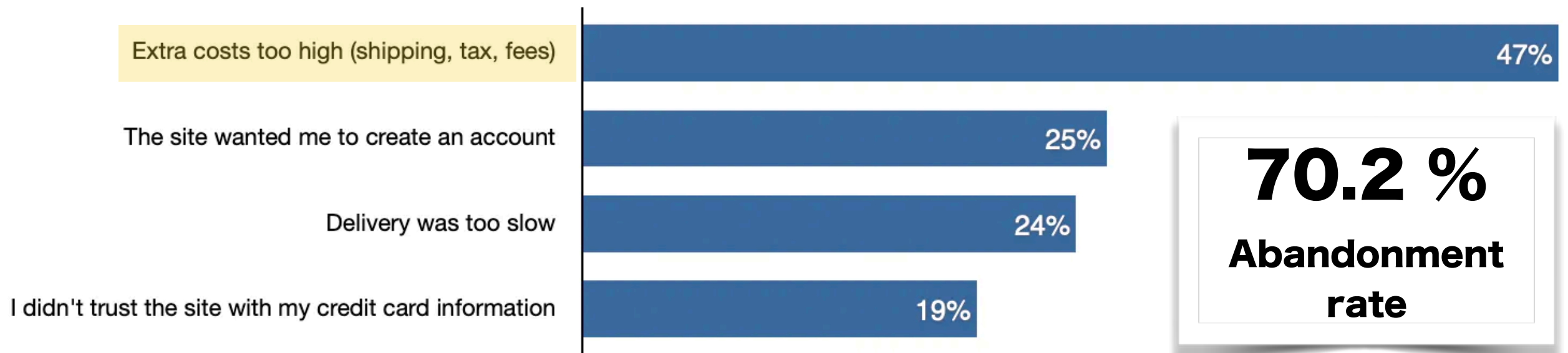


Stimulating purchase by lowering shipping fees

An exploration of the Olist e-commerce dataset

Leonardo Cerliani

High shipping fee is #1 reason for Cart Abandonment



Sources: Baymard Cart Abandonment Report July 2023: <https://baymard.com/lists/cart-abandonment-rate>

