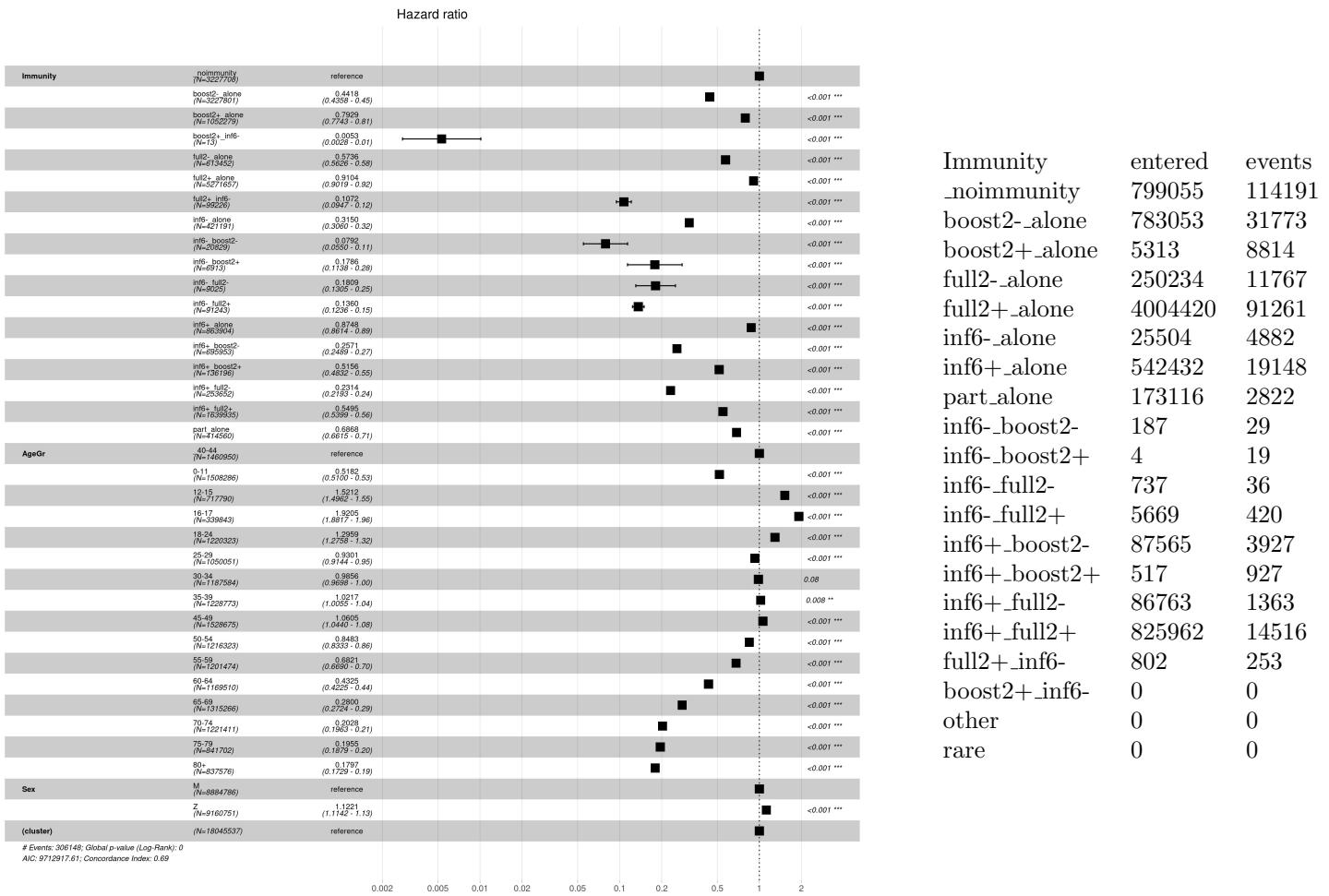


Protection provided by covid-19 vaccines and previous infection against the Omicron
variant

