



TPC Semiconductor Market Survey

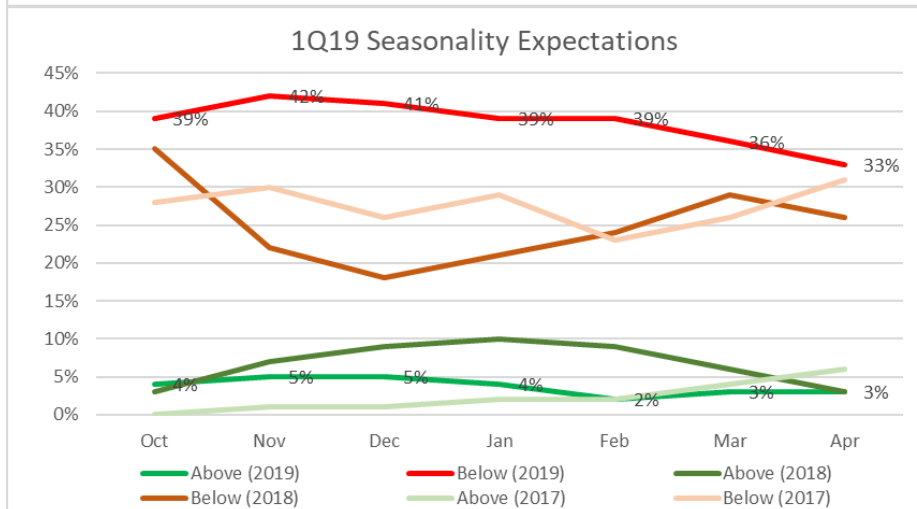
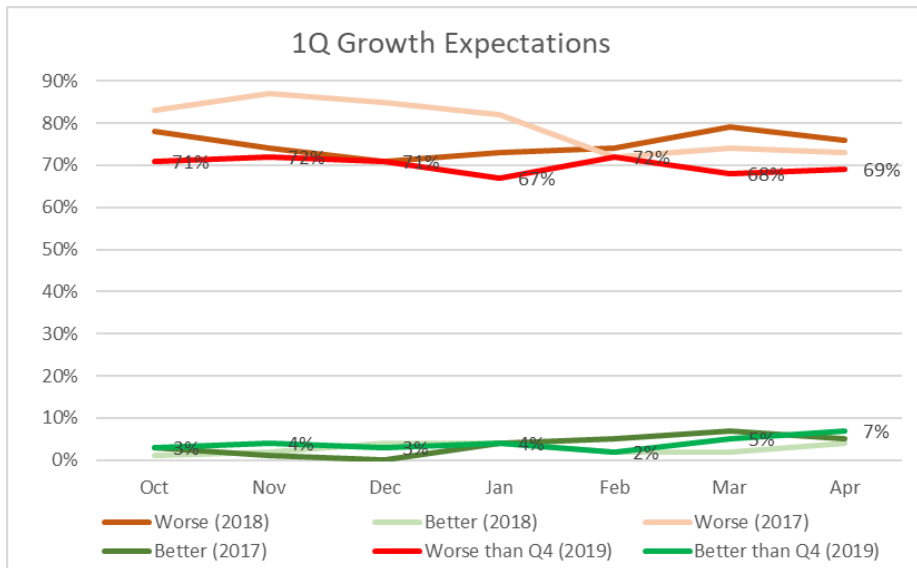
April 2019

TPC April 2019 Survey Summary

*Survey Date: April 6-9 Respondents: ~11,600 Location: Worldwide (~80% Asia) Who: Active Electronics Industry Professionals
Response Composition (multiple choices): Indust 43%, Auto 22%, Comm 13%, Computing 25%, Mobile 30%, Data Ctr 14%, Other 11%*

