PRICING STRATEGY DESIGN FOR ZACH'S GARAGE USING GABOR-GRANGER ANALYSIS

A Report on Data-Driven Ticket Pricing Scenarios to Support Community Engagement and Financial Sustainability

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Statement of the Problem

Zach's Garage is a grassroots music venue based in Chicago, founded by Zachary Lewis, an accomplished accountant and dedicated dark metal fan. Inspired by his passion for music and community, Zach transformed an old warehouse into a performance space where aspiring musicians can showcase their talents without the burden of financial constraints. His mission was to create a platform that removed economic barriers for both performers and audiences. To make this vision a reality, Zach invested his personal savings into renovations, securing event permits, and covering operational costs. Events at Zach's Garage are free to attend, with voluntary contributions encouraged for performing bands. This inclusive model quickly gained traction, the venue's events are now frequently packed, and its community has grown to include over *10,000* fans.

However, this rapid growth has brought financial strain. Zach now faces a *$3,000* monthly deficit, alongside upcoming capital expenses such as safety upgrades, professional-grade sound and lighting, and legal costs tied to zoning and liability compliance. While committed to accessibility, he must now consider pricing strategies that ensure financial sustainability. Yet, he remains reluctant to price students out of a space created to be inclusive, wanting them to continue experiencing live music without financial barriers.

To address the venue's financial concerns, Zach enlisted a marketing consultant to conduct a pricing study using the ***Gabor-Granger Pricing Method***. This approach estimates consumer sensitivity to ticket prices by asking how likely they would be to attend at each price point. Participants evaluated six ticket prices ***$1, $3, $5, $8, $12***, and *$20*, rating their likelihood on a 5-point scale, where ratings of *1* and *2* correspond to *0%* attendance probability, *3* corresponds to *10%*, *4 to 40%*, and *5* to *100%*. Demographic details such as *age* and *gender* were also collected. These responses, combined with the mapped probabilities, will inform pricing recommendations and potential revenue projections.

The purpose of this report is to analyse the pricing survey data using the **Enginius Marketing Analytics** platform, applying the **Gabor-Granger Pricing Method** to determine the most viable pricing strategies for Zach's Garage. Specifically, the analysis aims to answer the following five key business questions:

1. Revenue Maximization: What price level would maximize expected revenues, assuming an average of 250 attendees per event and 12 events per month? Would this price be sufficient to cover the $3,000 monthly cost?
2. Demand Sensitivity: At what price level would the attendance drop from 250 to approximately 125 (i.e., by 50%)?
3. Break-even Pricing: What is the minimum price required to exactly cover Zach's monthly operating costs?
4. Segmented Pricing (Free Entry for Youth): What would be the optimal pricing strategy if customers aged 21 or younger (assumed to be 1/3 of the audience) are allowed to attend for free? How would this affect total attendance and revenue?
5. Segmented Pricing (Discounted Entry for Youth): What would be the profit-maximizing price for the younger customer segment (aged ≤21) if Zach offers them a discounted entry fee instead of allowing free access? How does this alternative price compare to the revenue-maximizing price identified in Question 1, both in terms of profitability and audience attendance? What impact would this strategy have on overall attendance, and would it be a recommended approach for Zach to implement?

By combining survey data, segmentation insights, and revenue modelling, this report seeks to provide a sustainable pricing strategy that enables Zach's Garage to continue supporting local talent while ensuring financial viability.

Analysis and Results

To identify the best pricing strategy for Zach's Garage, the study combined price levels, survey responses on attendance likelihood, and demographic data. Using **Enginius' Pricing Optimization tool**, which applies the **Gabor-Granger method**, stated likelihoods were converted into attendance probabilities. The tool simulated expected attendance, revenue, and profit across prices, enabling data-driven forecasts that balance profitability with audience retention.

Model Setup

To address the first question, *What price level would maximize expected revenues, assuming an average of 250 attendees per event and 12 events per month*, the Pricing Optimization tool was carefully configured with relevant inputs reflecting the case study data.

