

Risk Factors of Stunting

Jade Benjamin-Chung, Andrew N. Mertens, Esther Chung, Jeremy Coyle, Oleg Sofrygin, Nima Hejazi, Ivana Malenica, Alan E. Hubbard, Mark J. van der Laan, John M. Colford, Jr., Benjamin F. Arnold

2018-06-14

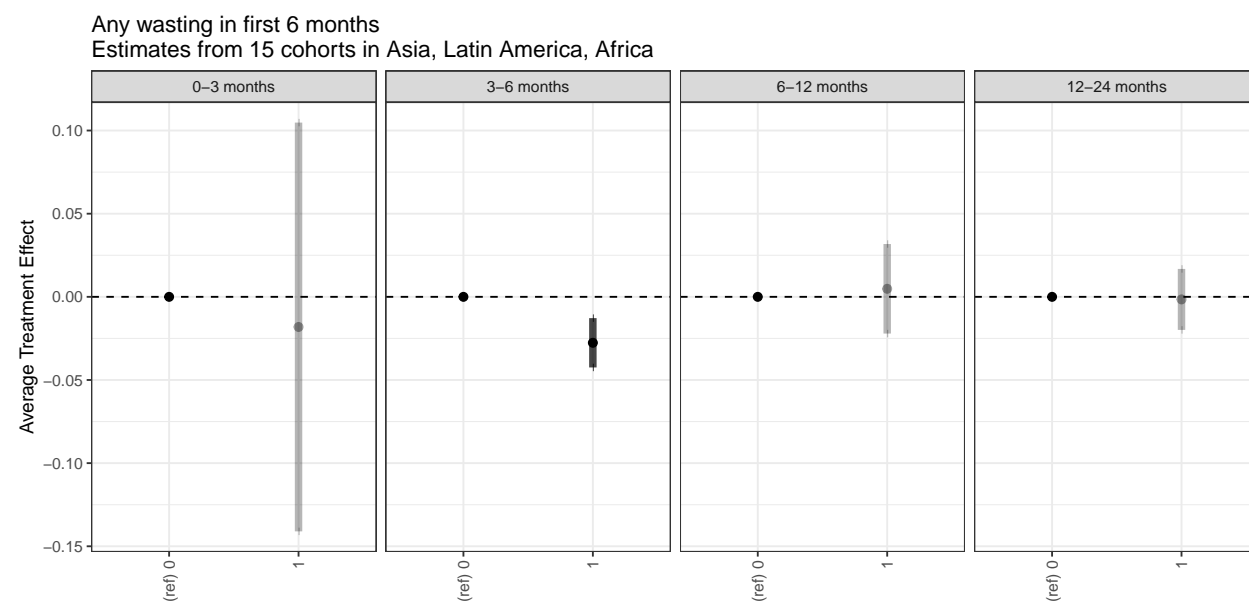
Contents

Average treatment effect pooled across cohorts	1
HAZ growth velocity	1
Length growth velocity	17
Appendix 1 - Average treatment effect stratified by cohort	34
HAZ growth velocity	34
Length growth velocity	66

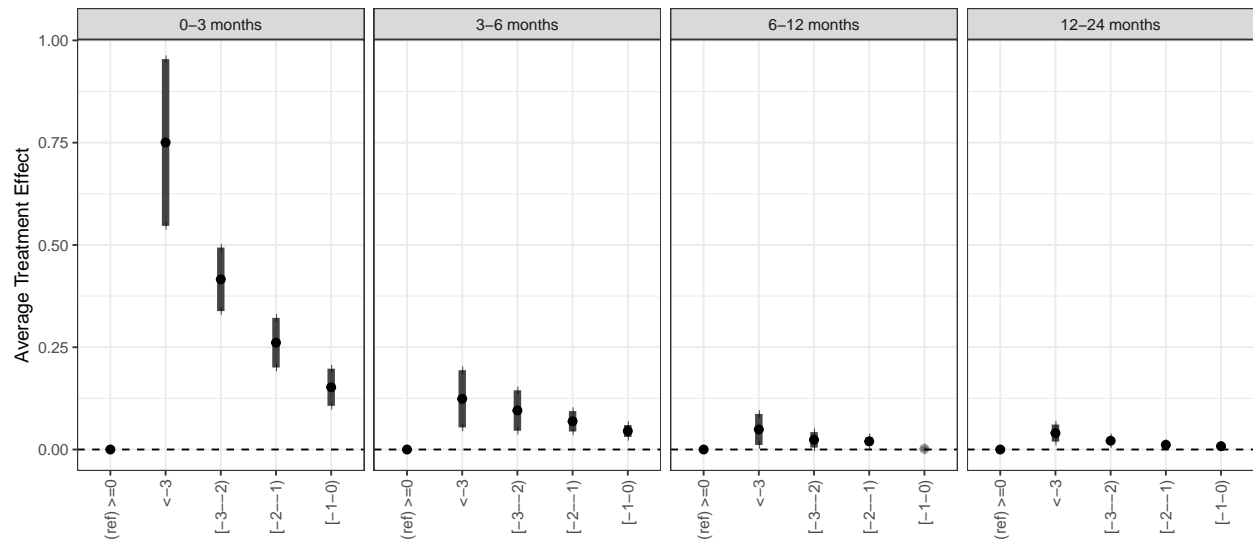
Average treatment effect pooled across cohorts

HAZ growth velocity

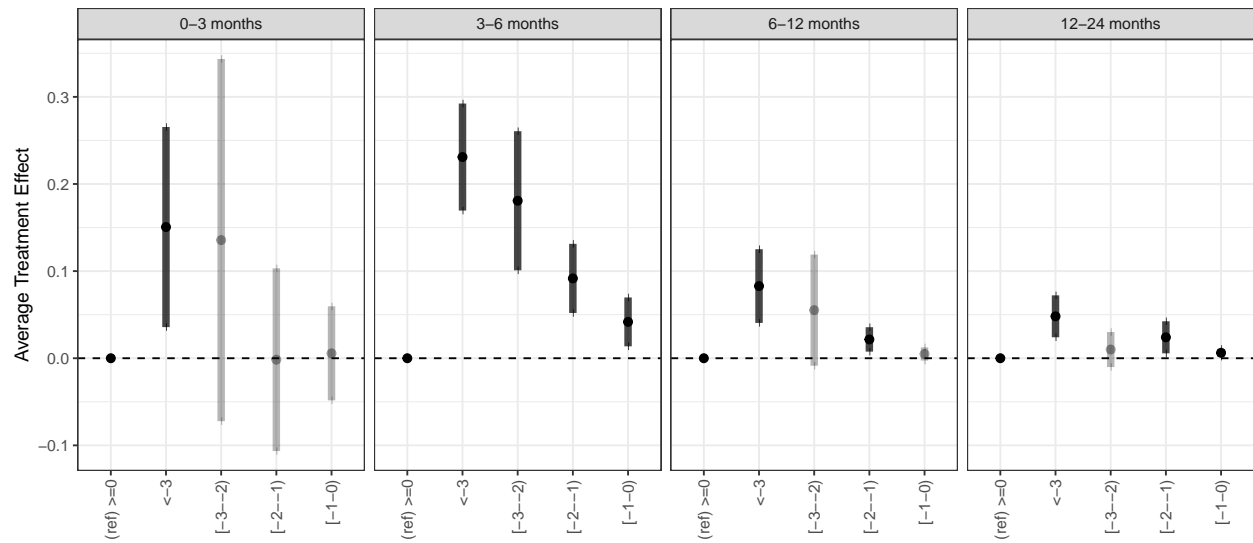
Child characteristics



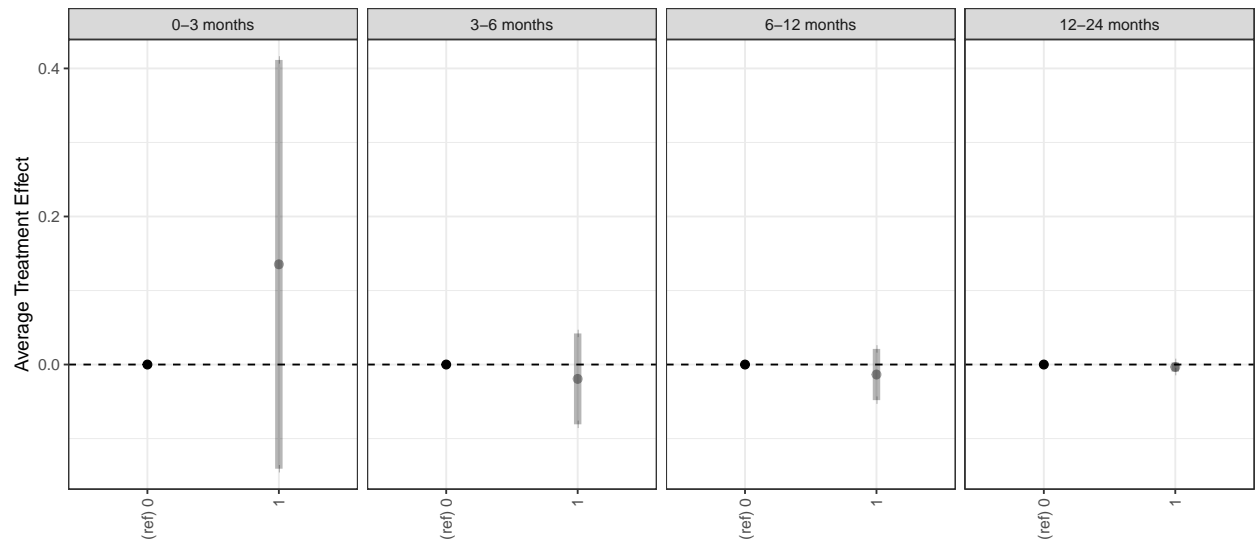
Birth length
Estimates from 15 cohorts in Latin America, Asia, Africa, Europe



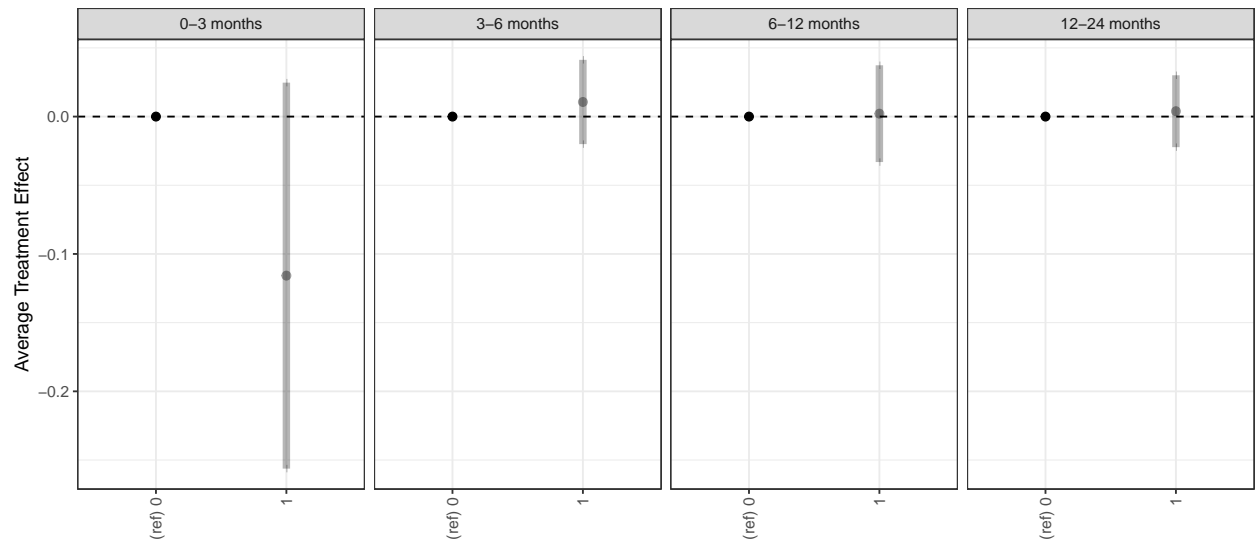
Birthweight
Estimates from 15 cohorts in Asia, Latin America, Africa, Europe



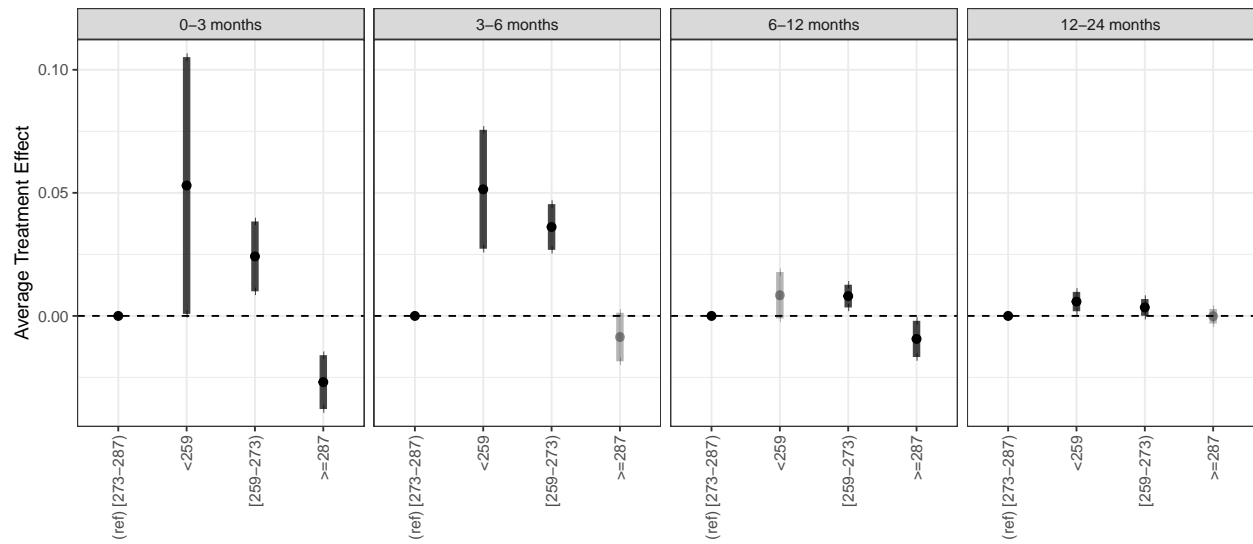
Child delivered at home
Estimates from 11 cohorts in Asia, Africa



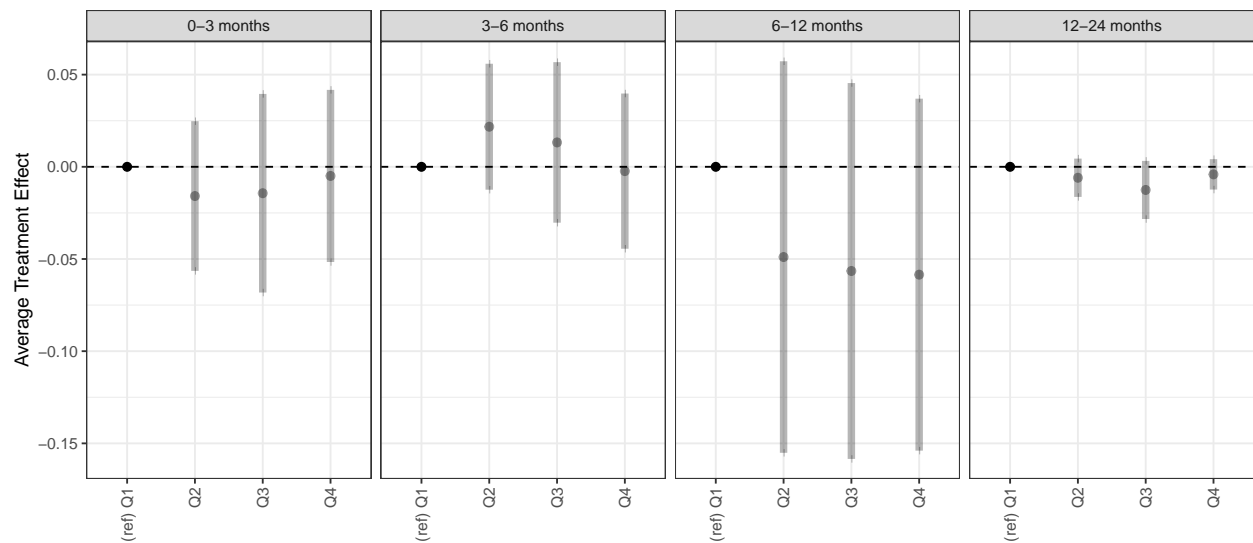
Enrolled wasted
Estimates from 19 cohorts in Asia, Latin America, Africa, Europe



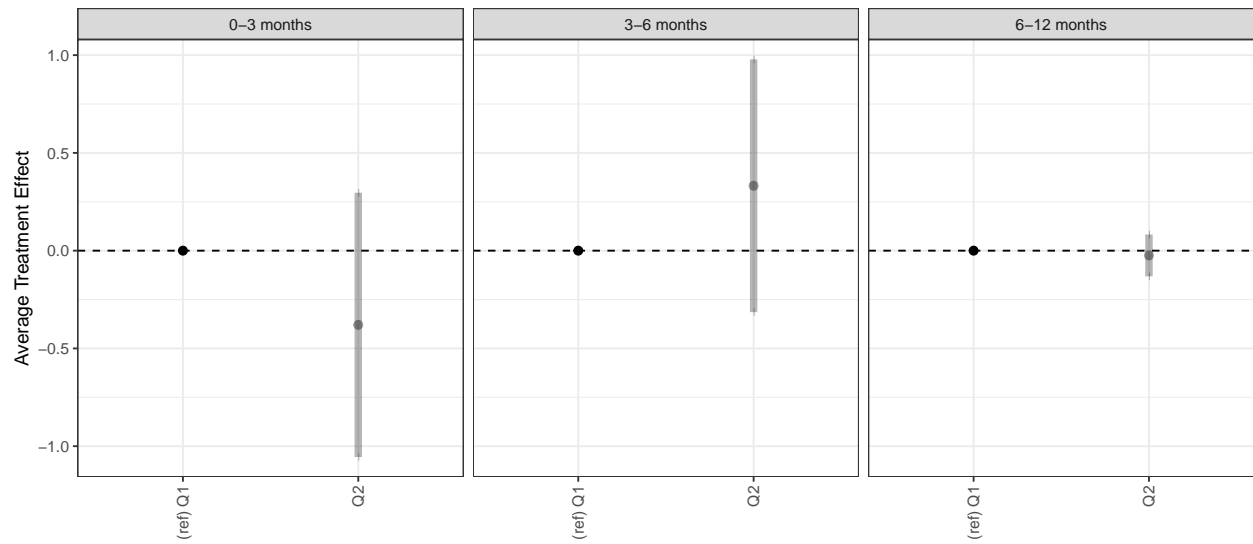
Gestational age at birth in days
Estimates from 8 cohorts in Asia, Latin America, Africa, Europe



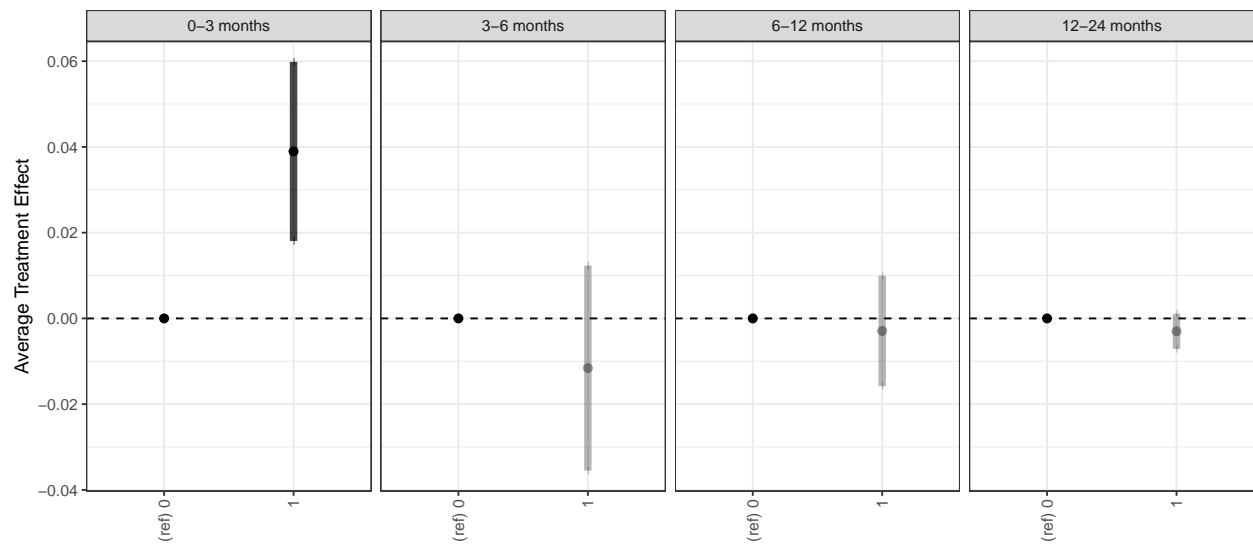
Percent diarrhea in first 24 months
Estimates from 12 cohorts in Latin America, Asia, Africa



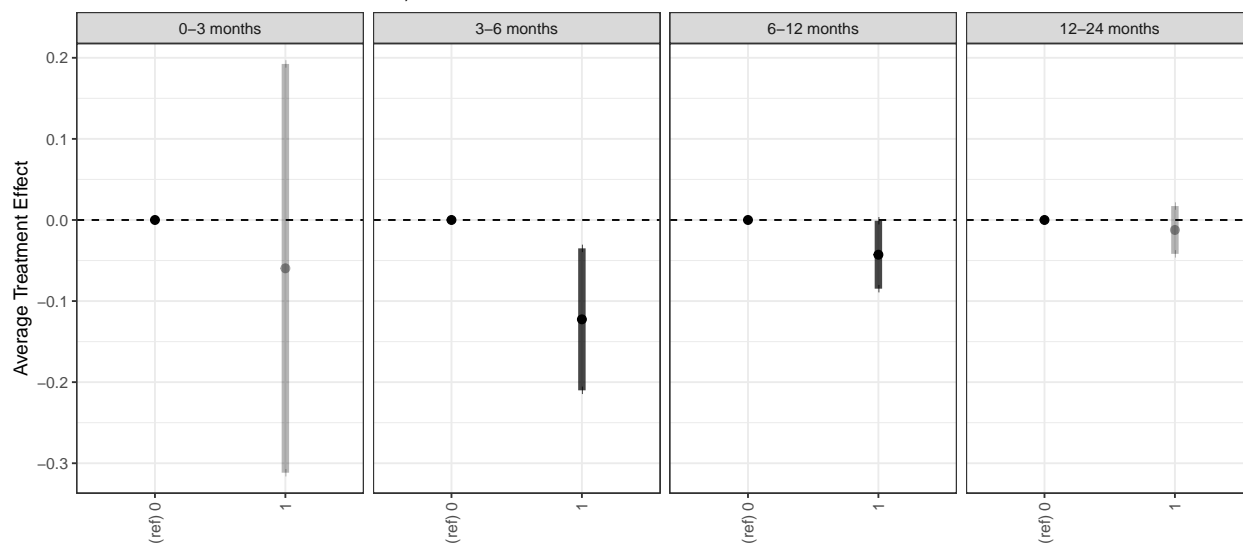
Percent diarrhea in first 6 months
Estimates from 5 cohorts in Latin America, Asia



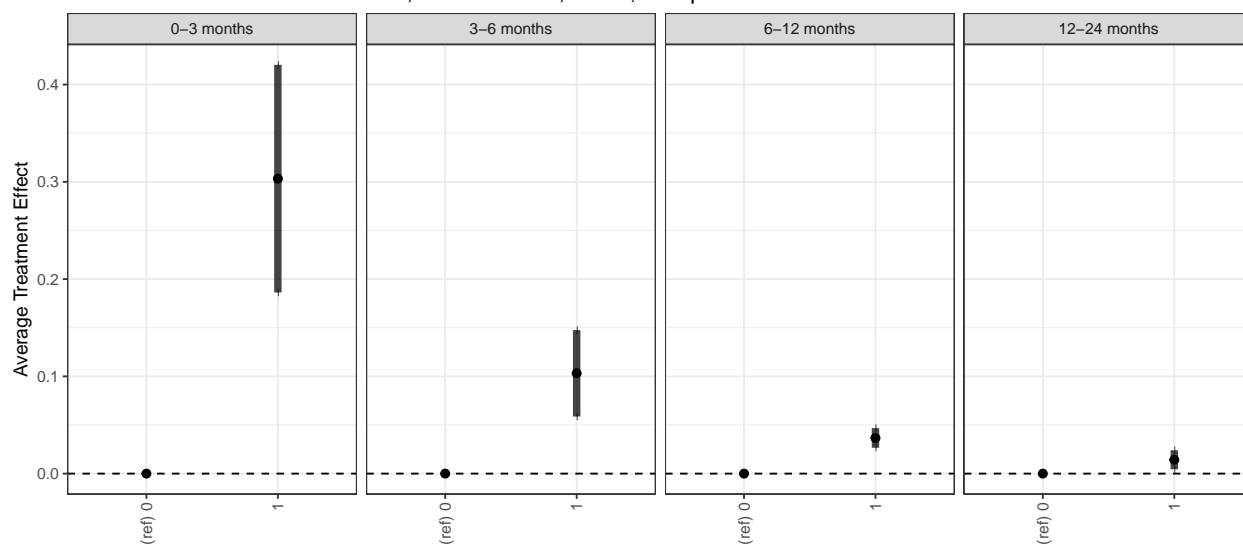
Percent exclusive breastfeeding
Estimates from 11 cohorts in Asia, Africa, Latin America



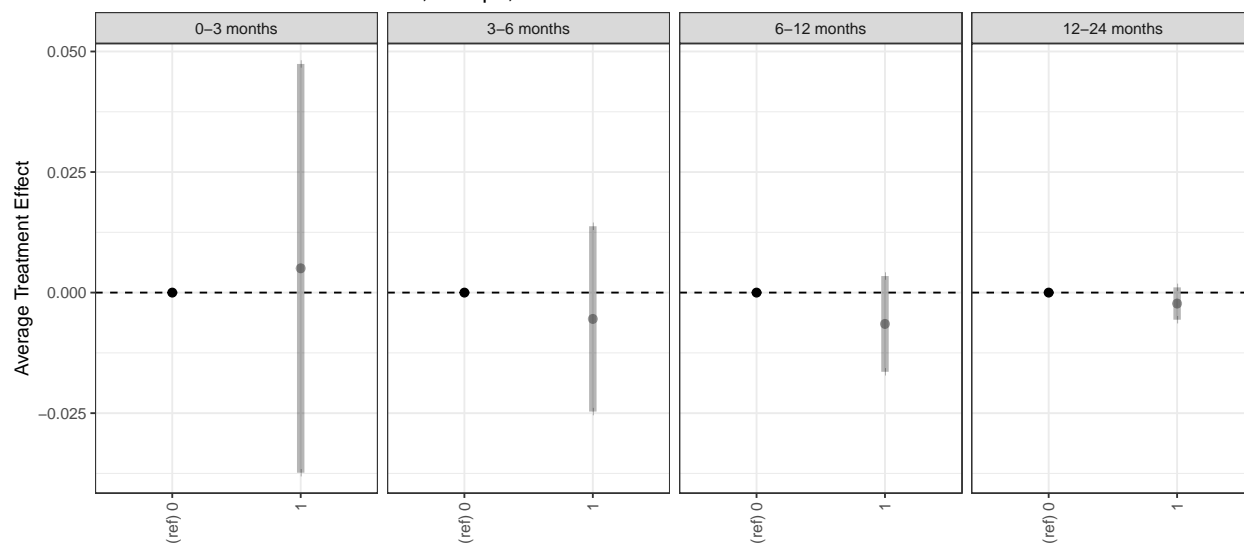
Persistent wasting in first 6 months
Estimates from 8 cohorts in Asia, Africa



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

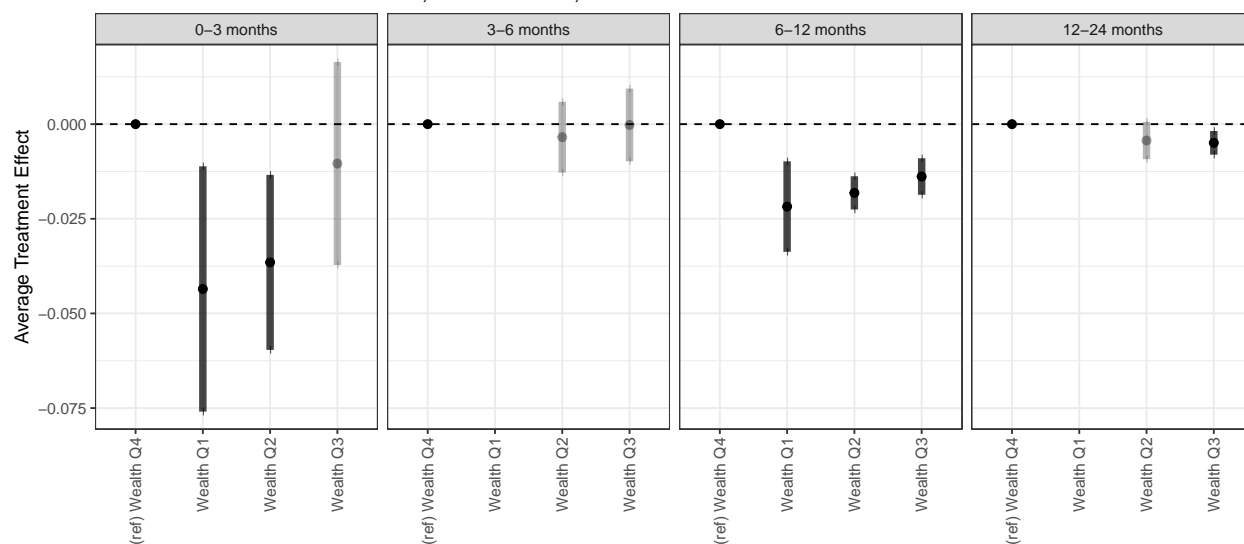


Vaginal delivery Estimates from 8 cohorts in Asia, Europe, Africa

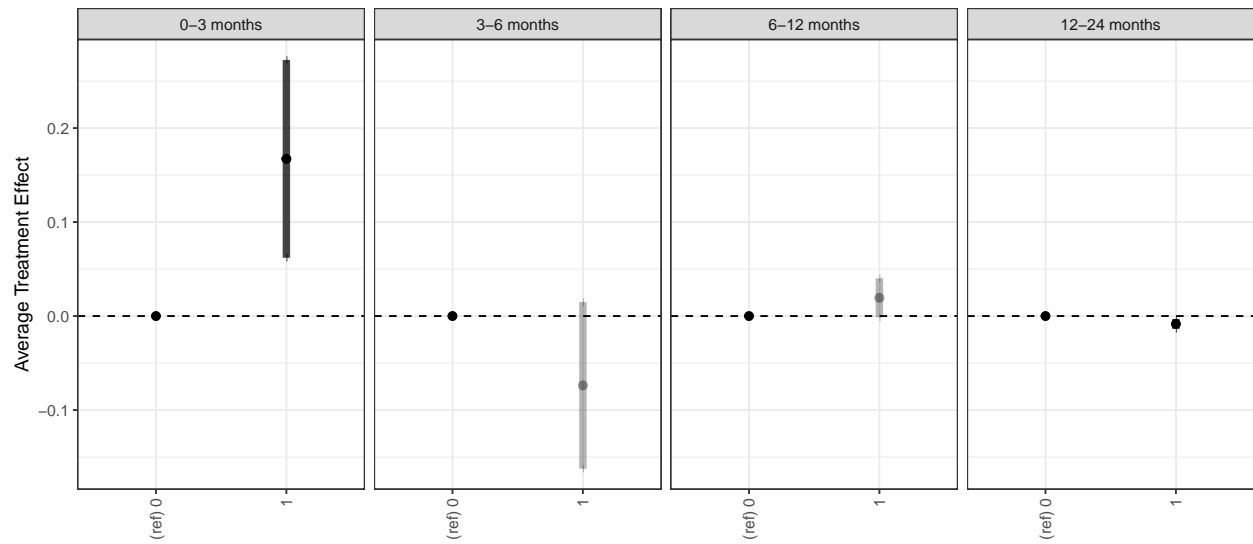


Household characteristics

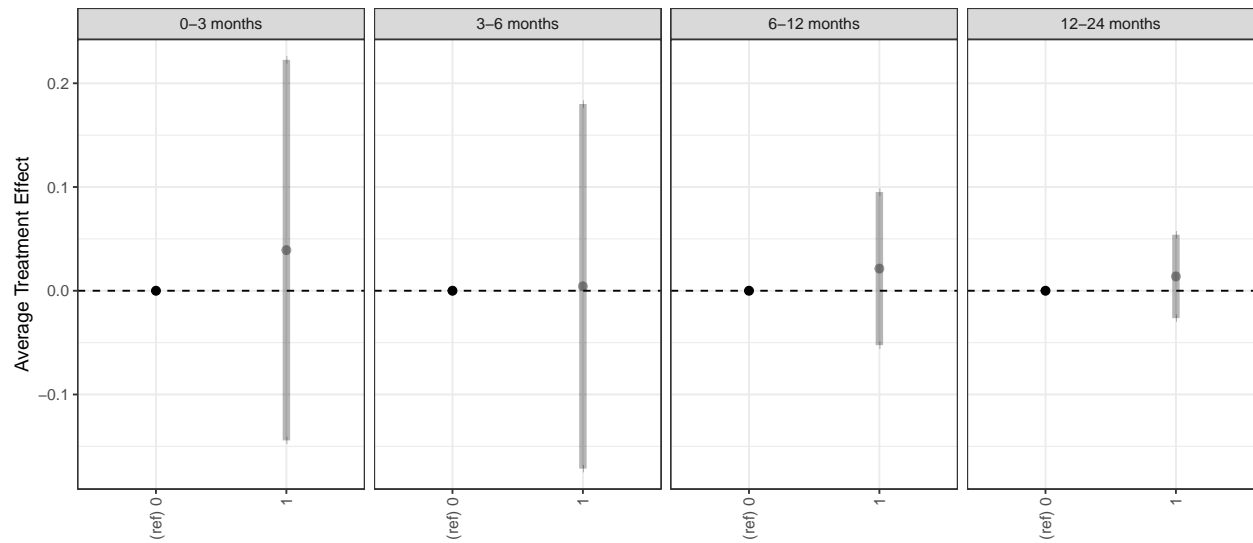
Asset based wealth index Estimates from 8 cohorts in Asia, Latin America, Africa



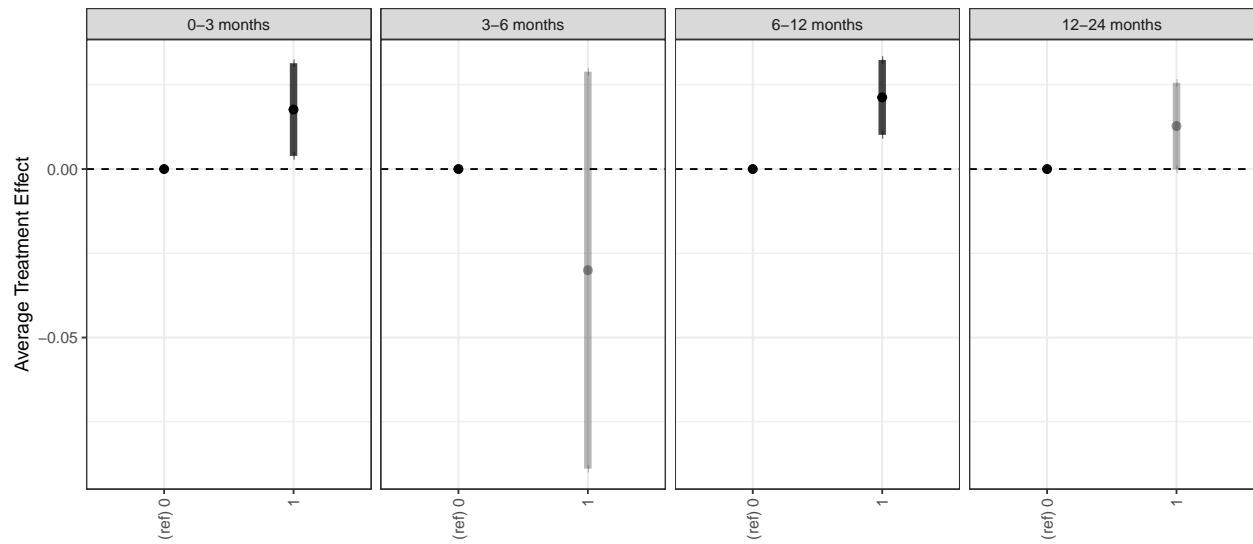
Clean cook
Estimates from 4 cohorts in Asia



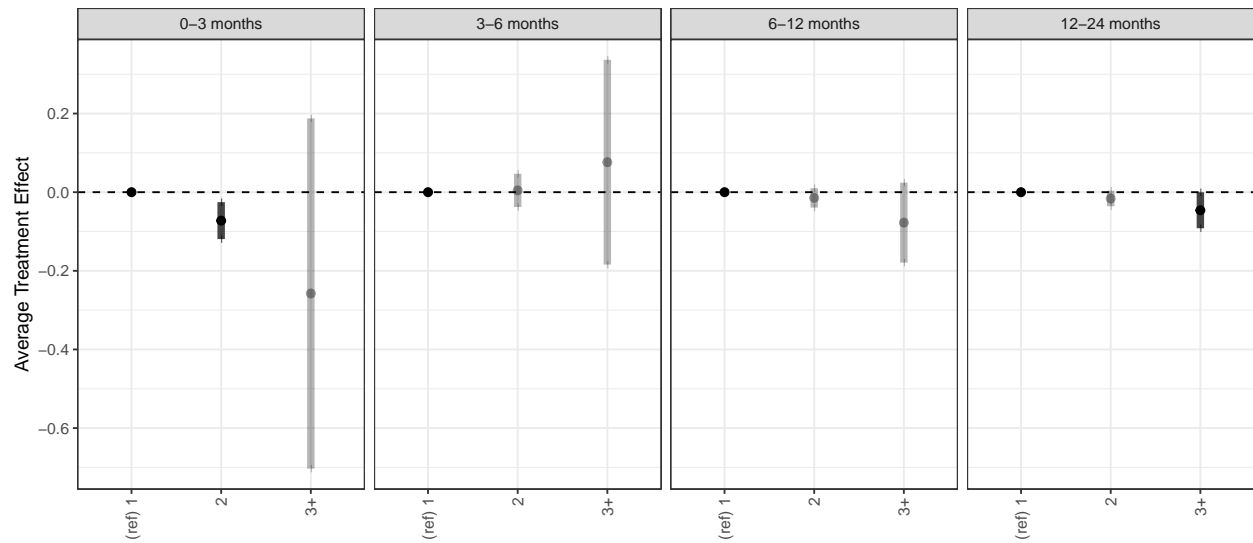
Improved floor
Estimates from 13 cohorts in Latin America, Asia, Africa



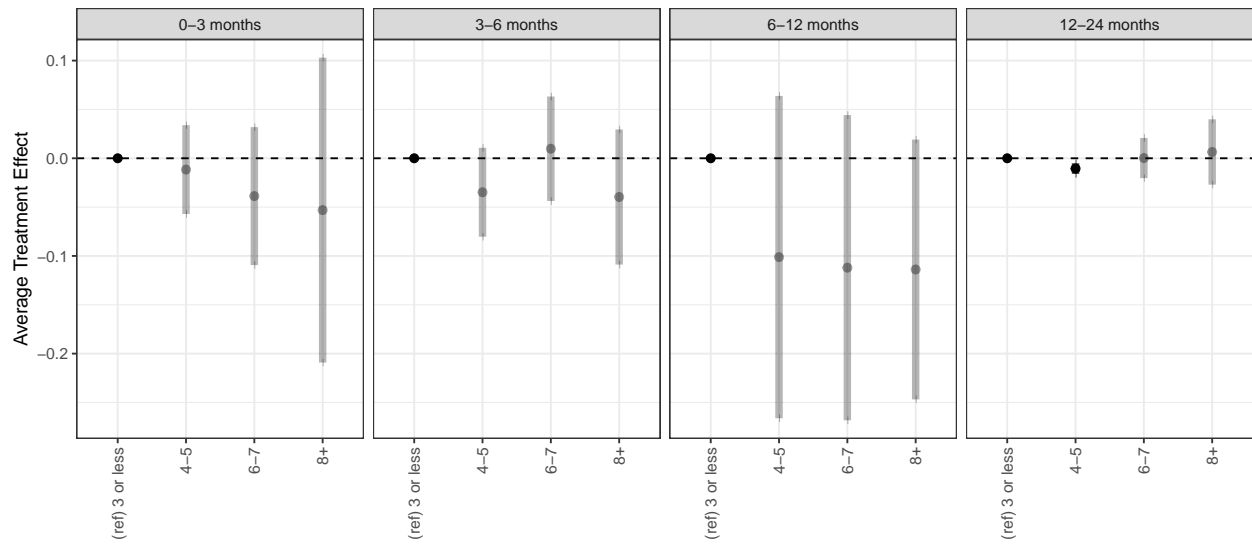
Improved sanitation
Estimates from 10 cohorts in Latin America, Asia



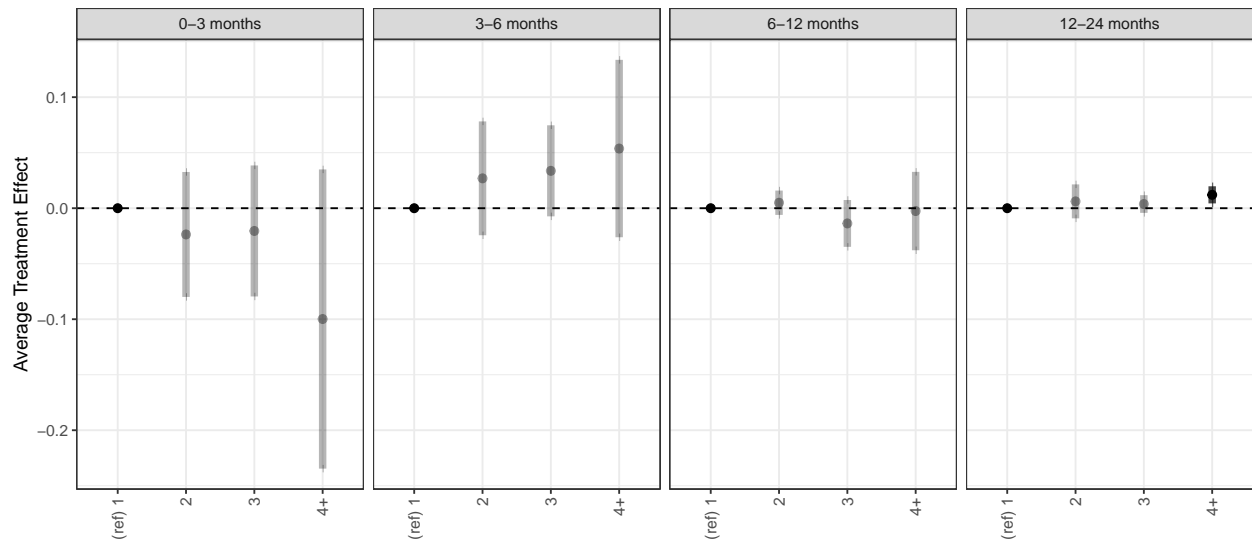
Number of children in the household under 5 years
Estimates from 4 cohorts in Asia



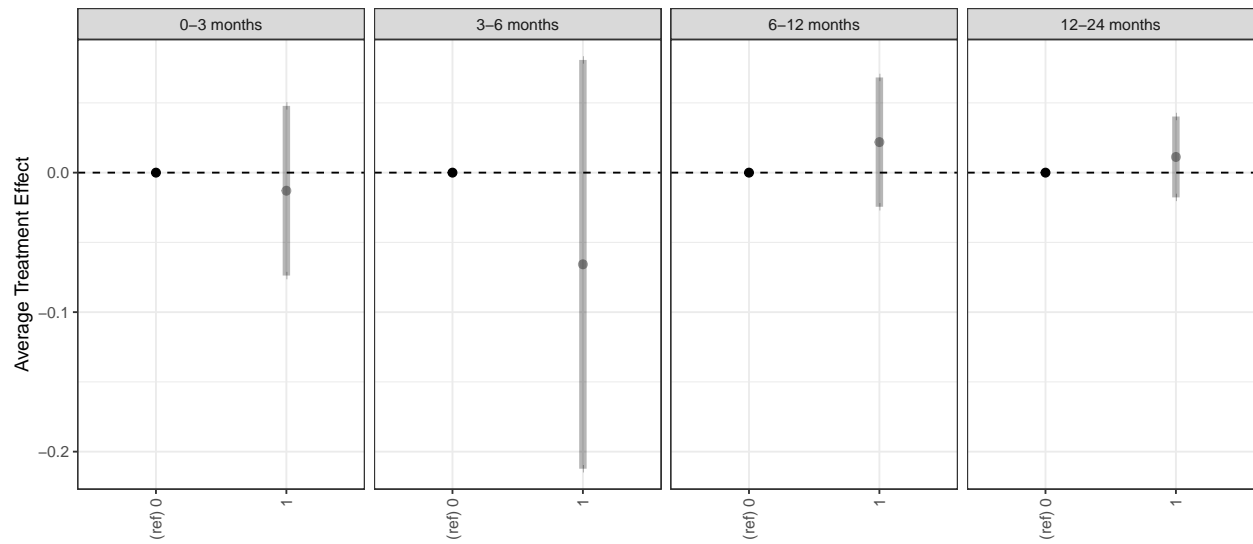
Number of people in the household
Estimates from 4 cohorts in Asia



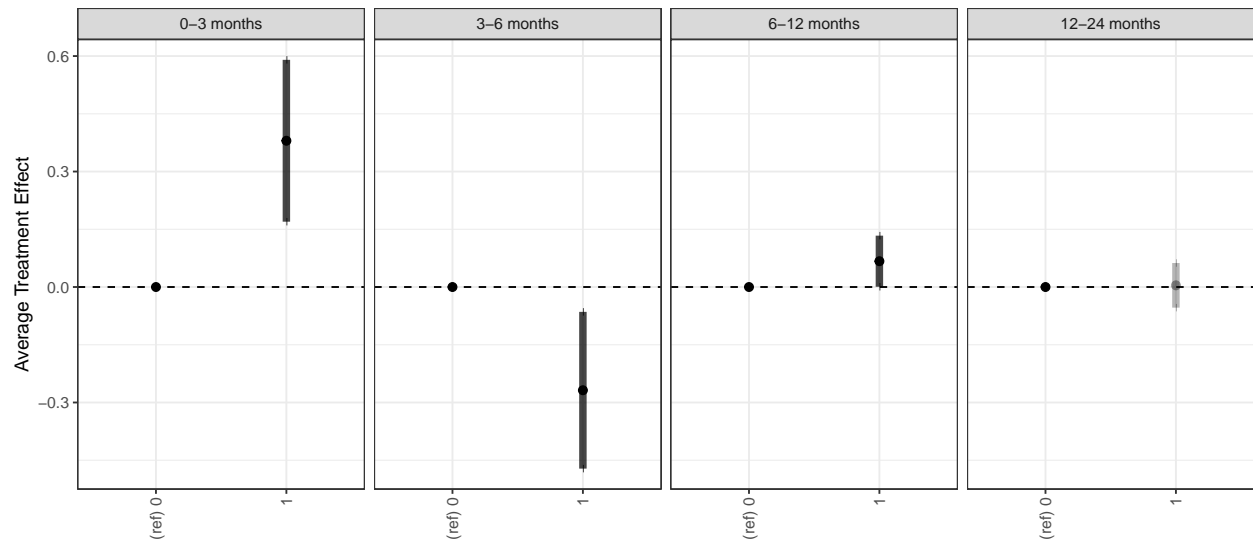
Number of rooms in household
Estimates from 15 cohorts in Asia, Latin America, Africa



