

Name: Yuhui Wang  
ID: 606332401

### Exercise1

Code:

```
libname npi "~/my_shared_file_links/u5338439";
proc contents data=npi.cms_providers_la;
run;

*1;
data cms_payment;
  set npi.cms_providers_la;
  keep npi total_drug_unique_benes total_drug_medicare_payment_amt;
run;

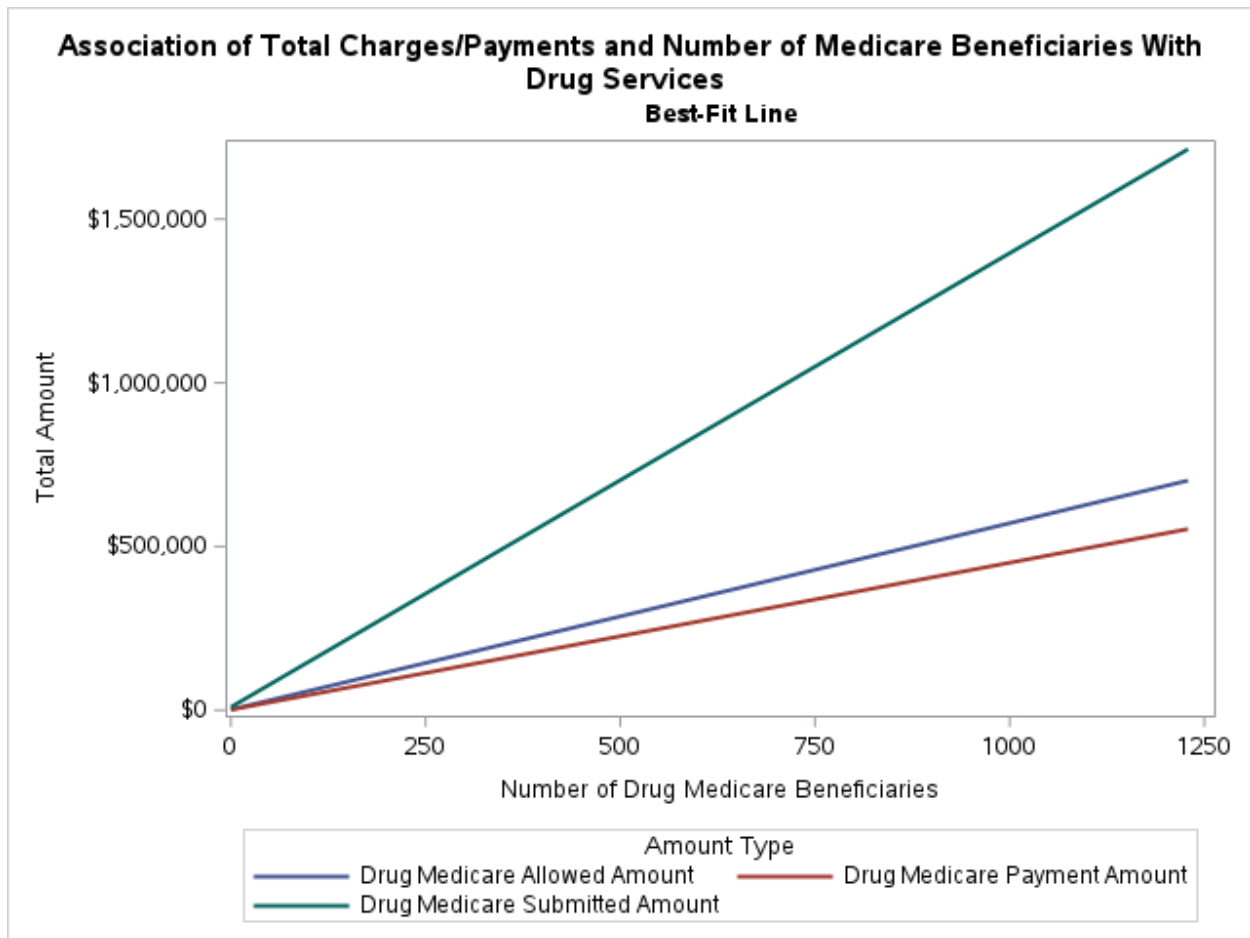
data cms_allowed;
  set npi.cms_providers_la;
  keep npi total_drug_unique_benes total_drug_medicare_allowed_amt;
run;

data cms_submitted;
  set npi.cms_providers_la;
  keep npi total_drug_unique_benes total_drug_submitted_chrg_amt;
run;

data cms_append;
  set cms_submitted (in=in_sub rename=(total_drug_submitted_chrg_amt = amount))
    cms_allowed (in=in_allow rename=(total_drug_medicare_allowed_amt = amount))
    cms_payment (in=in_pay rename=(total_drug_medicare_payment_amt = amount));
  if in_sub then amount_type = "Drug Medicare Submitted Amount";
  else if in_allow then amount_type = "Drug Medicare Allowed Amount";
  else if in_pay then amount_type = "Drug Medicare Payment Amount";
run;

proc sgplot data=cms_append;
  title1 "Association of Total Charges/Payments and Number of Medicare Beneficiaries With
Drug Services";
  title2 "Best-Fit Line";
  label amount_type = "Amount Type";
  reg y=amount x=total_drug_unique_benes / group=amount_type nomarkers;
  xaxis label="Number of Drug Medicare Beneficiaries";
  yaxis label="Total Amount";
  format amount dollar15.;
run;
```

