

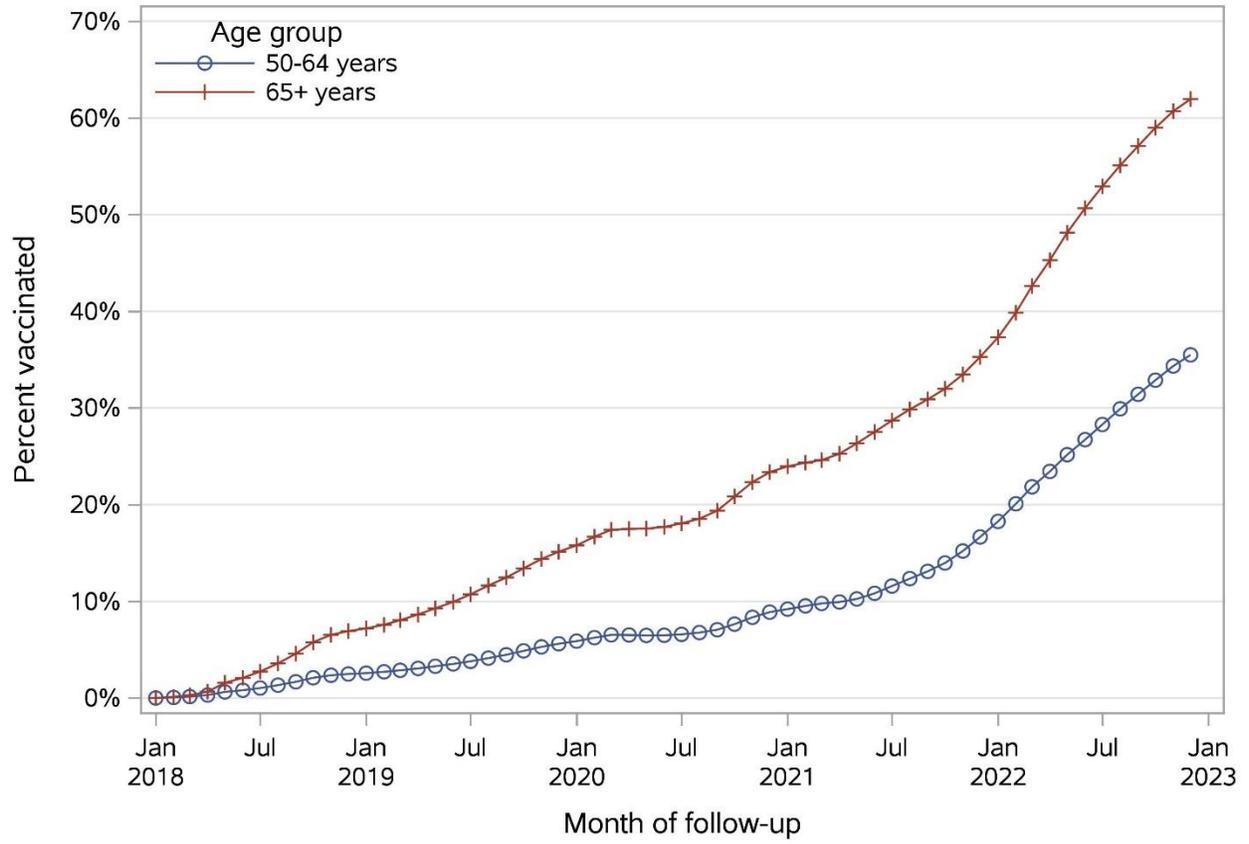
Supplemental Material

Zerbo O, Bartlett J, Fireman B, et al. Effectiveness of recombinant zoster vaccine against herpes zoster in a real-world setting.

