EXPLORATORY DATA ANALYSIS ON TRAVEL INSURANCE

FINAL PROJECT DS102 & DS104 | LEE YI PING

Problem Objectives

- to understand which risk profile are more likely to have high claim rate of travel insurance

- determine the price for the particular plans to be adjusted based on the age, duration and country that is most travelled.

Solution for challenges and difficulties

- Data Cleaning
  I. Drop the column of gender
  II. Replacing the age more than 100 years old by the average age of each individual product (https://en.wikipedia.org/wiki/Oldest_people)

- Data Quality Assurance
  I. Drop the negative value from duration
  II. replace zero by average duration

Data findings from top view

- **Online transaction are more than offline**
  - More IT savvy

- **An imbalance claim status**
  - Only 1.5%

- **Correlation of commission and net sales are strong**
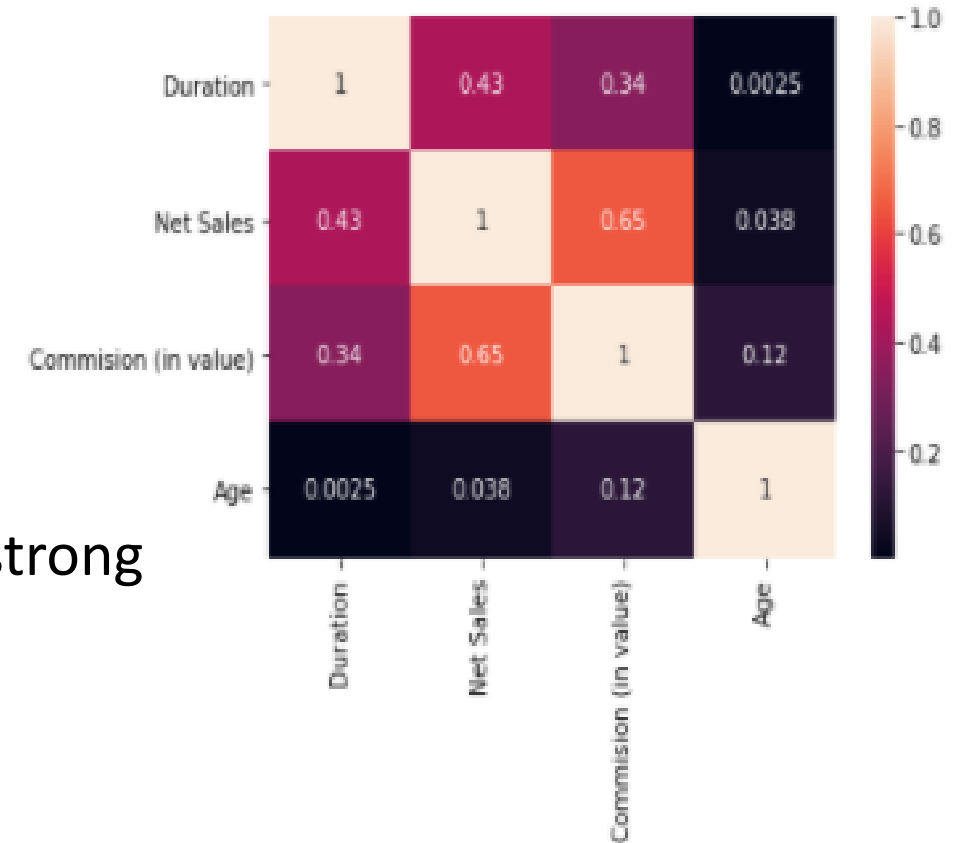
Data Insights/Visualization/Recommendation

Which product have the most negative net sales transaction and from which agency?

- *Insights:* Negative net sales may be due to some advisers having higher commission rate with the agency.

- *Recommendations:* Agency may adjust the commission paid out based on the commission they received from provider instead of the premium in order to increase the sales.