Plot:



## Excercise2

Code:

```
*2;  
data adj_percent;  
set npf.cms_providers_la;  
beneficiary_cc_depr_percent=beneficiary_cc_depr_percent/100;  
beneficiary_cc_diab_percent=beneficiary_cc_diab_percent/100;  
beneficiary_cc_hypert_percent=beneficiary_cc_hypert_percent/100;  
beneficiary_cc_strk_percent=beneficiary_cc_strk_percent/100;  
beneficiary_cc_ost_percent=beneficiary_cc_ost_percent/100;  
run;
```

```
proc transpose  
data=adj_percent  
out=cms_long (rename=(Coll=percent_label_=disease_type))  
name=att;  
by npf beneficiary_average_age;  
var beneficiary_cc_depr_percent  
beneficiary_cc_diab_percent
```

```

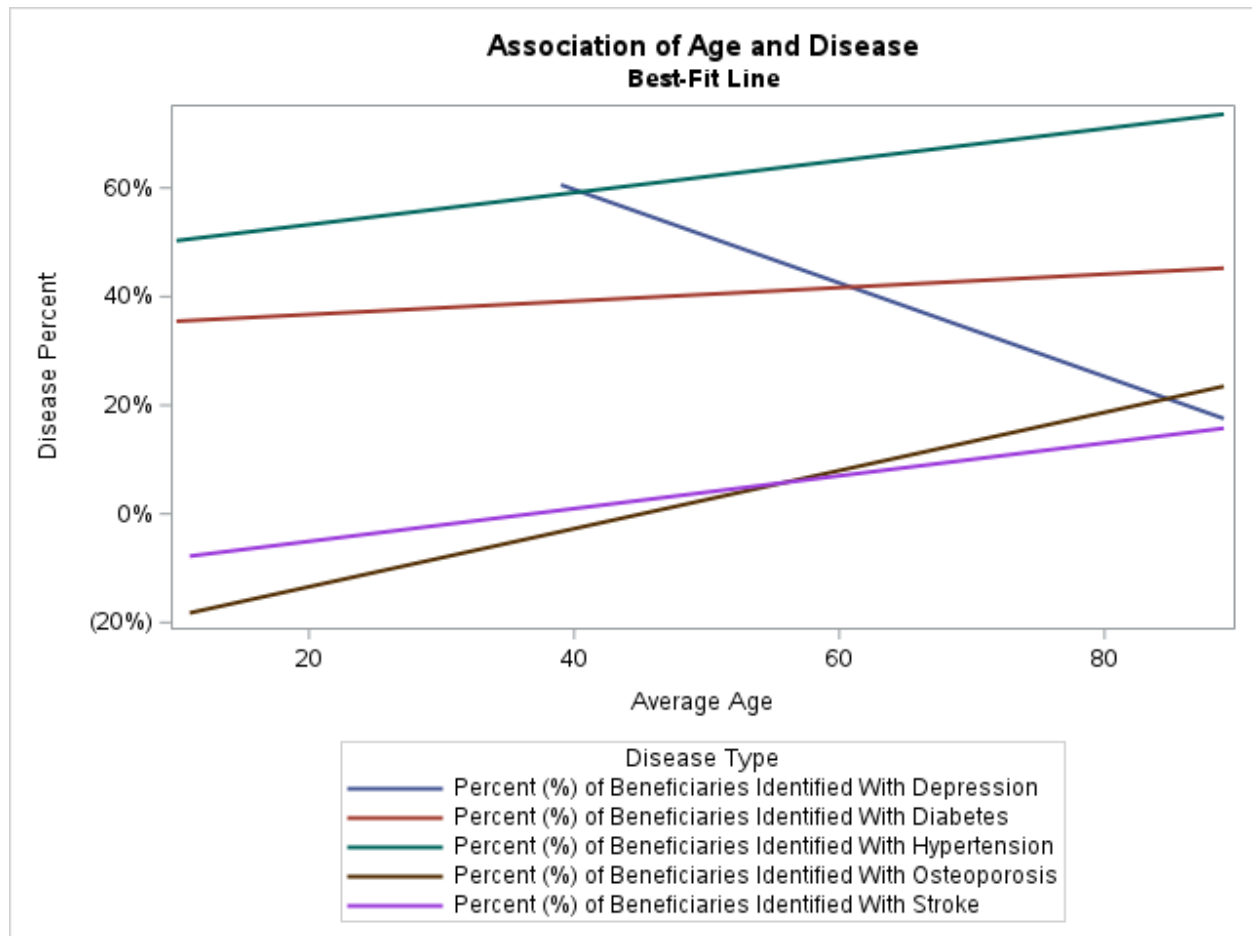
beneficiary_cc_hypert_percent
beneficiary_cc_strk_percent
beneficiary_cc_ost_percent;

run;

proc sgplot data=cms_long;
  title1 "Association of Age and Disease";
  title2 "Best-Fit Line";
  label disease_type = "Disease Type";
  reg y=percent x=beneficiary_average_age / group=disease_type nomarkers;
  xaxis label="Average Age";
  yaxis label="Disease Percent";
  format percent percent10.3;
run;

