

# **Customer Analytics and Growth Strategy** for **BarefootCare**

October 2025

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## Executive Summary

BarefootCare, a boutique nail salon founded two and a half years ago, is at a strategic crossroads. With rising demand, an upcoming price adjustment, and questions about growth or scale, the business required a data-driven understanding of its customer base.

Using appointment-level data from Square, customer visit histories were reconstructed to examine patterns in frequency, spending, and loyalty. Customers were segmented into four behavioral groups: **Explorers** (1–2 visits), **Casuals** (3–8), **Regulars** (9–12), and **Superusers** (13+). While Explorers made up over 60% of the customer base, they contributed less than 30% of revenue. In contrast, a small number of Regulars and Superusers—just 18 clients—generated over \$21,000 annually.

Customer retention improved markedly between FY 2023–2024 and FY 2024–2025, with a noticeable shift from one-time visits to recurring behavior. A cluster of clients returned monthly, in line with Victoria's foot care recommendations. Spending patterns showed wide variability, but high-frequency customers consistently accounted for the majority of revenue.

To further understand the business's growth potential, Zero-Truncated Negative Binomial (ZT-NBD) models—with and without one-inflation adjustments—were used to estimate the size of the unobserved customer base and assess untapped demand. These models also revealed that a sizable share of customers may be structural one-timers, impacting long-term retention and acquisition strategy.

**Strategic recommendations** include investing in loyalty programs to retain high-value clients, converting mid-frequency customers into Regulars, and adjusting pricing to reflect premium service value. If Victoria chooses to scale, these insights can support efforts to train others, expand capacity, or reposition the brand for broader reach.

## 1 Introduction

On a crisp fall morning, Victoria glanced over her appointment calendar at BarefootCare, the boutique nail salon she founded two and a half years ago. The early days hadn't been easy, her first winter exposed the cyclical nature of the business, but her persistence and passion began to pay off. Specializing in premium services like the meticulous Russian Pedicure, she quietly built a reputation not only for aesthetic excellence but also for serving an often-overlooked segment: clients whose foot care needs extend beyond beauty.

Now, with a price adjustment on the horizon and demand steadily rising, Victoria faced a new set of strategic questions. Should she expand her offerings? Train others in her technique? Explore acquisition as a growth path? Or transition from hands-on service to scaling a brand? The next chapter of BarefootCare would demand more than craft, it would demand clarity, precision, and a deeper, data-driven understanding of the customer base.

Using raw visit-level data exported from Square, each client's history was reconstructed to capture how often they visited, how much they spent, and how recently they returned. Customers were then segmented into behavioral groups: **Explorers**, **Casuals**, **Regulars**, and **Superusers**, to identify patterns in visit frequency and monetary value. The analysis also examined whether specific segments, particularly one-time visitors, were inflating the appearance of a broad customer base.

By fitting zero-truncated Negative Binomial models (with and without adjustments for one-inflation), the size of the hidden, unobserved customer base was estimated, enabling a better understanding of untapped demand. The ultimate goal: to equip Victoria with data-backed insights that support a confident strategic decision, whether that means expanding capacity, optimizing pricing, launching a loyalty program, or shifting toward training and scaling through others.

## 2 Exploratory Data Analysis

The analysis began with a detailed review of customer visit behavior using appointment-level data extracted from Square. The dataset included timestamps, client names, services rendered, and estimated spending. To ensure relevance to current business performance, the data was segmented into two fiscal periods:

- **FY 2023–2024:** October 1, 2023 – September 30, 2024
- **FY 2024–2025:** October 1, 2024 – September 30, 2025

Appointments were filtered to include only those with a status of *Accepted*. Each visit was cleaned, and customer histories were reconstructed to assess frequency, spending, and service-level characteristics.

### Customer Frequency Patterns

Figure 1 illustrates the distribution of visit frequencies for both fiscal years. Both distributions exhibit a classic long-tail pattern: most customers visited only once or twice, while a smaller group returned regularly throughout the year.

