expandable sections: "What is customer lifetime value (LTV)?", "How does LTV improve my lookalike performance?", and "How do I measure and test performance?". The first section is expanded, showing the text: "LTV is a value associated with your customers based on how much and how often they spend with your business over the course of their relationship with you. People with high LTV may be more expensive to acquire, but lead to greater value over time." At the bottom, there is a link: "Learn more about how to prepare a customer file with LTV" with an external link icon. At the very bottom, there are three buttons: "Cancel", "Back", and "Get started".

Create a Value-Based Custom Audience

Get Better Performing Lookalikes with LTV

When you include customer value in your audience, our system uses it to weight your customers. Creating a lookalike from an audience with LTV allows our system to find people more similar to your highest value customers.

- 1 Add LTV to your Custom Audience
- 2 Create a lookalike
- 3 Measure performance against goals like return on ad spend (ROAS)

What is customer lifetime value (LTV)?


LTV is a value associated with your customers based on how much and how often they spend with your business over the course of their relationship with you. People with high LTV may be more expensive to acquire, but lead to greater value over time.

How does LTV improve my lookalike performance?

How do I measure and test performance?

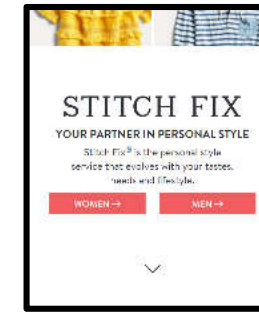
[Learn more about how to prepare a customer file with LTV](#)

Cancel Back **Get started**




***Data-Driven Personalization /
Recommendations =
Early Innings @ Scale***

Evolution of Commerce Drivers (1890s -> 2010s) = Demographic -> Brand -> Utility -> Data



1890s - 1940s	1940s - 1990s	1990s - 2010s	2010s - ...
Demographic	Brand	Utility	Data
Catalogs	Department Stores / Malls	E-Commerce – Transactional	E-Commerce – Personalized
Limited product selection + shopping moments	Rising product selection + shopping moments	Massive product selection + 24x7 shopping moments	Curated product discovery + 24x7 recommendations
<ul style="list-style-type: none"> • Sears Roebuck • Montgomery Ward 	<ul style="list-style-type: none"> • Macy's • GAP • Nike 	<ul style="list-style-type: none"> • Amazon • eBay 	<ul style="list-style-type: none"> • Amazon • Facebook • Stitch Fix



***Product Purchases =
Many Evolving from
Buying to Subscribing***

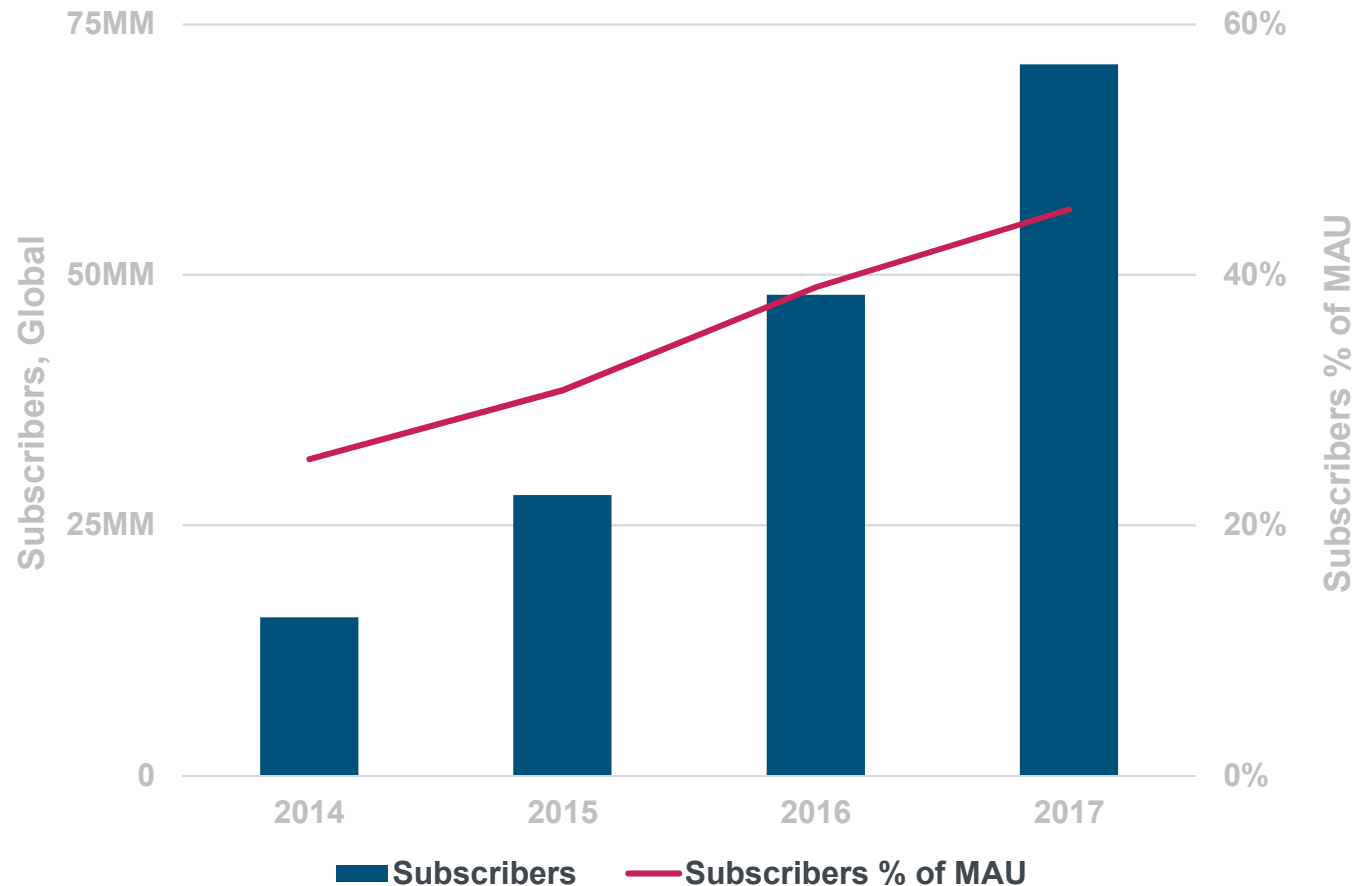
Subscription Service Growth = Driven by...


Access / Selection / Price / Experience / Personalization

Online Subscription Services		Subscribers	Growth
Representative Companies		2017	Y/Y
Netflix	Video	118MM	+25%
Amazon	Commerce / Media	100MM	--
Spotify	Music / Audio	71MM	+48%
Sony PlayStation Plus	Gaming	34MM	+30%
Dropbox	File Storage	11MM	+25%
The New York Times	News / Media	3MM	+43%
Stitch Fix	Fashion / Clothing	3MM	+31%
LegalZoom	Legal Services	550K	+16%
Peloton	Fitness	172K	+173%

Free-to-Paid Conversion = Driven by User Experience... Spotify Subscribers @ 45% of MAUs vs. 0% @ 2008 Launch

Spotify Subscribers % of MAU

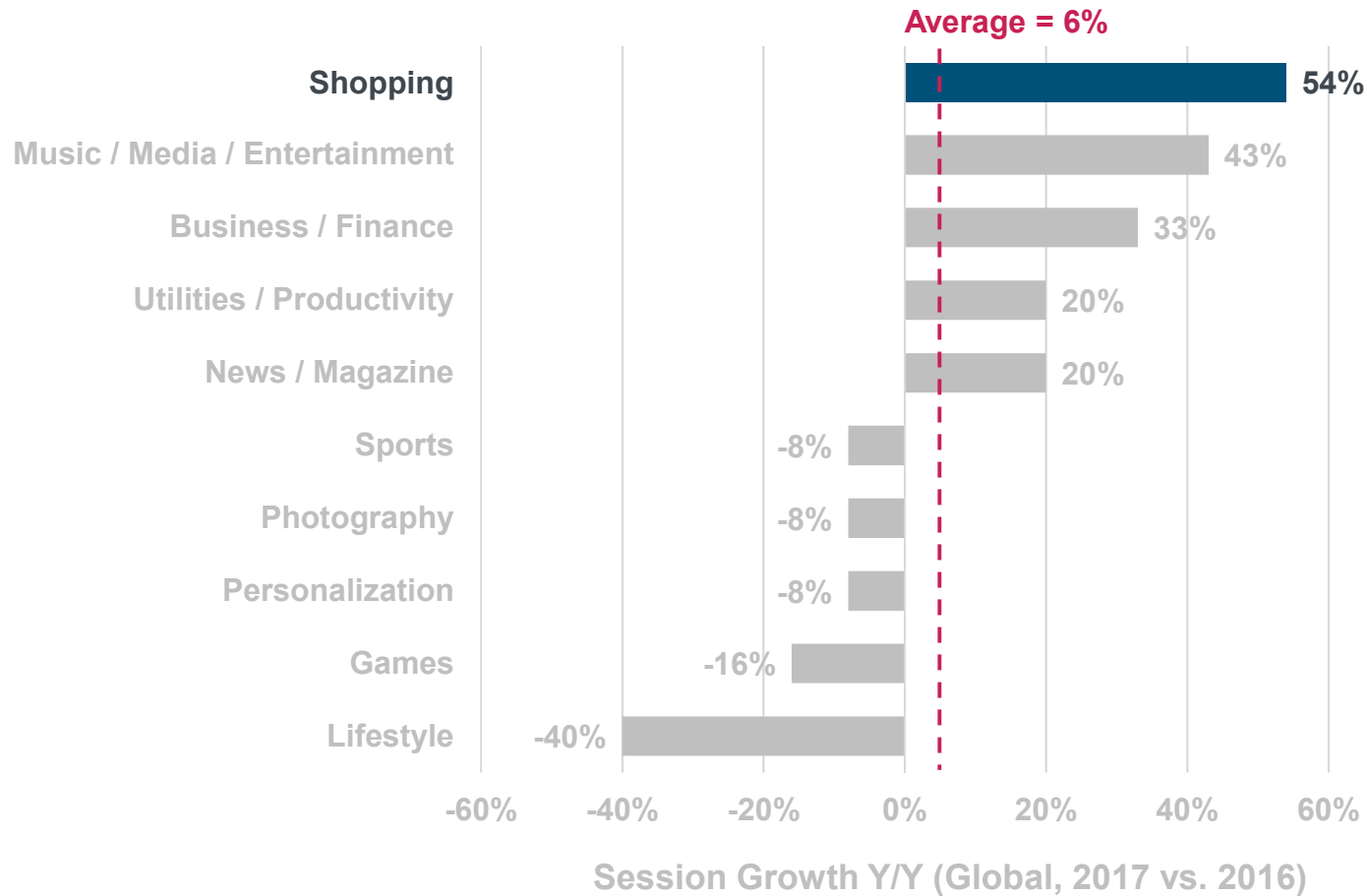




Shopping =
Entertainment...

Mobile Shopping Usage = Sessions Growing Fast

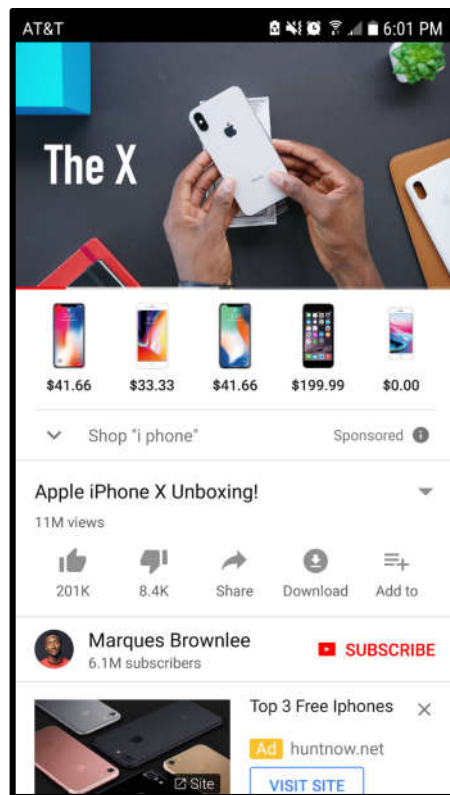
Mobile Shopping App Sessions – Growth Y/Y



Product + Price Discovery = Often Video-Enabled...

YouTube

Many USA Consumers View YouTube Before Purchasing Products



Taobao

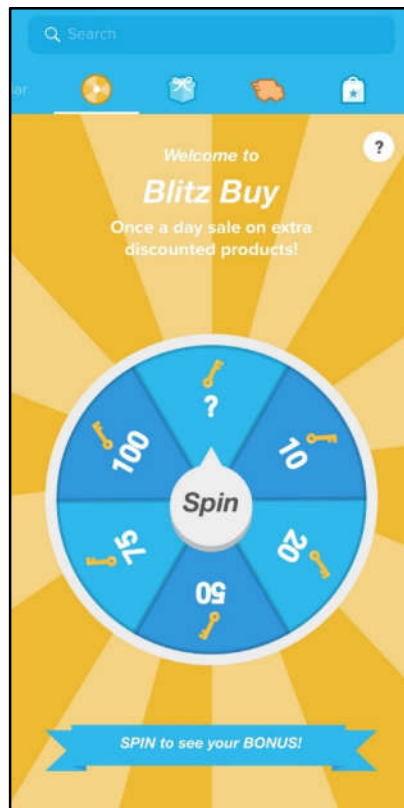
1.5MM+ Active Content Creators



...Product + Price Discovery =
Often Social + Gamified

Wish

Hourly Deals
300MM+ Users



Pinduoduo

Refer Friends to
Reduce Price

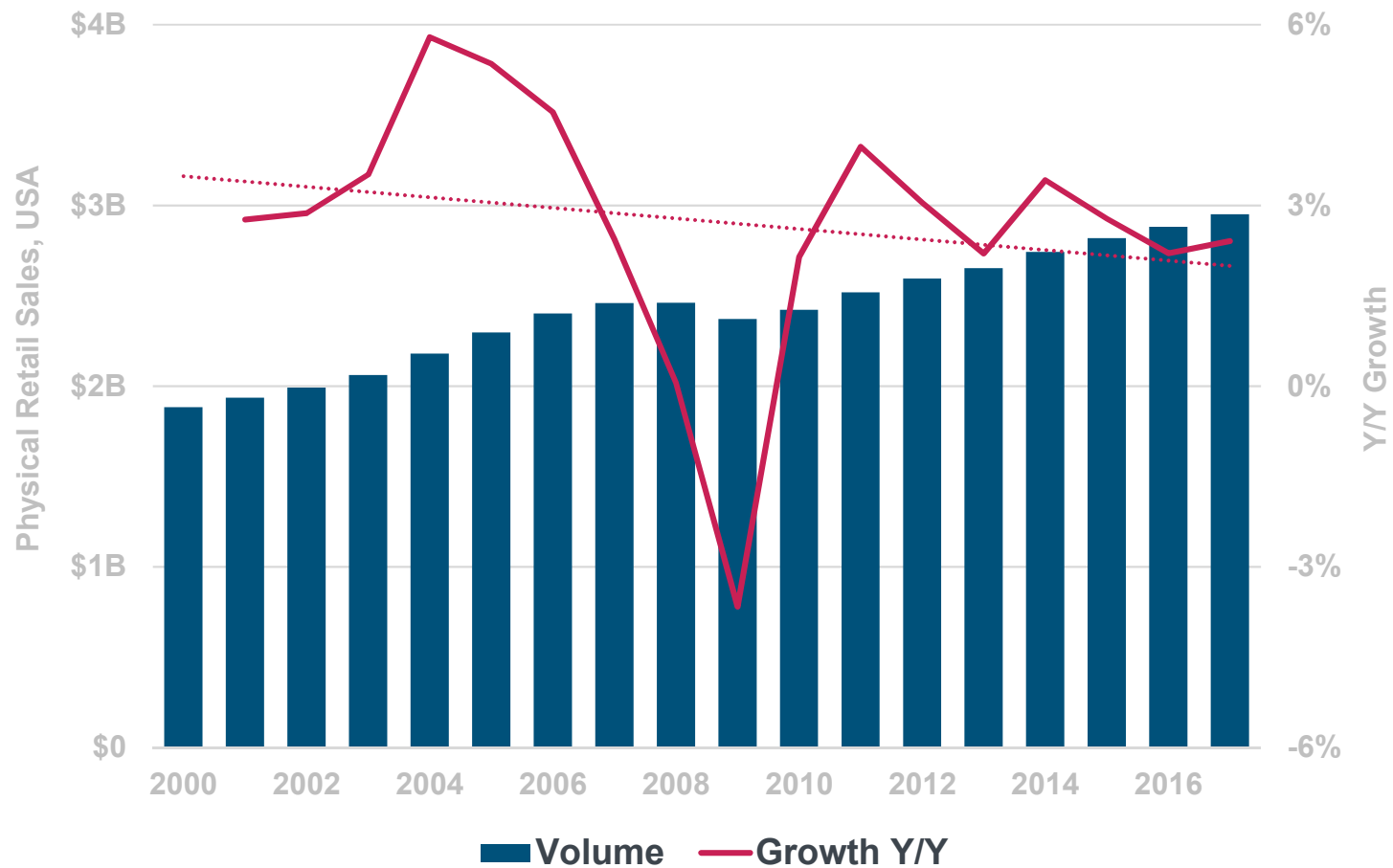




***Physical Retail Trending =
Long-Term Growth Deceleration***

Physical Retail = Long-Term Sales Growth Deceleration Trend

Physical Retail Sales + Y/Y Growth, USA





‘New Retail’ =
Alibaba View from China

Alibaba = Building E-Commerce Ecosystem Born in China



Alibaba & Amazon = Similar Focus Areas...

Alibaba = Higher GMV...Amazon = Higher Revenue (2017)

Alibaba

\$509B = Market Capitalization
 \$701B = GMV(E) +29% Y/Y
 \$34B = Revenue +31% Y/Y
 60% = Gross Margin
 \$14B = Free Cash Flow
 8% = Non-China Revenue as % of Total**

Amazon

\$783B = Market Capitalization
 \$225B = GMV(E) +25% Y/Y
 \$178B = Revenue +31% Y/Y
 37% = Gross Margin
 \$4B = Free Cash Flow
 31% = Non-USA Revenue as % of Total**

Tmall / Taobao / AliExpress / Lazada / Alibaba.com / 1688.com / Juhuasuan / Daraz	Online Marketplace	Amazon.com
Intime / Suning* / Hema	Physical Retail	Whole Foods / Amazon Go / Amazonbooks
Ant Financial* / Paytm*	Payments	Amazon Payments
Youku / UCWeb / Alisports / Alibaba Music / Damai / Alibaba Pictures*	Digital Entertainment	Amazon Video / Amazon Music / Twitch / Amazon Game Studios / Audible
Ele.Me (Local) / Koubei (Local) / Alimama / (Marketing) / Cainiao (Logistics) / Autonavi (Mapping) / Tmall Genie (IoT)	Other	Alexa (IoT) / Ring (IoT) / Kindle + Fire Devices (Hardware)
Alibaba Cloud	Cloud Platform	Amazon Web Services (AWS)

Alibaba = 'New Retail' Vision Starts in China...

*...through technology & consumer insights,
we [Alibaba] put the right products in front of right customers at the right time...
our 'New Retail' initiatives are substantially growing Alibaba's total addressable
market in commerce...*

*in this process of digitizing the entire retail operation,
we are driving a massive transformation of the traditional retail industry.*

***It is fair to say that our e-commerce platform is
fast becoming the leading retail infrastructure of China.***

*Since Jack Ma coined the term 'New Retail' in 2016,
the term has been widely adopted in China by
traditional retailers & Internet companies alike.
New Retail has become the most talked about concept in business...*

*Alibaba has three unique success factors that are
enabling us to realize the New Retail vision.*

...Alibaba = 'New Retail' Vision Starts in China

...Alibaba's

marketplace platforms handle billions of transactions each month

in shopping, daily services & payments.

These transactions provide us with the

best insights into consumer behavior

& shifting consumption trends. This puts us in the best position to

enable our retail partners to grow their business.

*...Alibaba is a **deep technology** company.*

We contribute expertise in cloud, artificial intelligence,

mobile transactions & enterprise systems to help our

retail partners improve their businesses

through digitization & operating efficiency.

...Alibaba has the most

comprehensive ecosystem of commerce platforms, logistics & payments

to support the digital transformation of the retail sector.

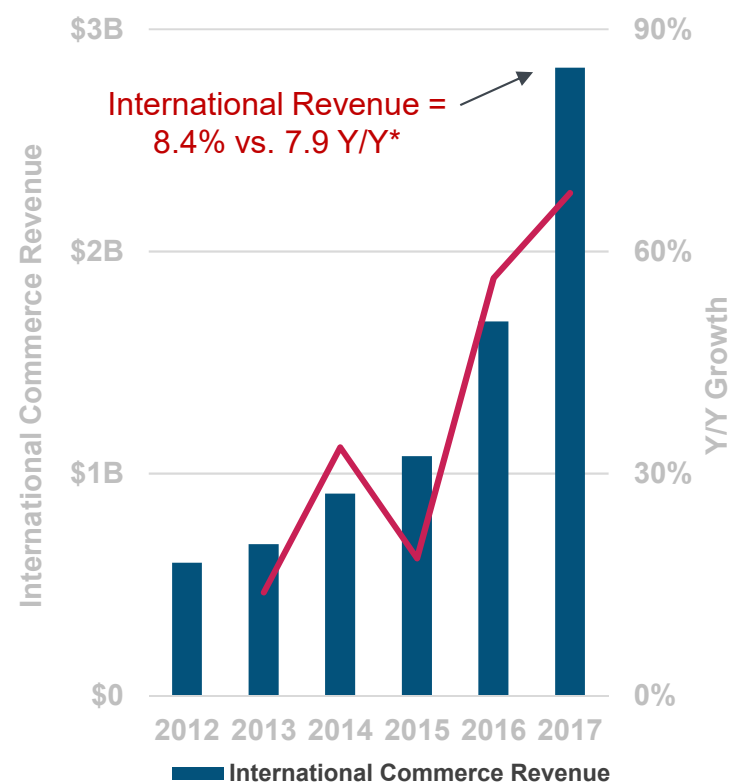
...Alibaba = Extending Platform Beyond China

Alibaba Non-China E-Commerce Highlights

Selected Investment

Company	Country	Category	Type	Date
Daraz.pk	Pakistan	Marketplace	M&A	5/18
Tokopedia	Indonesia	Marketplace	Equity	8/17
Paytm	India	Payments	Equity	4/17
Lazada	Singapore	Marketplace	M&A	4/16

Revenue

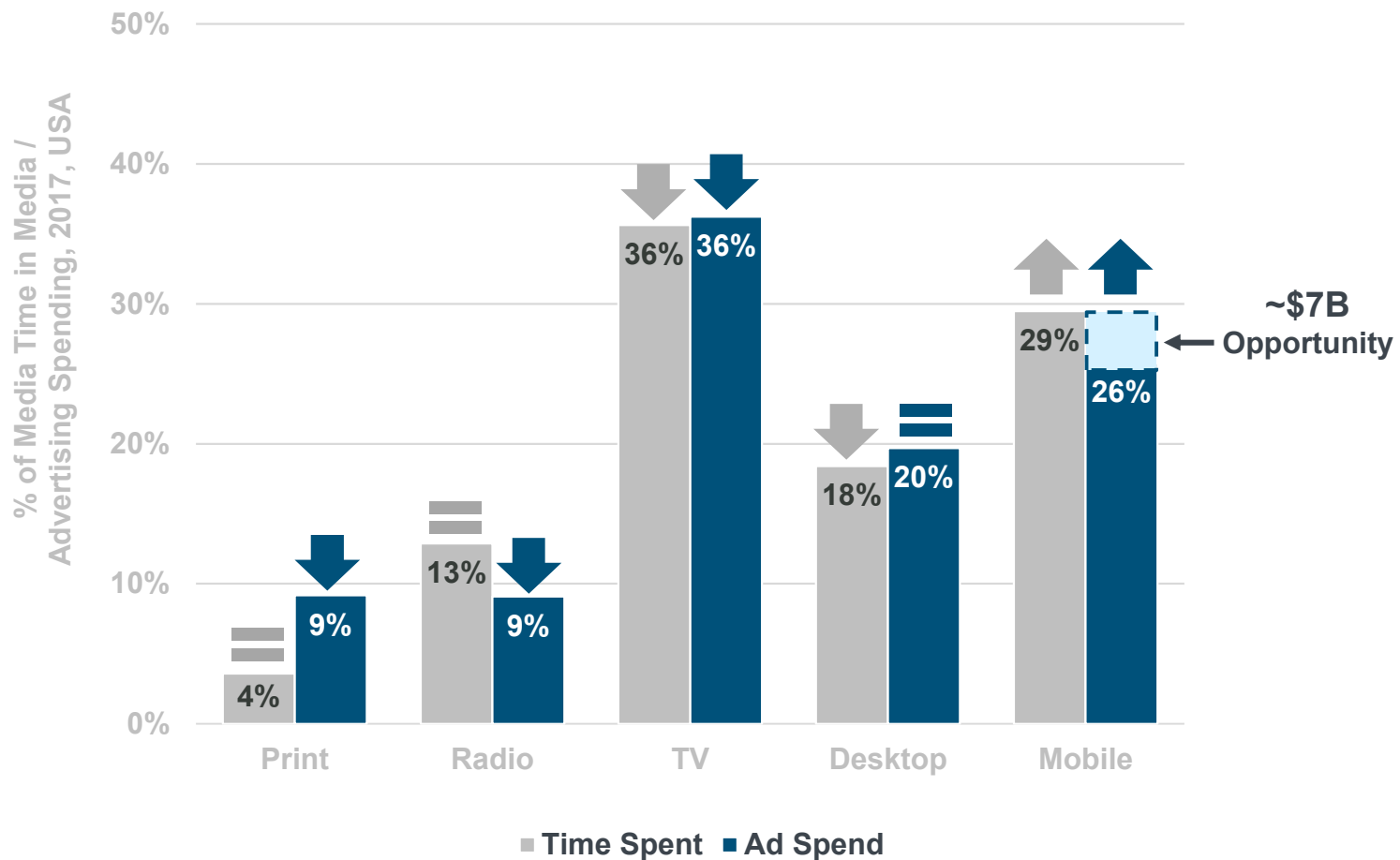


INTERNET ADVERTISING =

**GROWTH CONTINUING...
ACCOUNTABILITY RISING**

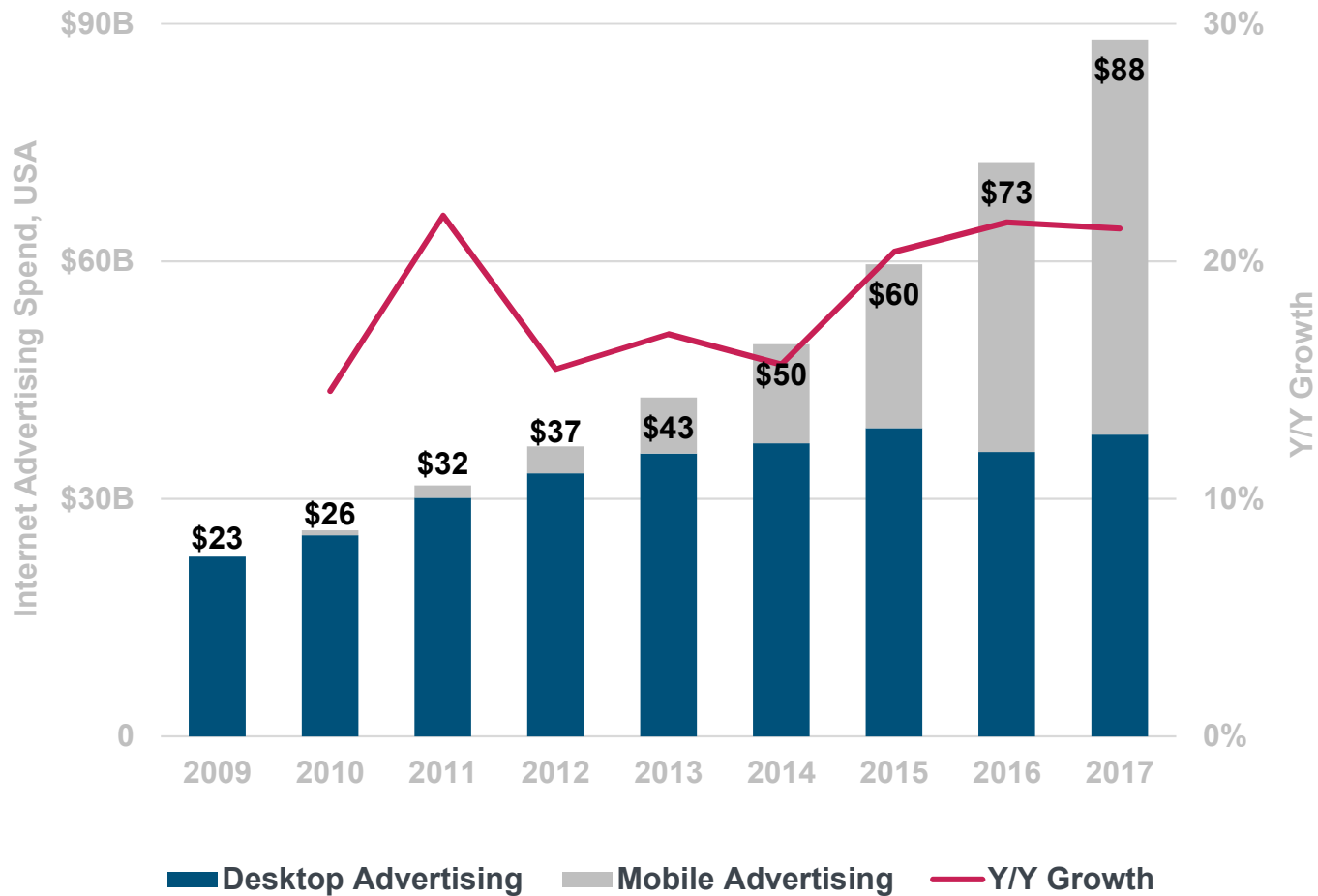
Advertising \$ = Shift to Usage (Mobile) Continues

% of Time Spent in Media vs. % of Advertising Spending



Internet Advertising =
+21% vs. +22% Y/Y

Internet Advertising Spend



Advertisers / Users vs. Content Platforms = Accountability Rising...

Many Americans Believe Fake News Is Sowing Confusion

Pew Research Center, December 2016

**Procter & Gamble Cut Up to \$140
Million in Digital Ad Spending Because
of Brand Safety Concerns**

Adweek, July 2017

**Unilever Threatens to Reduce Ad Spending on Tech Platforms That Don't
Combat Divisive Content**

The Wall Street Journal, February 2018

...Advertisers / Users vs. Content Platforms = Accountability Rising

Content Initiatives

Google / YouTube

8MM = Videos Removed (Q4:17)...
81% Flagged by Algorithms...
75% Removed Before First View

2MM = Videos De-Monetized For
Misleading Content Tagging (2017)

10K = Content Moderators (2018 Goal)

Facebook (Q1:18)

583MM = Fake Accounts Removed...
99% Flagged Prior To User Reporting

21MM = Pieces of Lewd Content Removed...
96% Flagged by Algorithms

3.5MM = Pieces of Violent Content Removed...
86% Flagged by Algorithms

2.5MM = Pieces of Hate Speech Removed...
38% Flagged by Algorithms

+7,500 = Content Moderators...
3,000 Hired (5/17–2/18)

CONSUMER SPENDING =

DYNAMICS EVOLVING...

INTERNET CREATING OPPORTUNITIES



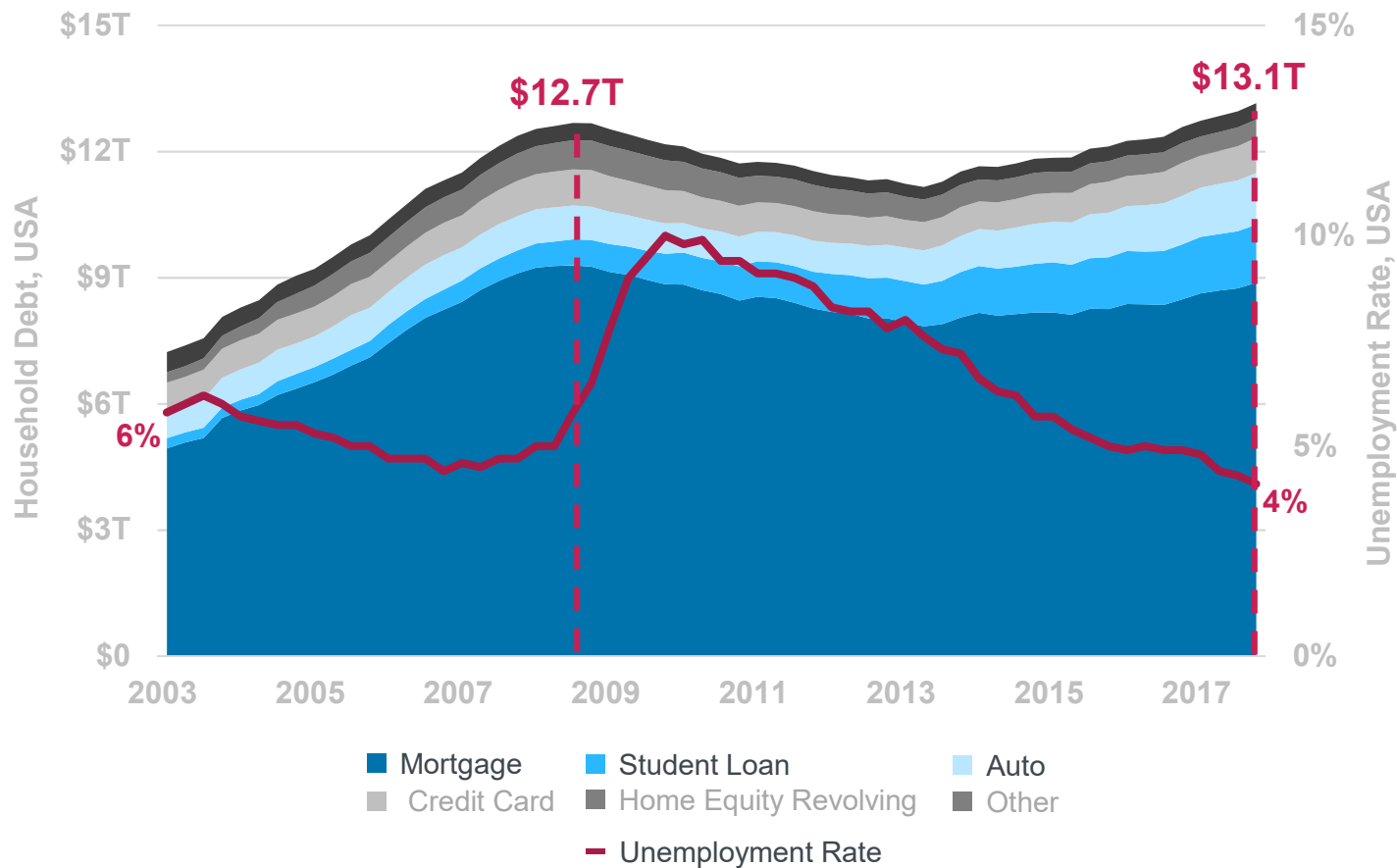
Consumers...

***Making Ends Meet =
Difficult***

Household Debt = Highest Level Ever & Rising...

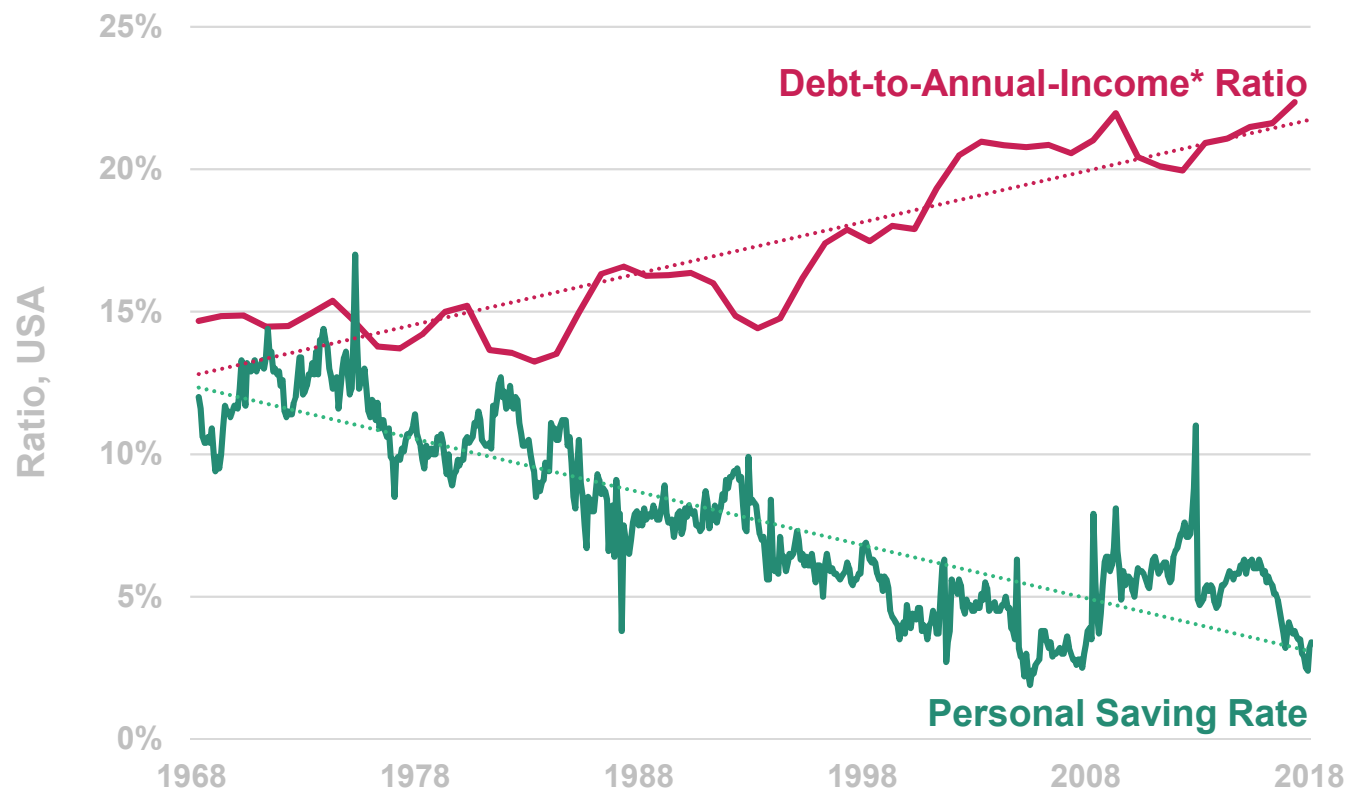
Change vs. Q3:08 = Student +126%...Auto +51%...Mortgage -4%

Household Debt & Unemployment Rate



Personal Saving Rate = Falling @ 3% vs. 12% Fifty Years Ago...
Debt-to-Annual-Income Ratio = Rising @ 22% vs. 15%

Personal Saving Rate & Debt-to-Annual-Income* Ratio

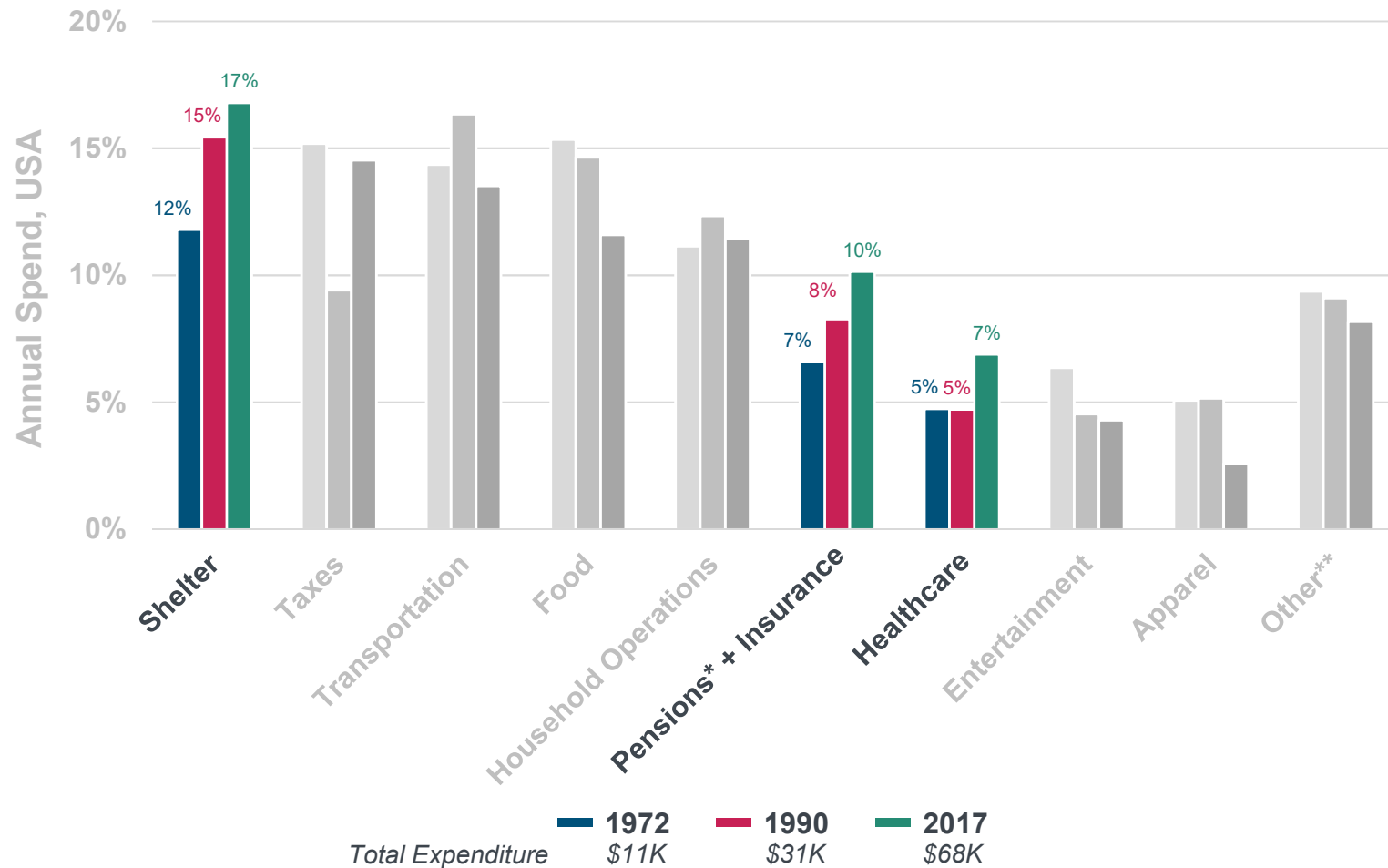




***Relative Household Spending =
Shifting Over Past Half-Century***

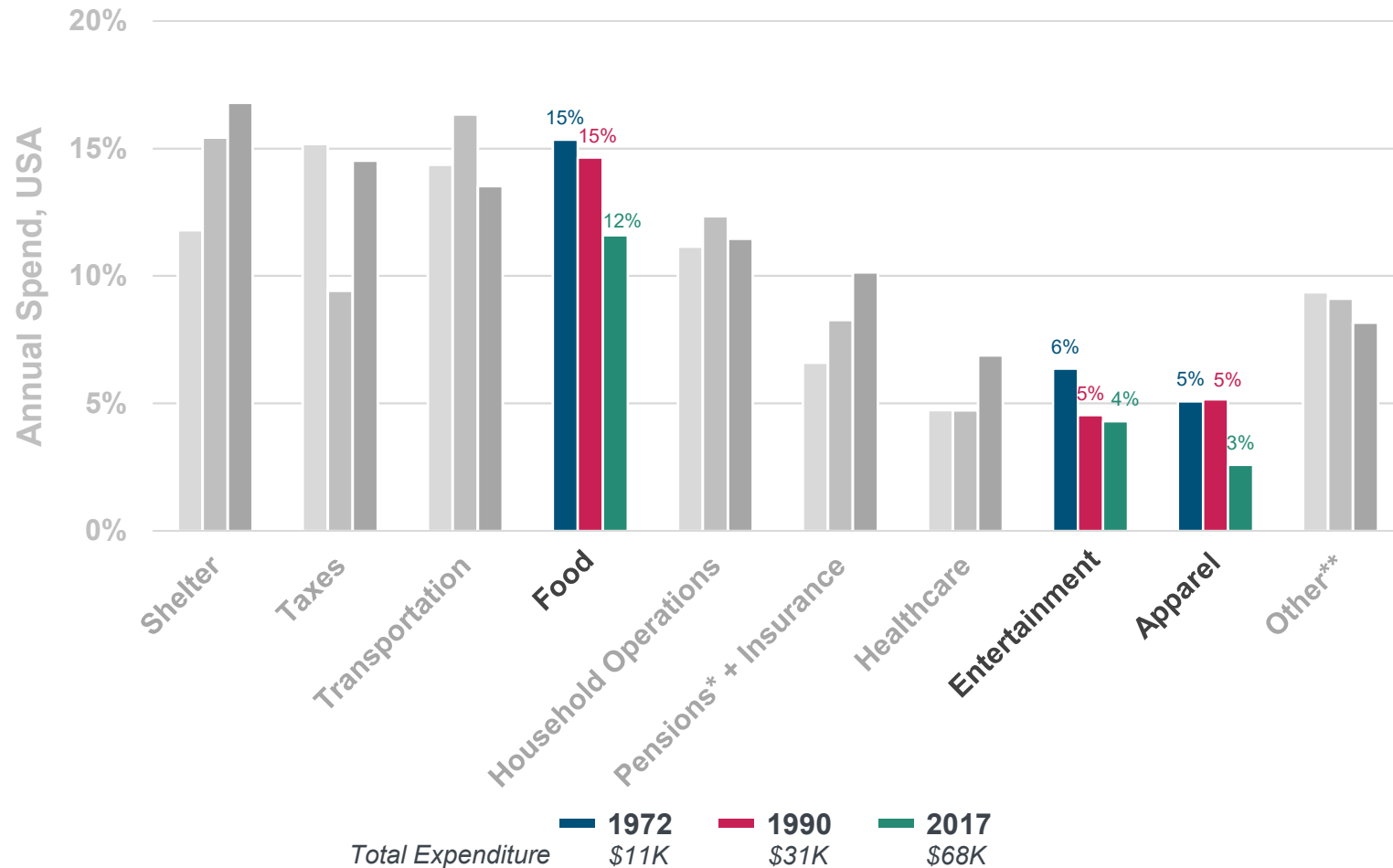
Relative Household Spending *Rising* Over Time = Shelter + Pensions / Insurance + Healthcare...

