



MMAI 861 – Analytical Decision Making

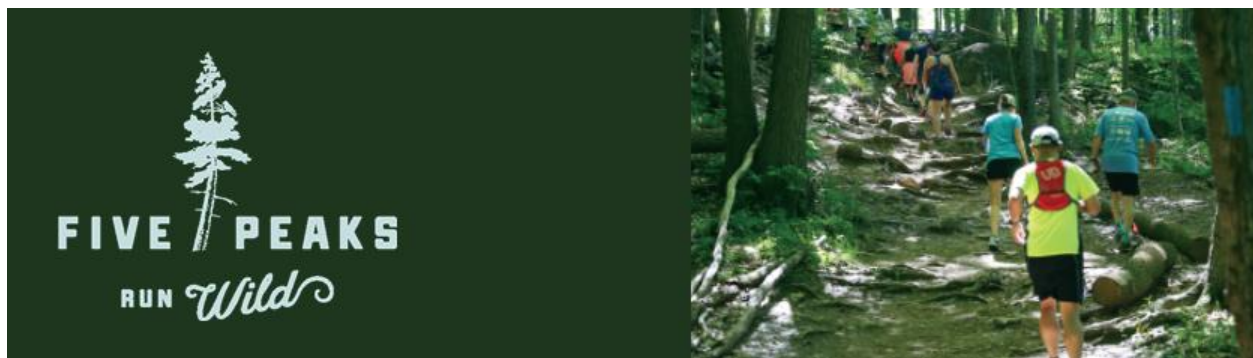
Lecturer: Yuri Levin, Smith School of Business

*“Opportunity Essay” Assignment:*

**REVENUE AND PRICE OPTIMIZATION - *Five Peaks Trail Racing***

*Blair Nicolle (Queens ID# 201904169)*

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## Background

### *The Tao of Trail Racing*

Trail racing is a popular and growing alternative to traditional “5k/10k road races”, marathons, triathlons, etc. and like them it has its own fairly distinct community and participant ‘profile’. In comparison to large-field road races with thousands of “faceless” co-participants, the trail running experience is much more intimate, informal, environmentally-positive, and wellness-aware.

Most obviously, being closer to nature makes it a *higher sensory experience*: consider the sights and smells of running through the woods on dirt trails. Also, course elevation grades can be in the teens as contrasted to the dullery of a ‘clean, flat, paved’ road: it may seem like a paradox that dirt is better than road, beyond the joint-wearing nature of asphalt and concrete, but let’s peel this back.

Tripping over imperfections on the trail (tree roots, rocks, etc.) is actually part of the culture and it leads to a lighter, skippier gait and a much more *active and present* mindset: that is, the sport not only changes how people run but it nudges them positively about *how they should think about living and in being present*. You can’t zone out and use headphones like in a 5k: your mind remains energized and open. This is a subtle part of the sport’s draw and value proposition to its members.

All this is to say that it is a unique sport with a solid core of rabid enthusiasts surrounded by a growing base of people that are seeking fresh and unique athletic experiences that don’t necessarily require a great deal of training time to try out but which delivers strong value. Of course, for some motivated folks, it can lead to more advanced adventure racing and trail-based ultra-marathons.

### *Five Peaks*

*Five Peaks* is a Canadian trail racing organization with series in some provinces and here we will focus on the Ontario chapter. In 2019 they sold out *before* the season began with ticket revenue of roughly \$250,000 and a YOY increase in participants of about 45%. The aim is to map out an increase revenue of over \$50,000 that does not overcrowd the trails. As its name implies, each Five Peaks series consists of “five (5) races” in five different locations – each with its own *personality* – and which are spaced out from late Spring to mid-Autumn.

