

# IO2 PS2: Bresnahan and Reiss (1991)

Carlos T. Estrada Arzamendi

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## Problem 1 :

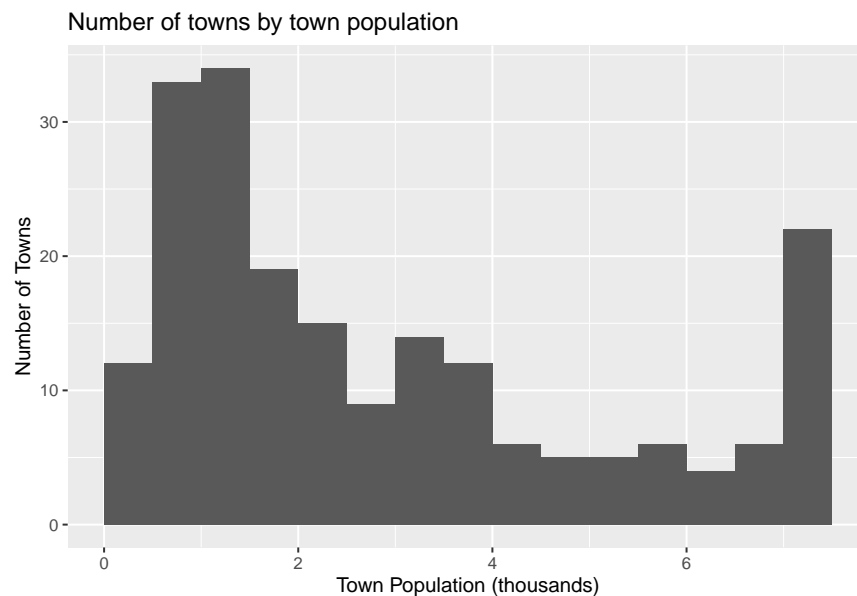
Reproduce the results for the tire dealers reported in Table 4 of the paper. Note that Bresnahan and Reiss (1991) estimate the model imposing the constraints  $\alpha_n \geq 0$  and  $\gamma_n \geq 0$ . You should impose the same constraints.

```
# Reading Data
data = as.data.table(read.csv("ps2.csv"))
```

## Reproducing Figure 2 to get to know the data

```
figure2 = ggplot(data, aes(x = TPOP)) + geom_histogram(breaks = seq(0,7.5, by = 0.5)) +
  scale_x_continuous(limits = c(0, 7.5),
    oob = scales::oob_squish) +
  xlab("Town Population (thousands)") +
  ylab("Number of Towns") +
  ggtitle("Number of towns by town population")
```

figure2



**Table 3**

```
datasummary_skim(data, out = "markdown", histogram = F, title = "Table 3")
```

Table 1: Table 3

	Unique	Missing Pct.	Mean	SD	Min	Median	Max
ID	202	0	328090.8	143299.0	40013.0	320014.0	560045.0
TIRE	14	0	2.6	2.6	0.0	2.0	13.0
TPOP	195	0	3.7	5.4	0.1	2.1	45.1
NRGW	58	0	-0.1	0.1	-1.3	0.0	0.0
PGRW	119	0	0.5	1.1	0.0	0.1	7.2
OCTY	160	0	0.3	0.7	0.0	0.2	8.4
OPOP	178	0	0.4	0.7	0.0	0.1	5.8
LANDV	166	0	0.3	0.2	0.1	0.2	1.6
ELD	198	0	0.1	0.0	0.0	0.1	0.3
FFRAC	174	0	0.7	0.4	0.0	0.8	1.3
PINC	191	0	5.9	1.1	3.2	5.9	10.5
LNHDD	62	0	8.6	0.5	6.8	8.7	9.2

**Table 4**

```
#s = TPOP + NRGW + PGRW + OCTY + OPOP
#V = A + FFRAC + ELD + PINC + LNHDD
```