THE LANCET

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Sheikh A, McMenamin J, Taylor B, Robertson C. SARS-CoV-2 Delta VOC in Scotland: demographics, risk of hospital admission, and vaccine effectiveness. *Lancet* 2021; published online June 14. http://dx.doi.org/10.1016/S0140-6736(21)01358-1.

Figure S1: Changing proportion of infections due to Alpha and Delta VOCs in Scotland over time

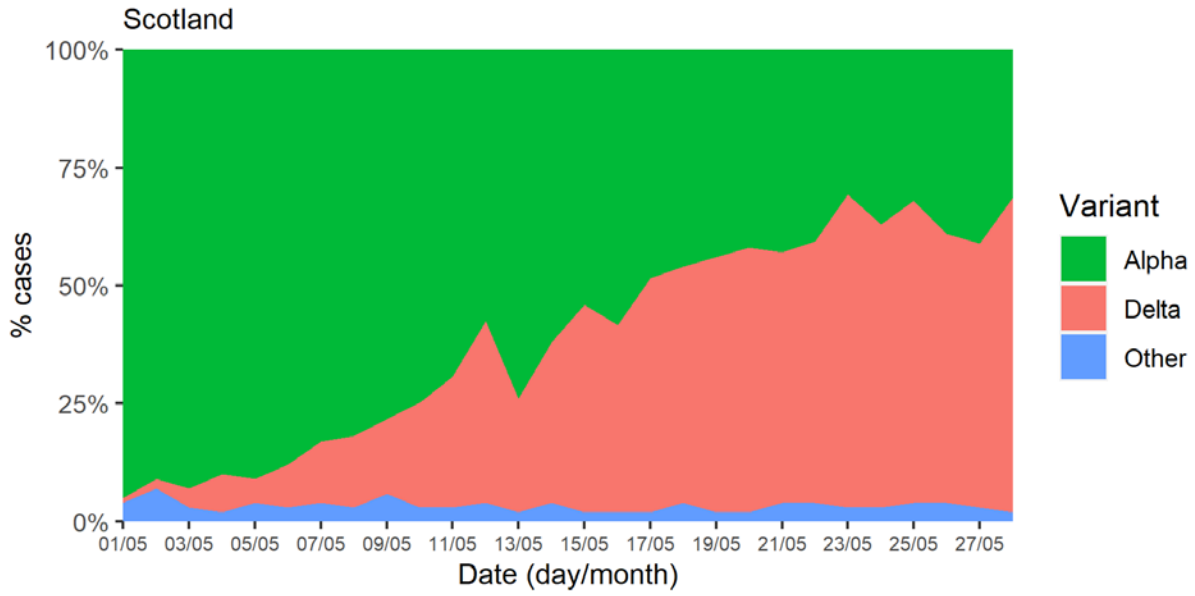
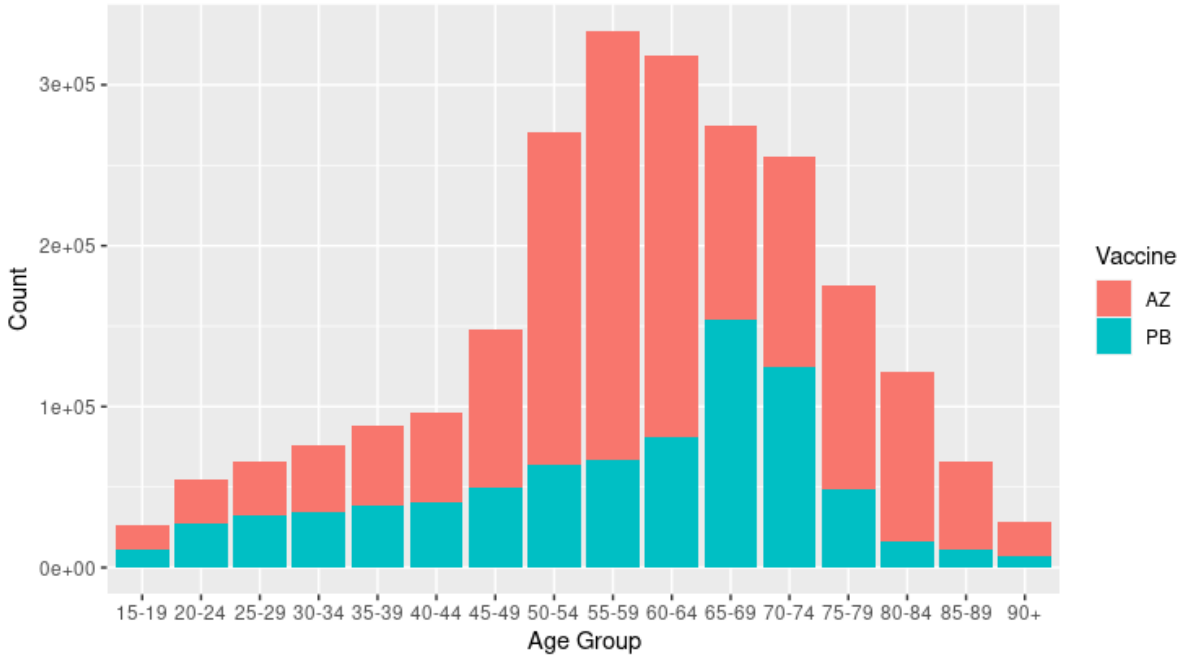
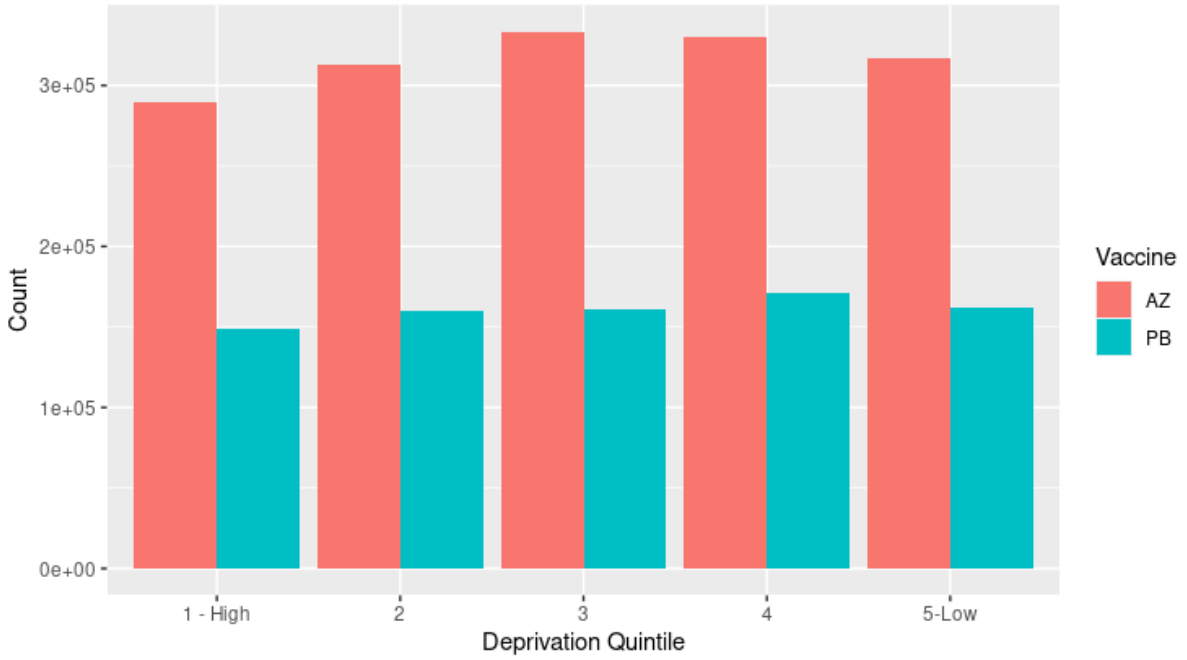


