

# 2020 Business Activity Outlook in the Composites Sector

IACMI Winter 2020 Members Meeting

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Gardner Intelligence



# Presentation Outline

- Who is Gardner Intelligence?
- GBI Composites Review
- 3-Lenses Approach
  - Aerospace
  - Automotive
- Conclusion: What does it all mean?



# Who Is Gardner Intelligence?

2 Economists / Business Market SMEs

2 Market Research SMEs

1 Data Scientist

1 Visualization Specialist

- 75 years of combined experience
- Serving international and domestic clients
- Serving all company sizes





# Our Diversity Is Our Greatest Strength

3-prong analysis approach:

- GBM Proprietary data
- SEC Financial data
- Macroeconomic data



*If you don't know where you are going, any road will get you there.*

- Lewis Carroll

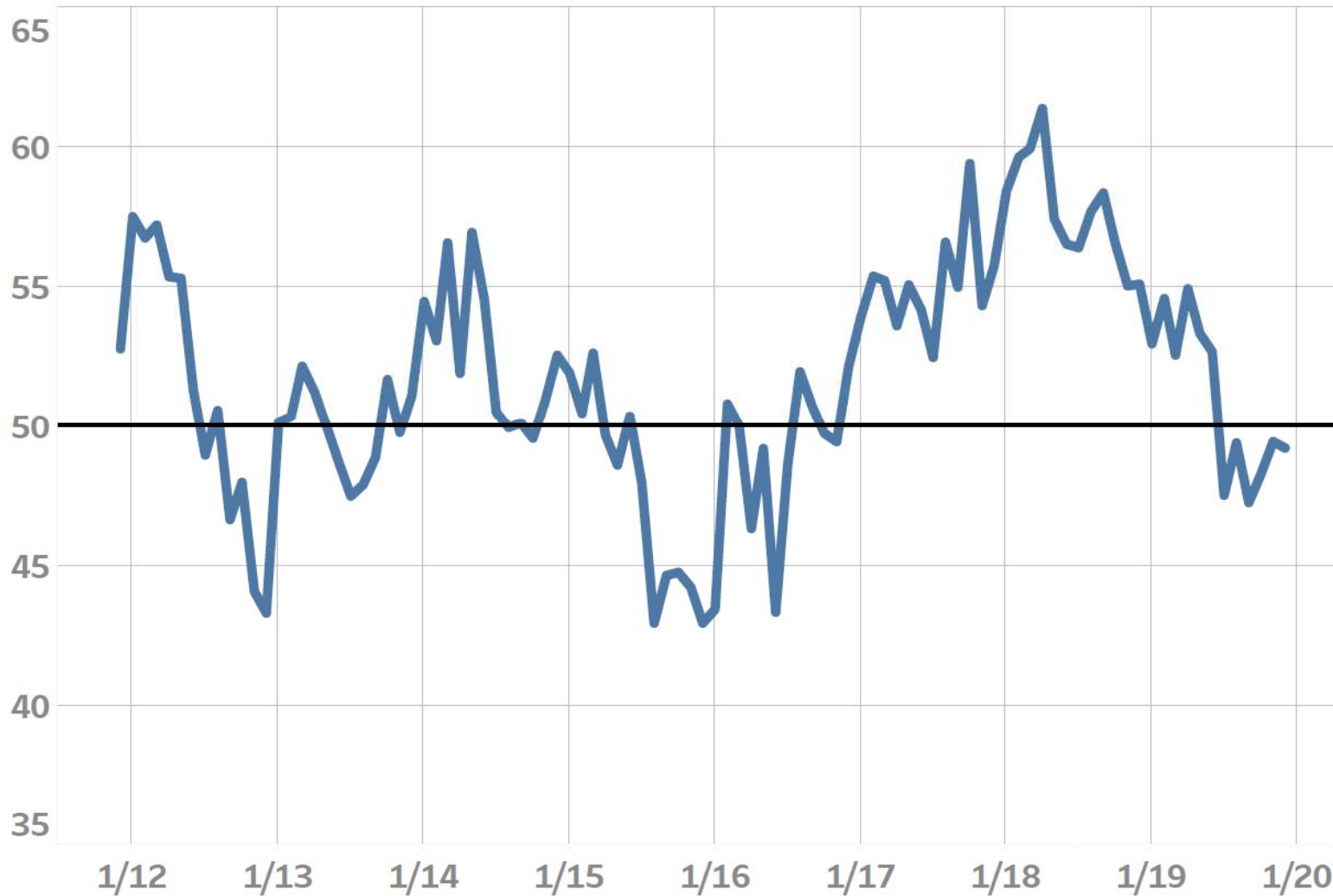


# Market Conditions as Reported by North American Composites Fabricators



# Composites Industry Survey Insights (Dec19)

GBI: Composites - Total Index

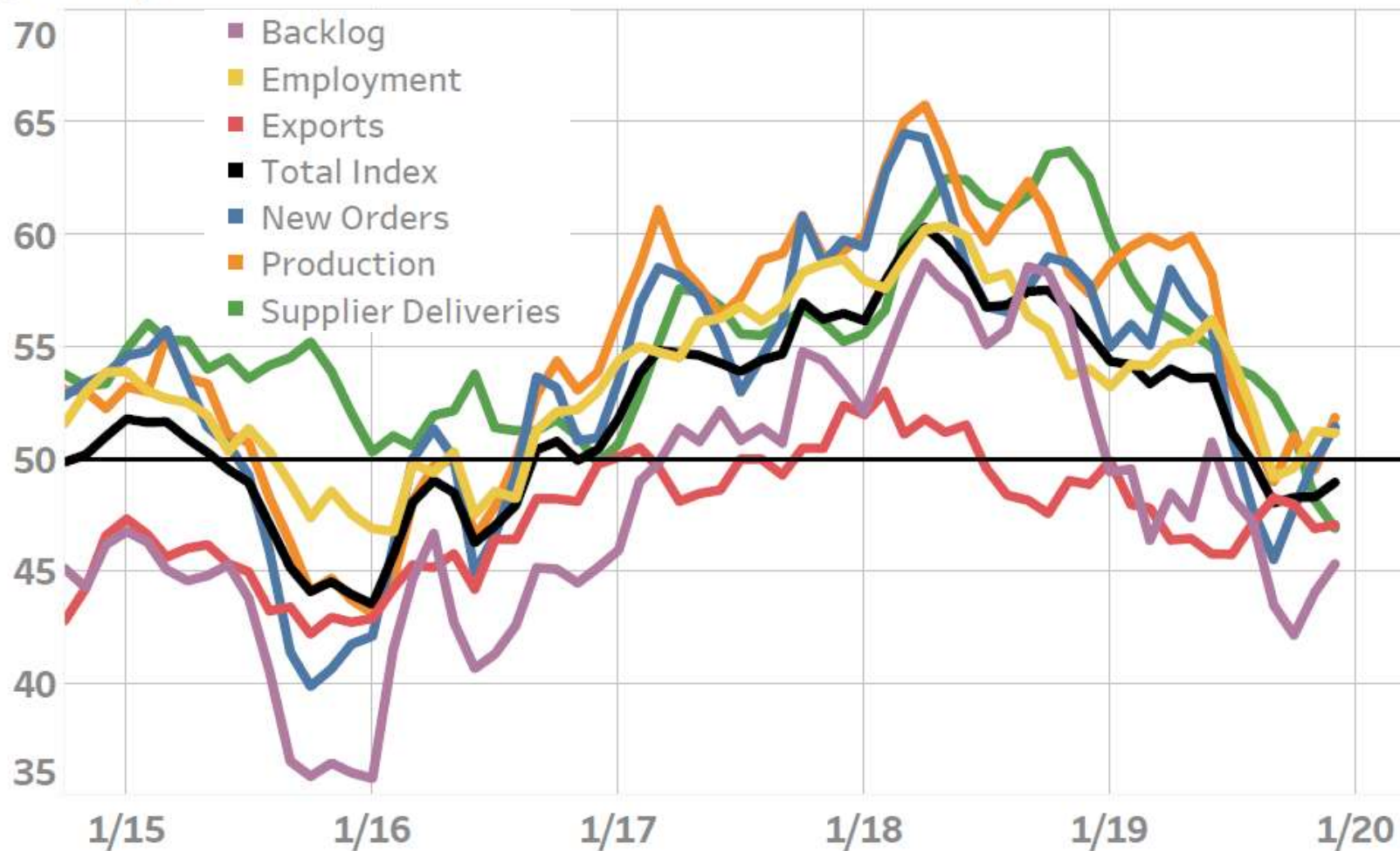




# Composites Industry Survey Insights (Dec19)

## GBI: Composites Fabricating Components

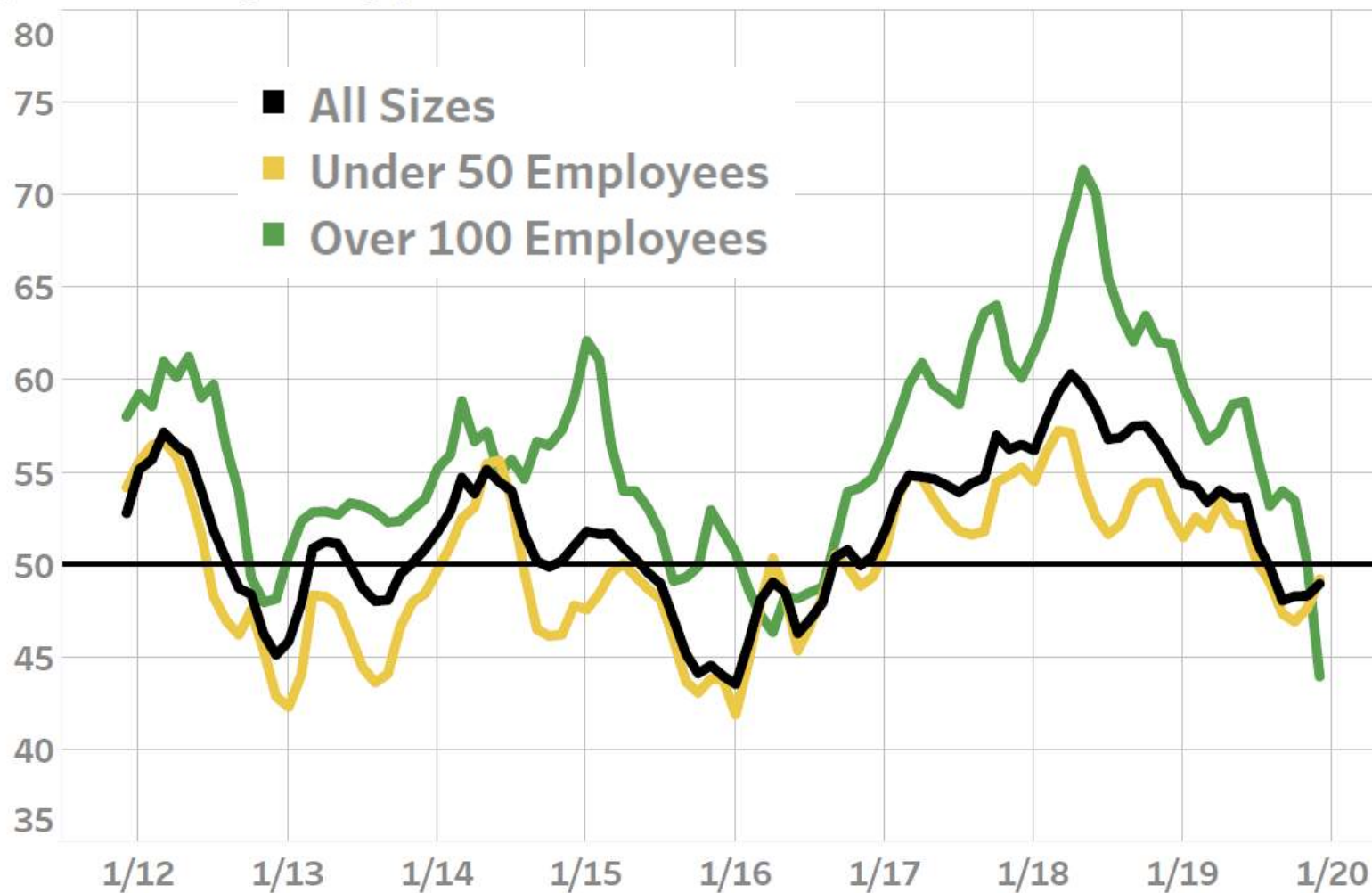
(3-MMA)





# Composites Industry Survey Insights (Dec19)

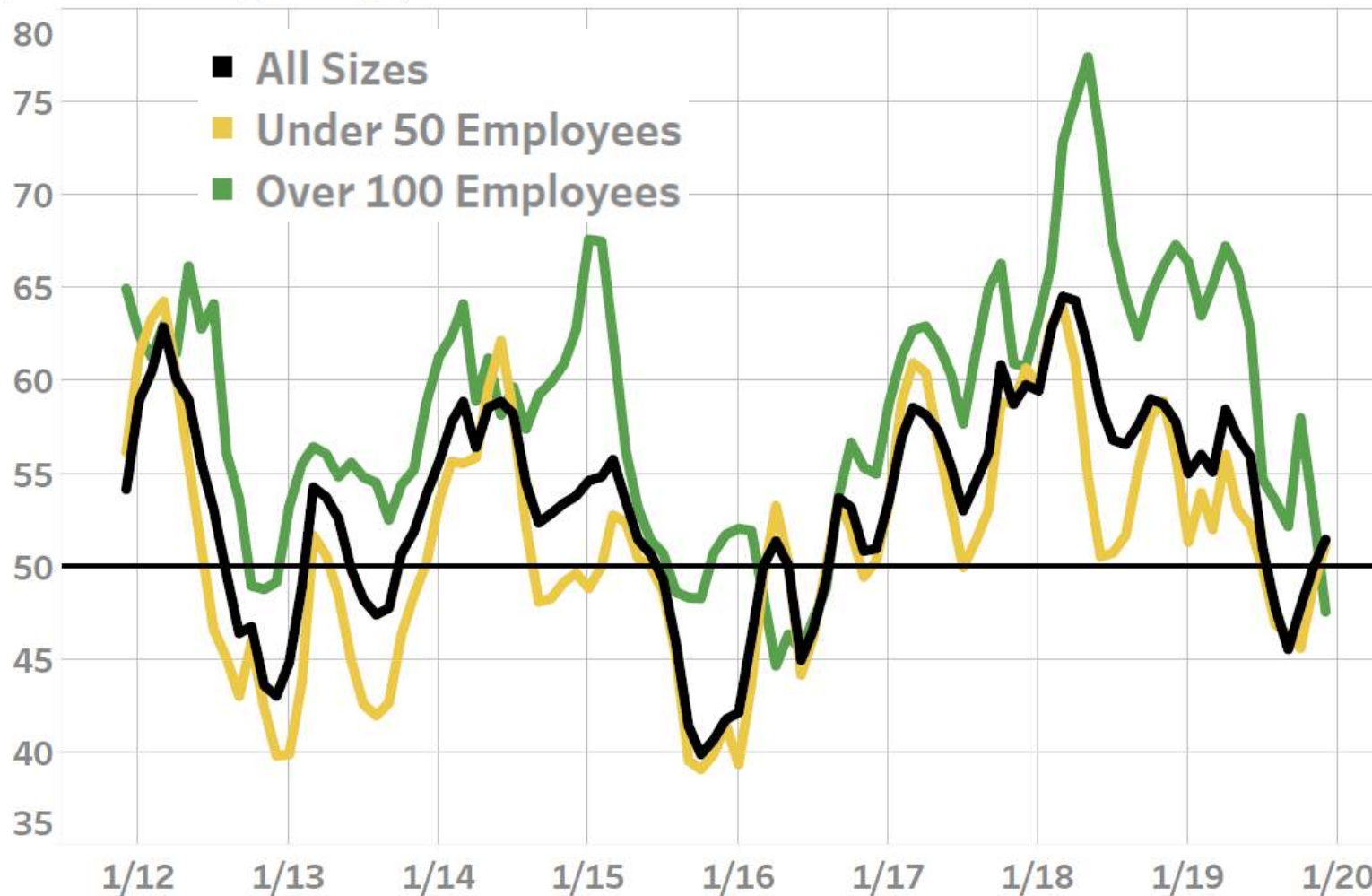
GBI Snapshot: Composites - Total Index, By Company Size  
(3-Month Moving Average)





