



IS SAN MATEO COUNTY AT RISK OF A LARGE MEASLES OUTBREAK?

ISSUE

How has San Mateo County addressed the risk of a large measles outbreak?

SUMMARY

Recent reports of major measles outbreaks across the country have alarmed public health officials and the public at large. In the wake of these concerns the Grand Jury investigated the measles immunization rates of schoolchildren and adults in San Mateo County and the actions that County agencies take to minimize the risk of such an outbreak.

Vaccines that immunize individuals against measles have been available since 1963. Nonetheless, outbreaks of measles still occur when an infected individual enters an unimmunized community. State laws try to reduce the risk of infection faced by children by requiring vaccination against measles and other diseases as a condition of entry into preschool, kindergarten, and 7th grade classes in public and private educational facilities. Health officials agree that vaccination rates of at least 93 percent achieve acceptable population immunity, and the average vaccination rates for San Mateo County schoolchildren have exceeded this threshold in recent years.¹ Yet, vaccination rates fell below this threshold in a few local schools in the 2017/18 school year, the most recent year for which data are published. In these instances, the Grand Jury learned that some schools allowed the enrollment of unvaccinated students if their parents promised to get them the required shots. In Grand Jury interviews, school officials stated that by the end of the school year, parents provided them with a doctor's confirmation that their children had been vaccinated. There is no formal record of these late vaccinations, however, and until the shots are received, the pockets of unvaccinated children raise the risk of an outbreak.

Much less is known about the vaccination rates of adults in the county. Public health officials believe that people born before 1957 gained immunity by exposure to the disease.² Adults born after 1963 may have been vaccinated in their school years, although as discussed in this report, most states offer certain exemptions from vaccination requirements. Some adults in the county may have grown up in countries with less strict vaccination requirements, but immigrants and green card holders must be vaccinated. The presence of major transportation corridors and an international airport in San Mateo County through which infected individuals may contact pockets of unimmunized adults and children adds risk.

Four isolated cases of measles (three adults and one child under 18 years) have occurred in San Mateo County in 2019.³ Once a measles case is identified, the San Mateo County Health Communicable Disease Control Program (SMCDC) ensures that infected individuals are isolated and tracks down exposed individuals to limit the spread of the disease. None of the 2019 cases

¹ California Department of Public Health. Retrieved from <https://www.shotsforschool.org/>

² California Department of Public Health, *Measles Investigation Quicksheet*, February 2018.

³ <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/measles.aspx>

spread within the county, suggesting to some public health officials that pockets of unvaccinated individuals may be sufficiently small and isolated that the risk of a large outbreak is not high.

To further counter the risk of a measles outbreak in the county, the Grand Jury recommends that (1) each school district in the county report to their Governing Board of five elected officials who oversee school district policies when overdue measles vaccinations of schoolchildren have been completed, (2) the San Mateo County Health Communicable Disease Control Program (SMCDC) study the feasibility of testing adults visiting County clinics for their level of measles immunity and offer to immunize them if the level is low, and (3) the SMCDC upgrade resources needed to strengthen the County's response to a measles outbreak.

GLOSSARY

Attenuated virus - a strain of live virus used for vaccines that can lead to immunity but lacks the ability to cause disease.

Governing Board of School Districts – a group of five elected officials serving staggered terms. Each Governing Board oversees the policies of its school district.

Herd immunity – a level of immunization that makes it unlikely that an infected individual will encounter enough non-immune individuals to cause an outbreak of a disease. Public health officials believe that vaccination rates above 93 percent provide a community with herd immunity against measles.

Measles outbreak - three or more cases of measles derived from a single infected individual.

MMR - Measles Mumps and Rubella vaccine. MMR contains an attenuated virus.

Medical exemption - issued by a physician for a child who is immunosuppressed and may be harmed by a live vaccine. Immunosuppression can occur because of treatment by chemotherapy or other medications or may be a congenital condition. Even an attenuated vaccine can pose significant risk to someone who lacks an effective immune system.

Personal belief exemption (PBE) - an exemption to vaccine requirements for religious or other non-medical reasons. As of January 1, 2016, personal belief exemptions are not permitted in California.

