

# Adjusted Risk Factors of Stunting

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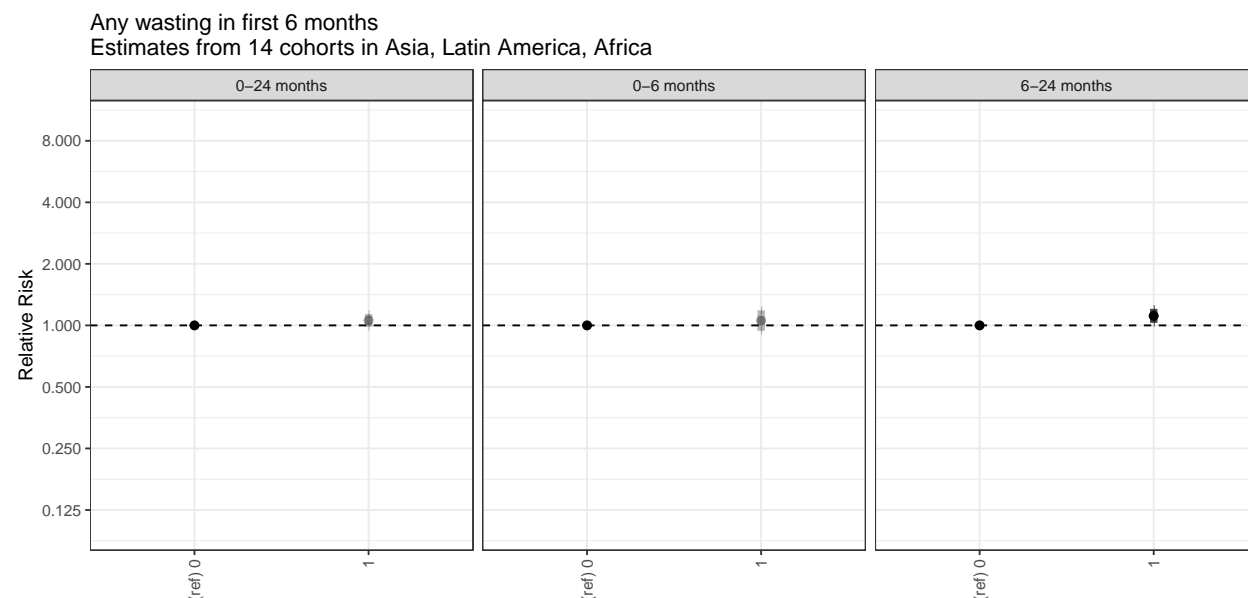
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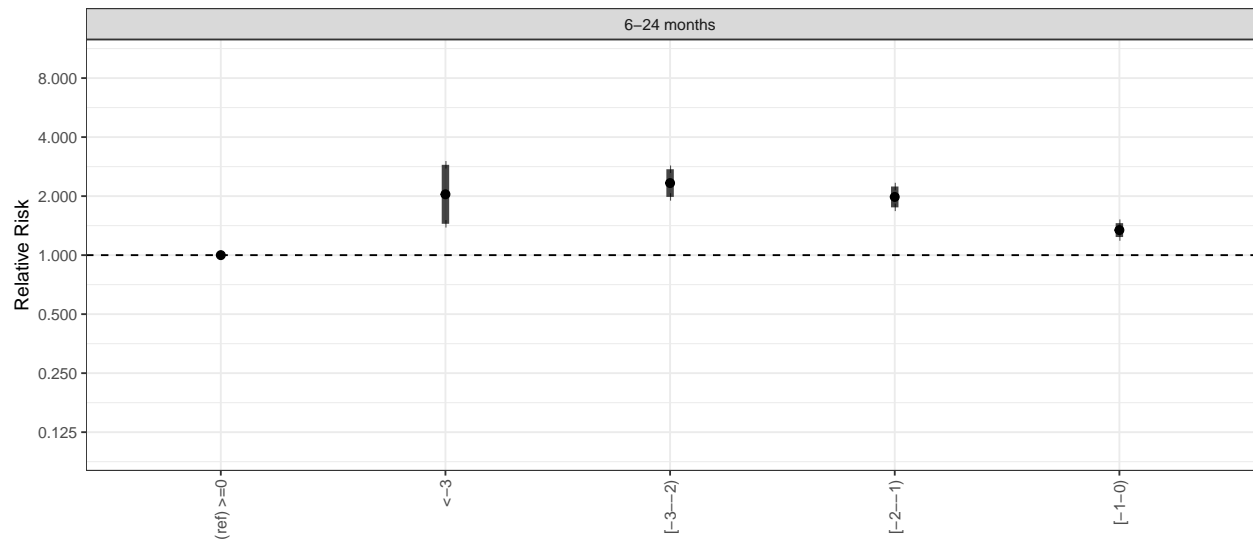
## Relative risk pooled across cohorts

### Cumulative incidence of stunting from birth to 24 months

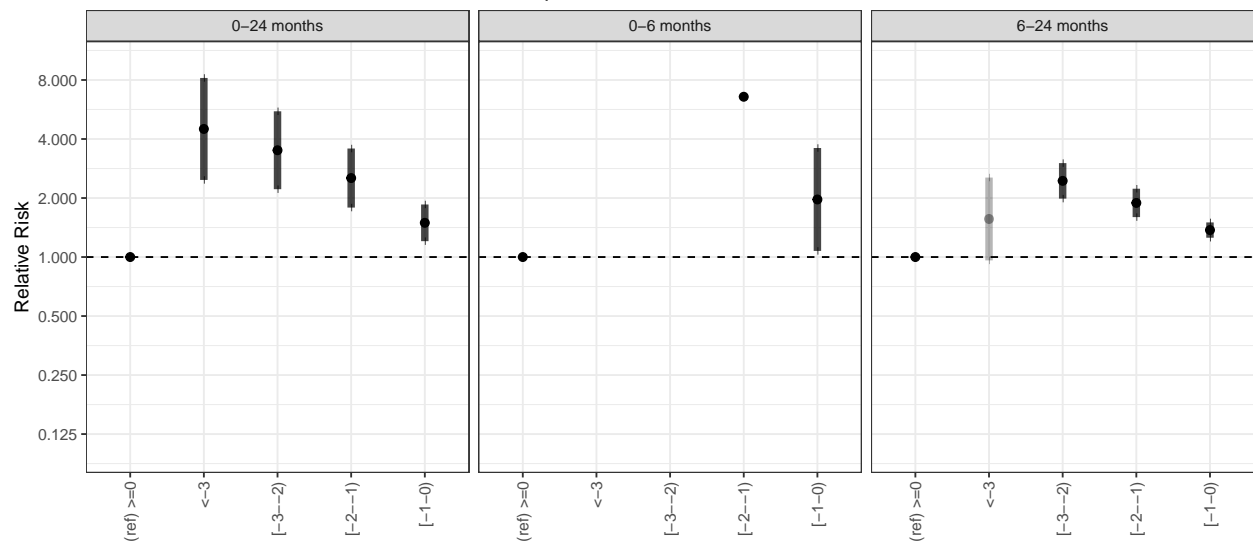
#### Child characteristics



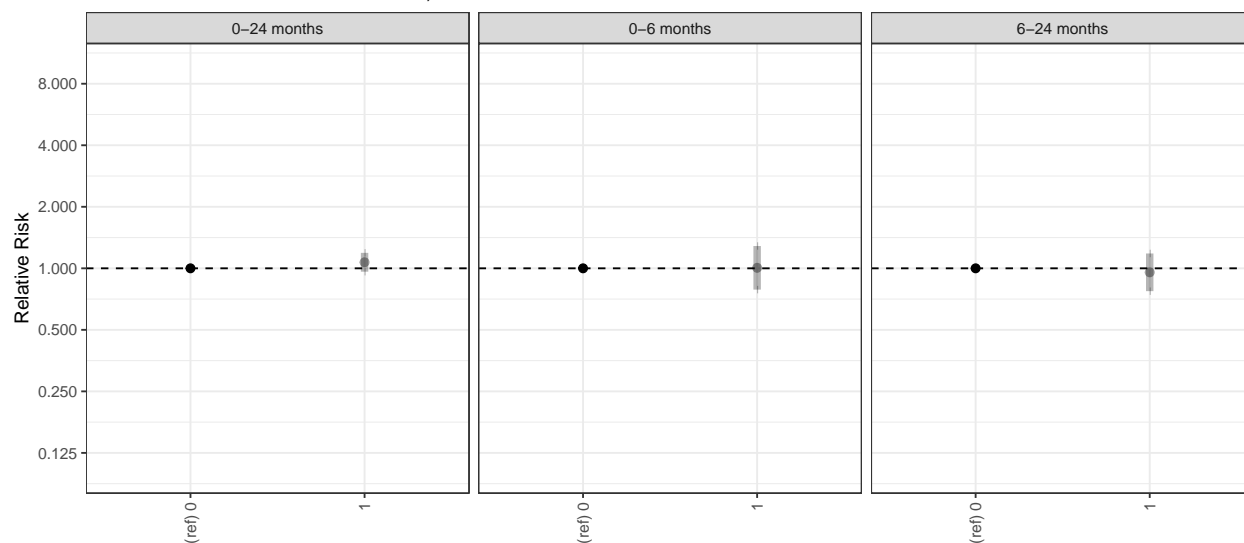
Birth length  
Estimates from 5 cohorts in Asia, Africa



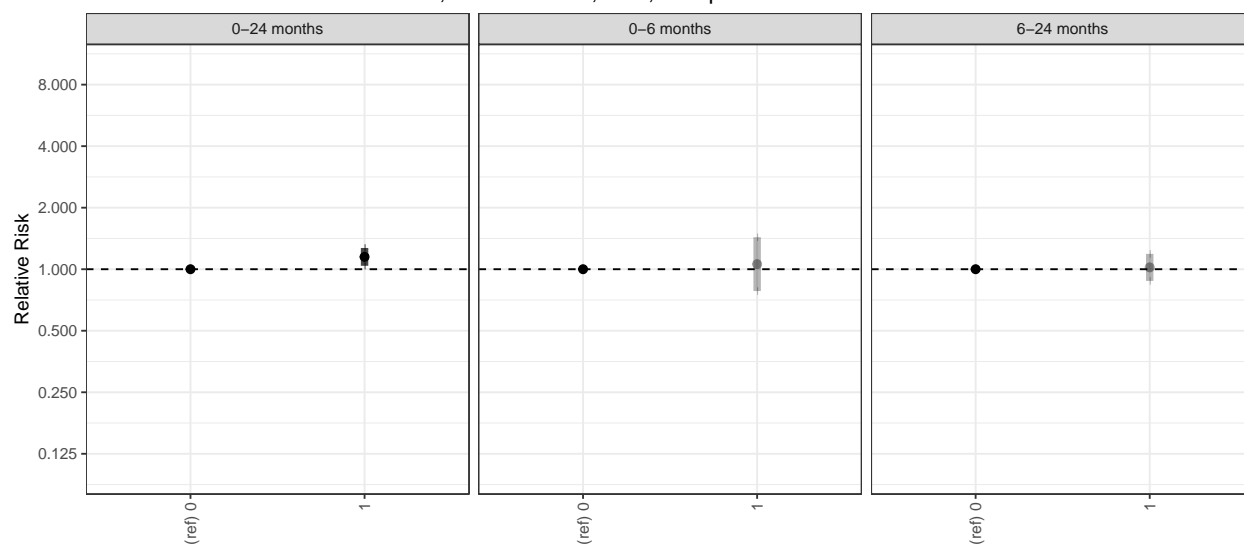
Birthweight  
Estimates from 8 cohorts in Asia, Africa, Europe



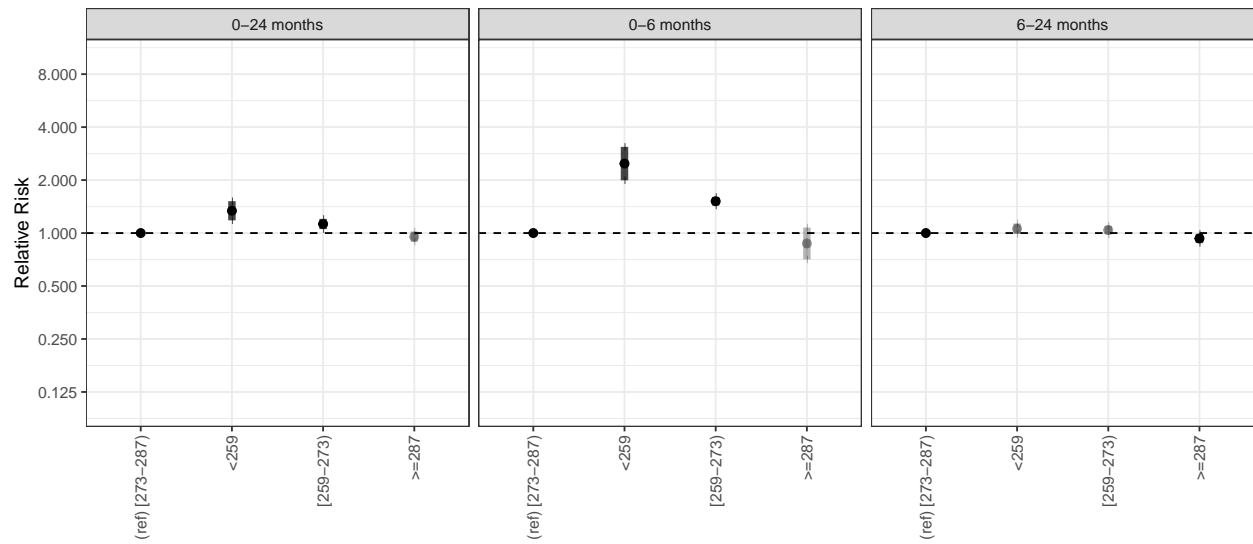
Child delivered at home  
Estimates from 10 cohorts in Asia, Africa



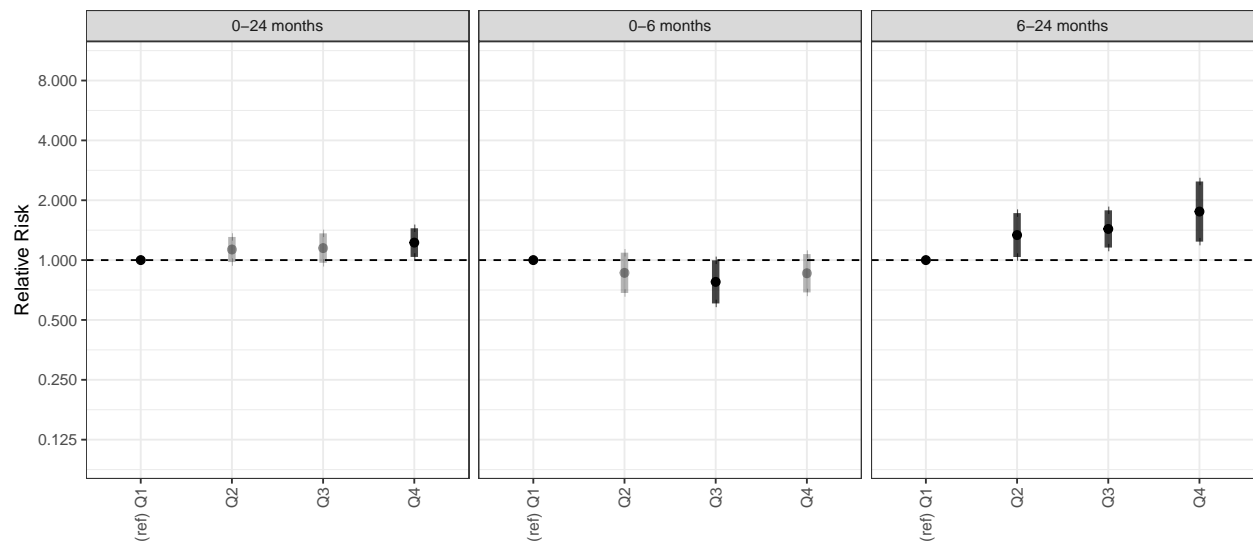
Enrolled wasted  
Estimates from 19 cohorts in Africa, Latin America, Asia, Europe



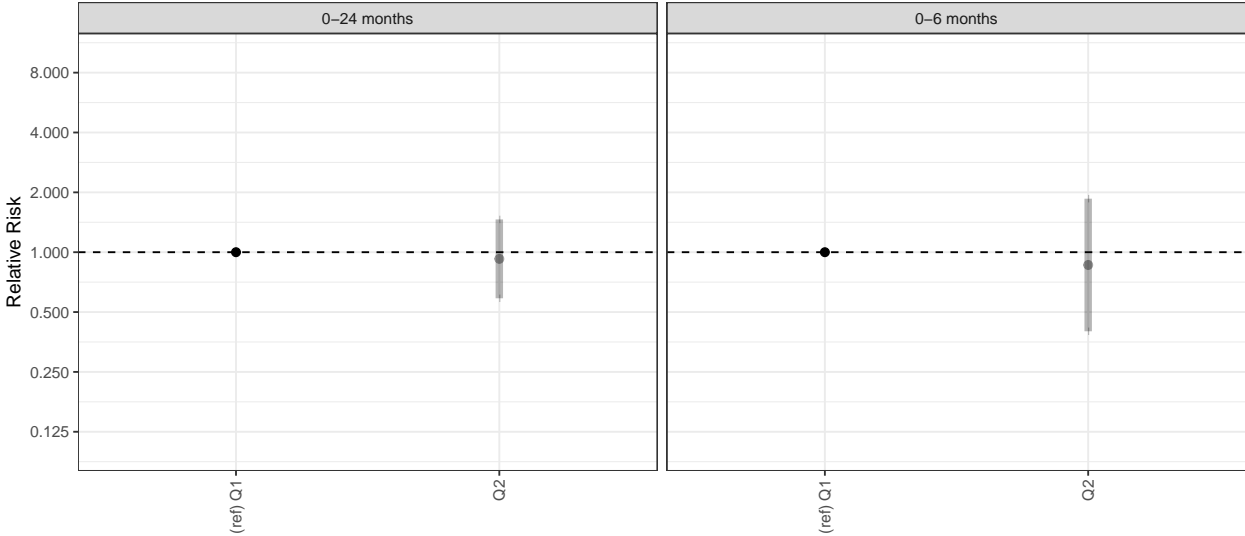
Gestational age at birth in days  
Estimates from 8 cohorts in Asia, Latin America, Africa



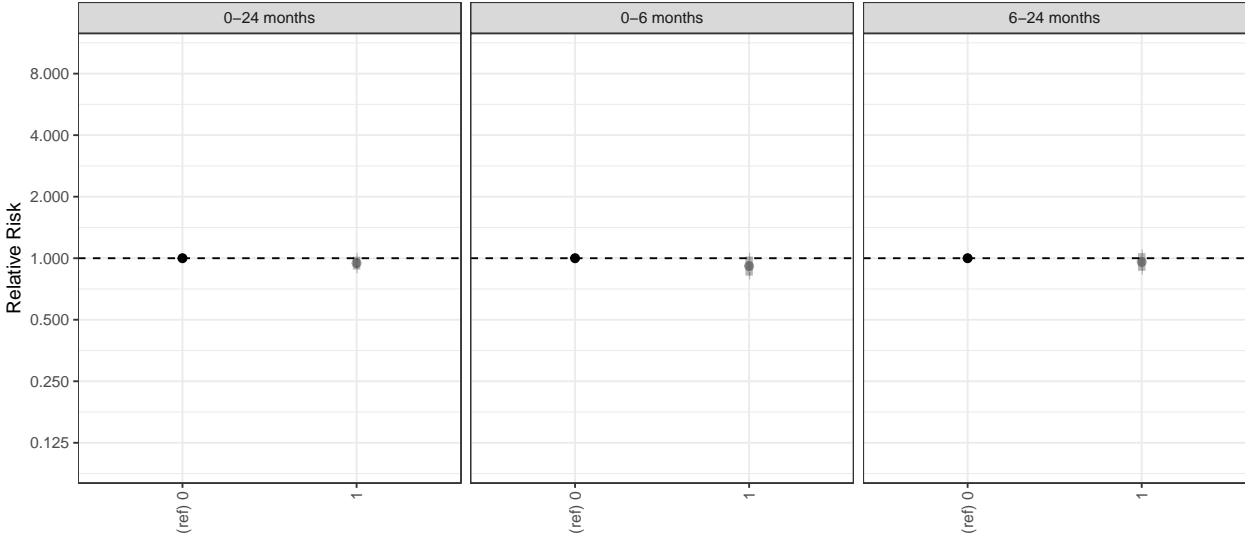
Percent diarrhea in first 24 months  
Estimates from 16 cohorts in Asia, Latin America, Africa



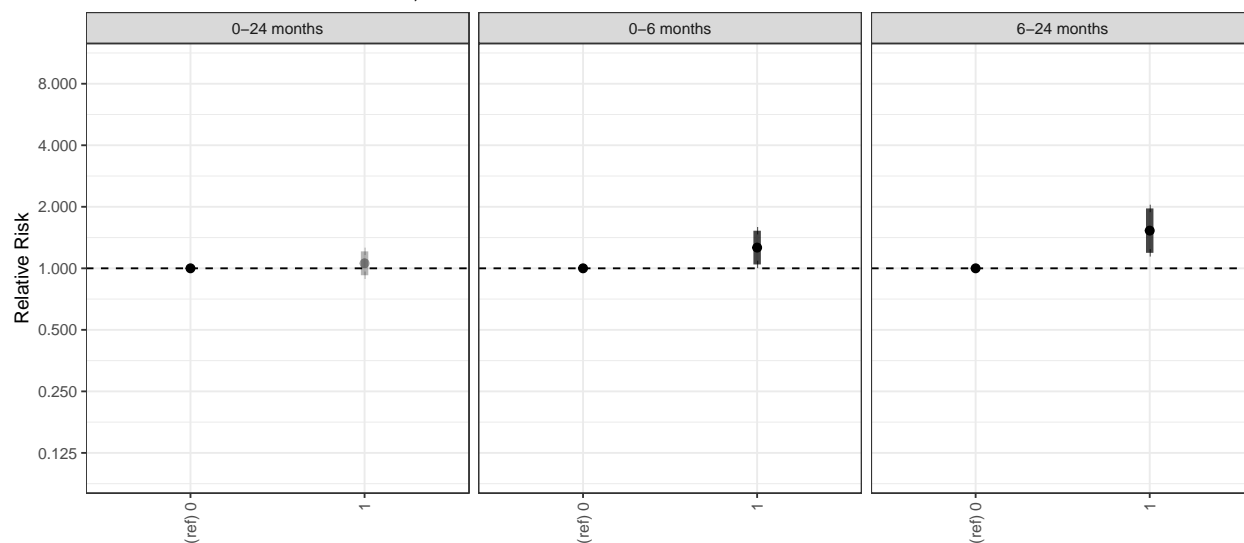
Percent diarrhea in first 6 months  
Estimates from 1 cohorts in Asia



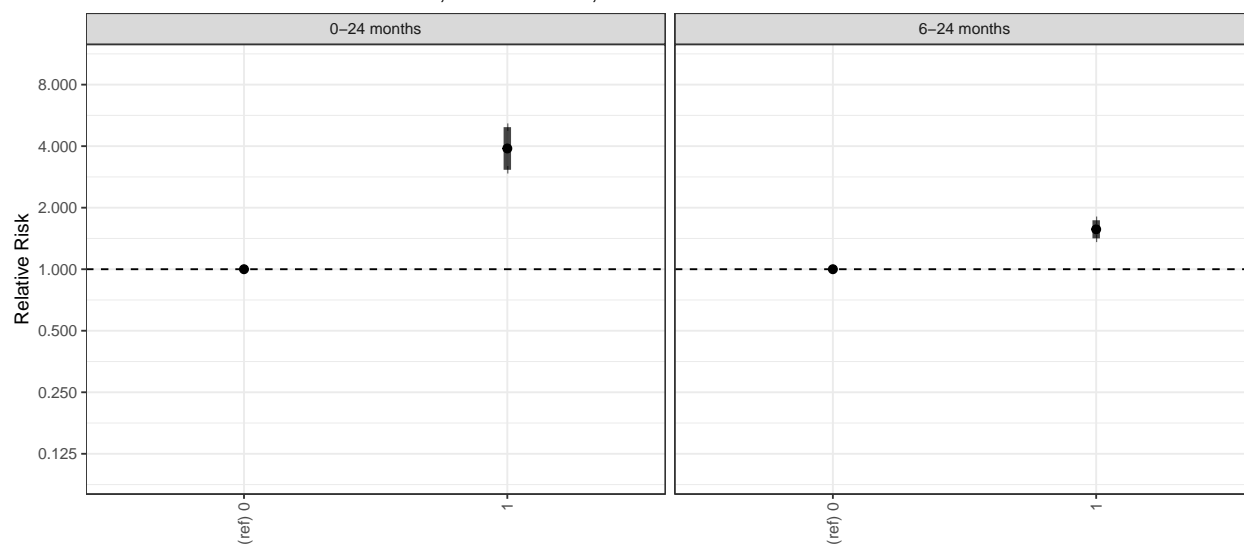
Percent exclusive breastfeeding  
Estimates from 13 cohorts in Asia, Africa, Latin America



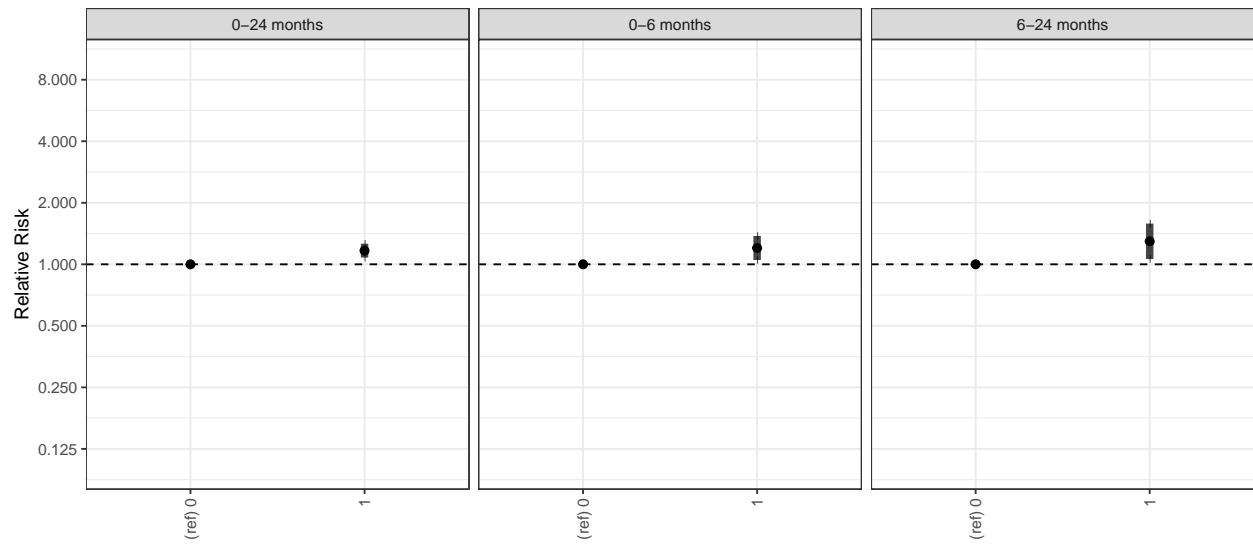
Persistent wasting in first 6 months  
Estimates from 7 cohorts in Asia, Africa



Stunted at enrollment  
Estimates from 16 cohorts in Africa, Latin America, Asia

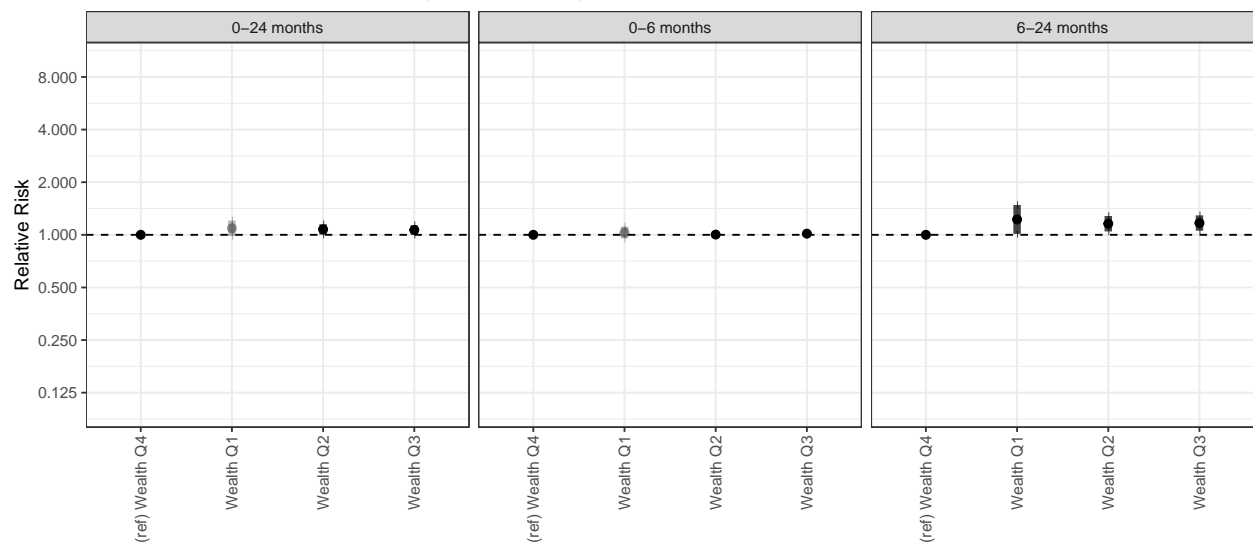


Vaginal delivery  
Estimates from 9 cohorts in Asia, Europe, Africa

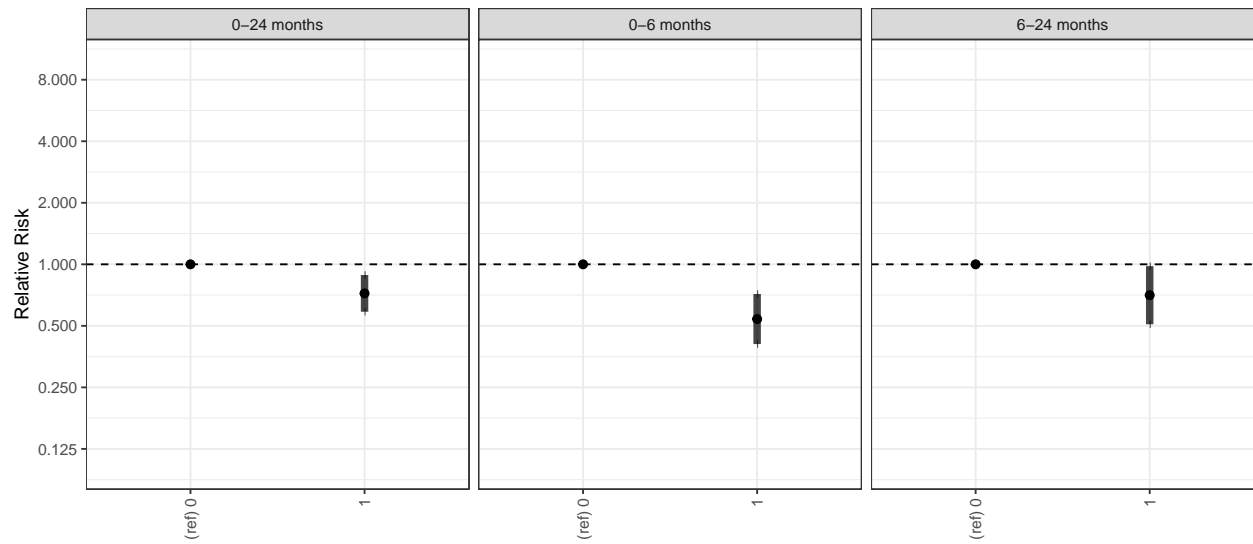


Household characteristics

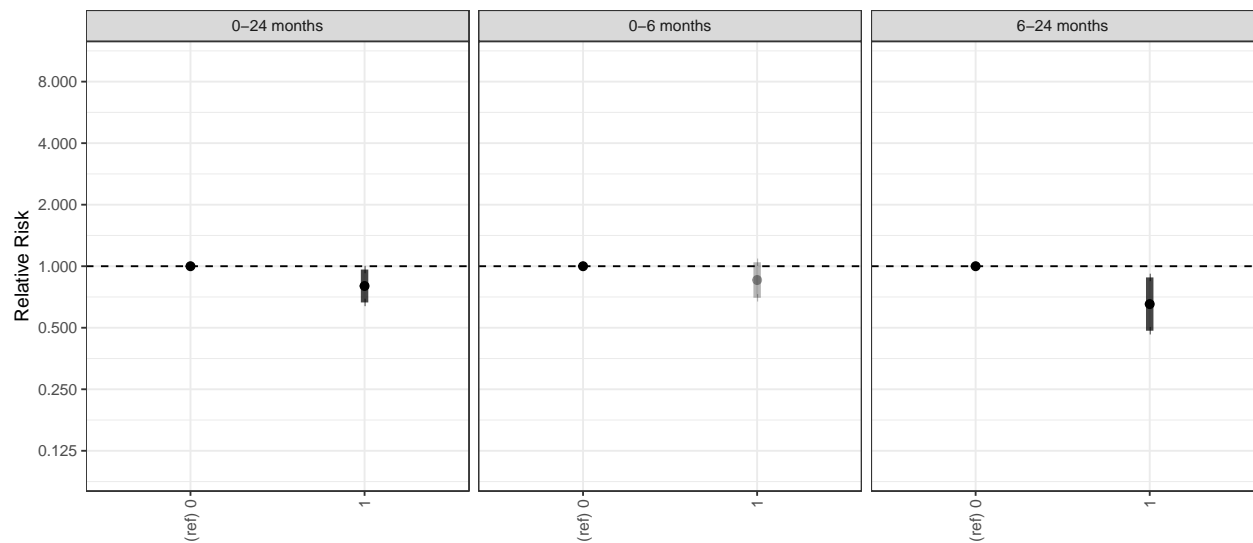
Asset based wealth index  
Estimates from 11 cohorts in Asia, Latin America, Africa



Clean cook  
Estimates from 4 cohorts in Asia

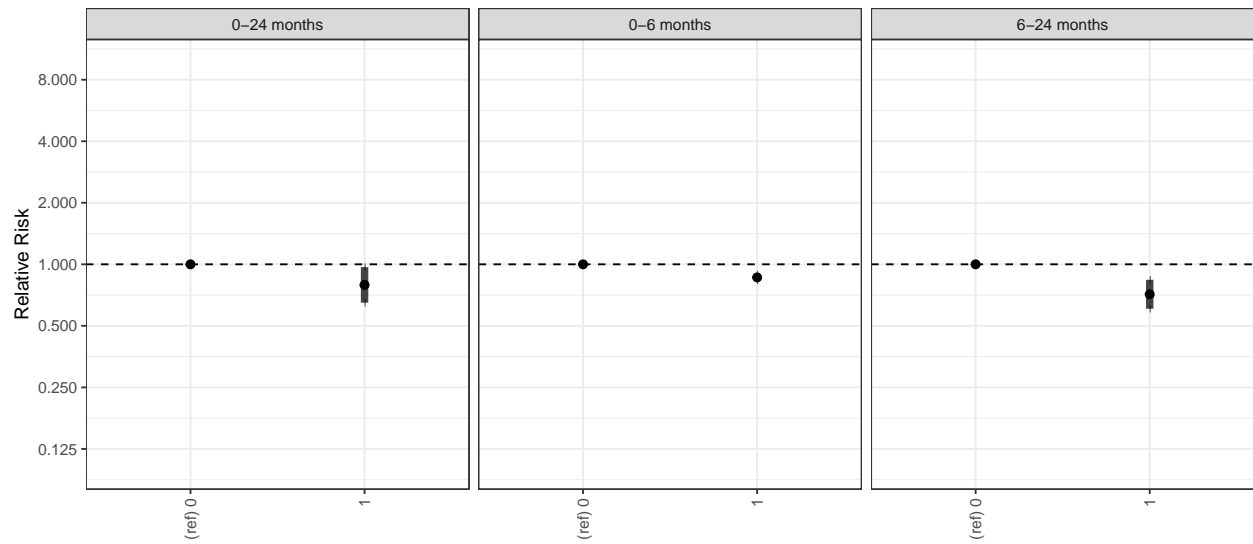


Improved floor  
Estimates from 12 cohorts in Asia, Africa, Latin America

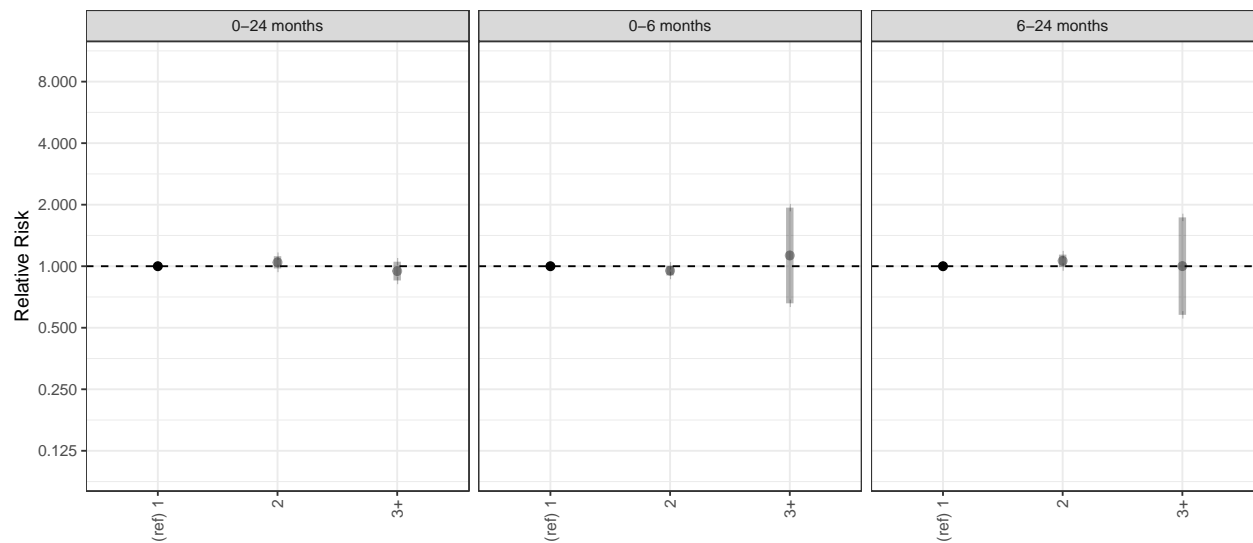




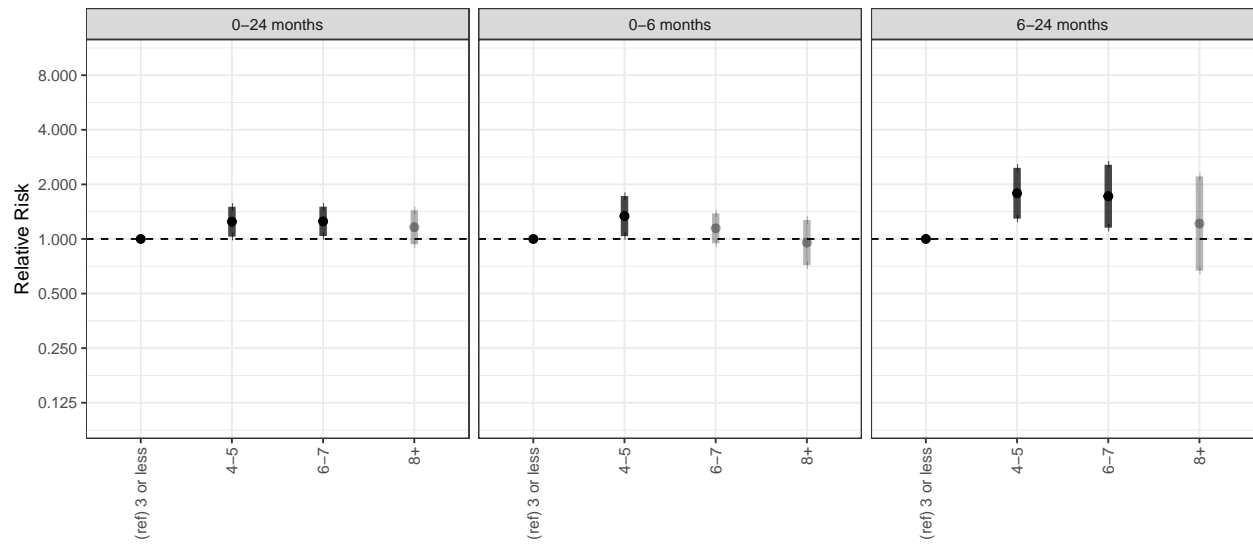
Improved sanitation  
Estimates from 12 cohorts in Latin America, Asia



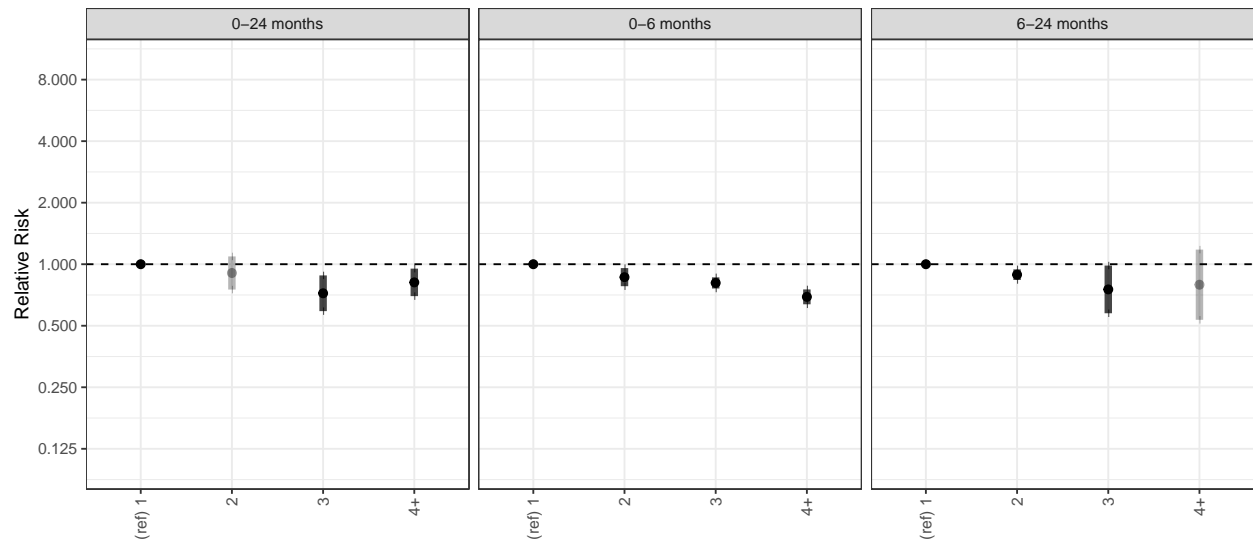
Number of children in the household under 5 years  
Estimates from 5 cohorts in Asia, Africa



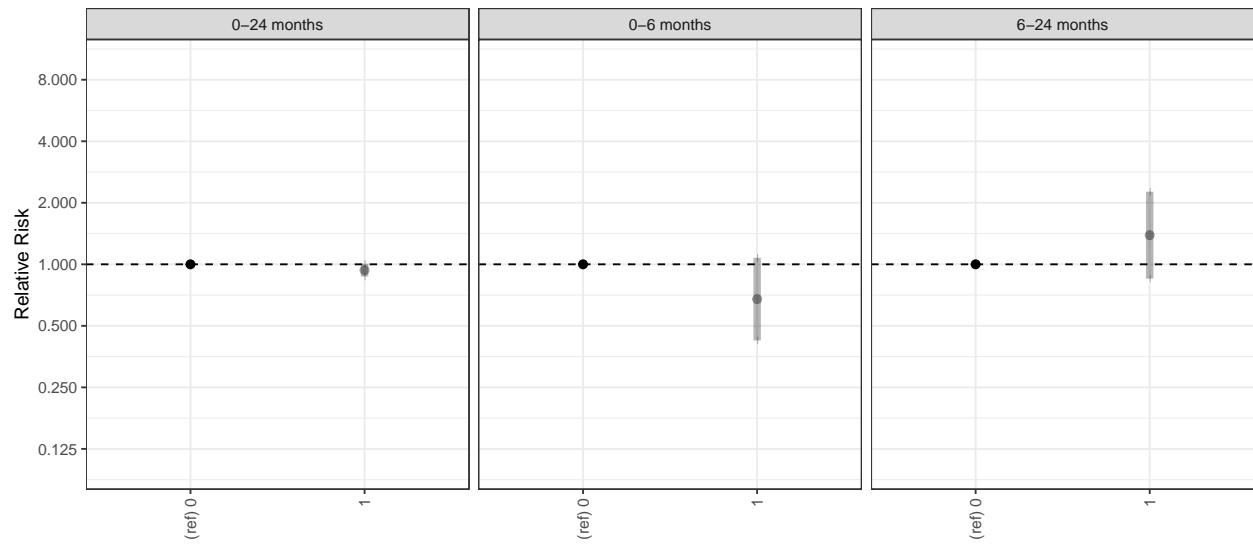
Number of people in the household  
Estimates from 6 cohorts in Asia, Africa



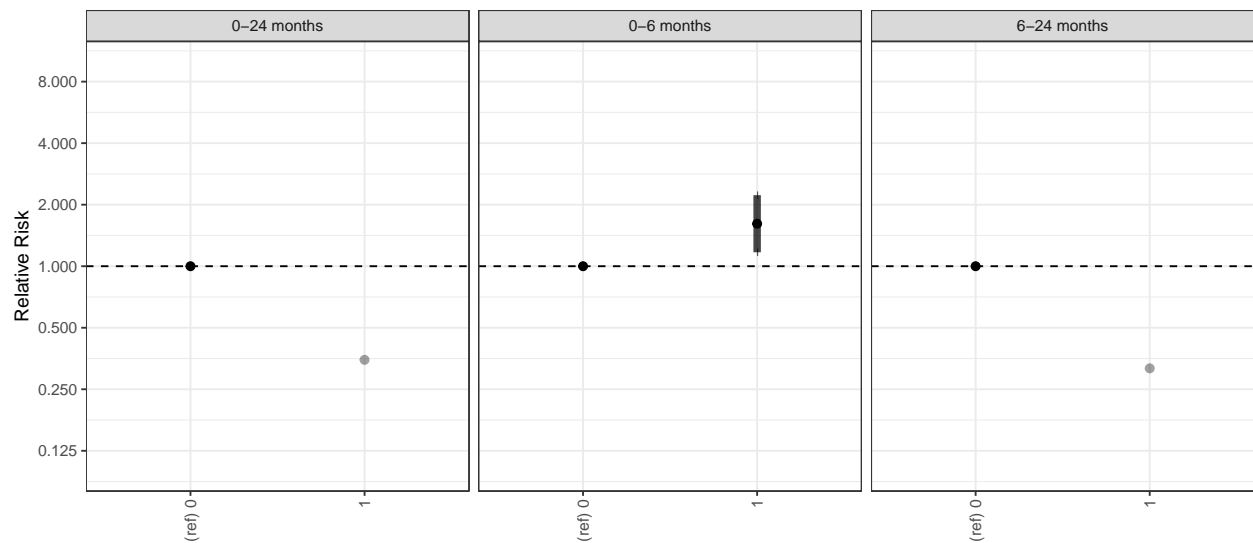
Number of rooms in household  
Estimates from 9 cohorts in Asia, Latin America



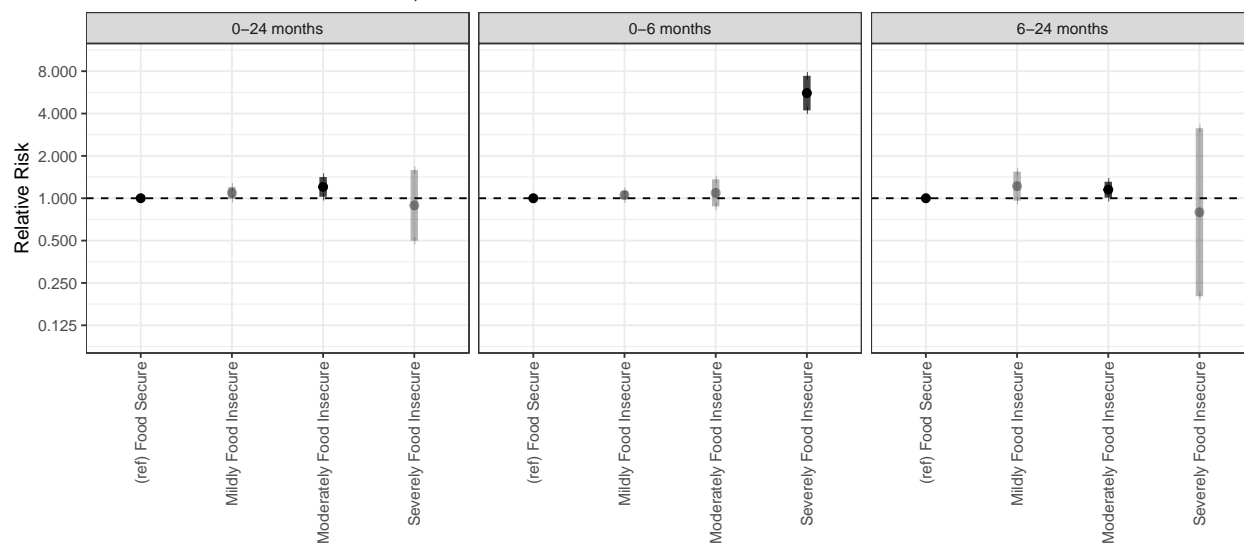
Safe water  
Estimates from 4 cohorts in Asia, Africa



Treats water  
Estimates from 3 cohorts in Asia

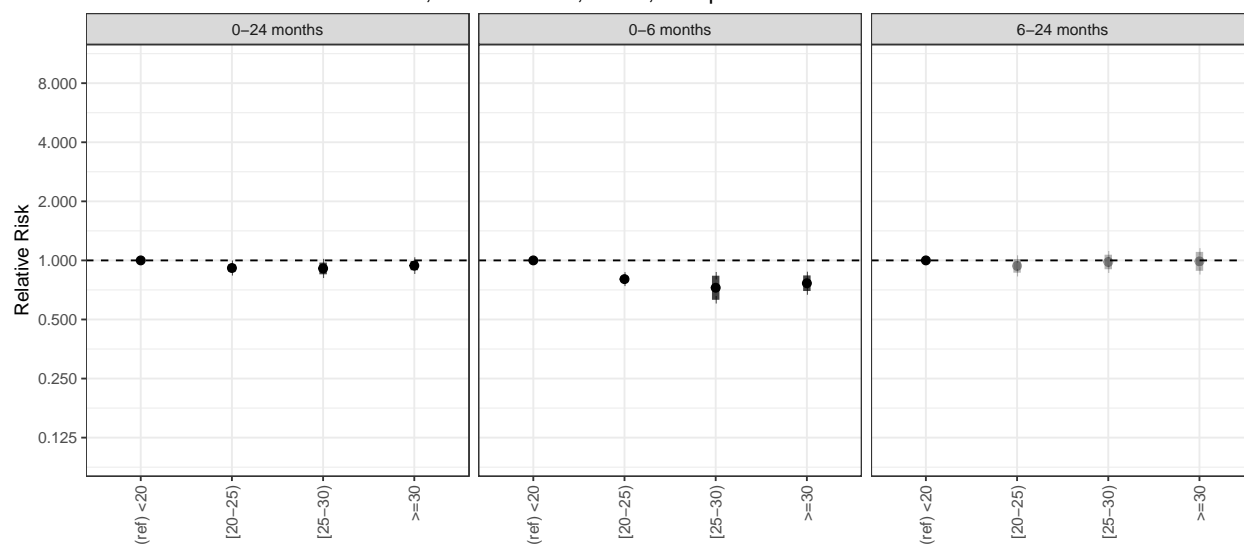


USAID Household Food Insecurity Access Scale (HFIAS) category  
Estimates from 5 cohorts in Asia, Latin America

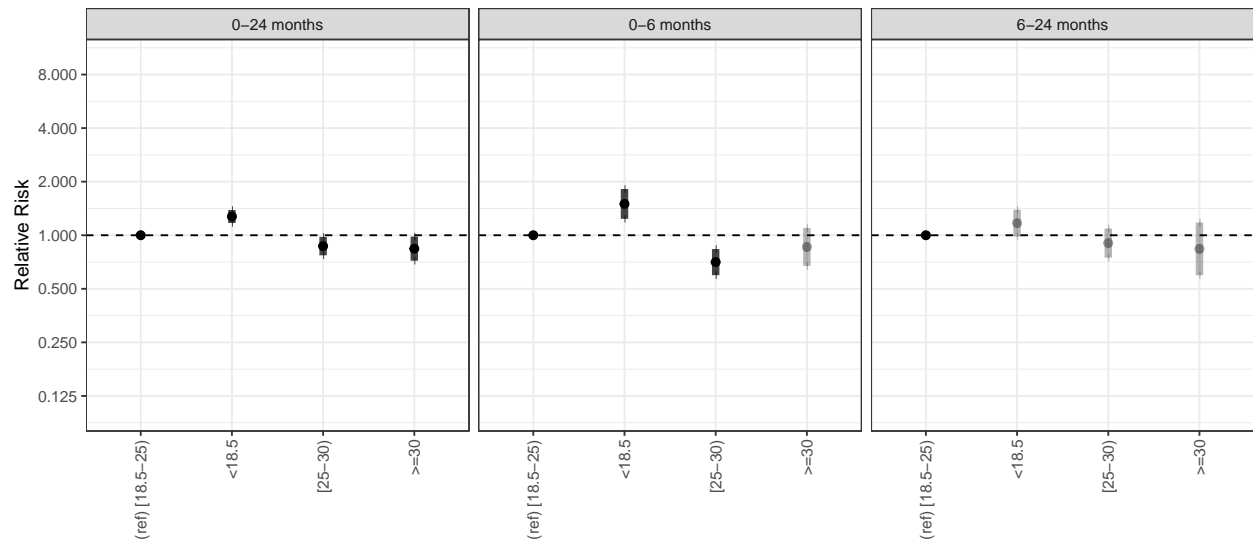


## Maternal characteristics

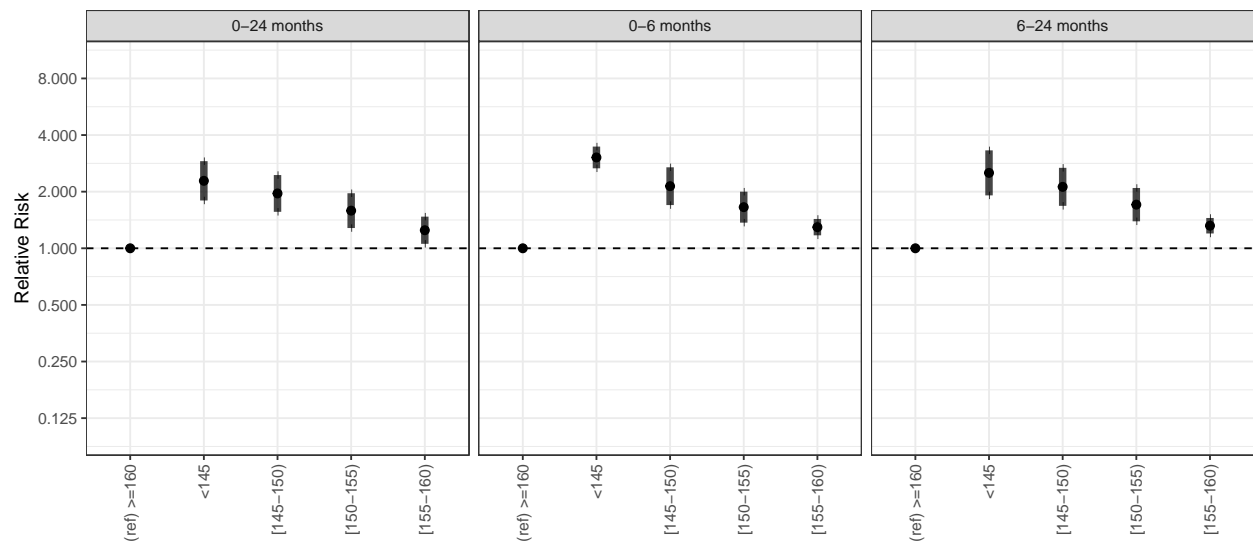
Maternal age  
Estimates from 24 cohorts in Asia, Latin America, Africa, Europe



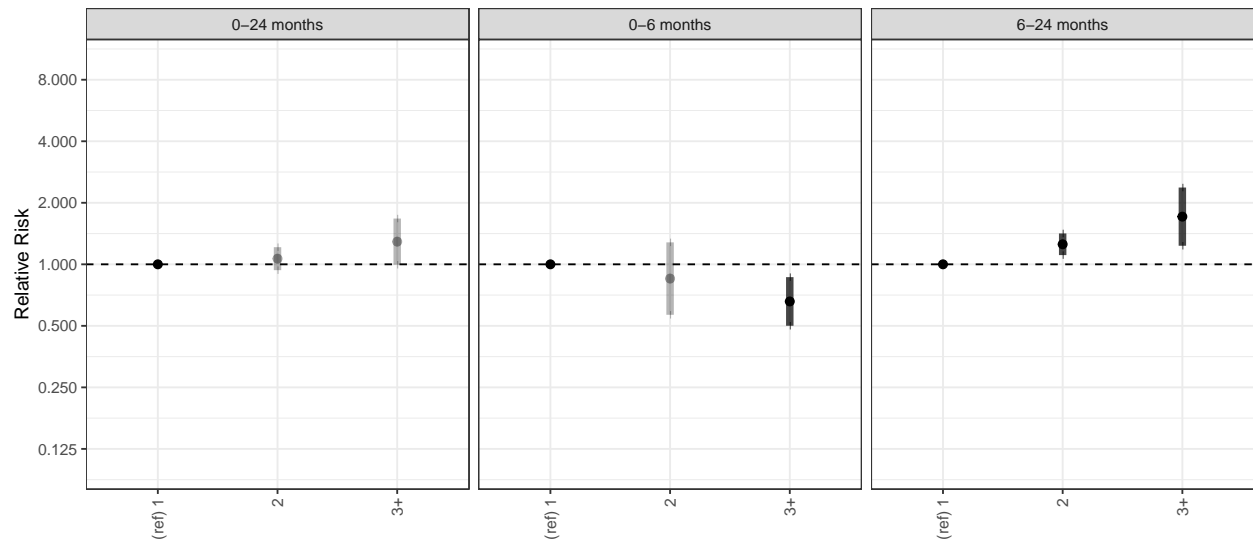
**Maternal BMI**  
Estimates from 8 cohorts in Asia, Europe, Africa



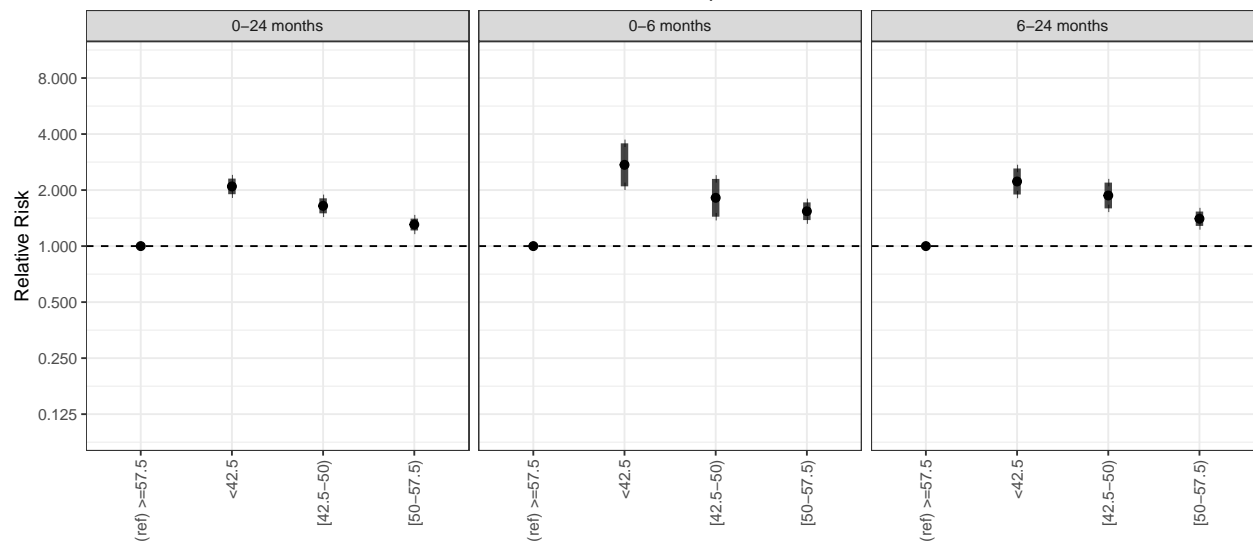
**Maternal height**  
Estimates from 10 cohorts in Latin America, Asia, Africa



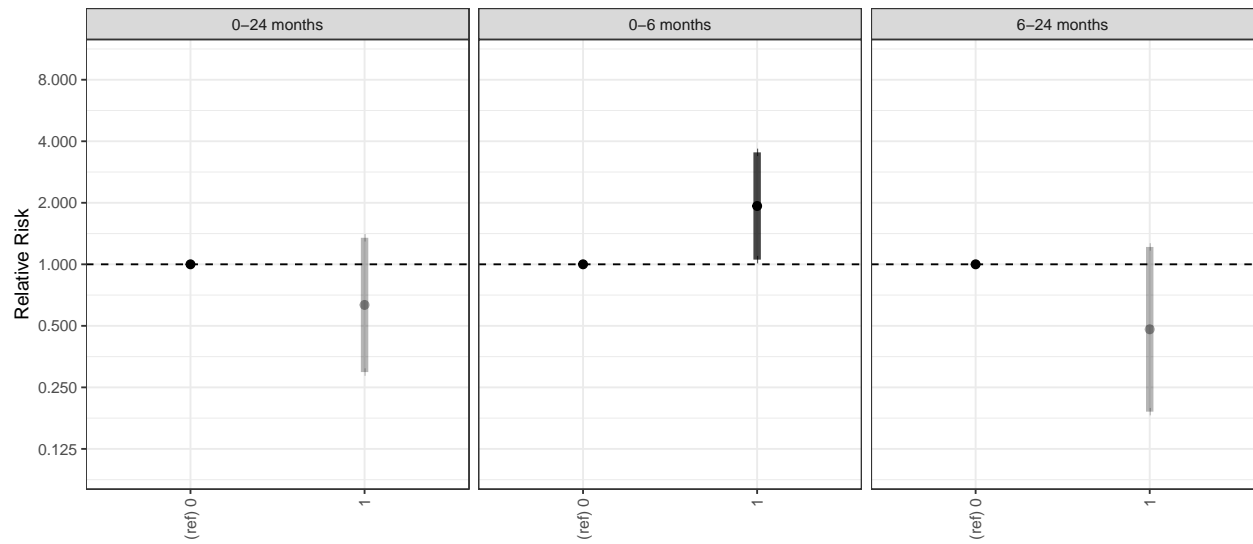
Maternal parity  
Estimates from 11 cohorts in Latin America, Asia, Africa



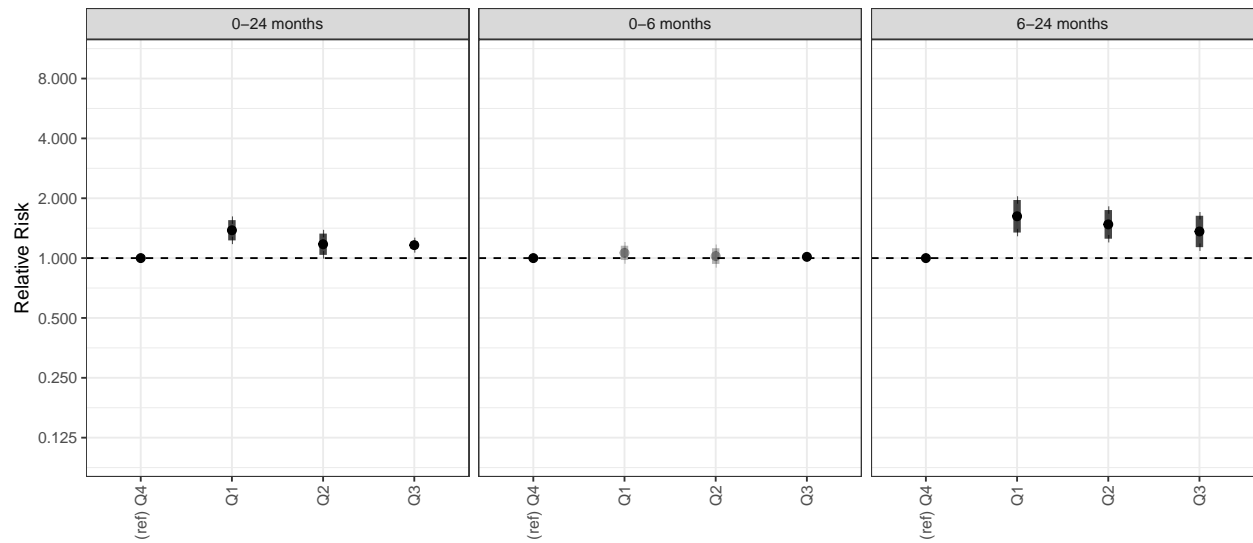
Maternal weight  
Estimates from 12 cohorts in Africa, Asia, Latin America, Europe



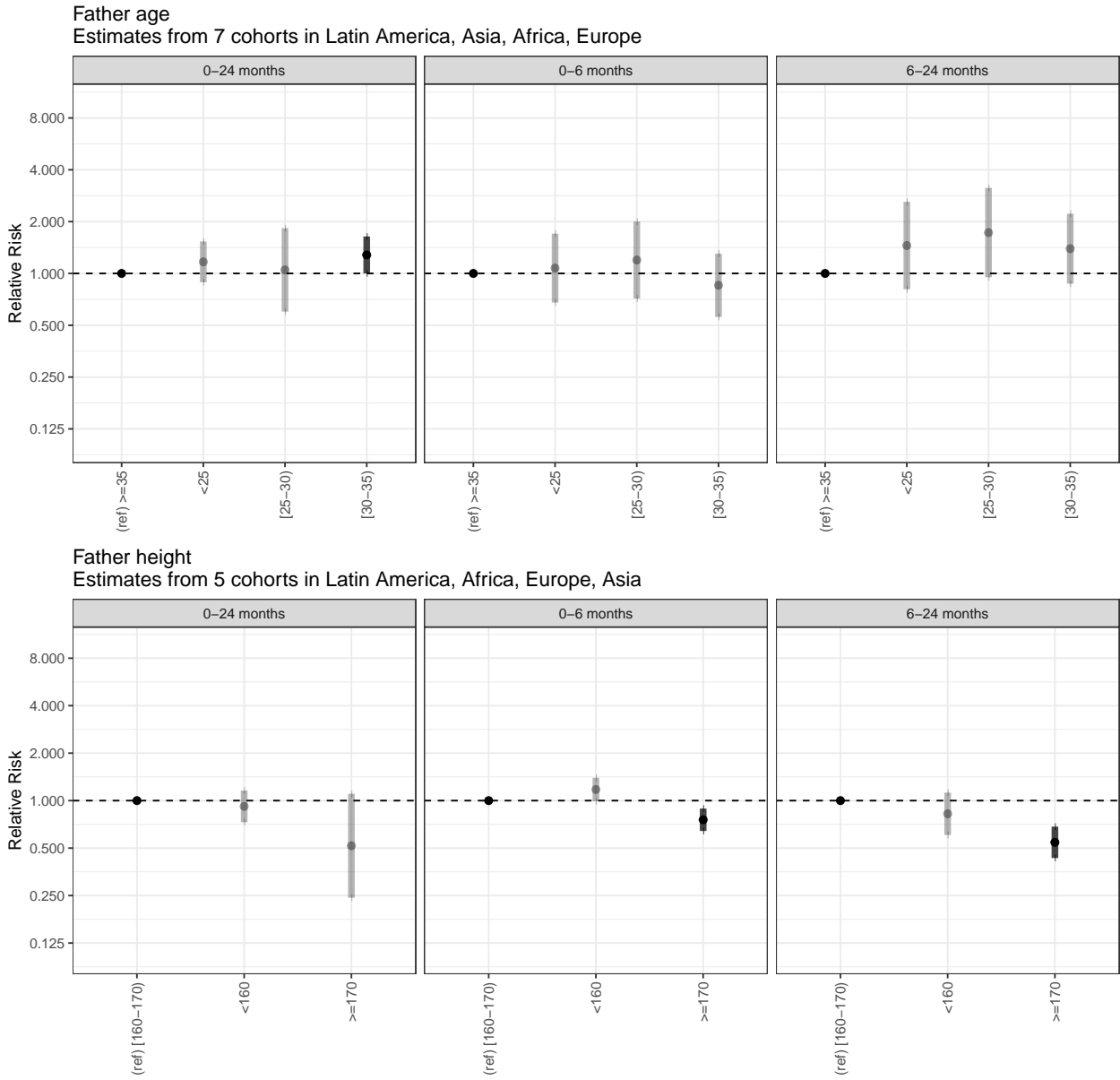
**Mother is unmarried**  
**Estimates from 9 cohorts in Latin America, Asia, Africa, Europe**



**Mother's education**  
**Estimates from 19 cohorts in Asia, Latin America, Africa, Europe**

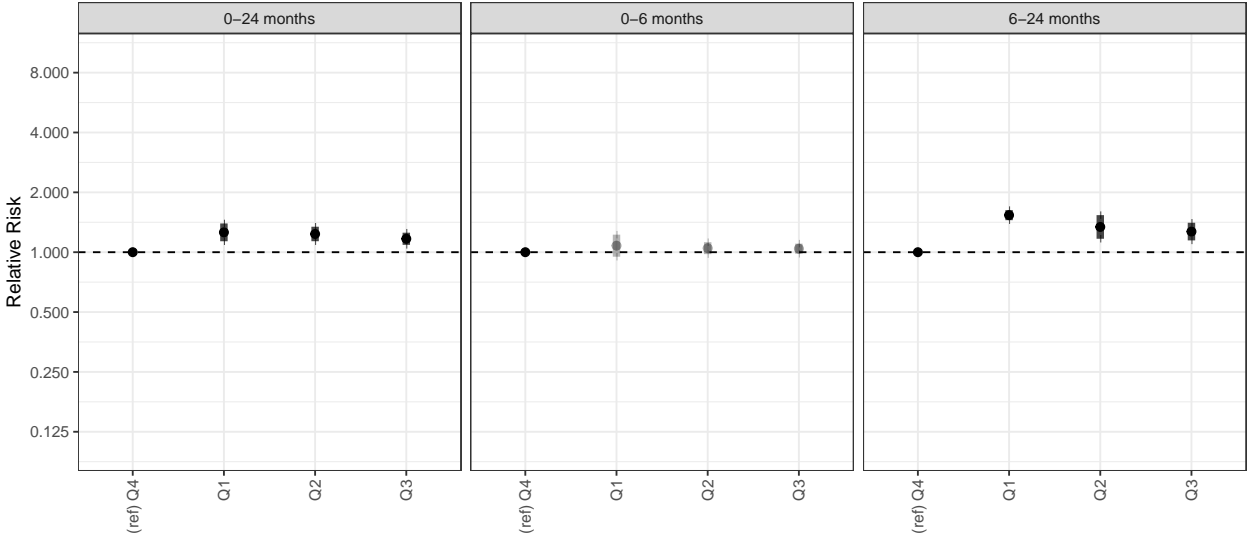


Paternal characteristics





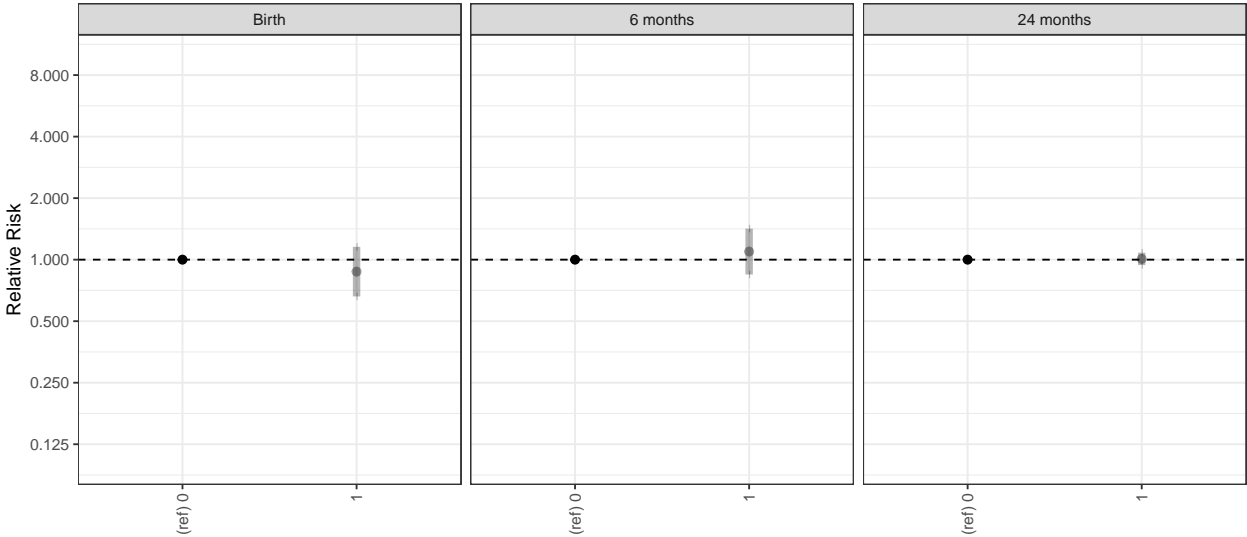
Father's education  
Estimates from 13 cohorts in Asia, Africa, Europe



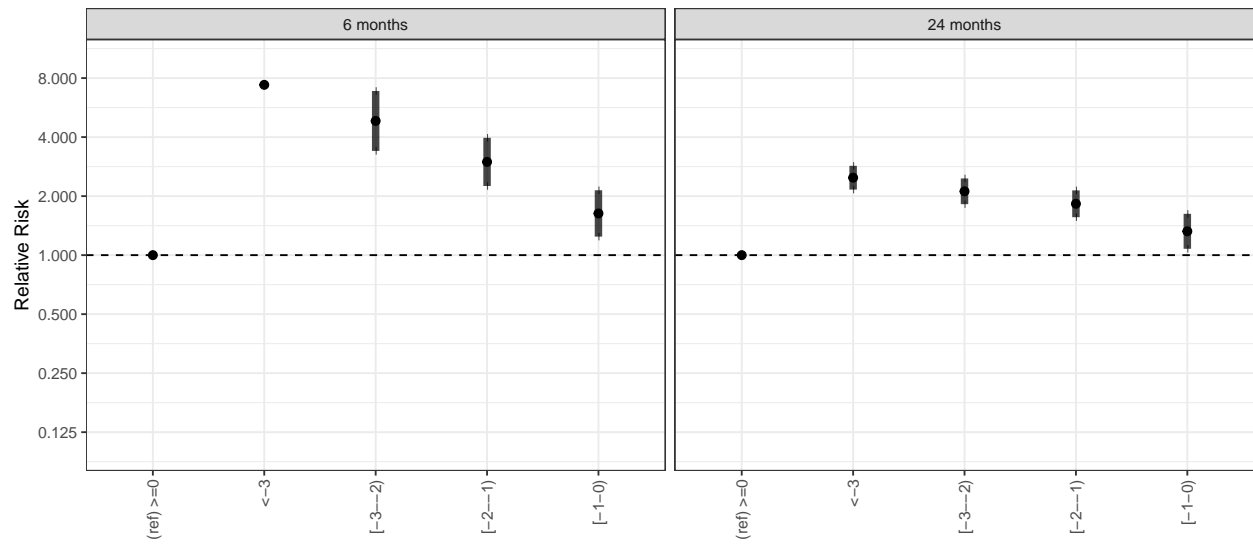
Point prevalence of stunting

Child characteristics

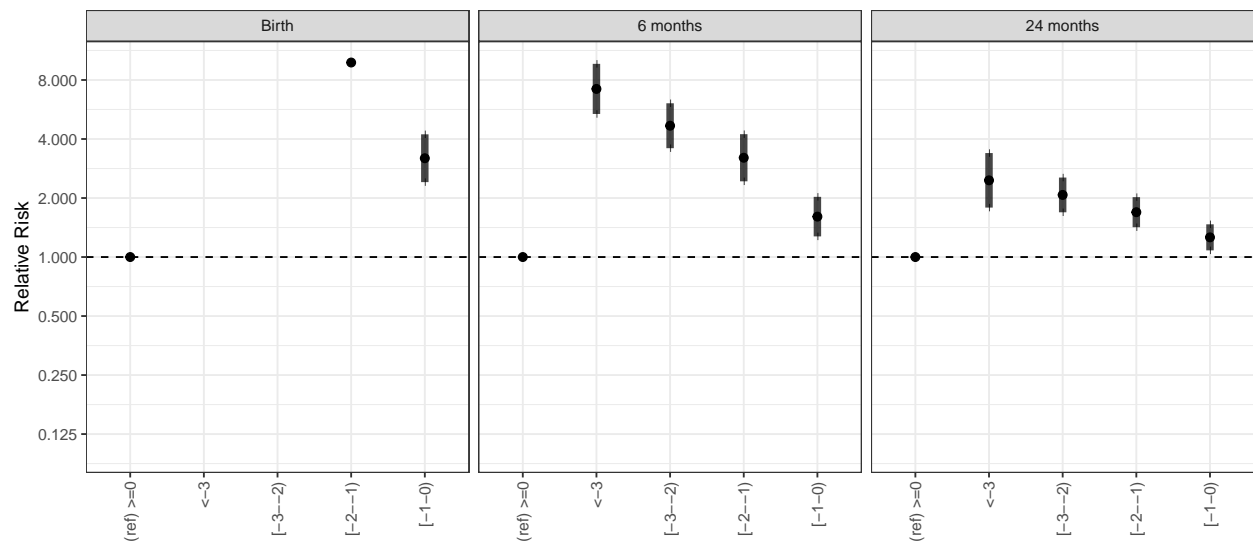
Any wasting in first 6 months  
Estimates from 7 cohorts in Asia, Africa



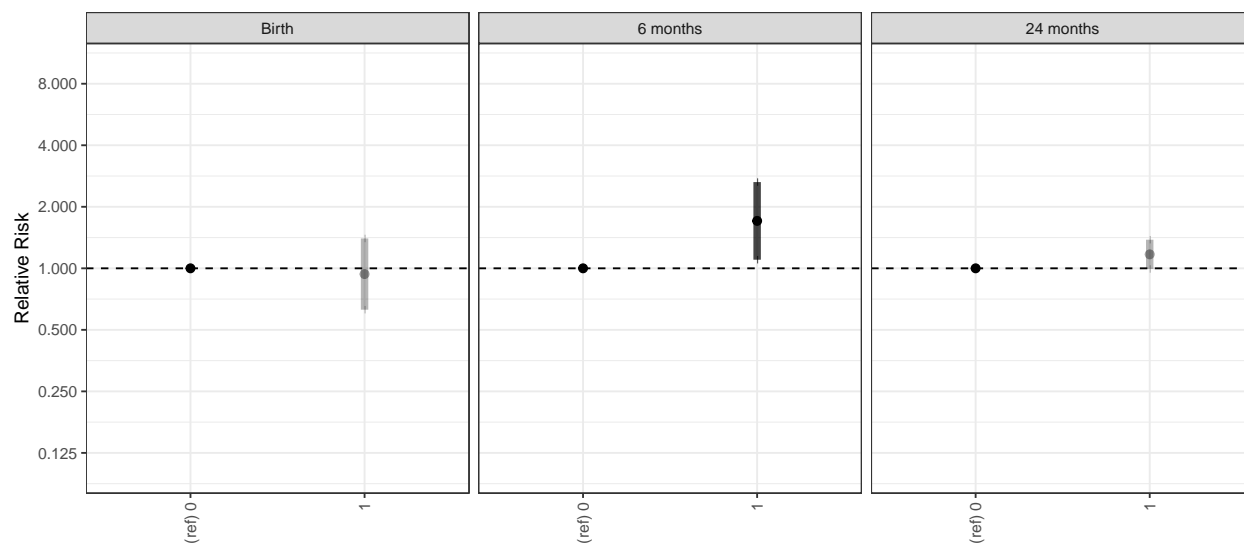
Birth length  
Estimates from 7 cohorts in Asia, Africa



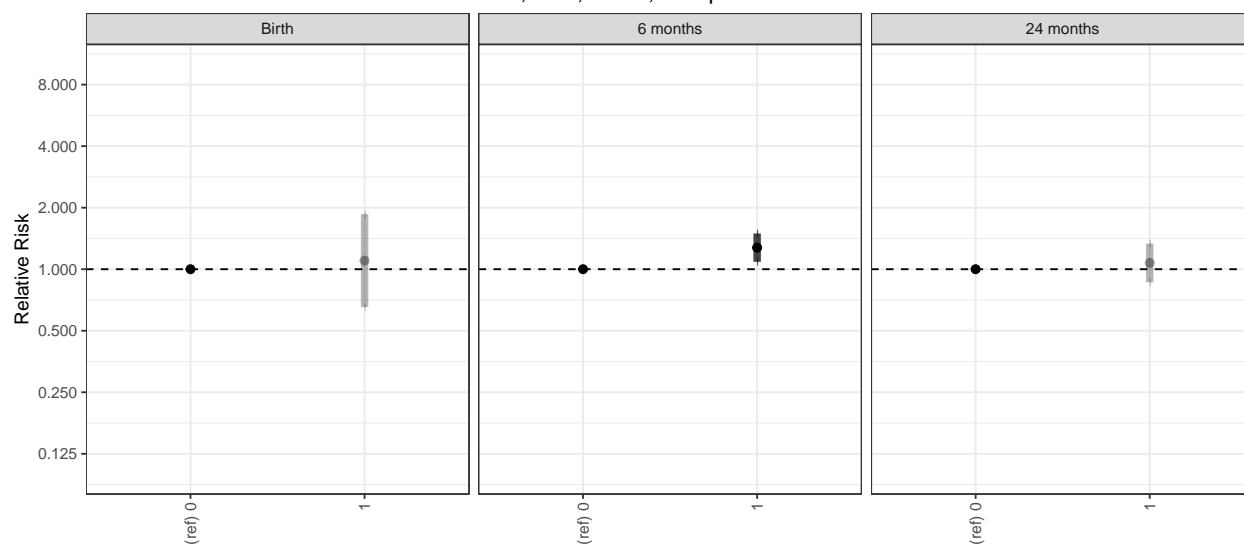
Birthweight  
Estimates from 2 cohorts in Asia, Africa



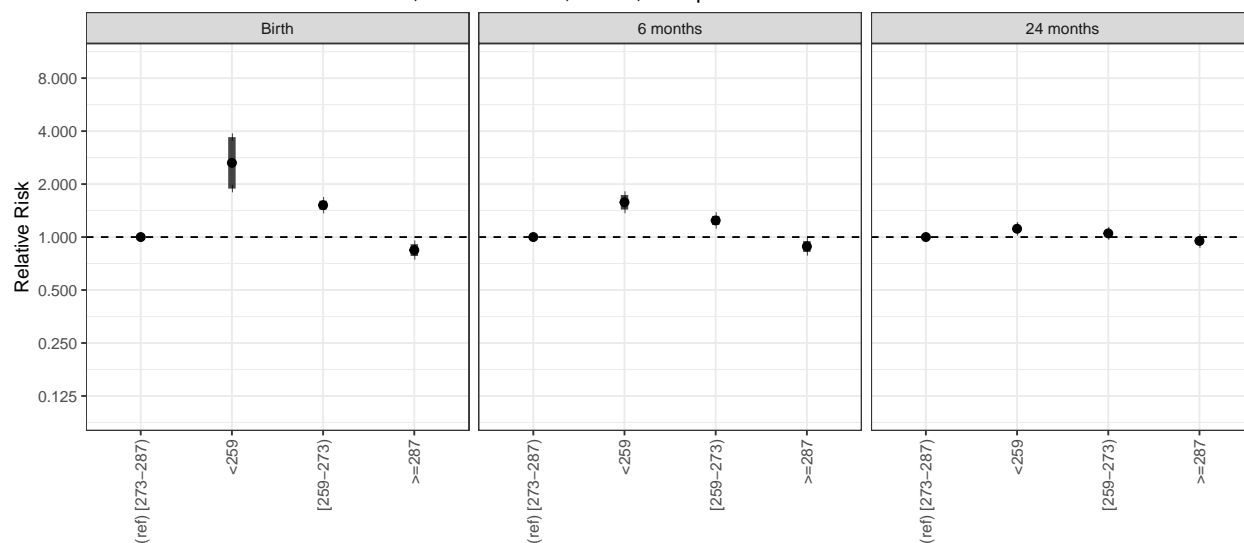
Child delivered at home  
Estimates from 4 cohorts in Asia



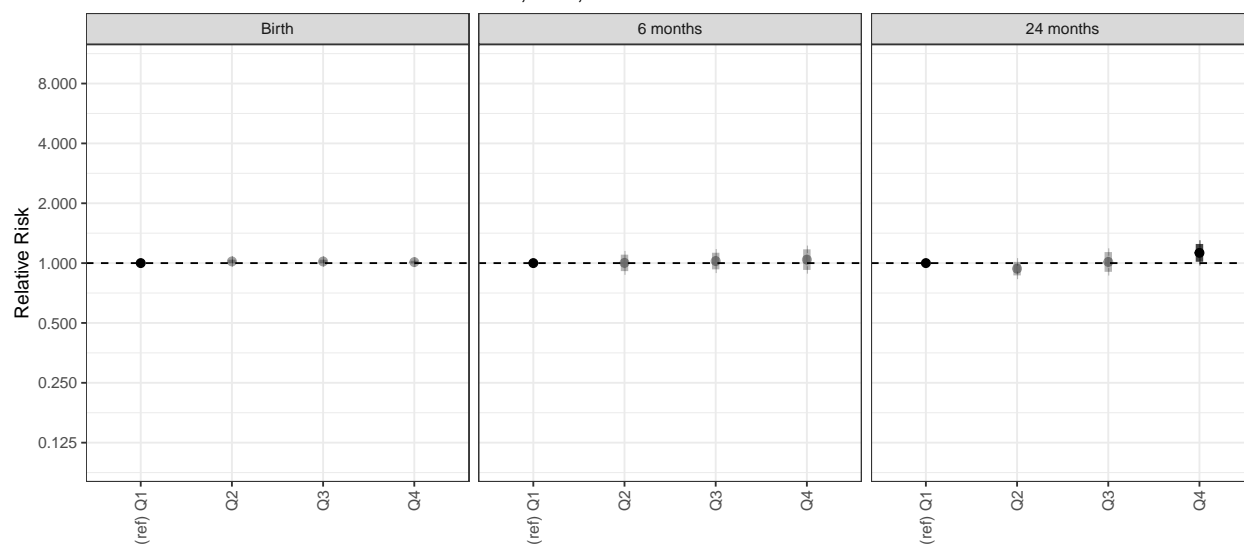
Enrolled wasted  
Estimates from 16 cohorts in Latin America, Asia, Africa, Europe



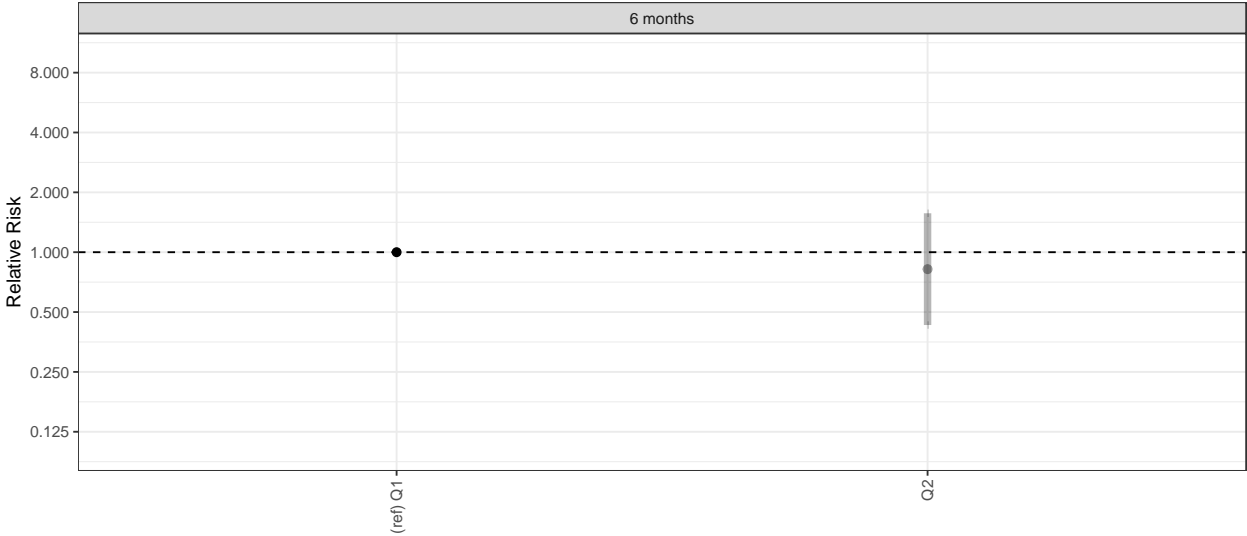
Gestational age at birth in days  
Estimates from 9 cohorts in Asia, Latin America, Africa, Europe



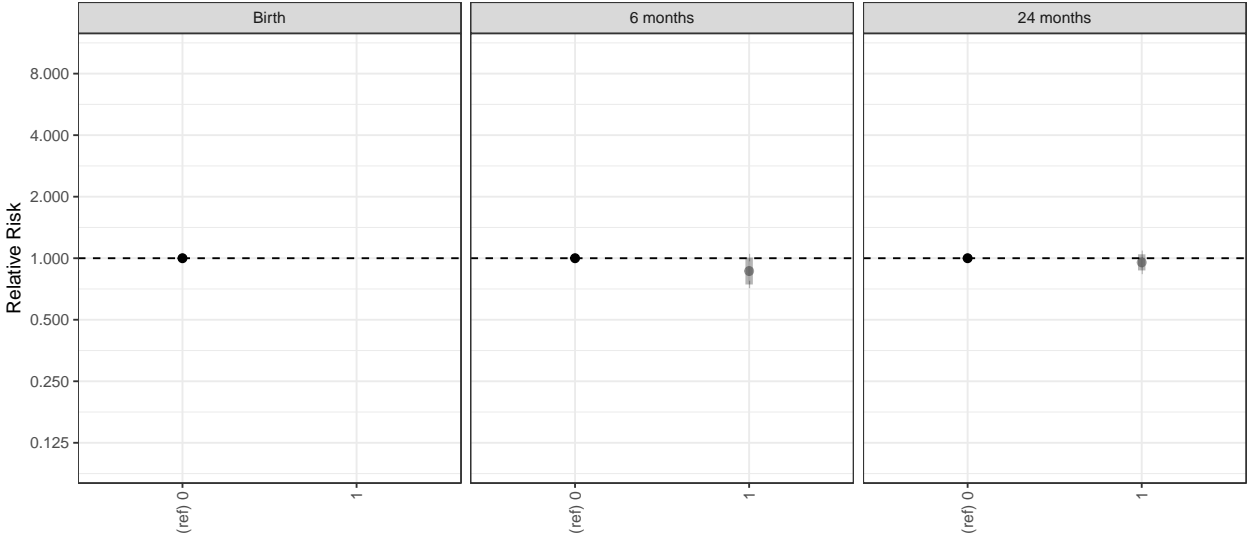
Percent diarrhea in first 24 months  
Estimates from 10 cohorts in Latin America, Asia, Africa



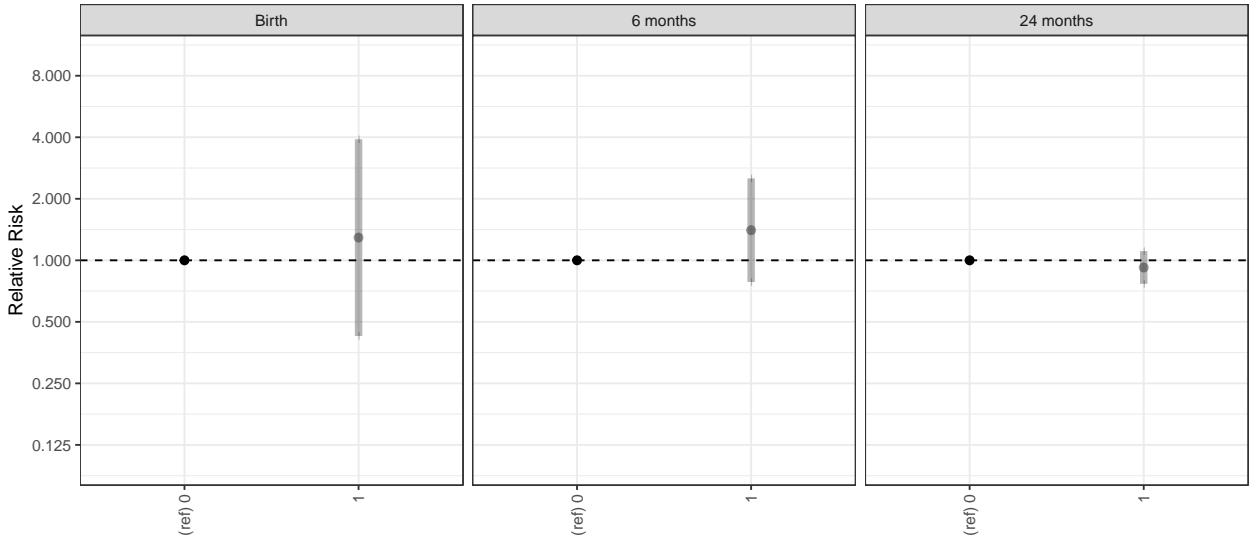
Percent diarrhea in first 6 months  
Estimates from 1 cohorts in Asia



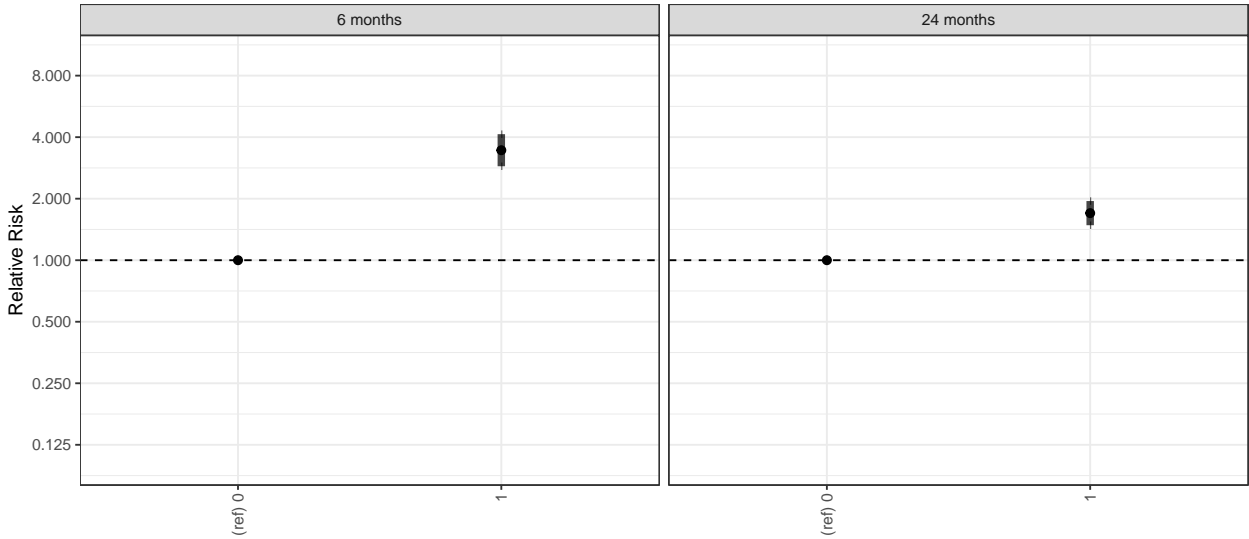
Percent exclusive breastfeeding  
Estimates from 11 cohorts in Asia, Africa, Latin America



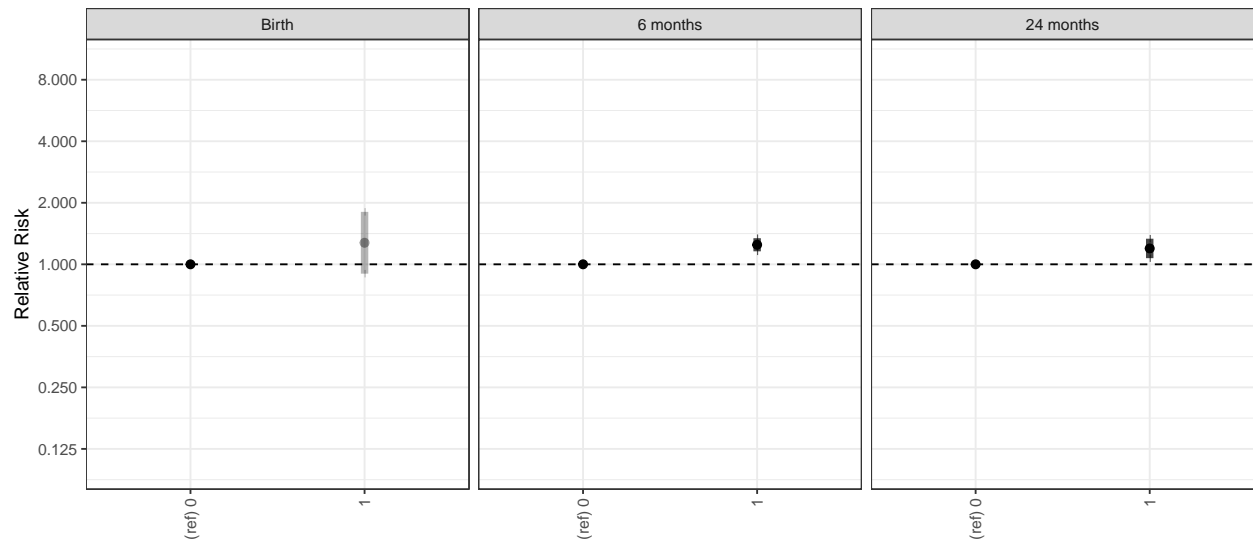
Persistent wasting in first 6 months  
Estimates from 2 cohorts in Asia



Stunted at enrollment  
Estimates from 20 cohorts in Asia, Africa, Latin America, Europe

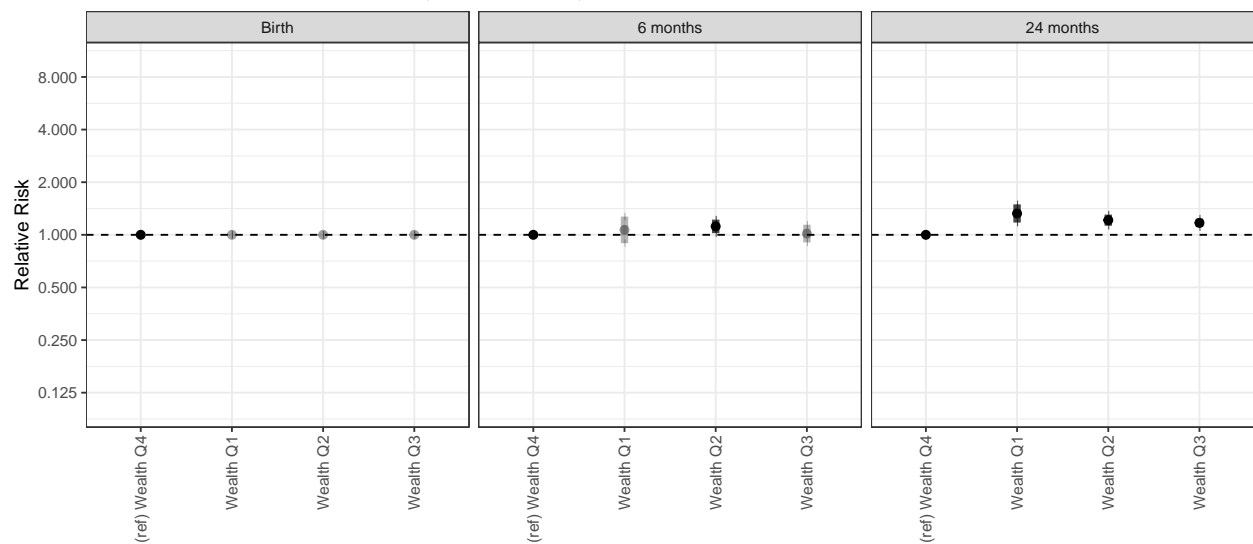


Vaginal delivery  
Estimates from 9 cohorts in Asia, Europe, Africa

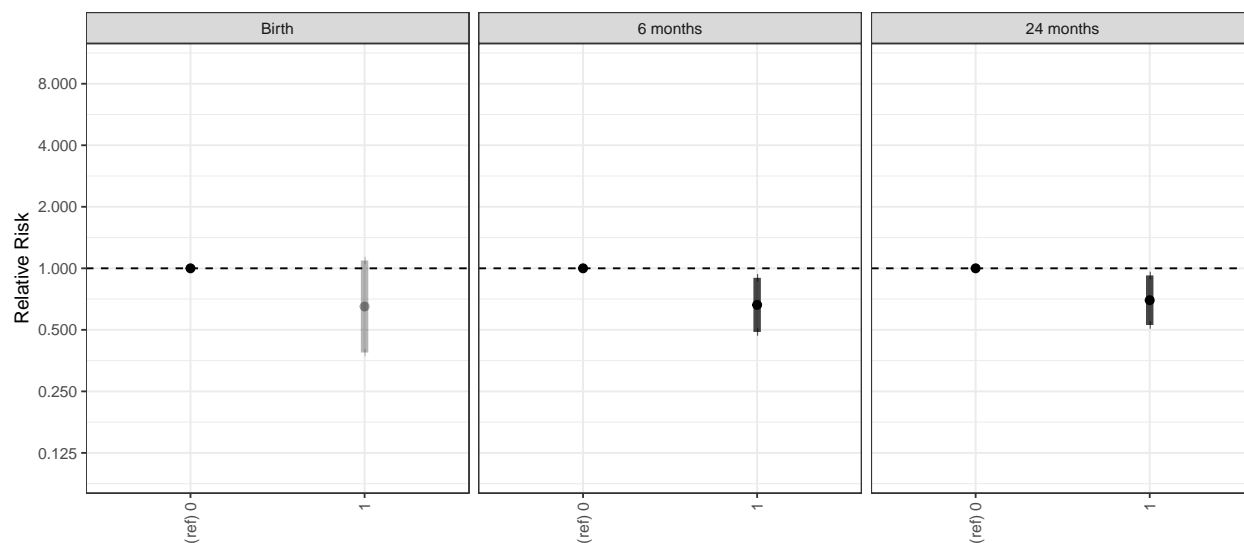


Household characteristics

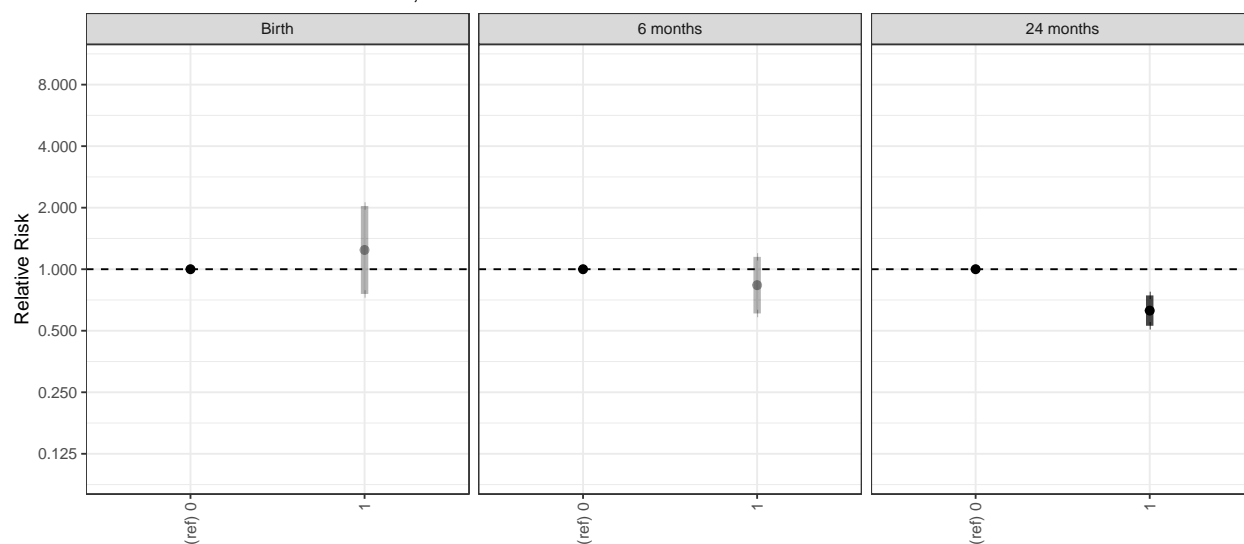
Asset based wealth index  
Estimates from 10 cohorts in Asia, Latin America, Africa



