

## Program Summary - Homework 3.sas

### Execution Environment

Author: chwang10  
File: /home/chwang10/Homework 3.sas  
SAS Platform: Linux LIN X64 3.10.0-1062.9.1.el7.x86\_64  
SAS Host: ODAWS03-USW2.ODA.SAS.COM  
SAS Version: 9.04.01M6P11072018  
SAS Locale: en\_US  
Submission Time: 10/6/2020, 4:49:29 AM  
Browser Host: ASTOUND-66-234-210-119.CA.ASTOUND.NET  
User Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_14\_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/85.0.4183.121 Safari/537.36  
Application Server: ODAMID00-USW2.ODA.SAS.COM

### Code: Homework 3.sas

```
* Programmed by Charles Hwang *
* Coded in SAS OnDemand      *
* Wednesday, October 7, 2020 *
* Course: STAT 403           *
* Title: Homework 3          *;

/* 1 */ Data Adoption;
Infile "/home/chwang10/adoption.txt";
Length Country$ 12;
Input Country$ Year Adoptions;
Run;

/* 1a */ Axis1 label=("Number of Adoptions");
Axis2 label=(a=90 "Year");
Proc Gchart data=Adoption;
Title "1a. Total Annual Adoptions from 2003 to 2013";
Hbar Year /sumvar=Adoptions axis=axis1 maxis=axis2 type=sum discrete;
Run;

/* 1b */ Proc Gchart data=Adoption;
Title "1b. Annual Adoptions from 2003 to 2013 by Country, Part 1";
Vbar Year /sumvar=Adoptions group=Country discrete;
Where Country="China" or Country="Russia" or Country="Guatemala" or Country="Ethiopia";
Proc Gchart data=Adoption;
Title "1b. Annual Adoptions from 2003 to 2013 by Country, Part 2";
Vbar Year /sumvar=Adoptions group=Country discrete;
Where Country="South_Korea" or Country="Colombia" or Country="Ukraine" or Country="Haiti" or Country="Vietnam";
Run;

/* 1c */ Proc Gchart data=Adoption;
Title "1c. Total Adoptions from 2003 to 2013 by Country";
Pie Country /sumvar=Adoptions other=0;
Run;

/* 1d */ Symbol1 value=star color=red I=join; * Group names (countries) are alphabetized ;
Symbol2 value=circle color=green I=join;
Symbol3 value=diamond color=skyblue I=join;
Symbol4 value=square color=blue I=join;
Proc Gplot data=Adoption;
Title "1d. Annual Adoptions from 2003 to 2013 by Country";
Plot Adoptions*Year=Country;
Where Country="China" or Country="Russia" or Country="Guatemala" or Country="Ethiopia";
Run;

/* 1e(1) */ * International adoptions appears to have decreased over the past 11 years. The graphs of
all countries except Ethiopia support this. This may be happening due to an increase in domestic
adoptions. (UN) ;
/* 1e(2) */ * Improving health care in Ethiopia may have led to an increase in birth rate and a decrease in
mortality rate at birth. (Wikipedia) ;
/* 1e(3) */ * According to the respective graphs, Guatemala and Russia have seen international adoption
decrease to almost zero. Guatemala reformed the adoption system in 2007-08 to combat corruption,
sharply lowering adoption numbers, while Russia heavily promoted domestic adoption in the mid-2000s
and banned adoption to the United States altogether in 2012. (Wikipedia, Time Magazine) ;
```

```

/* 2 */ Proc Import out=Olympics file="/home/chwang10/Pyeongchang 2018 Winter Olympics.xlsx" dbms=xlsx;
Data Olympics;
Set Olympics;
If Category="Apine Skiing" then Category="Alpine Skiing"; * Repairing apparent typos in data set ;
If Country="Japn" then Country="Japan";
Run;

/* 2a */ Pattern1 color=coral; * Group names (medal classifications) are alphabetized ;
Pattern2 color=gold;
Pattern3 color=silver;
Proc Gchart data=Olympics;
Title "2a. 2018 Olympic Medals by Country";
Hbar Country /subgroup=Medal;
Run; * The top five countries to earn medals were Norway (33), Canada (29), Germany (24),
the United States (23), and the Netherlands (20). ;

/* 2b */ Axis1 label=(a=90 "Number of Medals");
Axis2 order=("Gold" "Silver" "Bronze"); * Ordering medals by classification ;
Pattern1 color=coral;
Pattern2 color=gold;
Pattern3 color=silver;
Proc Gchart data=Olympics;
Title "2b. Top Five Countries by 2018 Olympic Medals";
Vbar Medal /group=Country axis=axis1 maxis=axis2 patternid=midpoint;
Where Country="Norway" or Country="Canada" or Country="Germany" or Country="United States" or Country="Netherlands";
Run;

/* 3a */ Data Concussion;
Infile "/home/chwang10/concussion.txt";
Length Sport$ 17;
Input Gender$ Sport$ Year Status$ Frequency;
If Status=1 then status2="Yes";
Else status2="No";
Run;

/* 3b */ Proc Freq data=Concussion order=freq;
Table Sport;
Where status2="Yes";
Weight Frequency;
Title "3b. Concussions by Sport";
Run;
/* 3b(i) */ * Soccer had the most concussions (259). ;
/* 3b(ii) */ * Soccer, basketball, and softball/baseball combined accounted for 86.02 percent of the
concussions. This number can be found in the third row of the "Cumulative Percent" column. ;

/* 3c */ Proc Freq data=Concussion;
Table status2*Gender;
Weight Frequency;
Title "3c. Concussions by Gender";
Run;
/* 3c(i) */ * Females are more likely than males to get a concussion. (See Problem 3c(iii).) ;
/* 3c(ii) */ * Approximately 0.0406649 percent of athletes have received a concussion and are female. ;
/* 3c(iii) */ * Approximately 0.0858638 percent of female athletes have received a concussion. ;

