DATA GOTTALENT

ROUND 2 REPORT

Team 25.07.2025

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Executive Summary: Small-Scale MNCs in the early stage of business expansion, selling various categories of Bikes

1. In 2019 sales surged due to the new products launched (Touring Bike and G&O). Sales slightly drop in 2018 due to the giving up huge cash generator - High-ends product lines. The shifting toward cheaper product lines beginning in 2018 work well for Mountain Bikes but not that positive to Road Bikes.

2. In terms of sales: US & Australia markets were the two largest contributors (as of 2019). The three "emerging" European markets experienced surprising sales growth.

3. Australia and Europe depend heavily on the long-term relationship customer bases and show limited capacity in captivating new-comers. Meanwhile, North America do great at acquiring huge number of new-comers, but still need to improve customer quality (ACV and loyalty).

4. Small number of customers are Skeptical New-comers, proving that the ability of captivating new customers is still limited despite possessing strong loyal customer base. Since reliance on those old customers would not be sustainable in long-term vision and given that the cost of investing on them is not as expensive as before, the company can leverage that spare resource to work out how to upgrade the effectiveness of new customer acquisition strategy.
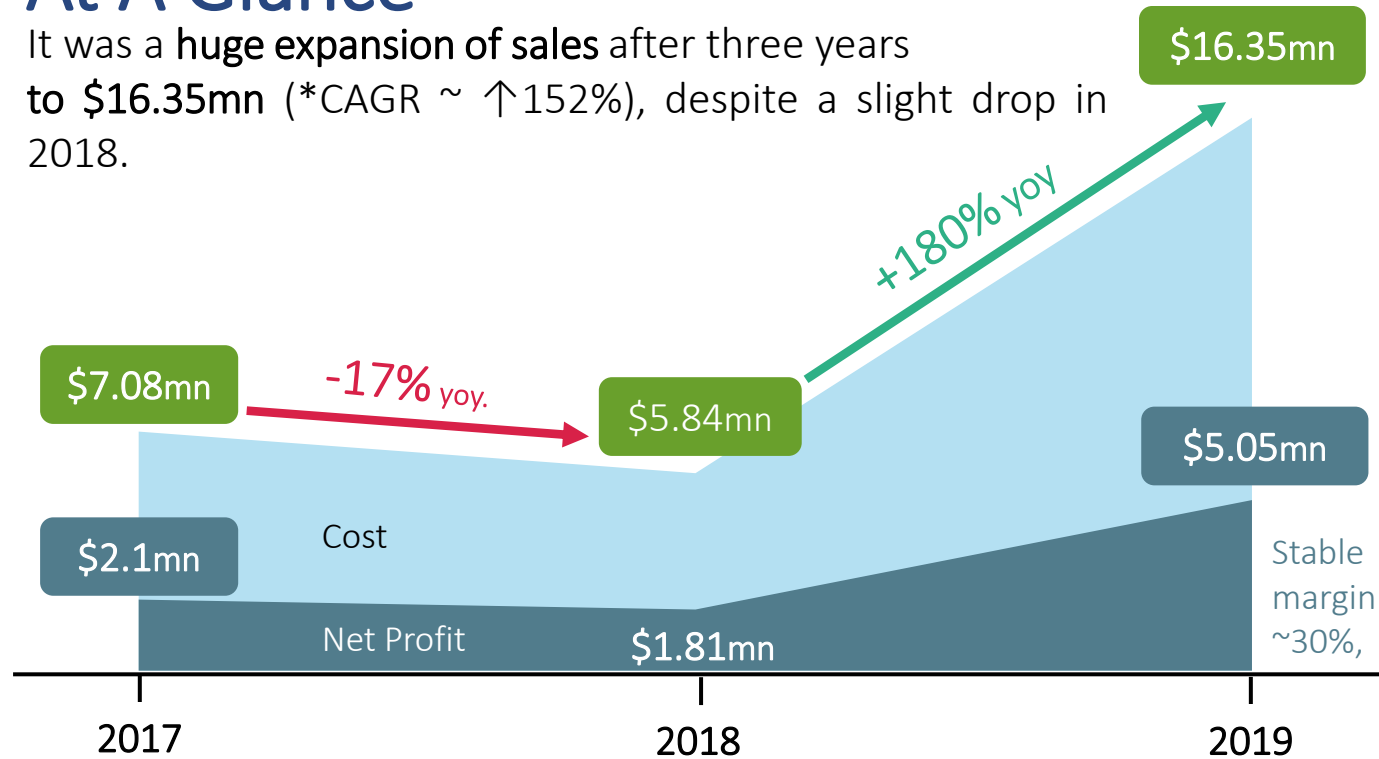
Section 01:

Sales Performance Breakdown

- At The Glance

- 2019 Surge & 2018 Slight Drop

- Product Shifting Strategy

- Gears & Outfits Evaluation

At A Glance

It was a **huge expansion of sales** after three years to **$16.35mn** (*CAGR ~ ↑152%), despite a slight drop in 2018.

$16.35mn

+180% yoy

$7.08mn

-17% yoy.

$5.84mn

$5.05mn

Cost

$2.1mn

Net Profit

$1.81mn

Stable margin ~30%,

2017　　　2018　　　2019

Bikes made up 95% of sales, Mountain Bikes to buzz ahead…

Road Bikes
2019 Sales ~ $5.2mn

Mountain Bikes
2019 Sales ~ $6.34mn

Touring Bikes
2019 Sales ~ $3.82mn

Gears & Outfits
2019 Sales ~ $0.92mn

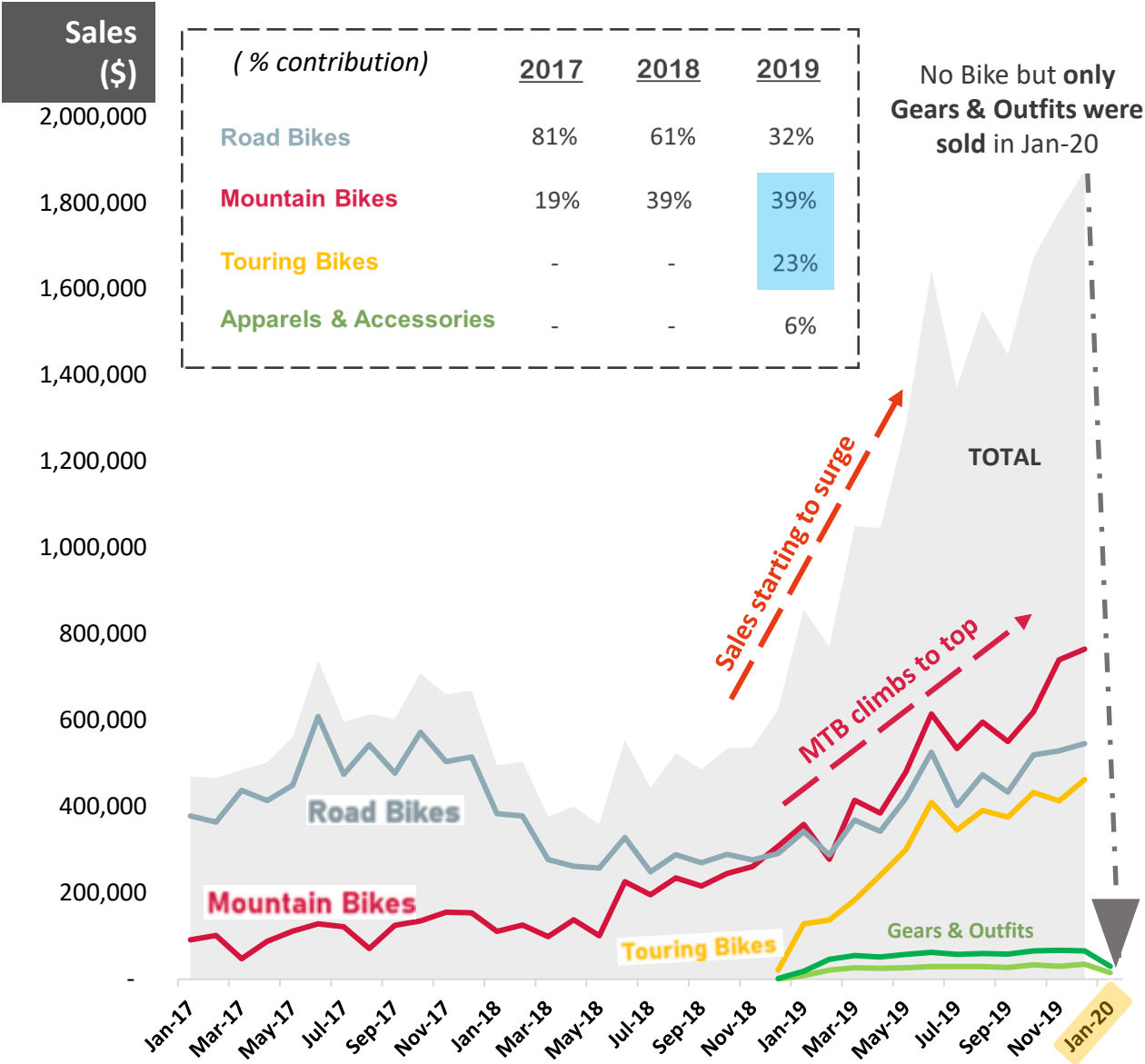|		2019 Sales	*CAGR
North America	US	$5.46M	↑149%
	Canada	$1.09M	↑138%
Europe	France	$1.58M	↑196%
	UK	$2.12M	↑196%
	Germany	$1.76M	↑184%
Asia Pacific	Australia	$4.34M	↑130%

