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BIOSTAT 203A LAB 1A
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Lab 4

Exercise 1

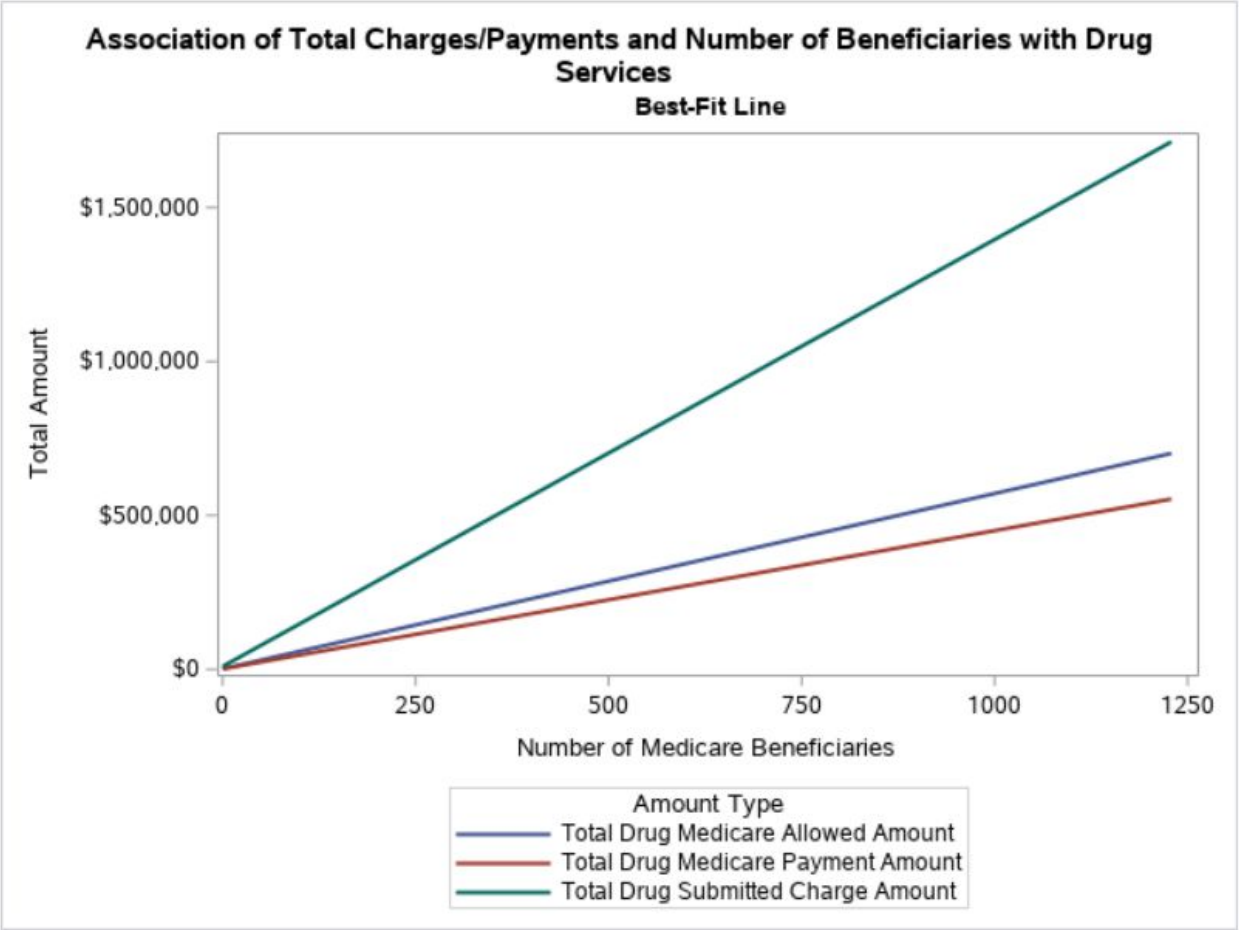
```
data cms_drug_payment;
 set npi.cms_providers_la;
 keep npi total_drug_unique_benes total_drug_medicare_payment_amt;
run;

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

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

data cms_drug_append;
 set cms_drug_submitted (in=in_sub rename=(total_drug_submitted_chrg_amt = amount))
 cms_drug_allowed (in=in_allow rename=(total_drug_medicare_allowed_amt = amount)
)
 cms_drug_payment (in=in_pay rename=(total_drug_medicare_payment_amt = amount));
 if in_sub then amount_type = "Total Drug Submitted Charge Amount";
 else if in_allow then amount_type = "Total Drug Medicare Allowed Amount";
 else if in_pay then amount_type = "Total Drug Medicare Payment Amount";
run;

proc sgplot data=cms_drug_append;
 title1 "Association of Total Charges/Payments and Number of 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 Medicare Beneficiaries";
 yaxis label="Total Amount";
 format amount dollar15.;
run;
```