```

## Log: Homework 3.sas

Notes (33)

```

1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
70
71          * Programmed by Charles Hwang *
72          * Coded in SAS OnDemand      *
73          * Wednesday, October 7, 2020  *
74          * Course: STAT 403            *
75          * Title: Homework 3           *;
76
77          /* 1 */
77          !          Data Adoption;
78          Infile "/home/chwang10/adoption.txt";
79          Length Country$ 12;
80          Input Country$ Year Adoptions;
81          Run;

NOTE: The infile "/home/chwang10/adoption.txt" is:
      Filename=/home/chwang10/adoption.txt,
      Owner Name=chwang10,Group Name=oda,
      Access Permission=-rw-r--r--,

```

Last Modified=28Sep2020:01:22:40,  
File Size (bytes)=1835

NOTE: 99 records were read from the infile "/home/chwang10/adoption.txt".

The minimum record length was 13.

The maximum record length was 21.

NOTE: The data set WORK.ADOPTION has 99 observations and 3 variables.

NOTE: DATA statement used (Total process time):

real time	0.12 seconds
user cpu time	0.00 seconds
system cpu time	0.00 seconds
memory	871.00k
OS Memory	33708.00k
Timestamp	10/06/2020 11:49:27 AM
Step Count	877
Switch Count	2
Page Faults	0
Page Reclaims	97
Page Swaps	0
Voluntary Context Switches	16
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	272

```
82
83      /* 1a */ Axis1 label=("Number of Adoptions");
84      Axis2 label=(a=90 "Year");
85      Proc Gchart data=Adoption;
86      Title "1a. Total Annual Adoptions from 2003 to 2013";
87      Hbar Year /sumvar=Adoptions axis=axis1 maxis=axis2 type=sum discrete;
88      Run;
```

```
89
90      /* 1b */
```

NOTE: There were 99 observations read from the data set WORK.ADOPTION.

NOTE: PROCEDURE GCHART used (Total process time):

real time	0.20 seconds
user cpu time	0.18 seconds
system cpu time	0.02 seconds
memory	7926.15k
OS Memory	39708.00k
Timestamp	10/06/2020 11:49:27 AM
Step Count	878
Switch Count	1
Page Faults	0
Page Reclaims	1509
Page Swaps	0
Voluntary Context Switches	6
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	240

```
90      !      Proc Gchart data=Adoption;
91      Title "1b. Annual Adoptions from 2003 to 2013 by Country, Part 1";
92      Vbar Year /sumvar=Adoptions group=Country discrete;
93      Where Country="China" or Country="Russia" or Country="Guatemala" or Country="Ethiopia";
```

NOTE: There were 44 observations read from the data set WORK.ADOPTION.

WHERE Country in ('China', 'Ethiopia', 'Guatemala', 'Russia');

NOTE: PROCEDURE GCHART used (Total process time):

real time	0.18 seconds
user cpu time	0.17 seconds
system cpu time	0.01 seconds
memory	6313.84k
OS Memory	40992.00k
Timestamp	10/06/2020 11:49:28 AM
Step Count	879
Switch Count	2
Page Faults	0
Page Reclaims	807
Page Swaps	0
Voluntary Context Switches	11
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	256

```
94      Proc Gchart data=Adoption;
95      Title "1b. Annual Adoptions from 2003 to 2013 by Country, Part 2";
96      Vbar Year /sumvar=Adoptions group=Country discrete;
97      Where Country="South_Korea" or Country="Colombia" or Country="Ukraine" or Country="Haiti" or Country="Vietnam";
98      Run;
```

```
99
100     /* 1c */
```

NOTE: There were 55 observations read from the data set WORK.ADOPTION.

