

**eTable 1. Procedure of estimating mediation parameters using IOW approach**

Step 1: The working model	An exposure model is run by regressing the exposure on all mediators and covariates using a logistic regression model.
Step 2: Create inverse odds weights	Based on the logistic regression model in step 1, inverse odds weights are created by taking the inverse of the predicted odds for each observation in the exposed group. The exposed and unexposed groups are then reweighted as follows: exposed = inverse odds, unexposed = 1.
Step 3: Total effect model	The total effect of the exposure, conditioning on potential confounders, is estimated by using the Poisson generalized linear model with a log link
Step 4: Direct effect model	The direct effect model is similar to the total effect model but additionally includes the inverse odds weights constructed from the mediators, instead of controlling for the mediators themselves.
Step 5: Compute indirect effect	Building on the traditional difference-in-coefficients approach, the indirect effect is obtained by subtracting the direct effect from the total effect.
Step 6: Estimate standard errors	The standard errors and CIs are obtained by bootstrapping.

## Stata code for mediation analysis with inverse odds weights and imputed data

```
cd "\\kifs03.user.ki.se\k9_users$\zakhos\...."
use midata.dta, clear

*Prepare the data for survival analysis
mim, cat(manip) sortorder(zakirid): stset persontime, failure(cvdmort=1) scale(365.25) id(id)
stsplitt fu, at(0(1)10) trim

* User-written program to estimate mediation parameters
capture program drop IOW
program IOW, rclass
capture drop logodds predprob inverseodds weight_iow

*Step 1: run the exposure model
logit sei_father i.edulevel i.sei_own i.smoke alco_risky ib3.physact ib2.diet ib2.bmi_cat ///
fu i.origin age gender mstatus

*Step 2: create inverse odds weights
predict logodds, xb
gen predprob=exp(logodds)/(1+exp(logodds))
gen inverseodds=((1-predprob)/predprob)

gen weight_iow = 1 if sei_father==0
replace weight_iow = inverseodds if sei_father==1

*Step 3: Estimate the total effect (TE)
mim, storebv: glm _d sei_father fu i.origin age gender mstatus, family(poisson) ///
link(log) vce(cluster id) eform nolog base
matrix bb_TE= e(b)
scalar b_TE=bb_TE[1,1]
return scalar b_TE=bb_TE[1,1]

*Step 4: Estimate the natural direct effect (NDE)
mim, storebv: glm _d sei_father fu i.origin age gender ///
mstatus [pweight= weight_iow], family(poisson) link(log) vce(cluster id) eform nolog base
matrix bb_NDE=e(b)
scalar b_NDE=bb_NDE[1,1]
return scalar b_NDE=bb_NDE[1,1]

*Step 5: calculate the natural indirect effect (NIE)
return scalar b_NIE=b_TE-b_NDE

end

*Step 6: bootstrap to get confidence intervals
bootstrap r(b_NIE) r(b_NDE) r(b_TE), cluster(id) seed(12345) reps(1000): IOW
estat bootstrap, all
```