1. What are the names of the people in your study group?

CHAN, KIM FAI

NICHOLAS

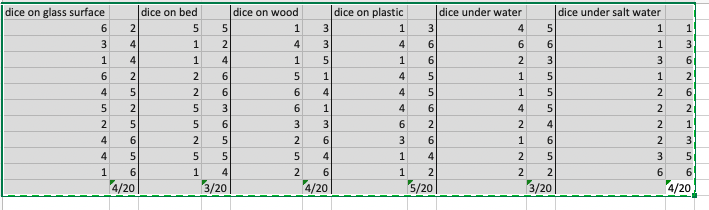
JOAQUIN SANCHEZ

COLLIN FAFFERTY

KYLE ZHOU

TANMAY THOMAS

1. WILL FINISH ON FRI Sept 24, 2021
2. Dice on various surface, I make 6 ways on how to dice and the result range between “3 ‘6’ out of 20 attempts” to “5 ‘6’ out of 20 attempts”, as below shows, seems probability on the result are random:



if I just use R to random dice 20 time, result as below:

> roll\_dice=function(n) sample(1:6,n,rep=T)

> roll\_dice(20)

[1] 6 2 4 4 6 6 3 4 5 6 2 6 6 1 6 4 3 3 1 6

> mean(roll\_dice(20))

[1] 3.25

> sd(roll\_dice(20))

[1] 1.631112

P(6)=40%

1. :My finding for the data are (not sure if I am correct):
2. the man’s average is younger than women which is 40.35 compare to women 42.72
3. according to the record, 69.97% white, 12.5% afican and 8.65% Asian, white is in very high percentage
4. it has 4.87% of total population who doesn’t purchase health insurance, and 69.06% purchase private health insurance. Which is weir to me because I did not purchase private insurance
5. I am not sure I am understanding and reading the data correctly, there are 26.76% of population which the income is lower than 20k, among them there are 19.65% of population which the income is lower than 15k, also 14.65% population applying food stamp. Seems this is why government expense so high and our tax are so high as well…

Coding record as below(question number 5 jump to page 8)

detach()

> load("acs2017\_ny\_data.RData")

>

>

> acs2017\_ny[1:10,1:7]

AGE female educ\_nohs educ\_hs educ\_somecoll educ\_college educ\_advdeg

1 72 1 0 0 0 0 1

2 72 0 0 0 0 0 1

3 31 0 0 0 0 1 0

4 28 1 0 0 0 1 0

5 54 0 0 0 0 0 1

6 45 1 0 1 0 0 0

7 84 1 0 0 1 0 0

8 71 0 0 0 0 1 0

9 68 1 0 0 1 0 0

10 37 1 1 0 0 0 0

>

> attach(acs2017\_ny)

> summary(acs2017\_ny)

