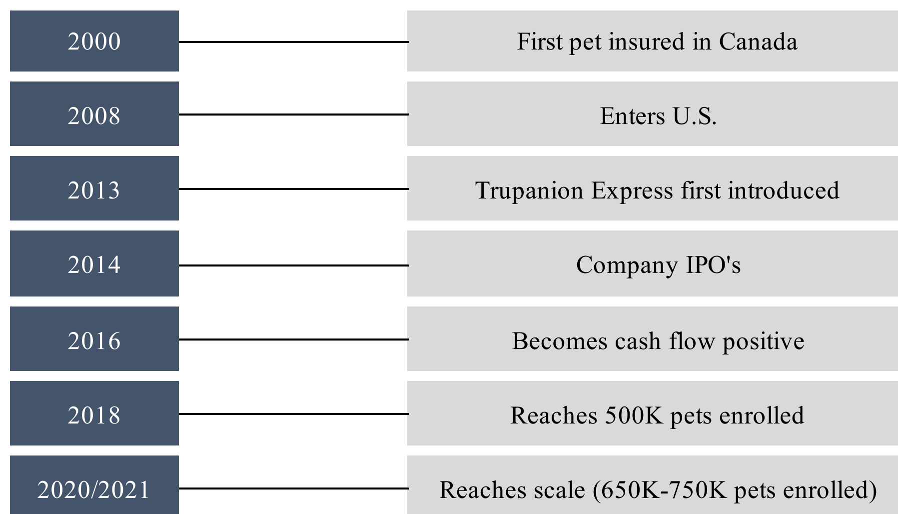
Trupanion, Inc. (TRUP)

Investment Thesis

- U.S. pet insurance industry is under-penetrated with a large addressable market.
- Trupanion is building a durable advantage as the low-cost pet insurance provider, growing economies of scale, and strengthening its network of veterinary hospitals through its nation sales force of Territory Partners.
- Founder-led with a strong CEO that is aligned with shareholders.
- Valuation looks very attractive based on high IRR reinvestment opportunities, market growth, and strong cash flow generation at scale.

Trupanion Background

Headquartered in Seattle, Trupanion is a monthly subscription service provider of medical insurance for cats and dogs in the U.S. and Canada. The current CEO started the company in Canada in 2000 and entered the U.S. in 2008. Since then it has grown to be the second largest pet insurer in North America.

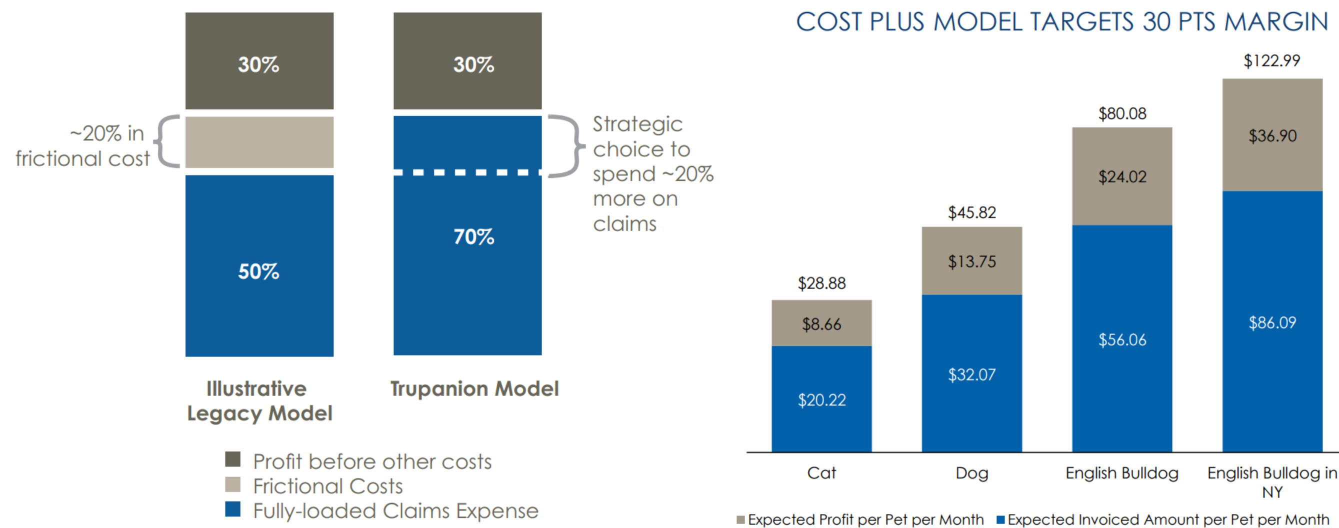


Source: Saga Partners

Before Trupanion entered the U.S., pet insurance was typically a bad product. Pet insurers set premiums at a low price point but excluded many of the conditions causing a bad customer experience. Trupanion was the first pet insurer to offer comprehensive insurance that covered hereditary and congenital conditions, the health issues pets are most likely to have. Trupanion pays 90% of the veterinary costs with the pet owner paying 10%. There are no payout limits or lifetime maximums with the only costs not covered related to pre-existing conditions prior to the pet's enrollment and routine or preventative care such as examination fees. The goal of the policy is to be a simple and easy to understand medical plan that provides pets with the best medical care while helping pet owners manage the costs.

While Trupanion is an insurance company in that it pools and redistributes risk, the business looks more like a monthly subscription service. Because pet insurance claims are very predictable, uncorrelated, and typically low dollar amounts, Trupanion can very accurately predict its monthly costs. In other words, it's an insurance company with very short tail risks, therefore it can operate more on a cash flow basis with nominal float.

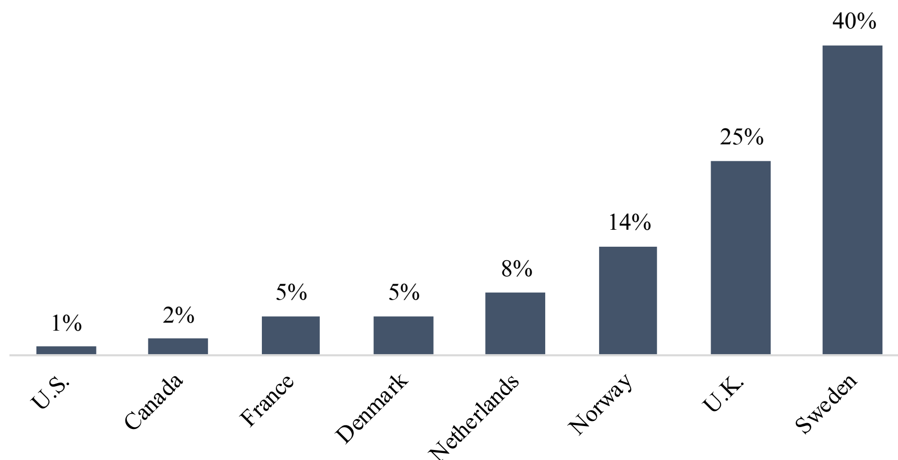
The company uses a *"cost-plus"* pay as you go monthly subscription model. After accumulating nearly two decades of data, they are able to accurately predict the "average cost" of a pet based on breed, zip code, age, and sometimes even the specific veterinary hospital. Once they know the average cost of a specific pet category, they add a 30% margin in order to target a 70% claims payout ratio, while most pet insurance competitors payout ratio is closer to 50-60%. Part of Trupanion's *"pricing promise"* is to always price the premium with a target 70% veterinary claims ratio so customers know they are getting the same value regardless of their location or pet.



Source: Trupanion Investor Relations

U.S. Pet Insurance Industry

Pet insurance in the U.S. is significantly underpenetrated if you compare it to other developed countries. In the U.S., only about 1.5-2.0% of pets have insurance while it's 5% in France and Denmark, 14% in Norway, 25% in the UK, and 40% in Sweden. Even Australia, South Africa, and Japan have 5-15% penetration rates.



Source: Trupanion Investor Presentation

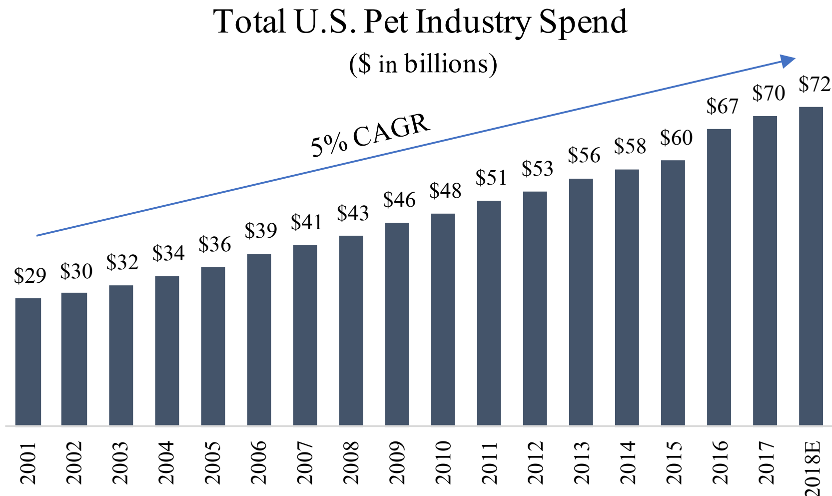
The important question is why is there such a large discrepancy relative to other developed countries when the U.S. has typically been a leader in financial services?