BACKGROUND

Measles is a highly contagious disease that can infect individuals through airborne particles. There is no cure for measles, and before the introduction of the first effective vaccine in 1963, “there were about 3-4 million measles cases in the United States each year, including 400-500 deaths [per year].”⁴ Vaccines against infectious diseases have been one of the great achievements in human public health. “The second half of the 20th century witnessed an explosion in vaccine research and the development of vaccines to prevent measles and other diseases including polio

⁴ Carrie MacMillan, “Will Measles Change Our View on Vaccinations?” *Yale Medicine*, March 26, 2019. <https://ym.care/jgg>

and influenza. Before these vaccines were available, Americans could expect that every year measles would cause severe and possibly fatal pneumonia, rubella would attack unborn babies, . . . , and Haemophilus influenza would infect the brain and spinal cord, killing or disabling thousands of young children.”⁵

For an *individual*, the measles vaccine is 93 percent effective after one dose and 97 percent effective after two doses, where effectiveness denotes production of an adequate level of antibodies against the virus.⁶ The effectiveness of vaccines in preventing *outbreaks in a population* depends on achieving “herd immunity.” Outbreaks occur when an infected individual has contact with non-immune individuals who, once infected, may spread the disease to other non-immune contacts. In an unimmunized population, a single case of measles can infect fifteen to twenty additional people.⁷ High immunization rates therefore limit the chance of the contacts between infected and unimmunized individuals that can produce an outbreak. Immunologists calculate that vaccination rates of at least 93 percent of the susceptible population provide herd immunity against measles.⁸

The use of vaccines became widespread through state laws requiring vaccinations for admission to public and private schools. However, many of these laws provide certain exemptions from vaccination requirements. Children who are immunosuppressed by birth or by chemotherapy should not receive vaccines like Measles, Mumps, Rubella (MMR), which contain an attenuated live virus.⁹ These children can receive a medical exemption.¹⁰ However, a persistent loophole in many state laws allows parents to refuse to immunize their children because of “personal belief,” not otherwise specified.¹¹ An anti-vaccination movement, which claims that the measles vaccine causes autism¹² and other undesirable side effects, has encouraged use of the personal belief exemption (PBE), despite the fact that scientific evidence has thoroughly debunked those claims.¹³ In California, SB 277 (2015) terminated the use of the PBE effective January 1, 2016.¹⁴

⁵ Offit, P. (2007). *Vaccinated*. N.Y., N.Y.: HarperCollins Publishers. 2007.

⁶ <https://www.cdc.gov/measles/vaccination.html>

⁷ Ibid.

⁸ Fine, P., Eames, K., & Heymann, D. L. (2011, April 1). “Herd Immunity”: *A Rough Guide. Clinical Infectious Diseases*, 52, 911-916. Sebastian, F. (2017, October 19). “Critical immunity thresholds for measles elimination.” Retrieved from

https://www.who.int/immunization/sage/meetings/2017/october/2_target_immunity_levels_FUNK.pdf

⁹ See Glossary for definition.

¹⁰ Grand Jury correspondence.

¹¹ Ibid.

¹² Autism includes a spectrum of developmental diagnoses.

¹³ Omer, S., & Yildirim, I., (2019, March 5). “Further Evidence of MMR Vaccine Safety: Scientific and Communications Considerations,” *Annals of Internal Medicine*, 170(8), 567-568. CDC. (2019, April). “Measles, Mumps, and Rubella (MMR) Vaccine Safety Studies.” Retrieved from <https://www.cdc.gov/vaccinesafety/vaccines/mmr/mmr-studies.html>. Hoffman, Jan. “One More Time With Big Data: Measles Vaccine Doesn’t Cause Autism,” *New York Times*, March 5, 2019. Retrieved from: <https://www.nytimes.com/2019/03/05/health/measles-vaccine-autism.html?action=click&module=RelatedLinks&pgtype=Article>

¹⁴ http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB277

There are no laws requiring immunization of adults. Public health officials believe that people born before 1957 gained immunity by exposure to the disease.¹⁵ The California Department of Public Health does not have data on the immunization status of adults born after the development of the vaccine in 1963. However, it is possible to test whether individuals may be susceptible to measles by measuring blood levels of antibodies against the virus. Between February 2011 and January 2012, a Salt Lake City test of over 10,000 people with a median age of 34 years found that only 86 percent had adequate anti-measles protection.¹⁶

