Update 11/3: for DE8, you only need to turn in 3 visualizations since the “class list” is not available. The final handin of DE9 will require all 4.

In this assignment, you will develop 3 visualizations, each telling a “story” from the ATUS data set.

This assignment will be turned in as [**DE08: Story Building (due Tue, Nov 8)**](https://canvas.wisc.edu/courses/322540/assignments/1731360)

Basically, the assignment is a connection between last week’s [**Design Exercise 7: Exploratory Data Analysis with the ATUS data**](https://pages.graphics.cs.wisc.edu/765-22/exercises/de7-eda/) where you explored the data set to find stories and next week’s [**Design Exercise 9: Visualization Hand-Ins**](https://pages.graphics.cs.wisc.edu/765-22/exercises/de9-visualizations/) where you turn in “final” visualizations that tell the stories. This week’s handin is basically an intermediate result on the way to Design Exercise 9.

The goal here is to allow for peer critique. This means that the deadline is strict. We need your draft designs so we send them back out for peer critique.

Next week, you will be asked to turn in 5 visualizations that present 4 different “stories” from the ATUS data. It’s up to you to pick 4 different “stories”. You will make a visualization for each story, as well as an alternate visualization for one of the stories.

Your four stories must include:

1. A story you identified in your exploration (probably in DE7, but possibly refined in subsequent exploring). It should not be one on the “class list”. If all of the ideas from your explorations ended up on the class list, you should do some more exploring. Note: for this story, originality (asking a unique question) is valued.
2. A story chosen from the “class list” (this will be made available during the week of the assignment). Basically, as a group we will identify common good questions, building on the explorations that people have done. Note: for this story, originality and quality of the design is most valued. **Note: this will be required for DE10, but is optional for DE8 because the class list is not available.**
3. Two stories of your choice. It can be from your DE7, from the class list, from a conversation you had with a classmate, etc. Because we care about diversity in the stories and visualizations, you may need to pick stories that extend the set. For example, if you make 3 bar charts, you might want to look for a story that will be best told with some other form of chart so you have some diversity in what you handin.

Ultimately (in DE9) you will need to turn in “final” visualizations - one for each of your four chosen stories, and one alternate (a second visualization that tells the story in a different way using a different visualization). The alternate can be for any of your three stories.

For this week, you need to tell us what the questions you will develop into your turn in “rough drafts” for your visualizations. This will allow us to do a round of peer feedback. We will give your designs to your classmates so they can perform critiques that we will return to you. You will perform critiques of your classmates designs (we will evaluate your critiques). **You don’t need to pick the “class list” story.**

Note: for the rough drafts, sketching is OK - but, be aware, sketching is not OK for the final handins. They must be made with the real data. Also, while we ask you for the question/story you are trying to tell, this text will not be made available to the classmates performing critiques. Make sure your visualizations stand alone! (even if it means putting captions and titles into the draft).

This assignment will be handed in as [**DE08: Story Building (due Tue, Nov 8)**](https://canvas.wisc.edu/courses/322540/assignments/1731360), you will be asked to upload the images, you will be asked to identify your questions, and you’ll be asked about your process.

## What do we mean by “story”

The goal of this assignment is to create visualizations that “tell stories” from the data: that highlight / show something in the data. They shouldn’t just dump a bunch of numbers: they should make an intended message come out.

Try not to pick questions that can be answered with a single statistic – but something where the visualization adds value. The richer and more complex the task the story (or sets of stories) that the visualization tells makes it more interesting (and challenging), and gives you more opportunities to make a particularly cool “story”.

A visualization should have a purpose - something that it helps the viewer see. This is the “story” that it tells. Visualizations that simply present the data (without something in mind) are not the goal here. “This visualization lets us see the distribution of grades in the class” is not as interesting (for this assignment) as “this visualization shows the correlation between how multi-variate a visualization is and the grade, letting us see that that mutli-variate visualizations are pretty much necessary for a good grade”.

The previous part of the assignment ([**Design Exercise 7: Exploratory Data Analysis with the ATUS data**](https://pages.graphics.cs.wisc.edu/765-22/exercises/de7-eda/)) gave you a chance to explore the data to identify interesting things in it (the stories to tell). Now, you must design visualizations that tell those stories.

Part of the idea of this assignment is that by looking at the data in different ways, you can see different things in it. Therefore, we ask you to make several different visualizations, each telling a different story from the data (e.g., highlighting a different interesting thing in the data).

## What is a “good story”

A good story is some rich and interesting thing in the data. However, for this assignment, a good story is something that is complex enough that it leads to being told with a visualization.

