



Vaccine Exemptions Fast Fact Sheet

Exemptors are more likely to contract vaccine-preventable diseases than vaccinated children.

- Children exempt from vaccination requirements are more than 35 times more likely to contract measles¹ and nearly 6 times more likely to contract pertussis,² compared to vaccinated children.

Exemptors put others at risk of deadly disease.

- An increase or decrease in the number of exemptions would affect the incidence of measles in nonexempt populations. If the number of exemptions doubled, the incidence of measles infection in nonexempt individuals would increase by 5.5%, 18.6%, and 30.8%, respectively, for intergroup mixing ratios of 20%, 40%, and 60%.³
- Herd immunity is only effective if vaccination rates are at a certain level:^{4, 5}

Disease	Herd Immunity Threshold
Diphtheria	85%
Measles	94%
Mumps	86%
Pertussis	94%
Polio	93%
Rubella	85%
Smallpox	85%
Varicella	Unknown

State exemption rates only show part of the picture. Parents that invoke a philosophical exemption are often clustered together, increasing the risk of transmitting deadly diseases within a community.

- For example, from 2018 through 2019, Washington’s state exemption rate was 4.8%. In individual counties, however, it ranged from 1.4 to 15%.⁶
- An example of this clustering was seen in Washington State's Clark County during the 2019 measles outbreak. The county’s measles vaccination rate was only 78%,⁷ far below the 94% needed to reach herd immunity. As a result, more than 81% of the state’s measles cases occurred there.⁸



¹ Salmon DA, Haber M, Gangarosa EJ, Phillips L, Smith NJ, Chen RT. Health consequences of religious and philosophical exemptions from immunization laws: individual and societal risk of measles. *JAMA*.1999;282:47-53.

² Feikin DR, Lezotte DC, Hamman RF, Salmon DA, Chen RT, and Hoffman RE. Individual and Community Risks of Measles and Pertussis Associated With Personal Exemptions to Immunization. *JAMA* 2007;284:3145-3150.

³ DA, S. (July 1999). Health consequences of religious and philosophical exemptions from immunization laws: individual and societal risk of measles. *Journal of the American Medical Association*, 47-53.

⁴ Fine PEM. Herd Immunity: history, theory, practice. *Epidemiol Rev* 15:265-302, 1993

⁵ Anderson RM, May RM. *Infectious Diseases of Humans: Dynamics and Control*. Oxford, UK: Oxford University Press; 1991.

⁶ Washington State Department of Health. "County School Immunization Dashboards." Accessed 15 June 2021.

<https://www.doh.wa.gov/DataandStatisticalReports/HealthDataVisualization/SchoolImmunization/CountySchoolImmunization>

⁷ Lambert J. NPR. "Measles Cases Mount in Pacific Northwest Outbreak." 19 February 2019. Accessed 15 June 2021.

<https://www.npr.org/sections/health-shots/2019/02/08/692665531/measles-cases-mount-in-pacific-northwest-outbreak>

⁸ Washington State Department of Health. "Measles 2019." 21 November 2019. Accessed 15 June 2021.

<https://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/Measles/Measles2019>