# New Orders: By Size (Dec19)

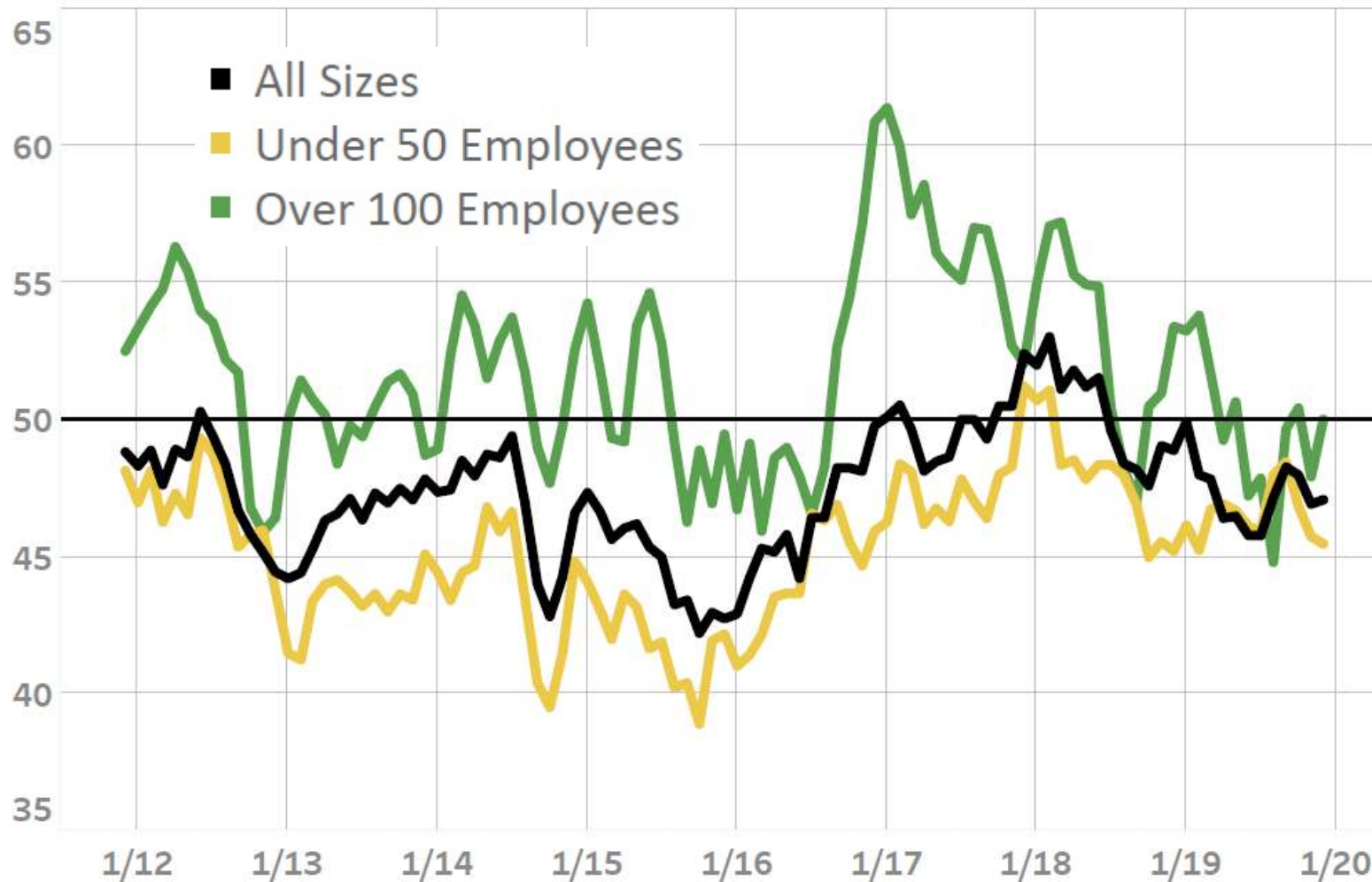
GBI Snapshot: Composites - New Orders, By Company Size  
(3-Month Moving Average)





# Exports: By Size (Dec19)

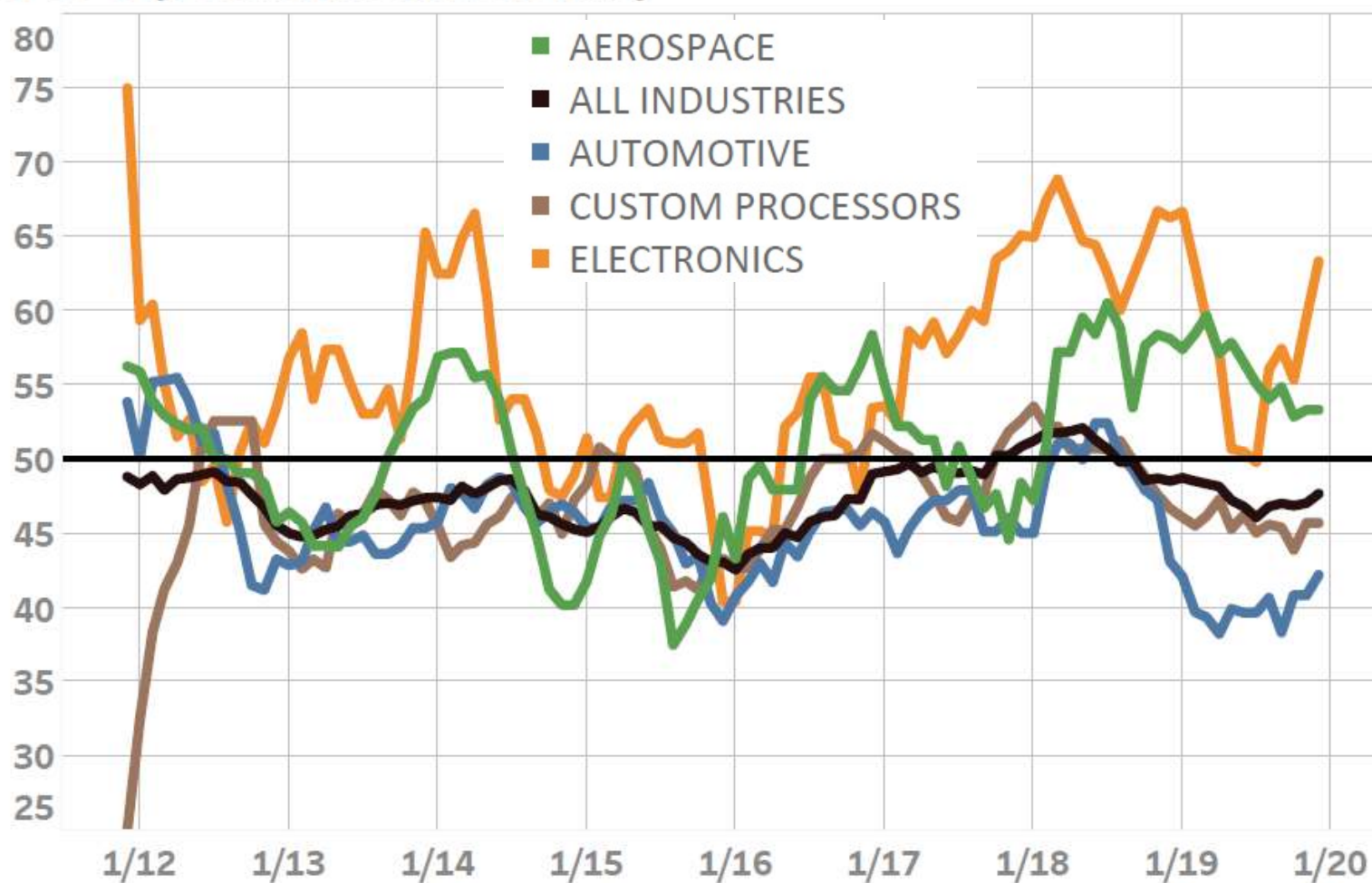
GBI Snapshot: Composites - Exports, By Company Size  
(3-Month Moving Average)





# Exports: By End Market (Dec19)

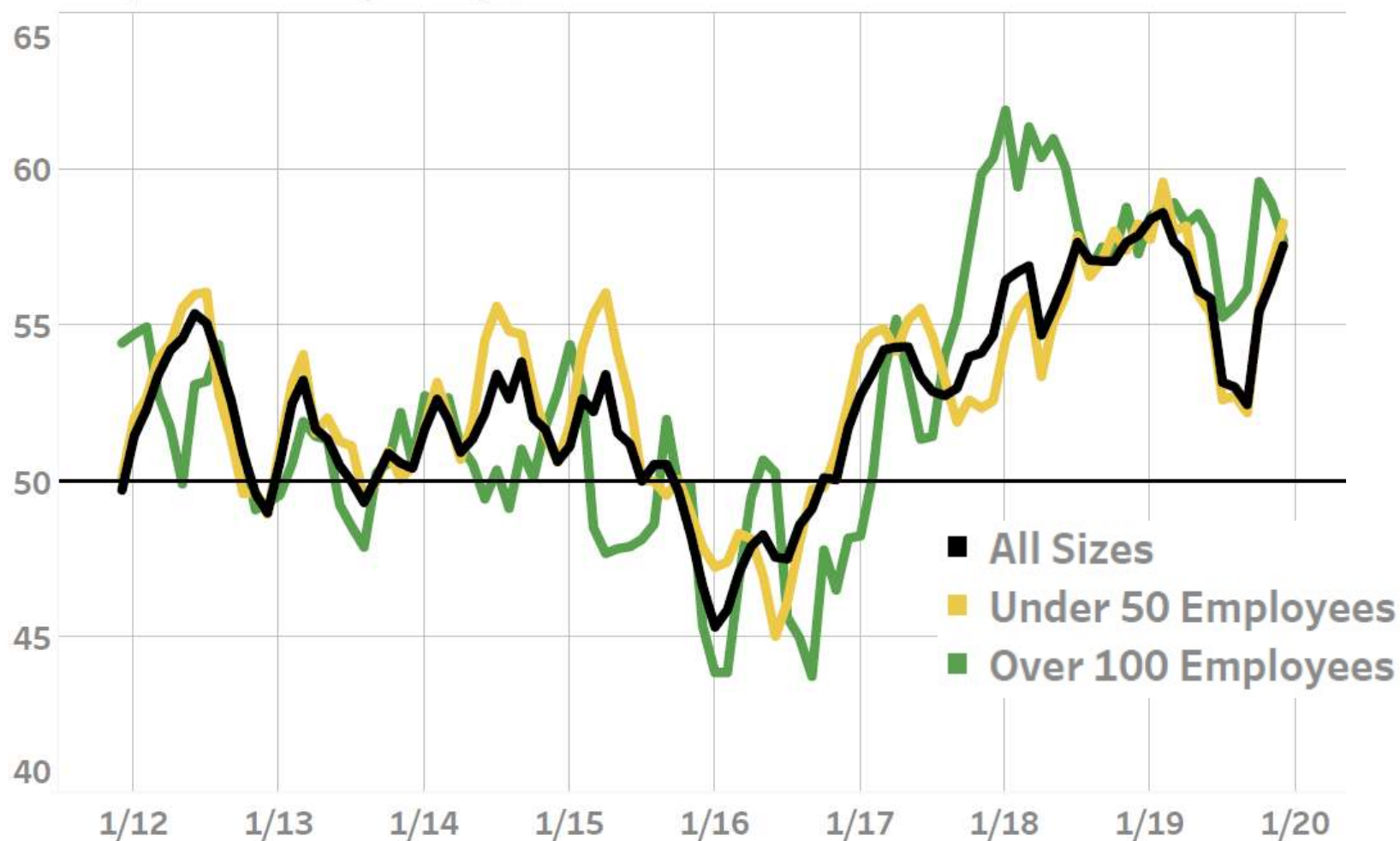
GBI Snapshot: Composites - Exports, By End-Market Served (6-Month Moving Average)





# Prices Received: By Company Size (Dec19)

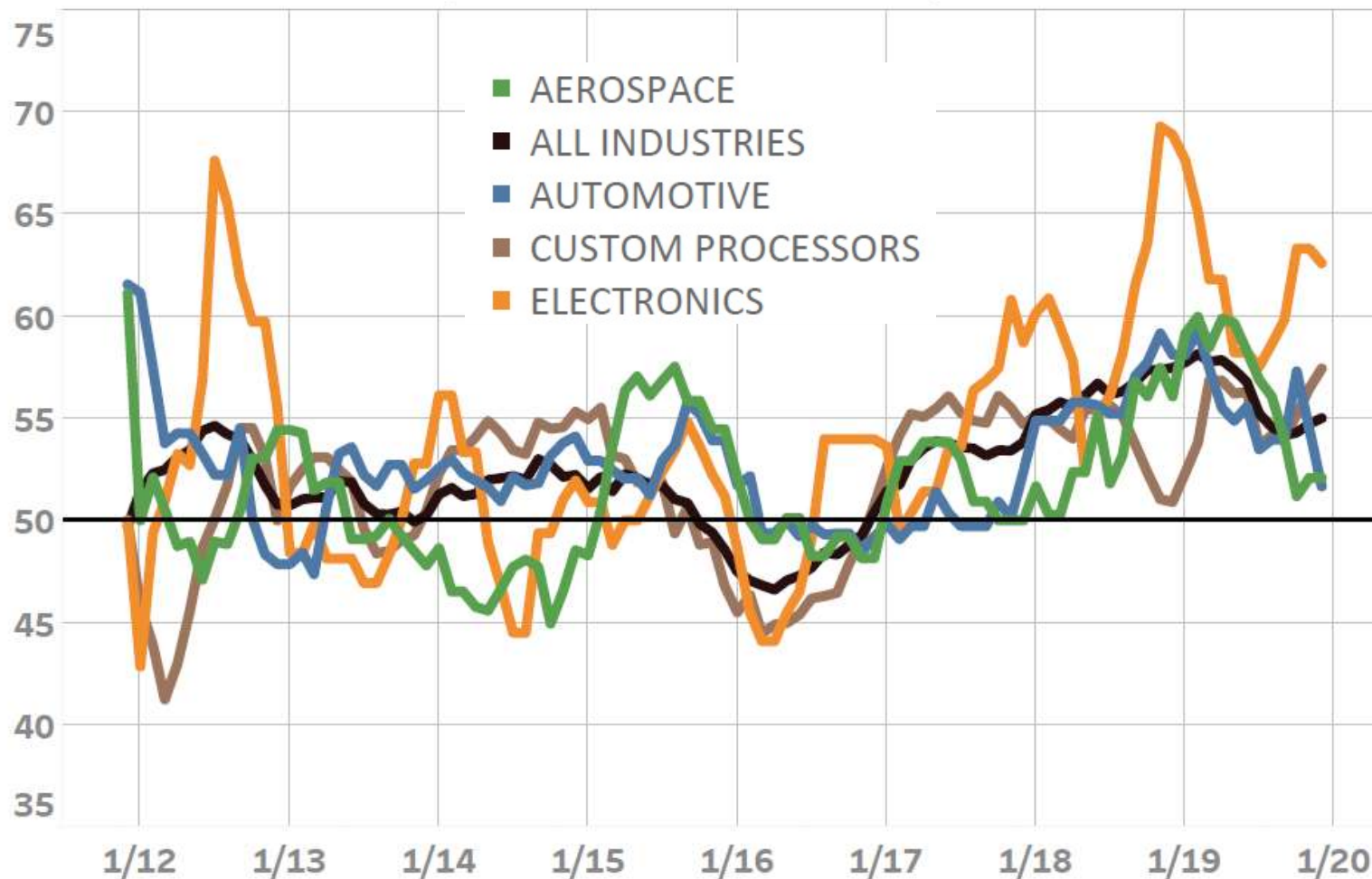
GBI Snapshot: Composites - Prices Received, By Company Size (3-Month Moving Average)





