Purchases Report

November 2018

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

Highlights

Through November, tie production has been in declining trend. While purchases also have a declining trend, the rate of decline is lower (Long-Term Trends - Production and Purchases graph). This has a profound affect on inventory levels. The Inventory-to-Sales ratio has been very close to extremely low levels for few months (Analysis of Monthly Data - ISR Histogram).

Long-Term Trends

In November, production came down at a 17.7% annual rate.
Purchases declined at a 7.3% annual rate.
Inventory's 12 month moving average (12MMA) came down by 22.9% from year ago levels.
Inventory-to-Sales Ratio's 12MMA fell from 0.9 to 0.7.

Table of Annual Observations

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

Date	Production	Purchases	Inventory	ISR
November 2017	21,173	23,245	20,530	0.9
November 2018	17,416	21,538	15,838	0.7

Tie Production and Purchases - 12 Months Rolling Total

Production   Purchases

Tie Inventory - 12 Months Moving Average

Tie Inventory-to-Sales Ratio - 12 Months Moving Average
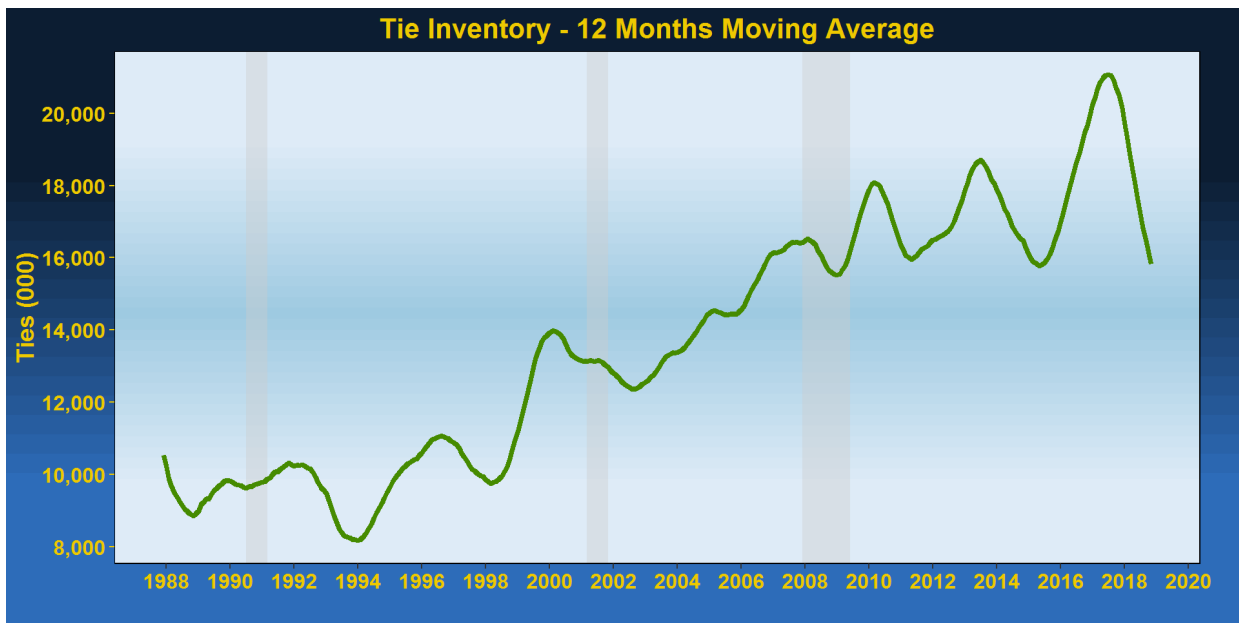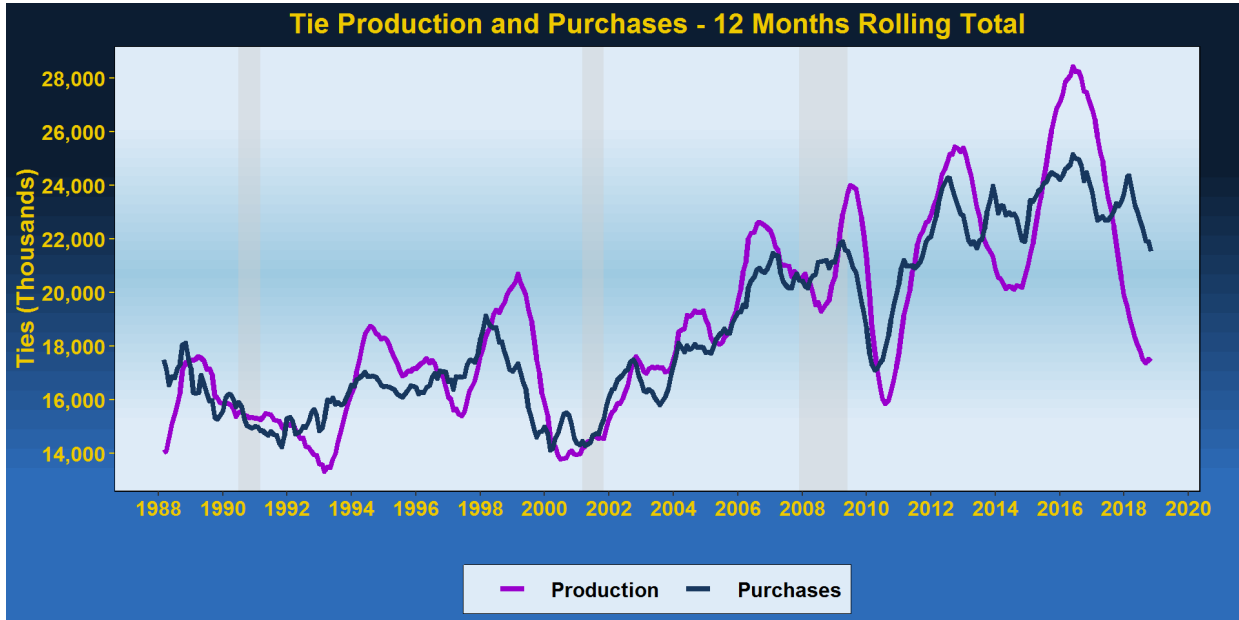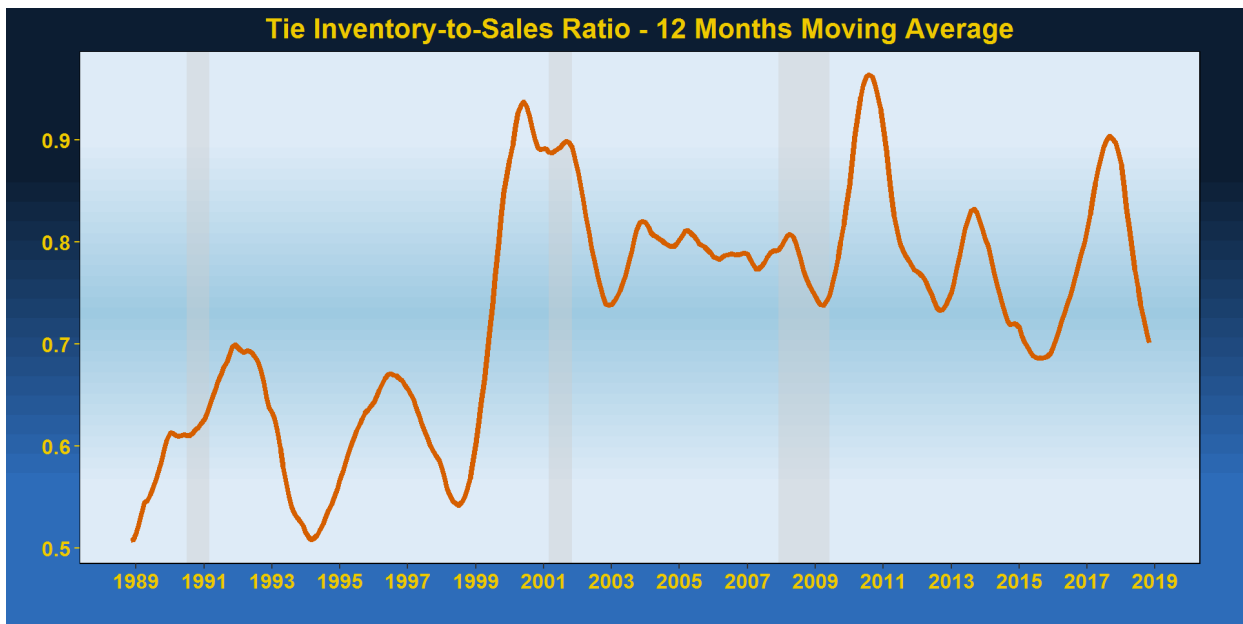
Analysis of Quarterly Data

