SAGA PARTNERS

QUARTERLY REPORT

FOURTH QUARTER 2019

4Q19 Results

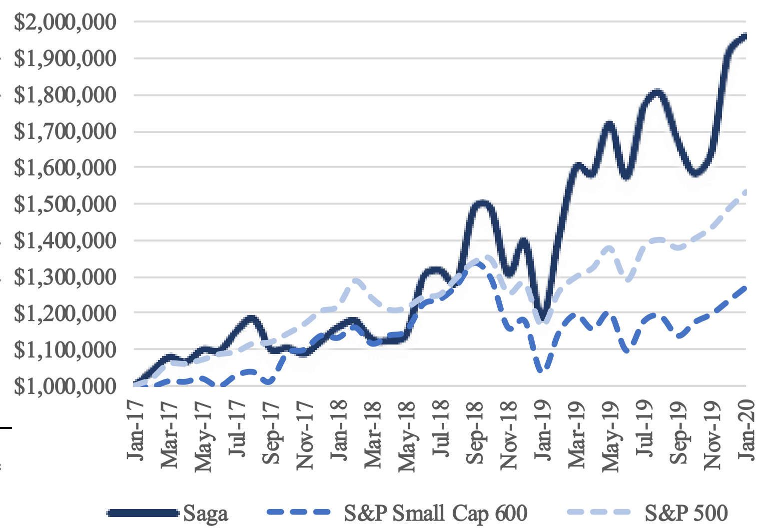
During the fourth quarter of 2019, the Saga Portfolio ("the Portfolio") increased 23.9% gross of fees. This compares to the overall increase, including dividends, for the S&P Smallcap 600 Index and S&P 500 Index of 8.2% and 9.1%, respectively.

The cumulative return since inception on January 1, 2017 for the Saga Portfolio is 96.2% gross of fees compared to the S&P Smallcap 600 Index and S&P 500 Index of 27.2% and 53.2%, respectively. The annualized return since inception for the Saga Portfolio is 25.2% gross of fees compared to the S&P Smallcap 600 and S&P 500's respective 8.4% and 15.3%.

Performance (gross of fees)*

	Saga Portfolio	S&P Smallcap 600	S&P 500
2017	**16.0%**	**13.2%**	**21.8%**
1Q18	-3.1%	0.6%	-0.8%
2Q18	17.1%	8.8%	3.4%
3Q18	13.0%	4.7%	7.7%
4Q18	-20.4%	-20.1%	-13.5%
2018	**2.1%**	**-8.5%**	**-4.4%**
1Q19	33.6%	11.6%	13.6%
2Q19	11.6%	1.9%	4.3%
3Q19	-10.4%	-0.2%	1.7%
4Q19	23.9%	8.2%	9.1%
2019	**65.6%**	**22.8%**	**31.5%**
Cumulative	**96.2%**	**27.2%**	**53.2%**
Annualized	**25.2%**	**8.4%**	**15.3%**

Growth of $1 Million



**Saga Portfolio serves as a model for client accounts. Returns calculated gross of fees. Assuming 1.5% AUM fee since inception would provide an annualized net return of 23.7%. S&P Smallcap 600 and S&P 500 performance include dividends.*
Source: S&P Dow Jones Indices LLC

Interpretation of Results and Market Commentary

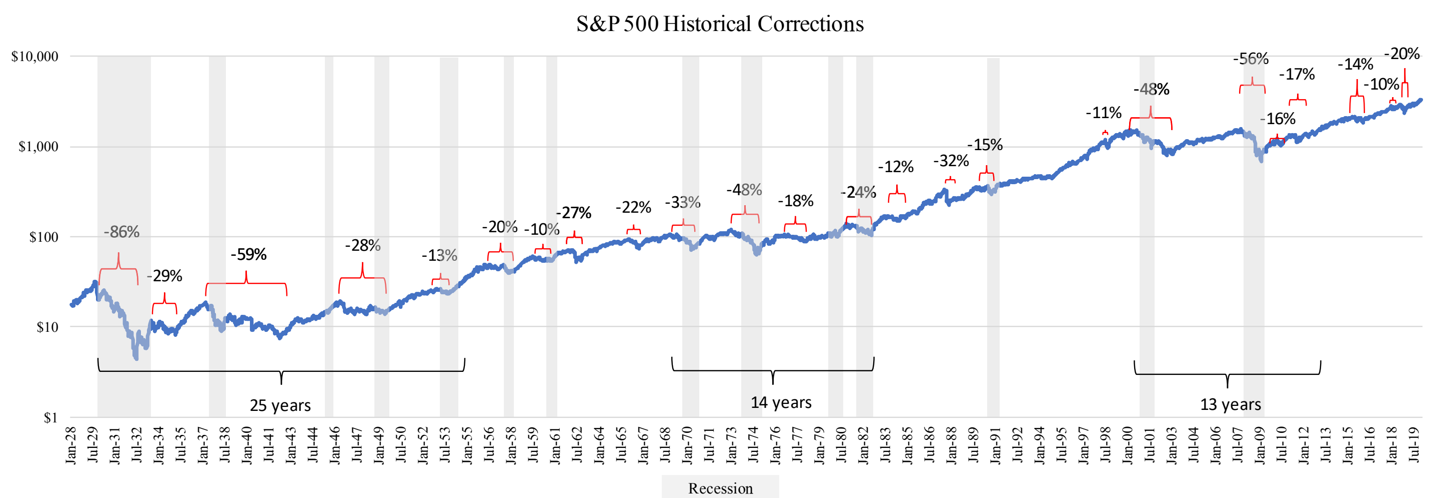
The three-year annualized return of 25.2% (~23.7% net of fees) would rank the Saga Portfolio 77th out of the 7,200 mutual funds currently listed on the Morningstar database or 44th out of all 3,100 equity mutual funds. Unlike many large mutual fund families, we do not follow the common practice of starting multiple portfolio strategies at our inception and then later highlighting the one that performed strongly while disregarding the others with lackluster results. All our successes as well as mistakes are reflected in the results which we will discuss later in the letter.

Three years is not "long-term" or statistically significant by any means and any short-term results can be a reflection of skill, luck, or a combination of both. Since it launched at the beginning of 2017, the Saga Portfolio has benefitted from a steadily growing economy and generally rising tide in the equity markets (a tailwind which has lasted since the summer of 2009). There have been many times over the past decade to have called a market high and then moved into “safer” assets like cash or bonds by trying to time the next market crash. It was only one year ago that commentators were panicking about threats of a U.S. and China trade war, rising interest rates, and fear of being near the end of the business cycle. The economic landscape shifts a lot less than typically believed while sentiment can fluctuate wildly. That is why we believe the best attitude is to be market agnostic. We try to keep our heads down, ignore the noise, and march forward to the best of our abilities since it’s impossible to predict what the market is going to do next.

If one takes the really long-term view, the United States has had an economic tailwind since its beginning. To provide a little history on market behavior, below is a log chart of the S&P 500 since 1928 highlighting each market correction of greater than 10%. While the nearly 100-year trend has been very favorable, we have to live day-to-day, which can cause people to do some pretty strange things.

General skepticism of current market levels is not that surprising. Many investors today have been scarred after going through the dot-com bubble and then housing credit bubble all within a ten-year period. It took 13 years for the S&P 500 to trade above its March 2000 peak, partially reflecting the excesses of the dot-com boom. Of course, thirteen years is nothing compared to the 25 years of market stagnation from 1929 through 1955.

A common saying is “bull markets climb a wall of worry” and that seems to be the case considering the five 10%+ market corrections over the last decade. The irony is that past stock market crashes always look like opportunities, but future ones look like risks.



Source: Factset Research Systems, Inc., Saga Partners LLC

The fear that most market skeptics have while sitting on large cash balances or bonds is that we are at or near a market peak that will inevitably lead to another crash and years of market stagnation from the presumed peak. It’s no question that the market has benefitted from sizeable fiscal and monetary stimulus in recent years as well as generally declining interest rates over the last 30 years. A reverse in either stimulus or low interest rates would be a headwind to future stock returns. One should likely expect more moderate future returns than the recent past and a significant drop in market values is always a possibility, although we think today's excesses are far from those reached in 1929, 1972, 2000, or 2007.

However, the longer the economy and the market inch along, the louder the "permabears" will shout and eventually they will be right. There is always some reason, risk, or headline for why it isn't a good time to invest. We take a generally optimistic view and believe businesses will do well over time and stocks will do well in-kind since their future is tied together. Periodic setbacks will occur but investors in the U.S. have the wind at their back in a game that is stacked in their favor. It can be an expensive mistake to try to dance in and out of the market based upon how the wind is blowing each day or the predictions of "experts."

Regardless of whether you think you are immune to the emotions of market fluctuations, it really is a bad habit to check the quotes of your stocks every day or even every month. A helpful mental exercise is to imagine you are on a desert island and only receive an update on your companies once a year, at which point you can either buy or sell holdings for only that one day. If this were the case, we think market participants would act much more rationally and be more likely to take advantage of Mr. Market's extremes versus being influenced by them.

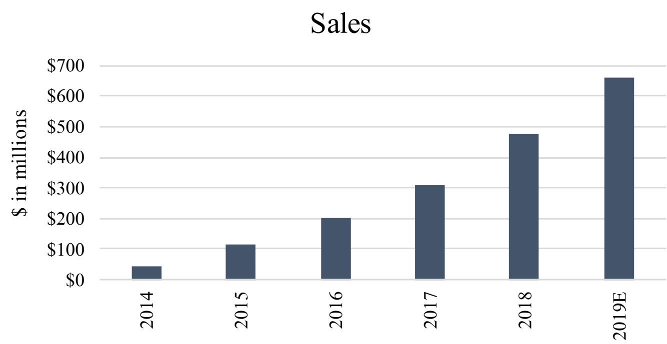
Getting back to Saga Partners' results, those who believe 2019 returns can be achieved with any regularity are sure to be disappointed. We can say with confidence that a +66% year is a rare result and partially a subsequent reaction to timing of the steep sell off at the end of 2018.

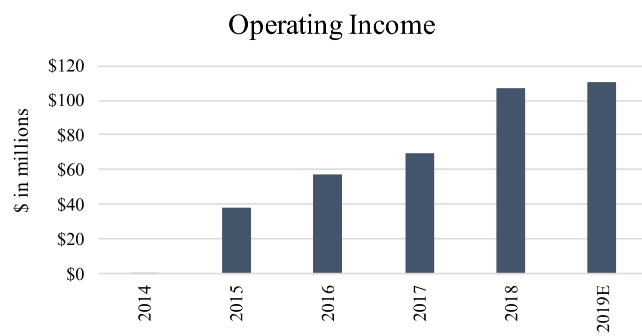
Of course investors in the Saga Portfolio, both new and old, do not benefit from past results. It is future results that matter. We continue to believe our strategy of buying a few companies with growing competitive advantages, led by great managers, and selling for what we estimate to be attractive prices will achieve above-average performance relative to the general market over the long-term.

There is no doubt the Saga Portfolio will have negative years and perhaps periods of significant underperformance to the general market. Constantly comparing how one's portfolio is performing against the S&P 500, or any benchmark, is likely to distort the investing process. This isn't to say we shouldn't have a measuring stick. We continue to think *at least* a five-year period of performance compared to the general market is a reasonable time to *begin* to assess an investment strategy, preferably with tests of relative results in both strong and weak markets.

Portfolio Update

The Trade Desk (TTD):





Source: Factset Research Systems, Inc.

Sales and operating income are expected to grow 38% and 3% in 2019. Slower operating income growth reflects increased investments in sales/marketing and infrastructure such as connected TV, data processing, and global expansion.

The Trade Desk's ad buying platform helps advertisers comb through a huge universe of possible inventory using data to target and value the select inventory that makes sense for that specific advertiser. The Co-founder and Chief Technology Officer Dave Pickles had a good quote when asked about why they started The Trade Desk:

> *"it just seemed like such an obvious opportunity to go after, if you discover there's a New York Stock Exchange for ads, the first thing you want to do is build the Goldman Sachs or Bloomberg for ads."*

Buying ads programmatically is significantly more effective than the old Mad Men era approach. Previously, advertisers bought inventory on a trial and error basis using little data, limited targeting, and no price discovery that created a lot of waste. Businesses knew that advertising worked but they didn't know what they were really buying or which advertising worked best. For example, TV ad campaigns were run based on broad demos on linear TV. There was little detailed feedback on how these campaigns performed. With more viewers now watching TV through connected devices, advertisers are able to better analyze TV campaigns for the first time, significantly increasing effectiveness and the return on ad spend.

The very nature of some types of businesses naturally move toward the overwhelming dominance of one firm. Examples may include internet search, computer operating systems, social media, payment networks, or in past decades with local newspapers. Competitive dynamics within the demand side platform (DSP) part of the advertising industry share similar qualities.

Economies of scale provide barriers to entry and have accelerated the trend towards consolidation. Advertisers want to come to a single platform to value potential inventory relative to all available options throughout the world. If a DSP can only see half of the available inventory, advertisers will have fewer options, less accurate pricing, and therefore a lower return on investment.

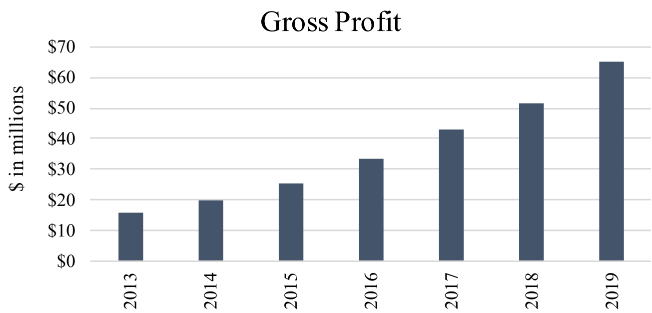
The operating leverage within the business model makes it nearly impossible for smaller players to compete profitably and inevitably leads to consolidation. Every time a DSP looks at potential inventory it costs money whether the customer wins the bid or not. Since DSPs need to look at all available inventory to offer similar value whether it has $50 million in revenue or $500 million in revenue, the larger DSP is able to spread similar costs over a greater volume of business.

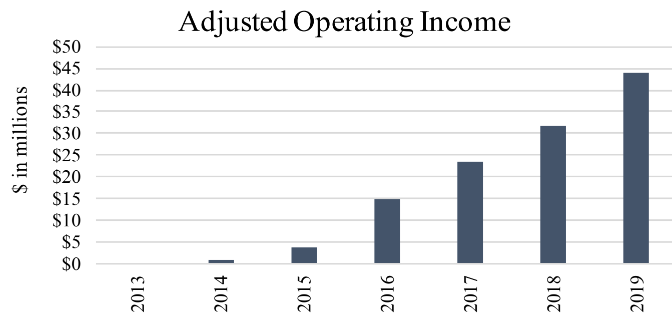
It's the complete opposite dynamic on the other side of the programmatic advertising transaction for supply side platforms (SSPs). SSPs help publishers/content companies monetize their inventory by providing access to demand. The economies of scale on the buy-side do not exist on the sell side. SSPs only have to pay for the traffic they generate creating a more variable cost structure with lower barriers to entry. As the sell side continues to fragment, DSPs have to plug into more and more sources of inventory which further increases operating leverage and raises barriers to entry on the buy side.

Much of the value creation is on the buyside which protects the DSP's earning power/take rate. As DSPs consolidate, SSPs only have to put bid requests out to a few buyers. This means SSPs look at a small fraction of bid queries while the DSP is looking at all available inventory. There is a huge data asymmetry between the buy side and sell side that puts the DSP in the power position when it relates to price discovery. Further, owners of inventory primarily care about getting the highest price for their inventory. Since inventory owners can typically use multiple SSPs to make sure they get the best prices, the SSP offering becomes more commoditized, providing a lower take rate/earning power over time.

Given these dynamics, The Trade Desk continues to look very attractive considering the significant market opportunity. As businesses discover the cost savings and superior ROI in programmatic advertising, it is likely that all advertising will be purchased programmatically one day. As the demand side continues to consolidate and barriers to entry grow, The Trade Desk is currently positioned to be the winning independent demand side platform.

Trupanion, Inc. (TRUP):





Source: Factset Research Systems, Inc.
Note: Adjusted operating income = operating income before any costs to acquire new pets.

Gross profit and adjusted operating income had strong 2019 growth of 26% and 38%, respectively.

Acceptance of pet insurance in the U.S. has historically been low because it was a bad product. It offered little value to customers after considering the extensive fine print in policies that had annual and lifetime limits, exclusions on congenital and hereditary conditions, red tape, and slow reimbursement process. By eliminating the pain points and providing a comprehensive product that is easy to use and understand, establishing veterinarian relationships through its territory partner network, and integrating its software to improve the reimbursement process, Trupanion is set up to continue to succeed in this growing market.

GAAP earnings per share can be a good representation of earnings power for many businesses but that isn't necessarily the case for businesses like Trupanion. Adjusted operating income is a better proxy of Trupanion's performance over time than net income because of significant investments being made in future growth that are expensed at the time they are incurred versus being capitalized over the life of the investment. For example, when a manufacturer buys new equipment to grow its production capacity, the growth capex is depreciated over the life of the equipment. A retailer growing new store locations like Walmart in its earlier day will have high capital expenditures as well. While the manufacturer or Walmart's income statement would reflect accrual earnings, the free cash flow would be much lower as a result of the high capex growth investment.