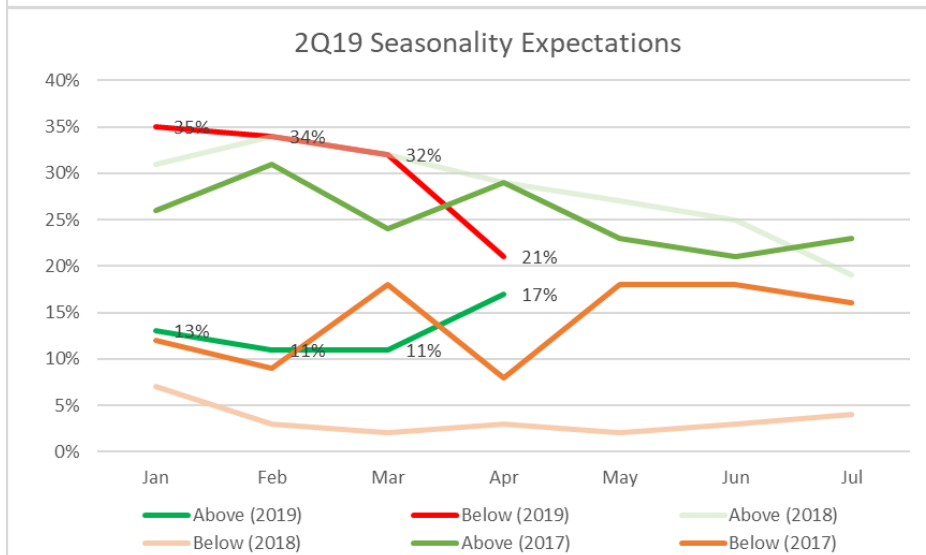
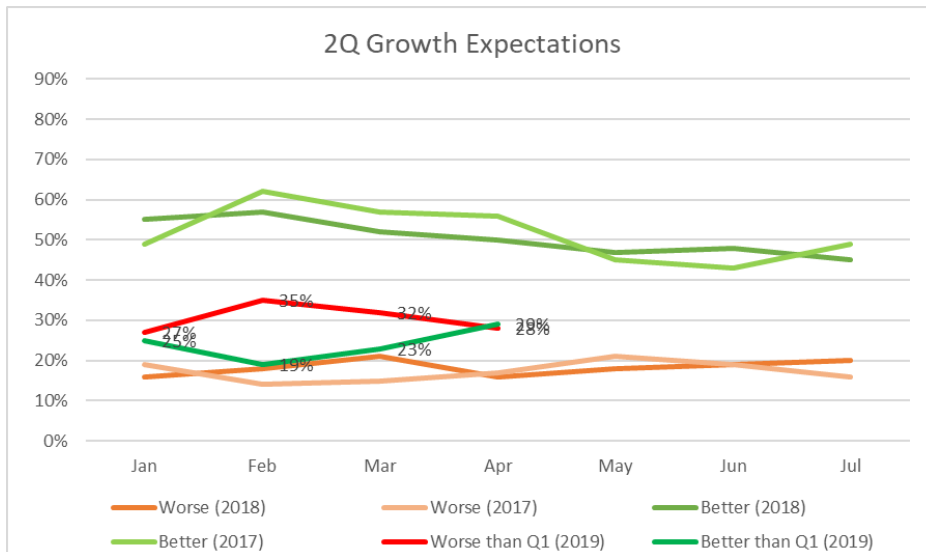
- Our April 2019 Semi industry survey of over 20k electronic industry professionals showed some improvement in bookings, demand, and cancellation trends. However, inventories continued to be high and are still increasing in some product areas.
- Based on our survey results and conversations with various supply chains; we believe the industry is close to if not at a bottom. However, inventories in some channels are still viewed as too high. Additionally, there continues to be concern over the macro environment especially in China. We look for another month of positive improvement in C2Q and continued positive C3Q trends to support the beginning of a turn around.
- We still question how quickly the recovery in the back half of the year will be, and will look to more C3Q survey data to help better understand this.
- The q/q demand outlook for both C2Q19 upticked slightly and our initial C3Q data seems to be headed in the right direction.
 - For C2Q, 28% expect weaker q/q growth vs. 33% previously, while 29% now expect better q/q growth vs. 23% last month.
 - 21% see C2Q as sub seasonal vs. 17% seeing it above seasonal. While this is remains significantly weaker than the previous 2 years data, it is a marked improvement vs. last month's seasonal data.
 - Our initial C3Q data shows 66% expecting growth vs. C2Q, but only 21% see it as better than seasonal. Both are less than the prior 2 years results.
- C2Q19's booking expectations also improved slightly with 50% expecting bookings to increase q/q vs. 46% in last month's survey. Only 15% expect weaker bookings vs. C1Q. However, our initial C3Q results show only 22% expecting bookings to increase while 13% expect them to be weaker vs. C2Q..
- Cancellation expectations which is an indicator that has been quite negative over the past few months is starting to show a positive shift which indicates the balance of inventory and demand is starting to normalize. If this trend continues into May, we would ?
- Inventories also continue to increase; for C1Q 49% saying inventories are increasing while only 6% see inventories decreasing. For C2Q, both the increasing and decreasing responses went up by 5% which says the inventory outlook for C2Q is unchanged.
- Slide 10, which shows a more granular view of inventory by key components, shows inventory and availability continuing to improve and inventories growing on most products. **We are seeing all previously allocated products now above what would be considered normal inventory levels.**

C1Q19 Growth & Seasonality Outlook



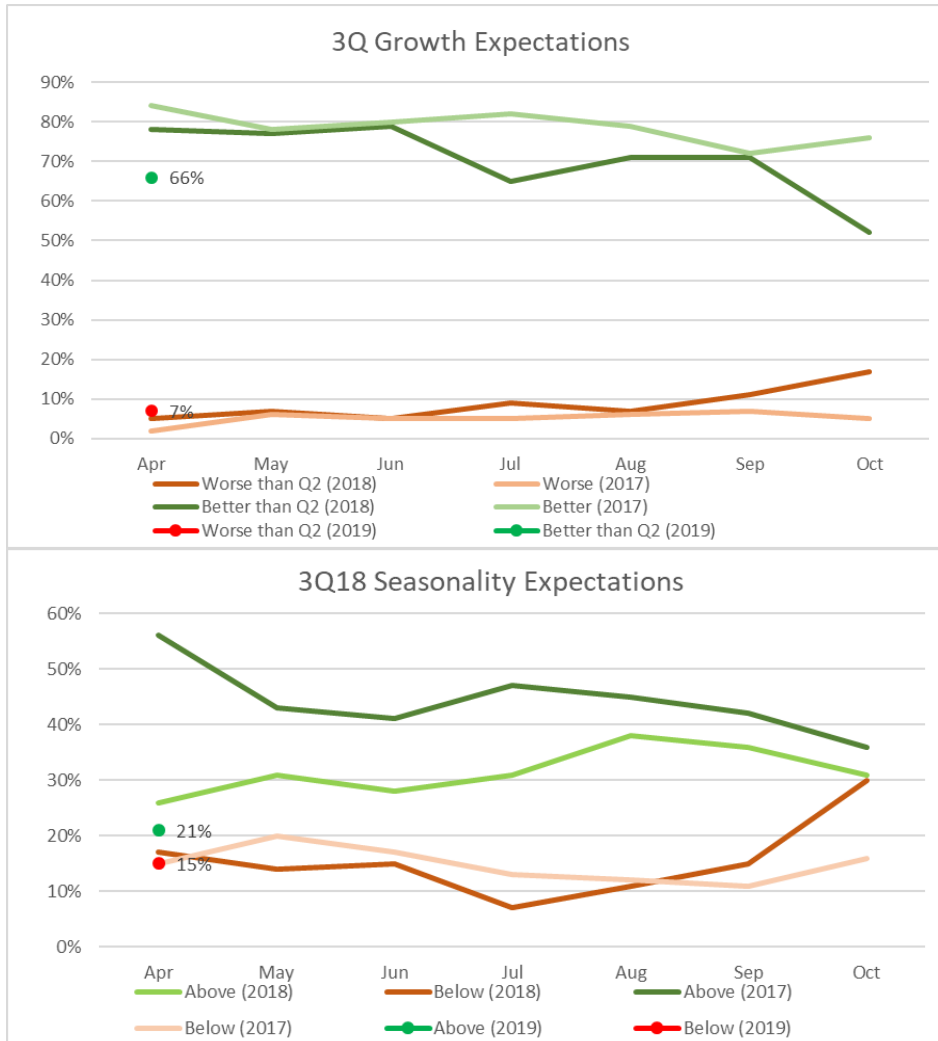
- Most respondents see C1Q19 weaker than C4Q18, but with seasonality much worse.
- While C1Q demand growth is roughly comparable to the previous 2 years; seasonality outlook for C1Q is ~20% worse than previous 2 years.

