Session no. 2927047

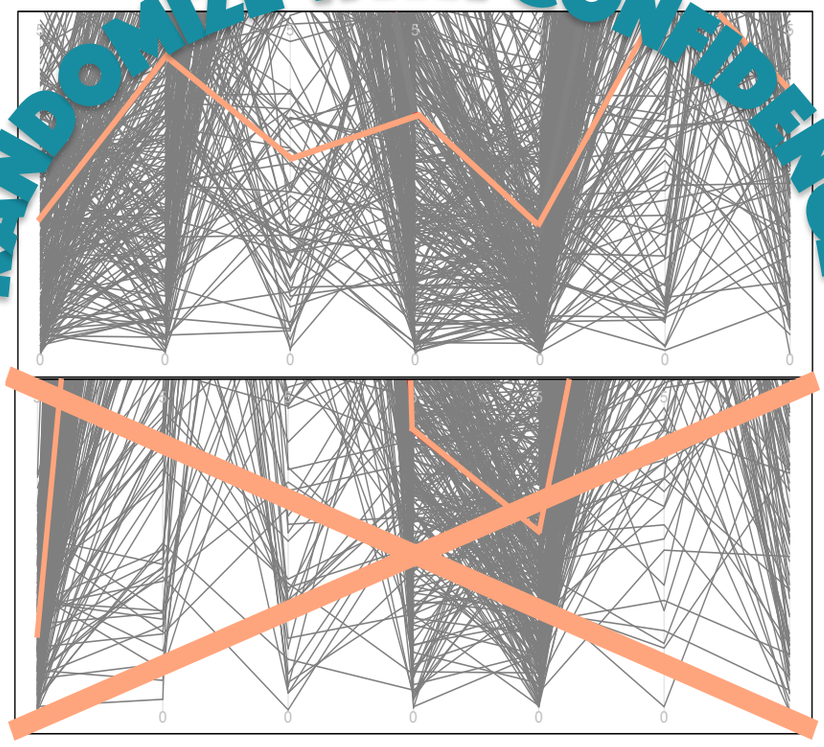
Poster Board 104

# Matching in Randomized Trials Using the Goldilocks Approach

s. gwynn sturdevant, Susan Huang, Richard Platt, and Ken Kleinman

UMass Amherst, UC Irvine, and Harvard University

## RANDOMIZE WITH CONFIDENCE



### 1. CHOOSE K NUMERIC VARIABLES IMPORTANT TO BALANCE

- Age
- Location…

### 2. PAIR ALL UNITS. FIND THE SET WITH MINIMAL MAHALANOBIS DISTANCE

$$\sqrt{(Unit.M_{CV} - Unit.N_{CV})^2}$$

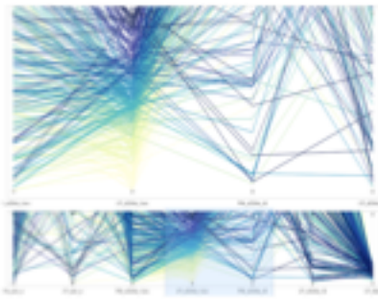
### 3. YOU'VE REACHED THE FLIPqING POINT

randomize the pairs R times

### 4. FIND THE K*R AVERAGES

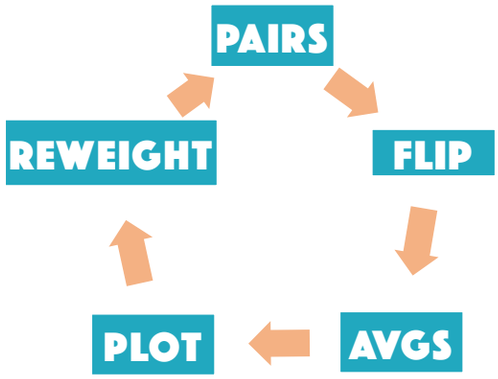
$$Avg_{rk} = \frac{\left|\sum_{trt_r} var_k - \sum_{ctl_r} var_k\right|}{no.of.units}$$

### 5. PLOT THEM



### 6. REWEIGHT TO GET BETTER MATCHES

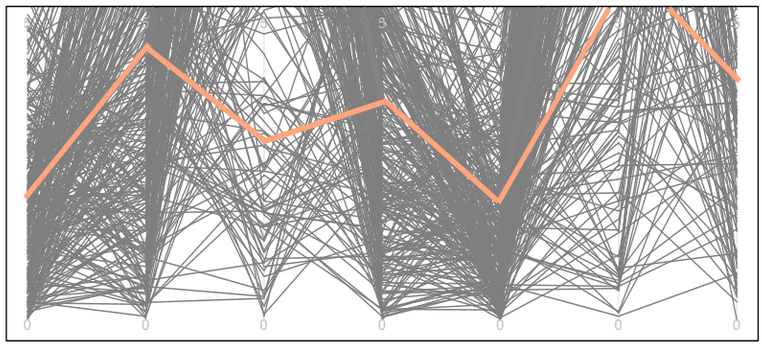

### 7. REPEAT 2 – 6 UNTIL THE PLOT IS OK




### 8. EXPORT THE MATCHES

```
     [,1]      [,2]
[1,] "Unit 21" "NA"
[2,] "Unit 1"  "Unit 8"
[3,] "Unit 2"  "Unit 25"
[4,] "Unit 3"  "Unit 28"
[5,] "Unit 4"  "Unit 27"
[6,] "Unit 5"  "Unit 45"
[7,] "Unit 6"  "Unit 46"
[8,] "Unit 7"  "Unit 41"
[9,] "Unit 9"  "Unit 20"
```

### 9. NOW RANDOMIZE



We developed a Shiny web application to assist. The coding is here:
github.com/nzgwynn/again/blob/master/app.R

The full article is available here:
github.com/nzgwynn/again/blob/master/sage_latex_template_3/Bins.pdf