Reducing Vaccine-Preventable Disease in Texas: Strategies to Increase Vaccine Coverage Levels

As Required By

Texas Health and Safety Code,

Sections 161.0074

and 161.00706

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Executive Summary

Texas Health and Safety Code (HSC) Sections 161.0074 and 161.00706 requires the Department of State Health Services (DSHS) to develop ways to increase immunization rates using state and federal resources and submit a report to the Legislative Budget Board (LBB), the Governor, the Lieutenant Governor, the Speaker of the House of Representatives, and appropriate committees of the Legislature by September 30 of each even-numbered year. This report includes data from fiscal years 2019-2022.

Additionally, this report contains an analysis of COVID-19 vaccine distribution and disparities as required by Section 161.0074(d), which was prompted by the public health disaster declaration on March 9, 2020.

According to the 2019 National Immunization Survey-Child (NIS), Texas' vaccine coverage rates increased slightly for the 4:3:1:3:3:1:4[1] combination series in children 19-35 months old, with a statewide coverage rate of 67.7 percent. In the 2020 NIS, Texas vaccine coverage for the 4:3:1:3:3:1:4 combination series further decreased to 65.9 percent and remained lower than the national average of 70.5 percent.

Preliminary evidence from the state's electronic vaccine inventory system suggests the COVID-19 pandemic led to lower rates of vaccination coverage among the Texas Vaccines for Children's eligible population in fiscal year 2020 than in previous years.[2] For the available COVID-19 vaccines, 75.5 percent of the eligible Texas population has received at least one dose of the vaccine while 62.8 percent of the population is fully vaccinated. Individuals were deemed:

- Vaccinated (initial immunization) if they had received at least one dose of a COVID-19 vaccine

[1] The combined 4:3:1:3:3:1:4 series includes four doses of diphtheria, tetanus toxoids, and pertussis (DTAP) vaccine, three doses of polio vaccine, one dose of measles-containing vaccine, three or four doses of Hemophilus influenza type b conjugate (Hib) vaccine, depending on brand, three doses of hepatitis B (HepB) vaccine, one dose of varicella (VAR) vaccine, and four doses of pneumococcal conjugate (PCV) vaccine.
[2] https://www.dshs.texas.gov/immunize/docs/COVID19impactTVFC.pdf

- Fully vaccinated (complete immunization) if they have completed their primary series by receiving either two doses of Moderna/NIAID, BioNTech/Pfizer, or Novavax, or one dose from Johnson and Johnson (Janssen)

- Boosted (booster immunization) if they received an additional COVID-19 vaccine after they completed their primary series (became fully vaccinated against COVID-19).[3]

In recent years, DSHS has employed several quality improvement strategies to increase coverage levels, including promoting a medical home[4], working with providers to make strong vaccination recommendations, engaging, and collaborating with partners and stakeholders, and promoting the use of ImmTrac2, the state's immunization registry. These strategies have been proven as successful immunization program strategies.

To coordinate immunization services across Texas, DSHS contracted with 50 local health departments (LHDs), who act as responsible entities[5] (RE), for the Texas Vaccines for Children (TVFC) and Adult Safety Net (ASN) Programs to provide routine vaccines. For fiscal years 2019-2022, DSHS made awards totaling $15.3 million in routine state and federal funds. Additionally, Texas used COVID-19 specific federal funding to award LHDs $133.4 million. In fiscal year 2022, $93.3 million was awarded to 31 LHDs. In collaboration with immunization partners, DSHS will continue to maintain efforts to ensure Texas children and adults catch up on vaccinations missed in 2020 and are protected from vaccine-preventable diseases.

[3] Immunocompromised individuals may have received a third COVID-19 vaccine as part of their primary series meaning a fourth COVID-19 vaccine would be considered a booster immunization.
[4] Medical home or patient-center medical home model is defined by CDC as an approach to delivering high-quality, cost-effective primary care. https://www.cdc.gov/dhdsp/policy_resources/pcmh.htm
[5] In the absence of a contracted LHD, the DSHS public health region office serves as a RE.

1. Introduction

HSC Sections 161.0074 and 161.00706 require DSHS to develop ways to increase immunization rates using state and federal resources and submit a report to the Legislative Budget Board, the Governor, the Lieutenant Governor, the Speaker of the House of Representatives, and appropriate committees of the Legislature. The COVID-19 public health disaster declaration on March 9, 2020, prompted additional reporting requirements related to vaccine preventable diseases. HSC 161.0074(d) states that if a public health disaster was declared during the preceding two years, DSHS must include information for immunizations used to immunize individuals against the disease subject to the declaration. This includes information on the accessibility, disparities in access, and recommendations on reducing disparities and increasing immunization rates.

To comply with HSC 161.0074(d), DSHS created a rapid needs assessment to collect primary information from Texans on their attitudes, opinions, and hesitancies towards receiving the COVID-19 vaccine as well as to identify any barriers to accessing the vaccine. Specifically, HSC 161.0074(d) requires the 2022 report to include:

- Information, by county, on the accessibility to the immunizations of county residents by age, race, and geographic location.
- An assessment of immunization accessibility in each county, including disparities in the access to the immunizations by age, race, and geographic location.
- The estimated economic benefit to Texas of reducing disparities in immunization accessibility.
- Recommendations for reducing disparities in immunization accessibility.
- Recommendations for legislative action to increase immunization rates.