Clean cook  
Estimates from 4 cohorts in Asia

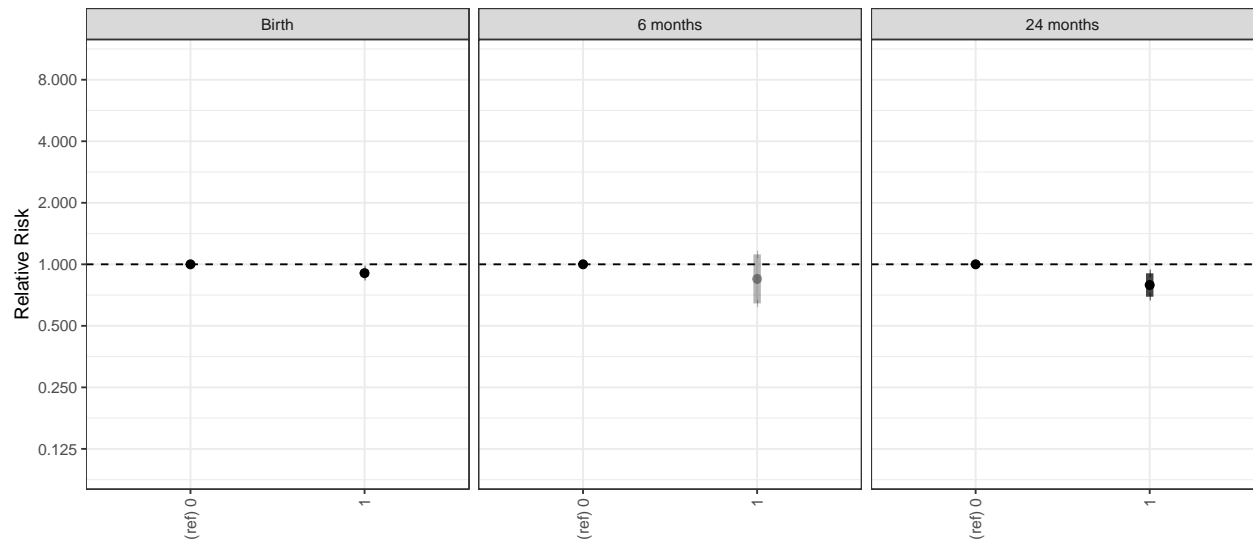


Improved floor  
Estimates from 8 cohorts in Asia, Latin America

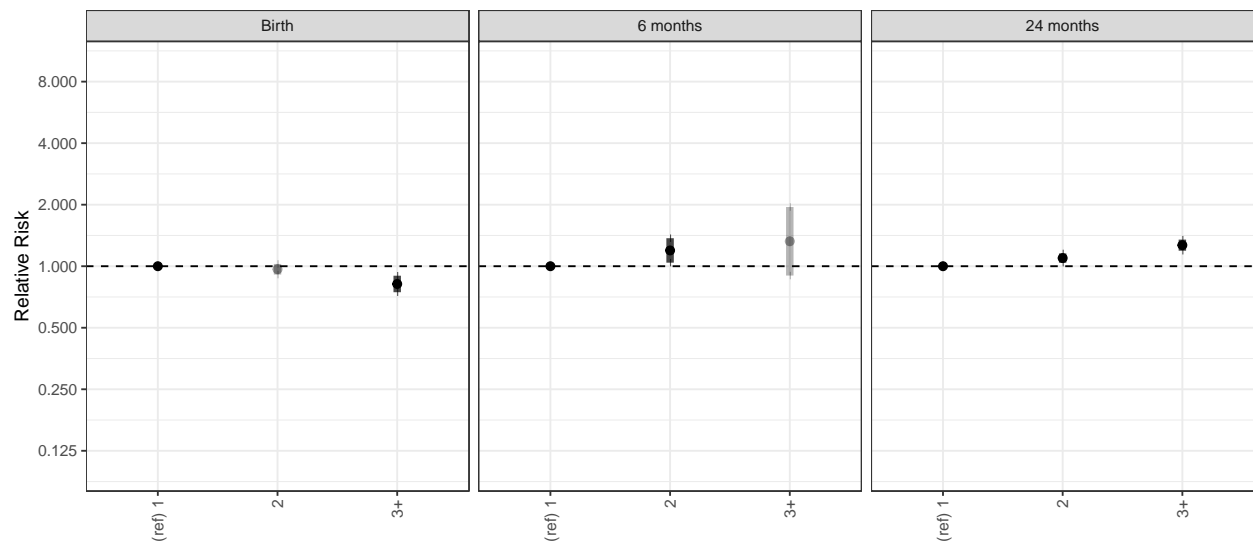




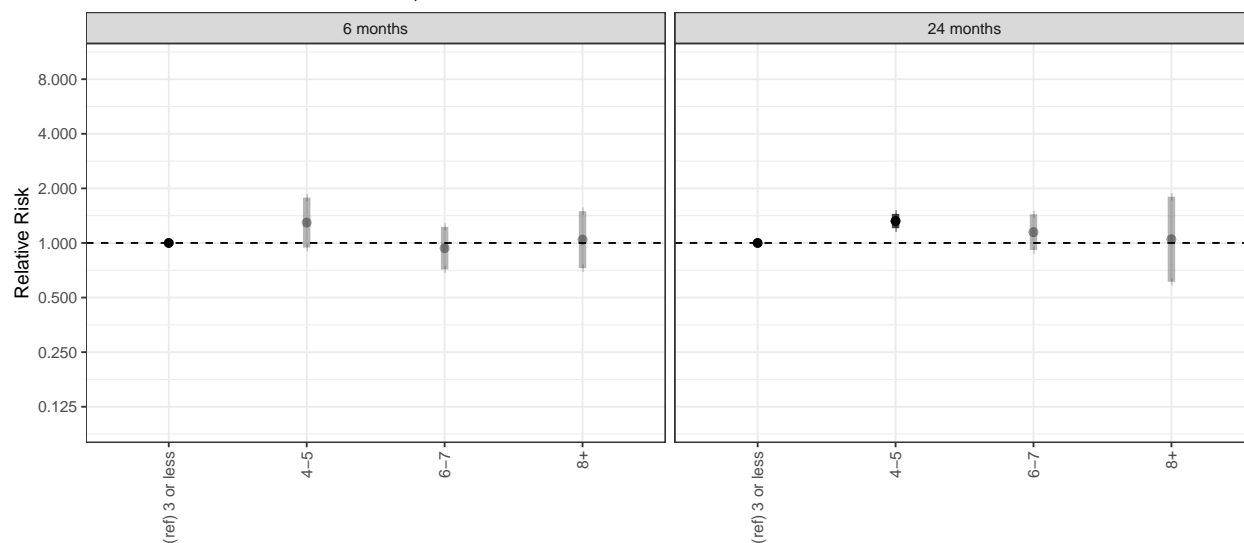
Improved sanitation  
Estimates from 11 cohorts in Latin America, Asia



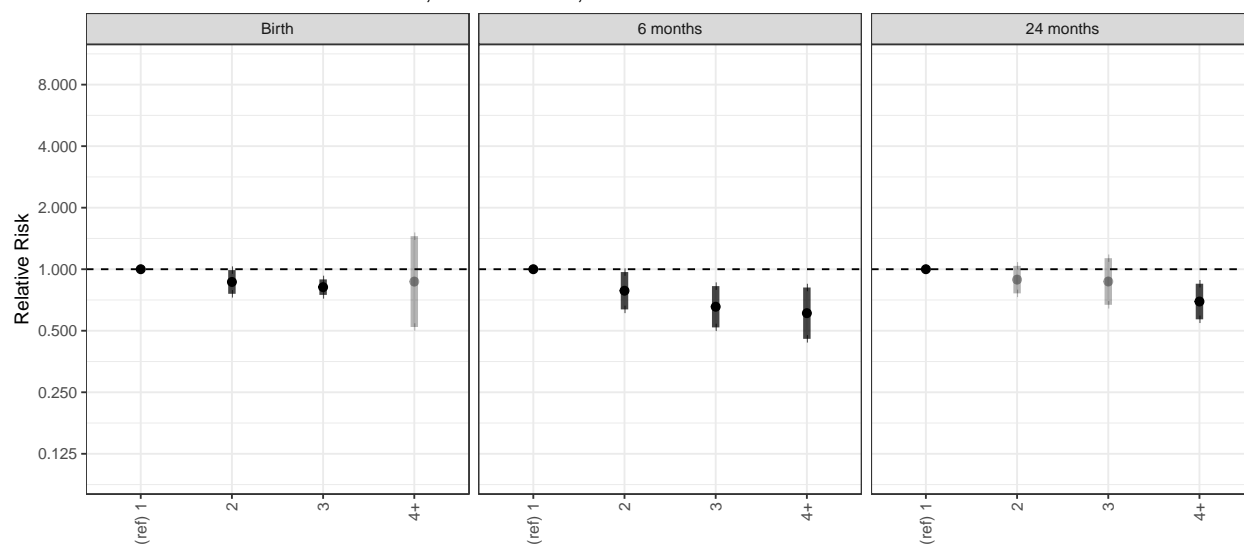
Number of children in the household under 5 years  
Estimates from 2 cohorts in Asia



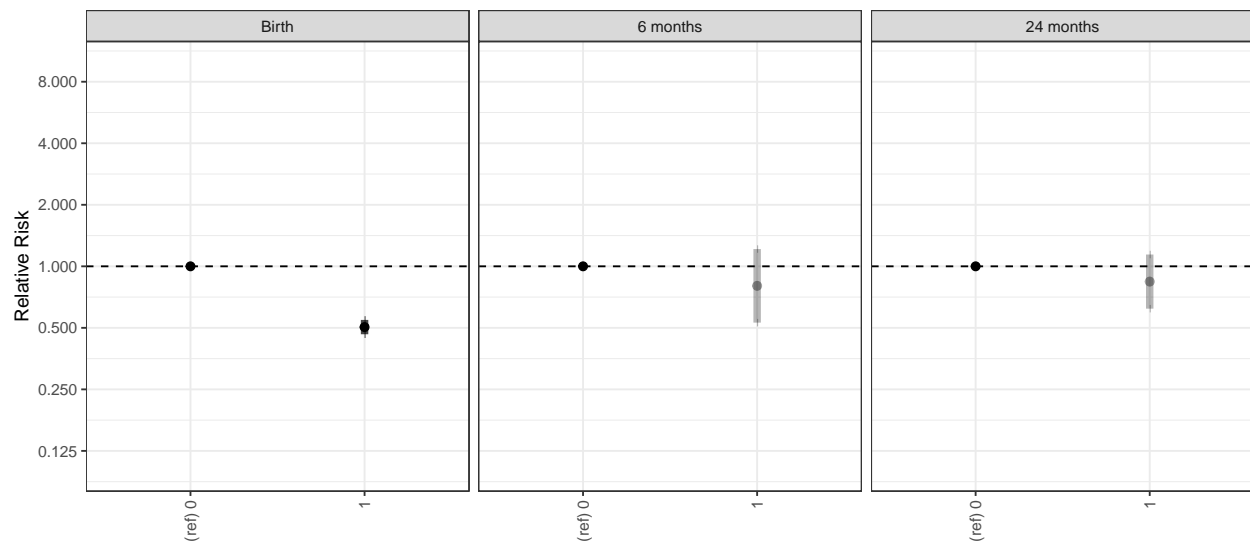
Number of people in the household  
Estimates from 6 cohorts in Asia, Africa



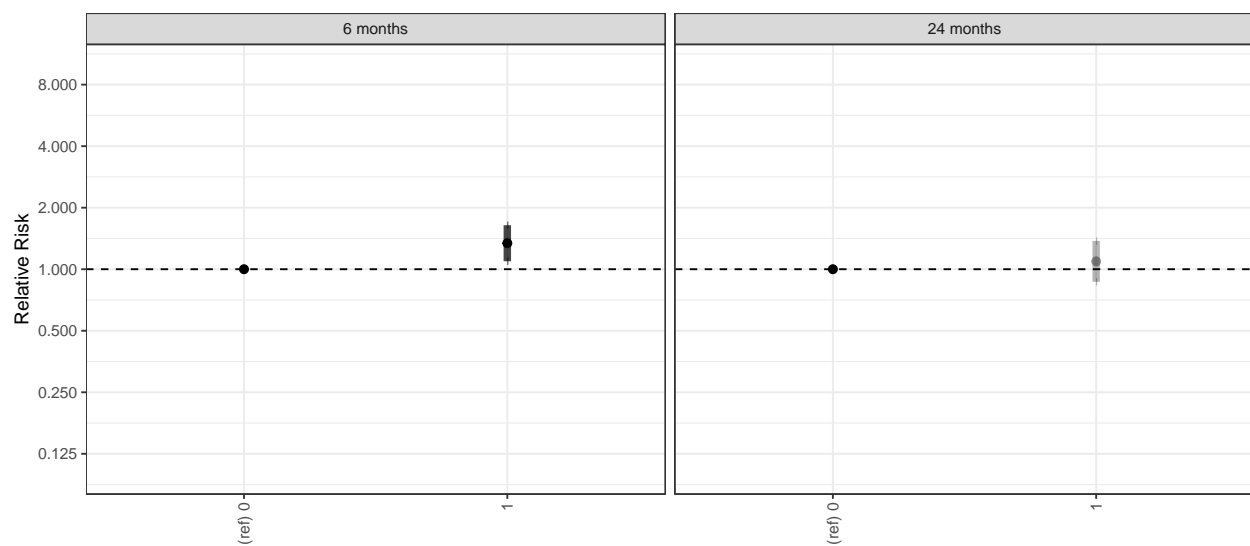
Number of rooms in household  
Estimates from 12 cohorts in Asia, Latin America, Africa



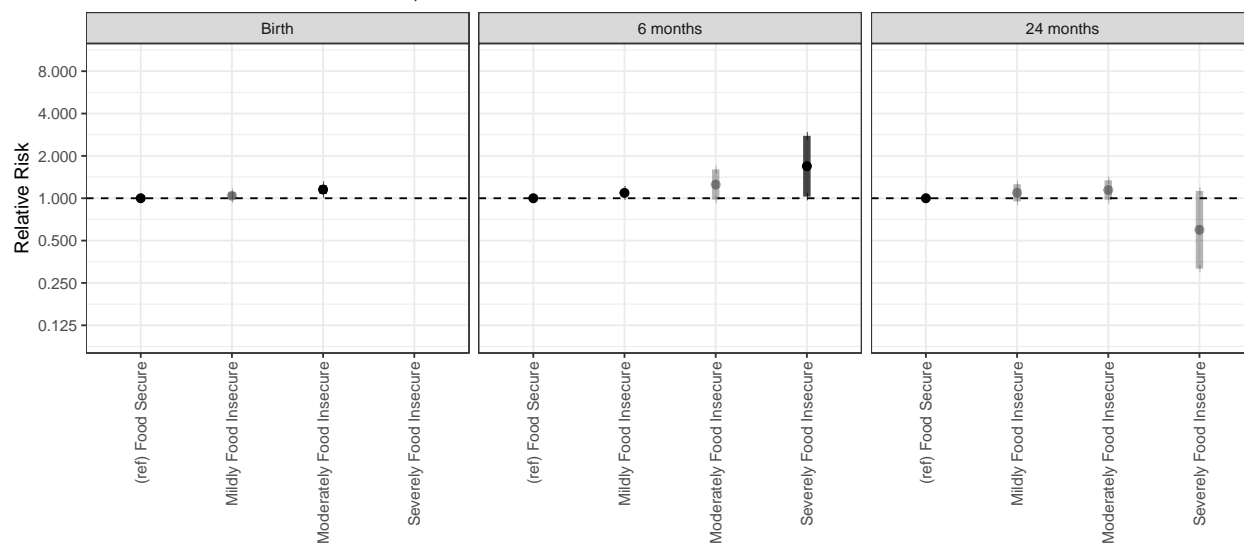
Safe water  
Estimates from 2 cohorts in Asia, Africa



Treats water  
Estimates from 1 cohorts in Asia

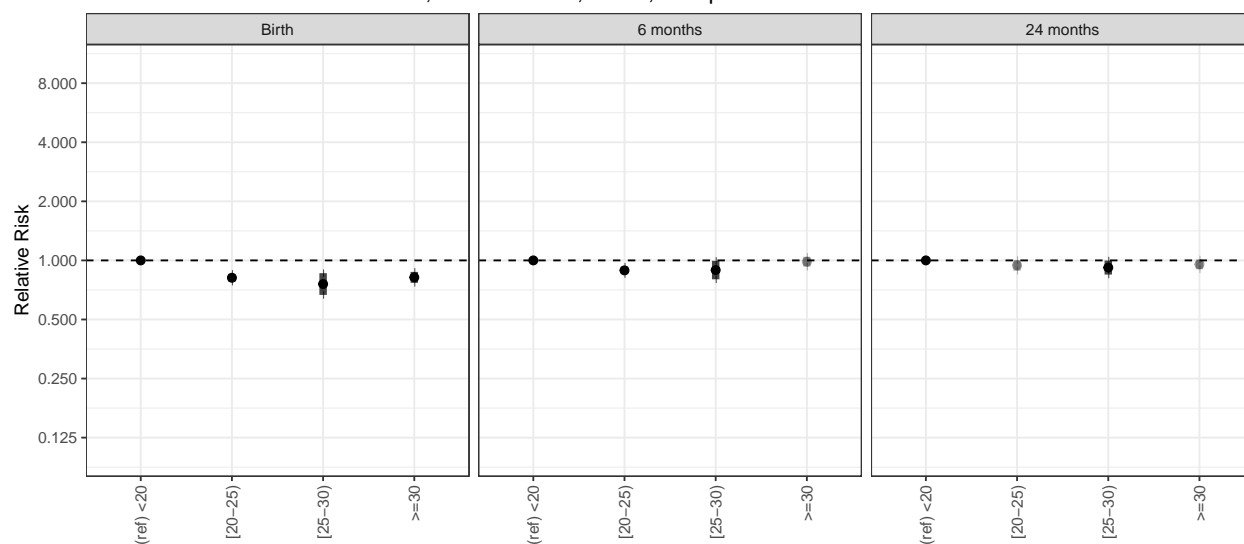


USAID Household Food Insecurity Access Scale (HFIAS) category  
Estimates from 5 cohorts in Asia, Latin America

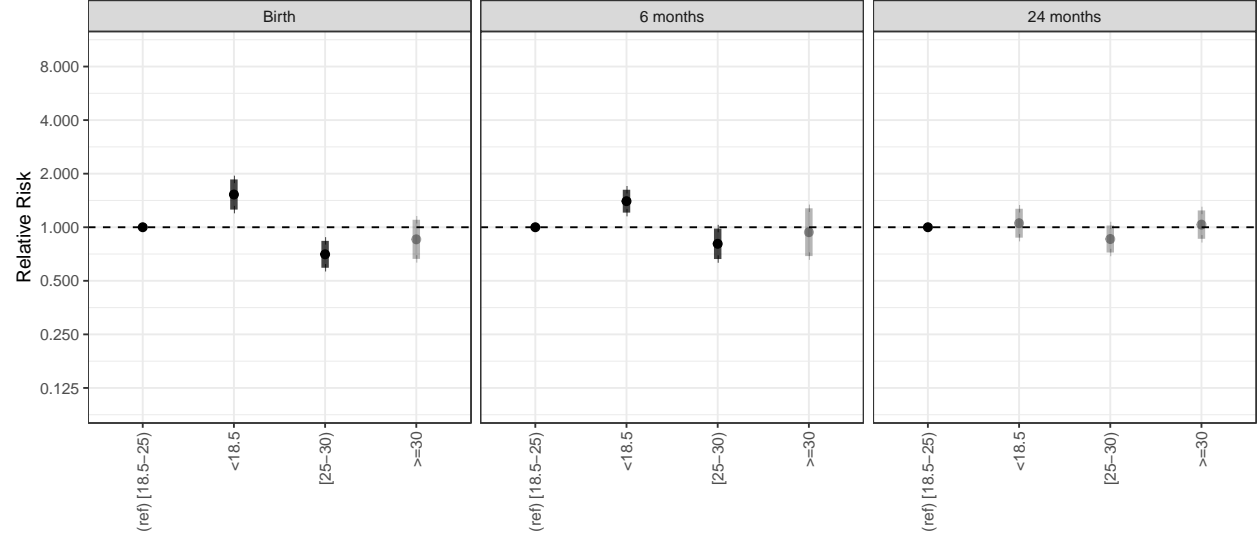


## Maternal characteristics

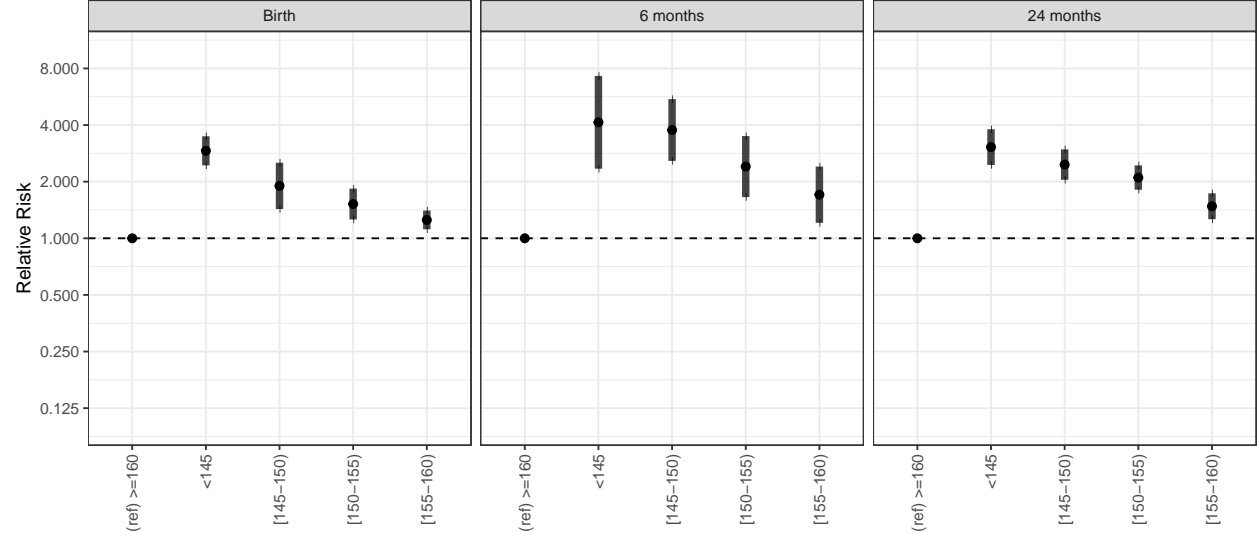
Maternal age  
Estimates from 21 cohorts in Asia, Latin America, Africa, Europe



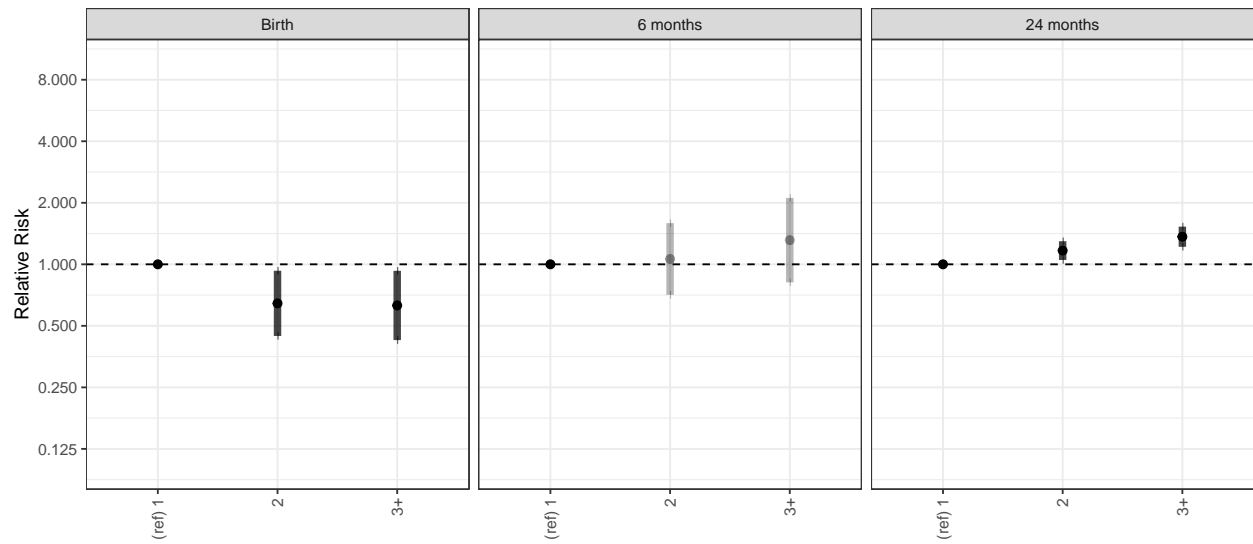
Maternal BMI  
Estimates from 3 cohorts in Asia, Europe, Africa



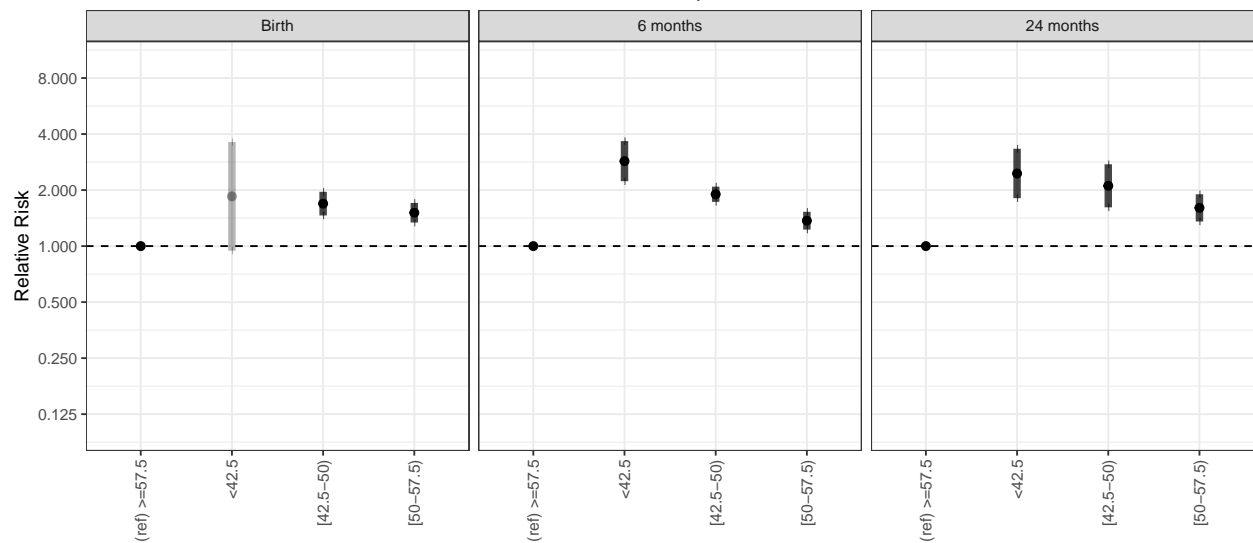
Maternal height  
Estimates from 5 cohorts in Latin America, Asia



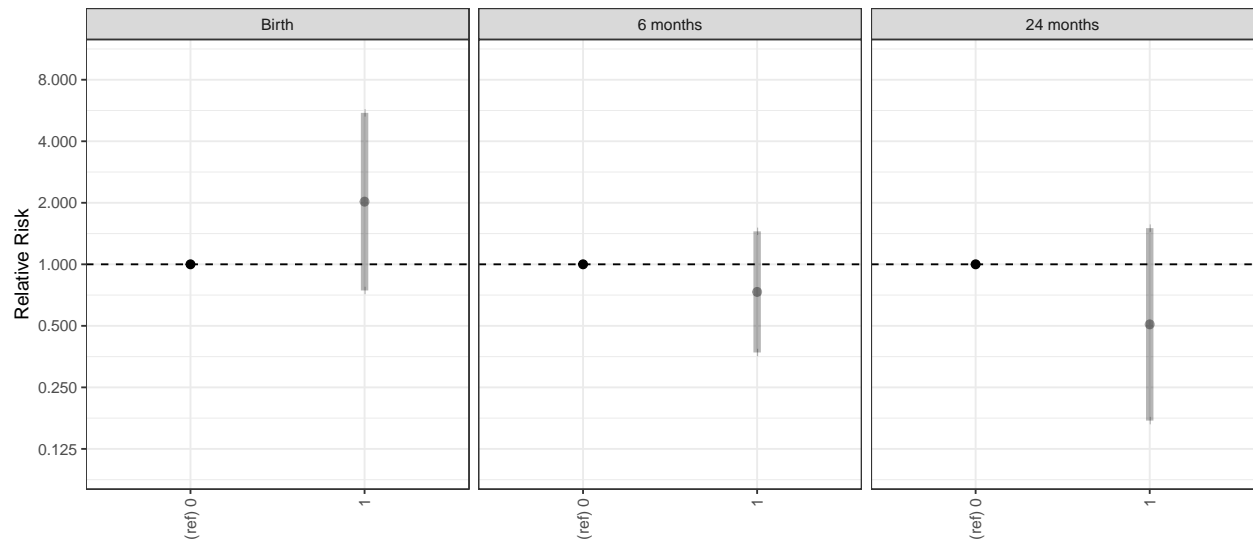
Maternal parity  
Estimates from 7 cohorts in Latin America, Asia, Africa



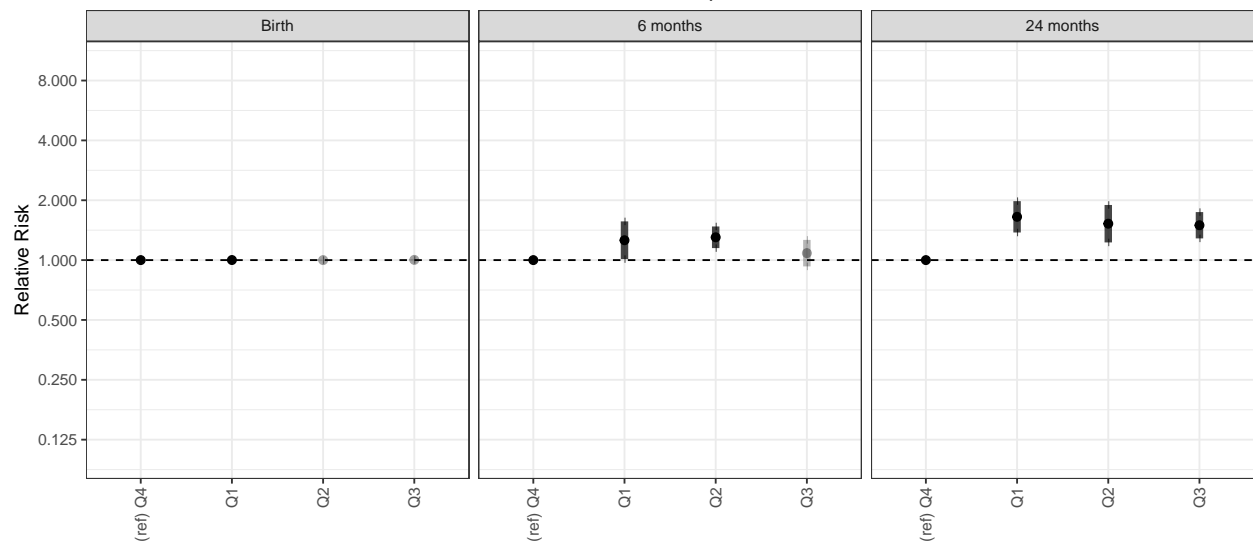
Maternal weight  
Estimates from 9 cohorts in Africa, Asia, Latin America, Europe



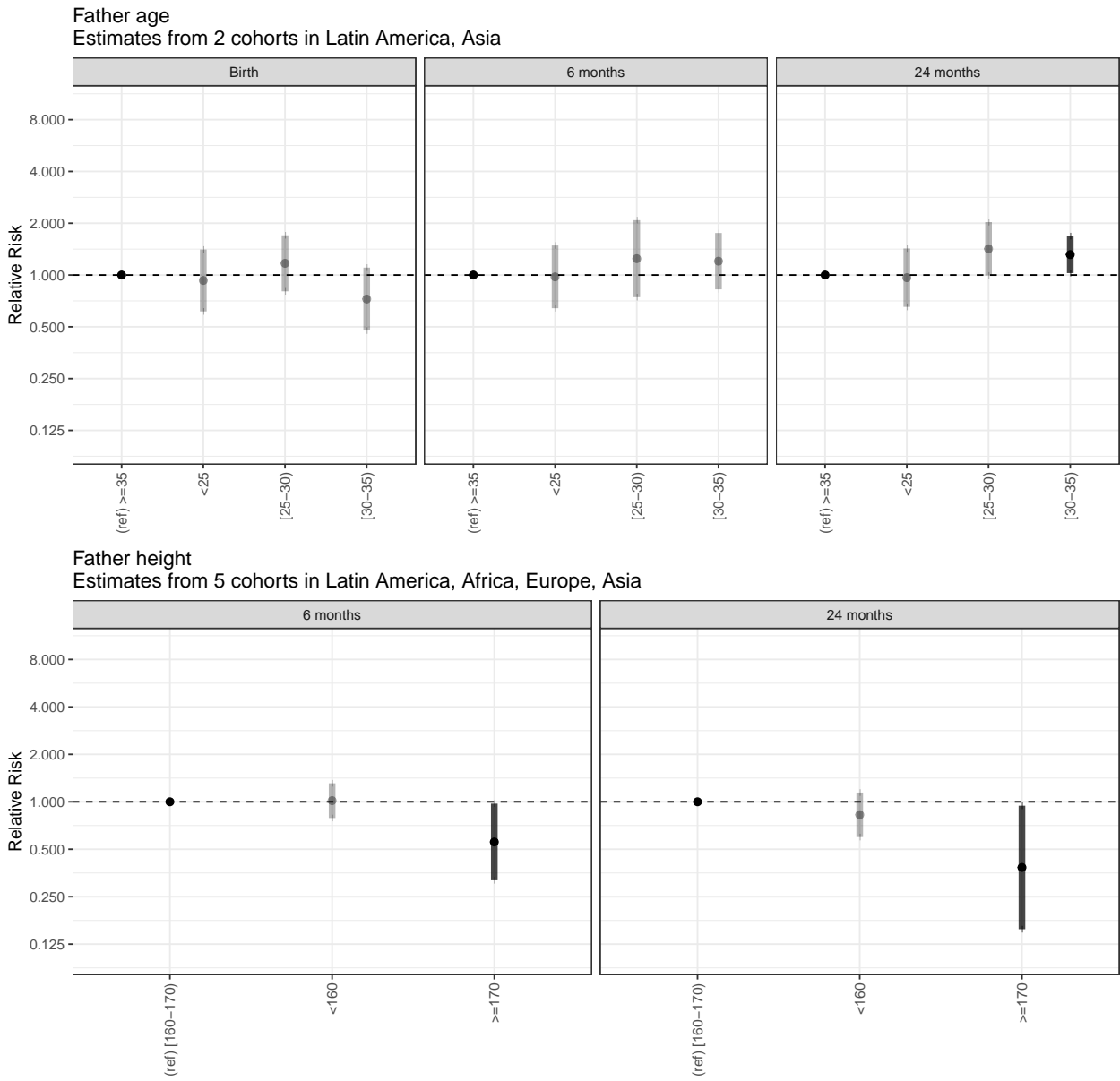
Mother is unmarried  
Estimates from 6 cohorts in Latin America, Asia, Africa



Mother's education  
Estimates from 15 cohorts in Asia, Latin America, Africa, Europe

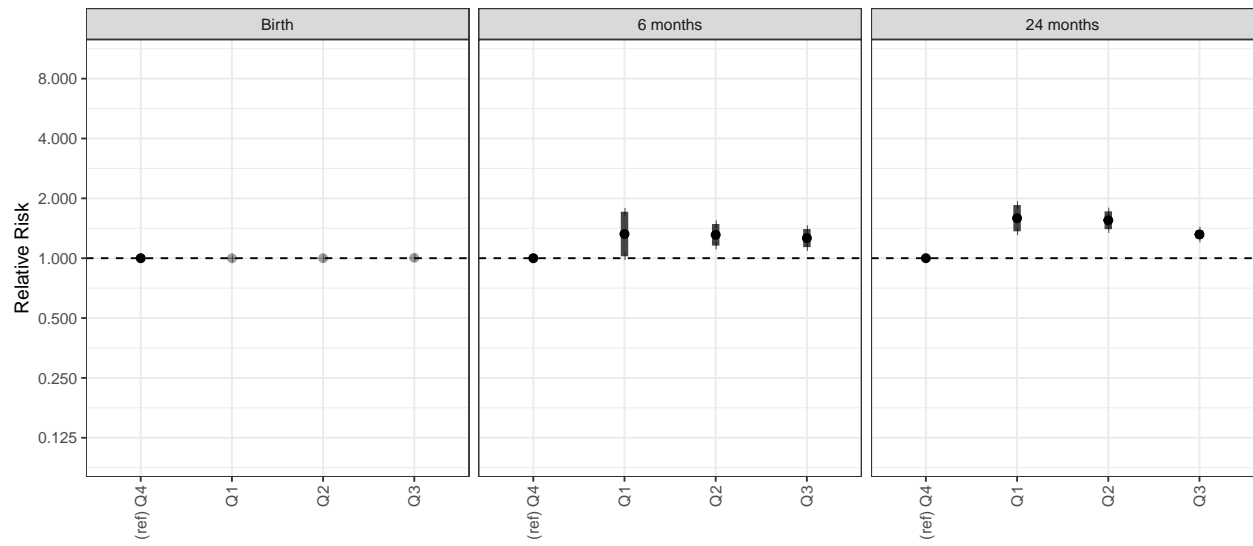


Paternal characteristics





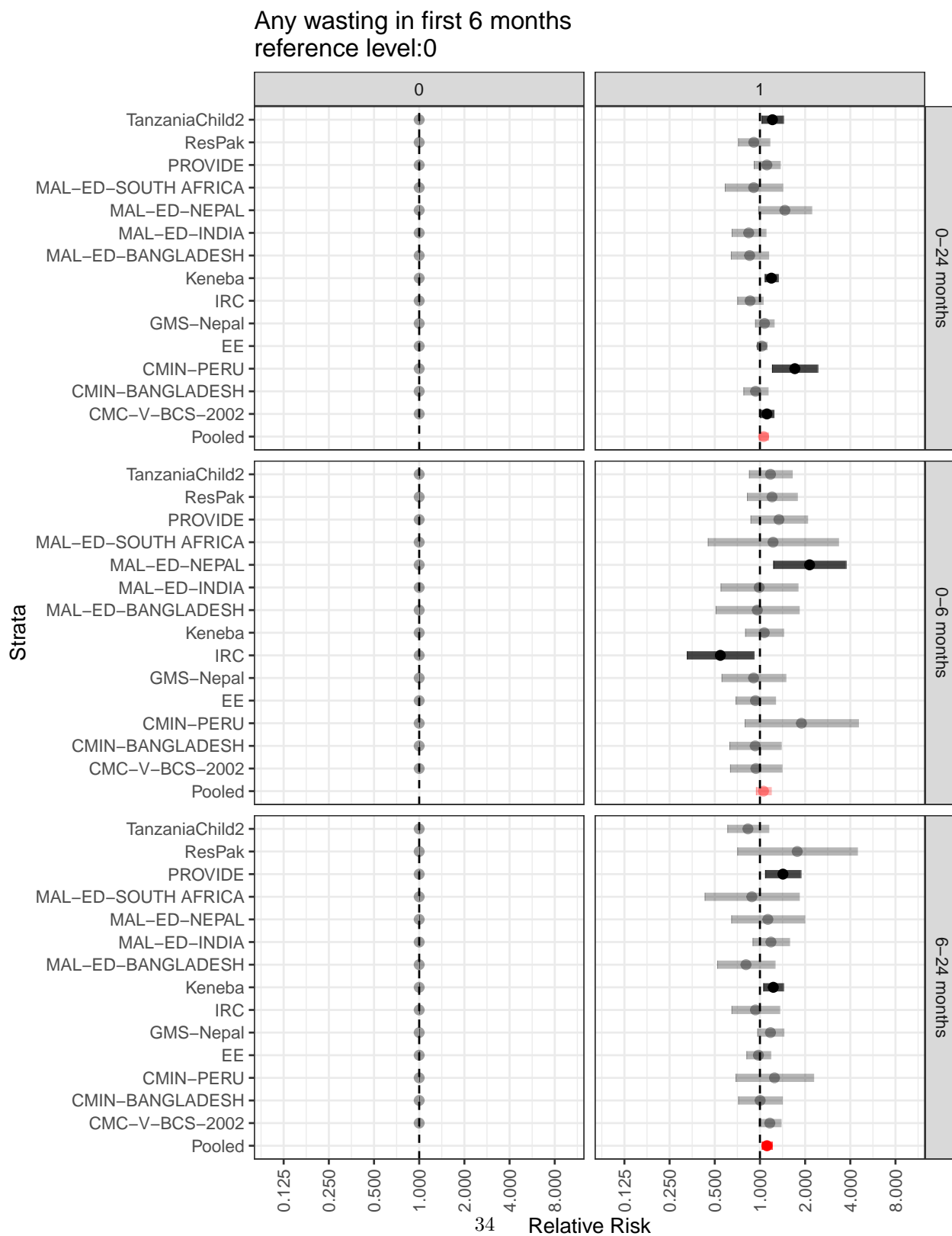
Father's education  
Estimates from 4 cohorts in Asia, Africa



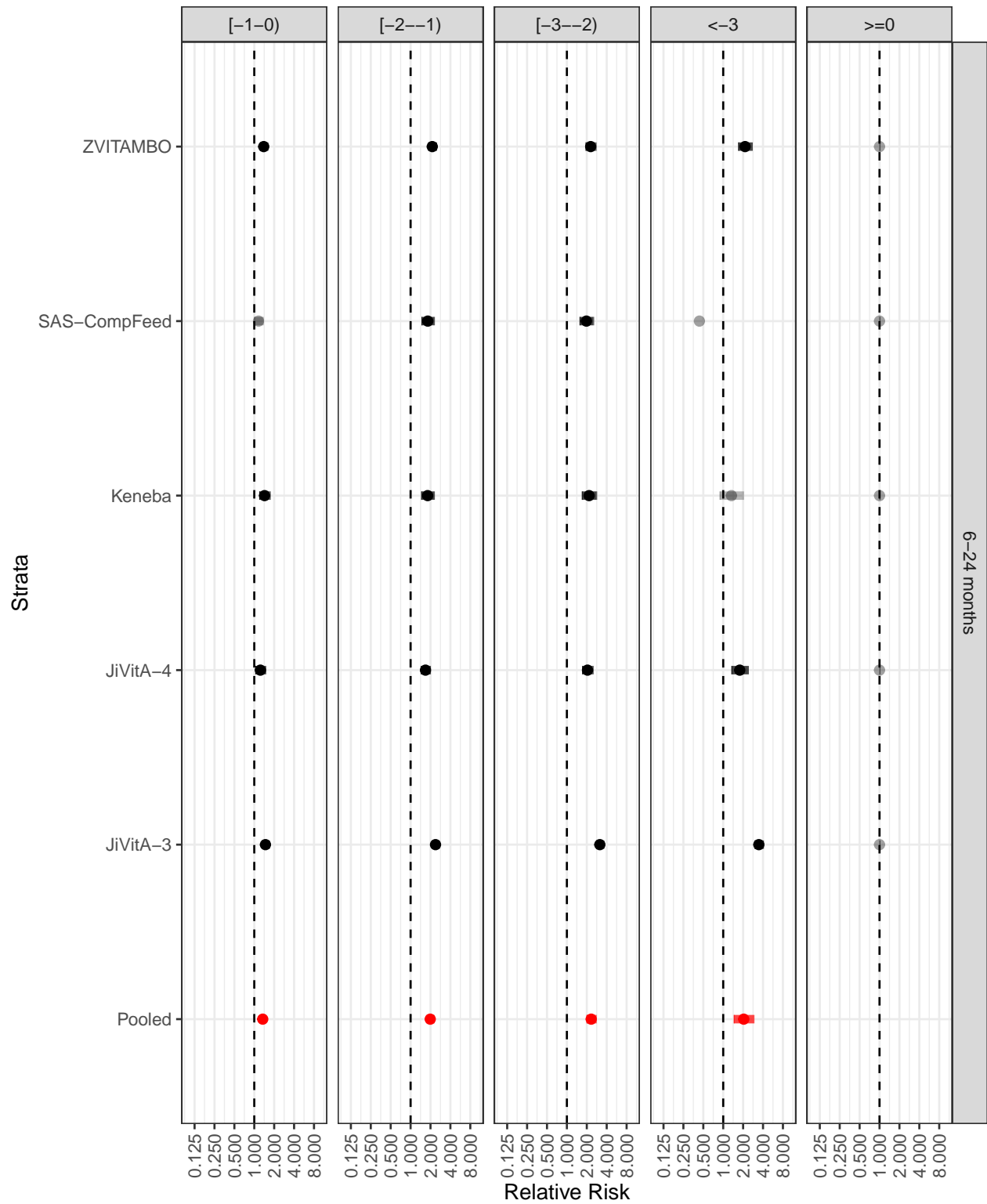
## Appendix 1 - Relative risk stratified by cohort

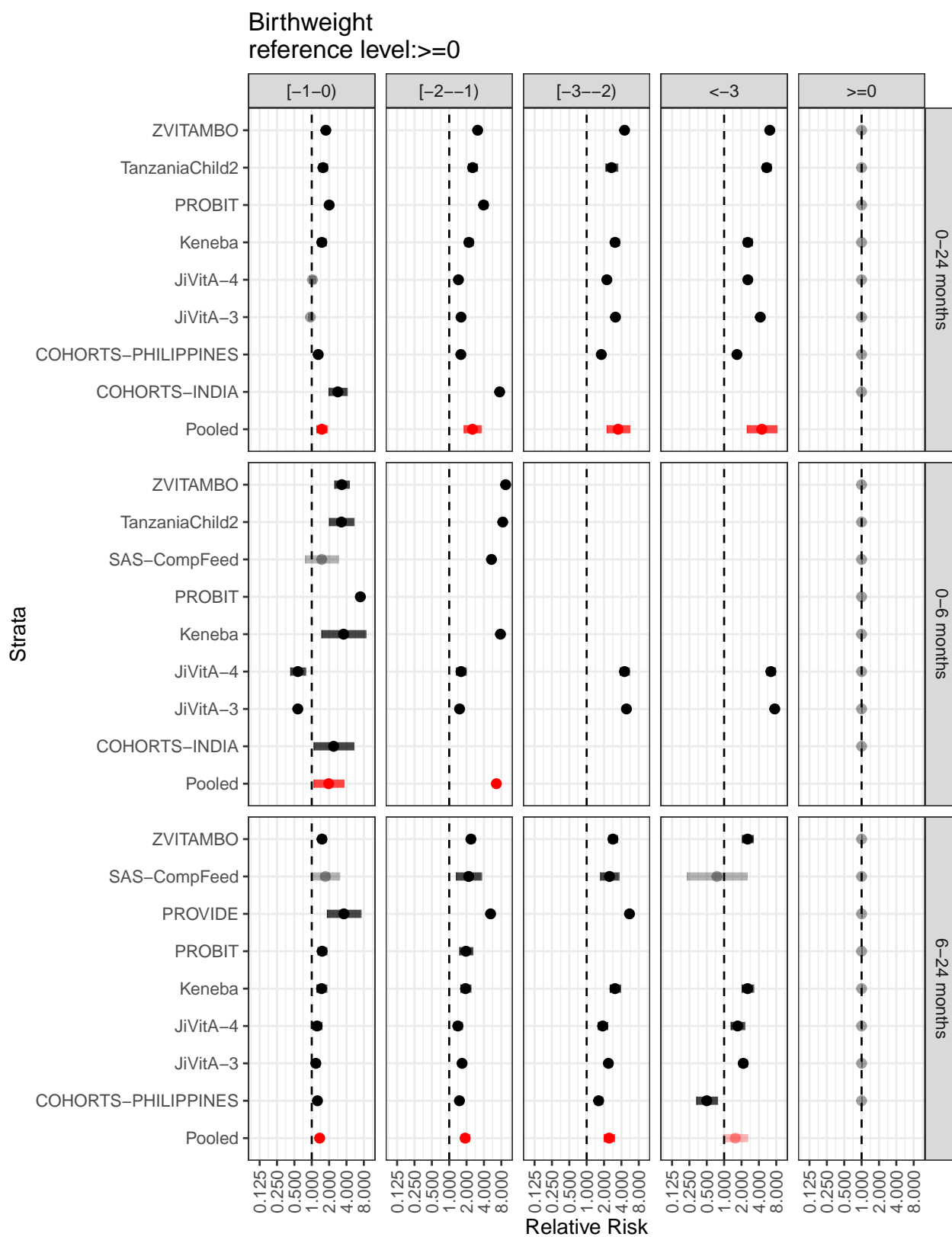
### Cumulative incidence of stunting from birth to 24 months

Child characteristics

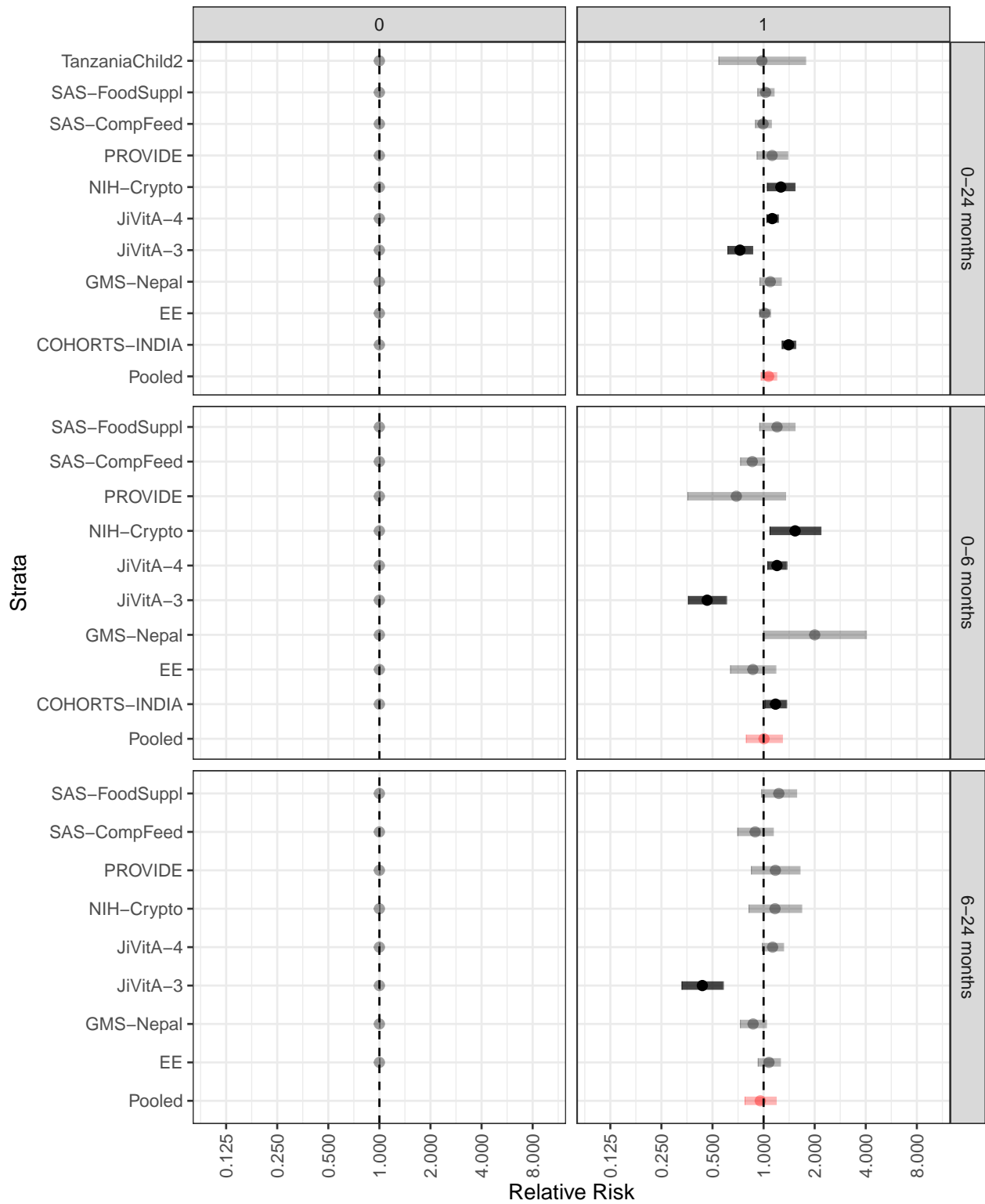


Birth length  
reference level:  $\geq 0$

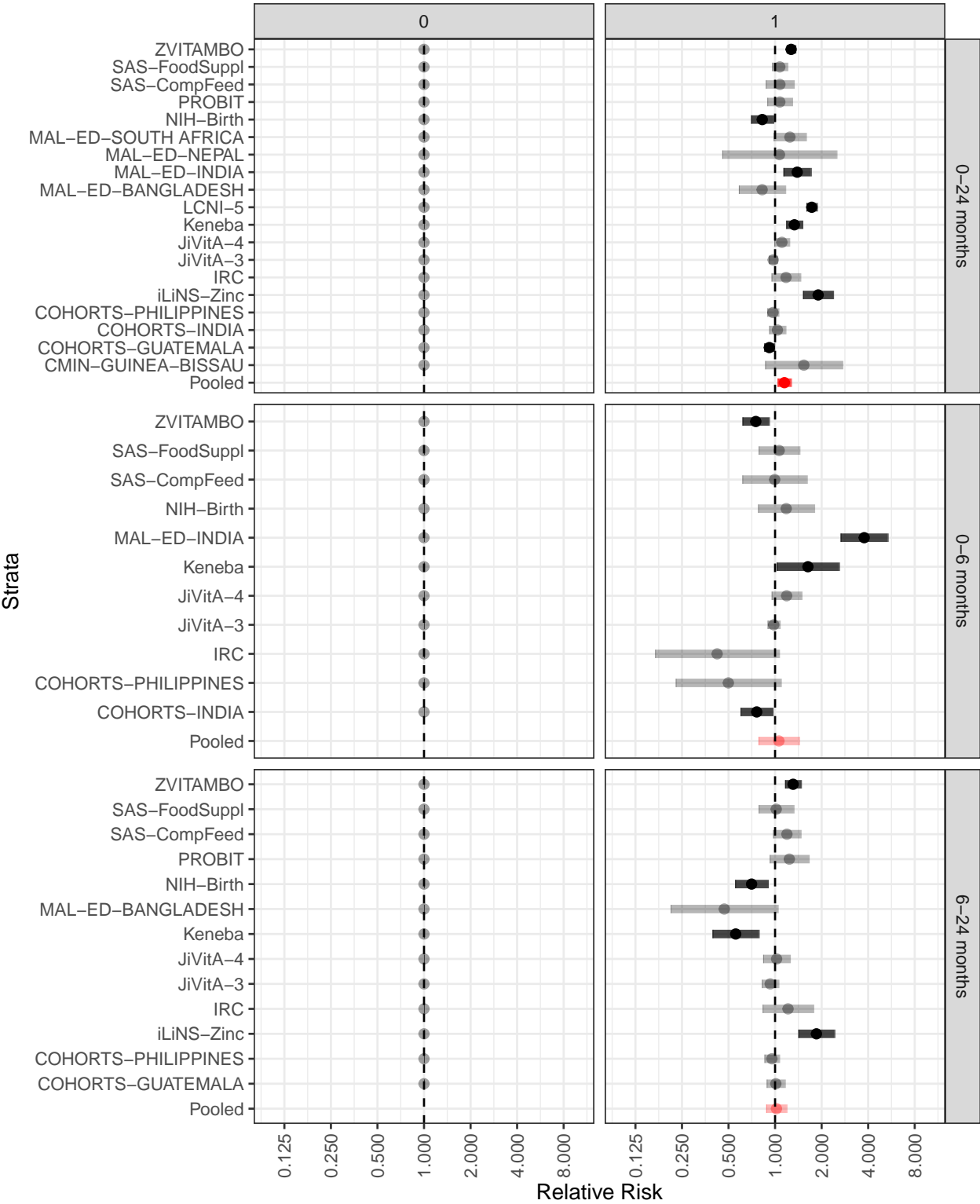




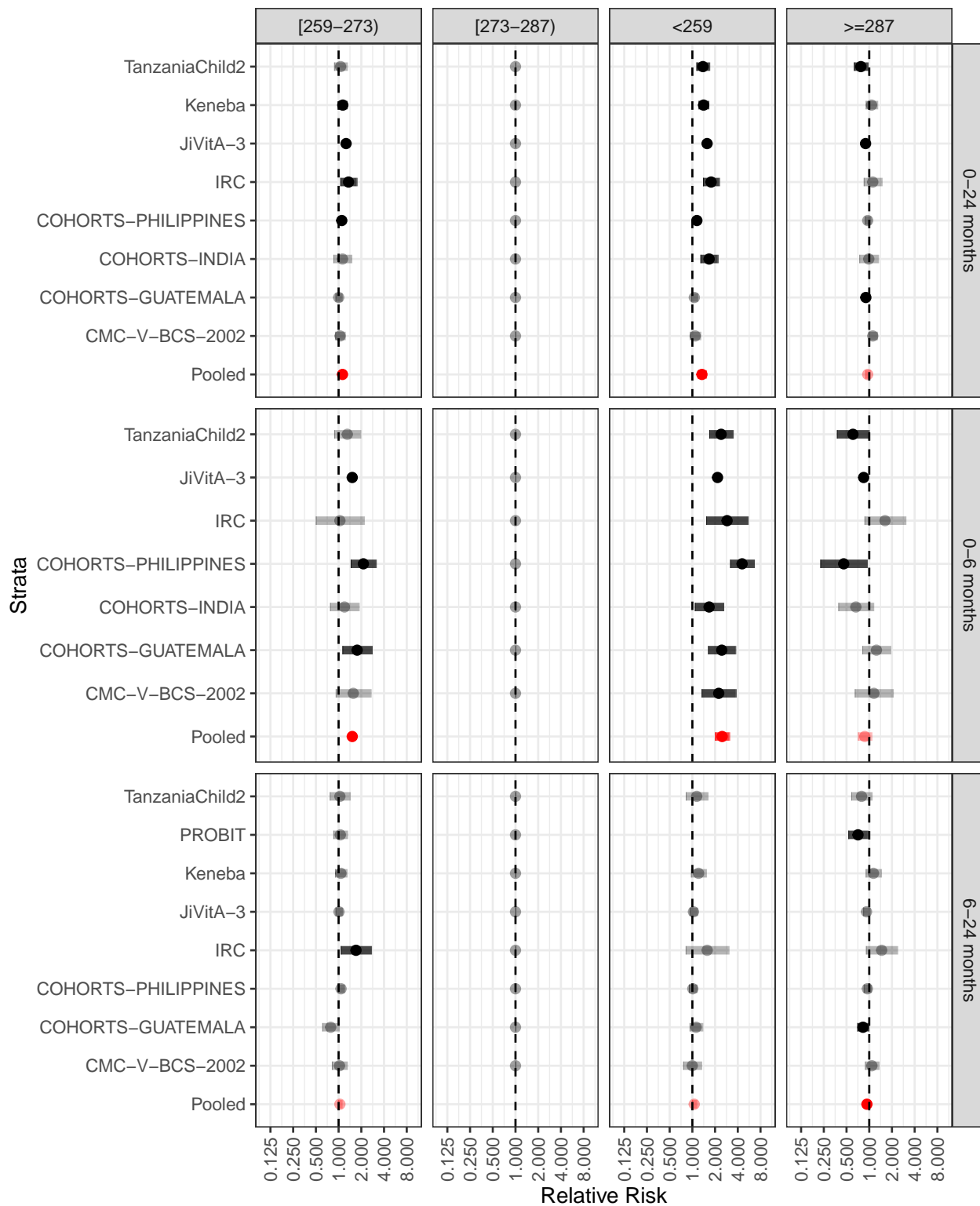
Child delivered at home  
reference level:0



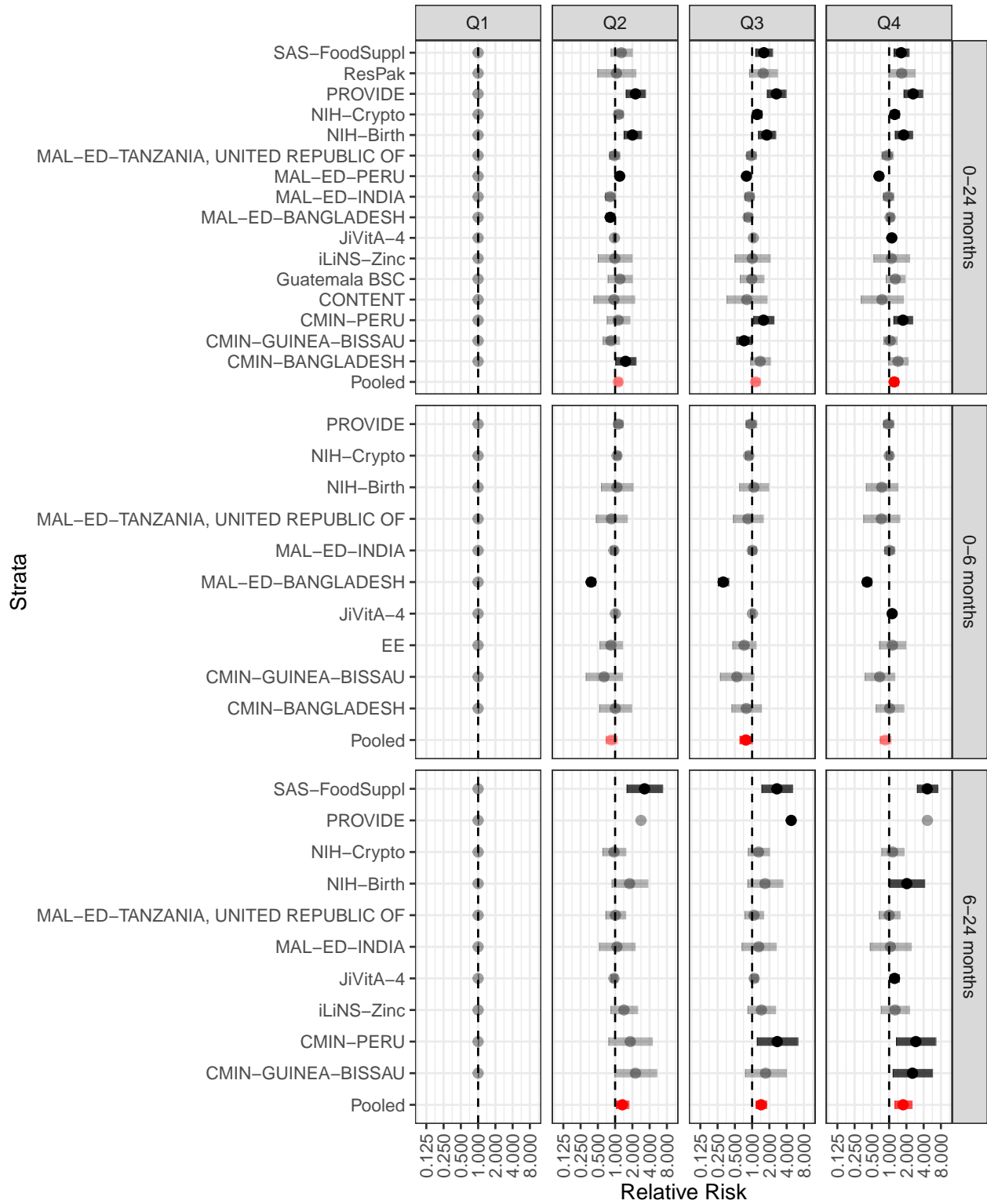
Enrolled wasted  
reference level:0



Gestational age at birth in days  
reference level:[273–287)

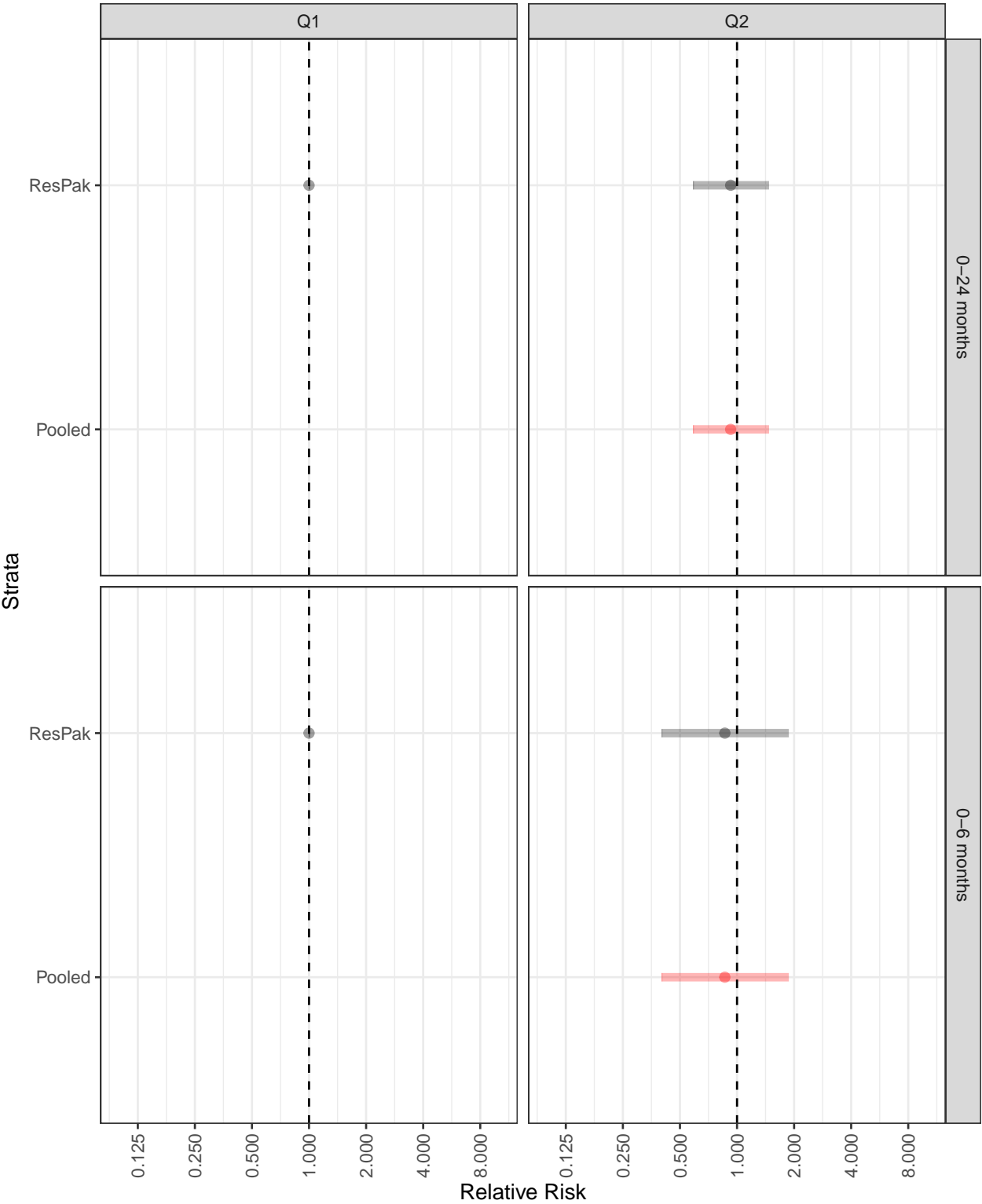


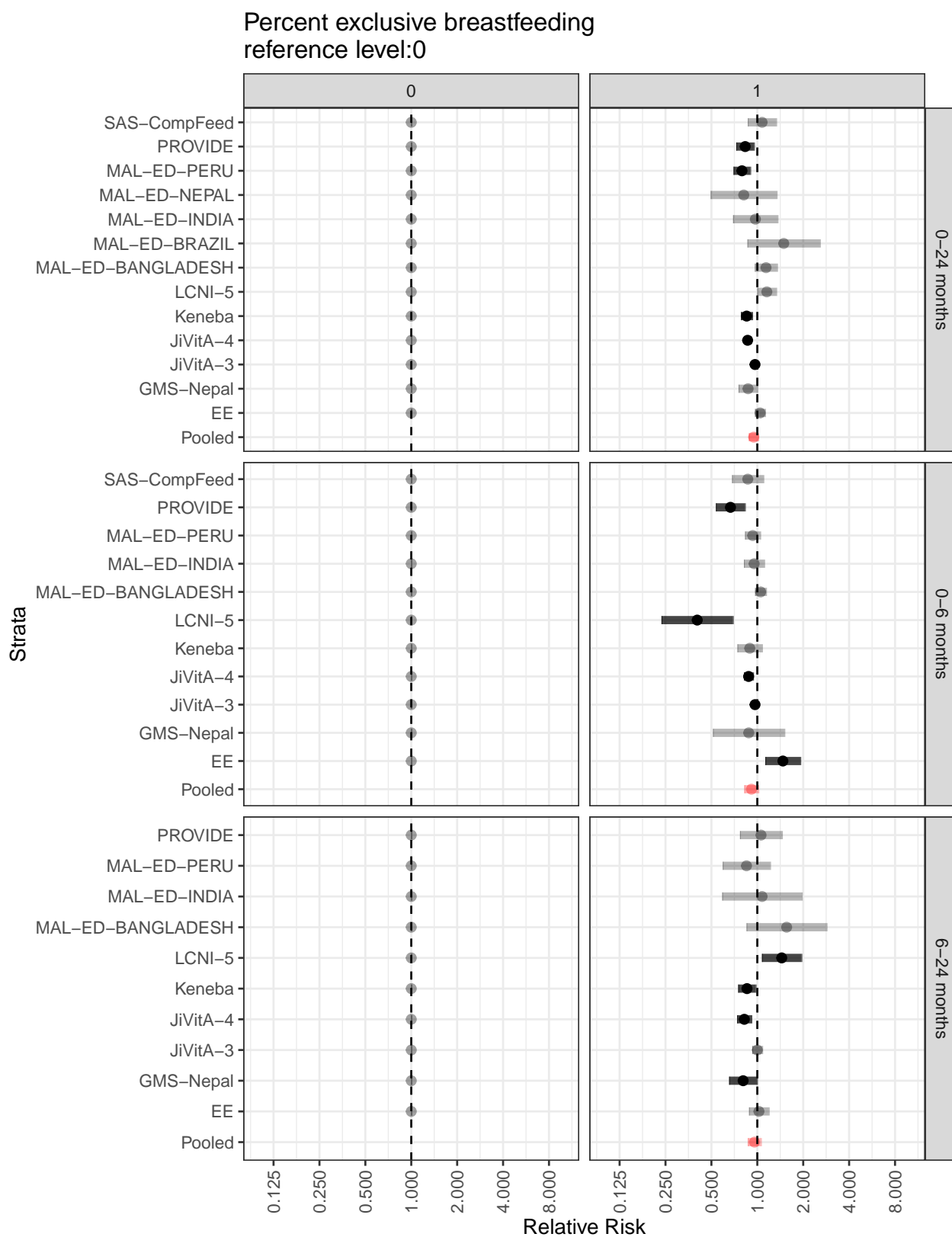
Percent diarrhea in first 24 months  
reference level:Q1



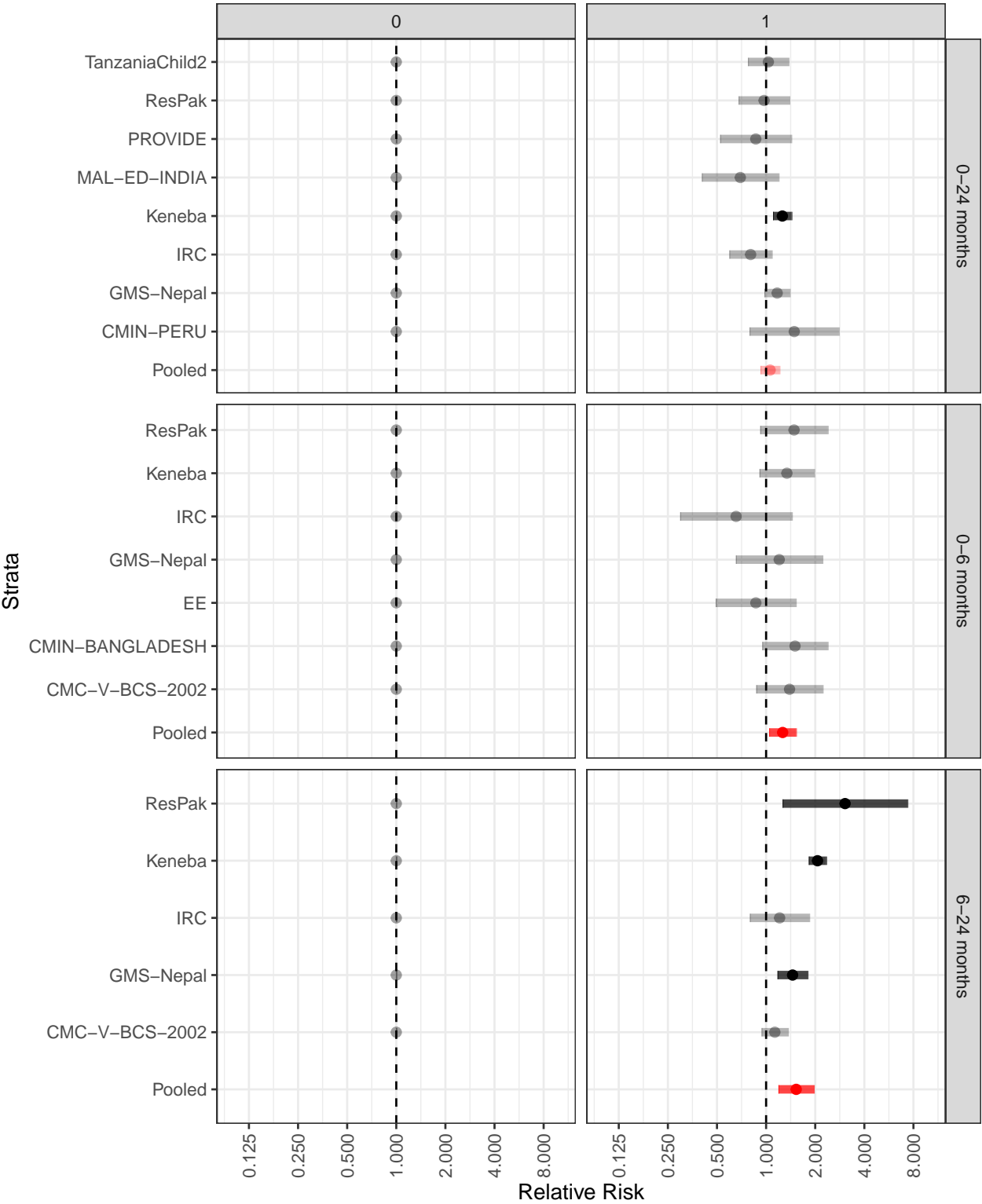


Percent diarrhea in first 6 months  
reference level:Q1

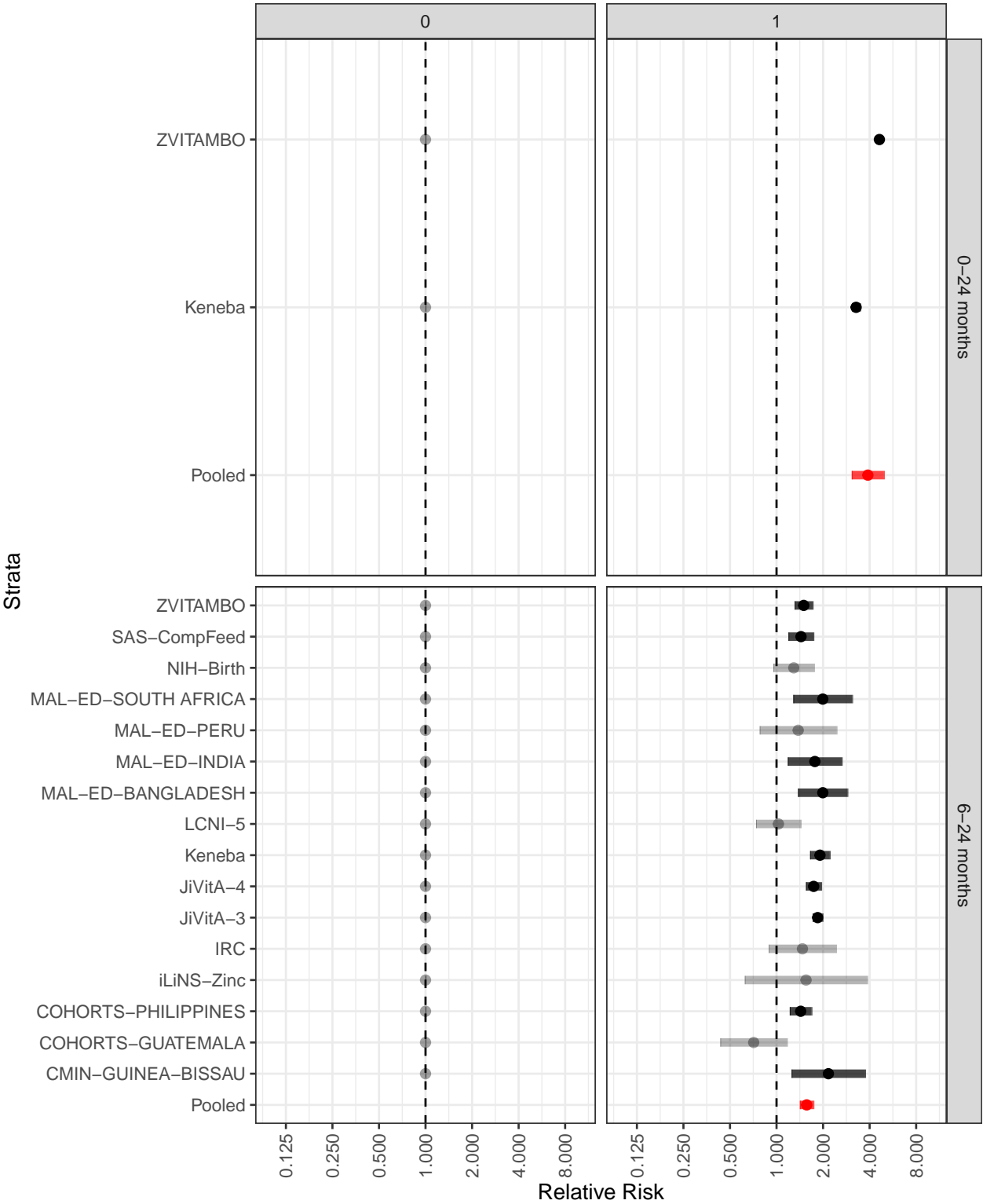


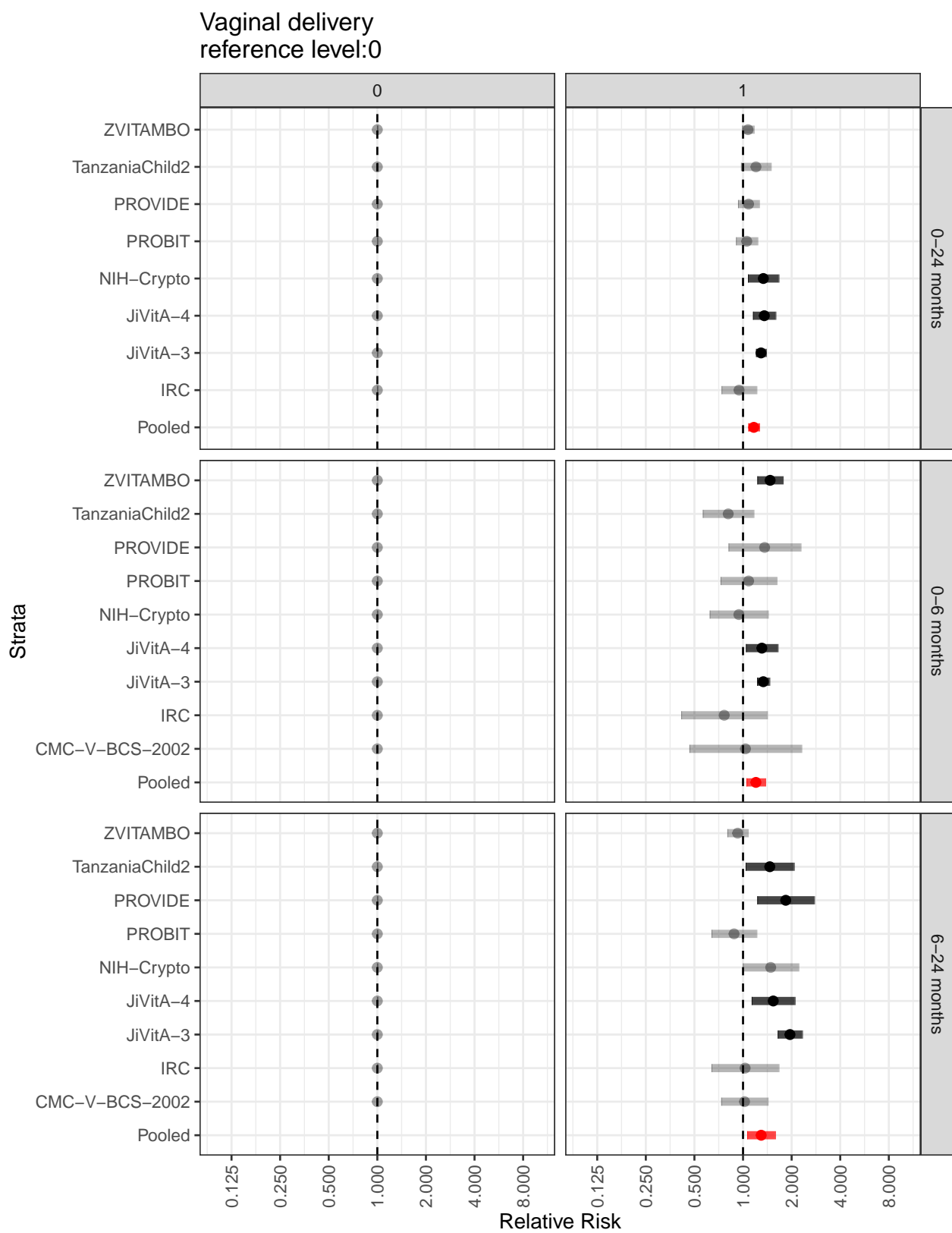


# Persistent wasting in first 6 months reference level:0

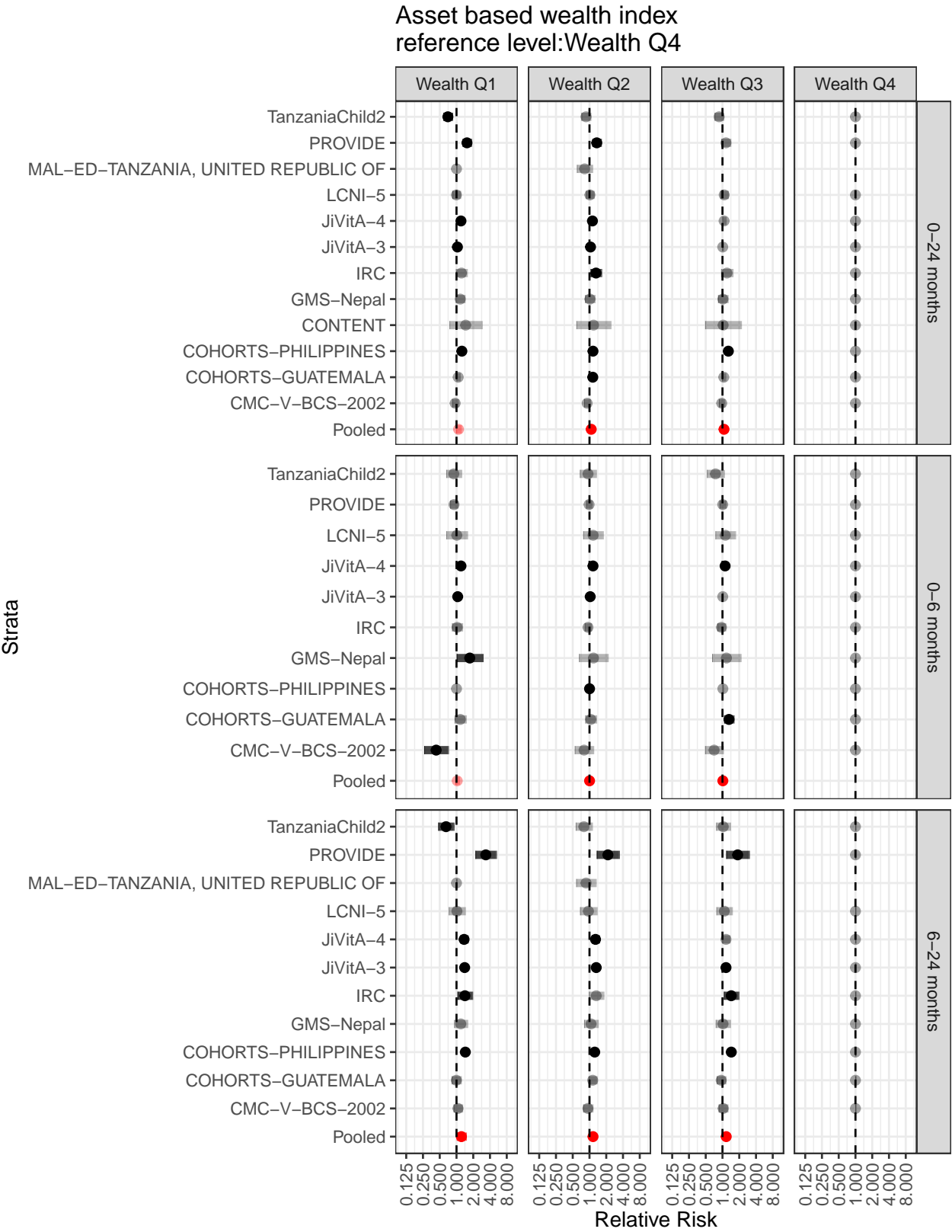


Stunted at enrollment  
reference level:0

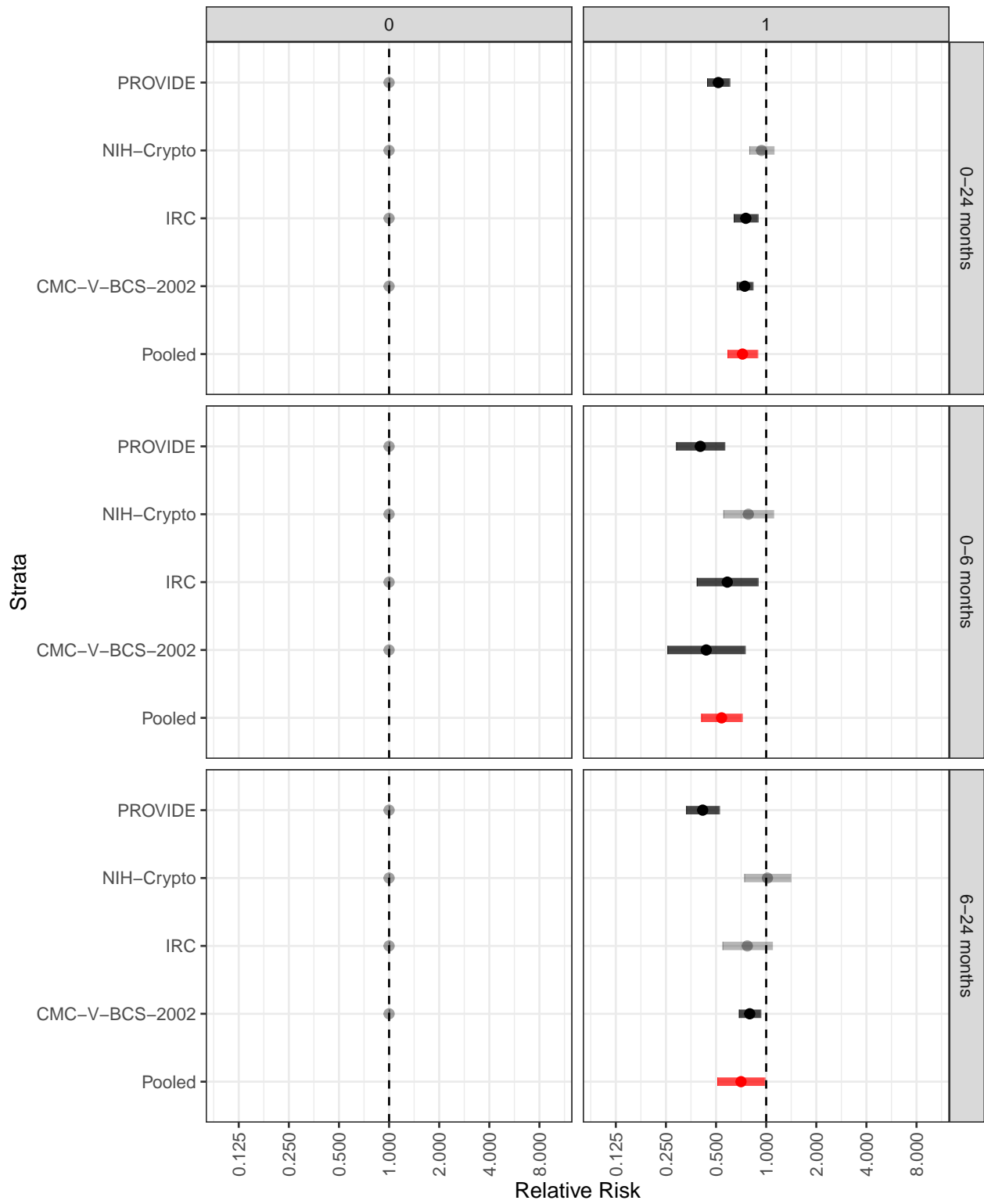


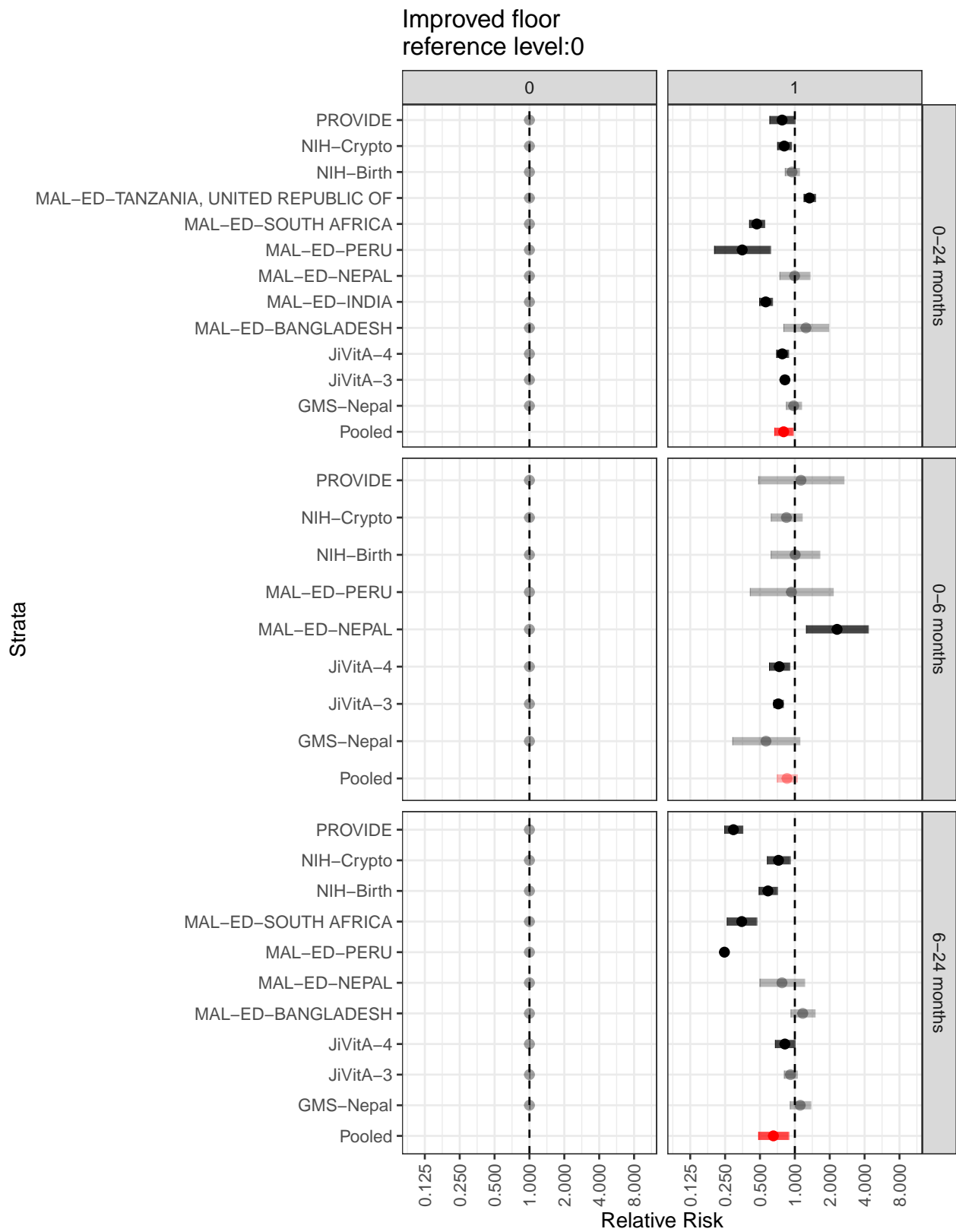


Household characteristics

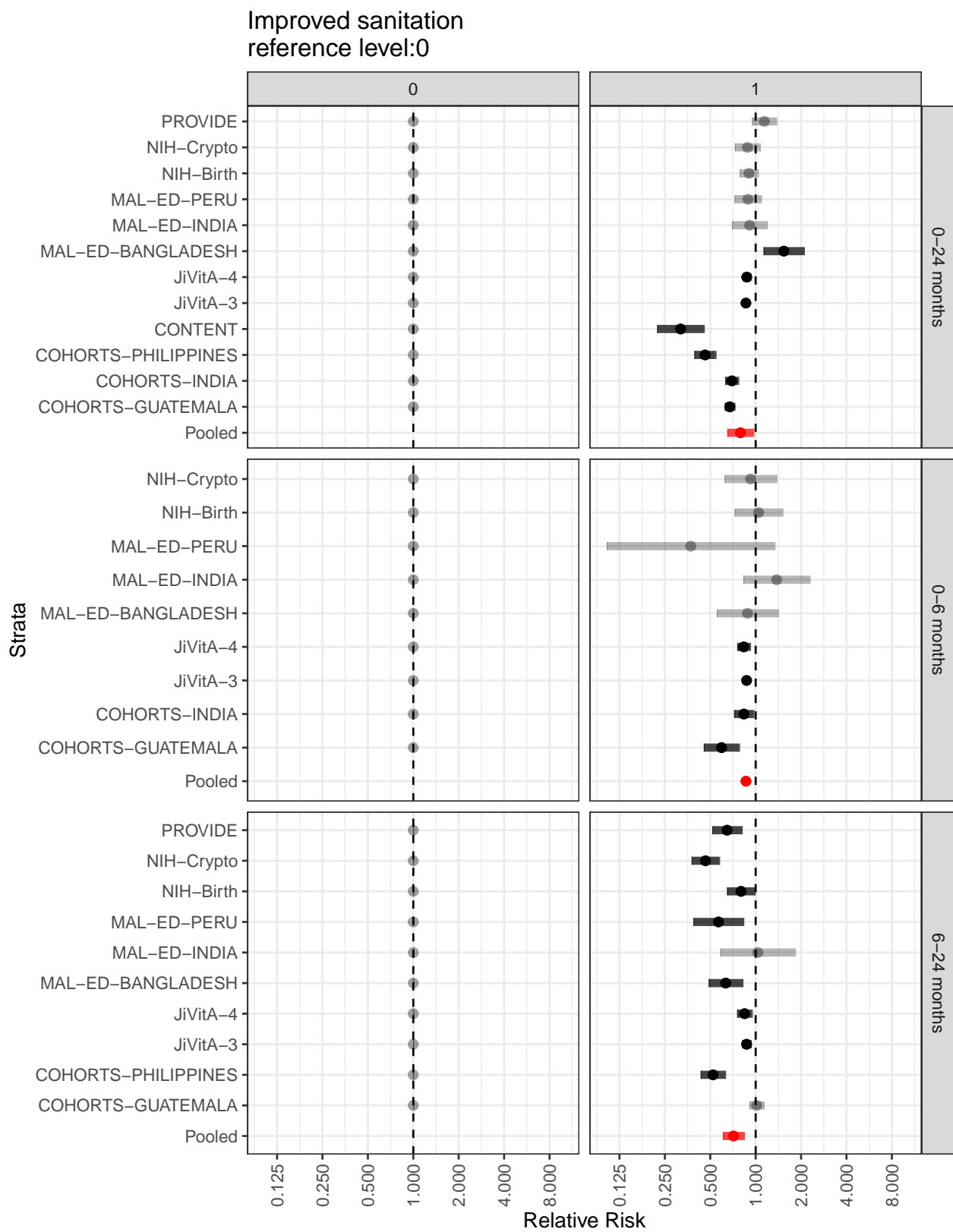


Clean cook  
reference level:0

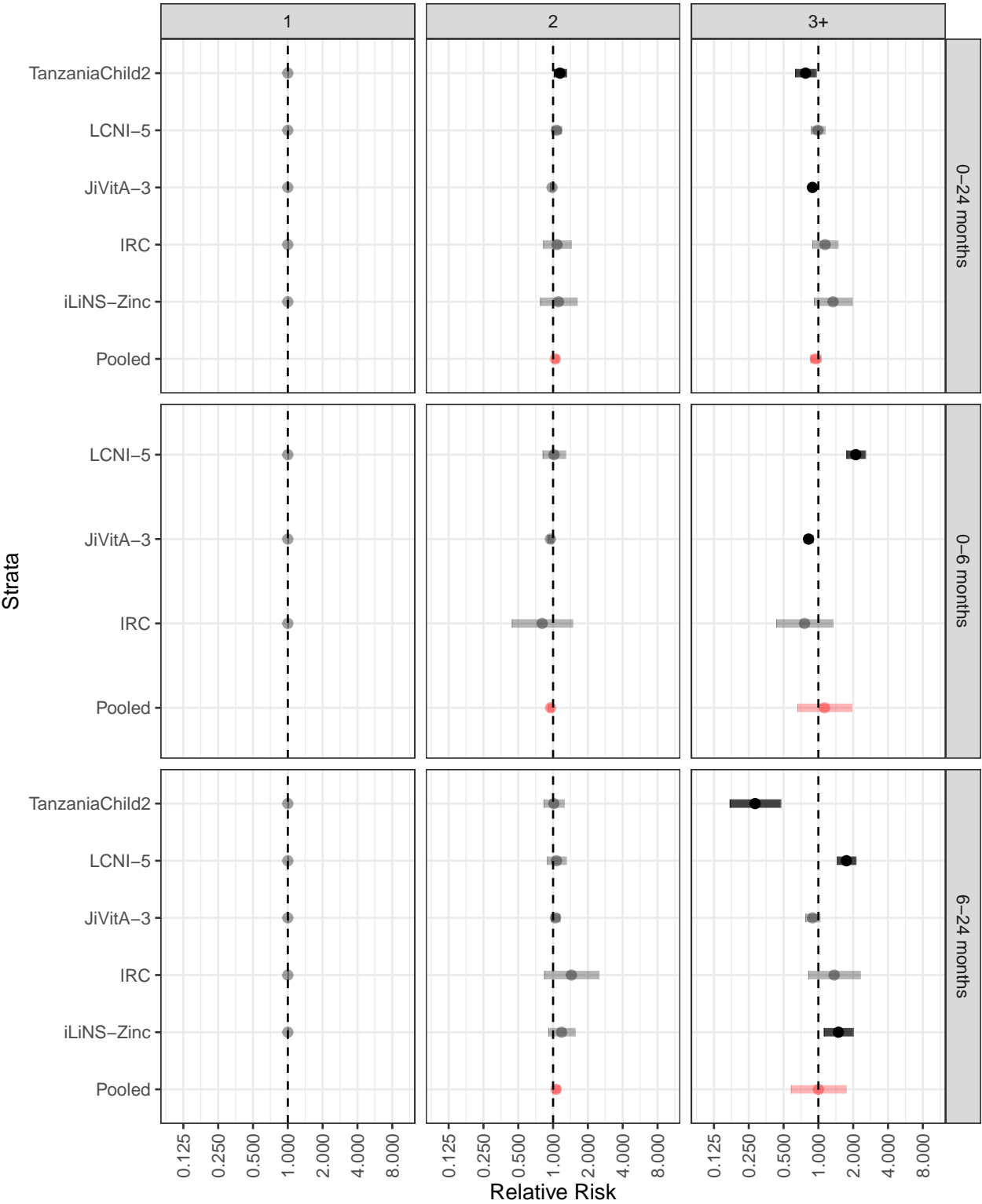




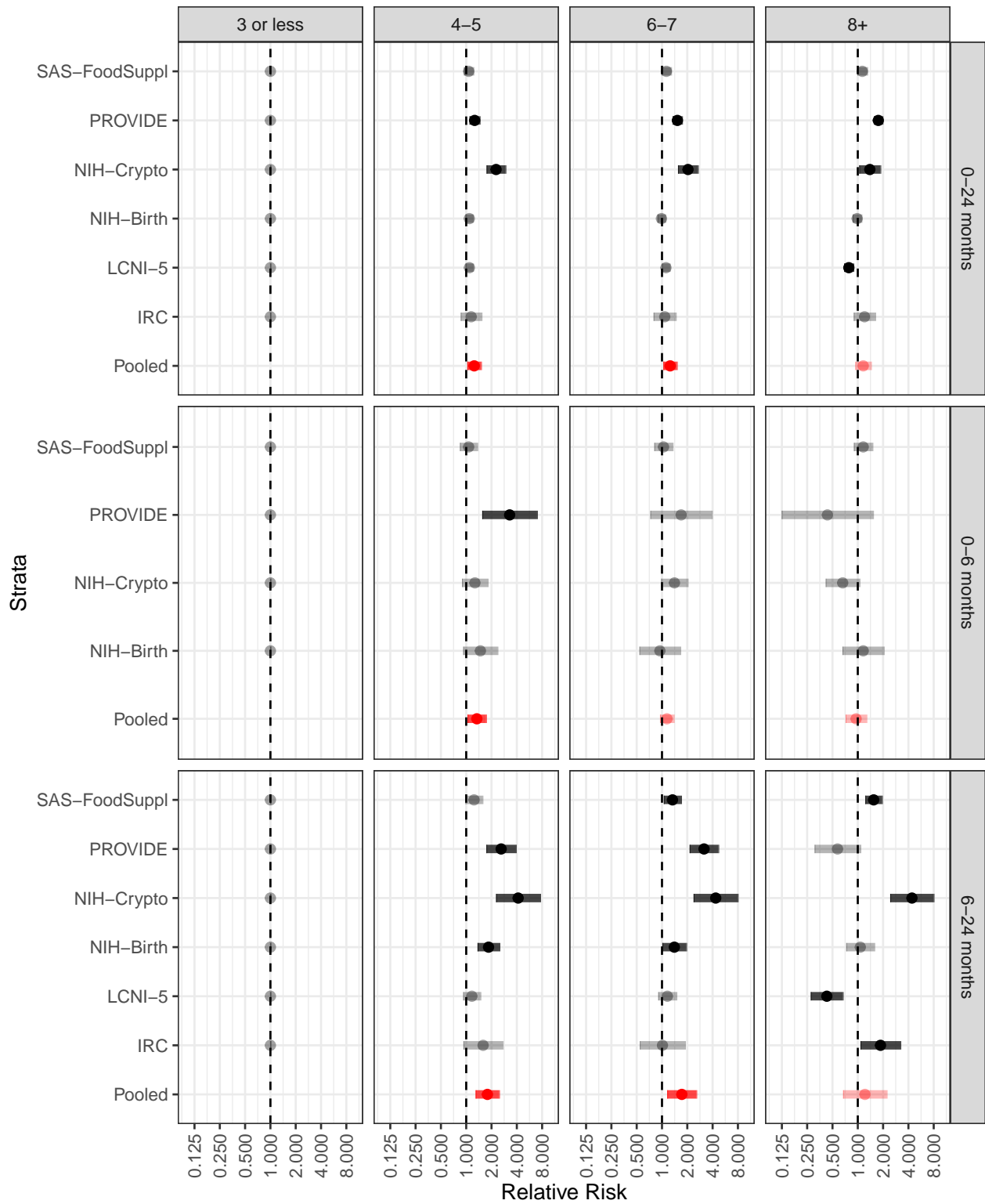




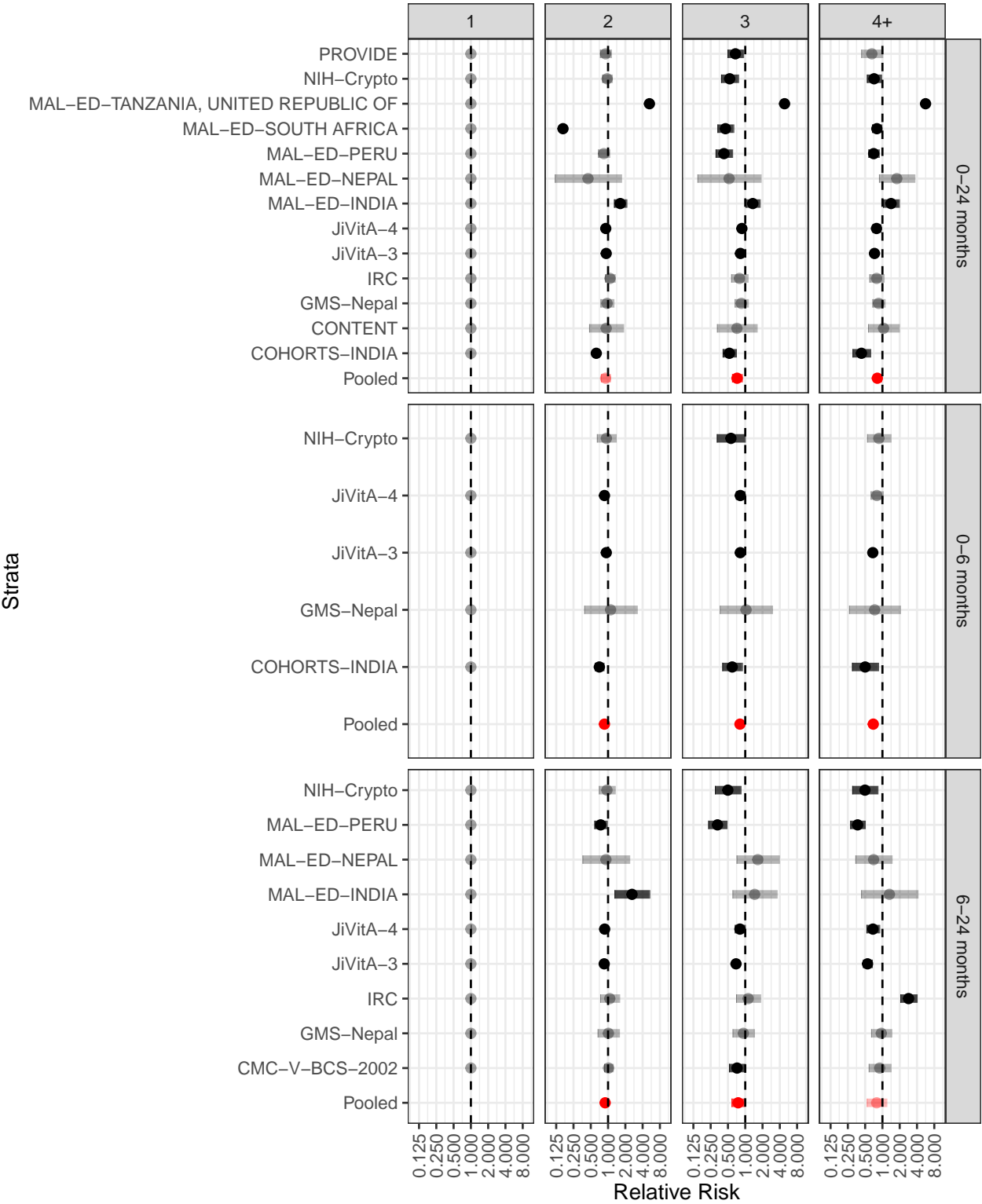
Number of children in the household under 5 years  
reference level:1