Shipping fee and speed mostly influence decision to shop online

Upfront shipping costs **74%**

Free returns **68%**

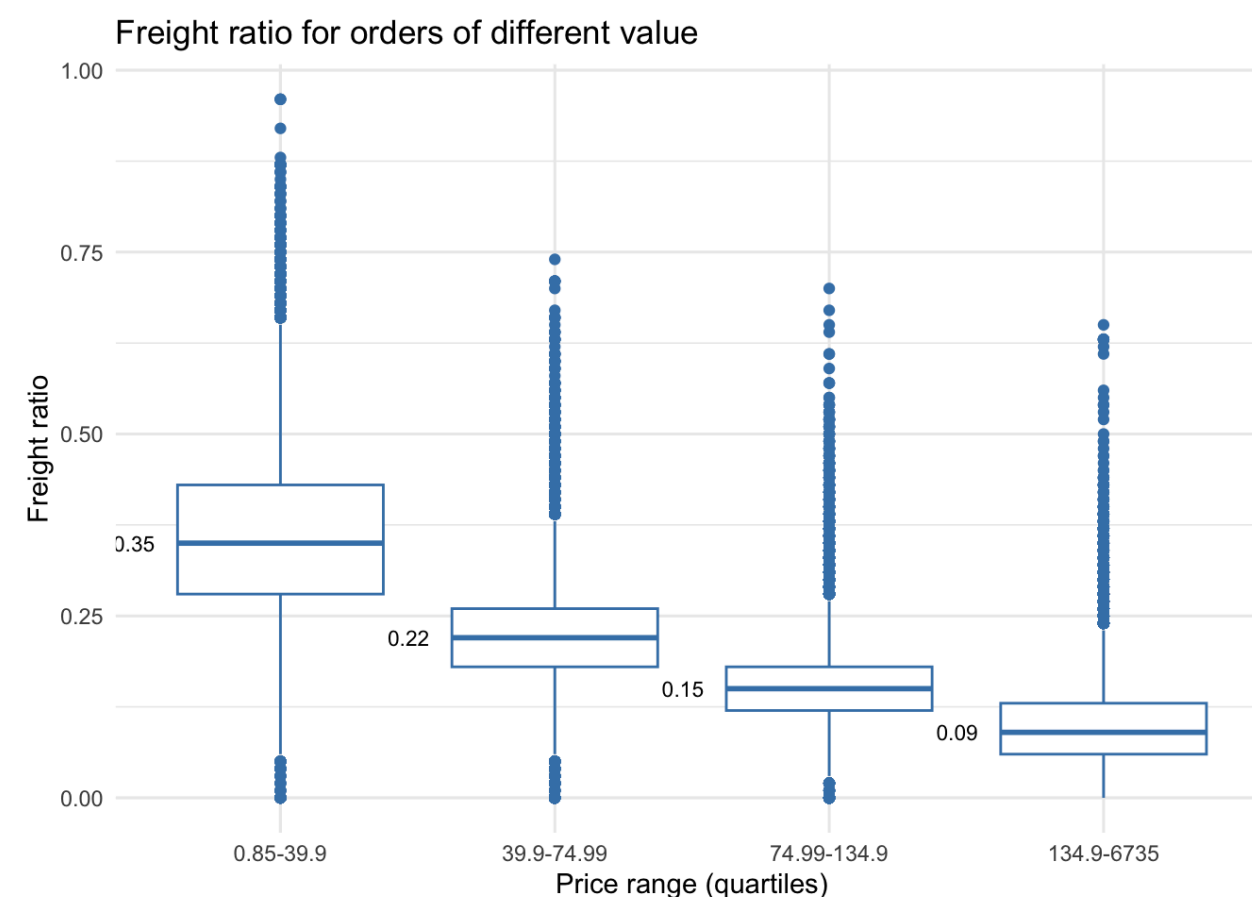
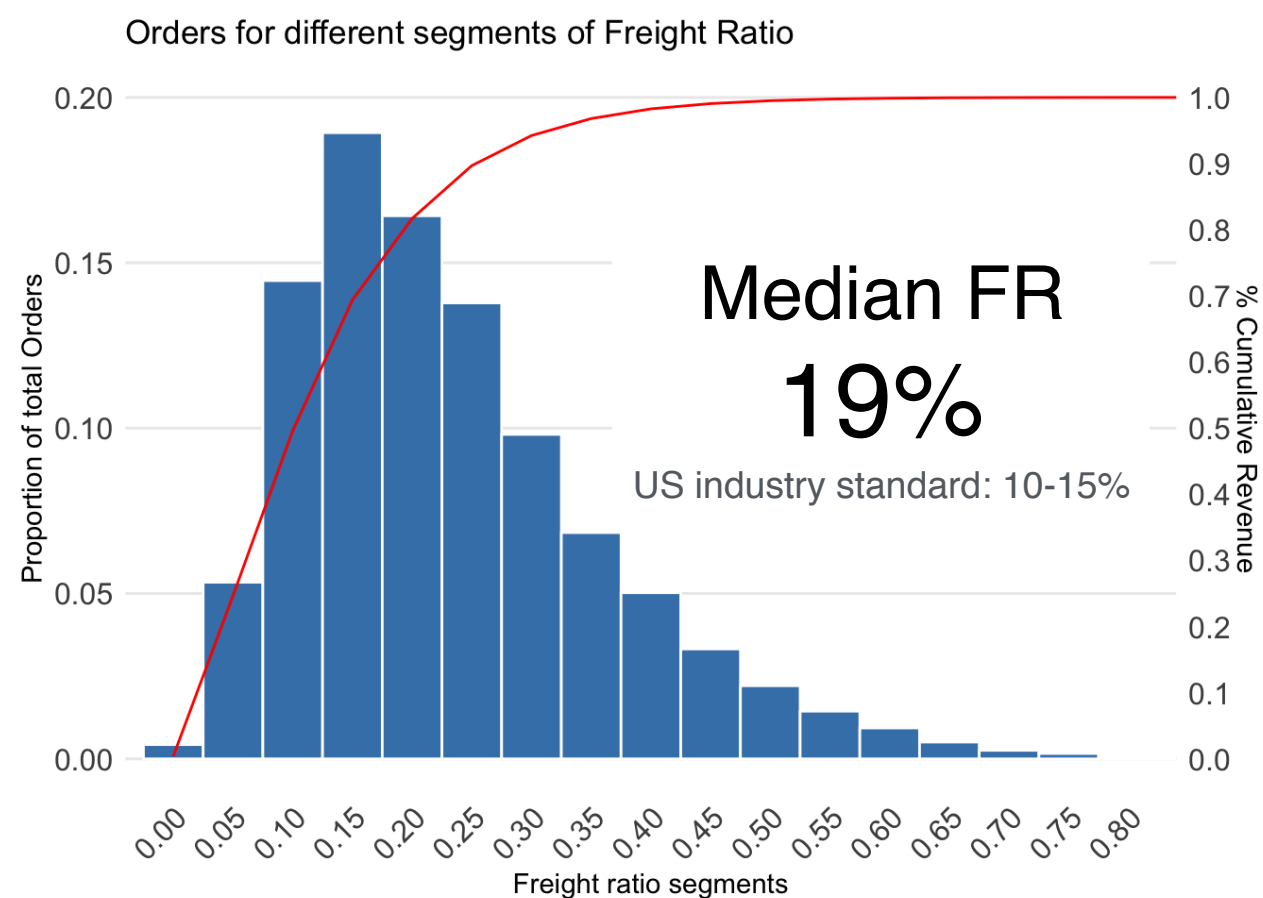
Estimated arrival **68%**