Figure S2: Age distribution of those vaccinated in Scotland with one dose by 1 April 2021



AZ – Oxford-AstraZeneca; PB – Pfizer-BioNTech

Figure S3: Distribution of those vaccinated in Scotland with one dose by April 01 2021 by deprivation status and vaccine type.



AZ – Oxford-AstraZeneca; PB – Pfizer-BioNTech

Figure S4: Age distribution of the cases by S gene status

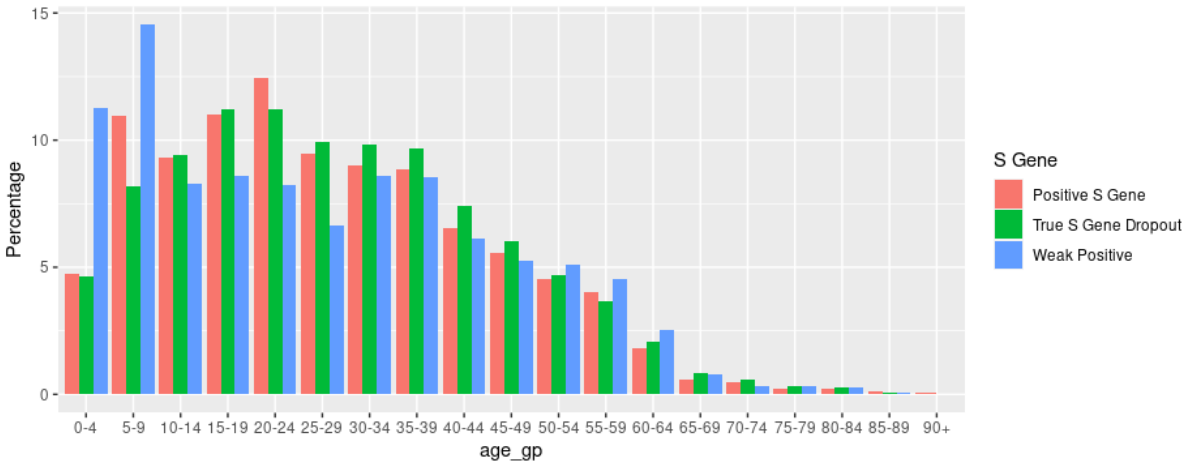


Table S1: Numbers of individuals testing positive (1 April to 6 June 2021) and number admitted to hospital from the community within 14 days of testing positive from the EAVE II cohort

S Gene	Person Years Exposure	N	Number Admitted to Hospital	Rate per 100 person years
S Gene Negative	**615.2**	**9996**	**223**	**36.2**
S Gene Positive	**214.7**	**7723**	**134**	**62.4**
Weak S Positive	**97.6**	**1824**	**20**	**20.5**

N – Number of individuals testing positive

Table S2: Hazard Ratios (HR) and lower and upper 95% confidence limits (LCL, UCL) for time to hospital admission following a COVID-19 positive test

		HR	LCL	UCL
S Gene Status	**S Gene Negative**	1.00		
	S Gene Positive	1.85	1.39	2.47
	Weak S Positive	0.51	0.30	0.87
Number of clinical Risk Groups	**0**	1.00		
	1	1.64	1.22	2.20
	2	1.77	1.31	2.38
	3-4	3.18	2.18	4.62
	5+	6.51	3.52	12.01
Vaccination Status	**Unvaccinated**	1.00		
	v1_0:27	0.65	0.45	0.93
	v1_28+	0.32	0.22	0.46
	v2_0:13	0.34	0.18	0.64
	v2_14+	0.30	0.16	0.54
Gender	**Female**	1.00		
	Male	0.98	0.80	1.21
Deprivation	**SIMD_Q1**	1.00		
	SIMD_Q2	1.07	0.81	1.42
	SIMD_Q3	0.94	0.68	1.29
	SIMD_Q4	0.78	0.56	1.08
	SIMD_Q5	0.73	0.52	1.04
	SIMD_Unknown	0.86	0.21	3.49

Footnote: The estimates were derived from a cox proportional hazards model with a smooth spline term for age and also for the temporal trend. The vaccination groups are uv – unvaccinated at the time of the test; V1_0-27 – one dose of vaccine 0 to 27 days before the swab for the test was taken; V1_28+ - one dose of the vaccine 28 days or more before the swab date; V2_0-13 – two doses of the vaccine where the second dose was 0 to 13 days before the date of the swab; V2_14+ two doses of the vaccine where the second dose was at least 14 days before the date of the swab.

Table S3: Hazard Ratios (HR) and lower and upper 95% confidence limits (LCL, UCL) for time to hospital admission following a covid 19 positive test. The estimates were derived from a cox proportional hazards model with a smooth spline term for age and also for the temporal trend.

		HR	LCL	UCL
Gender	**Female**	1.00		
	Male	0.98	0.79	1.20
Deprivation	**SIMD_Q1**	1.00		
	SIMD_Q2	1.08	0.82	1.43
	SIMD_Q3	0.95	0.69	1.30
	SIMD_Q4	0.78	0.56	1.08
	SIMD_Q5	0.73	0.52	1.04
	SIMD_Unknown	0.86	0.21	3.48
Number of clinical Risk Groups	**0**	1.00		
	1	1.63	1.21	2.18
	2	1.75	1.30	2.36
	3-4	3.15	2.16	4.59
	5+	6.65	3.61	12.25
Unvaccinated	**S Gene Negative**	1.00		
	S Gene Positive	1.82	1.31	2.53
	Weak S Positive	0.52	0.27	0.99
Vaccinated dose 1 < 28 days	**S Gene Negative**	0.81	0.52	1.24
	S Gene Positive	0.38	0.18	0.80
	Weak S Positive	0.84	0.18	3.85
Vaccinated D1 28+ Dose 2	**S Gene Negative**	0.28	0.18	0.43
	S Gene Positive	0.38	0.24	0.58
	Weak S Positive	0.27	0.07	0.98

Footnote: The vaccination groups are uv – unvaccinated at the time of the test; V1_0-27 – one dose of vaccine 0 to 27 days before the swab for the test was taken; V1_28+ - one dose of the vaccine 28 days or more before the swab date; V2_0-13 – two doses of the vaccine where the second dose was 0 to 13 days before the date of the swab; V2_14+ two doses of the vaccine where the second dose was at least 14 days before the date of the swab. This is an interaction model where the interaction between vaccine status and S gene status is included. The hazard ratios for the unvaccinated are compared to the S gene negative group. The interaction terms are those s gene estimates for the two vaccinated groups. These estimates are compared to a hazard ratio of 1 in the unvaccinated group with the same s gene level.