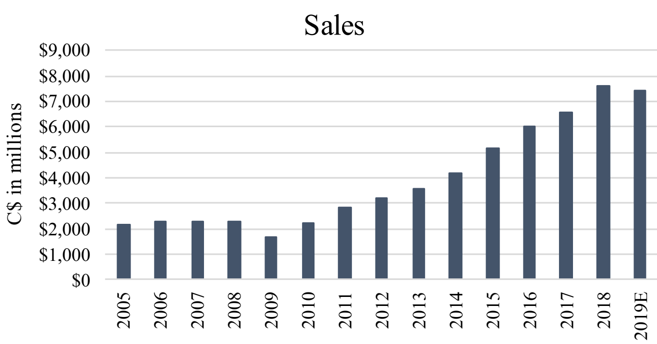
In Trupanion's business, and in other subscription-type business models where the future cash flows of customers are very predictable over the life of the customer, it makes sense to think of sales and marketing expenses to acquire new customers as growth capex. As in every investing equation it comes down to what cash you lay out today and what stream of cash flows you expect to get back in the future.

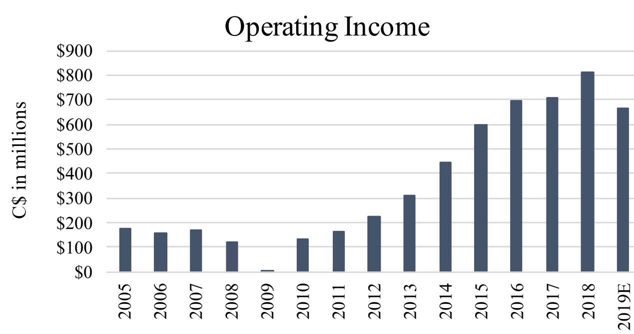
One could argue the sales and marketing costs of the manufacturer or Walmart should also be amortized. That would make sense if it were possible to bifurcate which sales and marketing costs were maintenance versus growth, and the value of new customers could be estimated over a multi-year period with some accuracy. However that is not how the economics or customer behavior of those businesses work.

If the average life of an insured pet is six years, every $1 spent on pet acquisition costs should be amortized over that period, or 17% per year. Assuming Trupanion has 15% operating margins at scale and spends all of it on pet acquisition costs, it makes sense to include 2.5% in amortization expense each year, providing 12.5% earnings before tax margins.

A company would look much less attractive if it was investing heavily in sales and marketing or growth capex but not growing its business, leaving little cash left over for shareholders simply for the business to run in place. Fortunately, Trupanion has been very successful in earning an attractive return on its pet acquisition expenses as reflected by its strong growth.

<u>Linamar Corporation (LIMAF)</u>:





Source: Factset Research Systems, Inc.

Sales and operating income are expected to decline a respective 2% and 18% in 2019. Linamar's end markets have been impacted by softer conditions in the access equipment, automotive, and agriculture segments. Global trade uncertainties and challenging harvest conditions have negatively impacted the agriculture market and the United Automobile Workers strike last fall at General Motors hurt automotive sales in North America. It's also likely China's manufacturing standstill as a result of the coronavirus will weigh on results into the first quarter. Roughly 8.5% of transportation segment sales or <5% of total sales, are generated in the Asia Pacific region.

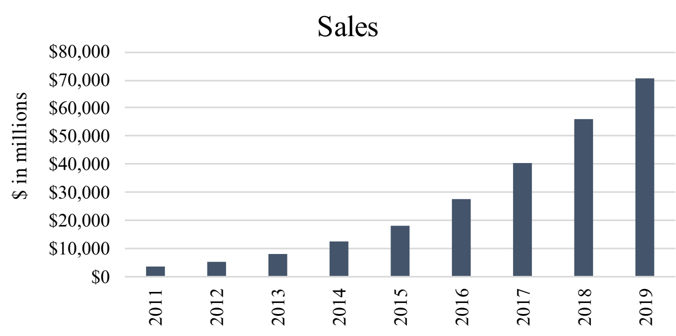
Linamar is a cyclical business that inevitably ebbs and flows. Demand for higher priced durable goods such as homes, automobiles, or larger capital purchases like farm equipment can decline quickly when consumers and businesses become more uncertain about their future income.

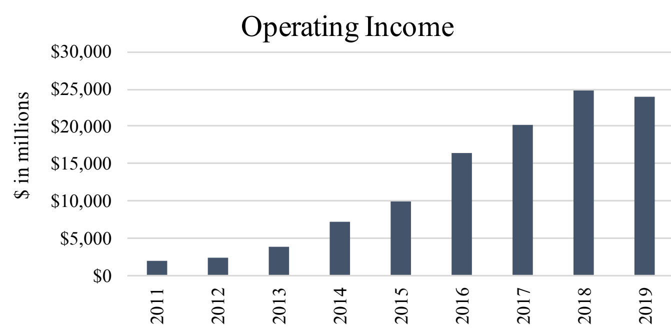
High quality cyclical businesses that are out of favor can provide attractive opportunities. While earnings in any single year may vary substantially, earnings over a full cycle can be more predictable. We are willing to own a great company like Linamar despite what earnings will do in the short term if we believe shares are priced significantly below what they will earn over a full cycle. In past economic downturns Linamar actually benefited at the expense of competitors that went out of business as it picked up takeover business.

2019 was the second consecutive year of global light vehicle volume declines and third year of declines in North America. North American downcycles have typically lasted four years on average. We do not know if auto manufacturing volumes will pick back up in 2020, but considering more difficult industry conditions, Linamar's 2019 operating results were impressive. If a company can perform well during more challenging times, it is a good sign for what will come once conditions inevitably improve.

Despite current headwinds, management still expects 2019 free cash flow to be between C$500-C$700 million, benefitting from lower capex and working capital improvements. This compares to its $2.8 billion market cap or $4.7 billion enterprise value. At current levels, shares are selling for a price to earnings of 6x and an enterprise value to expected operating income of 7x.

<u>Facebook, Inc. (FB)</u>:

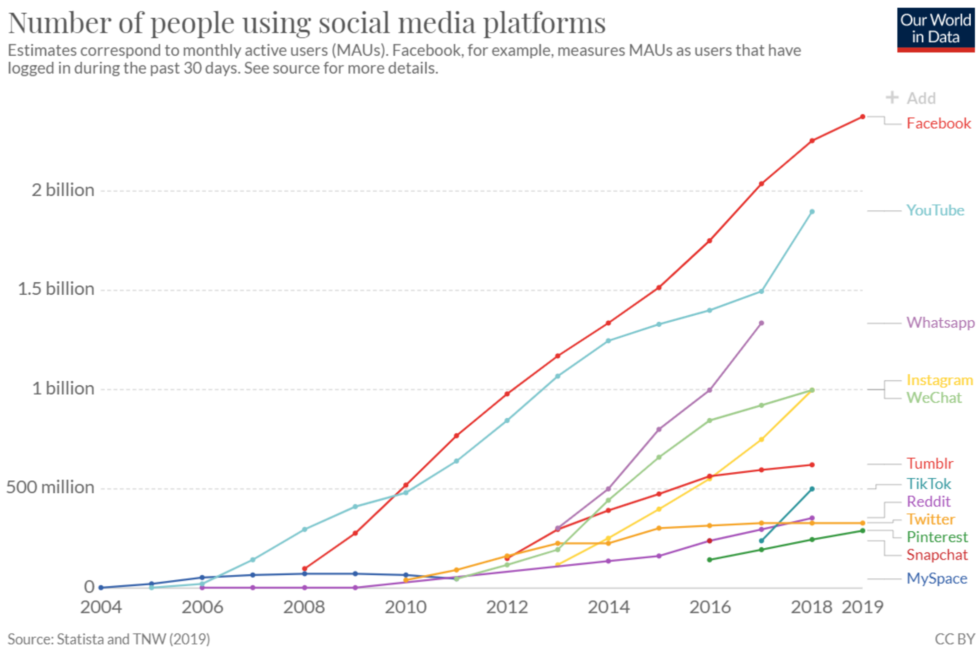




Source: Factset Research Systems, Inc.

Sales grew 27% while operating income declined 4% in 2019. As expected, expenses grew faster than sales as a result of increased hiring and investment in safety and security, R&D, infrastructure, and settlements/fines incurred during the year.

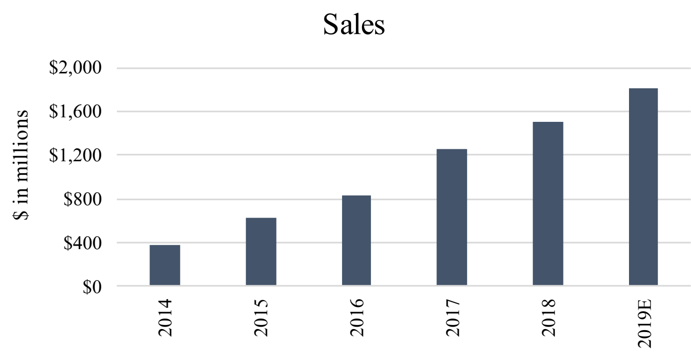
Facebook now has 2.9 billion people using Facebook, Instagram, WhatsApp or Messenger each month and around 2.3 billion using one of the services daily, far outpacing other social media companies.

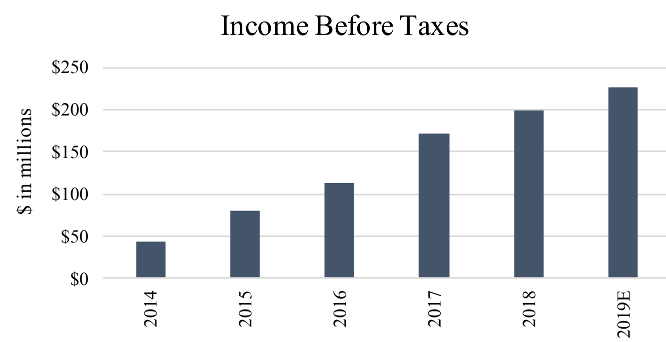


Because Facebook touches so many people around the world in various ways, it has been and will continue to be in the public eye regarding important social issues surrounding free speech and privacy. The company is investing heavily in privacy, particularly with encrypted messaging and richer private social platforms to provide users the ability to engage with friends and groups more naturally. These steps may hurt Facebook's ability to generate revenue from these interactions, but the goal is to make a better, more natural social experience which will benefit users and therefore the company over the long-term.

At the end of 2019, Facebook was selling for a market cap of $585 billion. If you back out the $45 billion of net cash on its balance sheet (netting out the $5 billion FTC fine that is still payable), its enterprise value was ~$540 billion. This is only 21.5x its $25 billion of pretax income in 2019 or 17x its expected $32 billion of pretax income in 2020. These multiples continue to look very attractive considering the durability of Facebook's platform, economic qualities, and future potential growth.

LGI Homes (LGIH):



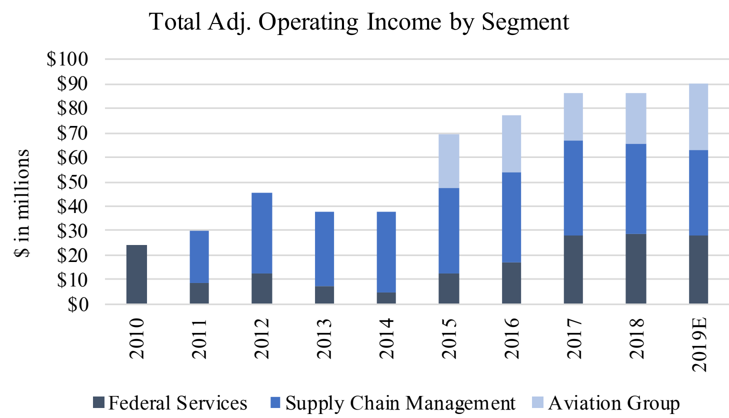


Source: Factset Research Systems, Inc.

Sales and income before taxes are expected to grow a respective 21% and 14% in 2019. Since LGIH went public ~6 years ago, sales have increased 11x, income before taxes by 10x, and home closings by 5x, albeit off a relatively small base. While we expect continued growth, it is sure to be more modest off the current sales of nearly $2 billion.

LGIH has a business model that has proved successful and difficult to copy within the homebuilding industry. By building standardized, move-in ready homes on lower cost land outside urban areas where potential demand from nearby renters is strong, LGIH is able to turn inventory quickly, keep marketing costs low by going direct to the buyer, and offer quality homes at attractive price points. Homebuilding is a huge and fragmented market and LGIH operates in a special niche where it has a long runway to reinvest capital at very attractive returns, providing a solid runway for continued growth.

VSE Corporation (VSEC):



Source: Factset Research Systems, Inc., Saga Partners LLC
Note: Adjusted operating income = operating income plus dep./amort. less capex.

VSEC's adjusted operating income is expected to grow in the low single digit range in 2019. Its maintenance capex is much lower than its depreciation and amortization costs that run through the income statement therefore adjusted operating income is a better reflection of the company's earning power.

VSEC's segments are not especially strong organic growers but they are fairly stable, recession resistant, and require little operating capital. Historically the company has used the cash generated from its segments to make acquisitions that complement its core competency in maintenance, repair, and overhaul services. Most recently, the Aviation Group has had strong growth through the recent acquisition of 1st Choice Aerospace. We expect there will be continued focus on growing the Aviation Group with the new CEO, John Cuomo, having a strong background in aerospace distribution. Overall, VSEC has strong, stable cash flow generating ability with modest growth prospects and sells for a very attractive price relative to its earning power (~5x expected 2019 adjusted net earnings and 6x on an EV/EBIT basis).

Carvana (CVNA):

Carvana was a new investment in 2019. It has a very impressive track record as it expands its lead in online used car sales. We wrote an in-depth piece on the company in December which is in the Appendix at the end of the letter. It was selected as the large cap winner in SumZero's Top Stocks for 2020 (link).

Dropbox (DBX):

Dropbox was the other addition to the Portfolio during 2019. The company was started in 2007 as an online storage and file sharing platform. It quickly won over consumers with its easy to use interface that provided a simple way to back up files and access them anywhere across a variety of devices. Through viral marketing, Dropbox built its end userbase to over 600 million plus registered users today and was one of the fastest software as a service (SaaS) companies to reach >$1 billion in revenue.

While Dropbox is perceived to be more of a consumer software company, over 80% of its 14 million paying users primarily use Dropbox for work. Dropbox represents a growing trend among enterprise technology products like Atlassian, Evernote, Slack, and Zoom, where individuals bring software products into the workplace in a bottom up fashion without any formal permission from IT or management.

SaaS businesses have been in the headlines since many of their stocks seem to move higher each day, giving wary spectators flashbacks to the dot-com days. Despite what may be optimistic valuations to say the least, there are many favorable qualities of SaaS businesses such as predictable recurring subscription-like revenues, significant operating leverage with big upfront costs in research and development but little to no distribution costs which provides scalability and high incremental margins for each new subscription. While many SaaS companies are valued today as though they will be the next Microsoft, Salesforce, or Adobe, Dropbox is interestingly valued as though it has little to no future growth or increased profitability despite having what in many cases are industry leading fundamentals.

Dropbox’ efficient self-service fremium sales model requires less outbound marketing resulting in lower sales and marketing costs (~25% of sales) compared to many other SaaS businesses where sales and marketing costs can reach to 50%+ of sales. As Dropbox continues to scale, management targets gross profit margins in the high 70% range and operating margins in the low 20% range. The strong gross margins and lower sale and marketing costs have afforded Dropbox the ability to be engineer focused in order to create a great product and user experience.

Although Dropbox is competing against well-capitalized competitors, the company has been successful in growing and developing its more neutral/independent platform which customers often select since Microsoft and Google are perceived to play to their own ecosystem and applications through integration and bundling. Dropbox has developed its product to work with and provide access to its users’ content regardless of the program it uses or where it may reside.

How people use and work with their files/content is becoming increasingly important despite simple file cloud storage being more of a commodity service as data storage costs continue to decline. User experience, collaboration tools, productivity features, security, and third-party integrations all work together to create an ecosystem for the growing “smart workspace”. Dropbox has evolved into a workflow, team space where “knowledge workers” are able to work and collaborate together where their content lives while being able to use other highly integrated enterprise software tools such as Zoom, Slack, or Atlassian. At an average cost of $10-$15 per month per user, the cost of Dropbox is almost trivial compared to how important it is for employees to maintain their workflows. An example of Dropbox’ pricing power was its ability to raise prices in their Plus Plan last year by ~20% while its churn rate remained stable in the mid-teens and net revenue retention improved to the mid-90%.

The market expects sales growth to slow materially, however Dropbox will continue to benefit from growing paid users, upselling existing paid users, and continued pricing power. Only 14 million of the total 600 million registered users currently pay. If Dropbox is successful in converting only a small fraction of nonpaying users, it would materially impact sales.

At current market prices, Dropbox has a market cap of $7.4 billion and ~$1 billion in net cash, providing an enterprise value of $6.4 billion. This compares to a free cash flow run rate of $365 million when accounting for capital leases, shares repurchased for tax withholding, and buildout of the new corporate headquarters. Assuming 2-3% share dilution per year for share based compensation would provide ~$350 million in free cash flow, or only 17x enterprise value.

