

Homework 9

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```
libname esshw '/folders/myfolders/health_survey';
```

```
proc contents data=esshw.ess6hw9;  
run;
```

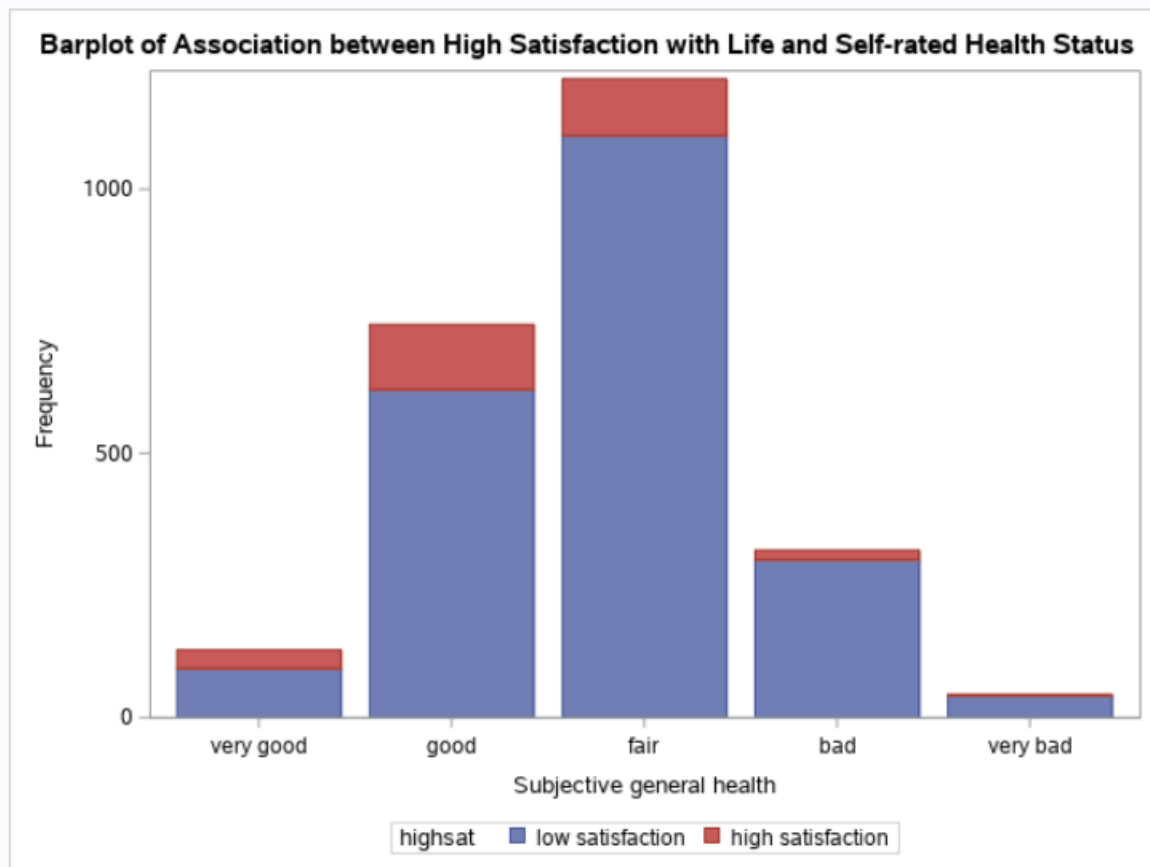
Question 1

```
/*Question 1*/  
data esshw.ess6hw9; set esshw.ess6hw9;  
if stflife>=9 then highsat=1;  
if stflife<=8 then highsat=0;  
if stflife=. then highsat=.;  
run;
```

```
proc contents data=esshw.ess6hw9;  
run;
```

Question 2

```
/*Question 2*/  
title "Barplot of Association between High Satisfaction with Life and Self-rated Health Status";  
proc sgplot data=esshw.ess6hw9;  
  vbar health / group= highsat weight = pspwght;  
run;
```



According to the bar plot, we can find that for those have self-rated health status equal to very good, good or fair, they have higher high satisfaction rate. For those with bad and very bad self-rated status, they have lower high satisfaction rate.

As the proportion of HIGHSAT in people with bad and very bad self-rated health status are similar and frequency of people with very bad self-rated health status is very low, I would recommend combining bad group and very bad group.

Question 3