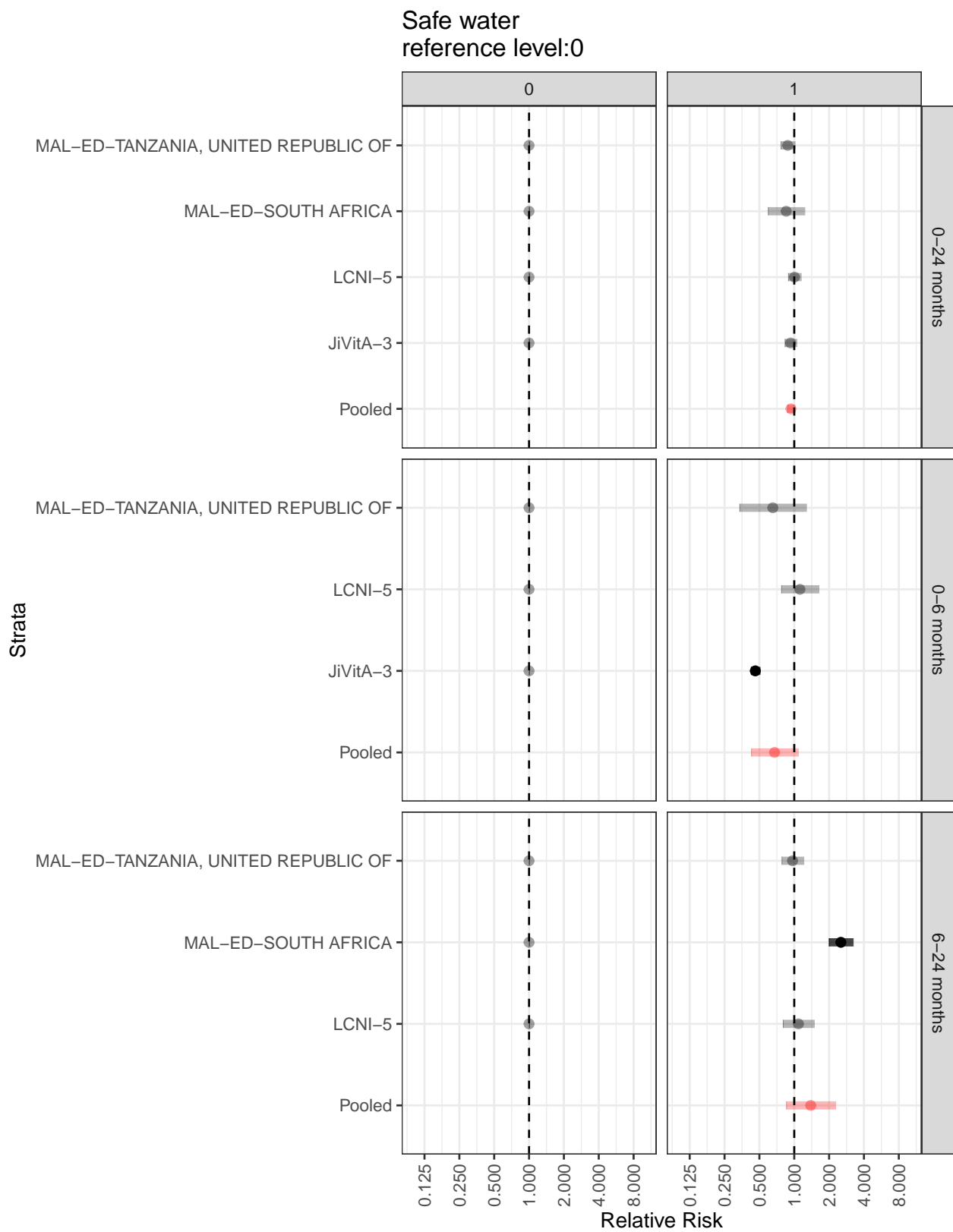


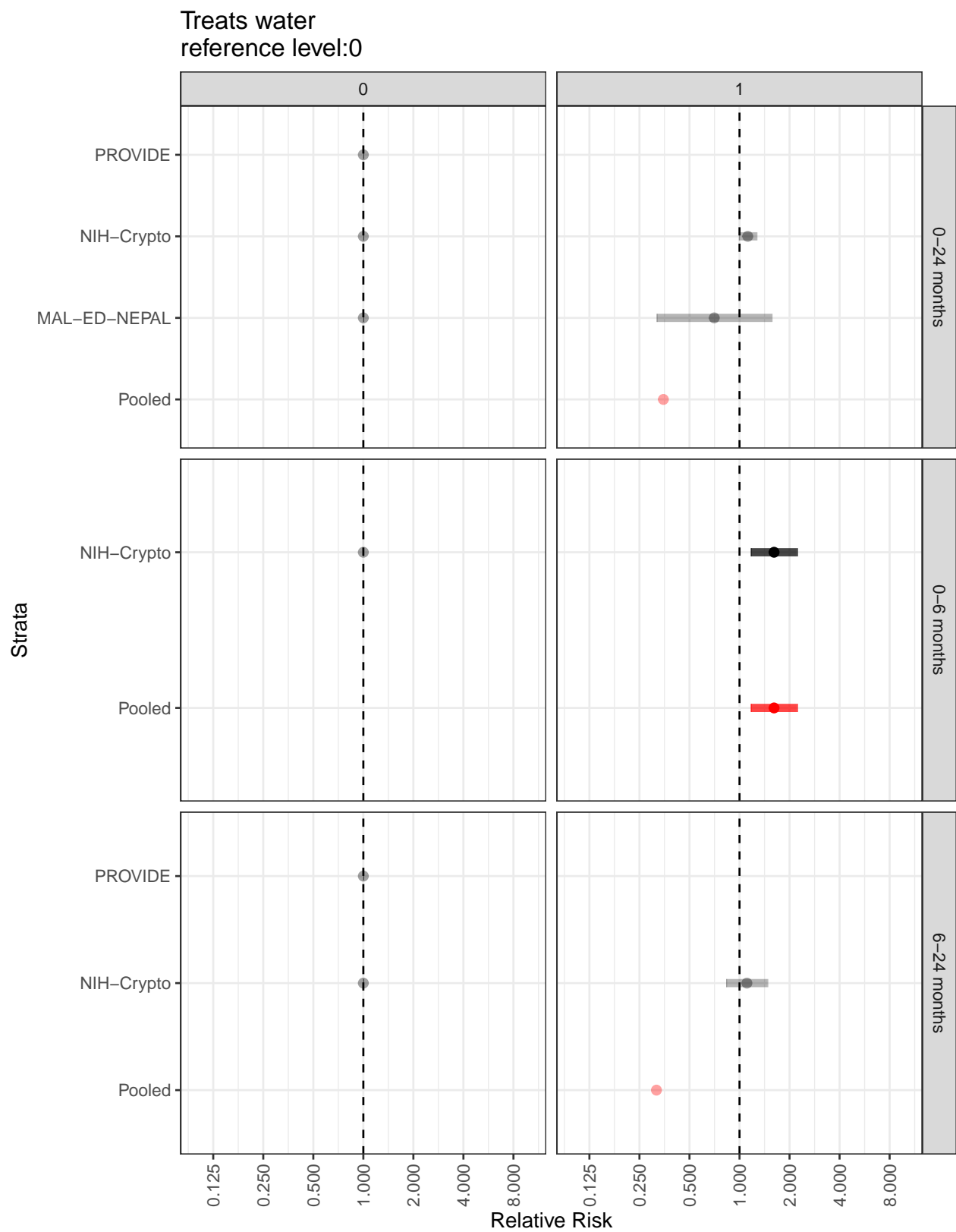
Number of people in the household  
reference level:3 or less



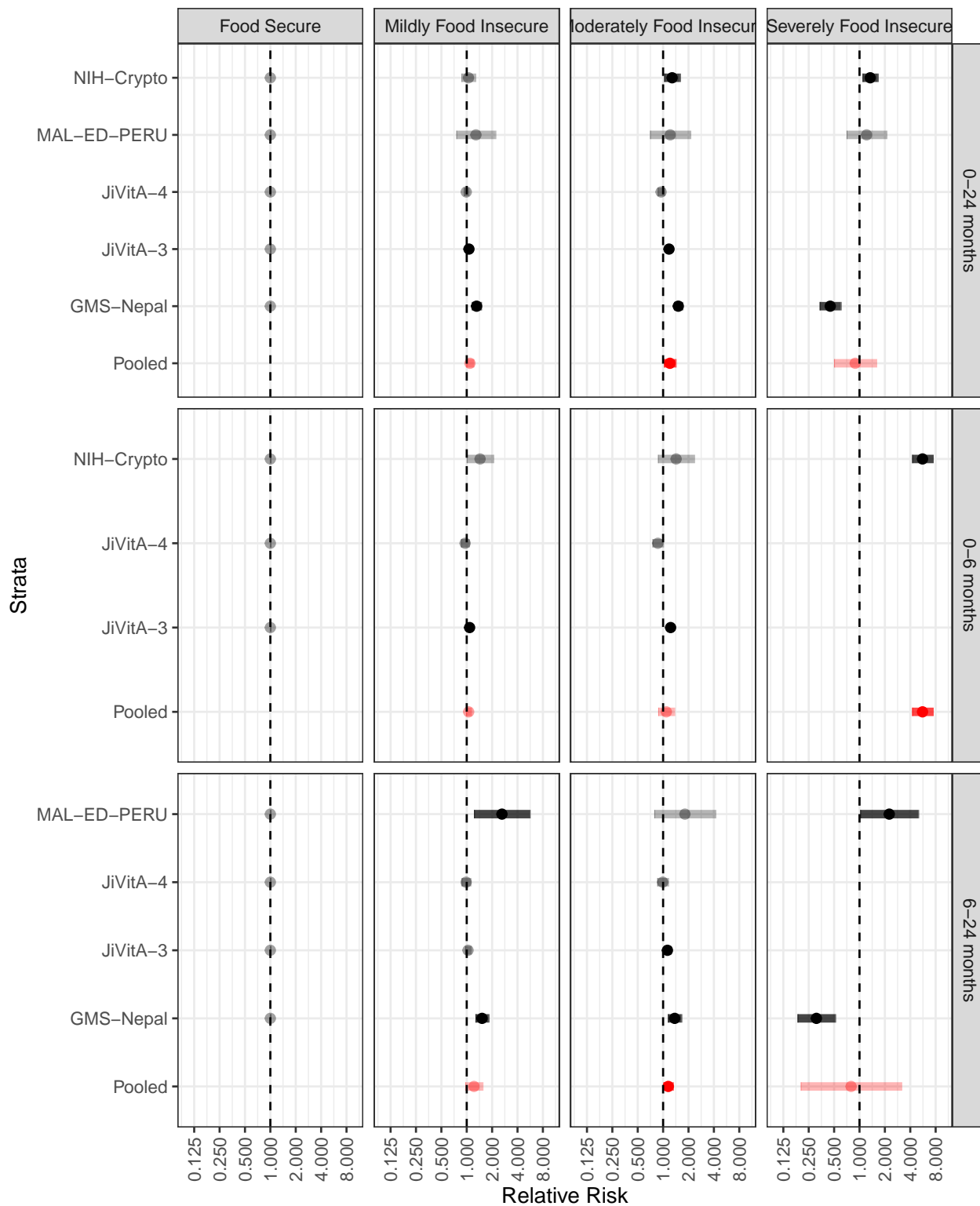
Number of rooms in household  
reference level:1



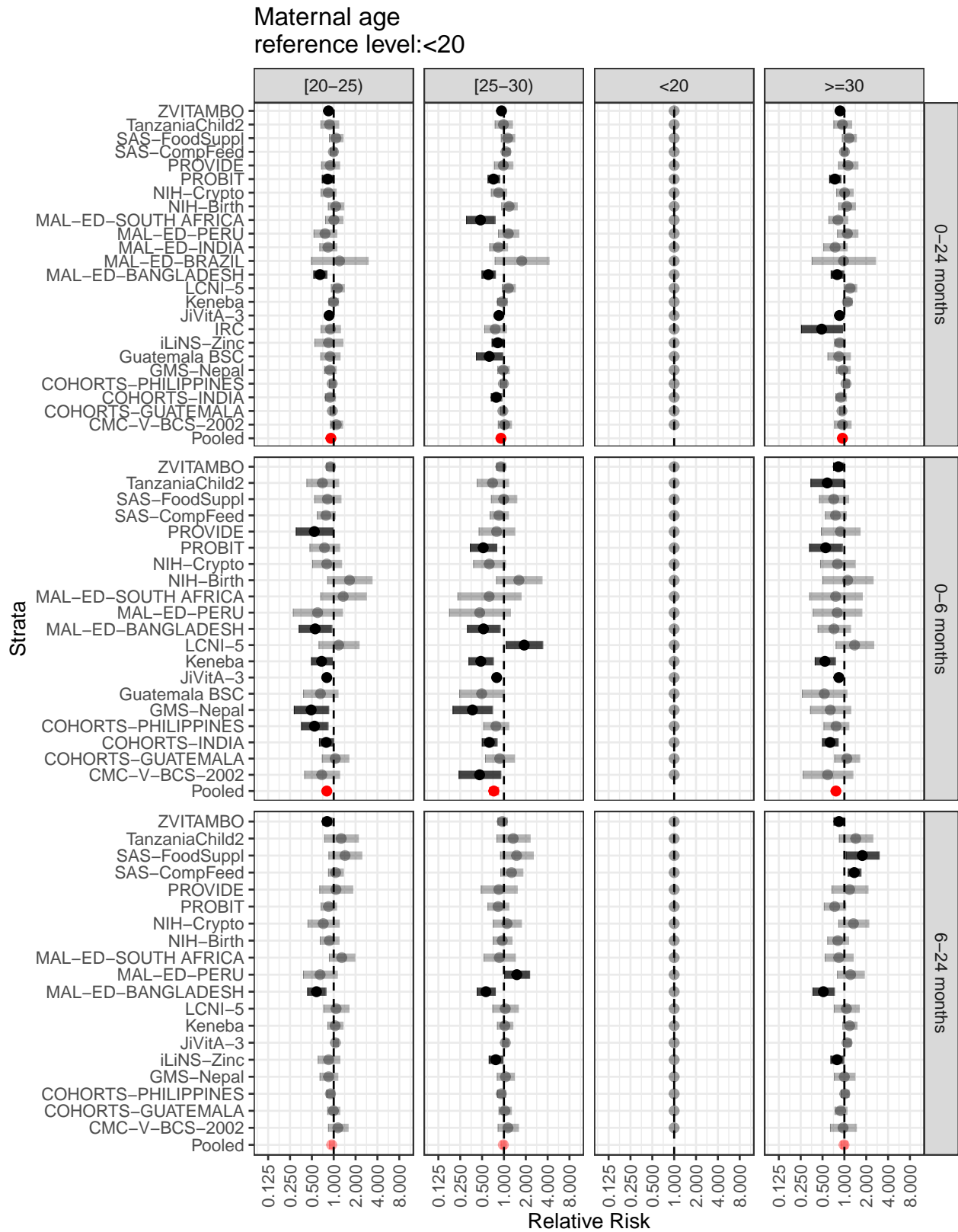




# USAID Household Food Insecurity Access Scale (HFIAS) category reference level: Food Secure

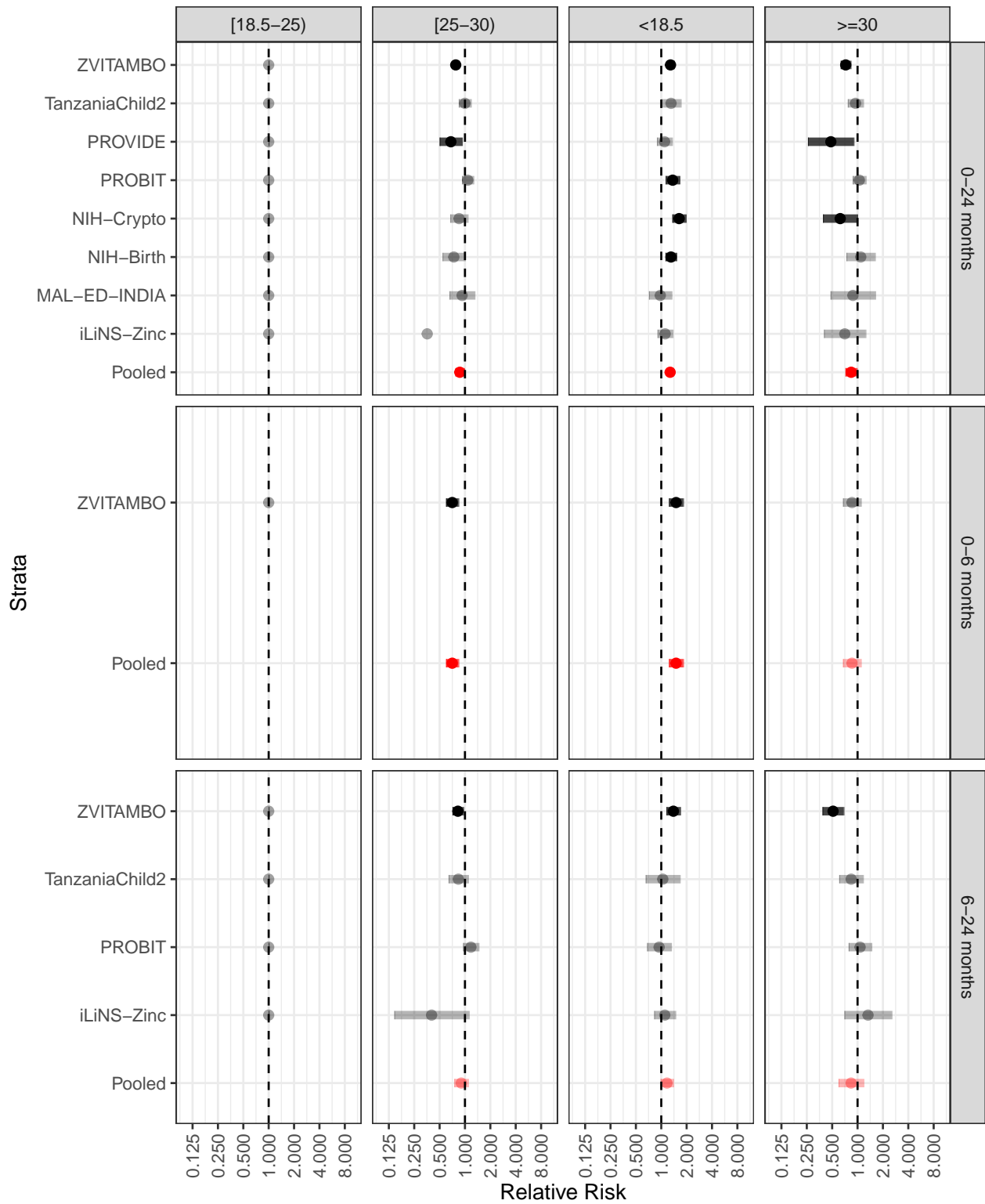


## Maternal characteristics

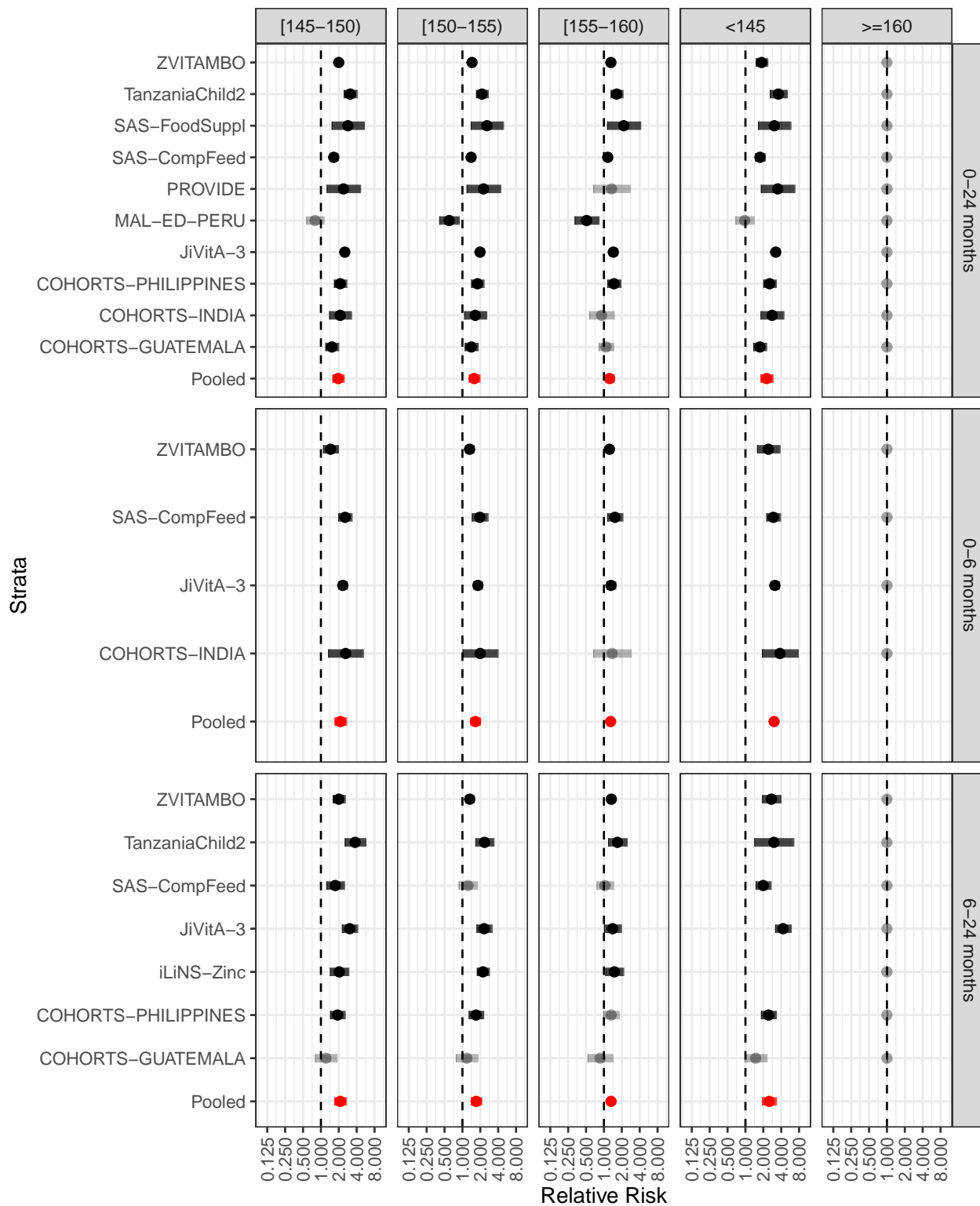


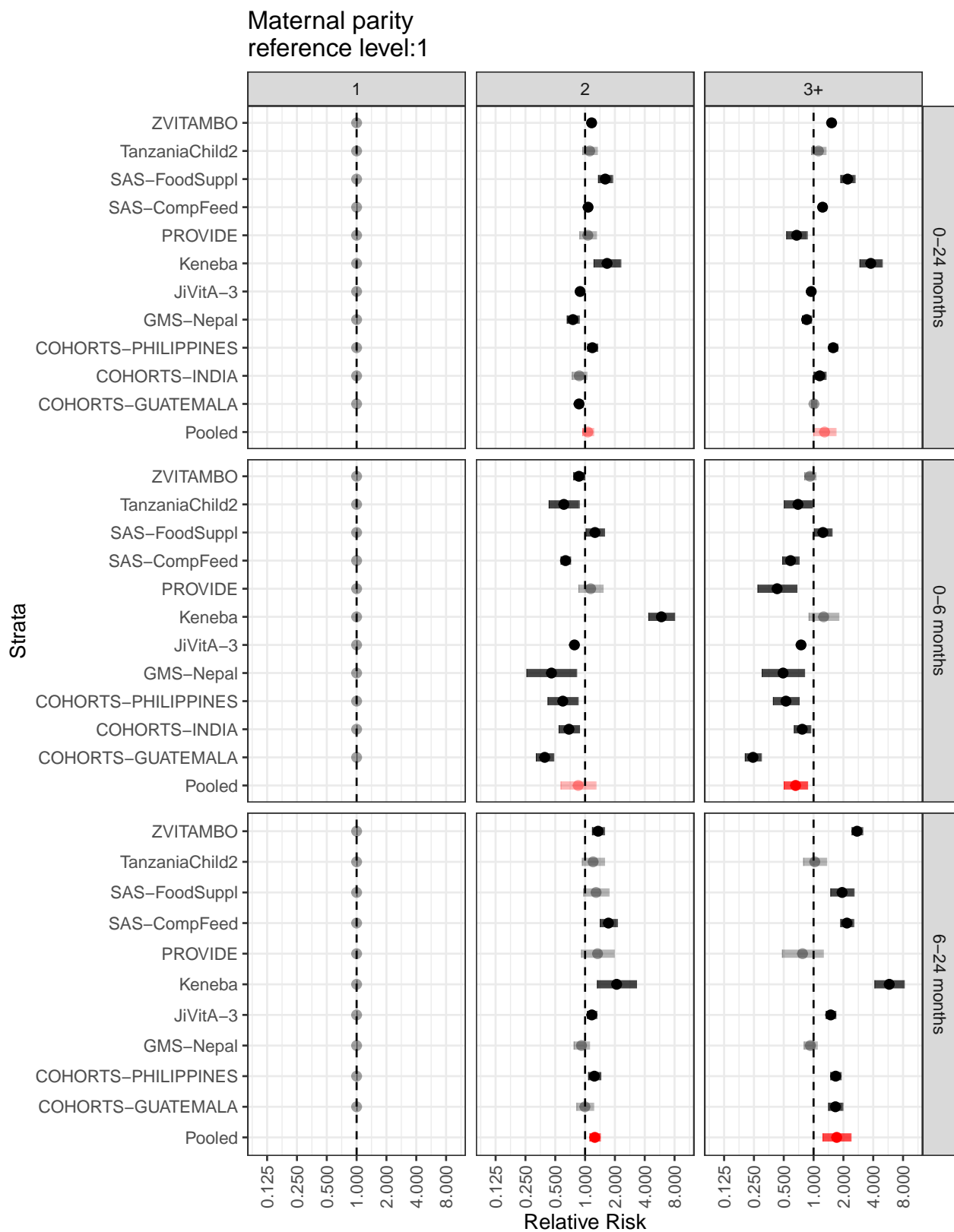


Maternal BMI  
reference level:[18.5–25)

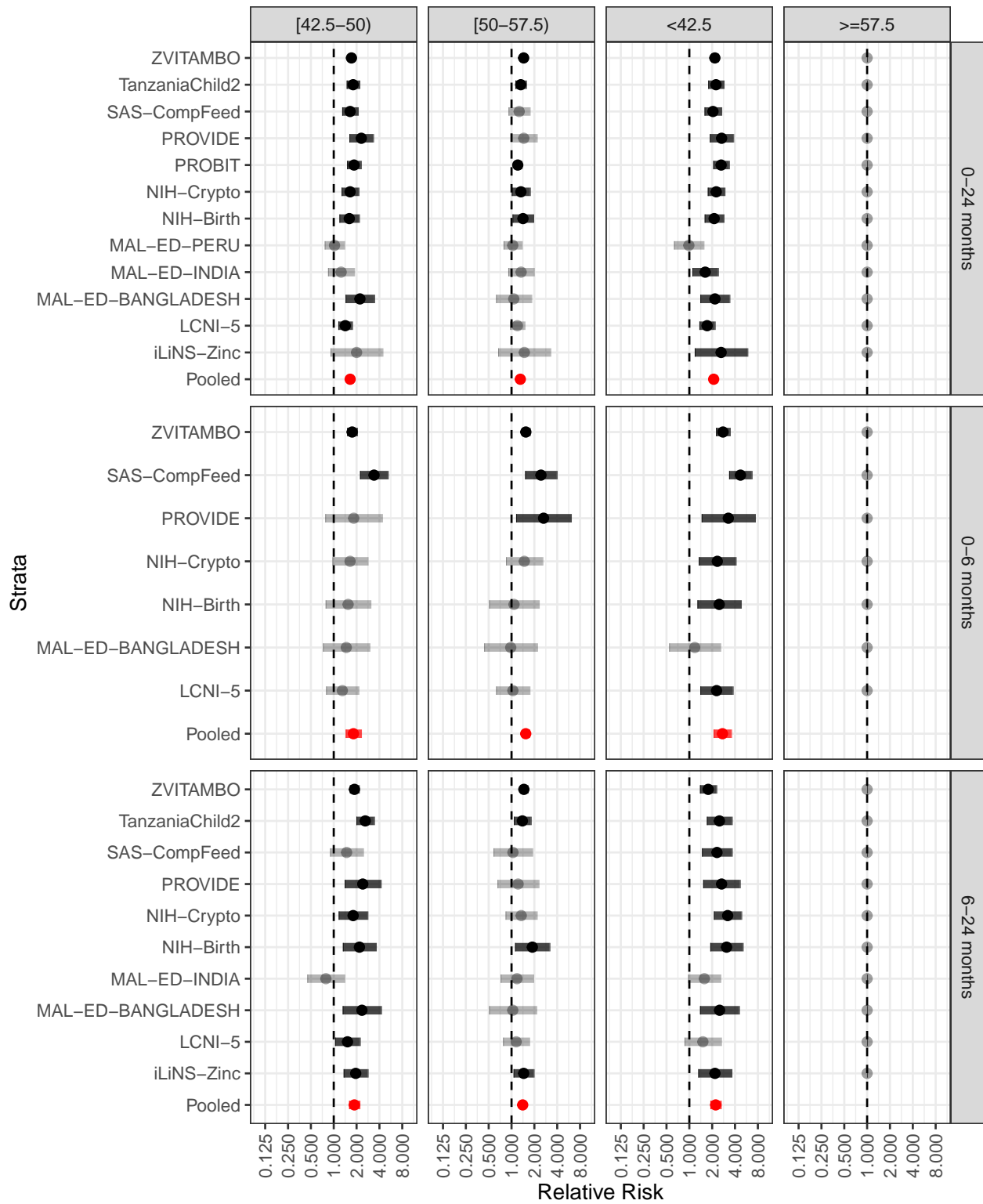


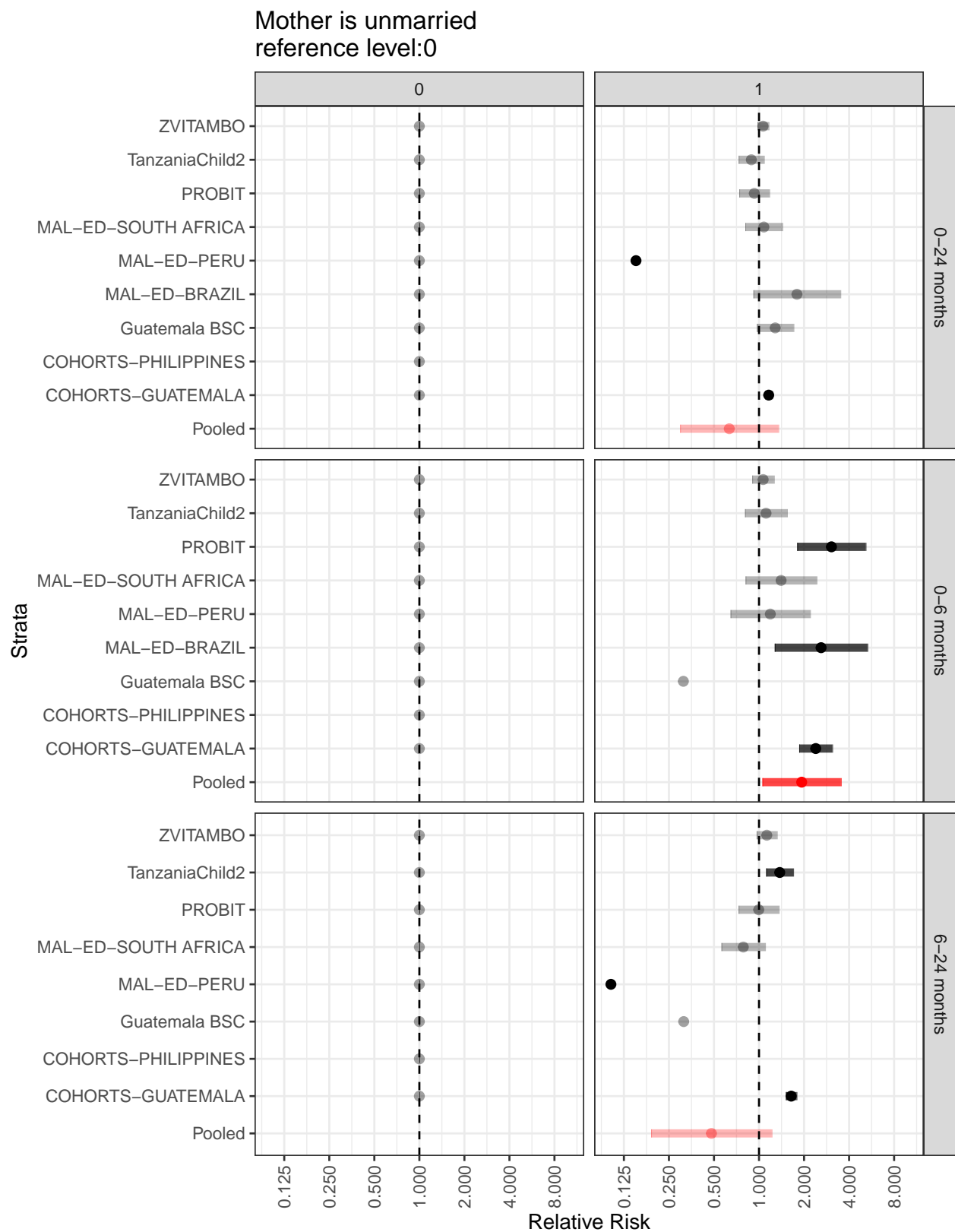
Maternal height  
reference level:  $\geq 160$



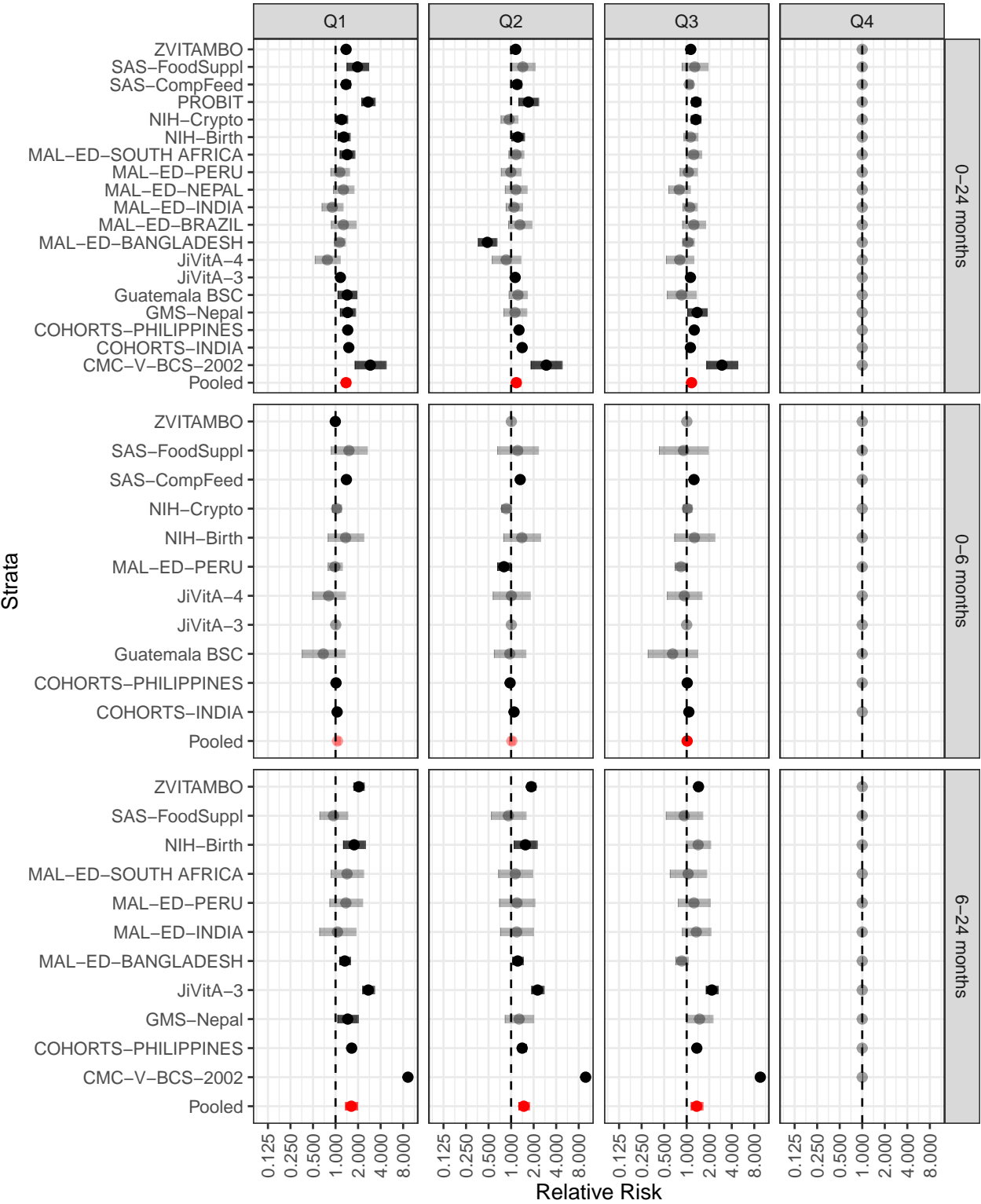


Maternal weight  
reference level:  $\geq 57.5$

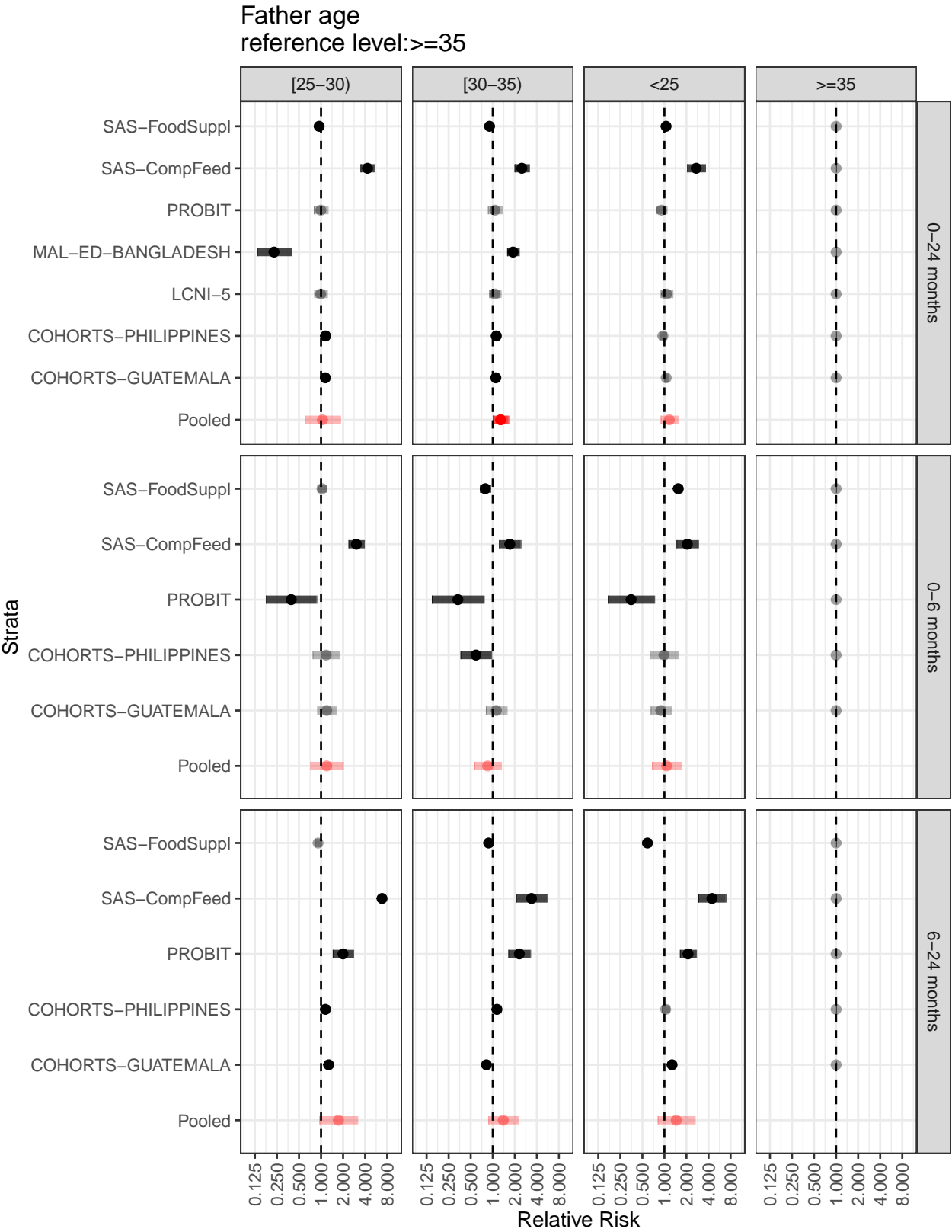


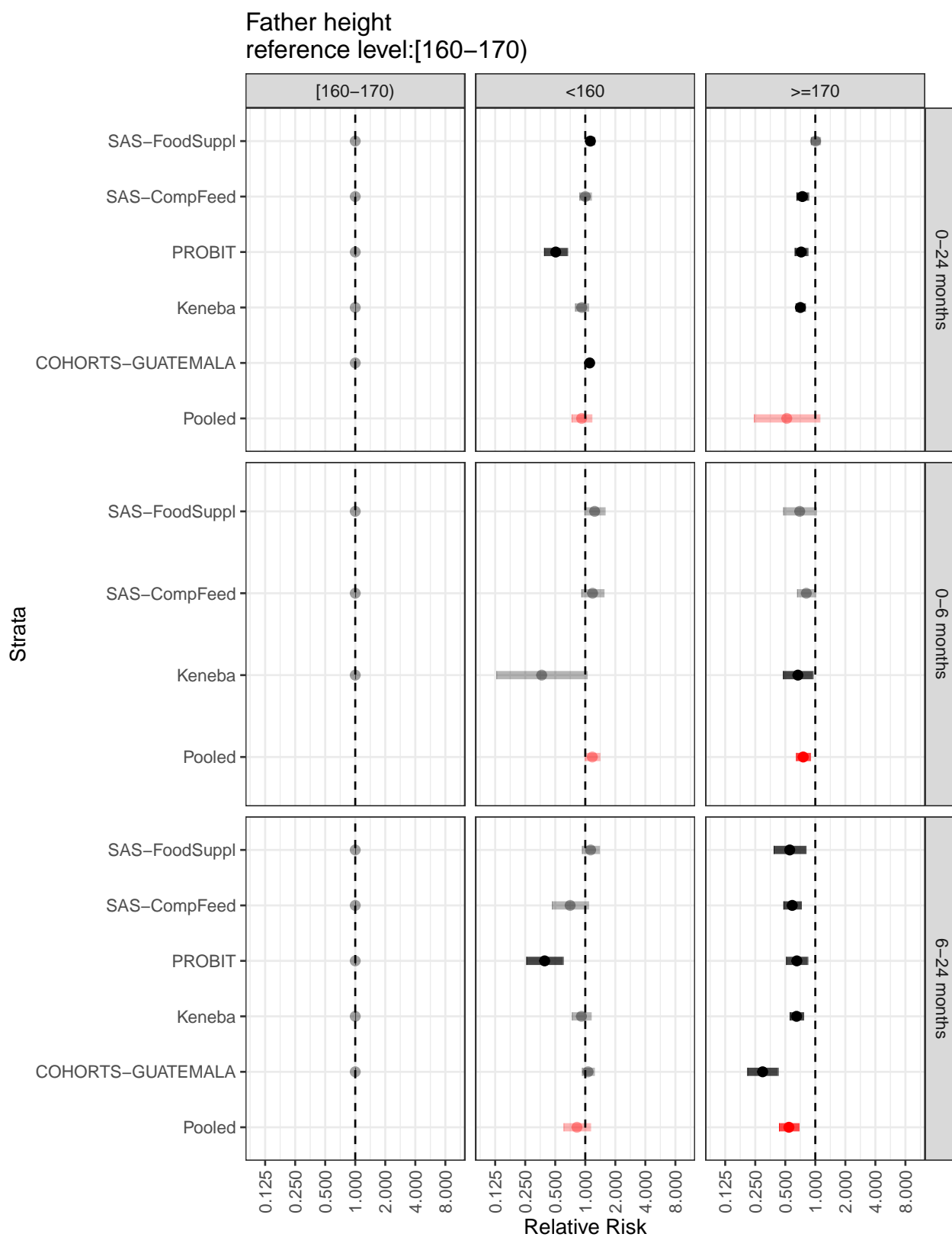


Mother's education  
reference level:Q4

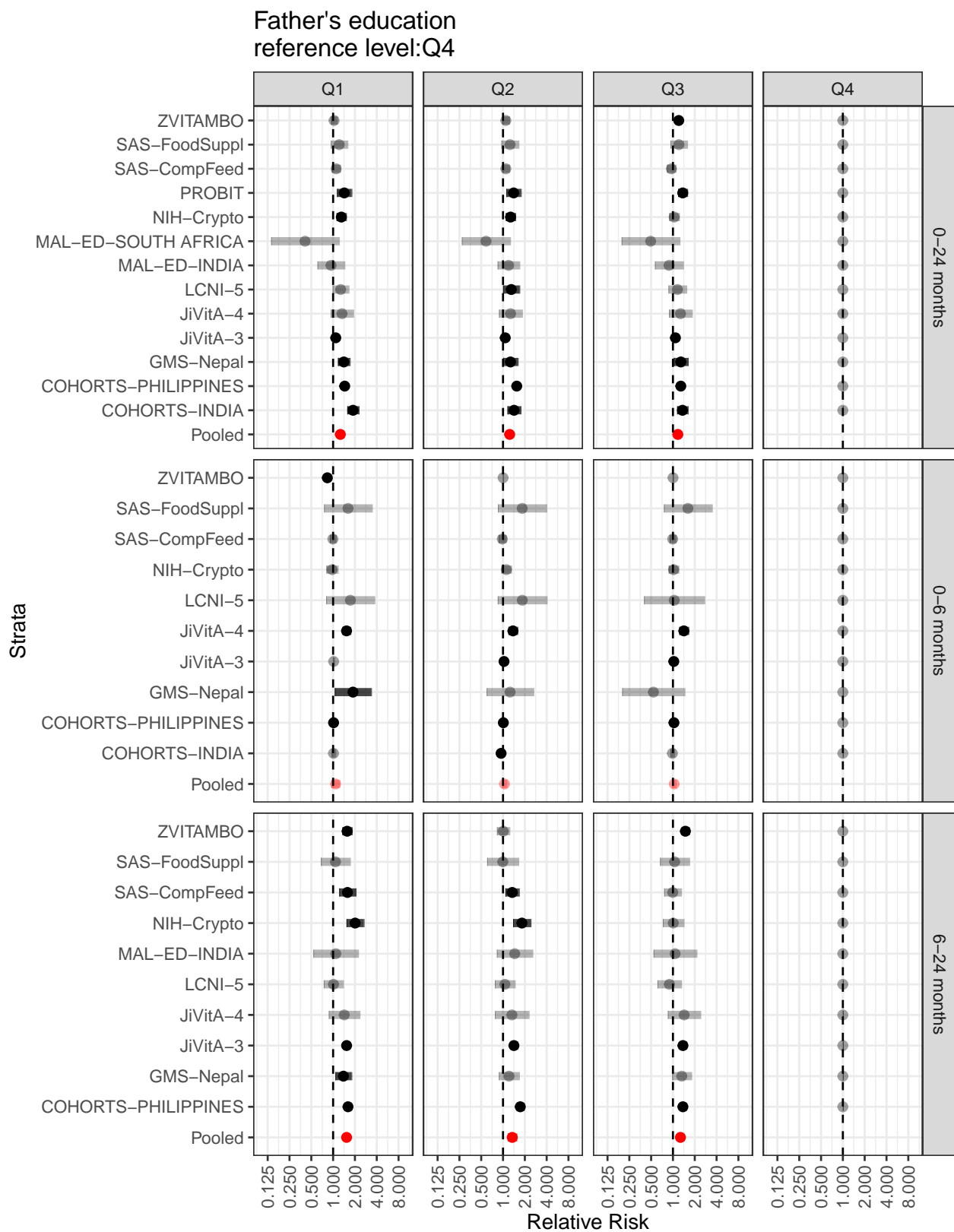


Paternal characteristics



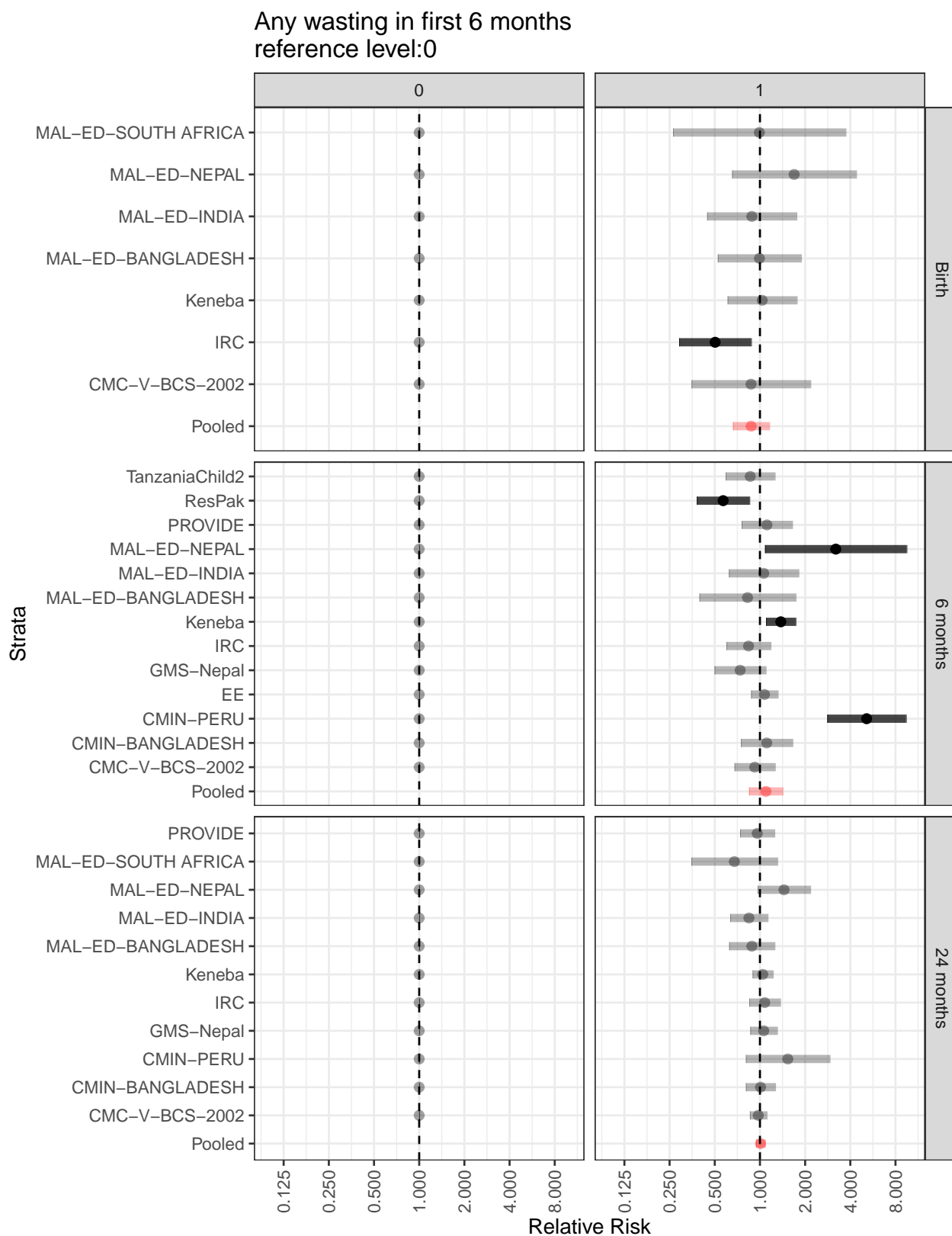




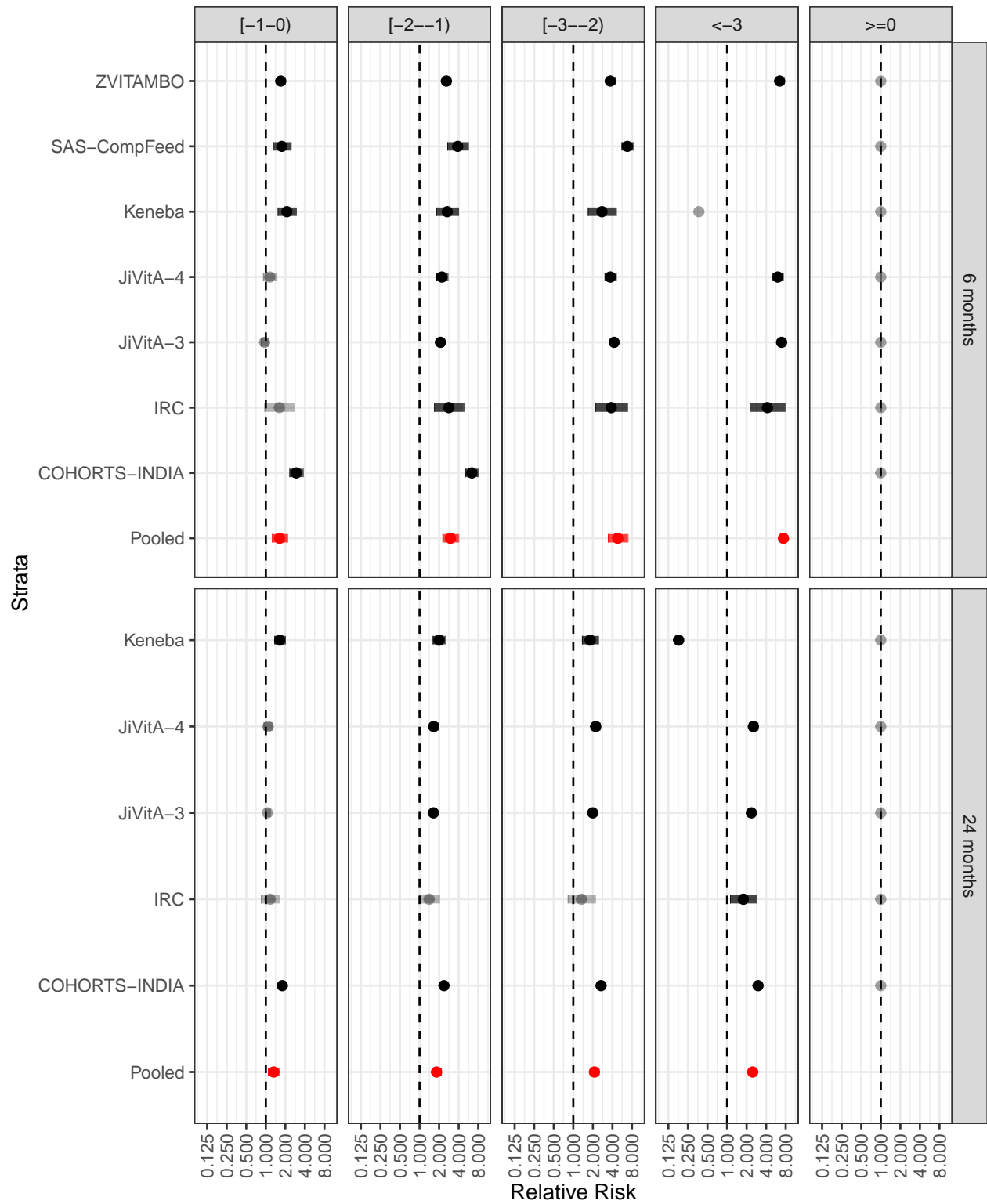


## Point prevalence of stunting

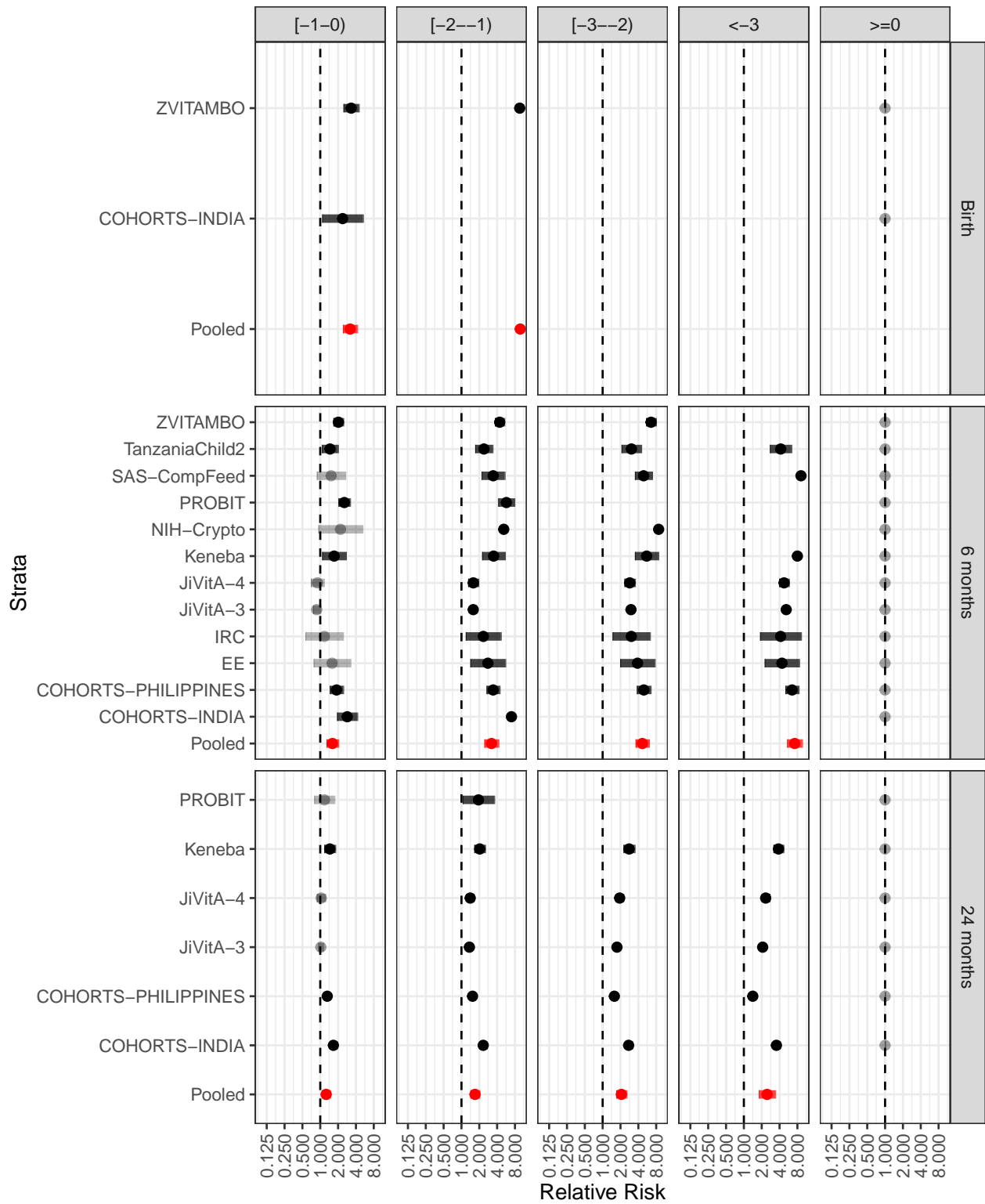
### Child characteristics



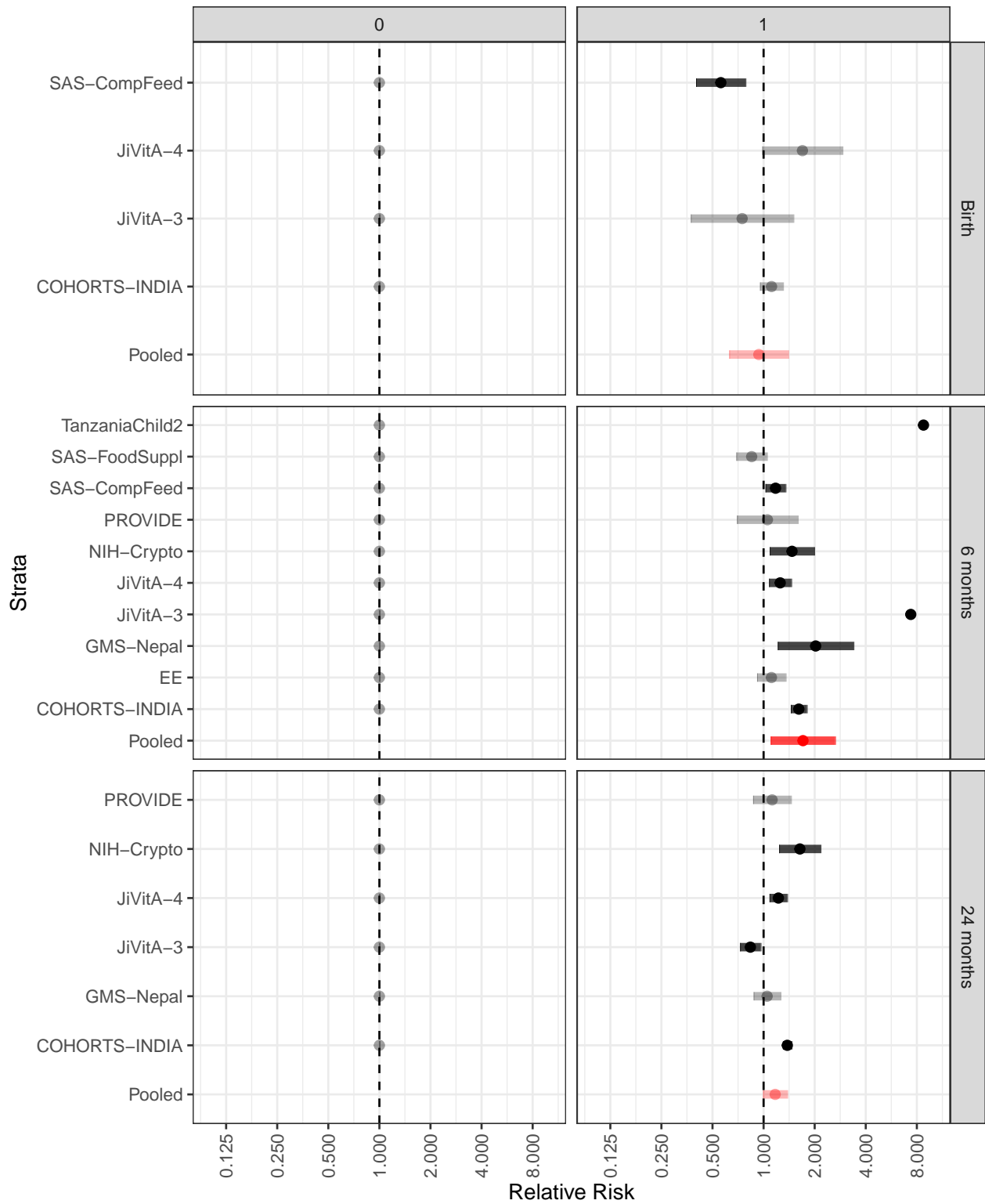
Birth length  
reference level:  $\geq 0$

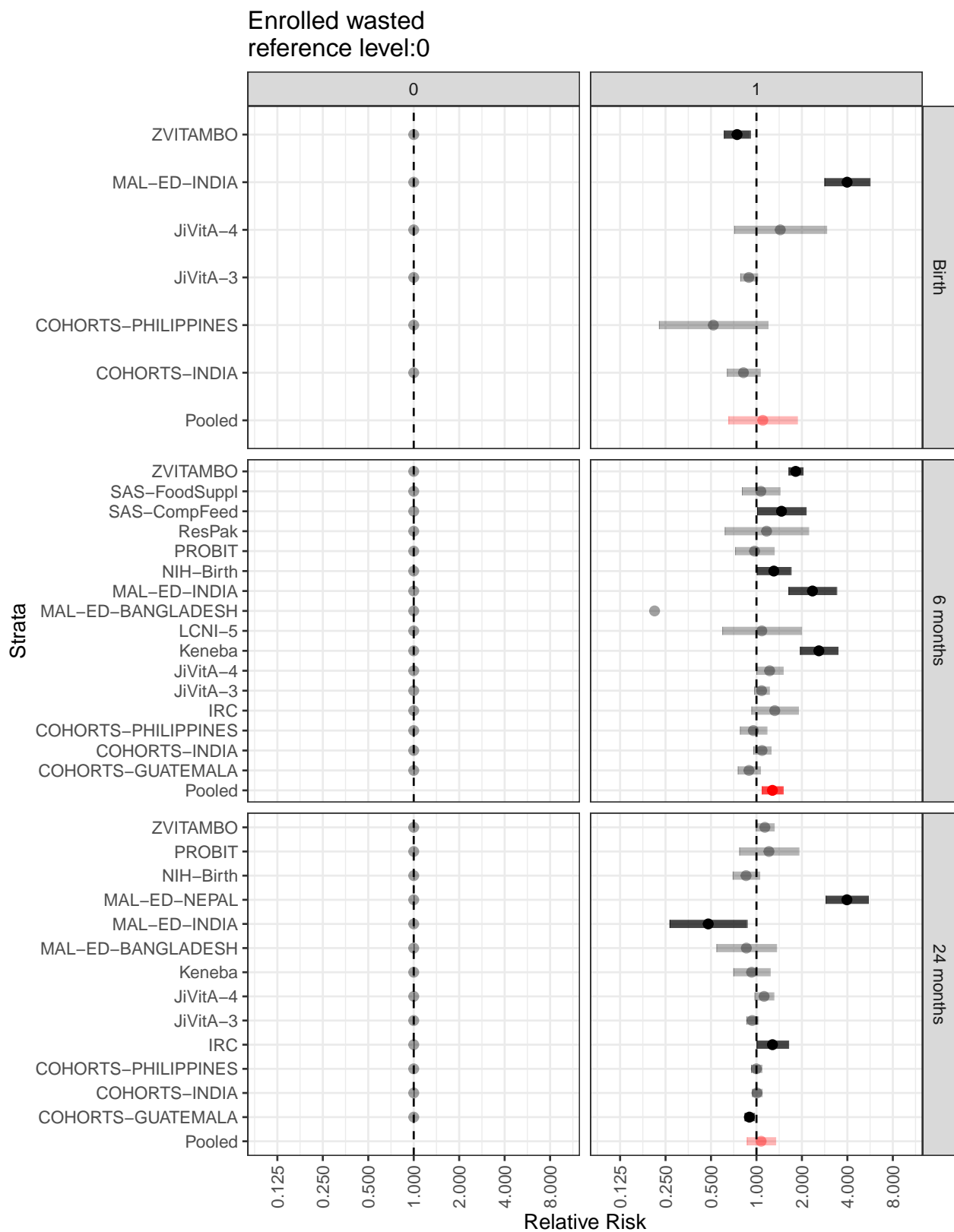


Birthweight  
reference level:  $\geq 0$

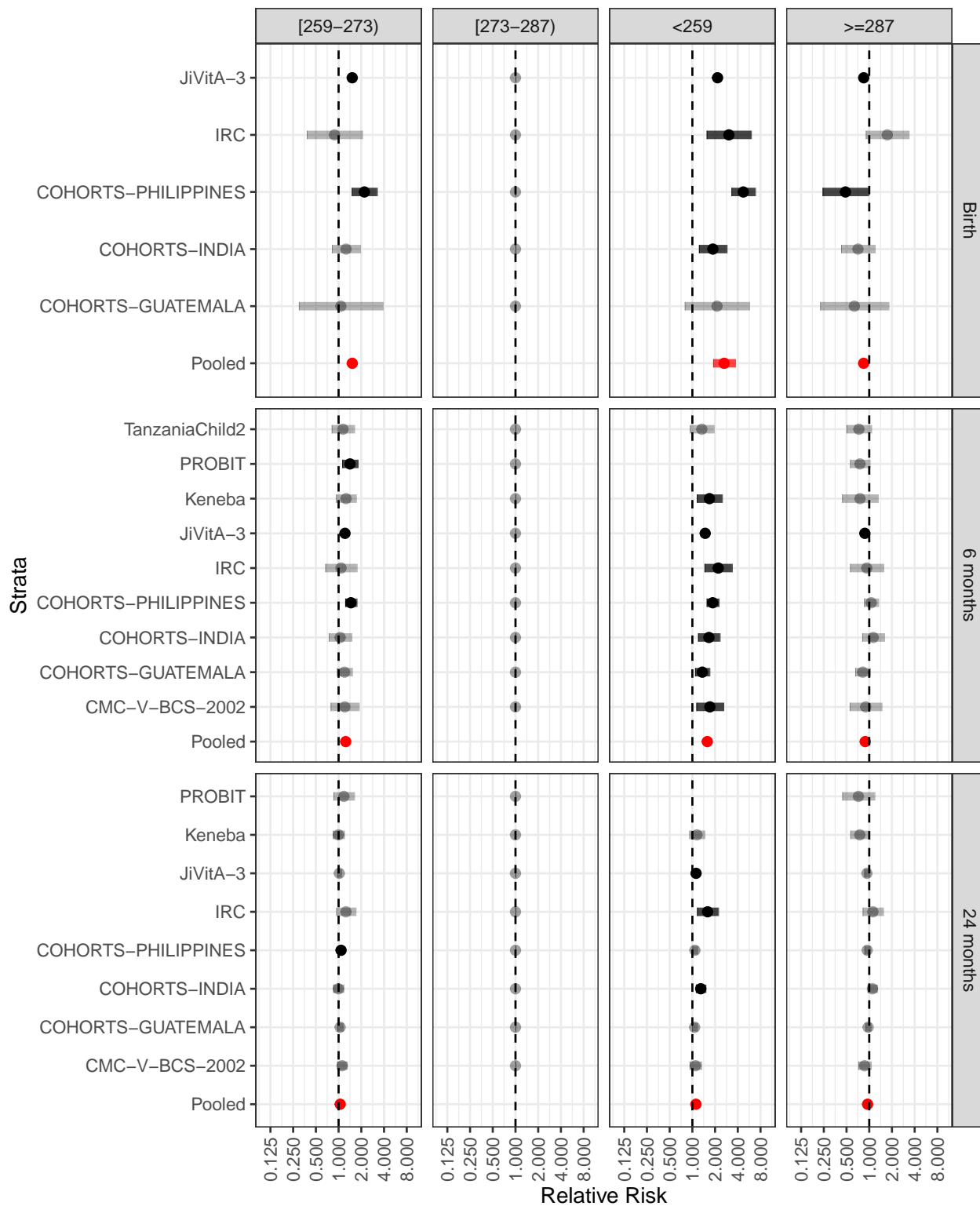


Child delivered at home  
reference level:0

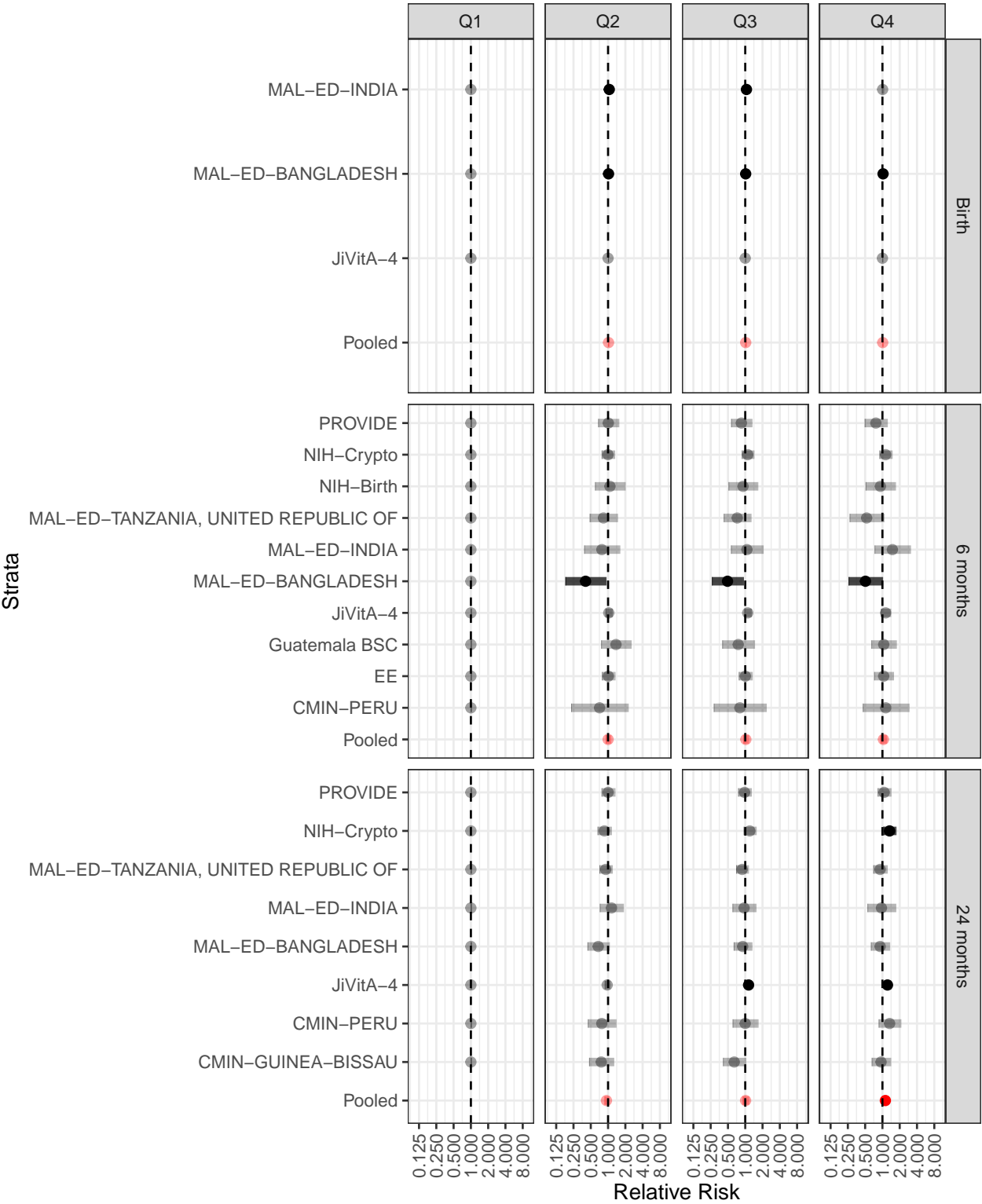




Gestational age at birth in days  
reference level:[273–287)

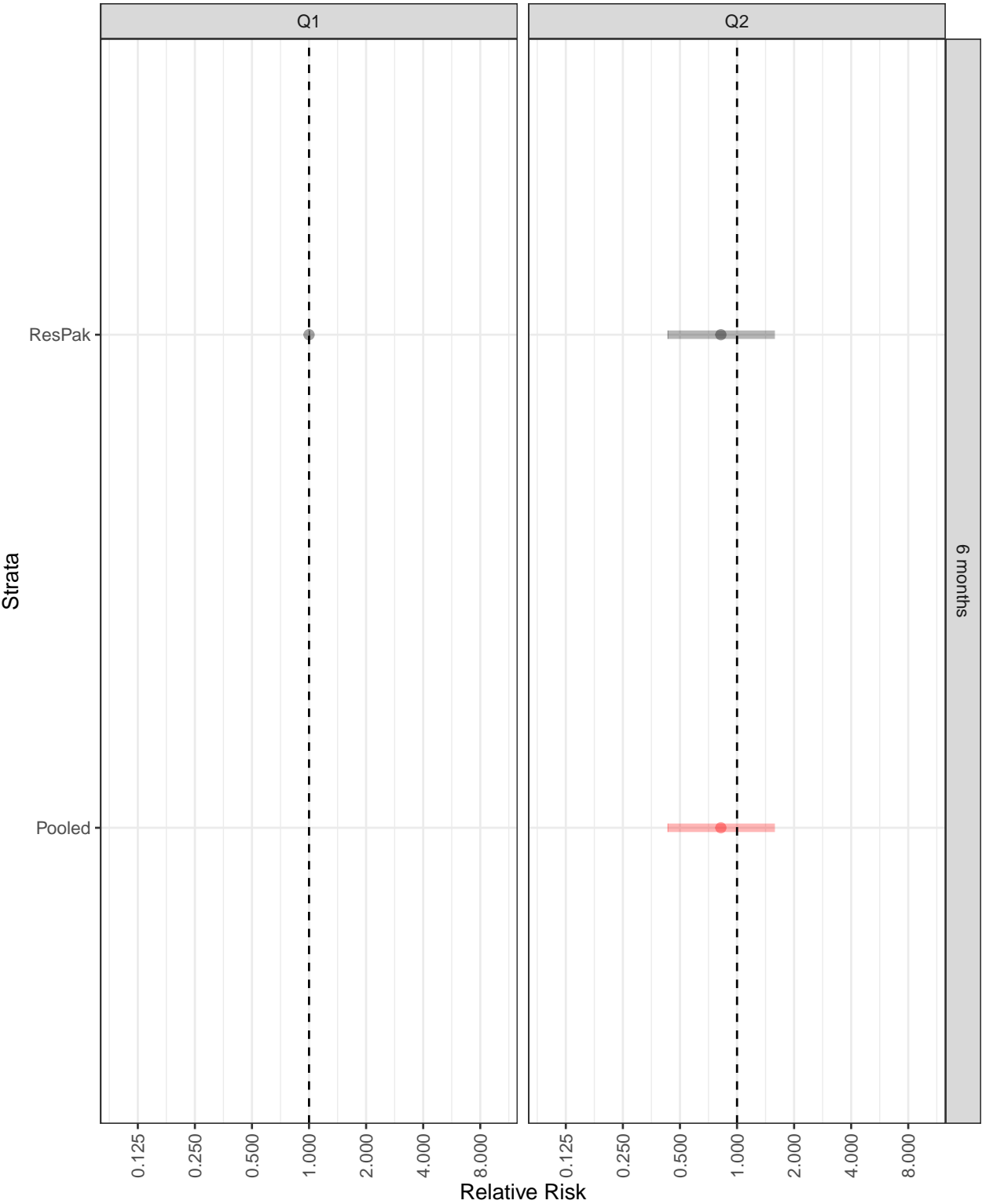


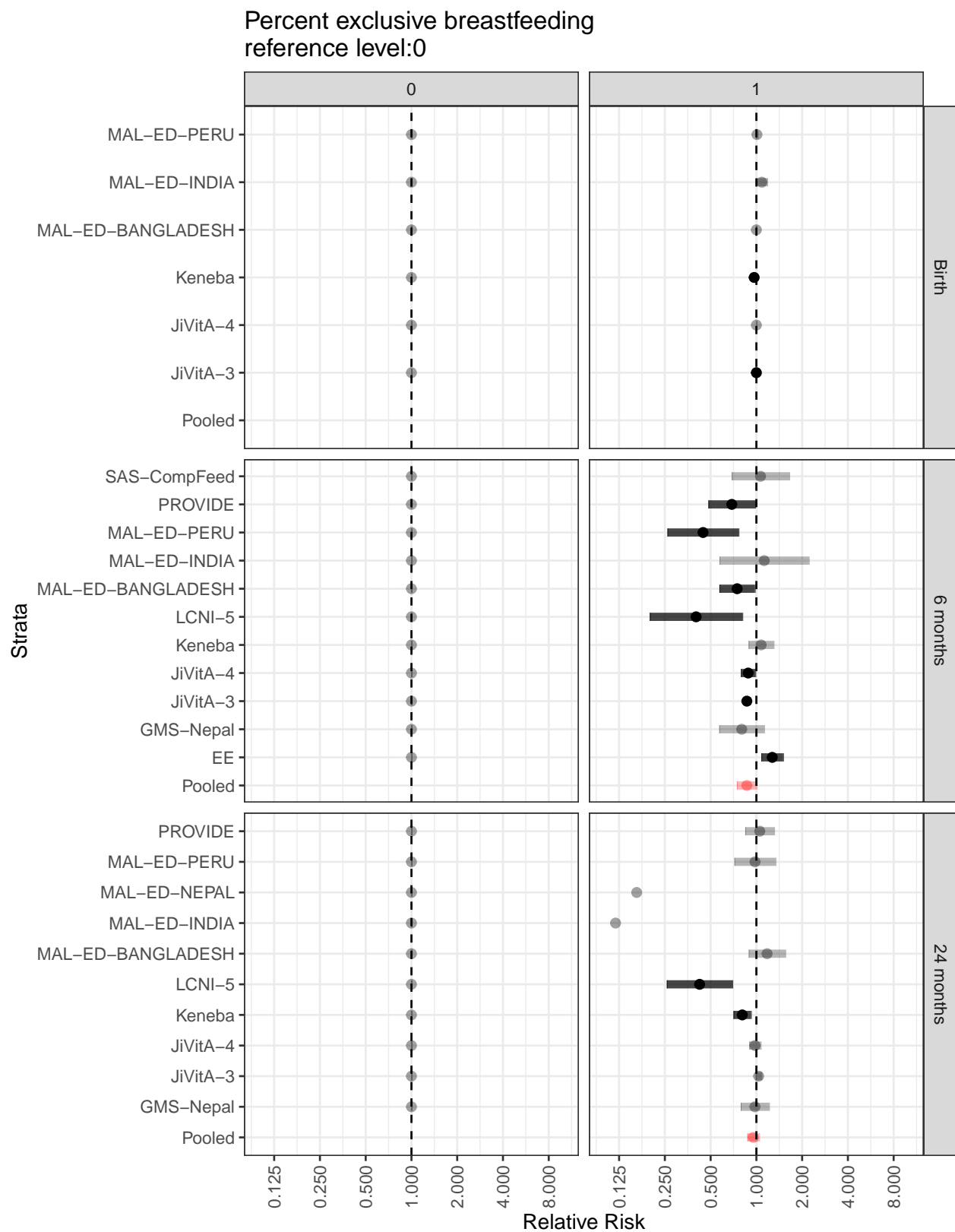
Percent diarrhea in first 24 months  
reference level:Q1



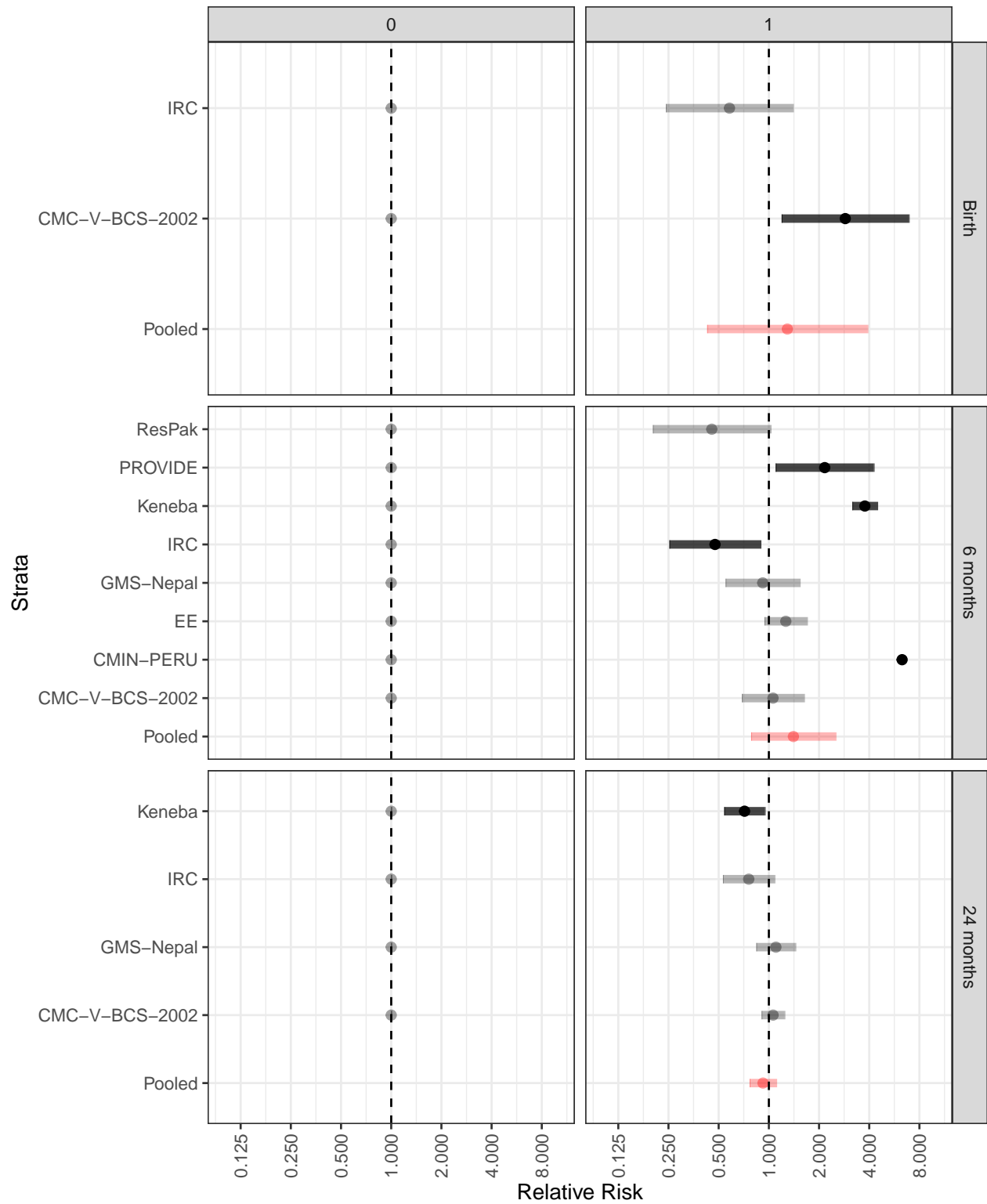


Percent diarrhea in first 6 months  
reference level:Q1

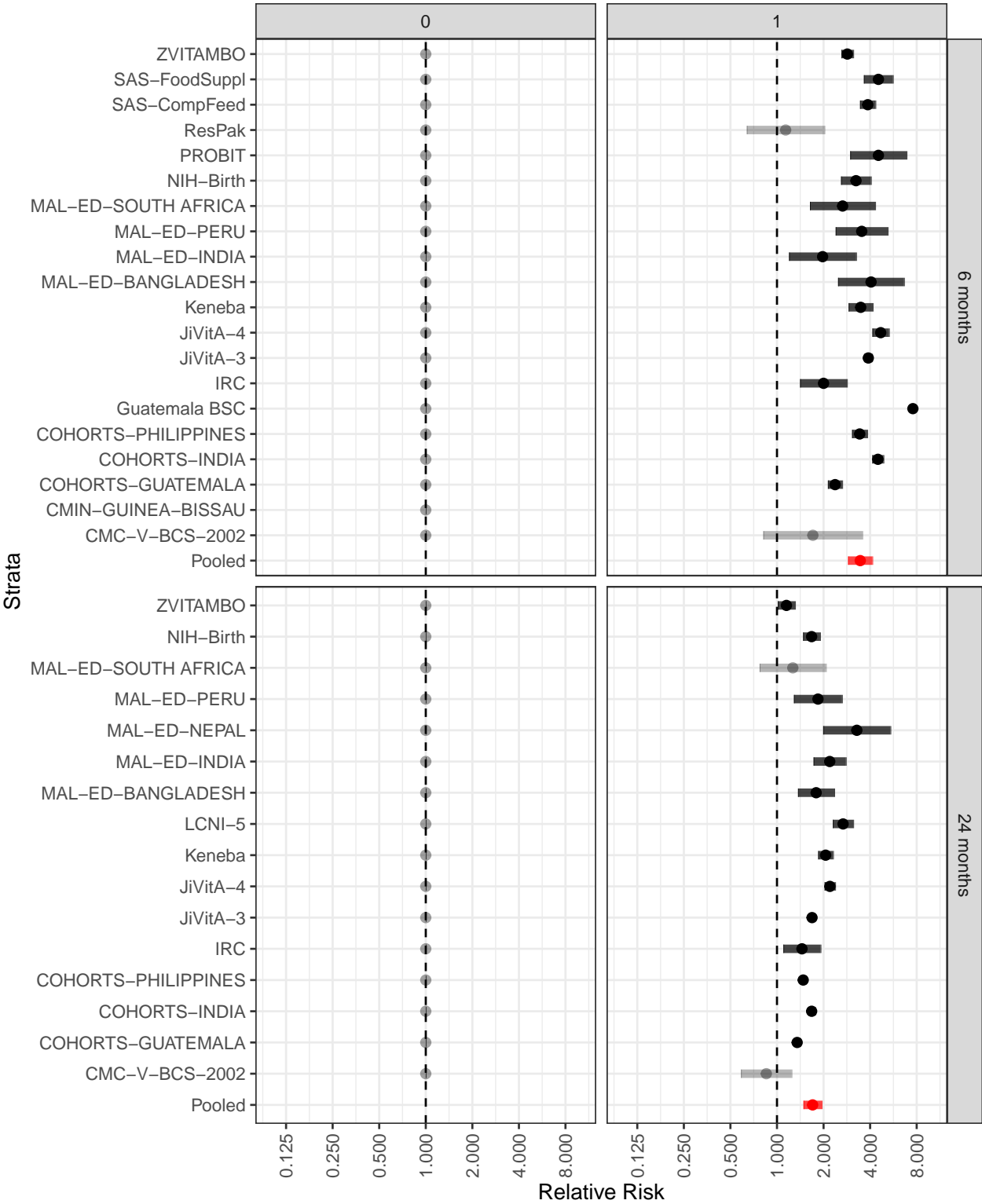


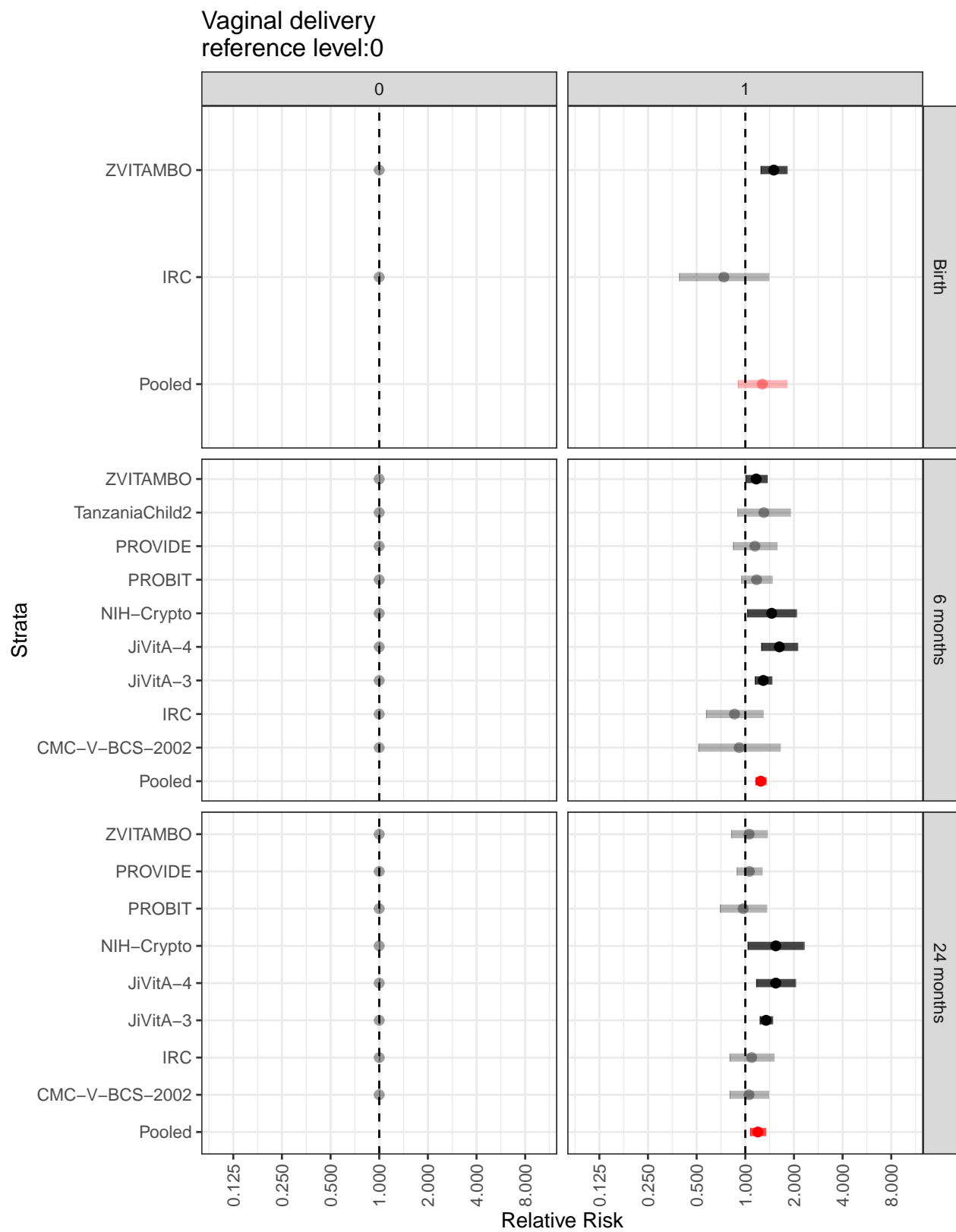


Persistent wasting in first 6 months  
reference level:0

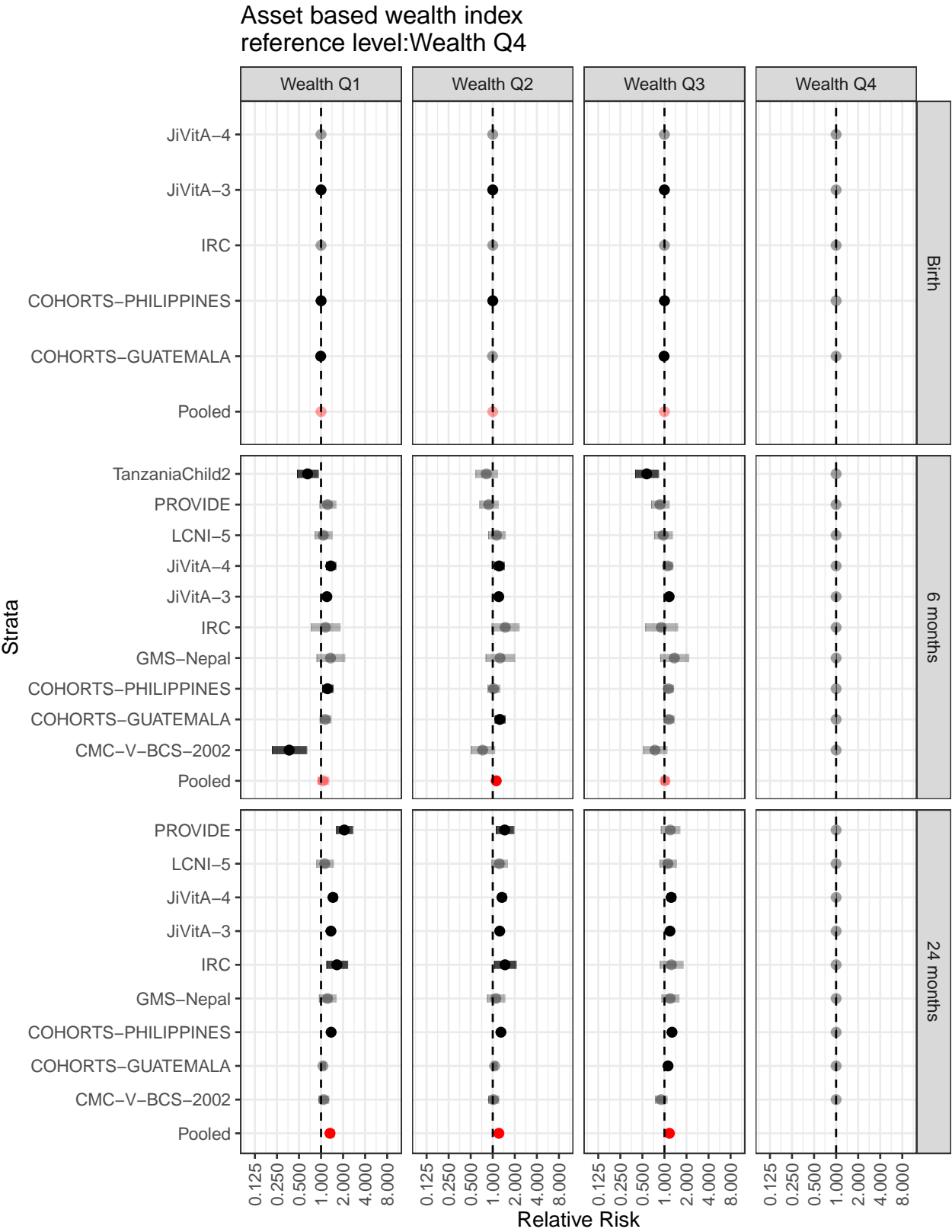


Stunted at enrollment  
reference level:0

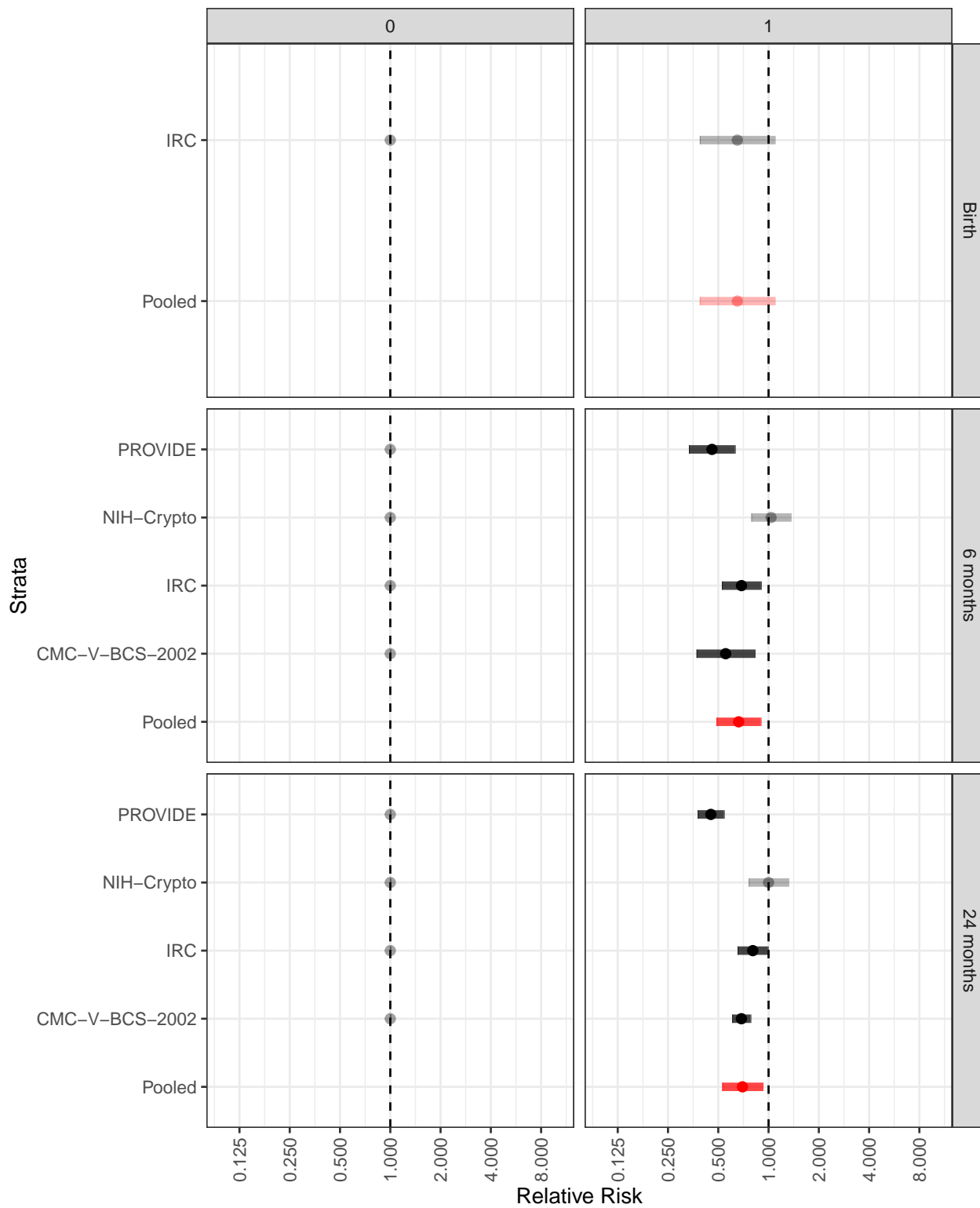


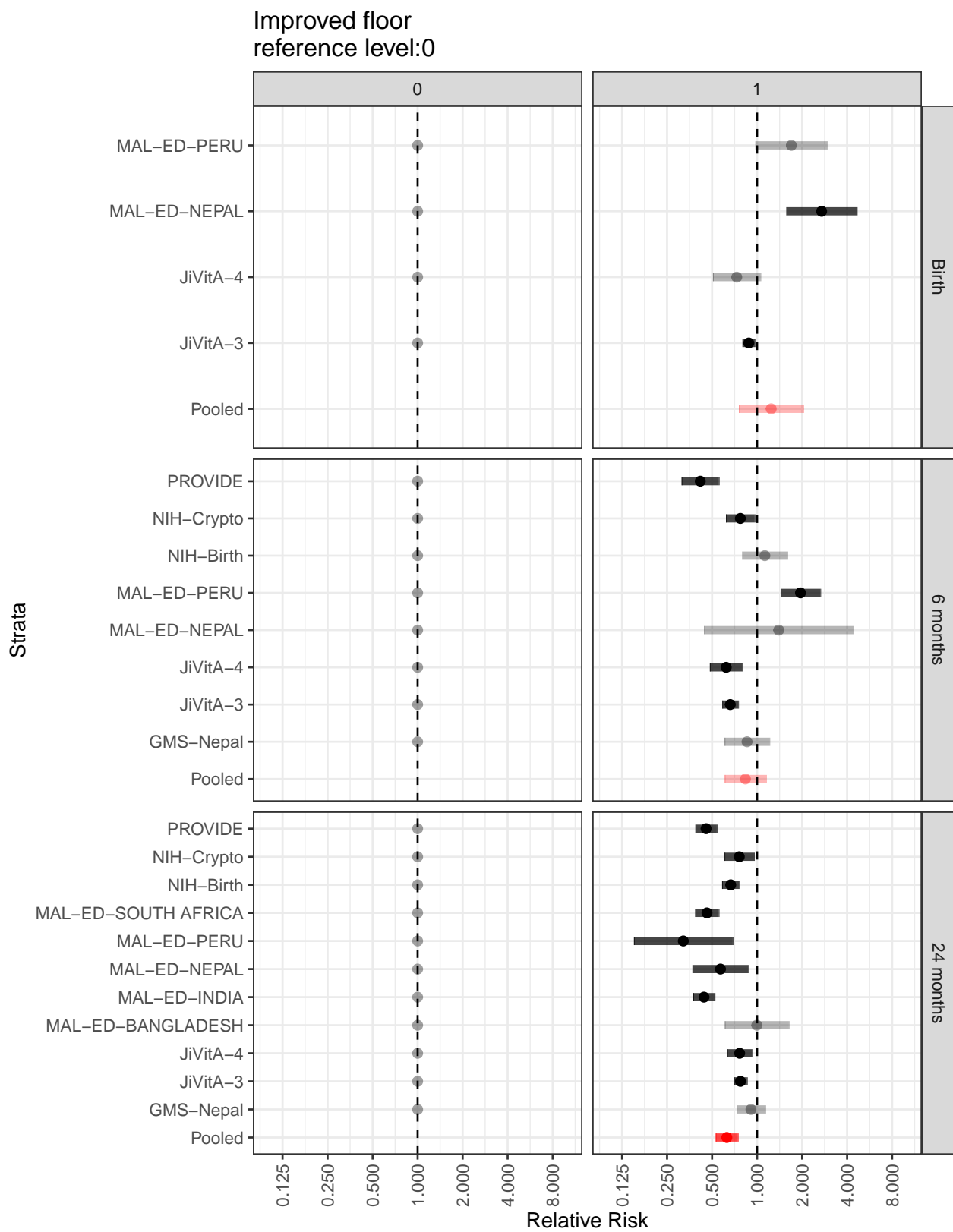


Household characteristics

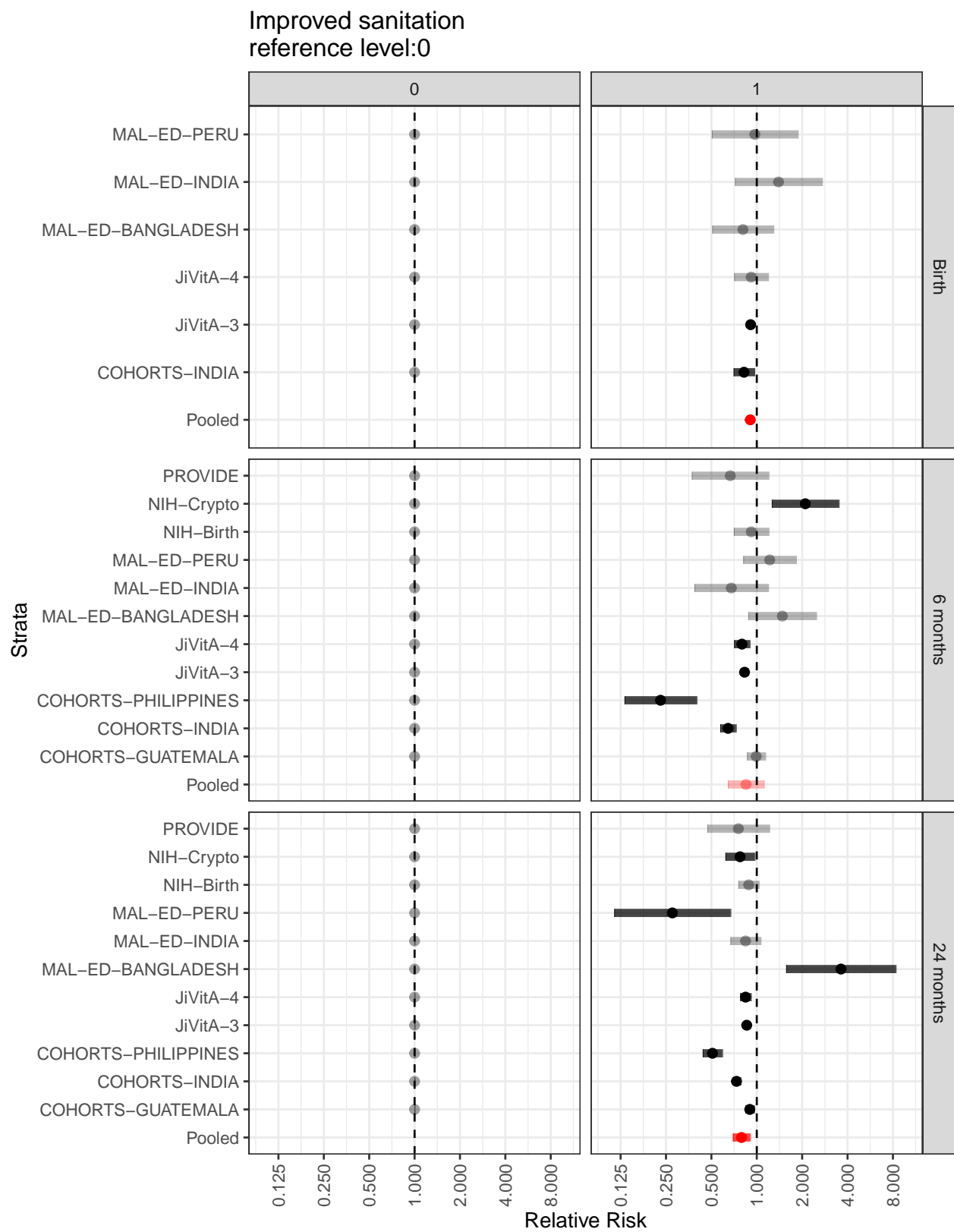


Clean cook  
reference level:0

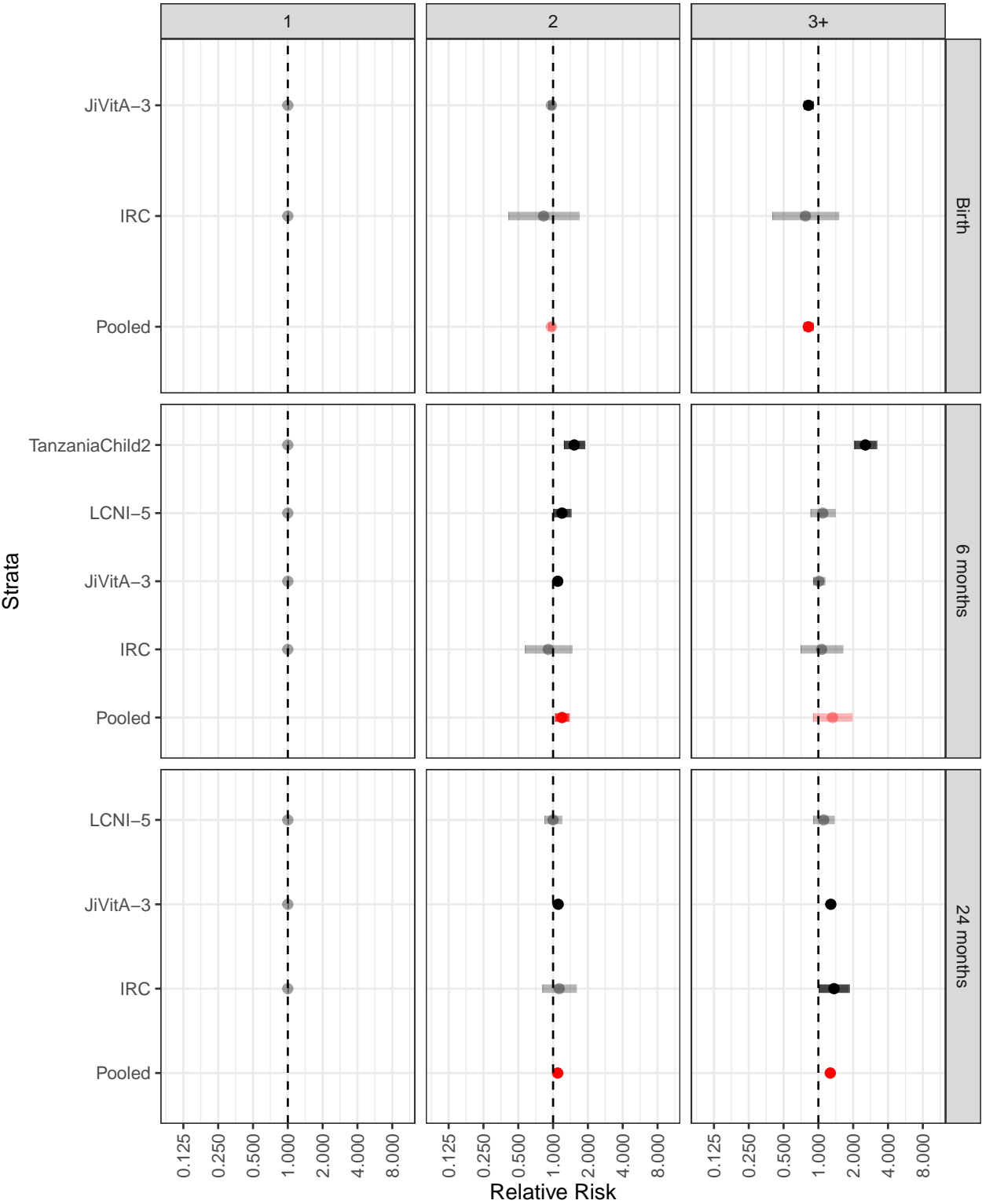




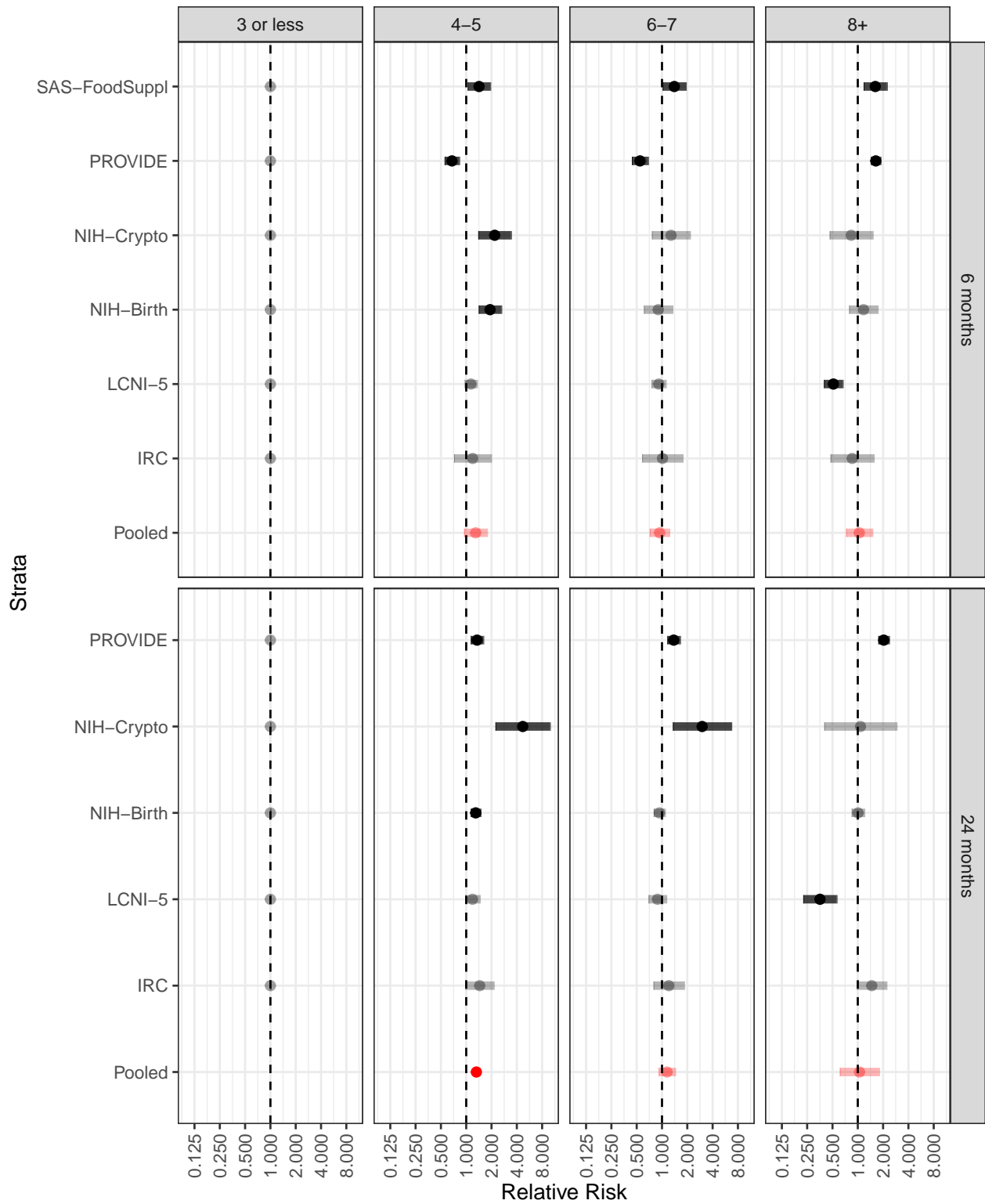




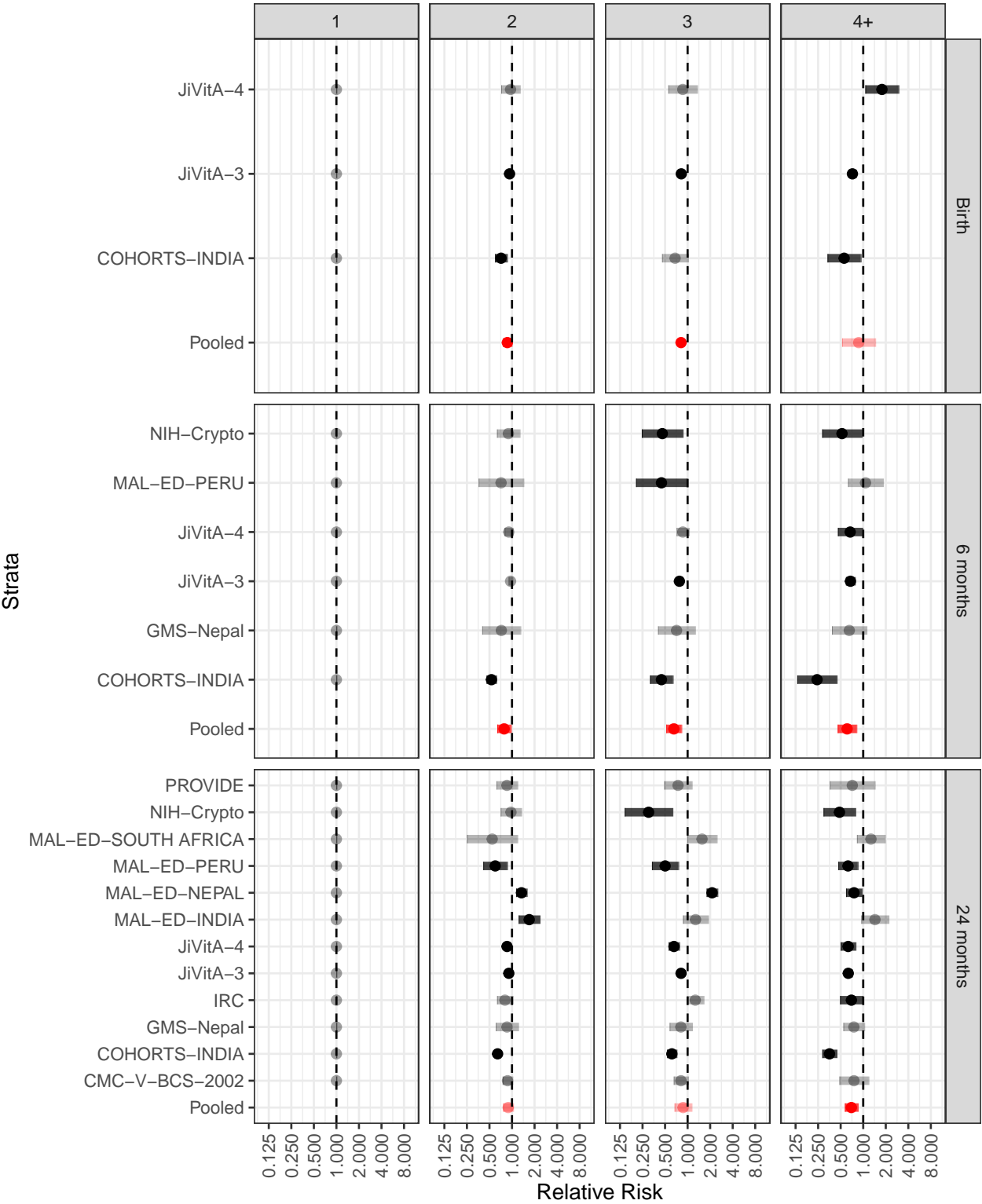
Number of children in the household under 5 years  
reference level:1