Mistakes, Selling, and Under Armour

The holy grail investment, at least in our opinion, is a tremendously high-quality company with an exceptional management team at a remarkably cheap price. A long runway to grow is a big plus as well. Of course, finding a holy grail investment is rare. Not only are there typically trade-offs between these variables but the evaluation of each factor is subject to interpretation, which is exactly what makes the whole investing process so interesting and fun.

It usually is not very difficult to recognize that some businesses are better than others. What makes investing so difficult is the market attempts to value a business to the point that no longer makes it an attractive investment. Stock prices reflect the market's set of expectations for the underlying company's future performance. In order for a stock to generate excess returns, the company's results have to exceed the expectations embedded in the stock price. At the end of the day, we are trying to form a general range of probable long-term expectations (think 10+ years out) for specific companies and then find situations where the market appears to be significantly underestimating those expectations. Of course, this is very difficult to do for two main reasons.

First, we are working with a very foggy future. No one knows with complete certainty what will happen far into the future, especially as technological innovation appears to disrupt business at an ever-increasing pace. Turnover of companies within the S&P 500 has steadily increased since the 1950s, meaning it continues to be harder to remain among the ranks of the top companies compared to prior generations. Half of all public companies perish within ten years of being publicly listed regardless of its industry. Just because a company was successful in the past does not mean it will be in the future. For most companies, the range of future expectations is so wide that no useful conclusion can be reached. While technological innovation boosts productivity and benefits society as a whole, a changing competitive landscape makes it that much more difficult to form long-term expectations and therefore harder to value companies.

Second, psychological factors impact decision making. Most investors today are aware of these cognitive biases/heuristics. Success in investing is seeing the world as it really is and when everyone else in the world sees it differently, having the conviction to bet against them. Of course it can be challenging to know if your interpretation of facts is always the right one. A good magician can make you see things that are not really there and not see things that are there simply by manipulating how the human brain works.

Everyone has their own perspective or interpretation of the world based on their personal background and how their brain is wired. Interpretations and decision making can even be situation dependent in that different situations can cause different conclusions, even when the same person is thinking about the same subject. There is even a bias from believing you are less biased than others which can really make your head spin. What makes heuristics especially difficult to manage is there can be conflicting biases at play in any given situation.

This all gets back to the topic of making mistakes. Because we are working with a very uncertain future and are susceptible to these numerous and conflicting biases, identifying investing mistakes is not always obvious. It is not perfectly clear if prior decisions were good or bad just because a certain outcome occurred. Good decisions sometimes result in bad outcomes and bad decisions can lead to good outcomes. Was a poor outcome due to bad luck or making a bad decision? Over time, enough good decisions should lead to good results, on average.

There can be a fine line between maintaining conviction in your long-term outlook versus recognizing mounting weaknesses in an investment. In managing the Saga Portfolio, we are likely to be slow in selling an investment that may appear to have cracks in the original thesis just like we are likely to be slow in buying a new opportunity we first come across. This may mean we hold on to an underperforming investment for too long or we miss out on some upside in a stock that increased quickly. We think the benefits of this sloth-like behavior outweigh the costs. It helps reduce the impact of making decisions based on emotions and forces us to think long and hard before committing to any new idea since we intend to own it through what can be both good times and bad.

We like how economist John Keynes recommended viewing, "*the purchase of an investment permanent and indissoluble, like marriage, except by reason of death or other grave cause, might be a useful remedy for our contemporary evils. For this would force the investor to direct his mind to the long-term prospects and to those only.*" Saga Partners prefers a longer courtship to get to know our potential spouse rather than a shotgun wedding that is more likely to end in divorce.

There are really only two reasons why we will sell shares; 1. opportunity costs and 2. mistakes. Opportunity costs are always what is our next best available option. If we find an opportunity that we strongly believe will provide better returns than a current holding in the Portfolio, it would make sense to replace the lower return holding. If the price of a stock appreciates to the point that future returns over the next 10+ years are no longer attractive in our view, we will reallocate that capital to a higher returning opportunity. This may all seem obvious, but it's important to discuss when considering a long-term investing philosophy, conviction levels, and portfolio allocation.

Sometimes a company's business strengths are not as strong as we first believed and therefore the long-term outlook is less promising than previously considered. Mistakes are bound to happen in investing and once we realize a mistake has been made, agonizing over it is a mistake in itself. We actually try to seek out criticism of our ideas whenever possible because we are simply trying to see the world as clearly as possible. It does not matter if we were right or wrong in the past, all that matters is that we try to get as close to right going forward with the information we have available today.

We don't question an investment thesis because shares go up or down and we don't anxiously wait for each company's quarterly report to see if we are right or wrong. If a bad quarter or modest variations in a company's margins and growth rate are going to make or break an investment thesis, it's probably best to pass on to the next idea. However, if material new information comes to contradict part of our original thesis and the company's longer term fundamental operating results seem to be trending far different from our initial expectations, it's in our best interests to reexamine.

Eventually one has to look up at the scoreboard and get results whether that's in an investment portfolio or a specific company. We don't want to be the investment firm that boasts about its superior philosophy, process, and culture, but after a decade of effort have results that leave investors no better off than if they simply invested into the Vanguard S&P 500 ETF yet still try to justify their existence by claiming to have better risk management. While we won't always opine on every mistake we make since there have been and will likely continue to be too many to mention, we like the habit of highlighting the more material ones to help keep us honest.

Under Armour is a company we have owned since starting the Portfolio. It had what we thought were all the ingredients for an attractive long-term investment; a strong brand with a 20+ year track record of solid growth, gaining market share from the industry giants, attractive historic margins and return on capital. The industry appeared to have a long runway for growth with a rising global middle class and performance/athletic apparel becoming increasingly mainstream. It was founder-led by a driven leader who had a significant part of his net worth in company stock.

After shares reached euphoric highs of over $50 per share, a perfect storm of events, both self-inflicted and some industry-wide, led to the stock cratering and us subsequently picking up shares at an average price of around $20 a share. Retail bankruptcies, high inventory levels, overexpansion and aggressive sales practices, and a few questionable technology acquisitions left the company needing to slow down and refocus. What we anticipated to be a transition period with slower sales growth and reigning in a cost structure built for a larger company proved to be more pervasive. Competition intensified, fashion trends shifted, and executive management faced turnover as the company tried to regain its footing.

Of the various types of moats, we have realized brands are more challenging for us to assess. An important component of our original thesis was that Under Armour is a durable sports brand and globally desired sports brands are difficult to build. Despite having large and well-established competitors like Nike and Adidas, Under Armour was able to compete successfully for years. We believed consumers would continue to pay a premium to wear Under Armour shirts, shoes, and other products. As they were competing with other high-quality sports brands who wanted to sell at premium price points, we believed there would be little price competition. Despite this view, Under Armour's rapid overexpansion and potentially overextended product lines may have hurt their brand more than we believed. Customers appear to have grown accustomed to the off channel discounted inventory while the company has struggled to sell product at its premium price points.

The internet has also really shifted the competitive landscape in many industries and lowered barriers to entry. Specifically with consumer products, smaller companies can now more easily reach customers and compete with the larger well-established brands. E-commerce and access to distribution (thanks to Fulfillment By Amazon and Shopify Fulfillment Network) and social media with targeted digital advertising (think Google, Facebook, and The Trade Desk…at least we got something right!) have made it increasingly easier for the Dollar Shave Clubs to compete with the Gillettes of the world.

We have realized that brands are more susceptible to disruption than we previously believed and when there is an element of fashion trends tied to its success, we have little to bring to the table. Weighing the various factors and our revised long-term outlook for Under Armour, we have decided to sell the last of what has become a relatively small position in the Portfolio.

We may be wrong in our revised outlook. It wasn't too long ago Adidas went through a period of slower growth (2013-2016) and subsequently introduced popular new products combined with improved advertising spend that led to strong sales and profitability trends. Perhaps Lululemon's brand has durable pricing power and the market's strong growth expectations will be realized, supporting its \$35 billion market cap on ~\$4 billion in sales and ~\$900 million in operating income.

Many companies in this category will have very bright futures but we have less confidence in our ability to predict these trends. These questions now go into our "too hard" bucket. We are obviously still rooting for Under Armour and maintain the view the company will work through its issues and likely be selling a lot more shirts and shoes in ten years from now. However, when we look over the investing landscape at other potentially attractive opportunities, it's best to reallocate capital accordingly. We are sure to make more mistakes but we will try our hardest to keep the unforced errors as low as possible.

Conclusion

The purpose of these letters is to help our investors understand what they own and how the Portfolio is managed. As much as we love to dive deep into our investing philosophy and process each quarter, we think our past letters provide a good framework for understanding how we think and what we are trying to do. Going forward we will be providing semi-annual letters with portfolio updates and any other notes we think may be important. This will let us spend even more time searching the investing universe for great ideas, managing the Portfolio, and put less emphasis on short-term quarterly results.

As we look into the fourth year of managing the Saga Portfolio, we couldn't be happier with the investors that have joined our growing group. We continue to be grateful for the opportunity to manage our investors' hard-earned capital. The success of the Saga Portfolio requires investors that are stable, long-term, and realistic in their expectations. As always, please reach out if you have any questions or comments, we are always happy to hear from you!

Sincerely,

Joe Frankenfield

Appendix

(CVNA)

Investment Thesis

- The U.S. used car industry is very large, highly fragmented, and due for disruption.
- Carvana created a vertically integrated, online platform for buying and selling cars that provides a more seamless customer experience, vast vehicle selection, and lower prices.
- Founder-led CEO with significant inside ownership.
- As Carvana builds its scale advantages, the self-reinforcing flywheel will continue to build, helping grow its inventory selection, logistics & transportation network, and data analytics.
- Current trends show Carvana quickly gaining significant market share. Once volumes and operating margins reach scale, and assuming reasonable market share, current valuation looks very attractive based on cash flow potential.

Carvana has been a heavily shorted and misunderstood company by investors who focus on the overall net losses since inception. While Carvana does have operating losses, its e-commerce business model requires upfront capital investments before unit volumes reach scale and profitability. Shorts overlook the attractive unit economics and strong growth trends/customer adoption. As Carvana's coverage is able to reach more consumers across the U.S. and offer greater inventory selection at more attractive prices, they are expected to continue to win market share from traditional brick & mortar dealerships. It increasingly appears that Carvana will be the primary winner in the online car dealer market. At current market prices, shares look very attractive relative to the large market opportunity as Carvana continues to grow volumes and reach scale operating margins.

Company Background

Carvana is disrupting the used car industry through its online platform to buy and sell cars. By offering a better overall customer experience, wider vehicle selection, and lower prices, Carvana has rapidly grown volumes, improved gross profit per unit, and scaled fixed costs by establishing itself as the dominant e-commerce used automobile dealer. It is reasonable to expect them to gain significant market share in the highly fragment landscape and earn attractive economic profits.

Founded in 2013 in Atlanta, Georgia, Carvana has grown to 146 markets, reaching 66% of the U.S. population, and is expected to sell ~175,000 retail units in 2019. It has become known for its car vending machines and last mile delivery of a purchased car to customers' homes. Since launching just seven years ago, Carvana has disrupted the used car industry and has quickly grown to generate an estimated $4 billion in 2019 sales.

Used Car Industry

The U.S. automotive industry is very large, generating ~$1.2 trillion in sales during 2018 and makes up roughly 20% of the U.S. retail economy. According Edmunds Used Vehicle Market report, there were $764 billion in 2017 used car sales. The market is highly fragmented with over 43,000 used car dealerships and nearly 18,000 franchise dealerships. The 100 largest dealerships make up only ~7% of the total market with CarMax being the largest used car dealer having just under 2% market share. Carvana is expected to sell 175,000 used cars in 2019, making it the fourth largest used car dealer.

Company	2018 Used Retail Units Sold	Market Share
Carmax	721,512	1.8%
Penske	282,542	0.7%
Auto Nation	237,722	0.6%
Lithia Motors	151,234	0.4%
Group 1 Automotive	111,806	0.3%
Sonic Automotive	139,605	0.4%
Carvana	94,108	0.2%
Asbury Automotive Group, Inc.	82,377	0.2%
Total 2018 U.S. Used Vehicles Sol	39,500,000	

Source: Saga Partners, Company filings

Cox Automotive estimated 2018 U.S. market to reach 39.5 million used vehicle transactions.

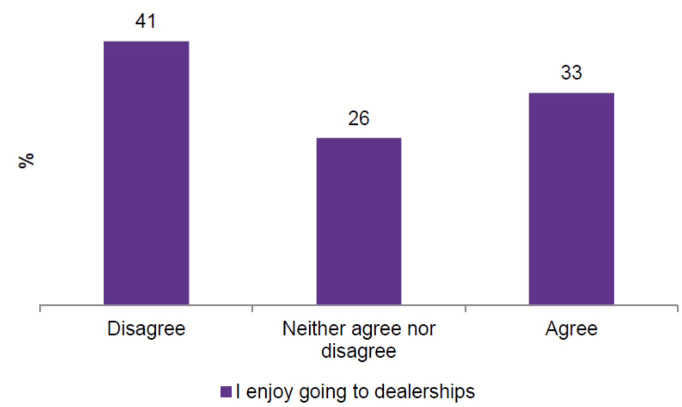
Of the nearly 41 million used vehicles sold during 2017, ~70% were sold through car dealerships while ~30% were sold in private party transactions.

	Used U.S. Vehicle Retail Units By Year		
	2015	2016	2017
New Car Dealers	14,647,535	14,968,206	15,107,834
Used Car Dealers	13,319,015	13,892,922	14,106,537
Private Party Sales	11,476,307	11,694,366	12,168,616
Total	**39,442,857**	**40,555,494**	**41,382,987**

Source: National Automobile Dealers Association

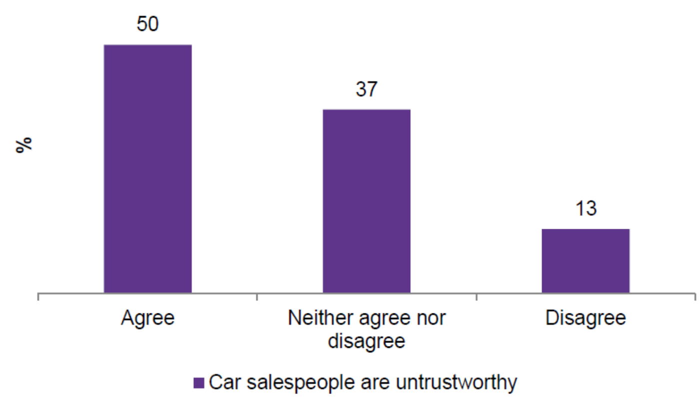
The traditional brick & mortar used car dealership model has been due for disruption. The majority of consumers have negative views towards used car dealerships. Buying a car is a significant and infrequent purchase for the average customer, combined with the highly fragmented industry, makes it likely that customers are not very familiar with their local used car dealership. There may be uncertainty surrounding the quality of the used car, the fair price (it's not uncommon for haggling over different parts of the transaction) and the whole process may take several hours of time spent at the dealership completing the transaction.

According to Mintel Group's June 2019 consumer survey of 1,100 prospective car buyers, over 40% do not enjoy going to dealerships.



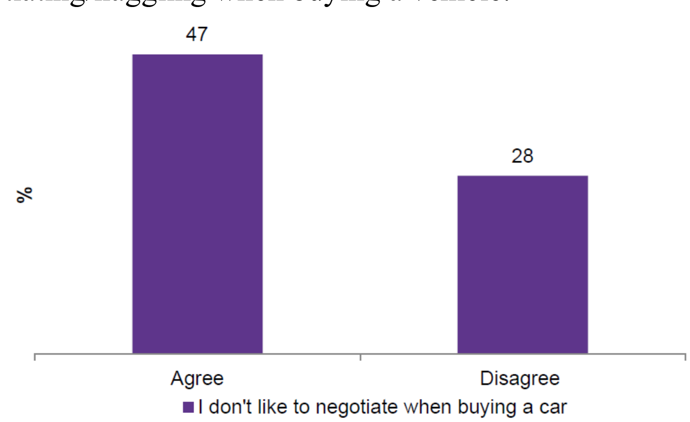
Base: 1,100 internet users aged 18+ that plan to purchase a vehicle within the next 3 years
Source: Lightspeed/Mintel

50% of consumers distrust car salespeople.



Base: 1,100 internet users aged 18+ that plan to purchase a vehicle within the next 3 years
Source: Lightspeed/Mintel

47% of consumers dislike negotiating/haggling when buying a vehicle.

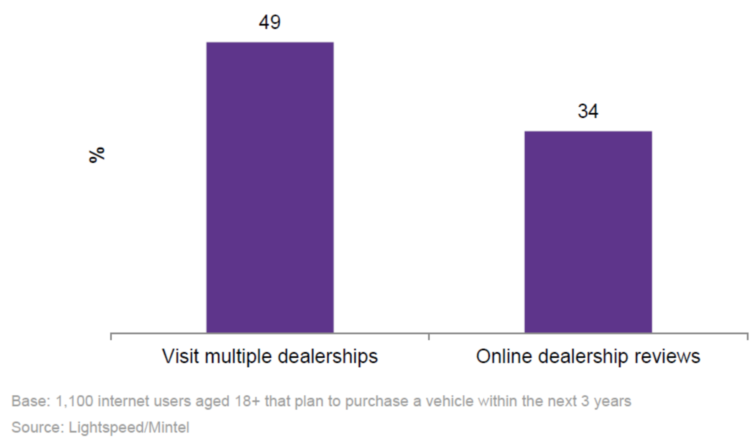


Base: 1,100 internet users aged 18+ that plan to purchase a vehicle within the next 3 years
Source: Lightspeed/Mintel

Buyers are least satisfied with how long the purchase process takes at a used car dealership and interactions with the financing department is the second biggest pain point. According to the survey, buyers spend an average of nearly 40 minutes idle at the dealership; largely during the financing/paperwork process.

