Announcements on March 21

⦿ Schedule

- 3/19: Random Variables
  - Read MU 2.
- 3/21:

  Random Variables (Expectation, Conditional Expectation)
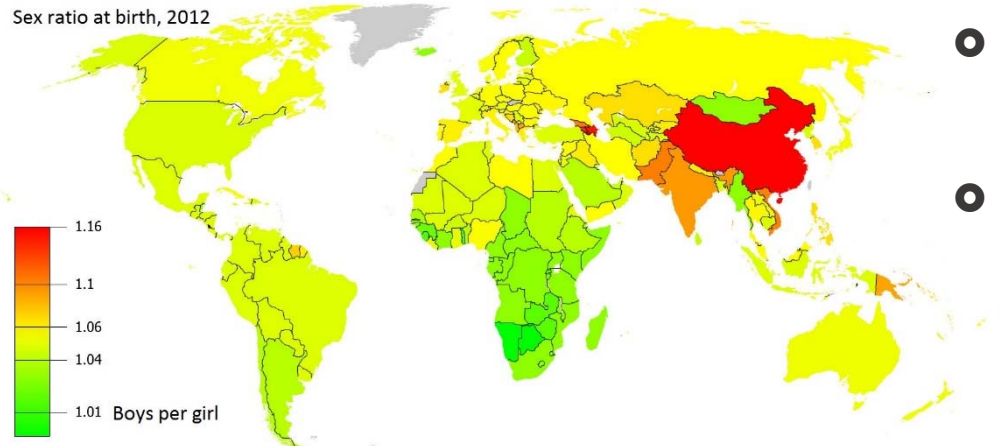 - Read MU 2.

  Quiz

  Homework: MU Chapter 2: 2, 6, 8, 9, 18, 25, 28, 31
- 3/26: Random variables (Examples of Discrete RVs)
  - Read MU 2

Gender Imbalance

Sex ratio at birth, 2012

- 1.16
- 1.1
- 1.06
- 1.04
- 1.01 Boys per girl

◉ To find the Girls to Boys ratio when people prefer Girls over Boys

◉ Assumptions:

- Married couples give births one child per birth (No twins)

- A child is either Girl or Boy with the equal prob.

- Girls are preferred over Boys and each couple keep giving births until they have a Girl

- Couples stop giving birth if they have a Girl

◉ Solutions

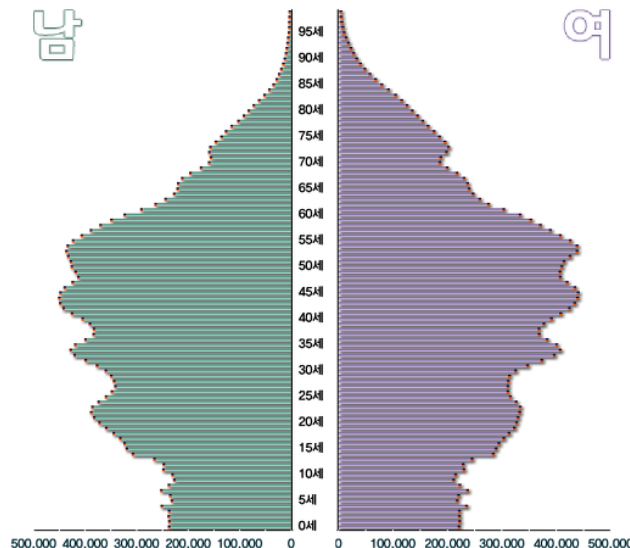Refer to MU Problem 2.8

Announcements on March 26

⊙ Schedule

- 3/21:

  Random Variables (Expectation, Conditional Expectation)

  • Read MU 2.

  Quiz

  Homework: MU Chapter 2: 2, 6, 8, 9, 18, 25, 28, 31

- 3/26: Random variables (Examples of Discrete RVs)

  • Read MU 2

- 3/28: Moments

  • Read MU 3

Figure Collection

Figure Collection

- Assume that the probabilities of receiving each figure type are the same
  - Pr(Kia Tigers) = Pr(LG Twins) = … = 1/10

- How many burgers should you eat until collecting a "Kia Tigers"?