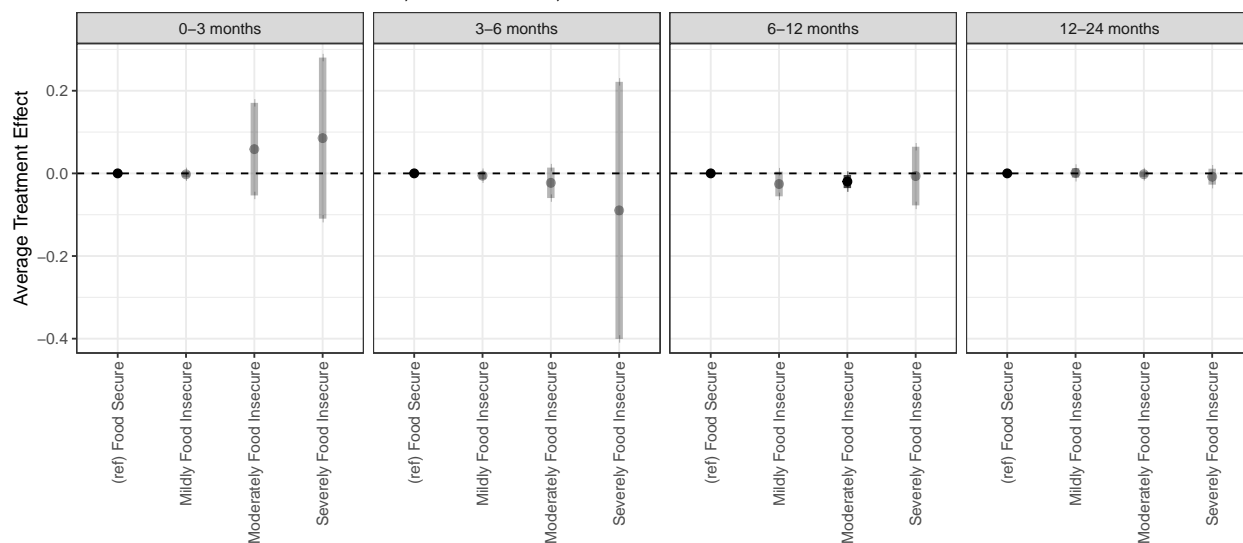
Safe water
Estimates from 4 cohorts in Asia, Africa, Latin America



Treats water
Estimates from 6 cohorts in Asia, Africa, Latin America

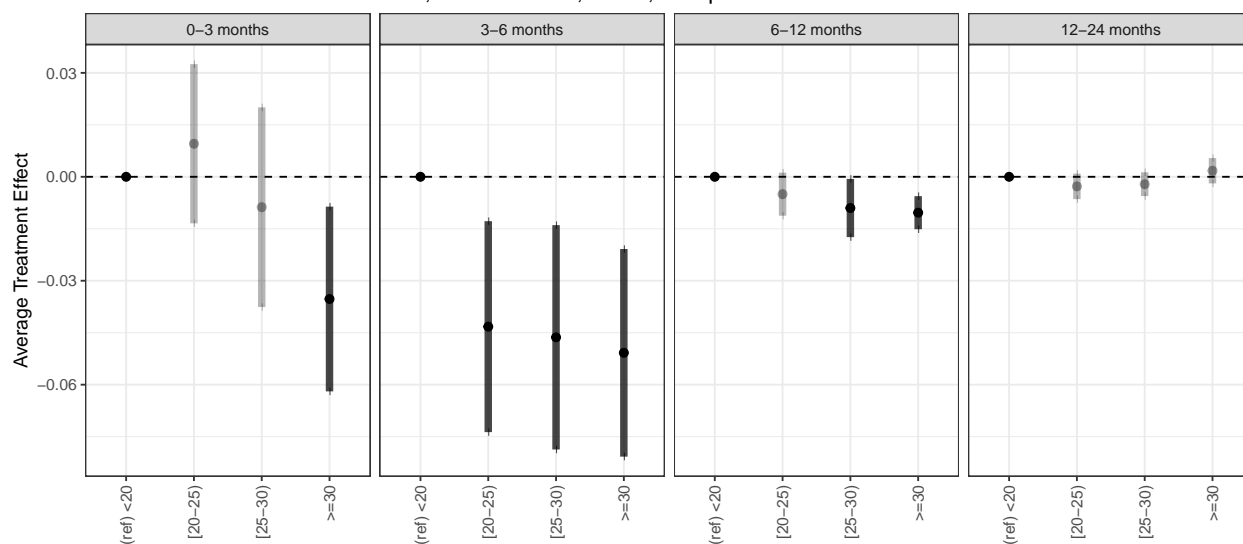


USAID Household Food Insecurity Access Scale (HFIAS) category
Estimates from 6 cohorts in Asia, Latin America, Africa

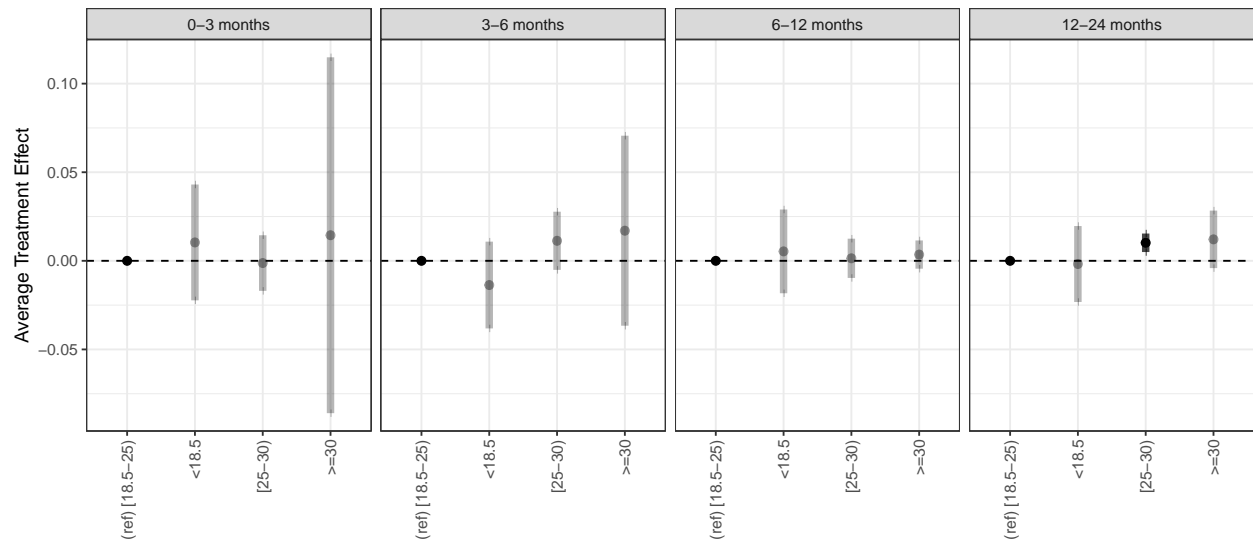


Maternal characteristics

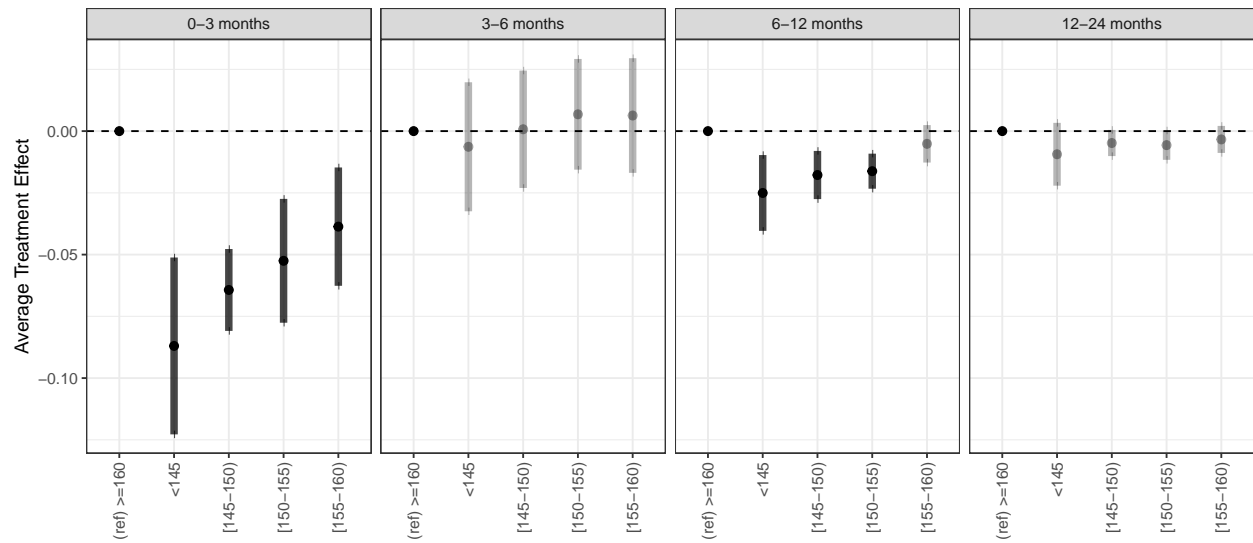
Maternal age
Estimates from 21 cohorts in Asia, Latin America, Africa, Europe



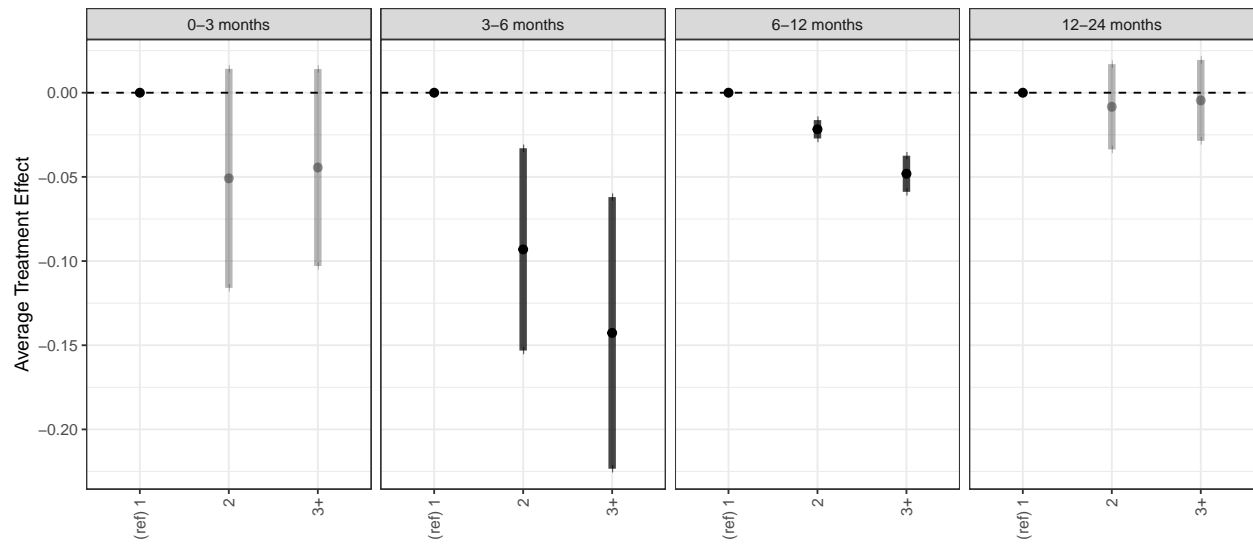
Maternal BMI
Estimates from 11 cohorts in Asia, Africa, Latin America, Europe



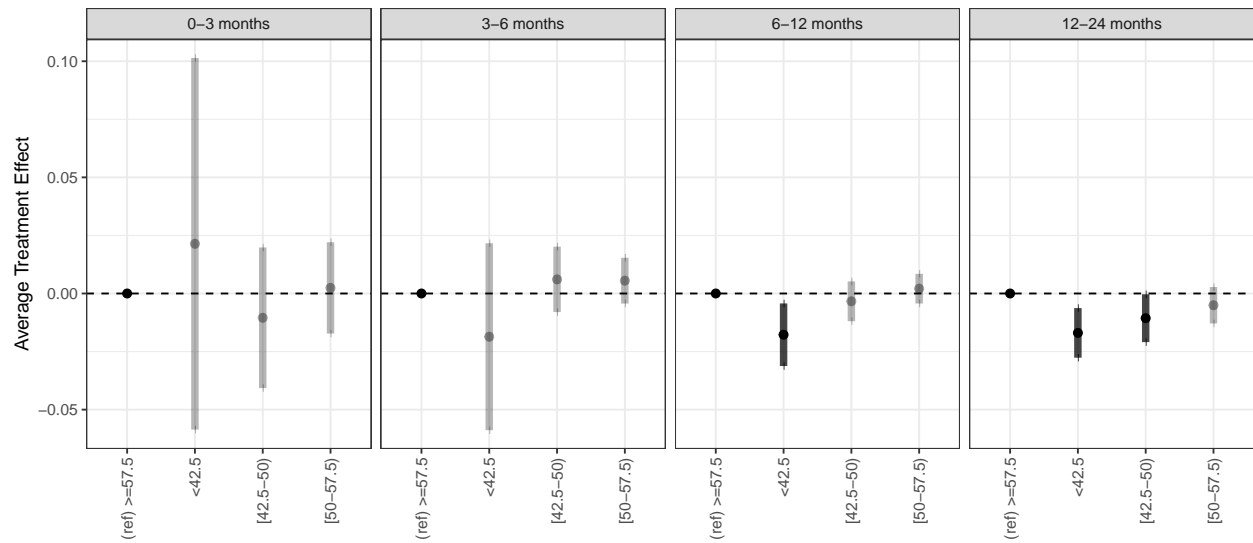
Maternal height
Estimates from 13 cohorts in Latin America, Asia, Africa



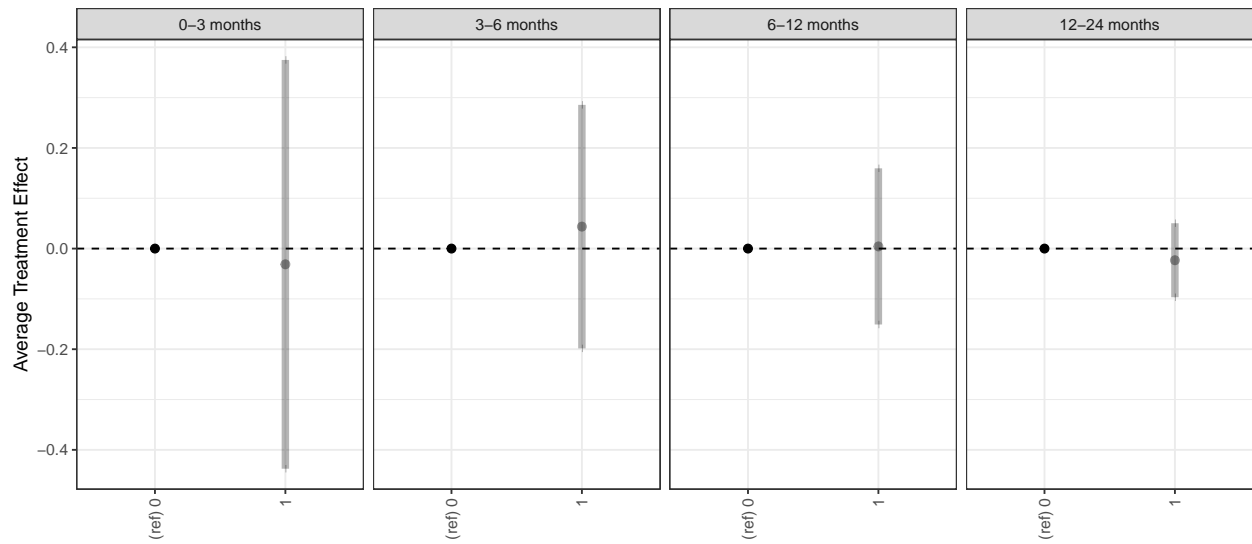
Maternal parity
Estimates from 7 cohorts in Latin America, Asia, Africa



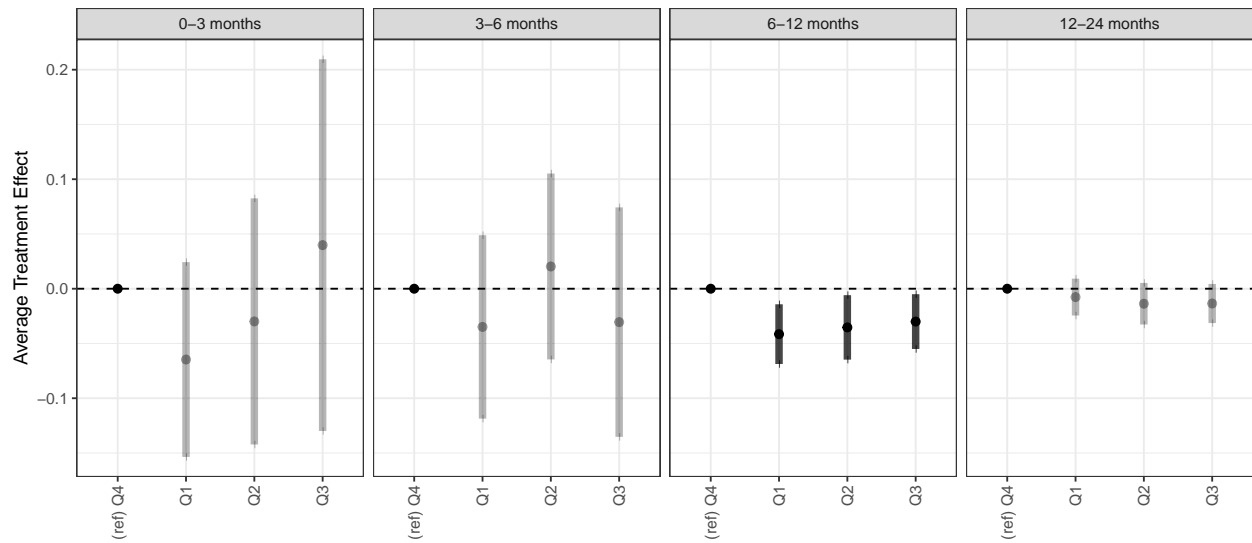
Maternal weight
Estimates from 13 cohorts in Africa, Asia, Latin America, Europe



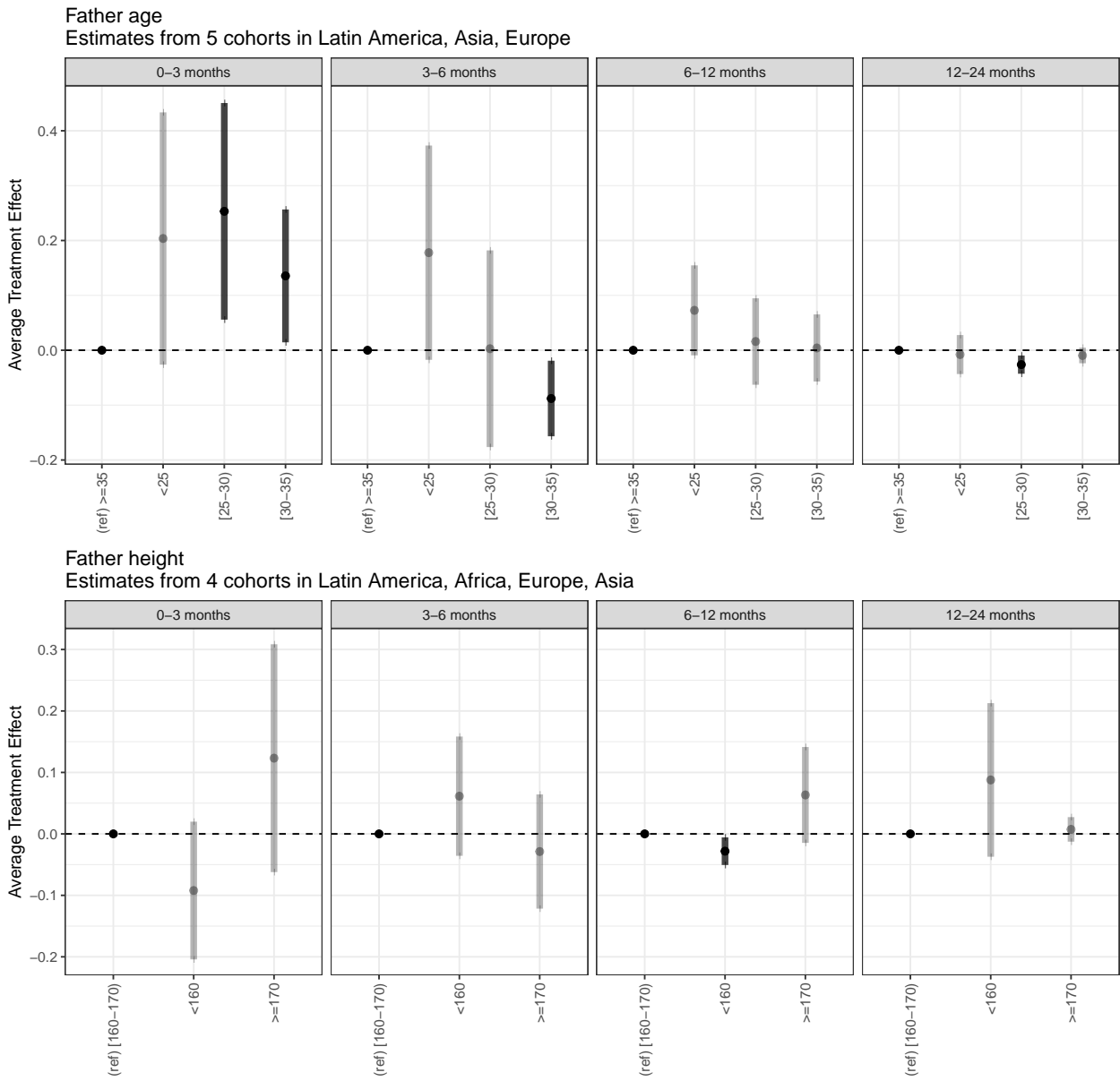
Mother is unmarried
Estimates from 8 cohorts in Latin America, Asia, Africa, Europe



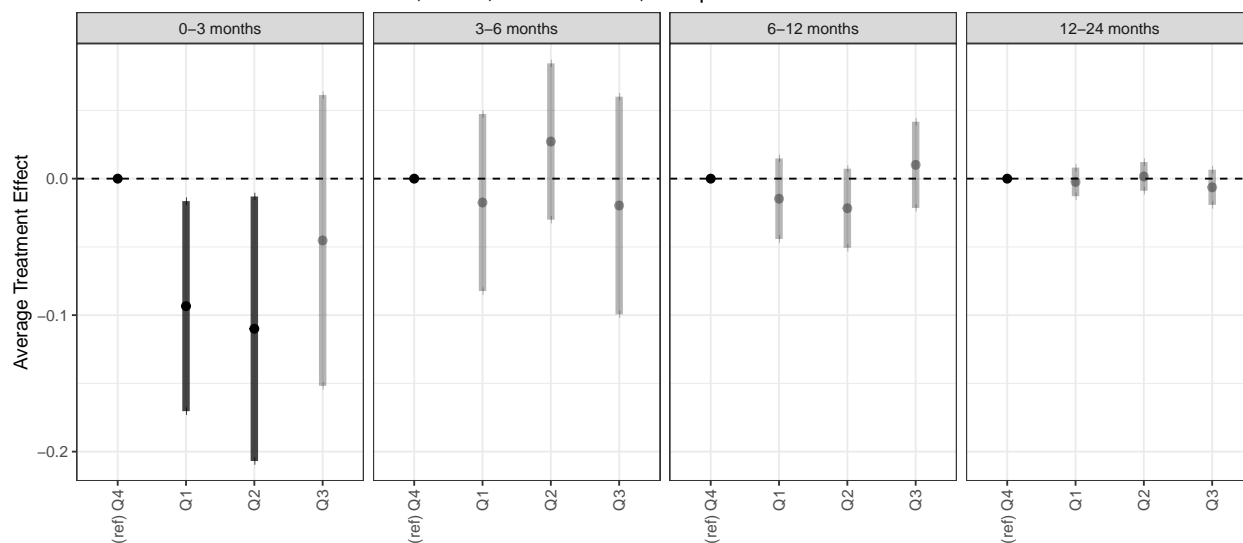
Mother's education
Estimates from 16 cohorts in Asia, Latin America, Africa, Europe



Paternal characteristics



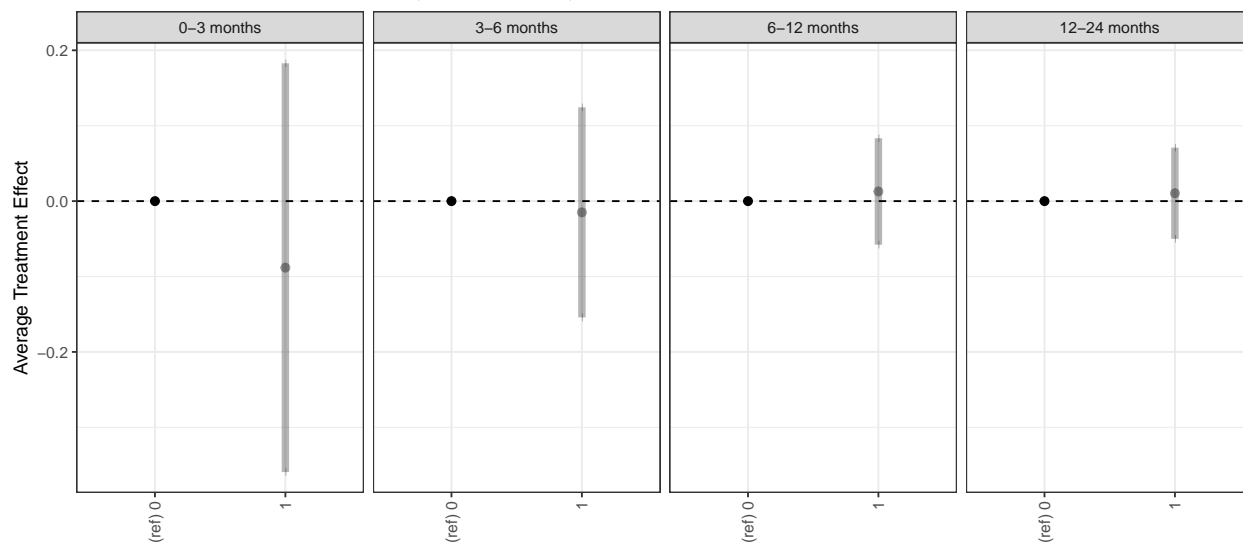
Father's education
Estimates from 14 cohorts in Asia, Africa, Latin America, Europe



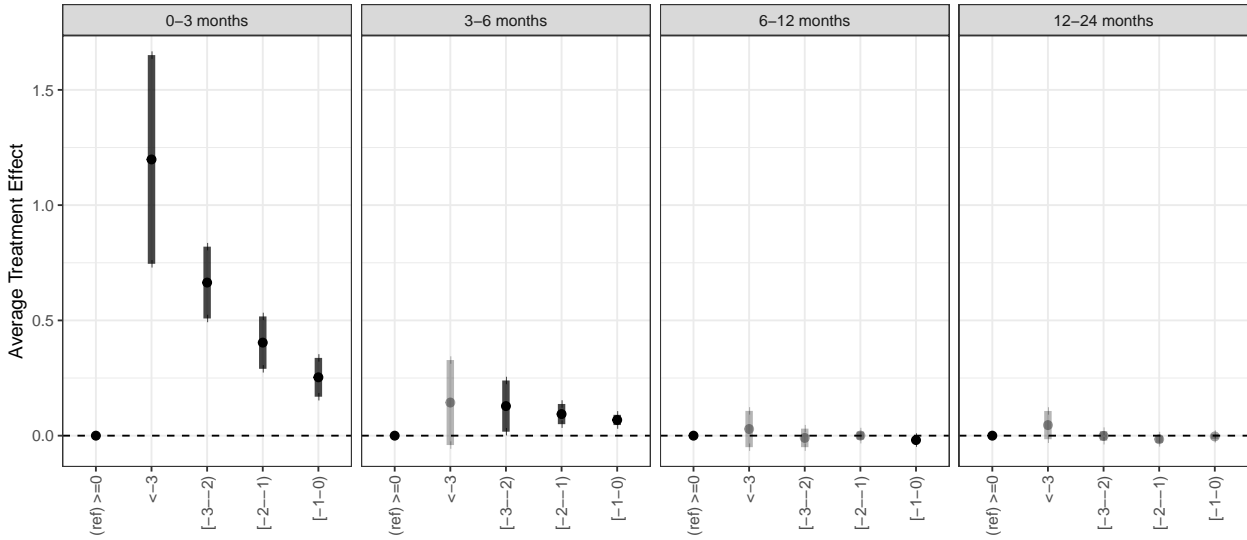
Length growth velocity

Child characteristics

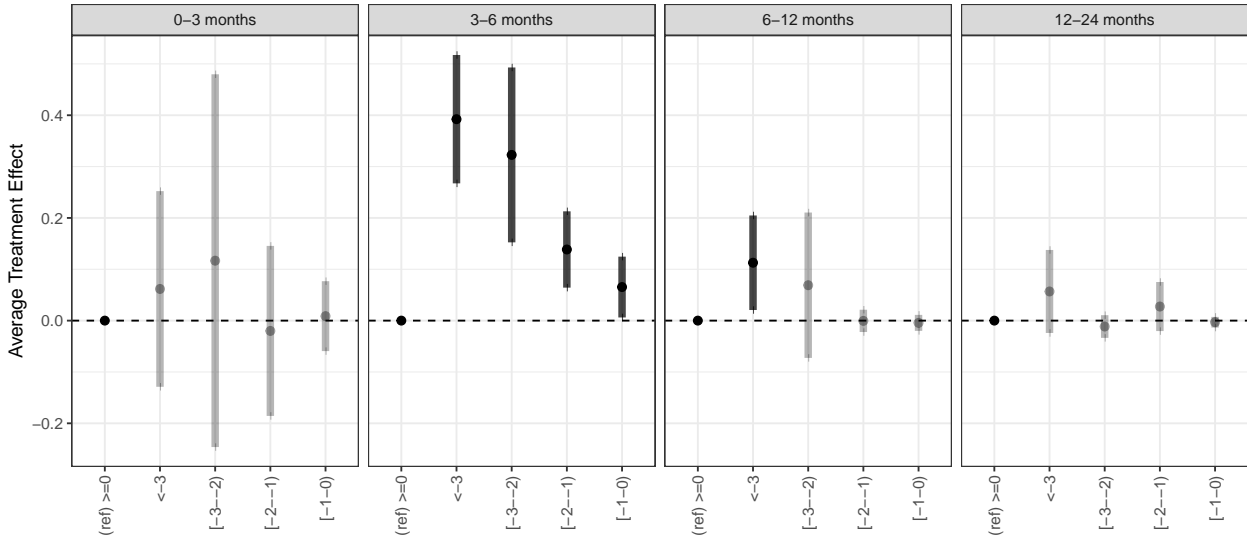
Any wasting in first 6 months
Estimates from 15 cohorts in Asia, Latin America, Africa



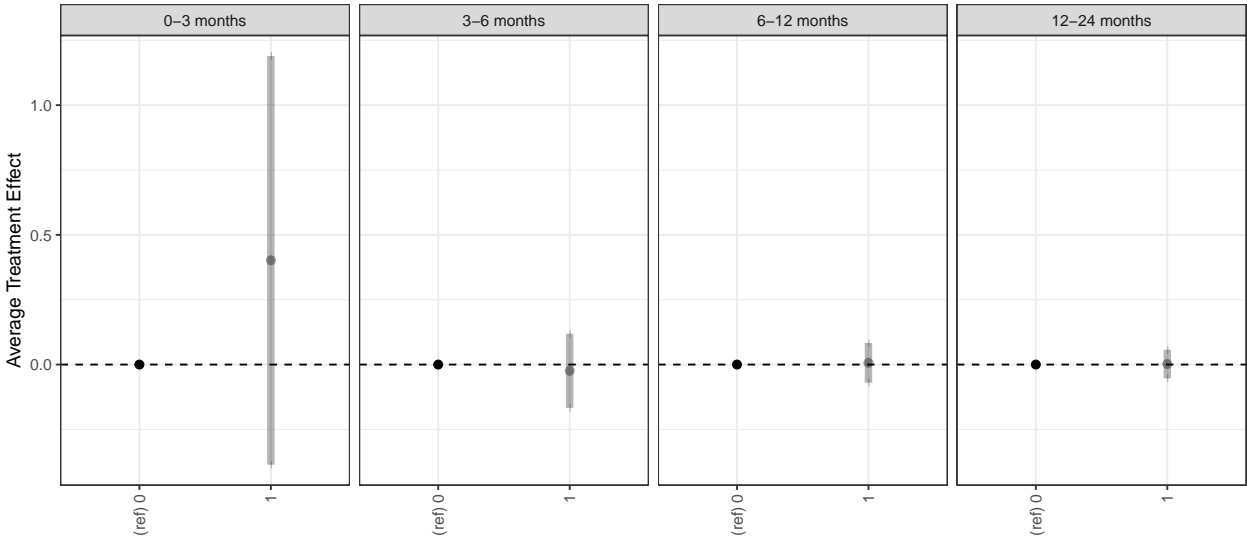
Birth length
 Estimates from 15 cohorts in Latin America, Asia, Africa, Europe



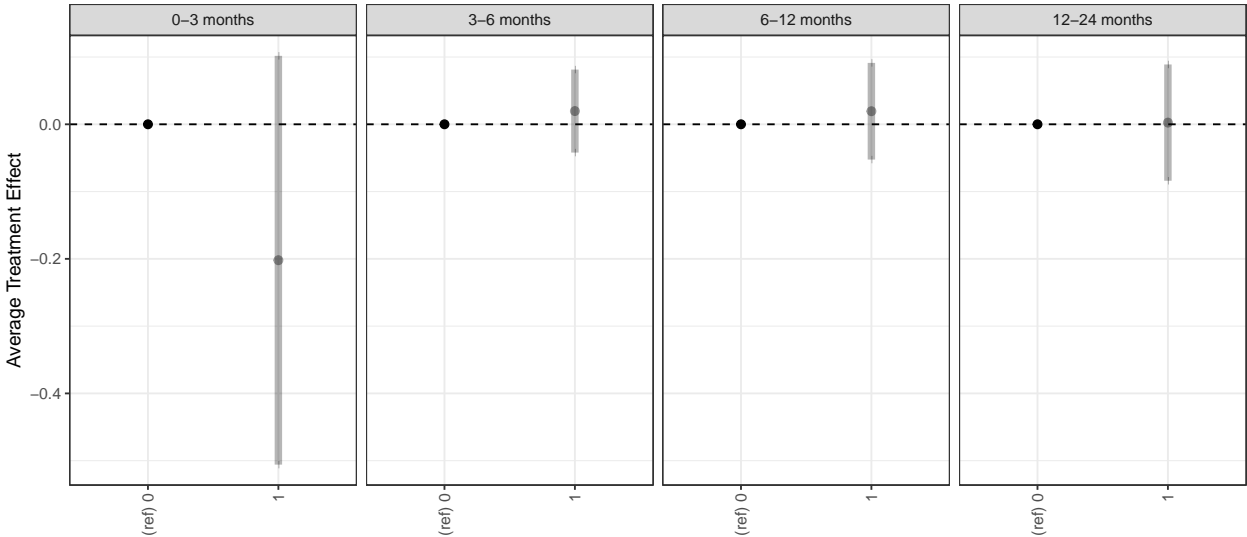
Birthweight
 Estimates from 15 cohorts in Asia, Latin America, Africa, Europe



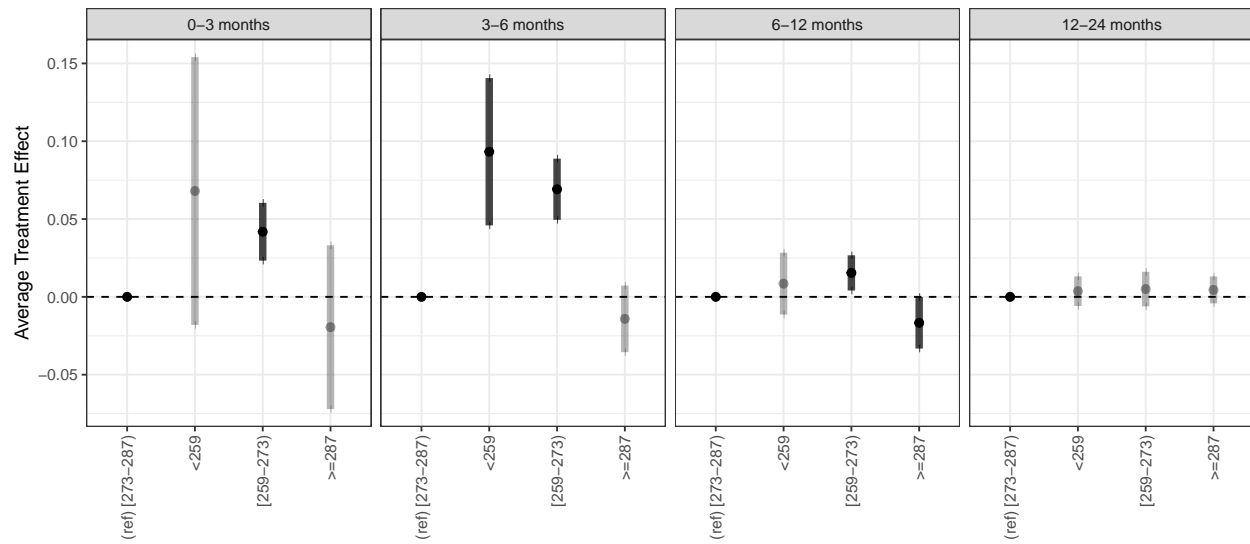
Child delivered at home
Estimates from 11 cohorts in Asia, Africa



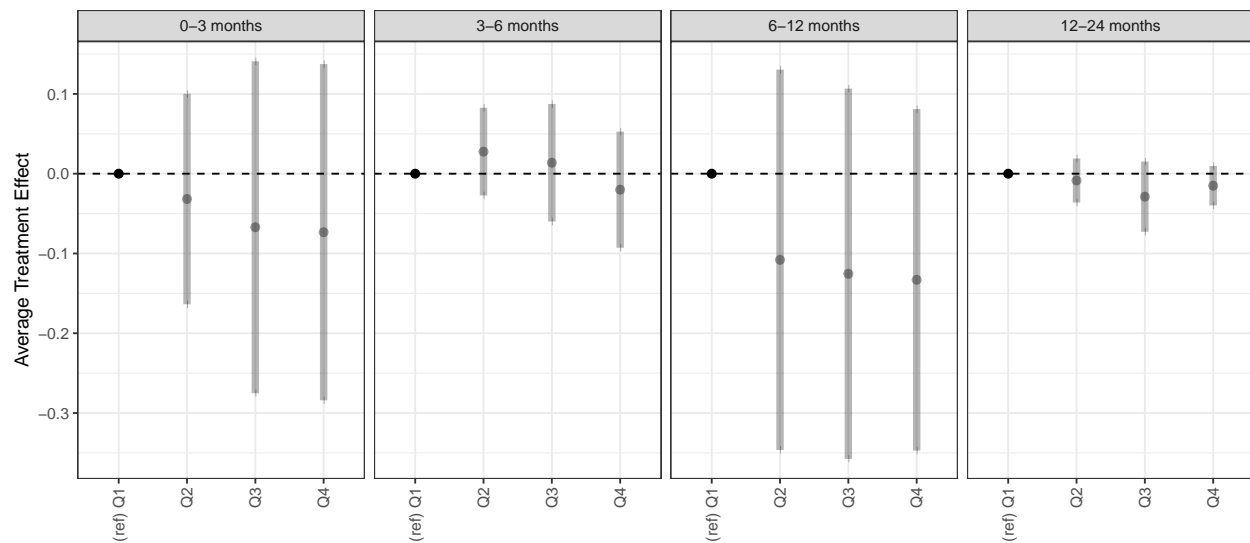
Enrolled wasted
Estimates from 19 cohorts in Asia, Latin America, Africa, Europe



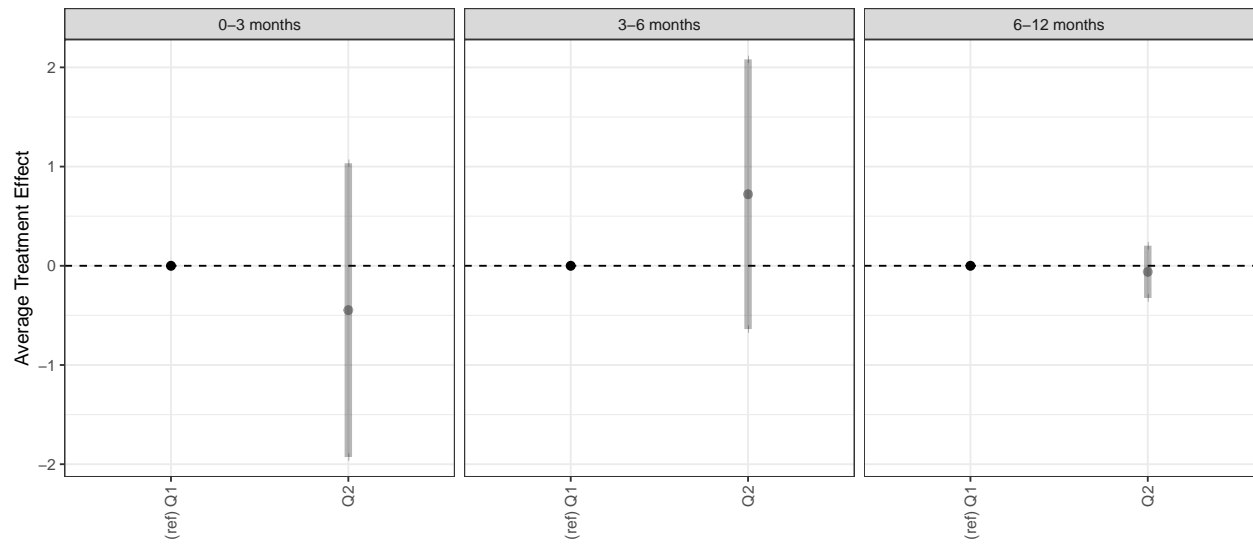
Gestational age at birth in days
Estimates from 8 cohorts in Asia, Latin America, Africa, Europe



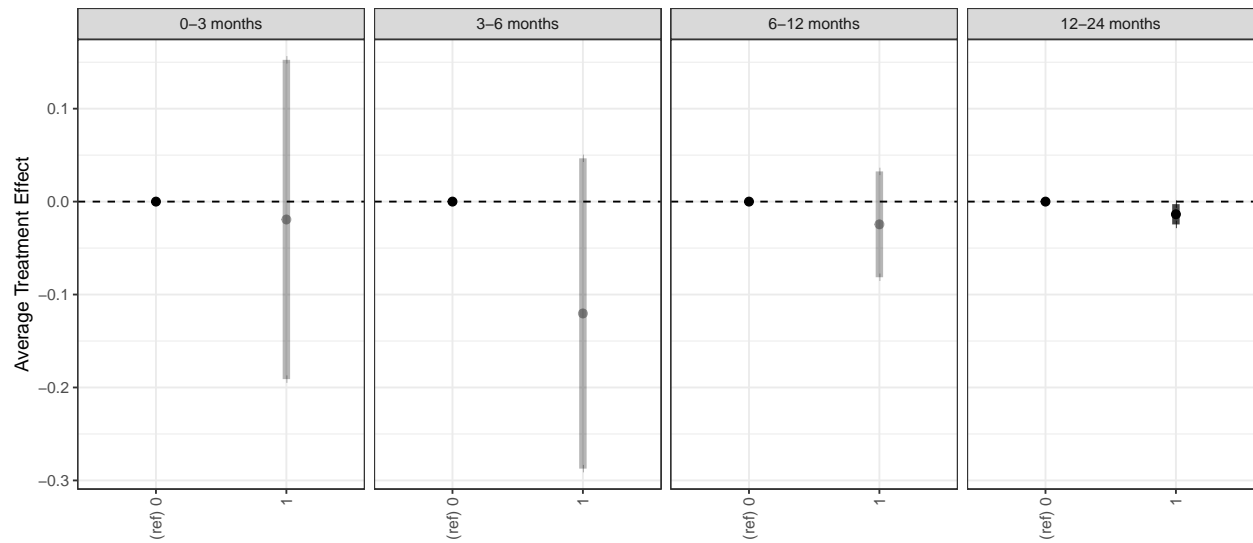
Percent diarrhea in first 24 months
Estimates from 12 cohorts in Latin America, Asia, Africa



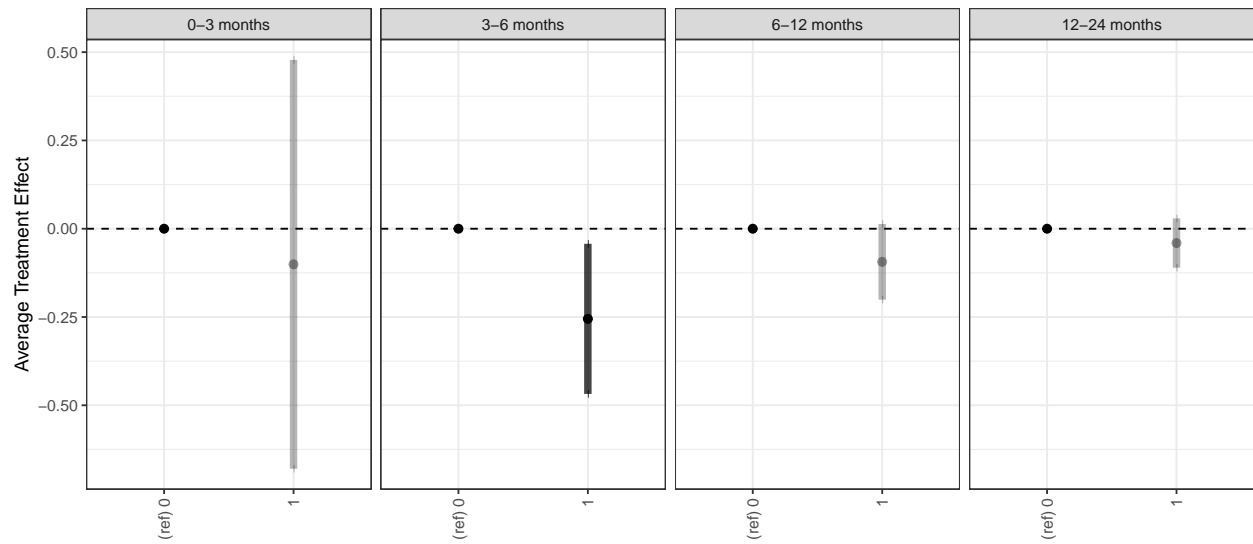
Percent diarrhea in first 6 months
Estimates from 5 cohorts in Latin America, Asia



