

# NSU Assignment 2

Course: Epidemiology II (Ahmed Hossain, PhD)

*Due Date: March 18, 2016*

**Q1** Forty-five patients with fever, headache, and a history of tick bite were classified into two groups: those with Rocky Mountain Spotted Fever (RMSF) and those without it. The serum-sodium level of each patient is measured using two techniques.

<b>RMSF=Yes</b>				<b>RMSF=No</b>			
ID	Method1	Method2	Diagnosis	ID	Method1	Method2	Diagnosis
1	124	122	1	22	129	124	0
2	125	124	1	23	131	128	0
3	126	125	1	24	131	130	0
4	126	125	1	25	134	133	0
5	127	126	1	26	134	133	0
6	128	126	1	27	135	133	0
7	128	127	1	28	136	134	0
8	128	128	1	29	136	134	0
9	128	128	1	30	136	134	0
10	129	128	1	31	137	134	0
11	129	130	1	32	137	136	0
12	131	130	1	33	138	136	0
13	132	133	1	34	138	137	0
14	133	133	1	35	139	138	0
15	133	134	1	36	139	138	0
16	135	134	1	37	139	140	0
17	135	134	1	38	139	140	0
18	135	134	1	39	140	141	0
19	136	136	1	40	140	141	0
20	138	138	1	41	141	142	0
21	139	140	1	42	142	142	0
				43	142	142	0
				44	142	142	0
				45	143	144	0

1. Find the sensitivity and specificity with the cutoff values 128, 130, 133, 137 and 140. Hint,

**Table for Method 1, Cutoff = 137**

Method 1 Cutoff=137	RMSF=Yes	RMSF=No
Sodium<=137, <b>Positive</b>	19	11
Sodium>137, <b>Negative</b>	2	13

**Table for Method 2, Cutoff = 137**

Method 2 Cutoff=137	RMSF=Yes	RMSF=No
Sodium<=137, <b>Positive</b>	19	13
Sodium>137, <b>Negative</b>	12	11

2. Which technique is most accurate in diagnosing. (Hint: draw a figure with sensitivity corresponding to 1-specificity.) RMSF?

**Q2** For each survey in the following, describe the target population, design, possible sampling technique and determine the sample size. Discuss any possible sources of selection bias or inaccuracy of responses.

1. Many scholars and policy makers are interested in the proportion of homeless people who are mentally ill in dhaka city. From a pilot study you find that 33% of all homeless people are mentally ill who received medical attention from one of the clinics (total 12 clinics) in the Health Care for the Homeless (HCH) project. It is also found that approximately 30 homeless people visit the clinics each day. You may be interested to continue the data collection for next 30 days.
2. A survey is conducted to find the average weight of first trimester pregnant women in a region. A list of all ANC services is available for the region, and it is found that the standard deviation of the weight of first trimester pregnant women is 2.8 and it is also found that there are about 1600 pregnant women reported in the ANCs.
3. The researcher wants to study the prevalence of smoking and other risk behaviors among female high school students in a different region of dhaka city with 35 universities.
4. Cigarette smoking is a remarkably strong cause of lung cancer. Our aim is to learn how cigarette smoking is associated with the risk of lung cancer especially in male Bangladeshi population. The study will explore the relationship between smoking habit and development of lung cancer among visited male patients in a hospital of Bangladesh.