**MSDS 6370**

Due: May 16, 2017

1. Exercise 1.1

This is not EPSEM unless for each student the number of schools of their level times the number of classrooms in their school are all equal, highly unlikely. The probability of any given student being selected equals:

Where is the number of schools of the student’s level in the district and is the number of rooms in the student’s school.

1. Exercise 1.2

Coverage bias: Unless every freshman is required to take Intro to Psych there will be coverage bias. Social Science majors may be over represented compared to physical science major for example. Student facing college level math may face different challenges entering college than students who do not face those courses.

Selection bias: There may be selection bias as well. This is a volunteer sample and students who struggle may be more likely to seek extra credit.

Non-response bias: The response rate should be very high since it is a volunteer sample.

I do not think this sample is appropriate for the research question. I think the reasons for possible bias are related to the question the researchers are trying to answer. I think an email to every freshman would yield a more representative sample of the population.

1. Exercise 2.2

Population: Adults over the age of 18 who reside within the city limits of the town excluding college students and those in group quarters such as jail or nursing homes..

Children are not eligible; their guardian will speak for them.

People who live outside of the city are not eligible, they do not pay property taxes.

All university students are not included; they have access to other facilities.

1. Exercise 3.1

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| --- | --- | --- | --- |
| **Simple Random Sample** | |  |  |
| Student | Rand | Order |  |
| Ravi Srinivas | 0.153594601 | 1 | \* |
| Salomon Gilles | 0.185101489 | 2 | \* |
| Dominique Edwards | 0.186027472 | 3 | \* |
| Rajeev Kumar | 0.22038217 | 4 |  |
| Celia Taylor | 0.289822182 | 5 |  |
| Alex Deshowitz | 0.466271981 | 6 |  |
| Najeeb Zaidi | 0.619473421 | 7 |  |
| Tracie Scott | 0.931730767 | 8 |  |
| Araya Messa | 0.959952114 | 9 |  |
| Andrew Abbott | 0.99111581 | 10 |  |
|  |  |  |  |
|  |  |  |  |
| **Systemic Sampling** |  |  |  |
| Andrew Abbott | 1 | \* |  |
| Alex Deshowitz | 2 |  |  |
| Dominique Edwards | 3 |  |  |
| Salomon Gilles | 4 | \* |  |
| Rajeev Kumar | 5 |  |  |
| Araya Messa | 6 |  |  |
| Tracie Scott | 7 | \* |  |
| Ravi Srinivas | 8 |  |  |
| Celia Taylor | 9 |  |  |
| Najeeb Zaidi | 10 |  |  |
|  |  |  |  |
| Interval = 10/3 = | 3.3 |  |  |
| random start = | 4 |  |  |