

Protection provided by covid-19 vaccines and previous infection against the Omicron variant

Supplementary Material 2 – Results of Statistical Estimation

February 26, 2022, revised September 1, 2022

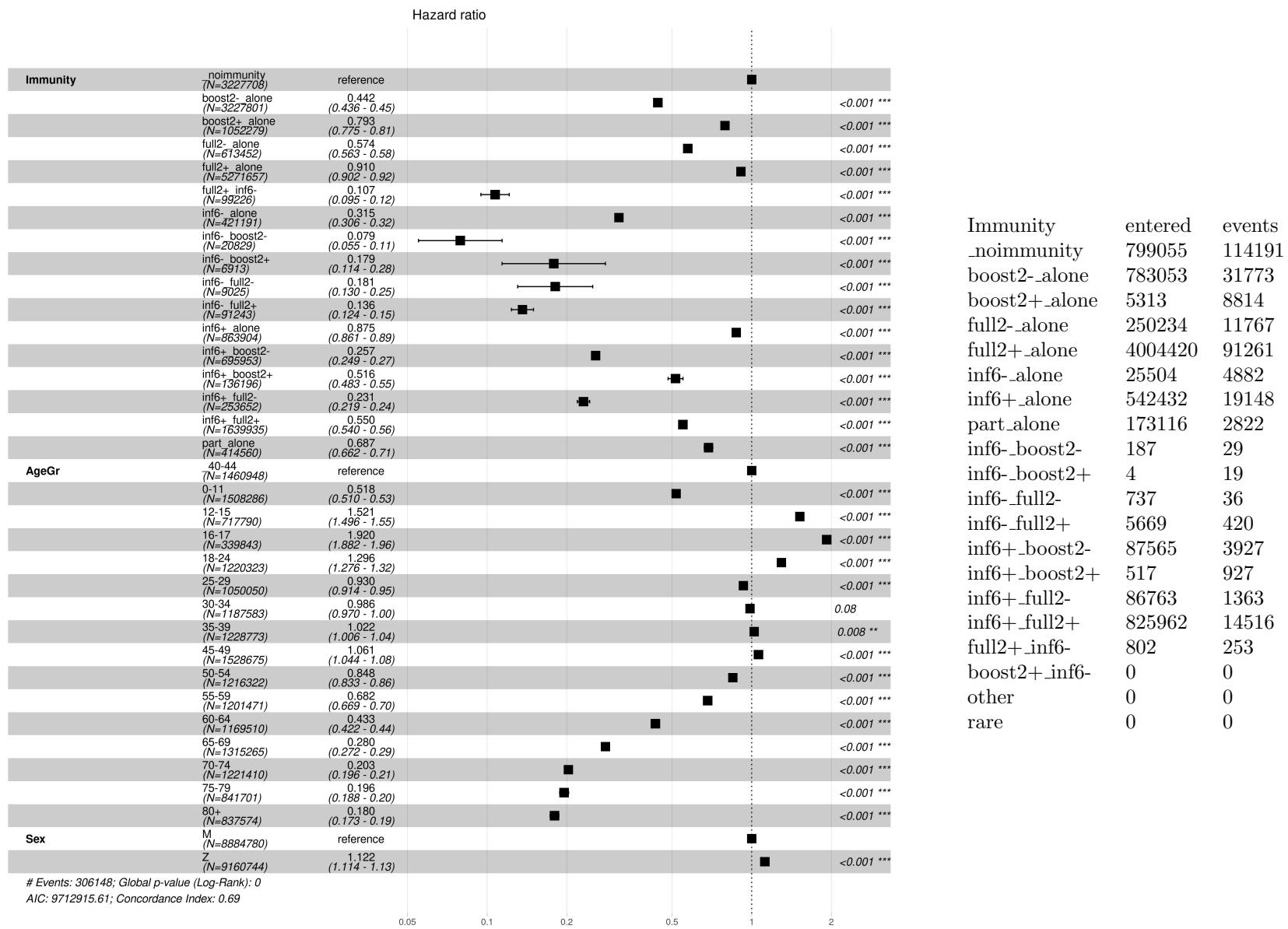
This material contains results of the analyses by Cox Regression (1–14,20) and by Logistic Regression (15–19).

Cox Regression The report from a Cox Regression contains a forest plot and a descriptive statistic of involved covariates. The forest plot displays the estimates of the hazard rates corresponding to individual categories of the covariates and their confidence intervals. Below each category name, the number N of input records containing the category is displayed. For each covariate other than AgeGr and Sex, there is a table of categories with the number of subjects from the Institute of Health Information and Statistics database finding themselves in the category at time zero (column Entered) and the number of individuals, suffering the outcome while being in the category (column Events).¹

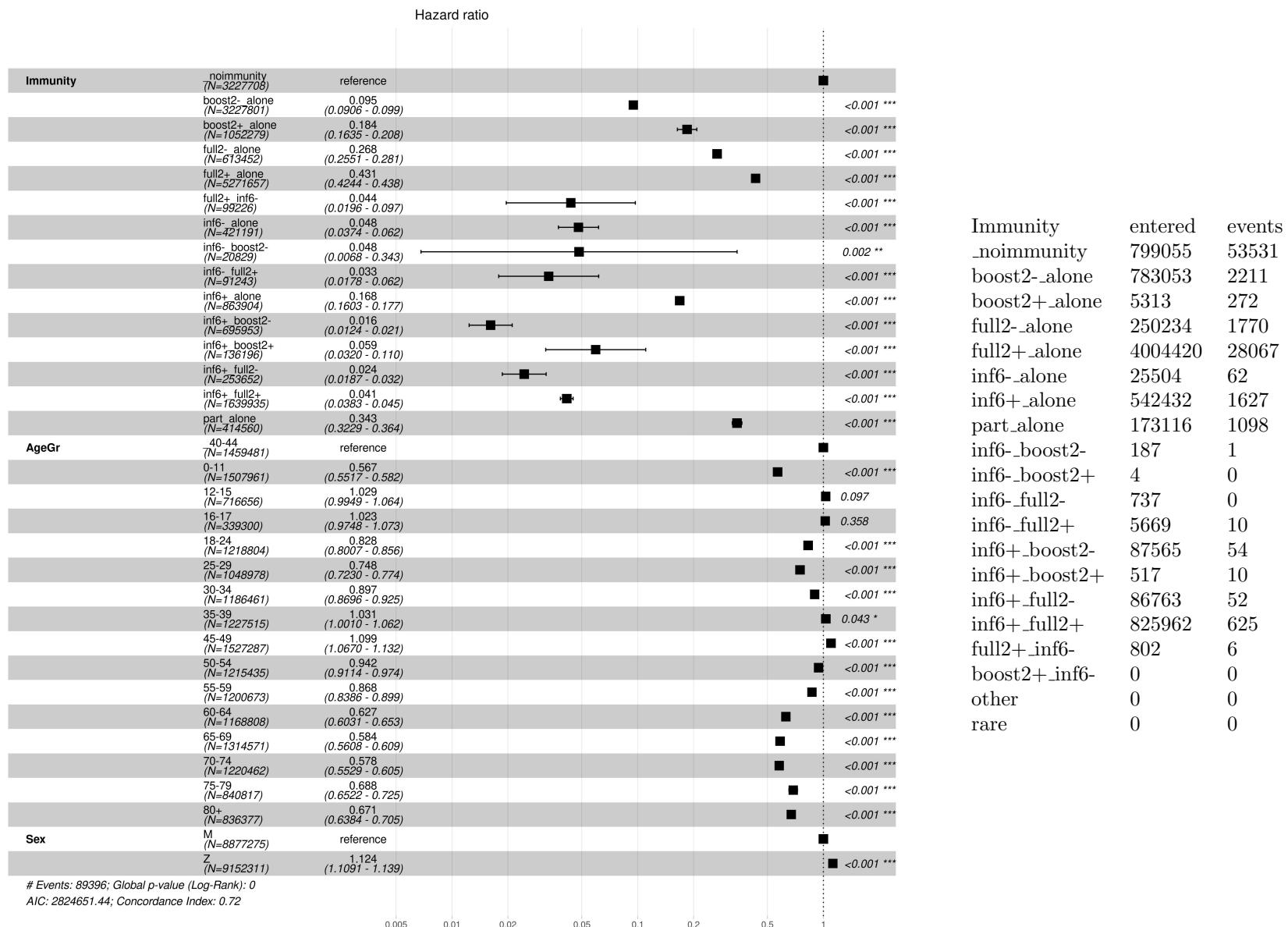
Logistic Regression The results of logistic Regressions include forest plots of individual covariates and, in particular, the odds ratios of the Omicron and the Delta variant (row Variant).

¹It can happen that the Entered value is less than the Events one. For instance, as boosters started to be administrated as late as in October 21, only a small number found themselves in the category `boost2 + _alone` at the beginning of the study. At the end of the period, on the other hand, there were more than one million people in the category (more than 61 days from the booster), so the number of event could be higher.