Production in Q3 grew by 5.3% from last quarter and dropped by 13% from year ago.
For the same intervals, purchases expanded by 0.1% and dropped by 15.5% respectively.
Inventory's 3MMA dropped by 7.4% from last quarter and dwindled by 23.8% from year ago levels.
3MMA of Inventory-to-Sales Ratio came down from 0.7 to 0.67. Year ago, the ratio was 0.86.

Table of Quarterly Observations

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

Date	Production	Purchases	Inventory	ISR
September 2017	5,346	6,893	19,226	0.86
June 2018	4,414	5,816	15,826	0.70
September 2018	4,649	5,824	14,651	0.67

Quarterly Tie Production and Purchases
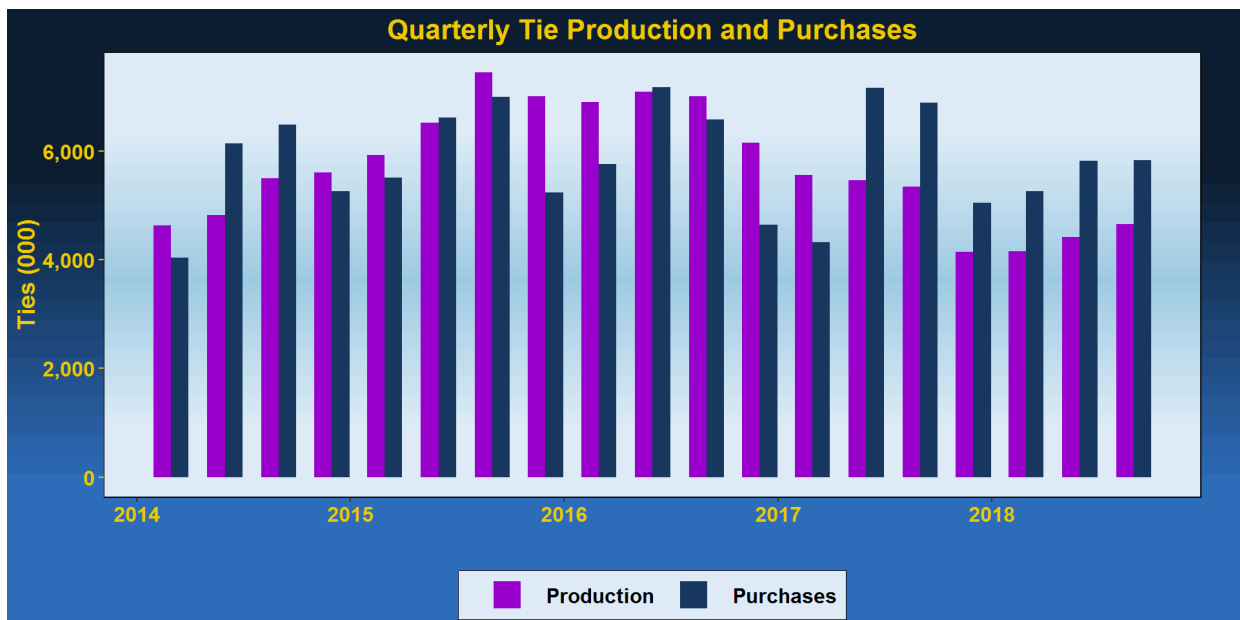
Quarterly pattern of production and purchases uses data from January 2000. The top graph shows data analysis within each quarter. It shows the median, upper quartile and lower quartile boundary (more detailed explanation is available in the Appendix section). It also displays what the production and 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.
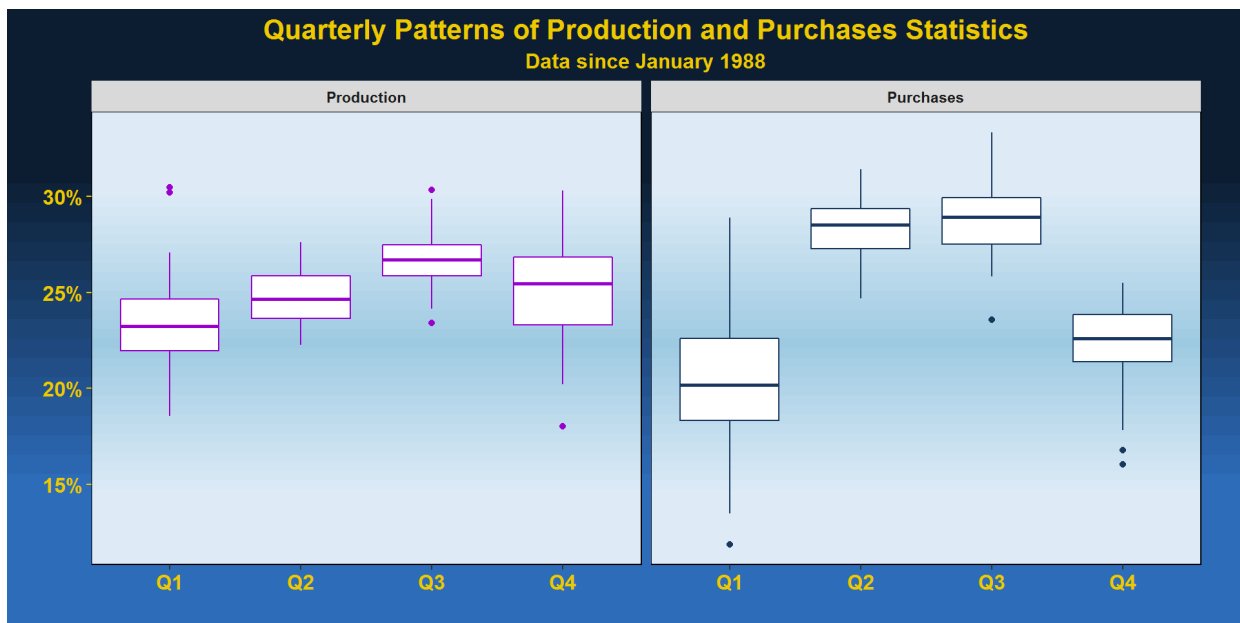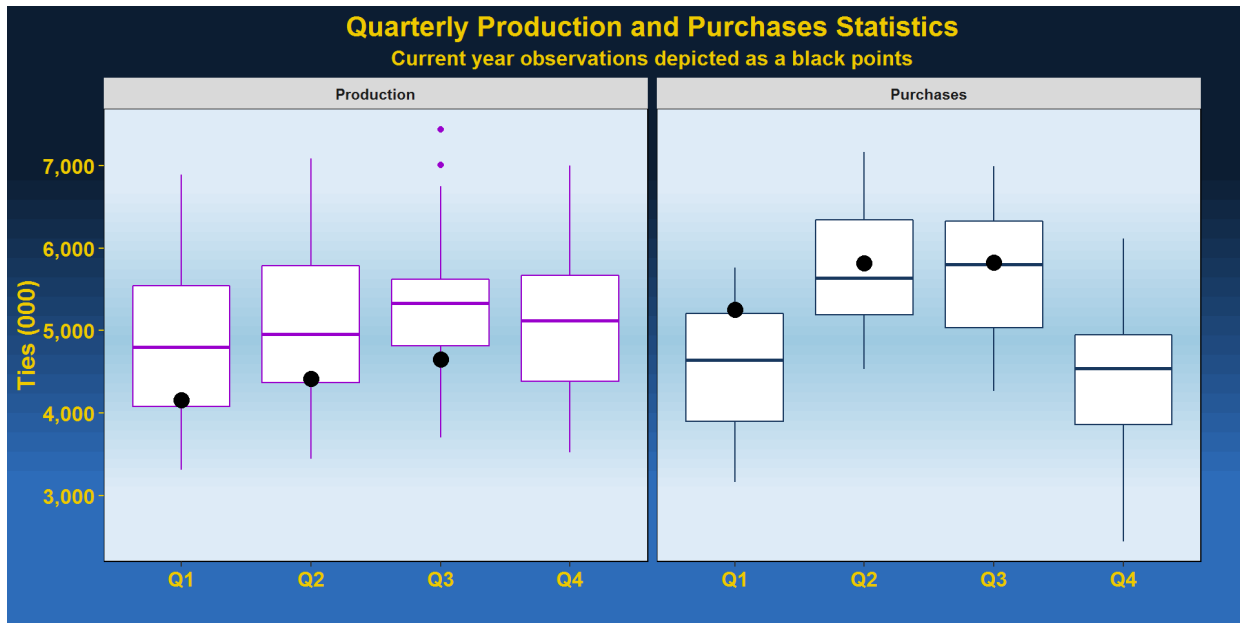
Analysis of Monthly Data

