

# 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](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](http://en.wikipedia.org/wiki/Diagnosis-related_group)

### Preparation Step:

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



Buy Sign In English ▾



Products Solutions Learning Support Partners About

FREE TRIAL

Download a free, fully functioning Tableau trial below.



Tableau Desktop

FAST ANALYTICS  
FOR EVERYONE

GET STARTED



Tableau Server

COLLABORATION FOR  
ANY ORGANIZATION

GET STARTED

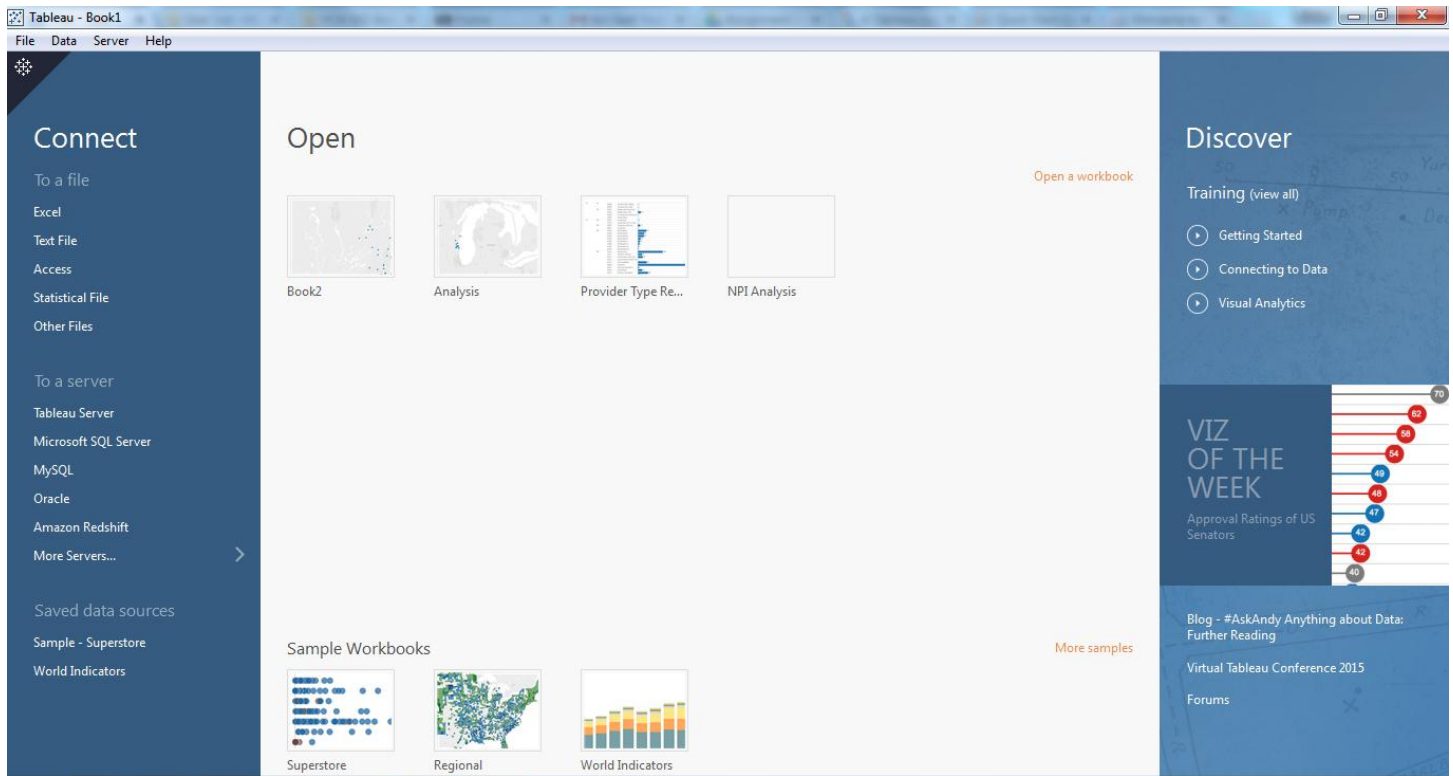


Tableau Online

BUSINESS INTELLIGENCE  
IN THE CLOUD

GET STARTED

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](http://data.gov/health) and use the search box at the top of the page. On the results page you should see:

