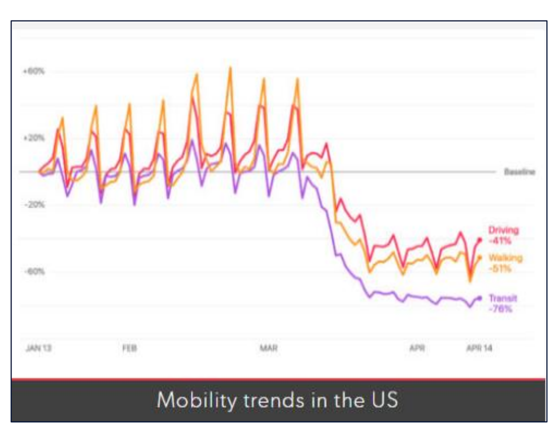
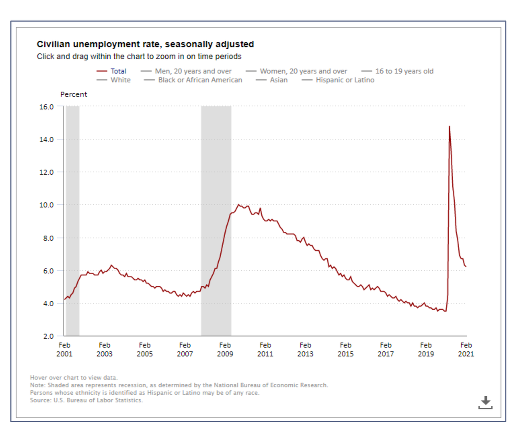
CAR CRASH: THE EFFECT OF COVID-19 ON SUPPLY AND DEMAND IN THE AUTOMOTIVE INDUSTRY

INTRODUCTION

The global Covid-19 pandemic had a substantial impact on the automotive sector. Governmental responses to the pandemic caused rolling halts in automotive production impacting vehicle supply, at the same time changes to consumer spending habits and travel impacted automotive supply chain demand. **Vehicle travel declined by 41%** ("Mobility Trends in the US) from March 2020 to April 2020 as more employees were working from home. At the same time the economic uncertainty caused by the pandemic coupled with the **rise to 14% unemployment** ("Civilian Unemployment Rate") should have impacted consumer spending at the automotive and aftermarket retailers. Consumer spending dried up during the early days of the Covid-19 pandemic and **U.S savings rates would grow to over double the average** ("Personal Saving Rate") as consumer travel and discretionary spending would grind to a halt. We wanted to see what level these impacts from the pandemic had on the three sectors of the automotive supply chain: (1) tier 1 automotive suppliers, (2) automotive retailers, and (3) automotive aftermarket retailers during the 2020 Covid-19 pandemic.





HYPOTHESIS

H1 - Revenue Decrease: Quarterly revenues for tier 1 suppliers, automotive retailers, and automotive aftermarket retailers would be significantly less in 2020 compared to prior years.

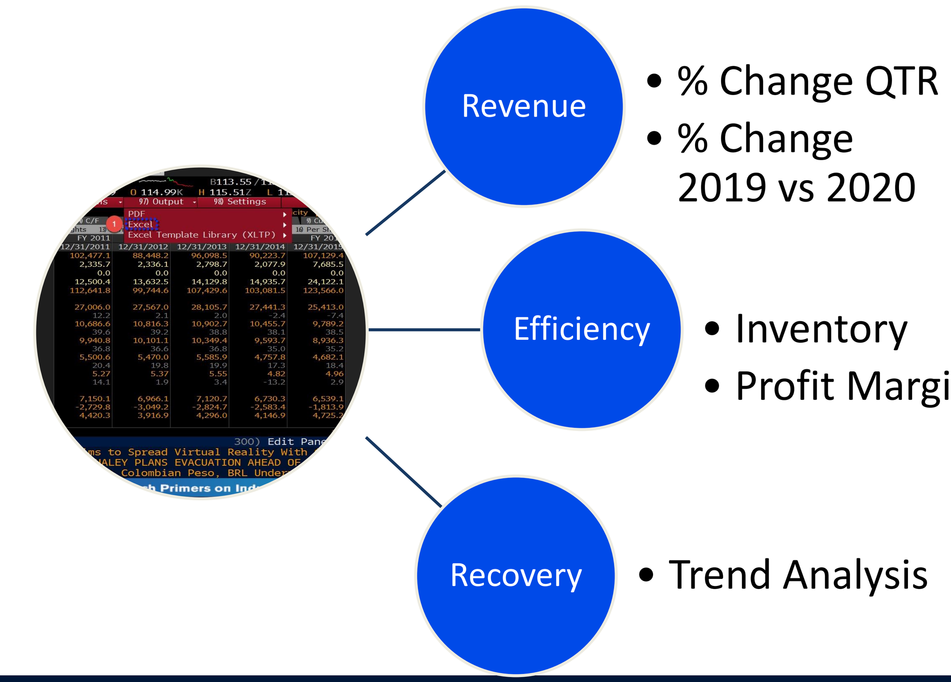
H2 - Efficiency Decrease: The efficiency of each of the three segments would greatly decrease, shown with a decrease in inventory turnover and an increase in the cash conversion cycle

