HCA 542: Health Care Database Design and Management

Assignment V

Your task

Through this exercise, you will conduct a data analysis that practices some of the concepts outlined in your text, *The Accidental Analyst*.

Deliverables

A Tableau packaged workbook. Reference http://onlinehelp.tableau.com/current/pro/online/windows/en-us/help.htm#qs_packaged_workbooks.html for more information. **Note that you must save your work as a packaged workbook otherwise it cannot be graded.**

Software

Note that this assignment uses a demo version of Tableau Desktop that you will need to obtain and use yourself. Given that this is an optional assignment, you will not find this software supported by the Enderis computer lab and is likely not found anywhere else on campus. Directions for obtaining the software are included in the directions below.

Individual work

This assignment will be completed individually without collaboration with other students.

Submission

Submit your assignment to the D2L Submit your assignment to the D2L dropbox by 11:55 on the due date in the course schedule on D2L.

It is your responsibility to correctly submit the entire assignment on time in D2L. To ensure that your items are correctly uploaded, reopen your files from the D2L dropbox to test it.

Grading

This project is worth 100 points and will replace your lowest score of another assignment if higher.

10 pts per Tableau Worksheet (10 sheets x 10 pts each = 100 pts)

Data Analysis

Choose your questions:

You have been asked to determine the categories of diagnoses and procedures with the highest reimbursement levels in the Milwaukee metro area.   We will be using DRGs to help answer this question:
http://en.wikipedia.org/wiki/Diagnosis-related_group

Preparation Step:

Download and install Tableau Desktop from http://www.tableausoftware.com/products/trial.

Click "Get Started" this will download the install file for Tableau. Install the program. Once you are done installing and when Tableau starts for the first time, select "Start Trial Now" and then register. The following screen will appear and you are ready to use Tableau.
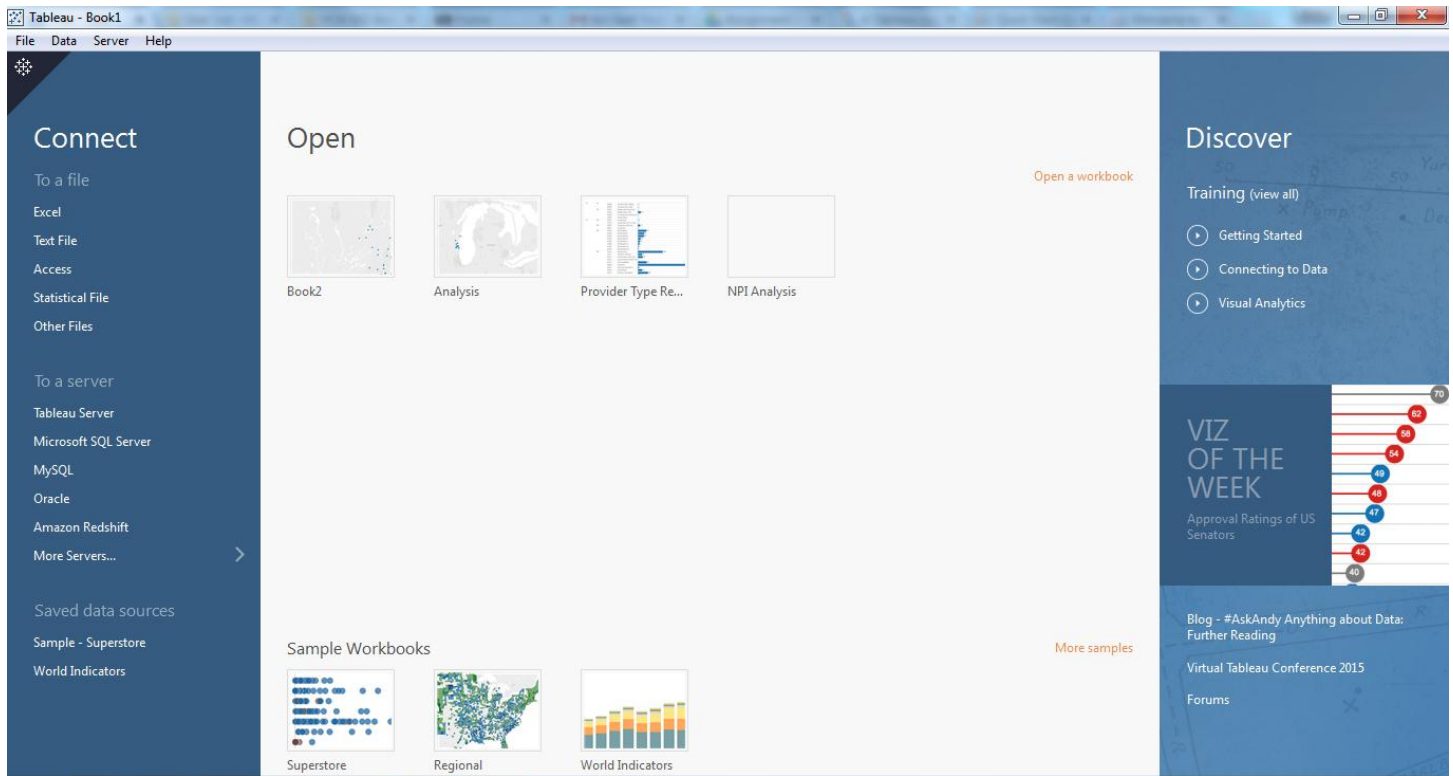
Collect your data:

Obtain the Inpatient Prospective Payment System (IPPS) Provider Summary for the Top 100 Diagnosis-Related Groups (DRG) - FY2011 from the federal government. Go to data.gov/health and use the search box at the top of the page. On the results page you should see:

Click on the link and then the Download button. On the next screen there is an Export menu option that will show the following download menu. Select CSV to obtain the data file. Save this file to an appropriate folder.

Back in Tableau, use the Connect to a Text File, and make sure you pick .csv, in order to find the downloaded file from the data website. In the next screen, select the Extract option and then Go to Worksheet. You will be asked to save an extract file. Place this in the same folder as your CSV file.

Tableau will now look like the following:
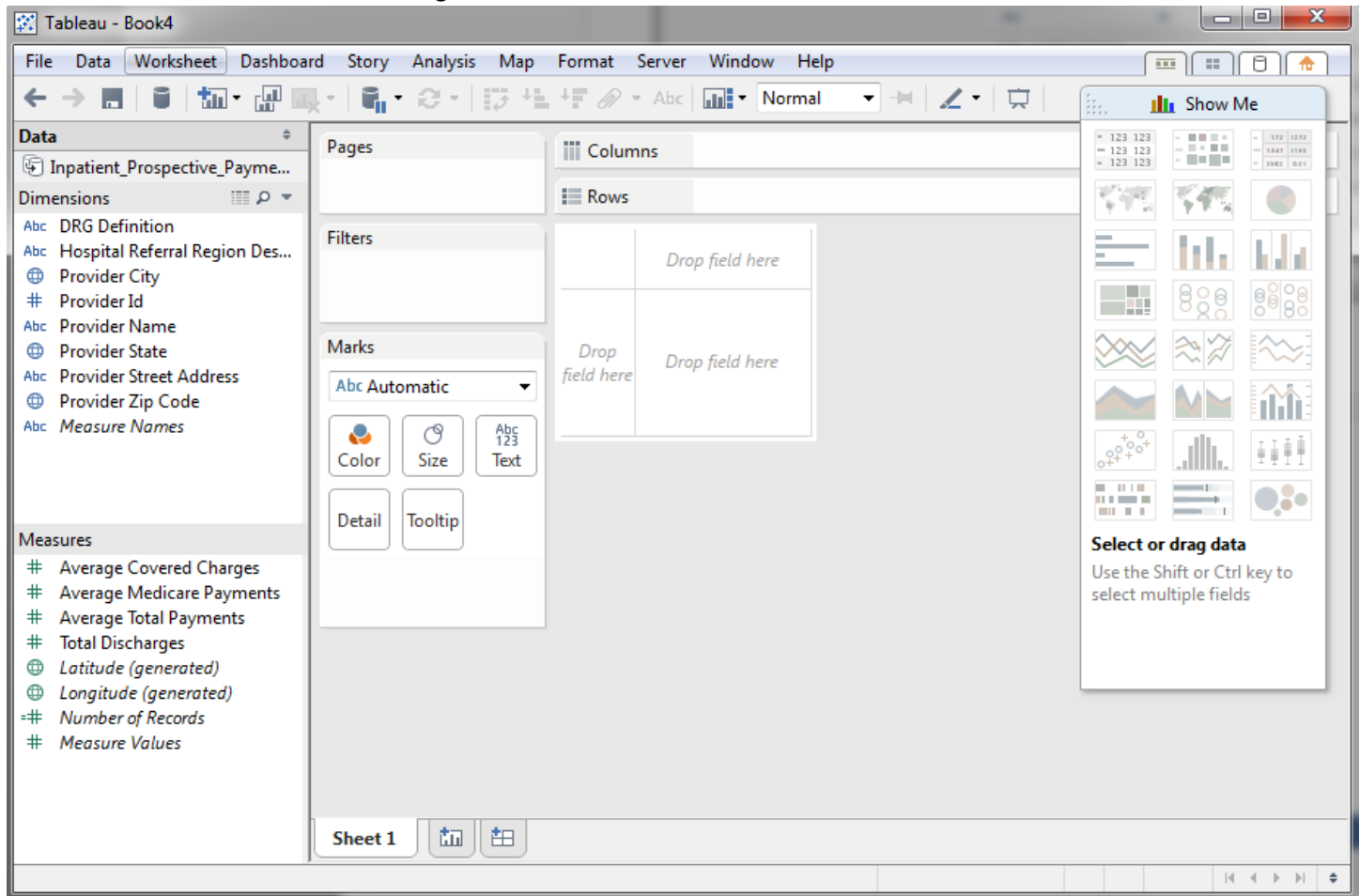
Save your Tableau workbook as a packaged workbook. Reference
http://onlinehelp.tableau.com/current/pro/online/windows/en-us/help.htm#qs_packaged_workbooks.html for more
information

Check out your data

Now it's time to explore your data. Create the following worksheets:

Sheet 1: The count of the number of records. Did you get the same number of rows as the CSV if you open it in Excel?

Sheet 2: Provider City. Are you getting hospitals from all 50 states?

Sheet 3: Provider Name. Are you getting values from A to Z?

Sheet 4: Total Discharges. Did you get a sum of 6,975,318?

If you answered yes to all of these questions, then you appear ready to move to the next step.

Clean up your data

While we are not going to exclude any data from our analysis, it is important to understand if you have extreme values or outliers that may be candidates for exclusion or may impact your interpretation of your analysis.

Sheet 5: Create a box and whisker plot consisting of Provider ID, Provider Name, and the sum of Total Discharges. What hospital has the most discharges? How many more discharges does this hospital have compared to the next? Hovering over each dot should pop up a context menu with the 3 data elements (Provider ID, Provider Name, and the sum of Total Discharges).
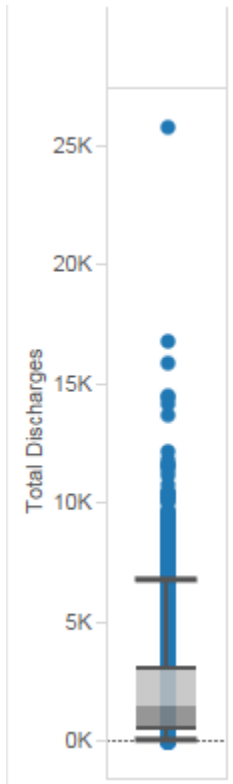
Chart your analysis

Create individual sheets to answer the following questions:

Sheet 6: Where are the hospitals in Wisconsin? What is the size of each in terms of discharges?