In addition to the requirements prompted by the COVID-19 public health disaster, the report must:

- Include the current immunization rates by geographic region of the state, where available.

- Focus on the geographic regions of the state with immunization rates below the state average for preschool children.
- Describe the approaches identified to increase immunization rates in underserved areas and the estimated cost for each.
- Identify changes to DSHS procedures needed to increase immunization rates.
- Identify the services provided under and provisions of DSHS contracts to increase immunization rates in underserved areas.
- Identify DSHS contract performance measures used to increase immunization rates in underserved areas.
- Include the number and type of exemptions used in the past year.
- Include the number of complaints received by DSHS related to its failure to comply with requests for exclusion of individuals from the immunization registry, ImmTrac2[6].
- Identify all reported incidents of discrimination for requesting exclusion from the registry or for using an exemption for a required immunization.
- Include the number of complaints received by DSHS related to its failure to comply with requests for removal by first responders of information from the registry in HSC Section 161.00706 (e).
- Include DSHS's recommendations about the best way to use, and communicate with, local registries.
- Include ways to increase provider participation in the registry.

[6] ImmTrac2 is a secure and confidential system that safely consolidates and stores immunization records from multiple sources in one centralized repository. Texas law requires written consent by individuals to participate in the registry.

2. Background

Every year, vaccine-preventable disease (VPD) outbreaks occur in Texas, causing illness, and in some cases, death. VPDs include diseases such as influenza, shingles, human papillomavirus (HPV), Hepatitis B, and COVID-19. A highly vaccinated population reduces the incidences of diseases and safeguards public health. To ensure that vaccine coverage levels in Texas are high, DSHS engages in efforts to promote vaccination through a network of partnerships that integrate federal agencies and programs, state and local governments, schools, healthcare providers, employers, insurers and health plans, vaccine manufacturers, and others in the private sector.

In partnership with Local Health Departments (LHDs), DSHS coordinates immunization activities to reflect the following strategic goals set by the agency:

- Improve vaccine coverage levels for infants, children, adolescents, and adults.
- Maintain and improve public health preparedness.
- Promote and practice the safe handling and administration of vaccines and ensure the accountability and integrity of all program components.

To address Texas' complex immunization needs, DSHS operates the Texas Vaccines for Children (TVFC)[7] and Adult Safety Net (ASN)[8] programs and manages the statewide immunization information system, known as ImmTrac2[9], which allows Texans to store their vaccination records in a secure, electronic registry. Additionally, DSHS conducts public education related to VPDs and performs the assessment and evaluation of vaccine coverage across the state. Lastly, DSHS created the COVID-19 Vaccine Program, which supports providers by assisting with COVID-19 vaccine distribution, conducting quality assurance visits, providing

[7] The TVFC program provides vaccines at no cost to physicians to vaccinate eligible children. Further information on the TVFC program can be found at: www.dshs.texas.gov/immunize/tvfc/.
[8] The ASN program provides vaccines at no cost to physicians to vaccinate uninsured adults. Further information on the ASN program can be found at: www.dshs.texas.gov/immunize/ASN/.
[9] Information about ImmTrac2 is available at: www.dshs.texas.gov/immunize/immtrac/default.shtm.

educational materials, doing educational outreach, and engaging with stakeholders via webinars.

3. COVID-19 Vaccine Program

Overview

The DSHS COVID-19 Vaccine Program was established to quickly aid in the distribution and administration of the COVID-19 vaccines in response to the pandemic. The program provided up-to-date information regarding the COVID-19 vaccine to the public. The program also reviewed policies related to safeguarding the vaccine, healthcare provider vaccine administration, and ensuring the safety of patients who receive the vaccine. DSHS supports providers by helping with COVID-19 vaccine administration, quality assurance, educational outreach, and stakeholder engagement.

To meet the requirements of HSC 161.0074(d), DSHS conducted a statewide rapid needs assessment (RNA), in the form of a community survey, to identify vaccine hesitancy and any barriers to accessing the vaccine for vulnerable populations to address disparities in the access to and distribution of the COVID-19 vaccine.

COVID-19 Vaccine Administration

DSHS' COVID-19 Vaccine Program has aided in the distribution of the COVID-19 vaccine, making it readily available to providers within the program across Texas. As of November 2022, the program has contributed to the following totals regarding the administration of the vaccine in Texas:

- 21,828,859 people or 75.8 percent of Texas' eligible population has received at least one dose.
- 18,149,735 people or 63.0 percent of Texas' eligible population are considered fully vaccinated.
- 7,697,804 people or 26.7 percent of Texas' eligible population have received an additional dose.