Relative Household Spending



...Relative Household Spending *Falling* Over Time = Food + Entertainment + Apparel

Relative Household Spending



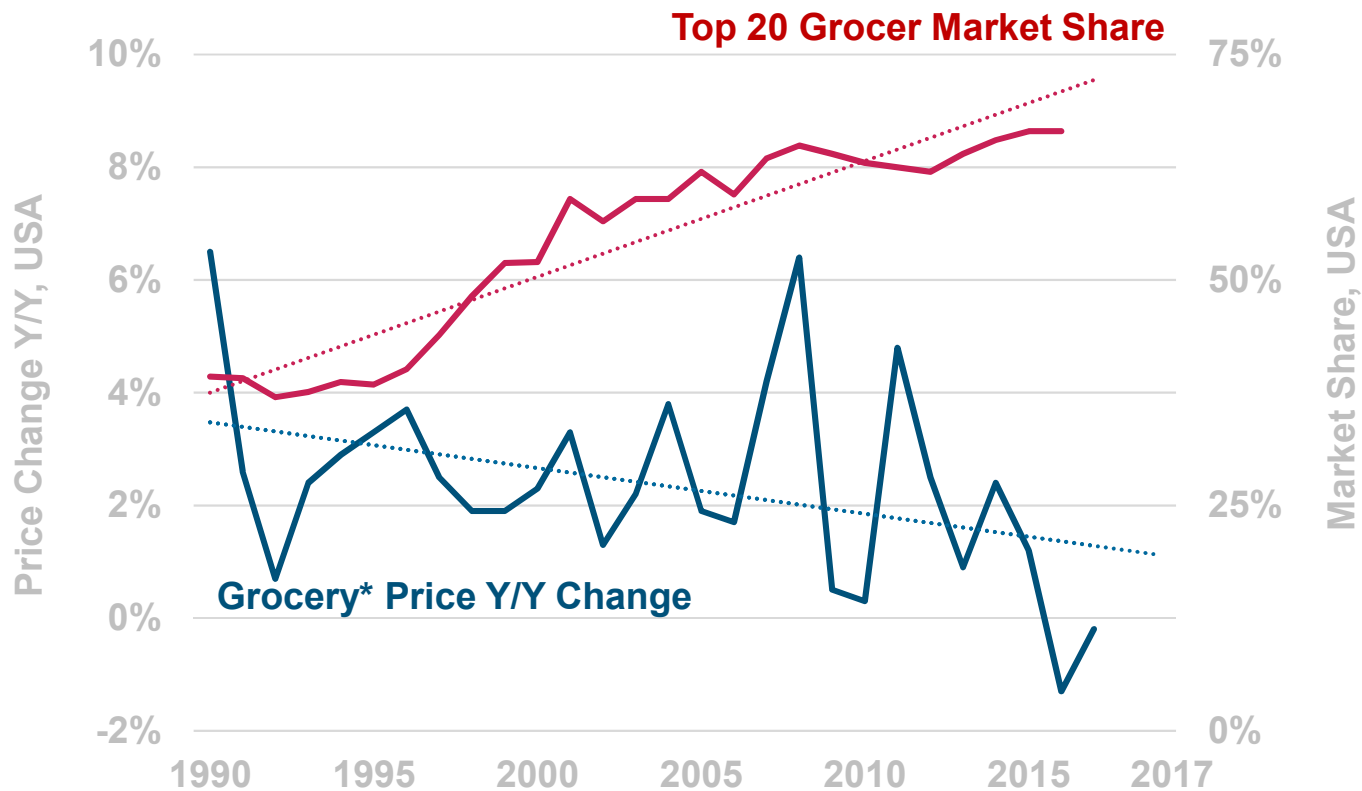


Food =

*12% vs. 15% of
Household Spending 28 Years Ago...*

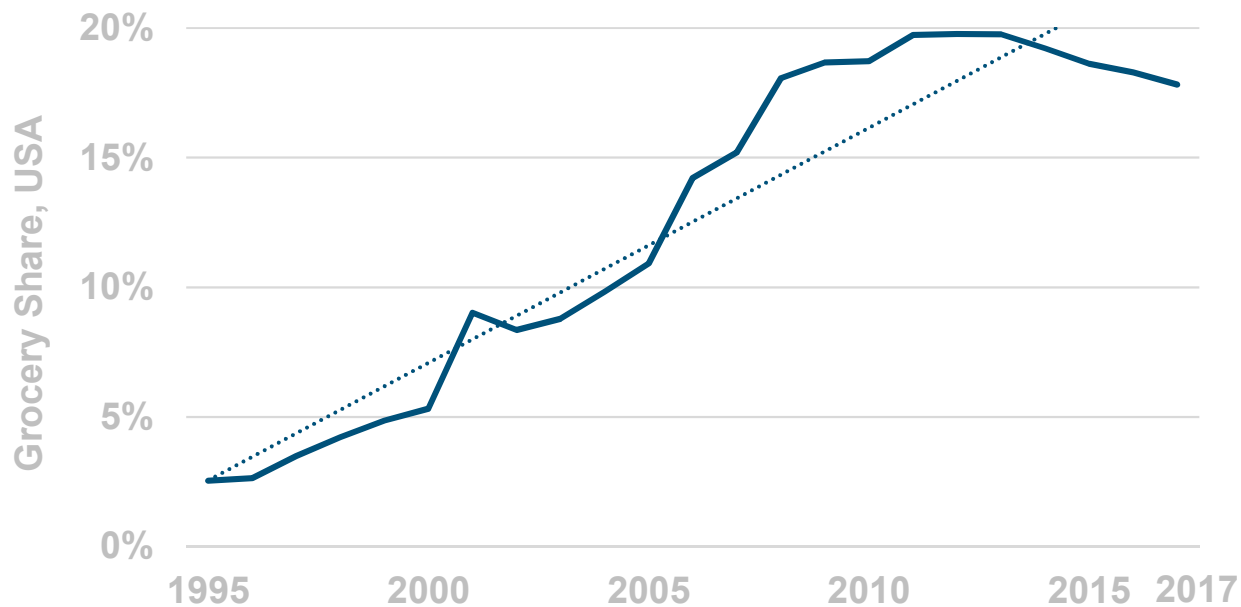
Grocery Price Growth = Declining Trend... Owing To Grocery Competition

Grocery Price Change Y/Y & Market Share of Top 20 Grocers



Walmart = Helped Reduce Grocery Prices via Technology + Scale... per Greg Melich @ MoffettNathanson

Walmart – Grocery Share



*By using technology to reduce inventory, expenses & shrinkage,
we can create lower prices for our customers.*

- Walmart 1999 Annual Report



E-Commerce =

Helping Reduce Prices for Consumers

*E-Commerce sales have
risen rapidly over the past decade.*

***Online prices are falling – absolutely & relative to –
traditional inflation measures like the CPI.***

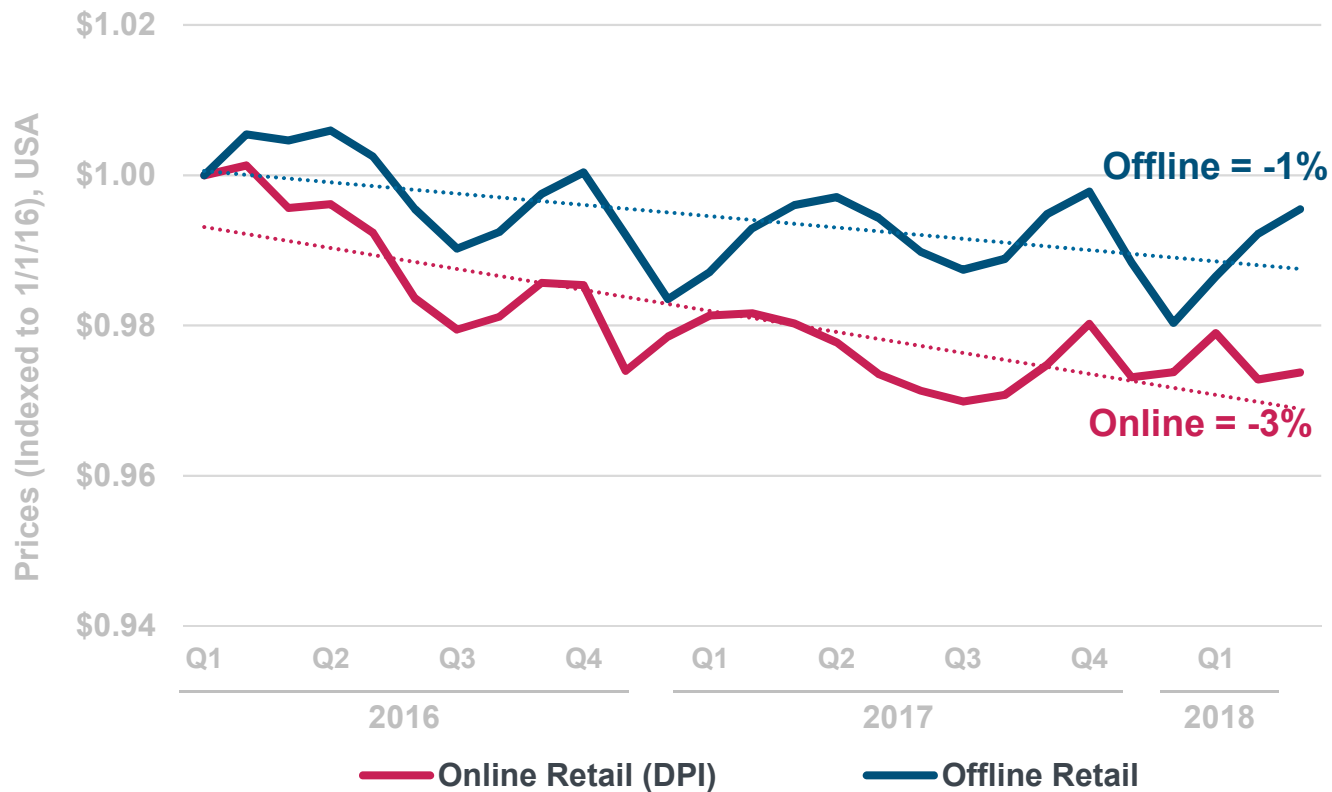
*Inflation online is, literally, 200 basis points
lower per year than what the CPI has been showing.*

*To better understand the economy going forward,
we will need to find better ways to measure prices & inflation.*

- Austan Goolsbee,
Professor of Economics, University of Chicago Booth School of Business, 5/18

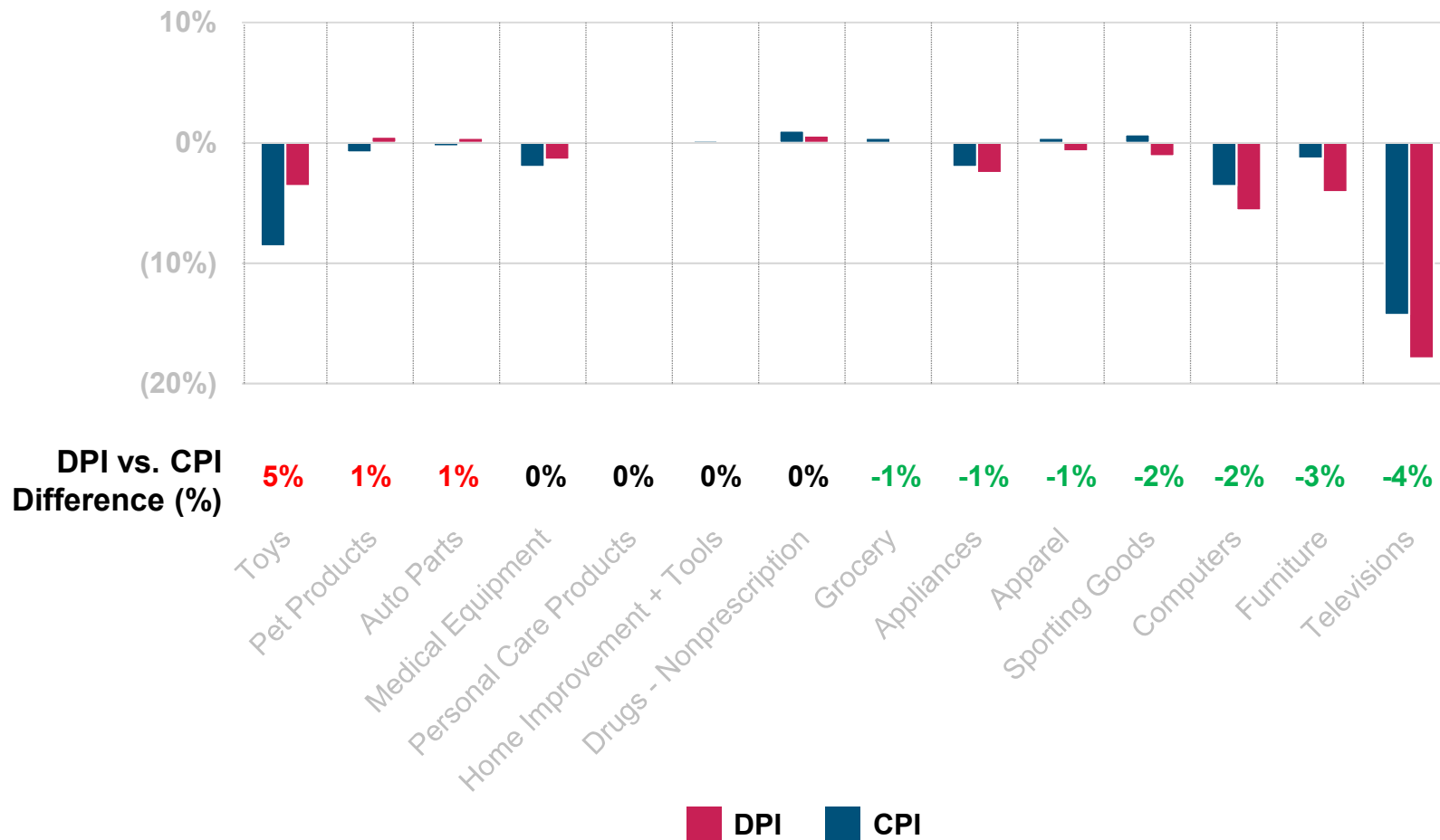
Consumer Goods Prices = Have Fallen... -3% Online & -1% Offline Over 2 1/4 Years per Adobe DPI...

Consumer Prices For Matching Products - Online vs. Offline



...Online vs. Offline Price Decline Leaders = TVs / Furniture / Computers / Sporting Goods per Adobe DPI

Price Change, Y/Y
(DPI vs. CPI), USA, 3/17-3/18





***We've seen how technology can make
online shopping more efficient, with lower prices,
more selection & increased convenience.***

*We are about to see the
same thing happen to offline shopping.*

- Hal Varian, Chief Economist @ Google, 5/18

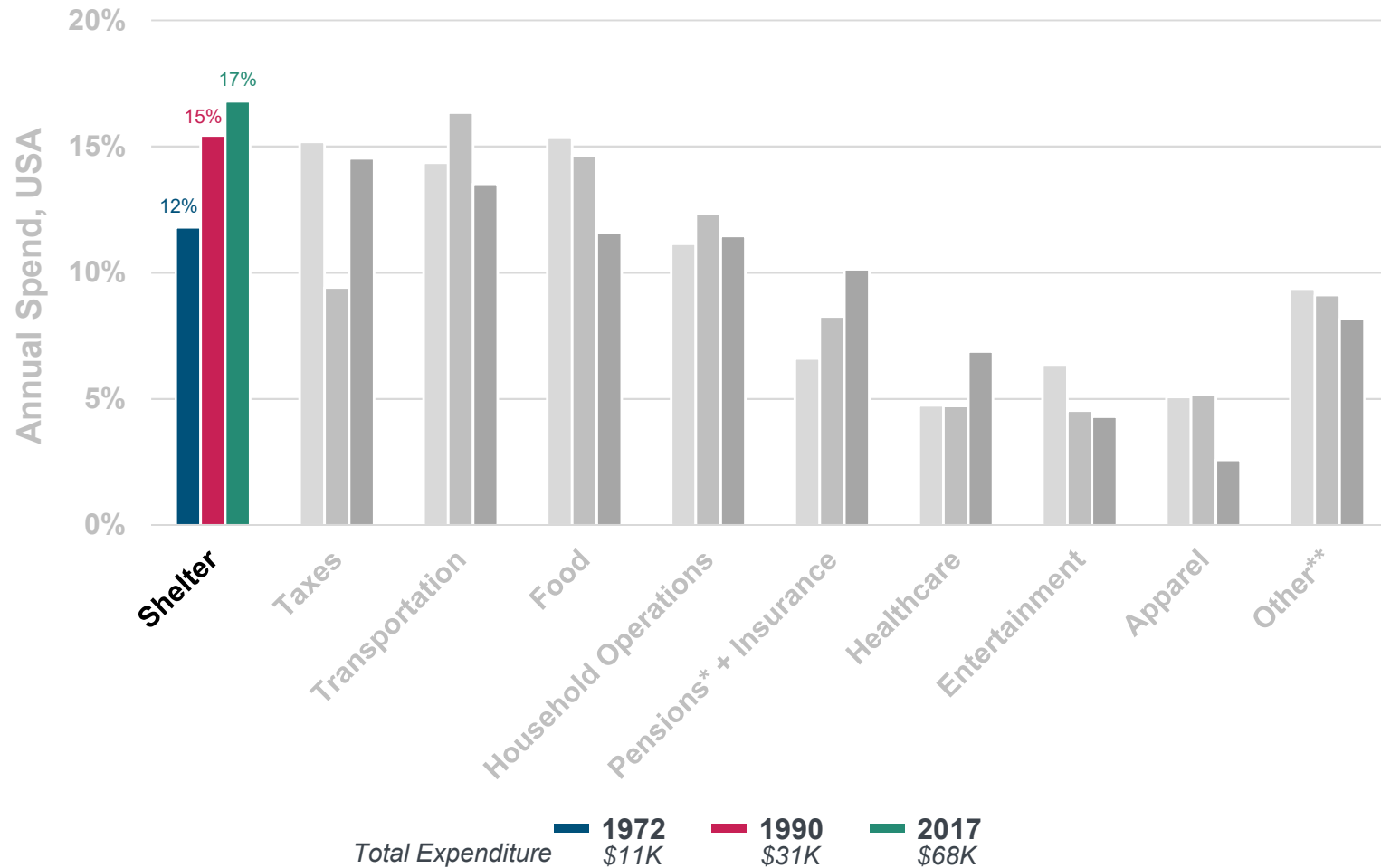


***Relative Household Spending =
How Might it Evolve?***

Shelter Spend = Rising
Transportation Spend = Flat
Healthcare Spend = Rising

Shelter as % of Household Spending = 17% vs. 12% (1972)... Largest Segment in % + \$ Growth

Relative Household Spending

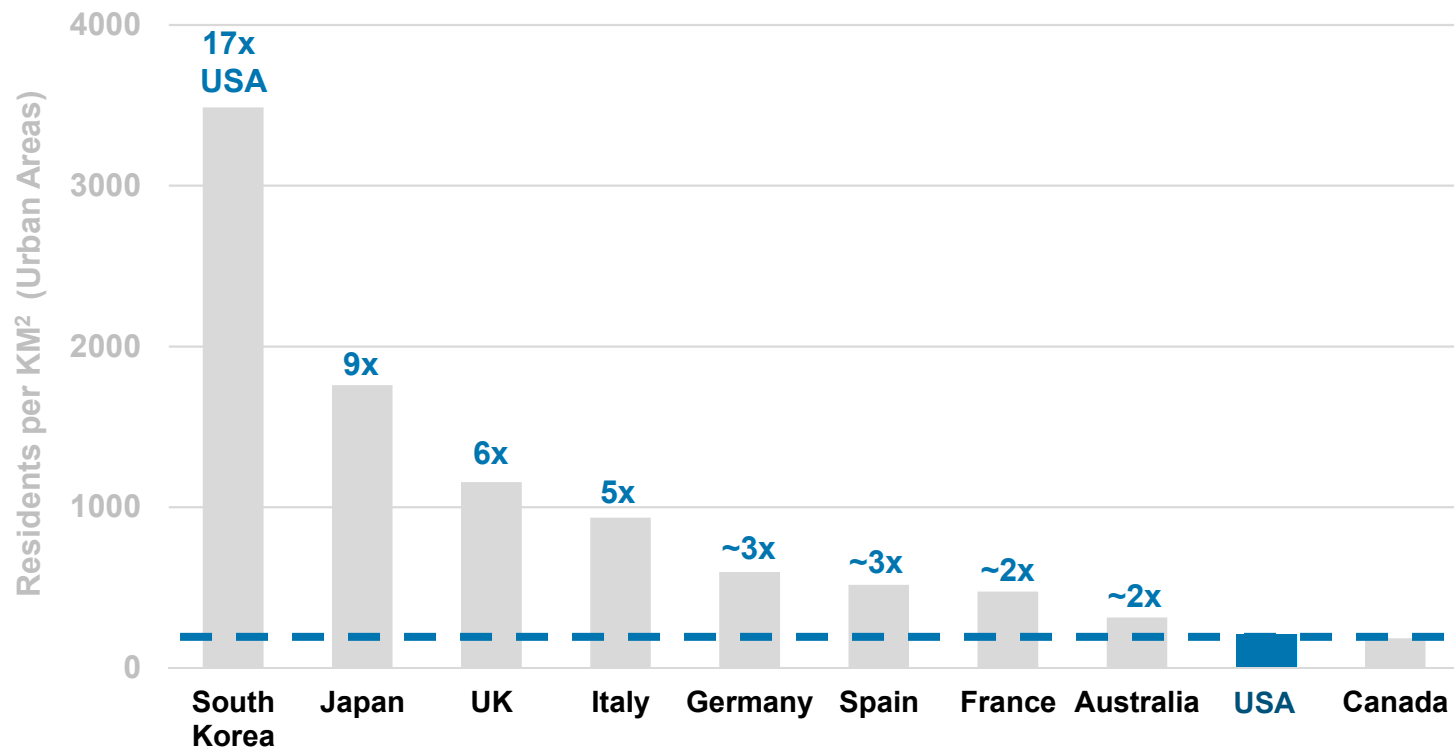




Shelter...

USA Cities = Less Densely Populated vs. Developed World

Population Density – Urban Areas* Top 10 ‘Advanced’ Economies**, 2014



USA Homes = Bigger vs. Developed World...

Average Home Size* (Square Feet) – Select Countries

USA
~1,500



Japan
~1,015



UK
~990

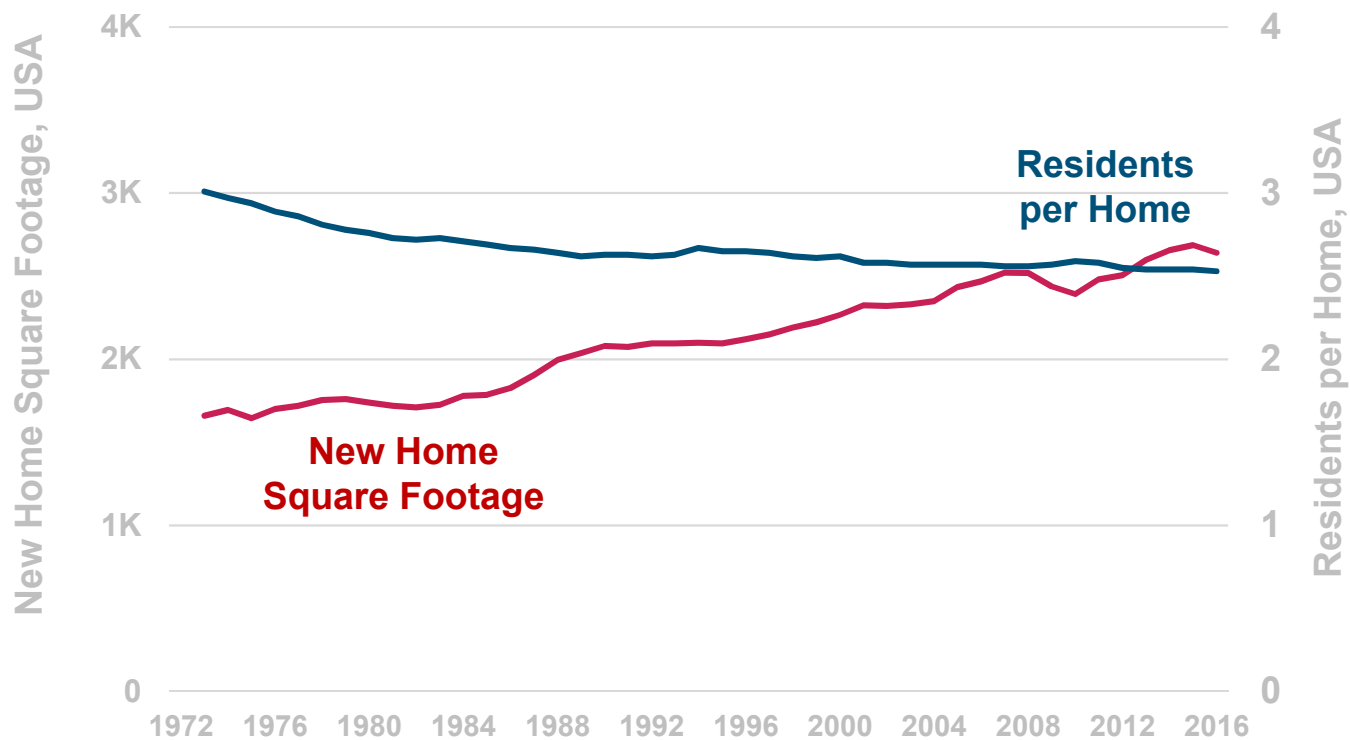


South Korea
~725



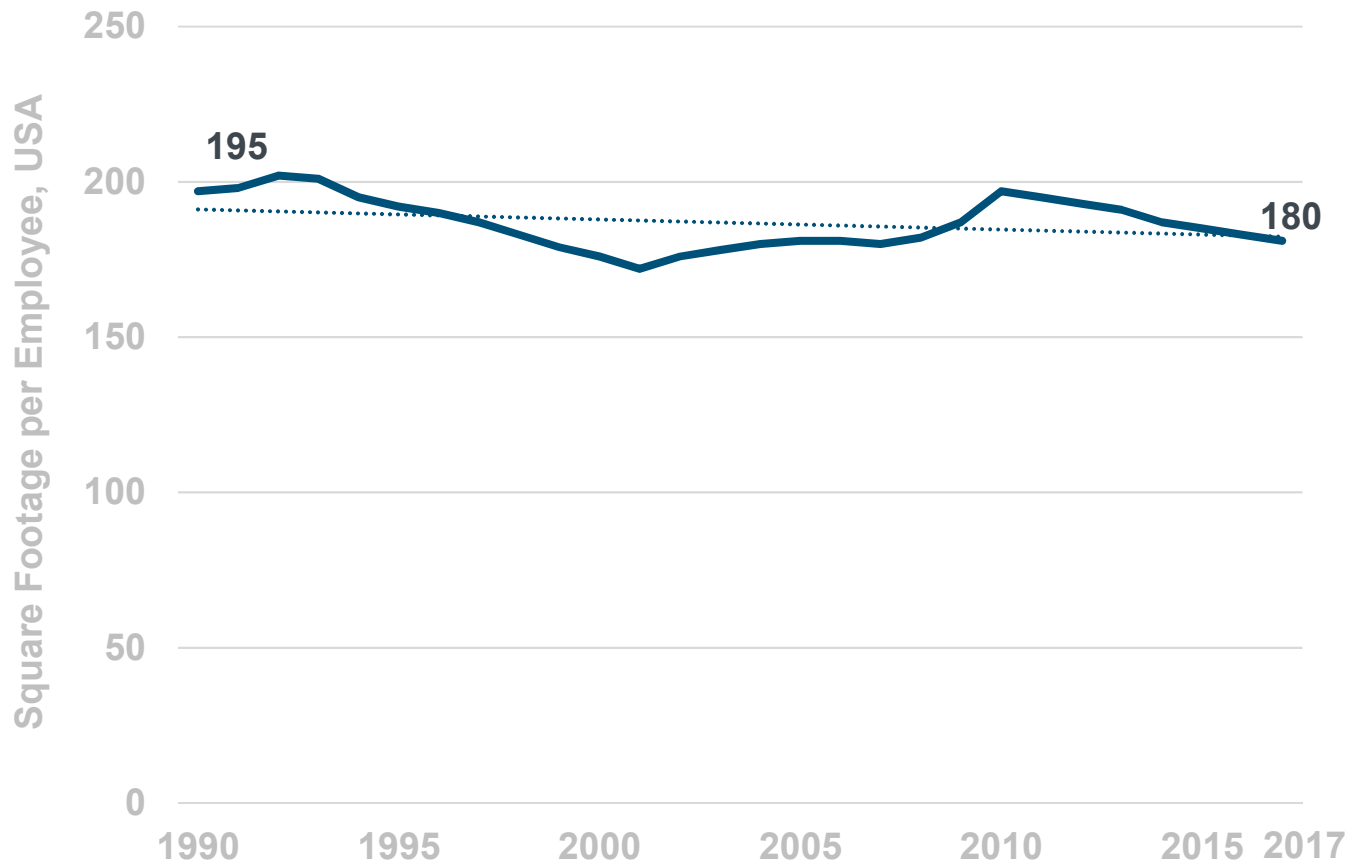
...USA Homes = Getting Bigger...Residents Falling @ 2.5 vs. 3.0 (1972)

Average New Home Square Footage & Residents



USA Office Space = Steadily Getting Denser / More Efficient

Occupied Office Space per Employee – Square Feet





...Shelter...

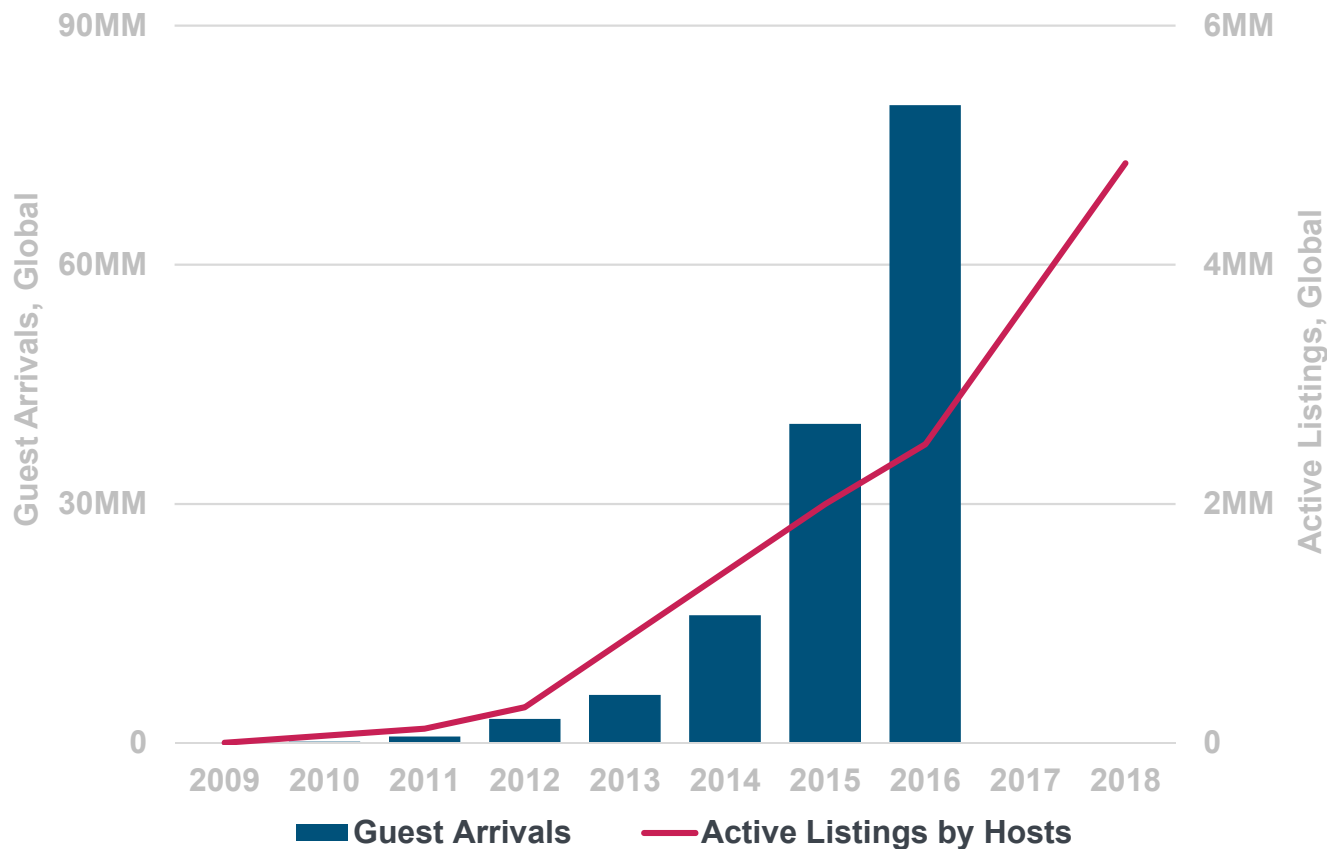
To Contain Spending...

*Consumers May Aim to
Increase Utility of Space*

Airbnb = Provides Income Opportunities for Hosts...

Airbnb Guest Arrivals & Active Listings by Hosts

5MM Global Active Listings



...Airbnb Consumer Benefits = Can Offer Lower Prices for Overnight Accommodations

Airbnb vs. Hotel – Average Room Price per Night



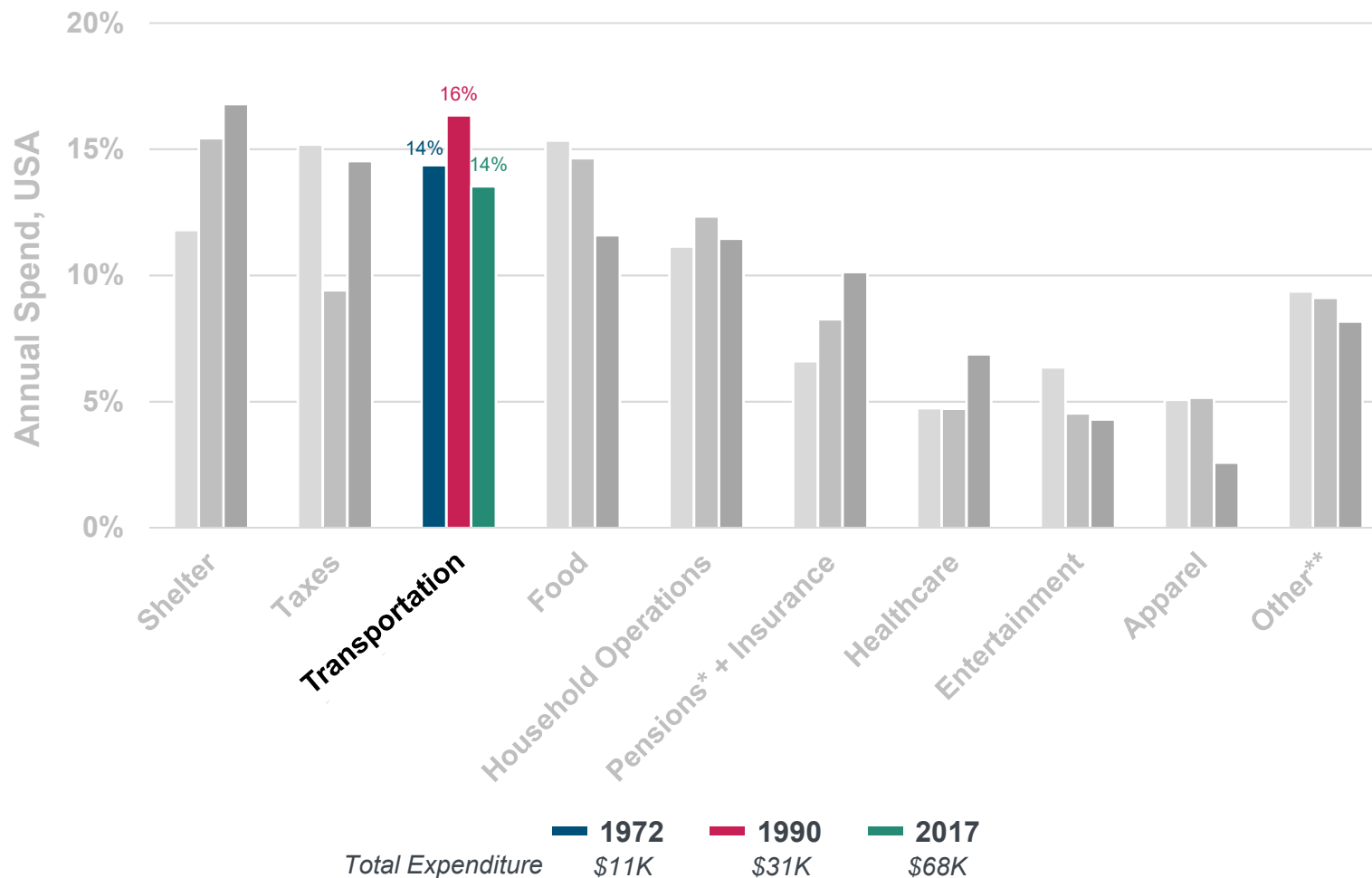


***Relative Household Spending =
How Might it Evolve?***

Shelter Spend = Rising
Transportation Spend = Flat
Healthcare Spend = Rising

Transportation as % of Household Spending = 14% vs. 14% (1972)... #3 Segment of \$ Spending Behind Shelter + Taxes

Relative Household Spending





Transportation...

To Contain Spending...

*Consumers Reducing Relative
Spend on Vehicles +
Increasing Utility of Vehicles*

Transportation as % of Household Spending = Vehicle Purchase % Declining...Other Transportation % Rising

Relative Transportation Spending =

Vehicles Stay On Road Longer...

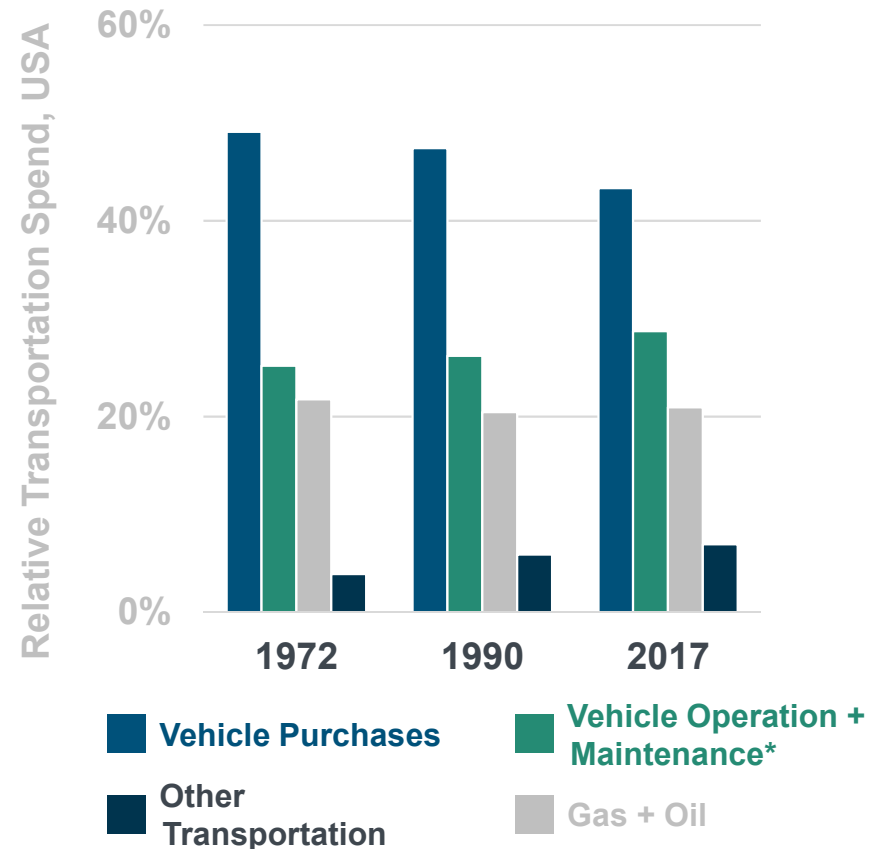
@ 12 vs. 8 Years (1995)
Average Car Lifespan

...Other Transportation Rising

+30% vs. 1995
Public Transit Usage

~2x Y/Y (2017)
Ride-Share Rides

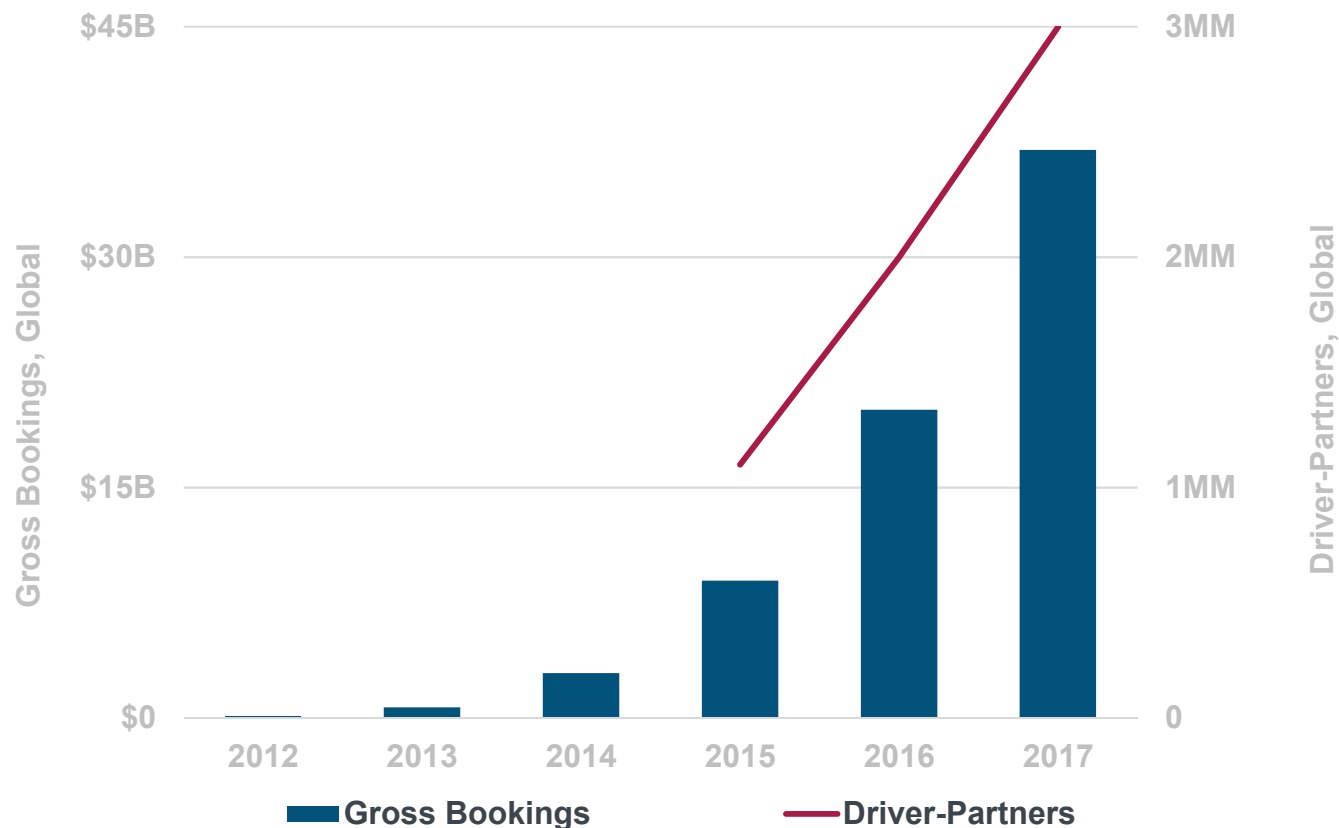
**Relative Household Spending –
Transportation**



Uber = Can Provide Work Opportunities for Driver-Partners...

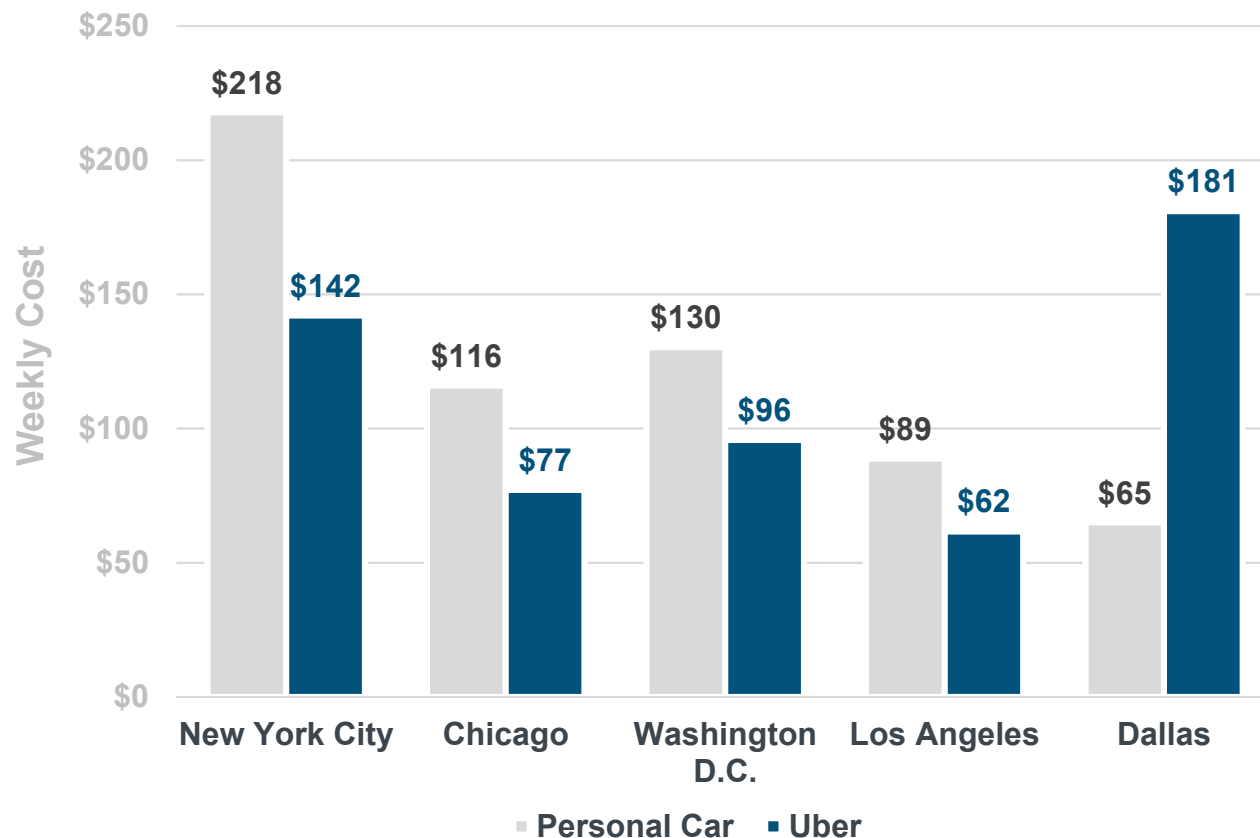
Uber Gross Bookings & Driver-Partners

3MM Global Driver-Partners +50*%



...Uber Consumer Benefits = Lower Commute Cost vs. Personal Cars – 4 of 5 Largest USA Cities

UberX / POOL vs. Personal Car* – Weekly Commute Costs 5 Largest USA Cities, 2017





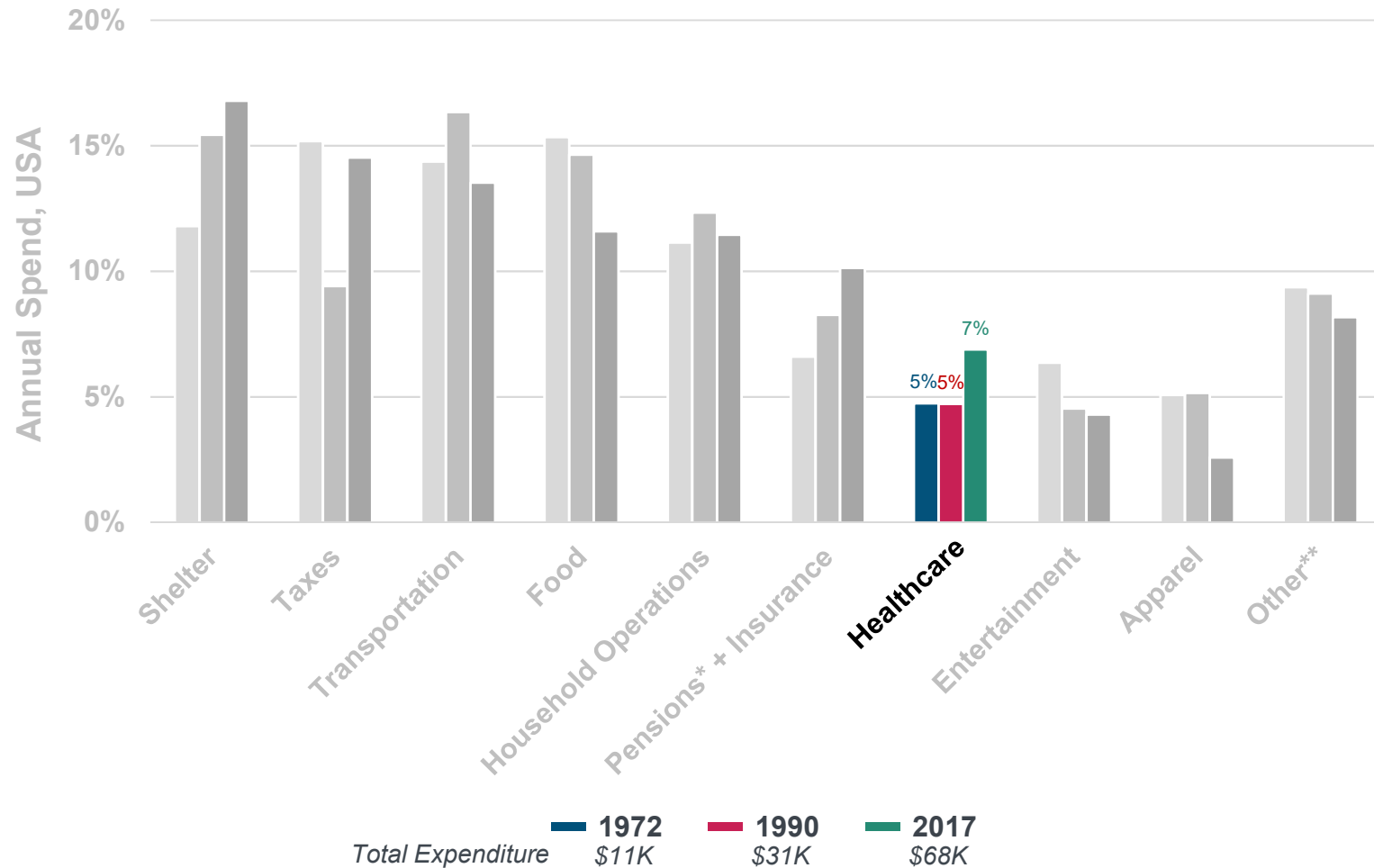
***Relative Household Spending =
How Might it Evolve?***

Shelter Spend = Rising
Transportation Spend = Flat
Healthcare Spend = Rising

CREATED BY NOAH KNAUF @ KLEINER PERKINS

Healthcare as % of Household Spending = 7% vs. 5% (1972)... Fastest Relative % Grower

Relative Household Spending

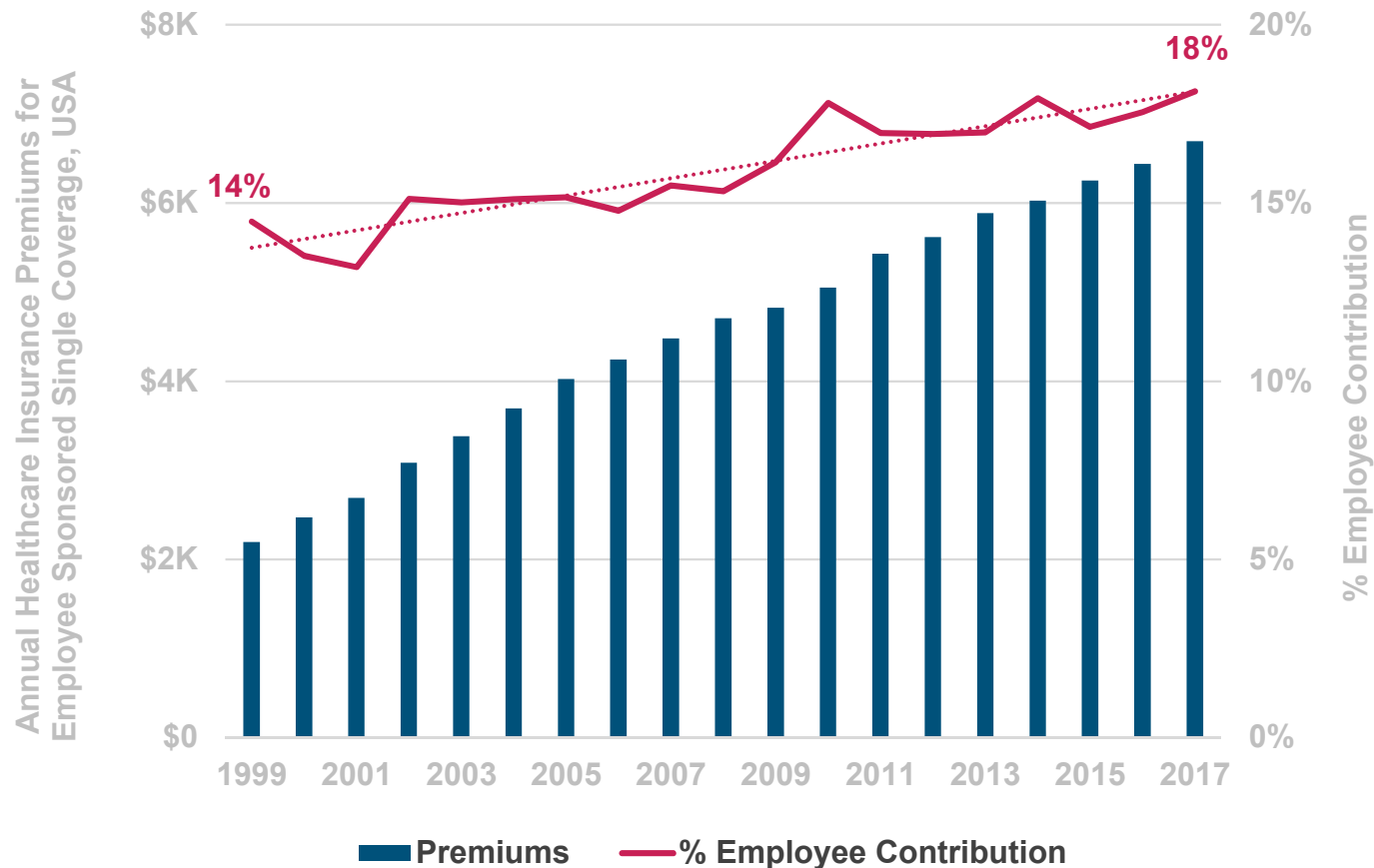




*Healthcare Spending =
Increasingly Shifting to Consumers...*

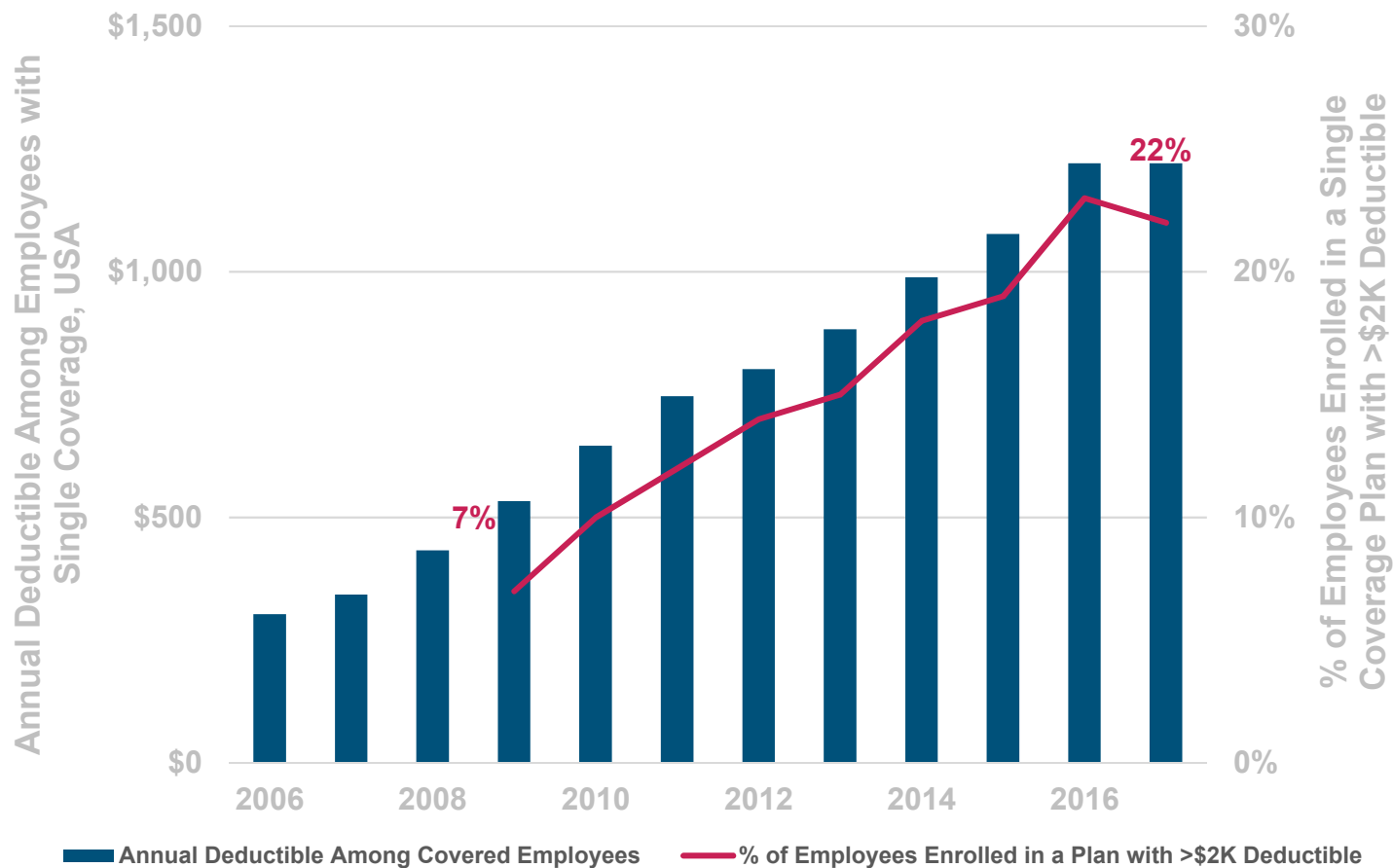
USA Healthcare Insurance Costs = Rising for All... Consumers Paying Higher Portion @ 18% vs. 14% (1999)...