	Agency	Agency Type	Distribution Channel	Product Name	Claim	Duration	Destination	Net Sales	Commision (in value)	Gender	Age
0	CBH	Travel Agency	Offline	Comprehensive Plan	No	186	MALAYSIA	-29.0	9.57	F	81
1	CBH	Travel Agency	Offline	Comprehensive Plan	No	186	MALAYSIA	-29.0	9.57	F	71
2	CWT	Travel Agency	Online	Rental Vehicle Excess Insurance	No	65	AUSTRALIA	-49.5	29.70	NaN	32
3	CWT	Travel Agency	Online	Rental Vehicle Excess Insurance	No	60	AUSTRALIA	-39.6	23.76	NaN	32
4	CWT	Travel Agency	Online	Rental Vehicle Excess Insurance	No	79	ITALY	-19.8	11.88	NaN	41

Data Insights/Visualization/Recommendation

Net sales and commission by product
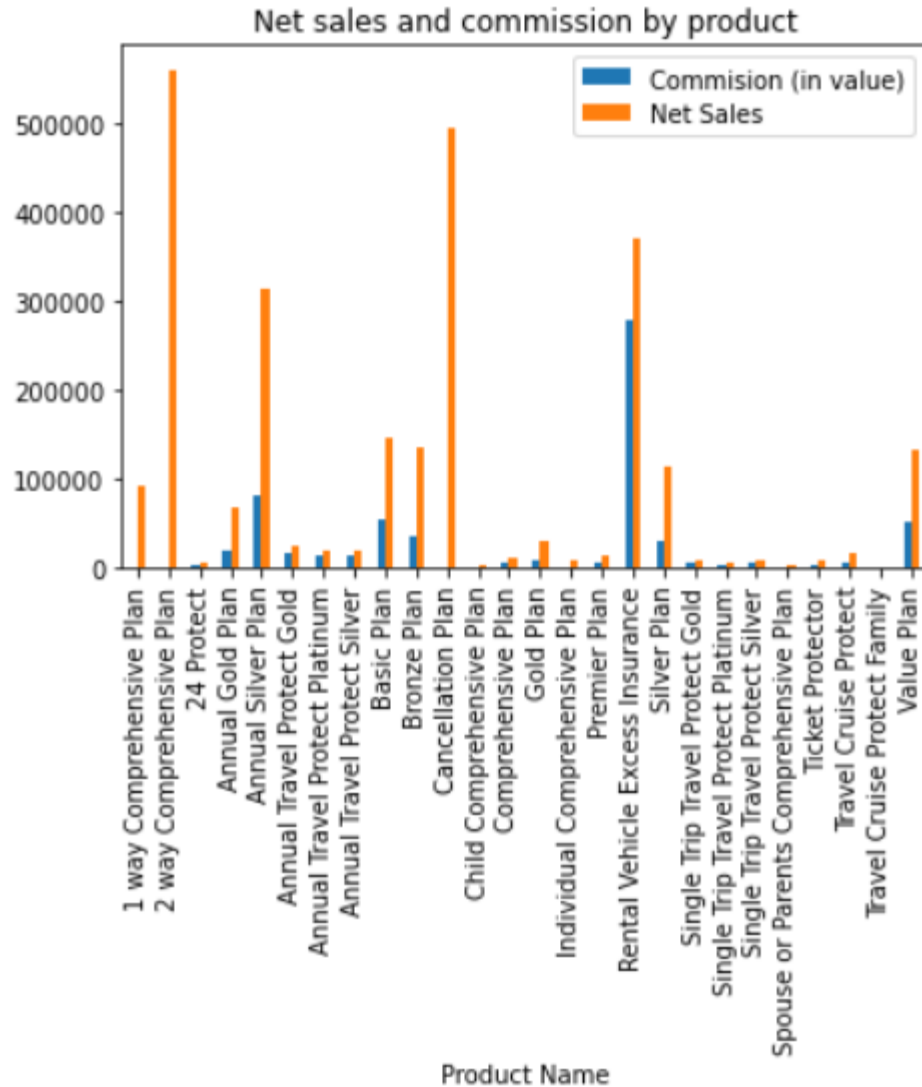
**Which product have the highest net sales and highest commission?**

- Top 2 highest sales product without any no commission paid out.