Customer Demographics:

- ✓ *Age:* 34 − 58
- ✓ *Gender:* 50.6% Male
- ✓ *Marital status:* 54% Married
- ✓ *Yearly income:* $20.000 − 80.000
- ✓ *# of Children:* 0 − 2
- ✓ *Occupation:* Professional (30%), Skilled manual (25%), Management (17%) & Clerical (16%)

(*): CAGR for 2017-19 period

Mountain Bikes And Newly Launched Touring Bikes As The Major Drivers Of __Astounding Sales Growth In 2019__

(% contribution)	2017	2018	2019
Road Bikes	81%	61%	32%
Mountain Bikes	19%	39%	39%
Touring Bikes	-	-	23%
Apparels & Accessories	-	-	6%

No Bike but **only Gears & Outfits were sold** in Jan-20

Sales starting to surge

MTB climbs to top

TOTAL

Road Bikes

Mountain Bikes

Touring Bikes

Gears & Outfits

Sales ($)

2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-

Jan-17 · Mar-17 · May-17 · Jul-17 · Sep-17 · Nov-17 · Jan-18 · Mar-18 · May-18 · Jul-18 · Sep-18 · Nov-18 · Jan-19 · Mar-19 · May-19 · Jul-19 · Sep-19 · Nov-19 · Jan-20

Mountain Bikes…

Touring Bikes…

Gears & Outfits…

Key Drivers Of 2019 Surge In Sales

… Had Climbed To The Top

- Accelerated since May-18, reached accumulated sales of $6.3mn in 2019 (↑180% vs 2018).
- Surpassed Road Bikes – which were at the top before - since early 2019, increasing its weight to total sales to 39%.

… Create Potential Revenue Stream

- Officially launched in Jan-19, with promising average monthly growth rate reached 14% (from 0.13mn in Jan 19 to 0.46mn in Dec 19)
- Performed 23% contribution to total sales, closely caught up with Road Bikes within a year.

### … Captivate Huge # Of New Customers

- Launched together with TB, these ancillary items made up modest proportion (6%) to total sales.
- That's said, they do help to attract new customers (evidenced by 97% new customers in 2019 bought Gears & Outfits).

MTB Abnormally Underperformed In Australia In Contrast With Other Markets In 2019

% Sales 2019	Australia		Other markets
Road Bikes	44%	>	27%
MTB	28%	<	43%
Touring Bike	23%		24%
Gear & Outfits	5%		6%

- In Australia 2019, MTB improved but still ended up with only 28% contribution to sales, far behind 44% of Road Bikes – the sustainable dominant.

- In Australia 2019, MTB sales grew with 23% monthly average growth rate despite fluctuation (in Feb and Jun). However, still low compared to 28% of the clearly upward trend in other markets.

Sales in Australia

Sales in Other Markets
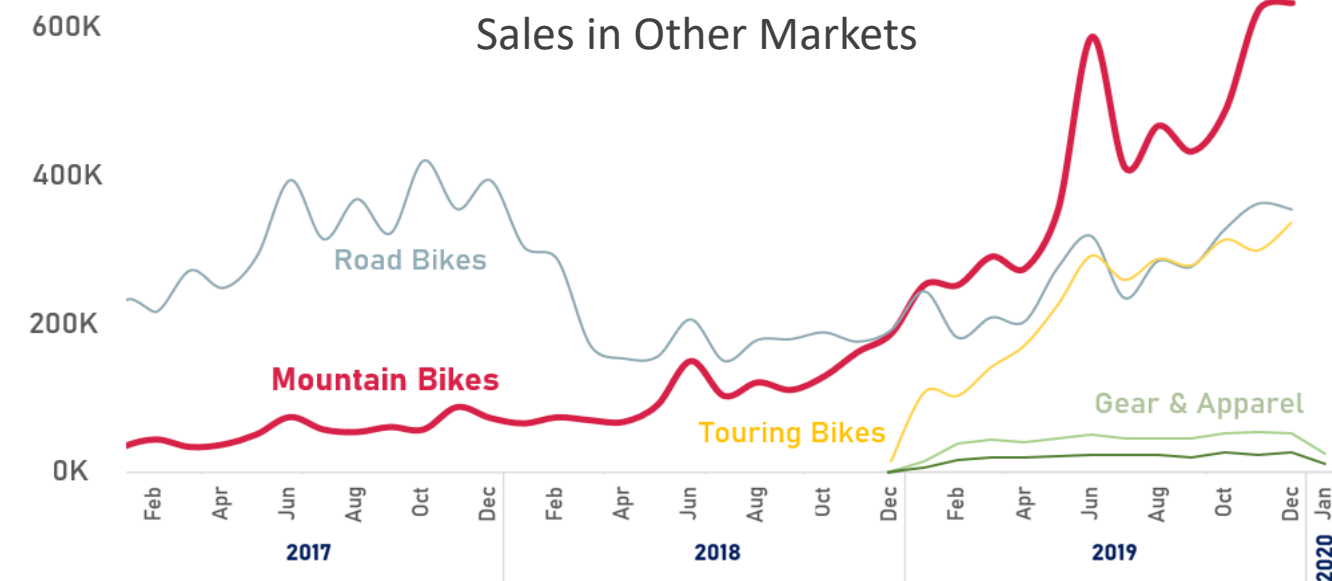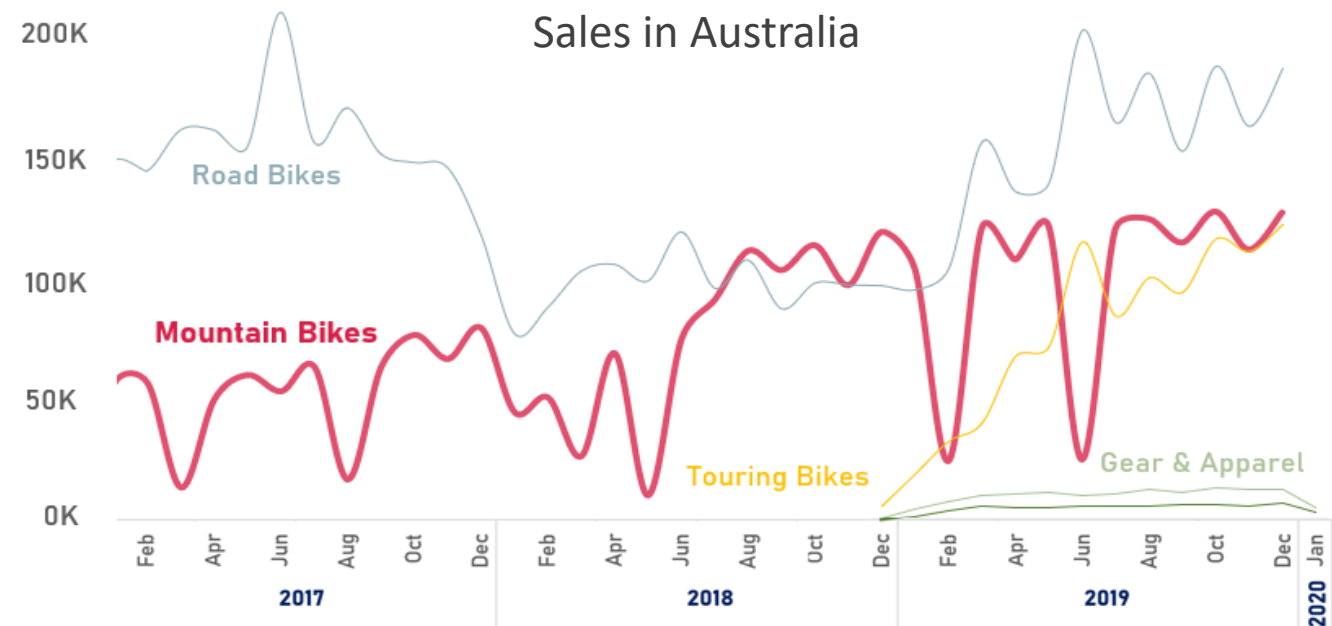
In 2018, Sales Slightly Dropped By $1.24mn (↓17% yoy) Despite 47% Growth in Total Number of Bikes Sold