One view for lower penetration rates is the average person would be financially better off simply saving their monthly premium and paying out veterinary costs as they occur with their specific pet. That view is more a statement on the general purpose of insurance than specifically pet insurance. People buy insurance of any kind to help them pay for large, unexpected or unplanned expenses for which they would have trouble paying for out-of-pocket. The reason for not buying pet insurance would be the same for not buying life, rental, home, dental, eye, or general health insurance since it will no longer be required by law.

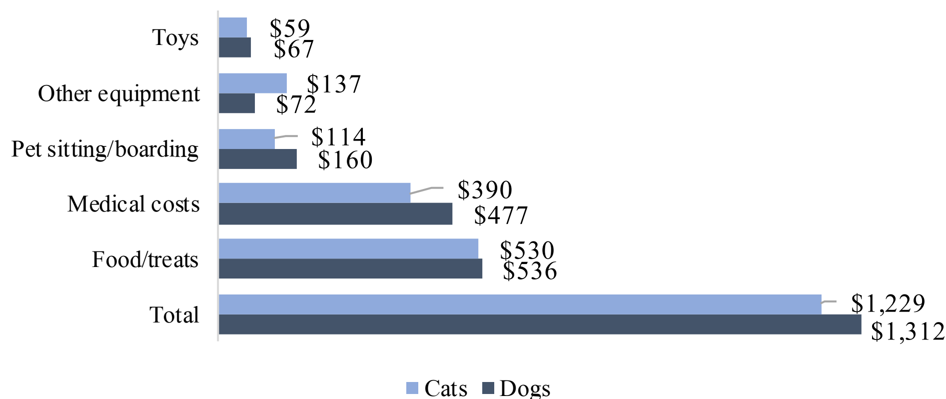
While the average pet owner would be better off saving the monthly premium and paying out vet expenses as they occur, the average pet own usually only owns 1-3 pets at a time. They do not have the benefit of diversifying the risk among thousands of pets. If one of their specific pets becomes sick, the owner can be faced with a hefty vet bill. As more expensive and sophisticated veterinary care becomes more prevalent, including radiation therapy, CT scans, and transplants, customers are increasingly valuing the benefit that pet insurers provide by taking on the risk of potentially expensive procedures in exchange for consistent premiums.

People buy insurance for catastrophe protection. The question any pet owner must ask when deciding to get pet insurance is how much money they are willing to spend on their pet if it has a serious illness or condition. Is it $1K, $5K, $10K? If a pet owner is only willing to spend a total of $1K on vet bills before putting their pet down, spending $600-$700/year in premiums may not make sense financially. If they are likely to spend much more on their pet, to the point it puts a burden on the average person's budget, insurance likely makes sense.

The lower U.S. pet insurance penetration rates are not because disposable income is lower, or U.S. pet owners love their pets less. According to the American Pet Products Association (APPA), U.S. consumers are estimated to spend over $72 billion on their pets in 2018, which is a nearly 70% increase over the last 10 years. A survey by Harris Interactive estimated 91% of U.S. pet owners consider their pets to be family members, 81% consider them equal members of the family, and 58% think of their pets as children. A growing number of pet owners are spending more on their pets whether its premium organic food, doggy day care, or general vet care and medicines.



Source: APPA U.S. Pet Industry Spending Figures & Future Outlook



Source: Harris Interactive, 2015

The answer to lower penetration rates is because pet insurance in the U.S. was historically a bad product. In the U.S., pet insurers historically set premiums at a low price point but excluded many of the conditions pets were most likely to have. The insurance products typically had complex policy language, coverage exclusions, and payout caps over the life of the policy and per condition. The result was a bad product with unhappy pet owners and vets reluctant to recommend insurance.

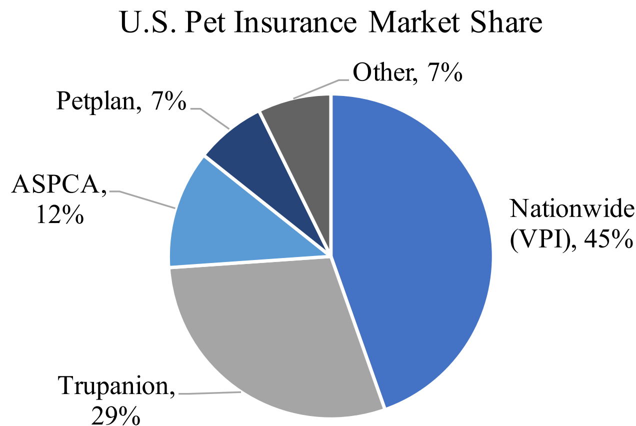
Comprehensive pet insurance started in the UK in the 1970's but did not come to the U.S. until 2008. While Nationwide (VPI) is currently the largest U.S. pet insurer and its product has been around since the early 1980s, Trupanion was the first company in the U.S. to offer comprehensive coverage. If you use other developed countries as a proxy for future pet insurance penetration rates in the U.S., it's reasonable to expect demand for pet insurance to have a long runway of growth going forward if the product provides good customer value.

The winners in insurance businesses are going to be the companies that have some franchise based on providing a specialized product, managerial talent, or better distribution. We think Trupanion checks all three boxes. There will be competitors that attempt to copy Trupanion's product offering, but we think the company has a strong head start that gives it a growing competitive advantage.

Competitors

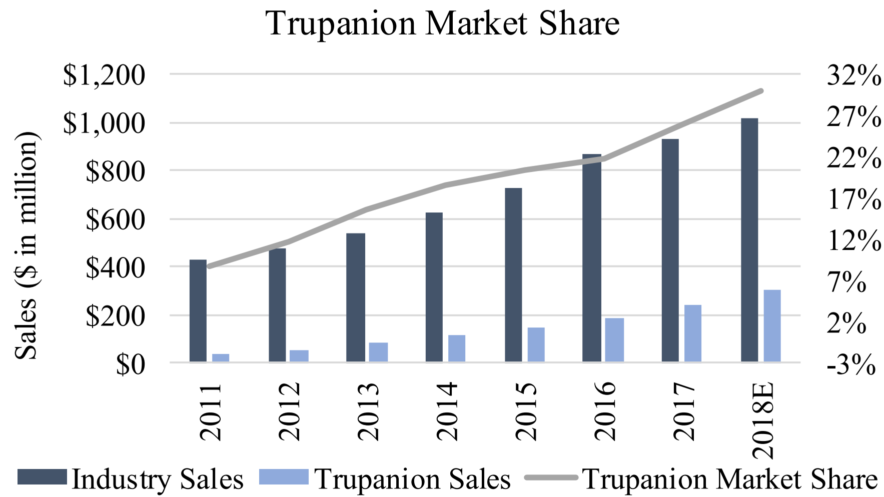
According to IBISWorld, the U.S. pet insurance industry is highly concentrated with the top four companies accounting for over 90% market share in 2018, a large increase from nearly 70% in 2013. There are an estimated 14 companies operating in the industry with the largest player being Nationwide (VPI).

The industry's increasing concentration is largely attributable to Trupanion's high growth in recent years. Trupanion's market share has grown from ~15.5% to 29.3% over the last five years and its market share of newly insured pets is closer to ~40%. Petplan has also experienced strong growth, increasing market share to ~7%. IBISWorld predicts the dominant companies to continue to use their established positions and scale within the industry to drive revenue growth for both themselves and the industry as a whole.



Source: IBISWorld 2018

While industry premium volume has grown at a 13% CAGR since 2011, Trupanion has grown at a 35% CAGR as market share reached nearly 30% in 2018. Gains in market share has primarily come by growing the total market of pet owners enrolling in pet insurance versus stealing it from competitors. Increasingly pet owners are learning about the value of having comprehensive pet insurance.



Source: IBISWorld 2018

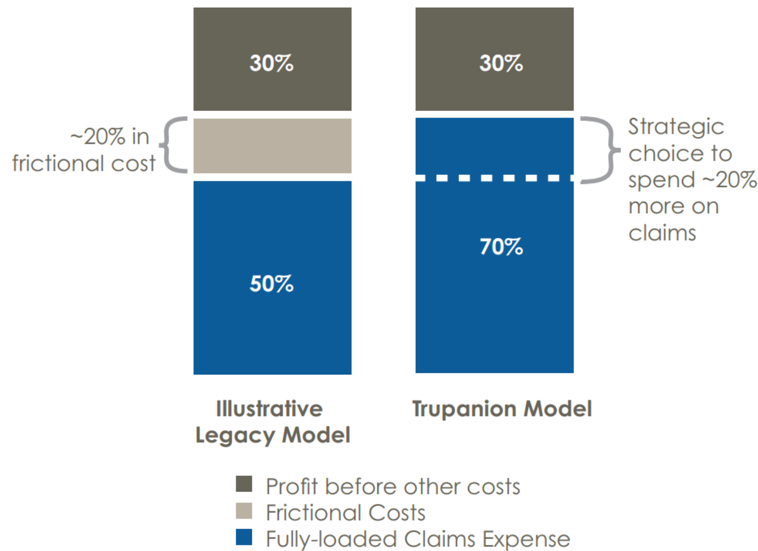
Competitive advantage

Trupanion's competitive advantage comes from a combination of being the low-cost operator, proprietary data, and their distribution model.

