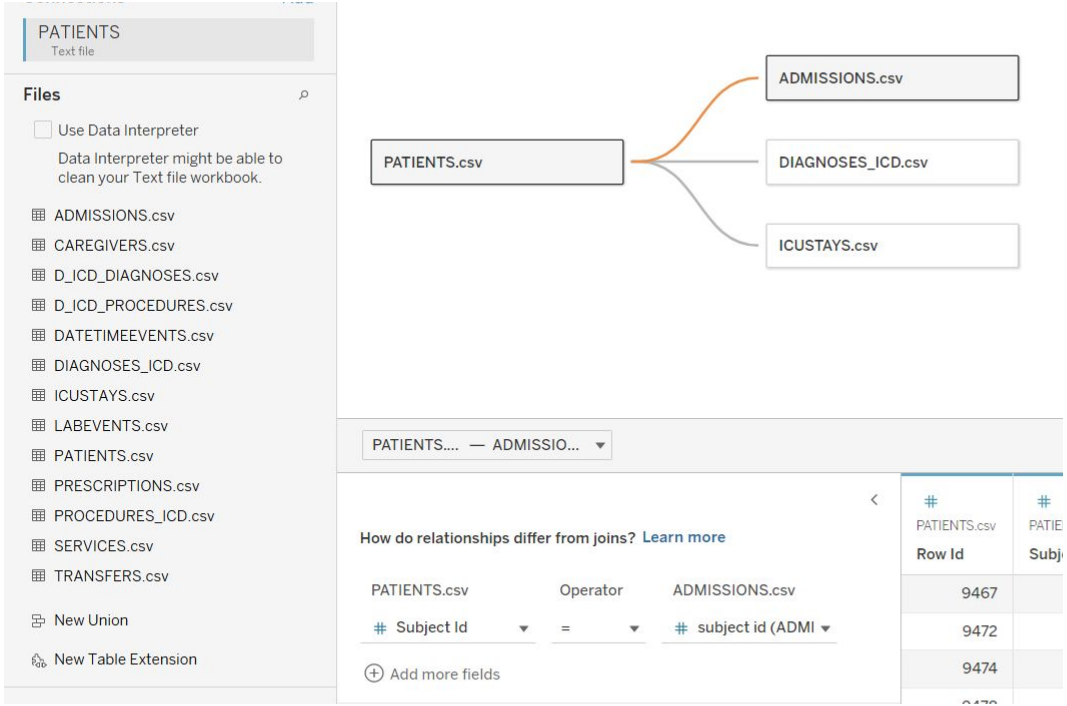
MIMIC III Tableau Visualization Assignment

Hari Priya Kandasamy

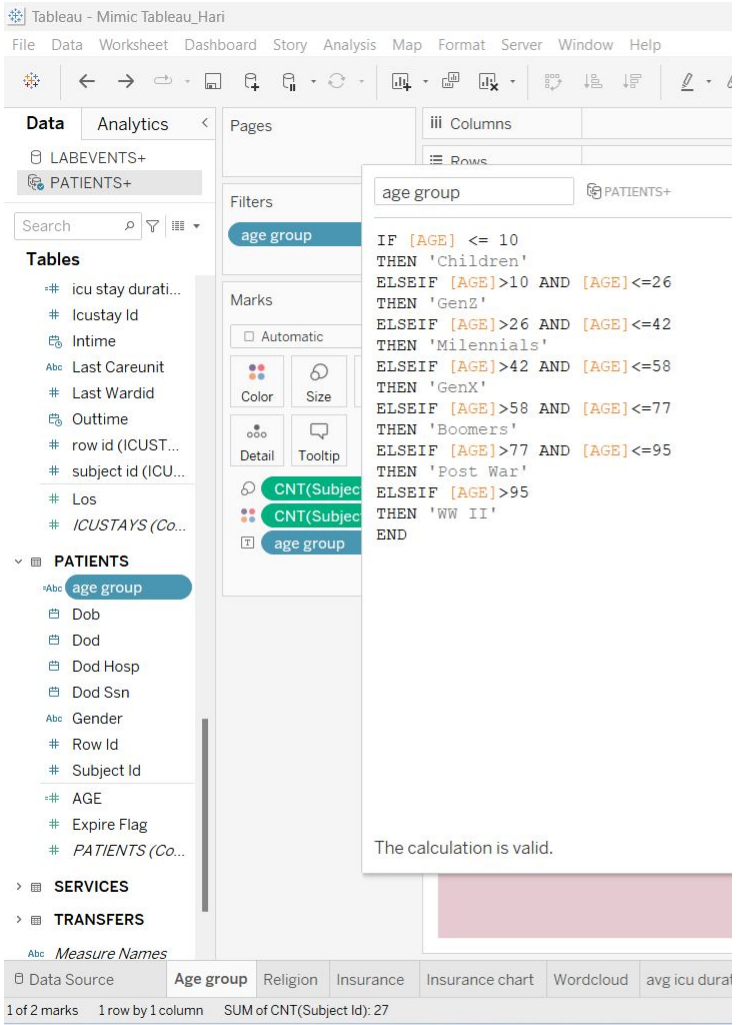
Importing Data and Connecting to Tableau

1. Download MIMIC III data from https://physionet.org
2. The tables Patients, Admissions, Procedures, Prescriptions, ICU Stays, Diagnosis, Lab events are connected to Tableau by clicking on Connect-> File -> Patients.csv
3. The tables are integrated by giving relations using the primary value in each table. In this case, it is Subject id. In procedures, it is row id.