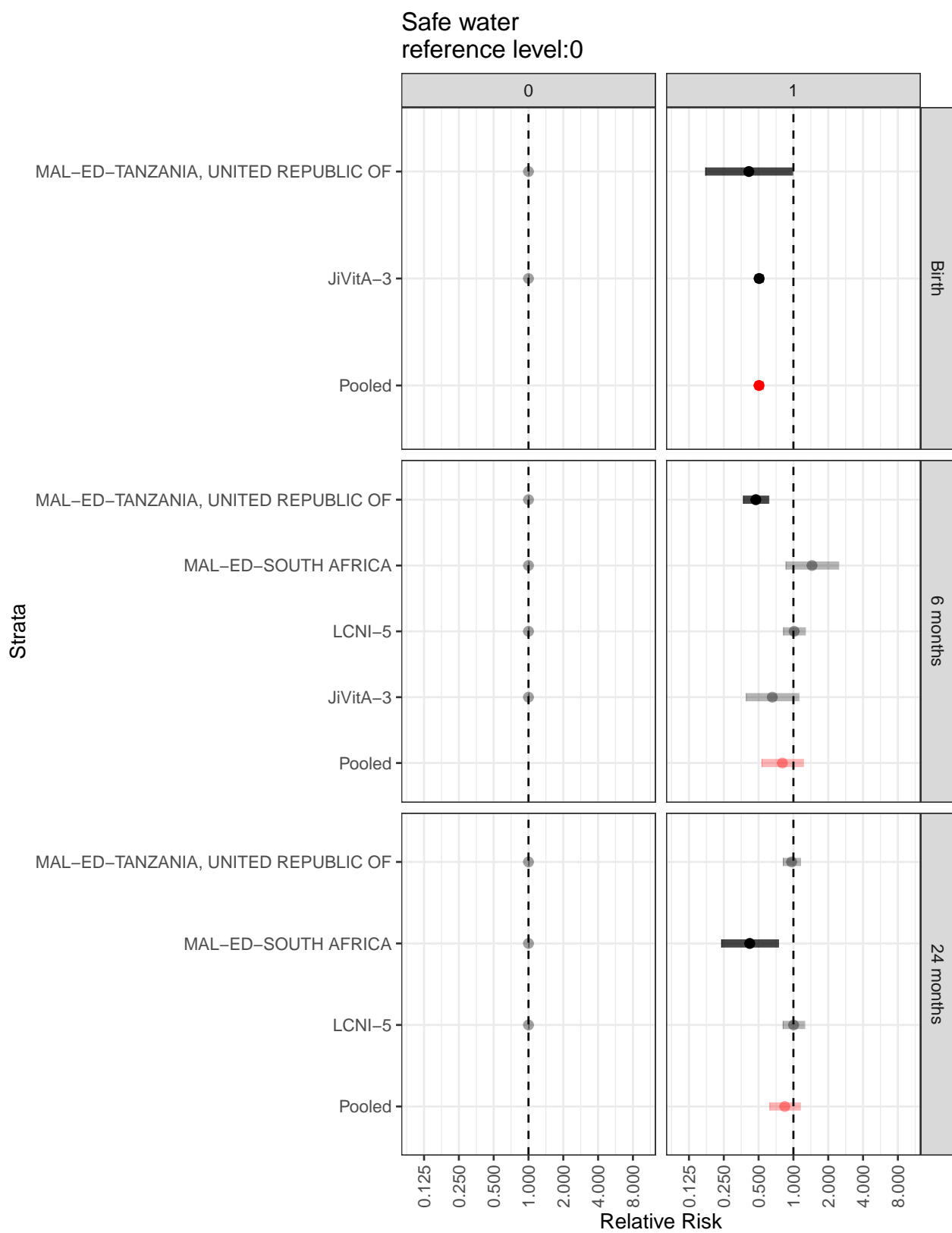


Number of people in the household  
reference level:3 or less

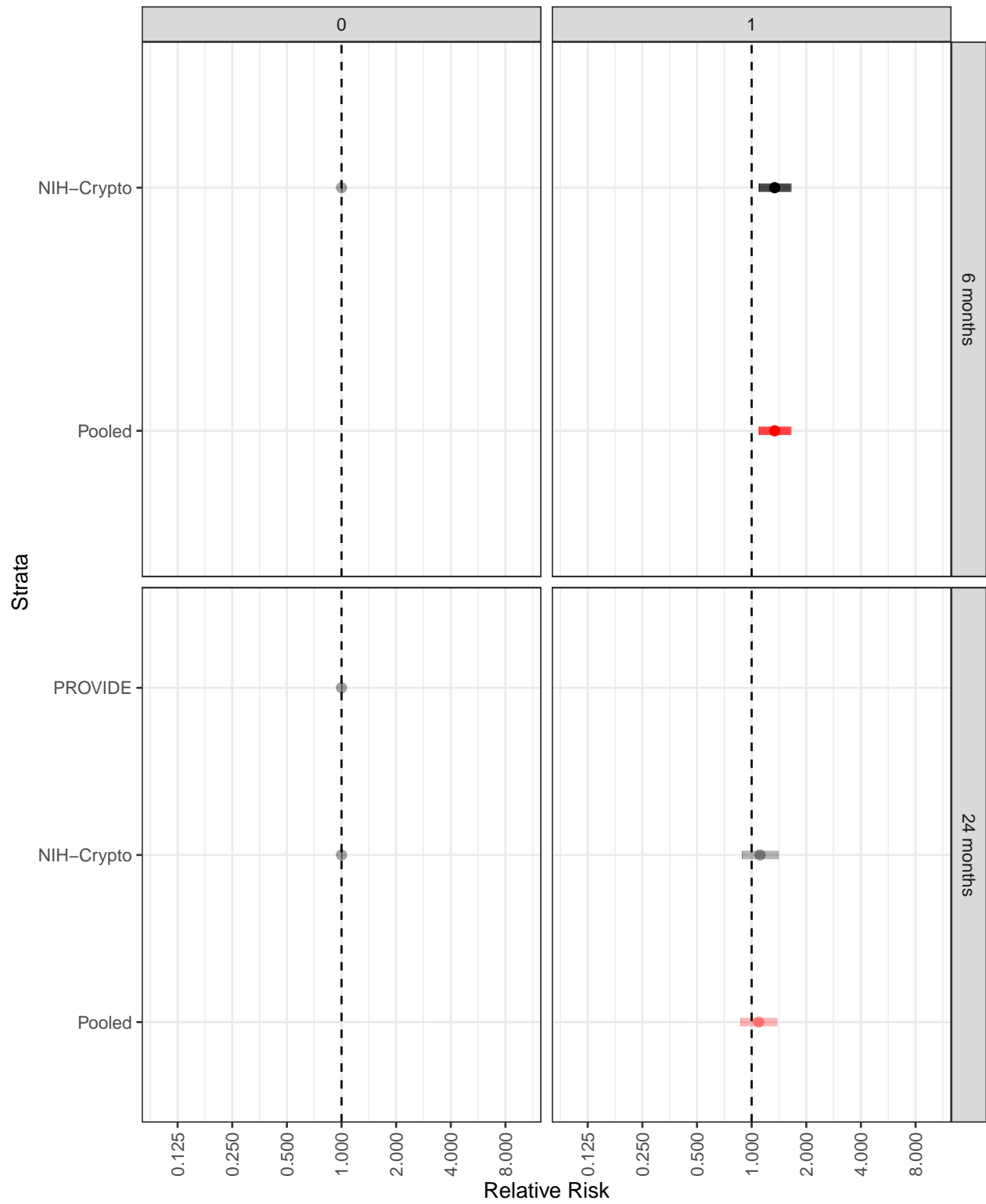


Number of rooms in household  
reference level:1

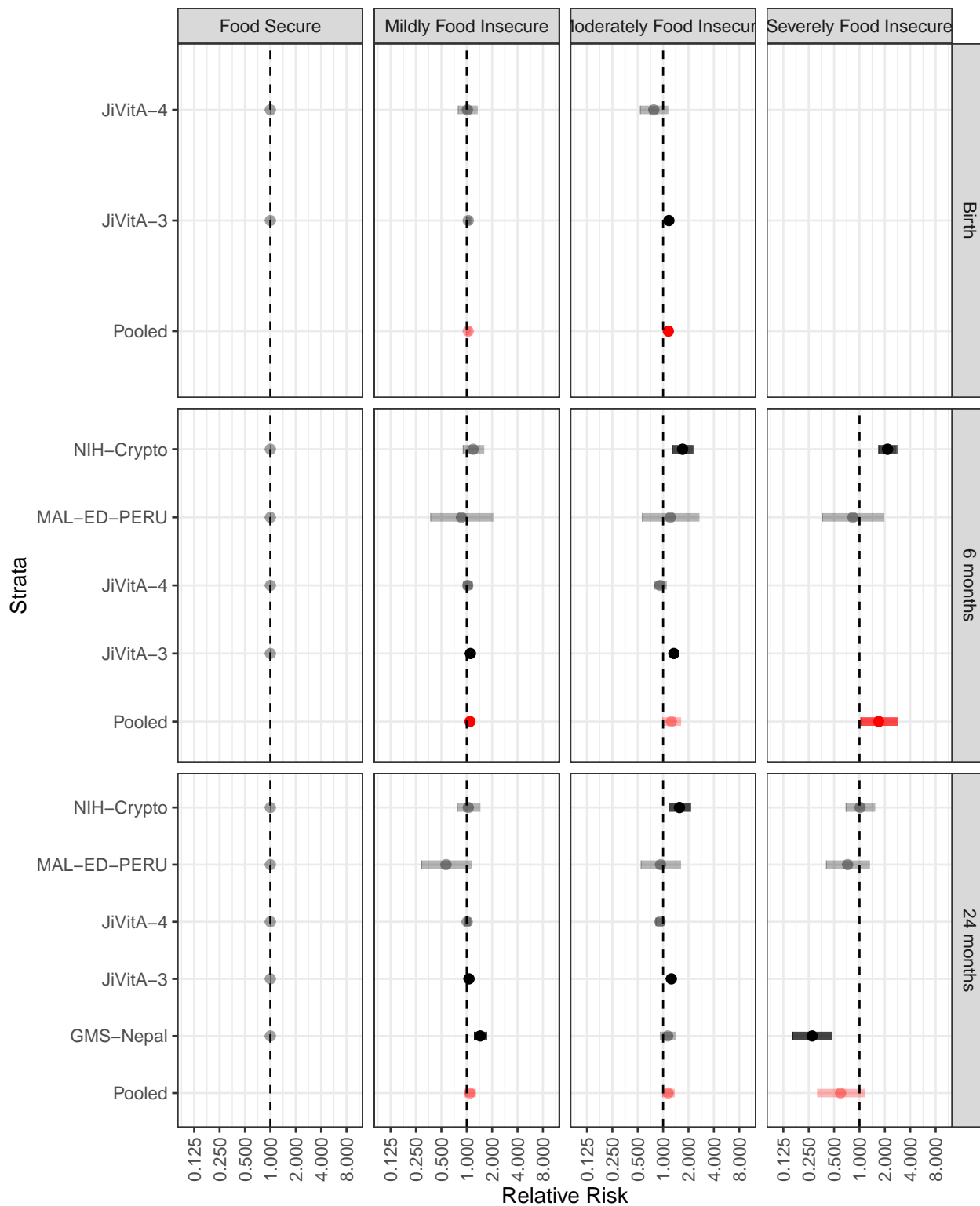




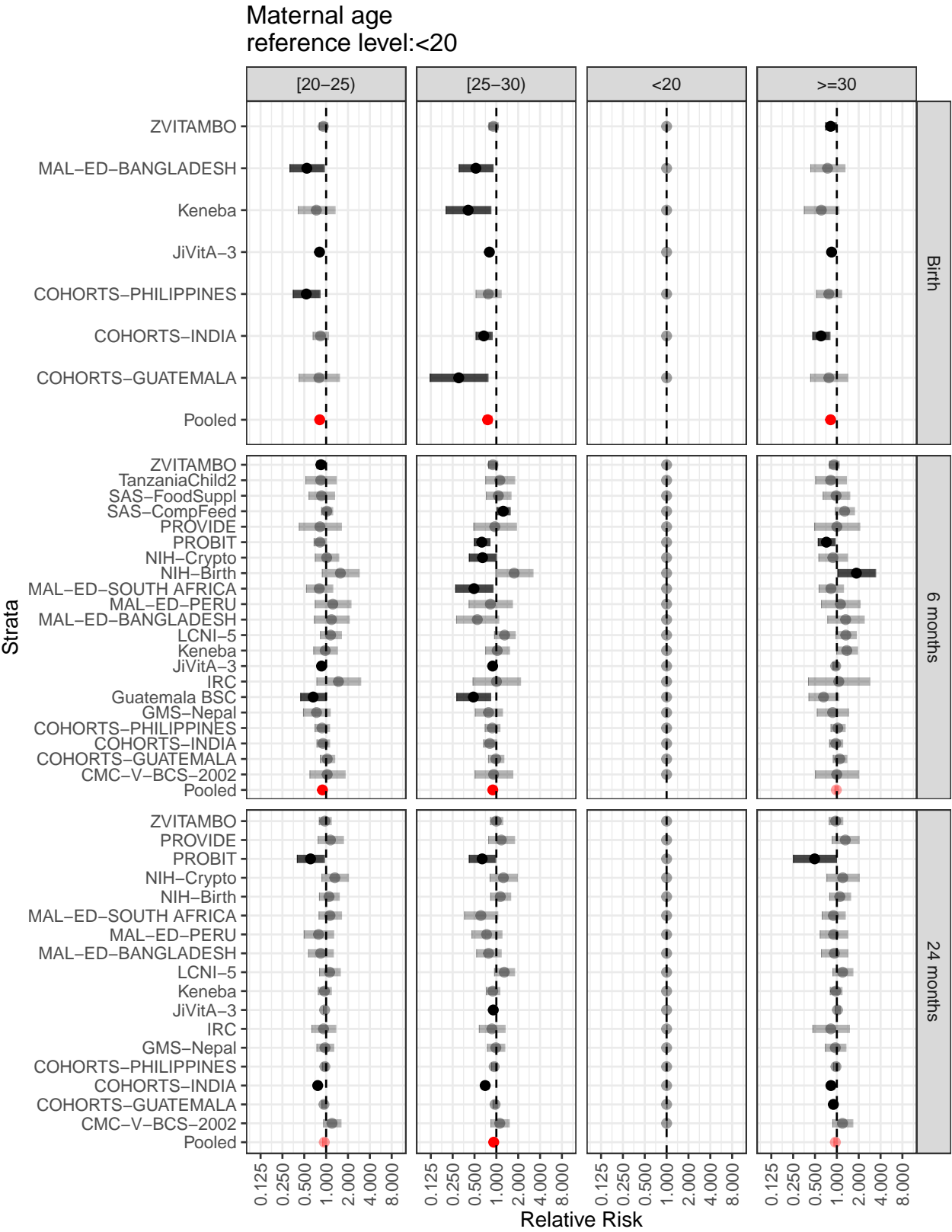
Treats water  
reference level:0



# USAID Household Food Insecurity Access Scale (HFIAS) category reference level: Food Secure

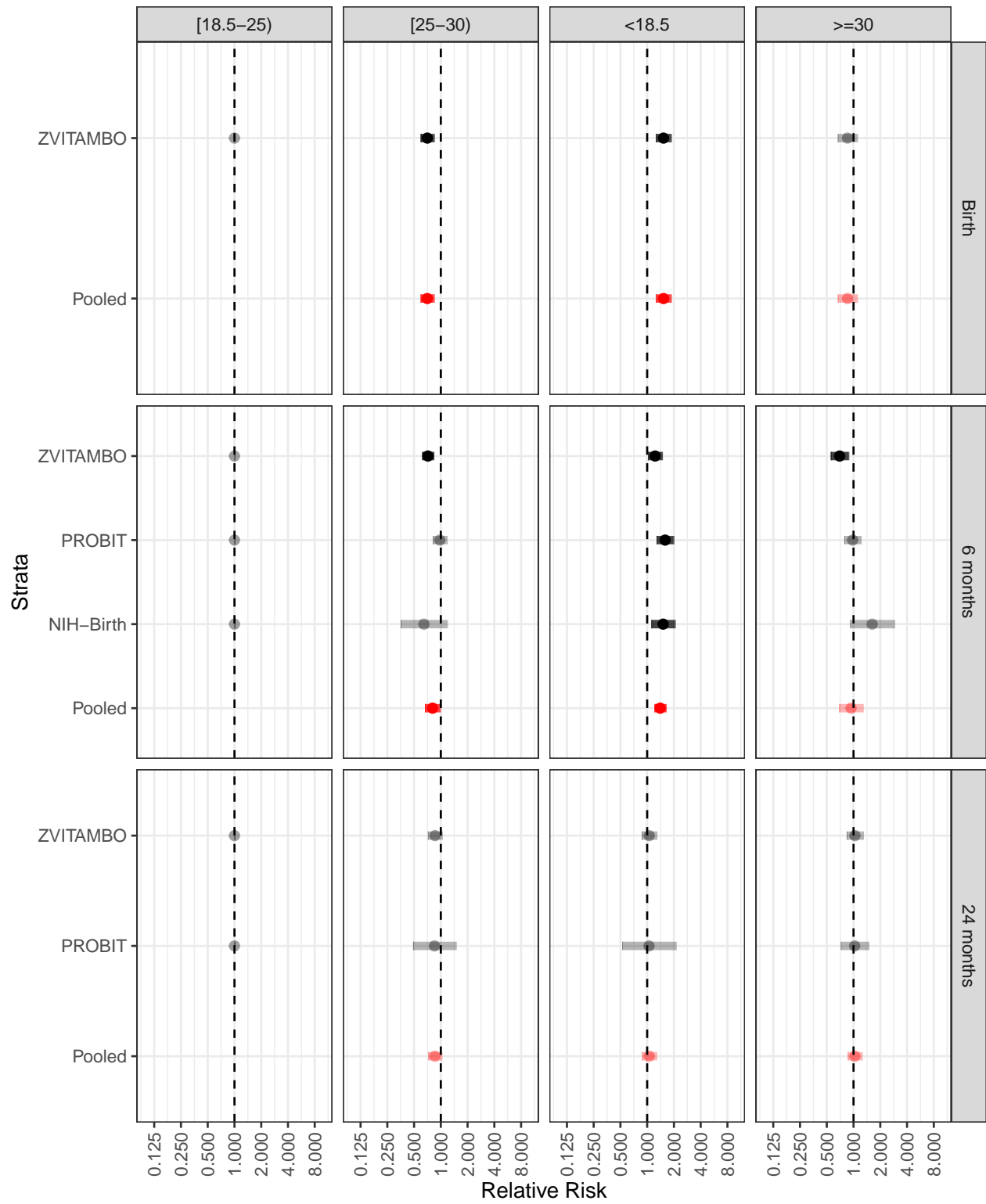


Maternal characteristics

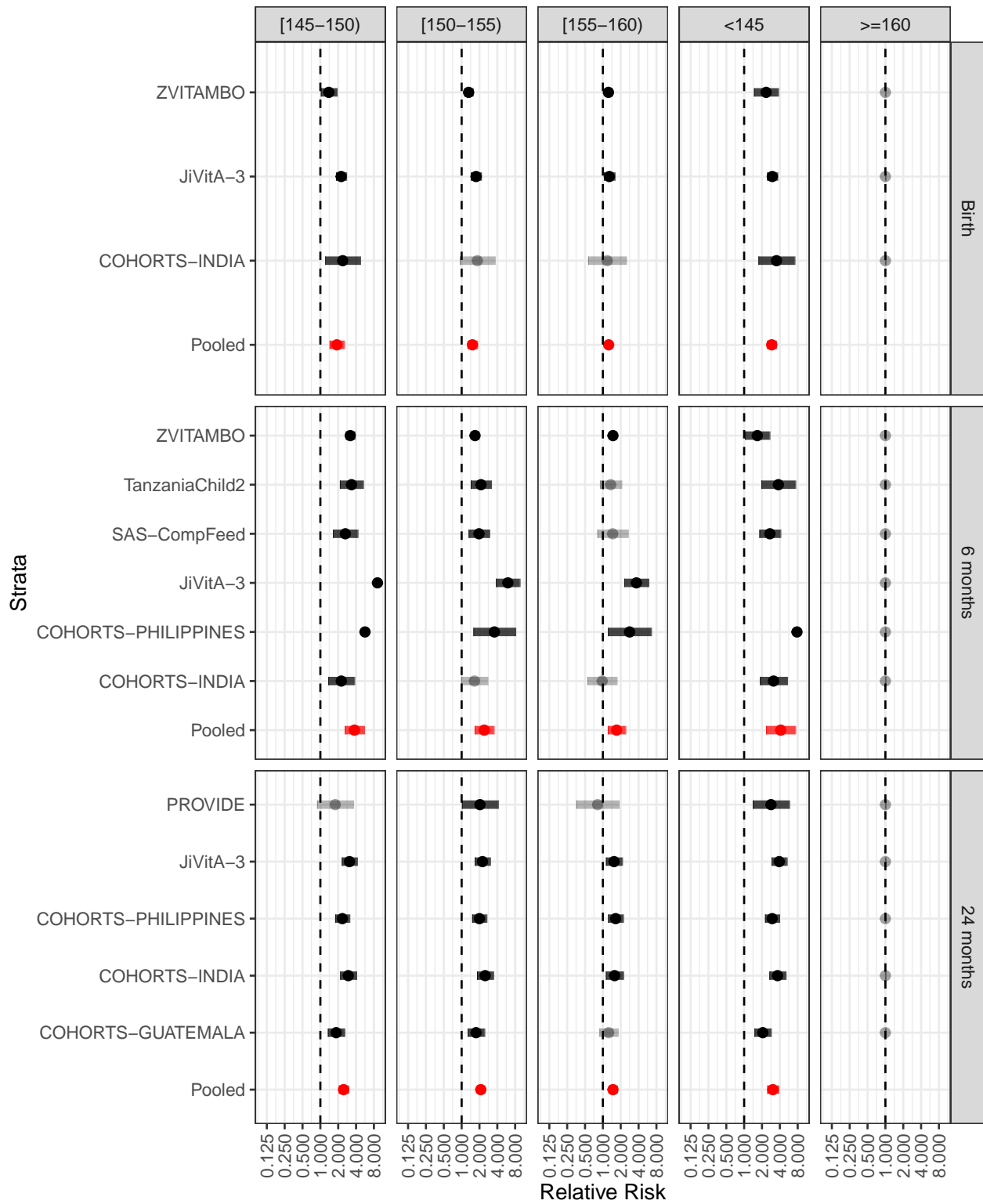


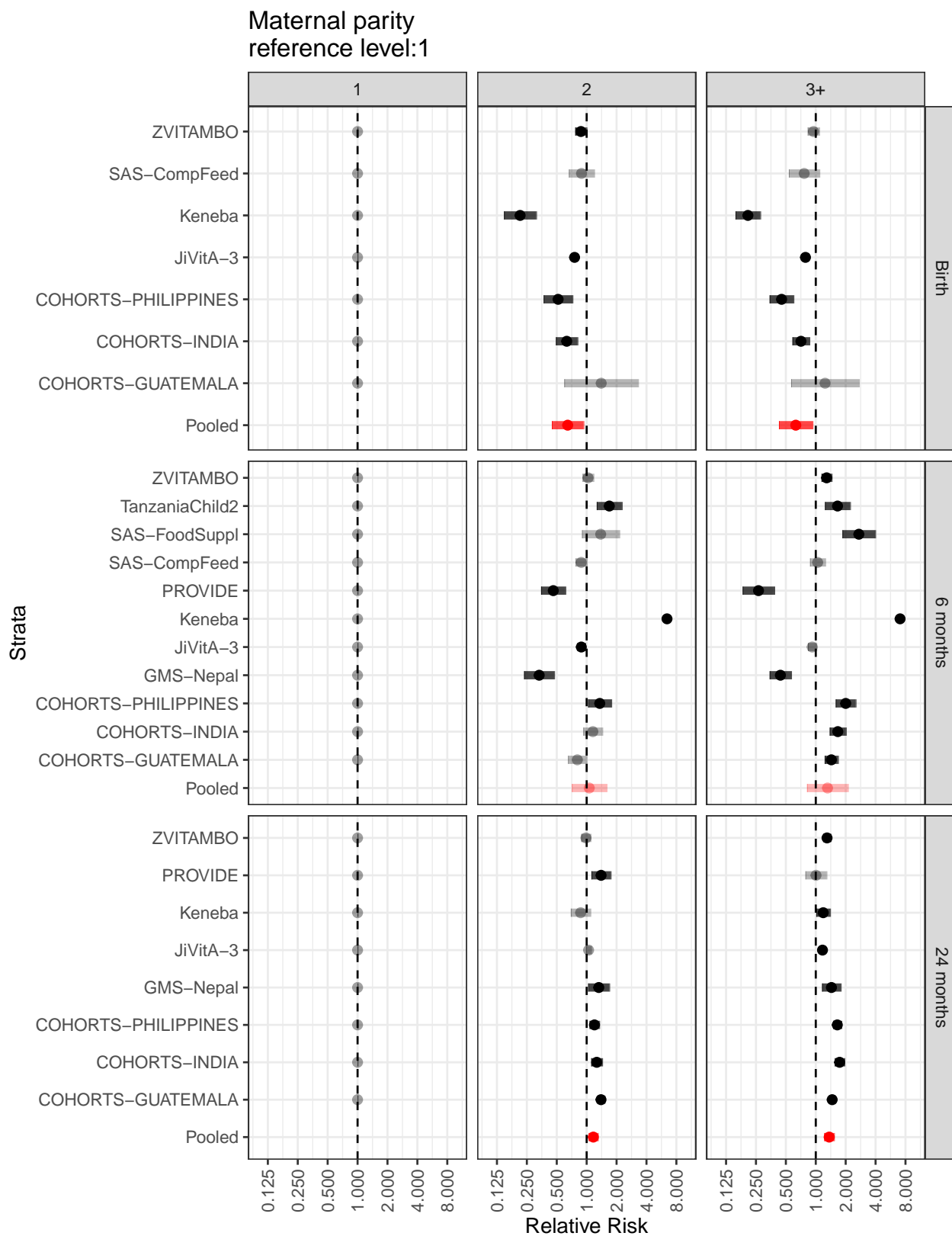


Maternal BMI  
reference level:[18.5–25)

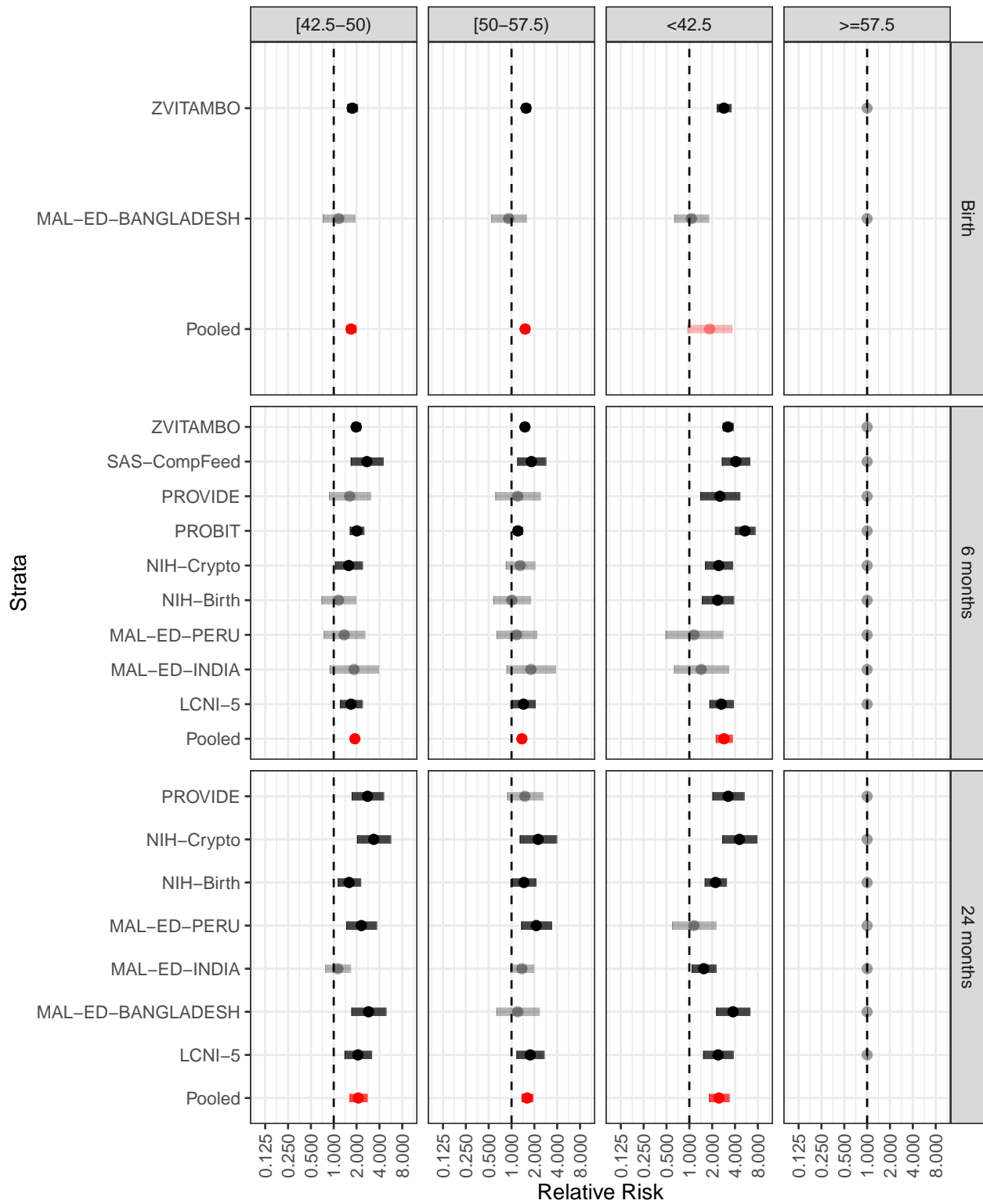


Maternal height  
reference level:  $\geq 160$

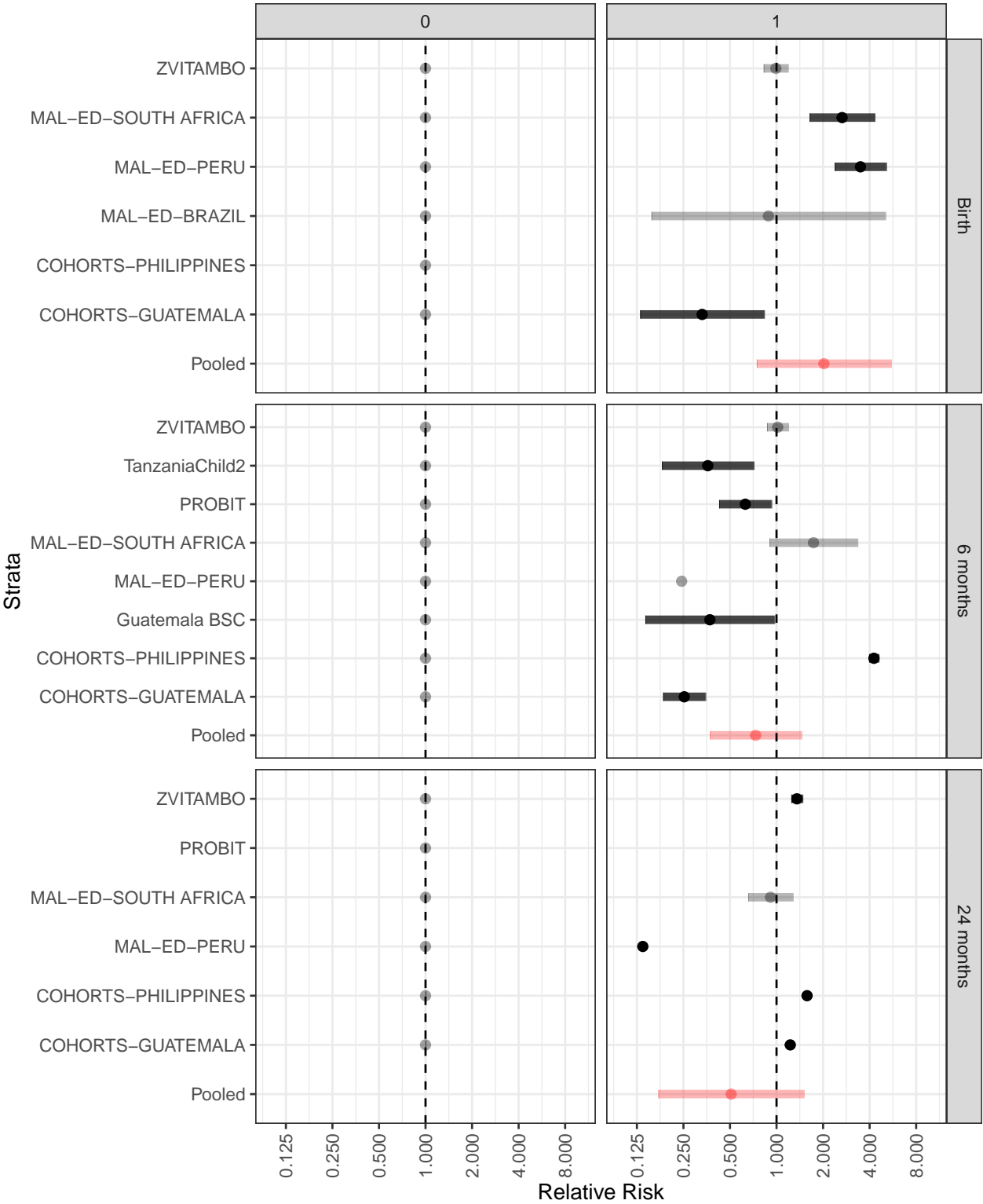




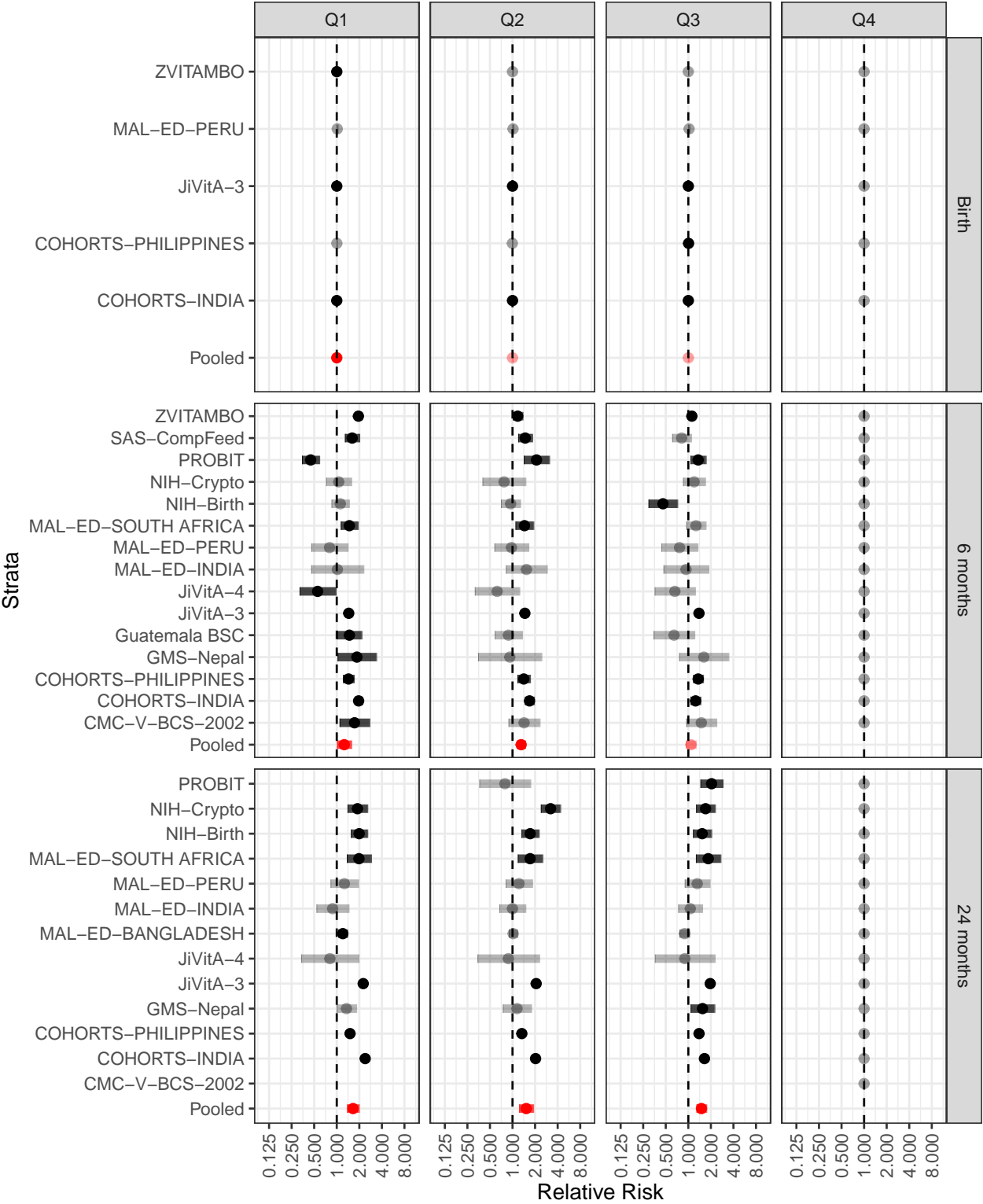
Maternal weight  
reference level:  $\geq 57.5$



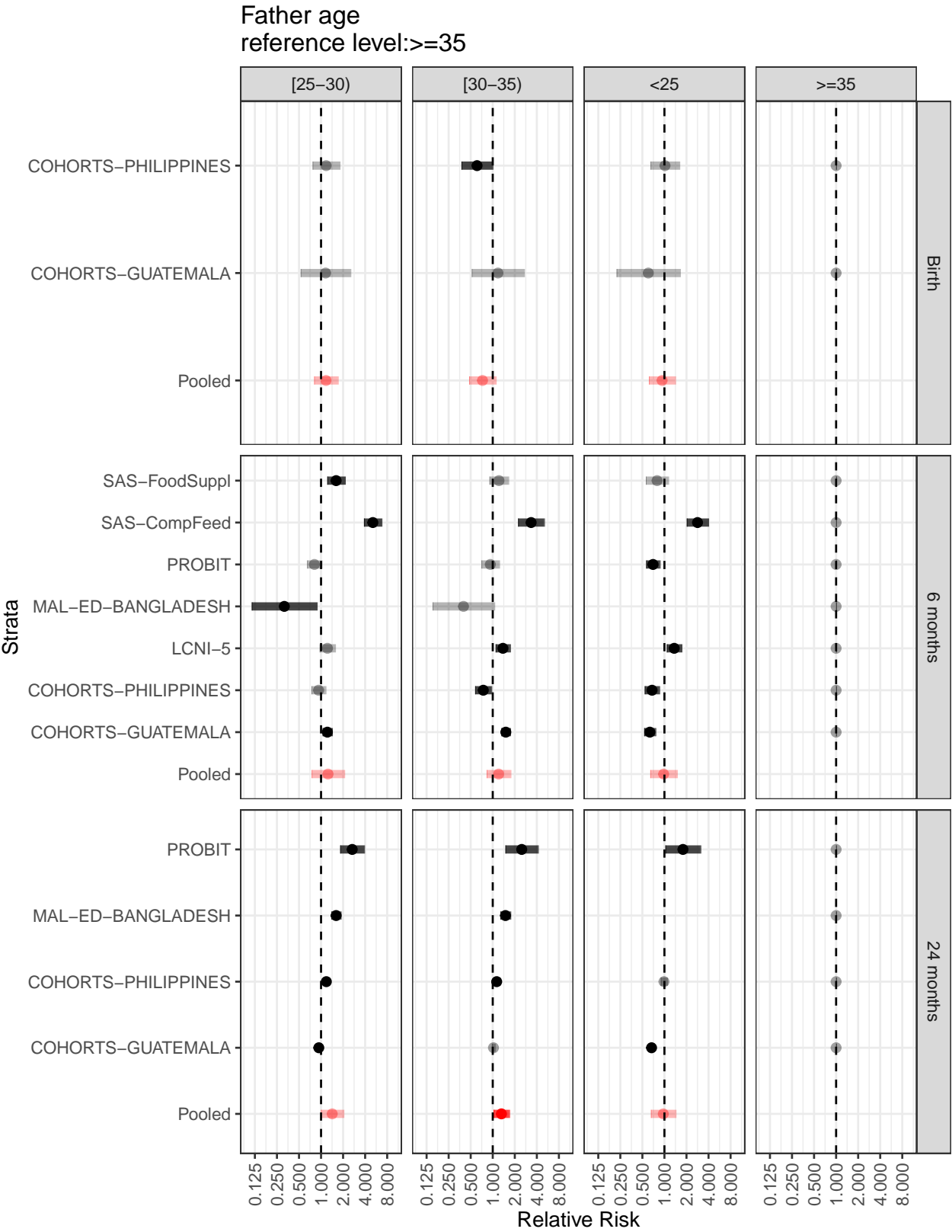
Mother is unmarried  
reference level:0

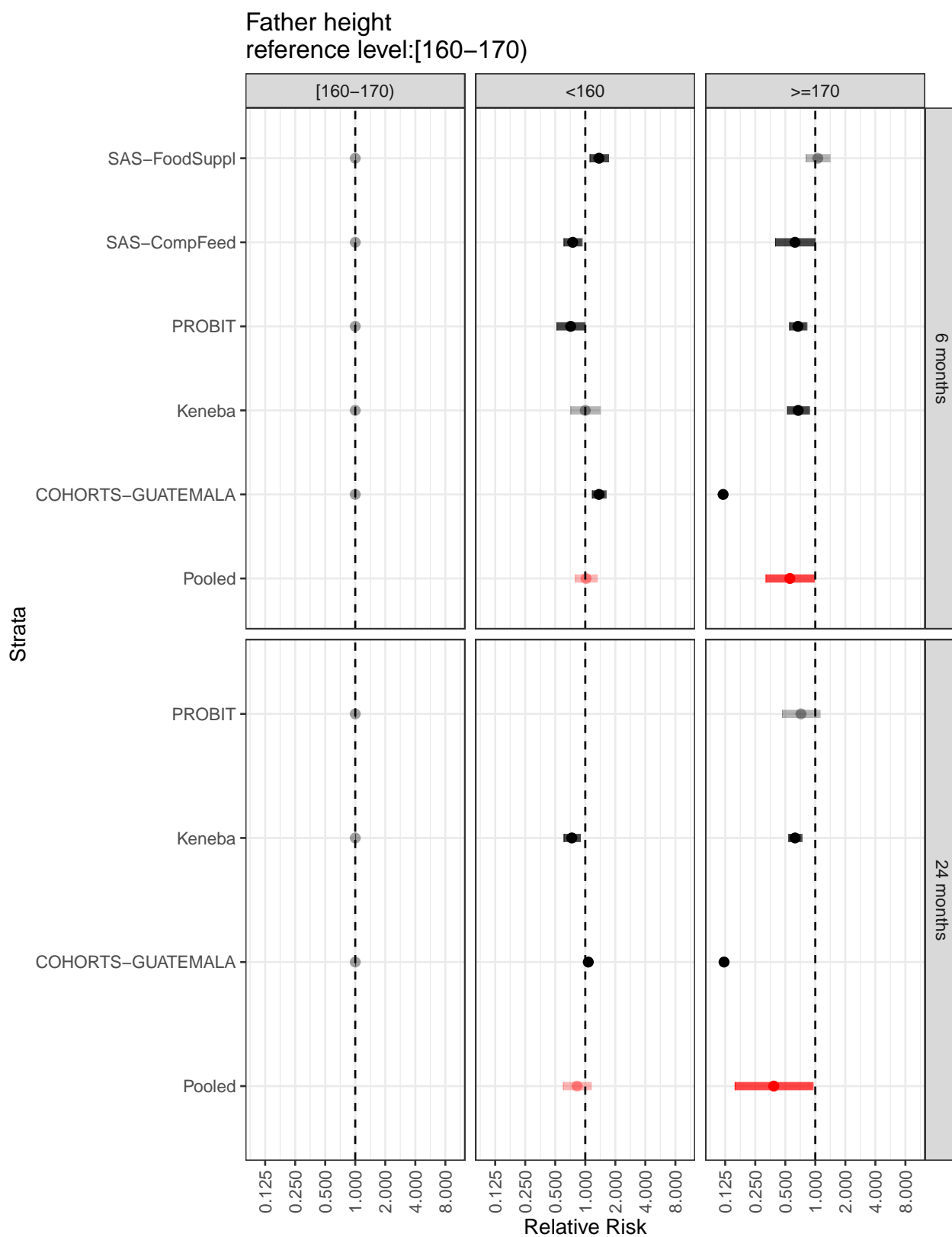


Mother's education  
reference level:Q4



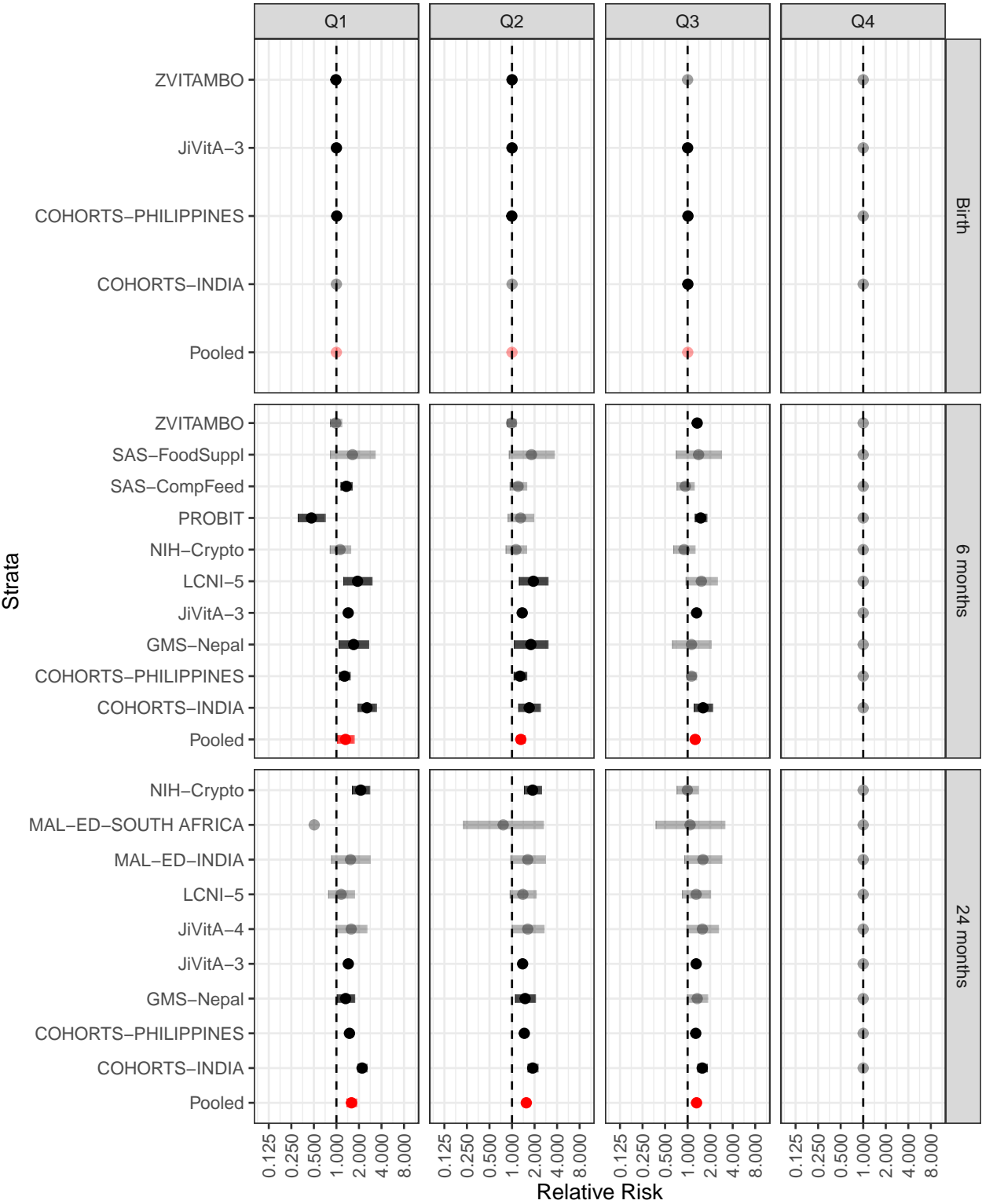
Paternal characteristics







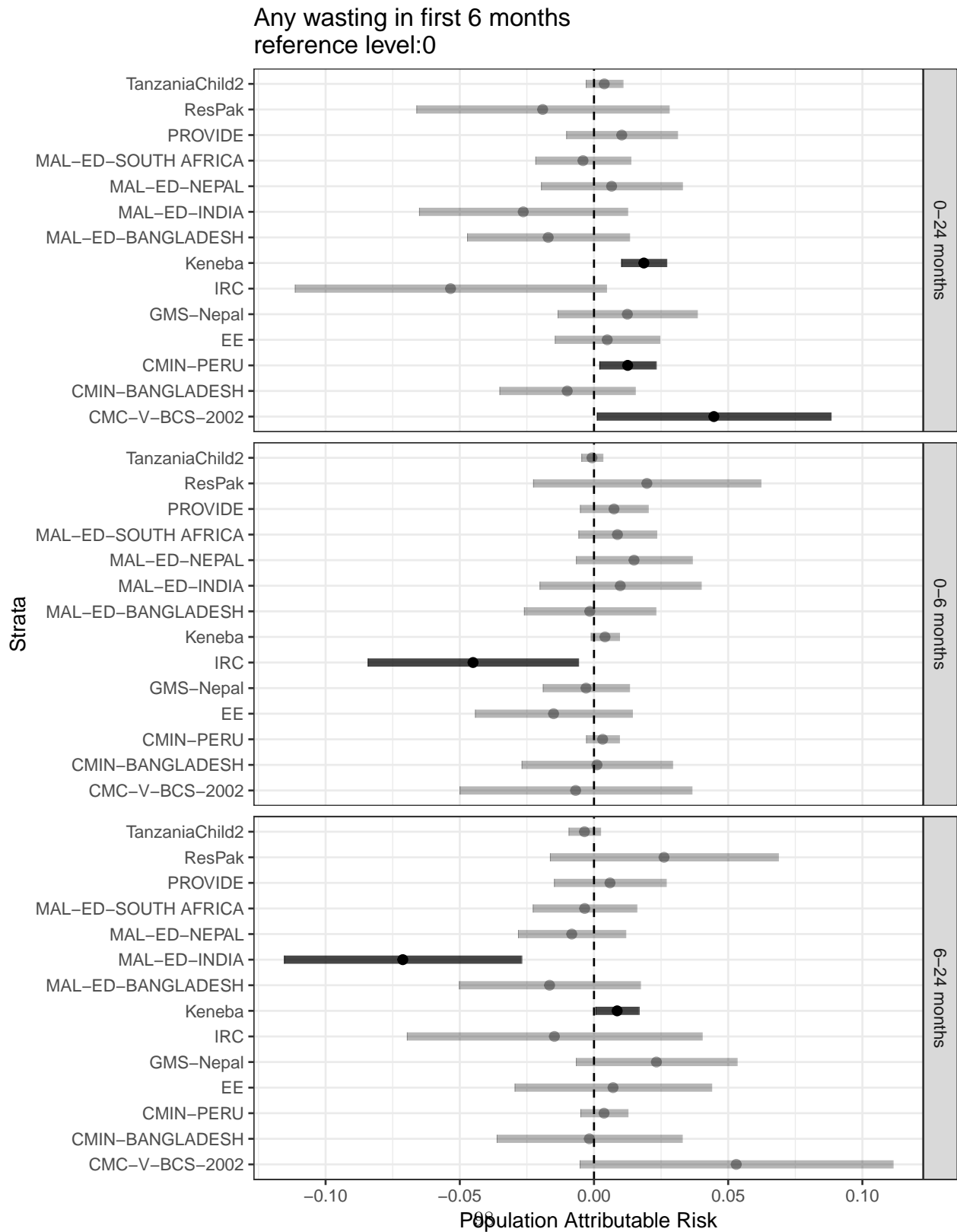
Father's education  
reference level:Q4

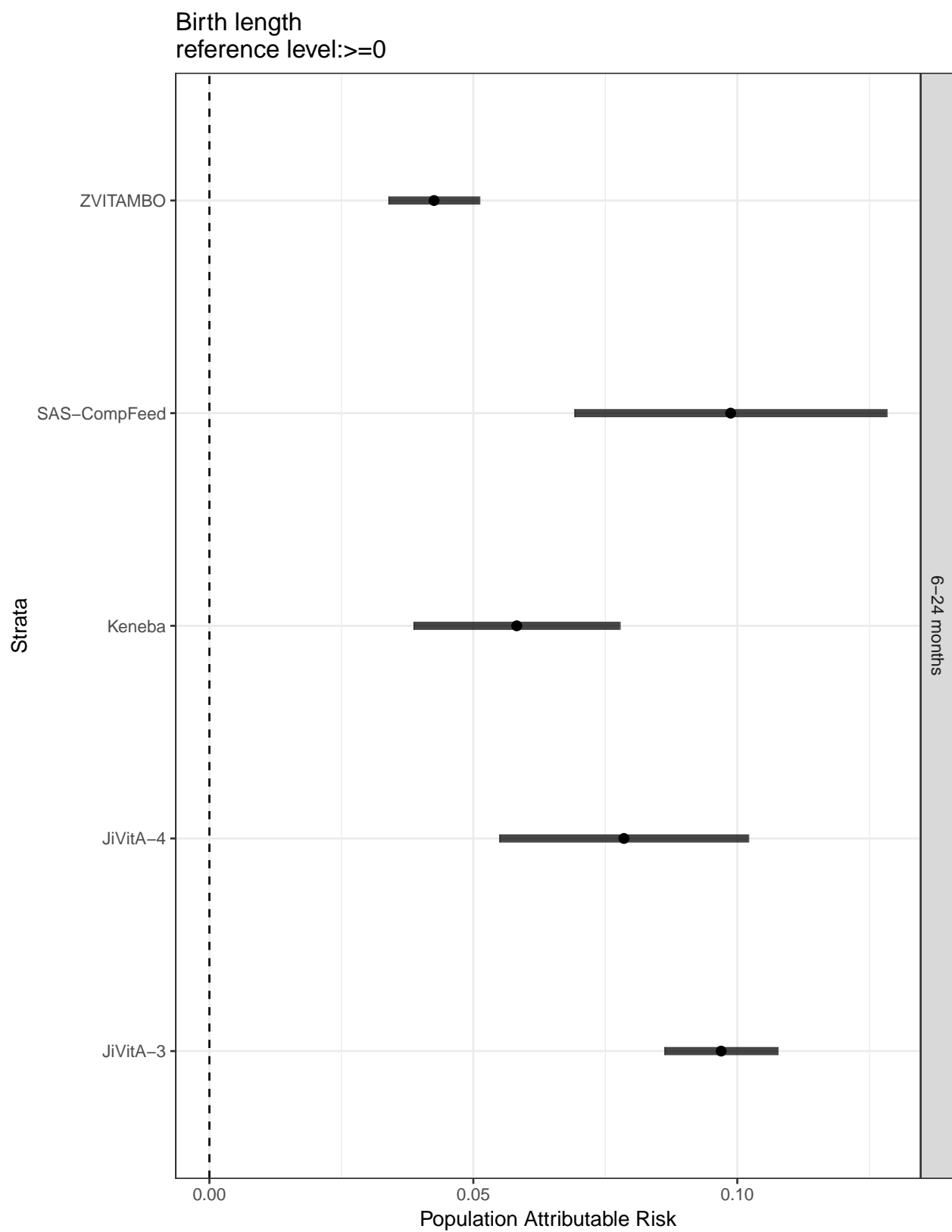


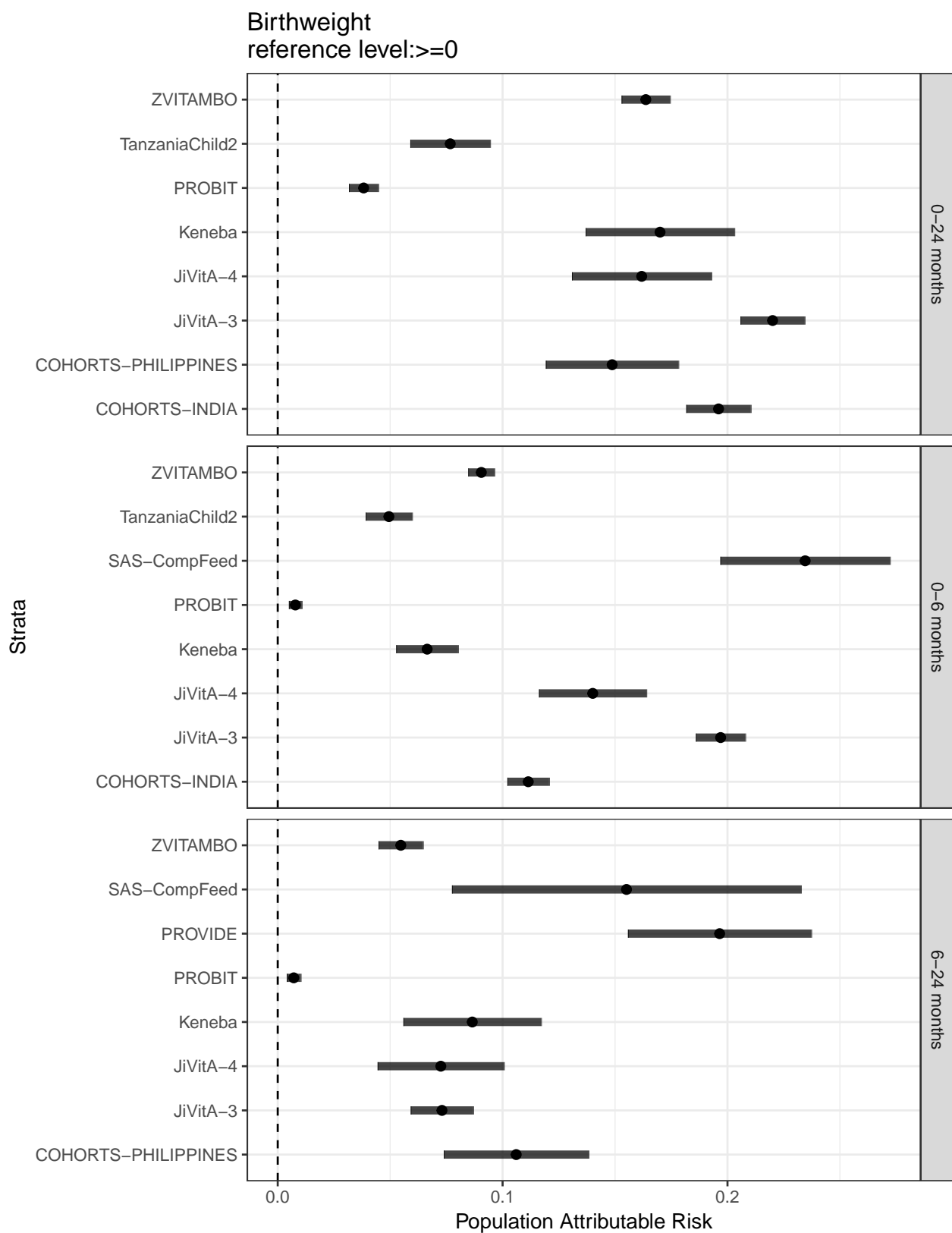
## Appendix 2 - Population Attributable Risk stratified by cohort

### Cumulative incidence of stunting from birth to 24 months

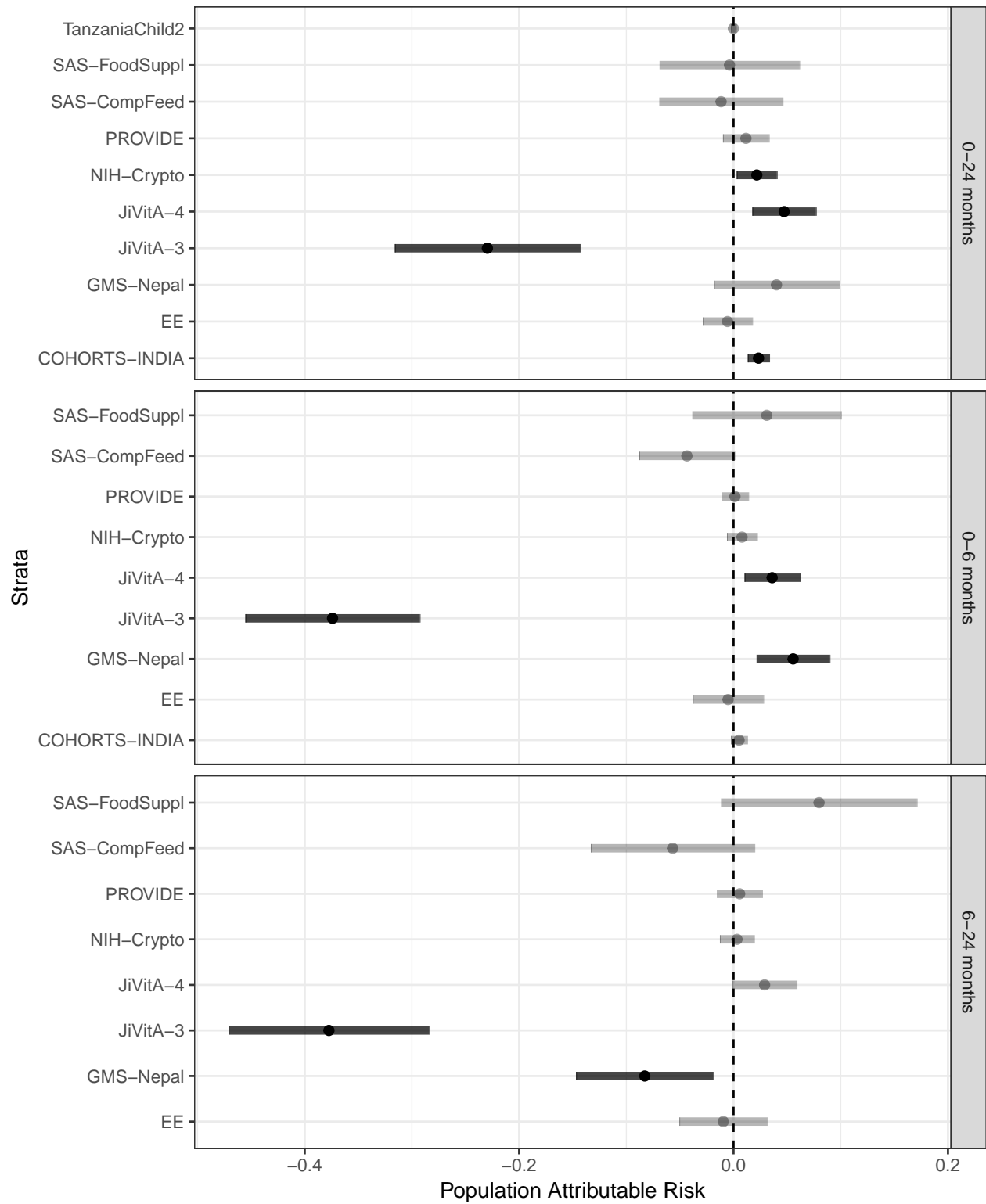
#### Child characteristics

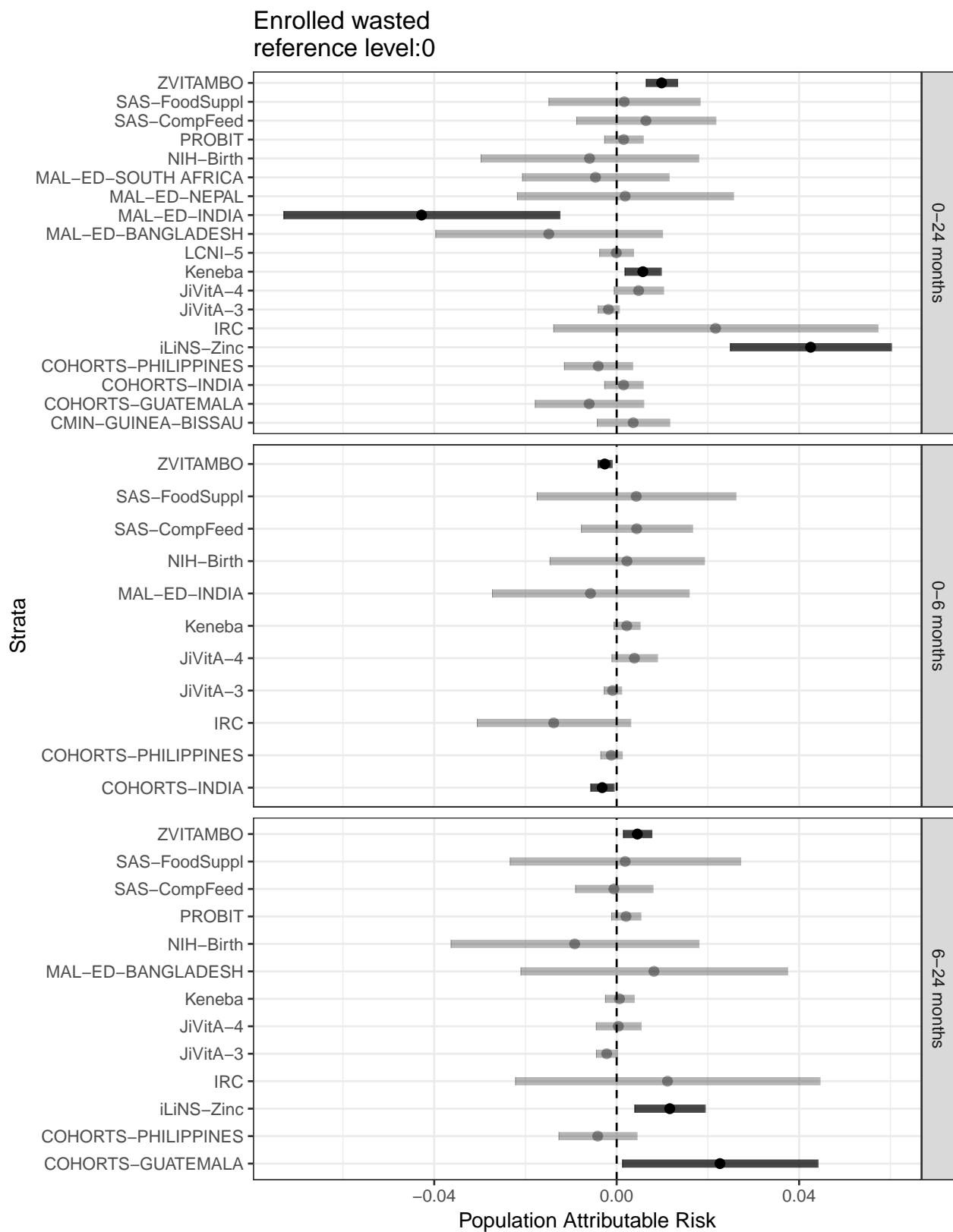




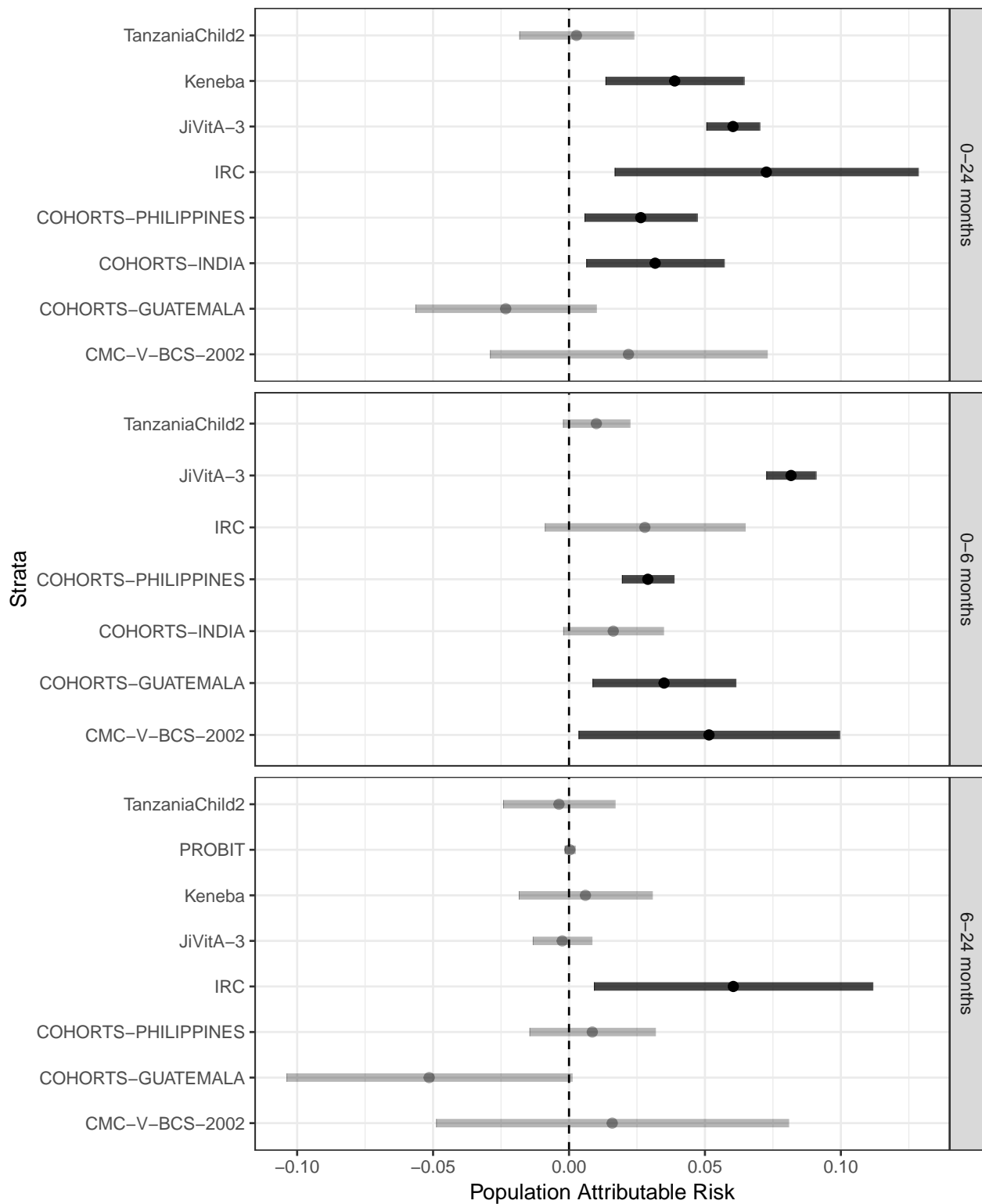


Child delivered at home  
reference level:0

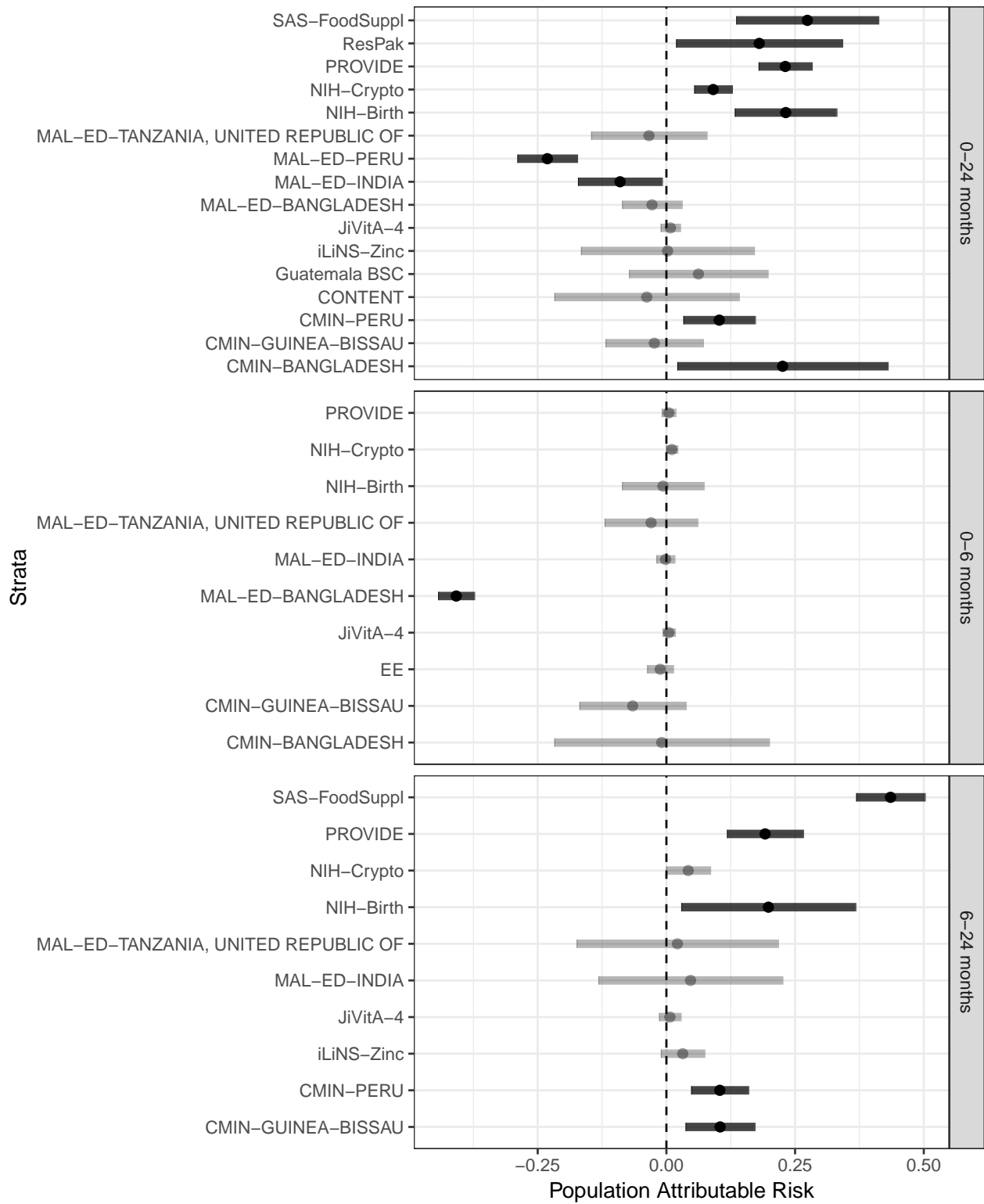




Gestational age at birth in days  
reference level:[273–287)

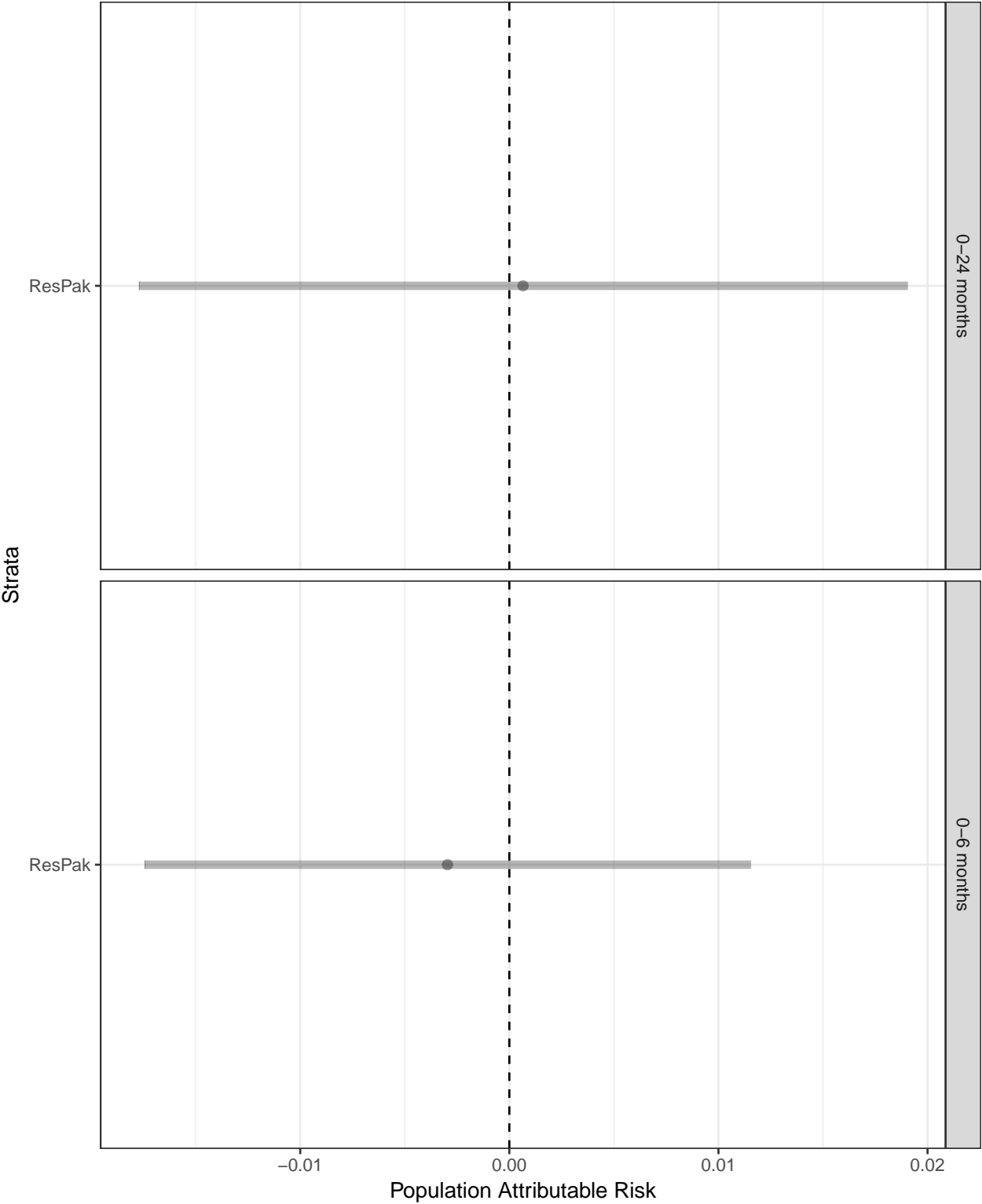


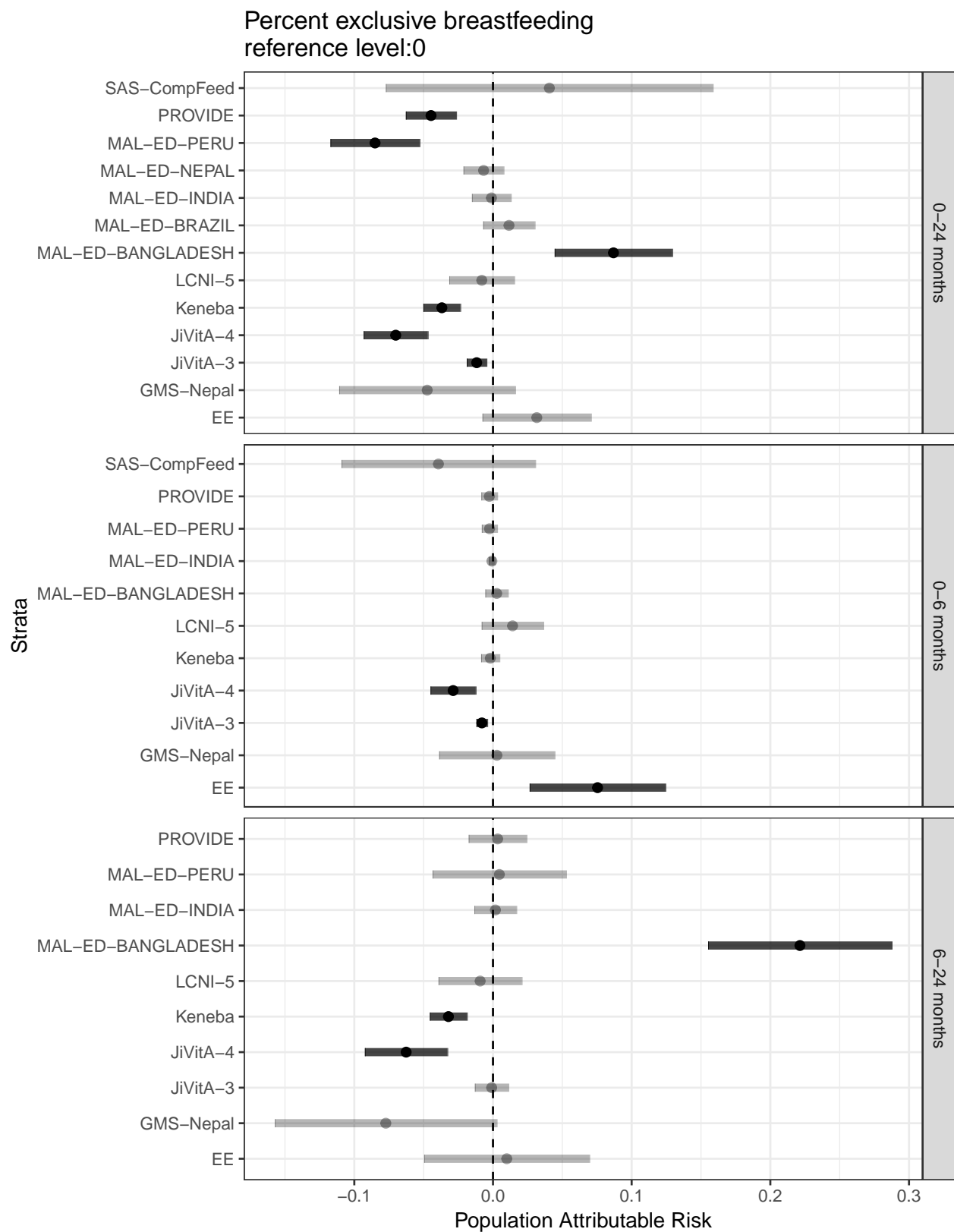
Percent diarrhea in first 24 months  
reference level:Q1