COVID Vaccination Rate by Race, Geographic Location, and Age

The Centers for Disease Control and Prevention (CDC) COVID-19 Vaccination Program Provider Agreement, requires healthcare providers to report within 24 hours of administering a dose of COVID-19 Vaccine to the relevant state, local, or

territorial public health authority. In Texas, COVID-19 vaccination providers must report vaccine administration of the COVID-19 vaccine to the Texas Immunization Registry (ImmTrac2) within 24 hours of administration.

Table 1: COVID-19 Vaccination Status by Race/Ethnicity[10]

Race/Ethnicity Calculation	% People Vaccinated	% Fully Vaccinated	% First Booster/Additional Doses
Asian	77%	65%	31%
Black	47%	40%	16%
Hispanic	70%	55%	19%
Other	>99%	>99%	>99%
White	53%	47%	21%

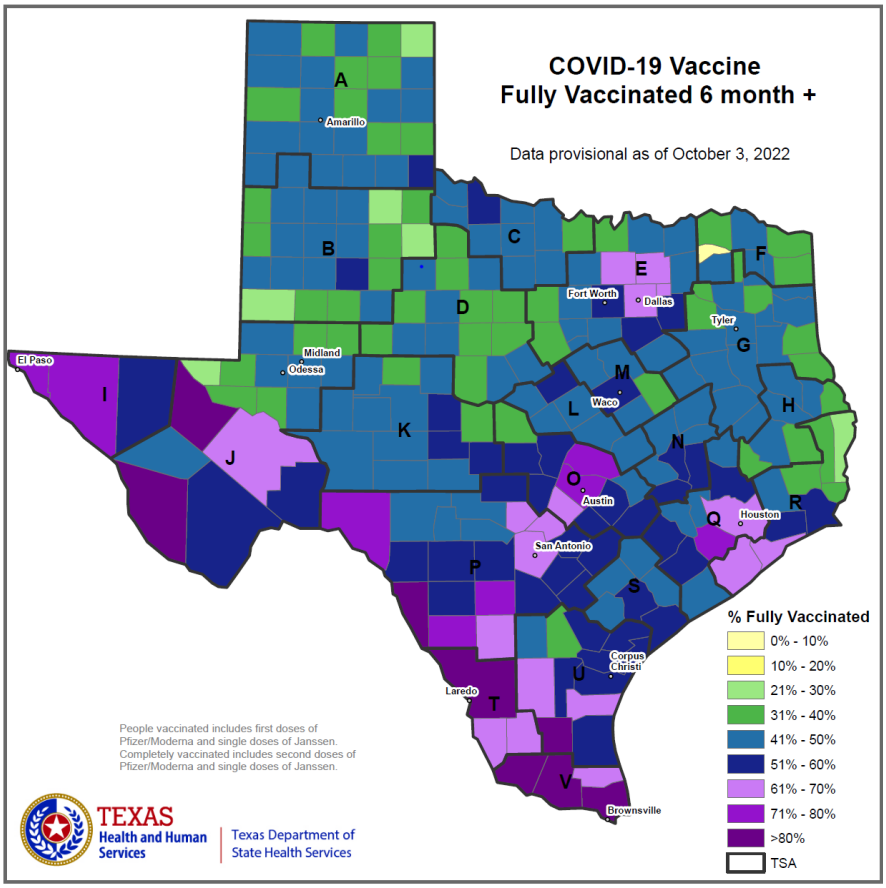
Source: Texas Immunization Registry Data as of November 18, 2022.

Texans who reported their race/ethnicity as "other"[11] have the highest vaccination rate across all three vaccination groups followed by Asian and non-Hispanic ethnicity. Hispanics follow closely behind with the third highest rates across people and fully vaccinated. Black, non-Hispanics reported the lowest rates across all three vaccination groups.

Most counties in Texas have a vaccination rate for fully vaccinated above 40 percent with counties along the Texas-Mexico border reporting the highest rates of vaccination in the state. Brooks, Reeves, Webb, Maverick, Starr, Hidalgo, Presidio, Dimmit, Cameron, and El Paso counties have a vaccination rate of more than 99 percent while 105 counties have vaccination rates below 50 percent. Newton (28 percent), Gaines (27 percent), King (25 percent), and Delta (4 percent) counties have the lowest vaccination rates.

[10] Race/ethnicity is determined using the race and ethnicity information in ImmTrac2. If a client reports their ethnicity as Hispanic, then race/ethnicity is Hispanic. Clients reporting not Hispanic will be reported as race/ethnicity.
[11] Other includes the identification of people as multiracial, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, and other races reported to ImmTrac2 compared to the number of people based on Texas Demographic Center 2019 population estimates.

Figure 1: COVID-19 Vaccination Rate of All Vaccine Eligible Age Groups by Client County



Source: Texas Immunization Registry Data as of October 3, 2022.

Table 2: COVID-19 Vaccination Status by Age

Age Group	% People Vaccinated	% Fully Vaccinated	% First Booster/Additional Doses	% Not Vaccinated
6 months-4 years	6%	1%	0%	94%
5 years-11 years	41%	29%	4%	59%
12 years-17 years	78%	61%	14%	22%
18years -29 years	74%	59%	15%	26%
30 years-39 years	80%	66%	22%	20%
40 years-49 years	86%	74%	30%	14%
50 years-64 years	92%	80%	42%	8%
65+ years	97%	87%	59%	3%

Source: Texas Immunization Registry Data as of November 18, 2022.