### Inpatient Prospective Payment System (IPPS) Provider Summary for the Top 100 Diagnosis-Related Groups (DRG)

*U.S. Department of Health & Human Services* – A provider level summary of Inpatient Prospective Payment System (IPPS) discharges, average charges and average Medicare payments for the Top 100 Diagnosis-Related...

JSON CSV



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.

## Inpatient Prospective Payment System (IPPS) Provide...

6/2/14 UPDATE: Original FY2011 data file has been updated to include a new

Manage
More Views
Filter
Visualize
Export
Discuss
Embed
About

DRG Definition	Provider Id	Provider Name
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10001	SOUTHEAST ALABAMA
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10005	MARSHALL MEDICAL
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10006	ELIZA COFFEE MEMOR
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10011	ST VINCENT'S EAST
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10016	SHELBY BAPTIST MED
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10023	BAPTIST MEDICAL CE
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10029	EAST ALABAMA MEDI
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10033	UNIVERSITY OF ALABA
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10039	HUNTSVILLE HOSP
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10040	GADSDEN REGIONAL
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10046	RIVERVIEW REHABIL
039 - EXTRACRANIAL PROCEDURES W/O CC/MCC	10055	FLOWERS HOSPITAL

**Export**

SODA API

OData

Print

**Download**

Download a copy of this dataset in a static format

Download As

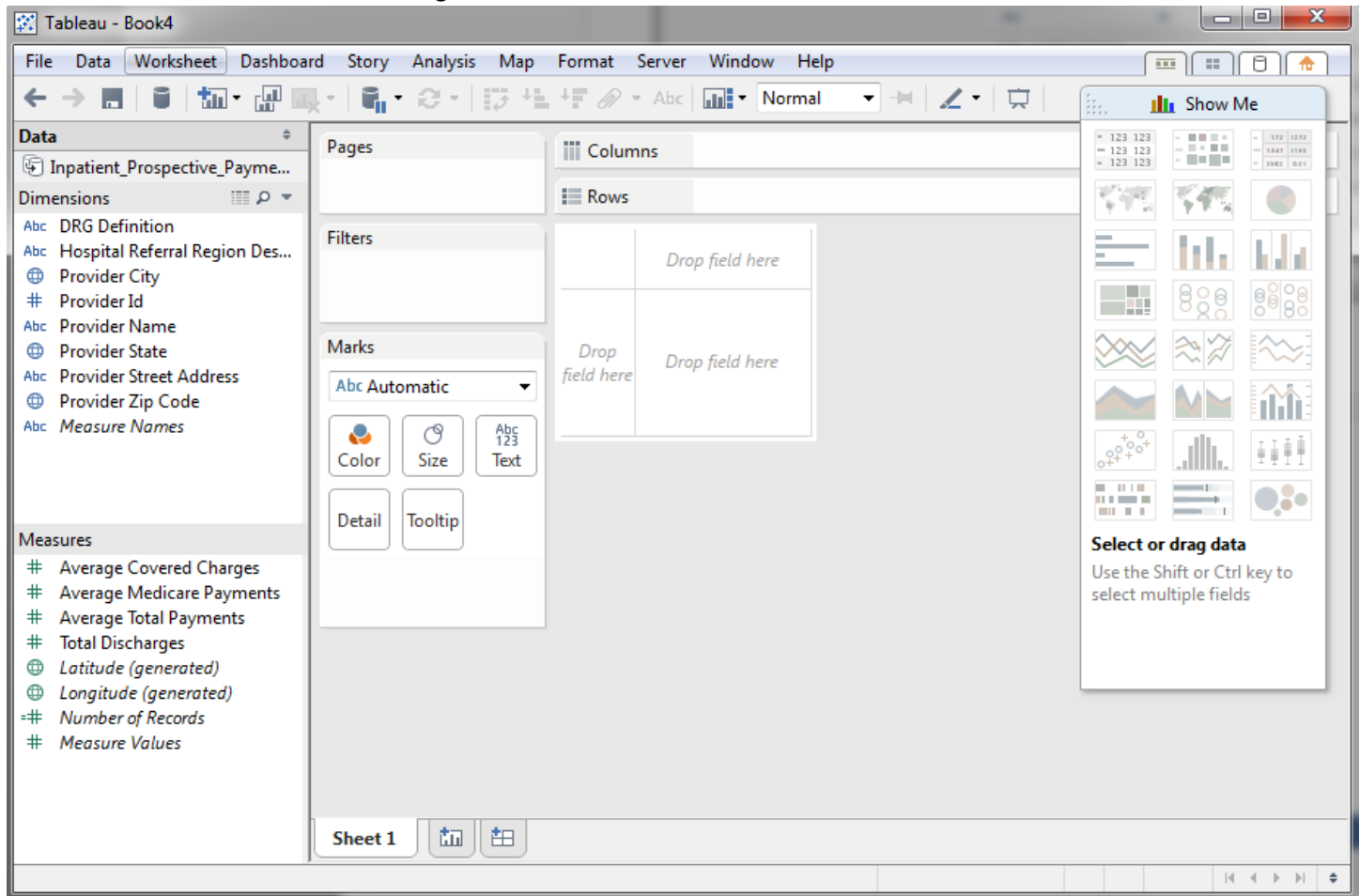
- [CSV](#)
- [JSON](#)
- [PDF](#)
- [RDF](#)