1. Low-Cost Provider and Economies of Scale

Trupanion's core strategy is to be the low-cost provider. They are committed to having the lowest cost to administer and the lowest cost to acquire new customers which is very difficult for any new or existing company to copy. Being the low-cost provider does not necessarily mean their product is the cheapest in the market. It means that Trupanion can consistently use a higher percentage of customers' monthly premiums toward paying veterinary invoices.

Trupanion pays ~70% of premiums collected to veterinary claims vs. the industry average of ~50-60%, meaning their value proposition is about 10-20% better than competitors. Trupanion's insurance may cost more than some products with certain exclusions but it delivers an overall better value proposition to pet owners. Competitors may underprice policies at times to boost short term growth, although that is unlikely to be a sustainable strategy.



Source: Trupanion Investor Relations

How can Trupanion price their product below competitors but still be profitable? Trupanion is able to price insurance at a lower mark up because they are vertically integrated which reduces frictional costs. Unlike most competitors that outsource insurance underwriting to a third party, Trupanion owns its insurance subsidiary. They do not have to share the profit from underwriting which cuts ~10-12% in costs.

Trupanion also has their own national salesforce of Territory Partners, actuarial team, contact center and owns their brand. In total, vertical integration eliminates between 10-20% in frictional costs that most other competitors experience.

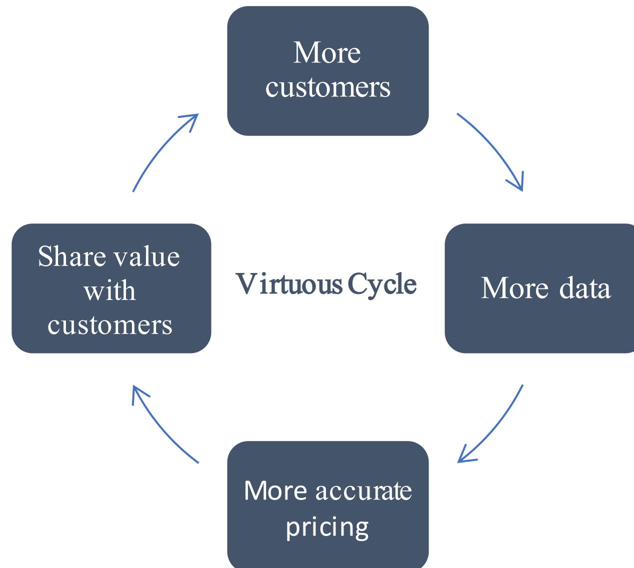
2. Data and Pricing Promise (building a brand)

Current scale and data collected over the past 15 years helps Trupanion price policies more accurately. It has a proprietary database that breaks down 1.2 million different price categories, giving them the ability to price policies down to specific zip codes and sometimes even to vet hospitals while Nationwide and other competitors still price policies by state. Even though companies like Nationwide have been in the market longer, it does not have pricing data going farther back because they only more recently started to offer more comprehensive coverage. An owner of a Dachshund in Eureka, California should not be subsidizing an English Bulldog in San Francisco. The better the data, the more accurate Trupanion is able to price specific policies so pet owners know they are receiving the promised value proposition.

Trupanion currently has ~500,000 dogs and cats insured. They are expected to reach their target adj. operating margins at scale which is somewhere between 650,000-750,000 pets and should happen by 2020/2021 (discussed below in financial section). Once a business becomes the low-cost provider at scale, it has a choice between either keeping prices higher and making more money or sharing some of the cost advantage with its customer.

On the 3Q18 earnings call the CEO stated, "today we target and spend ~70% of subscription revenue paying veterinary invoices. Once we achieve our goal of a 15% adjusted operating margin at operational scale, we intend to return any additional cost savings back to the pet owner by the way of an even better value proposition."

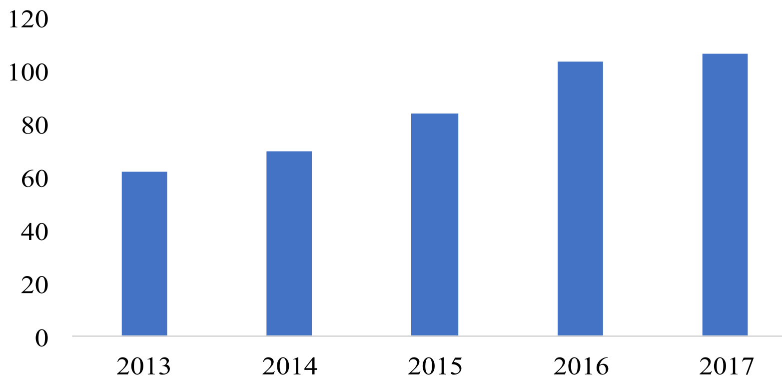
Trupanion has committed to their pricing promise of maintaining its value proposition, by always targeting a 70% payout of premiums collected. Passing on the cost advantage to customers strengthens its brand. Pet owners will know they are getting the most value when they sign up with Trupanion. It creates the powerful self-reinforcing virtuous cycle that we love to find. A company shares its economies of scale with customers, leading to higher demand, and therefore greater economies of scale.



3. <u>Distribution (Territory Partners and Trupanion Express)</u>

Distribution and customer acquisition costs are key parts of an insurer's business model. Historically, U.S. pet insurers unsuccessfully used a more direct to consumer marketing strategy. Trupanion has a different model that uses a contracted sales force called territory partners who build relationships directly with veterinarians. This was the primary strategy used in the U.K. and has so far been very successful for Trupanion with nearly 50% of new customers coming from vet referrals. Trupanion is the only U.S. pet insurer with a national sales force that directly markets to veterinarians.

Trupanion has been growing its Territory Partners sales force since 2003 in an effort to build veterinary relationships. Veterinary hospitals are very fragmented and typically owner operated. An average territory has ~2 million people, 1 million dogs and cats, and 250 hospitals. It usually takes 2-3 years of repeated visits to develop relationships with vets before they become comfortable referring pet owners. It would be very difficult and time consuming for a competitor to try and replicate Trupanion's network of Territory Partners and their relationships with veterinary hospitals.



Source: Company filings. Note 2013 is as of 3/31/14 per S-1 filing

It's important for Trupanion to continually strengthen its relationship with vets and customers. One way they did this was by improving the legacy insurance reimbursement model which was slow, inefficient, and created a bad customer experience. The legacy reimbursement model required customers to pay 100% of vet costs out of pocket, then submit a claim and wait for it to get approved and reimbursed which could take 30-45 days. Some veterinary costs can be very expensive and require customers to pay a lot of money upfront.

Trupanion created a software called **Trupanion Express.** It is a no-cost software that integrates with a vets practice management software to enable direct payment by Trupanion to vets. One of the key benefits of the software is that is provides a framework for claims automation. With claims automation, Trupanion can reduce the checkout time to seconds. Overall it removes friction and eliminates pain points for both vets and pet owners.

Legacy Reimbursement Model

Trupanion Express Model

Trupanion Express helps widen Trupanion's moat by benefiting all parties. Vets benefit because they can move forward with providing care for a sick pet, reduces non-paid accounts receivable, and saves on credit card transaction fees which can improve a vet's cash flow by ~15%. Pet owners benefit because it reduces their upfront out of pocket costs and removes having to submit a claim and waiting for the insurance company to respond. Trupanion benefits because it collects more data to further improve their pricing models, lowers variable expenses, and strengthens relationships with vets and therefore improves referral and conversion rates of new customers.

Management

Darryl Rawlings is the CEO and started Trupanion in 2000 by insuring his dog. He has a clear vision and goal of becoming the largest and best pet insurer in the world. Usually company annual shareholder letters are more marketing brochures, but Darryl writes out detailed letters that explain how he thinks about the business, its goals, opportunities, problems, etc.

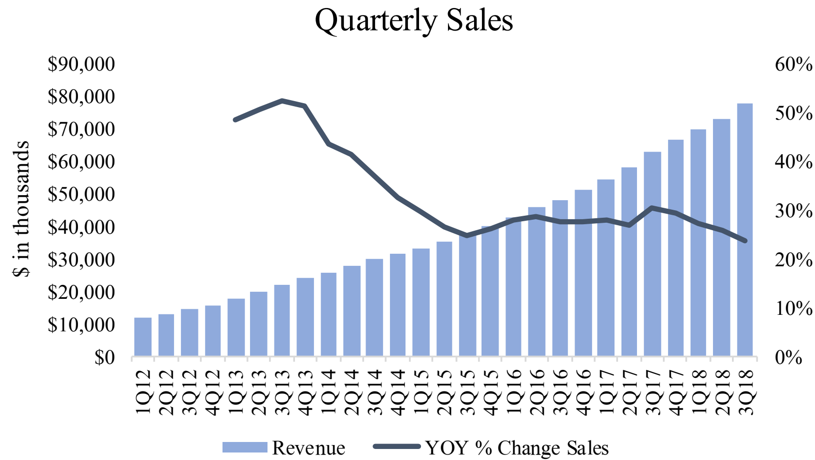
Darryl owns ~7% of outstanding shares which makes up the majority of his net worth. Other insiders own ~3%. Management has taken the owner mentality a step further by providing an equity incentive program that grants shares to all employees based on growth in intrinsic value each year. While rarely fans of companies issuing shares, we like companies that aligned incentives with shareholders and pay for performance. If the employees can grow Trupanion's intrinsic value at 30% a year, we will happily pay them 2.5% of the growth.