**The motivating question here asks whether the current pricing maximizes the revenue and how revenue could potentially be enhanced without disrupting the trail racing experience** (\*that is, such as by simply over-loading the trails with large volumes of new runners in the already overcrowded Sport and Enduro Divisions). **Some price increases are justified, a “5<sup>th</sup> race free” in Autumn is proposed, and resultant additional revenues of just over \$53,000 are calculated.**

## Current State Pricing

### Observations

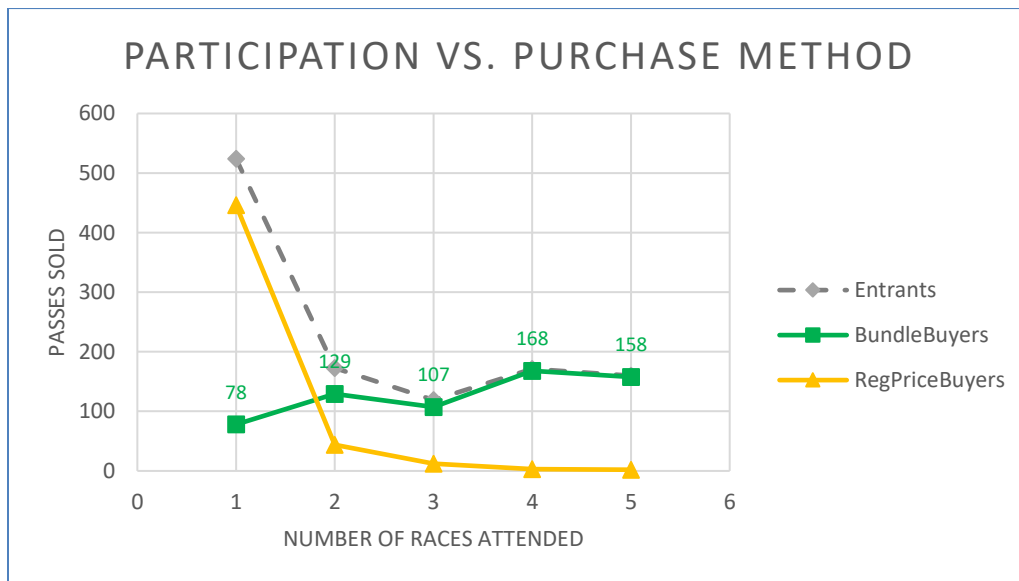
This section lists observations at the root of the theory that more revenue can be tapped. Five Peaks' current pricing model is provided in Appendix 1. In short, its races can be bought *a la mode* / by event or as a "Race Pass": a modestly-discounted, bundled price for all five races.

#### 1. High Conversion Rates for the "Race Pass" (bundled price) campaign

From the source data, an estimated 650-700 bundles were sold. Considering that each race event hosted an average of 780 entrants, the race pass was a very popular and successful program, with an approximate 85% conversion rate.

#### 2. Mixed Event Participation Rates for Bundle Buyers

Of the 650+ bundle buyers, the following graph shows that not all those buyers attended all events. In fact, even in this rosiest estimation shown, *half of bundle buyers attended at most three races*. This shows some people are willing to pay more than full price to attend.



#### 3. The Race Pass sells like hot cakes

Data that I did not have available was the identity of the 'early purchasers' (door crasher sale purchasers) of Race Passes as compared with those that do 4-5 races versus those that attended 0-3 races.

**OUR FIRST 500 DOOR  
CRASHER PASSES SOLD OUT IN ONLY 36 HOURS.**

However, these ‘early purchasers’ – wanting badly to have the right to attend their preferred races but also with an intention to come to races - is another interesting psychographic segment.

**Note:** Further observations have been relegated to Appendix 4 as supplemental reference.

## Willingness to Pay (WTP)

WTP is a theoretical model so, like all models, it has its practical limitations. But, in theory, it is the threshold price level(s) beyond which people should be unwilling to pay for a given level of service or a certain product, especially when compared to alternatives. Here the product is for ‘race attendance’ and could be calculated at race-level for popular venues.