AGE female educ\_nohs educ\_hs

Min. : 0.00 Min. :0.0000 Min. :0.000 Min. :0.0000

1st Qu.:22.00 1st Qu.:0.0000 1st Qu.:0.000 1st Qu.:0.0000

Median :42.00 Median :1.0000 Median :0.000 Median :0.0000

Mean :41.57 Mean :0.5156 Mean :0.271 Mean :0.2804

3rd Qu.:60.00 3rd Qu.:1.0000 3rd Qu.:1.000 3rd Qu.:1.0000

Max. :95.00 Max. :1.0000 Max. :1.000 Max. :1.0000

educ\_somecoll educ\_college educ\_advdeg SCHOOL

Min. :0.000 Min. :0.0000 Min. :0.000 N/A : 5569

1st Qu.:0.000 1st Qu.:0.0000 1st Qu.:0.000 No, not in school:144968

Median :0.000 Median :0.0000 Median :0.000 Yes, in school : 46048

Mean :0.173 Mean :0.1567 Mean :0.119 Missing : 0

3rd Qu.:0.000 3rd Qu.:0.0000 3rd Qu.:0.000

Max. :1.000 Max. :1.0000 Max. :1.000

EDUC

Grade 12 :55119

4 years of college :30802

5+ years of college :23385

1 year of college :19947

Nursery school to grade 4:14240

2 years of college :14065

(Other) :39027

EDUCD

Regular high school diploma :35689

Bachelor's degree :30802

1 or more years of college credit, no degree:19947

Master's degree :17010

Associate's degree, type not specified :14065

Some college, but less than 1 year : 9086

(Other) :69986

DEGFIELD

N/A :142398

Business : 9802

Education Administration and Teaching : 6708

Social Sciences : 4836

Medical and Health Sciences and Services: 3919

Fine Arts : 3491

(Other) : 25431

DEGFIELDD

N/A :142398

Psychology : 2926

Business Management and Administration: 2501

Accounting : 2284

General Education : 2238

English Language and Literature : 2202

(Other) : 42036

DEGFIELD2

N/A :190425

Business : 972

Social Sciences : 853

Education Administration and Teaching: 611

Fine Arts : 465

Communications : 352

(Other) : 2907

DEGFIELD2D

N/A :190425

Psychology : 284

Economics : 260

Political Science and Government : 243

Business Management and Administration : 217

French, German, Latin and Other Common Foreign Language Studies: 205

(Other) : 4951

PUMA GQ OWNERSHP OWNERSHPD MORTGAGE

Min. : 100 Min. :1.000 Min. :0.000 Min. : 0.00 Min. :0.000

1st Qu.:1500 1st Qu.:1.000 1st Qu.:1.000 1st Qu.:12.00 1st Qu.:0.000

Median :3201 Median :1.000 Median :1.000 Median :13.00 Median :1.000

Mean :2713 Mean :1.148 Mean :1.266 Mean :14.95 Mean :1.453

3rd Qu.:3902 3rd Qu.:1.000 3rd Qu.:2.000 3rd Qu.:22.00 3rd Qu.:3.000

Max. :4114 Max. :5.000 Max. :2.000 Max. :22.00 Max. :4.000

OWNCOST RENT COSTELEC COSTGAS COSTWATR

Min. : 0 Min. : 0 Min. : 0 Min. : 0 Min. : 0

1st Qu.: 1208 1st Qu.: 0 1st Qu.: 960 1st Qu.: 840 1st Qu.: 320

Median : 2891 Median : 0 Median :1560 Median :2400 Median :1400

Mean :38582 Mean : 393 Mean :2311 Mean :5032 Mean :4836

3rd Qu.:99999 3rd Qu.: 630 3rd Qu.:2520 3rd Qu.:9993 3rd Qu.:9993

Max. :99999 Max. :3800 Max. :9997 Max. :9997 Max. :9997

COSTFUEL HHINCOME FOODSTMP LINGISOL

Min. : 0 Min. : -11800 Min. :1.000 Min. :0.000

1st Qu.:9993 1st Qu.: 41600 1st Qu.:1.000 1st Qu.:1.000

Median :9993 Median : 81700 Median :1.000 Median :1.000

Mean :7935 Mean : 114902 Mean :1.147 Mean :1.002

3rd Qu.:9993 3rd Qu.: 140900 3rd Qu.:1.000 3rd Qu.:1.000

Max. :9997 Max. :2030000 Max. :2.000 Max. :2.000

NA's :10630

ROOMS BUILTYR2 UNITSSTR FUELHEAT