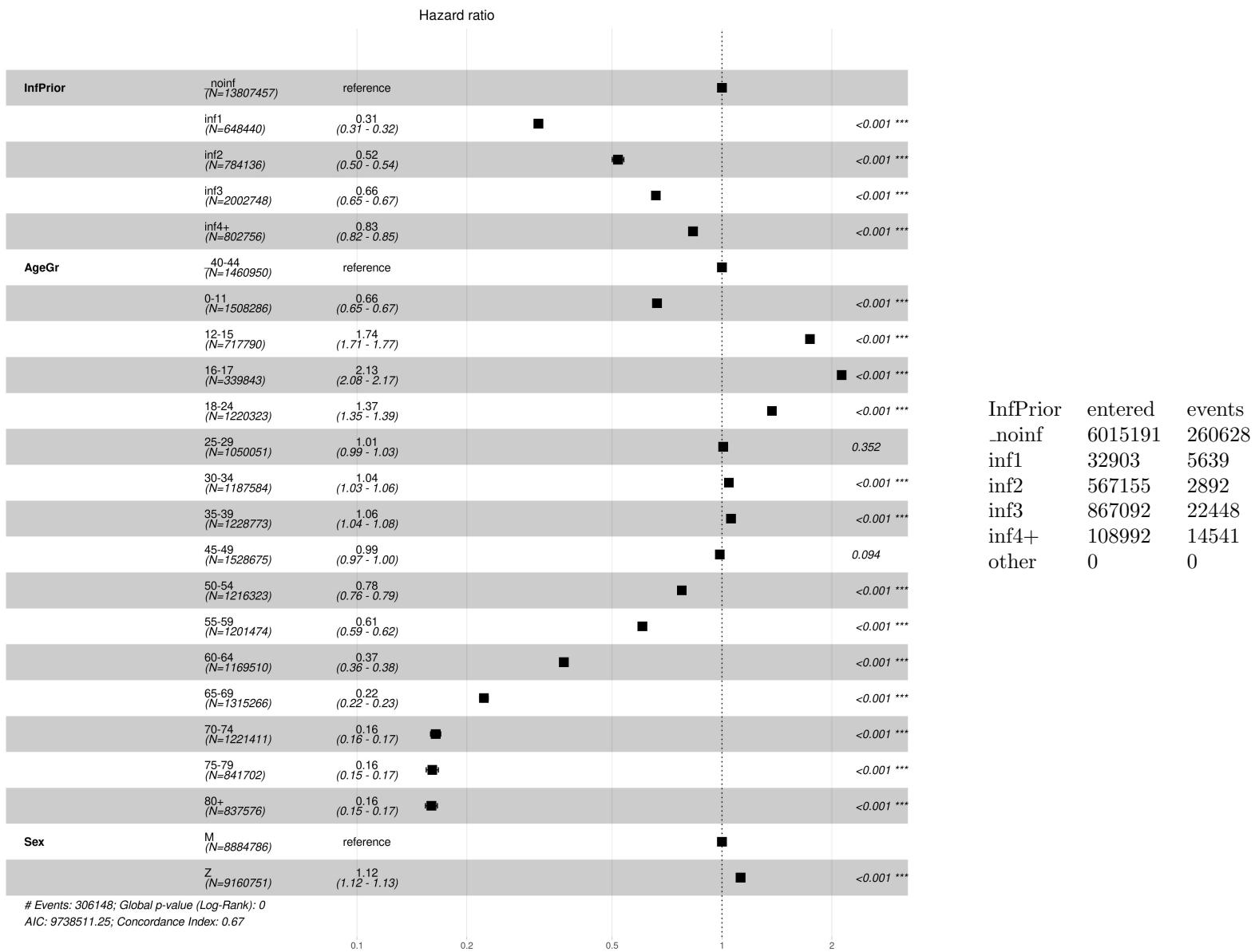
1 Infections – Omicron



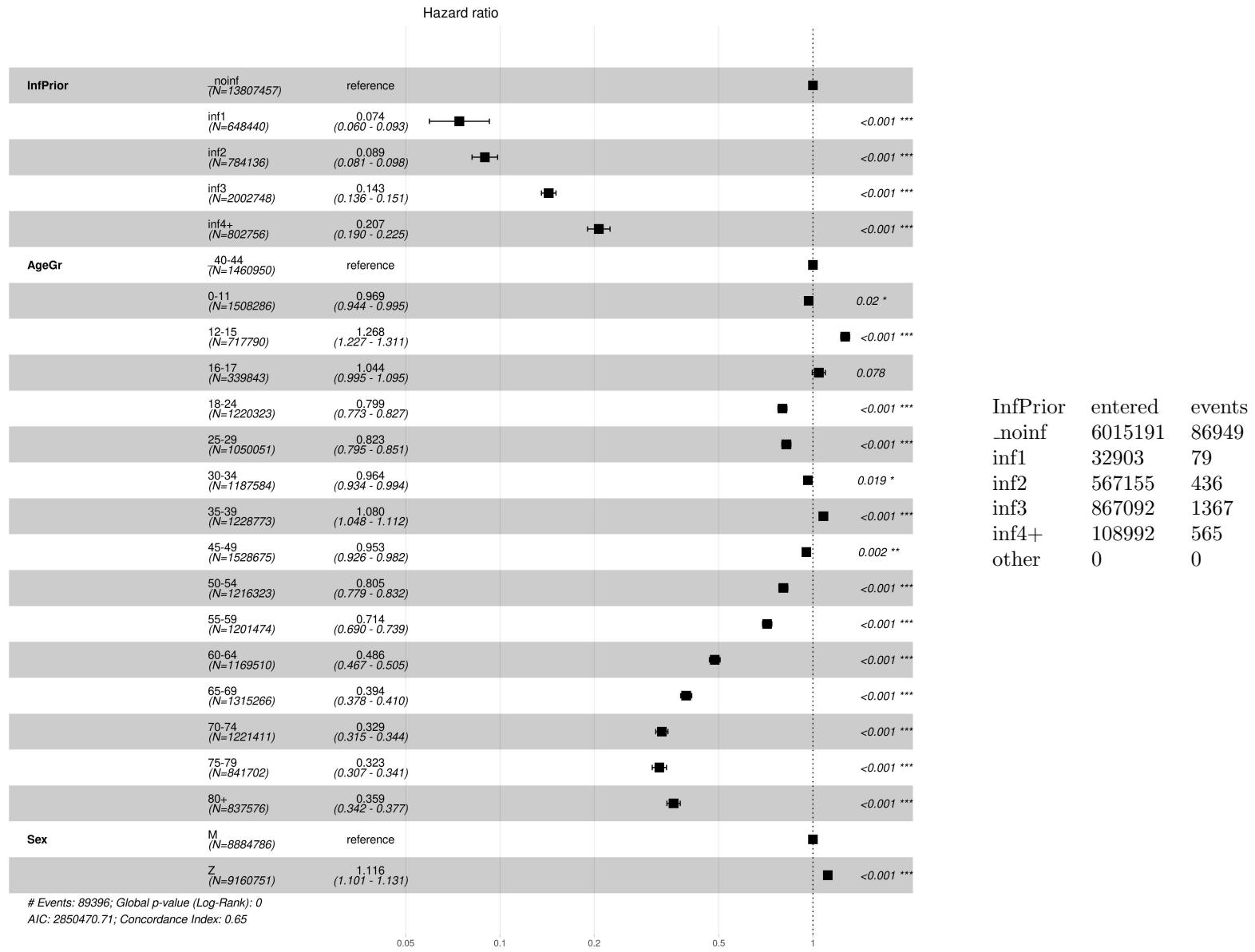
2 Infections – Delta



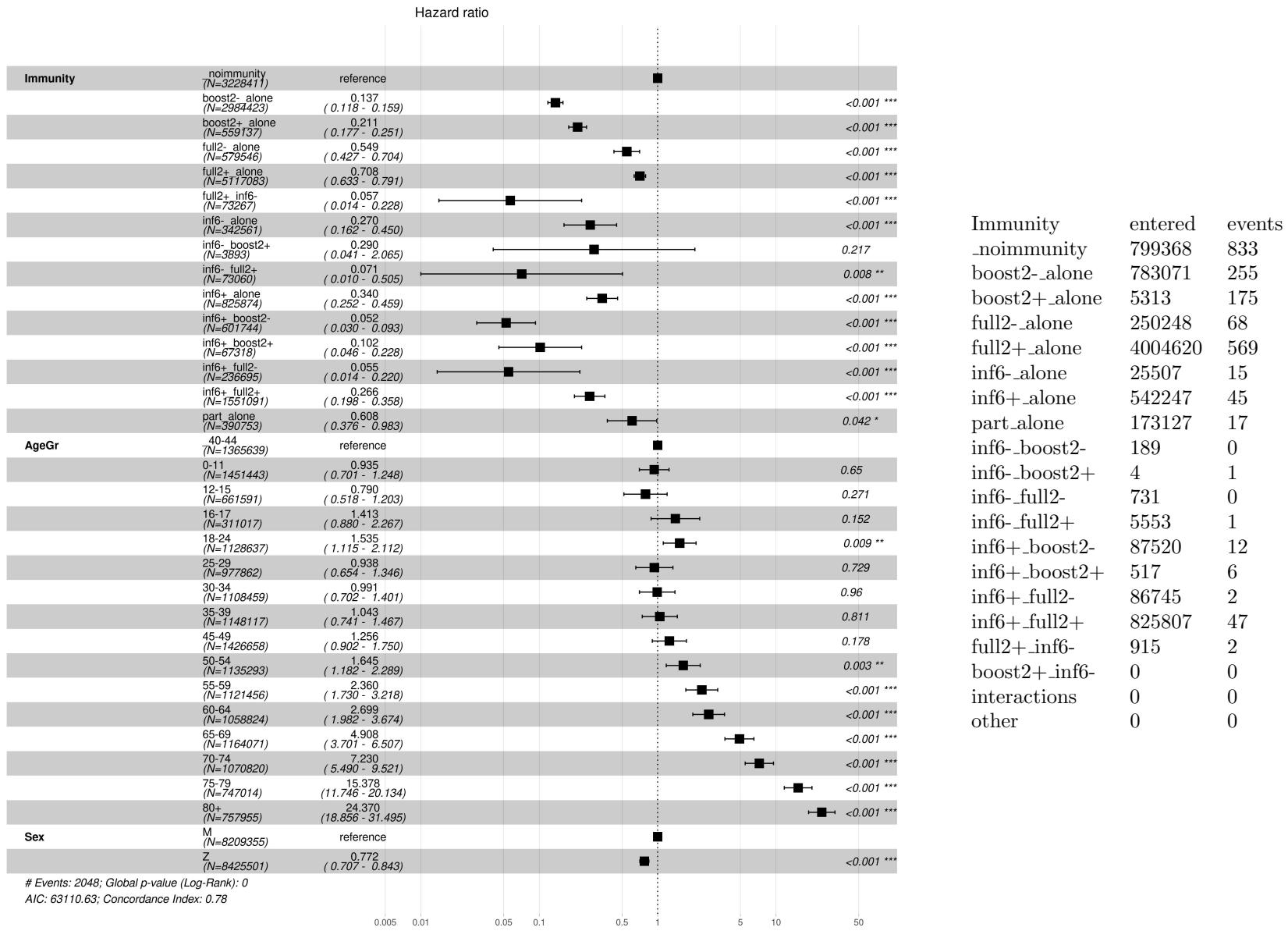
3 Protection by Infection – Omicron



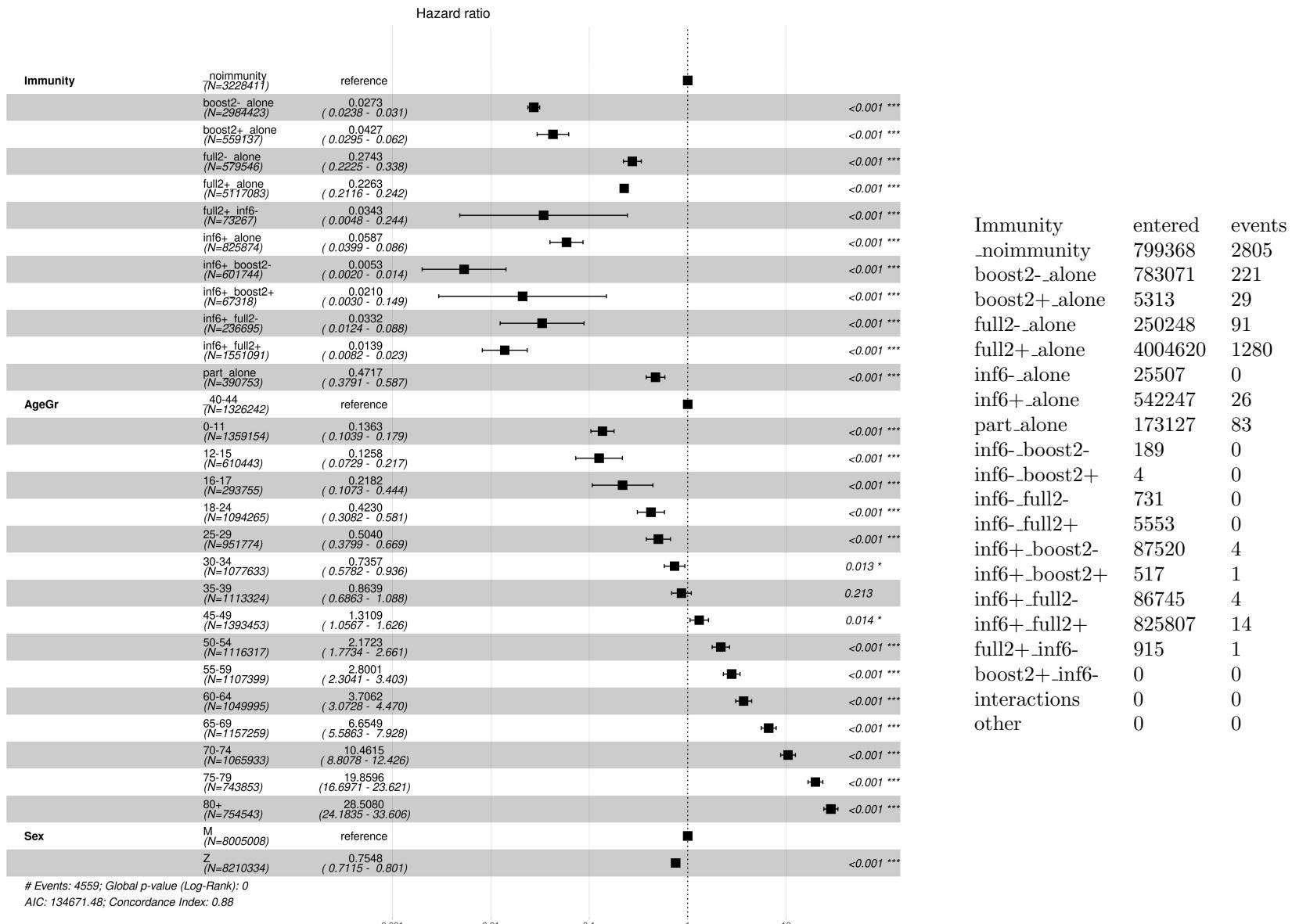
4 Protection by Infection – Delta



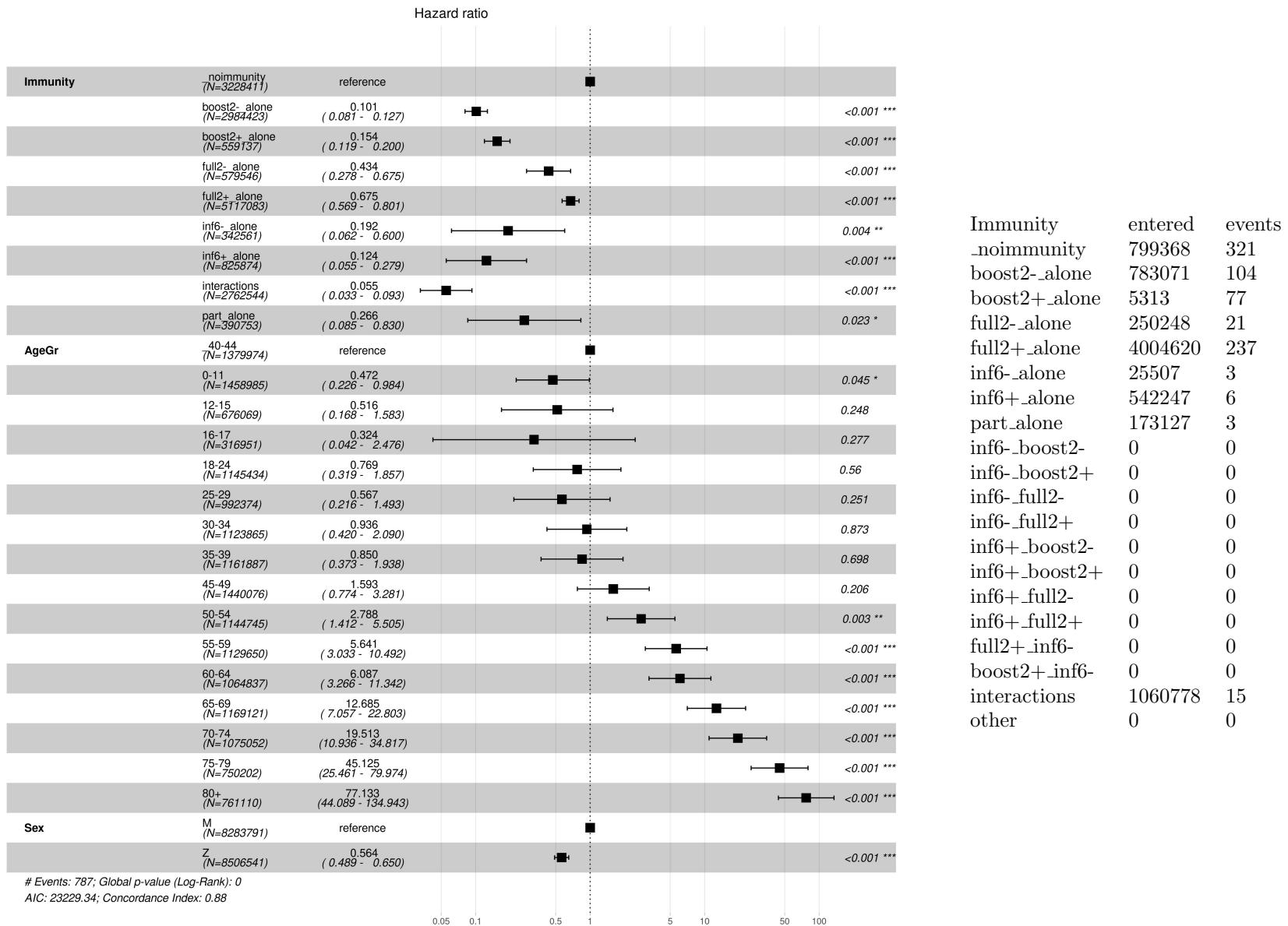
5 Hospitalizations – Omicron



