PS1_ECON_471

kareem2, alynde2

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2 Simulating an economic model by programming

```
library(data.table)
library(knitr)
#1
N = 100
#2
unif.draws = runif(N, 0, 1)
#3
data = data.table(unif.draws)
#4
data[unif.draws < .09, education := "Less than high school"]
data[unif.draws >= .09 & unif.draws < .37, education := "High school"]
data[unif.draws >= .37 & unif.draws < .62, education := "Some college"]
data[unif.draws >= .62 & unif.draws < .86, education := "College"]
data[unif.draws >= .86, education := "More than college"]
```

5 unif.draws is analogous to an event or outcome in Ω, and education is analogous to a variable which measures the event.

6 The distribution of education is as follows

$$

```
\begin{cases}
 0.09 & education = \textrm{Less than high school} \\
 0.28 & education = \textrm{High school} \\
 0.25 & education = \textrm{Some college} \\
 0.24 & education = \textrm{College} \\
 0.14 & education = \textrm{More than college}
\end{cases}
```

$$

```
#7
data[education == "Less than high school", base.wages := 15.48]
data[education == "High school", base.wages := 19.53]
data[education == "Some college", base.wages := 22.50]
data[education == "College", base.wages := 32.63]
data[education == "More than college", base.wages := 41.25]

#8
data[, skill := rnorm(100, 0, 1)]

#9
```

```r
data[, wage := base.wages + 5 * skill]

#10
mean(data$wage)
```

```
## [1] 23.8199
```

```r
var(data$wage)
```

```
## [1] 81.51268
```

```r
#11
mean(data$wage[data$education == "College"])
```

```
## [1] 28.77772
```

```r
var(data$wage[data$education == "College"])
```

```
## [1] 15.67772
```

We can see here that the mean wage is higher given education = College