Freight Ratio

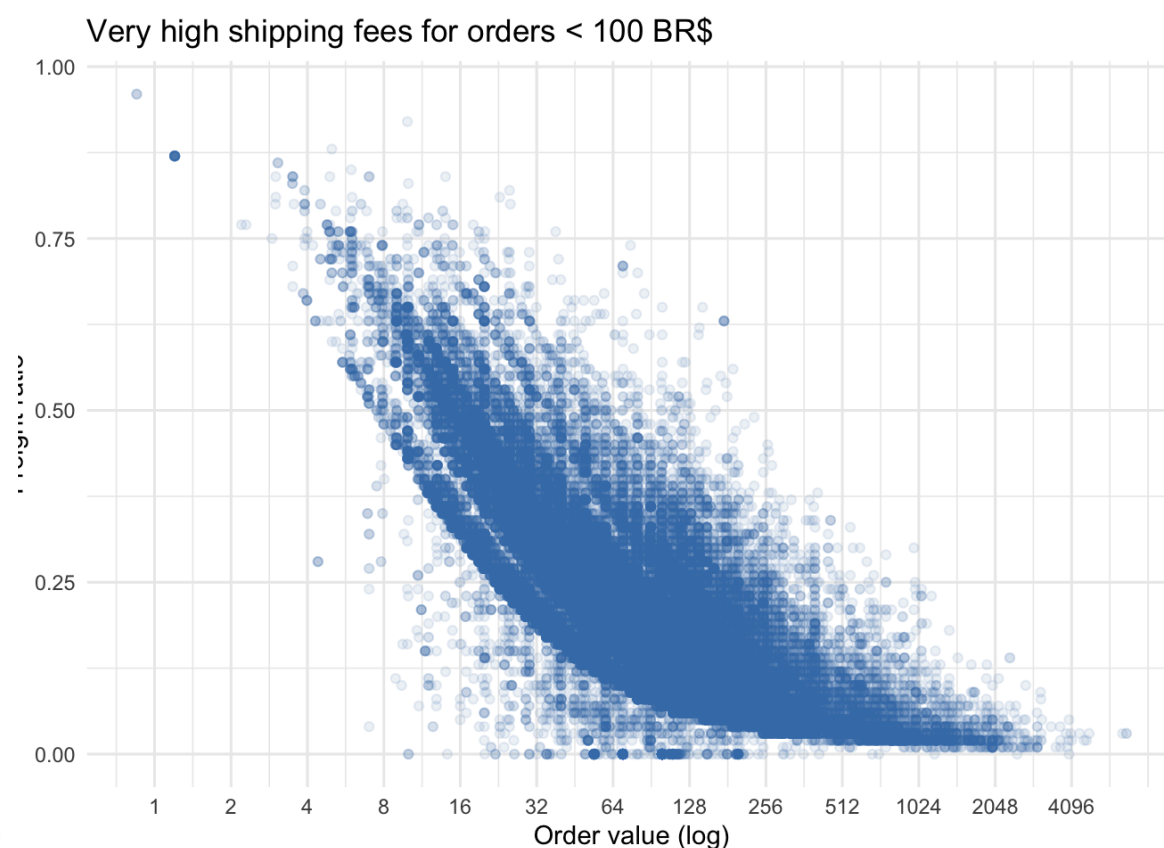
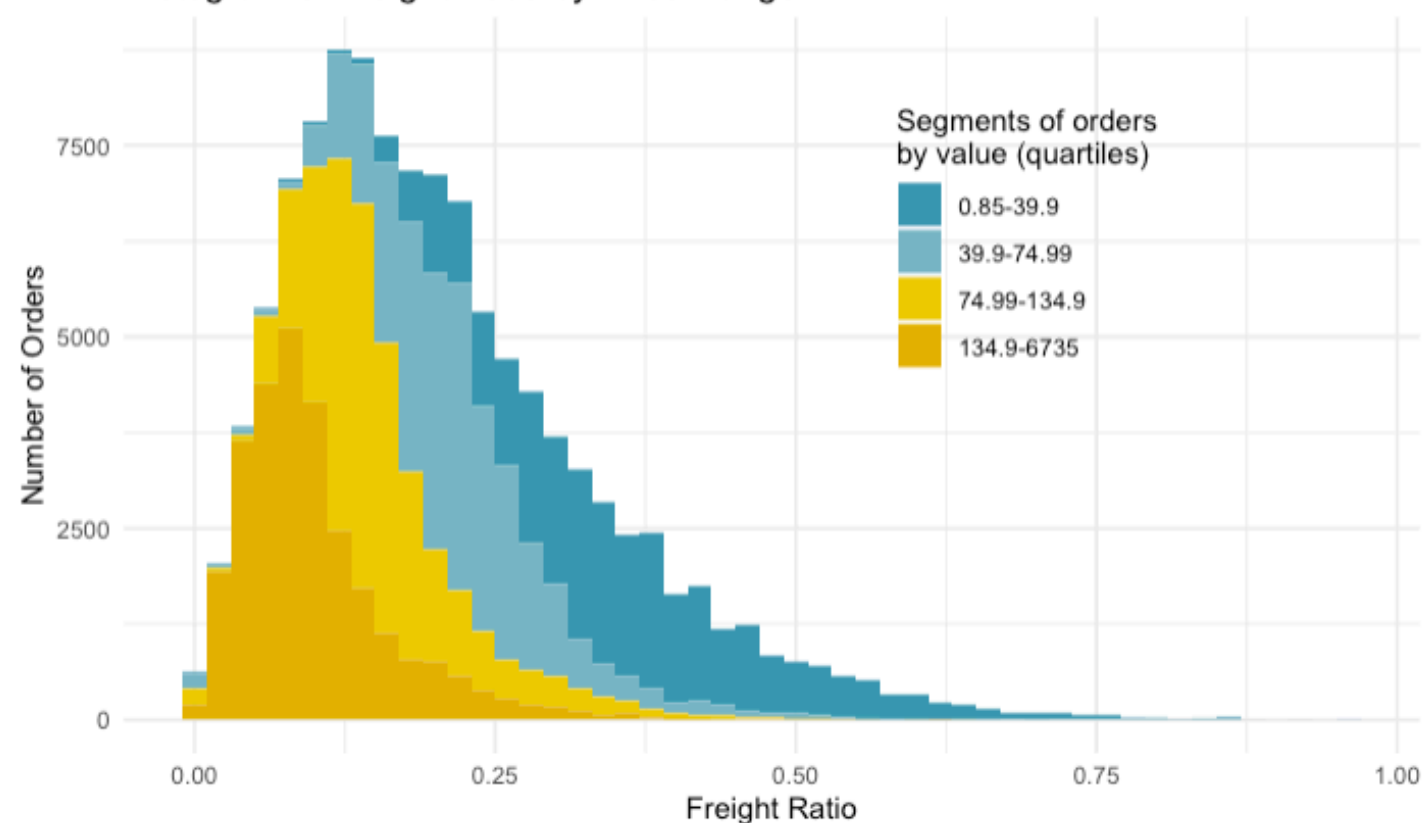
$$\frac{\text{Shipping Fees}}{\text{Price} + \text{Shipping Fees}}$$

Source: Shopify eCommerce Market Credibility Study 2021
<https://www.shopify.com/enterprise/freight-container-shipping-trends>