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.

The screenshot shows the Tableau Desktop interface. The top menu bar includes File, Data, Server, Window, and Help. The main window title is 'Tableau - Book1'. Below the menu, there's a toolbar with navigation icons. The central area shows a data source connection: 'Inpatient\_Prospective\_Payment\_System\_IPPS\_Provid...' connected to a text file. The connection type is set to 'Extract'. Below this, a directory view shows the file path 'C:\Users\019748\Downloads' and a list of files. The selected file is 'Inpatient\_Prospective\_Payment\_S...'. A preview table is displayed below the file list, showing columns for DRG Definition, Provider Id, Provider Name, Provider Street Address, Provider City, Provider State, Provider Zip Code, and Hospital Referral. The table contains 12 rows of data, matching the data shown in the first screenshot.

DRG Definition	Provider Id	Provider Name	Provider Street Addr...	Provider City	Provider State	Provider Zip Code	Hospital Referral
039 - EXTRACRANIAL P...	10001	SOUTHEAST ALABAM...	1108 ROSS CLARK CIRC...	DOTHAN	AL	36301	AL - Dothan
039 - EXTRACRANIAL P...	10005	MARSHALL MEDICAL ...	2505 U S HIGHWAY 431...	BOAZ	AL	35957	AL - Birmingh
039 - EXTRACRANIAL P...	10006	ELIZA COFFEE MEMOR...	205 MARENGO STREET	FLORENCE	AL	35631	AL - Birmingh
039 - EXTRACRANIAL P...	10011	ST VINCENT'S EAST	50 MEDICAL PARK EAS...	BIRMINGHAM	AL	35235	AL - Birmingh
039 - EXTRACRANIAL P...	10016	SHELBY BAPTIST MEDI...	1000 FIRST STREET NO...	ALABASTER	AL	35007	AL - Birmingh
039 - EXTRACRANIAL P...	10023	BAPTIST MEDICAL CE...	2105 EAST SOUTH BOU...	MONTGOMERY	AL	36116	AL - Montgor
039 - EXTRACRANIAL P...	10029	EAST ALABAMA MEDI...	2000 PEPPERELL PARK...	OPELIKA	AL	36801	AL - Birmingh
039 - EXTRACRANIAL P...	10033	UNIVERSITY OF ALABA...	619 SOUTH 19TH STREET	BIRMINGHAM	AL	35233	AL - Birmingh

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](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?