Source: NIADA 2018 Used Car Industry Report

Additionally, most dealerships only hold about 50-200 cars on their lot; therefore finding the right used car may be difficult at any single location. Nearly half of prospective used car customers expect to visit multiple dealerships to find the car they are looking for.



Carvana's Solution

Ernie Garcia III, the founder and CEO of Carvana, sought to fix the used car buying experience by removing the pain points. The traditional retail model provided an undifferentiated buying experience among dealerships.

A fragmented market makes it difficult for any single dealer to achieve scale, partially reflecting the high variable cost structure of the business and low barriers to entry. Most dealers acquire vehicles and fulfill sales the same way with similar cost and operating models across dealerships. Reliance on third party lending adds incremental frictional costs and limits the dealer's ability to participate in the gross profit created through financing. Additionally the value proposition customers receive at a traditional dealership is often clouded during the multiple steps that often occur within an automobile purchase that often requires haggling/negotiating with a salesperson.

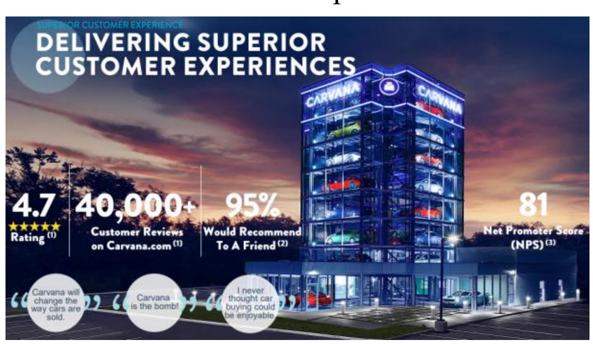
Ernie believed it was possible to provide a better car buying experience by building a vertically integrated, used vehicle supply chain supported by software and data. What were variable costs in the traditional model, i.e. vast vehicle selection, providing extensive product information, personalized recommendations, and other sales support costs, largely shift to fixed costs in an e-commerce, software-driven model and thus shrink rapidly as a percent of sales as volumes grow. Additionally, costs that remain variable with an e-commerce model, such as: transportation/fulfillment, sourcing vehicle inventory, inspection & reconditioning vehicles, significantly improve with scale and the help of technology/data management.

Ernie focused on: 1) Improving the entire customer experience, 2) Offering a wide selection, and 3) Providing better value.

1. Customer Experience

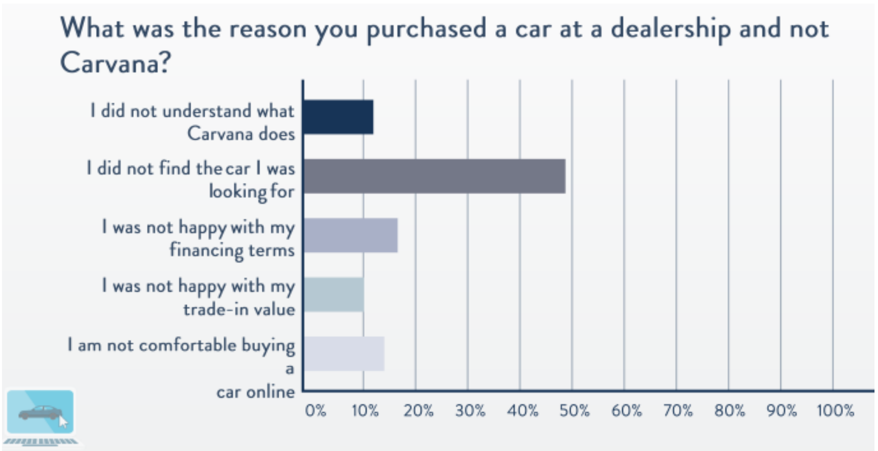
There are many different parts of the used car sale that dealerships must get right to provide a smooth customer experience. It is very difficult to provide a seamless process if different parties control different parts of the operation, such as vehicle sourcing, reconditioning, pricing, sales, financing, trading, or delivery. Carvana wanted to integrate the entire customer-facing aspect of the business to make it seamless, transparent, and self-serviced, which would drive higher adoption. Carvana's motto is, "they sell cars, but they're not car salesmen."

- Customers can buy a car in under 10 minutes, have it delivered to their door for free, and have a 7-day test period where Carvana will pick up the car for free if the customer decides to return the car.
- 360-degree photography of each vehicle gives a potential customer enough confidence in the quality of the vehicle in a self-service way that doesn't require a used car salesperson or a trip to the dealership.
- Vehicle trade-in experience is simple, asking for limited information, no photography, no physical inspection, and provides vehicle pick up.
- Vending machines provide a unique fulfillment option for consumers and are a key part of Carvana's growth strategy. In addition to reducing variable fulfillment costs, vending machines offer customers a fun experience to pick up their purchased vehicle while simultaneously creating branding and marketing.
- Integrated lending provides a better customer experience, fewer frictional costs in time, information, and Carvana can share in the gross profit economics. Over 70% of people finance their vehicle through Carvana because it is seamlessly integrated into the customer experience.



2. <u>Wide Selection</u>

Based on a survey of people that visited Carvana's website and did not purchase from Carvana but from a dealership afterwards, the number one reason for not buying from Carvana was "they did not find the car they were looking for." This suggests that the reason people do not buy on Carvana is not the online buying platform, financing terms, trade in value, etc. but the selection. Therefore, as Carvana expands its inventory selection, they should continue to drive increased customer conversion.

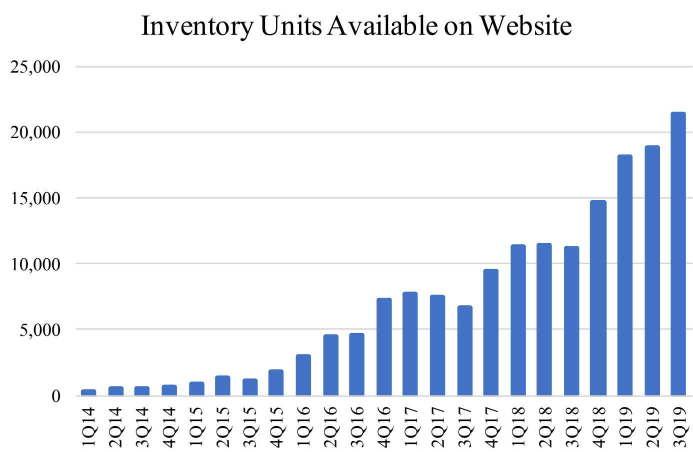


Source: Investor Presentation

Physical dealerships are restricted to the inventory on their lot. If a dealer has multiple locations within a geographic region, they still need to keep the most popular items in stock at each location in a very redundant way.

Carvana has a pooled national inventory of nearly 25,000 cars available to purchase on its website compared to less than 200 on a traditional dealer lot and ~15,000 total dealer vehicles available for sale in the average regional market. In other words, Carvana has nearly twice the selection available than an entire region's dealer inventory.

In order for Carvana to provide the nationwide inventory to customers, it has built an internal hub and spoke logistics network and software system to be able to quickly and economically transport cars directly to the customer when they want it.



Better Value

By shifting much of the dealership's variable costs to fixed, Carvana's cost structure has much more attractive unit economics compared to the traditional used car dealer. Combined with integrating the lending in-house so Carvana can share in the financing gross profits, they are typically able to sell vehicles $1,000 – $1,500 below Kelley Blue Book's Suggested Retail Value or prices of comparable cars at other dealerships. They are also able to offer more money on vehicle trade-ins and still earn attractive gross profit per unit. Of course when scaling to a nationwide online used automotive dealer, there are significant capital investments required and large fixed costs which incur operating losses until volumes reach scale. However, unit economics for each automobile sold are very attractive (see Management's Core Objects and Unit Economics section below).

It does not take long for prospective customers to discover they are able to buy the same type of car on Carvana for a lower price that can get delivered directly to their home with seamless and transparent financing.

Management's Core Objectives

The key differences between an online e-commerce company like Carvana and the traditional brick and mortar used car dealership are between the variable and fixed costs of selling each incremental vehicle. Carvana's total fixed costs are significant relative to the average dealership. However, the fixed costs are relatively stable and as Carvana scales, fixed costs will become a smaller percent of total sales. The average dealership has difficulty scaling because of their high variable cost structure, providing few economies of scale and some diseconomies of scale when considering the loss of entrepreneurial drive when dealerships are no longer owner-operated.

Below is a chart of the six publicly traded automotive dealerships operating margins. It's a little difficult to compare Carvana to the publicly traded automobile dealers without breaking out the operating segments within each dealership because the average dealership has four profit centers: new car sales, used car sales, parts & services, and other ancillary products such as warranties & insurance. Each segment has different margins, with new car sales providing very little gross margin (~4%), used cars providing some gross margin (~6-7%), and selling parts, services, and ancillary products providing very high margins. Carvana only sells used vehicles and financing/ancillary products.

Overall, as Carvana scales it expects total fixed costs to decline as a percent of sales providing more attractive operating margins in the long term despite not offering higher margin parts & services.

	Margins	3Q19 Carvana	Carvana LT Target	Penske	Auto Nation	Lithia Motors	Group 1 Auto	Sonic Automotive	Asbury Auto Group
	Sales	100%	100%	100%	100%	100%	100%	100%	100%
Variable Costs	COGS	87%	81%-85%	85%	85%	86%	86%	86%	84%
	GPM	13%	15-19%	15%	15%	14%	14%	14%	16%
Fixed Costs	SG&A	19%	6-8%	12%	12%	11%	11%	12%	11%
	EBIT	-6%	7.5%-12.5%	3%	3%	2%	4%	2%	5%

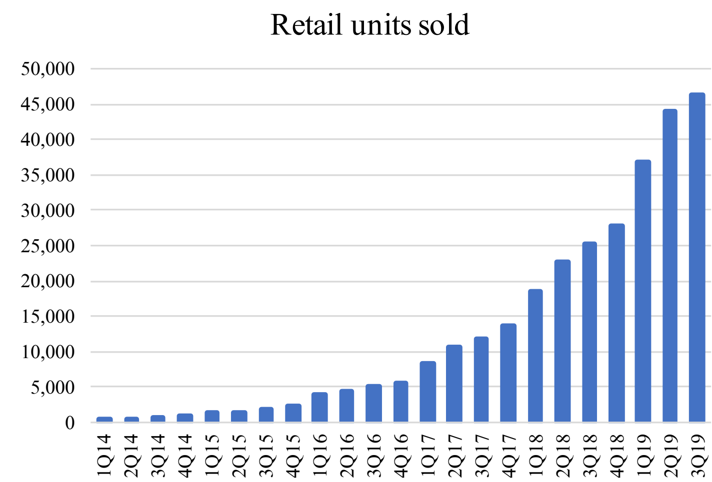
Source: Saga Partners, Company filings

Carvana loses money at its current volume of business. For the company to be successful it must continue to scale in order to benefit from its high operating leverage. Management outlined their "vision" and goals in the very first public quarterly letter to shareholders.

Their core objectives are to:
1. Grow Retail Units and Revenue
2. Increase total gross profit per unit
3. Demonstrate operating leverage

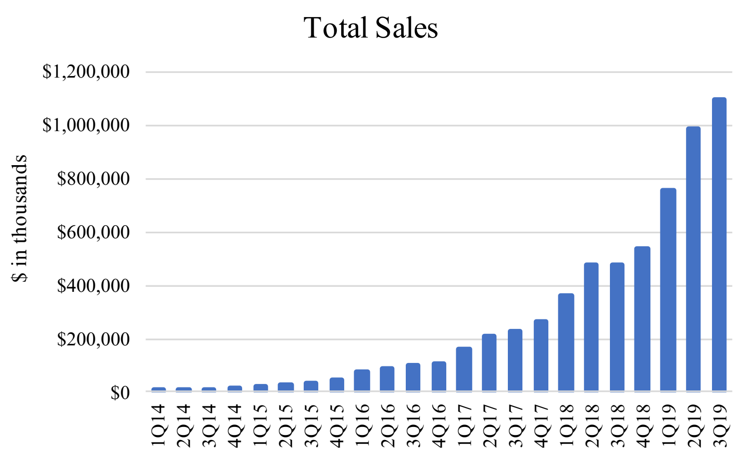
1. Grow retail units and revenue

Total growth in retail units and revenue look very favorable. Retail units grew 113% in 2018 and are expected to grow 86% in 2019.



Source: Company filings

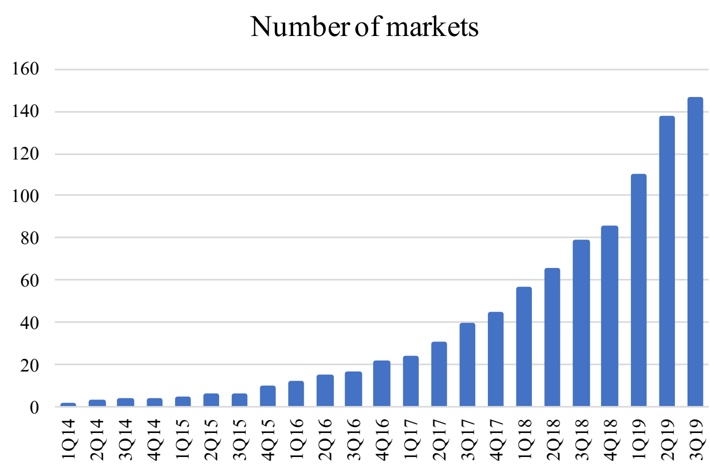
Total revenue grew 131% in 2018 and is expected to grow 100% in 2019 to ~$4 billion.



Source: Company filings

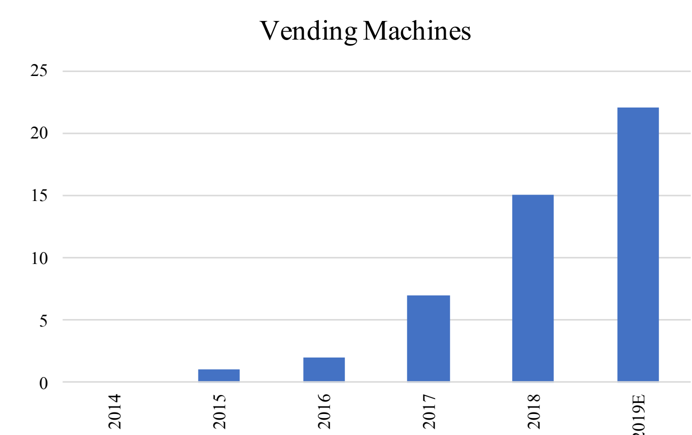
Carvana launched 22 new markets in the first three quarters of 2019, providing a total of 146 at the end of the third quarter. They do not expect to open any new markets during 4Q19 in order to focus on operational efforts and prepare the business for further growth in 2020.

In the brick and mortar used car dealership model, launching a new market requires constructing a new dealership in that market and building a local inventory to fill the dealership lot. In the e-commerce model, launching a new market requires connecting the market to an existing inventory pool through a logistics network. This means new markets can be added by setting up an office, small support staff, a few single car haulers, initial marketing costs for an average cost of ~$500,000 vs. $10-$20 million for opening a traditional dealership.



Source: Company filings

Markets with vending machines see a significant boost in market share gains and cost an average of $5 million for a new location.



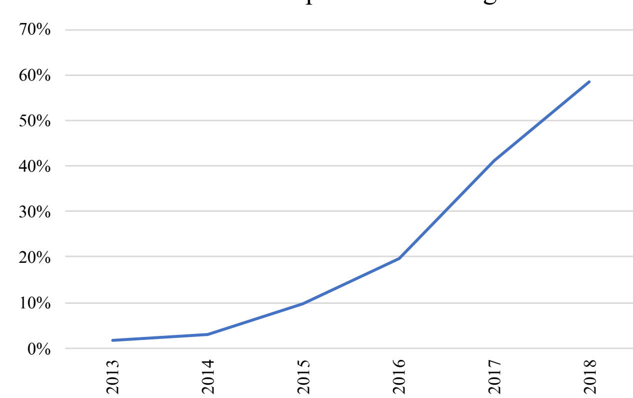
Source: Company filings

*Represents facilities and markets as of November 6, 2019

Production Line and Photo Booth at Carvana's Phoenix-area IRC

Carvana estimates they can now reach ~67% of the total U.S. population based on their current markets, up from 59% at the end of 2018. Management believes they can eventually serve 90%+ of the U.S. population in their markets over time and serve another 5% in smaller cities through delivery from nearby markets, ultimately bringing the total share of the population they serve to 95%.