Production decreased by 21.5% from last month and dwindled by 7.3% from year ago.
For the same time intervals, purchases came down by 23.5% and dropped by 21.1% respectively.
Inventory declined by 0.4% and declined by 22.2% from year ago levels.
From month ago, the Inventory-to-Sales Ratio grew from 0.66 to 0.67 and from year ago, the ratio came down from 0.8.

Table of Monthly Observations

| Date	Production	Purchases	Inventory	ISR
November 2017	1,391	1,706	18,599	0.80
October 2018	1,643	1,760	14,534	0.66
November 2018	1,289	1,346	14,477	0.67
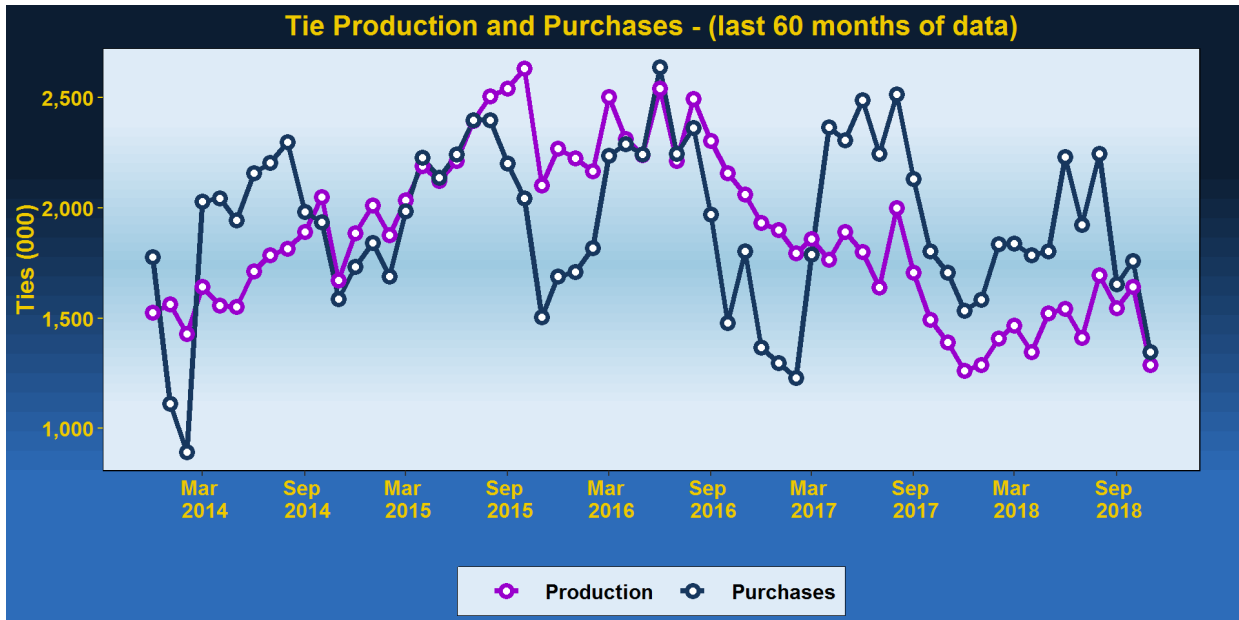
Sales-to-Production Ratio shows the replenishment/diminishment of inventory. Ratio above one signals diminishment and ratio below one replenishment of inventory stock.
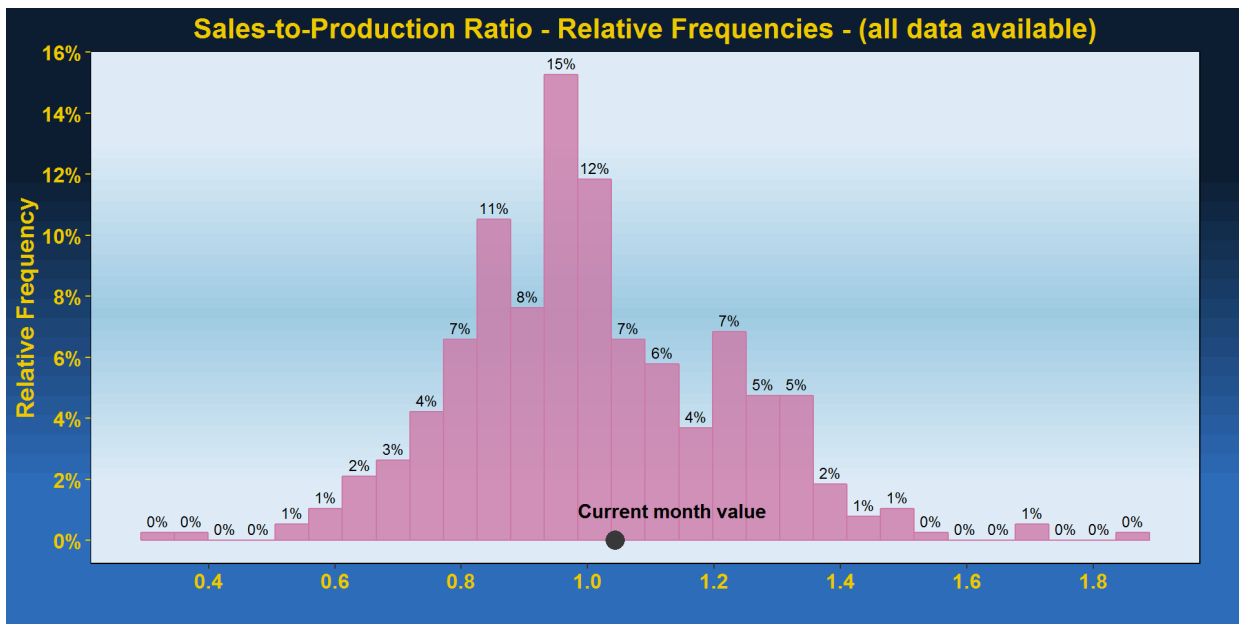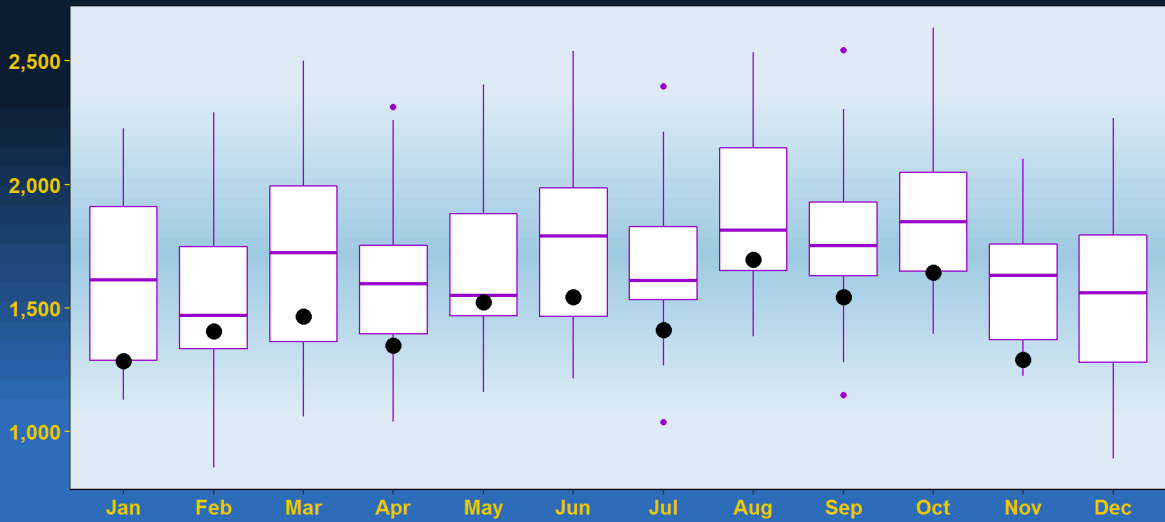

