

DSC5211C QUANTITATIVE RISK MANAGEMENT Workshop 2

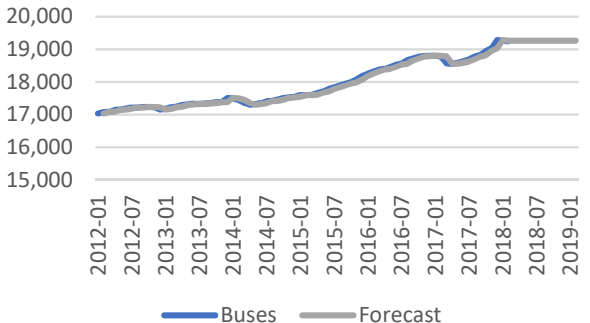
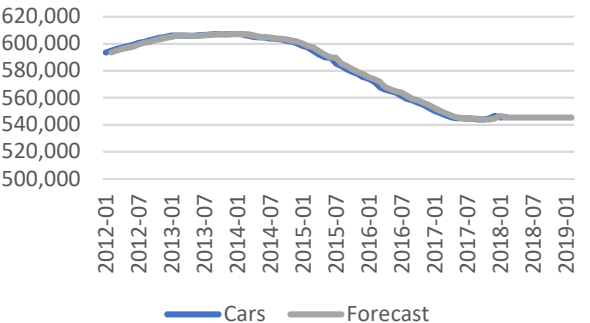
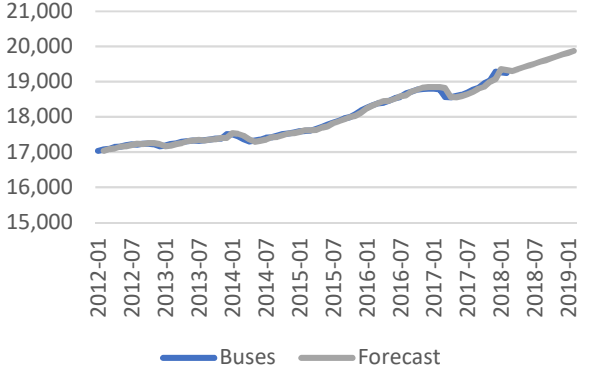
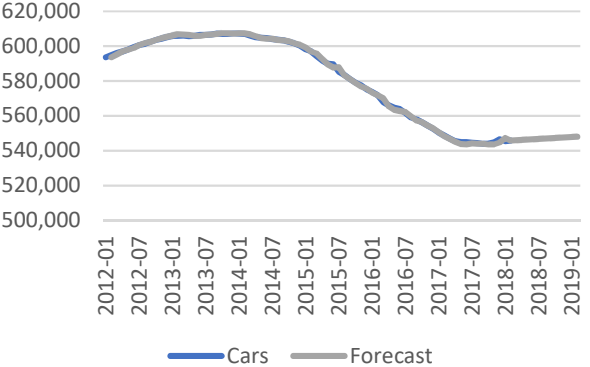
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We performed Simple and Holt Exponential Smoothing for Buses and Cars. For all cases we used Excel Solver to MINIMIZE MAPE by optimizing ALPHA and GAMMA.

The constraints for both ALPHA and GAMMA are set to ≥ 0.01 and ≤ 0.99 . The results are as follows:

Buses	Cars
<p>Simple Exponential Smoothing</p>  <p>Optimal ALPHA: 0.99 MAPE: 0.2565 / MSD: 403,368</p>	<p>Simple Exponential Smoothing</p>  <p>Optimal ALPHA: 0.99 MAPE: 0.1969 / MSD: 210,141,372</p>
<p>Holt - Exponential Smoothing</p>  <p>Optimal ALPHA: 0.99 / GAMMA: 0.14 MAPE: 0.2083 / MSD: 312,521</p>	<p>Holt - Exponential Smoothing</p>  <p>Optimal ALPHA: 0.88 / GAMMA: 0.45 MAPE: 0.0947 / MSD: 61,470,481</p>

The results show that Holt-Exponential Smoothing performed better than Simple Exponential given that MAPE and MSD are improved for both Buses and Cars. For all cases, the ALPHA is very high, indicating that most recent information is most useful for forecasting next period. GAMMA for Cars is higher than for Buses as we can observe that the curve for Cars exhibit more gradual slope changes than for Buses. The forecasts for Holt methods generally assumes that the trend continues according to the last known data point.