- *Insights:* No mark up on the sales price or the company policy that there will be no commission therefore it is cheaper and worth to purchase

- Commission percentage pay out for the product is higher, sales may increase accordingly.
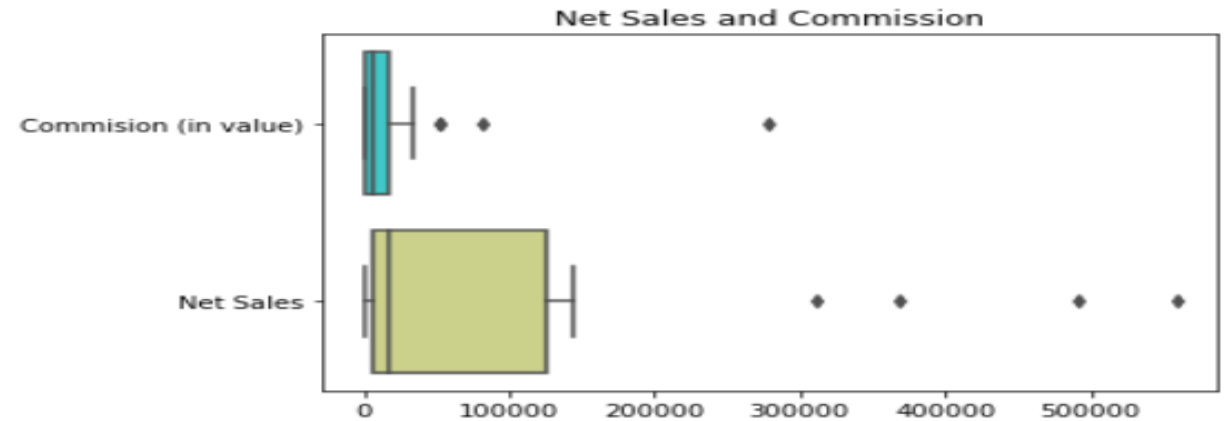
Net Sales and Commission

Data Insights/Visualization/Recommendation

Findings of claimed product against age, destination and duration

- *Insights:* Provider may consider to adjust the premium for the highest claimed below:

  a. Age group from 18-49 especially on the age group 30-39 where the claim rate is almost 50% among all other age group.
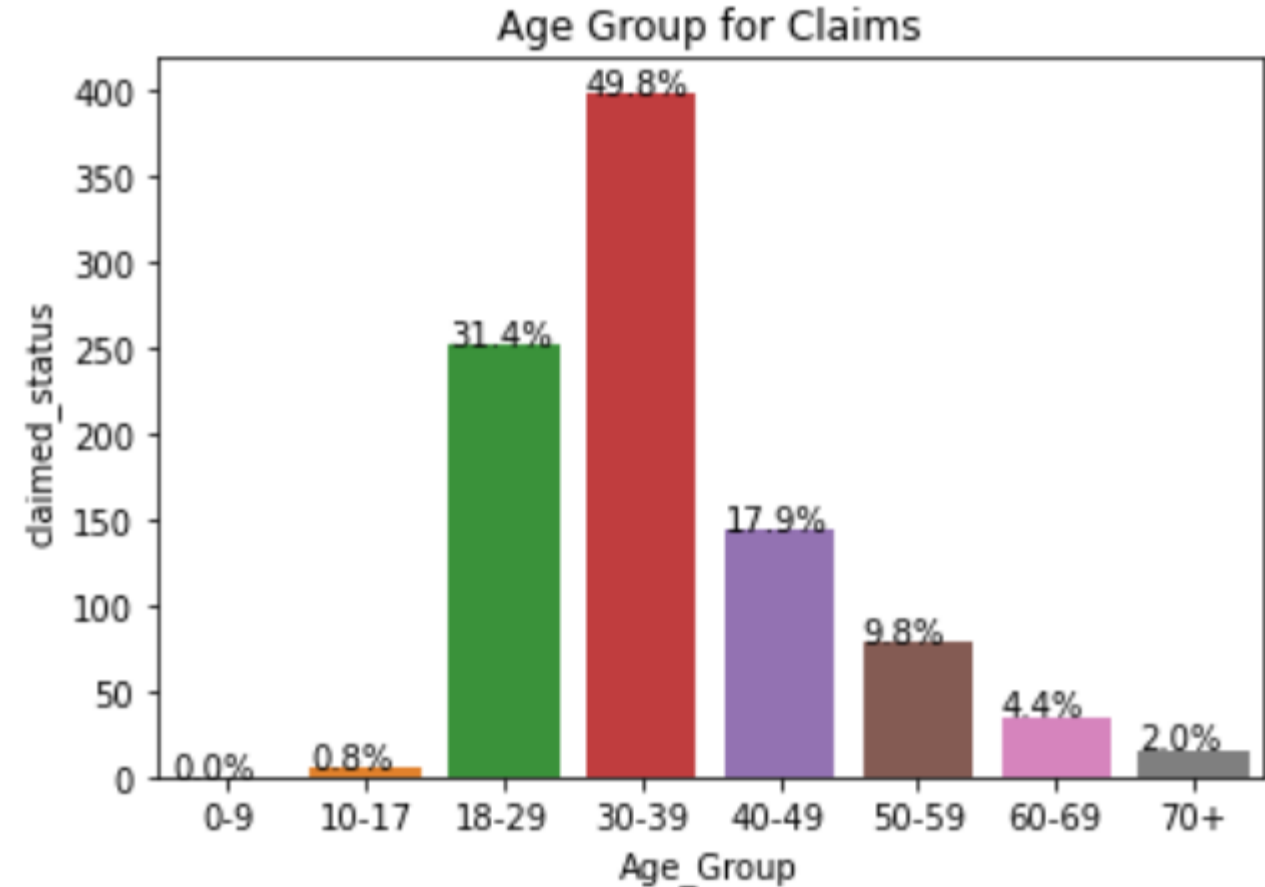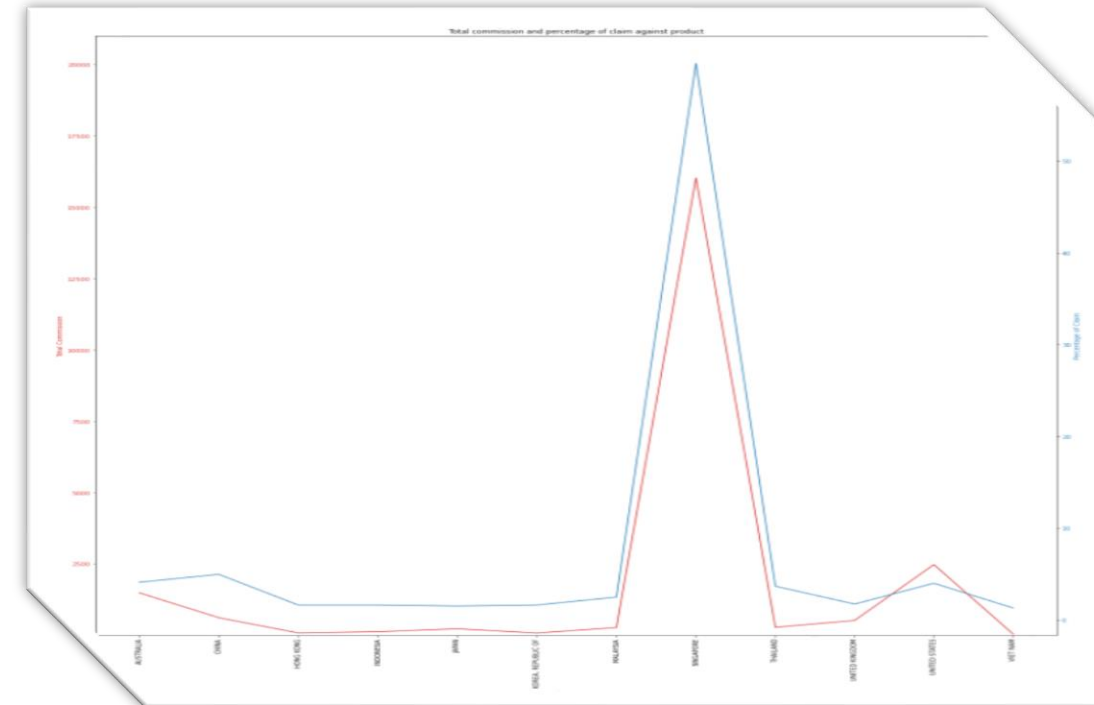
Data Insights/Visualization/Recommendation

Findings of claimed product against age, destination and duration

b. Singapore have the highest claimed rate which are more than 60% among other countries.

c. Top 5 average duration from 3 unique countries is more than one year as it is annual coverage.

*Recommendations:* Shorten the duration of policies and yearly renewal

Product Name	Destination	Count	Duration
Annual Travel Protect Silver	UNITED STATES	51	399.960784
	INDONESIA	6	388.000000
	CHINA	29	383.413793
Annual Travel Protect Gold	UNITED STATES	75	381.493333
	INDONESIA	2	380.500000

Total commission and percentage of claim against product

Data Insights/Visualization/Recommendation

Analyze the relationship between age, claim status, commission and claimed product against agency.

