

**Supplementary table 3:****Projected total and daily peaks of COVID-19 deaths by the end of 2024 in England under different scenarios of uptake rate of vaccination in younger adults****Assumptions and notes:**

- Initial overall vaccine efficacy: 62.5% after dose-1 and 85% after dose-2.
- The overall vaccine efficacy is equally attributable to the infection and disease protection.
- Reinfectivity is reduced by 45%.

Scenario	Uptake rate	Vaccination waves (interval days)	Long-term vaccine efficacy	Immunity duration (day): Natural /vaccine	Total COVID-19 deaths (2020-2024)	Daily peaks of COVID-19 deaths		
						2022	2023	2024

**Higher coverage in younger adults: age 16-29: 80%; age 30-39: 85%; age 40-49: 90%; age 50+: 90%**

A2b1y	0.80-0.90	1	85.0%	730/365	269147	33	544	328
A2b2y	0.80-0.90	2 (365)	85.0%	730/365	203065	33	5	646
A2b3y	0.80-0.90	3 (365)	85.0%	730/365	149709	33	0	516
A2b4y	0.80-0.90	4 (365)	85.0%	730/365	131794	33	0	23
A2c1y	0.80-0.90	1	85.0%	365/182	374300	652	681	597
A2c2y	0.80-0.90	2 (365)	85.0%	365/182	253530	114	454	438
A2c3y	0.80-0.90	3 (365)	85.0%	365/182	214420	114	41	215
A2c4y	0.80-0.90	4 (365)	85.0%	365/182	182710	114	41	82
B2b1y	0.80-0.90	1	62.5%	730/365	380068	171	852	787
B2b2y	0.80-0.90	2 (365)	62.5%	730/365	294212	171	17	1339
B2b3y	0.80-0.90	3 (365)	62.5%	730/365	230951	171	0	813
B2b4y	0.80-0.90	4 (365)	62.5%	730/365	175249	171	0	187
B2c1y	0.80-0.90	1	62.5%	365/182	618489	764	1506	1842
B2c2y	0.80-0.90	2 (365)	62.5%	365/182	425932	515	1578	875
B2c3y	0.80-0.90	3 (365)	62.5%	365/182	356424	515	465	877
B2c4y	0.80-0.90	4 (365)	62.5%	365/182	331865	515	465	695

**Moderate coverage in younger adults: age 16-29: 75%; age 30-39: 80%; age 40-49: 85%; age 50+: 90%**

A2b1	0.75-0.90	1	85.0%	730/365	265799	42	627	243
A2b2	0.75-0.90	2 (365)	85.0%	730/365	206600	42	9	731
A2b3	0.75-0.90	3 (365)	85.0%	730/365	159912	42	0	582
A2b4	0.75-0.90	4 (365)	85.0%	730/365	134421	42	0	36
A2c1	0.75-0.90	1	85.0%	365/182	373907	479	588	435
A2c2	0.75-0.90	2 (365)	85.0%	365/182	266690	151	675	628
A2c3	0.75-0.90	3 (365)	85.0%	365/182	222944	151	55	363
A2c4	0.75-0.90	4 (365)	85.0%	365/182	194661	151	55	168

B2b1	0.75-0.90	1	62.5%	730/365	383433	209	916	801
B2b2	0.75-0.90	2 (365)	62.5%	730/365	304138	209	13	1301
B2b3	0.75-0.90	3 (365)	62.5%	730/365	236662	209	0	952
B2b4	0.75-0.90	4 (365)	62.5%	730/365	179002	209	0	224
B2c1	0.75-0.90	1	62.5%	365/182	611929	867	1542	2437
B2c2	0.75-0.90	2 (365)	62.5%	365/182	443176	615	1860	1096
B2c3	0.75-0.90	3 (365)	62.5%	365/182	376242	615	537	1092
B2c4	0.75-0.90	4 (365)	62.5%	365/182	350016	615	537	886

**Lower vaccination coverage in younger adults: age 16-29: 60%; age 30-39: 70%; age 40-49: 80%; age 50+: 90%**

A2b1x	0.60-0.90	1	85.0%	730/365	266219	67	638	209
A2b2x	0.60-0.90	2 (365)	85.0%	730/365	214159	67	14	761
A2b3x	0.60-0.90	3 (365)	85.0%	730/365	171971	67	0	562
A2b4x	0.60-0.90	4 (365)	85.0%	730/365	140179	67	0	46
A2c1x	0.60-0.90	1	85.0%	365/182	379362	477	550	353
A2c2x	0.60-0.90	2 (365)	85.0%	365/182	290730	243	1064	1066
A2c3x	0.60-0.90	3 (365)	85.0%	365/182	243384	243	46	548
A2c4x	0.60-0.90	4 (365)	85.0%	365/182	209857	243	46	255
B2b1x	0.60-0.90	1	62.5%	730/365	398443	306	1376	1052
B2b2x	0.60-0.90	2 (365)	62.5%	730/365	333844	306	3	1150
B2b3x	0.60-0.90	3 (365)	62.5%	730/365	237005	306	0	1250
B2b4x	0.60-0.90	4 (365)	62.5%	730/365	185126	306	0	240
B2c1x	0.60-0.90	1	62.5%	365/182	520700	977	1747	1732
B2c2x	0.60-0.90	2 (365)	62.5%	365/182	470214	814	2238	1526
B2c3x	0.60-0.90	3 (365)	62.5%	365/182	406564	814	563	1408
B2c4x	0.60-0.90	4 (365)	62.5%	365/182	377531	814	563	1140