WHERE Country in ('Colombia', 'Haiti', 'South\_Korea', 'Ukraine', 'Vietnam');

NOTE: PROCEDURE GCHART used (Total process time):

```

real time          0.19 seconds
user cpu time      0.17 seconds
system cpu time    0.02 seconds
memory             6190.65k
OS Memory          41248.00k
Timestamp          10/06/2020 11:49:28 AM
Step Count         880   Switch Count   3
Page Faults        0
Page Reclaims      871
Page Swaps         0
Voluntary Context Switches 18
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 304

```

```

100      !          Proc Gchart data=Adoption;
101      Title "1c. Total Adoptions from 2003 to 2013 by Country";
102      Pie Country /sumvar=Adoptions other=0;
103      Run;

104
105      /* 1d */ Symbol1 value=star color=red I=join; * Group names (countries) are alphabetized ;
106      Symbol2 value=circle color=green I=join;
107      Symbol3 value=diamond color=skyblue I=join;
108      Symbol4 value=square color=blue I=join;

```

NOTE: There were 99 observations read from the data set WORK.ADOPTION.

NOTE: PROCEDURE GCHART used (Total process time):

```

real time          0.20 seconds
user cpu time      0.18 seconds
system cpu time    0.03 seconds
memory             6118.65k
OS Memory          41500.00k
Timestamp          10/06/2020 11:49:28 AM
Step Count         881   Switch Count   5
Page Faults        0
Page Reclaims      959
Page Swaps         0
Voluntary Context Switches 49
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 360

```

```

109      Proc Gplot data=Adoption;
110      Title "1d. Annual Adoptions from 2003 to 2013 by Country";
111      Plot Adoptions*Year=Country;
112      Where Country="China" or Country="Russia" or Country="Guatemala" or Country="Ethiopia";
113      Run;

114
115      /* 1e(1) */ * International adoptions appears to have decreased over the past 11 years. The graphs of
116      all countries except Ethiopia support this. This may be happening due to an increase in domestic
117      adoptions. (UN) ;
118      /* 1e(2) */ * Improving health care in Ethiopia may have led to an increase in birth rate and a decrease in
119      mortality rate at birth. (Wikipedia) ;
120      /* 1e(3) */ * According to the respective graphs, Guatemala and Russia have seen international adoption
121      decrease to almost zero. Guatemala reformed the adoption system in 2007-08 to combat corruption,
122      sharply lowering adoption numbers, while Russia heavily promoted domestic adoption in the mid-2000s
123      and banned adoption to the United States altogether in 2012. (Wikipedia, Time Magazine) ;
124
125      /* 2 */

```

NOTE: There were 44 observations read from the data set WORK.ADOPTION.

WHERE Country in ('China', 'Ethiopia', 'Guatemala', 'Russia');

NOTE: PROCEDURE GPLOT used (Total process time):

```

real time          0.17 seconds
user cpu time      0.16 seconds
system cpu time    0.01 seconds
memory             7151.96k
OS Memory          43552.00k
Timestamp          10/06/2020 11:49:28 AM
Step Count         882   Switch Count   5
Page Faults        0
Page Reclaims      1110
Page Swaps         0
Voluntary Context Switches 22
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 368

```

```

125      !          Proc Import out=Olympics file="/home/chwang10/Pyeongchang 2018 Winter Olympics.xlsx" dbms=xlsx;

```

NOTE: Import cancelled. Output dataset WORK.OLYMPICS already exists. Specify REPLACE option to overwrite it.

NOTE: The SAS System stopped processing this step because of errors.

NOTE: PROCEDURE IMPORT used (Total process time):

```

real time          0.00 seconds

```

```

user cpu time      0.00 seconds
system cpu time    0.00 seconds
memory             800.75k
OS Memory          40344.00k
Timestamp          10/06/2020 11:49:28 AM
Step Count         883   Switch Count   0
Page Faults        0
Page Reclaims      138
Page Swaps         0
Voluntary Context Switches 1
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 0

```

```

126      Data Olympics;
127      Set Olympics;
128      If Category="Apine Skiing" then Category="Alpine Skiing"; * Repairing apparent typos in data set ;
129      If Country="Japn" then Country="Japan";
130      Run;

```

NOTE: There were 274 observations read from the data set WORK.OLYMPICS.

NOTE: The data set WORK.OLYMPICS has 274 observations and 5 variables.

NOTE: DATA statement used (Total process time):

```

real time          0.00 seconds
user cpu time      0.00 seconds
system cpu time    0.01 seconds
memory             946.18k
OS Memory          40368.00k
Timestamp          10/06/2020 11:49:28 AM
Step Count         884   Switch Count   2
Page Faults        0
Page Reclaims      121
Page Swaps         0
Voluntary Context Switches 13
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 264

```

```

131
132      /* 2a */ Pattern1 color=coral; * Group names (medal classifications) are alphabetized ;
133      Pattern2 color=gold;
134      Pattern3 color=silver;
135      Proc Gchart data=Olympics;
136      Title "2a. 2018 Olympic Medals by Country";
137      Hbar Country /subgroup=Medal;
138      Run;

```

```

138      !      * The top five countries to earn medals were Norway (33), Canada (29), Germany (24),
139      the United States (23), and the Netherlands (20). ;
140

```

```

141      /* 2b */ Axis1 label=(a=90 "Number of Medals");
142      Axis2 order=("Gold" "Silver" "Bronze"); * Ordering medals by classification ;
143      Pattern1 color=coral;
144      Pattern2 color=gold;
145      Pattern3 color=silver;

```

NOTE: There were 274 observations read from the data set WORK.OLYMPICS.