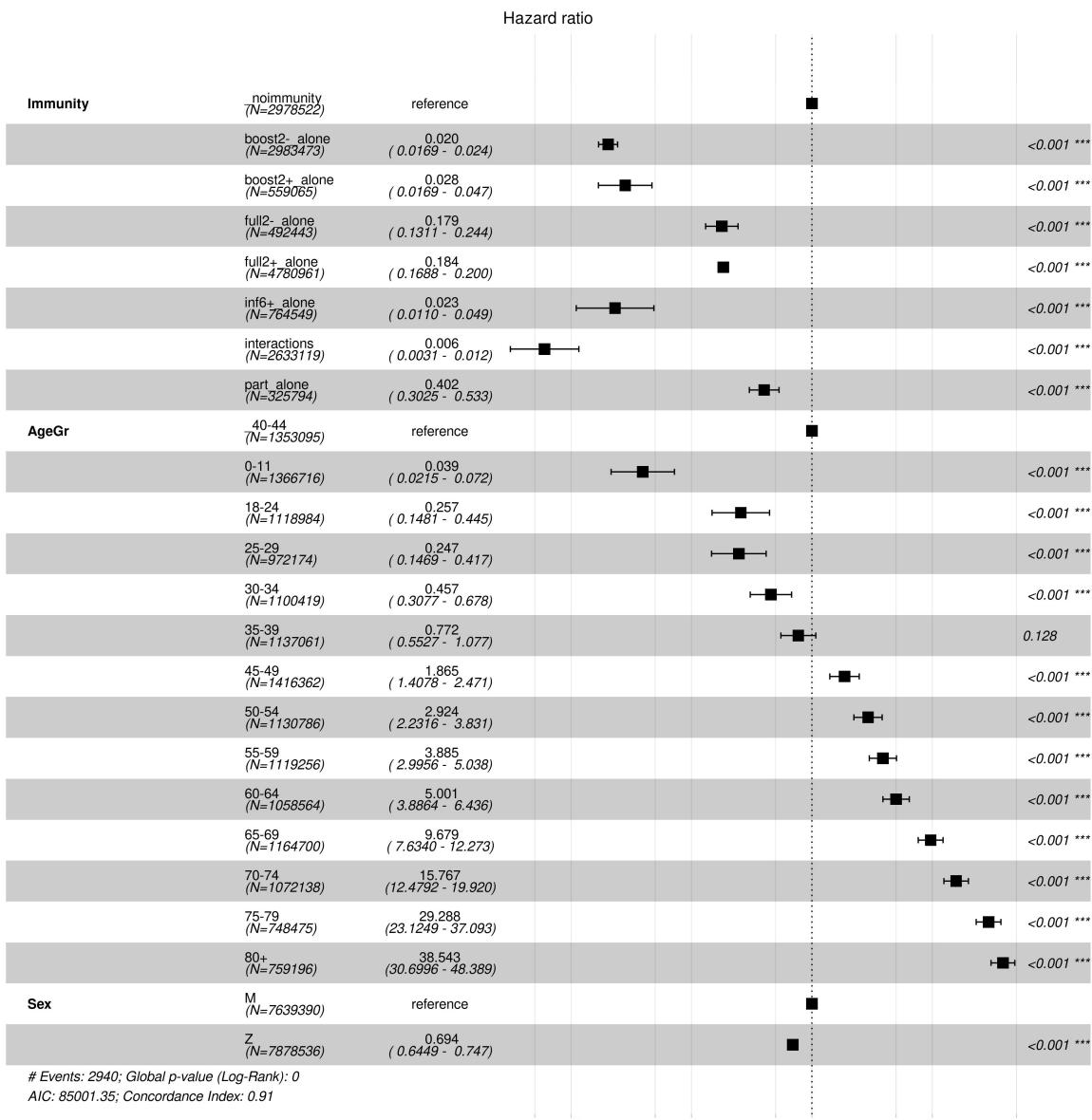
6 Hospitalizations – Delta



7 Oxygen therapy – Omicron



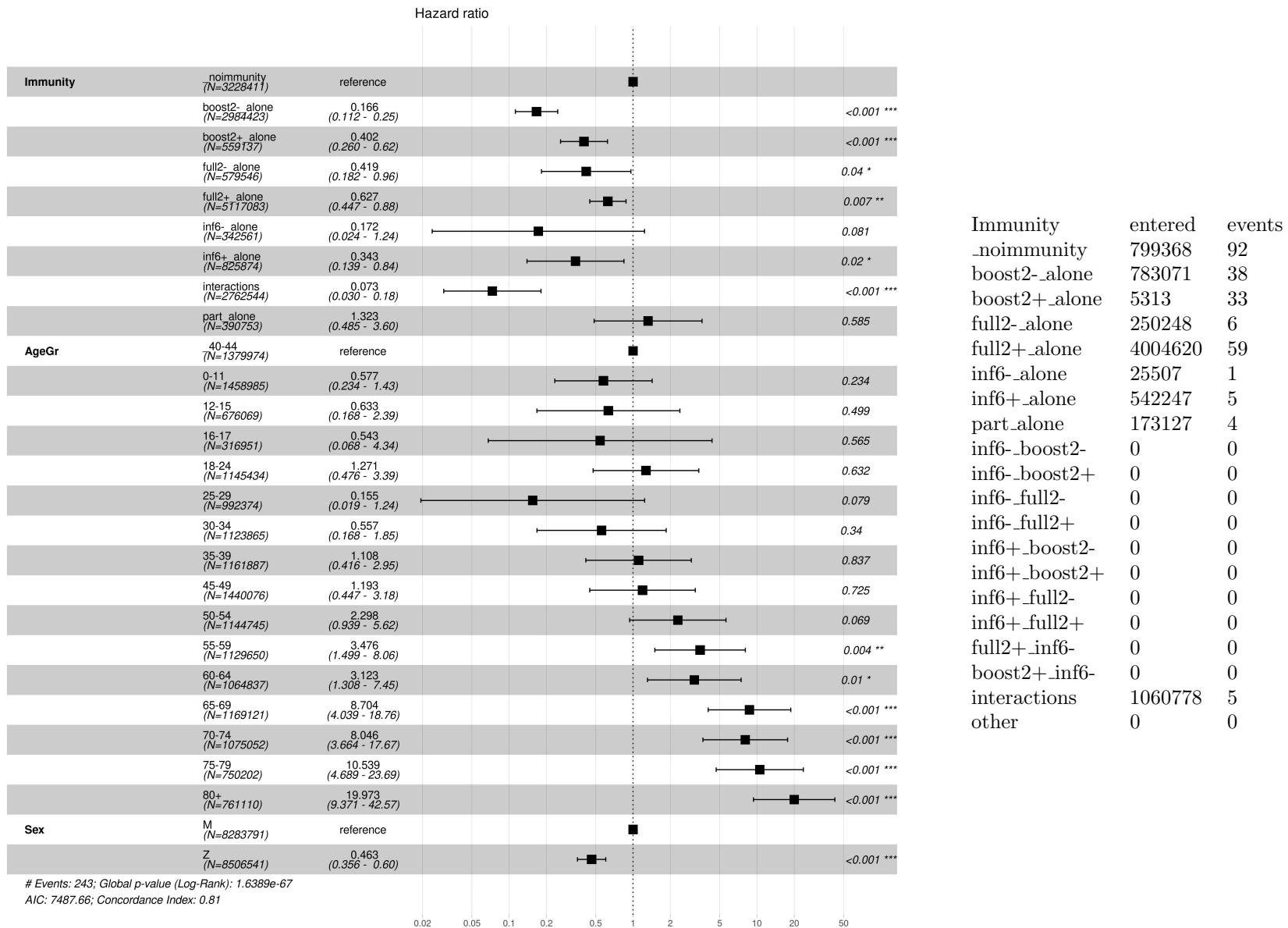
8 Oxygen therapy – Delta



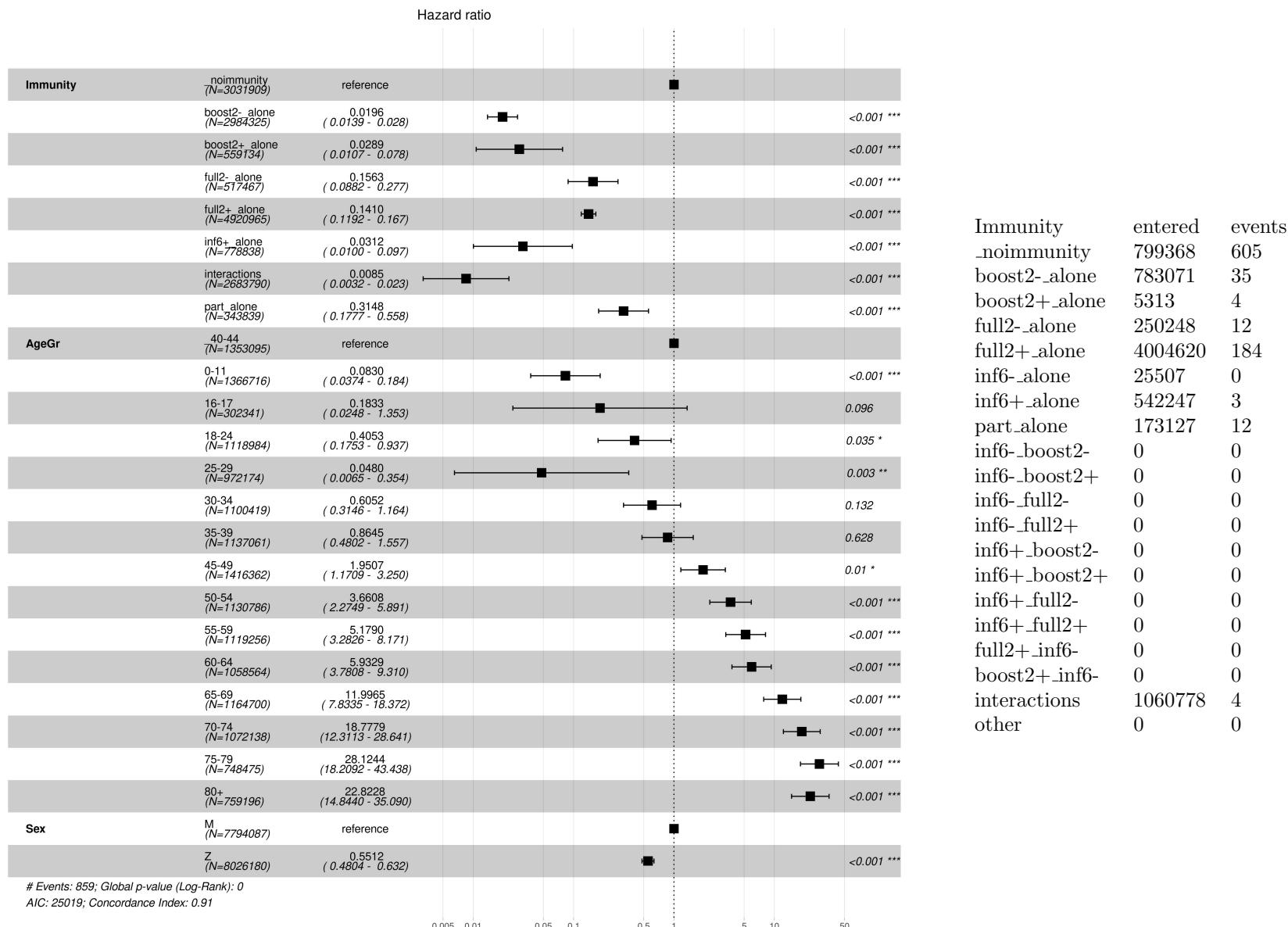
Events: 2940; Global p-value (Log-Rank): 0
AIC: 85001.35; Concordance Index: 0.91

Immunity	entered	events
_noimmunity	799368	1939
boost2-alone	783071	126
boost2+_alone	5313	15
full2-alone	250248	41
full2+_alone	4004620	754
inf6-alone	25507	0
inf6+_alone	542247	7
part-alone	173127	49
inf6-boost2-	0	0
inf6-boost2+	0	0
inf6_full2-	0	0
inf6_full2+	0	0
inf6+_boost2-	0	0
inf6+_boost2+	0	0
inf6+_full2-	0	0
inf6+_full2+	0	0
full2+_inf6-	0	0
boost2+_inf6-	0	0
interactions	1060778	9
other	0	0

