INTERNET TRENDS 2018

Mary Meeker

May 30 @ Code 2018

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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.
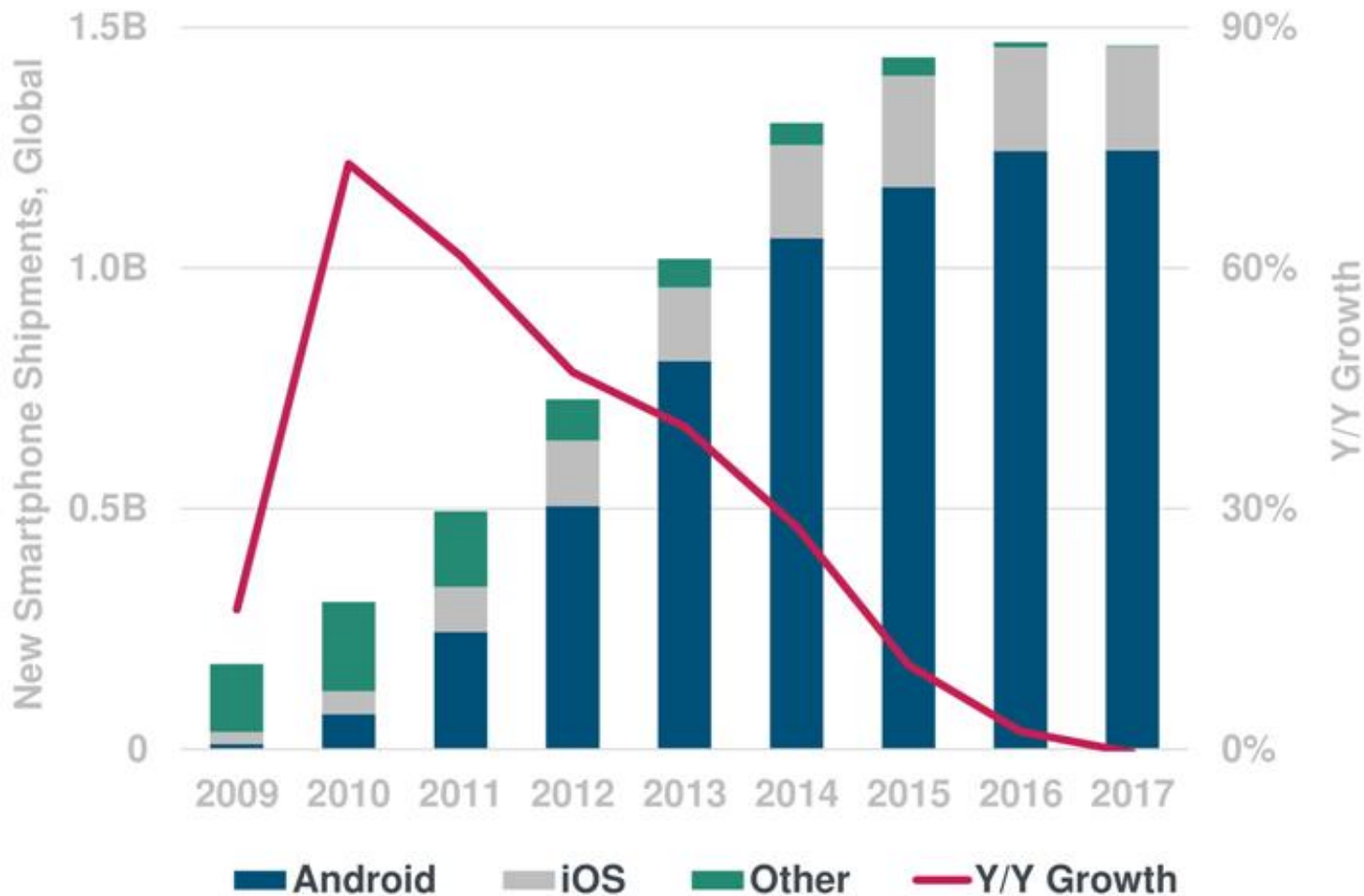
Internet Trends 2018
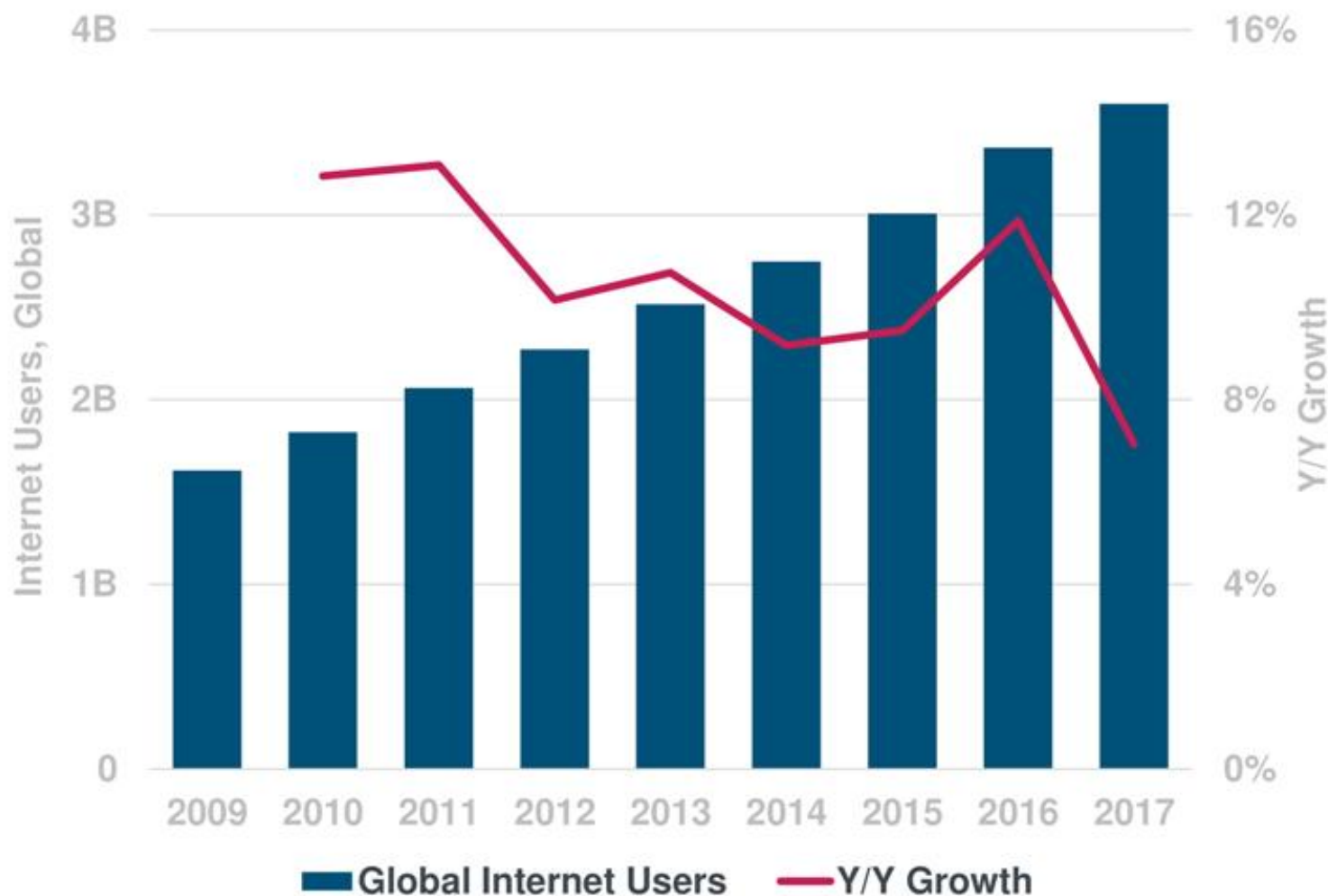
INTERNET DEVICES + USERS =

GROWTH CONTINUES TO SLOW

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

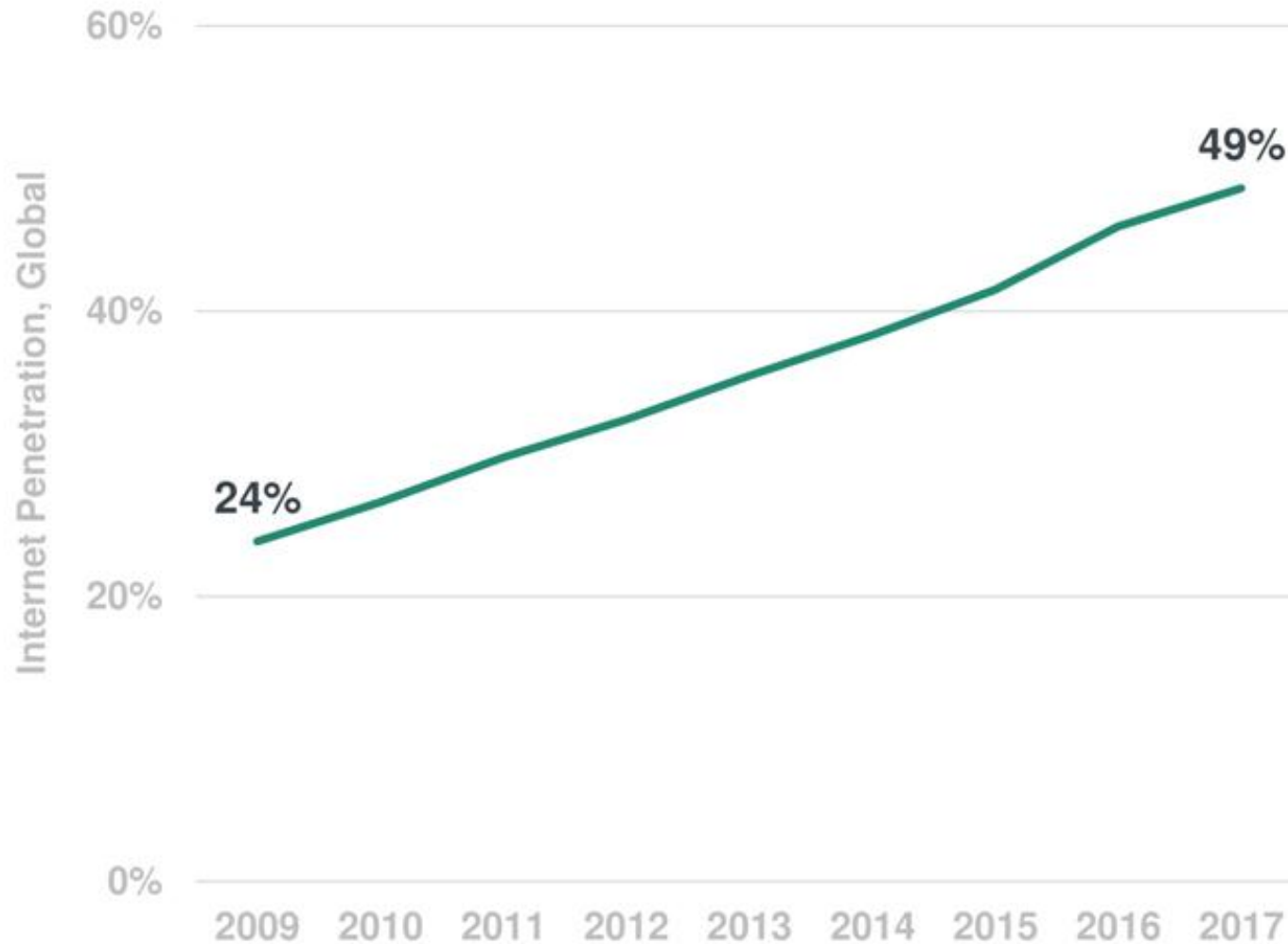New Smartphone Unit Shipments vs. Y/Y Growth

Internet Users…
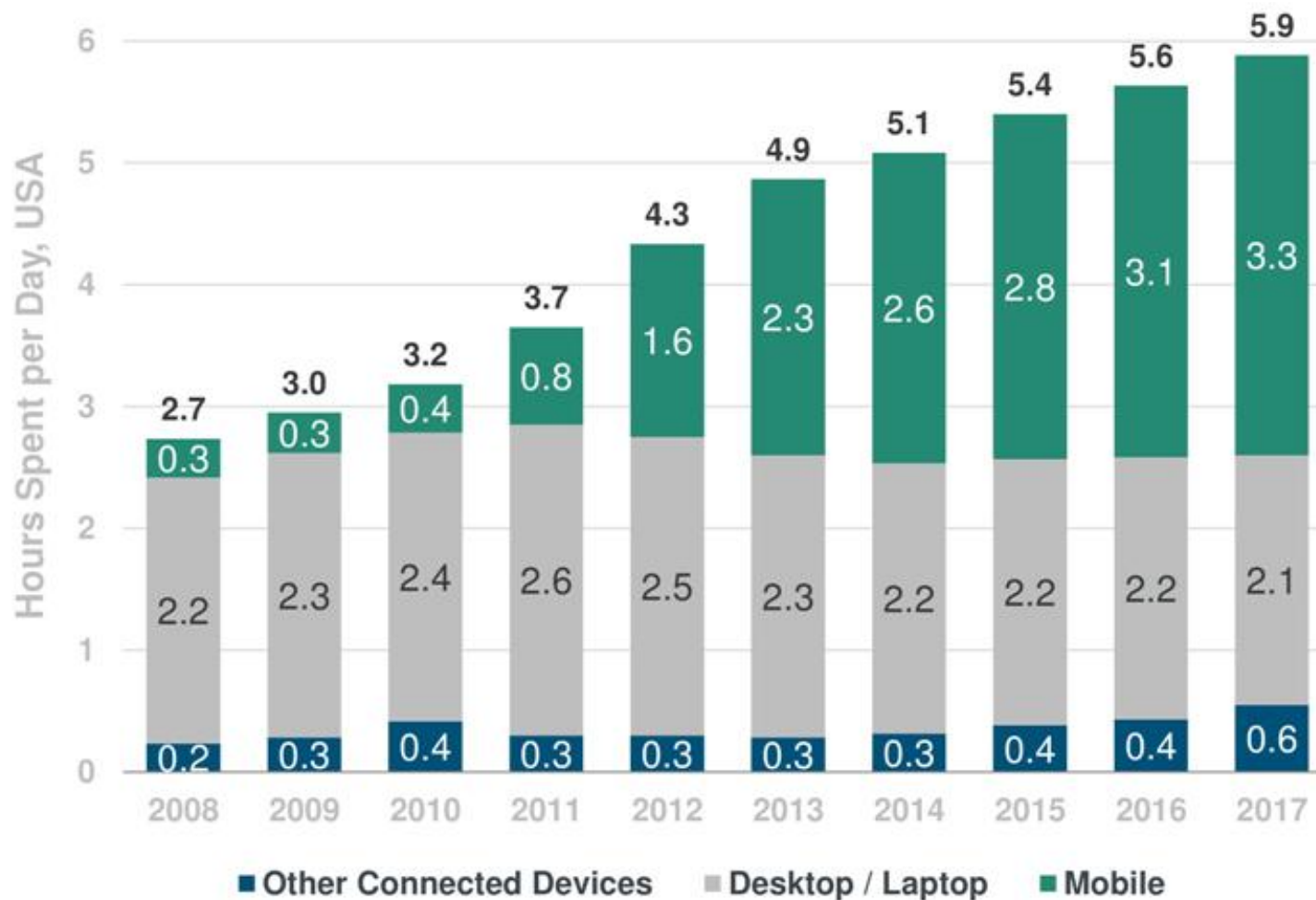
Growth Harder to Find After
Hitting 50% Market Penetration

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
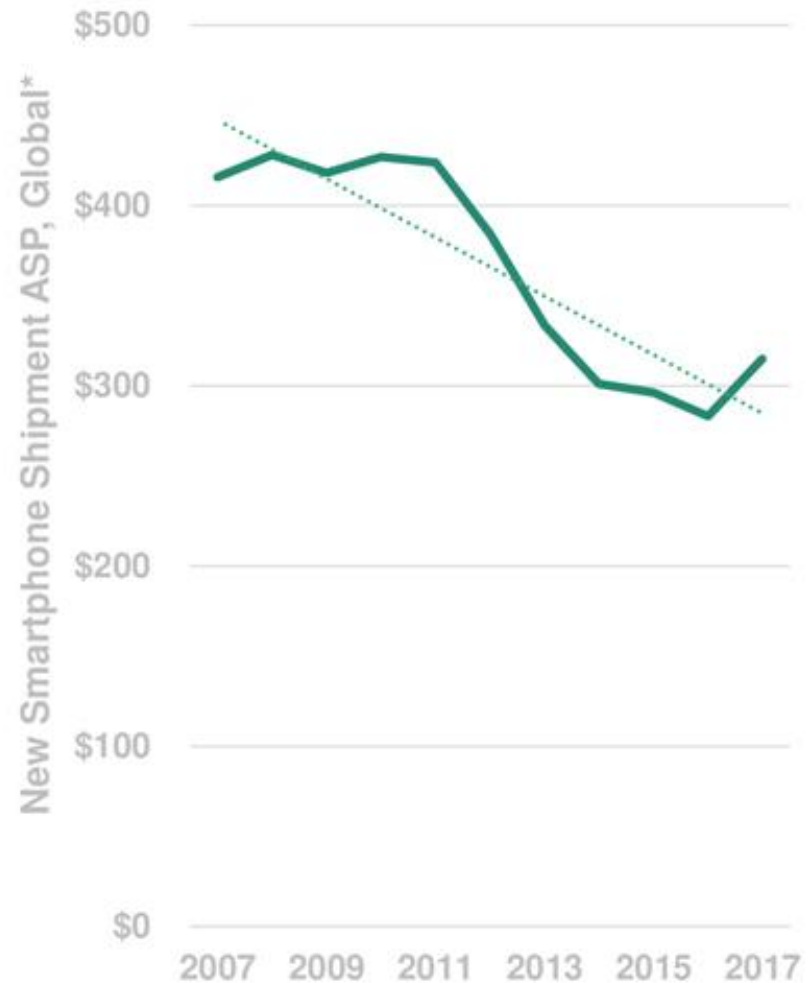Wireless Charging

Google Android

2016

Google Assistant
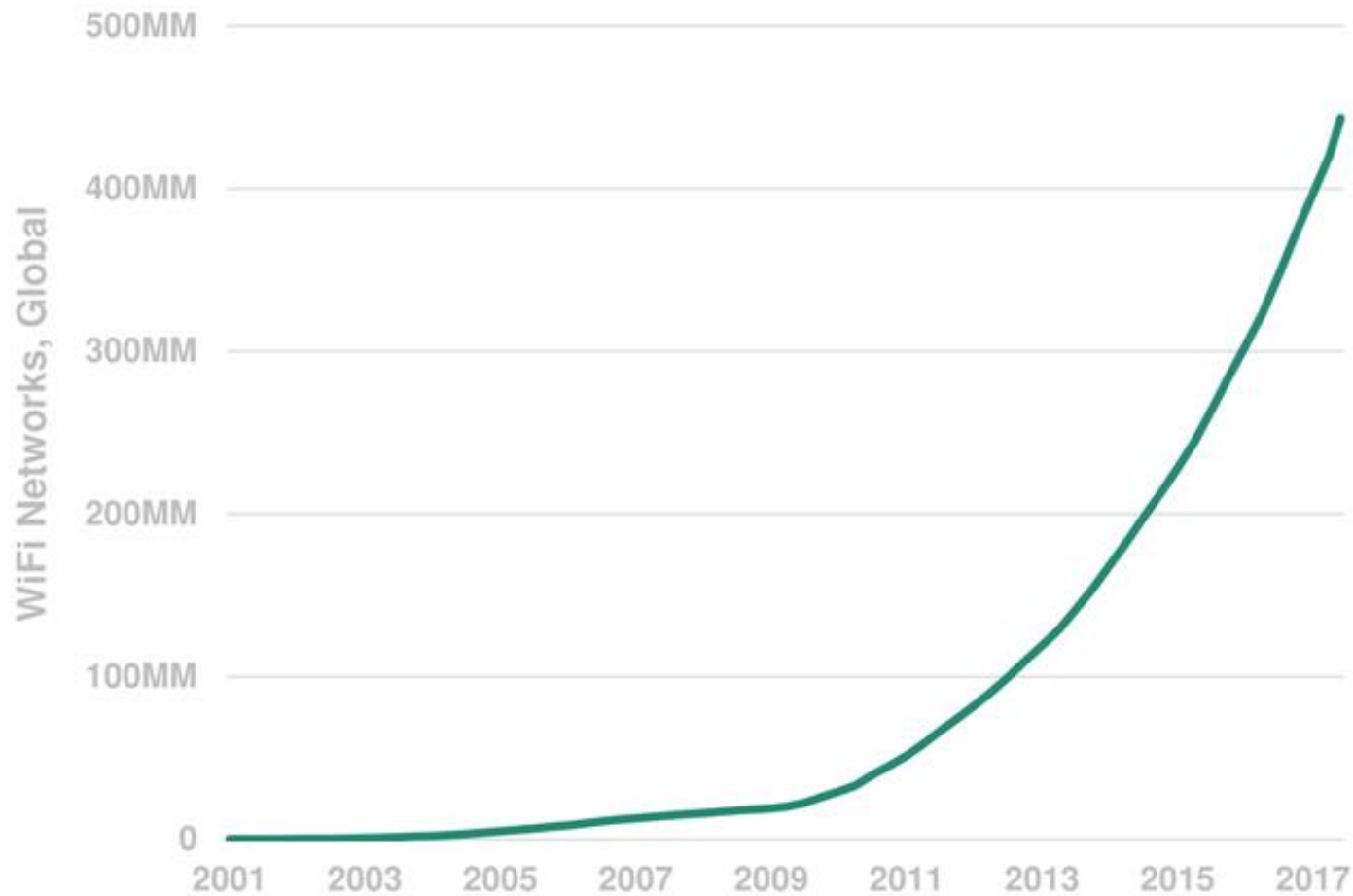'AI-Assisted'
Photo Editing

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
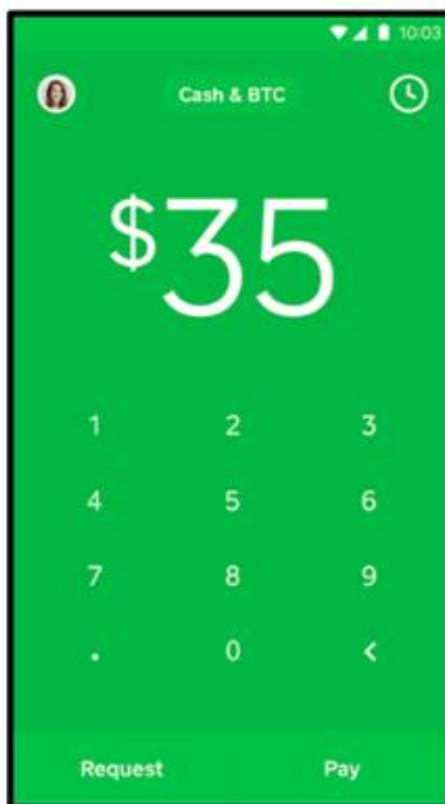
Media
Spotify
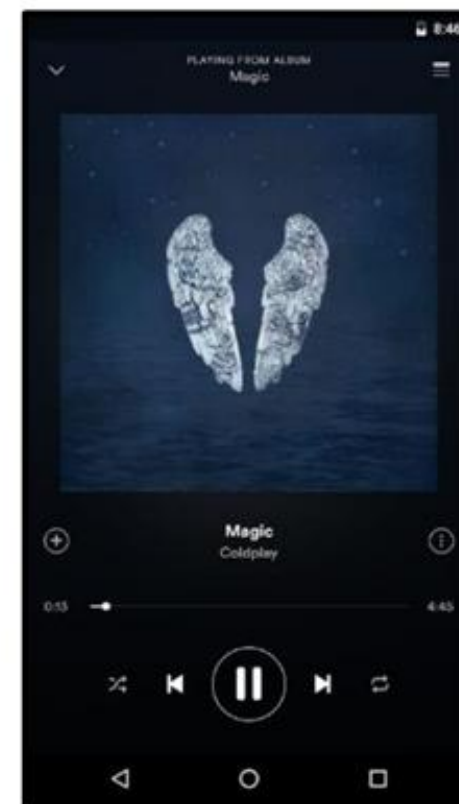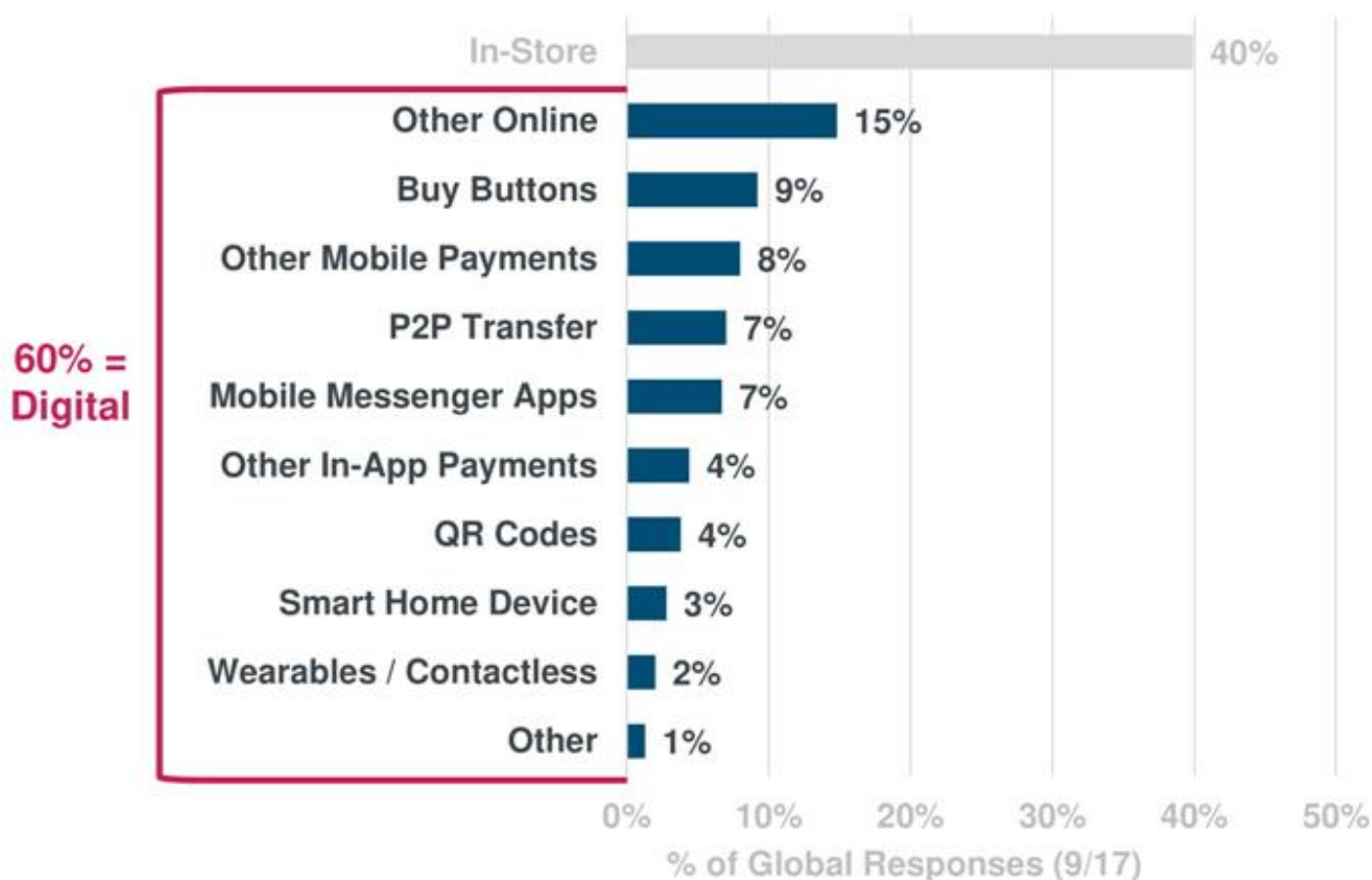
...Payments =
Friction Declining...

China Mobile Payment Users
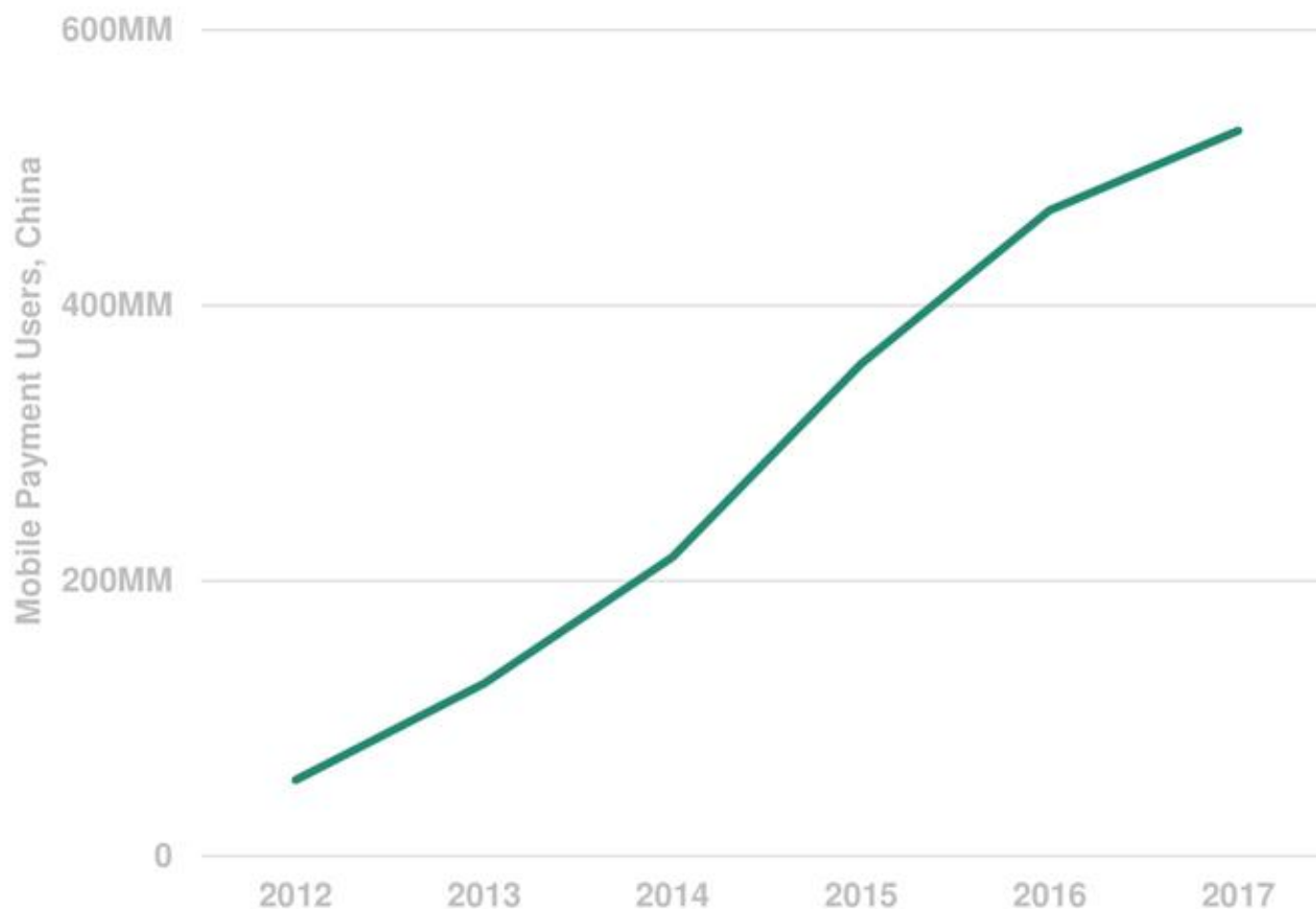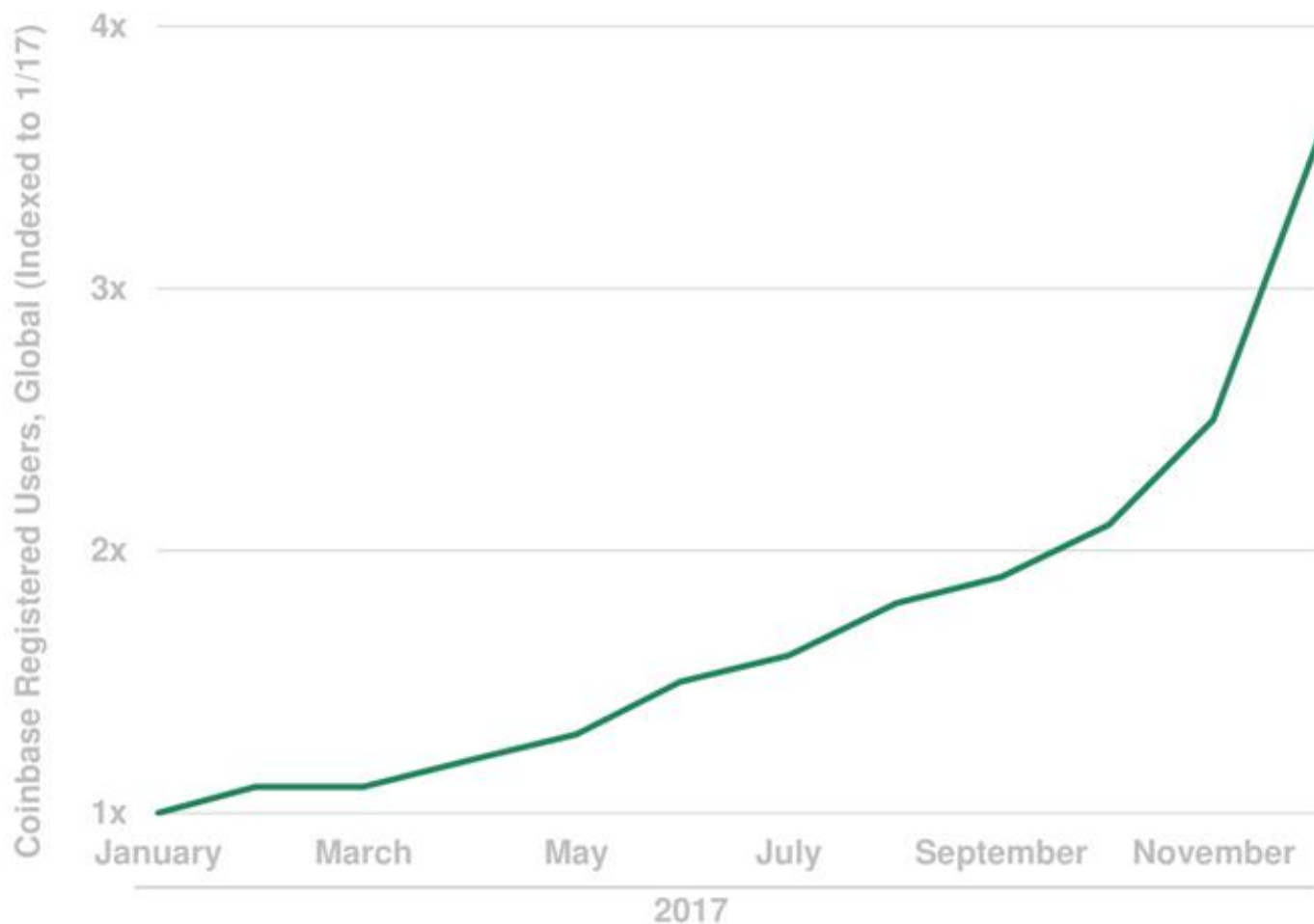
Coinbase Users

Nextdoor Active Neighborhoods

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2018
INTERNET TRENDS

Source: Nextdoor (5/18). Note: There are ~130MM households in USA. Nextdoor estimates
that there are ~650 households per average neighborhood (~200K USA neighborhoods).

21
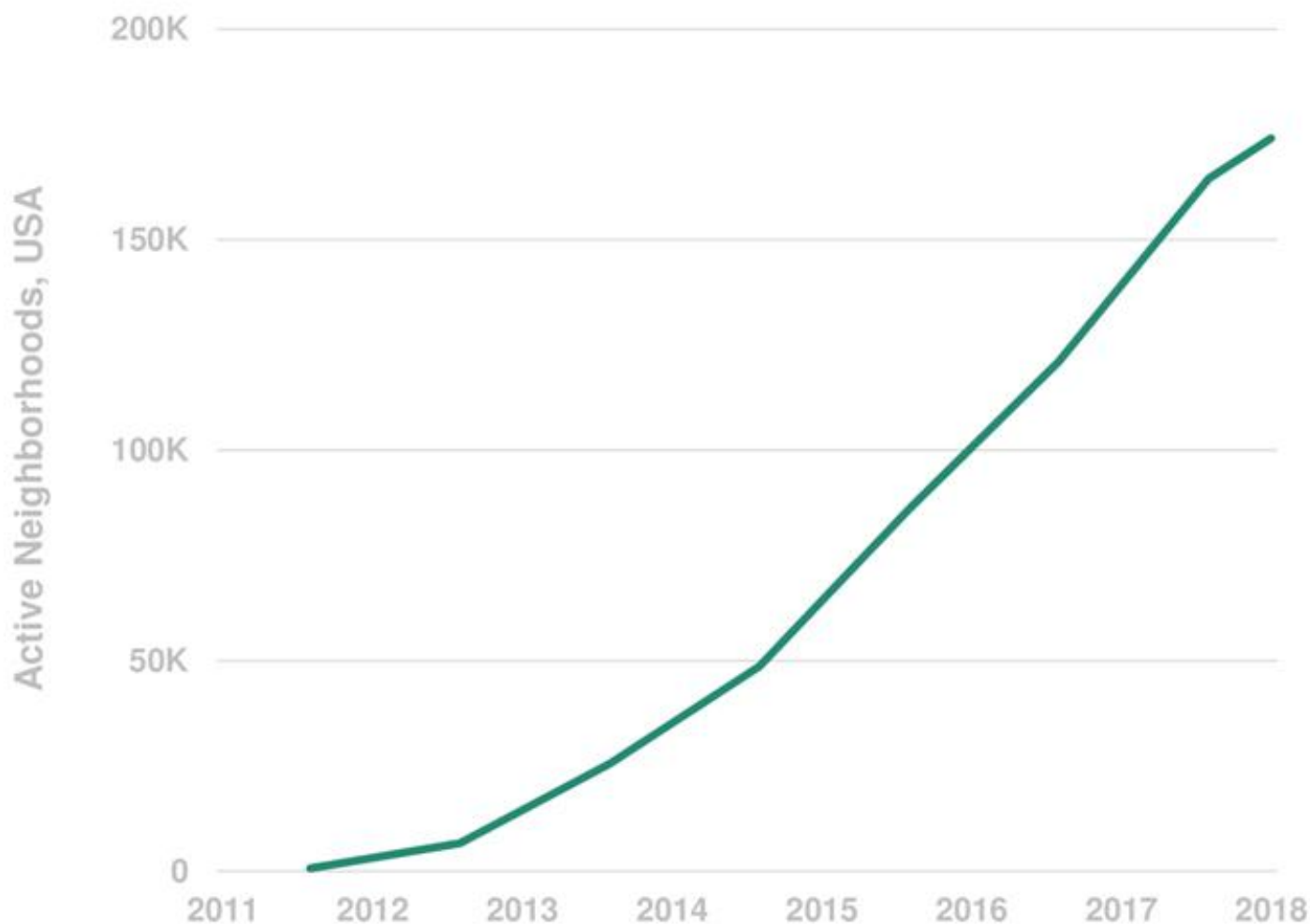
Messaging = Extensibility Expanding

Messaging
Tencent (2000 → 2018)

QQ

WeChat

Messenger MAUs

- **WhatsApp**
- **WeChat**
- **Twitter**
- **Facebook Messenger**
- **Instagram**
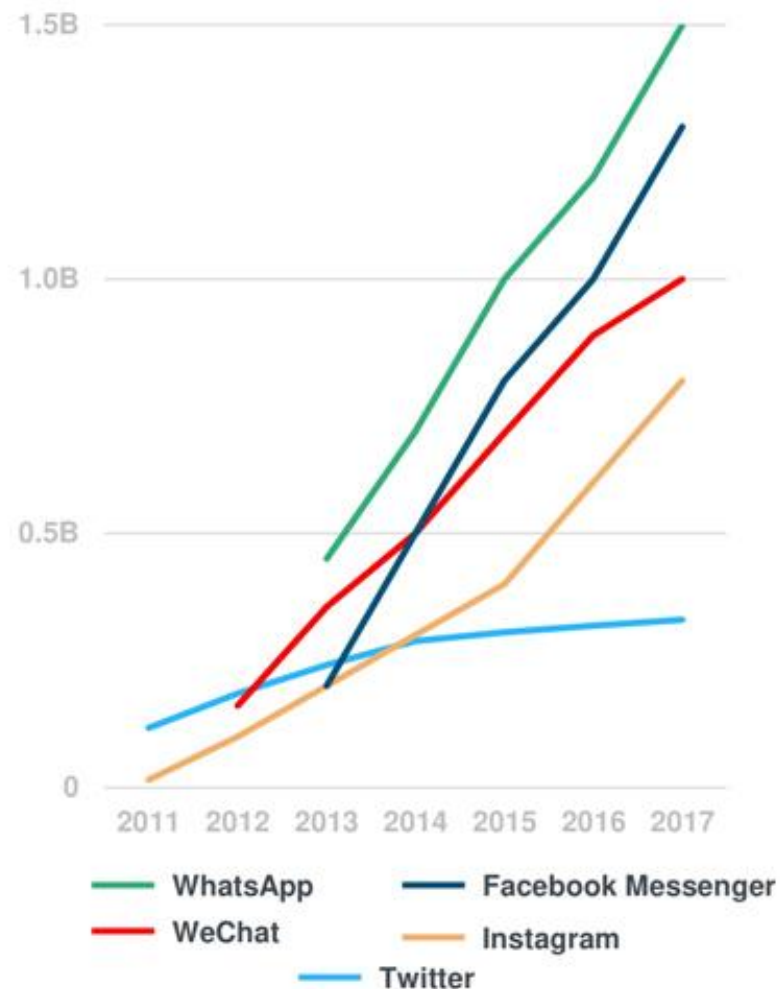
Mobile Video Usage
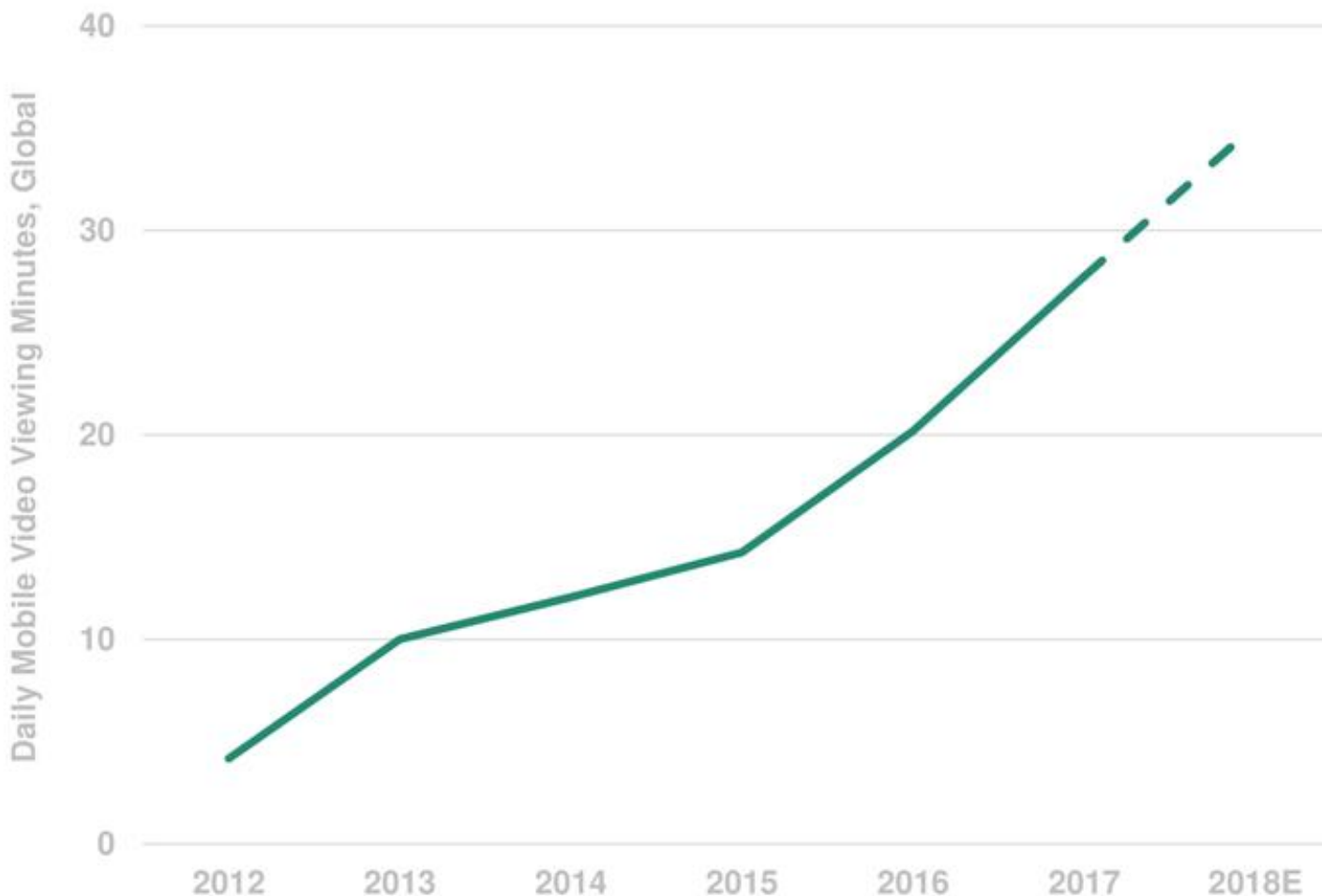
...Video = New Content Types Emerging

Fortnite Battle Royale

Most Watched Game on Twitch

Twitch Streaming Hours

Average Daily Streaming Hours, Global

18MM

12MM

6MM

0

2012   2013   2014   2015   2016   2017

24
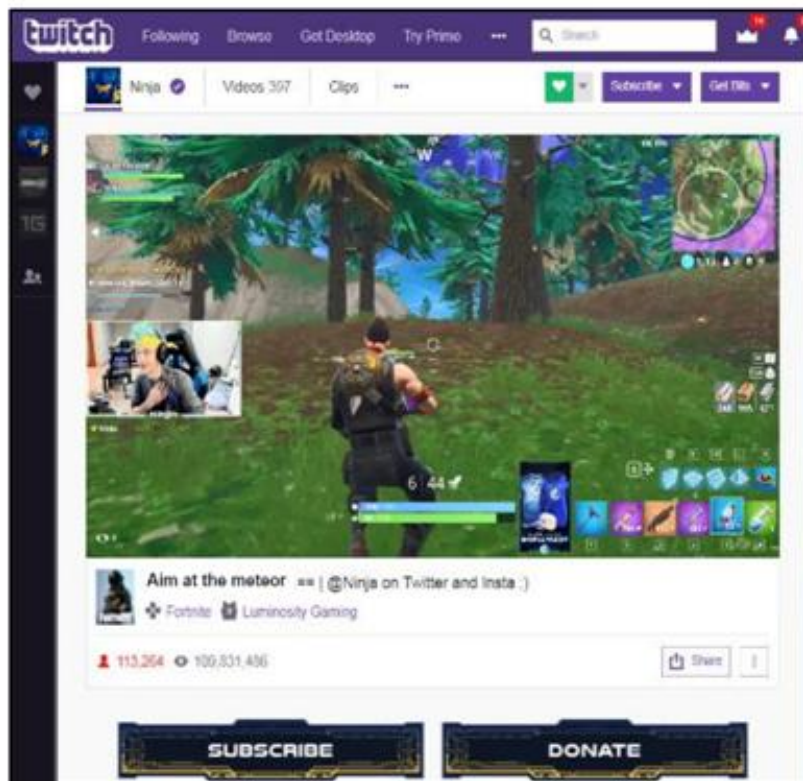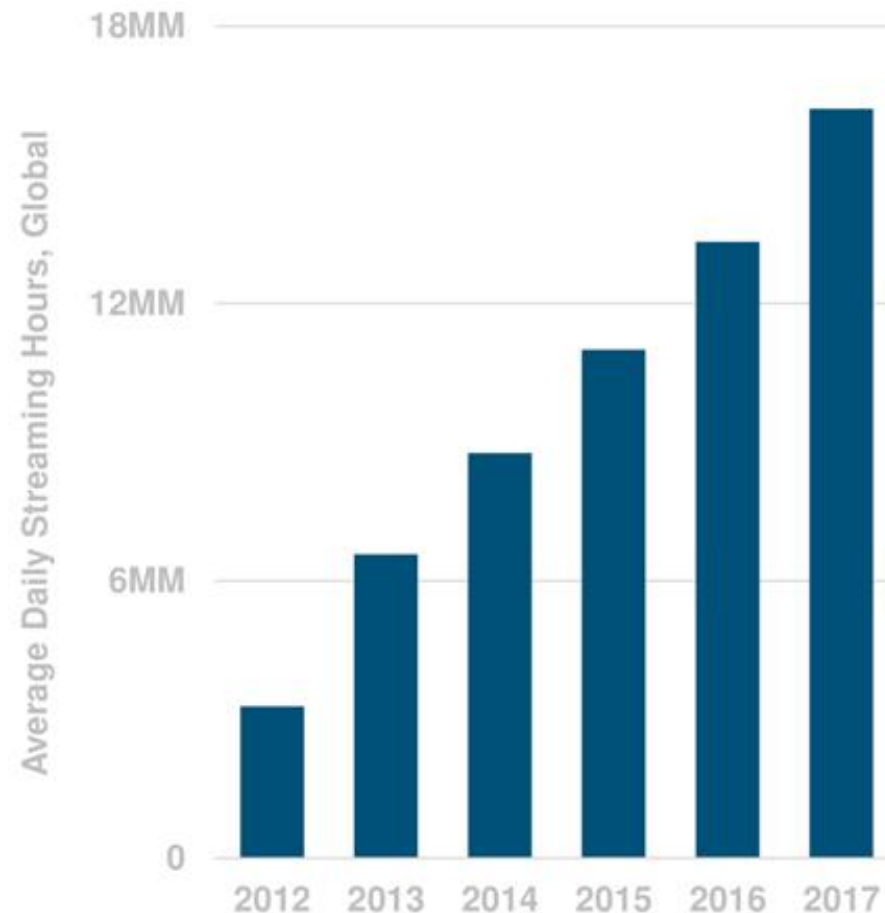
Google Machine Learning Word Accuracy
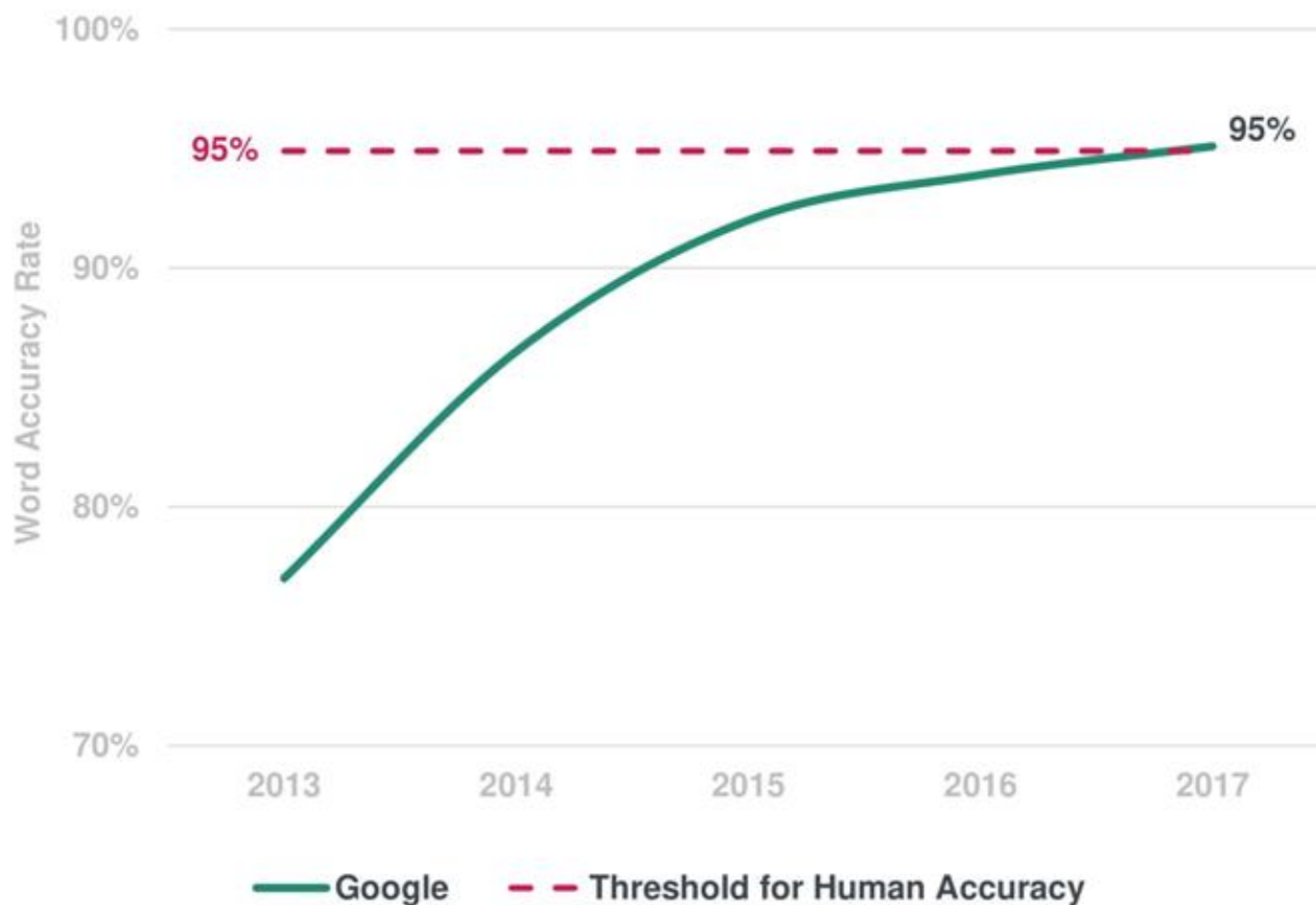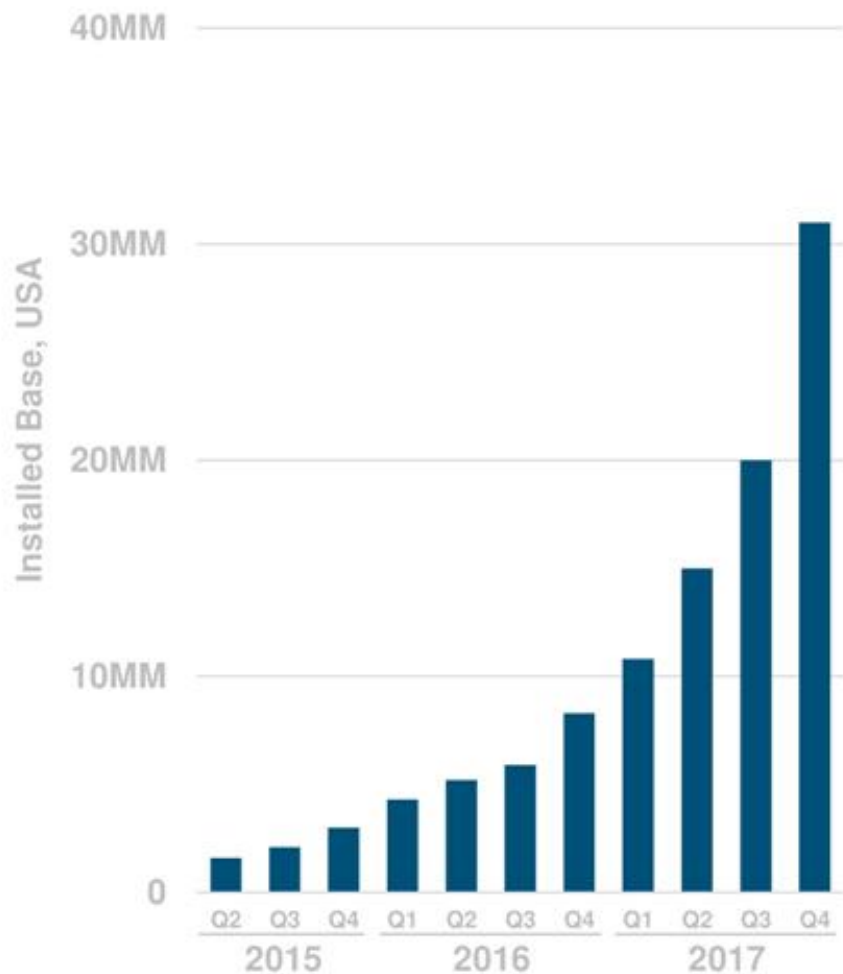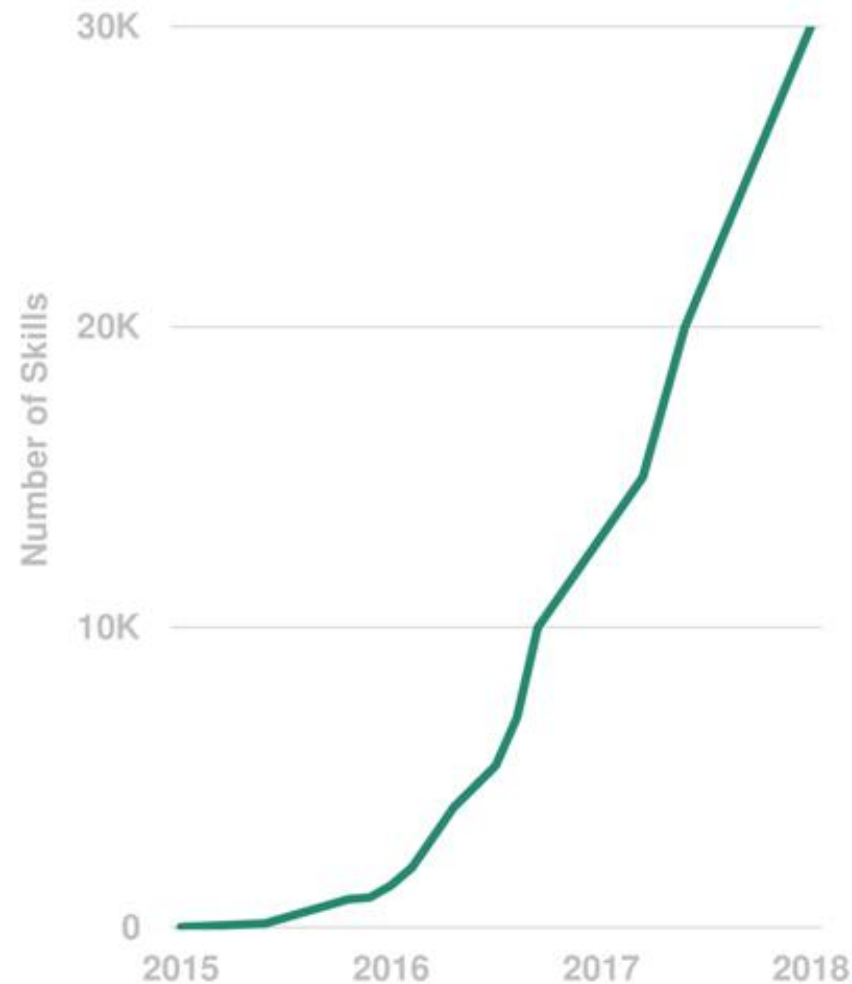
Word Accuracy Rate

100%

95%

95%

90%

80%

70%

2013   2014   2015   2016   2017

Google   — — Threshold for Human Accuracy

Source: Google (5/17). Note: Data as of 5/17/17 & refers to recognition accuracy for English language. Word error rate is evaluated using real world search data which is extremely diverse & more error prone than typical human dialogue.