- In FY 2023–2024, 101 of 173 customers (58%) visited only once.
- In FY 2024–2025, this proportion dropped to 113 of 258 (44%), indicating stronger customer retention.

A distinct cluster appears around 12–13 visits in FY 2024–2025. According to the business owner, monthly visits are encouraged as part of a regular foot care regimen, and this recommendation seems to have shaped the observed behavior among loyal clients.

One notable outlier was a customer with 22 visits in FY 2024–2025. Upon investigation, it was found that this count represented three individuals in the same household sharing a booking profile. To preserve the assumption of customer-level independence required by statistical models, the entry was recoded as three separate customers with 7, 7, and 8 visits, respectively.

### Spending Patterns

Estimated spending was computed by mapping services to their respective prices provided by the business owner. As expected, high-frequency customers accounted for a disproportionately large share of annual revenue.

- In FY 2023–2024, the top spenders contributed between \$800 and \$1,106 annually.
- In FY 2024–2025, several customers exceeded \$1,300, with the highest reaching \$1,355.

Not all frequent visitors spent equally. For instance, some clients with 6–8 visits spent over \$800, while others with similar frequency spent less than \$400. This variation reflects differences in service bundling and customer preferences, which highlights the importance of modeling monetary value alongside frequency.

## Seasonality and Trends

The data exhibited moderate seasonality, aligning with anecdotal observations from the business owner. Colder months were generally slower, while spring and summer saw increased activity. Though not explicitly modeled in this analysis, such trends may have implications for future staffing or promotional planning.

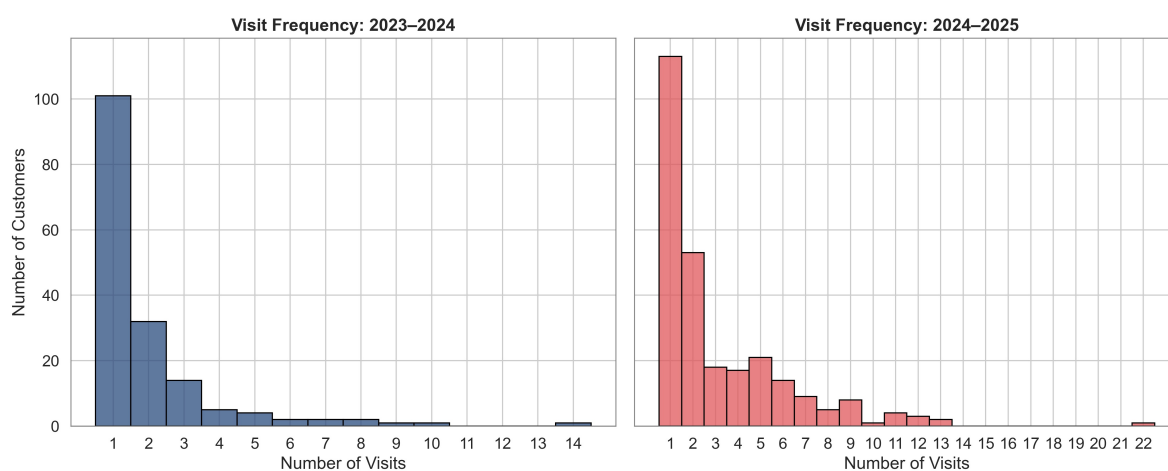


Figure 1: Customer Visit Frequency Distribution by Fiscal Year

## 3 Customer Segmentation

Customers were segmented into four behavioral groups based on their total number of visits during the most recent fiscal year (FY 2024–2025): **Explorers** (1–2 visits), **Casuals** (3–8), **Regulars** (9–12), and **Superusers** (13+).

Explorers made up the majority of the customer base, accounting for 166 out of 271 customers (approximately 61%). These are largely first-time or trial users and represent a key group for conversion and retention strategies. Casuals (87 customers) contributed the highest total revenue, benefiting from a combination of moderate visit frequency and upsold services.