# Prices Received: By End Market (Dec19)

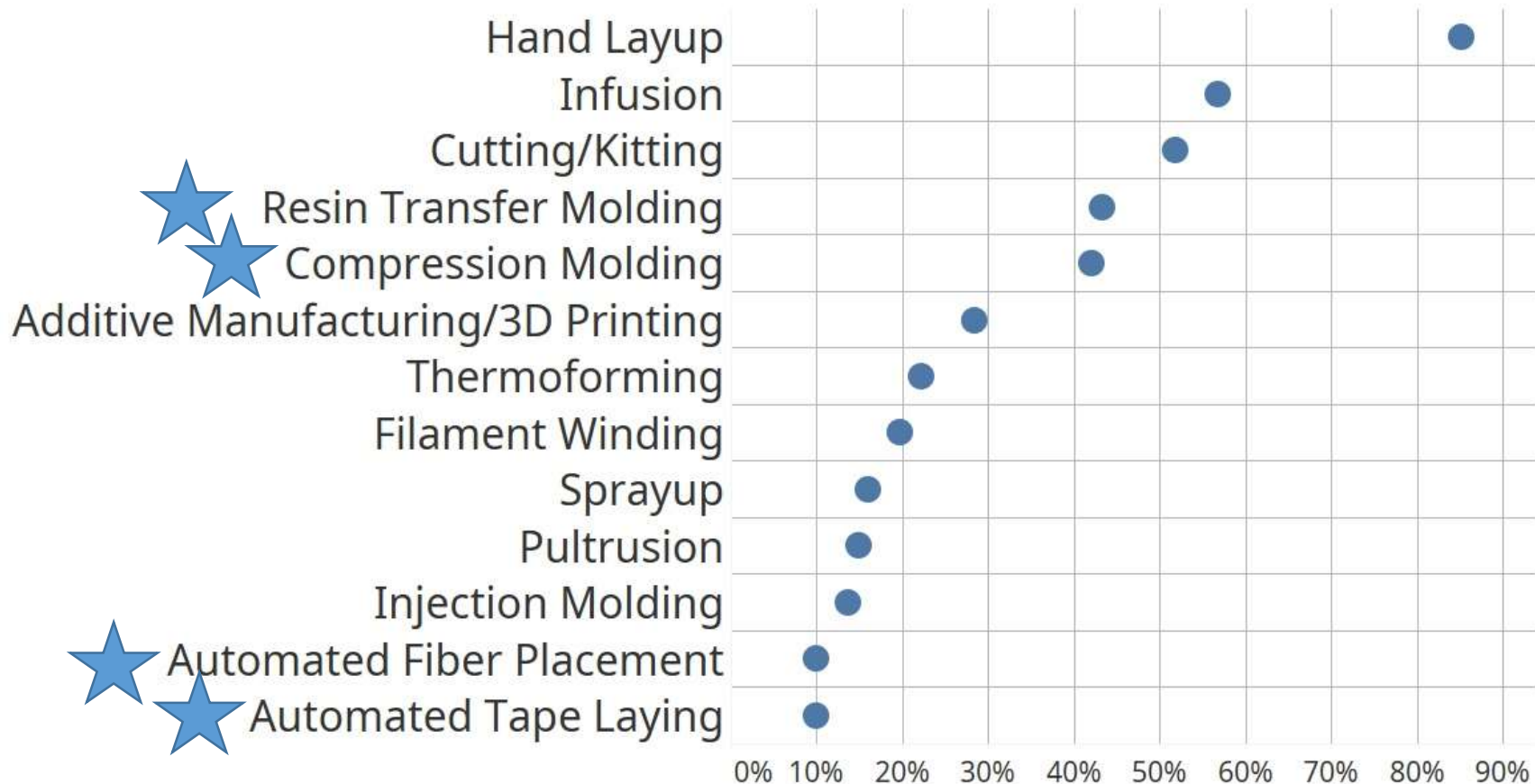
GBI Snapshot: Composites - Prices Received, By  
End-Market Served (6-Month Moving Average)





# Composites Top Shops – Processes Performed

## Composites Manufacturing Process Usage



★ = Operations setting Top Shops apart from others

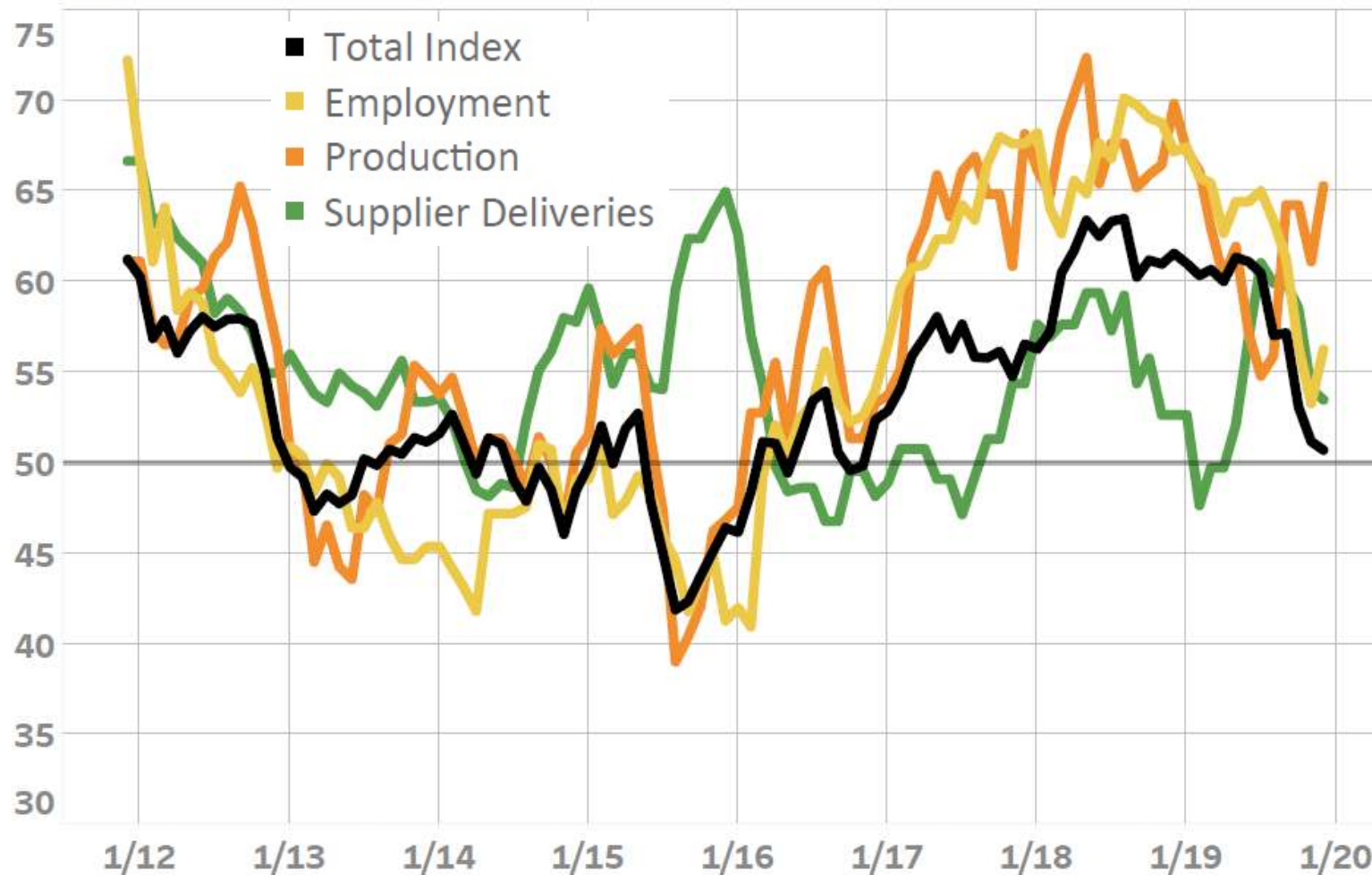


# Aerospace Market



# Aerospace Composites Insights (Dec19)

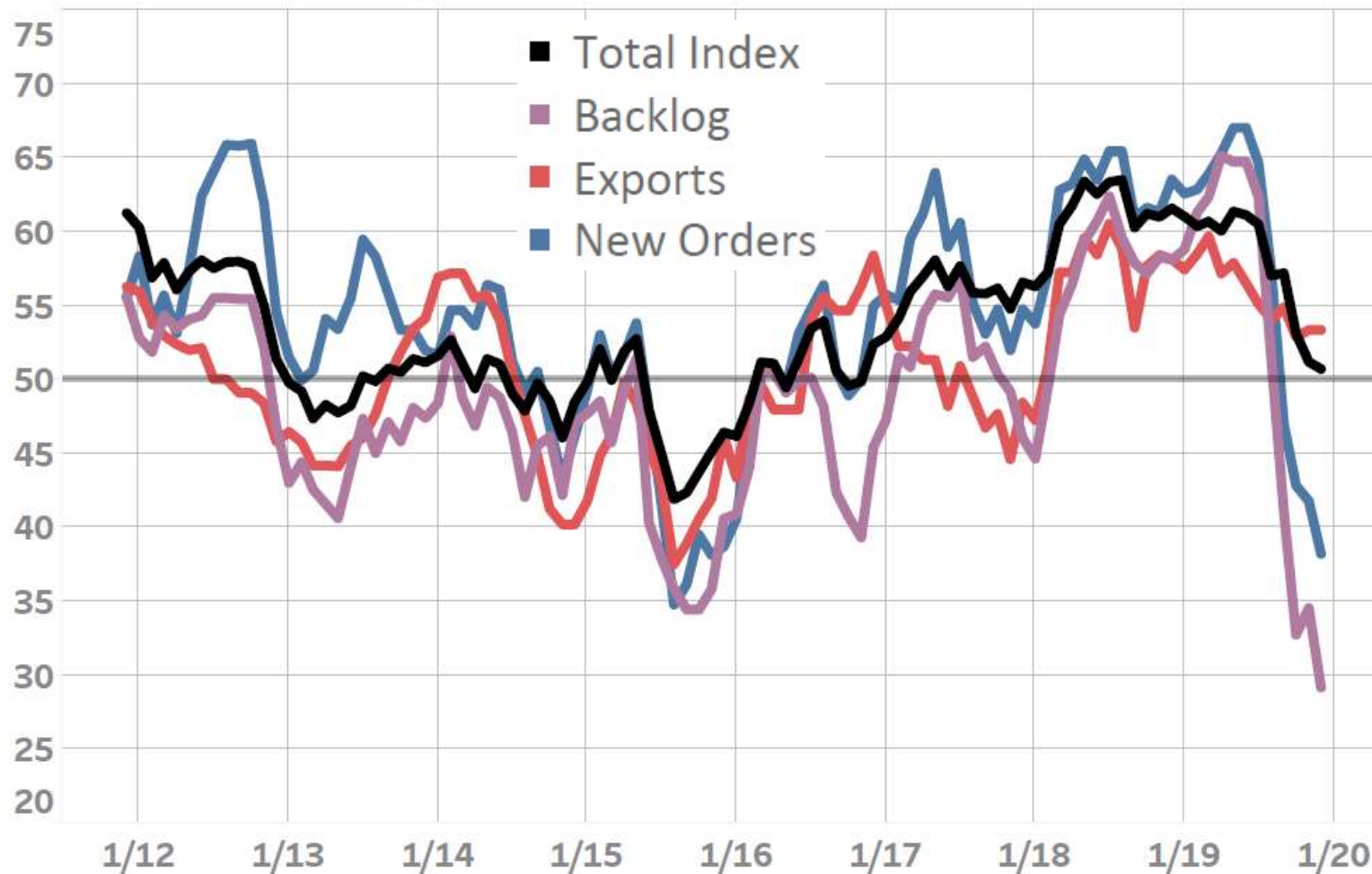
GBI Snapshot: Composites - Components, Aerospace  
End-Market (6-MMA)





# Aerospace Composites Insights (Dec19)

GBI Snapshot: Components - Composites, Aerospace  
End-Market (6-MMA)

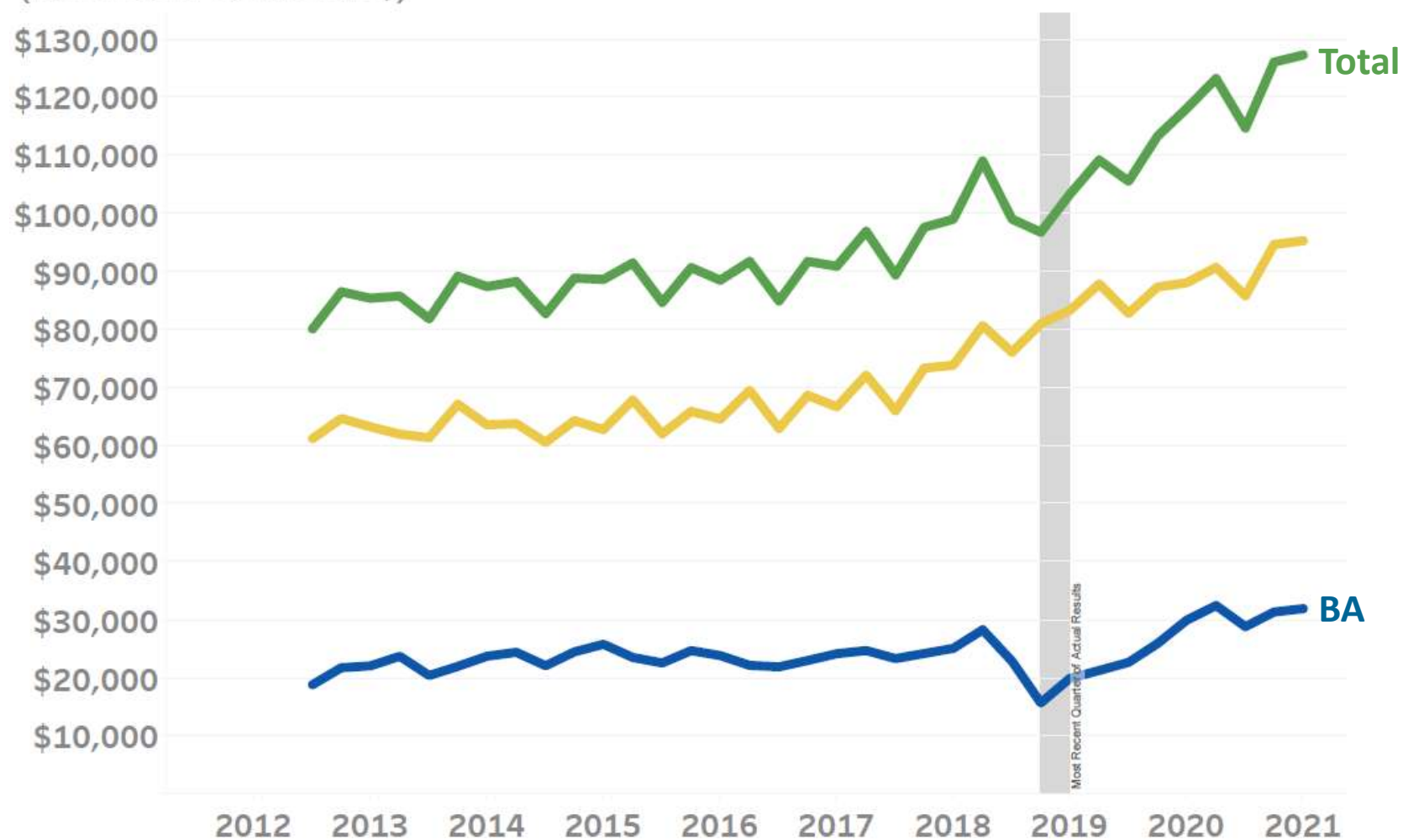




# Aerospace Industry Financial Insights: Revenues

## Aerospace & Defense - Revenues

(As of 3Q2019, Millions \$)