Texans above the age of 65 years have the highest vaccination rate among all age groups for all three vaccination statuses. This trend continues in descending order from older to younger age groups, with an exception between the 18 to 29 year and the 12 to 17 year age groups. The 12 to 17 year age group had a higher vaccination rate compared to the 18 to 29 year age group in the partially and fully vaccinated vaccination status groups.

Barriers to Vaccination by Race, Geographic Location, and Age

DSHS partnered with The University of Texas at Tyler and The University of Texas Health Science Center at Houston to conduct the RNA and produce the graphs below regarding COVID-19 vaccination trends in Texas. Data provided is current as of September 28, 2022, and only completed survey responses are included, totaling 14,735 responses. A completed survey is defined as a response where 75 percent of the questions were answered. The data cannot be stratified by age or county due to the limited number of responses received. As a result, geographical location is presented by Public Health Region (PHR).

Table 2: Barriers to Accessing COVID-19 Vaccine for Children or Dependents, 6 Months to 4 Years, by PHR

Experiencing Barriers to Accessing the COVID-19 Vaccine	**Decline**	**No**	**Yes**
PHR 1	0.0%	2.3%	5.7%
PHR 2/3	45.5%	25.8%	37.1%
PHR 4/5N	18.2%	8.8%	8.6%
PHR 6/5S	9.1%	25.0%	14.3%
PHR 7	0.0%	16.8%	5.7%
PHR 8	18.2%	11.5%	20.0%
PHR 9/10	0.0%	5.7%	0.0%
PHR 11	9.1%	4.1%	8.6%

Source: Texas Department of State Health Services. *COVID-19 Vaccine Hesitancy and Confidence (COVHAC) Survey: A Rapid Community Assessment in Texas.*

Table 3: Barriers to Accessing COVID-19 Vaccine for Children or Dependents, 5 to 17 Years, by PHR

Experiencing Barriers to Accessing the COVID-19 Vaccine	Decline	No	Yes
PHR 1	0.0%	2.7%	3.5%
PHR 2/3	31.4%	30.6%	35.3%
PHR 4/5N	14.3%	8.2%	7.1%
PHR 6/5S	14.3%	24.6%	24.7%
PHR 7	20.0%	12.2%	8.2%
PHR 8	14.3%	11.0%	12.9%
PHR 9/10	2.9%	5.3%	3.5%
PHR 11	2.9%	5.5%	4.7%

Source: Texas Department of State Health Services. *COVID-19 Vaccine Hesitancy and Confidence (COVHAC) Survey: A Rapid Community Assessment in Texas.*

Table 4: Barriers to Accessing COVID-19 Vaccine for Adults, by PHR

Experiencing Barriers to Accessing the COVID-19 Vaccine	Decline	No	Yes
PHR 1	3.4%	3.3%	6.4%
PHR 2/3	22.7%	30.3%	33.3%
PHR 4/5N	10.2%	11.3%	11.5%
PHR 6/5S	28.4%	23.2%	16.7%
PHR 7	15.9%	12.7%	10.3%
PHR 8	13.6%	9.7%	10.3%
PHR 9/10	2.3%	5.4%	3.9%
PHR 11	3.4%	4.2%	7.7%

Source: Texas Department of State Health Services. *COVID-19 Vaccine Hesitancy and Confidence (COVHAC) Survey: A Rapid Community Assessment in Texas.*

Survey respondents were asked to identify their county and zip code of residence, which was then organized by PHR, to identify by geographic location possible barriers to accessing the COVID-19 vaccine.

Economic Benefits of COVID-19 Vaccination

Texans who become gravely ill from COVID-19 are likely to experience significant healthcare costs. Per a study published in the Journal of Medical Economics regarding the economic burden of hospitalized COVID-19 patients in the U.S., persons with a median five-day length-of-stay (LOS) incurred a median of $43,986 in hospital charges and hospitals incurred a median of $12,046 in hospital cost.

LOS, hospital charges, and hospital cost increased with intensive care unit (ICU) and invasive mechanical ventilation (IMV) usage. Patients who were admitted to the ICU and needed IMV had the longest median LOS at 15 days, highest median hospital charges at $198,394, and the highest median hospital cost at $54,402.[12]

The study recommends the COVID-19 vaccine as the primary preventive treatment to reduce severe COVID-19 symptoms and hospitalizations. Several peer-reviewed research studies have measured the effectiveness of the COVID-19 vaccines against hospitalization. For example, a study published in The British Medical Journal (BMJ) found that effectiveness of mRNA[13] vaccines to prevent COVID-19 associated hospitalizations was 85 percent for two doses against the alpha variant[14], 85 percent for two doses against the delta variant[15], 94 percent for three doses against the delta variant, 65 percent for two doses against the omicron variant, and 86 percent for three doses against the omicron variant.[16,17]

Disparities

Since the first rollout of COVID-19 vaccines for public use, DSHS has prioritized the immunization of vulnerable populations. DSHS created the Expert Vaccine Allocation Panel (EVAP) to ensure equitable vaccine allocation decisions.