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	**200MM**	**170MM**	**125MM**
Facebooks	Pinterests	Spotifys	Netflixes

Newsfeed	*Discovery*	*Music*	*Video*
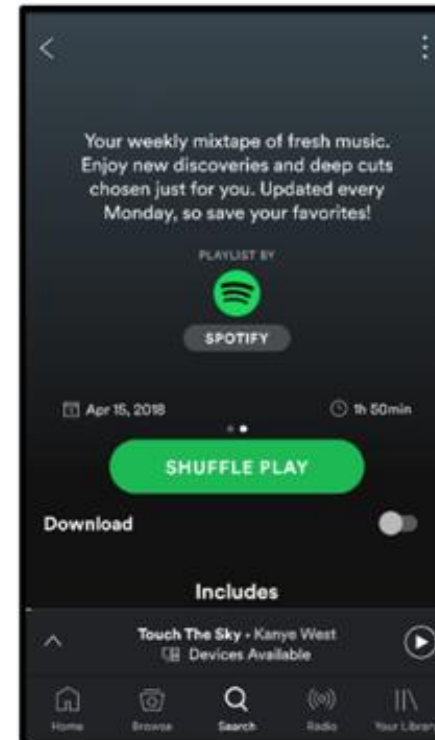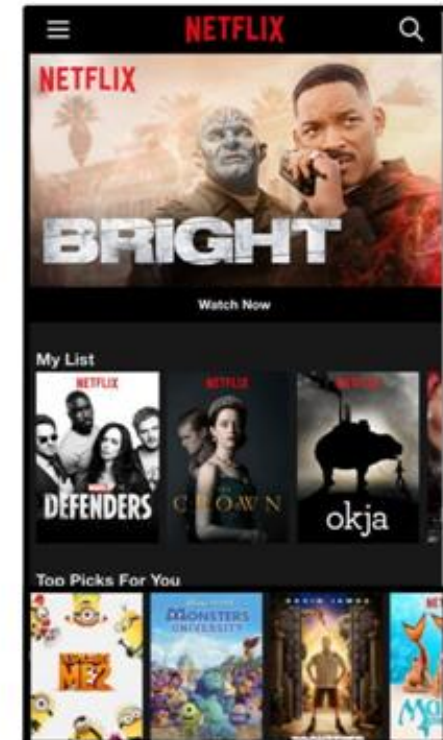
...Personal + *Collective* Data = Provide Better Experiences for Consumers

100MM+	20%	100MM+	17MM**
Waze	UberPOOL Share of All	Snap Map	Nextdoor
Drivers	Rides, Where Available*	MAUs	Recommendations

Real-Time *Navigation*	*Real-Time* *Transportation*	*Real-Time* *Social Stories*	*Often Real-Time* *Local News*
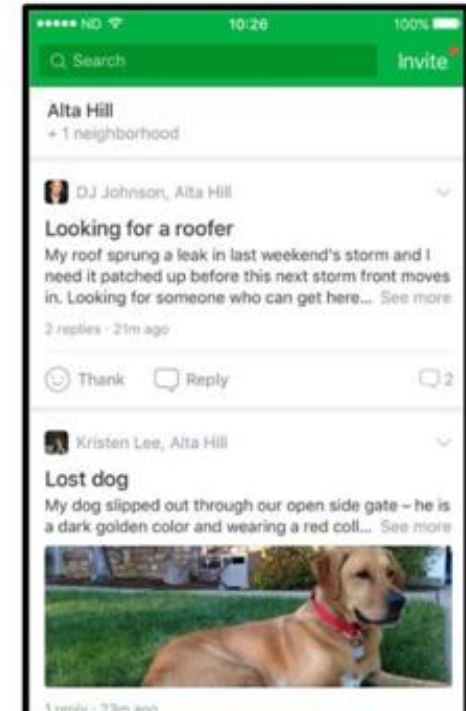
Privacy Paradox

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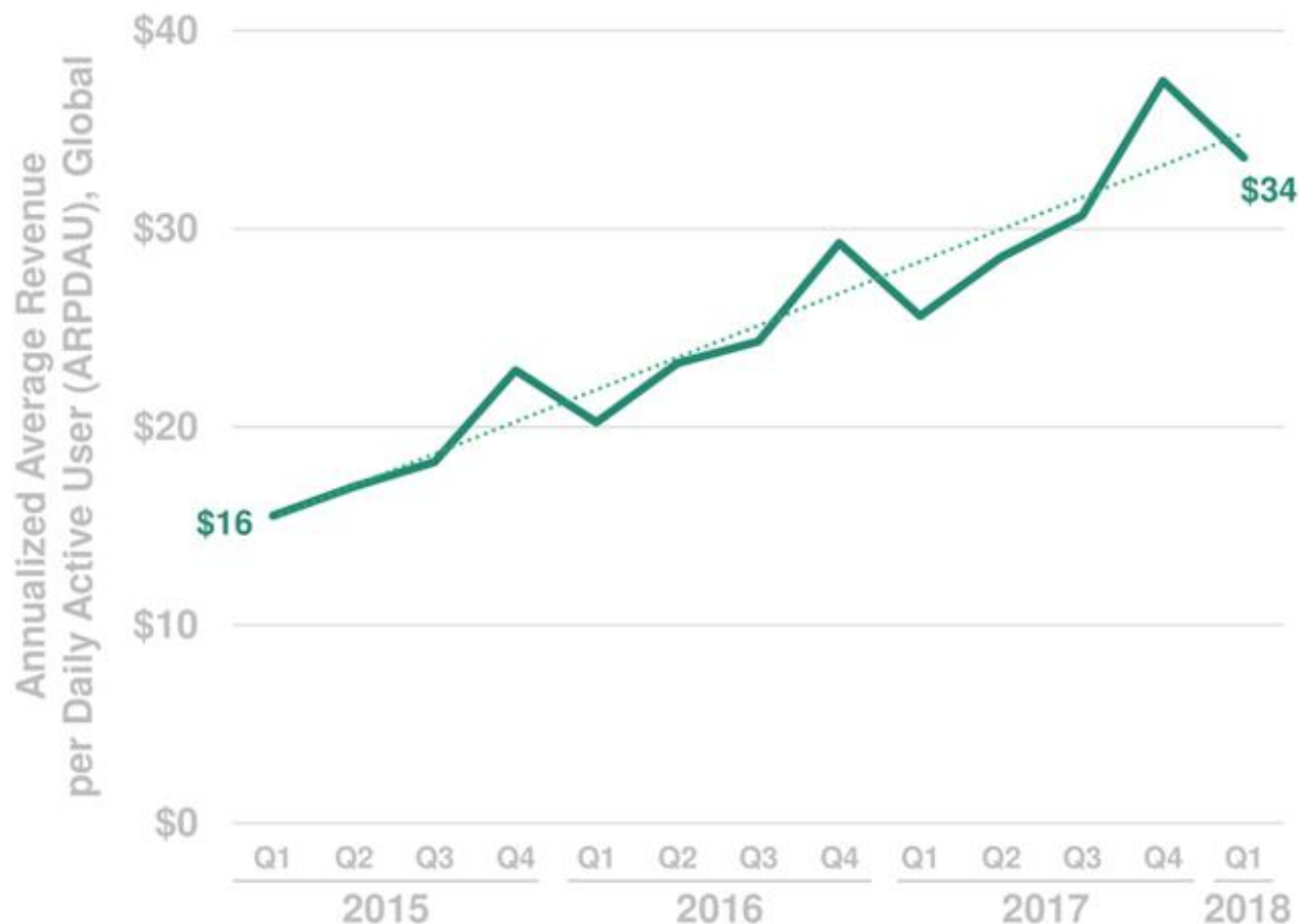
...Rising Monetization + Data Collection = Drives Regulatory Scrutiny

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

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

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

Legend: Technology Private Financing · Technology IPO · NASDAQ

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

USA Information Technology % of MSCI Market Capitalization

33%
March, 2000

25%
April, 2018

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

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

Company	2017 R&D + Capex	Y/Y
Amazon		+45% Y/Y
Google / Alphabet		+23%
Intel		+11%
Apple		+5%
Microsoft		+6%
AT&T		-4%
Verizon		+1%
Exxon Mobil		-4%
General Motors		+5%
Ford		+5%
Facebook		+40%
Chevron		-26%
Johnson & Johnson		+12%
General Electric		+2%
Merck		+3%

$0 $10B $20B $30B $40B

2017 R&D + Capex

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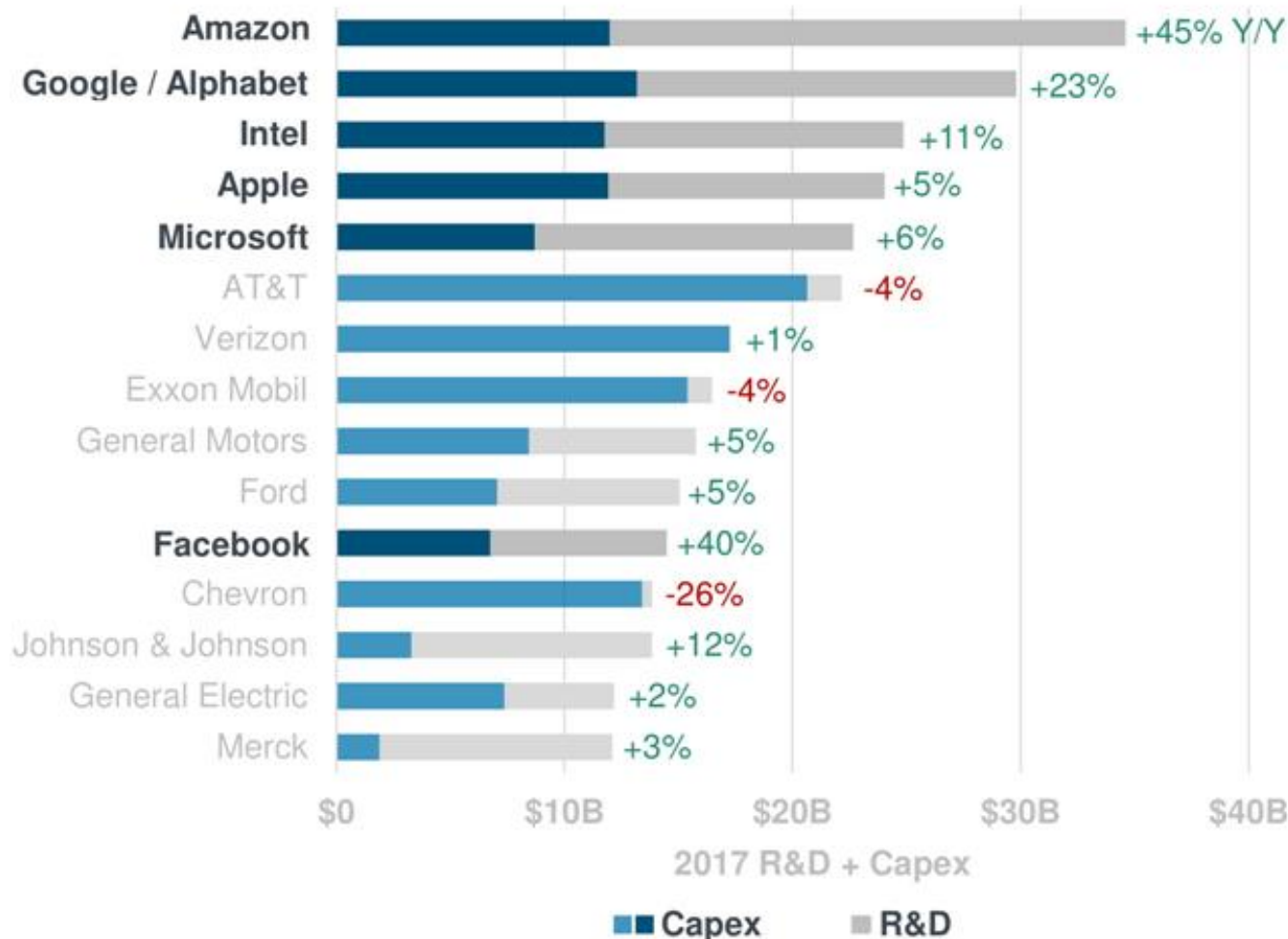
Technology Companies =
Largest + Fastest Growing R&D + Capex Spenders, USA

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

Technology
+9% CAGR
+18% Y/Y

Healthcare*
+4% CAGR
+8% Y/Y

Discretionary
0% CAGR
-22% Y/Y

Legend: Technology, Healthcare, Energy, Materials, Industrials, Discretionary, Staples, Utilities, Telecom

Y-axis: R&D + Capex, USA — $0, $100B, $200B, $300B
X-axis: 2007, 2009, 2011, 2013, 2015, 2017
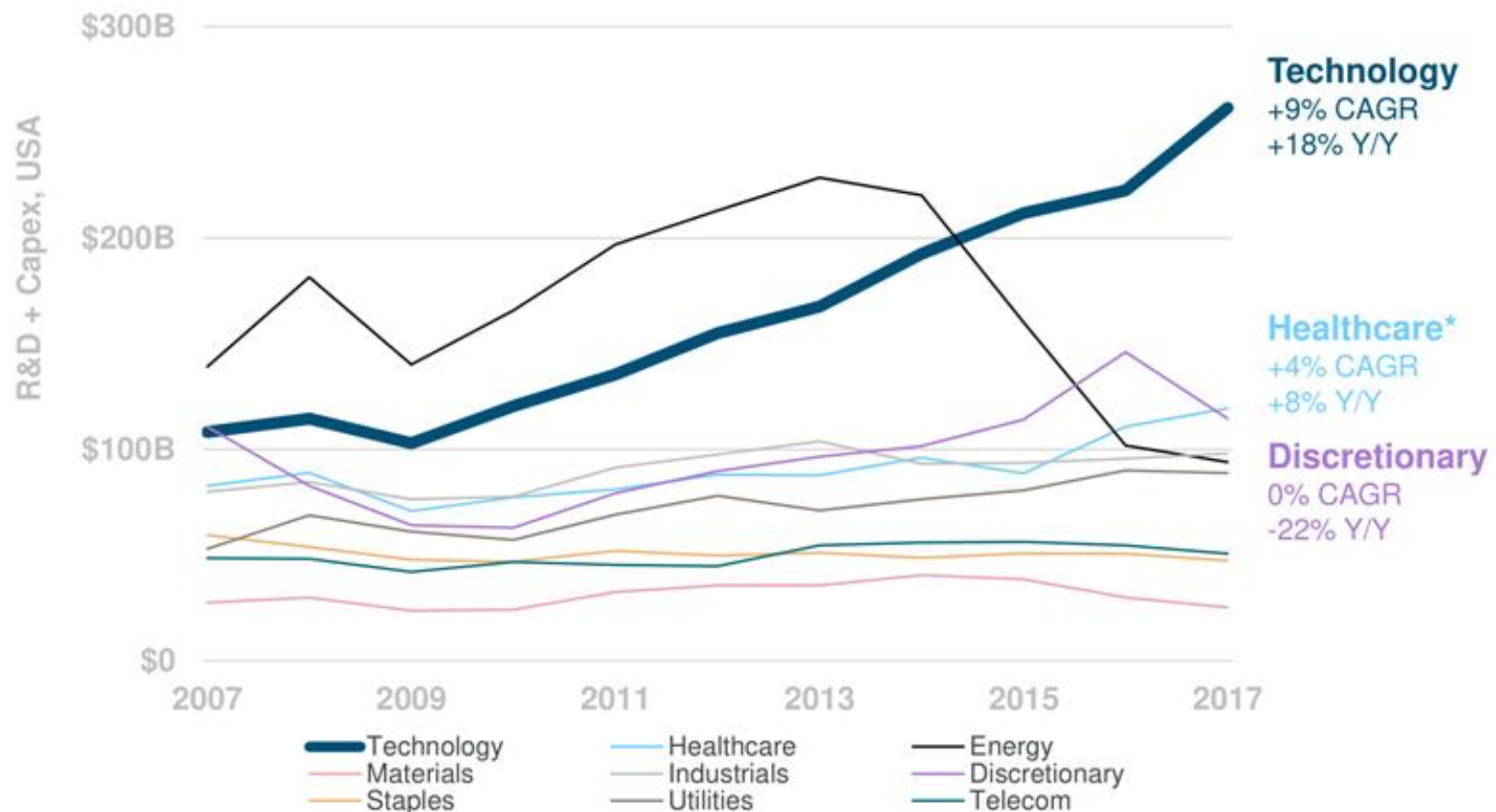
Technology Companies =
Rising R&D + Capex as % of Revenue...18% vs. 13% (2007)

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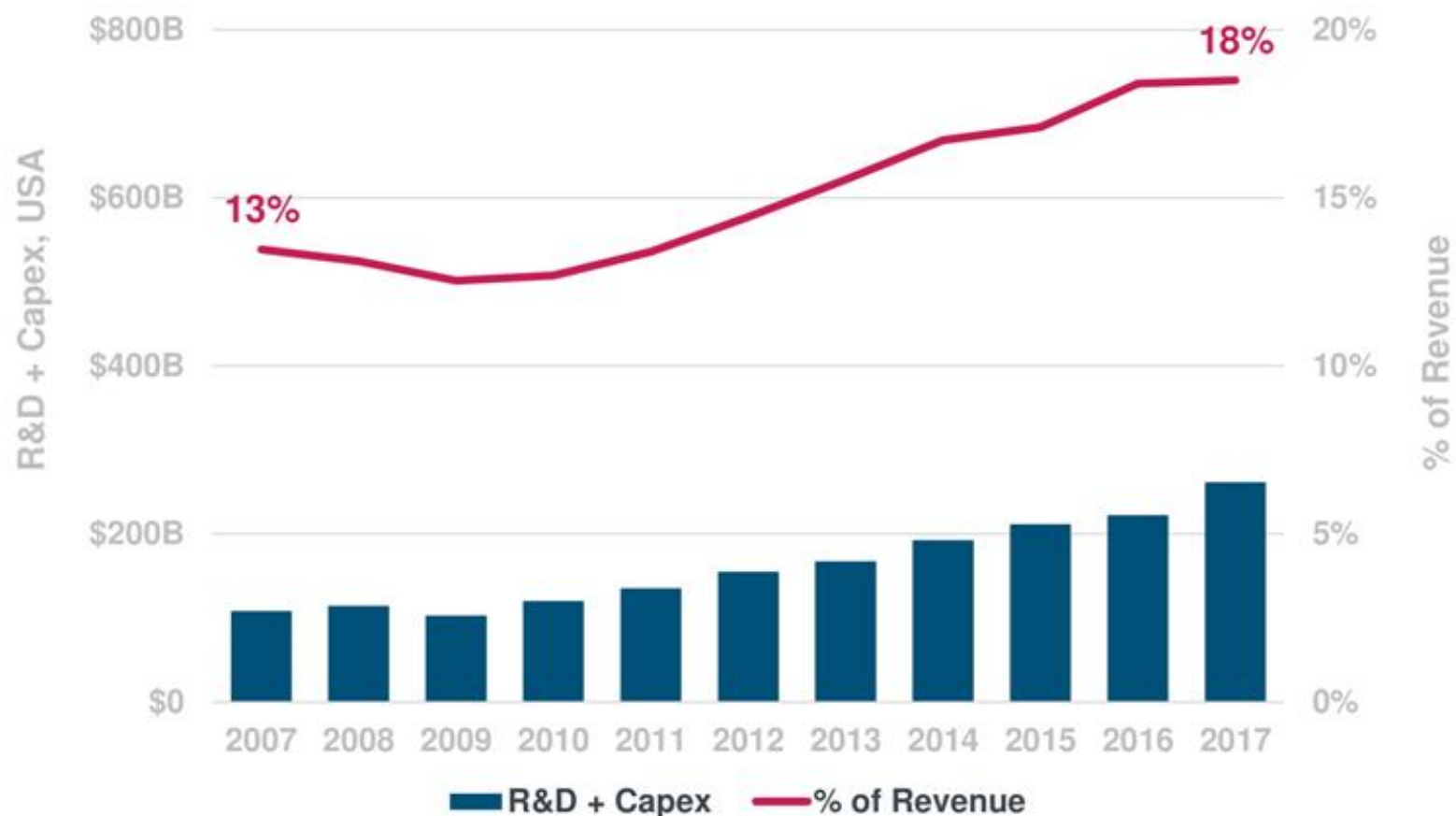
USA Tech Companies…

Aggressive Competition +
Spending on R&D + Capex =

Driving Innovation + Growth

E-COMMERCE =

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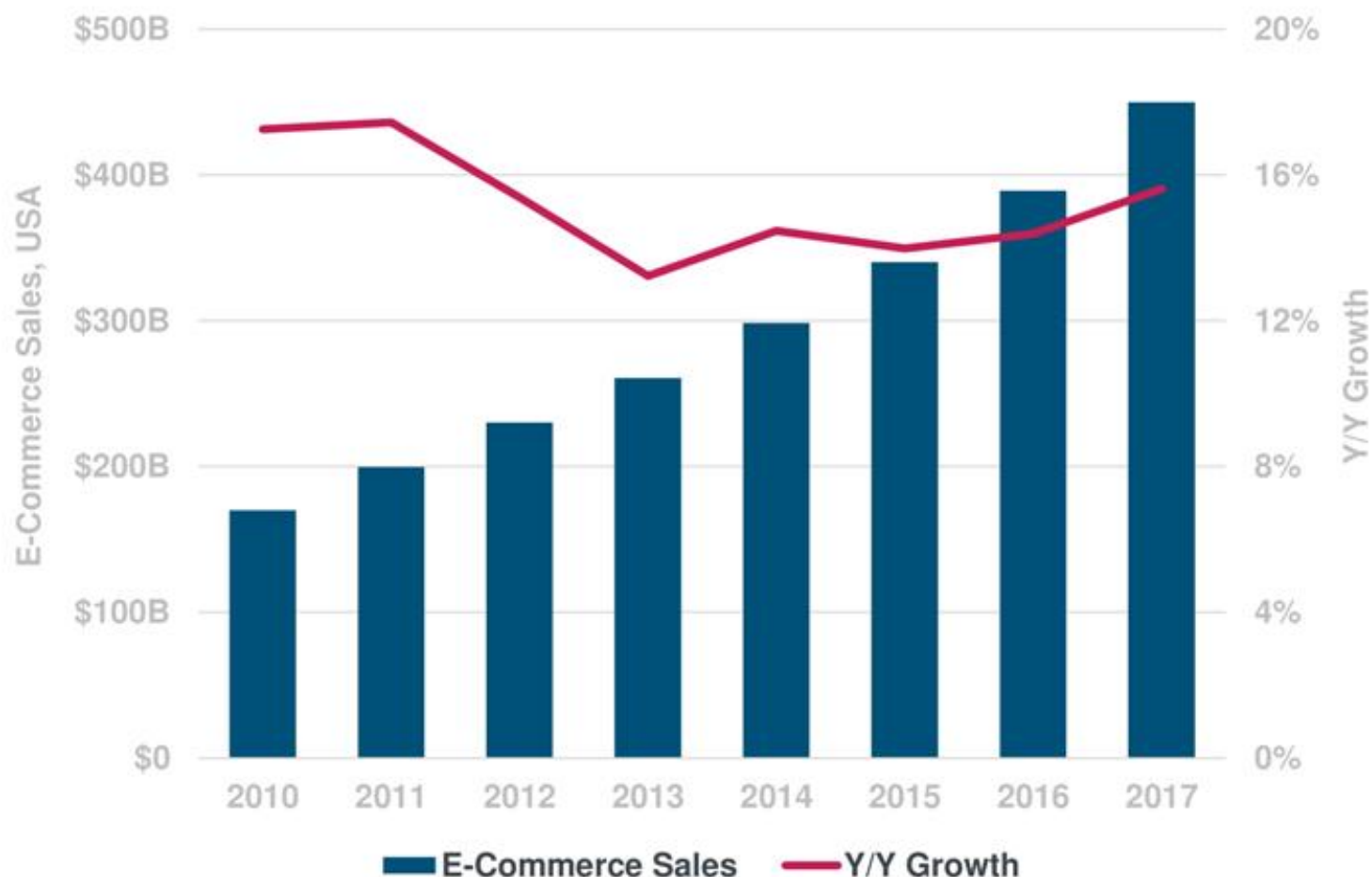
E-Commerce vs. Physical Retail =
Share Gains Continue @ 13% of Retail

E-Commerce as % of Retail Sales
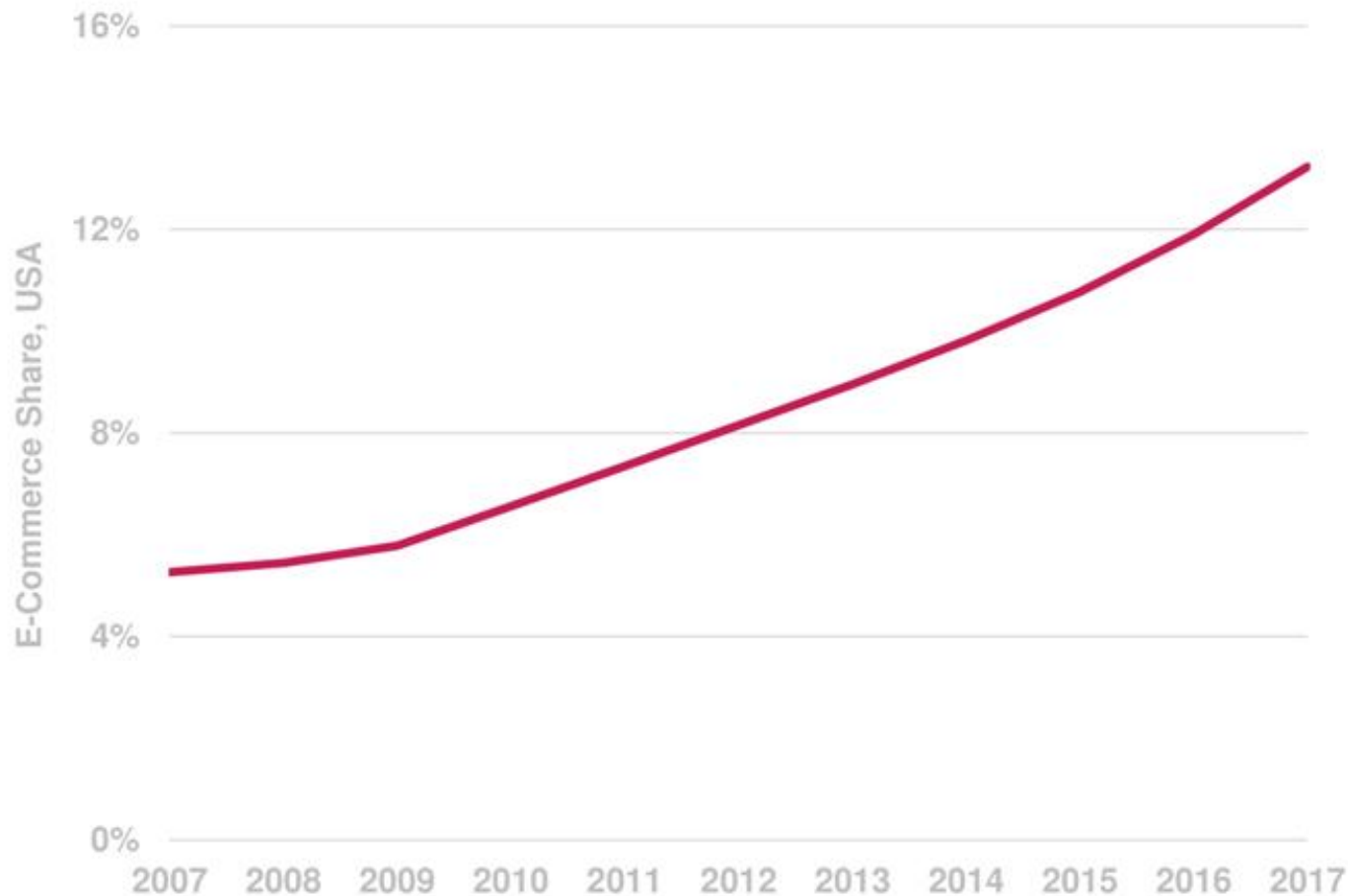
Source: USA Census Bureau, St. Louis Federal Reserve FRED database.
Note: 13% = Annualized share. Penetration calculated by dividing
E-Commerce sales by "Core" Retail Sales (excluding food services, motor
vehicles / auto parts, gas stations & fuel). All figures are seasonally adjusted.
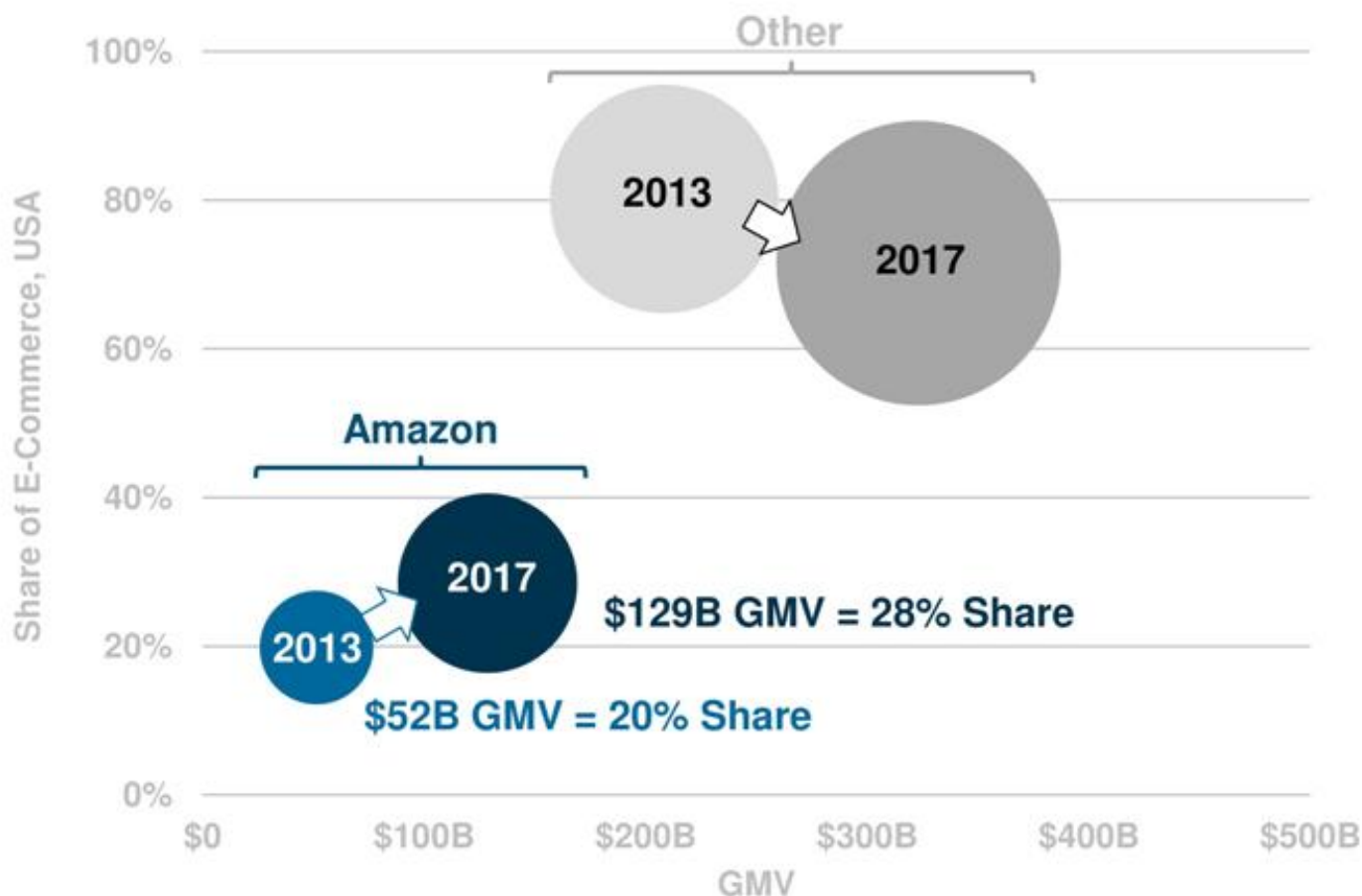
E-Commerce =

Evolving + Scaling

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

Instacart

Find	**Explore**	**View + Share**	**Pay**	**Update**
Local Store	**Custom Savings**	**Recommendations**	**Seamlessly**	
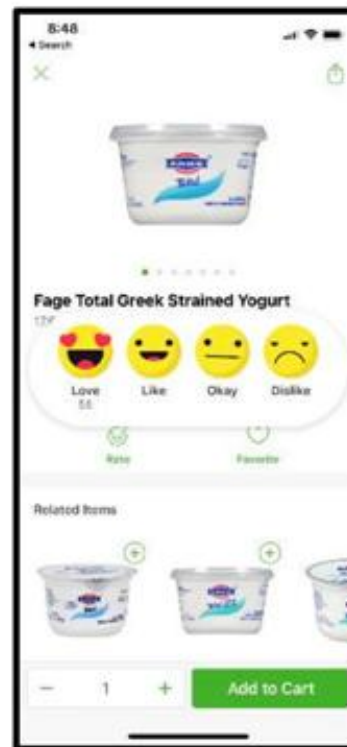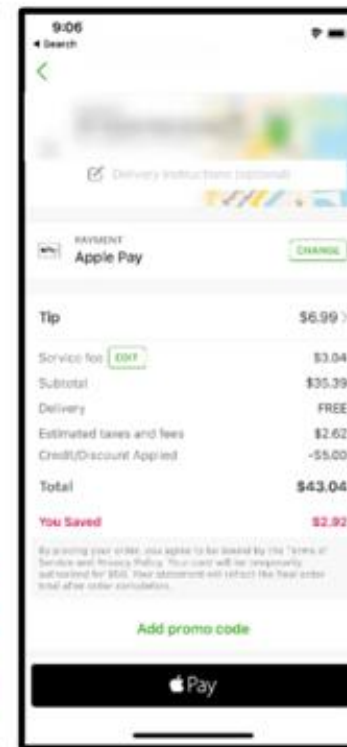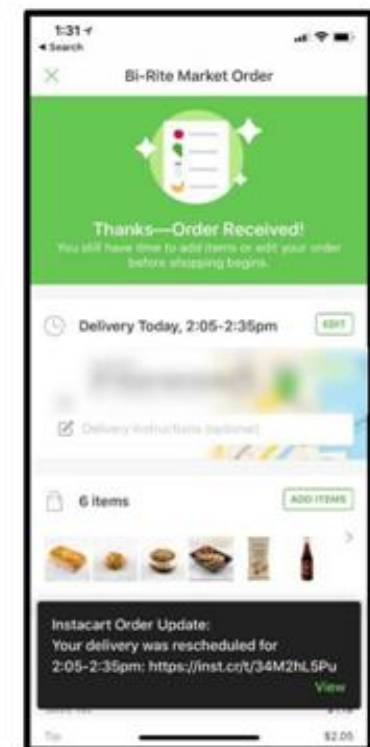
E-Commerce =
A Look @ Tools + Numbers…

Payment

Online Store

Online Payment

Fraud Prevention

Purchase Financing

Customer Support

Finding Customers

Delivering Product
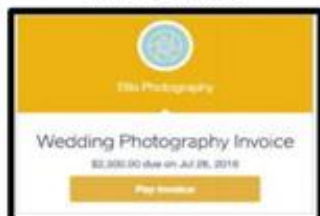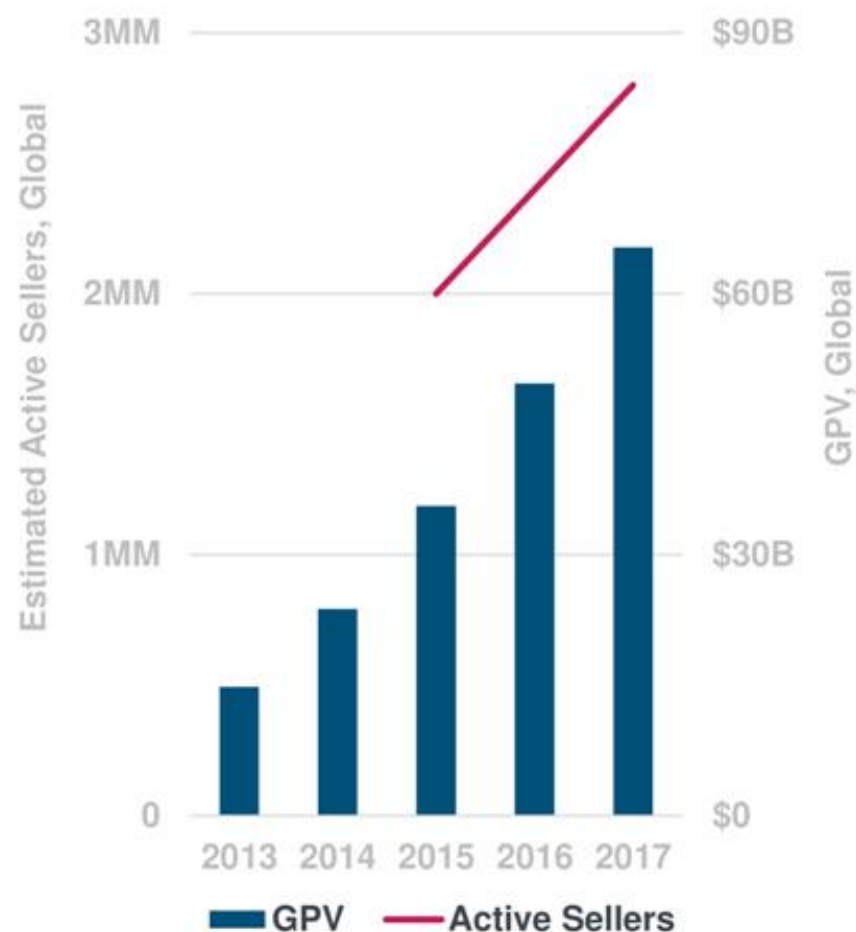
...Build Online Store...

Shopify Online Stores
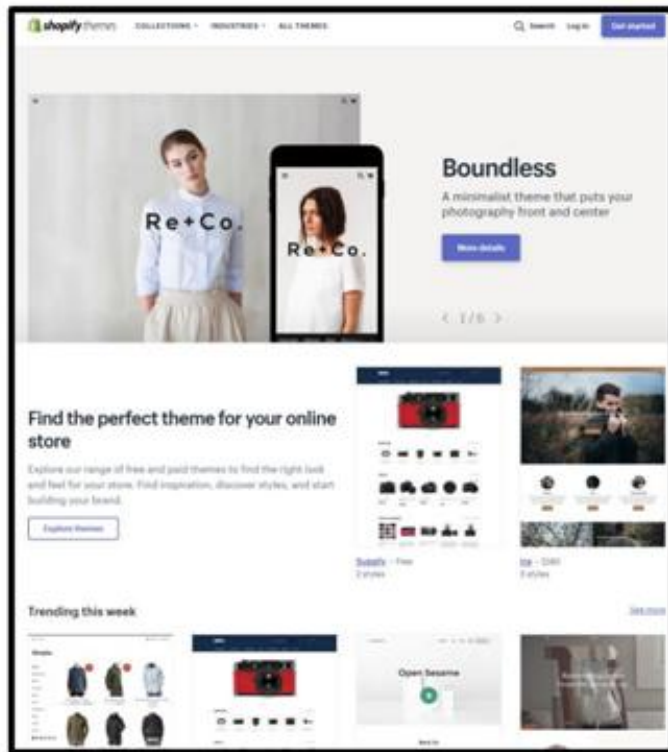
Active Merchants & Gross Merchandise Volume (GMV)
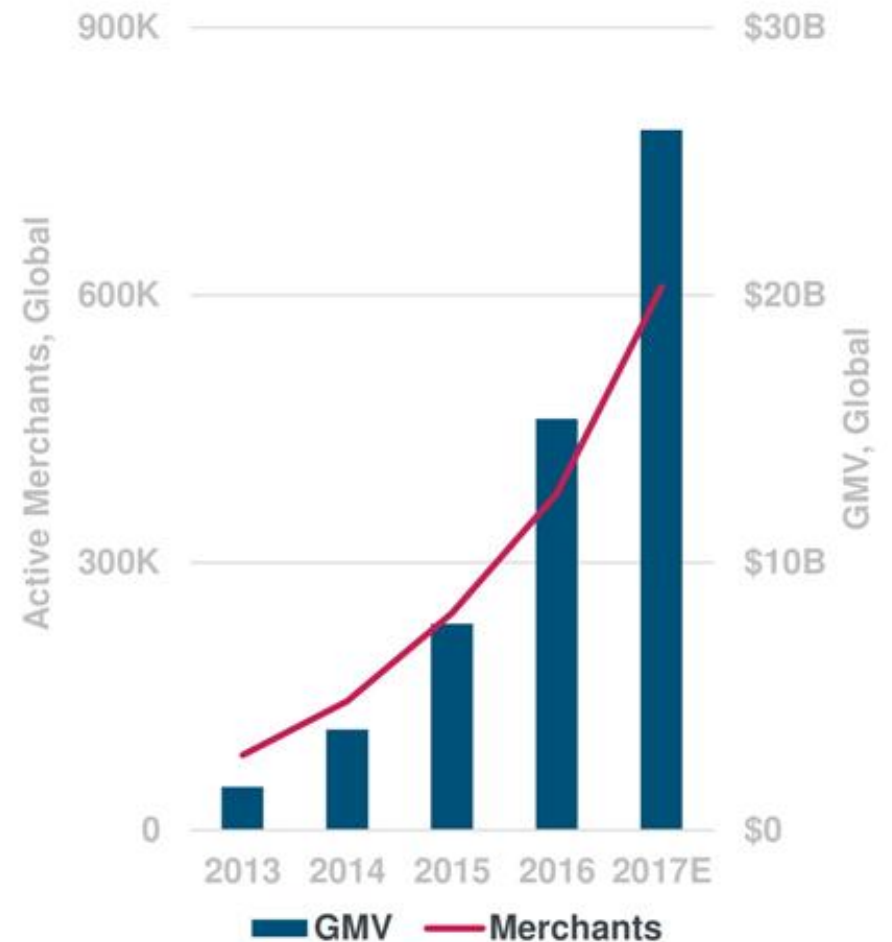
…Integrate Online Payment System…

