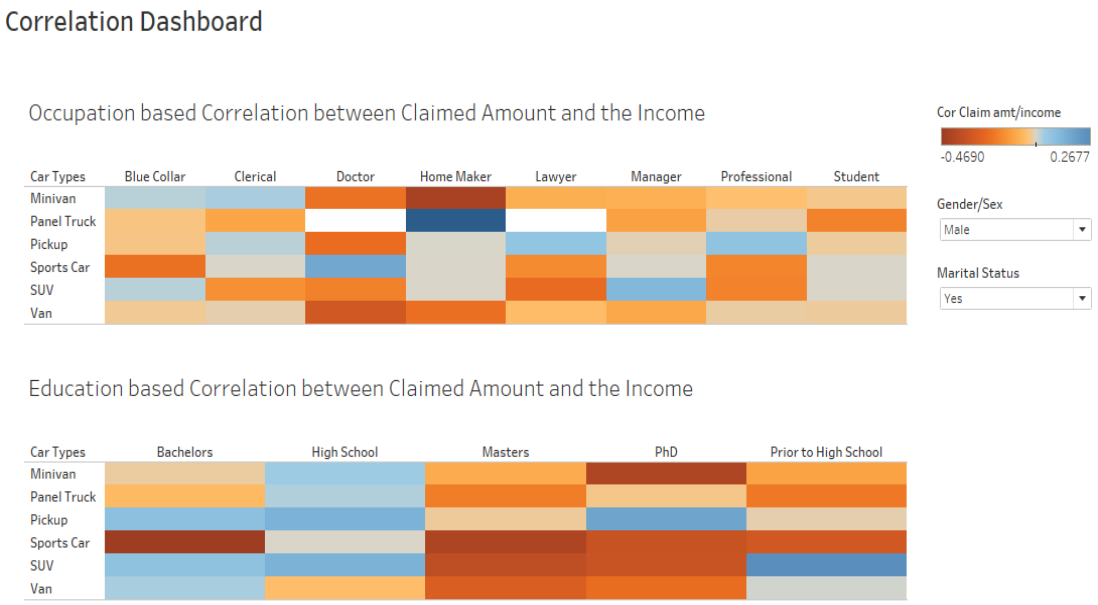
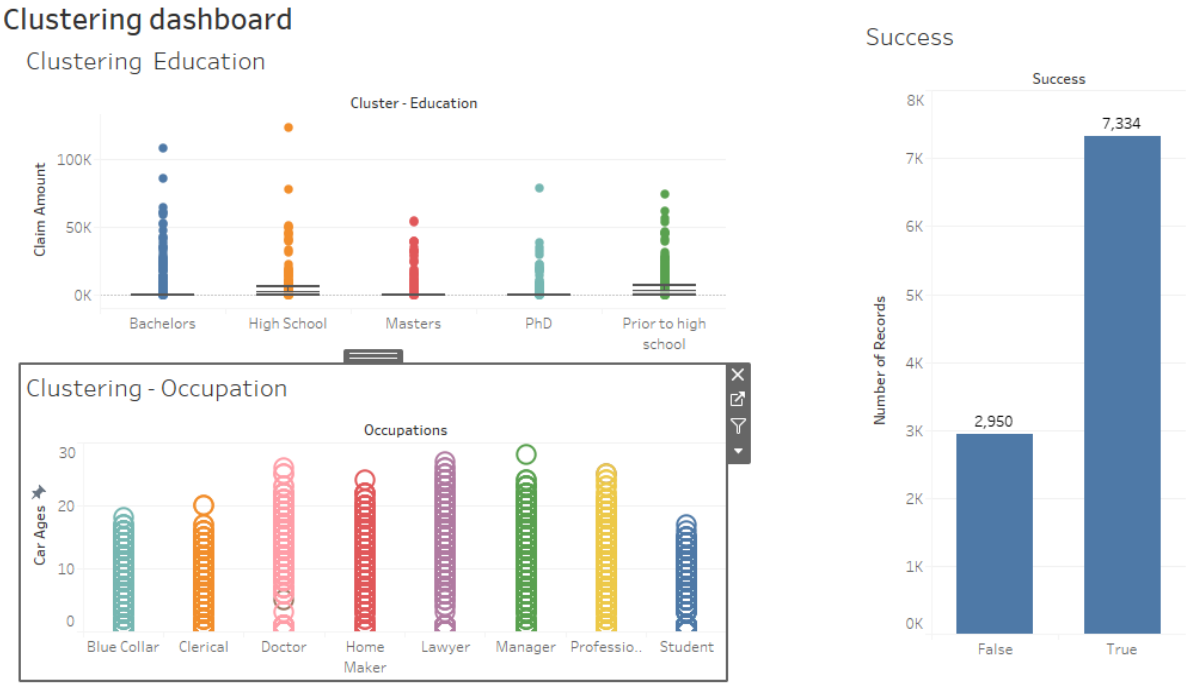
Part 2 - Predictive Analytics and Visualisation of Insights