The following are DSHS recommendations based on EVAP recommendations and public feedback collected by the RNA to ensure statewide distribution of and access to COVID-19 vaccines are unbiased across the state:

- Adapt and change messaging around COVID-19 to highlight the potential severity of COVID-19 to the individual and the community. Survey responses

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[12] Di Fusco M, Shea KM, Lin J, et al. Health outcomes and economic burden of hospitalized COVID-19 patients in the United States. J Med Econ. 2021;24(1):308-317. doi:10.1080/13696998.2021.1886109

[13] mRNA vaccines begin with identifying a spike protein that is designed to treat a disease. The mRNA vaccine carries instructions for that protein and spread it throughout the body.

[14] Alpha variant is extinct worldwide. The delta variant replaced alpha as the dominant strain in the U.S. in the summer of 2021.

[15] Delta variant spreads easier than the alpha variant, vaccines are less effective against it. The delta variant is potentially up to 60 percent more transmissible than the alpha variant and perhaps twice as transmissible as the original strain of the coronavirus.

[16] The omicron variant spreads easier than the initial variant and the delta variant. The omicron variant evades immunity from past COVID-19 infection and vaccination because it has a high number of mutations in the spike protein.

[17] Lauring A S, Tenforde M W, Chappell J D, Gaglani M, Ginde A A, McNeal T et al. Clinical severity of, and effectiveness of mRNA vaccines against, covid-19 from omicron, delta, and alpha SARS-CoV-2 variants in the United States: prospective observational study. BMJ 2022; 376 :e069761 doi:10.1136/bmj-2021-069761

indicated increased public concern of COVID-19 transmission when connected to potential community harm rather than personal harm.

- Develop and disseminate information on how, when, and where to access a COVID-19 vaccine (how an individual can set up an appointment to receive a COVID-19 vaccine, when individuals are eligible for immunization, and where they can access a COVID-19 vaccine).

- Develop and disseminate information addressing commonly cited concerns precluding individuals from becoming vaccinated against COVID-19, underlining the efficacy and safety of the COVID-19 vaccine.

- Address transportation and mobility barriers to accessing the COVID-19 vaccine with programs like free travel vouchers to and from vaccine appointments or mobile vaccination clinics.

- Address childcare for individuals wishing to vaccinate themselves and their families against COVID-19. Survey responses indicated childcare was a barrier to accessing the COVID-19 vaccine for many children or dependents under 18 years old.

- Include information on the COVID-19 vaccine (ingredients, how it works to help mitigate the harm of COVID-19, etc.), the relative risk of COVID-19 immunization, and the potential side effects of the various vaccines for different populations in future programming and initiatives to rebuild trust between public institutions and the public through public transparency.

- Encourage all providers to initiate open ended conversations with their patients about the COVID-19 virus and the COVID-19 vaccine to help dispel incorrect information and help their patients become more comfortable with receiving a COVID-19 vaccine.

- Develop and disseminate clear communication about the Food and Drug Administration approval process for vaccines and updates on the approval status of COVID-19 vaccines currently available in Texas for every eligibility population.

Recommendations for Legislative Action

Per HSC Section 161.0074, DSHS recommends the following legislative action based on immunizations rates:

- Continue public and provider education by directing provider and public to educational materials and DSHS services.

4. Immunization Coverage Rates

The CDC conducts and analyzes an annual National Immunization Survey (NIS). DSHS uses the analyses to assess immunization coverage rates across the state. The NIS measures childhood vaccination coverage and the NIS-Teen measures adolescent vaccination coverage. In addition to national estimates, DSHS receives state specific vaccination coverage estimates, which includes both statewide data and data for selected cities or counties within the state.

National Immunization Survey-Child

The NIS assesses vaccine coverage levels for children 19-35 months of age nationally, by state, and in selected areas. Coverage for most vaccines is now estimated at 24 months of age, by birth year. The NIS 2019 report measured vaccinations for children born between January 2016 and May 2017. The NIS 2020 report measured vaccinations for children born between January 2017 and May 2019. The NIS 2021 report measured vaccinations for children born between January 2018 and May 2020. Measures in these reports reflect the effectiveness of strategies and activities in place up to three years prior.

The graph below shows coverage rates for children receiving the combined 4:3:1:3:3:1:4 series. Overall, in 2019, Texas' rate was 67.7 percent, which is lower than the national average of 70.5 percent. In 2020, Texas' rate was 65.9 percent, which was lower than the national average of 70.5 percent.