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_6pRNASCoBOKtIshFeQd4XMUh"
  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>
```

Stripe.com
Widget

Email

Card number

MM / YY   CVC

Remember me

Pay $9.99

...Integrate Fraud Prevention...

Signifyd
Fraud Prevention
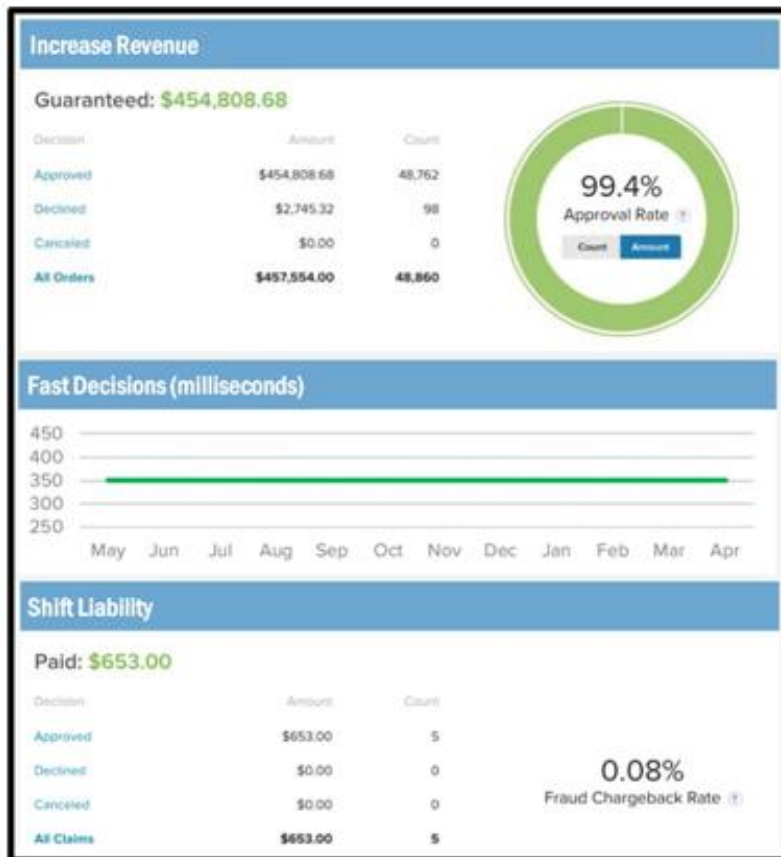
Merchants
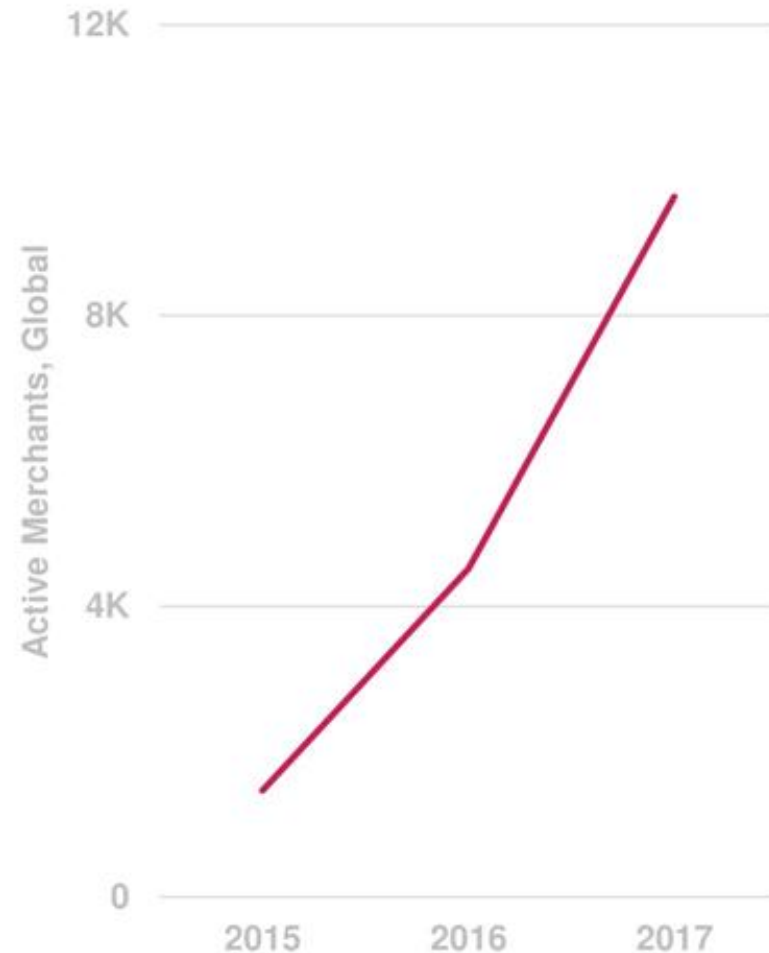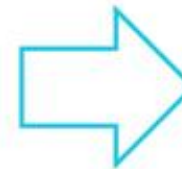
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2018
INTERNET TRENDS

Source: Signifyd (5/18). Note: Merchants refers to retailers using
Signifyd services to monitor for fraud @ period end. (10K = 2017)

54

...Integrate Customer Support...

Intercom
Real-Time Support
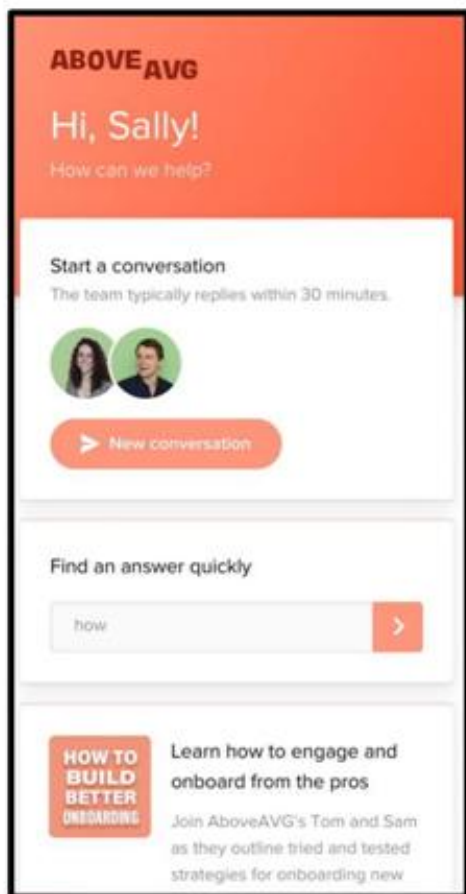
Customer Conversations

Source: Intercom (5/18). Note: Conversations started include messages initiated by business & customers. (500MM = 2018)
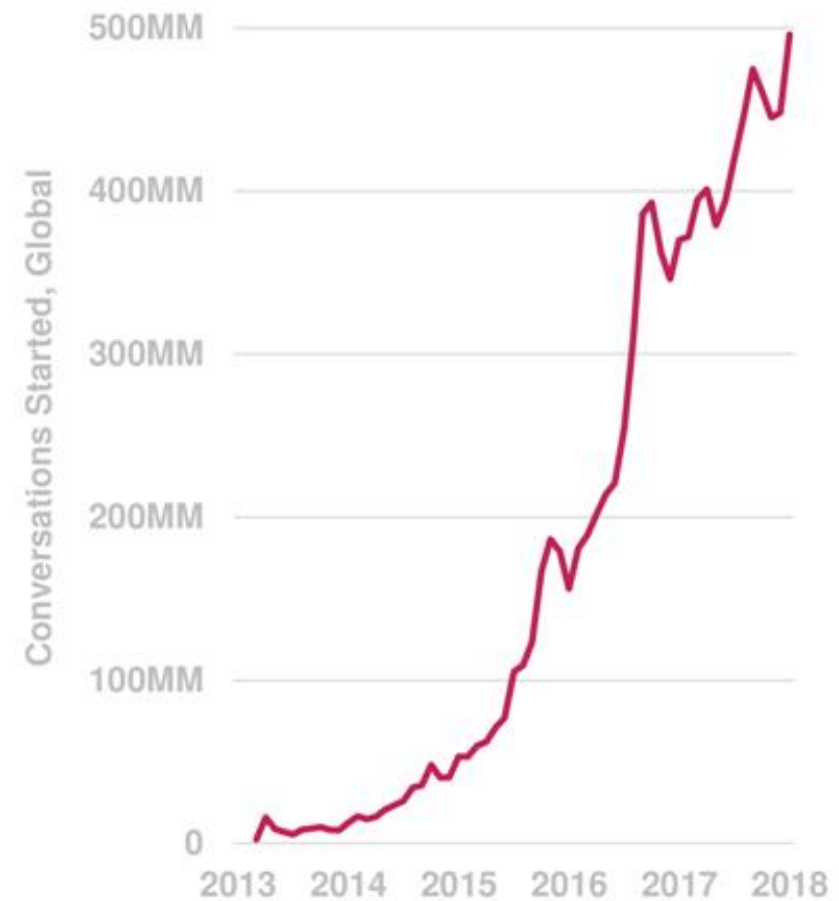
...Find Customers...

Criteo
Customer Targeting

Marketing Clients

KLEINER PERKINS
2018
INTERNET TRENDS

Source: Criteo (5/18). Note: Clients defined as active
clients @ relevant period end. (18K = 2017)

57
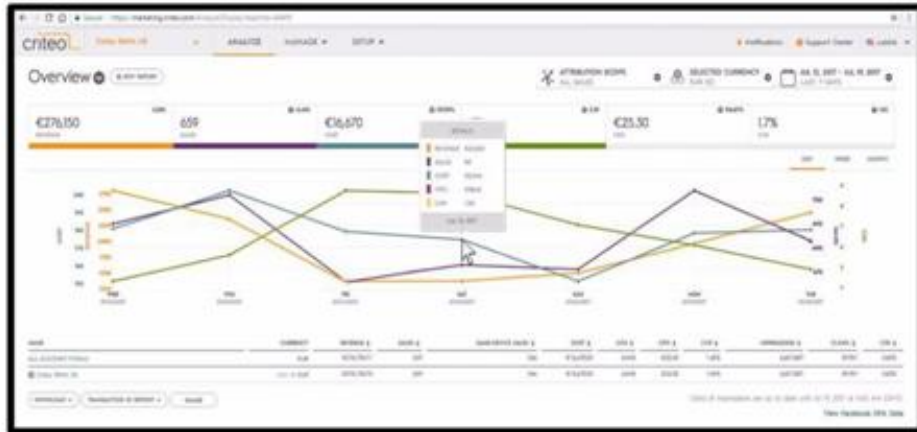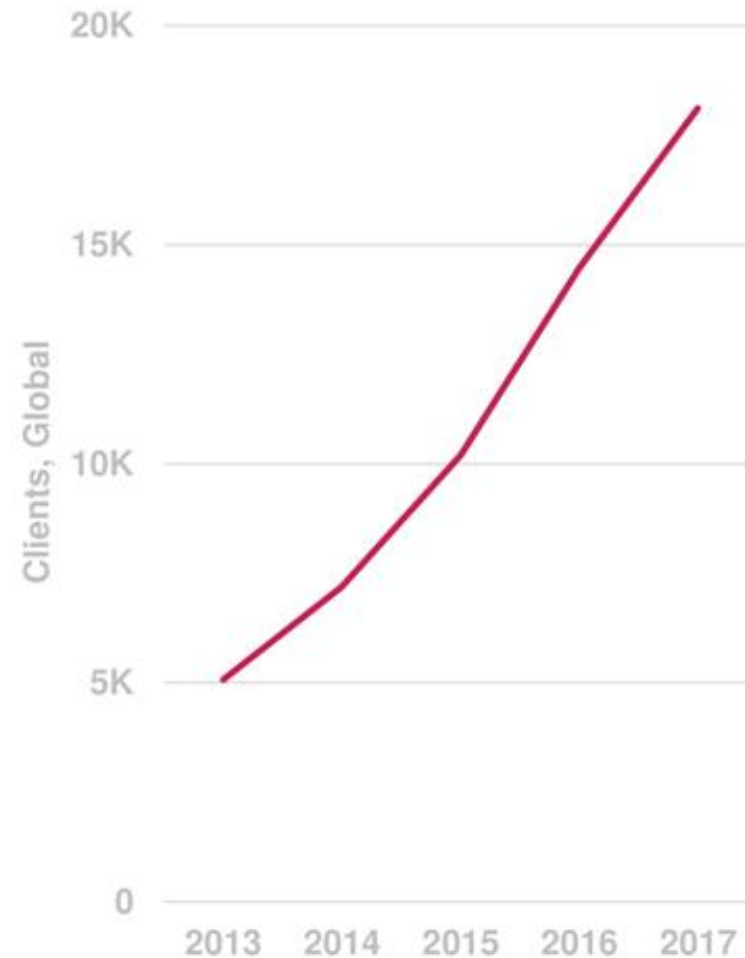
...Deliver Products to Customers

Product Delivery

Parcel Volume
UPS + FedEx + USPS*

USPS   **UPS**   **FedEx**

Source: UPS, FedEx, USPS, Caviar. *Combines USPS's domestic shipping &
package services volumes, FedEx's domestic package volumes, and UPS's
domestic package volumes. All figures are calendar year end except FedEx
which includes LTM figures ending November 30 due to offset fiscal year.

Payment

Online Store

Online Payment

Fraud Prevention

Purchase Financing

Customer Support

Finding Customers

Delivering Product

Shopify Storefront Exchange (Launched 6 / 17)

Online Product Finding Evolution =

Search Leads...

Discovery Emerging

Getting More...
Data Driven / Personalized / Competitive

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
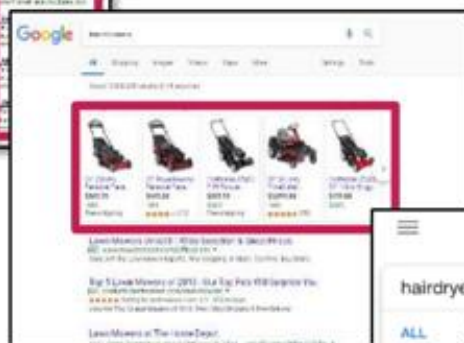
Product
Listing Ads
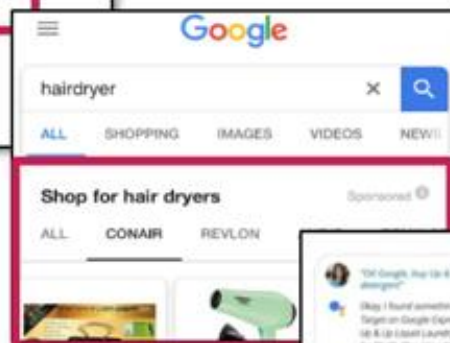
Shopping
Actions
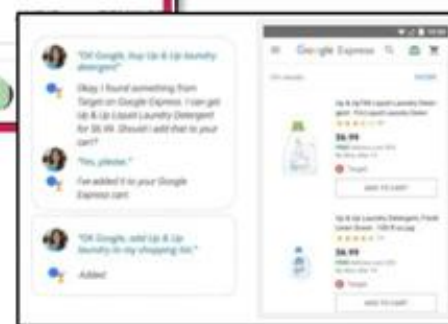
Online Product Finding Evolution =

Search Leads...

Discovery Emerging

Getting More...
Data Driven / Personalized / Competitive

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

Facebook
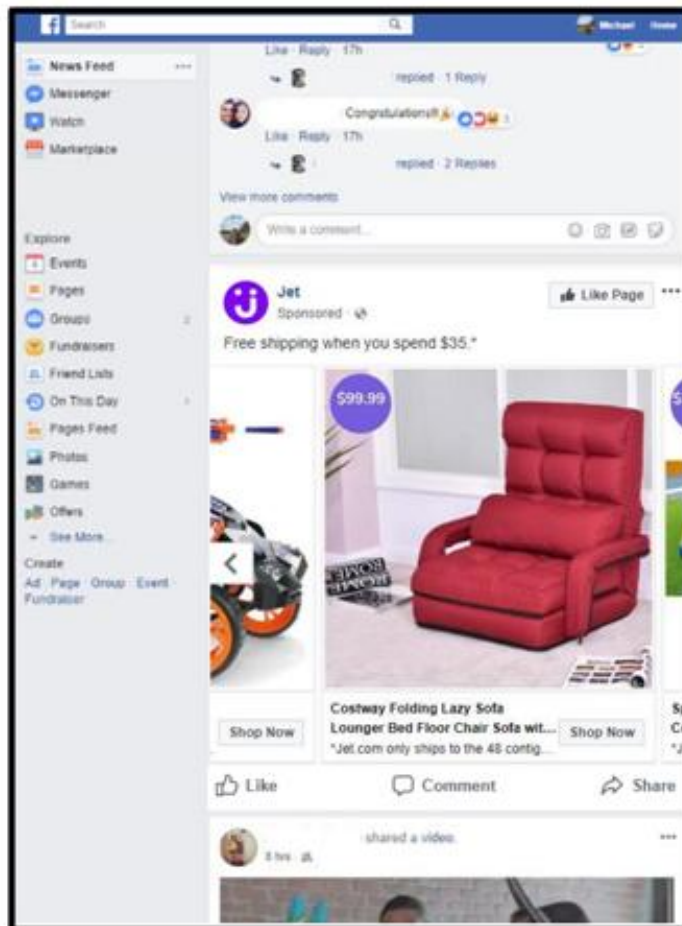
Instagram

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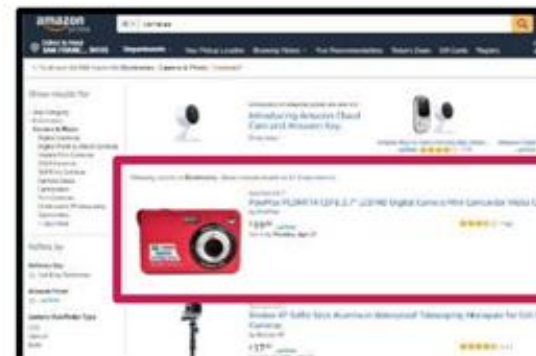
E-Commerce-Related Advertising Revenue = Rising @ Google + Amazon + Facebook

Google

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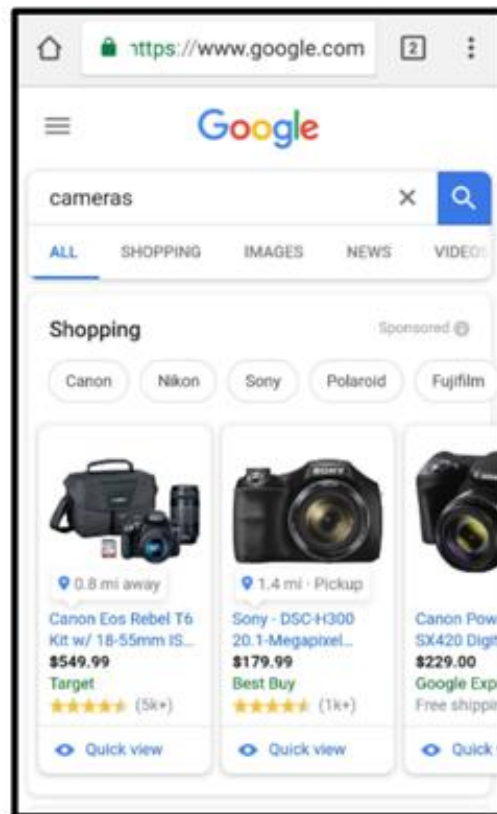
Amazon

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

Facebook

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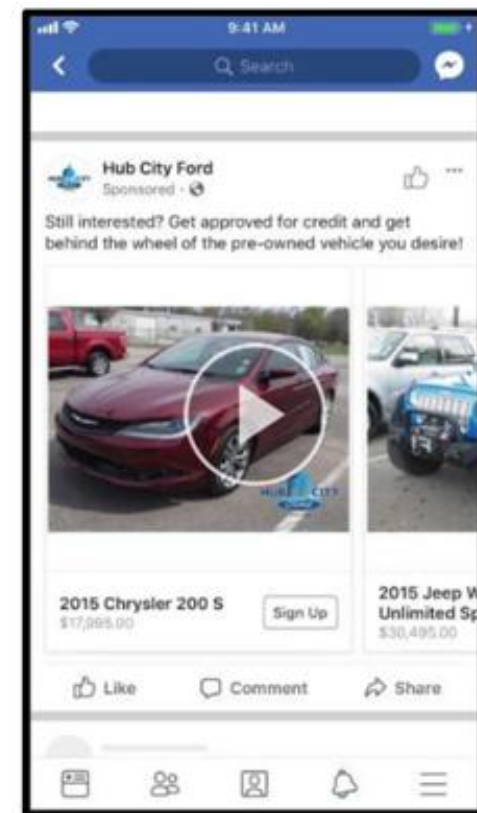
Social Media =

Enabling More Efficient
Product Discovery / Commerce

Social Media =
Driving Product Discovery + Purchases

Social Media Driving Product Discovery...

Facebook	78%
Instagram	59%
Pinterest	59%
Twitter	34%
Snap	22%

0%   50%   100%
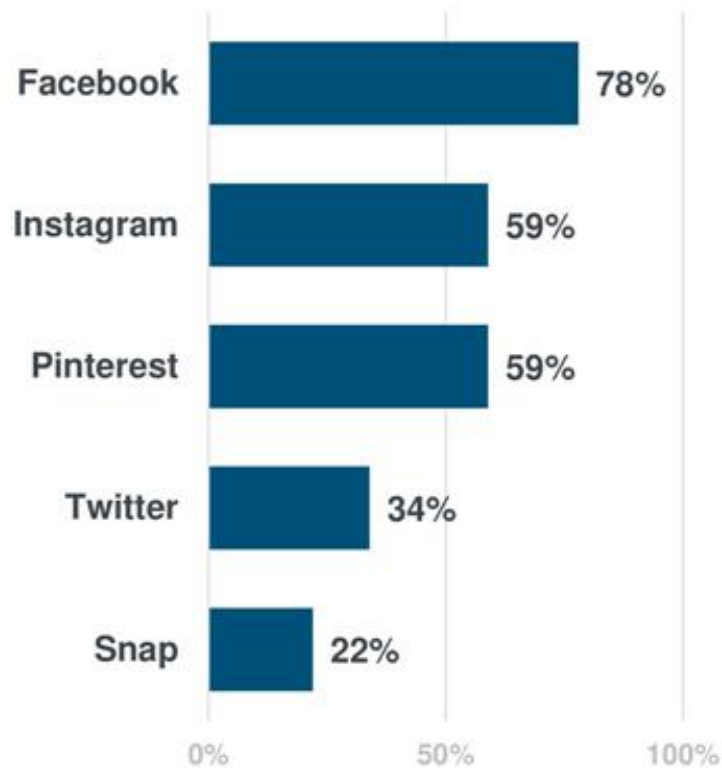
% of Respondents that Have Discovered
Products on Platform, USA (18-34 Years Old)

...Social Media Discovery Driving Purchases

45%   44%

11%

**55% = Bought
Product Online
After Social
Media Discovery**

■ Bought Online Later

■ Bought Online Immediately

■ Never Bought / Other
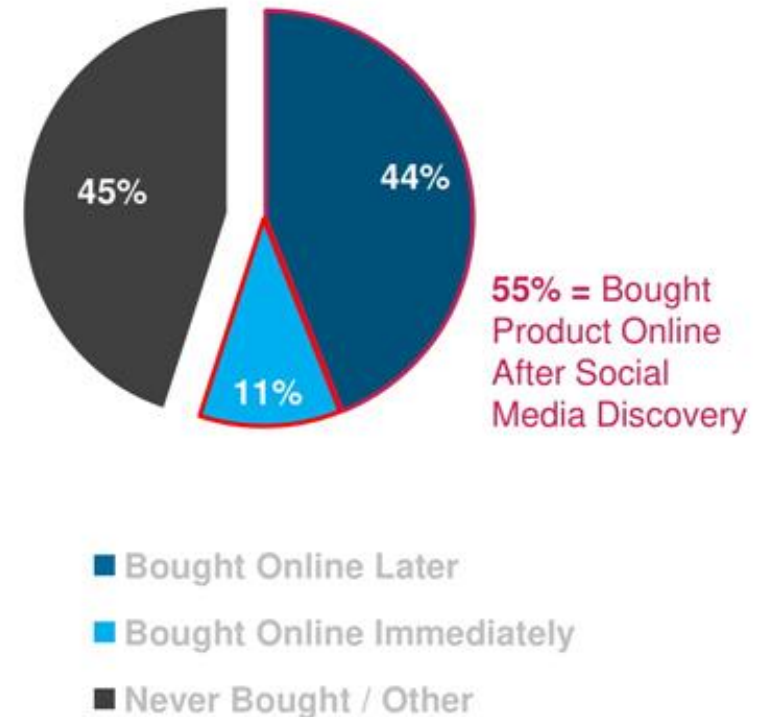
% of Respondents, USA (18-65 Years Old)

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

Social / Feed Referrals to E-Commerce Sites
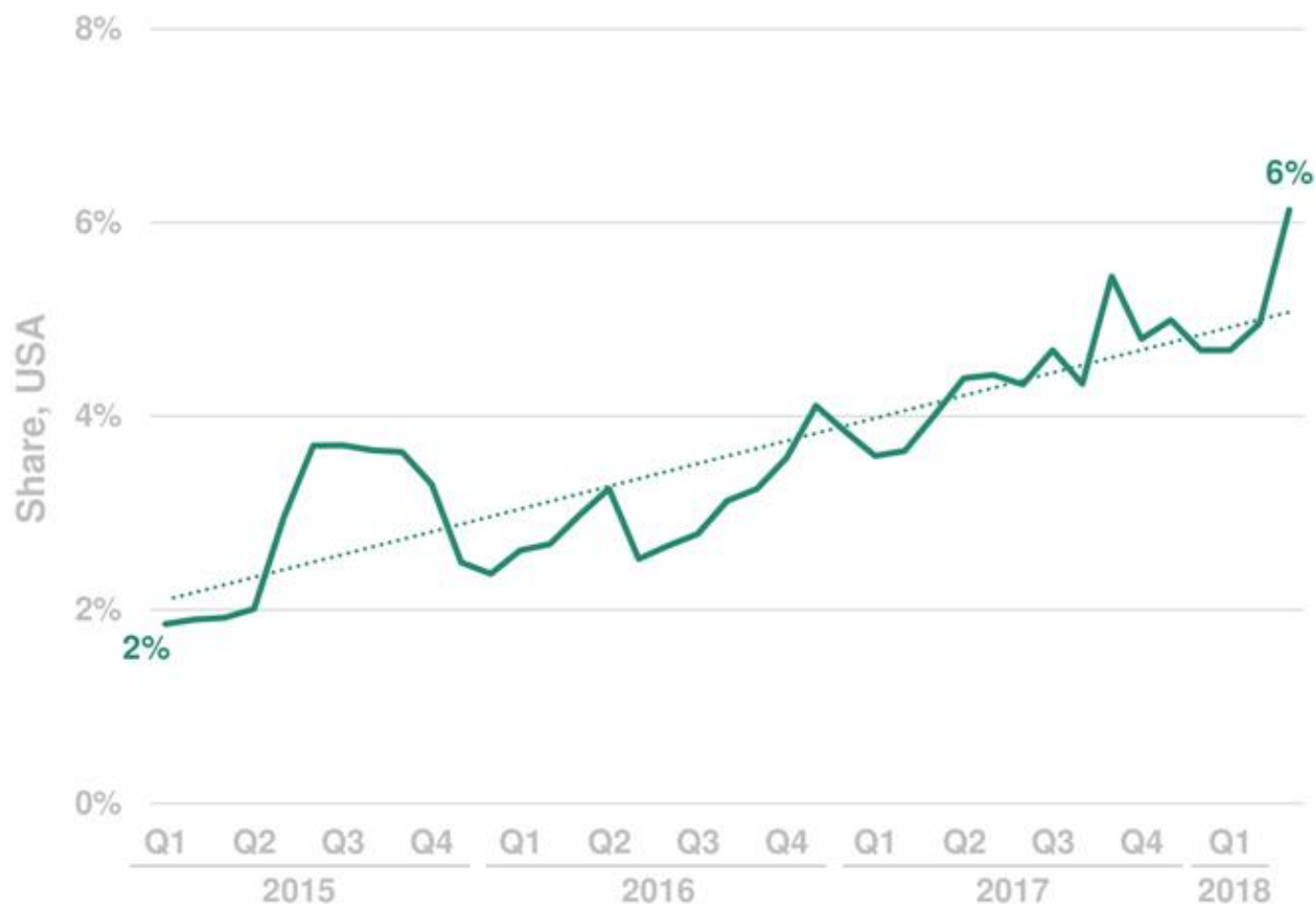
Social Media =
Helping Drive Growth for Emerging DTC Retailers / Brands

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

Annual Revenue, USA

$100MM
$80MM
$60MM
$40MM
$20MM
$0

0   1   2   3   4   5   6   7

Years Since Inception
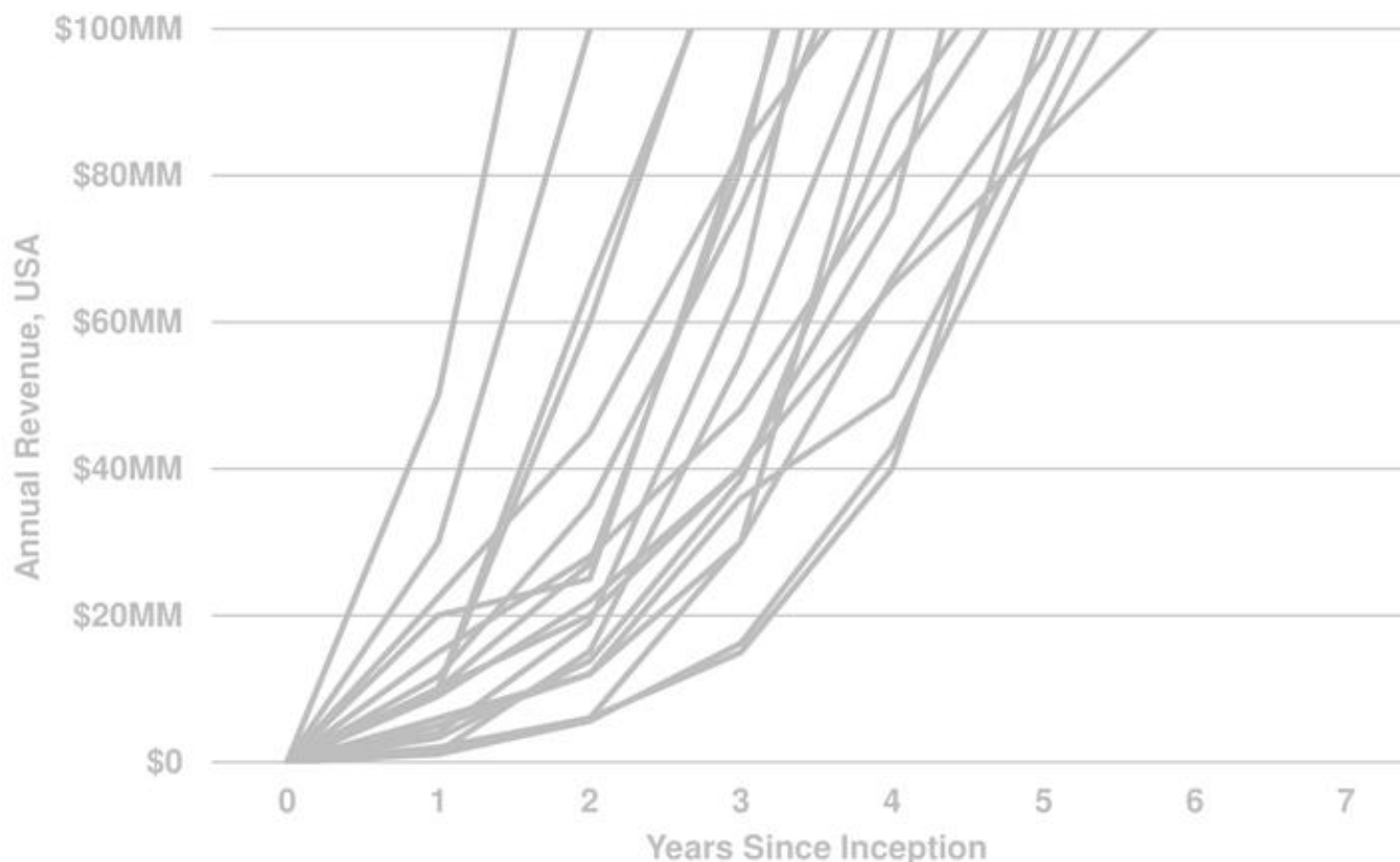
Social Media =
Ad Engagement Rising…Facebook E-Commerce CTRs Rising

Facebook E-Commerce CTRs (Click-Through Rates)

Source: Facebook, Nanigans Quarterly Facebook Benchmarking Data. Note: Click-Through Rate is defined as the percentage of people visiting a web page who access a hyperlink text from a particular advertisement. CTR figures based on $600MM+ of ad spend through Nannigan's platform.
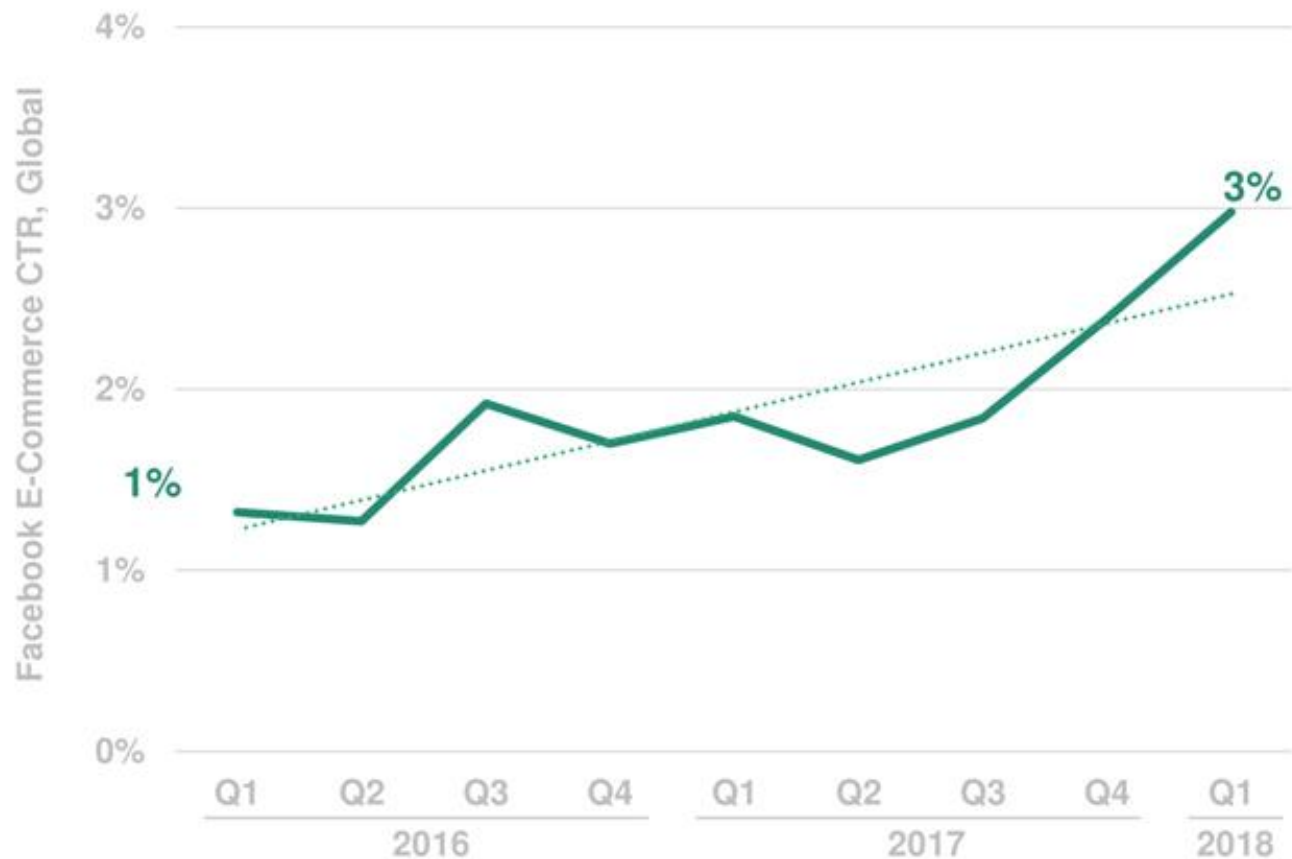
Return on Ad Spend =
Cost Rising @ Faster Rate than Reach

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
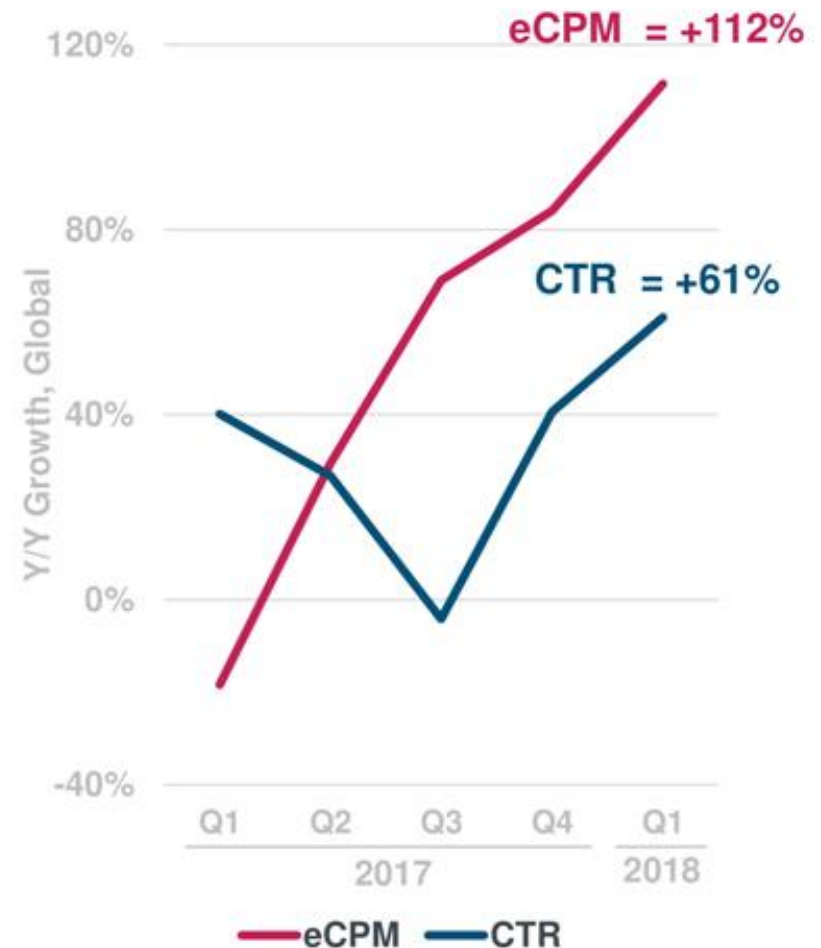
eCPM = +112%

CTR = +61%

120%

80%

40%

0%

-40%

Y/Y Growth, Global

Q1   Q2   Q3   Q4   Q1
      2017   2018

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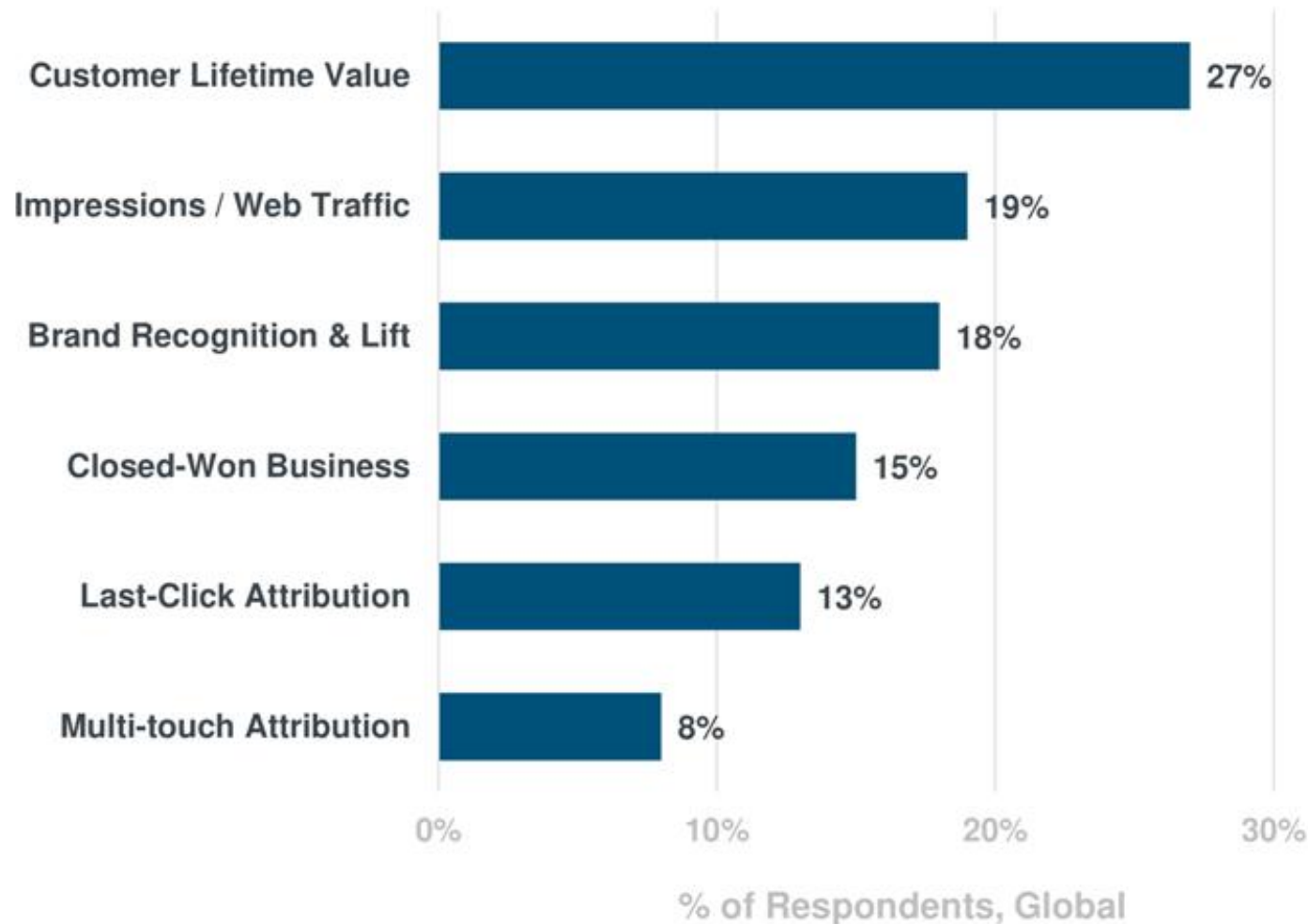
Lifetime Value / Customer Acquisition Cost (LTV / CAC) = Increasingly Important Metric for Retailers / Brands

Facebook Ad Analytics Tools LTV Integration

Data-Driven Personalization / Recommendations =

Early Innings @ Scale

Evolution of Commerce Drivers (1890s -> 2010s) = Demographic -> Brand -> Utility -> Data
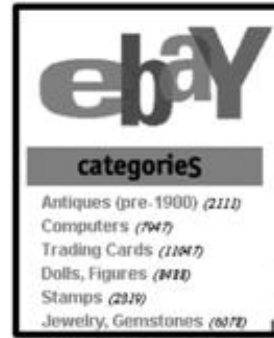
1890s - 1940s	1940s - 1990s	1990s - 2010s	2010s - …
Demographic	**Brand**	**Utility**	**Data**
Catalogs	Department Stores / Malls	E-Commerce – Transactional	**E-Commerce – Personalized**
Limited product selection + shopping moments	Rising product selection + shopping moments	Massive product selection + 24x7 shopping moments	Curated product discovery + 24x7 recommendations
• Sears Roebuck • Montgomery Ward	• Macy's • GAP • Nike	• Amazon • eBay	• Amazon • Facebook • Stitch Fix

Product Purchases =

Many Evolving from
Buying to Subscribing

Online Subscription Services Representative Companies		Subscribers 2017	Growth 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
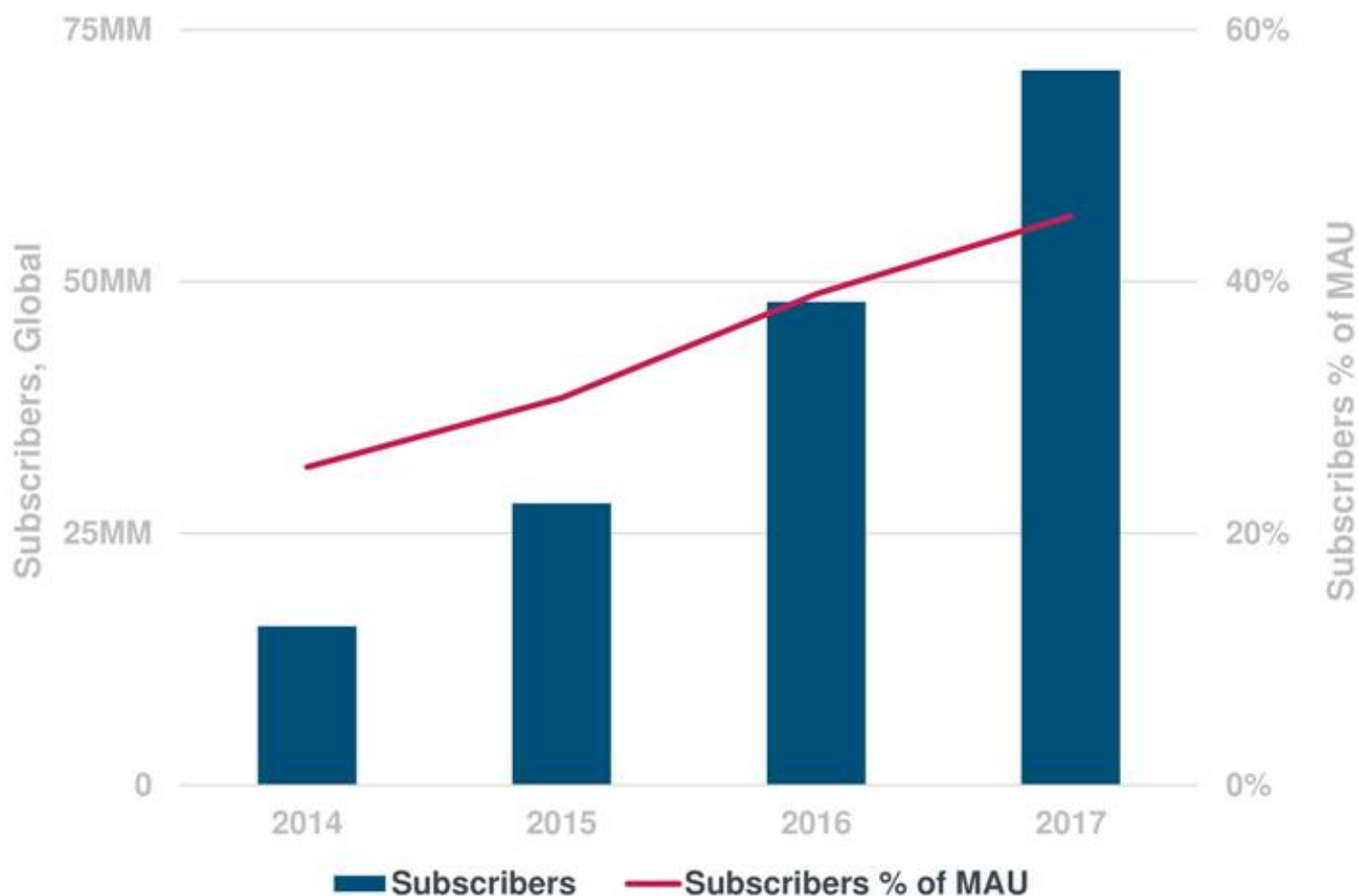
Shopping =

Entertainment...

Mobile Shopping Usage = Sessions Growing Fast

Mobile Shopping App Sessions – Growth Y/Y

Average = 6%

Category	Growth
Shopping	**54%**
Music / Media / Entertainment	43%
Business / Finance	33%
Utilities / Productivity	20%
News / Magazine	20%
Sports	-8%
Photography	-8%
Personalization	-8%
Games	-16%
Lifestyle	-40%

-60% -40% -20% 0% 20% 40% 60%

Session Growth Y/Y (Global, 2017 vs. 2016)

Source: Flurry Analytics State of Mobile 2017 (1/18). Note: n = 1MM applications across 2.6B devices globally. Sessions defined as when a user opens an app.

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

YouTube

Many USA Consumers View YouTube
Before Purchasing Products
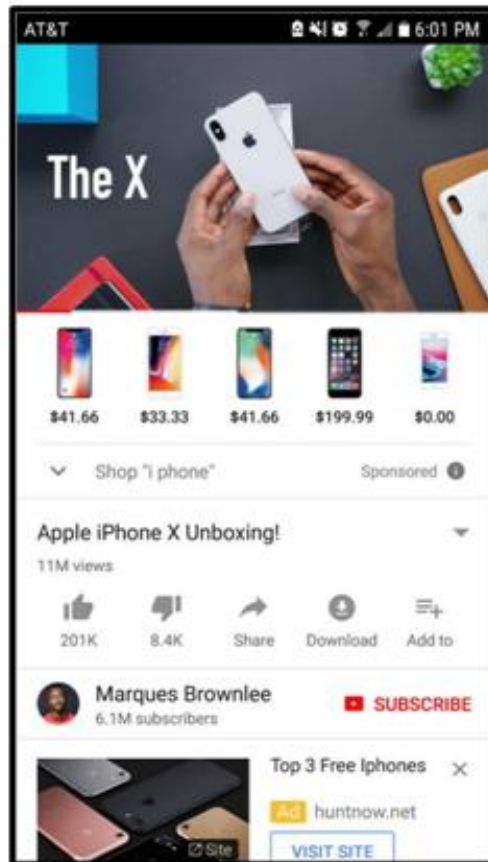
Taobao

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

Volume — Growth Y/Y

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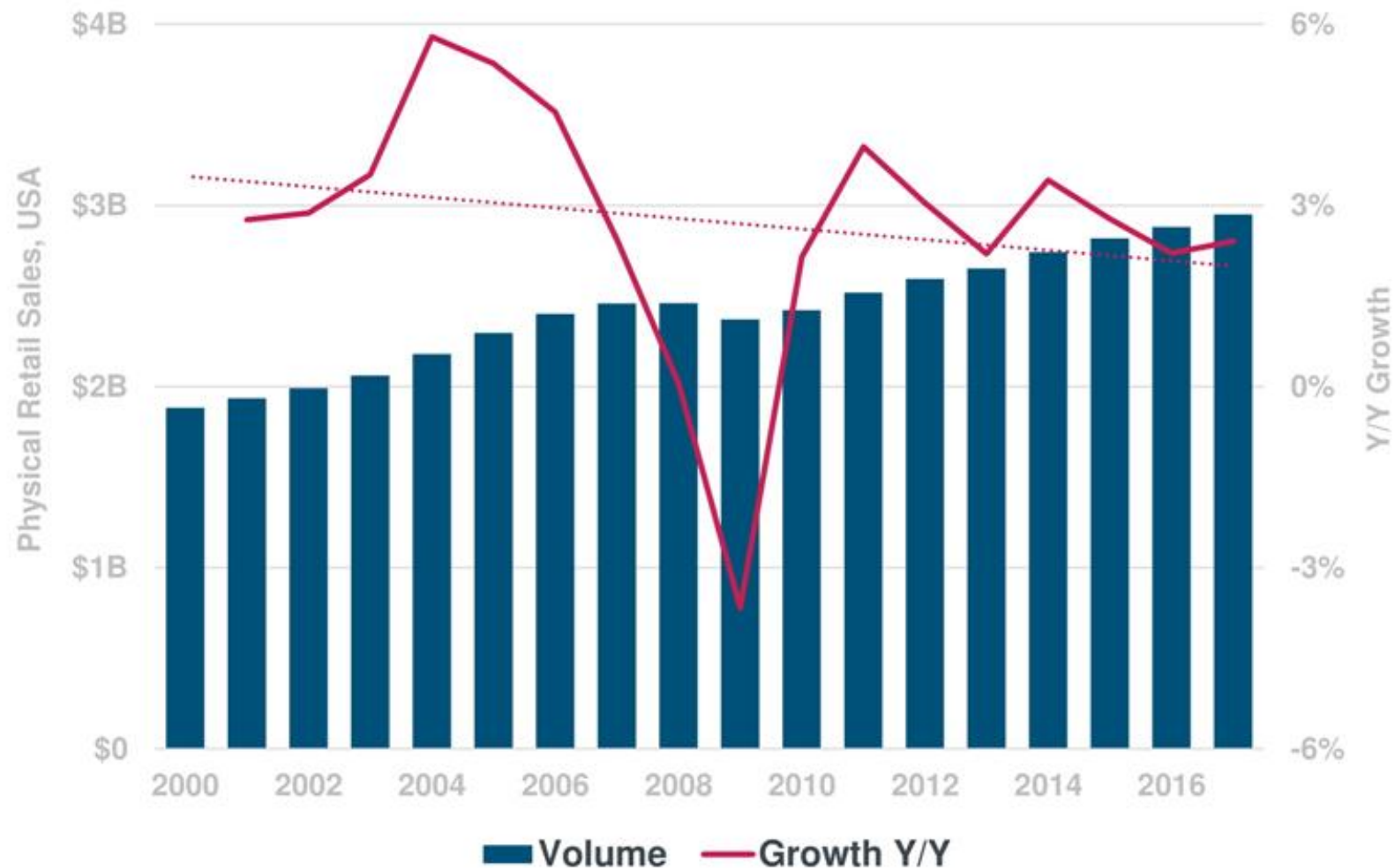
'New Retail' =

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**

Alibaba	Category	Amazon
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)

…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'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 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
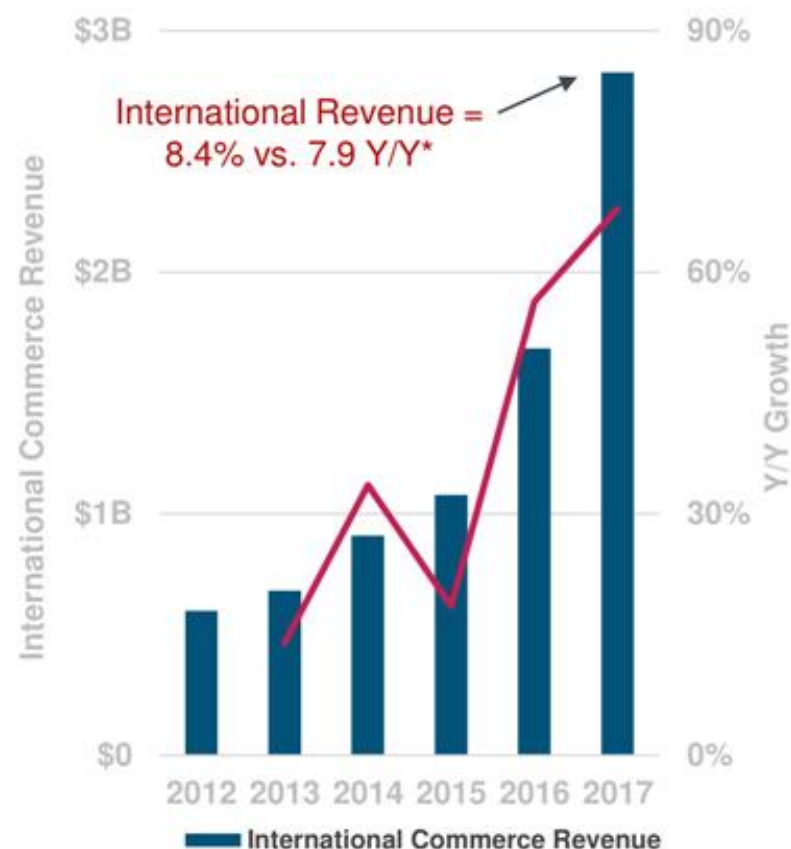
International Revenue =
