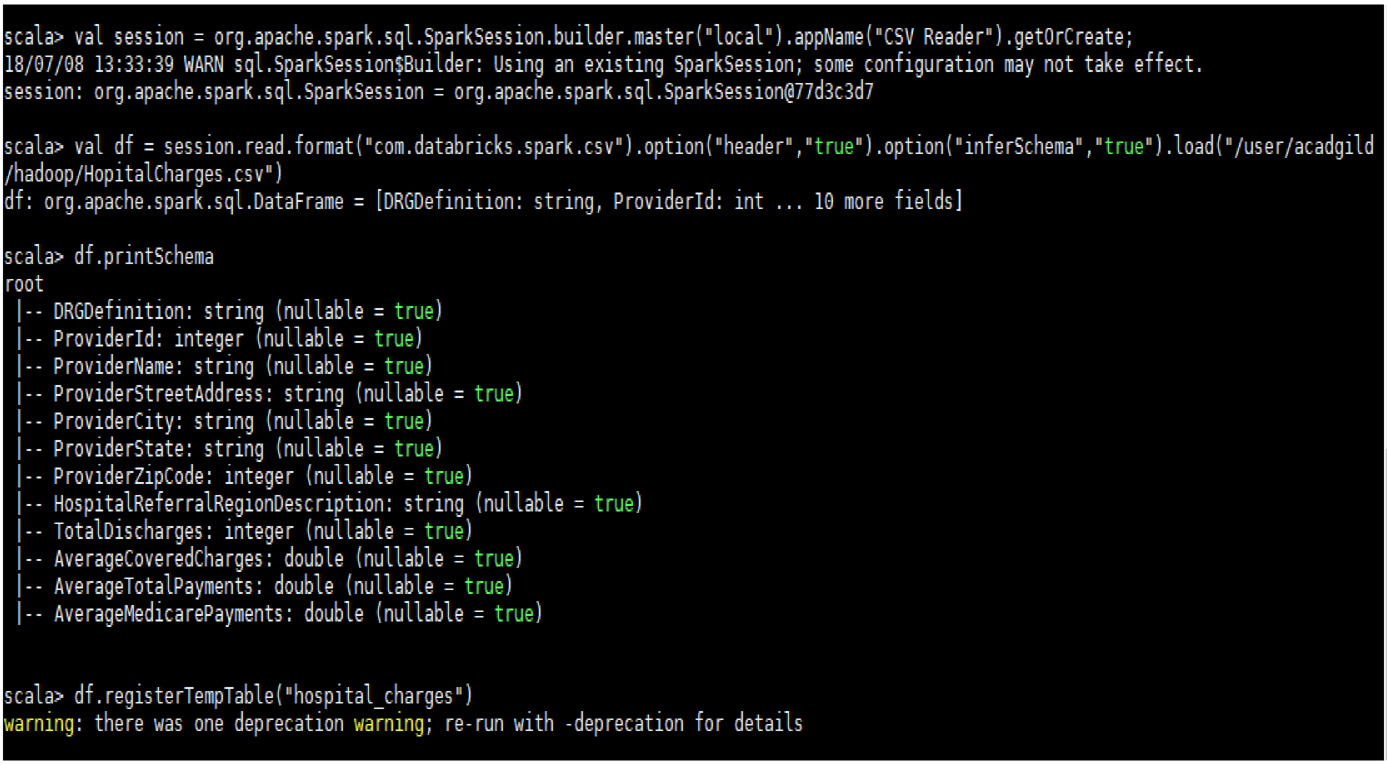
Session 22: Interview Preparation-II

Assignment Case Study IV- Hospital Analysis In US

Objective -1

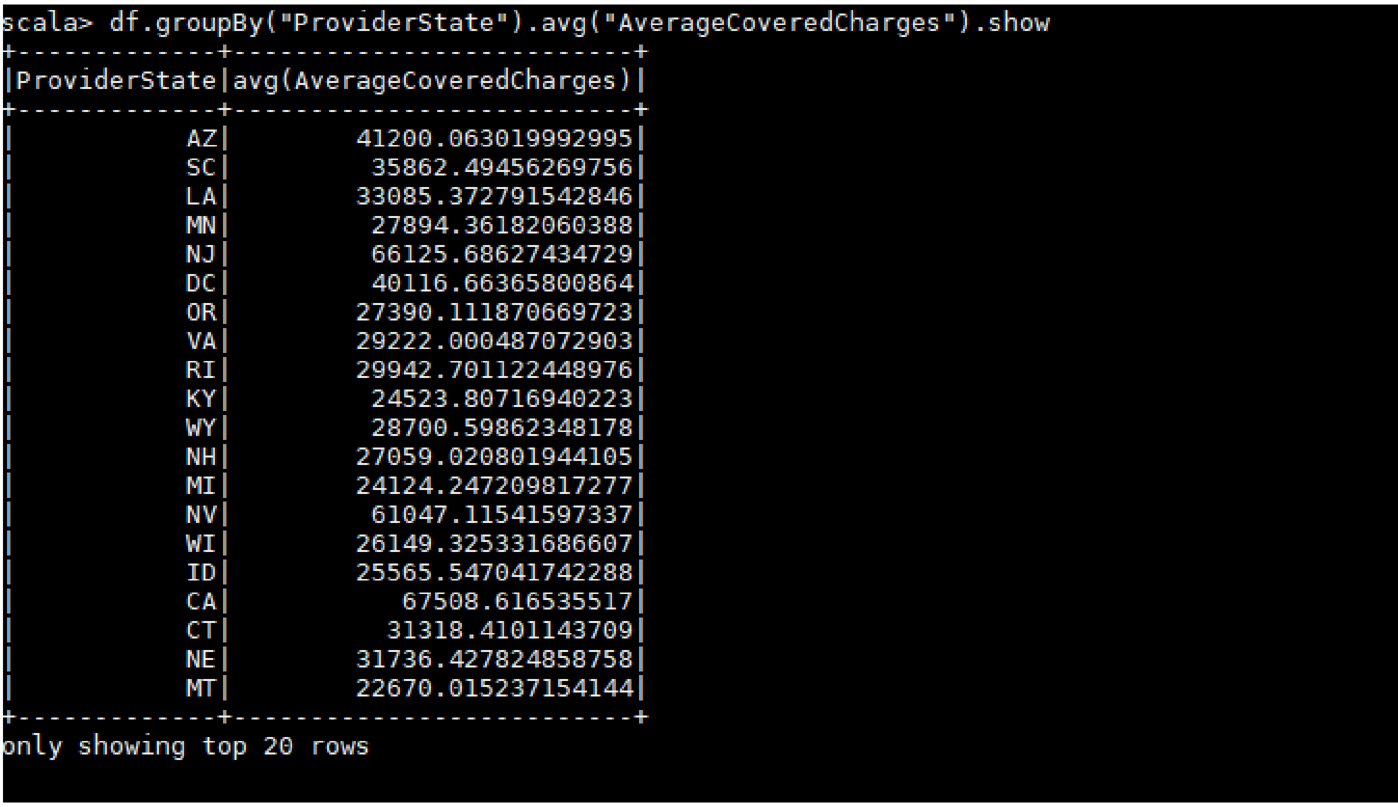
1. Load file into spark, we can directly load csv file into SparkSql context and create temporary table as :



```
scala> val session = org.apache.spark.sql.SparkSession.builder.master("local").appName("CSV Reader").getOrCreate;
18/07/08 13:33:39 WARN sql.SparkSession$Builder: Using an existing SparkSession; some configuration may not take effect.