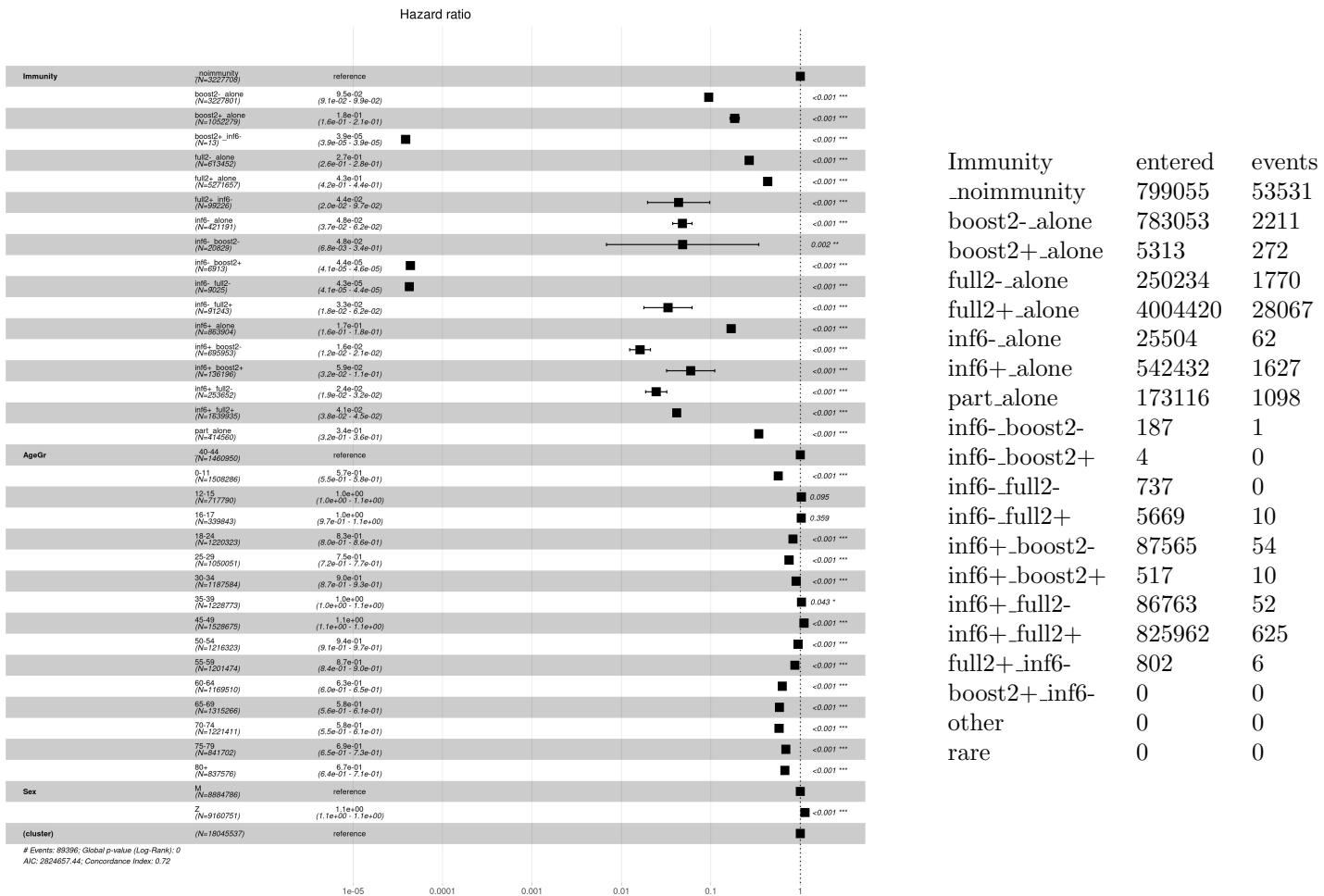
Results of Statistical Estimation

February 23, 2022

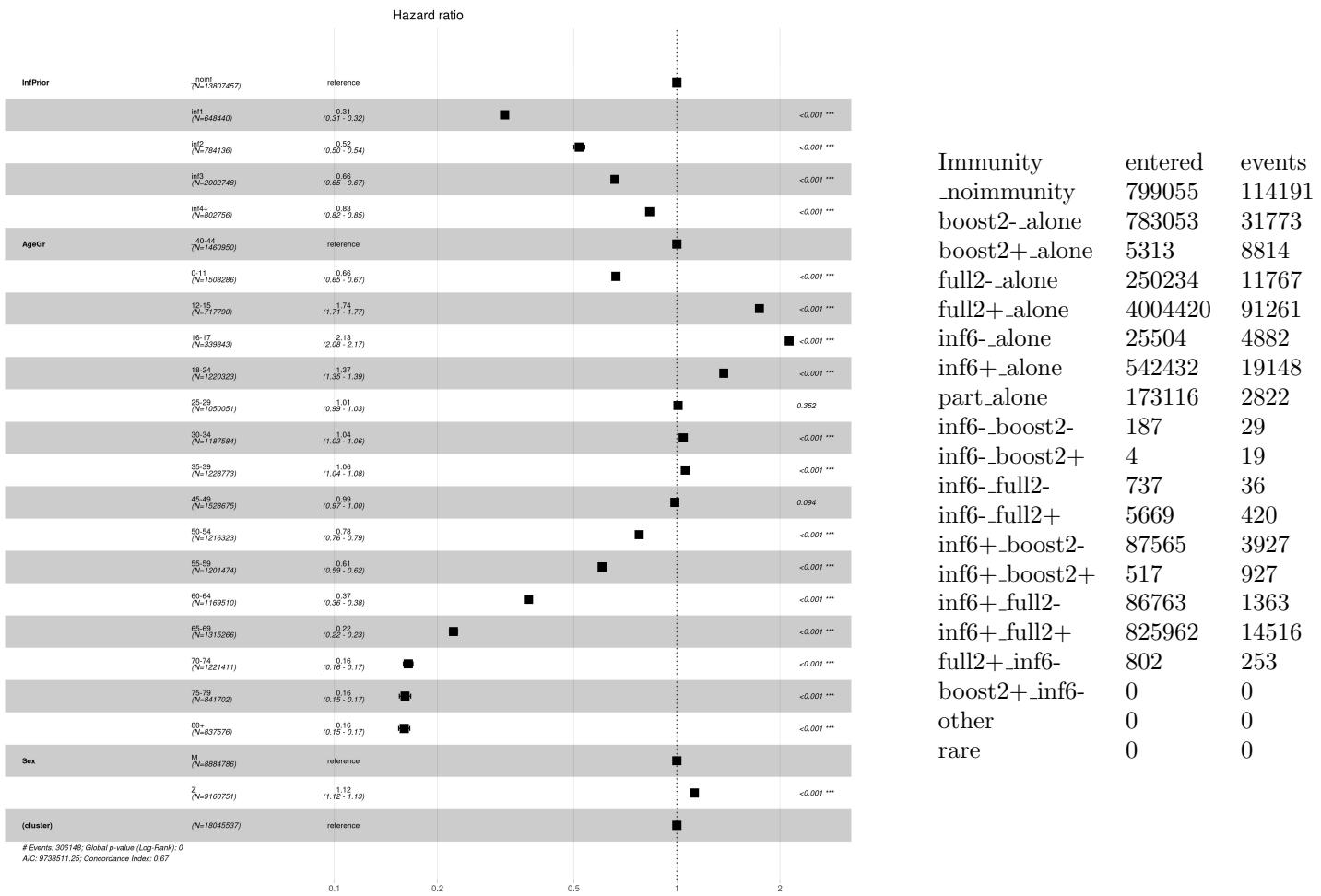
1 Infections – Omicron



2 Infections – Delta

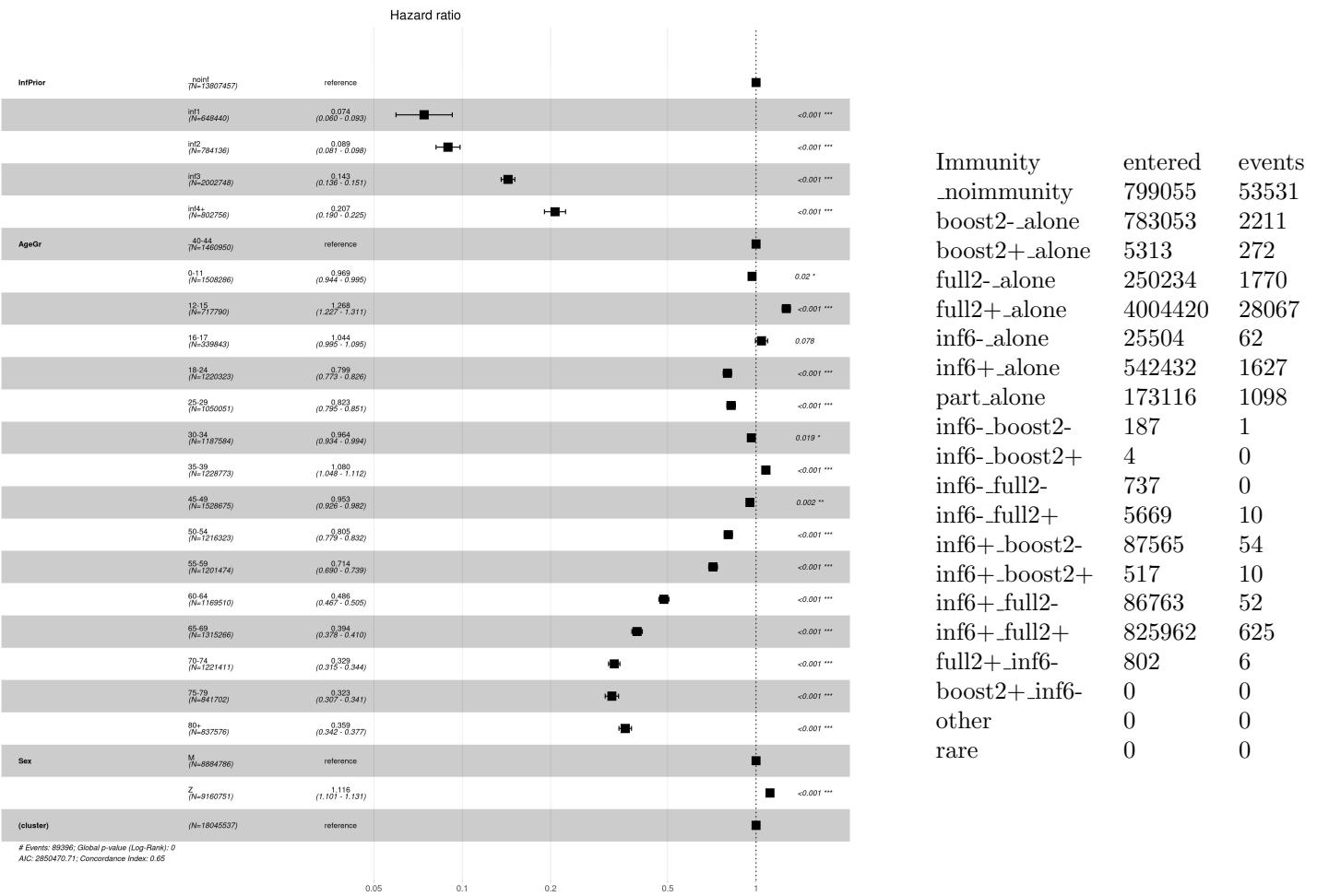


3 Re-infections – Omicron

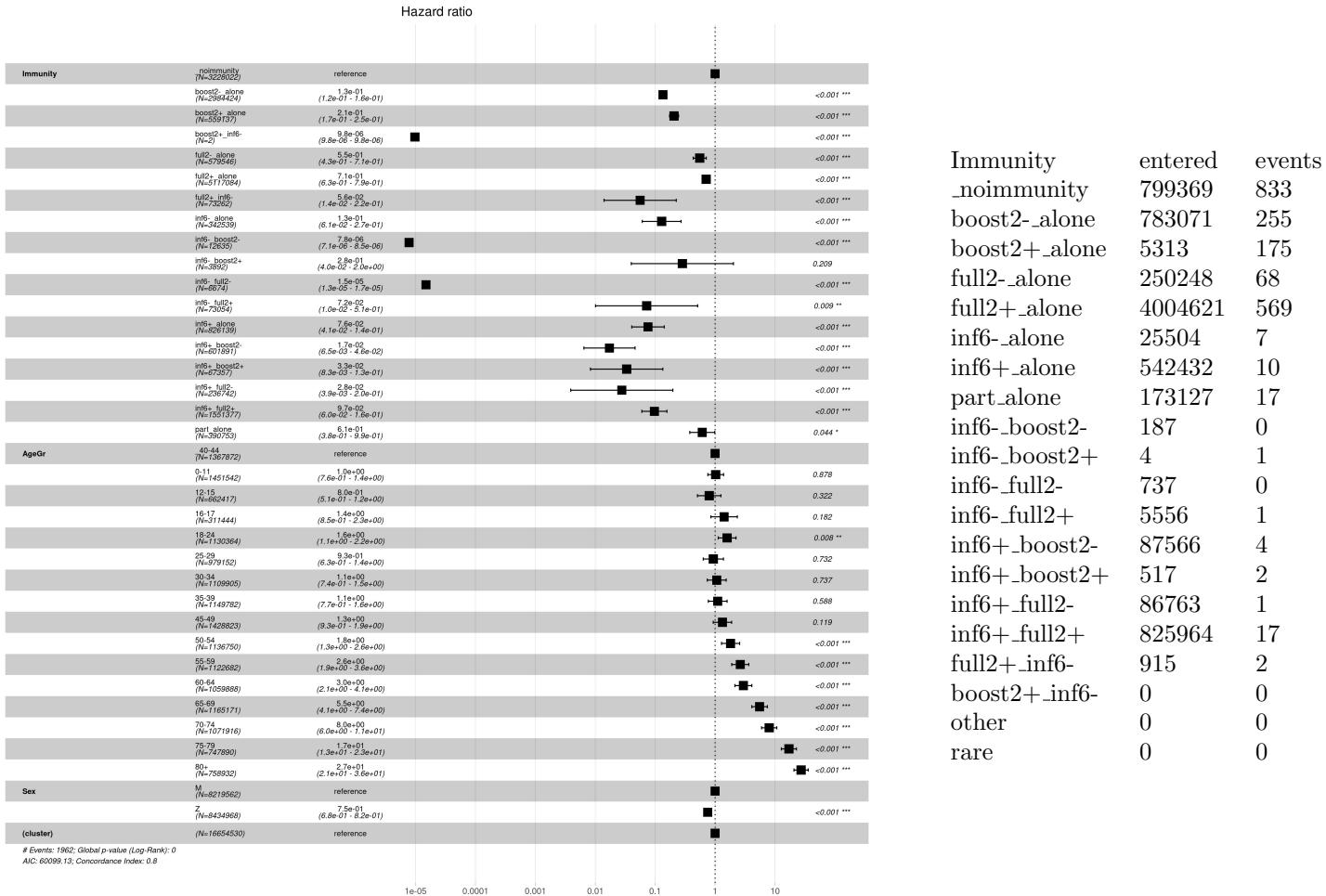


Immunity	entered	events
_noimmunity	799055	114191
boost2-alone	783053	31773
boost2+alone	5313	8814
full2-alone	250234	11767
full2+alone	4004420	91261
inf6-alone	25504	4882
inf6+alone	542432	19148
part-alone	173116	2822
inf6-boost2-	187	29
inf6-boost2+	4	19
inf6-full2-	737	36
inf6-full2+	5669	420
inf6+boost2-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

