

Consistency check for mu0 and mu1 estimator

: 07월 08일 version

- 2 종류의 μ_0, μ_1 추정량 formula 사용하여 Consistency check 진행!
- true μ_0, μ_1 공식은 변한 부분 없이 그대로 유지

1) Version 1

- IPTW ATT 추정량의 분산 추정량 formula 제시된 논문에서 나와있는 $\hat{\mu}_0, \hat{\mu}_1$ 추정량 공식 이용!

Weight 의미!

$$\hat{\mu}_1 = E[Y^1 | E=1] = \frac{\sum_i \hat{\omega}_i A_i Y_i}{\sum_i \hat{\omega}_i A_i}, \quad \hat{\mu}_0 = E[Y^0 | E=1] = \frac{\sum_i \hat{\omega}_i (1-A_i) Y_i}{\sum_i \hat{\omega}_i (1-A_i)}$$

Version 1의 Result)

	bias of μ_0 estimator	variance of μ_0 estimator	bias of μ_1 estimator	variance of μ_1 estimator
#of obs = 315	0.3456272	0.0080314435	0.3471517	0.0329251409
#of obs = 1250	0.3432533	0.0020281883	0.3402290	0.0091021915
#of obs = 5000	0.3454498	0.0004574931	0.3455804	0.0016821134
#of obs = 20000	0.3501899	0.0001763451	0.3494102	0.0006605543

2) Version 2

- "What If" Causal Inference Book에 나온 $E[Y^a]$ 추정량 formula 이용!
- $\hat{E}[Y^a] = \hat{E}\left[\frac{I(E=a) \cdot Y}{P(E=1|B,C)}\right]$ → Propensity Score

Version 2의 Result)

	bias of μ_0 estimator	variance of μ_0 estimator	bias of μ_1 estimator	variance of μ_1 estimator
#of obs = 315	0.3355297	0.0098968548	0.3417957	0.0296894165
#of obs = 1250	0.3412261	0.0028276837	0.3405413	0.0081240516
#of obs = 5000	0.3379549	0.0005589629	0.3417661	0.0014733490
#of obs = 20000	0.3393458	0.0002580032	0.3442608	0.0005060583