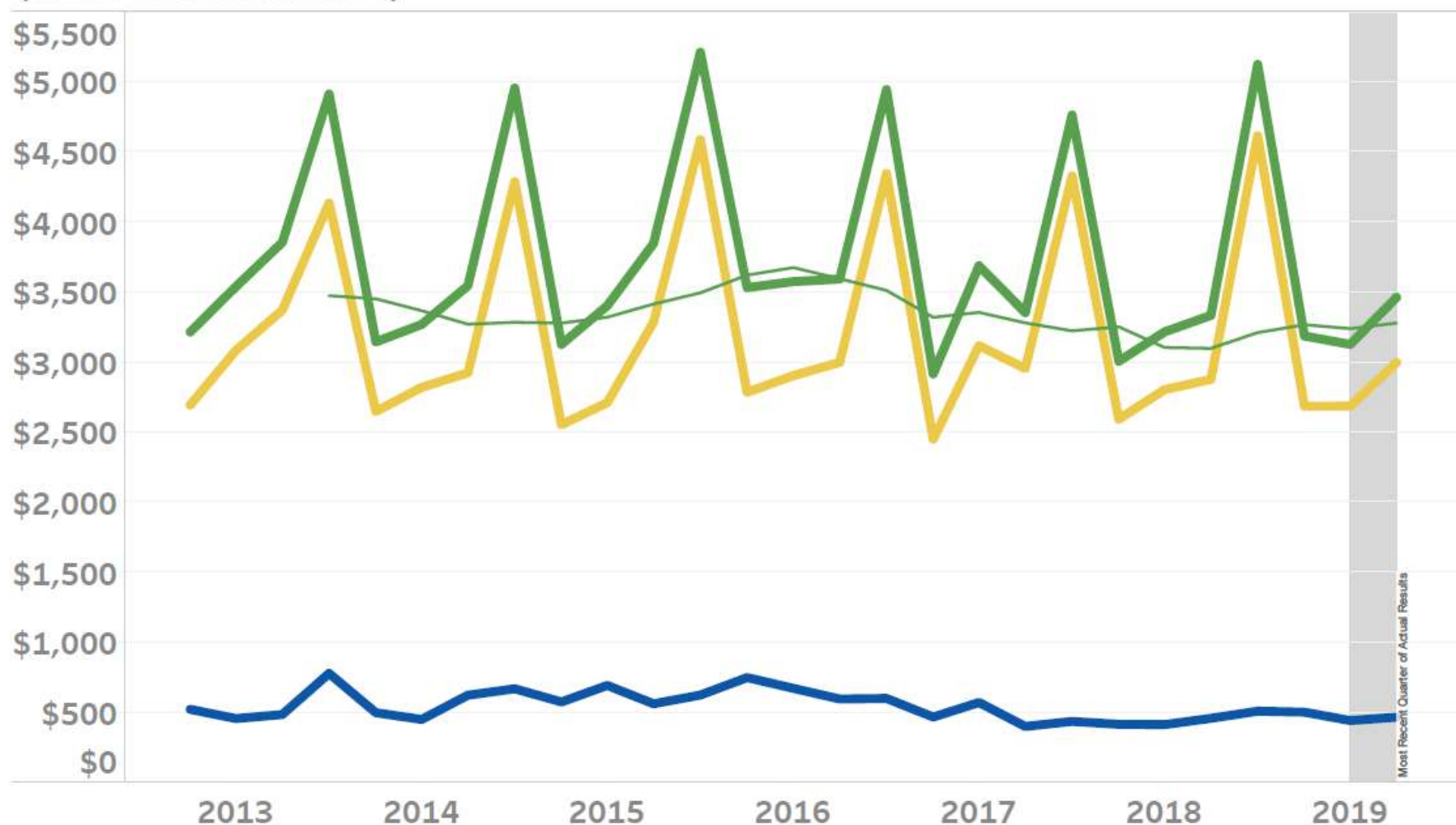




# Aerospace Industry Financial Insights: CAPEX

## Aerospace & Defense - Capital Expenditures

(As of 3Q2019, Millions \$)

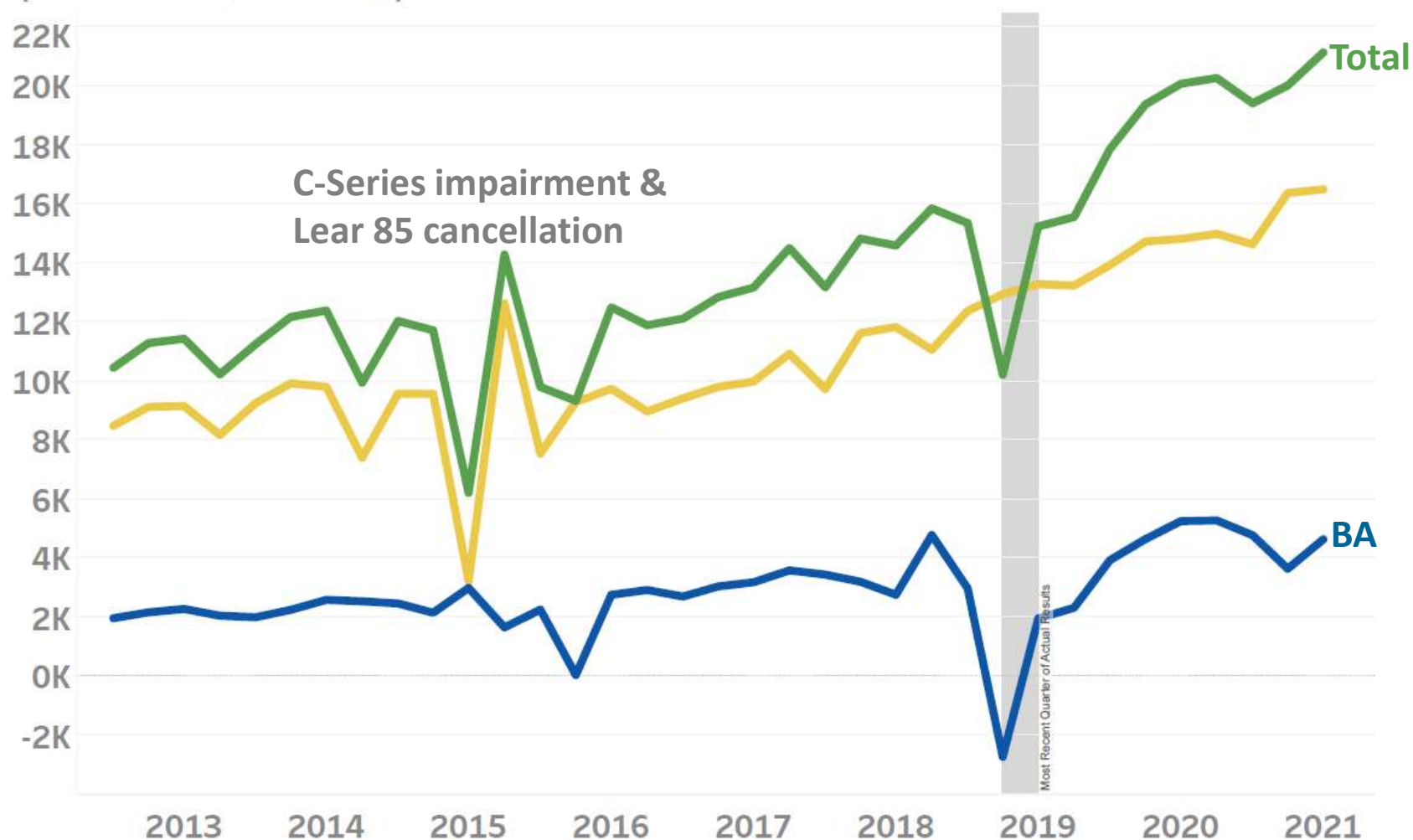




# Aerospace Industry Financial Insights: EBITDA

## Aerospace Manufacturers - EBITDA with Projections

(As of 3Q2019, Millions \$)



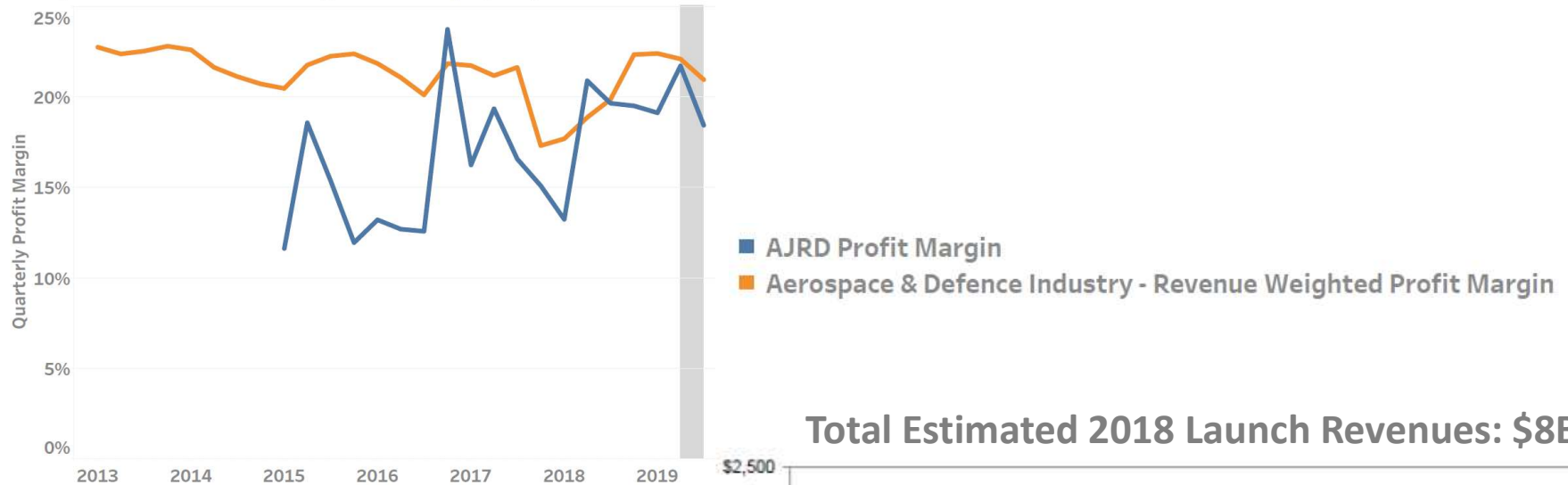




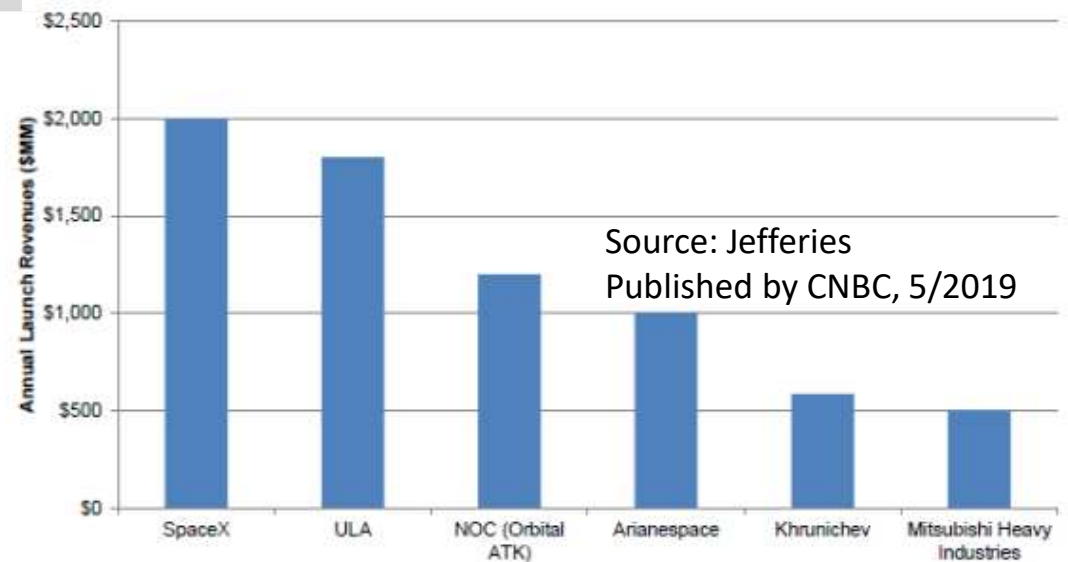


# Rocket Industry Financial Insights:

Aerospace Manufacturers - Average Profit Margin (TTM)



## Total Estimated 2018 Launch Revenues: \$8B





# Commercial Aircraft Orders

Boeing, Airbus: 2019 Orders & Deliveries Through 31 Dec.							
Deliveries	Airbus	A220	A320	A330	A350	A380	TOTAL
		48	642	53	112	8	863
	Boeing	737	747-8	767	777	787	TOTAL
	127	7	43	45	158	380	
Net Orders	Airbus	A220	A320	A330	A350	A380	TOTAL
		63	654	89	32	-70	768
	Boeing	737	747-8	767	777	787	TOTAL
	-183	0	26	-4	74	-87	
Gross Orders	Airbus	A220	A320	A330	A350	A380	TOTAL
		118	796	104	113	0	1,131
	Boeing	737	747-8	767	777	787	TOTAL
	67	0	26	38	112	243	
Backlog	Airbus	A220	A320	A330	A350	A380	TOTAL
		495	6,068	331	579	9	7,482
	Boeing	737	747-8	767	777	787	TOTAL
	4,585	17	94	383	546	5,625	

Source: Forecast International

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# Commercial Aircraft Orders - Deliveries

2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Airbus	39	49	74	70	81	76	69	42	71	76	78	138	863
	Q1	162		Q2	227		Q3	182		Q4	292		
Boeing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	380
	46	49	54	23	30	37	19	18	26	19	24	35	
	Q1	149		Q2	90		Q3	63		Q4	78		

2018	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Airbus	27	38	56	51	51	80	77	54	69	81	89	127	800
	Q1	121		Q2	182		Q3	200		Q4	297		
Boeing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	806
	44	49	91	44	68	82	39	64	87	57	79	102	
	Q1	184		Q2	194		Q3	190		Q4	238		

Source: Forecast International

Model Family	Orders	Deliveries	Unfilled Orders	Unfilled as % of Total
737	10118	5526	4592	80.5%
<b>737 MAX</b>	<b>4930</b>	<b>387</b>	<b>4543</b>	<b>79.6%</b>
737 All Others	5188	5139	49	0.9%
747	107	88	19	0.3%
767	296	191	105	1.8%
777	1479	1045	434	7.6%
787	1450	894	556	9.7%

Boeing Website, 1/20/2020  
Gardner Intelligence Calculations

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# Boeing May Be Its Own Worse Enemy

777X Family	777-8X	777-9X
<b>List Price</b>	\$410.2 million	\$442.2 million
<b>Seats (2-class)</b>	384	426
<b>Range</b>	Up to 8,730 nmi (16,170 km)	7,285 nmi (13,500 km)
<b>Engine</b>	<a href="#">GE9X</a> , supplied by GE Aviation	

Dreamliner	787-8	787-9	787-10
<b>List Price</b>	248.3M	292.5M	338.4M
<b>Passengers (two-class)</b>	248	296	336
<b>Range nmi (km)</b>	7,305 nmi (13,530 km)	7,530 nmi (13,950 km)	6,345 nmi (11,750 km)
<b>Engine</b>	GE <sub>nx</sub> -1B / Trent 1000	GE <sub>nx</sub> -1B / Trent 1000	GE <sub>nx</sub> -1B / Trent 1000