Total U.S. Population Coverage



Source: Company filings

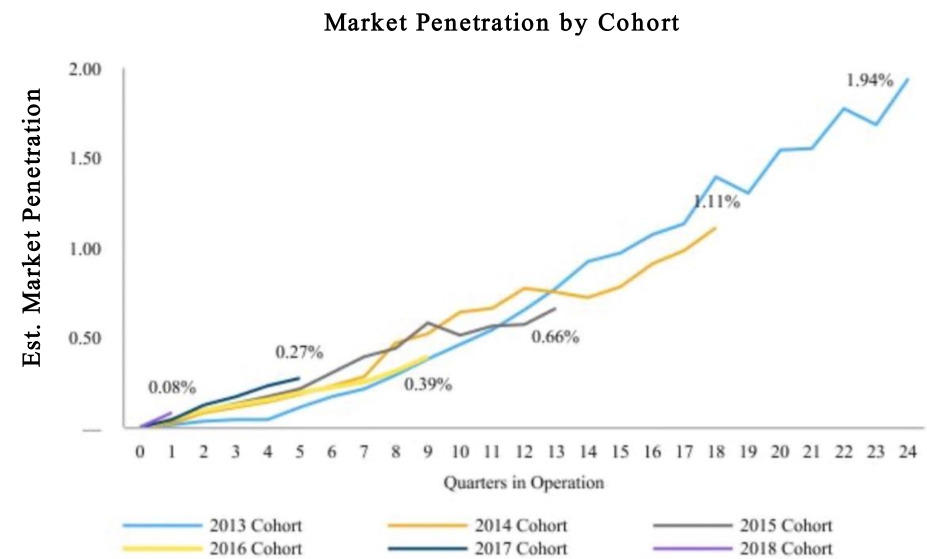
Part of Carvana's hub and spoke transportation/logistics network are inspection & reconditioning centers (IRCs). After Carvana acquires a vehicle, they transport it to an IRC where it undergoes a 150-point inspection and reconditioning process and then is stored as part of the nationally available inventory. A vehicle will remain at the IRC until it is purchased, at which point it will be delivered to a local market hub and finally delivered to the customer.

IRCs deliver economies of scale that are essential to the Carvana operating model and achieving their long-term margin goals. New IRCs create benefits in sales volumes and logistics expenses in nearby markets. After opening a new IRC, markets closest to it see an average logistics expense per unit typically fall 20% and sales grow more than twice as fast as comparable markets.

Carvana will complete their 8th IRC at the beginning of 2020, providing the ability to inspect & recondition ~400K vehicles at full capacity. They have five more sites where they expect to launch facilities in the near future.

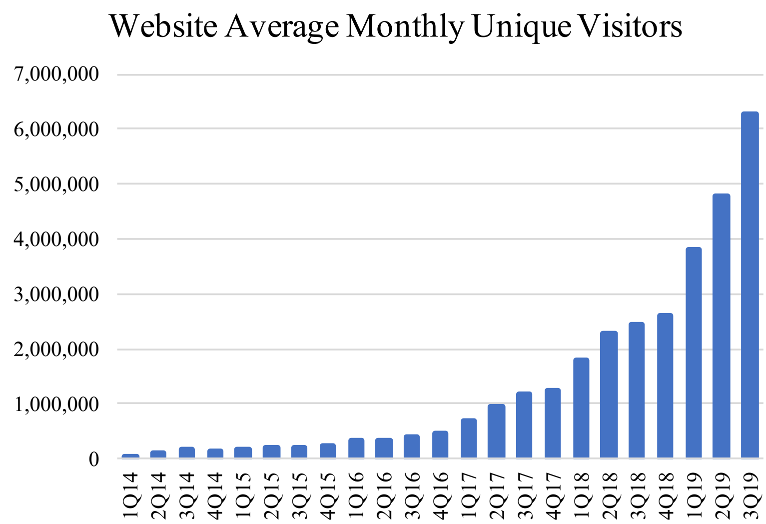
Beyond opening new locations, Carvana will grow from increasing market penetration. As market share increases within a region, expense per unit declines. The chart below aligns performance of all market cohorts with their first quarter of operation and includes data in quarters where all markets in a cohort were active.

The 2013 cohort only consists of Atlanta, Georgia, the first market, and the 2014 cohort is comprised of Nashville and Charlotte.



Source: Company Annual Report

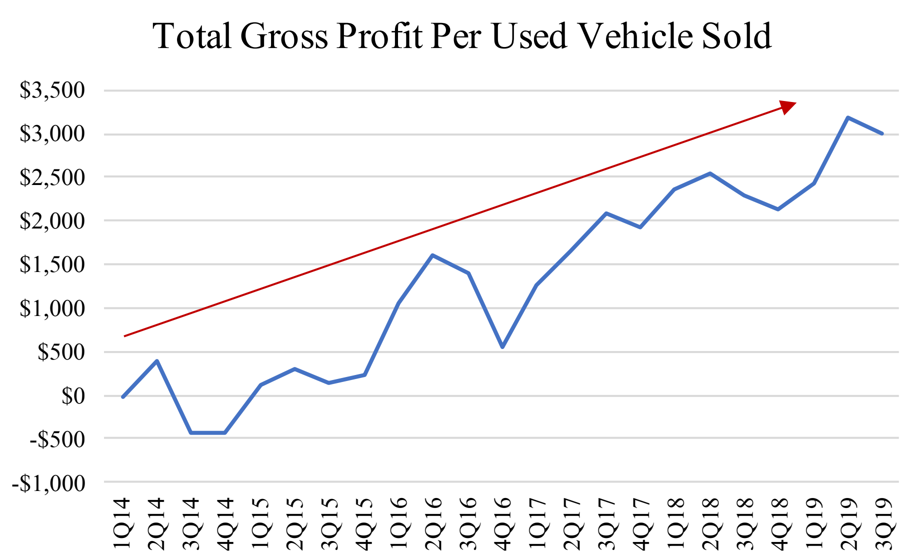
Traffic to the website follows similarly strong trends as Carvana moves into new markets.



Source: Company filings

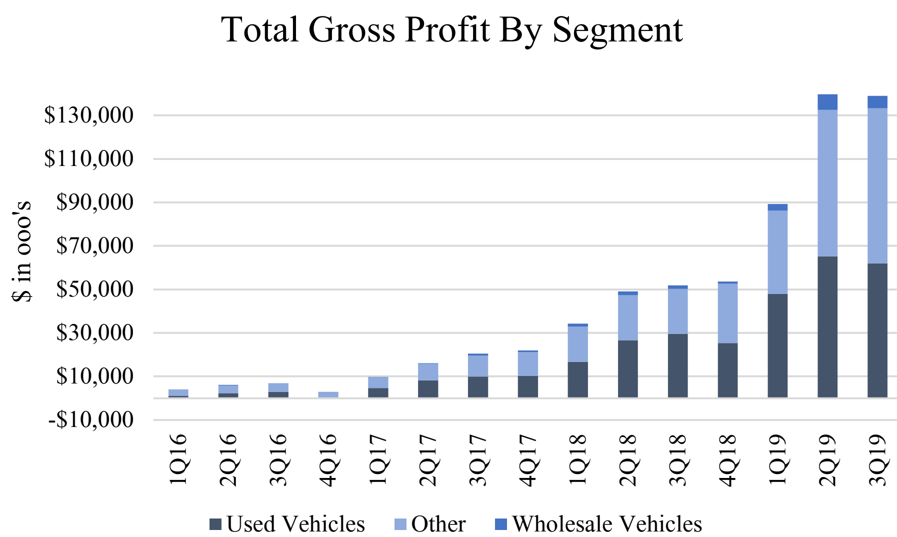
2. Increase total gross profit per unit

While the highest priority during Carvana's growth phase is generating demand and building infrastructure to support growth in retail units, management's next priority is increasing gross profit per unit (GPU).



Source: Company filings

Gross profit consists of used vehicles, wholesale vehicles, and other ancillary products largely consisting of financing customer purchases.



Source: Company filings

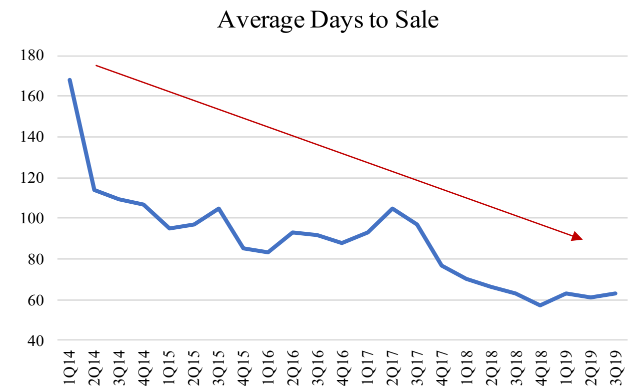
Carvana is able to grow gross profit per unit by:

1. Selling vehicles for higher prices
2. Lowering COGS per unit
3. Selling other products/services (Carvana Automotive Finance, vehicle service contracts, and GAP coverage)

1. **Selling vehicles for higher prices.** Carvana can improve sales prices by lowering average days to sale, i.e. improving inventory turnover. The average used car price declines by ~18% per year, or ~$10 per day on a $20,000 vehicle. This reduction in price over time is incorporated into Carvana's vehicle pricing.

   Reduction in used vehicle prices over time means that average days to sale impacts the average selling price of vehicles. Average days to sale depends on the number of vehicles they hold in inventory and the number of customers Carvana attracts to purchase those vehicles. Decreasing the average number of days between vehicle acquisition and sale to customer lowers the depreciation cost of the vehicle over time and increases benefits from economies of scale due to their centralized online sales model.

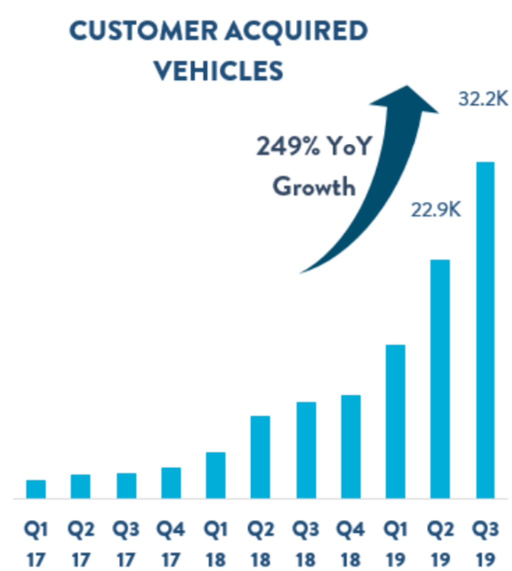
Over time Carvana's goal is to increase the number of markets and sales growth faster than their inventory size which will decrease average days to sale as demand increases relative to supply.



Source: Company filings

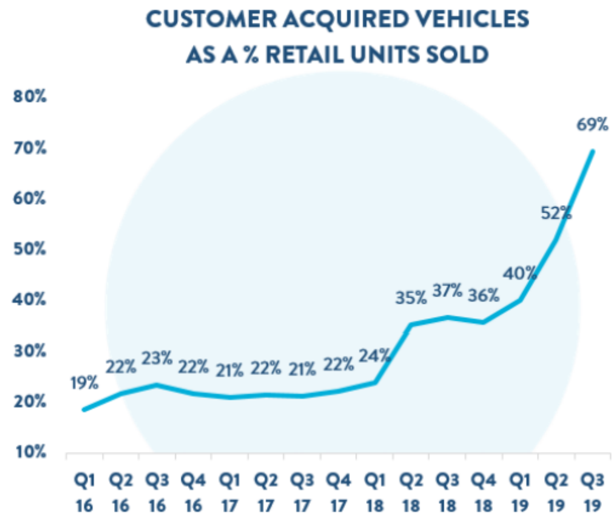
2. **Lowering COGS per unit**. COGS consist of the costs to acquire the vehicle, reconditioning the vehicle, transportation costs with preparing the vehicle for resale, depreciation, and IRC overhead. While COGS is largely a variable cost, Carvana can improve COGS by lowering vehicle acquisition costs by purchasing more cars from customers and benefitting from some economies of scale with IRC overhead and transportation as utilization increases.

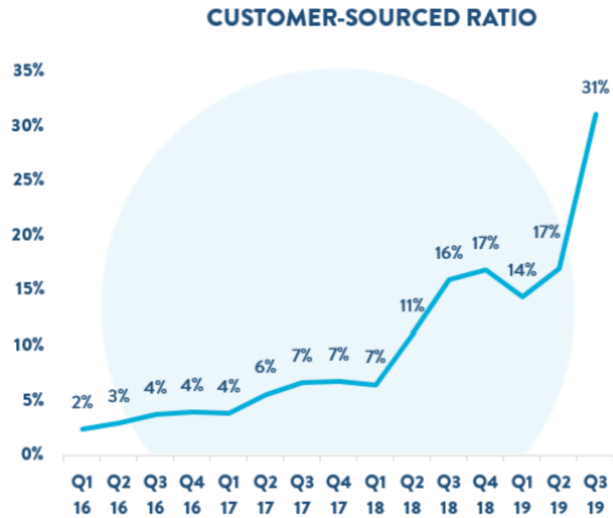
Source more cars from customers: Cars sourced from customers benefits retail GPU and wholesale GPU (where cars are sold to auctions because they don't meet retail standards) because they are more profitable than cars sourced from wholesale auctions (no auction fees and less competitive bidding process). Sourcing vehicles from customers typically provides \$200 - \$500 more in profit per unit compared to acquiring a vehicle through auction.



Source: Investor presentation

In 3Q19, Carvana grew total cars purchased from customers to 32,000 vehicles, or nearly 70% of retail units sold to customers. Of all the retail units sold, over 30% were sourced from customers, up from 17% in the prior quarter.





Source: Investor presentation

Increasing IRC volume/capacity: The more vehicles that an IRC serves, the lower the cost per vehicle as costs scale. Collectively the IRCs have the capacity to inspect and recondition 350K vehicles per year. More IRCs also lower transportation costs as distance and time to delivery decrease per unit sold.

Inspection & Reconditioning Centers			
No.	**IRC Location**	**IRC Launch Quarter**	**Estimated Annual Capacity (In thousands)**
1	Atlanta, GA	4Q12	50.0
2	Dallas, TX	4Q14	50.0
3	Philadelphia, PA	4Q15	50.0
4	Phoenix, AZ	3Q17	66.7
5	Indianapolis, IN	4Q18	66.7
6	Cleveland, OH	1Q19	33.3
7	Nashville, TN	2Q19	33.3
8	North Carolina	Under Construction	
	Total Capacity		350.0
	3Q19 Used Vehicle Sales Run Rate		185.7
	Current IRC Utilization		53%

Source: Company filings, Saga Partners

3. Selling other products and service

Other sales revenues primarily consist of gains on the sales of automotive finance receivables Carvana originates, and to a lesser extent, sales commissions on vehicle service contracts (VSCs) and commissions from GAP waiver coverage. It's important to understand Carvana's automotive finance business since it makes up roughly half of gross profits and will likely continue to be a driver of profits going forward.

Carvana's Automotive Finance Platform

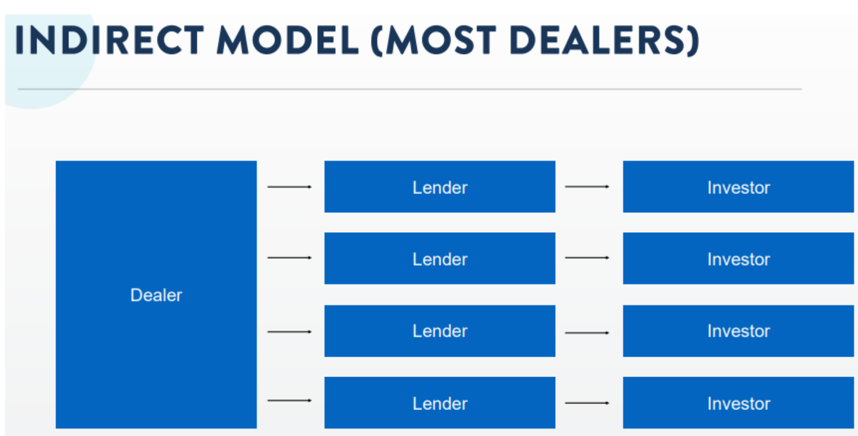
Automotive finance is a very large market and has historically been a very profitable space. The industry is estimated to have more than $1 trillion in outstanding receivables at the end of 2018. Carvana's vertically integrated auto lending model is improving traditional auto financing and unlocking significant incremental profit opportunities.

In auto lending there are three players that work together to finance a car;

1. Dealers: Acquire the customers, ensure vehicle quality, and arrange loan information for lenders.
2. Lenders: Underwrite the loan by pulling credit score and pricing the loan.
3. Investors: Own the loan and earn a risk-adjusted rate on the investment.

Lenders/underwriters do the most work and earn the most profits from the transaction. Dealers earn some profits and the investors will earn a risk adjusted profit from owning the loan over its life.

The most common way for the three players to interact in auto lending is through "indirect lending" where the dealer (car dealership) brings in the customer and then partners with lenders who compete and underwrite the loans. The lenders may partner with investors who will ultimately hold the credit risk. Lenders may also play the role of investors by holding the loans they underwrite until maturity, which is common with banks and credit unions.