Olist has very high freight ratios (FR), especially for small orders

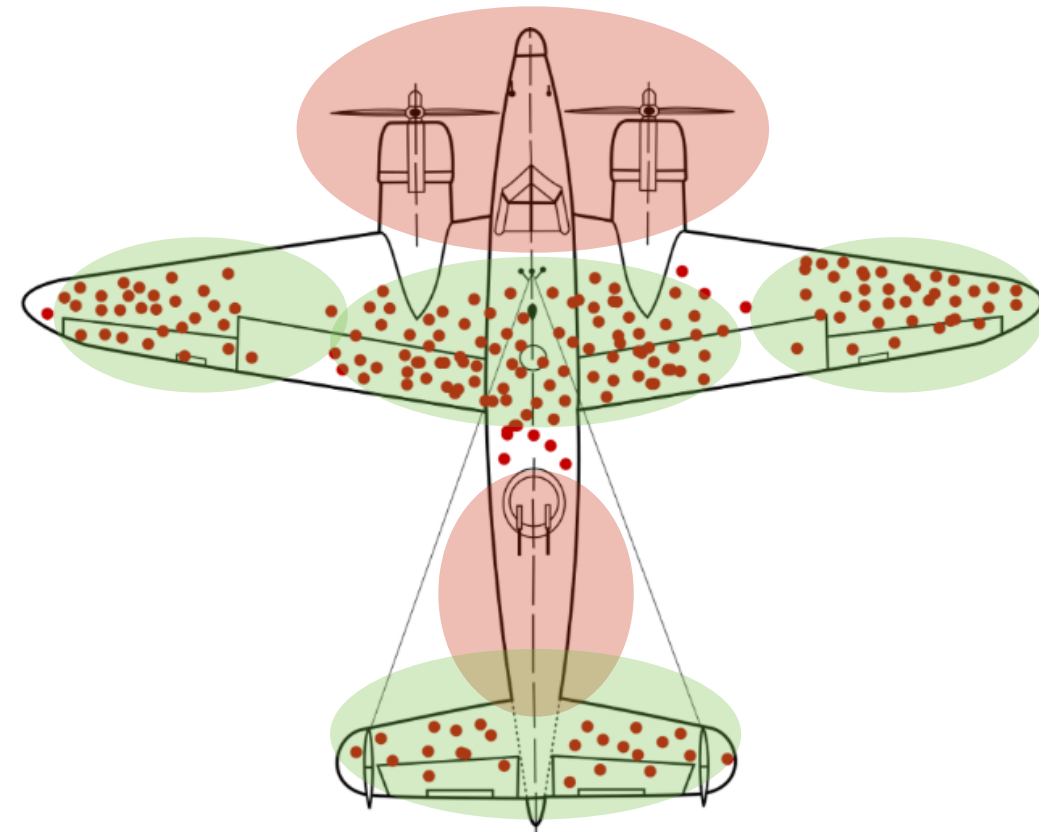
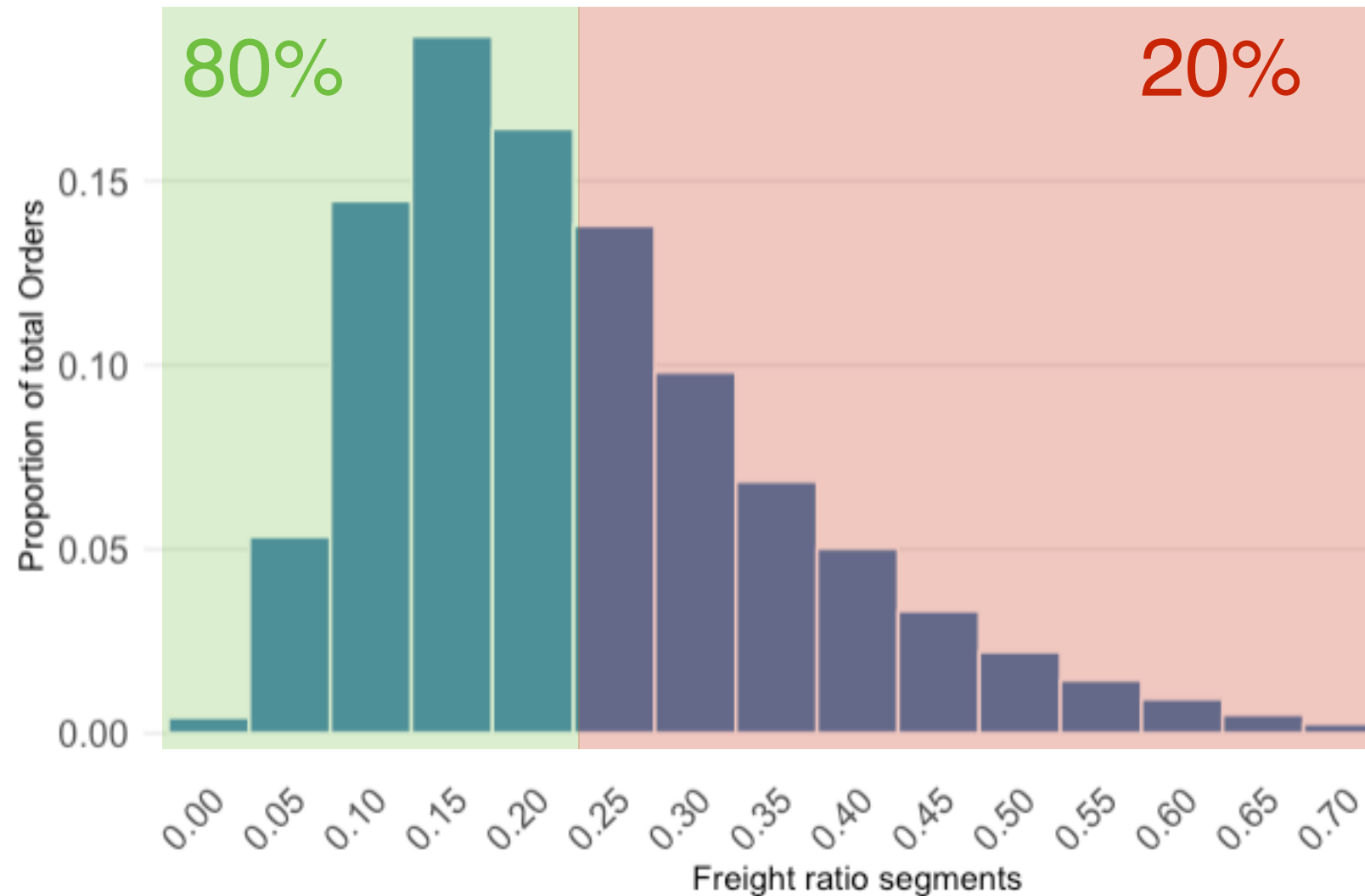