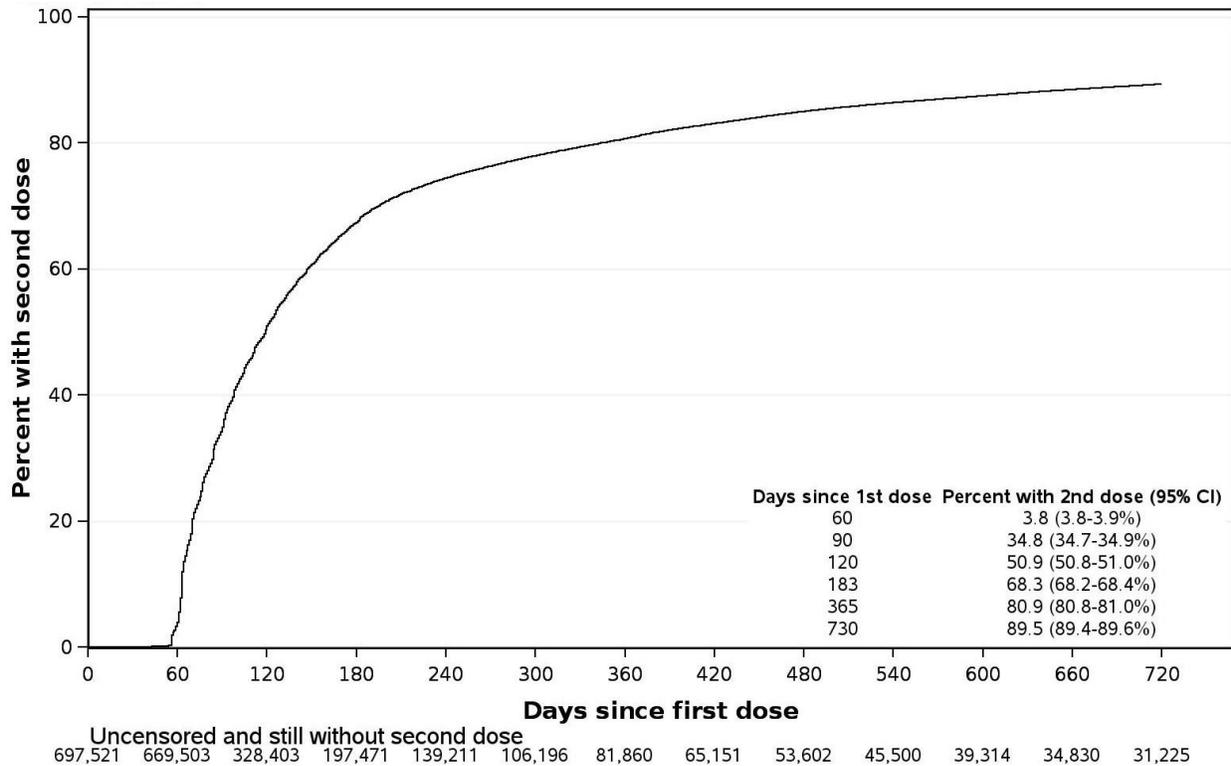
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Supplement Figure 1. Percent of follow-up time vaccinated with one or two RZV doses by age group, January 2018 to December 2022



Supplement Figure 2. Percent of RZV Dose 1 vaccinees who received 2nd dose by days since 1st dose.



RZV denotes recombinant zoster vaccine.

These estimates are based on people who received Dose 1 by September 30, 2022 with follow-up for 2nd dose through December 31, 2022.

(These estimates exclude people with <3 months follow up because they received Dose 1 after September 30, 2022.)

Estimates of the percent of Dose 1 vaccinees who received 2nd dose account for incomplete data using Kaplan-Meier methods.

Supplement Figure 3. Effectiveness of RZV vaccine against herpes zoster during the pre-pandemic period, January 2018 to February 2020.



*This figure shows the VE estimates obtained from the first model with a 5-level measure of RZV vaccination status during the pre-pandemic period. The model is conditioned on VSD site and calendar time, and adjusted for age, sex, race or ethnic group, ZVL status, corticosteroid use, influenza vaccination, hospital admission, outpatient visit frequency, and diagnoses for diabetes, chronic obstructive pulmonary disease, coronary heart disease, obesity, and hypertension.

Abbreviations: RZV denotes recombinant zoster vaccine, HZ herpes zoster, PY person-years, VE vaccine effectiveness, CI confidence interval.

Supplement Table 1a. Sensitivity analysis of the effectiveness of RZV against herpes zoster, by dose, January 2018 to December 2022

Comparison of VE estimates with and without adjustment for time-varying covariates.

RZV vaccination status	Vaccine effectiveness estimates (95% CI)		
	HZ cases	Primary analysis corresponding to Figure 1*	Sensitivity analysis omitting time-varying covariates†
Unvaccinated (reference group)	42,798		
1st dose 1-29 days	314	23.2% (14.1%,31.3%)	20.1% (10.6%,28.5%)
1st dose 30+ days (partially vaccinated)	805	64.4% (61.7%,66.8%)	62.5% (59.8%,65.1%)
2nd dose 1-29 days	83	73.8% (67.6%,78.9%)	71.9% (65.2%,77.4%)
2nd dose 30+ days (fully vaccinated)	1,333	76.3% (74.9%,77.6%)	74.5% (73.0%,75.9%)

*Cox regression analysis conditioned on VSD site and calendar time, and adjusted for age, sex, race or ethnic group, ZVL status, corticosteroid use, influenza vaccination, hospital admission, outpatient visit frequency, and diagnoses for diabetes, chronic obstructive pulmonary disease, coronary heart disease, obesity, and hypertension.

†Cox regression analysis conditioned on VSD site and calendar time, and adjusted for age, sex, race or ethnic group, and ZVL status.

Abbreviations: RZV denotes recombinant zoster vaccine, HZ herpes zoster, CI confidence interval.

Supplement Table 1b. Sensitivity analysis of the effectiveness of RZV against herpes zoster, by dose and time since vaccination, January 2018 to December 2022

Comparison of VE estimates with and without adjustment for time-varying covariates.