Regulars and Superusers were small in number, 18 customers combined but collectively drove over \$21,000 in annual revenue. These clients represent a deeply loyal customer segment and align with Victoria’s recommendation of monthly foot care visits.

The **Superusers** are particularly noteworthy: though only two in number, they generated an average of \$1,135 each and contributed a total of \$2,270. Despite their small representation, this group demonstrates consistently high engagement and repeat behavior. Their spending and visit frequency indicate strong loyalty to BarefootCare’s services and may provide a model for cultivating other high-value clients through personalized outreach or membership-style programs.

Table 1: Customer Segment Summary (FY 2024–2025)

Segment	# Customers	Total Revenue	Avg Revenue per Customer
Explorer	166	\$24,270	\$146.20
Casual	87	\$49,130	\$564.71
Regular	16	\$18,770	\$1,173.12
Superuser	2	\$2,270	\$1,135.00

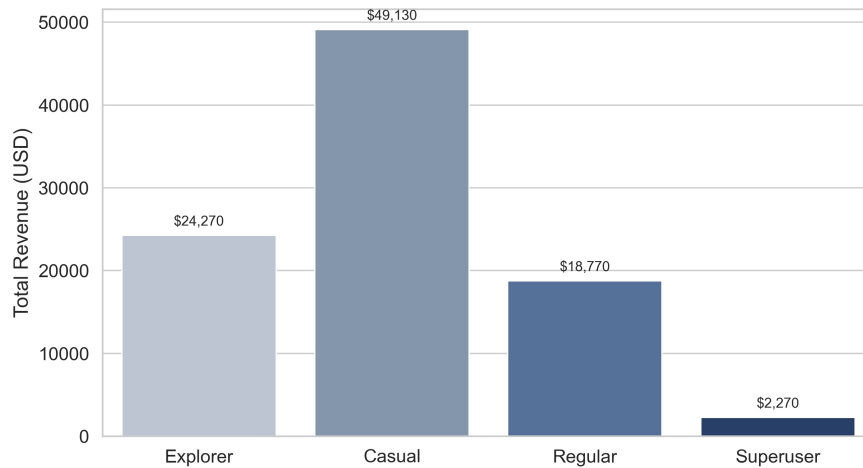


Figure 2: Total Revenue by Customer Segment (FY 2024–2025)

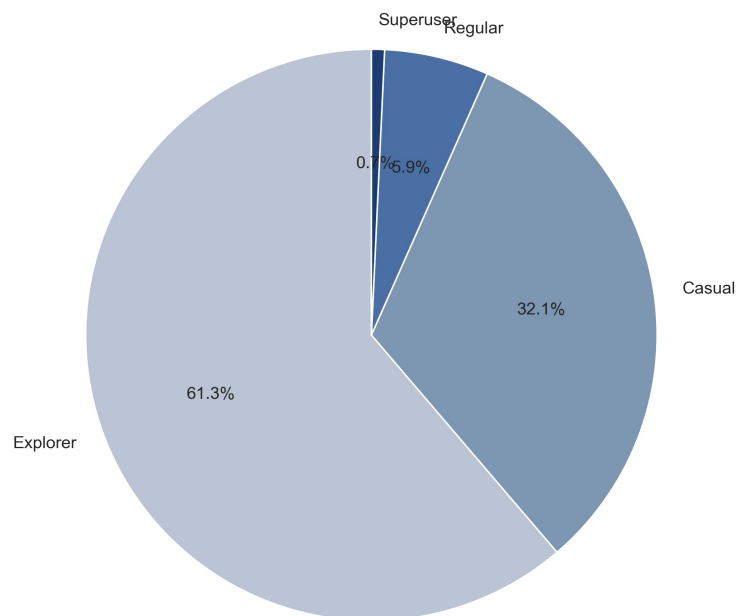


Figure 3: Customer Distribution by Segment (FY 2024–2025)

Taken together, the summary table and visualizations highlight a key strategic insight: while the business draws from a wide base of clients, a small fraction of highly engaged customers drives the majority of revenue. Retaining and replicating these high-value relationships should be a focal point for future growth.