The large outbreaks of measles across the US in recent months confirm the risk associated with pockets of unimmunized population groups. Clark County Washington declared a medical emergency after forty-nine new cases of measles, largely in an unimmunized Ukrainian community, were reported from January through early February 2019. Only 78 percent of the kindergarten through high school students in that community were vaccinated.¹⁷ An outbreak in New York City centered on ultra-Orthodox Jewish communities that oppose vaccinations and led the mayor to declare a public health emergency and require the vaccination of residents in some Brooklyn neighborhoods.¹⁸ The New York outbreak spread to Michigan because an individual who falsely believed he was immune visited communities that were unvaccinated.¹⁹ In an effort to limit an outbreak of measles in Los Angeles County in April 2019, the Los Angeles County Department of Public Health quarantined over 700 students and staff until their immunity could be determined.²⁰

DISCUSSION

Immunization Status of Children

California requires vaccinations against measles and several other diseases as a condition of entry into preschool programs and into kindergarten and 7th grade in public and private schools.²¹ Schools must report data on the immunization status of students entering these grade levels to

¹⁵ California Department of Public Health, *Quicksheet...*

¹⁶ The immunization rate was not recorded. Shirts, B. H., Welch, R. J., & Couturier, M. R. "Seropositivity Rates for Measles, Mumps, and Rubella IgG and Costs Associated with Testing and Revaccination," *Clinical Vaccine Immunology*, March 2013, 20(3), 443-445.

¹⁷ Johnson, K. "'A Match Into a Can of Gasoline': Measles Outbreak Now an Emergency in Washington State," *New York Times*, February 7, 2019. Retrieved from <https://www.nytimes.com/2019/02/06/us/measles-outbreak.html>.

¹⁸ Otterman, S. "New York Confronts Its Worst Measles Outbreak in Decades," *New York Times*, January 17, 2019. Retrieved from <https://www.nytimes.com/2019/01/17/nyregion/measles-outbreak-jews-nyc.html?action=click&module=RelatedCoverage&pgtype=Article®ion=Footer>

¹⁹ Sun, L. H. "Unaware he had measles, a man traveled from N.Y. to Michigan, infecting 39 people," *Washington Post*, April 16, 2019. Retrieved from https://www.washingtonpost.com/health/2019/04/16/how-patient-zero-spread-measles-across-state-lines-infected-people/?utm_term=.57c639afb78e

²⁰ Del Real, Jose, "Measles Outbreak Declared in Los Angeles County," *New York Times*, April 23, 2019. Retrieved from: <https://www.nytimes.com/2019/04/23/us/measles-outbreak-los-angeles-county.html>. Mele, Christopher, "More Than 700 at 2 California Universities Under Quarantine Amid Measles Outbreak," *New York Times*, April 26, 2019. Retrieved from: <https://www.nytimes.com/2019/04/26/us/measles-outbreak-los-angeles-quarantine.html?action=click&module=Well&pgtype=Homepage§ion=US>

²¹ California Code of Regulations, Title 17, Division 1, Chapter 4, Subchapter 8. http://eziz.org/assets/docs/IMM-1080_old.pdf

state public health authorities annually by November 1. These annual reports also tabulate the use of various exemptions.²² The law does not apply to educational facilities with fewer than 20 students, or to children who are home-schooled.²³

The Grand Jury reviewed these data, which are tabulated by county, school district, and individual school. (See Appendix A for the annual averages for kindergarten²⁴ students in San Mateo County and Appendix B for examples of data for preschool, kindergarten, and 7th grade enrollees at individual educational facilities.) This review established the following facts.

1. Between 2000 to 2018, the overall kindergarten vaccination rate in San Mateo County dropped to a low of 88.7 percent in 2010/11, and then rose to over 96 percent beginning in the 2016/17 school year.²⁵
2. Personal belief exemptions, which had ranged between 1-2 percent for kindergarten enrollments in the county during the decade preceding the 2016 effective date of SB 277, fell to zero percent following the effective date of the law.²⁶
3. In San Mateo County, there has been a rise in medical exemptions from vaccination requirements since the 2016 effective date of SB 277. Such exemptions increased from roughly 0.2 percent of kindergarten enrollments in the decade before SB 277 took effect to 0.5 percent for the 2017/18 school year. Much larger increases in the use of the medical exemption occurred elsewhere in California. California Department of Public Health data show that in 83 schools (none in San Mateo County), between 5 and 58 percent of kindergarten enrollees had medical exemptions.²⁷ In response to the suspicion that these data document an inappropriate use of the medical exemption,²⁸ the state legislature is considering a new law, SB 276. As amended on June 17, 2019, this legislation would broaden the guidelines for granting medical exemptions but require the state Public Health Department to review exemptions (1) for children in schools where the vaccination rate is below 95 percent and (2) from doctors who provided more than five exemptions per year.²⁹

²² <https://www.shotsforschool.org/>

²³ Grand Jury interviews.