C2Q19 Growth & Seasonality Outlook



- Both C2Q19's demand growth outlook and seasonality outlook is significantly weaker than the previous 2 years.
- ~2x weaker demand growth vs. C2Q17/18
- ~2x weaker seasonality outlook vs. C2Q17/18.

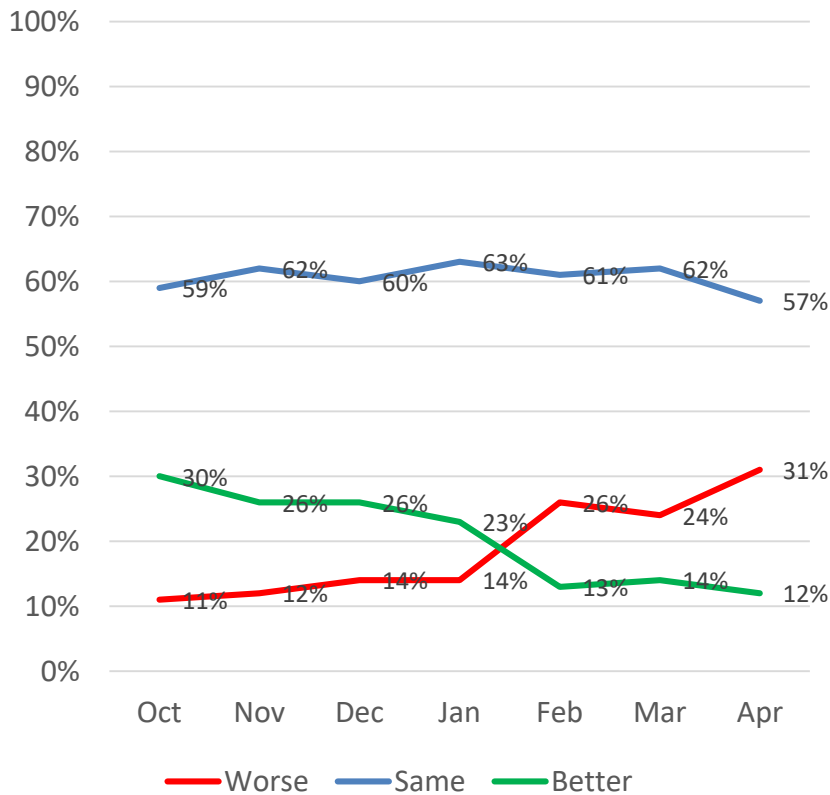
C3Q19 Growth & Seasonality Outlook



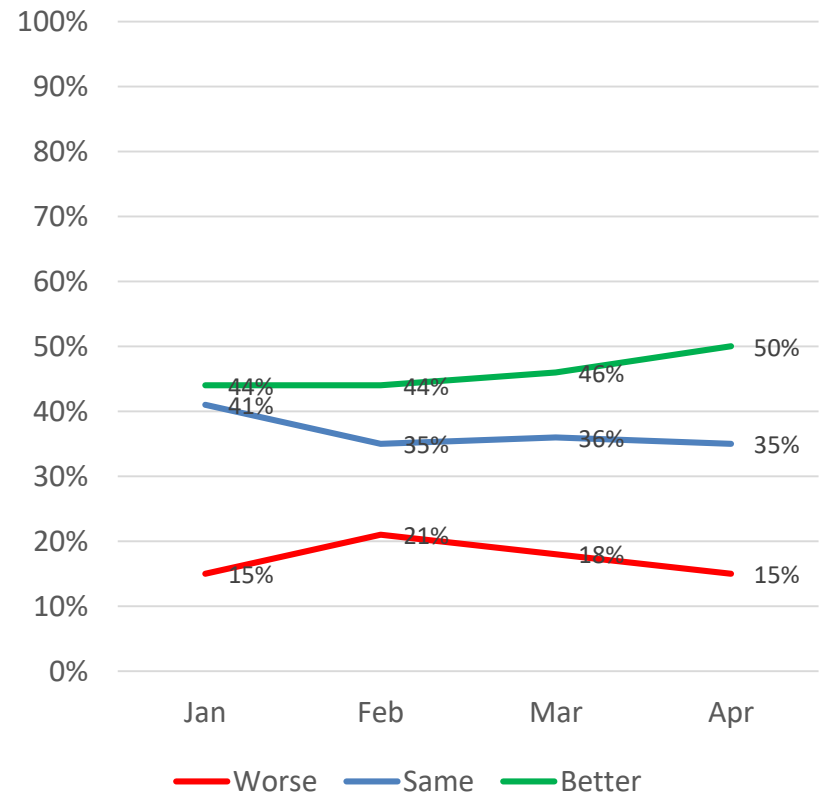
- While initial C3Q19's demand growth outlook is generally in line vs. the previous 2 years, seasonality outlook is weaker than the previous 2 years especially compared to 2018.