Creating Calculated fields

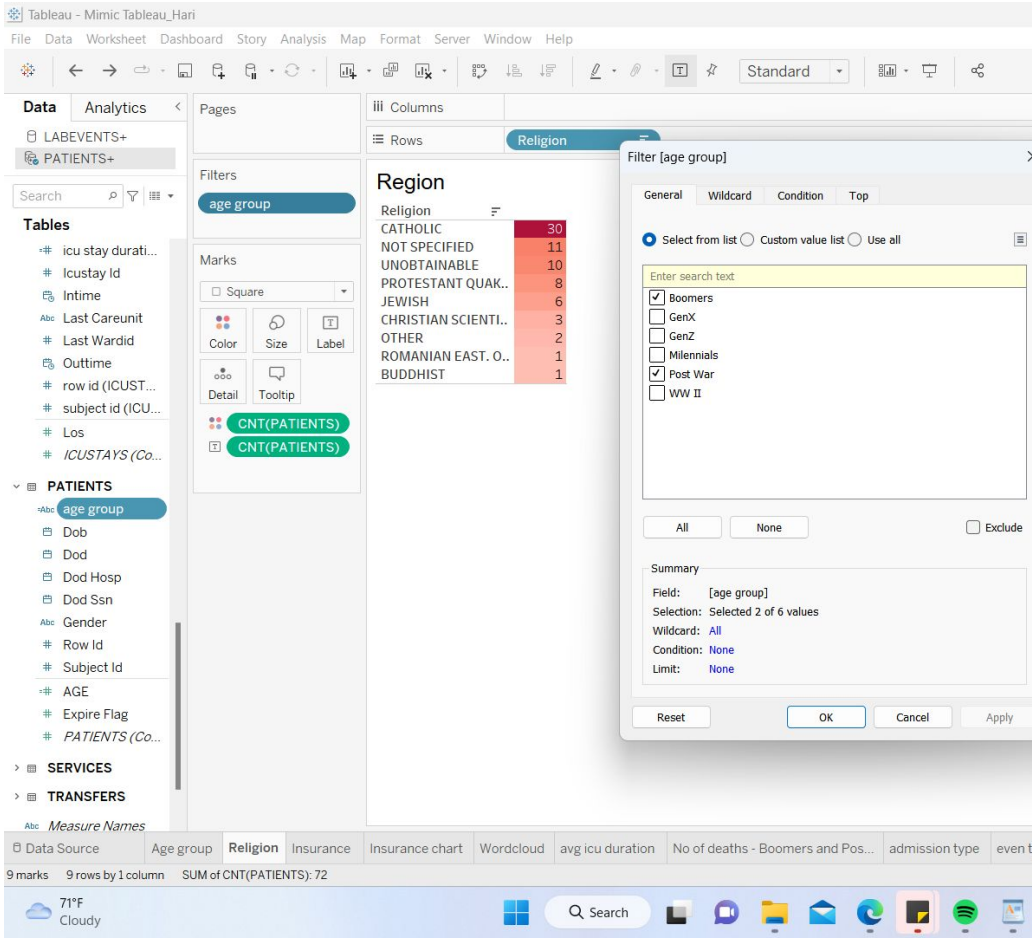
After importing the data,create a calculated field called Age by right clicking on patients.csv and select “Create Calculated field”. A tab will open. Follow the figure on the right to create the field. Here, I have divided the patients into different age groups.



Creating filters

Now I am going to use the calculated field “Age” to filter out age groups less than 58 (i.e) considering only Boomers generation or older people for the purpose of this project as they are the age group of people with significant amount of diseases as they get older.