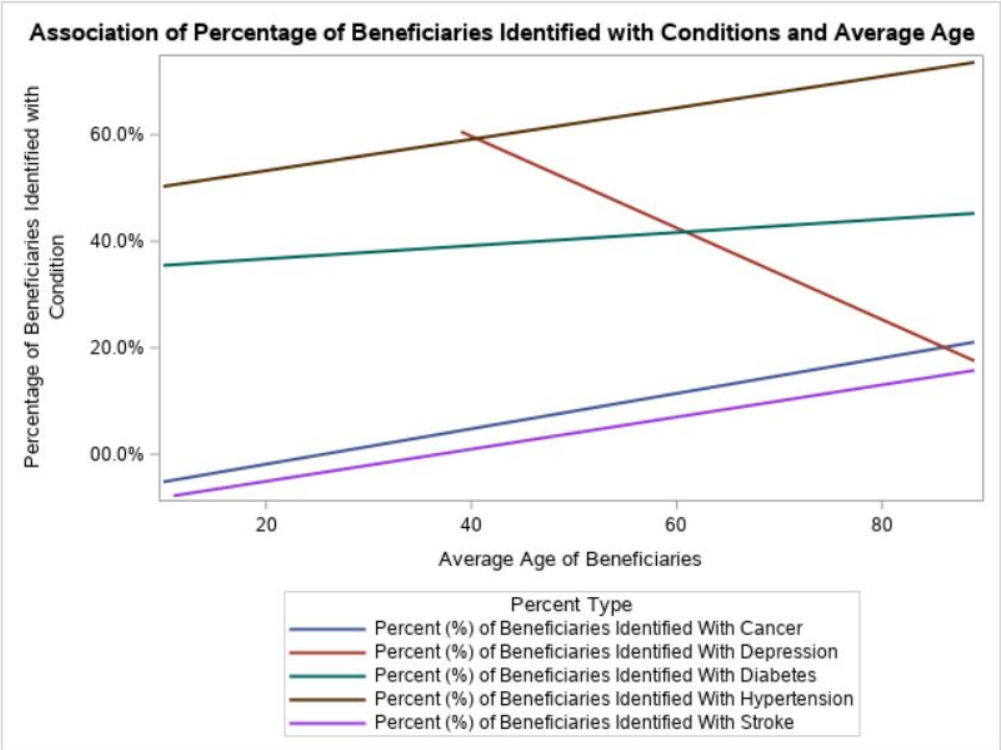

Association of Total Charges/Payments and Number of Beneficiaries with Drug Services
Best-Fit Line
$1,500,000
$1,000,000
$500,000
$0
Total Amount
0
250
500
750
1000
1250
Number of Medicare Beneficiaries
Amount Type
Total Drug Medicare Allowed Amount
Total Drug Medicare Payment Amount
Total Drug Submitted Charge Amount

Exercise 2

```
proc transpose
 data=npi.cms_providers_la
 out=cms_long (rename=(Col1 = percent _LABEL_ = percent_type))
 name=at;
 by npi beneficiary_average_age;
 var beneficiary_cc_depr_percent beneficiary_cc_diab_percent beneficiary_cc_hypert_percent
beneficiary_cc_strk_percent beneficiary_cc_cancer_percent;
run;

proc format;
 picture pctfmt low-high = "99.9%";
run;

proc sgplot data=cms_long;
 title1 "Association of Percentage of Beneficiaries Identified with Conditions and Average Age";
 label percent_type = "Percent Type";
 reg y=percent x=beneficiary_average_age / group=percent_type nomarkers;
 xaxis label="Average Age of Beneficiaries";
 yaxis label="Percentage of Beneficiaries Identified with Condition";
 format percent pctfmt.;
run;
```



Exercise 3

```
data famprac;
 set npi.cms_providers_la;
 if provider_type = "Family Practice";
run;

proc means data=famprac noprint;
 var total_services;
 output out=avgFamprac mean=famprac_mean;
run;

data pctFamprac;
 set famprac(keep=npi nppes_provider_last_org_name nppes_provider_first_name
 total_services);
 if _n_ = 1 then set avgFamprac;
 pct_services = total_services/famprac_mean;
 format pct_services percent10.1;
run;

proc print data=pctFamprac;
run;

proc means data=pctFamprac n min max;
 var pct_services;
 format pct_services percent10.1
run;
```

The MEANS Procedure

Analysis Variable : pct_services		
N	Minimum	Maximum
218	0.0107273	37.6061819

Percentages ranged from 1.07% to 3760.62%.