Q/Q Bookings Growth

C1Q19 Bookings vs. C4Q18

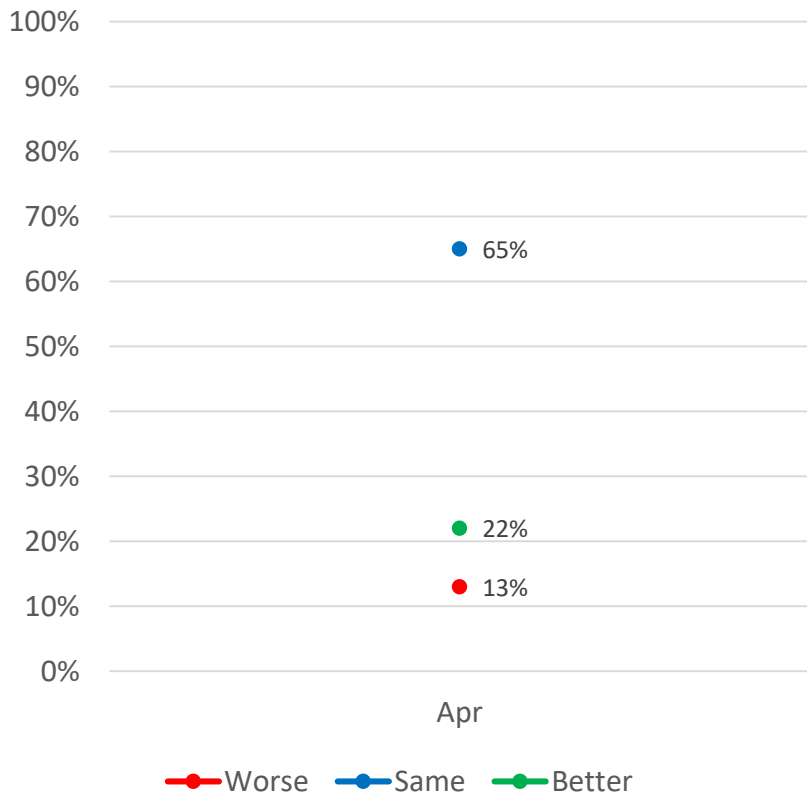


C2Q19 Bookings vs. C1Q19

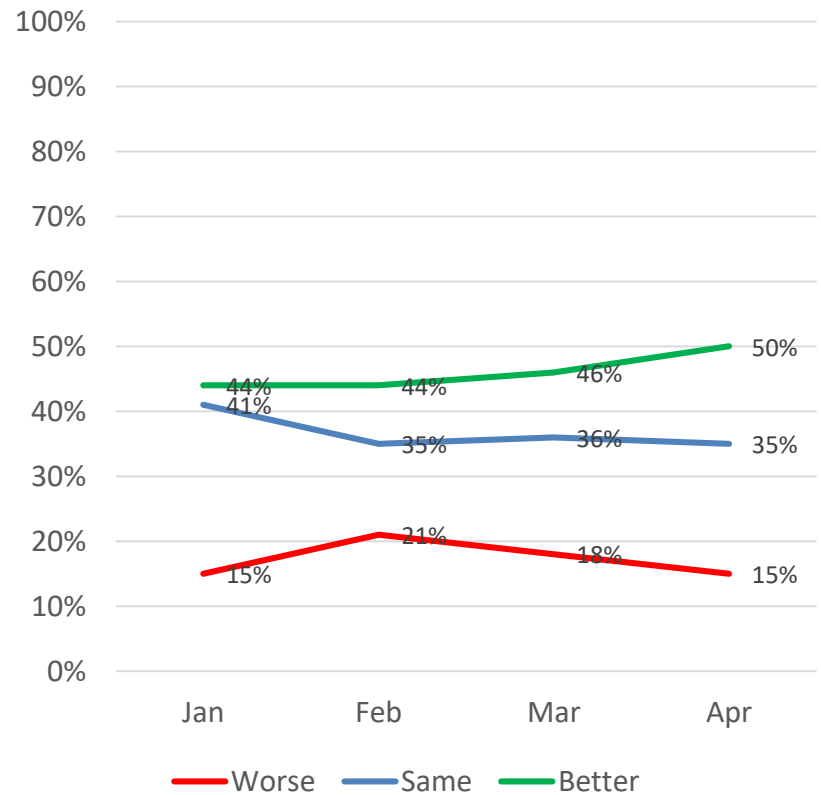


Q/Q Bookings Growth

C3Q19 Bookings vs. C2Q19