Table 6: Estimated Vaccination Coverage[a] for Selected Vaccines, NIS-Child 2019 to 2021[18]

Vaccine	Texas (NIS-Child 2019)	Texas (NIS-Child 2020)	Texas (NIS-Child 2021[b])
≥4 doses diphtheria, tetanus, acellular pertussis (4+DTaP)	78.2%	77.4%[h]	-
≥3 doses inactivated poliovirus (3+Polio)	88.9%	90.6%[h]	-
≥1 dose measles, mumps, rubella (1+MMR)	88.5%	90.9%	-
Haemophilus influenzae full series (Hib-FS)[c]	76.2%	76.0%[h]	-
1 dose Hepatitis B in first 3 days of life (Hep B birth dose)	77.4%	79.8%	-
≥3 doses Hepatitis B (3+HepB)	87.5%	88.0%[h]	-
≥1 dose varicella (1+VAR)	87.9%	89.6%	-
≥4 doses pneumococcal conjugate (4+PCV)	79.5%	79.9%	-
≥ 1 dose Hepatitis A (1+HepA)	87.0%	88.4%	-
≥ 2 dose Hepatitis A (2+HepA)	80.6%	78.0%	-
Rotavirus series by 8 months of age (Rota)[d]	71.7%	74.3%	-
≥2 doses influenza (2+Flu)[e]	51.4%	52.6%[h]	-
7-vaccine series (4:3:1:3:3:1:4)[f]*	67.7%	65.9%[h]	-

[a] Coverage estimates are at 24 months unless otherwise noted (i.e., rotavirus vaccination coverage assessed at 8 months)
[b] Data for the 2019 birth year are considered preliminary and are based on survey years 2020 and 2021. The CDC NIS-Child 2021 data was not yet available at the time of publication.
[c] Full series (FS) of either 3 or 4 doses of *Hib* conjugate vaccine, depending on vaccine type
[d] Either ≥2 or ≥3 doses of rotavirus vaccine, depending on product used, by 8 months of age
[e] Doses must be at least 24 days apart (four weeks, with a four-day grace period)
[f] 4:3:1:3:3:1:4 includes 4+ DTaP, 3+ polio, 1+ MMR, 3 or 4 doses Hib, depending on vaccine type, 3+ Hep B, 1+ varicella, and 4+ PCV
[g] Statistically significant difference ($p<0.05$) between birth years
[h] Statistically significant difference ($p<0.05$) from U.S estimate

[18] NIS Full Report https://www.dshs.texas.gov/immunize/coverage/NIS/

National Immunization Survey-Teen (NIS-Teen)

The NIS-Teen assesses immunization coverage rates among 13-17-year-olds for vaccines recommended by the Advisory Committee on Immunization Practices (ACIP) for adolescents. These vaccines include Tetanus, Diphtheria, and Acellular Pertussis (Tdap), Meningococcal Serogroups A, C, W, and Y (MenACWY), and HPV. The NIS-Teen also measures coverage for the following catch-up schedule vaccines; this includes measles, mumps, rubella (MMR) and the varicella (VAR) for teens who did not complete these vaccines when they were younger. The NIS-Teen 2020 survey included a new question on hepatitis A (HepA) vaccination. This new question in NIS-Teen 2020 reflects the updated ACIP recommendation from July 2020 to include catch-up vaccination for children and adolescents 2-18 years of age who had not previously received HepA vaccine.

The table below shows national and Texas coverage rates for adolescents receiving the HPV, Tdap, and meningococcal vaccines. The table also includes coverage rates for adolescents for the catch-up vaccines included in NIS-Teen.

Table 7. Adolescent Immunization Coverage Estimates in Texas, NIS-Teen 2019-2021.[19]

Vaccine	Texas 2019	Texas 2020	Texas 2021
≥1 dose of Tdap	84.8%	84.0%	87.1%
≥1 dose of MenACWY	85.9%	91.2%	90.0%
≥1 dose of HPV	65.1%	72.8%	71.3%
HPV Completed Series	48.4%	54.9%	51.5%
≥1 dose of HPV, females	64.2%	76.1%	73.4%
Completed HPV Series, females	50.6%	57.0%	54.8%
≥1 dose of HPV, males	65.8%	69.6%	69.2%
Completed HPV Series, males	46.3%	52.9%	48.3%
≥2 doses of MMR	84.2%	85.9%	84.1%
≥2 doses of VAR	81.6%	86.7%	84.7%
≥2 doses of HepA	--	87.1%	84.3%

[19] NIS-Teen Full Report https://www.dshs.texas.gov/immunize/coverage/NIS/National-Immunization-Survey-Teen-(NIS-Teen)-2020,-Texas/

5. Approaches to Increase Immunization Rates

DSHS takes a multifaceted approach to increase immunization rates in Texas, which includes providing free vaccines to underserved populations, employing quality improvement efforts, performing educational outreach, and engaging and collaborating with partners and stakeholders.

Vaccine Programs

DSHS oversees programs that provide vaccines in Texas. The TVFC Program provides free childhood vaccines and the ASN Program provides free adult vaccines. These programs provide vaccines to eligible Texans who may not otherwise receive immunizations due to limited access to medical systems or an inability to afford vaccines. Due to the impact of the COVID-19 pandemic, the TVFC and ASN programs have been refocusing provider and Responsible Entities (REs) attention on program fundamentals and the program importance of utilizing the Standards for Pediatric and Adult Immunization Practices[i] to take steps to help ensure that patients are fully immunized. Additionally, the clinical team at DSHS hosts disease-specific webinars for VPDs to stress the importance of immunizations.