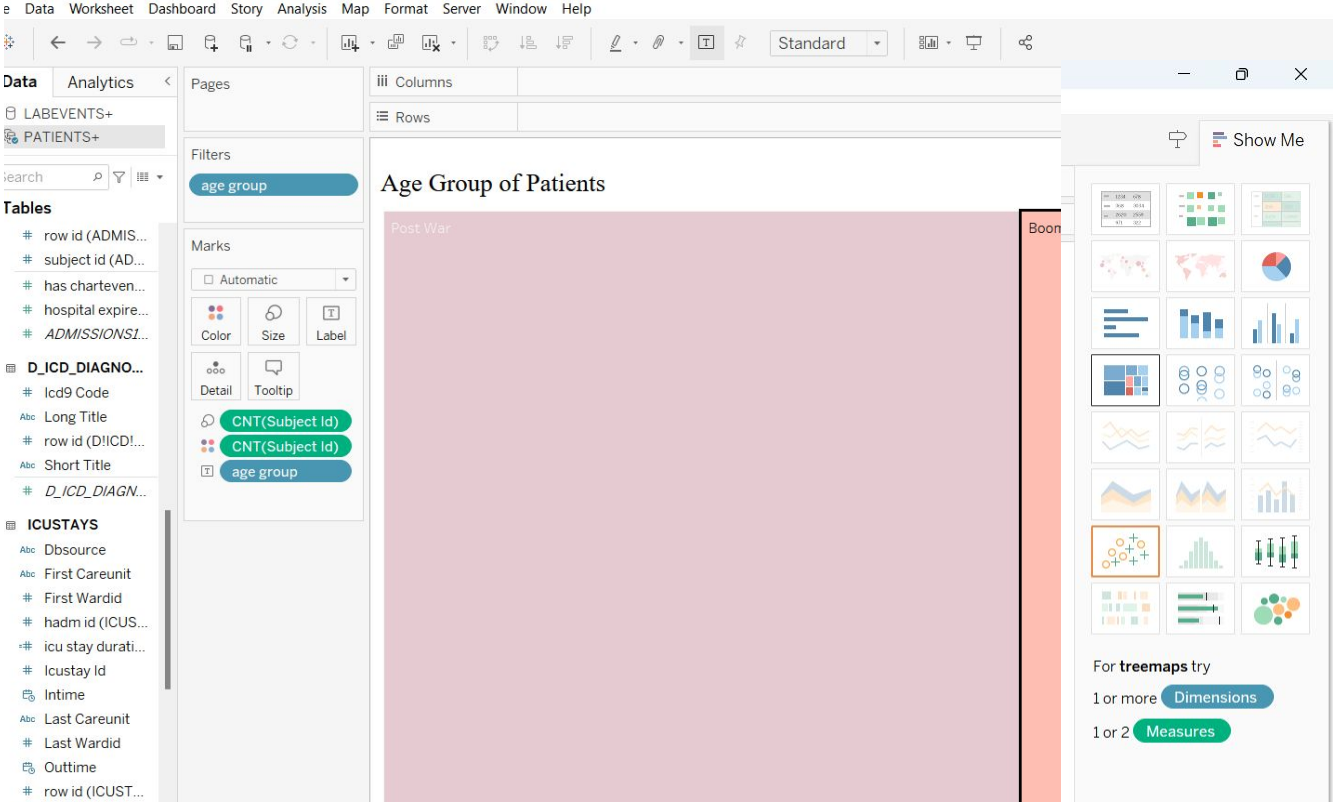
It is done by dragging “Age” to the “Filters” Tab on the left and selecting only “Boomers” and “Post war”



Age

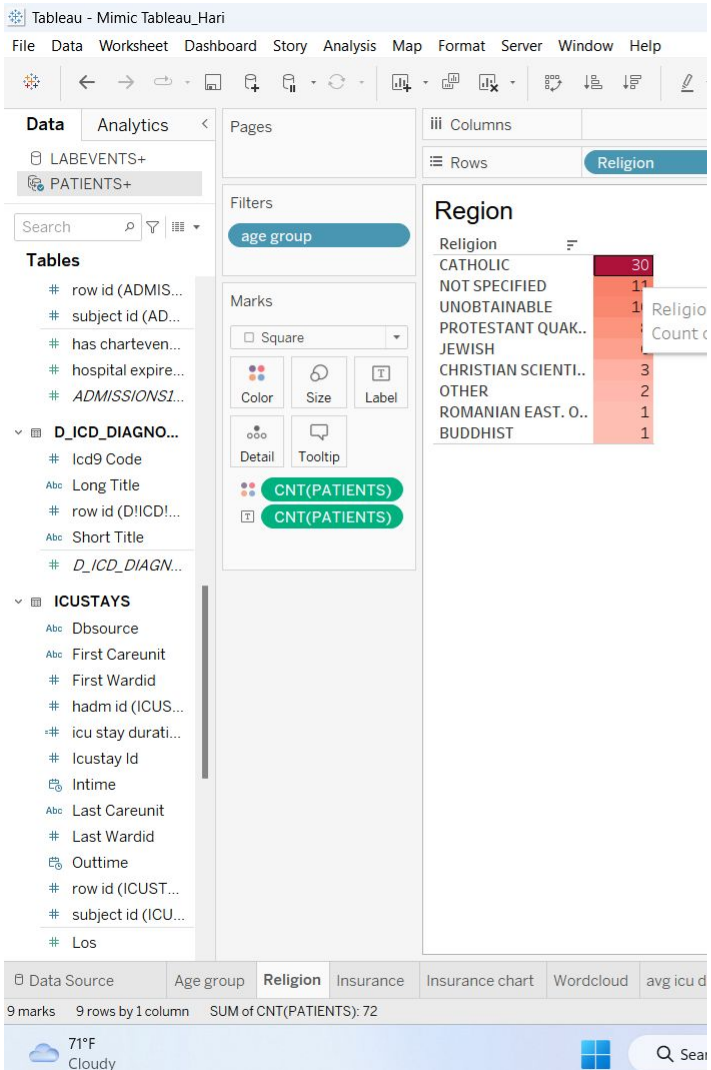
Now drag “Subject Id” from Patients to the Marks tab.

And then click on “Show Me” on the top right corner and select “tree maps”



Finding Religion

The next step is to create a table using the SHOW ME tab for finding no of patients according to religion.



Finding what type of Insurance do Boomers have in Majority

Drag Insurance into Columns Tab and age group into rows tab to have a look at the types of insurance held by Boomers and Post War born people. The color can be changed by clicking color under Marks. Tooltip can also be added by clicking on Tooltip and then using the field names for creating a tooltip with inferences as described below.