The pricing data setup involved selecting the likelihood of purchase scale based on the predefined survey options table, which maps the 5-point attendance likelihood scale to corresponding probabilities. The six ticket price levels used in the survey *$1, $3, $5, $8, $12*, and *$20* were also input as the price levels for analysis. Parameters related to the respondents' data were included by selecting the pricing survey data table, containing individual likelihood ratings for each price level along with demographic details. This enabled the model to accurately capture consumer price sensitivity across the surveyed population. Market size information was incorporated by enabling the market size option and specifying a total market size of *3,000* units per month, based on *12* events and an average attendance of *250* per event. Additionally, fixed costs were accounted for by including an operating cost of *$3,000* per month, which reflects Zach's current financial deficit *(see Exhibit A1)*.

These combined inputs allowed the tool to simulate expected attendance, revenue, and profitability across different ticket prices, forming the basis for identifying the optimal pricing strategy.

Model Selection and Fit

Enginius tested multiple models and selected a logit model with ceiling, intercept, and linear and logarithmic price terms as the best fit. The model estimated a *96%* market ceiling and showed strong fit based on BIC *(689.19)*, McFadden R-squared *(0.3873),* RMSE *(0.0028)*, and R-squared *(1.0002)*, effectively representing the survey data

Optimization Output and Interpretation

The pricing optimization results, presented in *Exhibit A2*, illustrate the projected impact of each ticket price on attendance likelihood, units sold, revenue, and gross profit. At the lowest price point of *$1*, the attendance likelihood was highest at *86.4%*, resulting in *2,591* units sold, but with a gross loss of *$408.63* due to insufficient revenue. A *$3* ticket showed stronger performance, with *1,580* expected attendees, *$4,740.94* in revenue, and a gross profit of *$1,740.94*. At *$5*, profit remained positive at *$1,277.76*, but attendance dropped to *856*. Prices of *$8* and above saw attendance and profitability decline sharply. The model identified *$3.31* as the optimal price, forecasted to attract *1,439* attendees and deliver the highest gross profit of *$1,768.42*, alongside the highest revenue point of *$4,768.42*, marking a balanced "sweet spot" between profit and attendance.

In summary, the analysis suggests that Zach should consider setting the average ticket price at approximately ***$3.31*** to maximize revenue and profitability. At this price point, Zach's Garage would generate a monthly revenue of ***$4,768.42***, covering the fixed operating cost of *$3,000* and yielding a gross profit of *$1,768.42*. This represents the most favourable uniform pricing strategy currently achievable, effectively meeting financial sustainability goals. This baseline result provides a strong foundation for evaluating alternative pricing models that may better align with Zach's broader goals, including inclusivity and community engagement.

Attendance Drop-off Analysis – Question 2

To address the second question, *at what price level would attendance decline from the current average of 250 to approximately 125 attendees per event*, the analysis relies on the same pricing model and fit used in Question 1. Specifically, the predicted purchase likelihood curve generated by the model is used to estimate how changes in ticket prices affect attendance behaviour.

The predicted likelihood curve *(see exhibit D1),* which plots ticket price on the x-axis and predicted attendance likelihood (%) on the y-axis, displays a typical downward-sloping demand pattern, indicating that as prices increase, the likelihood of attendance decreases. Since *125* attendees represent *50%* of the current average attendance of *250*, the objective is to identify the price point at which the predicted likelihood of attendance drops to approximately *50%.* According to the model, the likelihood of attendance is around *86.4%* at a *$1* price, falls to about *52.7%* at *$3*, and further declines to approximately *45.3%* at *$3.5*. These figures suggest that the *50%* threshold equivalent to about *125* attendees occurs just slightly below the *$3* price level. In other words, as ticket prices approach *$3*, about half of the typical audience becomes unwilling to attend. This observation is consistent with both the prediction table *(see exhibit A4)* and the visual curve of predicted purchase likelihood *(see exhibit A3)*, which clearly shows that attendance drops sharply around the *$3* mark. The model thus indicates that this is the tipping point where increased pricing starts to significantly deter participation.

In conclusion, the analysis suggests that setting the ticket price at approximately $3 would reduce average attendance from 250 to around 125 attendees per event. This result highlights the sensitivity of attendance to pricing and underscores the importance of balancing revenue objectives with inclusivity and accessibility when making pricing decisions.