session: org.apache.spark.sql.SparkSession = org.apache.spark.sql.SparkSession@77d3c3d7

scala> val df = session.read.format("com.databricks.spark.csv").option("header","true").option("inferSchema","true").load("/user/acadgild
/hadoop/HopitalCharges.csv")
df: org.apache.spark.sql.DataFrame = [DRGDefinition: string, ProviderId: int ... 10 more fields]

scala> df.printSchema
root
 |-- DRGDefinition: string (nullable = true)
 |-- ProviderId: integer (nullable = true)
 |-- ProviderName: string (nullable = true)
 |-- ProviderStreetAddress: string (nullable = true)
 |-- ProviderCity: string (nullable = true)
 |-- ProviderState: string (nullable = true)
 |-- ProviderZipCode: integer (nullable = true)
 |-- HospitalReferralRegionDescription: string (nullable = true)
 |-- TotalDischarges: integer (nullable = true)
 |-- AverageCoveredCharges: double (nullable = true)
 |-- AverageTotalPayments: double (nullable = true)
 |-- AverageMedicarePayments: double (nullable = true)


scala> df.registerTempTable("hospital_charges")
warning: there was one deprecation warning; re-run with -deprecation for details
```

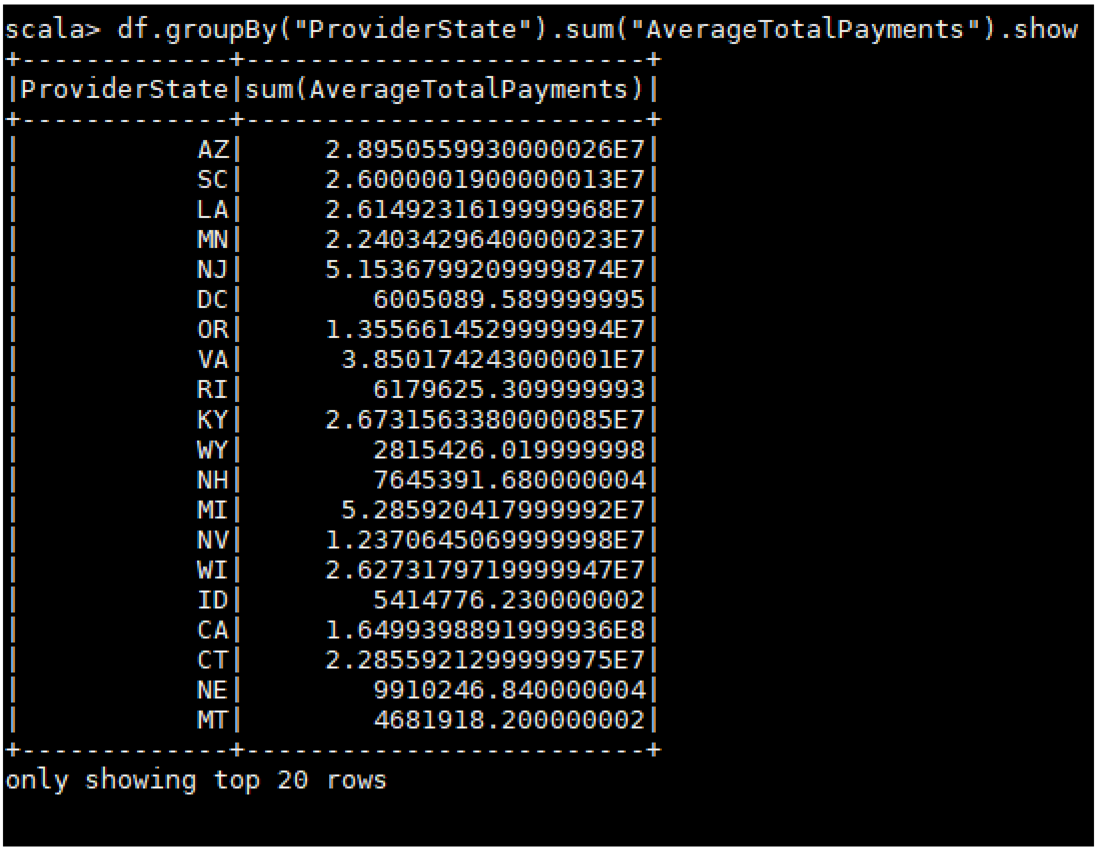
Objective -2

What is the average amount of AverageCoveredCharges per state