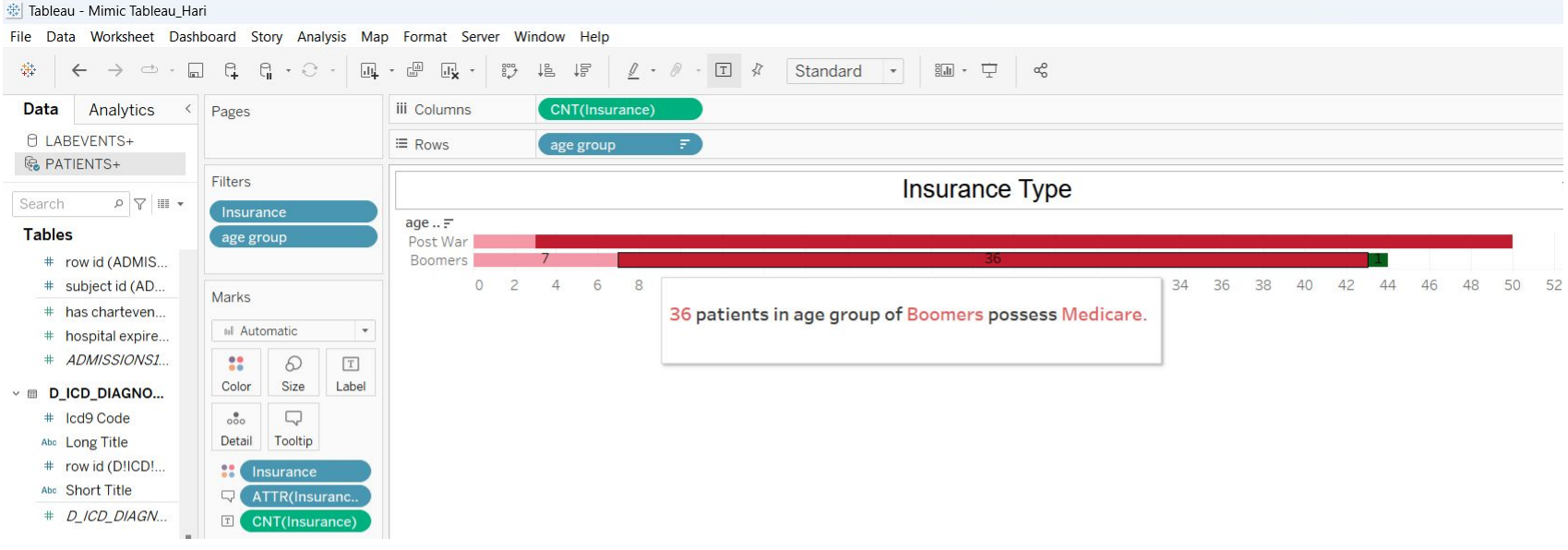


Tableau - Mimic Tableau_Hari

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Fit Width | Show Me

Data | Analytics

LABEVENTS+
PATIENTS+

Search

Tables

- row id (ADMIS...
- subject id (AD...
- has charteven...
- hospital expire...
- *ADMISSIONS1...*

D_ICD_DIAGNO...
- Icd9 Code
- Long Title
- row id (D!ICD!...
- Short Title
- *D_ICD_DIAGN...*

ICUSTAYS
- Dbsource
- First Careunit
- First Wardid
- hadm id (ICUS...
- icu stay durati...
- Icustay Id
- Intime
- Last Careunit
- Last Wardid
- Outtime
- row id (ICUST...
- subject id (ICU...
- Los

Pages

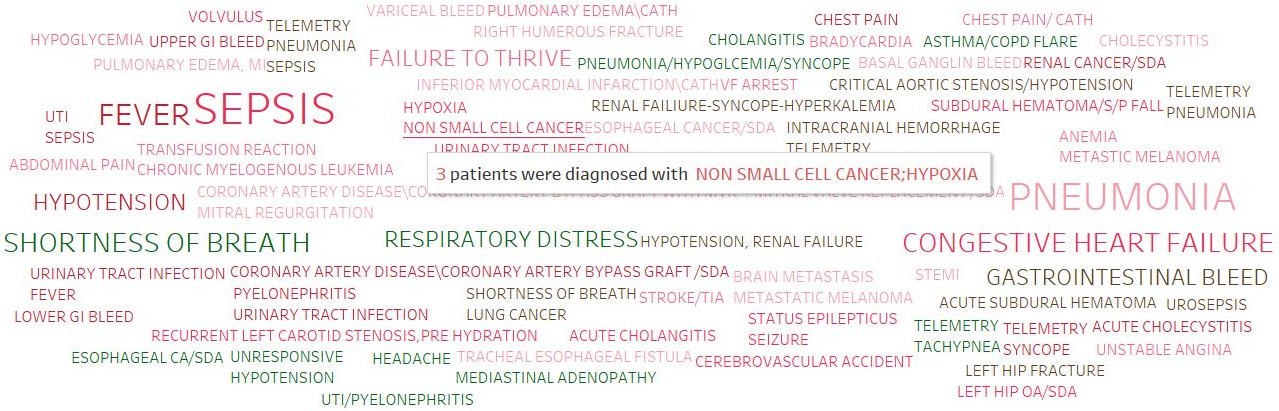
Filters
- age group

Marks
- Text
- Color | Size | Text
- Detail | Tooltip
- AGG(count dia..
- ATTR(Diagnosi..
- Diagnosis - 拆..
- Diagnosis - 拆..
- Diagnosis - 拆..
- Diagnosis