Europe +$0.49mn

-$1.24mn

Net drop vs 2017

Australia -$0.44mn

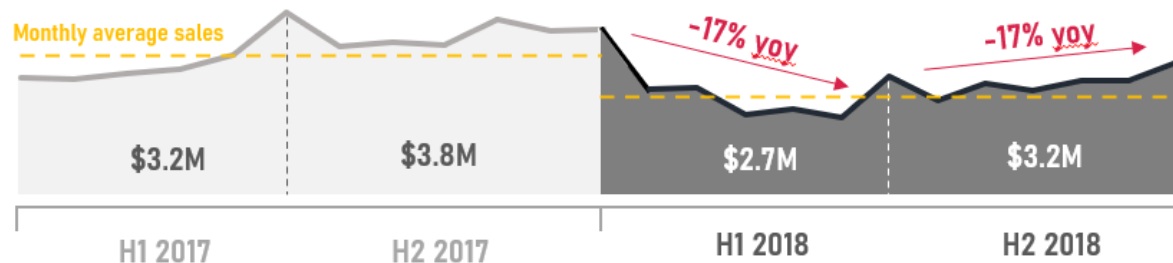**North America** -$1.29mn
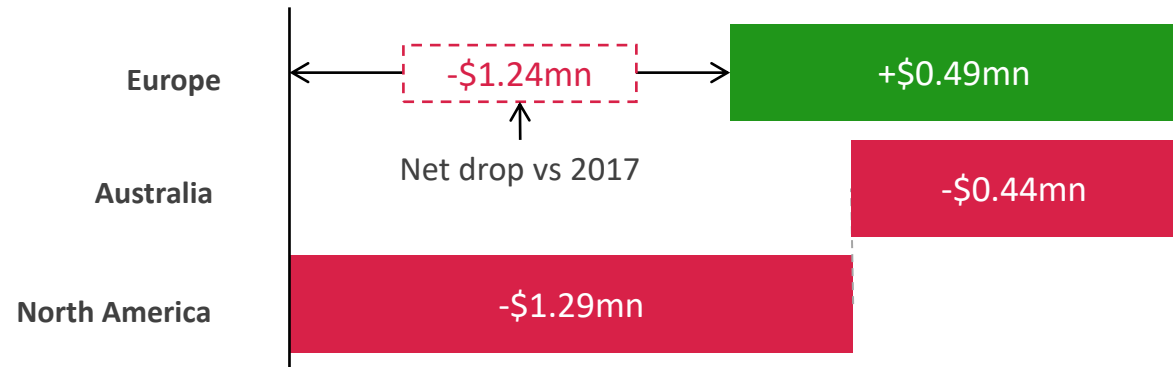
- NA and PA sales suffered heavy loss while EU showed bright growth, offsetting somewhat the decline in 2018 to reach final net drop of $1.24mn

Monthly average sales

-17% yoy   -17% yoy

$3.2M $3.8M $2.7M $3.2M

H1 2017   H2 2017   H1 2018   H2 2018

- Except the sharp drop in Jan 2018, the movement of sales in 2017 and 2018 reflected the same pattern of seasonality but lower monthly average amount.

2017- 2018 changes	Sales ($)	Units sold
Road Bikes	- $2.2mn	+336 ~ 18%
Mountain Bikes	+ $0.93mn	+702 ~ 177%
All Bikes	- $1.24mn	+1051 ~ 47%

- Road Bikes experienced significant sales decline ($2.2mn) despite the increase in # of unit sold. Fortunately, its impact on total sales was partly alleviated thanks to the sales increase of Mountain Bikes with 177% surge in # of unit sold.

- The 18% increase in Units sold of Road Bikes was mainly attributed by a surge in sales vol of the cheaper product lines (Model 250, 550, 650) - while the one yielding higher revenue (luxury Model 150) were cut off *(See the next slide)*

Product Portfolio Strategy: Toward Cheaper Segments

Road Bikes

Price Range ($)	2017	2018	2019
3,300 – 3,600	+ $5.5mn — Model 150		
2,000 – 2,400	+ $0.04mn — Model 250	+ $2.7mn — Model 250	+ $1.7mn — Model 250
1,000 – 1,700		+ $0.36mn — Model 550	+ $1.2mn — Model 550 / + $1.6mn — Model 350
500 – 800	+ $0.18mn — Model 650	+ $0.46mn — Model 650	+ $0.78mn — Model 750

Mountain Bikes

Price Range ($)	2017	2018	2019
3,300 – 3,600	+ $1.3mn — Model 100		
2,000 – 2,400		+ $2.3mn — Model 200	+ $5.7mn — Model 200
500 – 800			+ $0.42mn — Model 400 / + $0.26mn — Model 500

Touring Bikes

Price Range ($)	Dec 2018 & 2019
2,000 – 2,400	+ $2.99mn — Model 1000
1,000 – 1,700	+ $0.45mn — Model 2000
500 – 800	+ $0.4mn — Model 3000


- In 2017, the company positioned itself as High-end Bike brand (unit price of $3,300-3,600)

- Since 2018, High-end Bikes were divested that the company focused expanding and diversifying its offer toward lower price segments
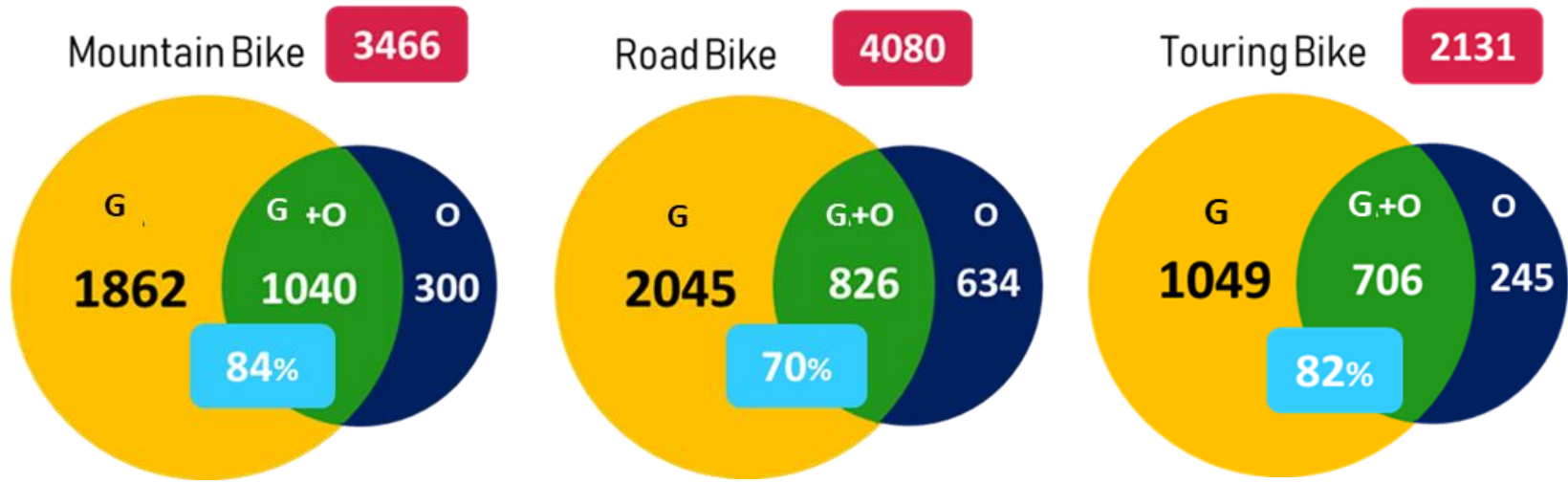

- Road Bikes sales was poor after restructuring with only 3.5% average growth rate, that could not even gain back the sales level on 2017 ($5.7mn)

- Despite 53% average increase in Units sold, it could not bring explosive revenue since cheaper products (Model 250, 550, 650) were well sold, not the higher one (Model 150 was totally cut off)

- The shifting was also not profitable as Model 150 yield higher profit margin than others (29% vs ~27%)

Road Bikes

2017	2018	2019
5.7M	3.6M	5.2M

Mountain Bikes

1.3M	2.3M	6.3M
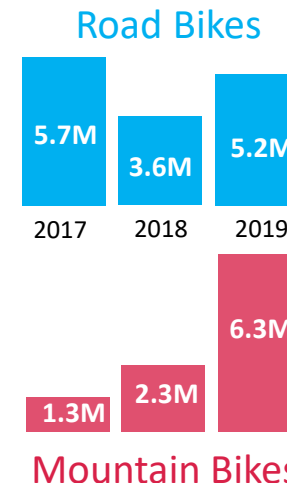
- MTB sales were spectacularly boosted after restructuring (with average growth rate of 125%), correlatively with the surge of Units sold (197% growth in average)