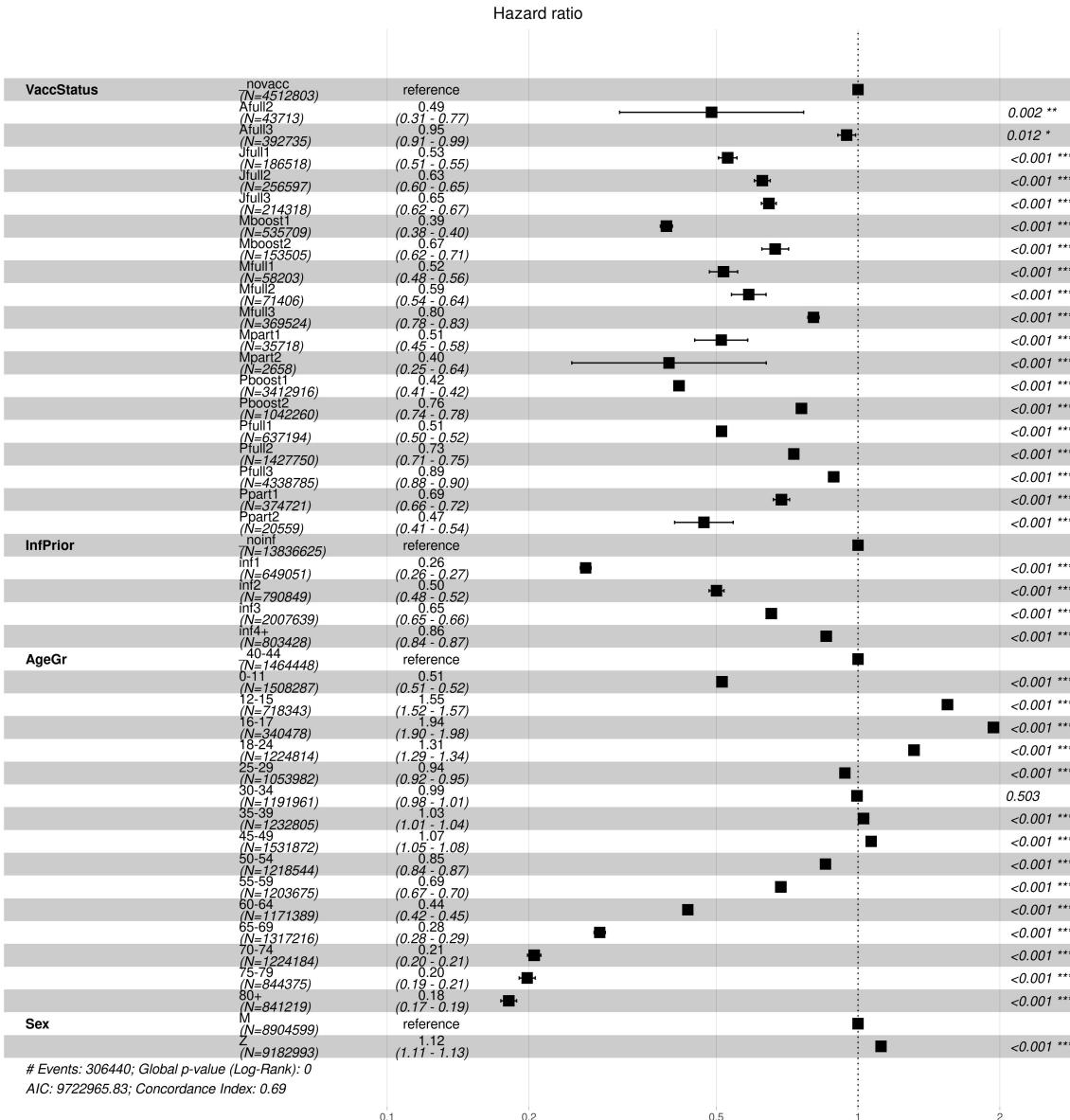
9 ICU therapy – Omicron



10 ICU therapy – Delta

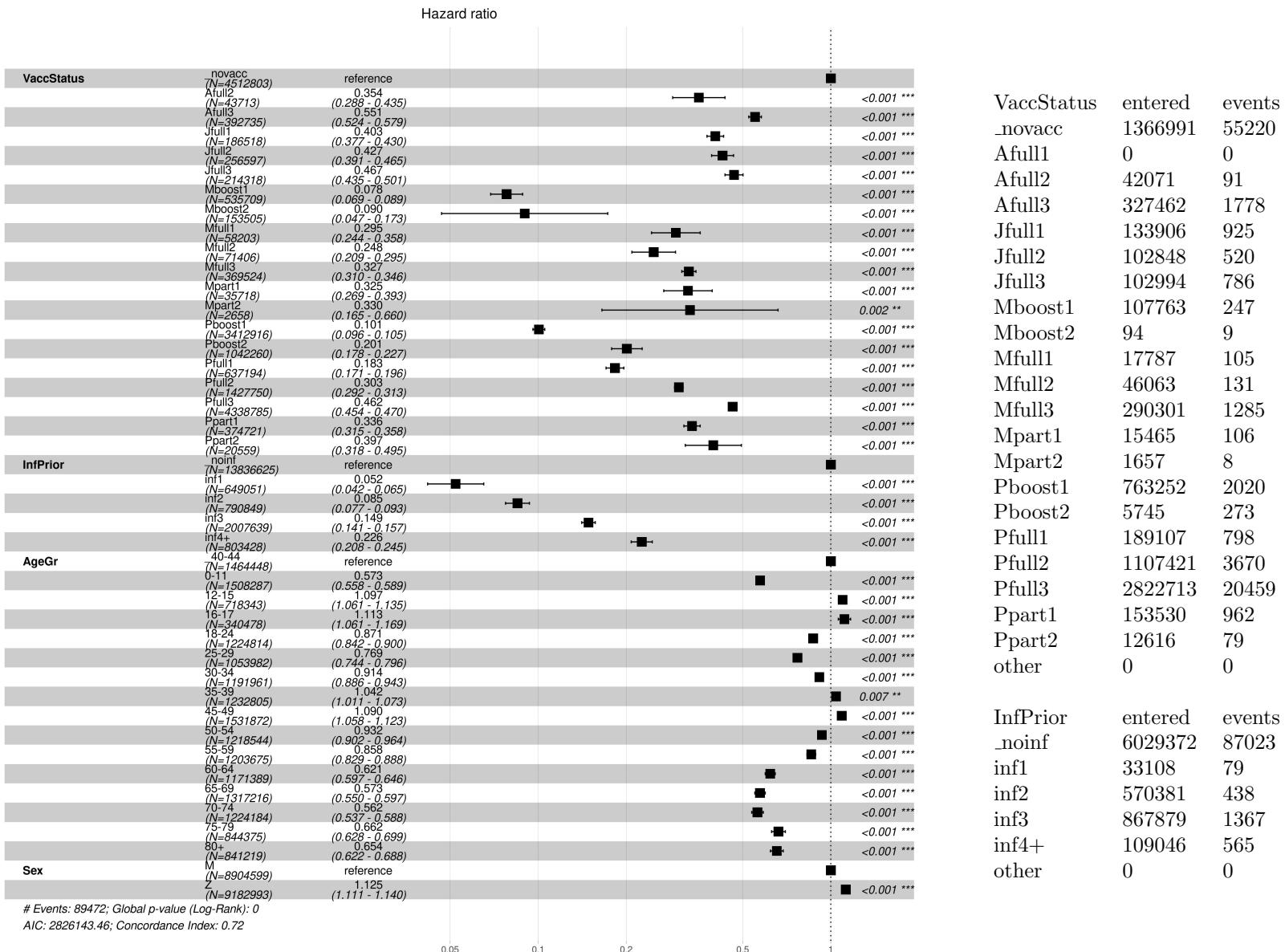


11 Infections by Vaccines - Omicron

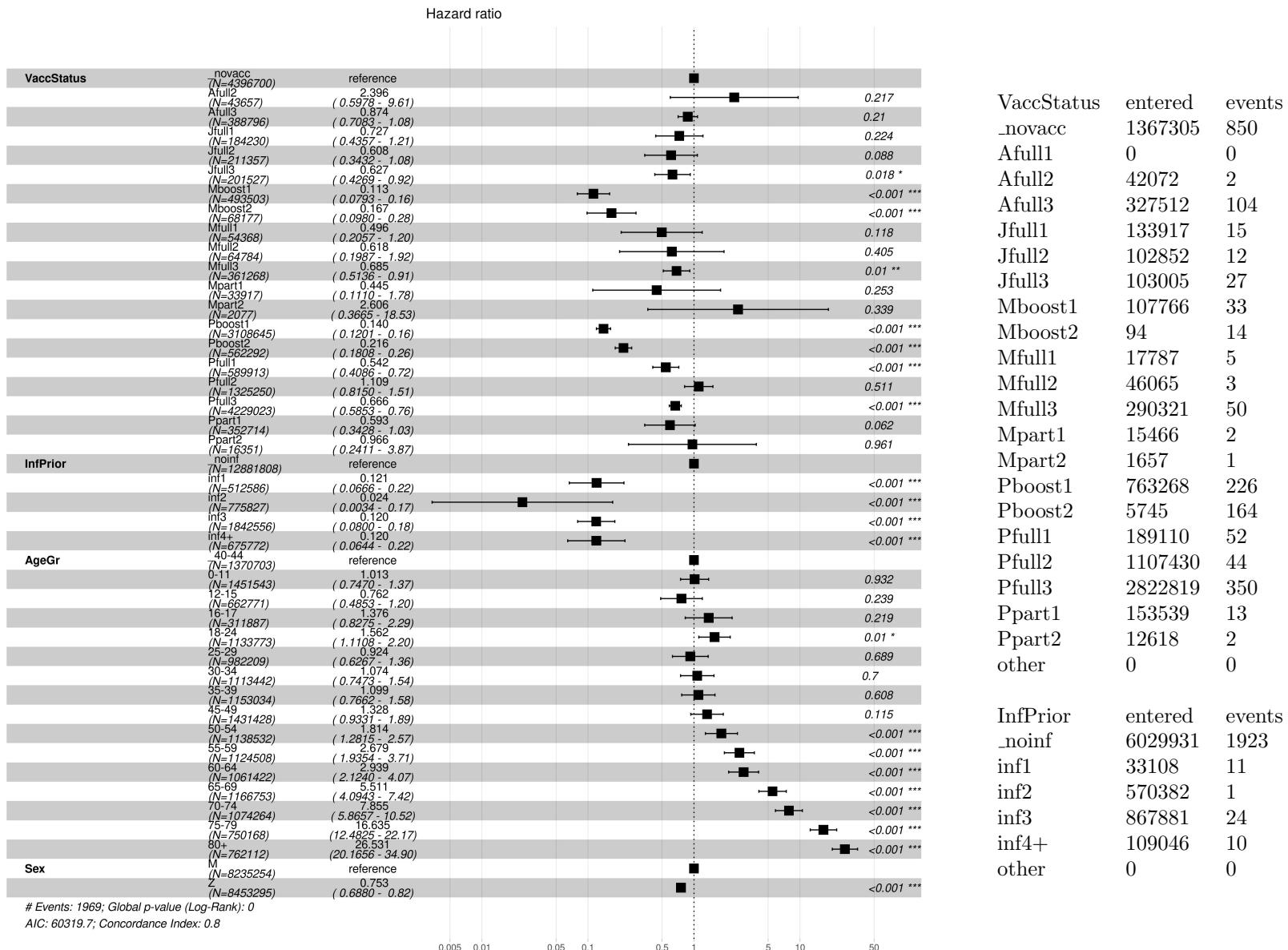


VaccStatus	entered	events
_novacc	1366991	138221
Afull1	0	0
Afull2	42071	19
Afull3	327462	2127
Jfull1	133906	1915
Jfull2	102848	2634
Jfull3	102994	2976
Mboost1	107763	4696
Mboost2	94	923
Mfull1	17787	814
Mfull2	46063	540
Mfull3	290301	5285