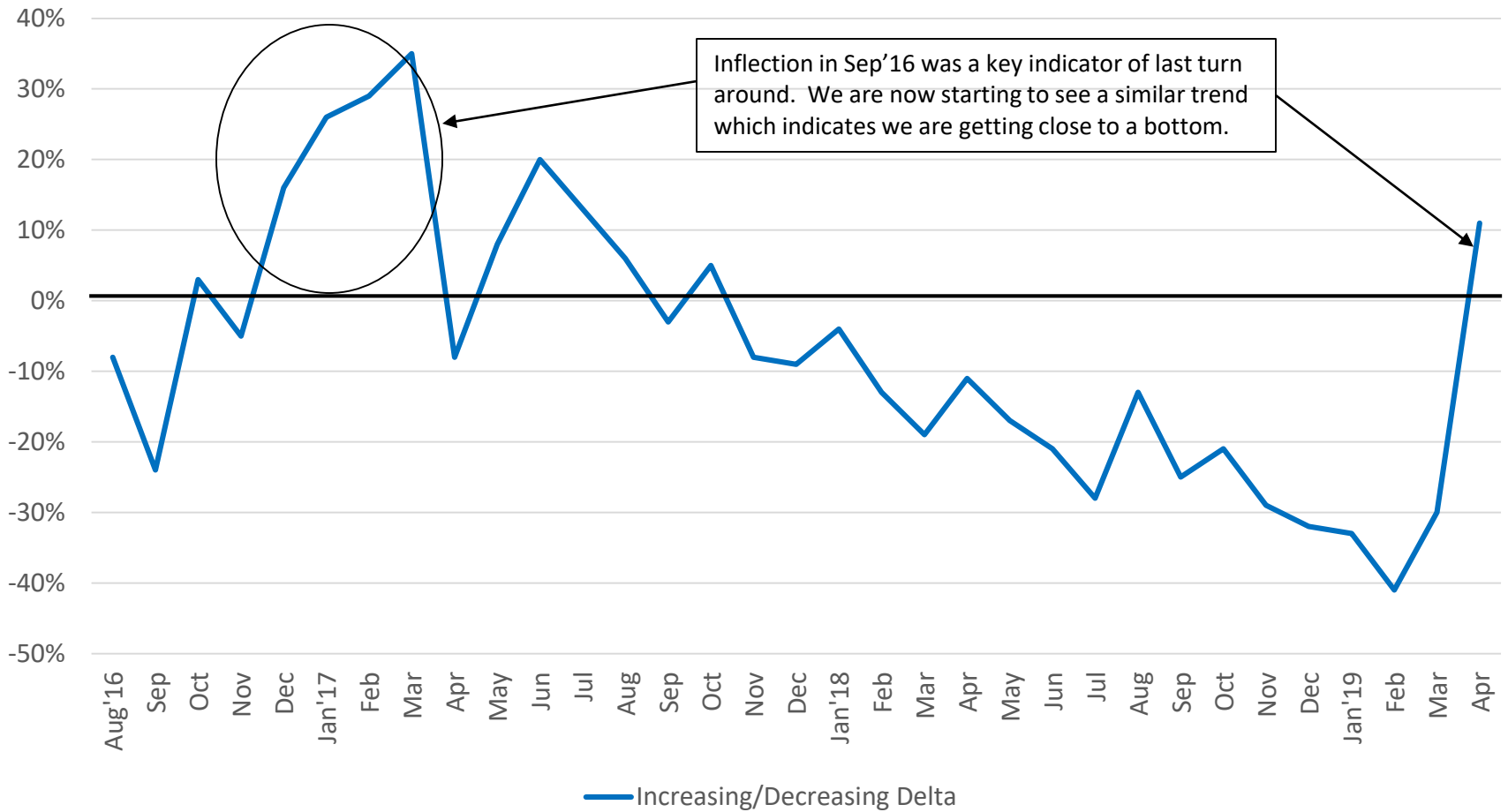


C2Q19 Bookings vs. C1Q19



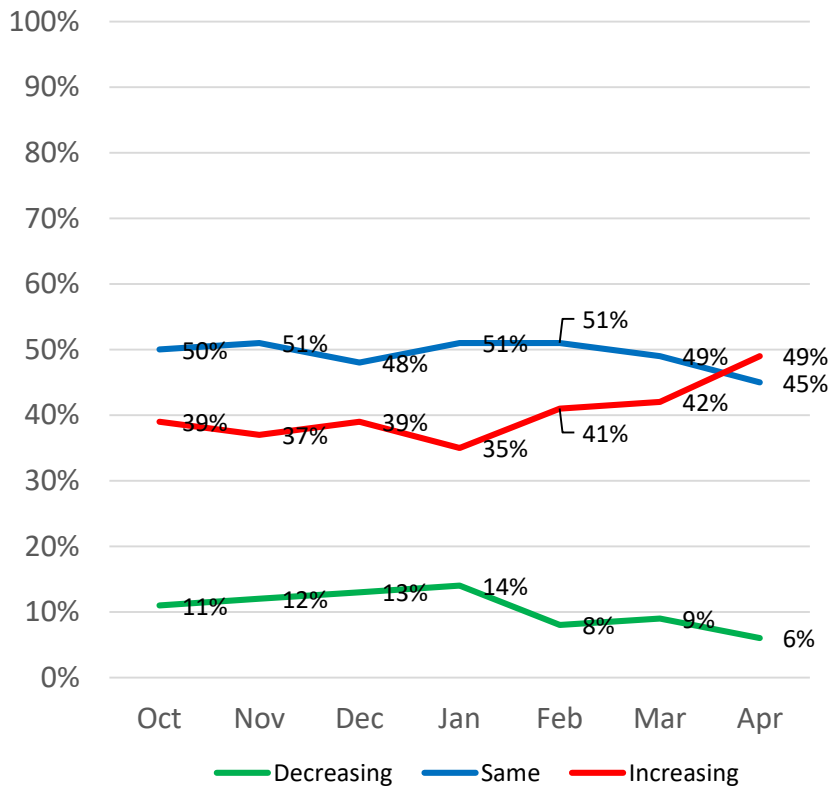
Backlog Order Cancellations vs. 30 Days Ago

(Delta between Increasing and Decreasing Cancellations)