Annual Health Insurance Premiums vs. Employee Contribution



...USA Healthcare Deductible Costs = Rising A Lot... Employees @ >\$2K Deductible = 22% vs. 7% (2009)


Annual Deductibles vs. % of Covered Employees with >\$2K Deductibles





*When Consumers Start Spending More
They Tend To Pay More
Attention to Value + Prices...*

*Will Market Forces
Finally Come to Healthcare &
Drive Prices Lower for Consumers?*



*Healthcare Patients Increasingly
Developing Consumer Expectations...*

Modern Retail Experience

Digital Engagement

On-Demand Access

Vertical Expertise

Transparent Pricing

Simple Payments

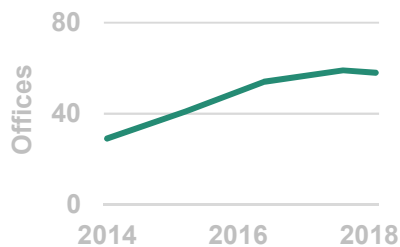
Healthcare Consumerization...

Modern Retail Experience

One Medical

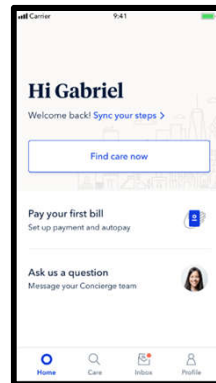


Office Locations

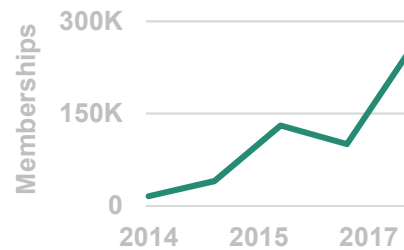


Digital Healthcare Management

Oscar

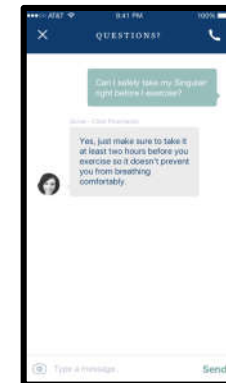


Memberships

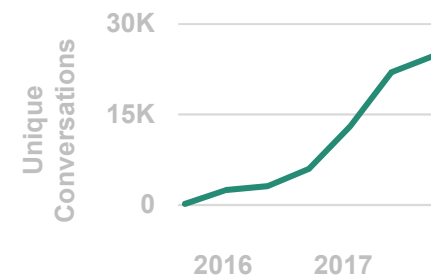


On-Demand Pharmacy

Capsule



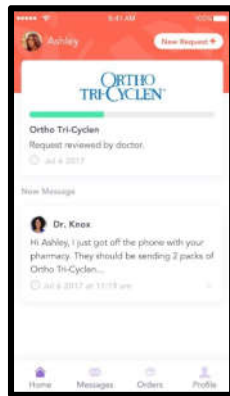
Unique Conversations



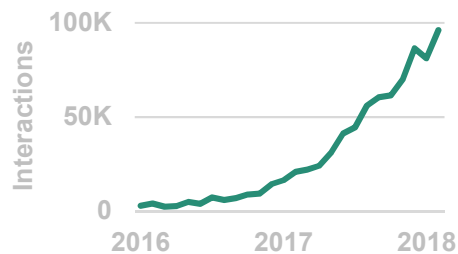
...Healthcare Consumerization

Women's Healthcare Specific Solutions

Nurx



Medical Interactions*

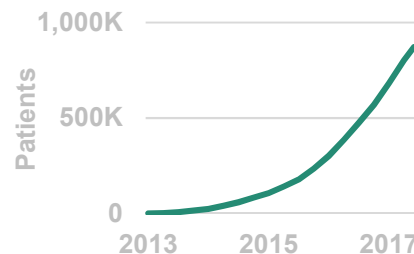


Transparent Pricing

Dr. Consulta

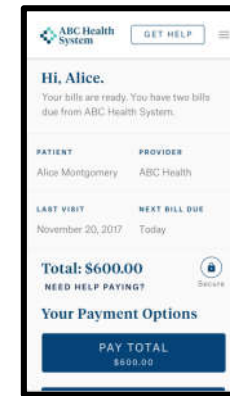


Patients

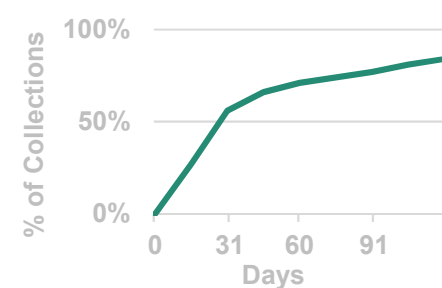



Simplified Healthcare Billing

Cedar



% of Collections**






*Consumerization of Healthcare
+ Rising Data Availability =*

*On Cusp of Reducing
Consumer Healthcare Spending?*

WORK =

CHANGING RAPIDLY...

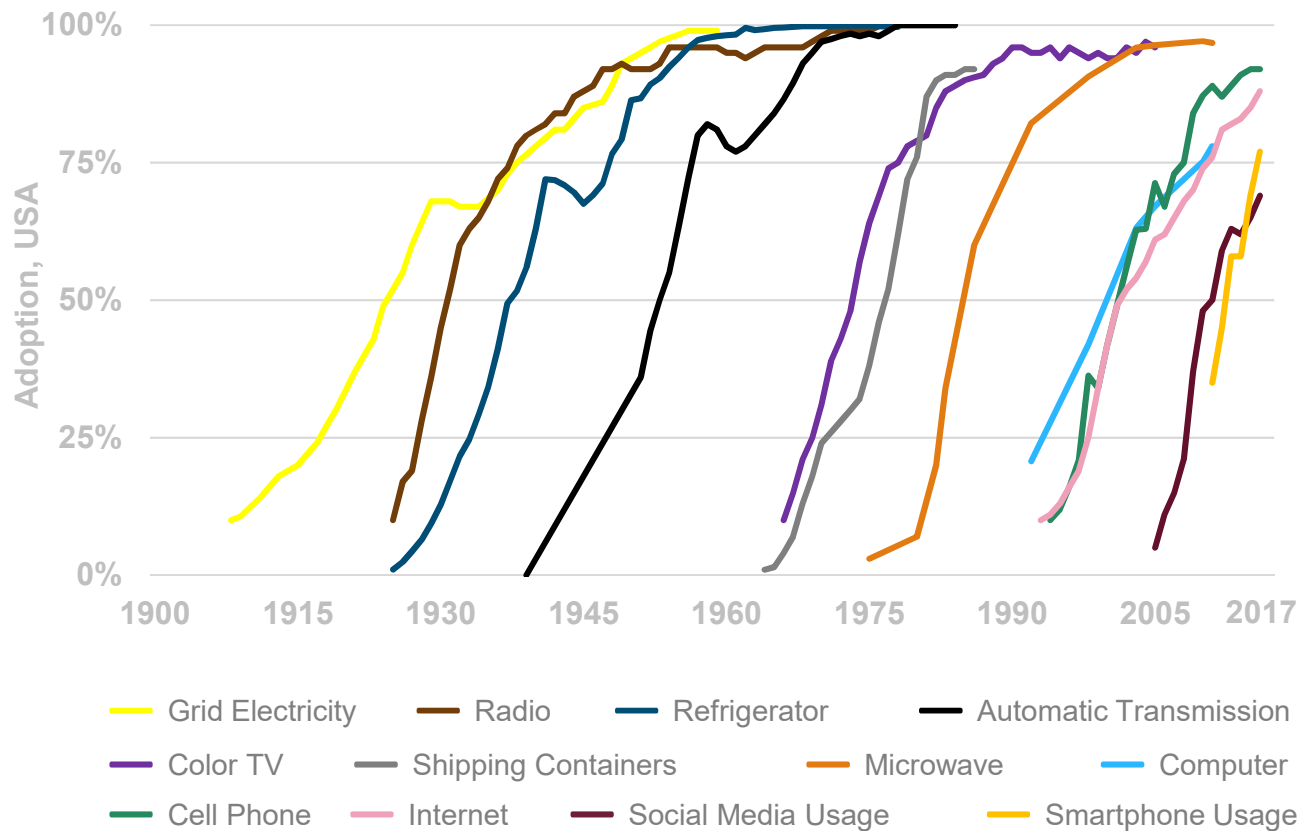
INTERNET HELPING, SO FAR...



***Technology Disruption =
Not New...But Accelerating***

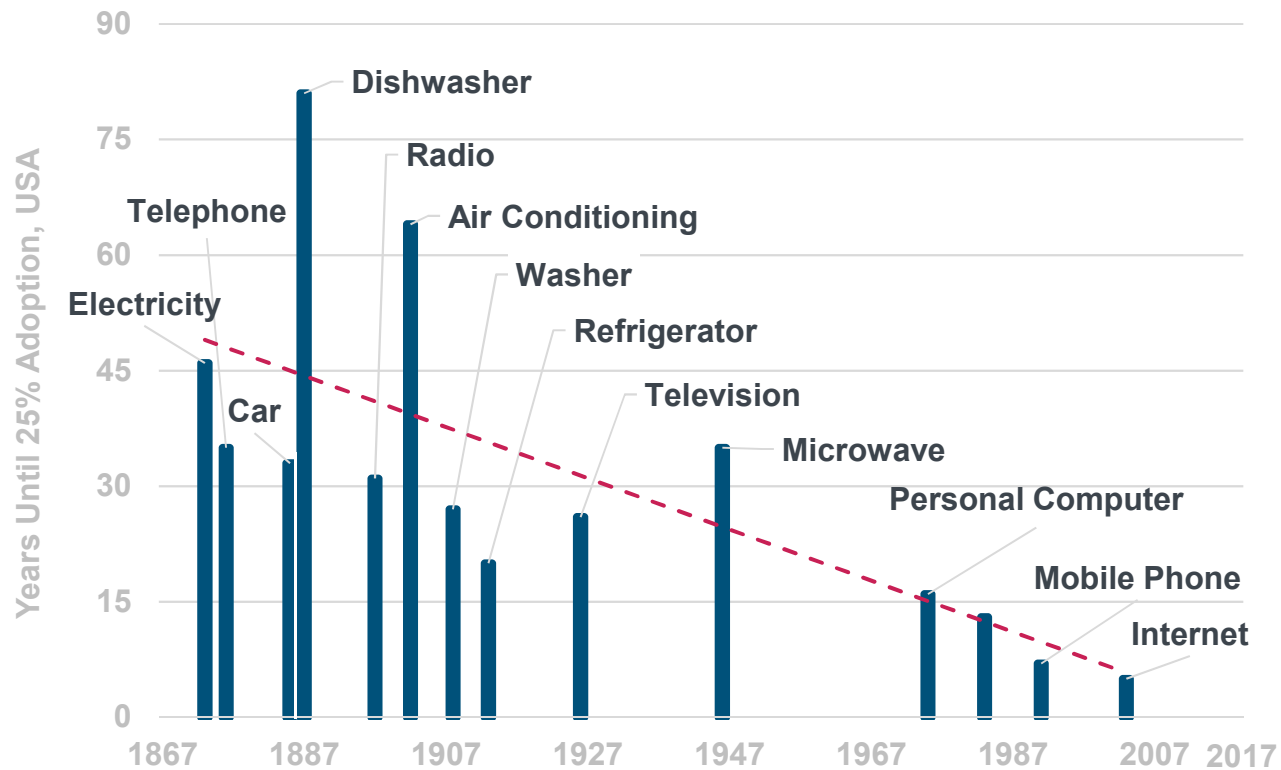
Technology Disruption = Not New...

New Technology Proliferation Curves*



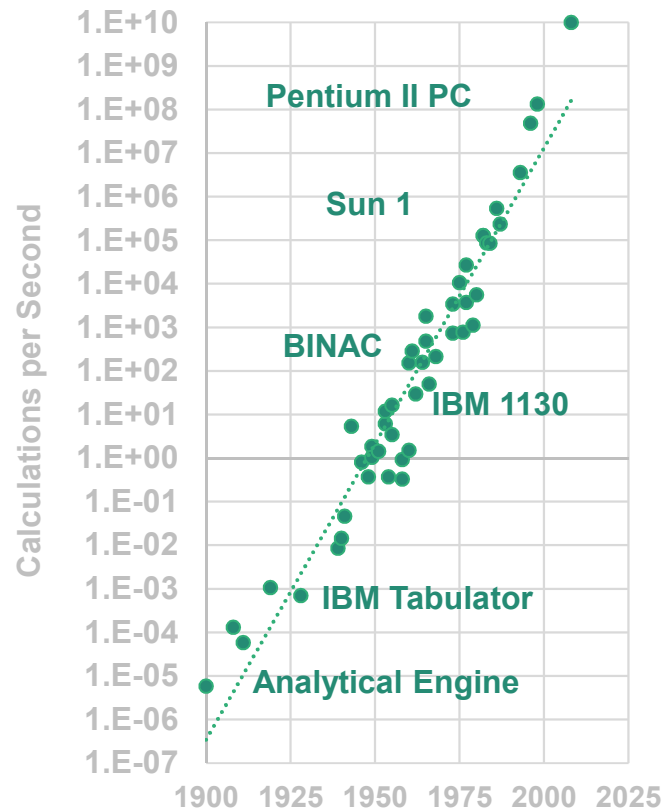
...Technology Disruption =
Accelerating...Internet > PC > TV > Telephone

New Technology Adoption Curves

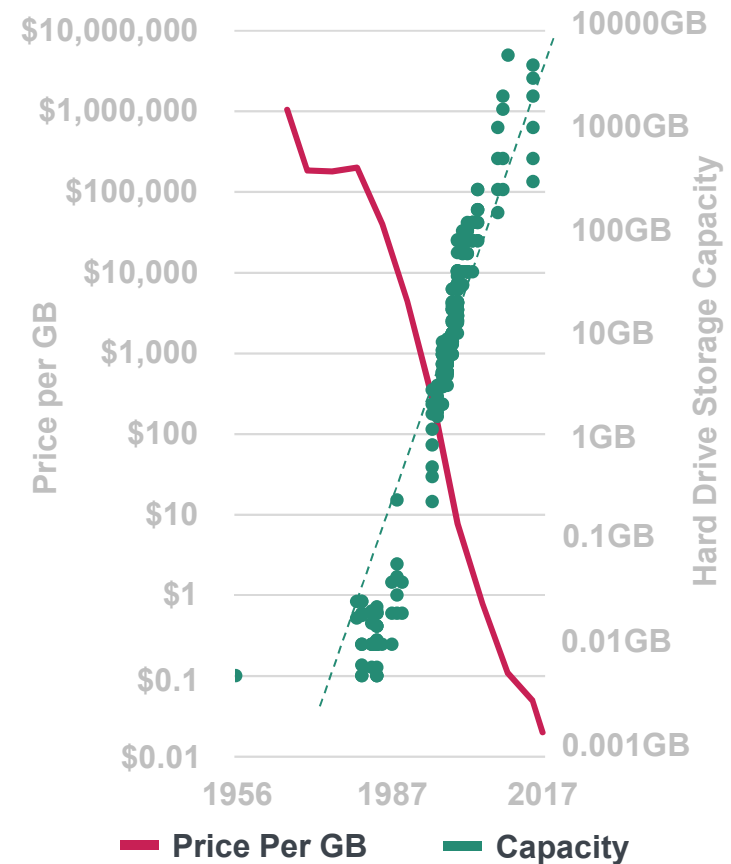


Technology Disruption Drivers = Rising & Cheaper Compute Power + Storage Capacity...

\$1,000 of Computer Equipment

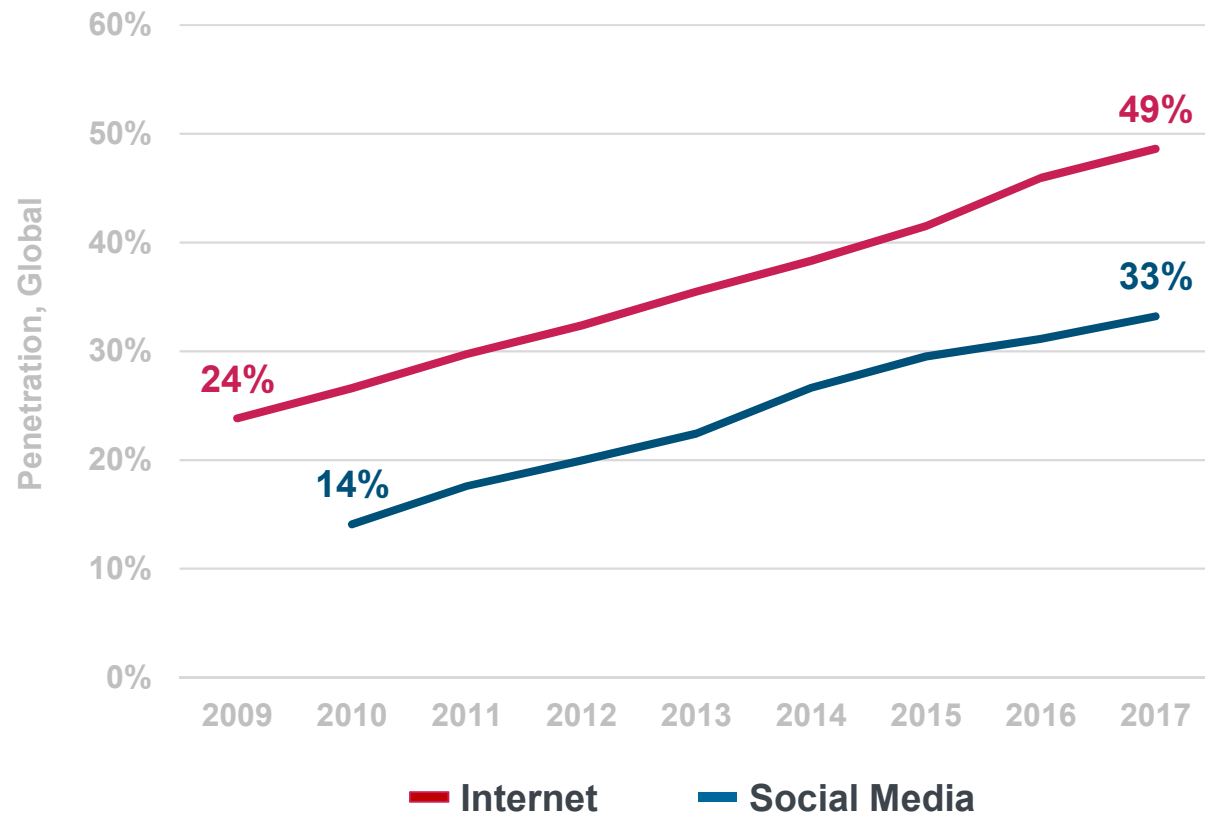


Storage Price vs. Hard Drive Capacity



...Technology Disruption Drivers = Rising & Cheaper Connectivity + Data Sharing

Internet + Social Media – Global Penetration





***New Technologies =
Created / Displaced Jobs Historically***

New Technologies = Job Concerns / Reality Ebb + Flow Over Time

1920

1940

1960

1980

2000

2020

MARCH OF THE MACHINE MAKES IDLE HANDS

Phenomenon of Unemployment With Growth Increased Industrial Output
Partly as the Influence of Labor-Saving Devices as an Underlying Cause

DOES MACHINE DISPLACE MEN IN THE LONG RUN?

New Studies Cited as Old Argument Is Renewed Over Significance of 'Technological Unemployment'



Will Robots Take Our Children's Jobs?

By ALEX WILLIAMS DEC. 31, 2017

THE NEW YORK TIMES

THE ROBOT TAKEOVER OF OUR CHILDREN'S JOBS IS A REALITY CHECK FOR PARENTS AND POLICYMAKERS. AS THE ECONOMY CONTINUES TO RECOVER FROM THE RECESSION, THE QUESTION OF WHETHER ROBOTS WILL TAKE OVER THE JOBS OF OUR CHILDREN IS BECOMING MORE AND MORE RELEVANT. THE ANSWER IS NOT AS SIMPLE AS IT SEEMS. WHILE ROBOTS ARE CAPABLE OF PERFORMING MANY OF THE SAME TASKS AS HUMAN WORKERS, THEY ARE NOT YET CAPABLE OF PERFORMING ALL OF THEM. THE QUESTION IS NOT WHETHER ROBOTS WILL TAKE OUR CHILDREN'S JOBS, BUT WHETHER THEY WILL TAKE OUR CHILDREN'S JOBS IN THE LONG RUN.



200,000 a Year Will Lose Jobs To Automation, U.S. Aides Say

By MILTON BRACKER

HARRISBURG, N. Y., May 4.—of the total decline in production of 100,000 jobs a year during the next decade was predicted at a conference on automation and technological changes here today.

The loss would be "distributed" in jobs created by increased output for each man-hour.

The estimate was made in a paper by Evan Clark and Leon Dreier of the Department of Labor, Mr. Clark is Commissioner of Labor Statistics.

Their paper, one of nine issued at the twenty-first annual meeting of the American Academy of Arts and Sciences, was presented at a dinner here today.

Mr. Clark said that the loss of 200,000 jobs a year would be made up of 100,000 jobs in manufacturing and 100,000 jobs in services.

He said that the loss of 200,000 jobs a year would be made up of 100,000 jobs in manufacturing and 100,000 jobs in services.

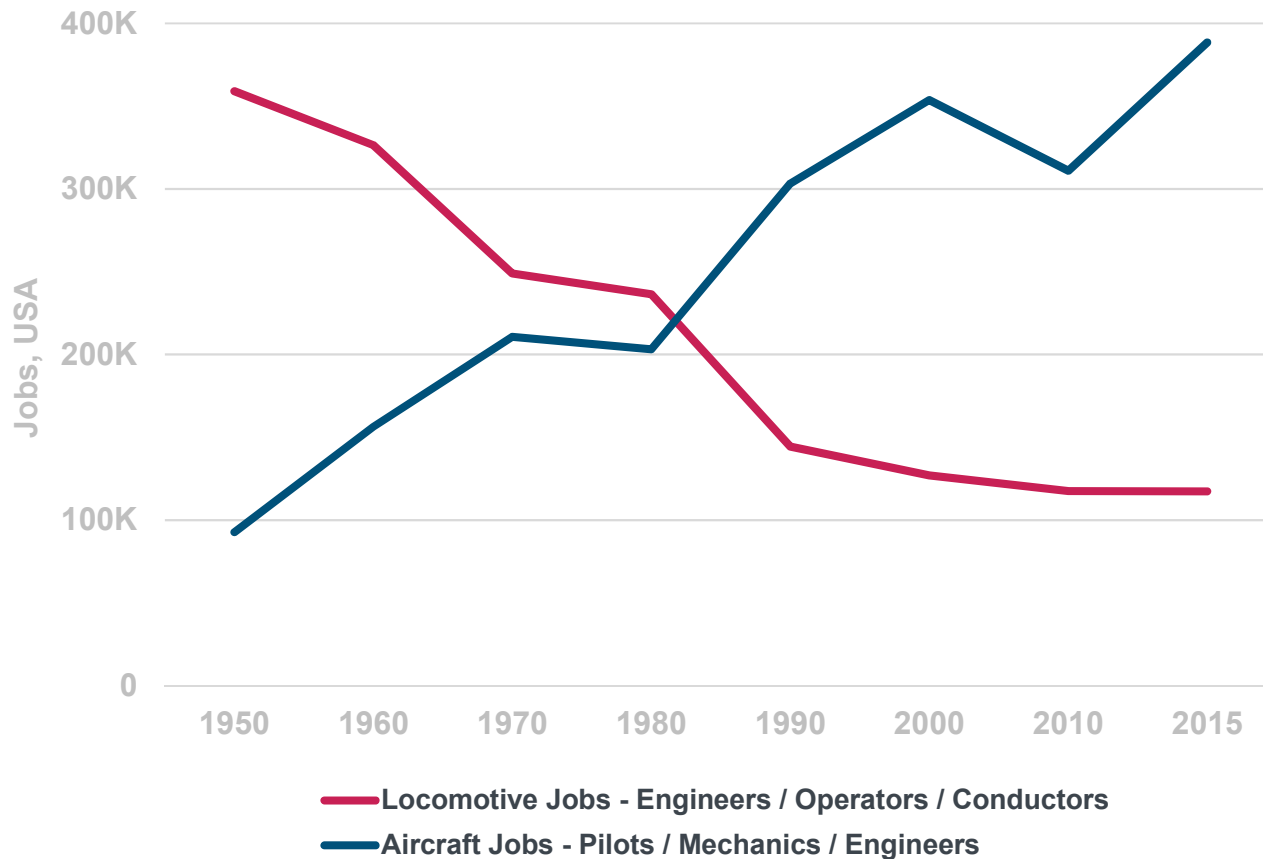
A Robot Is After Your Job

By Torrey Shaker

NEW YORK (UPI)—The robot is coming. It is not a science fiction story. It is a reality. The robot is coming to take your job. The robot is coming to take your job. The robot is coming to take your job.

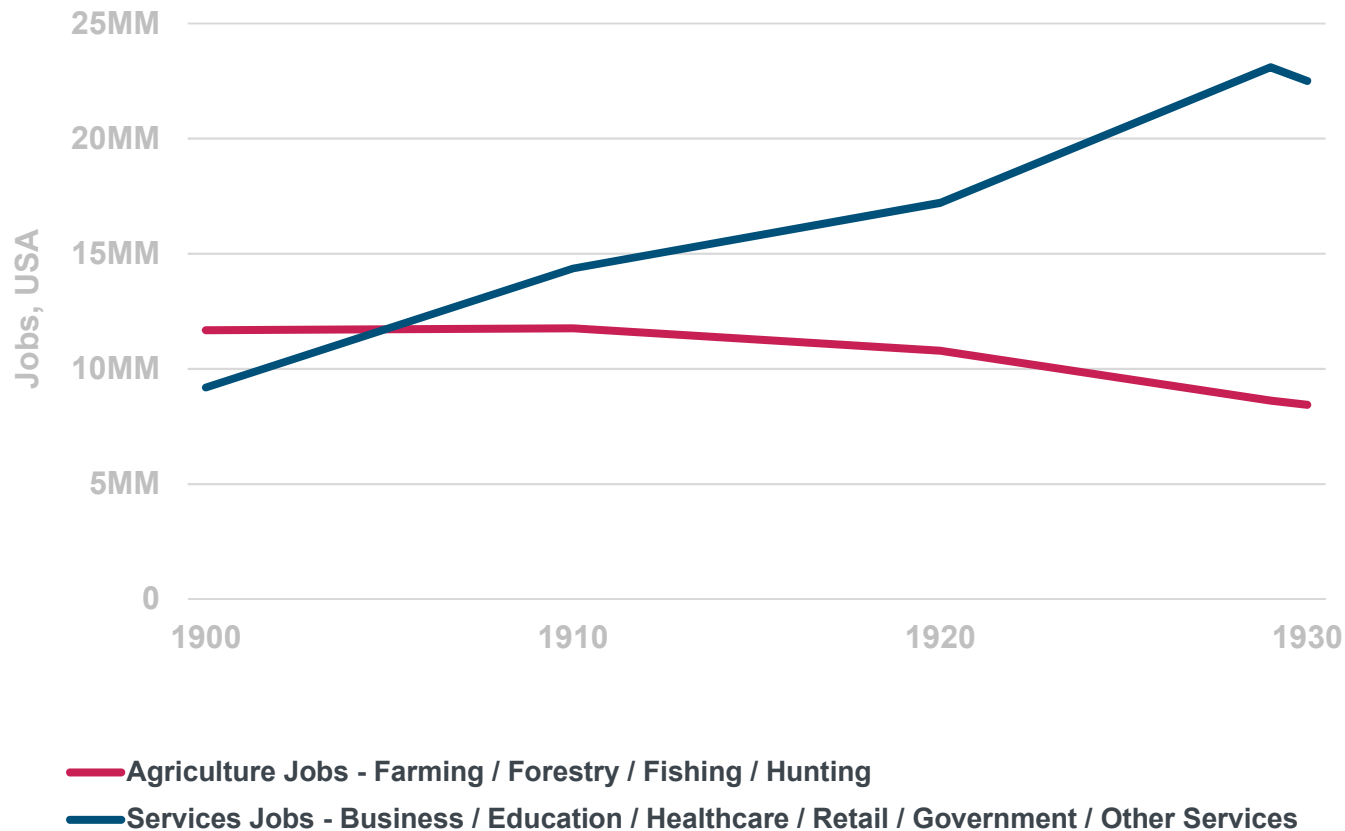
New Technologies = Aircraft Jobs Replaced Locomotive Jobs...

Locomotive vs. Aircraft Jobs



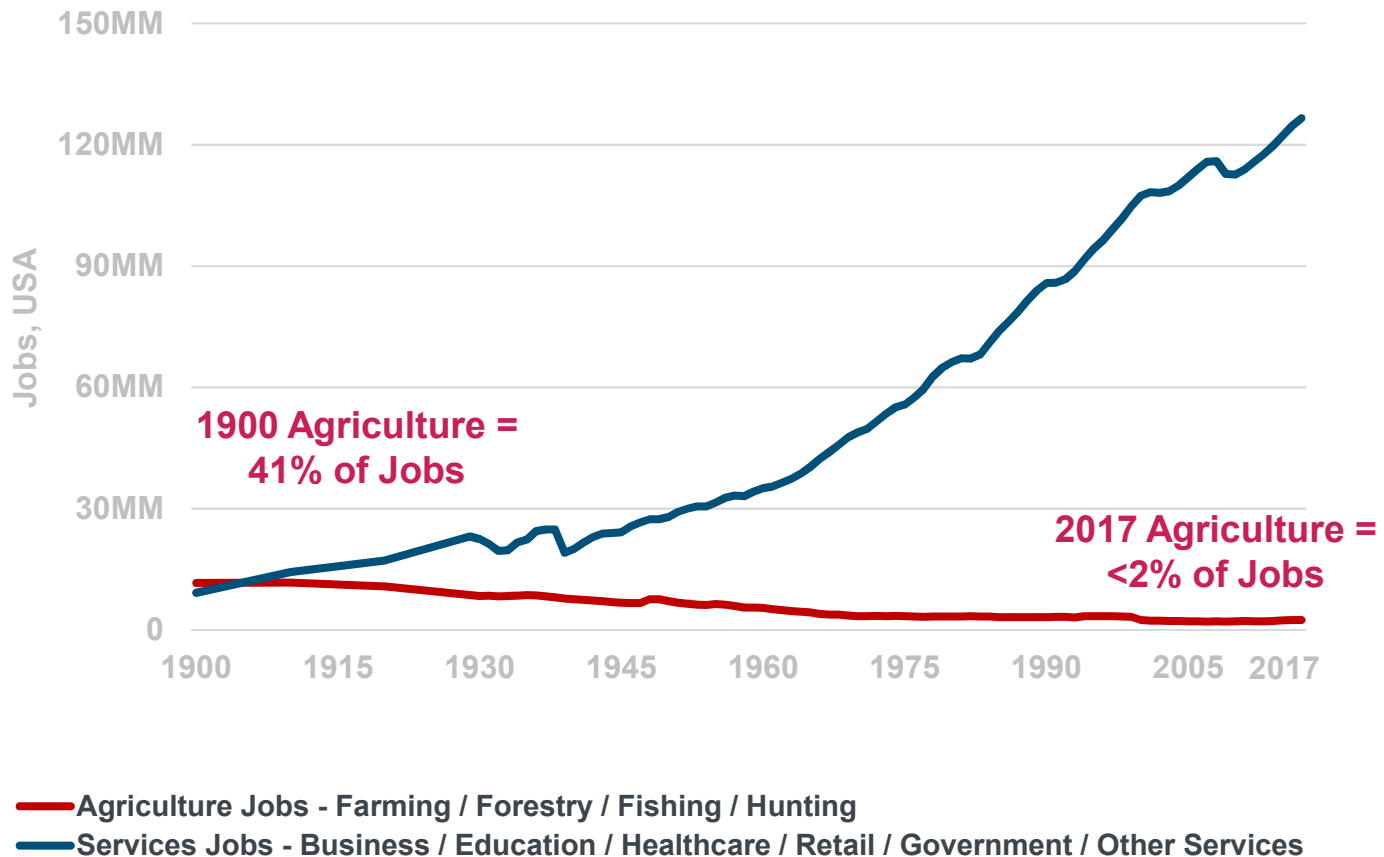
...New Technologies = Services Jobs Replaced Agriculture Jobs ...

Agriculture vs. Services Jobs



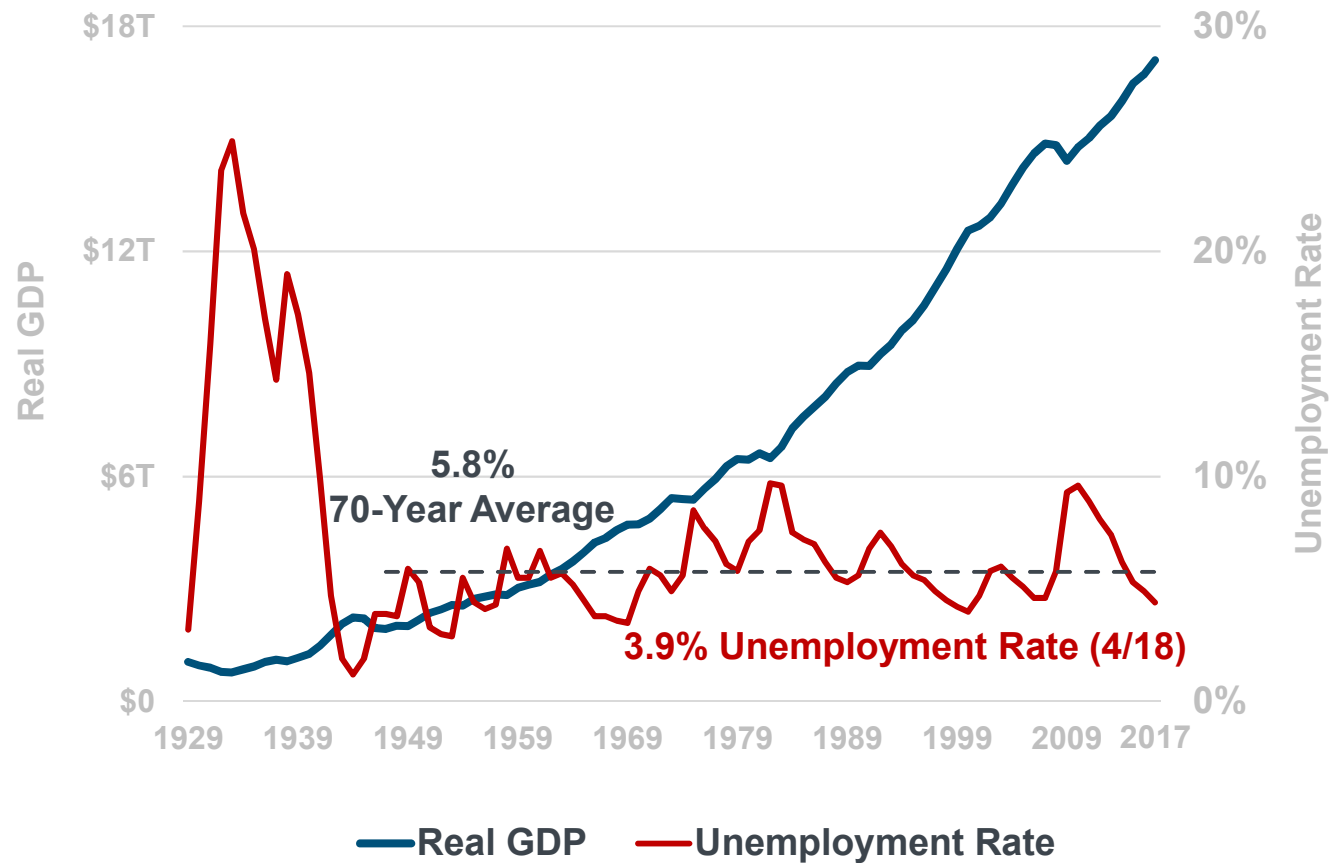
...Agriculture =
<2% vs. 41% of Jobs in 1900

Agriculture vs. Services Jobs



70 Years = New Technology Concerns Ebb / Flow... GDP Rises...Unemployment Ranges 2.9 - 9.7%

Real GDP vs. Unemployment Rate, USA





*Will Technology Impact Jobs
Differently This Time?*

*Perhaps...But It Would Be
Inconsistent With History as...*

*New Jobs / Services +
Efficiencies + Growth Typically
Created Around New Technologies*

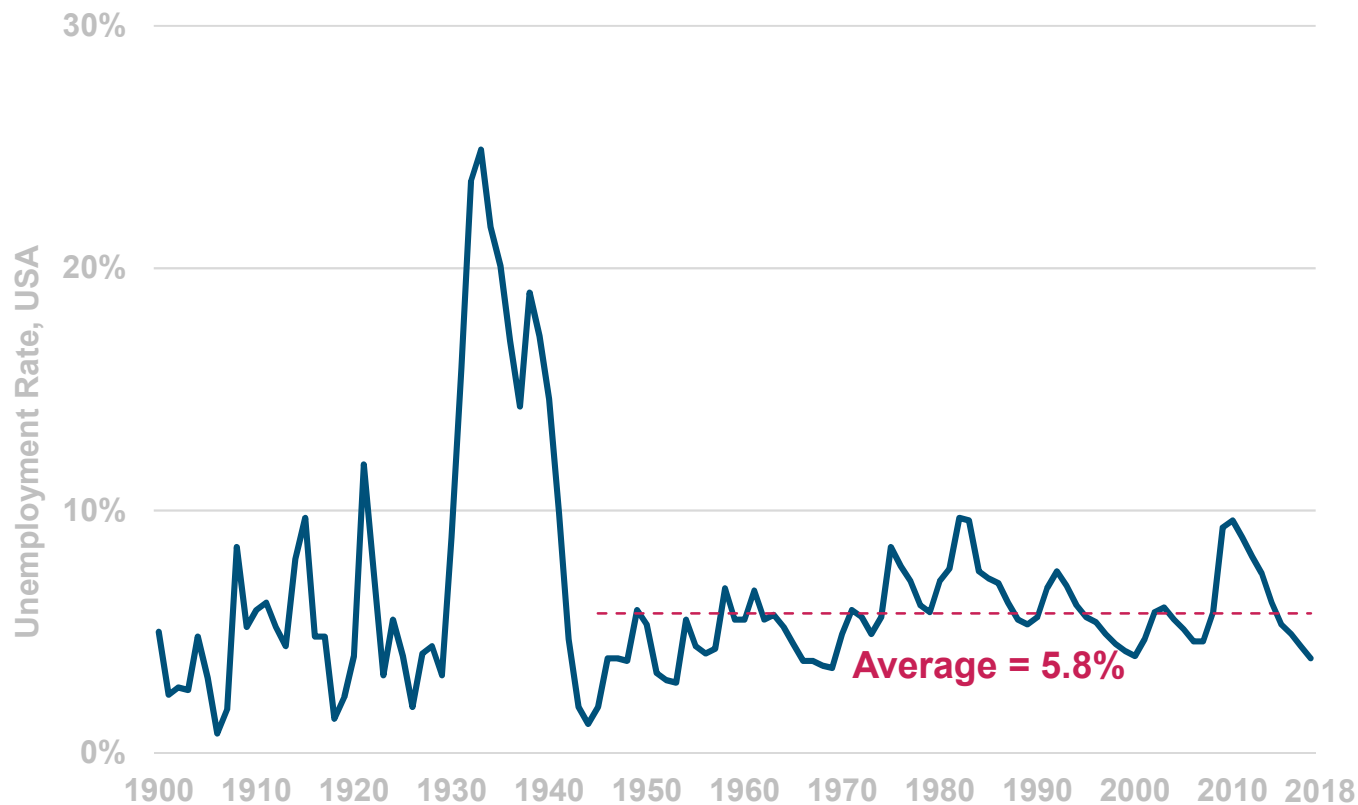


Job Market =

***Solid Based on Traditional
High-Level Metrics, USA***

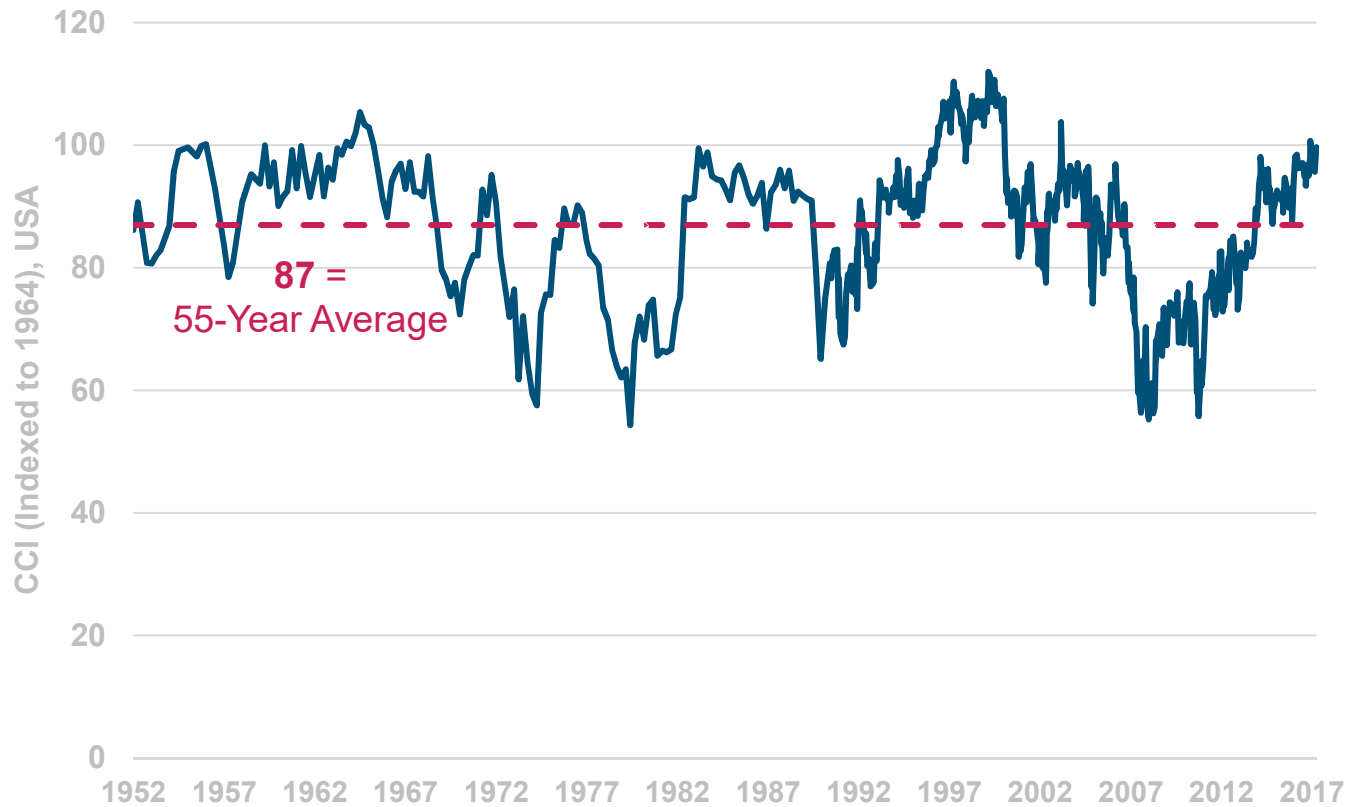
Unemployment @ 3.9% = Well Below 5.8% Seventy Year Average

Unemployment Rate



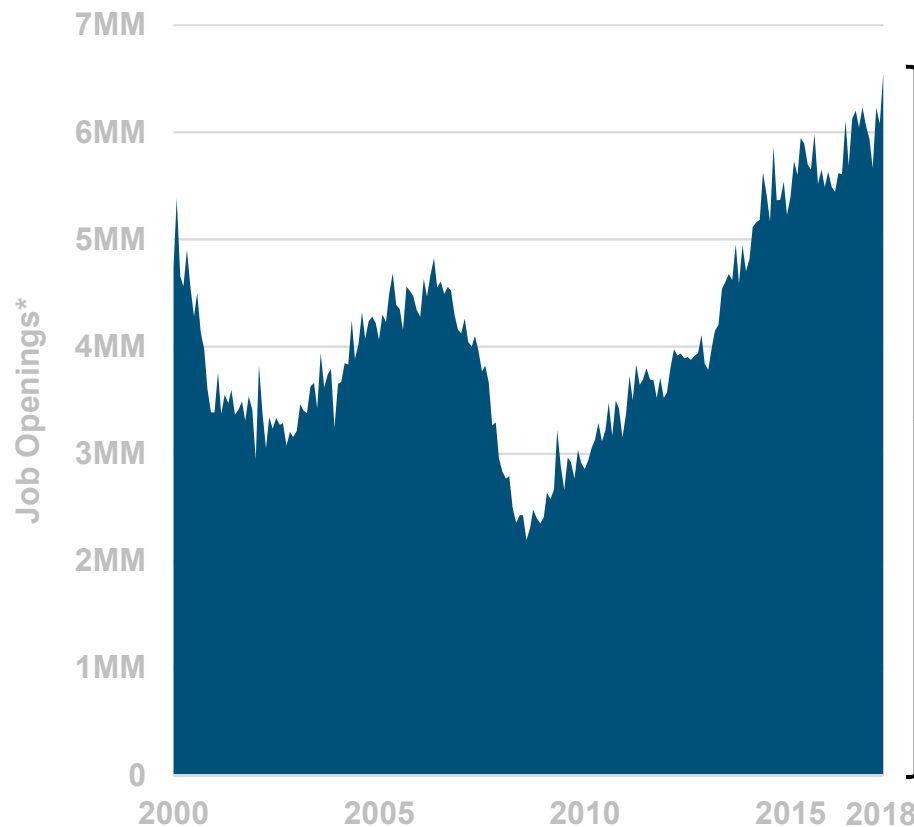
Consumer Confidence = High & Rising... Index @ 100 vs. 87 Fifty-Five Year Average

Consumer Confidence Index (CCI)



Job Openings = 17 Year High... @ 7MM...~3x Higher vs. 2009 Trough

Job Openings* – USA

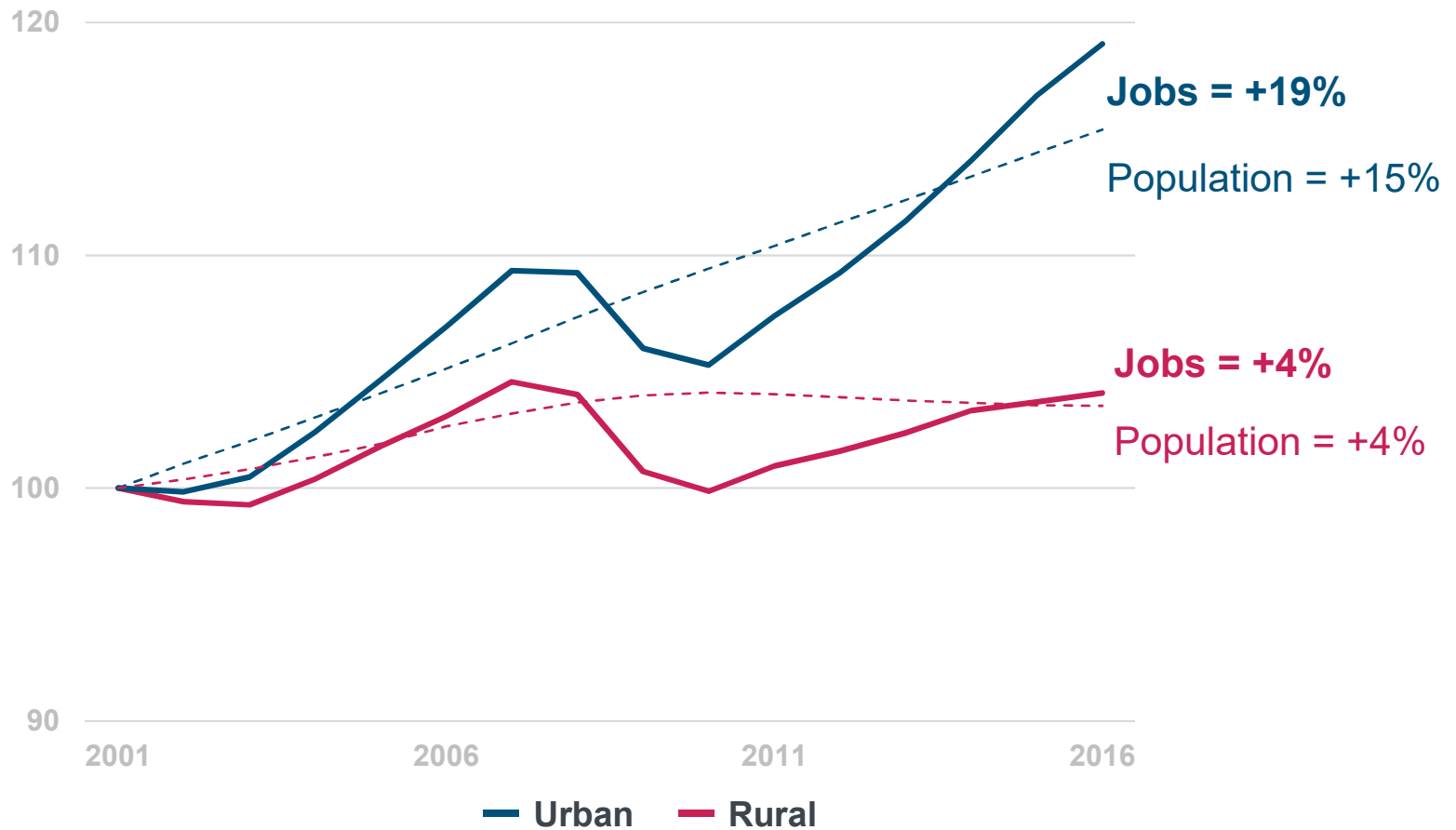


6.6MM Job Openings (3/18)

- 1.4MM = Professional Services + Finance
- 1.3MM = Healthcare + Education
- 1.2MM = Trade / Transportation / Utilities
- 879K = Leisure / Hospitality
- 661K = Mining / Construction / Manufacturing
- 622K = Government
- 486K = Other

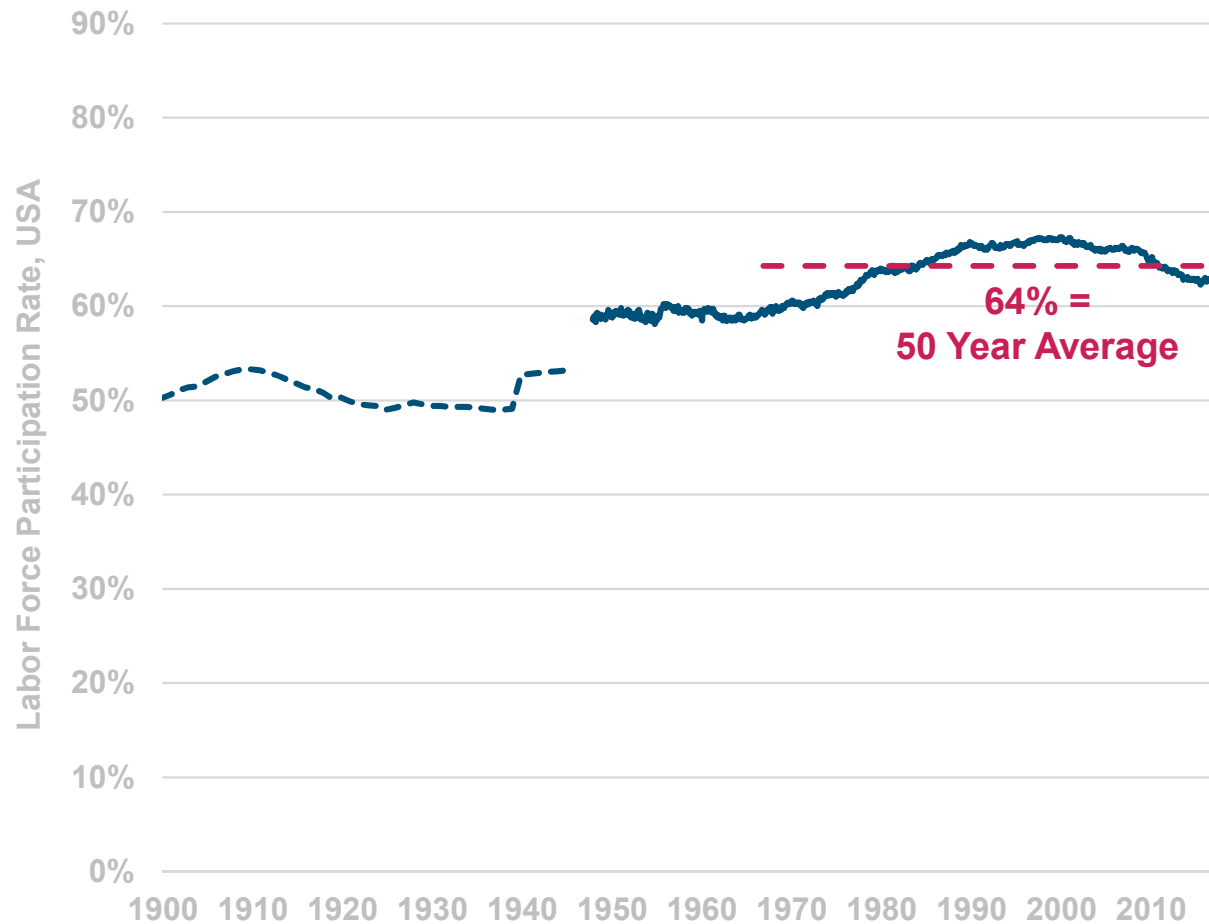
Job Growth = Stronger in Urban Areas Where 86% of Americans Live