## 4 NBD Model Fitting

To better understand the underlying dynamics of visit behavior—and estimate how many potential customers might exist but haven't yet been observed—we fit a zero-truncated Negative Binomial Distribution (ZT-NBD) model to the frequency distribution of customer visits.

The ZT-NBD is well-suited for modeling repeat behaviors like salon appointments because it allows for heterogeneity in visit rates across customers. The “zero-truncated” version accounts for the fact that we only observe customers who visited at least once (i.e., the data excludes those with zero visits).

Table 2: ZT-NBD Model Fit by Visit Frequency

Visits ( $x$ )	$N_x$	$P(X = x)$	Rescale	LL	Predicted $N$	Chi-sq
1	113	0.1270	0.3964	-104.55	107.44	0.288
2	53	0.0635	0.1984	-85.72	53.77	0.011
3	18	0.0384	0.1200	-38.16	32.53	6.490
4	17	0.0253	0.0789	-43.17	21.38	0.897
5	21	0.0174	0.0543	-61.17	14.72	2.676
6	14	0.0123	0.0385	-45.58	10.45	1.209
7	11	0.0089	0.0279	-39.36	7.57	1.556
8	6	0.0066	0.0205	-23.31	5.57	0.034
9	8	0.0049	0.0153	-33.44	4.14	3.586
10	1	0.0037	0.0115	-4.47	3.11	1.435
11	4	0.0028	0.0087	-18.98	2.36	1.144
12	3	0.0021	0.0066	-15.05	1.80	0.807
13+	2	0.0073	0.0228	-7.57	6.17	2.815
Chi-square (df = 10)						<b>22.95</b>
p-value						<b>0.011</b>
Estimated unobserved customers ( $f_0$ )						<b>575.08</b>

### Assumptions

- The observation window is fixed at 12 months for all customers.
- Visits are assumed to follow a count process with individual-level heterogeneity in visit rates.
- The model is fit using maximum likelihood estimation on the frequency table of visit counts.

### Model Results

The ZT-NBD model fit to the 2025 customer visit data reveals substantial heterogeneity in visit behavior, as indicated by the low shape parameter ( $r = 0.229$ ). This implies that different customers have widely varying propensities to return. The estimated rate parameter ( $\alpha = 0.228$ ) helps determine the spread of those propensities.

The model achieves a log-likelihood of  $-520.53$ , and while it captures the overall structure reasonably well, the goodness-of-fit test yields a chi-square statistic of 22.95 (with 10 degrees

of freedom) and a p-value of 0.0109. This indicates a statistically significant gap between the model and the observed data, particularly due to underestimation at certain visit levels (e.g., 1-time and 3–4-time visitors).

Most notably, the model estimates that there are approximately **575 customers who have never been observed**, suggesting that only about **32% of the total market** (271 out of 846) has been reached so far. This has direct implications for BarefootCare's growth potential and marketing strategy, as it quantifies the opportunity to convert unseen individuals into paying customers.

Table 3: ZT-NBD Model Estimates (2025)

Parameter	Estimate
$r$	0.229
$\alpha$	0.228
Log-likelihood (LL)	-520.53
Chi-square GoF	22.95 (df = 10)
p-value	0.0109
Estimated unobserved customers ( $f_0$ )	575.1
Total estimated market size ( $N$ )	846.1

## Interpretation

The ZT-NBD model reveals substantial heterogeneity in visit rates across customers, reflected in the low  $r$  value (0.229). It estimates that BarefootCare has reached approximately 32% of its addressable market (271 observed out of 846 total), suggesting significant untapped potential.