Break-even Pricing Analysis – Question 3:

To address the third question, *what is the minimum price required to exactly cover Zach's monthly operating costs*, the analysis once again draws on the same predictive model and outputs used in Questions *1* and *2*. This question focuses on identifying the price point at which revenue precisely equals Zach's fixed monthly operating cost of *$3,000*, resulting in zero gross profit. This point, commonly referred to as the break-even price, is critical for determining the minimum viable ticket price required to sustain operations without incurring losses. The 'Price Optimization' graph *(see exhibit A3)* generated by the model illustrates three key components: revenue *(represented by the blue curve)*, total cost *(a red horizontal line fixed at $3,000)*, and gross profit *(the green shaded area between revenue and cost)*. As ticket prices increase along the x-axis, the model projects changes in units sold, total revenue, and resulting gross profit. The intersection of the revenue curve and the cost line represents the break-even point, where revenue just covers fixed operating costs. The model output table *(see Exhibit A4)* provides further clarity. At a price of *$1*, Zach is expected to sell *2,591* tickets, generating revenue of $2,591.37, well below the $3,000 required to break even, resulting in a gross loss of *$408.63*. However, when the price increases to ***$1.50***, expected sales drop slightly to *2,349* tickets, but revenue rises to ***$3,523.03***. This amount exceeds the *$3,000* cost, yielding a positive gross profit of *$523.03*. This indicates that Zach's break-even point lies somewhere between *$1* and *$1.50*.

In conclusion, the model suggests Zach must charge a minimum ticket price just below *$1.50* likely between *$1.45* and *$1.49* to break even on his *$3,000* monthly operating costs. While the exact point isn't pinpointed due to limited price increments, it's clear that *$1* yields a loss, while *$1.50* turns a profit. This break-even threshold is a critical pricing floor: pricing below it results in losses, while even a slight increase ensures profitability.

<u>Segmented Pricing Analysis – Question 4:</u>

Model Setup

To evaluate the fourth question, *what would be the optimal pricing strategy if customers aged 21 or younger are allowed to attend for free*, the analysis uses the same pricing model setup as in previous questions, with an important adjustment: only respondents aged *22* and above are included in the predictive model, as this group represents the paying segment of the market *(see Exhibit B1)*. This segmentation assumes that youth (*21* and under) are not influenced by the pricing decision, even though in practice this assumption may have limitations. The total market size was originally estimated at *3,000* individuals. However, since one-third of this audience approximately *1,000* individuals are aged *21* or younger and will receive free entry, the effective market size for pricing analysis was adjusted to *2,000* potential paying customers. This refined estimate was used to model pricing strategies. The fixed monthly operating cost remains unchanged at *$3,000*, as the free-entry policy does not reduce Zach's core expenses.

Model Output & Interpretation

Using the adjusted model based on respondents aged *22* and above, the logistic regression estimates the probability of attendance at various price points for the paying customer segment. Based on the model's output (see *Exhibit B2,B3,B4*), the optimal ticket price is ***$3.57***, which yields the highest gross profit of ***$659.21*** and is also the point of maximum revenue, totalling ***$3,659.21***. At this price, approximately ***1,024*** paying customers, *51.2%* of the *2,000* potential adult audience are expected to attend. Including the *1,000* younger patrons (under *22*) who attend for free, total attendance is projected to reach 2,024 individuals. In conclusion, the optimal pricing strategy approach maximizes revenue and results in a strong total attendance of individuals, balancing profitability with Zach's goal of retaining his youngest audience.

<u>Segmented Pricing Analysis – Question 5:</u>

To evaluate the fifth question, the same pricing framework used in earlier questions was applied, with a key adjustment: only respondents aged 21 or younger were extracted and included in the model setup *(see Exhibit C1)*, as this group represents the discounted segment. The potential market size for this segment was set at *1,000*, reflecting one-third of the original *3,000*-person audience. Zach's fixed monthly cost of *$3,000* remains unchanged but is fully covered by adult segment revenue *(from Question 4)*. Therefore, fixed costs are excluded from this youth pricing model, and all revenue generated from youth ticket sales is treated as pure profit.

Model Output & Interpretation

The optimal ticket price for the youth segment is ***$2.60***, yielding a maximum revenue of ***$1,167.18*** *(see Exhibit C2, C3****)***. At this price point, the predicted attendance rate is ***45%***, or approximately 450 attendees out of 1,000. Since Zach's fixed costs are already covered by the adult segment *(from Question 4)*, this revenue translates directly into **gross profit**. When combined with the *$ 659.21* gross profit from the adult segment *(see Exhibit B2),* the total gross profit increases to approximately *$1,826.39*. In contrast, the single-price strategy in *Question 1* generated only *$1,768.42* in total profit. Thus, by segmenting the youth audience and offering a discounted price, rather than free entry, Zach earns an additional ***$57.97***, representing a ***3.3%*** increase in **total gross profit**. This underscores the value of targeted pricing over a uniform or free-entry approach.