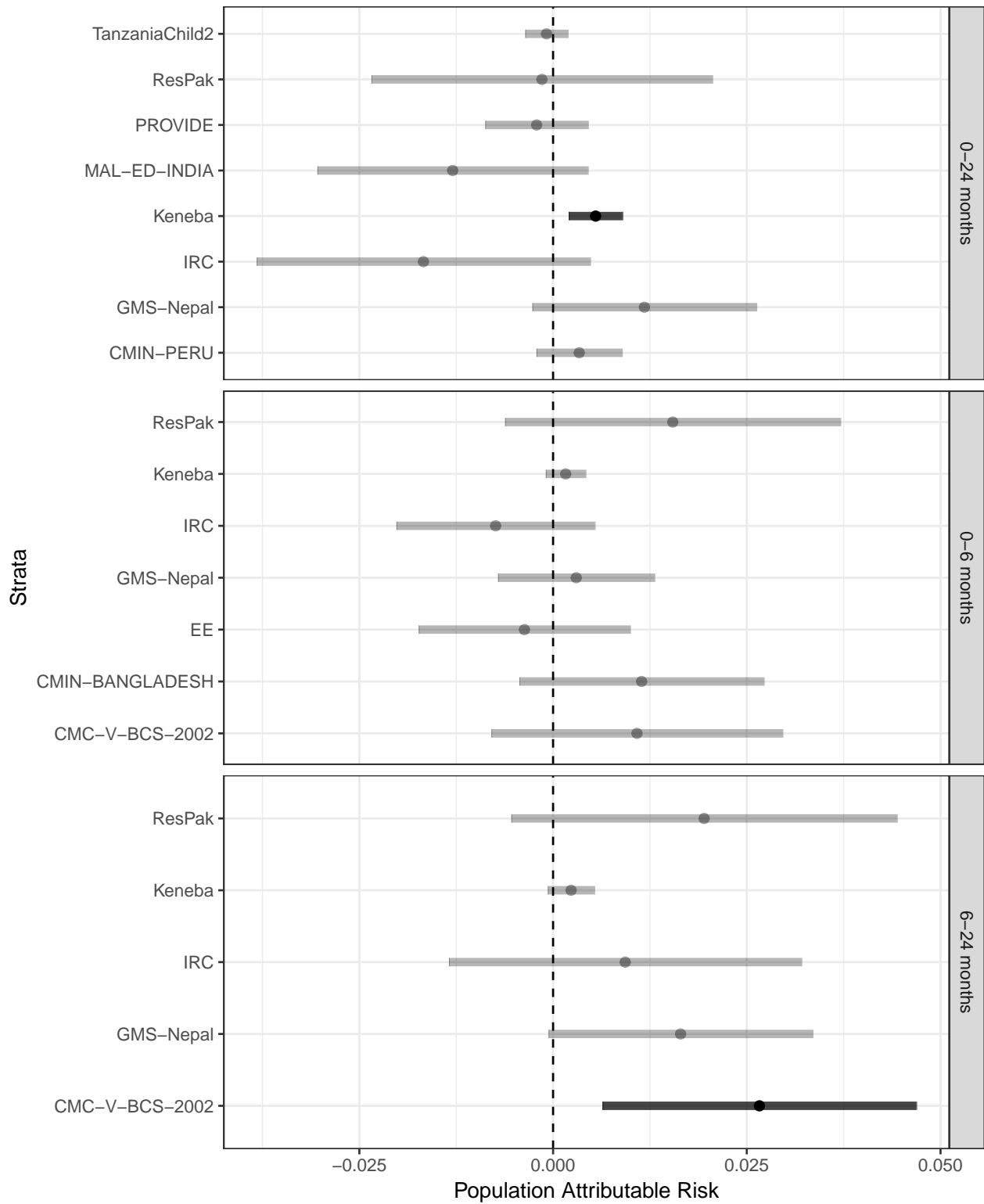


Percent diarrhea in first 6 months  
reference level:Q1



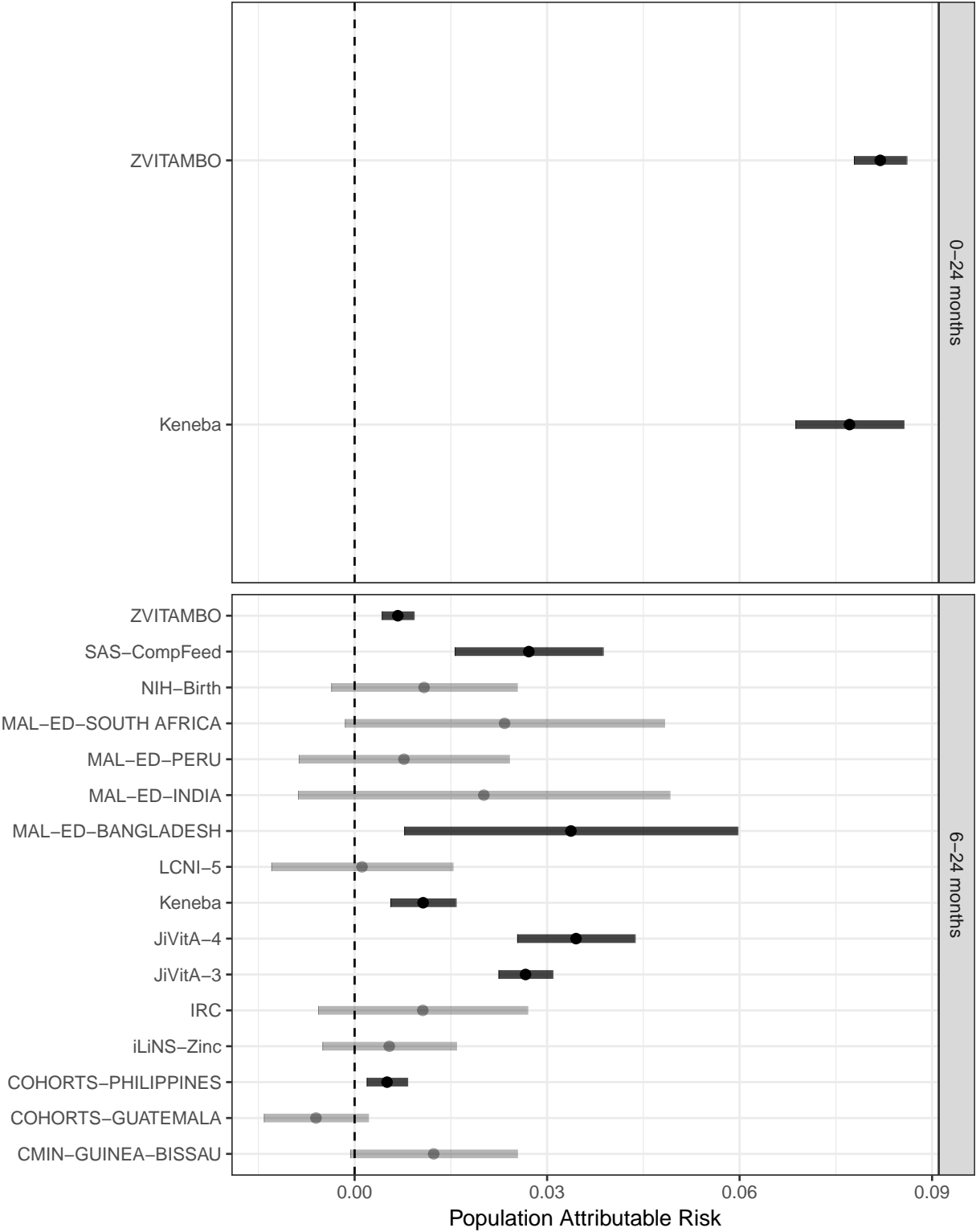


Persistent wasting in first 6 months  
reference level:0

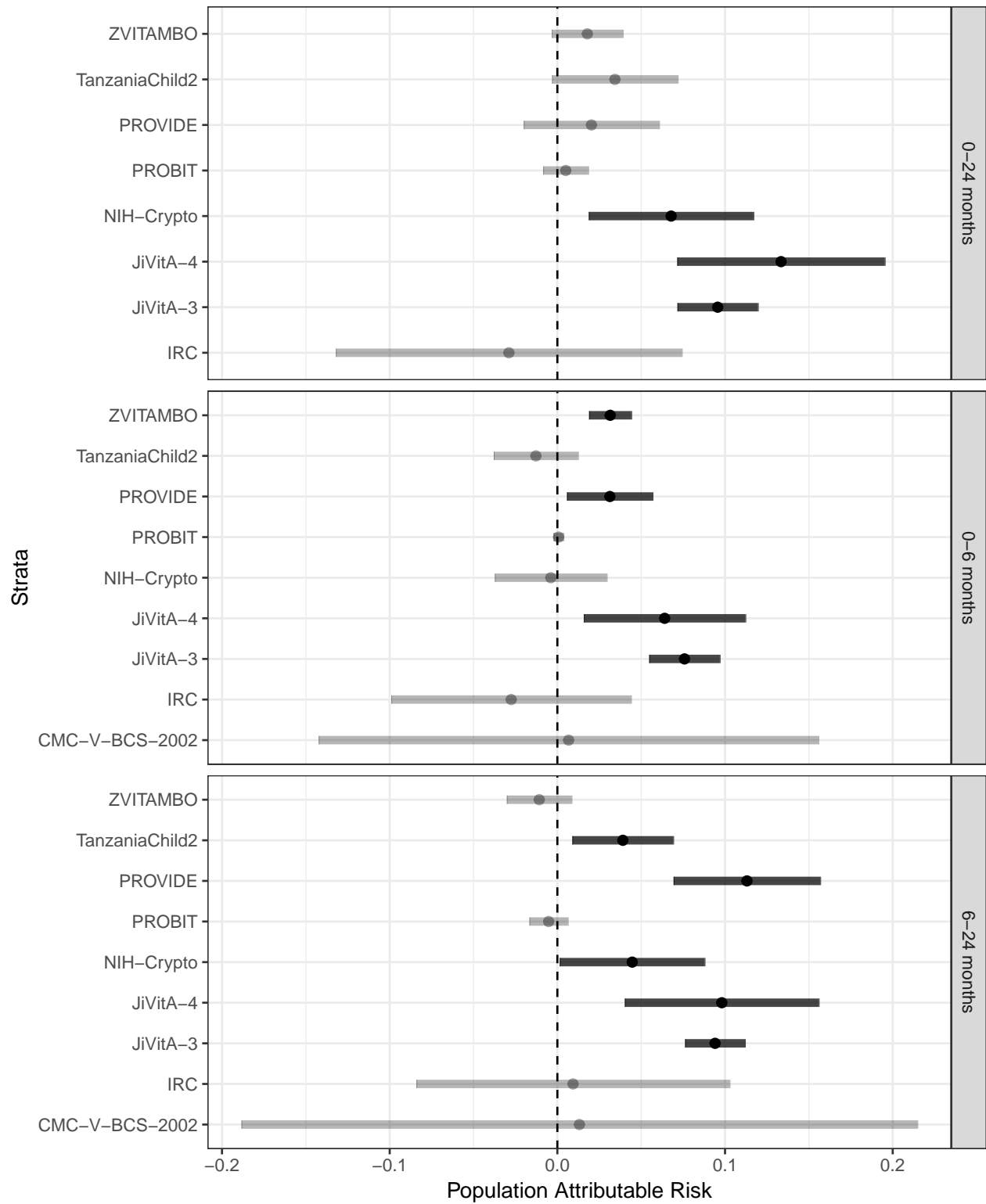


Stunted at enrollment  
reference level:0

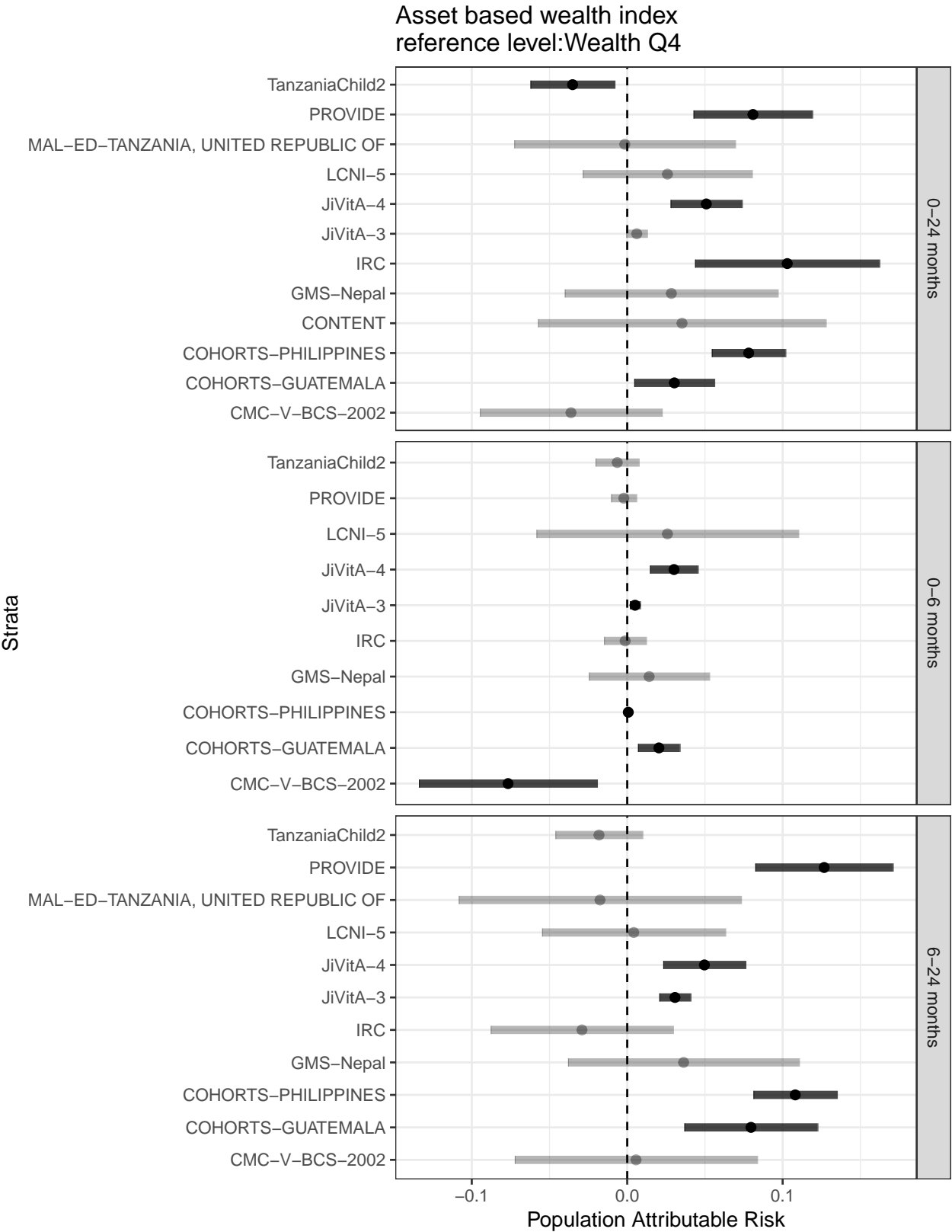
Strata



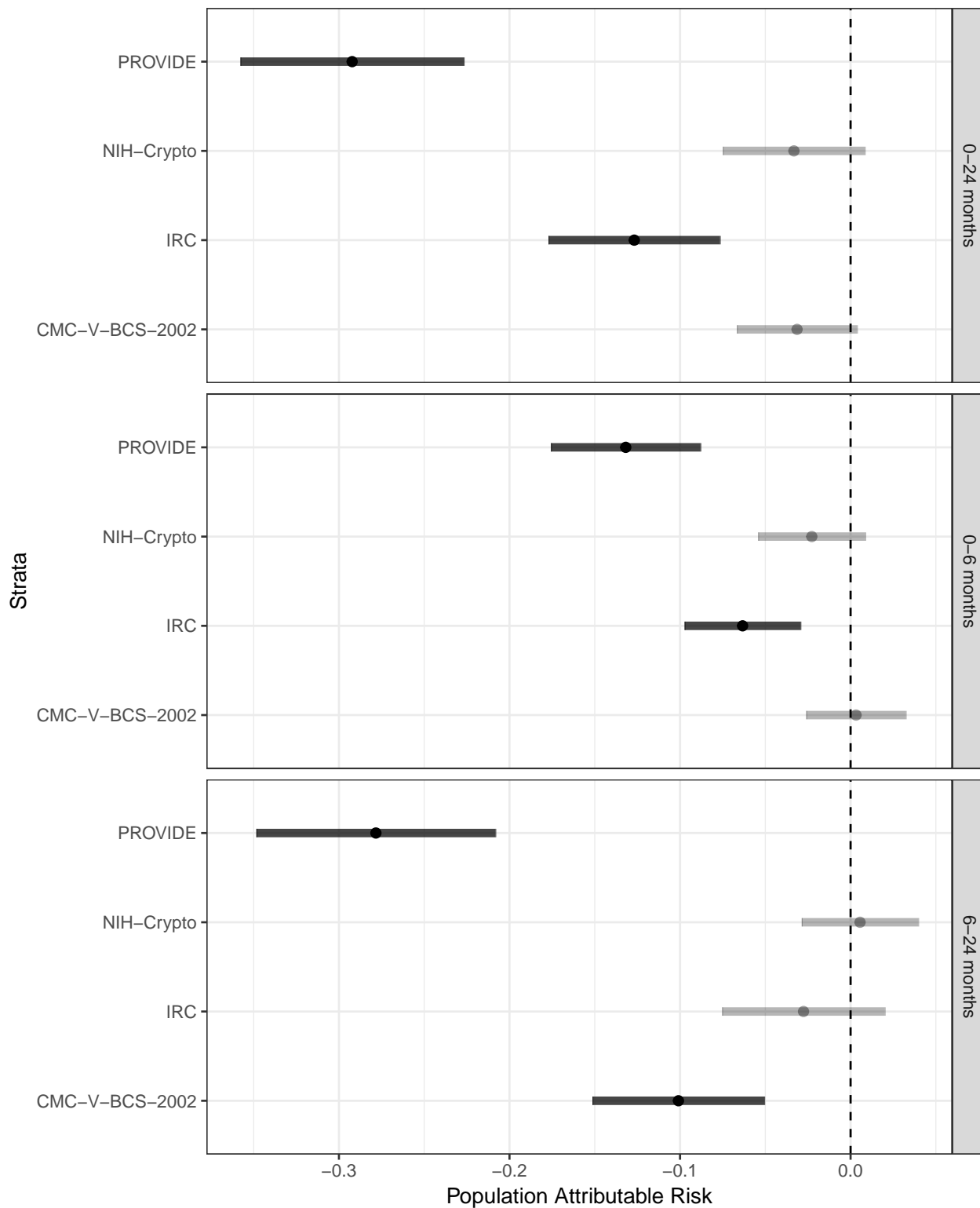
Vaginal delivery  
reference level:0



Household characteristics

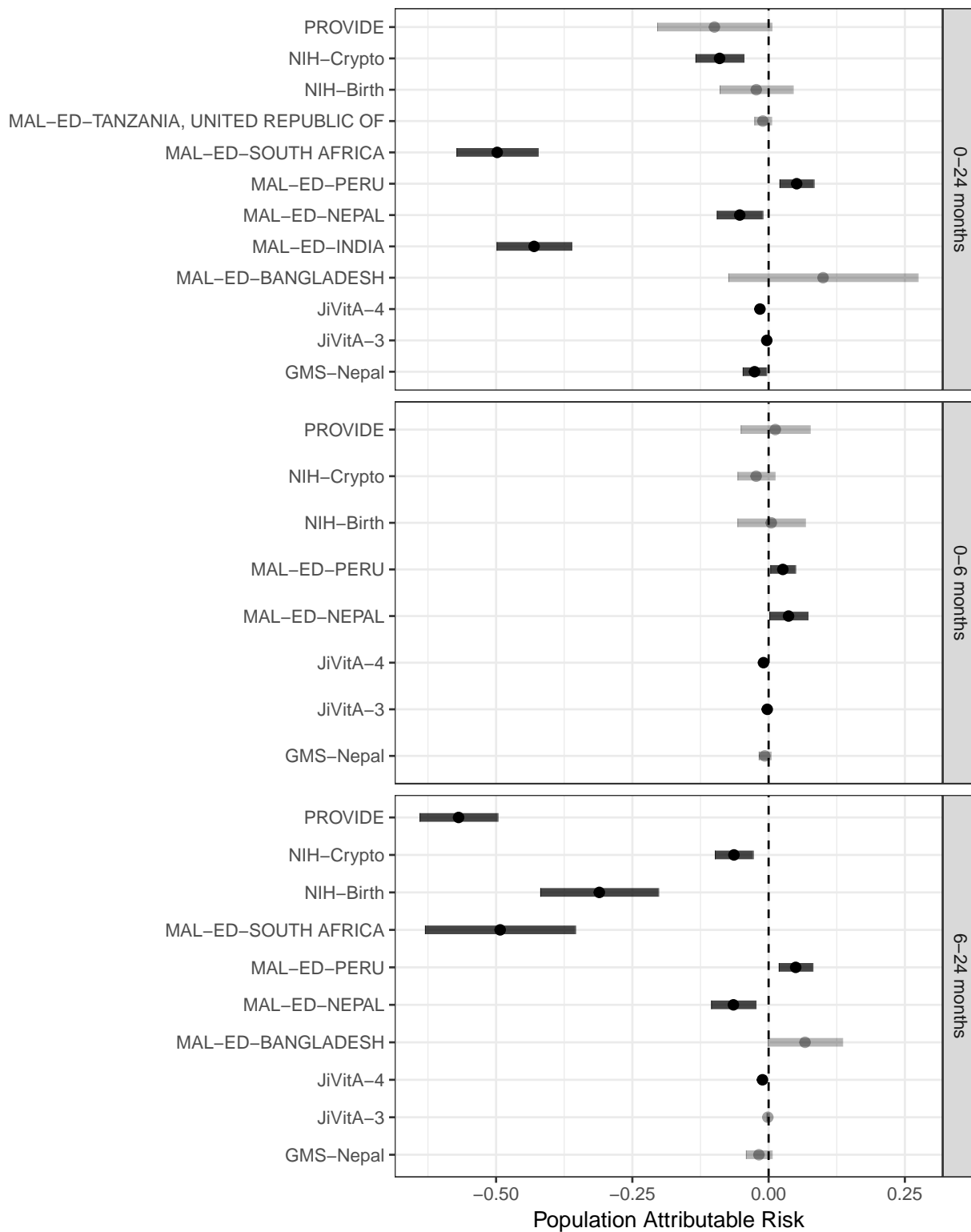


Clean cook  
reference level:0

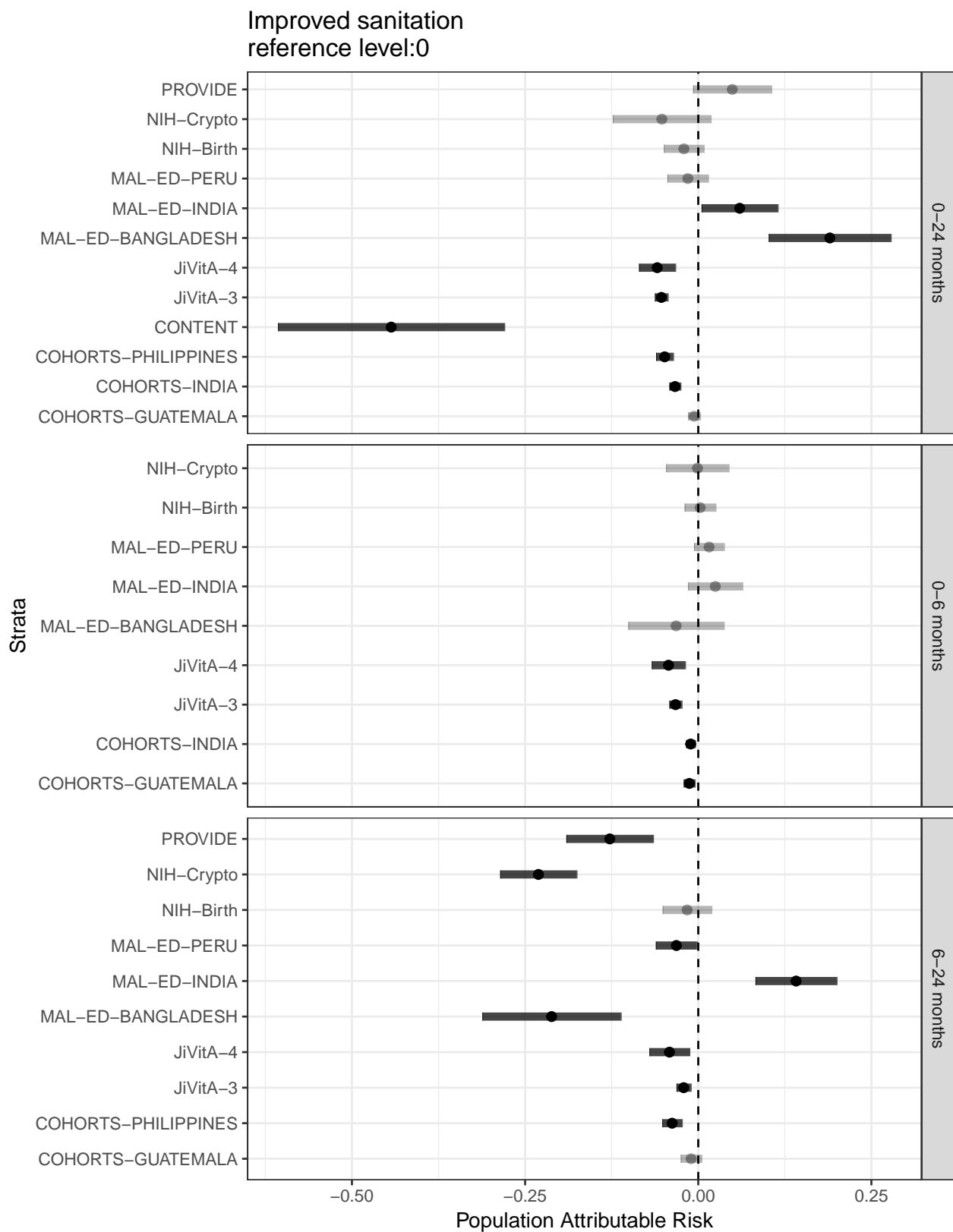


Strata

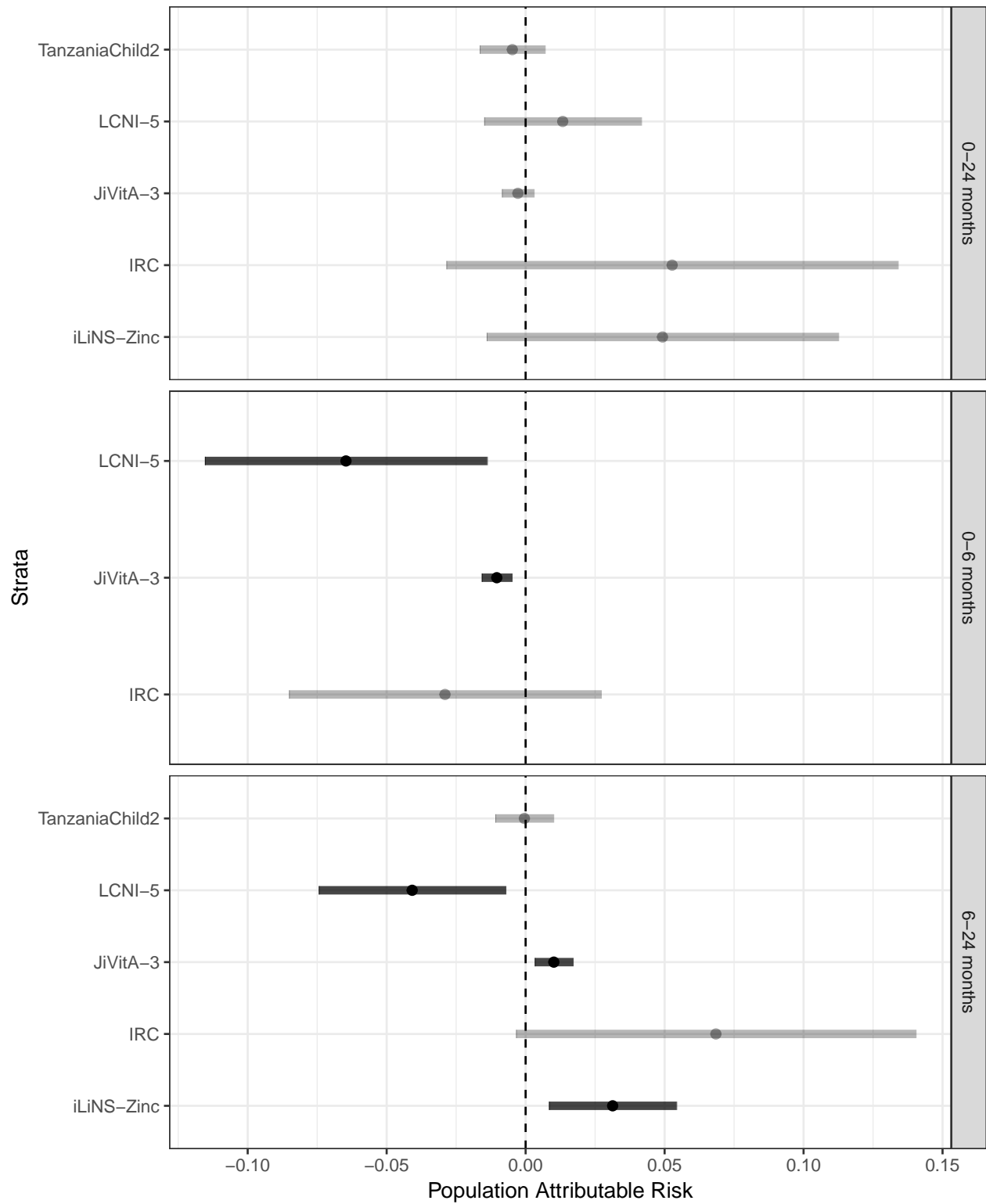
Improved floor  
reference level:0



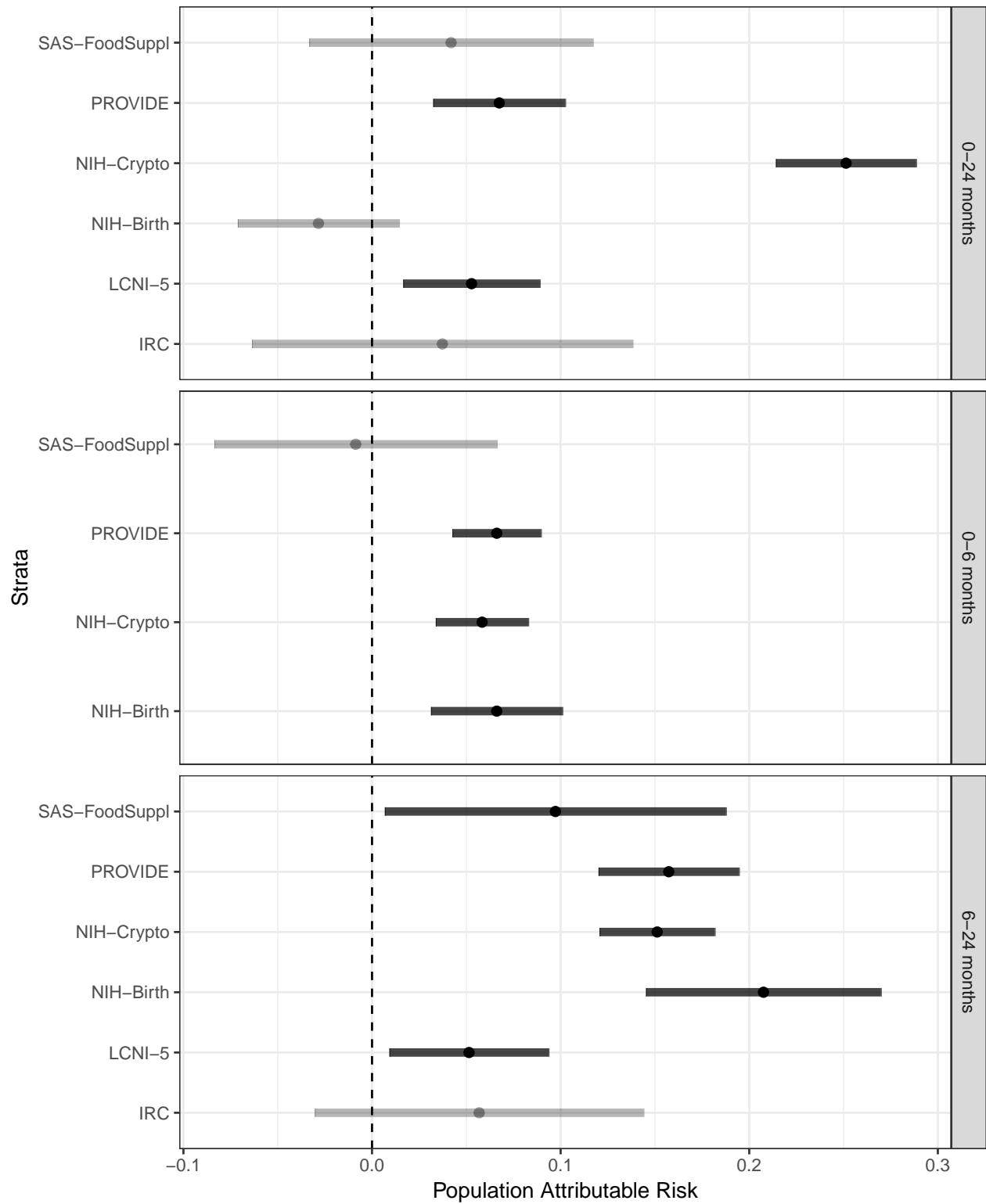


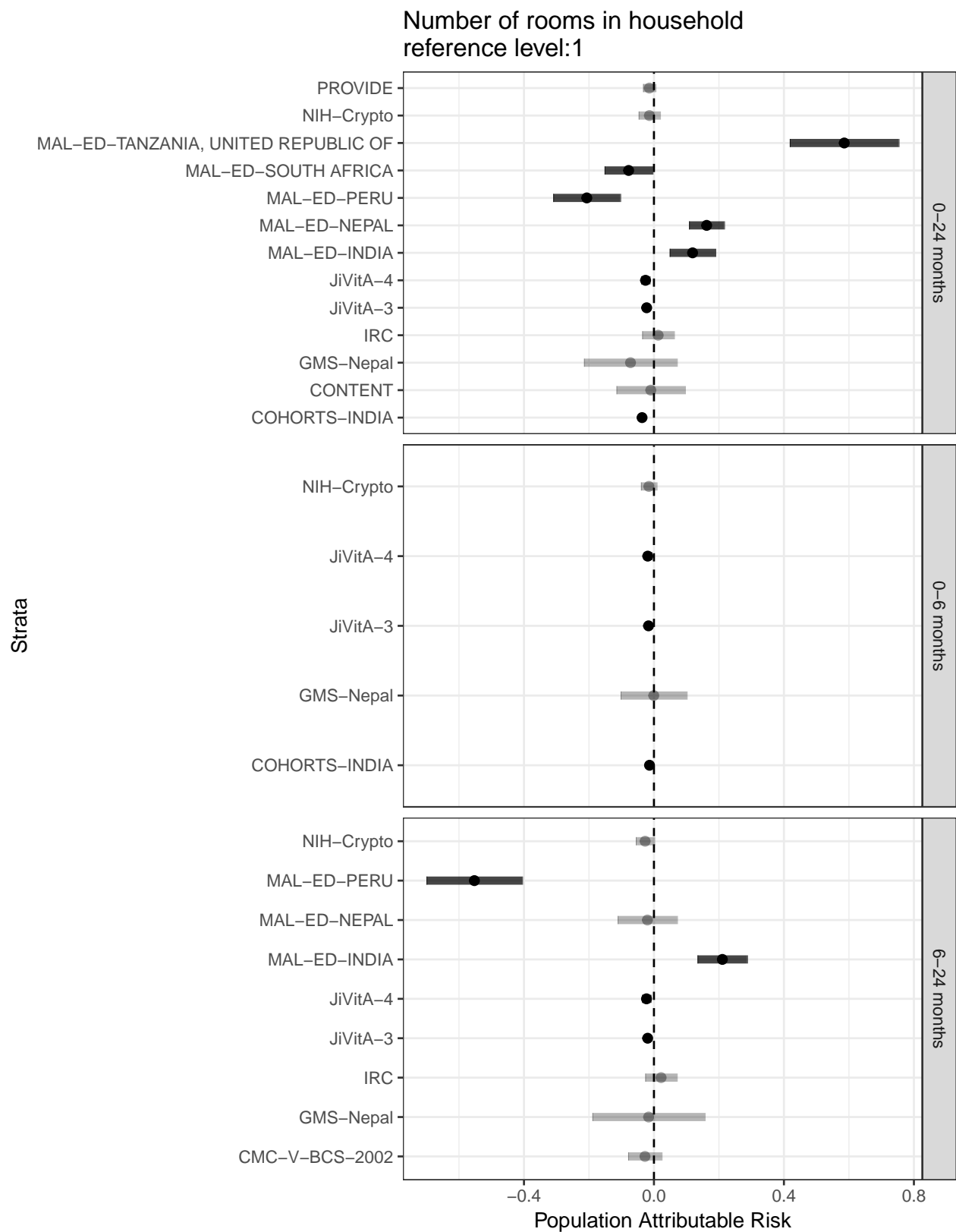


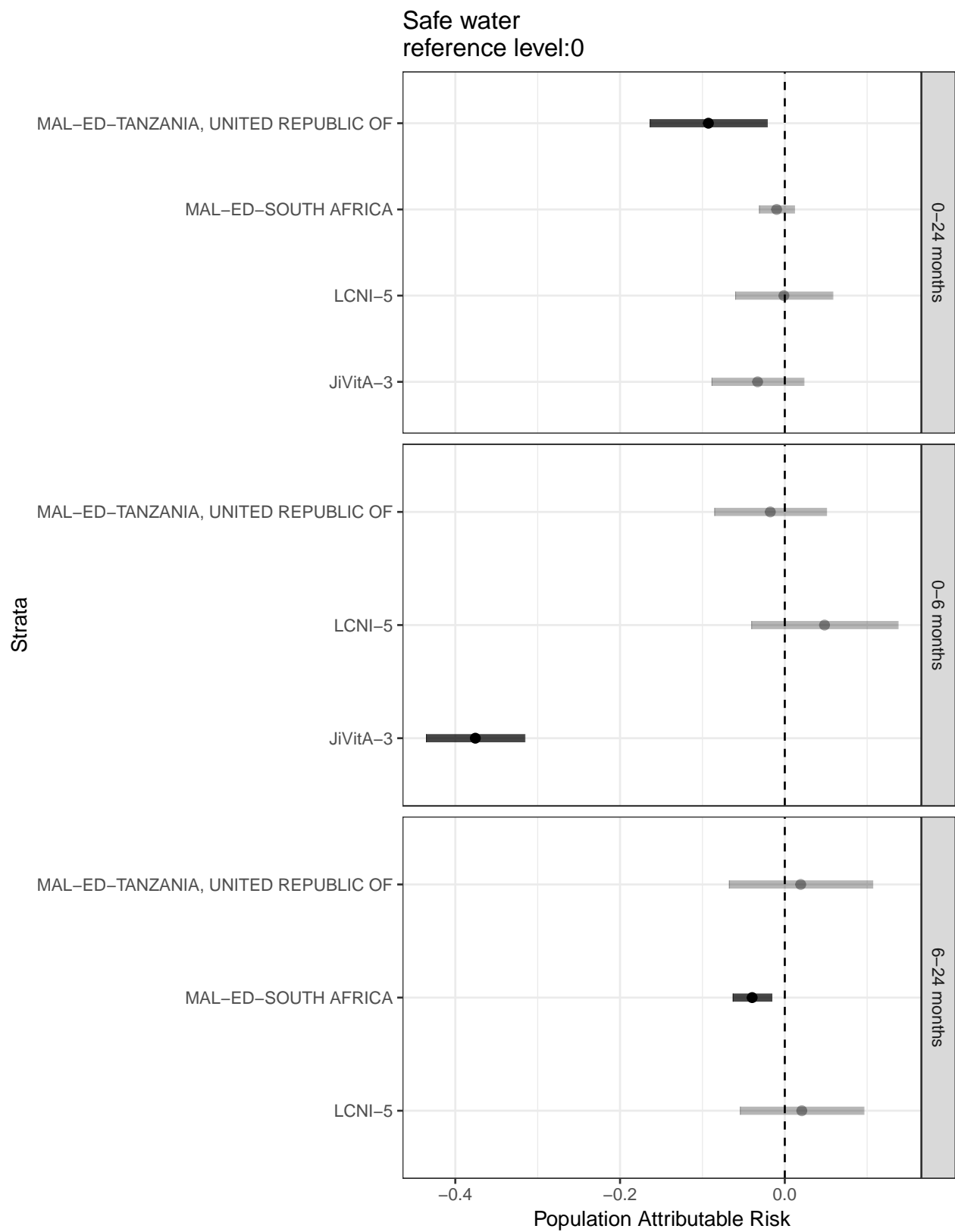
Number of children in the household under 5 years  
reference level:1

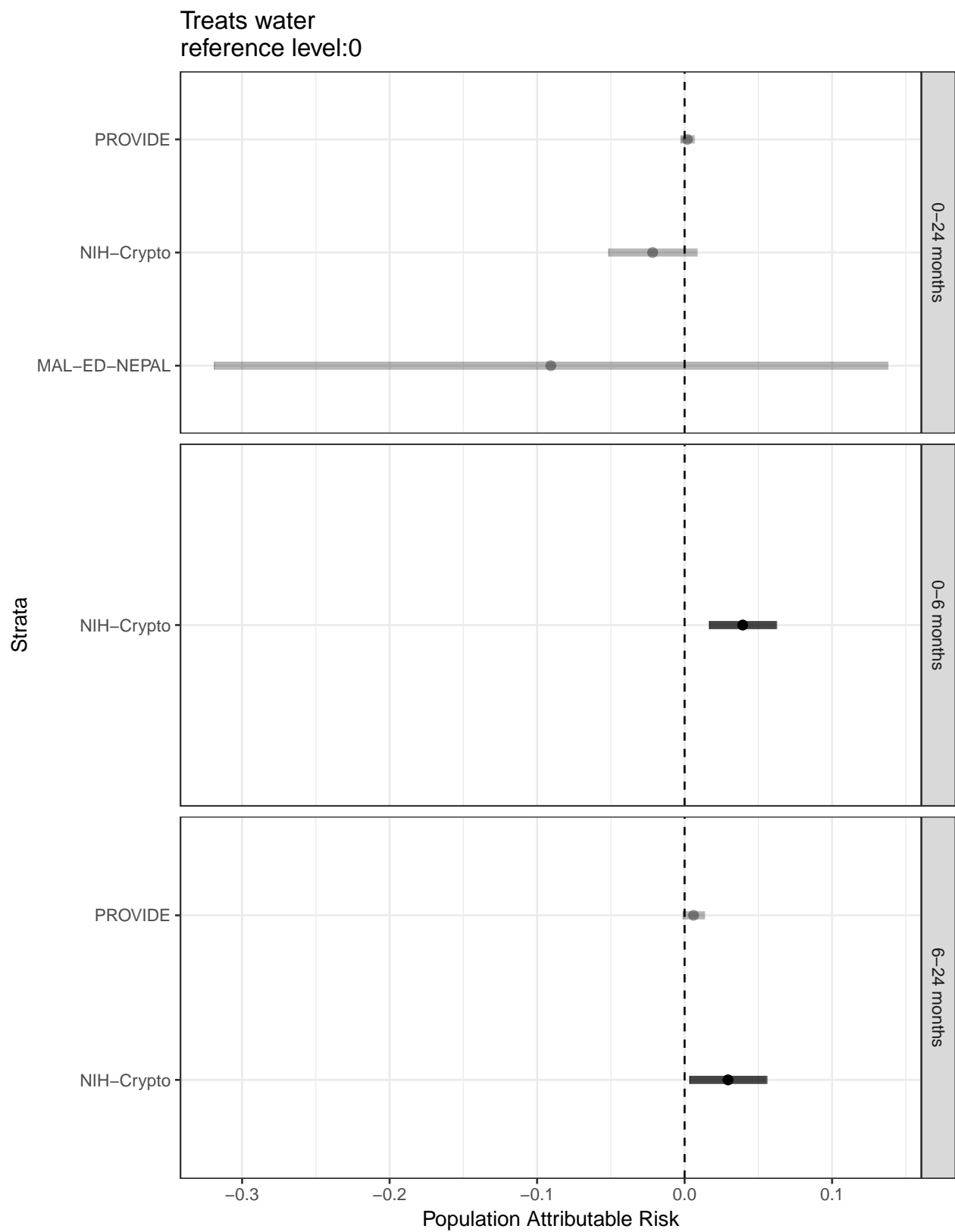


Number of people in the household  
reference level:3 or less

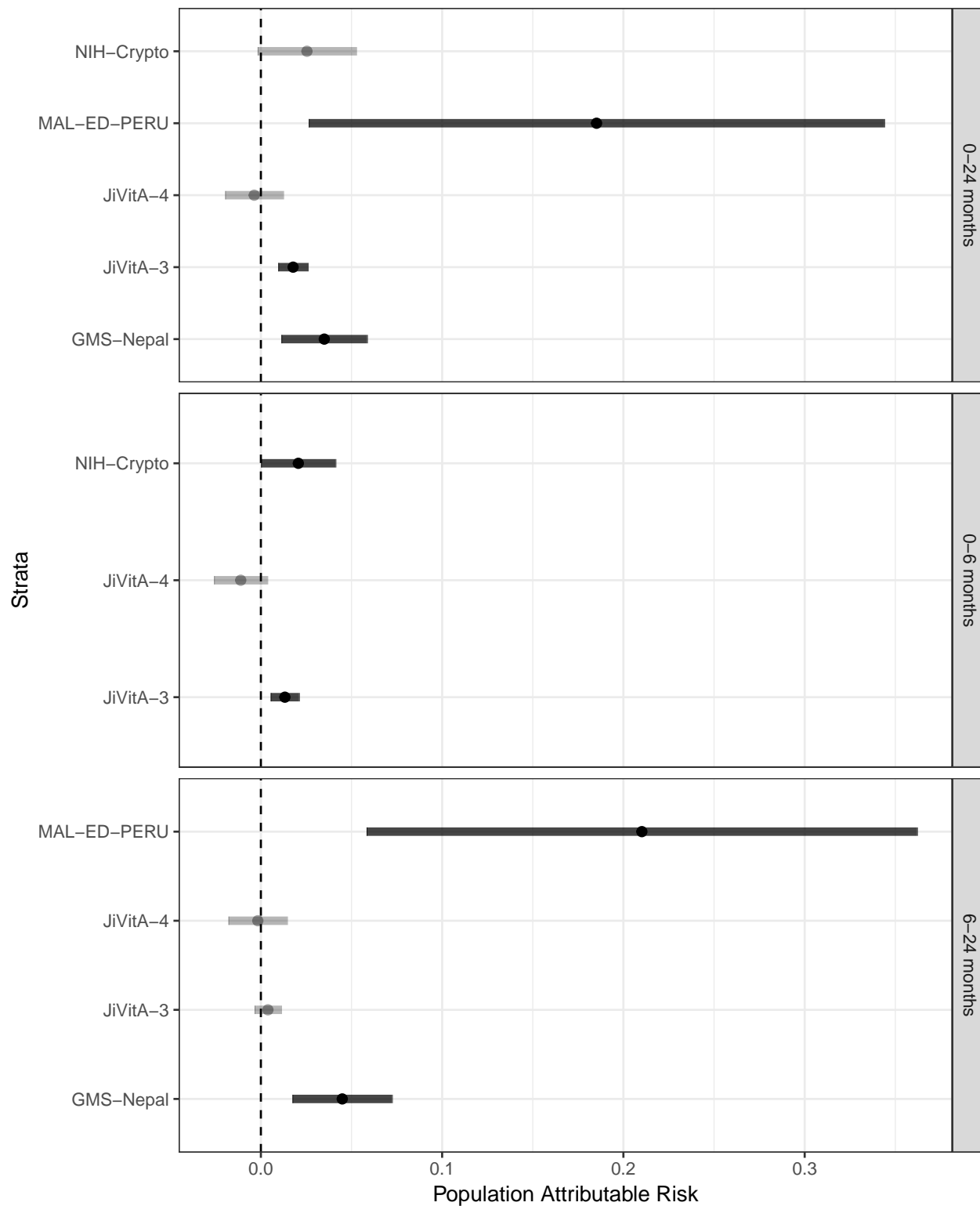






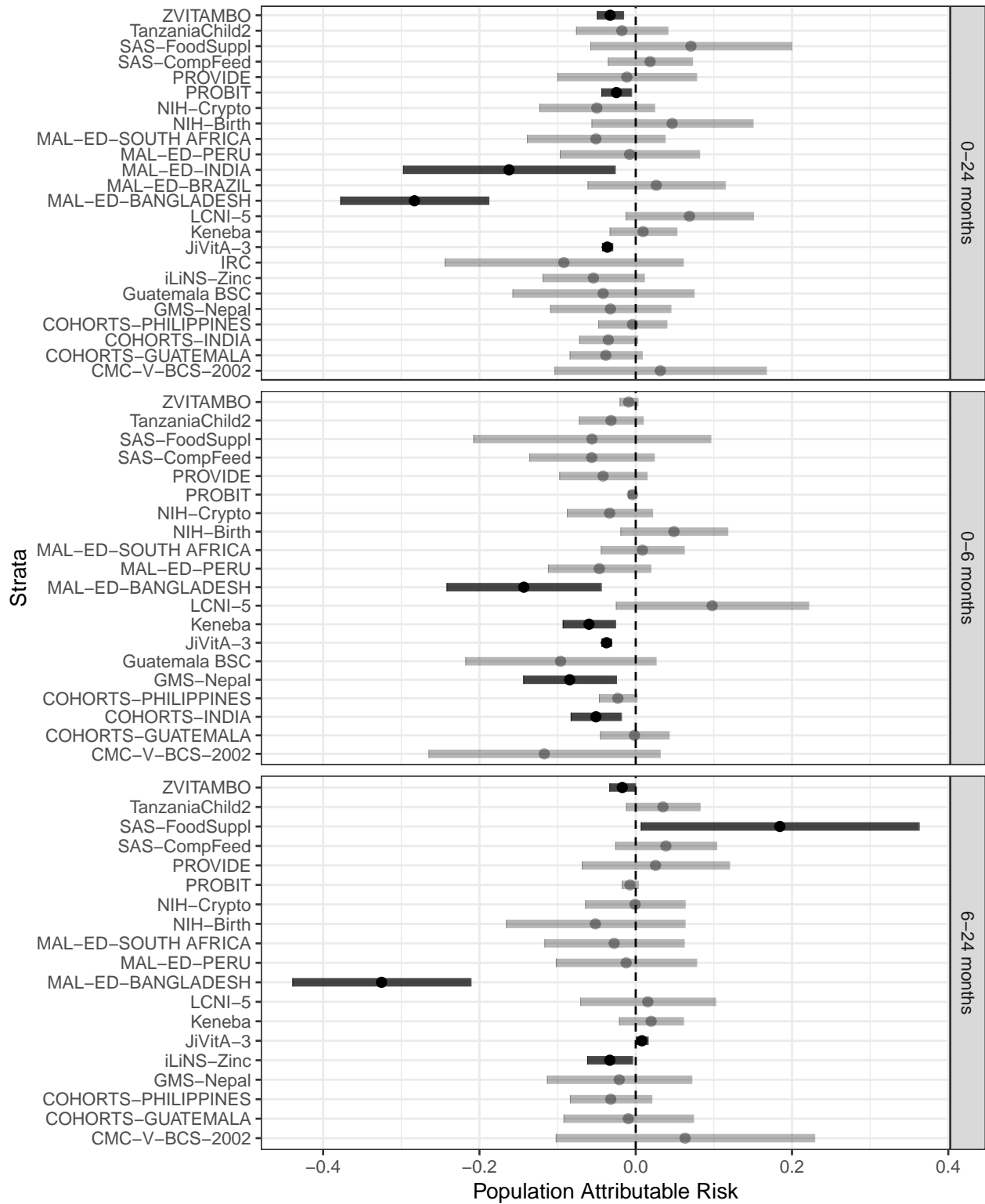


USAID Household Food Insecurity Access Scale (HFIAS) category  
reference level: Food Secure



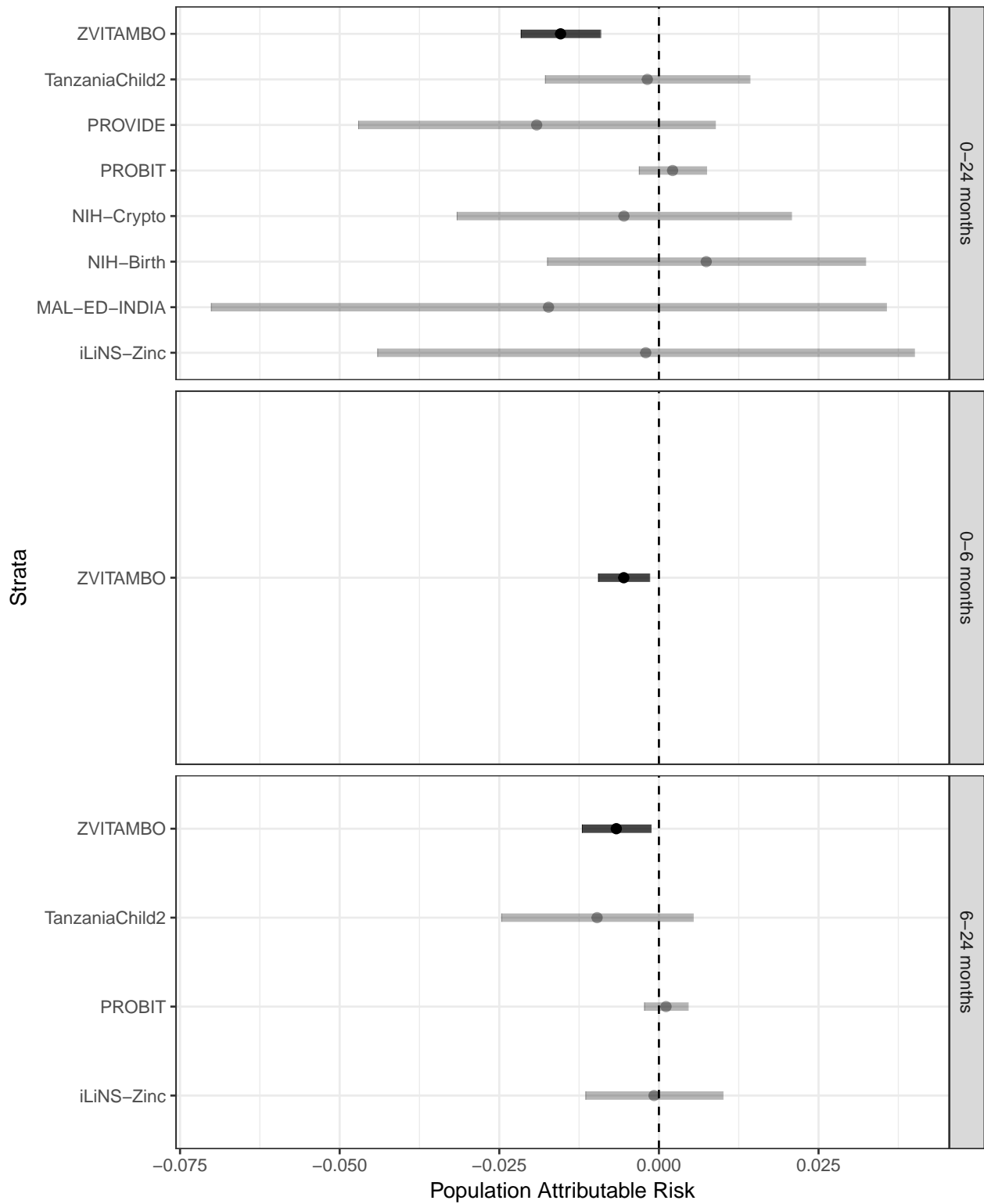
## Maternal characteristics

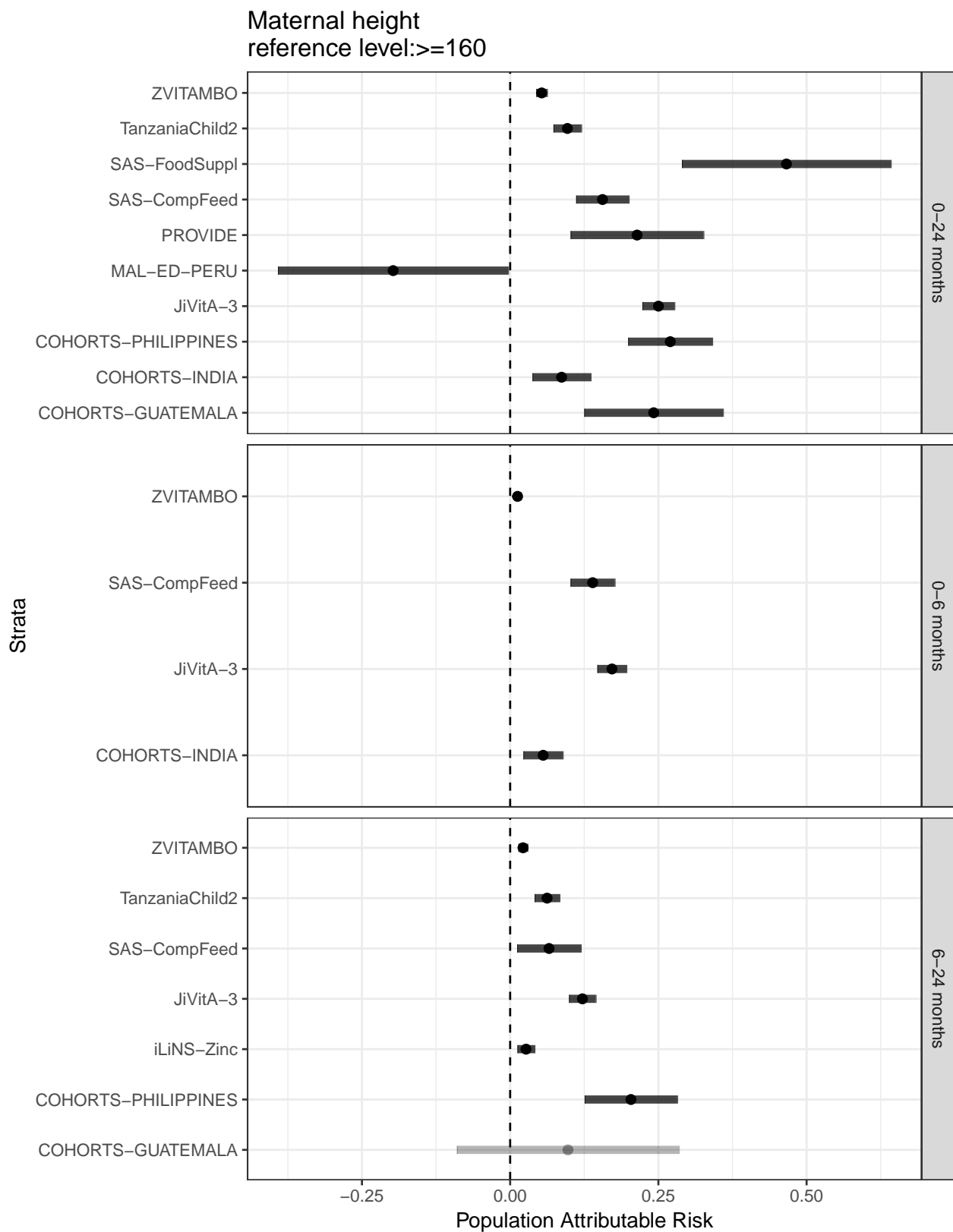
Maternal age  
reference level: <20

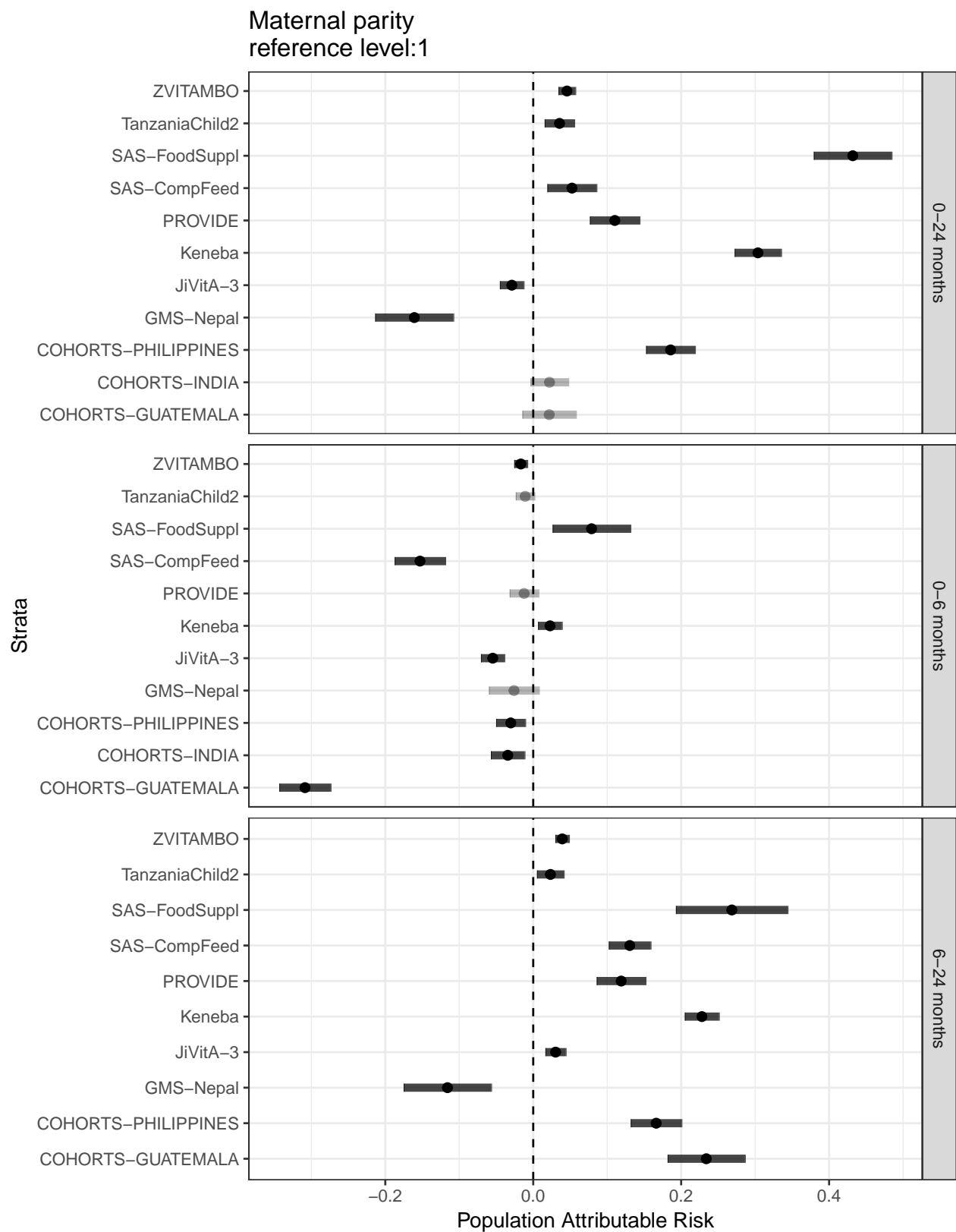


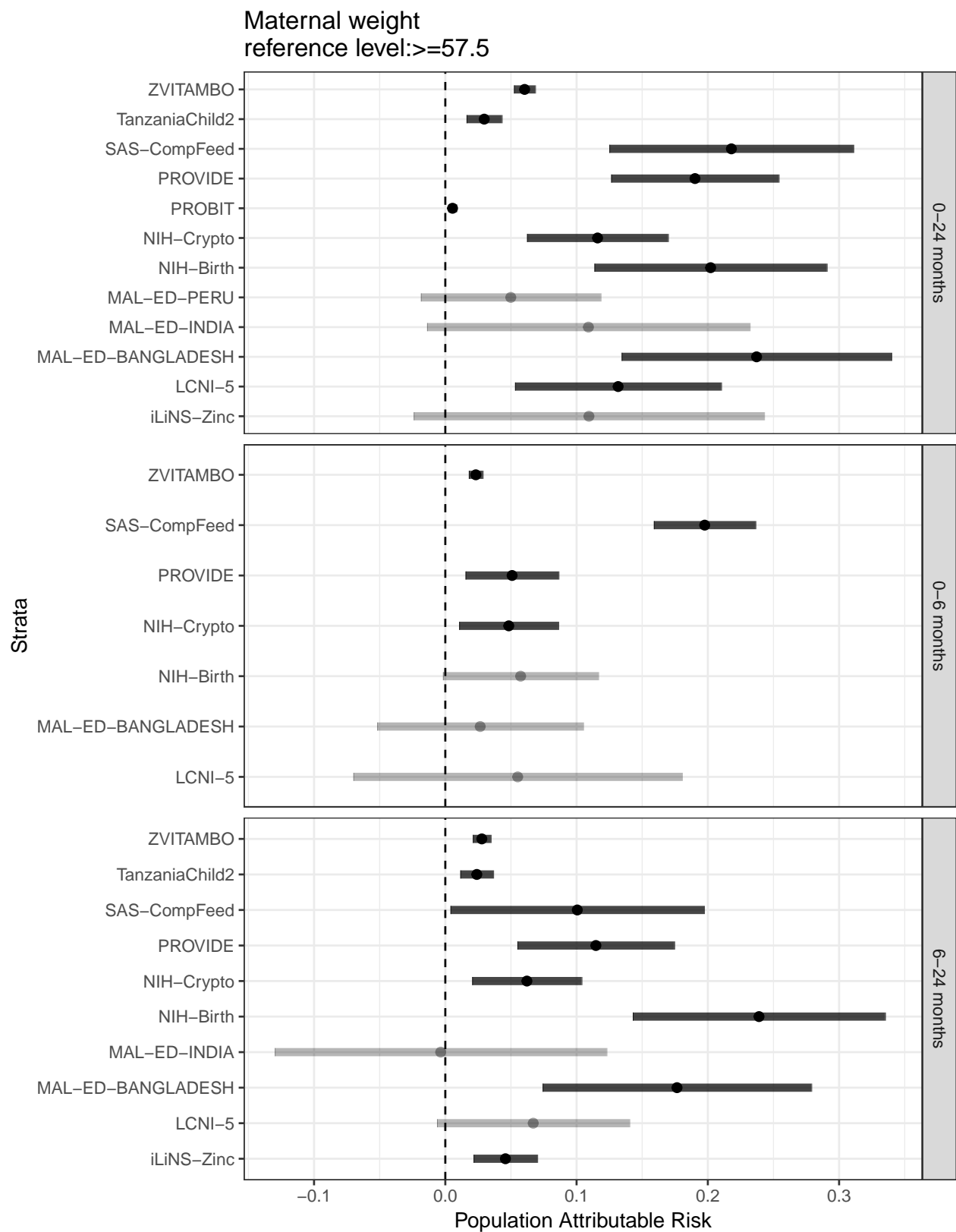


Maternal BMI  
reference level:[18.5–25)

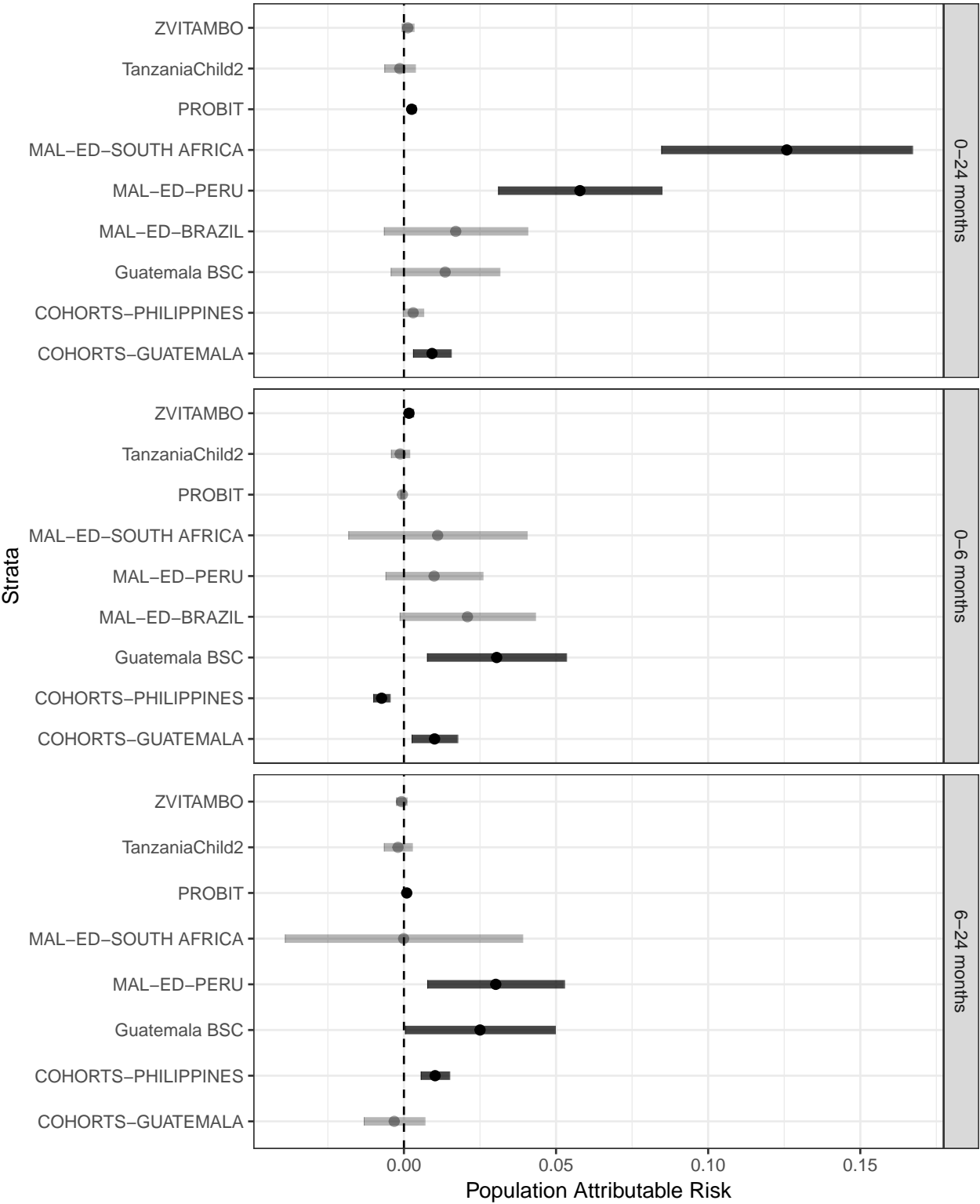




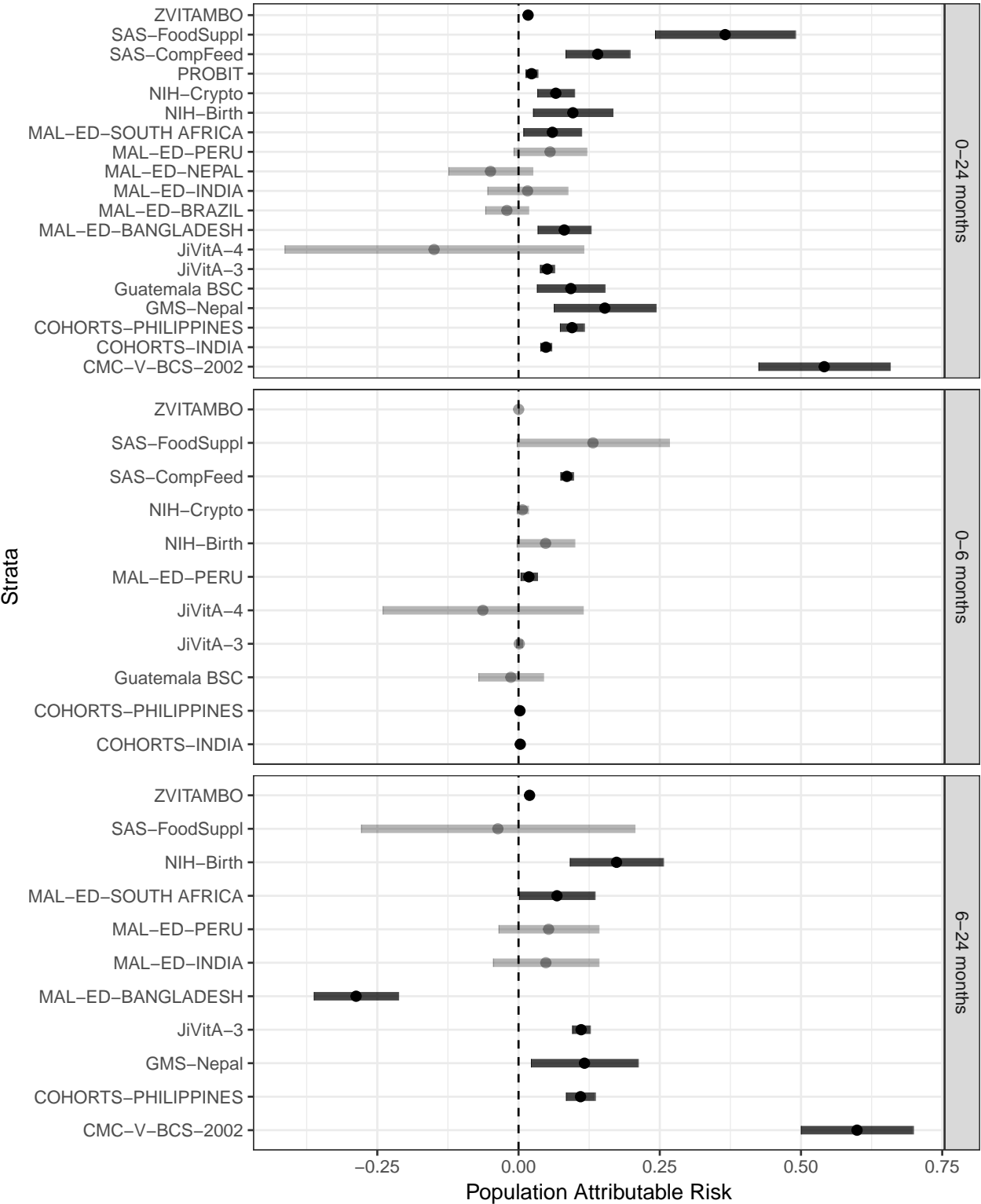




Mother is unmarried  
reference level:0

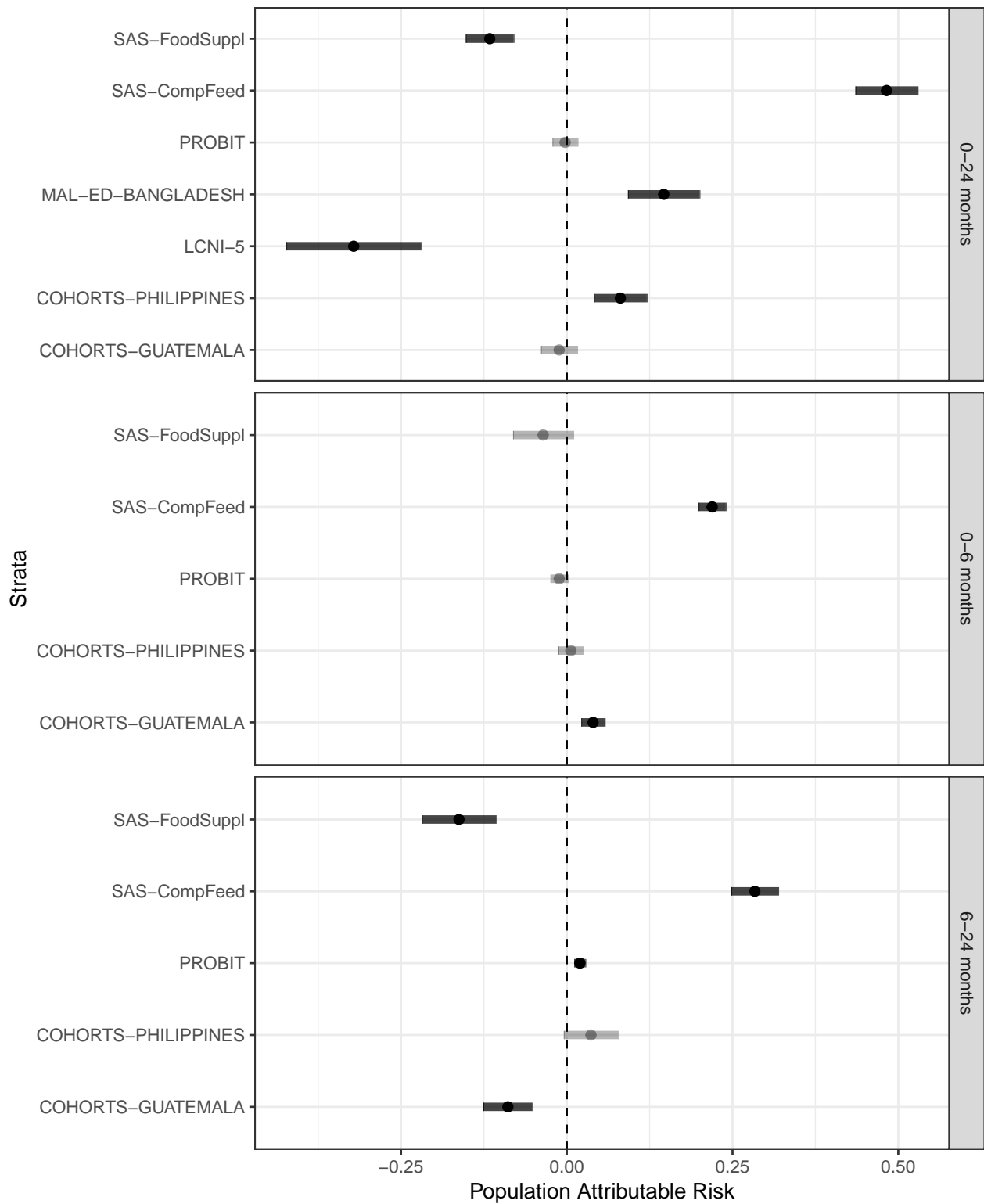


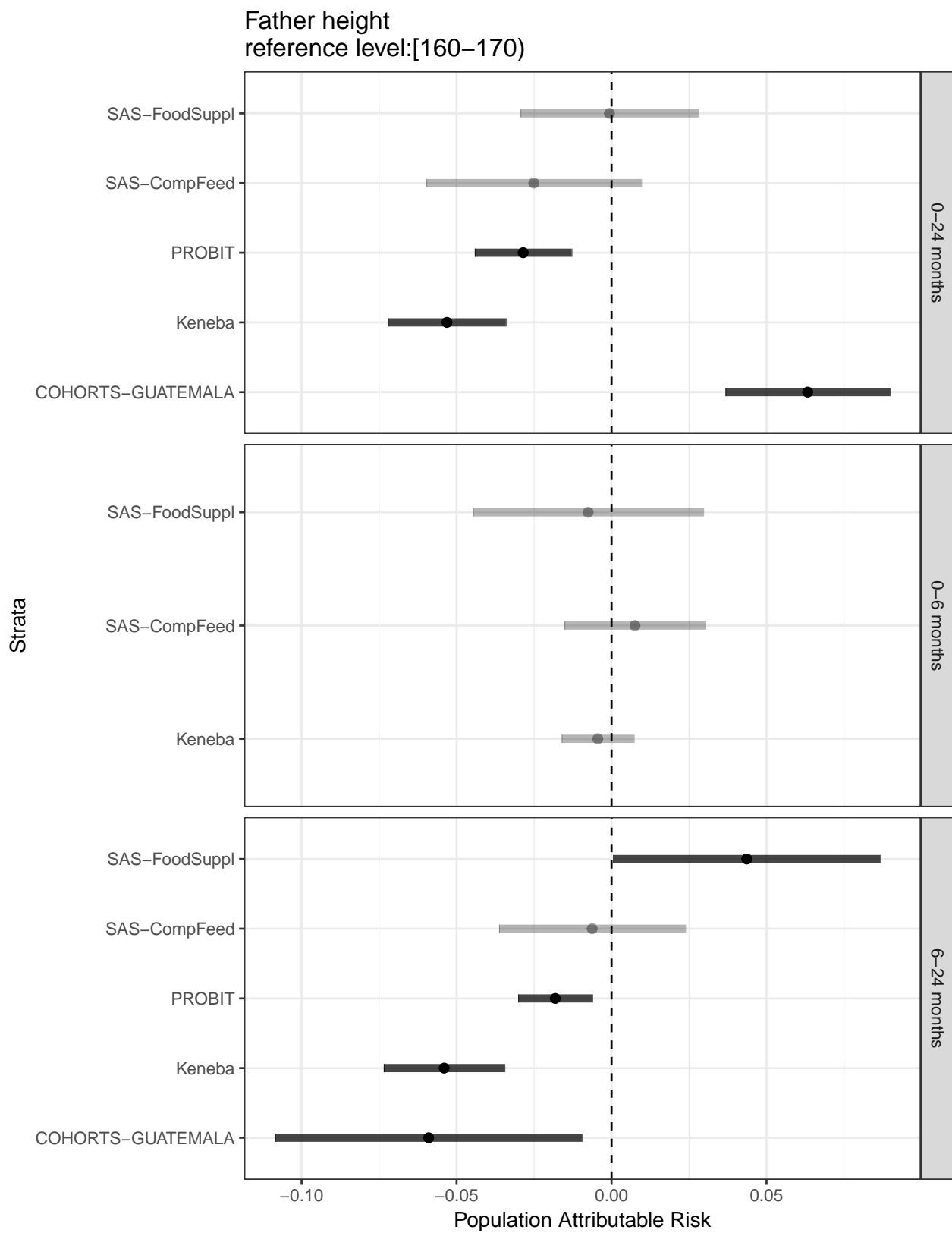
Mother's education  
reference level:Q4



## Paternal characteristics

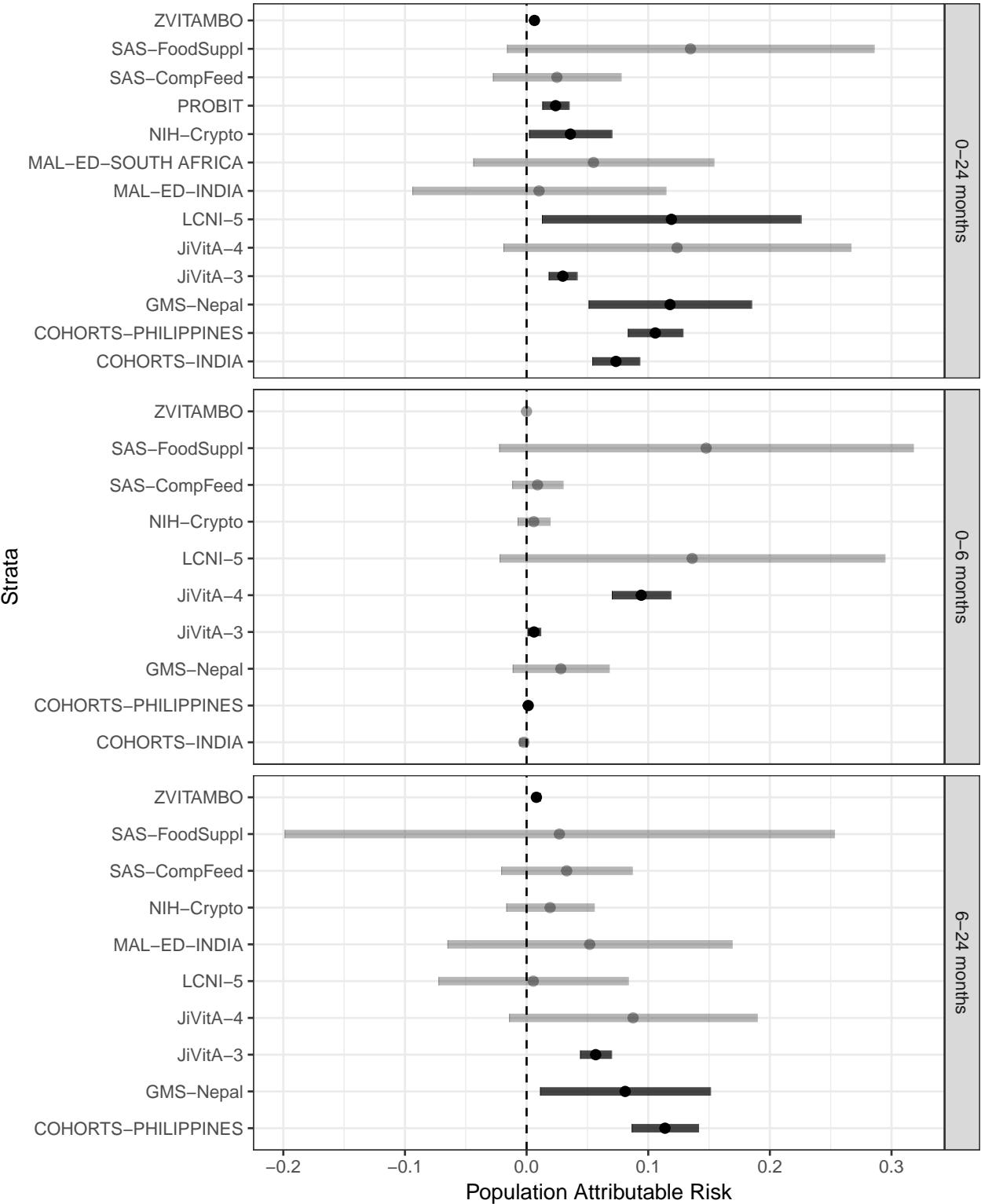
Father age  
reference level:  $\geq 35$





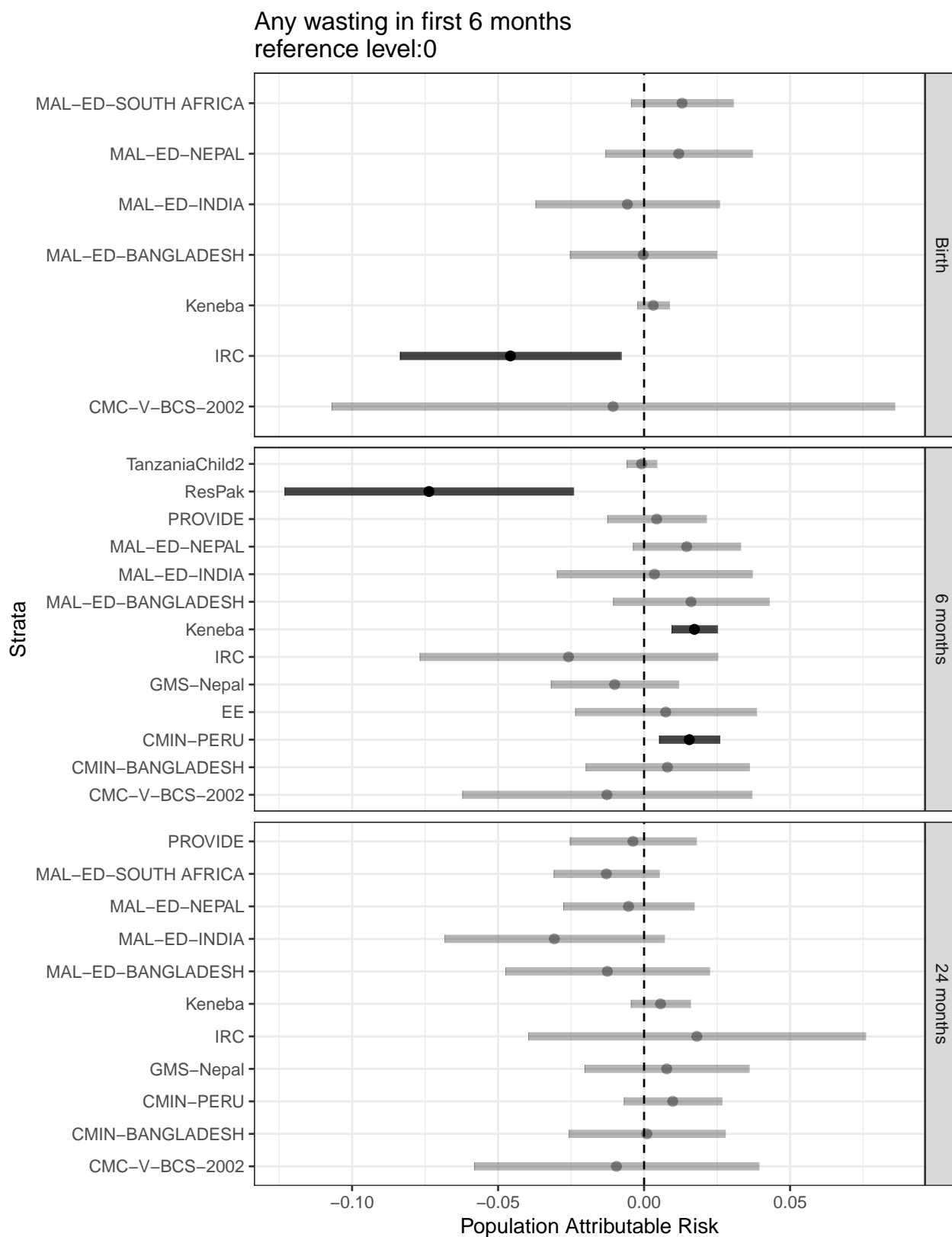


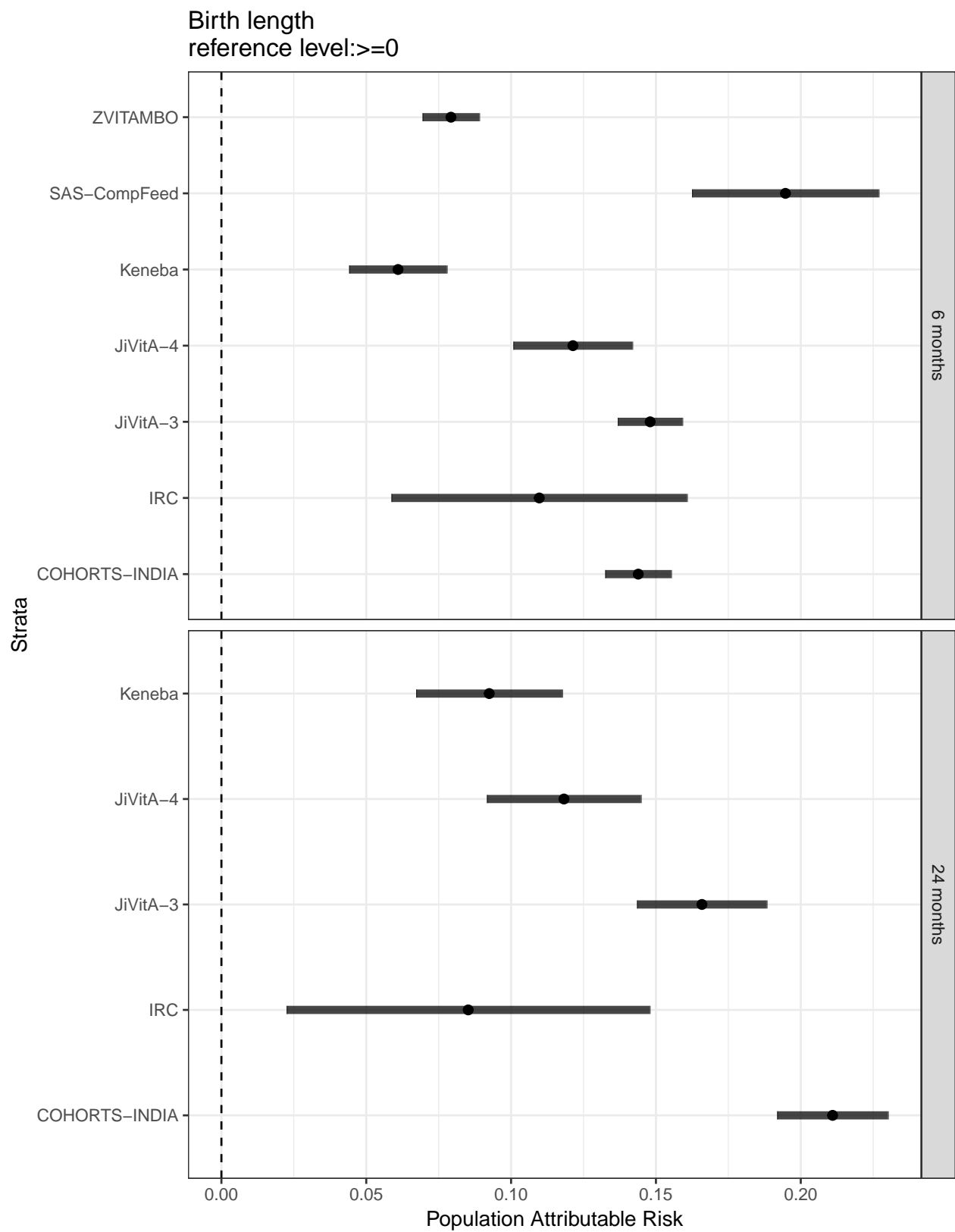
Father's education  
reference level:Q4

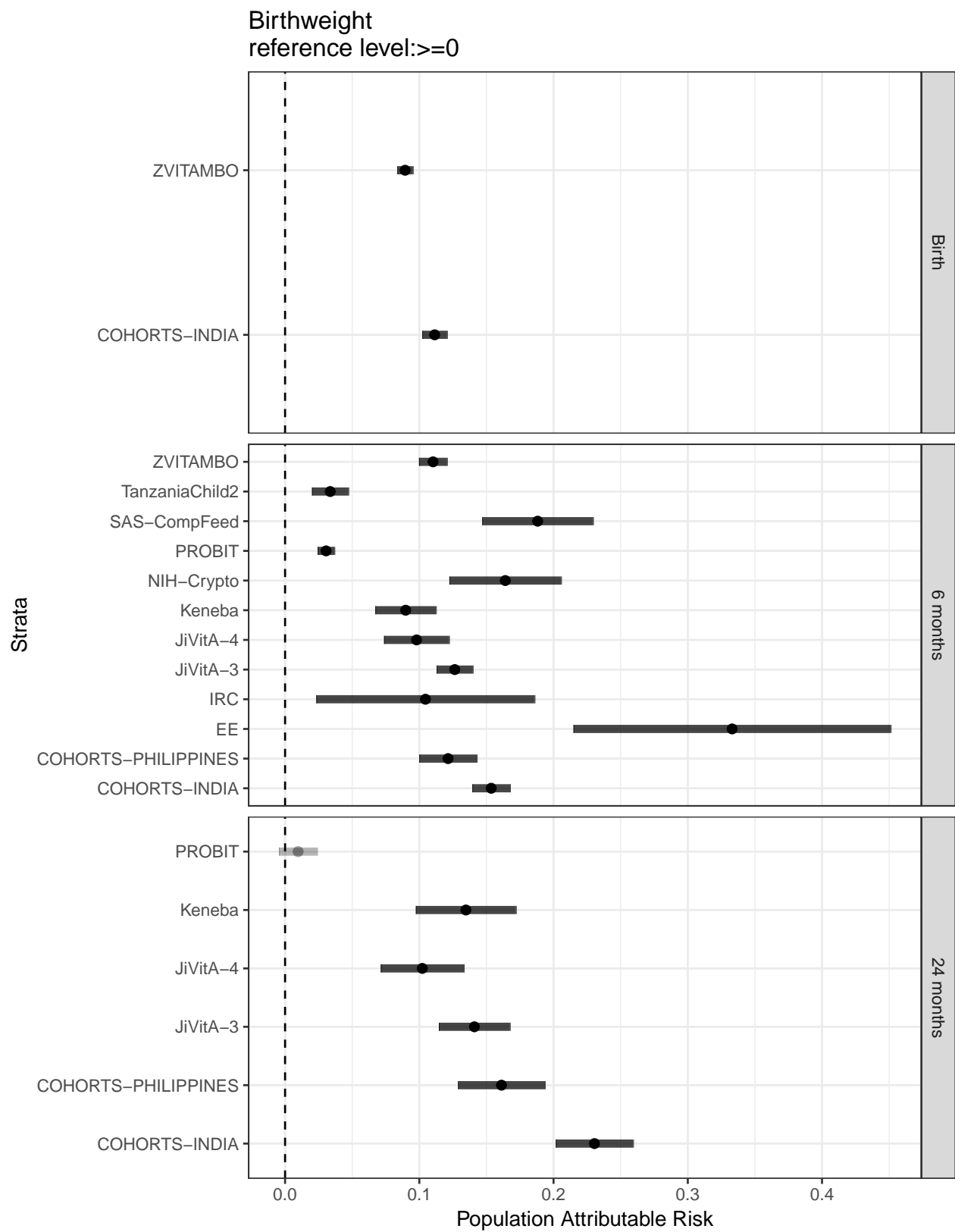


## Point prevalence of stunting

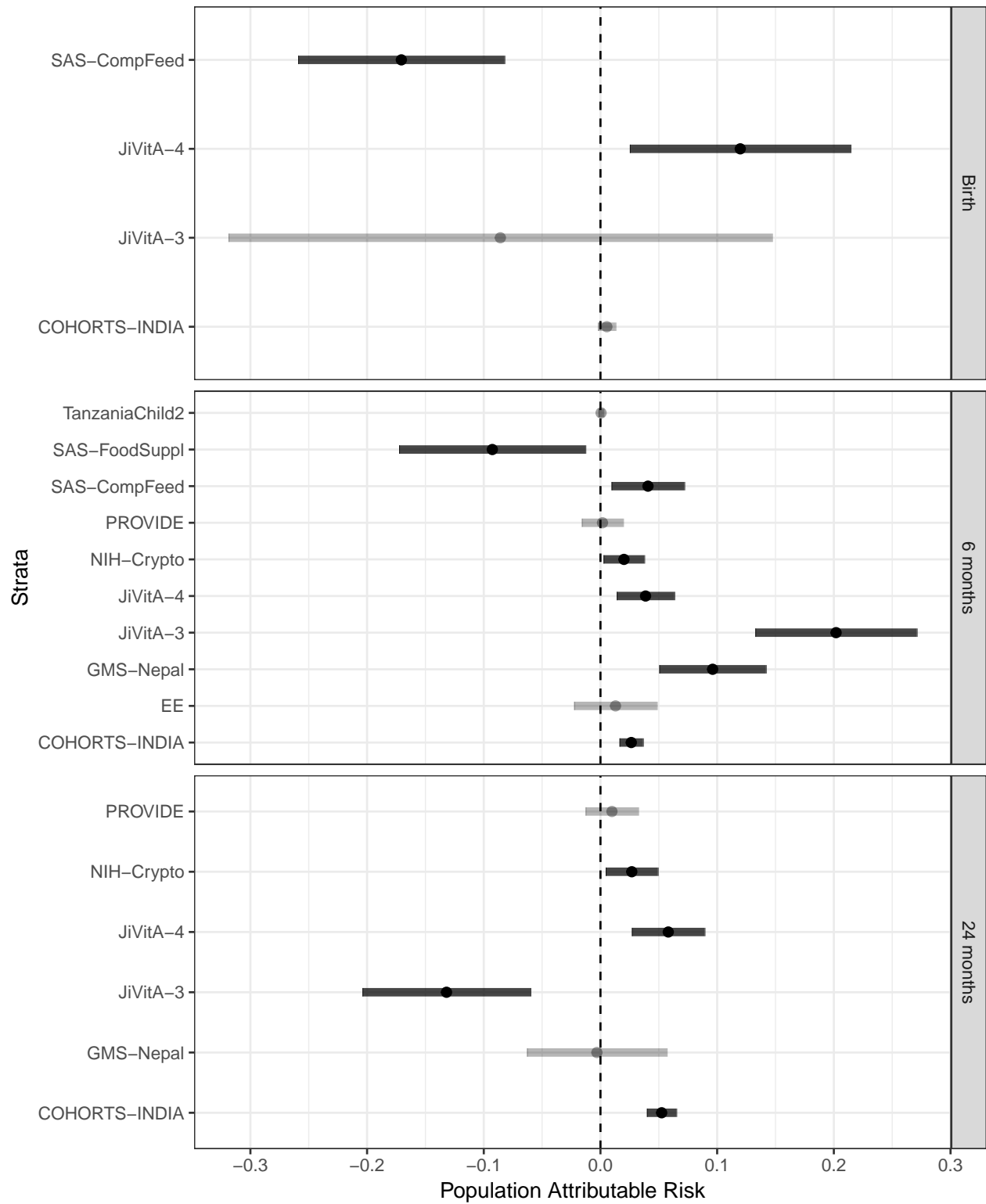
### Child characteristics

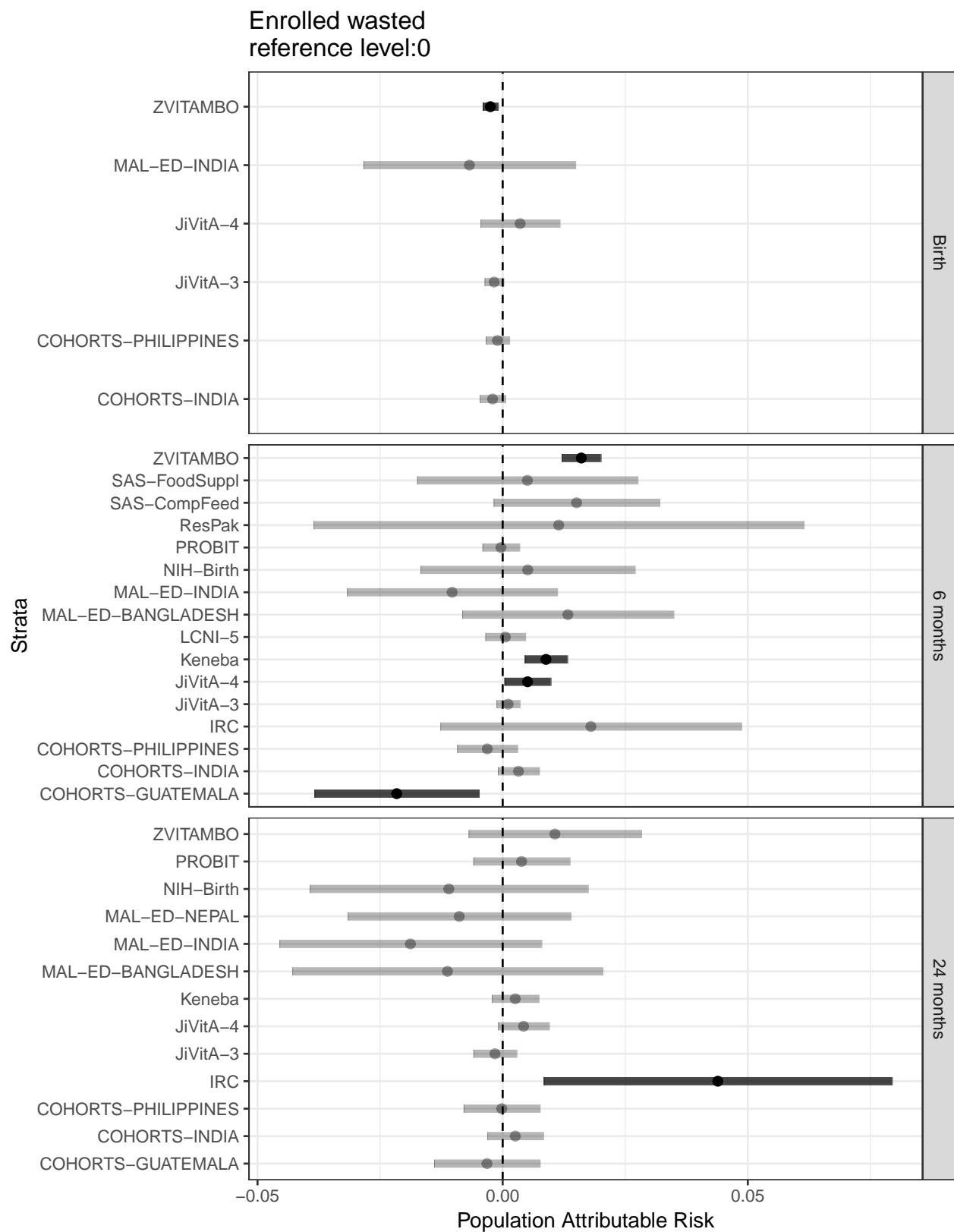




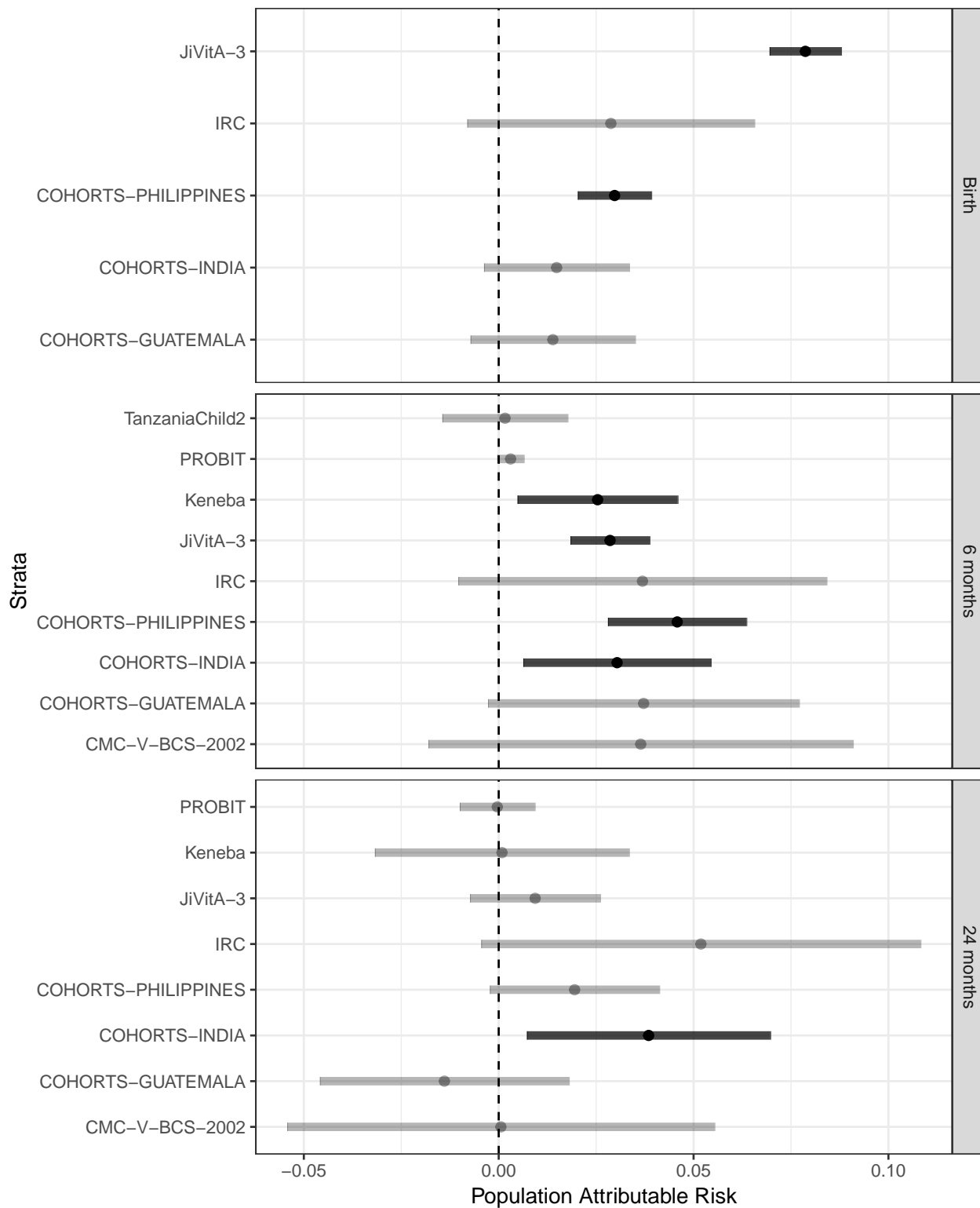


Child delivered at home  
reference level:0

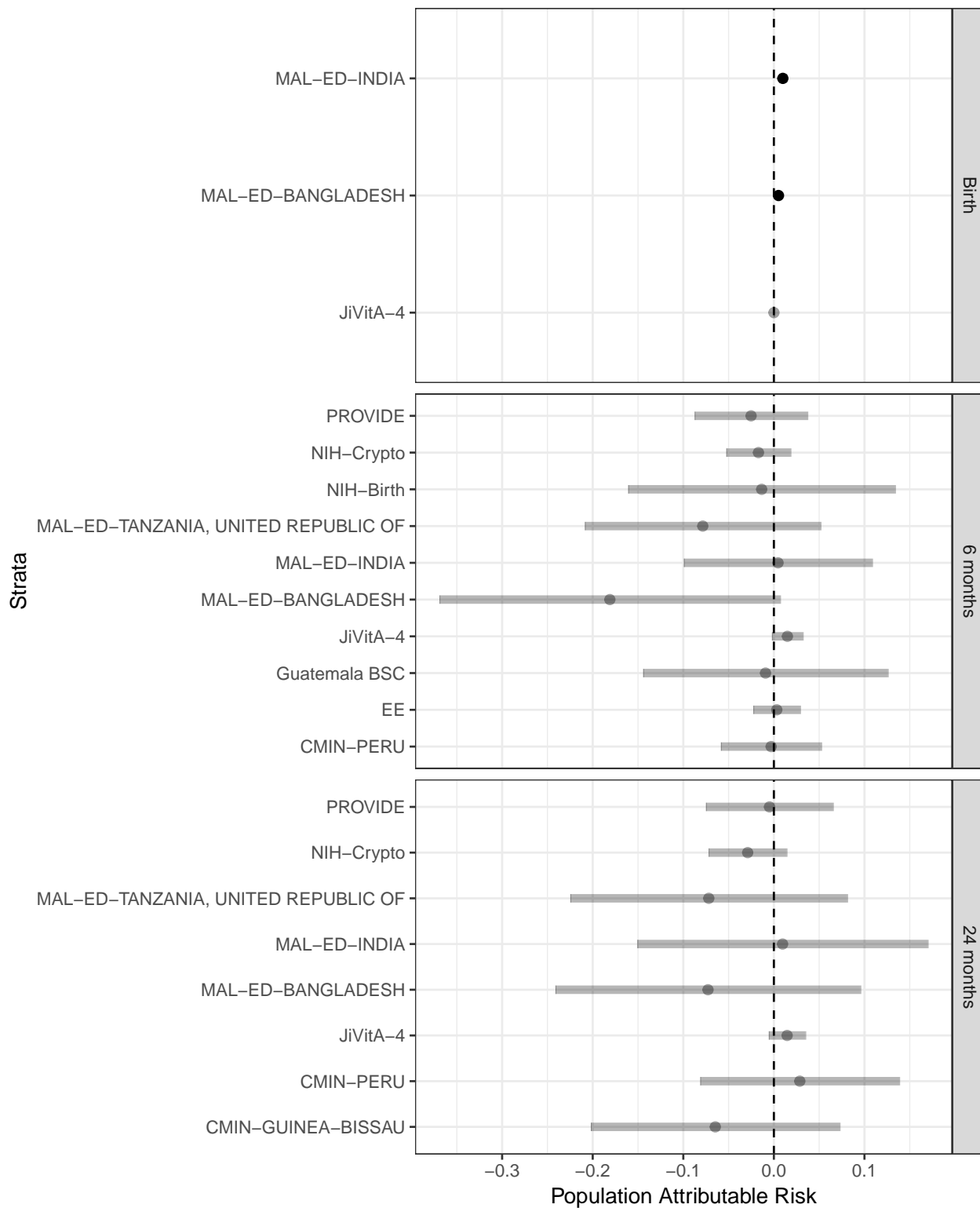




Gestational age at birth in days  
reference level:[273–287)