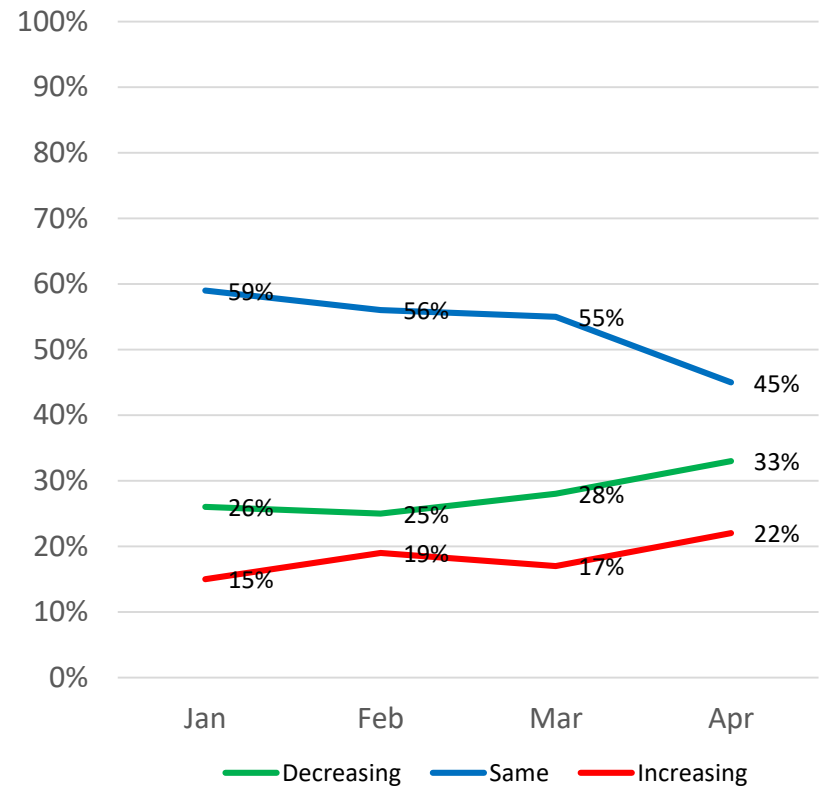


Q/Q Inventory Growth

C1Q19 Inventories vs. C4Q18

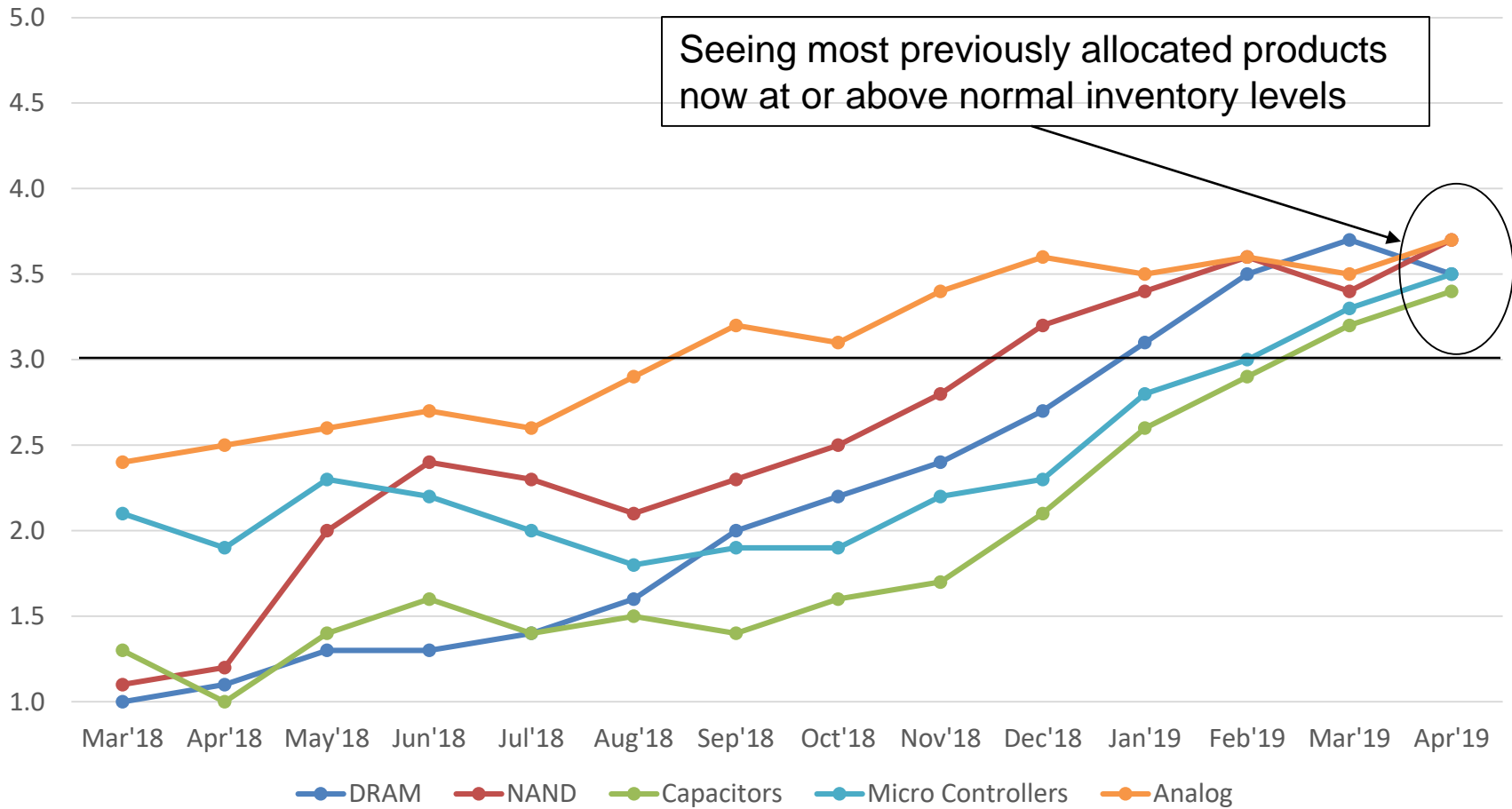


C2Q19 Inventories vs. C1Q19



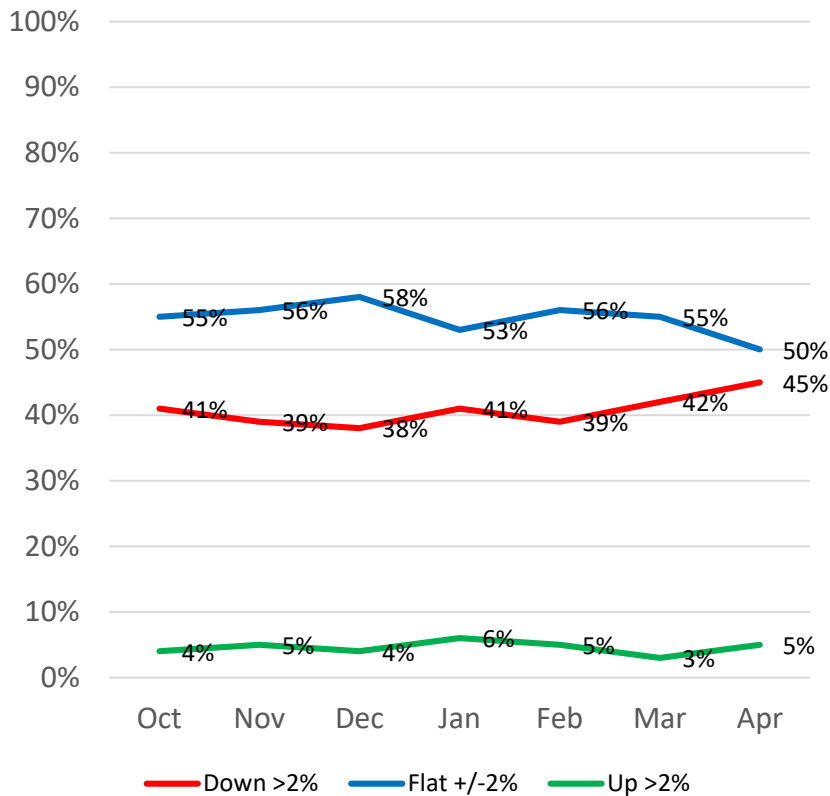
Inventory Status

(Using a scale of 1 to 5 with 1 being extremely low inventory, 3 being the normal amount, and 5 being extremely high; how do you view inventory levels for the following products?)