Boeing Website, 1/20/2020  
Gardner Intelligence Calculations

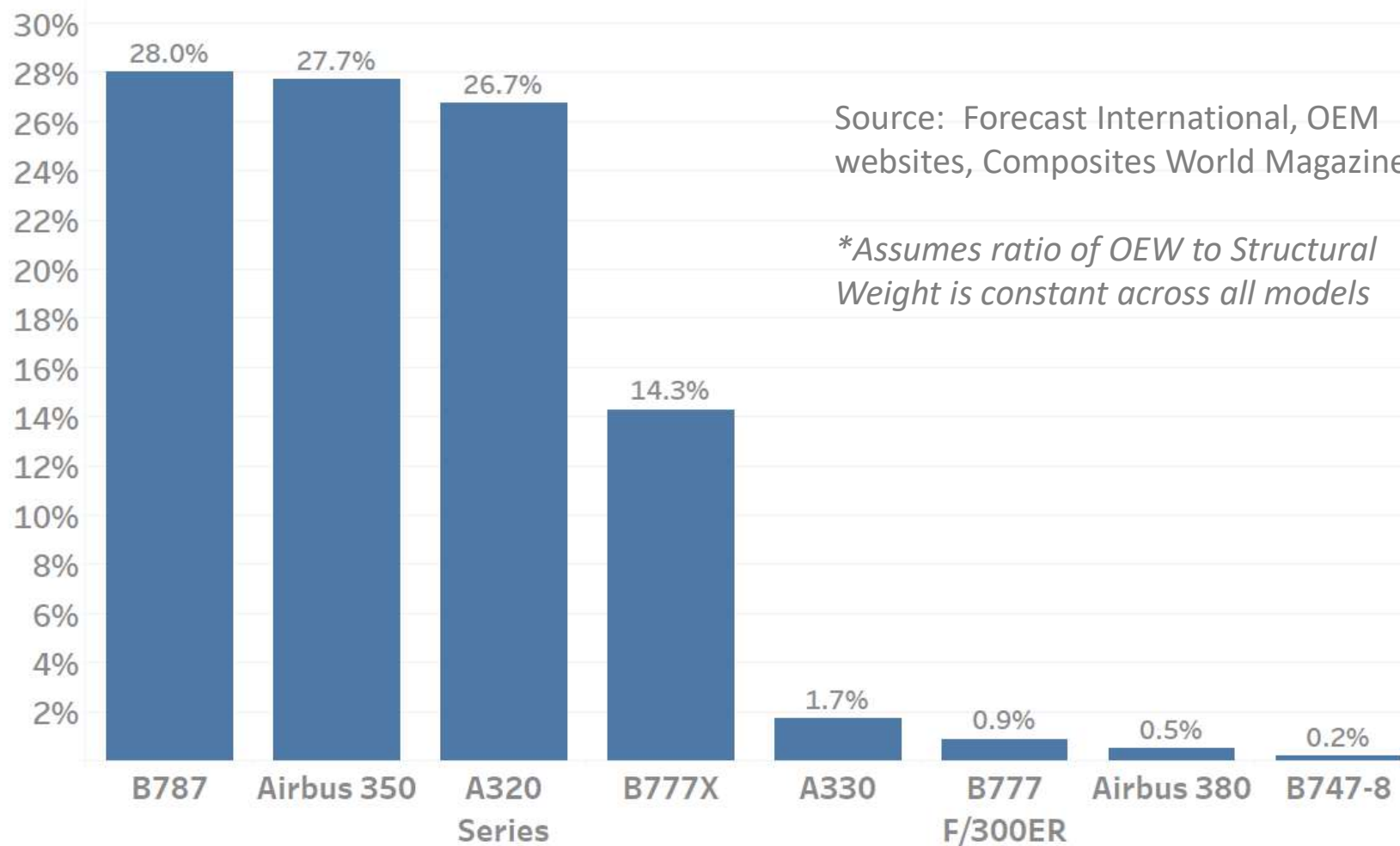
- Emirates swapped 30, 777X orders for 30, 787 orders
  - \$12.3B order reduced to \$8.8B (-35%)
  - In part due to a delay in production as a result of the 737-MAX
- British Airways and Deutsche Lufthansa downgraded 777X commitments in 4Q19.

Source: WSJ, 11/19/2019



# Aircraft Composites Market Share (%\*)

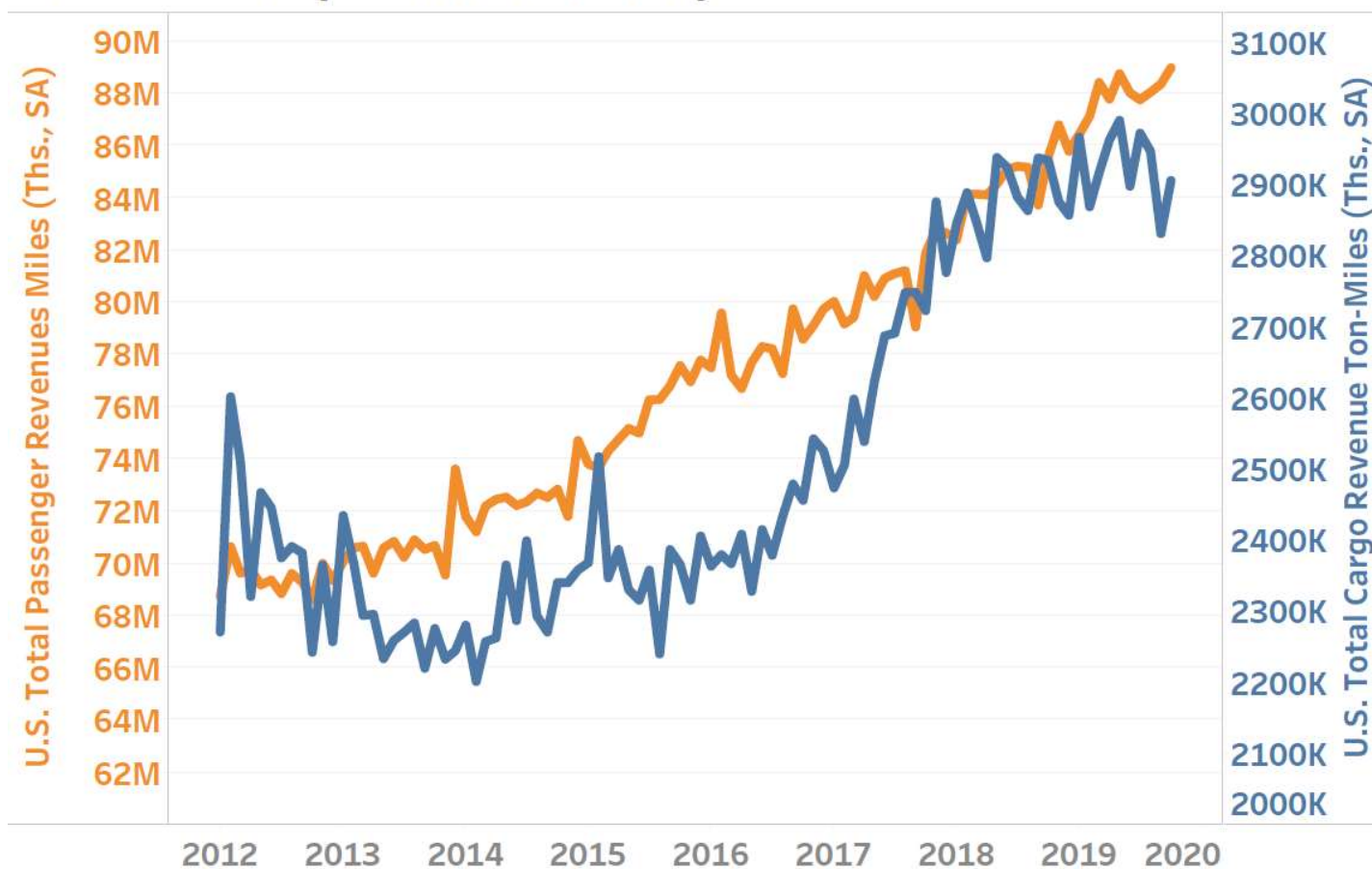
Market Share of Composite Material by Model Family and Backlog Volume (lbs)





# Aerospace Outlook – U.S.

## U.S. Air Transportation Activity



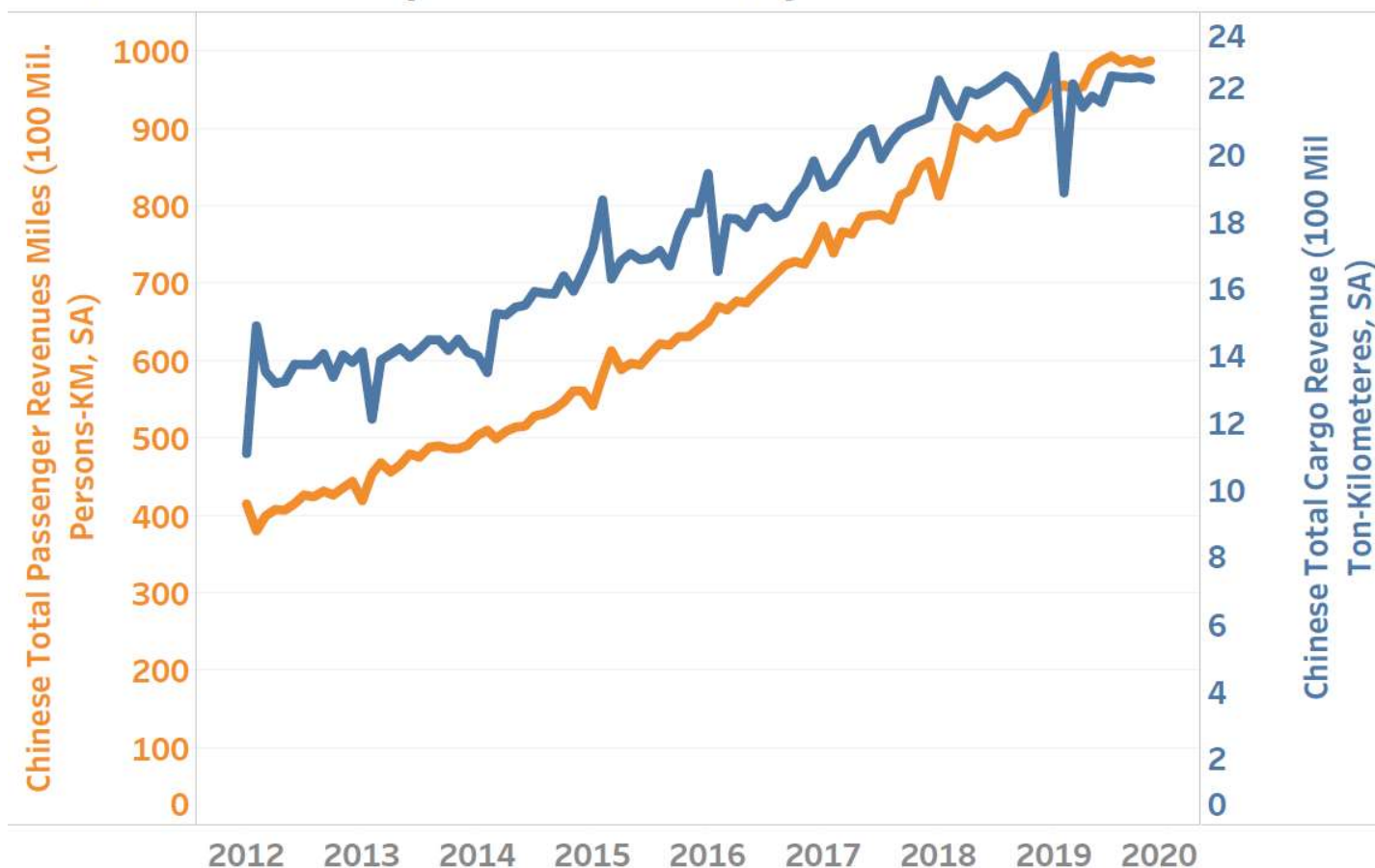
Year	YTD2019	2018	2017	2016	2015	2014
Passenger	4.2%	4.7%	3.1%	3.4%	4.3%	2.5%
Freight	-1.4%	7.8%	9.6%	2.6%	2.4%	0.9%

Annual Figures, 12/12 ROC, SA



# Aerospace Outlook - China

## Chinese Air Transportation Activity



Year	YTD2019	2018	2017	2016	2015	2014
Passenger	9.7%	12.3%	14.0%	15.0%	15.1%	11.6%
Freight	-0.1%	7.9%	10.1%	6.2%	12.1%	10.2%

Annual Figures, 12/12 ROC, SA



# View From On The Horizon: Aerospace



## Military Industry – Evolving Threats

- Faster aircraft and unmanned aircraft create a more precarious environment:
  - Drone warfare increases danger of miscommunication:
  - Is it a hypersonic reconnaissance craft or a nuclear missile?



*New weapon systems preparing for China's National Day Parade on 10/1, image taken 9/14*