We argue that the current average price of \$55 would be well-priced if all people showed up all the time to all races and races didn’t *quite* sell out. But since a large percentage of people are paying it and then not showing up suggests that they are willing to pay a premium for the *right* to show up. If a person suspected they’d only go to two races, they could easily save \$130 by paying full price for two races *a la mode*. But *hundreds of people* are choosing not to do this and so for many the consumer surplus of a bundle is ~\$130.

Below, I compute the theoretical price people are willing to pay IF they had been able to accurately estimate the probability they would show up to each of the races (for now, without distinguishing which races they chose to show up to: Kelso, Mansfield, etc). And also without regards to segmentations of customers at this point.

The WTP per race for the summer races is calculated at between \$63 and \$135. The point is that there is clearly an effective premium people that some are happily willing to pay for the right to attend a race – in particular those known desired races.

weight	Race#	Default assumption			"One race, maybe 2"			"A few races"		
		chance	invChance	adjRaceValue	chance	invChance	adjRaceValue	chance	invChance	adjRaceValue
1	1	100%	100%	\$ 55.00	99%	101%	\$ 135.45	100%	100%	\$ 91.36
1	2	100%	100%	\$ 55.00	80%	250%	\$ 109.45	90%	111%	\$ 82.23
1	3	100%	100%	\$ 55.00	20%	200%	\$ 27.36	70%	143%	\$ 63.95
1	4	100%	100%	\$ 55.00	1%	200%	\$ 1.37	40%	200%	\$ 36.54
1	5	100%	100%	\$ 55.00	1%	200%	\$ 1.37	1%	200%	\$ 0.91
Notional WTP:		\$ 275			\$ 523			\$ 415		
Notional WTP per Race Attended:		\$ 55.00			\$ 104.61			\$ 82.94		
expected # of races:		5.0			2.0			3.0		

## Pricing Recommendations

### ***“A la mode” / “Full” Price Increases***

- Increase the full price of popular early summer and ‘closest to Toronto’ venues) of Kelso and Rattlesnake by a significant ~60% to \$95. Bump Albion to \$65: it is the only race that’s during “summer vacation” time and shouldn’t be impacted by a modest increase.
- Consider moving Heart Lake to a non-holiday weekend, if poss., to increase attendance.
- Decrease Autumn races ~20% from \$60 to \$50. Increase attendance by selling more tickets. See overbooking. Offer last minute deals for autumn like “bring a pal for \$25.”

### ***Bundle Changes***

**Get rid of the 5-pack.** ...It’s not being used properly by people. Still take their money (slightly lower amount than legacy Race Pass), but for *fewer races* which will open up spots that other people can use without selling out races as quickly. See overbooking.

- Introduce the **summer-pack** (3-pack for Kelso, Rattlesnake, and Albion). \$240. This is cheaper than current door crusher sale for 5-pack which is on average being used for 3 races anyway.
- Introduce **4-pack**, charge \$295. They don’t have to specify which 4. If you force them to choose, they’ll all choose Kelso & Rattlesnake in their choices; the idea is to nudge them towards feeling not bad at missing one of the popular early season races.
- ...Now, Ready...?
  - **Make Mansfield FREE** for those that attended the first 4 races of the season. No pre-payment required. This is why 5-pack is no longer required.
    - Aim to boost attendance at Mansfield by making it an end-of-season celebratory, “destination” event.
    - For summer-pack buyers that went to all 3, buying Heart Lake will feel like 2-for-1, and they don’t even have to commit until late in the summer.
- Acknowledge Best Customers
  - For those that attended 5 races offer limited time offer at legacy rates (\$60) before the new prices apply.

### ***Overbooking***

- Recall that on a good day, 20% don’t show up. On a bad day, 40% no-show. So:
  - Overbook by 15-20% well before season at new prices, as above.
  - Overbook up to another 5-25% closer to the day at a deep discount, as required.

### ***Miscellaneous***

- Add Relay Division for Half-Marathon



## APPENDICES

### Appendix 1: Current Pricing, for the 2020 Season

Each event has three adult race categories: Sport distance (about 6-7 km), Enduro (12-14 km), and Half-Marathon (21 km). The current pricing is covered in Appendix 1: it is a flattened tier with a full price of \$60/event for Sport and Enduro. The half-marathon full price is \$90.

