Supplementary Materials

72,172 viral genome sequences associated with 63,639 cases in WDRS from December 1, 2020 to January 14, 2022

Excluding sequences with poor sequencing quality (>10% ambiguity)
n = 462

Excluding sequences with no known lineage
n = 1246

Excluding sequences with associated case missing vaccination or hospital admission date
n = 70

Excluding sequences with improbable collection dates
n = 3

Excluding sequences due to multiple lineages for each case and keeping only first detection if case has multiple sequences of a single lineage
n = 8307

Excluding sequences with a collection date >14 days after hospitalization date
n = 103

Excluding sequences with associated case with a repeat positive test >21 day after first positive test day as well as sequences not collected as part of sentinel surveillance
n = 3,099

58,882 sentinel surveillance viral genome sequences associated with 58,882 cases in WDRS from December 1, 2020 to January 14, 2022
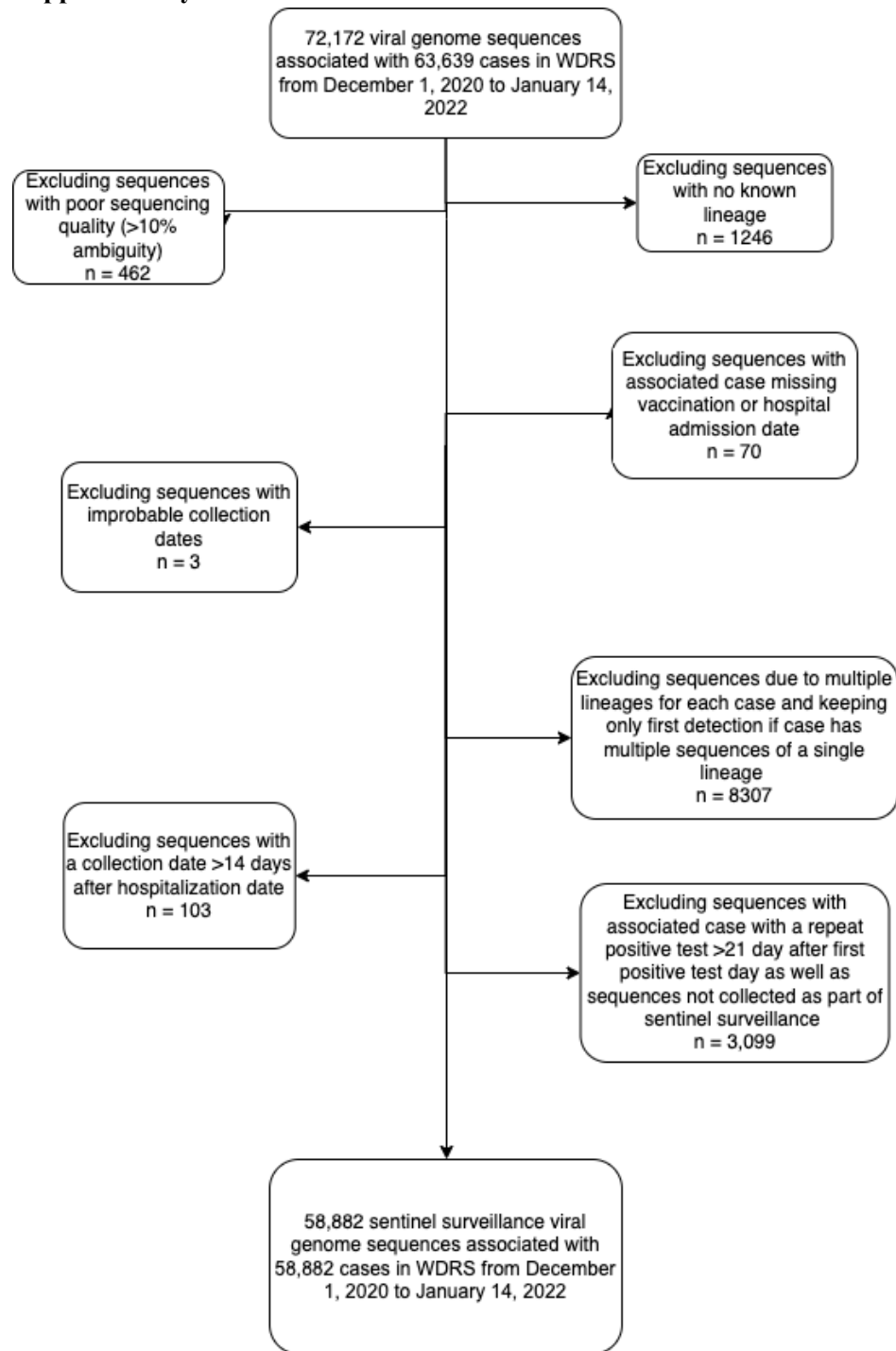
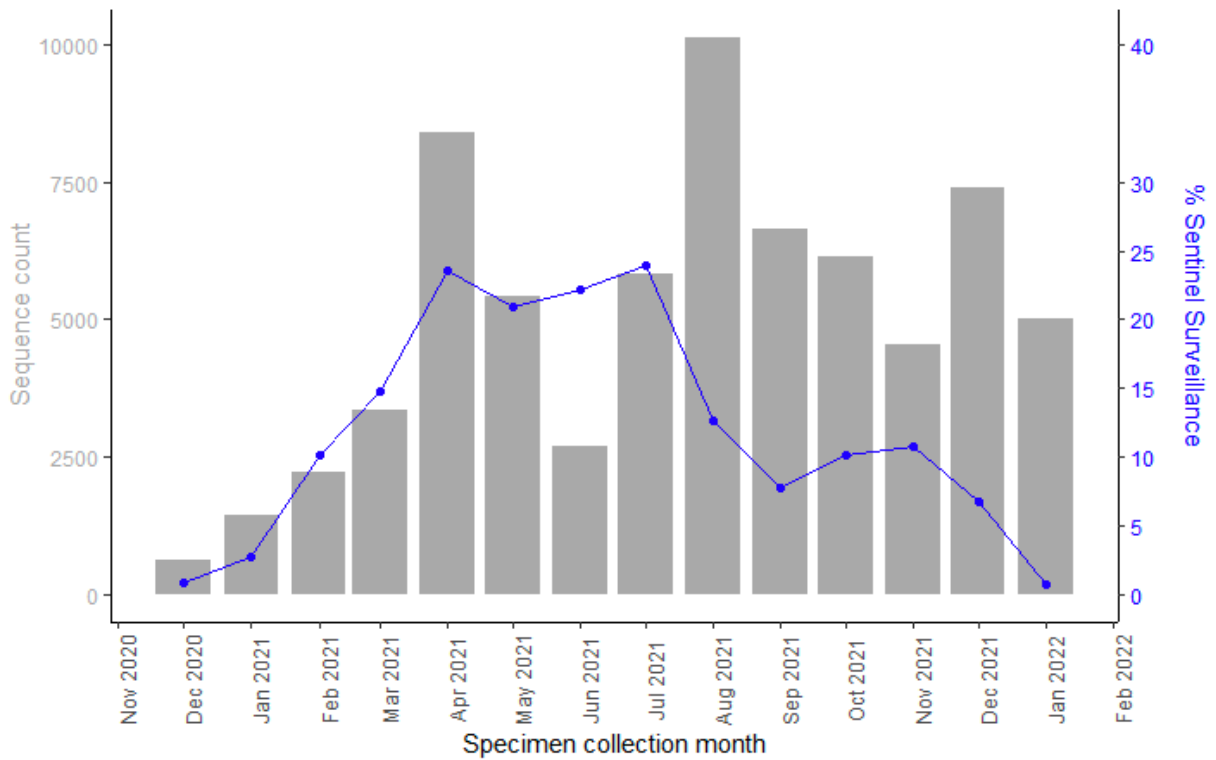**Figure S1: Inclusion flow diagram for study population**.