Create a map of Wisconsin using Provider Zip Code. Zoom to Wisconsin. Drag Total Discharges onto Size in the Marks Panel. Drag Provider Name onto Label in the Marks Panel.
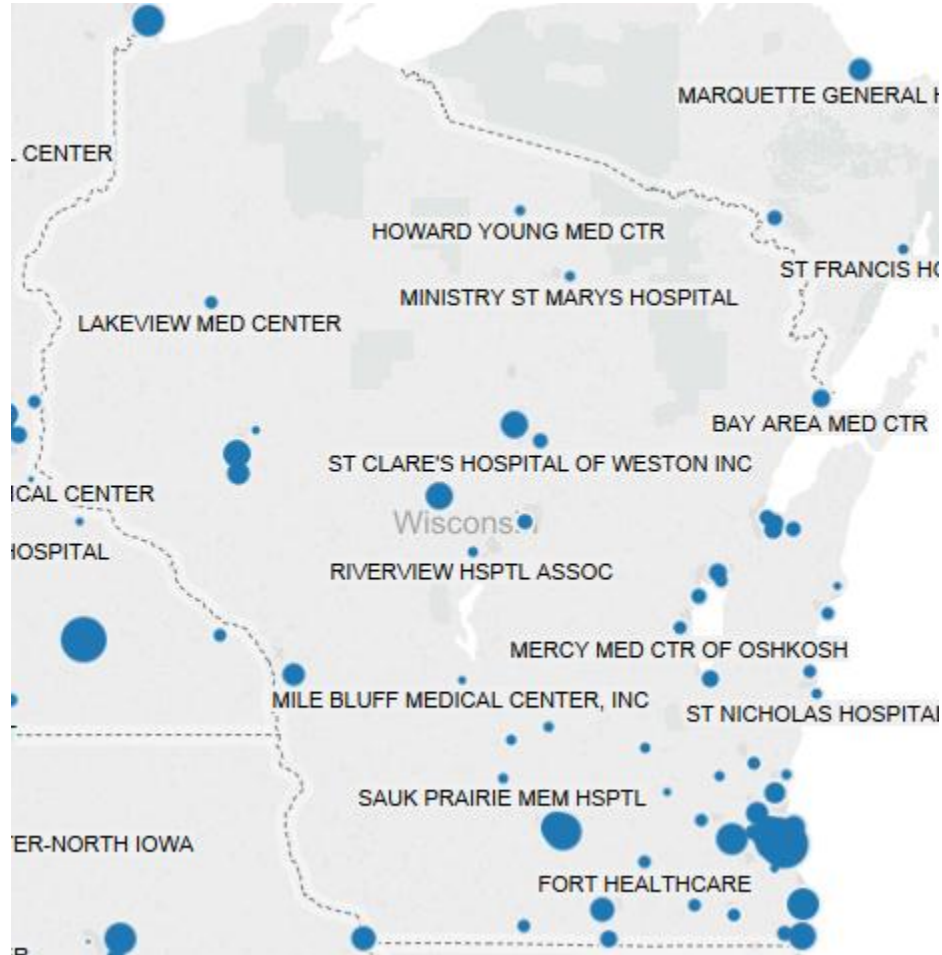
Sheet 7: Show a list of Wisconsin hospitals ranked by size terms of discharges (Hint: Filter by Provider State and sort the data).