Exercise 4

```
proc means data=npi.cms_providers_la noprint;
 class provider_type;
 var total_unique_benes;
 output out=avgThree (where= (_TYPE_ = 1)) mean=benes_mean;
run;

data three;
 set npi.cms_providers_la (where=(provider_type in ("Family Practice", "Psychiatry",
"Emergency Medicine")));
 if _n_ = 1 then set avgThree (where=(provider_type = "Family Practice") keep=provider_type
benes_mean rename= (benes_mean = fampract_mean));
 if _n_ = 1 then set avgThree (where=(provider_type = "Psychiatry") keep=provider_type
benes_mean rename= (benes_mean = psych_mean));
 if _n_ = 1 then set avgThree (where=(provider_type = "Emergency Medicine")
keep=provider_type benes_mean rename= (benes_mean = em_mean));
 if provider_type = "Family Practice" then num_benes_relative_avg =
total_unique_benes/fampract_mean;
 else if provider_type = "Psychiatry" then num_benes_relative_avg =
total_unique_benes/psych_mean;
 else if provider_type = "Emergency Medicine" then num_benes_relative_avg =
total_unique_benes/em_mean;
run;

proc means data=three n min max;
 class provider_type;
 var num_benes_relative_avg;
run;
```

The MEANS Procedure

Analysis Variable : num_benes_relative_avg				
Provider Type of the Provider	N Obs	N	Minimum	Maximum
Emergency Medicine	307	307	0.0377079	5.4230886
Family Practice	218	218	0.0821430	7.1539068
Psychiatry	193	193	0.1223413	15.9266181

For Emergency Medicine providers, the new variable has a minimum of 0.038 and a maximum of 5.42.
For Family Practice providers, the new variable has a minimum of 0.082 and a maximum of 7.15.
For Psychiatry providers, the new variable has a minimum of 0.12 and a maximum of 15.93.

Exercise 5

```
data cms_deactivated;
 length NPI $10;
 informat NPPES_Deactivation_Date mmddyy10.;
 infile "/folders/myfolders/Lab_4/NPPES_Deactivated_NPI_Report_20171010.csv" dsd;
 input  NPI $
        NPPES_Deactivation_Date;
 format NPPES_Deactivation_Date mmddyy10.;
run;

proc sort data=cms_deactivated;
 by NPI;
run;

proc sort data=npi.cms_providers_la;
 by npi;
run;

data cms_all;
 merge npi.cms_providers_la (in=ind1)
           cms_deactivated (in=ind2);
 by NPI;
 if ind1 & ind2;
run;

proc sort data=cms_all;
 by NPPES_Deactivation_Date;
run;

proc print data=cms_all (keep = npi nppes_provider_last_org_name nppes_provider_first_name
NPPES_Deactivation_Date);
run;

proc print data=cms_all (obs=1);
 var NPPES_Deactivation_Date;
run;

proc sort data=cms_all;
 by descending NPPES_Deactivation_Date;
run;

proc print data=cms_all (obs=1);
 var NPPES_Deactivation_Date;
```

run;

Obs	npi	nppes_provider_last_org_name	nppes_provider_first_name	NPPES_Deactivation_Date
1	1518992676	MORGAN	MARSHALL	05/14/2015
2	1891869954	LYUBASHEVSKY	VLADIMIR	10/12/2015
3	1265471783	BRYDA	STEPHEN	11/17/2015
4	1255490165	SPECTOR	SHELDON	02/08/2016
5	1447349568	CARLSON	PHILIP	02/15/2016
6	1245365121	BERNSTEIN	MATTHEW	03/03/2016
7	1780691014	MARSHALL	CLIFFORD	03/22/2016
8	1912154113	RICKLES	WILLIAM	04/29/2016
9	1164487336	FOSTER	OLIVER	05/04/2016
10	1811225998	TAGUCHI	YUTAKA	05/16/2016
11	1619921079	NIPARKO	JOHN	06/13/2016
12	1437146388	WALTUCH	ARTHUR	07/14/2016
13	1598964397	BUSNAINA	IBRAHIM	11/09/2016
14	1821039835	LIU	MING	03/13/2017
15	1164445300	BROWN	GARY	03/20/2017
16	1770661613	EZELL	JIMMY	05/02/2017
17	1518297951	GARFIELD BEACH CVS, L.L.C.		05/16/2017
18	1538248000	SCHNEIDER	JOEL	08/03/2017
19	1861424491	GOLDSTEIN	DAVID	08/03/2017
20	1346384377	PAYA	KAZEM	08/30/2017
21	1528174166	LEE	WILLIAM	09/12/2017
22	1164692257	KAHEN	NISSAN	09/19/2017
23	1679596407	FETT	DAVID	09/26/2017
24	1003957259	PINZON	ANASTACIO	10/09/2017

Obs	NPPES_Deactivation_Date
1	05/14/2015

Obs	NPPES_Deactivation_Date
1	10/09/2017

There are 24 records.
The earliest deactivation date is 05/14/2015.
The latest deactivation date is 10/09/2017.

Exercise 6

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

proc sort data=npi.cms_providers_la;
 by NPI;
run;

data cms_update;
 update cms_deactivated npi.cms_providers_la (in=ind1);
 by NPI;
 if ind1;
run;

proc contents data=cms_update;
run;
```

The CONTENTS Procedure

Data Set Name	WORK.CMS_UPDATE	Observations	5742
Member Type	DATA	Variables	71
Engine	V9	Indexes	0
Created	10/24/2019 14:38:21	Observation Length	776
Last Modified	10/24/2019 14:38:21	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		