Job / Population Growth – Urban vs. Rural (Indexed to 2001)



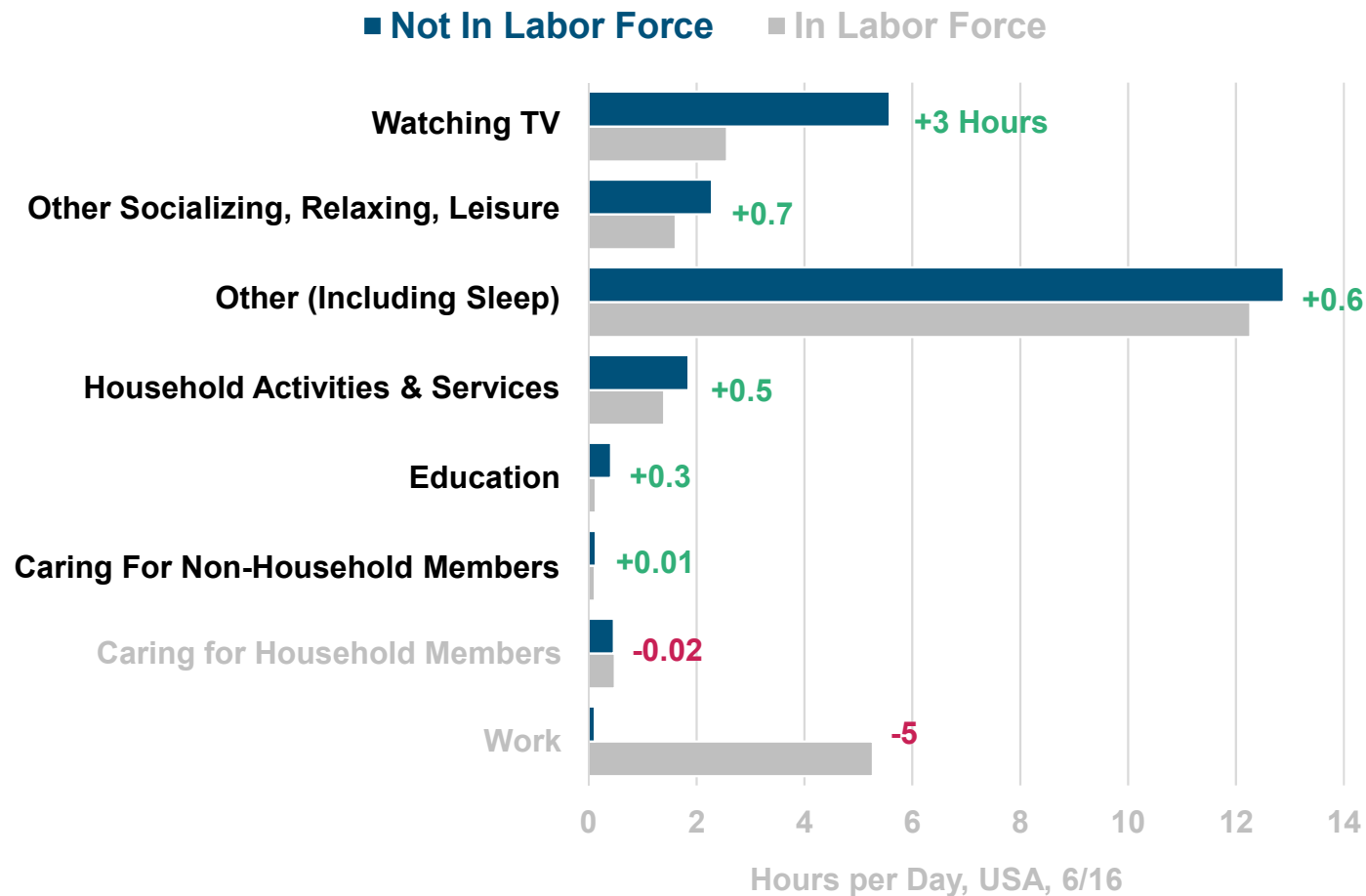
Labor Force Participation @ 63% = Below 64% Fifty-Year Average...~3.5MM People Below Average*

Labor Force Participation Rate**



Most Common Activities For Many Who Don't Work* = Leisure / Household Activities / Education

Males* (Ages 25-54) – Daily Time Use

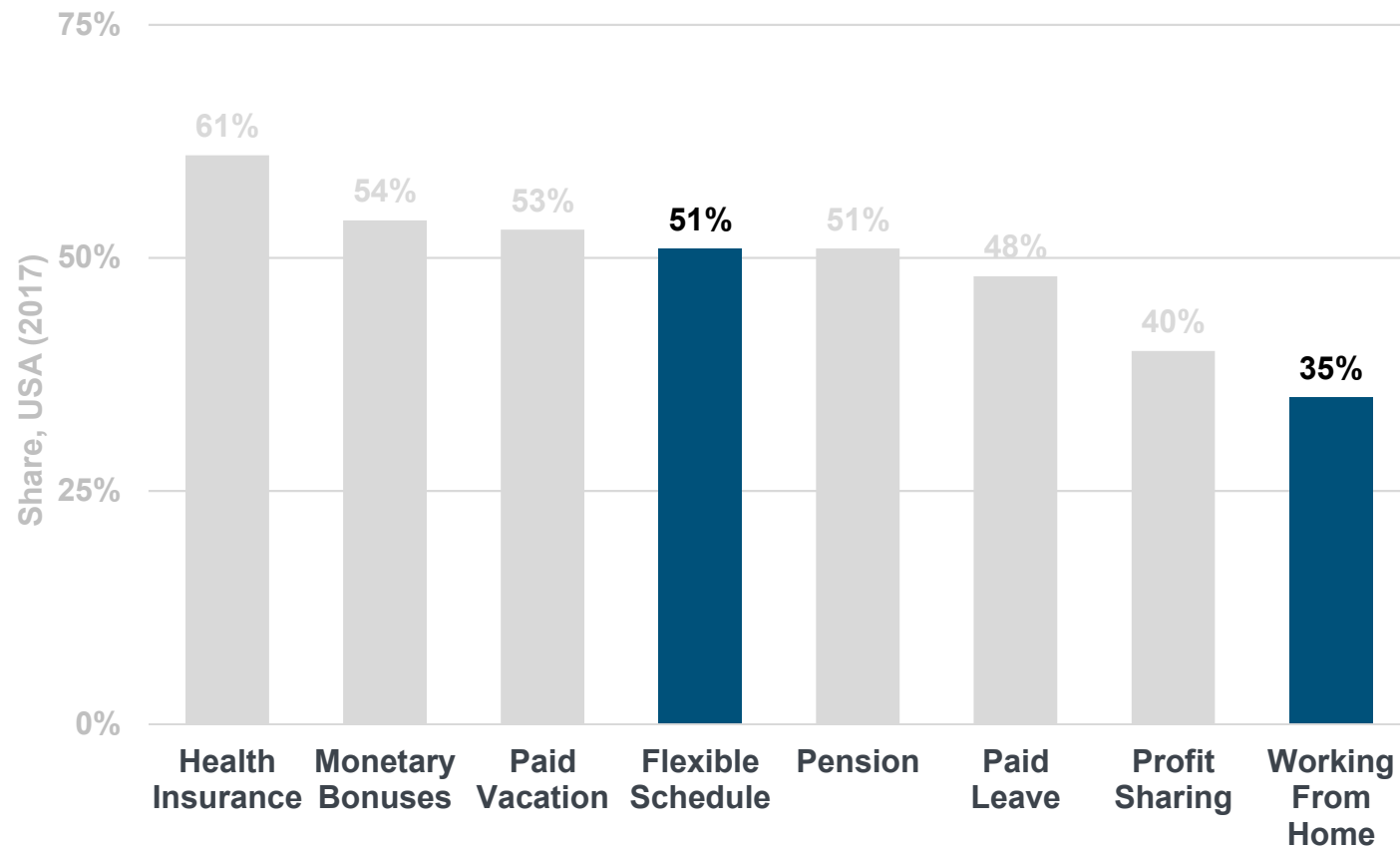




***Job Expectations =
Evolving***

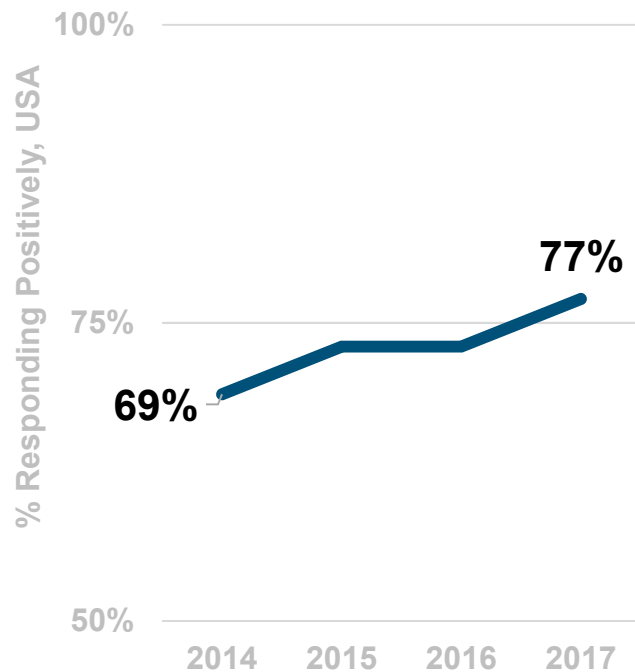
Most Desired Non-Monetary Benefit for Workers = Flexibility per Gallup

Would You Change Jobs to Have Access To...

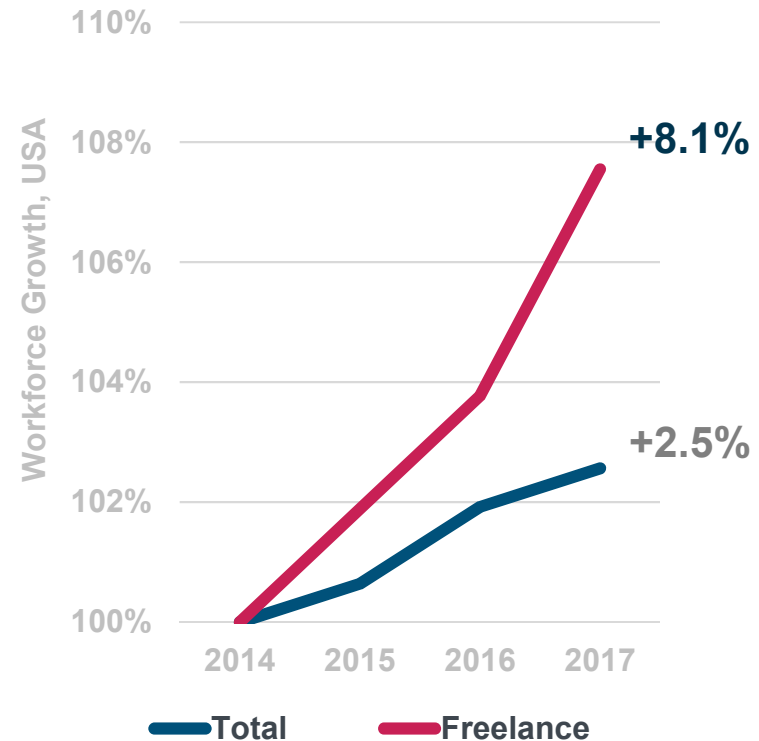


Technology = Makes Freelance Work Easier to Find... Freelance Workforce = 3x Faster Growth vs. Total Workforce

Has Technology Has Made It Easier To Find Freelance Work?



Workforce Growth – Freelance vs. Total





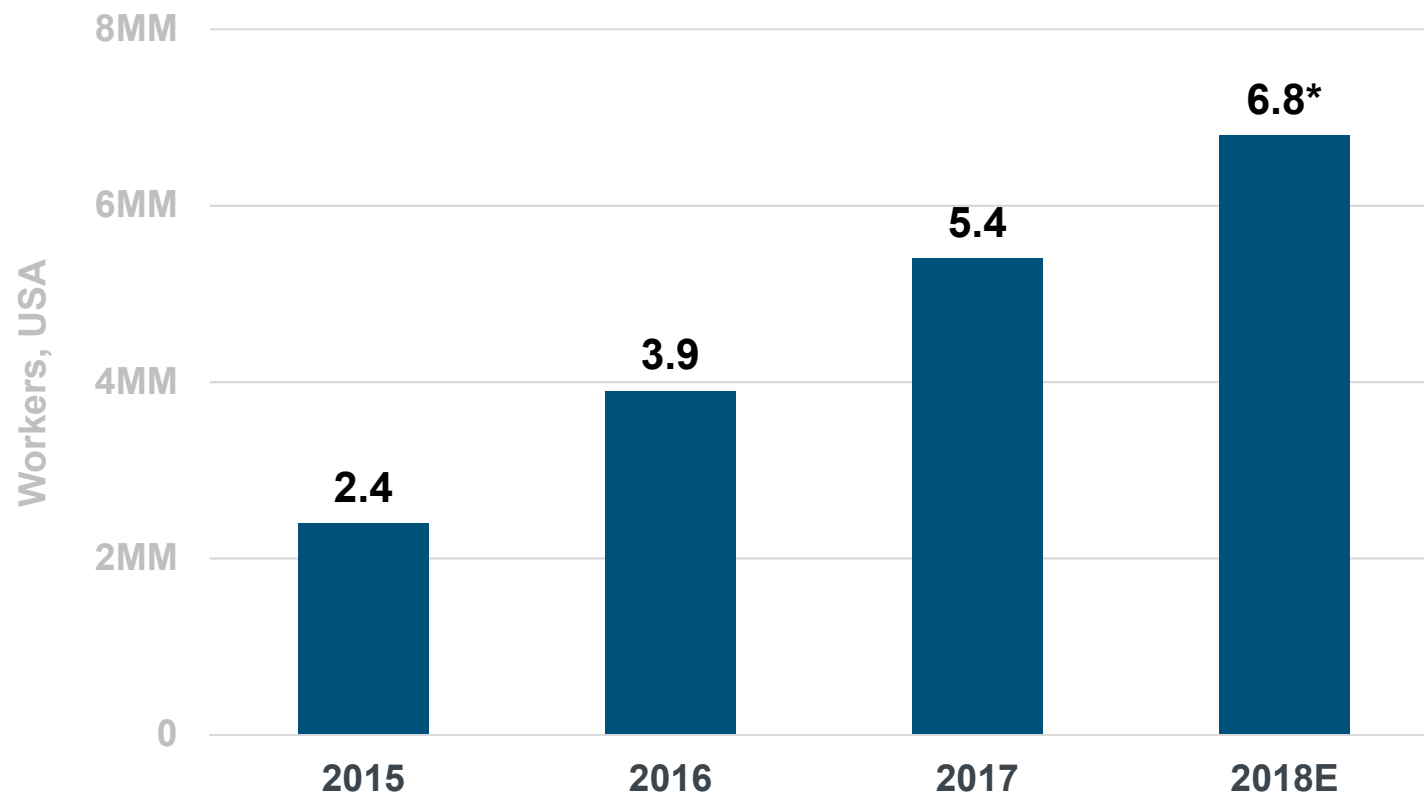
On-Demand Jobs =

Big Numbers + High Growth

*Increasingly Filling Needs for Workers Who
Want Extra Income / Flexibility...
Have Underutilized Skills / Assets*

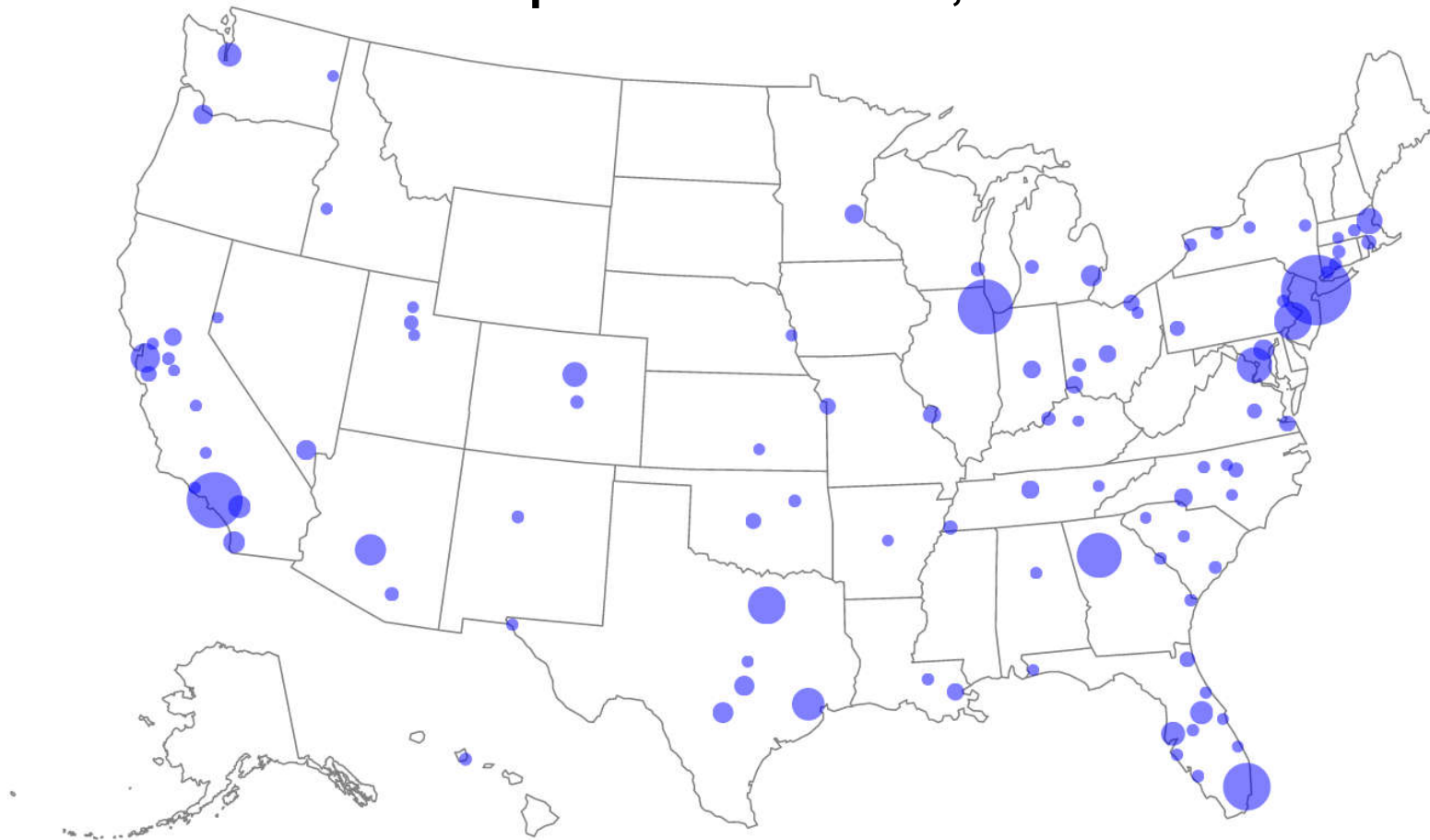
On-Demand Workers =
5.4MM +23%, USA per Intuit

On-Demand Platform Workers, USA



On-Demand Jobs = >15MM Applicants on Checkr Platform Since 2014, USA

Checkr Background Check On-Demand Applicants – Top 100 Metro Areas, USA

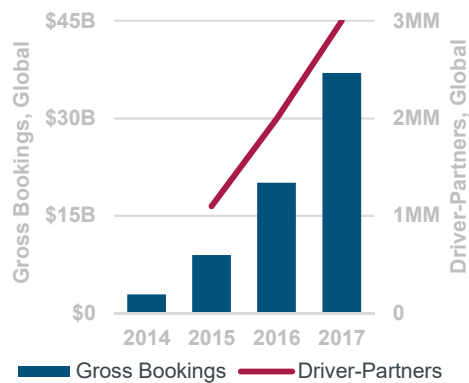


On-Demand Jobs = Big Numbers + High Growth

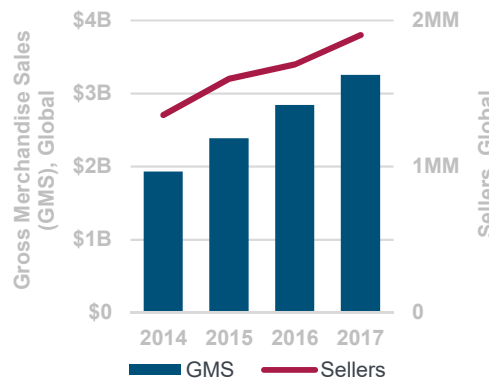
Real-Time Platforms

Internet-Enabled Marketplaces

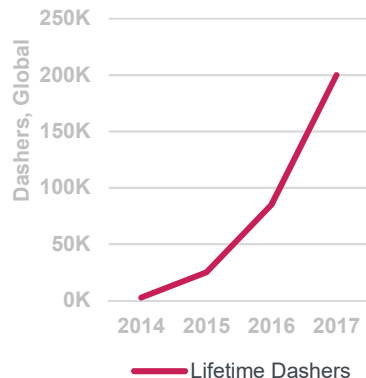
Uber @ 3MM Driver-Partners



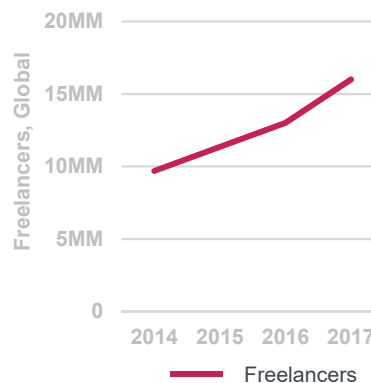
Etsy @ 2MM Sellers



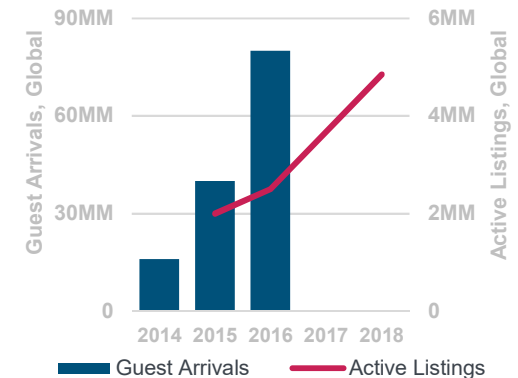
DoorDash @ 200K Dashers



Upwork @ 16MM Freelancers



Airbnb @ 5MM Listings





On-Demand Jobs =

Big Numbers + High Growth

***Filling Needs for Workers Who
Want Extra Income / Flexibility...
Have Underutilized Skills / Assets***

On-Demand Work Basics + Benefits = Extra Income + Flexibility, USA per Intuit

Extra Income

Flexibility

Basics

37% = Run Own Business

33% = Use Multiple On-Demand Platforms

26% = Employed Full-Time (W2 Wages)

14% = Employed Part-Time (W2 Wages)

5% = Retired

71% = Always Wanted To Be Own Boss

46% = Want To Control Schedule

19% = Responsible for Family Care

9% = Active Student

Benefits

57% = Earn Extra Income

21% = Make Up For Financial Hardship

19% = Earn Income While Job Searching

\$34 Average Hourly Income

\$12K Average Annual Income

24% Average Share of Total Income

91% = Control Own Schedule

50% = Do Not Want Traditional Job

35% = Have Better Work / Life Balance

11 Average Weekly Hours With
Primary On-Demand Platform

37 Average Weekly Hours of Work
(All Types / Platforms)



*On-Demand
Platform Specifics...*

Uber =
3MM Global Driver-Partners +~50% Y/Y (2017)

Uber Driver-Partners (USA = 900K)...

\$21 = Average Hourly Earnings

17 = Average Weekly Hours

30 = Average Trips Per Week

Basics

80% = Had Job Before Starting Uber

72% = Not Professional Driver

71% = Increased Income Driving Uber

66% = Have Other Job

Motivations

91% = Earn Extra Income

87% = Set Own Hours

85% = Work / Life Balance

74% = Maintain Steady Income

32% = Earn Income While Job Searching

Etsy = 2MM Global Active Sellers +9% (Q1)

Etsy Sellers (USA = 1.2MM)...

\$1.7K = Annualized Gross Merchandise Sales (GMS) per Seller

\$3.4B = Annualized GMS +20% (Q1)

99.9% = USA Counties with Etsy Seller(s)

Basics

- 97% = Operate @ Home
- 87% = Identify as Women
- 58% = Sell / Promote Etsy Goods Off Etsy.com
- 53% = Started Their Business on Etsy
- 49% = Use Etsy Income for Household Bills
- 32% = Etsy Sole Occupation
- 32% = Have Traditional Full-Time Job
- 28% = Operate From Rural Location
- 27% = Have Children @ Home
- 13% = Etsy Portion of Annual Household Income

Motivations

- 68% = Creativity Provides Happiness
- 65% = Way to Enjoy Spare Time
- 51% = Have Financial Challenges
- 43% = Flexible Schedule
- 30% = Use Etsy Income for Savings

Airbnb = 5MM Global Active Listings (5/18)

Airbnb Hosts (USA Listings = 600K+)...

\$6,100 = Average Annual Earnings per Host Sharing Space

97% = Price of Listing Kept by Hosts (9/17)

43% = Airbnb Income Used for Rent / Mortgage / Home Improvement

Basics

80%+ = Share Home in Which They Live

60%+ = 'Superhosts' Who Identify as Women

29% = Not Full-Time Employed

18% = Retirees

Motivations

57% = Use Earnings to Stay in Home

36% = Spend >30% of Total Income on Housing

12% = Avoided Eviction / Foreclosure
Owing to Airbnb Earnings

No [Uber] driver-partner is ever told where or when to work.

This is quite remarkable – an entire global network miraculously ‘level loads’ on its own.

Driver-partners unilaterally decide when they want to work and where they want to work.

The flip side is also true – they have unlimited freedom to choose when they do NOT want to work...

The Uber Network...is able to elegantly match supply & demand without ‘schedules’ & ‘shifts’...

That worker autonomy of both time & place simply does not exist in other industries.

- Bill Gurley – *The Thing I Love Most About Uber – Above the Crowd*, 4/18



On-Demand + Internet-Related Jobs =

Scale Becoming Significant

DATA GATHERING + OPTIMIZATION =

YEARS IN MAKING...

INCREASINGLY GLOBAL + COMPETITIVE

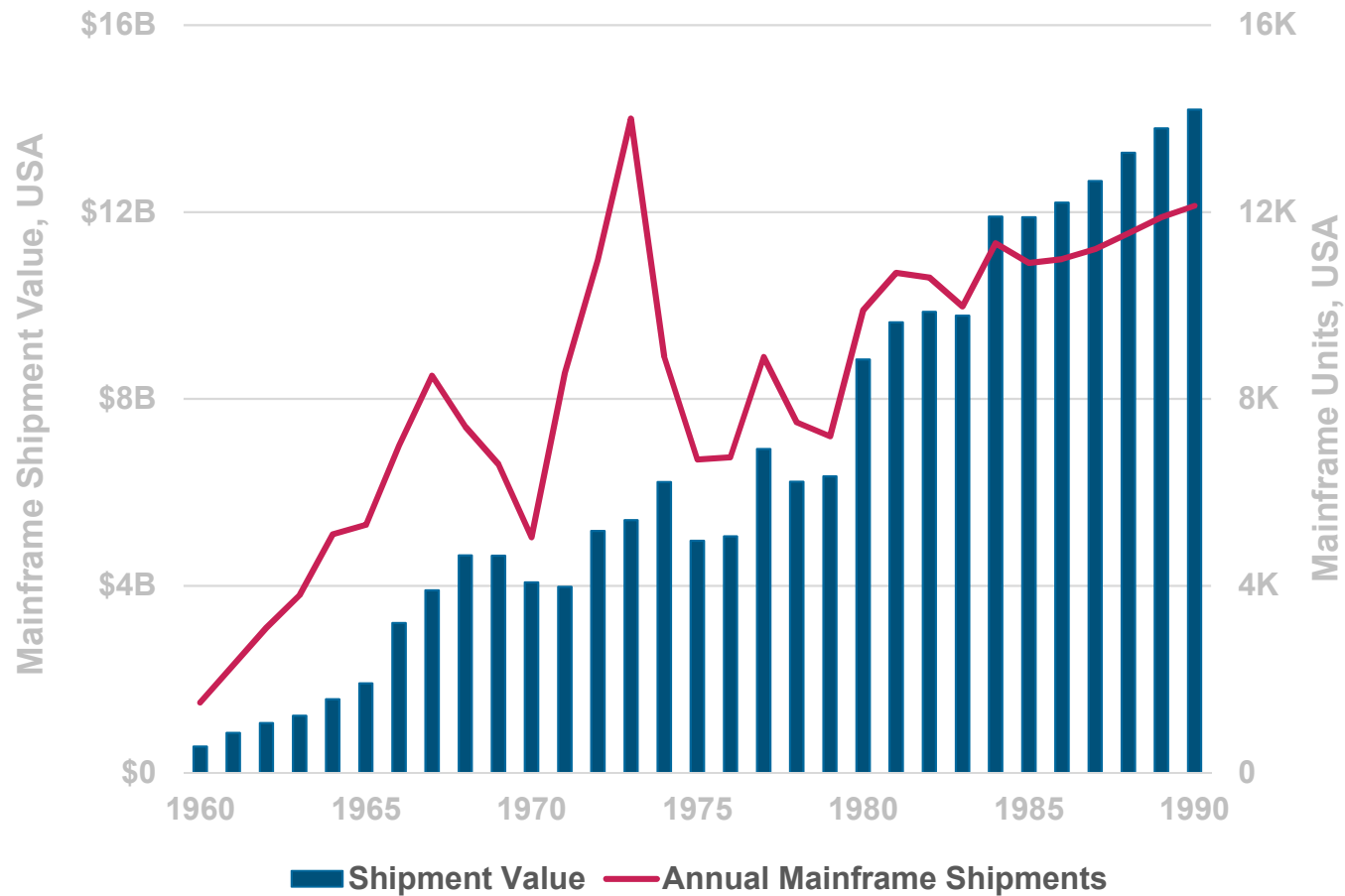
Data Gathering + Optimization =

***Accelerates With
Computer Adoption...***

***Mainframes
(Early 1950s* →)...***

Data Gathering + Optimization (1950s →) = Enabled by Mainframe Adoption...

Mainframe Shipment Value & Units



...Data Gathering + Optimization (1950s →) = Government Mainframe Deployment...

1955

1960

1965



Social Security

Calculate Benefits for
15MM Recipients (62MM Now)



NASA

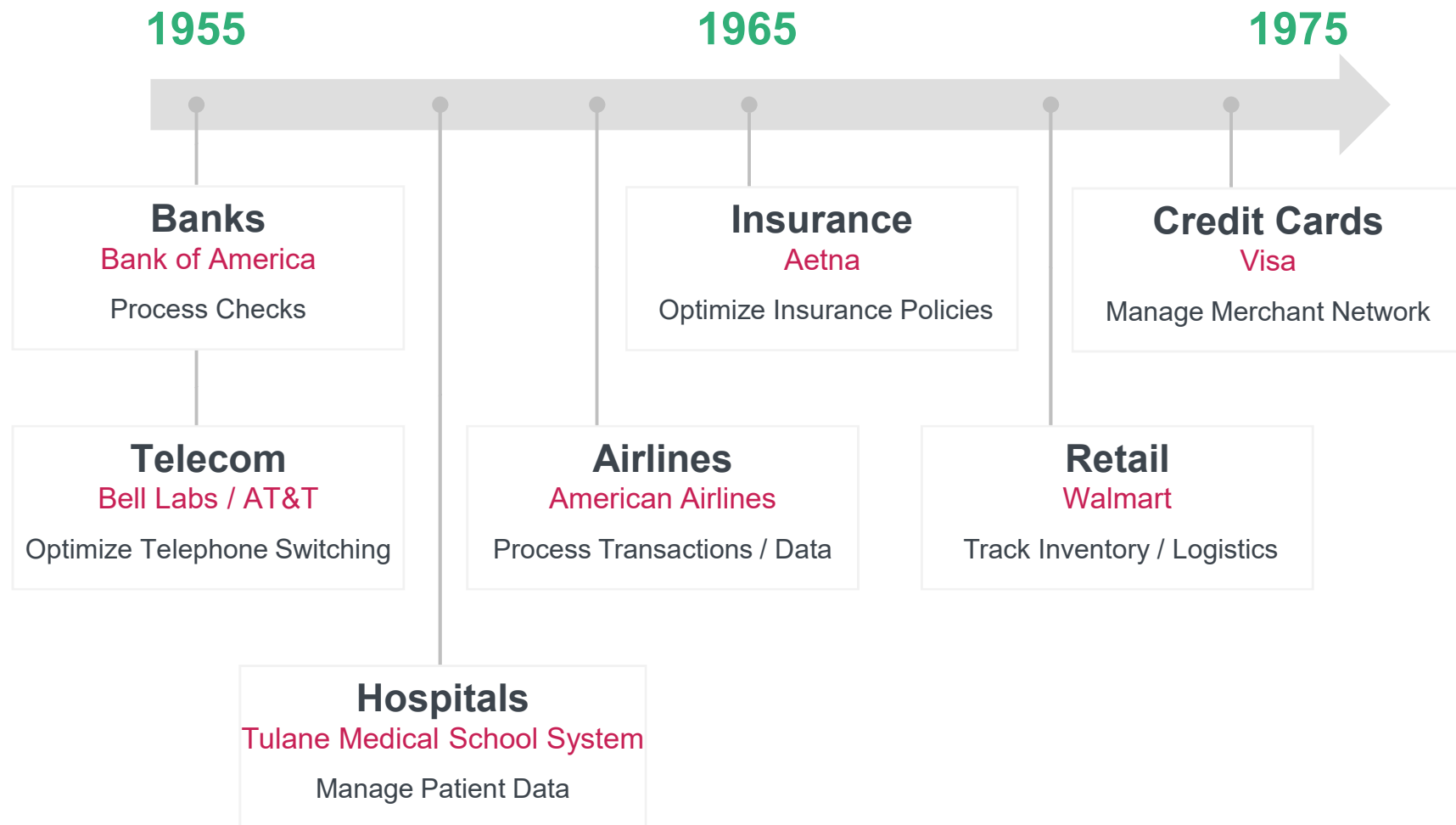
Calculate Real-Time
Orbital Determination



IRS

Calculate / Store
55MM Records (126MM Now)

...Data Gathering + Optimization (1950s →) = Business Mainframe Deployment





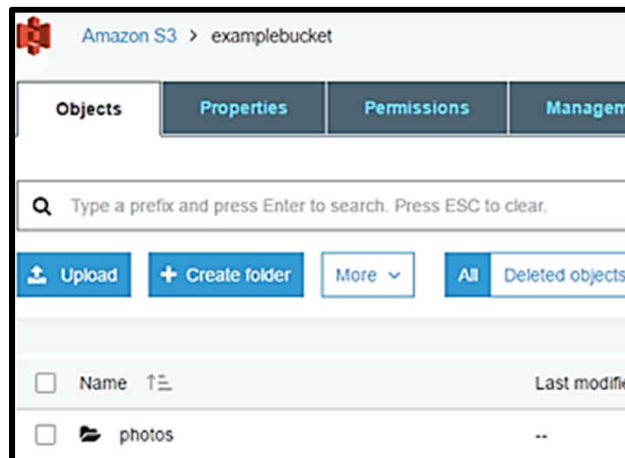
...Data Gathering + Sharing + Optimization =

*Accelerates With
Computer Adoption...*

***Consumer Mobiles + The Cloud
(2006 →)...***

Computing Big Bangs = Cloud (2006) + Consumer Mobile (2007)...

2006 Amazon AWS



*Until now, a sophisticated & scalable data storage infrastructure has been **beyond the reach of small developers.***

- Amazon S3 Launch FAQ, 2006

2007 Apple iPhone

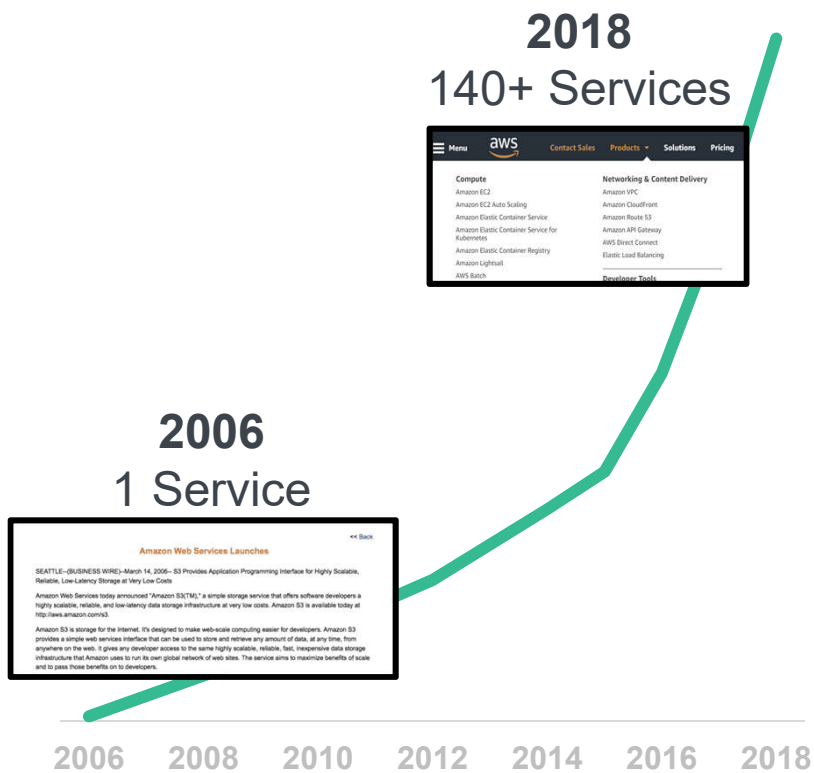


*Why run such a sophisticated operating system on a mobile device? Well, because **it's got everything we need.***

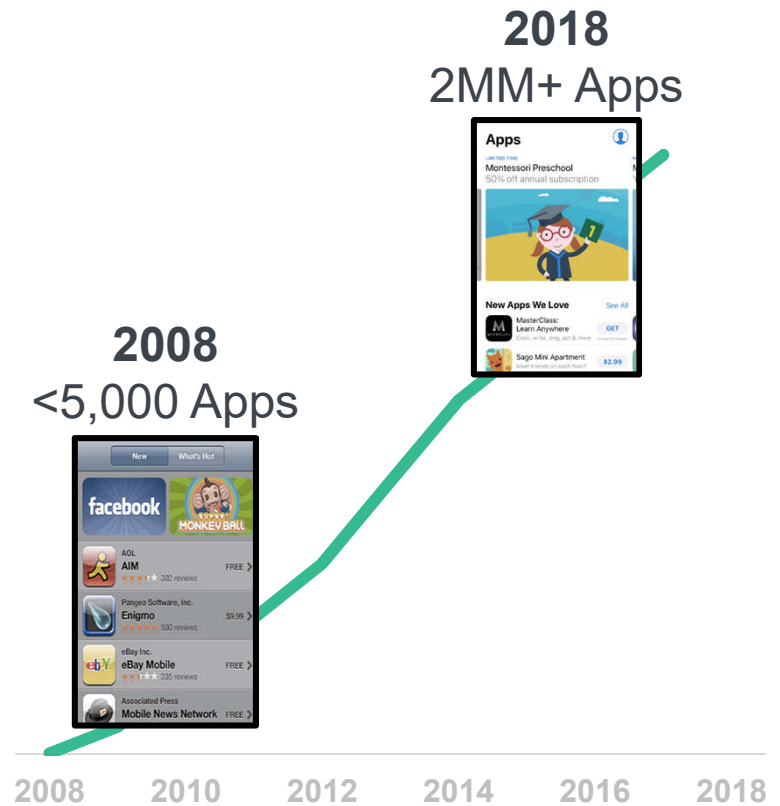
- Steve Jobs, iPhone Launch, 2007

...Computing Big Bangs = Cloud (2006) + Consumer Mobile (2007)

Amazon AWS – # of Services

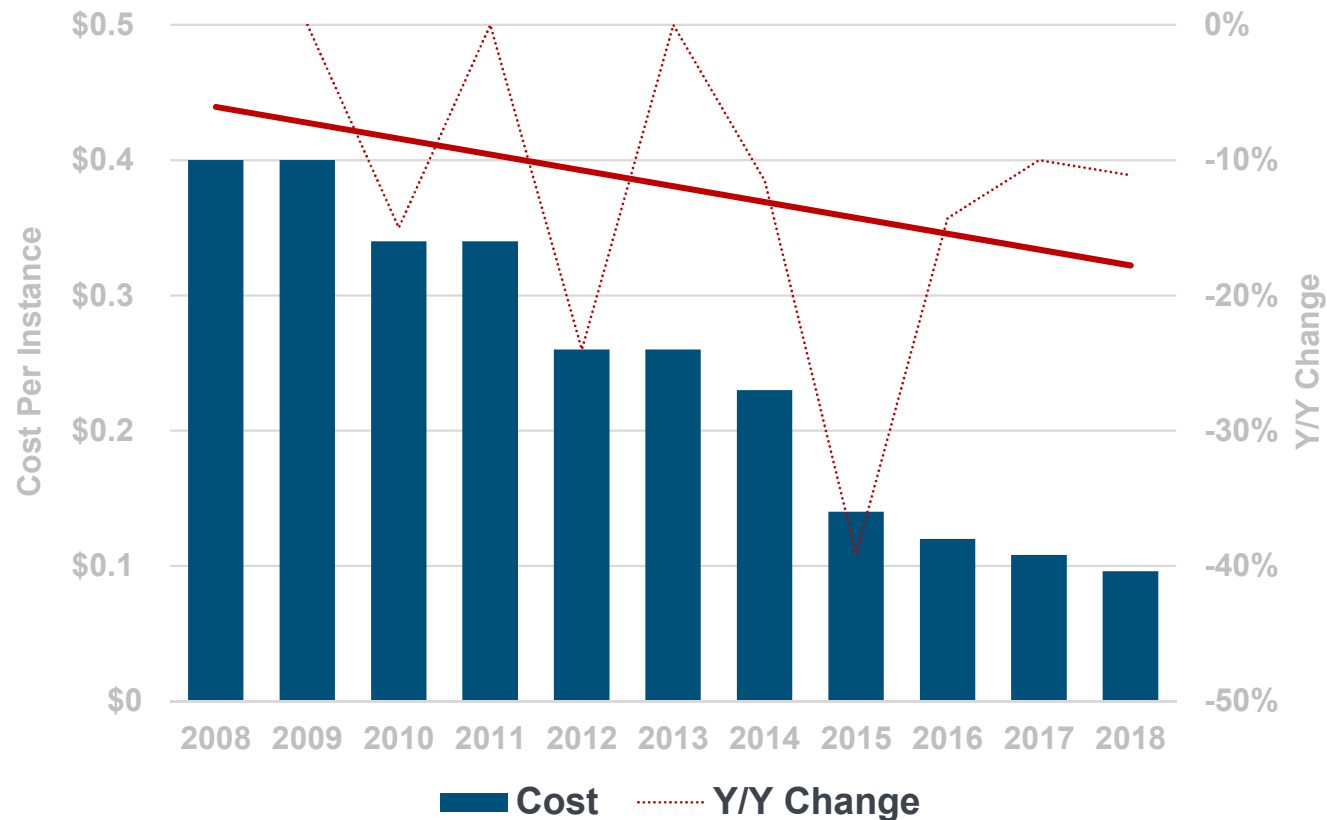


Apple iOS – # of Apps



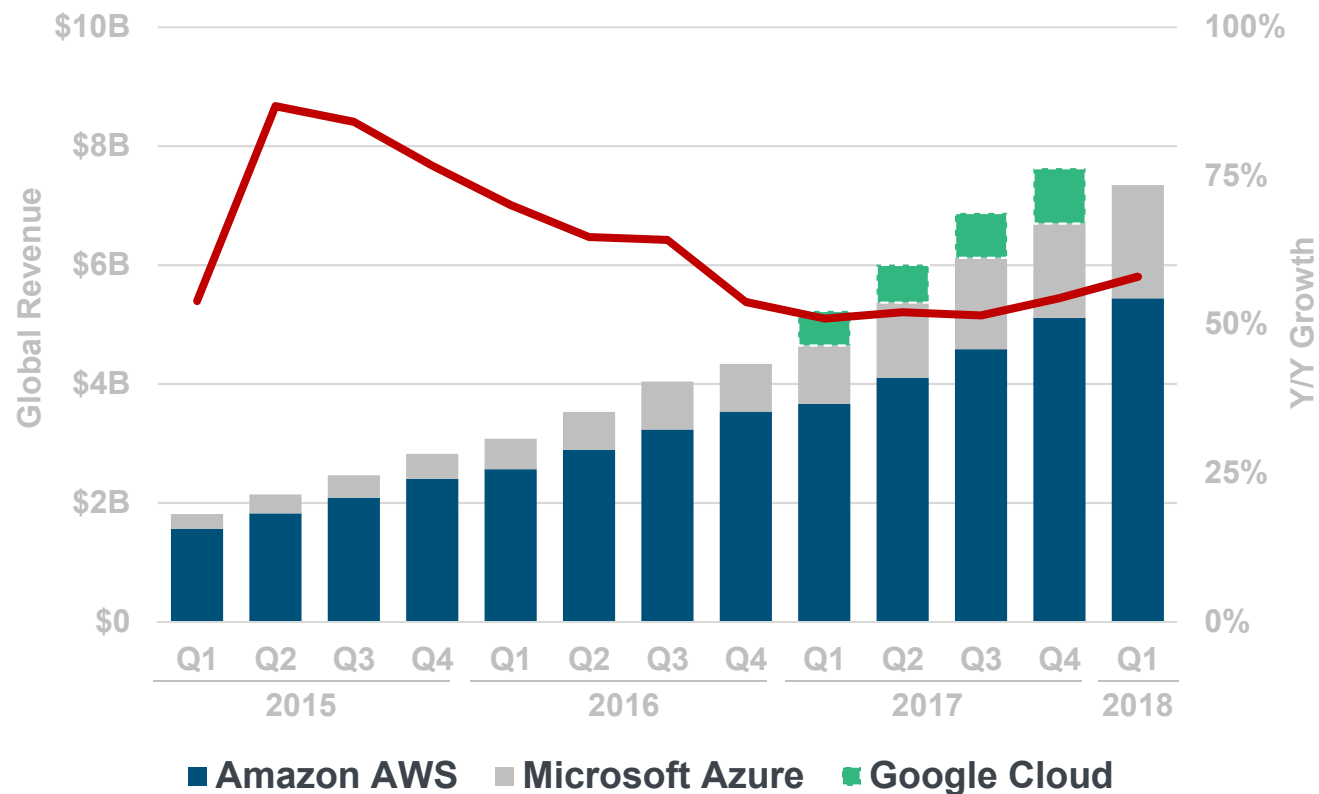
...Computing Big Bangs Volume Effects = Cloud Compute Cost Declines Continue -11% vs. -10% Y/Y...

AWS Compute Cost + Growth*



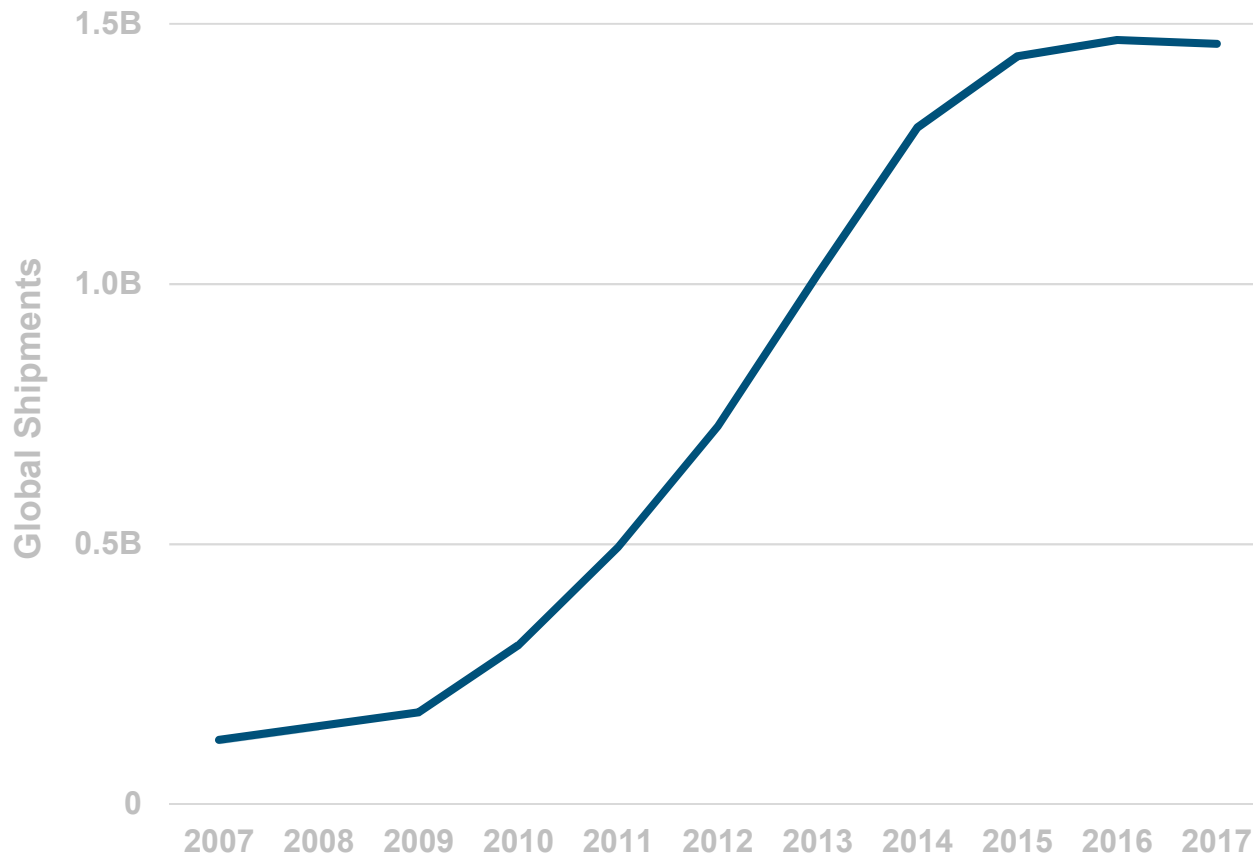
...Computing Big Bangs Volume Effects = Cloud Revenue Re-Accelerating +58% vs. +54% Q/Q

Cloud Service Revenue – Amazon + Microsoft + Google

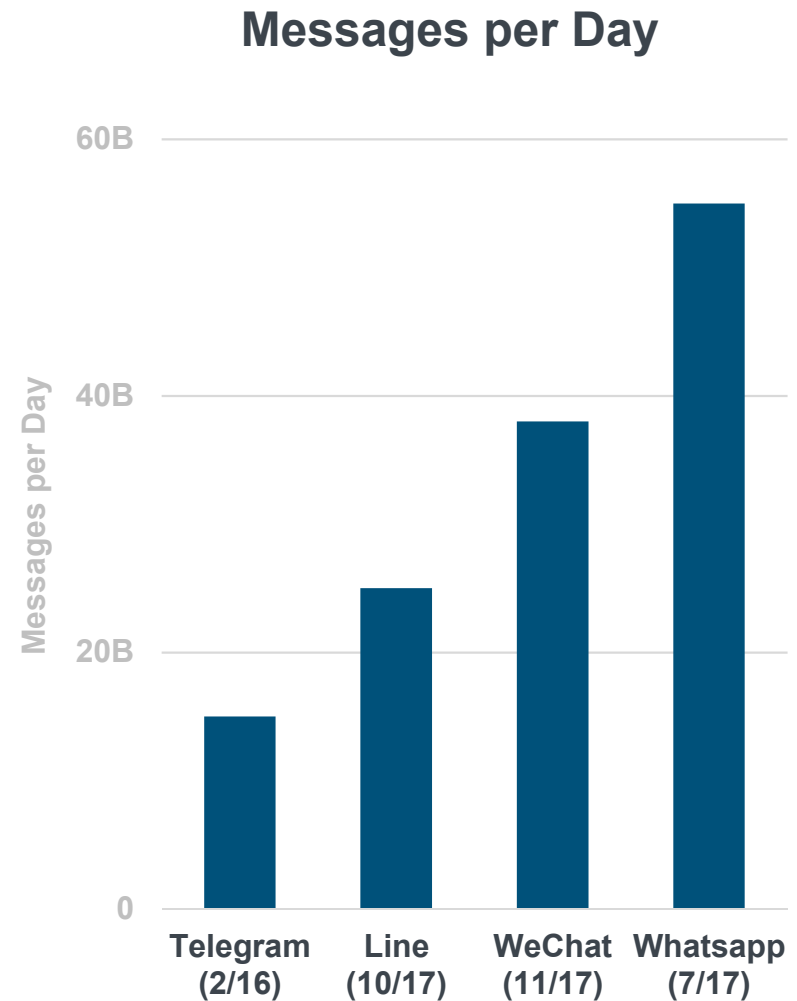
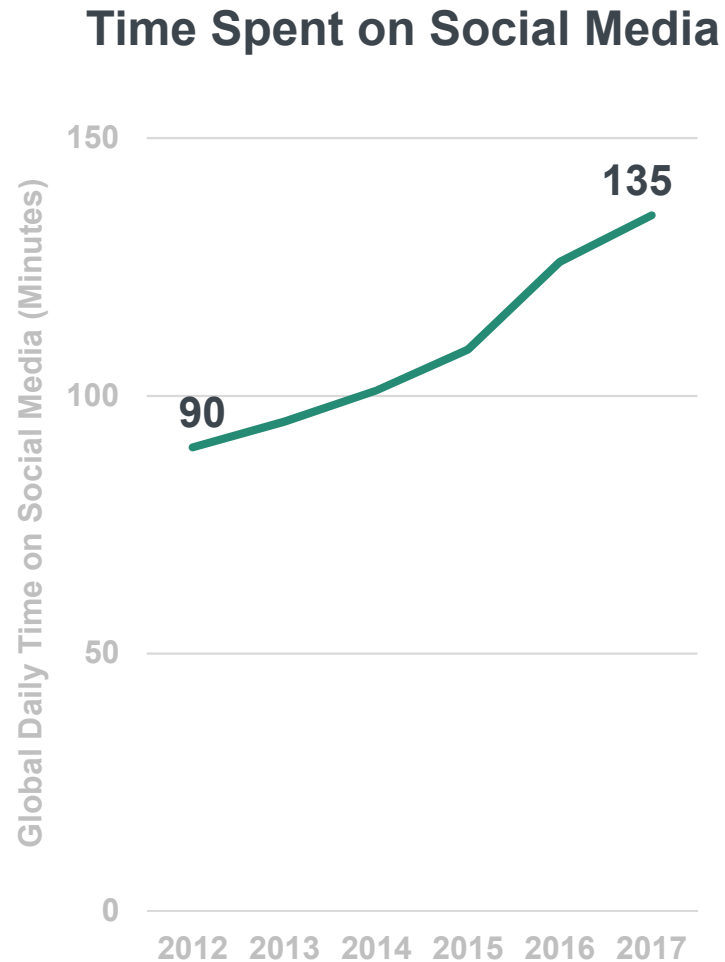


Data Gathering + Sharing + Optimization (2006 →) = Enabled by Consumer Mobile Adoption...

