



Seasonal incidence of symptomatic RSV during the COVID-19 pandemic in a rural community cohort: Wisconsin, USA 2021-2023.

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Background

RSV activity in the USA was initially suppressed during the COVID-19 pandemic, followed by a resurgence in summer/fall of 2021. However, national RSV trends are largely based on medically-attended cases with clinical testing biased toward young children. We estimated symptomatic RSV incidence in a prospective rural community cohort of adults and children across 2 years from July 2021 to April 2023.

Methods

- Persons living in or near Marshfield WI were prospectively sampled by 10-year age strata with oversampling of young children and older adults.
- Participants reported symptoms weekly from July 2021-June 2022 (N=1,497; 1355 person-years)
- A subset of children continued participation between July 2022-April 2023 (N=246; 242 person-years)
- RSV A and RSV B were identified by RT-PCR of nasal swabs self-collected by symptomatic participants.
- Incidence was estimated as the number of symptomatic RSV cases per 100 person-years of follow-up in each study year.
- RSV incidence rate ratios (IRR) were estimated by age group (<5, 5-11, 12-17, 18-29, 30-59, 60-79, and ≥80 years), sex, race and ethnicity, and chronic conditions using multivariable Poisson regression.
- The number and proportion of RSV positive children who sought medical care was determined by self-report or electronic health record documentation of a medically-attended acute respiratory illness (MAARI) visit defined by ICD-10 code.

Results

Figure 1. Symptomatic RSV A and RSV B infections by calendar week: July 1, 2021 to April 30, 2023