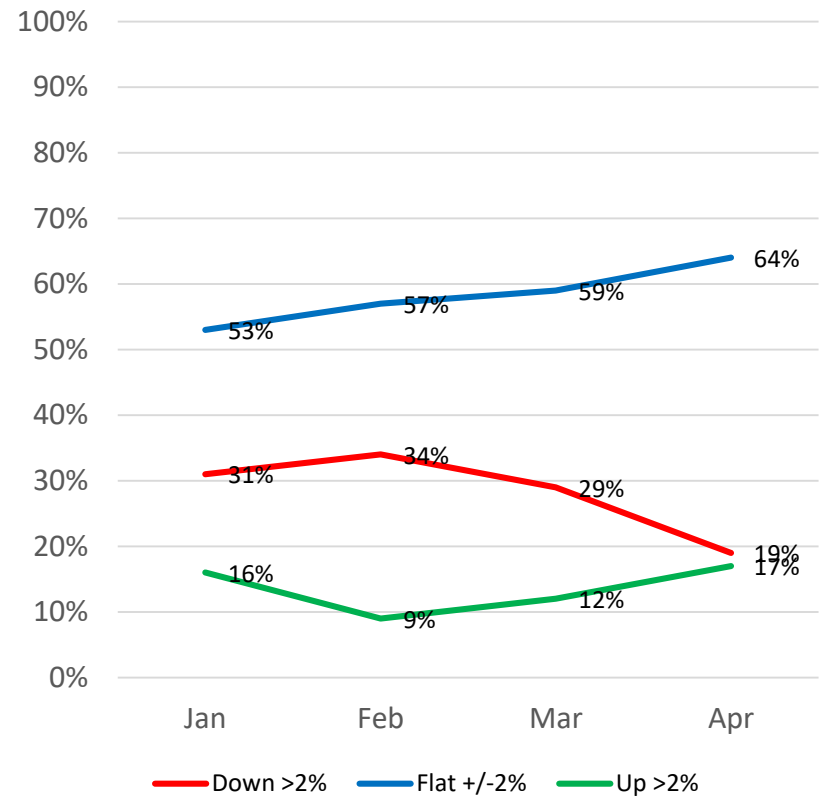


Q/Q Pricing Trends

C1Q19 Pricing vs. C4Q18

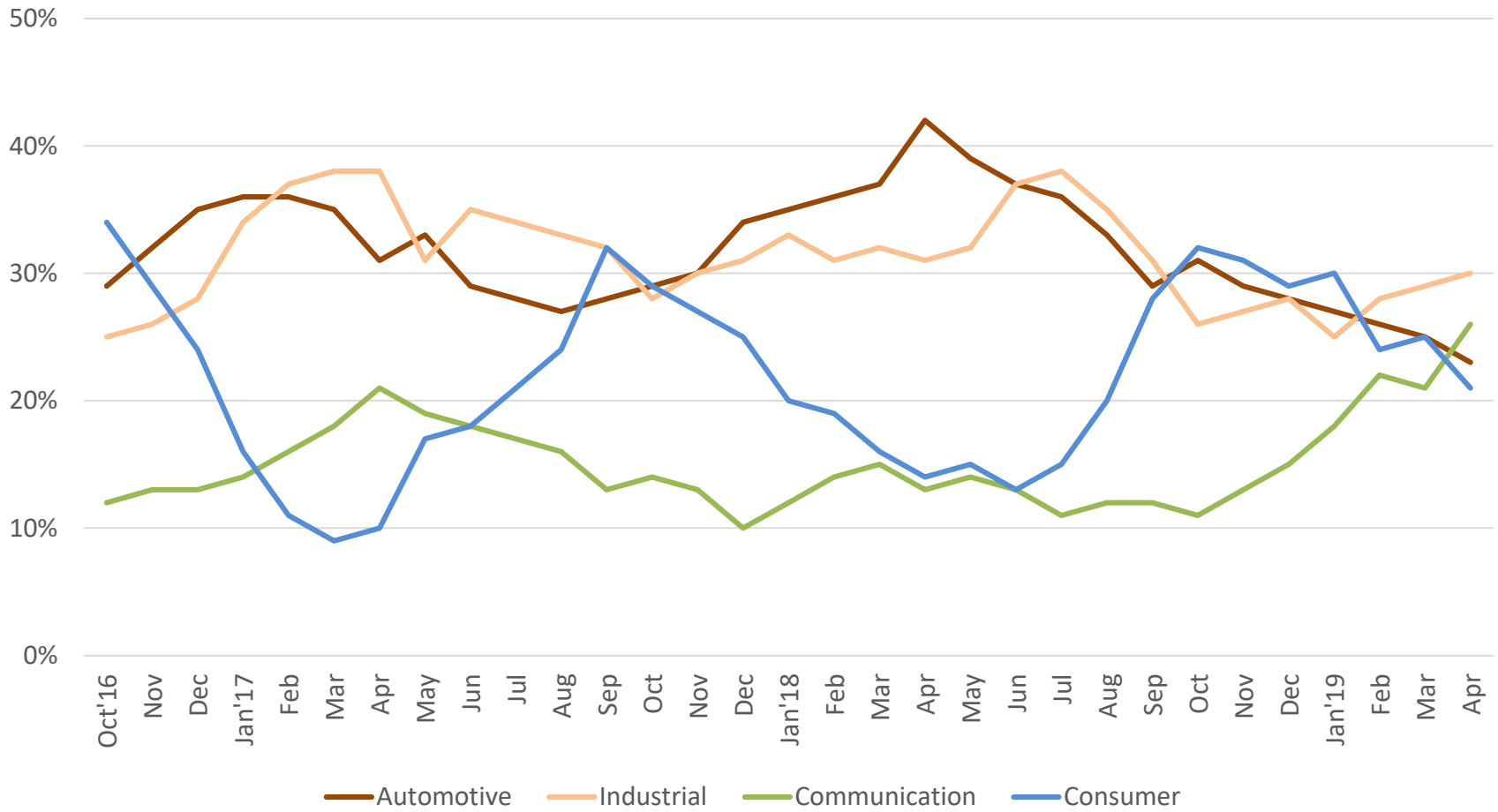


C2Q19 Pricing vs. C1Q19



Vertical Outlook

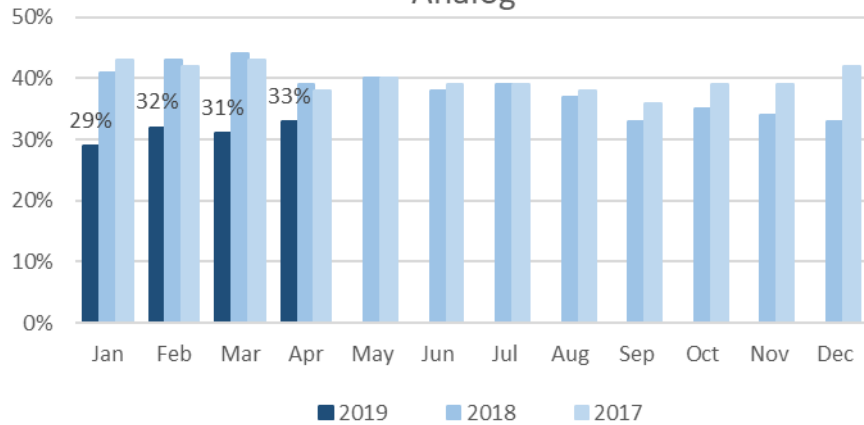