The folowing graph tells the same story as the graph above, just the ratio is reversed - Production-to-Sales Ratio.

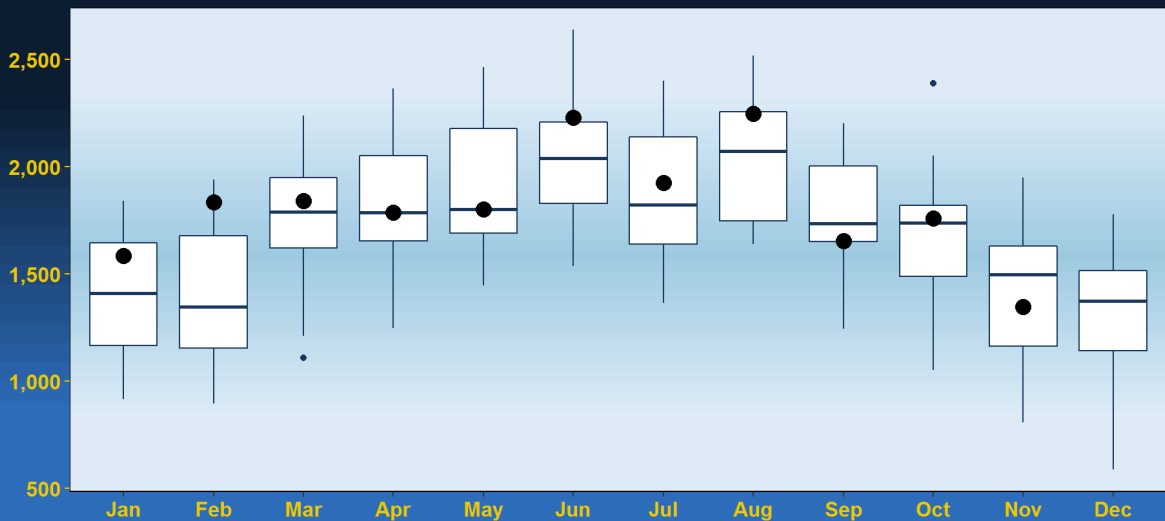## Production-to-Sales Ratio - Relative Frequencies - (all data available)
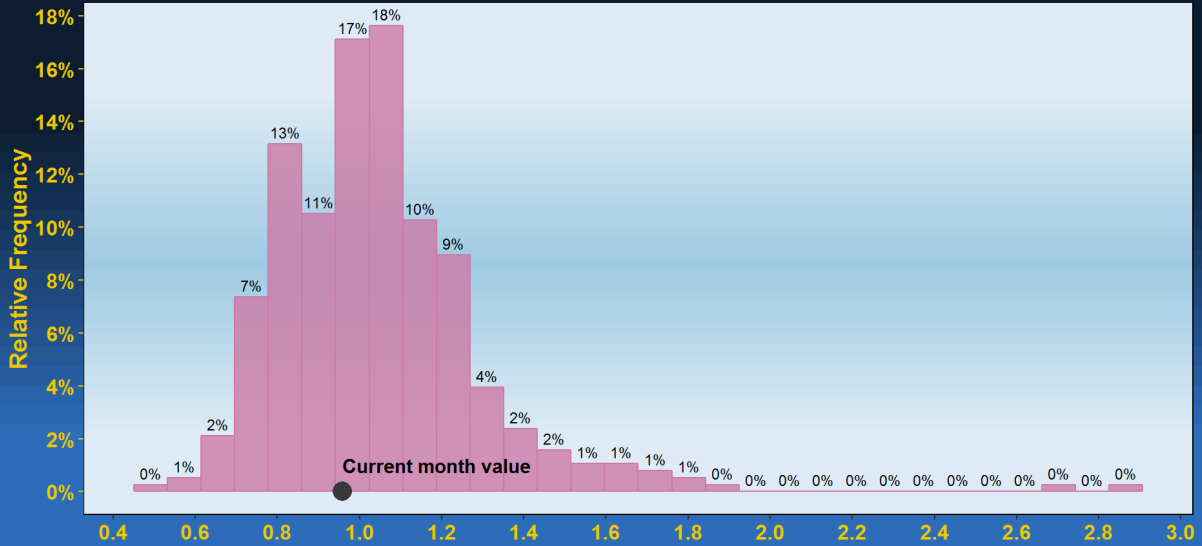