Smartphone Shipments

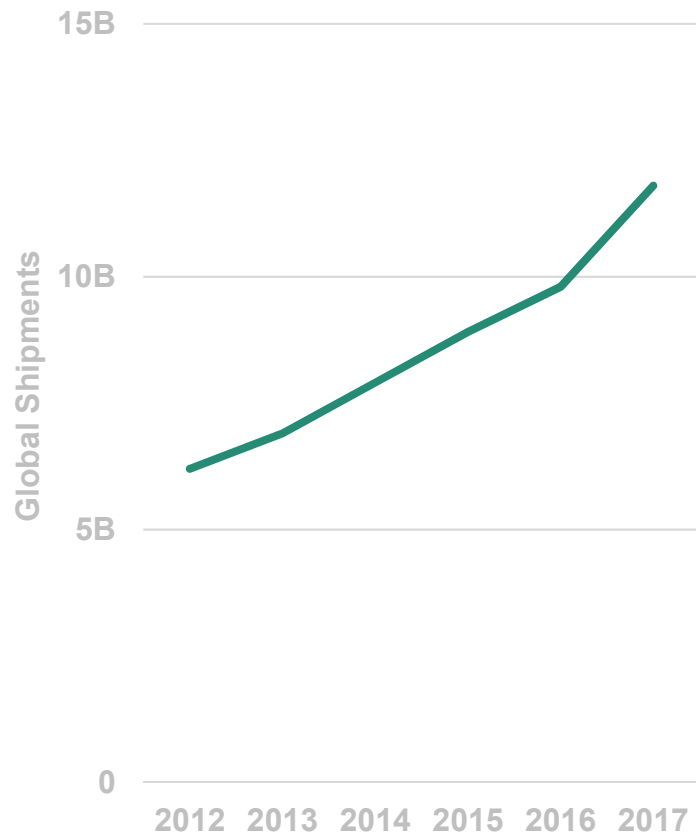


...Data Gathering + Sharing + Optimization (2006 →) = Enabled by Social Media Adoption...



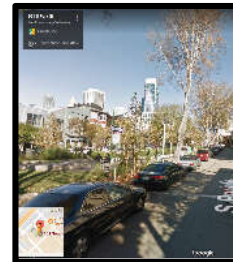
...Data Gathering + Sharing + Optimization (2006 →) = Enabled by Sensor Pervasiveness...

MEMS Sensor / Actuator Shipments

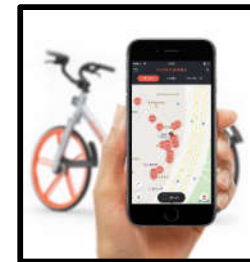


Sensors + Data = In More Places

Visual Navigation
Google Maps



Shared Transportation
Mobike



Home Temperature
Nest



Predictive Maintenance
Samsara



Fitness Tracking
Motiv

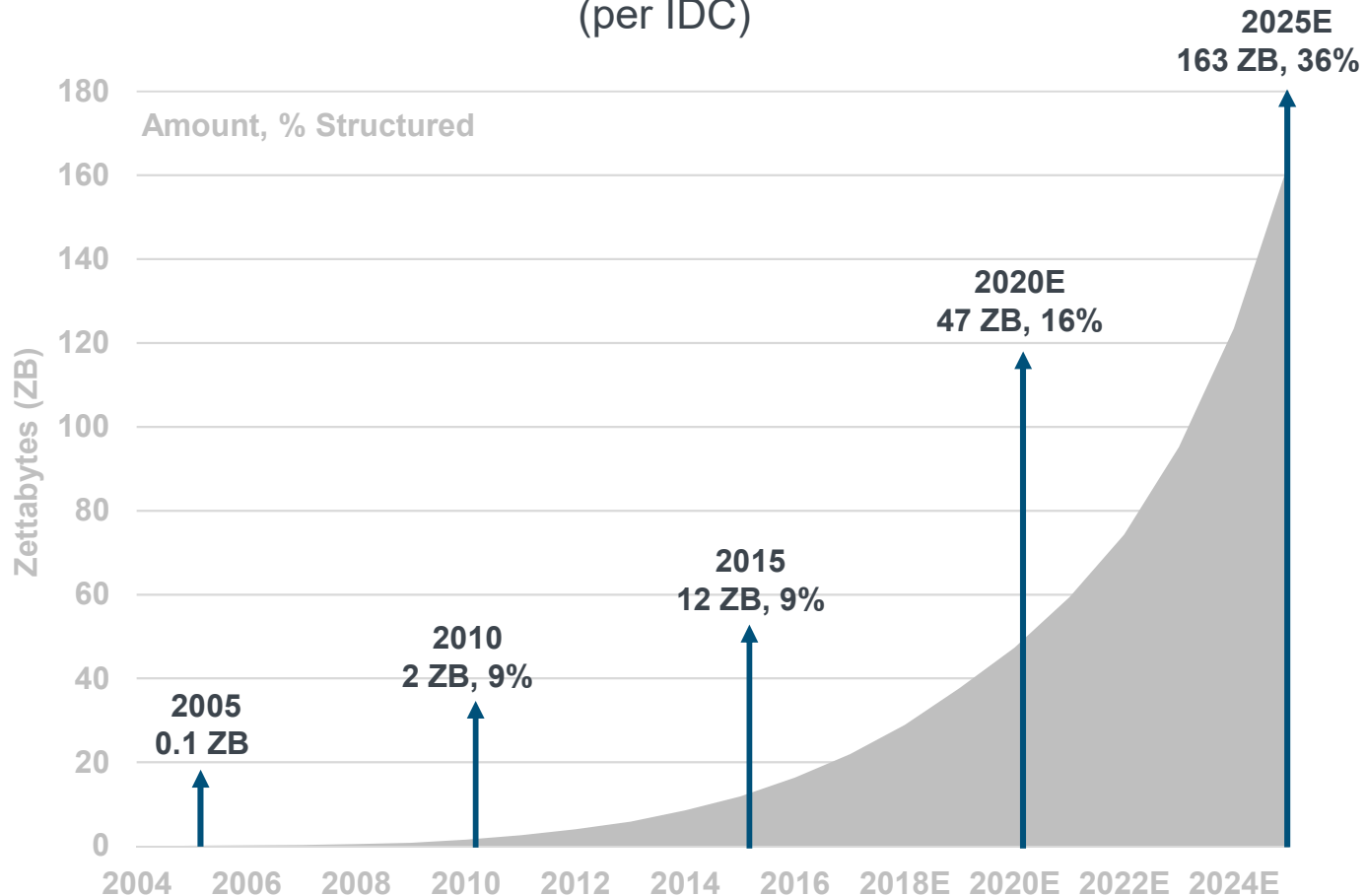


Precision Cooking
Joule



...Data Gathering + Sharing + Optimization (2006 →) = Ramping @ Torrid Pace

Information Created Worldwide (per IDC)





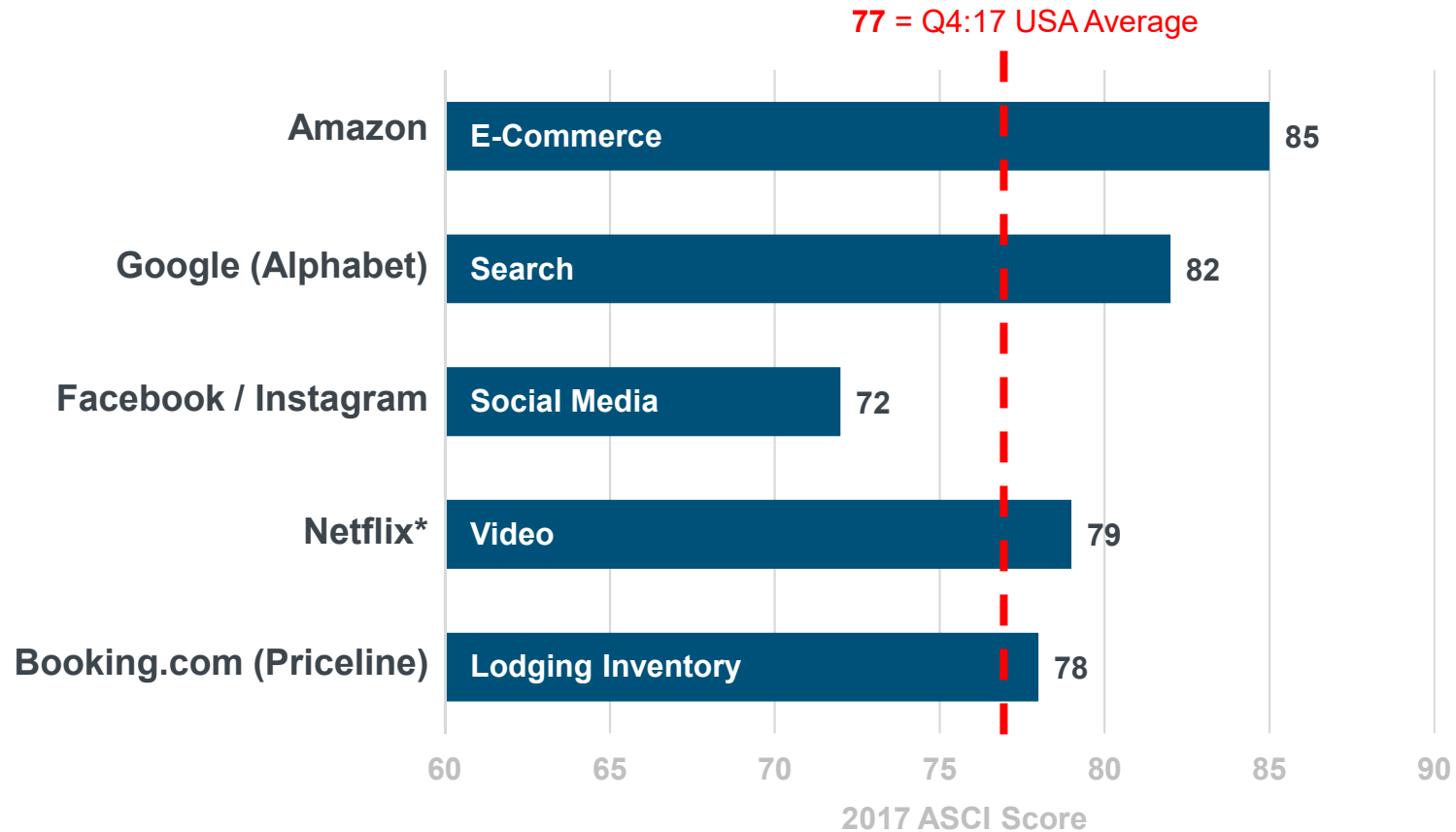
Data =

***Can Be Important Driver of
Customer Satisfaction***

USA Internet Data Leaders = Relatively High Customer Satisfaction

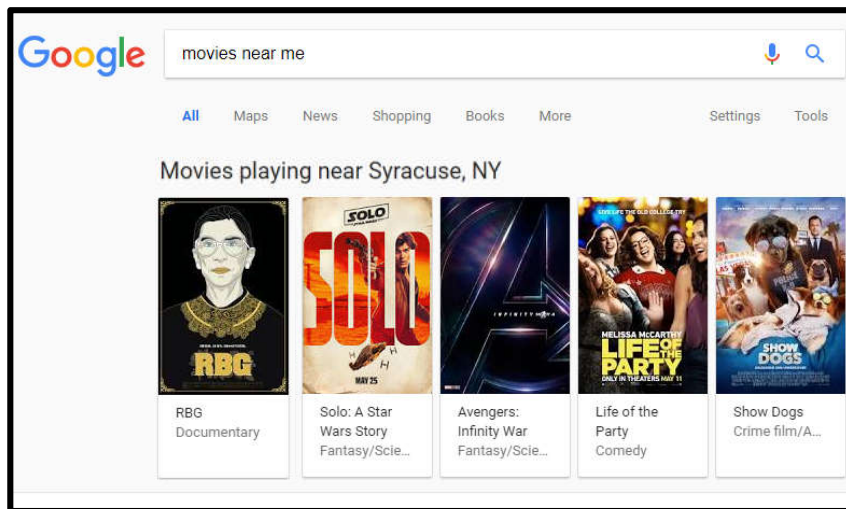
American Customer Satisfaction Index (ASCI) Scores

(Internet Data Companies >\$100B Market Capitalization, 5/18, USA)

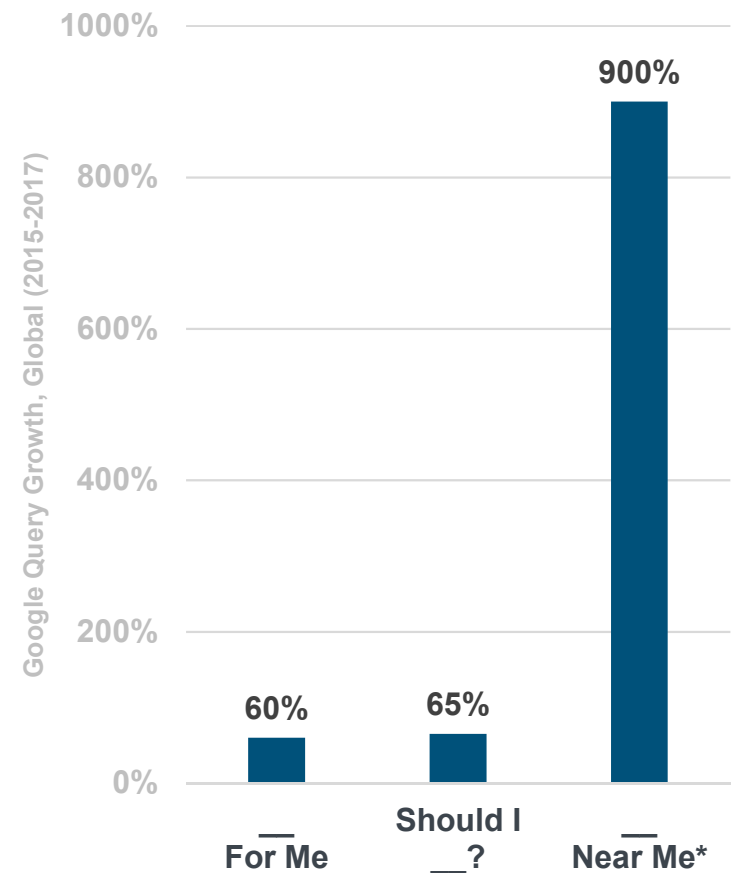


Google Personalization = Queries... Drive Engagement + Customer Satisfaction

Data-Driven Personalization

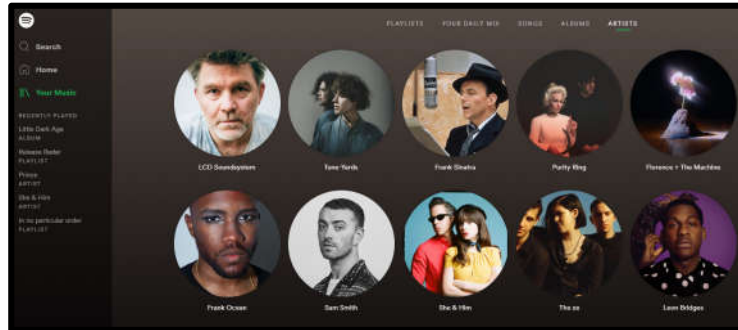


Query Growth (2015 -2017)

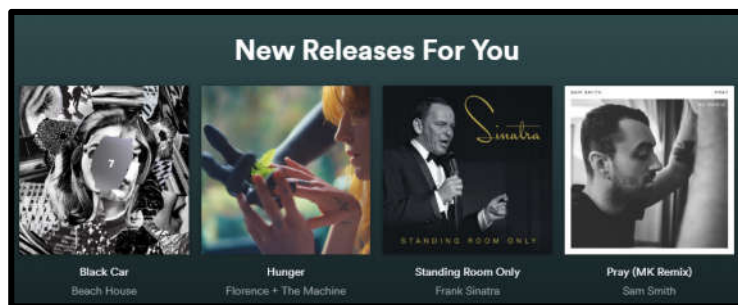


Spotify Personalization = Preferences... Drive Engagement + Customer Satisfaction

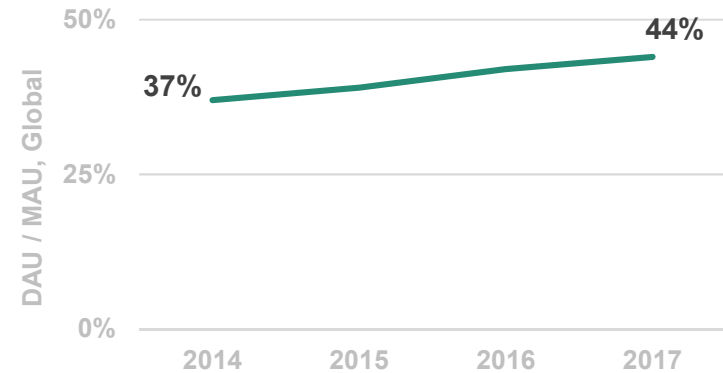
User Preferences



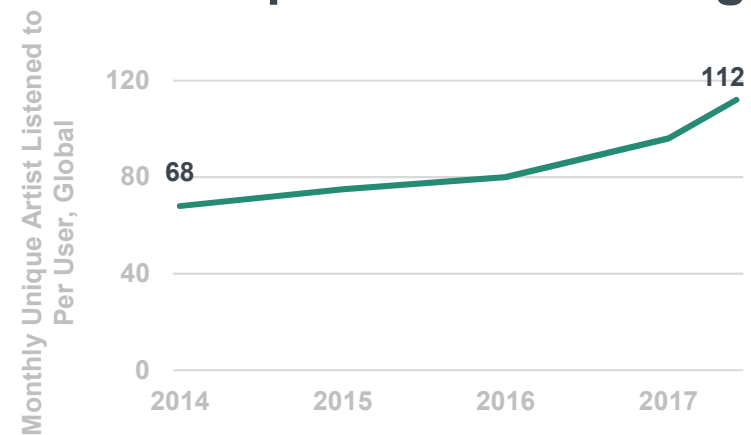
Data-Driven Personalization



Spotify Daily Engagement



Unique Artist Listening



Toutiao Personalization = Interests... Drive Engagement + Customer Satisfaction

Data-Driven Personalization

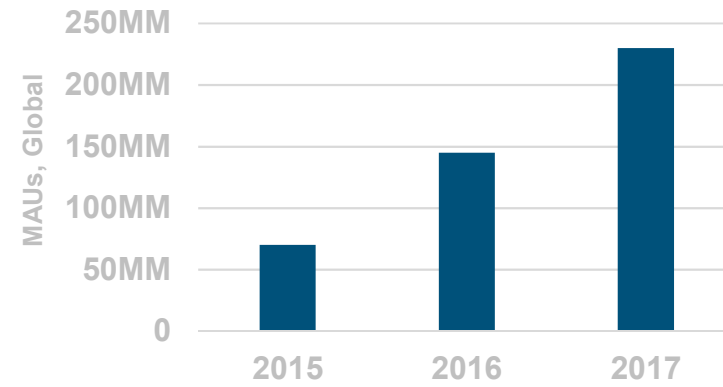


Main Page – User A

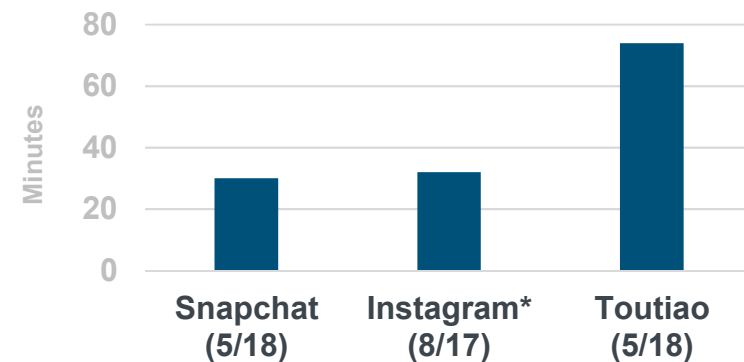


Main Page – User B

MAUs



Minutes Spent per Day

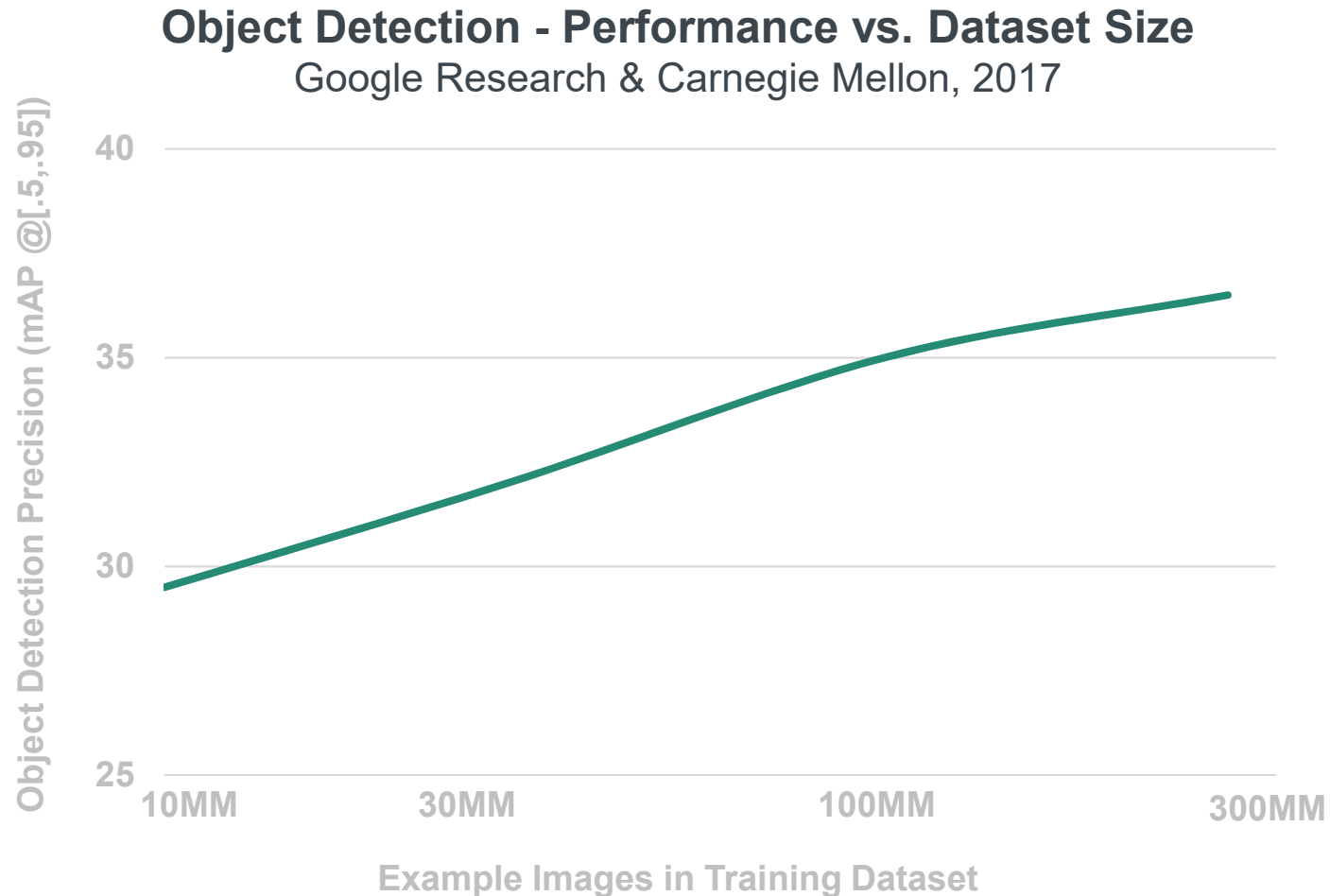




Data =

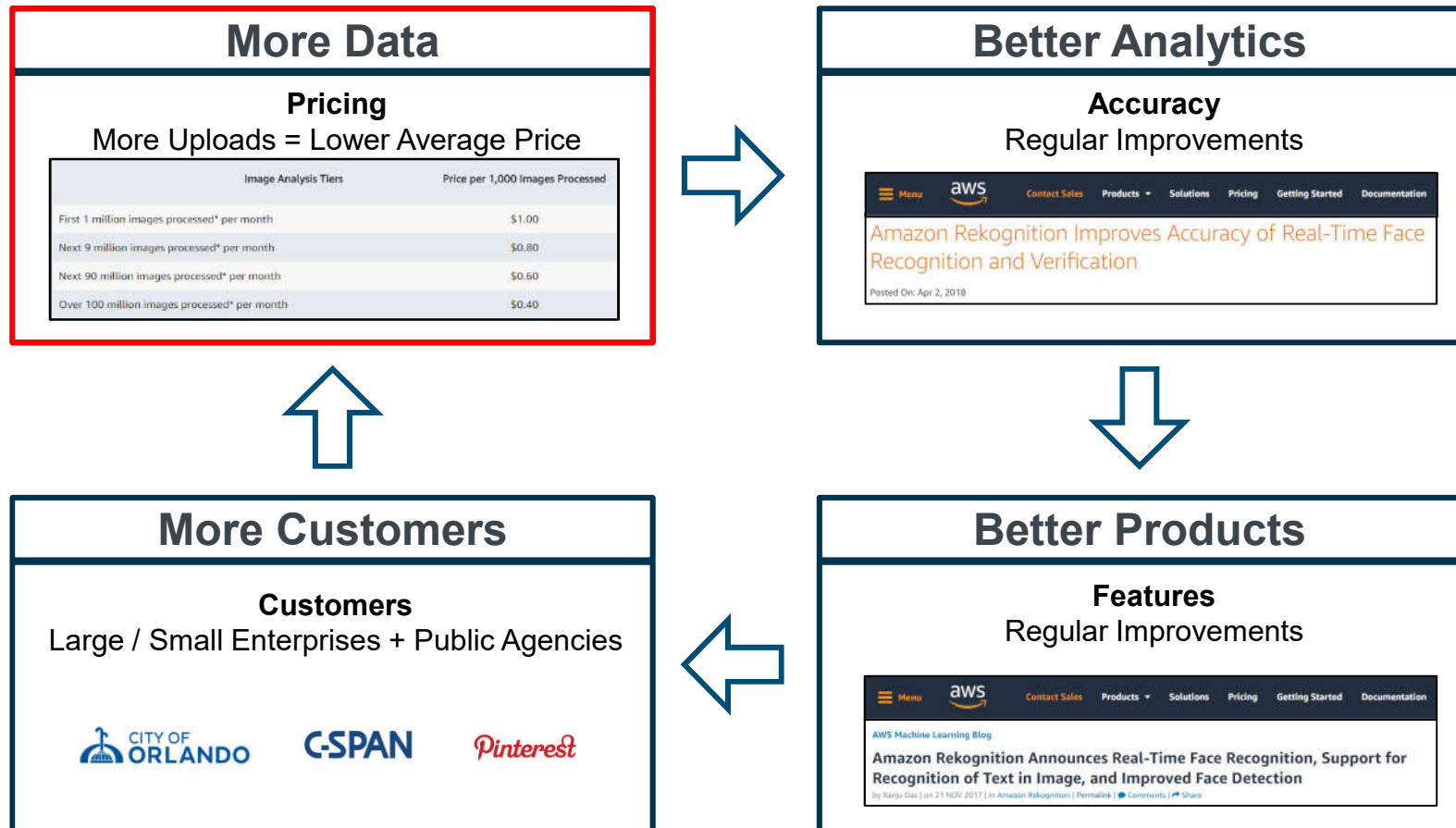
*Improves Predictive Ability of
Many Services*


Data Volume = Foundational to Algorithm Refinement + Artificial Intelligence (AI) Performance...



...Data Volume = Foundational to Tool / Product Improvement... Artificial Intelligence (AI) Predictive Capability

AWS 'Data Flywheel' – Amazon Rekognition*



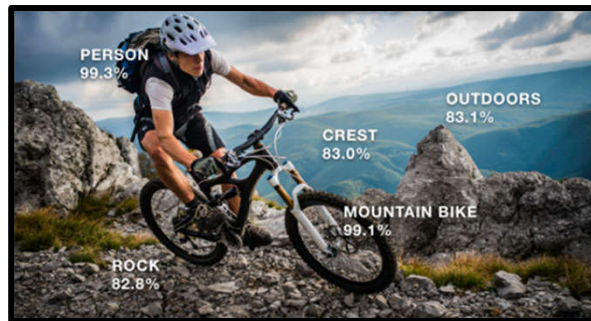


*Artificial Intelligence (AI)
Service Platforms for Others =
Emerging from Internet Leaders*

Amazon = AI Platform Emerging from AWS... Enabling Easier Data Processing / Collection for Others...

Amazon AWS AI Services / Infrastructure

Rekognition Image Recognition



AI Hardware – Scalable GPU Compute Clusters

P3

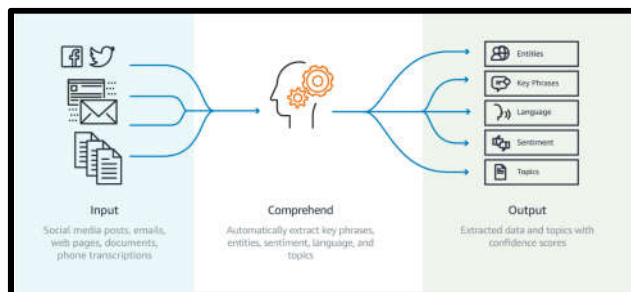
P3 instances are the latest generation of general purpose GPU instances.

Model	GPUs	vCPU	Mem (GiB)	GPU Mem (GiB)	GPU p2p
p3.2xlarge	1	8	61	16	-
p3.8xlarge	4	32	244	64	NVLink
p3.16xlarge	8	64	488	128	NVLink

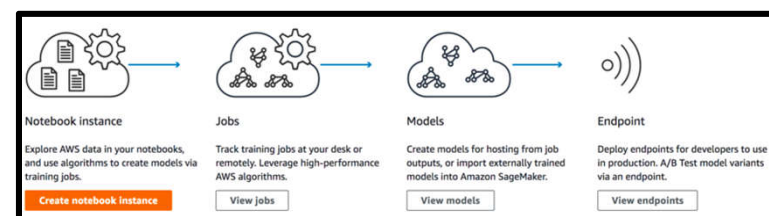
Features:

- Up to 8 NVIDIA Tesla V100 GPUs, each pairing 5,120 CUDA Cores and 640 Tensor Cores
- High frequency Intel Xeon E5-2686 v4 (Broadwell) processors
- Supports NVLink for peer-to-peer GPU communication
- Provide Enhanced Networking using Elastic Network Adapter with up to 25 Gbps of aggregate network bandwidth within a Placement Group

Comprehend Language Processing



SageMaker Machine Learning Framework



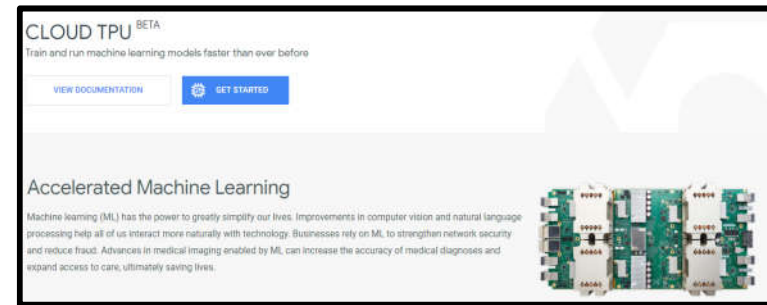
...Google = AI Platform Emerging from Google Cloud... Enabling Easier Data Processing / Collection for Others

Google Cloud AI Services / Infrastructure

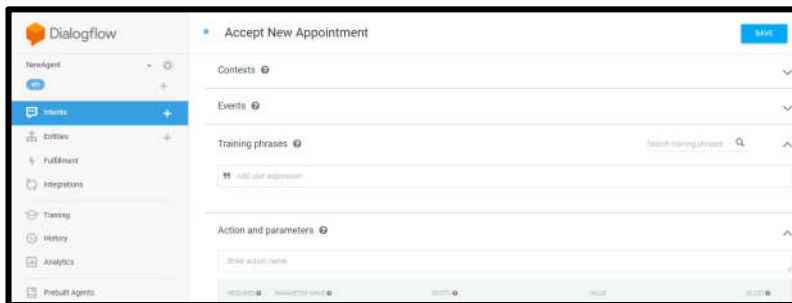
Google Cloud Vision API



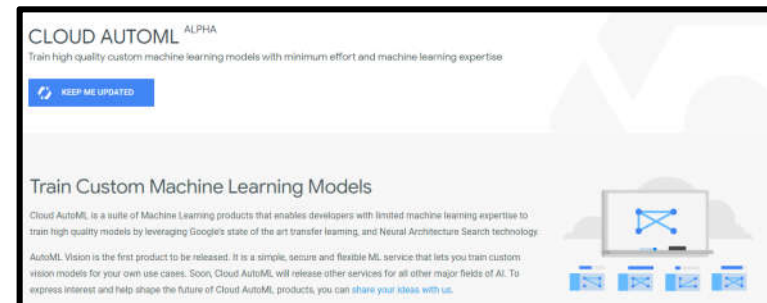
AI Hardware – Tensor Processing Units



Dialogflow Conversational Platform

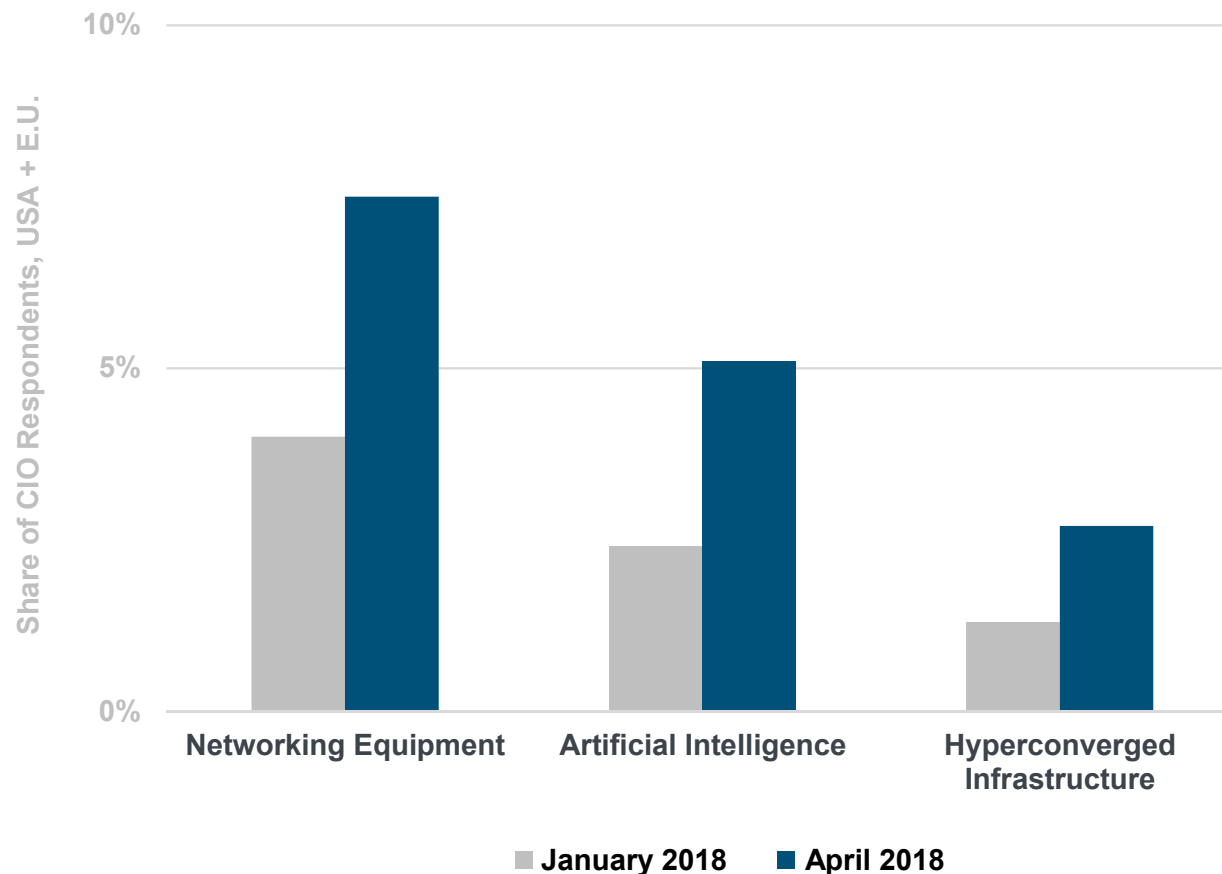



Cloud AutoML – Custom Models



AI in Enterprises = Small But Rapidly Rising Spend Priority... Per Morgan Stanley CIO Survey (4/18 vs 1/18)

Which IT Projects Will See The Largest Spend Increase in 2018?






*AI is one of the most important things
humanity is working on.
It is more profound than electricity or fire...*

*We have learned to harness fire for the benefits of
humanity but we had to overcome its downsides too.*

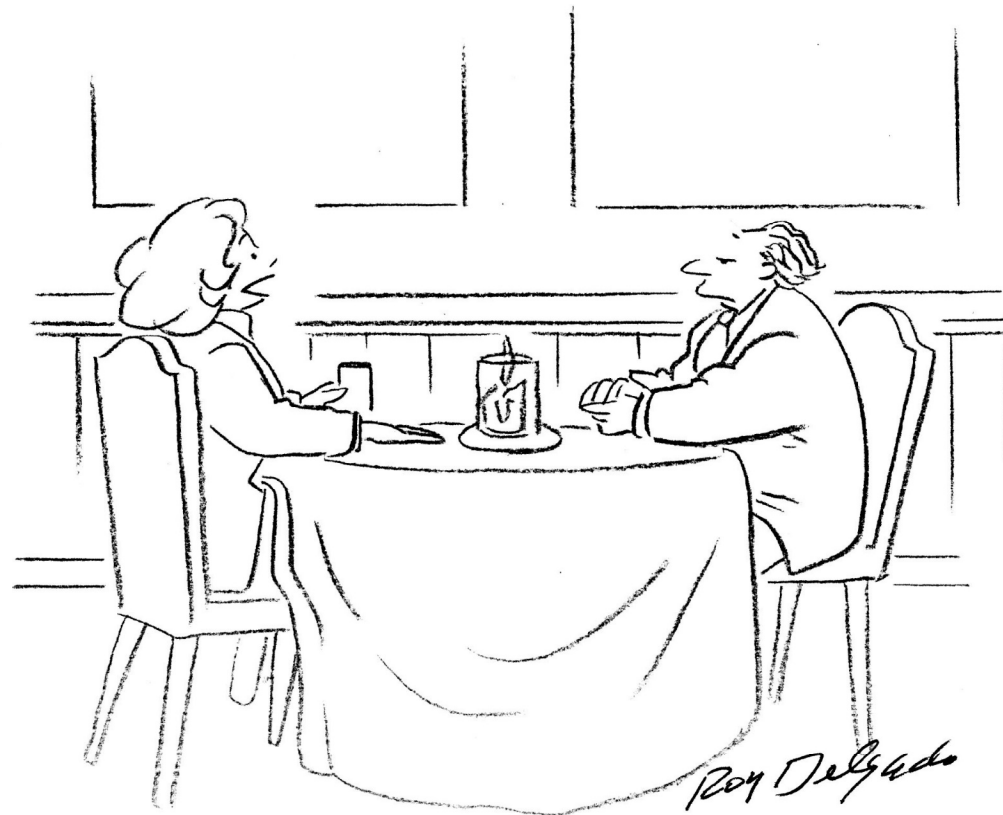
*...AI is really important, but we
have to be concerned about it.*

- Sundar Pichai, CEO of Google, 2/18



***Data Sharing =
Creates Multi-Faceted Challenges***

Data + Consumers = Love-Hate Relationship



" Just because I hate you doesn't mean
I don't love you. "

Most Online Consumers Share Data for Benefits...

USA Consumers per Deloitte

79%

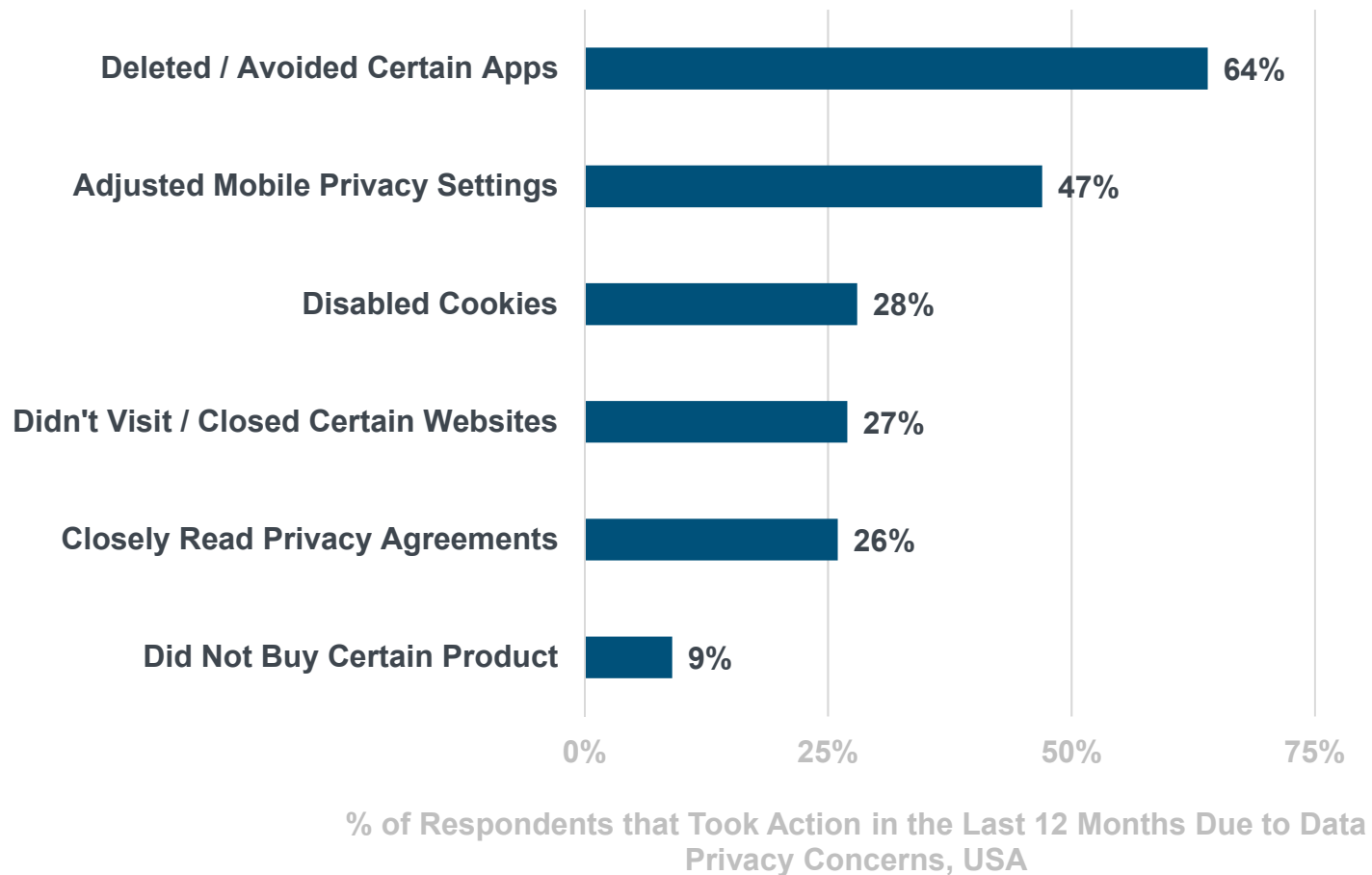
Willing to Share Personal Data For 'Clear Personal Benefit'

>66%

Willing To Share Online Data With Friends & Family

...Most Online Consumers Protect Data When Benefits Not Clear

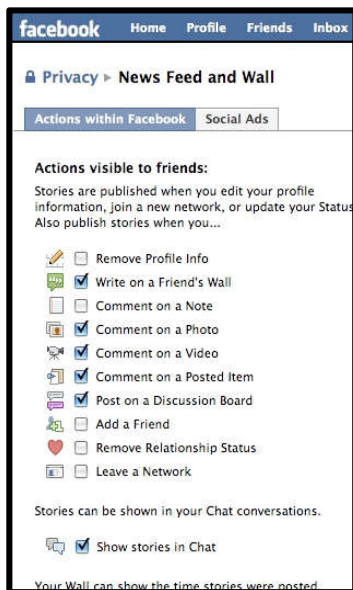
Consumers Taking Action To Address Data Privacy Concerns



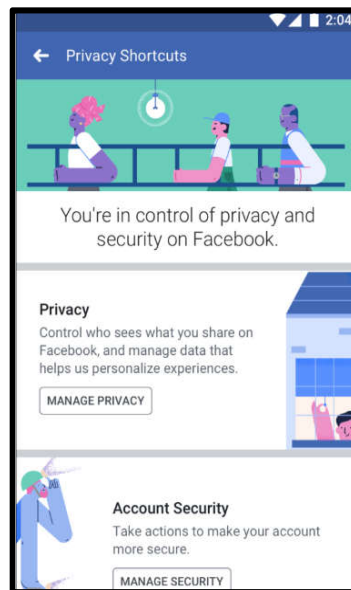
Internet Companies = Making Consumer Privacy Tools More Accessible (2018)

Facebook

2008

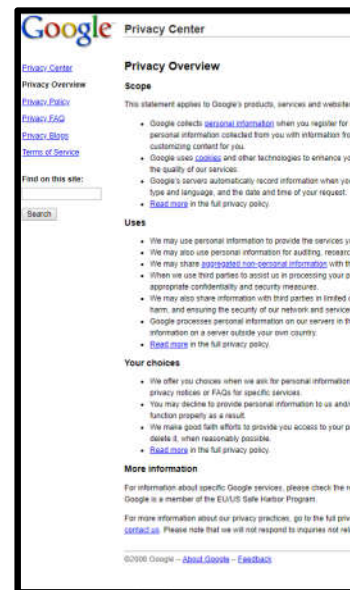


2018

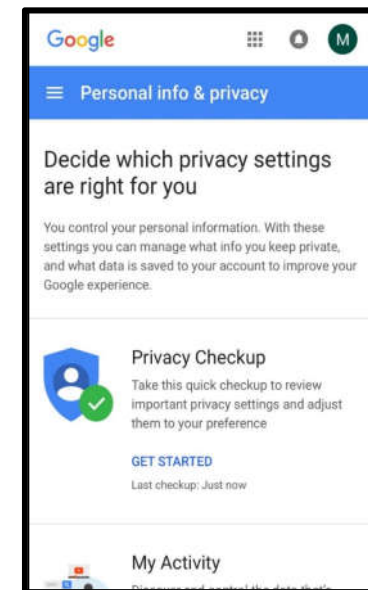



Google

2008



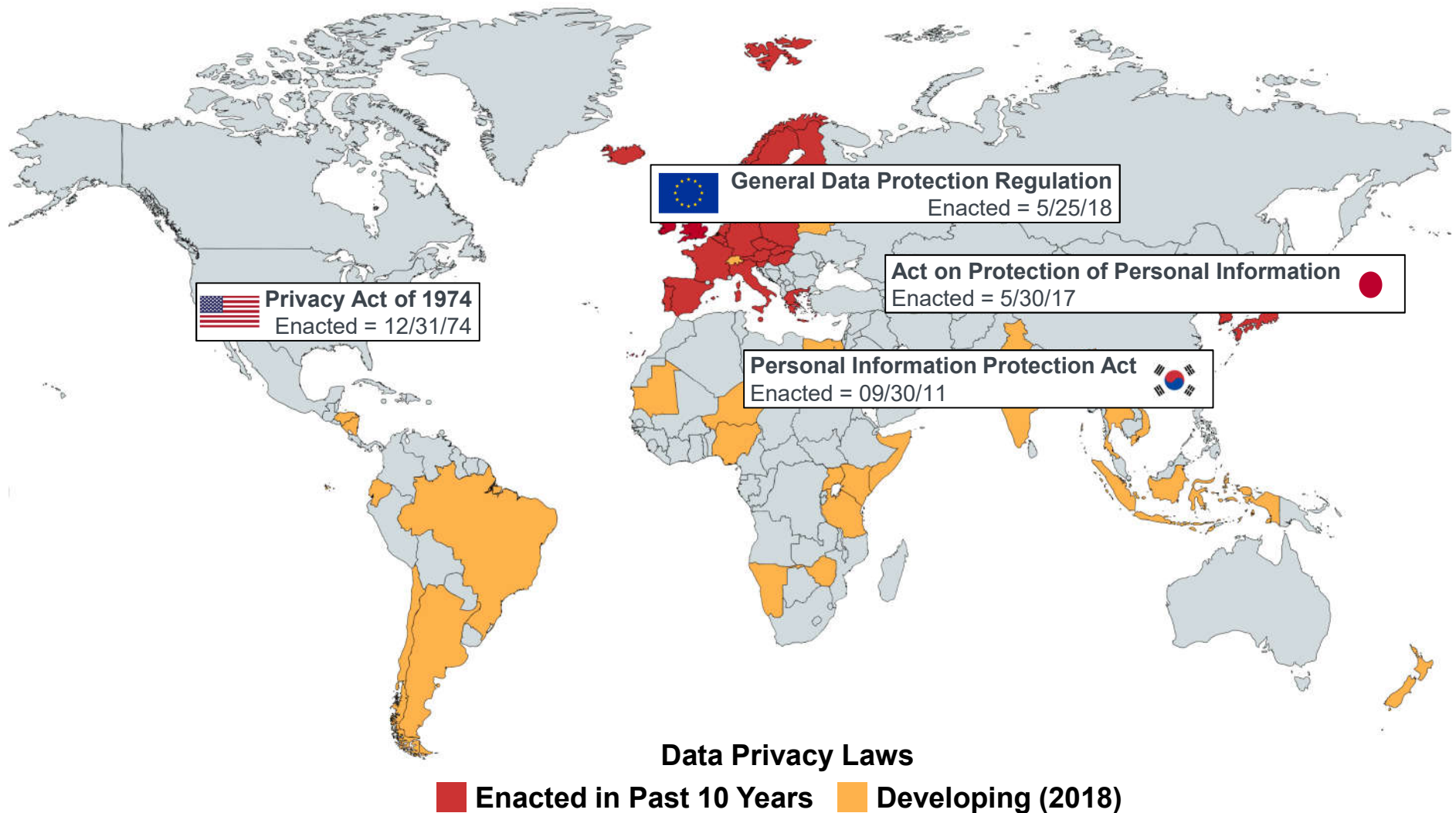
2018





*Data Sharing =
Varying Views*

EU / Asia / Americas = Rising Regulatory Focus on Data Collection + Sharing...



