

Please note that this letter is intended for an audience of shareholders, team members, and veterinarians, and may include individuals who are being introduced to Trupanion's shareholder letters for the first time. In order to make this material accessible to all of these audiences, I have included plain-English intended meanings of certain terms along the sidebar. These definitions are **highlighted in green** throughout the text. These definitions differ from and are not to be confused with the technical definitions that may appear in our public filings with the U.S. Securities Exchange Commission.

I have also indicated **numbers in blue** in instances where they appear in both a description as well as in a table or an equation, to help the reader follow my logic.

To Our Shareholders

“ If we dare to understand, progress is possible in all fields, scientific, political and moral. Problems are inevitable, because our knowledge will always be far from complete. Some problems are hard, but it is a mistake to confuse hard problems with problems unlikely to be solved.

—DAVID DEUTSCH

When I first drafted this letter, we were still very early into what has evolved into a global health pandemic. I had intended to open with the following:

Trupanion's mission is simple: helping loving, responsible pet owners budget and care for their pets.

Today, our mission feels particularly relevant. Providing pet owners peace of mind in periods of uncertainty is why Trupanion exists! I can think of several other “crises” or periods of uncertainty in our 20 year history, but not one that so clearly embodies the challenges of an unexpected health crisis.

Planning for the unexpected is the heart of the problem Trupanion was designed to solve. How do pet owners budget for veterinary expenses if and when their pet becomes sick or injured?

So, how do we know if we are progressing or doing well? The basic answer, like our mission, is simple: the more pet owners and pets that we are helping, the better we are doing. In addition, we have key metrics, which when monitored on annual intervals, provide insight into the overall strength and health of our business.

We have **three key financial goals**. We don't expect we will achieve them each and every year, but you can be assured that we will try our best. These three primary annual goals are:

Grow total revenue between 20% and 30% annually.

Compound the cash from existing and new pets. The keys to compounding cash flow are growth in pets, average revenue per pet, and our **adjusted operating margin** per pet. For our monthly subscription pets, we target an adjusted operating margin of 15%.

Re-invest our discretionary cash at internal rates of return between 30% and 40%. At these internal rates of return, we aim to invest as much discretionary cash as possible, while remaining **free cash flow** positive.

Adjusted Operating Margin (AOM):

The amount of Adjusted Operating Income (defined below) as a percentage of revenue generated from our members during the period.

Discretionary Cash: This is a term that we use to describe our cash flow that could be returned to shareholders in the way of dividends, or reinvested to grow the company.

Internal Rate of Return (IRR): A calculation used to evaluate the return on an investment over time.

Free Cash Flow: Cash we generated from operations, net of any cash used on capital expenditures such as purchases of property or equipment and reinvested to grow the business.

I am pleased to report that based on these three financial goals, 2019 was a good year. Compared to the prior year, revenue grew **26%** and the cash we generated from our existing pets, before investment in new pet acquisition (which we refer to as our **adjusted operating income**), grew 39% to **\$44.2 million**. We were able to invest **\$32.9 million** of this discretionary income to acquire 141,283 new **subscription pets**, where we calculate we will earn a **40%** internal rate of return for the average pet.

Key Metrics

As in previous years, here are our key metrics. My intention is to share the same (or similar) key metrics with you every year.

Table 1. Key Metrics

	2014	2015	2016	2017	2018	2019
Revenue	\$115.9M	\$147.0M	\$188.2M	\$242.7M	\$304.0M	\$383.9M
YoY revenue growth	38%	27%	28%	29%	25%	26%
Adjusted operating income (AOI)	\$0.9M	\$3.6M	\$14.8M	\$23.4M	\$31.9M	\$44.2M
Adjusted Operating Margin (AOM)	1%	2%	8%	10%	10%	12%
Pet acquisition cost	\$11.1M	\$14.8M	\$14.7M	\$18.4M	\$23.7M	\$33.3M ¹
Internal rate of return (from new subscription pets)	N/A	N/A	31%	35%	37%	40% ²
Free cash flow	(\$16.4M)	(\$15.3M)	\$3.1M	\$6.5M	\$8.3M ³	\$10.8M

¹The \$33.3M acquisition spend noted in this table includes spend in our other business segment, **\$32.9M** of which was spent acquiring subscription pets in 2019.

²In 2019, we began to use the per pet unit economics specific to our subscription business as an input for our internal rate of return calculation. Prior to 2019, per pet unit economics reflected our consolidated business.

³2018 free cash flow of \$8.3 million reflects free cash flow of (\$44.3) million, adjusted to exclude the \$52.5 million used to purchase our building.

Adjusted Operating Income (AOI): The profit we generate from our members during a period, adjusted to remove acquisition costs and certain non-cash items.

Subscription Pets: Pets that are enrolled with Trupanion, generally where the member pays Trupanion directly every month as opposed to our **other business** segment.

Other Business: In addition to our direct to consumer subscription business, we have a business to business component. It comprises several initiatives with one unifying characteristic: the pet owner does not pay us directly; a third-party pays us. While lower margin, our other business adds to our data advantage, provides us insights into alternative products and channels and allows us to share in the success of the broader category. We also spend very little to acquire pets within this segment.

Pet Acquisition Spend: Our total sales and marketing expense for our subscription business, minus our **sign-up fee**. This also excludes stock-based compensation for our sales and marketing team members. When divided by the total number of subscription pets enrolled in a given period, we refer to this as our Pet Acquisition Cost (PAC). This is a one-time expense.

Sign-Up Fees: A fee that we charge new members when they enroll to cover up-front costs.

Table 2. Financial Metrics/Performance 2012-2019

Year	Enrolled pets	Revenue	YoY revenue growth	Adjusted operating income	Invested capital to acquire new pets	IRR on an average pet	Cash, short-term investments, our building assets, minus debt	Earnings (Net Loss)
2012	127,704	\$55.5M	50%	\$3.0M	\$6.7M	N/A	\$5.1M	(\$8.1M)
2013	182,497	\$83.8M	51%	\$4.3M	\$8.4M	N/A	\$7.9M	(\$8.2M)
2014	232,450	\$115.9M	38%	\$0.9M	\$11.1M	N/A	\$60.6M	(\$21.2M)
2015	291,818	\$147.0M	27%	\$3.6M	\$14.8M	N/A	\$43.2M	(\$17.2M)
2016	343,649	\$188.2M	28%	\$14.8M	\$14.7M	31%	\$48.8M	(\$6.9M)
2017	423,194	\$242.7M	29%	\$23.4M	\$18.4M	35%	\$54.4M	(\$1.5M)
2018	521,326	\$304.0M	25%	\$31.9M	\$23.7M	37%	\$134.7M	(\$0.9M)
2019	646,728	\$383.9M	26%	\$44.2M	\$33.3M	40%	\$139.4M	(\$1.8M)

Per-Share Performance

We closely track stock-based compensation and **dilution**. At the end of 2019, our fully diluted share count, including options and unvested restricted stock units, was **37,951,839**. In 2019, we calculated an increase in Trupanion's intrinsic value per share for compensation purposes (based on a two-year compounded annual growth rate) of 24.1% before stock grants. In accordance with our Intrinsic Value Incentive Plan, a portion of this intrinsic value growth is shared with our team members, with the remainder benefiting shareholders. Given our 24.1% intrinsic value per share growth in 2019, we shared 1.6% of this increase in value with the team, with the remaining 22.5% increase per share benefiting shareholders. Please see a full description of our Intrinsic Value Incentive Plan in the Compensation Discussion and Analysis section of our 2020 Proxy Statement. In order to share 1.6% with the team, the total size of the grant pool in 2019 was 479,039 shares. 154,138 were allocated during the year for new hire grants, individual performance awards and board compensation, leaving 324,901 shares that were issued in 2020 for our Performance Grant Program related to the 2019 fiscal year.

Our key financial metrics on a per share basis:

Table 3. Key Financial Metrics Per Share

Year	Total share count plus options, awards and warrants granted ¹	Revenue per share	YoY growth	Adjusted operating income per share	YoY growth	Cash, short-term investments, our building assets, minus debt per share	YoY growth	Earnings (loss) per share ²
2012	22,467,205	\$2.47	53%	\$0.13	-7%	\$0.23	-30%	\$(9.76)
2013	24,889,316	\$3.37	36%	\$0.17	31%	\$0.32	39%	\$(6.23)
2014	33,813,736	\$3.43	2%	\$0.03	-82%	\$1.79	459%	\$(1.64)
2015	34,138,237	\$4.31	26%	\$0.11	267%	\$1.27	-29%	\$(0.62)
2016	34,879,610	\$5.40	25%	\$0.42	282%	\$1.40	10%	\$(0.24)
2017	35,444,460	\$6.85	27%	\$0.66	57%	\$1.53	9%	\$(0.05)
2018	37,862,666	\$8.03	17%	\$0.85	28%	\$3.56	133%	\$(0.03)
2019	37,951,839	\$10.12	26%	\$1.16	37%	\$3.67	3%	\$(0.05)

¹Share count includes outstanding shares plus unexercised options and unvested restricted stock, as well as shares granted in subsequent year pertaining to the year's performance.

²Loss per share is calculated using the GAAP basic weighted-average shares at year end.

A quick note on the difference between **GAAP** earnings and cash flow. Unlike earnings, which is subject to GAAP accounting, cash flow represents the actual cash flowing into the company. Accounting standards, like the treatment of **deferred revenue** and **depreciation**, impact earnings, but are excluded from cash flow. We manage the business on a cash flow basis. The guardrails we have put in place regarding deployment of our capital are to do so at high internal rates of return (between 30 and 40%), while maintaining positive free cash flow.