Provider Name	Total Discharges (0K–10K)
AURORA ST LUKES MEDICAL CENTER	~9.7K
ST MARY'S HOSPITAL	~5.7K
FROEDTERT MEM LUTHERAN HSPTL	~4.9K
WHEATON FRANCISCAN HEALTHCARE- AL..	~4.1K
WAUKESHA MEMORIAL HOSPITAL	~4.0K
UNIVERSITY OF WI HOSPITALS & CLINICS ..	~3.8K
MERITER HSPTL	~3.5K
MINISTRY SAINT JOSEPH'S HOSPITAL	~3.1K
ASPIRUS WAUSAU HOSPITAL	~3.0K
MAYO CLINIC HEALTH SYSTEM EAU CLAIR..	~3.0K
AURORA WEST ALLIS MEDICAL CENTER	~2.9K
UNITED HSPTL SYS	~2.8K
MERCY HLTH SYS CORP	~2.6K
WHEATON FRANCISCAN, INC- ST JOSEPH	~2.5K
COLUMBIA ST MARYS HSPTL MILW (COL ..	~2.1K
COMMUNITY MEM HSPTL	~2.1K
GUNDERSEN LUTH MED CTR	~2.0K
SACRED HEART HSPTL	~2.0K
WHEATON FRANCISCAN HEALTHCARE- ST..	~1.8K
COLUMBIA ST MARY'S HOSPITAL OZAUKE..	~1.7K
BAY AREA MED CTR	~1.6K

Sheet 8: Which hospital has the most discharges in the Madison market? How about Wausau?

Duplicate Sheet 7 and create a multi-pane bar chart using Hospital Referral Region Description.
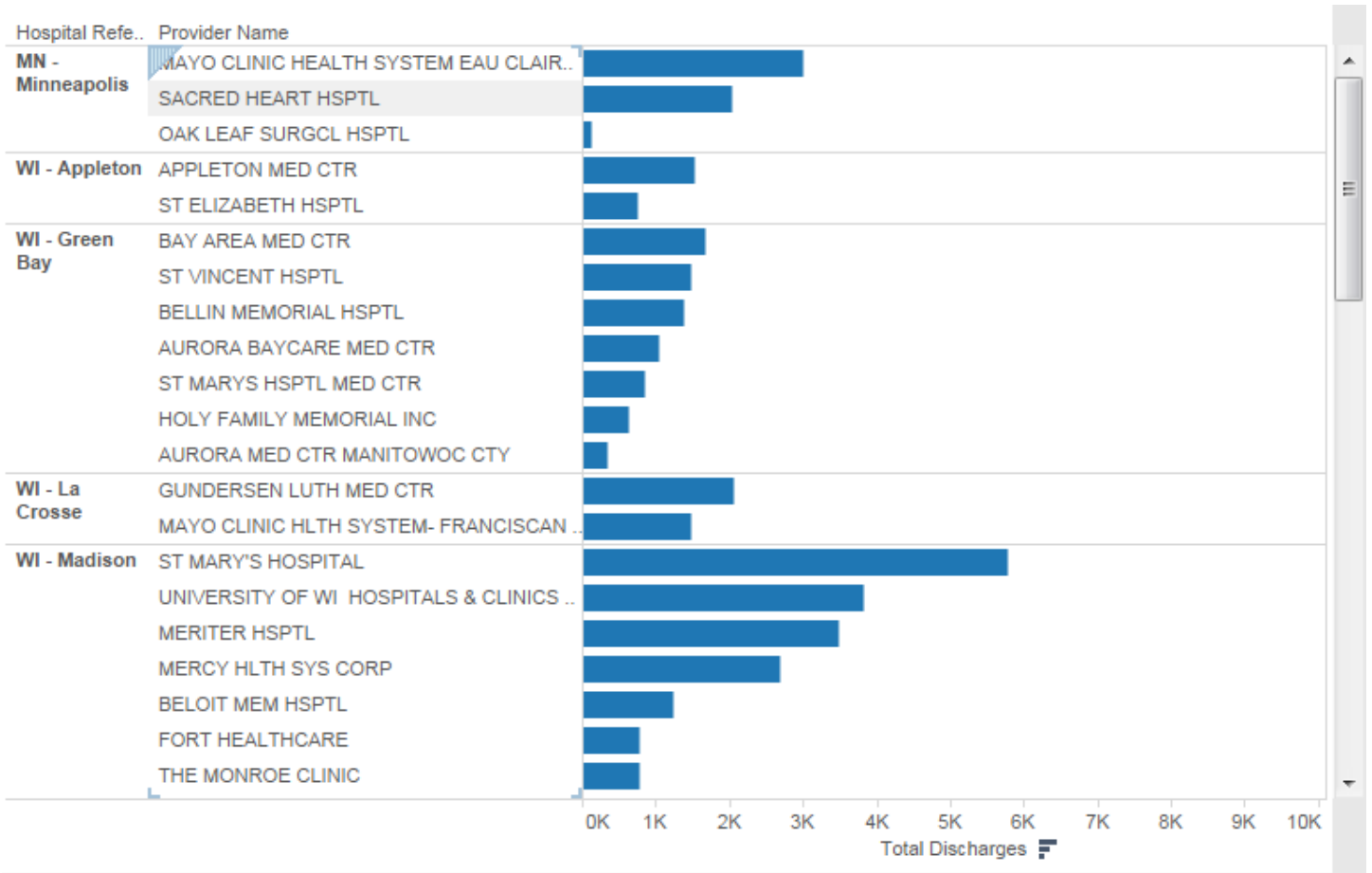
Customize your analysis