1. **Correlation Dashboard based on Occupation and Education - Claimed amount vs Income.**



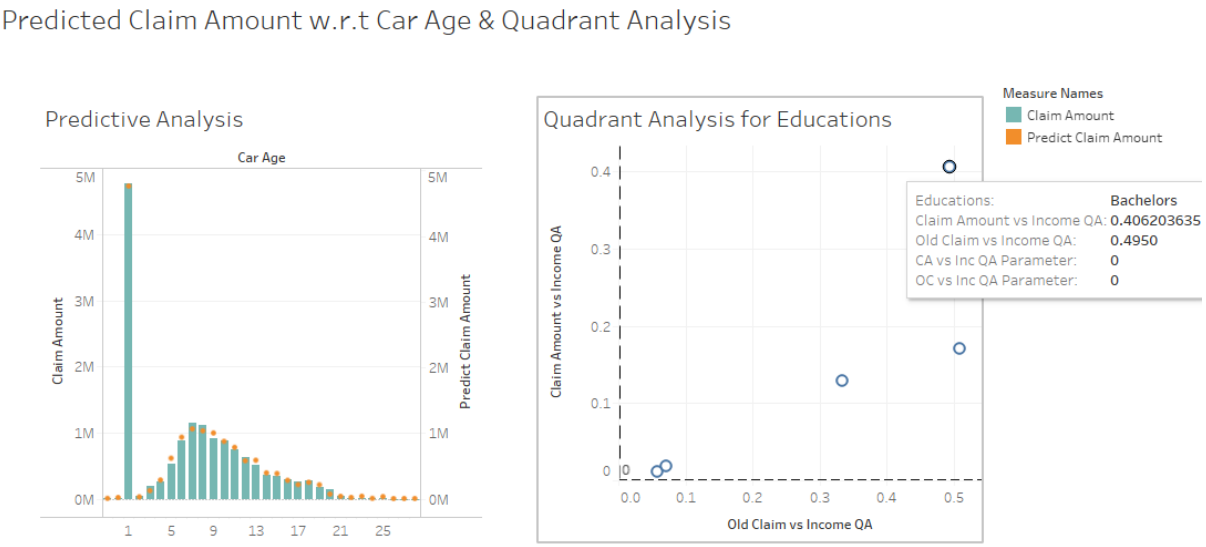
Insight – A female manager who owns a Panel truck having the highest correlation (0.895) between the claim amount and the income. Similarly a married male Doctor who owns a sports car have the highest correlation between income and the claim amount.