Stock Dilution: The decrease in existing shareholders' ownership percentage of a company as a result of the company issuing new equity.

Generally Accepted Accounting Principles (GAAP):

The accounting standards established by the Financial Accounting Standards Board and adopted by the U.S. Securities and Exchange Commission (SEC).

Deferred Revenue: At Trupanion, we collect an entire month of premium on the first day that a member enrolls. This also becomes their monthly billing date. For members that do not enroll on the first day of the month, a portion of what they paid for their subscription that applies to coverage in the following month must be noted as "deferred revenue." As an example, if a member enrolls on January 25th, they would pay for coverage between January 25th and February 24th. We would consider 6 days of their monthly cost in January as "revenue," and the remaining 24 days would be considered "deferred revenue" in January. In February, those 24 days previously treated to as "deferred revenue" in January would be "revenue" in February.

Depreciation: When we purchase an asset whose value degrades over time (which is any physical asset that is not land), rather than noting the purchase of this asset as an expense at the time of purchase, we will instead spread out the cost of that expense over the life of the asset in accordance with GAAP. For example, if we purchase a \$2,000 laptop for a team member, and that laptop is expected to last for four years before needing to be replaced, every month from the date of purchase we would reduce the value of the laptop by \$41.66 in our books.

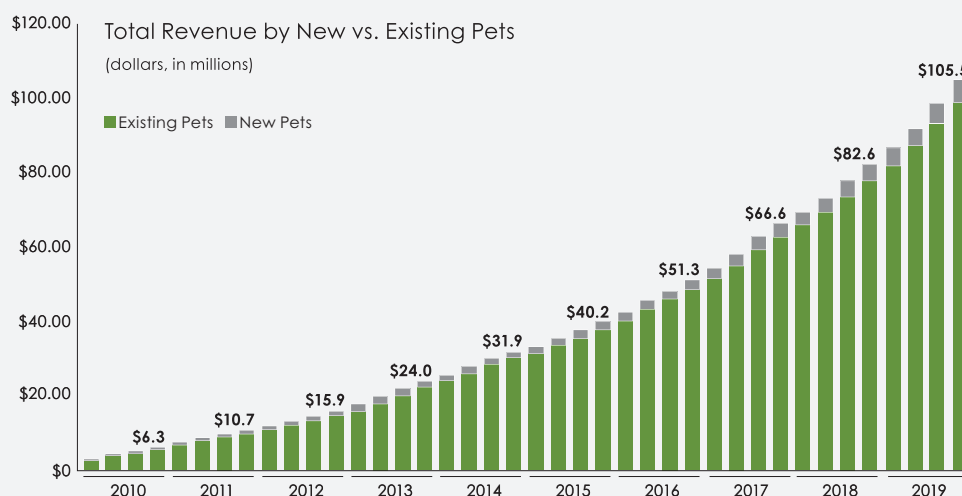
Today, as we enter our third decade, most of Trupanion Inc.'s business and **intrinsic value** are derived from our direct-to-consumer monthly subscription business, which has two key attributes: high **retention** rates and a large underpenetrated market.

Below is a break-down between our two segments of business:

Intrinsic Value: Our calculation of how much our business is worth, irrespective of the determination of the public markets.

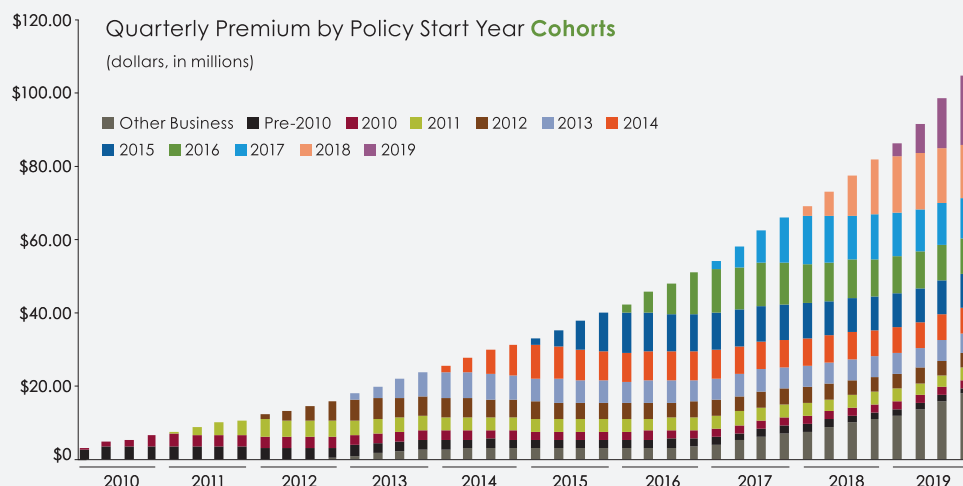
Table 4. Business Segments

	Subscription Business	Other Business	Total Business	Subscription Business	Other Business	Total Business
Revenue	100%	100%	100%	\$321.2M	\$62.8M	\$383.9M
Less: Paying Veterinary Invoices	72%	61%	70%	\$231.7M	\$38.5M	\$270.3M
Less: Variable Expenses	9%	29%	12%	\$29.4M	\$18.3M	\$47.7M
Less: Fixed Expenses	6%	6%	6%	\$18.2M	\$3.6M	\$21.7M
Equals Adjusted Operating Margin (AOM) or Income (AOI)	13%	4%	12%	\$41.9M	\$2.3M	\$44.2M



Retention: Subscription pets that remained enrolled each month, on average, monitored over a rolling 12 month period.

Cohort: A cohort is a group of pets who share a defining characteristic. In this case, we refer to cohorts as a group of pets enrolling in the same quarter.



My Report Card on the Year

Same Store Sales **B**

This was an area of good progress and learning in 2019. **Same store sales** measures the **penetration rate** of Trupanion insured pets among our existing **active hospital** base. We endeavor to grow our active hospital count, while simultaneously increasing the rate at which pets are enrolling with Trupanion at veterinary hospitals. Doing so is really, really hard!

The rate at which we add active hospitals can influence growth in same store sales. Hospitals further down the adoption curve naturally carry a lower penetration rate of Trupanion insured pets. In 2019, we were able to deliver 11% growth in active hospitals, while increasing the number of pets that enrolled per active hospital per month to 1.14 from 1.13 in 2018.

Growth in same store sales was driven by increased leads, benefiting from the number of hospitals that have installed **our software** and have an assigned inside **Account Manager** to act as a hospital's point of contact in between **Territory Partner** visits. We ended the year with over 4,850 hospitals with our software, and about three dozen inside Account Managers. For those hospitals that have had our software and an assigned inside Account Manager for at least six months, we're seeing a consistent 48% increase in the number of pets enrolled per hospital, per month.

Conversion Rates **C**

Our primary challenge in increasing **conversion rates** lies in more effectively communicating our value proposition to prospective members. Our efforts to do so during 2019 did not move the needle, despite a significant investment year over year.

Q3 was a good quarter, where certain tests and initiatives worked well. In Q4, our tests did not work well. We have plenty of reasons to be optimistic; as I write this letter, we have seen some encouraging improvements to this metric. Execution, however, is not always up and to the right. We will have to put 2019 down as a year of learning.

Attached and linked to this year's letter is a member facing document titled: "Why Trupanion." This document provides some of the key content that we need to learn how to share more effectively with pet owners who are trying to decide if they should choose Trupanion. We are already exceptionally skilled at delivering this content over the phone. The team needs to become more proficient at delivering this content via multiple formats and delivery mechanisms. This information needs to then be reinforced for new members to help increase retention during the first year. Not all new members will take the time to digest this information, but I'm confident that those who do will not only be more likely to convert, they are also more likely to become brand ambassadors.

Same Store Sales: The average number of pets enrolled per active hospital per month.

Penetration Rate: In this context, our penetration rate is the number of Trupanion-insured clients that a particular hospital cares for as a percentage of their total number of clients.

Active Hospitals: A veterinary hospital that has one or more net pets enrolled every three months.

Account Managers: Team members who support veterinary hospitals in between visits from our Territory Partners.

Territory Partner: Entrepreneurial team members who are responsible for educating the veterinarians in their exclusive geography about the benefits of pet owners having high-quality medical insurance for pets. Once they have established a relationship with these veterinarians, Territory Partners will work with veterinary staff to ensure that Trupanion members have a great customer experience when their pet gets sick or injured, which increases our retention rates. Note that the majority of a Territory Partner's compensation is tied to keeping pets enrolled, not enrolling them in the first place, which we consider to be a variable expense.

Our Software: Our software communicates with the Practice Management Software inside a hospital, which allows us to pay hospitals directly at time of invoice and eliminates a major barrier to care—the **reimbursement model** (see page 07 for definition).

Conversion Rates: The percentage of pet owners who enroll with Trupanion after receiving a quote.

Nirvana B

Getting closer to achieving **Nirvana** was a major focus in 2019. There were a few areas to celebrate—ask for details at the Shareholder Meeting! We made progress in some categories (and territories), and overall, this metric improved slightly from 2018. We define Nirvana as the referrals from members adding pets or referring friends offsetting **churn** in the business. In 2019, our monthly average of pet owners adding pets or referring friends represented 0.74% of our overall book. Churn for the year averaged 1.42% per month. The difference between the two was 0.68%, whereas in 2018 the difference was 0.72%. This is a 0.04% improvement over 2018!

Nirvana: The referrals from members adding pets or referring friends, offsetting churn in the business.

Churn: Members who are canceling their subscription.

Automating claims A-

We made lots of progress here in 2019. We increased the percentage of automated claims through our software from 4.7% in 2018 to 32.2% in 2019—with an average processing time of less than 15 seconds. Like conversion rates, automating claims provides benefits across the organization. I am pushing the team to get above 50% in 2020!