- **CWT has the highest commission and C2B sold the most policies to high risk profiler but it is not the highest claimed product of all agency.**

- **Unique agency companies will not lead to an increase numbers of claimed policies.**
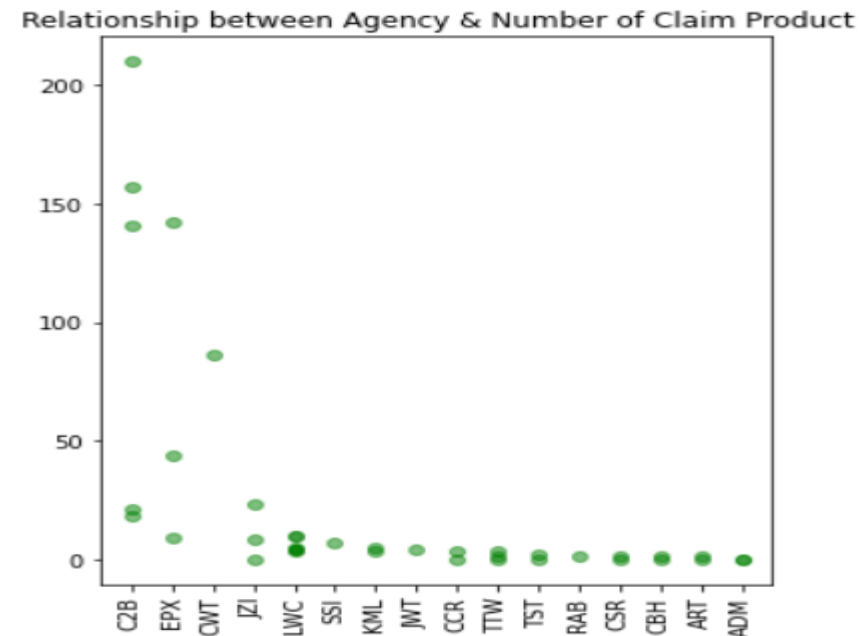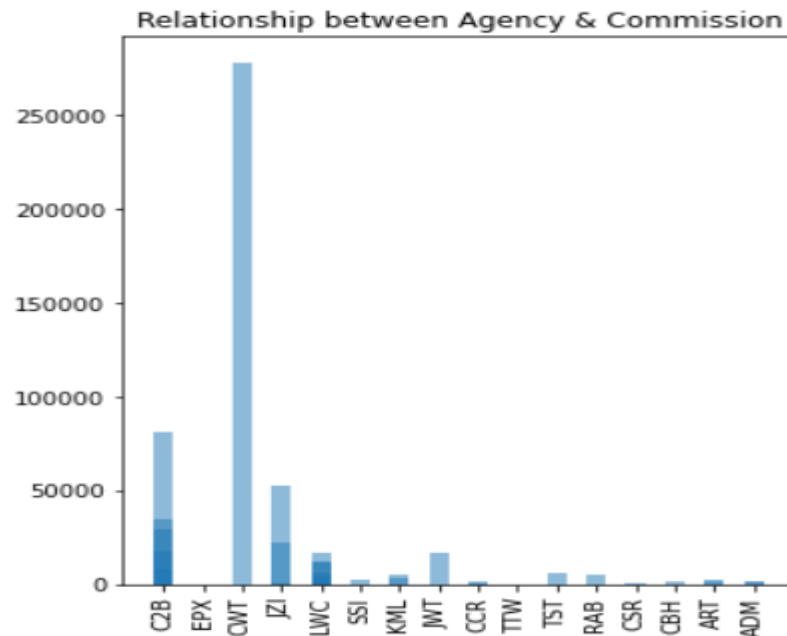
Data Insights/Visualization/Recommendation

What is the percentage of net sales from agency type and distribution channel?

- People tend to purchase through travel agency

- More options to their needs and it may be in a package with the trips.

