



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 measlesⁱ and nearly 6 times more likely to contract pertussis,ⁱⁱ 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%.ⁱⁱⁱ
- Herd immunity is only effective if vaccination rates are at a certain level:^{iv v}

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

- When considering herd immunity thresholds, it is important to remember state exemption rates only show part of the picture. For example, from 2006 through 2007, Washington’s state exemption rate was 6%. In individual counties, however, it ranged from 1.2 to 26.9%.^{vi}

Parents that invoke a philosophical exemption are often clustered together, increasing the risk of transmitting deadly diseases within a community.

- State exemption rates only show part of the picture. For example, from 2006 through 2007, Washington’s state exemption rate was 6%. In individual counties, however, it ranged from 1.2 to 26.9%.^{vii}
- An example of this clustering is in Washington State's San Juan County, where 89% of sixth graders are either noncompliant with or exempt from vaccination requirements for school entry. Only 4% of sixth graders were adequately immunized against pertussis for the 2010–11 school year. Not surprisingly, the county also had one of the state's highest incidence rates of pertussis.^{viii}



ⁱ 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.

ⁱⁱ 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.

ⁱⁱⁱ 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.

^{iv} Fine PEM. Herd Immunity: history, theory, practice. *Epidemiol Rev* 15:265-302, 1993

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

^{vi} Saad B. Omer, Daniel A. Salmon, Walter A. Orenstein, Patricia deHart, and Neal Halsey. Vaccine Refusal, Mandatory Immunization, and the Risks of Vaccine-Preventable Diseases. *NEJM* 360;19. May 7, 2009.

^{vii} Saad B. Omer, Daniel A. Salmon, Walter A. Orenstein, Patricia deHart, and Neal Halsey. Vaccine Refusal, Mandatory Immunization, and the Risks of Vaccine-Preventable Diseases. *NEJM* 360;19. May 7, 2009.

^{viii} Diekema, D. S. (February 2012). Improving Childhood Vaccination Rates. *New England Journal of Medicine*, 366:391-393.