Under this segmented pricing model, adult attendance is expected to be *1,024 (51.2% of 2,000)*, while youth attendance drops to *450 (45% of 1,000*), resulting in a total projected attendance of ***1,474, 35*** **more attendees** than the ***1,439*** reached under the flat pricing strategy in *Question 1*.

In conclusion, the segmented pricing model charging *$2.60* for youth, results in a higher total gross profit of ***$1,826.39***, representing a ***3.3%*** increase over the single-price strategy. Additionally, it attracts ***35*** more attendees, demonstrating that targeted pricing can enhance both profitability and audience reach.

Recommendations

Zach's mission is to build an inclusive, community-focused venue that supports artists and makes live music accessible to all. His pricing strategy should therefore balance financial sustainability with audience reach, rather than focusing purely on profit maximization. Based on the analysis, the following recommendations are proposed:

1. Single-Price Model : Charging $1.50 per ticket *(see Exhibit A4)* yields a modest gross profit of *$523.03* while retaining approximately *78.3%* of potential attendees. This price ensures Zach covers his *$3,000* fixed monthly costs while keeping the event affordable to the majority. Though it generates lower profit than the optimal price of *$3.31* (which produces *$1,768.42* at *51.2%* attendance), the lower price aligns more strongly with Zach's mission of accessibility and community engagement.

2. Segmented Pricing ($2.00 Adults, $1.00 Youth) : A segmented strategy offers stronger alignment with Zach's goals while improving overall financial outcomes. Charging *$2.00* for adults increases attendance to *77.2%* (compared to *51.2%* at *$3.57* ; *see Exhibit B4*), fully covering fixed costs while expanding audience reach. For the youth segment, a symbolic *$1.00* fee *(see Exhibit C2) is* preferable over both free entry and the *$2.60* profit-maximizing price. Although free entry would attract a larger youth crowd, it risks exceeding venue capacity and diluting the event experience, especially if the venue gains popularity.

This pricing model generates approximately *$718.43* in youth revenue and *$3,088.40* from adults, totalling *$3,806.83* in total revenue. Though this is slightly lower than the $4,826.39 under the profit-maximizing segment strategy *($3.57 adults, $2.60 youth),* it offers substantially greater audience engagement and preserves long-term sustainability.

3. Adults Only Pricing ($2 Ticket for 22+ Only) : If Zach prefers to offer free entry to the youth segment while still recovering costs, he could focus solely on pricing the *22+* segment. By charging them *$2*, he reaches *77.2%* of adults and brings in just over *$3,000*, covering his fixed monthly costs with minimal surplus. While this results in low profit, it significantly increases attendance compared to the *$3.57* profit-maximizing price point, which only attracts *51.2%* of adults. More attendees not only support community-building but also enhance the experience for artists and may encourage word-of-mouth marketing, helping Zach build momentum in the long run.

Conclusion

In conclusion, unless Zach's long-term goals shift toward maximizing revenue for expansion or artist compensation, he should avoid pure profit optimization. Instead, his pricing strategy should prioritize inclusivity, audience diversity, and financial sustainability. A pricing model that ensures break-even or modest profit while fostering an inclusive and artist-supportive environment is most aligned with Zach's mission.

Among the options evaluated, both the flat $1.50 ticket and the segmented $2.00/$1.00 pricing model offer strong alignment with these values. Additionally, focusing only on adult ticket pricing while offering free youth entry provides another viable path to financial viability with broader reach. Each of these approaches balances Zach's desire for community engagement with the need for operational stability. By adopting one of these models, Zach can build a loyal audience, support local artists, and grow his venue organically through word-of-mouth and community trust.