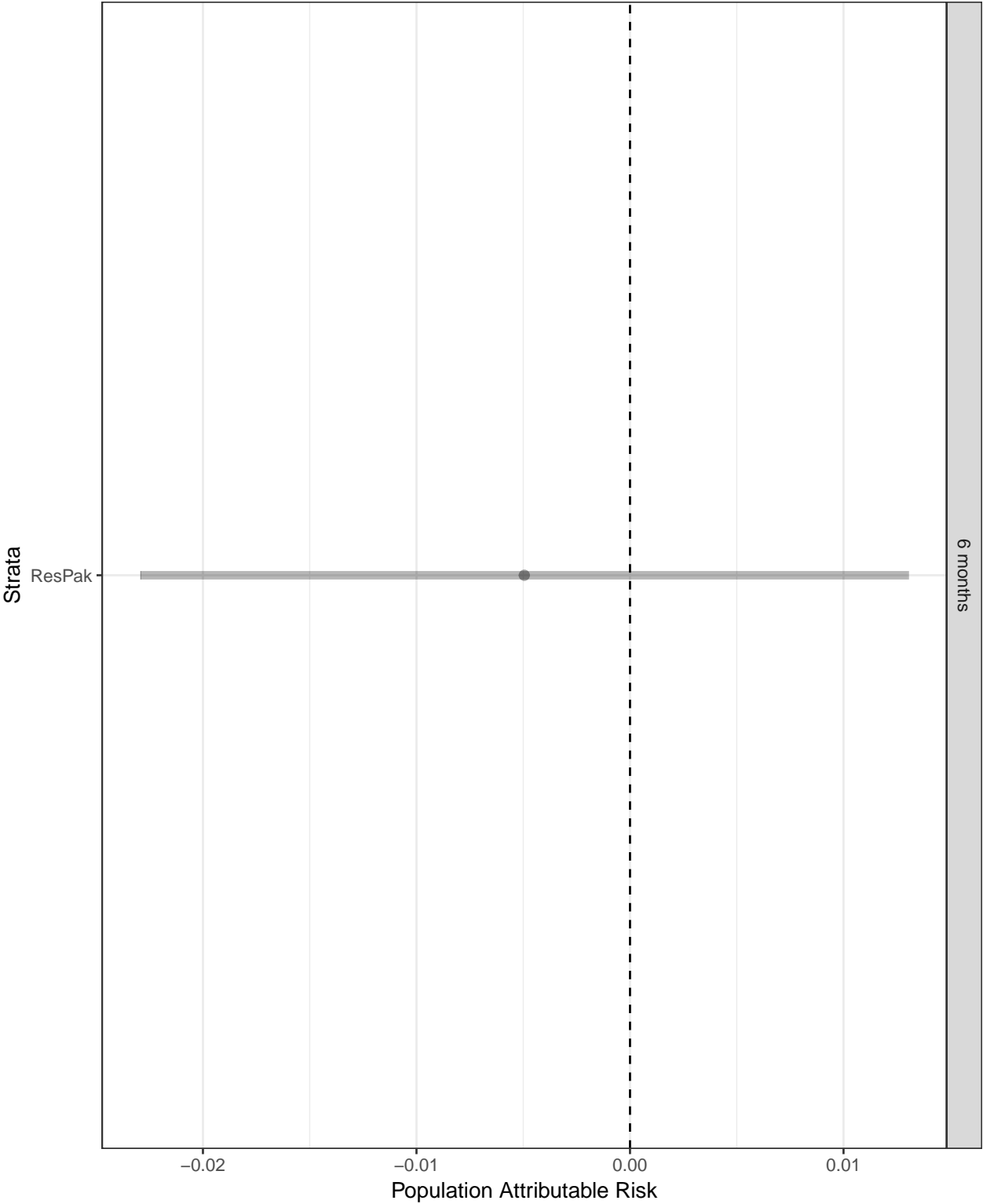


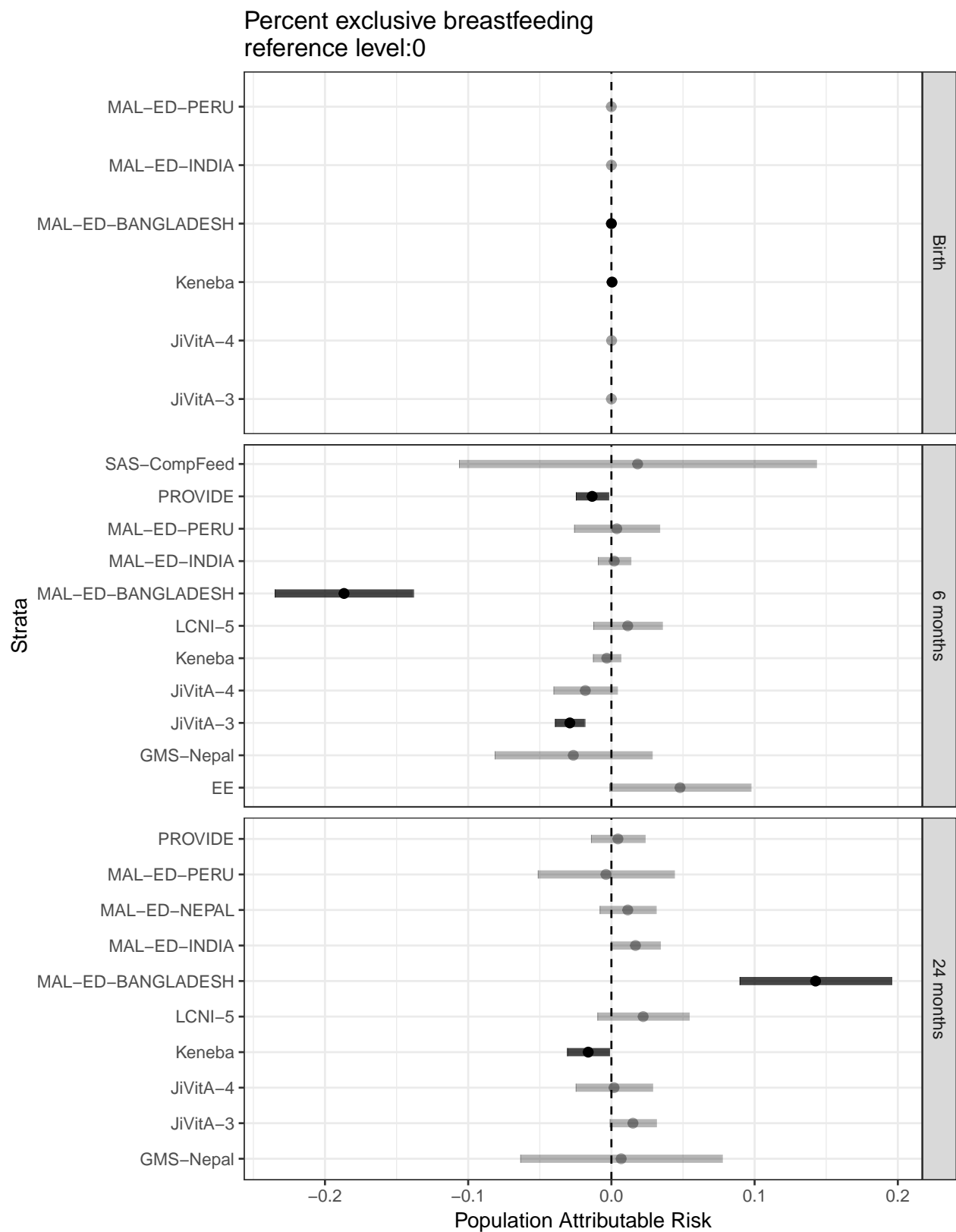
Percent diarrhea in first 24 months  
reference level:Q1



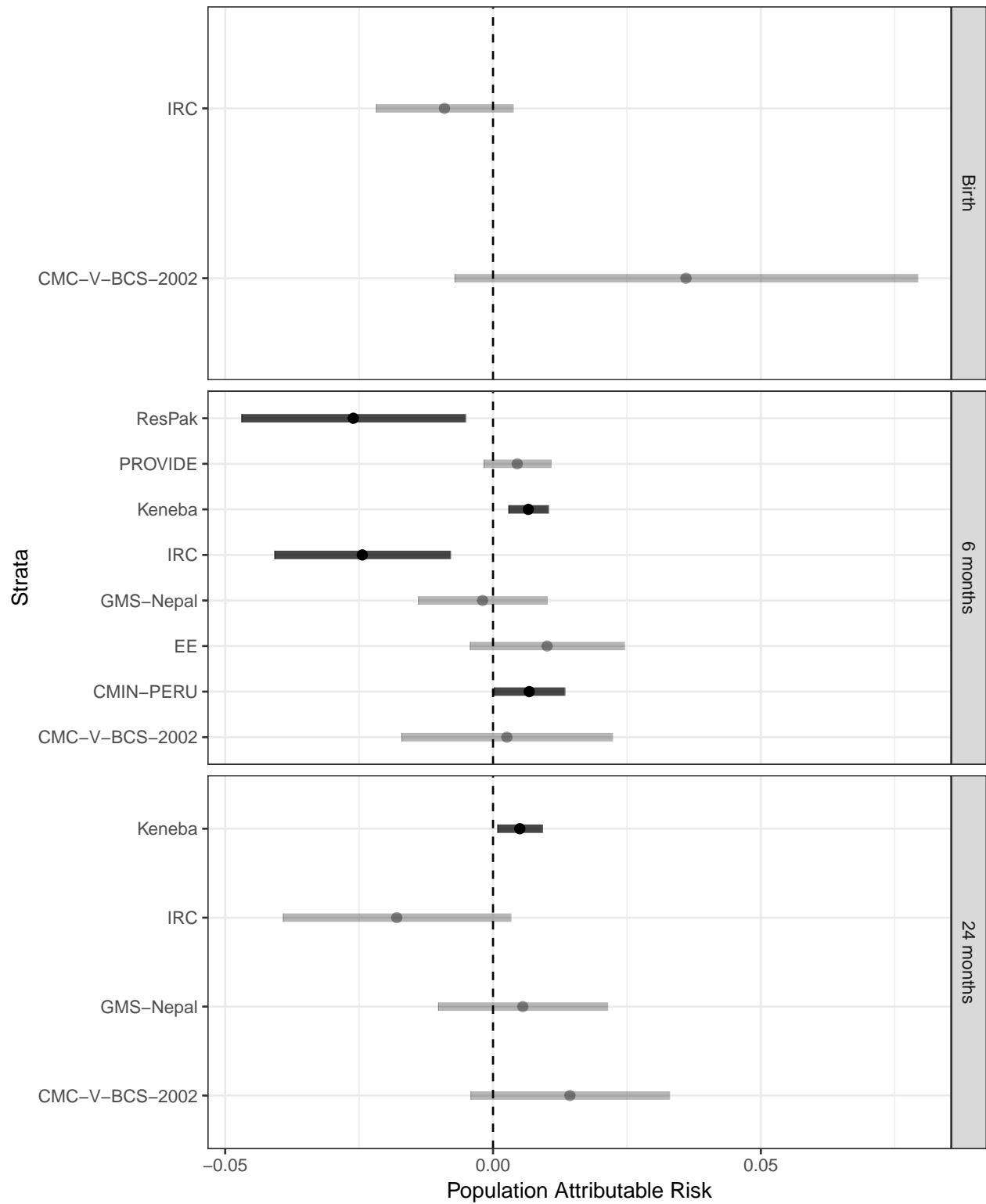


Percent diarrhea in first 6 months  
reference level:Q1

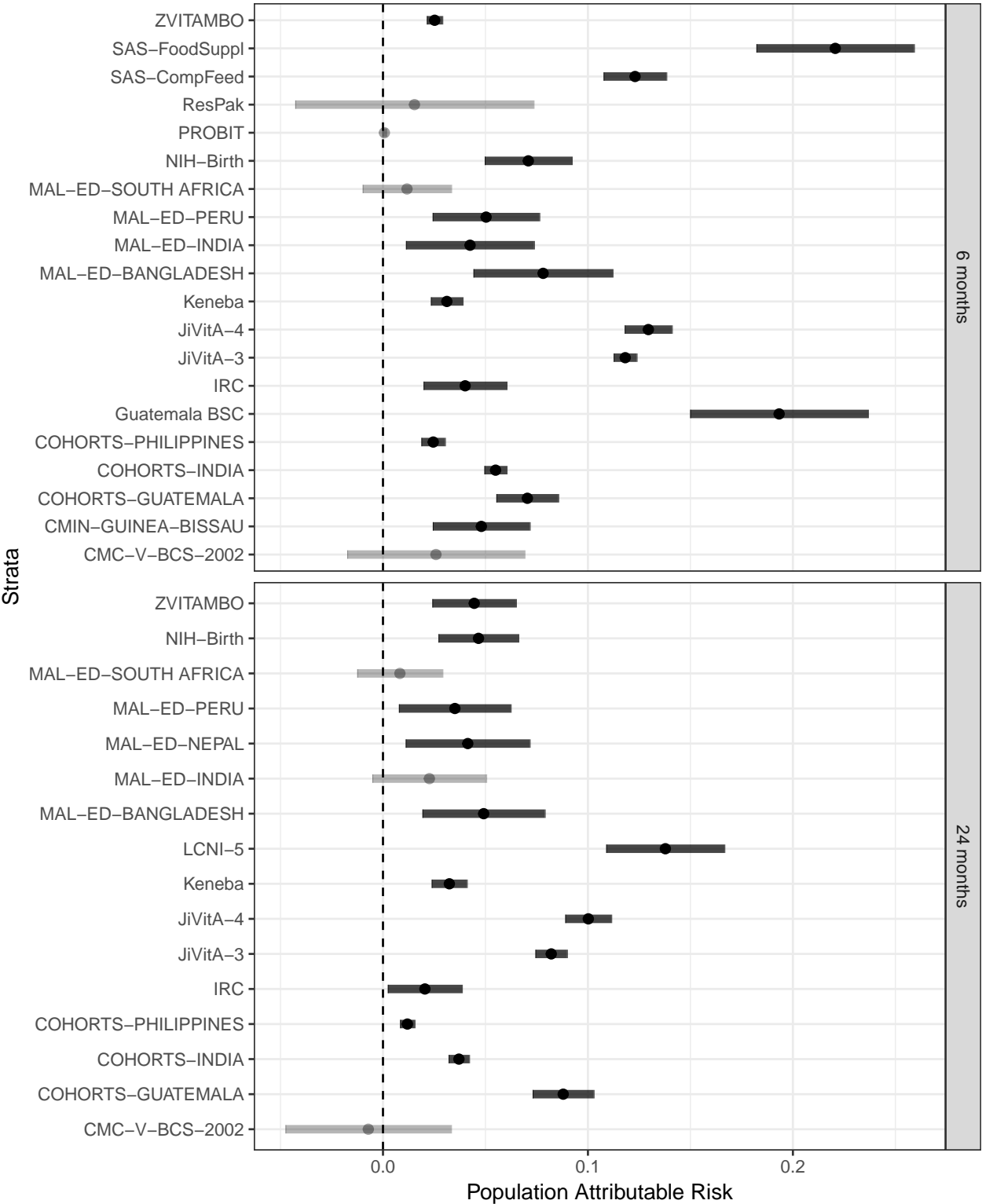




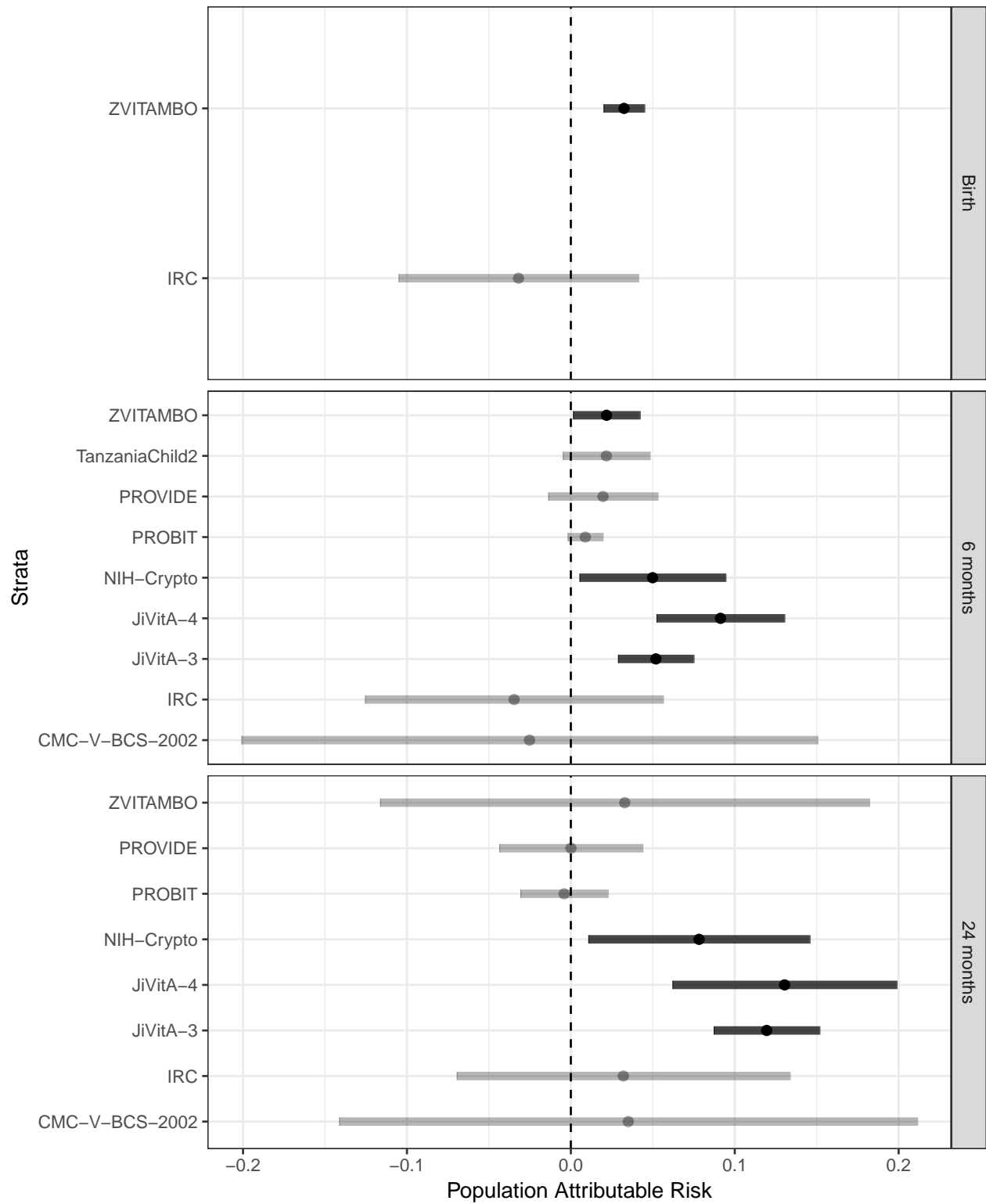
Persistent wasting in first 6 months  
reference level:0



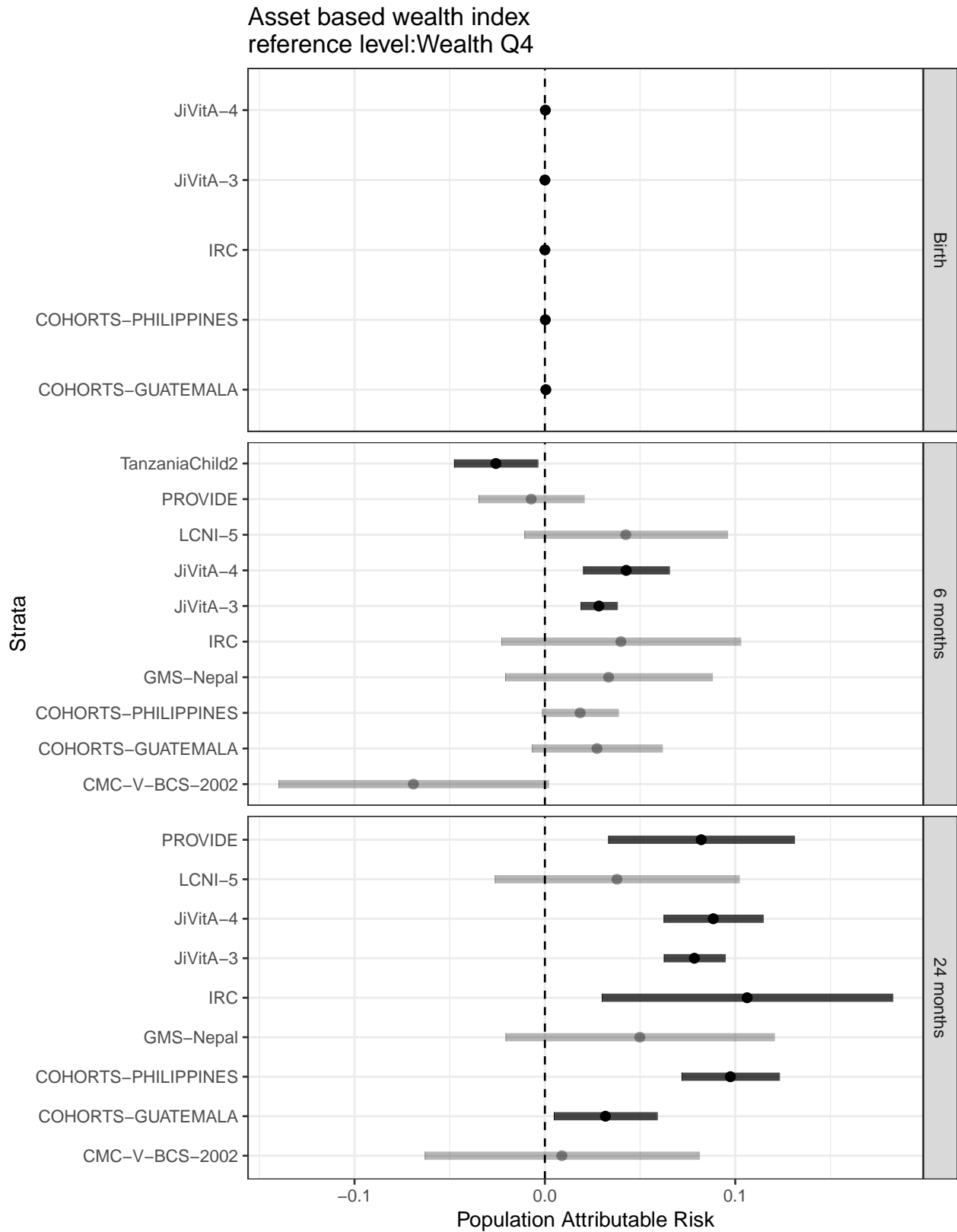
Stunted at enrollment  
reference level:0



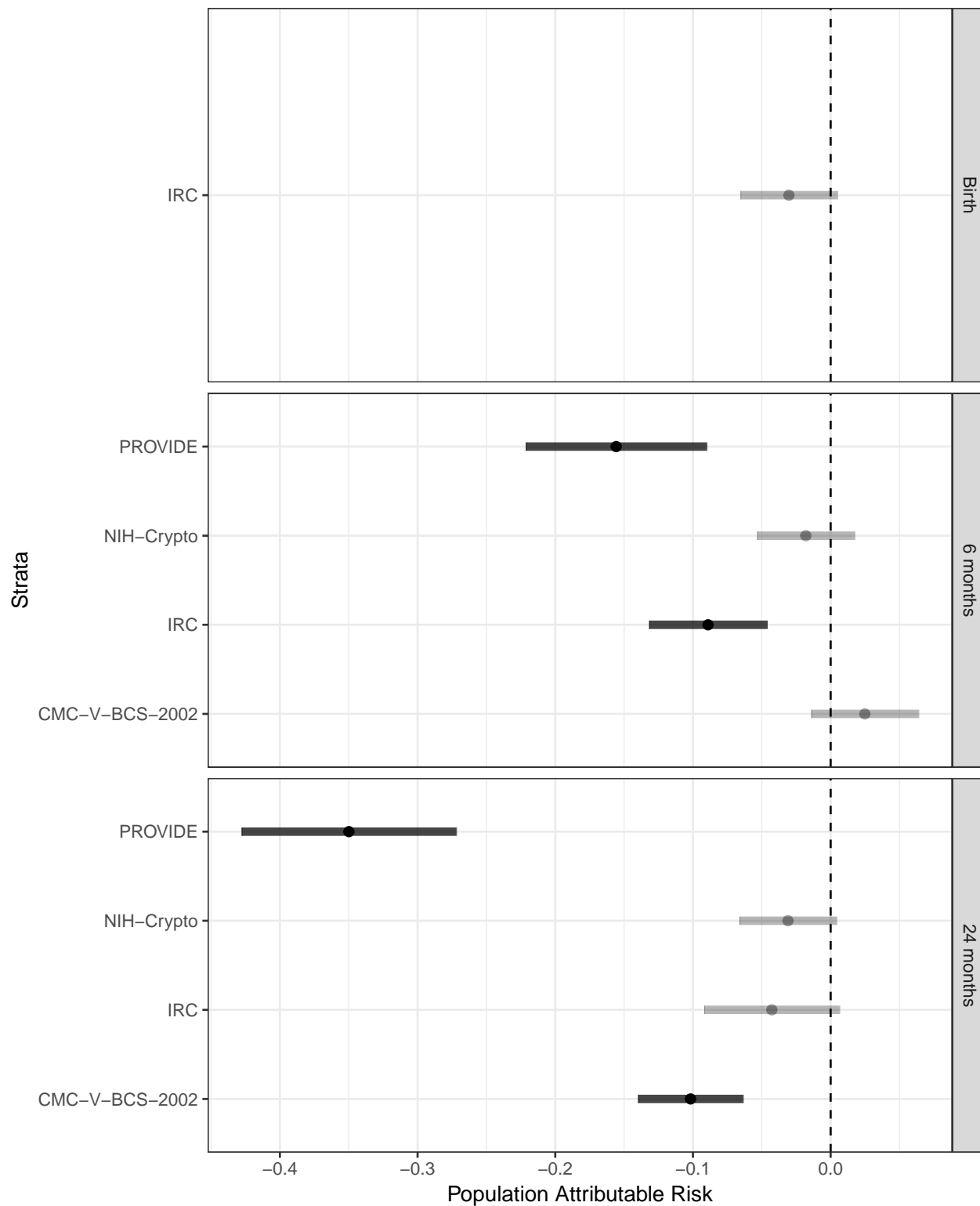
Vaginal delivery  
reference level:0

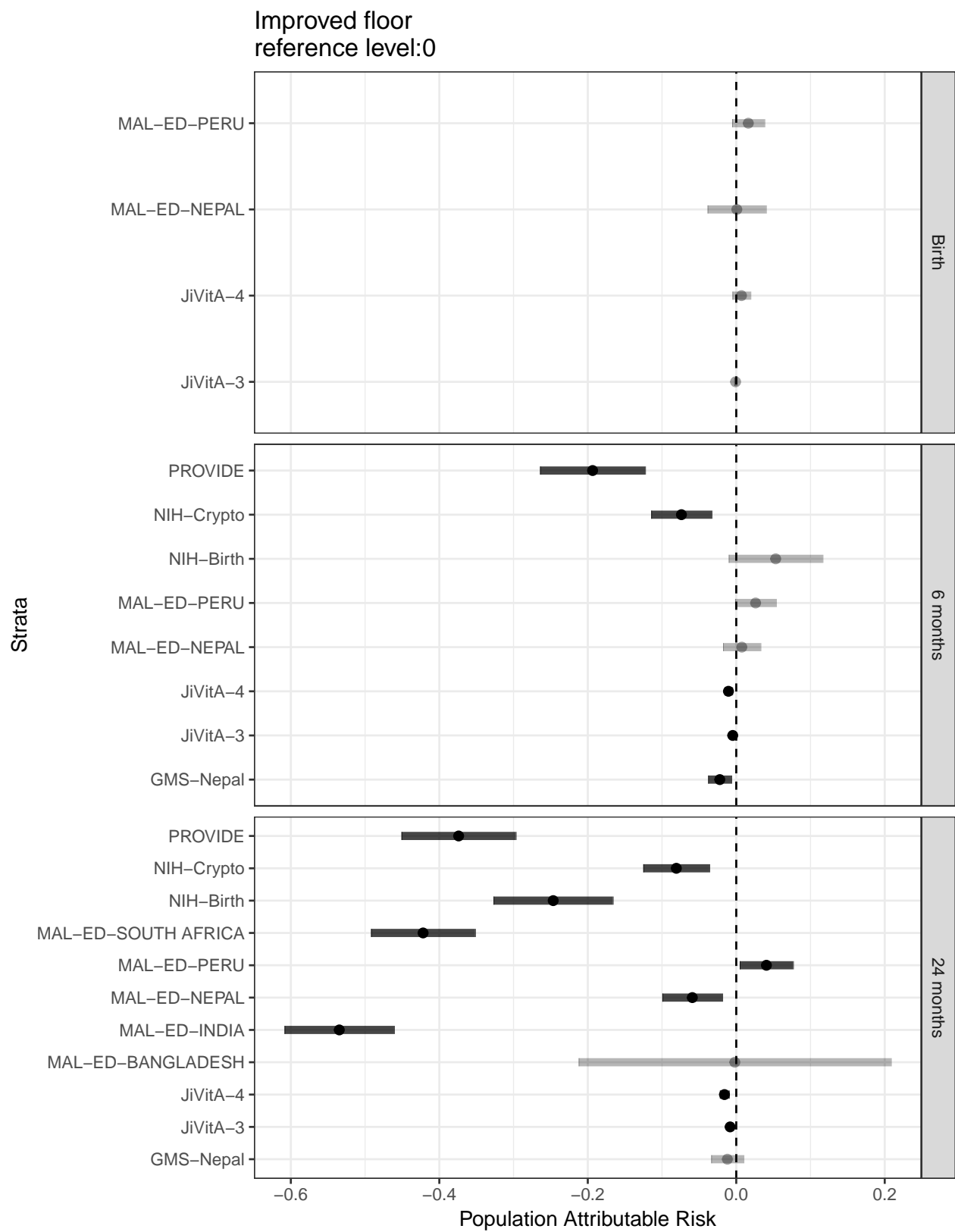


## Household characteristics

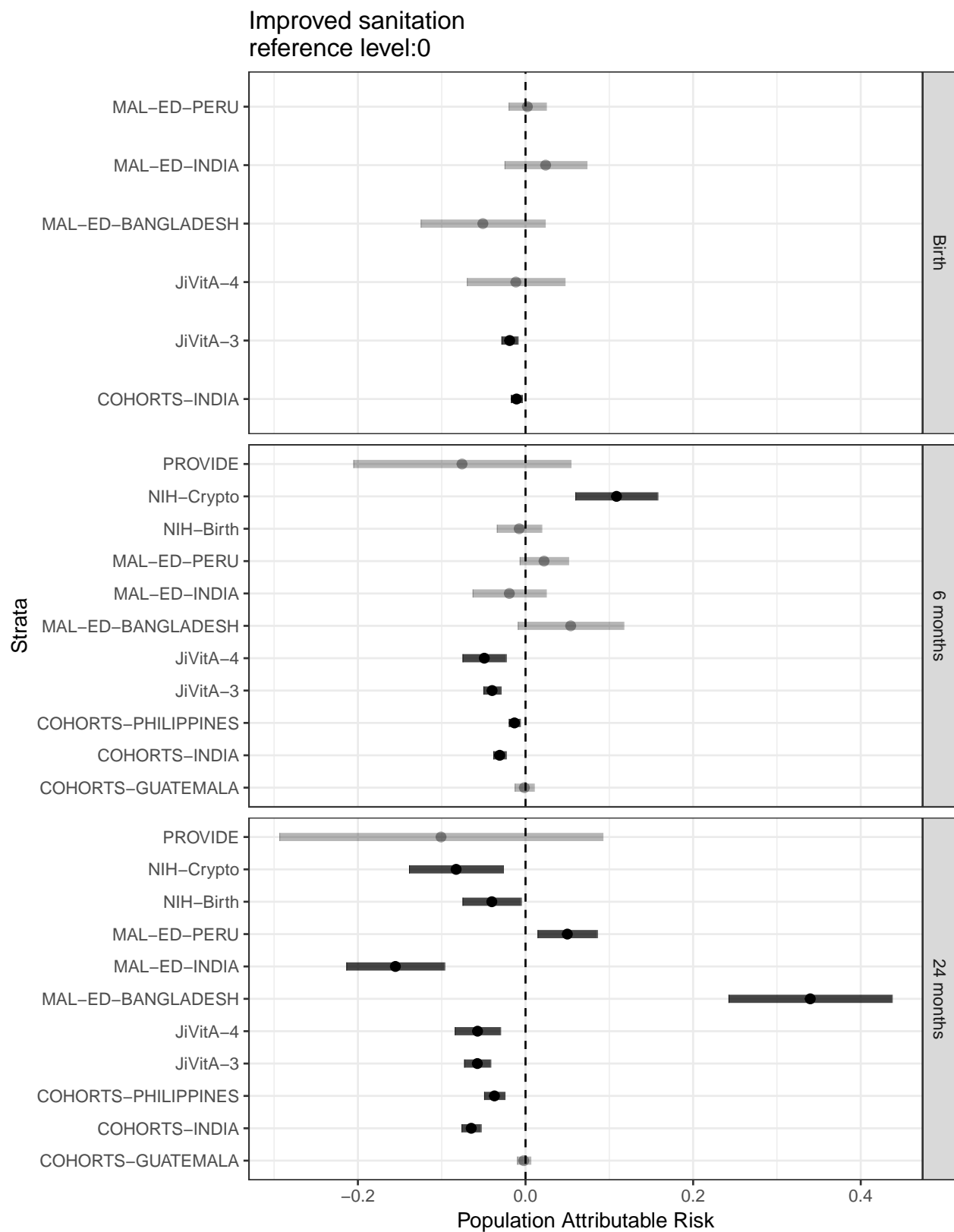


Clean cook  
reference level:0

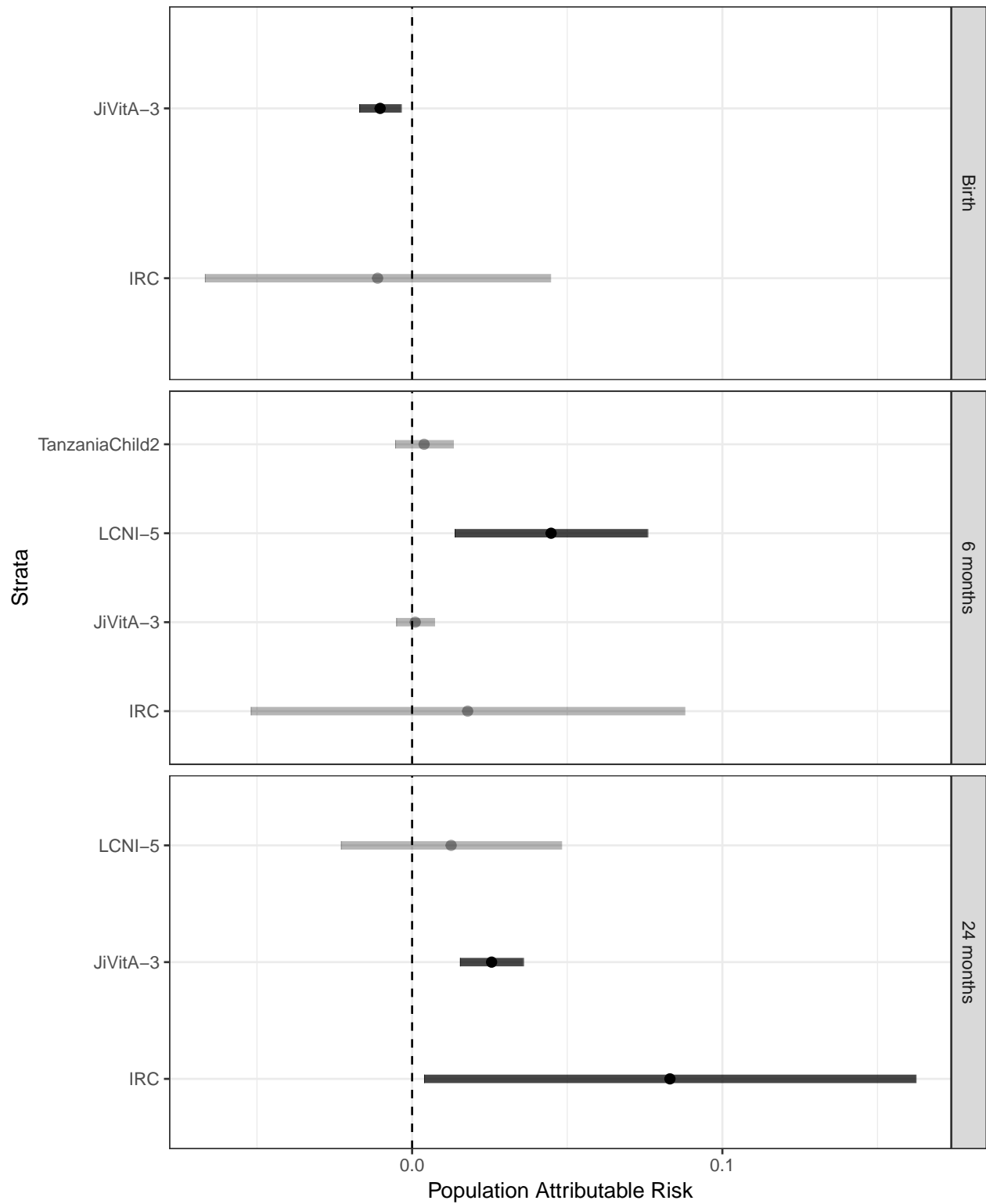




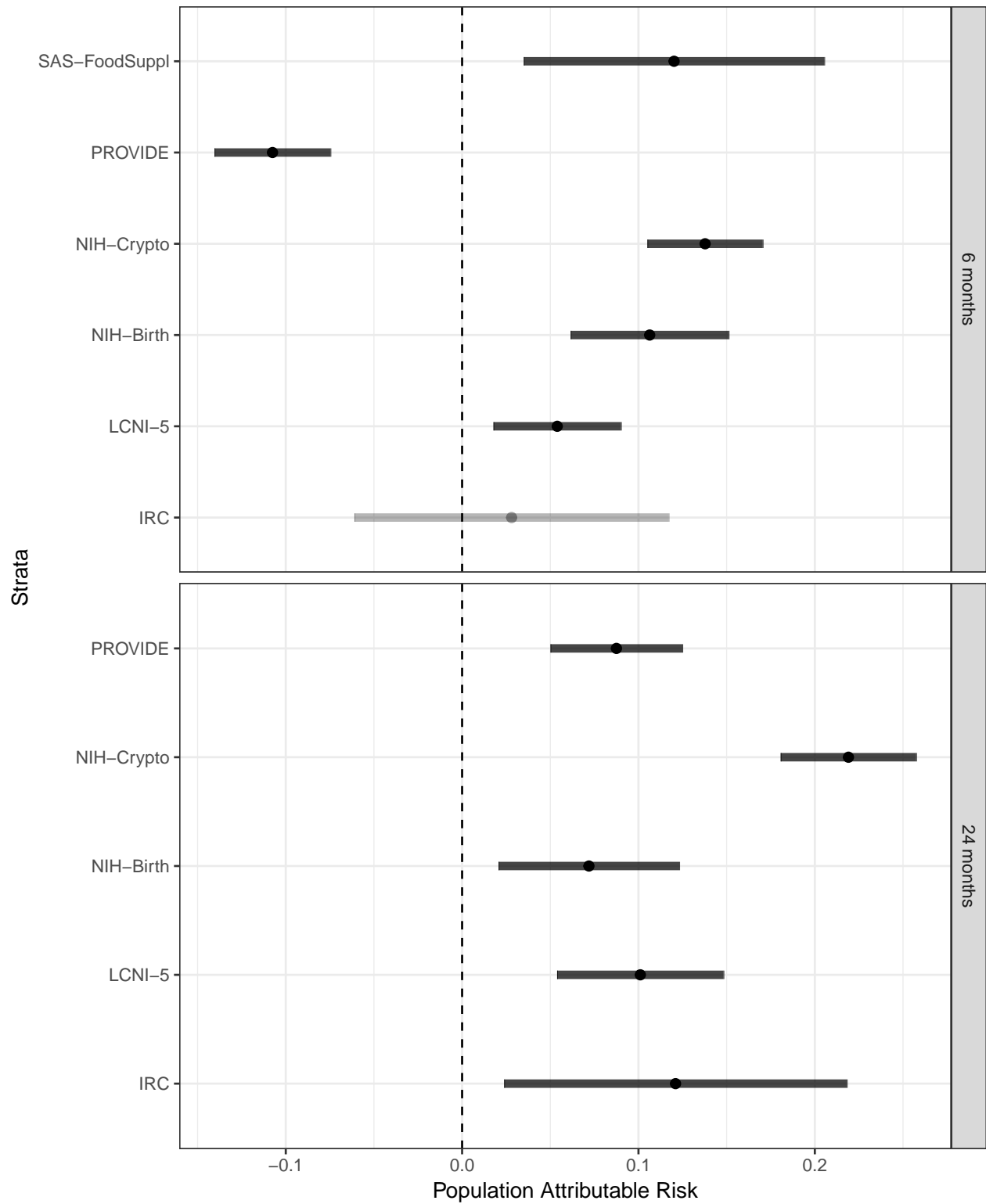




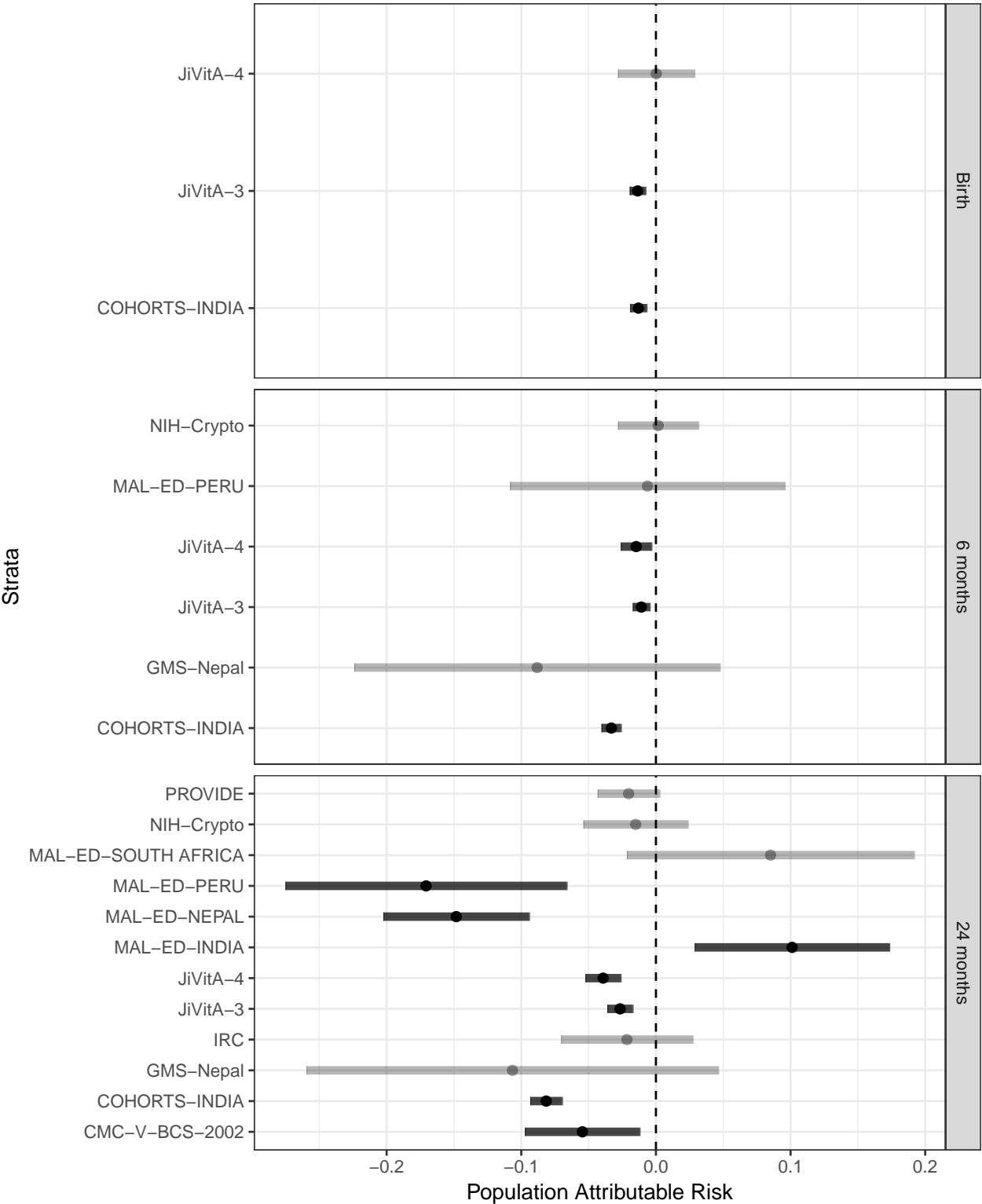
Number of children in the household under 5 years  
reference level:1

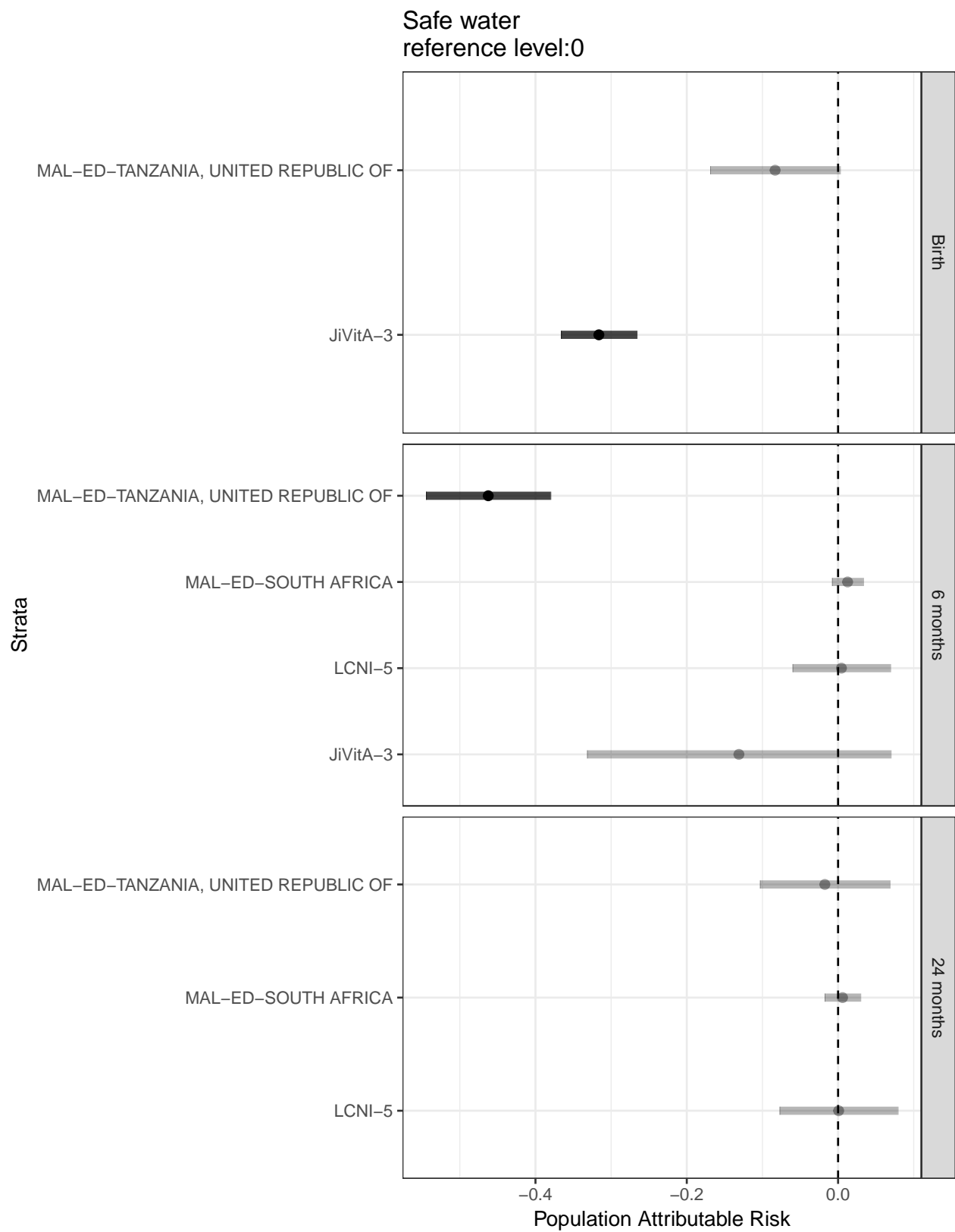


Number of people in the household  
reference level:3 or less

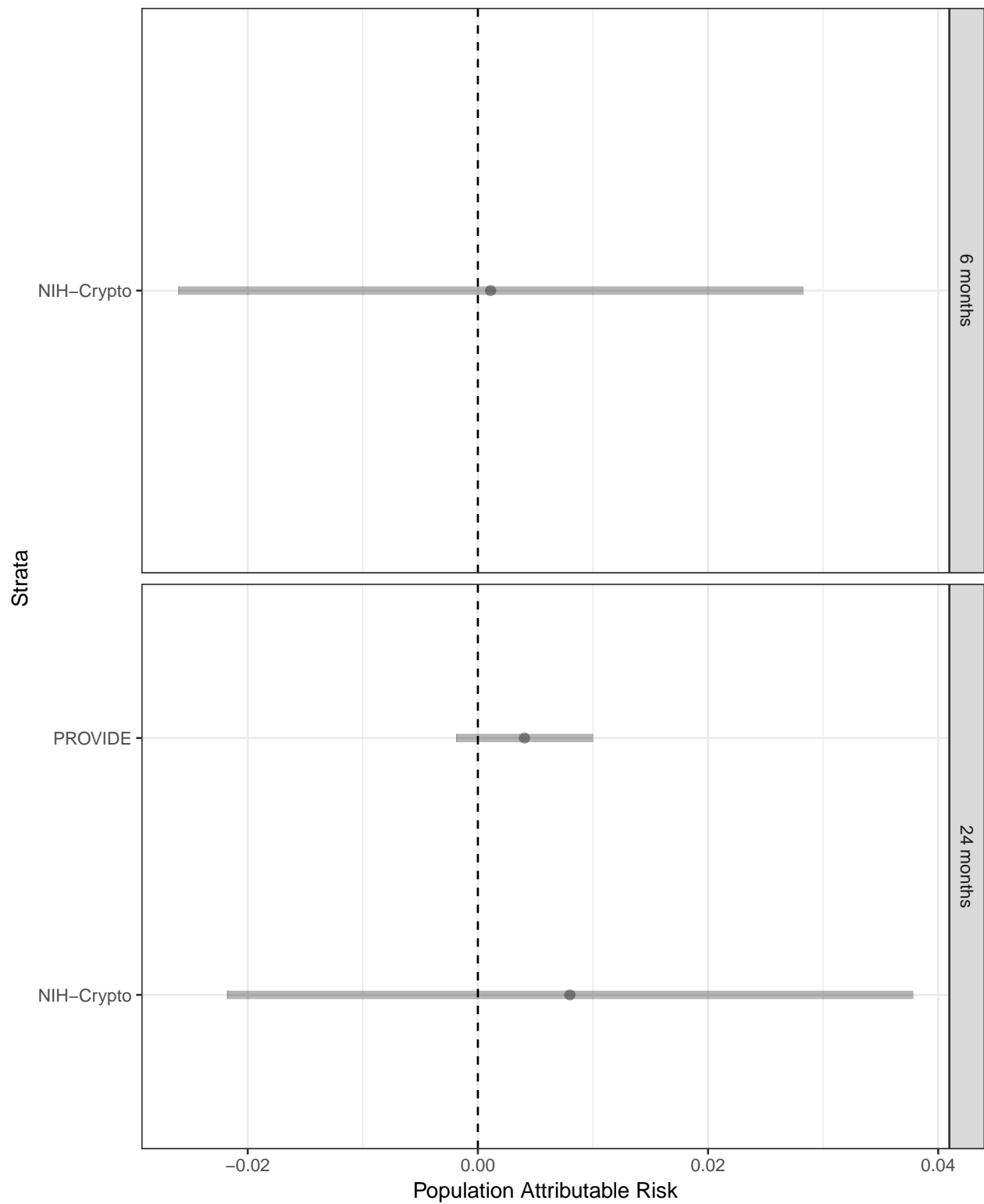


Number of rooms in household  
reference level:1

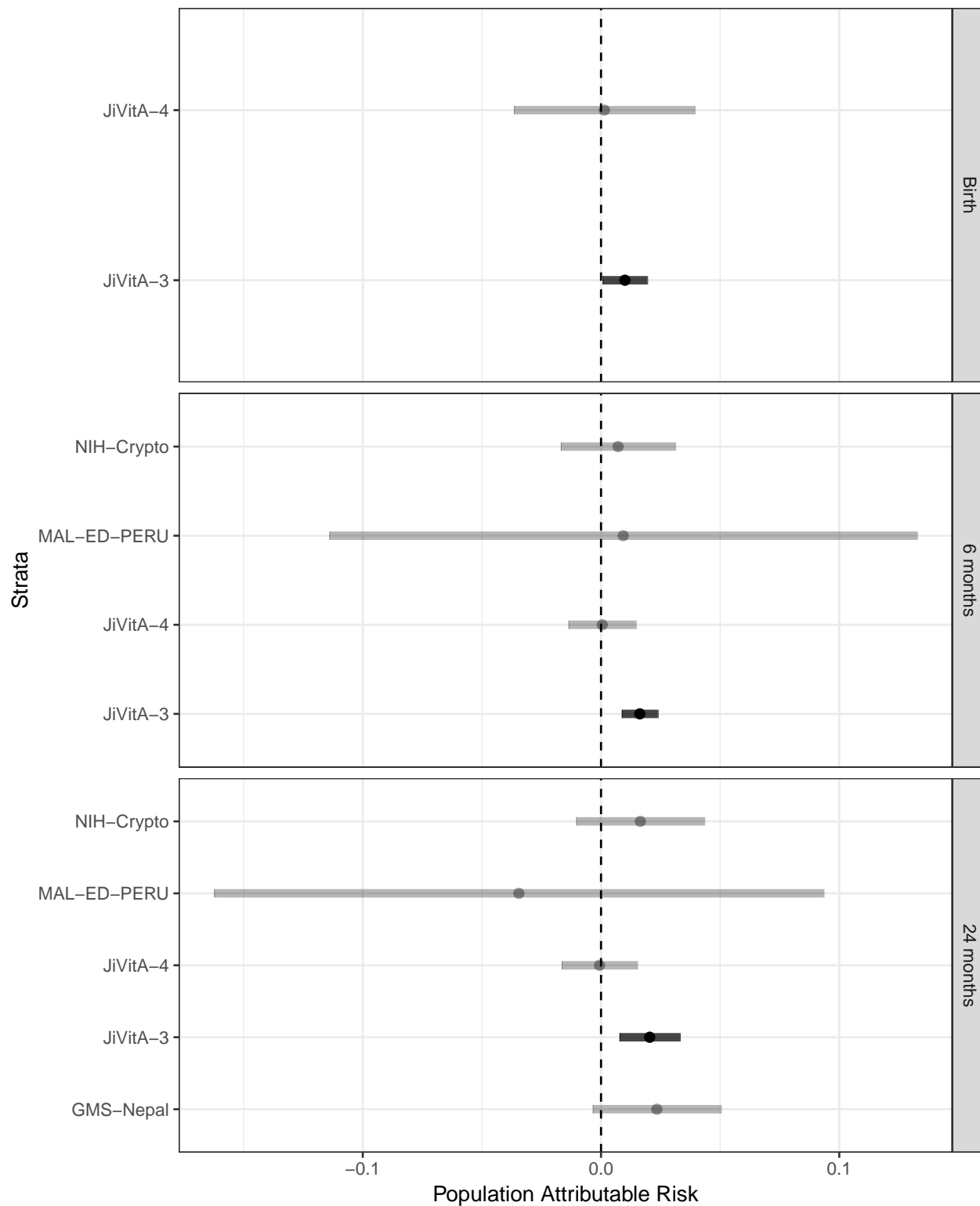




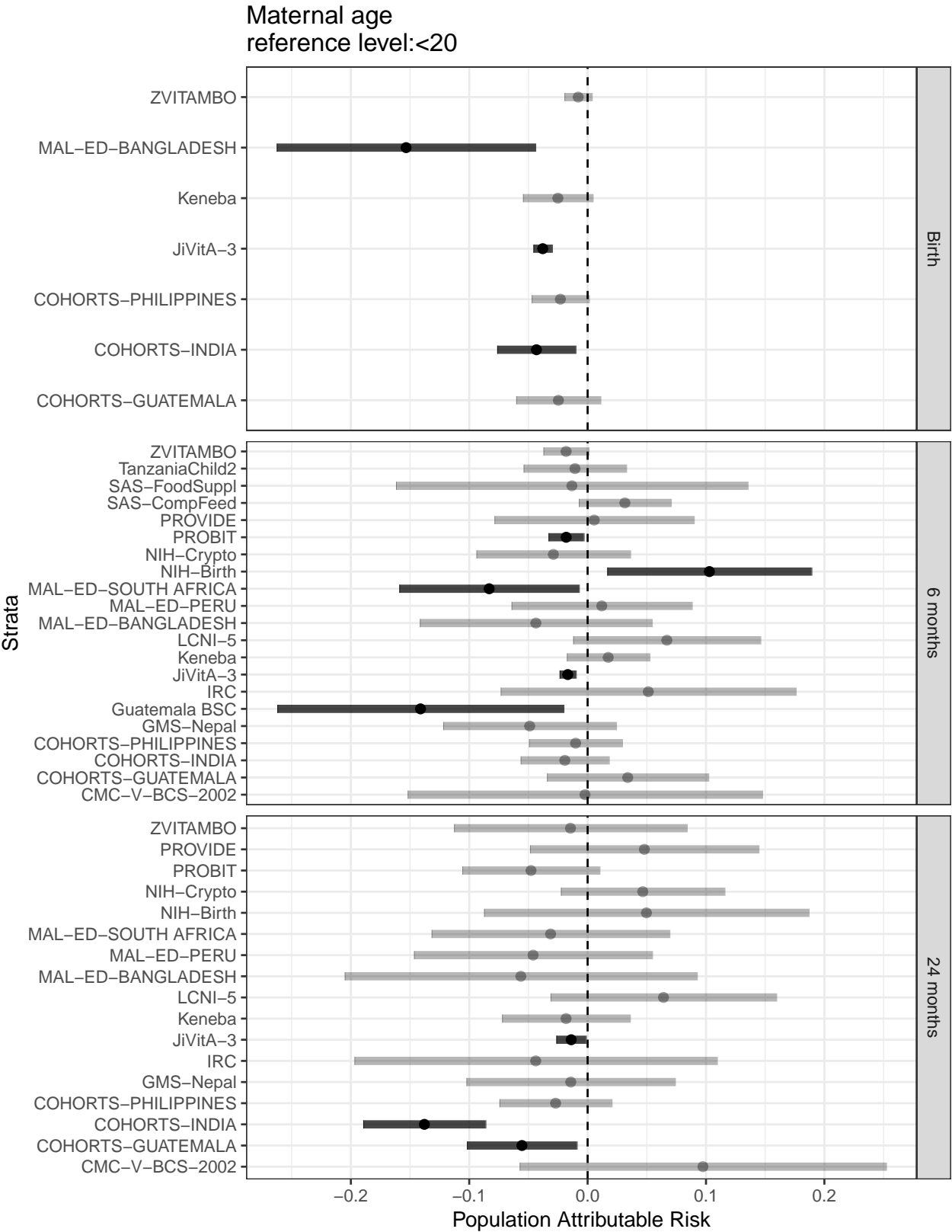
Treats water  
reference level:0



USAID Household Food Insecurity Access Scale (HFIAS) category  
reference level: Food Secure

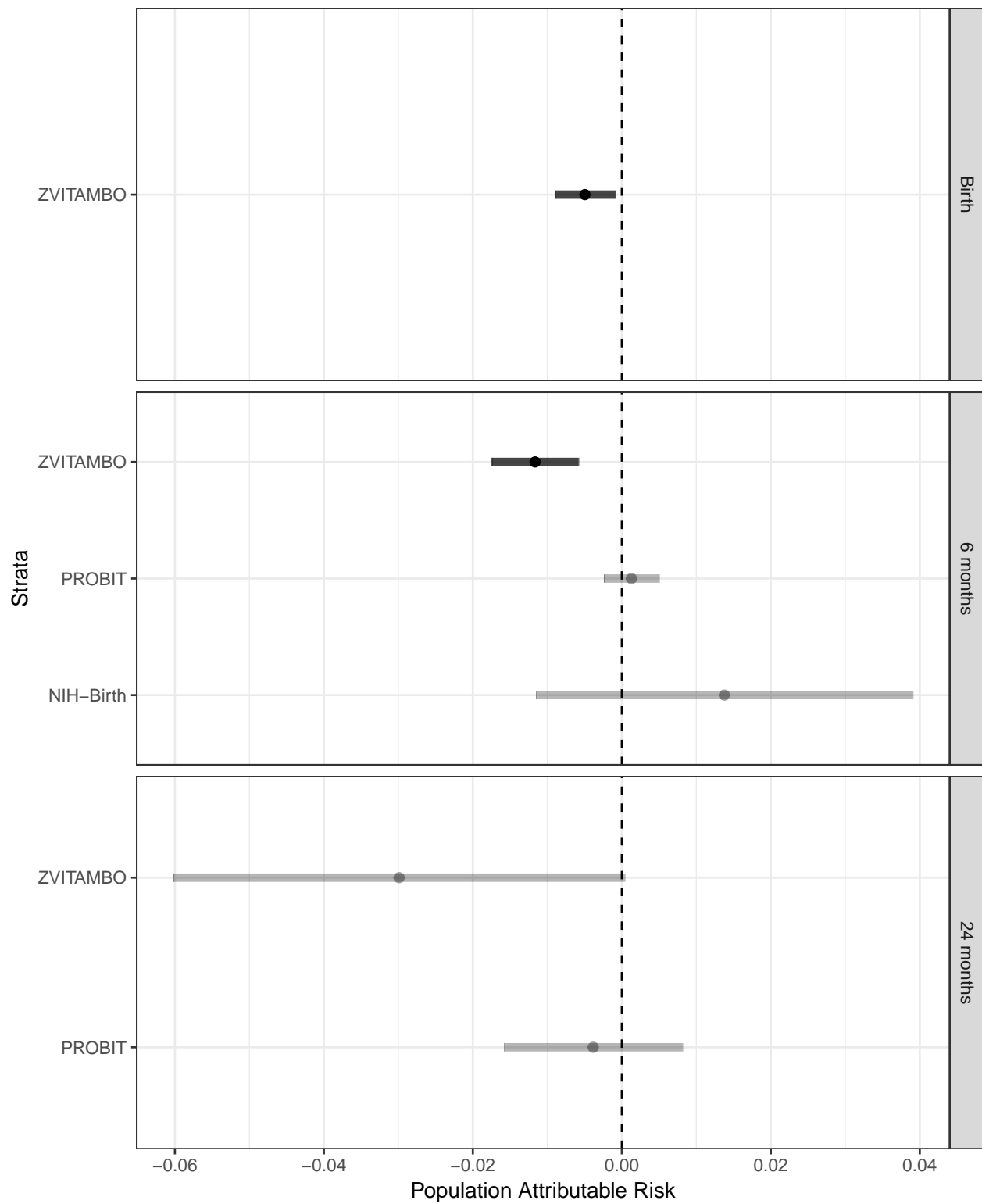


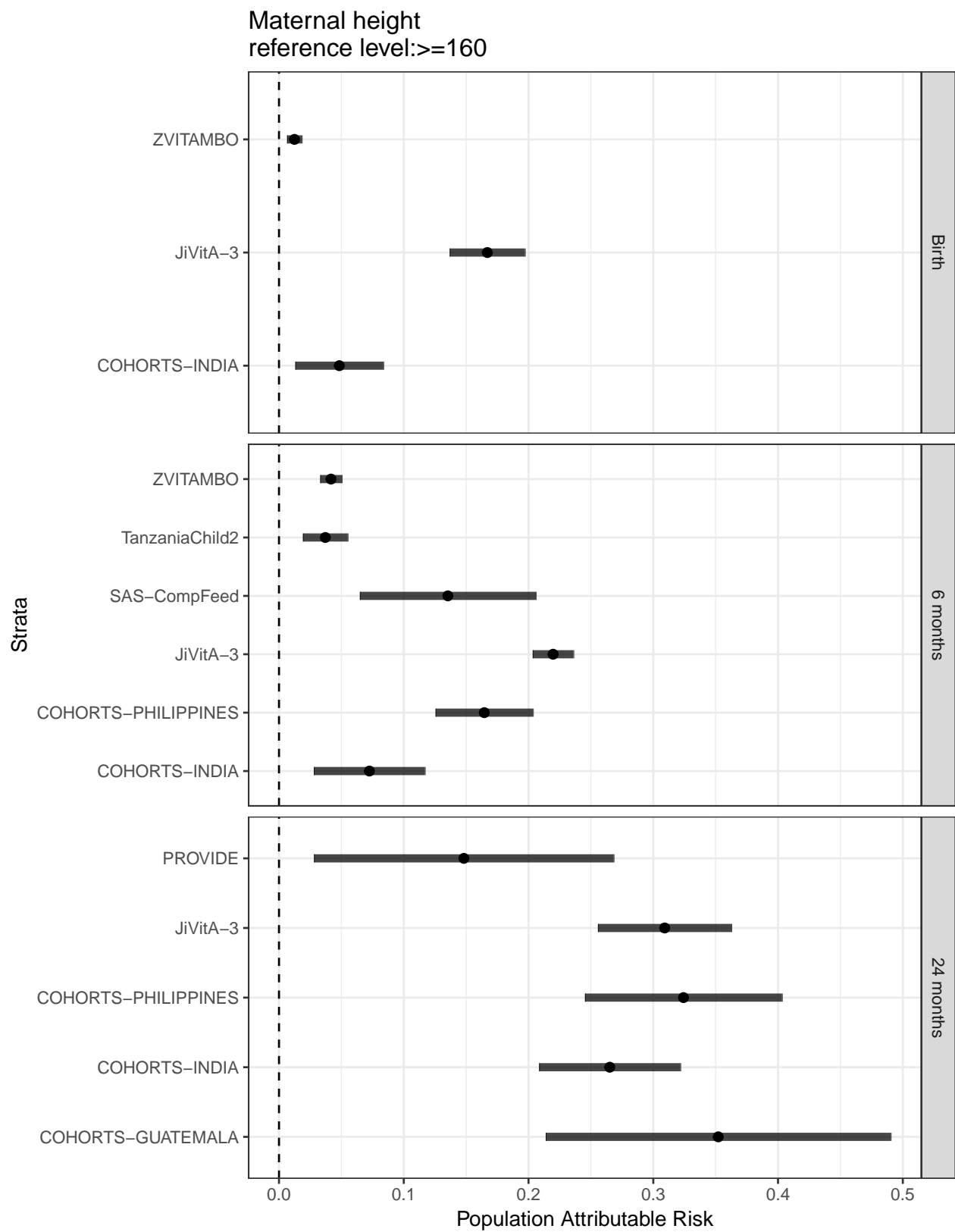
Maternal characteristics

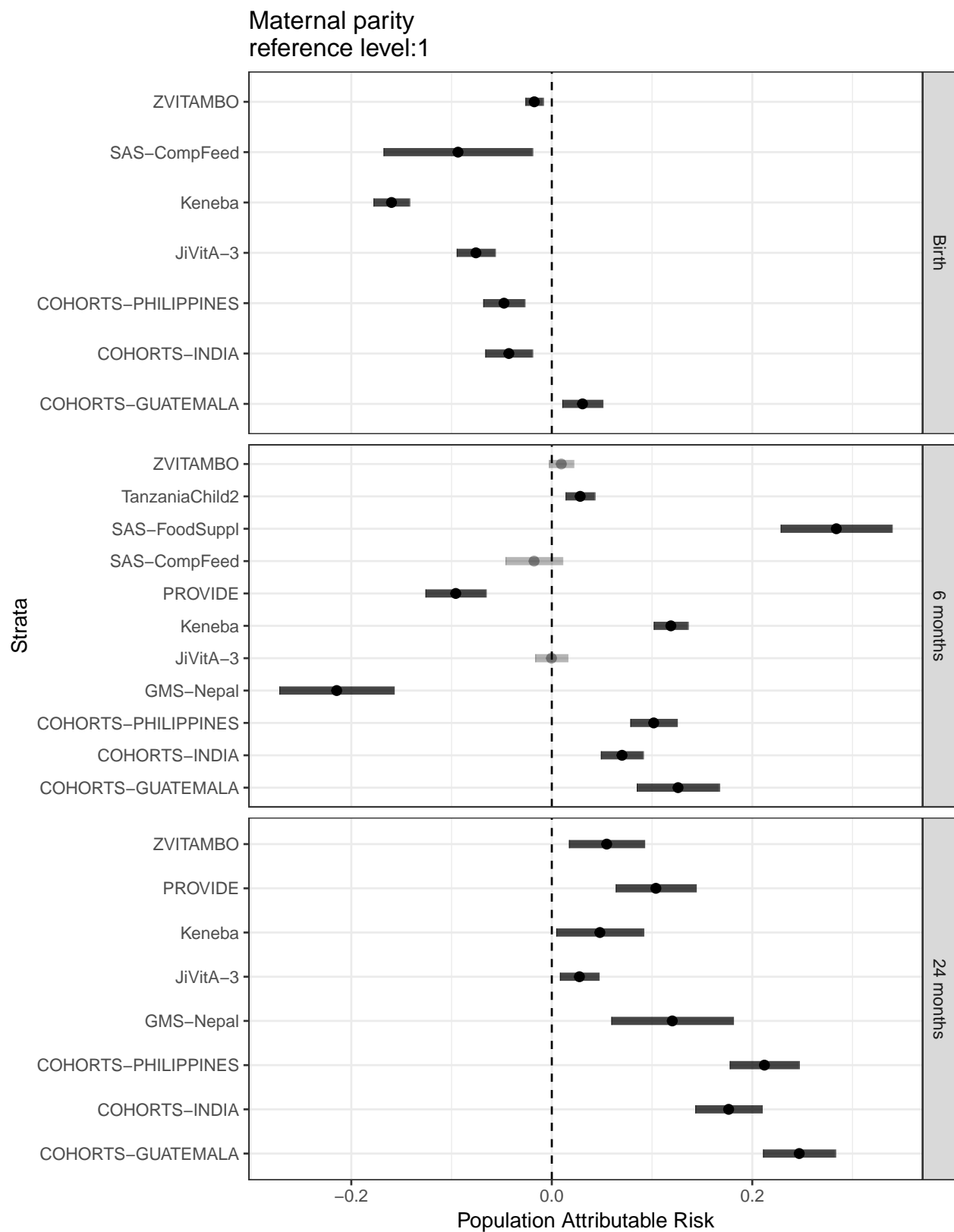


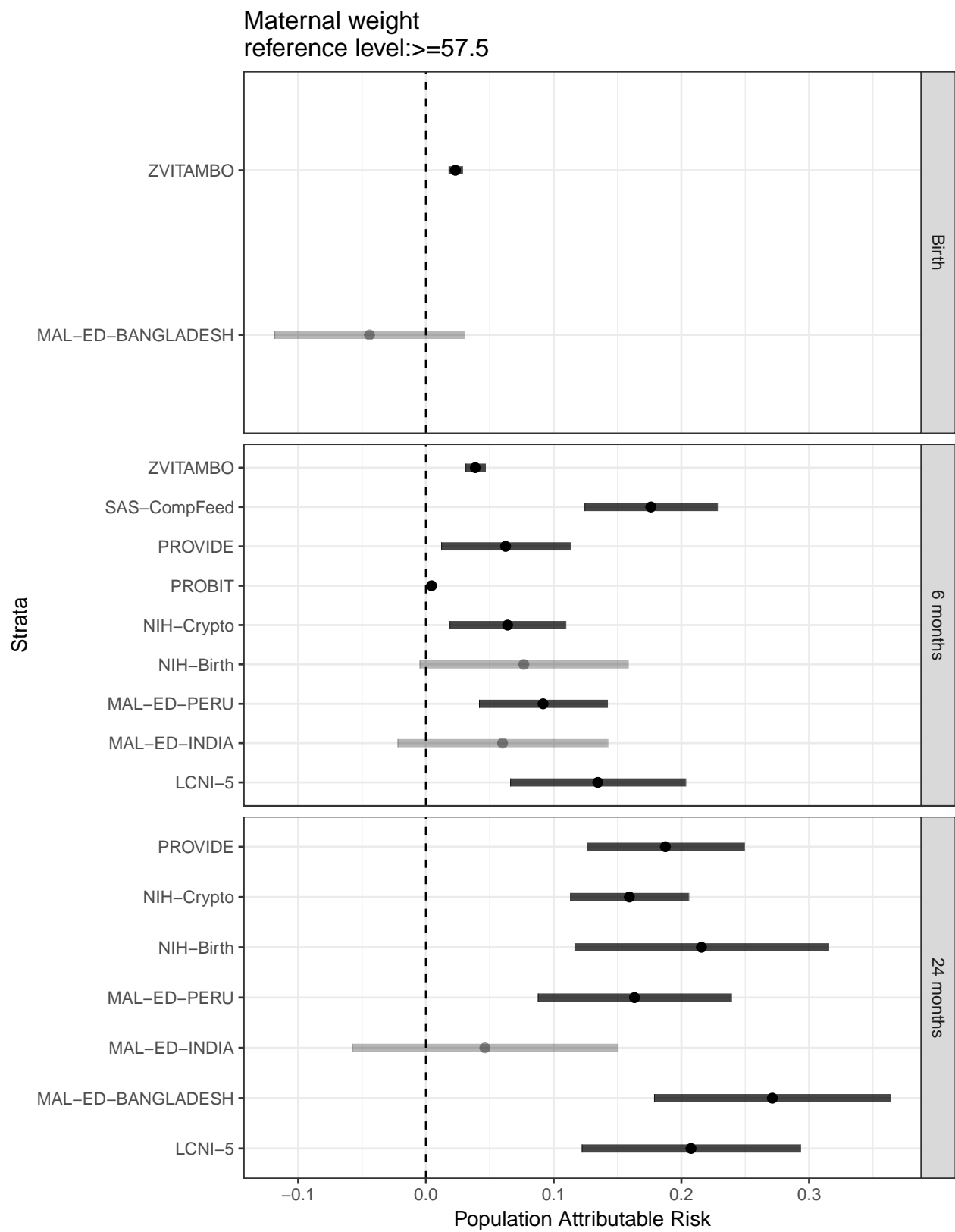


Maternal BMI  
reference level:[18.5–25)

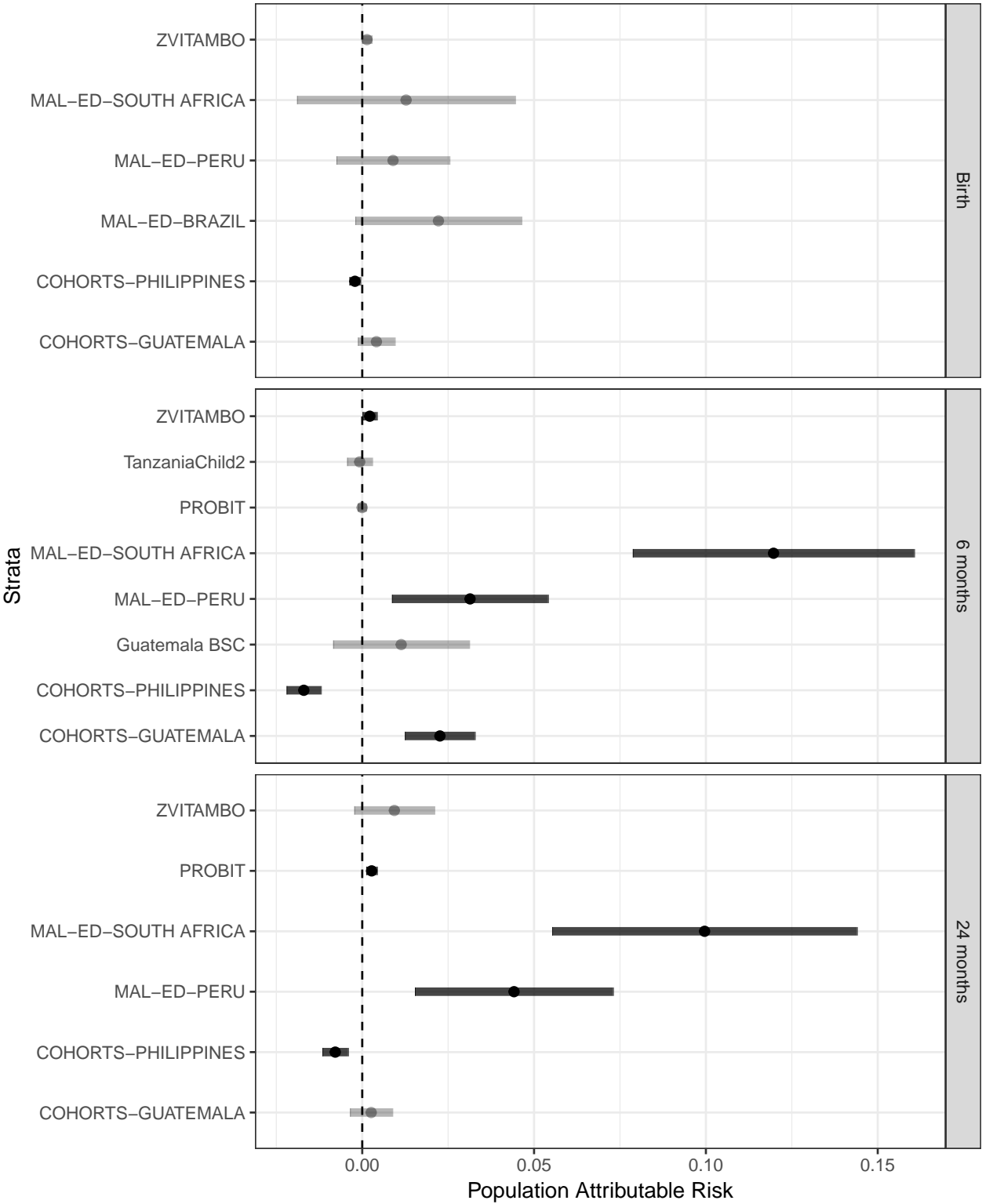


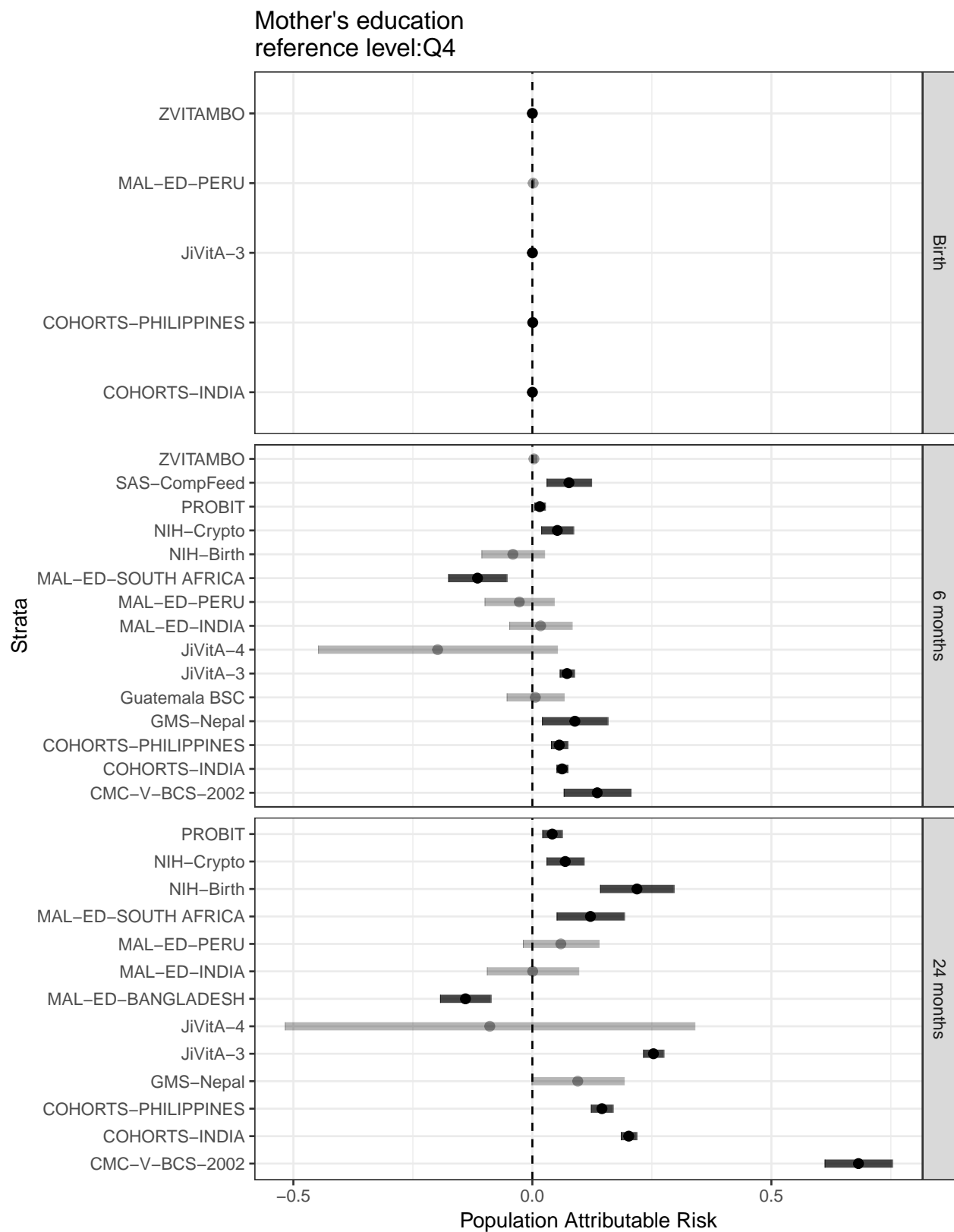




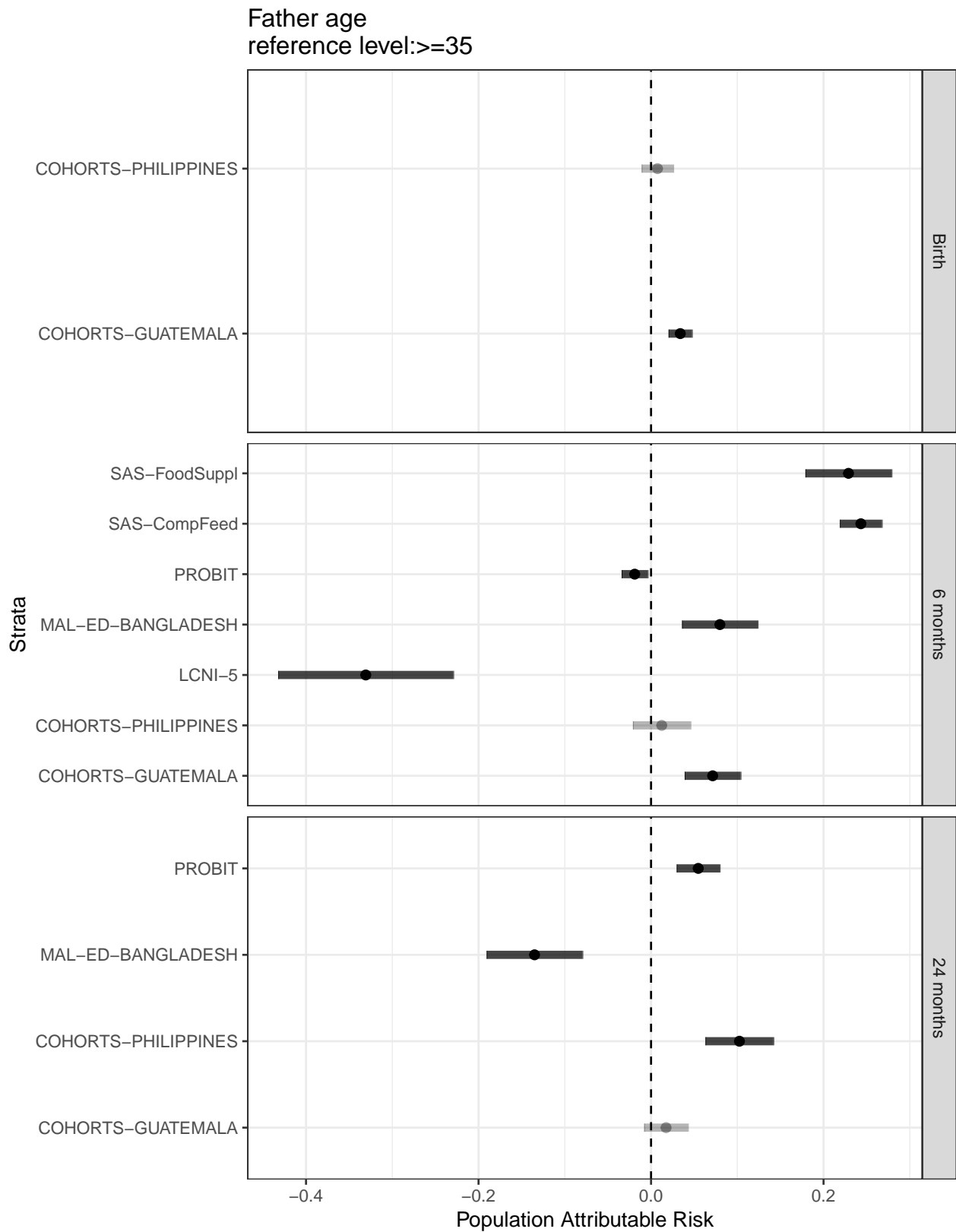


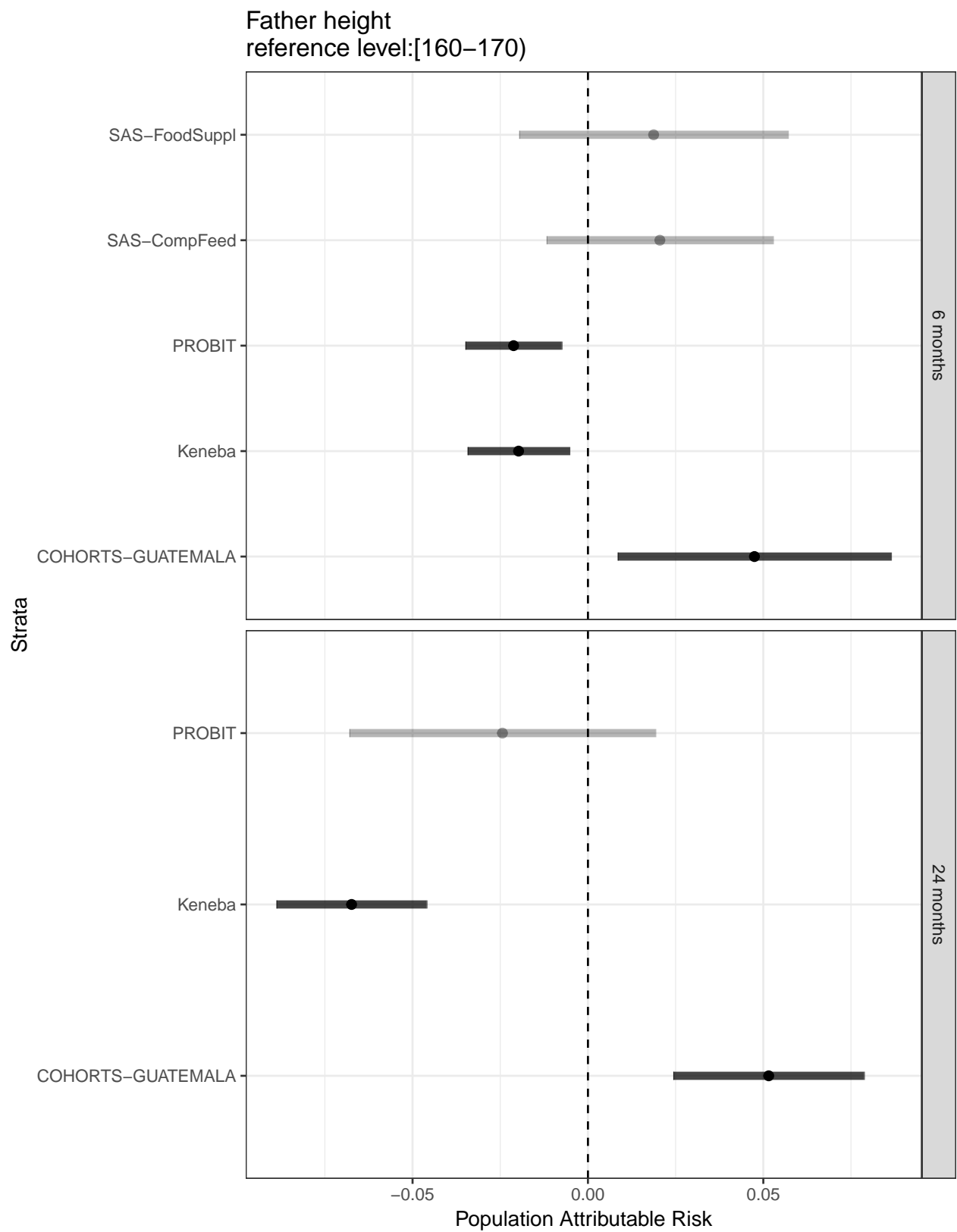
Mother is unmarried  
reference level:0



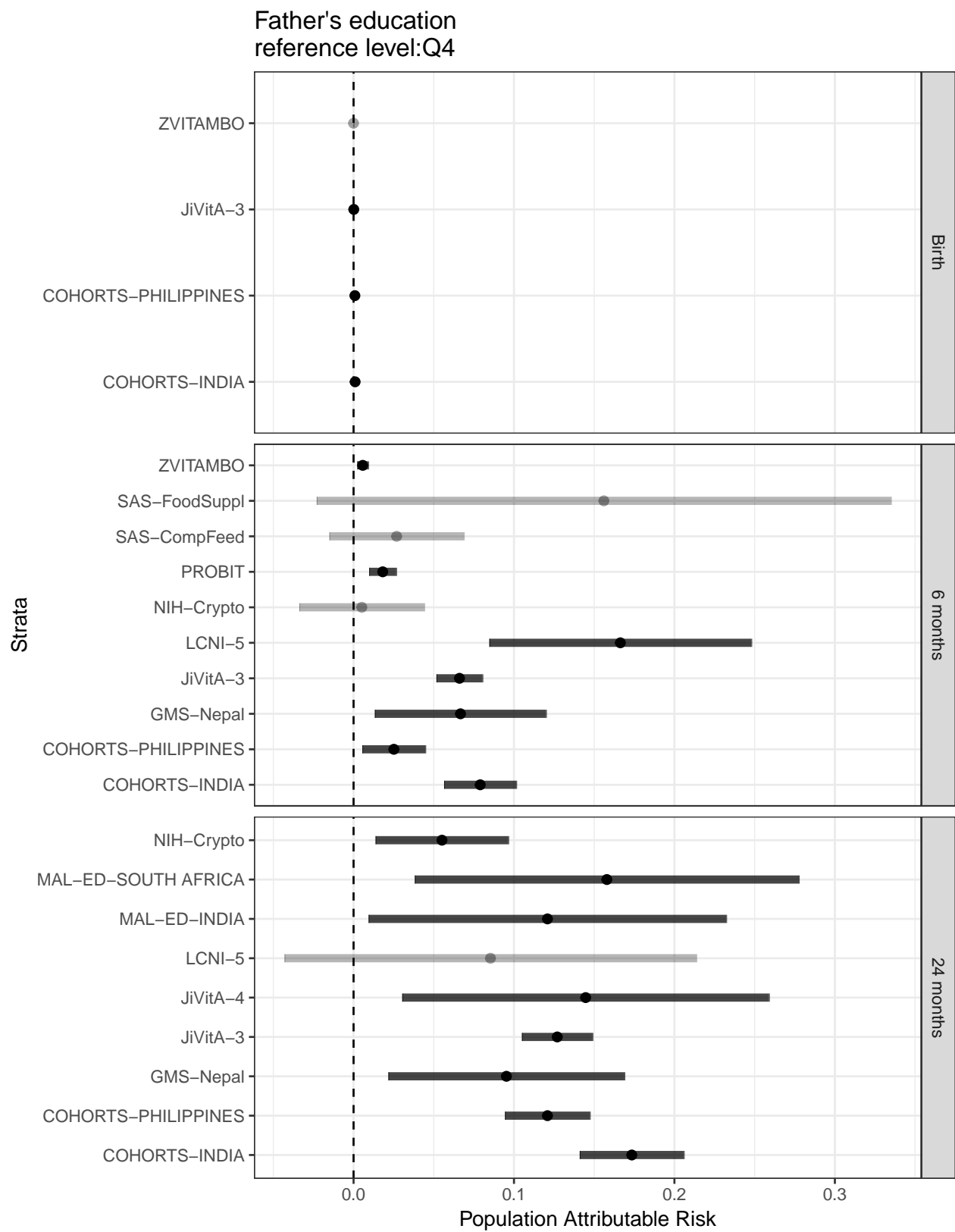


## Paternal characteristics





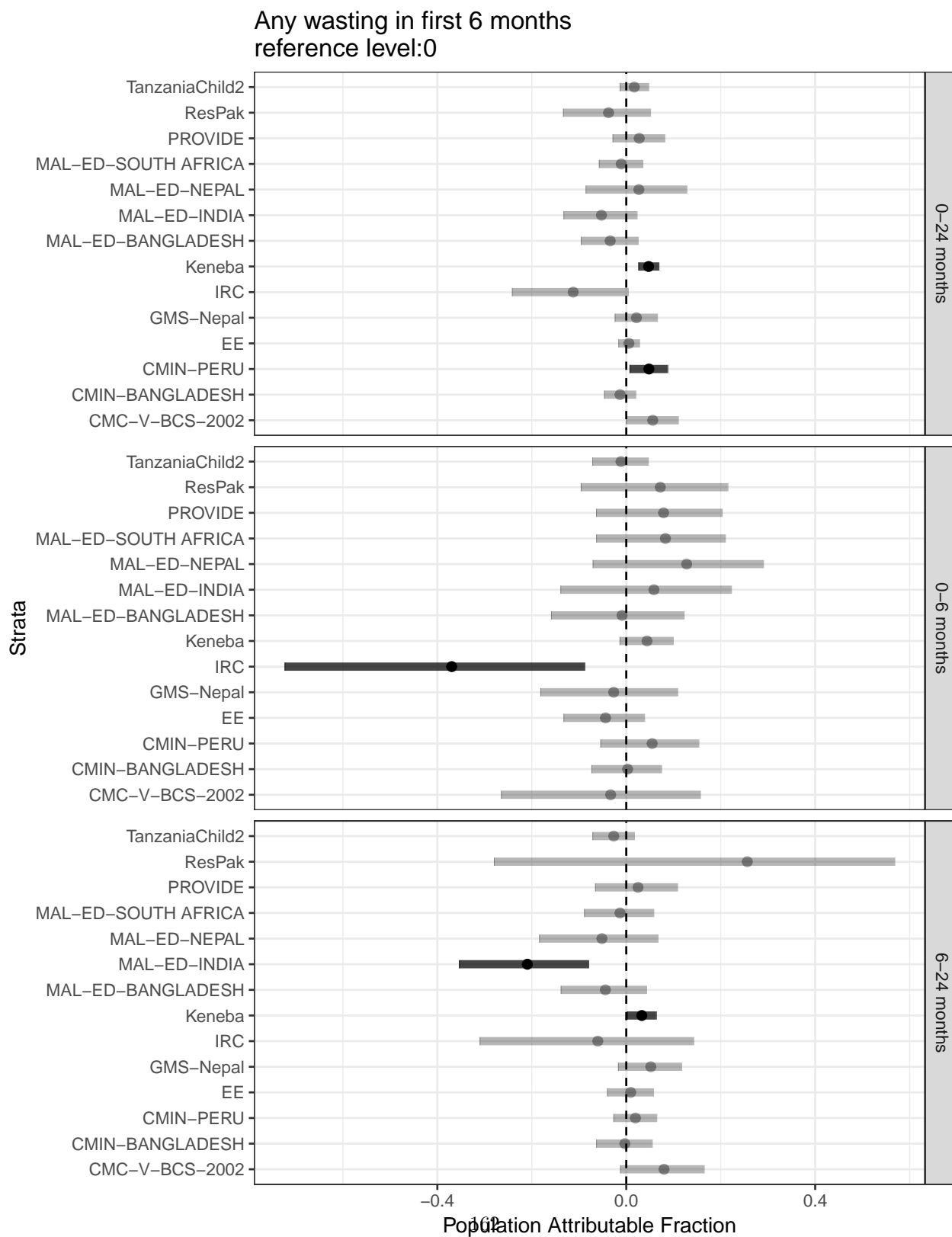


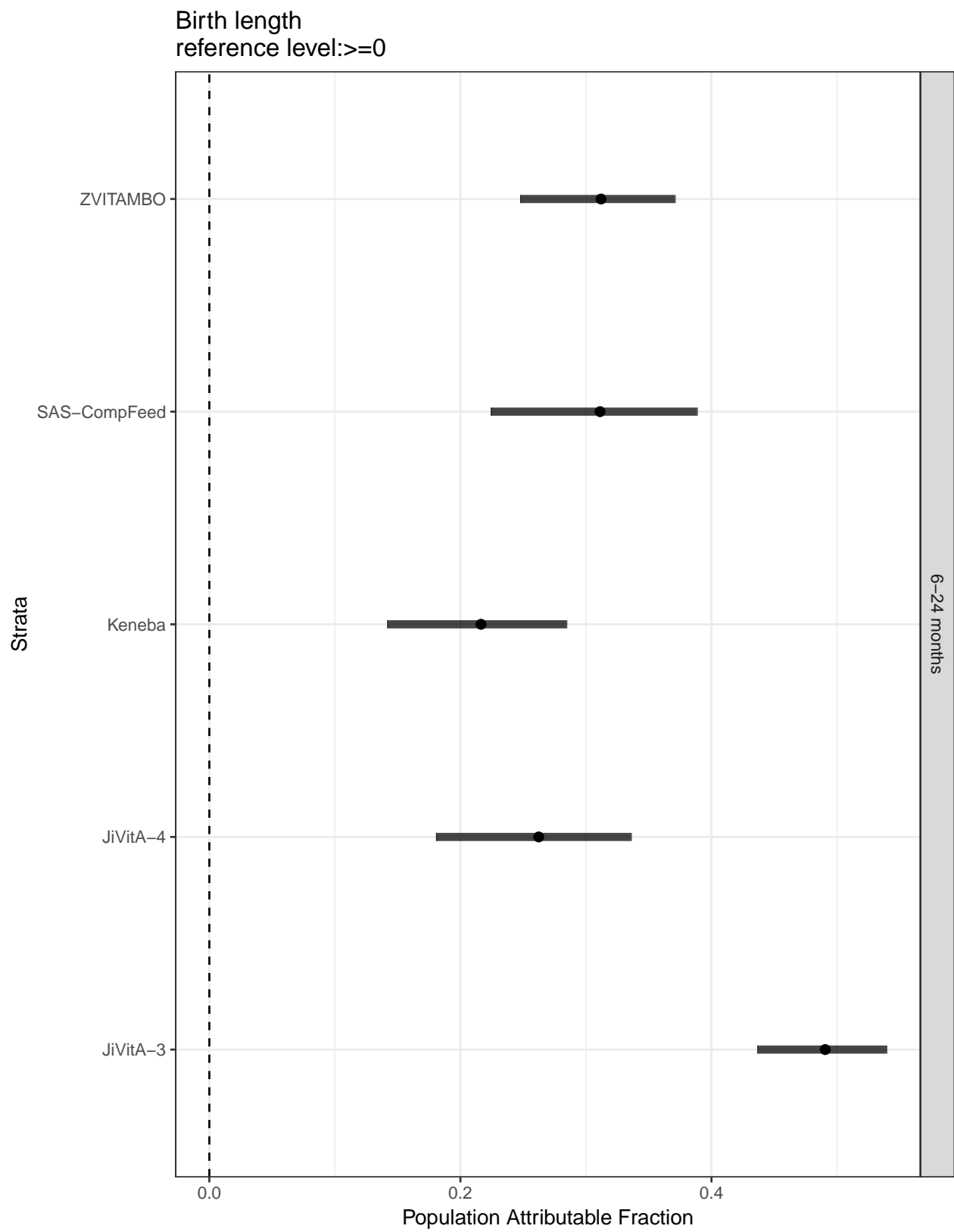


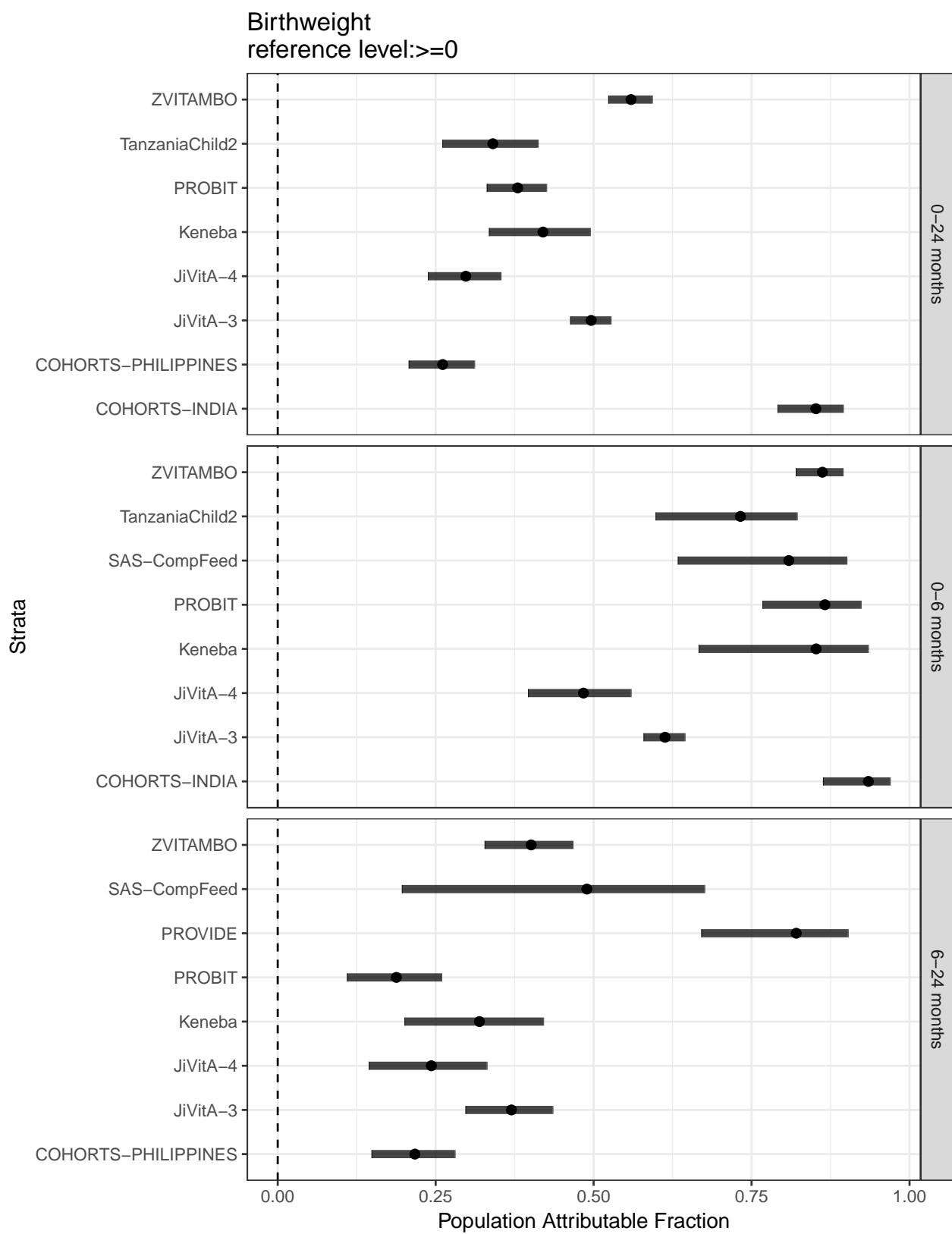
## Appendix 3 - Population Attributable Fraction stratified by cohort