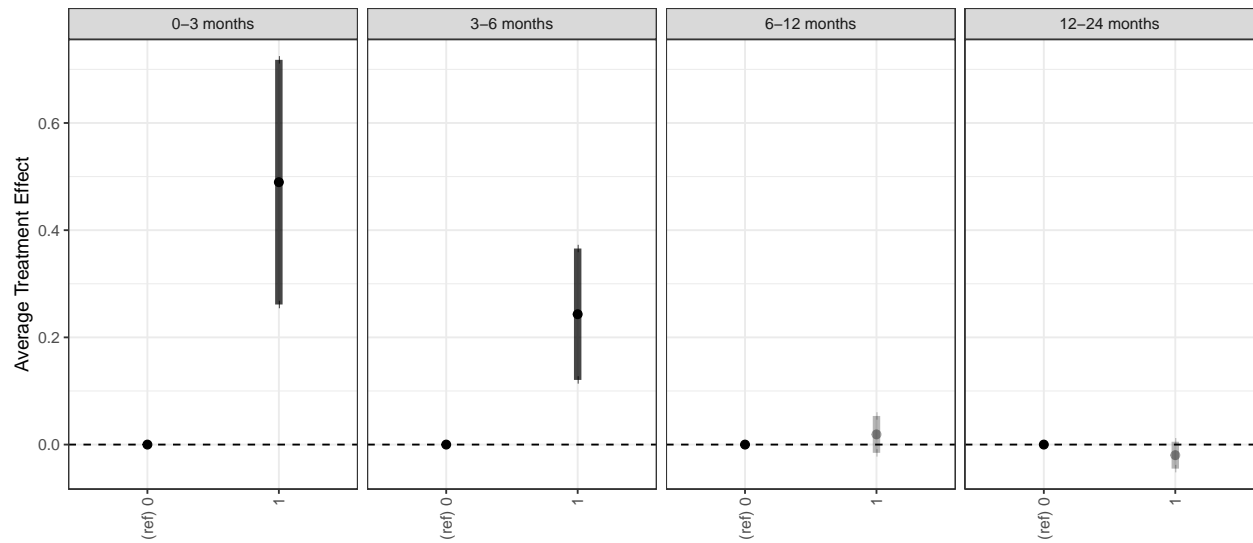
Percent exclusive breastfeeding
Estimates from 11 cohorts in Asia, Africa, Latin America



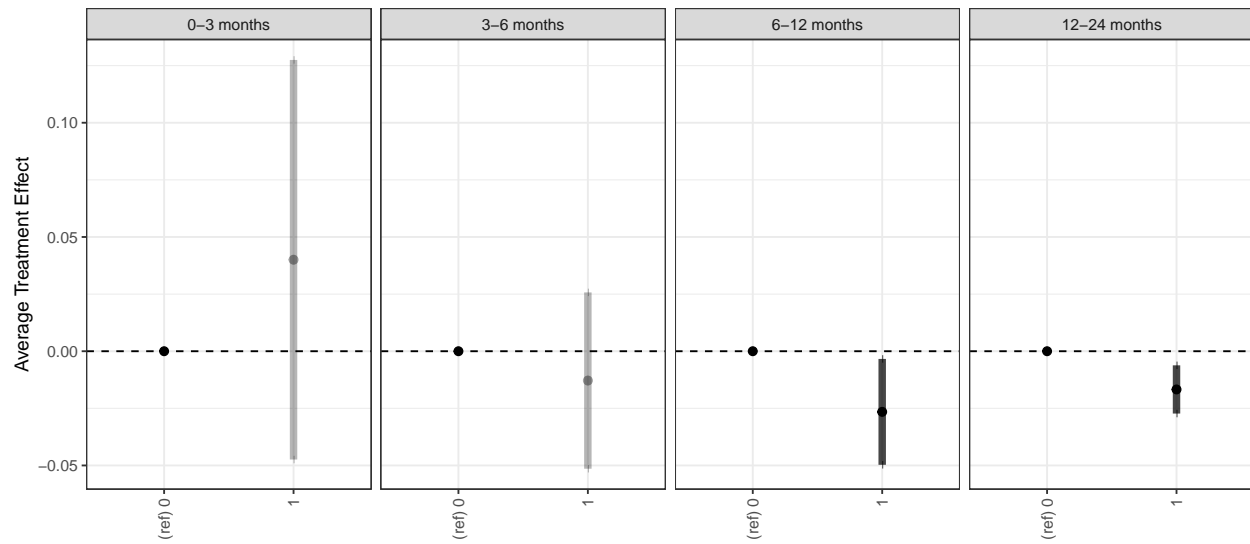
Persistent wasting in first 6 months
Estimates from 8 cohorts in Asia, Africa



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

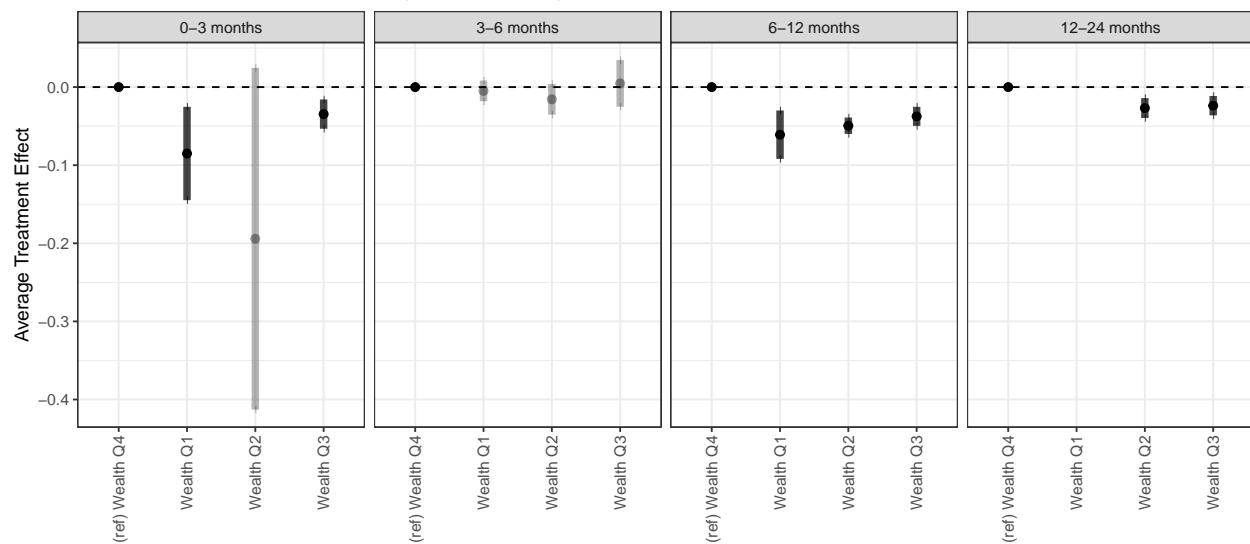


Vaginal delivery
Estimates from 8 cohorts in Asia, Europe, Africa

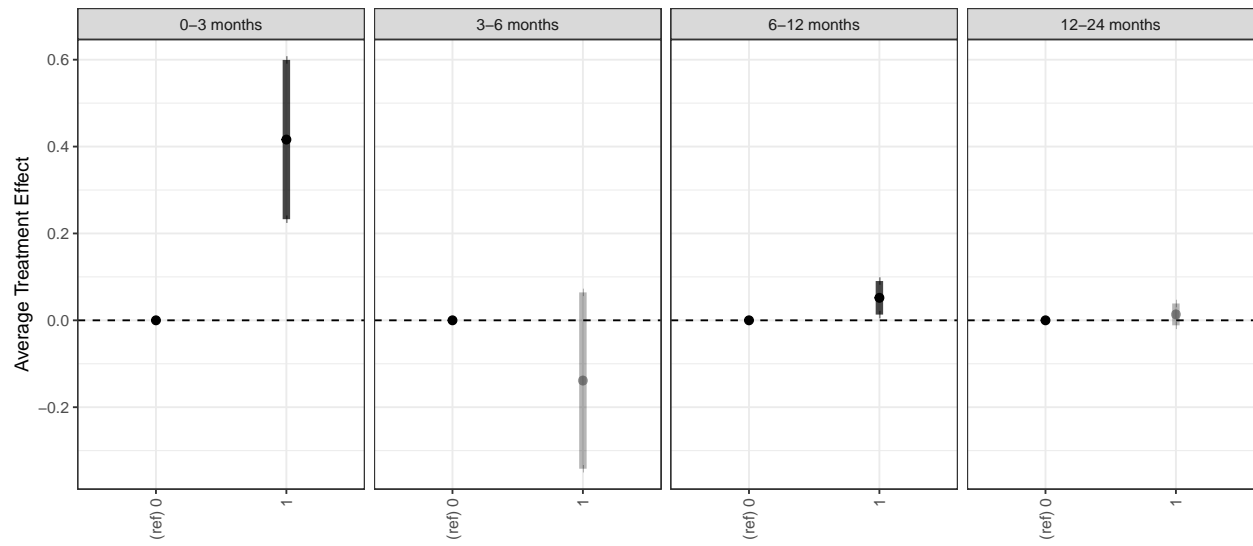


Household characteristics

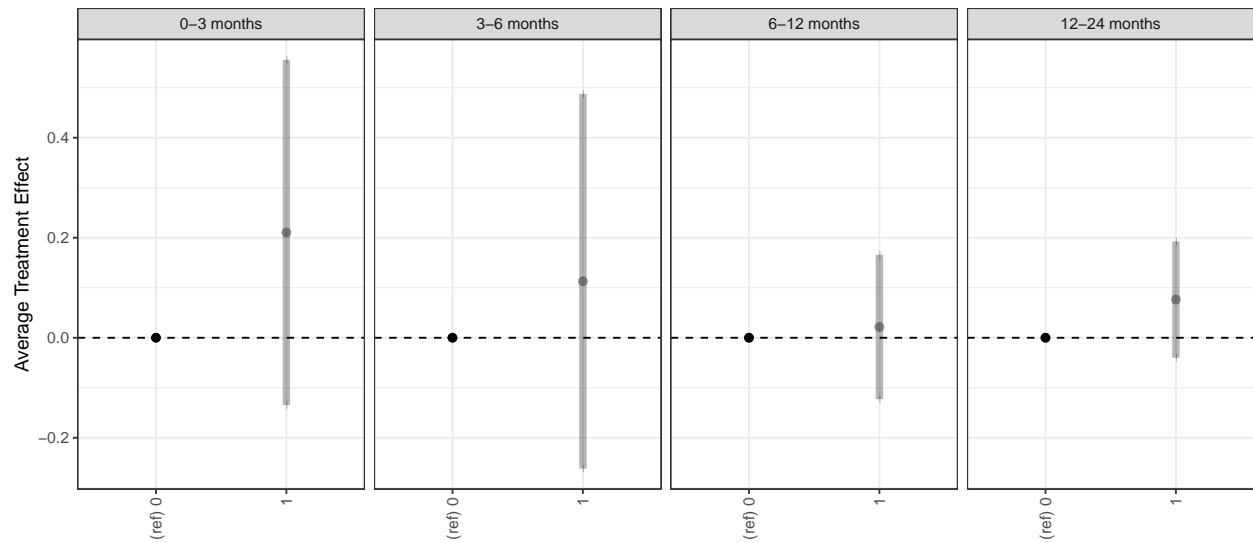
Asset based wealth index
Estimates from 8 cohorts in Asia, Latin America, Africa



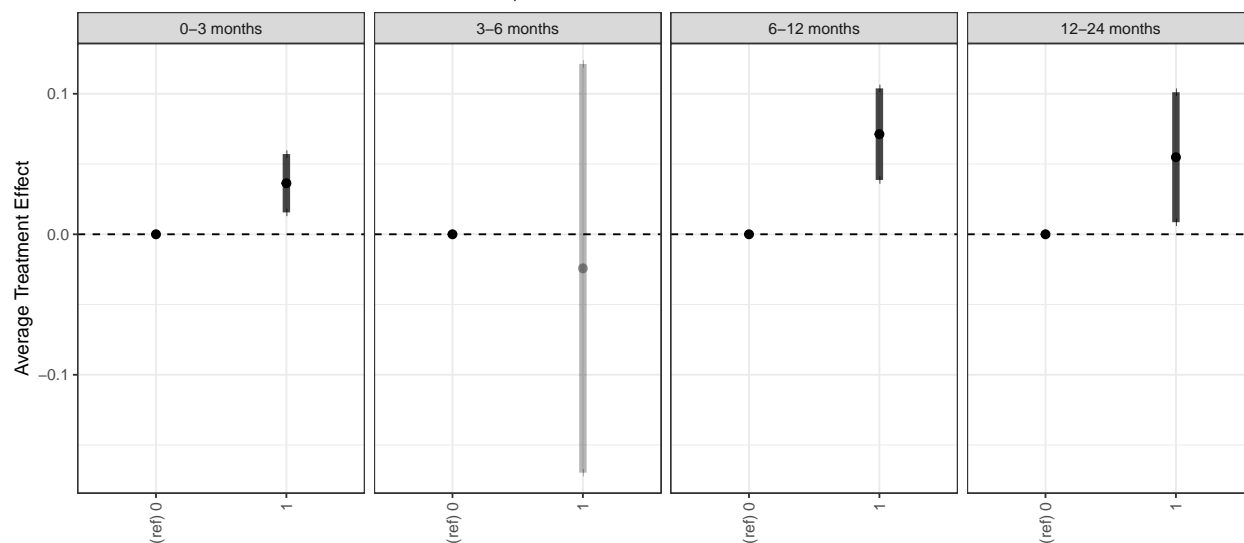
Clean cook
Estimates from 4 cohorts in Asia



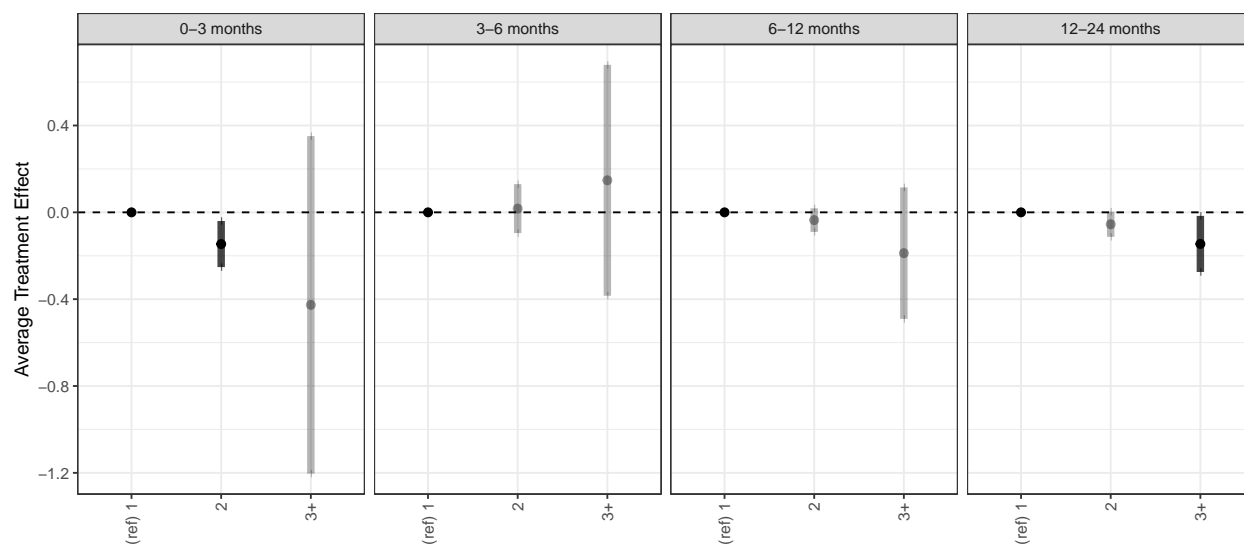
Improved floor
Estimates from 13 cohorts in Latin America, Asia, Africa



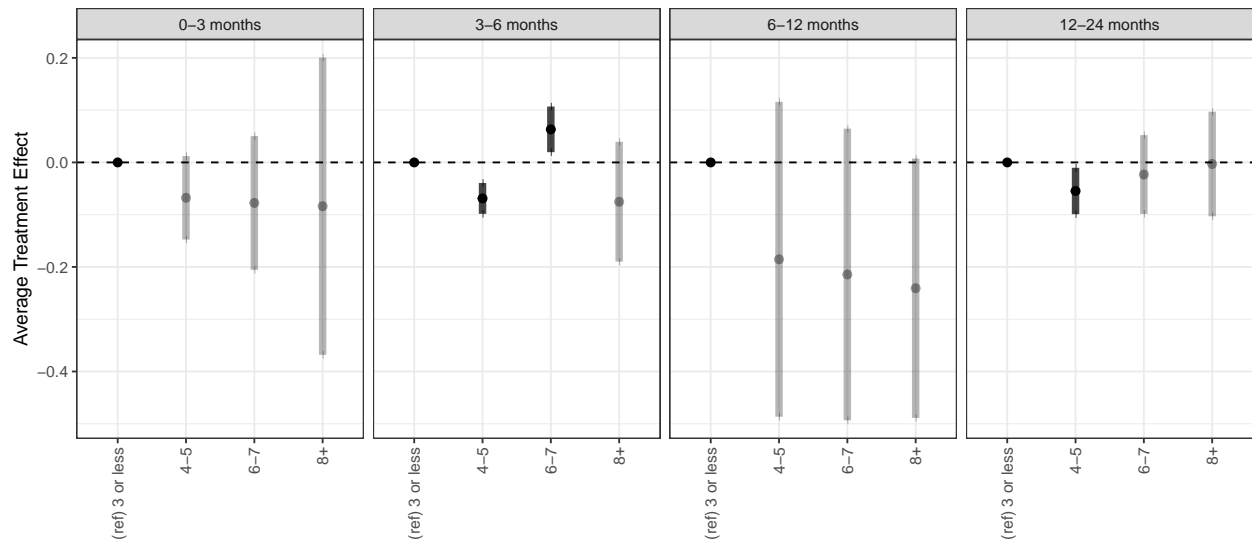
Improved sanitation
Estimates from 10 cohorts in Latin America, Asia



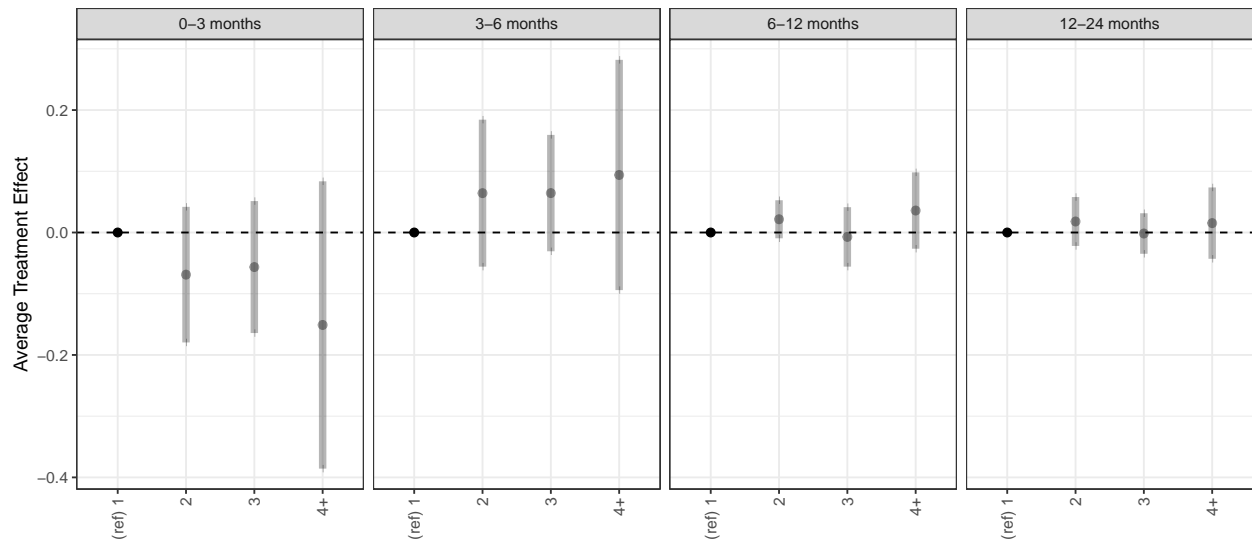
Number of children in the household under 5 years
Estimates from 4 cohorts in Asia



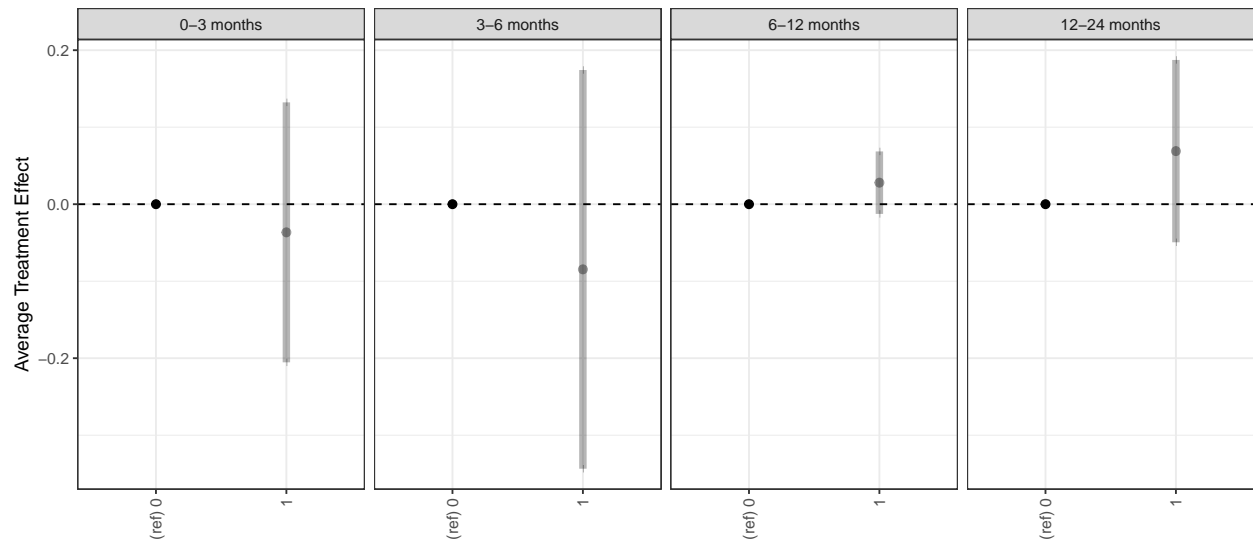
Number of people in the household
Estimates from 4 cohorts in Asia



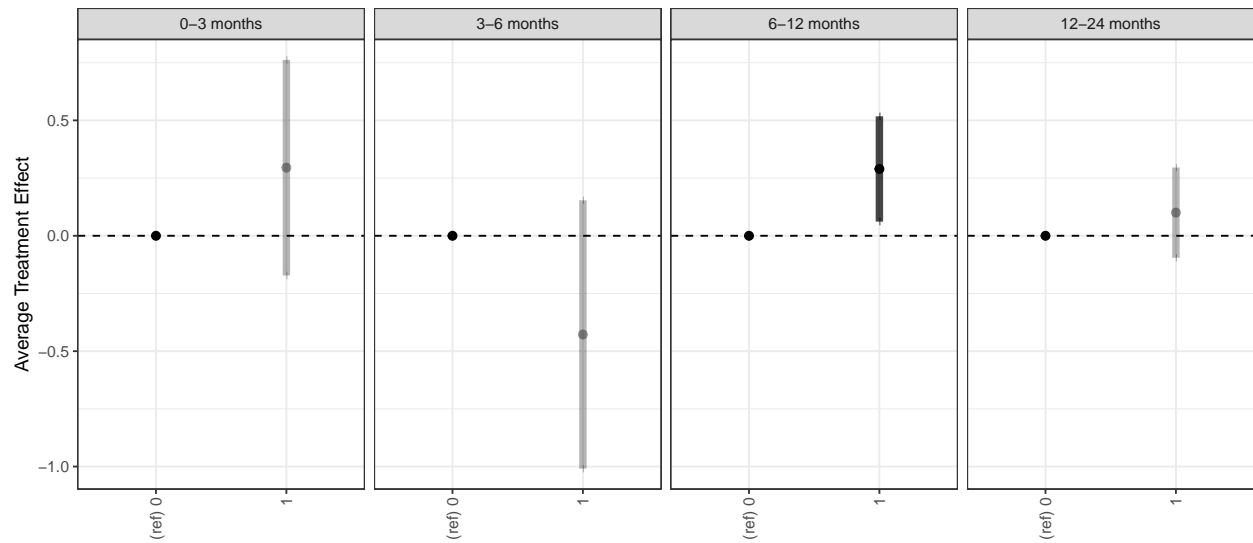
Number of rooms in household
Estimates from 15 cohorts in Asia, Latin America, Africa



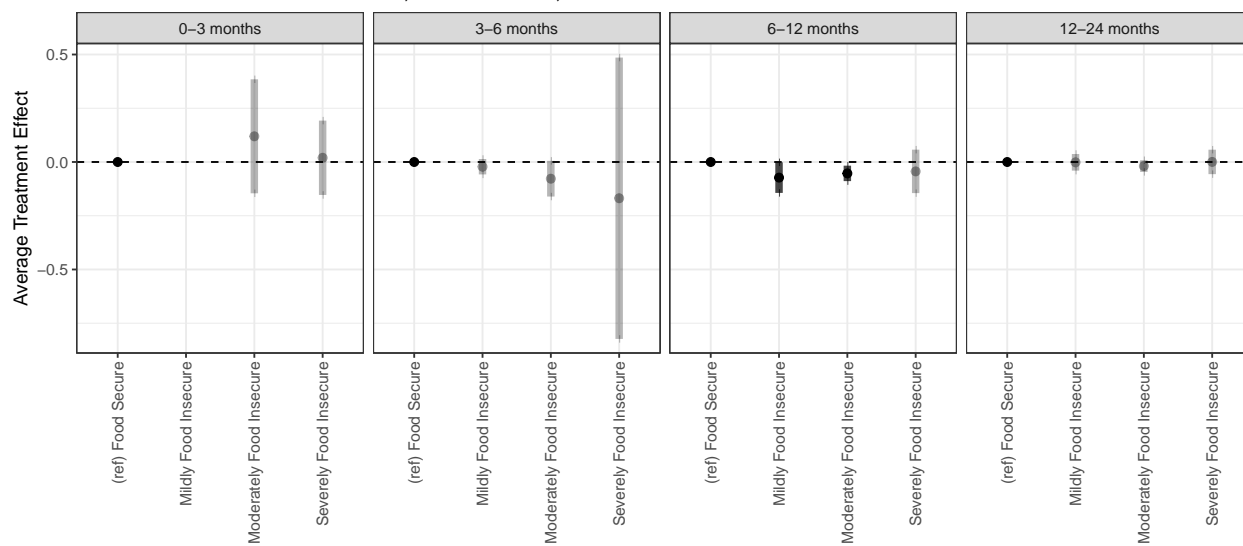
Safe water
Estimates from 4 cohorts in Asia, Africa, Latin America



Treats water
Estimates from 6 cohorts in Asia, Africa, Latin America

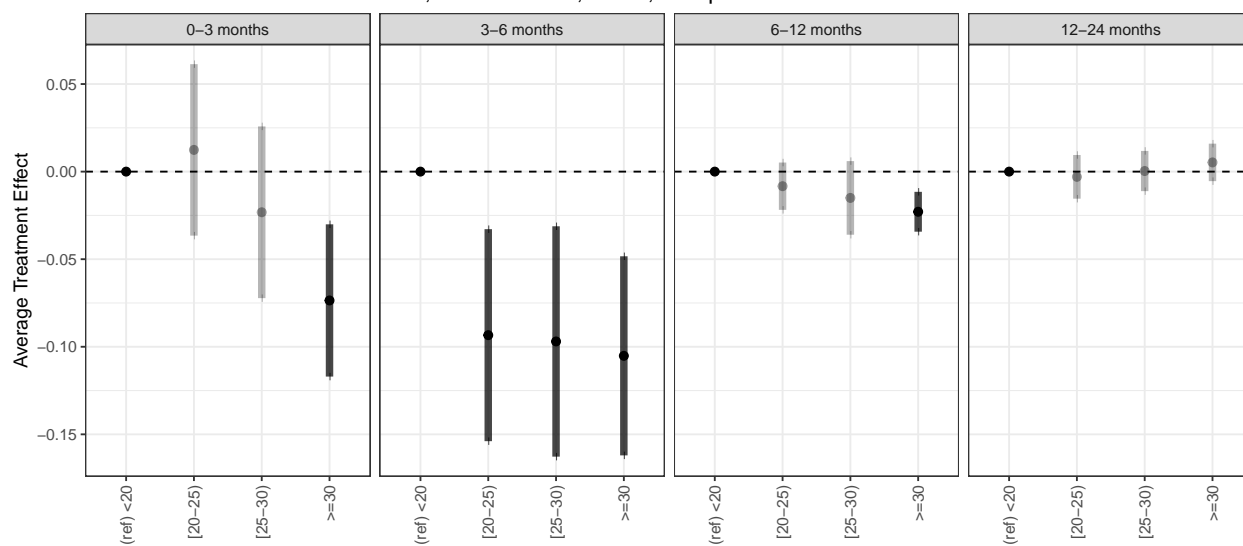


USAID Household Food Insecurity Access Scale (HFIAS) category
Estimates from 6 cohorts in Asia, Latin America, Africa

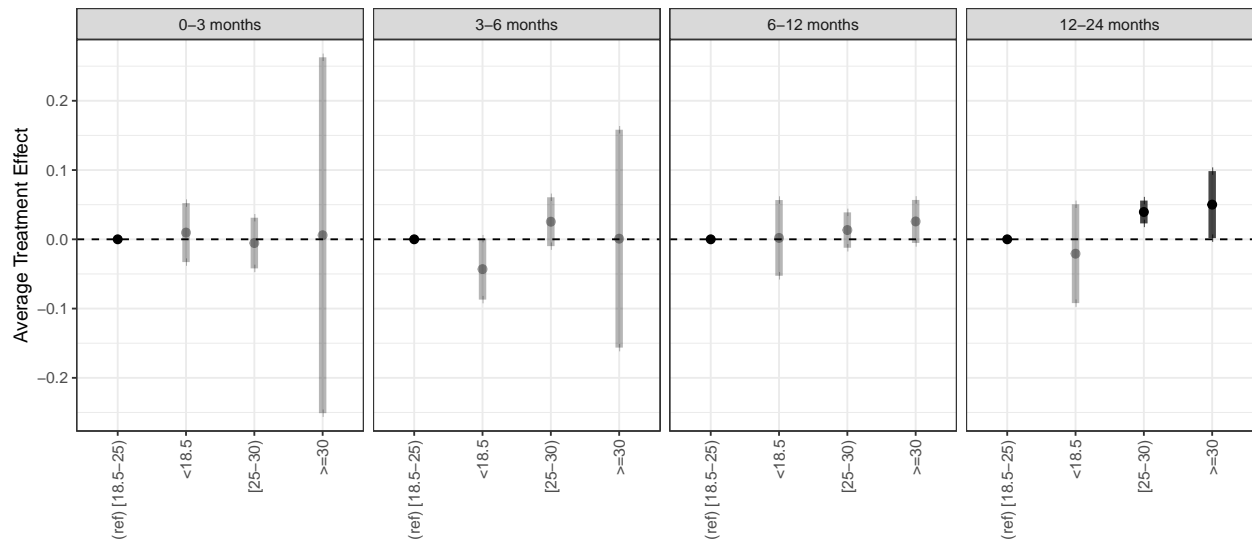


Maternal characteristics

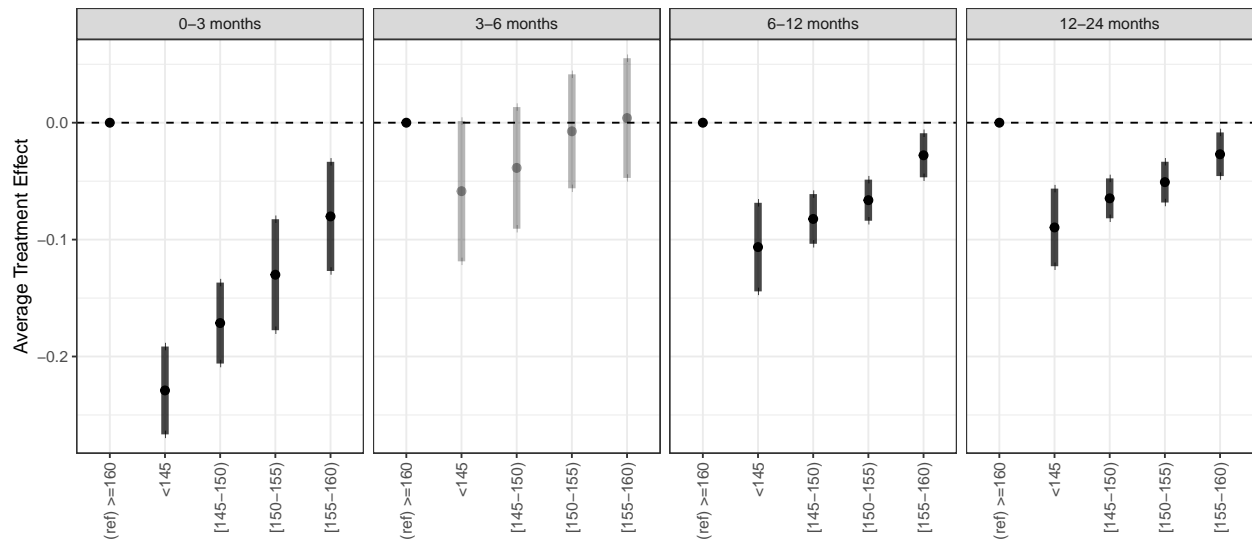
Maternal age
Estimates from 21 cohorts in Asia, Latin America, Africa, Europe



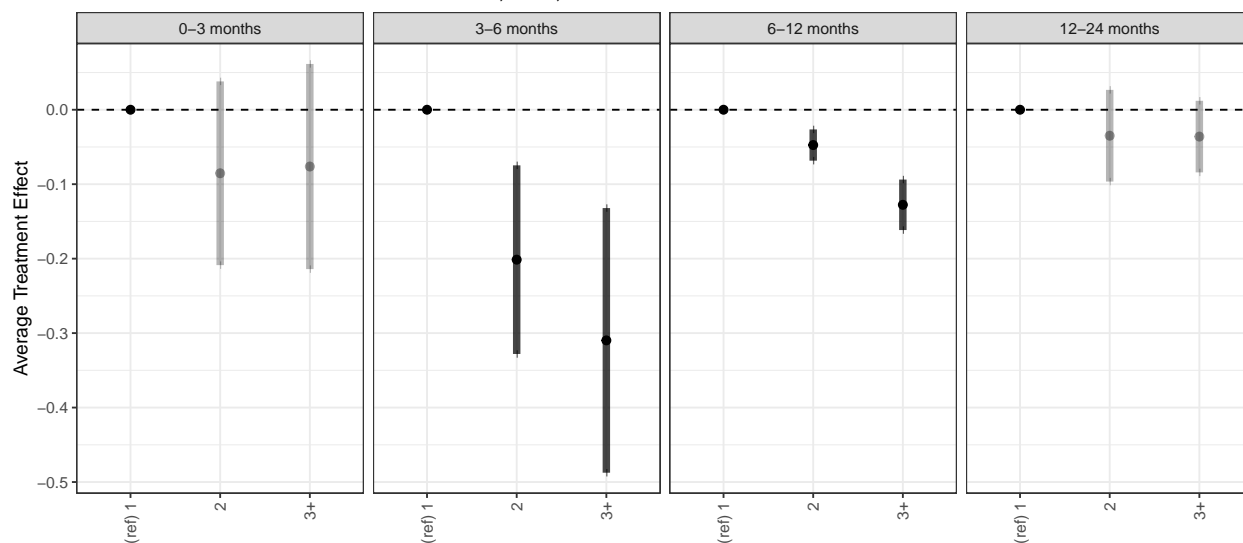
Maternal BMI
Estimates from 11 cohorts in Asia, Africa, Latin America, Europe



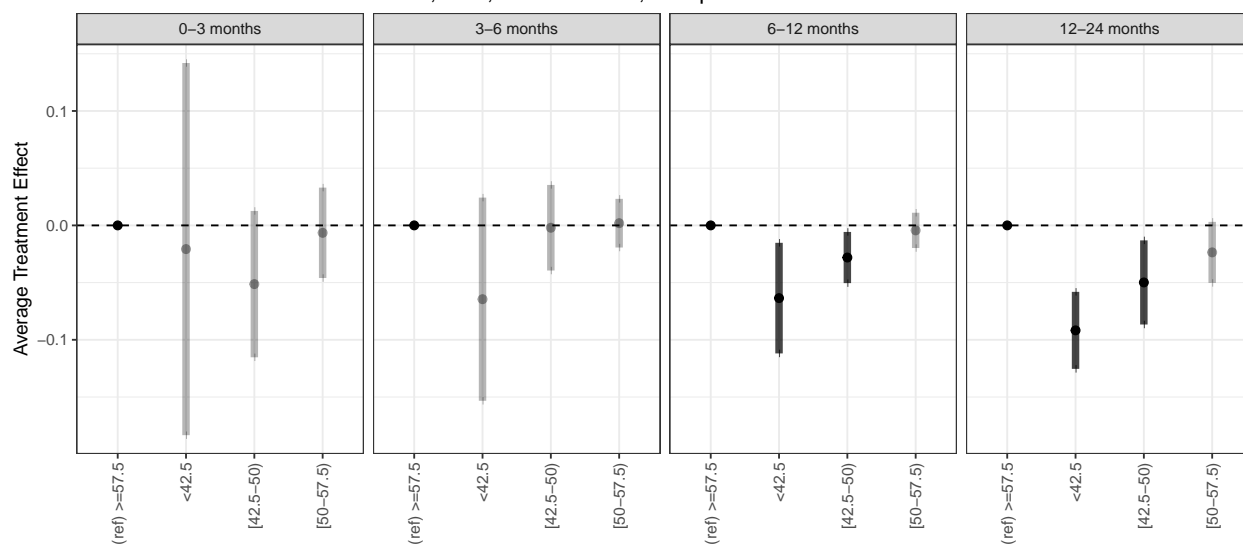
Maternal height
Estimates from 13 cohorts in Latin America, Asia, Africa



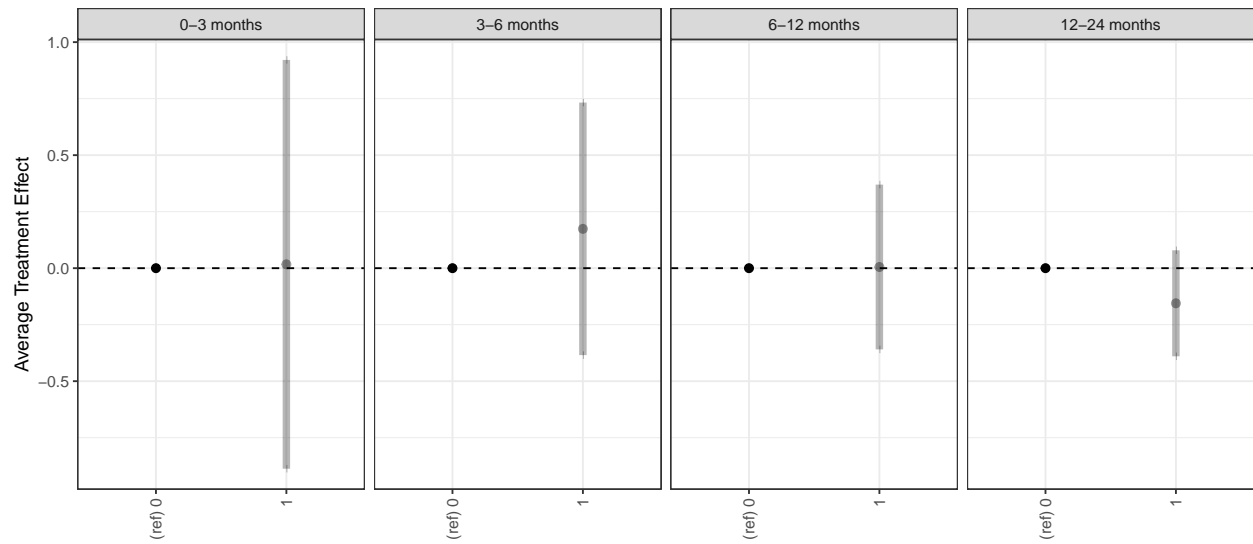
Maternal parity
Estimates from 7 cohorts in Latin America, Asia, Africa



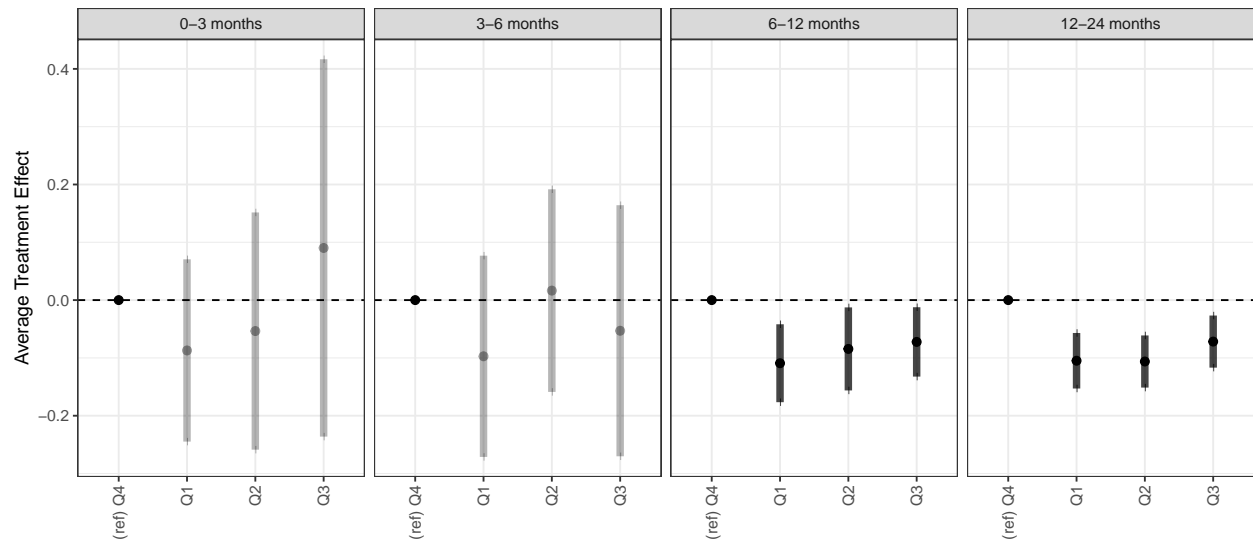
Maternal weight
Estimates from 13 cohorts in Africa, Asia, Latin America, Europe



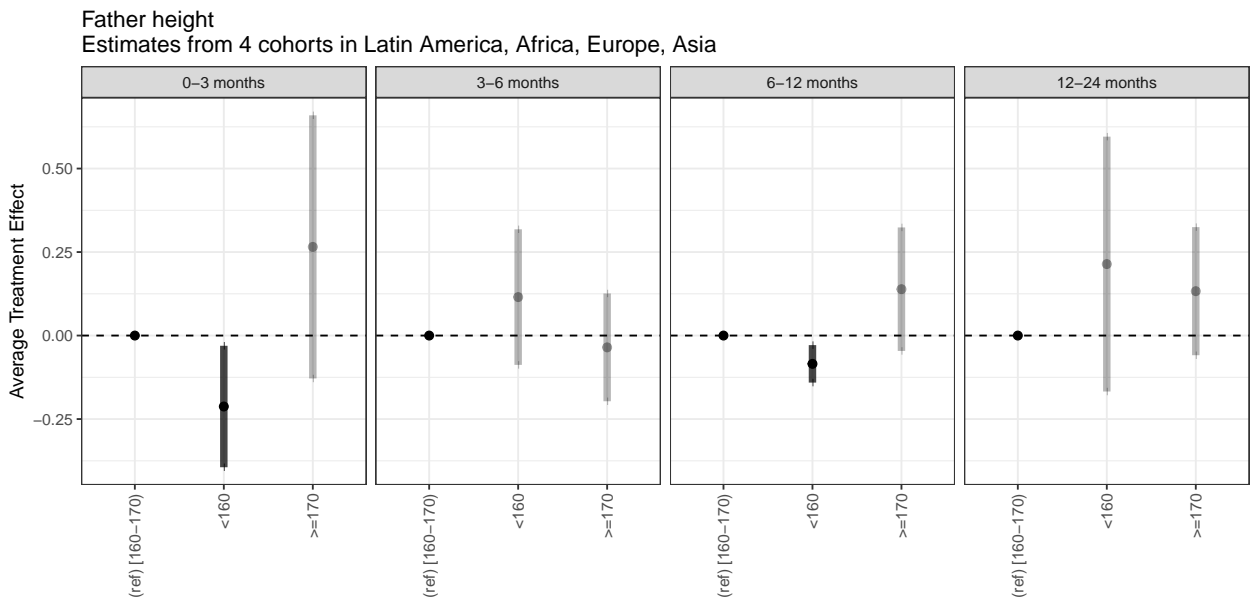
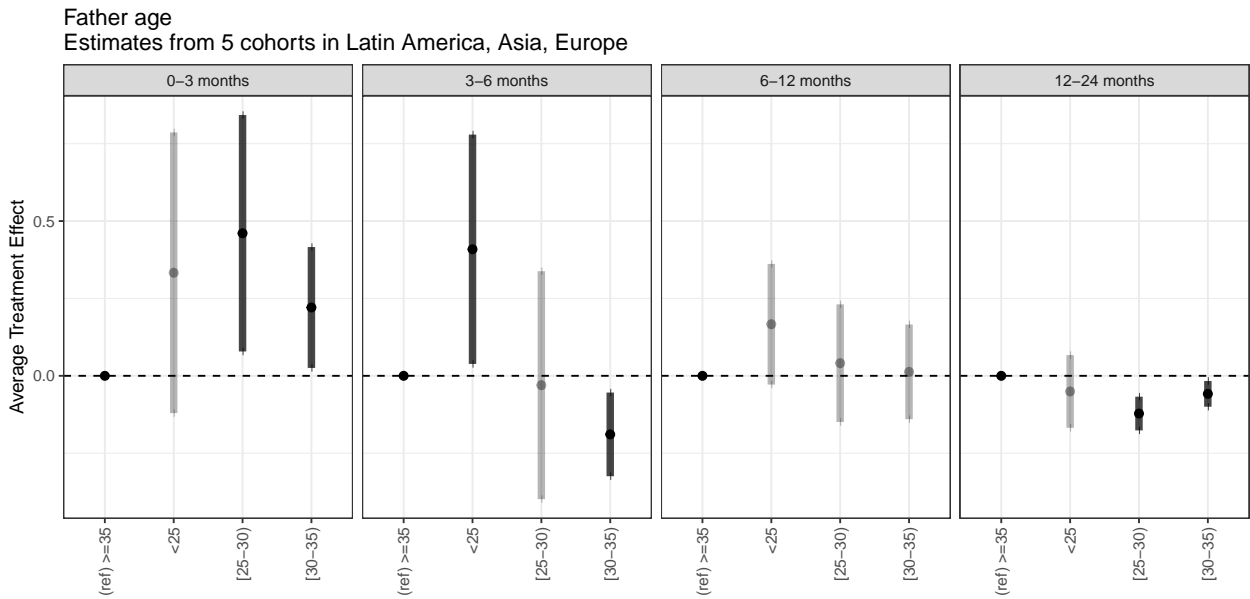
Mother is unmarried
Estimates from 8 cohorts in Latin America, Asia, Africa, Europe