Columns

Rows

High Frequency Disease among Boomers



Diagnosis
- NON SMALL CELL C..
- PNEUMONIA
- PNEUMONIA;TELE..
- PNEUMONIA/HYPO..
- PULMONARY EDE..
- PULMONARY EDE..
- RECURRENT LEFT C..
- RENAL CANCER/SDA
- RENAL FAILIURE-S..
- RESPIRATORY DIS..
- RIGHT HUMEROUS ..
- SEIZURE;STATUS E..
- SEPSIS
- SEPSIS; UTI
- SEPSIS;PNEUMONI..
- SHORTNESS OF BR..
- STEMI;
- STROKE/TIA
- SUBDURAL HEMAT..
- SYNCOPE;TELEME..
- SYNCOPE;TELEME..
- TACHYPNEA;TELE..
- TRACHEAL ESOPH..
- UNSTABLE ANGINA
- UPPER GI BLEED
- URINARY TRACT IN..
- UROSEPSIS
- UTI/PYELONEPHRI..
- VARICEAL BLEED
- VF ARREST
- VOLVULUS

Highlight ATTR(Diagnos...
CHEST PAIN

Data Source | Age group | Religion | Insurance | Insurance chart | Wordcloud | avg icu duration | No of deaths - Boomers and Pos... | admission type | even type | icu duration | icu duration (2) | disease duration | Dashboard health (2) | Sheet 1

69 marks | 1 row by 1 column | SUM of AGG(count diagnosis): 282

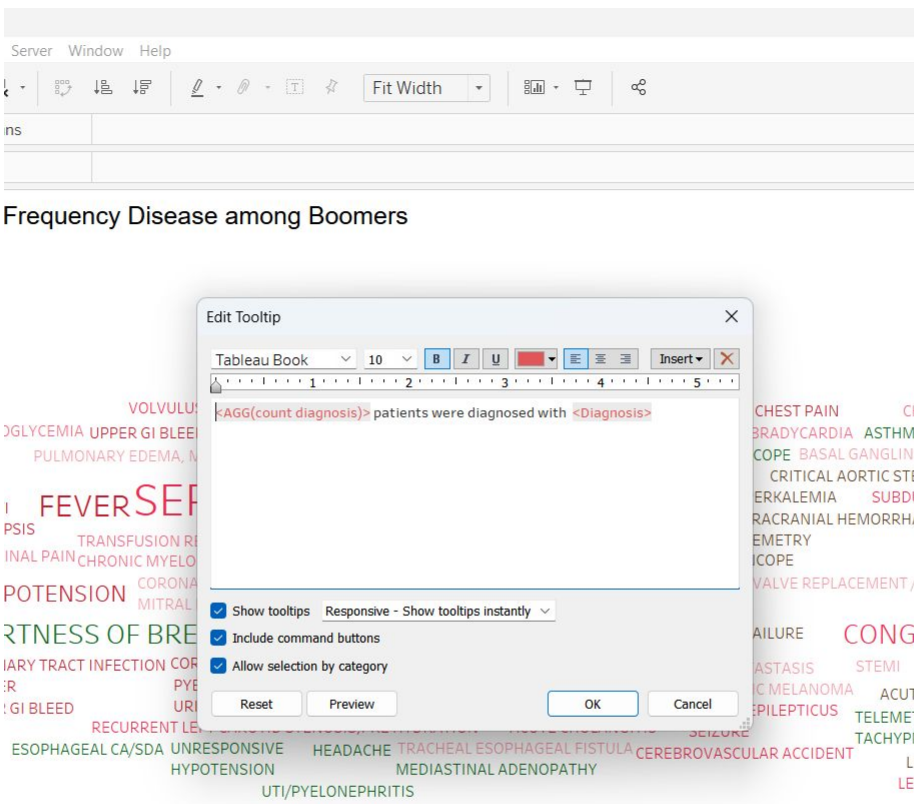
71°F Cloudy

Search

10:52 PM 2/15/2023

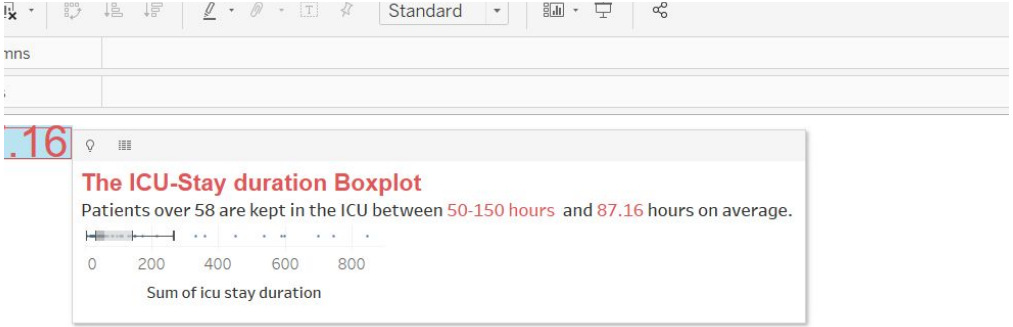
Creating Custom Tooltip

To insert results in tooltip, you can use the field within <> and include sentences along with the field. After creating a tooltip, You need to hover over the charts to see the results. This can save space.