We care that you have a diverse set of stories: your visualizations show different aspects of the data.

The best way to pick what to do is to view this as you are making drafts for next week, so understanding what we are going to ask you for next week is worthwhile.

For the final handin (DE9), we will look for:

1. Is the question/story interesting and clear?
2. Is it multi-variate?
3. Is the design effective? (is it well adapted to the story/task?)
4. Do the details represent good choices?
5. Is the design appropriate for the data?
6. Is the rationale properly stated (in the documentation)
7. Is the design complete (it has enough of a caption that it stands alone)?
8. Is there a diversity of designs across the assignment?
9. Is there a diversity of questions across the assignment?

The best designs for this assignment are multivariate and specifically adapted to the task/story. They may use a standard design (stacked bar chart), but use good choices in the details (e.g., the ordering of the bars or the colors) to make the “answer to the question” easy to see. We look for signs of students making explicit good choices to make what they want the viewer to see easy to see. (you can explain your choices in the documentation). Good solutions often show lots of data, but use design elements to make the story stand out so the extra information provides context.

We will look for diversity in the stories that you choose to tell with the visualizations.

Generally, we look for diversity in designs. If all of your visualizations are bar charts, that’s often a bad sign. Of course, if it really is the case that you have found four questions that are each best answered with various bar charts, that’s less of an issue. But in general, you may want to pick stories that are told with a variety of designs.

To emphasize: what we are looking for are what explicit choices you made to emphasize your “story.” A “data dump” (just making a chart of some of the variables) is not likely to get you a good score. If you make explicit decisions - selecting subsets or data, highlighting particular points, arranging designs that emphasize certain aspects, etc. - this will be rewarded.

The emphasis on this assignment is the visualization. You are welcome to build a fancy machine learning or statistical model, but we would like you to focus on telling the story visually. Usually, assignments involve simple statistics for summaries presented in interesting ways.

(Note: our experience of what past “good” assignments are like is from past years where the assignment was a bit different. You can see the old assignment at [**2021 Design Challenge 1**](https://pages.graphics.cs.wisc.edu/765-21/assigns/dc1/).

### Captions and added text

Captions (and other text) are an important part of visualizations, and tricky for this assignment.

The distinction between a caption (roughly, a short text accomplanying an image) and “in-line text” (text put into an image - such as a label, or a callout arrow) isn’t clear cut. So we encourage you to do both as needed.

There is also a tension between “your visualization should be so clear that the viewer has no problem seeing the right thing” and “a caption can help call attention to the right place and/or guide the viewers interpretation.” Don’t use captions as a crutch. If you write something like “Notice that the faint blue dot hidden behind the red square which means that”, you probably want to make this easier to see through visual design choices.

We ask that your visualizations “stand alone”. You should give a sense of what the data is, but do not need to document the data source. But there should be a clear title (that suggests the story), a caption, and any labels or in-line text that helps make the story clear.

### Some Advice

(for the final visualizations in DE9)

We look for signs of students making explicit good choices to make what they want the viewer to see easy to see. (you can explain your choices in the documentation for DE9).

Your “story” should be “something that is easy to see in the visualization”, and the assignment is about making explicit choices to make the story be the thing that is easy to see.

Think about (and write in your rationale): What does this design make easy to see? This should be a fact about the data (the “story” – or the finding of the story). The fact should be specific – not just “we can see variable X and Y” – but something like “we can see the positive correlation” or “we can see the pattern that there are more yelp check ins on weekends.” And it should be something that really is easy to see (look at your visualization!). Why is it easy to see? What choices did you make that makes it easy to see?

## How to make Visualizations

This is for the final (DE9) visualizations. For the rough drafts (DE8), anything goes. You can even sketch if you like. Just be aware, that for DE9, you must make visualizations with the real data.

We do not make any requirements on what tools you use (we will ask you what tools you use). In the first phase of the assignment, we strongly recommended Tableau as a good way to explore the data. For making final visualizations, Tableau may be a less good tool as it gives less control over the details.

We encourage you to use Tableau, but we will not force you to do so. But, any tool is fine, as long as you can get your visualizations into PDF files. It is fine to use Excel or Tableau or JMP or some other “tool.” If you are going to make standard designs, you probably should use standard tools.

Note: you are turning in static visualizations as PDFs. You may use interactive tools to make them, but you need the visualizations to “tell the story” as a static picture.

You may “edit” the visualizations that come from the tools (but please document this). For example, you might make a picture in Tableau, and then load that into PhotoShop or PowerPoint in order to add captions or adjust colors.

## Evaluation

For DE8, Canvas will give you a check (or not). The real evaluation happens in DE9.