8.4% vs. 7.9 Y/Y*

International Commerce Revenue

Y/Y Growth

$3B — 90%
$2B — 60%
$1B — 30%
$0 — 0%

2012 2013 2014 2015 2016 2017

■ International Commerce Revenue

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

Internet Advertising Spend
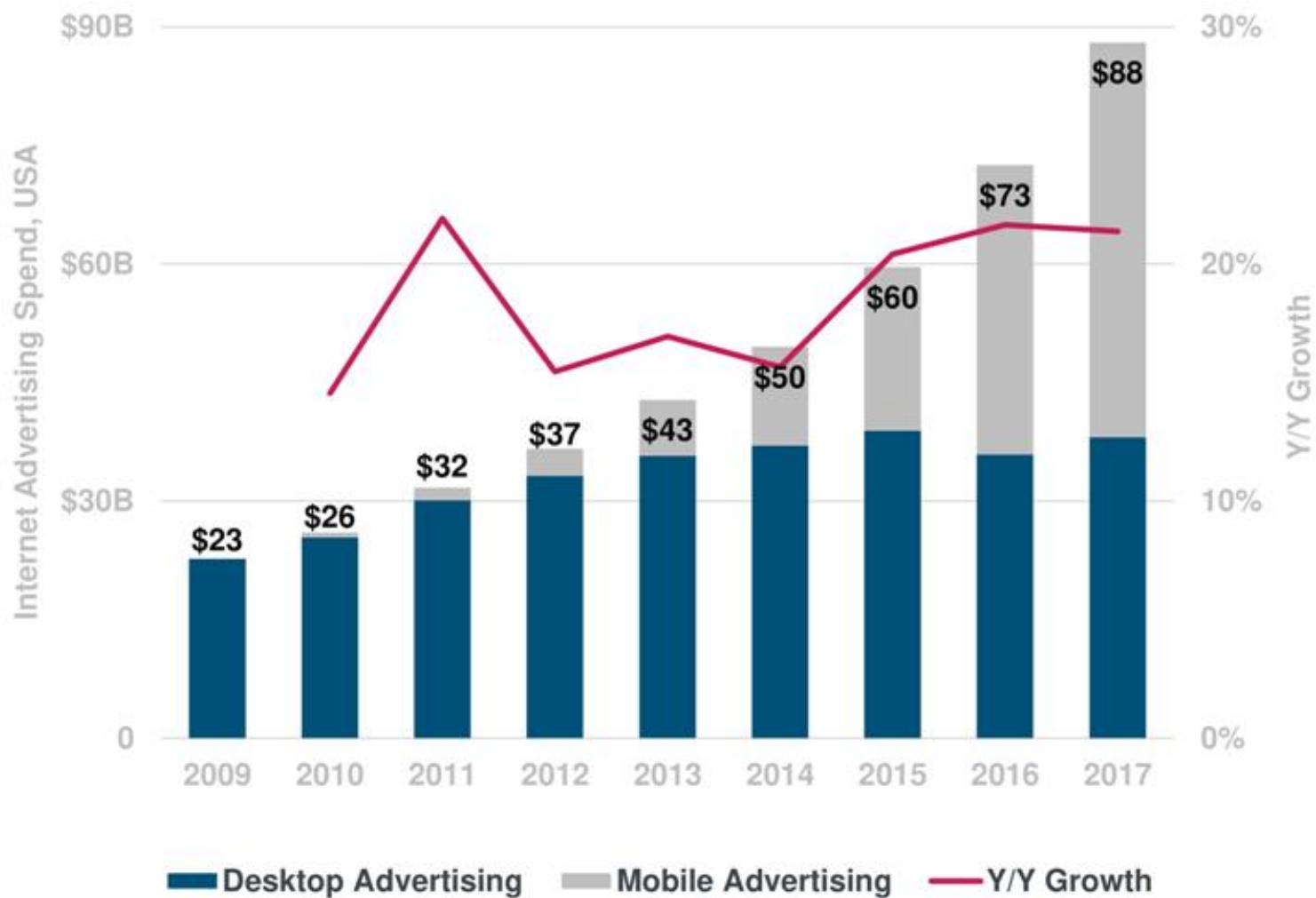
Advertisers / Users vs. Content Platforms = Accountability Rising...

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

KLEINER PERKINS
2018
INTERNET TRENDS

Source: Federal Reserve Bank of New York Consumer Credit Panel / Equifax, Quarterly Household Debt and Credit Report, Q4:17; St. Louis Federal Reserve FRED Database.

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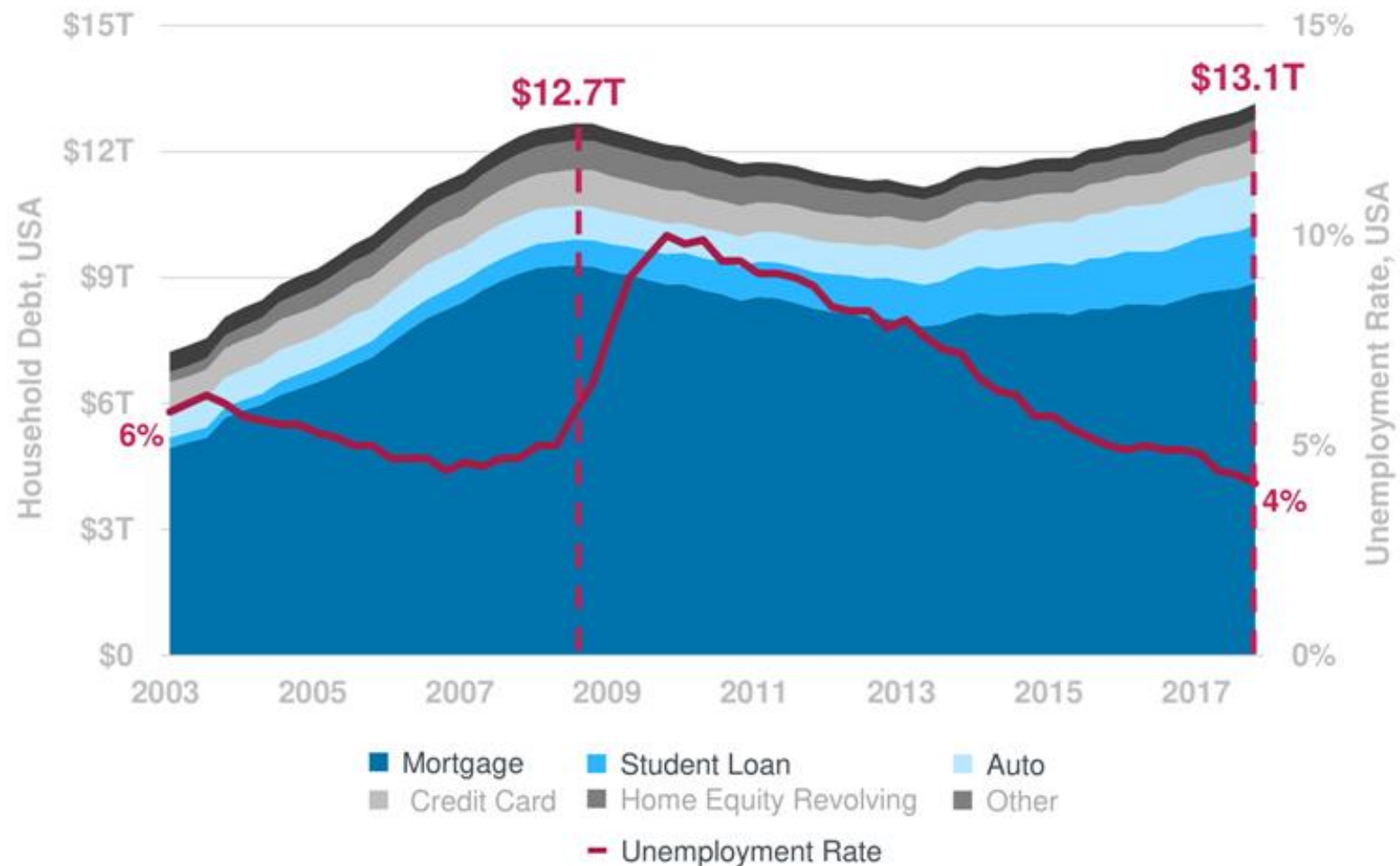
Personal Saving Rate = Falling @ 3% vs. 12% Fifty Years Ago…
Debt-to-Annual-Income Ratio = Rising @ 22% vs. 15%

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

Annual Spend, USA

Shelter: 12% (1972), 15% (1990), 17% (2017)

Pensions* + Insurance: 7% (1972), 8% (1990), 10% (2017)

Healthcare: 5% (1972), 5% (1990), 7% (2017)

Categories: Shelter, Taxes, Transportation, Food, Household Operations, Pensions* + Insurance, Healthcare, Entertainment, Apparel, Other**

	1972	1990	2017
Total Expenditure	$11K	$31K	$68K

105
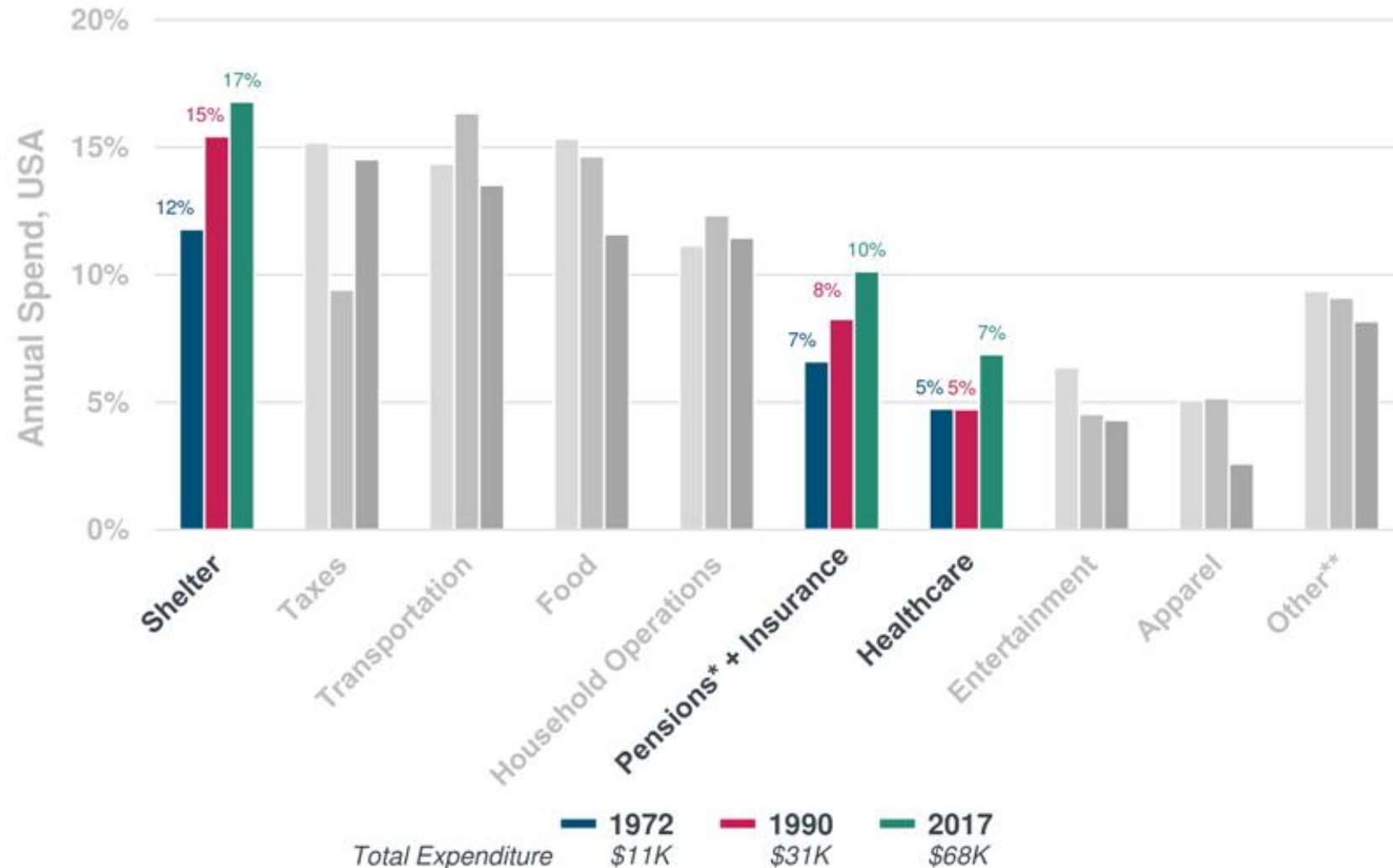
...Relative Household Spending *Falling* Over Time = Food + Entertainment + Apparel

Relative Household Spending
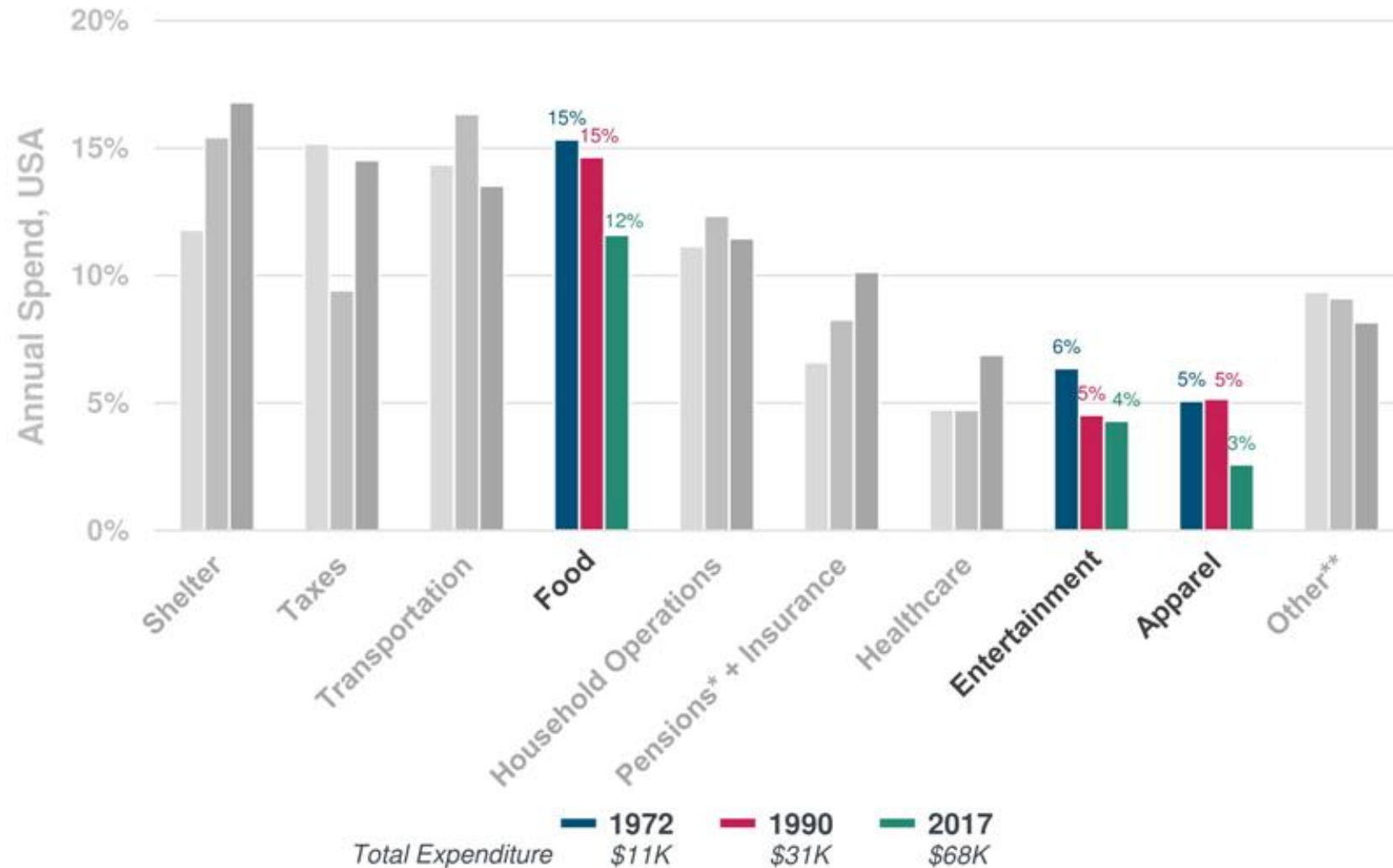
Food =

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
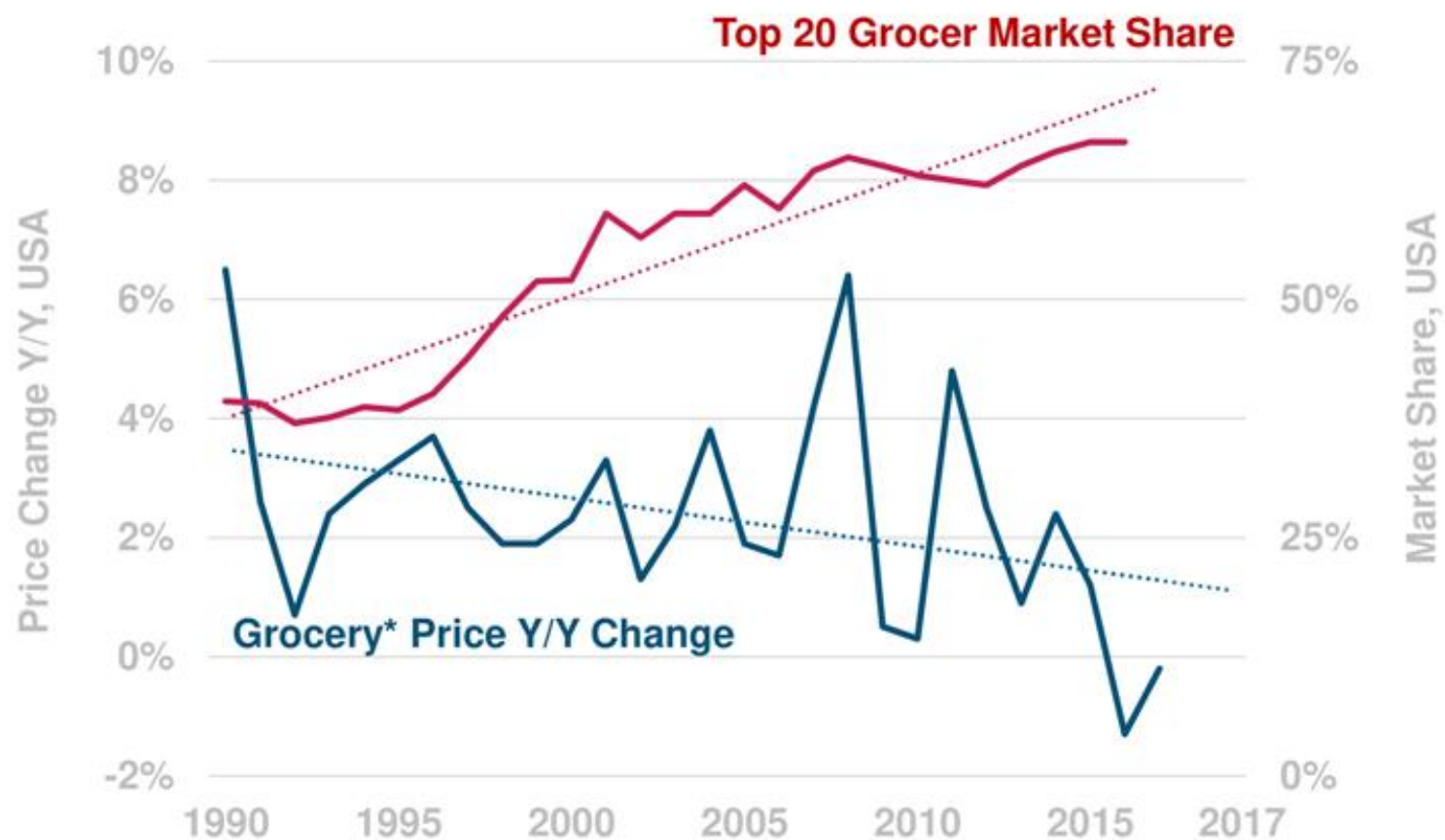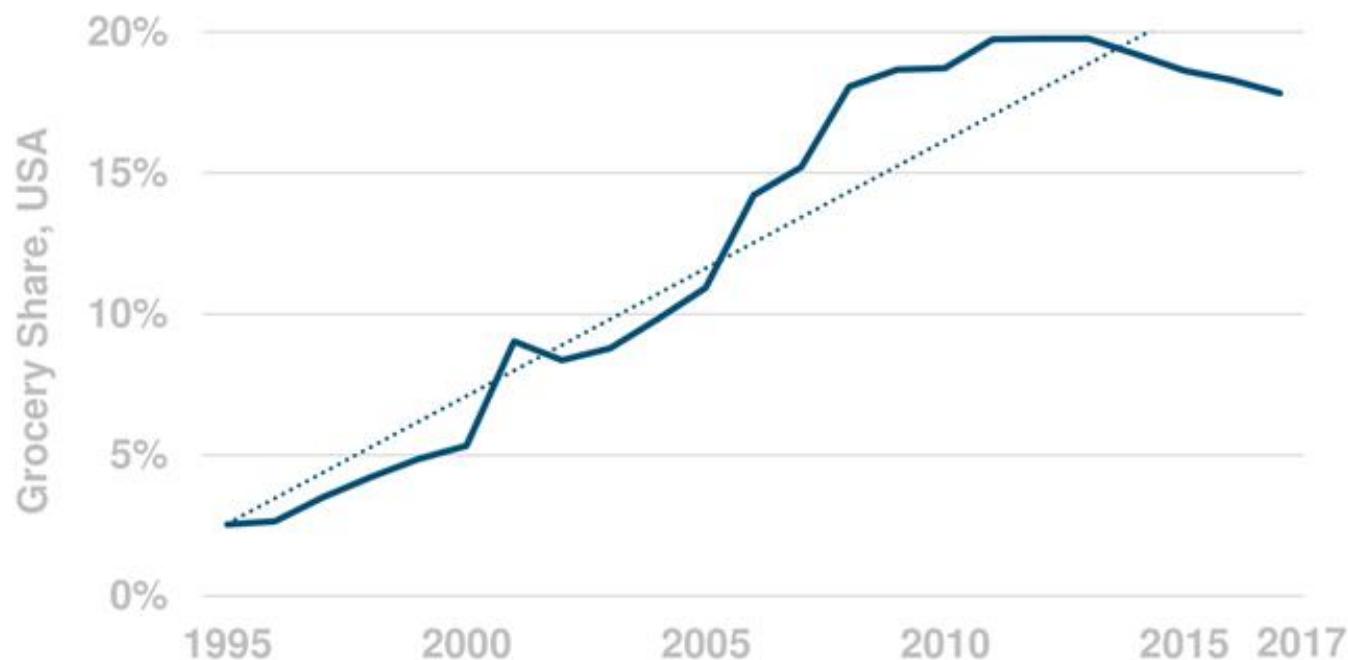
E-Commerce =

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

Offline = -1%

Online = -3%

Prices (Indexed to 1/1/16), USA

— Online Retail (DPI) — Offline Retail

...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

DPI vs. CPI Difference (%)	Toys	Pet Products	Auto Parts	Medical Equipment	Personal Care Products	Home Improvement + Tools	Drugs - Nonprescription	Grocery	Appliances	Apparel	Sporting Goods	Computers	Furniture	Televisions
	5%	1%	1%	0%	0%	0%	0%	-1%	-1%	-1%	-2%	-2%	-3%	-4%

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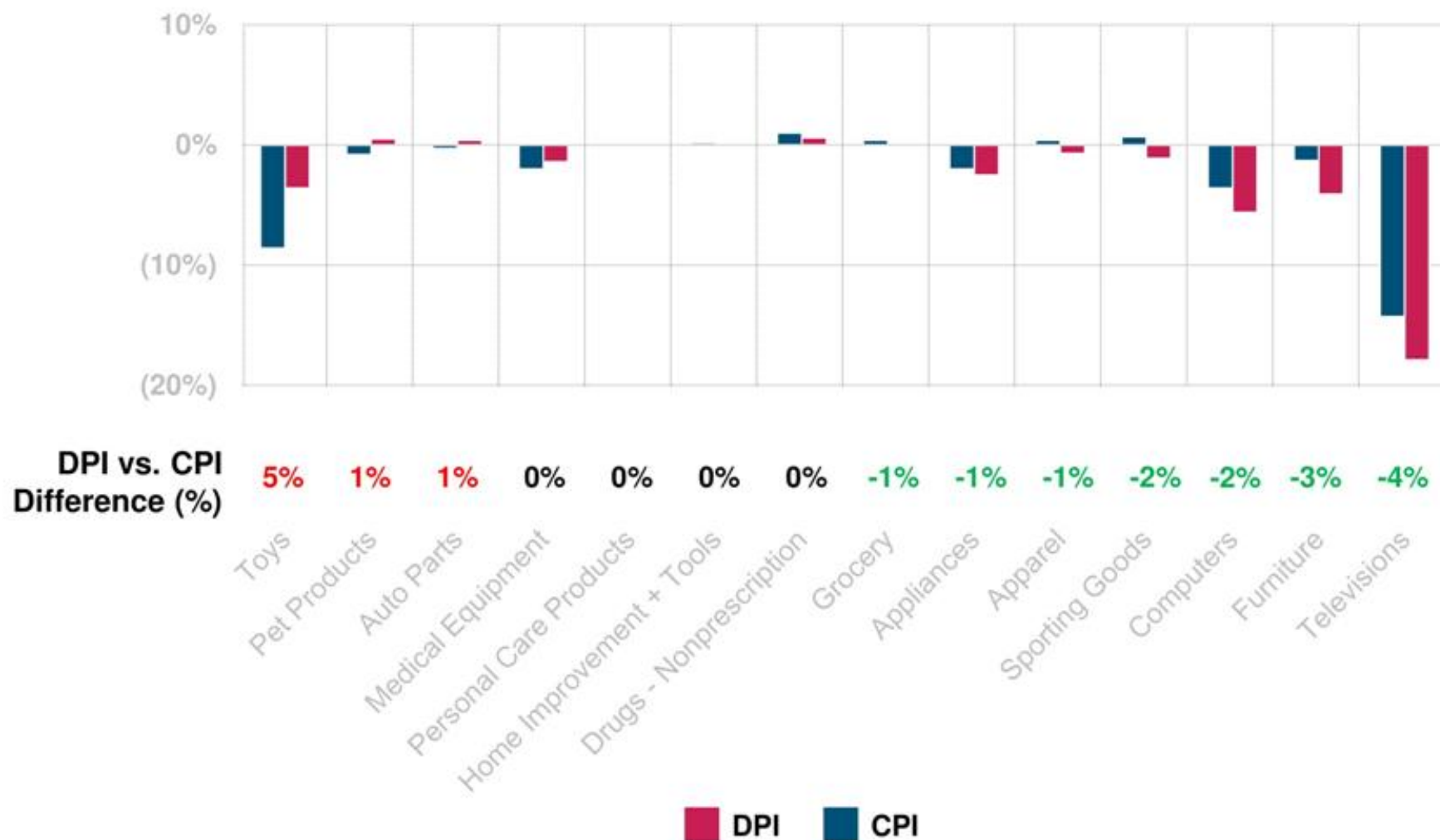
**We've seen how technology can make
online shopping more efficient, with lower prices,
more selection & increased convenience.**

*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
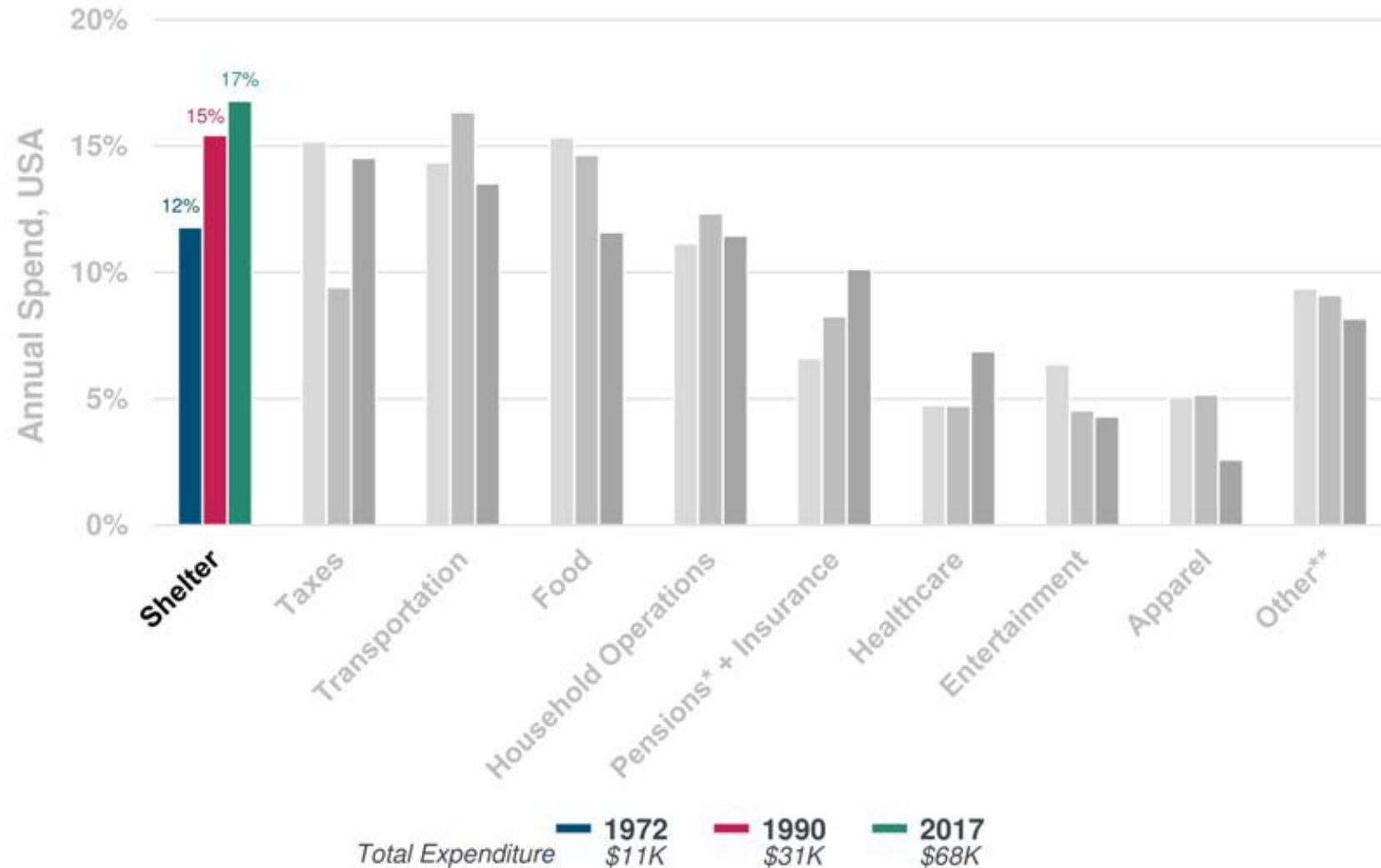
Annual Spend, USA

20%

15%

10%

5%

0%

17%
15%
12%

Shelter · Taxes · Transportation · Food · Household Operations · Pensions* + Insurance · Healthcare · Entertainment · Apparel · Other**

	1972	1990	2017
Total Expenditure	$11K	$31K	$68K

Source: USA Bureau of Labor Statistics (BLS), Consumer Expenditure Survey, *Pensions + Insurance includes deductions for private retirement accounts, social security, and life insurance. **Other includes education and miscellaneous other expenses. Note: Results based on Surveys of American Urban & Rural Households (Families & Single Consumers). 1972 data reflects non-annual survey conducted by BLS + Census Bureau to adjust CPI. 1990 and 2017 Data Based on Annual Survey performed by BLS + Census Bureau. Healthcare costs include insurance, drugs, out-of-pocket medical expenses, etc. 2017 = mid-year figures.

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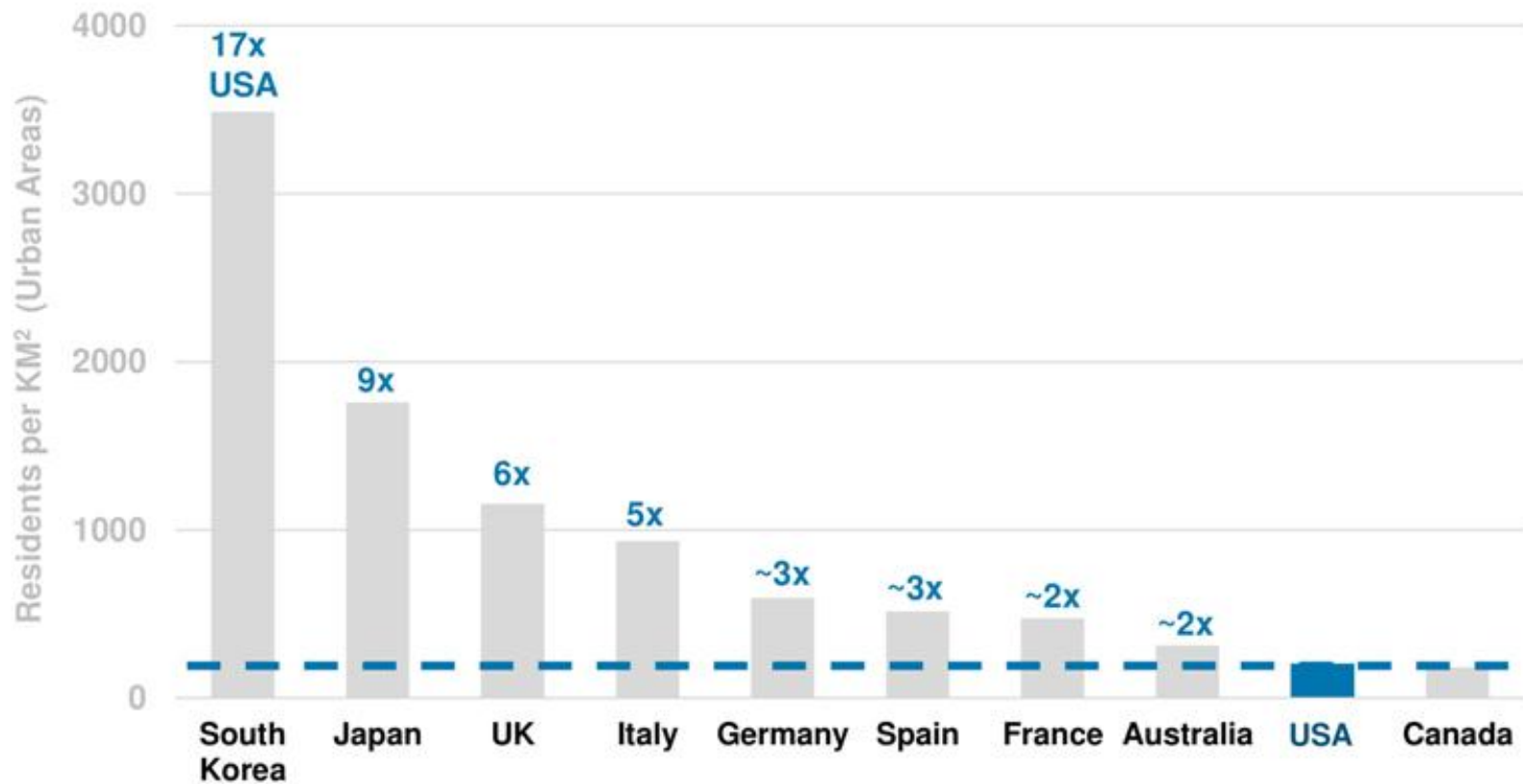
...USA Homes =
Getting Bigger...Residents Falling @ 2.5 vs. 3.0 (1972)

Average New Home Square Footage & Residents

Source: USA Census Bureau (6/17). Note: Data reflects newly built housing stock. Single Family homes includes newly built single family homes. Similar growth trends are seen across all housing units, as single-family homes are the majority of new USA housing stock. Average size of multifamily new dwelling in USA = 1,095 square feet in 1999 (earliest data available), 1,207 square feet in 2016. Residents per household based on all households.

USA Office Space =
Steadily Getting Denser / More Efficient

Occupied Office Space per Employee – Square Feet

Source: CoStart Portfolio strategy Analysis of USA Leased office space & USA Employment Figures (2017).
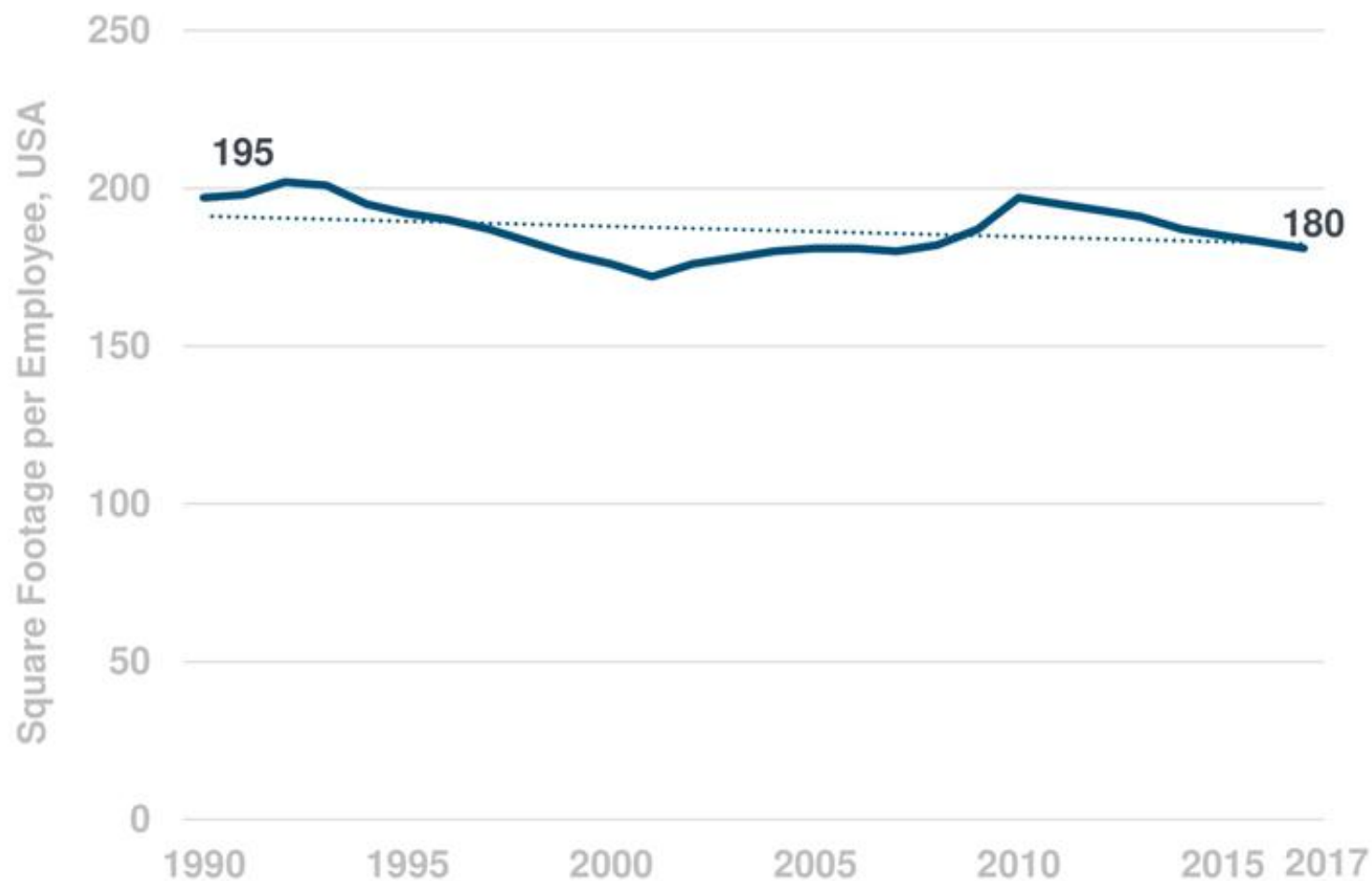
...Shelter...

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
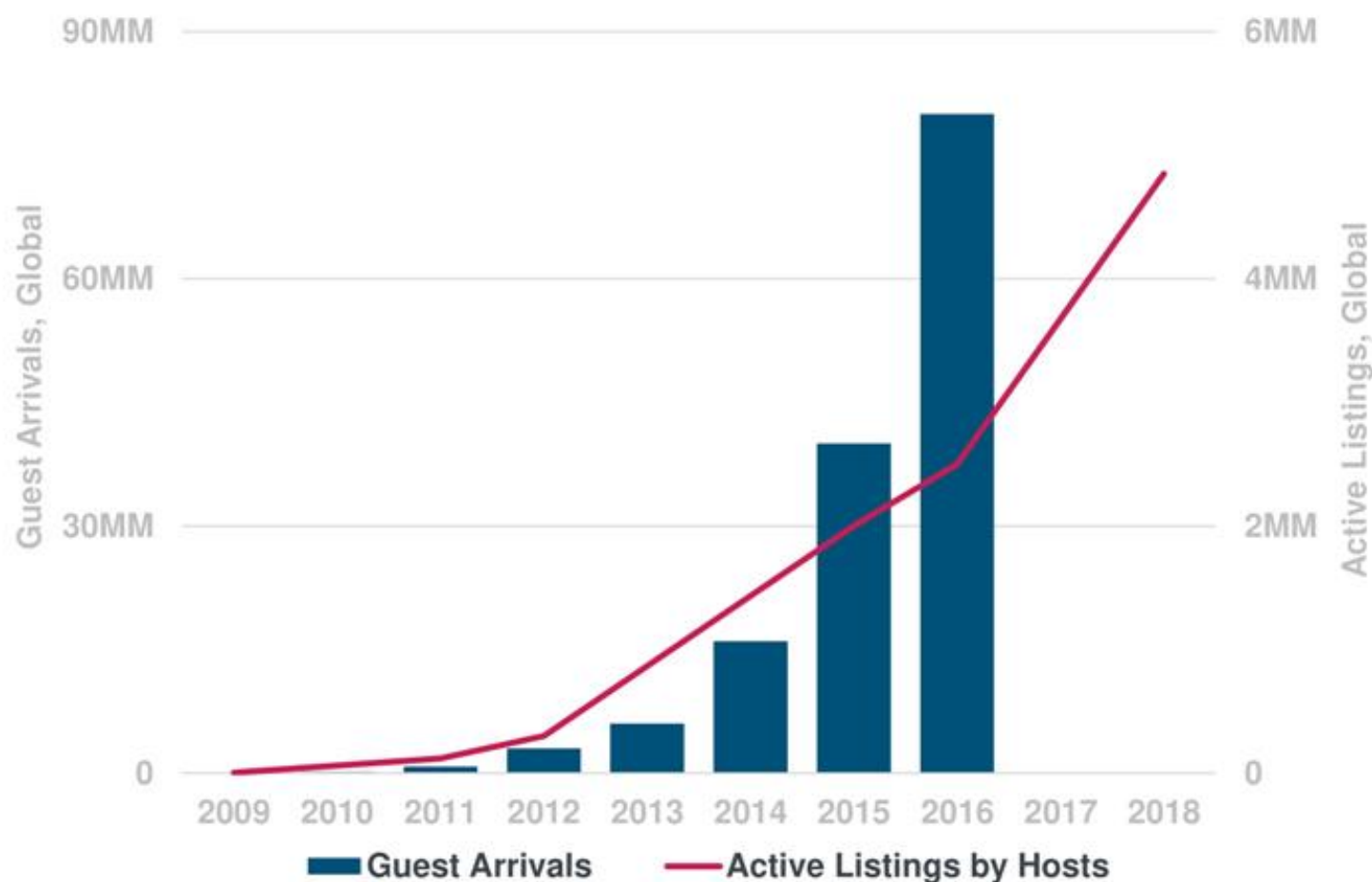
Guest Arrivals — Active Listings by Hosts

Relative Household Spending = How Might it Evolve?

Shelter Spend = Rising

Transportation Spend = Flat

Healthcare Spend = Rising

Relative Household Spending

| Total Expenditure | 1972 $11K | 1990 $31K | 2017 $68K |

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
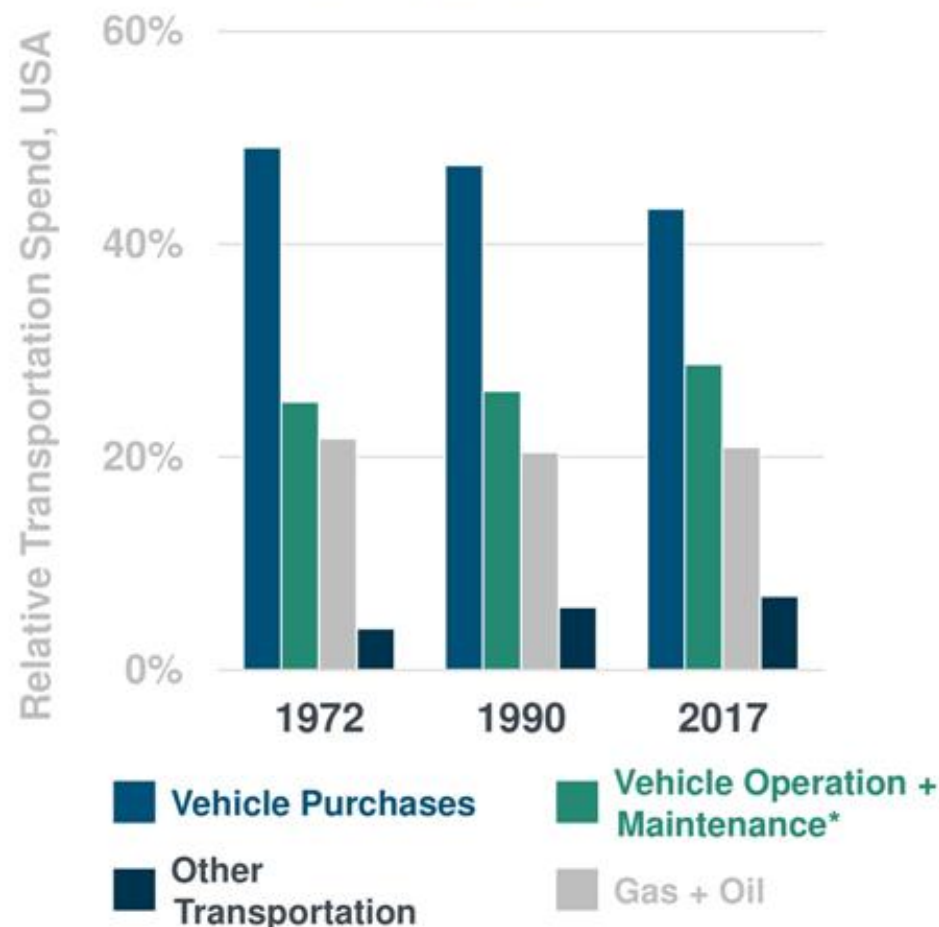
Relative Transportation Spend, USA

- 60%
- 40%
- 20%
- 0%

1972   1990   2017

■ Vehicle Purchases   ■ Vehicle Operation + Maintenance*

■ Other Transportation   ■ Gas + Oil
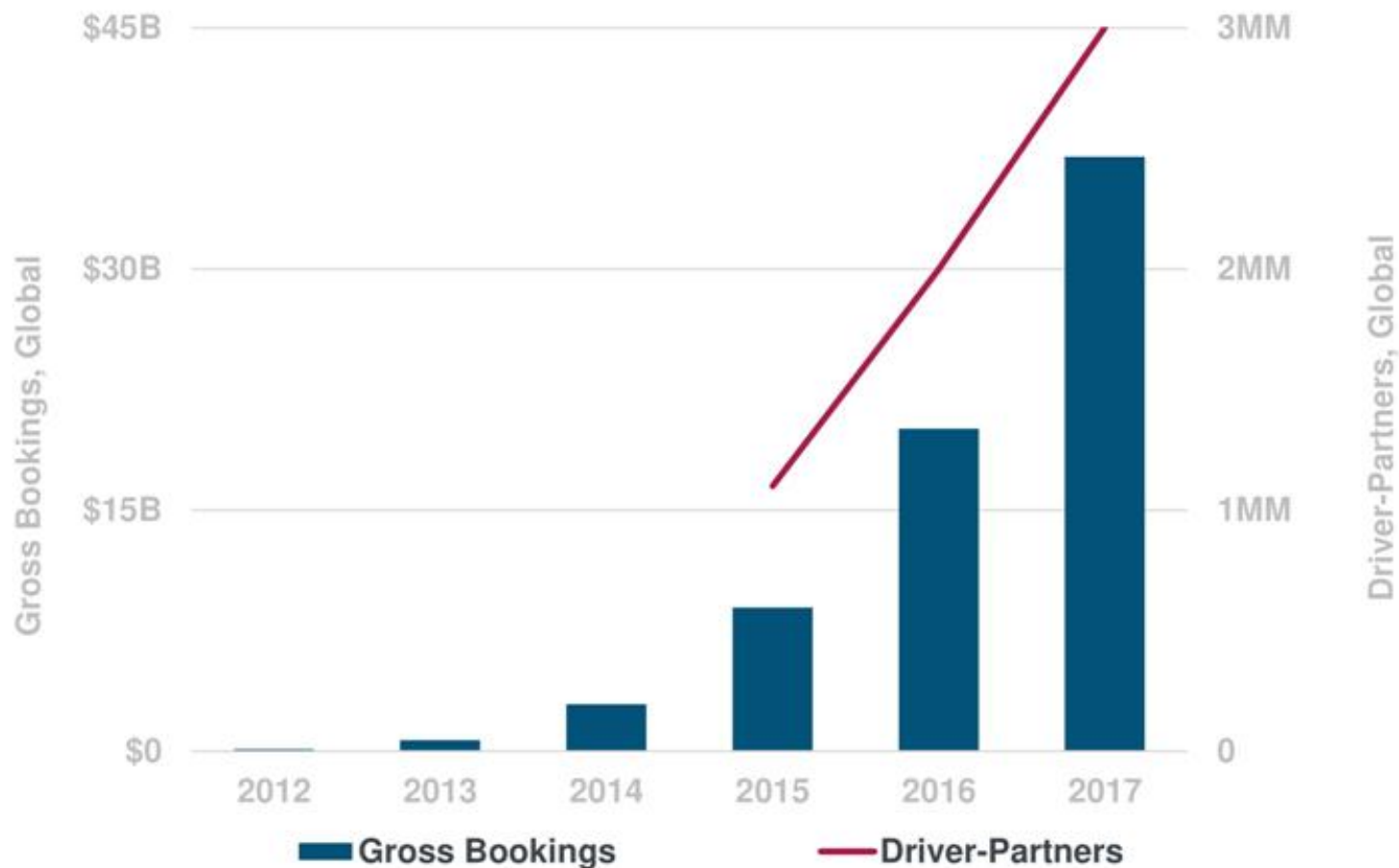
...Uber Consumer Benefits =
Lower Commute Cost vs. Personal Cars – 4 of 5 Largest USA Cities

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

New York City: Personal Car $218, Uber $142
Chicago: Personal Car $116, Uber $77
Washington D.C.: Personal Car $130, Uber $96
Los Angeles: Personal Car $89, Uber $62
Dallas: Personal Car $65, Uber $181

■ Personal Car ■ Uber

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

Total Expenditure

1972 $11K   **1990** $31K   **2017** $68K
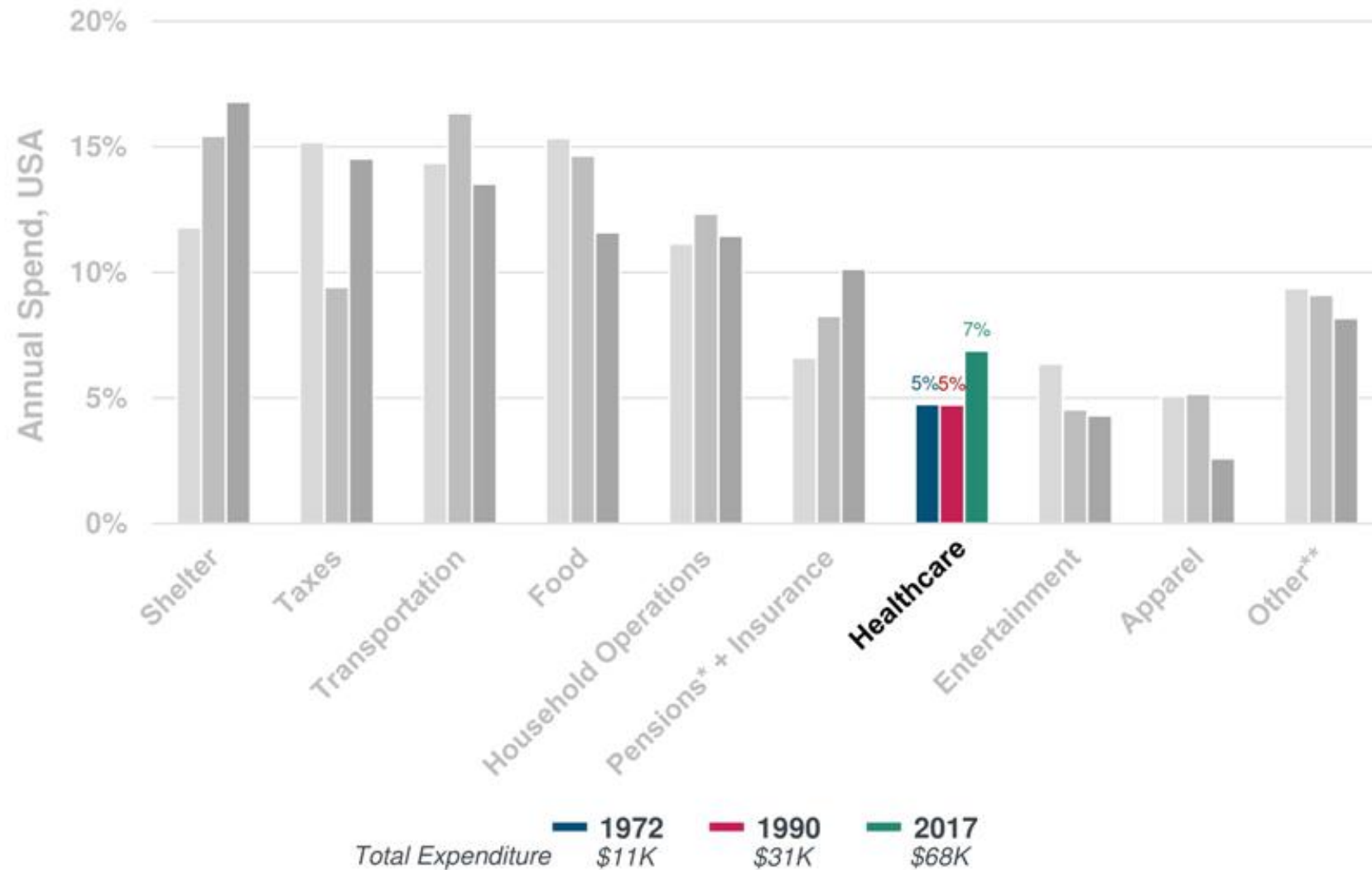
Healthcare Spending =

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

KLEINER PERKINS
2018
INTERNET TRENDS

Source: Kaiser Family Foundation Employer Health Benefits Survey (9/17). Note: n = 2,000 private, non-federal businesses with at least 3 employees. Employers are asked for full person costs of healthcare coverage and the employee contribution.

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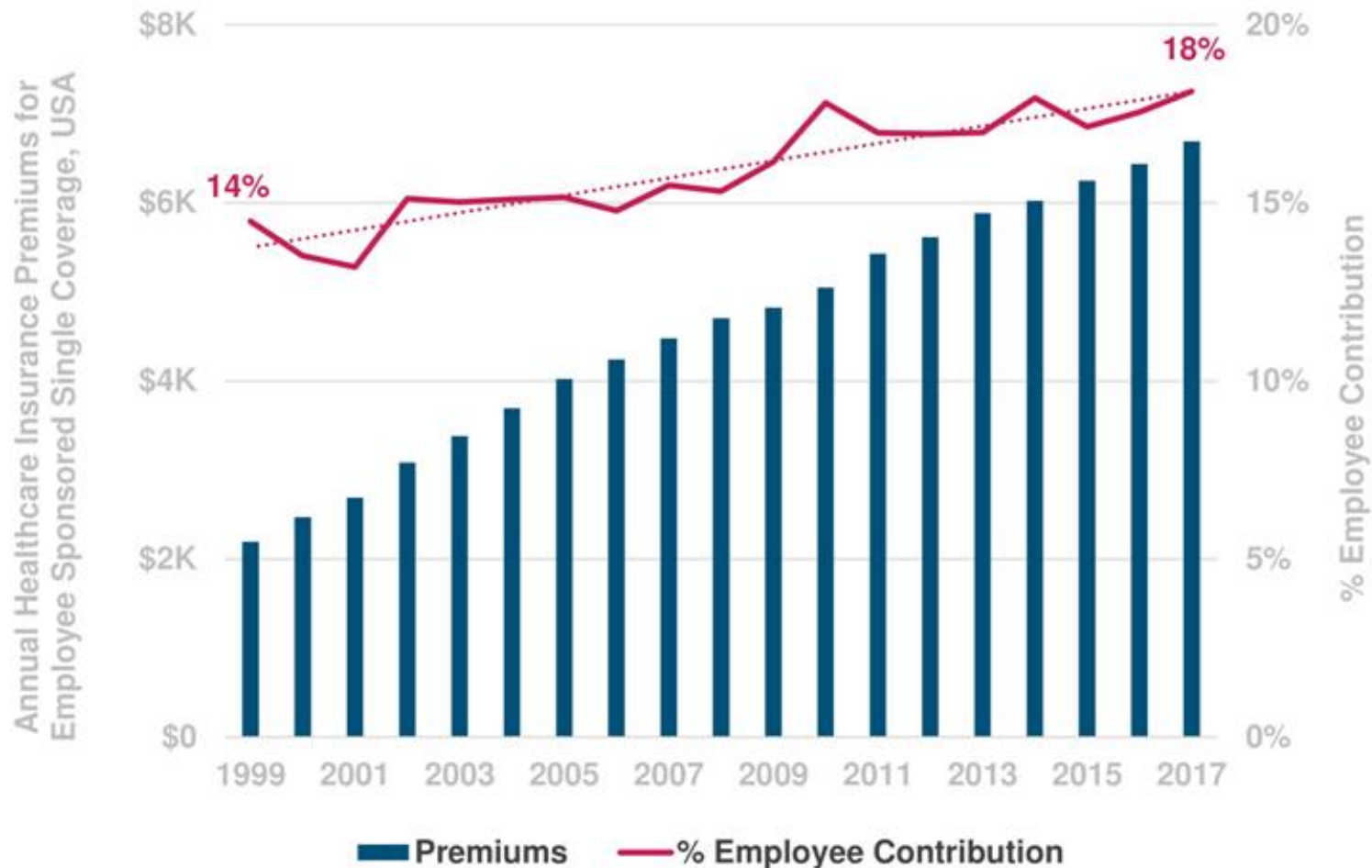
...USA Healthcare Deductible Costs = Rising A Lot...
Employees @ >$2K Deductible = 22% vs. 7% (2009)

Annual Deductibles vs. % of Covered Employees with >$2K Deductibles
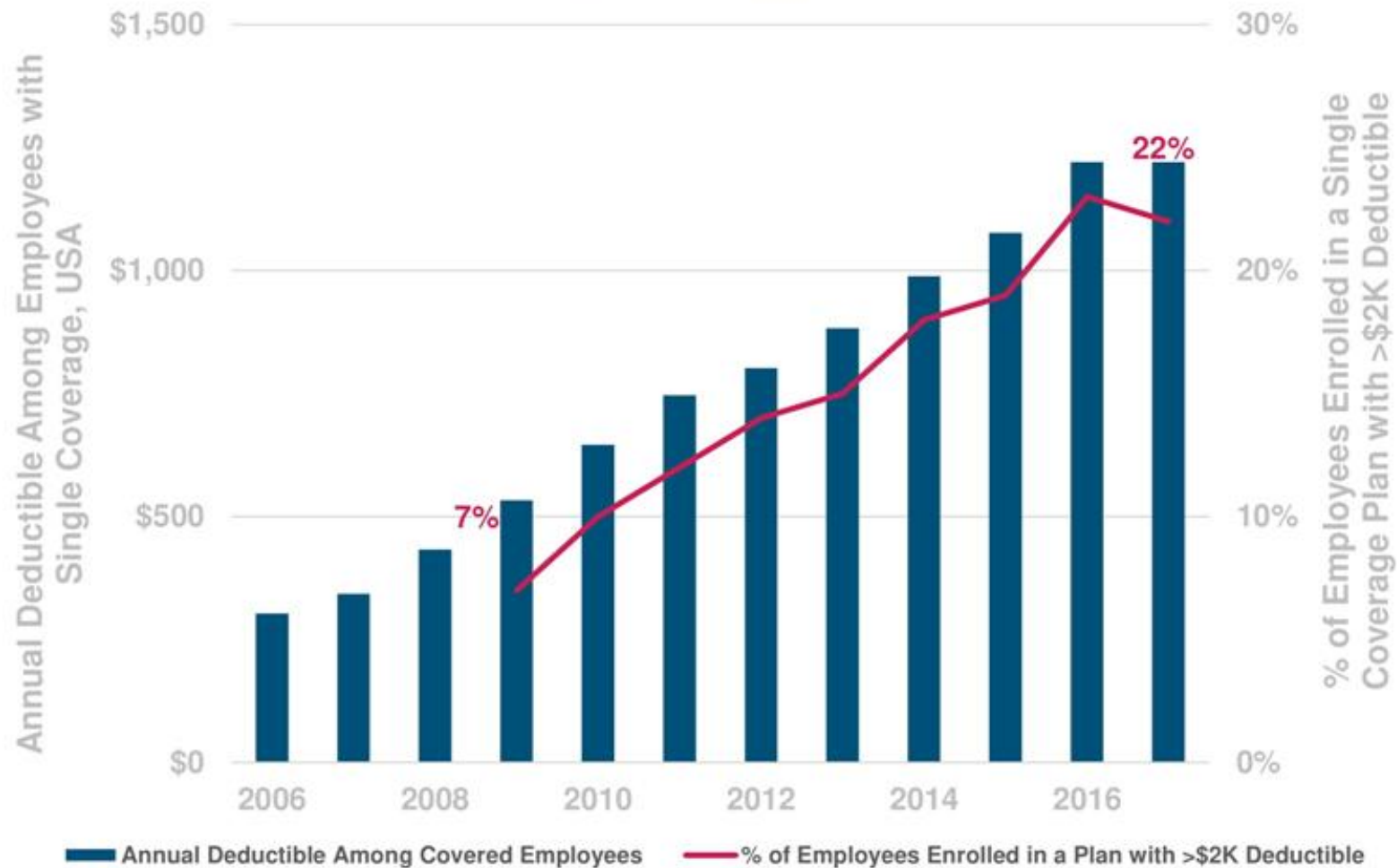
When Consumers Start Spending More
They Tend To Pay More
Attention to Value + Prices…

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
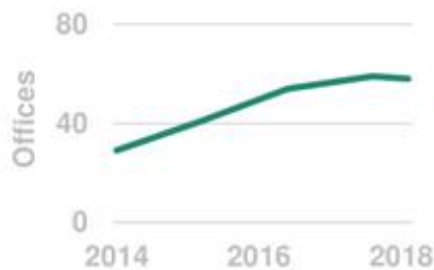
Digital Healthcare Management

Oscar

Memberships
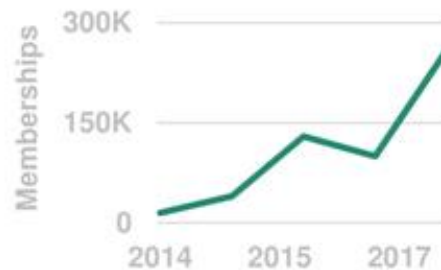
On-Demand Pharmacy

Capsule

Unique Conversations
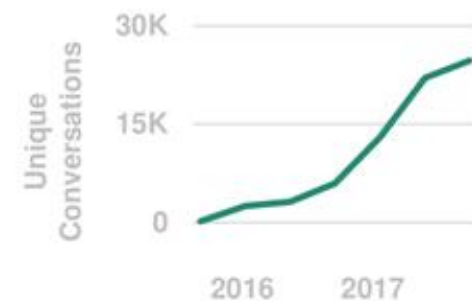
...Healthcare Consumerization

Women's Healthcare Specific Solutions

Nurx

Medical Interactions*

2016　2017　2018
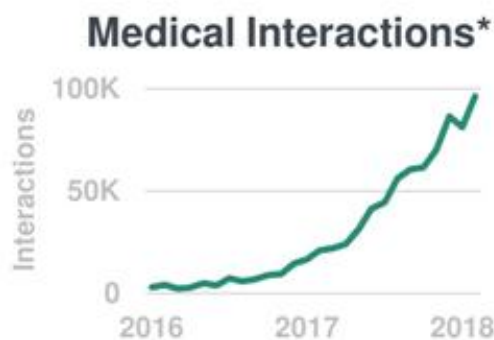
Transparent Pricing

Dr. Consulta

Patients

2013　2015　2017
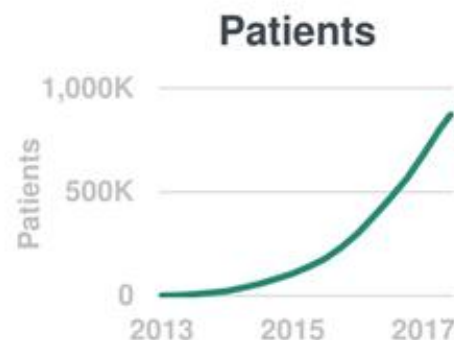
Simplified Healthcare Billing

Cedar

% of Collections**

0　31　60　91
Days

Source: Nurx, Dr. Consulta, Cedar. *Medical interactions include prescriptions, lab orders, & messages from MDs / RNs. **Cedar data represents the % of total collections using Cedar over time at a multispecialty group with 450 physicians and an ambulatory surgical center.
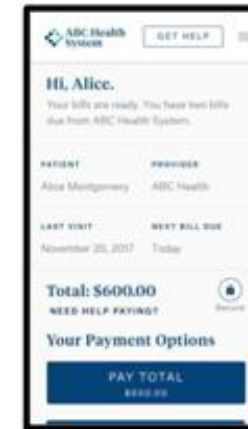