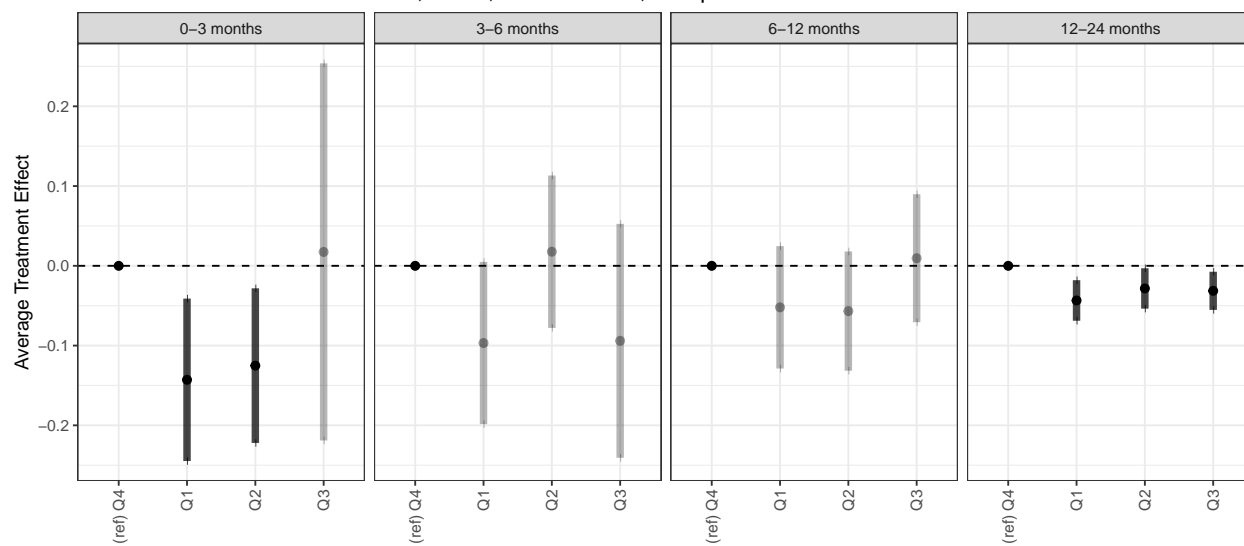
Mother's education
Estimates from 16 cohorts in Asia, Latin America, Africa, Europe



Paternal characteristics



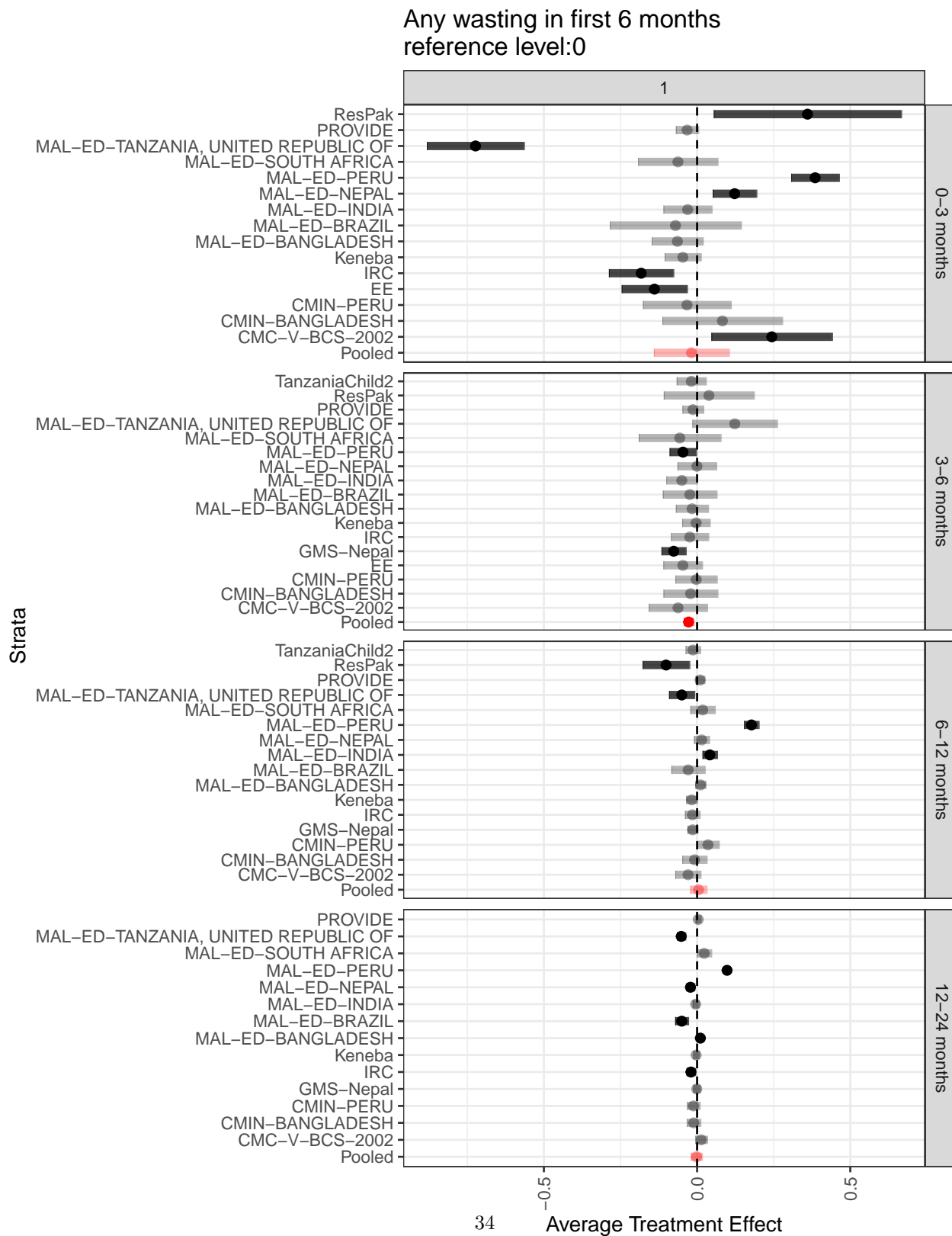
Father's education
Estimates from 14 cohorts in Asia, Africa, Latin America, Europe

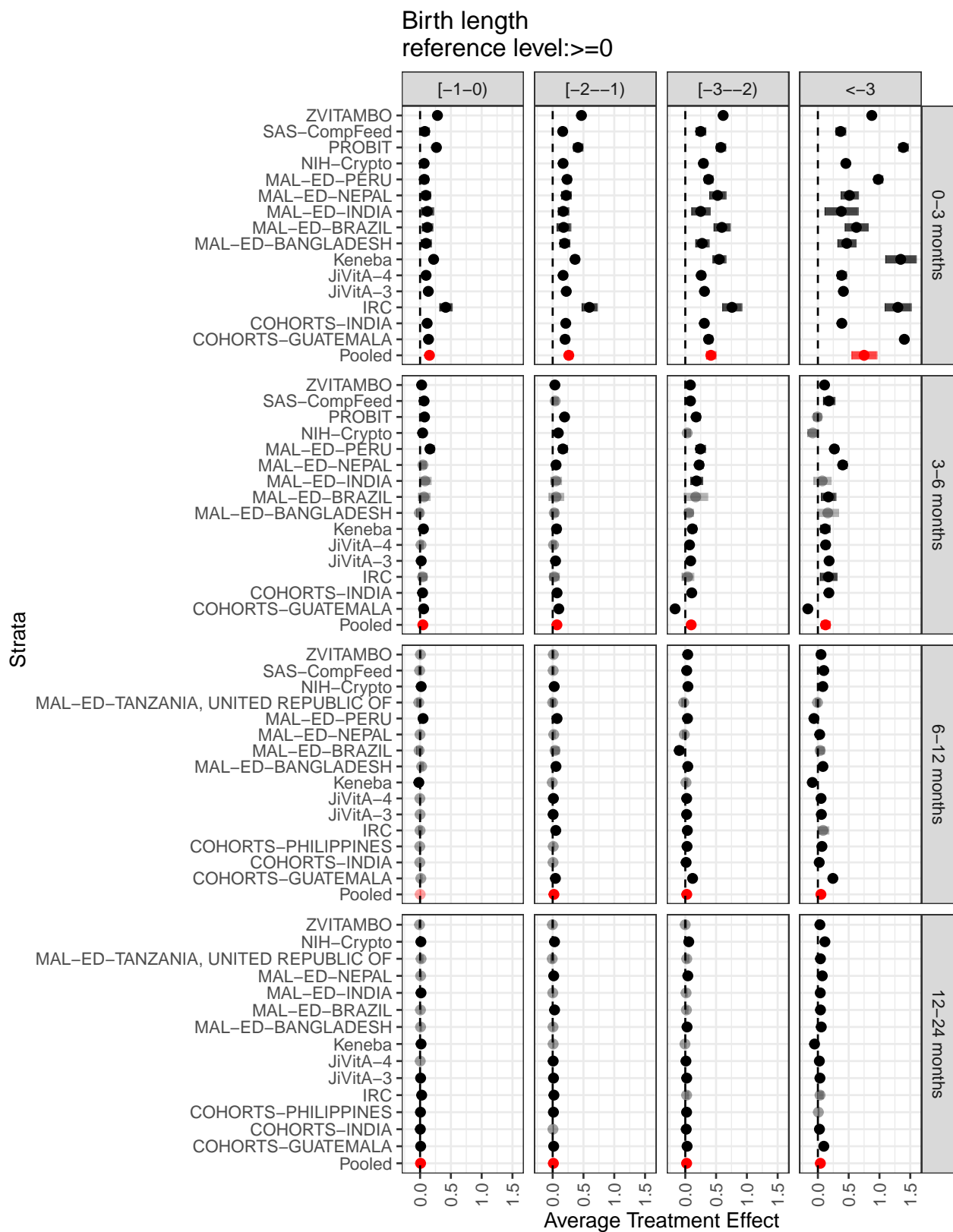


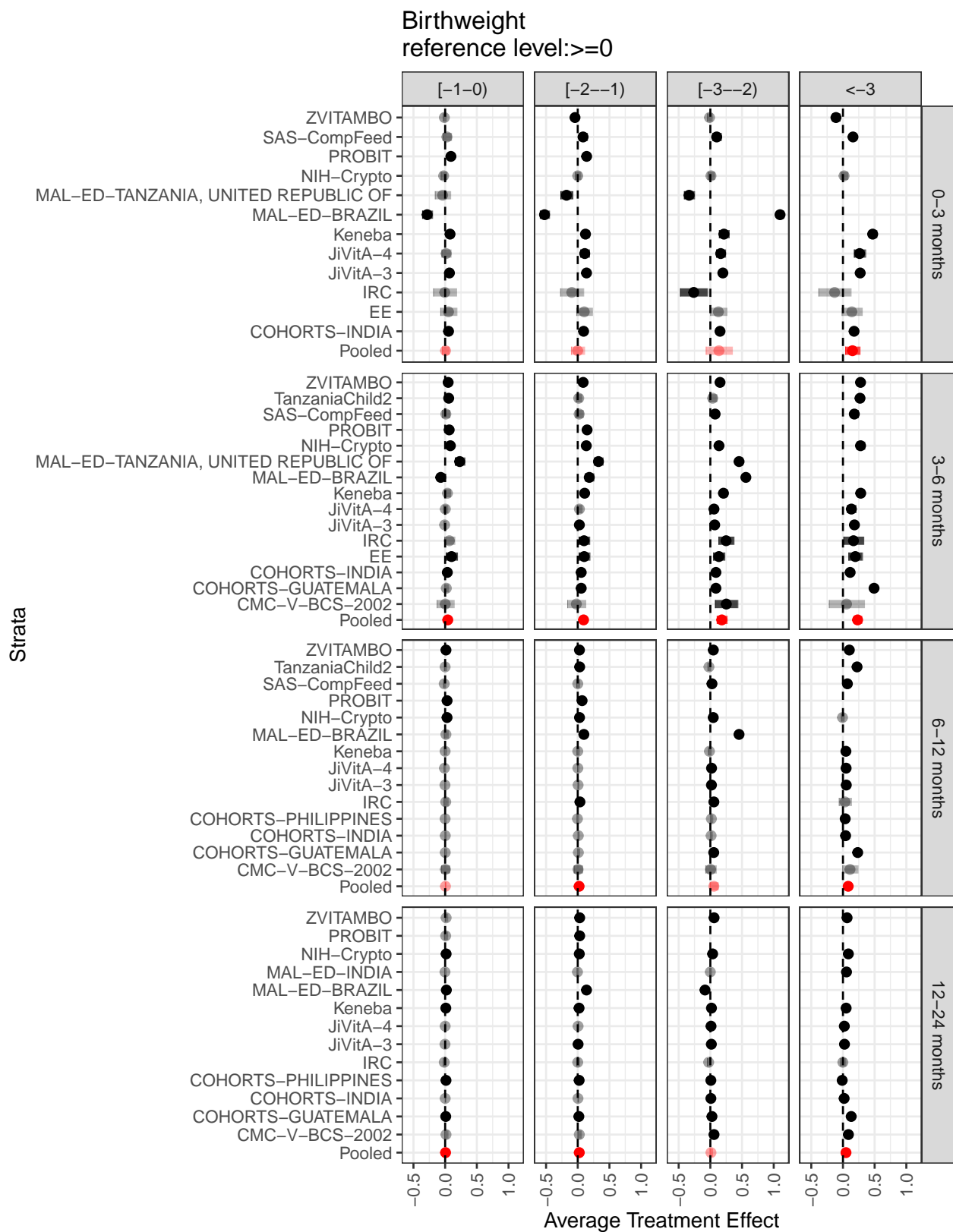
Appendix 1 - Average treatment effect stratified by cohort

HAZ growth velocity

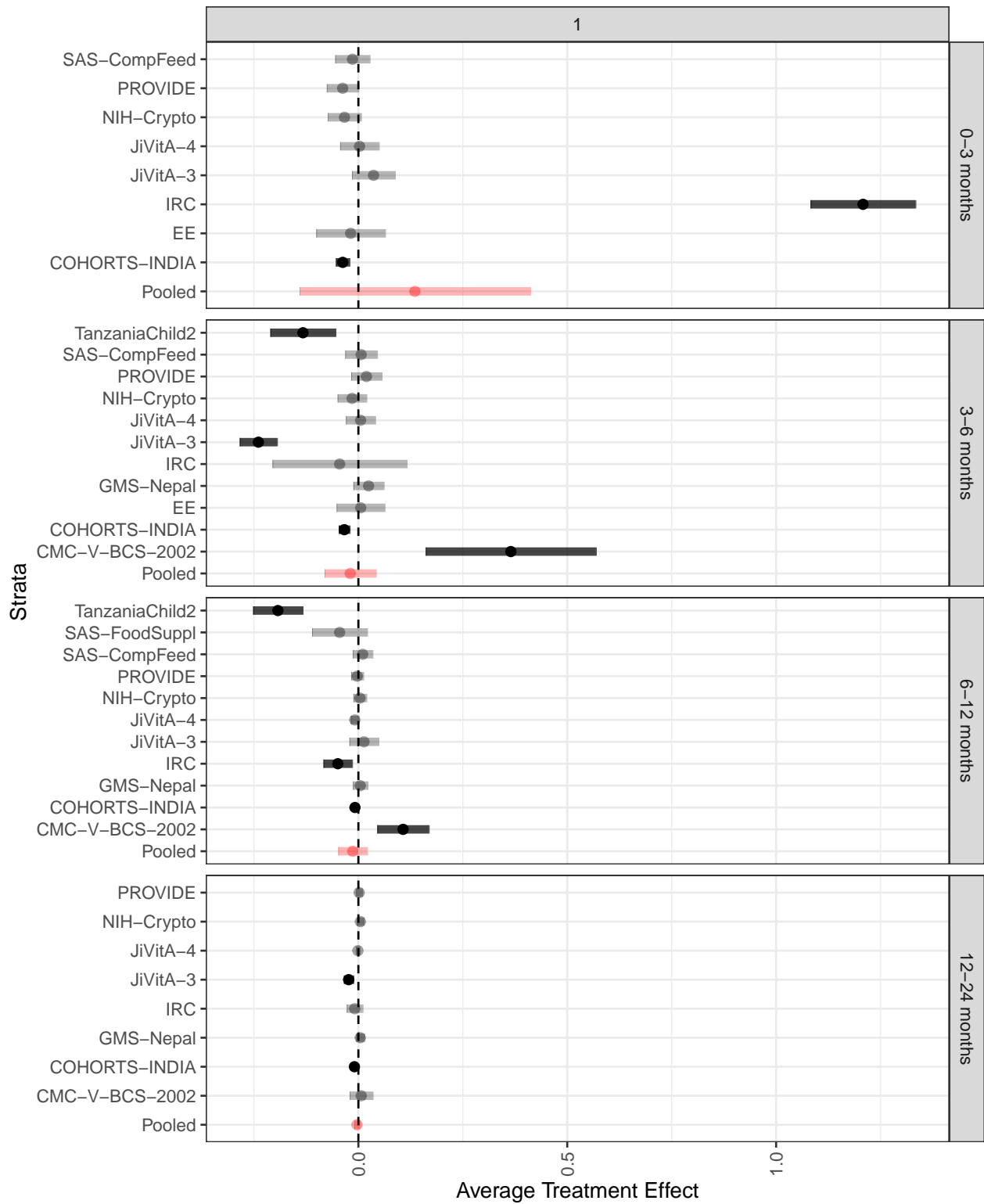
Child characteristics



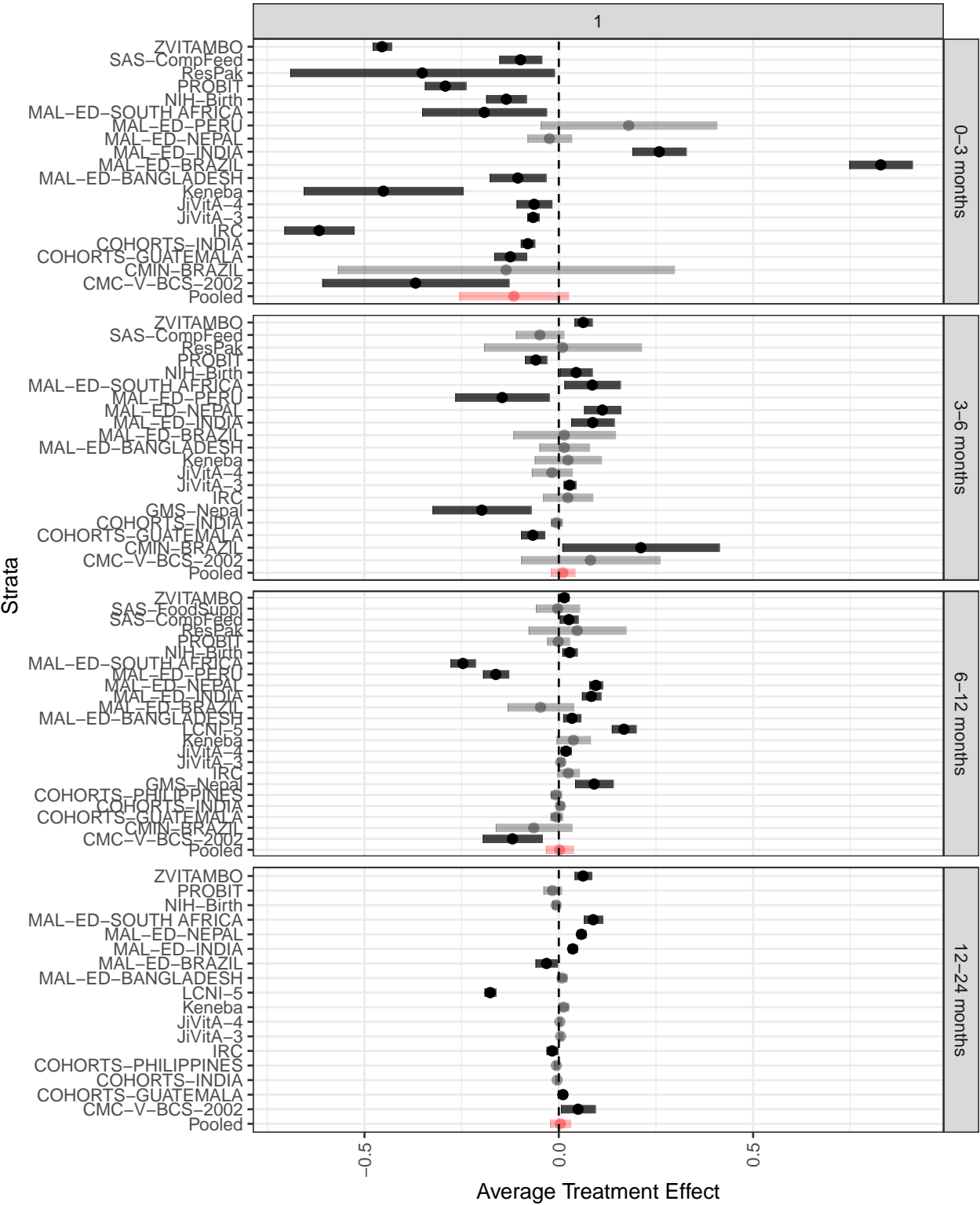




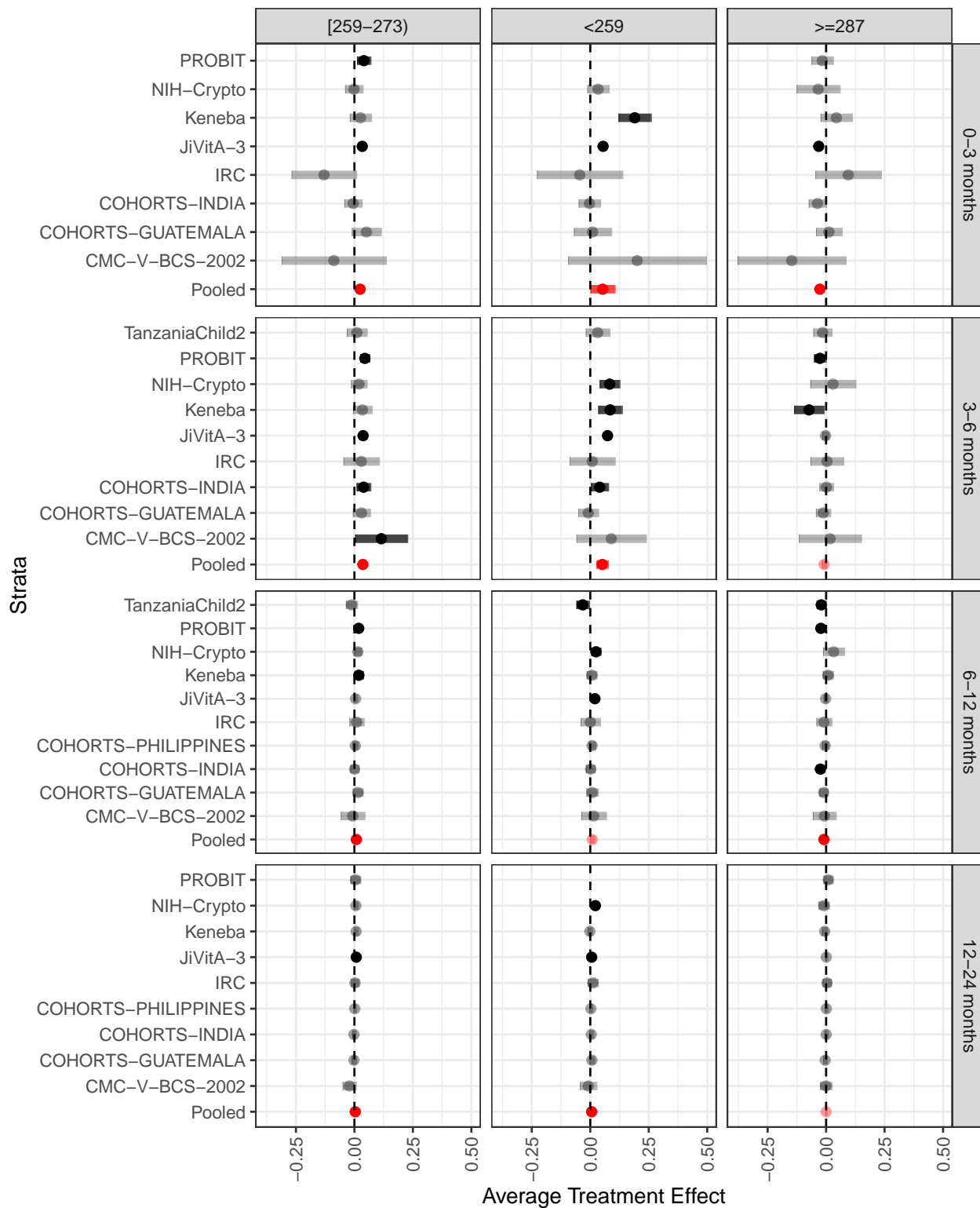
Child delivered at home
reference level:0



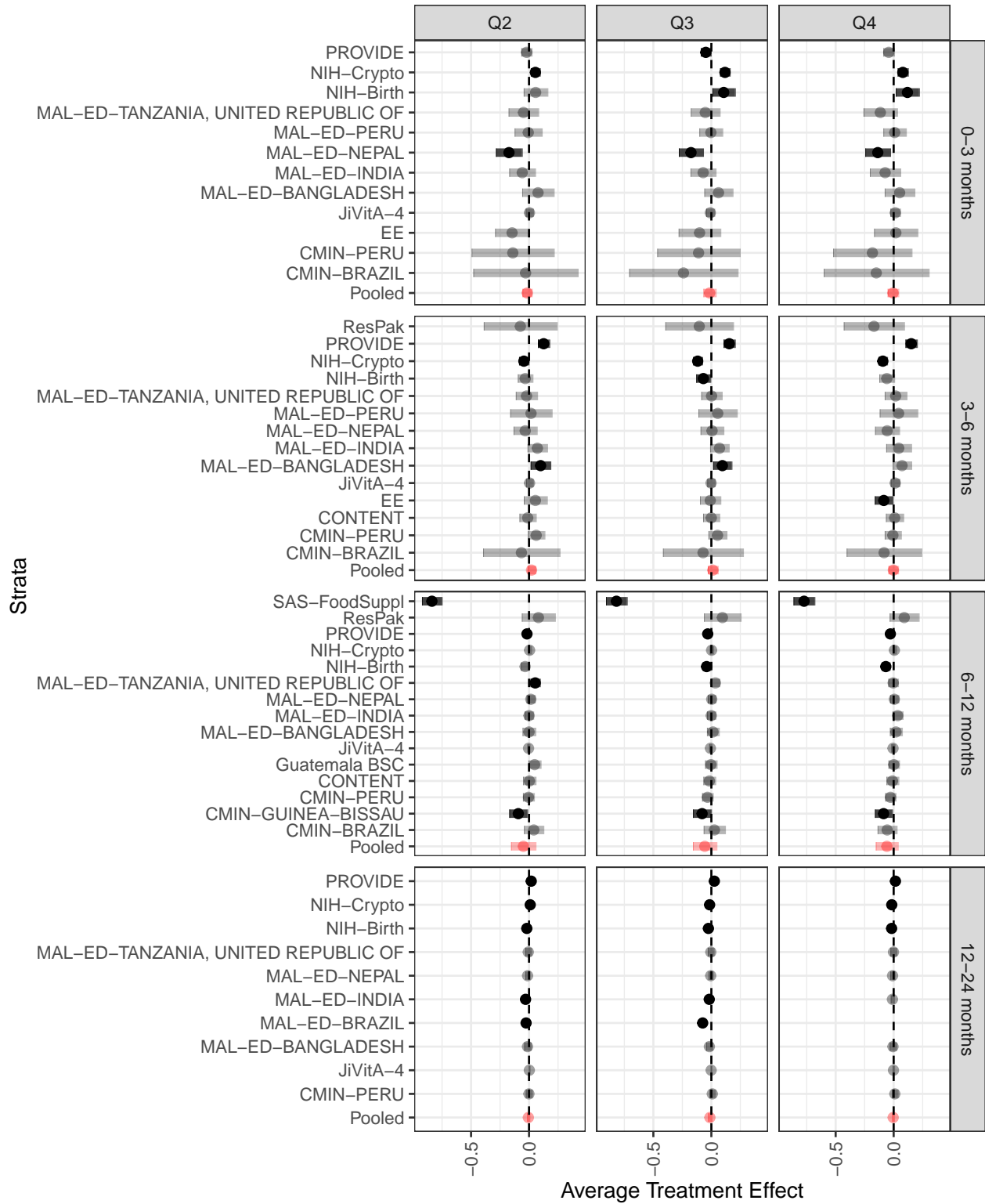
Enrolled wasted
reference level:0

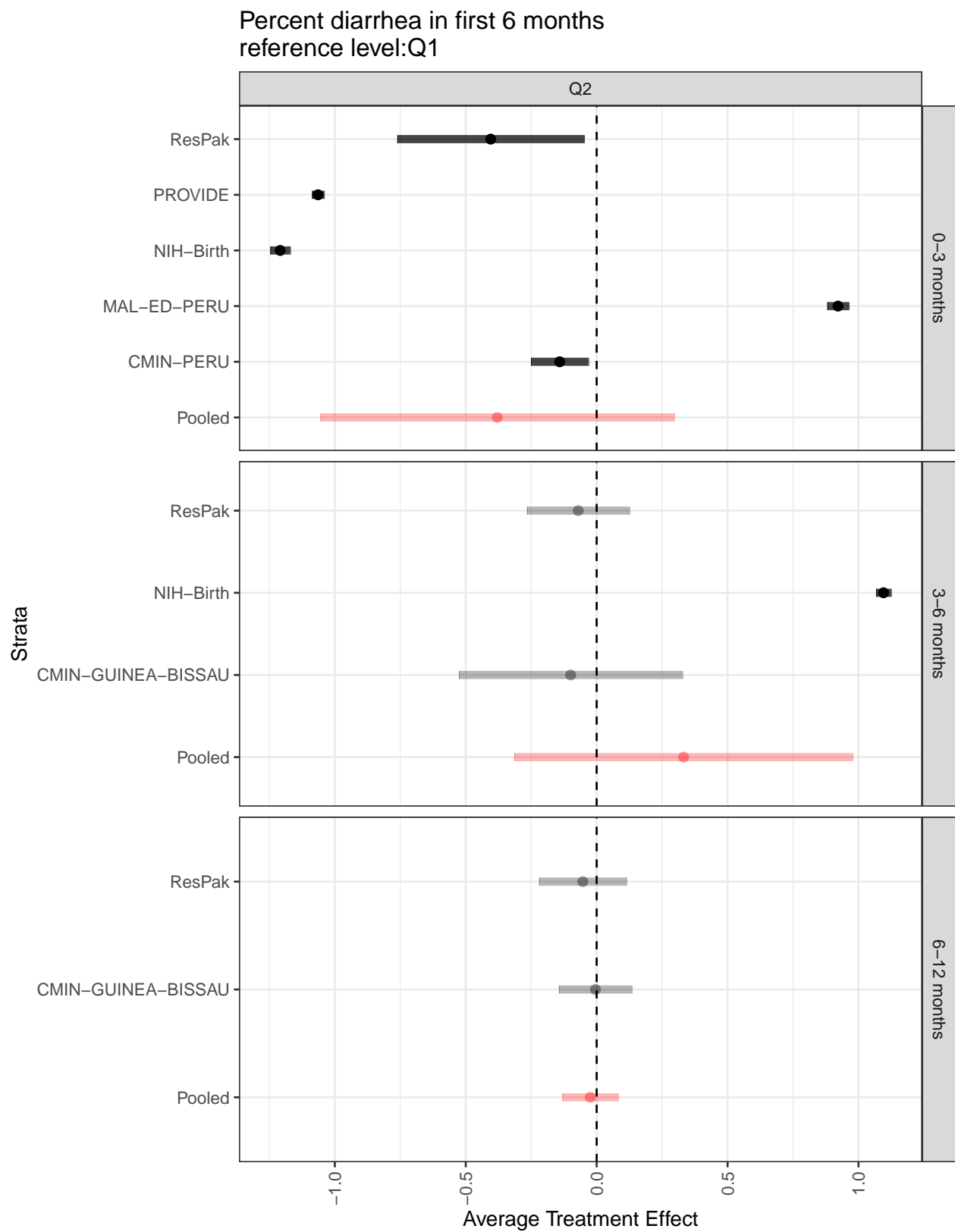


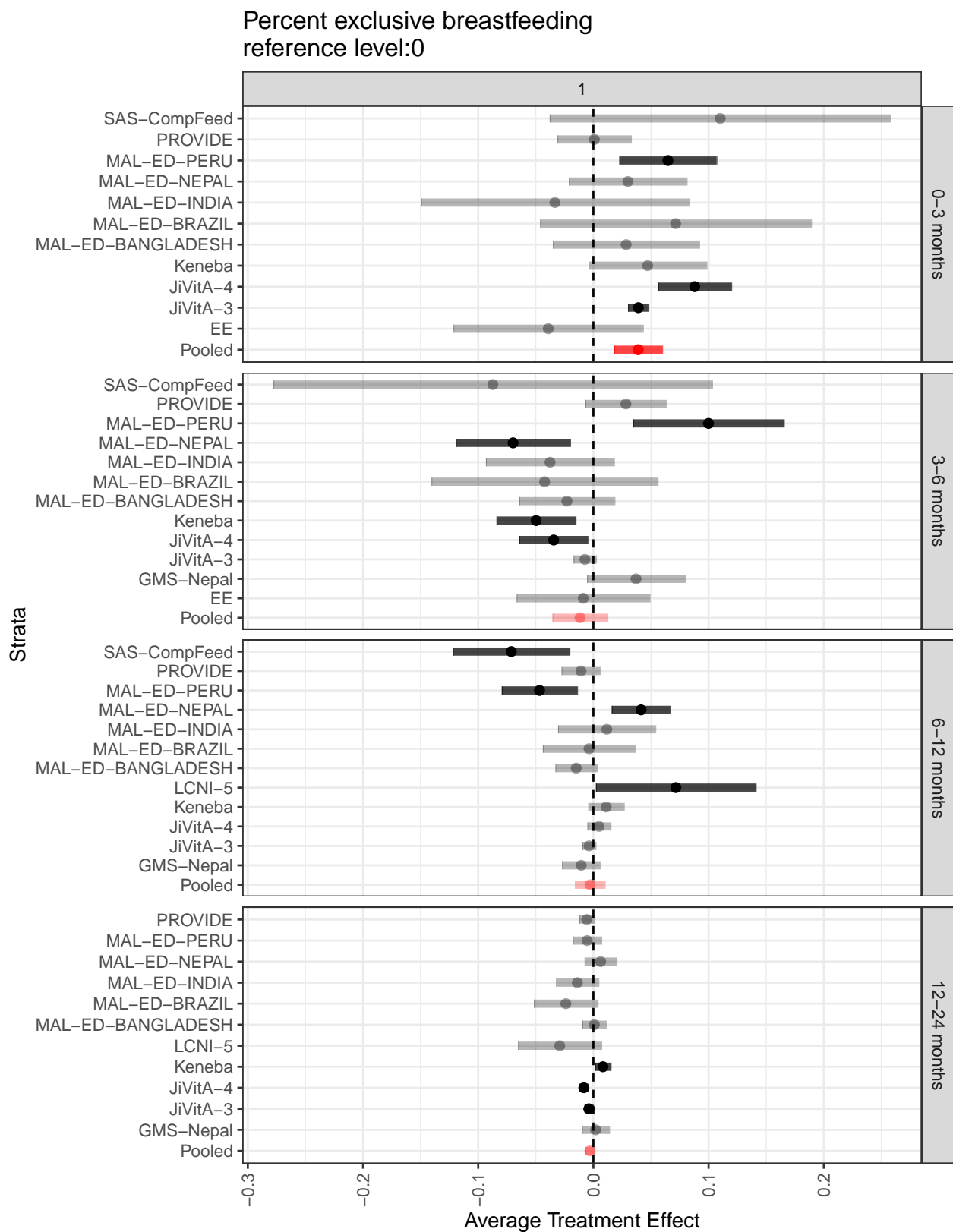
Gestational age at birth in days
reference level:[273–287)

