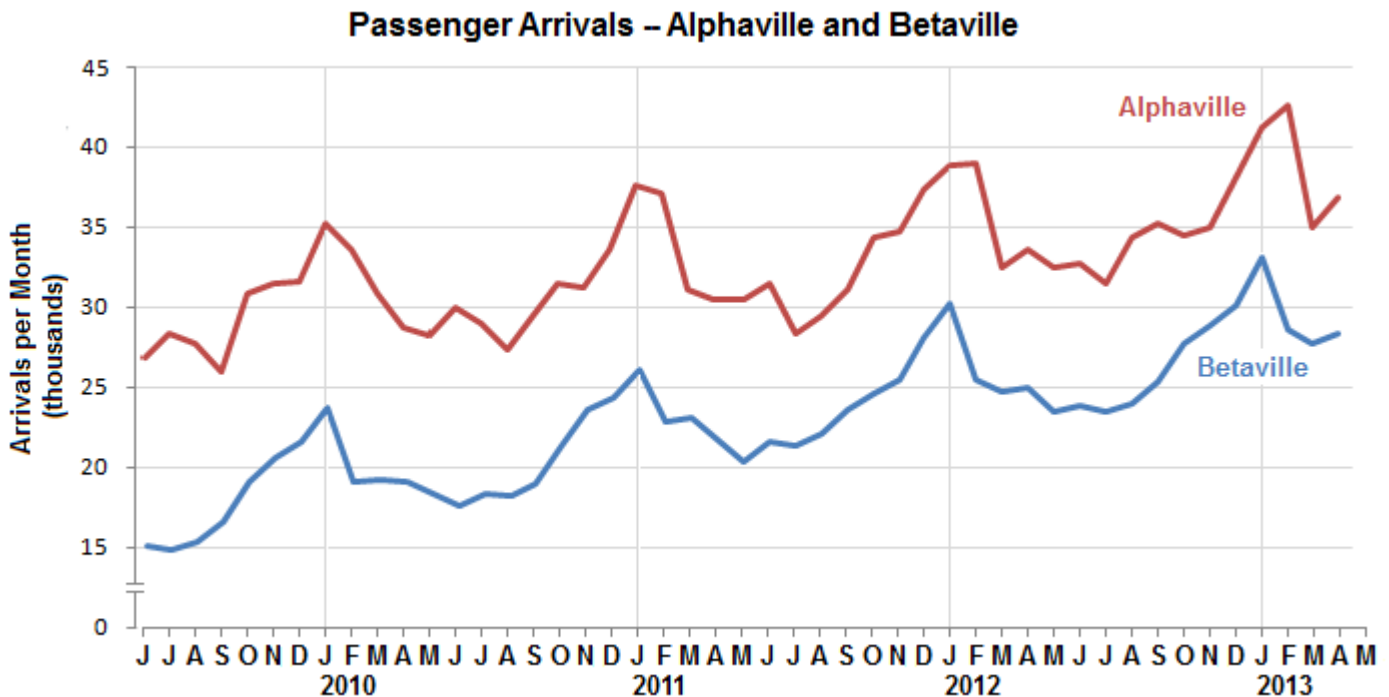


Level 1 Data Practice #3

Alphaville and Betaville are nearby cities. Both have major airports.

The Mayor of Betaville produces the graph below:



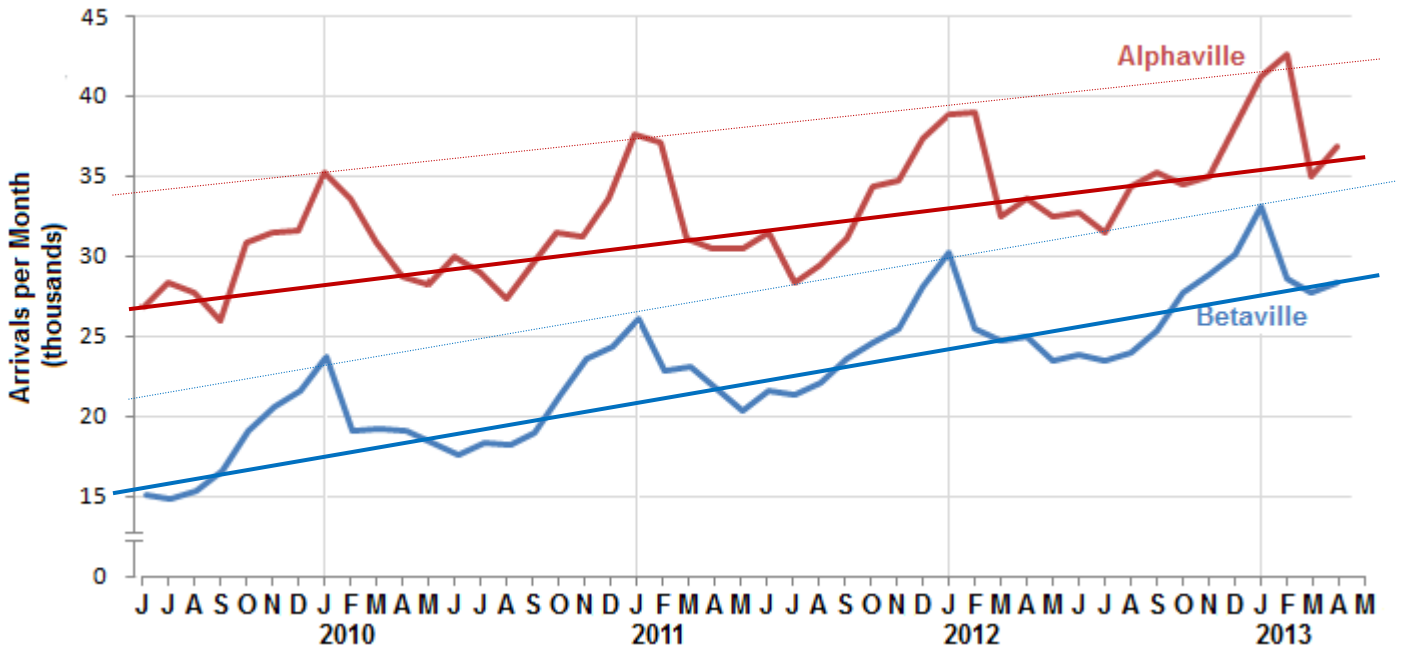
The Mayor of Betaville then releases a statement which includes the sentence:

" Betaville airport is quickly catching up to Alphaville airport in number of arrivals, and will soon overtake it to be the busier airport."

1. Describe any flaws you see in the Mayor's statement about arrival numbers.
Describe any flaws you see in the graph, as it relates to that statement.
2. Describe the three similarities and three differences between the number of arrivals at the two airports.
Use correct statistical language in your answer.
3. Predict the number of arrivals in January 2014 for the two airports.
How reliable do you believe your predictions are?

Answers: Level 1 Data Practice #3

Passenger Arrivals – Alphaville and Betaville



Numbers will vary a little bit depending on how students measure. It is wise to draw the appropriate lines on the graph to show the marker where your numbers come from.

The arrival numbers in Alphaville increased from 28,000 to 36,000 from Jan 2010 to Jan 2013 years, so the growth was 2,666 per year – based on the thick red trend line.

The arrival numbers in Betaville increased from 17,500 to 27,500 from Jan 2010 to Jan 2013 years, so the growth was 3,333 per year – based on the thick blue trend line.

1. The difference in 2013 was 8,500 ($36,000 - 27,500$), which is 13 years of growth difference. (Each year Betaville catches up about 666 per year in difference.)

Not only is 13 years not “soon” as the Mayor said, we cannot assume that the patterns seen will continue unaltered for such a long time. Anything could happen in that time.

The graph is misleadingly made to look as if Alphaville is catching faster than it is by the use of a gap in the vertical axis. If the graph went from 0 to 15,000 at full scale, it would be clear that Betaville is not catching very quickly.

2.
 - 1) Both Alphaville and Betaville have a quite linear baseline trend that is increasing.
 - 2) Both have a regular seasonal pattern, with arrivals peaking in January of each year.
 - 3) The height from base trend to peak is fairly constant about 10,000 in both cases.
 - 1) Alphaville has more variation in numbers – the troughs are less smooth and the peaks change shape between years.
 - 2) The trend of increase is higher for Betaville by 666 per year (see calculations above).
 - 3) The peaks for Alphaville also include high numbers in February, whereas the peak for Alphaville drops off strongly after January.
3. Either by drawing the dotted lines out, or adding 2,666/3,333 to the 2013 January peaks (or both) estimates should be about 44,000 for Alphaville and 37,000 for Betaville. These are likely to be quite accurate. The data is very regular and 2014 is not far away.