Sheet 9: Which DRGs have the highest average total payments in the Milwaukee referral region?

Create a highlight table using DRG Definition and Provider Name. Filter on Hospital Referral Region.

| DRG Definition	ADVOCA..	AURORA ..	AURORA ..	AURORA ..	AURORA ..	AURC
			Provider Name			
191 - CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	6,979	5,887	5,575	6,188		
192 - CHRONIC OBSTRUCTIVE PULMONARY DISEASE W/O CC/MCC	5,516	4,872	3,971	4,575		
193 - SIMPLE PNEUMONIA & PLEURISY W MCC	9,308	9,156	8,032	10,081	6,649	
194 - SIMPLE PNEUMONIA & PLEURISY W CC	6,861	6,262	6,034	6,674	10,323	
195 - SIMPLE PNEUMONIA & PLEURISY W/O CC/MCC	5,944	4,713	3,910	4,558	3,700	
202 - BRONCHITIS & ASTHMA W CC/MCC	6,059				4,405	
203 - BRONCHITIS & ASTHMA W/O CC/MCC	4,216					
207 - RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT 96+ H..	32,629					
208 - RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT <96 H..	14,301					
238 - MAJOR CARDIOVASC PROCEDURES W/O MCC	20,449					1
243 - PERMANENT CARDIAC PACEMAKER IMPLANT W CC	16,390					
244 - PERMANENT CARDIAC PACEMAKER IMPLANT W/O CC/MCC	12,843					
246 - PERC CARDIOVASC PROC W DRUG-ELUTING STENT W MCC OR 4+ V..	29,899					
247 - PERC CARDIOVASC PROC W DRUG-ELUTING STENT W/O MCC	13,498				10,297	
249 - PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MCC	11,157					
251 - PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT W/O MCC	11,411					
252 - OTHER VASCULAR PROCEDURES W MCC	19,305					1
253 - OTHER VASCULAR PROCEDURES W CC	18,632					1
254 - OTHER VASCULAR PROCEDURES W/O CC/MCC						
280 - ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	11,369		7,947			
281 - ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W CC	7,188		5,987			
282 - ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W/O CC/MCC						

Sheet 10: For each DRG, how do Milwaukee region hospitals compare in terms of Total Discharges and Average Total Payments?