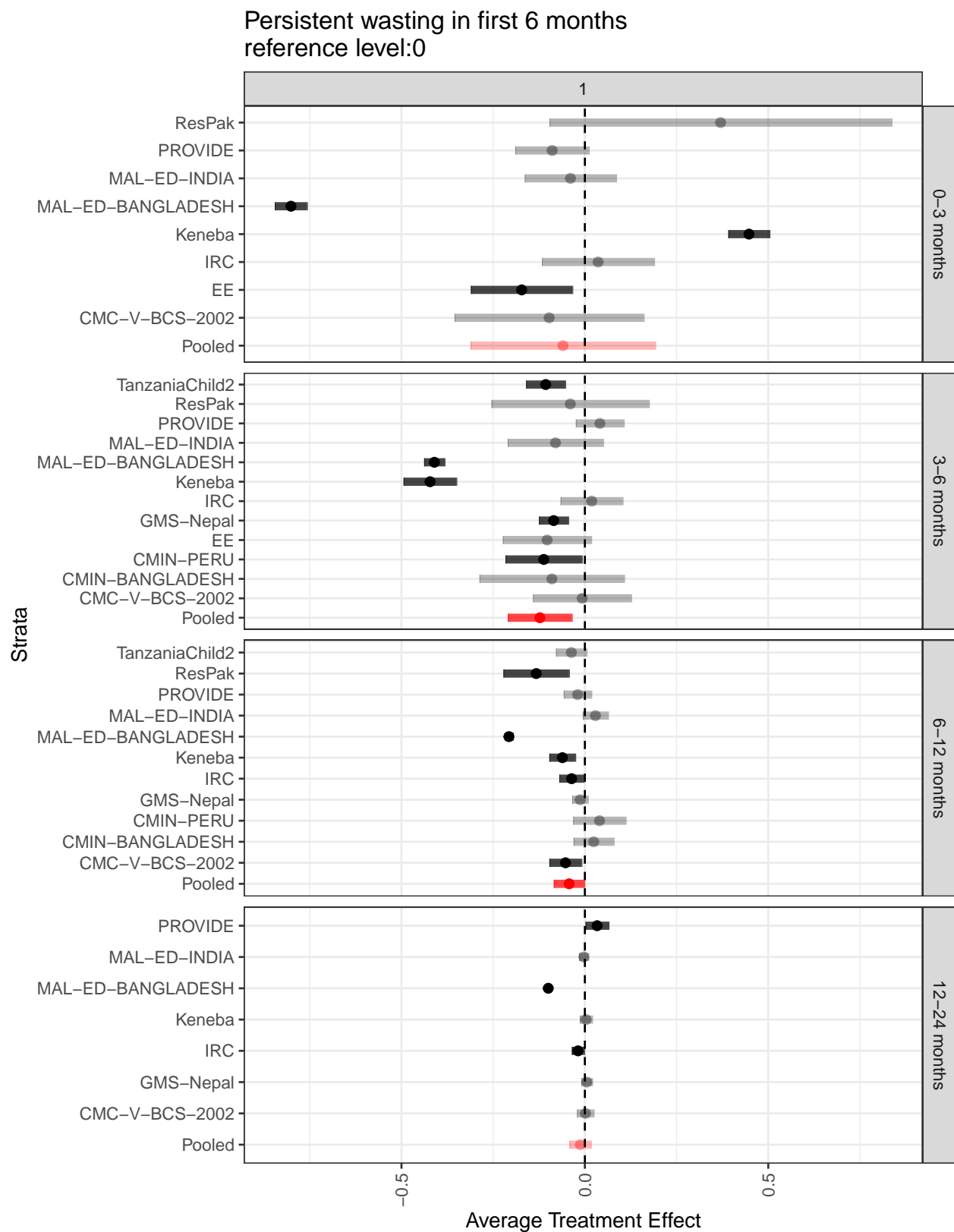


Percent diarrhea in first 24 months
reference level:Q1

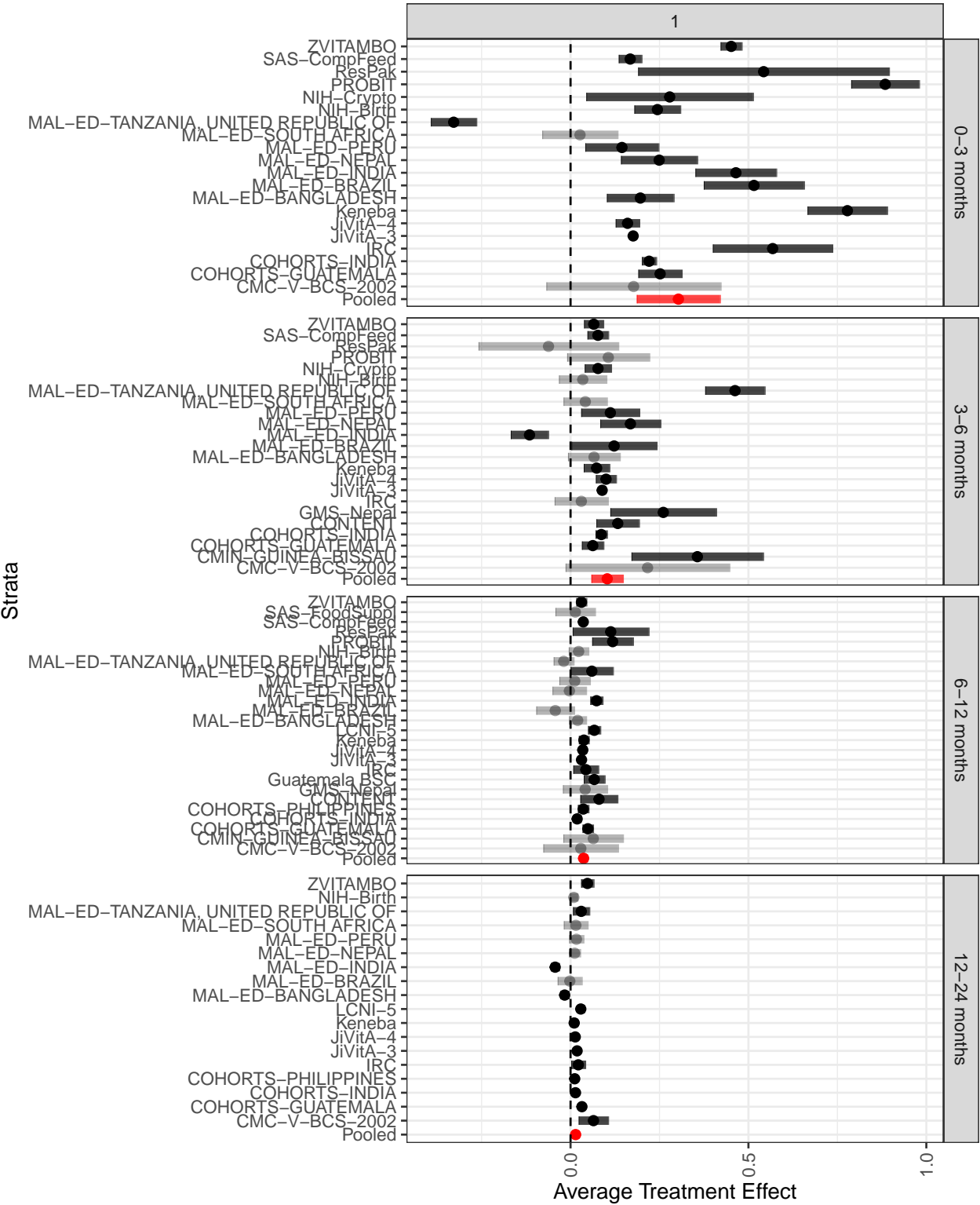




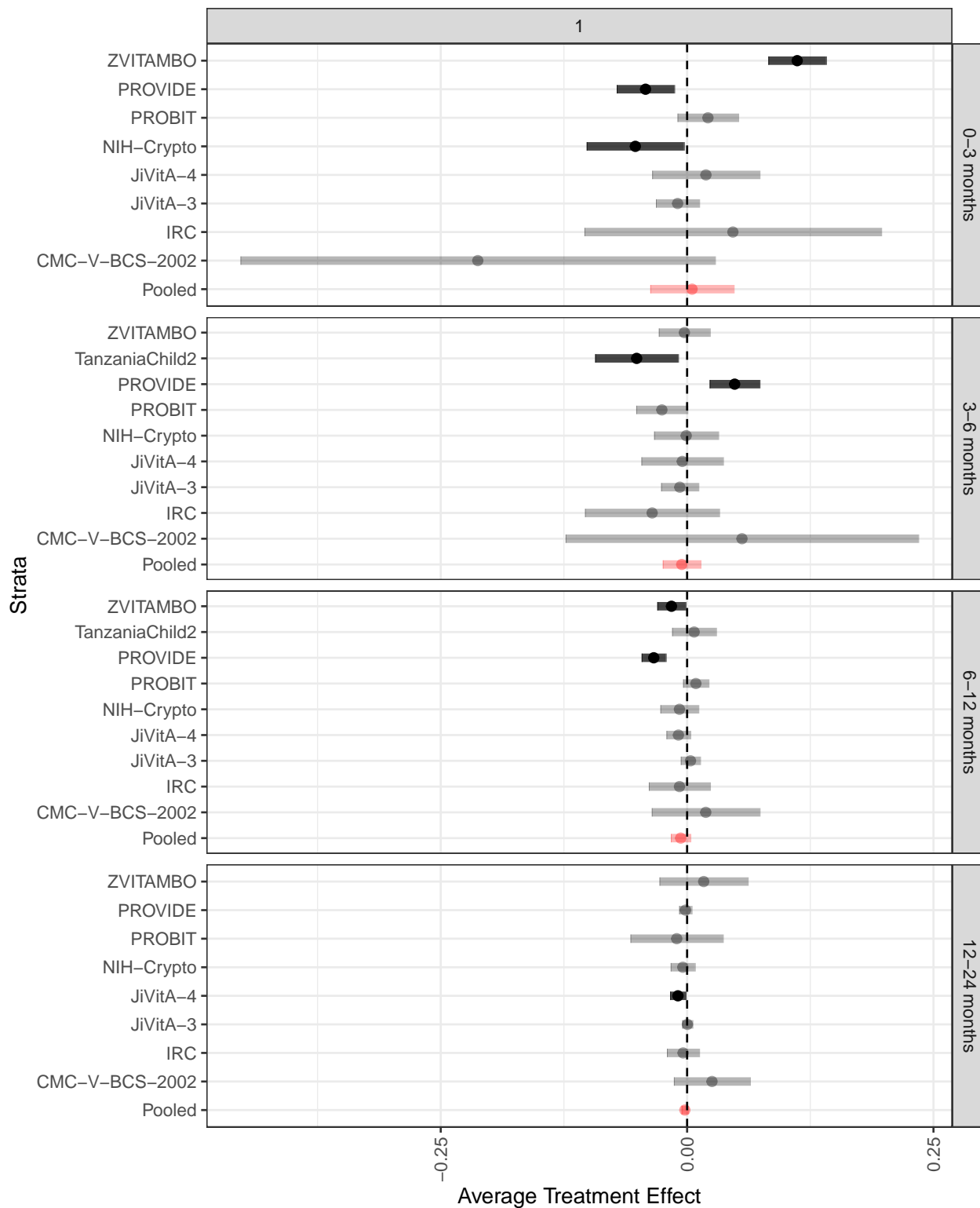




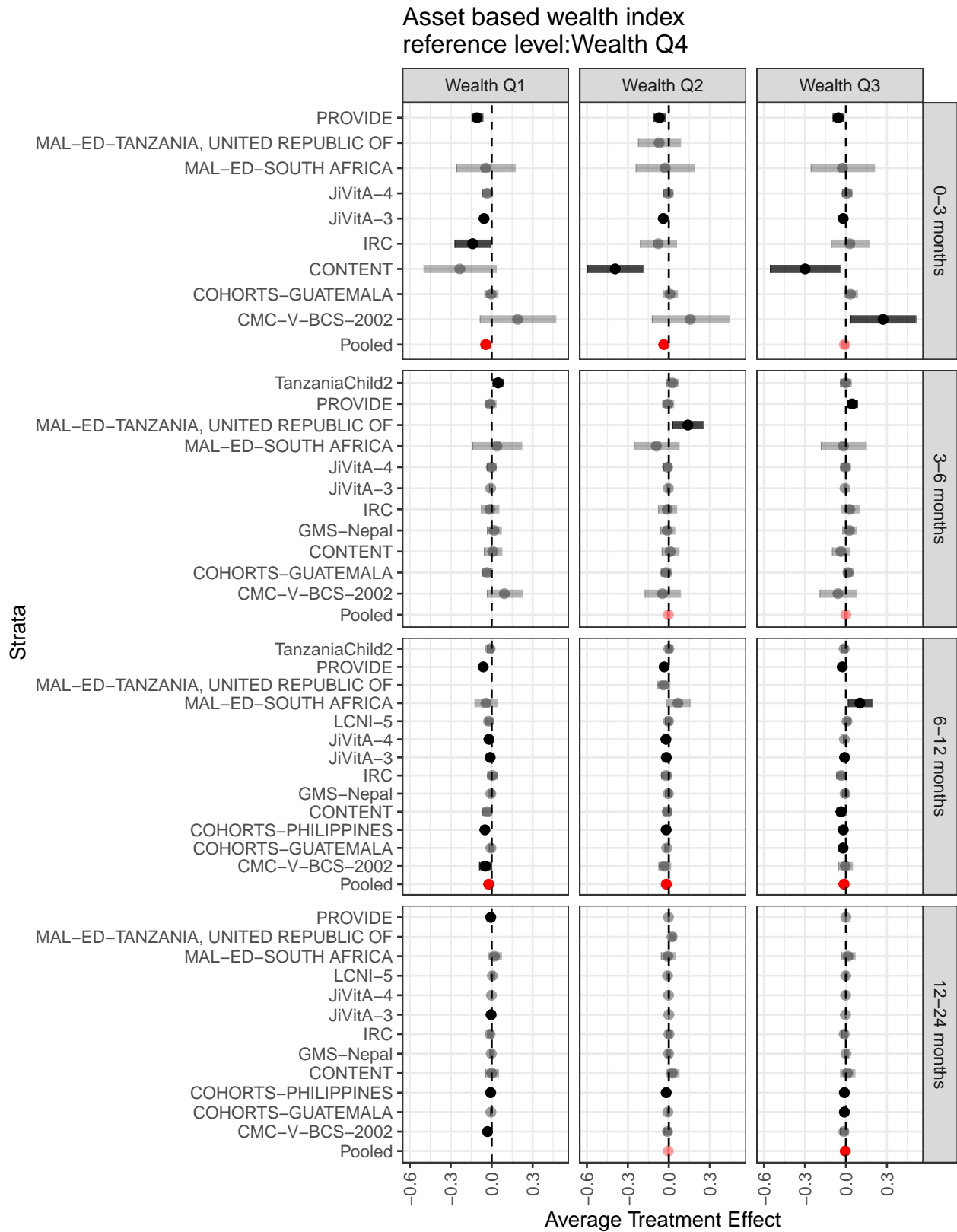
Stunted at enrollment
reference level:0



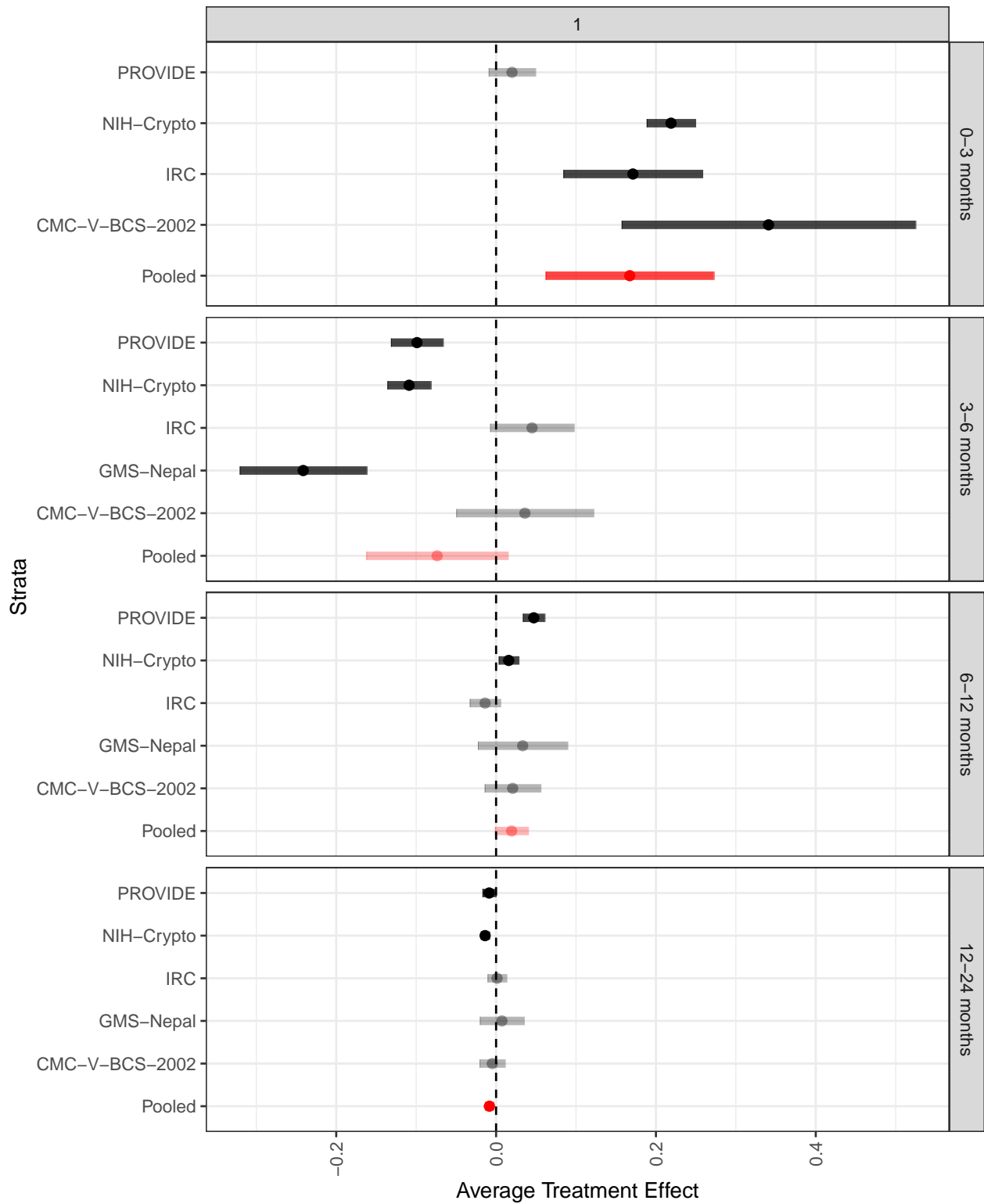
Vaginal delivery
reference level:0



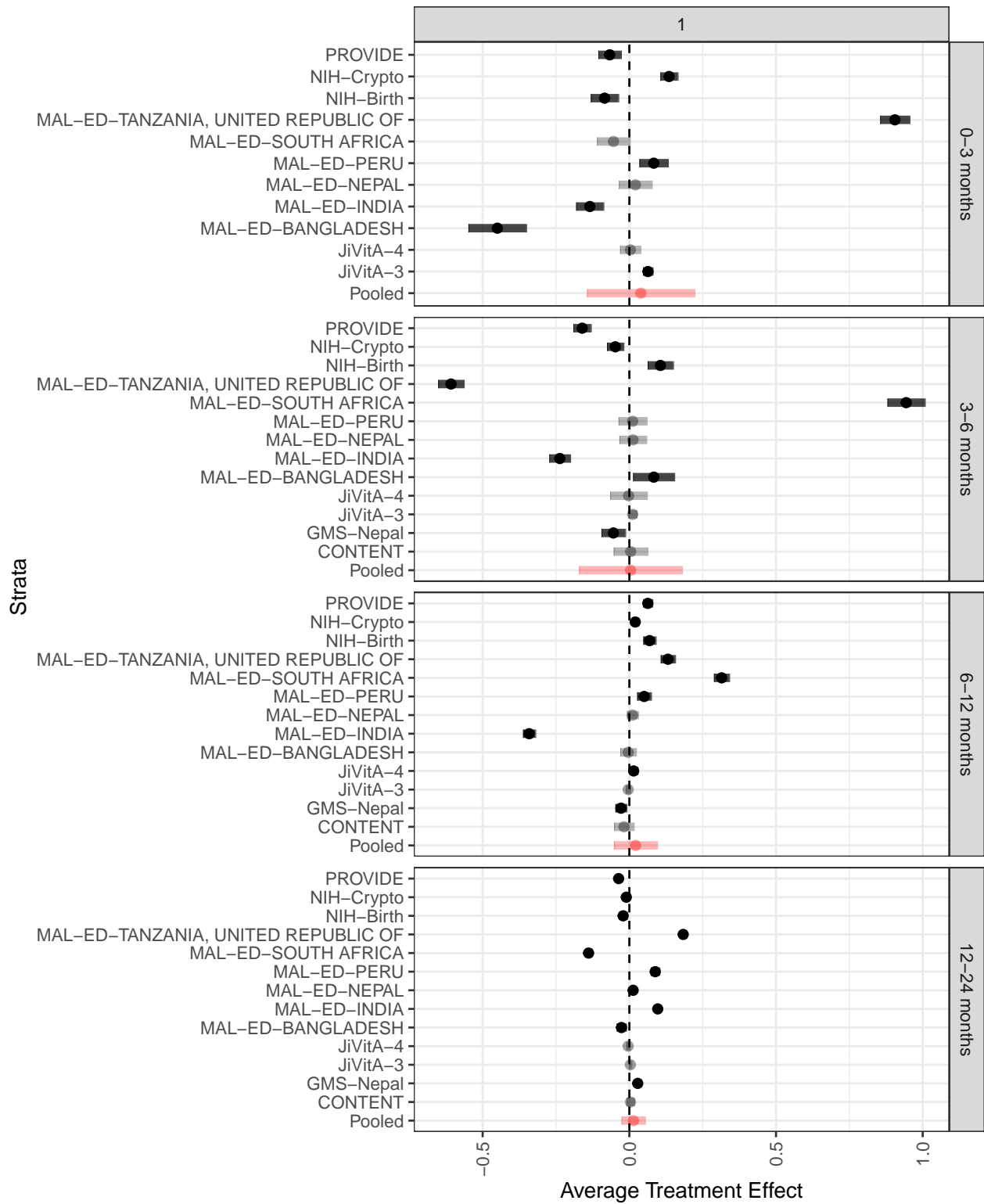
Household characteristics

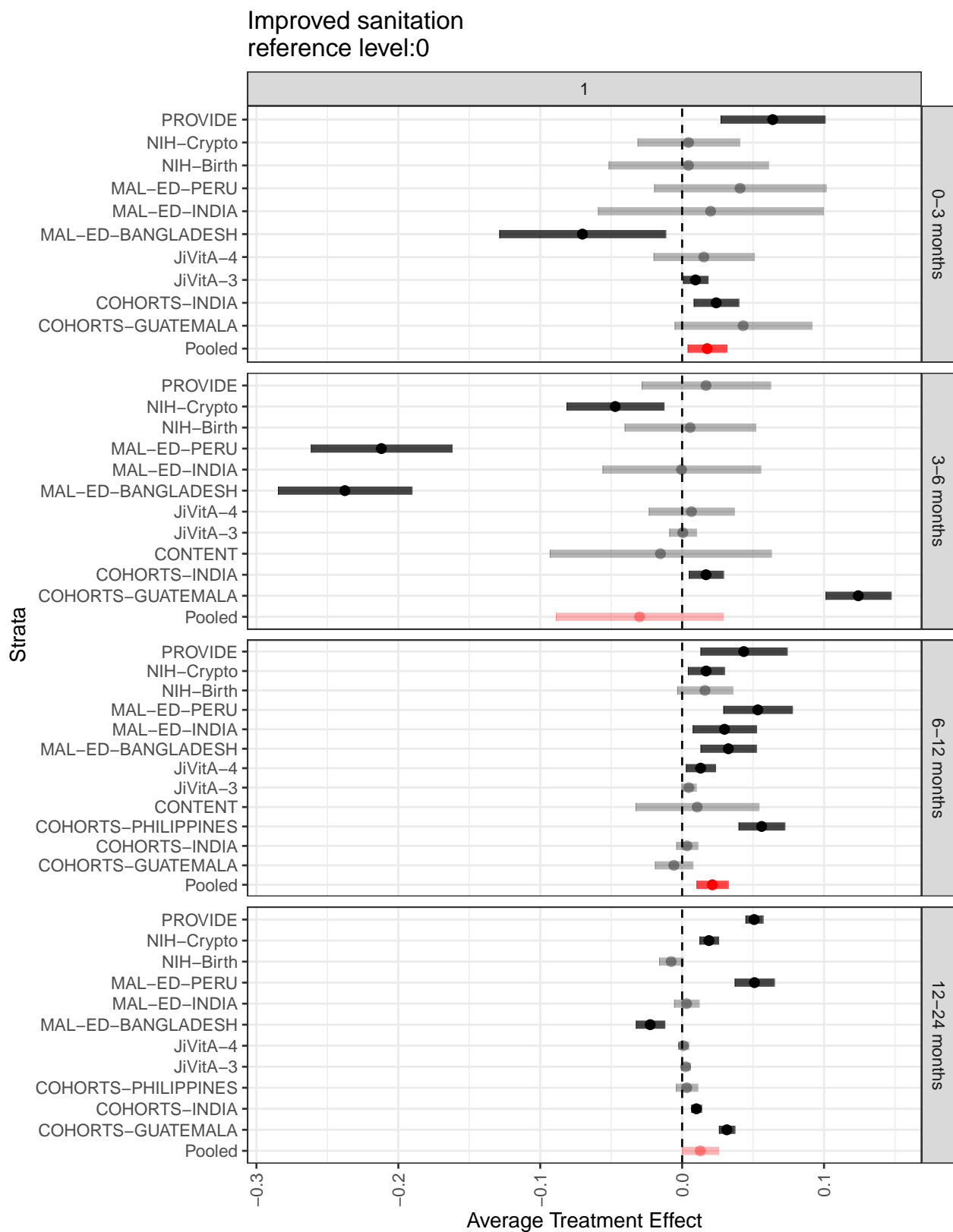


Clean cook
reference level:0

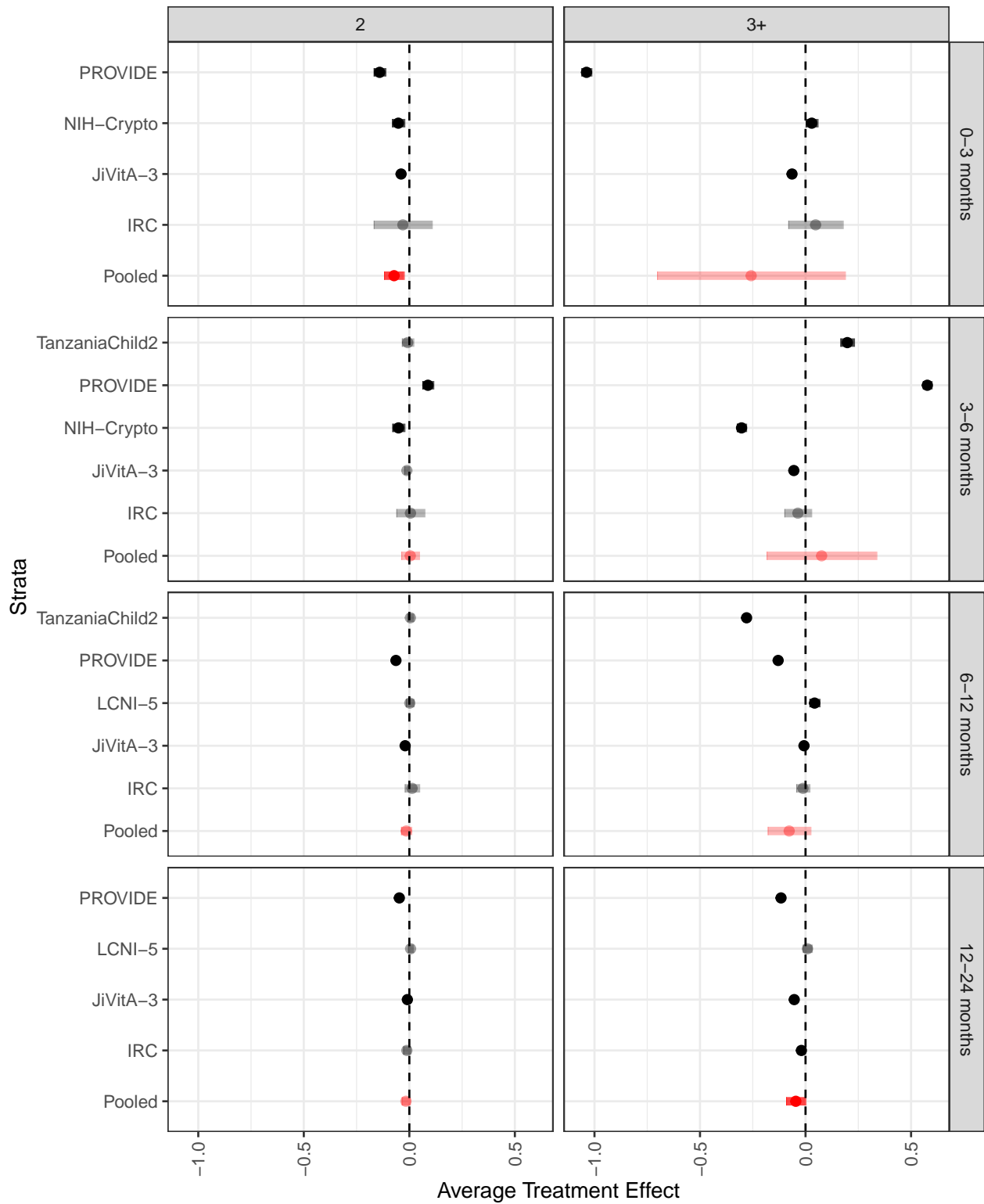


Improved floor
reference level:0

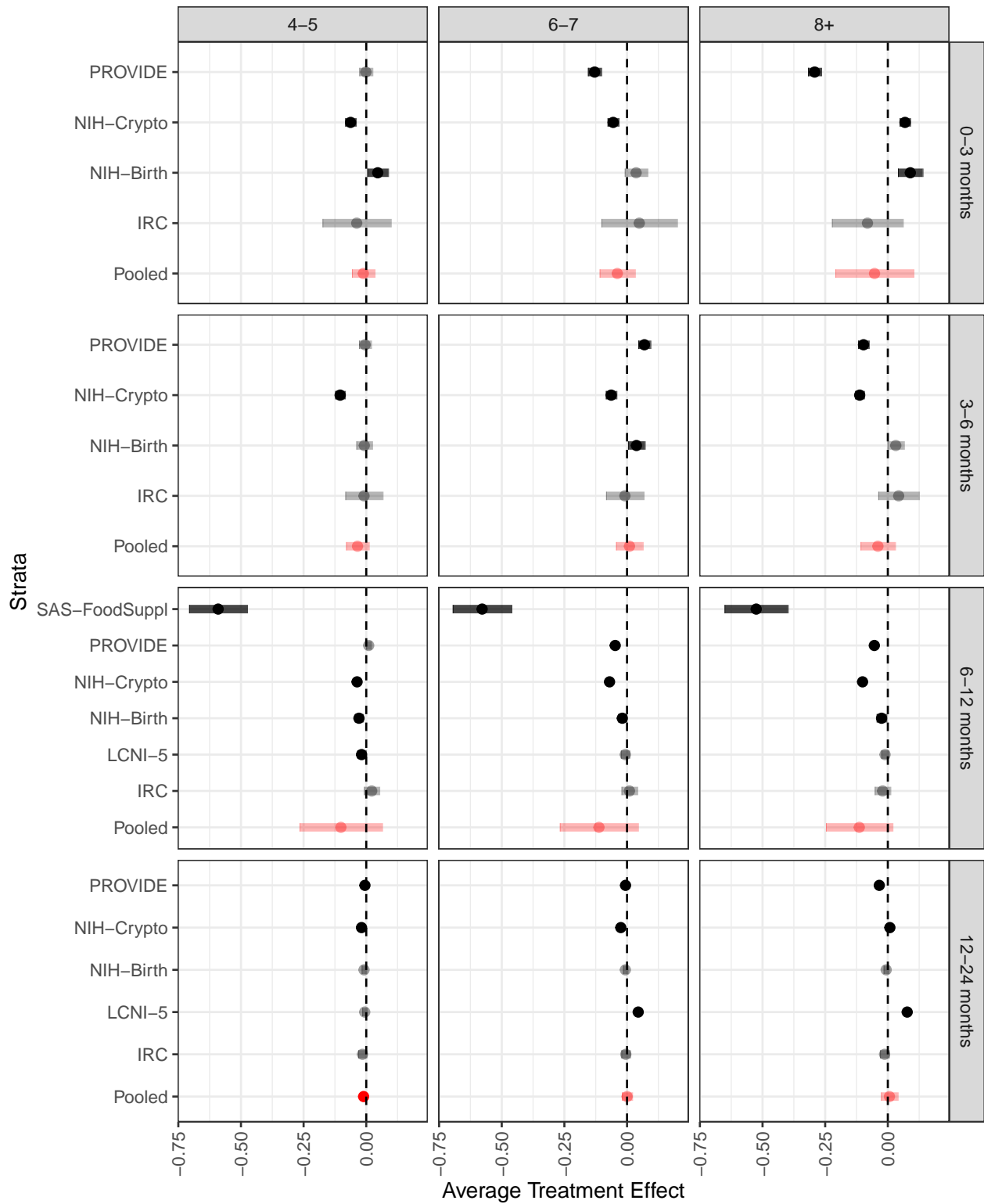




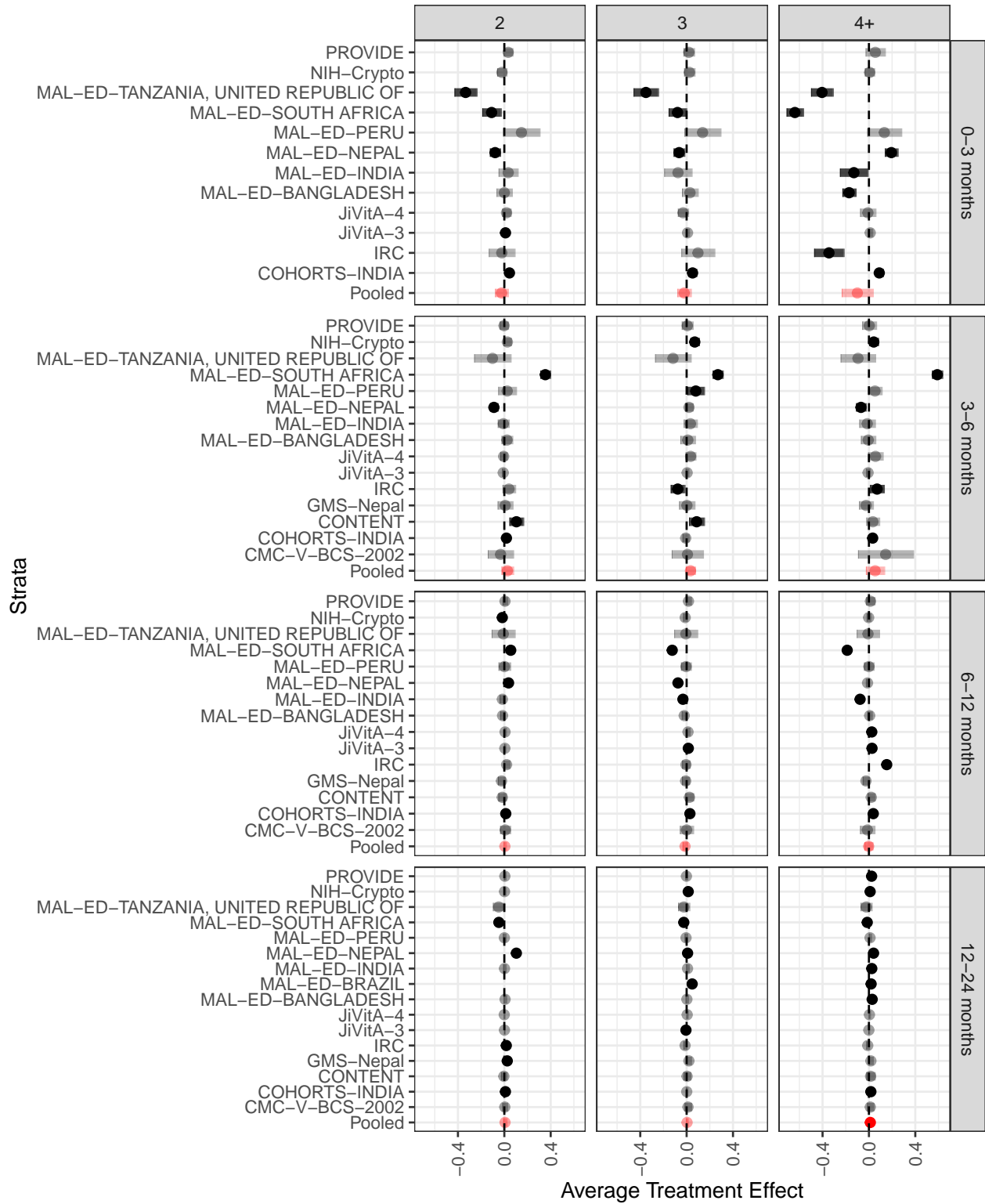
Number of children in the household under 5 years
reference level:1



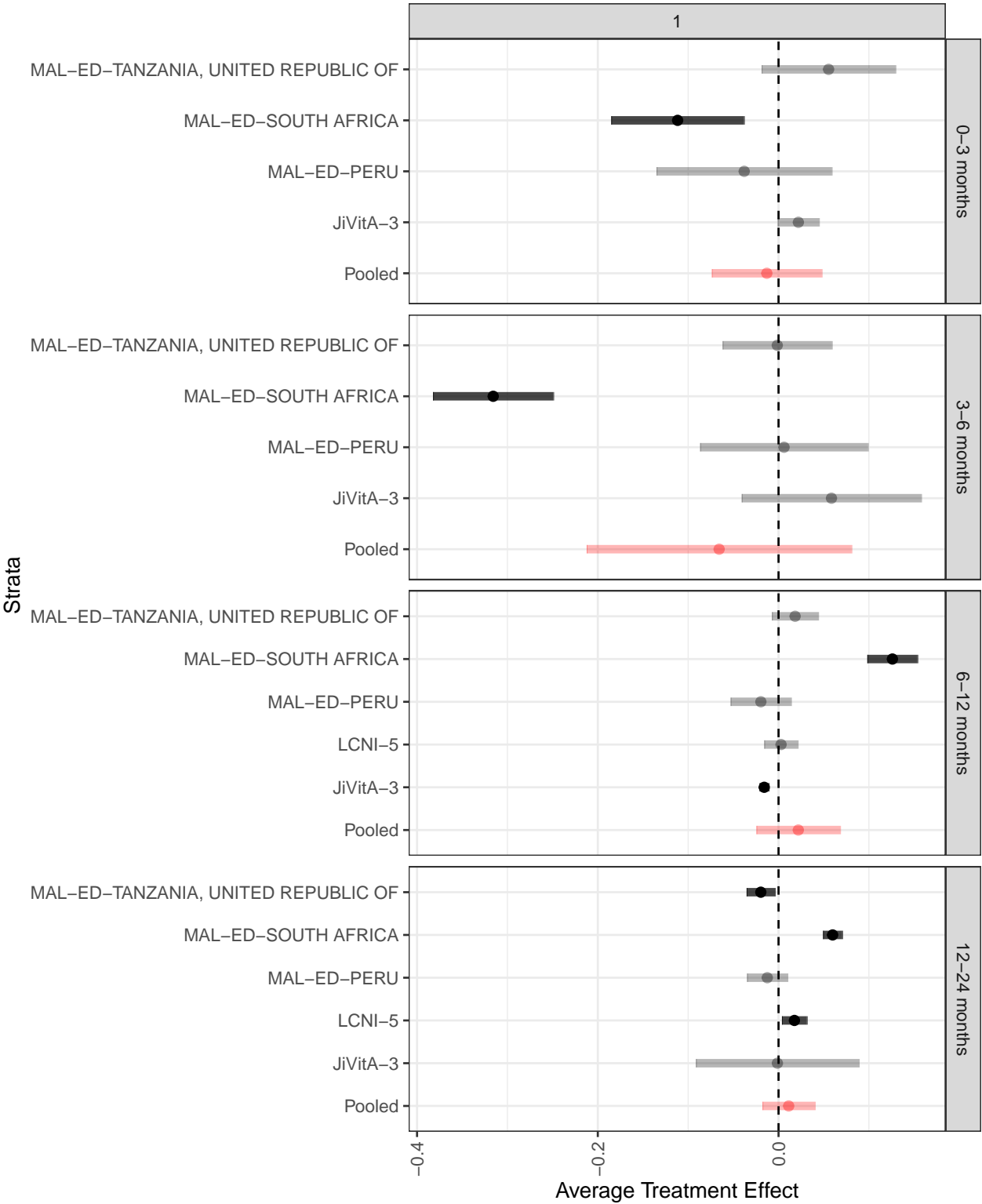
Number of people in the household
reference level:3 or less

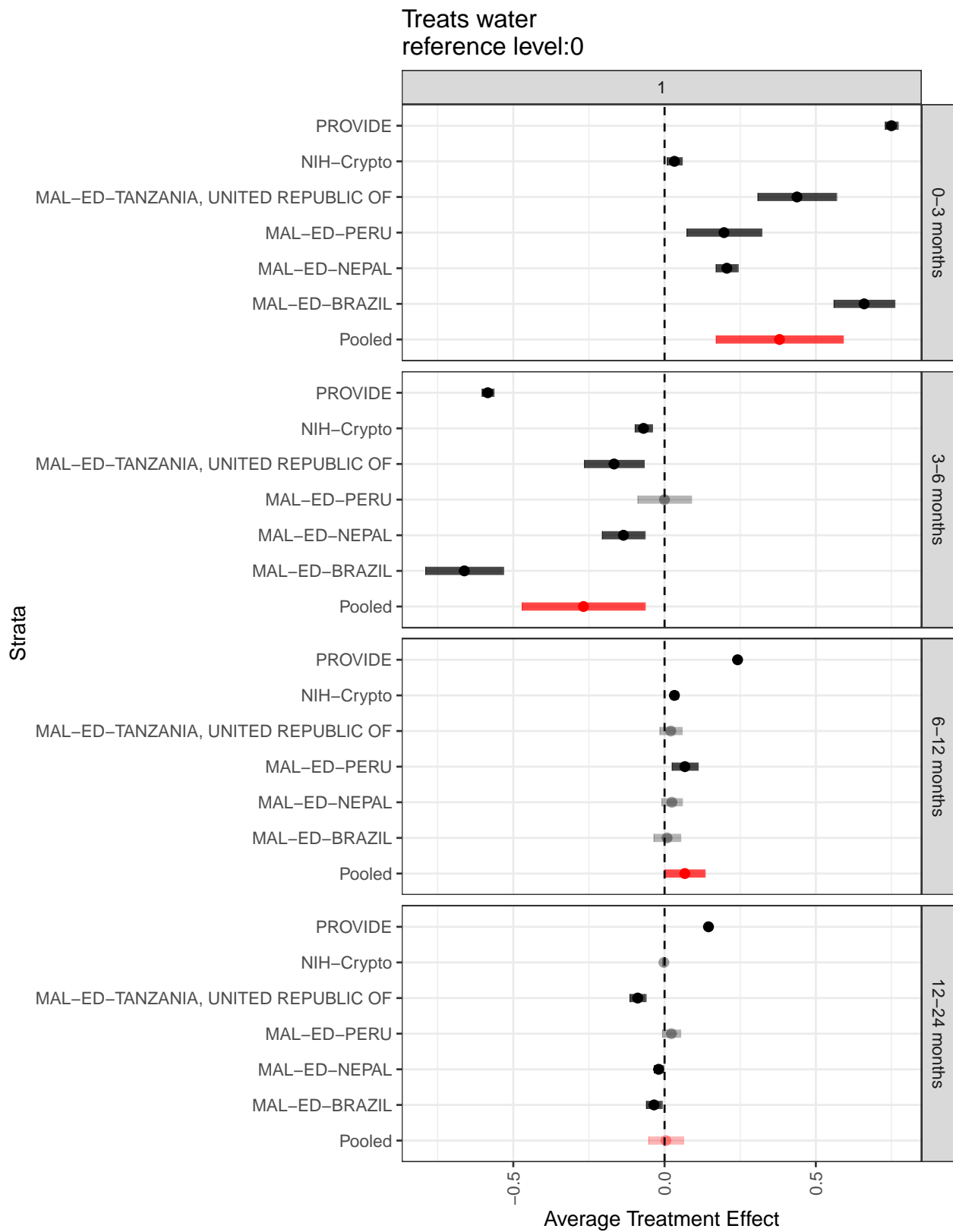


Number of rooms in household
reference level:1

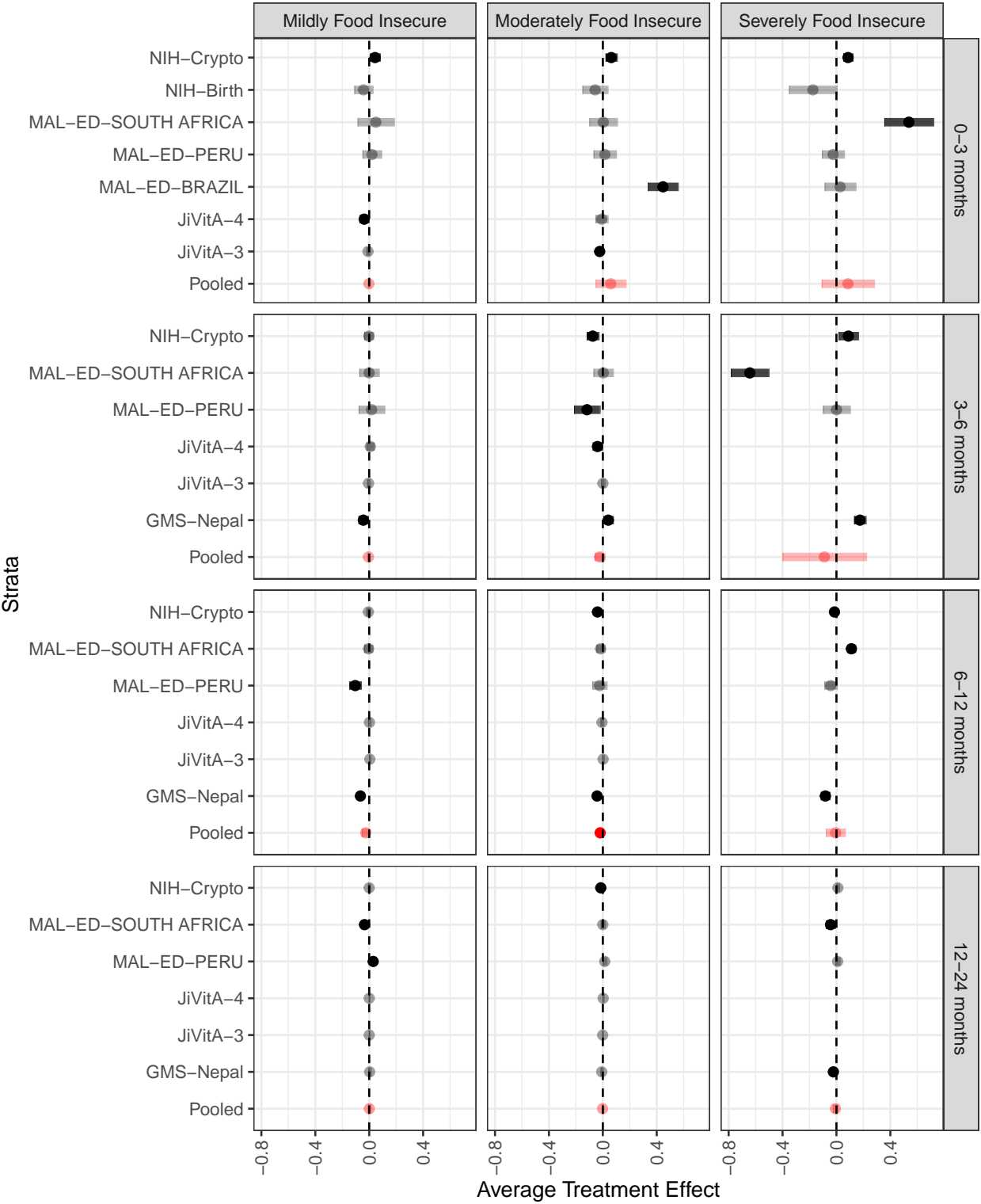


Safe water
reference level:0

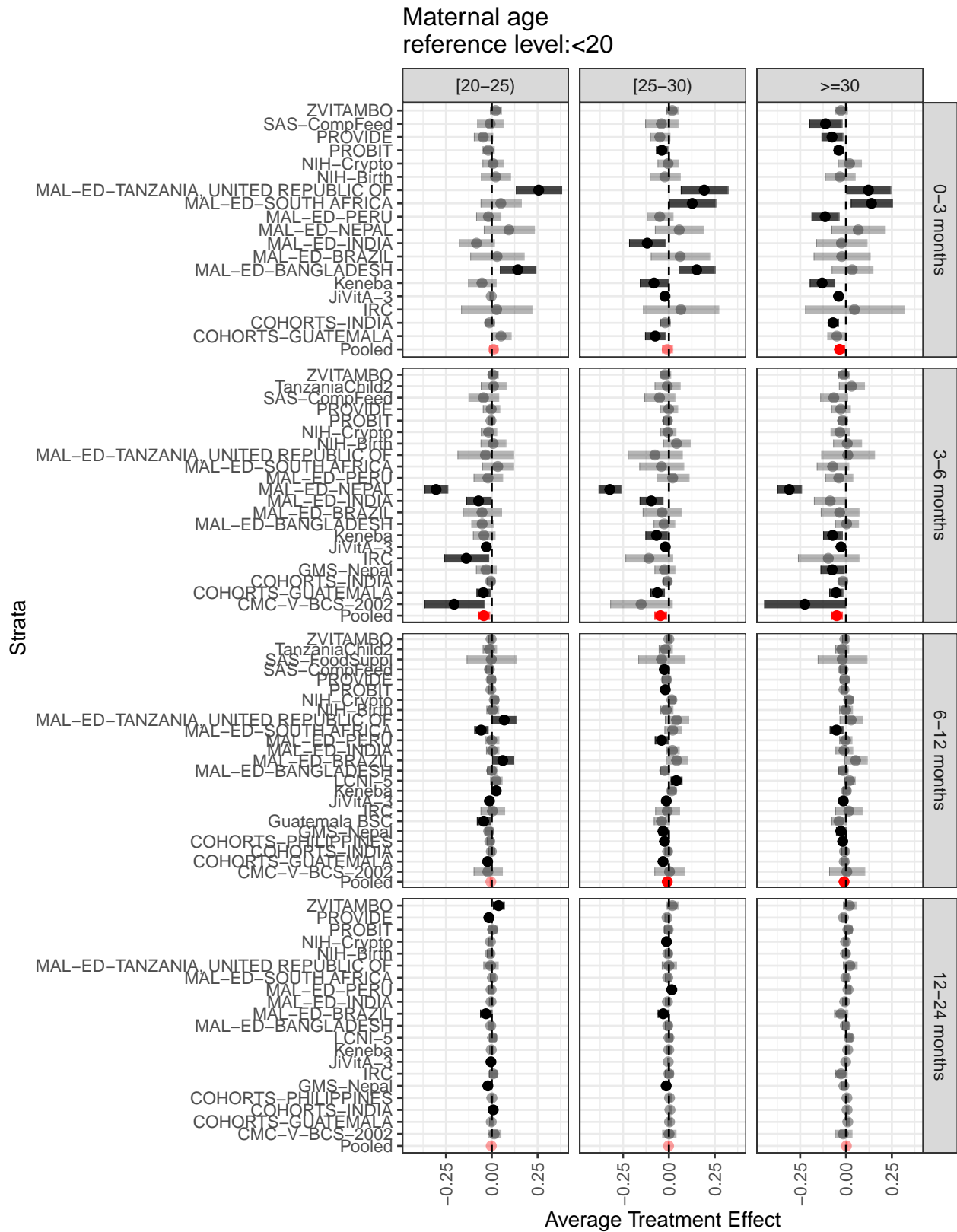




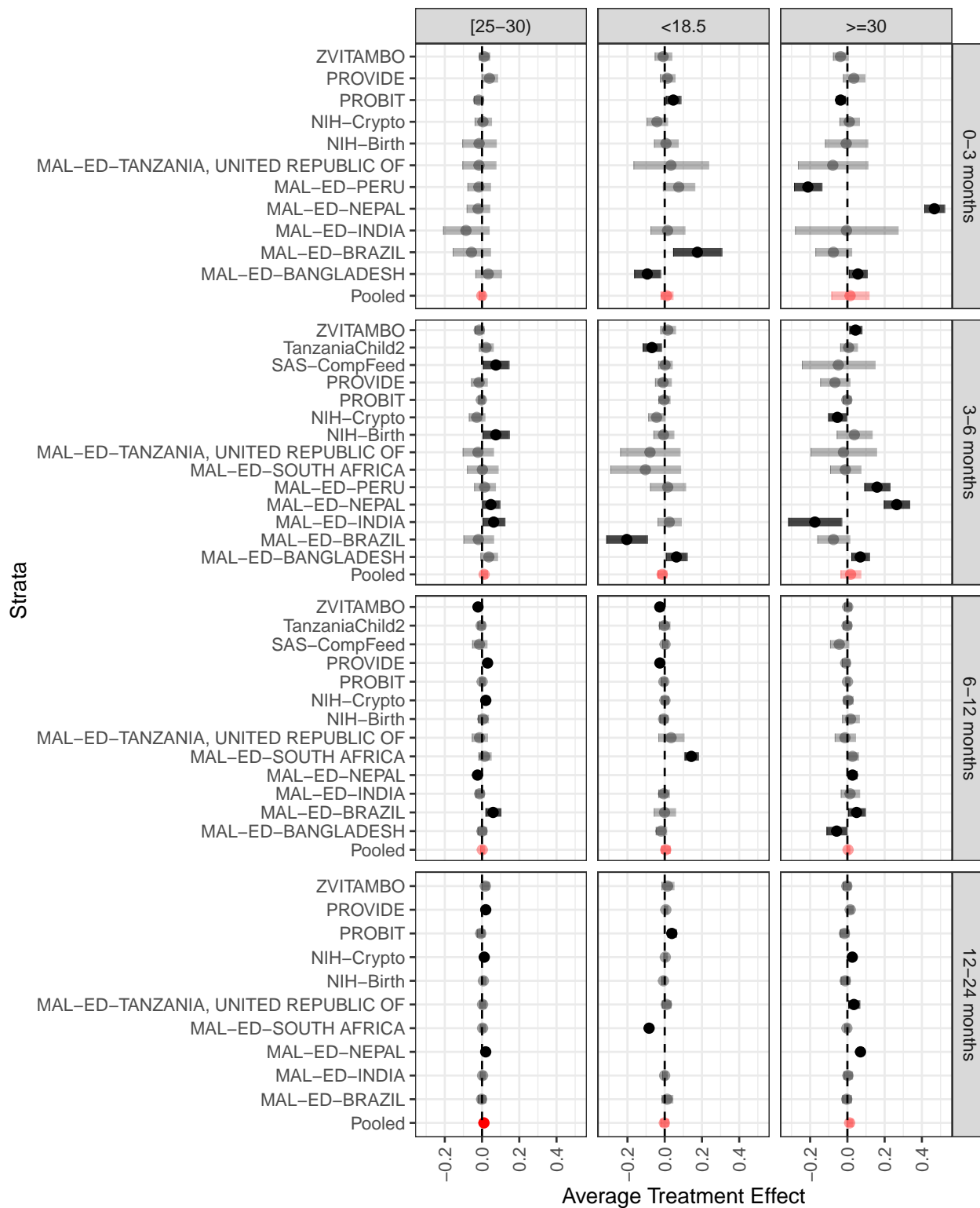
USAID Household Food Insecurity Access Scale (HFIAS) category
reference level: Food Secure