Educational Outreach

DSHS has employed a variety of educational strategies to increase immunization rates across Texas. These educational strategies include:

- Vaccine Education Online: eLearning system that offers educational modules for physicians, nurses, and health education specialists to earn continuing education credits.

- "Every Dose Matters": Public education campaign promoting the ACIP's vaccine recommendations for children. Digital and broadcast media targeting providers, parents, and the public started in spring 2018 and free printed resources were made available for order.

- Influenza and Pneumococcal Education: DSHS has mailed educational and promotional materials to more than 1,200 long-term care facilities encouraging immunization of residents.

- Adult and First Responder Education: In-person trainings were conducted in 2019, 2021, and 2022 at the Texas Emergency Medical Services (EMS) Conference to promote the adult standards for immunization practices, or steps recommended by the CDC, that first responder agencies can follow to ensure that adult and first responder patients get the vaccines they need. First Responder Agencies and individuals were educated on how to assess their team's immunization status, the recommended age-appropriate vaccines for adult and first responders, how to answer questions regarding vaccines and diseases they prevent, where they can receive the appropriate vaccines or refer a team member to a provider, and document/view doses administered in ImmTrac2. Additionally, the Adult Immunization Team also participated in the Exhibit Hall of the 2019, 2021, and 2022 Texas EMS conference educating first responder attendees on the recommended vaccines and ImmTrac2, and they partnered with Walgreens to provide both the Influenza and COVID-19 vaccines.

Stakeholder Engagement

DSHS's primary mechanism for engaging with immunization stakeholders is the Texas Immunization Stakeholder Working Group (TISWG)[20], which consists of more than a dozen members from across state health and human service agencies and professional healthcare associations. The DSHS-led working group brings stakeholders of the state's immunization community together to discuss and identify needs and successes, enabling DSHS to overcome barriers and gaps in the immunization system.

Collaboration with non-profit organizations is another critical component for stakeholder engagement that allows for coalition-building and outreach. Additionally, the DSHS-hosted Texas Immunization Conference is another important opportunity for peer engagement and education. The biennial event brings together stakeholders from public health departments, private providers, vaccine manufacturers, hospital staff, non-profits, and university researchers to present, discuss, and learn about best practices for improving immunization rates. The most recent meeting of the Texas Immunization Conference took place in June 2022.

[20] Information about TISWG can be found at: http://dshs.texas.gov/immunize/partners/tiswg.shtm.

6. Addressing the Needs of Underserved Areas

Children who are uninsured, underinsured, lack a medical home, live in rural areas, or live on the Texas-Mexico border are historically medically underserved. These areas continue to exist although DSHS actively seeks to enroll Federally Qualified Health Centers (FQHCs) and Rural Health Clinics (RHCs) as healthcare providers in the TVFC and ASN Programs. FQHCs and RHCs mitigate barriers to medical care by offering immunization services outside of usual clinic hours and by serving populations that may otherwise have difficulty accessing care due to cost without insurance or travel time to the nearest clinic. As of mid-2021, approximately 483 private and public border-area clinic sites are enrolled in TVFC, administering approximately 1.5 million doses of vaccine each year.

DSHS maintains long-standing relationships with public health departments in border counties. As of mid-2021, approximately 483 private and public border-area clinic sites are enrolled in TVFC, administering approximately 1.5 million doses of vaccine each year. For fiscal year 2021 and fiscal year 2022, DSHS awarded $15.3 million per fiscal year in state general revenue and federal funds to 50 contracted LHDs to serve as the RE to provide essential TVFC and ASN immunization services. In fiscal year 2022, DSHS offered an opportunity for LHDs, and city and county governments that do not have LHDs, to apply for funding to help reduce health disparities and increase access to COVID-19 vaccine in their communities. During fiscal year 2021-22, DSHS awarded a total of $226.7 million in Immunization and Vaccines for Children COVID-19 CARES Act[21] federal funds to LHDs, city, and county governments to provide essential COVID-19 immunization services. In addition to other funds distributed to LHDs, in fiscal year 2020, DSHS provided more than $2.0 million in state and federal funds to LHDs located in medically underserved border regions.

The LHDs implement immunization programs for children, adolescents, and adults, focusing special attention on children under the age of three years, with the goals of eliminating barriers to immunizing children on schedule, expanding vaccine delivery, and establishing uniform immunization policies. DSHS also works with the Children's Health Insurance Program (CHIP) to ensure that CHIP providers have access to low-cost vaccines, through an interagency cooperative contract between the Texas Health and Human Services Commission (HHSC) and DSHS.

[21] https://www.congress.gov/bill/116th-congress/house-bill/748

7. ImmTrac2, the Texas Immunization Registry

HSC Section 161.007, requires DSHS to maintain an immunization registry as a single repository of accurate, complete, and current immunization records. The Texas Immunization Registry, ImmTrac2, consolidates and stores immunization records in a secure, central immunization information system and offers providers the ability to assess current vaccine coverage levels and forecast future needs.