NOTE: PROCEDURE GCHART used (Total process time):

```

real time          0.24 seconds
user cpu time      0.22 seconds
system cpu time    0.02 seconds
memory             6478.93k
OS Memory          42156.00k
Timestamp          10/06/2020 11:49:28 AM
Step Count         885   Switch Count   6
Page Faults        0
Page Reclaims      1037
Page Swaps         0
Voluntary Context Switches 53
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 576

```

```

146      Proc Gchart data=Olympics;
147      Title "2b. 2018 Olympic Medals by Country";
148      Vbar Medal /group=Country axis=axis1 maxis=axis2 patternid=midpoint;
149      Where Country="Norway" or Country="Canada" or Country="Germany" or Country="United States" or Country="Netherlands";
150      Run;

```

```

151
152      /* 3a */

```

NOTE: There were 129 observations read from the data set WORK.OLYMPICS.

```

WHERE Country in ('Canada', 'Germany', 'Netherlands', 'Norway', 'United States');

```

NOTE: PROCEDURE GCHART used (Total process time):

```

real time          0.17 seconds
user cpu time      0.16 seconds
system cpu time    0.01 seconds
memory             6421.15k
OS Memory          43040.00k
Timestamp          10/06/2020 11:49:29 AM
Step Count         886   Switch Count   5
Page Faults        0
Page Reclaims      652
Page Swaps         0
Voluntary Context Switches 16
Involuntary Context Switches 1
Block Input Operations 0
Block Output Operations 208

```

```

152      !           Data Concussion;
153      Infile "/home/chwangl0/concussion.txt";
154      Length Sport$ 17;
155      Input Gender$ Sport$ Year Status$ Frequency;
156      If Status=1 then status2="Yes";
157      Else status2="No";
158      Run;

```

NOTE: Character values have been converted to numeric values at the places given by: (Line):(Column).  
156:4

NOTE: The infile "/home/chwangl0/concussion.txt" is:  
Filename=/home/chwangl0/concussion.txt,  
Owner Name=chwangl0,Group Name=oda,  
Access Permission=-rw-r--r--,  
Last Modified=28Sep2020:01:22:40,  
File Size (bytes)=3000

NOTE: 60 records were read from the infile "/home/chwangl0/concussion.txt".  
The minimum record length was 49.  
The maximum record length was 49.

NOTE: The data set WORK.CONCUSSION has 60 observations and 6 variables.

NOTE: DATA statement used (Total process time):

```

real time          0.00 seconds
user cpu time      0.01 seconds
system cpu time    0.00 seconds
memory             767.75k
OS Memory          40876.00k
Timestamp          10/06/2020 11:49:29 AM
Step Count         887   Switch Count   2
Page Faults        0
Page Reclaims      98
Page Swaps         0
Voluntary Context Switches 20
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 264

```

```

159
160      /* 3b */
160      !           Proc Freq data=Concussion order=freq;
161      Table Sport;
162      Where status2="Yes";
163      Weight Frequency;
164      Title "3b. Concussions by Sport";
165      Run;

```

NOTE: There were 30 observations read from the data set WORK.CONCUSSION.  
WHERE status2='Yes';

NOTE: PROCEDURE FREQ used (Total process time):

```

real time          0.02 seconds
user cpu time      0.02 seconds
system cpu time    0.00 seconds
memory             1932.31k
OS Memory          40880.00k
Timestamp          10/06/2020 11:49:29 AM
Step Count         888   Switch Count   3
Page Faults        0
Page Reclaims      155
Page Swaps         0
Voluntary Context Switches 17
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 264

```

```

166      /* 3b(i) */ * Soccer had the most concussions (259). ;
167      /* 3b(ii) */ * Soccer, basketball, and softball/baseball combined accounted for 86.02 percent of the
168      concussions. This number can be found in the third row of the "Cumulative Percent" column. ;
169
170      /* 3c */
170      !           Proc Freq data=Concussion;
171      Table status2*Gender;