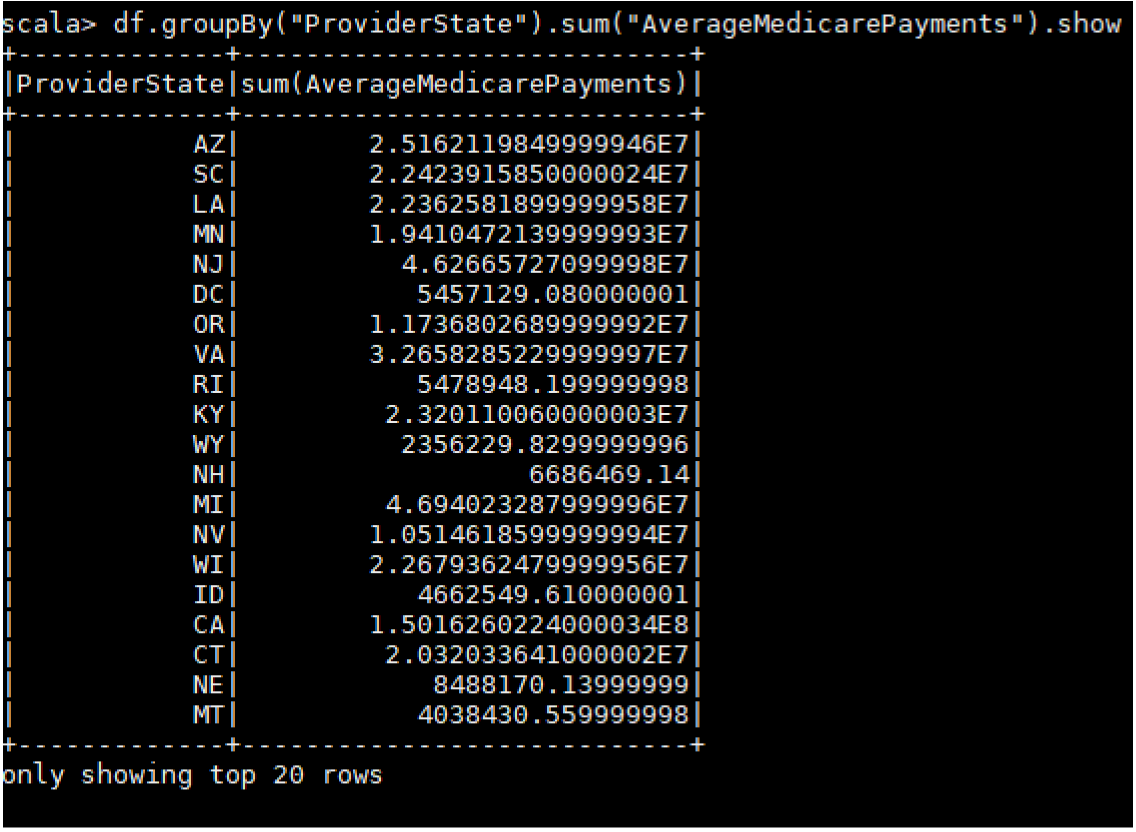
```
scala> df.groupBy("ProviderState").avg("AverageCoveredCharges").show
+-------------+--------------------------+
|ProviderState|avg(AverageCoveredCharges)|
+-------------+--------------------------+
|           AZ|        41200.063019992995|
|           SC|         35862.49456269756|
|           LA|        33085.372791542846|
|           MN|         27894.36182060388|
|           NJ|         66125.68627434729|
|           DC|         40116.66365800864|
|           OR|        27390.111870669723|
|           VA|        29222.000487072903|
|           RI|        29942.701122448976|
|           KY|         24523.80716940223|
|           WY|         28700.59862348178|
|           NH|        27059.020801944105|
|           MI|        24124.247209817277|
|           NV|         61047.11541597337|
|           WI|        26149.325331686607|
|           ID|        25565.547041742288|
|           CA|           67508.616535517|
|           CT|          31318.4101143709|
|           NE|        31736.427824858758|
|           MT|        22670.015237154144|
+-------------+--------------------------+
only showing top 20 rows
```

find out the AverageTotalPayments charges per state