YOY Increase to Intrinsic value	Performance share dilution %	Net increase in intrinsic value per diluted share
1-10%	0.0%	1-10%
11%	0.3%	10.7%
12%	0.3%	11.7%
13%	0.4%	12.6%
14%	0.4%	13.6%
15%	0.5%	14.5%
16%	0.6%	15.4%
17%	0.7%	16.3%
18%	0.8%	17.2%
19%	0.9%	18.1%
20%	1.0%	19.0%
21%	1.1%	19.9%
22%	1.3%	20.7%
23%	1.4%	21.6%
24%	1.6%	22.4%
25%	1.7%	23.3%
26%	1.9%	24.1%
27%	2.0%	25.0%
28%	2.2%	25.8%
29%	2.3%	26.7%
30%	2.5%	27.5%

Source: Trupanion Investor Relations

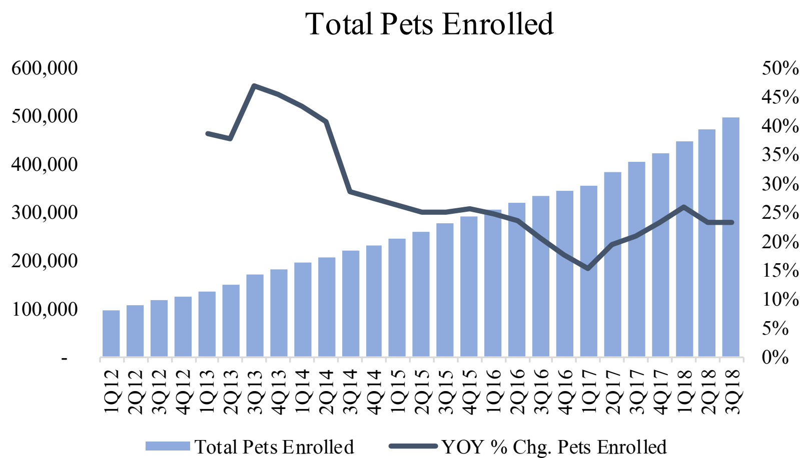
Financials

Trupanion is in the high growth stage of its life cycle, growing sales greater than 20% a year for every quarter since going public. According to their 2016 shareholder letter, they have not had a single month in the last five years in which revenue has been less than the previous month's revenue. Sales growth is attributable to enrolling more pets and increases in monthly revenue to pet.



Source: Company filings

Total pets enrolled has grown over 20% YOY for nearly every quarter since going public.

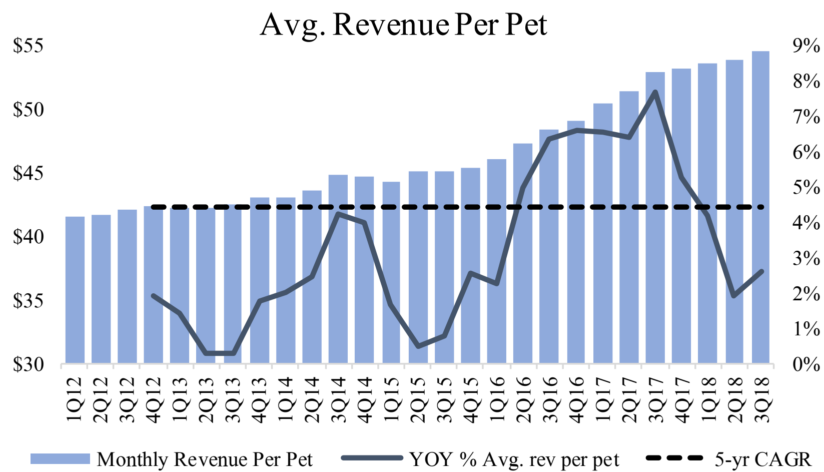


Source: Company filings

Average revenue per pet has grown at a 4-5% CAGR since the company has been public. Trupanion does not try to control the cost of veterinary care or increase pricing to boost profitability. They simply target spending 70% of premiums on veterinary claims for a specific pet category.

Unlike most competitors that will automatically increase pricing as a pet ages each year, Trupanion prices a pet by the age at enrollment. The expected costs of care for a pet are averaged over the life of the pet by using the age at enrollment. For example, if a puppy enrolls, the price of the policy is based on an average cost for the puppy enrolled for ages 0-13 years, while enrolling a 5-year-old dog will be based on the average cost for ages 5-13 years.

Growth in the average revenue per pet only reflects the higher average cost of veterinary care from both general inflation as well as advances in care, diagnostic tests, and more advanced treatments now available to pets. Over the last 15 years, veterinary costs have grown at an annual rate of 5-10%. Trupanion continually adjusts their subscription pricing up or down to target the 70% payout ratio. Existing members' monthly premiums are locked-in for a minimum of 12 months from their last rate change.



Source: Company filings

Management evaluates their business and capital allocation based on *adjusted operating income*. They define adjusted operating income as their discretionary margin or the operating income before any costs to acquire new pets. After Trupanion pays all the veterinary invoice expenses, other cost of revenue (direct and indirect member service expenses), technology & development, and G&A, they assess what is available to be spent on sales and marketing (pet acquisition costs).

($ in millions)	2012	2013	2014	2015	2016	2017	YTD 3Q18
Total Sales	**55.5**	**83.8**	**115.9**	**147.0**	**188.2**	**242.7**	**221.3**
Veterinary invoice expense	37.8	56.5	79.9	103.3	133.5	170.1	156.2
Other cost of revenue	6.4	11.5	16.1	18.4	21.4	29.5	28.0
Gross Profit	**11.3**	**15.8**	**19.9**	**25.2**	**33.3**	**43.1**	**37.2**
Technology and development	3.4	4.9	9.9	11.2	9.5	9.8	6.8
General and administrative	6.2	8.7	14.3	15.6	15.2	16.8	13.2
Adj. Operating Income	**1.7**	**2.3**	**(4.3)**	**(1.5)**	**8.5**	**16.5**	**17.2**
Sales and marketing	7.1	9.1	11.6	15.2	15.2	19.1	18.0
EBIT	**(5.5)**	**(6.8)**	**(15.9)**	**(16.8)**	**(6.7)**	**(2.6)**	**(0.8)**

Source: Company filings

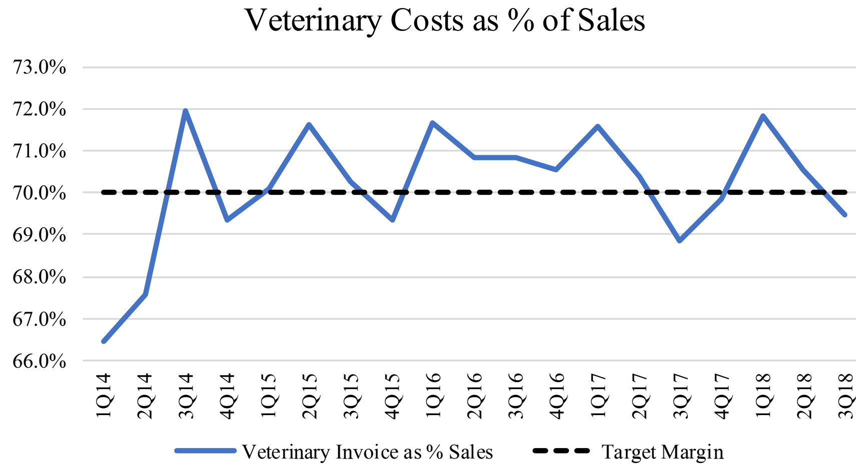
Trupanion's cost structure is based on reaching scale, which is expected to happen when 650,000-750,000 pets are enrolled. Scale is very important for several reasons. As the number of pets enrolled grows each year, the fixed costs (technology and G&A) and certain variable costs (specifically "other cost of revenue") decline as a percent of sales. Reaching scale is what will provide Trupanion the ability to maintain its pricing promise (paying out 70% of premiums in vet costs) as the lowest cost operator. Another significant benefit of reaching greater scale and therefore increased density in more mature markets, is the cost of acquiring new pets is significantly lower than in newer markets with less pets enrolled.

At scale, the operating margin before customer acquisition costs is expected to be ~15%.