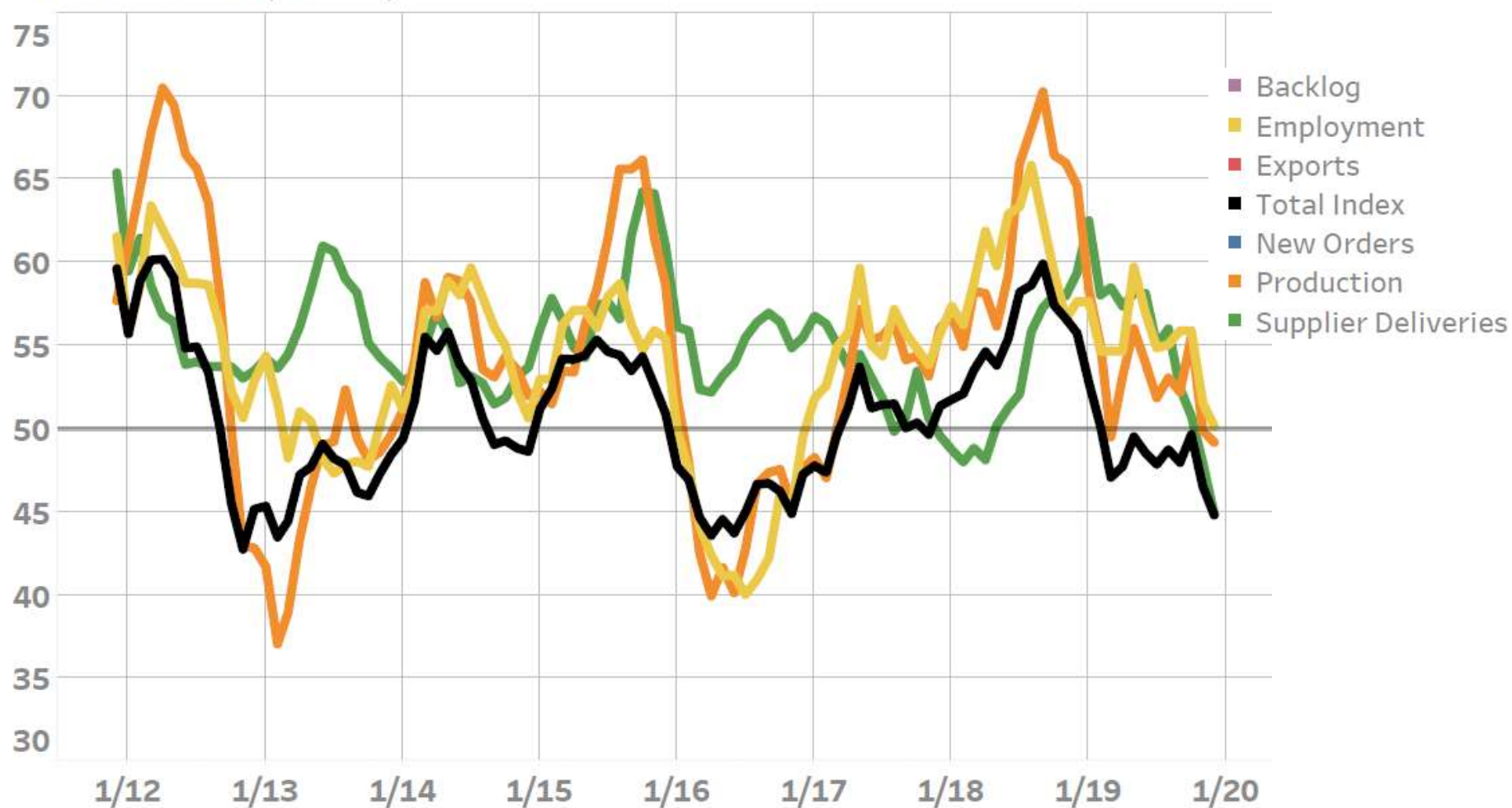


# Automotive Financials and Wall Street Estimates



# Automotive Composites Insights (Dec19)

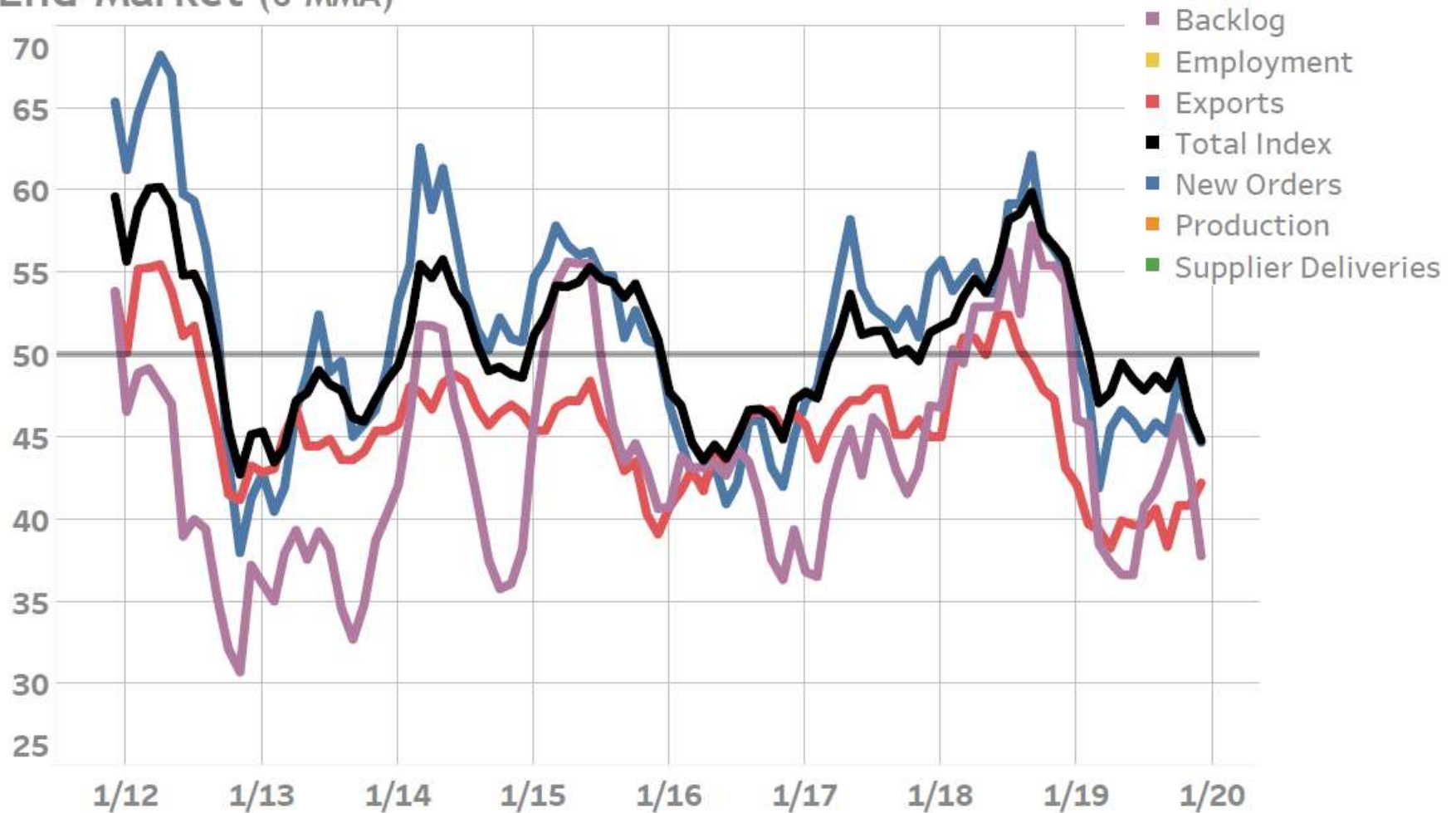
GBI Snapshot: Composites - Components, Automotive  
End-Market (6-MMA)





# Automotive Composites Insights (Dec19)

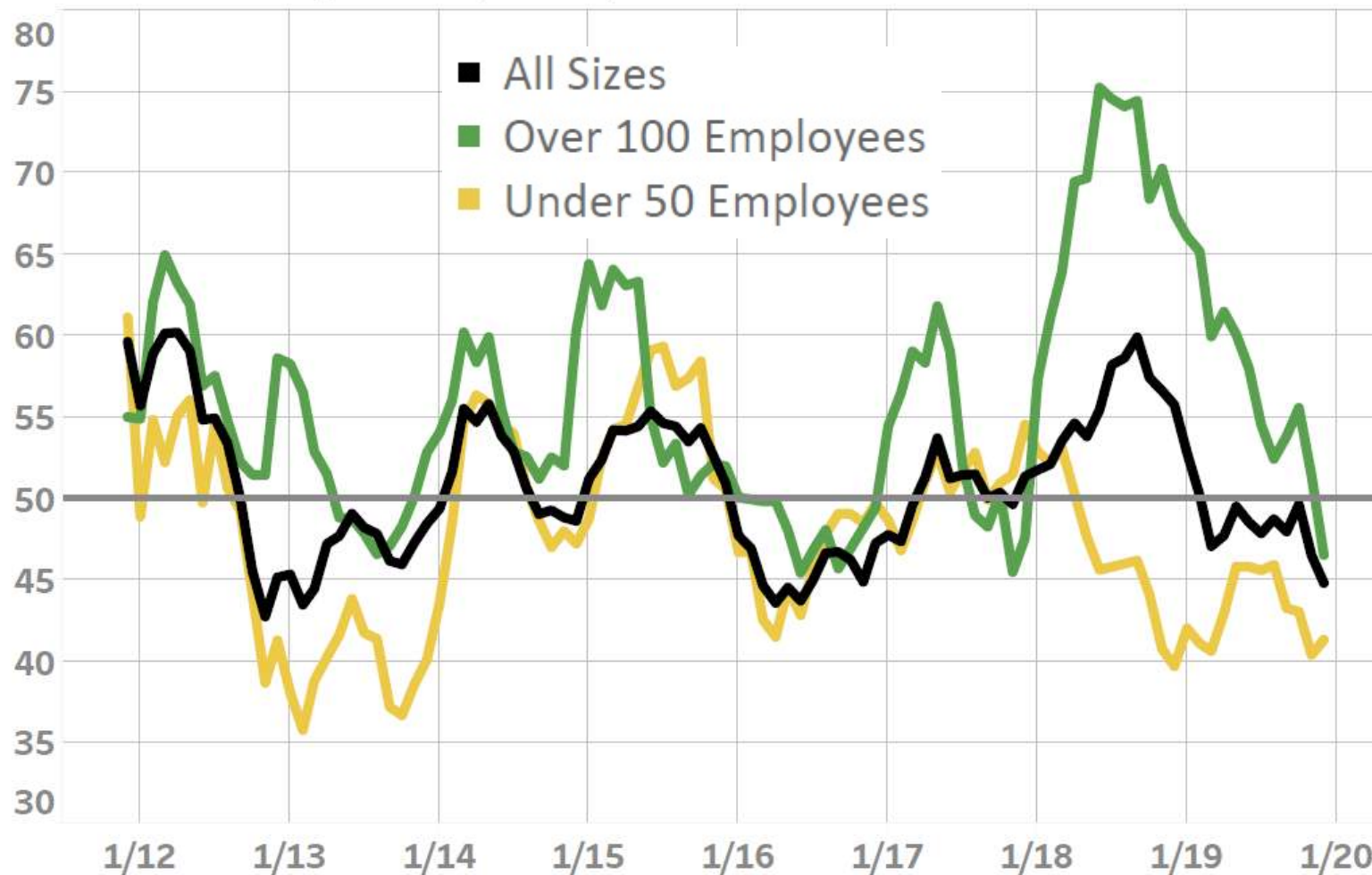
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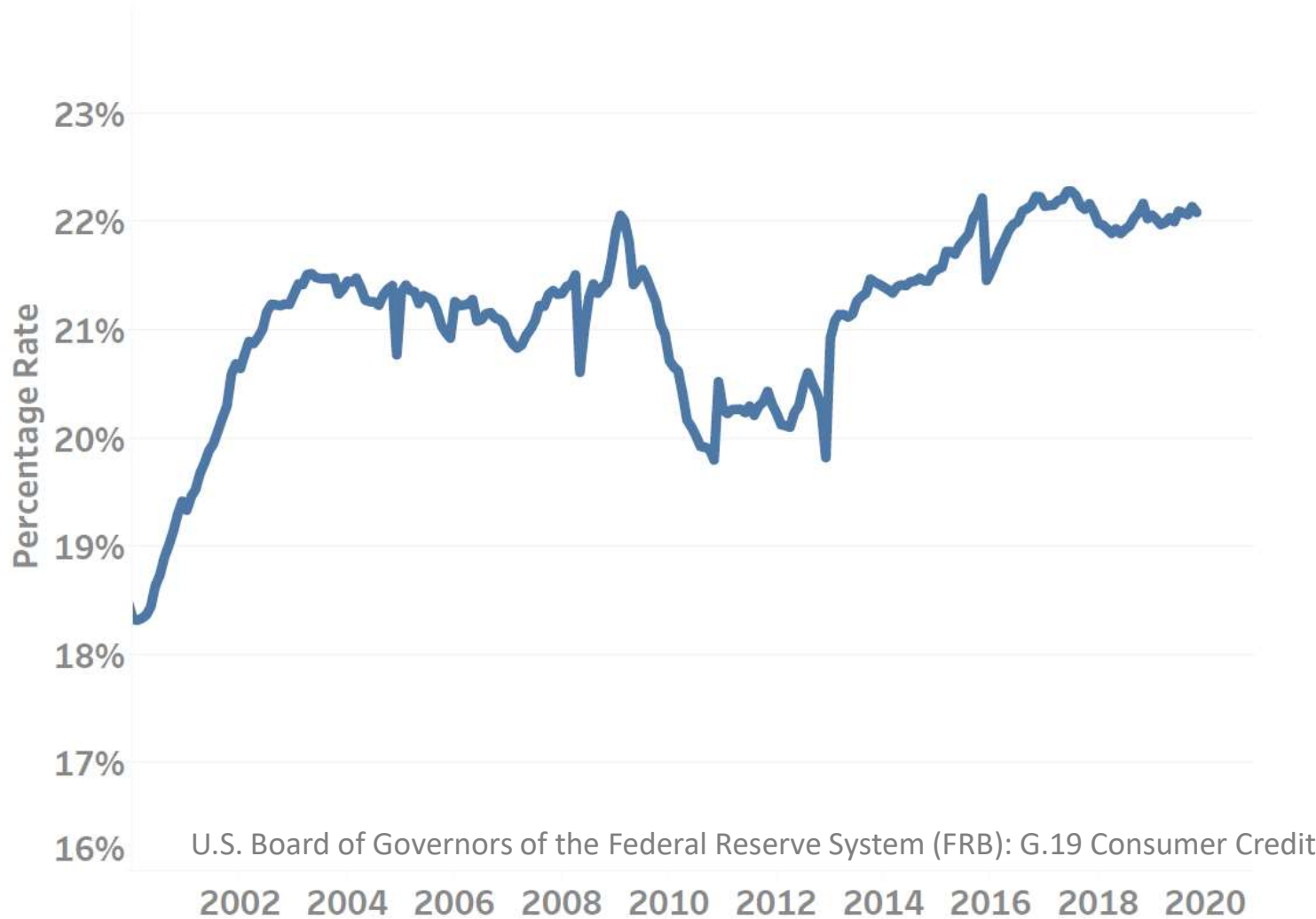
GBI Snapshot: Composites - Total Index, Automotive End-Market by Size (6-MMA)