- The MTB restructuring also proved profitable as cheaper product lines had higher profit margin than the High-end one (Model 100) (35% vs 33%)

Gears were powerful supporter for sales of Bikes, whereas Outfits were not at all…

Bike Sales Ven Diagram

Mountain Bike   3466

G,
1862   G,+O **1040**   O **300**

84%

Road Bike   4080

G
2045   G,+O **826**   O **634**

70%

Touring Bike   2131

G
1049   G,+O **706**   O **245**

82%

# of customers who purchased <u>Bikes</u>
- ▮ at least once (red)
- ▮ with <u>Gears</u> (yellow)
- ▮ with <u>both G & O</u> (green)
- ▮ with <u>Outfits only</u> (dark blue)
- ▮ % Customer purchased Bike along with <u>Gear</u> (light blue)

Relationship between G&O and Bike sales

```
Detrended Robust Regression For Mountain Bike
==============================================
                         Dependent variable:
                         -------------------
                             mountainbike
----------------------------------------------
timetrend                   33.238***
                            (3.650)

mt.accessories              18.032***
                            (2.011)

outfits                     -1.922
                            (1.204)

Constant                    4,164.661***
                            (1,023.807)
----------------------------------------------
Observations                362
Residual Std. Error    6,004.464 (df = 358)
```

```
Detrended Robust Regression For Road Bike
=========================================
                         Dependent variable:
                         -------------------
                               roadbike
-----------------------------------------
timetrend                   24.053***
                            (3.335)

road.accessories            4.993
                            (3.371)

outfits                     -2.201**
                            (1.025)

Constant                    10,397.750***
                            (1,015.951)
-----------------------------------------
Observations                361
Residual Std. Error    5,255.293 (df = 357)
```

```
Detrended Robust Regression For Touring Bike
============================================
                         Dependent variable:
                         -------------------
                             touringbike
--------------------------------------------
timetrend                   29.635***
                            (2.878)

touring.accessories         7.750*
                            (4.382)

outfits                     2.102**
                            (0.874)

Constant                    2,377.786***
                            (764.668)
--------------------------------------------
Observations                343
Residual Std. Error    4,431.234 (df = 339)
```

For each Subcategory of Bike, the number of Bike buyers who also buy Gears always account for a <u>dominant proportion</u> of Bike buyers:
1. 82% of Touring bikes
2. 70% of Road bikes
3. 84% of Mountain bikes

→ Gears are perceived by Bike buyers as necessary add-ons for their bikes, esp. for MTB & TB.

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1. Gears <u>do support</u> the sales of Mountain bikes & Touring bikes, as indicated by the positive coefficients and their significance levels.

2. Outfits sales have an <u>inverse relationship</u> with RB & MTB sales, but a <u>positive relationship</u> with TB sales.

*Note:
1. A time trend variable is added to the models to remove the effect of trend in calculating the coefficients (avoid spurious regression problem).
2. Gear are classified based on three types of bike: Mountain bikes, Road bikes & Touring bikes.
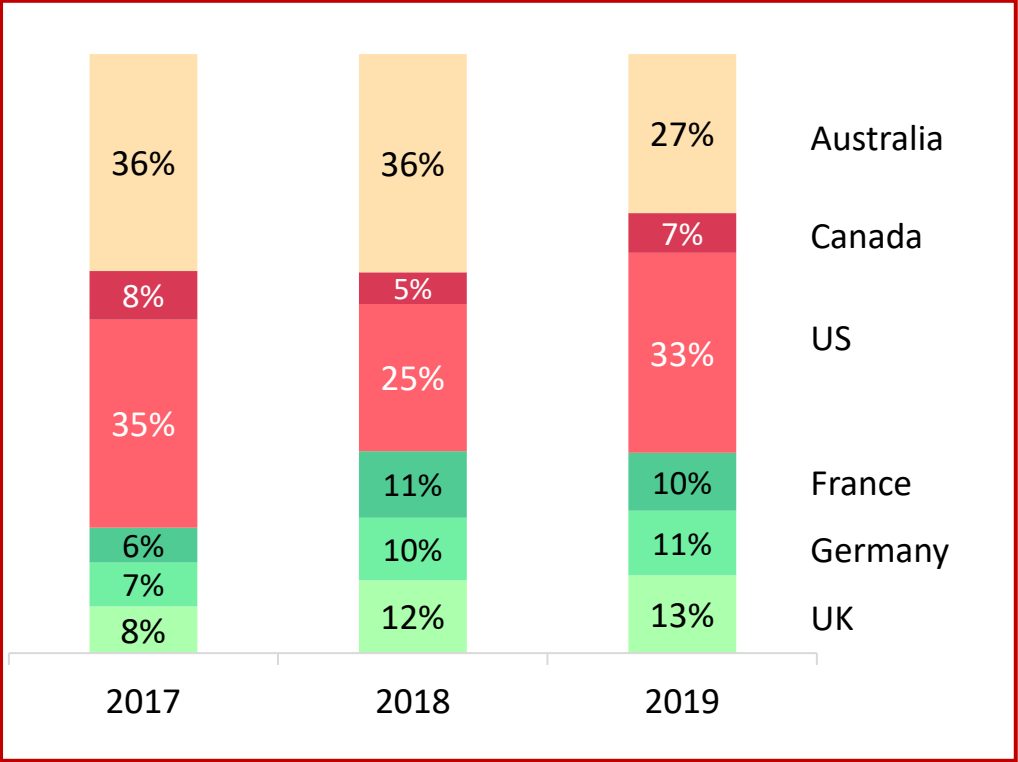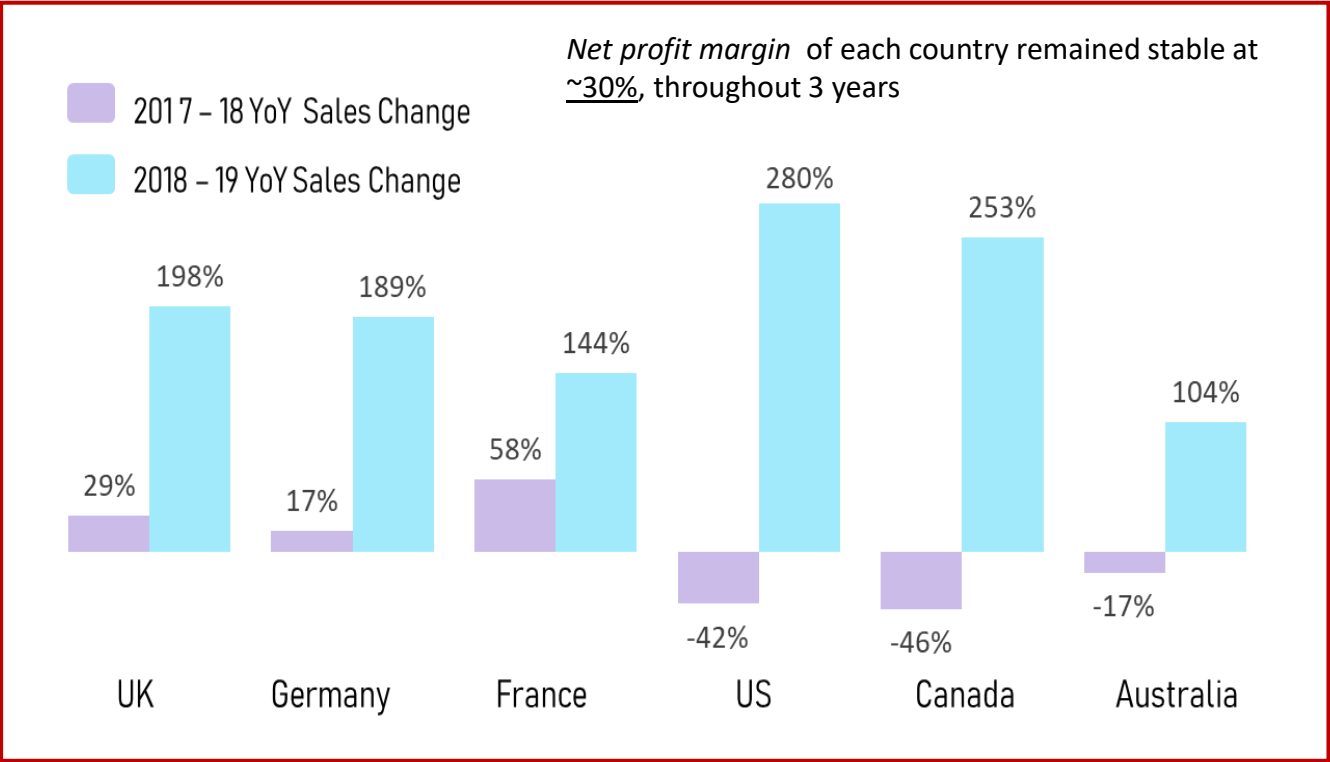
Section 02:

Regional Market Analysis

- Sales Performance & Growth

- Customer Demographics

- Customer Base Evaluation

- Purchase Behaviors

Regional Markets: One Saturated, One Promising and One Fluctuated

% Contribution To Total Sales By Countries Each Year

2017	2018	2019	
36%	36%	27%	Australia
8%	5%	7%	Canada
35%	25%	33%	US
6%	11%	10%	France
7%	10%	11%	Germany
8%	12%	13%	UK

Volatile Of Sales By Countries (% change yoy)

Net profit margin of each country remained stable at ~30%, throughout 3 years

■ 2017 – 18 YoY Sales Change
■ 2018 – 19 YoY Sales Change

UK: 29% / 198%
Germany: 17% / 189%
France: 58% / 144%
US: -42% / 280%
Canada: -46% / 253%
Australia: -17% / 104%

Continuously growing European market

From 2017 – 19, the three European markets consistently experienced consistent high sales growth, albeit their sales were notably lower than those of the US and Australia market.

The low-volatility large-scale Australian market

In comparison with Europe and North America, sales of Australian market showed significantly less volatility (From 2017-18, it only dropped by 17%, whereas NA dropped by 42-46%. The same pattern can also be found for 2018-19 sales growth).

Spectacular bounce-back of North America

Even though US & Canada sales plummeted moving from 2017 – 18, they quickly made a staggering bounce-back the next period, moving from $1.4mn & $0.3mn in 2018 to $5.5mn & $1.1mn, respectively. In comparison with other two regions, sales in NA fluctuated the most.
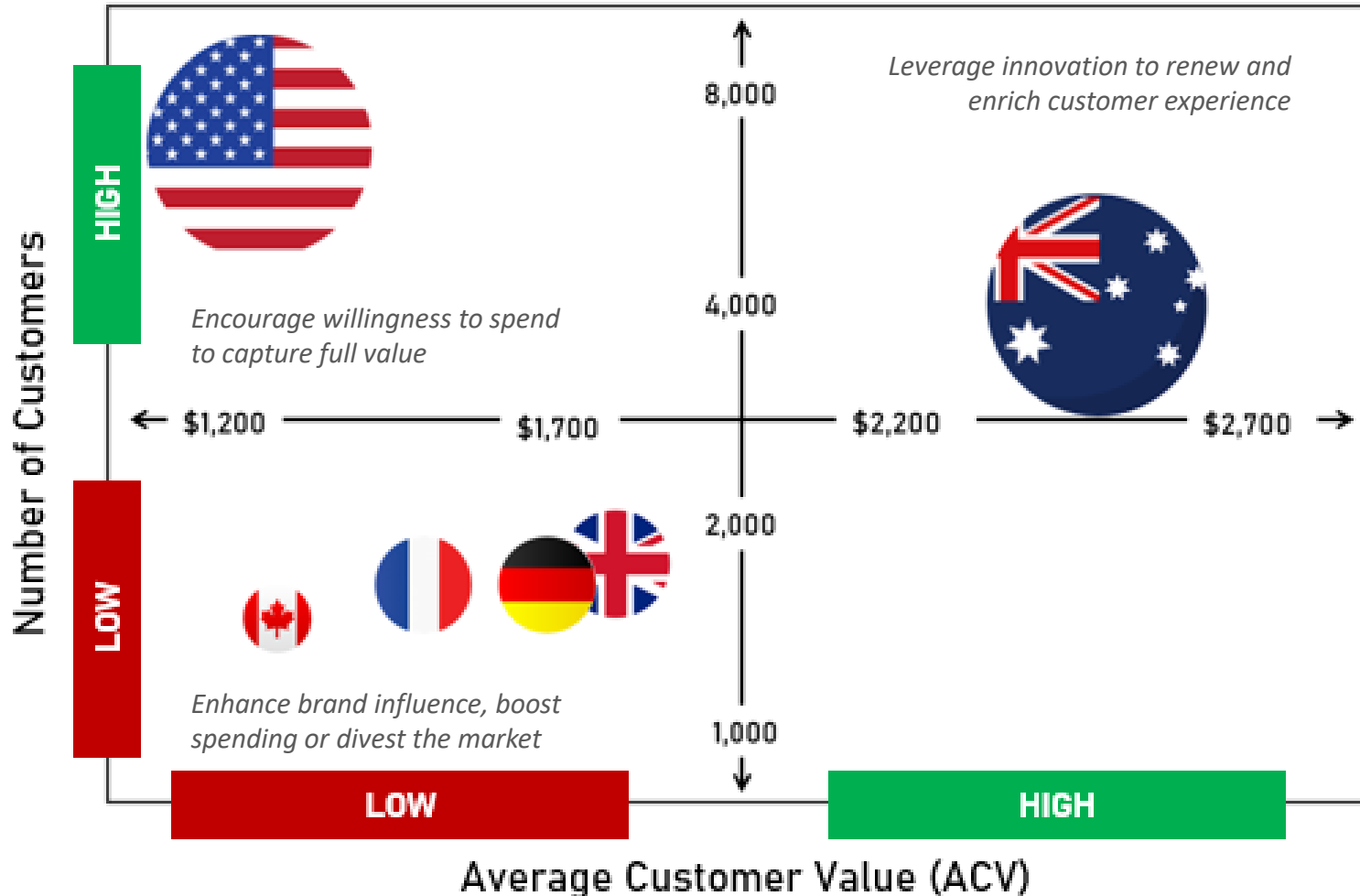
Customer Demographics by Sales Region: An Overview

Customer Population Pyramid

Europe 🇩🇪 🇬🇧 🇫🇷

North America 🇺🇸 🇨🇦

Australia 🇦🇺

Male / Female
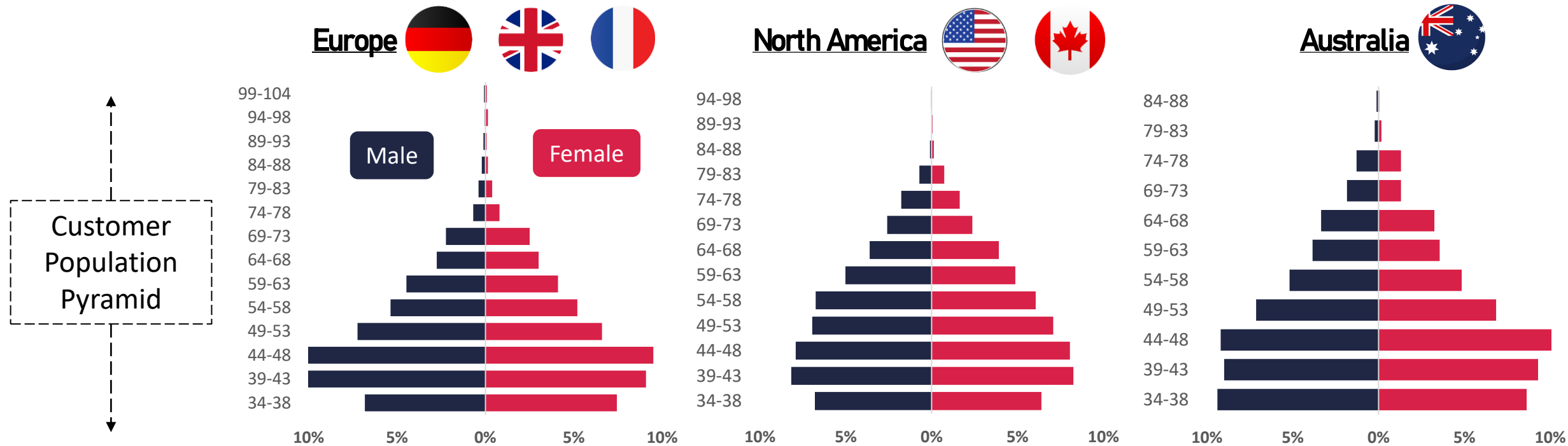
	Europe	North America	Australia
Total Children	0 – 3 children	0 – 2 children	0 – 2 children
Marital Status	49% Married	58% Married	53% Married
Yearly Income	$10.000 – 40.000	$40.000 – 80.000	$60.000 – 100.000
Occupation	Clerical & Manual	Management, Professional & Skilled Manual	Management, Professional & Skilled Manual
Commute Distance	0 – 1 mile	0 – 5 miles	0 – 1 mile & 5+ miles
# of Cars owned	0 – 2 cars	0 – 2 cars	1 – 3 cars

Regional Analysis: Customer Base

Each region show distinctive features regarding to the number of customers and their willingness to pay

Leverage innovation to renew and enrich customer experience

Encourage willingness to spend to capture full value

Enhance brand influence, boost spending or divest the market

HIGH

LOW

$1,200 $1,700 $2,200 $2,700

8,000 4,000 2,000 1,000

LOW **HIGH**

Number of Customers

Average Customer Value (ACV)

North America
Excellent customer expansion but poor customer engagement

- Exemptional for CA, US market attracts huge customer base of 7819 # of customer, as 42% of the total

- Though average income of NA customer is high but ACV show the opposite ($1,211)

- The customers are not as loyal as it of other markets with repeated purchase of ~27%

Australia
Outstanding customer value capturing

- Rank only behind US in number (3,590 ~19%), AU customers show the most valuable with ACV of $2,523 and impressive loyalty as 72% of them make repeated purchase

Europe
Moderate customer base embracing three territories

- EU holds 3,141 customer accounting for the rest 30% of total customers. And 33% of them are loyal.