Margins	2012	2013	2014	2015	2016	2017	YTD 2018	Target Margins at Scale
Total Sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Veterinary invoice expense	68.1%	67.4%	68.9%	70.3%	70.9%	70.1%	70.6%	70.0%
Other cost of revenue	11.5%	13.7%	13.9%	12.5%	11.4%	12.2%	12.6%	10.0%
Gross Profit	**20.4%**	**18.9%**	**17.1%**	**17.2%**	**17.7%**	**17.7%**	**16.8%**	**20.0%**
Technology and development	6.1%	5.8%	8.5%	7.6%	5.1%	4.0%	3.1%	5.0%
General and administrative	11.2%	10.3%	12.3%	10.6%	8.1%	6.9%	6.0%	
Adj. Operating Income	**3.1%**	**2.7%**	**-3.7%**	**-1.1%**	**4.5%**	**6.8%**	**7.8%**	**15.0%**
Sales and marketing	12.9%	10.8%	10.0%	10.4%	8.1%	7.9%	8.1%	
EBIT	-9.8%	-8.2%	-13.8%	-11.4%	-3.6%	-1.1%	-0.4%	
Total pets enrolled	117,217	182,497	232,450	291,818	343,649	423,194	497,942	650,000-750,000

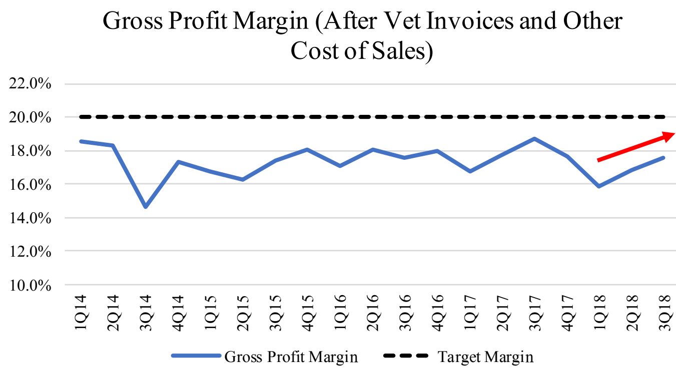
Source: Company filings, Saga Partners

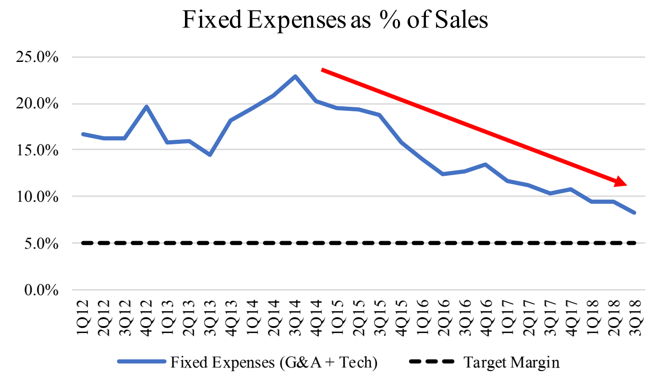
Veterinary costs are consistently around 70% of total sales each quarter.



Source: Company filings, Saga Partners

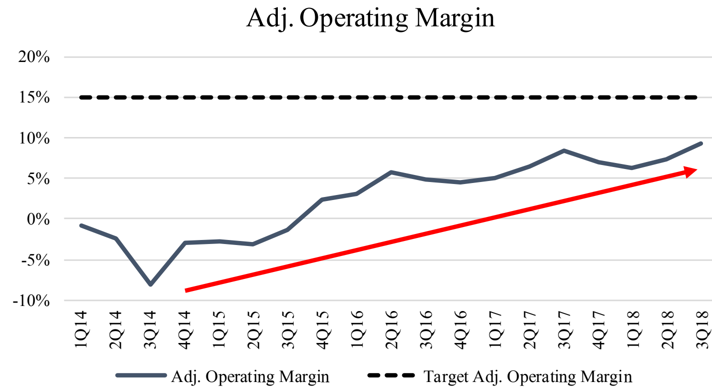
As Trupanion gets closer to scale, variable costs (veterinary invoice expense + other cost of sales) will approach 20% and fixed costs (G&A and technology & development) will approach 5% of sales.

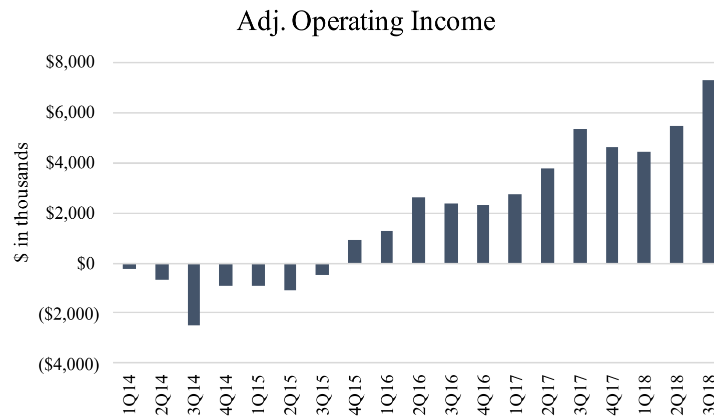




Source: Company filings, Saga Partners

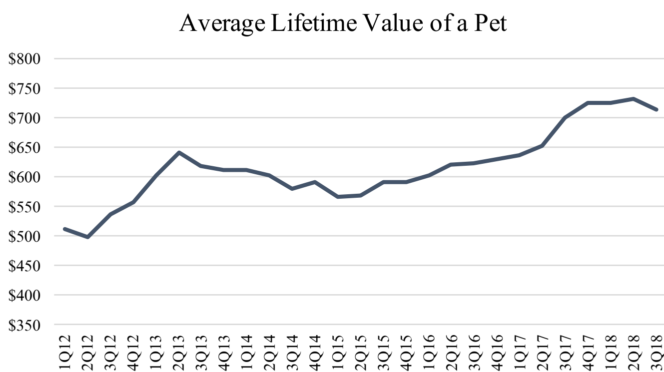
As the number of pets increase, Trupanion continues to get closer to its target adjusted operating margin of 15%.

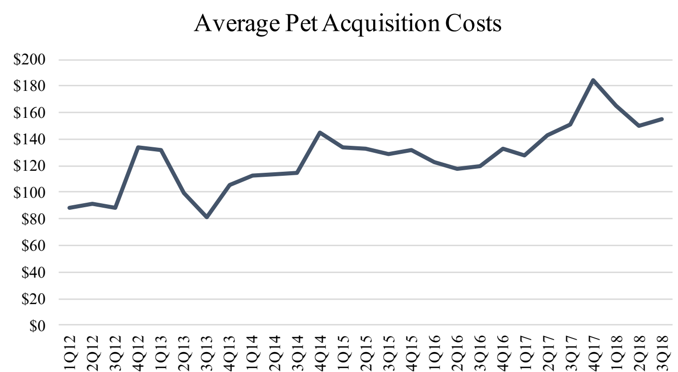




Source: Company filings, Saga Partners

Adjusted operating income should be viewed as a proxy for operating cash flow while pet acquisition costs are similar to capital expenditures. Each pet is an asset for Trupanion, therefore from an investment perspective, money spent acquiring the value of that asset should be amortized over the life of the asset. Trupanion's strategy is to invest as much capital as possible, as long as they can achieve a good return on their investment. They are able to accurately predict the return on their invested capital (pet acquisition costs) because they are able to predict the lifetime value of a pet (LVP), retention rate, and contribution margin of the average pet.





Source: Company filings

As long as Trupanion is able to invest all adjusted operating income in pet acquisition costs, they will not report any earnings on a GAAP basis because all pet acquisition costs are expensed when they occur. This is a big benefit from a tax standpoint and paradoxically means that the more Trupanion can invest capital at high returns, the lower their net earnings will be, but the faster intrinsic value will grow. It's similar to any high growth company not reporting any free cash flow in their early years as they reinvest the operating cash flow.

As Warren Buffett famously said, *"truly great businesses, earn huge returns on tangible assets and can reinvest a large portion of their earnings internally at high rates of return."*

Below calculates the return Trupanion expects to make on an average pet based on 2017 numbers. It is based on the adjusted operating income they expect to earn on the average pet acquired, the expected time the average pet will be enrolled, capital charges, and the acquisition costs per pet.

In 2017, the average life of a pet was 73 months and Trupanion spent $152 to acquire each new pet. Based on an adjusted operating margin of 9.6%, the IRR was 36% on the $152 spent to acquire each new pet. In other words, Trupanion should be reinvesting every dollar they can in pet acquisition costs as long as they are able to maintain a high return on their investment.