# Automotive Financial Credit Conditions

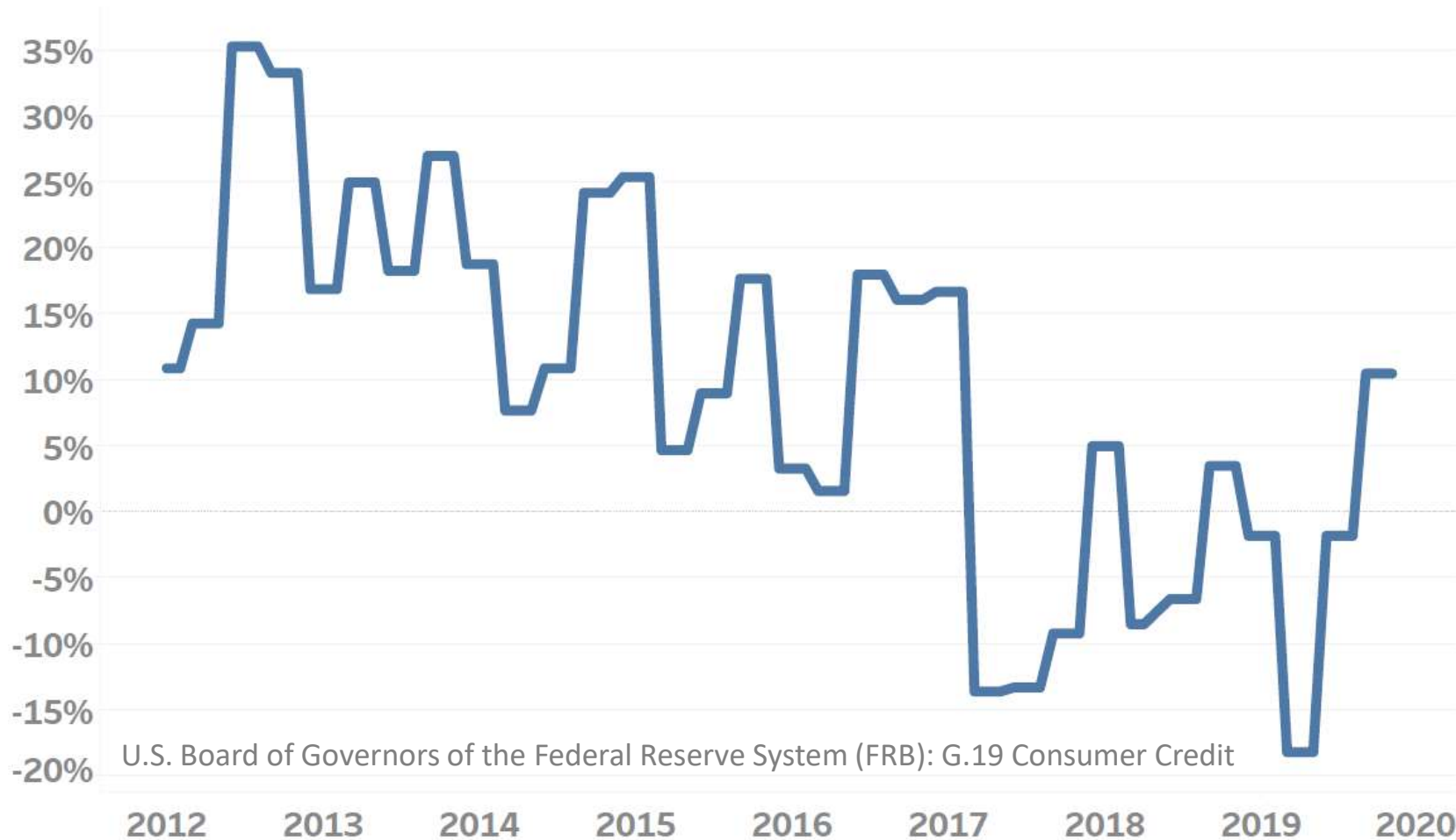
## Vehicle Financing Ratios





# Automotive Financial Credit Conditions

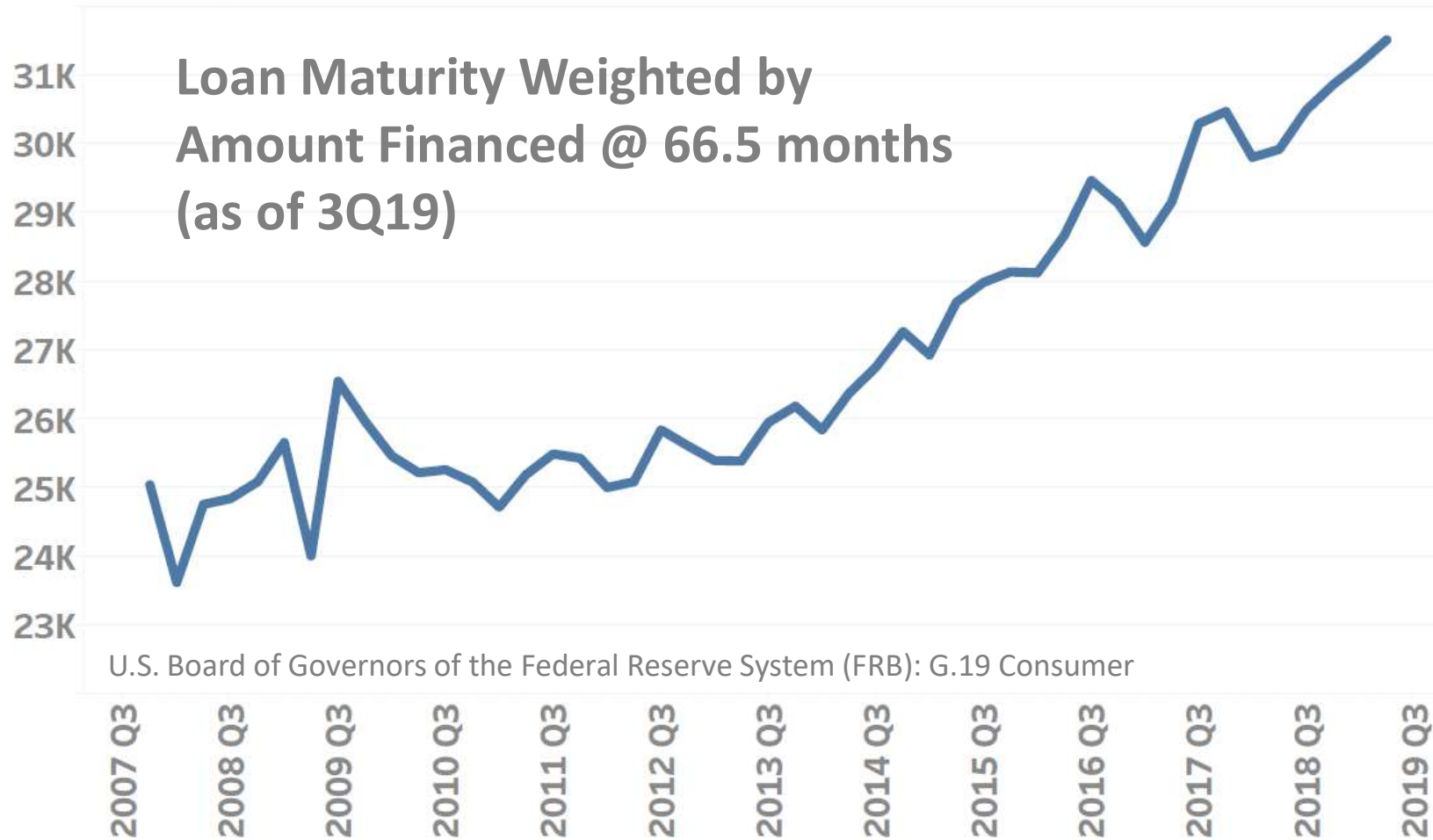
## Net Percentage of Banks Reporting Stronger Demand for Auto Loans





# Automotive Financial Credit Conditions

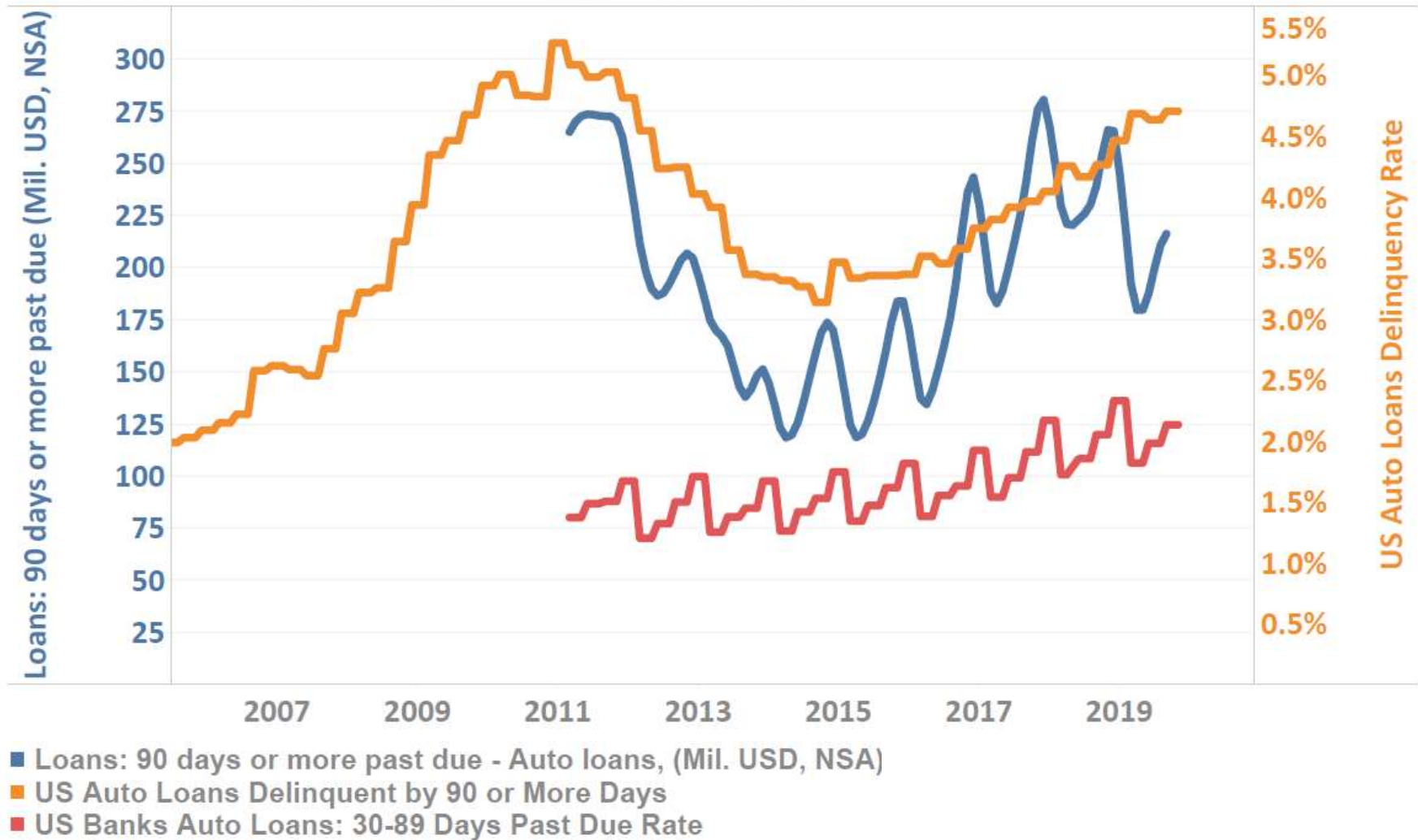
New Car Loans (Terms) - Average Amount Financed,  
(USD, NSA)





# Automotive Financial Credit Conditions

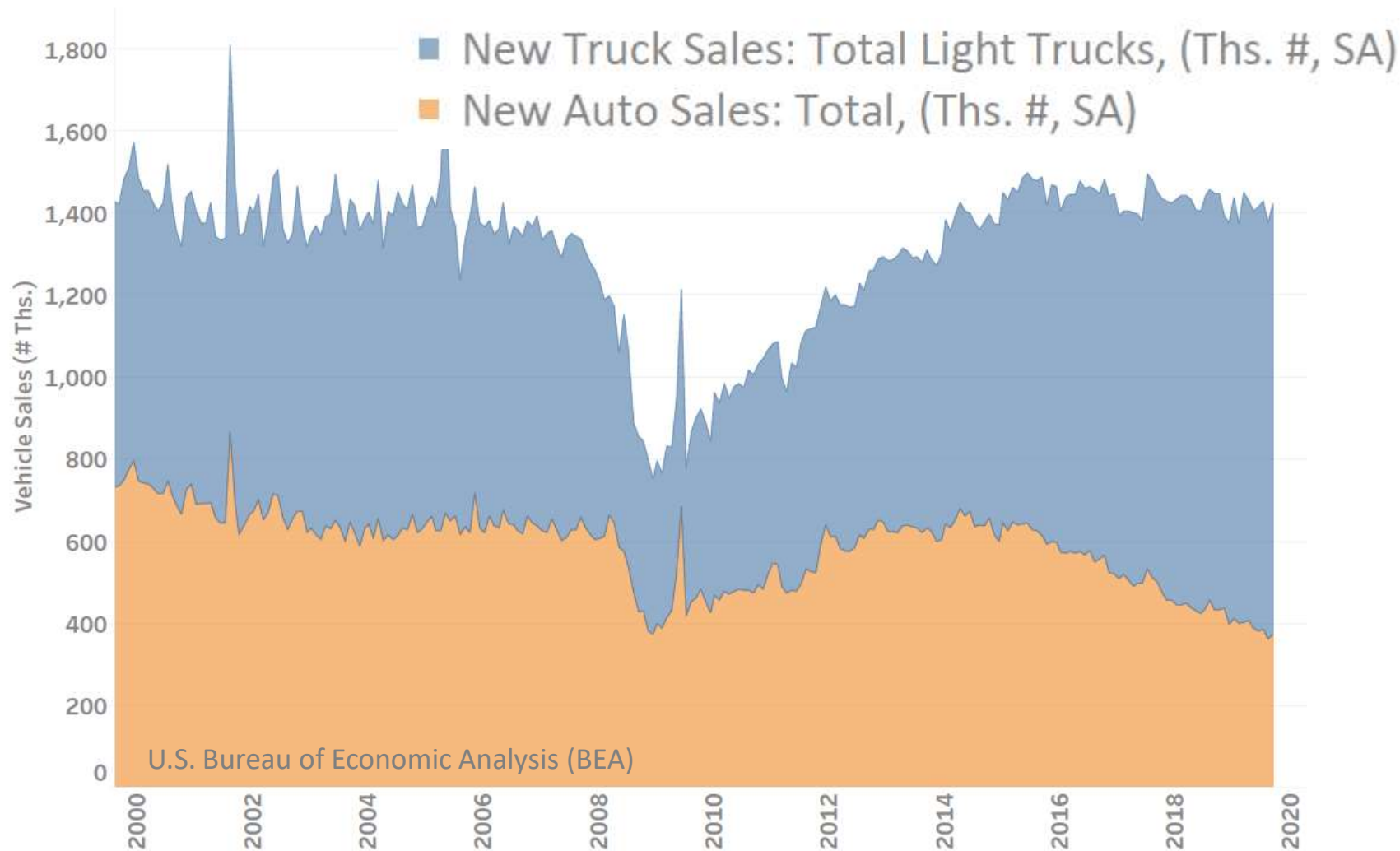
## Automobile and Total Delinquent Loans





# U.S. Vehicle Sales

## New Vehicle Unit Sales, Seasonally Adjusted





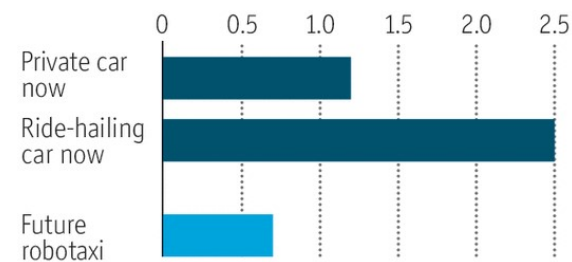
# Drivers of Automotive Adoption

- Automation
  - Based on existing taxi data, the average NYC taxi travels 70K Mi/Year.
    - Removing the capacity utilization barrier of the driver, an autonomous vehicle could average a >200% increase.
    - Such vehicles being thought of as a capital asset means an increased focus on their ROI:

**RESULT:** A 5-year old vehicle could see 700K miles of use, creating demand for materials that are non-corroding and more durable.

## Designated driver

Cost per mile, worldwide, \$



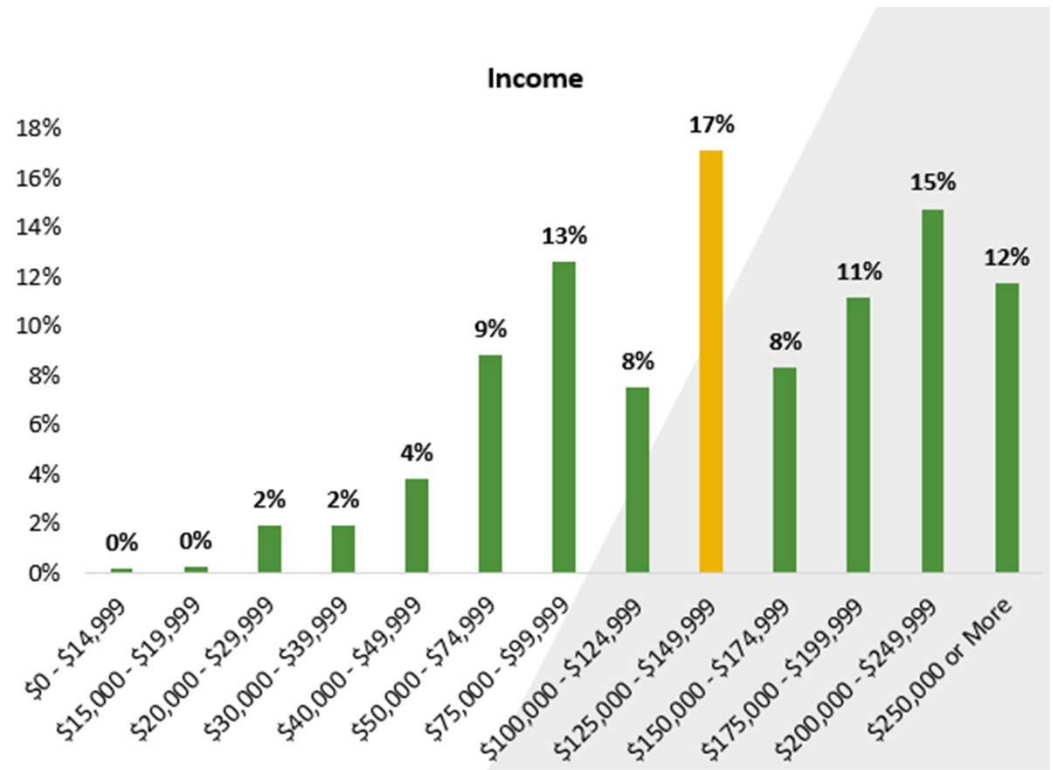
Source: UBS

Economist.com



# Electric Vehicle Adoption Trend and Hurdles

- Battery prices fell 70% from 2010 – 2016, helping to close the first hurdle of initial affordability.
  - 2017 Real Median Household Income: \$61.3K
- “Range anxiety” is only one (technology) hurdle.
- 2020-2025 may be \$250B in EV investment by OEMs.
  - Push for composites to be a part of the investment matrix!