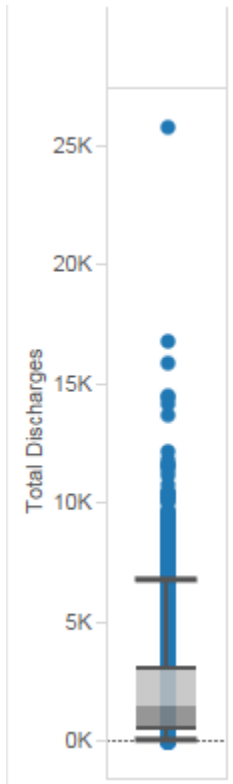
Sheet 4: Total Discharges. Did you get a sum of 6,975,318?

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).

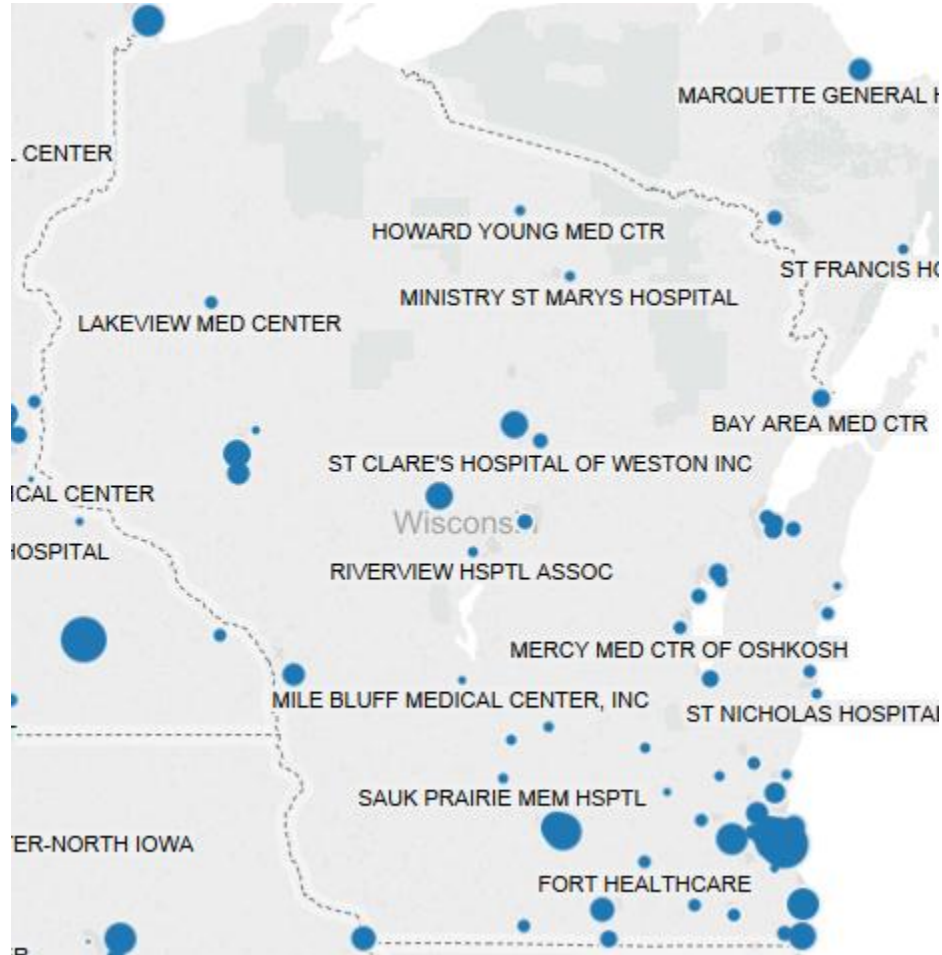