...China = Encouraging Data Collection

[Xi Jinping] called for building high-speed, mobile, ubiquitous & safe information infrastructure, integrating government & social data resources, & improving the collection of fundamental information...

[Xi stated] The Internet, 'Big Data,' Artificial Intelligence, & 'The Real Economy' should be interconnected.

- Xinhua State News Agency, 12/9/17

**Ministry of Industry & Information
Training to Build 'Big Data' Datacenter**

Xinhua State Press Agency, 5/07/17

**China to Further Promote Government
Information Sharing & Disclosure**

Xinhua State Press Agency, 12/7/17

**China Launches 'Big Earth' Big Data Project
To Boost Science Data Sharing**

Xinhua State Press Agency, 2/13/18

Cybersecurity = Threats Increasingly Sophisticated...Targeting Data

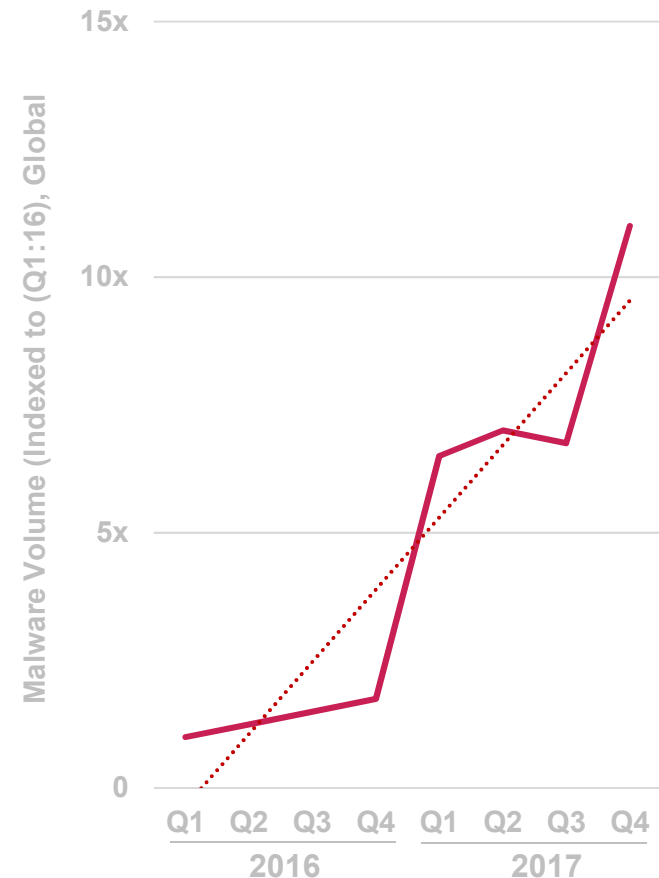
Adversaries are taking malware to unprecedented levels of sophistication & impact...

Weaponizing cloud services & other technology used for legitimate purposes...

And for some adversaries, the prize isn't ransom, but obliteration of systems & data.

- Cisco 2018 Annual Cybersecurity Report, 2/18

Observed Malware Volume





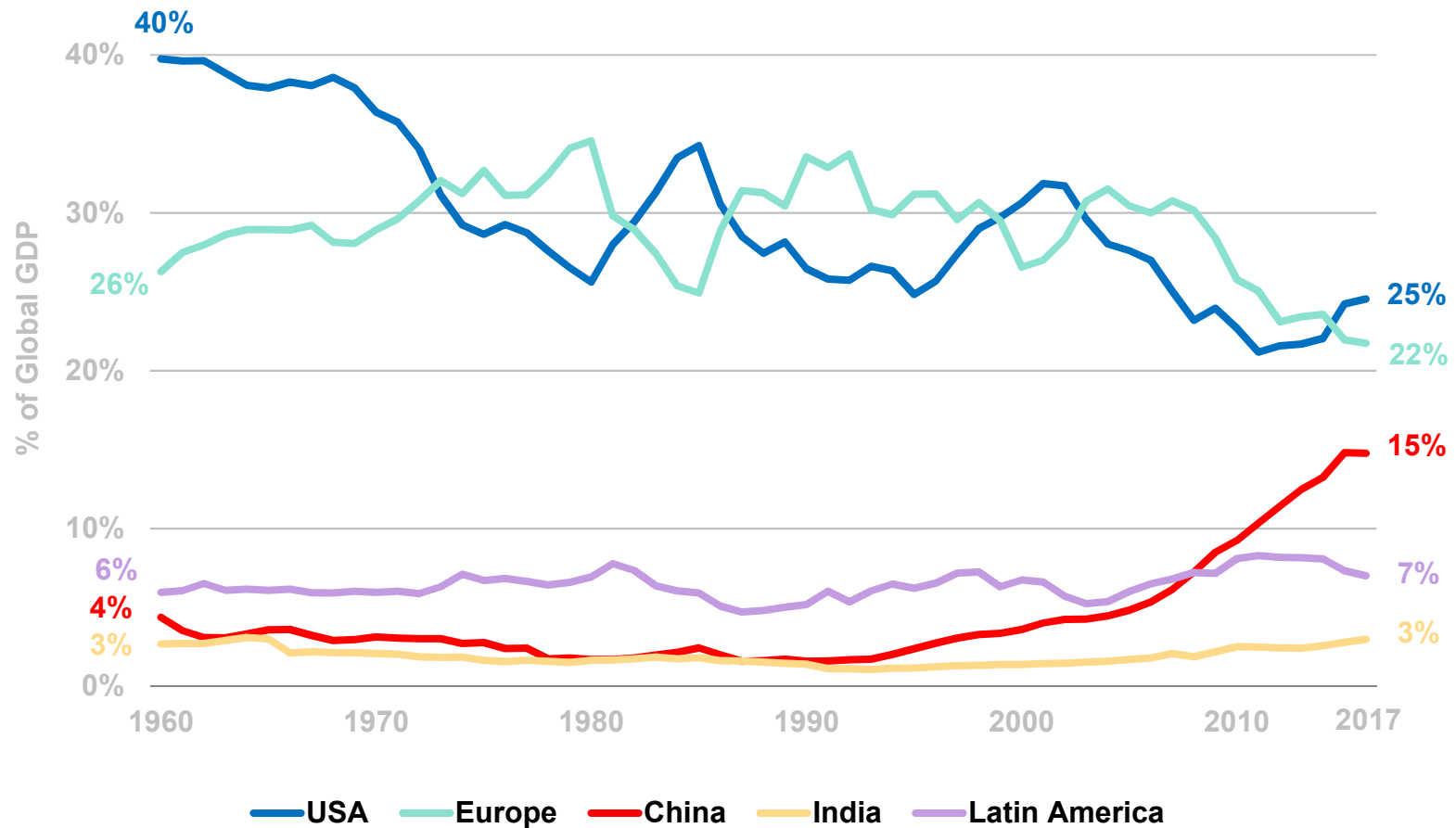
***Global Internet Leadership =
USA & China***



Economic Leadership...

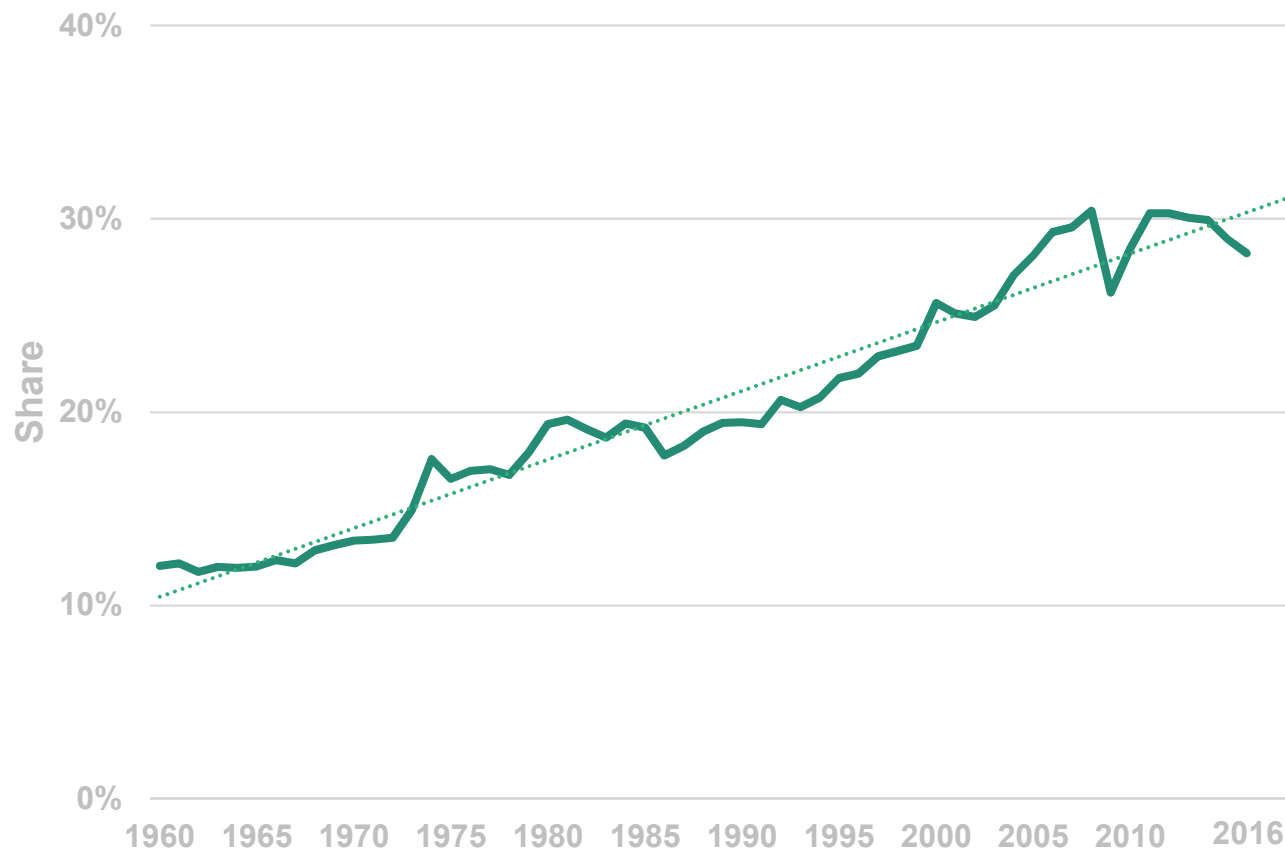
Relative Global GDP (Current \$) = USA + China + India Gaining... Other Leaders Falling


Global GDP Contribution (Current \$)



Cross-Border Trade = Increasingly Important to Global Economy

Trade as % of Global GDP





*Internet Leadership =
A Lot's Happened Over
5-10 Years...*

Today's Top 20 Worldwide Internet Leaders 5 Years Ago* = USA @ 9...China @ 2...

Public / Private Internet Companies, Ranked by Market Valuation (5/29/18)

Rank 2018	Company	Region	Market Value (\$B)
			5/29/13
1)	Apple	USA	\$418
2)	Amazon	USA	121
3)	Microsoft	USA	291
4)	Google / Alphabet	USA	288
5)	Facebook	USA	56
6)	Alibaba	China	--
7)	Tencent	China	71
8)	Netflix	USA	13
9)	Ant Financial	China	--
10)	eBay + PayPal**	USA	71
11)	Booking Holdings	USA	41
12)	Salesforce.com	USA	25
13)	Baidu	China	34
14)	Xiaomi	China	--
15)	Uber	USA	--
16)	Didi Chuxing	China	--
17)	JD.com	China	--
18)	Airbnb	USA	--
19)	Meituan-Dianping	China	--
20)	Toutiao	China	--
		Total	\$1,429

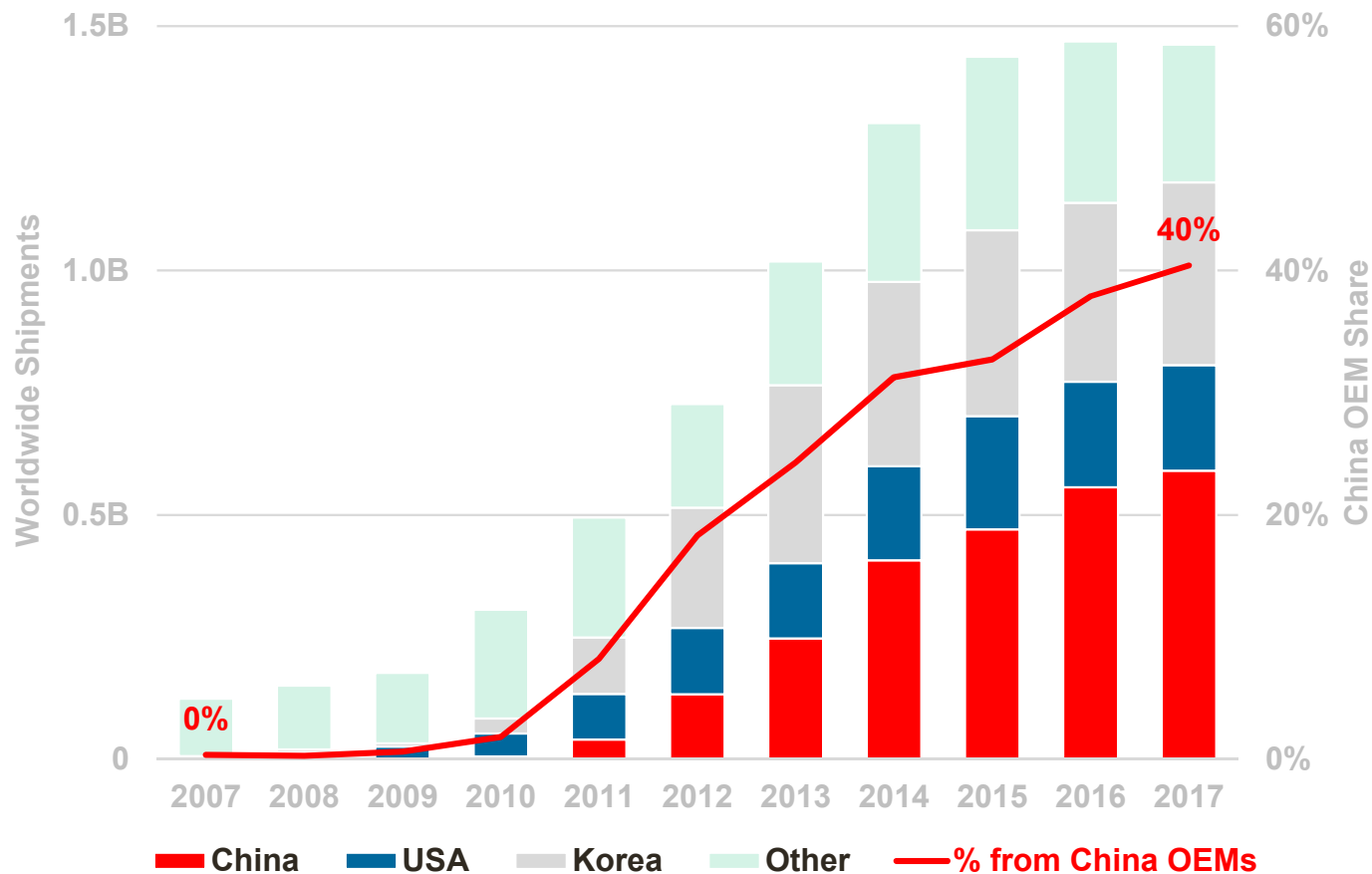
...Today's Top 20 Worldwide Internet Leaders Today = USA @ 11...China @ 9

Public / Private Internet Companies, Ranked by Market Valuation (5/29/18)

Rank 2018	Company	Region	Market Value (\$B)	
			5/29/13	5/29/18
1)	Apple	USA	\$418	\$924
2)	Amazon	USA	121	783
3)	Microsoft	USA	291	753
4)	Google / Alphabet	USA	288	739
5)	Facebook	USA	56	538
6)	Alibaba	China	--	509
7)	Tencent	China	71	483
8)	Netflix	USA	13	152
9)	Ant Financial	China	--	150
10)	eBay + PayPal*	USA	71	133
11)	Booking Holdings	USA	41	100
12)	Salesforce.com	USA	25	94
13)	Baidu	China	34	84
14)	Xiaomi	China	--	75
15)	Uber	USA	--	72
16)	Didi Chuxing	China	--	56
17)	JD.com	China	--	52
18)	Airbnb	USA	--	31
19)	Meituan-Dianping	China	--	30
20)	Toutiao	China	--	30
Total			\$1,429	\$5,788

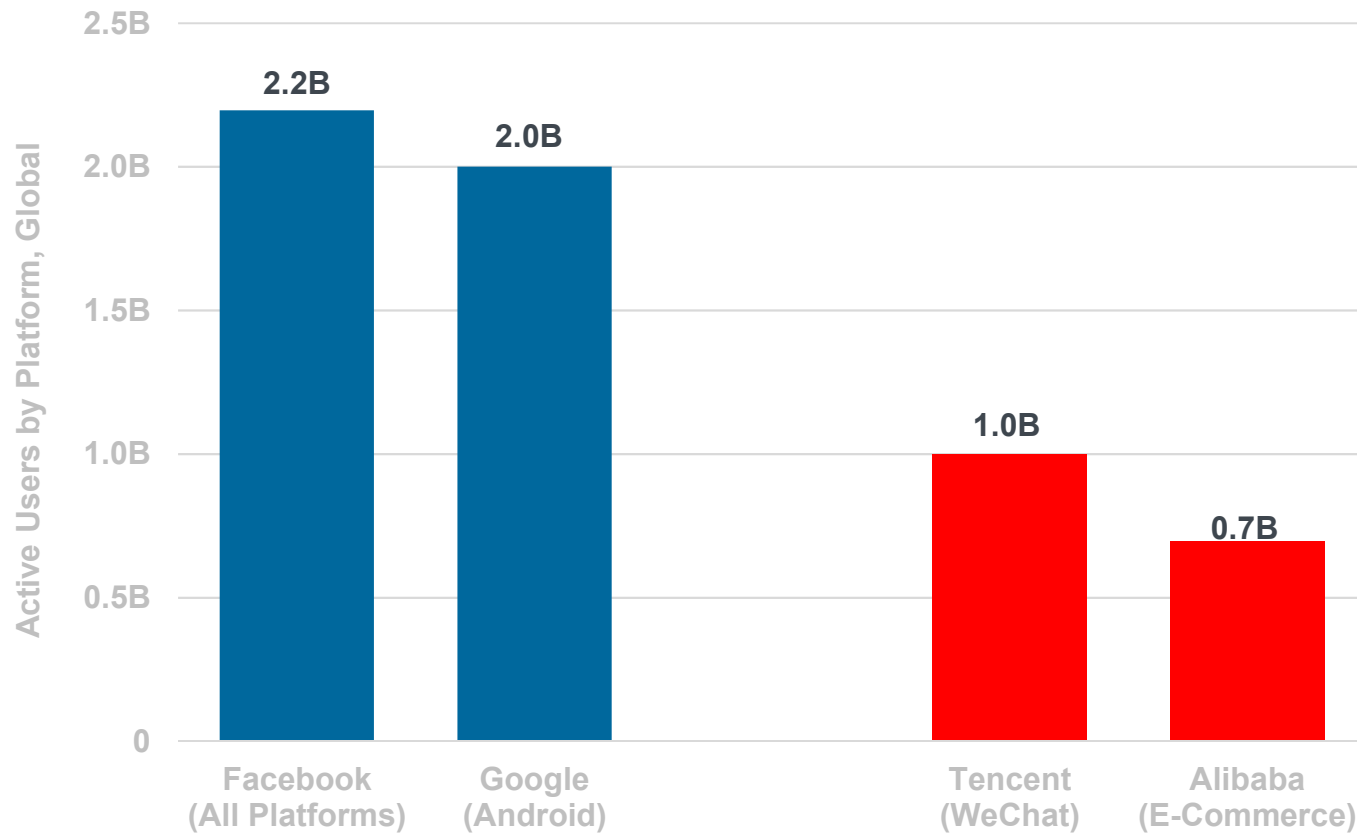
Smartphones = China @ #1 Worldwide OEM...
 @ 40% vs. 0% Share Ten Years Ago...USA @ 15% vs. 3%

Worldwide New Smartphone Shipments by OEM Headquarters



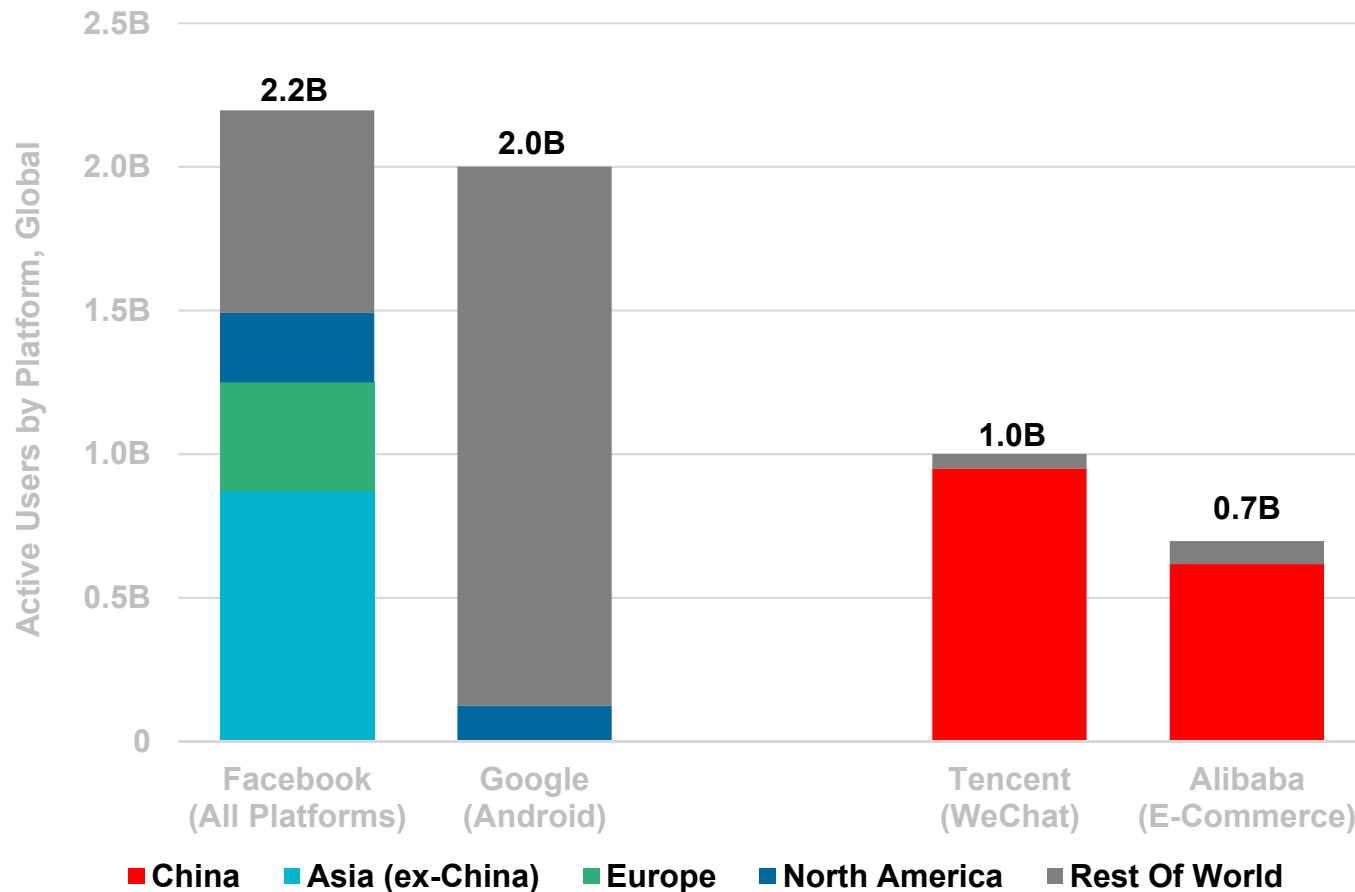
Internet Globally = USA Platforms = Lead User Numbers...

Active Users By Platform



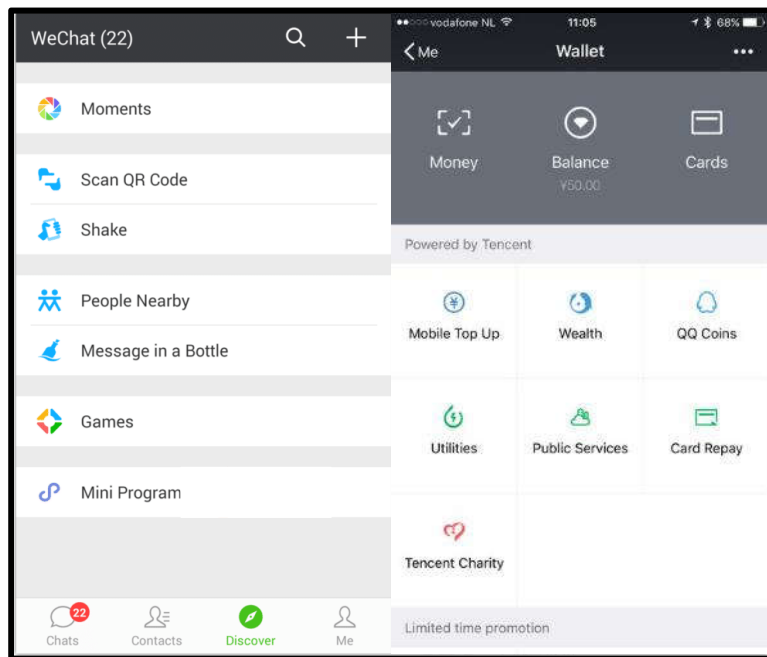
...Internet by Country = China Platforms = Lead User Numbers...in China

Active Users By Platform



China Feature + Data-Rich Internet Platforms = Largest # of Users in One Country

Tencent WeChat + WeChat Pay



**Photos...Friends...Games...
Apps...Finances...Bills...**

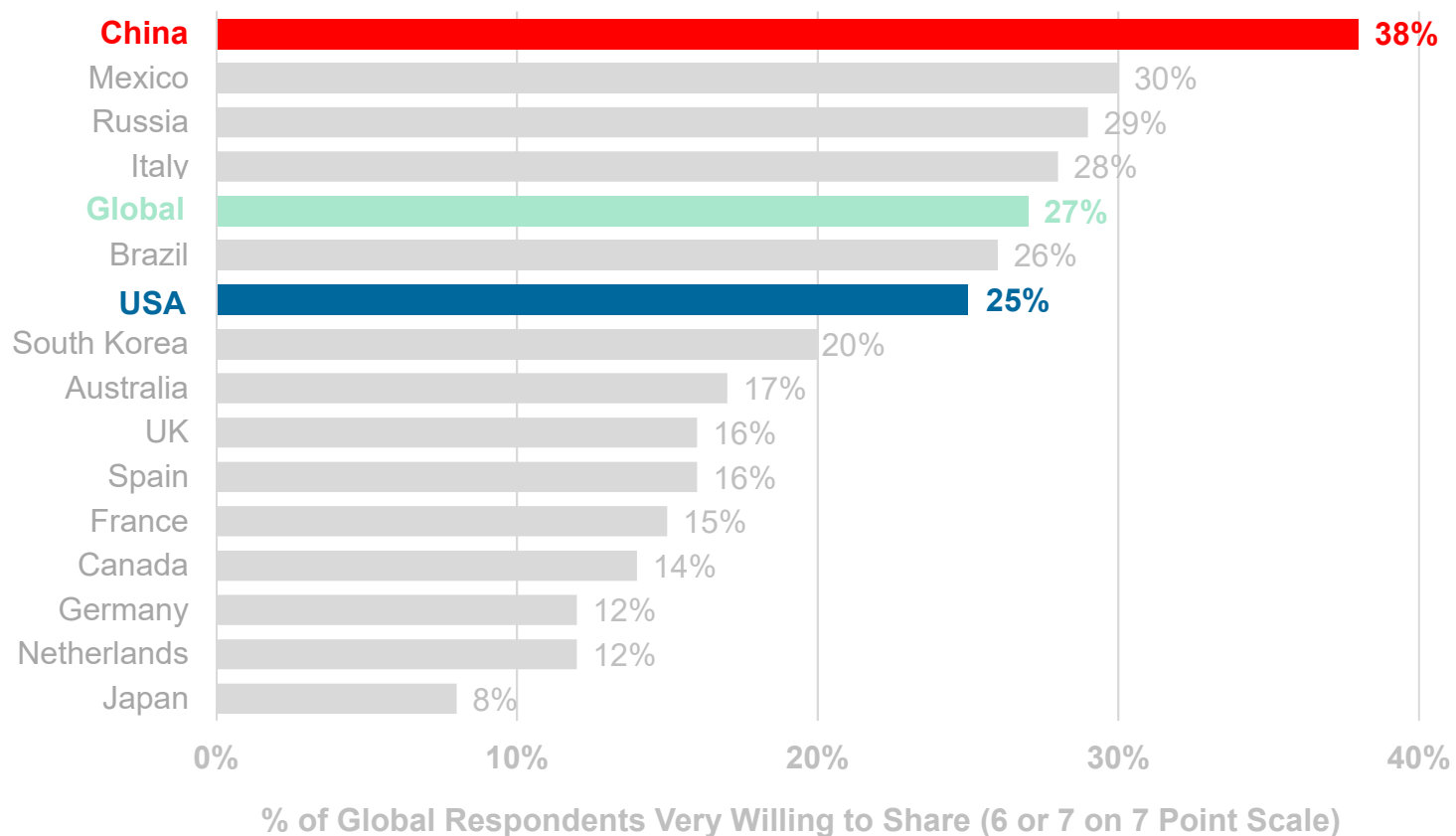
Alibaba TaoBao + Alipay



**Searches...News...Brands...
Feedback...Finances...Bills...**

China Internet Users = More Willing to Share Data for Benefits vs. Other Countries per GfK

*Would you share personal data (financial, driving records, etc.)
for benefits (e.g., lower cost, personalization, etc.)?*





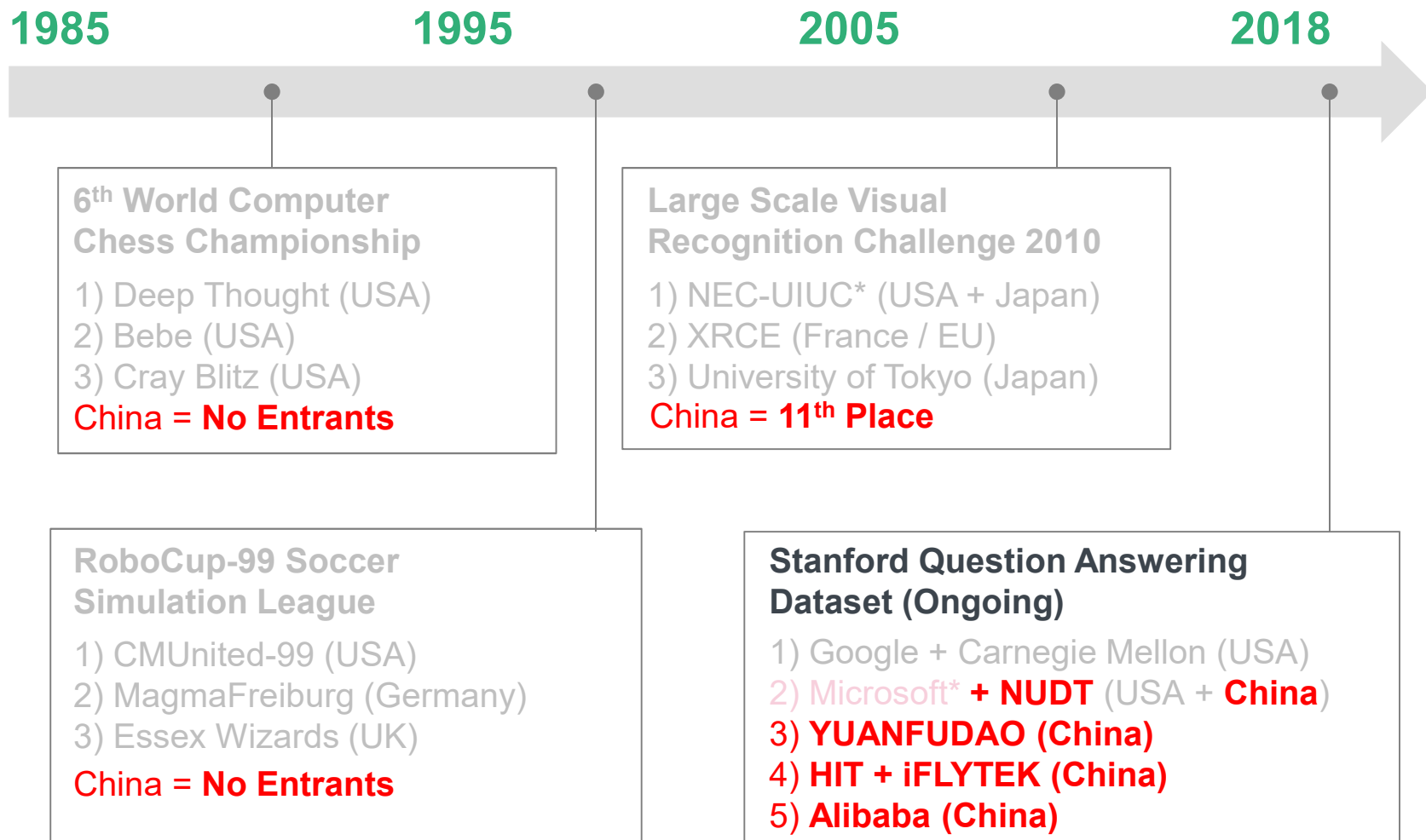
*China Digital Data Volume @
Significant Scale & Growing Fast =*

*Providing Fuel for
Rapid Artificial Intelligence Advancements*



*Artificial Intelligence =
USA & China...*

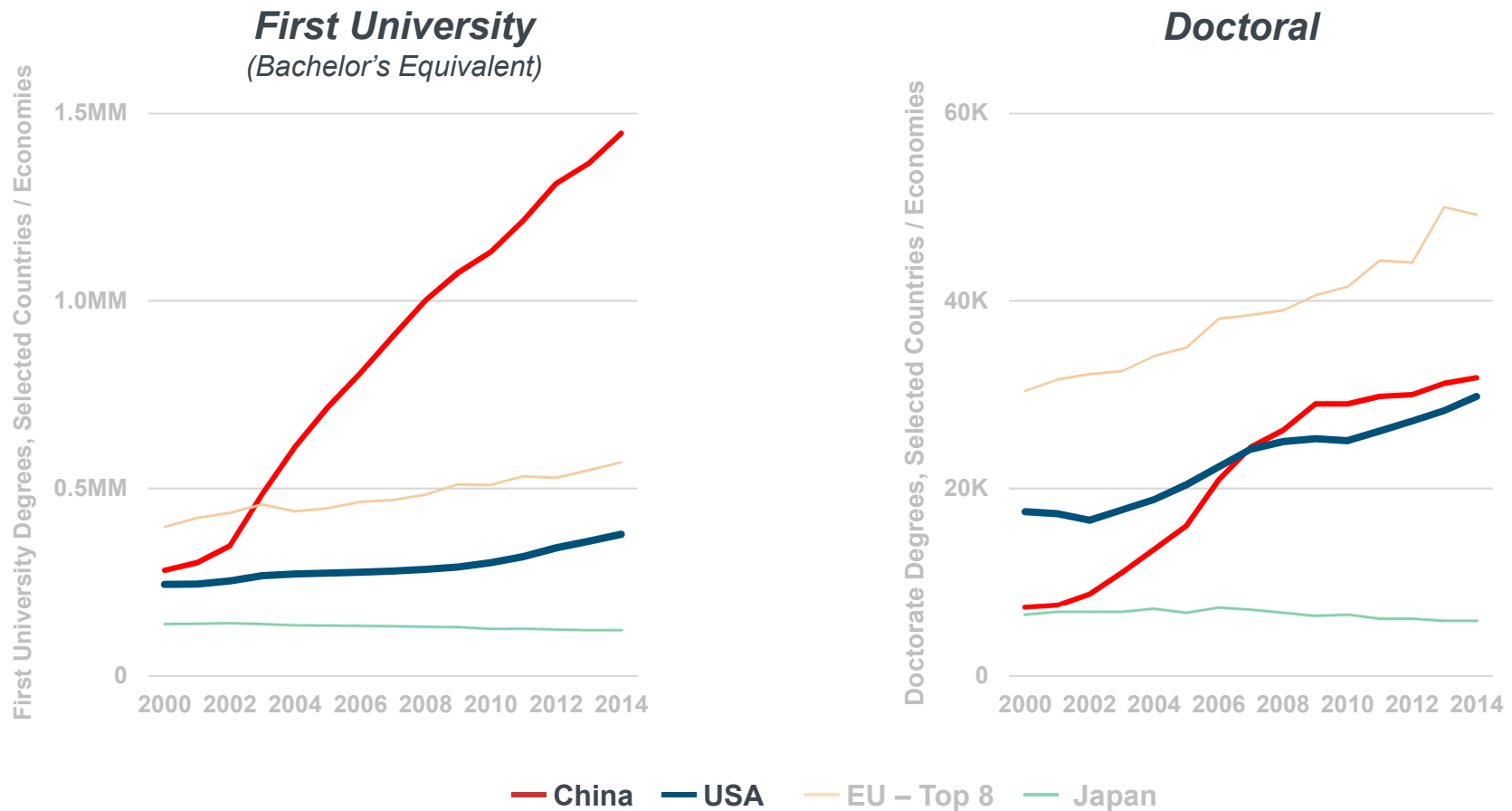
Artificial Intelligence Competition = Increasingly Complex Tasks...China Momentum Strong



Natural Science & Engineering Higher Education = China Graduation Rates Rising Rapidly per National Science Foundation

Annual Natural Science & Engineering Degrees

(Agricultural Sciences / Biological Sciences / Computer Sciences / Earth, Atmospheric & Ocean Sciences / Mathematics / Engineering)



Source: USA National Science Foundation analysis of National Bureau of Statistics (China), Government of Japan, UNESCO, OECD, National Center for Education Statistics, IPEDS, & National Center for Science / Engineering data. Note: Data for the majority of the countries were collected under same OECD, EU, and UIS guidelines & field groupings in the ISCED-F are similar to fields used in China, a major degree producer. Natural sciences include agricultural sciences, biological sciences, computer sciences, earth, atmospheric, and ocean sciences; & mathematics. EU-Top 8 for doctoral degrees includes UK / Germany / France / Spain / Italy / Portugal / Romania / Sweden. EU-Top 8 for first university degrees includes UK / Germany / France / Poland / Italy / Spain / Romania / The Netherlands. The # of S&E doctorates awarded rose from about 8K in 2000 to more than 34K in 2014. Despite the growth in the quantity of doctorate recipients, some question the quality of the doctoral programs in China (Cyranoski et al. 2011). The rate of growth in doctoral degrees in S&E and in all fields has considerably slowed starting in 2010, after an announcement by the Chinese Ministry of Education indicating that China would begin to limit admissions to doctoral programs & focus on quality of graduate education (Mooney 2007). Also in China, first university degrees increased greatly in all fields, with a larger increase in non-S&E than in S&E fields. China experienced an increase of almost 1.2MM degrees and up more than 400% from 2000 to 2014. China has traditionally awarded a large proportion of its first university degrees in engineering, but the percentage declined from 43% in 2000 to 33% in 2014.

Artificial Intelligence Focus = China Government Highly Focused on Developing AI

Artificial Intelligence - Next Generation Development Plan Goals



1) Build Open & Coordinated AI Innovation Systems

2) Foster a Highly Efficient Smart Economy

3) Construct Safe / Convenient Intelligent Society

4) Strengthen Military-Civilian Integration in AI

5) Build Safe & Efficient Information Infrastructure

6) Plan Next Generation AI Science & Technology Projects

Artificial Intelligence = USA Ahead...
China = Focused + Organized + Gaining

I'm assuming that [USA's] lead [in Artificial Intelligence] will continue over the next five years, & that China will catch up extremely quickly.

In five years we'll kind of be at the same level, possibly.

It's hard to see how China would have passed us in that period, although their rate of improvement is so impressively good.

- Eric Schmidt, Chairman, US Defense Innovation Advisory Board,
Keynote Address at Artificial Intelligence & Global Security Summit, 11/13/17

**ECONOMIC GROWTH DRIVERS =
EVOLVE OVER TIME...**



Century	Economic Growth Drivers
Pre-18 th	Cultivation & Extraction
19-20 th	Manufacturing & Industry
21 st ...	Compute Power & Human Potential



Lifelong Learning =

*Crucial in Evolving
Work Environment &*

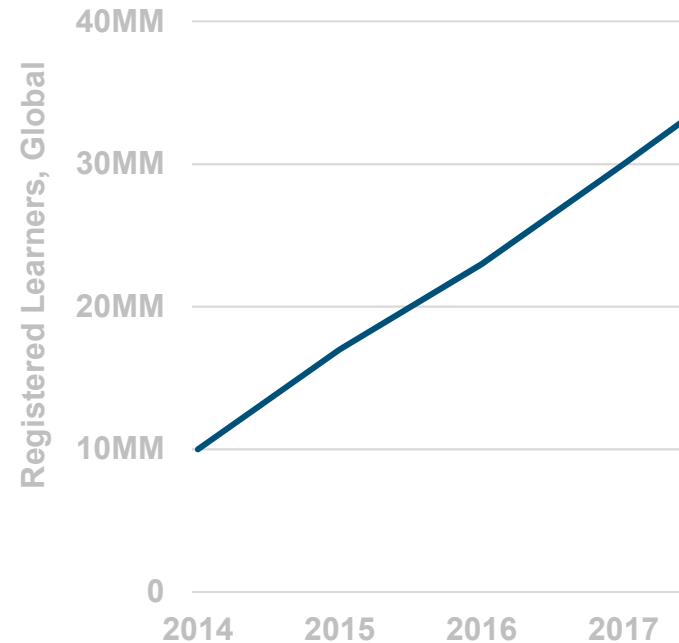
*Tools Getting Better +
More Accessible*

Lifelong Learning = 33MM Learners +30% (Coursera)...

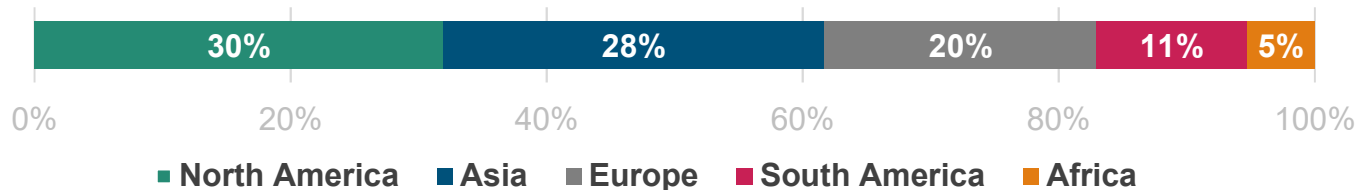
Top Courses, 2017

Machine Learning	Stanford
Neural Networks & Deeper Learning	Deeplearning.ai
Learning How to Learn: Powerful Mental Tools to Help You Master Tough Subjects	UC San Diego
Introduction to Mathematical Thinking	Stanford
Bitcoin & Cryptocurrency Technologies	Princeton
Programming for Everybody	University of Michigan
Algorithms, Part I	Princeton
English for Career Development	University of Pennsylvania
Neural Networks / Machine Learning	University of Toronto
Financial Markets	Yale

Learners



Learners by Geography



...Lifelong Learning = Educational Content Usage Ramping Fast (YouTube)...

1B

Daily Learning Video Views

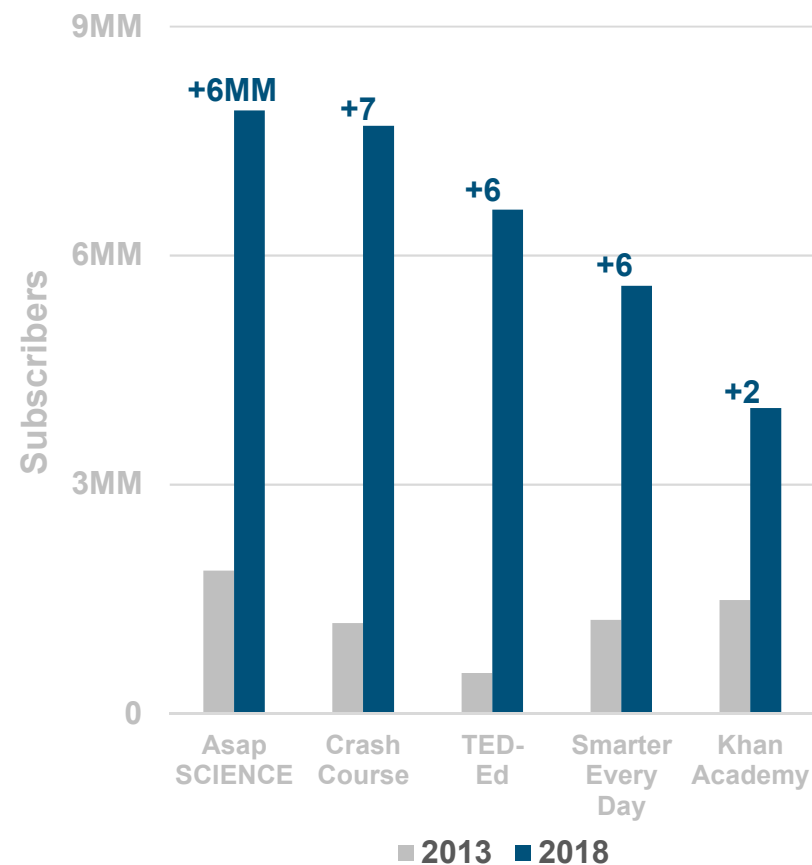
70%

Viewers Use Platform to Help Solve Work / School / Hobby Problems

+38%

Growth Y/Y (2017)
Job Search Video Views
(e.g., Resume-Writing Guides)

Selected Education Channel Subscribers



...Lifelong Learning =
Employee Re-Training Engagement High (AT&T)...

‘Workforce 2020’ / ‘Future Ready’ Programs

\$1B

Allocated for web-based employee training.
Partners = Coursera / Udacity / Universities.

2.9MM

Emerging tech courses completed by employees.
Most popular courses = Cyber Security / Machine Learning /
Data-Driven Decision Making / Virtual Collaboration.

194K

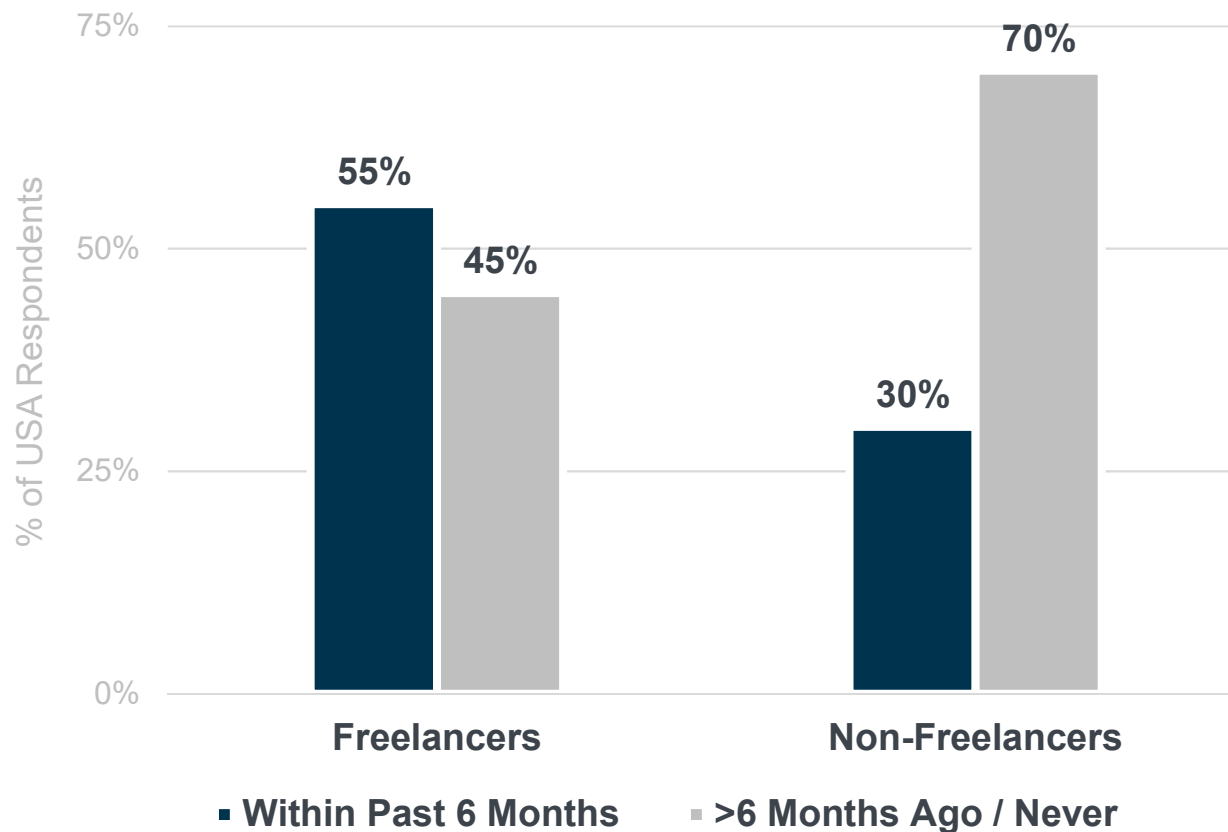
Employees (77% of workforce) actively engaged in re-training.

61%

Share of promotions received by re-trained employees (2016-Q1:18)

...Lifelong Learning = >50% of Freelancers Updated Skills Within Past 6 Months

When Did You Last Participate in Skill-Related Training?