```

```

172      Weight Frequency;
173      Title "3c. Concussions by Gender";
174      Run;

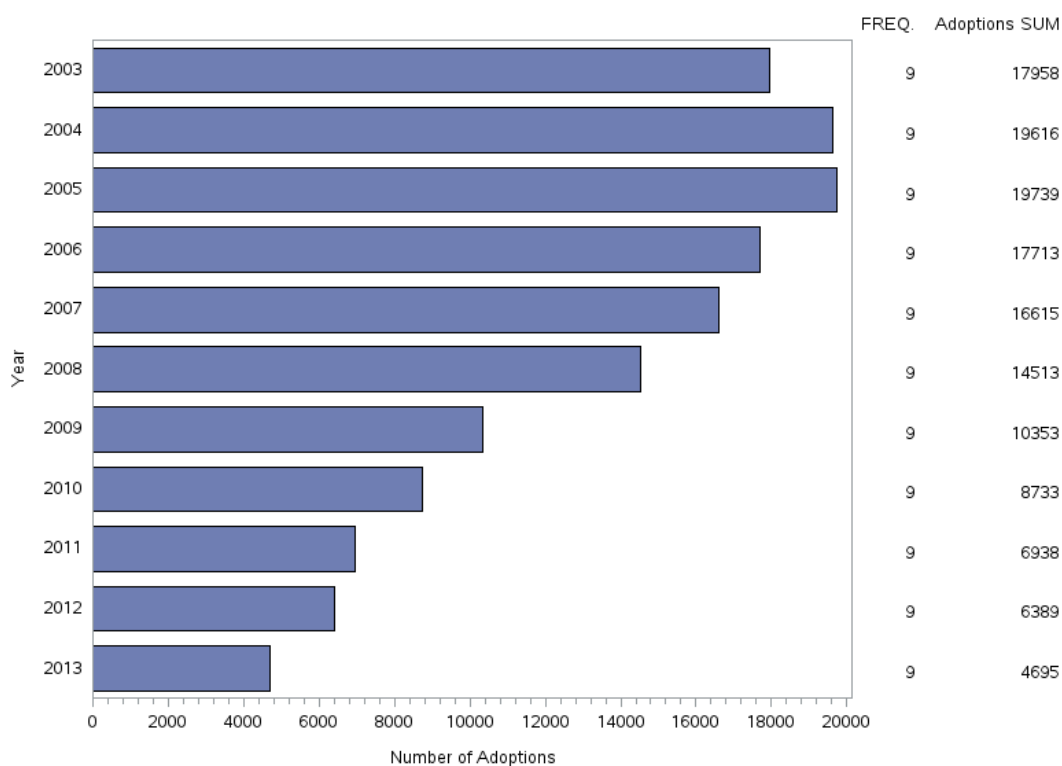
NOTE: There were 60 observations read from the data set WORK.CONCUSSION.
NOTE: PROCEDURE FREQ used (Total process time):
      real time           0.02 seconds
      user cpu time       0.03 seconds
      system cpu time     0.01 seconds
      memory              1410.43k
      OS Memory           41140.00k
      Timestamp           10/06/2020 11:49:29 AM
      Step Count          889   Switch Count   5
      Page Faults         0
      Page Reclaims       189
      Page Swaps          0
      Voluntary Context Switches 38
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 528

175      /* 3c(i) */ * Females are more likely than males to get a concussion. (See Problem 3c(iii).) ;
176      /* 3c(ii) */ * Approximately 0.0406649 percent of athletes have received a concussion and are female. ;
177      /* 3c(iii) */ * Approximately 0.0858638 percent of female athletes have received a concussion. ;
178
179      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
190

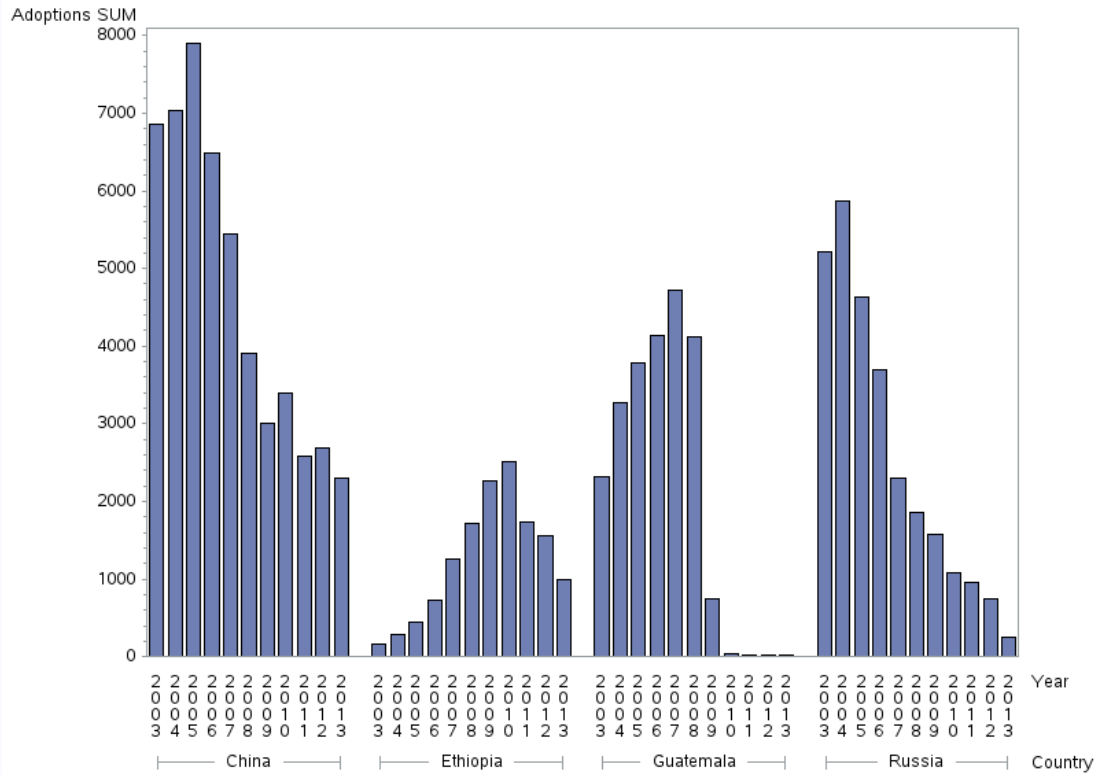
```