## Chart your analysis

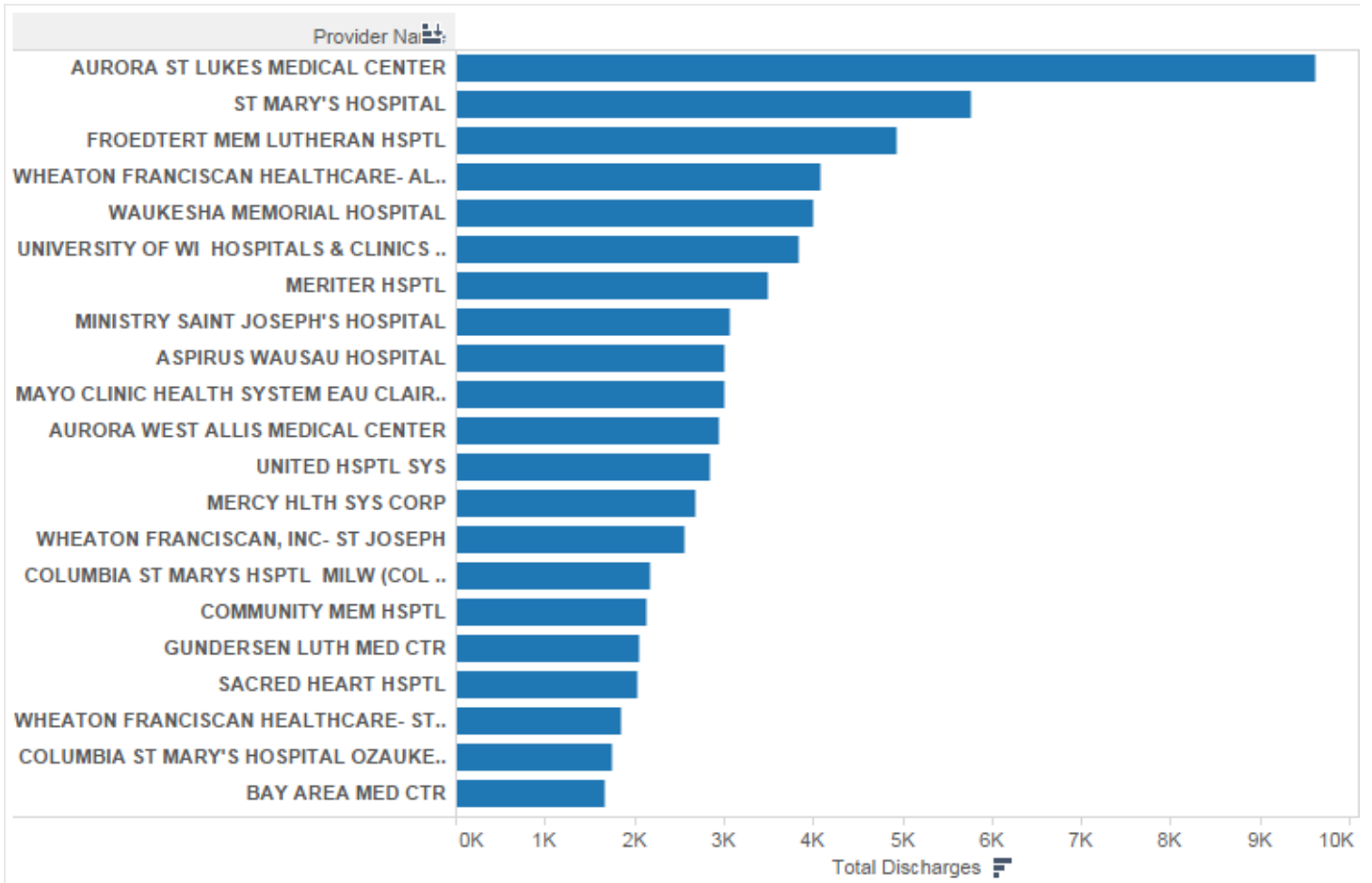
Create individual sheets to answer the following questions:

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.