Exhibits

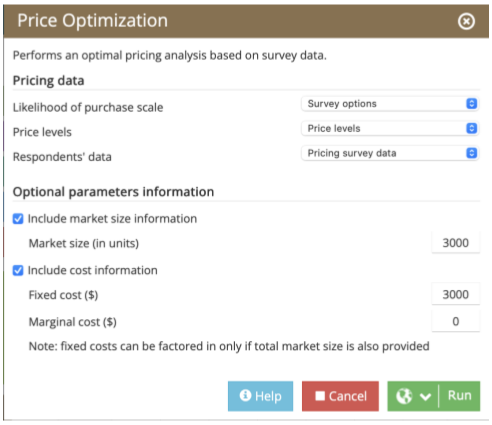


Exhibit A1: Enginius Price Optimization Setup with Market Size and Cost Inputs

	Prices	Predicted likelihood	Units sold	Revenue	Cost	Gross profit
Level 1	1	86.4%	2 591	2 591.37	3 000.00	-408.63
Level 2	3	52.7%	1 580	4 740.94	3 000.00	1 740.94
Level 3	5	28.5%	856	4 277.76	3 000.00	1 277.76
Level 4	8	11.8%	353	2 822.33	3 000.00	-177.67
Level 5	12	4.2%	125	1 505.61	3 000.00	-1 494.39
Level 6	20	0.7%	22	449.91	3 000.00	-2 550.09
Max gross profit	3.31	48.0%	1 439	4 768.42	3 000.00	1 768.42
Max revenue	3.31	48.0%	1 439	4 768.42	3 000.00	1 768.42

Optimization results.

Exhibit A2: Simulated Revenue and Profit Outcomes Across Ticket Price Points Using Gabor-Granger Model

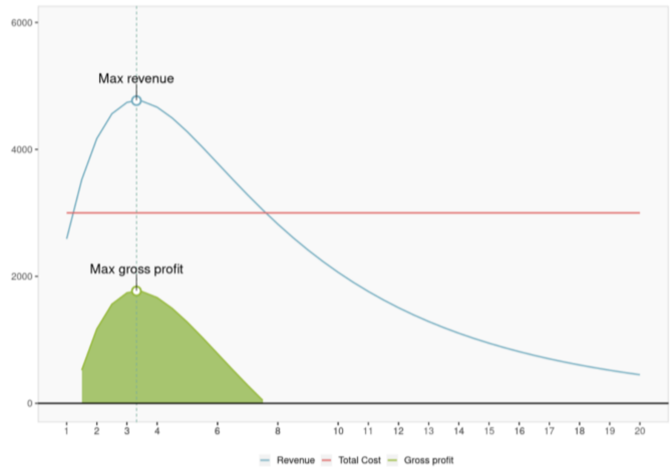


Exhibit A3: Visual Optimization of Ticket Pricing – Revenue, Cost, and Gross Profit Curves

	Prices	Predicted likelihood	Units sold	Revenue	Cost	Gross profit
Level 1	1	86.4%	2 591	2 591.37	3 000.00	-408.63
Level 2	1.5	78.3%	2 349	3 523.03	3 000.00	523.03
Level 3	2	69.5%	2 086	4 171.23	3 000.00	1 171.23
Level 4	2.5	60.8%	1 825	4 561.76	3 000.00	1 561.76
Level 5	3	52.7%	1 580	4 740.94	3 000.00	1 740.94
Level 6	3.5	45.3%	1 360	4 759.85	3 000.00	1 759.85
Level 7	4	38.9%	1 166	4 665.03	3 000.00	1 665.03
Level 8	4.5	33.3%	999	4 494.62	3 000.00	1 494.62
Level 9	5	28.5%	856	4 277.76	3 000.00	1 277.76
Level 10	5.5	24.5%	734	4 035.64	3 000.00	1 035.64

Exhibit A4: Incremental Price Point Analysis for Identifying Break-even and Near-optimal Ticket Prices

** Exhibit A4 presents a refined price point analysis ranging from $1.00 to $5.50. While the full model evaluated prices up to $20, this exhibit focuses only on the range where revenue continues to increase. Price points beyond this range were excluded, as they resulted in declining attendance and diminishing returns, offering little strategic value for Zach's Garage.*