Histogram of Freight Ratio by Price Range



Business as usual or missed opportunity?

Orders for different segments of Freight Ratio

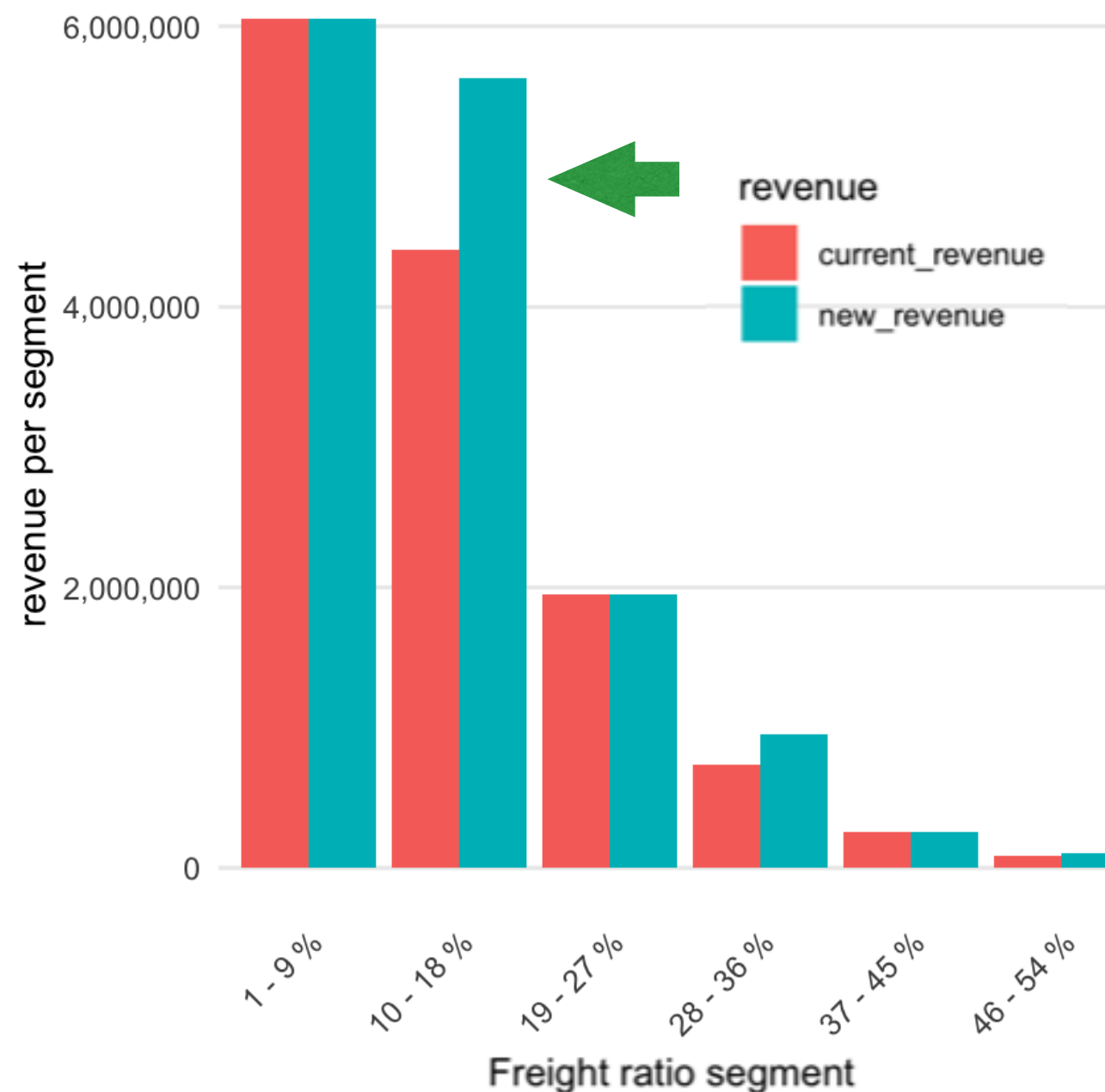


The reason for having few orders with high freight ratio could be *the high freight ratio itself*

Estimating revenue increase with lower FR

$$\text{Expected revenue} = \frac{N \text{ Orders lower fee}}{N \text{ Orders current fee}} * AOV \text{ current fee}$$

Expected increase in revenue: 10.77%
when freight ratio is lowered by 5%



Estimated
Profits

+ 9%

122K BR\$

Which (actionable) factors are associated with shipping fees?

and in particular with freight ratio

Price disproportionately determines shipping fees

Freight Ratio %

(71% variance)

Price
64%

Distance
4%

Volume +
Weight
2%

Shipping Fees BR\$

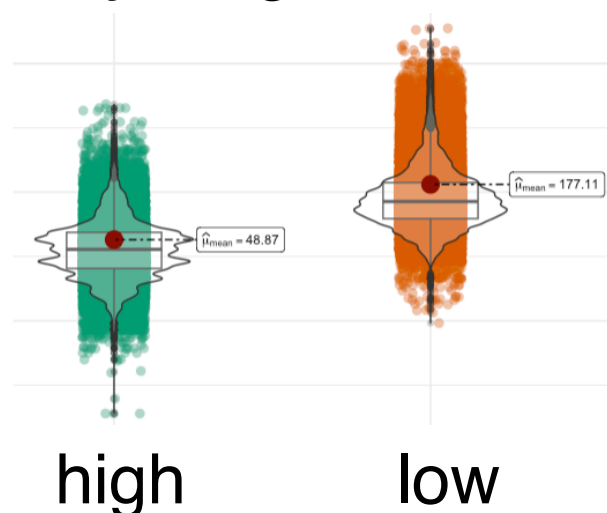
(57% variance)