## Results: Homework 3.sas

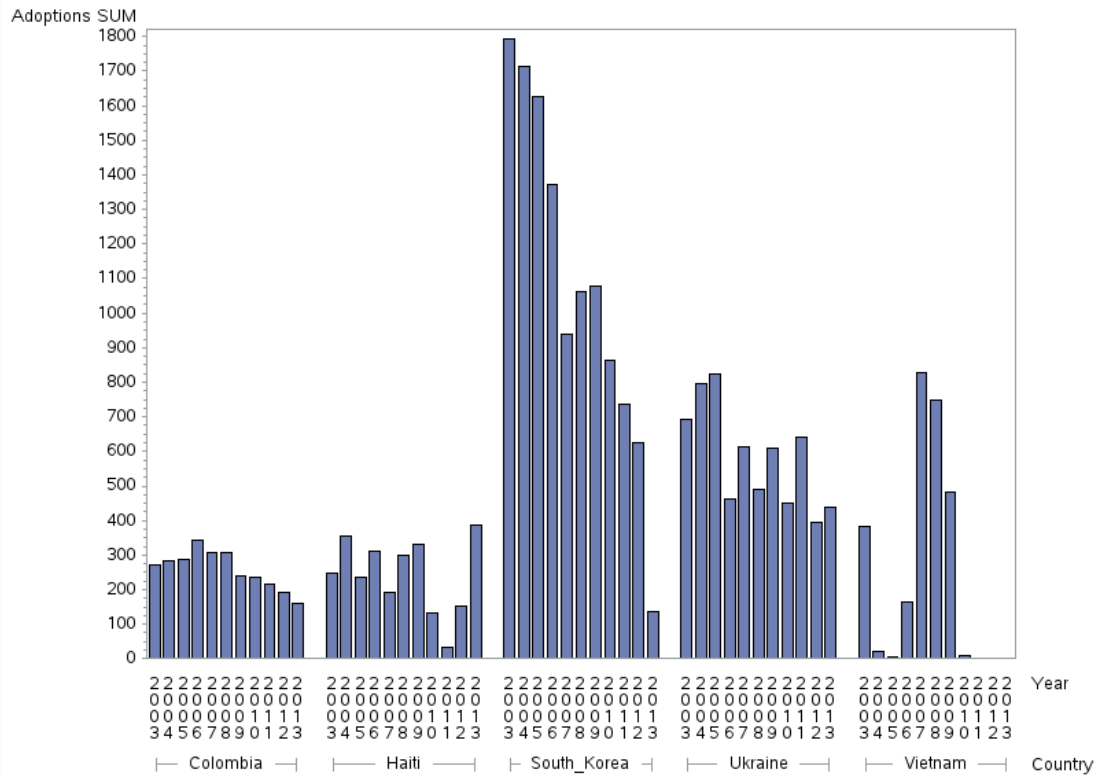
**1a. Total Annual Adoptions from 2003 to 2013**



1b. Annual Adoptions from 2003 to 2013 by Country, Part 1



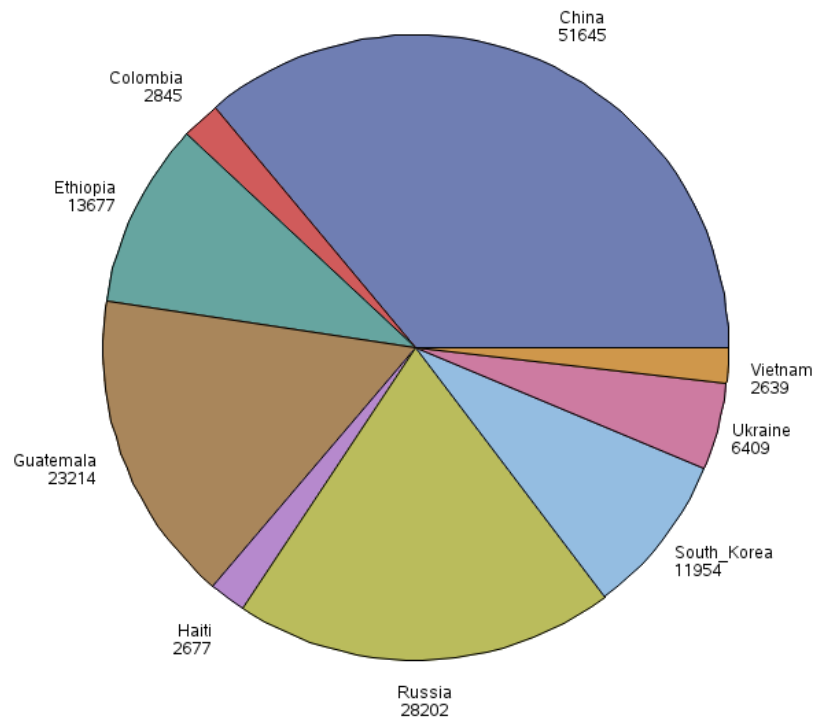
1b. Annual Adoptions from 2003 to 2013 by Country, Part 2