Min. : 0.000 Min. : 0.000 Min. : 0.00 Min. :0.000

1st Qu.: 4.000 1st Qu.: 1.000 1st Qu.: 3.00 1st Qu.:2.000

Median : 6.000 Median : 3.000 Median : 3.00 Median :2.000

Mean : 5.887 Mean : 3.711 Mean : 4.39 Mean :2.959

3rd Qu.: 8.000 3rd Qu.: 5.000 3rd Qu.: 6.00 3rd Qu.:4.000

Max. :16.000 Max. :22.000 Max. :10.00 Max. :9.000

SSMC FAMSIZE NCHILD NCHLT5

Min. :0.00000 Min. : 1.000 Min. :0.0000 Min. :0.00000

1st Qu.:0.00000 1st Qu.: 2.000 1st Qu.:0.0000 1st Qu.:0.00000

Median :0.00000 Median : 3.000 Median :0.0000 Median :0.00000

Mean :0.01102 Mean : 3.087 Mean :0.5009 Mean :0.08441

3rd Qu.:0.00000 3rd Qu.: 4.000 3rd Qu.:1.0000 3rd Qu.:0.00000

Max. :2.00000 Max. :19.000 Max. :9.0000 Max. :5.00000

RELATE RELATED MARST RACE RACED

Min. : 1.000 Min. : 101.0 Min. :1.000 Min. :1.00 Min. :100

1st Qu.: 1.000 1st Qu.: 101.0 1st Qu.:1.000 1st Qu.:1.00 1st Qu.:100

Median : 2.000 Median : 201.0 Median :5.000 Median :1.00 Median :100

Mean : 3.307 Mean : 335.6 Mean :3.742 Mean :2.03 Mean :205

3rd Qu.: 3.000 3rd Qu.: 301.0 3rd Qu.:6.000 3rd Qu.:2.00 3rd Qu.:200

Max. :13.000 Max. :1301.0 Max. :6.000 Max. :9.00 Max. :990

HISPAN HISPAND BPL

Min. :0.0000 Min. : 0.00 New York :128517

1st Qu.:0.0000 1st Qu.: 0.00 West Indies : 8481

Median :0.0000 Median : 0.00 China : 4964

Mean :0.4153 Mean : 44.75 SOUTH AMERICA: 4957

3rd Qu.:0.0000 3rd Qu.: 0.00 India : 3476

Max. :4.0000 Max. :498.00 Pennsylvania : 3303

(Other) : 42887

BPLD ANCESTR1

New York :128517 Not Reported :32021

China : 4116 Italian :20577

Dominican Republic: 3517 Irish, various subheads,:16388

Pennsylvania : 3303 German :12781

New Jersey : 3127 African-American : 9559

Puerto Rico : 2272 United States : 8209

(Other) : 51733 (Other) :97050

ANCESTR1D ANCESTR2

Not Reported :32021 Not Reported:141487

Italian (1990-2000, ACS, PRCS) :20577 German : 9476

Irish :15651 Irish : 9238

German (1990-2000, ACS/PRCS) :12605 English : 4895

African-American (1990-2000, ACS, PRCS): 9559 Italian : 4531

United States : 8209 Polish : 3113

(Other) :97963 (Other) : 23845

ANCESTR2D CITIZEN YRSUSA1

Not Reported :141487 Min. :0.0000 Min. : 0.000

German (1990-2000, ACS, PRCS) : 9441 1st Qu.:0.0000 1st Qu.: 0.000

Irish : 8809 Median :0.0000 Median : 0.000

English : 4895 Mean :0.4793 Mean : 5.377

Italian (1990-2000, ACS, PRCS): 4531 3rd Qu.:0.0000 3rd Qu.: 0.000

Polish : 3113 Max. :3.0000 Max. :92.000

(Other) : 24309

HCOVANY HCOVPRIV SEX EMPSTAT EMPSTATD

Min. :1.000 Min. :1.000 Male : 95222 Min. :0.000 Min. : 0.00

1st Qu.:2.000 1st Qu.:1.000 Female:101363 1st Qu.:1.000 1st Qu.:10.00

Median :2.000 Median :2.000 Median :1.000 Median :10.00

Mean :1.951 Mean :1.691 Mean :1.514 Mean :15.16

3rd Qu.:2.000 3rd Qu.:2.000 3rd Qu.:3.000 3rd Qu.:30.00

Max. :2.000 Max. :2.000 Max. :3.000 Max. :30.00

LABFORCE OCC IND CLASSWKR CLASSWKRD

Min. :0.000 0 : 79987 0 :79987 Min. :0.000 Min. : 0.00

1st Qu.:1.000 2310 : 3494 7860 : 9025 1st Qu.:0.000 1st Qu.: 0.00

Median :2.000 5700 : 3235 8680 : 6354 Median :2.000 Median :22.00

Mean :1.331 430 : 3025 770 : 6279 Mean :1.116 Mean :13.03

3rd Qu.:2.000 4720 : 2666 8190 : 5873 3rd Qu.:2.000 3rd Qu.:22.00