- One EU customer brings moderately $1,623 revenue on average though it has significantly lower average yearly income.

Purchase Behavior Pattern: Europe

LRFM & K-Means Analysis Divide **Current Bike Customers** Into 6 Clusters *(See Appendix 1)*:

Cluster	Characteristics	Length	Recency	Frequency	Monetary	Behavior	Status
6	La Rm Fa Ma	687	78	3	$6.861	Long-term customer with significantly high monetary spending & high purchase frequency.	
2	Lm Rb Fm Mm	648	67	2	$3.233	First bought quite a long time ago, came back recently for more, with medium monetary spending.	Loyal & Profitable
3	Lm Rm Fm Ma	528	242	2	$3.444	First bought quite a long time ago, came back ~ 8 months ago, with good monetary spending.	
4	Lb Rb Fb Mb	68	68	1	$1.120	New customers with low spending and purchased only once.	Skeptical New comers
5	Lb Ra Fb Mb	251	251	1	$1.120		
1	La Ra Fb Mm	693	693	1	$2.071	Lost customer who purchased only once a long time ago and never came back.	Lost
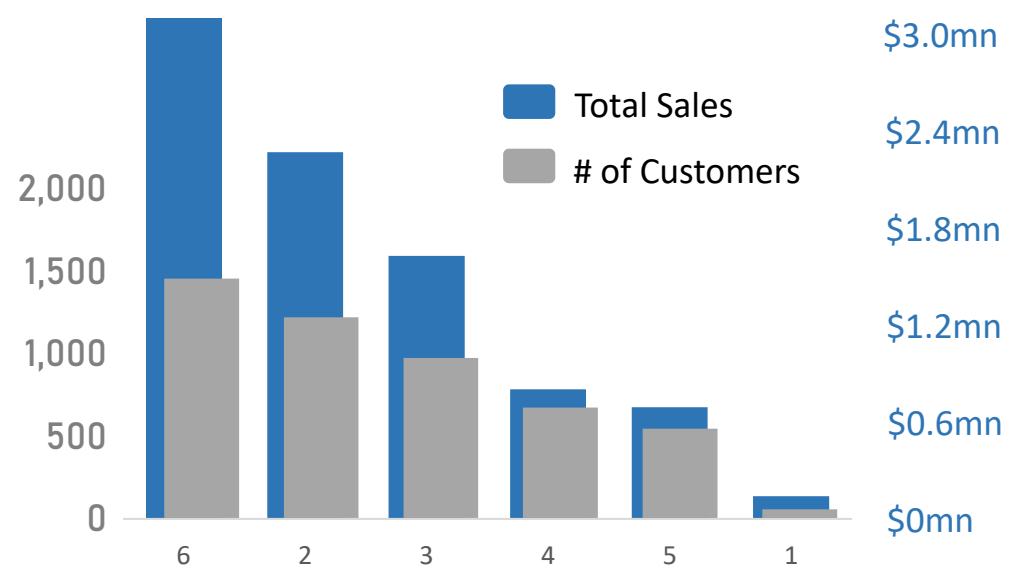
The Loyal & Profitable: show a preference for luxury bikes. Highlighted by strong willingness-to-revisit, high willingness-to-pay and thus, contribute the most to total sales.
- For Road Bike: accounted for 100% sales of model 150 ($3.500) and 84% sales of model 250 ($2.200 ~ 2.400).
- For Mountain Bike: accounted for 94% Sales of all model 200 sold (~$2.100)
- As for Touring Bike, accounted for 71% sales of model 1000 ($2.400), 88% of which came solely from Cluster 6.

Skeptical new comers: show strong preference towards low-price bikes, which leads to modest spending of this group, proven by the fact that they accounted for 78% of total number of RB 750 ($500) & 48% of all RB 550 (~$1.000) sold. In addition, Mountain bikes & Touring bikes were not popular for this customer group.

Purchase Behavior Pattern: North America

LRFM & K-Means Analysis Divide **Current Bike Customers** Into 6 Clusters

Cluster	Abbreviation	Length	Frequency	Recency	Monetary	Behavior	Status
5	La Rm Fa Ma	796	2	165	4763	Long term customer who recently purchased – big spenders	Loyal & Profitable
4	Lm Rb Fa Mm	487	2	127	3103	Quite new customer who recently purchased. Contribute much to total sales due to frequently significant spending.	
6	Lb Rb Fb Mb	63	1	63	1701	New customers, but rarely purchase with even modest amount. Account for the large portion of number of customers.	Skeptical New-comers
2	Lm Ra Fb Mb	270	1	268	1701	Lost customers, purchase rarely with low amount of money. Account for the large portion of number of customers.	
3	Lb Rm Fb Mb	194	1	194	1120	Quite new customer, very low frequency with low spending and few participants	
1	La Ra Fb Ma	921.5	1	922	3578	Lost customers, purchase with low frequency despite high spend, very few participants	The Lost
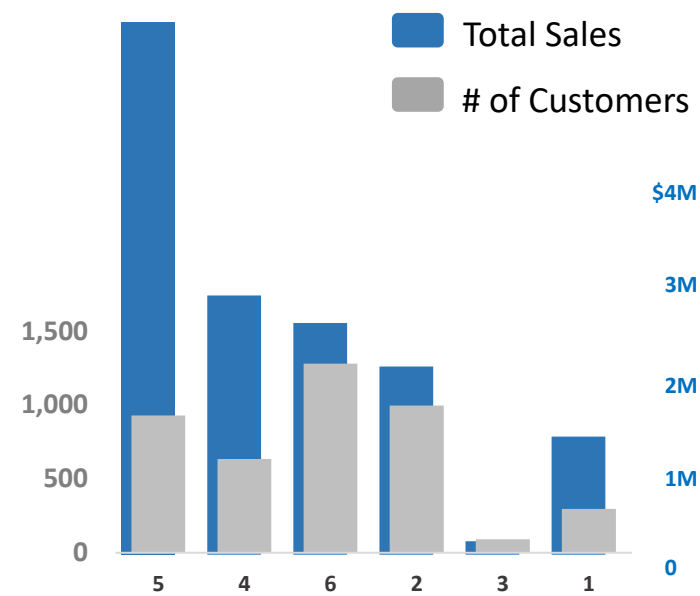
Majority of customers were Skeptical New-comers but luckily there still be The Loyal & Profitable yielding high revenue stream
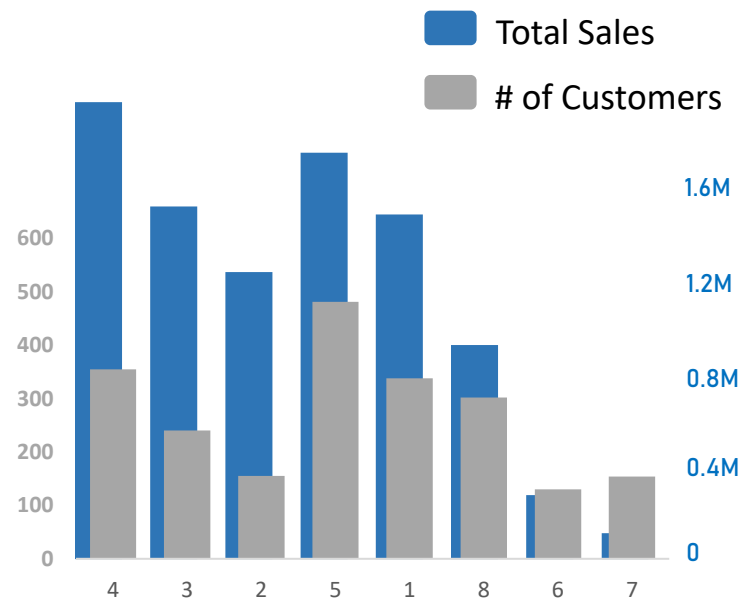
- **Cluster 4&5** made up ~60% revenue while only accounted for 37% total customers. Keeping serving them in the as it has been done is vital. Continuously innovating to create new customer experience is also recommended