Mpart1	15465	229
Mpart2	1657	17
Pboost1	763252	31043
Pboost2	5745	8840
Pfull1	189107	10510
Pfull2	1107421	8255
Pfull3	2822713	84716
Ppart1	153530	2492
Ppart2	12616	188
other	0	0
InfPrior	entered	events
_noinf	6029372	260863
inf1	33108	5643
inf2	570381	2915
inf3	867879	22471
inf4+	109046	14548
other	0	0

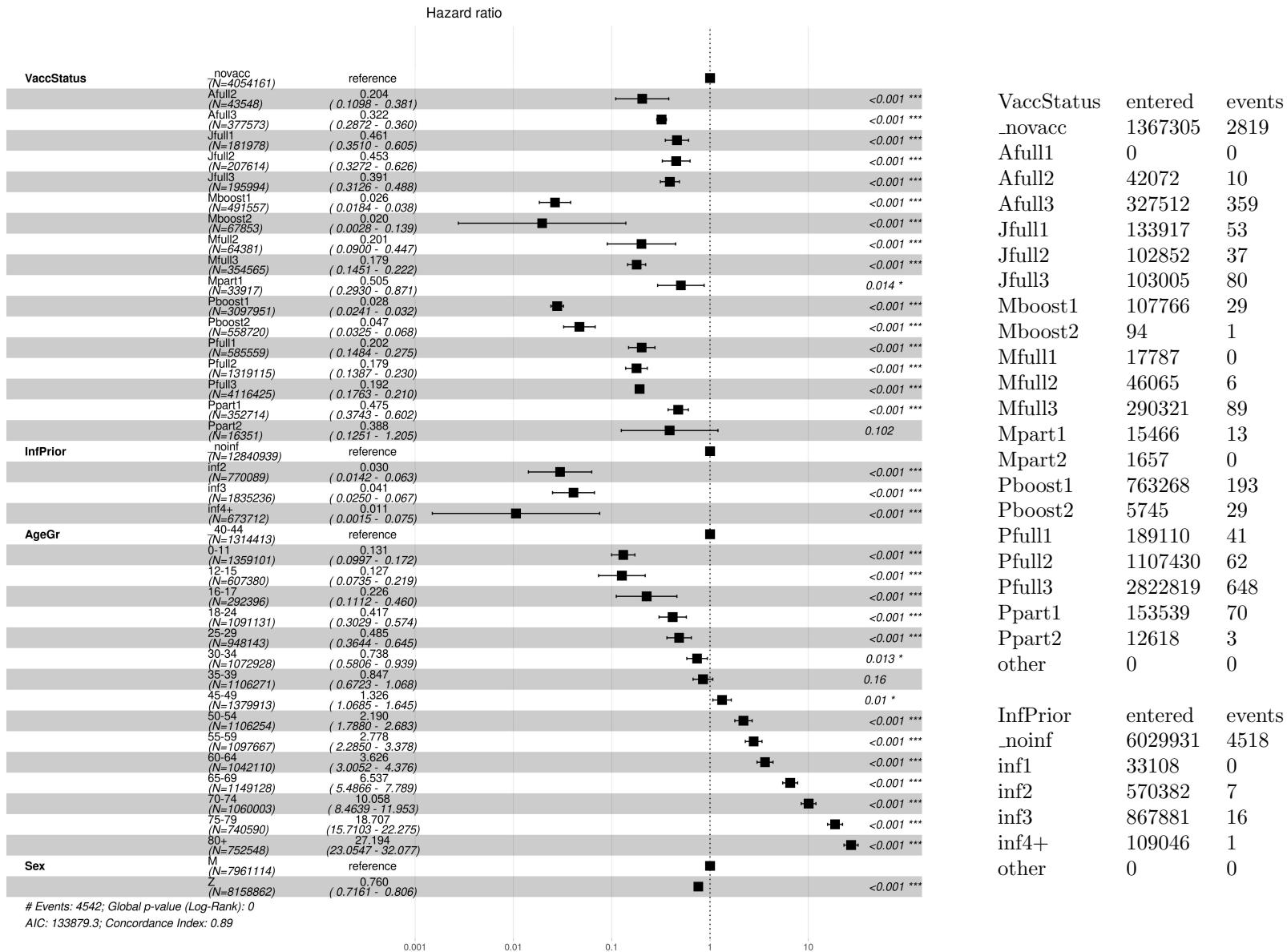
12 Infections by Vaccines - Delta



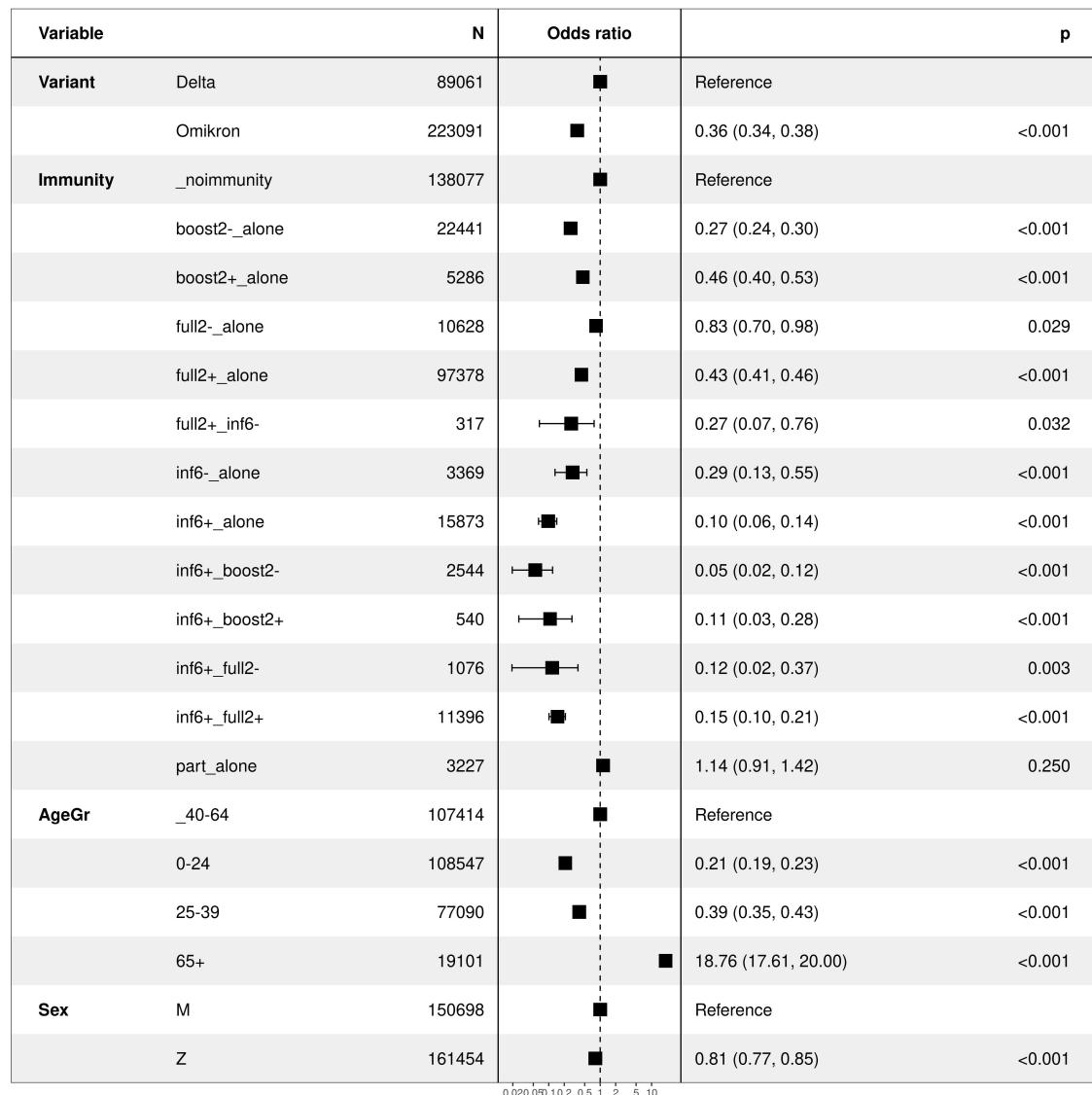
13 Hospitalizations by Vaccines - Omicron



