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Important notes:
As of November 2016, unless explicitly specified otherwise, RTA uses 3-month moving average for reporting on inventory (including historical data), hence, affecting calculated values of purchases and Inventory-to-Sales Ratio. In this way, any exaggerations that might be manifest in monthly purchases data, due to regular inventory counts by members, are not emphasized.

Highlighted areas in the graphs represent time of recessions.

Explanation about how to read box plots and histograms can be found in the Appendix section.

Disclaimer: The data and report presented herein are based solely on RTA member monthly reports on production and inventory. Occasionally, members send corrections to previously submitted data. If and when these corrections are received they are incorporated at that time. Users of this report should note while all care is taken to accurately compile the data submitted by member companies, that no warranty is made as to the accuracy of any RTA member reports.

Highlights
In September, the twelve-month moving average of production, inventory and the inventory-to-sales ratio all maintained their upward trends. Purchases continued their declining trend; however, the rate improved by 8.3% from April's lows and 0.9% from last month. On quarterly bases, production was above its median while purchases were slightly below. Similar outcomes were observed considering monthly statistics. ISR remained flat and inventory levels increased marginally.

Long-Term Trends
Production advanced at a 14.8% annual rate.
Purchases dropped at a 7.3% annual rate.
Inventory’s 12 month moving average (12MMA) advanced by 10.6% from year ago levels.
Inventory-to-Sales Ratio’s 12MMA grew from 0.66 to 0.82.
## Table of Annual Observations

*Production and Purchases are 12 months rolling totals, Inventory and ISR are 12MMA*

<table>
<thead>
<tr>
<th>Date</th>
<th>Production</th>
<th>Purchases</th>
<th>Inventory</th>
<th>ISR</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2019</td>
<td>17,577</td>
<td>19,409</td>
<td>13,432</td>
<td>0.66</td>
</tr>
<tr>
<td>September 2020</td>
<td>20,180</td>
<td>18,000</td>
<td>14,862</td>
<td>0.82</td>
</tr>
</tbody>
</table>

### Graphs

#### Tie Production and Purchases - 12 Months Rolling Total

[Graph showing production and purchases over time]

#### Tie Inventory - 12 Months Moving Average

[Graph showing inventory over time]
Analysis of Quarterly Data

Production in Q3 advanced by 11.2% from last quarter and rose by 8.4% from year ago. For the same intervals, purchases expanded by 1.5% and advanced by 6.8% respectively. Inventory’s 3MMA expanded by 0.6% from last quarter and grew by 17% from year ago levels. From Q4 2019 to Q1 2020, the 3MMA of Inventory-to-Sales Ratio dropped from 0.86 to 0.83. Year ago, the ratio was 0.64.

Table of Quarterly Observations

Production and Purchases Quarterly Sum, Inventory and ISR - 3MMA

<table>
<thead>
<tr>
<th>Date</th>
<th>Production</th>
<th>Purchases</th>
<th>Inventory</th>
<th>ISR</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2019</td>
<td>5,117</td>
<td>5,112</td>
<td>12,819</td>
<td>0.64</td>
</tr>
<tr>
<td>June 2020</td>
<td>4,986</td>
<td>5,377</td>
<td>14,913</td>
<td>0.86</td>
</tr>
<tr>
<td>September 2020</td>
<td>5,546</td>
<td>5,460</td>
<td>14,999</td>
<td>0.83</td>
</tr>
</tbody>
</table>
Quarterly pattern of production and purchases uses data from January 2000. The top graph shows data analysis within each quarter. It shows the median, upper quartile and lower quartile boundary (a more detailed explanation is available in the Appendix section). It also displays what the production and purchases were in each quarter of reporting year represented by black points in relation to quarterly statistical values. The second graph shows the contribution of each quarter to the total annual production and purchases.

Analysis of Monthly Data
Production increased by 2.2% from last month and advanced by 10.3% from year ago. For the same time intervals, purchases dropped by 9.6% and expanded by 11.7% respectively. Inventory levels rose by 1.5% from last month and expanded by 17% from year ago levels. The Inventory-to-Sales Ratio remained flat at 0.83 from month ago, and from year ago, the ratio expanded from 0.66.
Sales-to-Production Ratio shows the replenishment/diminishment of inventory. Ratio above one signals diminishment and ratio below one replenishment of inventory stock.

The following graph tells the same story as the graph above, just the ratio is reversed - Production-to-Sales Ratio.
Inventory-to-Sales Ratio (ISR) histogram of relative frequencies shows the monthly ISR data distribution and the black point represents the value for the current reporting month.
Appendix

Box Plot Explained

- Maximum value - these are outlier values
- Upper quartile - 75% of observations are below this line and 25% above this line
- Median - half of observations are less than and half more than the median
- Lower quartile - 25% of observations are below this line and 75% above this line
- Minimum value - in this case, not an outlier because it is within defined distance from the lower quartile line

Histogram of Relative Frequencies Explained

12% of the time, the values of ISR were between 0.795 and 0.81.