2. **Clustering dashboard based on Occupation and Education – Claim amount vs Education and Car Age vs Occupation**



Insight –
Clustering Education - The average Claim amount is 1512.16, but as we can see there is an outlier in Education- High school with a claim amount of 123.25K. Success chart shows us that out of total of 10284, our cluster estimated 7334 correctly. ***Thus the accuracy of this cluster analysis is 71.31%.***

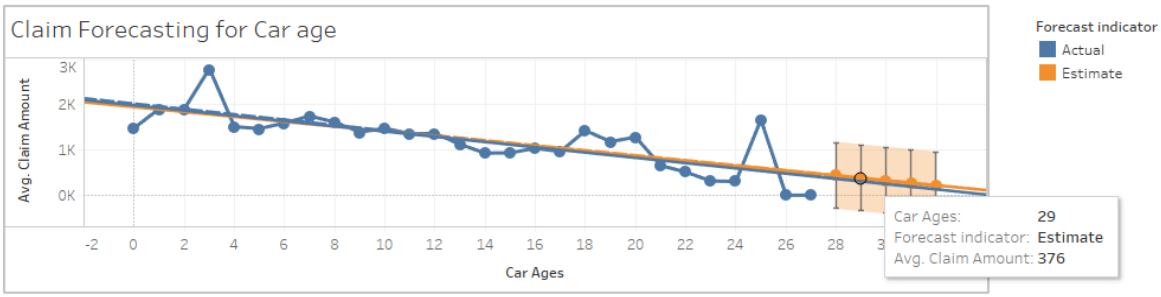
3. **Predicted Claim Amount & Quadrant Analysis**



Insight- As we can see for bachelors, the correlation between the Claim amount vs Income is 0.40 and Old Claim vs Income is 0.49 and is the highest among all the education criteria.

4. Claim Frequency Forecasting

- ***With additive level, additive Trend and No Seasonality***



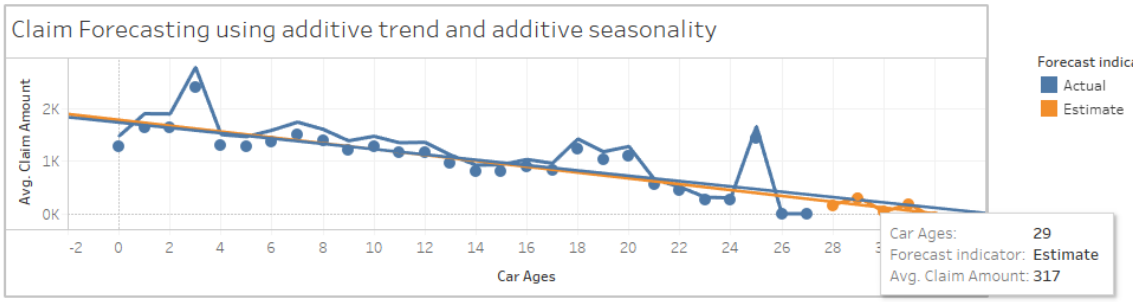
All forecasts were computed using exponential smoothing.

Avg. Claim Amount

Model			Quality Metrics					Smoothing Coefficients		
Level	Trend	Season	RMSE	MAE	MASE	MAPE	AIC	Alpha	Beta	Gamma
Additive	Additive	None	379	272	0.82	24.0%	343	0.000	0.047	0.000

Insight - With additive level, additive Trend and No Seasonality, the average estimated claim amount at Age 29 is 376. The MAPE (mean absolute percentage Error is 24% and AIC is 343.). Thus the accuracy is 76.0%.

- ***With additive level, additive Trend and additive Seasonality***



All forecasts were computed using exponential smoothing.

Avg. Claim Amount

Model			Quality Metrics					Smoothing Coefficients		
Level	Trend	Season	RMSE	MAE	MASE	MAPE	AIC	Alpha	Beta	Gamma
Additive	Additive	Additive	447	347	1.04	27.4%	356	0.000	0.338	0.255

Insight - With additive level, additive Trend and additive Seasonality, the average estimated claim amount at Age 29 is 317. The MAPE (mean absolute percentage Error is 27.4% and AIC is 356. Thus the accuracy is 72.6%.

Conclusion – We will consider the model with less MAPE and lower AIC value. Thus we will go for additive trend and no seasonality model which gives us the accuracy of 76%.