RZV vaccination status	Vaccine effectiveness estimates (95% CI)		
	HZ cases	Primary analysis corresponding to Figure 2*	Sensitivity analysis omitting time-varying covariates†
Unvaccinated (reference group)	42,798		
1st dose 1-29 days	314	23.2% (14.2%,31.4%)	20.1% (10.6%,28.5%)
1st dose 30 days to < 1 year	509	70.2% (67.4%,72.7%)	68.4% (65.5%,71.1%)
1st dose 1 to < 2 years	189	44.8% (36.3%,52.2%)	42.9% (34.1%,50.5%)
1st dose 2 to < 3 years	77	47.8% (34.7%,58.3%)	46.4% (32.9%,57.2%)
1st dose 3+ years	30	52.3% (31.7%,66.6%)	51.0% (29.8%,65.7%)
2nd dose 1-29 days	83	73.9% (67.6%,79.0%)	72.0% (65.2%,77.4%)
2nd dose 30 days to < 1 year	573	79.0% (77.1%,80.7%)	77.0% (75.0%,78.9%)
2nd dose 1 to < 2 years	395	74.6% (71.9%,77.0%)	72.9% (70.1%,75.5%)
2nd dose 2 to < 3 years	244	73.0% (69.3%,76.2%)	71.3% (67.4%,74.7%)
2nd dose 3+ years	121	73.3% (68.0%,77.7%)	71.3% (65.6%,76.0%)

*Cox regression analysis conditioned on VSD site and calendar time, and adjusted for age, sex, race or ethnic group, ZVL status, corticosteroid use, influenza vaccination, hospital admission, outpatient visit frequency, and diagnoses for diabetes, chronic obstructive pulmonary disease, coronary heart disease, obesity, and hypertension.

†Cox regression analysis conditioned on VSD site and calendar time, and adjusted for age, sex, race or ethnic group, and ZVL status.

Abbreviations: RZV denotes recombinant zoster vaccine, HZ herpes zoster, CI confidence interval.

Supplement Table 2. Effects of the RZV vaccine and covariates on the risk of herpes zoster, January 2018 to December 2022

Variable	Hazard ratio	
	HR (95% CI)	P-value
RZV vaccination status		
RZV-unvaccinated (reference)		
RZV-1st dose (1-29 days)	0.77 (0.69,0.86)	<.001
RZV-1st dose (30+ days)	0.36 (0.33,0.38)	<.001
RZV-2nd dose (1-29 days)	0.26 (0.21,0.32)	<.001
RZV-2nd dose (30+ days)	0.24 (0.22,0.25)	<.001
ZVL vaccination status		
ZVL-unvaccinated (known) (reference)		
ZVL-unvaccinated (probable)	1.00 (0.97,1.04)	0.97
ZVL-unknown	0.92 (0.89,0.97)	<.001
ZVL-vaccinated < 5 years	0.59 (0.57,0.61)	<.001
ZVL-vaccinated 5+ years	0.75 (0.73,0.77)	<.001
Age group (5-year)		
50-54 years (reference)		
55-59 years	1.17 (1.13,1.21)	<.001
60-64 years	1.31 (1.26,1.35)	<.001
65-69 years	1.36 (1.31,1.42)	<.001
70-74 years	1.57 (1.50,1.63)	<.001
75-79 years	1.75 (1.68,1.83)	<.001
80-84 years	1.88 (1.79,1.97)	<.001
85-89 years	1.86 (1.76,1.96)	<.001
90+ years	1.60 (1.50,1.71)	<.001
Female	1.45 (1.42,1.48)	<.001
Race or ethnic group		
White (reference)		
Black	0.73 (0.69,0.76)	<.001
Asian	1.19 (1.16,1.23)	<.001
Hawaiian or Pacific Islander	1.10 (0.97,1.24)	0.143

Variable	Hazard ratio	
	HR (95% CI)	P-value
Native American or Alaska Native	1.09 (0.94,1.26)	0.26
Other or Multirace	1.10 (1.04,1.16)	<.001
Hispanic (regardless of race)	1.20 (1.16,1.23)	<.001
Unknown	0.74 (0.68,0.79)	<.001
Corticosteroid use	1.49 (1.44,1.55)	<.001
Influenza vaccination	1.17 (1.15,1.20)	<.001
Hospital admission	1.14 (1.10,1.18)	<.001
Outpatient visit frequency	1.42 (1.39,1.45)	<.001
Diabetes	1.04 (1.01,1.08)	0.011
Chronic obstructive pulmonary disease	1.03 (0.98,1.09)	0.24
Coronary heart disease	1.14 (1.09,1.19)	<.001
Obesity	1.03 (0.98,1.08)	0.25
Hypertension	1.01 (0.99,1.04)	0.31

Hazard ratio estimates from the first model, conditioned on VSD site and calendar time, and adjusted for the variables shown in the table.

Abbreviations: RZV denotes recombinant zoster vaccine, ZVL zoster vaccine live.