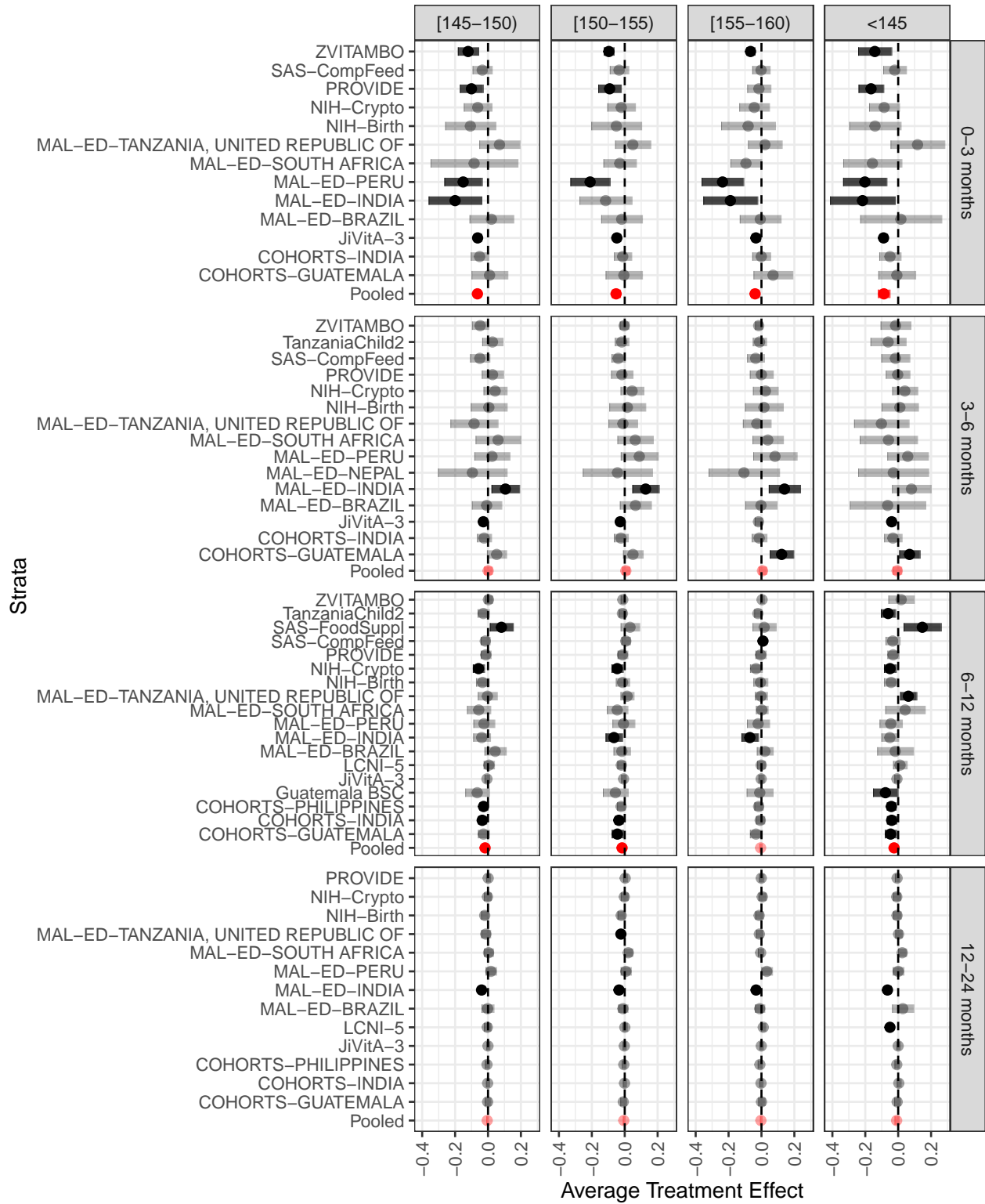
Maternal characteristics

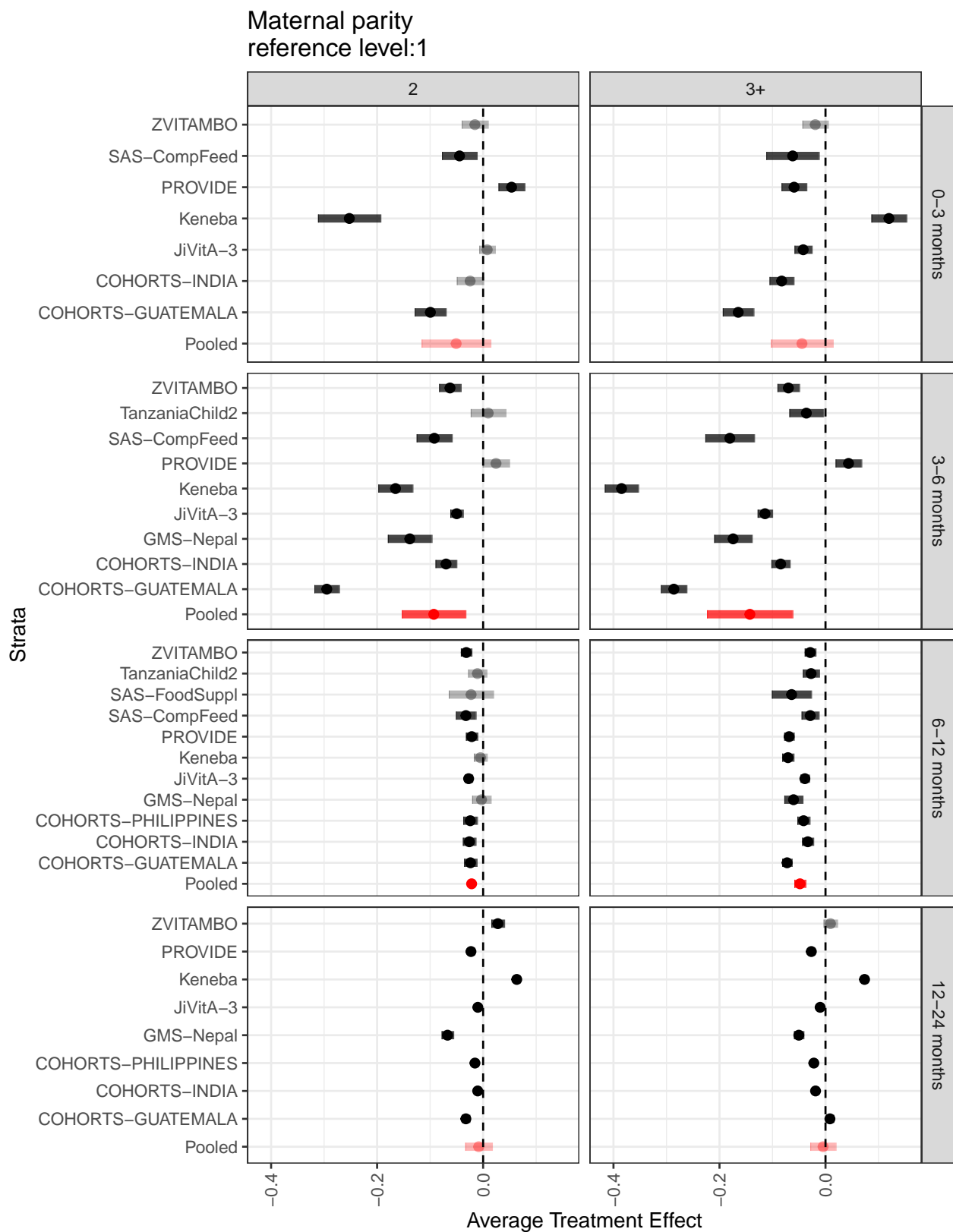


Maternal BMI
reference level:[18.5–25)

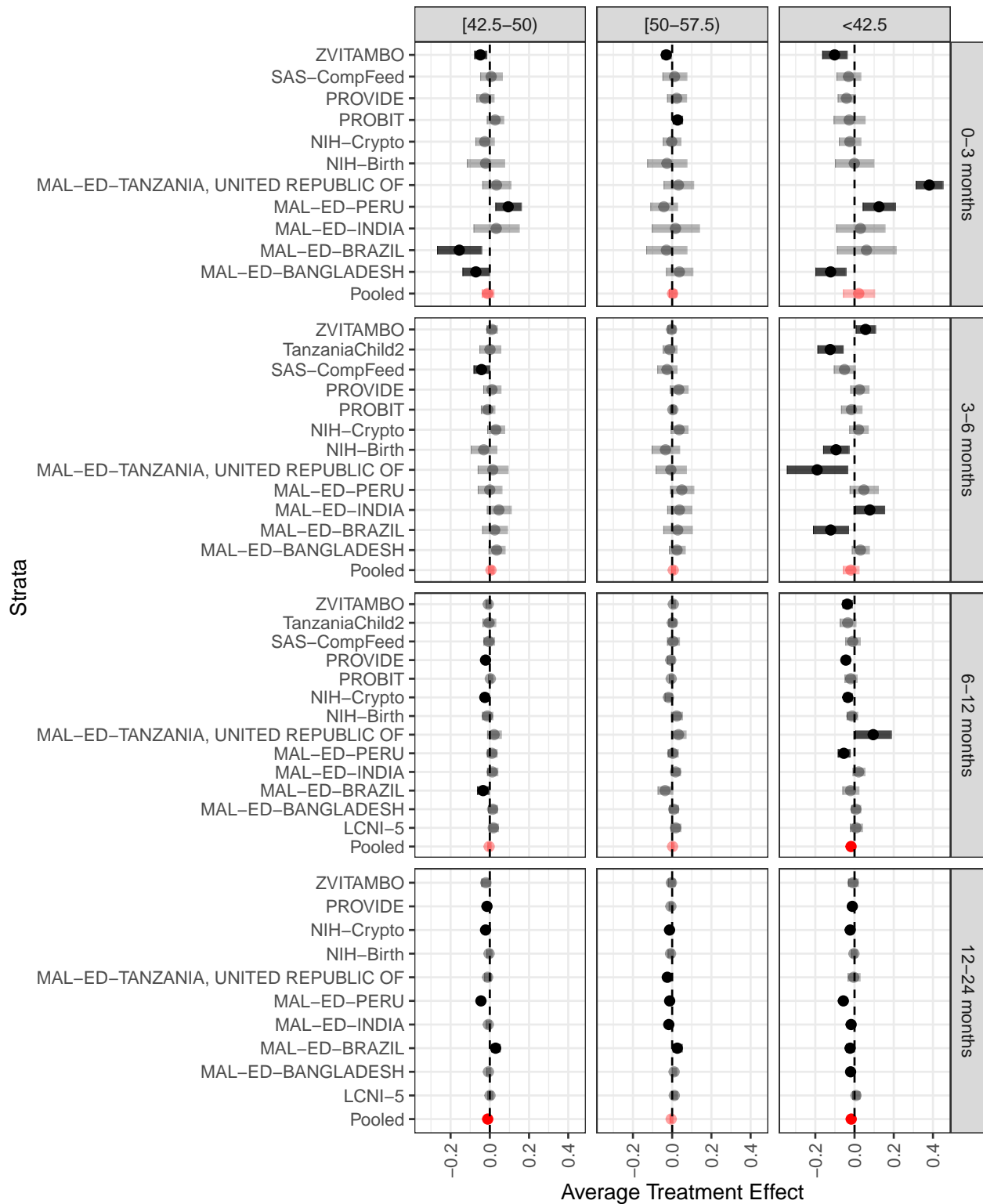


Maternal height
reference level: ≥ 160

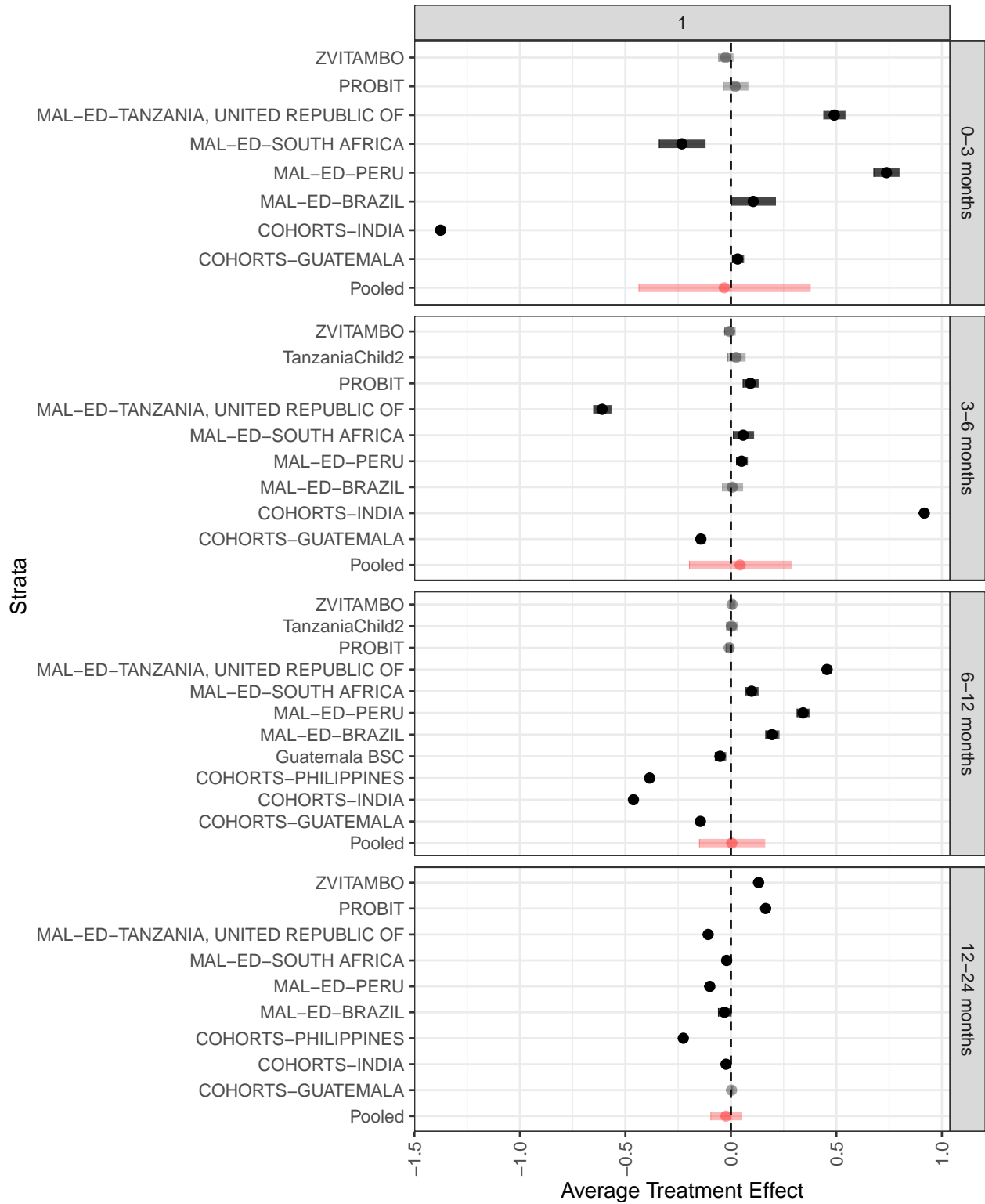




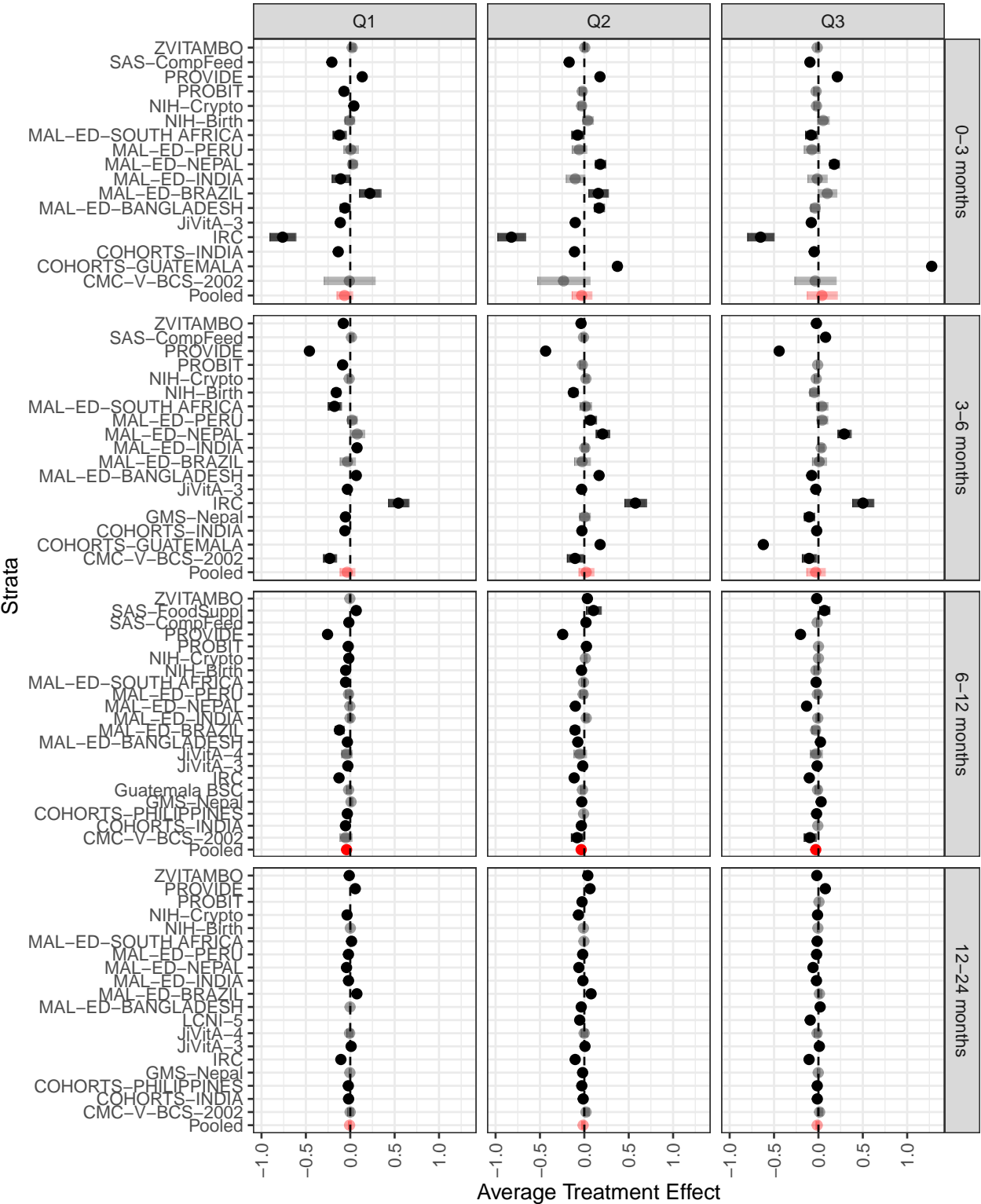
Maternal weight
reference level: ≥ 57.5



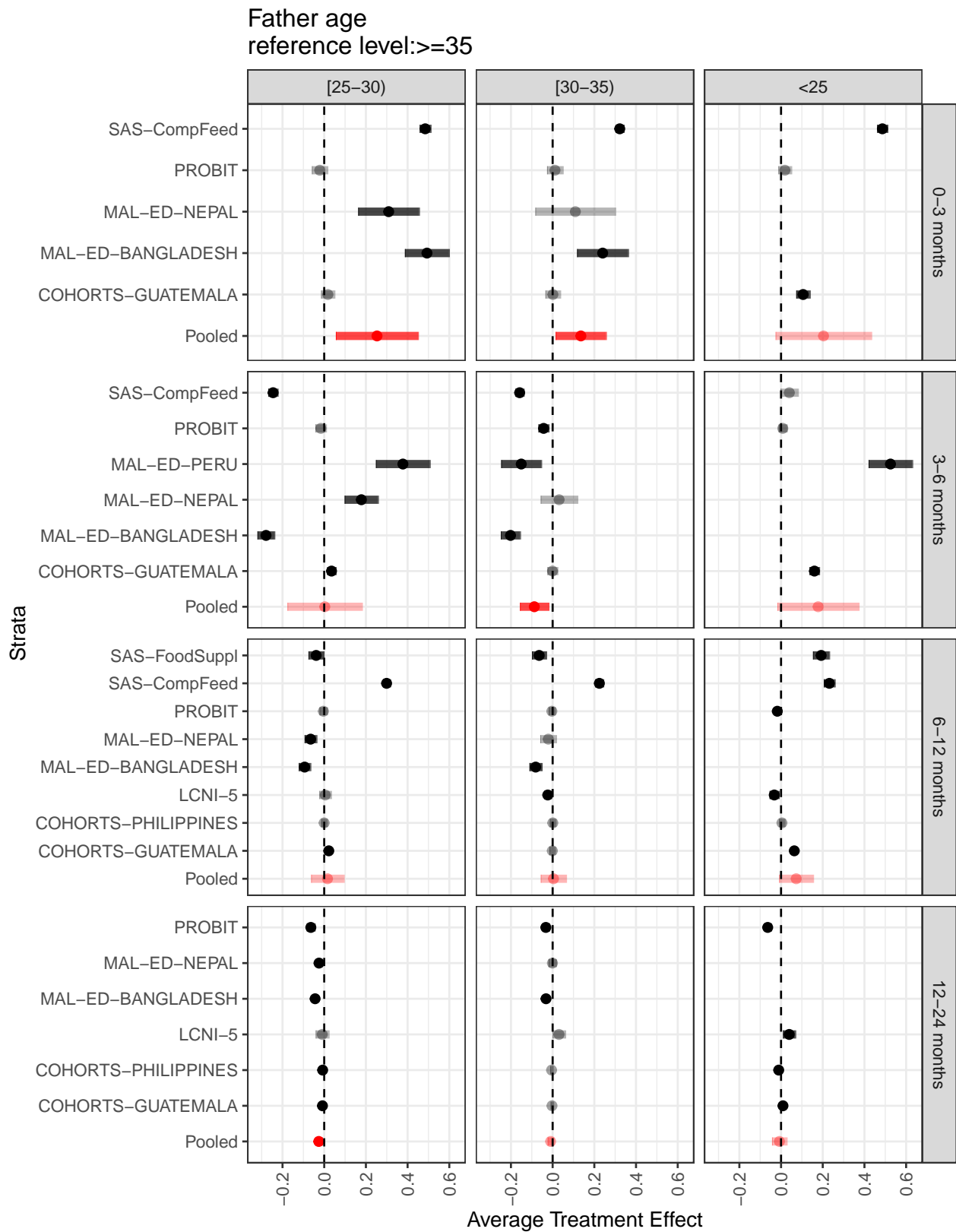
Mother is unmarried
reference level:0



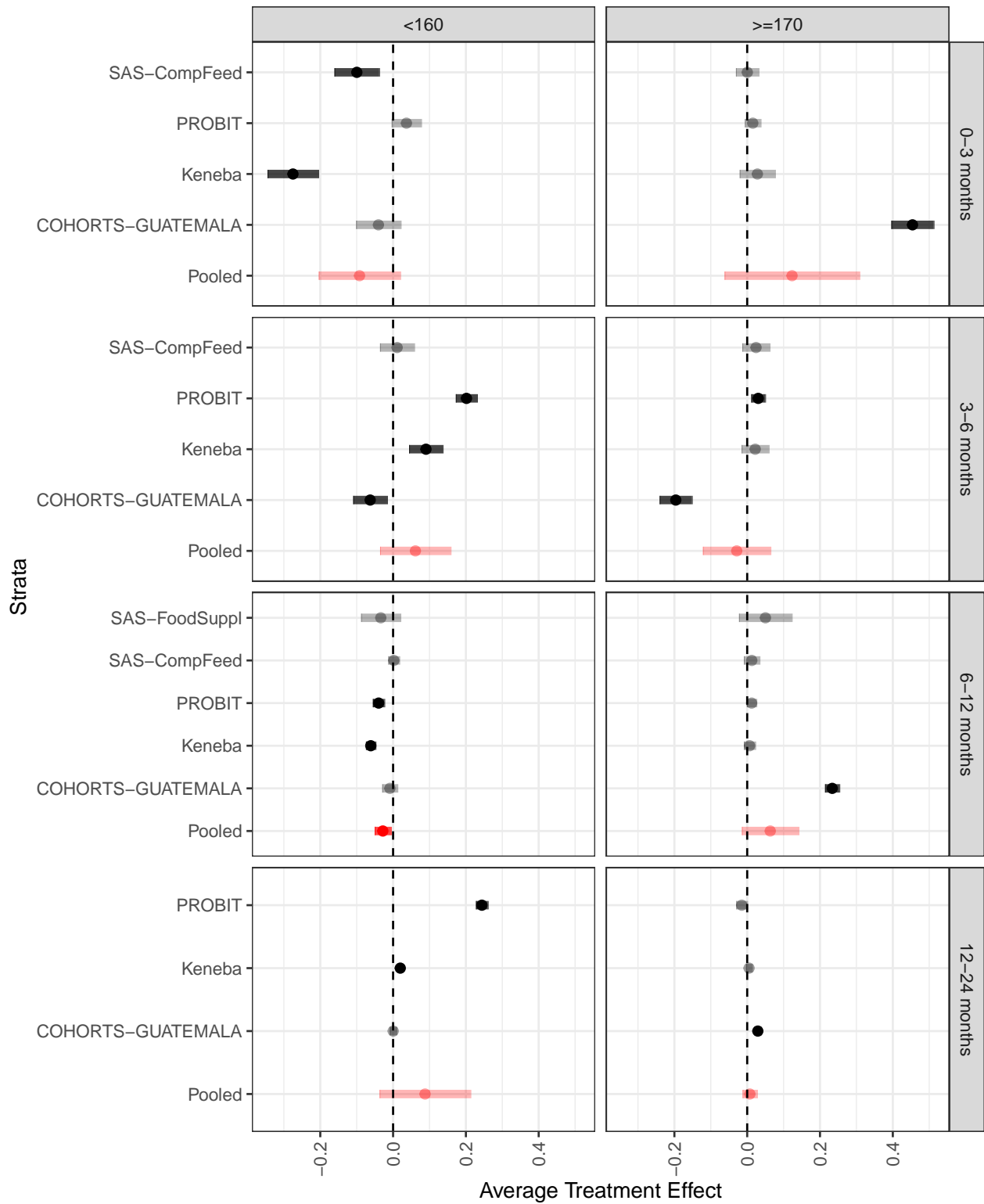
Mother's education
reference level:Q4



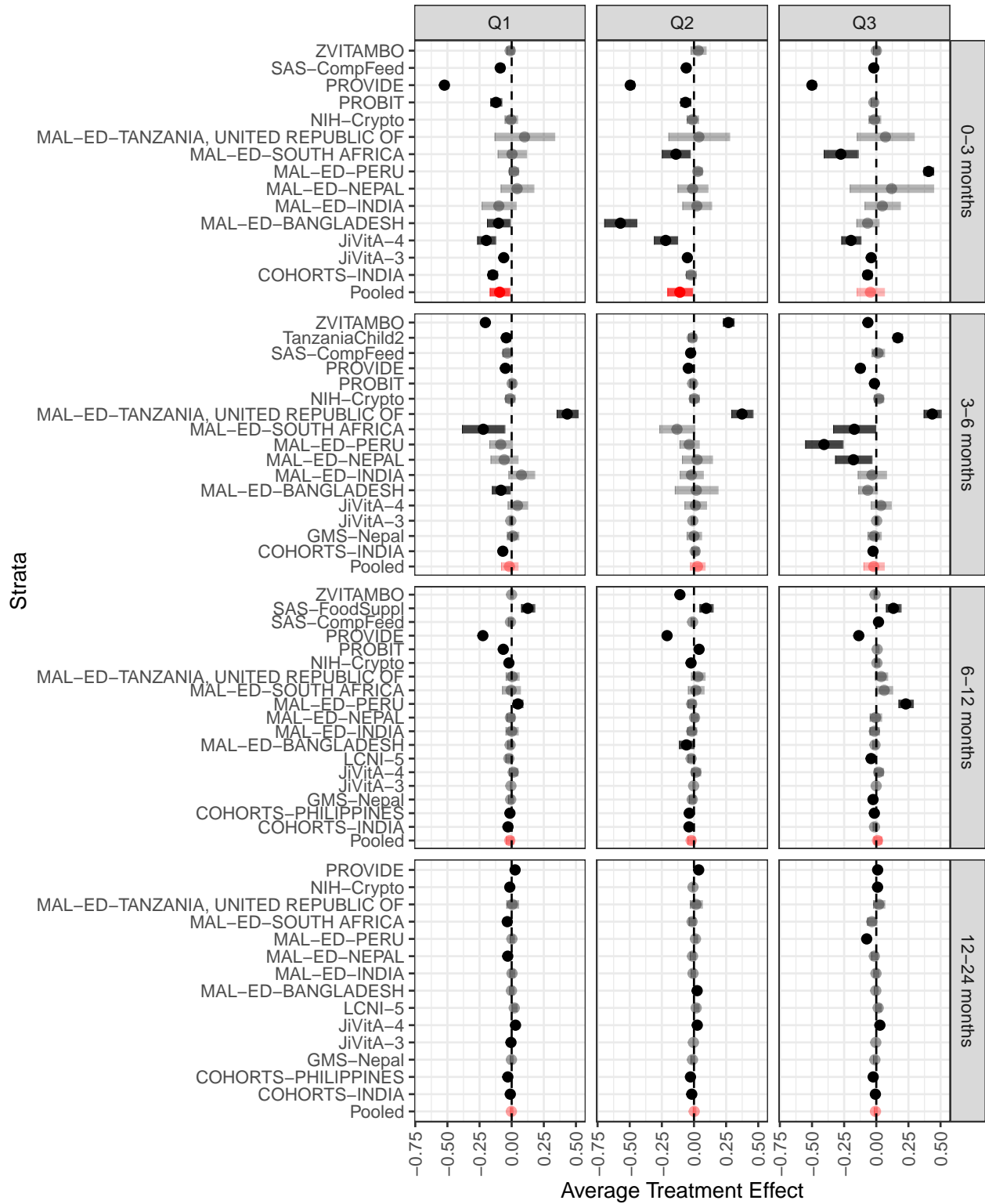
Paternal characteristics



Father height
reference level:[160–170)



Father's education
reference level:Q4



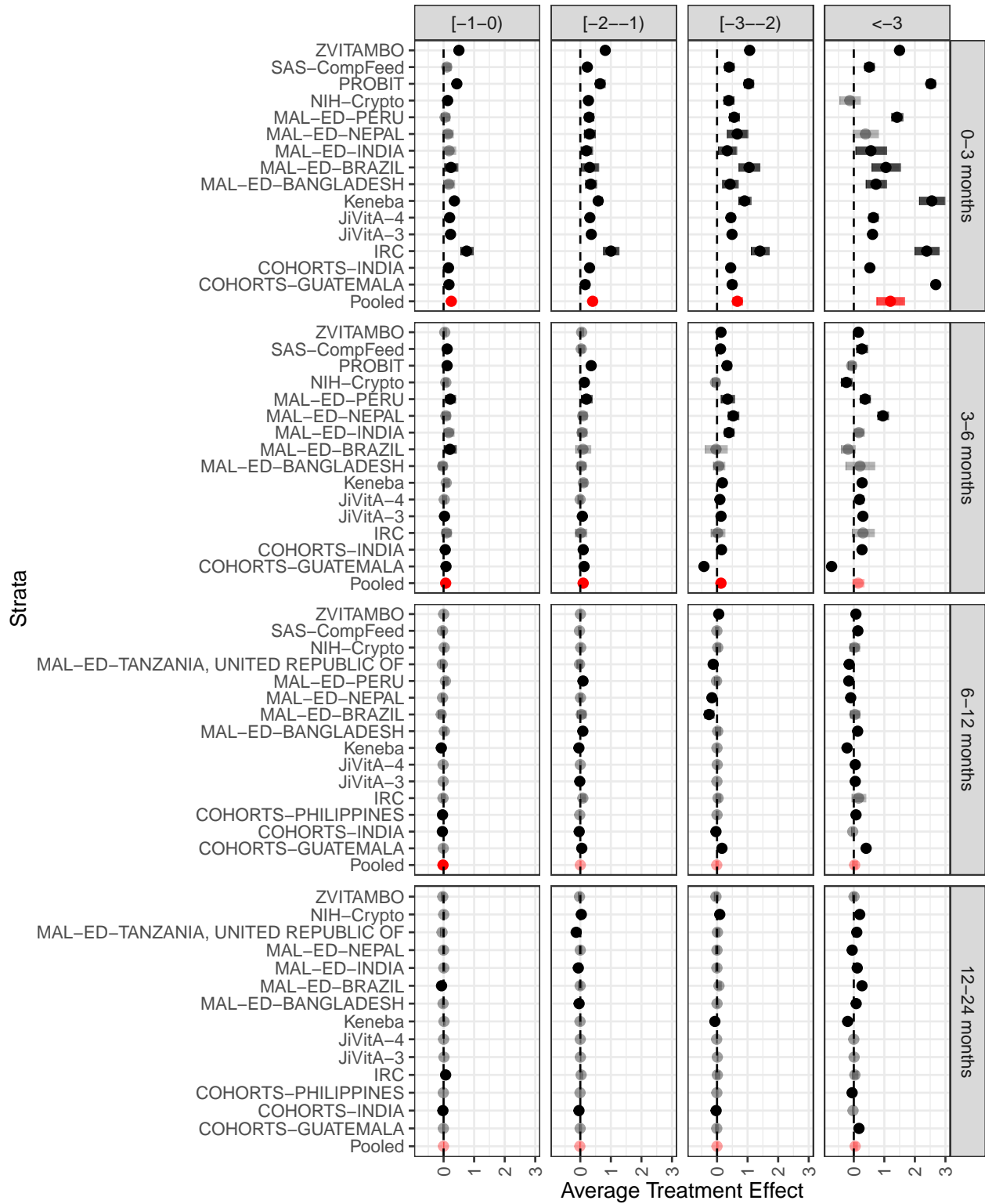
Length growth velocity

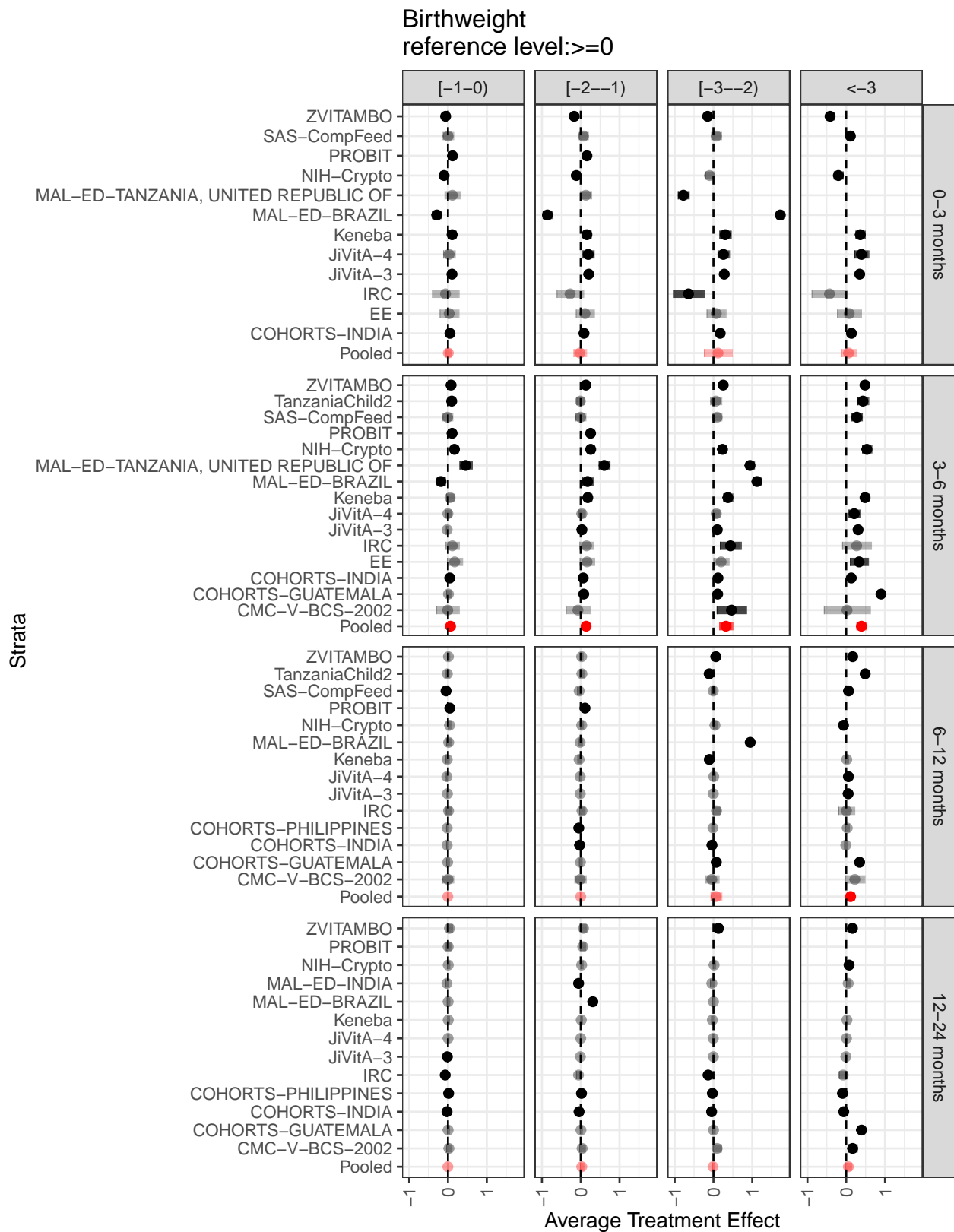
Child characteristics

Any wasting in first 6 months
reference level:0

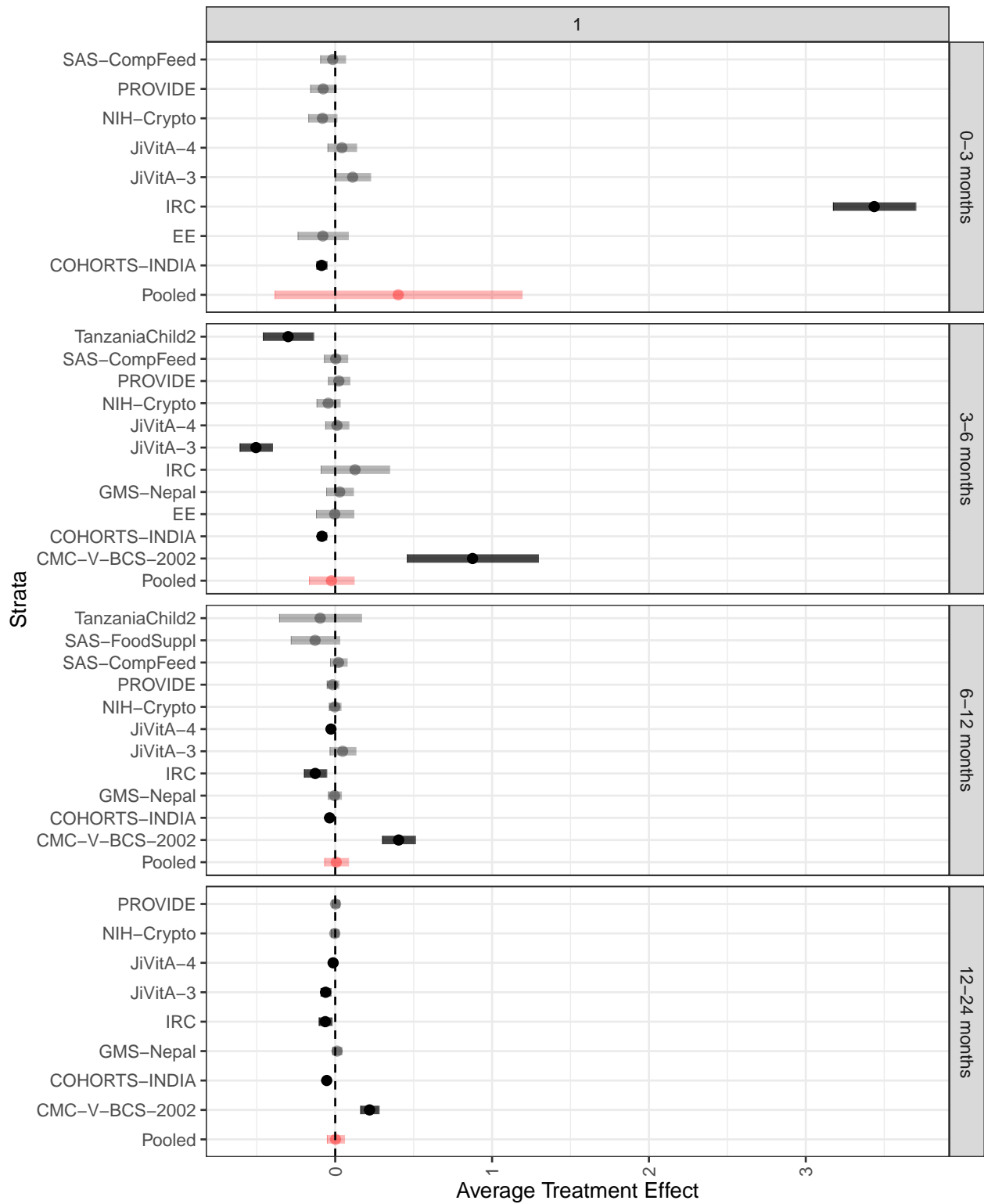


Birth length
reference level: ≥ 0

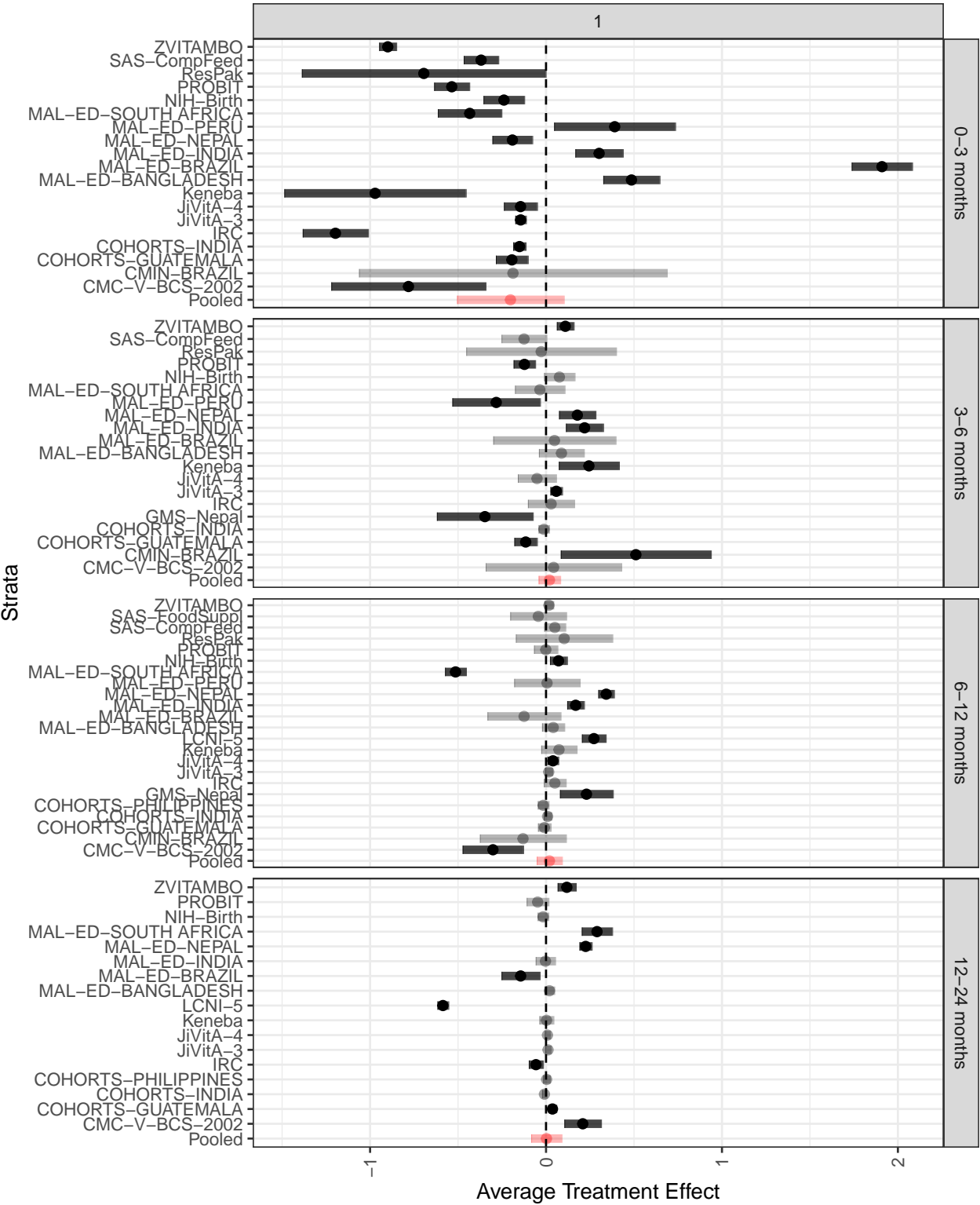




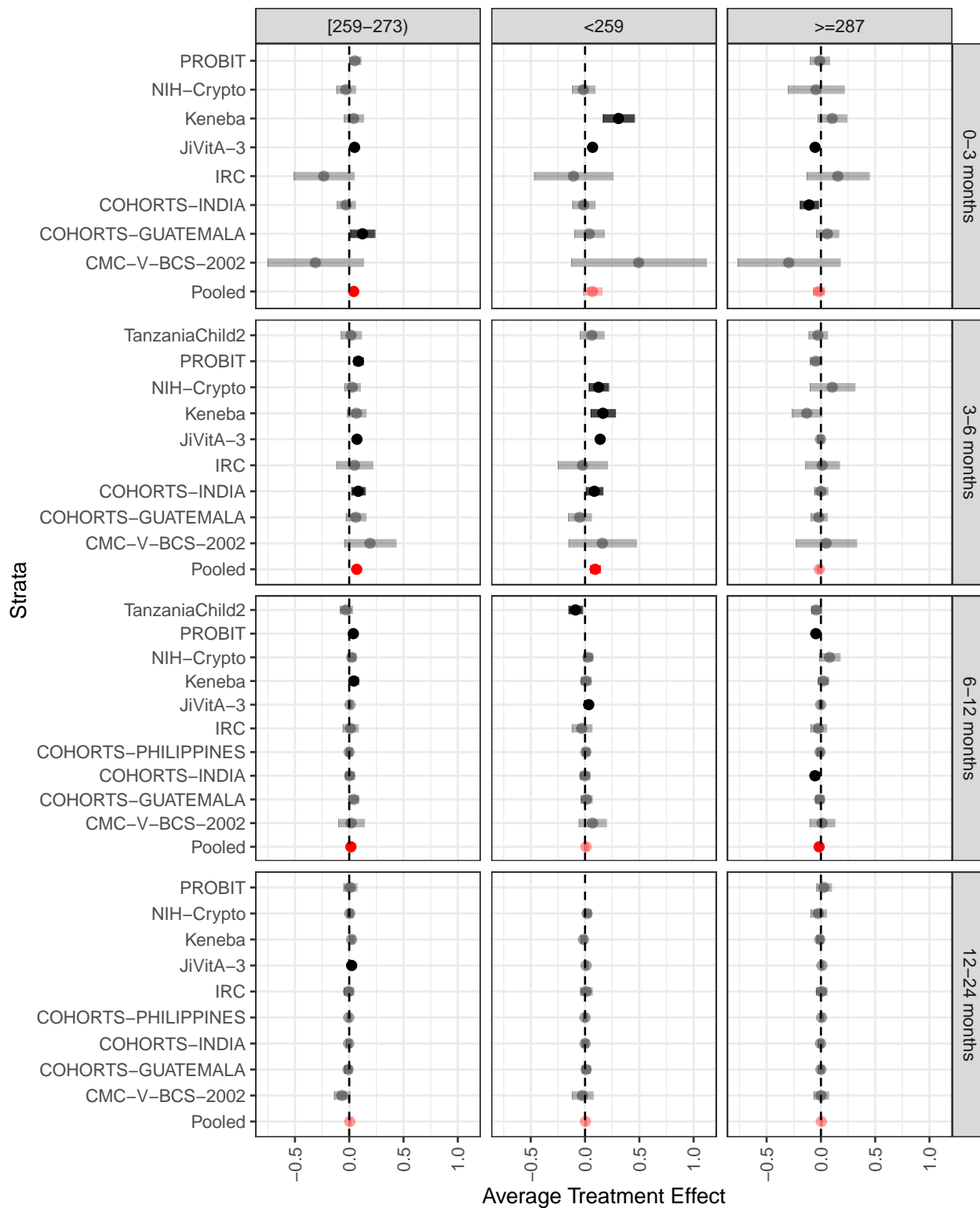
Child delivered at home
reference level:0