### Cumulative incidence of stunting from birth to 24 months

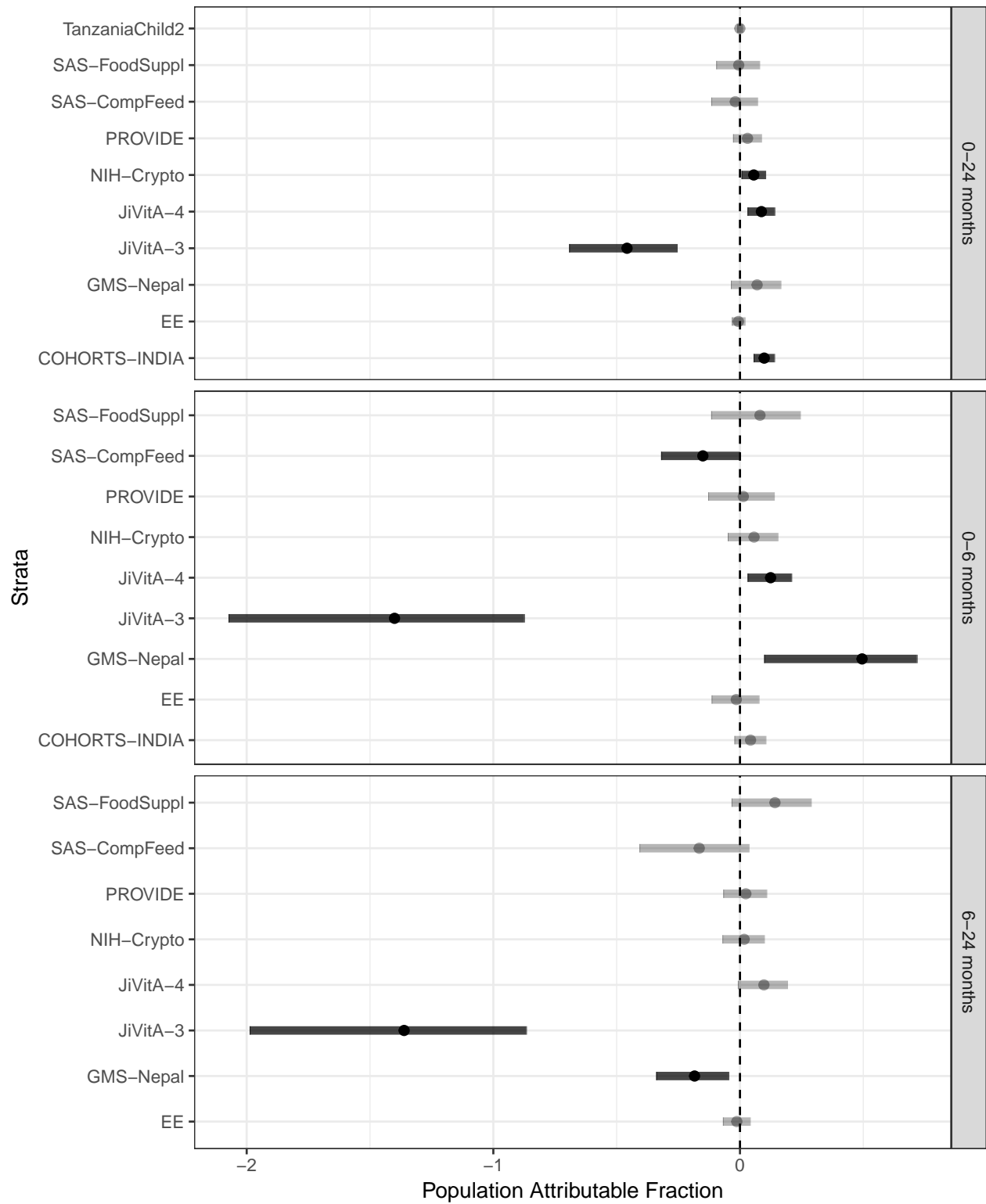
#### Child characteristics

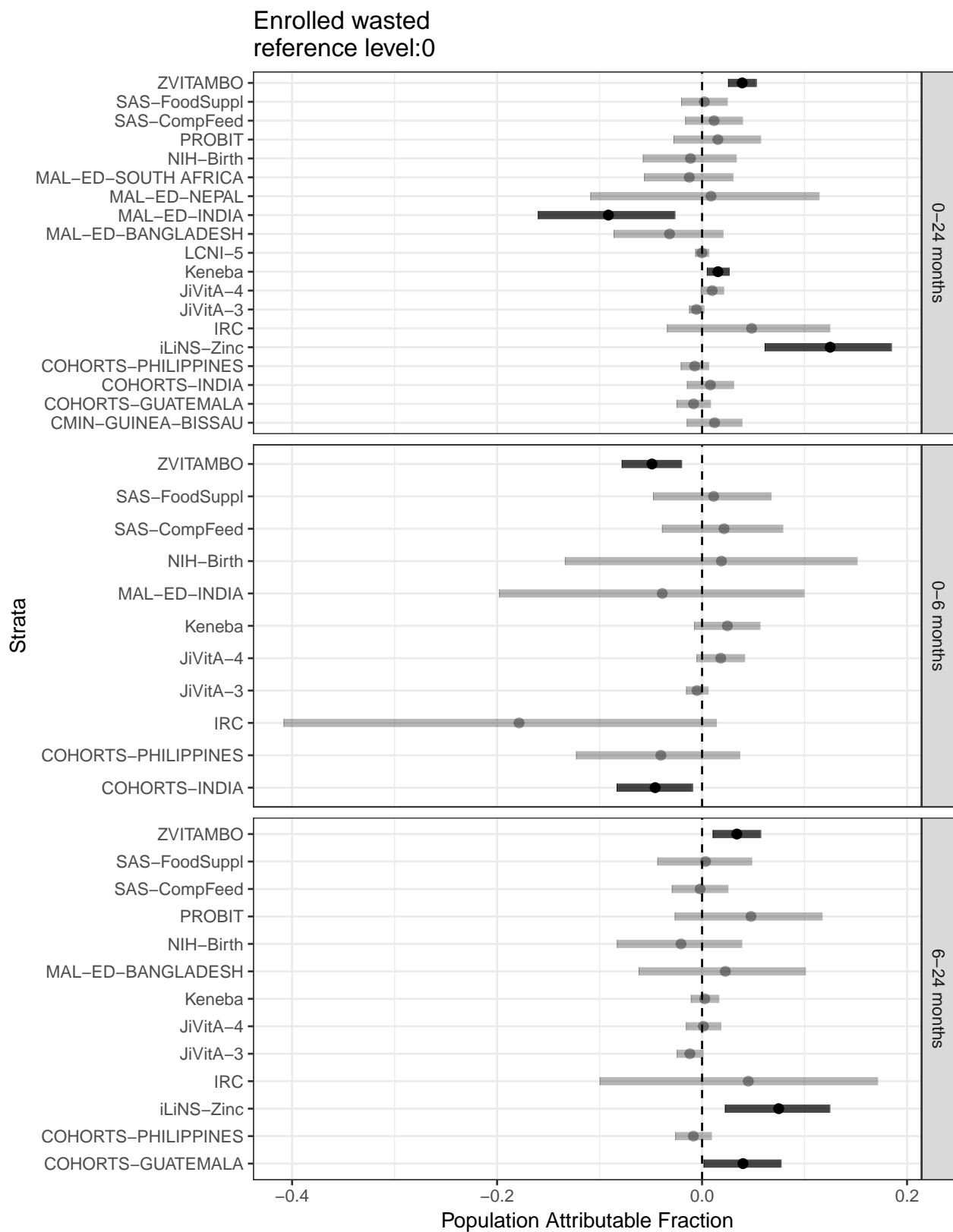




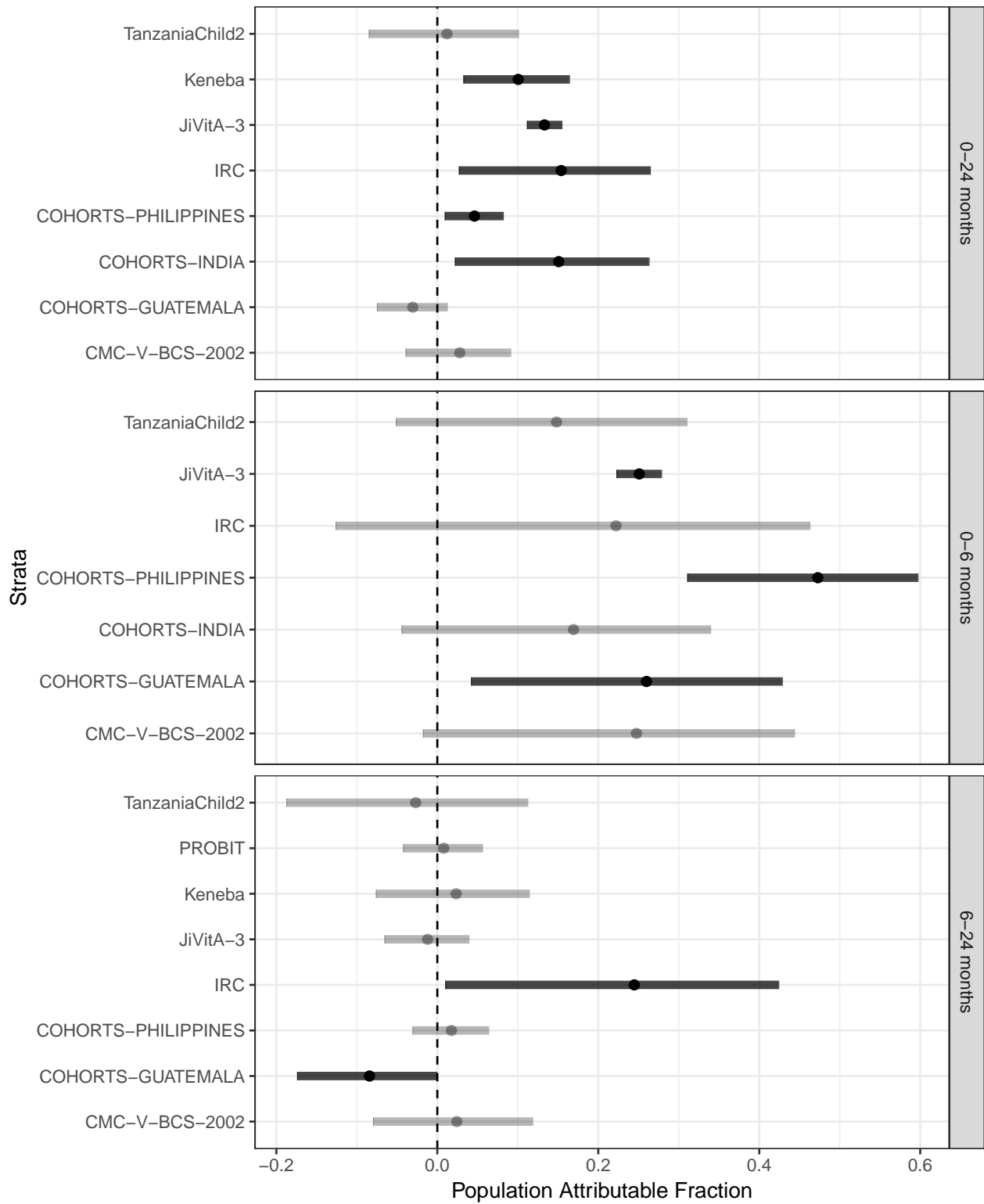


Child delivered at home  
reference level:0

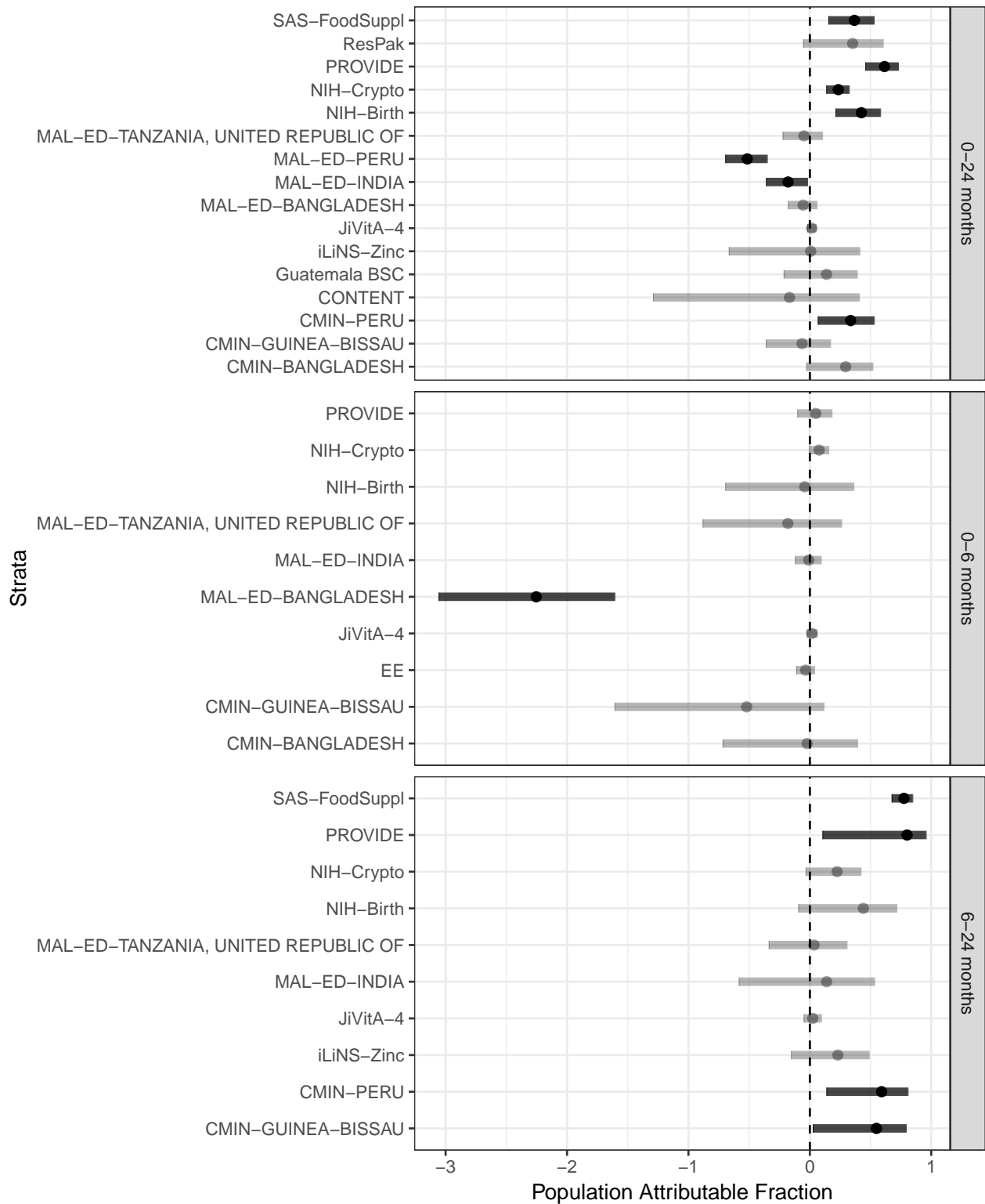




Gestational age at birth in days  
reference level:[273–287)

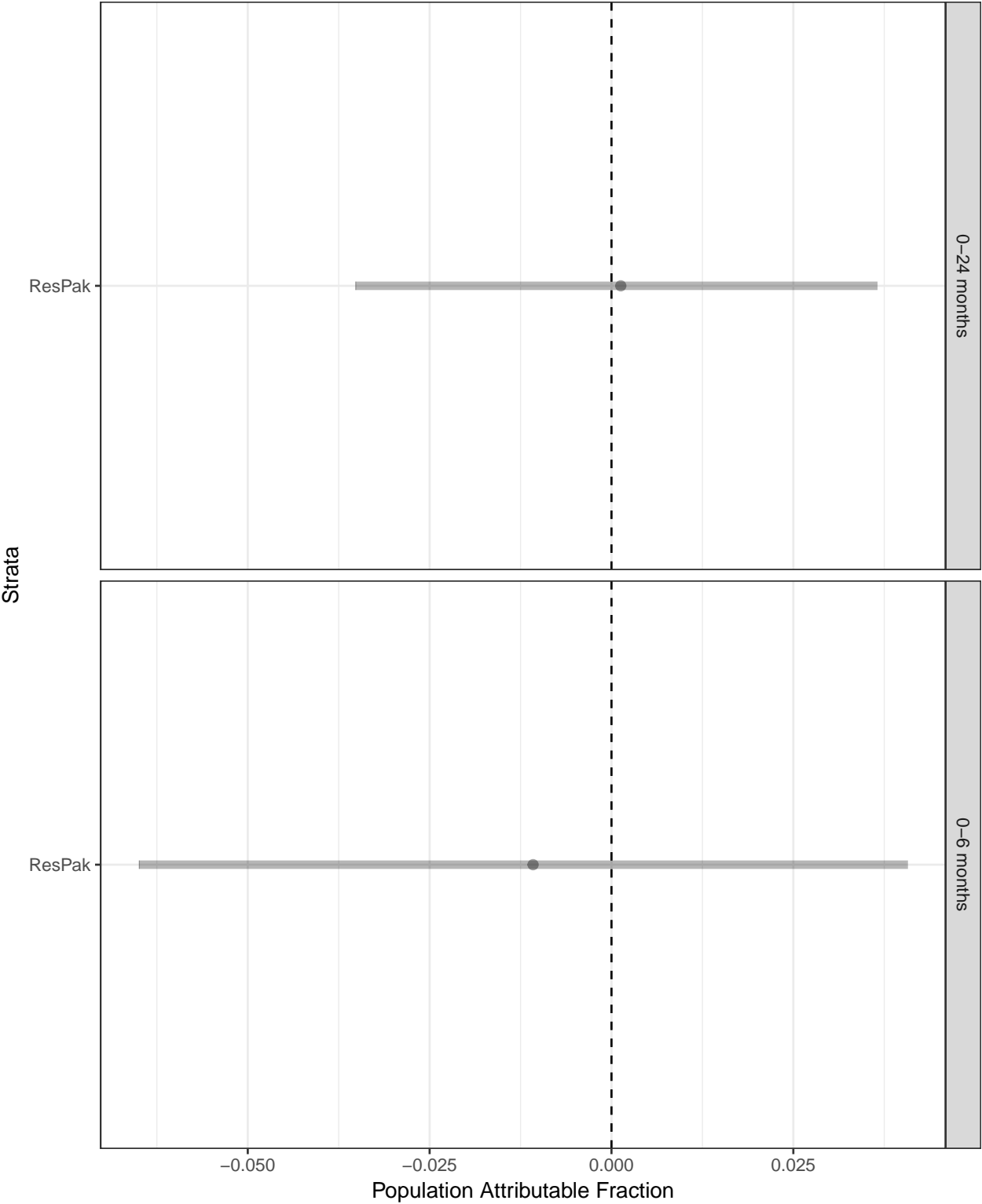


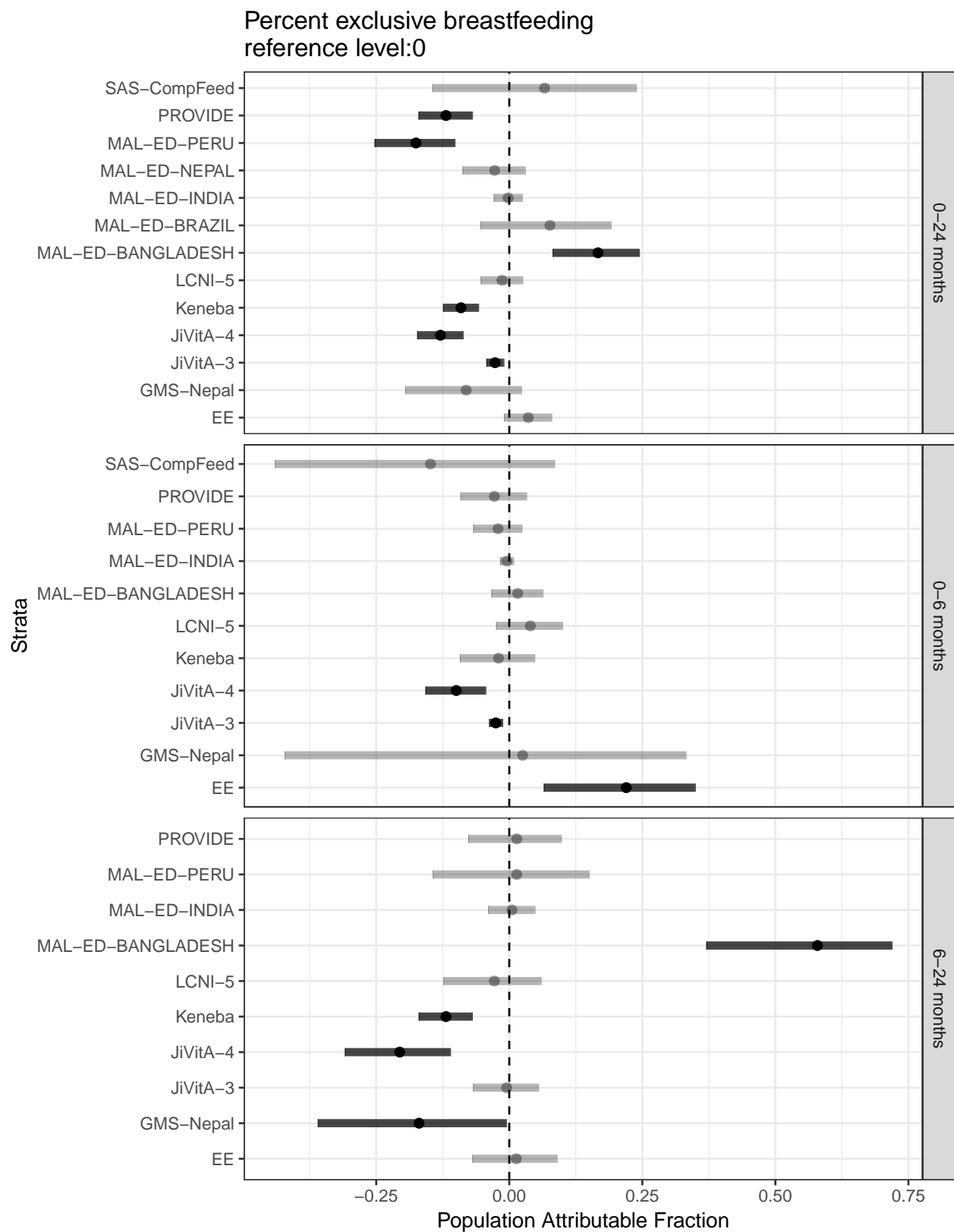
Percent diarrhea in first 24 months  
reference level:Q1



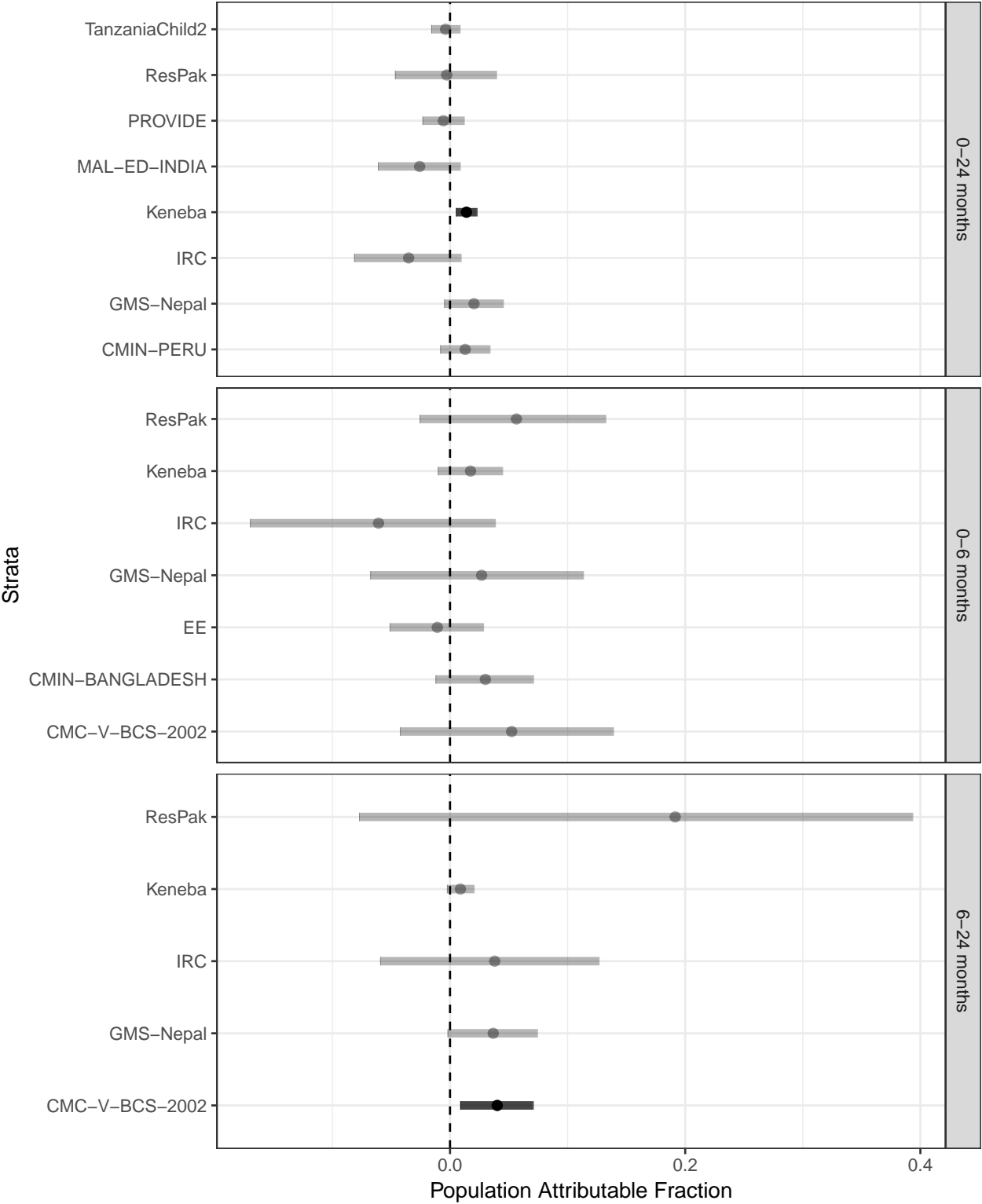


Percent diarrhea in first 6 months  
reference level:Q1

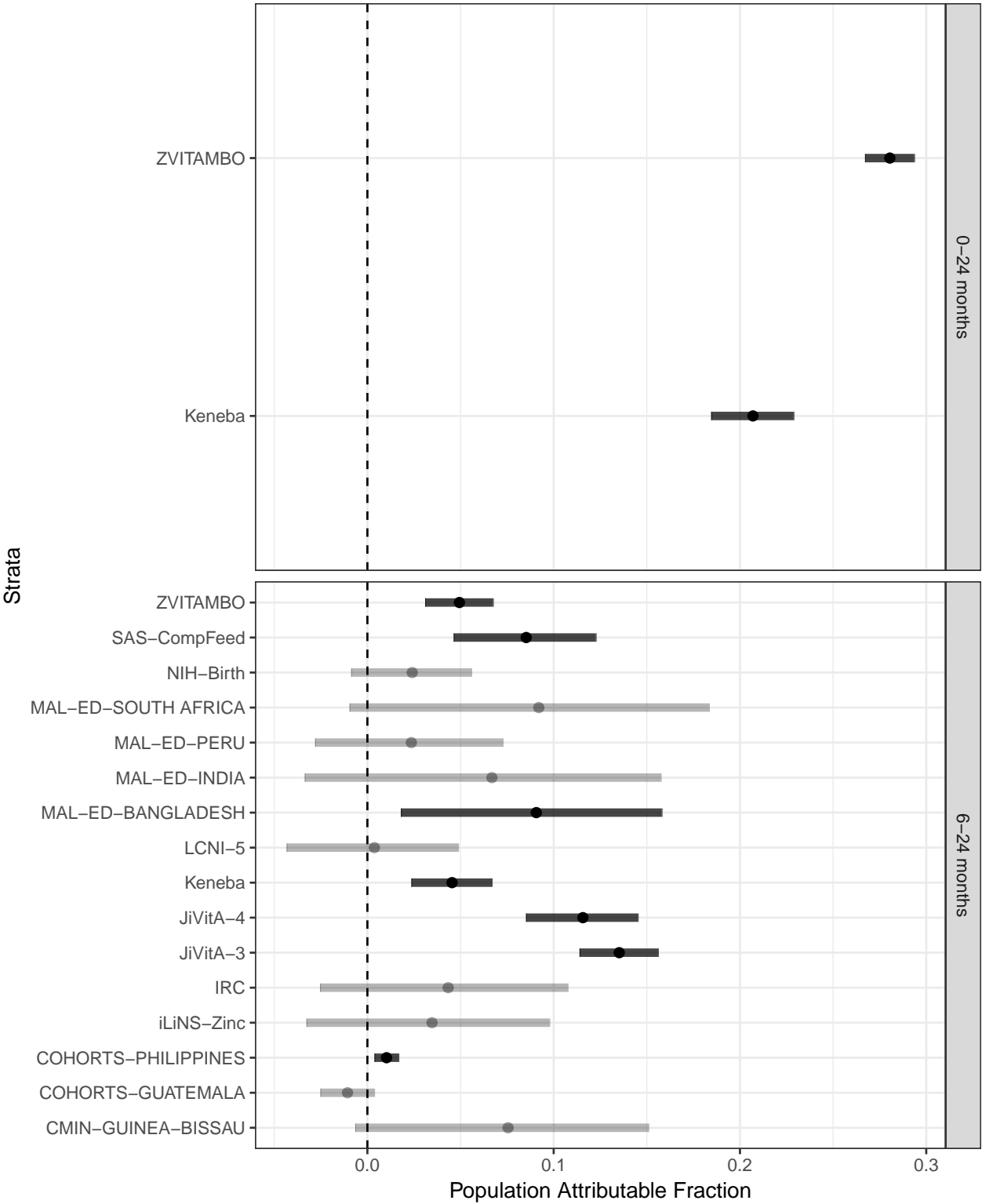




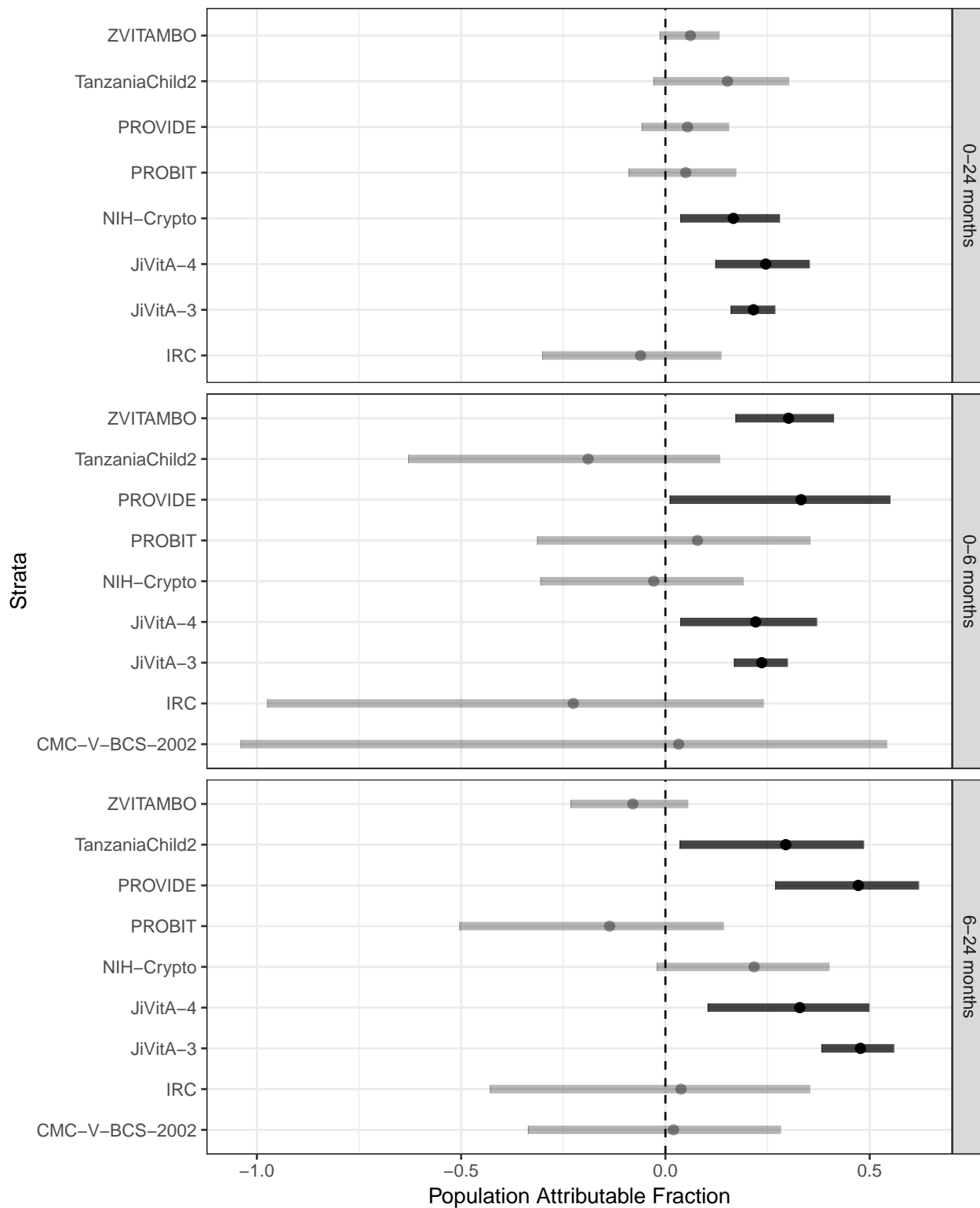
# Persistent wasting in first 6 months reference level:0



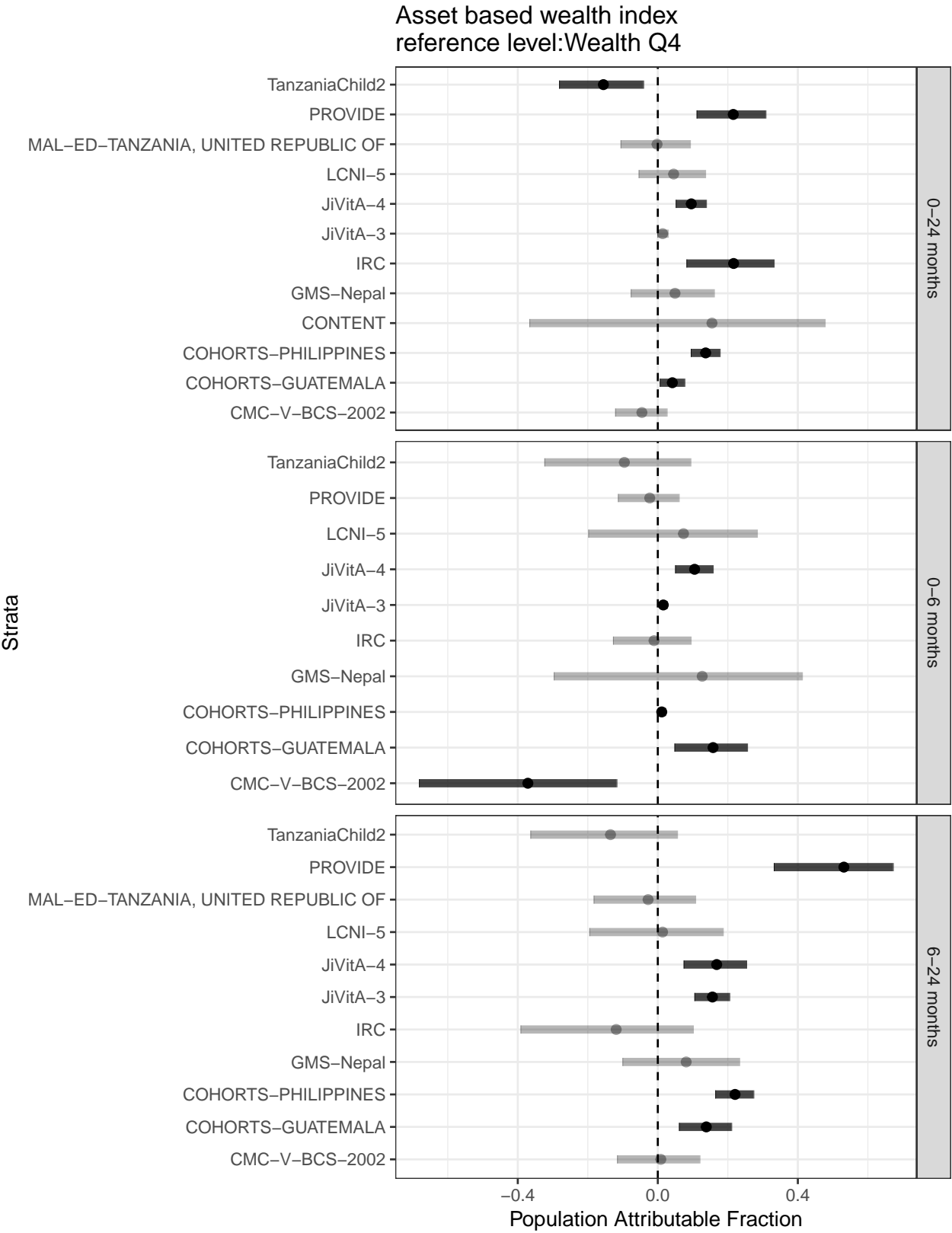
Stunted at enrollment  
reference level:0



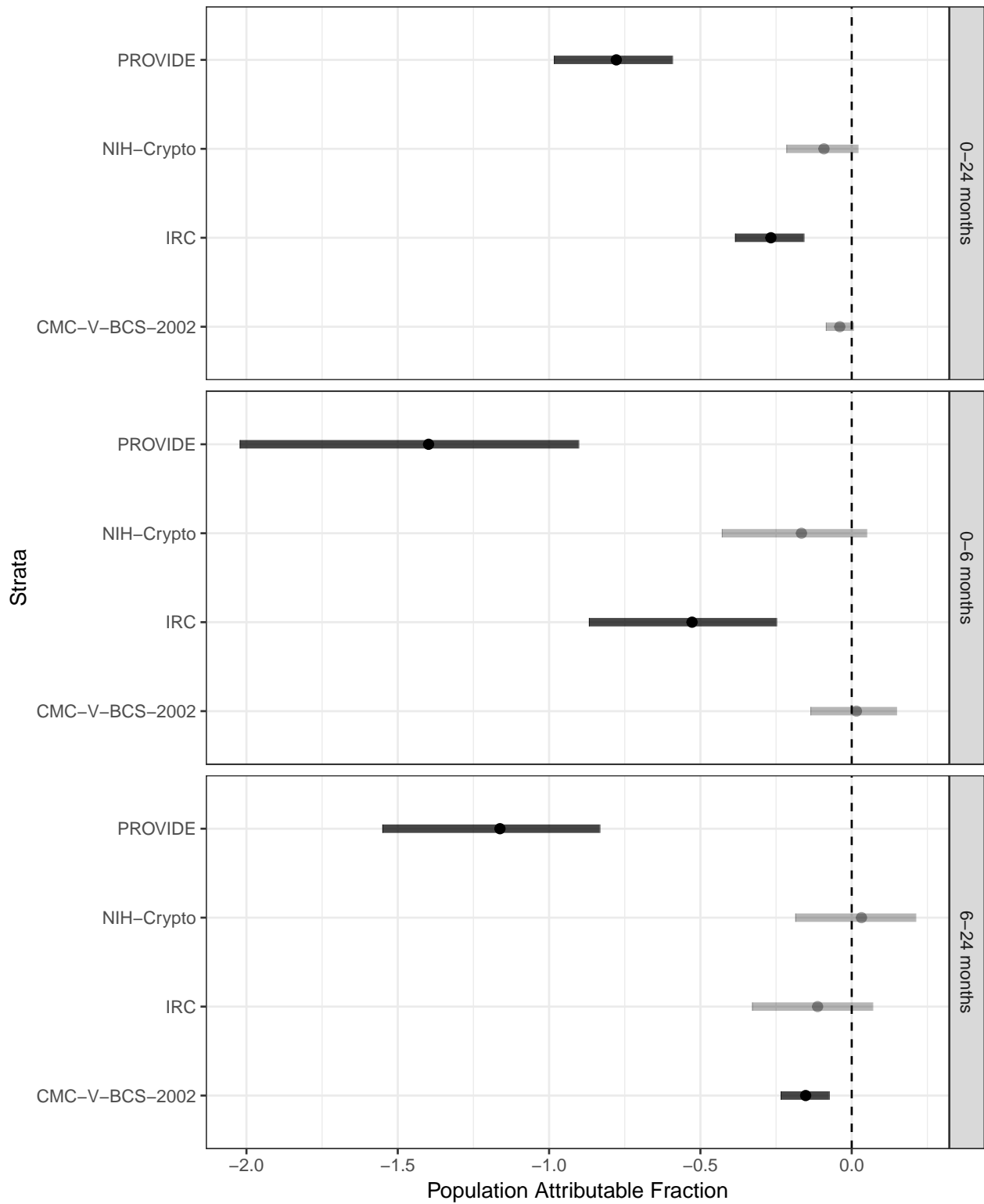
Vaginal delivery  
reference level:0



Household characteristics

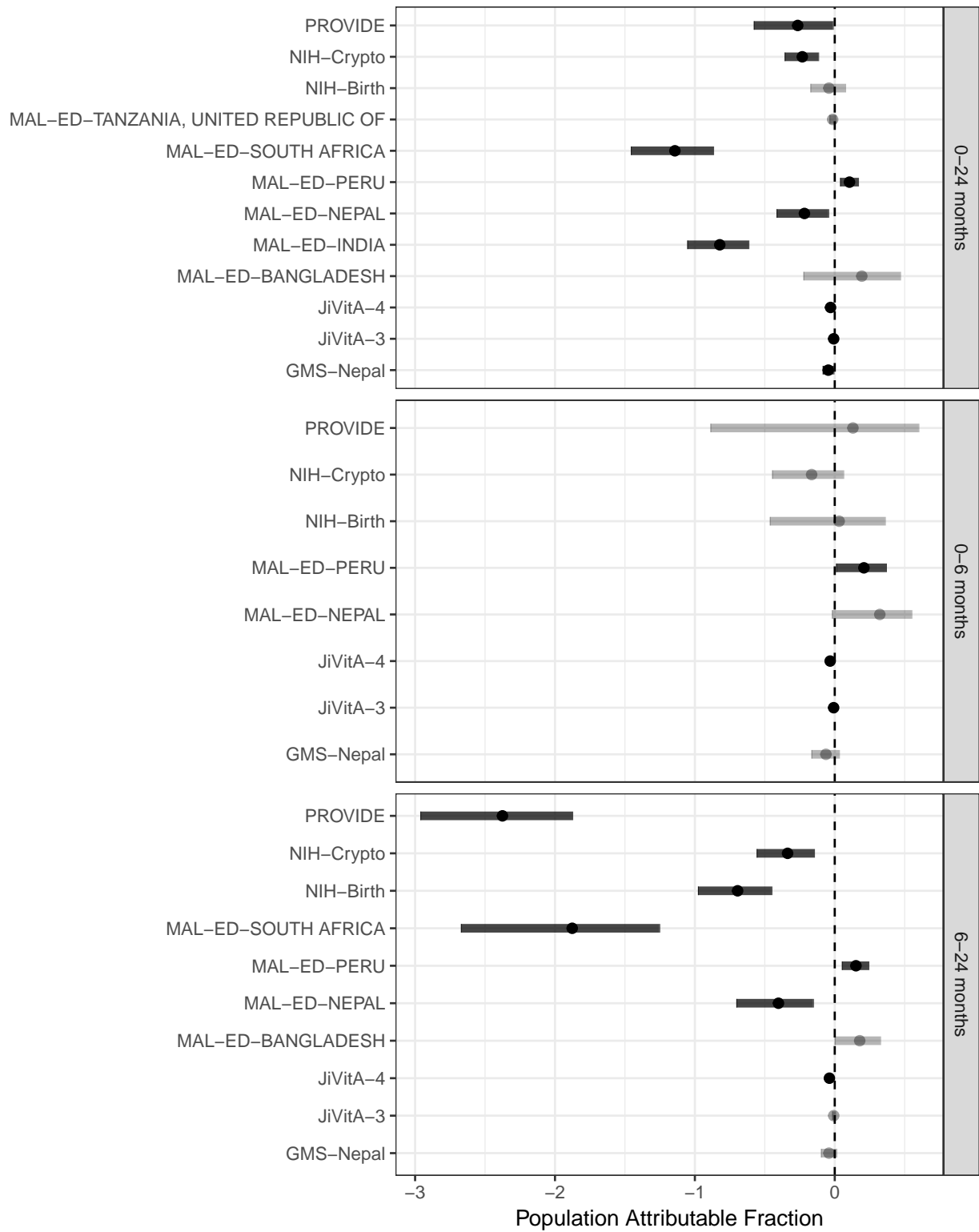


Clean cook  
reference level:0

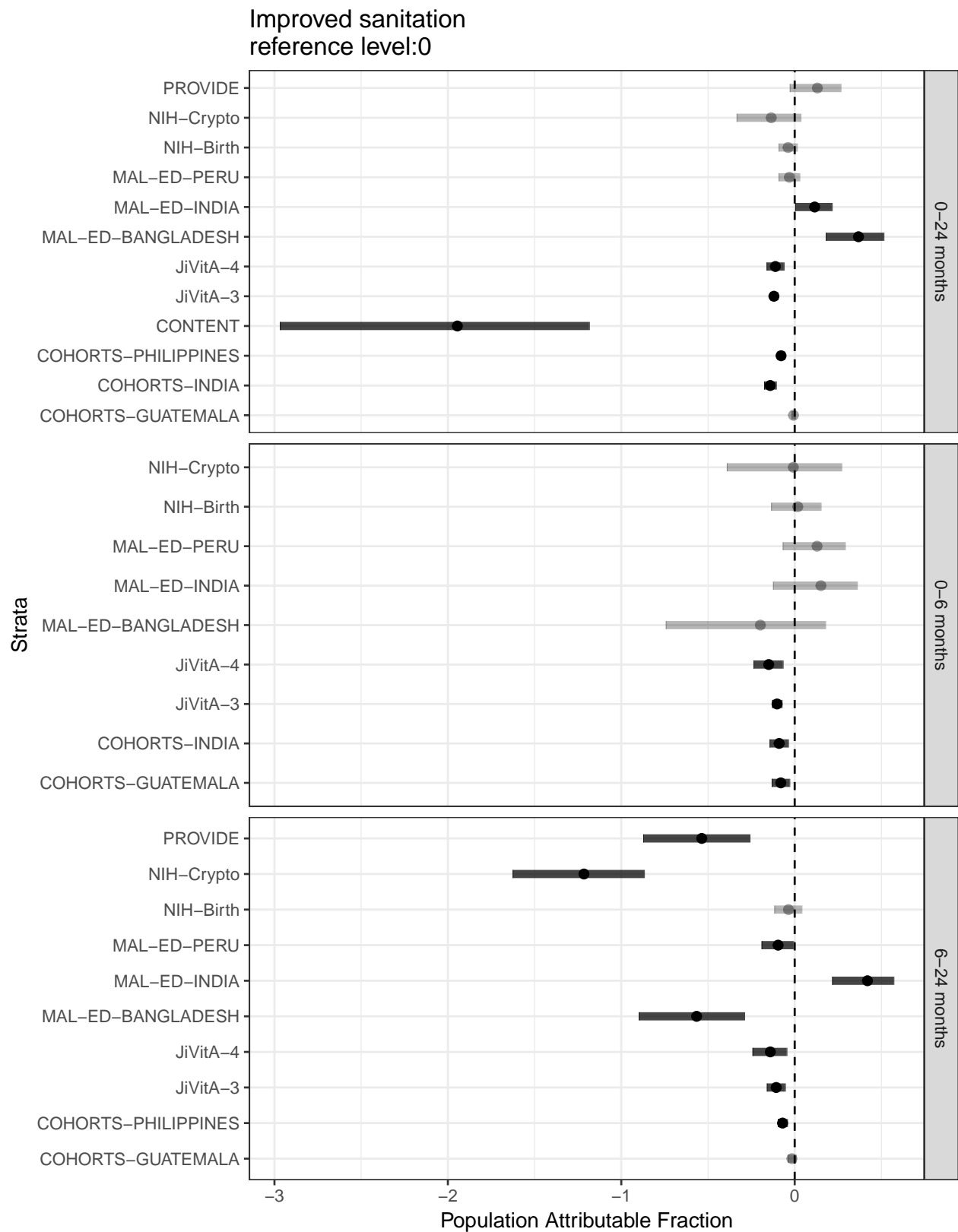


Strata

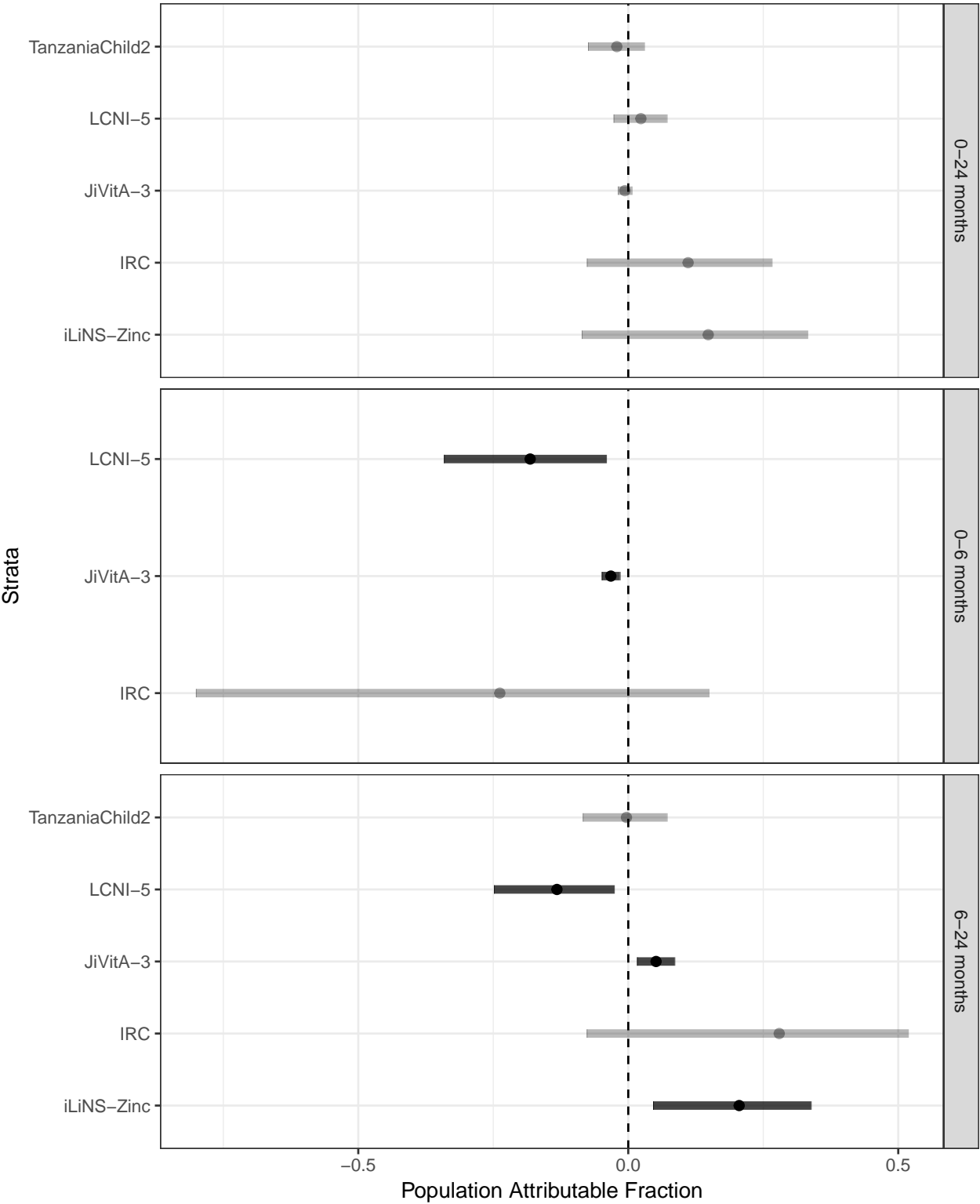
Improved floor  
reference level:0



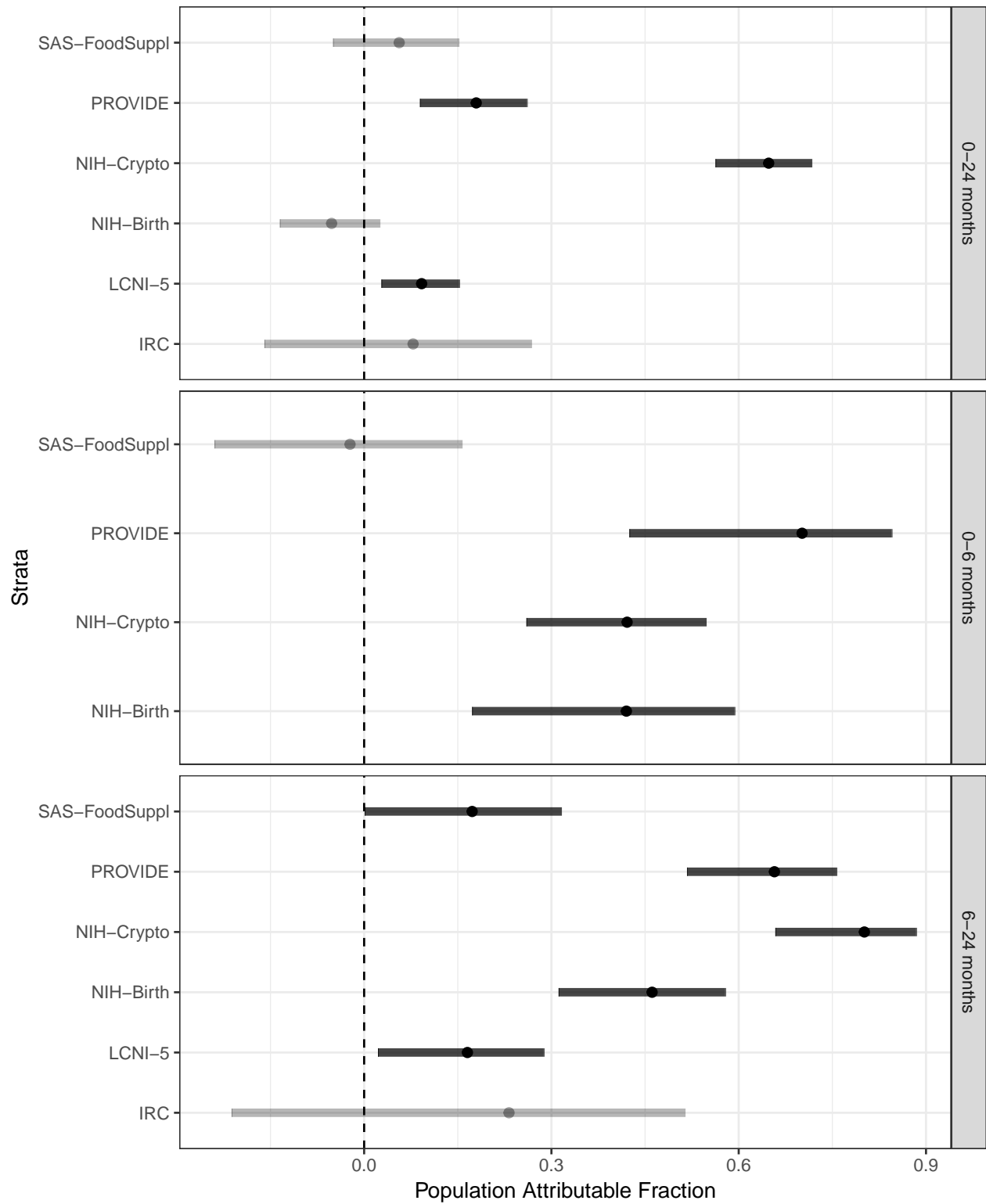




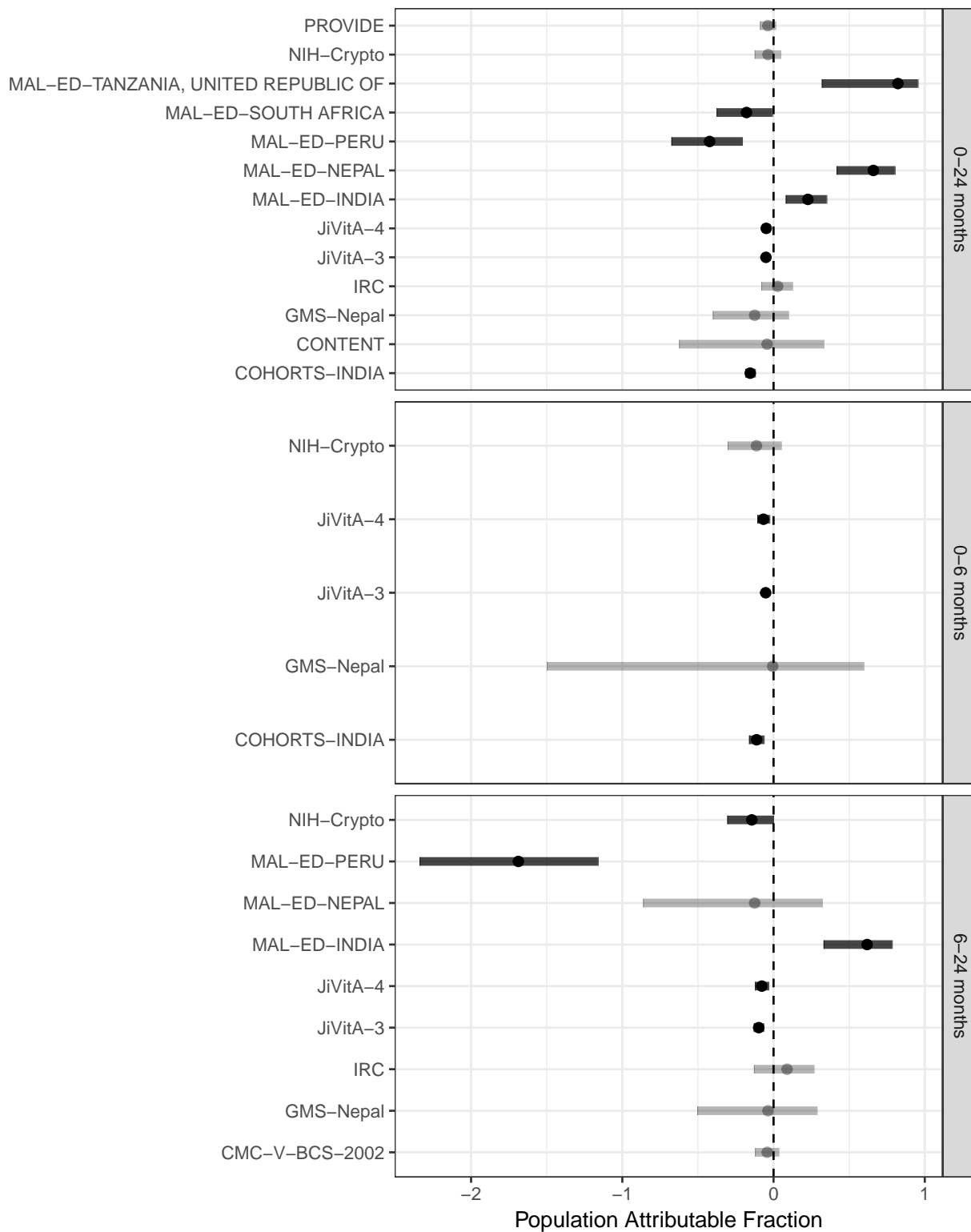
Number of children in the household under 5 years  
reference level:1

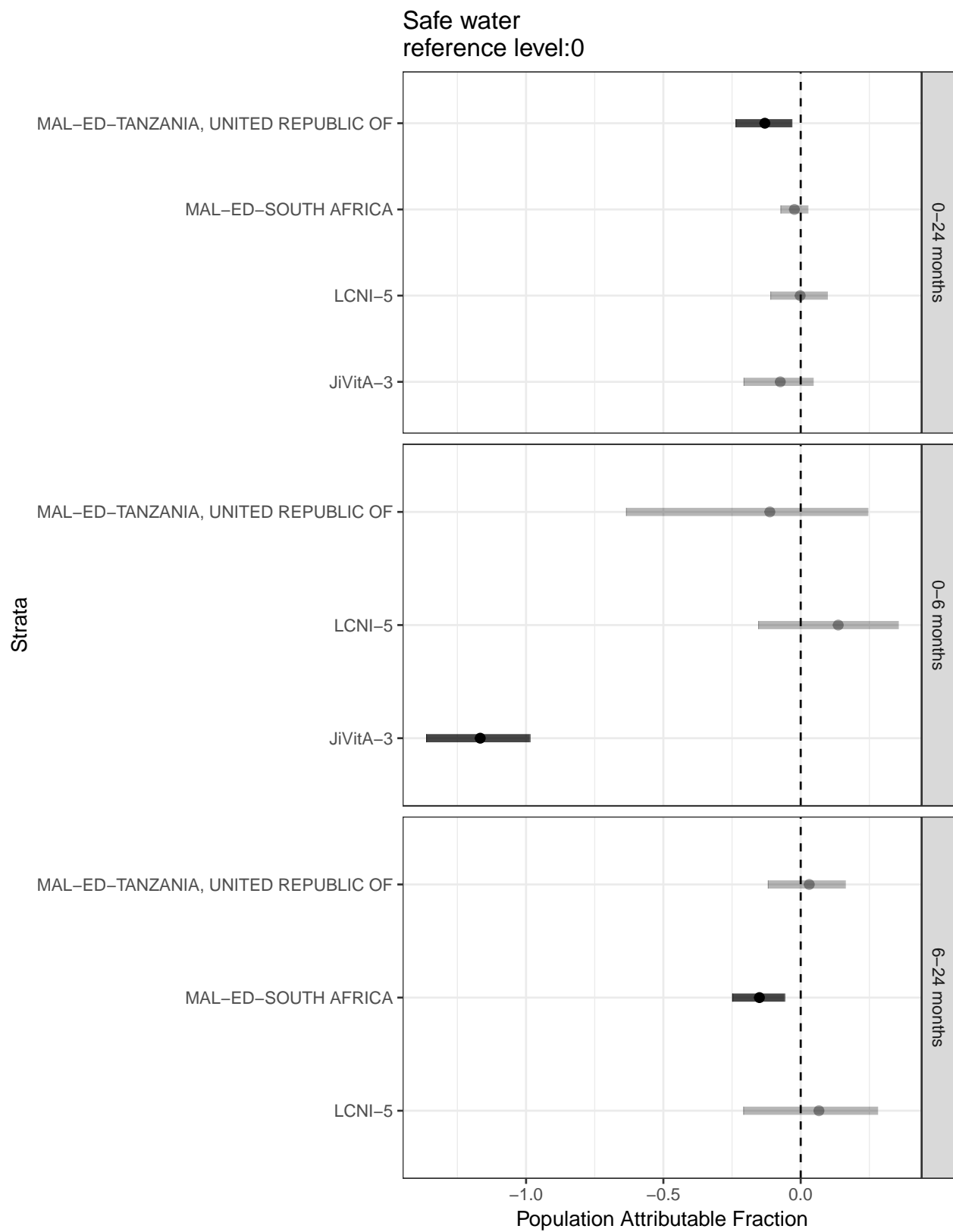


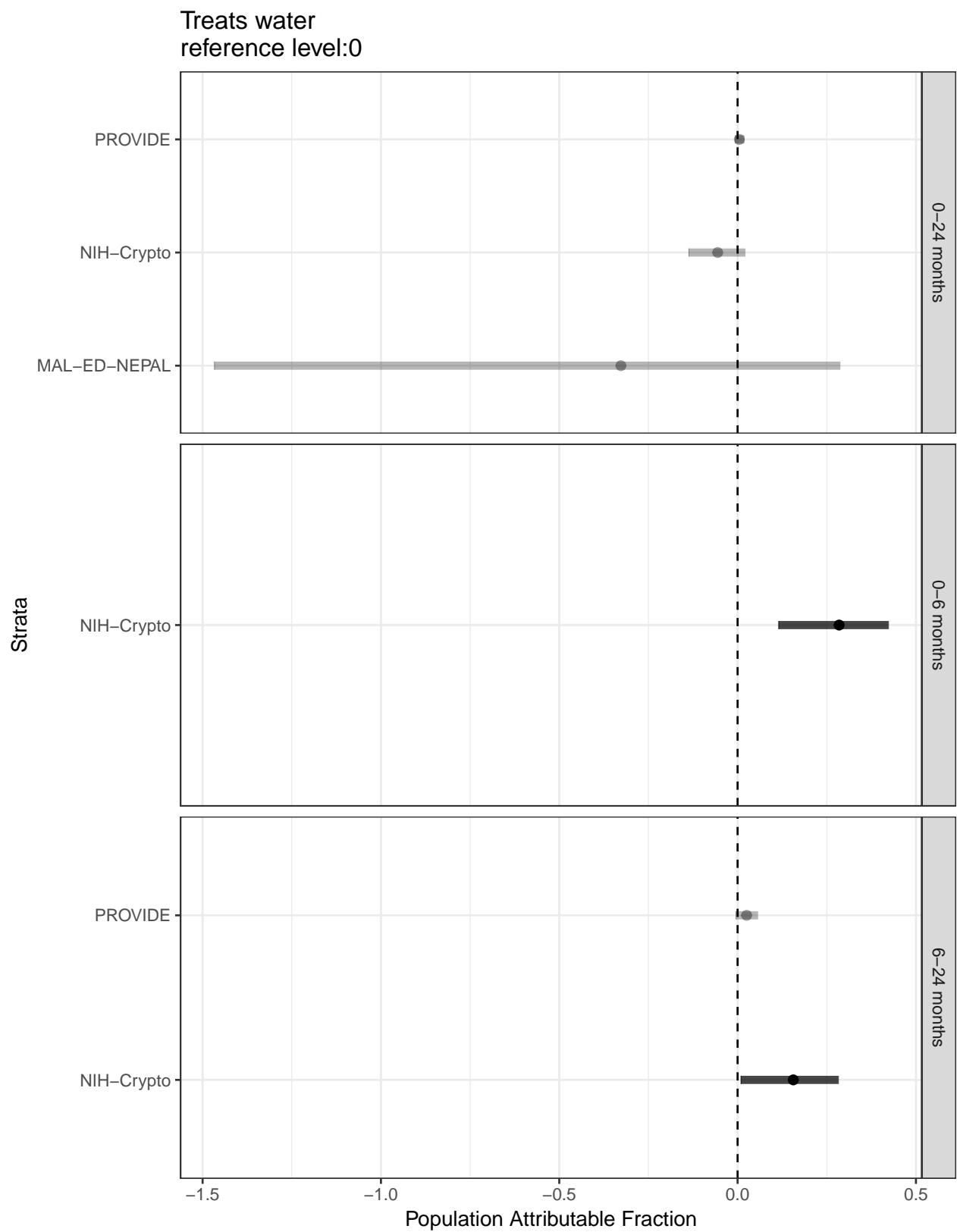
Number of people in the household  
reference level:3 or less



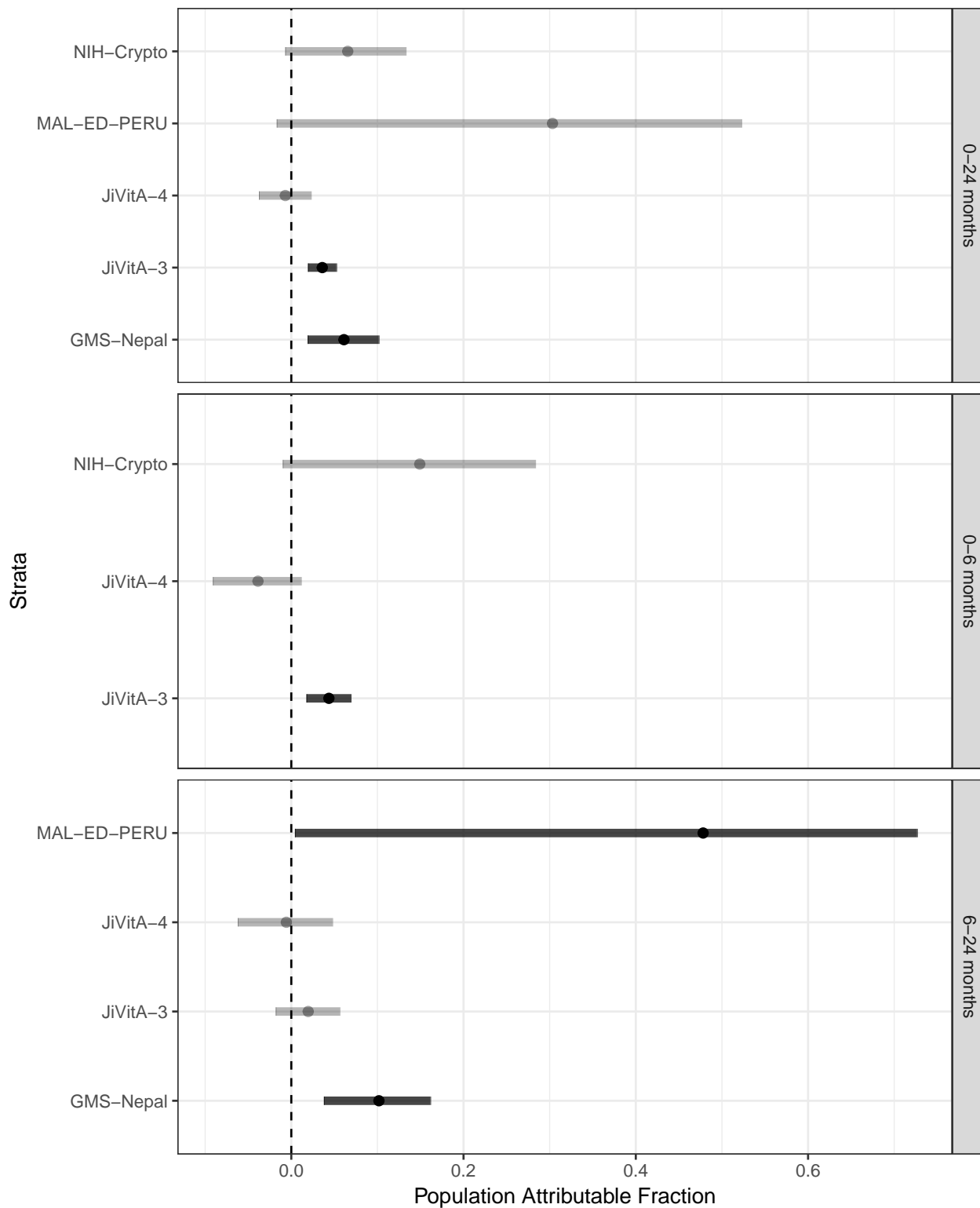
# Number of rooms in household reference level:1





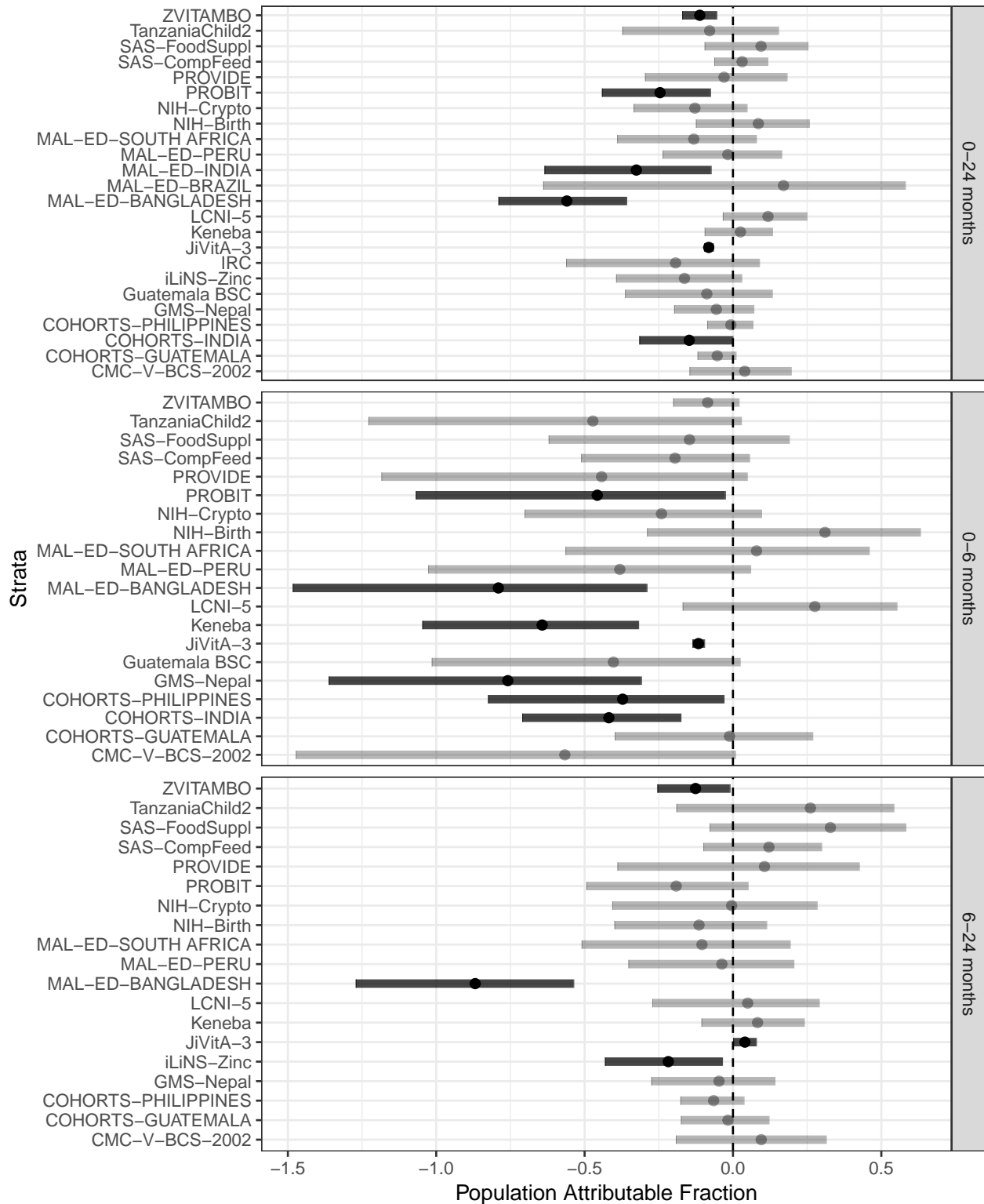


USAID Household Food Insecurity Access Scale (HFIAS) category  
reference level: Food Secure



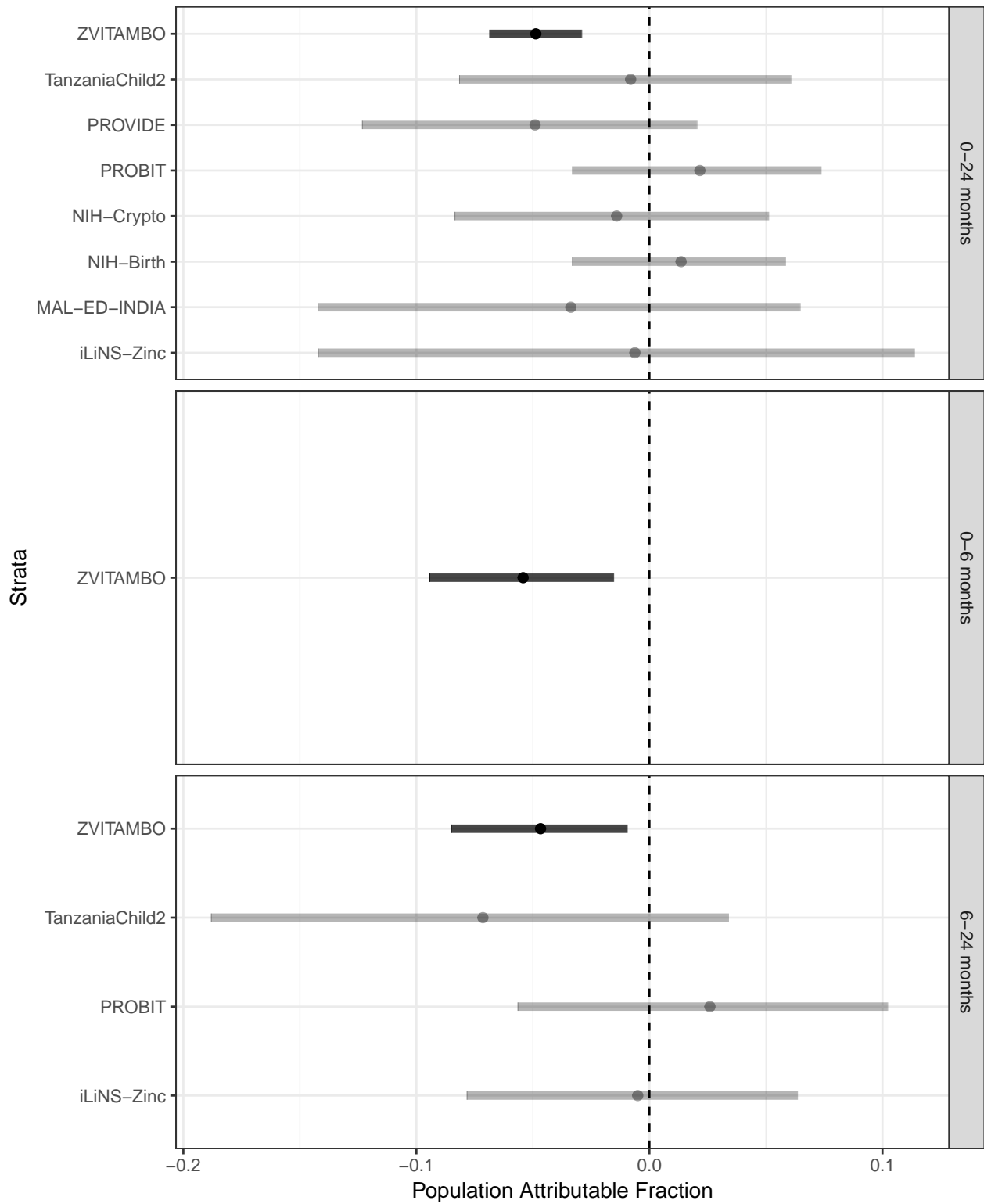
## Maternal characteristics

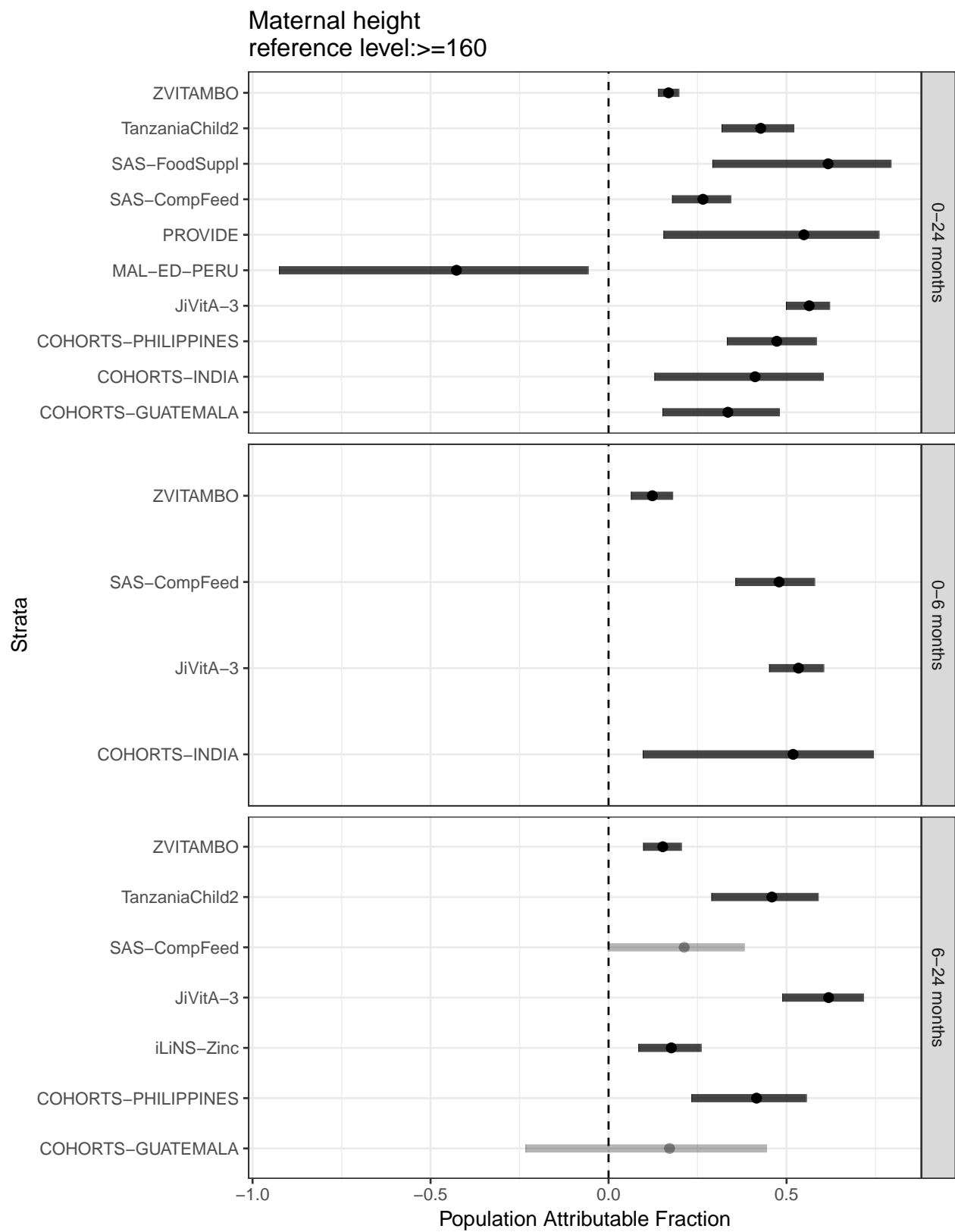
Maternal age  
reference level: <20

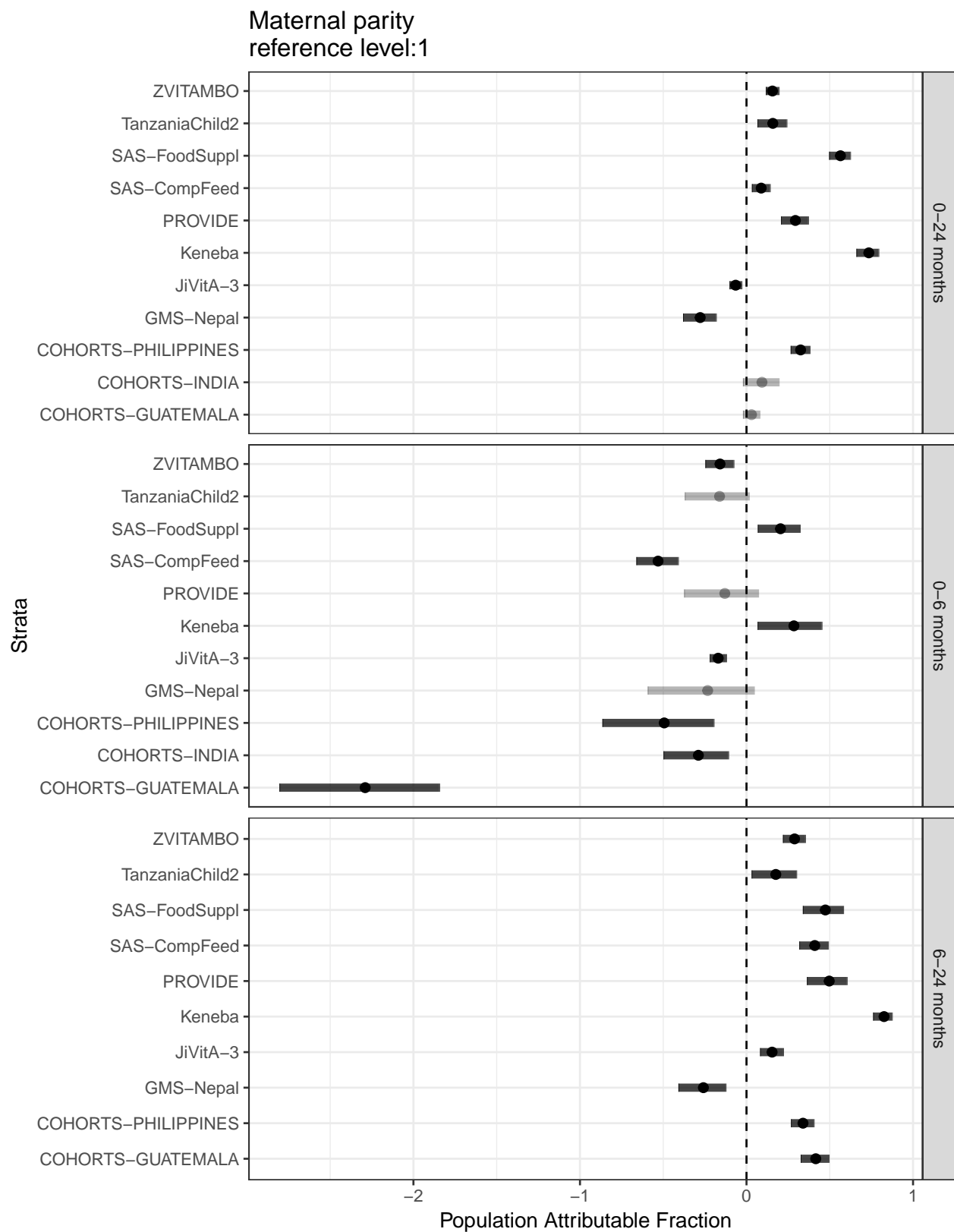


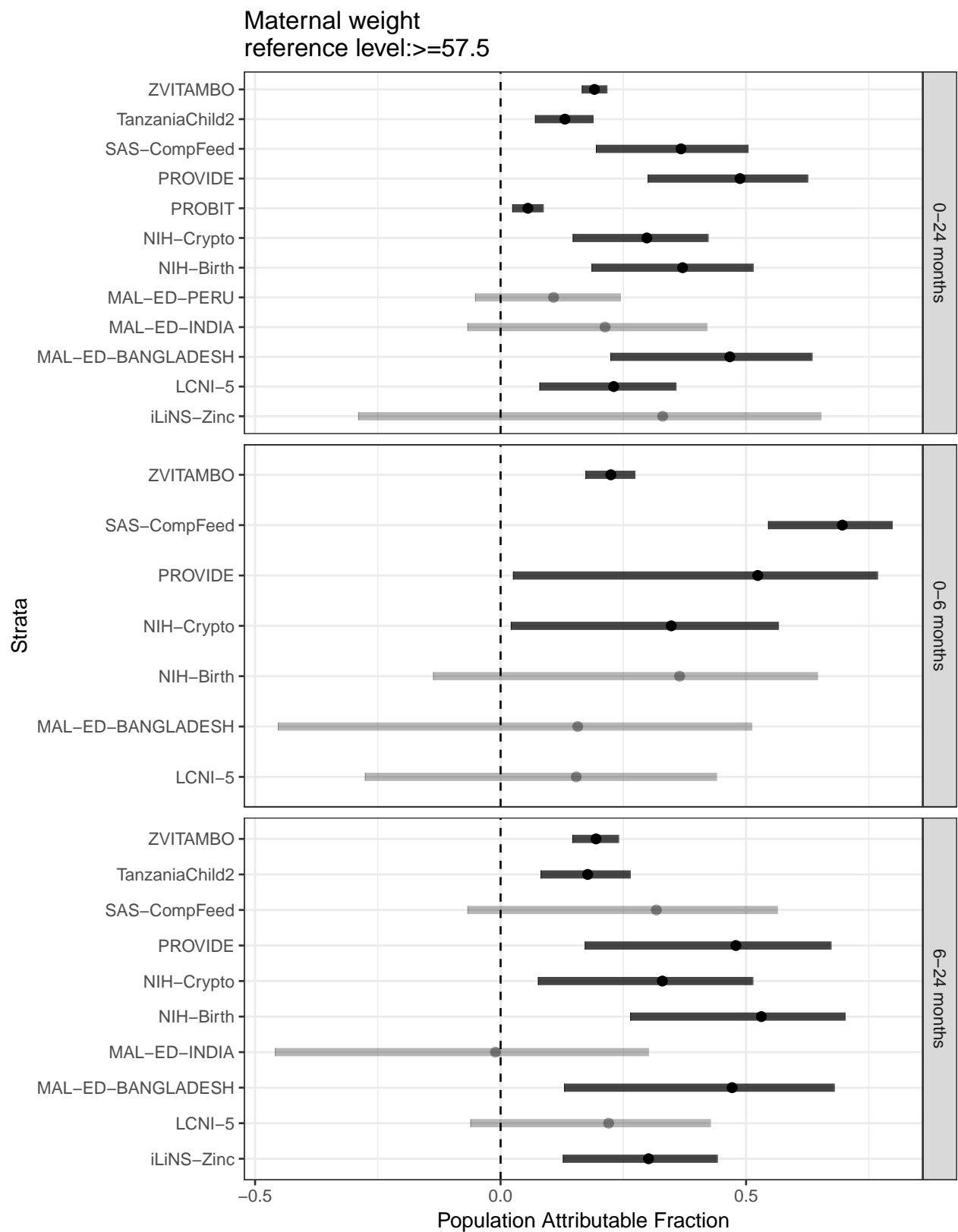


Maternal BMI  
reference level:[18.5–25)

