QUESTION: MORE OR LESS RANDOMNESS IN STAT?

BOOTSTRAP METHOD WITH AN EXAMPLE

POPULATION

MEAN μ

VARIANCE σ^2

UNKNOWN

BOX 1

$X_1,...,X_n$

BOX 2:BOOTSTRAP WORLD

DRAW RANDOM SAMPLE

$X_1,...,X_n$

$\overline{X}_n = n^{-1}\sum_{i=1}^{n} X_i$ Q: $Var(\overline{X}_n)=?$

Var DUE TO RANDOMNESS
IN BOX 1

DRAW B SAMPLES SIZE n
CALCULATE SAMPLE MEANS
$\overline{X}^*_1, ..., \overline{X}^*_B$ WITH MEAN $\overline{\overline{X}}^*$

$B^{-1}\sum_{i=1}^{B}(\overline{X}^*_i - \overline{\overline{X}}^*)^2 \sim Var(\overline{X}_n)$

RANDOMNESS | BOX 1
BOX 1+BOX 2