CHINA INTERNET =

**ROBUST ENTERTAINMENT +
RETAIL INNOVATION**



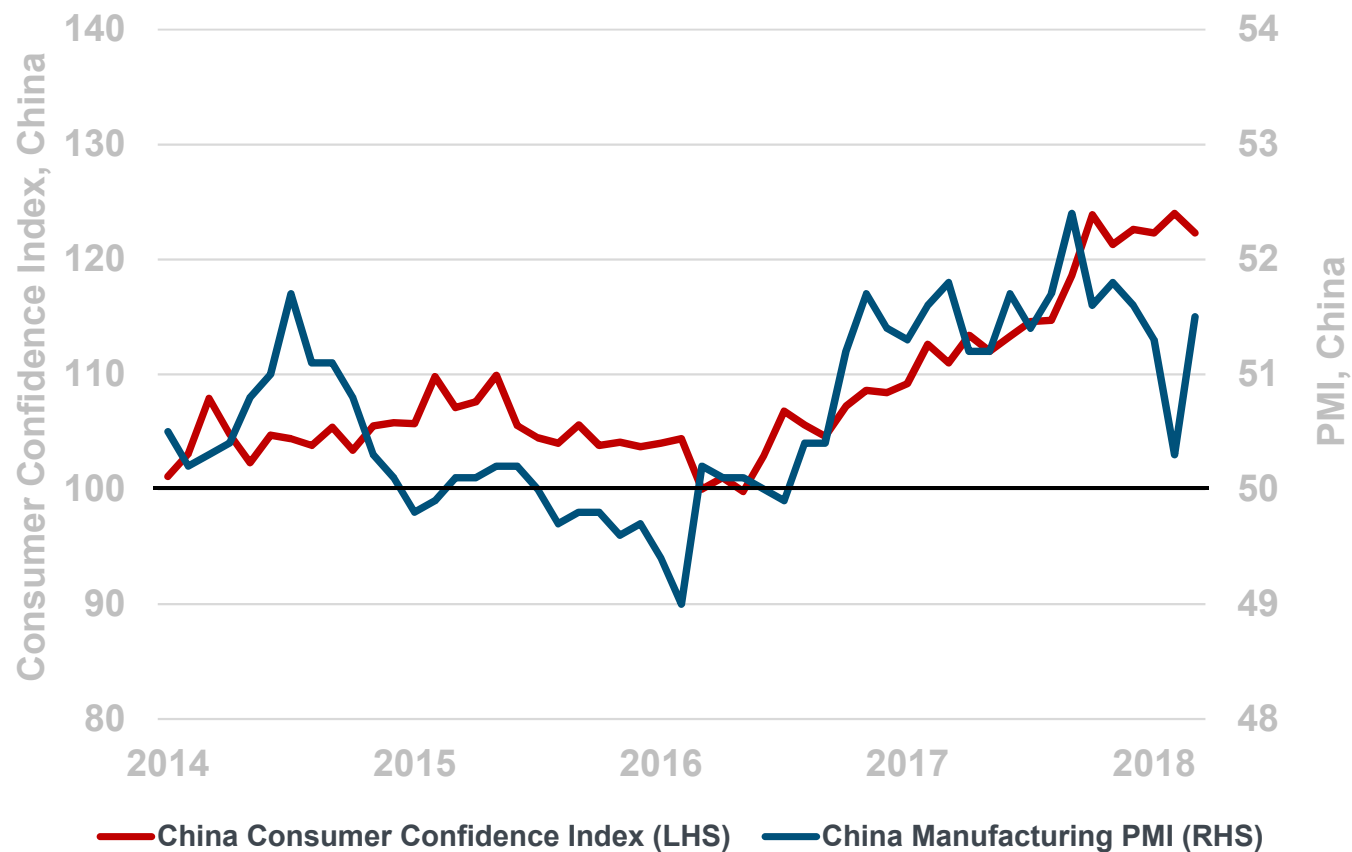
**Hillhouse
Capital**

[下載中文版](#)

***China Macro Trends =
Strong***

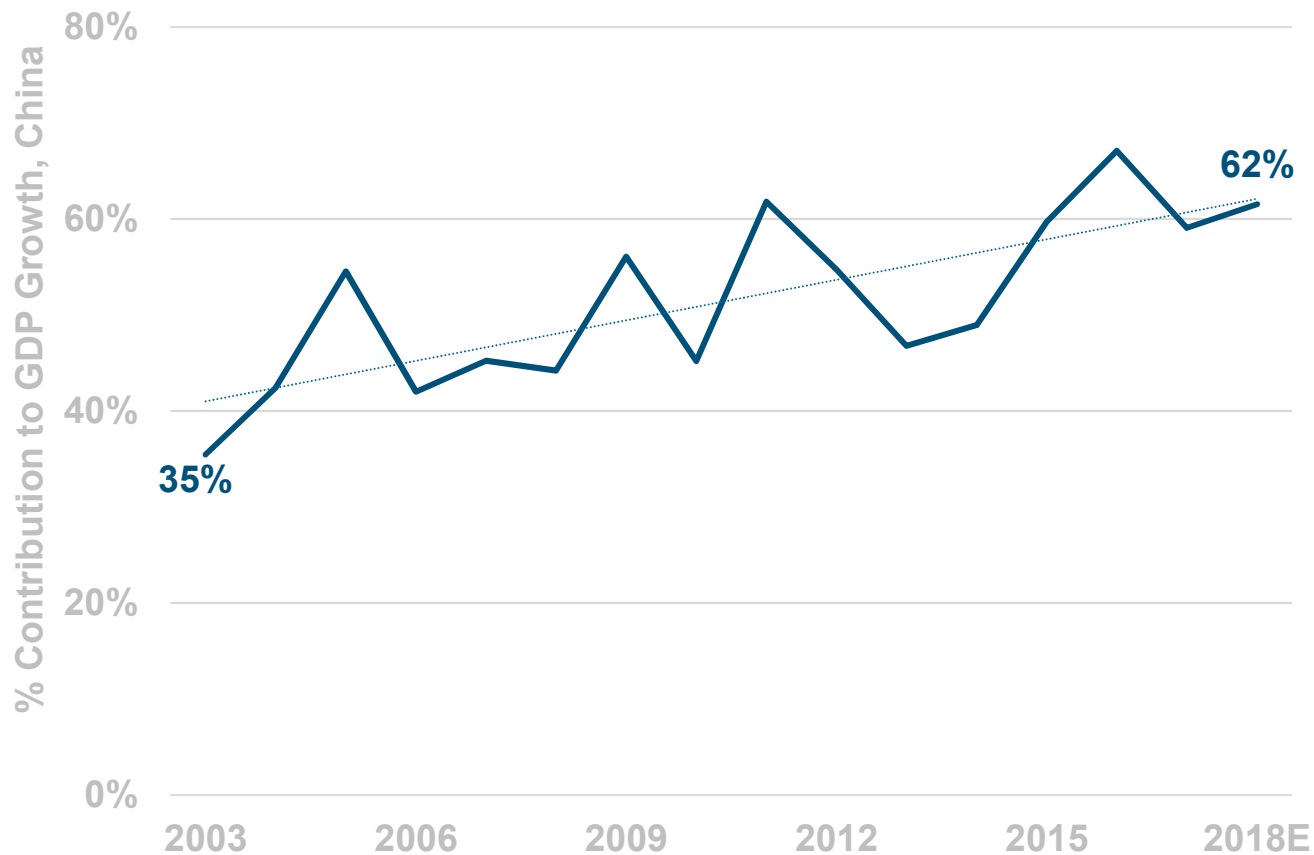
China Consumer Confidence = Near 4 Year High... Manufacturing Index = Expanding

China Consumer Confidence Index + Manufacturing Purchasing Managers' Index (PMI)



China GDP Growth = Increasingly Driven by Domestic Consumption... @ 62% vs. 35% of GDP Growth (2003)

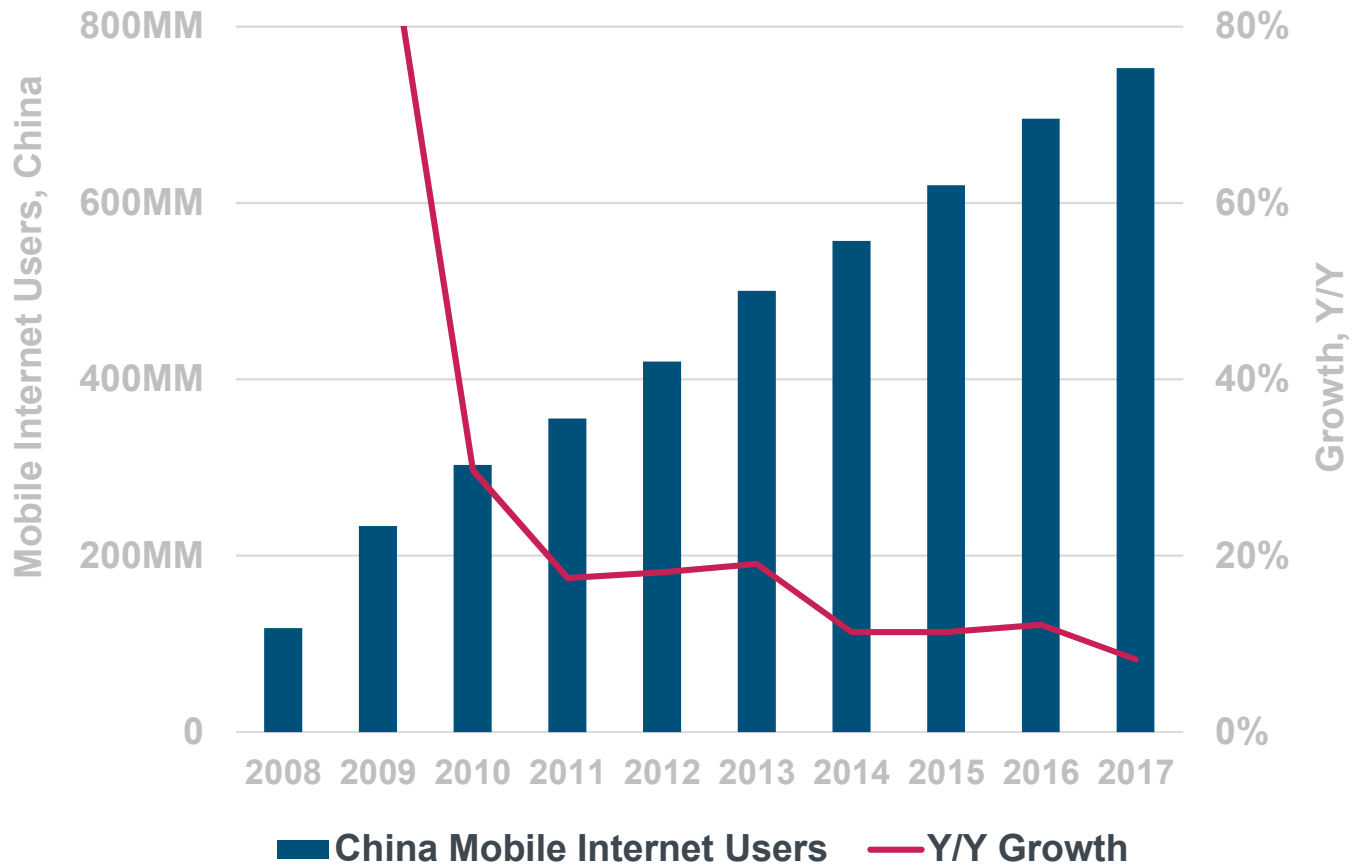
China Domestic Consumption Contribution to GDP Growth



***China Internet Usage =
Accelerating***

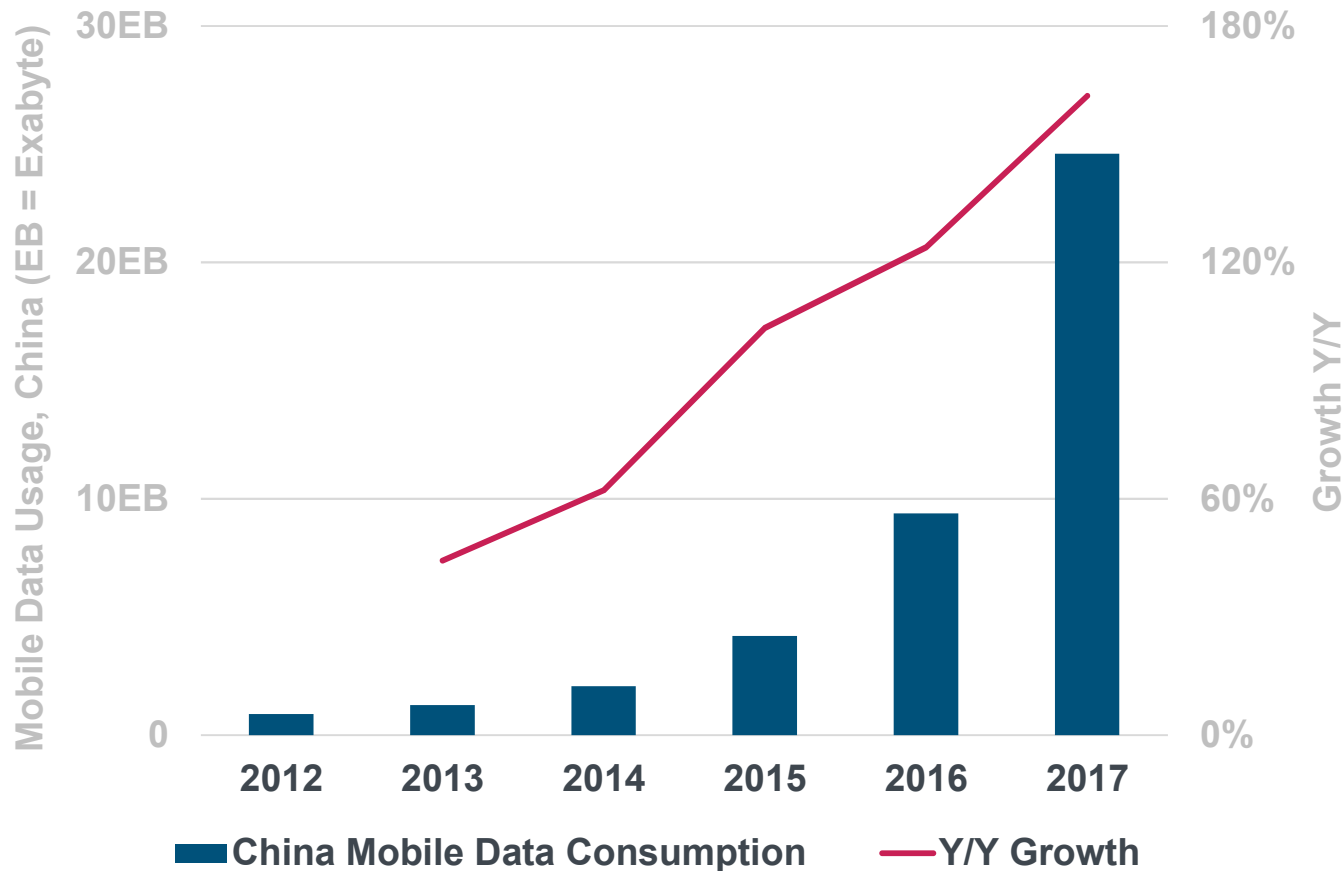
China Mobile Internet Users =
753MM...+8% vs. 12% Y/Y

China Mobile Internet Users vs. Y/Y Growth



China Mobile Internet (Data) Usage = Accelerating...+162% vs. +124% Y/Y

China Cellular Internet Data Usage & Growth Y/Y



China Online Entertainment =

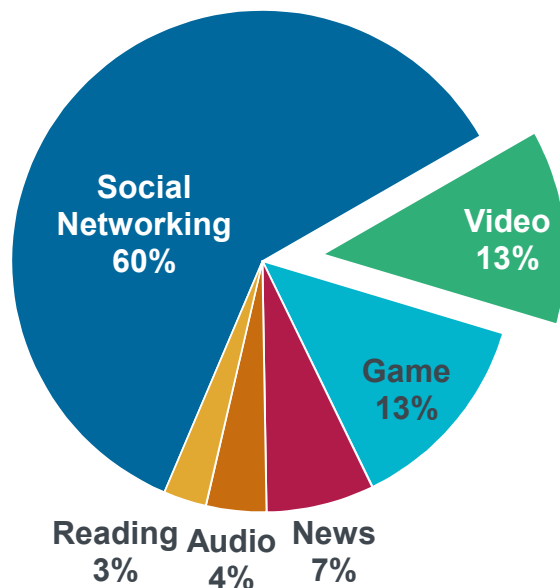
***Long + Short-Form Video &
Team-Based Multiplayer Mobile Games***

Growing Quickly

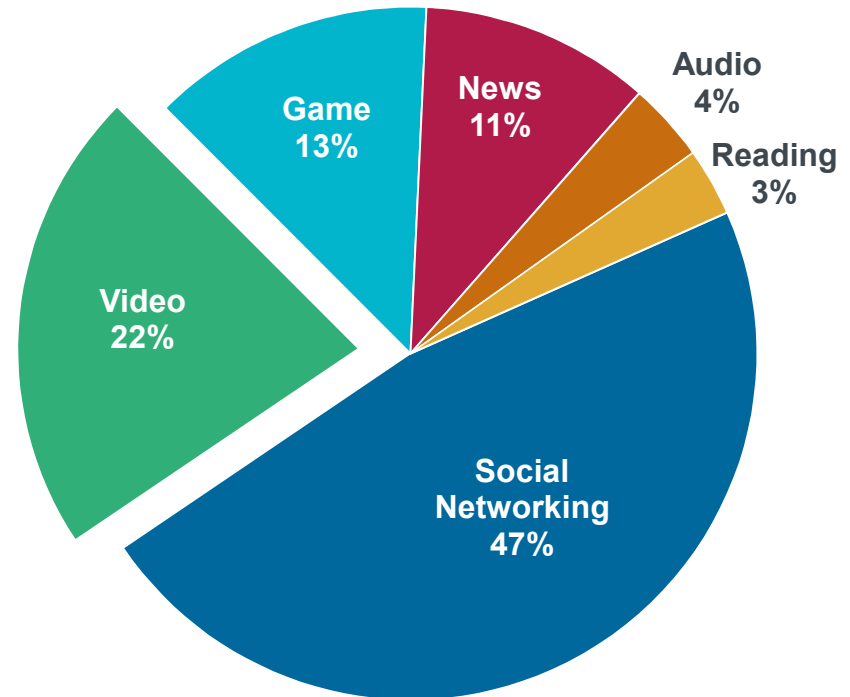
China Mobile Media / Entertainment Time Spent = +22% Y/Y...Mobile Video Growing Fastest

China Mobile Media / Entertainment Daily Time Spent

March 2016
2.0B Hours

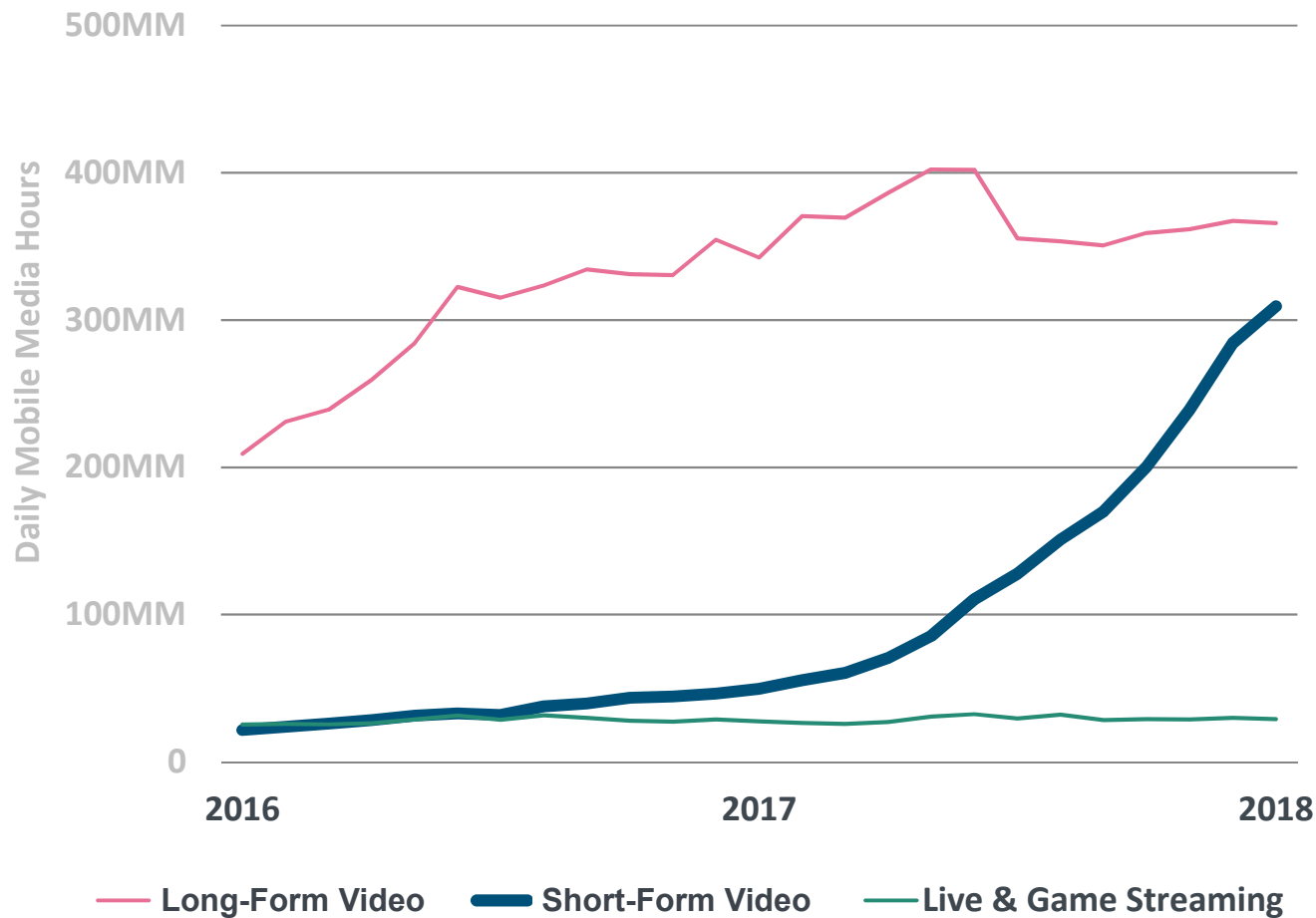


March 2018
3.2B Hours, +22% Y/Y



China Short-Form Video = Usage Growing Rapidly...

China Daily Mobile Media Time Spent

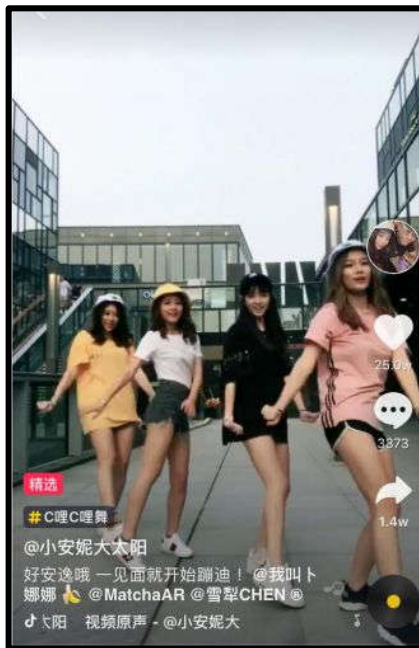


...China Short-Form Video Leaders = 100MM+ DAU... Massive Growth + High Engagement (50 Minute Daily Average)

Douyin (Tik-Tok)

AI-Augmented Mobile Video Creation
/ Personalized Feed

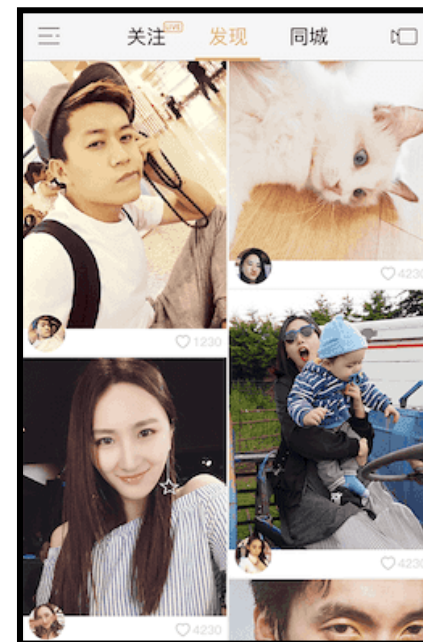
DAU = **95MM +78x Y/Y**
Daily Time Spent = **52 Minutes**
DAU / MAU Ratio = **57%**



Kuaishou

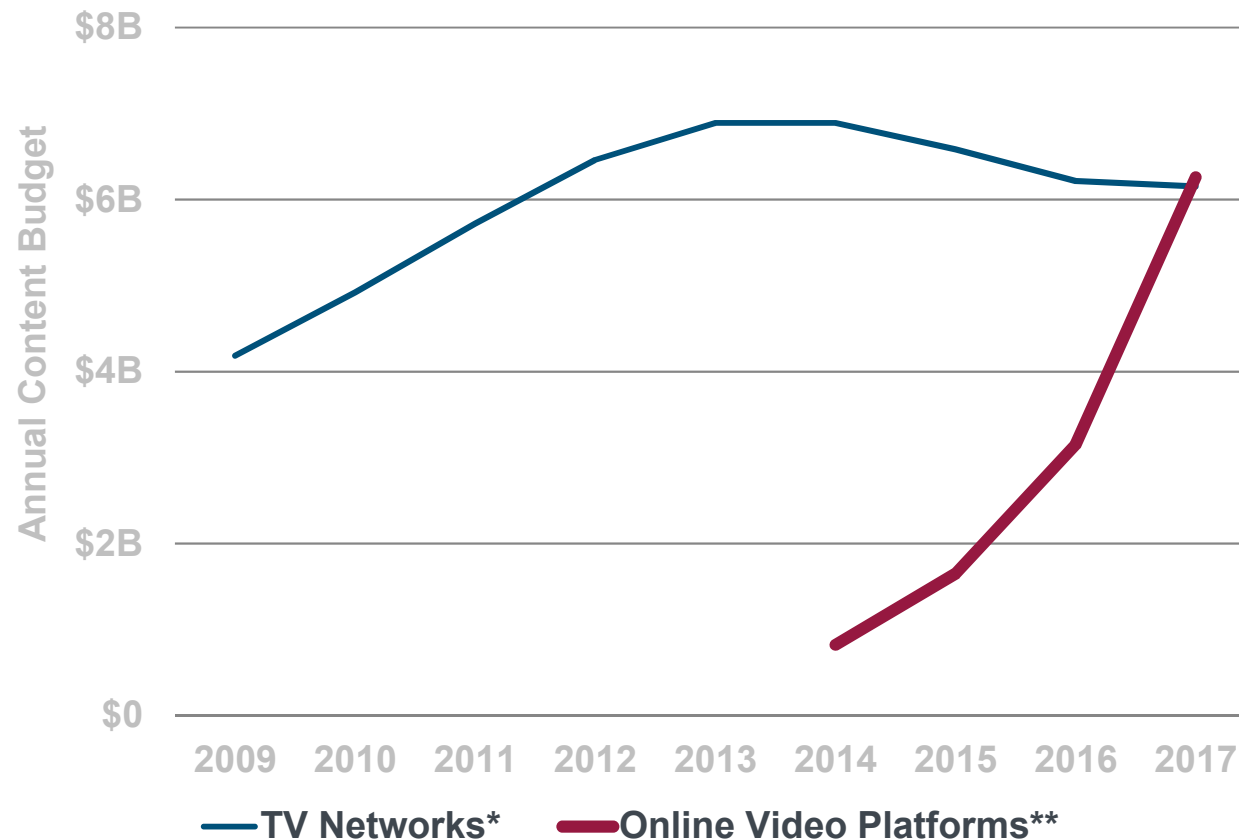
De-Centralized / Personalized /
Location-Based Mobile Video Discovery

DAU = **104MM +2x Y/Y**
Daily Time Spent = **52 Minutes**
DAU / MAU Ratio = **46%**



China Online Long-Form Video Content Budgets = Exceeded TV Networks (2017)...

China TV Networks* vs. Online Video Platform** Content Budget

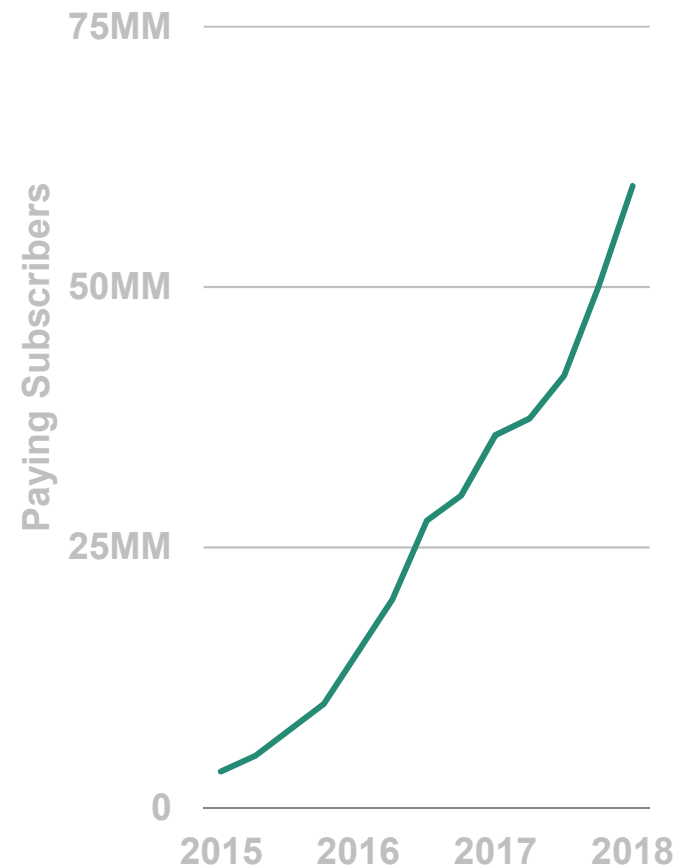


...China Online Long-Form Video Original / Exclusive Content = Driving Industry-Wide Paying Subscriber Growth

Original / Exclusive Content

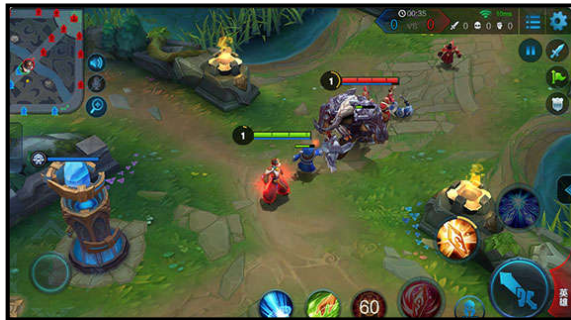


iQIYI Paying Subscribers



China Team-Based Multiplayer Mobile Games = Lead Game Time Spent in China

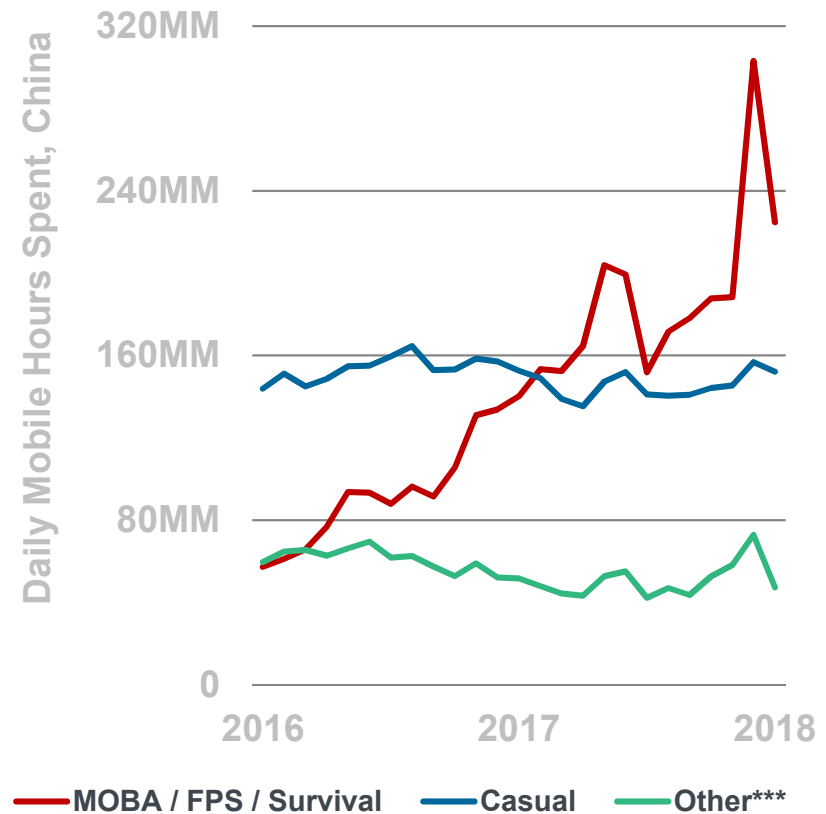
Honor of Kings 80MM+ China DAU



PUBG Mobile 50MM+ China DAU

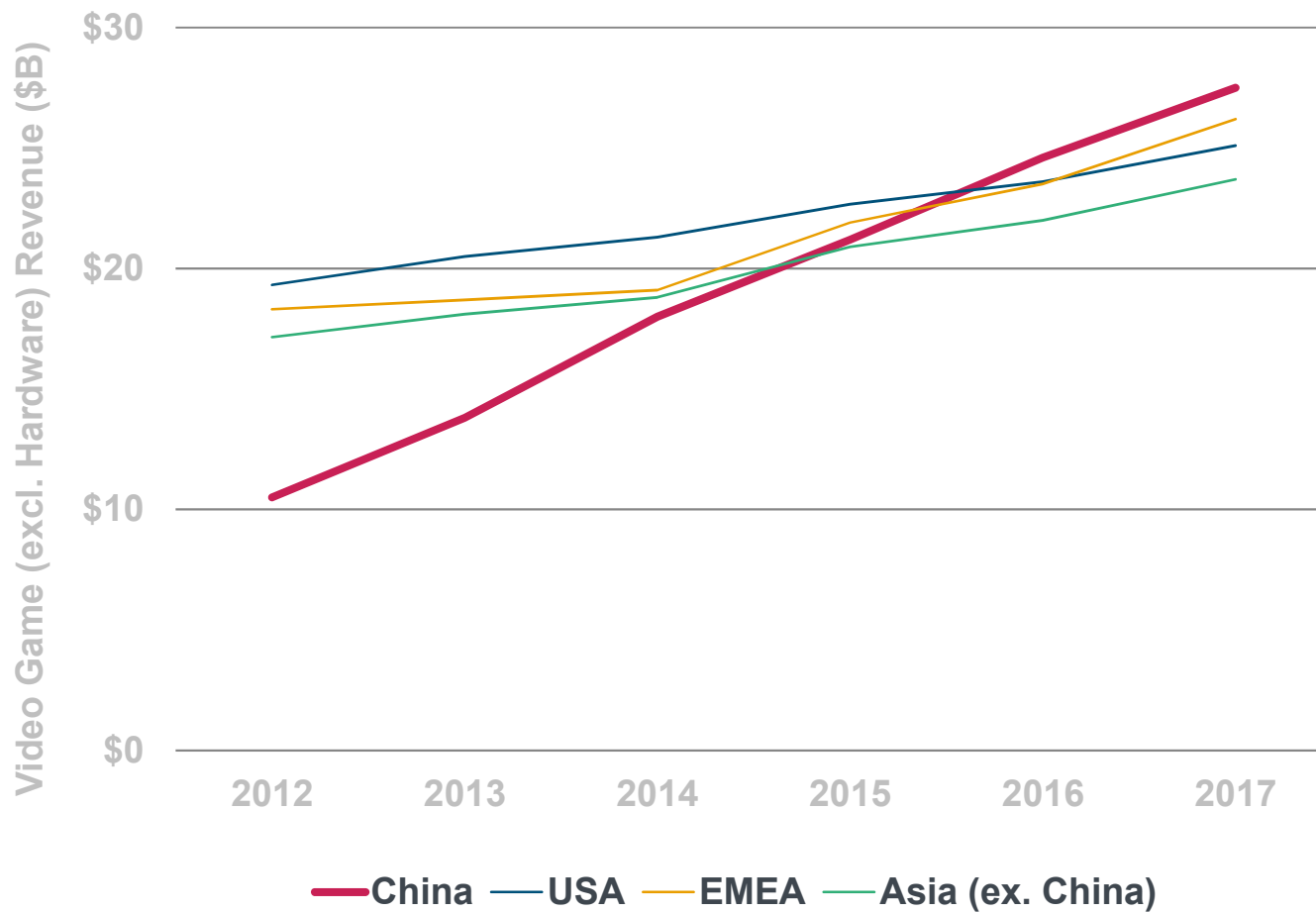


China Mobile Games Daily Hours



Global Interactive Game Revenue = China #1 Market in World* > USA (2017)

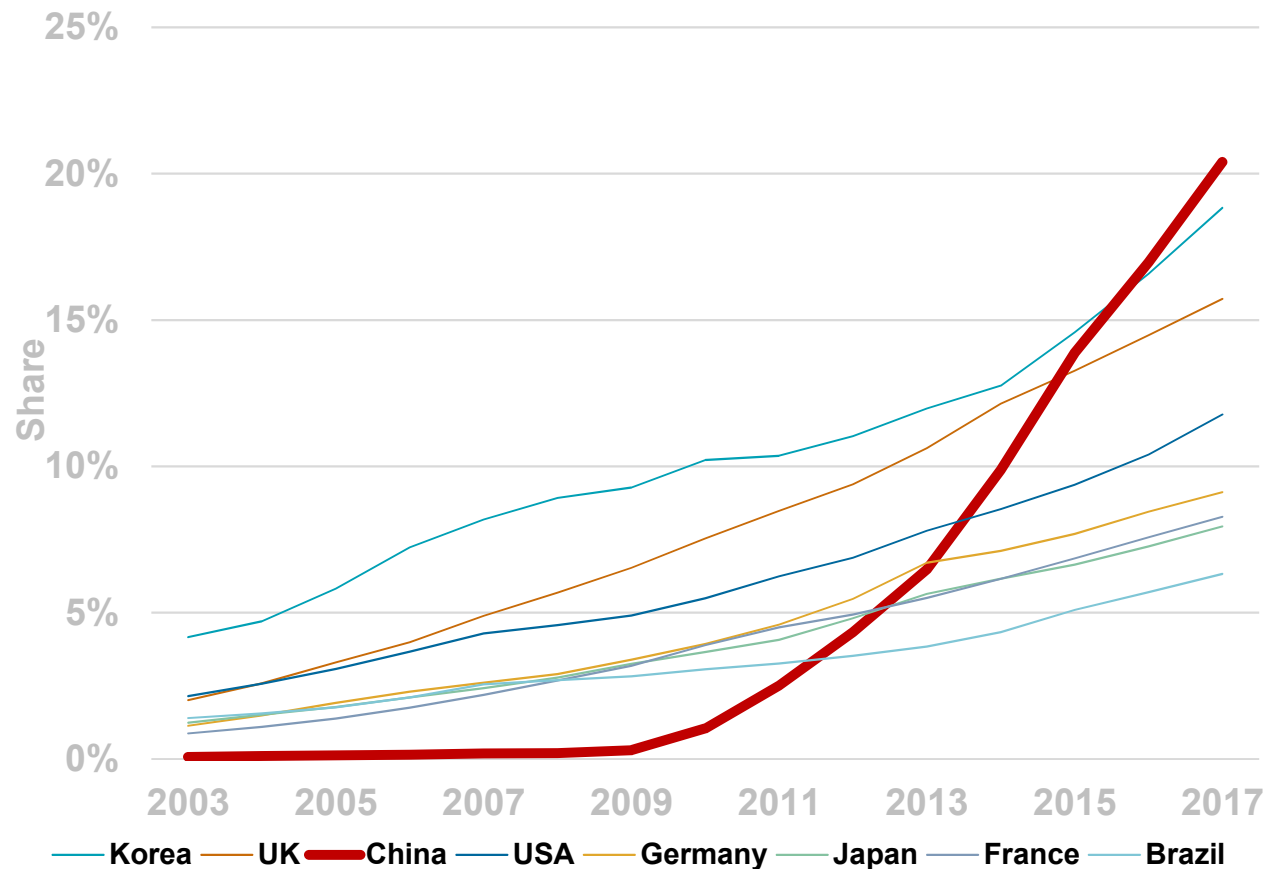
Interactive Game Software Revenue



***China Retail Innovation =
Spreading from Online to Offline***

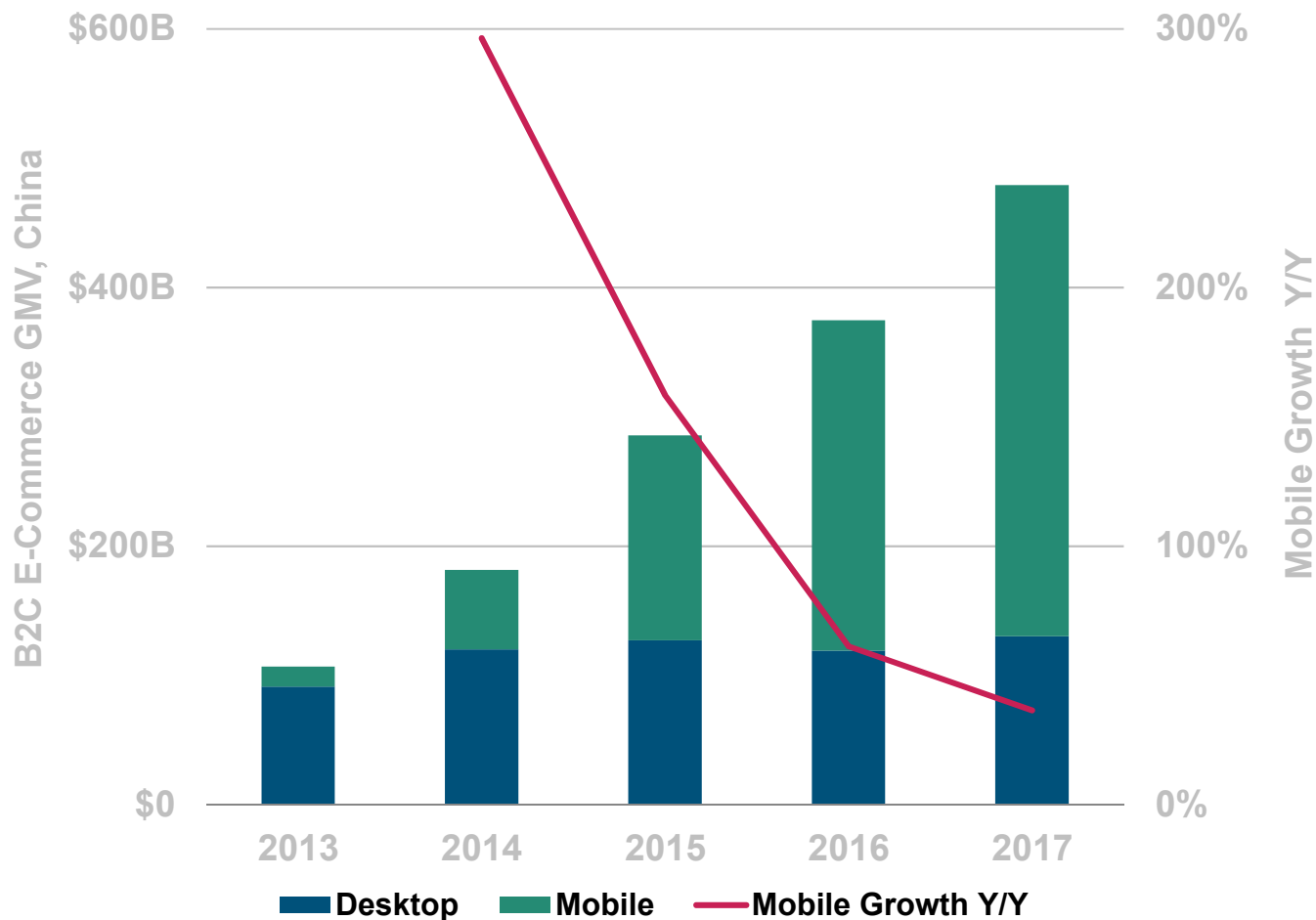
Worldwide E-Commerce Share Gains Continue... China @ 20% = Highest Penetration Rate + Fastest Growing

E-Commerce % of Retail Sales



China E-Commerce = Strong Growth +28% Y/Y... Mobile = 73% of GMV

China B2C E-Commerce Gross Merchandise Value



Hema Stores = Re-Imagining Grocery Retail Experience... High Quality + Convenience + Digital...

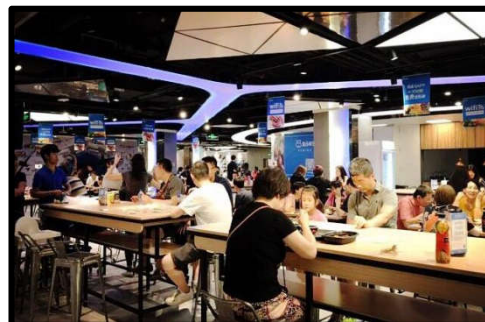
Digital Grocery Store

SKU Selection =
Based on Customer Data..
Alipay Membership To Pay



Restaurant

Cook To Order Chefs /
Eat-in-Shop



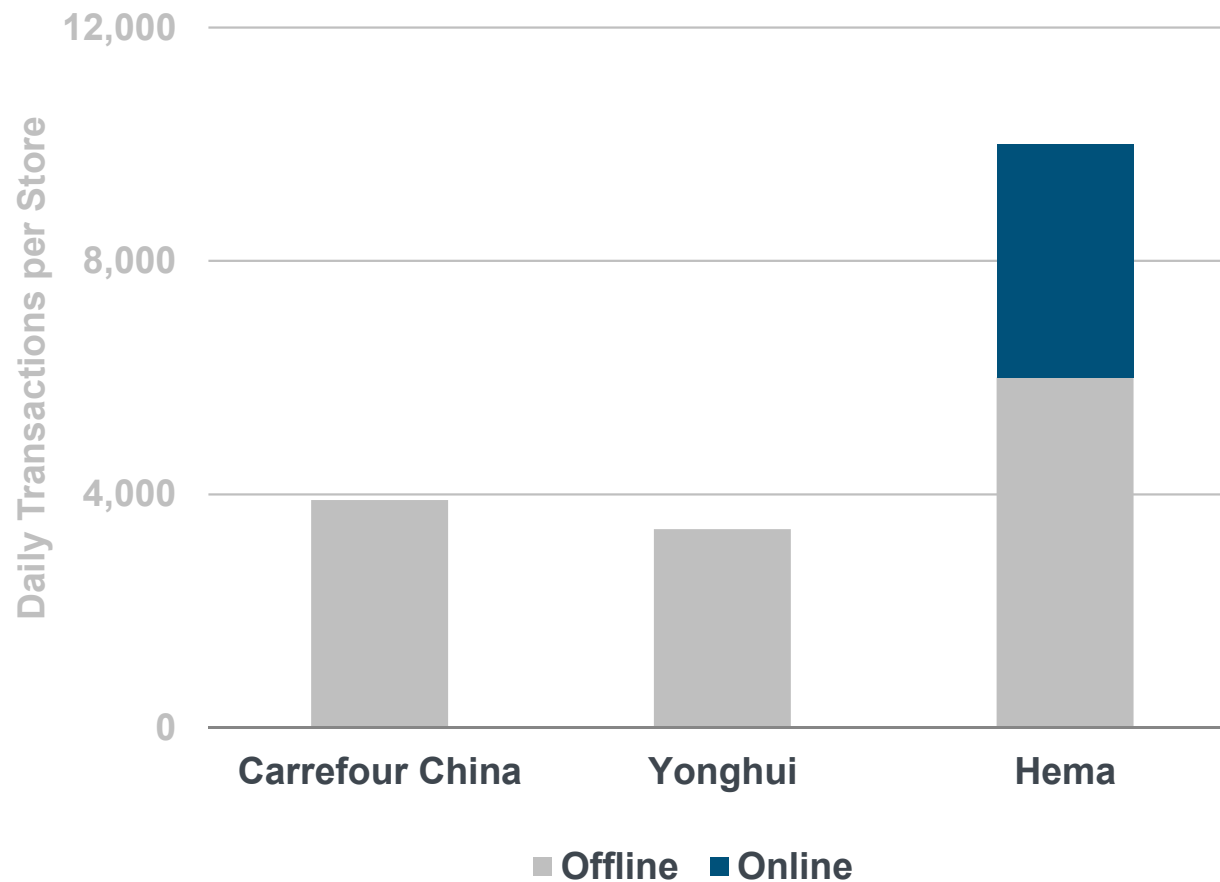
Real-Time E-Commerce

Ceiling-Conveyor System /
In-Store Fulfillment /
30-Minute Delivery



...Hema Stores = Material Portion of Orders Online... Driving Higher Sales Productivity vs. Offline Peers

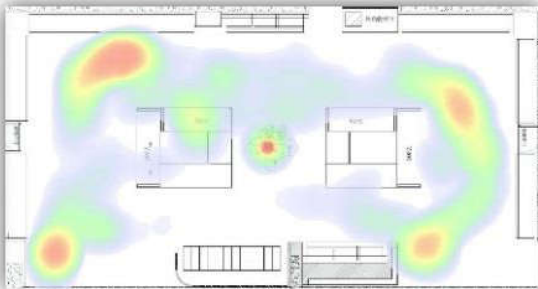
Daily Retail Transactions per Store, 11/17



Belle = Re-Imagining Offline Retail Experience with Online Analytics

Traffic Heat Map

Optimize Layout



RFID in Shoes / Floor Mat

Conversion Analysis



138 fittings / 37 sales
27% conversion



168 fittings / 5 sales
3% conversion

3D Foot Scan

Personalization

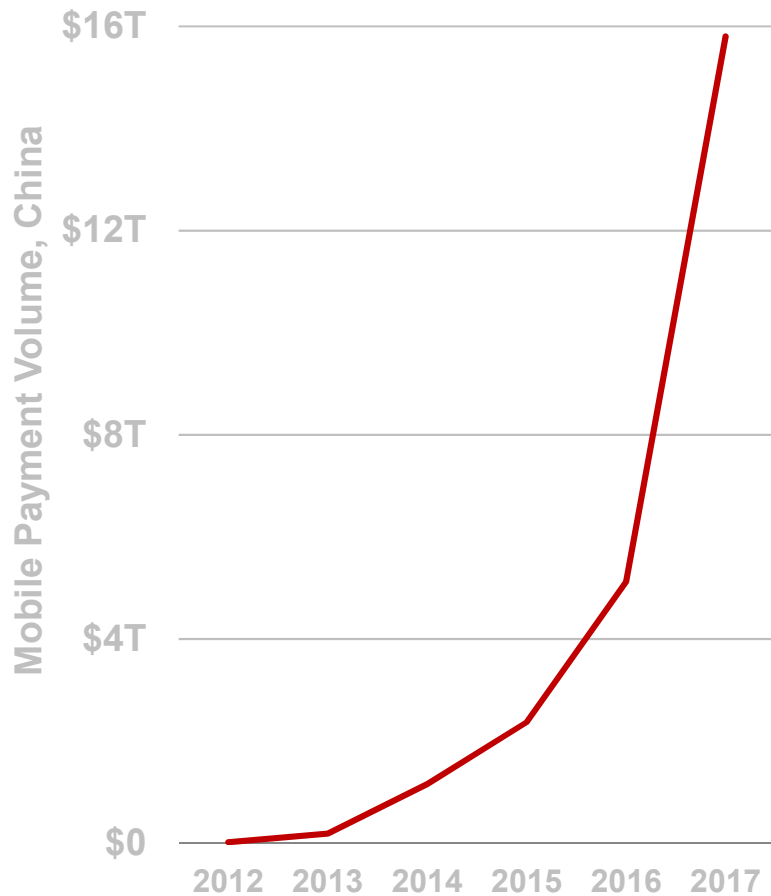


China
Online Payments / Advertising /
On-Demand Transportation =

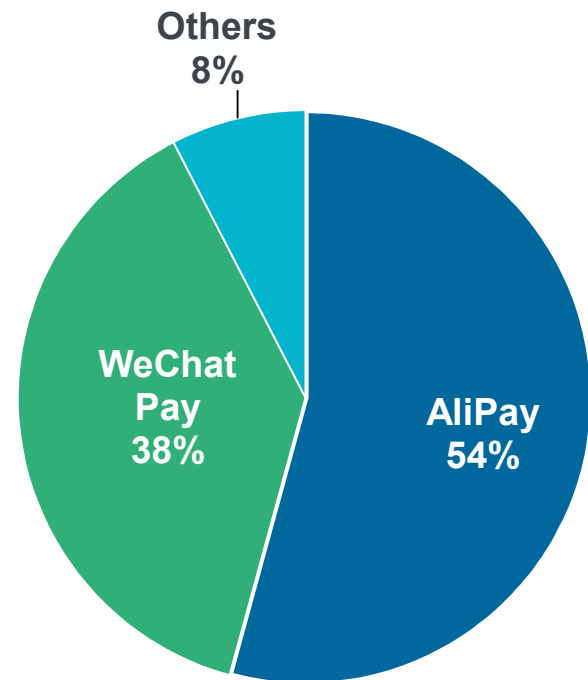
Growing Rapidly

China Mobile Payment Volume = +209% vs. +116% Y/Y Led by Alipay + WeChat Pay

China Mobile Payment Volume

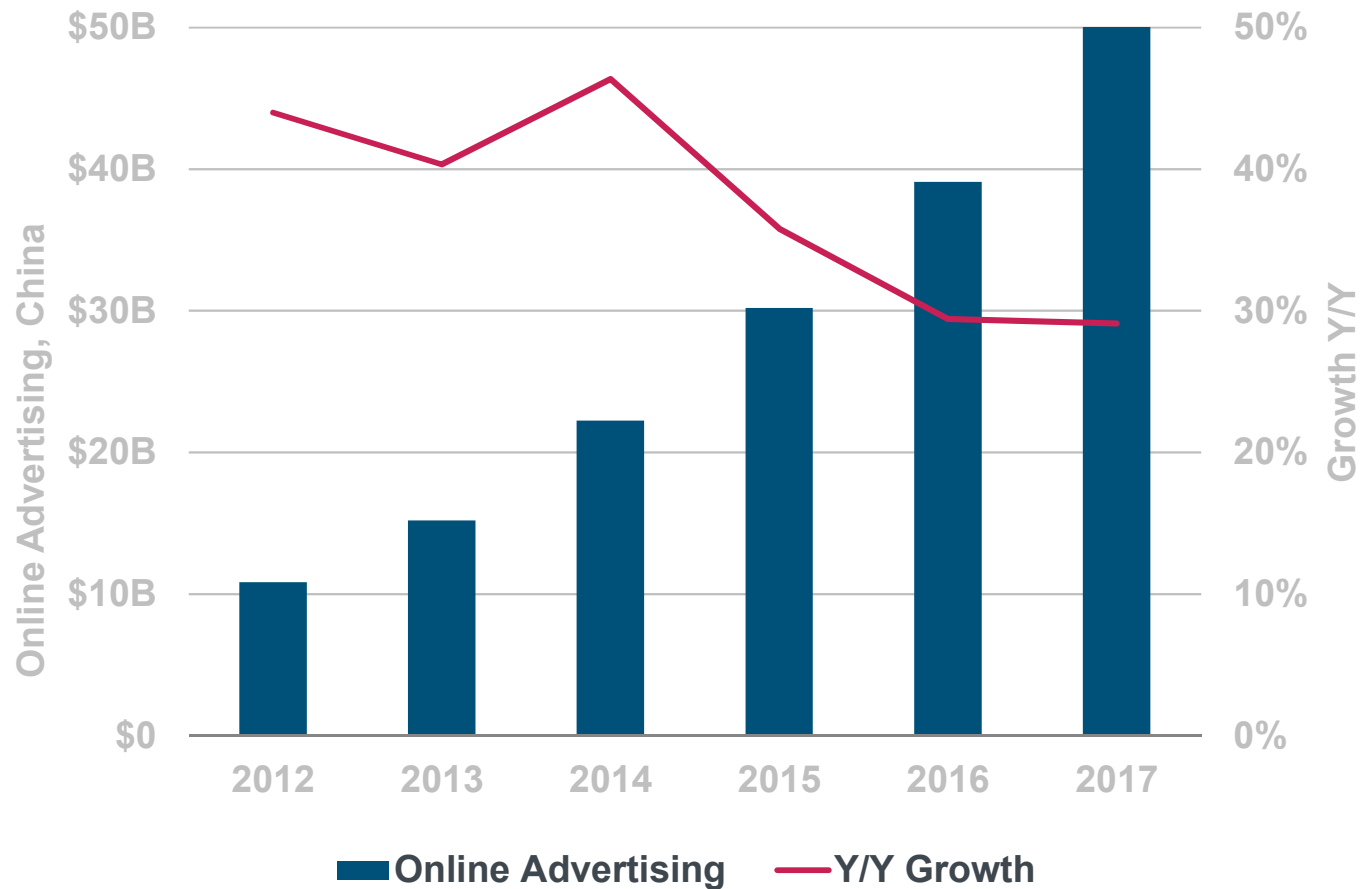


China Mobile Payment Share*



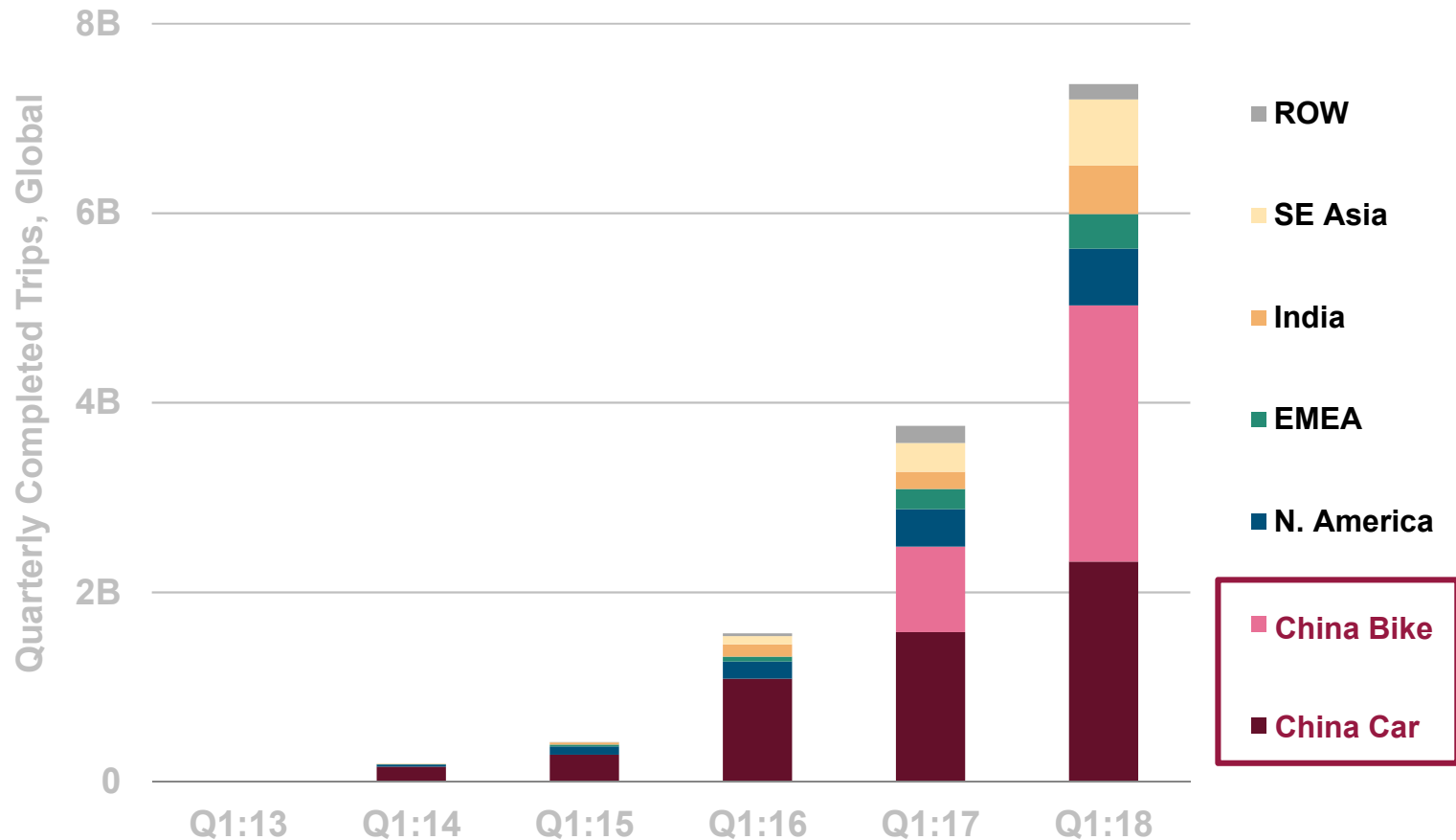
China Online Advertising Revenue = +29% vs. 29% Y/Y

China Online Advertising Revenue




China On-Demand Transportation (Cars + Bikes) = +96%... 68% Global Share & Rising

On-Demand Transportation Trip Volume by Region



**ENTERPRISE SOFTWARE =
USABILITY / USAGE IMPROVING**



***Consumer-Like Apps =
Changed Enterprise Computing***

Dropbox (2007) = Pioneered... Consumer-Grade Product With Enterprise Appeal...