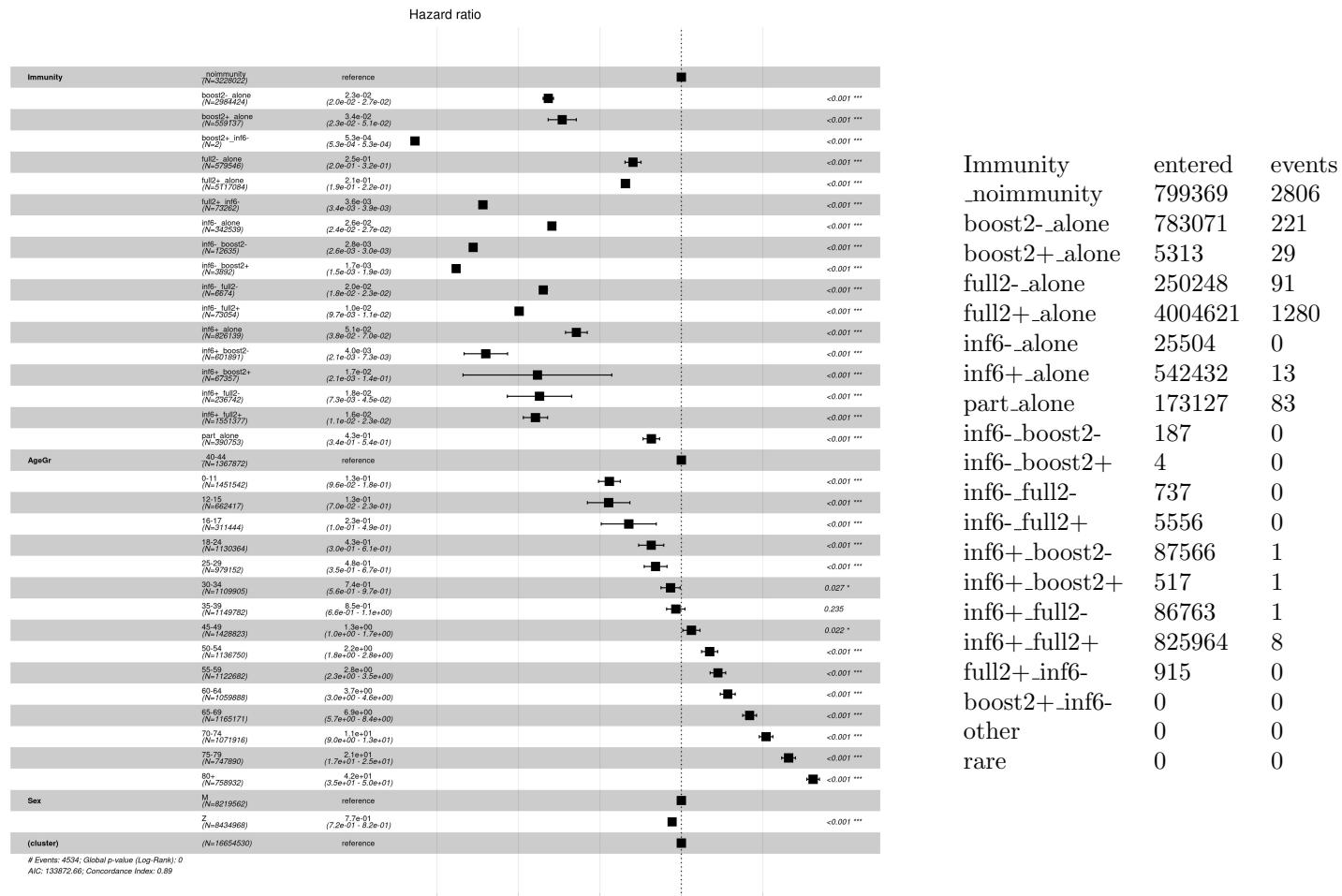
4 Re-infections – Delta



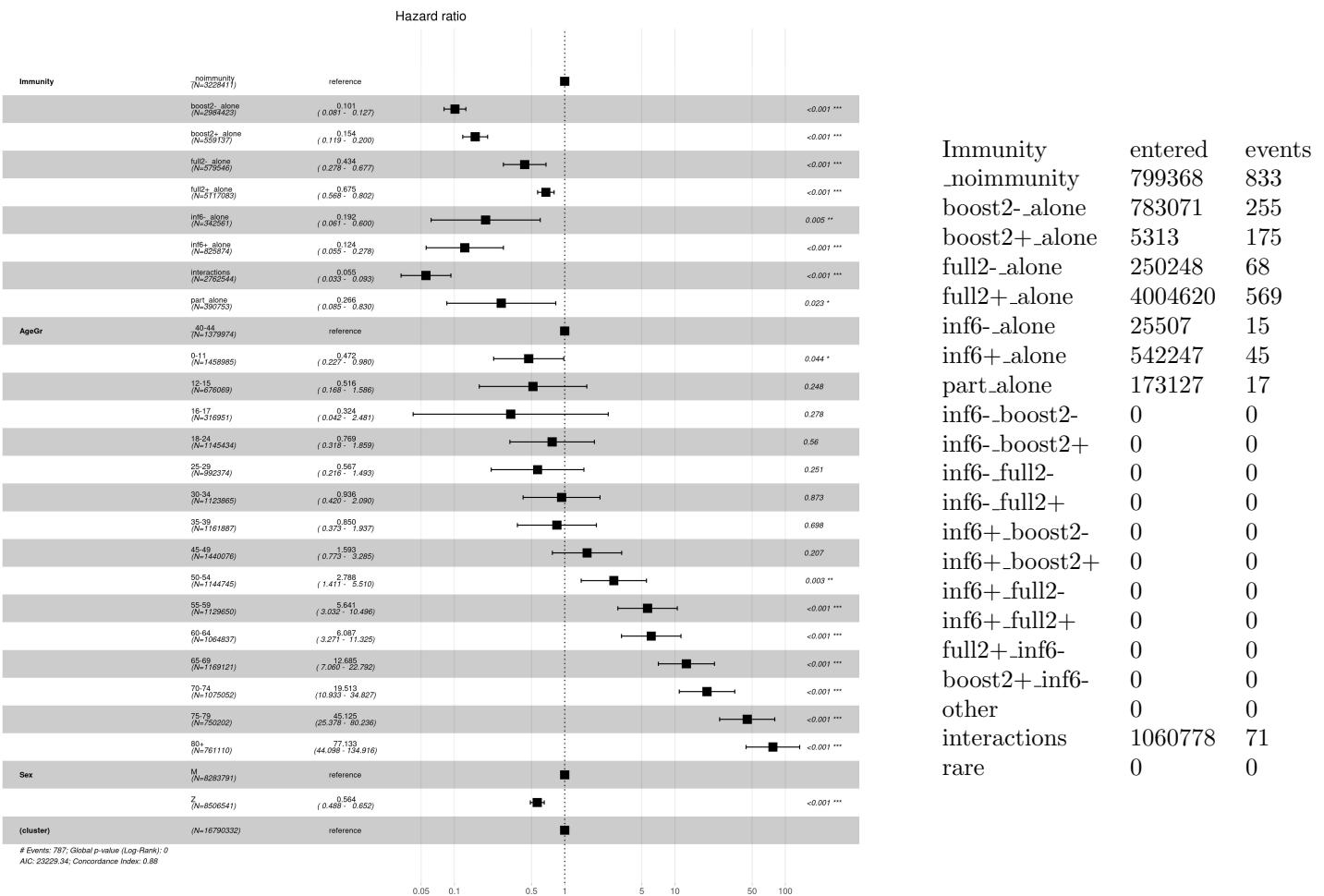
5 Hospitalizations – Omicron



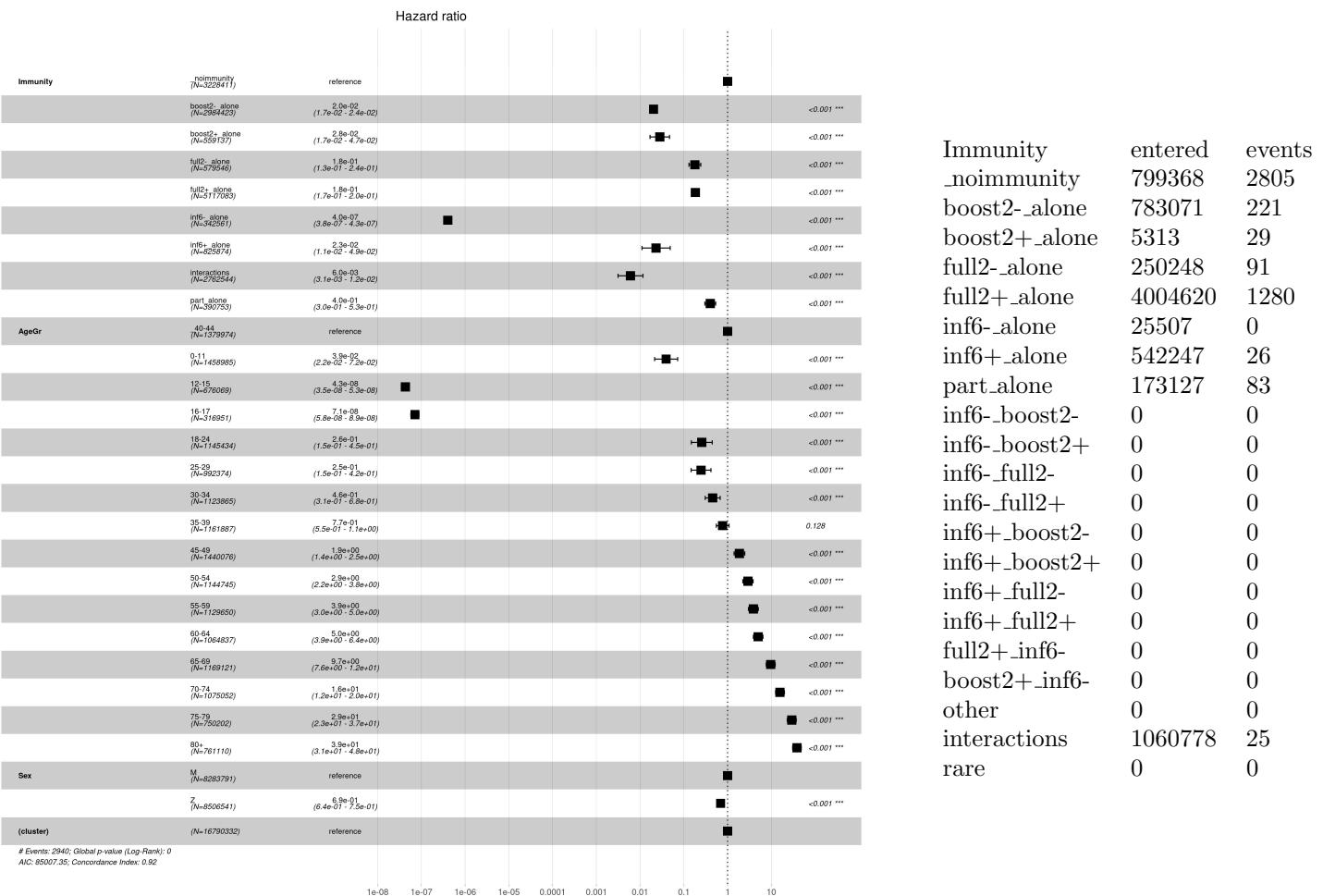
6 Hospitalizations – Delta



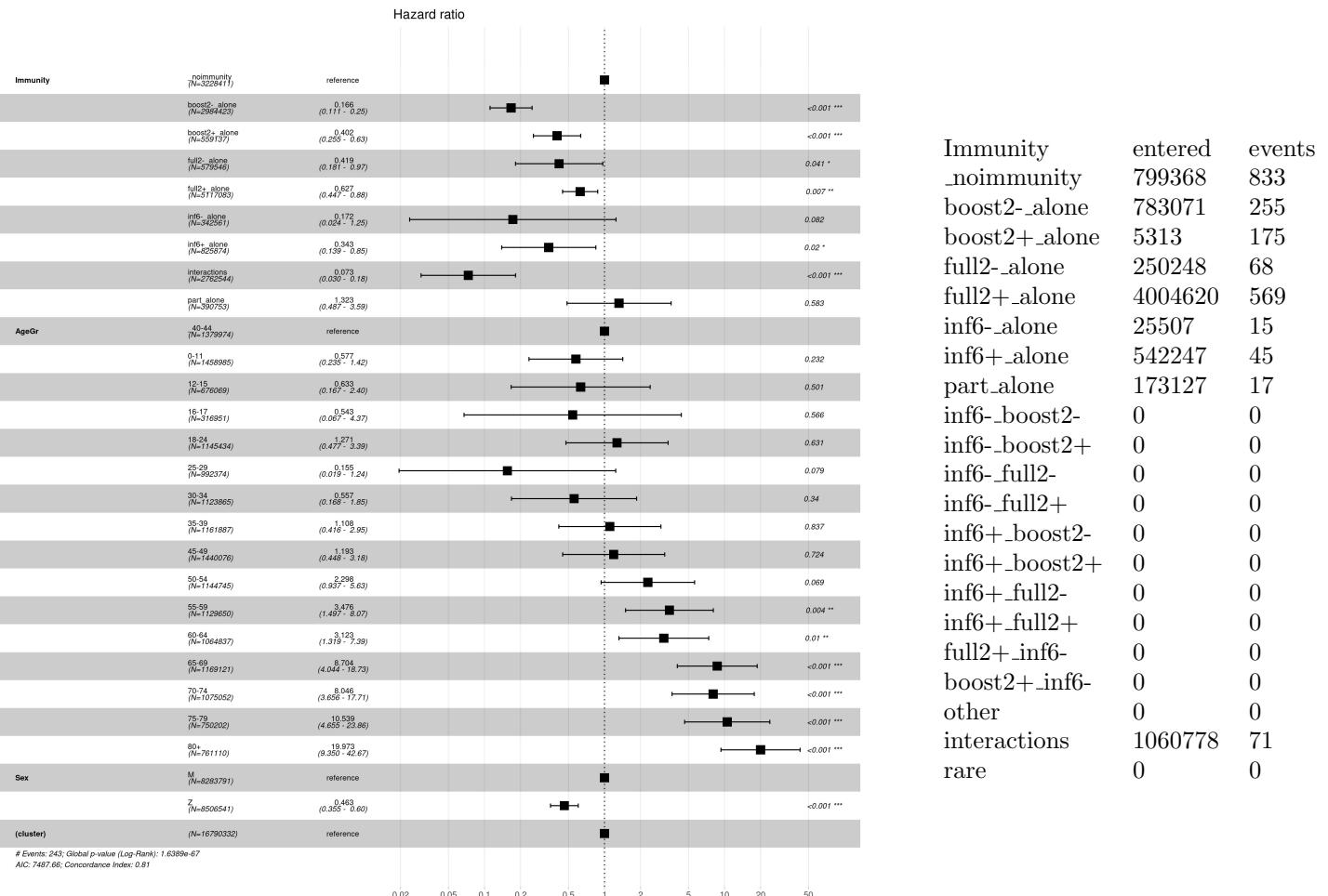
7 Oxygen therapy – Omicron



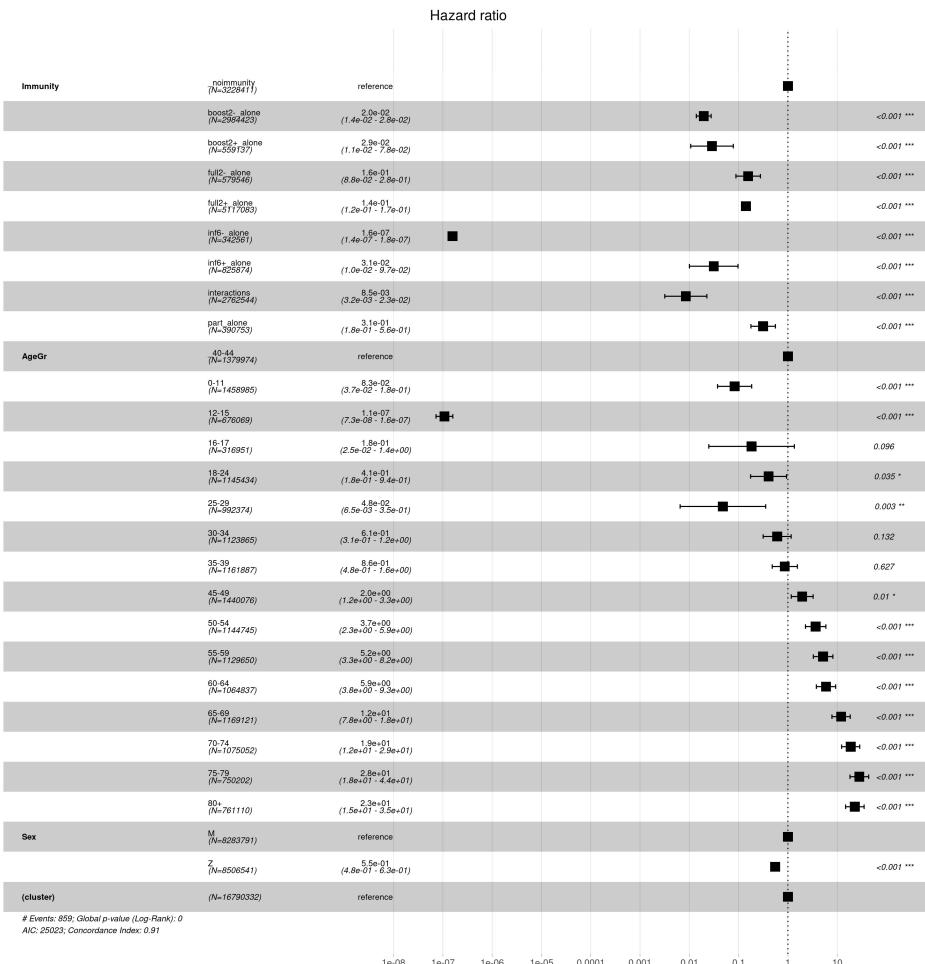
8 Oxygen therapy – Delta



9 ICU therapy – Omicron

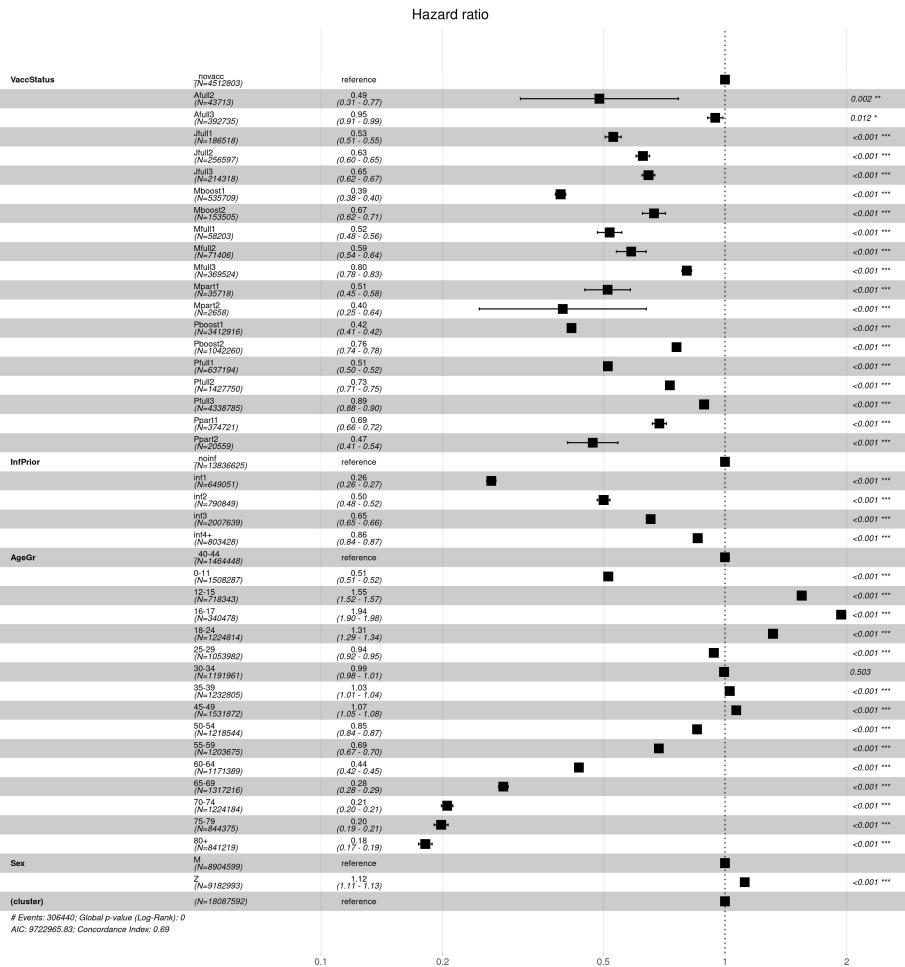


10 ICU therapy – Delta



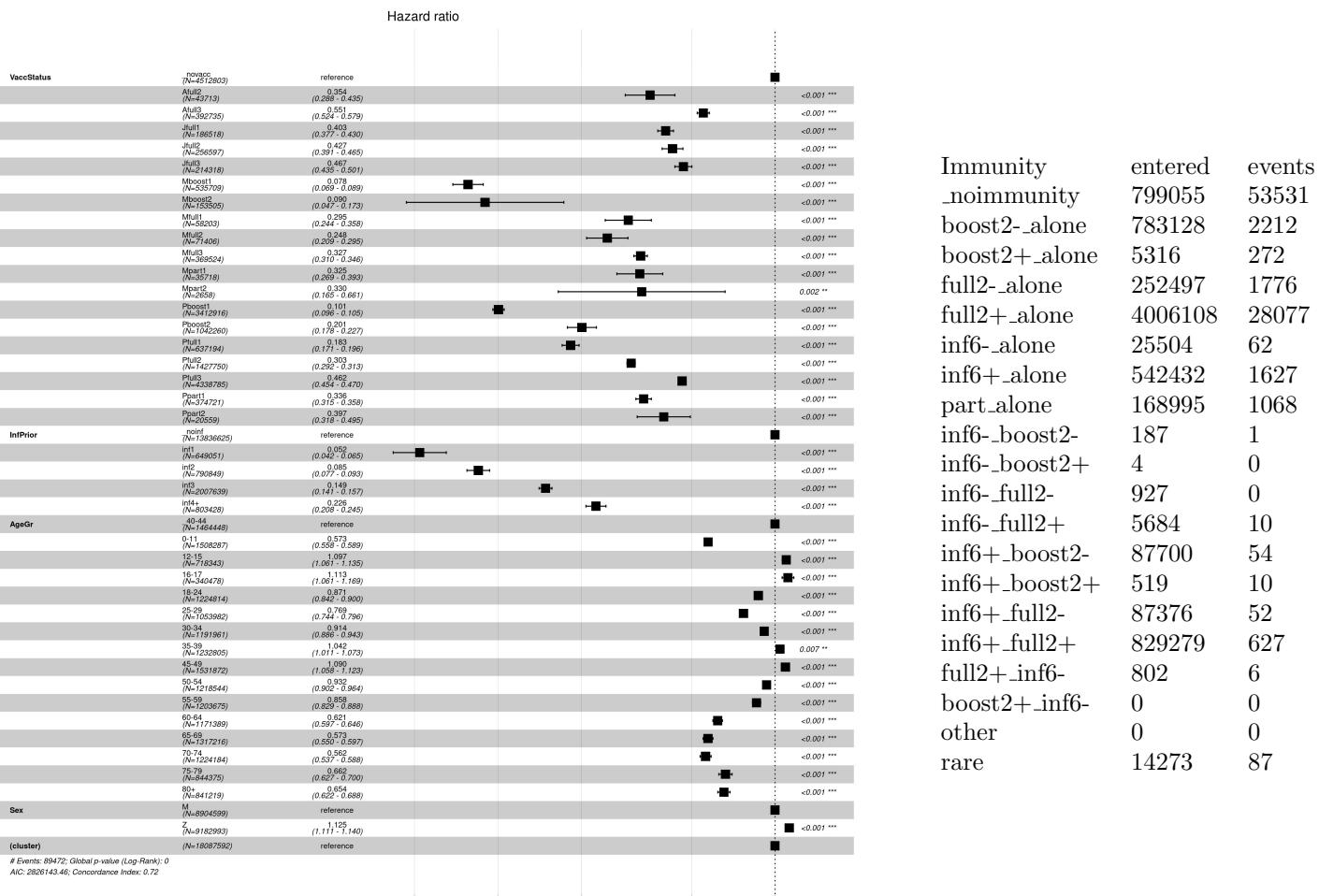