H3 - Recovery: Starting in Q4 2020 each segment will show an increase in revenue and efficiency, almost to the level of pre-pandemic financial performance due to lessened governmental restrictions and consumers higher propensity to spend.

METHODS

In Millions of USD except Per Share					
Tier 1 Automotive Supplier					
Ticker	Market Cap	Revenue	Total Assets	Net Income	Profit Margin
CPS	$628.73M	2375.40	2611.90	-267.60	-11.27
TEN	$692.81M	15379.00	11852.00	-1521.00	-9.89
GTXMQ	$507.95M	3034.00	3017.00	80.00	2.64
HZN	$254.33M	661.20	456.50	-36.60	-5.53
MOD	$746.63M	1766.40	1306.70	-202.40	-11.46
Automotive retailers					
Ticker	Market Cap	Revenue	Total Assets	Net Income	Profit Margin
GPI	$2.70B	10851.80	5089.40	286.50	3.07
ABG	$3.16B	7131.80	3676.30	254.40	3.57
SAH	$1.83B	9767.00	3746.00	-51.40	-0.53
CARS	$877.37M	547.50	1075.70	-817.10	-149.24
CARG	$3.25B	551.50	502.30	77.60	14.06
Automotive aftermarket retailers					
Ticker	Market Cap	Revenue	Total Assets	Net Income	Profit Margin
MPAA	$408.18M	523.40	799.20	12.40	2.38
SHYF	$1.19B	676.00	359.00	32.80	4.86
SMP	$953.28M	1128.60	956.50	57.40	5.09
XPEL	$1.56B	158.90	83.80	18.30	11.50
PRTS	$894.31M	443.90	187.00	0.34	0.34

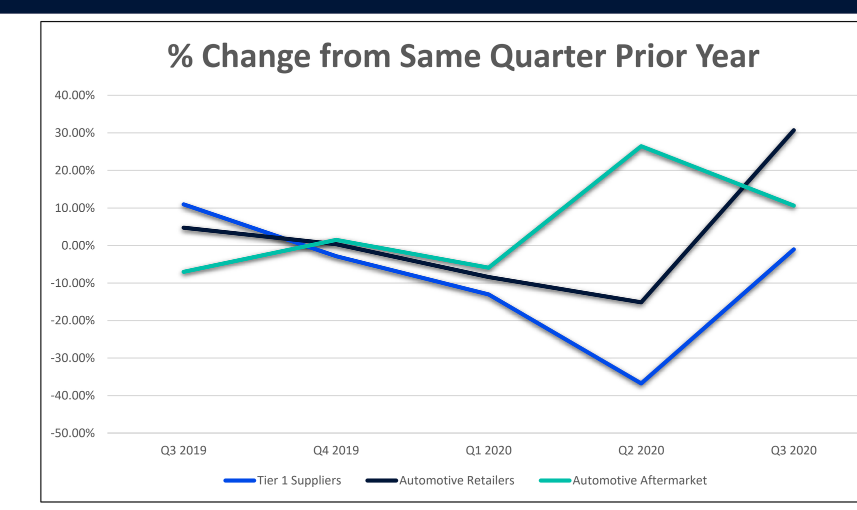
We divided the automotive industry into three groups: (1) Tier 1 automotive suppliers, (2) automotive retailers, and (3) automotive aftermarket retailers. We analyzed the quarterly financial statements. ranging Q1, 2018 to Q4, 2020. Bloomberg Terminal data and 10-Qs from all 15 companies.