However, the model exhibits a poor fit ( $p = 0.011$ ), particularly underpredicting the number of one-time visitors ( $X = 1$ ) and those visiting 3–4 times. This misfit could be attributed to seasonal behavior or behavioral clusters not captured by the standard NBD.

From a business standpoint, Victoria recommends her clients come once a month, but this may not always be feasible. Some clients may instead aim to visit seasonally, especially during summer months when demand is higher. This could lead to mini-clusters of customers who visit 3–4 times a year, creating a mild spike in that region of the distribution.

While we did not explicitly model spikes at these higher visit levels due to time constraints, this represents a promising direction for future refinement.

## 5 One-Inflated NBD Model

To address the spike in one-time visitors, we estimated a Zero-Truncated, One-Inflated NBD (ZT-1INBD) model, which introduces an additional parameter to account for structural one-timers, customers who come once and never return.

### Assumptions

- All assumptions from the ZT-NBD model hold.



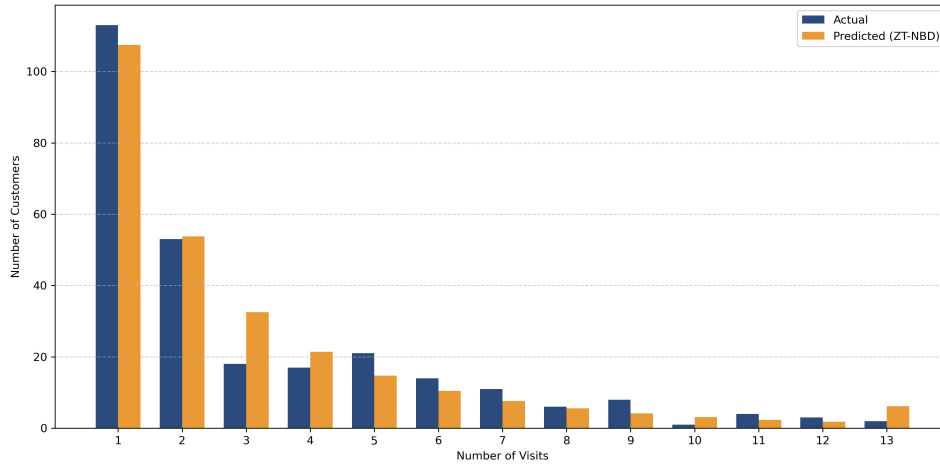


Figure 4: Model Fit: Actual vs. Predicted Visit Frequencies (ZT-NBD)  
The model underpredicts one-time visits and slightly underestimates 3–4 visit frequencies, suggesting behavioral clusters such as seasonal or occasional customers.

Table 4: ZT-1INBD Model Fit by Visit Frequency

Visits ( $x$ )	$N_x$	$P(X = x)$	Rescale	With Spike	LL	Predicted $N$	Chi-sq
1	113	0.1986	0.2714	0.4170	-98.84	113.00	0.000
2	53	0.1454	0.1987	0.1590	-97.47	43.08	2.284
3	18	0.1060	0.1449	0.1159	-38.79	31.42	5.729
4	17	0.0771	0.1054	0.0844	-42.03	22.87	1.505
5	21	0.0561	0.0767	0.0613	-58.62	16.62	1.152
6	14	0.0407	0.0557	0.0446	-43.55	12.08	0.306
7	11	0.0296	0.0404	0.0324	-37.74	8.77	0.567
8	6	0.0215	0.0294	0.0235	-22.51	6.37	0.021
9	8	0.0156	0.0213	0.0170	-32.58	4.62	2.476
10	1	0.0113	0.0155	0.0124	-4.39	3.35	1.649
11	4	0.0082	0.0112	0.0090	-18.86	2.43	1.015
12	3	0.0059	0.0081	0.0065	-15.11	1.76	0.870
13+	2	0.0157	0.0214	0.0171	-8.13	4.64	1.503
						Chi-square (df = 9)	<b>19.08</b>
						p-value	<b>0.0246</b>
						Estimated unobserved customers ( $f_0$ )	<b>99.38</b>

- An additional behavioral segment consists of structural one-timers who do not follow the NBD process.
- The adjusted probability at  $X = 1$  is:

$$P^*(X = 1) = (1 - a) \cdot P_{\text{NBD}}(X = 1 \mid X \geq 1) + a$$

where  $a$  is the estimated spike at  $X = 1$ .