- How many burgers should you eat until collecting all figure types?

⦿ Schedule

– 3/26: Random variables (Examples of Discrete RV)

– 3/28: Moments
- Read MU Chapter 3
- **HW: MU Chapter 3: 12, 13, 14, 26**
  MU Chapter 4: 1, 2, 7, 9, 10, 12

– 4/02: Moments, MGF, Bounds
- Read MU Chapter 3 & Chapter 4

Google "Trend"

2018년 3월 20일 화요일

1 설현
최소 200,000명회 검색됨
설현, 과거 아이돌 고충 토로"혼자 밥 먹고 영화 본다" 부산
그룹 AOA의 설현이 자신을 둘러싼 루머에 대해 강경대응할

2 이명박
최소 2,000명회 검색됨
이명박측 "이미 예상했던 수순…법정에서 진실 밝힐 것" ㅎ
이명박 전 대통령(MB)측은 19일 검찰의 구속영장 청구에

2018년 3월 19일 월요일

1 이태임
최소 20,000명회 검색됨
배우 **이태임** "평범한 삶 살기로"…활동중단 암시글 한겨레
이태임은 19일 자신의 인스타그램에 "여러 생각과 고통 속

- **Problem**
  - Millions of search keywords streamed into search engines
  - Determine "Top Ten" list of most popular keywords

- **Naïve, but exact Solution**
  - Maintain a counter for each keyword
    - ➔ Millions of distinct keywords
    - ➔ Exact answer not required

- **Stream processing**
  - Complete processing in one pass while data are streaming into the system

- **Use various, proprietary sampling methods such as reservoir sampling**

    Exercise 2.18,19

◉ Schedule

- 3/28: Moments
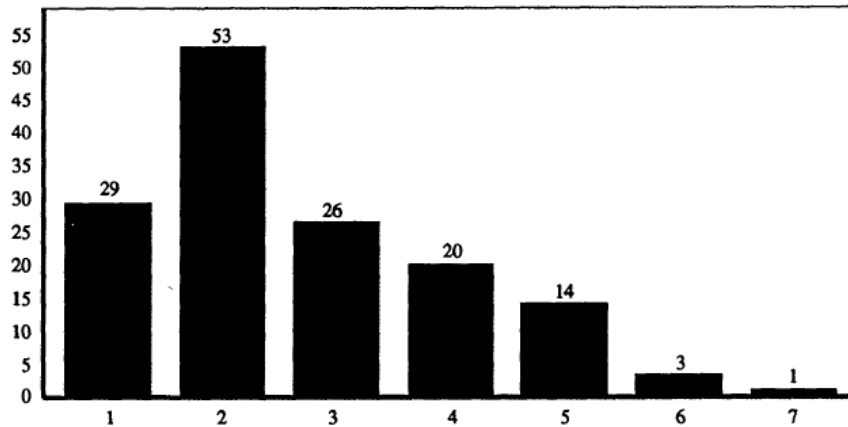 - ● Read MU Chapter 3
- 4/02:

Think You're Lucky?

- In controllable circumstances or if decisions requires reasoning, people tend to over-estimate their abilities in making good decisions
  - Stock investments
  - Guess answers to questions
  - …

- Contrarily, in the case of out-of-control circumstances, people believe they are extremely unlucky
  - It rains whenever I picnic
  - Buses came late whenever I wait buses
  - The restaurants I visited were always crowded

