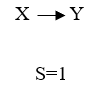
Appendix. Inference of estimator correction in different selection bias scenarios

1. Scenario 1：Suppose the selection of participants is not affected by Y, X and Z.

Selection model:

Outcome model:



Scenario 1 A DAG representing marginally dependent X and Y without additional conditional (on S = 1) dependency.

DAG: directed acyclic graph.

X is the exposure; Y is the outcome; S is an indicator of sample selection.

(2) Scenario 2：Suppose the selection of participants is only affected by Y.

Selection model:

Outcome model:



Scenario 2 A DAG representing marginally dependent X and Y, and conditionally (on S = 1) dependent Y.

(3) Scenario 3：Suppose the selection of participants is only affected by X.

Selection model:

Outcome model:



Scenario 3 A DAG representing marginally dependent X and Y, and conditionally (on S = 1) dependent X.

(4) Scenario 4：Suppose the selection of participants is affected by Y and X.

Selection model:

Outcome model:

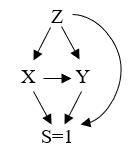


Scenario 4 A DAG representing marginally dependent X and Y, and conditionally (on S = 1) dependent X and Y.

(5) Scenario 5：Suppose the selection of participants is affected by Y, X and Z. Z is a confounder variable.

Selection model:

Outcome model:

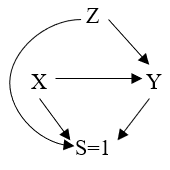


Scenario 5 A DAG representing marginally dependent X and Y with additional conditional (on S = 1) dependency and confounding variable Z directly affects S.

(6) Scenario 6：Suppose the selection of participants is affected by Y, X and Z. Z is an effect measure modifier.

Selection model:

Outcome model:



Scenario 6 A DAG representing marginally dependent X and Y with additional conditional (on S = 1) dependency, and effect measure modifier Z affects S.

The interaction between the effects of X and Z influences on both S and Y. The interaction between the effects of X and Z is also influenced by both X and Z.