## Model Results

The inclusion of a spike at  $X = 1$  substantially improves the model's fit compared to the standard ZT-NBD. The estimated spike parameter ( $a = 0.20$ ) implies that approximately **20% of observed customers are structural one-timers**, those who visit once and never return. This adjustment corrects the systematic underprediction at  $X = 1$  seen in the previous model.

The estimated  $r = 1.023$  is higher than the ZT-NBD value ( $r = 0.229$ ), reflecting reduced

heterogeneity among repeat visitors once one-timers are accounted for. The estimated unobserved customer count ( $f_0 = 99.4$ ) is also much lower than in the base model (575.1), meaning that many low-frequency customers are now recognized as part of the observed group rather than “unseen” potential customers. This reduces the estimated total market size to 370.4 customers.

The updated chi-square statistic (19.08,  $p = 0.0246$ ) indicates a **moderately acceptable fit**—a clear improvement over the base model (22.95,  $p = 0.0109$ ). The model still shows mild underprediction at  $X = 3$ –4, possibly reflecting semi-regular customers who return seasonally rather than monthly.

Table 5: ZT-1INBD Model Estimates (2025)

Metric	Value
$r$	1.023
$\alpha$	0.382
spike@1 ( $a$ )	0.20
Log-likelihood	−518.62
Chi-square GoF	19.08 (df = 9)
p-value	0.0246
Estimated unobserved customers ( $f_0$ )	99.4
Total estimated market size ( $N$ )	370.4

### Interpretation and Model Comparison

To formally test whether the one-inflated model significantly improves over the base ZT-NBD, we compute a likelihood ratio test (LRT):

$$\text{LRT} = 2 \cdot (-518.62 - (-520.53)) = 3.82, \quad df = 1, \quad p = 0.0505$$

Although the one-inflated model improves the overall fit slightly — reducing the chi-square statistic and passing the likelihood ratio test at the 5% level — the improvement remains modest. The new p-value (0.0246) is still below conventional thresholds for model adequacy, indicating residual misfit in parts of the distribution, particularly around 3–4 visits.

The spike at  $X = 1$  does offer a more behaviorally grounded explanation for the large number of one-time visitors, and the higher  $r$  value suggests reduced heterogeneity among repeat customers once those one-timers are accounted for. However, the model does not fully resolve the broader misfit seen in the visit frequency distribution.

Overall, the ZT-1INBD model offers a **slight refinement** over the base NBD, but not a compelling improvement. Future work could explore additional structural spikes (e.g., around  $X = 3$ ) to better capture seasonal or semi-regular visitors.