```
scala> df.groupBy("ProviderState").sum("AverageTotalPayments").show
+-------------+-------------------------+
|ProviderState|sum(AverageTotalPayments)|
+-------------+-------------------------+
|           AZ|     2.8950559930000026E7|
|           SC|     2.6000001900000013E7|
|           LA|     2.6149231619999968E7|
|           MN|     2.2403429640000023E7|
|           NJ|     5.1536799209999874E7|
|           DC|        6005089.589999995|
|           OR|     1.3556614529999994E7|
|           VA|      3.850174243000001E7|
|           RI|        6179625.309999993|
|           KY|     2.6731563380000085E7|
|           WY|        2815426.019999998|
|           NH|        7645391.680000004|
|           MI|      5.285920417999992E7|
|           NV|     1.2370645069999998E7|
|           WI|     2.6273179719999947E7|
|           ID|        5414776.230000002|
|           CA|     1.6499398891999936E8|
|           CT|     2.2855921299999975E7|
|           NE|        9910246.840000004|
|           MT|        4681918.200000002|
+-------------+-------------------------+
only showing top 20 rows
```

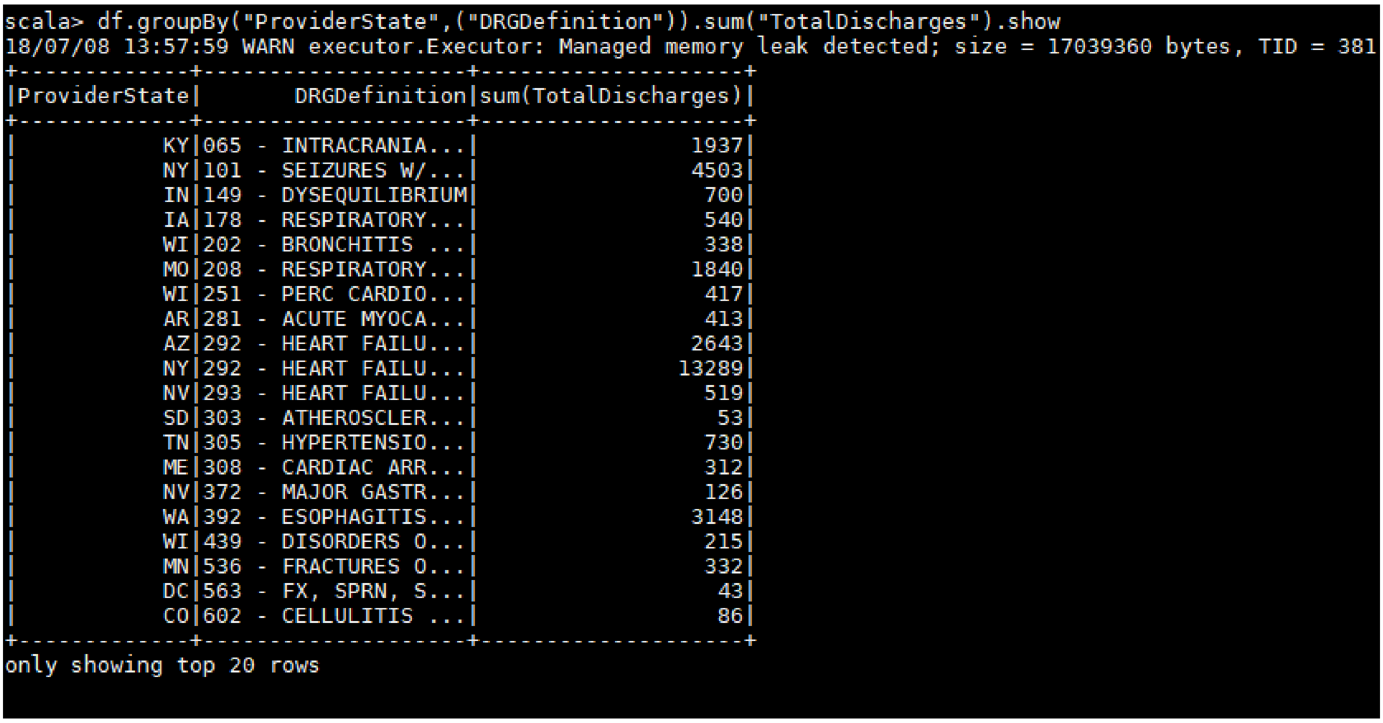
find out the AverageMedicarePayments charges per state.