	entered	events
Immunity		
_noimmunity	799368	2805
boost2-_alone	783071	221
boost2+_alone	5313	29
full2-_alone	250248	91
full2+_alone	4004620	1280
inf6-_alone	25507	0
inf6+_alone	542247	26
part_alone	173127	83
inf6_-boost2-	0	0
inf6_-boost2+-	0	0
inf6_-full2-	0	0
inf6_-full2+-	0	0
inf6+_boost2-	0	0
inf6+_boost2+-	0	0
inf6+_full2-	0	0
inf6+_full2+-	0	0
full2+_inf6-	0	0
boost2+_inf6-	0	0
other	0	0
interactions	1060778	25
rare	0	0

11 Infections by Vaccines - Omicron

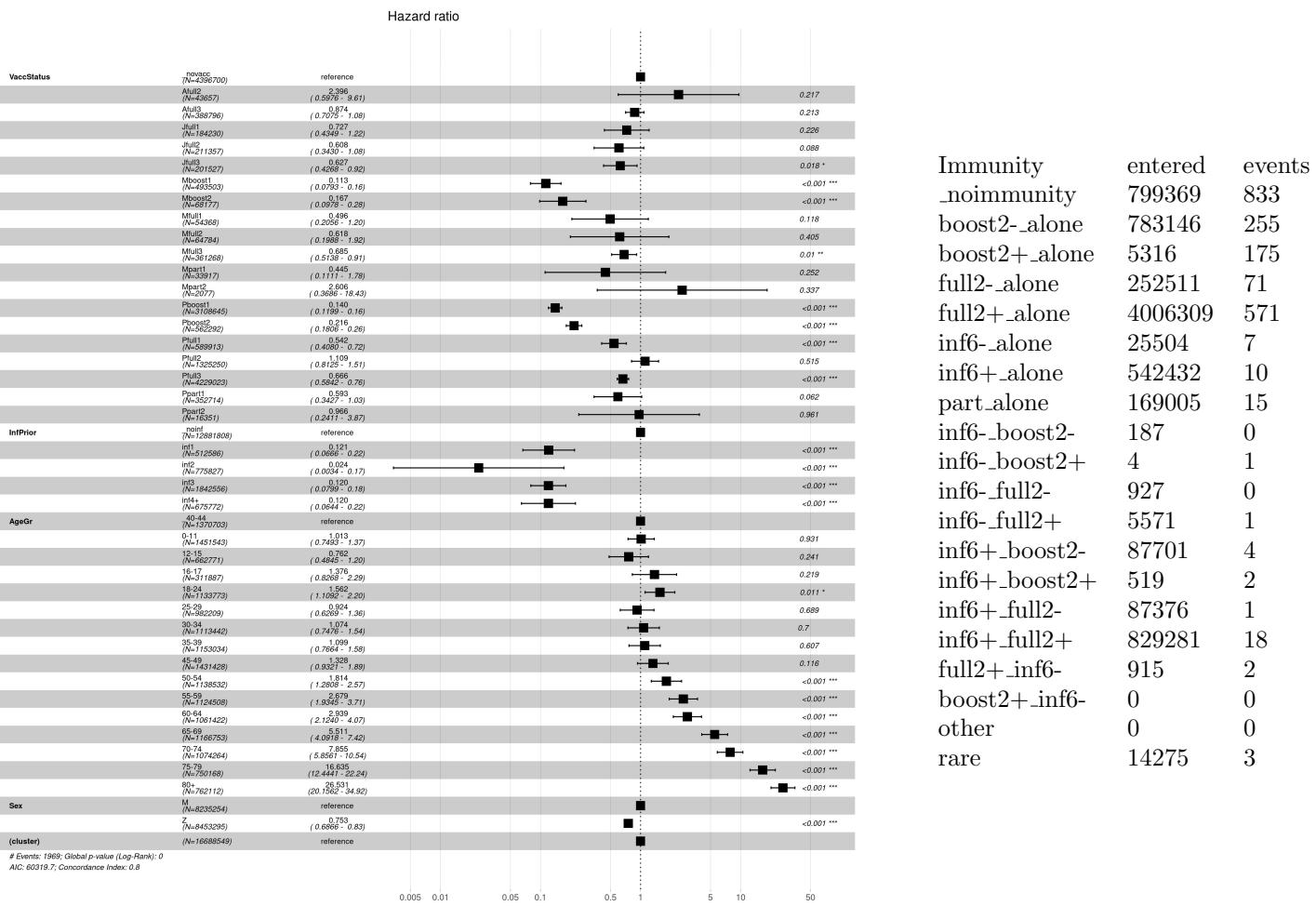


Immunity	entered	events
_noimmunity	799055	114191
boost2_-alone	783128	31776
boost2+_-alone	5316	8816
full2_-alone	252497	11825
full2+_-alone	4006108	91329
inf6_-alone	25504	4882
inf6+_-alone	542432	19148
part_-alone	168995	2721
inf6_-boost2-	187	29
inf6_-boost2+	4	19
inf6_-full2-	927	40
inf6_-full2+	5684	420
inf6+_boost2-	87700	3934
inf6+_boost2+	519	928
inf6+_full2-	87376	1374
inf6+_full2+	829279	14550
full2+_inf6-	802	253
boost2+_inf6-	0	0
other	0	0
rare	14273	205