Return on Pet Acqusition Costs - 2017 IRR Calculation

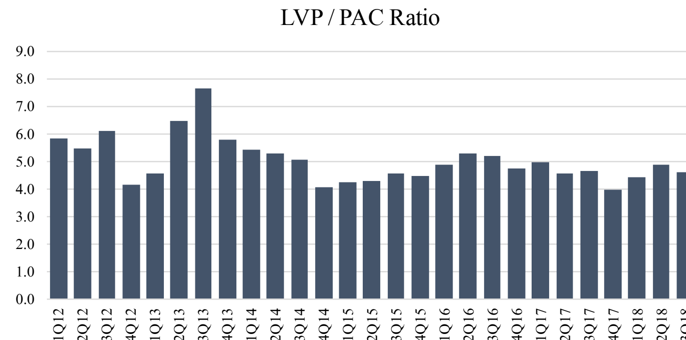
Avg. Life of a Pet	73 months	Adj. Operating Margin	9.6%
PAC	$152	Avg. Revenue Pet Pet	$52.07

Year	0	1	2	3	4	5	6	Total
Months	6	12	12	12	12	12	7	73
Sales Per Pet	312	625	625	625	625	625	364	3,801
Adj. Operating Margin	30	60	60	60	60	60	35	366
Capital Charges	(3)	(5)	(5)	(5)	(5)	(5)	(3)	(32)
PAC	(152)							
FCF Per Pet	(125)	55	55	55	55	55	32	183

IRR	36%

Source: Trupanion Investor Relations, Saga Partners

The ratio of lifetime value of a pet to pet acquisition costs (LVP/PAC) enables management to determine if they will achieve their cash flow and IRR targets. It provides a proxy to assess the return on pet acquisition costs. The lifetime value of a pet is based on the contribution margin of a pet multiplied by the number of expected months the pet will be enrolled. The higher the LVP/PAC ratio, the more value Trupanion receives for each dollar spent in acquiring a pet. Over the last five years the ratio has ranged between 4-6x, providing very attractive returns on acquisition costs.



Source: Trupanion Investor Relations

As Trupanion scales and spreads fixed costs across more pets, the adjusted operating margin will expand and more capital can be spent on pet acquisition costs relative to the life time value of the pets while still earning a high IRR on their investment.

Below is a sensitivity table showing how Trupanion's operating margin impacts the amount that can be spent on pet acquisition costs. As the operating margin increases, Trupanion is able to spend more on pet acquisition costs relative to the lifetime value of the pet and still earn a high IRR. In other words, the more profitable each incremental pet is, the more Trupanion can spend to acquire that pet relative to the lifetime value of the pet, meaning the LVP/PAC ratio can decline and the IRR will still be attractive.

The adjusted operating margin has recently ranged between 7-10% and the LVP/PAC has been between 4-6x, providing an IRR of 30-40%. With a 15% operating margin, Trupanion can have an LVP/PAC ratio of 3.0x and still have an IRR of ~40%.

IRR Sensitivity Table

		LVP/PAC Ratio				
		2.0x	**3.0x**	**4.0x**	**5.0x**	**6.0x**
Operating Margin	**5.0%**	-18%	-8%	1%	9%	16%
	7.5%	-8%	5%	16%	28%	39%
	10.0%	1%	16%	31%	47%	63%
	12.5%	9%	28%	47%	67%	89%
	15.0%	16%	39%	63%	89%	120%
	17.5%	24%	51%	80%	114%	156%

Current LVP/PAC and IRR range
IRR > 20% and relative LVP/PAC

Source: Saga Partners

Future Growth

Trupanion is in the high growth stage of its life cycle and an important question is how much more they will be able to grow. We referenced the fact that the U.S. pet insurance market is less penetrated relative to many Western European nations. Using a 20-30% penetration rate found in more mature markets, a reasonable potential addressable market range in the U.S. and Canada is between $26 - $39 billion.

($ in billions)

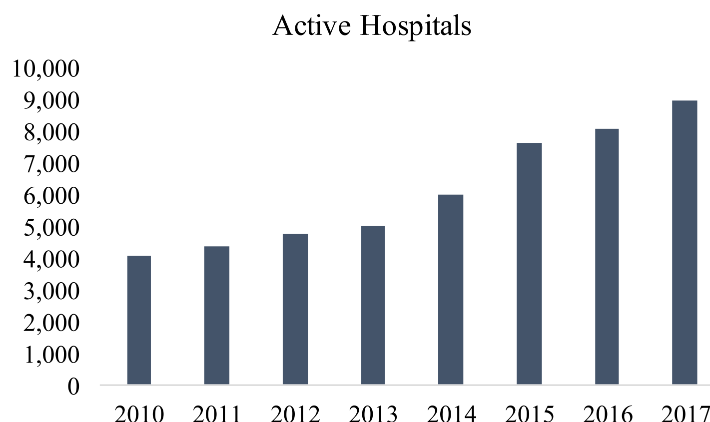
Pets in the U.S. and Canada	200M
Avg. Monthly Revenue Per Pet	$54.55
Penetration Rate	20%-30%
Total Addressable Market	$26.2-$39.3

The $26-$39 billion total addressable market is a very imprecise range for the potential in North America. There are many different variables that could impact the potential market, but it gives some idea of the potential TAM. In the U.K. is took ~20 years to reach a 5% penetration rate and then another 20 years to reach 25% penetration. Therefore it took a fairly long time to reach the initial 5% penetration, but subsequent adoption grew at a much faster pace. Management believes the U.S. is at least one pet generation away (~10 years) from reaching 5% penetration rates.

Growth Drivers

1. **Numbery of stores**: Stores are veterinary hospitals actively recommending Trupanion. This has been the key growth driver for Trupanion historically. It typically takes 2-3 years of repeated visits from Territory Partners before a hospital becomes confident in Trupanion to suggest pet owners look into pet insurance.

   Trupanion had over 9,000 active hospitals as of June 2018. There are ~28,000 hospitals in the U.S. and Canada providing over 30% penetration. In more mature markets where Trupanion has been for at least 5+ years, ~50% of hospitals are typically active. ~80% of all veterinary hospitals are located within Territory Partners current geography. Trupanion's goal is to be visiting 25,000 hospitals in the U.S. and Canada and have ~70% active, providing a potential 17,500 hospitals in the U.S. and Canada.



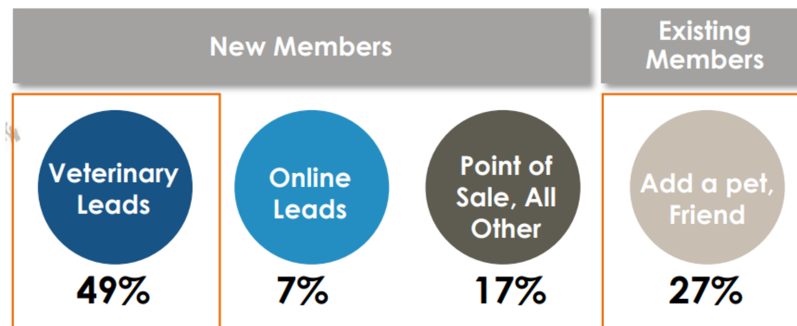
Source: Trupanion Investor Relations. Note 2017 as of June 2018

2. **Same store sales**: Growth in number of pets enrolled as a hospital. Management indicated that they have not figured out a way to accelerate SSS growth beyond what happens naturally over time. They have tested a few tools that may prove accretive but they are still early in their development.

3. **Direct to consumer marketing**: Utilizing media such as TV and radio advertisements. This is what competitors have typically used ineffectively to grow enrolled pets. Management believes that in more mature markets where the majority of vets are actively recommending Trupanion, there will be a cost-effective was to market directly to consumers. So far this has not been a big growth driver for Trupanion.

4. **Pet owner referrals (reaching "nirvana")**: Currently enrolled pet owners that either add another pet or tell their friends about Trupanion. This growth channel costs Trupanion $0 in customer acquisition costs. Management has a goal they call "nirvana" which is having referrals offset Trupanion's churn rate. If nirvana is reached Trupanion could in theory spend $0 on pet acquisition costs and maintain their current number of enrolled pets.

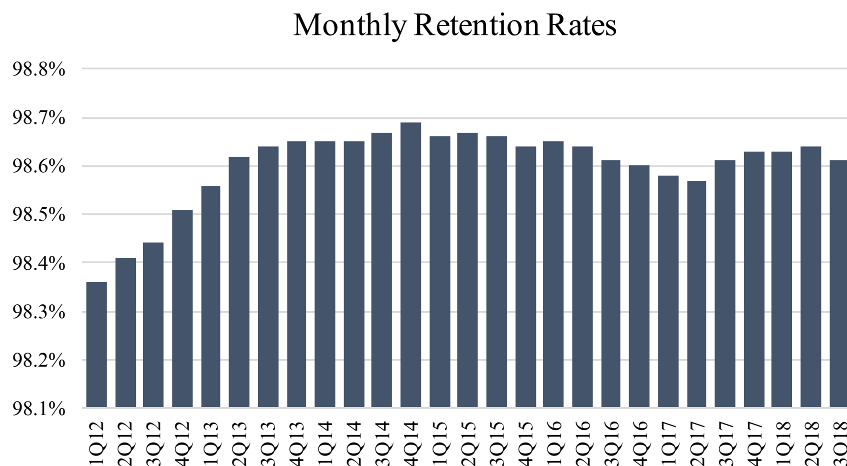
   Nearly 80% of referral sources (veterinary leads and existing member referrals) are not directly compensated. Most recently, pet owner referrals contributed 0.7% to monthly growth, so Trupanion is halfway for pet referrals offsetting the 1.5% churn rate.