Create a scatter plot table using DRG Definition in the Pages panel and filtering on Hospital Referral Region. The scatterplot is uses Total Discharges and Average Total Payments. The marks used are Provider Name in order to color-code each circle. You should be able to hit play and have the graph switch from one DRG to the next.
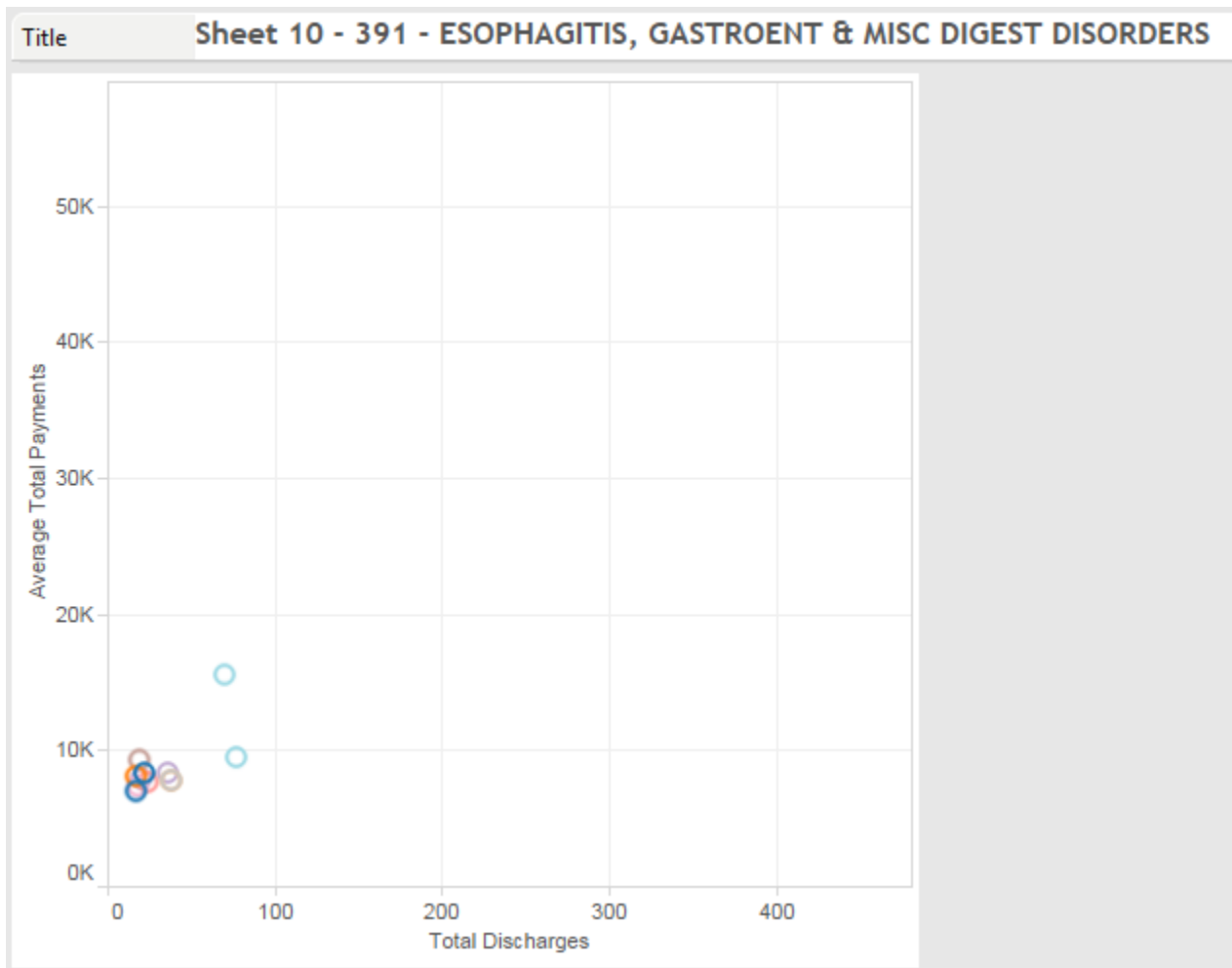
Communicate your results

Save your Tableau packaged workbook and submit it to the D2L dropbox. Make sure your file has an extension of *.twbx (note the x at the end).