Max. :2.000 4760 : 2563 7870 : 4041 Max. :2.000 Max. :29.00

(Other):101615 (Other):85026

WKSWORK2 UHRSWORK INCTOT FTOTINC

Min. :0.000 Min. : 0.00 Min. : -7300 Min. : -11800

1st Qu.:0.000 1st Qu.: 0.00 1st Qu.: 8000 1st Qu.: 35550

Median :1.000 Median :12.00 Median : 25000 Median : 74000

Mean :2.701 Mean :19.77 Mean : 45245 Mean : 107110

3rd Qu.:6.000 3rd Qu.:40.00 3rd Qu.: 56500 3rd Qu.: 132438

Max. :6.000 Max. :99.00 Max. :1563000 Max. :2030000

NA's :31129 NA's :10817

INCWAGE POVERTY MIGRATE1 MIGRATE1D

Min. : 0 Min. : 0.0 Min. :0.000 Min. : 0.00

1st Qu.: 0 1st Qu.:159.0 1st Qu.:1.000 1st Qu.:10.00

Median : 10000 Median :351.0 Median :1.000 Median :10.00

Mean : 33796 Mean :318.7 Mean :1.122 Mean :11.51

3rd Qu.: 47000 3rd Qu.:501.0 3rd Qu.:1.000 3rd Qu.:10.00

Max. :638000 Max. :501.0 Max. :4.000 Max. :40.00

NA's :33427

MIGPLAC1 MIGCOUNTY1 MIGPUMA1 VETSTAT

Min. : 0.000 Min. : 0.000 Min. : 0 Min. :0.0000

1st Qu.: 0.000 1st Qu.: 0.000 1st Qu.: 0 1st Qu.:1.0000

Median : 0.000 Median : 0.000 Median : 0 Median :1.0000

Mean : 6.184 Mean : 4.117 Mean : 277 Mean :0.8621

3rd Qu.: 0.000 3rd Qu.: 0.000 3rd Qu.: 0 3rd Qu.:1.0000

Max. :900.000 Max. :810.000 Max. :70100 Max. :2.0000

VETSTATD PWPUMA00 TRANWORK TRANTIME

Min. : 0.000 Min. : 0 Min. : 0.000 Min. : 0.00

1st Qu.:11.000 1st Qu.: 0 1st Qu.: 0.000 1st Qu.: 0.00

Median :11.000 Median : 0 Median : 0.000 Median : 0.00

Mean : 9.412 Mean : 1255 Mean : 9.725 Mean : 14.75

3rd Qu.:11.000 3rd Qu.: 3100 3rd Qu.:10.000 3rd Qu.: 20.00

Max. :20.000 Max. :59300 Max. :70.000 Max. :138.00

DEPARTS in\_NYC in\_Bronx in\_Manhattan

Min. : 0.0 Min. :0.0000 Min. :0.0000 Min. :0.00000

1st Qu.: 0.0 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:0.00000

Median : 0.0 Median :0.0000 Median :0.0000 Median :0.00000

Mean : 373.3 Mean :0.3615 Mean :0.0538 Mean :0.04981

3rd Qu.: 732.0 3rd Qu.:1.0000 3rd Qu.:0.0000 3rd Qu.:0.00000

Max. :2345.0 Max. :1.0000 Max. :1.0000 Max. :1.00000

in\_StatenI in\_Brooklyn in\_Queens in\_Westchester

Min. :0.00000 Min. :0.000 Min. :0.0000 Min. :0.00000

1st Qu.:0.00000 1st Qu.:0.000 1st Qu.:0.0000 1st Qu.:0.00000

Median :0.00000 Median :0.000 Median :0.0000 Median :0.00000

Mean :0.02084 Mean :0.126 Mean :0.1111 Mean :0.04413

3rd Qu.:0.00000 3rd Qu.:0.000 3rd Qu.:0.0000 3rd Qu.:0.00000

Max. :1.00000 Max. :1.000 Max. :1.0000 Max. :1.00000

in\_Nassau Hispanic Hisp\_Mex Hisp\_PR

Min. :0.00000 Min. :0.0000 Min. :0.00000 Min. :0.0000

1st Qu.:0.00000 1st Qu.:0.0000 1st Qu.:0.00000 1st Qu.:0.0000

Median :0.00000 Median :0.0000 Median :0.00000 Median :0.0000

Mean :0.07032 Mean :0.1387 Mean :0.01626 Mean :0.0436

3rd Qu.:0.00000 3rd Qu.:0.0000 3rd Qu.:0.00000 3rd Qu.:0.0000

Max. :1.00000 Max. :1.0000 Max. :1.00000 Max. :1.0000

Hisp\_Cuban Hisp\_DomR white AfAm

Min. :0.000000 Min. :0.00000 Min. :0.0000 Min. :0.000

1st Qu.:0.000000 1st Qu.:0.00000 1st Qu.:0.0000 1st Qu.:0.000

Median :0.000000 Median :0.00000 Median :1.0000 Median :0.000

Mean :0.003403 Mean :0.02827 Mean :0.6997 Mean :0.125

3rd Qu.:0.000000 3rd Qu.:0.00000 3rd Qu.:1.0000 3rd Qu.:0.000

Max. :1.000000 Max. :1.00000 Max. :1.0000 Max. :1.000