DATA AND RESULTS

H1

Obvious impact on overall revenue as expected for all groups but the **Automotive Aftermarket** which saw a rise of **26%** in Revenue during Q2 2020 and sustained increase through 2020. **Tier 1 Suppliers** saw the largest **reduction in Revenue** with a sustained downtrend for all of 2020 when comparing the same quarters from 2019 to 2020. Using an ANOVA test, the change in revenue from Q1 to Q2, 2020 was significant when compared to the previous two years. **$F = 5.05678$, $F_{crit} = 3.885$, $P<0.05$.**

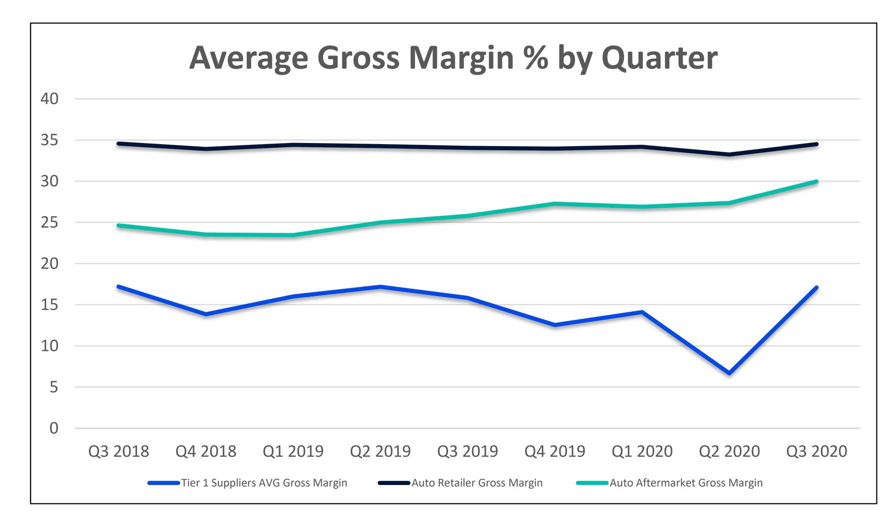


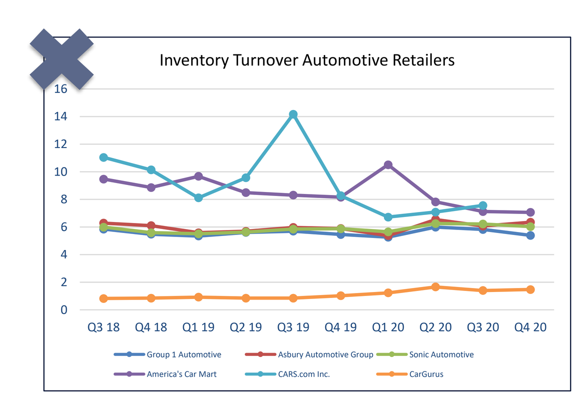
AVG Revenue % Change from Same Quarter Prior Year					
	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
Tier 1 Suppliers	10.96%	-2.87%	-13.06%	-36.76%	-1.06%
Automotive Retailers	4.73%	0.35%	-8.42%	-15.16%	30.68%
Automotive Aftermarket	-7.03%	1.47%	-5.93%	26.47%	10.63%

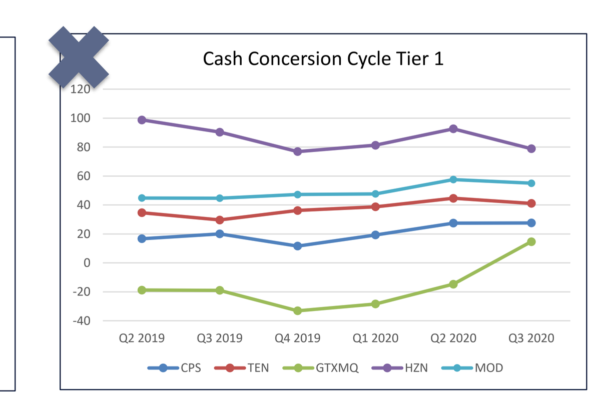
H2

When looking for the expected increase in cash conversions cycle, we did not see major upswings as expected in all 3 groups. Inventory levels and inventory turnover did not increase as we expected in our Hypothesis as well.