- **Cluster 6, 2&3** are still hesitant to purchase more as they contribution to only ~32% revenue but the number of customer are significantly high ~56%. These clusters raise the needs for creating trust, driving them make more transactions with higher-price products. Such marketing campaign to boost brand awareness, loyalty program and improving customer service will work

The Lost – Cluster 1 is accepted to be gone as they company shifted to cheaper segments while it showed strong preference over luxury products

Purchase Behavior Pattern: Australia

LRFM & K-Means Analysis Divide **Current Bike Customers** Into 8 Clusters

Cluster	Abbreviation	Length	Frequency	Recency	Monetary	Behavior	Status
4	La Ra Fm Ma	891	2	271	6022	Loyal but old customers, purchased usually with huge spending, contribute largely to the revenue	Long term& Huge spenders
3	Lm Rb Fa Ma	545	3	63	6728	Quite new customers but loyal, purchase usually with huge spending	
2	La Rm Fa Ma	925	3	156	8079	Loyal customers, purchase frequently with high spending, though fewer participant but yield great revenue stream	
5	Lb Rb Fm Mm	469	2	56	3883	New customer and very active, largest in participant and bring great revenue though middle spend	Long term & Still potential
1	La Rm Fm Mm	883	2	103	4625	Long term customer but purchase not usually and midlle spend	
8	Lm Ra Fm Mb	504	2	208	2983	Old customer, purchase not usually with low spending. Numerous participants	
6	Lb Rb Fb Mb	81	1	80	540	New customer, purchase rarely with disappointingly low spending. Few participants	Skeptical new-comers
7	Lb Ra Fb Mb	259	1	249	2384	New customer, purchase rarely with low spending. Few participants	

Most of Australia customers are exceedingly profitable, loyal and even still potential

- **Cluster 4, 3 & 2** yield ~51% revenue stream but accounting for ~35% customer. Keeping serving them in the as it has been done is vital. Continuously innovating to create new customer experience is also recommended

- **Cluster 5, 1 & 8** though spend less than the one above but still contribute ~45% to the total sales while show much higher participants ~52% total customers. The problem is to trigger them spending more on each transaction. Such marketing campaign like loyalty program, special offer tighten to their interest will work

Small number of customers are Skeptical New-comers, proving that the ability of captivating new customers is still limited despite possessing strong loyal customer base. Since reliance on those old customers would not be sustainable in long-term vision, and given that the cost of investing on them is not as expensive as before, the company can leverage that spare resource to work out how to upgrade the effectiveness of new customer acquisition strategy.
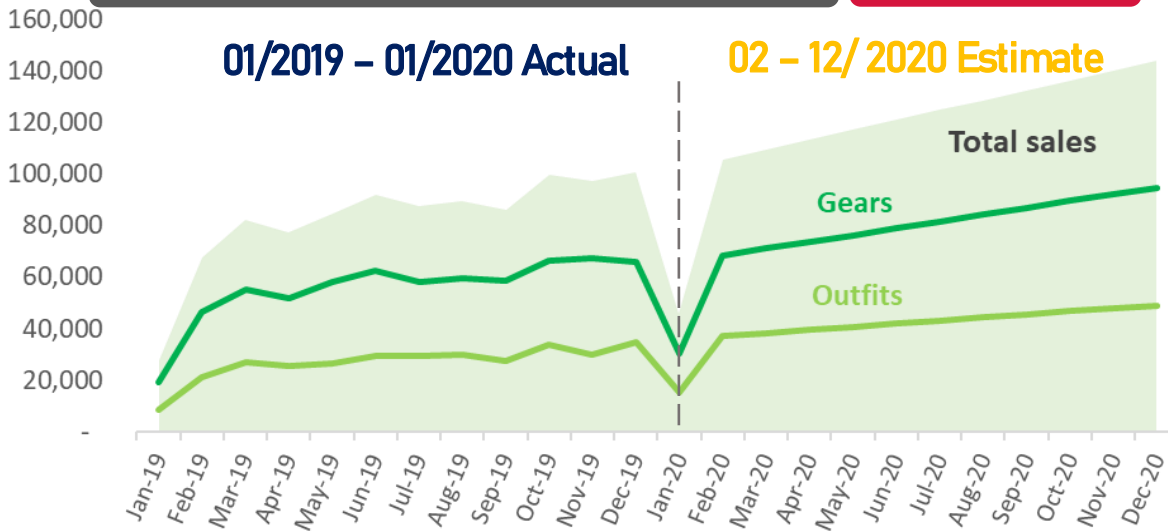
Section 03:

2020 Sales Forecast

- Methodology & Model Assumptions

- Scenario 01: Bikes would not be resumed in 2020

- Scenario 02: Bikes would be resumed from Feb 2020
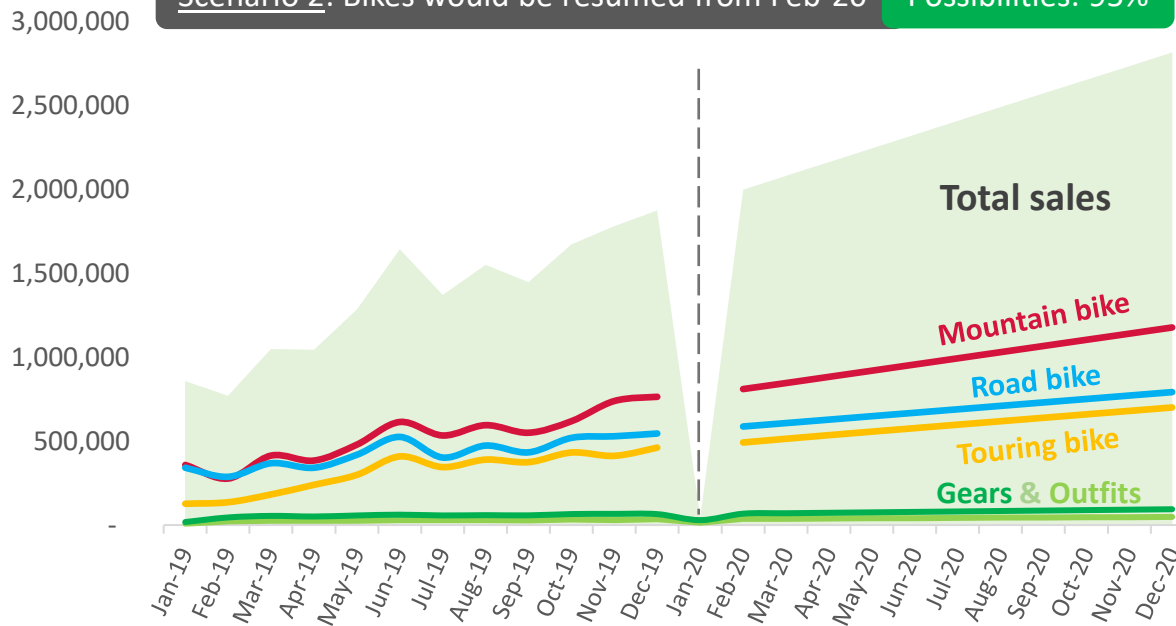
2020 Sales Forecasts

Scenario 1: Bikes would not be resumed in 2020 — Possibilities: 5%

01/2019 – 01/2020 Actual   **02 – 12/ 2020 Estimate**

Total sales
Gears
Outfits

Scenario 2: Bikes would be resumed from Feb-20 — Possibilities: 95%

Total sales
Mountain bike
Road bike
Touring bike
Gears & Outfits

For forecasting Gear sales, we first divide the data into two subcategories: high-growth (Helmets; Tires & Tubes) & medium-growth (Others).

Then, we employ an ARIMA (0,1,0) model to forecast the sales of 2 groups in 2020 separately, using 2019 sales data only, because the structural break in Jan-2020 will compromise the stability of our model. After having obtain the mean forecasted values, we combine them to get total sales of Gear in 2020.

We believe our forecast model is still valid, as the drop-then-recover in Jan-Feb/20 can be expected (just like it once did in Q1 2018), since the company is still in its early stage of expansion, and thus, its sales fluctuate a lot. The same procedure was performed for forecasting sales of Outfits. Our high-growth product subcategory is Jerseys, and the model is still ARIMA (0,1,0).