Amindian Asian race\_oth unmarried

Min. :0.000000 Min. :0.00000 Min. :0.0000 Min. :0.00

1st Qu.:0.000000 1st Qu.:0.00000 1st Qu.:0.0000 1st Qu.:0.00

Median :0.000000 Median :0.00000 Median :0.0000 Median :0.00

Mean :0.003779 Mean :0.08656 Mean :0.1324 Mean :0.45

3rd Qu.:0.000000 3rd Qu.:0.00000 3rd Qu.:0.0000 3rd Qu.:1.00

Max. :1.000000 Max. :1.00000 Max. :1.0000 Max. :1.00

veteran has\_AnyHealthIns has\_PvtHealthIns Commute\_car

Min. :0.00000 Min. :0.0000 Min. :0.0000 Min. :0.0000

1st Qu.:0.00000 1st Qu.:1.0000 1st Qu.:0.0000 1st Qu.:0.0000

Median :0.00000 Median :1.0000 Median :1.0000 Median :0.0000

Mean :0.04443 Mean :0.9513 Mean :0.6906 Mean :0.2997

3rd Qu.:0.00000 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:1.0000

Max. :1.00000 Max. :1.0000 Max. :1.0000 Max. :1.0000

Commute\_bus Commute\_subway Commute\_rail Commute\_other

Min. :0.00000 Min. :0.00000 Min. :0.00000 Min. :0.00000

1st Qu.:0.00000 1st Qu.:0.00000 1st Qu.:0.00000 1st Qu.:0.00000

Median :0.00000 Median :0.00000 Median :0.00000 Median :0.00000

Mean :0.02162 Mean :0.07468 Mean :0.01332 Mean :0.05506

3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.00000 3rd Qu.:0.00000

Max. :1.00000 Max. :1.00000 Max. :1.00000 Max. :1.00000

below\_povertyline below\_150poverty below\_200poverty foodstamps

Min. :0.000 Min. :0.0000 Min. :0.0000 Min. :0.0000

1st Qu.:0.000 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:0.0000

Median :0.000 Median :0.0000 Median :0.0000 Median :0.0000

Mean :0.122 Mean :0.1965 Mean :0.2676 Mean :0.1465

3rd Qu.:0.000 3rd Qu.:0.0000 3rd Qu.:1.0000 3rd Qu.:0.0000

Max. :1.000 Max. :1.0000 Max. :1.0000 Max. :1.0000

> print(NN\_obs <- length(AGE))

[1] 196585

> summary(AGE[female == 1])

Min. 1st Qu. Median Mean 3rd Qu. Max.

0.00 23.00 44.00 42.72 61.00 95.00

> summary(AGE[!female])

Min. 1st Qu. Median Mean 3rd Qu. Max.

0.00 21.00 40.00 40.35 59.00 95.00

> mean(AGE[female == 1])

[1] 42.71629

> sd(AGE[female == 1])

[1] 23.72012

> mean(AGE[!female])

[1] 40.35398

> sd(AGE[!female])

[1] 23.1098

>

1. I random choce SP500 from Aug 03, 2020 to Sep 11, 2020, From the beginning of August 2020, market got 7 days’ rise, which generated a mean return rate of 0.447%. the previous two days mean return rate is 0.57% much higher than that in 7 days rising of 0.447%. My understanding is: when the market is in rise period, investors believe that the return rate will be more often to remain positive. Similarly, in the dice experiment, the first 20 times rolling dice physically, I got 8 time of "6". I believe the market has been increasing for a certain period, our mind will think that there might be a downturn after a consecutive positive return from stock. In this situation, part of the investors may believe to go short and and hence has impact to other investors.

My conclusion is that it’s just like a gamble over a gamble, But it seems that stock market sometime like rolling dice and there’s no conditional probability. So\ Since the daily return of the stock is an independent event, the probability is 50/50, and investment should still focus on long run rather than short run.