²⁴ Screening for immunization at kindergarten, the point of entry into the public school system, provides the broadest protection against the development of non-immune pockets of school children.

²⁵ See Appendix A.

²⁶ Ibid.

²⁷ Willis, Daniel J. "Vaccination Rates by School in California 2017-18," *Ed Source*, April 4, 2019. Retrieved from <https://edsources.org/2019/vaccination-rates-by-school-in-california-2017-18/610790>. Ostrov, B. "Exemptions Surge As Parents and Doctors Do 'Hail Mary' Around Vaccine Laws," *California Healthline*, April 4, 2019. Retrieved from *California Healthline*: <https://californiahealthline.org/news/exemptions-surge-as-parents-and-doctors-do-hail-mary-around-vaccine-laws/>

²⁸ Kaplan, K. . "Here's what happened after California got rid of personal belief exemptions for childhood vaccines," *Los Angeles Times*, October 29, 2018. Retrieved from <https://www.latimes.com/science/sciencenow/la-sci-sn-vaccine-medical-exemptions-20181029-story.html>

²⁹ http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB276

4. Although the average vaccination rate in San Mateo County schools exceeded herd immunity for the 2017/18 academic year, some schools fell below this standard. Five private and public child-care centers with a total of 156 students reported vaccination rates between 77 and 92 percent. For kindergarten enrollments, one private and ten public schools enrolling 739 kindergarten students reported vaccination rates between 86 and 91 percent. For seventh grade enrollments, six public schools enrolling 683 seventh grade students reported vaccination rates between 75 and 92 percent. (See Appendix B for details.)
5. County schools with vaccination rates below the 93 percent herd immunity level often identify unvaccinated students as “overdue.” (See Appendix B.) The criteria for this classification are not well defined. Under state law, schools should not enroll children who lack the required vaccinations.³⁰ However, some districts allow unvaccinated students to attend school, if (1) parents demonstrate the intent to complete the required vaccinations, and (2) exclusion from school would do immediate harm to the students. These children constitute a pocket of unvaccinated students until they complete their shots. School officials claim that parents present evidence that the shots have been completed before the end of the school year, but because the state provides no way to update data submitted after the annual November 1 deadline, there are no available data showing whether overdue students received the required vaccination.

Immunization Status of Adults

School vaccination requirements limit the development of pockets of unvaccinated children in San Mateo County, but there are no parallel programs to identify and vaccinate unimmunized adults.³¹ Many adults raised in the United States may be immune from measles because they received required vaccinations during their school years or had contact with the disease, but others may have used exemptions to avoid vaccination.

The overall immunization status of adult county residents born abroad is unknown. Those who “entered the U.S. in 1996 or later with an immigrant visa or have a green card” are presumed to be immune.³² On the other hand, there are no vaccination requirements for visitors to the United States, which may add risk to a county with an international airport and major transportation corridors through which infected individuals may travel.³³ Health care officials believe that the risk of infection from travelers from Canada and Mexico is low, because both countries have excellent vaccination policies and coverage.³⁴ In contrast, travelers from Israel, the Philippines, the Ukraine, and other countries where low immunization rates have facilitated large outbreaks

³⁰ California Code of Regulations, Title 17, Division 1, Chapter 4, Subchapter 8.
http://eziz.org/assets/docs/IMM-1080_old.pdf

³¹ Grand Jury interviews.

³² California Department of Public Health, *Quicksheet*. . . . The U.S. Citizenship and Immigration Services agency states that “[i]n 1996, Congress provided in legislation that every immigrant entering the United States, or every individual seeking adjustment of status to that of a legal permanent resident, show proof that he or she was vaccinated against vaccine-preventable diseases. The text for this requirement is in the Immigration and Nationality Act (INA), section 212(a)(1)(A)(ii).” <https://www.uscis.gov/news/questions-and-answers/vaccination-requirements>

³³ <https://wwwnc.cdc.gov/travel/destinations/traveler/none/united-states>

³⁴ Grand Jury interviews.

of measles present a greater risk if they have contact with nonimmune pockets of county residents.³⁵

No formal health program within the county targets the risk of pockets of unimmunized adult residents. However, different clinics in the San Mateo Health system perform routine blood testing with the consent of their patients.³⁶ The clinics test for diabetes, anemia, and cholesterol, or communicable diseases, including tuberculosis and sexually transmitted diseases.³⁷ The results of those tests can lead to treatment for tested individuals or their contacts who may be at risk. The clinics do not now routinely administer tests for measles immunity, except for some specific groups such as healthcare workers and military recruits.³⁸ The Grand Jury believes that measles testing in the clinics and follow-up immunization could identify and reduce adult pockets of unimmunized individuals, thereby reducing the risk that they would present to the county.