The outlook for Comm and Industrial improves while Auto and Consumer weaken



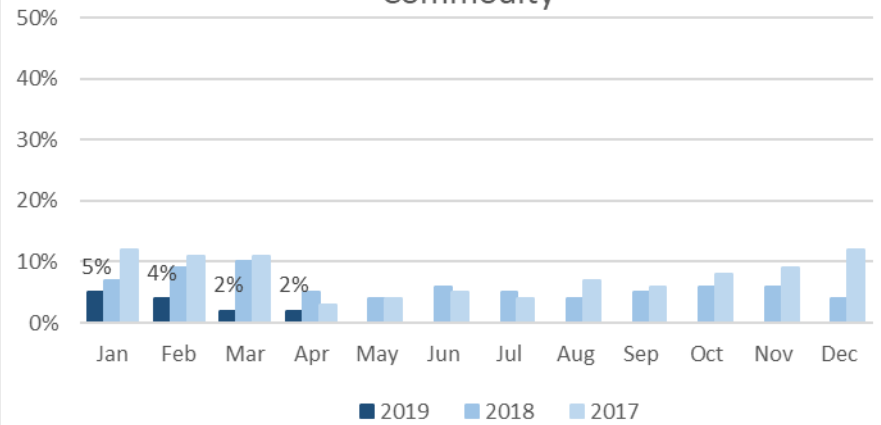
Technology Outlook

(y/y comparison)

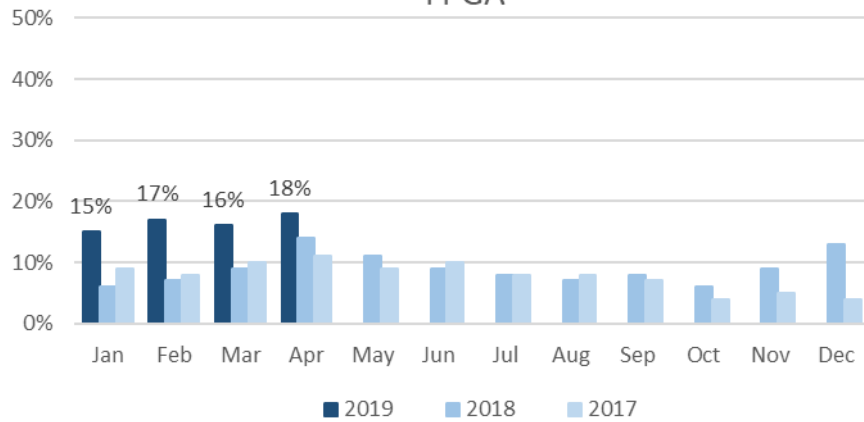
Analog



Commodity



FPGA



App Processors