Monthly Production Statistics - (data since 2000)
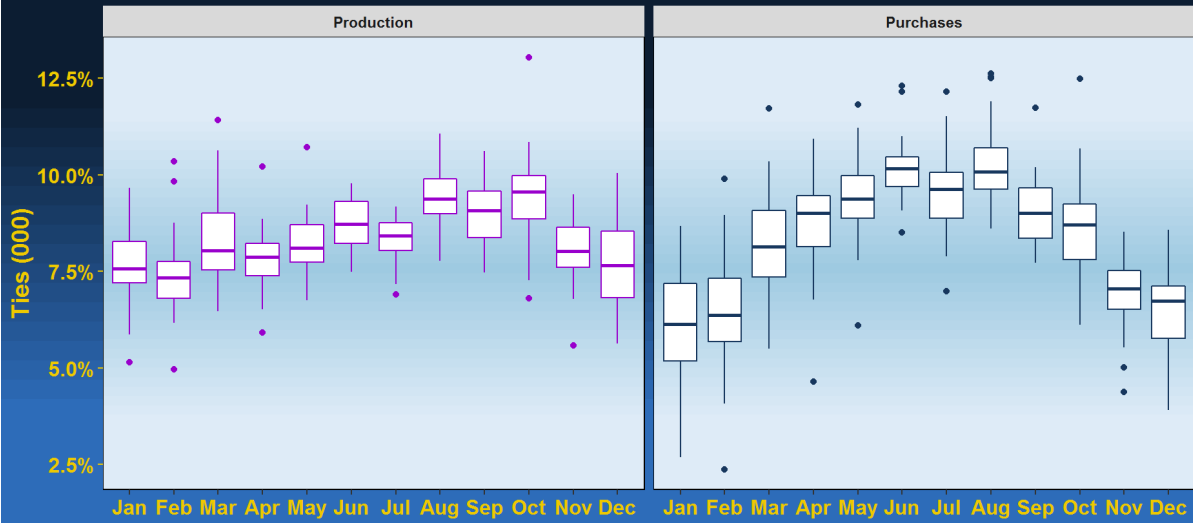Current year observations depicted as a black points

Monthly Purchases Statistics - (data since 2000)
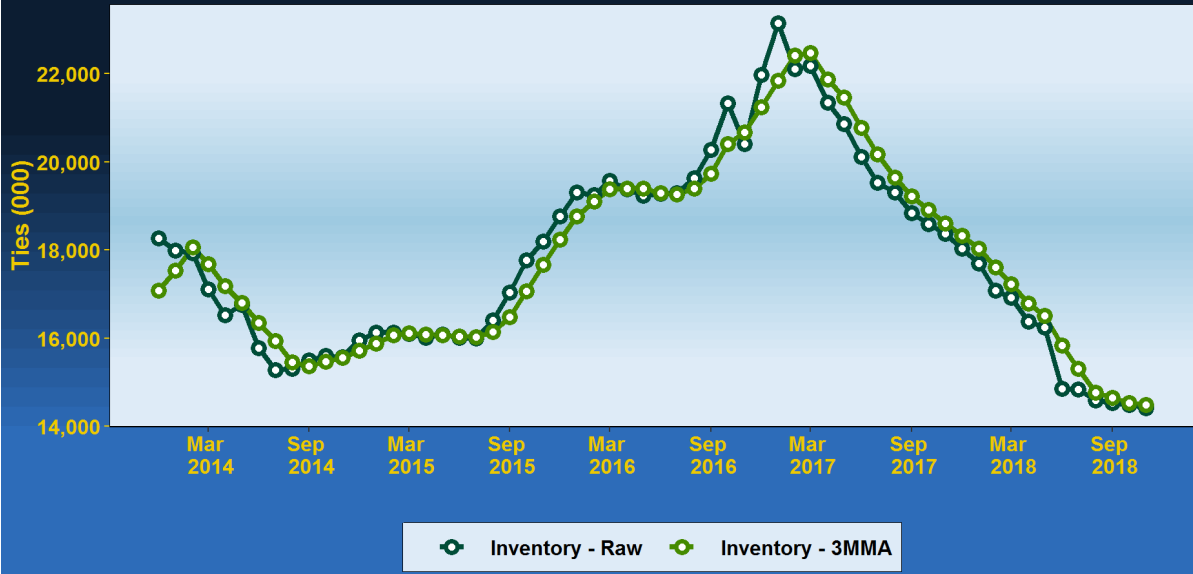Current year observations depicted as a black points