```
scala> df.groupBy("ProviderState").sum("AverageMedicarePayments").show
+-------------+----------------------------+
|ProviderState|sum(AverageMedicarePayments)|
+-------------+----------------------------+
|           AZ|        2.5162119849999946E7|
|           SC|        2.2423915850000024E7|
|           LA|        2.2362581899999958E7|
|           MN|        1.9410472139999993E7|
|           NJ|          4.62665727099998E7|
|           DC|           5457129.080000001|
|           OR|        1.1736802689999992E7|
|           VA|        3.2658285229999997E7|
|           RI|           5478948.199999998|
|           KY|         2.320110060000003E7|
|           WY|          2356229.8299999996|
|           NH|                  6686469.14|
|           MI|         4.694023287999996E7|
|           NV|        1.0514618599999994E7|
|           WI|        2.2679362479999956E7|
|           ID|           4662549.610000001|
|           CA|        1.5016260224000034E8|
|           CT|         2.032033641000002E7|
|           NE|            8488170.13999999|
|           MT|           4038430.559999998|
+-------------+----------------------------+
only showing top 20 rows
```

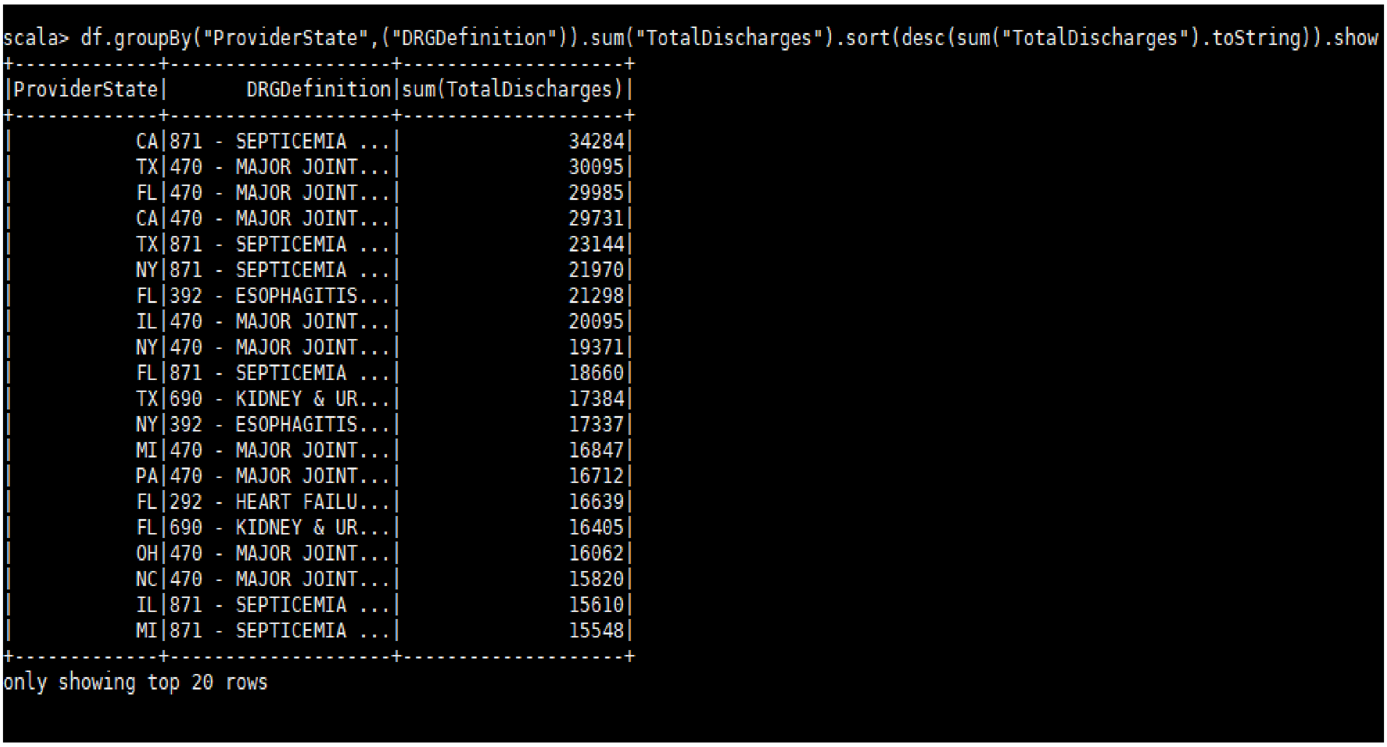
Objective - 3

Find out the total number of Discharges per state and for each disease



```
scala> df.groupBy("ProviderState",("DRGDefinition")).sum("TotalDischarges").show
18/07/08 13:57:59 WARN executor.Executor: Managed memory leak detected; size = 17039360 bytes, TID = 381
+-------------+--------------------+--------------------+
|ProviderState|       DRGDefinition|sum(TotalDischarges)|
+-------------+--------------------+--------------------+
|           KY|065 - INTRACRANIA...|                1937|
|           NY|101 - SEIZURES W/...|                4503|
|           IN|149 - DYSEQUILIBRIUM|                 700|
|           IA|178 - RESPIRATORY...|                 540|
|           WI|202 - BRONCHITIS ...|                 338|
|           MO|208 - RESPIRATORY...|                1840|
|           WI|251 - PERC CARDIO...|                 417|
|           AR|281 - ACUTE MYOCA...|                 413|
|           AZ|292 - HEART FAILU...|                2643|
|           NY|292 - HEART FAILU...|               13289|