San Mateo County Health Department Response to Cases

All cases of measles and many other communicable diseases must be reported to the San Mateo County Health Communicable Disease Control Program (SMCDC), which takes several actions to limit the spread from each reported case. When notified of a suspected case of measles, SMCDC personnel test the potential carrier to confirm the diagnosis and isolate infected individuals.³⁹ The SMCDC currently sends samples from a suspected case to the California Department of Public Health for analysis, a process that can delay confirmation of a measles case.⁴⁰ If the Program had the capacity to perform testing internally, the laboratory turnaround time for confirming and following up on a diagnosis would be faster.⁴¹

SMCDC personnel also try to identify and find people who had recent contact with the infected individual, assess their immune status, offer post-exposure prophylaxis, and recommend symptom watch or quarantine if needed—a labor-intensive task as hundreds of contacts may exist. When an outbreak occurs in other counties, the SMCDC team may assist in seeking and following contacts in San Mateo County. The current staff of the SMCDC includes a program supervisor, one physician, one or two Public Health Nurses, and three to five Communicable Disease Investigators.⁴² An official from the SMCDC noted, however, that “[e]ven with only one measles case, the entire communicable disease team usually ends up being involved, mostly because of the burden related to the Contact Investigation.”⁴³ The four individual measles cases that developed in San Mateo County in the first quarter of 2019 placed considerable pressure on

³⁵ Ibid.

³⁶ <https://www.smchealth.org/smmc-find-location>

³⁷ Grand Jury interviews.

³⁸ Ibid.

³⁹ Grand Jury correspondence.

⁴⁰ Grand Jury correspondence.

⁴¹ Grand Jury correspondence.

⁴² Grand Jury correspondence.

⁴³ Grand Jury interview.

existing personnel.⁴⁴ If an outbreak occurs, the SMCDC team would seek additional assistance from personnel in other units of the San Mateo County Health Department.⁴⁵

SMCDC currently lacks an electronic case management system that would make contact investigations less time-consuming.⁴⁶ One study of case management systems reported that “[h]ealth care providers are legally obliged to report cases of specified diseases to public health authorities, but existing manual provider-initiated reporting systems generally result in incomplete, error-prone, and tardy information flow.”⁴⁷ Parallel judgements were offered in Grand Jury interviews.

Conclusions

Outbreaks of measles occur when an infected individual makes contact with a pocket of non-immune people. San Mateo County has few pockets of unvaccinated school children, and the fact that none of the four 2019 cases of measles spread within the county leads some public health officials to believe that pockets of unvaccinated adults may be sufficiently small and isolated that the risk of a large outbreak is not high. Yet, there is little hard evidence on the immunization status of adults in the county. Thus far, the few isolated cases of measles in the county have been contained by the SMCDC, but given the uncertainties, continued vigilance is prudent.

FINDINGS

- F1. Outbreaks of measles occur when an infected individual enters an under-immunized community.
- F2. For the 2017/18 school year, the overall measles vaccination rate for public and private school students in San Mateo County exceeded the 93 percent herd immunity level experts say is needed to protect the community as a whole.
- F3. Following the January 1, 2016, effective date of SB 227, use of the personal belief exemption dropped from two percent of students to zero in San Mateo County.
- F4. Schools that admit students with overdue vaccinations create pockets of unimmunized individuals that may facilitate the development of a measles outbreak.
- F5. The vaccination status of some schoolchildren—notably those who are home-schooled and those in schools with fewer than 20 students—is unknown.
- F6. Adults born after 1957 who never had a measles infection and who lack sufficient vaccination may also be at risk of a measles infection.
- F7. Recent outbreaks in Washington State, New York, and Los Angeles illustrate that pockets of unvaccinated people can pose a risk of outbreaks.