Figure S2: Proportion of total SARS-CoV-2 cases in Washington sequenced over time as part of sentinel surveillance. Bars represent total sequence count while blue line represents percentage of total SARS-CoV-2 positive cases in Washington that sequenced as part of sentinel surveillance for each time period. Specimens submitted from sentinel labs have decreased in January 2022 due to lab capacity during the omicron peak.
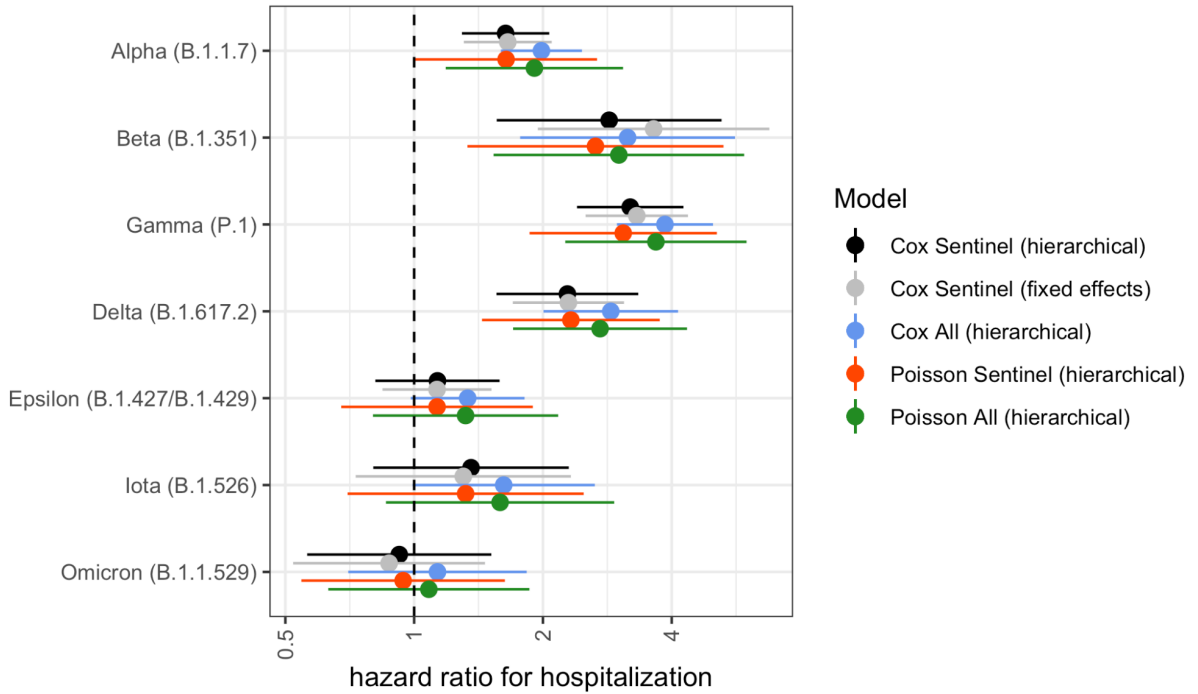
Figure S3: Risk of Hospitalization by Variant Lineage via differing model selection. Error bars represent 95% CI. "Hierarchical" refers to a model with mixed effects and "Sentinel" refers to the sample restricted to only to cases collected through sentinel surveillance. "Fixed effects" describes all model covariates being treated as fixed effects and "All" refers to the entire dataset from Dec 1, 2020 to Jan 14, 2022, irrespective of participation in sentinel surveillance.
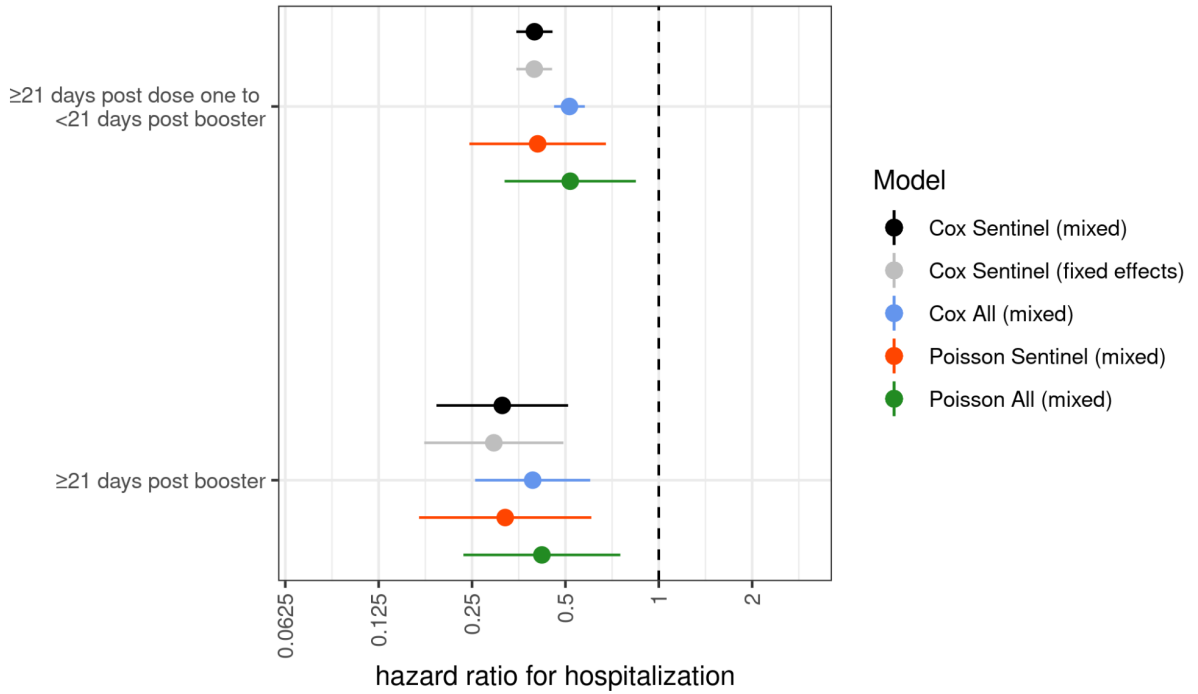
Figure S4: Risk of Hospitalization by vaccination dosage and technology via differing model selection. Error bars represent 95% CI. "Mixed" refers to a model with mixed effects and "Sentinel" refers to the sample restricted to only to cases collected through sentinel surveillance. "Fixed effects" describes all model covariates being treated as fixed effects and "All" refers to the entire dataset from Dec 1, 2020 to Jan 14, 2022 , irrespective of participation in sentinel surveillance and includes targeted sequencing of suspected breakthrough infections.