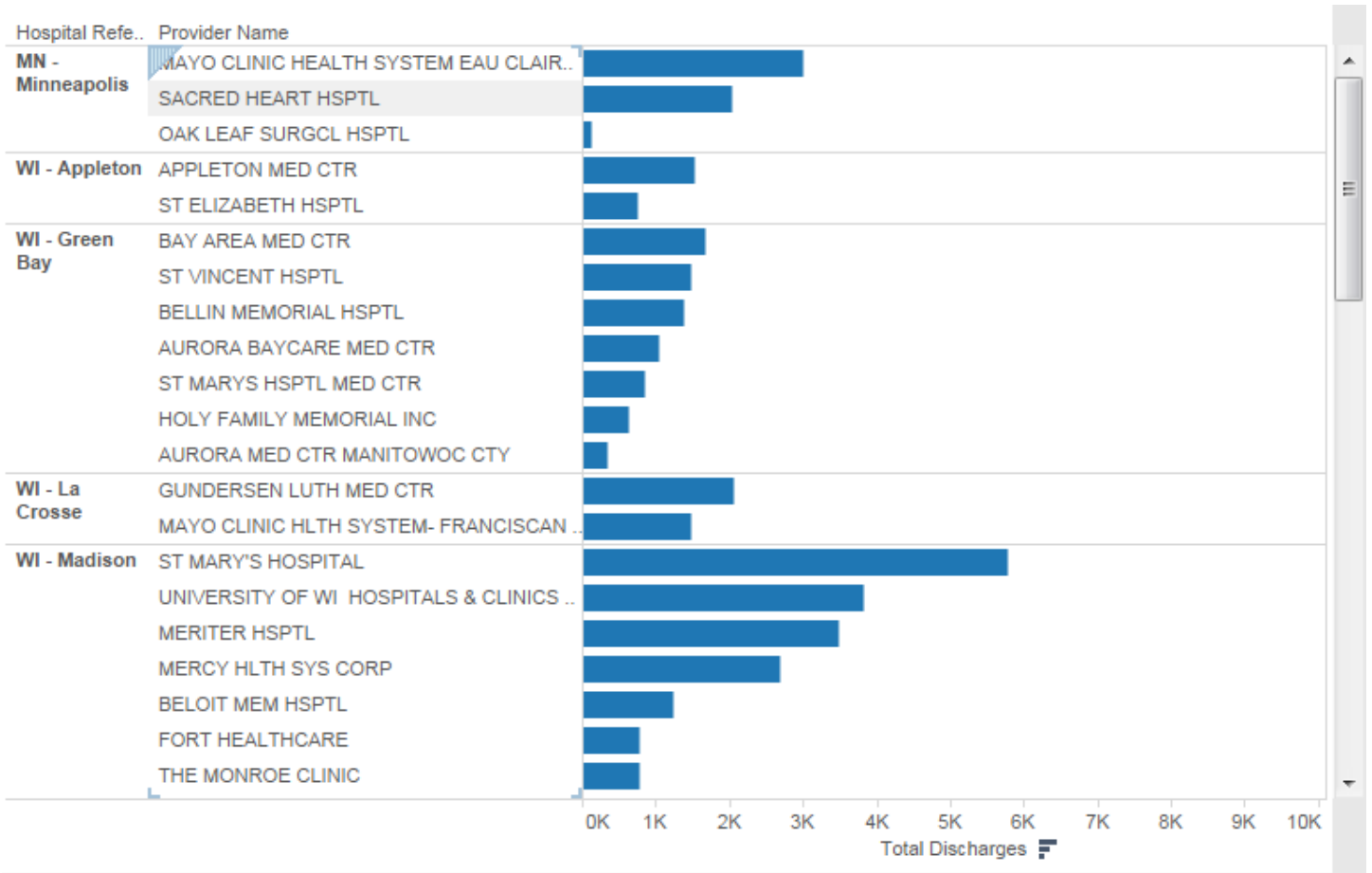
Sheet 7: Show a list of Wisconsin hospitals ranked by size terms of discharges (Hint: Filter by Provider State and sort the data).