Consumerization of Healthcare + Rising Data Availability =

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*

Adoption, USA

Legend:
- Grid Electricity
- Radio
- Refrigerator
- Automatic Transmission
- Color TV
- Shipping Containers
- Microwave
- Computer
- Cell Phone
- Internet
- Social Media Usage
- Smartphone Usage

Source: 'Our World In Data' collection of published economics data including Isard (1942), Grubler (1990), Pew Research, USA Census Bureau, and others. *Proliferation defined by share of households using a particular technology. In the case of features (e.g., Automatic Transmission), adoption refers to share of feature in available models.

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

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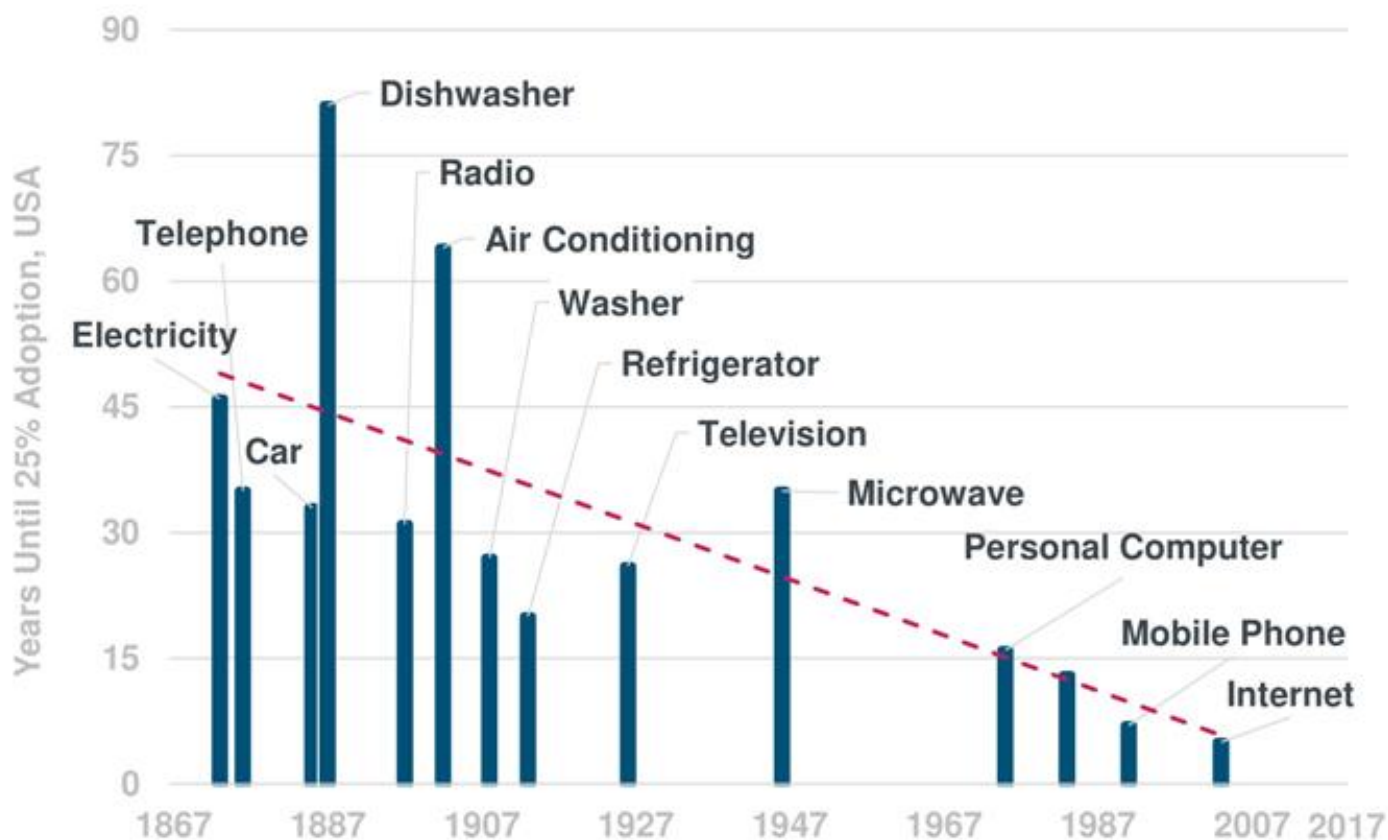
Technology Disruption Drivers = Rising & Cheaper Compute Power + Storage Capacity...

$1,000 of Computer Equipment
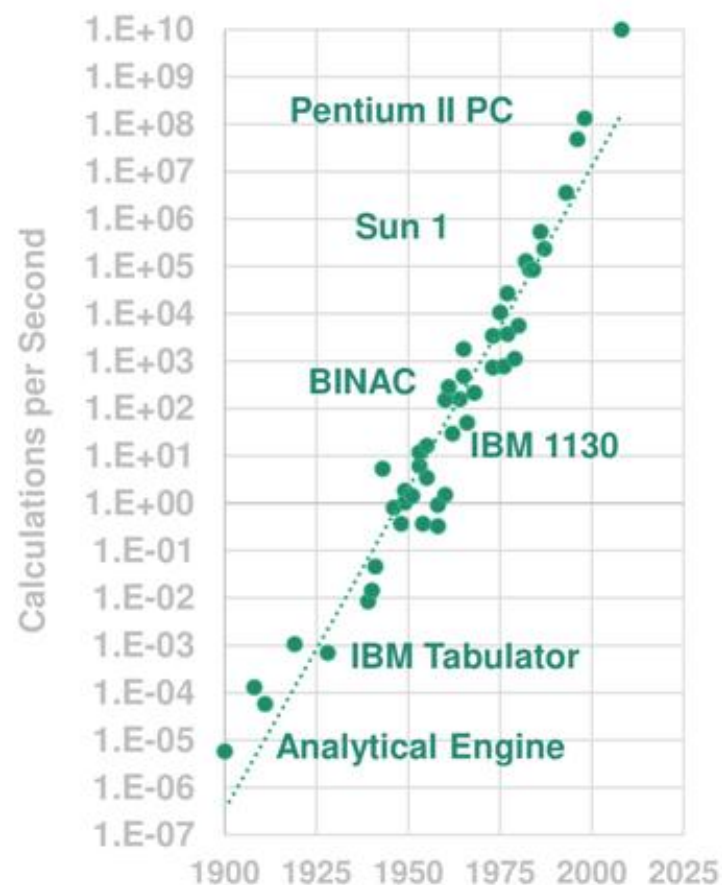
Storage Price vs. Hard Drive Capacity

KLEINER PERKINS
2018
INTERNET TRENDS

Source: John McCallum @ IDC, David Rosenthal @ LOCKSS Program – Stanford); Kryder's Law. Time + Ray Kurzweil analysis of multiple sources, including Gwennap (1996), Kempt (1961) and others. Note: All figures shown on logarithmic scale.

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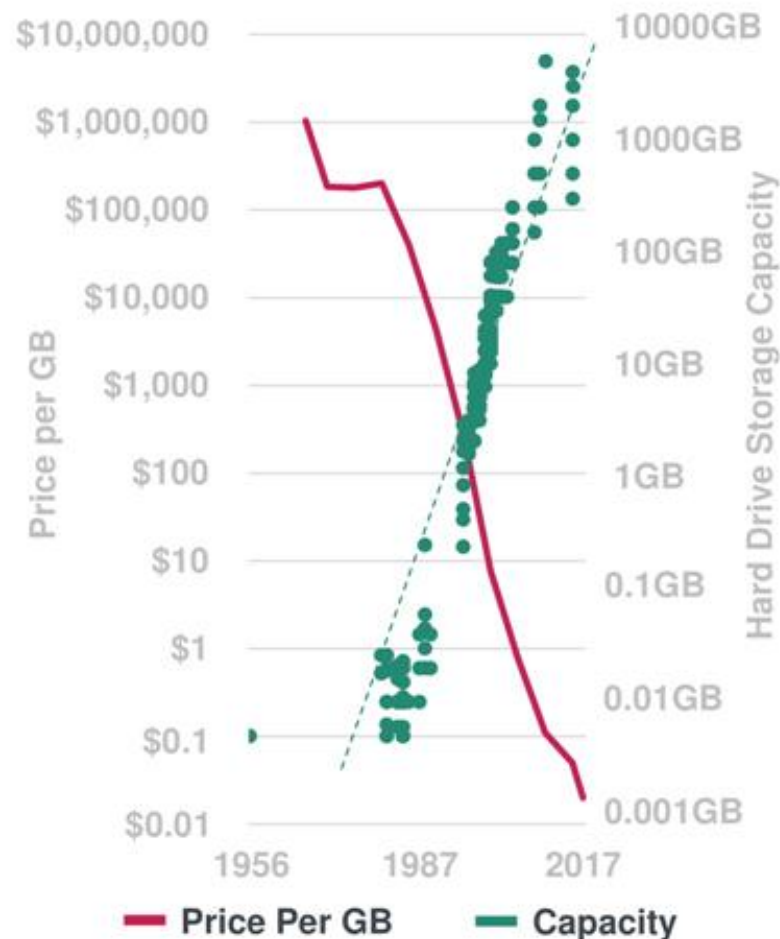
...Technology Disruption Drivers =
Rising & Cheaper Connectivity + Data Sharing

Internet + Social Media – Global Penetration
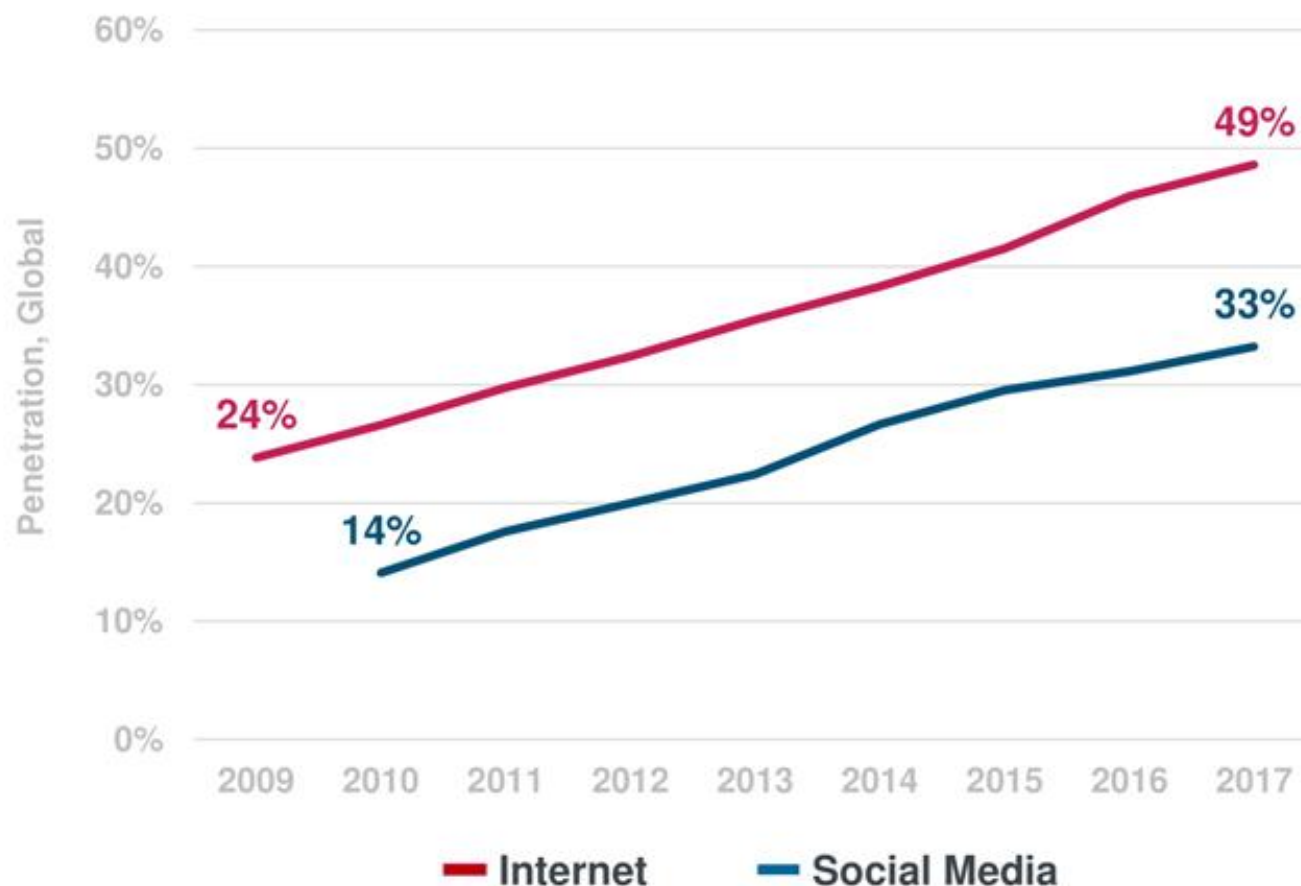
New Technologies =

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

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?

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

A Robot Is After Your Job

New technology isn't a panacea

New Technologies =
Aircraft Jobs Replaced Locomotive Jobs...

Locomotive vs. Aircraft Jobs

Locomotive Jobs - Engineers / Operators / Conductors
Aircraft Jobs - Pilots / Mechanics / Engineers

Source: ITIF analysis of IPUMS data (Atkinson + Wu); St. Louis Federal Reserve FRED Database. Note: IPUMS data tracks historical employment
(since 1950) using 2010 Census occupational codes. (7140:Aircraft Mechanics + Service Technicians; 9030: Aircraft Pilots + Flight Engineers; 9200:
Locomotive Engineers + Operators; 9230: Railroad Brake, Signal, + Switch Operators; 9240: Railroad Conductors + Yardmasters).

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

Agriculture vs. Services Jobs
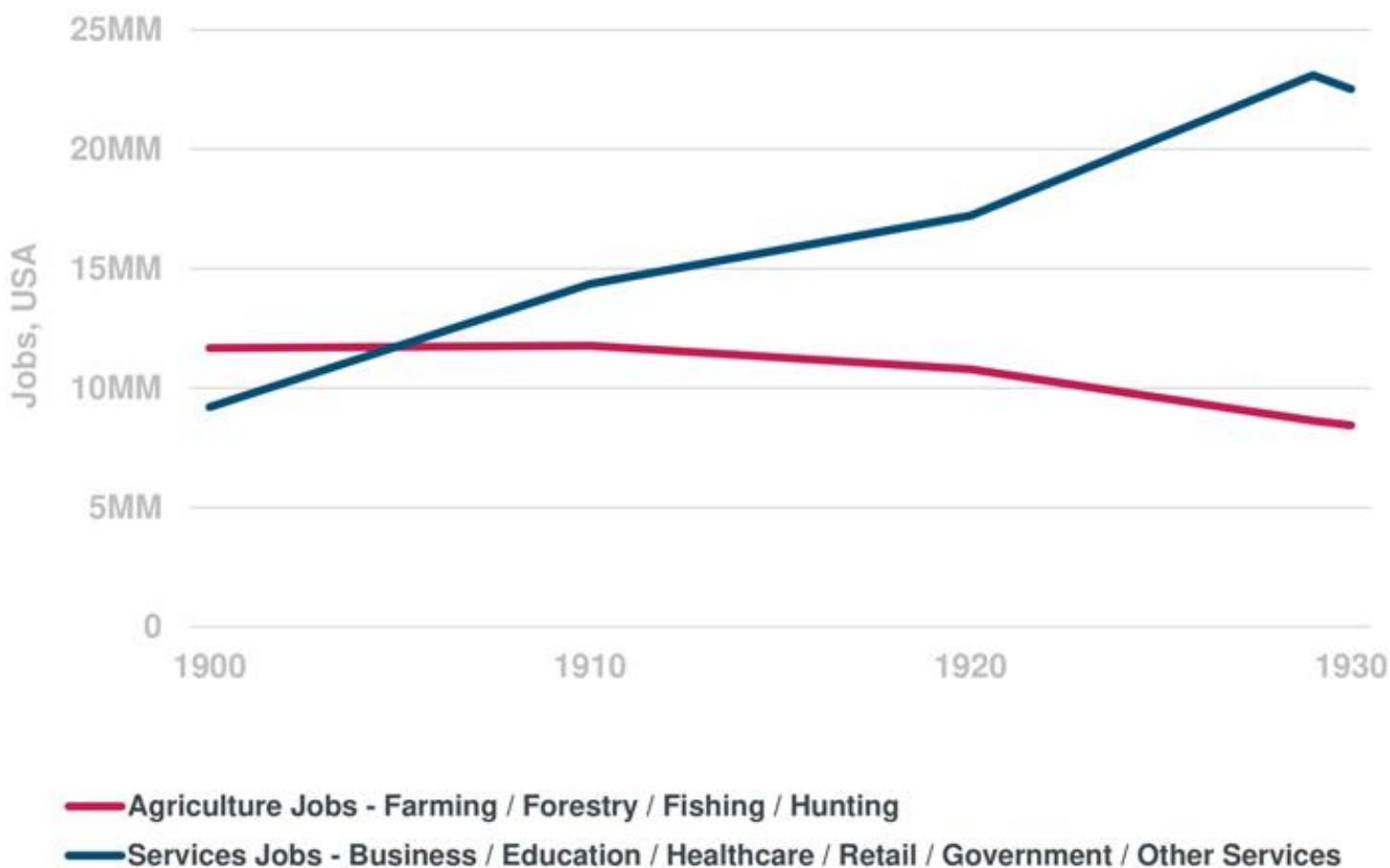
Agriculture Jobs - Farming / Forestry / Fishing / Hunting
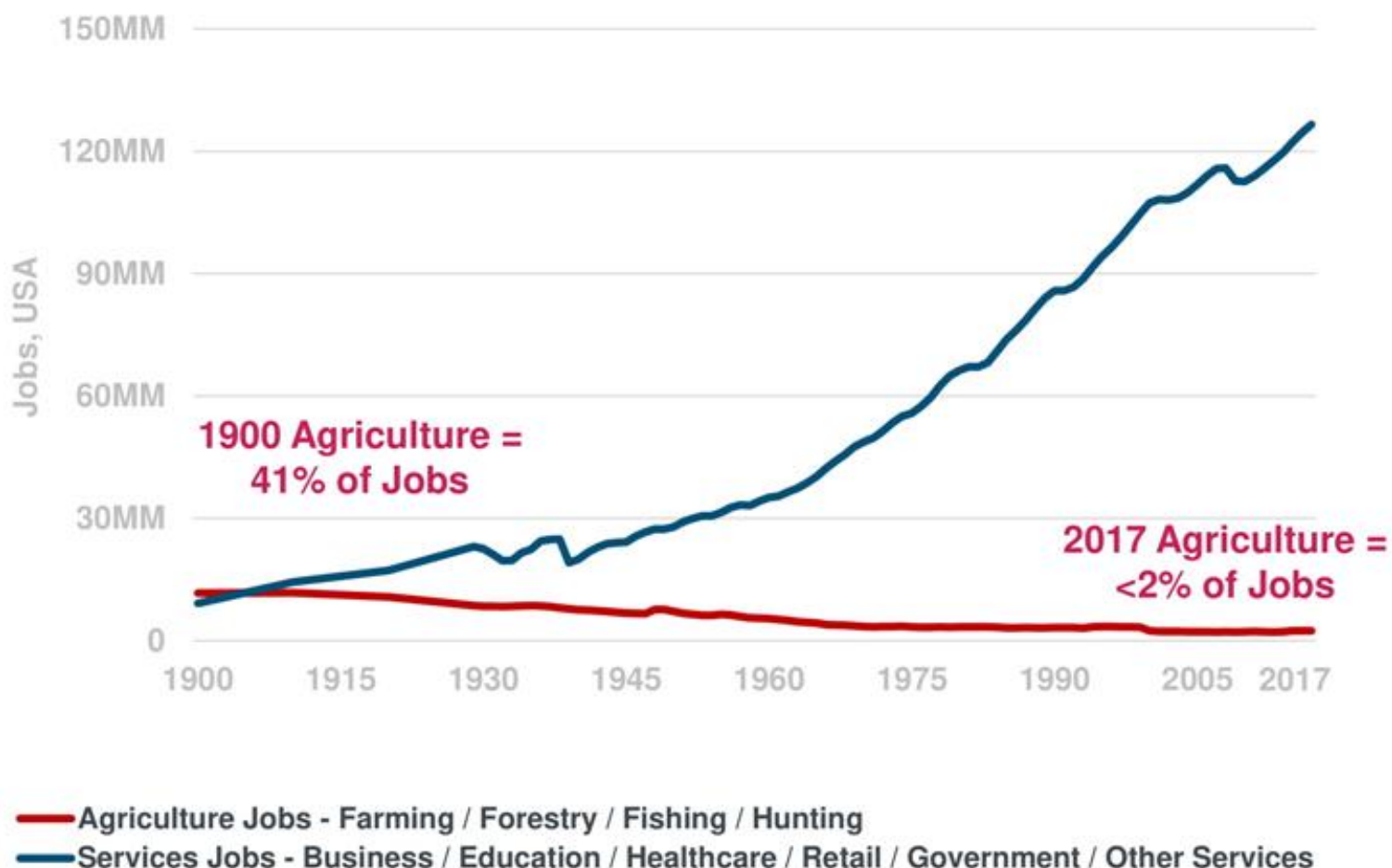
Services Jobs - Business / Education / Healthcare / Retail / Government / Other Services

Agriculture vs. Services Jobs

Real GDP vs. Unemployment Rate, USA

Real GDP

Unemployment Rate

$18T — 30%

$12T — 20%

5.8%
70-Year Average

$6T — 10%

3.9% Unemployment Rate (4/18)

$0 — 0%

1929 1939 1949 1959 1969 1979 1989 1999 2009 2017

— Real GDP   — Unemployment Rate
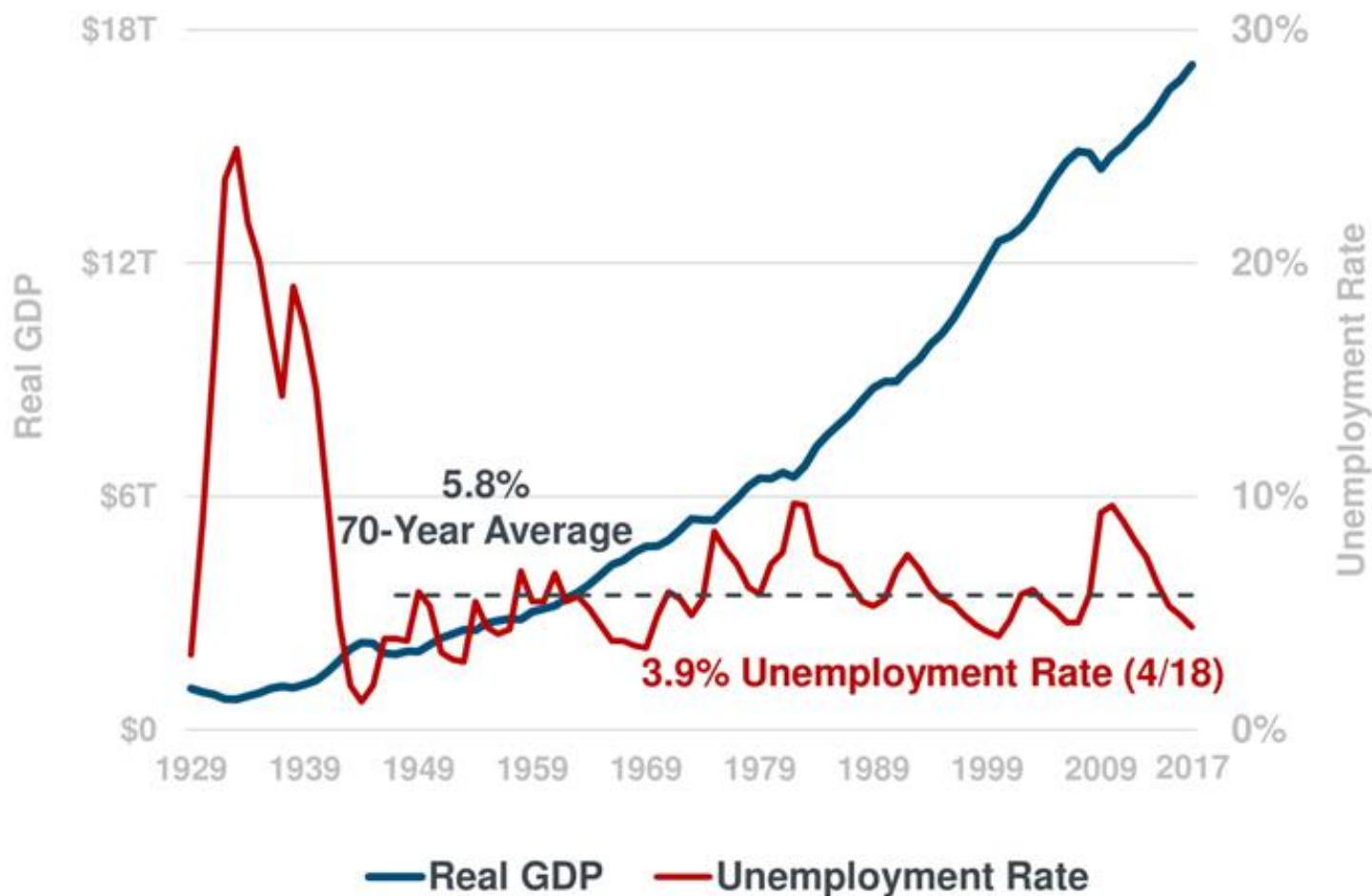
Will Technology Impact Jobs
Differently This Time?

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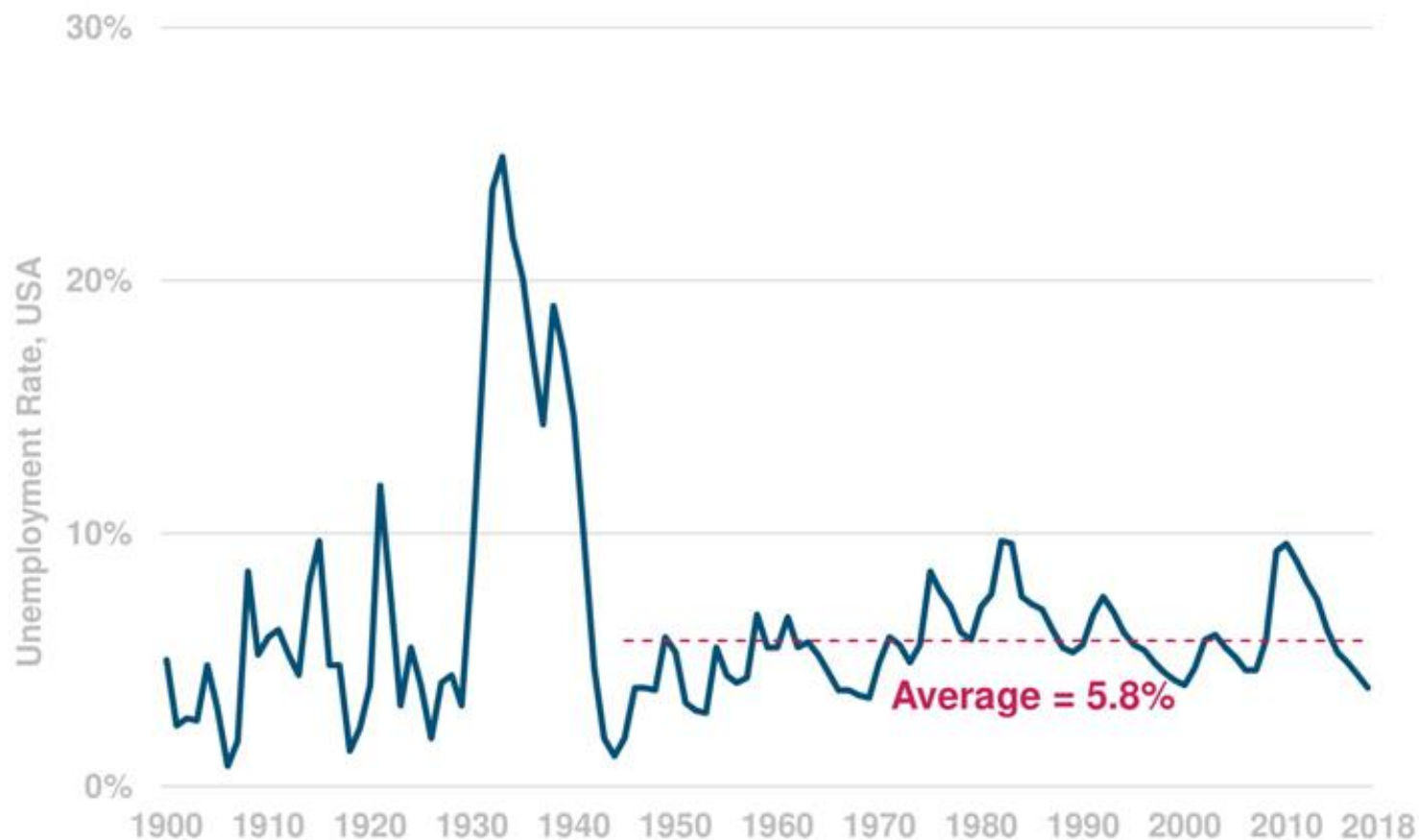
Consumer Confidence = High & Rising…
Index @ 100 vs. 87 Fifty-Five Year Average

Consumer Confidence Index (CCI)

87 =
55-Year Average
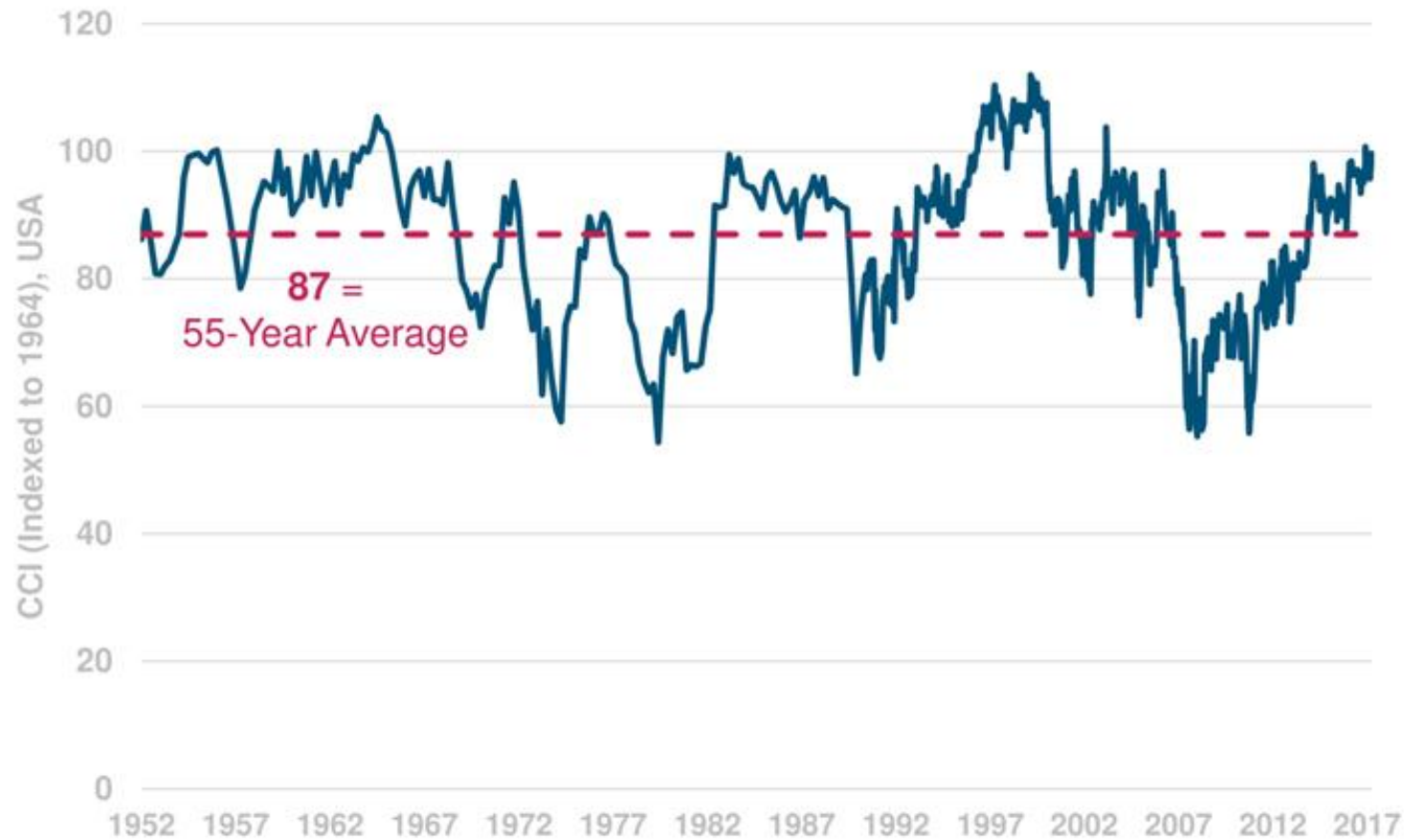
Job Openings = 17 Year High…
@ 7MM…~3x Higher vs. 2009 Trough

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

Source: St Louis Federal Reserve FRED Database. *A job opening is defined as a non-farm specific position of employment to be filled at an establishment. Conditions include the following: there is work available for that position, the job could start within 30 days, and the employer is actively recruiting for the position.

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

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

Jobs = +19%
Population = +15%

Jobs = +4%
Population = +4%

— Urban — Rural

Source: USDA ERS, BLS. Note: LAUS county-level data from BLS are aggregated into urban (metropolitan/metro) and rural (nonmetropolitan / non-metro), based on the Office of Management and Budget's 2013 metropolitan classification. Metro areas defined as counties with urban areas >50K in population and the outlying counties where >35% of population commutes to an urban center for work. 'Rural' data reflects total non-metro employment, where population has been declining since 2011.

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Labor Force Participation Rate**

64% =
50 Year Average

Source: St Louis Federal Reserve FRED Database, BLS. *In March 2018, ~161.8MM Americans were in the labor force (62.9% participation). Participation @ 50-year average of 64.3% would imply a labor force of 165.3MM. The labor force participation rate is defined as the section of working population in the age group of 16+ in the economy currently employed or seeking employment. **For data from 1900-1945 the labor force participation rate includes working population over the age of 10.

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

Males* (Ages 25 - 54) – Daily Time Use

■ Not In Labor Force   ■ In Labor Force

Watching TV — +3 Hours
Other Socializing, Relaxing, Leisure — +0.7
Other (Including Sleep) — +0.6
Household Activities & Services — +0.5
Education — +0.3
Caring For Non-Household Members — +0.01
Caring for Household Members — -0.02
Work — -5

0   2   4   6   8   10   12   14

Hours per Day, USA, 6/16

Source: 2014 American Time Use Survey, CEA calculations, BLS. Note: Prime-age males defined as men between the ages of 25-54. Daily hours may not add up to 24 since some individuals do not report all time spent. Household activities include cleaning, cooking, yardwork & home maintenance not related to caregiving.

Job Expectations =

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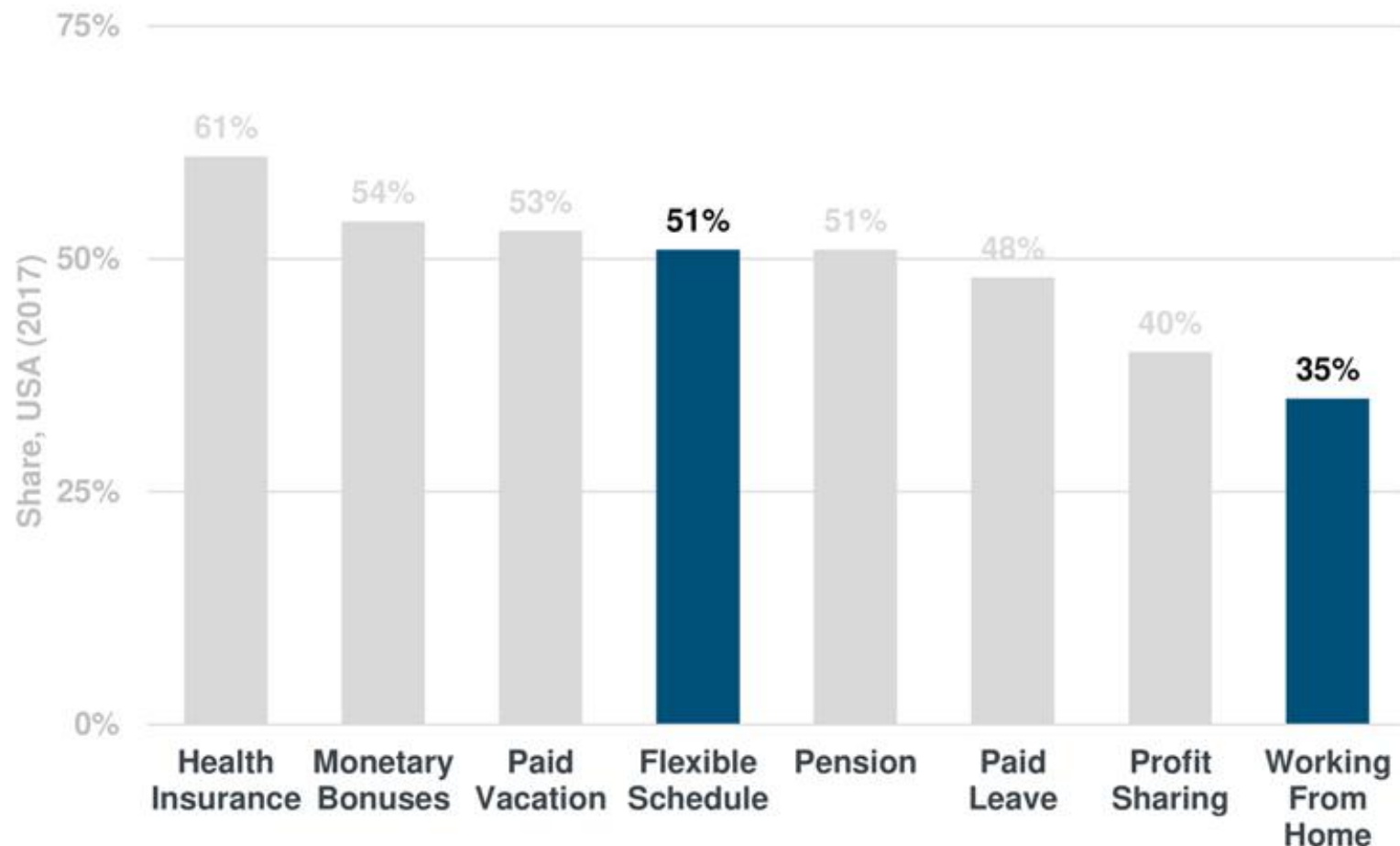
Technology = Makes Freelance Work Easier to Find…
Freelance Workforce = 3x Faster Growth vs. Total Workforce

Has Technology Has Made It Easier To Find Freelance Work?
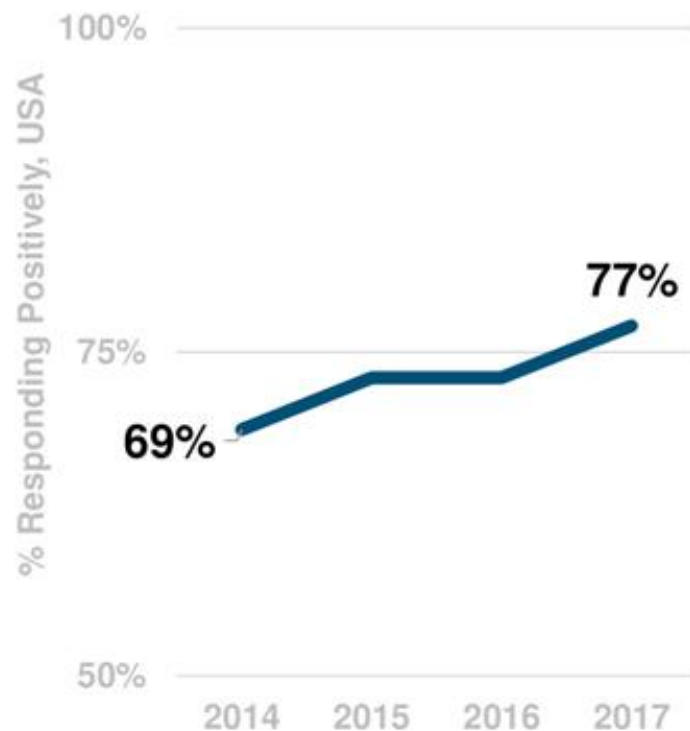
Workforce Growth – Freelance vs. Total
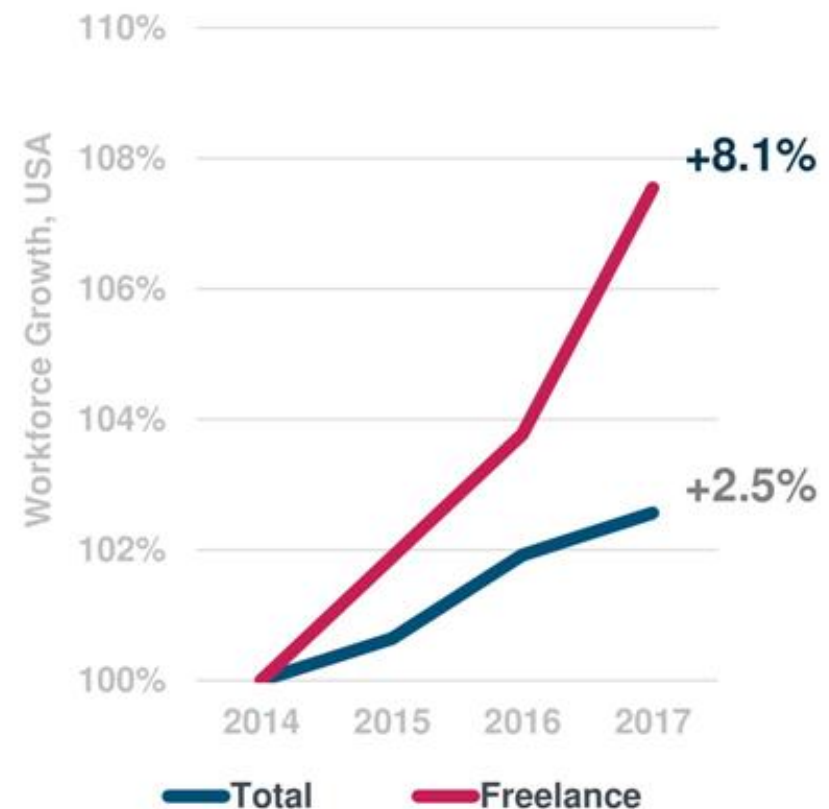
On-Demand Jobs =

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

Source: Intuit (2017/2018). *2018 = Forecast from 2017 data. Preliminary 2018 results appear to be in line with forecast as of 5/16/18. Note: On-demand workers defined as online marketplace workers including transportation and/or logistics for people or products, online talent marketplaces, renting out space. Providing other miscellaneous consumer and business services (e.g. TaskRabbit, Gigwalk, Wonolo, etc.). Workers defined as 'active' employees that have done 'significant' on-demand work within the preceding 6 months.

On-Demand 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

DoorDash @ 200K Dashers

Etsy @ 2MM Sellers

Upwork @ 16MM Freelancers

Airbnb @ 5MM Listings

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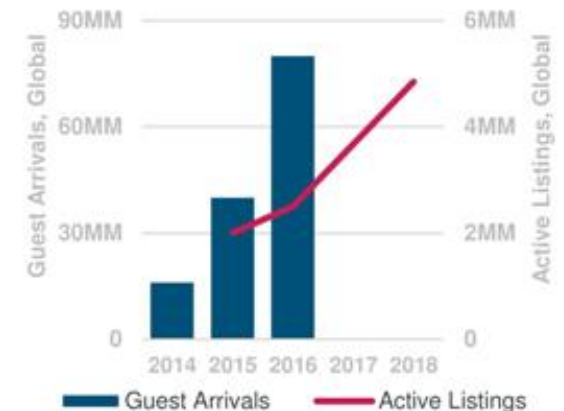