Price
16%

Distance
12%

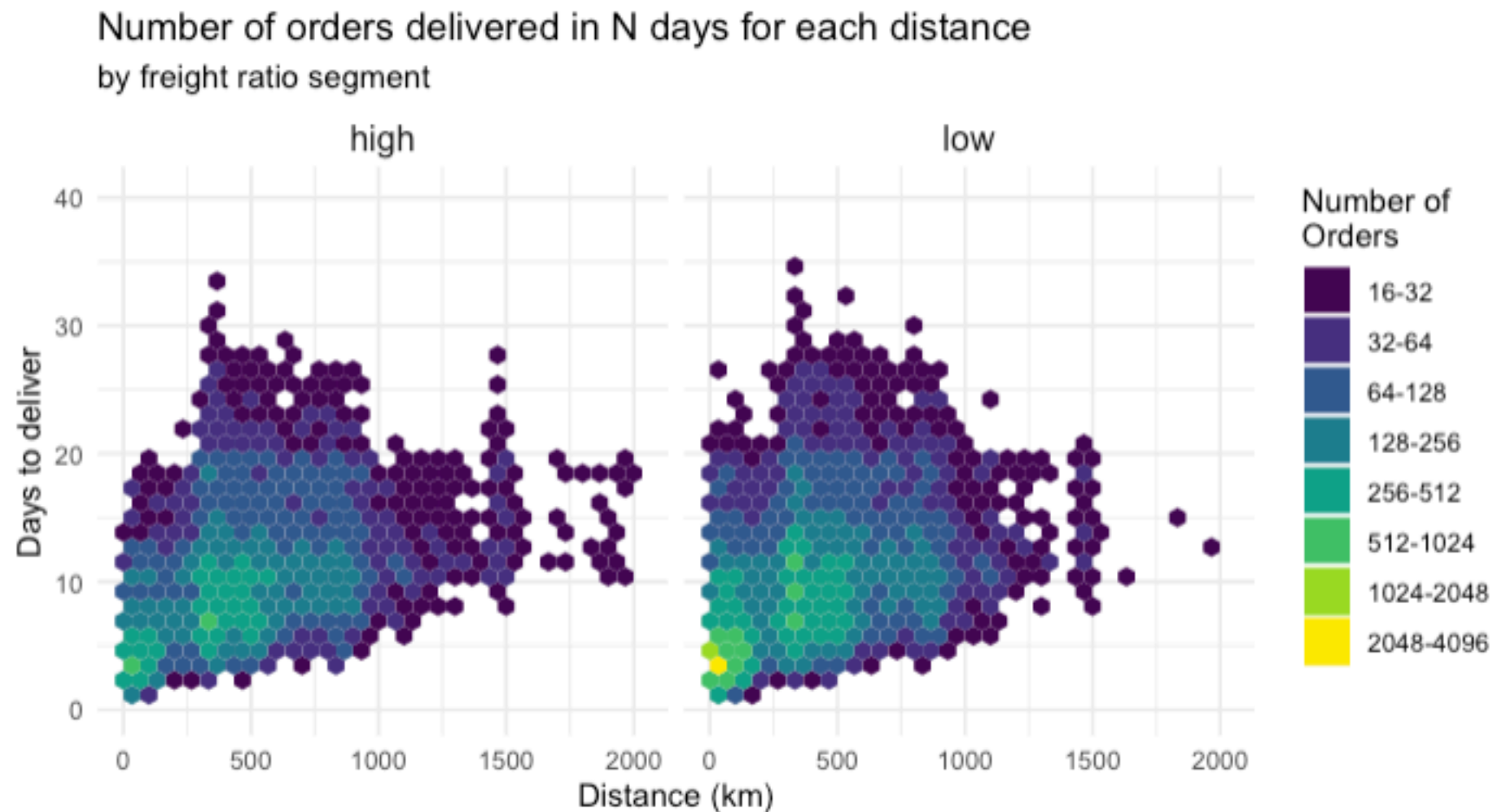
Volume +
Weight
43%

order value
by freight ratio



- Explore (e.g. A/B) discounting FR in the 10-18% FR segment
- Investigate why price accounts for 16% of shipping fee
- Explore which carrier offer a better price based on volume and weight

Loose association between distance and days to delivery



- Very high variability in delivery time for same distance
- Interestingly, the higher the distance, the lower the variability and the delivery time

Conclusions

- **High shipping fees are #1 reason for cart abandonment, especially for small value orders**
- Lowering shipping fees can reduce loss of customers at the very last stage of the funnel (high potential for purchasing)
- **A reduction of 5% in freight ratio can return up to 9% profits**
- **Explore carrier which offer better deal on size and weight, rather than distance**
- Explore the possibility of a subscription-based shipping service (e.g. Amazon prime)