

Product Pricing Algorithm

Business Science

3/19/2019

ProTips: Rmd files are self-contained. Knitting requires all libraries, functions, data, and other dependencies to be loaded or created using R Chunks in the document. This is why source() functions that are not built inside the document.

Problem Statement

Research and Development wants help to determine new product ideas and pricing using existing product line as a benchmark.

Solution Summary

We've identified several product gaps in the existing product line including:

1. Aluminum Over Mountain
2. Aluminum Triathalon

The Data Science Team has developed a pricing model that uses predictive analytics to estimate the price of the new bicycle models based on the existing fleet. This ensures that new models are priced comparatively to other similar bicycles.

New product prediction for 2 new models:

1. Trigger, Over Mountain with Aluminum Frame: \$2,985
2. Slice, Triathalon with Aluminum Frame: \$2,438

Next Steps: Integrate the model into a proof-of-concept web application that can be deployed to the R&D department.

Gap Analysis

Bike List

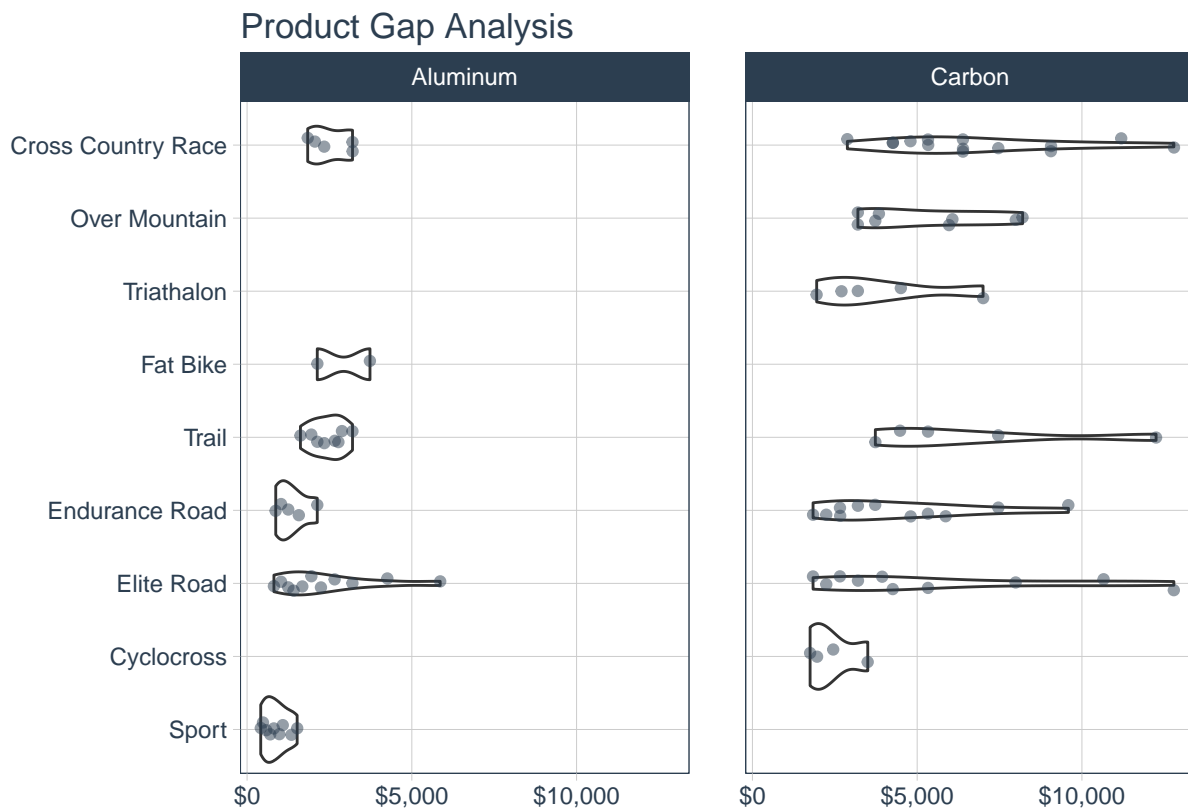
Our current product portfolio consists of 97 bike models that were analyzed.

```
## # A tibble: 97 x 15
##       id price model  category_1 category_2 frame_material model_base model_tier
##   <int> <dbl> <chr>   <chr>      <chr>      <chr>      <chr>      <chr>
## 1     1   6070 Jekyll Mountain Over Moun~ Carbon      Jekyll     Carbon 2
## 2     2   5970 Trigg~ Mountain Over Moun~ Carbon      Trigger     Carbon 2
## 3     3   2770 Beast~ Mountain Trail       Aluminum    Beast of ~ 1
## 4     4  10660 Super~ Road      Elite Road Carbon      Supersix ~ Hi-Mod Te~
## 5     5   3200 Jekyll Mountain Over Moun~ Carbon      Jekyll     Carbon 4
## 6     6  12790 Super~ Road      Elite Road Carbon      Supersix ~ Black Inc.
## 7     7   5330 Super~ Road      Elite Road Carbon      Supersix ~ Hi-Mod Du~
## 8     8   1570 Synap~ Road      Endurance~ Aluminum    Synapse     Disc 105
## 9     9   4800 Synap~ Road      Endurance~ Carbon      Synapse     Carbon Di~
## 10    10   480 Catal~ Mountain Sport       Aluminum    Catalyst     3
## # ... with 87 more rows, and 7 more variables: black <dbl>, hi_mod <dbl>,
## #   team <dbl>, red <dbl>, ultegra <dbl>, dura_ace <dbl>, disc <dbl>
```

Gaps

The visualization segments the full bicycle product line by category and frame material. This exposes two product gaps:

1. New **Aluminum** line of bikes in the **Over Mountain Category**
2. New **Aluminum** line of bikes in the **Triathlon**



Price Prediction

New product prediction for 2 new models:

1. Trigger, Over Mountain with Aluminum Frame: \$2,985
2. Slice, Triathalon with Aluminum Frame: \$2,438

New Model Attribute	Slice Al 1	Trigger Al 1
.pred	\$2,131	\$2,200
frame_material	Aluminum	Aluminum
category_2	Triathalon	Over Mountain
model_base	Slice	Trigger
model_tier	Ultegra	Aluminum 1
black	0	0
hi_mod	0	0
team	0	0
red	0	0
ultegra	0	0
dura_ace	0	0
disc	0	0