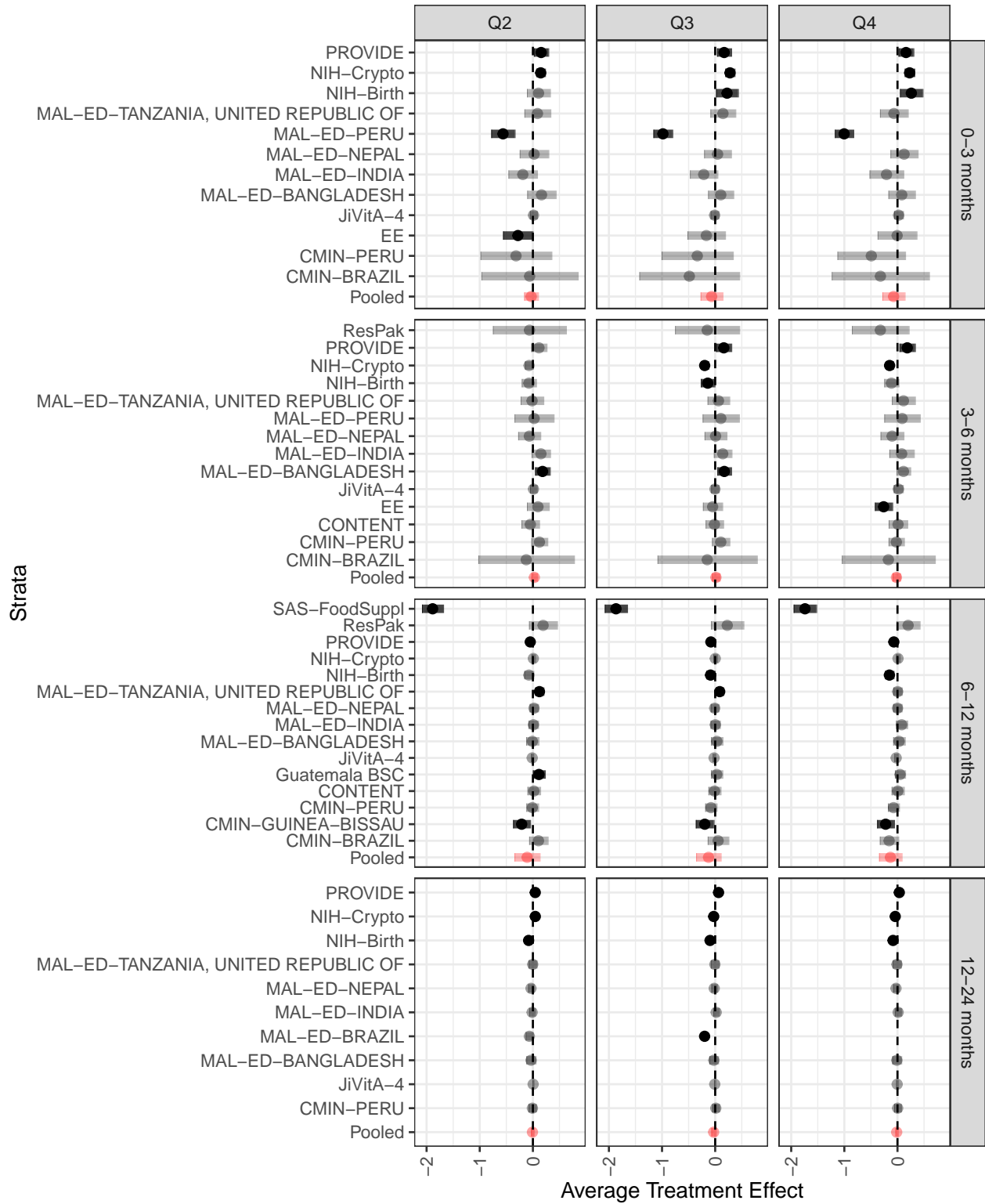
Enrolled wasted
reference level:0



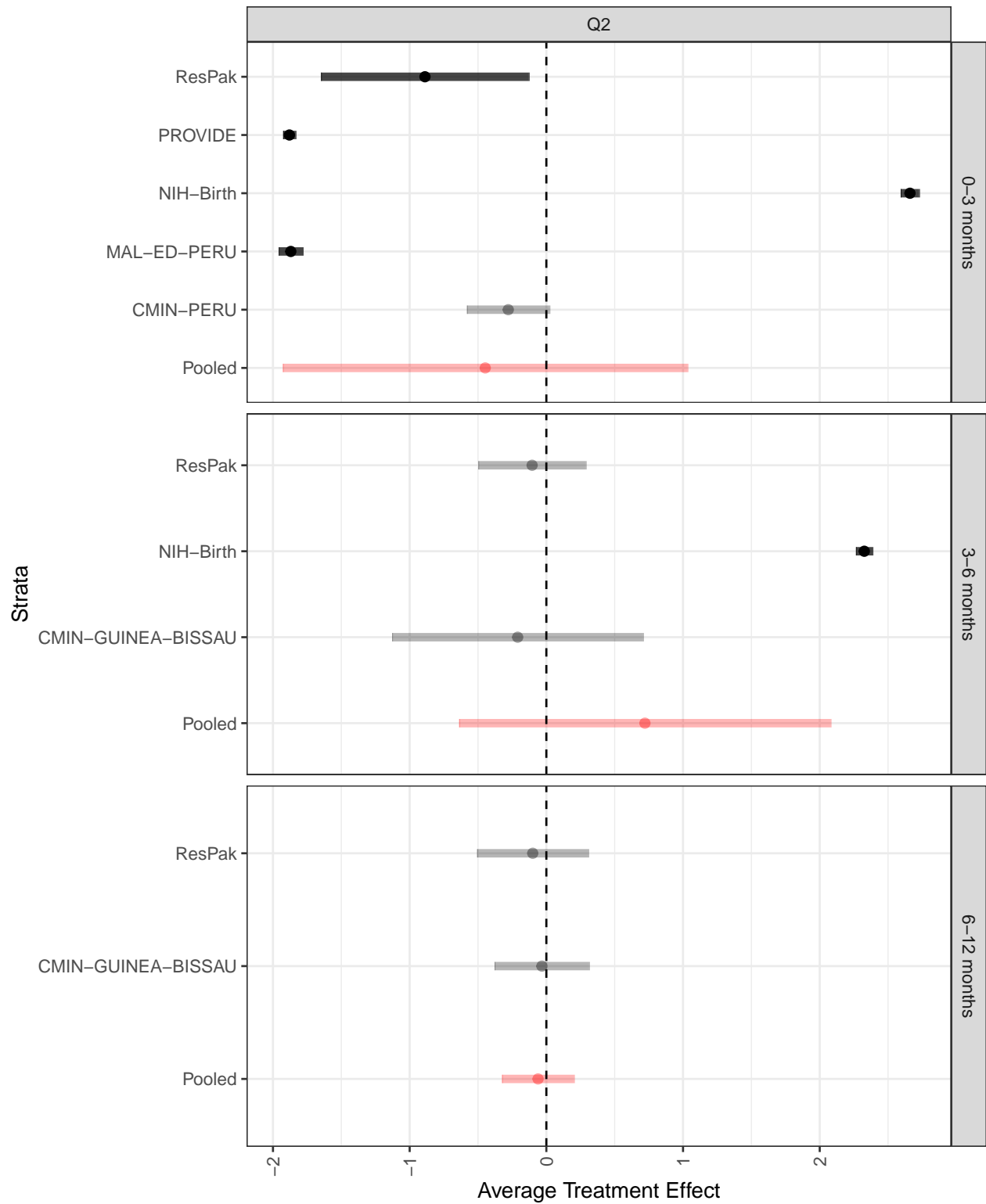
Gestational age at birth in days
reference level:[273–287)

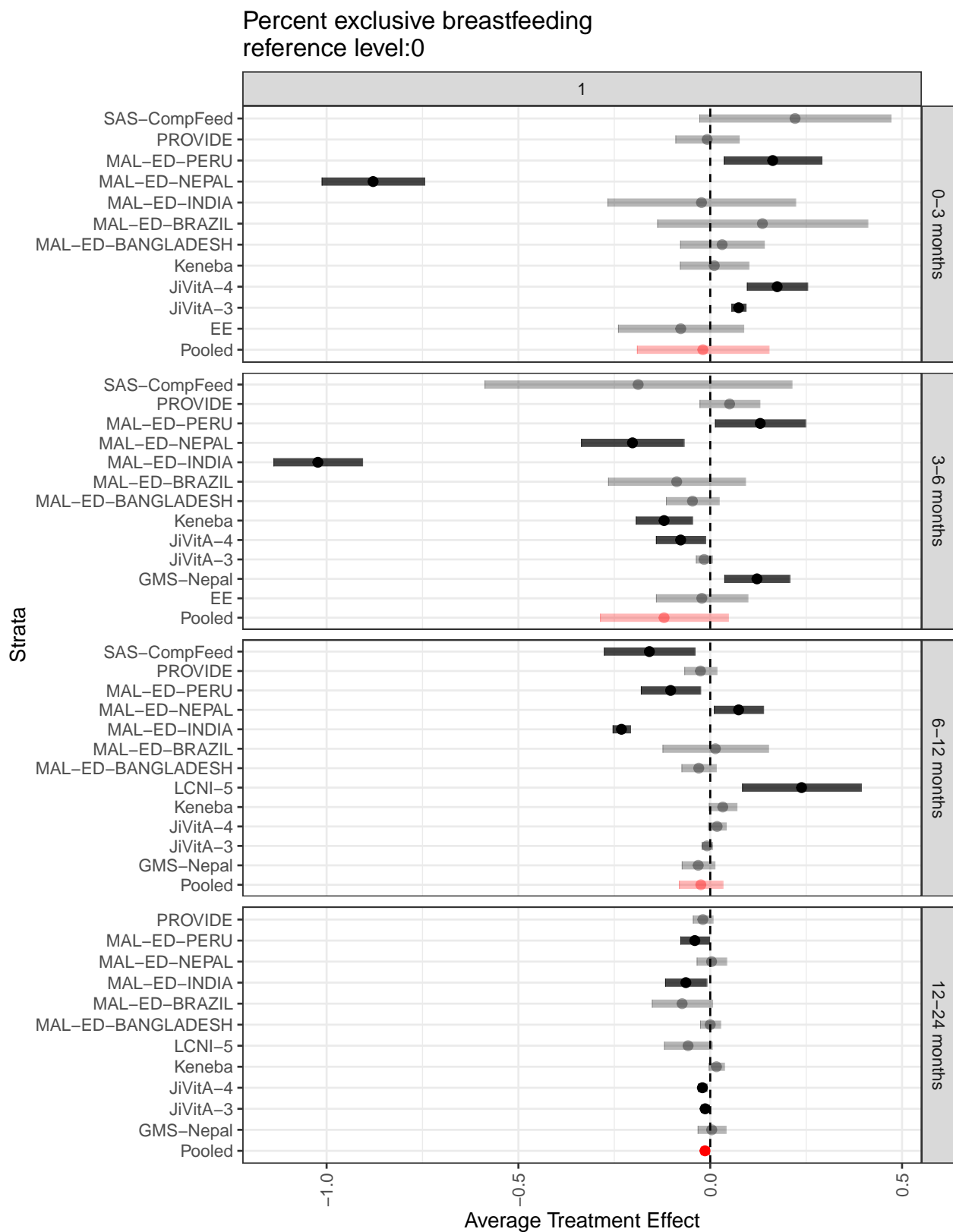


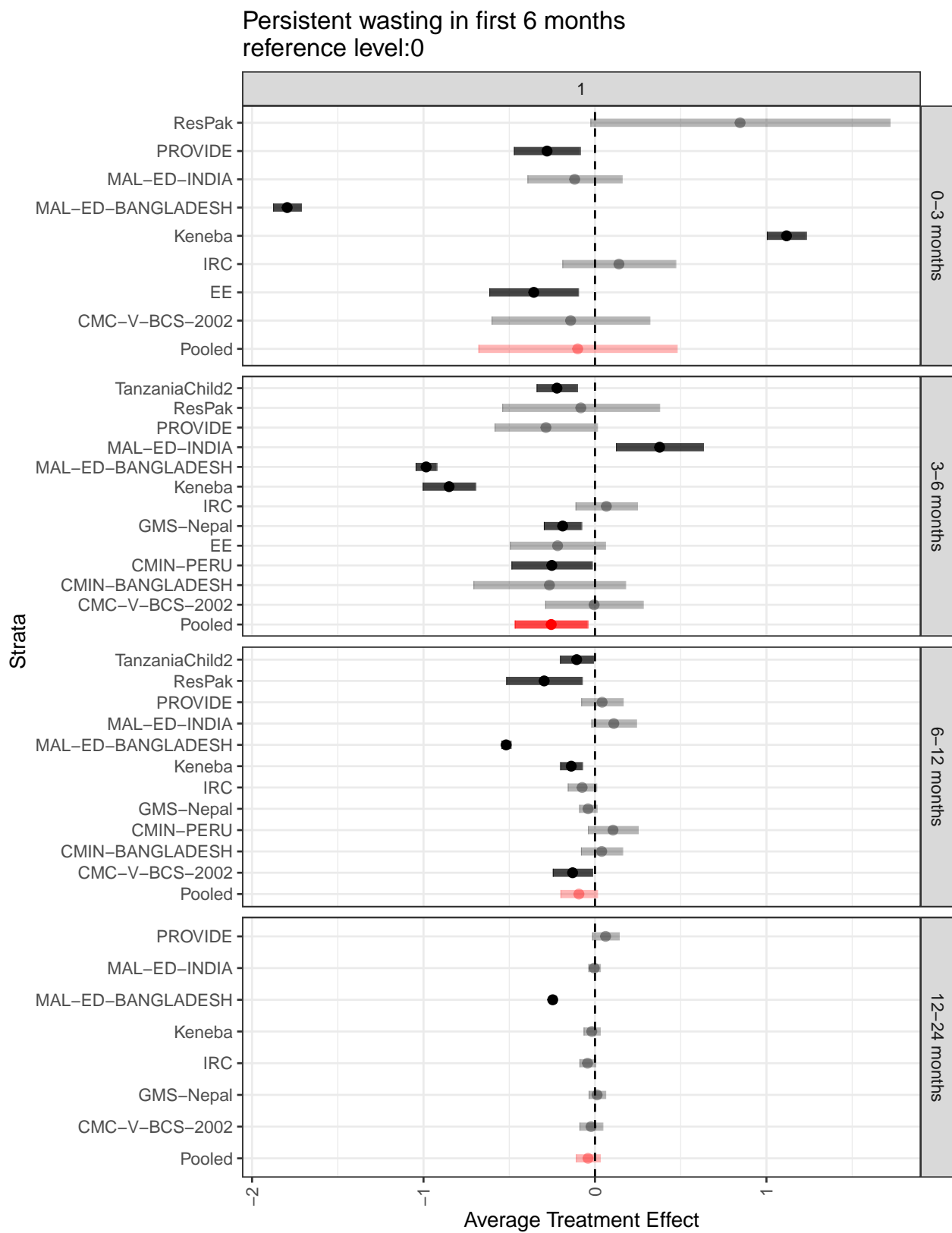
Percent diarrhea in first 24 months
reference level:Q1



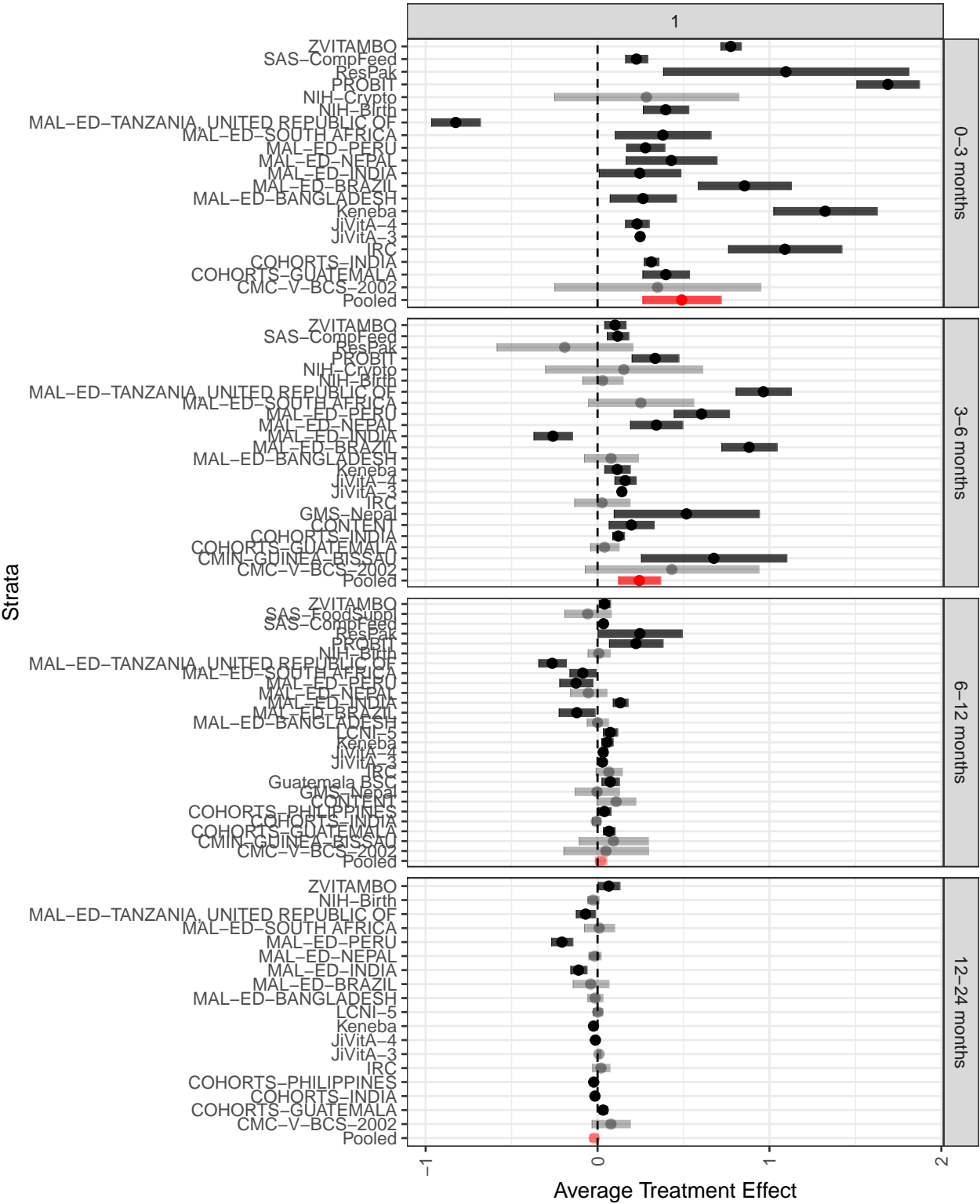
Percent diarrhea in first 6 months
reference level:Q1



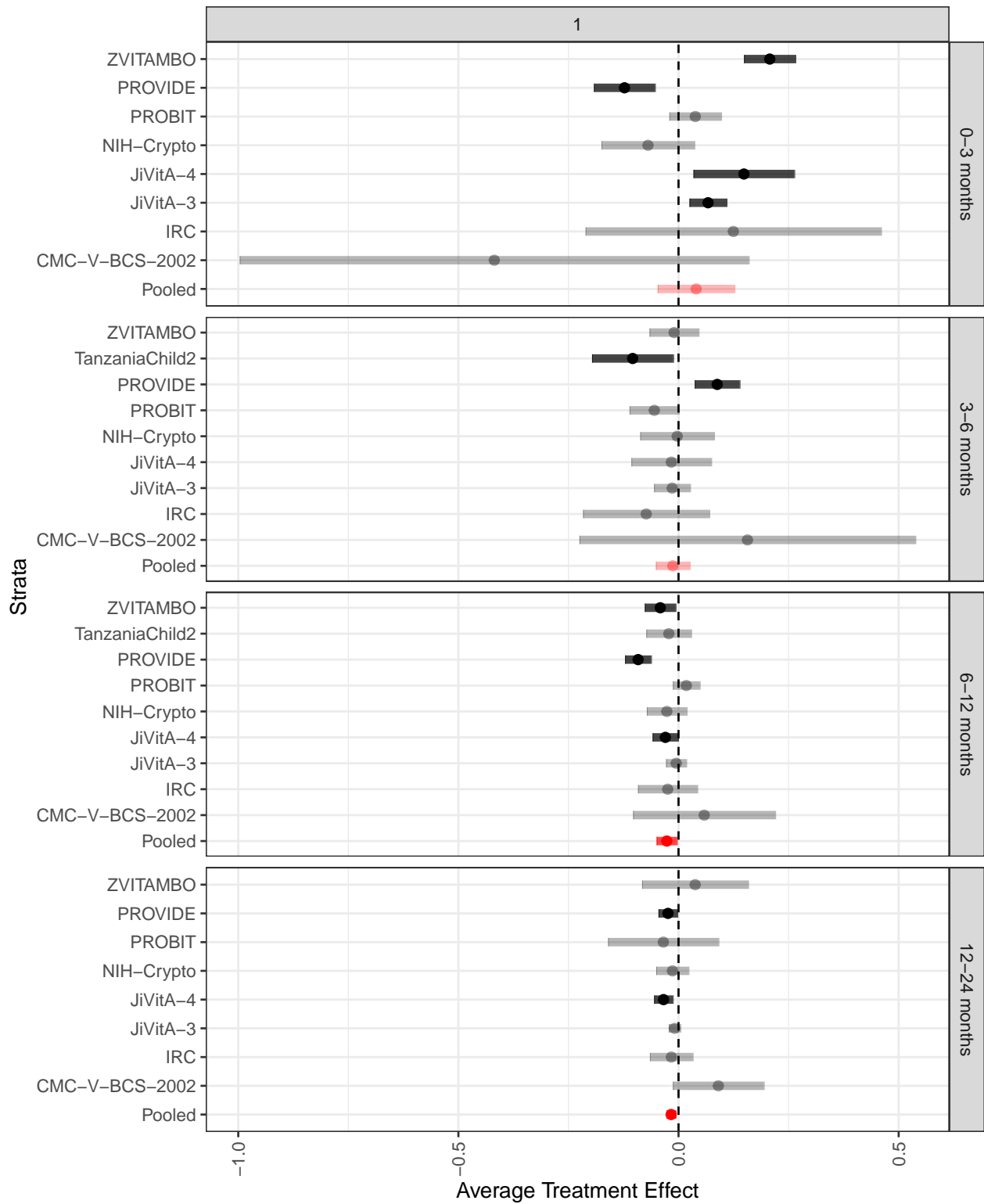




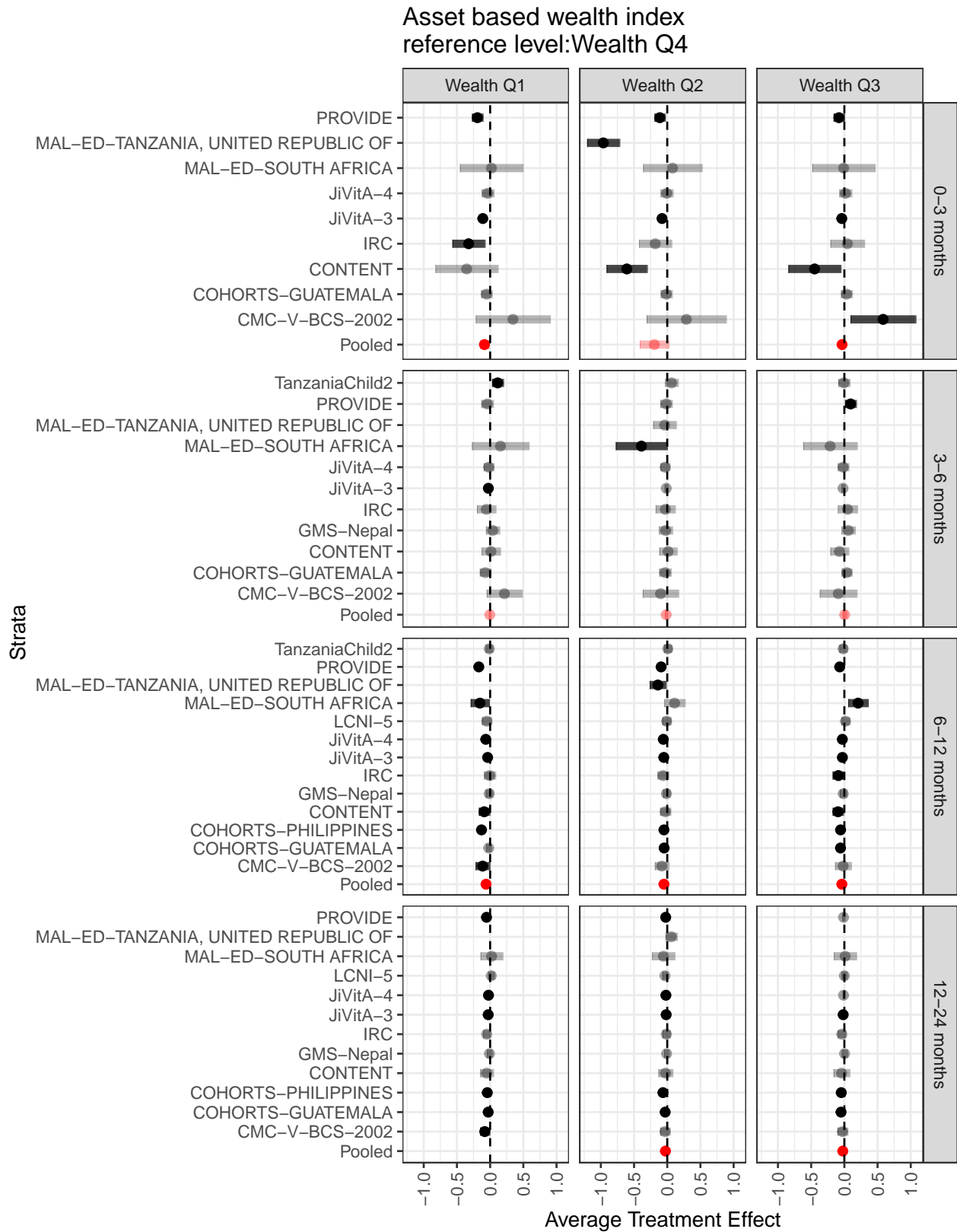
Stunted at enrollment
reference level:0



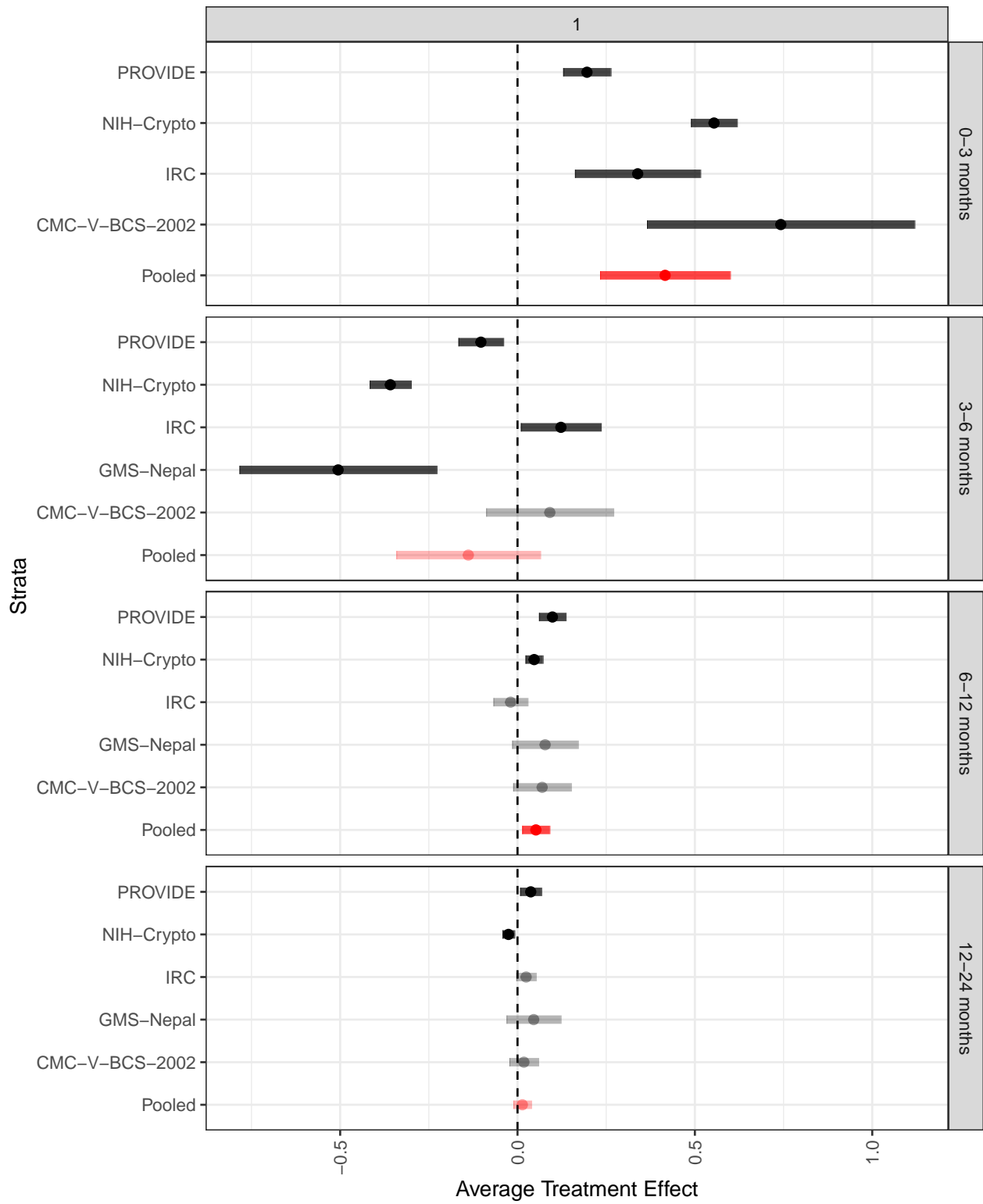
Vaginal delivery
reference level:0



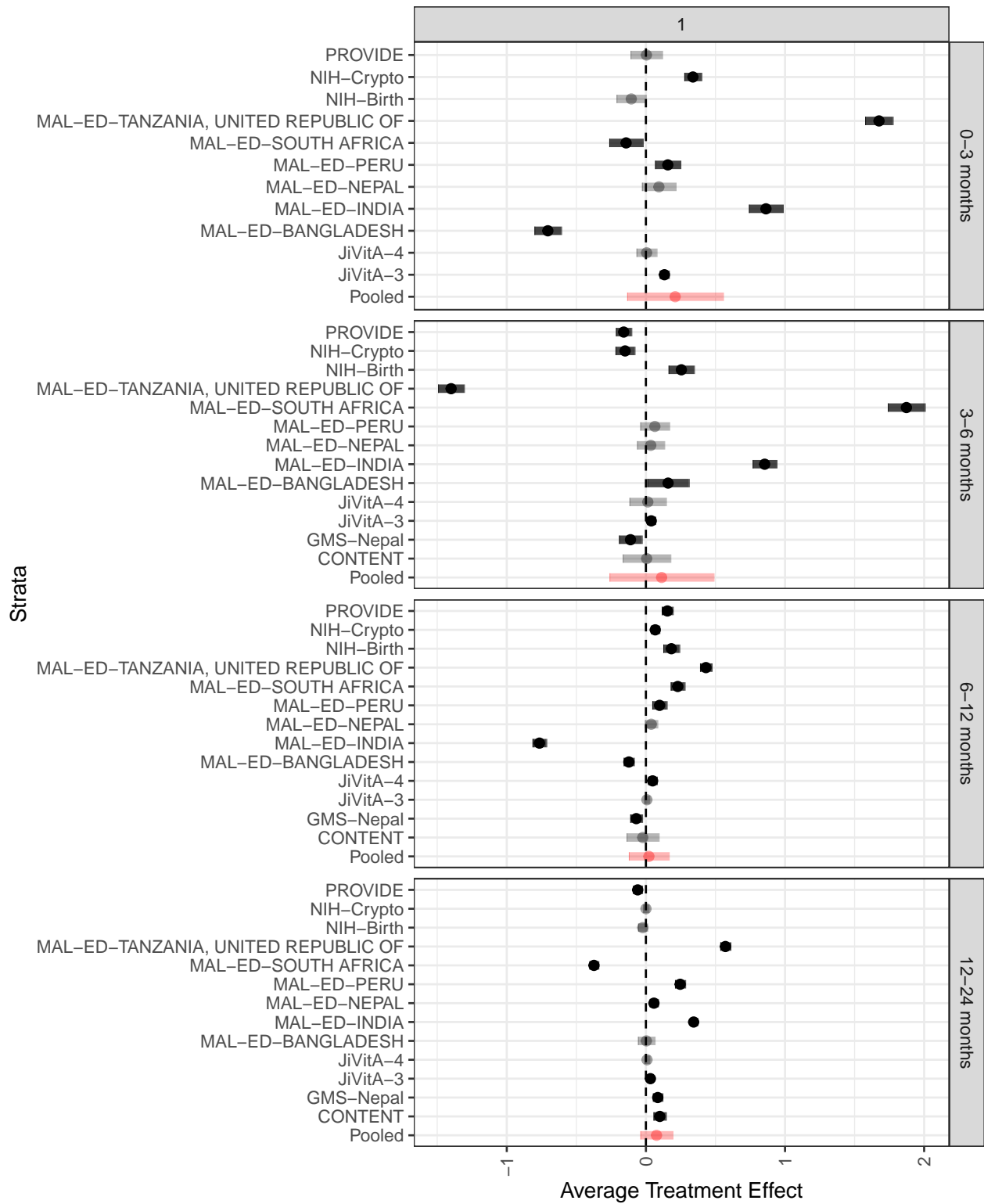
Household characteristics

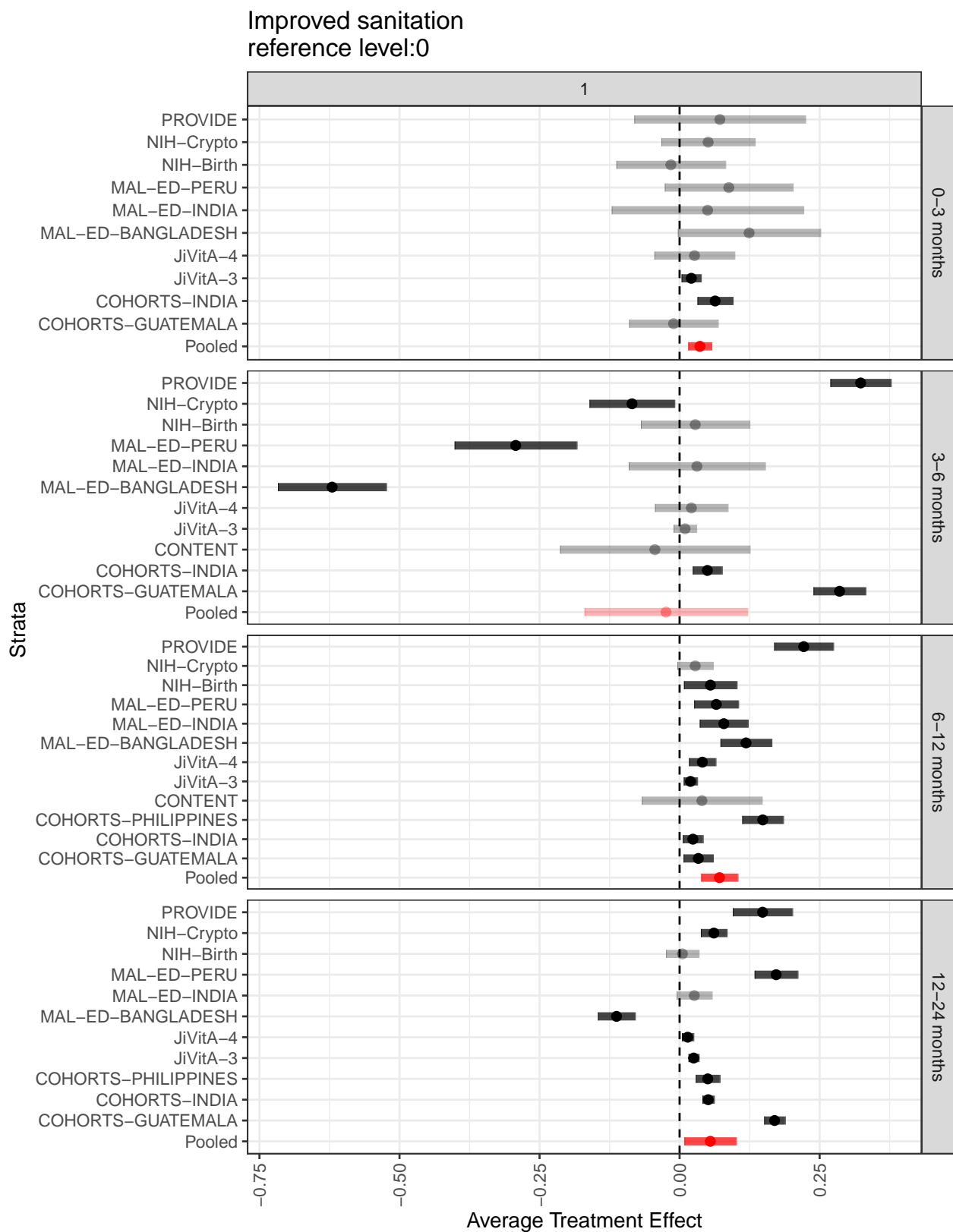


Clean cook
reference level:0

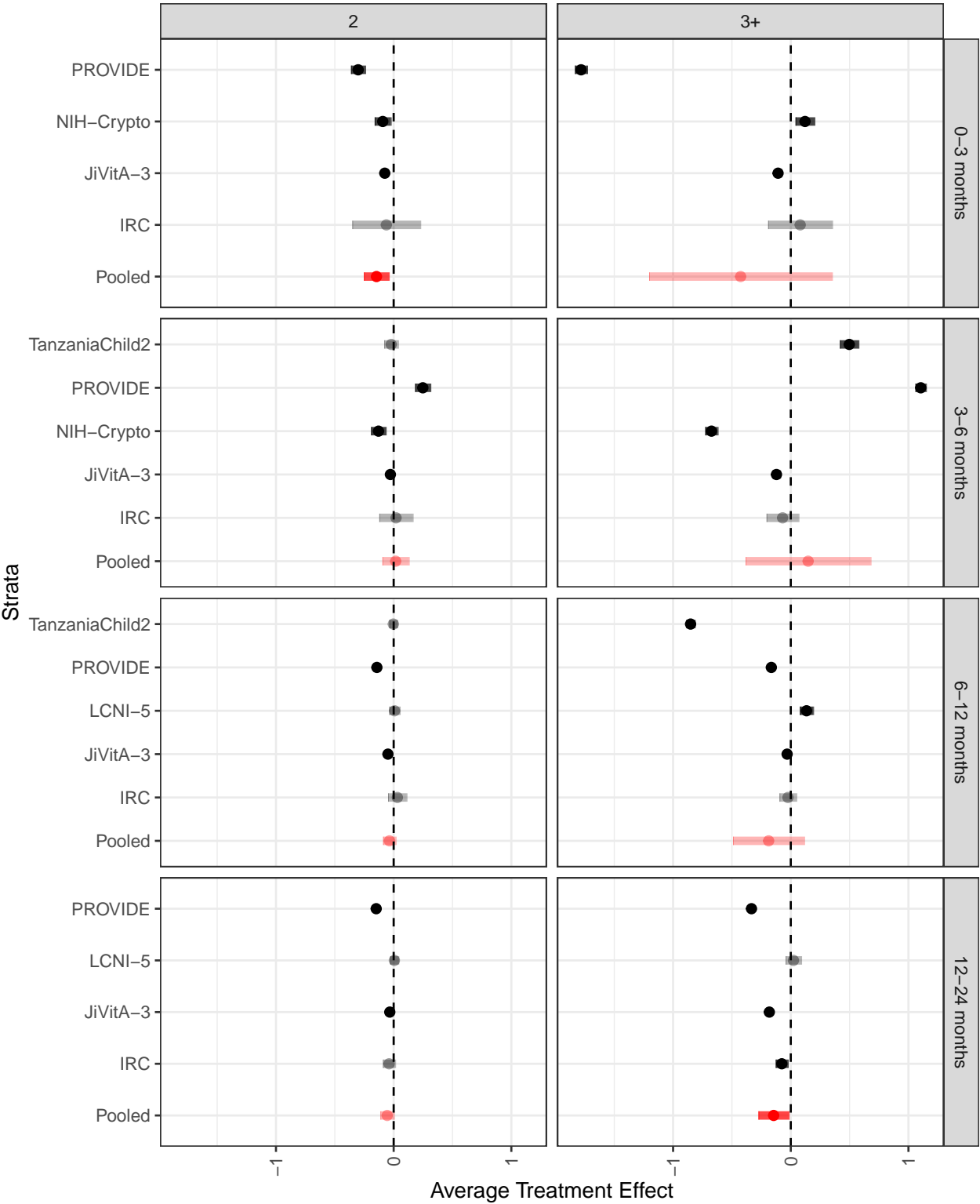


Improved floor
reference level:0

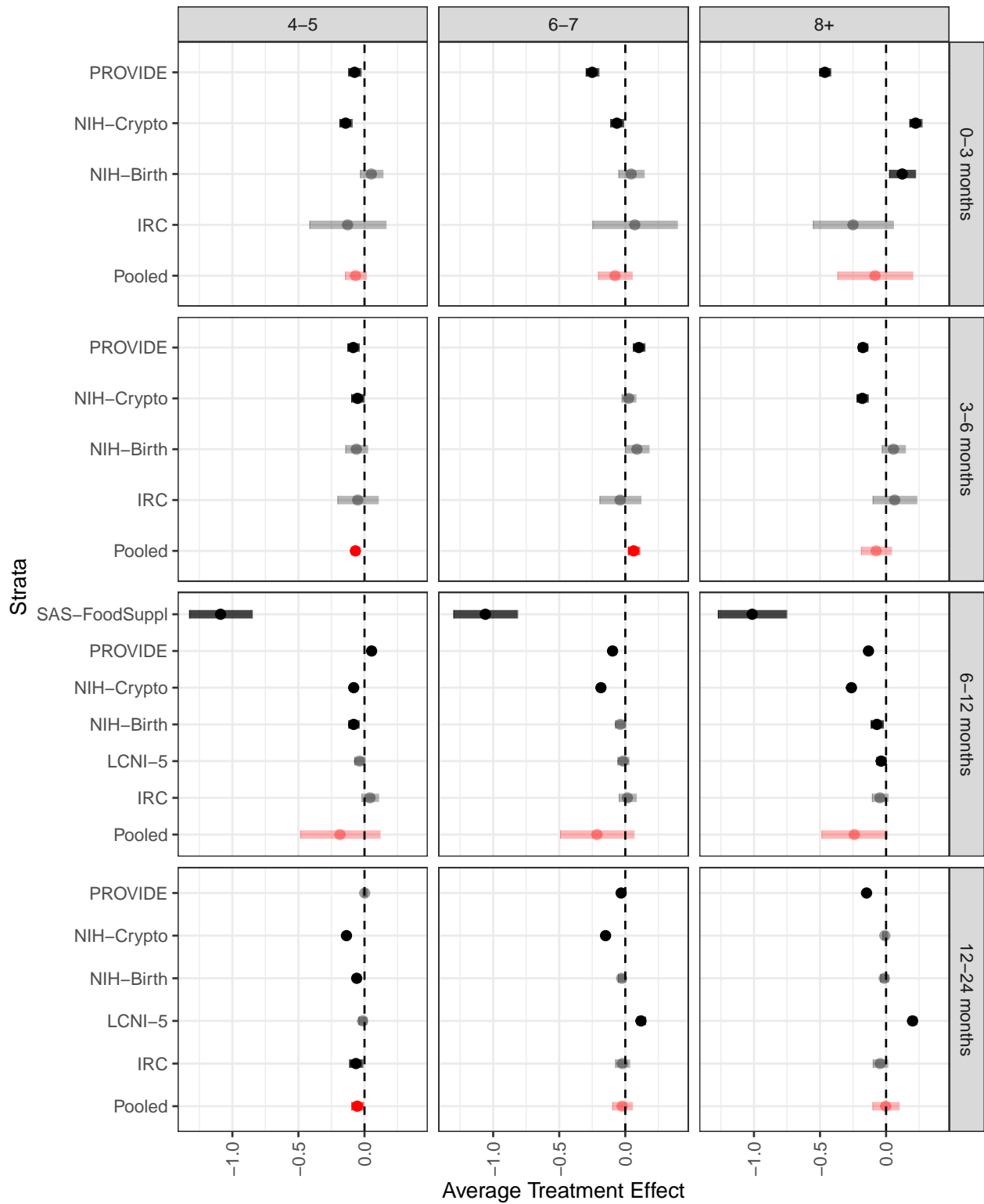




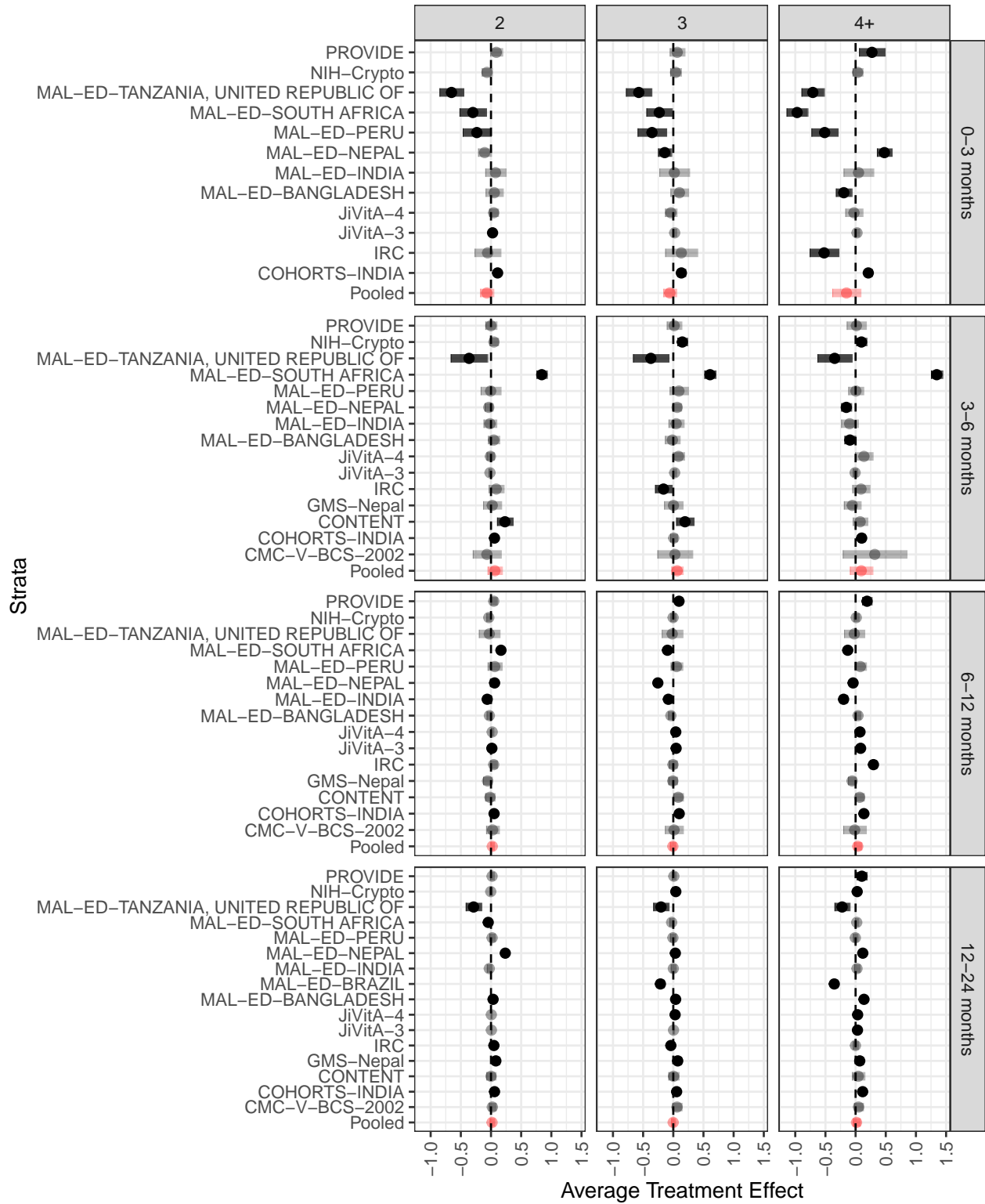
Number of children in the household under 5 years
reference level:1