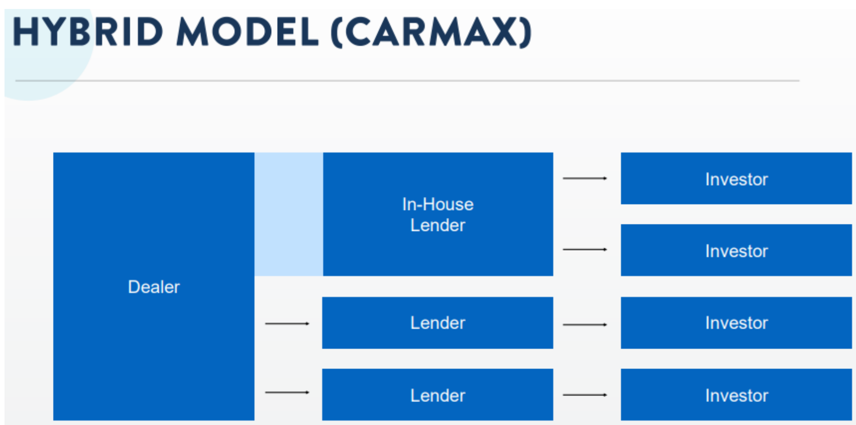


The indirect model provides a system with limited price discovery. At traditional dealerships, sales managers and finance managers are typically paid a commission based on the profit of the entire bundled transaction of a used car (selling price, trade-in value of customers car, interest rate on loan, vehicle service contracts, etc.).

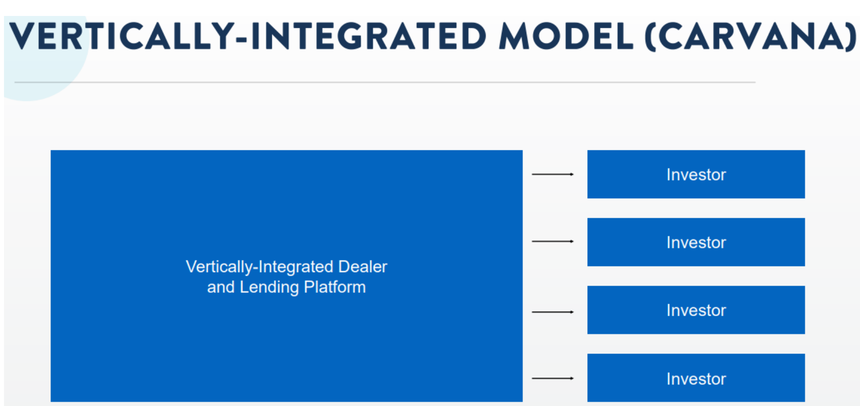
The lender/finance partner typically compensates the dealer through a fee based on the spread between the loan offer rate provided by the financial institution and the final loan rate the dealer negotiates with the customer. Dealers are incentivized to get the highest profit possible on the entire transaction and will adjust the pricing on the different elements of the transaction based on customer preferences, such as lowering the interest rate on a loan while increasing the selling price of the car.

When third party lenders are used to underwrite the loan, they do not necessarily know the true market price/value of the vehicle. This impacts the loan-to-value, risk-adjusted interest rates, and overall credit worthiness of the loan.

CarMax uses a hybrid model (combines the dealer and the lender) which replaces some of the outside lenders with an in-house lending segment. For some customers, there's an in-house lender while for other customers there are outside lenders who then pair with investors.

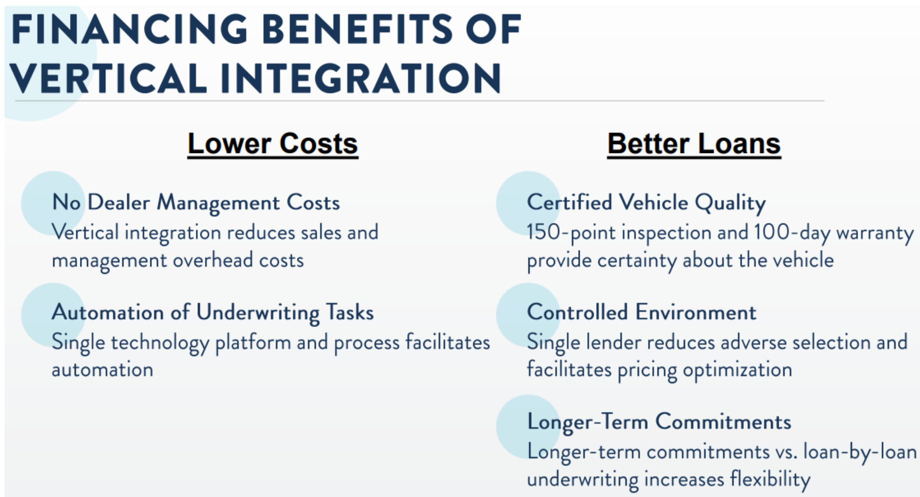


Carvana's model is a fully integrated retail and financing platform which provides an integrated/seamless customer experience.



Like the other elements of Carvana's sales model/vehicle purchase, the financing element is transparent with no haggle pricing. Customers fill out a credit application, instantly receive the credit terms and those same terms apply to all the cars on the Carvana website. This provides a seamless customer experience and strong loan economics.

It is almost impossible for multiple third-party lenders working with multiple local dealers to consistently ensure vehicle quality and underwriting information. By fully integrating, Carvana reduces frictional costs by removing dealer relationship management costs, reducing overhead, and automating the loan process under one roof. Not only does this provide strong loan performance by being able to certify vehicle quality, customer credit information, eliminating adverse selection, and optimizing loan pricing, it provides an easier customer experience since they only have to deal with one party for their entire automotive transaction.

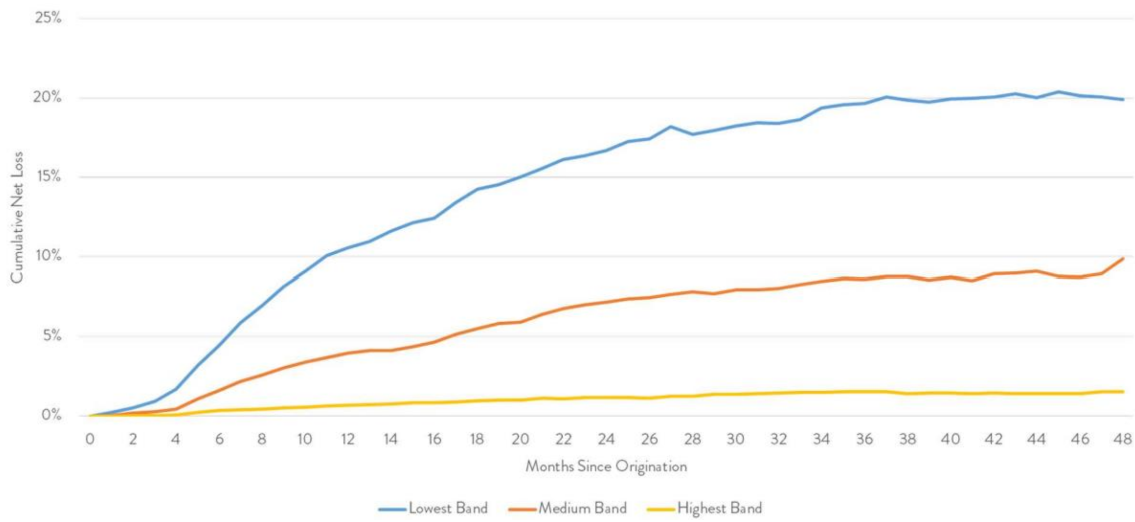


There are two key ways to expand financing gross profits; strong loan performance and lower cost of funds. The loans Carvana underwrites perform better because their integrated process produces better data but also because Carvana's retail model is able to sell cars at a lower price compared to similar quality cars at traditional dealerships. Lower car prices lead to lower loan-to-value (LTV) ratios and lower monthly payments on the same quality vehicle which leads to better performing loans.

Below is a chart showing Carvana's historical loan performance Deal Score Band which is Carvana's internal credit score system designed to predict performance of each loan at the time of origination using numerous credit attributes of the borrower, specific vehicle, and terms selected by the customer. While the Deal Score Band is correlated to the FICO score, it is more predictive of future loan performance due to its customized sample, data, and methodology. Higher deal scores imply better expected loan performance.

The chart shows the cumulative net loss (CNL) by Deal Score Band which is calculated by the total cumulative charged-off balance through the end of the given period, net of recoveries, divided by the total original principal balance of the pool. The lowest band (blue) has the higher losses and the highest band (yellow) has the lowest losses; suggesting Carvana's Deal Score Band is a strong predictor of loan performance.

Figure 1: Carvana Historical Loan Performance by Deal Score Band[3]



Source: Company investor relations

In 2018, 53% of the loans Carvana underwrote were in the highest band, 37% were in the medium band, and 10% were in the lowest band.

Table 1: Carvana 2018 Originations by Deal Score Band

	Highest Band	Medium Band	Lowest Band
2018 Share	53%	37%	10%
2018 W.A. FICO	702	567	508
Historical CNL Curve	Yellow	Orange	Blue

Source: Company investor relations

Carvana's loan pool performance compares favorably to five large securitization market issuers with public information available who fund fixed pools of auto loans in the securitization markets.

Table 2: Auto Loan Securitization Pool Statistics[5]

	CarMax Auto Finance (CAF)	Westlake Financial	Santander Consumer USA (SDART)	Exeter Financial	Santander Consumer USA (DRIVE)	American Credit Acceptance
Deal	CARMX 2018-3	WLAKE 2018-3	SDART 2018-3	EART 2018-3	DRIVE 2018-3	ACAR 2018-3
Original Pool Balance	$1,440M	$924M	$1,304M	$567M	$1,643M	$280M
W.A. FICO	706	601	609	568	581	545
Rating agency CNL midpoint	2.25%	13.25%	16.1%	21.0%	27.0%	27.5%
Historical CNL range	2 - 2.2%	12%+	12%+	18%+	20%+	25%+

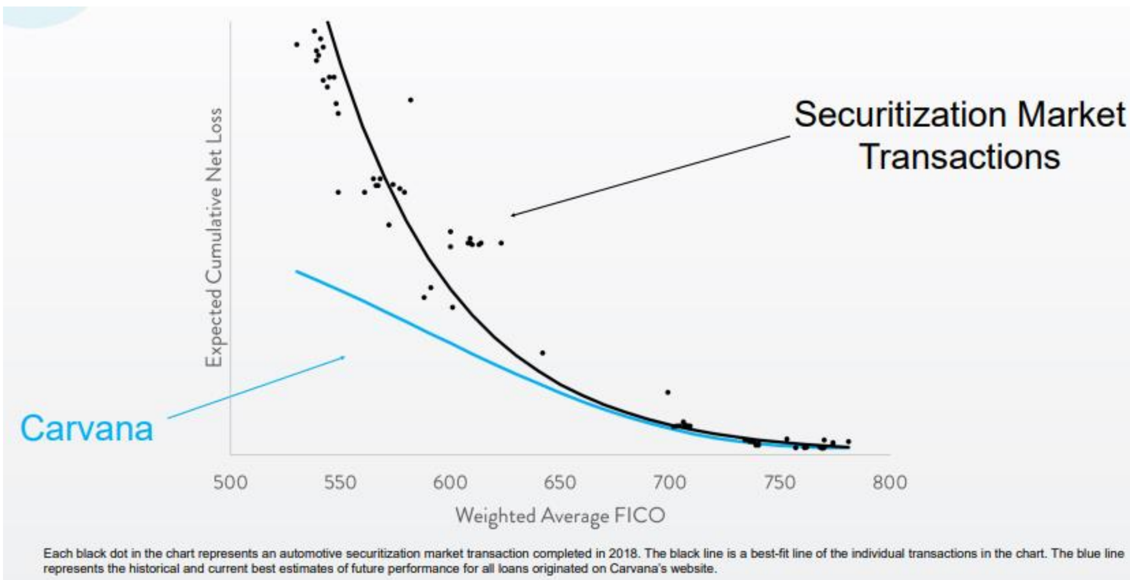
Source: Company investor relations

Carvana's cumulative net loss (CNL) is lower than the equivalent weighted average FICO of other securitization market issuers.

Quality	Carvana Deal Band	FICO	Carvana CNL range	Public Comp	FICO	CNL range
Best	Yellow	702	**2%**	CarMax Auto Finance (CAF)	706	**2.0 - 2.2%**
Medium	Orange	567	**10%**	Exter Financial	568	**18%+**
Lowest	Blue	508	**20%**	American Credit Acceptance	545	**25%+**

Source: Saga Partners, Company investor relations

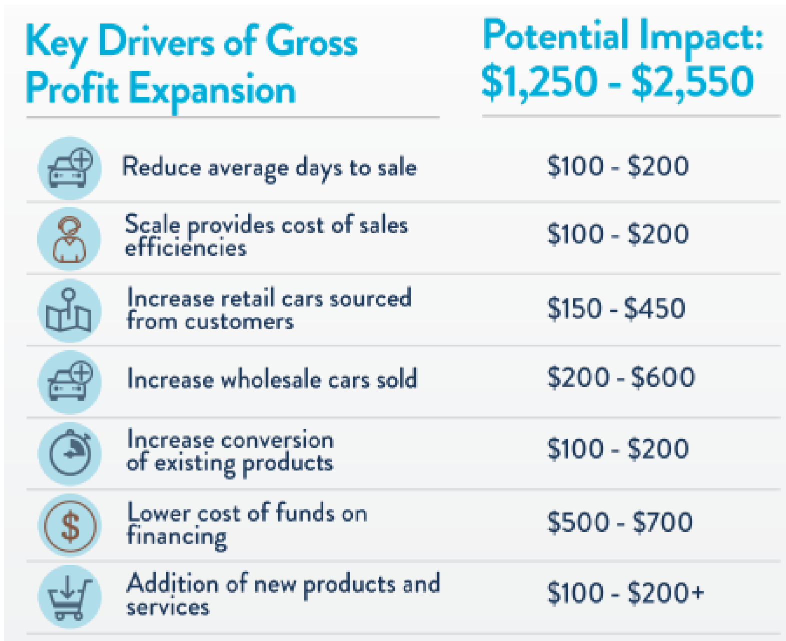
The chart below also reflects how Carvana's loans have lower expected cumulative net losses to other securitization market transactions with comparable weighted average FICO scores.



Source: Investor Day Presentation

Total GPU Opportunity

During Carvana's Investor Day in 2018, they listed the potential drivers of gross profit growth totaling $1,250 - $2,550 in potential GPU expansion, which implied a GPU of **$3,500 - $4,500 at scale**. Note management's long-term margin guidance of a gross margin of 15%-19% at scale would imply a gross profit of **$2,800 - $3,600 on a $19,000 vehicle.**



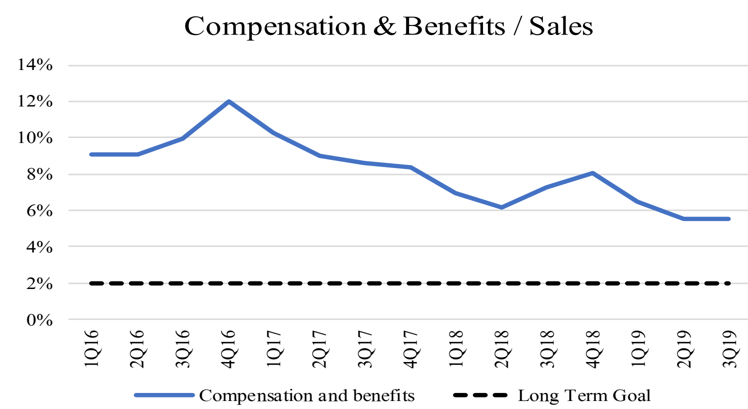
Key Drivers of Gross Profit Expansion	Potential Impact: $1,250 - $2,550
Reduce average days to sale	$100 - $200
Scale provides cost of sales efficiencies	$100 - $200
Increase retail cars sourced from customers	$150 - $450
Increase wholesale cars sold	$200 - $600
Increase conversion of existing products	$100 - $200
Lower cost of funds on financing	$500 - $700
Addition of new products and services	$100 - $200+

Source: Investor Day Presentation

3. Demonstrate operating leverage

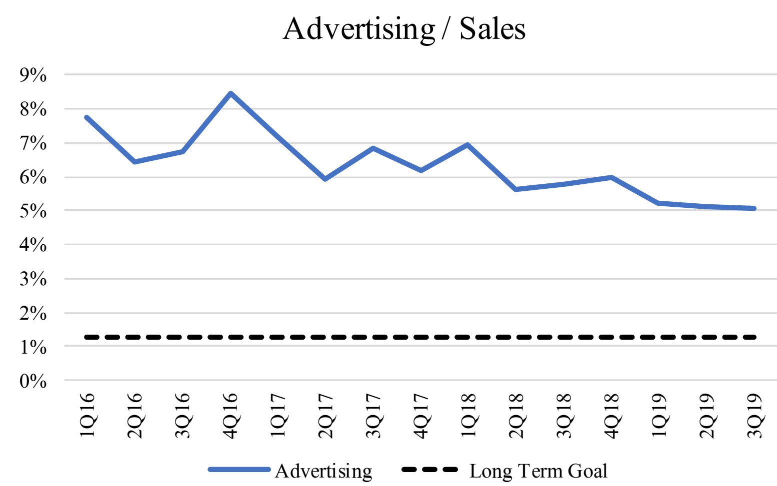
Management's third priority is to demonstrate operating leverage as the company continues to scale. The charts below show each SG&A line item as a percent of sales.

<u>Compensation and benefits</u> consists of: fulfillment and customer service advocates who do last mile delivery, auto hauler drivers who transport cars from IRCs to local market hubs, technology & corporate expense who handle customer calls, title/registration, and corporate, R&D, finance, HR, senior management, etc. In the long-term, 4/5th of compensation & benefits will consist of fulfillment & customer service and 1/5th will consist of technology & corporate.