The only major finding doing a deep dive into efficiency ratios is that the **Aftermarket** segment had **better Gross Margins** numbers than 2019.

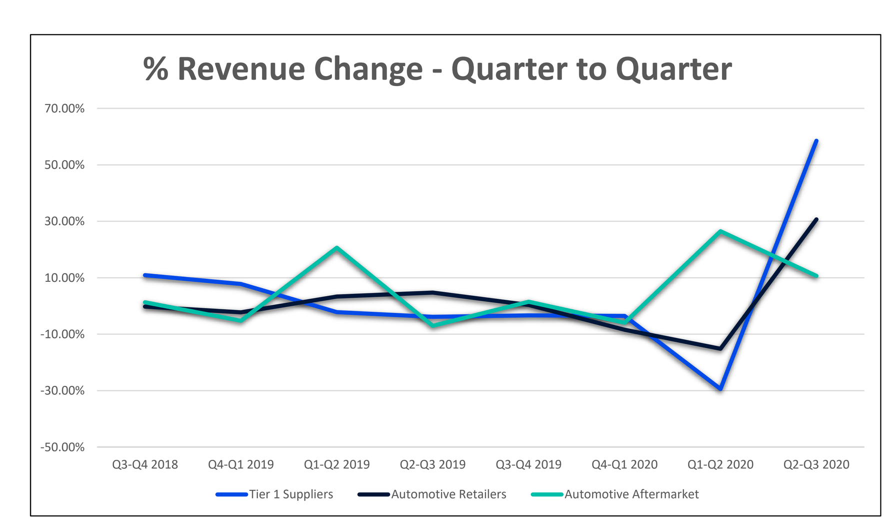






H3

As expected, consumer mobility increased, and governmental lockdowns decreased causing revenue to return to normal for Tier 1 and Automotive Retailers. **Automotive Aftermarket** revenue trended down in late 2020 as their **revenue** would return to pre-pandemic levels after being **elevated** for most of 2020. The % revenue change from Q2 to Q3, 2020 was determined to be significant using an ANOVA. **$F=8.7631$, $F_{crit} = 3.16721$, $P<0.05$.**



DISCUSSION

After collecting results and comparing them to our original hypothesis, we found some interesting information.

- **H1** – While revenue did decrease significantly for both tier 1 suppliers and automotive retailers, surprisingly, the automotive aftermarket industry saw unprecedented growth in revenue during Q2, 2020, where most of the automotive market was hitting pandemic lows.
- **H2** - The data shows no significant change in efficiency for any of the three markets during the pandemic. While sales slowed and efficiency should have decreased, companies found creative ways to become more efficient this year, meaning we do not see a large change on the financial statements.
- **H3** – The financial performance of all three segments normalized starting in Q4, 2020. Meaning tier 1 suppliers and automotive retailers showed a large increase in demand during this quarter. On the other hand, the automotive aftermarket saw their demand slow to pre-pandemic levels, meaning the increase in sales was attributed to the pandemic and not an outside source.

CONCLUSION

- The data suggests that as consumers grew more economically uncertain and apt to save, tier 1 automotive suppliers and automotive retailers saw a sharp drop in revenue, while the automotive aftermarket industry showed a sharp upturn in revenue during the pandemic. This could be explained by consumers straying away from new car purchases and being more likely to purchase aftermarket parts to repair the vehicles they already own.
- As governmental regulations slowed and consumers became more secure in their economic situation, tier 1 automotive suppliers and direct automotive retailers bounced back to pre-pandemic revenue numbers rapidly. Conversely, the automotive aftermarket industry settled to their pre-pandemic financial performance. While the automotive aftermarket showed a revenue uptick in Q2 2020 as well, the revenue upturn in Q2, 2020 was considered significant using an ANOVA analysis.

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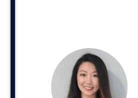
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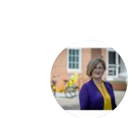
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