On-Demand Jobs =

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

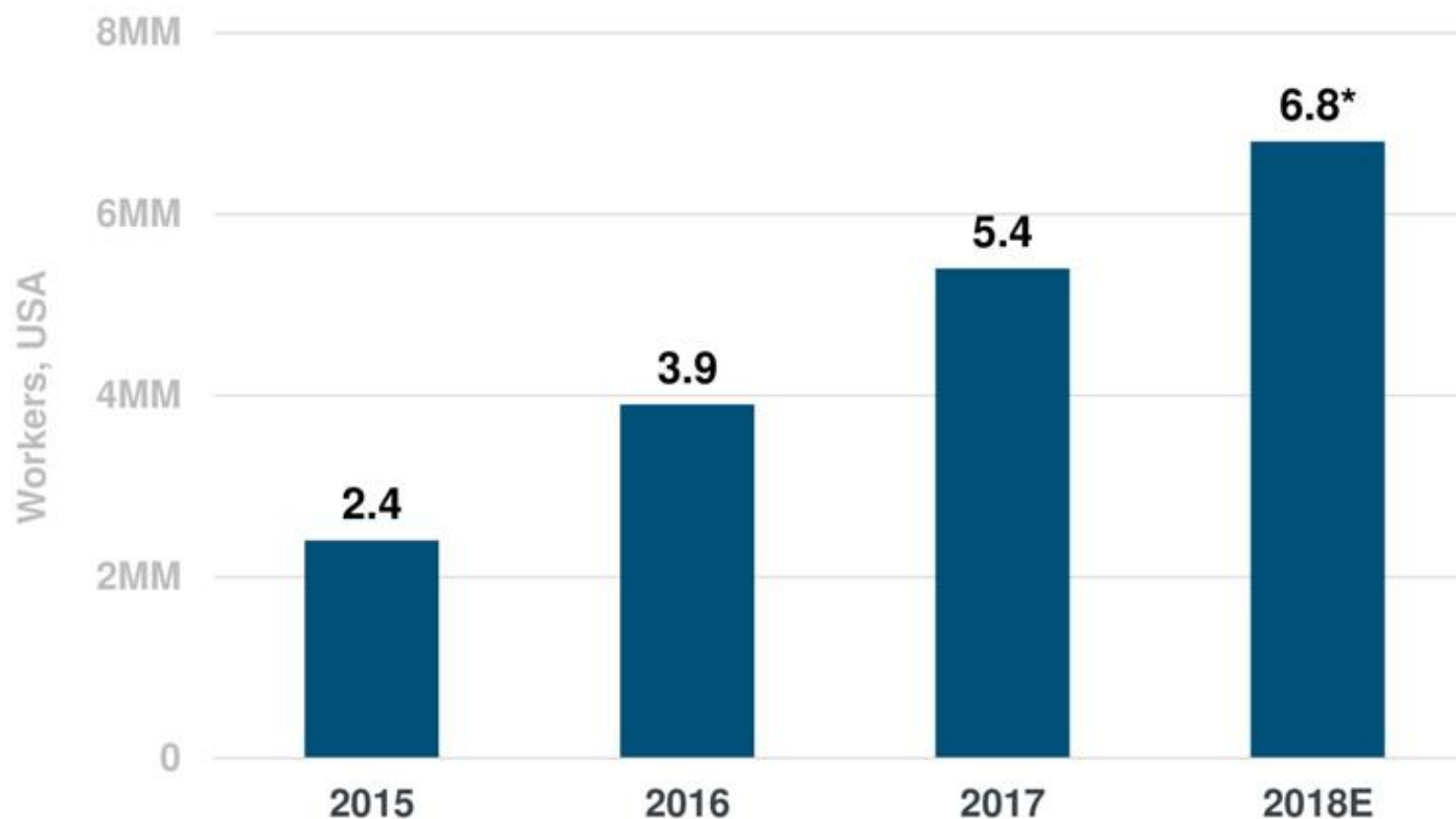|	**Extra Income**	**Flexibility**
Basics	**37%** = Run Own Business **33%** = Use Multiple On-Demand Platforms **26%** = Employed Full-Time (W2 Wages) **14%** = Employed Part-Time (W2 Wages) **5%** = Retired	**71%** = Always Wanted To Be Own Boss **46%** = Want To Control Schedule **19%** = Responsible 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 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 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 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*→)...

KLEINER PERKINS
2018
INTERNET TRENDS

* In 1952 IBM launched the first fully electronic data processing system, the IBM 701.

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

Mainframe Shipment Value & Units

Shipment Value — Annual Mainframe Shipments

Source: W. Edward Steinmueller: The USA Software Industry: An Analysis and Interpretive History (3/95).
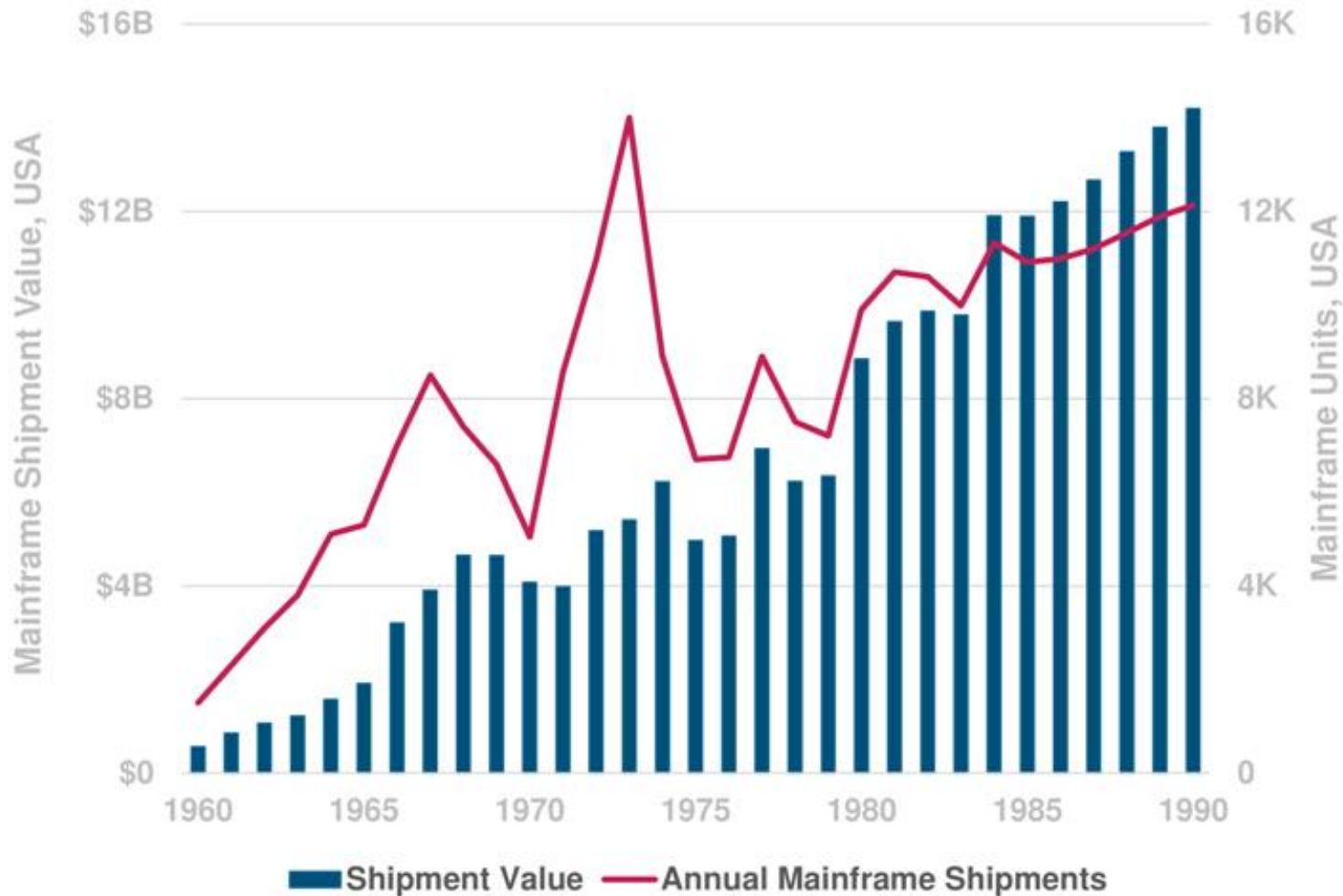
…Data Gathering + Optimization (1950s →) = Government Mainframe Deployment…

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

1955   **1965**   **1975**

Banks
Bank of America
Process Checks

Insurance
Aetna
Optimize Insurance Policies

Credit Cards
Visa
Manage Merchant Network

Telecom
Bell Labs / AT&T
Optimize Telephone Switching

Airlines
American Airlines
Process Transactions / Data

Retail
Walmart
Track Inventory / Logistics

Hospitals
Tulane Medical School System
Manage Patient Data
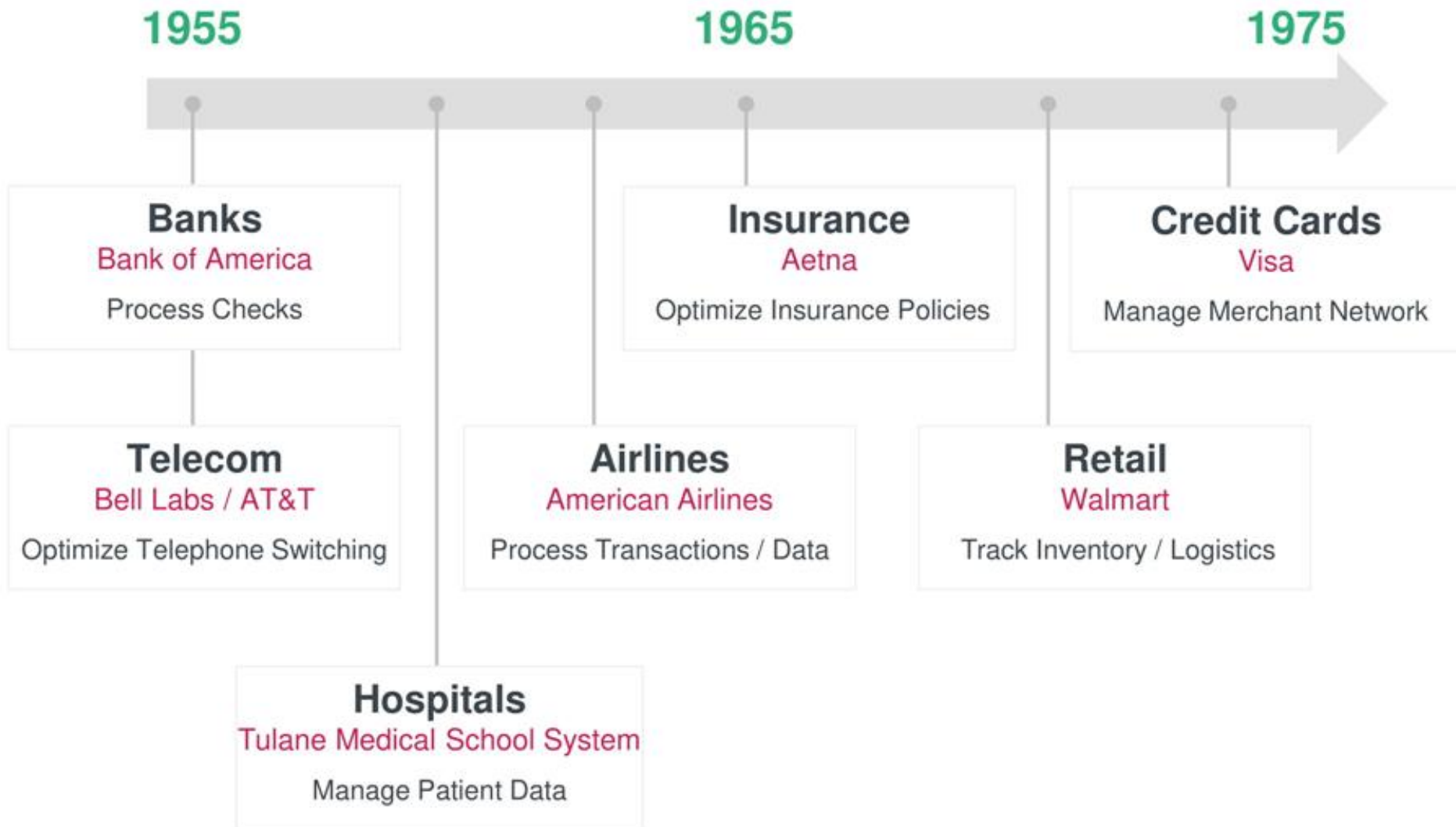
...Data Gathering + Sharing + Optimization =

Accelerates With
Computer Adoption...

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

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

2006
Amazon AWS
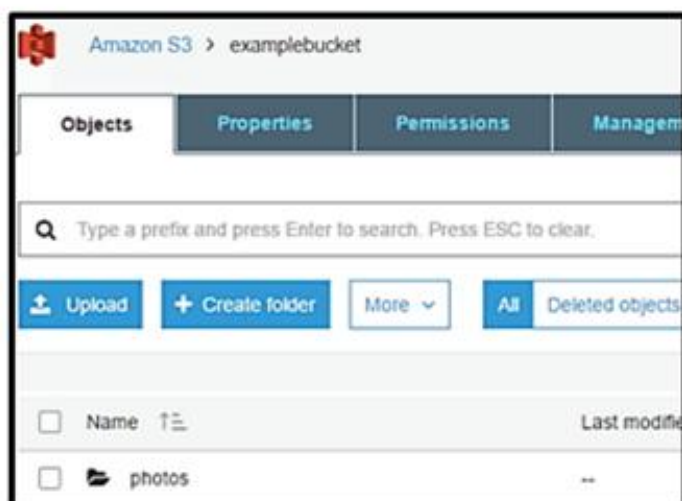
*Until now, a sophisticated &
scalable data storage infrastructure
has been **beyond the reach
of small developers.***

- 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

2018
140+ Services

2006
1 Service

2006 2008 2010 2012 2014 2016 2018

Apple iOS – # of Apps

2018
2MM+ Apps

2008
<5,000 Apps

2008 2010 2012 2014 2016 2018

AWS Compute Cost + Growth*

Source: The Internet Archive. *Cost data reflects price of 'current generation' m.large on-demand Linux instance in USA-East Virginia (m1.large = 2008-2013, m3.large = 2014-2015, m4.large = 2016-2017, m5.large = 2018). m.large chosen as a representative instance of general purpose compute; pricing does not account for increasing instance performance.

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

Cloud Service Revenue – Amazon + Microsoft + Google
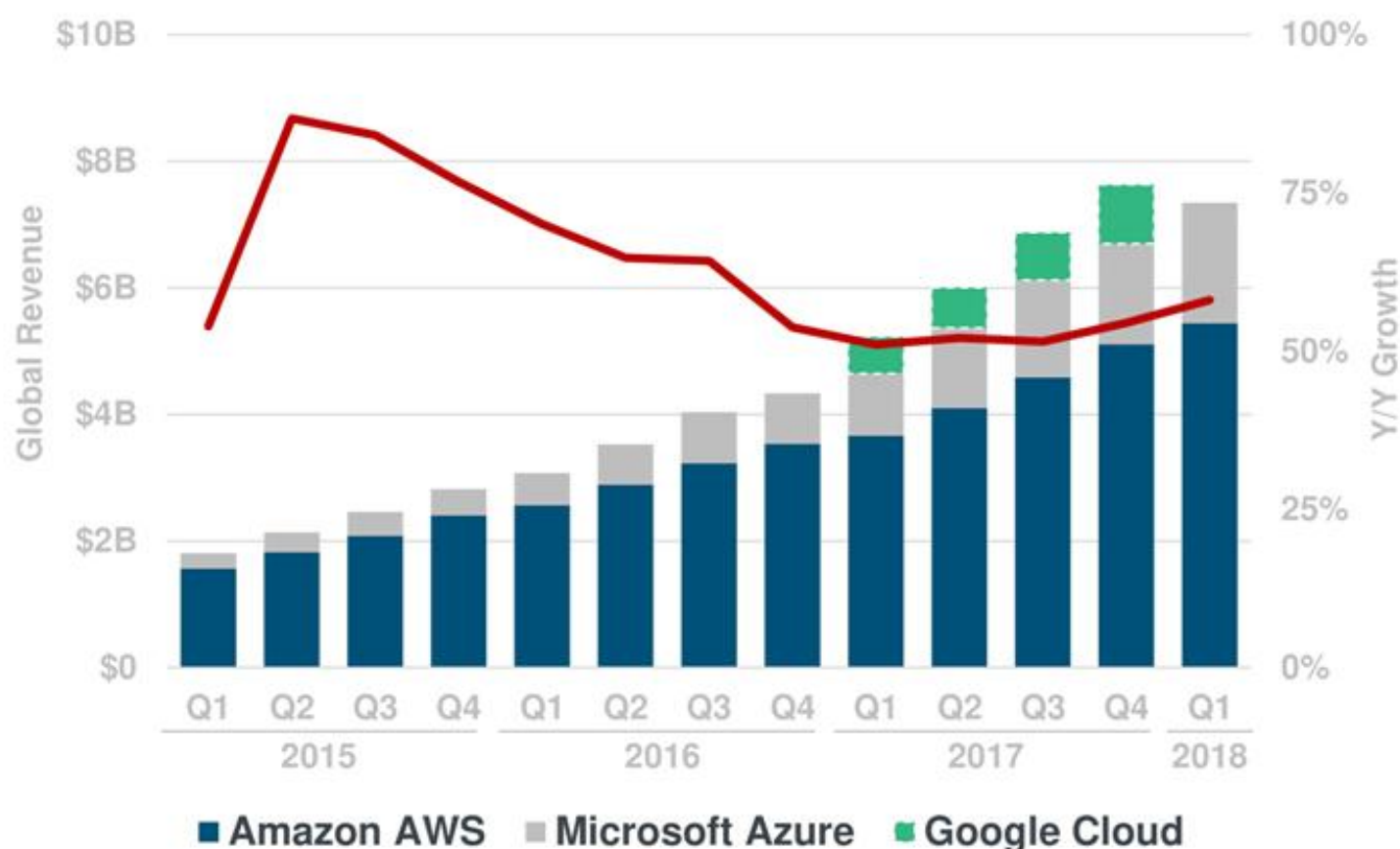
Data Gathering + Sharing + Optimization (2006 →) = Enabled by Consumer Mobile Adoption...

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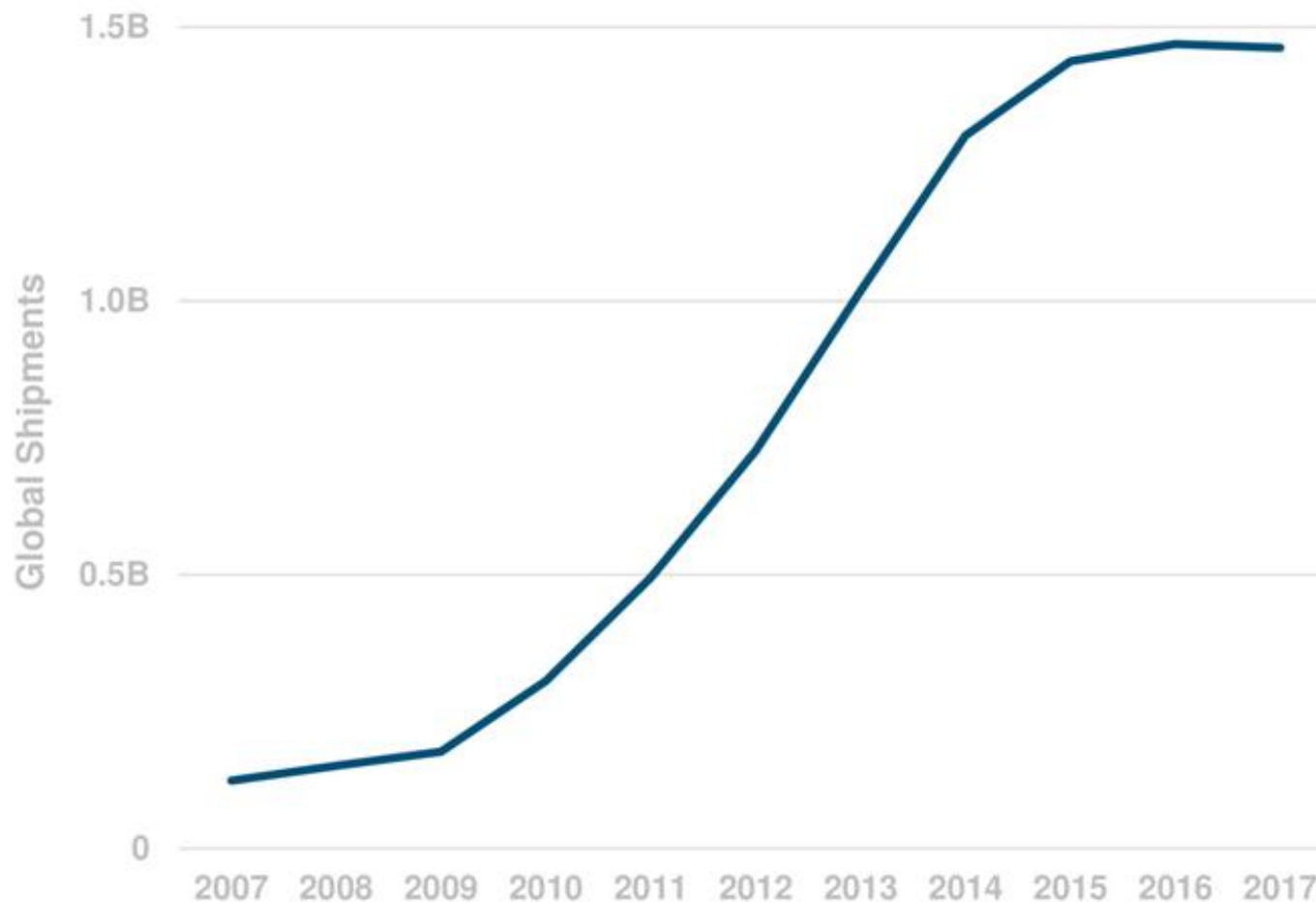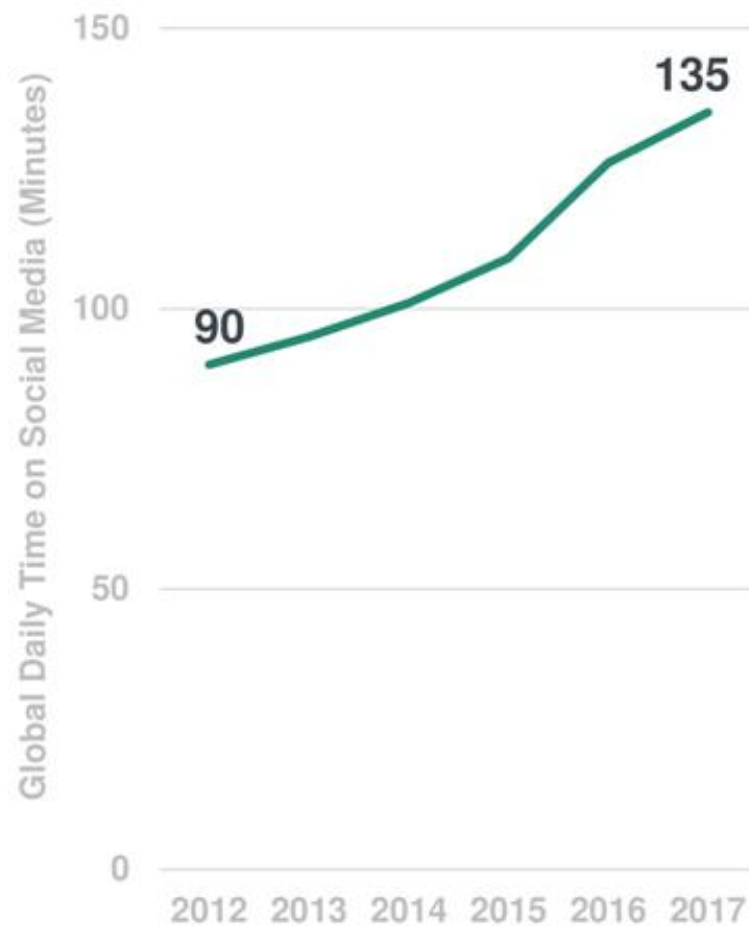
...Data Gathering + Sharing + Optimization (2006 →) = Enabled by Social Media Adoption...

Time Spent on Social Media

Global Daily Time on Social Media (Minutes)

90
135

2012 2013 2014 2015 2016 2017

Messages per Day

Messages per Day

60B
40B
20B
0

Telegram (2/16) Line (10/17) WeChat (11/17) Whatsapp (7/17)

Source: Global Web Index (9/17), Telegram (2/16), Line (10/17), WeChat (11/17), Whatsapp (7/17).
Note: Per Global Web Index, social media time spent for Internet users aged 16-64. n = 61,196
(2012), 156,876 (2013), 168,046 (2014), 198,734 (2015), 211,024 (2016), 178,421 (2017).
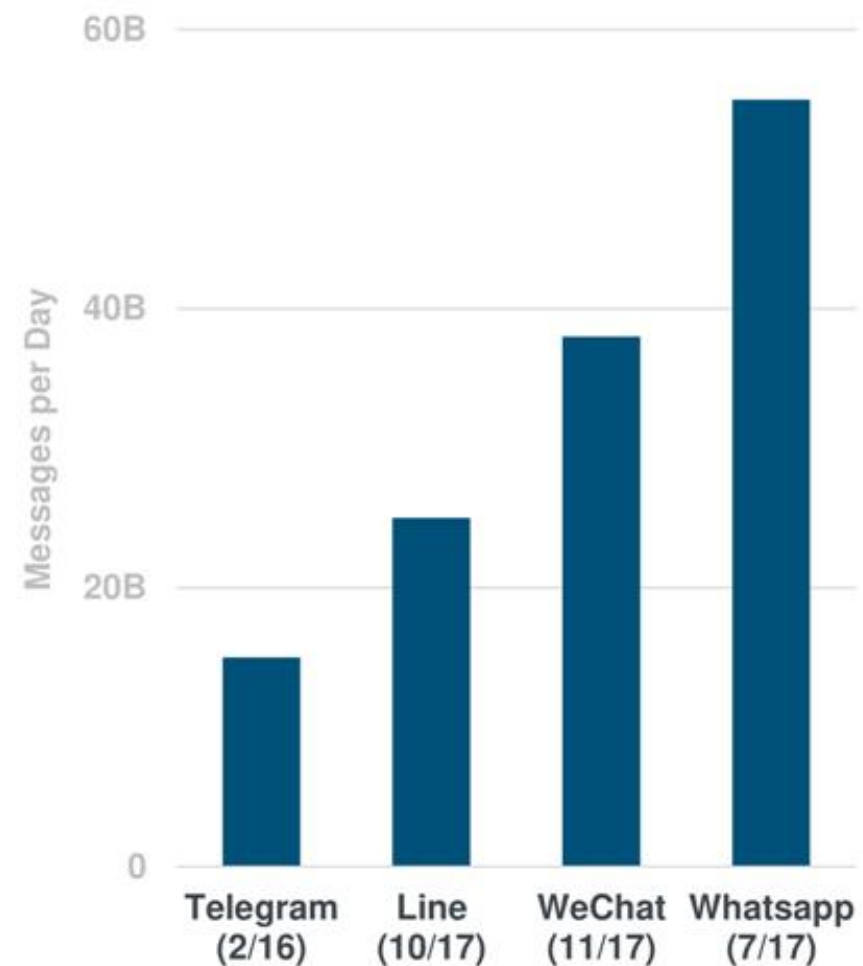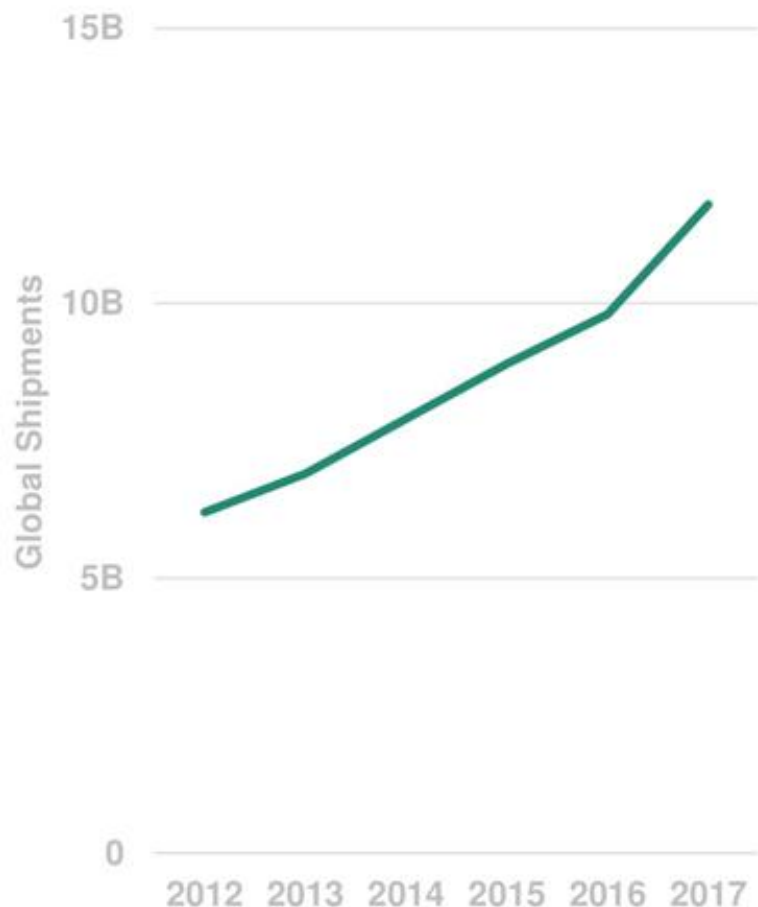
...Data Gathering + Sharing + Optimization (2006 →) = Enabled by Sensor Pervasiveness...

MEMS Sensor / Actuator Shipments

Sensors + Data = In More Places

Visual Navigation
Google Maps

Shared Transportation
Mobike

Home Temperature
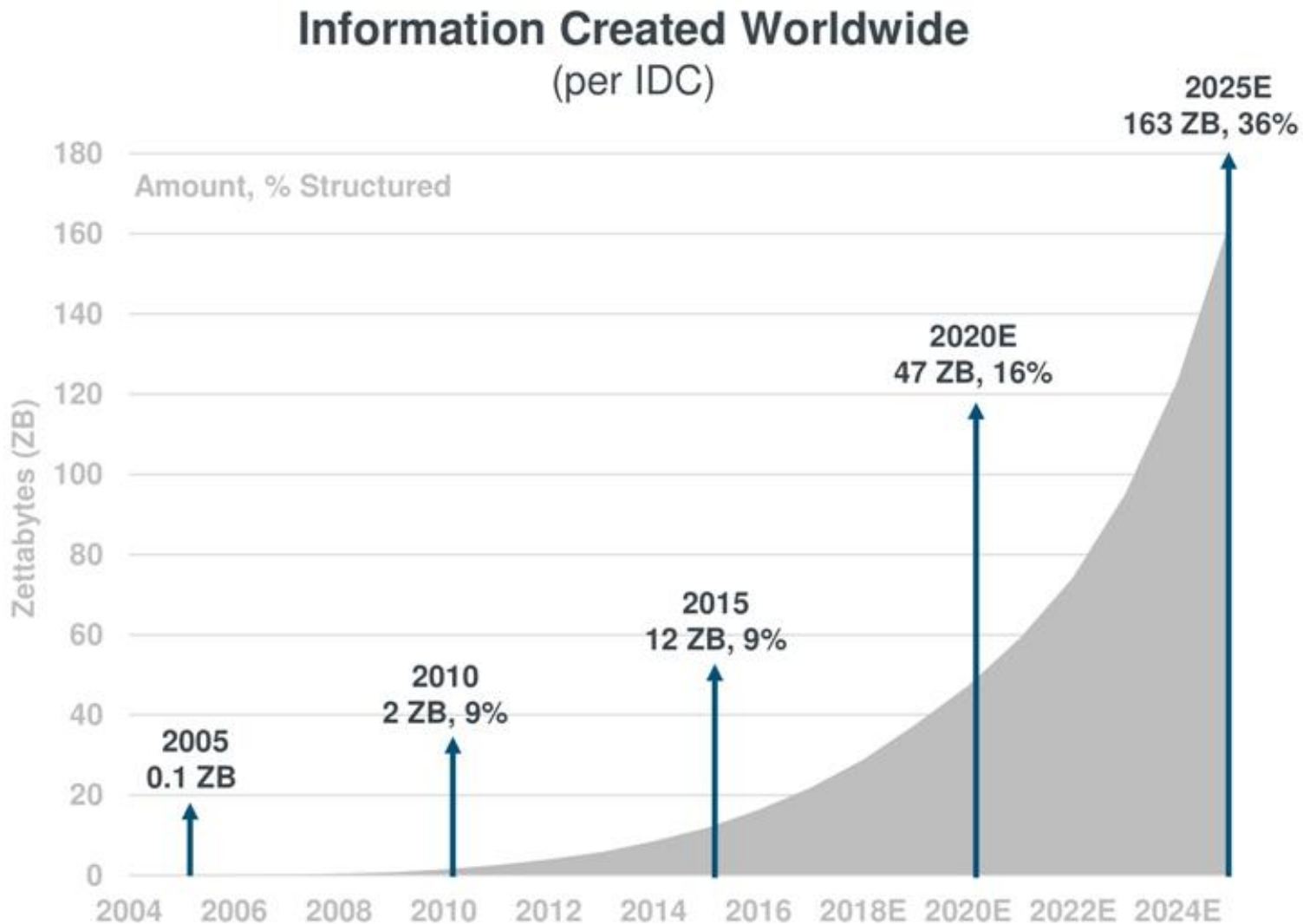Nest

Predictive Maintenance
Samsara

Fitness Tracking
Motiv

Precision Cooking
Joule

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

Information Created Worldwide
(per IDC)

2025E
163 ZB, 36%

180

Amount, % Structured

160

140

2020E
47 ZB, 16%

120

Zettabytes (ZB)

100

80

2015
12 ZB, 9%

60

2010
2 ZB, 9%

40

2005
0.1 ZB

20

0

2004   2006   2008   2010   2012   2014   2016   2018E   2020E   2022E   2024E

Data =

Can Be Important Driver of Customer Satisfaction

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

User Preferences

Data-Driven Personalization

New Releases For You

Spotify Daily Engagement
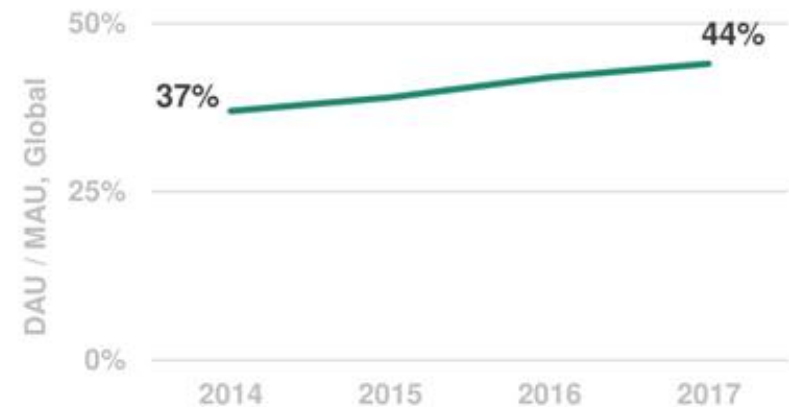
Unique Artist Listening
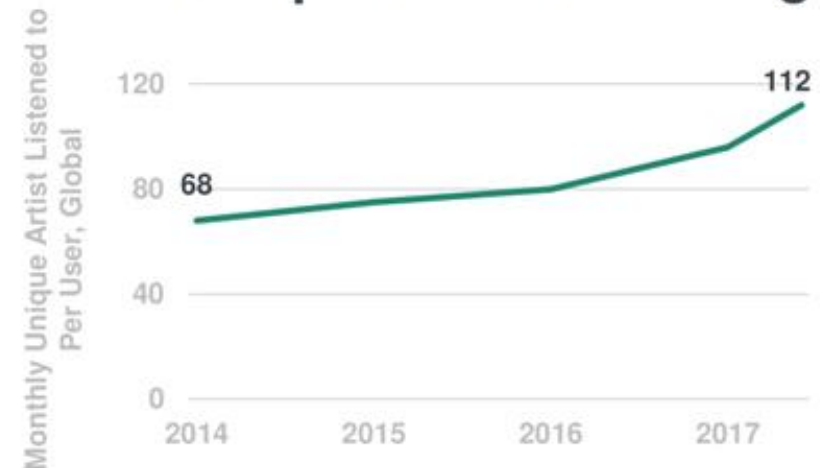
Toutiao Personalization = Interests...
Drive Engagement + Customer Satisfaction

Data-Driven Personalization

Main Page – User A

Main Page – User B

MAUs

MAUs, Global

250MM
200MM
150MM
100MM
50MM
0

2015   2016   2017

Minutes Spent per Day

Minutes

80
60
40
20
0

Snapchat   Instagram*   Toutiao
(5/18)   (8/17)   (5/18)

Source: Toutiao (5/18), Snap (5/18), Instagram (8/17).
*Instagram data reflects time spent by users under the age
of 25, assumed to be representative of all Instagram users.
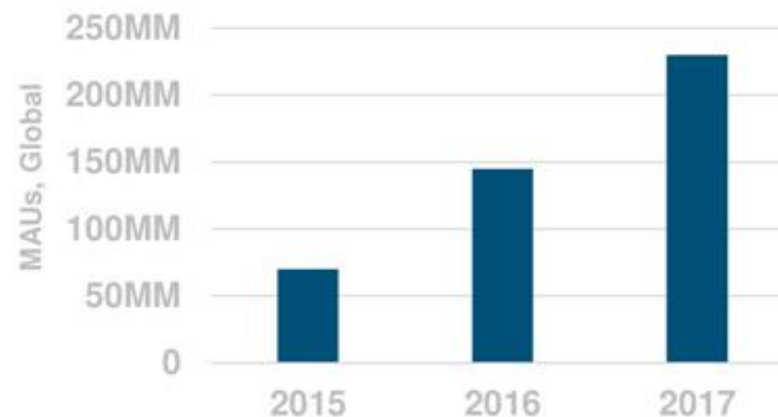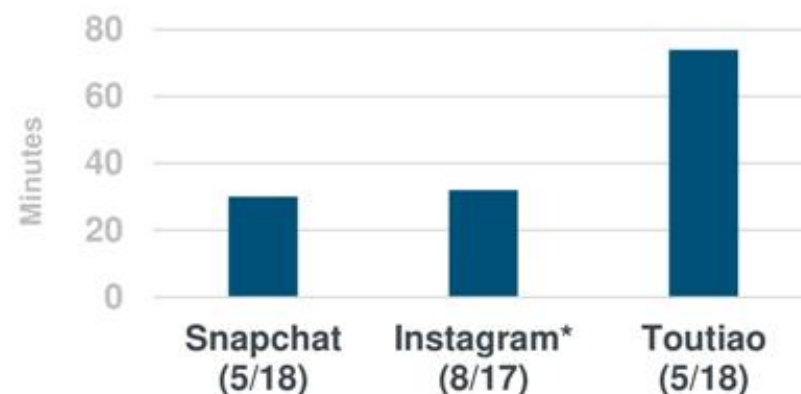
Data =

Improves Predictive Ability of Many Services

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

Object Detection - Performance vs. Dataset Size

Google Research & Carnegie Mellon, 2017
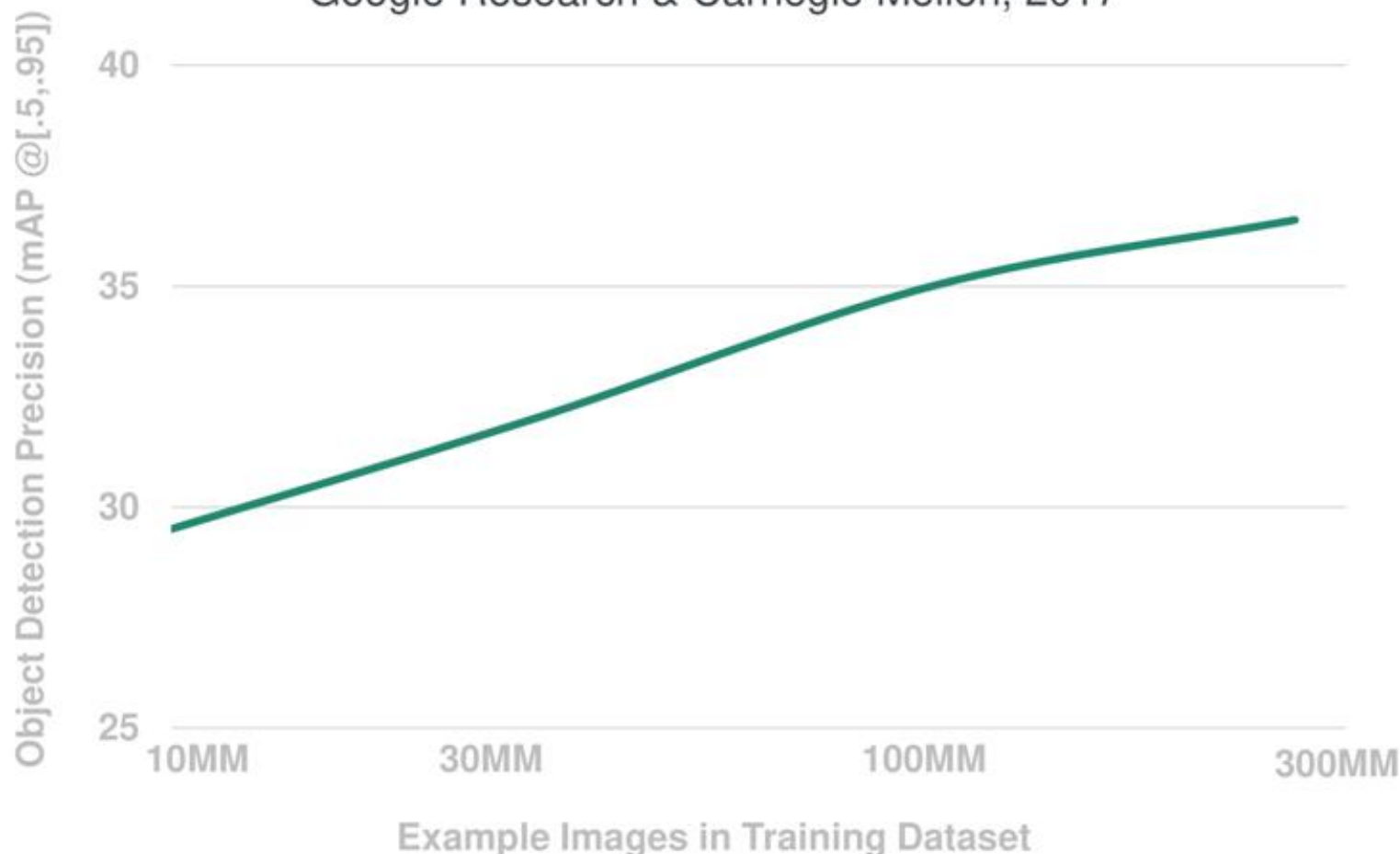
...Data Volume = Foundational to Tool / Product Improvement...
Artificial Intelligence (AI) Predictive Capability

AWS 'Data Flywheel' – Amazon Rekognition*
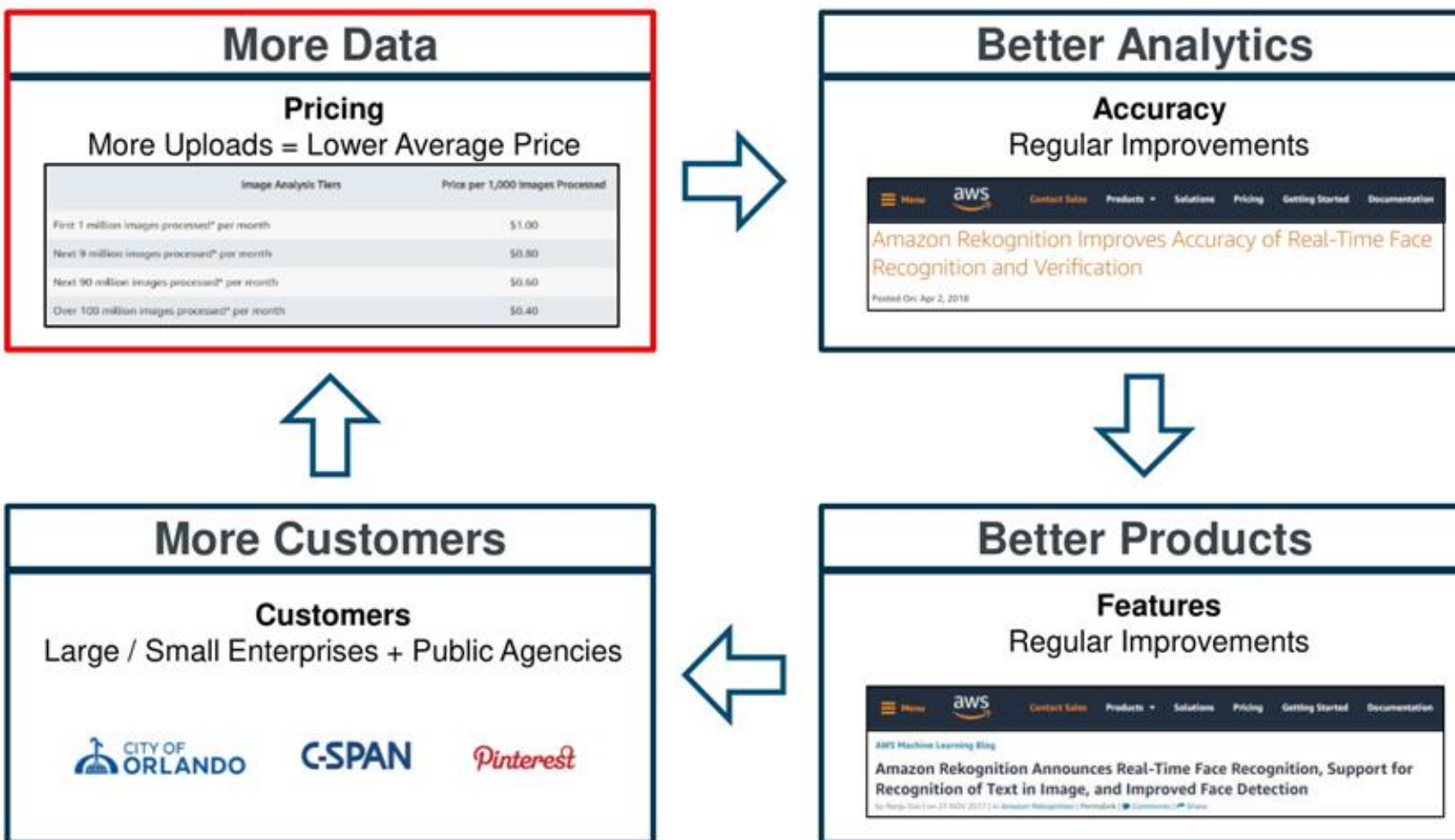
Artificial Intelligence (AI)
Service Platforms for Others =

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

Comprehend Language Processing
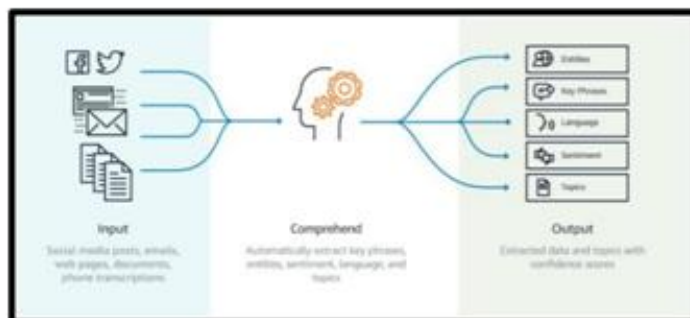
SageMaker Machine Learning Framework
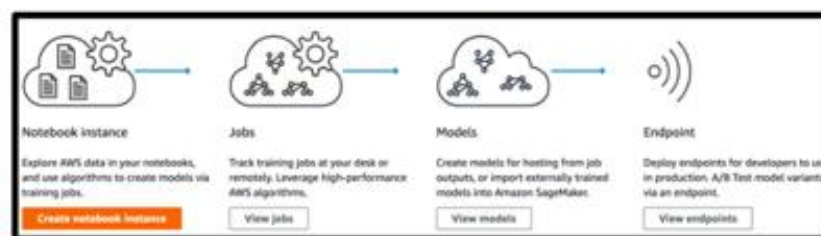
...Google = AI Platform Emerging from Google Cloud...
enabling Easier Data Processing / Collection for Others

Google Cloud AI Services / Infrastructure

Google Cloud Vision API

AI Hardware – Tensor Processing Units
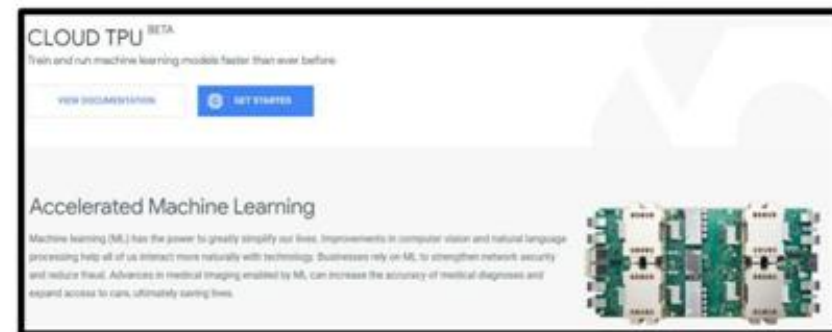
Dialogflow Conversational Platform

Cloud AutoML – Custom Models

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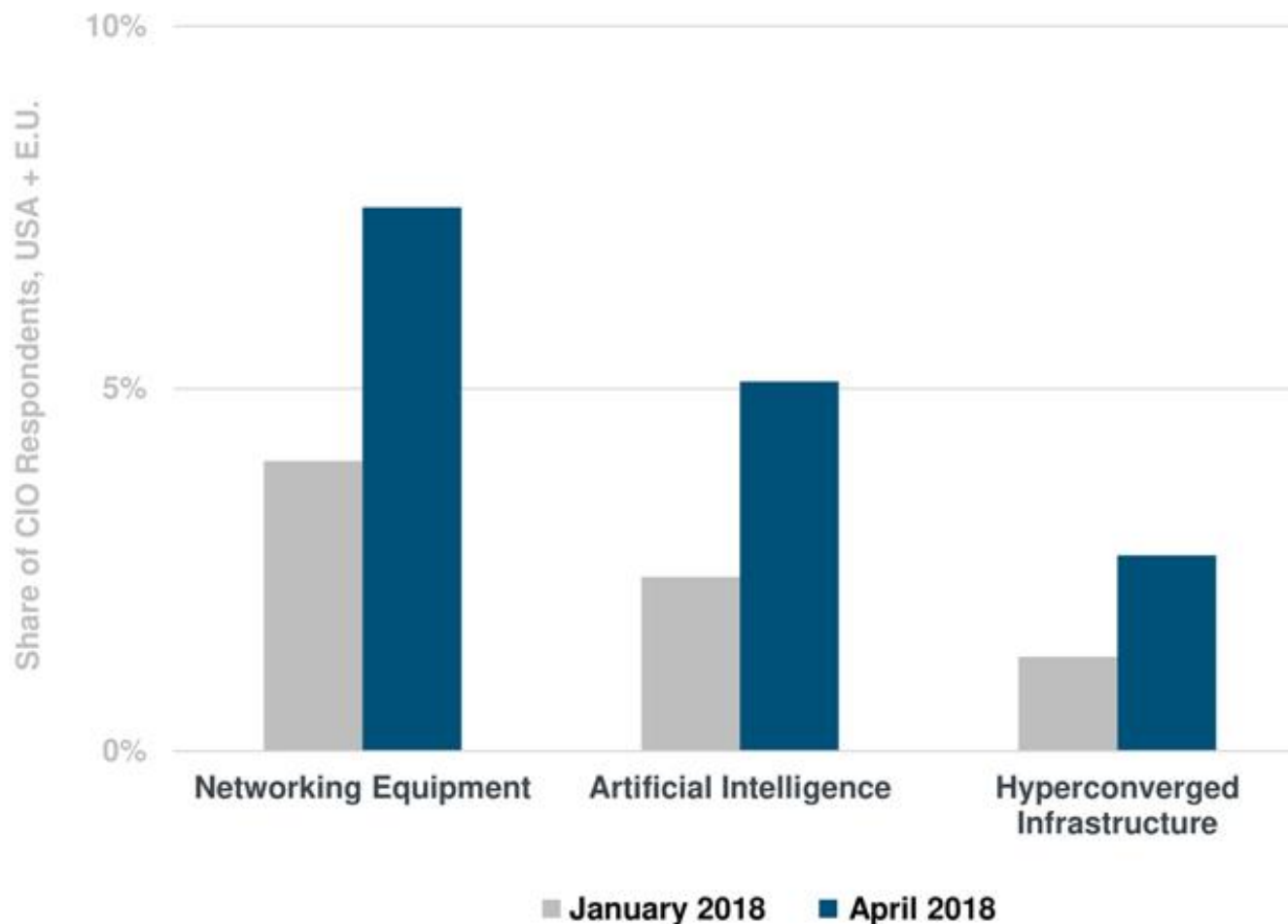
*AI is one of the most important things
humanity is working on.
It is more profound than electricity or fire…*

*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. "

USA Consumers per Deloitte

79%
Willing to Share Personal Data For 'Clear Personal Benefit'

>66%
Willing To Share Online Data With Friends & Family

KLEINER PERKINS
2018
INTERNET TRENDS

Source: USA Consumer Data = Deloitte *To share or not to share* (9/17)
Note: n = 1,538 USA customers surveyed in cooperation with SSI in 2016.

205
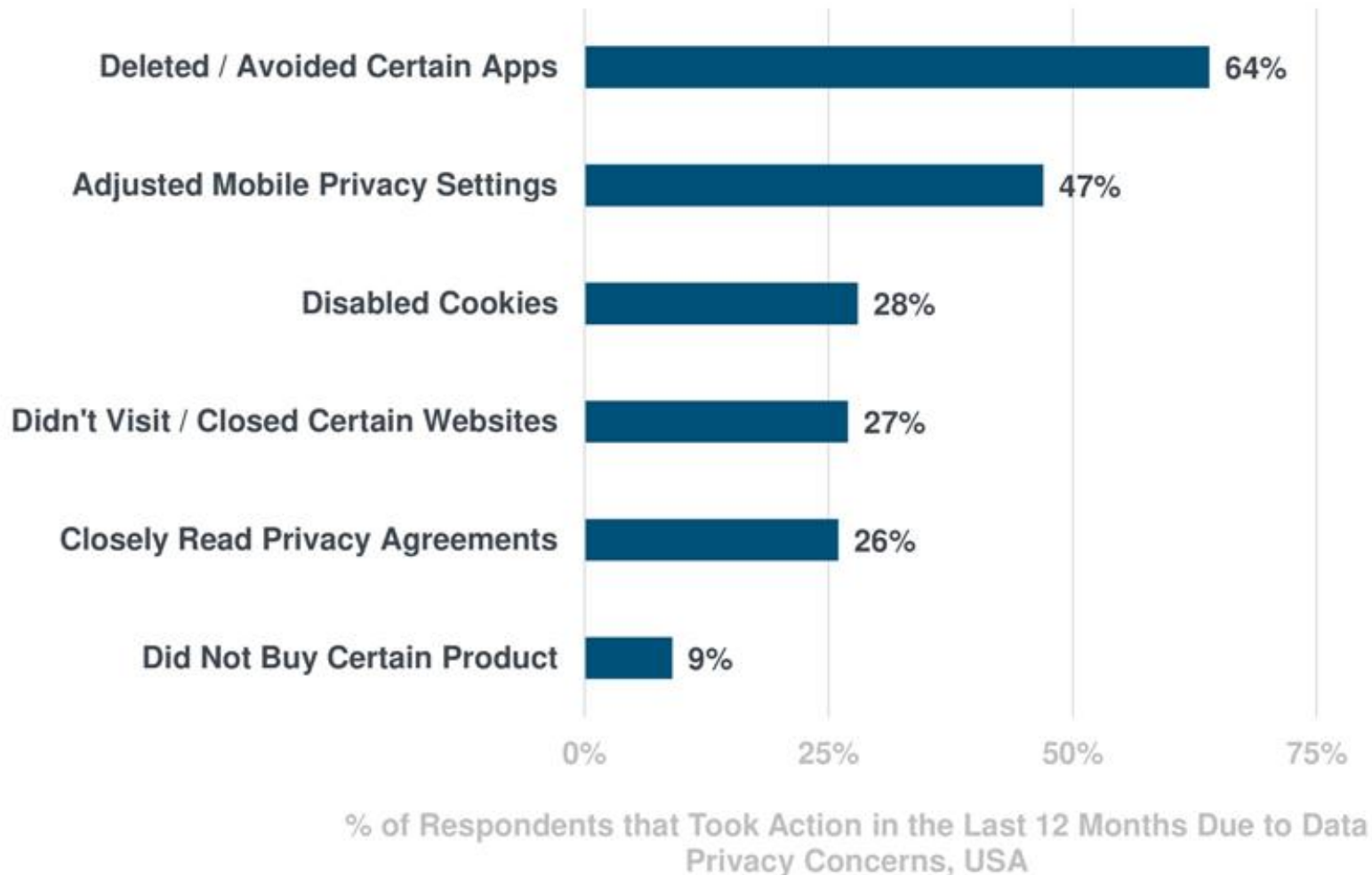
Internet Companies =
Making Consumer Privacy Tools More Accessible (2018)

Facebook
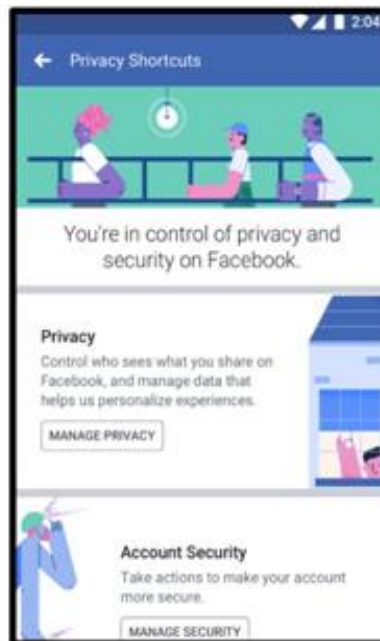
Google
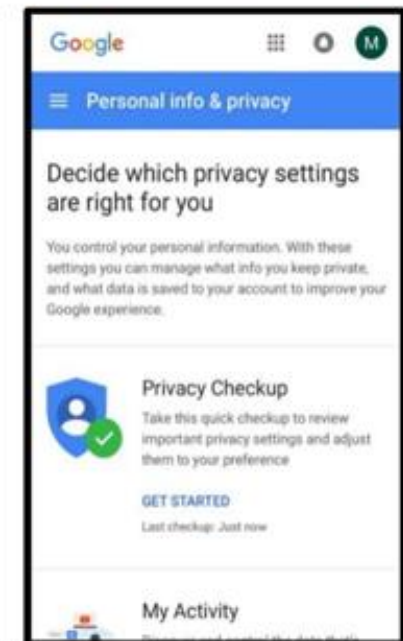