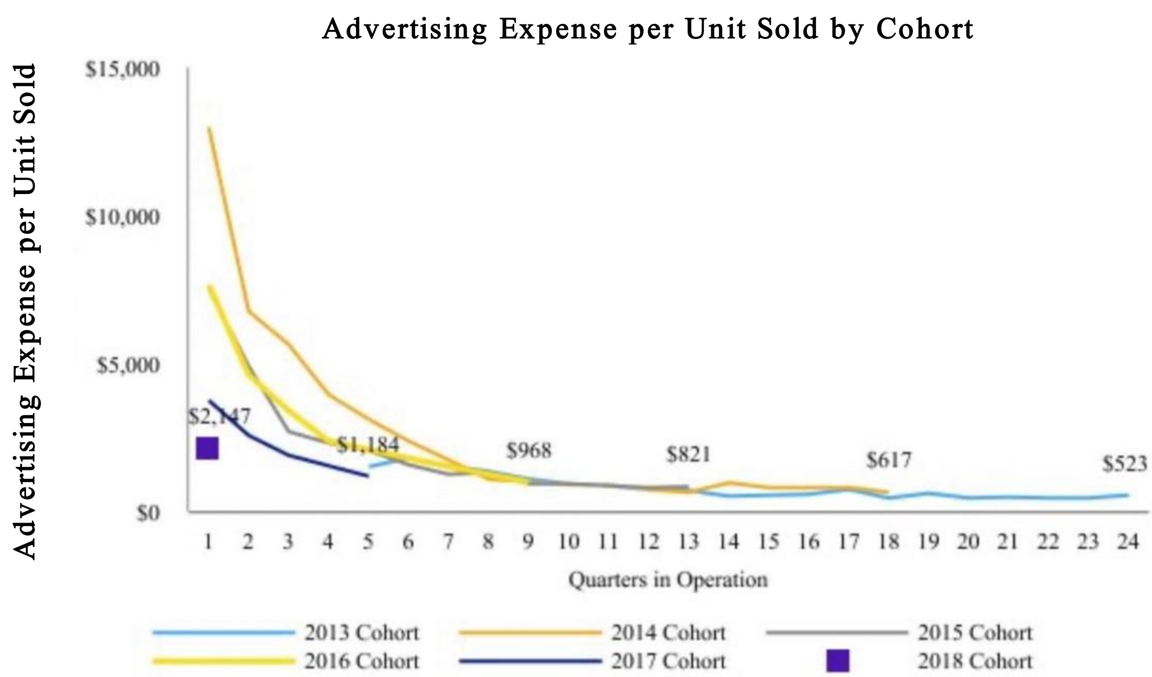
Source: Saga Partners, Company filings

<u>*Advertising expense*</u> has historically declined as markets ramp up/mature with accumulated awareness and word of mouth.



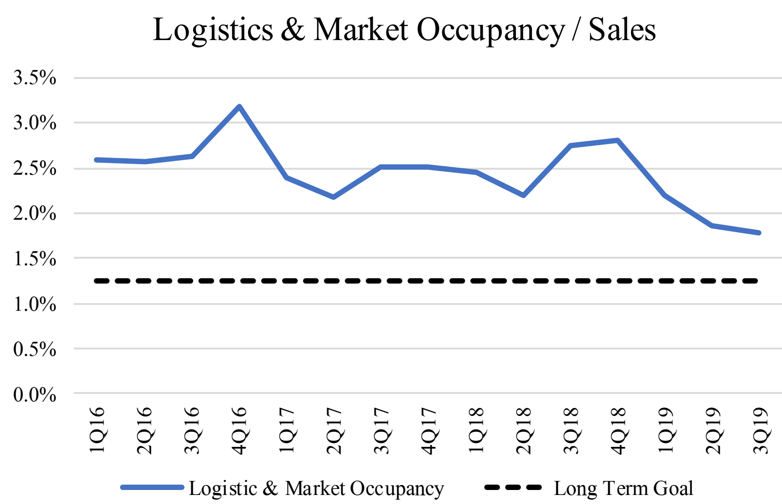
Source: Saga Partners, Company filings

Each new cohort reflects lower initial advertising expense per unit sold as new markets benefit from nearby advertising spend and quicker ramp up in unit sales.



Source: Carvana 2018 Annual Report

Logistics & Market Occupancy costs decline with scale as capacity utilization increases and adding more IRCs over time reduces freight times and distance between customers and the cars they purchase.



Source: Saga Partners, Company filings

Unit Economics at Scale

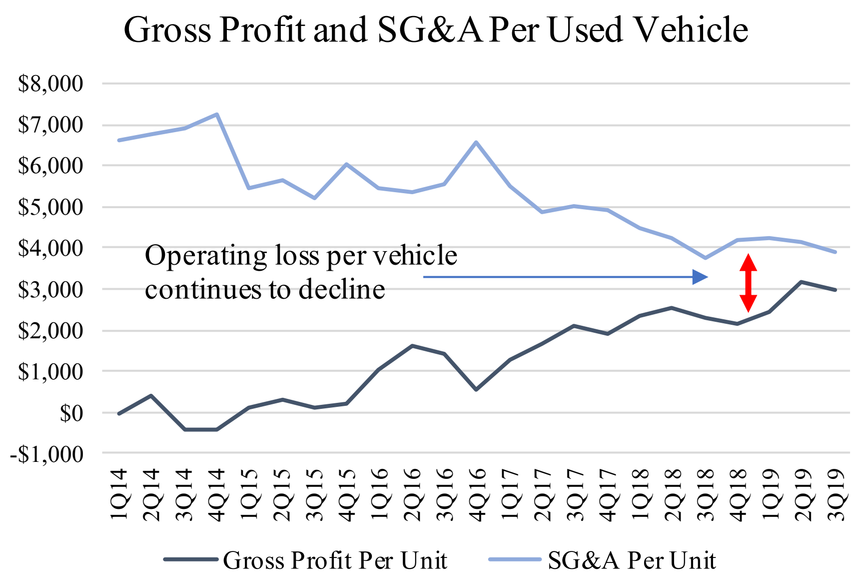
Management provided long-term margin goals, reflecting SG&A costs declining to 6%-8% of sales vs. the 18.7% during 3Q19. At scale, management is targeting 8%-13.5% EBITDA margins and 7.5%-12.5% EBIT margins.

PROGRESS TOWARDS OUR FINANCIAL OBJECTIVES

	FY 2016	FY 2017	FY 2018	Q3 2019	Long Term Target
YoY Revenue Growth	180%	135%	128%	105%	–
Gross Margin (incl. Gift / ex. Gift)	5.3%	7.9%	10.1% / 10.3%	12.6% / 12.7%	15 – 19%
Advertising	7.4%	6.5%	5.7%	5.0%	1.0 – 1.5%
SG&A ex. Advertising and D&A (incl. Gift / ex. Gift)	21.1%	18.2%	14.9% / 14.5%	13.0% / 12.7%	4.5 – 5.5%
D&A	1.3%	1.3%	1.2%	1.0%	0.5 – 1.0%
SG&A Total as % of Revenue (incl. Gift / ex. Gift)	29.8%	26.0%	21.7% / 21.3%	19.0% / 18.7%	6 – 8%
Net Loss Margin (incl. Gift / ex. Gift)	(25.5)%	(19.1)%	(13.0)% / (12.4)%	(8.4)% / (8.0)%	–
EBITDA Margin (ex. Gift)	(23.2%)	(16.9%)	(9.9%)	(5.1%)	8 – 13.5%

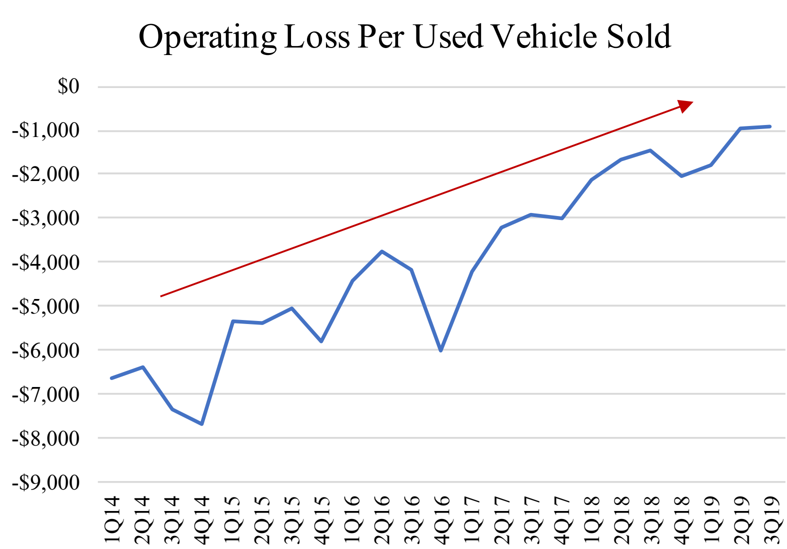
Source: Company filings

The chart below shows how gross profit per unit has consistently grown over time as unit volumes have increased while SG&A per unit has declined as fixed costs have scaled.



Source: Saga Partners, Company filings

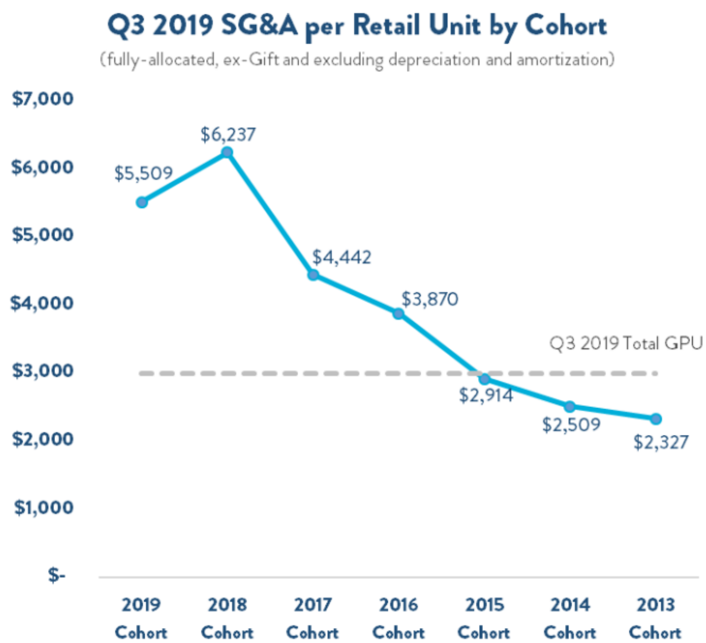
While Carvana is still scaling its high fixed-cost operating structure, the operating loss per vehicle has improved significantly and Carvana will be earning an operating profit per vehicle as unit volumes continue to grow.



Source: Saga Partners, Company filings

As of 3Q19, 80% of Carvana's markets, accounting for 97% of retail unit sales, had greater gross profit than advertising and in-market operating expenses, and 14 markets, accounting for 35% of retail unit sales, were generating positive EBITDA after allocating for all centralized logistics and corporate expenses. Newer cohorts are reaching positive EBITDA faster than prior cohorts. For example, Atlanta reached positive EBITDA 21 quarters after launch while newer markets reach positive EBITDA in just 10-14 quarters.

In the last quarterly letter, management provided SG&A per Retail Unit by Cohort which shows the operating leverage of Carvana's business model as unit volumes grow. The older cohorts (2013, 2014, and 2015) are still growing at high rates but are generating positive EBITDA. This indicates cohort expenses improved through increased scale and efficiency gains.



Source: Company Quarterly Letter

Assuming an average used vehicle sold for $19,000, Carvana would earn a gross profit of $2,800 - $3,600 and an operating income of $1,300 - $2,500 per a used vehicle.

Unit Sales Price	$19,000	
Gross Profit Per Unit	2,850	3,610
Gross Profit Margin	*15%*	*19%*
SG&A Expense	1,140	1,520
as % Sales	*6%*	*8%*
EBIT	$1,330	$2,470
as % Sales	*7%*	*13%*

Source: Saga Partners

Competitive Advantage / Barriers to Entry

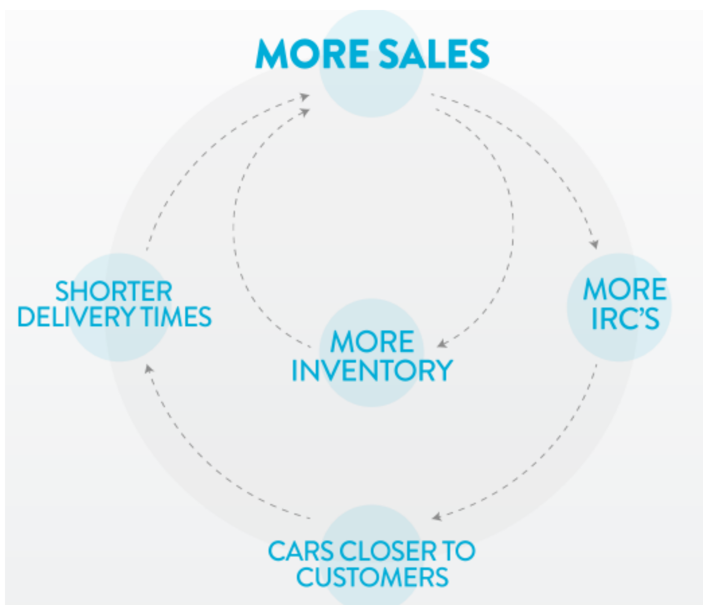
Scale

Relative size is very important in e-commerce. Similar to what happened in the general merchandise e-commerce industry with Amazon dominating the U.S. space, once Carvana establishes itself as the leading online auto dealer and volumes pass a certain threshold, it will be very difficult for any competitor to scale.

Demand generates further demand. As Carvana moves into new markets, demand will increase, which enables Carvana to carry more inventory. A broader vehicle inventory further improves their offering across the entire market, enabling them to increase market share. Higher volumes and more inventory mean more IRCs and therefore shorter delivery times and lower transportation costs.

If one day Carvana has 100,000 vehicles available on their website while the second largest online car dealership has 20,000, Carvana is more likely to have the type of car a customer is looking for, sell it for a lower price, and deliver is faster. That drives more customers to purchase from Carvana, which helps them grow vehicle inventory further, which attracts more customers, etc.

Carvana is a business that becomes better and as it gets bigger. Its value proposition only becomes stronger which strengthens its relative advantage over competitors. Once the self-reinforcing flywheel begins rolling, it will be very difficult for traditional dealership or relatively smaller competitors to compete.



Source: Investor Presentation

Data

Since the entire customer transaction happens digitally, Carvana is able to use its data and algorithms to help determine the vehicles it makes available to customers, the fair price of those vehicles, accurate trade in value to offer, the financing terms, and VSC and GAP waiver coverage options available. Algorithms establish prices for vehicles based on recommended initial retail price points as well as retail price markdowns for specific vehicle-based factors, including: sales history, consumer interest, and prevailing market prices. Data controls the logistics infrastructure which enables them to offer customers fast, specific and reliable delivery times. With financing, the more data Carvana accumulates the better they can underwrite loans.

Logistics Network

Third party automobile haulers typically run at very low occupancy and indirect routes, therefore the average cost to ship a car on a per mile basis is pretty high and often takes several weeks. By transporting vehicles in-house through its hub and spoke logistics network, Carvana is able to significantly lower the time and cost to ship a car, estimated to cost less than $0.20/mile vs. a third party's average $0.75-$1.00 per mile. As Carvana builds more IRCs/hubs, transportation costs and times will decline.

Competitors

Vroom

Currently the second largest online automobile dealer with a similar model to Carvana is Vroom. Recent reports state Vroom has raised a total $721 million in capital with a potential company value over $1 billion. Vroom has one vehicle reconditioning center in Houston and also partners with third party reconditioning facilities. In 2018, Vroom laid off about 30% of its staff after a failed attempt at building brick and mortar car dealerships. With size being very important to its e-commerce platform, Vroom has a lot of room to make up, only having ~4,800 vehicles available for sale on its website.

CarMax

CarMax is probably the most comparable publicly traded company to Carvana since it does not offer parts & services like the traditional dealership, only selling used cars, and like Carvana, has a significant finance arm called CarMax Auto Finance (CAF). One of CarMax's primary differences is it still focuses on using a storefront and salesperson to provide an omni-channel sales and distribution strategy where customers can buy a car in one of its store locations or through a combination of online and in-store. CarMax has about 200 store fronts and a nationwide inventory of ~70,000 vehicles. While CarMax has extensive inventory available, the majority of customers purchase a car from their local storefront. In fiscal 2019, ~34% of vehicles sold were transferred between stores at the request of the customer. CarMax primarily uses third party transportation providers for longer hauls which puts it at a transportation cost disadvantage (see logistics network section above).

CarMax has been very successful competing with traditional dealerships by using customer-friendly sales practices and utilizing its extensive customer/pricing data. CarMax's salespeople receive the same commission regardless of the car they sell while salespeople at traditional dealerships earn commission by selling vehicles that earn the highest possible gross profit rather than selling customers the vehicle they actually want or need.

While CarMax has been successful historically (growing sales at a ~10% CAGR of the last cycle) and will likely continue to be successful in the foreseeable future relative to traditional used car dealerships, CarMax's current omnichannel store front and salesperson operating model, combined with higher transportation costs, give it a cost structure disadvantage to Carvana. Carvana's capital investments have largely gone towards its technology/online experience, centralized inventory, and logistics network while CarMax's capital investment has gone into opening specific markets and its salesforce This provides Carvana with more attractive unit economics, helping it scale at a much faster rate.