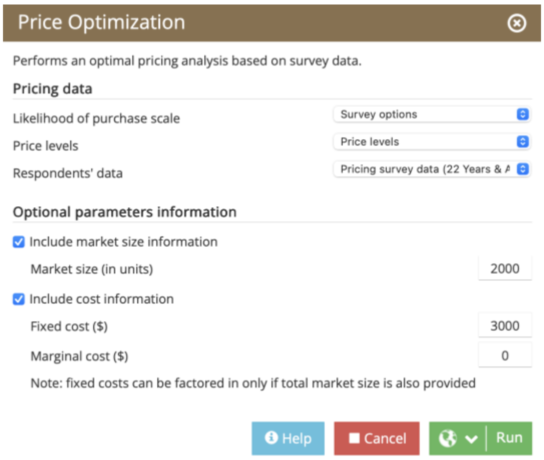
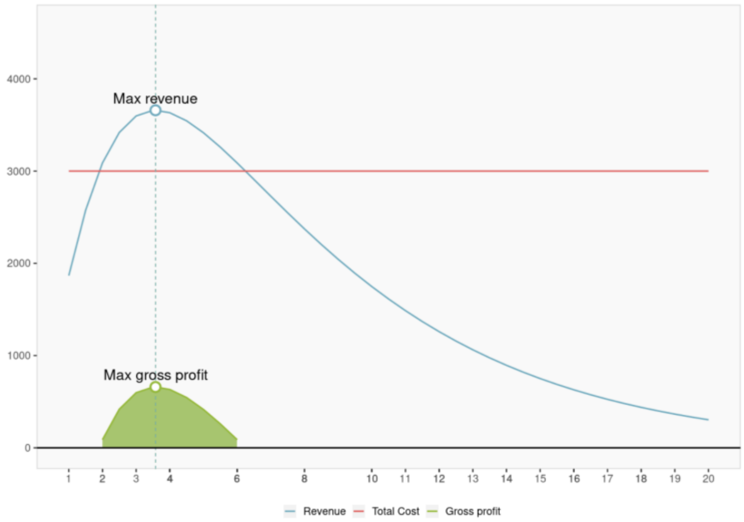


Exhibit B1: Price Optimization Setup for Paid Adult Segment (Aged 22+), Excluding Youth Audience

	Prices	Predicted likelihood	Units sold	Revenue	Cost	Gross profit
Level 1	1	93.4%	1 867	1 867.38	3 000.00	-1 132.62
Level 2	3	60.0%	1 199	3 597.47	3 000.00	597.47
Level 3	5	34.2%	683	3 415.33	3 000.00	415.33
Level 4	8	14.8%	297	2 372.94	3 000.00	-627.06
Level 5	12	5.2%	105	1 259.01	3 000.00	-1 740.99
Level 6	20	0.8%	15	303.65	3 000.00	-2 696.35
Max gross profit	3.57	51.2%	1 024	3 659.21	3 000.00	659.21
Max revenue	3.57	51.2%	1 024	3 659.21	3 000.00	659.21

Optimization results.

Exhibit B2: Revenue and Profit Simulation for Adult Segment Pricing (Excluding Youth Under 22)



Price optimization.

Exhibit B3: Revenue and Profit Curves for Adult Segment Pricing – Optimal Price Point at $3.57

	Prices	Predicted likelihood	Units sold	Revenue	Cost	Gross profit
Level 1	1	93.4%	1 867	1 867.38	3 000.00	-1 132.62
Level 2	1.5	85.9%	1 717	2 575.87	3 000.00	-424.13
Level 3	2	77.2%	1 544	3 088.40	3 000.00	88.4
Level 4	2.5	68.4%	1 368	3 418.82	3 000.00	418.82
Level 5	3	60.0%	1 199	3 597.47	3 000.00	597.47
Level 6	3.5	52.3%	1 045	3 658.27	3 000.00	658.27
Level 7	4	45.4%	908	3 632.14	3 000.00	632.14
Level 8	4.5	39.4%	788	3 544.54	3 000.00	544.54
Level 9	5	34.2%	683	3 415.33	3 000.00	415.33
Level 10	5.5	29.6%	593	3 259.44	3 000.00	259.44

Exhibit B4: Youth Segment Price Optimization – Predicted Attendance, Revenue, and Profitability Across Discounted Ticket Levels

** Exhibit B4 illustrates a focused price point analysis for the youth segment, ranging from $1.00 to $5.50. Although the full model considered prices up to $20, this exhibit narrows in on the most relevant pricing window, where revenue continues to increase. Higher price points were excluded due to rapidly declining attendance and diminishing returns, offering limited strategic value for Zach's youth-focused pricing strategy.*