Monthly Pattern of Production and Purchases Statistics - Percent of Annual Total
Data since January 1988

Production | Purchases

Tie Inventory - Raw Monthly and 3MMA Data - (last 60 months of data)

Inventory - Raw | Inventory - 3MMA

Monthly Patterns of Inventory - (data since 2000)
Monthly average depicted with solid green line, current year observations depicted as a black points

Tie Inventory-to-Sales Ratio - (last 60 months of data)
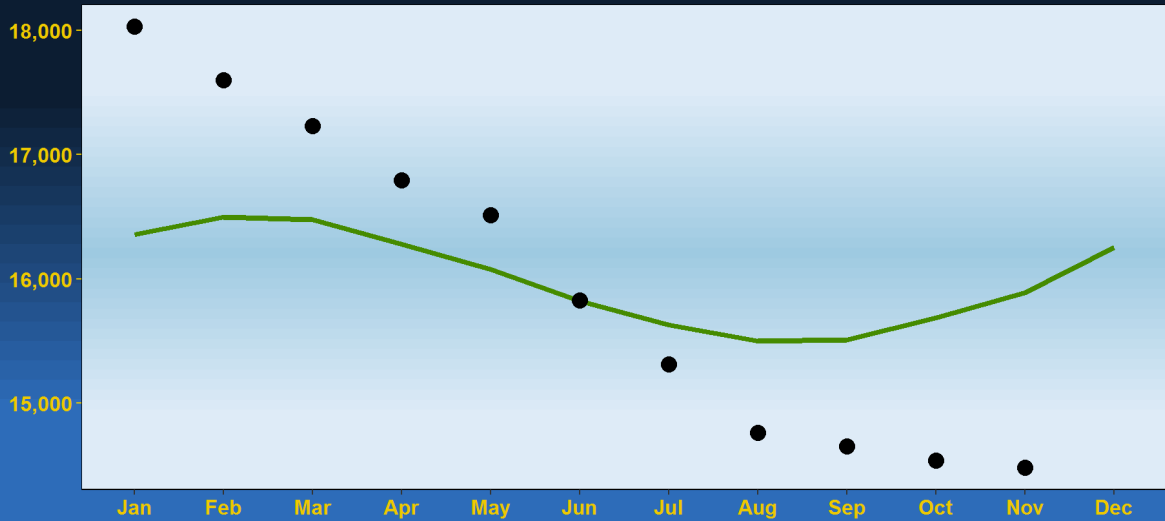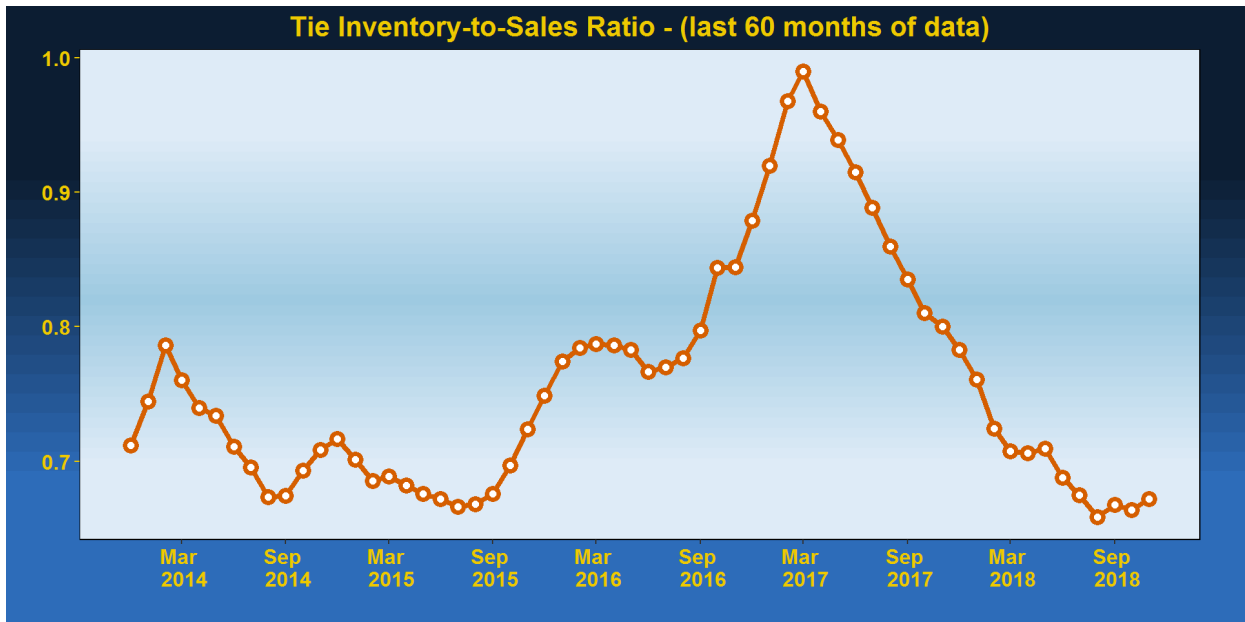
Inventory-to-Sales Ratio (ISR) histogram of relative frequencies shows the monthly ISR data distribution and the black point represents the value for current reporting month.