Five Peaks' current price tiering is relatively flat and the full cost of \$60/event was presumably researched and anchored based rotely on the “alternatives” of road races.

The percentage increase difference is modest - 6% per increase - from Sept thru Apr 15<sup>th</sup>.

“*Five Peaks*” has a simple pricing structure:

Adult Pricing. Race Type:	Until April 15 <sup>th</sup>	Between Apr 16th and Race Day
Sport or Enduro (Bundle eligible)	\$55	\$60
Marathon (Not Bundle Eligible*)	\$85	\$95

	Door Crasher (in Sept)	Oct 1 to Dec 31	Jan 1 to Apr 15	Between Apr 16 and Race Day
5-Race Bundle (Discounted Bundle)	\$250 (\$50/avg)	\$265 (\$53/avg)	\$275 (\$55/avg)	\$300 (\$60/avg)

### Appendix 2 – Contextual Notes on Trail Race Logistics

Importantly, logistics plays an important part to planning out any organizational changes including effects stemming from revenue model changes. This paper is meant to be short and so I don't go into many of these details here, but I will list some of these as flavor for the reader.

Trails are narrow by nature – certainly in contrast to city roadways - and in many of the courses they are two-persons *or even one-person wide*, in parts. Thus, you can't just lower pricing, attract bigger crowds of entrants, and then jam hundreds of more people into a race field and expect that they'll all enjoy being in a massive congo line. This leads to having that conversation about certain one-time price increases balanced against the mandate of delivering a high quality experience.

Event locations are set a year in advance and so trail-width and other logistics are set in advance of fresh revenue numbers for the upcoming season. A revenue model change should be made with a definite plan about how to react tactically to negative response to a price increase.

Some race sites and dates are simply “more desirable” by participants as a whole and so pricing may need to be site-specific to optimize revenue.

Logistically and unlike road races, trail races don’t require city roads to be shut down nor generally the use *nor expense* of police officers for crowd and traffic control. I hadn’t the data to fully consider fixed and variable per unit costs, and I cite this only as a sizeable cost that *isn’t* there.

Conversely, public transit is usually not available for participants who have to carpool to reach event sites and park. So some supplemental costs are transferred subtly to participants and play into optics of possible price increases: supplemental costs like parking do not go unnoticed on race day but may be forgotten or disregarded at the time of online ticket purchase.

There is also a potential for post-run concession revenue as there are no food vendors in conservation areas unlike an in-town 5k event. Supplemental revenues *like* this could play into a broader supplier surplus revenue calculation.

### **Appendix 3: Contextual Notes on Data Sourcing and Analysis**

All data used was sourced from Five Peaks’ public website. The conclusions will be shared later with the race director whom I happen to know personally though I did not contact him before beginning the analysis. I have prepared a companion spreadsheet where I had taken the raw data and made a variety of summaries, calculations, and illustrations.

Pricing data is largely based mostly on the 2020 year but the prices hadn’t changed appreciably since 2019. Current pricing is covered in Appendix 1. Participation history is solely from 2019. In essence, my intent was to use price, limited but known facts about sales behaviors, and fairly detailed participation history to build a model of segmented participant’s willingness to pay.