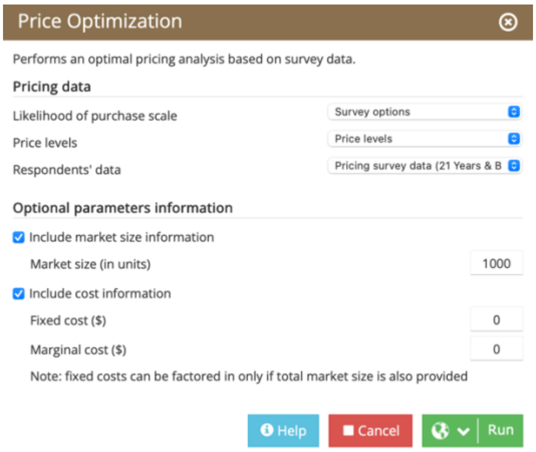
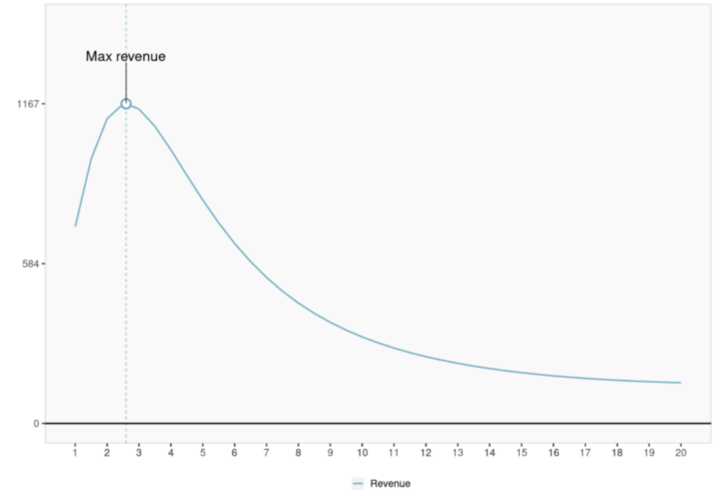


Exhibit C1: Model Configuration for Youth Segment Pricing

	Prices	Predicted likelihood	Revenue per market unit	Units sold	Revenue
Level 1	1	71.8%	0.72	718	718.43
Level 2	3	38.3%	1.15	383	1 147.85
Level 3	5	16.3%	0.82	163	816.03
Level 4	8	5.5%	0.44	55	439.48
Level 5	12	2.0%	0.24	20	243.81
Level 6	20	0.7%	0.15	7	148.69
Max revenue	2.6	45.0%	1.17	450	1 167.18

Optimization results.

Exhibit C2: Optimization Results for Youth Segment Across Ticket Price Levels

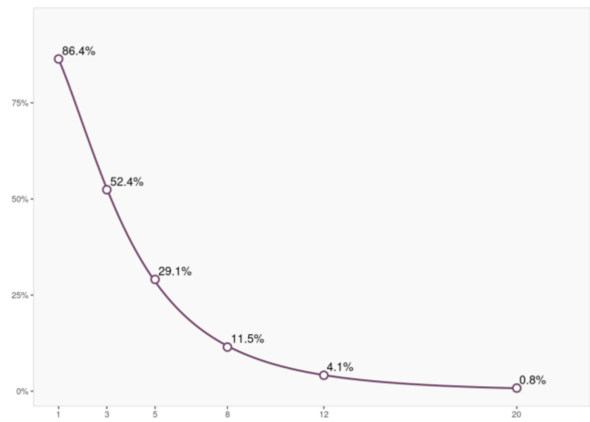


Price optimization.

Exhibit C3: Revenue Curve for Youth Segment Highlighting Optimal Discounted Price at $2.60

**Exhibit C3 illustrates the projected revenue across ticket prices for the youth segment (aged ≤21). Since fixed costs are fully covered by the adult (22+) segment, all revenue generated from youth ticket sales is treated as gross profit. Maximum profit is achieved at a $2.60 price point, beyond which higher prices lead to a sharp decline in both attendance and revenue.*

Predicted purchase likelihood



Predicted likelihood. The dots represent the purchase likelihood derived from the survey for different price levels. The line represents the model predictions.

Exhibit D1: Predicted Purchase Likelihood Curve Across Ticket Price Levels