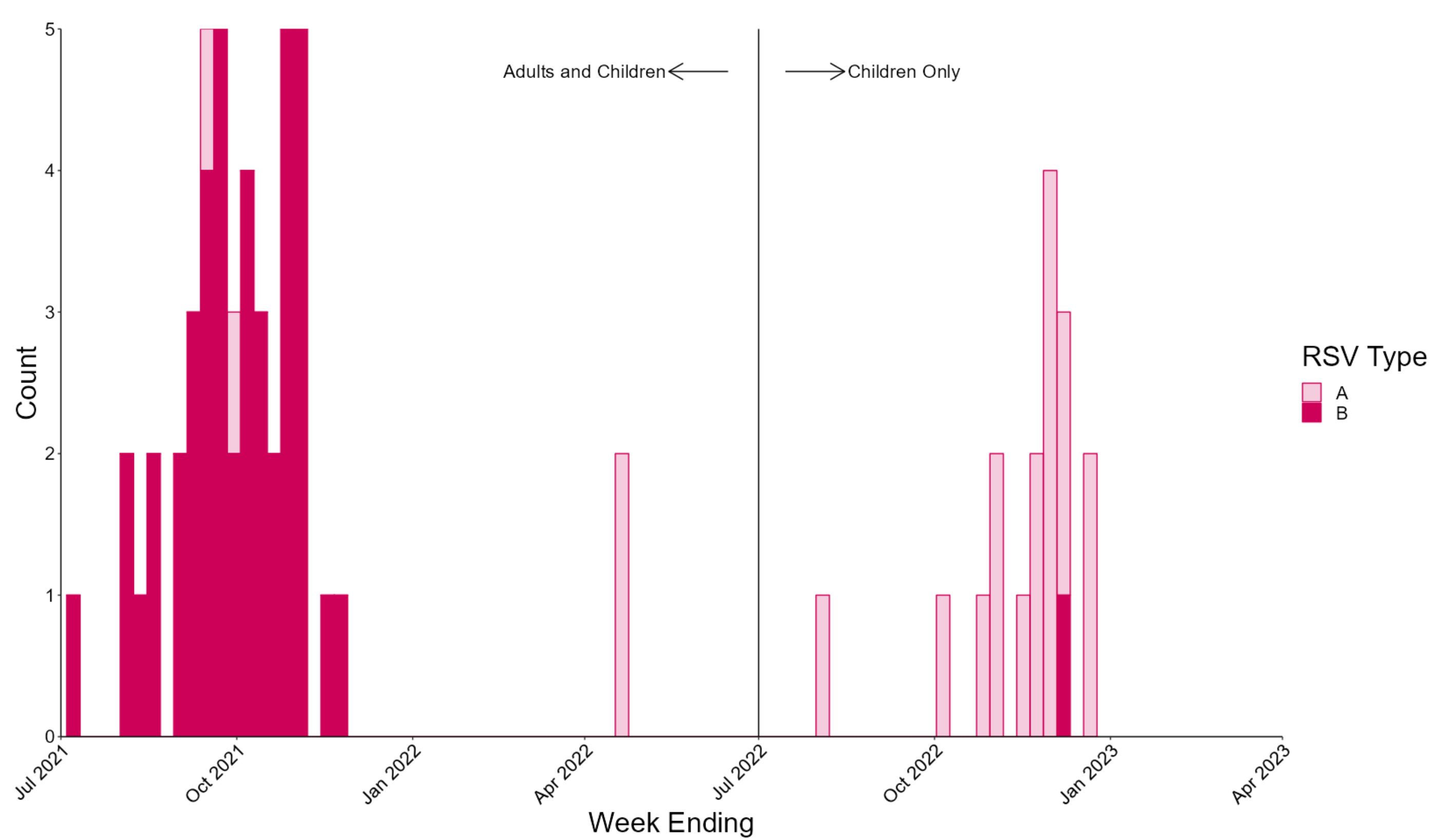


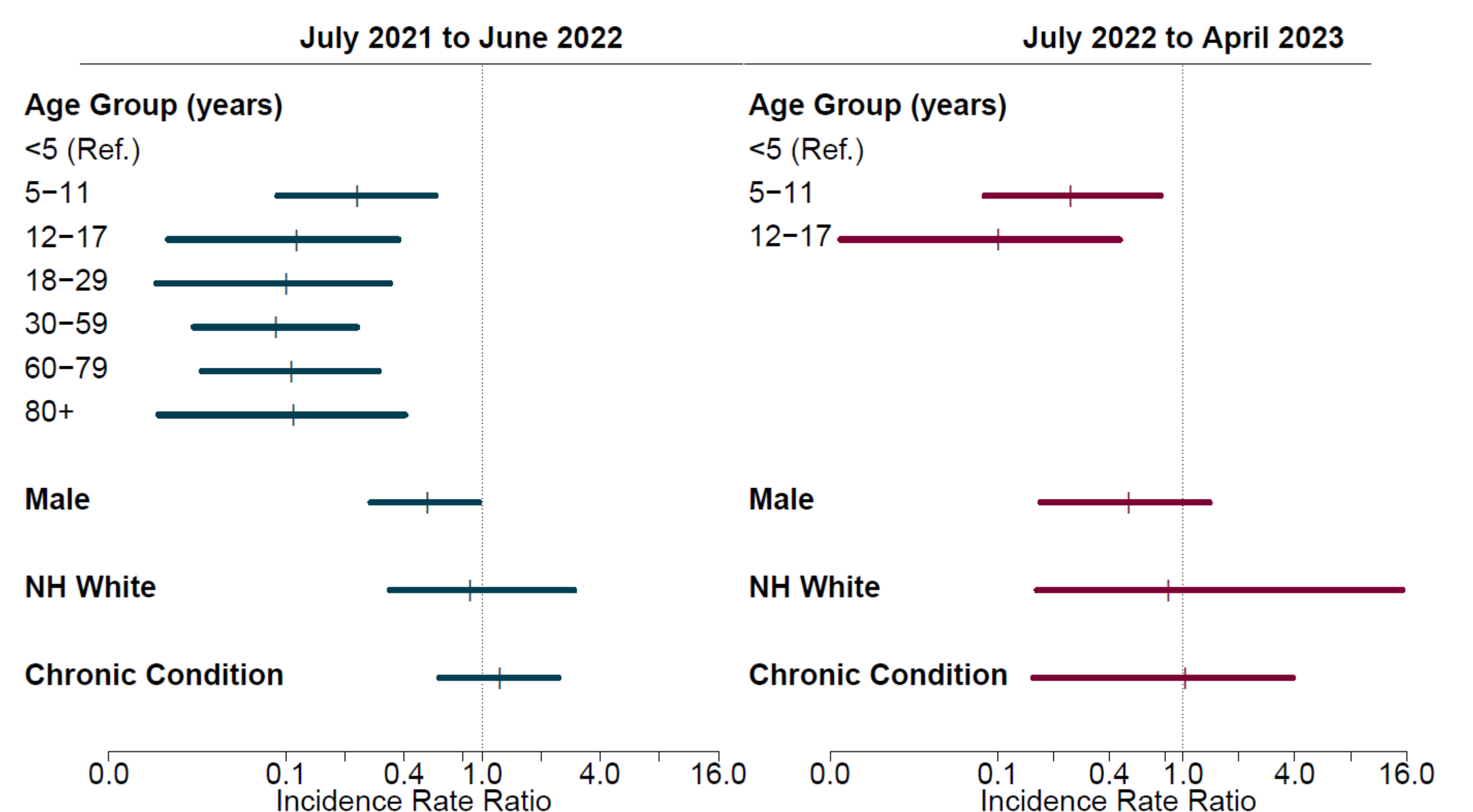
Table 1. RSV incidence in children and adults: July 1, 2021 to June 30, 2022.

