Employment data exercise

### Data source: Minnesota DEED’s website pulls data from the Quarterly Census of Employment and Wages (QCEW), <http://mn.gov/deed/data/data-tools/qcew/> About QCEW

The Quarterly Census of Employment and Wages is a census of employers on employment and wages. Data are available by industry, ownership type, states, regions, counties and minor civil divisions.

**Data Source**

All establishments covered under the Unemployment Insurance Program are required to report wage and employment statistics quarterly to the Minnesota Department of Employment and Economic Development. Federal government establishments are also covered by the QCEW program. These data are edited and verified for research and analysis purposes.

The dataset we’re working with is a subset of what I originally downloaded (in order to make it easier). You can see full dataset by going to the link above. **Record layout:**  
PeriodYear: Year data represents  
NAICSTitle: North American Industry Classification Code ([NAICS](http://www.census.gov/eos/www/naics/))  
AreaName: Geographic area this data represents  
OwnerTitle: Ownership types that are included (all ownerships=private, non-profit and govt)  
Employees: Average number of employees over course of the year (based on counts from each quarter)  
Establishments: Average number of establishments over course of the year (based on counts from each quarter)  
TotalWages: Average total wages paid over course of the year (based on totals provided each quarter)  
AvgWeeklyWage: Average weekly wage paid (based on figures provided each quarter)

Note that there are records that represent the totals for all industries, then there are separate records for each of the top-level NAICS (industry) codes. So you can’t just add up all the figures here – you’d be double-counting everything. There are also some records where employment and wage figures are not available.

**Step 1 – IMPORT:** The data file is a tab-delimited text file. So we need to first import it into Excel.

Open a blank workbook in Excel.

Go to the Data menu and choose “From Text”. Follow the steps through the Import Wizard. Once your file is in Excel, go to the File menu and choose “Save As” – name and save your workbook.

**STEP 2 – CREATE NEW WORKSHEETS:** Now you’ll see that the data has one row for each year, for each industry. It’s kind of hard to do analysis on this – especially in Excel. The most likely question we want to ask is whether the number of employees and the average wages have been going up or down, over the years we have here. To do that, it would be easier if the years were going across as columns – so one row for each industry.

We can get that by using pivot tables to create new worksheets, but we’ll have to separate our data points – one worksheet for employees, one for establishments, one for total wages and one for average weekly wages.

You’ll make 4 Pivot Tables. For all four of them, the “row” will be the industry (“naicstitle”) and the “column” will be the year (“periodyear”). The thing that will be different will be the “value” – in one of them use the number of employees, in another use the number of establishments, in another use the total wages and the in the final one use the average weekly wages.

This is a rare circumstance where we’re NOT using the PivotTable to sum or count or do any sort of math. We’re just rearranging (pivoting) our data.

Copy the results of each PivotTable out to new worksheets.

Make sure to put header rows on each one and re-name your sheets so you know which is which. Add any notations you’d like at the top (i.e. noting this is total ownership, covering whole state of MN, data source, etc)

**STEP 3 – ANALYSIS:**   
Let’s start by doing a quick visualization of our data to see what we might be dealing with. Go into the Employees worksheet and create a line chart based on “Total, All industries” to see how the workforce has gone up and down with the Recession.

Then let’s use that to figure out what questions we want to ask and which time periods we want to calculate percentage change for (since the recession ended? Across all the years? Across the years just before the recession?)

Then create those percentage change fields off the end of the table. Be sure to put labels on them!

Repeat this process for your other worksheets.

What did you find?

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