```

Plot:



### Exercise3

Code:

```
*3;
```

```
data family_practice;  
set np.cms_providers_la;  
if provider_type = "Family Practice";  
run;
```

```
data family_practice_total (keep=total_number);  
  set family_practice end=last;  
  total_number+total_services;  
  if last then output;  
run;
```

```
data pct;  
set family_practice (keep=np total_services);  
if _n_=1 then set family_practice_total;  
pct_total=total_services / total_number;  
format pct_total percent10.3;  
run;
```

```
proc means data=pct;  
var pct_total;  
run;
```

Min value: 0.000049208  
Max value: 0.1725054  
Range: from 0.0049208% to 17.25054%

#### **Excercise4**

Code:

```
*4;  
*family;  
data family;  
set np.cms_providers_la;  
if provider_type = "Family Practice";  
run;
```

```
data family_benes (keep=total_benes);  
  set family end=last;  
  total_benes+total_unique_benes;  
  if last then output;  
run;
```

```
data pct_family;  
set family (keep=np total_unique_benes provider_type);  
if _n_=1 then set family_benes;  
pct_family=total_unique_benes / total_benes;  
format pct_family percent10.3;
```

```
run;
```

```
*psy;  
data psy;  
set np.cms_providers_la;  
if provider_type = "Psychiatry";  
run;
```

```
data psy_benes (keep=total_benes);  
  set psy end=last;  
  total_benes+total_unique_benes;  
  if last then output;  
run;
```

```
data pct_psy;  
set psy (keep=np total_unique_benes provider_type);  
if _n_=1 then set psy_benes;  
pct_psy=total_unique_benes / total_benes;  
format pct_psy percent10.3;  
run;
```

```
*emer;  
data emer;  
set np.cms_providers_la;  
if provider_type = "Emergency Medicine";  
run;
```

```
data emer_benes (keep=total_benes);  
  set emer end=last;  
  total_benes+total_unique_benes;  
  if last then output;  
run;
```

```
data pct_emer;  
set emer (keep=np total_unique_benes provider_type);  
if _n_=1 then set emer_benes;  
pct_emer=total_unique_benes / total_benes;  
format pct_emer percent10.3;  
run;
```

```
data pct_append;  
set pct_family (rename=(pct_family = num_benes_relative_tot))  
  pct_psy (rename=(pct_psy = num_benes_relative_tot))  
  pct_emer (rename=(pct_emer = num_benes_relative_tot));  
run;
```

```
proc means data=pct_append median;
class provider_type;
run;
```

Median

Emergency Medicine: 0.0028399

Family Practice: 0.0032028

Psychiatry: 0.0023218

### **Excercise5**

```
*5;
data cms_deactivated;
length NPI $10;
informat NPPES_Deactivation_Date mmddyy10.;
infile "~/my_shared_file_links/u5338439/NPPES_Deactivated_NPI_Report_20171010.csv"
dsd;
input NPI $
      NPPES_Deactivation_Date;
format NPPES_Deactivation_Date mmddyy10.;
run;
```

```
title "Contents of the Deactivation NPI Report Data Set";
proc contents data=cms_deactivated;
run;
```

```
proc sort data=cms_deactivated;
by npi;
run;
```

```
data cms;
set npi.cms_providers_la;
run;
```

```
proc sort data=cms;
by npi;
run;
```

```
data combine;
merge cms (in=master)
      cms_deactivated (in=deactivated);
by npi;
if master and deactivated;
run;
```

Total rows: 24, 24 records in total.  
Earliest deactivation date is: 05/14/2015  
Latest deactivation date is: 10/09/2017

### **Exercise6**

Code:

```
*6;  
data cms;  
set np_i.cms_providers_la;  
run;  
  
proc sort data=cms_deactivated;  
by np_i;  
run;  
  
proc sort data=cms;  
by np_i;  
run;  
  
data combine_update;  
  update cms (in=master)  
           cms_deactivated (in=deactivated);  
  by np_i;  
  if master;  
run;
```