Source: Trupanion Investor Relations.

Trupanion's monthly retention rate for the last 10 years has averaged just over 98.5%, providing ~82% annual retention rate. The company believes they have the highest retention rates than any other pet insurance provider in the U.S. Churn comes from three categories; 1. pet own dissatisfaction, 2. loss of pet ownership (usually pet passes away or is re-homed), and 3. failed payments.

Pet owner dissatisfaction is the largest contributor to churn which often occurs within the first 90 days of enrolling. After the first 90 days, retention rates increase substantially and the average life of the pet enrolled increases ~10 years versus the ~6 years when all enrolled pets are counted. Dissatisfaction mostly occurs because a pet may have a preexisting condition that is not covered. If an older pet signs up with Trupanion, all prior vet records need to get documented which can take time to get processed if a vet needs to send them to Trupanion. Trupanion Express is attempting to improve the speed and transparency of informing pet owners if a specific preexisting condition is not be covered. Trupanion is also focused on educating pet owners to sign up puppies and kittens which have no preexisting conditions so pet owners know everything will be covered during the entire life of their pet.



Source: Company filings

5. **Other revenue**: Business-to-business partnerships through corporate employee benefits and veterinary employee benefits. Trupanion's insurance subsidiary, American Pet Insurance Company, also issues policies for other brands of medical insurance for pets.

6. **New products/businesses**: This could include other lines of pet insurance (i.e. fish insurance) or entering new businesses. Trupanion still has plenty of ability to grow within its existing product lines therefore this growth category will be not be relevant until the U.S. and Canada dog and cat insurance market becomes more saturated.

Valuation

Management has been very transparent about near-term and long-term goals for the company. In each of the annual shareholder letters, they outline what the company did well and needs to work on. You can go back and read what management says in past years and see what actually occurs subsequently. For example, in the 2014 letter, management said they plan on being cash flow positive by the second or third quarter of 2016, which they achieved in the second quarter of 2016.

Many Trupanion skeptics state the company is a money losing P&C insurance business and should be valued relative to book value. We agree that on the surface valuation *looks* expensive since there are no reported GAAP earnings and a price to book ratio of ~6x. However these often-used, somewhat cursory valuation proxies do not provide much insight into Trupanion's true potential intrinsic value.

There are good reasons why financial firms are often valued relative to book value while non-financial firm value is typically based more on operating activities, often relative to some cash flow proxy. Insurers earn a substantial portion of their profits from the spread between the return on invested asset and the cost of liabilities, and their book values of asset and liabilities are typically close to fair values. Potential growth can also be limited because insurers' capacity to underwrite is directly related to their equity capital.

At the basic level, insurance is simply pooling together premiums from customers to redistribute risk and then paying out claims. The most important job of an insurance company is estimating what the future claims will be and pricing premiums at a level to cover the claims and operating expenses to leave a fair profit for shareholders.

Trupanion's insurance operation is not as comparable to certain other P&C insurers. Some types of insurers such as with life insurance have very long-term policies. There can be a long lag between when insurers collect premiums and eventually pay out claims. This means some insurance companies do not know their true cost of goods sold or its operating margin in a given period for several years after they report because estimates of the claims accrued for a given year do not materialize for many years into the future.

The larger the claims, lower the frequency, and more unpredictable the costs, means insurers must hold more assets on their balance sheet to prepare for potential long-tail risks. Insurers will hold premiums longer creating a lot of float, which is simply money held at the insurer but is expected to be paid out in claims. As insurers hold more assets on their balance sheet relative to their potential claims liability, they become more capital intensive and dependent on interest and investments for income.

At the end of the day the value of any company is the cash it generates. What truly matters with any asset is understanding the *cash flows*. Trupanion operates on a money-in, money-out basis, all within the same month, on average. Their goal is to pay claims within the first five minutes of an invoice being created. As a result Trupanion carries very little float.

Trupanion is able to grow much faster than the average insurance company both because it is in a largely untapped market and it can accurately know what to price a premium of a newly enrolled pet to cover the average cost the pet will experience during its first month (~70% veterinary costs). Trupanion's entire cost structure is based on what they will look like when they reach scale at 650,000-750,000 pets, at which point they should have operating margins before customer acquisition costs of ~15%. Based on historic trends and expected enrolled pets of 510K at 2018-year end, we think it's reasonable to expect Trupanion to reach between 650K-700K pets by 2020.

Below is a model of what Trupanion's income statement may look like in the year 2020. We assume pets enrolled grow at 12-17% CAGR, veterinary care inflation is 5-6%, and Trupanion reaches scale adjusted operating margins of 14-15%.

We assume that in 2020 Trupanion will still be able to reinvest all adjusted operating income in high IRR pet acquisition costs. Since pet acquisition costs should be viewed as capital expenditures spent on acquiring long-term assets, we amortize the adjusted operating income over the expected life of pet, or ~6.5 years.

Assuming 2.0-2.5% in share dilution, 2020 EBIT could range between $53 – $62 million. If an investor requires a 15% return on their investment (not the WACC just a general return on investment target), the present value EBIT would be between $42 - $50 million, providing an market cap/EBIT of 16-19x. We use market cap instead of enterprise value because we assume the net cash held on Trupanion's balance sheet is required for operating purposes. As of 3Q18, Trupanion has $74 million in cash equivalents and $8.6 million in debt. Cash equivalents held on the balance sheet is to cover expected claims (reserve for veterinary invoices was $14.2M at 3Q18).

A 16-19x EBIT multiple looks very attractive considering Trupanion has a long pathway ahead for growth, with the ability to reinvest cash flow at 30-40% IRR and continue to grow sales between 20-30%.

Trupanion Current Valuation			
Pets Enrolled 2018E		510,000	
2 Yr. Pets Enrolled CAGR	13%	15%	17%
Pets Enrolled 2020E (scale)	**650,000**	**675,000**	**700,000**
Avg. Revenue Per Pet 3Q18		$54.55	
Avg. Veterinary Care Inflation	5.0%	5.5%	6.0%
Avg. Revenue Per Pet 2020E	$60.14	$60.72	$61.29
Annual Revenue ($m)	**469.1**	**491.8**	**514.9**
Revenue CAGR	*24%*	*27%*	*30%*
Adjusted Operating Margin	14.0%	14.5%	15.0%
Sales & Marketing Amortized Over 6.5 yrs	2.2%	2.2%	2.3%
EBIT margin	11.8%	12.3%	12.7%
EBIT	**$55.6**	**$60.3**	**$65.3**
Share Dilution Per Year	2.0%	2.3%	2.5%
2020 Diluted EBIT	**$53.4**	**$57.7**	**$62.2**
Discount Rate		15%	
Present Value of Diluted EBIT	**$42.0**	**$45.6**	**$49.4**
Current Market Cap ($m)		**$790**	
Market Cap / EBIT	**19x**	**17x**	**16x**

Source: Company filings, Saga Partners

The market can underappreciate the value of a truly high-quality company that has the ability to reinvest earnings at a high rate of return for many years into the future. Amazon is a good example of this kind of business. If you go back just 15 years, Amazon was trading for a market cap of $21 billion and had sales and earnings of $2.3 billion and $4 million. If you bought shares in 2003 for $50 and held them today, you would have earned a 25% compounded return. Let's say in 2003 you required a long-term IRR of 15% on all your investments (far above the 7-8% S&P 500 CAGR provided over the same time). Amazon's fair value to an investor would have been about $200 per share or 4x the price. $200/share would have valued Amazon at $84 billion or 37x its 2003 sales.

Other great 20%+ compounders like Google, Facebook, or Berkshire Hathaway, were historically undervalued much of the time because the market underweighted their compounding power. Of course hindsight is always 20/20 and we are not claiming Trupanion is the next $1 trillion market cap company, but it does show how the market can undervalue companies that have the ability to reinvest capital at high returns for many years into the future.

There are few long-term compounder companies, so if you get conviction you have found one, we suggest buying shares and holding on to them for the long-haul. Wall Street analysts typically don't look much farther than two years out when valuing a company. Trupanion skeptics are very focused on how the financial statements look today, ignore their growing competitive advantage, long-term trends in the historic results, and disregard what the company will likely look like in 10+ years.

Below are sensitivity tables showing what Trupanion may look like 20 years out in 2038. There is huge margin for error when looking out 20 years, but if you believe Trupanion is building a durable moat in a large underpenetrated market, we think these scenarios are within a reasonable range of expectations. If you do not think Trupanion has a defensible moat and provides an undifferentiated, low margin product, it's probably best to look no further.

We assume the 200 million dog and cat population in the U.S. will grow inline with historic rates of 1.5% annually, providing 270 million dogs and cats in 2038. Regarding U.S. & Canada pet insurance penetration, management believes the U.S. is at least one pet generation away (~10 years) from reaching 5% penetration rates. If the U.S. follows a similar trend as the U.K., once it hits 5%, growth in penetration may accelerate in the subsequent decade. We think a 5-25% penetration rate in the year 2038 is a reasonable range. Trupanion's current market share is ~30% and its market share of newly insured pets is closer to ~40%, therefore we assume future market share between 20-45%. Based on the assumptions below, Trupanion will enroll between 2.7-30.4 million pets in 2038.