Table S4: Test negative design analysis estimating vaccine effectiveness in preventing RT-PCR confirmed SARS-CoV-2 infection comparing S gene positive (Delta VOC) with S gene negative (Alpha VOC) cases. All community testing data in Scotland from 1 April 2021 to 6 June 2021 were used irrespective of symptoms at the swab test.

06-Jun-21	All Tested	S Gene Positive					S Gene Negative				
Vaccine	Vaccine Status	N	R	VE	LCL	UCL	N	R	VE	LCL	UCL
	Unvaccinated	117263	3672	0	0	0	119419	5828	0	0	0
Pfizer-	**V1_0-27**	6986	317	12	0	22	6857	188	31	20	41
BioNTech	**V1_28+**	14214	163	30	17	41	14324	273	38	29	45
	V2_0-13	7233	15	66	43	80	7277	59	73	64	79
	V2_14+	53679	208	79	75	82	53575	104	92	90	93
	Unvaccinated	117263	3672	0	0	0	119419	5828	0	0	0
Oxford-	**V1_0-27**	14863	293	7	-7	19	15137	567	9	-1	17
AstraZeneca	**V1_28+**	51392	776	18	9	25	51572	956	37	32	42
	V2_0-13	13984	265	25	14	35	13818	99	64	56	71
	V2_14+	32719	231	60	53	66	32588	100	73	66	78

Footnote: N – number of individuals tested; R – Number testing positive; VE – vaccine effect, which is equal to (1-OR)*100, where OR is the odds ratio from the logistic regression model; LCL, UCL – the lower and upper 95% confidence limits for the vaccine effect; V1_0-27 – one dose of vaccine 0 to 27 days before the swab for the test was taken; V1_28+ - one dose of the vaccine 28 days or more before the swab date; V2_0-13 – two doses of the vaccine where the second dose was 0 to 13 days before the date of the swab; V2_14+ two doses of the vaccine where the second dose was at least 14 days before the date of the swab. The VE estimates were derived from a generalised additive logistic regression model with spline terms for age, number of prior COVID tests, date and factors for sex and deprivation.

Table S5: Test negative design analysis estimating vaccine effectiveness in preventing RT-PCR confirmed symptomatic SARS-CoV-2 infection comparing S gene positive (Delta variant) with S gene negative (Alpha variant) cases. All community testing data in Scotland from 1 April 2021 to 6 June 2021 were used, but only those reporting symptoms at the swab test are included in this table.

06-Jun-21	Symptomatic	S Gene Positive					S Gene Negative				
Vaccine	Vaccine Status	N	R	VE	LCL	UCL	N	R	VE	LCL	UCL
	Unvaccinated	40504	2439	0	0	0	42062	3997	0	0	0
Pfizer-	**V1_0-27**	1942	203	18	4	31	1858	119	28	13	41
BioNTech	**V1_28+**	2376	92	33	15	47	2466	182	27	13	39
	V2_0-7	883	5	84	61	93	898	20	78	65	86
	V2_14+	4401	75	83	78	87	4360	34	92	88	94
	Unvaccinated	40504	2439	0	0	0	42062	3997	0	0	0
Oxford-	**V1_0-27**	4422	186	23	7	36	4634	398	17	6	26
AstraZeneca	**V1_28+**	10242	511	33	23	41	10322	591	39	32	45
	V2_0-7	1877	160	37	23	48	1774	57	65	54	74
	V2_14+	2089	126	61	51	70	1999	36	81	72	87

Footnote: N – number of individuals tested; R – Number testing positive; VE – vaccine effect, which is equal to (1-OR)*100, where OR is the odds ratio from the logistic regression model; LCL, UCL – the lower and upper 95% confidence limits for the vaccine effect; V1_0-27 – one dose of vaccine 0 to 27 days before the swab for the test was taken; V1_28+ - one dose of the vaccine 28 days or more before the swab date; V2_0-13 – two doses of the vaccine where the second dose was 0 to 13 days before the date of the swab; V2_14+ two doses of the vaccine where the second dose was at least 14 days before the date of the swab. The VE estimates were derived from a generalised additive logistic regression model with spline terms for age, number of prior covid tests, date and factors for gender and deprivation.

Acknowledgments

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