

# ECON 343, Spring 2021 HW3

Please upload three files to the appropriate D2L folder by the deadline: One must be a *written report* in .pdf (preferred) or Word format, which answers all questions using text, graphics, and results tables. The second will include your final **12-variable database** (properly formatted) and any work you did. This may be in Excel or in any readable format. You should also include one of your original downloads from the BLS.

The main part of this assignment is to produce a quality report that integrates correctly-made figures and text.

This assignment is worth 10 percent of your final grade. **Please do not work with anyone else to complete it** (or you get a zero!).

1. Go to the Bureau of Labor Statistics and download **monthly** CPI series (seasonally adjusted) for the **maximum time span** for the following variables:

All items in U.S. city average, all urban consumers, seasonally adjusted (CUSR0000SA0)  
Food in U.S. city average, all urban consumers, seasonally adjusted (CUSR0000SAF1)  
Housing in U.S. city average, all urban consumers, seasonally adjusted (CUSR0000SAH)  
Gasoline (all types) in U.S. city average, all urban consumers, seasonally adjusted (CUSR0000SETB01)

You should follow the screens such as Data Tools→Top picks/Multi-Screen→Inflation & Prices→ All Urban Consumers (Current Series)→Seasonally adjusted.

To get your variables with dates arranged vertically, try “More Formatting Options,” all time periods, column format, and download to .csv format.

2. Make a database, arranged properly, with these variable names:  
*P\_ALL*      *P\_FOOD*      *P\_HOUS*      *P\_GAS*  
Begin all your variables at **1967m01**. See below for a hint.  
End your series at 2021m01 and cut anything after that.  
Plot all four time series (on a single graph in your report) and answer: Which shows the most “volatility” (most extreme movements)?
3. Calculate the following eight variables (and name them as follows), and add them to your database:

12-month inflation rate (%Δ) of P_ALL	(INF_ALL_12)
Monthly log changes in P_ALL	(DLNPALL)
1-month inflation rate (%Δ) of P_ALL	(INF_ALL)
1-month inflation rate (%Δ) of P_FOOD	(INF_FOOD)
1-month inflation rate (%Δ) of P_HOUS	(INF_HOUS)
1-month inflation rate (%Δ) of P_GAS	(INF_GAS)
Ratio of P_HOUS divided by P_ALL	(PRATIO)
Difference between INF_HOUS and INF_ALL	(INFDIFF)

Remember that you should have monthly values in each cell, but that you will have “blanks” at the beginning of each inflation series. There will be 12 blank cells at the beginning of INF\_ALL\_12, but no blanks at the beginning of PRATIO.

4. Calculate the following summary statistics for each of your seven new inflation variables (but not the price ratio), and make a properly-formatted table: *Mean*, *sd*, *min*, *max*, *N* (sample size). Answer: which inflation rate has the largest variance? Does this match your answer from #2?
5. Make a scatterplot of INF\_ALL\_12 (y-axis) and INF\_ALL (x-axis). Do these appear related? Are the two variables correlated? Do the same for INF\_ALL and DLNPALL.
6. Plot PRATIO over time. Does the series appear to be *falling*, *steady*, or *rising*? What does this mean: which price is rising relatively faster?
7. Plot the following two time series on a single graph: INF\_ALL and INF\_FOOD. Make the lines appear distinct (using grey and black colors). Which appears to be higher overall? Which appears to be more volatile? How can your answer from #4 help answer this?
8. Make a histogram for INFDIFF. Try different widths of each “bar” until you find something that looks good. Do you notice anything interesting in this graph?

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Hint: Your starting database—once you have the BLS data—should look like this *before* you create any new variables or calculate anything:

	A	B	C	D	E	F
1	Year	Period	P_ALL	P_FOOD	P_HOUS	P_GAS
2	1967	M01	32.9	33.9	30.5	26.3
3	1967	M02	33	33.8	30.5	26.2
4	1967	M03	33	33.8	30.5	26.1
5	1967	M04	33.1	33.7	30.6	26.4
6	1967	M05	33.1	33.7	30.7	26.4
7	1967	M06	33.3	34	30.7	26.4
8	1967	M07	33.4	34.1	30.8	26.4
9	1967	M08	33.5	34.3	30.9	26.4
10	1967	M09	33.6	34.3	31	26.7
11	1967	M10	33.7	34.4	31	26.4
12	1967	M11	33.8	34.5	31.1	26.8

You can remove commas in Excel using “text to columns.”