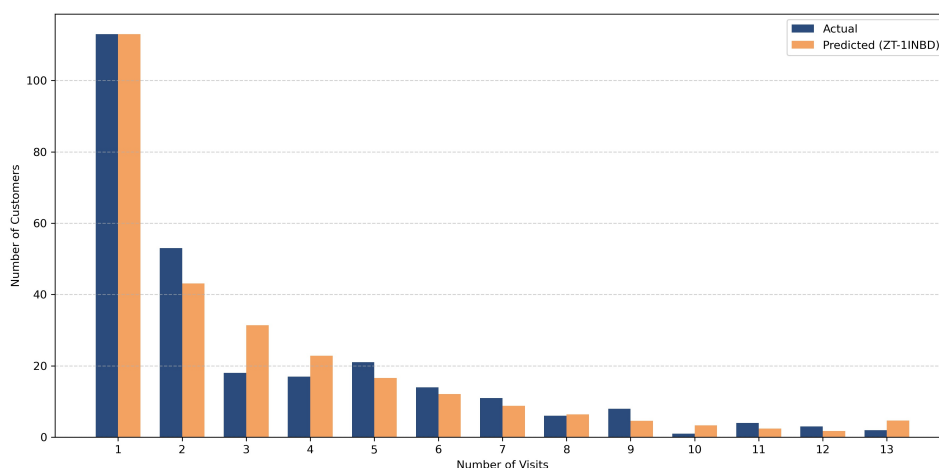


Figure 5: Model Fit: Actual vs. Predicted Visit Frequencies (ZT-1INBD)

## 6 Five NBD-Powered Questions That Changed Our View

### 1. How many potential customers has Victoria never seen?

By fitting a Zero-Truncated Negative Binomial (ZT-NBD) model to the 2025 customer visit data, we estimate that **BarefootCare has reached only about 32% of its total addressable market**. The model uncovers an estimated **575 unseen customers**, individuals who have never visited and are therefore invisible in the observed data. These latent customers represent untapped potential for future marketing and growth initiatives. (See Figure 4 and  $f_0$  Estimate)

### 2. How many clients are likely structural one-timers?

By extending the ZT-NBD model to include a spike at  $X = 1$ , we estimated that approximately **20% of BarefootCare's clients are structural one-timers**, customers who visit once and do not return, regardless of marketing efforts or service follow-up. However, the overall goodness-of-fit of the model *worsened*, suggesting that while one-time visitors exist, they are not the sole source of model misfit. Some of the deviation also arises from underprediction around 3–4 visits, hinting at seasonal or occasional customers who return only during high-demand periods such as summer. (See Figures 4 and 5 )

### 3. How many will ever become Superusers (12+ visits/year)?

Using the fitted ZT-NBD model, we estimate that only about **6 to 7 out of 846 clients** exhibit the behavioral propensity to become Superusers, those who visit 12 or more times a year. These clients are rare, highly engaged, and likely already familiar to Victoria.

### 4. Does the 80/20 rule hold — or is it worse?

A Lorenz-style analysis shows that the top **25.8% of customers account for approximately 59.5% of all visits**, confirming a strong concentration of visit activity. While this is not more extreme than the classic 80/20 rule, it still highlights a heavy dependence on a relatively small group of loyal customers. This reinforces the importance of retention strategies focused on high-value clients, losing even a few could significantly impact overall performance.

### 5. What visit frequency should BarefootCare design for?

The fitted ZT-NBD model suggests that the **average active customer visits about 2.7 times per year**, equivalent to once per quarter. This figure can serve as a planning anchor for scheduling, staffing, and retention strategy, especially when designing around natural visit cycles.

## 7 Strategic Recommendations

Based on a detailed analysis of customer behavior, including behavioral segmentation, and visit frequency modeling (ZT-NBD and one-inflated variants), the following strategies are recommended to support BarefootCare's next phase of growth.

At a high level, a three-pronged framework is proposed: nurture high-value customers, convert mid-tier clients into loyal Regulars, and prune low-value customers through pricing or access strategies. Strategic choices can then align with Victoria's operational bandwidth and broader ambitions.