Finally, we checked ACF plot and the histogram of the residuals to evaluate the integrity of our model. The plots showed no sign of serial correlation & non-normality.

For forecasting sales of Mountain bikes, we employed a VAR(1) model (the lag was chosen using BIC/SC information criteria). The endogenous variables were 2019 MTB sales and 2019 MTB Gear sales. We choose to use VAR in order to incorporate the fact that MTB Gear does support sales of MTB into our MTB sales forecast. (as indicated by the detrended robust regression in pg. 09).

After running the model, we employed the following diagnostic tests to evaluate it: Portmanteau-Test for Serial correlation; Arch test for Heteroskedasticity; Multivariate Jarque-Bera test for Normality; and OLS-CUSUM Stability test for the stability of our VAR(1) model. All the diagnostic tests suggest that there exists no sign of abnormality in our model.

The same procedure was employed for forecasting 2020 TB sales and 2020 RB sales. The models were still VAR(1) whose lag was selected using BIC/SC information criteria, and all diagnostic tests showed that our models were good.

2020 Sales of G & O was obtained using the same procedure described in Scenario 1.

Section 04:

Appendix

# Appendix 1: Clustering & The LFRM Model

Variable measurement:

In this report, we use LRFM model as inputs for K-means clustering to classify **customers who purchase Bike at least once** into different clusters based on their **bike-purchasing behavior.** The definitions are as follows: Recency is the time interval between the last day of purchase and analysis date (the last bike-selling date in the dataset: Dec 28th 2019); frequency is the number of transactions that a customer has made during the period and monetary means the total amount of money spent in this specified time period. Our RFM was extended by adding an additional variable: customer relation length (L) to become LRFM model, because by adopting RFM model, the companies cannot effectively distinguish between the short-life and long-life customers. (L) measures the time period between the first visit of a particular customer and the day of analysis.
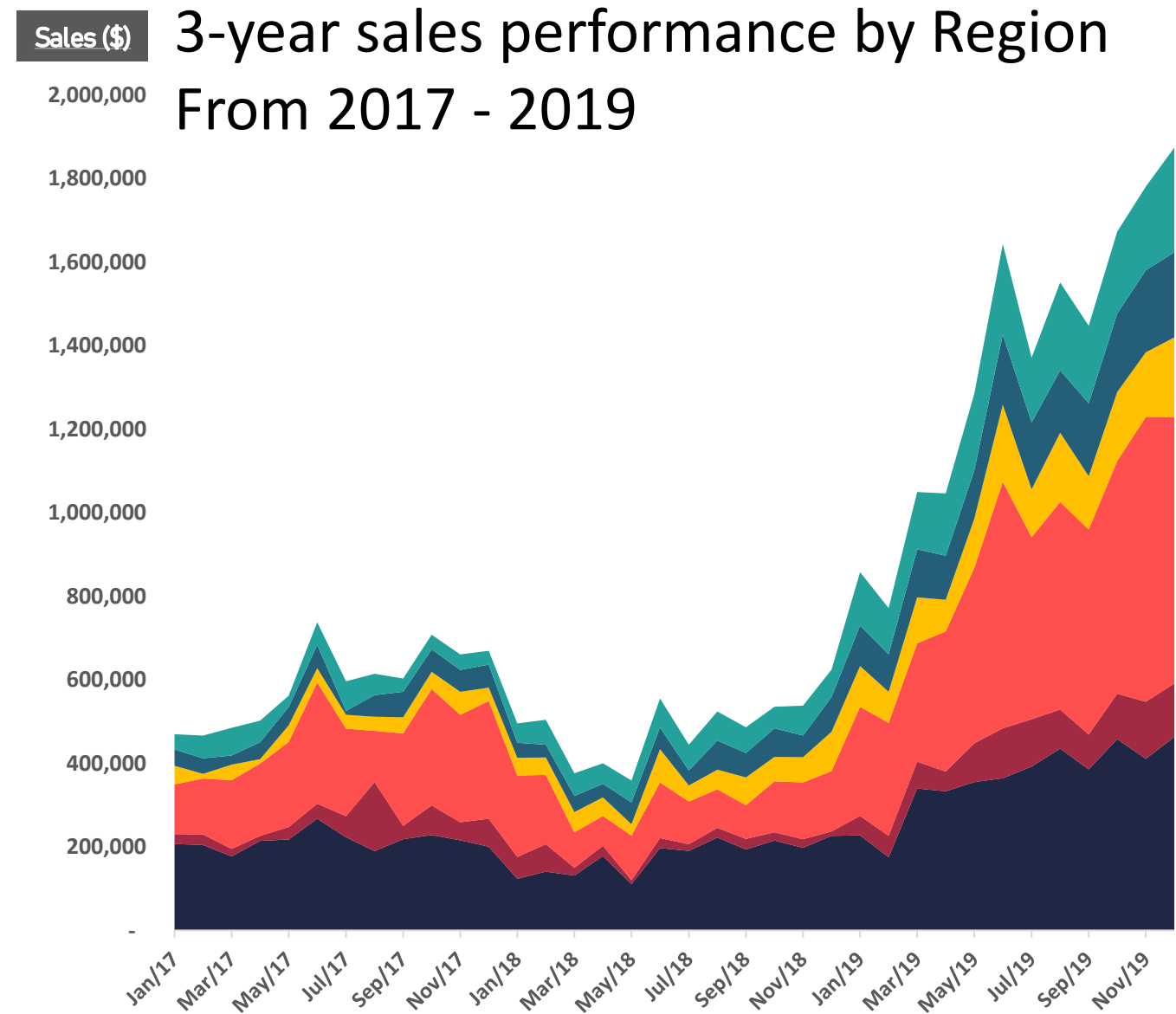
Cluster Abbreviations:

- La means the L value falls within the (66% percentile; 100% percentile];
- Lm means the L value falls within the (33% percentile; 66% percentile];
- Lb means the L value falls within the (0% percentile; 33% percentile].

And the same principle applies for other RFM values.

Cluster Characteristics By Region:
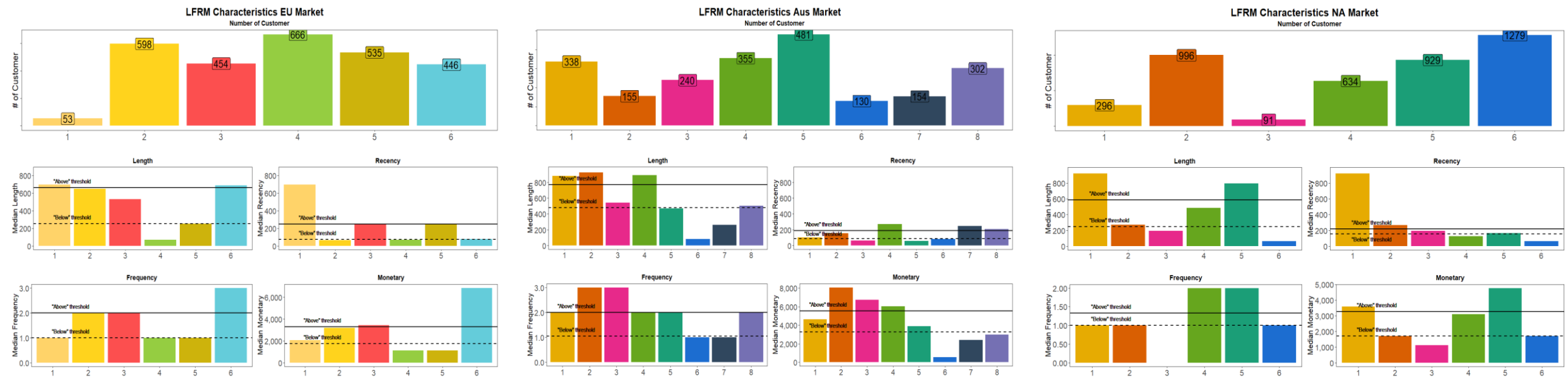
The LFRM Values displayed are the median LFRM value of all customers within each cluster.

Appendix 2: Sales & Customer data by Region from 2017–19

3-year sales performance by Region From 2017 - 2019

Sales ($)

# of Customers	2017		2018		2019
UK	175	123%	391	377%	1867
Germany	175	86%	326	422%	1701
France	140	149%	349	386%	1697
US	770	8%	833	768%	7230
Canada	170	-6%	160	776%	1402
Australia	786	41%	1106	219%	3532

	2017	2018	2019
UK	550,591	712,701	2,124,007
Germany	520,500	608,658	1,761,876
France	410,845	648,066	1,578,512
US	2,458,285	1,437,049	5,462,079
Canada	571,572	307,605	1,085,633
Australia	2,563,732	2,128,407	4,339,443

Net profit margin of each country remained stable at ~30%, throughout 3 years