Total Pets Insured in U.S. & Canada (in millions)

TRUP Market Share	Pet Insurance Penetration				
	5%	**10%**	**15%**	**20%**	**25%**
20%	2.7	5.4	8.1	10.8	13.5
25%	3.4	6.7	10.1	13.5	16.9
30%	4.0	8.1	12.1	16.2	20.2
35%	4.7	9.4	14.2	18.9	23.6
40%	5.4	10.8	16.2	21.6	27.0
45%	6.1	12.1	18.2	24.3	30.4

Assuming a 5% CAGR in average revenue per pet over the next 20 years, (at the low end of the 5-10% historical average veterinary care inflation over the last 15 years), the average monthly revenue per pet will grow from the current $54.55 to $144.74 in 2038, providing a revenue range of $4.7-$52.7 billion based on the sensitivity scenarios.

Revenue ($ in millions)

TRUP Market Share	Pet Insurance Penetration				
	5%	10%	15%	20%	25%
20%	$4,688	$9,376	$14,063	$18,751	$23,439
25%	$5,860	$11,719	$17,579	$23,439	$29,299
30%	$7,032	$14,063	$21,095	$28,127	$35,158
35%	$8,204	$16,407	$24,611	$32,815	$41,018
40%	$9,376	$18,751	$28,127	$37,502	$46,878
45%	$10,548	$21,095	$31,643	$42,190	$52,738

Assuming a margin of 15%, Trupanion's adj. operating income would be between $703 million - $7.9 billion.

Adj. Operating Income

TRUP Market Share	Pet Insurance Penetration				
	5%	10%	15%	20%	25%
20%	$703	$1,406	$2,110	$2,813	$3,516
25%	$879	$1,758	$2,637	$3,516	$4,395
30%	$1,055	$2,110	$3,164	$4,219	$5,274
35%	$1,231	$2,461	$3,692	$4,922	$6,153
40%	$1,406	$2,813	$4,219	$5,625	$7,032
45%	$1,582	$3,164	$4,746	$6,329	$7,911

Note that adj. operating income is before sales & marketing costs to acquire new pets. There is a chance that Trupanion reaches "nirvana" where they could spend $0 in customer acquisition costs and maintain the current number of enrolled pets, meaning all adj. operating income could drop to the bottom line after paying interest and taxes if no attractive investment were available. It is reasonable to expect that Trupanion will not be able to invest at such a high IRR on pet acquisition costs since the market will be more saturated.

For valuation purposes, let's assume that Trupanion can not find any attractive investment opportunities in 20 years and adj. operating income is available to shareholders after paying interest expense and taxes. Putting a reasonable 12x market cap/EBIT multiple on 2038 adj. operating income provides an enterprise value range between $8.4-$95 billion. This is a very wide range which makes sense given the uncertainty looking 20 years out. This growth also does not consider Trupanion expanding into related business lines (i.e. fish insurance) or expanding outside the U.S. and Canada. Often when investing in high quality companies there can be positive surprises over time (such as Amazon unexpectedly moving into AWS), while lower quality businesses often have negative surprises.

Market Capitalization ($ in millions)

TRUP Market Share	Pet Insurance Penetration				
	5%	**10%**	**15%**	**20%**	**25%**
20%	$8,438	$16,876	$25,314	$33,752	$42,190
25%	$10,548	$21,095	$31,643	$42,190	$52,738
30%	$12,657	$25,314	$37,971	$50,628	$63,285
35%	$14,767	$29,533	$44,300	$59,066	$73,833
40%	$16,876	$33,752	$50,628	$67,504	$84,380
45%	$18,986	$37,971	$56,957	$75,942	$94,928

Based on the current market cap of ~$790 million, the expected returns for the given scenarios range between a 13-27% CAGR over a 20-year period. An investor should probably lower the expected CAGR by ~1-2% annually to account for share dilution, providing an 11-25% CAGR.

Earning an 11% CAGR over the next 20 years vs. earning 25% CAGR will provide significantly different results however we think it shows the substantial return potential for a strong long-term compounder company.

IRR From Current Valuation

TRUP Market Share	Pet Insurance Penetration				
	5%	**10%**	**15%**	**20%**	**25%**
20%	13%	17%	19%	21%	22%
25%	14%	18%	20%	22%	23%
30%	15%	19%	21%	23%	25%
35%	16%	20%	22%	24%	26%
40%	17%	21%	23%	25%	26%
45%	17%	21%	24%	26%	27%

Risks

1. **Execution:** Trupanion is in the very early stages of their development and disrupting an industry that is largely untapped. While Trupanion's trends look strong, they have to continue building their competitive advantage. Competition was not historically very strong and it is reasonable to expect other companies to try and emulate Trupanion's product and business model going forward. While we think the cards are heavily weighted in Trupanion's favor, they still have to execute by sticking to their pricing promise and providing the best valued product to both customers and supporting veterinarians.

2. **Regulatory Risks**: There has been a lot of attention recently on Trupanion's regulatory matters. The concerns surround the fact Territory Partners are not licensed to sell insurance. Trupanion has licensed agents that sell their products direct to pet owners through their 24/7 call center or online. Trupanion claims that Territory Partners do not sell directly to customers unless they chose to be licensed themselves. Their role is to build and support relationships with veterinarians. The grey area is how Territory Partners are compensated.

   According to regulators, *"an insurance agency may pay a fee to a non-licensee, non-employee for making a referral provided that the non-licensee does not discuss the specific terms and conditions of the policy, and the fee paid is not dependent upon whether the referral results in the sale of insurance."*

   Territory Partners are compensated by a combination of referral fees for new pet enrollment and residuals tied to pet retention within their territory. Their fee compensation is the same flat amount without regard to how the customer enrolled. Trupanion claims they have ongoing discussions with regulators relating to their business practices and no state regulatory agency has ever reached any conclusion that has or is expected to have a material impact on their business.

   We are not experts in regulatory law or policy, however let's say regulators determine that Territory Partners must become licensed. It costs a few hundred dollars and typically a few weeks at most to study and pass the insurance licensing exam. It would hardly be a big impact to Trupanion's business model if regulators determined that the 100+ Territory Partners needed to get licensed.

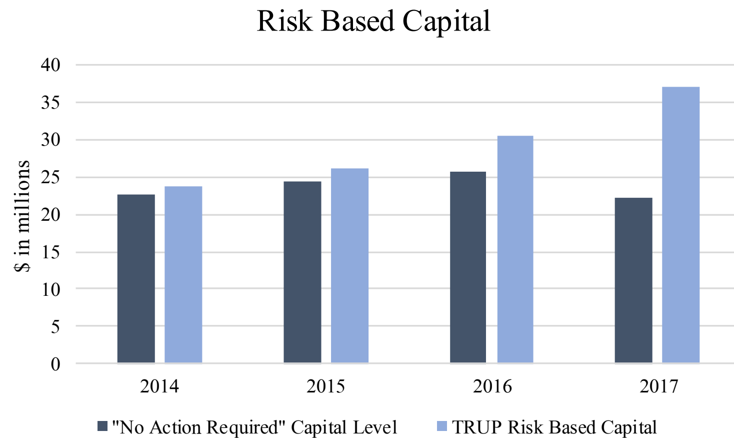
   A worse scenario would be if regulators found that Trupanion knowingly supported bad business practices and then got fined a material amount of money. From what appears to be ongoing and constructive conversations with regulators, we think it is unlikely Trupanion would face significant penalties.

3. **Equity Raise:** In July 2018, Trupanion issued 1.8 million shares at $33 to acquire the $65 million building it was leasing. There was some concern among investors that issuing equity at a below market price at the time (shares were selling for ~$40/share), may not have been the best source of capital. Management had stated in their 2016 letter, "paying up front for assets that would sit on…balance sheet and help lower ongoing frictional costs."

   Our main question was why Trupanion did not issue debt to purchase the building. Trupanion's investor relations provided us with more color stating the equity raise was because regulators approved 10% of the equity in the building ($7.5 million) to be considered in Trupanion's risk-based capital requirements, therefore freeing up $7.5 million that could be used for higher returning investments (PAC). Over the next

12-15 years it will free up ~$60 million of capital. Additionally purchasing the building in itself lowers fixed expenses by $3M-$5M per year in lease savings and rental income.

From a capital standpoint, Trupanion is subject to risk-based capital regulations that require it to maintain certain levels of surplus capital to support the overall business operations in consideration to their size and risk profile. To be fully compliant with a regulatory "no action level" status, insurer's total adjusted capital must be equal to or greater than 200% of insurer's estimated capital adequacy.



Source: Company filings

Conclusion

Trupanion is a high-quality company building a durable competitive advantage with long-term compound growth potential. It has a strong lead relative to competitors as the low-cost operator. As the company reaches operating scale over the next 2-3 years, adjusted operating income will accelerate while still having numerous opportunities to reinvest capital at high returns into the foreseeable future.