|           NV|293 - HEART FAILU...|                 519|
|           SD|303 - ATHEROSCLER...|                  53|
|           TN|305 - HYPERTENSIO...|                 730|
|           ME|308 - CARDIAC ARR...|                 312|
|           NV|372 - MAJOR GASTR...|                 126|
|           WA|392 - ESOPHAGITIS...|                3148|
|           WI|439 - DISORDERS O...|                 215|
|           MN|536 - FRACTURES O...|                 332|
|           DC|563 - FX, SPRN, S...|                  43|
|           CO|602 - CELLULITIS ...|                  86|
+-------------+--------------------+--------------------+
only showing top 20 rows
```

Sort the output in descending order of totalDischarges



```
scala> df.groupBy("ProviderState",("DRGDefinition")).sum("TotalDischarges").sort(desc(sum("TotalDischarges").toString)).show
+-------------+--------------------+--------------------+
|ProviderState|       DRGDefinition|sum(TotalDischarges)|
+-------------+--------------------+--------------------+
|           CA|871 - SEPTICEMIA ...|               34284|
|           TX|470 - MAJOR JOINT...|               30095|
|           FL|470 - MAJOR JOINT...|               29985|
|           CA|470 - MAJOR JOINT...|               29731|
|           TX|871 - SEPTICEMIA ...|               23144|
|           NY|871 - SEPTICEMIA ...|               21970|
|           FL|392 - ESOPHAGITIS...|               21298|
|           IL|470 - MAJOR JOINT...|               20095|
|           NY|470 - MAJOR JOINT...|               19371|
|           FL|871 - SEPTICEMIA ...|               18660|
|           TX|690 - KIDNEY & UR...|               17384|
|           NY|392 - ESOPHAGITIS...|               17337|
|           MI|470 - MAJOR JOINT...|               16847|
|           PA|470 - MAJOR JOINT...|               16712|
|           FL|292 - HEART FAILU...|               16639|
|           FL|690 - KIDNEY & UR...|               16405|
|           OH|470 - MAJOR JOINT...|               16062|
|           NC|470 - MAJOR JOINT...|               15820|
|           IL|871 - SEPTICEMIA ...|               15610|
|           MI|871 - SEPTICEMIA ...|               15548|
+-------------+--------------------+--------------------+
only showing top 20 rows
```