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

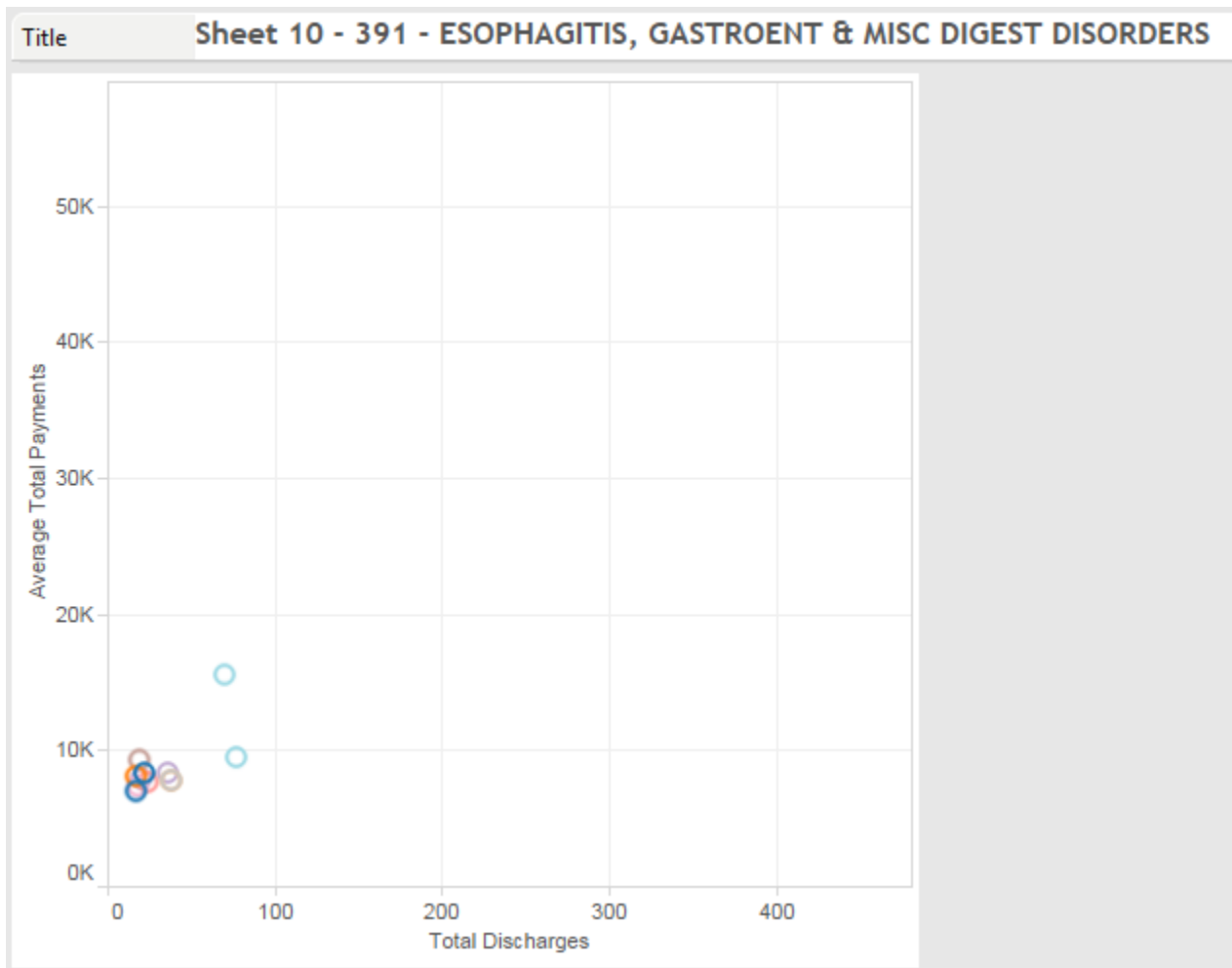
Sheet 9: Which DRGs have the highest average total payments in the Milwaukee referral region?

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

DRG Definition	Provider Name					
	ADVOCA..	AURORA ..	AURORA ..	AURORA ..	AURORA ..	AURC
191 - CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	0,979	0,007	0,070	0,100		
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).