ISR Statistics - Relative Frequencies - (all available data)

12% of the time, the values of ISR were between 0.785 and 0.80.
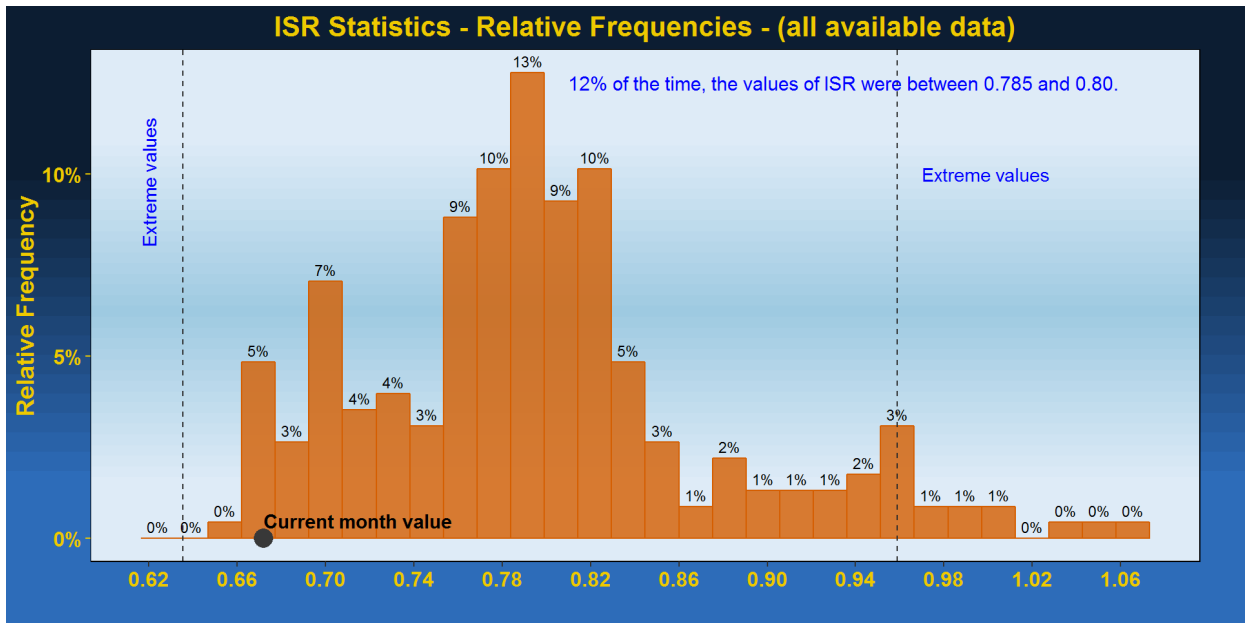
Appendix

Box Plot Explained

Maximum value - these are outlyer values
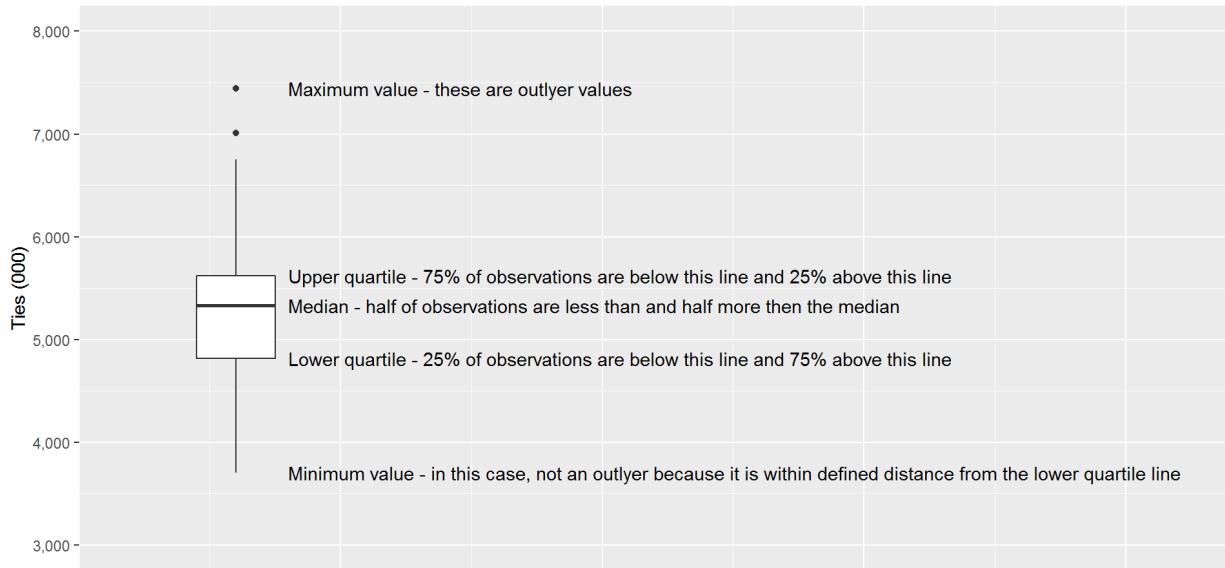
Upper quartile - 75% of observations are below this line and 25% above this line

Median - half of observations are less than and half more then the median

Lower quartile - 25% of observations are below this line and 75% above this line

Minimum value - in this case, not an outlyer because it is within defined distance from the lower quartile line

(y-axis: Ties (000))

Histogram of Relative Frequencies Explained

12% of the time, the values of ISR were between 0.79 and 0.805.

(y-axis: Relative Frequency; x-axis: ISR)