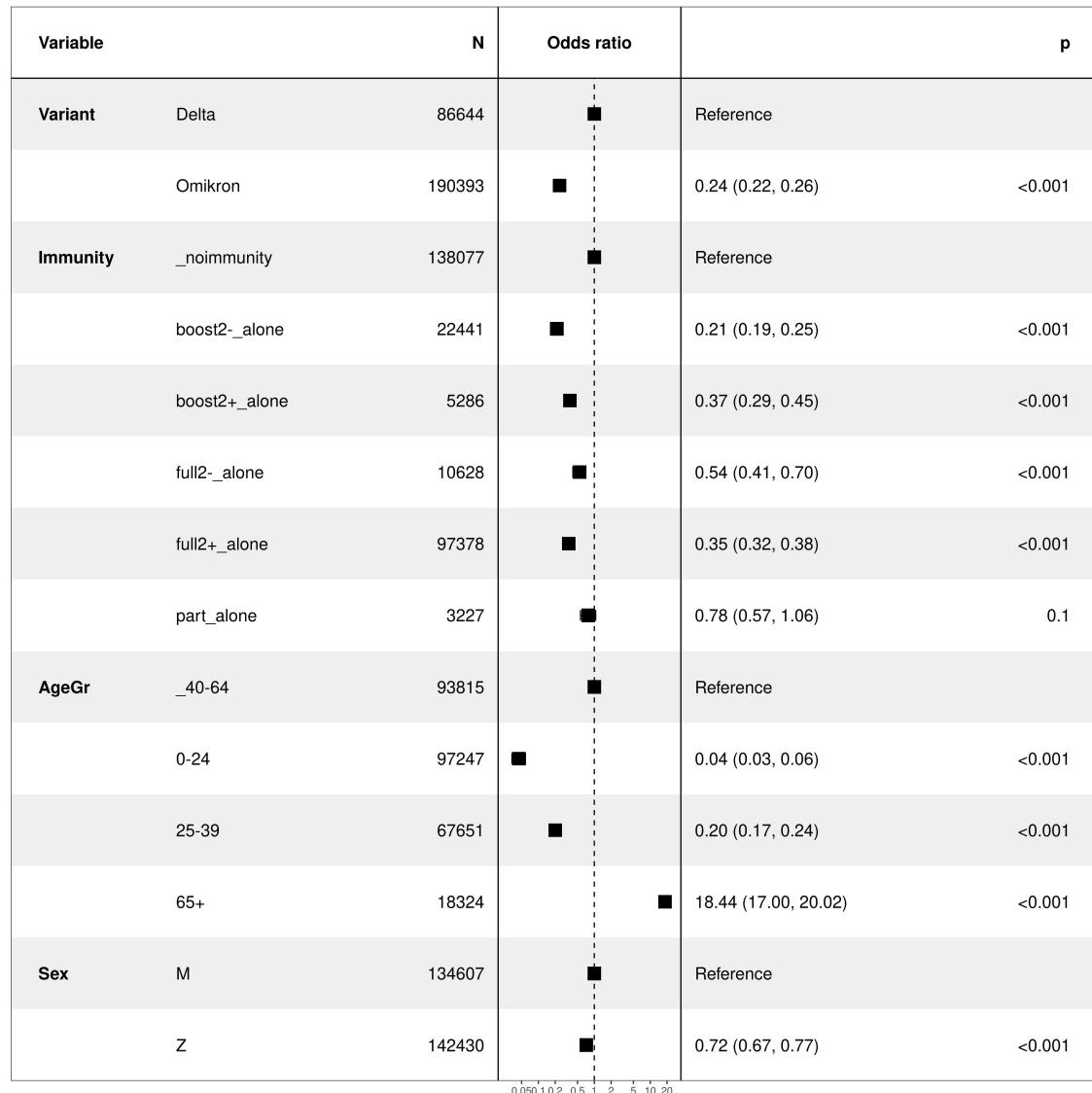
14 Hospitalizations by Vaccines - Delta



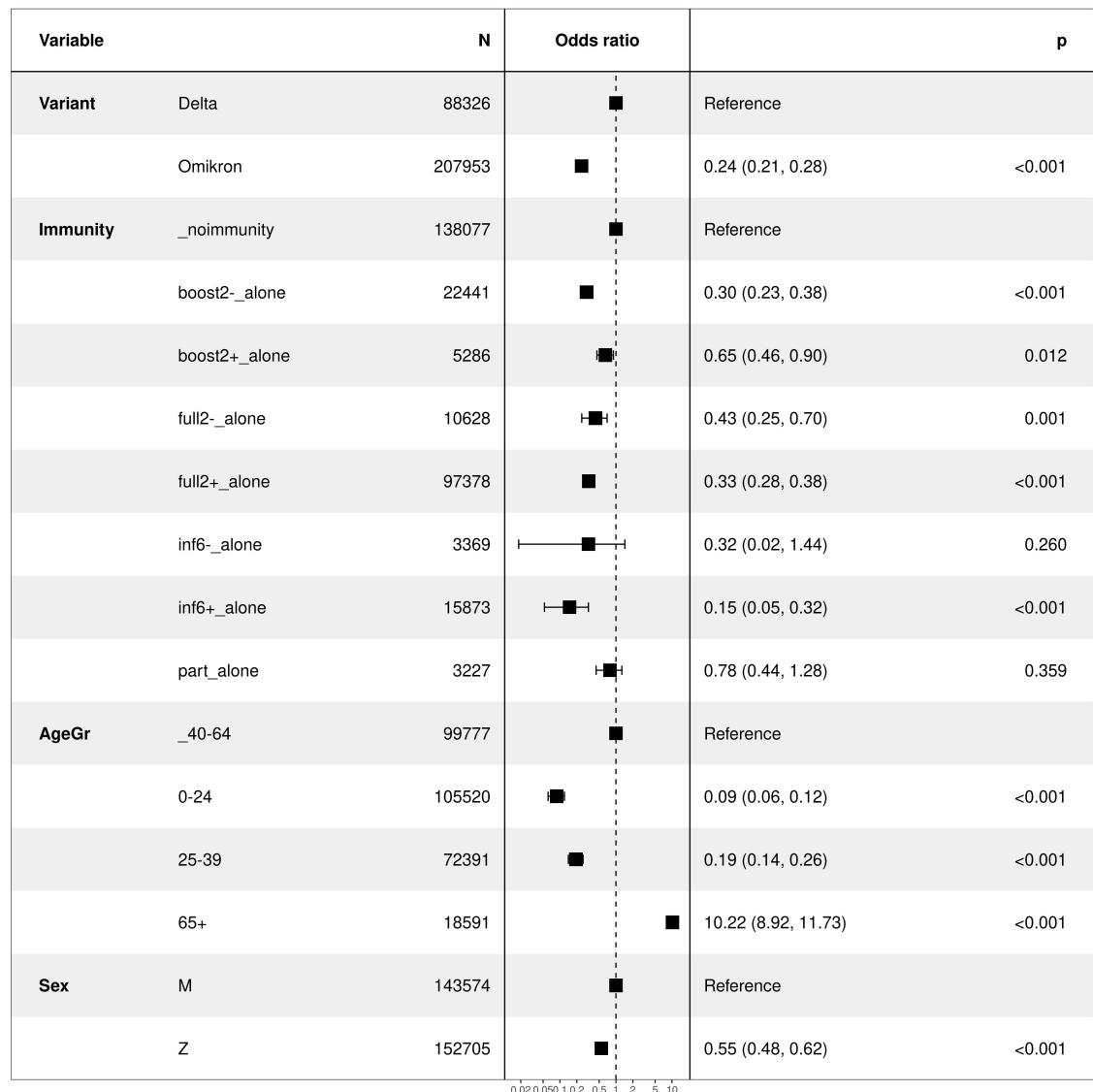
15 Hospitalization given Infection



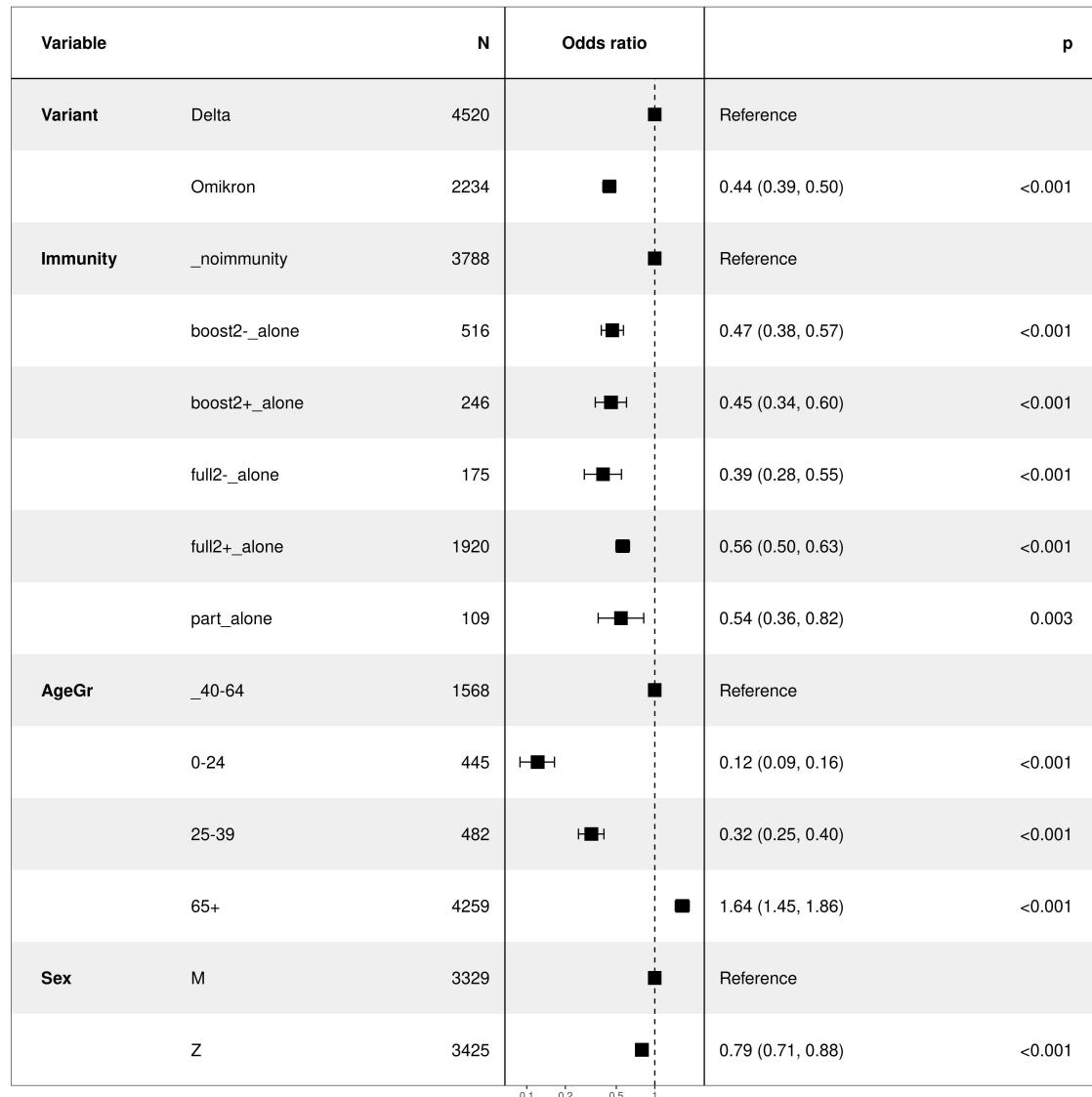
16 Oxygen given Infection



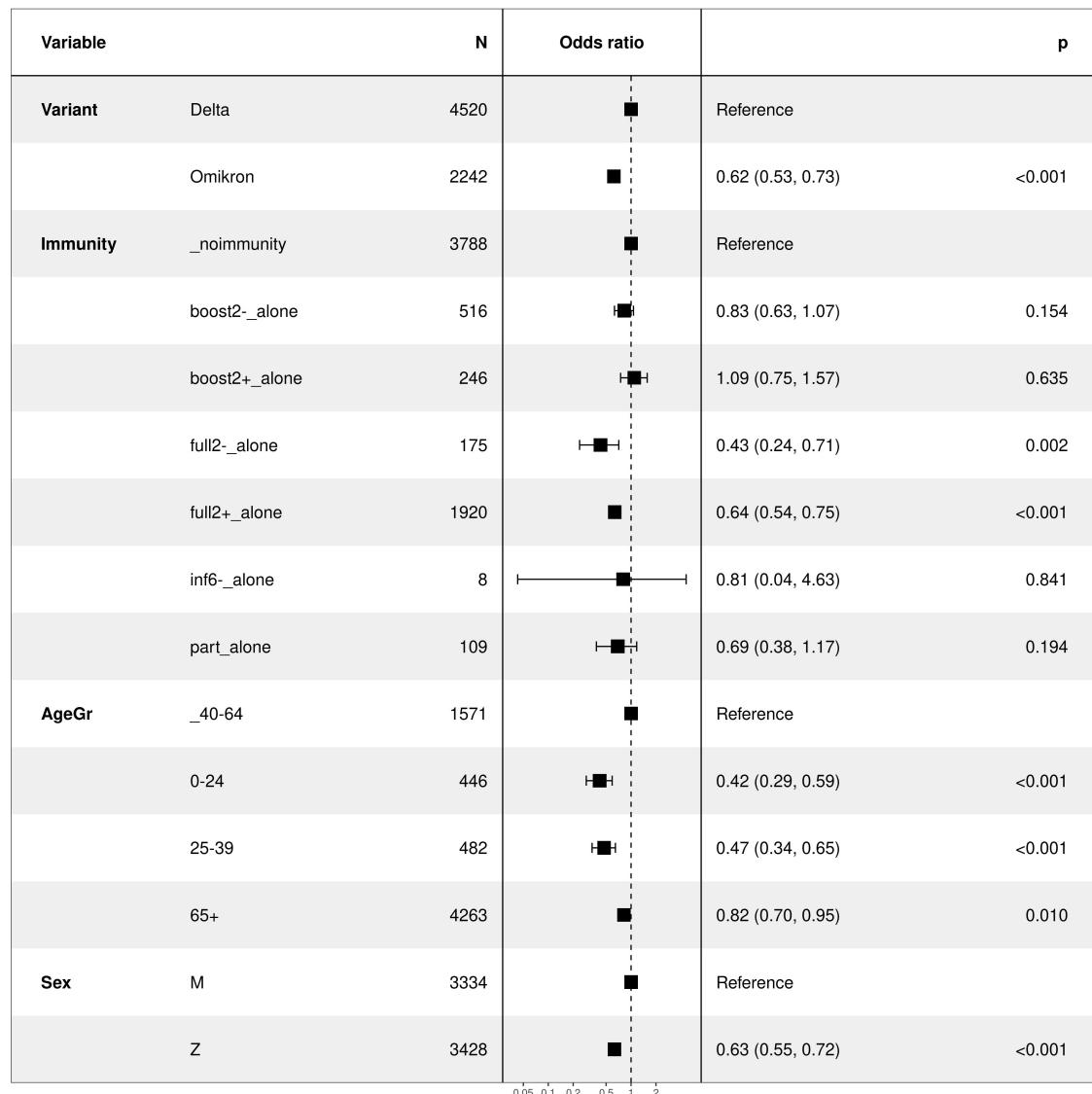
17 ICU given Infection



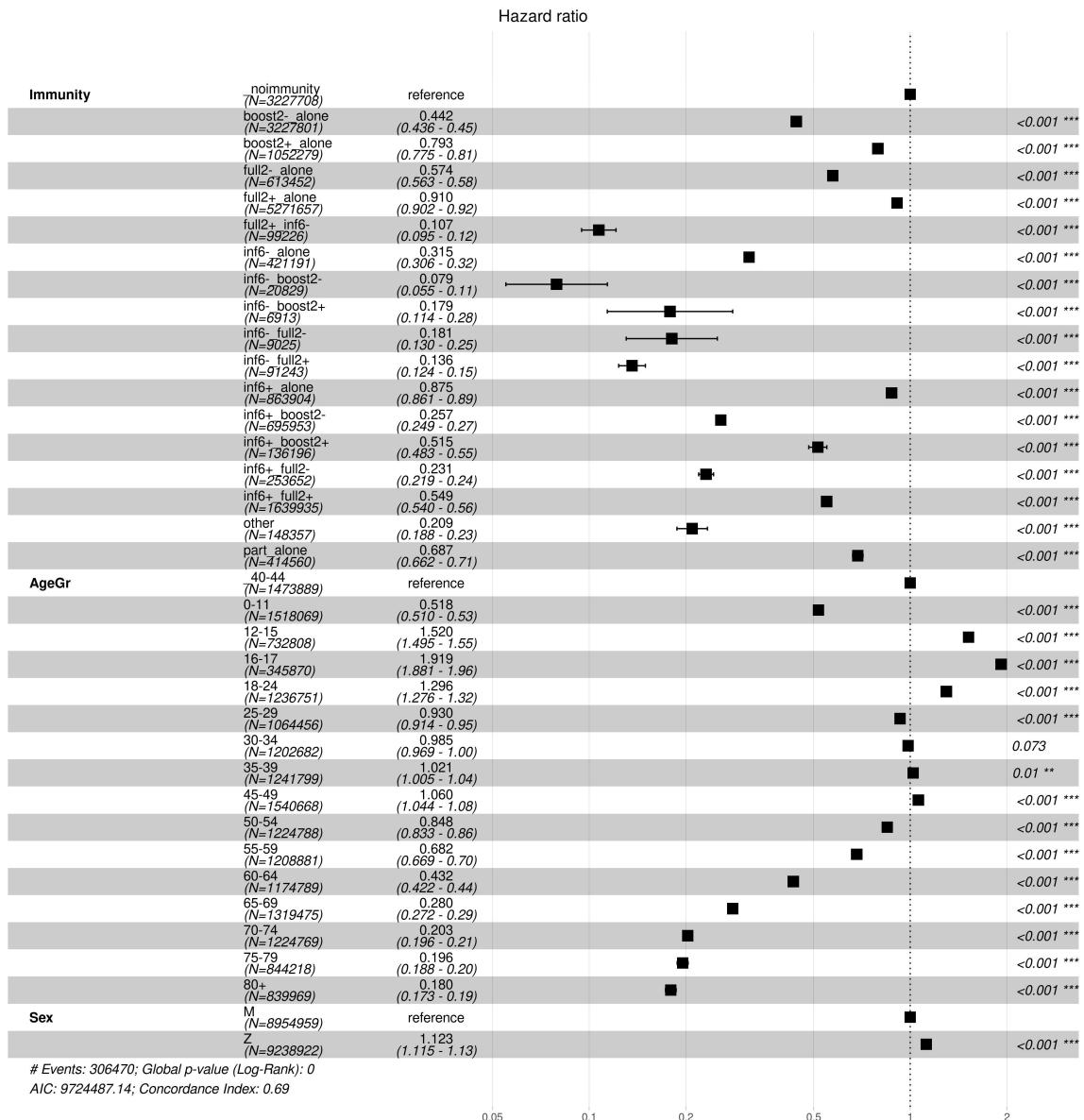
18 Oxygen given Hospitalization



19 ICU given Hospitalization



20 Infections – Omicron – Sensitivity*



Immunity	entered	events
_noimmunity	799055	114191
boost2_-alone	783053	31773
boost2_+alone	5313	8814
full2_-alone	250234	11767
full2_+alone	4004420	91261
inf6_-alone	25504	4882
inf6_+alone	542432	19148
part_alone	173116	2822
inf6_-boost2-	187	29
inf6_-boost2+	4	19
inf6_-full2-	737	36
inf6_-full2+	5669	420
inf6_+boost2-	87565	3927
inf6_+boost2+	517	927
inf6_+full2-	86763	1363
inf6_+full2+	825962	14516
full2_+inf6-	802	253
boost2_+inf6-	0	0
other	52809	322
rare	0	0

* The same

analysis as in Section 1, but with rare categories grouped to "other" category rather than omitted.