Adjusted Operating Income/Margin B

Adjusted Operating Income grew 39% year over year which, on its own, was fantastic, and in my opinion, deserves a grade of “A+”. But we must also consider our results as a percent of revenue.

As a percent of revenue, performance was mixed. Adjusted operating margin, including our other business, which runs at a lower margin, was 12% for the year. Within our direct to consumer monthly subscription business, we target a 15% adjusted operating margin.

In 2019, our adjusted operating margin for our subscription business was 13%, comprised of 72% paying veterinary invoices, 9.1% **variable expenses** and 5.7% **fixed expenses**. For the second consecutive year, we were able to scale variable expenses below our historical 10%. We're now able to target 9% moving forward—this is great for the pet owner, and great for us!

Variable Expenses: Expenses that vary alongside the number of pets that are enrolled. For example, the more members we have, the more customer service agents we need to be able to take care of those members.

Our fixed expenses were 5.7% in the year and 5.2% in the back half of the year. We are pleased to announce that we are approaching operating scale, which we define as keeping fixed expenses at 5% of revenue. This should happen when we reach the low end of our targeted range of 650,000 to 750,000 total enrolled pets. Even so, results could have been better considering that we benefited from a 1% savings after diluting the company to buy our building.

Fixed Expenses: Operating costs that do not increase in direct proportion with the number of pets we have enrolled.

Nevertheless, our run-rate as of year end implies combined variable and fixed expenses of 14%, leaving 71% available to pay veterinary invoices while meeting our 15% adjusted operating margin target. Let me be clear, our ability to hit 71% today is no greater than our ability to hit 70% last year—they both require a great deal of execution. Consistently, over the past few years, we have operated about 2% above our target payout ratio—not below. A 2% miss is okay but something to improve upon.

We have **three items** that make it difficult for our teams to hit our target of using 71% of our revenue to pay veterinary invoices for the average pet owner. They have been at play for the last couple of years and will continue to be a challenge for the next few years. They include:

Installing more of our software, which facilitates our ability to pay veterinarians directly and helps increase same store sales. When we install our software, the number of invoices we receive per 1,000 pets increases, not because there are more “**unlucky**” **pets**, but because in a **reimbursement model**, some small invoices never get submitted. Because our software is deployed at the hospital level, we cannot effectively price in advance of this deployment and it takes us about 18 months to fully roll through the one-time step up in veterinary invoice expense incurred at these hospitals. It's worth repeating that this is 100% the right thing to do for pet owners and veterinarians and we would take this trade-off every time. As we look to accelerate the number of hospitals with our software over the next several years, we expect this headwind to persist.

Increasing the percentage of invoices that are processed and paid within seconds via automation. 100% of the invoices submitted to us via our software are routed through our artificial intelligence automation tool. Some are processed via automation, and others are passed on to our claims team, which operates 24/7/365. As we try to increase the percentage of claims that are processed through our automation tool, we expect there will be mistakes as we place greater confidence in this machine to make the right decisions.

Continually improving the accuracy of our pricing categories in a more granular way. Said simply, we have some **sub-categories** that are priced at 65% and others at 75%. It would be easier to hit our target if we allowed those at 65% to stay low while we increase pricing for those at 75%, but that is not the right thing to do, and is not consistent with our pricing promise (you can learn more about our pricing promise in the attached “Why Trupanion” booklet). We lower the monthly cost for members in the sub-category priced at a 65% payout, while raising the monthly cost for members in the sub-category priced at a 75% payout, in order to achieve our overall target of paying out 71% of our revenue towards veterinary invoices in each pricing category, instead of allowing one group to subsidize another.

For me, the three tactics described above—**direct pay, automation and pricing**—are strategically important moats for our business. When stack-ranking them against hitting our near-term pricing/margin targets, they win. That being said, we strive to both build competitive moats and hit our margin targets at the same time.

In the words of one of my favorite business guru's, Dr. Edward Deming,

“ Good companies keep improving, and the most important knowledge that they embody is how to detect and eliminate errors.

Unlucky Pets: Pets that have more accidents and illnesses than the average pet. A lucky pet, by contrast, has fewer accidents and illnesses than the average pet.

Reimbursement Model: An insurance model that requires the pet owner to first pay the veterinarian for his/her services in full. The pet owner then sends the invoice to their insurance company and waits for reimbursement, which typically takes 3-5 weeks. When a hospital uses our software, the hospital receives direct payment from Trupanion at the time of checkout, which removes a substantial barrier to care in cases where the member could not afford to pay for the services rendered and wait for reimbursement.

Pricing Categories: Groups of pets who share similar features, and should therefore pay similar monthly premiums. Examples of pricing categories might be breed, geography, or age at enrollment.

Sub-categories: Pricing categories that get further refined over time as we learn more about pets through our data. For example, while a pricing category might be “geography,” sub-categories might be “state or province,” “zip code,” or “neighborhood.”

Culture & Team B+

2019 was a mixed year for me on this front. Our culture at Trupanion is unique. We don't embrace status or typical hierarchy. Trust is a minimum requirement. During the year we hit a few bumps, made a few course corrections and ended the year back on track. Our people, culture and communications need to constantly evolve and improve—at times, we could have moved faster. My role is to lead by example; at times I have struggled to evolve.

During the year, I listened to a podcast interview of Shopify CEO Tobias Lütke, where he explained:

“*In a company that's growing, significantly, 50% a year or something like this...that means that everyone has to get 50% better at their job just to stand still. If you want to grow and make it further, you have to outpace the growth of the company and that's tough. It's tough to do. You have to be really committed.*

When it comes to our team, there are three critical areas of focus: bringing in amazing team members, offering best-in-class learning and development opportunities, and providing an environment that best encourages team members' fulfillment. In 2019, our team was able to accelerate the time it took to find and onboard key positions. We were impressed by these results in a year when most companies were having difficulty adding to their teams. I am especially proud that for certain key positions where we undertook nationwide searches and identified very skilled people, our side-by-side comparisons confirmed that our internally developed candidates were still the best people for the jobs.

In fact, 123 team members advanced their careers last year and our overall team member retention rate increased by more than 3%. This makes me smile 😊. I believe that the ability to attract and retain amazing people is an underappreciated strength. At the end of the day, our culture and mission are paying dividends.

Our mission is strong, and our addressable market is large. Our core business model is compelling; our moats are deep. Metrics inform us of our progress and our underlying health. Strong execution, leadership and culture are difficult to achieve yet rewarding.

Annual Shareholder Meeting

We intend to discuss these initiatives, and more, during our upcoming **Annual Shareholder Meeting on June 11th**. It had been our hope to host you all again at our headquarters in Seattle, but because we are prioritizing the health and safety of our team members and community, we will be moving to an online format this year.

How We Make Strategic Decisions

When we are making strategic decisions, or choosing how to deploy our discretionary cash, we use a 15-year discounted cash flow (DCF) model to determine the value we expect to create.

This 15-year discounted cash flow (DCF) model informs what we believe is the intrinsic value of our company and how it changes over time. These changes, when positive, result in value creation. Building and using our DCF model not only keeps us honest about our value creation per share, but it also reinforces the importance of our key metrics and informs our decision making.

Said another way, our model is a tool to help track our progress as well as chart our future. Our model does not determine our destination, nor does it reflect our aspirations. Our aspirations are to outperform our model! Rather, it acts as a compass, helping us navigate and plot our course.

Our metrics, how they have trended historically, and our conviction around how they will trend in the future, are the building blocks of our intrinsic value model. For me, using the past as a guide is the single best method for trying to predict the future. If the past was consistent and predictable, then one can reasonably expect it to be a useful forecasting tool.

We believe all companies should be valued on future cash flows. To accomplish this task, one needs to build a DCF model. When an informed investor builds such a model for Trupanion, we believe they will better understand how and why our business is differentiated. Absent this exercise, one is only speculating as to how best to value a company.

There is no such thing as the perfect DCF model, but I am confident that when it comes to our business, our interpretation is well thought out and defensible. Our goal is to be transparent to our shareholders, employees (who are also shareholders!), Territory Partners, veterinarians, and members. We share what we believe are our key metrics and how they impact our intrinsic value. With that explanation as a backdrop, let me tell you how we build it and why.

How we build our 15-year DCF model:

After years of monitoring what we believe is our intrinsic value and building our DCF model using our key metrics, we have learned a lot. We expect our knowledge to continue to grow and our methodology, key metrics and models to continue to evolve and improve. Over the last few years, our inputs are more rule-based, and although they have shown a slightly more conservative view of our estimated intrinsic value, we believe they are more defensible. Every year we replace our model's forecast for the current year with actual results, and then project cash flows for the remaining 14 years, including the terminal period in year 15. At the end of each year, we measure the year over year change in intrinsic value, compared to the prior model, indicating how much per share value we created.

To demonstrate how our model works, we are going to turn the clocks back to January 1st, 2019 and show you what our 2018 model forecasted for 2019. This practice informs us of what we would have expected our intrinsic value per share to be at the end of 2019. We'll also compare our projected 2019 results to our actual performance, allowing the reader the ability to measure the accuracy of the assumptions used to project future periods.

At the end of this exercise, we will have provided you with the roadmap of how we internally update our model each year.

