

Updated: Full SVD Runs

Note that all ratios are original:optimal

With Party Id

KPOP (no meanfirst)

Table 1: KPOP + MF=FALSE + W PID: Comparison of Bias bound and L1 distance by choice of b

| | Bias Bound Ratio | L1 Ratio | Bias Bound Orig | Bias Bound Opt | L1 Orig | L1 Opt |
|---------|------------------|----------|-----------------|----------------|---------|--------|
| b=2x | 2.4161 | 5.4181 | 0.0540 | 0.0224 | 0.0416 | 0.0077 |
| b=1x | 2.2103 | 4.9226 | 0.0531 | 0.0240 | 0.0856 | 0.0174 |
| b=.5x | 4.0284 | 17.1382 | 0.0418 | 0.0104 | 0.1811 | 0.0106 |
| b=.25x | 2.2641 | 5.5715 | 0.0279 | 0.0123 | 0.3531 | 0.0634 |
| b=.125x | 1.2792 | 1.5100 | 0.0210 | 0.0165 | 0.5024 | 0.3327 |

Table 2: KPOP + MF=FALSE + W PID: Choice of b and Estimated Outcome

| | Bias Bound Ratio | L1 Ratio | Est Vote Margin | Diff from Target |
|---------|------------------|----------|-----------------|------------------|
| b=2x | 2.4161 | 5.4181 | -0.0420 | -0.0684 |
| b=1x | 2.2103 | 4.9226 | -0.0130 | -0.0394 |
| b=.5x | 4.0284 | 17.1382 | 0.0409 | 0.0145 |
| b=.25x | 2.2641 | 5.5715 | 0.0244 | -0.0020 |
| b=.125x | 1.2792 | 1.5100 | 0.0564 | 0.0300 |

KPOP with meanfirst

Table 3: KPOP + MF=TRUE + W PID: Comparison of Bias bound and L1 distance by choice of b

| | Bias Bound Ratio | L1 Ratio | Bias Bound Orig | Bias Bound Opt | L1 Orig | L1 Opt |
|---------|------------------|----------|-----------------|----------------|---------|--------|
| b=2x | 7.8998 | 40.9127 | 0.0540 | 0.0068 | 0.0416 | 0.0010 |
| b=1x | 5.4788 | 21.4005 | 0.0531 | 0.0097 | 0.0856 | 0.0040 |
| b=.5x | 3.4858 | 8.4553 | 0.0418 | 0.0120 | 0.1811 | 0.0214 |
| b=.25x | 2.2433 | 4.8617 | 0.0279 | 0.0124 | 0.3531 | 0.0726 |
| b=.125x | 1.3924 | 2.0274 | 0.0210 | 0.0151 | 0.5024 | 0.2478 |

Table 4: KPOP + MF=TRUE + W PID: Choice of b and Estimated Outcome

| | Bias Bound Ratio | L1 Ratio | Est Vote Margin | Diff from Target |
|---------|------------------|----------|-----------------|------------------|
| b=2x | 7.8998 | 40.9127 | 0.0247 | -0.0017 |
| b=1x | 5.4788 | 21.4005 | 0.0249 | -0.0015 |
| b=.5x | 3.4858 | 8.4553 | 0.0268 | 0.0004 |
| b=.25x | 2.2433 | 4.8617 | 0.0263 | -0.0001 |
| b=.125x | 1.3924 | 2.0274 | 0.0292 | 0.0028 |

Without Party Id

KPOP (no meanfirst)

Table 5: KPOP + MF=FALSE + NO PID: Comparison of Bias bound and L1 distance by choice of b

| | Bias Bound Ratio | L1 Ratio | Bias Bound Orig | Bias Bound Opt | L1 Orig | L1 Opt |
|---------|------------------|----------|-----------------|----------------|---------|--------|
| b=2x | 6.0636 | 14.7920 | 0.0575 | 0.0095 | 0.0464 | 0.0031 |
| b=1x | 5.3590 | 14.7438 | 0.0575 | 0.0107 | 0.0960 | 0.0065 |
| b=.5x | 6.6915 | 27.7576 | 0.0472 | 0.0070 | 0.2027 | 0.0073 |
| b=.25x | 2.6331 | 5.9951 | 0.0343 | 0.0130 | 0.3783 | 0.0631 |
| b=.125x | 2.2572 | 3.7655 | 0.0280 | 0.0124 | 0.4964 | 0.1318 |