⁴⁴ Grand Jury correspondence.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ *J Am Med Inform Assoc.* 2009 Jan-Feb; 16(1): 18–24.

- F8. Testing for measles immunity at County clinics could identify pockets of people susceptible to measles.
- F9. The resources of the SMCDC, which identifies and tracks measles cases in San Mateo County, may be inadequate to contain a major outbreak.

RECOMMENDATIONS

- R1. School districts that enrolled students who did not meet state vaccination requirements for the 2018/2019 school year should report to their Governing Board whether overdue vaccinations have been completed by October 1, 2019, and the Governing Boards of these districts should publish updated vaccination data for its schools on the school district's website by November 1, 2019.
- R2. Beginning with the 2019/2020 school year, school districts that enroll students who do not meet vaccination requirements in subsequent school years should report to their Governing Board whether overdue vaccinations have been completed by March 31 of each year, and the Governing Board should publish updated vaccination data for its schools on the school district's website.
- R3. The San Mateo County Health Communicable Disease Control Program should study the feasibility of testing people visiting San Mateo County clinics for their level of measles immunity. The results of the study should be reported to the San Mateo County Health Department Board by January 1, 2020.
- R4. Within three months of this report, the San Mateo County Health Communicable Disease Control Program should request funding for upgrading the resources needed to address outbreaks of measles and other communicable diseases from the Chief of the San Mateo County Health Department. San Mateo County Health should respond within three months of receiving those requests.

REQUEST FOR RESPONSES

Pursuant to Penal Code Section 933.05, the Grand Jury requests responses as follows:

From the following:

- Governing Boards of all San Mateo County school districts.
- San Mateo County Board of Supervisors

The governing bodies indicated above should be aware that the comment or response of the governing body must be conducted subject to the notice, agenda, and open meeting requirements of the Brown Act.

METHODOLOGY

Documents

- California Department of Health vaccination data for preschool, kindergarten, and 7th grade students at schools throughout the state.
- Medical literature, CDC publications, and news reports were reviewed. See Bibliography for a complete list.

Interviews

Reports issued by the Civil Grand Jury do not identify individuals interviewed. Penal Code Section 929 requires that reports of the Grand Jury not contain the name of any person or facts leading to the identity of any person who provides information to the Civil Grand Jury.

- Superintendents of Schools in two San Mateo County school districts.
- San Mateo County public health personnel.

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APPENDIX A

Kindergarten Vaccination Rates, San Mateo County (all figures are percentages)

<u>Academic Year</u>	<u>Vaccination Rate</u>	<u>Conditional Admits</u>	<u>Permanent Medical Exemptions</u>	<u>Personal Belief Exemptions</u>
2000/01	90.41	8.56	0.25	0.77
2001/02	88.64	9.85	0.21	1.29
2002/03	91.19	7.55	0.22	1.05
2003/04	92.45	6.32	0.11	1.12
2004/05	92.47	6.49	0.08	0.95
2005/06	93.14	5.76	0.08	1.02
2006/07	93.48	5.19	0.23	1.09
2007/08	89.97	8.56	0.25	1.22
2008/09	89.34	8.63	0.23	1.80
2009/10	88.81	9.12	0.22	1.85
2010/11	88.68	9.05	0.21	2.06
2011/12	91.16	6.41	0.18	2.25
2012/13	91.70	6.02	0.19	2.10
2013/14	90.18	7.40	0.16	2.26
2014/15	93.55	4.41	0.19	1.85
2015/16	95.20	3.00	0.10	1.60
2016/17	96.50	1.80	0.40	0.20
2017/18	96.90	1.20	0.50	0.00

Source: California Department of Public Health

APPENDIX B

**2017-2018 IMMUNIZATION STATUS OF CHILDREN ENROLLED IN CHILD CARE WHERE MMR RATES ARE LESS THAN 93%
Facilities with 20 or more children enrolled that report ed and facilities that did not report.**