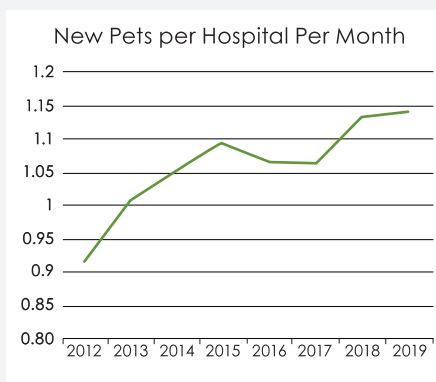
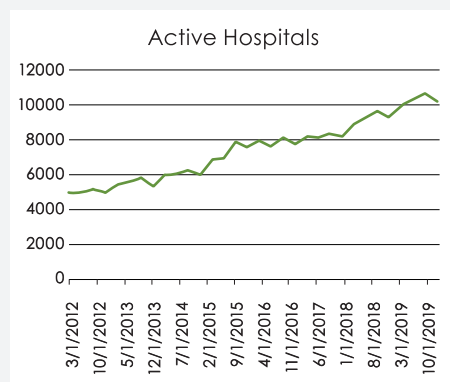
I'll reiterate that the following analysis is simply a projection applying a set of rules that relate to assumptions about our business based on historical performance. As our analysis will show, our actual results will be different than what is predicted by the model. Therefore, **any numbers represented herein should not be interpreted as guidance**, nor do they represent our strategic goals.

I'll also note that we aspire to outperform our model through both great execution and a bit of luck, but we are mindful that we may underperform if we take our eye off the ball. Many of our strategic investments—today and in the future—are aimed at driving improved results across our key metrics. This model, driven by key metrics, informs us of the past and tells us what we need to do in the future—sometimes years in advance (more on that in a moment!).

We have several facets of our current business. Our direct to consumer monthly subscription business is the largest component and where the most value is created. I will start with this facet of the business first; we will then add other business, and when summed together, this will provide a valuation for the entire organization.

How many new pet enrollments should we include in future years when building our model?

We focus on the number of veterinary hospitals recommending Trupanion (active hospitals), the average number of new pets per hospital per month that enroll in our subscription product (same store sales), and their underlying trend lines. See below:



As I stated before, we believe the best predictor of future performance is past performance. For future new enrollments, we look at the growth rate in our number of active hospitals and the change in the number of enrollments per hospital per month. Going back to 2014, and using 3-year averages for both metrics, our predictive accuracy using this methodology has been **98.2%**.

Table 5. Predictive Accuracy Of New Pet Assumptions

Year	Number of Territory Partners	Estimated number of clinics we are visiting every 60-90 days	Estimated aggregate number of face-to-face visits	Actual average number of active hospitals	YOY percentage change	Actual average number of new pets per Hospital per month	YOY change	Predicted new pets	Actual number of new pets	Predictive accuracy
2012	34	15,000	262,000	5,034	5%	0.918	0.100	-	-	-
2013	40	16,200	324,000	5,531	10%	1.008	0.090	-	-	-
2014	58	15,400	404,000	6,098	10%	1.053	0.045	82,969	77,066	93%
2015	84	19,000	490,000	7,359	21%	1.093	0.040	89,704	96,556	108%
2016	105	21,300	577,000	7,875	7%	1.066	-0.028	115,568	100,692	87%
2017	107	19,800	662,000	8,242	5%	1.063	-0.002	115,465	105,180	91%
2018	123	20,200	751,000	9,279	13%	1.133	0.070	116,899	126,182	108%
2019	130	21,600	852,000	10,315	11%	1.141	0.008	137,981	141,283	102%
										98.2%

STEP 1

When building the 15-year discounted cash flow model, we **first calculate how many pets we're adding in the first year.**

Table 5 shows that we averaged **9,279** active hospitals with average same store sales of **1.133** pets per month in 2018. Our 3-year trend line for adding active hospitals in 2018 predicts an **8.1%** growth rate per year. Our same store sales 3-year trend line shows a growth rate of an additional **0.013** pets per month or a **1.2%** increase in same store sales for 2019. Based on these assumptions, we can project **137,981** gross new subscription pets in 2019.

Step 1:

$$\begin{array}{r} 7\% \text{ avg. growth rate '16} \\ 5\% \text{ avg. growth rate '17} \\ + 13\% \text{ avg. growth rate '18} \\ \hline 25 \\ \div 3 \text{ years} \\ \hline 8.1\% \text{ predicted avg. growth rate '19} \end{array}$$

Step 2:

$$\begin{array}{r} 9,279 \text{ active hospitals '18} \\ \times 8.1\% \text{ predicted avg. growth rate '19} \\ \hline 751 \text{ predicted new active hospitals '19} \\ \\ 9,279 \text{ active hospitals '18} \\ + 751 \text{ predicted new active hospitals '19} \\ \hline 10,029 \text{ total active hospitals '19} \end{array}$$

Step 3:

$$\begin{array}{r} -0.028 \text{ YoY change of pets in enrolled '16} \\ - 0.002 \text{ YoY change of pets in enrolled '17} \\ + 0.070 \text{ YoY change of pets in enrolled '18} \\ \hline 0.040 \\ \div 3 \text{ years} \\ \hline 0.013 \text{ avg. YoY change '16-'18} \\ +1.133 \text{ avg. new pets per hospital per month '18} \\ \hline 1.146 \text{ predicted same store sales '19} \end{array}$$

Step 4:

$$\begin{array}{r} 10,029 \text{ predicted total active hospitals '19} \\ \times 1.146 \text{ predicted same store sales '19} \\ \hline 11,498 \text{ predicted new pets per month '19} \\ \\ 11,498 \text{ predicted new pets per month '19} \\ \times 12 \text{ months} \\ \hline 137,981 \text{ predicted new subscription pets '19} \end{array}$$

Compare this to our actual gross new pets in 2019 of **141,283**, which exceeded our predicted gross new pets by 2%. In our 2019 model, this additional growth would be incorporated into future assumptions, as the metrics for predicting new pets is based on the most recent 3-year trend.

Before we move on to retention, I want to point out how we look to the model to help inform strategy. Recall the 8.1% predictive growth rate in active hospitals noted above. Assuming we grow our veterinary hospital base by 8.1% for 15 consecutive years, we're left with approximately 30,000 active hospitals in 2033. That's quite a feat considering there are only 25,000 veterinary hospitals in North America today. Indeed, the model demonstrates that in order to achieve this level of success,

expansion beyond North America will be necessary. In this example, forecasted growth in active hospitals illustrates how our model can help inform our decision making years in advance.

Next, we will turn to retention. As introduced in our shareholder letter last year, I believe the following is the most helpful view of retention for the purposes of steps 2 and 3.

Table 6. 2018 Churn By Rate Change

2018 Churn	Active Pets at Year End	Number of Cancelled Pets	Percentage of Pets in 2018	Monthly Churn	Monthly Retention
No Rate Change (New Pets)	86,914	26,960	20.18%	2.79%	97.21%
Rate Change < 20%	290,719	30,000	67.49%	0.93%	99.07%
Rate Change > 20%	53,137	10,135	12.34%	1.69%	98.31%
Total	430,770	67,095	100.00%	1.40%	98.60%

We just started reviewing churn by the above member groupings in 2018. As mentioned, this model progresses as we continue to develop and refine assumptions with time. In the future, with more historical data, we may use a blended rate or another approach if those methodologies prove more accurate for capturing retention rates.

To project cancellations we consider that retention in the first year is different than retention after the first year a member enrolls. For this reason, cancellations are projected by using our historical experience for first year retention (and applying that rate to new pets added during the year). Reducing the number of pets that cancel within the first year, and before they ever receive a rate change, remains our biggest opportunity. After the first year, historical experience for retention is applied to our existing book of business each year. This better reflects the expected overall retention rate based on the number of new enrollments.

STEP 2

Calculate how many of the pets enrolling in the first year will also cancel in that first year.

Use the "Monthly Churn" for "Pets with No Rate Change" of **2.79%** from Table 6 to calculate.

Table 7. Net New Subscription Pets, Year 1 Churn

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	2019
Remaining subscription pets from prior month		11,177	22,042	32,604	42,871	52,852	62,554	71,986	81,155	90,068	98,732	107,154	
New subscription pets	11,498	11,498	11,498	11,498	11,498	11,498	11,498	11,498	11,498	11,498	11,498	11,498	
Monthly churn For new pets added in year 1 at 2.79%	(321)	(321)	(321)	(321)	(321)	(321)	(321)	(321)	(321)	(321)	(321)	(321)	
Monthly churn for remaining subscription pets at 2.79%	-	(312)	(615)	(910)	(1,196)	(1,475)	(1,745)	(2,008)	(2,264)	(2,513)	(2,755)	(2,990)	
Total 2019 cohort of new pets	11,177	22,042	32,604	42,871	52,852	62,554	71,986	81,155	90,068	98,732	107,154	115,341	115,341

The above shows 2019 gross pet adds averaged throughout the year. In reality, new pets added build throughout the year and vary based on seasonality and the number of days in a month. The variable enrollment growth within a year adds complexity without any meaningful change to the ultimate calculation.

Step 1: **11,498** new subscription pets in Jan '19
 x **2.79%** monthly churn with no rate change in '18 (see Table 6)
321 predicted cancellations in Jan '19

11,498 new subscription pets in Jan '19
 - 321 predicted cancellations in Jan '19
11,177 remaining pets enrolled from this cohort at the end of Jan '19

Step 2: 11,177 remaining pets enrolled from this cohort at the end of Jan '19
 x **2.79%** monthly churn with no rate change ('18)
312 predicted cancellations in Feb '19 for new subscription pets in Jan '19

11,177 remaining pets enrolled from this cohort at the end of Jan '19
 - 312 predicted cancellations in Feb '19 for new subscription pets in Jan '19
 - 321 predicted cancellations in Feb '19 for new subscription pets in Feb '19
 + 11,498 new subscription pets in Jan '19
22,042 remaining pets enrolled from this cohort at the end of Feb '19

Step 3: Repeat Step 2 for every month through December to calculate the total retained pets who enrolled in the first year: **115,341**.