Commentary and chart from Cox Automotive Mobility and/or IHS Markit, reporting as of 10/2019



# Why People Buy Electric is Changing:



**Top reasons customers cited for buying a Prius**

	2Q'07	1Q'04
"Makes a statement about me"	57	34%
Other (including incentives, business, etc.)	42	42
Higher fuel economy	36	27
Distinctive styling	33	41
Lower emissions	25	36
New technology	7	19

Source: CNW Marketing Research



# Why People Buy Electric is Changing:



**EPA est. 235  
miles ⓘ**

Targeted range, AWD Model

**Mid 3-second ⓘ**

Targeted 0-60, AWD

**AWD**

20" Wheels

Source: Ford website



## How people buy performance is changing:

- 40,000 built annually
- Sold out first-year production in roughly 10-days in July. (motor1.com)



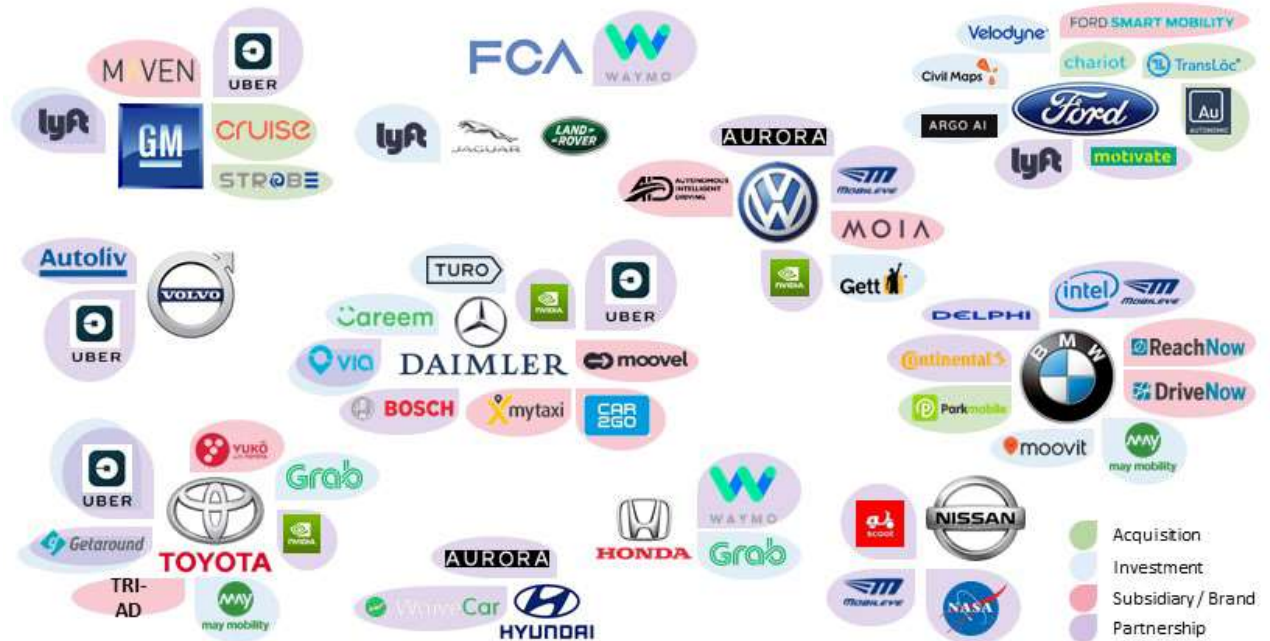
### Pop Quiz:

- 1.) How much faster is the Corvette's 0-60 time over the Mach-E?
- 2.) How much weight difference is there between the C7 and C8 models?



# Mobility Technology Investments Increasing

- Strategic partnerships will continue to multiply, providing multiple “front doors” to knock on.



*From Center for Automotive Research, May 2018*

- Hyundai will invest \$34.6B in strategic investments by 2025
- Sony and other firms see their future in automotive



## 2020 European Automobile Market

- EU: Experiencing mild growth in sales, influenced by tax law changes taking effect in 2020:
  - -1.6% through 3Q19, +1.2% at YE2019

### By Manufacturer: (Ranked by 2019 Registration Volumes)

VW Group 3.6% (3.4M)	PSA Group -1.5% (2.3M)	RENAULT -0.2% (1.4M)
BMW +0.8% (1M)	DAIMLER +4.9% (1M)	HYUNDAI +2.1% (0.9M)

### By Country: (Top Six EU nations by total registrations, Millions)

Germany +5%, 3.6M	UK -2.4% 2.3M	France +1.9%, 2.2M
Italy +0.3%, 1.9M	Spain -4.8% 1.3M	(6 <sup>th</sup> ) Poland +4.5% 0.6M

Source: [European Automobile Manufacturers Association](#) Press Release 1/16/2020



# 2020 Global Automobile Market

- Chinese Sales: Experiencing a significant slump & shift in consumer preference:

New vehicle sales by type (Factory shipments)

	Oct. 2019			Jan.-Oct. 2019		
	Units (10,000)	Share(%)	Y-oY(%)	Units (10,000)	Share(%)	Y-oY(%)
Sedan/Hatchback	89.8	39.3	-10.1	831.8	40.3	-11.8
MPV	13.0	5.7	-11.4	111.3	5.4	-21.0
SUV	86.9	38.0	0.1	742.7	36.0	-8.3
Mini Van	3.0	1.3	-7.6	31.7	1.5	-13.9
<b>Passenger Cars Total</b>	<b>192.8</b>	<b>84.4</b>	<b>-5.8</b>	<b>1,717.4</b>	<b>83.2</b>	<b>-11.0</b>
<b>Commercial Vehicles Total</b>	<b>35.7</b>	<b>15.6</b>	<b>7.0</b>	<b>347.8</b>	<b>16.8</b>	<b>-2.5</b>
<b>Grand Total</b>	<b>228.4</b>	<b>100.0</b>	<b>-4.0</b>	<b>2,065.2</b>	<b>100.0</b>	<b>-9.7</b>

Source:CAAM, Each maker's press releases



# 2020 Global Automobile Market

- Chinese Production Moving In Tandem with Sales

## China - Production of vehicles

	Oct. 2019			Jan.-Oct. 2019		
	Units (10,000)	Share(%)	Y-oY(%)	Units (10,000)	Share(%)	Y-oY(%)
Sedan/Hatchback	88.7	38.6	-10.7	826.0	40.4	-12.2
MPV	13.7	6.0	6.7	109.5	5.4	-20.2
SUV	88.0	38.3	3.3	733.3	35.9	-10.8
Mini Van	3.4	1.5	16.4	32.4	1.6	-7.2
<b>Passenger Cars Total</b>	<b>193.8</b>	<b>84.4</b>	<b>-3.2</b>	<b>1,701.2</b>	<b>83.2</b>	<b>-12.1</b>
<b>Commercial Vehicles Total</b>	<b>35.8</b>	<b>15.6</b>	<b>7.7</b>	<b>343.2</b>	<b>16.8</b>	<b>-1.3</b>
<b>Grand Total</b>	<b>229.5</b>	<b>100.0</b>	<b>-1.7</b>	<b>2,044.4</b>	<b>100.0</b>	<b>-10.4</b>

Source:CAAM, Each maker's press releases



# What Does It All Mean?

## How do you make the economics work?

- Average new car price is \$36,700 (Edmunds.com)
- Average financing amount is \$31,500 (Federal Reserve, Sep 2019)
- Degrading loan performance with already high loan-to-income ratios

## Options:

- Marketing Message: Performance, Range, Durability
- Push out loan duration?
  - Vehicle durability will be critical to this:
    - Thus composites should be part of the investment mix
    - E.G. Sierra CarbonPro Bed: 1-minute cycle time (source: CSP)



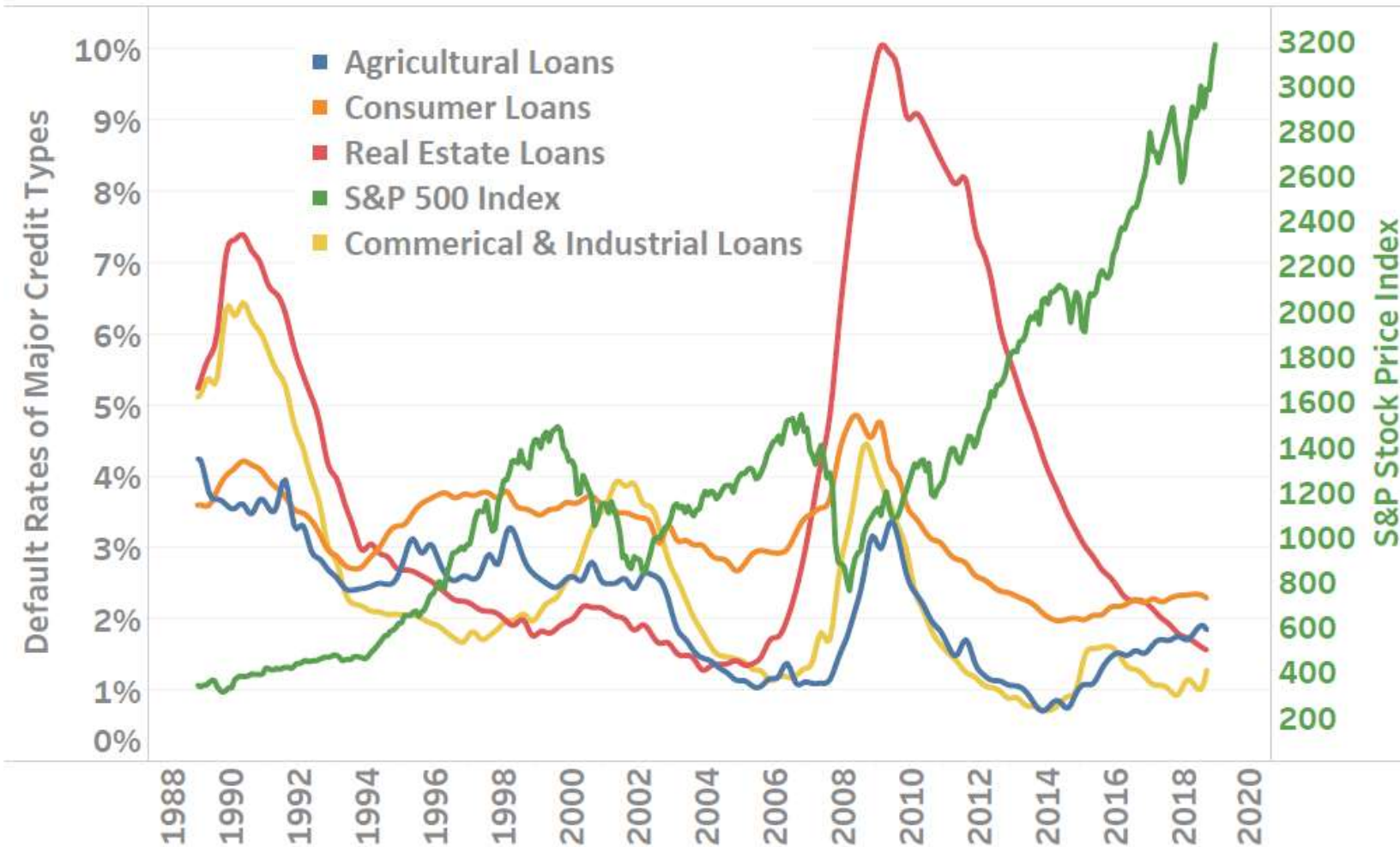
# Additional Macroeconomic Considerations



# Credit Markets (Can) Lead Market Turns

## Credit Conditions and Equity Prices

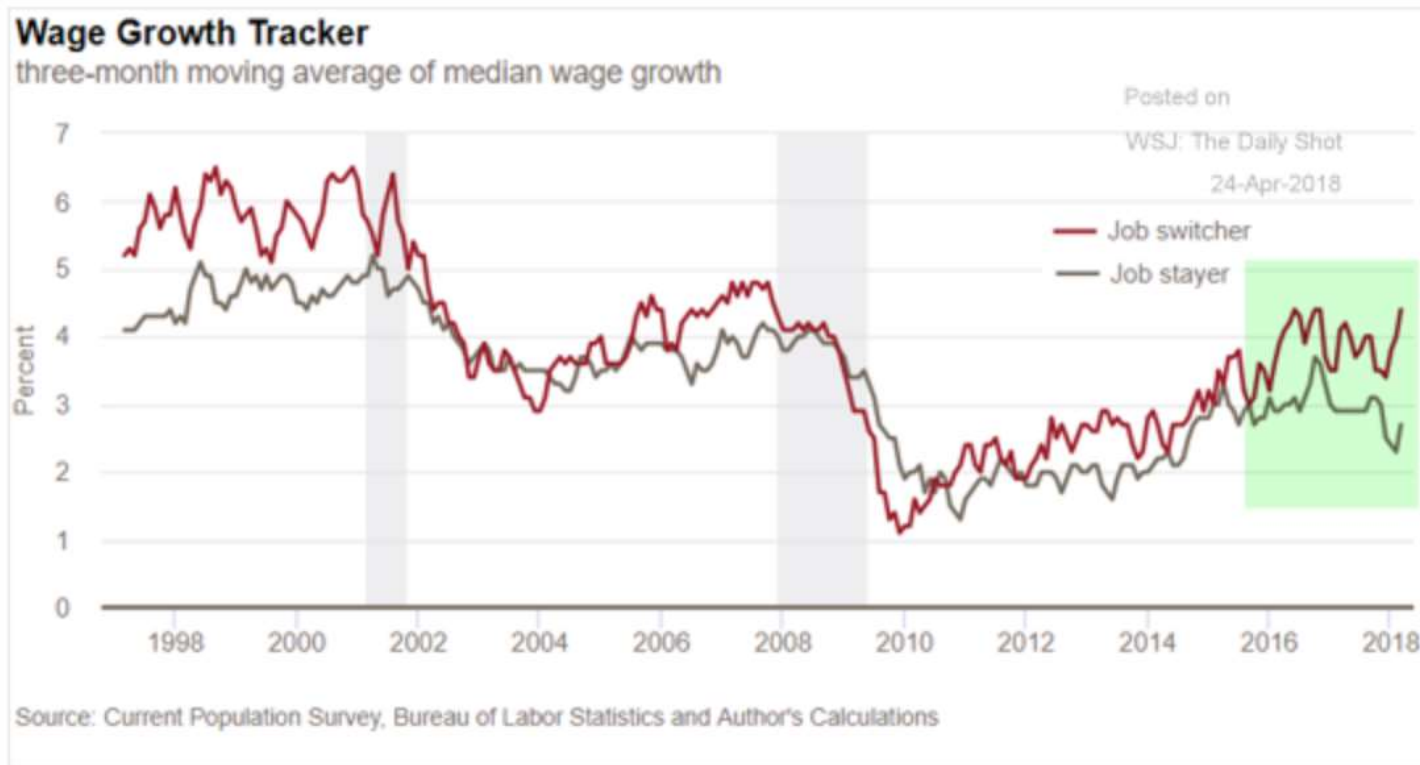
Updated Jan-2020





# Critical Employment Trend For Employers

- Job-hopping is proving more lucrative than staying in place.





# Critical Employment Trend For Employers

*Nearly 70% of manufacturers are creating or expanding training programs for their workforce. Upskilling workers helped to improve productivity, promotion opportunities and morale.*

*“Manufacturers to spend \$26.2 Billion on ‘upskilling in 2020 to attract and keep workers” CNBC, Jan 17<sup>th</sup>, 2020*



## If you remember nothing else...

“Okay, you have overwhelmed me with charts, graphs and numbers. What am I supposed to do with all of this stuff?!”





# Thank you for your time

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