Data Sharing =

Varying Views

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

General Data Protection Regulation
Enacted = 5/25/18

Act on Protection of Personal Information
Enacted = 5/30/17

Privacy Act of 1974
Enacted = 12/31/74

Personal Information Protection Act
Enacted = 09/30/11

Data Privacy Laws

Enacted in Past 10 Years   Developing (2018)

Source: Wikimedia, USA Congress, EU, Japan Government, South Korea Government, Argentina Government.
Note: Argentina proposed a 2017 draft amendment to the Personal Data Protection Act that would strengthen current regulation and align with most GDPR requirements. Japan enacted an amendment to its Act on Protection of Personal Information that went into effect on 5/30/17. All EU countries grouped due to passage of EU-wide GDPR laws.

Cybersecurity = Threats Increasingly Sophisticated...Targeting Data

Observed Malware Volume

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

Malware Volume (Indexed to (Q1:16), Global

15x
10x
5x
0

Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2016				2017			

Global Internet Leadership =

USA & China

Economic Leadership...

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

Global GDP Contribution (Current $)

Source: World Bank (GDP in current $). Other countries account for ~30% of global GDP.
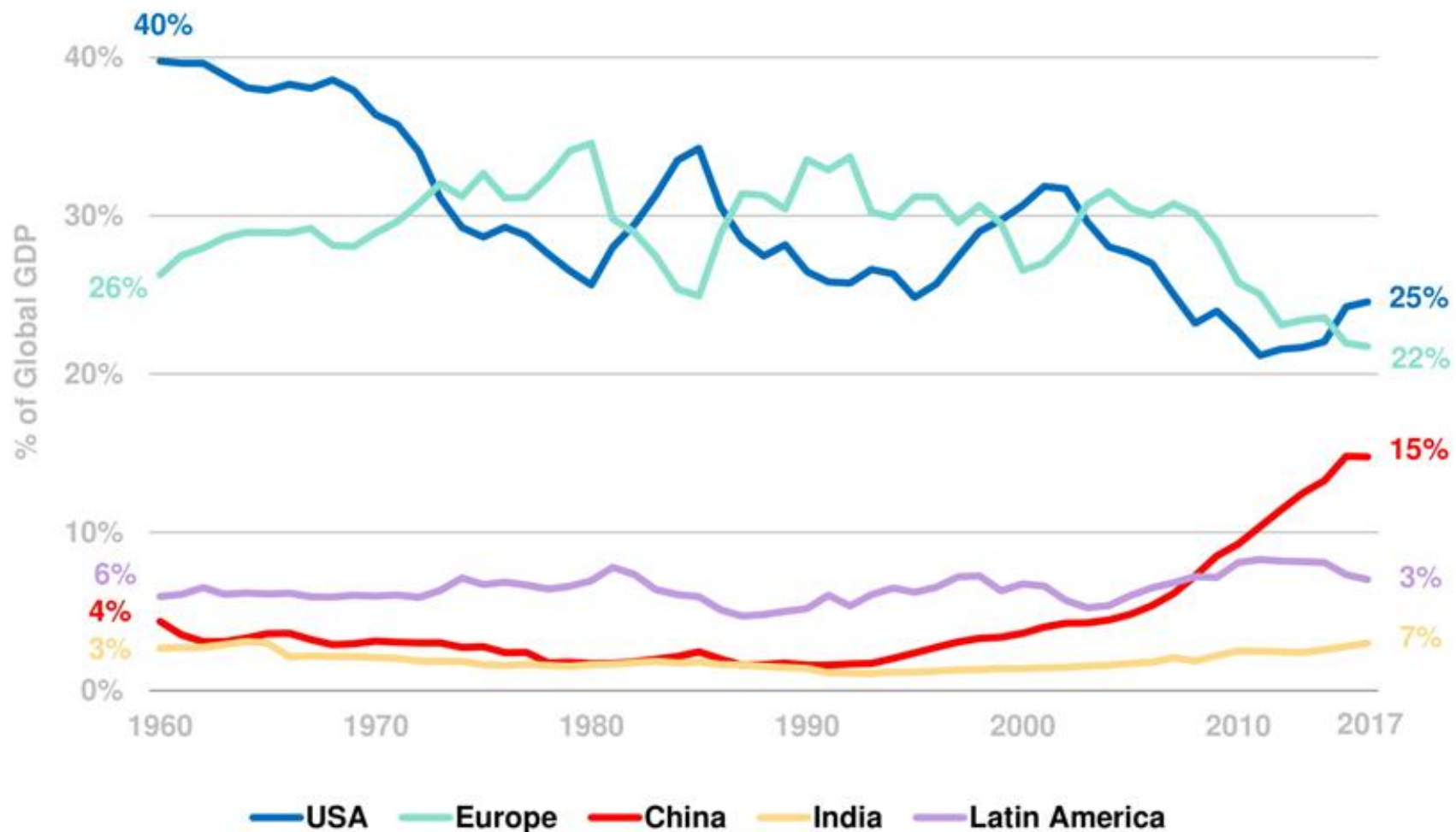
Cross-Border Trade = Increasingly Important to Global Economy

Trade as % of Global GDP

KLEINER PERKINS
2018
INTERNET TRENDS

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

215
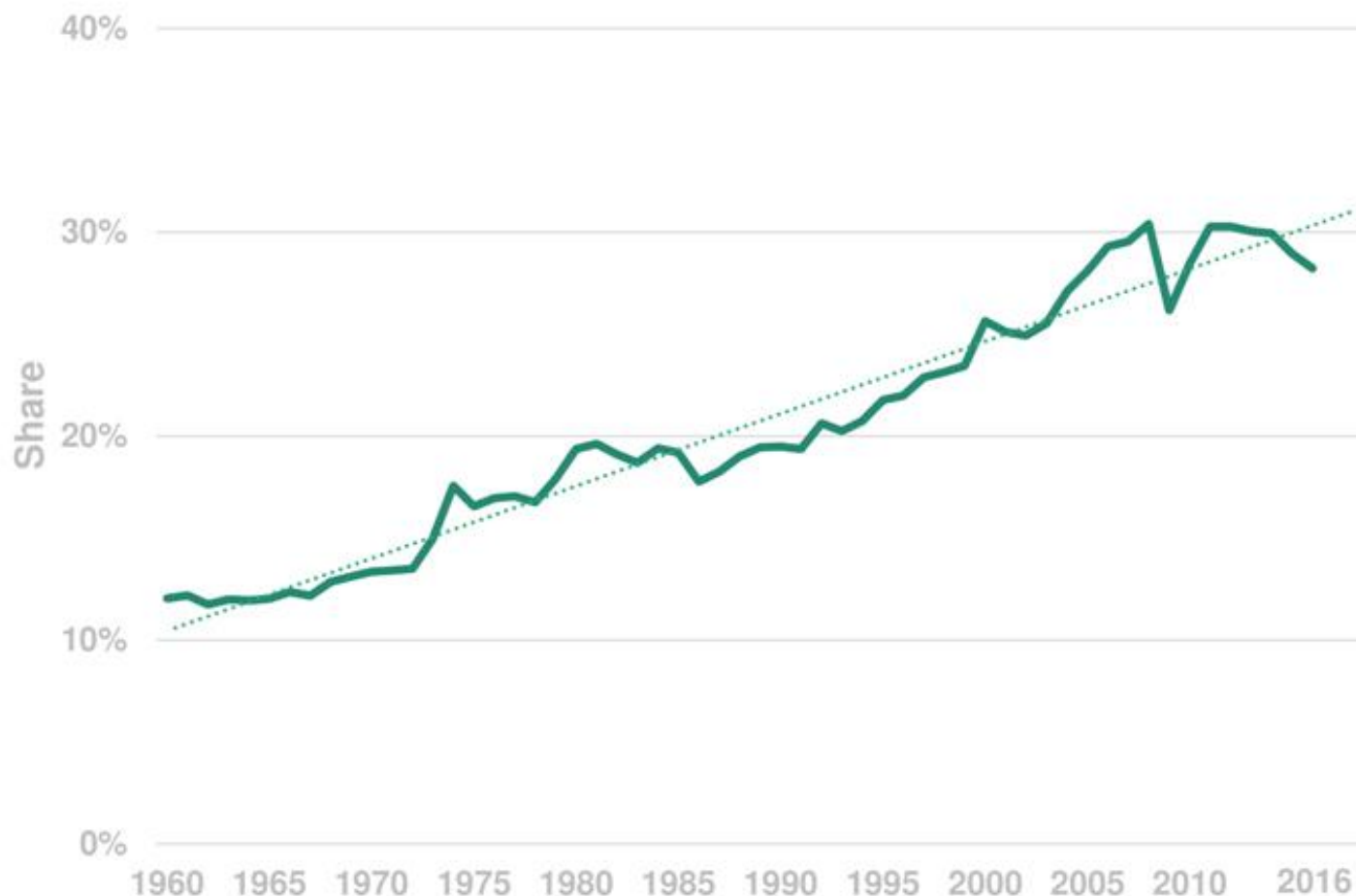
Internet Leadership =

A Lot's Happened Over
5-10 Years…

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**

KLEINER PERKINS
2018
INTERNET TRENDS

Source: CaptIQ, CB Insights, The Wall Street Journal, media reports. *Only includes public companies in 2013. **eBay + PayPal combined for comparison purposes though PayPal spun-off of eBay on 7/20/15.

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

Rank 2018	Company	Region	Market Value ($B) 5/29/13	Market Value ($B) 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

China   USA   Korea   Other   % from China OEMs

Source: Katy Huberty @ Morgan Stanley (3/18), IDC. Note: OEM = Original Equipment Manufacturer.
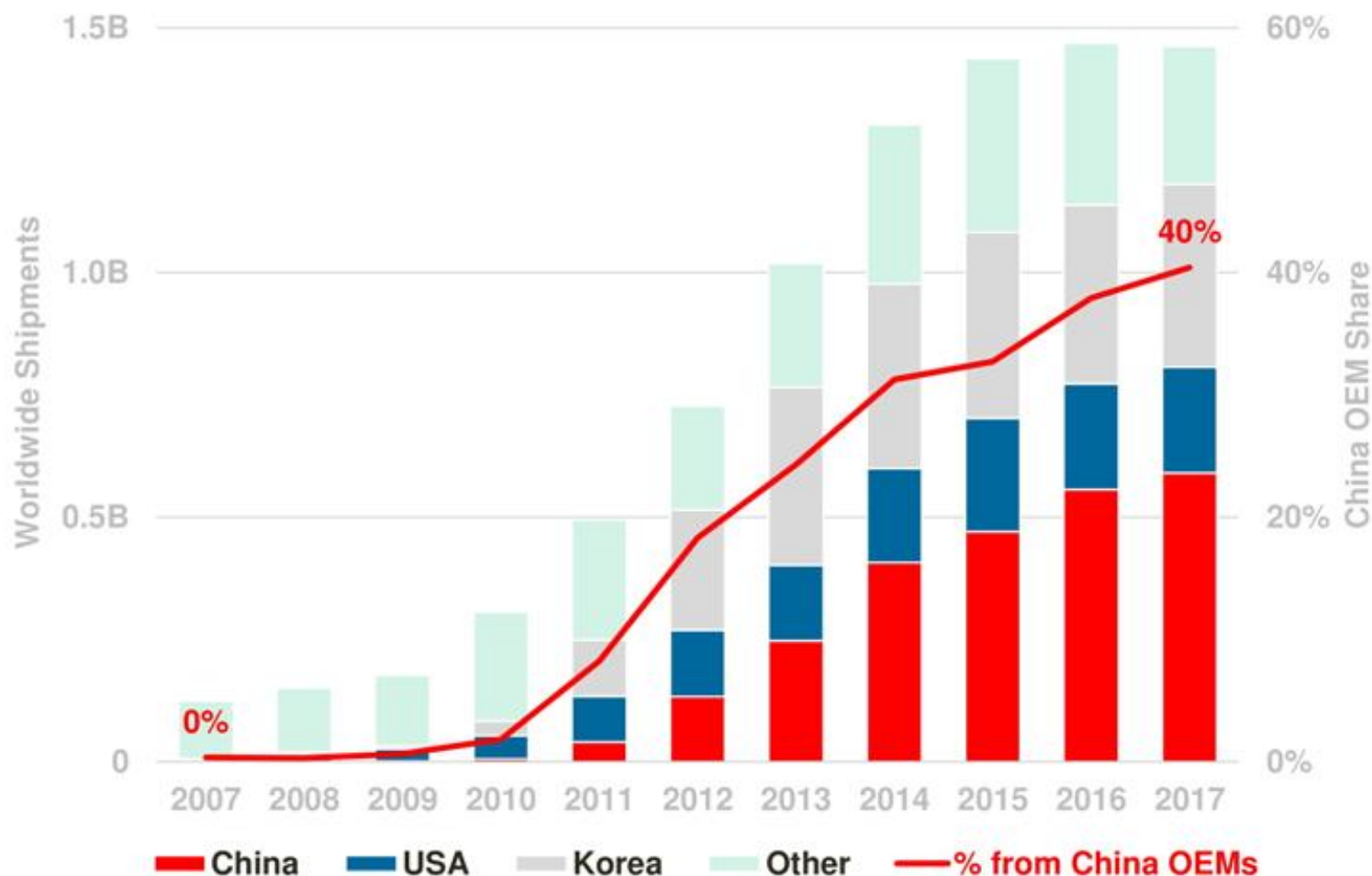
Internet Globally =
USA Platforms = Lead User Numbers...

Active Users By Platform

Source: Facebook (4/18), Google (5/17), Tencent (3/18), Alibaba (5/18). Note: Facebook = MAUs, Google = MAUs, Tencent WeChat = MAUs, Alibaba = Mobile MAUs.
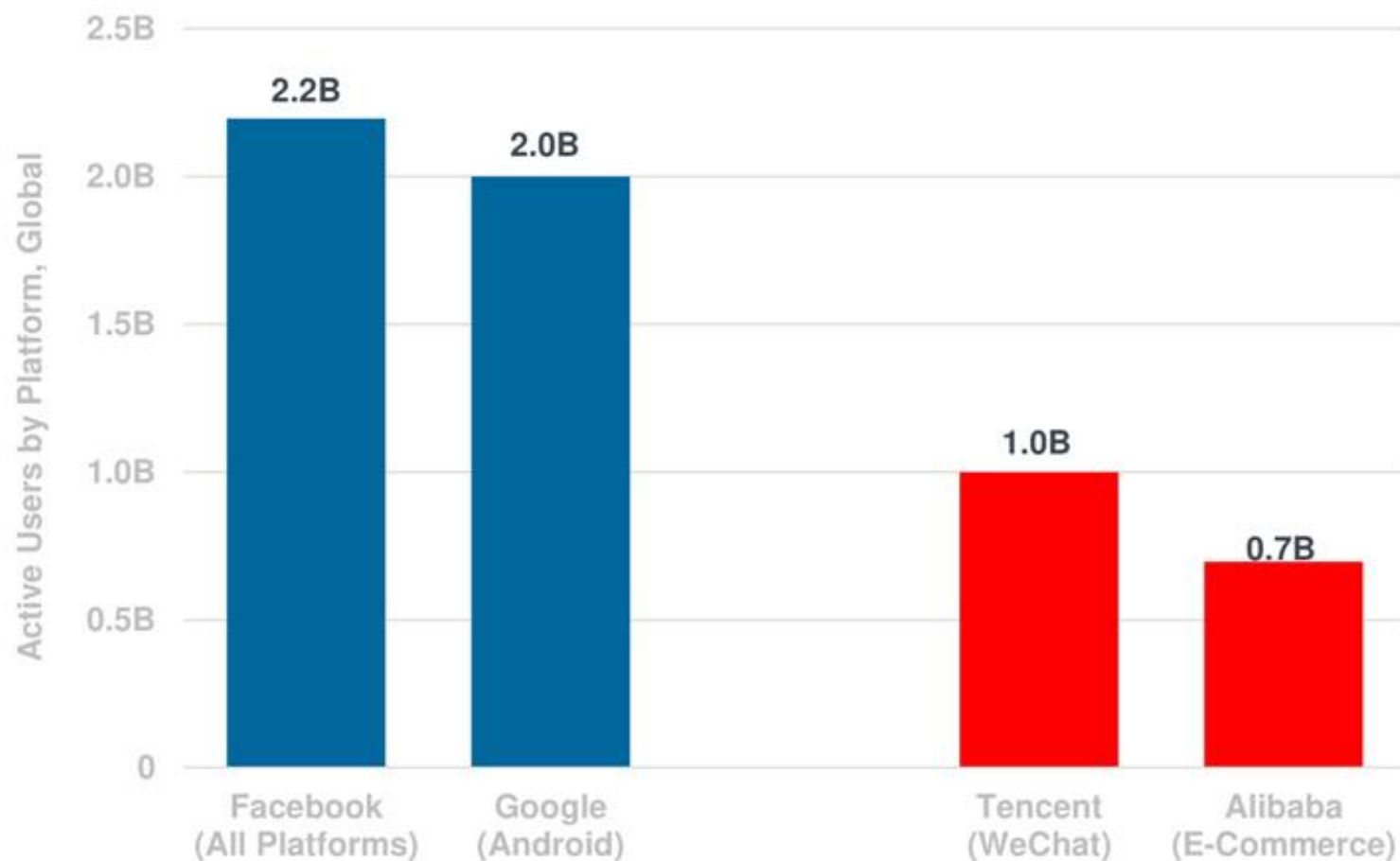
...Internet by Country =
China Platforms = Lead User Numbers...in China

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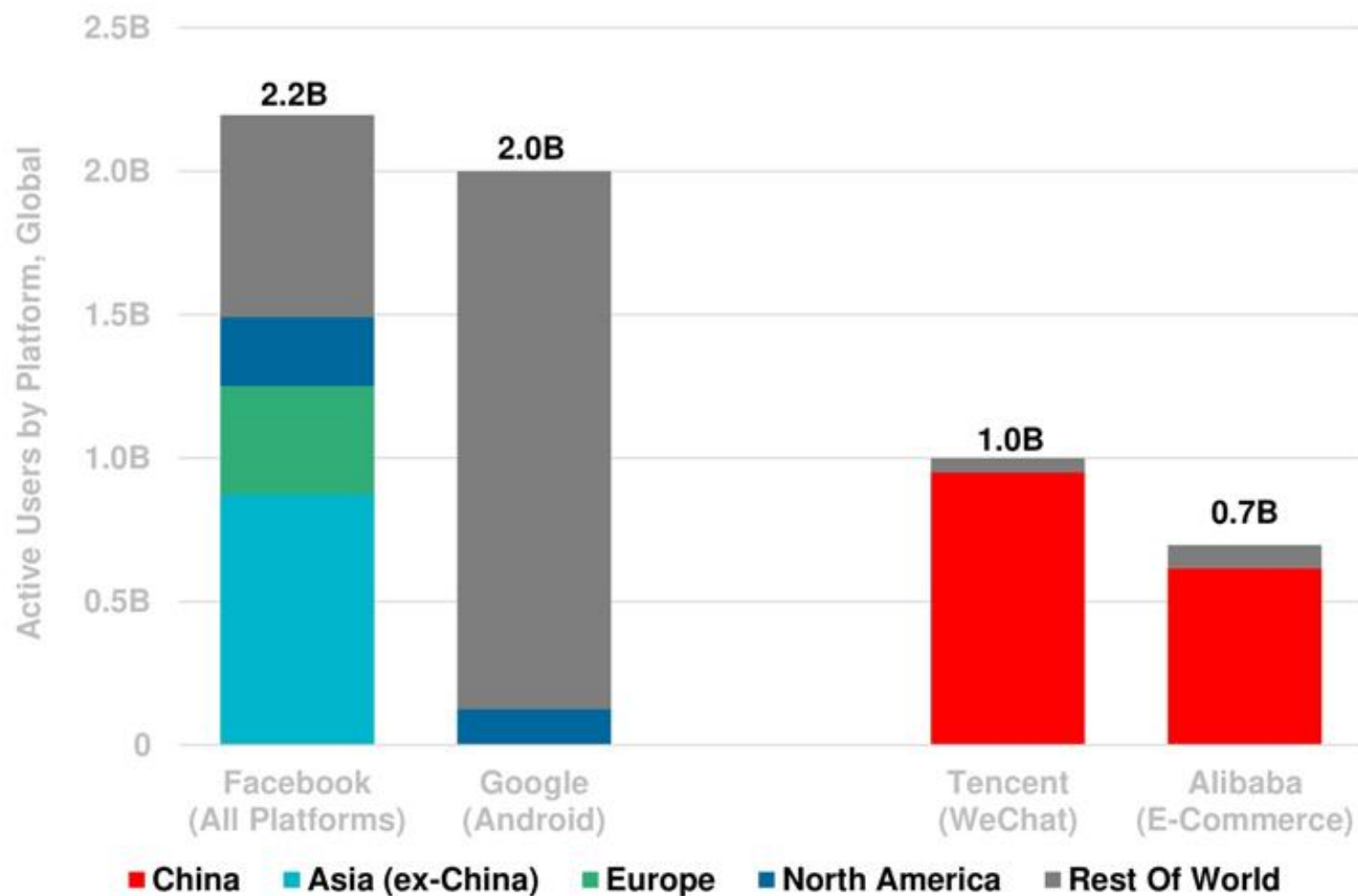
China Feature + Data-Rich Internet Platforms = Largest # of Users in One Country

Tencent
WeChat + WeChat Pay
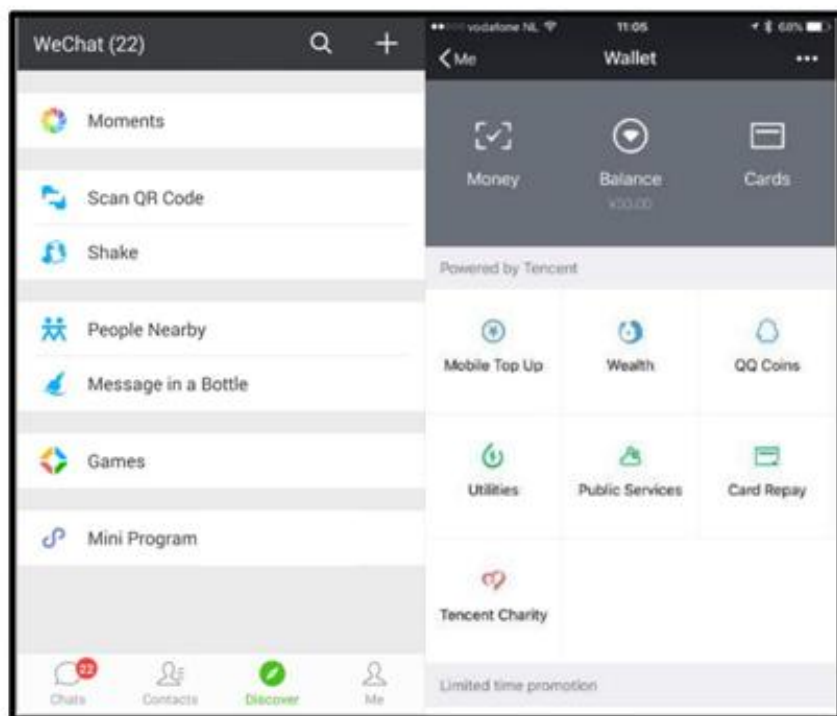
Photos…Friends…Games…
Apps…Finances…Bills…

Alibaba
TaoBao + Alipay

Searches…News…Brands…
Feedback…Finances…Bills…

Source: Tencent, Alibaba

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.)?

Country	%
China	**38%**
Mexico	30%
Russia	29%
Italy	28%
Global	27%
Brazil	26%
USA	**25%**
South Korea	20%
Australia	17%
UK	16%
Spain	16%
France	15%
Canada	14%
Germany	12%
Netherlands	12%
Japan	8%

% of Global Respondents Very Willing to Share (6 or 7 on 7 Point Scale)
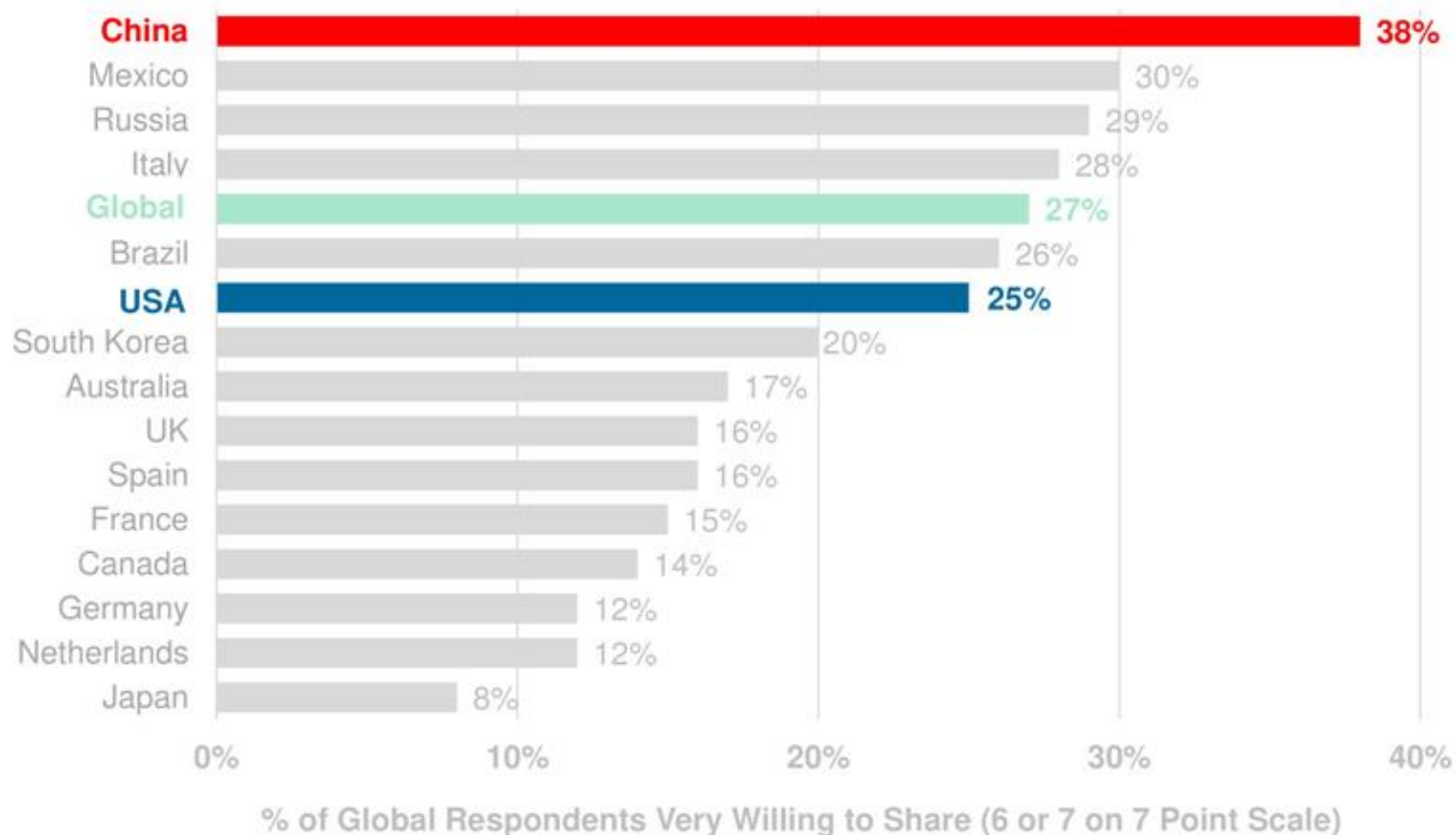
China Digital Data Volume @
Significant Scale & Growing Fast =

Providing Fuel for
Rapid Artificial Intelligence Advancements

Artificial Intelligence =

USA & China...

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

1985   **1995**   **2005**   **2018**

6th World Computer Chess Championship

1) Deep Thought (USA)
2) Bebe (USA)
3) Cray Blitz (USA)
China = **No Entrants**

Large Scale Visual Recognition Challenge 2010

1) NEC-UIUC* (USA + Japan)
2) XRCE (France / EU)
3) University of Tokyo (Japan)
China = **11th Place**

RoboCup-99 Soccer Simulation League

1) CMUnited-99 (USA)
2) MagmaFreiburg (Germany)
3) Essex Wizards (UK)
China = **No Entrants**

Stanford Question Answering Dataset (Ongoing)

1) Google + Carnegie Mellon (USA)
2) Microsoft* **+ NUDT** (USA + **China**)
3) **YUANFUDAO (China)**
4) **HIT + iFLYTEK (China)**
5) **Alibaba (China)**

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)

First University
(Bachelor's Equivalent)

Doctoral

China   USA   EU – Top 8   Japan

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

Source: New America Translation of China State Council documents (7/20/17).

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-18th	**Cultivation & Extraction**
19-20th	**Manufacturing & Industry**
21st…	**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

Registered Learners, Global

- 40MM
- 30MM
- 20MM
- 10MM
- 0

2014 · 2015 · 2016 · 2017

Learners by Geography

| 30% | 28% | 20% | 11% | 5% |

0% · 20% · 40% · 60% · 80% · 100%

■ North America ■ Asia ■ Europe ■ South America ■ Africa

Source: Coursera. Note: Course popularity based on average daily enrollments. Graph shows learners as of 5/18.
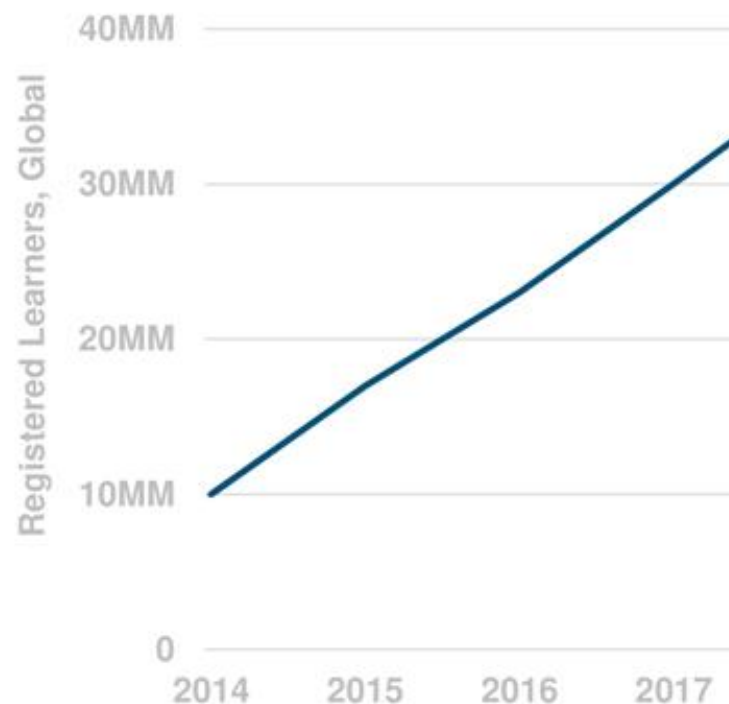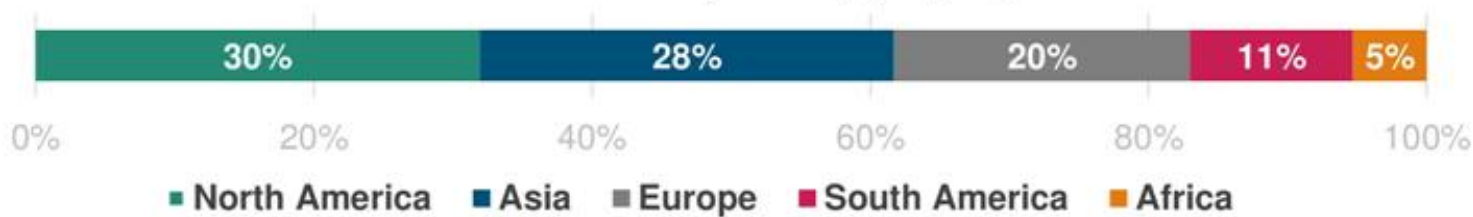
...Lifelong Learning =
Educational Content Usage Ramping Fast (YouTube)...

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

Subscribers

9MM

+6MM

+7

+6

+6

+2

6MM

3MM

0

Asap SCIENCE | Crash Course | TED-Ed | Smarter Every Day | Khan Academy

■ 2013 ■ 2018

Source: YouTube (5/18).
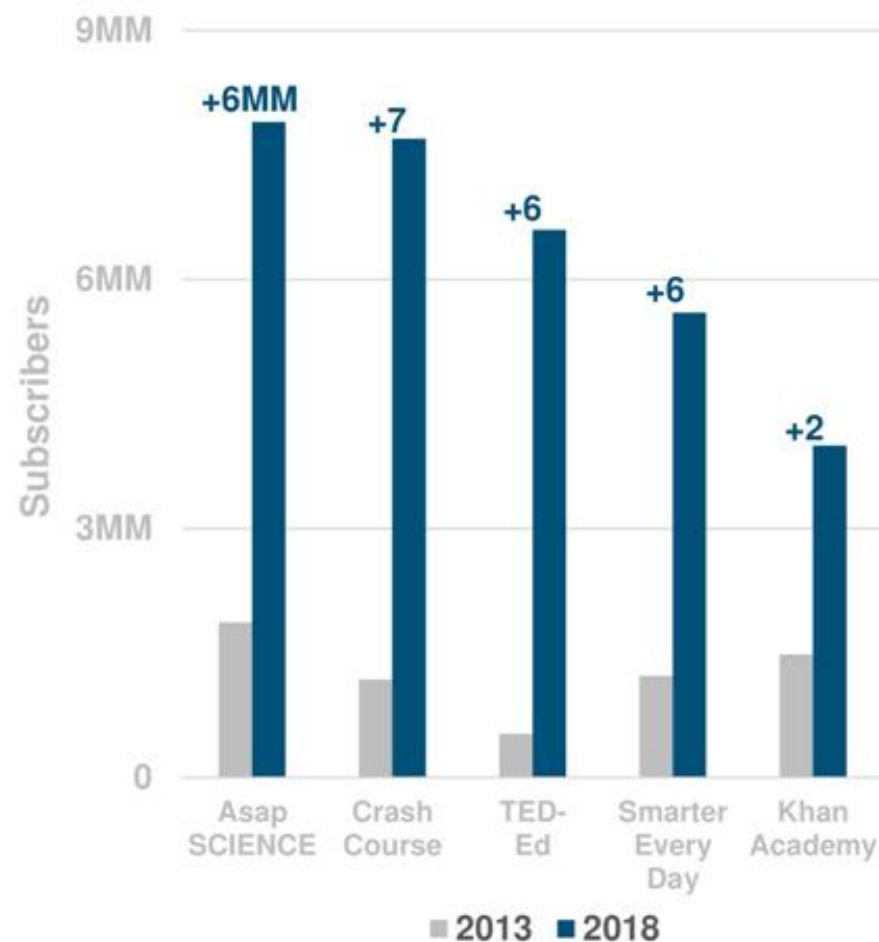
'Workforce 2020' / 'Future Ready' Programs

$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)

Source: AT&T (4/18).
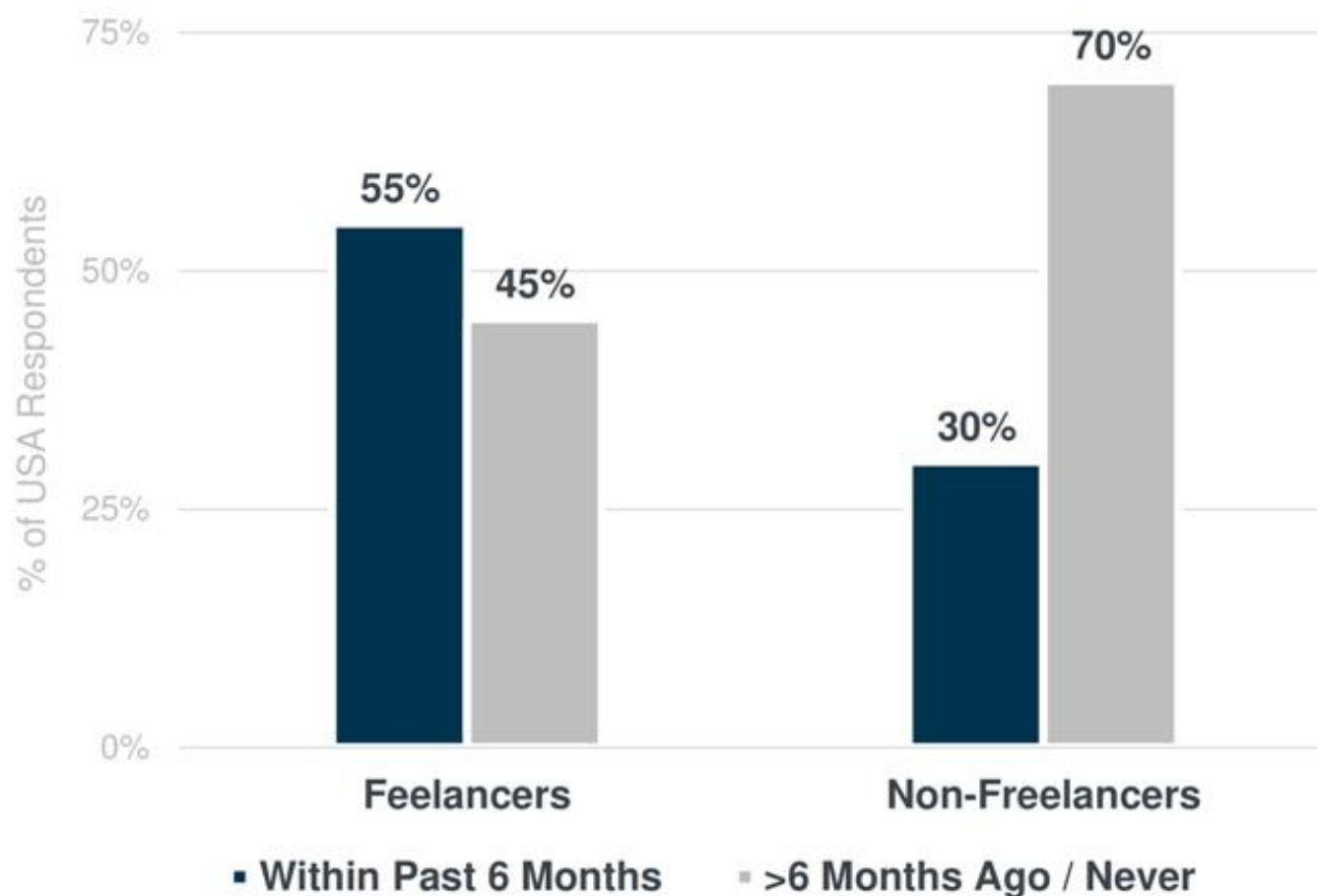
CHINA INTERNET =

ROBUST ENTERTAINMENT + RETAIL INNOVATION

Hillhouse Capital

下载中文版

China Macro Trends =

Strong

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

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

China Consumer Confidence Index (LHS) — China Manufacturing PMI (RHS)
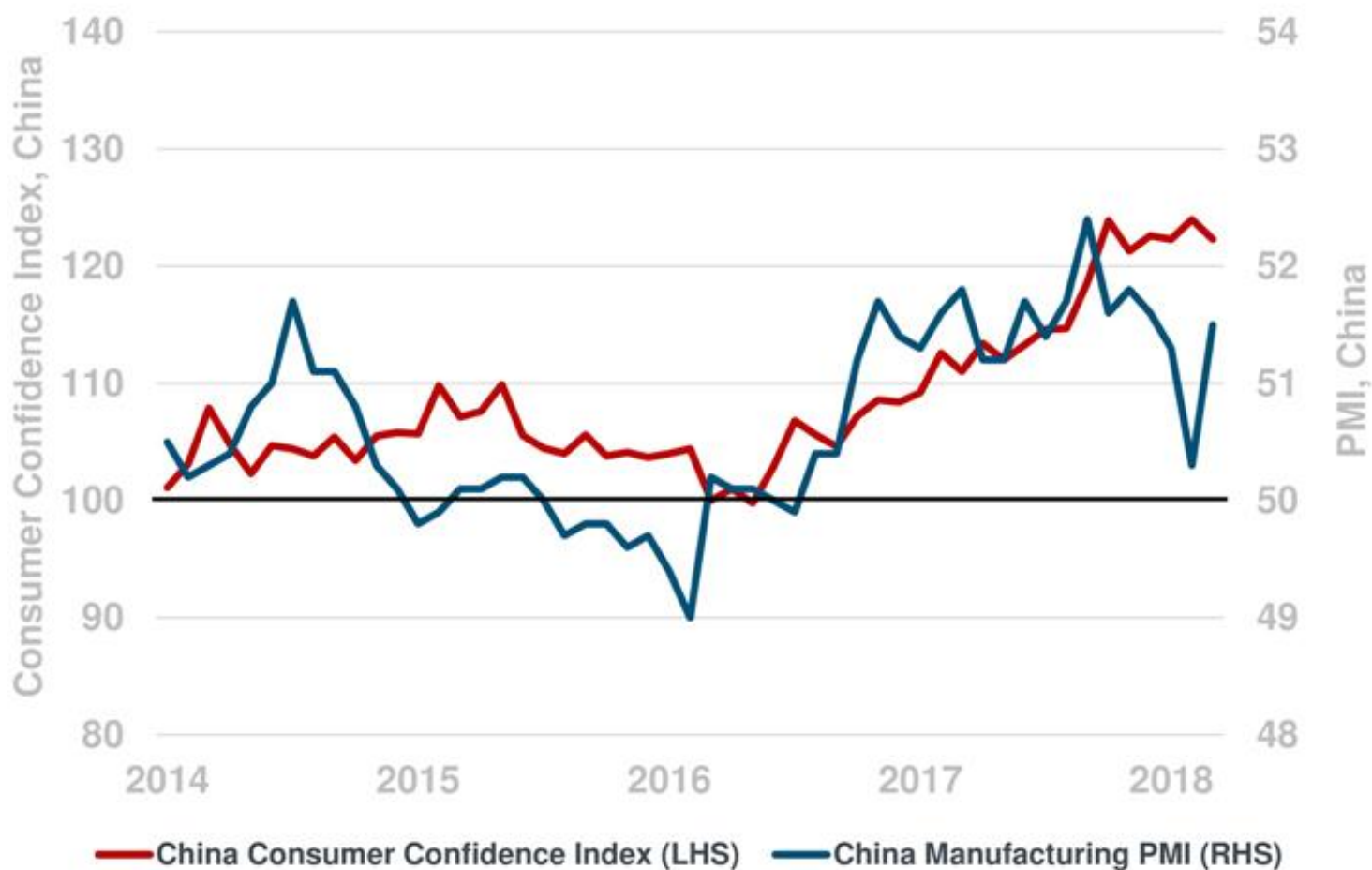
China GDP Growth = Increasingly Driven by Domestic Consumption... @ 62% vs. 35% of GDP Growth (2003)

China Domestic Consumption Contribution to GDP Growth
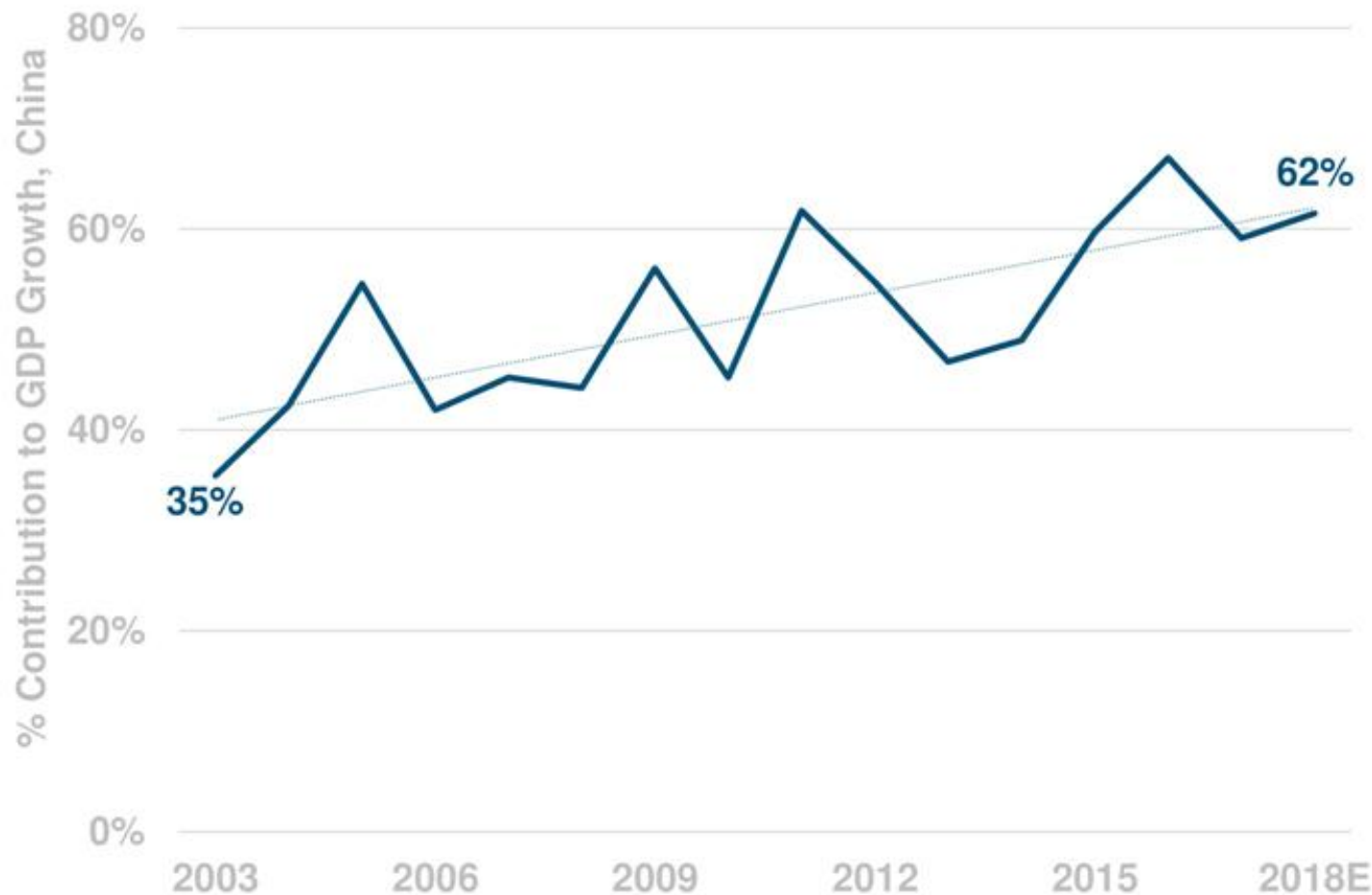
China Internet Usage =

Accelerating

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

China Mobile Internet Users vs. Y/Y Growth

KLEINER PERKINS
2018
INTERNET TRENDS

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

HILLHOUSE **Hillhouse Capital** 242
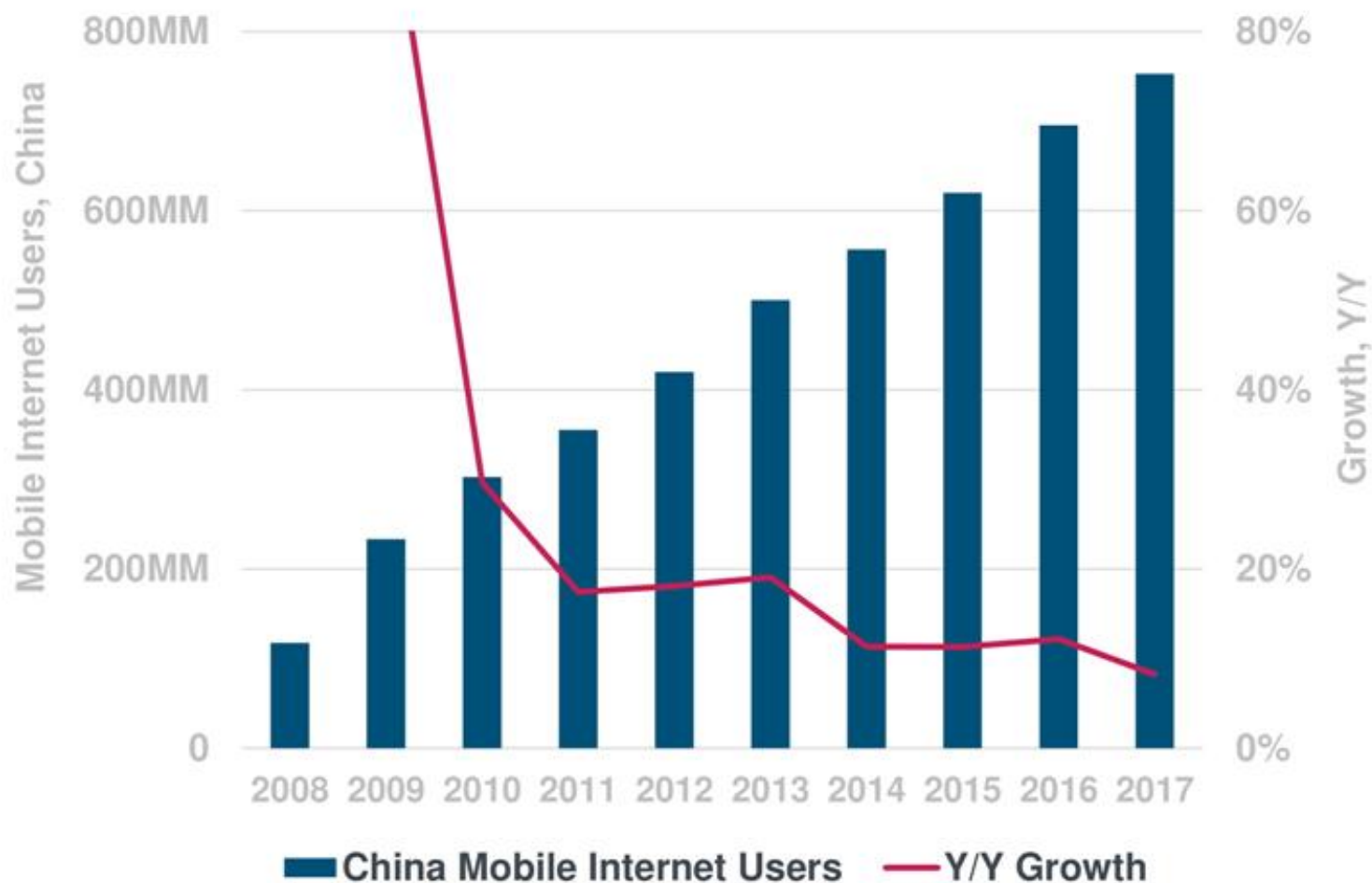
China Mobile Internet (Data) Usage = Accelerating…+162% vs. +124% Y/Y

China Cellular Internet Data Usage & Growth Y/Y

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

Hillhouse Capital
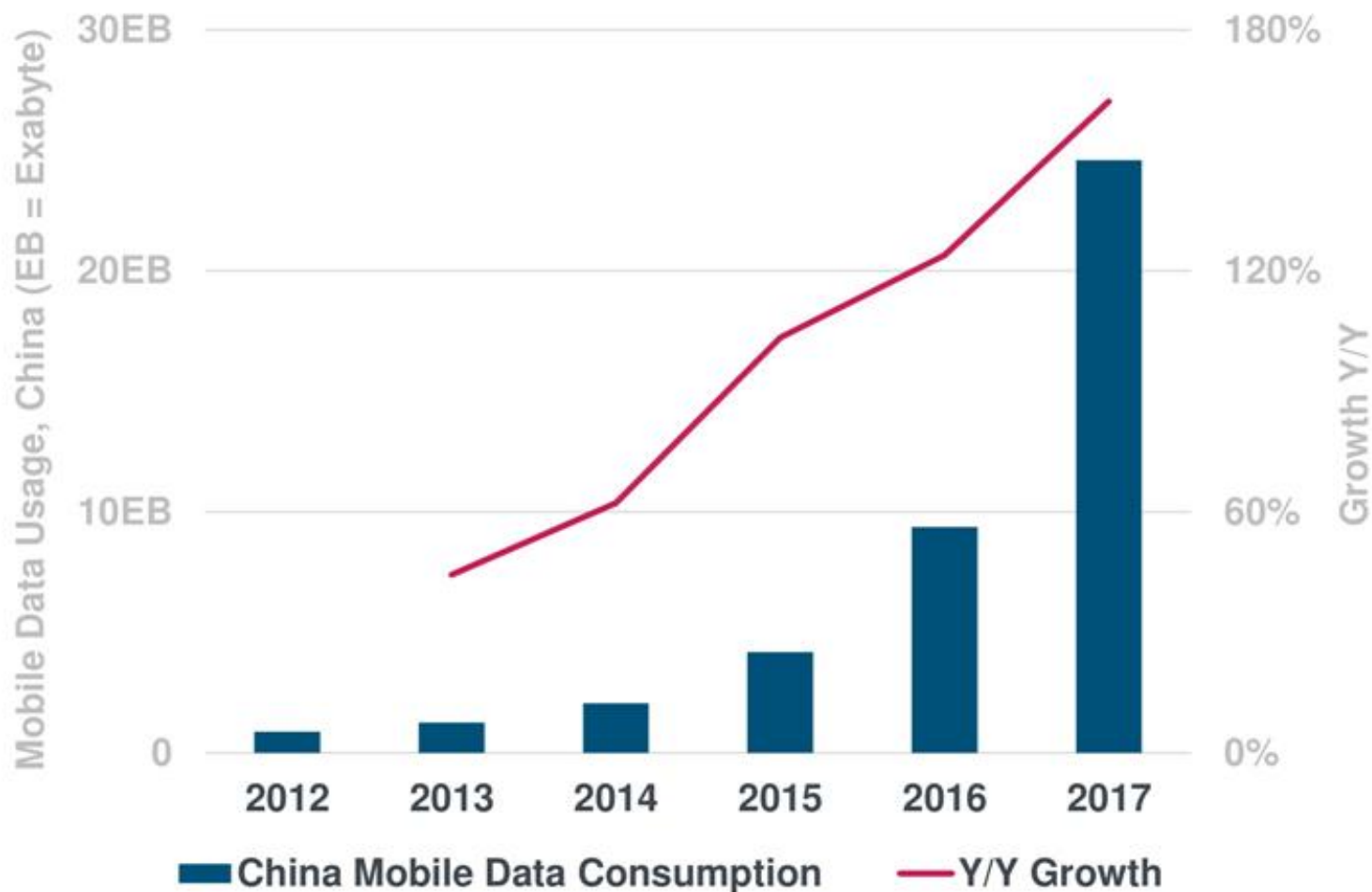
China Online Entertainment =

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

- Social Networking 60%
- Video 13%
- Game 13%
- News 7%
- Audio 4%
- Reading 3%
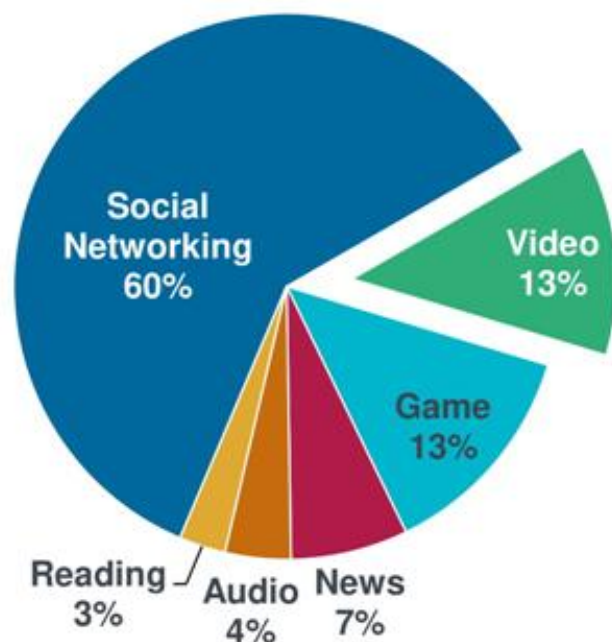
March 2018
3.2B Hours, +22% Y/Y
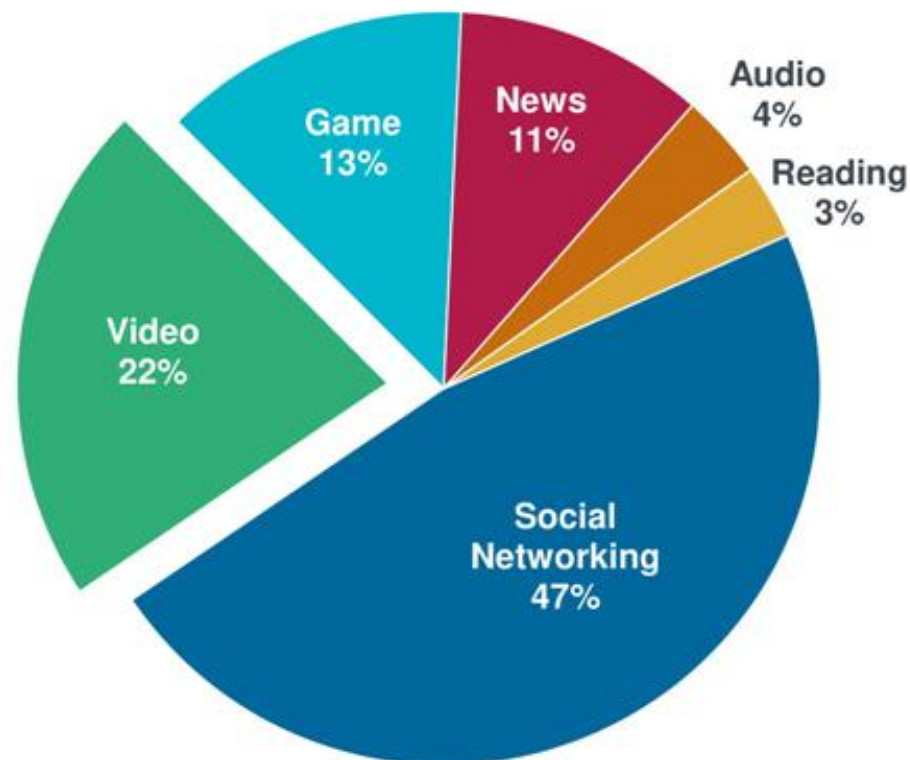