STEP 3

Project monthly cancellations of the pets who have been enrolled longer than a year.

Our blended average between the **67.49%** of pet owners who received a rate increase that was less than 20% in 2018 (see Table 6) with a **0.93%** monthly churn rate and the **12.34%** of pet owners who received a rate change of greater than 20% in 2018 with a monthly churn of **1.69%**, is a **1.05%** monthly churn for existing pets.

Table 8. Monthly Retention of Existing Pets

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	2019
Pets who have been enrolled longer than a year	430,770	426,247	421,771	417,342	412,960	408,624	404,333	400,088	395,887	391,730	387,617	383,547	
Monthly churn of 1.05%	(4,523)	(4,476)	(4,429)	(4,382)	(4,336)	(4,291)	(4,245)	(4,201)	(4,157)	(4,113)	(4,070)	(4,027)	
Remaining pets who have been enrolled longer than a year	426,247	421,771	417,342	412,960	408,624	404,333	400,088	395,887	391,730	387,617	383,547	379,520	379,520

Step 1: **430,770** subscription enrolled pets as of December 31, 2018
 x **1.05%** monthly churn
4,523 Jan churn
 430,770 subscription enrolled pets as of December 31, 2018
 - 4,523 Jan churn
426,247 remaining pets who have been enrolled longer than a year at the end of Jan '19

Step 2: **426,247** remaining pets who have been enrolled longer than a year at the end of Jan '19
 x **1.05%** monthly churn
4,476 Feb churn
 426,247 remaining pets who have been enrolled longer than a year at the end of Jan '19
 - 4,476 Feb churn
421,771 remaining pets who have been enrolled longer than a year at the end of Feb '19

Step 3: Repeat Step 2 for every month through December to calculate remaining pets who have been enrolled longer than a year at the end of 2019: **379,520**.

STEP 4

Predict total number of pets enrolled in each month of the first year. Sum each month of total retained pets through the year to calculate total **pet months** for the year.

Compare this to actual pet months of 5,575,676 in 2019—slightly below our prediction, due to a slight decline in our actual retention rates in 2019, shown below:

Pet Months: The sum of adding together the ending enrolled pets each month over a period of time.

Table 9. Subscription Pet Months

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	2019
Total 2019 cohort retained new pets	11,177	22,042	32,604	42,871	52,852	62,554	71,986	81,155	90,068	98,732	107,154	115,341	
Total retained existing pets	426,247	421,771	417,342	412,960	408,624	404,333	400,088	395,887	391,730	387,617	383,547	379,520	
Total retained pets	437,424	443,813	449,946	455,831	461,476	466,887	472,074	477,042	481,798	486,349	490,701	494,861	5,618,202 Pet Months

Note that the sum of the bottom row of Table 9 is **5,618,202**, which is what we call pet months. The above calculation is a simplified illustrative example compared to our actual model, and when we factor in the impact of new pets added in 2018 that have higher cancellations for a portion of 2019; the total pet months projected for 2019 was 5,602,431 in our model. This is the number of subscription “pet months” we would use to project 2019 in our DCF model. Pet months is a metric that we commonly use within the company and it will come up later in the model analysis.

437,424 Jan
443,813 Feb
449,946 Mar
455,831 Apr
461,476 May
466,887 Jun
472,074 Jul
477,042 Aug
481,798 Sept
486,349 Oct
490,701 Nov
+ 494,861 Dec
5,618,202 pet months '19

Compare this to actual pet months of 5,575,670 in 2019—slightly below our prediction, due to a slight decline in our actual retention rates in 2019, shown below:

Table 10. 2019 Churn By Rate Change

2019 Churn	Active pets at year end	Number of canceled pets	Distribution	Monthly Churn	Monthly Retention
No Rate Change	100,008	30,155	20.24%	2.70%	97.30%
Rate Change < 20%	306,681	34,138	62.08%	1.00%	99.00%
Rate Change > 20%	87,337	13,734	17.68%	1.41%	98.59%
Total	494,026	78,027	100.00%	1.42%	98.58%

STEP 5

Isolate the cash earned from a single average subscription pet per month.

Below is our monthly per-pet economics, or cash flow prior to new pet acquisition, for our average subscription pet in 2018:

Table 11. 2018 Per Pet Monthly Economics

	2018	
Average monthly cost (ARPU)	\$54.34	100.0%
– Paying veterinary invoices (COGS)	(\$39.33)	72.4%
– Variable expense (fast, 24/7 service)	(\$5.08)	9.3%
= Contribution profit	\$9.93	18.3%
– Fixed expenses (G&A + IT)	(\$3.65)	6.7%
= Profit per pet per month	\$6.28	11.6%
– a 1% capital charge	(\$0.54)	1.0%
= the cash generated per month for the average pet	\$5.74	10.6%

Why we add a 1% capital charge

In 2018, we earned **\$6.28** per month for the average subscription pet. From a cash perspective \$6.28 is correct, but because we own an insurance entity with the goal of lowering **frictional costs**, we are required to hold assets in case every enrolled pet became sick or injured at the same time. Some types of insurance businesses need to hold considerable amounts of cash in surplus, for unpredictably expensive events like Hurricane Katrina. Other types of insurance businesses need to hold less surplus, like dental insurance. Regardless of the ratio, this surplus (of assets or liabilities) is required, sensible and necessary.

At Trupanion, we currently have a revenue to capital ratio of approximately 4.8:1. This means that for every pet we enroll at our average subscription cost of **\$54.34** per month, we need to have \$11.32 sitting in an insurance entity.

Over the years, we have used debt as a tool to help with our overall growth and, when required, help satisfy our capital requirements. This debt, when utilized, is cash collateralized by our cash surplus and our other assets. I view the servicing of this debt to be a variable expense to operate our business. The spread between what we are being charged on a line of credit and what we are earning on our cash surplus works out to about 1% of revenue, thus the 1% capital charge.

Monthly Cost: The amount an average pet owner pays per month for a Trupanion subscription.

Average Revenue Per Unit (ARPU): A term commonly used in monthly subscription business models. In our case, we track and report the average revenue of each pet per month.

Cost of Goods Sold (COGS): For us, these are expenses related to paying veterinary invoices.

General and Administrative Costs (G&A): These expenses support our business operations in a way that's not directly tied to supporting our members (for example, our legal and finance teams would fall into this bucket).

Frictional Costs: All of the direct and indirect costs associated with issuing a policy to an enrolled pet.

Back to our monthly subscription economics. In 2018, our pet owners paid us an average \$54.34 per pet. Our cost to deliver on our product, including a 1% charge for our required surplus capital, was \$48.60. This left us with **\$5.74** profit for the average pet in 2018 prior to investment in new pet acquisition.

Our average lifetime retention of a pet was 71.4 months in 2018. $71.4 \text{ months} \times \$5.74 = \$409.84$. We spent \$23 million dollars one-time enrolling approximately 126,000 new subscription pets in 2018 that, excluding sign-up fees, averages to \$164 spent per pet. Investing \$164 once to get \$409.84 in return is a 250% return on your invested capital. Because it takes 71 months to earn back that capital, the 250% return equates to an estimated 46% average return per year, which we describe as our internal rate of return (IRR).

As a reminder, in 2018 our reported internal rate of return was informed by our **blended adjusted operating income**. Had we isolated per pet unit economics specific to our subscription business, our estimated internal rate of return in 2018 would have been 46%. At a 46% IRR, there is room to be more aggressive in the deployment of our acquisition spend!

Blended Adjusted Operating

Income: The AOI for both our subscription business and our other business. Moving forward, when we use the term "AOI" (as opposed to "Blended AOI"), we are referring to the AOI of our subscription business only.

Which margin matters, and why?

When building a DCF model, the breakdown of the margin above the "cash generated" line does not matter to me because it does not impact the cash flow. See these three examples:

Table 12. Cash Flow Per Month Margin Examples

	Example 1	Example 2	Example 3
Average monthly cost (ARPU)	100%	100%	100%
– Paying veterinary invoices (COGS)	68%	71%	73%
– Variable expense (fast, 24/7 service)	11%	9%	8%
– Fixed expenses (G&A + IT)	6%	5%	4%
= Adjusted operating margin	15%	15%	15%
– Capital charge for money we are required to hold in cash or assets	1%	1%	1%
= Cash generated per month for the average pet after a capital charge	14%	14%	14%

Although these three examples would yield the same cash flow per month, they would likely have different outcomes. Example 1 would be the easiest to manage as you would have more money for operating both your variable and fixed expenses. Example 3 would be the most difficult to execute but would likely yield the best long-term value as the pet owner would be receiving the best value proposition. All else being equal, over time I would expect that Example 3 would have higher conversion rates and longer retention rates than Examples 1 or 2. Example 3 has the biggest moats and is therefore the most likely to have consistent growth over long periods of time.

For the next several years, we will be targeting **Example 2**. Our COGS target is the most difficult to hit and we can expect fluctuations of +/- 2% for a year if we are executing well.

Back to Step 5: Isolate the cash earned from a single average subscription pet per month.

We have our per pet unit economics for 2018. How do we determine what to use as an average cash flow per pet in 2019 and in future years? We increase 2018 ARPU by 5.5% to represent the projected annual increase in the cost of veterinary care. Remember, we're a **cost-plus model**, and we historically have seen the cost of veterinary care rise 5-6% each year. We anticipate this trend to continue and will revisit this metric again in our discussion of terminal year value.

We should also include an assumption of our estimated profit per pet per month after our fixed expenses and a one percent capital charge (prior to new pet acquisition expense).