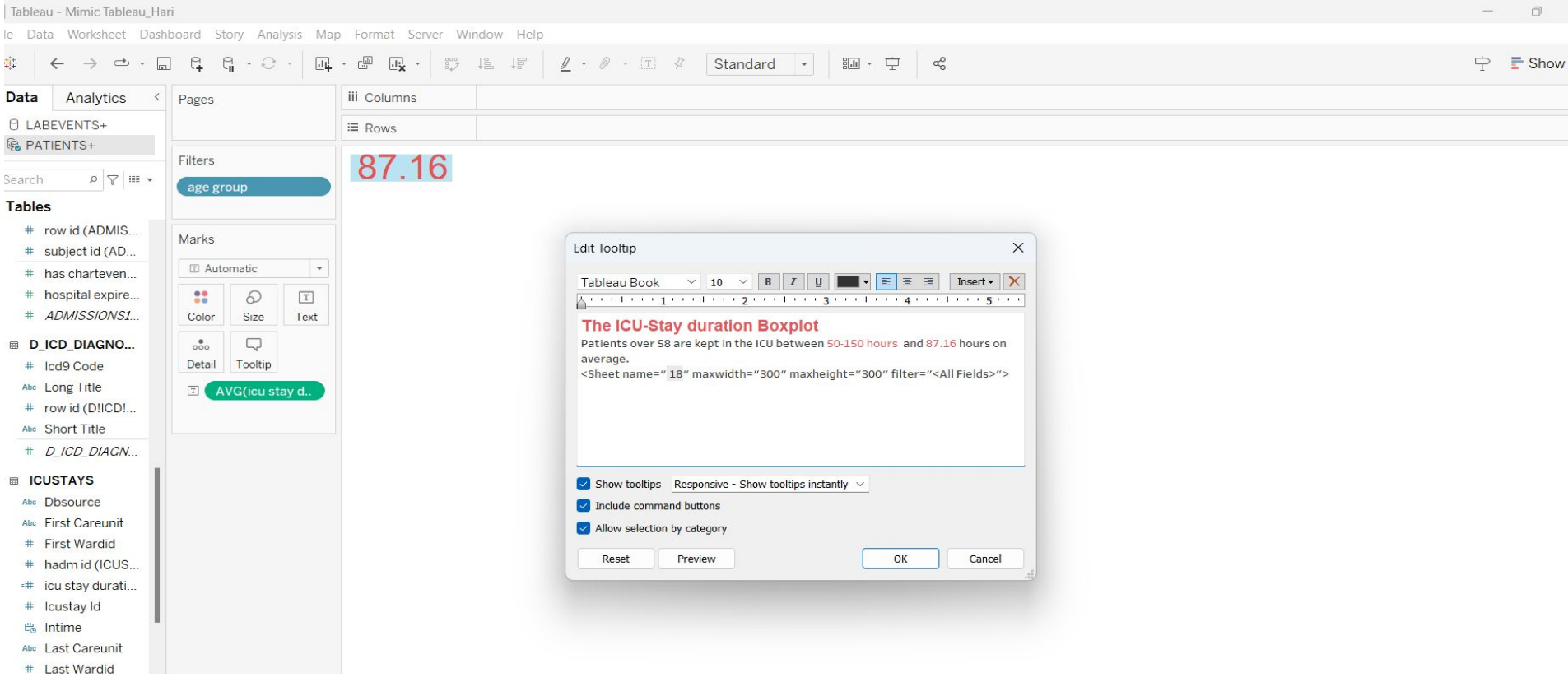


Adding charts inside Tooltip

I found the average duration of stay in ICUs by Boomers and Post War using Box plots by using the range, min and max values to create the plot. The field used was Number of hours stayed. To save space and be more clear about the result derived, I displayed the boxplot inside the Toolkit. So only if we hover over the number, the boxplot will be shown. The method to create this is given in the next slide.



The sheet number of the results of Boxplot should be specified using the command below.



Creating pie charts

Pie charts are more straightforward and is created by dragging the category field (i.e) admission type into rows and find the sum of each type of field. Drag subject id - unique id for identifying patient into the Marks Tab and choose Pie chart from the charts.

The same method should be followed for event type, insurance type charts.

Tableau - Mimic Tableau_Hari

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Entire View | Show Me

Data | Analytics

LABEVENTS+
PATIENTS+

Search

Tables

- row id (ADMIS...
- subject id (AD...
- has charteven...
- hospital expire...
- *ADMISSIONS1...*

D_ICD_DIAGNO...

- Icd9 Code
- Long Title
- row id (D!ICD!...
- Short Title
- *D_ICD_DIAGN...*

ICUSTAYS

- Dbsource
- First Careunit
- First Wardid
- hadm id (ICUS...
- icu stay durati...
- Icustay Id
- Intime
- Last Careunit
- Last Wardid
- Outtime
- row id (ICUST...
- subject id (ICU...
- Los

Pages

Filters

age group

Marks

All

SUM(0)

Pie

Color | Size | Label | Detail | Tooltip | Angle

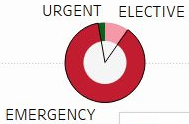
Admission Type
CNT(Subject Id)
CNT(Subject Id)
Admission Type

SUM(0)

Columns

Rows SUM(0) SUM(0)

Majority of the patients have Emergency Admission Type



63 patients over 58 yearas have EMERGENCY admission type.