HEAD START/ PRIVATE/ PUBLIC	CITY	FACILITY NAME	ENROLLMENT		UP-TO-DATE†	CONDI- TIONAL ^A	PMP ^{**}	PPE ^{***}	OTHER [§]	OVER- DUE††	DTP†††		POLIO‡		MMR§§	
			#	%							#	%	#	%	#	%
PRIVATE	COLMA	HOLY ANGELS PRESCHOOL	30	77	0	0	0	0	0	7	23	77	23	77	23	77
PRIVATE	REDWOOD CITY	TEMPLE BETH JACOB PRESCHOOL	31	84	4	13	1	3	0	0	0	0	0	0	0	0
PRIVATE	SAN MATEO	HIGHLANDS RECREATION DISTRICT	35	32	91	3	9	0	0	0	0	0	0	0	0	0
PRIVATE	REDWOOD CITY	FOOTSTEPS@CITY CENTER PLAZA (P5)	24	22	92	2	8	0	0	0	0	0	0	0	0	0
PRIVATE	PACIFICA	WE PLAY WE LEARN	35	33	92	0	0	3	8	0	0	34	94	33	92	33

* Number of children corresponds to the percentage range indicated in the column to the right.
† Up-To-Date: 3 doses of polio vaccine; and 4 doses of DTP; or combination of DTP and diphtheria-tetanus toxoids-containing vaccine; and 1 or more doses of measles, mumps and rubella-containing vaccine, separately or combined, on or after 1st birthday and 3 or more doses of Hepatitis B vaccine; and 1 or more doses of varicella vaccine or physician-documented varicella (chickenpox) disease.
^A Conditional Exemption is an enrollee who does not meet all requirements. This enrollee must be followed up because he/she lacks (i.e., is not yet due for) at least one dose and does not have a personal belief or permanent medical exemption; or has a physician affidavit of Temporary Medical Exemption for one or more doses.
^{**} A Permanent Medical Exemption (PME): granted upon the filing with the facility of a written statement from a licensed physician to the effect that the physical condition of the student or medical circumstances relating to the enrollee are such that immunization is permanently not indicated.
^{***} A Personal Belief Exemption (PBE), whereby a parent requests exemption from the immunization requirements for school entry because all or some immunizations are contrary to the parent's beliefs.
[§] Others: Includes students reported as receiving IEP services.
††† 4 or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids,
‡ 3 or more doses of polio vaccine; Oral polio vaccine (OPV) or inactivated polio vaccine (IPV) or any combination of these.
§§ 1 or more doses Measles, Mumps, and Rubella separately or combined on or after the 1st birthday
|| 1 or more doses of Hib on or after 1st birthday.
‡‡ 3 or more doses of Hepatitis B vaccine.
¶¶ 1 or more doses of varicella at or after 1st birthday, unadjusted for history of varicella illness.
¶¶¶ Full reports were due October 15, 2017 and reporting closed on December 15, 2017

2017-2018 IMMUNIZATION STATUS OF KINDERGARTEN STUDENTS WHERE MMR RATES ARE LESS THAN 93%

Schools with 20 or more students enrolled that reported and schools that did not report.

PUB/ PRIV	PUBLIC/SCHOOL/DISTRICT	CITY	SCHOOL NAME	ENROLLMENT		UP-TO-DATE†		CONDI-TIONAL^		PME**		PSE**		OTHERS†		DTP1††		POLIO‡		MMR‡	
				#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
PUBLIC	PACIFICA	PACIFICA	SUNSET RIDGE ELEMENTARY	130	91	83	19	17	0	0	0	0	0	0	0	0	85	95	86	95	86
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	HAWES ELEMENTARY	64	55	86	0	0	0	0	0	0	0	0	0	34	56	88	58	91	55
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	HENRY FORD ELEMENTARY	80	64	80	1	1	0	0	0	0	0	0	0	29	72	90	70	88	69
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	HOOVER ELEMENTARY	86	75	87	0	0	0	0	0	0	0	0	0	33	76	88	77	90	76
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	JOHN GILL ELEMENTARY	56	50	89	0	0	1	2	0	0	0	0	0	5	50	89	50	89	50
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	CLIFFORD ELEMENTARY	68	61	90	2	3	0	0	0	0	0	0	0	5	64	94	65	96	61
PUBLIC	JIF FERSON ELEMENTARY	SIMI VALLEY	CALIFORNIA VIRTUAL ACADEMY @ SAN MATEO	35	32	91	0	0	0	0	0	0	0	0	0	33	94	33	94	32	91
PUBLIC	REDWOOD CITY ELEMENTARY	ATHERTON	SELBY LANE ELEMENTARY	134	101	89	1	1	0	0	0	0	0	0	0	32	102	89	103	90	104
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	FAIR OAKS ELEMENTARY	33	30	91	0	0	0	0	0	0	0	0	0	3	90	91	30	91	30
PUBLIC	SAN CARLOS ELEMENTARY	SAN CARLOS	SAN CARLOS CHARTER LEARNING CENTER	44	40	91	0	0	4	9	0	0	0	0	0	0	0	0	0	0	0
PRIV/ATE		SAN BRUNO	STRATFORD SCHOOL	49	44	90	5	10	0	0	0	0	0	0	0	44	90	44	90	44	90

* Number of children corresponds to the percentage range indicated in the column to the right.