We project spend for paying veterinary invoices and variable expenses using a 3-year historical average of our subscription **gross margin** to ensure that we do not assume changes in gross margin until proven to be repeatable. Following this, we project that our fixed expenses will continue to scale at approximately half the rate of revenue to 5.8% of revenue in 2019 and continued scale to our 5% target thereafter. In future years, we do not allow our fixed expenses to scale beyond our 5% target, with the exception of allowing the benefits of owning our home office building to flow through. As a reminder, our building acquisition also was done to provide surplus capital efficiencies and long-term space planning flexibility.

Based on the methodology discussed above, we would predict the following 2019 per-pet economics, compared to 2019 actuals.

Cost-Plus Model: Trupanion's pricing methodology involves first understanding the cost of paying for items covered under our policy, then adding in the cost of running our business plus a small profit, which equals the monthly cost of the insurance policy. Most insurance companies will instead target a specific monthly cost for their customers, and in doing so, they must lessen their coverage (sometimes annually) in order to meet this target monthly cost.

Gross Margin: Our profit after paying claims, as well as the cost associated with paying out claims and supporting members, expressed as a percentage of revenue. This margin does not include our fixed expenses.

Table 13. Per Pet Unit Economics–Predicated Vs Actual

	2018 Actuals		2019 Predicted		2019 Actuals	
Average monthly cost (ARPU)	\$54.34	100.0%	\$57.32	100.0%	\$57.52	100.0%
– Paying veterinary invoices (COGS)	(\$39.33)	72.4%	(\$40.99)	71.5%	(\$41.56)	72.2%
– Variable expense (fast 24/7 service)	(\$5.08)	9.3%	(\$5.45)	9.5%	(\$5.27)	9.2%
= Contribution profit	\$9.93	18.3%	\$10.88	19.0%	\$10.69	18.6%
– Fixed expenses (G&A + IT)	(\$3.65)	6.7%	(\$3.29)	5.7%	(\$3.26)	5.7%
= Profit per pet per month	\$6.28	11.6%	\$7.59	13.2%	\$7.43	12.9%
- Capital charge for money we are required to hold in cash or assets	(\$0.54)	1.0%	(\$0.57)	1.0%	(\$0.58)	1.0%
= Cash generated per month for the average pet	\$5.74	10.6%	\$7.02	12.2%	\$6.85	11.9%

Viewing our per pet economics against 2019 actuals illustrates a predicted improvement in our adjusted operating margin that wasn't fully realized by **0.3%** of margin in 2019.

Based on the expected pet growth and churn determined in previous steps, the 2018 model predicted 491,440 total subscription pets enrolled by the end of the year 2019 with **5,602,431** pet months. When multiplied by the projected **\$7.02** of cash earned for the average pet in a month in 2019, the total cash generated from the subscription pets would be **\$39.3M** for the year. This projection is compared to actuals below.

Table 14. Predictive Accuracy Of Cash Generated By The Average Subscription Pet

	Monthly cash generated from the average subscription pet	Total Pet Months	Total cash generated from subscription pets
2019 Predicted	\$7.02	5,602,431	\$39.3M
2019 Actual	\$6.85	5,575,670	\$38.2M

To determine the remaining future enrollments to add annually, we use the historical growth assumptions to project the first 5 years after the current year in the model. As a reminder, these assumptions are a combination of two drivers: (1) the 3-year average of the historical growth rate in active hospitals, and (2) the 3-year average of the historical same store sales growth in pets. Adding in our churn rates by new and existing pet cohorts provides our pet month additions through year 5 after the current year.

To avoid creating too much volatility in the outer years of the model, we then project pet months for the remaining years at a constant growth rate (until the terminal year) based on the trend in pet months.

Using this methodology to calculate our value in 2019, we updated for our 2019 actuals and projected future pet months and subscription cash generated based on the methodology discussed above, resulting in the following (prior to the terminal year).

Table 15. Discounted Cash Flow Model Inputs 1.1

	Monthly cash generated from the average subscription pet	Total pet months	Total cash generated subscription pets
2018 Actual	\$5.74	4,843,802	\$27.8M
2019 Actual	\$6.85	5,575,670	\$38.2M
2020	\$7.78	6,407,329	\$49.9M
2021	\$8.47	7,280,343	\$61.7M
2022	\$9.18	8,242,219	\$75.6M
2023	\$9.81	9,304,305	\$91.3M
2024	\$10.32	10,479,007	\$108.1M
2025	\$10.86	11,781,547	\$127.9M
2026	\$11.43	13,230,666	\$151.2M
2027	\$12.04	14,850,112	\$178.8M
2028	\$12.68	16,667,751	\$211.4M
2029	\$13.37	18,707,901	\$250.1M
2030	\$14.09	20,997,766	\$295.9M
2031	\$14.86	23,567,914	\$350.1M
2032	\$15.67	26,452,650	\$414.4M

Add the cash generated from our other business segment.

First, a quick refresher. In addition to our direct to consumer subscription business, we have a business to business component, which we refer to as our other business. Our other business segment comprises several initiatives with one unifying characteristic: the pet owner does not pay us directly, rather a business pays us. While this side of our business operates at a lower margin, our other business adds to our data advantage, provides us with insights into alternative products and channels and allows us to share in the success of the broader category. We also spend very little to acquire pets within this segment. In 2019, acquisition spend related to this segment was about \$400,000.

A sizable portion of this segment of our business today acts like a traditional insurance company. We have the capital, underwriting licenses, pricing expertise and the capacity to help other companies underwrite more business (pets).

Like most insurance companies, the third party company, or broker, is paid to bring in the business and is paid a percentage-based commission. These commissions can range between 10% and 35% depending on what the broker contributes. These contracts tend to be annual. If you get the renewal business, you would have to pay those commissions each year.

Similar to our subscription business, we are required to put up capital, and in return we earn some cash. The cash we earn becomes a return on equity. In 2019, revenue for this segment was \$62.8M and we earned profit of **\$1.7M**. We put up \$13.1M to underwrite this business at a 4.8:1 ratio. \$1.7M on \$13.1M produces a 13.0% return on our equity. As we have already said, this segment on its own produces OK results, but I would certainly not describe it as compelling.

Now back to our exercise.

In 2018, we earned **\$0.5 million** of cash on \$40.2 million of revenue. As the North American category has been growing in revenue, at approximately 20% for the last three years, we model our cash in this segment based on the 20% year over year revenue growth rate in the category, net of the three year historical average gross margin and a fixed expense percentage in line with the fixed expenses discussed in Step 5. See below for results:

Table 16. Discounted Cash Flow Model Inputs 1.2

	Monthly cash generated from the average subscription pet	Total Pet Months	Total cash generated subscription pets	Total cash generated other pets	Total cash generated
2018 Actual	\$5.74	4,843,808	\$27.8M	\$0.5M	\$28.3M
2019 Actual	\$6.85	5,575,676	\$38.2M	\$1.7M	\$39.9M
2020	\$7.78	6,407,329	\$49.9M	\$1.6M	\$51.5M
2021	\$8.47	7,280,343	\$61.7M	\$2.3M	\$64.0M
2022	\$9.18	8,242,219	\$75.6M	\$3.1M	\$78.7M
2023	\$9.81	9,304,305	\$91.3M	\$4.0M	\$95.3M
2024	\$10.32	10,479,007	\$108.1M	\$4.8M	\$112.9M
2025	\$10.86	11,781,547	\$127.9M	\$5.7M	\$133.6M
2026	\$11.43	13,230,666	\$151.2M	\$6.9M	\$158.1M
2027	\$12.04	14,850,112	\$178.8M	\$8.2M	\$187.0M
2028	\$12.68	16,667,751	\$211.4M	\$9.9M	\$221.3M
2029	\$13.37	18,707,901	\$250.1M	\$11.8M	\$261.9M
2030	\$14.09	20,997,766	\$295.9M	\$14.3M	\$310.2M
2031	\$14.86	23,567,914	\$350.1M	\$17.2M	\$367.3M
2032	\$15.67	26,452,650	\$414.4M	\$20.8M	\$435.2M

Note that actual cash generated by our other business in 2019 was \$1.7M—an increase of \$1.1M over what the model would have predicted in 2018, because this segment grew more than 20% in 2019.

STEP 7

Determine how much of our discretionary cash we should expect to spend to grow the number of enrolled pets.

In our model, our total acquisition spend for the subscription business is based on a per pet acquisition cost (PAC), multiplied by the number of new pets in a given year. We estimate this allowable pet acquisition cost based on the calculated internal rate of return (IRR) of our average pet. Our target IRR is between 30% and 40% for all new subscription pets.

Our pet acquisition cost is a one-time expense that we pay to enroll a new pet. These expenses are recorded as sales and marketing in our income statement. Unlike many business models, we do not have ongoing sales and marketing expense for renewing pets. We pay a small, on-going residual to our Territory Partners, but those expenses are recorded as a part of our variable expenses.

For a given period of time, we take our total sales and marketing expense minus our one-time enrollment sign-up fee, and divide it by the number of new pets. This is our methodology to calculate our average pet acquisition cost (PAC). Several years ago, the majority of our sales and marketing spend was directed at creating leads. Today our pet acquisition costs are split between the costs associated with creating long-term lead sources and the costs of converting these leads.

Table 17. Discretionary Cash Available For Acquisition Spend, Per Pet

	Contribution profit over the life of an average pet	Fixed expenses over the life of an average pet	Total profit over the life of the average pet*	PAC	Lead ¹	Convert ²
2016	\$631	\$341	\$290	\$123	85%	15%
2017	\$727	\$318	\$409	\$152	75%	25%
2018	\$710	\$261	\$449	\$164	60%	40%
2019	\$753	\$230	\$523	\$212	50%	50%

¹Please note that in our filings, we refer to this as our key metric called "LVP, including fixed expenses." We have titled this column to align with the row titled "Profit Per Pet Per Month" in Table 11 of this letter.