Admission Type
ELECTIVE
EMERGENCY
URGENT

CNT(Subject Id)
72

Data Source | Age group | Religion | Insurance | Insurance chart | Wordcloud | avg icu duration | No of deaths - Boomers and Pos... | admission type | even type | icu duration | icu duration (2) | disease duration | Dashboard health (2) | Sheet 1

4 marks 1 row by 1 column SUM(0): 0

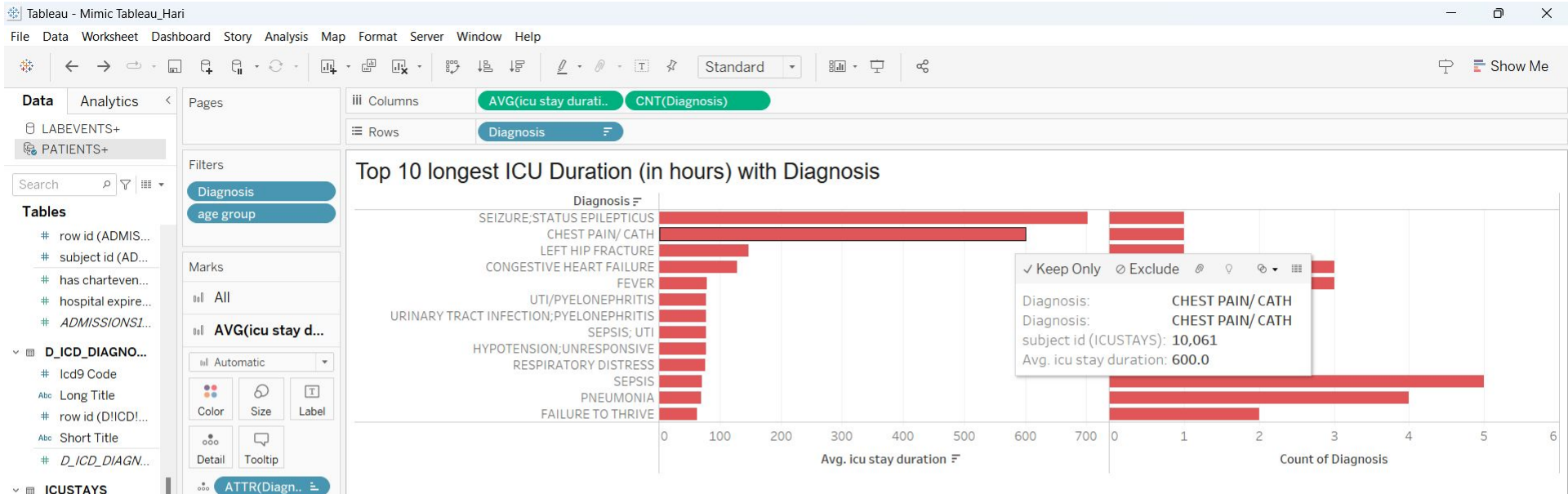
71°F Cloudy

Search

10:54 PM 2/15/2023

Creating Bar charts

Bar charts are used for finding the top 10 longest and shortest duration stays. AVG(duration stay) and CNT(duration stay) is dragged to columns. Diagnosis is dragged to rows. It is sorted in the descending order.



Finding time period of stay for prevalent diseases

Common disease among patients is found by using admitted time and discharged time difference and dragging into columns.

While drag Diagnosis and Subject id to rows.

The filter agegroup(Boomer, Post War) should be applied to all worksheets.