- Mostly untrue

- The fact is
  - You wait buses longer than half of the average inter-arrival times
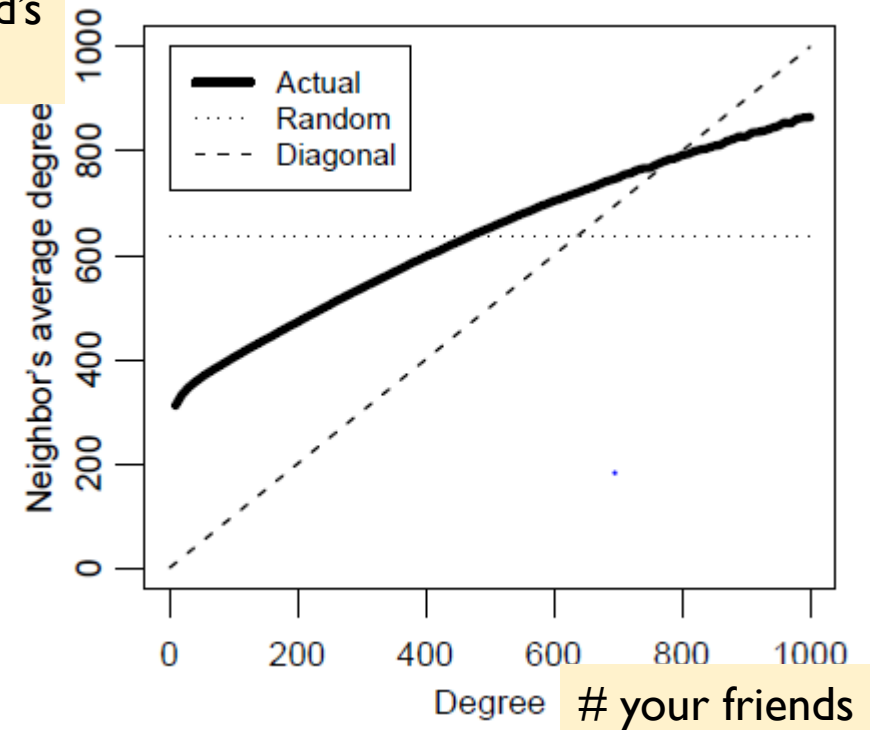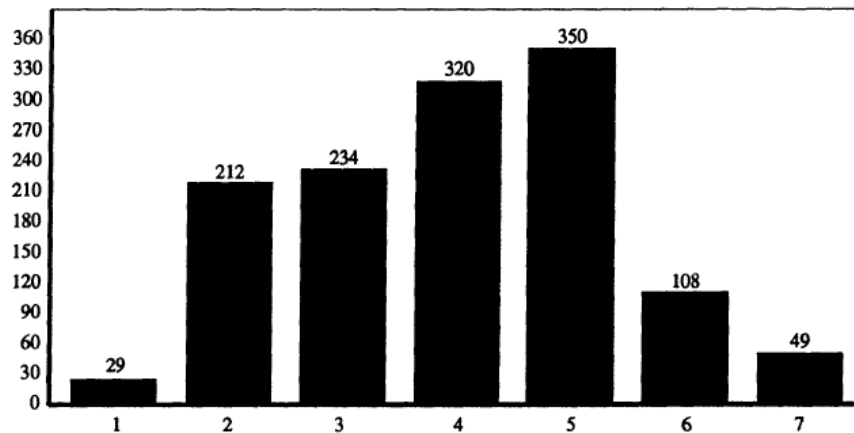 - Your friends have more friends than you

Think You're Lucky?

- Feld, a sociologist, said that "Your friends have more friends than you"

your friend's friends

a) The mean is 2.7.

your friends

Facebook Data

Why?

- Example: Waiting buses
  - Assume that average bus inter-arrival time is 7.5 min. but inter-arrival times are either 5 min. or 10 min.
    - ➔ You expect the waiting of 3.75 min.

  - Passengers arrive a bus stop uniformly at random
  - If one arrives during a short interval, she waits 2.5 min. on average
  - OW, she waits 5 min. on average
  - The prob. that one arrives during a short and long interval are 1/3 and 2/3, respectively
  - ➔ Average waiting = 2.5*1/3 + 5*2/3 > 3.75

- Apply the same argument and you can derive that "Your friends have more friends than you"

Regression Toward the Mean

○ Average heights of Female & Male are 165 & 175, respectively