

Economic Analysis of SB17-250

Bill SB17-250 would do two things. First, it would restate that exemptions from school immunization requirements can be from a licensed physician, physician assistant, or advanced practice nurse or a parent, guardian, emancipated student, or student older than eighteen. Second, this bill would remove the requirement of using the specified Department of Public Health and Environment form. This would apply to vaccine exemptions according to Colorado law, which currently allows vaccine exemptions for medical, religious, and personal reasons. These exemptions can include exemptions from all vaccines, or exemptions from only some vaccines.

The government initially intervened with vaccine policy in order to reduce the spread of contagious diseases through herd immunity (Reich, 2016). Herd immunity occurs when a large body of a population is immunized to protect the entire population from contagious disease (Helft, 2014).

If the society's immunity rate is around eighty-five to ninety-five percent, almost all members of the community are safe from infection (Helft, 2014; Reich, 2016). This is specific to each disease. More contagious diseases require higher society-level immunity rates, while less contagious diseases do not require as high of a level.

If the society-level immunity rates are high enough, vaccinations will protect people who are vaccinated, and herd immunity will protect people who cannot vaccinate due to medical reasons (such as people with lowered immune systems due to cancer or infants) and people who have not been able to vaccinate due to costs. Hence the safety of the entire society is dependent on the immunization of most people.

This herd immunity, or lack thereof, is a public good because nobody can opt out of it. Likewise, providing herd immunity to one person does not limit another person's use of it.

Additionally, the choice to not vaccinate negatively affects others, while the choice to vaccinate positively affects others. If someone chooses to not vaccinate, they are exposing other people, specifically those who are not able to vaccinate, to the risk of picking up any diseases they carry. Additionally, they are receiving benefits from the herd immunity without investing in it themselves. On the other hand, if someone does vaccinate, they are contributing to herd immunity and reduce the spread of contagious diseases. Therefore, this bill is appropriate for government discussion.

Currently people fulfilling school vaccination requirements and people seeking vaccine exemption have to put in different amounts of effort. If they plan on fulfilling school vaccination requirements, they have to put in a lot of effort through a multitude of doctor appointments and the maintenance of immunization records. Further, they have to submit to their child's school a Department of Public Health and Environment form.

If they plan on receiving vaccine exemptions, they have to fill out a form from the Department of Public Health and Environment (Colorado Department of Public Health and Environment, 2017). They then can submit this document to the school, or directly to the Department of Public Health and Environment .

If this bill passed, a parent seeking exemption would no longer be required to fill out a specific form. Instead they would be able to write a letter explaining their medical, religious, or personal reasons for filing for exemption. This reduces the effort required

by people seeking vaccination exemptions. Yet, under the bill, people fulfilling school vaccination requirements would still have to put in the same amount of effort as they had previously.

Theoretically this encourages parents to seek exemption, since this would require less work. Empirically, states with easier vaccine exemption laws were associated with lower vaccination rates (Omer, 2006). This bill would essentially be loosening vaccine exemption laws, making exemptions easier to obtain. This is likely to result in lower vaccination rates in Colorado.

Of course there are clear benefits (individual protection and herd immunity) to this additional work, and many parents would still immunize their children. However, even a slight reduction in community-level immunization rate could allow the spread of infectious diseases. For example, a recent Colorado survey found that 87.1% of Kindergartners were up to date with their MMR vaccinations, which protects from measles, mumps, and rubella (Centers for Disease Control and Prevention, 2015; Colorado Department of Health and Environment, 2016). However, measles requires a immunization level of 83%-94%, mumps of 75%-86%, and rubella of 83%-85% (Helft, 2014). The vaccinated rate is very close to the required immunity rate. Unvaccinated populations would be at risk with even slight reductions that could occur from this bill.

This would be especially damaging to the most vulnerable populations, such as the children whose parents cannot afford vaccinations, children and adults who do not have a strong enough immune system to support a vaccine, and the elderly. This bill

would not be supporting these vulnerable populations, but would in fact be harming them.

Additionally, it would be benefiting many of the least vulnerable populations, as unvaccinated or undervaccinated children by choice are more likely to be white, live in a household with an income over \$75,000, and have a mother who is married and college educated (Omer, 2008). Therefore, children in poverty, children and adults with weakened immune systems, infants, and elderly people in populations with high vaccine exemption by choice rates would be the most at risk. This would include areas such as Boulder county, which has eight of the top fifteen schools in Colorado with the highest student exemption rates (Schimke & Glen, 2016).

If SB17-250 were passed, individuals filing for vaccination exemption would not need to fill out an official form. This would reduce society-level immunization rates, which would in turn hurt populations of people who cannot vaccinate due to medical reasons (including infants) and people who were not able to afford vaccinations (including children). This is important because it can negatively affect the entire society, not just the people who choose to not get vaccinated. Specifically, this bill would hurt vulnerable population. Thus I recommend SB17-250 not be passed.

References

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Schimke, A & Glen, S. (2016). Six charts that explain who's getting vaccinated in Colorado - and who's not.

<http://www.chalkbeat.org/posts/co/2016/06/29/six-charts-that-explain-whos-getting-vaccinated-in-colorado-and-whos-not/>