- More convenient to go through a third party for the purchase of insurance

- Client also can have various product from different provider through one channel.
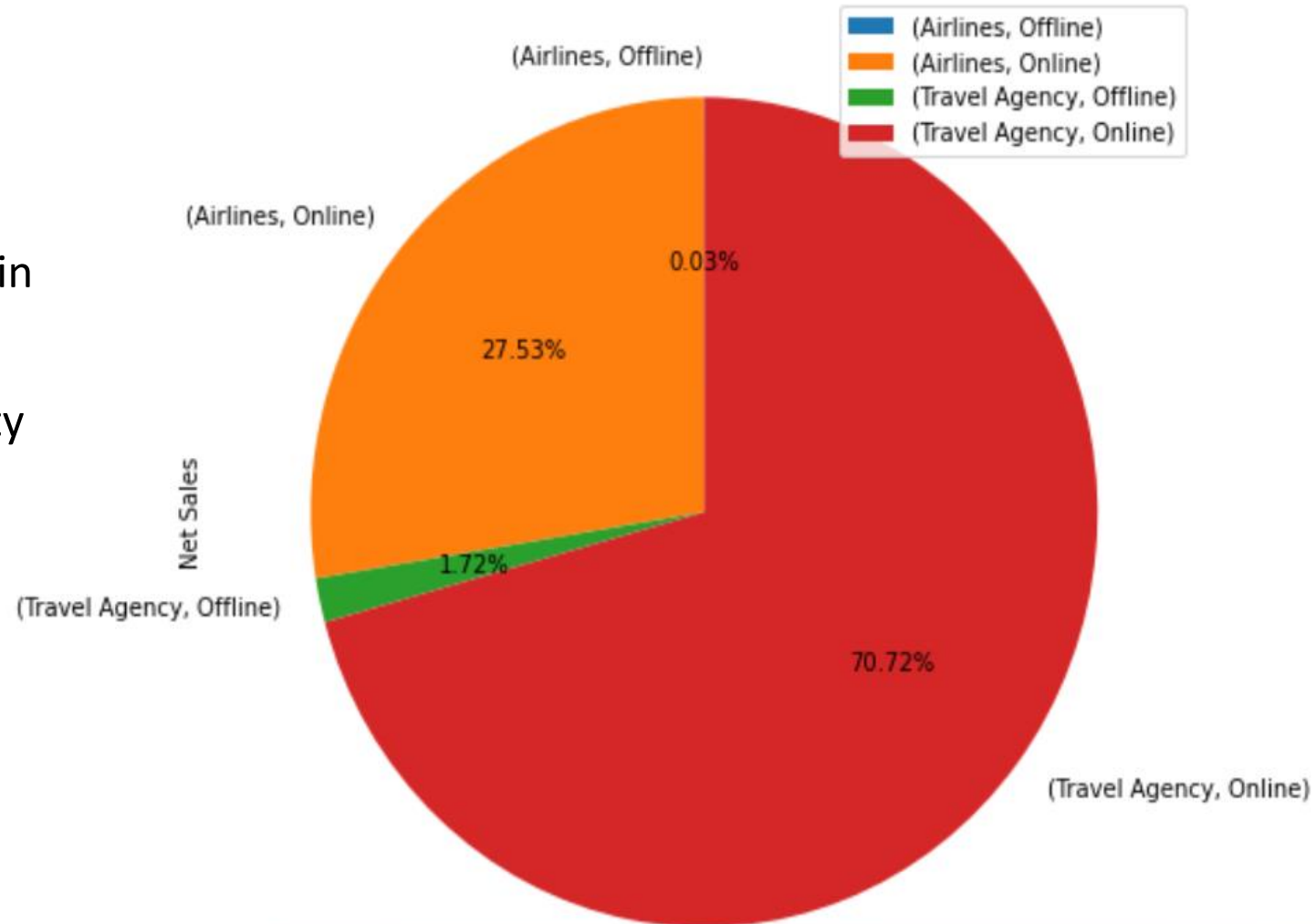
Conclusion

- In general, travel insurance premium is mostly based on destination and duration for the coverage.

- Airline agencies should focus more on acquiring customers who opt for airline insurance together with a package at a lower price to attract the customer to purchase from them.

- Provider may consider to drop their low performing products which generates lesser revenue

- Airline agencies should invest on how to increase their sales via online mode(e-commerce).

- Intelligently divide the resources in proportion to the revenue that they generate from different countries.

Appendix

- Github Link
  - https://github.com/aureliapy/final_project/