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**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";

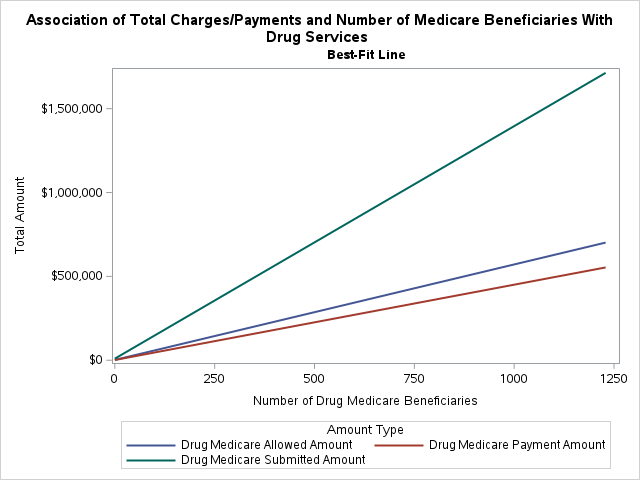
reg y=amount x=total\_drug\_unique\_benes / group=amount\_type nomarkers;

xaxis label="Number of Drug Medicare Beneficiaries";

yaxis label="Total Amount";

format amount dollar15.;

run;

Plot: 

**Excercise2**

Code:

\*2;

data adj\_percent;

set npi.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=(Col1=percent \_label\_=disease\_type))

name=att;

by npi 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:

A graph of different colored lines

Description automatically generated

**Exercise3**

Code:

\*3;

data family\_practice;

set npi.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=npi 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 npi.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=npi 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 npi.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=npi 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 npi.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=npi 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 npi.cms\_providers\_la;

run;

proc sort data=cms\_deactivated;

by npi;

run;

proc sort data=cms;

by npi;

run;

data combine\_update;

update cms (in=master)

cms\_deactivated (in=deactivated);

by npi;

if master;

run;