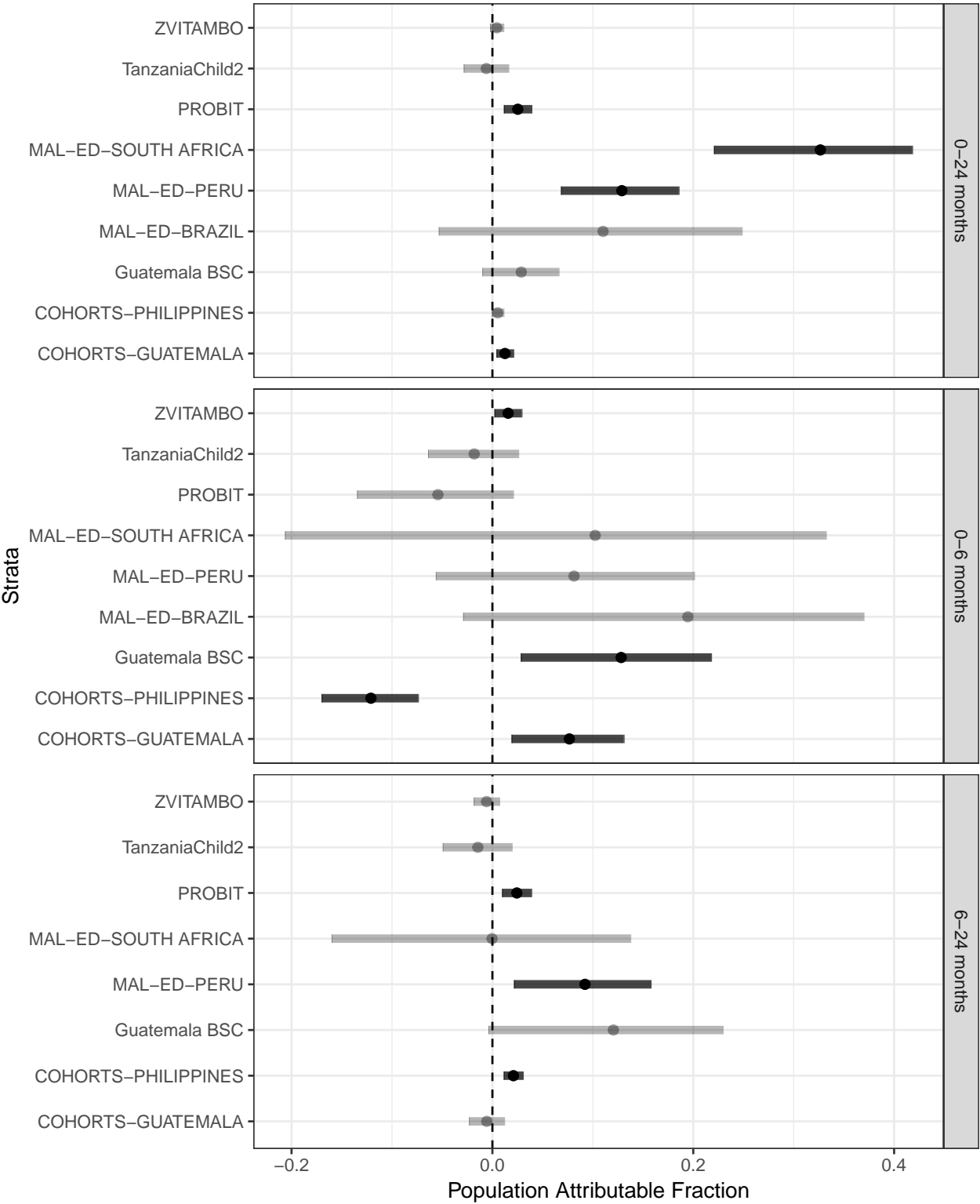




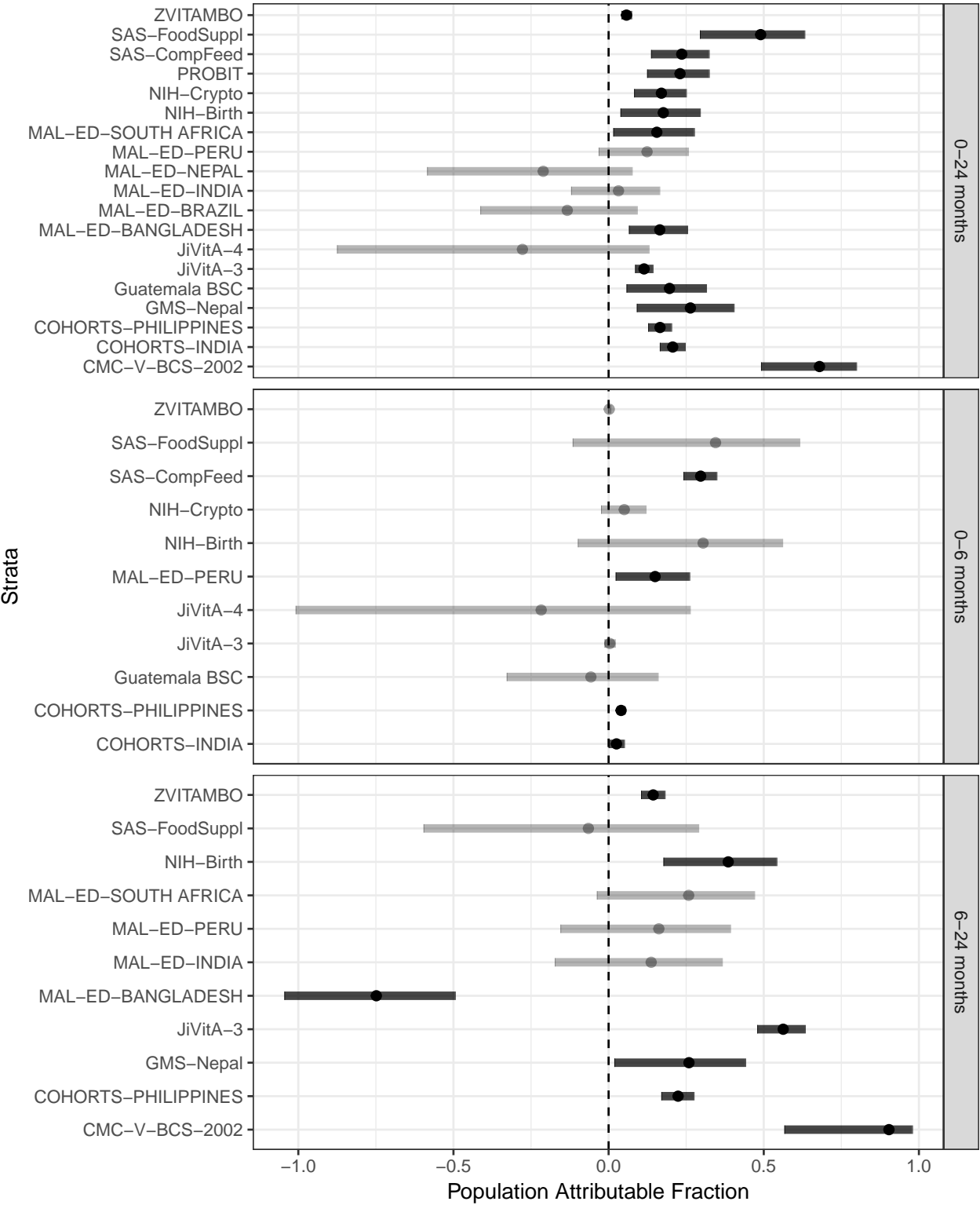




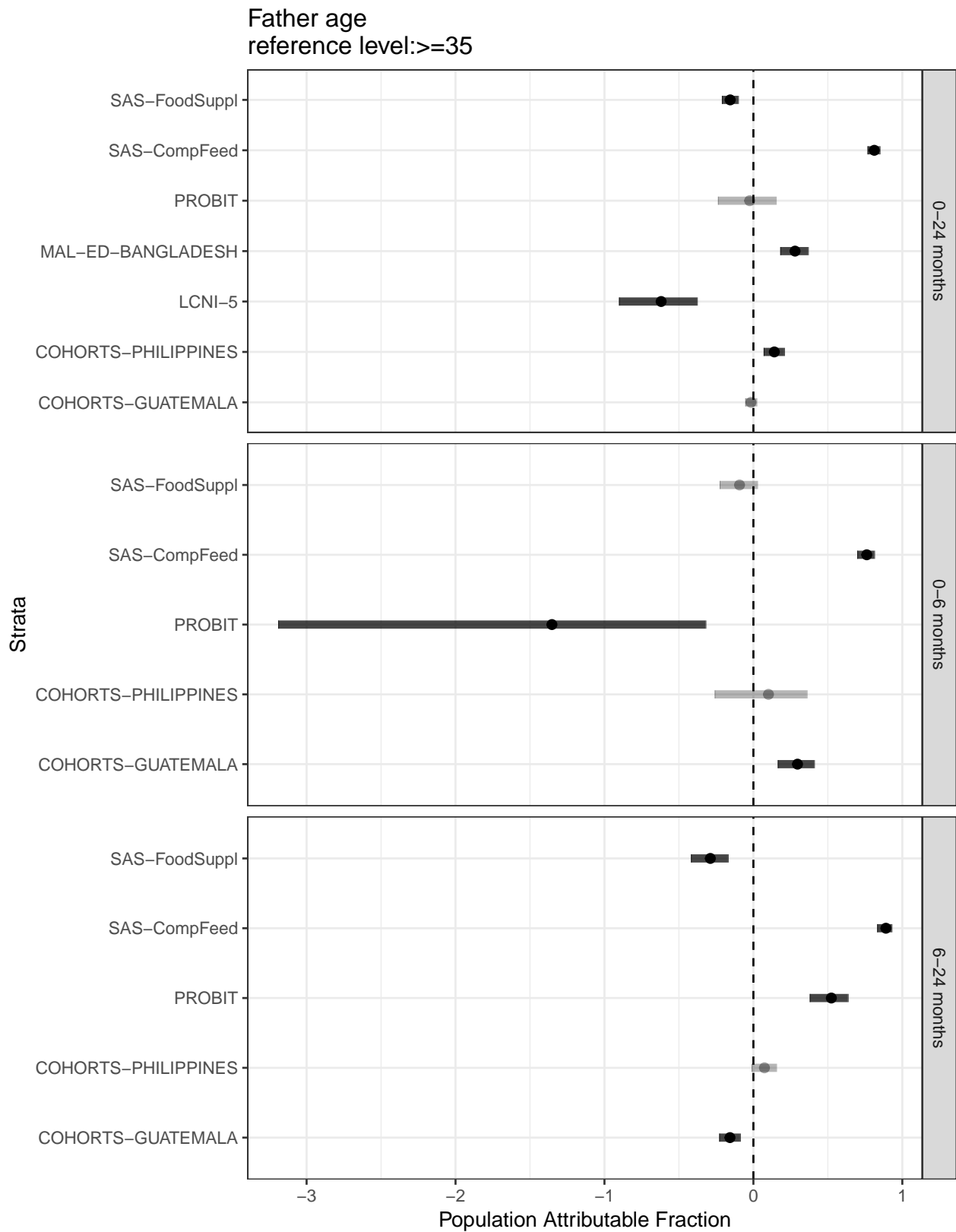
Mother is unmarried  
reference level:0

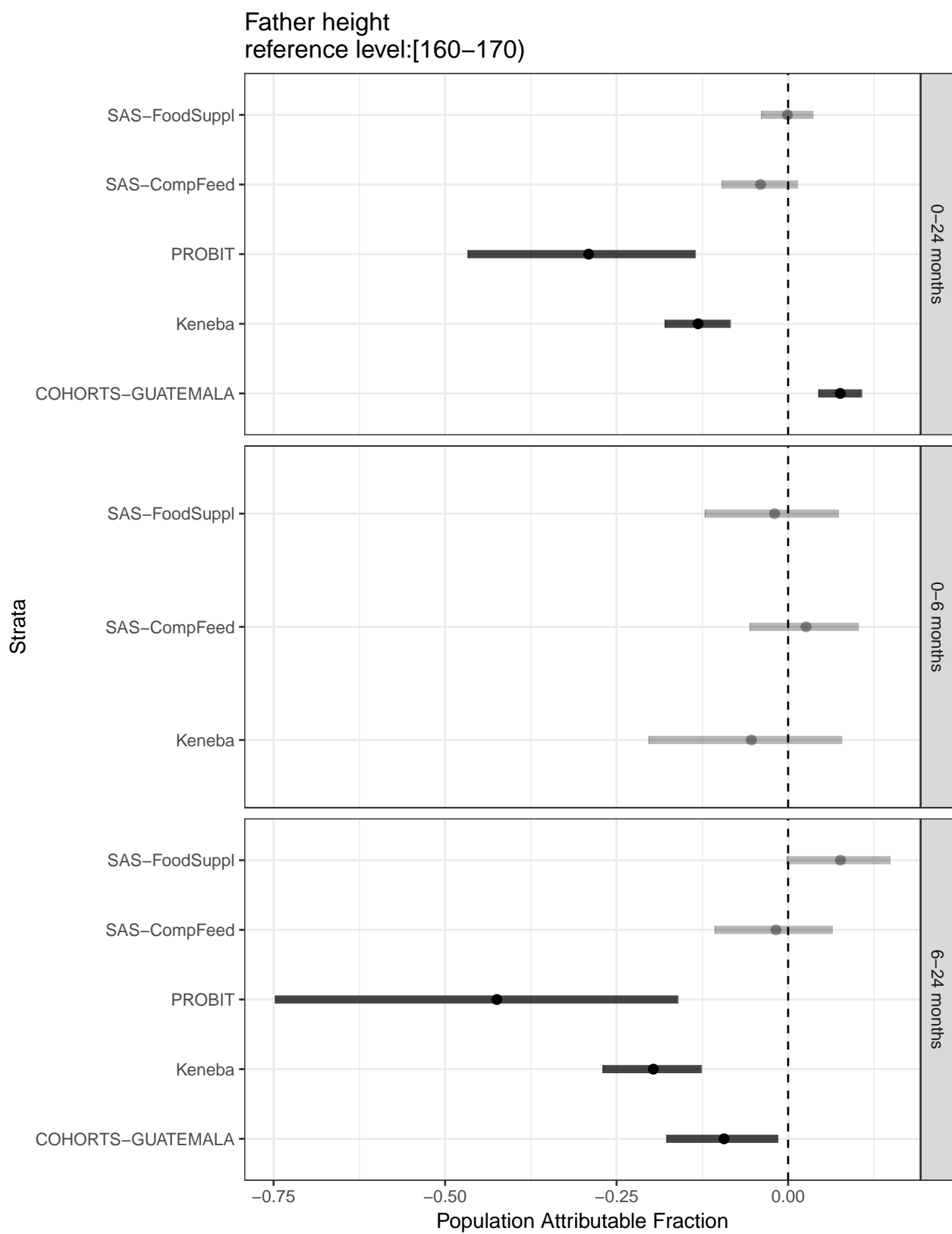


Mother's education  
reference level:Q4



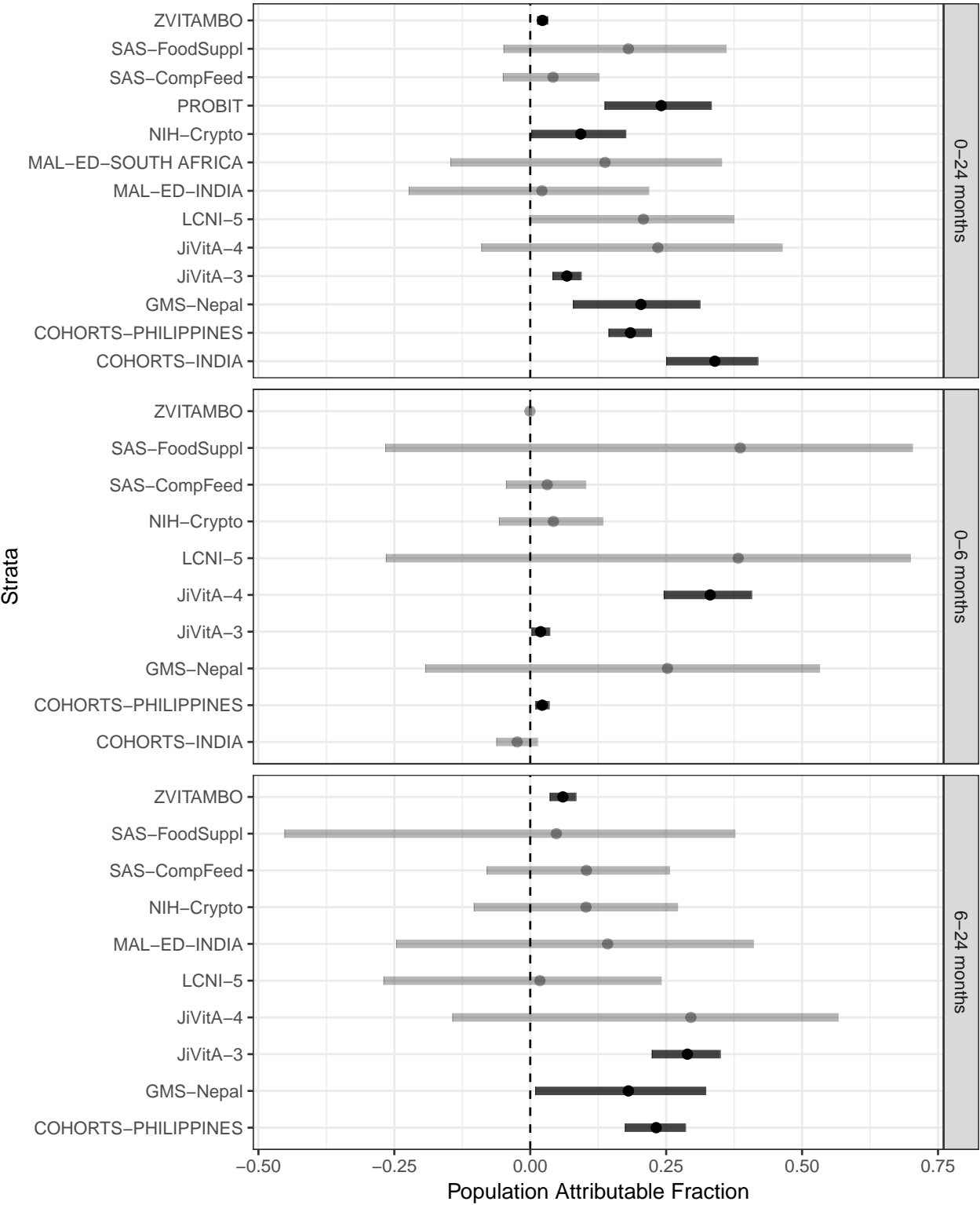
## Paternal characteristics





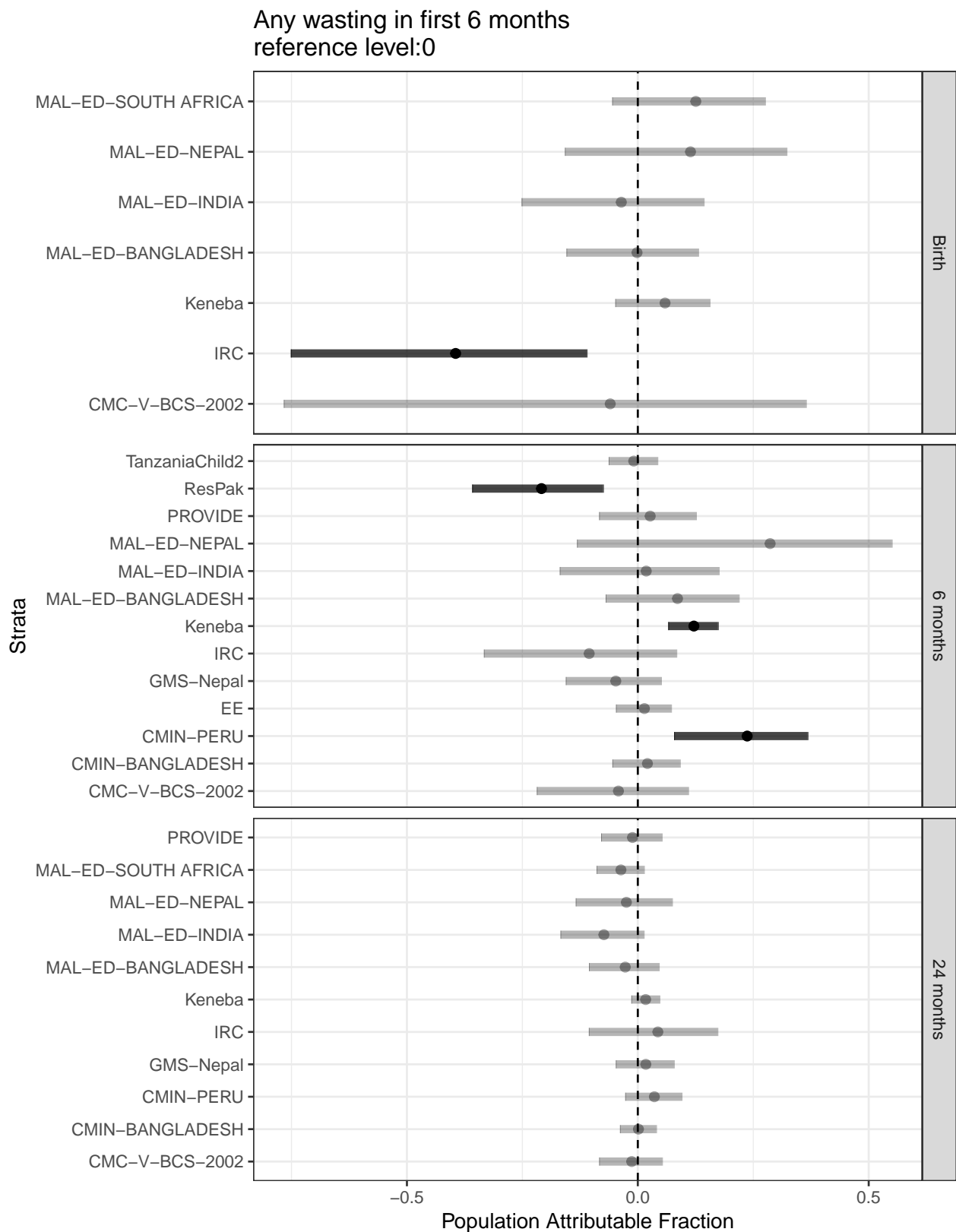


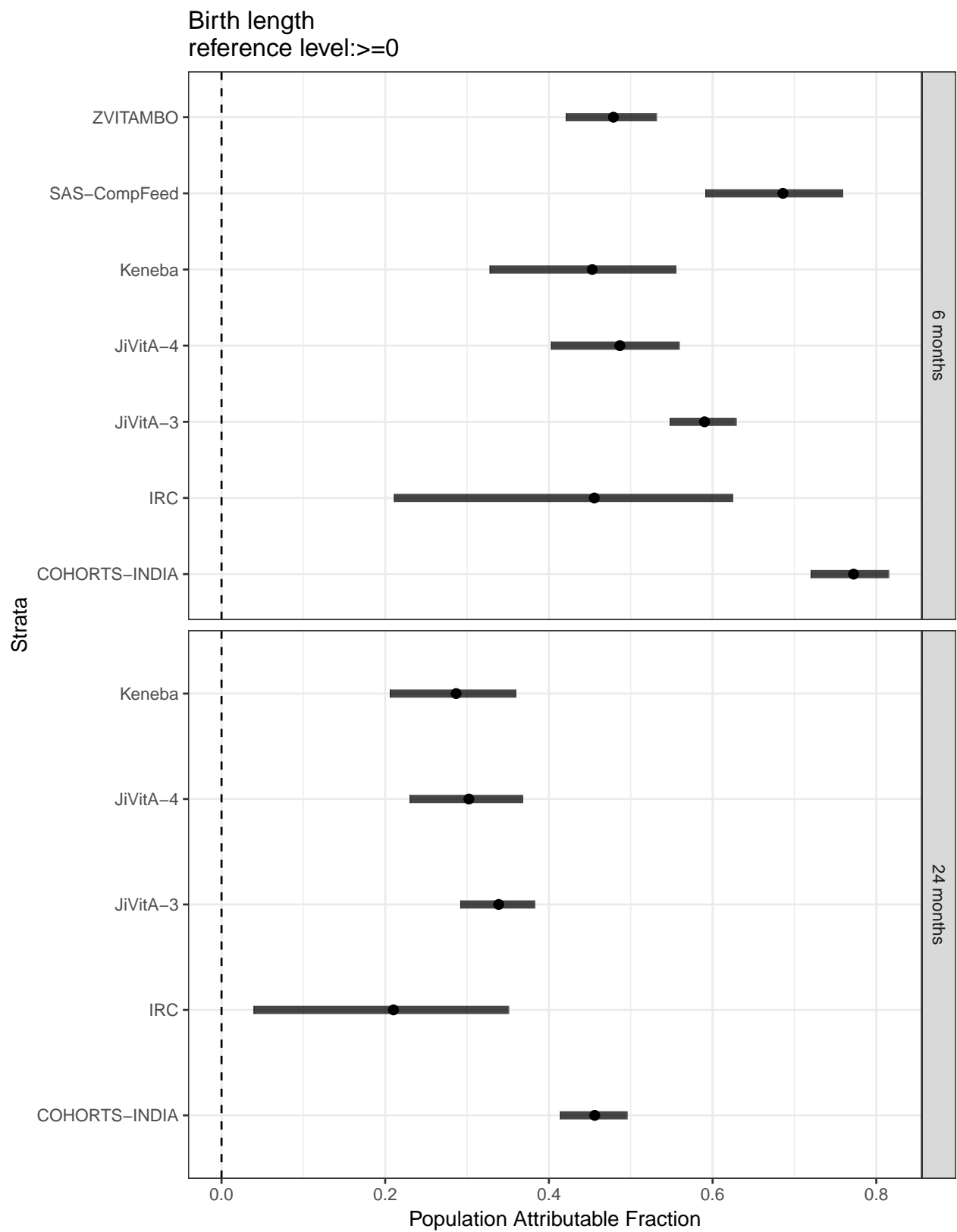
Father's education  
reference level:Q4

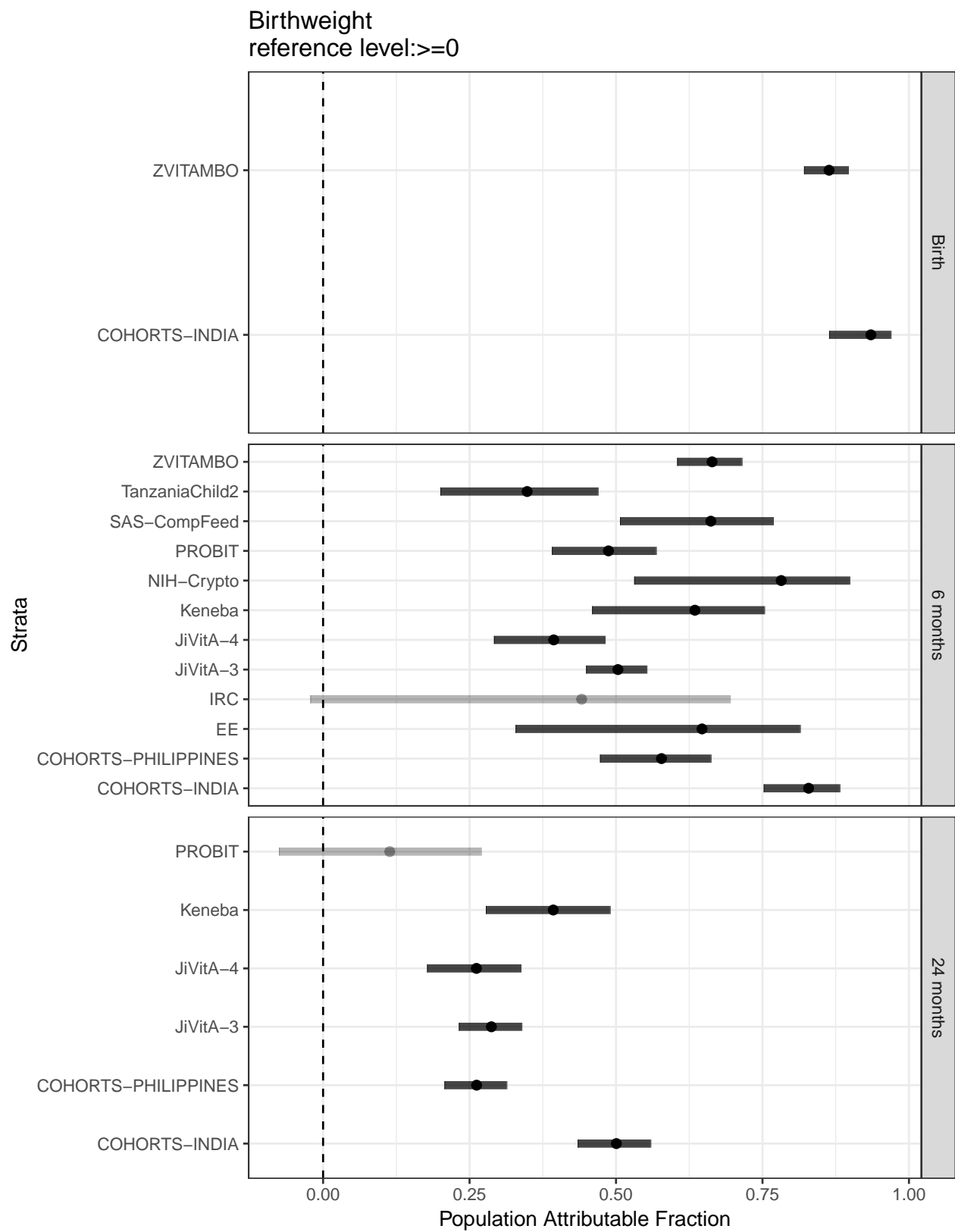


## Point prevalence of stunting

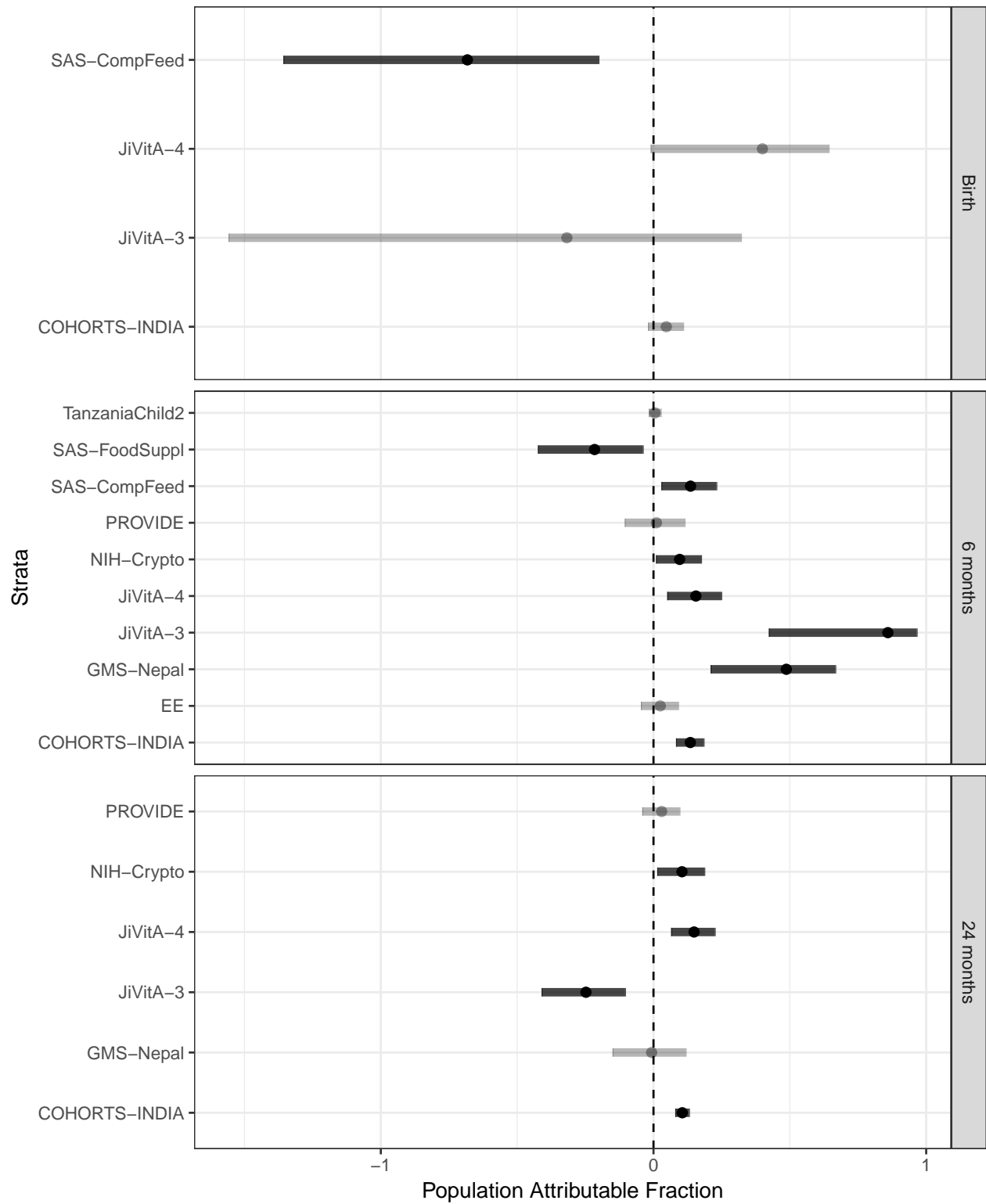
### Child characteristics



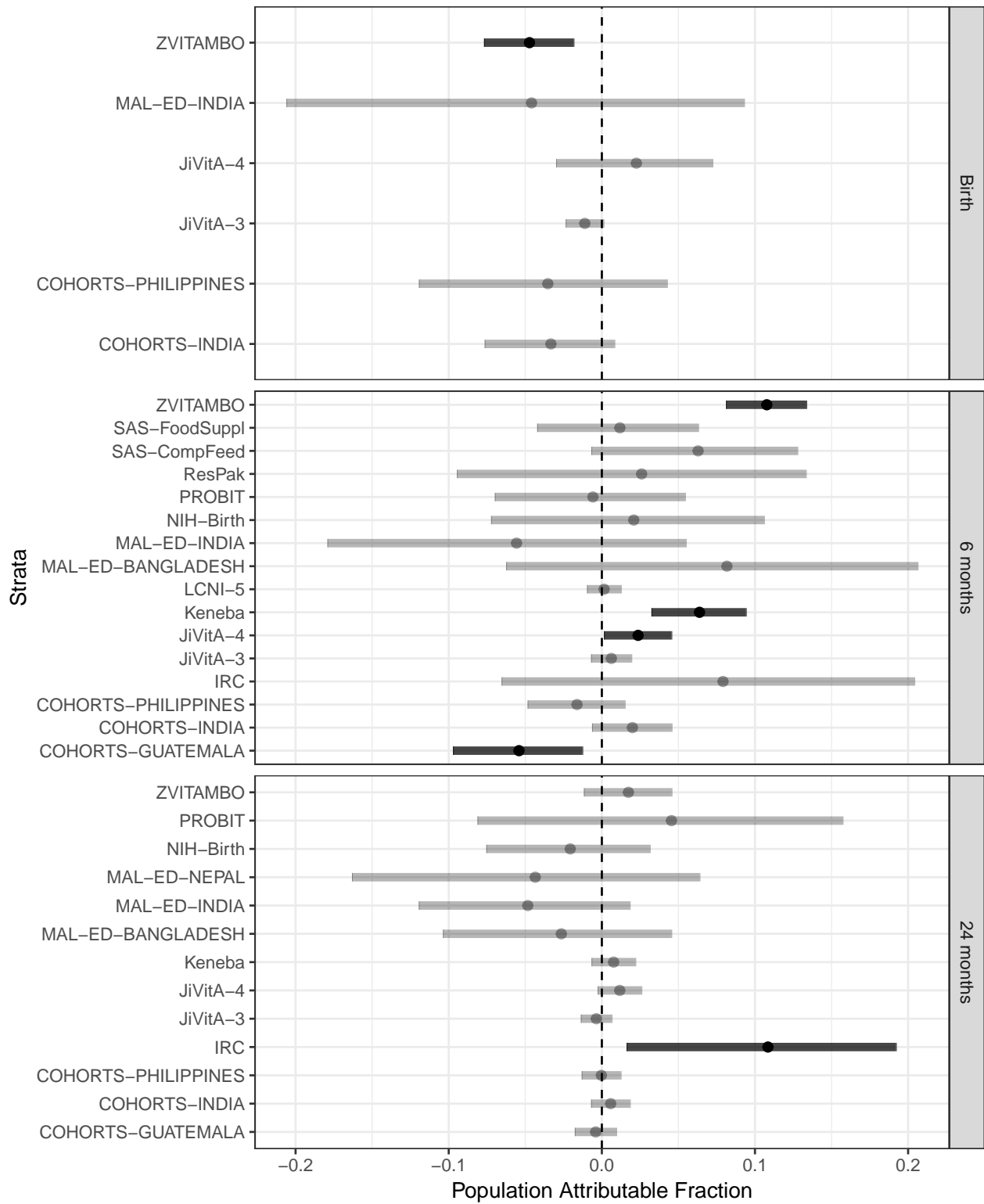




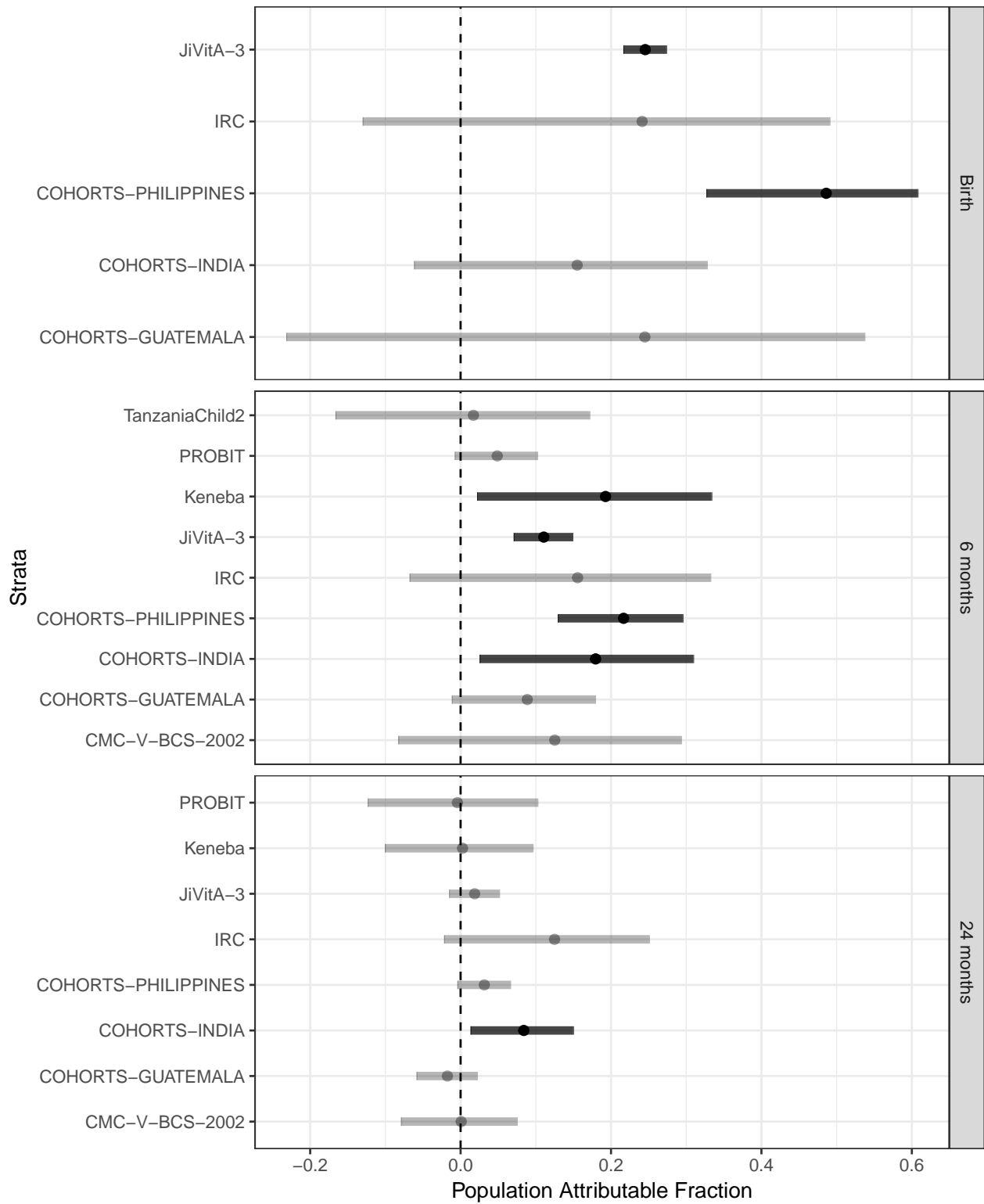
Child delivered at home  
reference level:0



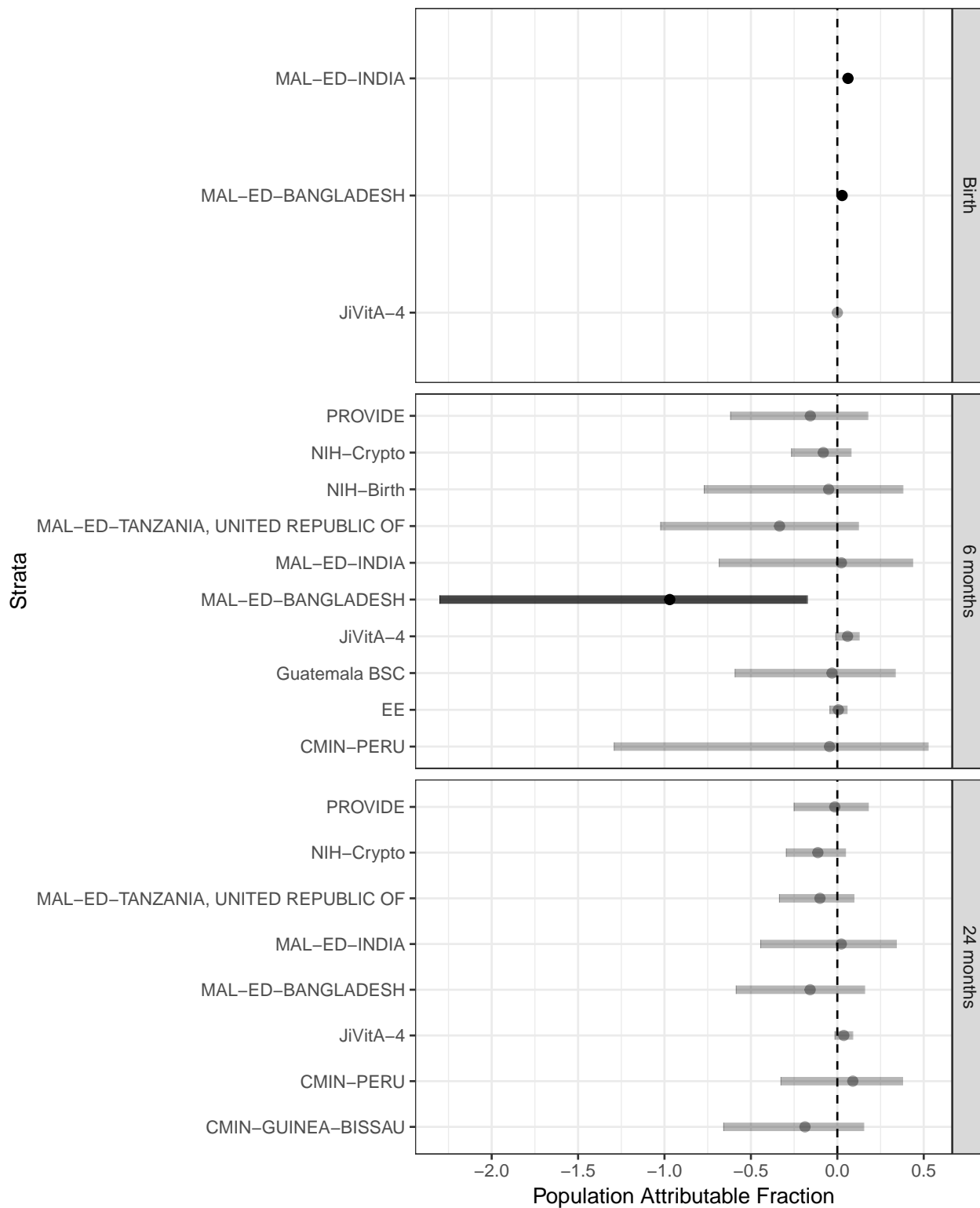
Enrolled wasted  
reference level:0



Gestational age at birth in days  
reference level:[273–287)

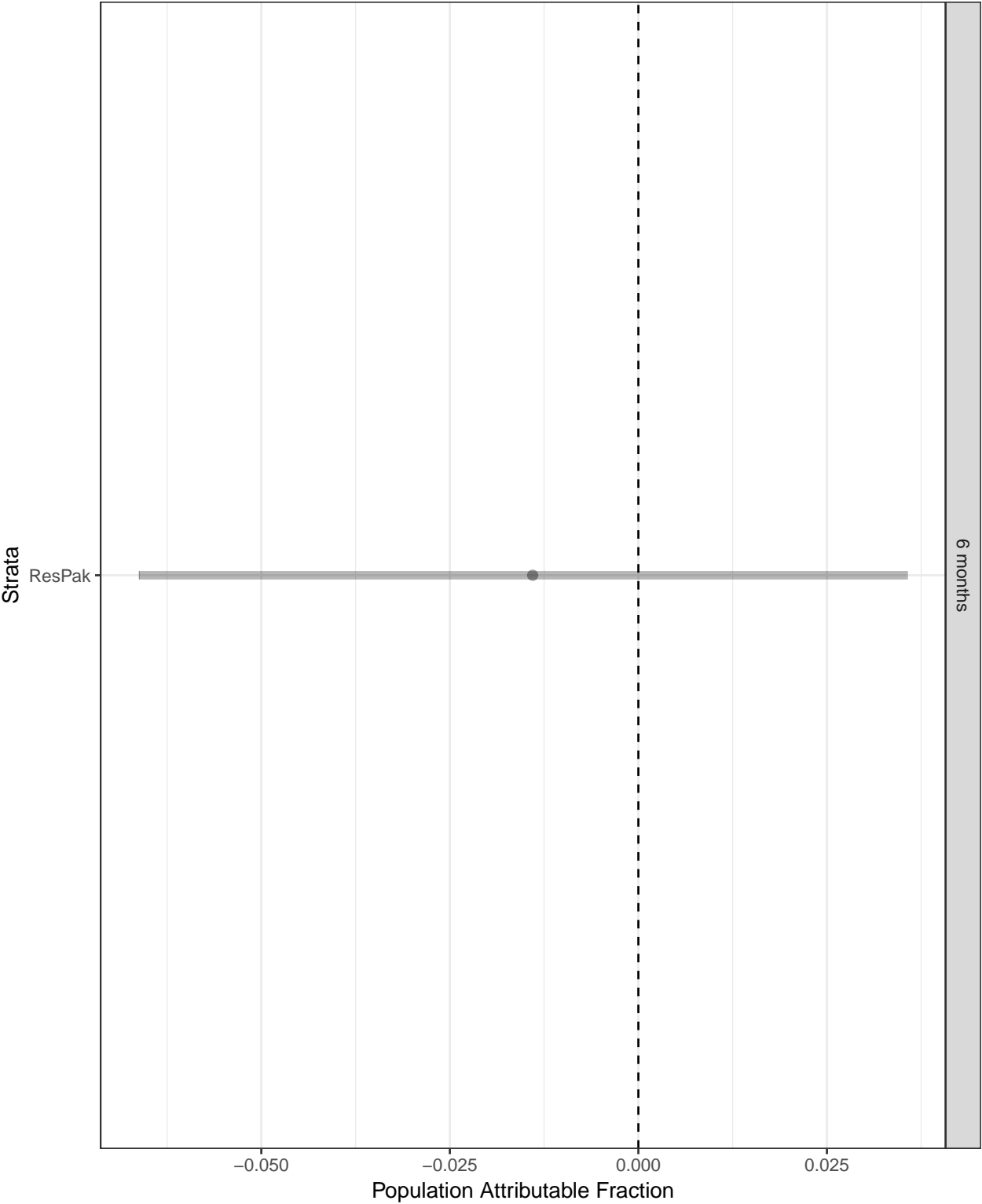


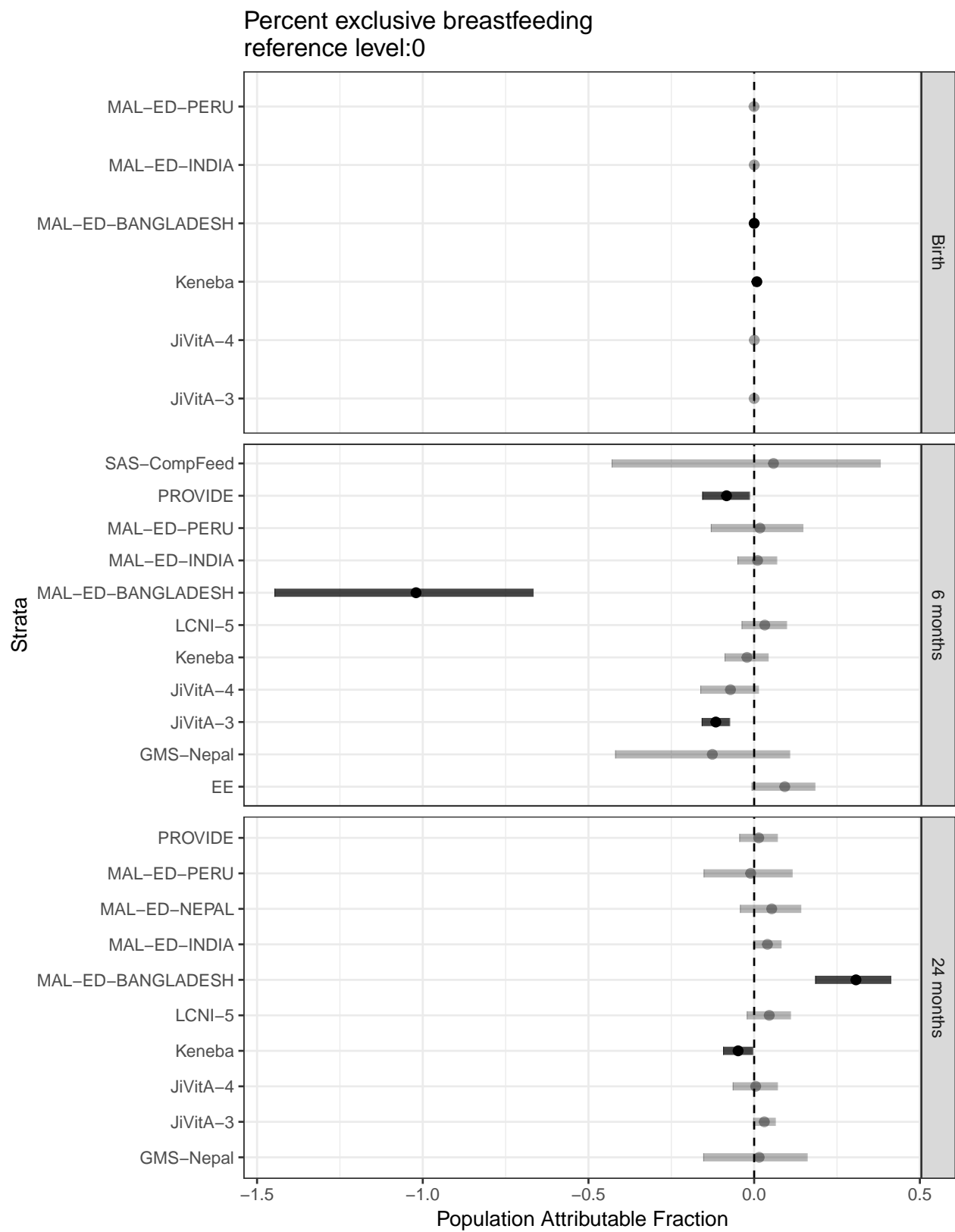
Percent diarrhea in first 24 months  
reference level:Q1



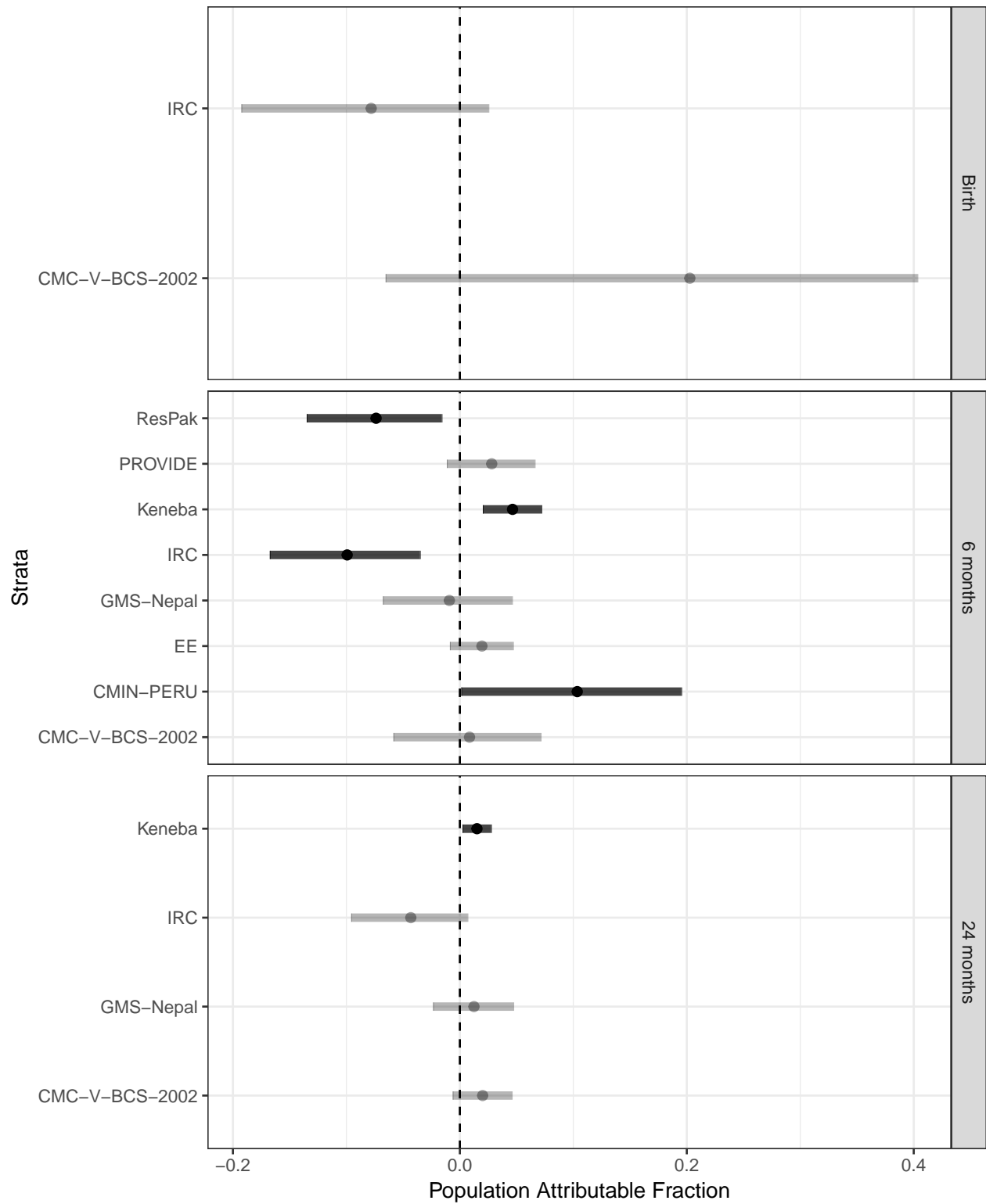


Percent diarrhea in first 6 months  
reference level:Q1

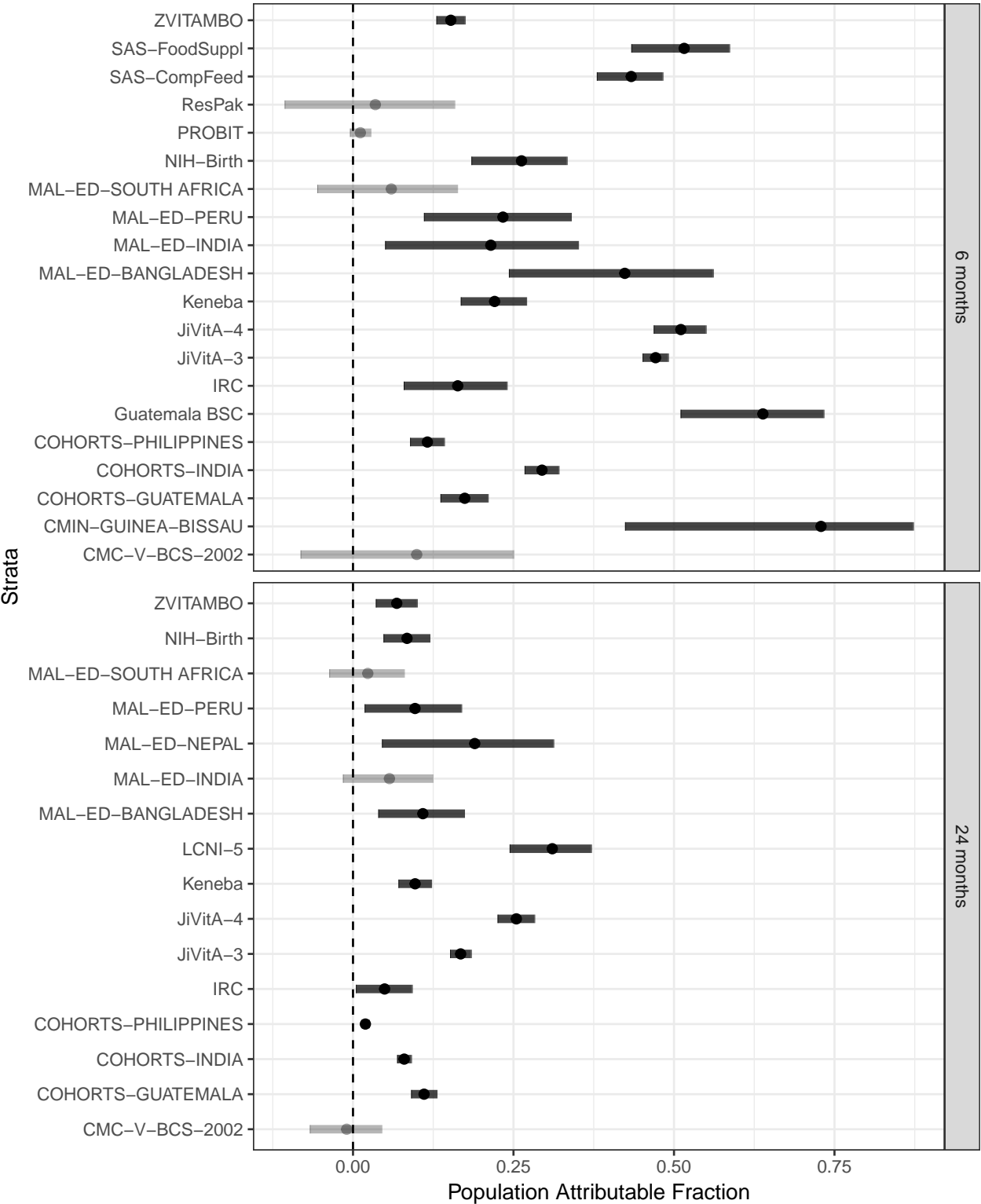


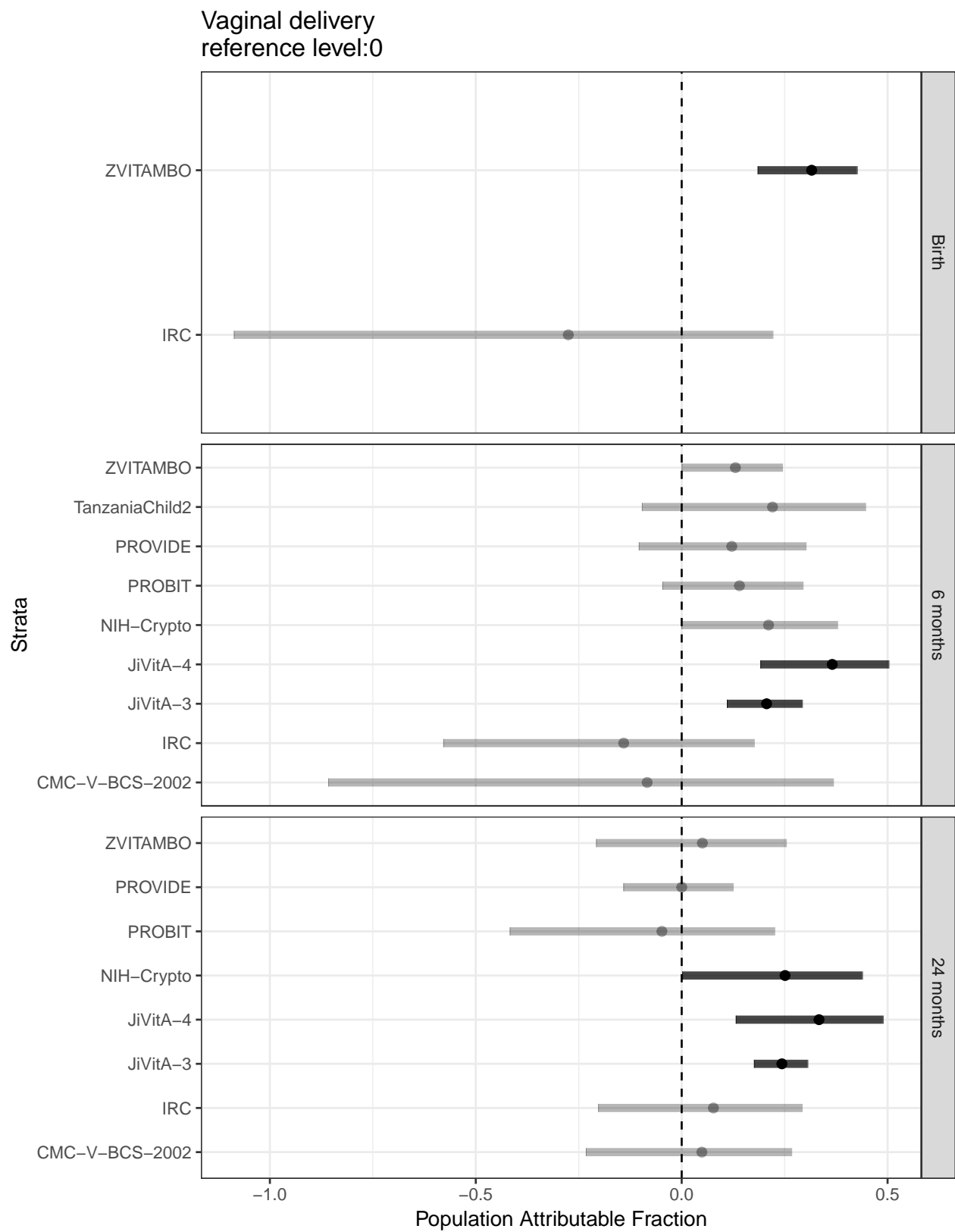


Persistent wasting in first 6 months  
reference level:0

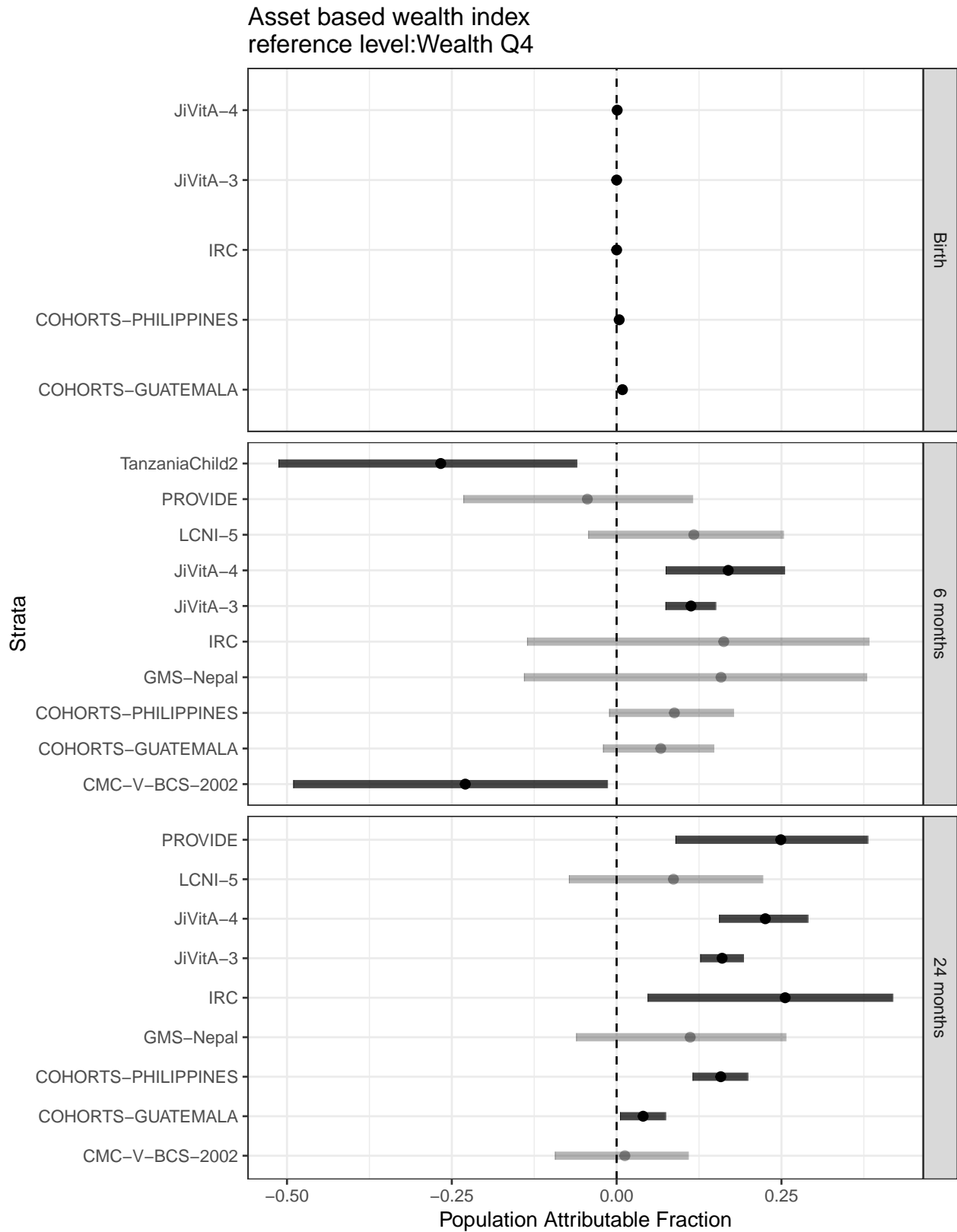


Stunted at enrollment  
reference level:0

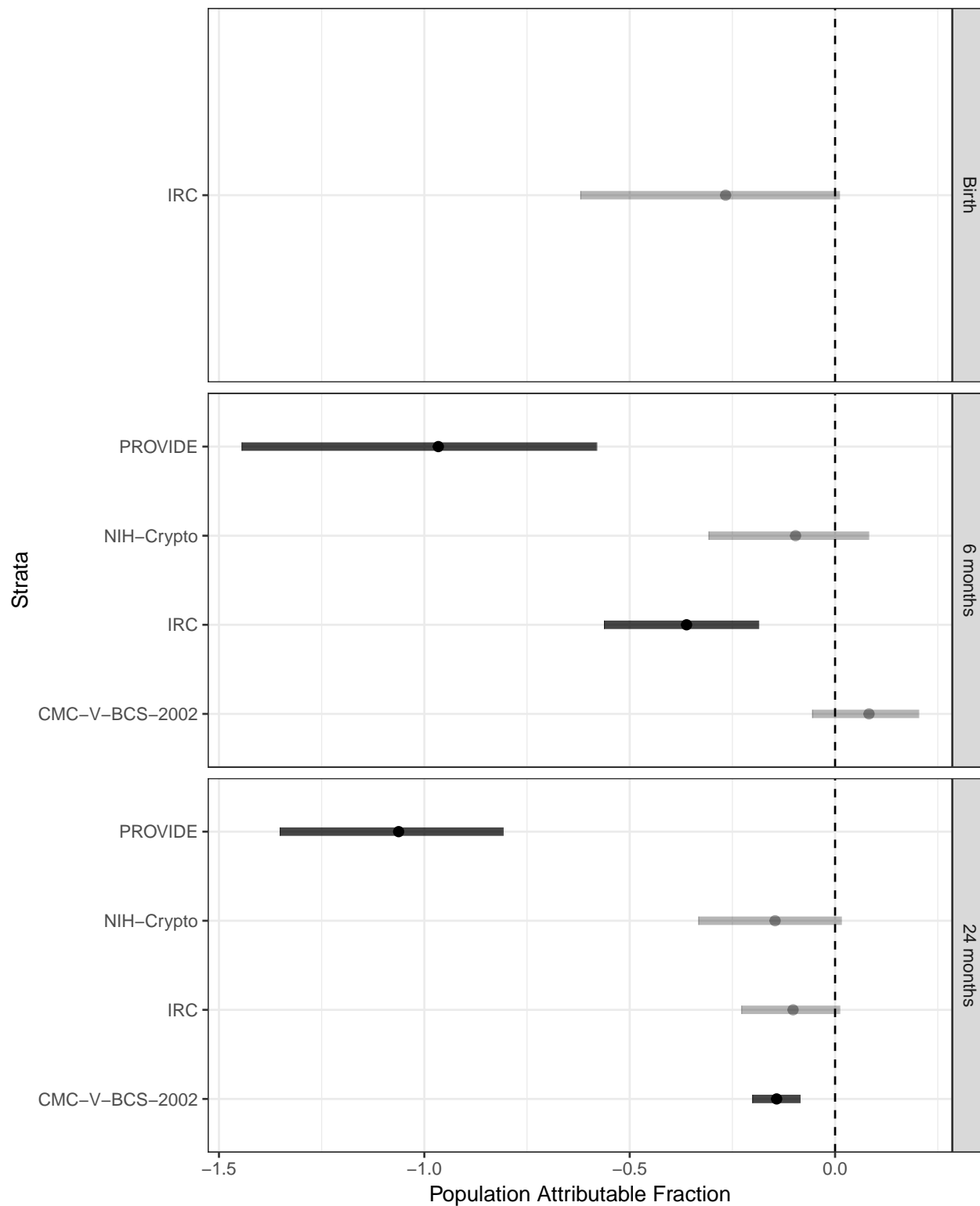


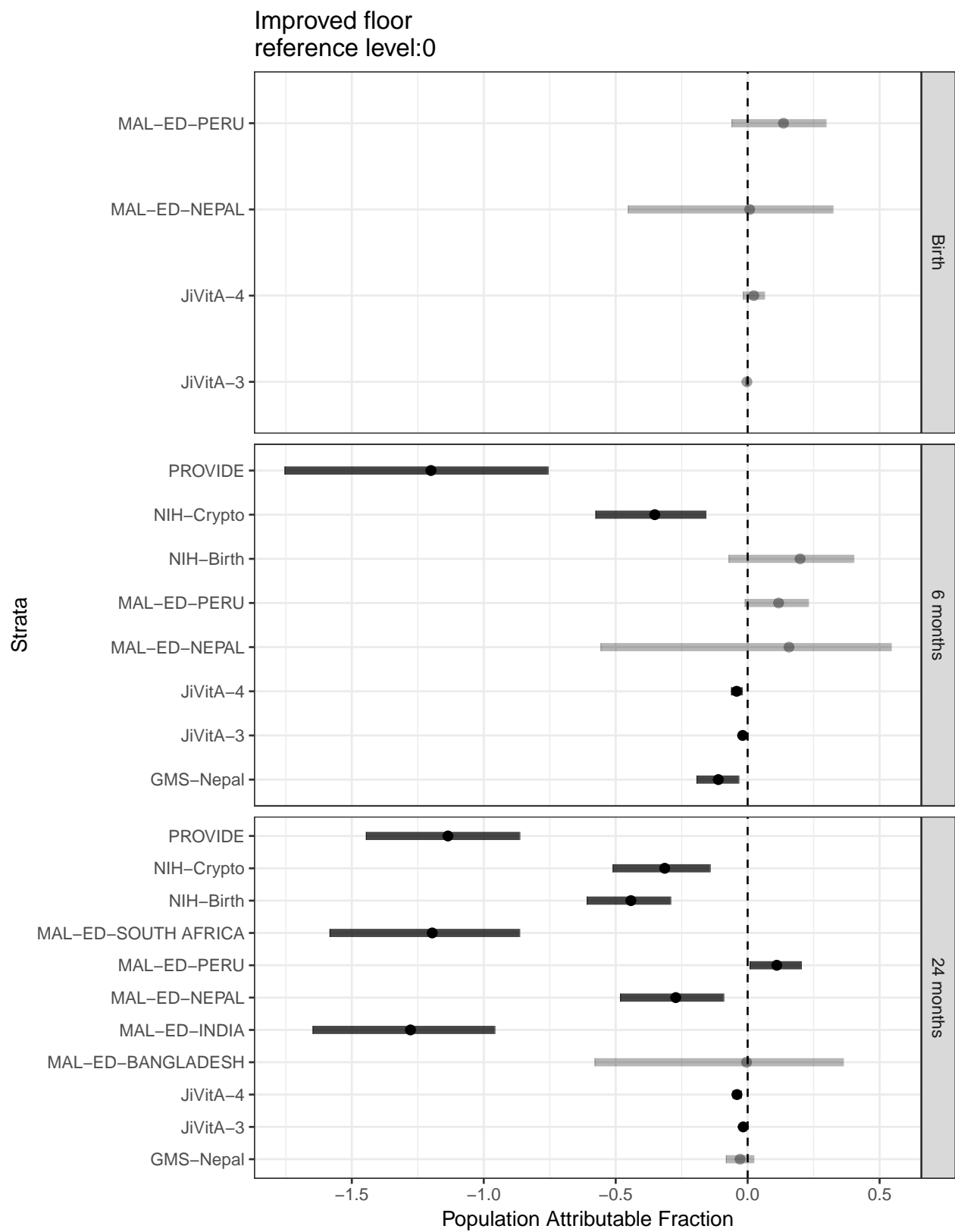


## Household characteristics

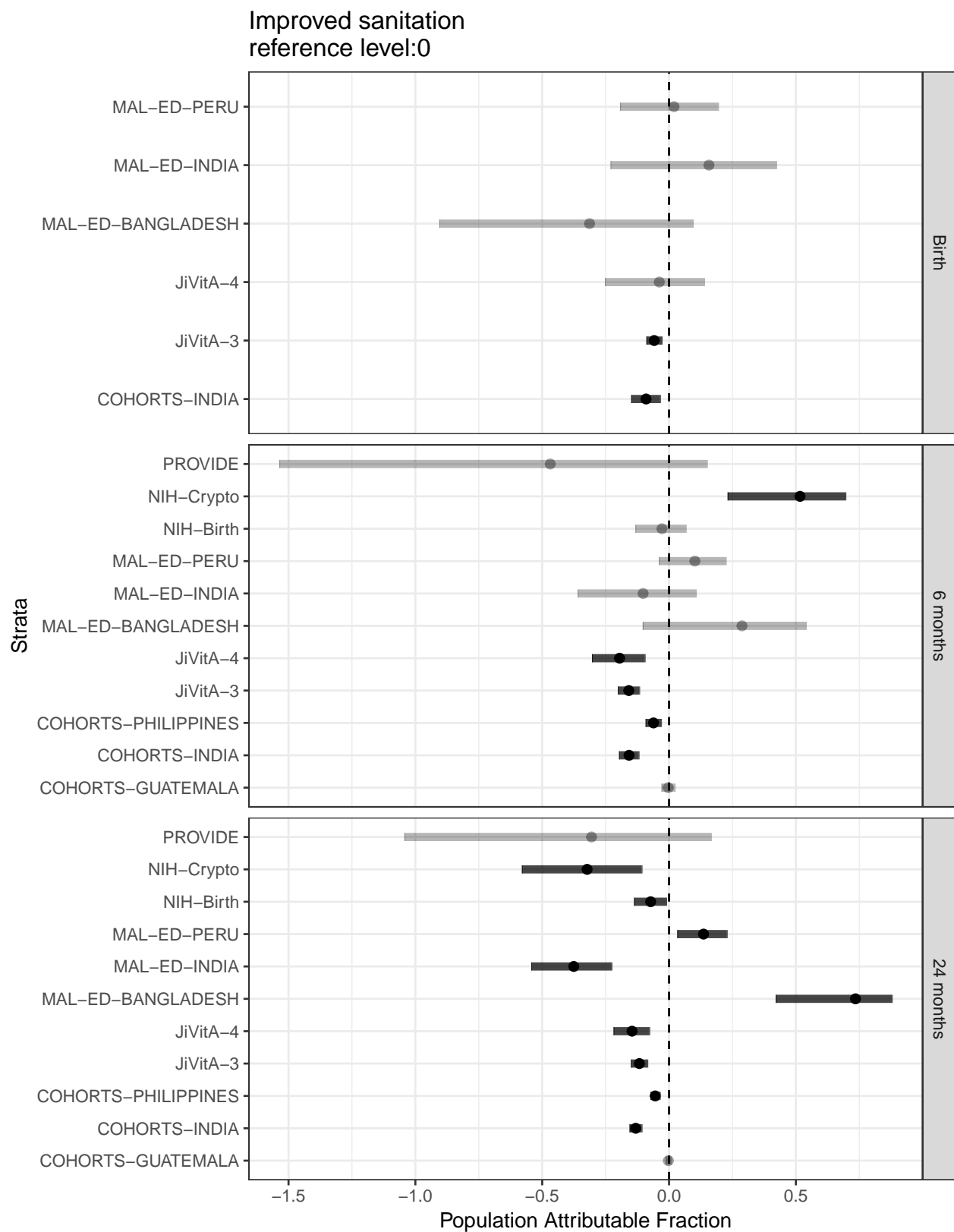


Clean cook  
reference level:0

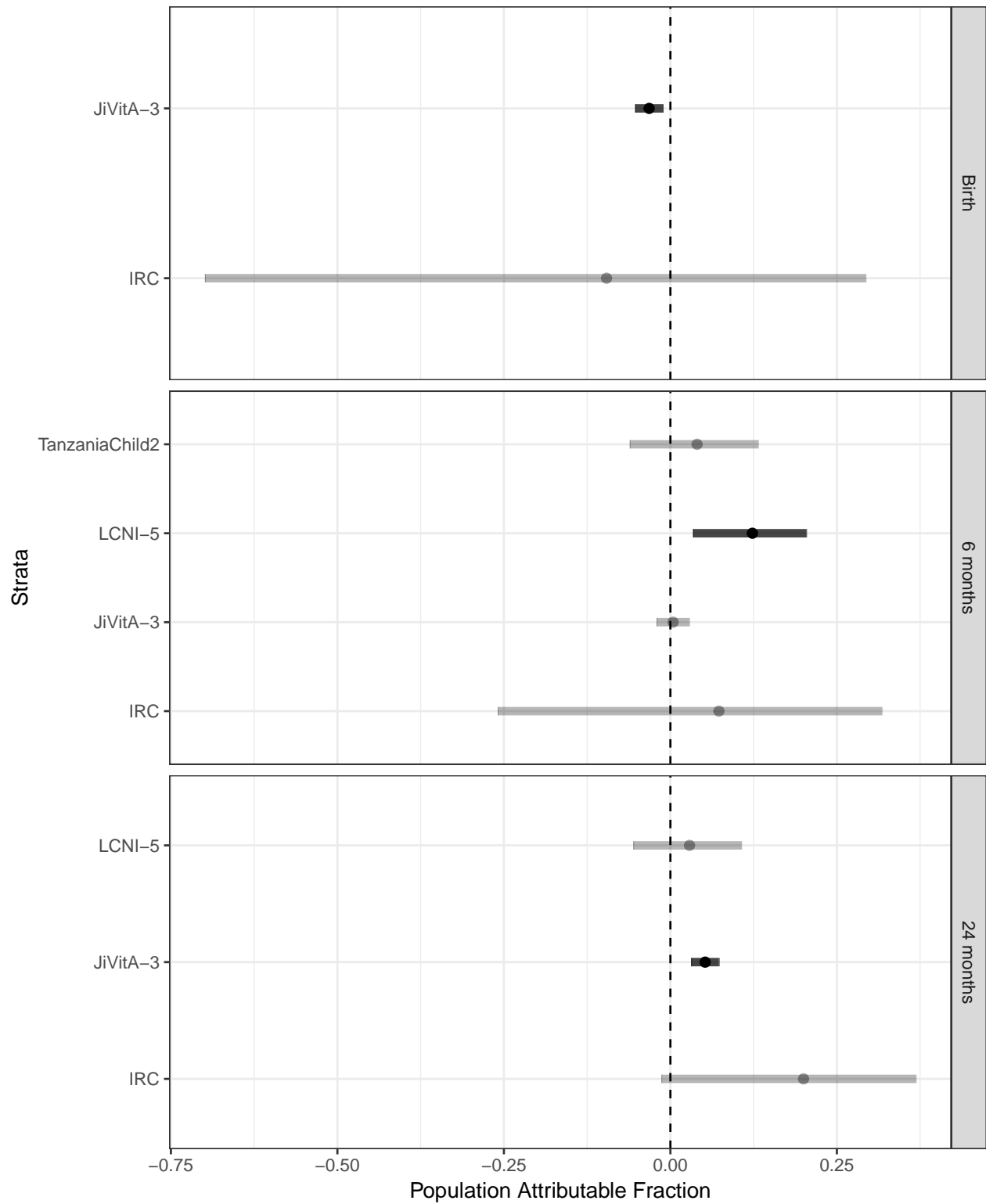




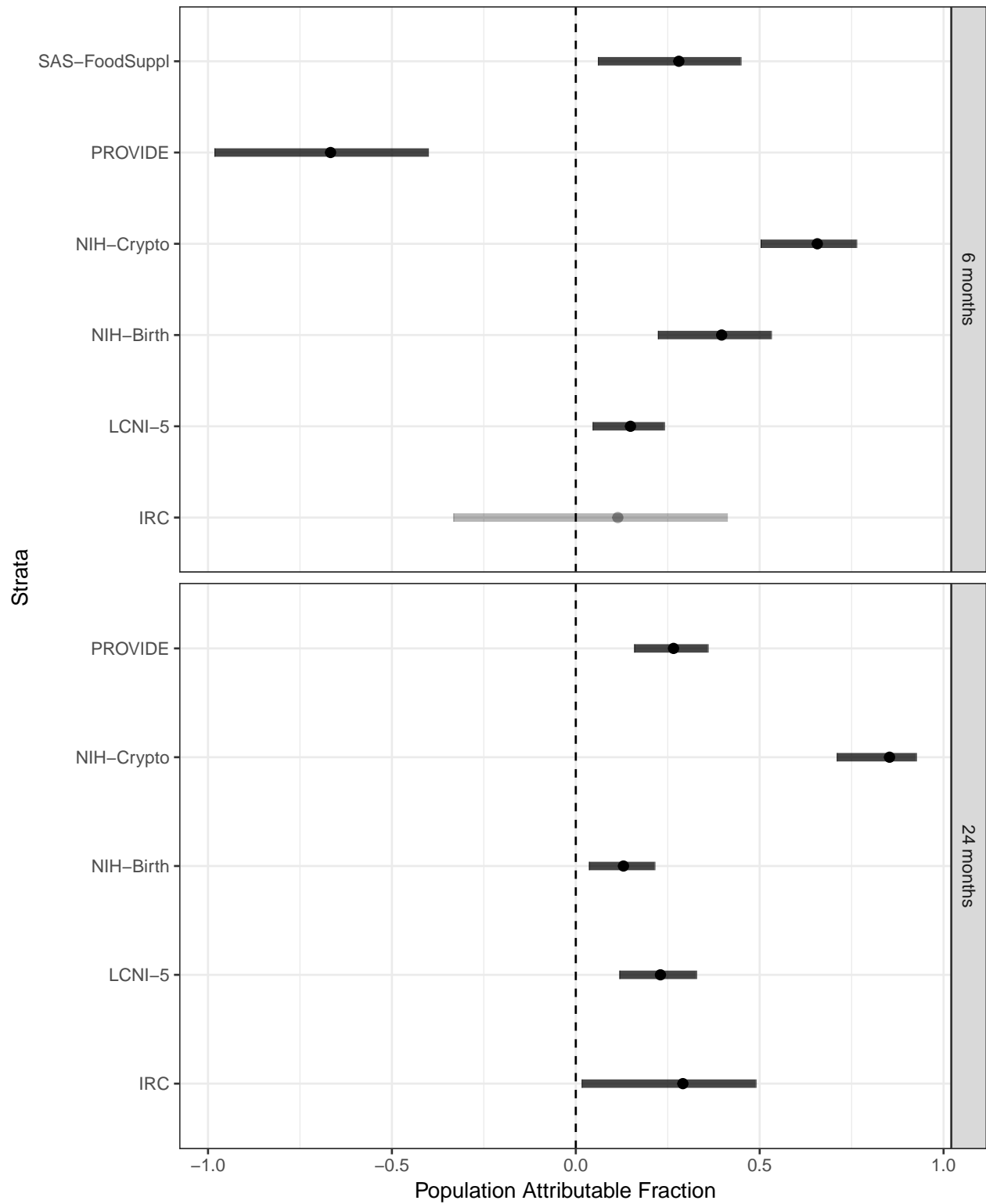


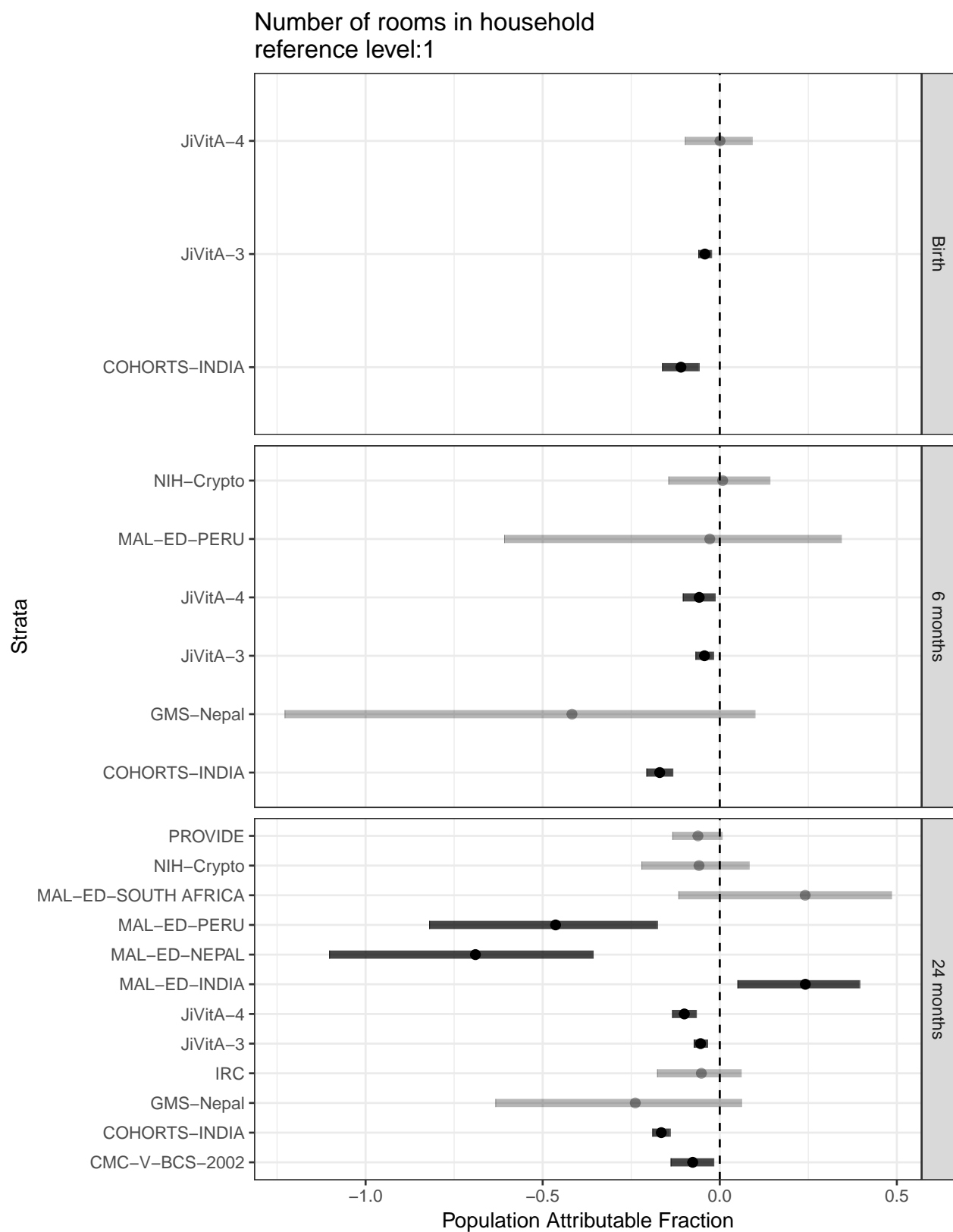


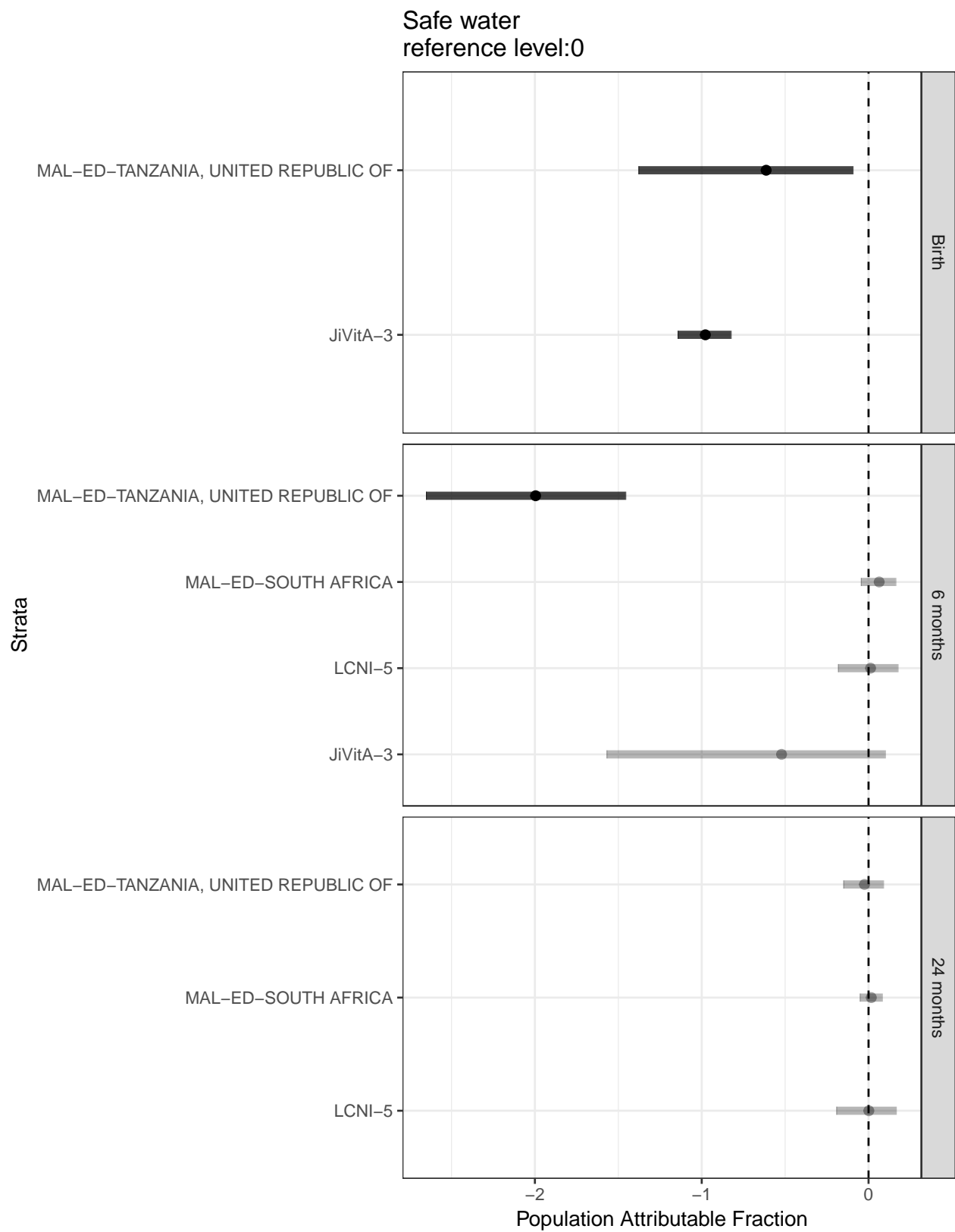
Number of children in the household under 5 years  
reference level:1



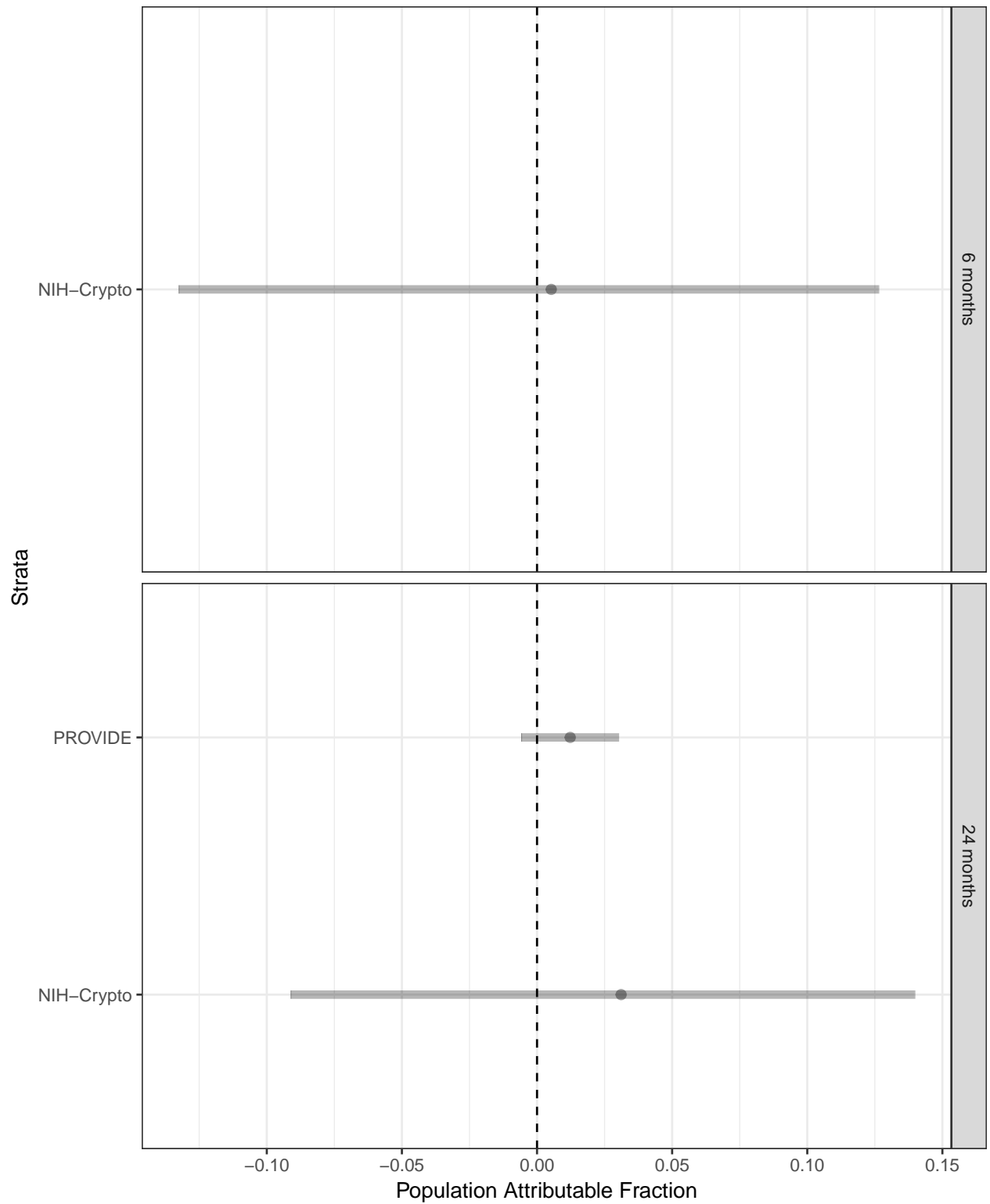
Number of people in the household  
reference level:3 or less



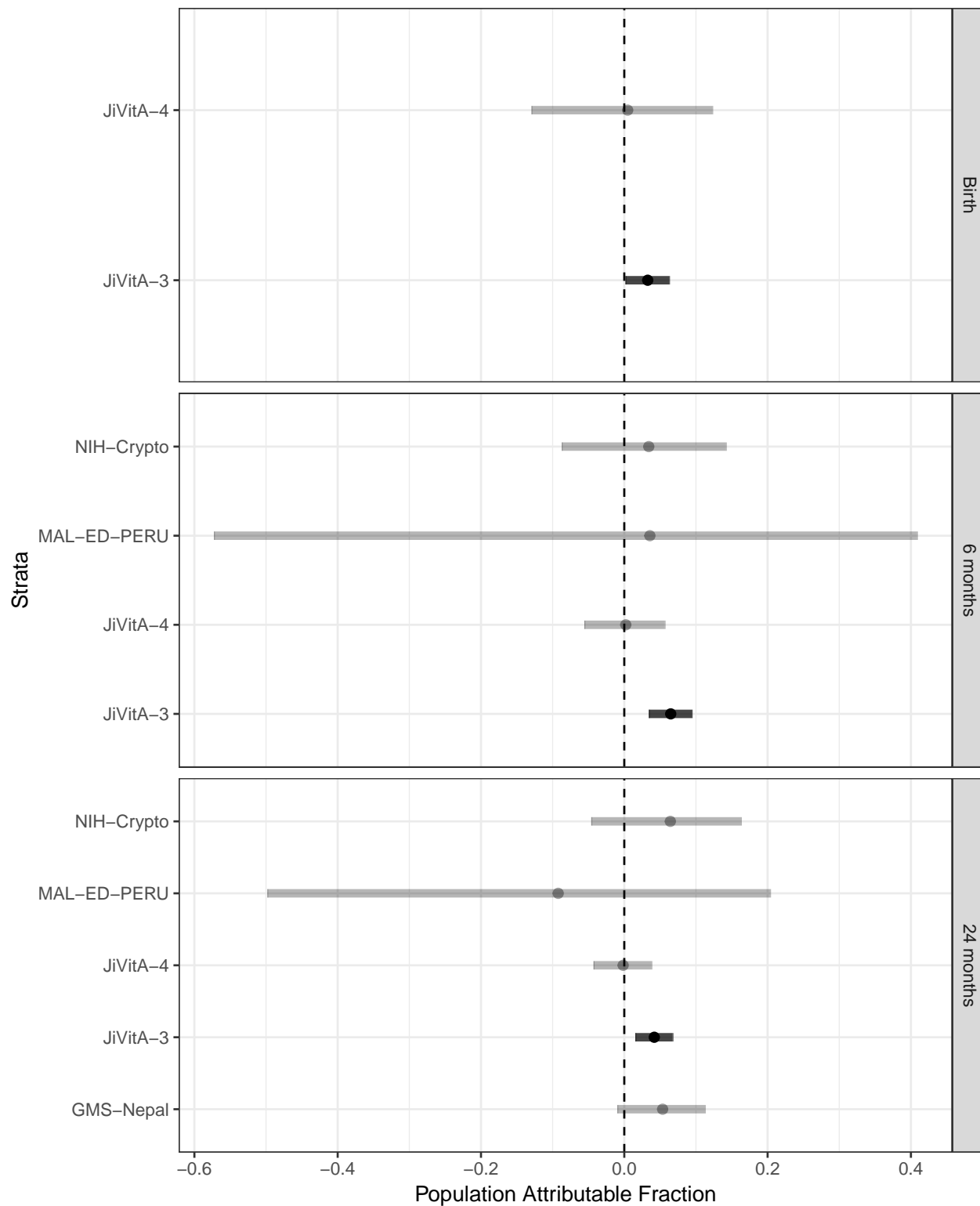




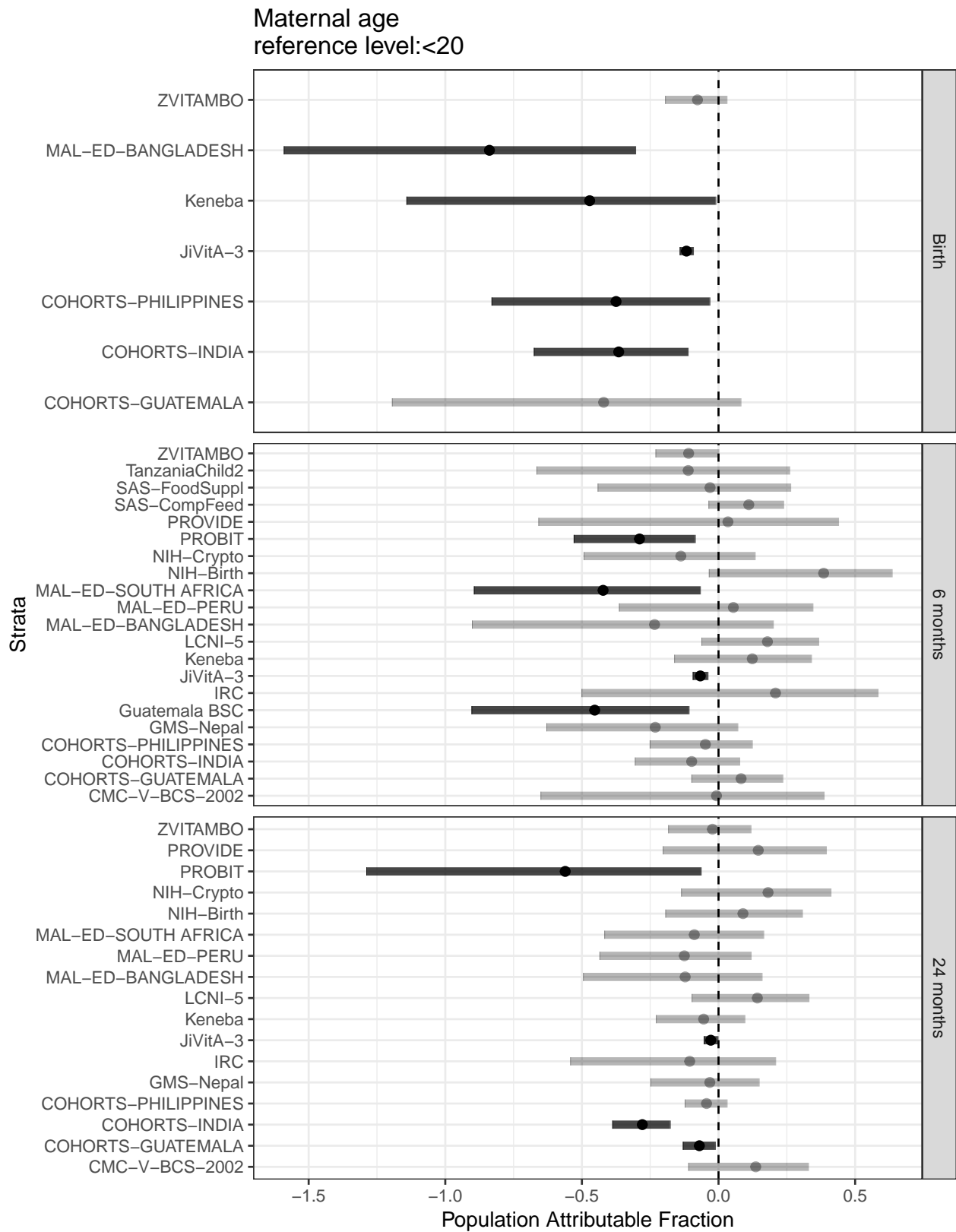
Treats water  
reference level:0



USAID Household Food Insecurity Access Scale (HFIAS) category  
reference level: Food Secure

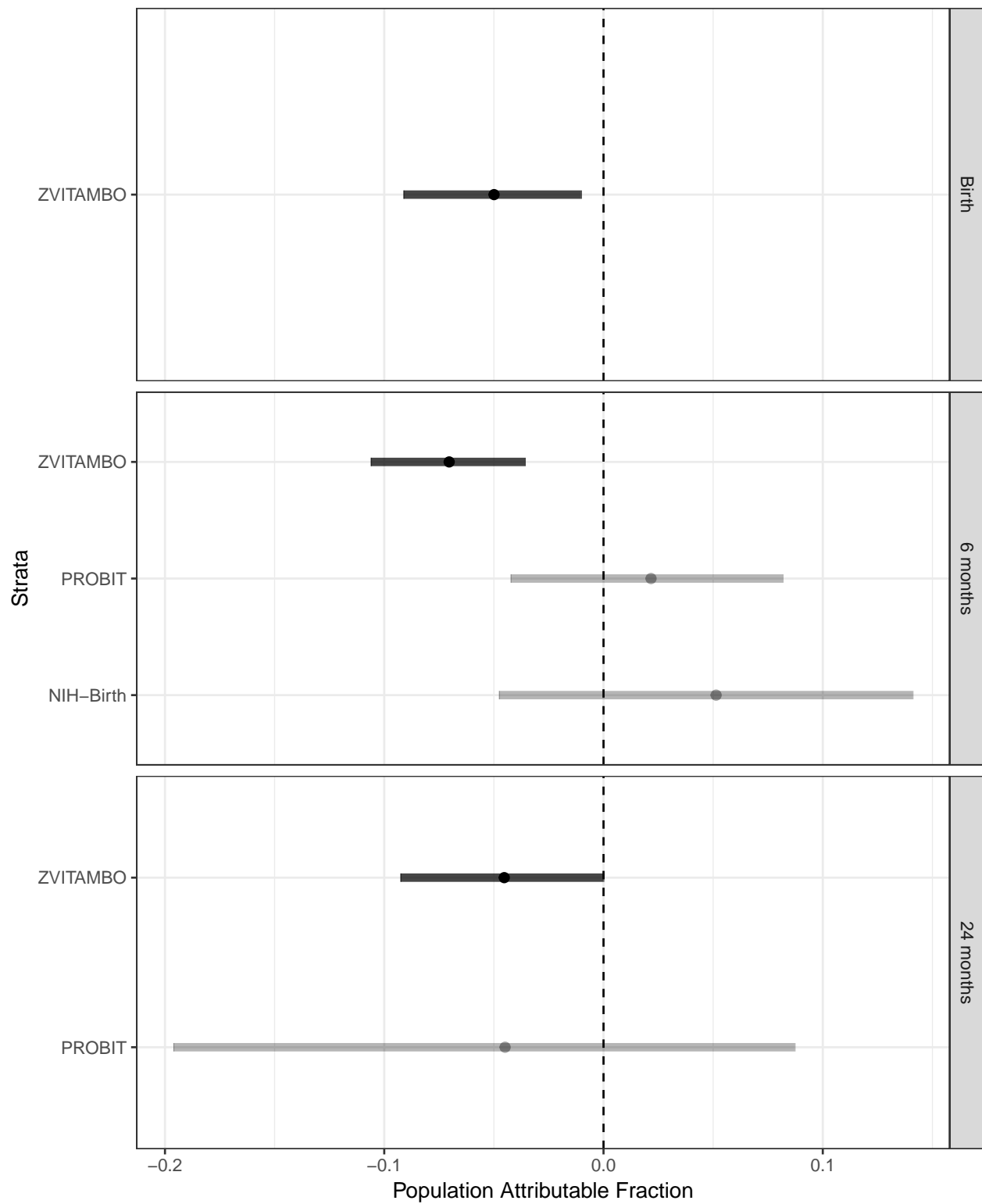


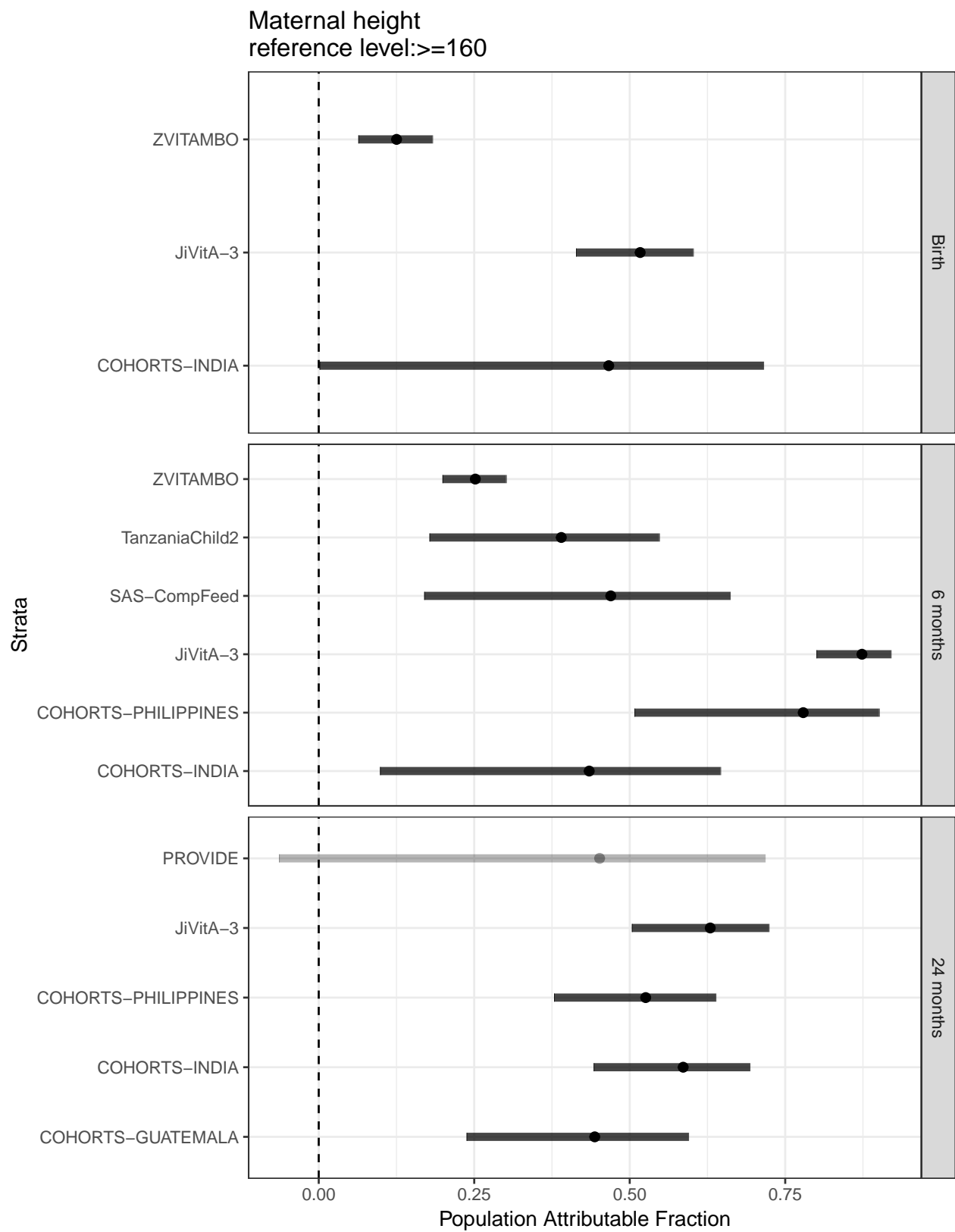
## Maternal characteristics

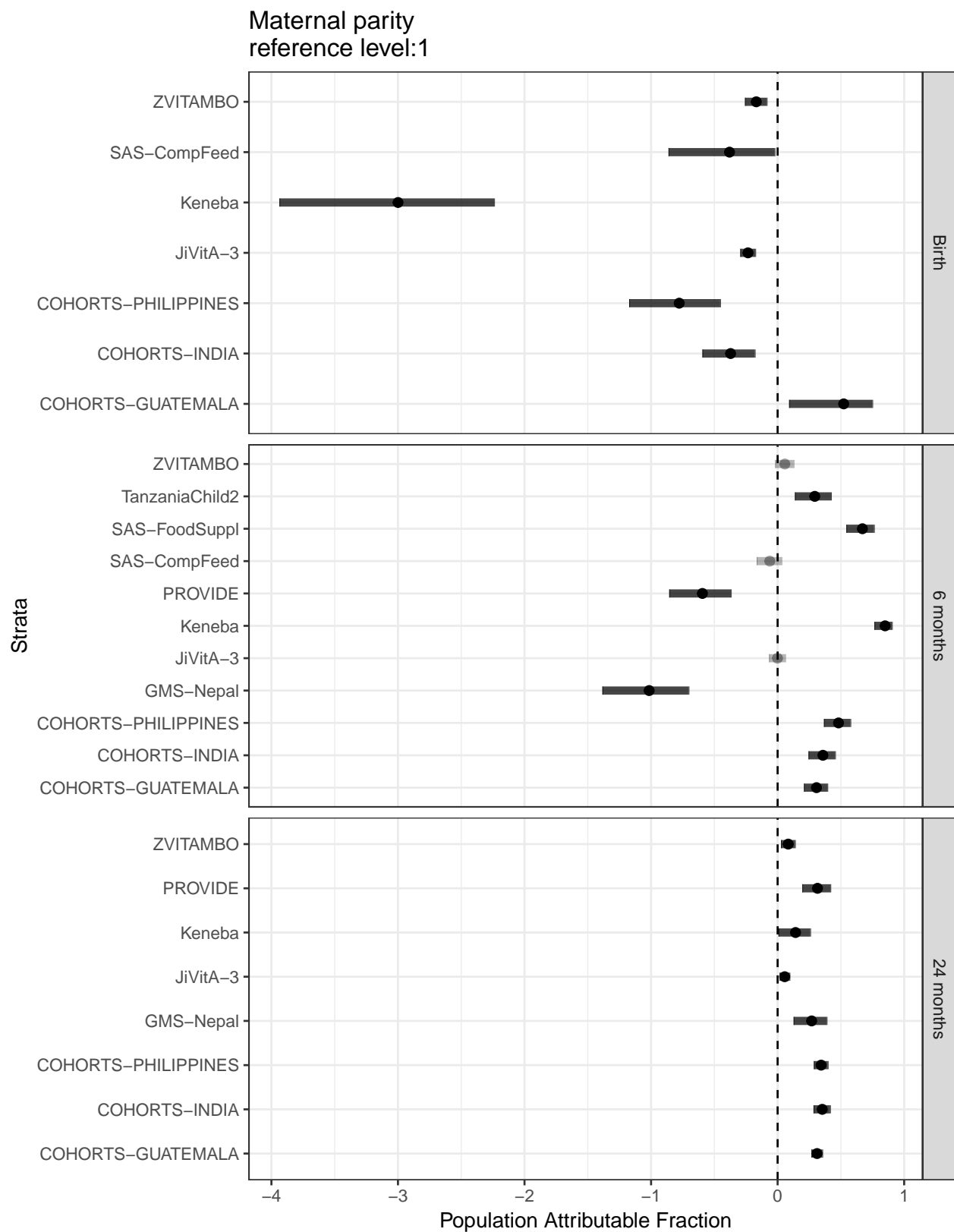


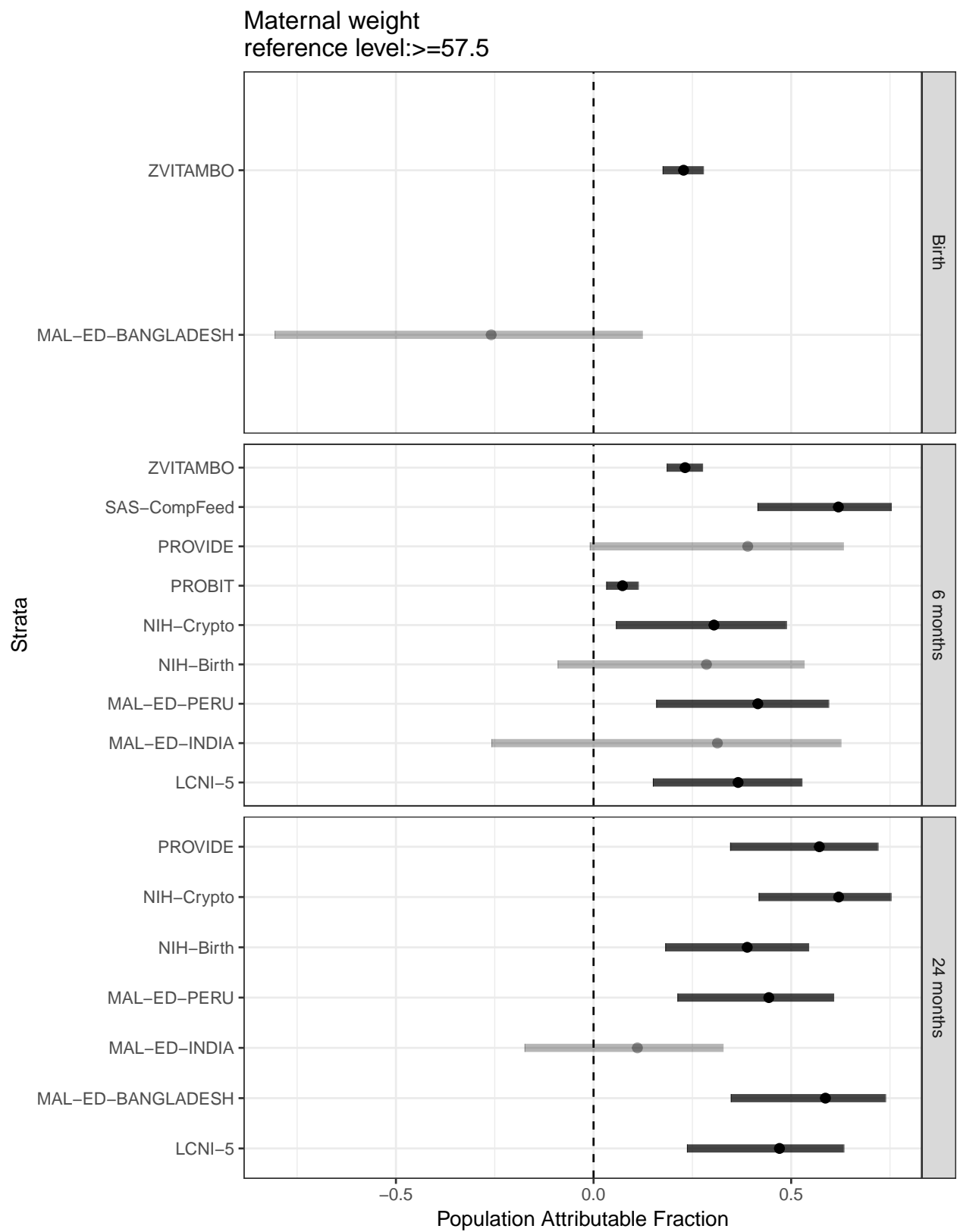


Maternal BMI  
reference level:[18.5–25)

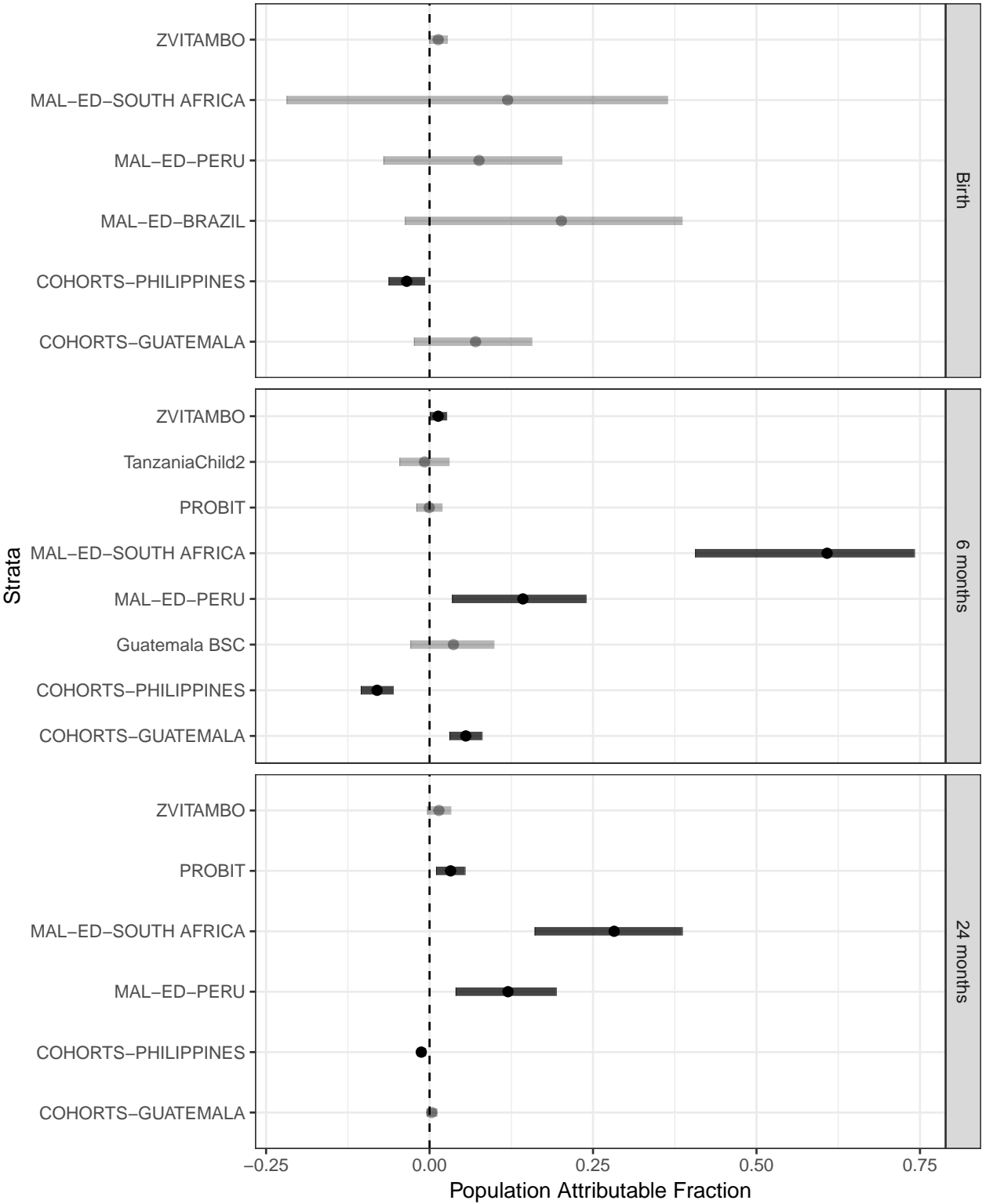


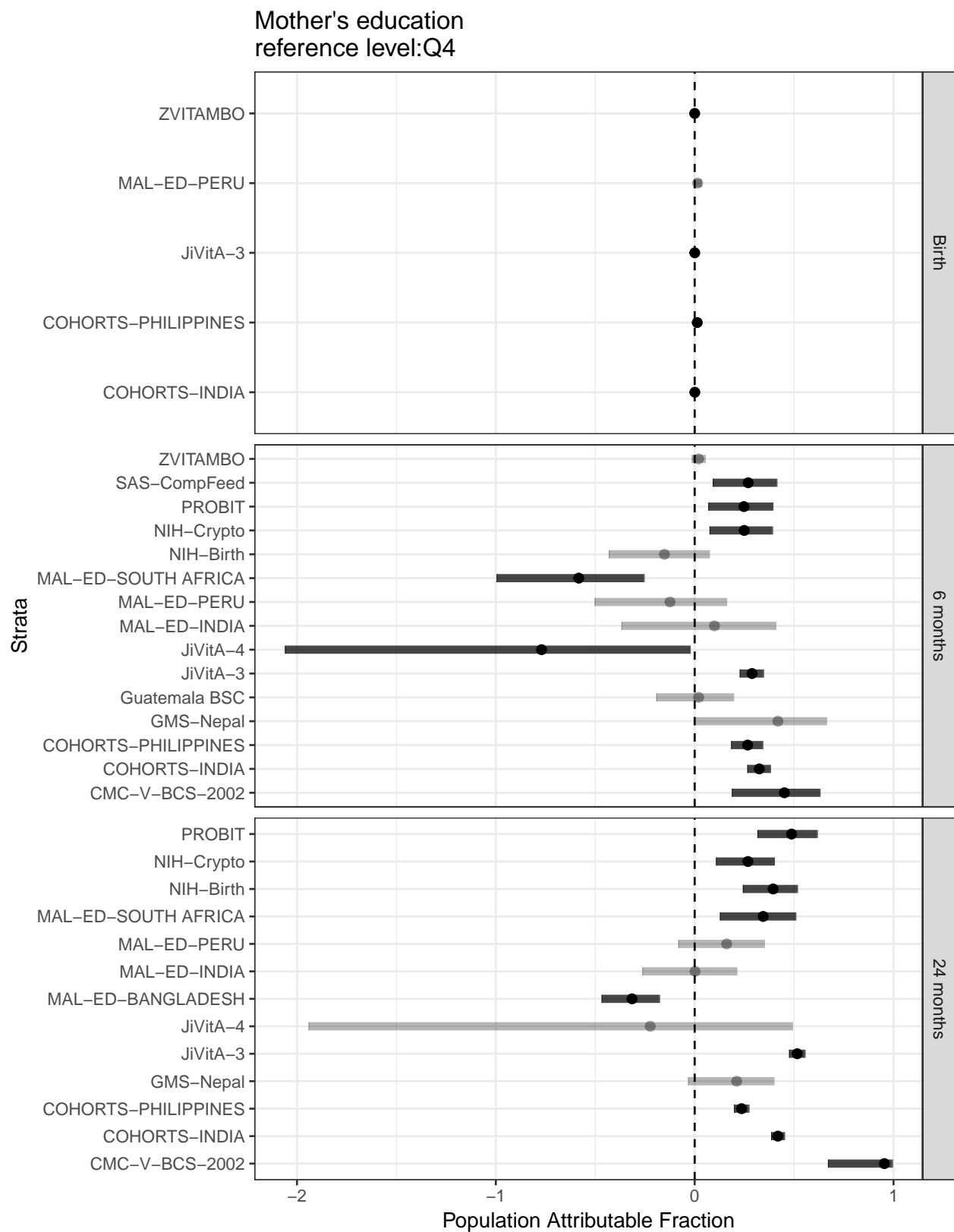






Mother is unmarried  
reference level:0





## Paternal characteristics