Capital Requirements, Balance Sheet, and Liquidity

Obviously when a company is generating operating losses as it scales, it requires capital to fund those losses and the other investments in inventory, vending machines, and IRCs.

Since 2014 through 3Q19, Carvana used ~$2.2 billion in cash, financed through debt (~$1.1 billion) and issuing equity (~$1.2 billion).

Cash Flows 2014-3Q19 ($ in millions)	
Funds from Operations	(999)
Change in Working Cap.	(670)
Operating Cash Flow	(1,669)
Capex	(514)
Dividends	(49)
Use of Cash	($2,232)
Chg. in Debt	1,137
Issue stock	1,216
Other Funds	17
Source of Cash	$2,370
Chg. in cash	$138

Source: Company filings, Saga Partners

Since Carvana went public it has issued two follow-on offerings and two notes offerings, raising both equity and debt. While capital raises are often looked down upon by investors, Carvana's dilution was fairly limited, especially considering the capital is helping support the Company's 100%+ growth rate.

Management stated the follow-on offering earlier this year provides Carvana the ability to be more aggressive in their growth and adds financial flexibility with high yield debt replacing the sale-leaseback financing used to finance capex. They do not expect to issue any more equity in the near-term and feel good about their current capital cushion.

Offering	Date	Shares Issued (in mil)	Offer Price	Net Proceeds (in mil)	Dilution
IPO	4/30/2017	17.25	$15.00	$242	
Follow-On	4/30/2018	6.6	$27.50	$172	4%
Follow-On	5/24/2019	4.8	$65.00	$298	3%
Senior Unsecured Note	5/24/2019			$250	
Total				$962	

Source: Company filings

At the end of 3Q19, Carvana had ~$650 million in liquidity.

($ in 000's)	
Cash & Equivalents	94,943
Availability under short	482,144
Availability under sale-	75,000
Total Liquidity	$652,087

Source: Company filing

Note: Floor Plan Facility was increased on 11/1/19 adding ~$73.6 million in available liquidity based on 9/30/19 inventory levels.

Most of the inventory and capex related to IRCs, vending machines, and haulers have access to adequate financing, therefore liquidity will be required to fund the operating losses. The majority of Carvana's liquidity is needed to fund the operating losses until they scale to positive operating cash flow.

Based on current volumes, Carvana is using ~$50 - $80 million in cash a quarter. Operating losses should decline as fixed costs scale at which point the gross profit of each incremental vehicle sold should largely drop to the bottom line. With ~$650 million in liquidity available, Carvana has a good runway to fund expected operating losses and it is unlikely they will need to raise additional capital in the foreseeable future.

($ in millions)	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19
EBITDA	(44.5)	(41.8)	(44.6)	(63.4)	(56.0)	(32.5)	(56.2)
Interest Expense	(3.5)	(4.2)	(5.6)	(11.7)	(15.6)	(19.3)	(21.0)
Cash Burn	**($48)**	**($46)**	**($50)**	**($75)**	**($72)**	**($52)**	**($77)**
TTM Cash Burn				**($219)**	**($243)**	**($249)**	**($276)**

Source: Company filings

Management / Ownership

Ernie Garcia III is the founder and CEO of Carvana. Carvana was started as a subsidiary of DriveTime and was later spun out during the IPO in 2017. DriveTime is a used car dealer and finance company based in Tempe, Arizona that is owned and managed by Ernie's father, Ernie Garcia II. While working for DriveTime from 2007 to 2012, Ernie III came up with the idea for Carvana and his father encouraged him to start the Company.

Carvana went public in 2017 as an "up-C" corporate structure, which occurs when an existing LLC goes public through a newly formed corporation structured as a holding company that owns an interest in the LLC. The up-C structure allows the LLC to go public but maintain the LLC status and therefore the tax benefits of a partnership for the LLC owners as well as enable the owners to maintain more control of the business.

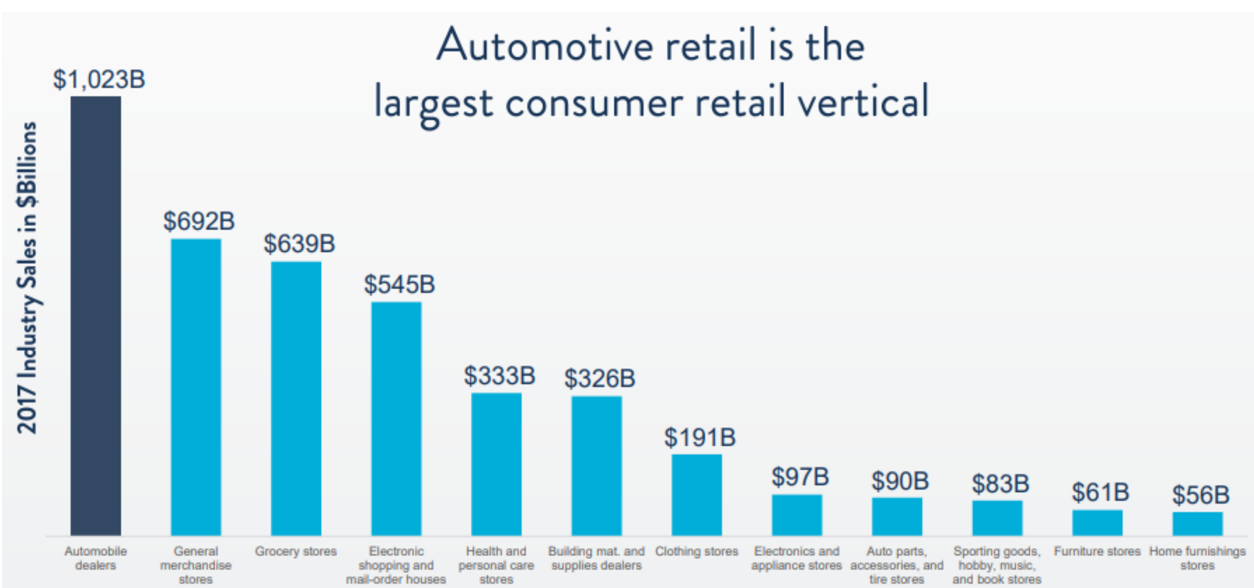
What really matters is Ernie Garcia III and Ernie Garcia II control 97% voting power in Carvana. They primarily own Class B shares in Carvana which have 10-1 voting rights and can be converted into Class A shares which are the publicly traded shares. As of the last proxy, Ernie Garcia II's ownership in Carvana is worth ~$7.6 billion and Ernie Garcia III's ownership is worth ~$1.3 billion based on current market prices.

Name	Class A Shares (in mil)	Class B Shares (in mil)	Total Shares if converted to A (in mil)	Economic Interest in CVNA	Value at $85/sh (in mil)
Ernie Garcia II	1,578	87,702	89,280	58%	$7,588,809
Ernie Garcia III	93	15,617	15,710	10%	$1,335,315

Source: Company filings

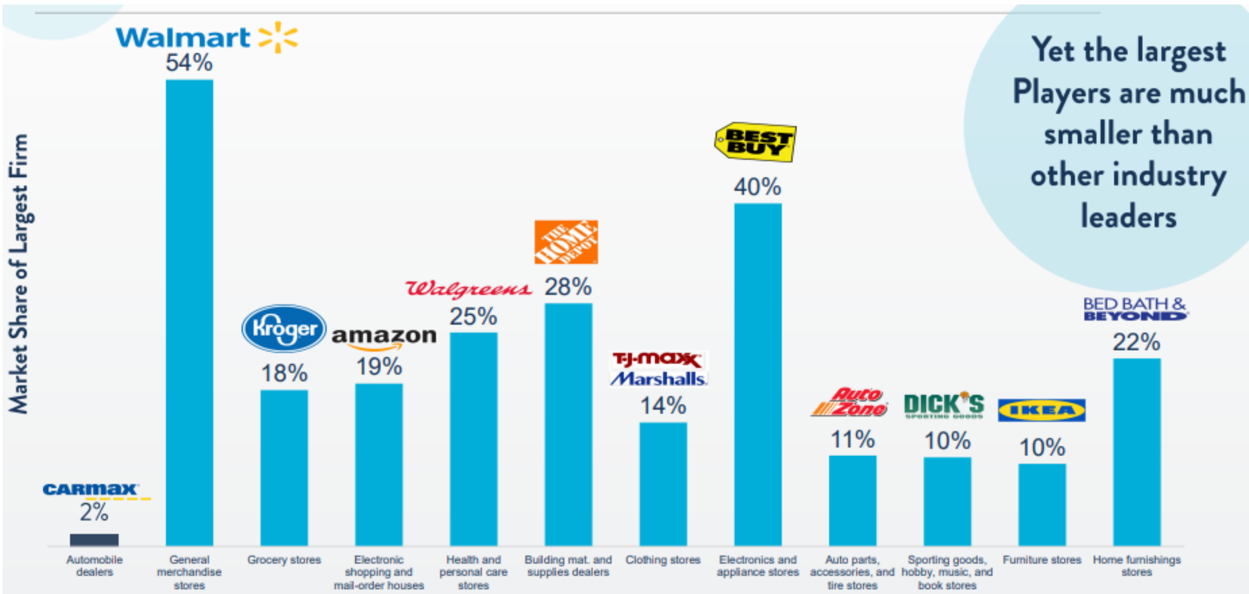
Market Size / Opportunity

Automotive retail is the largest consumer vertical in the United States with over $1 trillion in sales.



Source: U.S. Census

Despite its size, it is the most fragmented vertical with the largest player only having 2% market share. The largest players in each vertical typically have ~20% market share.



Source: U.S. Census, public company filings

Of the ~$1 trillion in automotive retail sales, ~$764 billion was used car sales. There are roughly 270 million automobiles in the U.S. and the average consumer buys a car every 6.75 years, resulting in ~40 million used car transactions each year (270 million cars / 6.75 years).

One can argue that if there were lower friction costs in time, money, and frustration during the purchase of a used car, people would increase the frequency they buy and sell cars. If the average used car price were ~$1,000 - $1,500 cheaper for the same quality car, only took 10-15 minutes to purchase online, and would get delivered directly to your home, it's reasonable to expect the frequency with which people buy cars would increase.

If the average car owner bought a car every 6 years compared to the current average of 6.75 years, the total number of used car transactions would increase to 45 million, therefore increasing the total market by 13%. If the frequency fell to every 5 years, total transactions would increase to 54 million vehicles a year.

Time Between Transactions (years)	3	4	5	6	7
Annual Transaction (in millions)	90	68	54	45	39
Market Growth	125%	69%	35%	13%	-4%

Source: Saga Partners

Carvana has grown at a rapid rate since launching in Atlanta in 2013. Atlanta reached an estimated 1.94% market share at the end of 2018; growing just under 30% that year. Nashville and Charlotte, the 2014 cohort, reached 1.11% market share and are grew over 50% that year. Newer markets have followed similar trends in market share gains.

Management estimates they can now reach ~67% of the total U.S. population based on their existing markets, up from 59% at the end of 2018 and they believe Carvana will ultimately be able to reach 95% of the U.S. population. Simply assuming that Carvana does not open up any more markets (highly unlikely) and the current cohorts follow similar market share gains as prior cohorts, Carvana could reach over 500,000 retail units within four years (see appendix 1). Current consensus estimates have Carvaba reaching 500,000 units within three years, providing a 40% CAGR from 2019 expected units.

Management has outlined their goal of reaching 2 million units, or ~5% market share based on 40 million cars sold per year. At this volume, vehicles are expected to average 30 days to sale; meaning Carvana would require about 165,000 available cars on their website. That level of selection would be over 10x as many cars that are available from all dealers and private-party sellers in the average market.

The following tables show a sensitivity analysis reflecting potential market share of all U.S. used vehicle transactions and income per transaction based on management's long-term guidance. These tables are a simple, high level, wide ranging analysis of potential long-term outcomes using unit economics/margins at scale. They are not at all comprehensive and are just to show the potential if Carvana continues its strong trends.

Keeping total U.S. used vehicle transactions fixed at 40 million per year, 2.5% - 10.0% market share provides 1 – 4 million retail units sold. A 6.5%-14.0% EBIT margin on an average used vehicle price of $19,000 provides between ~$1,250 and $2,750 in EBIT. Based on the below scenarios, EBIT would range between $1.3 billion (2.5% market share and $1,250 EBIT) and $11 billion (10.0% market share and $2,750 EBIT).

Total Used Vehicle Transactions (in 000's)
40,000

Total Operating Income

		Carvana Total Market Share			
		2.5%	5%	7.5%	10%
		Carvana Retail Units Sold (in 000's)			
EBIT Per Vehicle		1,000	2,000	3,000	4,000
	$1,250	$1,250,000	$2,500,000	$3,750,000	$5,000,000
	$2,000	$2,000,000	$4,000,000	$6,000,000	$8,000,000
	$2,750	$2,750,000	$5,500,000	$8,250,000	$11,000,000

Source: Saga Partners

Assuming interest expense remains ~2 and a 25% tax rate, net income would range between 3.5% and 9.5% of sales, or $650 - $1,775 per vehicle, providing a potential range based on the below scenarios between $650 million - $7.1 billion. Interest expense as a percent of sales will likely decline as Carvana's growth slows, margins scale, and free cash flow jumps helping lower interest costs on debt facilities, therefore net margins are likely conservative assuming Carvana reaches scale. It's expected that Carvana will likely continue to finance inventory levels with the asset-based Floor Plan Facility given the attractive financing for such operating activities.

Total Net Income

		Carvana Total Market Share			
		2.5%	5%	7.5%	10%
Income Per Unit		Carvana Retail Units Sold (in 000's)			
		1,000	2,000	3,000	4,000
	$650	$650,000	$1,300,000	$1,950,000	$2,600,000
	$1,215	$1,215,000	$2,430,000	$3,645,000	$4,860,000
	$1,775	$1,775,000	$3,550,000	$5,325,000	$7,100,000

Source: Saga Partners

If you put a market average P/E multiple of 18x earnings, market cap would range between $12 billion - $128 billion.

Market Cap (18x earnings)

		Carvana Total Market Share			
		2.5%	5%	7.5%	10%
Income Per Unit		Carvana Retail Units Sold (in 000's)			
		1,000	2,000	3,000	4,000
	$650	$11,700,000	$23,400,000	$35,100,000	$46,800,000
	$1,215	$21,870,000	$43,740,000	$65,610,000	$87,480,000
	$1,775	$31,950,000	$63,900,000	$95,850,000	$127,800,000

Source: Saga Partners

The next question is how fast can Carvana reach these volume levels. The first market, Atlanta, took six years to reach ~2% market share. With subsequent market cohorts following similar trends, Carvana could easily reach 500,000 units within three years or by 2022. Management set a goal of reaching 2 million units or 5% market share.

If Carvana is the dominant online platform for buying and selling cars, and continues to offer a better customer experience, lower prices, and more selection than any alternatives, there really isn't a reason for the 5% market share ceiling. As Carvana builds out transportation/logistics infrastructure, IRCs, vending machines, and inventory levels, it's not unreasonable for Carvana to take 10% market share (4 million units) or even 20% (8 million units) one day.

If it takes 10 years for Carvana to reach 4 million units (10% market share) and they earn $1,215 per vehicle, putting an 18x multiple on those earnings (CarMax's current multiple on high single digits expected growth), provides an ~$87.5 billion market cap, or a 20% CAGR from today's price assuming nominal share dilution. If Carvana is still able to grow at a 20%+ rate at that time, it's reasonable to expect the market to place a higher multiple on those earnings. These scenarios are simply to put rough numbers on the total market opportunity and margin potential and are not at all comprehensive of potential outcomes.

What you can see is if Carvana is successful in winning market share from traditional brick and mortar used car dealers by reducing frictional costs and reaches scale margins, there is significant potential upside. Shares look very attractive based on the current ~$13 billion market cap if Carvana is able to continue to gain market share, scale operating leverage, and increase its competitive advantages.

Risks

1. **Execution:** Carvana is in the early stages of its development and disrupting an industry. While Carvana's trends look strong, they have to continue building its competitive advantages. It is reasonable to expect other companies to try and copy Carvana's online car buying experience, delivery, and logistics network although the larger Carvana gets, the more difficult its model will be to replicate.

2. **Future growth, capital requirements & operating losses**: Carvana requires significant upfront capital investments and incurs operating losses until it reaches scale. If Carvana does not continue its strong growth trends then it will not reach profitability. While it has access to $650 million in liquidity, if operating losses continue, they may require additional equity capital raises that dilute shareholders.

3. **Economic cycle**: Automobile purchases are significant consumer purchases and a downturn in the economic cycle could cause consumers to delay car purchase and slow Carvana's growth. That said, one could argue that during an economic downturn, demand for used cars would grow relative to used cars, and Carvana's lower priced used cars would help drive adoption of Carvana's online retail model.

Conclusion

Carvana is disrupting the used car industry through its online platform to buy and sell cars. By offering a better overall customer experience, wider selection, and lower prices, Carvana is able to grow volumes at a fast rate, improve gross profit per unit, and scale fixed costs. As Carvana establishes itself as the dominant e-commerce automobile dealer, it will reasonably take significant market share in the very large and highly fragment market and earn significant economic profits.

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