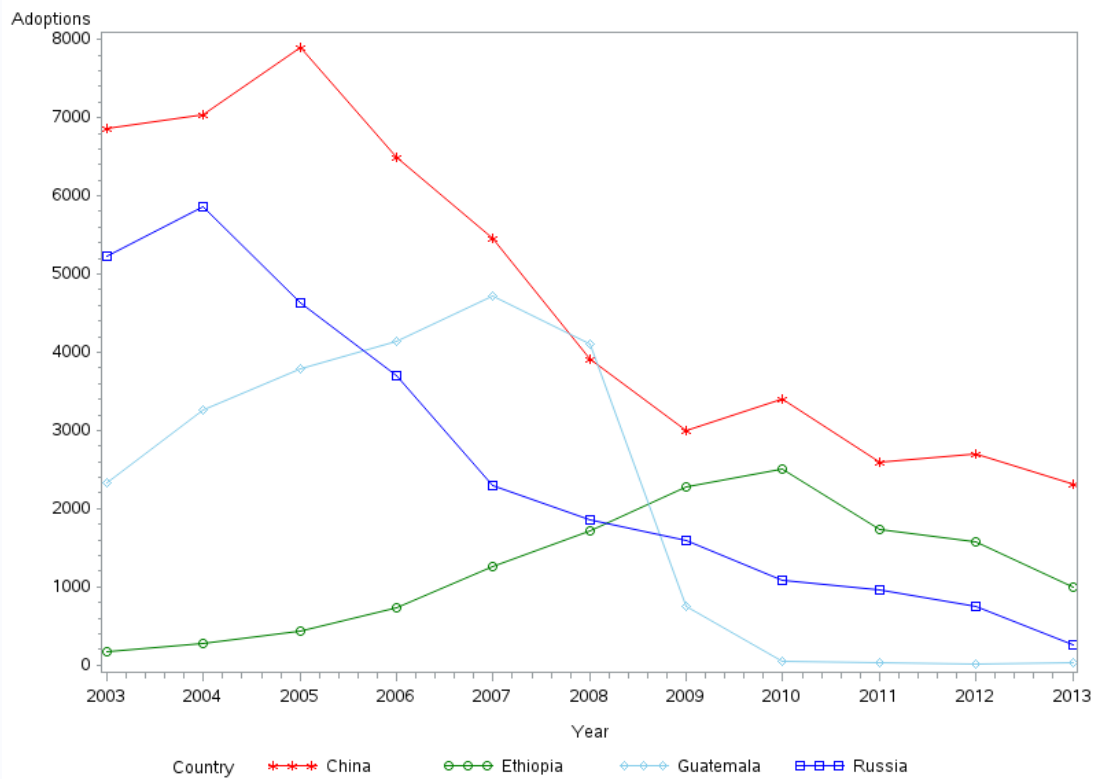


### 1c. Total Adoptions from 2003 to 2013 by Country

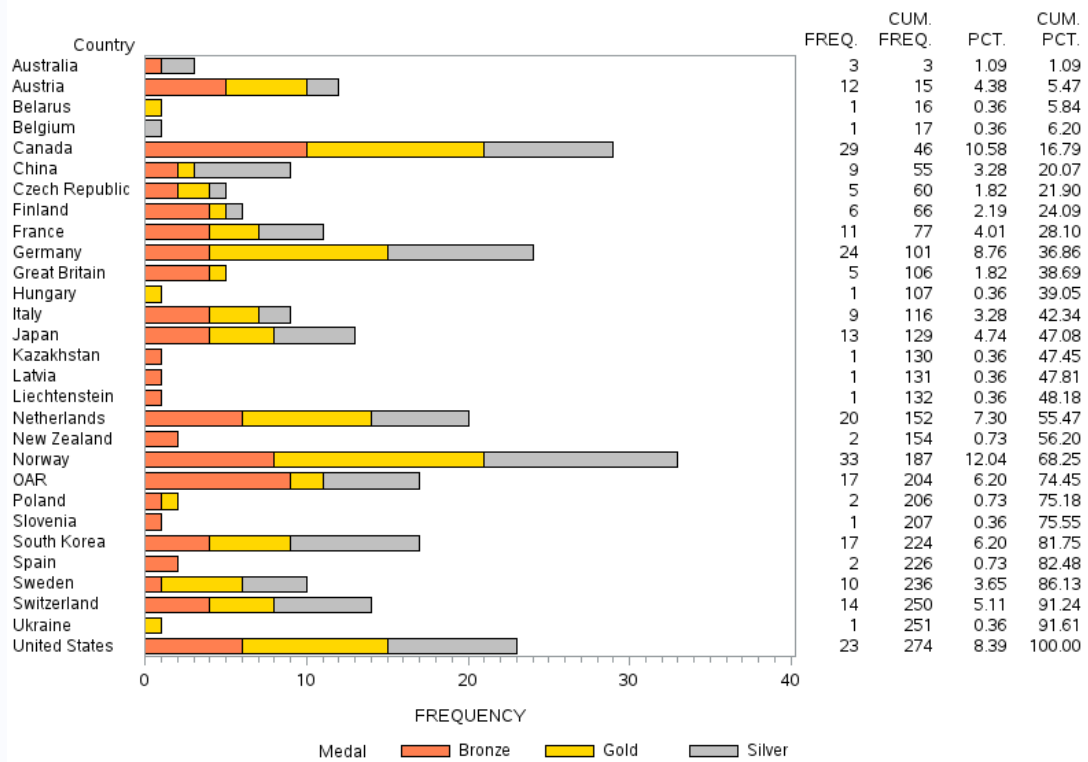
SUM of Adoptions by Country



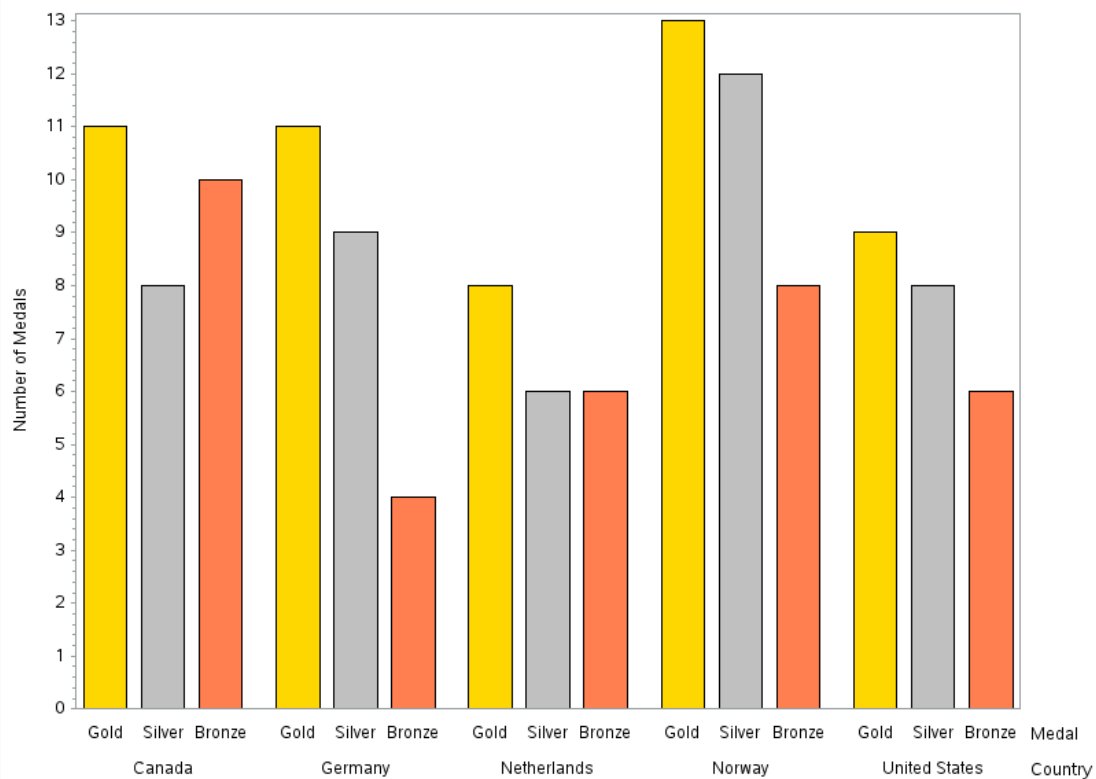
### 1d. Annual Adoptions from 2003 to 2013 by Country



## 2a. 2018 Olympic Medals by Country



## 2b. 2018 Olympic Medals by Country



## 3b. Concussions by Sport

The FREQ Procedure

Sport	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Soccer	259	46.42	259	46.42
Basketball	121	21.68	380	68.10
Softball/Baseball	100	17.92	480	86.02
Lacrosse	77	13.80	557	99.82

Sport	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Gymnastics	1	0.18	558	100.00

3c. Concussions by Gender

The FREQ Procedure

Frequency Percent Row Pct Col Pct	Table of status2 by Gender			
	status2	Gender		
		Female	Male	Total
	No	354049 47.36 47.40 99.91	392966 52.57 52.60 99.94	747015 99.93
	Yes	304 0.04 54.48 0.09	254 0.03 45.52 0.06	558 0.07
	Total	354353 47.40	393220 52.60	747573 100.00