```
/*Question 3*/
title "Descriptive statistics";
proc surveyfreq;
strata stratify;
cluster psu;
weight pspwght;
tables (lr3cat)*highsat /row(cl) chisq(secondorder);
run;
```

Table of lr3cat by highsat										
lr3cat	highsat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	Row Percent	Std Err of Row Percent	95% Confidence Limits for Row Percent	
left to moderately left	low satisfaction	342	333.19533	27.62546	18.7451	1.3345	93.8452	1.3976	91.0870	96.6035
	high satisfaction	25	21.85239	5.30782	1.2294	0.2970	6.1548	1.3976	3.3965	8.9130
	Total	367	355.04771	29.06352	19.9745	1.4079	100.0000			
moderate	low satisfaction	749	747.87839	48.03978	42.0746	1.9036	89.1792	1.5053	86.2082	92.1501
	high satisfaction	81	90.74625	13.72303	5.1053	0.7465	10.8208	1.5053	7.8499	13.7918
	Total	830	838.62464	51.73672	47.1799	1.9965	100.0000			
moderately right to right	low satisfaction	490	484.80635	36.59727	27.2745	1.6745	83.0385	2.1043	78.8854	87.1916
	high satisfaction	96	99.02660	13.97767	5.5711	0.7628	16.9615	2.1043	12.8084	21.1146
	Total	586	583.83296	41.14809	32.8456	1.8481	100.0000			
Total	low satisfaction	1581	1566	72.11250	88.0943	1.0656				
	high satisfaction	202	211.62524	20.36865	11.9057	1.0656				
	Total	1783	1778	77.24690	100.0000					
Frequency Missing = 701										

Rao-Scott Chi-Square Test	
Pearson Chi-Square	26.4469
Design Correction	1.5542
First-Order Chi-Square	17.0163
Second-Order Chi-Square	15.0071
DF	1.76
Pr > ChiSq	0.0004
F Value	8.5081
Num DF	1.76
Den DF	308.68
Pr > F	0.0005
Sample Size = 1783	

Percentages and 95% confidence intervals of high satisfaction with life for individuals in each political scale category are shown above. We can find that when political scale change from left to right, the percentage of high satisfaction increase.

Results of Rao-Scott F-statistic are shown above. We can get the test statistic equals to 8.5081 and p-value equals to 0.0005 which is smaller than 0.05. So we reject the null hypothesis and conclude that there is association between high satisfaction with life and political scale.

Question 4

a)

```
/*Question 4*/
proc format;
value health_copf 1="very good" 2="good" 3="fair" 4="bad";
run;

data esshw.ess6hw9; set esshw.ess6hw9;
health_cop=health;
if health>=4 then health_cop=4;
format health_cop health_copf.;
run;

title "multivariable logistic regression";
proc surveylogistic data=esshw.ess6hw9 ;
strata stratify; cluster psu; weight pspwght;
class lr3cat (ref=first) gndr (ref=first) health_cop (ref=first) agecat (ref="45-59") marcat (ref="currently married")/ param=ref ;
model highsats (event='high satisfaction') = lr3cat gndr health_cop agecat marcat;
ods select Stat.Surveylogistic.OddsRatios Stat.Surveylogistic.ParameterEstimates;
run;
```

ORs, 95% Cis and p-value are shown below.

Effect	Point Estimate	95% Confidence Limits		Pr > t
lr3cat moderate vs left to moderately left	1.862	1.053	3.292	0.0326
lr3cat moderately right to right vs left to moderately left	3.029	1.775	5.167	<.0001
GNDR male vs female	1.418	1.007	1.997	0.0458
health_cop fair vs bad	1.514	0.721	3.179	0.2713
health_cop good vs bad	3.567	1.504	8.462	0.0041
health_cop very good vs bad	3.520	1.150	10.772	0.0277
agecat 15-29 vs 45-59	1.267	0.716	2.240	0.4139
agecat 30-44 vs 45-59	1.036	0.608	1.767	0.8947
agecat 60+ vs 45-59	2.018	1.136	3.584	0.0169
marcat never married vs currently married	1.477	0.913	2.389	0.1110
marcat previously married vs currently married	1.229	0.807	1.872	0.3354

- b) According to table above, we can find that people whose political scale is moderately right to right, gender is male, self-rated health status is good, age is larger than 60 and marriage status is never marriage are more likely to have high satisfaction with life.