† Up-To-Date: Four doses of polio vaccine (three doses are acceptable if at least one dose was received on or after the fourth birthday); and the DTP1/DTP vaccine doses (four doses are acceptable if at least one dose was received on or after the fourth birthday); and two doses of measles-containing vaccine, at least one of which must be measles, mumps, and rubella combined. Both doses must have been received on or after the first birthday; and three doses of hepatitis B vaccine; and one dose of varicella vaccine or physician-documented varicella (chickenpox) disease.

^ Conditional Exempt is a student who does not currently meet all requirements. This student must be followed up because he/she is not yet due for a required dose has a physician affidavit of Temporary Medical Exemption for one or more doses; or is a transfer student who has no record available yet.

** Permanent Medical Exemption (PME): granted upon the filing with the school of a written statement from a licensed physician to the effect that the physical condition of the student or medical circumstances relating to the student are such that immunization is permanently not indicated.

*** Personal Belief Exemption (PBE), whereby a parent requests exemption from the immunization requirements for school entry because all or some immunizations are contrary to the parent's beliefs.

§ Others: Includes students reported as attending independent study who do not receive classroom-based instruction or home-based private schools or receiving EP services.

†† Overdue for one or more immunizations.

††† 4 or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any acellular pertussis vaccine (DTaP/DTaP/DT).

‡ 3 or more doses of polio vaccine; one polio vaccine (IPV) or inactivated polio vaccine (IPV) or any combination of these.

‡ 2 doses of measles-mumps-rubella vaccine.

‡ 3 or more doses of Hepatitis B vaccine.

‡ 1 or more doses of varicella at or after child's first birthday, unadjusted for history of varicella illness.

‡†† All reports were due October 15, 2017 and reporting closed on December 15, 2017.

2017-2018 IMMUNIZATION STATUS OF 7TH GRADE STUDENTS WHERE UP-TO-DATE RATES ARE LESS THAN 93%
Schools with 20 or more students enrolled that reported and schools that did not report.

PUBLIC/ PRIVATE	PUBLIC SCHOOL DISTRICT	CITY	SCHOOL NAME	ENROLLMENT		UP-TO-DATE*		CONDITIONAL (TIME)**		PME**		OTHERS†		OVERDUE††	
				#	%	#	%	#	%	#	%	#	%	#	%
PUBLIC	REDWOOD CITY ELEMENTARY	ATHERTON	SELBY LANE ELEMENTARY	92	75	0	0	0	0	0	0	0	0	23	25
PUBLIC	REDWOOD CITY ELEMENTARY	MENLO PARK	GARFIELD ELEMENTARY	62	54	0	0	0	0	0	0	0	0	8	13
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	JOHN F. KENNEDY MIDDLE	237	208	0	0	0	0	2	1	0	0	27	11
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	HOOVER ELEMENTARY	81	73	0	0	0	0	0	0	0	0	8	10
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	MCKINLEY INSTITUTE OF TECHNOLOGY	151	137	0	0	0	0	0	0	2	1	12	8
PUBLIC	REDWOOD CITY ELEMENTARY	REDWOOD CITY	ROOSEVELT ELEMENTARY	60	55	0	0	0	0	0	0	0	0	5	8
			TOTAL	683										83	

*Completed Pertussis-containing booster (DTaP, DTP or Tdap) on or after 7th birthday.
 ** A Conditional Exemption is a 7th Grade pupil who has not yet received the required Tdap booster dose because of a Temporary Medical Exemption (TIME).
 **A Permanent Medical Exemption (PME) shall be granted upon the filing with the school a written statement from a licensed physician to the effect that the physical condition of the student or medical circumstances relating to the student are such that immunization is permanently not indicated.
 † Others: Includes students reported as attending independent study who do not receive classroom-based instruction or home-based private schools or receiving IEP services.
 †† Overdue for one or more immunizations.
 ††† Fall reports were due November 1, 2016 and reporting closed on December 15, 2017.