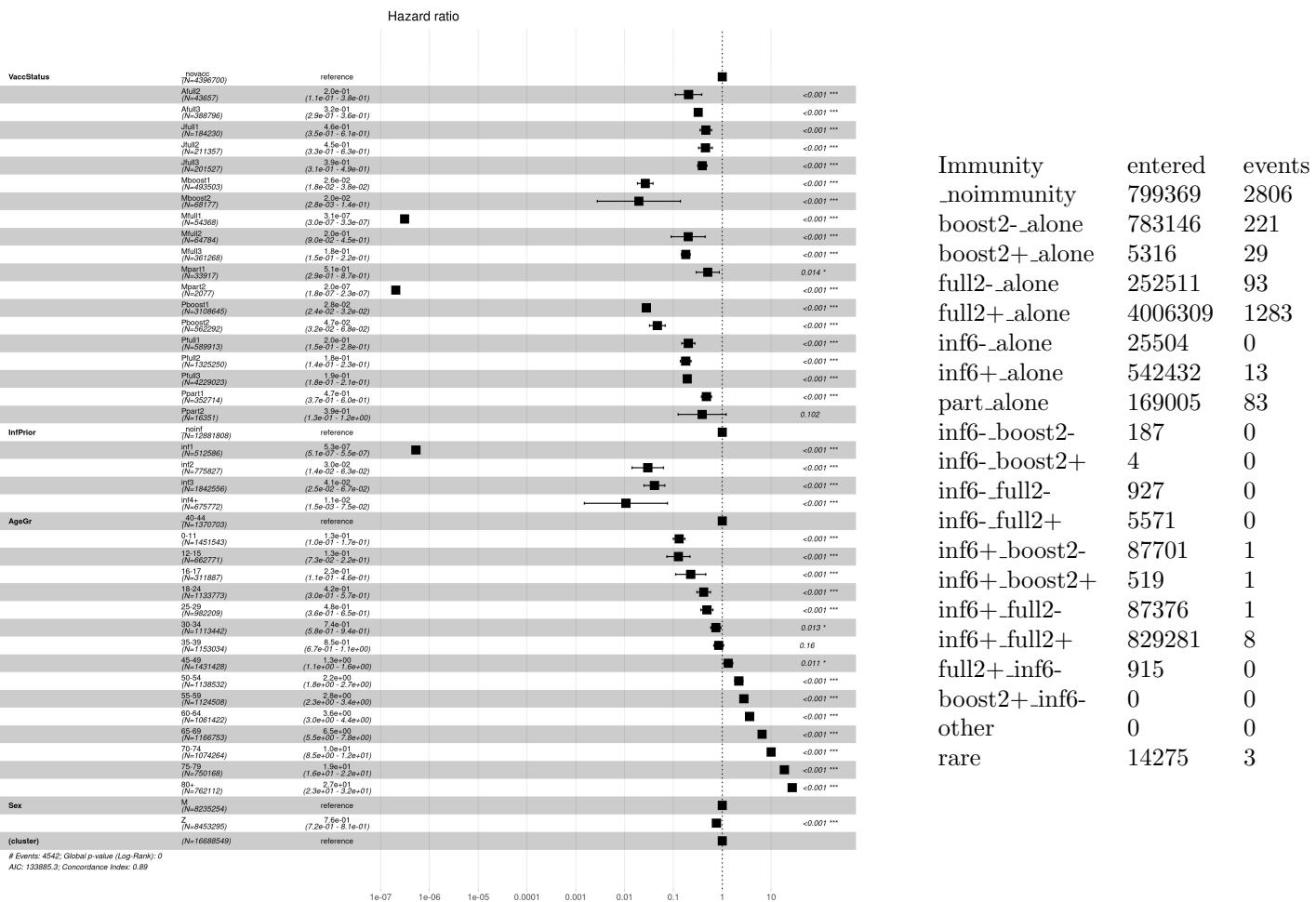
12 Infections by Vaccines - Delta



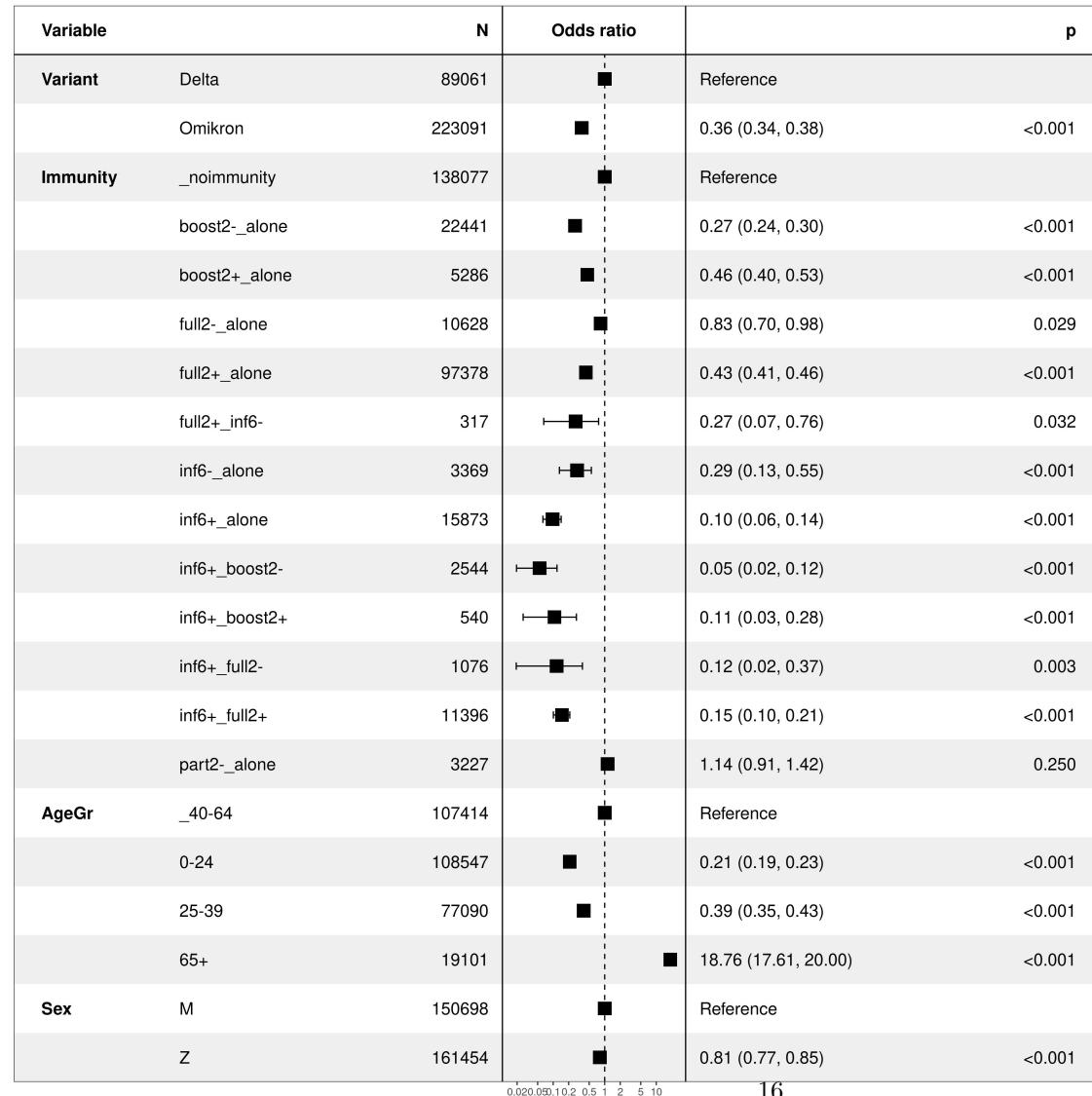
13 Hospitalizations by Vaccines - Omicron