	Total Participants (person-years)	RSV A	RSV B	RSV incidence per 100 person-years (95% CI)	Self-reported or EHR-documented MAARI visits No. (% of RSV positive)
Age Group					
<5 years (min 9 mo.)	52 (46)	3	7	21.9 (12.4, 35.9)	5 (50.0)
5-11 years	204 (181)	0	9	5.0 (2.6, 9.2)	2 (22.2)
12-17 years	128 (115)	0	3	2.6 (0.9, 7.4)	0 (0.0)
18-29 years	148 (121)	0	3	2.5 (0.9, 7.0)	1 (33.3)
30-59 years	483 (444)	0	10	2.3 (1.2, 4.1)	5 (50.0)
60-79 years	362 (337)	1	8	2.7 (1.4, 5.0)	3 (33.3)
80+ years	120 (110)	0	3	2.7 (0.9, 7.7)	2 (66.7)
Sex					
Female	859 (781)	4	29	4.2 (3.0, 5.9)	11 (33.3)
Male	638 (574)	0	14	2.4 (1.5, 4.1)	7 (50.0)
Non-Hispanic White					
Yes	1412 (1283)	4	39	3.4 (2.5, 4.5)	15 (34.9)
No	85 (72)	0	4	5.5 (2.2, 13.4)	3 (75.0)
Chronic Condition					
Yes	689 (643)	1	18	3.0 (1.9, 4.6)	8 (42.1)
No	808 (712)	3	25	3.9 (2.7, 5.6)	10 (35.7)
TOTAL	1497 (1355)	4	43	3.5 (2.6, 4.6)	18 (38.3)

Table 2. RSV incidence in children: July 1, 2022 to April 30, 2023.

	Total Participants (person-years)	RSV A	RSV B	RSV incidence per 100 person-years (95% CI)	Self-reported or EHR-documented MAARI visits No. (% of RSV positive)
Age Group					
<5 years (min 1 year)	26 (26)	6	0	23.1 (11.0, 42.1)	1 (16.7)
5-11 years	136 (135)	8	0	6.0 (3.0, 11.3)	1 (12.5)
12-17 years	84 (82)	1	1	2.5 (0.7, 8.5)	0 (0.0)
Sex					
Female	118 (116)	9	1	8.6 (4.7, 15.1)	0 (0.0)
Male	128 (126)	6	0	4.8 (2.2, 10.0)	2 (33.3)
Non-Hispanic White					
Yes	233 (229)	14	1	6.5 (4.0, 10.5)	2 (13.3)
No	13 (13)	1	0	7.8 (0.4, 33.6)	0 (0.0)
Chronic Condition					
Yes	42 (41)	2	0	4.8 (1.3, 16.0)	1 (50.0)
No	204 (201)	13	1	7.0 (4.2, 11.4)	1 (7.1)
TOTAL	246 (242)	15	1	6.6 (4.1, 10.5)	2 (12.5)

Figure 2. Associations between participant characteristics and RSV incidence.



Conclusions

- We observed a resurgence of symptomatic community RSV as pandemic restrictions eased, with highest rates in young children.
- These data may inform RSV burden estimates and provide community baselines for impact assessments of newly licensed products.

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