²Historically, we have not tracked the attribution between our lead and conversion costs. Therefore, the percentages in Table 17 are internal management estimates.

To determine the overall acquisition spend in the model, we break out our costs into two buckets. The first bucket is for the new pets we estimate will enroll through the **refer-a-friend** and **add-a-pet** channels. This is an important cohort of our new enrollments that we monitor and report regularly. For several years, 0.7% of our total book consistently enrolled a new pet each month by either adding a new pet to their policy or referring a friend with a new pet. For this model, we calculate our allowable spend at a 30% IRR and estimate that we will spend **50%** of that amount on this first bucket of pets. We estimate this at 50%, given that we incur virtually no lead expense associated with these new pets as they are directly referred from, or added by, our existing members, and this level of spend is consistent with our historical estimates.

Refer-A-Friend: Members who learned about Trupanion from their friend or relative, who recommended that they also enroll. Refer-a-friend historically grows as a percentage of total pets enrolled.

Add-A-Pet: Members who already have a pet enrolled and choose to enroll another pet. Add-a-pet historically grows as a percentage of total pets enrolled.

For the remaining new pets that enroll, we assume they will come at the bottom end of our allowable IRR range, which is 30%. In 2018, approximately 74% of our new enrollments were acquired outside of members adding pets or referring friends. It is the blend of these two cohorts that gave us a 46% IRR in 2018.

To break this down further, let me reference back to our earlier discussion beginning on page 17, "Why we add a 1% capital charge."

“ Our average lifetime retention of a pet was 71.4 months in 2018. $71.4 \text{ months} \times \$5.74 = \$409.84$. We spent \$23 million dollars one-time enrolling approximately 126,000 new subscription pets in 2018 that, excluding sign-up fees, averages to \$164 spent per pet. Investing \$164 once to get \$409.84 in return is a 250% return on your invested capital. Because it takes 71 months to earn back that capital, the 250% return equates to an estimated 46% average return per year, which we describe as our internal rate of return (IRR).

Table 18. Discounted Cash Flow Model Inputs 1.3

	Monthly cash generated from The Average subscription pet	Total Pet Months	Total cash generated subscription pets	Total cash generated other pets	Total cash generated	Acquisition spend minus sign up fee	Cash after acquisition spend
2018 Actual	\$5.74	4,843,802	\$27.8M	\$0.5M	\$28.3M	\$21.1M	\$7.2M
2019 Projected	\$7.02	5,602,431	\$39.3M	\$0.6M	\$39.9M	\$30.4M	\$9.5M
2019 Actual	\$6.85	5,575,670	\$38.2M	\$1.7M	\$39.9M	\$30.4M	\$9.5M
2020	\$7.78	6,407,329	\$49.9M	\$1.6M	\$51.5M	\$38.4M	\$13.1M
2021	\$8.47	7,280,343	\$61.7M	\$2.3M	\$64.0M	\$46.7M	\$17.3M
2022	\$9.18	8,242,219	\$75.6M	\$3.1M	\$78.7M	\$56.5M	\$22.2M
2023	\$9.81	9,304,305	\$91.3M	\$4.0M	\$95.3M	\$67.4M	\$27.9M
2024	\$10.32	10,479,007	\$108.1M	\$4.8M	\$112.9M	\$79.1M	\$33.8M
2025	\$10.84	11,781,547	\$127.9M	\$5.7M	\$133.6M	\$93.0M	\$40.6M
2026	\$11.43	13,230,666	\$151.2M	\$6.9M	\$158.1M	\$109.5M	\$48.6M
2027	\$12.04	14,850,112	\$178.8M	\$8.2M	\$187.0M	\$129.3M	\$57.7M
2028	\$12.68	16,667,751	\$211.4M	\$9.9M	\$221.3M	\$153.0M	\$68.3M
2029	\$13.37	18,707,901	\$250.1M	\$11.8M	\$261.9M	\$180.9M	\$81.0M
2030	\$14.09	20,997,766	\$295.9M	\$14.3M	\$310.2M	\$214.2M	\$96.0M
2031	\$14.86	23,567,914	\$350.1M	\$17.2M	\$367.3M	\$253.4M	\$113.9M
2032	\$15.67	26,452,650	\$414.4M	\$20.8M	\$435.2M	\$300.0M	\$135.2M

We highlight that actual acquisition spend in 2019, less sign-up fee revenue, was \$30.4M which is exactly what we had projected in our model in 2018.

The last component of the 15 year discounted cash flow model is to **determine the “steady” state or “terminal year” value.**

In the above model, we project pet (month) growth for the first five years (after the current year) based on active hospital and same store sales assumptions. We then project pet months in the remaining years at a constant growth rate (until the terminal year) based on the preceding trend in pet months. For 2019, this results in an approximate 12.2% average pet (month) growth rate in the outer years. When combined with a 5.5% annual increase in our cash earned per pet (ARPU), this results in an 18.4% year over year increase in revenue in these years.

In the remaining terminal year, we have assumed that our total enrolled pet count remains flat at 2.3M subscription pets enrolled, or zero net new pets. Assuming the continued 5.5% increase in veterinary costs due to inflation, the revenue growth rate would drop from 18.4% to 5.5%. Note that, despite zero net new pets, the pet months increase slightly in the terminal year due to mid-year enrollments from the prior year being enrolled for a full year in the terminal year.

The terminal year assumptions for retention and expenses are consistent with the methodology discussed in the previous steps, with the exception of the estimated 1% capital charge and assumptions around other business.

Since the terminal year assumes less growth (zero net new pets), the capital charge assumption in the terminal year is reduced from 1% to 0.75% of revenue. Similar to the subscription business, where minimal growth is assumed in the terminal year, the other business revenue growth assumption is reduced from 20% to 5%.

Terminal Year: This concept is used in the last year of a DCF model to signify the margin profile of a business when it moves from a growth mode to a steady state.

In the terminal year, there would be **\$461.8M** in cash earned from subscription pets assuming a 5.5% increase in ARPU, resulting in **\$16.51** of monthly cash generated from the average subscription pet.

Table 19. Discounted Cash Flow Model Inputs 1.4

	Monthly cash generated from the average subscription pet	Total Pet Months	Total cash generated subscription pets	Total cash generated other pets	Total cash generated
2019 Actual	\$6.85	5,575,670	\$38.2M	\$1.7M	\$39.9M
2020	\$7.78	6,407,329	\$49.9M	\$1.6M	\$51.5M
2021	\$8.47	7,280,343	\$61.7M	\$2.3M	\$64.0M
2022	\$9.18	8,242,219	\$75.6M	\$3.1M	\$78.7M
2023	\$9.81	9,304,305	\$91.3M	\$4.0M	\$95.3M
2024	\$10.32	10,479,007	\$108.1M	\$4.8M	\$112.9M
2025	\$10.86	11,781,547	\$127.9M	\$5.7M	\$133.6M
2026	\$11.43	13,230,666	\$151.2M	\$6.9M	\$158.1M
2027	\$12.04	14,850,112	\$178.8M	\$8.2M	\$187.0M
2028	\$12.68	16,667,751	\$211.4M	\$9.9M	\$221.3M
2029	\$13.37	18,707,901	\$250.1M	\$11.8M	\$261.9M
2030	\$14.09	20,997,766	\$295.9M	\$14.3M	\$310.2M
2031	\$14.86	23,567,914	\$350.1M	\$17.2M	\$367.3M
2032	\$15.67	26,452,650	\$414.4M	\$20.8M	\$435.2M
Terminal year	\$16.51	27,978,852	\$461.8M	\$23.9M	\$485.7M

In the terminal year, at a 30% internal rate of return, our target PAC spend would be **\$620** per pet. To achieve steady state growth in our terminal year, we would need to replenish 28,939 enrolled pets per month (the result of a 1.24% monthly churn rate). In our DCF model, we assume that 16,321 new pets per month, or 0.7% of the book, will come from existing pet owners adding pets or referring their friends. For the model, we have assumed these pets were acquired at 50% of our allowable PAC (or **\$310**), as they would not require lead generation costs. The remaining 12,618 new pets per month would come in at our allowable PAC spend of \$620. This results in a blended PAC spend of \$445 per pet for the combined cohorts. See the chart below.

Table 20. Terminal Year Cash After PAC Spend

	New enrollments, terminal year	PAC	
Terminal year cash generated			\$485.7M*
Refer-a-friend & add-a-pet acquisition spend	195,852	(\$310)	(\$60.7M)
New pet acquisition spend	151,411	(\$620)	(\$93.9M)
Net profit in terminal year			\$331.3M

*Excludes sign-up fees.

In the terminal year, the model would predict a **\$331.3M** net profit before taxes.