- Social Networking 47%
- Video 22%
- Game 13%
- News 11%
- Audio 4%
- Reading 3%
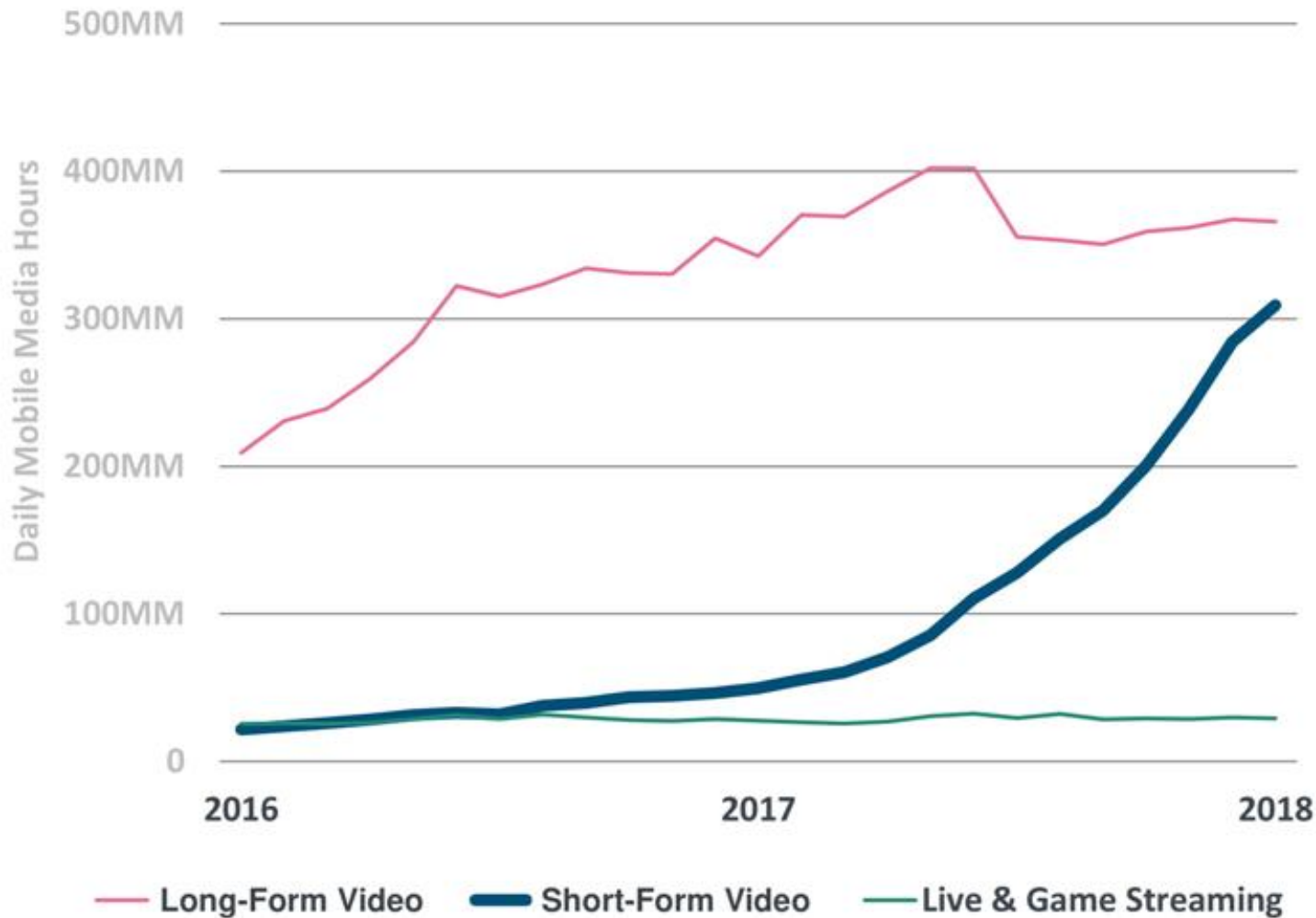
Douyin (Tik-Tok)

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**

Source: Public disclosures, Goldman Sachs, Bank of America, Hillhouse estimates. *Includes estimates from CCTV, provincial satellite TV channels and major local TV networks. **Includes iQiyi + Tencent Video + Youku.

Hillhouse Capital 248
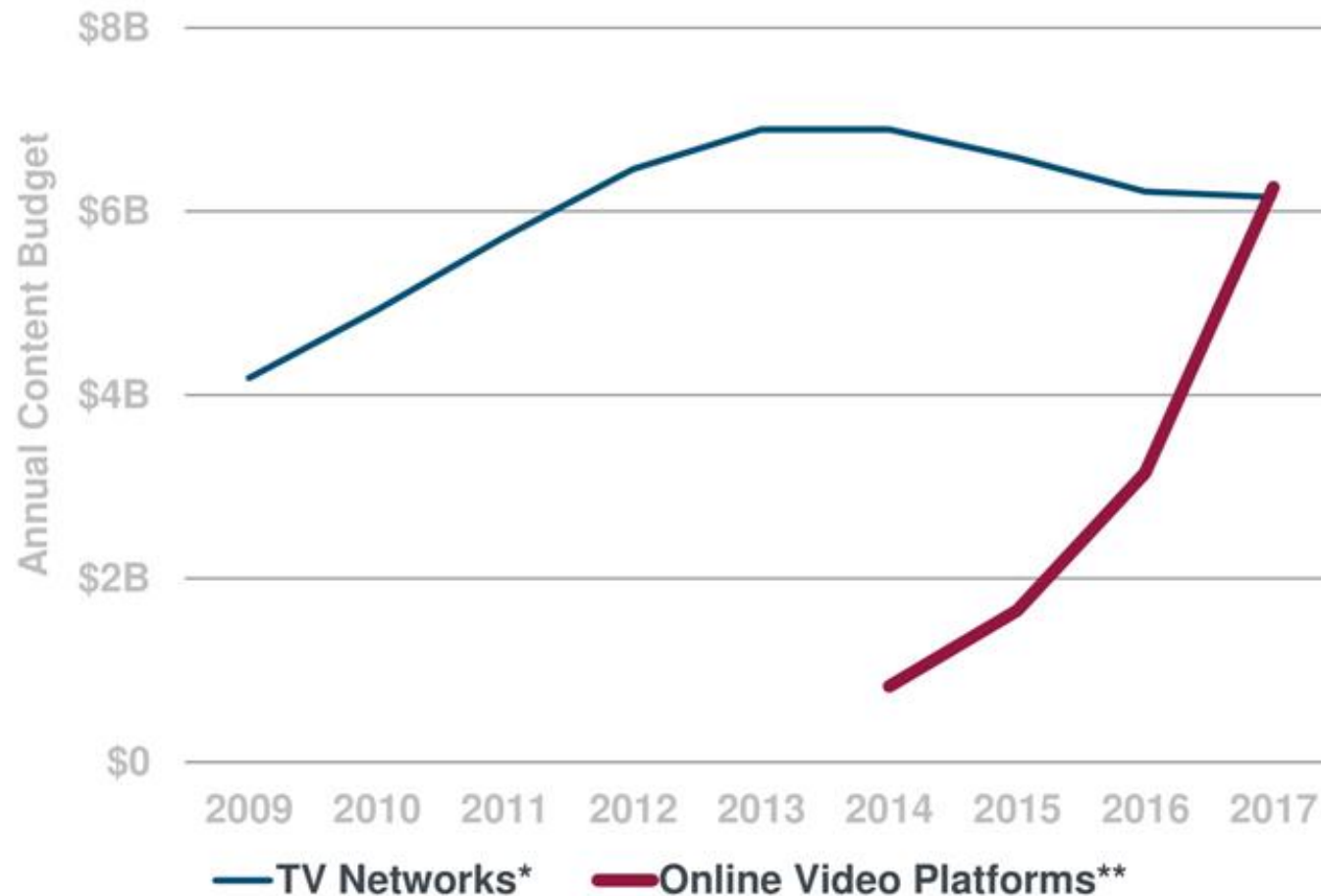
...China Online Long-Form Video Original / Exclusive Content = Driving Industry-Wide Paying Subscriber Growth

Original / Exclusive Content

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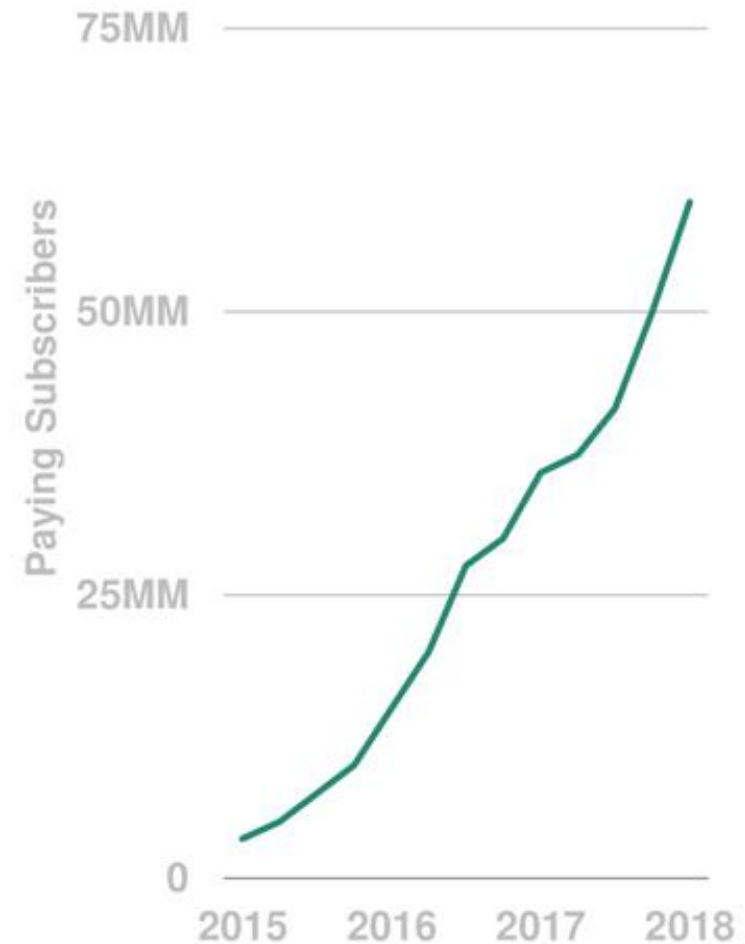
China Team-Based Multiplayer Mobile Games = Lead Game Time Spent in China

Honor of Kings
80MM+ China DAU

PUBG Mobile
50MM+ China DAU

China Mobile Games Daily Hours

—— MOBA / FPS / Survival   —— Casual   —— Other***

Hillhouse Capital

250
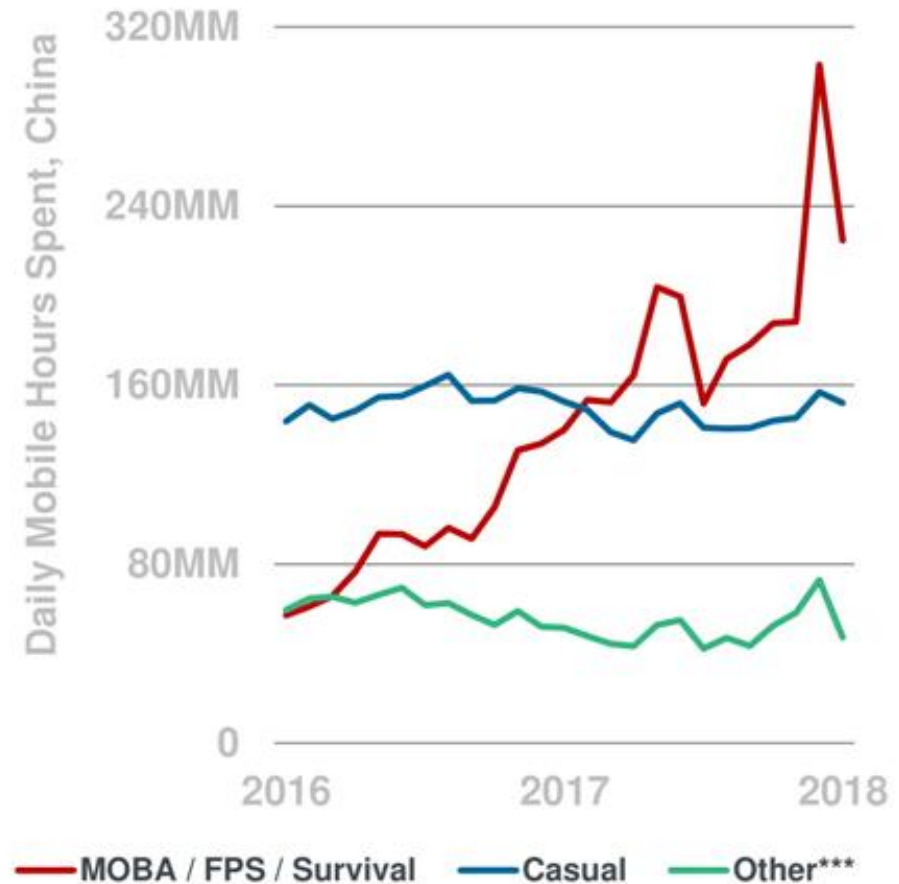
Global Interactive Game Revenue = China #1 Market in World* > USA (2017)

Interactive Game Software Revenue

Video Game (excl. Hardware) Revenue ($B)

Legend: China — USA — EMEA — Asia (ex. China)

KLEINER PERKINS 2018 INTERNET TRENDS

Hillhouse Capital
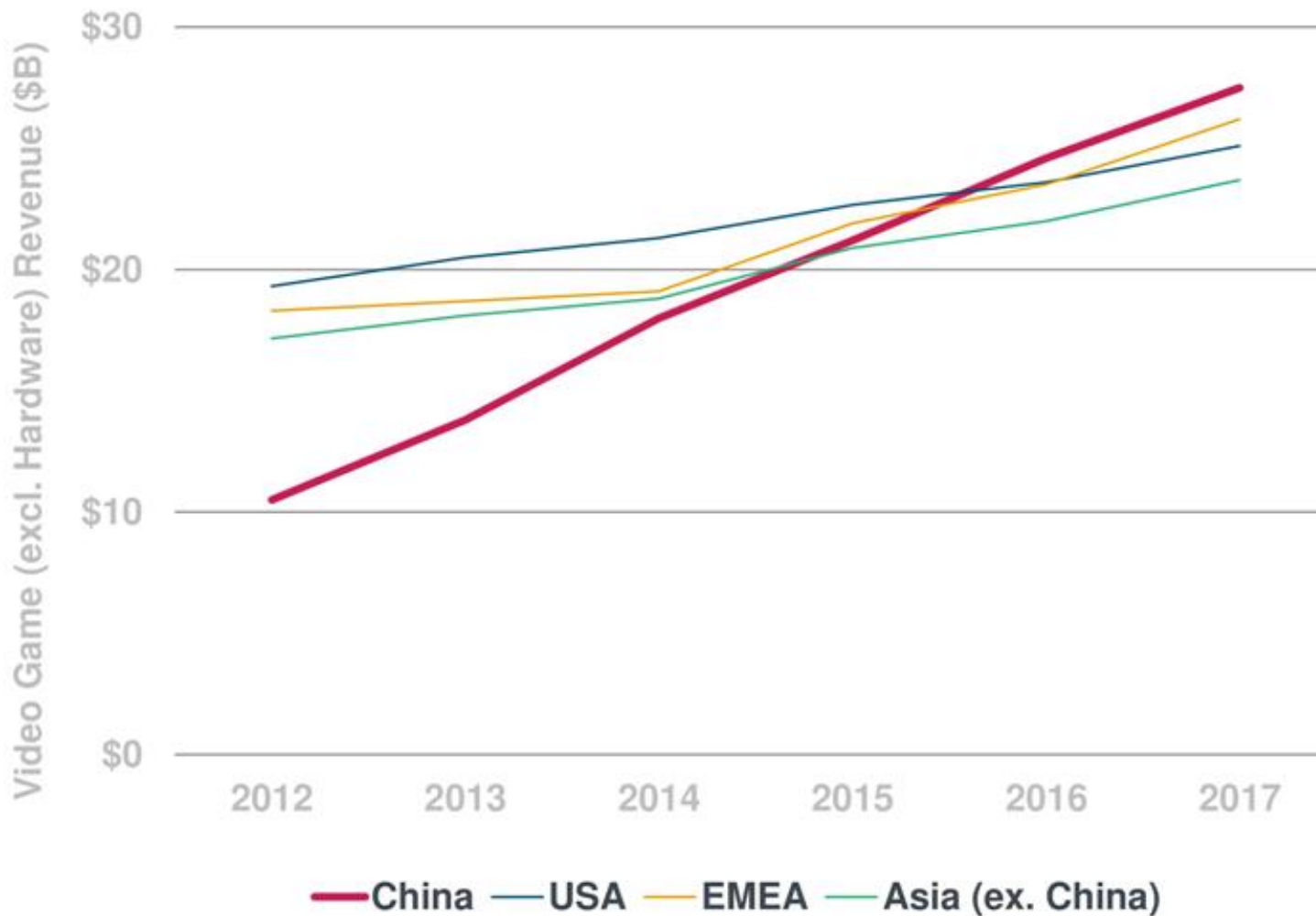
China Retail Innovation =

Spreading from Online to Offline

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

E-Commerce % of Retail Sales

Source: Euromonitor. Note data excludes certain
consumer-to-consumer (C2C) transactions.
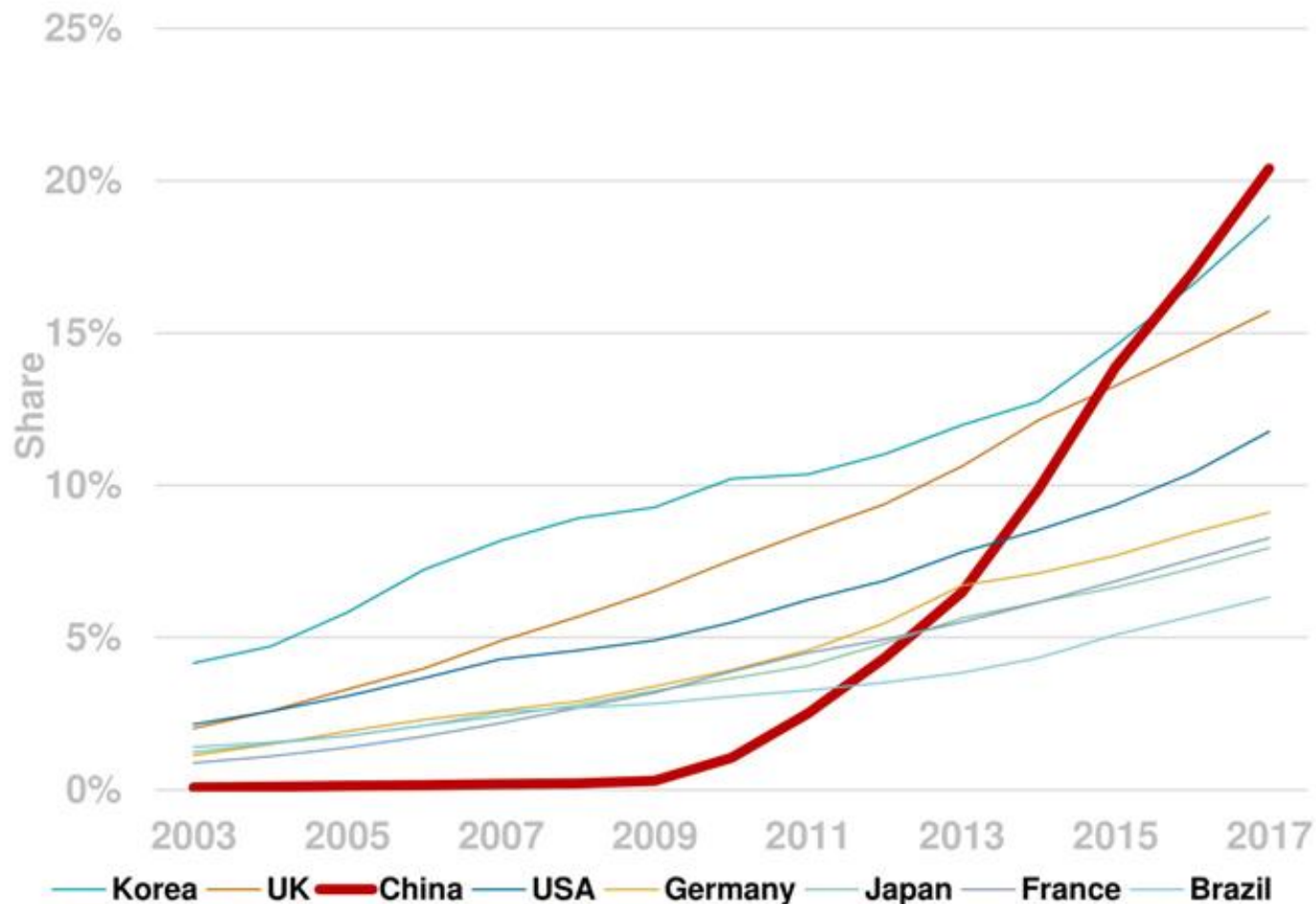
China E-Commerce = Strong Growth +28% Y/Y...
Mobile = 73% of GMV

China B2C E-Commerce Gross Merchandise Value
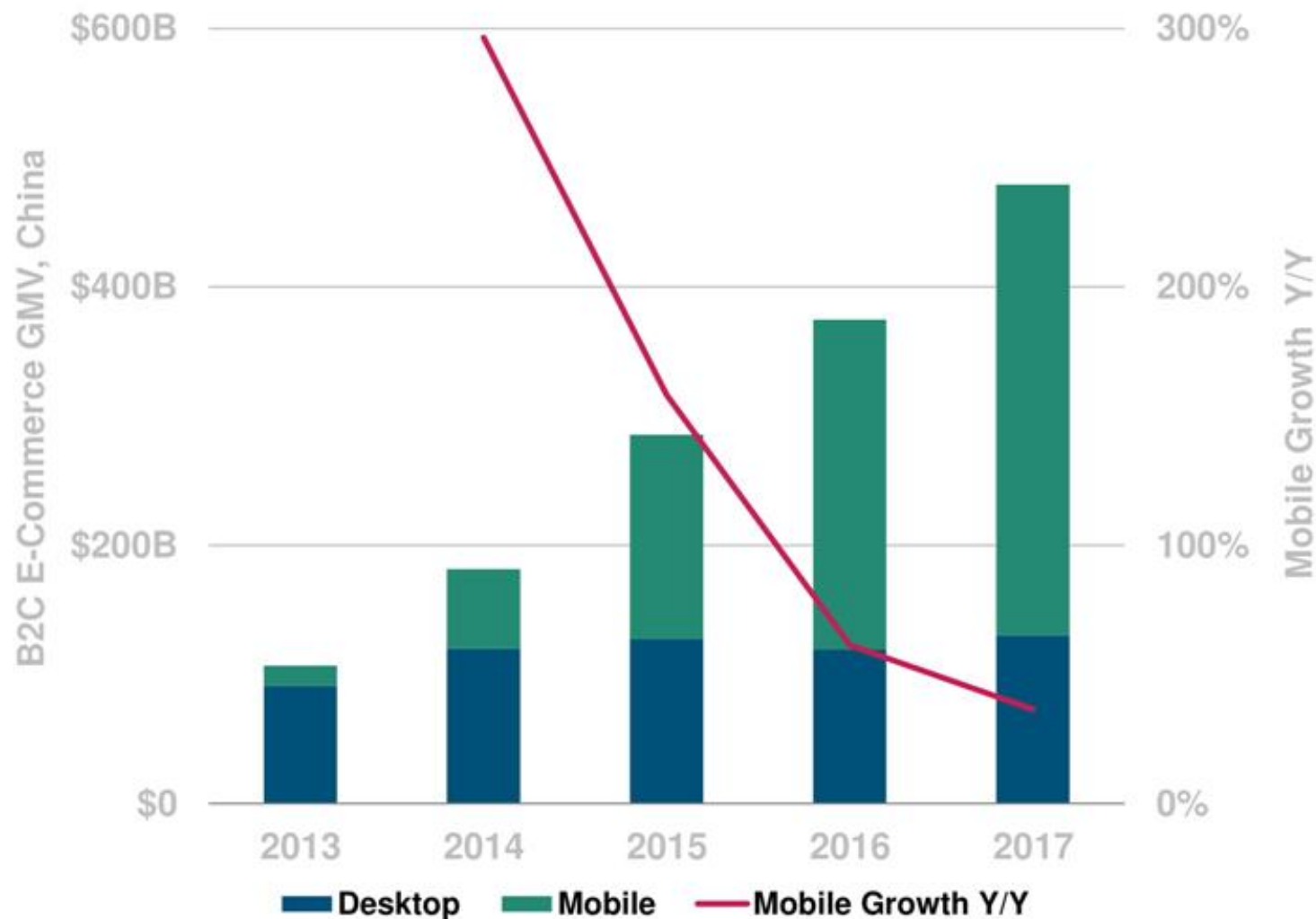
Hema Stores = Re-Imagining Grocery Retail Experience...
High Quality + Convenience + Digital...

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

Source: Hillhouse. Note: As of 4/18, there are 37 Hema stores in China.

Hillhouse Capital 255

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

Daily Retail Transactions per Store, 11/17

KLEINER PERKINS
2018
INTERNET TRENDS

Source: Bernstein Research. Note: Hema data points in chart came from stores in Shanghai and Hangzhou in 11/17. In Q1:18, more than 50% of Hema store orders were placed online for home delivery.

Hillhouse Capital   256
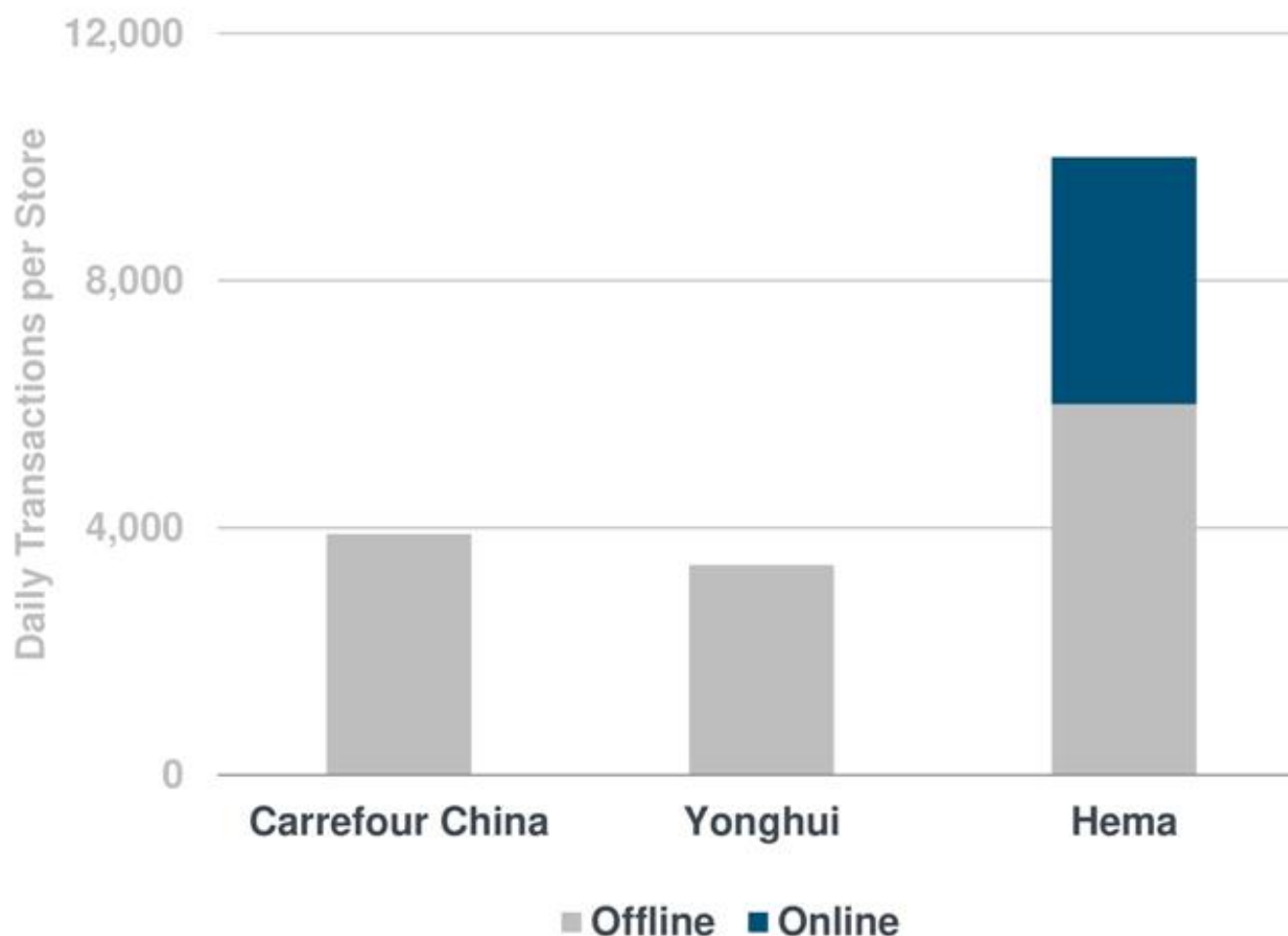
Belle =
Re-Imagining Offline Retail Experience with Online Analytics

Traffic Heat Map

Optimize Layout
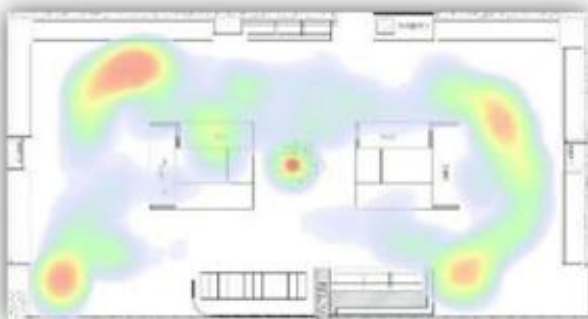
RFID in Shoes / Floor Mat

Conversion Analysis

3D Foot Scan

Personalization

138 fittings / 37 sales
27% conversion

168 fittings / 5 sales
3% conversion

KLEINER PERKINS
2018
INTERNET TRENDS

Source: Belle, Hillhouse Capital.

HILLHOUSE **Hillhouse** 257
Capital

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
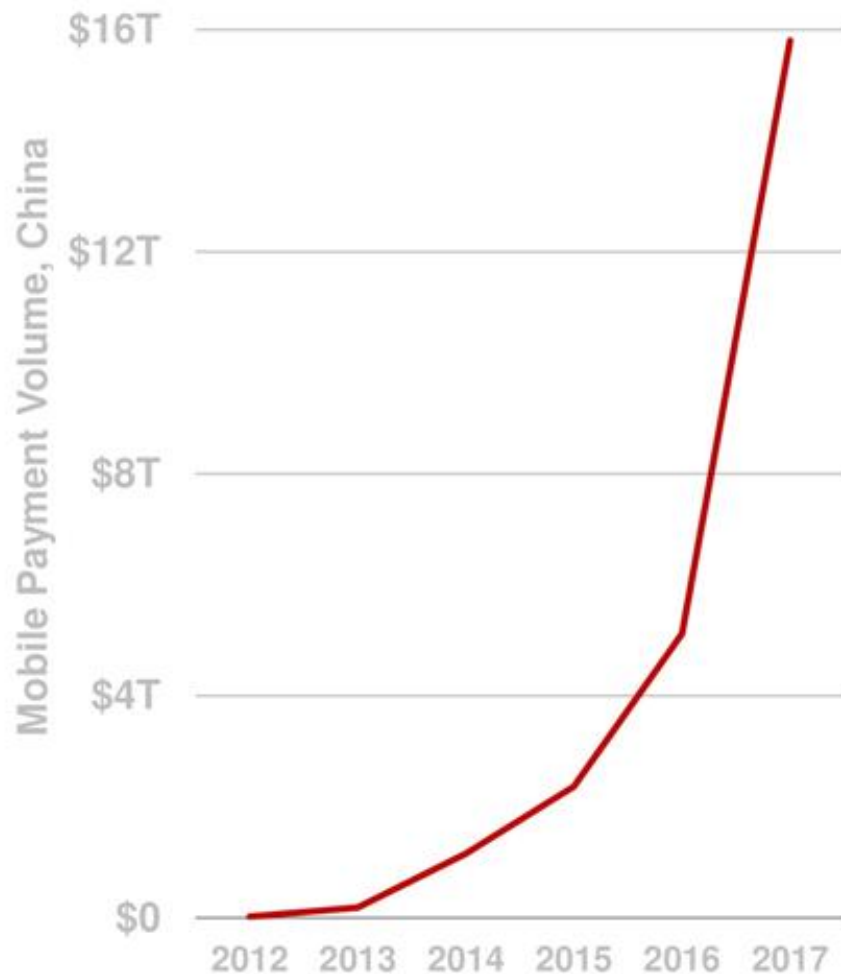
China Mobile Payment Share*
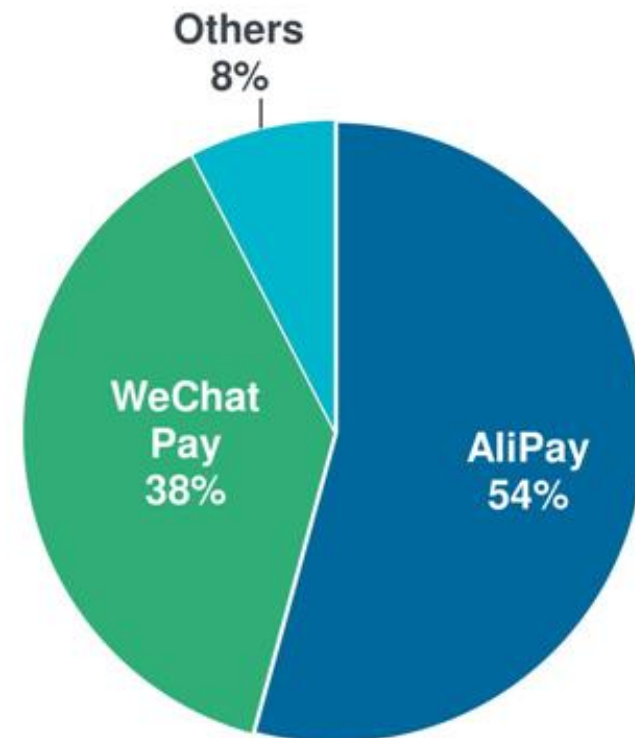
China Online Advertising Revenue =
+29% vs. 29% Y/Y

China Online Advertising Revenue

KLEINER PERKINS
2018
INTERNET TRENDS

Source: iResearch. Note: Assumes constant USD / RMB rate = 6.9.

HILLHOUSE Hillhouse Capital   260
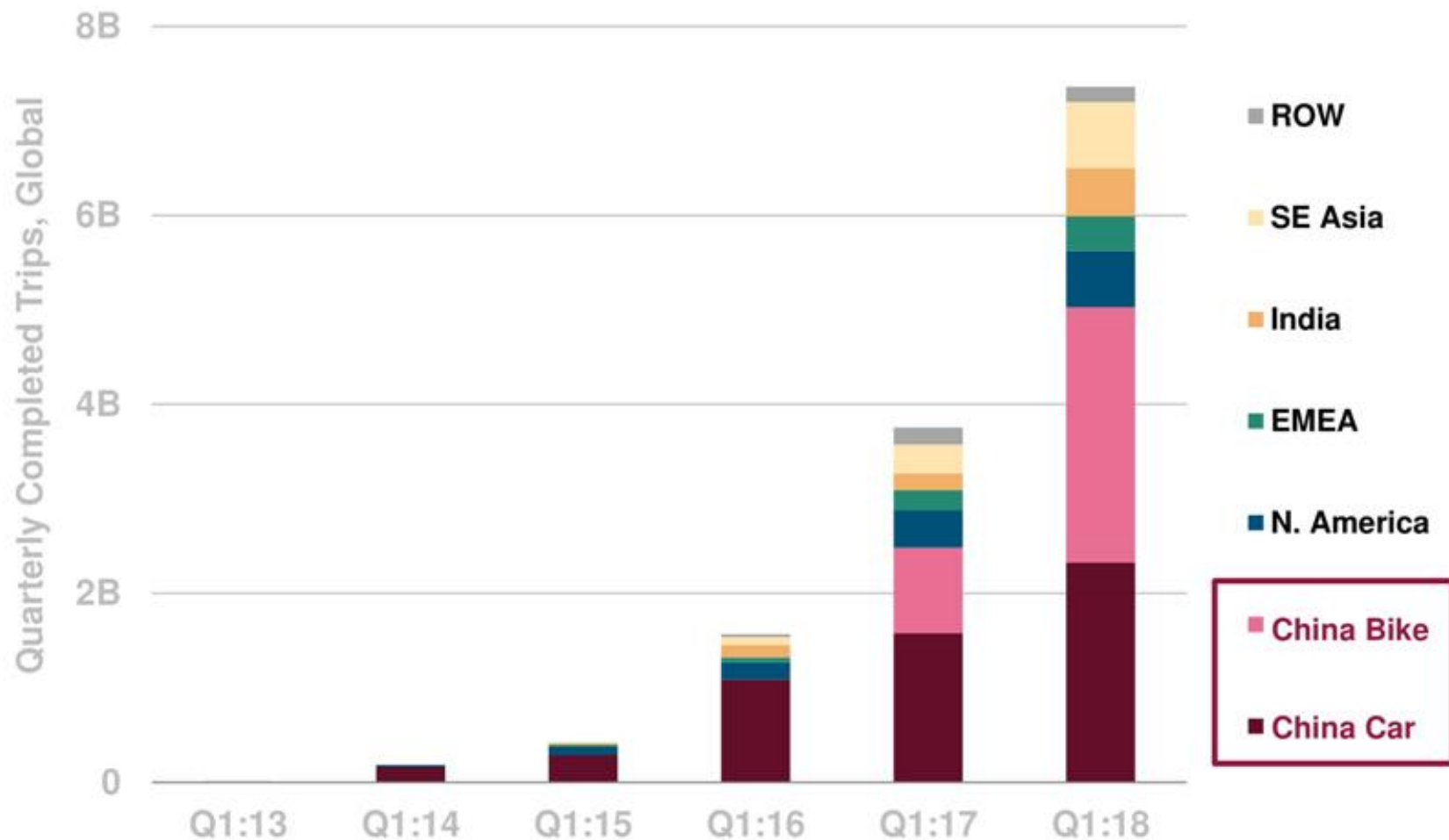
ENTERPRISE SOFTWARE =

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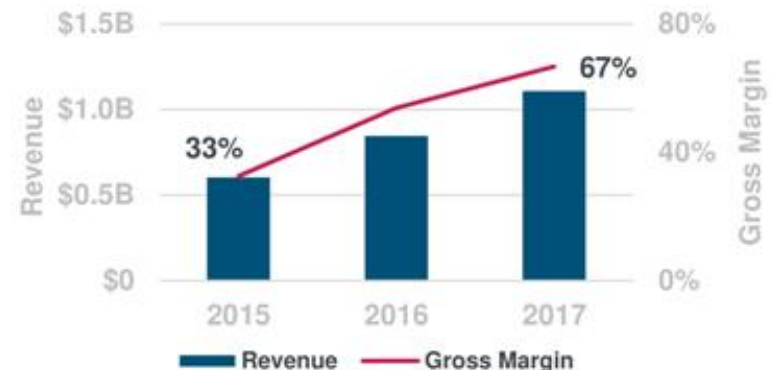
When you want something really bad,
you will put up with a lot of flaws.

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 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
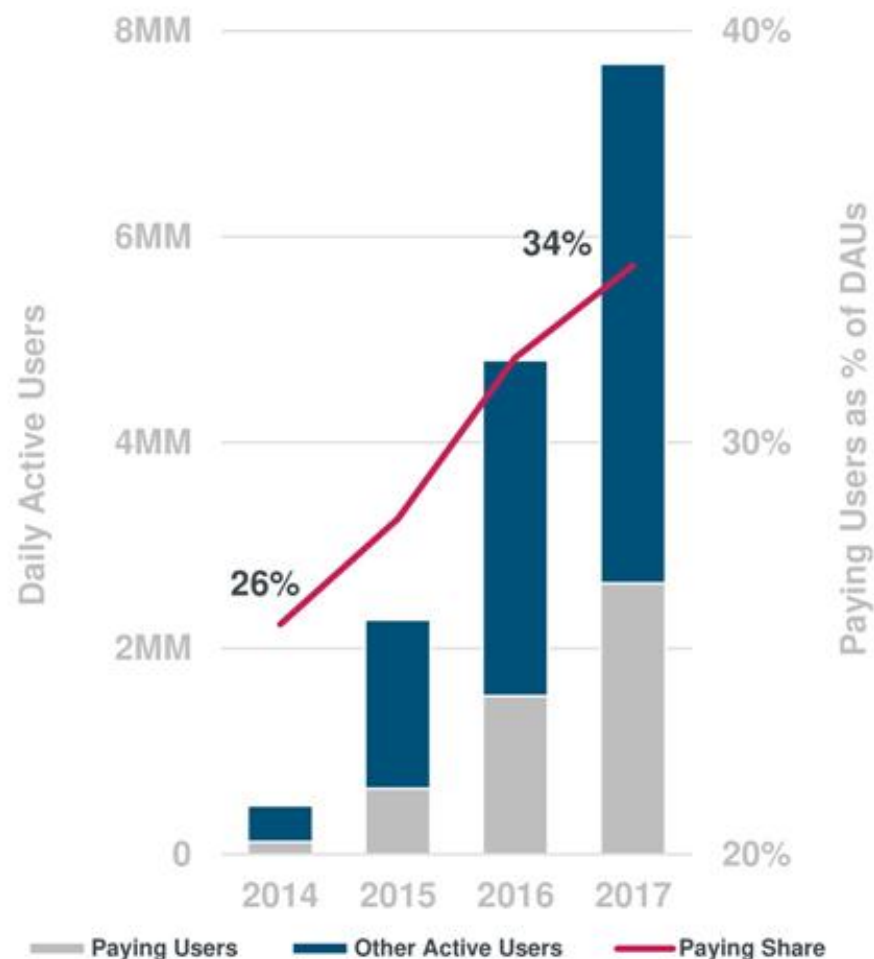
Enterprise Software Success Formula

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
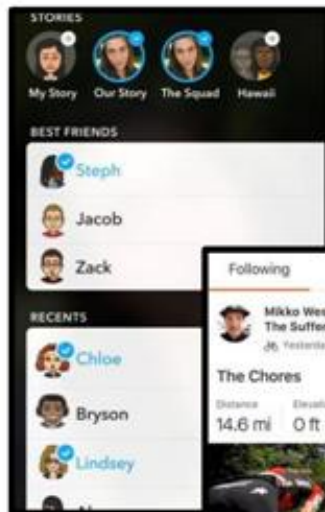
Square Cash
Payments
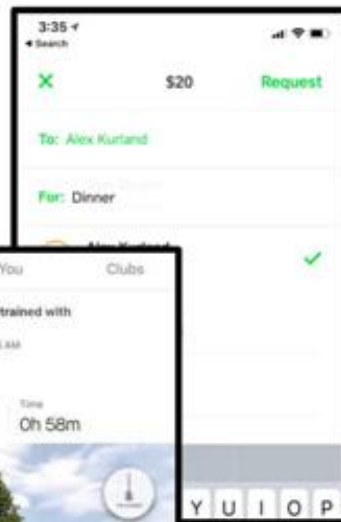
Strava
Workouts

...Enterprise Services

Dropbox
File Management

Slack
Communication
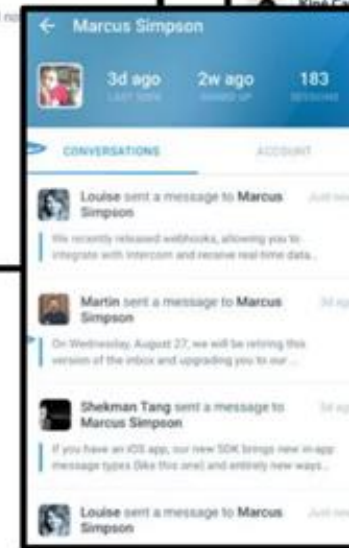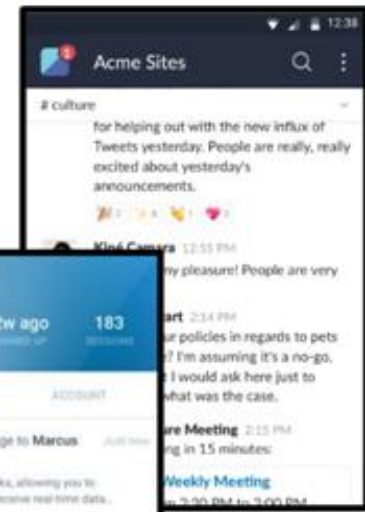
Intercom
Customer Interactions

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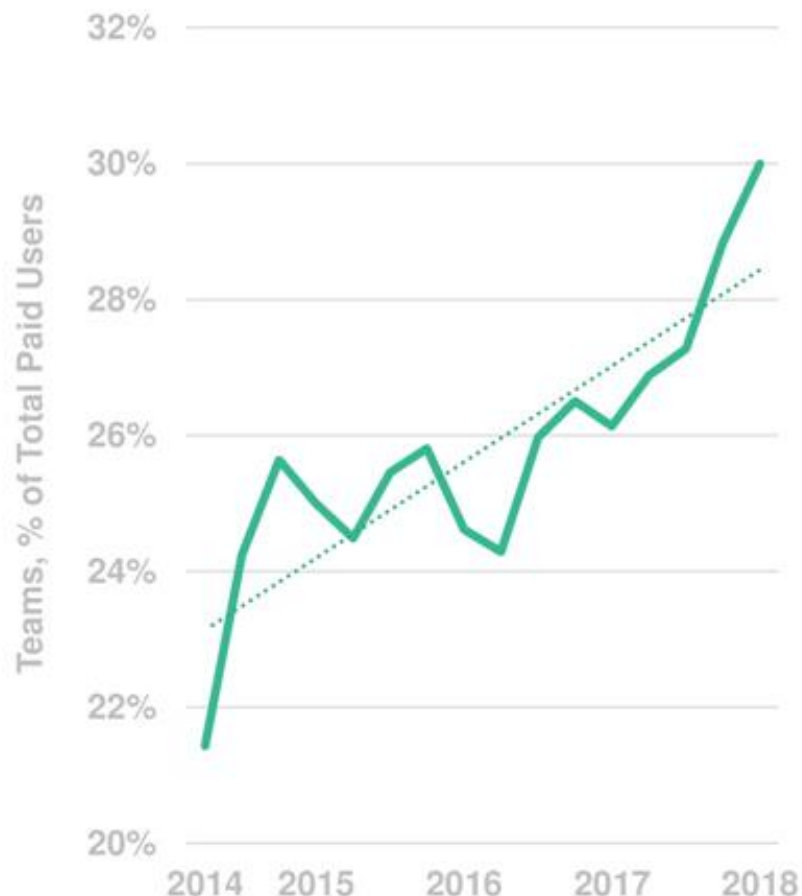
...Zoom = Visual Communication / Meeting Threads... Distributing + Increasing Productivity…

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
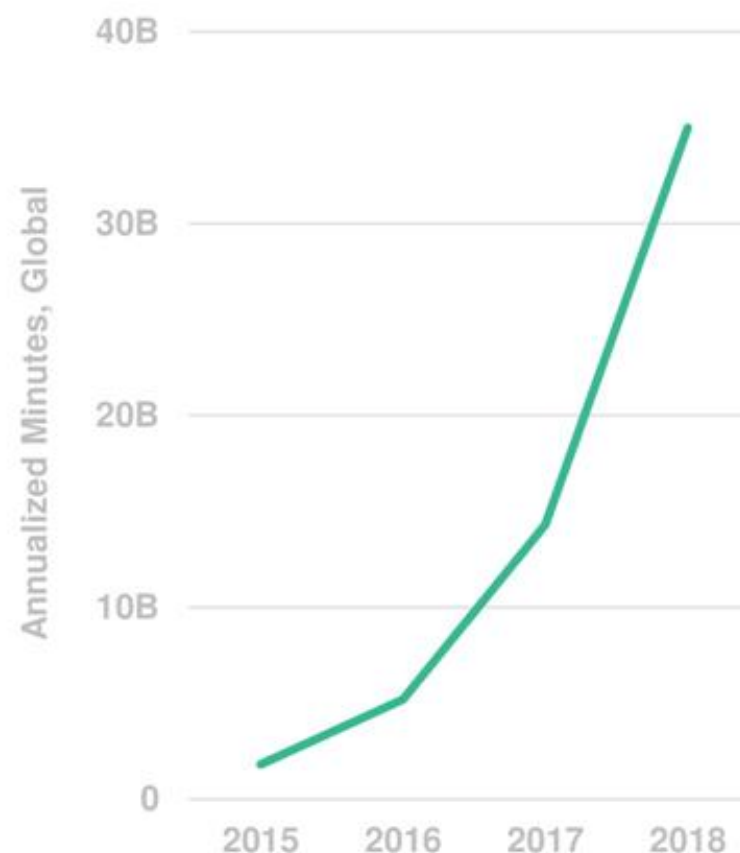
Intercom Benefits

- **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
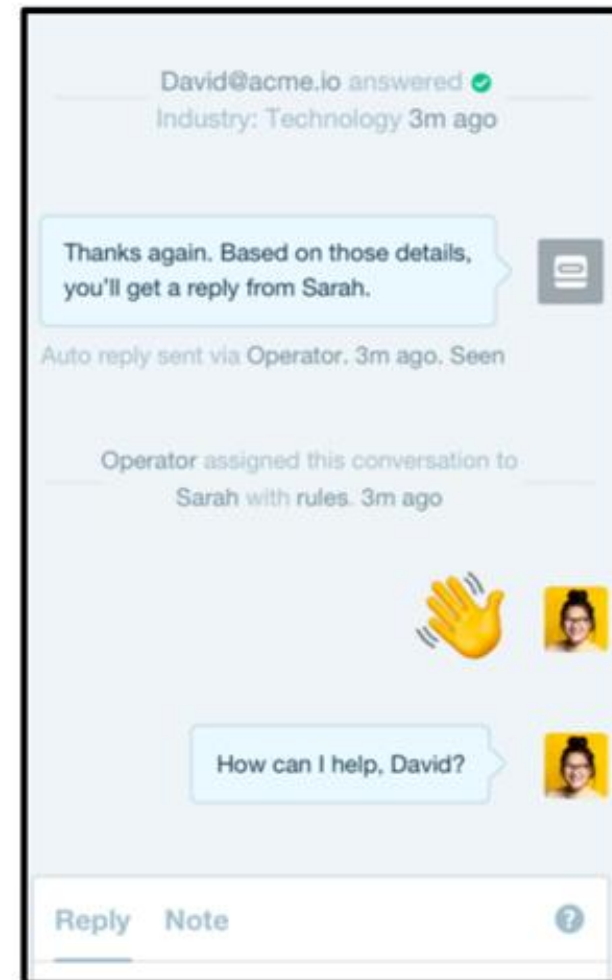
...Enterprise Messaging Threads =

Helping Improve Productivity + Collaboration

USA INC.* =

WHERE YOUR TAX DOLLARS GO

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

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

USA Annual Profits & Losses

KLEINER PERKINS
2018
INTERNET TRENDS

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

280

Real GDP Growth Y/Y

KLEINER PERKINS
2018
INTERNET TRENDS

Source: Bureau of Economic Analysis (BEA). Note: Real GDP based on chained 2009 dollars. Growth defined as growth over preceding period, seasonally adjusted annual rate.

281
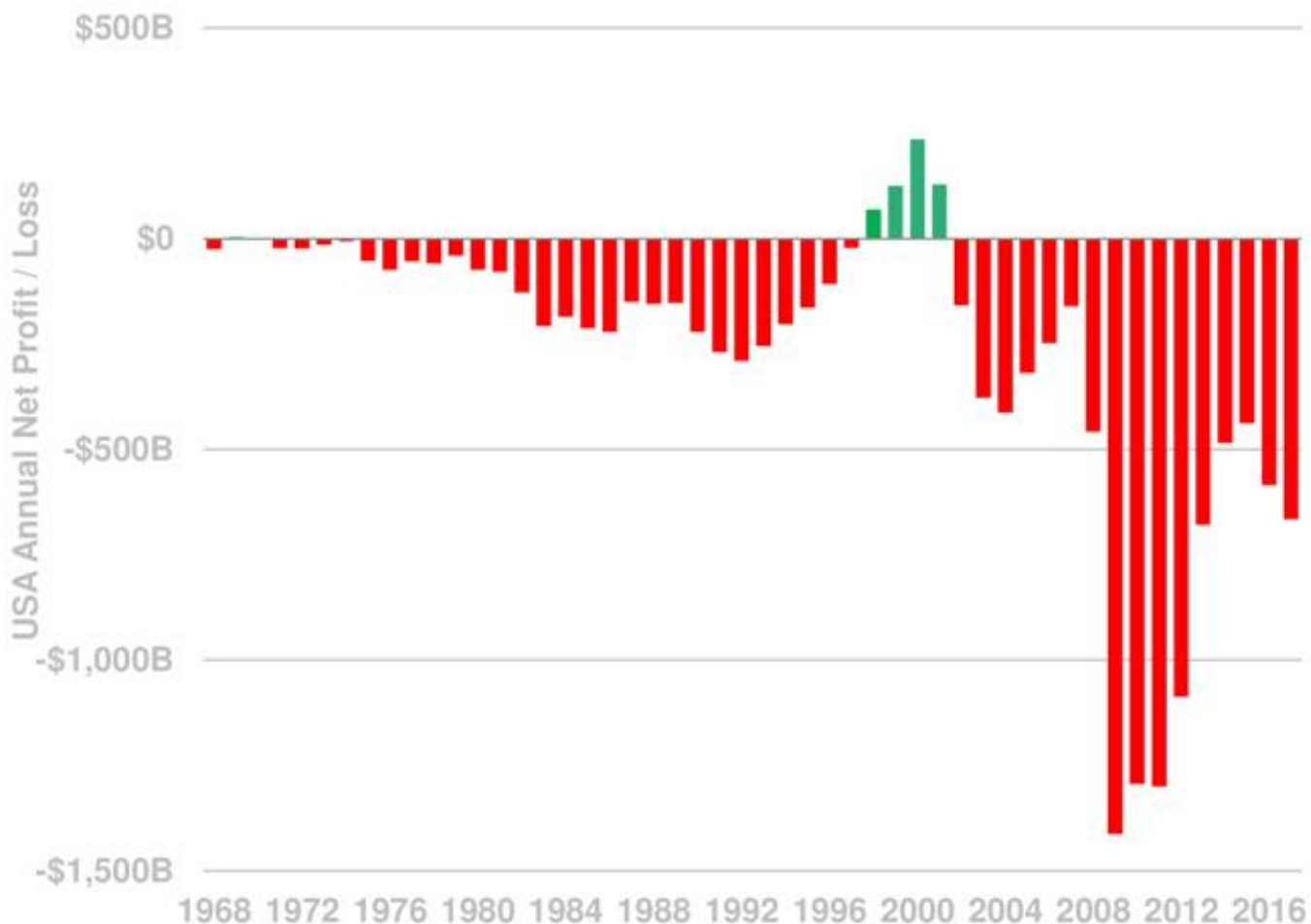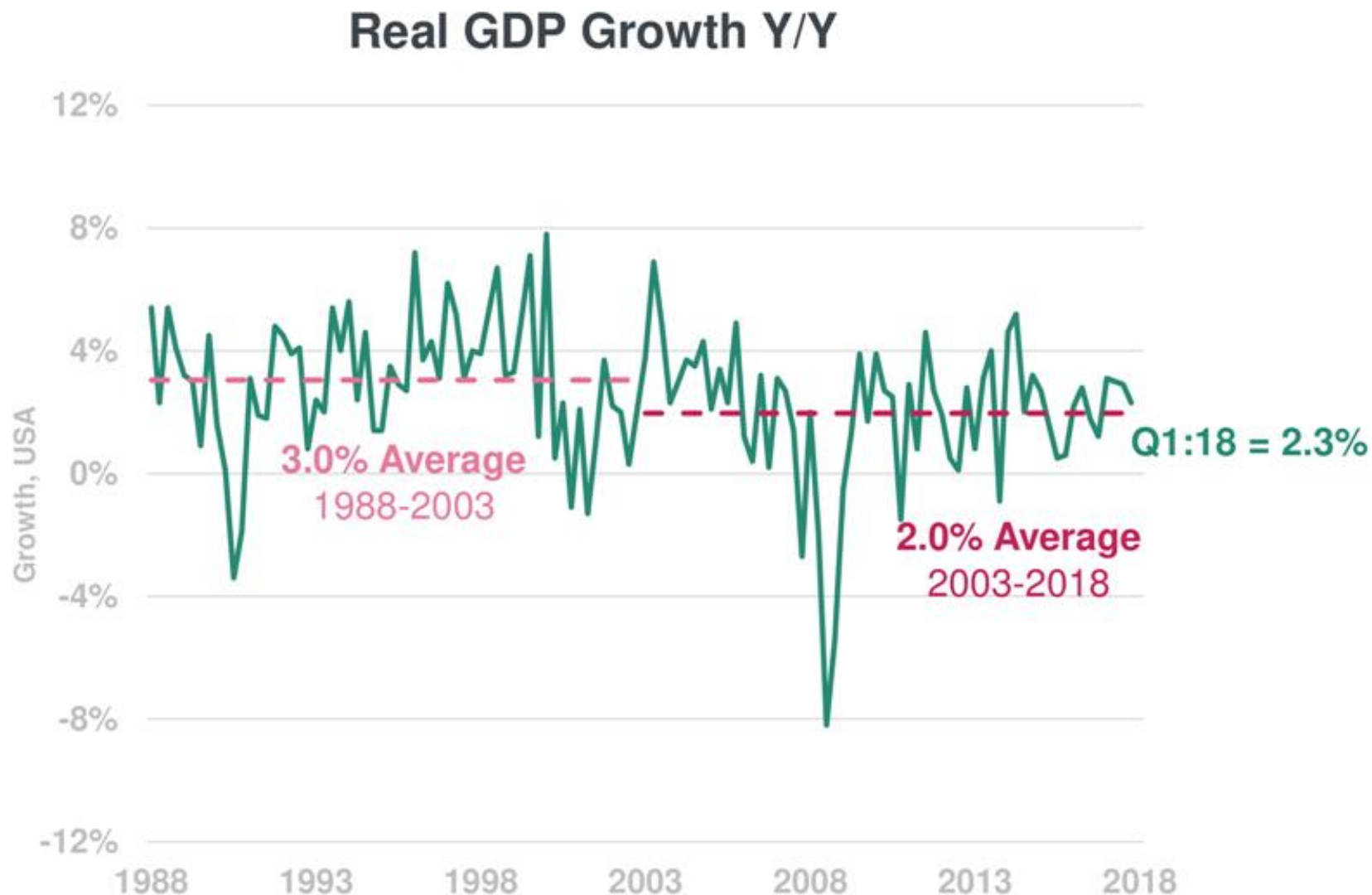
USA Rising
Debt Commitments =

Non-Trivial Challenge

USA Net Debt / GDP Ratio
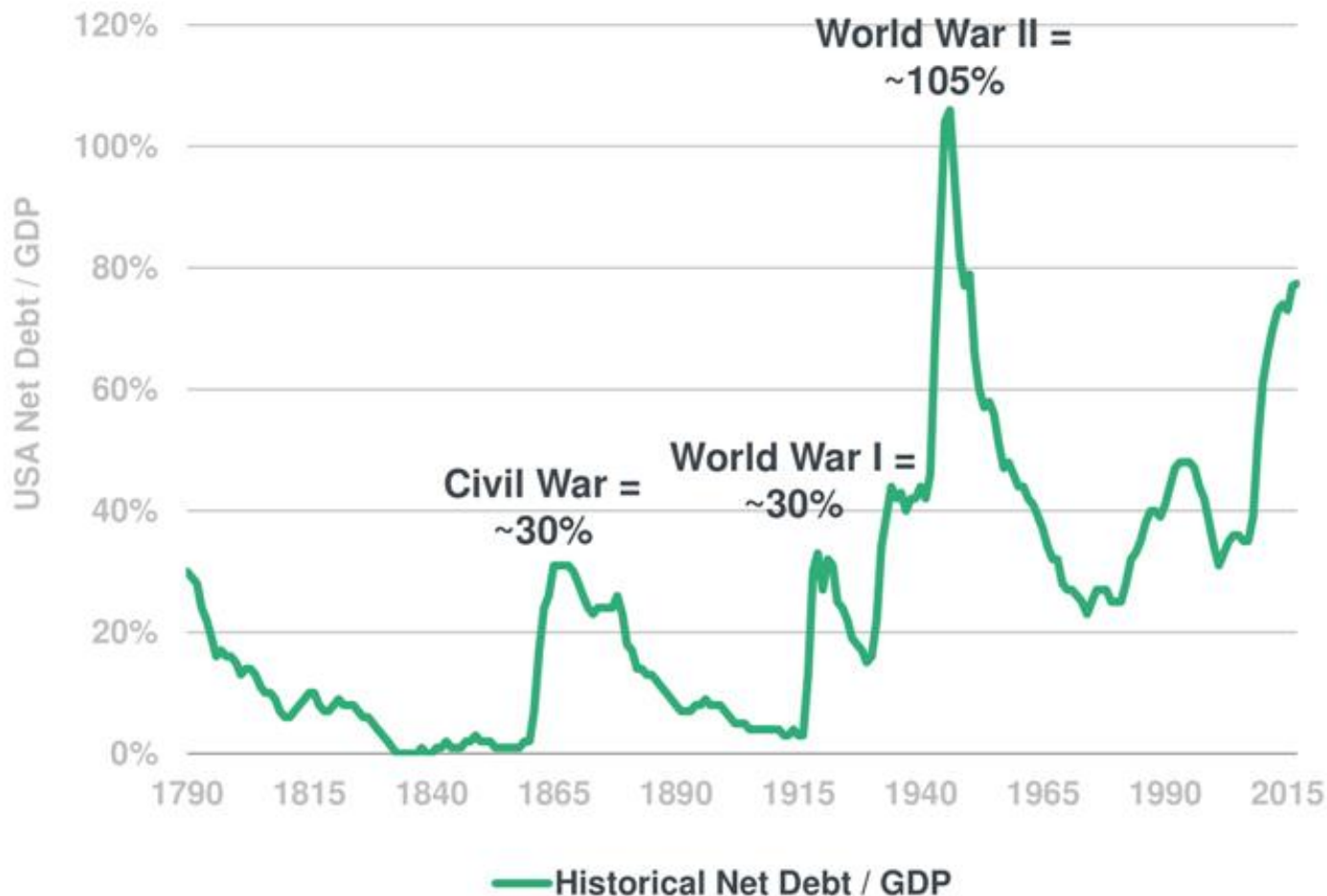
Country	Government Debt		Country	Government Debt	
	% of GDP	2017 ($B)		% of GDP	2017 ($B)
1) Japan	240%	$12,317	11) Egypt	101%	$199
2) Greece	180	403	12) Spain	99	1,412
3) Lebanon	152	80	13) France	97	2,730
4) Italy	133	2,798	14) Jordan	96	39
5) Portugal	126	301	15) Bahrain	91	31
6) Singapore	111	362	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

IMMIGRATION =

IMPORTANT FOR USA TECHNOLOGY JOB CREATION

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

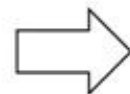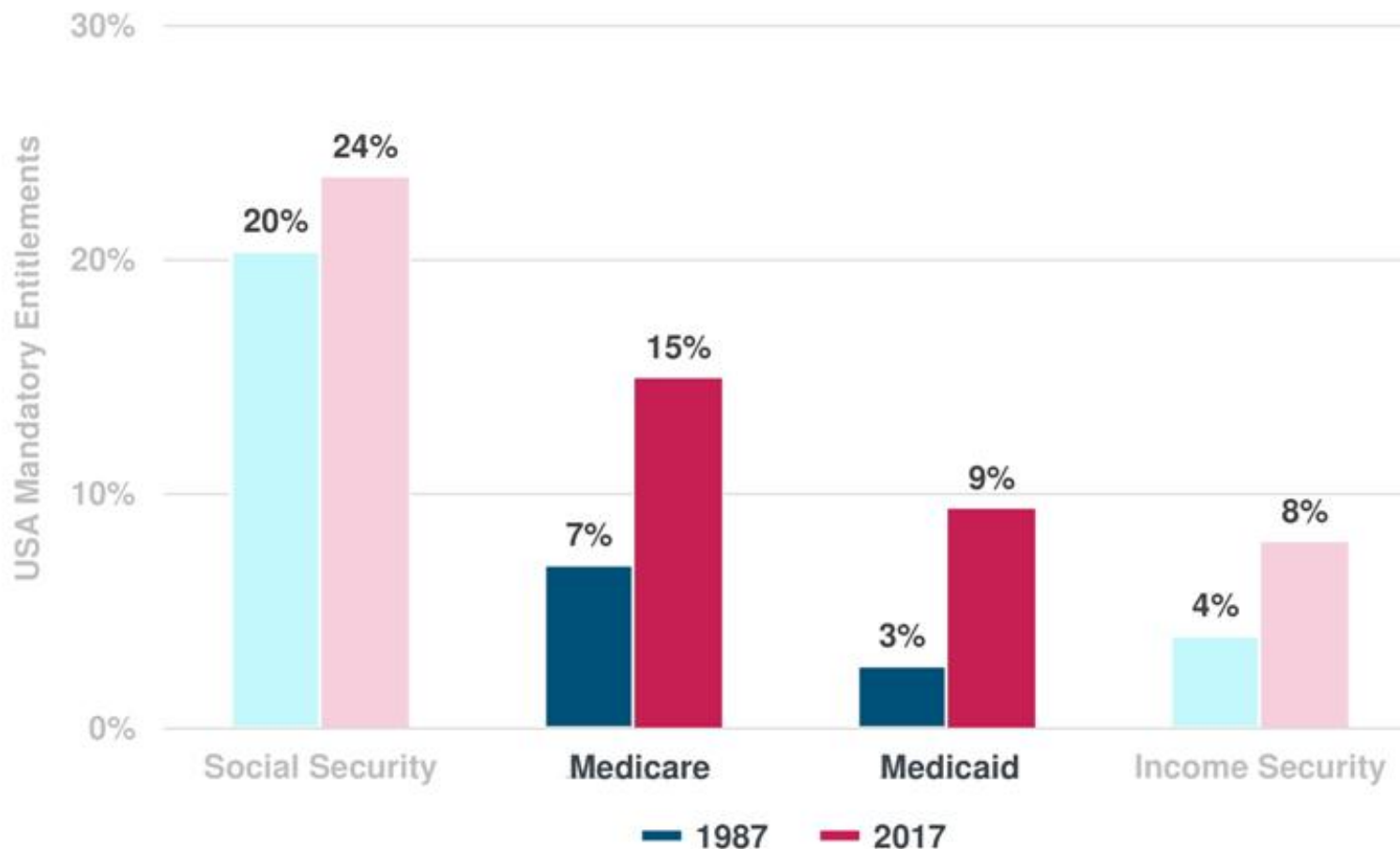| Rank	Company	Mkt Cap ($MM)	LTM Rev ($MM)	Employees	Founder / Co-Founder (1st / 2nd Gen Immigrant)	Generation
1	Apple	$923,554	$239,176	123,000	Steve Jobs	2nd – Syria
4	Amazon.com	782,608	177,866	566,000	Jeff Bezos	2nd – Cuba
3	Microsoft	753,030	95,652	124,000	--	--
2	Alphabet / Google	739,122	110,855	80,110	Sergey Brin	1st – Russia
5	Facebook	537,648	40,653	25,105	Eduardo Saverin	1st – 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	2nd – Russia / 2nd – Iran
11	Netflix	152,025	11,693	4,850	--	--
10	NVIDIA	150,894	9,714	10,299	Jensen Huang	1st – Taiwan
9	IBM	129,635	79,139	366,600	Herman Hollerith	2nd – 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	1st – UK / 2nd – Sweden
15	PayPal	95,858	13,094	18,700	Max Levchin / Luke Nosek / Peter Thiel / Elon Musk***	1st – Ukraine / 1st – Poland / 1st – Germany / 1st – South Africa
16	Salesforce.com	94,260	10,480	25,000	--	--
17	Qualcomm	86,333	22,360	33,800	Andrew Viterbi	1st – Italy
19	Automatic Data Processing	57,237	12,790	58,000	Henry Taub	2nd – Poland
21	VMware	55,282	7,922	20,615	Edouard Bugnion	1st – 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	1st – India** / 1st – Sri Lanka
24	eBay	37,304	9,567	14,100	Pierre Omidyar	1st – 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 Srini	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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