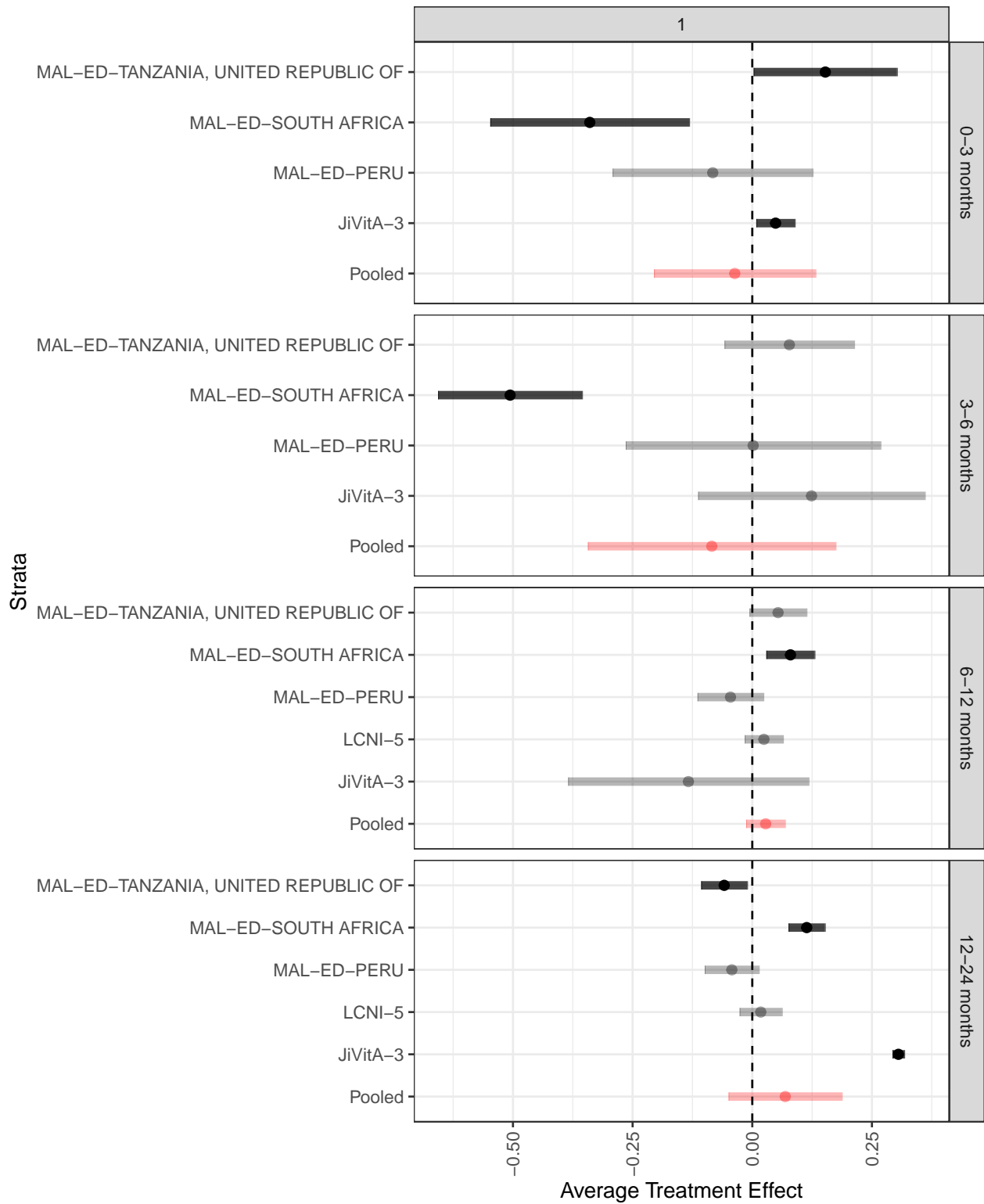
Number of people in the household
reference level:3 or less

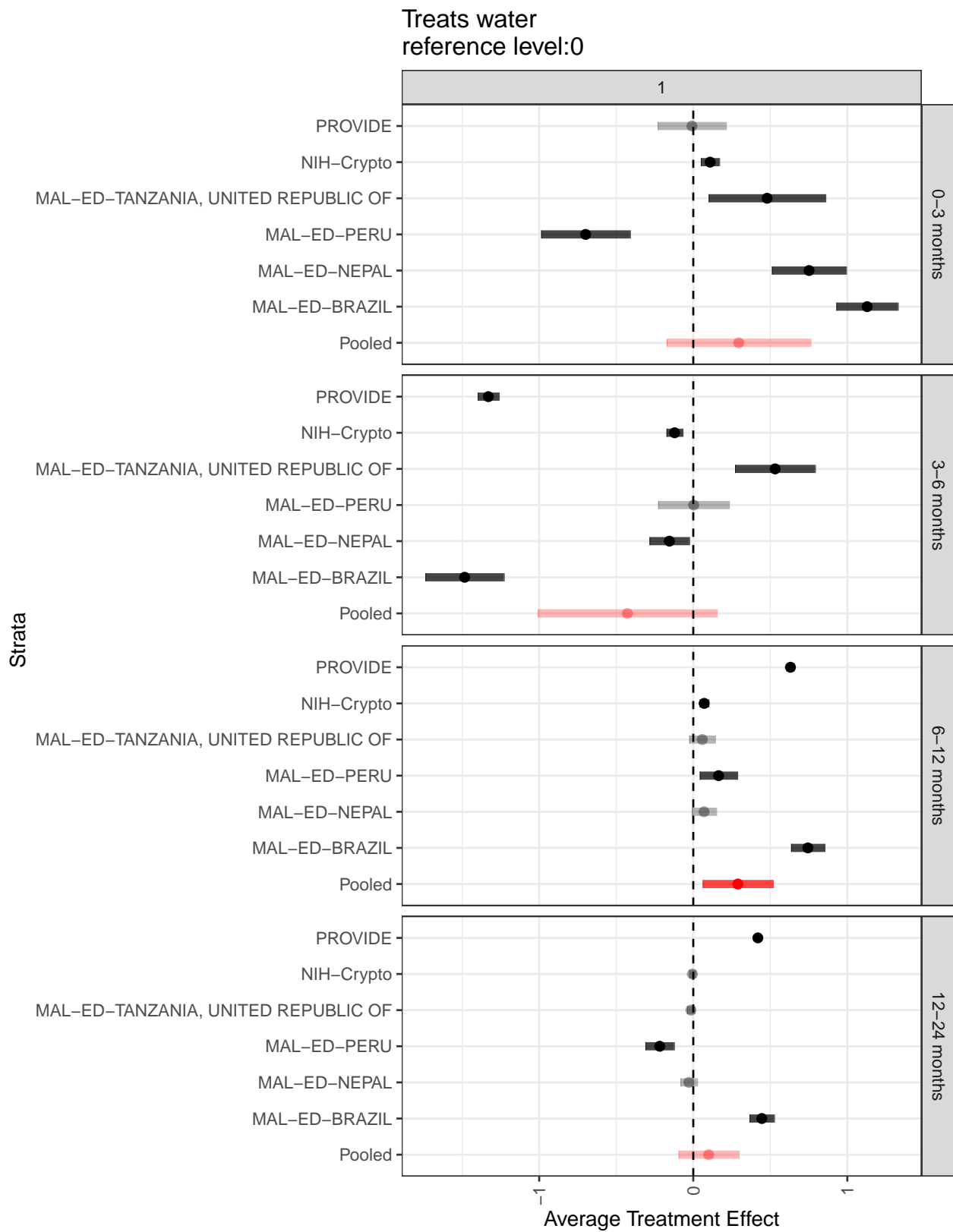


Number of rooms in household
reference level:1

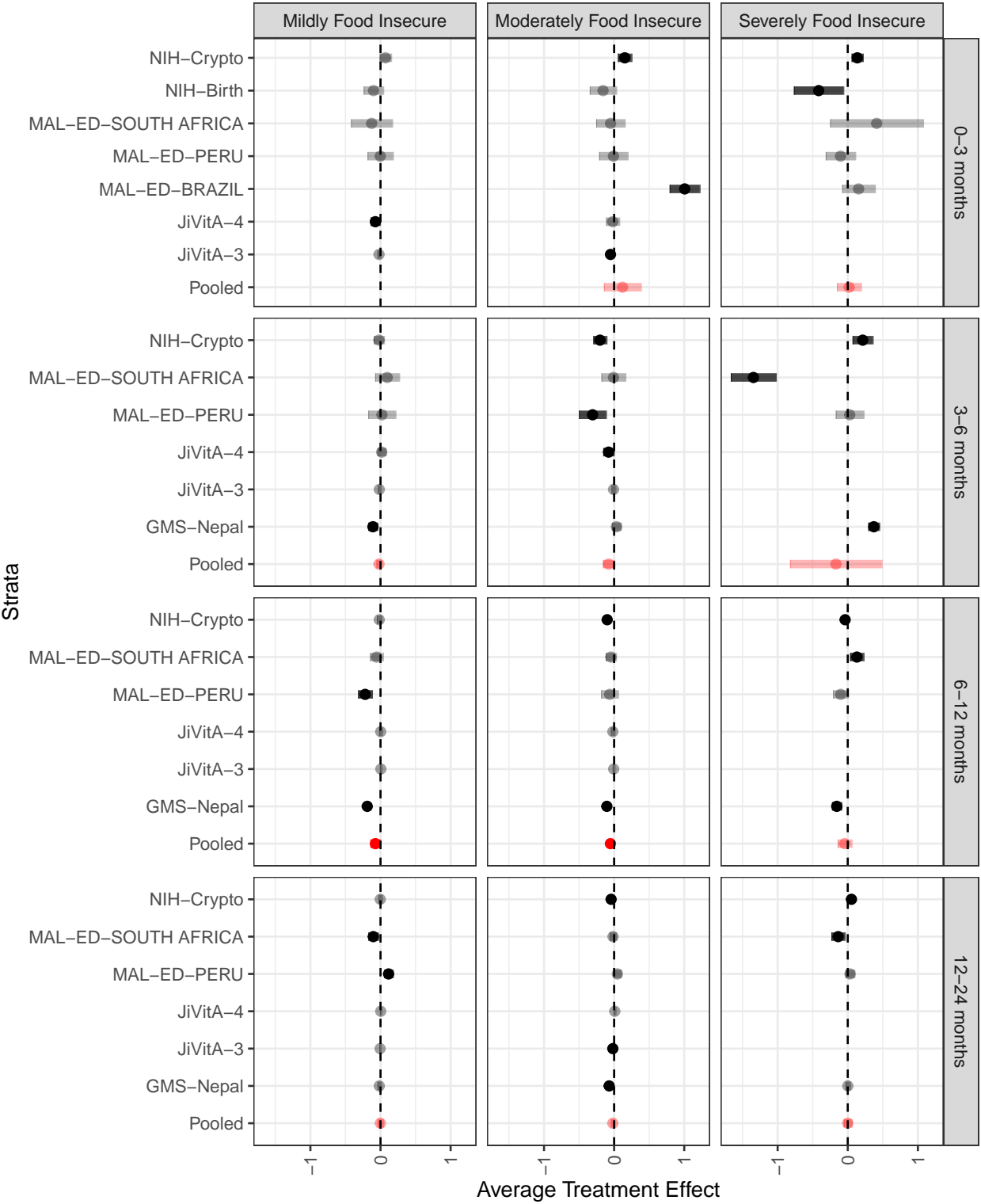


Safe water
reference level:0

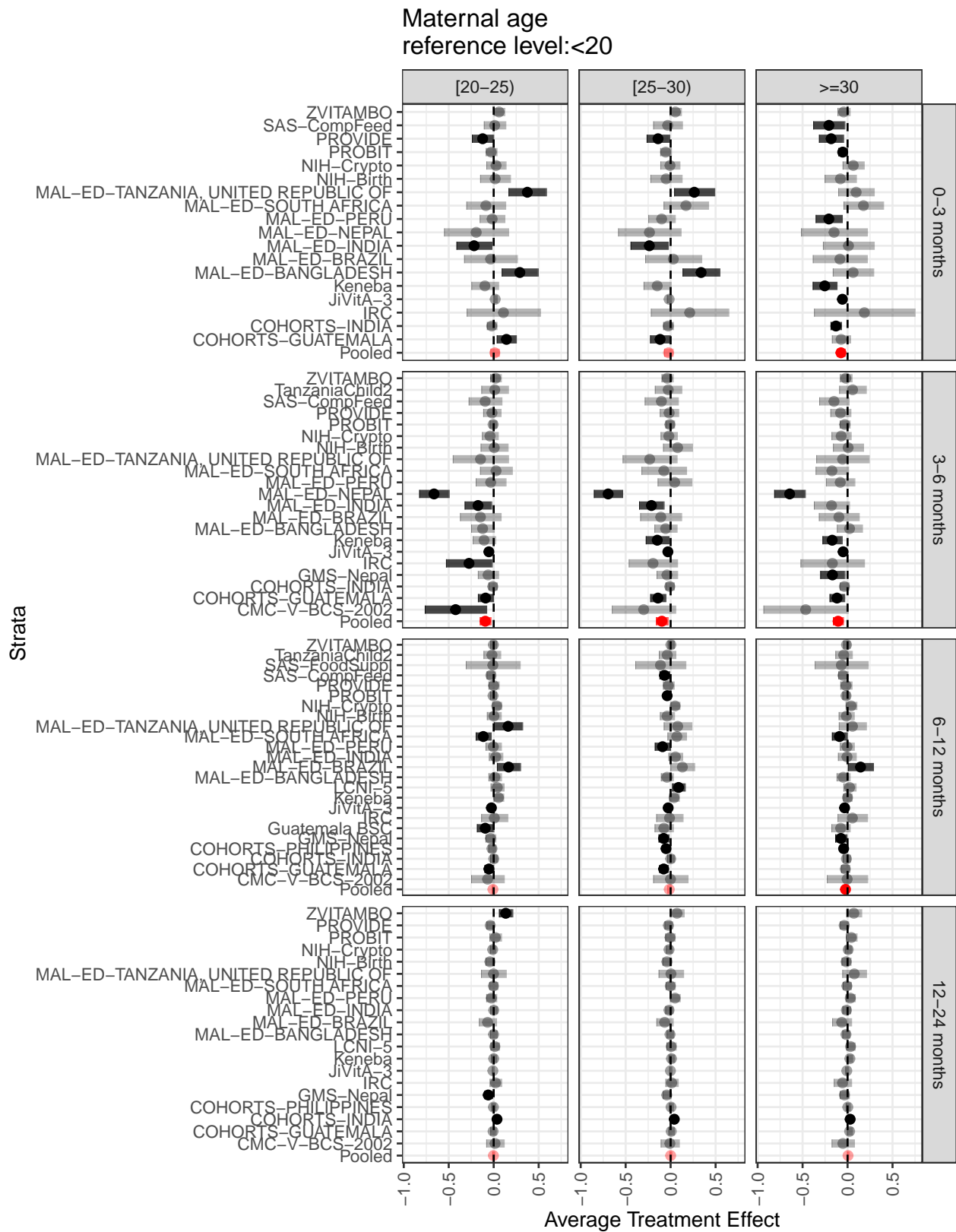




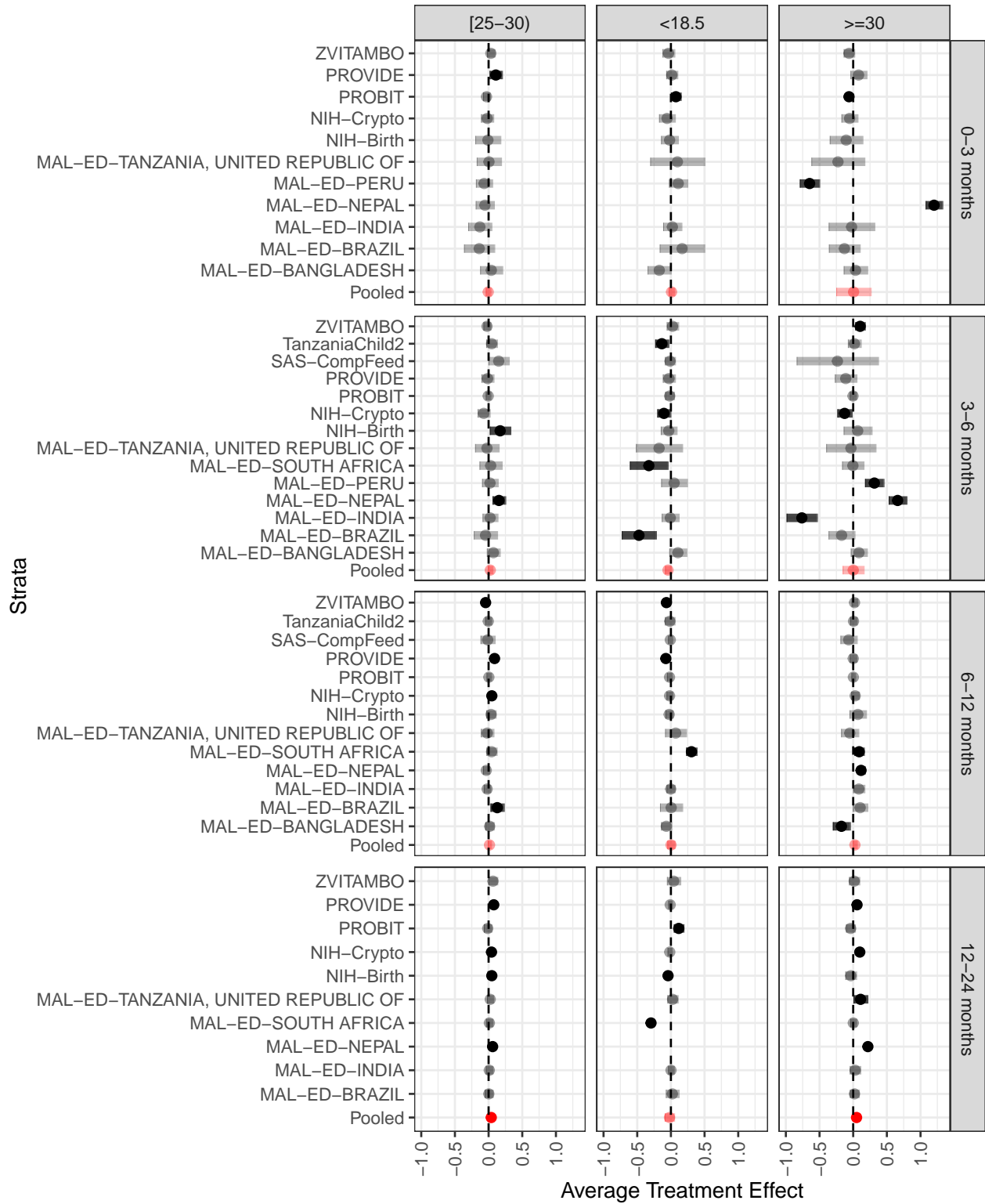
USAID Household Food Insecurity Access Scale (HFIAS) category
reference level: Food Secure



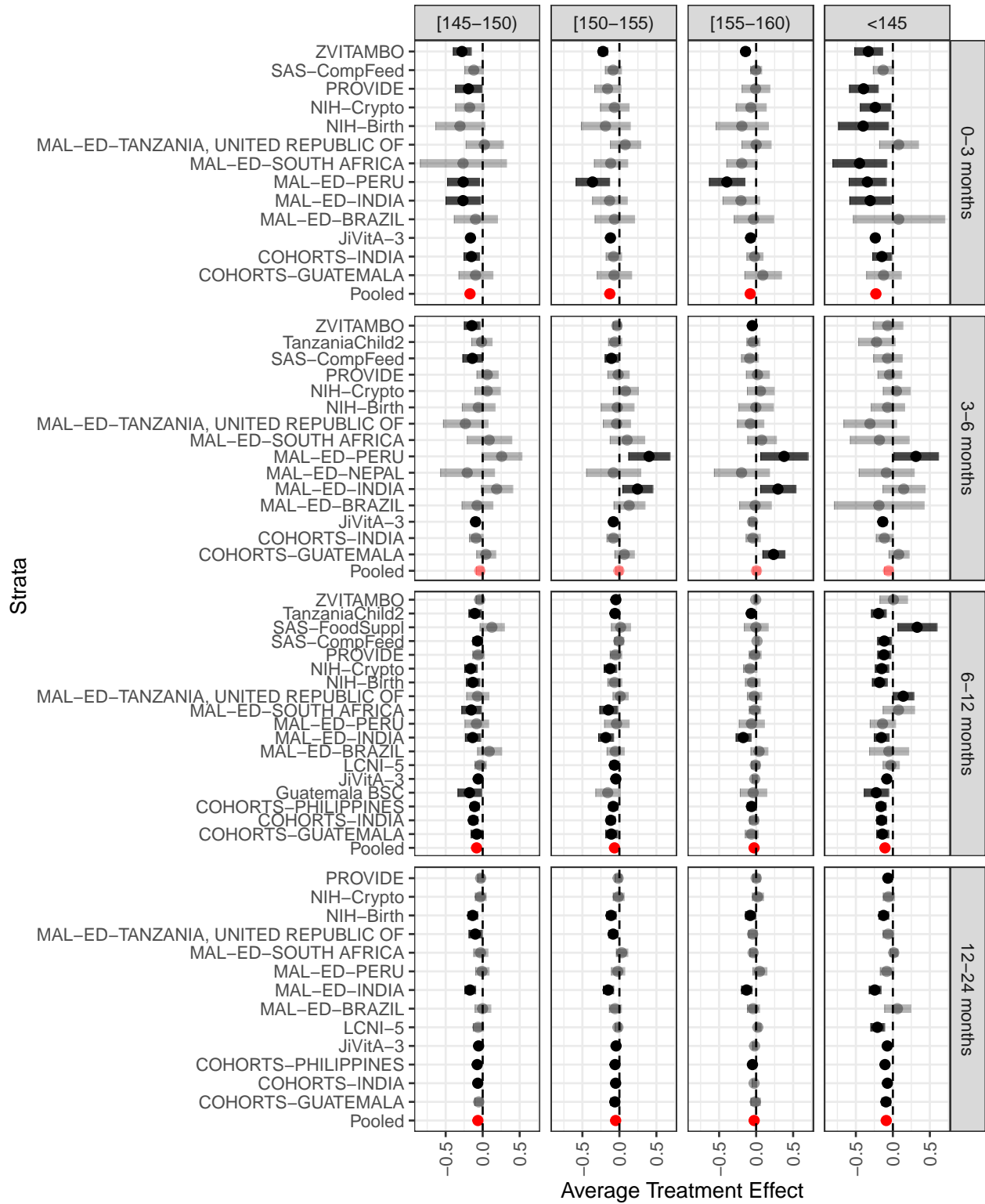
Maternal characteristics

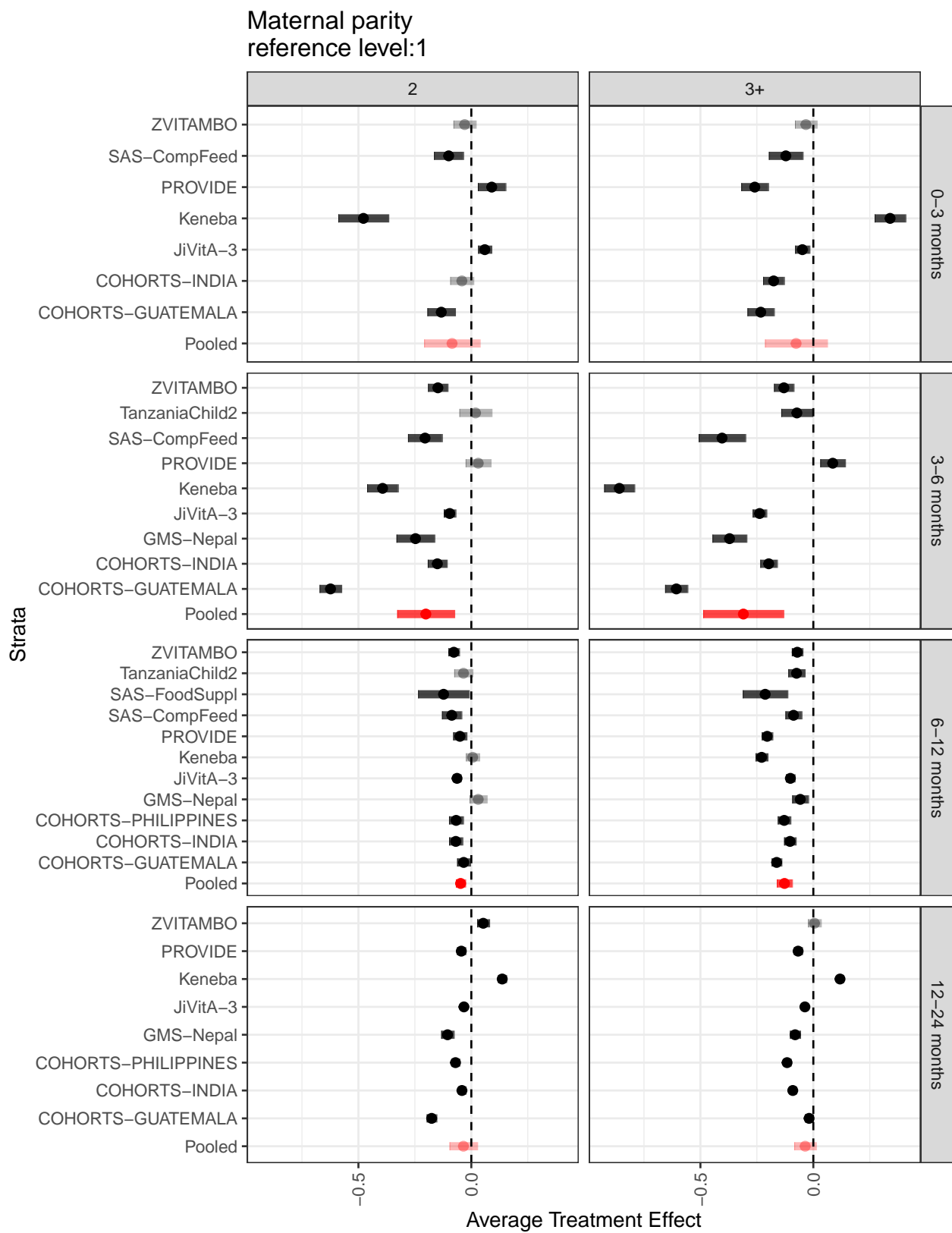


Maternal BMI
reference level:[18.5–25)

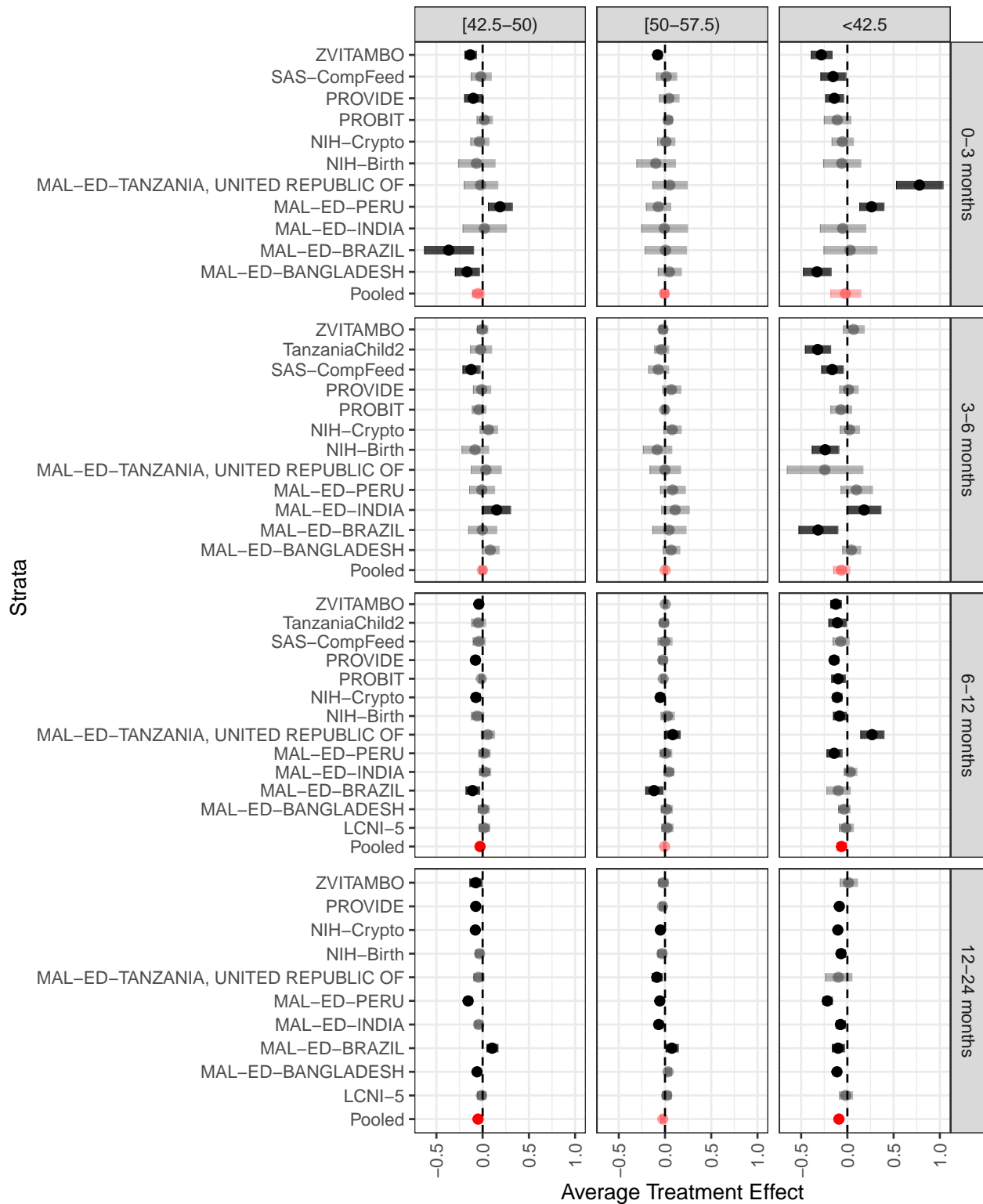


Maternal height
reference level: ≥ 160

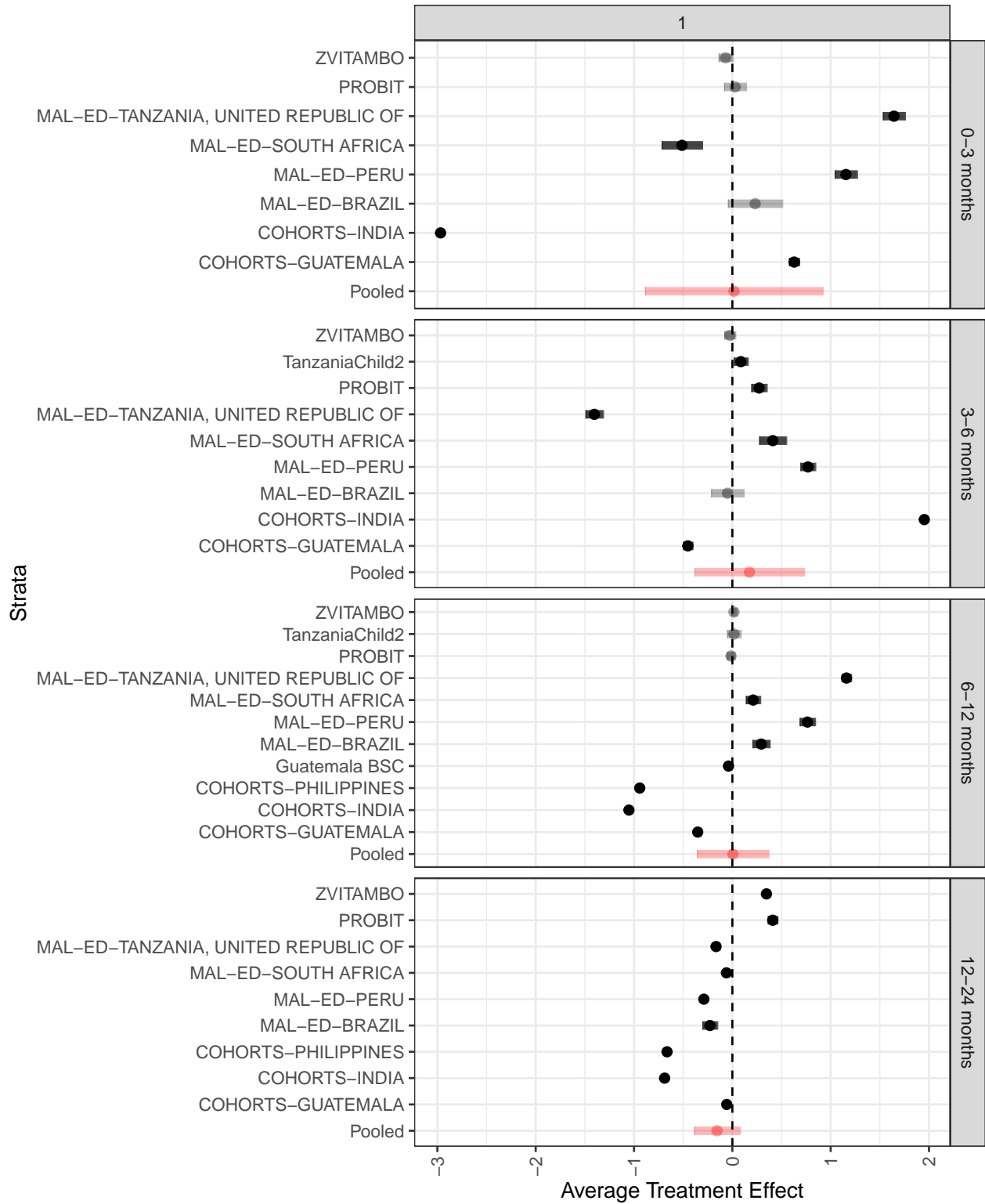




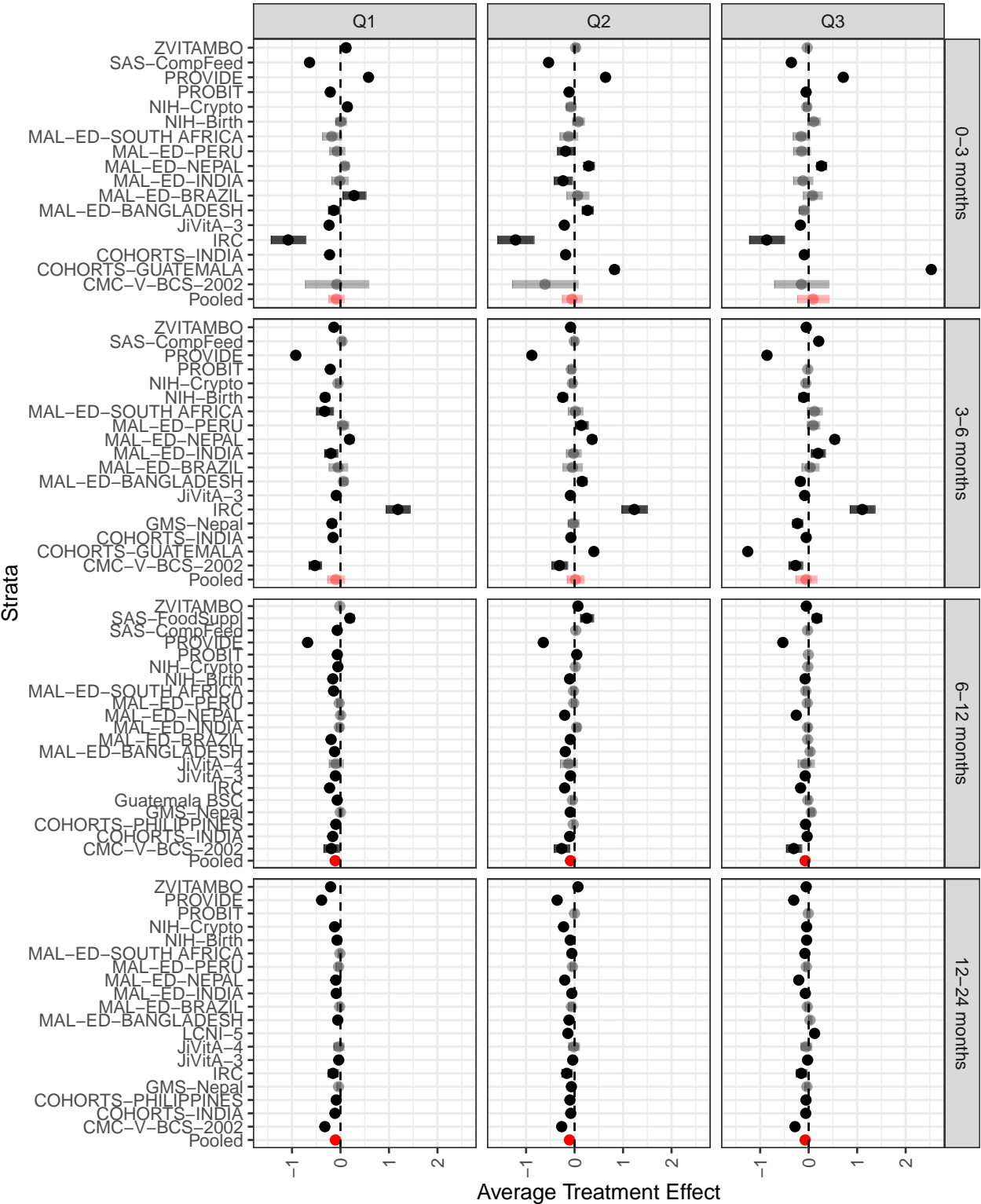
Maternal weight
reference level: ≥ 57.5



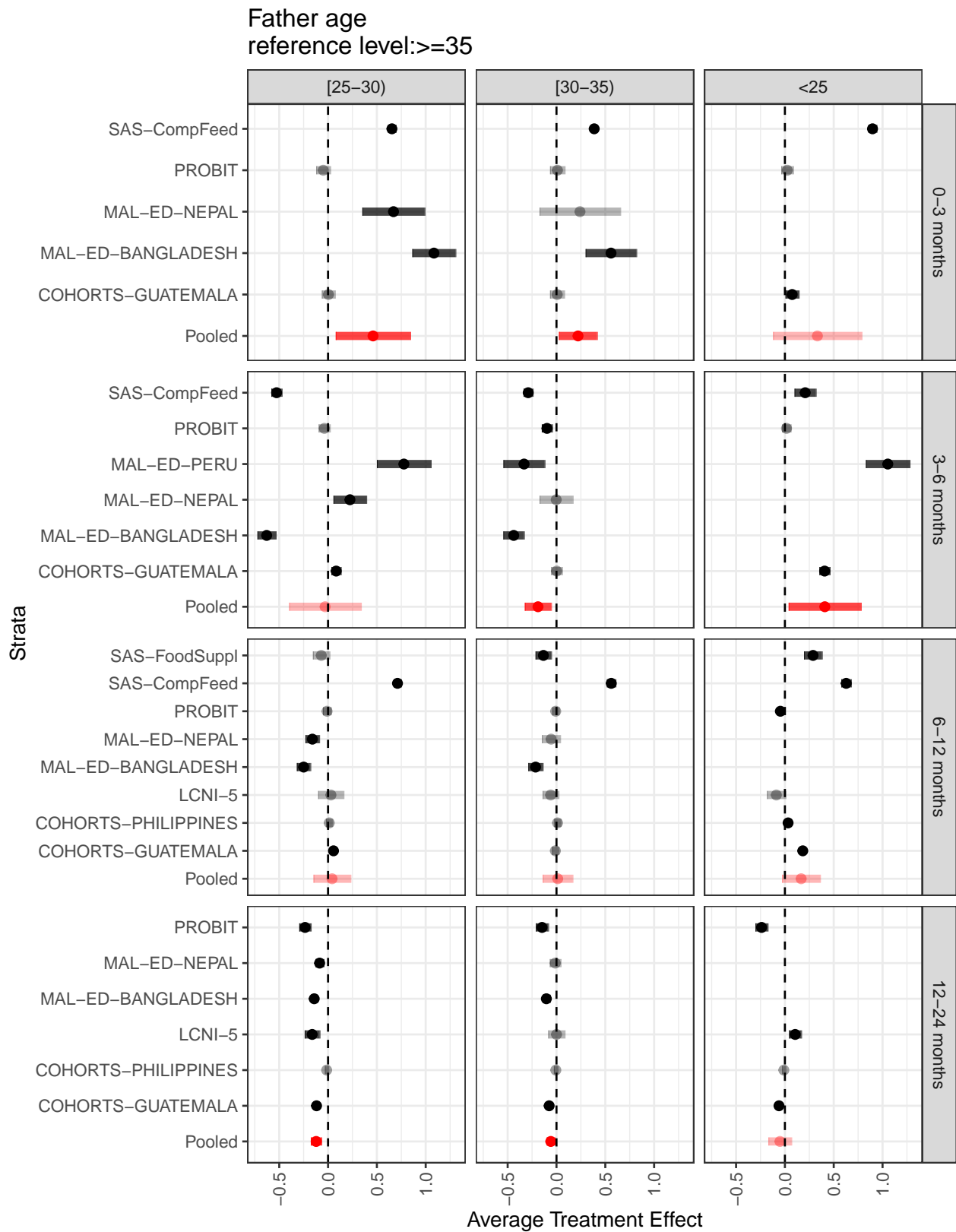
Mother is unmarried
reference level:0



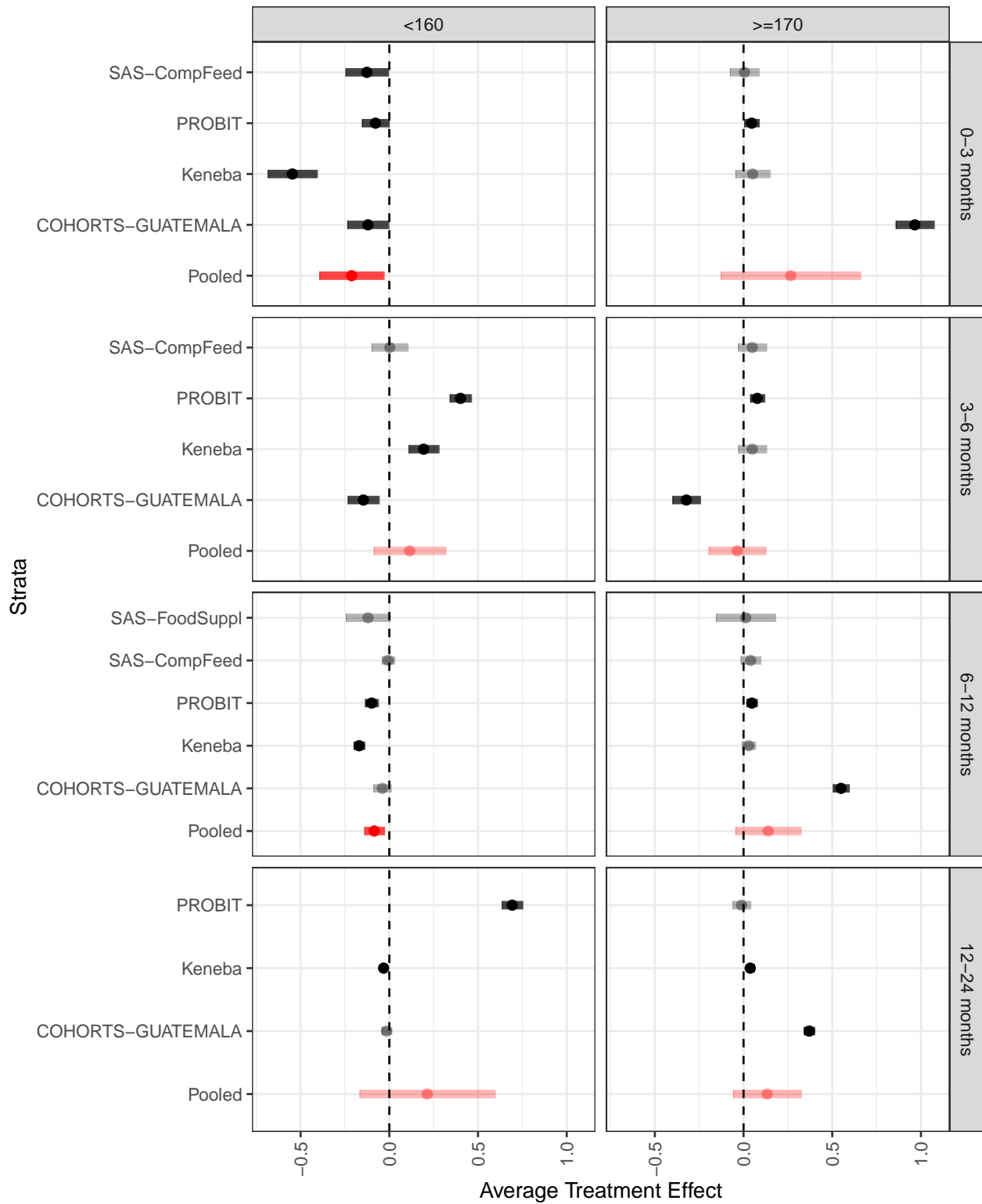
Mother's education
reference level:Q4



Paternal characteristics



Father height
reference level:[160–170)



Father's education
reference level:Q4