Table 6: KPOP + MF=FALSE + NO PID: Choice of b and Estimated Outcome

| | Bias Bound Ratio | L1 Ratio | Est Vote Margin | Diff from Target |
|---------|------------------|----------|-----------------|------------------|
| b=2x | 6.0636 | 14.7920 | -0.0205 | -0.0469 |
| b=1x | 5.3590 | 14.7438 | -0.0235 | -0.0499 |
| b=.5x | 6.6915 | 27.7576 | -0.0090 | -0.0354 |
| b=.25x | 2.6331 | 5.9951 | 0.0002 | -0.0262 |
| b=.125x | 2.2572 | 3.7655 | 0.0238 | -0.0026 |

KPOP with meanfirst

Table 7: KPOP + MF=TRUE + NO PID: Comparison of Bias bound and L1 distance by choice of b

| | Bias Bound Ratio | L1 Ratio | Bias Bound Orig | Bias Bound Opt | L1 Orig | L1 Opt |
|---------|------------------|----------|-----------------|----------------|---------|--------|
| b=2x | 10.2261 | 62.5195 | 0.0575 | 0.0056 | 0.0464 | 0.0007 |
| b=1x | 7.3857 | 42.9836 | 0.0575 | 0.0078 | 0.0960 | 0.0022 |
| b=.5x | 4.8136 | 20.9332 | 0.0472 | 0.0098 | 0.2027 | 0.0097 |
| b=.25x | 3.0477 | 9.8693 | 0.0343 | 0.0112 | 0.3783 | 0.0383 |
| b=.125x | 2.2043 | 5.4290 | 0.0280 | 0.0127 | 0.4964 | 0.0914 |

Table 8: KPOP + MF=TRUE + NO PID: Choice of b and Estimated Outcome

| | Bias Bound Ratio | L1 Ratio | Est Vote Margin | Diff from Target |
|---------|------------------|----------|-----------------|------------------|
| b=2x | 10.2261 | 62.5195 | -0.0187 | -0.0451 |
| b=1x | 7.3857 | 42.9836 | -0.0214 | -0.0478 |
| b=.5x | 4.8136 | 20.9332 | -0.0187 | -0.0451 |
| b=.25x | 3.0477 | 9.8693 | -0.0115 | -0.0379 |
| b=.125x | 2.2043 | 5.4290 | -0.0044 | -0.0308 |

[1] "b=.25x"

[1] "b=.5x"

[1] "b=.25x"

[1] "b=2x"

[1] "b=.125x"

```
## [1] "b=.5x"
## [1] "b=.125x"
## [1] "b=2x"
```

Best Choice of B

MF = F + Pid

```
#best
#bb_comp: best in terms of balance on target
rownames(bb_comp)[which(abs(bb_comp$Diff_from_Target) == min(abs(bb_comp$Diff_from_Target)))]

## [1] "b=.25x"
#best in terms of bias bound ratio
rownames(bb_comp)[which(abs(bb_comp$bb_ratio) == max(abs(bb_comp$bb_ratio)))]

## [1] "b=.5x"
```

MF = T + Pid

```
#best
#bb_comp_mf: best in terms of balance on target
rownames(bb_comp_mf)[which(abs(bb_comp_mf$Diff_from_Target) == min(abs(bb_comp_mf$Diff_from_Target)))]

## [1] "b=.25x"
#best in terms of bias bound ratio
rownames(bb_comp_mf)[which(abs(bb_comp_mf$bb_ratio) == max(abs(bb_comp_mf$bb_ratio)))]

## [1] "b=2x"
```

MF = F + No Pid

```
#best
#bb_comp_nopid: best in terms of balance on target
rownames(bb_comp_nopid)[which(abs(bb_comp_nopid$Diff_from_Target) == min(abs(bb_comp_nopid$Diff_from_Target)))]

## [1] "b=.125x"
#best in terms of bias bound ratio
rownames(bb_comp_nopid)[which(abs(bb_comp_nopid$bb_ratio) == max(abs(bb_comp_nopid$bb_ratio)))]

## [1] "b=.5x"
```

MF = T + No Pid

```
#best
#bb_comp_nopid_mf: best in terms of balance on target
rownames(bb_comp_mf_nopid)[which(abs(bb_comp_mf_nopid$Diff_from_Target) == min(abs(bb_comp_mf_nopid$Diff_from_Target)))]

## [1] "b=.125x"
```

```
#best in terms of bias bound ratio  
rownames(bb_comp_mf_nopid)[which(abs(bb_comp_mf_nopid$bb_ratio) == max(abs(bb_comp_mf_nopid$bb_ratio)))]  
  
## [1] "b=2x"
```

How did things change by moving to fullSVD?