Table 21. Discounted Cash Flow Model Inputs 1.5

	Monthly Cash Generated From The Average Subscription Pet	Total Pet Months	Total Cash Generated Subscription Pets	Other Pets	Total Cash Generated	PAC spend minus sign up fee	Cash after PAC spend
2019 Actual	\$6.85	5,575,670	\$38.2M	\$1.7M	\$39.9M	\$30.4M	\$9.5M
2020	\$7.78	6,407,329	\$49.9M	\$1.6M	\$51.5M	\$38.4M	\$13.1M
2021	\$8.47	7,280,343	\$61.7M	\$2.3M	\$64.0M	\$46.7M	\$17.3M
2022	\$9.18	8,242,219	\$75.6M	\$3.1M	\$78.7M	\$56.5M	\$22.2M
2023	\$9.81	9,304,305	\$91.3M	\$4.0M	\$95.3M	\$67.4M	\$27.9M
2024	\$10.32	10,479,007	\$108.1M	\$4.8M	\$112.9M	\$79.1M	\$33.8M
2025	\$10.86	11,781,547	\$127.9M	\$5.7M	\$133.6M	\$93.0M	\$40.6M
2026	\$11.43	13,230,666	\$151.2M	\$6.9M	\$158.1M	\$109.5M	\$48.6M
2027	\$12.04	14,850,112	\$178.8M	\$8.2M	\$187.0M	\$129.3M	\$57.7M
2028	\$12.68	16,667,751	\$211.4M	\$9.9M	\$221.3M	\$153.0M	\$68.3M
2029	\$13.37	18,707,901	\$250.1M	\$11.8M	\$261.9M	\$180.9M	\$81.0M
2030	\$14.09	20,997,766	\$295.9M	\$14.3M	\$310.2M	\$214.2M	\$96.0M
2031	\$14.86	23,567,914	\$350.1M	\$17.2M	\$367.3M	\$253.4M	\$113.9M
2032	\$15.67	26,452,650	\$414.4M	\$20.8M	\$435.2M	\$300.0M	\$135.2M
Terminal Year	\$16.51	27,978,852	\$461.8M	\$23.9M	\$485.7M	\$154.4M	\$331.3M

Table 22. Terminal Year P&L

Subscription revenue	\$3,393M	
Other revenue	\$874M	
Total revenue	\$4,267M	100%
Cash earned after capital charge	\$486M	11%
- PAC	(\$154M)	4%
=Net profit before taxes	\$331M	8%

In our 2019 model shown above, in 2033, the terminal year, we would have 2.3 million subscription pets with an average monthly revenue per pet of \$122. The model shows total revenue of **\$4,267 million** and a net profit before taxes of **\$331 million** in the terminal year of 2033.

Based on the present value of cash generated each year, a discount rate of **10.8%** (which we consider appropriate based on our calculated weighted average cost of capital), and the terminal year results, the model would indicate an intrinsic value in 2019 of \$1.26 billion. Additionally, we include the present value of cash flows we expect to generate during the 15 year period from our insurance entity purchasing full ownership of our home office building, which totals \$25.7M. This is a total intrinsic value in 2019 of **\$1.29 billion**. Our fully diluted share count (which includes all unvested shares and unexercised options) at the end of 2019 was 37,626,938. This equates to an intrinsic value per fully diluted share of \$34.21, since using the fully diluted share count is the most conservative view. If you wanted to calculate our intrinsic value using **outstanding shares** instead, it would have been \$36.45 at the end of 2019. Internally, we are more focused on our intrinsic value using our fully diluted share count when determining the value of our business, as well as the change from the prior year.

One could argue our cost of equity should be higher or lower. While we view 10.8% as conservative, a sensitivity analysis results in the following:

Table 23. Valuation Sensitivity Analysis

Discount rate		9.8%	10.8%	11.8%
Terminal growth rate	4.5%	\$1.56B	\$1.20B	\$0.96B
	5.0%	\$1.69B	\$1.29B	\$1.01B
	5.5%	\$1.86B	\$1.38B	\$1.07B

If going into a year, or a string of years, our model were to indicate that the predicted year-over-year change in our intrinsic value per share was to be below an acceptable return, then we would need to adjust our strategy to positively impact our key metrics.

What is an acceptable return? From my perspective, as a publicly traded **small-cap company** in a large under-penetrated market, we would expect to deliver out-sized returns to that of an **index fund**; otherwise, one would not accept the added risk. 15% is our floor. At 20% we are happy, and at 25% we are doing back-flips.

Outstanding Shares: Stock that is fully owned by all of our stockholders.

Terminal Growth Rate: The perpetual rate of growth we would expect of our business when it hits a steady state.

Small-Cap Company: Publicly traded company with a market value of less than \$5 billion.

Index Fund: An investment vehicle where one can own an equal percentage of all of the public companies included in the index fund, therefore getting an average return on investment on all of those publicly traded companies.

Common sense disclosure

We have provided this explanation of how we calculate intrinsic value for our company to help you in your own analysis and investment process. Our method is continually being refined. We hope we can share this information with you in a way that does not result in us, or other public companies, needing to be less transparent in the future.

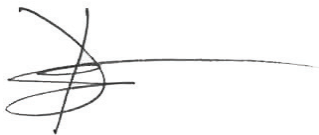
In Closing

As the CEO of Trupanion, it is my intention to share our key metrics as transparently as possible.

It is not my intention to provide annual updates to our intrinsic value model analysis, nor is it my intention to share our perspective on the resulting value per share publicly in the future. Be confident that we are monitoring our key metrics, the underlying health of our business, and the year over year change in intrinsic value per share the best way we know how.

For me, our core monthly subscription business is like "groundhog month." The recurring nature of our business model allows for incremental improvements of individual initiatives. Higher ARPU, more active hospitals, improved same store sales, expansion in our adjusted operating margin, reduced churn, and greater member referrals and new pets added are the key metrics that will help us outperform. When success in each of these areas is combined, it is not unthinkable to me that we could achieve the near impossible...or nirvana.

Kuyashii,

A handwritten signature in black ink, consisting of a stylized 'D' followed by a horizontal line extending to the right.

Darryl Rawlings

Founder & Chief Executive Officer

END NOTES

In this letter and our other publicly available reports, we present certain non-GAAP measures, including adjusted EBITDA, variable expenses, fixed expenses, adjusted operating income, adjusted operating margin, acquisition cost, and free cash flow. These non-GAAP financial measures may not provide information that is directly comparable to that provided by other companies in our industry as other companies in our industry may calculate or use non-GAAP financial measures differently. In addition, there are limitations in using non-GAAP financial measures because they are not prepared in accordance with GAAP and exclude expenses that may have a material impact on Trupanion's reported financial results. The presentation and utilization of non-GAAP financial measures is not meant to be considered in isolation or as a substitute for the directly comparable financial measures prepared in accordance with GAAP. Trupanion urges its investors to review the reconciliation of its non-GAAP financial measures to the most directly comparable GAAP financial measures in its consolidated financial statements, and not to rely on any single financial or operating measure to evaluate its business. These reconciliations are included within our Supplemental Financial Information provided on Trupanion's Investor Relations website.

Our internal rate of return is calculated assuming the new pets we enroll during the year will behave like an average pet. Specifically, our 2019 calculation assumes adjusted operating income (calculated as the average monthly revenue for new pets of \$57.52 factored by the adjusted operating margin of 11.5%) for an average subscriber life of 70.4 months (calculated as the quotient obtained by dividing one by the churn rate, which equals one minus the average monthly retention rate of 98.58%).

Because of varying available valuation methodologies, subjective assumptions and the variety of equity instruments that can impact a company's non-cash expenses, Trupanion believes that providing various non-GAAP financial measures that exclude stock-based compensation expense and depreciation and amortization expense allows for more meaningful comparisons between its operating results from period to period. Trupanion offsets sales and marketing expense with sign-up fee revenue in the calculation of net acquisition cost because it collects sign-up fee revenue from new members at the time of enrollment and considers it to be an offset to a portion of Trupanion's sales and marketing expenses. Trupanion believes this allows it to calculate and present financial measures in a consistent manner across periods. Trupanion's management believes that the non-GAAP financial measures and the related financial measures derived from them are important tools for financial and operational decision-making and for evaluating operating results over different periods of time.

DISCLAIMER

This letter contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, and section 27A of the Securities Act of 1933, as amended (Securities Act). All statements contained in this letter other than statements of historical fact, including statements regarding lifetime values of a pet, discounted cash flows and our intrinsic value model, future results of operations and financial position (including ARPU, AOM, AOI, IRR, PAC, new pets enrolled, retention and churn, active hospitals, international expansion, veterinary invoices, and variable and fixed expenses) our business strategy and plans and our objectives for future operations. In particular, this letter extensively discusses our internal discounted cash flow model, and you should regard substantially all parts of this discussion as forward-looking statements. In addition, the are forward-looking statements. The words "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "model," "plan," "potentially," "predict," "project," "target," "will," "would," and similar expressions that convey uncertainty of future events or outcomes, are intended to identify forward-looking statements.

These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including risks relating to:

- our net losses since inception, our ability to maintain revenue growth, maintain profitability, obtain returns on our investments in pet acquisition, and other financial risks;
- our ability to attract online visitors, grow or member base, and maintain retention rates;
- our ability to maintain relationships with Territory Partners, veterinarians and strategic partners;
- our ability to remain competitive and maintain brand recognition;
- our ability to scale our infrastructure, manage our growth, budget for veterinary invoice expenses, and other business risks;
- our other business;
- security breaches, payment processing, and related technology and intellectual property matters;
- compliance with risk-based capital and other regulations;
- litigation or regulatory proceedings;
- dependence on key personnel;
- compliance with covenants in our credit agreement;
- international operations, including exchange rates;
- investments or acquisitions, owning an office building, and other strategic matters;
- tax, accounting and general economic matters;
- being a public company; and
- ownership of our common stock; and
- those described under the heading "Risk Factors" in our Annual Report on Form 10-K and other filings we make from time to time with the Securities and Exchange Commission.

Moreover, we operate in a very competitive and rapidly changing environment, and new risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this letter may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

You should not rely on forward-looking statements as predictions or guarantees of future events. Although we believe that the assumptions and expectations reflected in the forward-looking statements are reasonable based on our historical experience, these assumptions and expectations involve significant judgment and uncertainty, and in some cases these assumptions and expectations (and therefore the judgment and uncertainty) have been projected over an extended period of time. Future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements may not be achieved or occur. We undertake no obligation to update publicly any forward-looking statements for any reason, except as required by law.