Table S1: Hospitalizations by Vaccination Status

	Other		Alpha		Delta		Gamma		Omicron	
Hospitalized	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Unvaccinated to <21 days post dose one	114	4975	224	8188	837	22271	102	1844	16	1984
≥21 days post dose one to <21 days post booster	–	–	9	300	261	9173	10	144	16	2793
≥21 days post booster	–	–	–	–	11	554	–	–	4	549

Categories with less than 4 hospitalizations were excluded.

Table S2: Adjusted Cox Proportional Hazards Estimates for Risk of Hospitalization for Omicron vs Delta

Characteristics	Hospitalization	
	HR	95% CI
Lineage		
Delta	REF	
Omicron	0.34	(0.23-0.50)
Vaccination Lineage*		
Delta		
Unvaccinated to <21 days post dose one	REF	
≥21 days post dose one to <21 days post booster	0.40	(0.34-46)
≥21 days post booster	0.30	(0.17-0.52)
Omicron		
Unvaccinated to <21 days post dose one	0.35	(0.20-0.62)
≥21 days post dose one to <21 days post booster	0.22	(0.13-0.37)
≥21 days post booster	0.18	(0.08-0.39)

*Additional model covariates include: sex, age (in 10 year bins), calendar week. Each variant lineage category risk estimate uses the "Unvaccinated to <21 days post dose one" vaccination group in cases infected with Delta as the reference group.