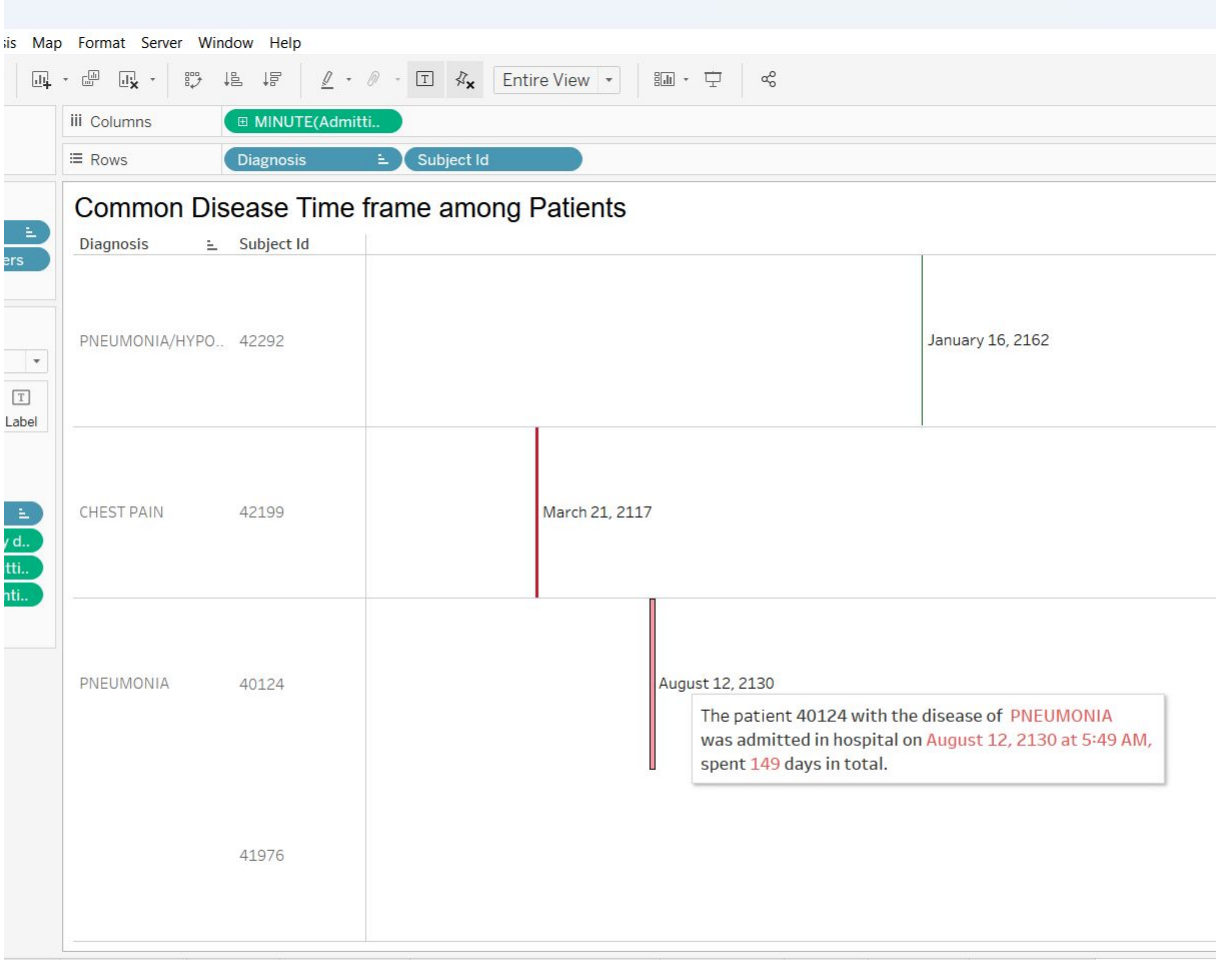


Tableau - Mimic Tableau_Hari

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Entire View | Show Me

Data | Analytics

LABEVENTS+
PATIENTS+

Search

Tables

- icu stay durati...
- Icustay Id
- Intime
- Last Careunit
- Last Wardid
- Outtime
- row id (ICUST...
- subject id (ICU...
- Los
- *ICUSTAYS (Co...*

PATIENTS

- age group
- Dob
- Dod
- Dod Hosp
- Dod Ssn
- Gender
- Row Id
- Subject Id
- AGE
- Expire Flag
- *PATIENTS (Co...*

SERVICES

TRANSFERS

Measure Names

Pages

Filters
- Diagnosis
- age group: Boomers

Marks
Automatic
Color | Size | Label | Detail | Tooltip
- Diagnosis
- SUM(icu stay d..
- DAY(Admitti..
- DAY(Deathti..

Columns: MINUTE(Admitti..

Rows: Diagnosis | Subject Id

Common Disease Time frame among Patients

Diagnosis	Subject Id
PNEUMONIA/HYPO..	42292
CHEST PAIN	42199
PNEUMONIA	40124
	41976

January 16, 2162

Edit Tooltip

Tableau Book | 10 | B I U | Insert

The patient <Subject Id> with the disease of <Diagnosis>
was admitted in hospital on <MINUTE(Admittime)>,
spent <SUM(icu stay duration)> days in total.

Show tooltips | Responsive - Show tooltips instantly
Include command buttons
Allow selection by category

Reset | Preview | OK | Cancel

age group
- (All)
- Boomers
- Post War
- WW II

Diagnosis
- SEPSIS;PNEUMO...
- SEPSIS;TELEMET...
- SHORTNESS OF B...
- STATUS POST MO...
- STEMI;
- STROKE/TIA
- SUBDURAL HEMA...
- SYNCOPE;TELEM...
- SYNCOPE;TELEM...
- TACHYPNEA;TELE...
- TRACHEAL ESOP...
- TRACHEAL STEN...
- UNSTABLE ANGINA
- UPPER GI BLEED
- URINARY TRACT I...
- UROSEPSIS
- UTI/PYELONEPHR...
- VARICEAL BLEED
- VF ARREST
- VOLVULUS

Diagnosis
- PNEUMONIA/HYPOGL...
- CHEST PAIN
- PNEUMONIA

Data Source | Age group | Religion | Insurance | Insurance chart | Wordcloud | avg icu duration | No of deaths - Boomers and Pos... | admission type | even type | icu duration | icu duration (2) | disease duration | Dashboard health (2) | Sheet 1

7 marks | 4 rows by 1 column | SUM(icu stay duration): 4.984

71°F Cloudy

Search

10:58 PM 2/15/2023

Final Dashboard