Dropbox synchronizes files across your / your team's computers...files are securely backed up to Amazon S3.

It takes concepts that are proven winners from the dev community & puts them in a package that my little sister can figure out...

Competing products force the user to constantly think & do things...

*With Dropbox, you hit "Save," as you normally would & **everything just works.***

- Drew Houston, Founder, Y Combinator Application, Summer 2007

...Dropbox = Pioneered... Consumerization of Enterprise Software Business Model

Inflection Points

2008 = Consumer / Individual

Free Premium Features for Referral Launch...
8 Months to 1MM Users

2013 = Enterprise / Team

Dropbox for Business Launch...
30% = Dropbox Business Share of Paid Users (2018)

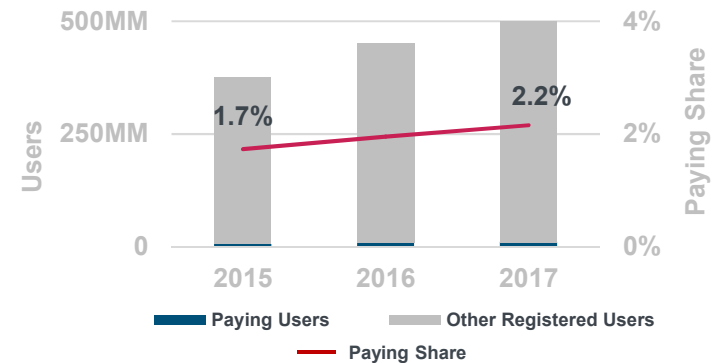
2015 = Revenue / Sales Efficiency

Free-to-Pay User Conversion Launch...
90% = Revenue From Self-Serve Channels (2018)...
>40% = New Teams with Former Individual Paid User (2018)

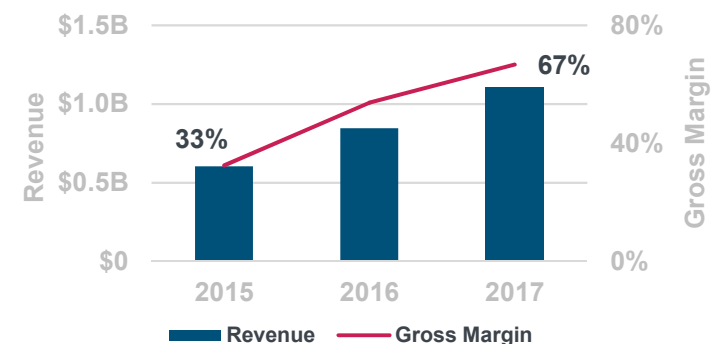
2018 = Platform

Integrated Product Suite Launch...
3 = Major Product Launches Since 2017*

Users



Revenue & Gross Margin



Slack (2013) = Pioneered... Enterprise-Grade Product With Consumer Look & Feel...

*When you want something really bad,
you will put up with a lot of flaws.*

*But if you do not yet know you want something,
your tolerance will be much lower.*

*That's why it is especially important for us to build a
beautiful, elegant and considerate piece of software.*

***Every bit of grace, refinement, & thoughtfulness
on our part will pull people along.***

*Every petty irritation will stop them &
give the impression that it is not worth it.*

- Stewart Butterfield, Slack Founder / CEO (2013)

...Slack = Pioneered... Consumerization of Enterprise Software Business Model

Slack Inflection Points

2013 = Small Teams

Consumer-Like Onboarding Launch...
128K Users 6 Months Post-Launch (2014)

2015 = Platform

3rd-Party App Directory Launch...
>1.5K Apps in Slack App Directory (2018)
>200K Developers on Slack Platform (2018)

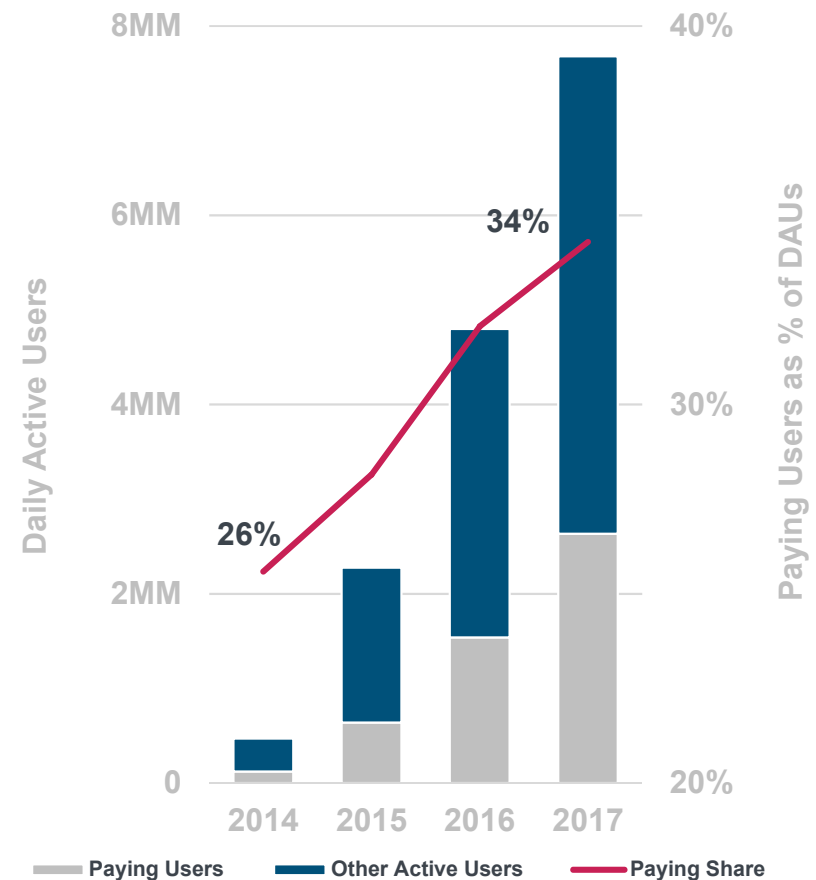
2015 = Revenue / Sales Efficiency

Free-to-Pay User Conversion Launch...
>400% = 2015 Y/Y Paid Subscription Growth

2017 = Enterprise / Large Teams

Enterprise Features Plan Launch...
>70K = Paid Teams (2018)...
>500K = Organizations Using Slack (2018)
>150 = Large Enterprises Using Slack Grid (2018)

Slack Daily Active Users



Enterprise Software Success Formula

Build Amazing Consumer-Grade Product


*Leverage Virality Across Individual Users To Grow
Personal + Professional Adoption @ Low Cost*

*Harvest Individual Users for Enterprise Go-to-Market With
Dedicated Product + Inside / Outbound Sales*

Build Enterprise-Grade Platform + Ecosystem

*Net = Low Cost Product-Driven Customer Acquisition +
Strong / Sticky Business Model*

- Ilya Fushman @ Kleiner Perkins

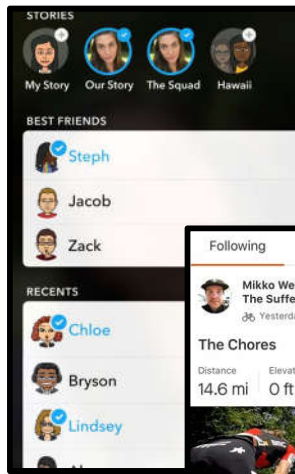


Messaging Threads =
Transforming Collaboration...
Distributing + Increasing Productivity

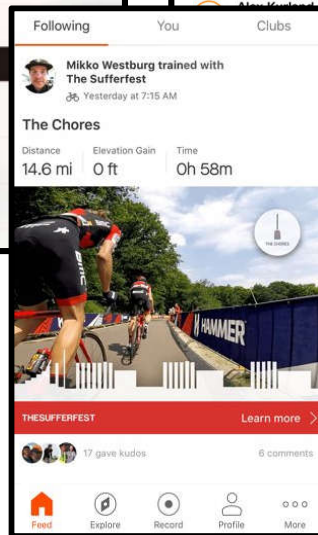
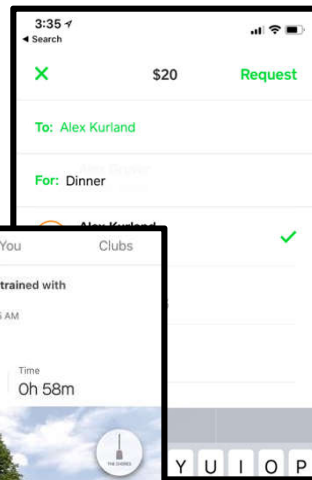
Messaging Threads = Increasingly Foundational for Consumers + Enterprises

Consumer Services...

Snapchat
Social



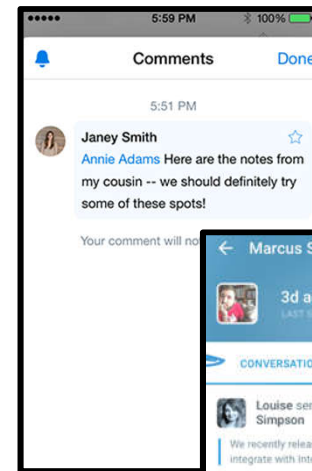
Square Cash
Payments



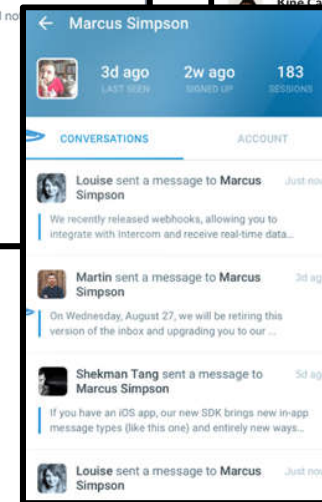
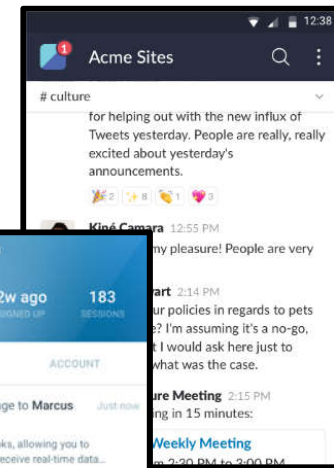
Strava
Workouts

...Enterprise Services

Dropbox
File Management



Slack
Communication



Intercom
Customer Interactions



Google Set Out to...

*‘Organize the World’s Information &
Make It Universally Accessible & Useful’*

Now Apps...

*Organize Business Information &
Make It Accessible & Useful
Within Enterprises*



Enterprise Messaging Threads =

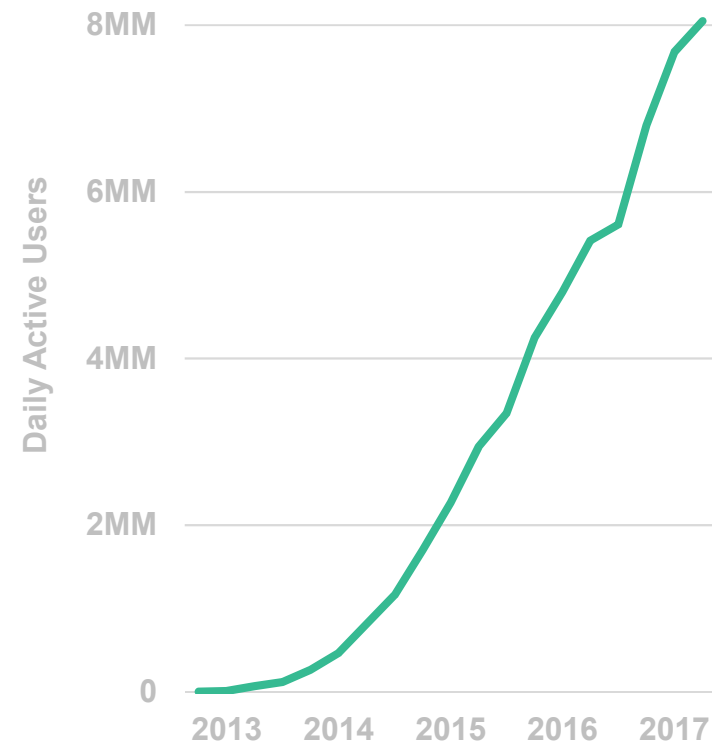
*Organizing Information + Teams...
Providing Context + History...*

Slack = Communication Threads... Organizing Information by Channel Topic...

Slack Benefits

- **32%** Decline in Email Usage
- **24%** Reduction in Employee Onboarding Time
- **23%** Faster Time to Market For Development Teams
- **23%** Decline in Meetings
- **10%** Rise in Employee Satisfaction

Slack Daily Active Users



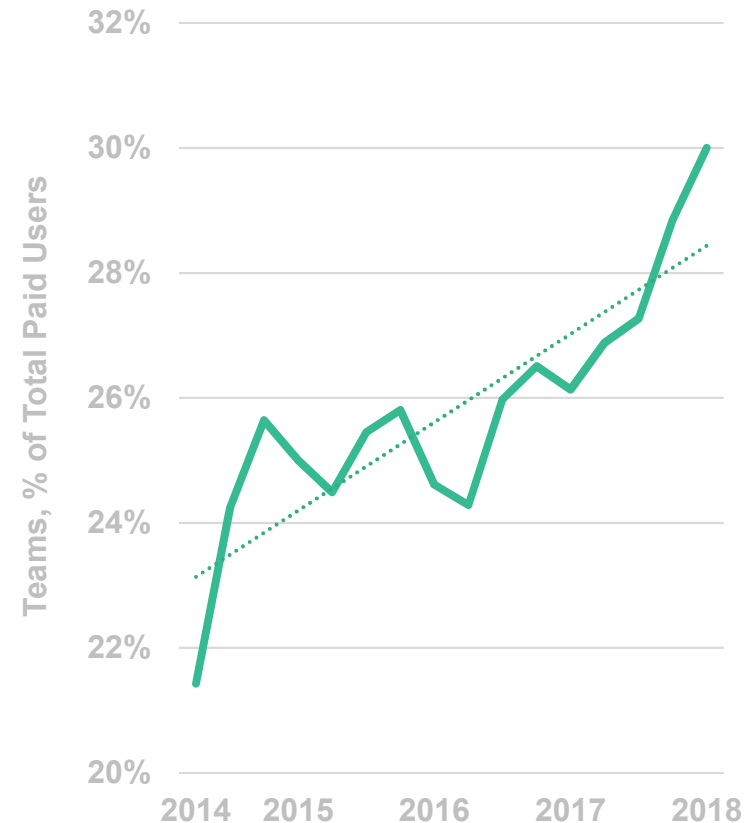
...Dropbox = File Management Threads...

Organizing Data by File + Version

Dropbox Benefits

- **6x** Rise in Employees on Multi-Department Teams
- **31%** Decline in IT Time Spent Supporting Collaboration
- **3.7K** Hours Saved Annually Per Organization in Document Management
- **6%** Rise in Sales Team Productivity

Teams % of Paid Users

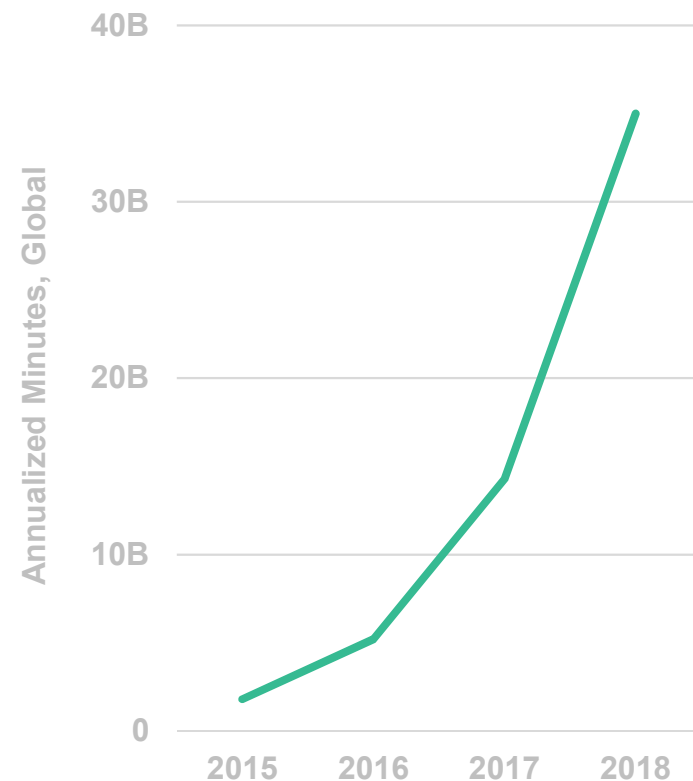


...Zoom = Visual Communication / Meeting Threads... Distributing + Increasing Productivity...

Zoom Benefits

- **85%** Improved Collaboration
- **71%** Improved Productivity
- **62%** Supported Flexible Work Schedule
- **58%** Built Trust Among Remote Workers
- **58%** Reduced Meeting Times
- **48%** Removed Company Silos
- **72** Net Promoter Score

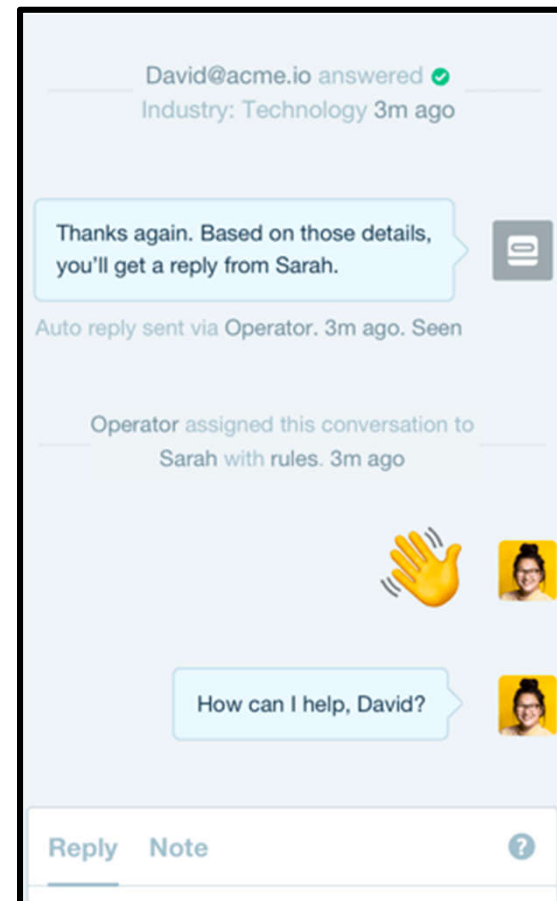
Annualized Meeting Minutes



...Intercom = Customer Transaction Threads... Organizing Customer Dialog

Intercom Benefits

- **82%** Rise in Conversion For Customers Chatting In Intercom
- **36%** Rise in Conversion For Customers Assisted by 'Operator' Chatbot
- **13%** Rise in Order Value for Customers Chatting in Intercom





*...Enterprise Messaging Threads =
Helping Improve Productivity + Collaboration*

USA INC.* =

WHERE YOUR TAX DOLLARS GO

* USA, Inc. Full Report: <http://www.kleinerperkins.com/blog/2011-usa-inc-full-report>

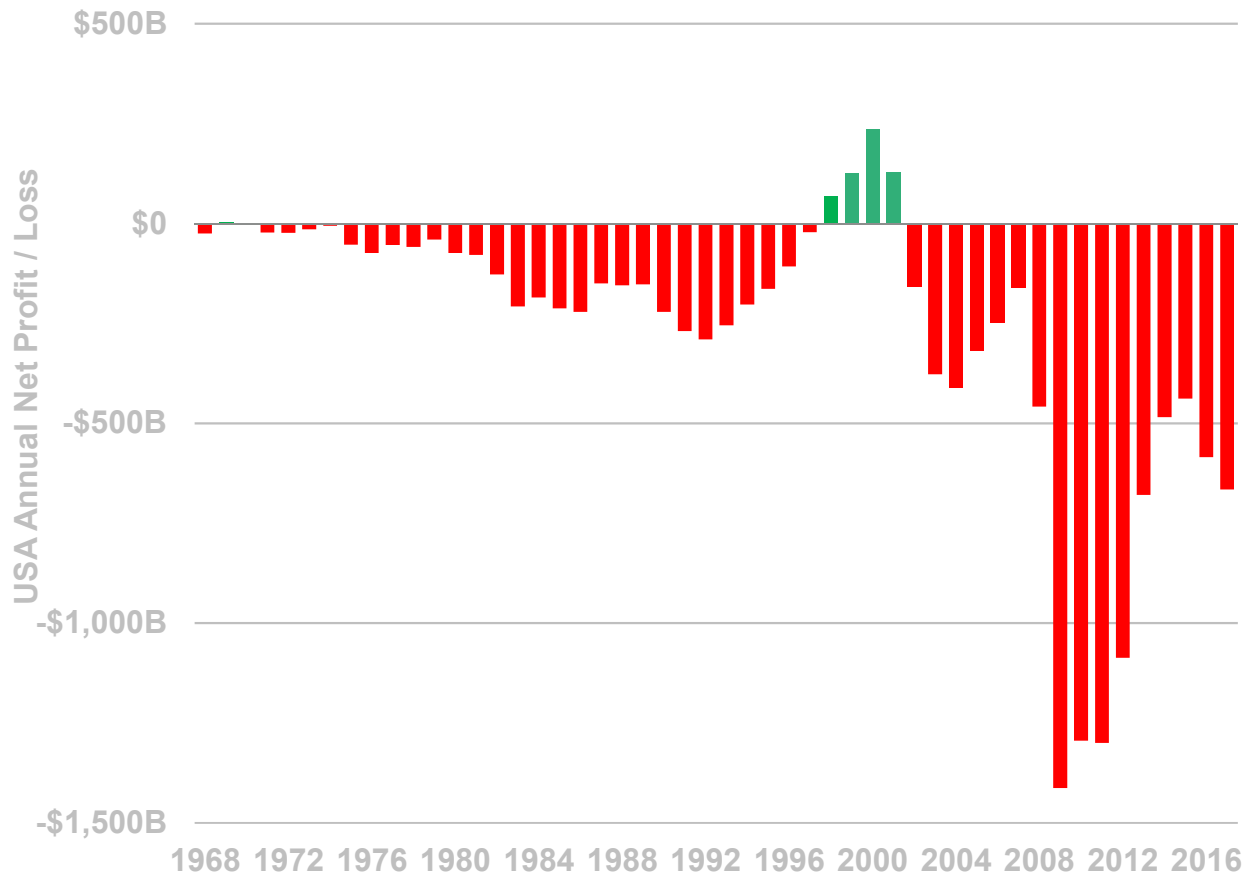
USA Income Statement = -19% Average Net Margin Over 30 Years...

USA Income Statement

	F1987	F1992	F1997	F2002	F2007	F2012	F2017	Comments
Revenue (\$B)	\$854	\$1,091	\$1,579	\$1,853	\$2,568	\$2,449	\$3,316	+5% Y/Y average over 25 years
Y/Y Growth	11%	3%	9%	-7%	7%	6%	2%	
Individual Income Taxes* <i>% of Revenue</i>	\$393 46%	\$476 44%	\$737 47%	\$858 46%	\$1,163 45%	\$1,132 46%	\$1,587 48%	Largest Driver of Revenue
Social Insurance Taxes <i>% of Revenue</i>	\$303 36%	\$414 38%	\$539 34%	\$701 38%	\$870 34%	\$845 35%	\$1,162 35%	Social Security & Medicare Payroll Tax
Corporate Income Taxes* <i>% of Revenue</i>	\$84 10%	\$100 9%	\$182 12%	\$148 8%	\$370 14%	\$242 10%	\$297 9%	Fluctuates with Economic Conditions
Other <i>% of Revenue</i>	\$74 9%	\$101 9%	\$120 8%	\$146 8%	\$165 6%	\$229 9%	\$270 8%	Estate & Gift Taxes / Duties / Fees / etc.
Expense (\$B)	\$1,004	\$1,382	\$1,601	\$2,011	\$2,729	\$3,537	\$3,982	
Y/Y Growth	1%	4%	3%	8%	3%	-2%	3%	
Entitlement / Mandatory <i>% of Expense</i>	\$421 42%	\$648 47%	\$810 51%	\$1,106 55%	\$1,450 53%	\$2,030 57%	\$2,519 63%	Risen Owing to Rising Healthcare Costs + Aging Population
Non-Defense Discretionary <i>% of Expense</i>	\$162 16%	\$231 17%	\$275 17%	\$385 19%	\$494 18%	\$616 17%	\$610 15%	Education / Law Enforcement / Transportation / Government Administration...
Defense <i>% of Expense</i>	\$283 28%	\$303 22%	\$272 17%	\$349 17%	\$548 20%	\$671 19%	\$590 15%	2007 increase driven by War on Terror
Net Interest on Public Debt <i>% of Expense</i>	\$139 14%	\$199 14%	\$244 15%	\$171 9%	\$237 9%	\$220 6%	\$263 7%	Has Benefitted from Declining Interest Rates Since Early 1980s
Surplus / Deficit (\$B)	-\$150	-\$290	-\$22	-\$158	-\$161	-\$1,088	-\$666	-19% Average Net Margin, 1987-2017
Net Margin (%)	-18%	-27%	-1%	-9%	-6%	-44%	-20%	

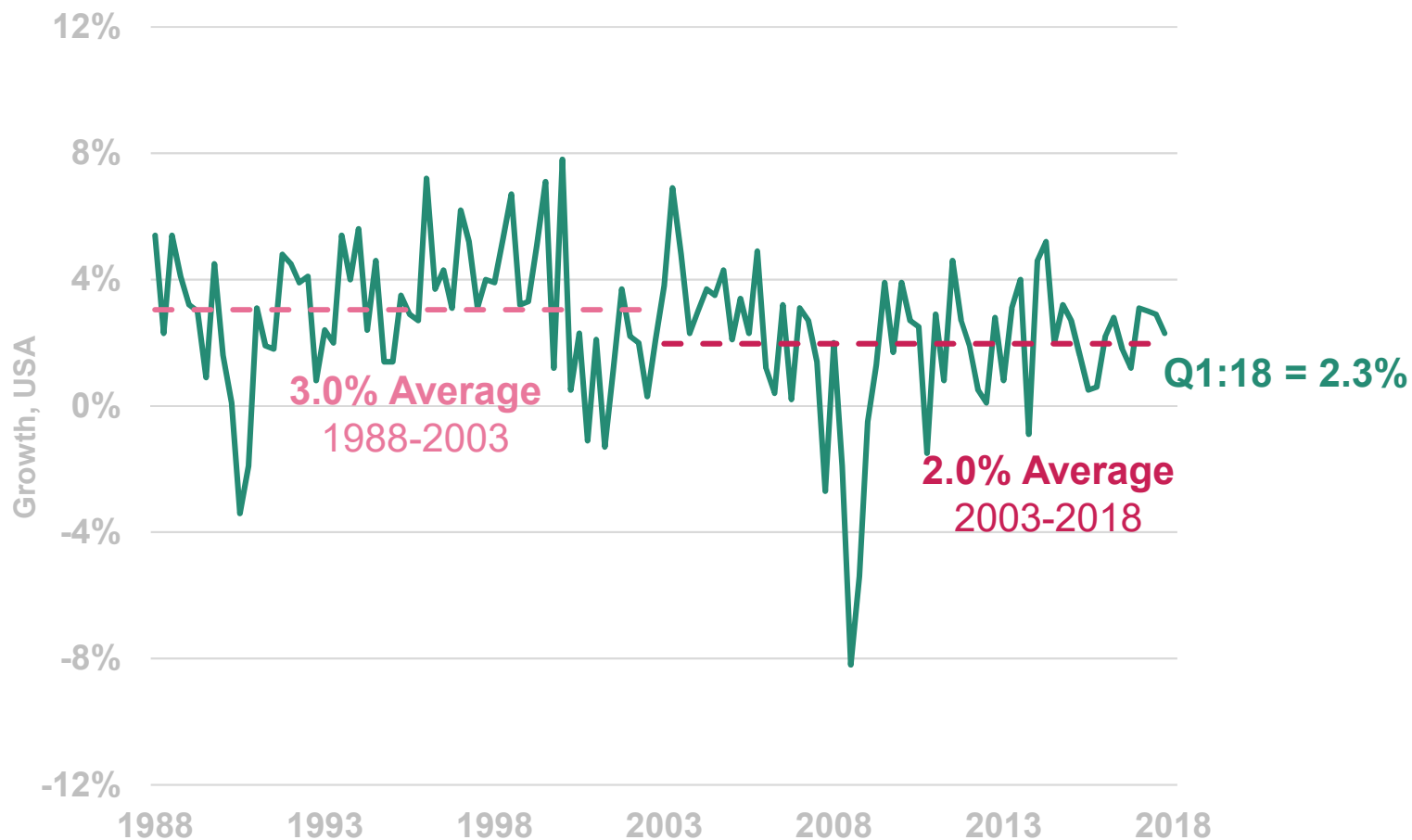
...USA Income Statement = Net Losses in 45 of 50 Years

USA Annual Profits & Losses



Real GDP Growth @ 2.3% (Q1)... 1988-2003 @ 3.0%...2003-2018 @ 2.0% Average

Real GDP Growth Y/Y





*USA Rising
Debt Commitments =
Non-Trivial Challenge*

Net Debt / GDP Ratio = Highest Level Since WWII

USA Net Debt / GDP Ratio



USA Public Debt / GDP Level = 7th Highest vs. Major Economies

Government Debt			Government Debt		
Country	% of GDP	2017 (\$B)	Country	% of GDP	2017 (\$B)
1) Japan	240%	\$12,317	11) Egypt	101%	\$199
2) Greece	180	403	12) Spain	99	1,412
3) Lebanon	152	80	13) France	97	2,730
4) Italy	133	2,798	14) Jordan	96	39
5) Portugal	126	301	15) Bahrain	91	31
6) Singapore	111	362	16) Canada	90	1,482
7) USA	108	20,939	17) UK	89	2,532
8) Jamaica	107	16	18) Mozambique	88	12
9) Cyprus	106	24	19) Ukraine	86	92
10) Belgium	104	561	20) Yemen	83	30

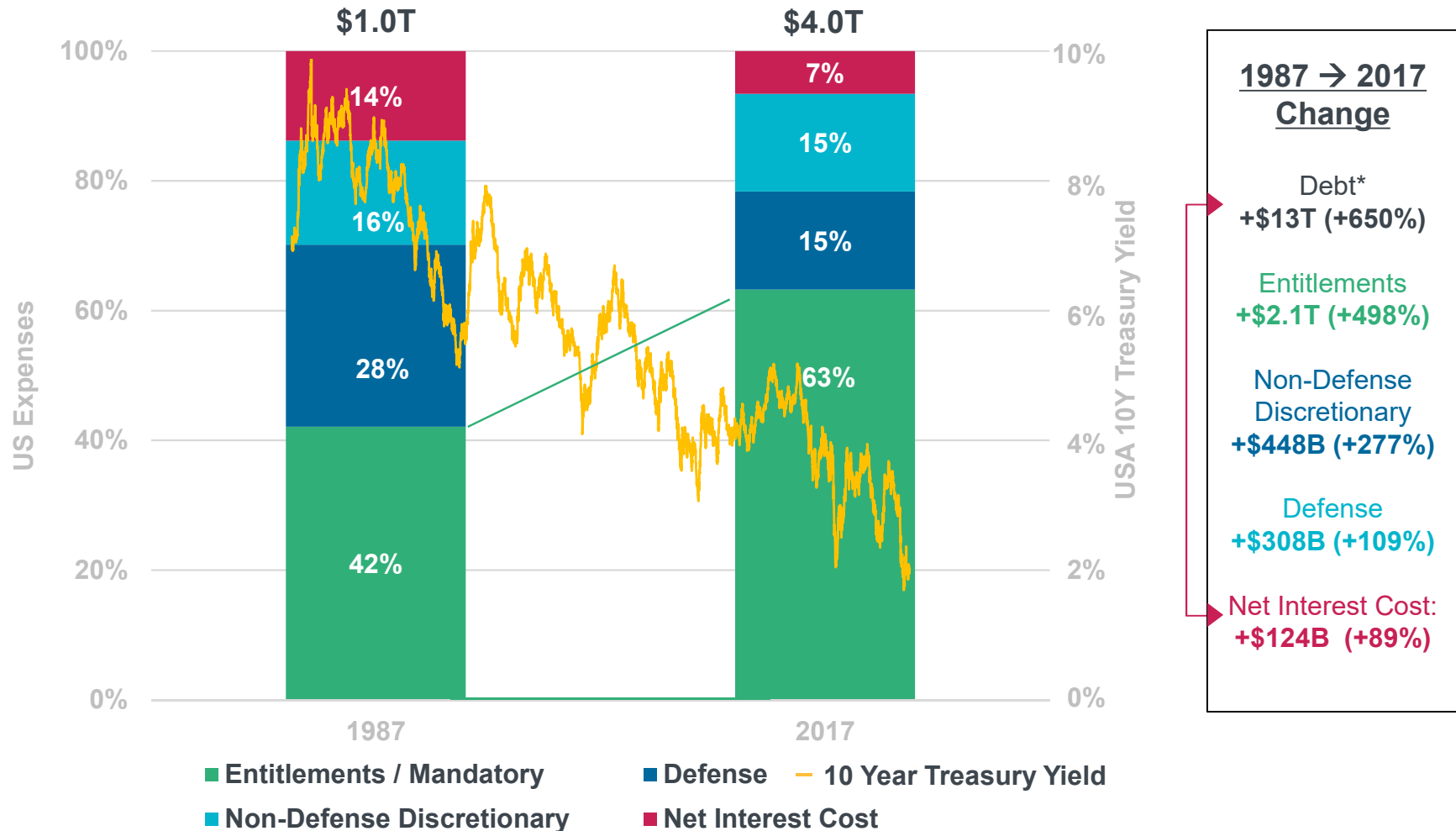


*USA Rising
Debt Drivers =*

*Spending on
Healthcare Entitlements
(Medicare + Medicaid)*

USA Entitlements = 63% vs. 42% of Government Spending Thirty Years Ago...

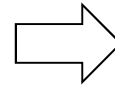
USA Expenses by Category



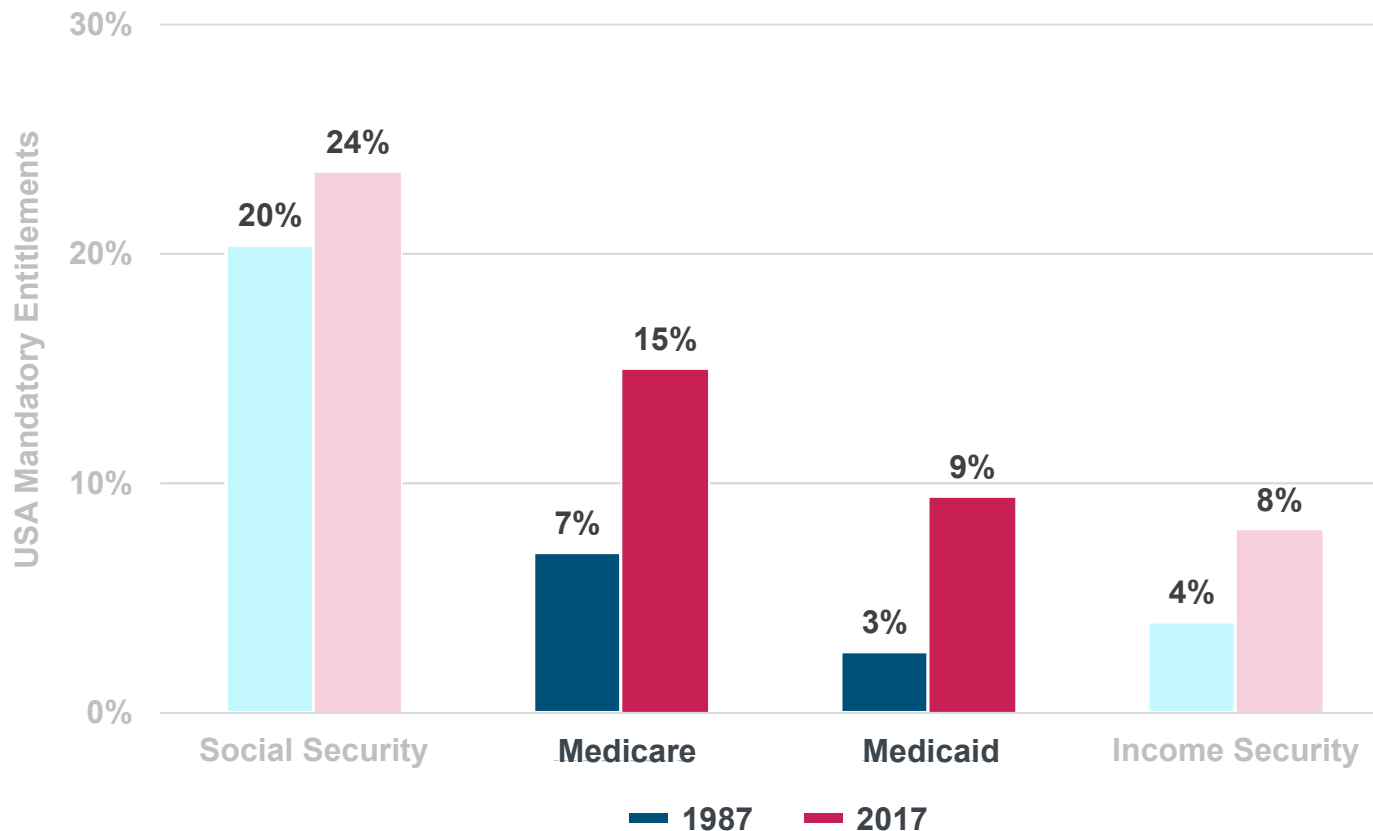
...USA Entitlements = Medicare + Medicaid Driving Most Spending Growth...

USA Entitlements by Category

1987 Entitlements* =
\$349B / 35% of Expenses



2017 Entitlements* =
\$2.2T / 56% of Expenses



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

2016

\$59K =

Median USA Household Income

\$20K =

Average Entitlement Payout per Household from Federal Government...

Scale = Equivalent to 34% of Household Income

1986

\$25K =

Median USA Household Income

\$5K =

Average Entitlement Payout per Household from Federal Government...

Scale = Equivalent to 19% of Household Income

IMMIGRATION =

**IMPORTANT FOR USA TECHNOLOGY
JOB CREATION**

USA = 56% of Most Highly Valued Tech Companies Founded By... 1st or 2nd Generation Americans... 1.7MM Employees, 2017

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

Rank	Company	Mkt Cap (\$MM)	LTM Rev (\$MM)	Employees	Founder / Co-Founder (1st / 2nd Gen Immigrant)	Generation
1	Apple	\$923,554	\$239,176	123,000	Steve Jobs	2 nd – Syria
4	Amazon.com	782,608	177,866	566,000	Jeff Bezos	2 nd – Cuba
3	Microsoft	753,030	95,652	124,000	--	--
2	Alphabet / Google	739,122	110,855	80,110	Sergey Brin	1 st – Russia
5	Facebook	537,648	40,653	25,105	Eduardo Saverin	1 st – Brazil
6	Intel	257,791	62,761	102,700	--*	--
7	Cisco	202,083	48,096	72,900	--	--
8	Oracle	188,848	39,472	138,000	Larry Ellison / Bob Miner	2 nd – Russia / 2 nd – Iran
11	Netflix	152,025	11,693	4,850	--	--
10	NVIDIA	150,894	9,714	10,299	Jensen Huang	1 st – Taiwan
9	IBM	129,635	79,139	366,600	Herman Hollerith	2 nd – Germany
12	Adobe Systems	119,271	7,699	17,973	--	--
13	Booking.com	100,013	12,681	22,900	--	--
14	Texas Instruments	108,912	14,961	29,714	Cecil Green / J. Erik Jonsson	1 st – UK / 2 nd – Sweden
15	PayPal	95,858	13,094	18,700	Max Levchin / Luke Nosek / Peter Thiel / Elon Musk***	1 st – Ukraine / 1 st – Poland / 1 st – Germany / 1 st – South Africa
16	Salesforce.com	94,260	10,480	25,000	--	--
17	Qualcomm	86,333	22,360	33,800	Andrew Viterbi	1 st – Italy
19	Automatic Data Processing	57,237	12,790	58,000	Henry Taub	2 nd – Poland
21	VMware	55,282	7,922	20,615	Edouard Bugnion	1 st – Switzerland
20	Activision Blizzard	53,772	7,017	9,625	--	--
18	Applied Materials	52,439	15,463	18,400	--	--
23	Intuit	50,471	5,434	8,200	--	--
22	Cognizant Technology	43,597	14,810	260,000	Francisco D'Souza / Kumar Mahadeva	1 st – India** / 1 st – Sri Lanka
24	eBay	37,304	9,567	14,100	Pierre Omidyar	1 st – France
25	Electronic Arts	34,763	4,845	8,800	--	--

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

Company	Immigrant Founder / Co-Founder	Country of Origin	Market Value (\$B)
Uber	Garrett Camp	Canada	\$72
SpaceX	Elon Musk	South Africa	25
Palantir	Peter Thiel	Germany	21
WeWork	Adam Neumann	Israel	21
Stripe	John Collison, Patrick Collison	Ireland	9
Wish (ContextLogic)	Peter Szulczewski, Danny Zhang	Canada	9
Moderna Therapeutics	Noubar Afeyan, Derrick Rossi	Armenia / Canada	8
Robinhood	Baiju Bhatt, Vlad Tenev	India / Bulgaria	6
Slack	Stewart Butterfield, Serguei Mourachov, Cal Henderson	Canada / Russia / UK	5
Tanium	David Hindawi	Iraq	5
Credit Karma	Kenneth Lin	China	4
Houzz	Adi Tatarko, Alon Cohen	Israel	4
Instacart	Apoorva Mehta	India	4
Bloom Energy	KR Sridhar	India	3
Oscar Health	Mario Schlosser	Germany	3
Unity Technologies	David Helgason	Iceland	3
Avant	Al Goldstein, John Sun, Paul Zhang	Uzbekistan / China / China	2
Zenefits	Laks Srin	India	2
AppNexus	Mike Nolet	Holland	2
ZocDoc	Oliver Kharraz	Germany	2
Sprinklr	Ragy Thomas	India	2
Compass	Ori Allon	Israel	2

Company	Immigrant Founder / Co-Founder	Country of Origin	Market Value (\$B)
JetSmarter	Sergey Petrossov	Russia	\$2
Warby Parker	Dave Gilboa	Sweden	2
Carbon3D	Alex Ermoshkin	Russia	2
Infinidat	Moshe Yanai	Israel	2
Tango	Uri Raz, Eric Setton	Israel / France	2
Quanergy	Louay Eldada, Tianyue Yu	Lebanon / China	2
Zoox	Tim Kentley-Klay	Australia	2
Eventbrite	Renaud Visage	France	2
Apttus	Kirk Krappe	UK	2
Cloudflare	Michelle Zatlyn	Canada	2
Proteus Digital Health	Andrew Thompson	UK	2
Anaplan	Guy Haddleton, Michael Gould	New Zealand / UK	1
Rubrik	Bipul Sinha	India	1
OfferUp	Arean Van Veelen	Netherlands	1
Actifio	Ash Ashutosh	India	1
Gusto	Tomer London	Israel	1
Medallia	Borge Hald	Norway	1
FanDuel	Nigel Eccles, Tom Griffiths, Lesley Eccles	UK	1
AppDirect	Daniel Saks, Nicolas Desmarais	Canada	1
Evernote	Stepan Pachikov, Phil Libin	Azerbaijan / Russia	1
Udacity	Sebastian Thrun	Germany	1
UiPath*	Daniel Dines, Marius Tirca	Romania	1
Zoom Video	Eric Yuan	China	1

APPENDIX

Global Industry Classification System (GICS)

(Slides 39 / 41 / 42)

GICS is a four-tiered, hierarchical industry classification system. It consists of 11 sectors, 24 industry groups, 68 industries and 157 sub-industries. The GICS methodology is widely accepted as an industry analytical framework for investment research, portfolio management and asset allocation. Companies are classified quantitatively and qualitatively. Each company is assigned a single GICS classification at the sub-industry level according to its principal business activity. MSCI and S&P Global use revenues as a key factor in determining a firm's principal business activity. Earnings and market, however, are also recognized as important and relevant information for classification purposes.

Global industry coverage is comprehensive and precise. The classification system is comprised of over 50,000 trading securities across 125 countries, covering approximately 95% of the world's equity market capitalization. Company classifications are regularly reviewed and maintained. Specialized teams from two major index providers — MSCI and S&P Global — have defined review procedures, refined over nearly 15 years.

Each sector includes the following industries:

- **Energy** = Energy Equipment & Services, Oil, Gas & Consumables Fuels
- **Materials** = Chemicals, Construction Materials, Containers & Packaging, Metals & Mining, Paper & Forest Products
- **Industrials** = Aerospace & Defense, Building Products, Construction & Engineering, Electrical Equipment, Industrial Conglomerates, Machinery, Trading Companies & Distributors, Commercial Services & Suppliers, Professional Services, Air Freight & Logistics, Airlines, Marine, Road & rail, Transportation Infrastructure
- **Consumer Discretionary** = Auto Components, Automobiles, Household Durables, Leisure Products, Textiles, Apparel & Luxury Goods, Hotels, Restaurants & Leisure, Diversified Consumer Services, Media, Distributors, Internet & Direct Marketing Retail, Multiline Retail, Specialty Retail
- **Consumer Staples** = Food & Staples Retailing, Beverages, Food Products, Tobacco, Household Products, Personal Products
- **Healthcare** = Healthcare Equipment & Supplies, Healthcare Providers & Services, Healthcare Technology, Biotechnology, Pharmaceuticals, Life Sciences Tools & Services
- **Financials** = Commercial Banks, Thrifts & Mortgage Finance, Diversified Financial Services, Consumer Finance, Capital Markets, Mortgage Real Estate Investment Trusts (REITs), Insurance
- **Information Technology** = Internet Software & Services, IT Services, Software, Communications Equipment, Computers & Peripherals, Electronic Equipment & Instruments, Semiconductors & Semiconductors Equipment
- **Telecommunication Services** = Diversified Telecommunication Services, Wireless Telecommunication Services
- **Utilities** = Electric Utilities, Gas Utilities, Multi-Utilities, Water Utilities, Independent Power & Renewable Electricity Producers
- **Real Estate** = Equity Real Estate Investment Trusts (REITs), Real Estate Management & Development

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