14 Hospitalizations by Vaccines - Delta



15 Hospitalization given Infection

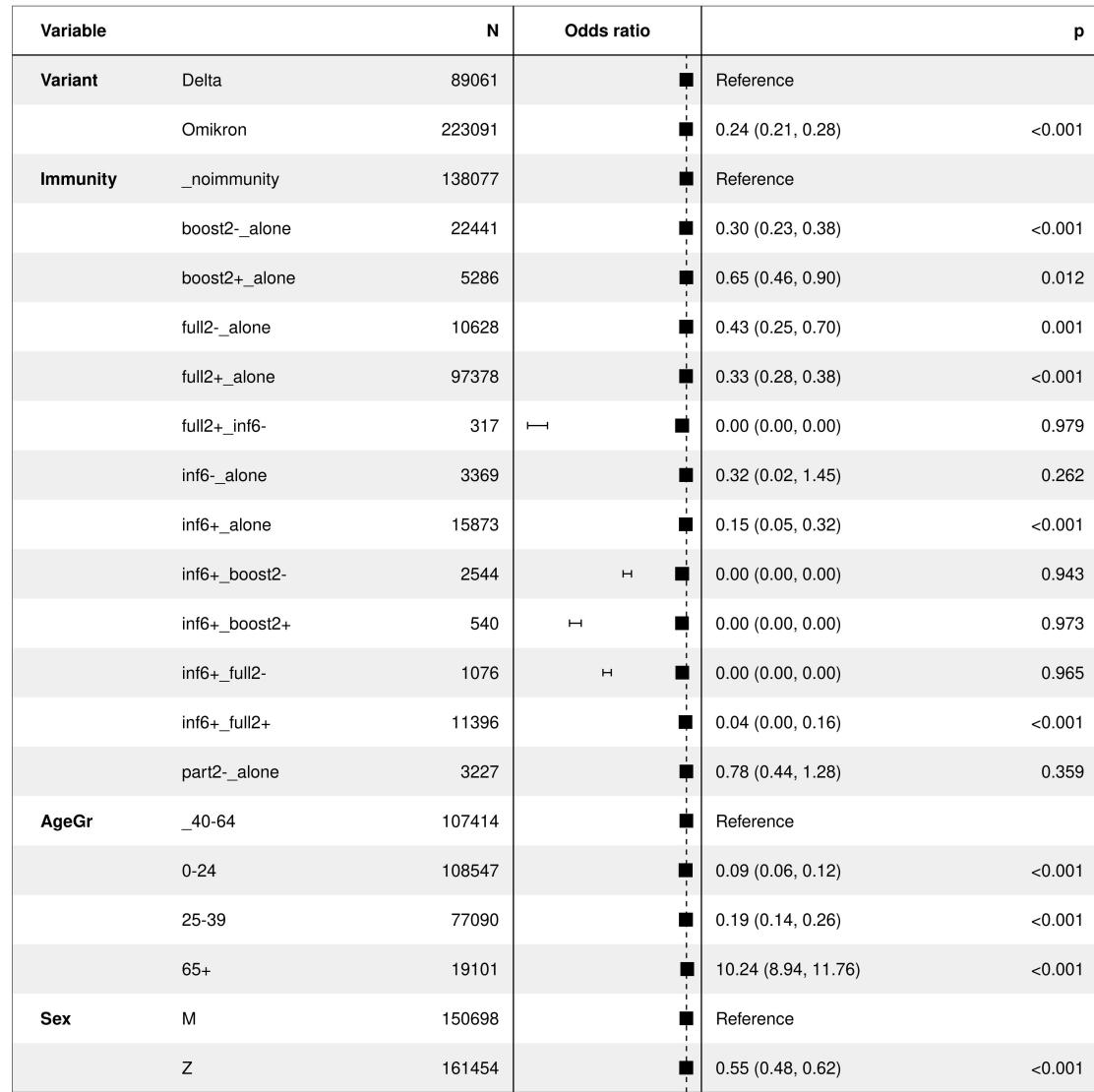


16 Oxygen given Infection

Variable		N	Odds ratio	p
Variant	Delta	89038	■	Reference
	Omikron	223041	■	0.24 (0.22, 0.26) <0.001
Immunity	_noimmunity	138077	■	Reference
	boost2_-_alone	22441	■	0.21 (0.19, 0.25) <0.001
	boost2+_alone	5286	■	0.37 (0.29, 0.45) <0.001
	full2_-_alone	10628	■	0.54 (0.41, 0.70) <0.001
	full2+_alone	97378	■	0.35 (0.32, 0.38) <0.001
	full2+_inf6-	314	—	0.00 (0.00, 0.00) 1.0
	inf6_-_alone	3361	■	0.00 (0.00, 0.00) 1.0
	inf6+_alone	15850	■	0.01 (0.00, 0.04) <0.001
	inf6+_boost2-	2539	■	0.00 (0.00, 0.00) 1.0
	inf6+_boost2+	537	■	0.00 (0.00, 0.00) 1.0
	inf6+_full2-	1074	■	0.00 (0.00, 0.00) 1.0
	inf6+_full2+	11367	■	0.00 (0.00, 0.00) 0.9
	part2_-_alone	3227	■	0.78 (0.57, 1.06) 0.1
AgeGr	_40-64	107391	■	Reference
	0-24	108545	■	0.04 (0.03, 0.06) <0.001
	25-39	77082	■	0.20 (0.17, 0.24) <0.001
	65+	19061	■	18.44 (17.01, 20.02) <0.001
Sex	M	150658	■	Reference
	Z	161421	■	0.72 (0.67, 0.77) <0.001

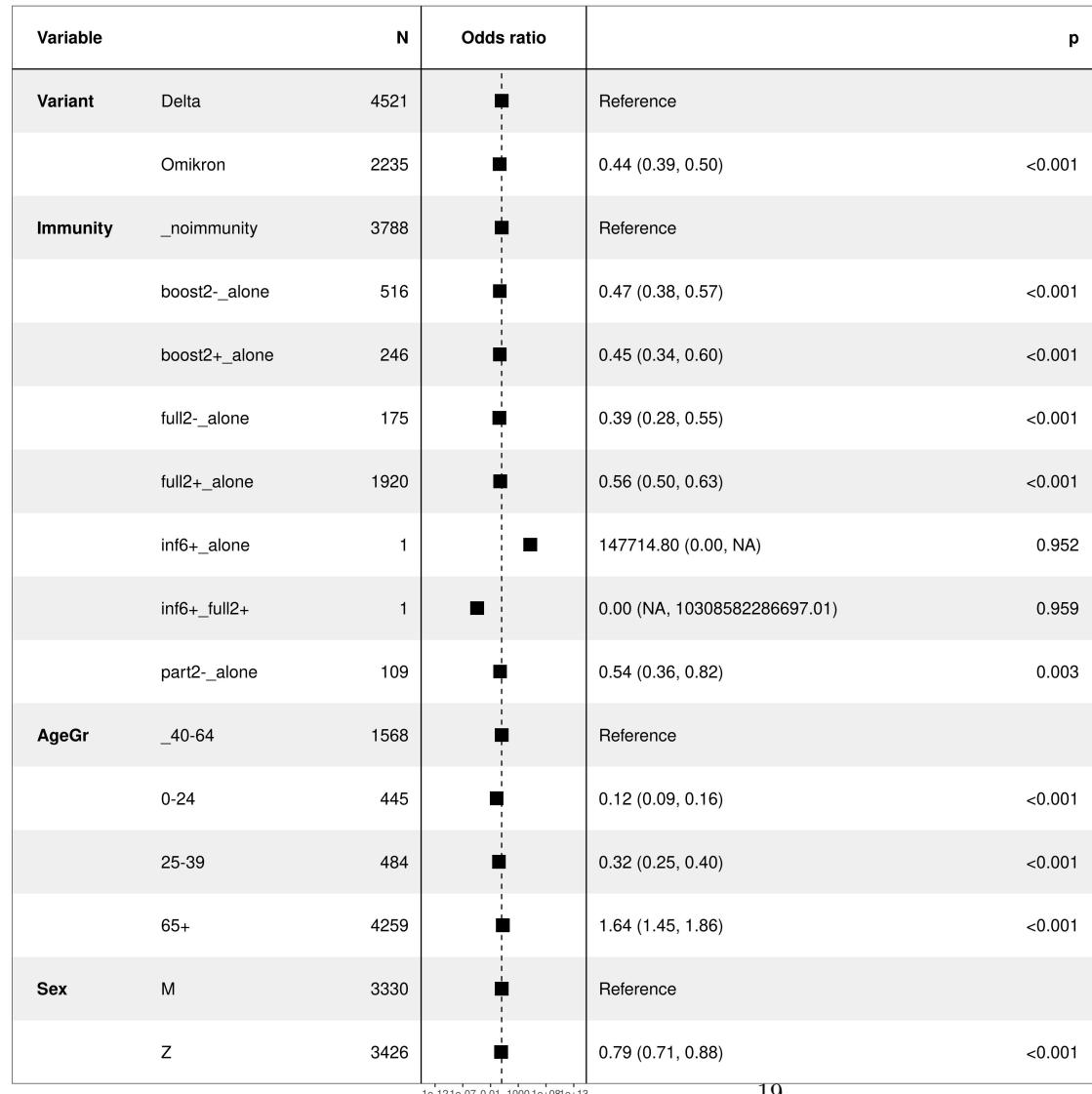
1e-2861e-2291e-1721e-1151e-58 0.1

17 ICU given Infection



1e-22 1e-17 1e-13 1e-09 1e-05 0.1

18 Oxagen given Hospitalization



19 ICU given Hospitalization

Variable		N	Odds ratio	p
Variant	Delta	4544	Reference	
	Omikron	2285	0.62 (0.53, 0.73)	<0.001
Immunity	_noimmunity	3788	Reference	
	boost2_-_alone	516	0.82 (0.63, 1.07)	0.149
	boost2+_alone	246	1.09 (0.75, 1.56)	0.649
	full2_-_alone	175	0.43 (0.24, 0.71)	0.002
	full2+_alone	1920	0.64 (0.54, 0.74)	<0.001
	full2+_inf6-	3	0.00 (NA, 2243344685955.21)	0.970
	inf6_-_alone	8	0.80 (0.04, 4.61)	0.838
	inf6+_alone	24	1.13 (0.37, 2.86)	0.812
	inf6+_boost2-	5	0.00 (NA, 313632.44)	0.960
	inf6+_boost2+	3	0.00 (NA, 1091790144331.05)	0.969
	inf6+_full2-	2	0.00 (NA, 211411878393342885888.00)	0.975
	inf6+_full2+	30	0.18 (0.01, 0.86)	0.095
	part2_-_alone	109	0.69 (0.38, 1.17)	0.194
AgeGr	_40-64	1591	Reference	
	0-24	447	0.42 (0.29, 0.59)	<0.001
	25-39	492	0.46 (0.33, 0.64)	<0.001
	65+	4299	0.82 (0.71, 0.95)	0.010
Sex	M	3370	Reference	
	Z	3459	0.63 (0.55, 0.72)	<0.001

0.1 1000e+07e+11e+15e+19