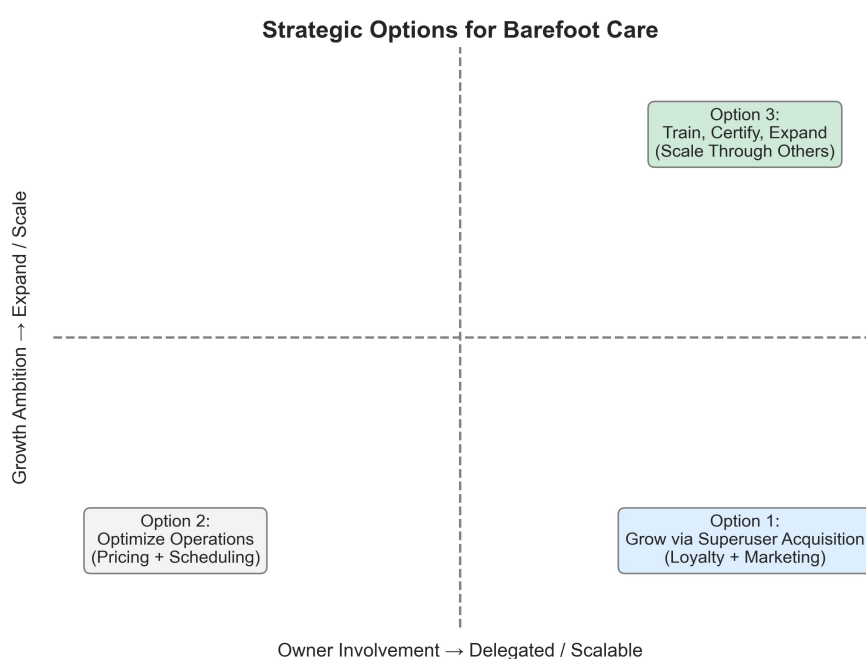


Figure 6: Strategic Options for BarefootCare

Options mapped by growth ambition and owner involvement. Option 3 enables scaling impact with lower operational intensity.

### Option 1: If Capacity Exists to Grow

#### Action: Acquire High-Fit Customers (Superuser Lookalikes)

- Develop customer acquisition campaigns targeting those who resemble current high-frequency, high-RFM clients.
- Emphasize messaging around precision, health-oriented foot care, and the premium experience offered.
- Use local platforms such as Instagram and Google Business to drive bookings from self-care-oriented individuals.

**Action: Launch a Loyalty Program**

- Design a reward structure to reinforce regular behavior (e.g., “Book 5, get 50% off the 6th”).
- Consider referral bonuses and preferred time slot access for loyal clients.

*Rationale:* The NBD model suggests over 400 potential clients exist and yet to be captured. Activating even a fraction can significantly increase revenue with low marginal cost.

**Option 2: If the Goal is Optimization Without Expansion****Action: Use Pricing as a Strategic Filter**

- Implement the proposed price increase to reinforce BarefootCare's premium positioning.
- Retain high-value clients while naturally reducing demand from price-sensitive, low-frequency users.

**Action: Prioritize High-Value Clients**

- Offer advance booking privileges or standing monthly appointments for Regulars and Superusers.
- Create bundled experiences to increase value per visit, particularly among Casuals.

*Rationale:* The bottom quartile of clients contributes minimally to revenue but consumes scheduling and operational resources. Rebalancing effort toward loyal clients improves efficiency and satisfaction.

**Option 3: If the Objective is to Step Back or Scale Through Others****Action: Develop a Training and Certification Program**

- Systematize the BarefootCare methodology and train practitioners in Victoria's techniques.
- License or certify others to offer services under the BarefootCare brand at satellite locations.
- Encourage certified practitioners to upsell loyal clients with seasonal kits, personalized products, or curated bundles.

**Action: Expand via Acquisition or Partnerships**

- Acquire underperforming salons in nearby neighborhoods and relaunch under the BarefootCare standard.
- Deploy trained staff to ensure consistency and extend brand reach without increasing Victoria's delivery burden.

*Rationale:* The brand equity and loyalty established at BarefootCare offers a scalable foundation. This model allows for strategic expansion without sacrificing quality or requiring day-to-day involvement.

**Final Thought**

Regardless of which path she chooses, the data is clear: BarefootCare's value lies not just in the quality of its services, but in the strength of its customer relationships. With a small number of high-value clients driving a significant share of revenue, the most strategic decision may not be "more," but **"more of the right ones."**