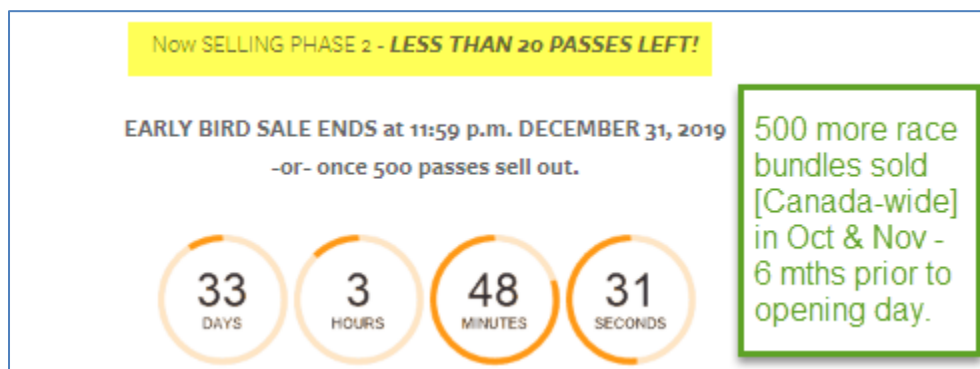


## Appendix 4: Additional Observations

These are some additional observations that were made during the study of the source data. The observation numbering continues from earlier in the document, below:

### 4. There are already justifications for a higher bundle price

Five Peaks claims that their door crasher \$250 bundle offered “\$265 in swag value” along with inclusion of park fees and then *also* the \$50 discount off full price. This seems like it is vastly underpriced or could be otherwise priced in a way that optimizes revenue.

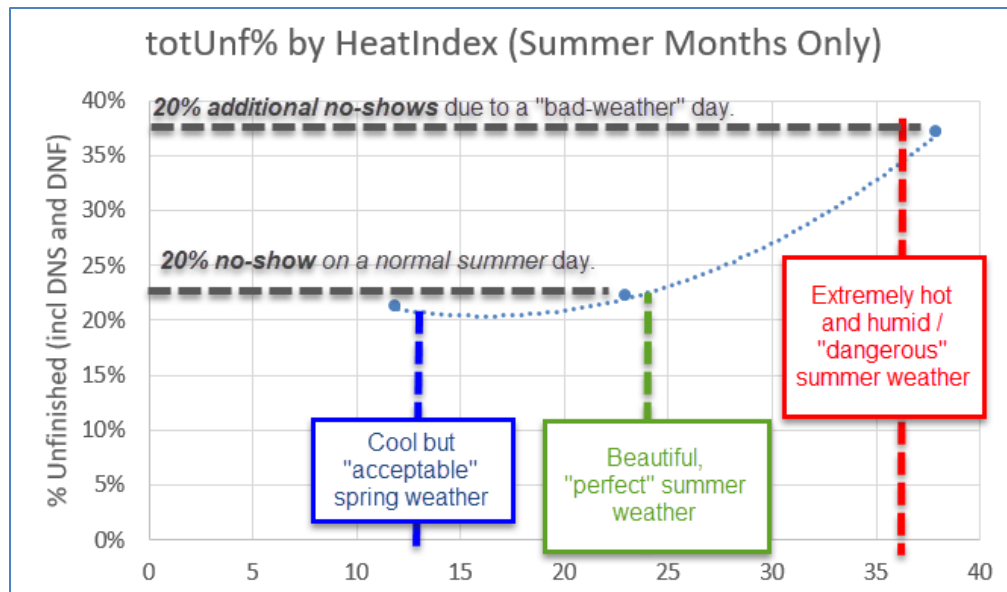


### 5. The “Race Pass” purchase data as a segmentation analyzer

Based on the two points above, alone, the race pass speaks to how different segments of participants value the races and their willingness to pay: from it, we can see how quickly they pounced on the bundle offer, how many races they attend despite paying for all five, and how their year over year choices about the race pass have changed or firmed further.

### 6. Total %No-shows (2019’s Summer Races)

The illustration below shows that **at least 20% of paid entrants** – regardless of purchase method - don’t show to races in summer. This relatively large percentage – especially if consistent year to year - speaks to additional surplus in willingness to pay.



## 7. Total %No-shows (2019's Autumn Races)

The Fall Races were even more poorly attended by payees – Mansfield had the second highest paid attendance out of all five races but 45% no-showed. *Heart Lake* had 35% no-show but it was on a holiday weekend. The lower attendance is most keenly noticed by sponsors and partners who depend on attendees to see and purchase their wares: getting *attendance* up is just as important as selling tickets. In fact, the aim is to achieve both.