As of 2021, approximately 256 million immunization records for more than 15 million children and adults are stored in ImmTrac2, and more than 35,000 medical providers in Texas actively use ImmTrac2 to assess vaccination coverage among their client populations. These numbers reflect a growth of more than 100 million immunization records, 7.25 million clients, and 28,000 providers since fiscal year 2018. Prior to ImmTrac2, which went live on April 3, 2017, there were just over 164 million immunization records for more than 8 million children and adults and just under 30,000 medical providers.

The rules governing ImmTrac2 provide the public with a formal complaint process. In addition, DSHS has not received any reports of incidents of discrimination from an individual requesting exclusion from the registry.

DSHS has identified the following methods to increase provider participation in ImmTrac2:

- Improve registry value and benefits to providers and payers.
- Increase registry marketing, promotion, and education efforts.
- Strengthen registry customer support.
- Continue with interoperability sustainability for Health Level 7[22] (HL7) immunization electronic data acceptance from registered providers.
- Collaborate with electronic health record (EHR) vendors to increase interoperability.
- Employ a medical home model to improve clinical usability of the system.

[22] Health Level Seven International is a not-for-profit organization dedicated to providing a comprehensive framework and standards for the exchange, integration, sharing, and retrieval of electronic health information. The organization's website can be found at www.hl7.org.

- Implement recognition programs.
- Apply technical improvements.

Texas law requires written consent by individuals to participate in the immunization registry. To register a child 17 years old or younger, the parent or legal guardian must provide consent. This consent is required once and is valid until the participating child turns 18. Persons 18 years and older must complete an adult consent form one time to participate for a lifetime.

HSC Section 161.007, requires childhood records of minors in ImmTrac2 to be purged once a participant reaches adulthood if adult consent is not received before a participant's 26th birthday. To maintain participation among graduating high school seniors, DSHS works with the Texas Education Agency and high school nurses to promote and obtain consent from 18-year-old students and works with higher education entities to increase young adult participation in the system. In addition, DSHS mails a notification to each ImmTrac2 participant who recently turned 18 outlining the benefits of providing opt-in consent as an adult to maintain vaccination histories for a lifetime.[23]

[23] House Bill 2171, 84th Legislature, Regular Session modified the age at which individuals' records are purged from ImmTrac2 if adult consent is not received, increasing it from 19 to 26 years old. The first cohort of individuals affected by this legislation will turn 25 in 2022, at which point DSHS will make a reasonable effort to provide notice that their information will be purged on their 26th birthday if they do not provide adult consent prior to that date.

8. Conclusion

HSC Section 161.0074 and 161.0076 requires DSHS to generate a biennial report and use its findings to develop ways to increase immunization rates using state and federal resources. DSHS has incorporated proven strategies in a comprehensive, collaborative approach with local, state, and federal partners to increase vaccine coverage levels. This systematic approach is designed to eliminate impediments to vaccination and maximize resources available to the immunization delivery system, including during a declared public health disaster. DSHS works to identify gaps in the statewide immunization system and proactively implement changes. The Texas Immunization Program brings all stakeholders of the immunization system together to talk about needs and successes across Texas.

DSHS has incorporated proven strategies in a comprehensive, collaborative approach with local and state partners to increase vaccine coverage levels. This systematic approach is designed to reduce barriers to vaccination and maximize resources available to the immunization delivery system.

DSHS created a COVID-19 Vaccine Program in response to the COVID-19 pandemic. The COVID-19 Vaccine Program provides support to COVID-19 vaccine providers by assisting with vaccine distribution, conducting quality assurance visits, providing educational materials, doing educational outreach, and engaging with stakeholders via webinars.

DSHS will continue to evaluate the effectiveness of existing public health strategies, and work to implement policies that increase coverage levels and decrease vaccine preventableCOVID-19 specific diseases in Texas.

List of Acronyms

Acronym	Full Name
ACIP	Advisory Committee on Immunization Practices
ASN	Adult Safety Net
CDC	Centers for Disease Control and Prevention
CHIP	Children's Health Insurance Program
DSHS	Department of State Health Services
DTaP	Diphtheria, Tetanus, and Acellular Pertussis
EHR	Electronic Health Record
EMS	Emergency Medical Services
FQHC	Federally Qualified Health Center
HHSC	Health and Human Services Commission
HepA	Hepatitis A
HepB	Hepatitis B
Hib	*Haemophilus influenzae* type B vaccine
HL7	Health Level 7
HPV	Human papillomavirus
ImmTrac2	Texas Immunization Registry

LHD	Local Health Department
MenACWY	Meningococcal Serogroups A, C, W, and Y
MMR	Measles, Mumps, and Rubella
NIS	National Immunization Survey
PCV	Pneumococcal Conjugate vaccine
PHR	Public Health Region
RHC	Rural Health Clinic
Tdap	Tetanus, Diphtheria, and Acellular Pertussis
TISWG	Texas Immunization Stakeholder Working Group
TVFC	Texas Vaccines for Children
VAR	Varicella
VPD	Vaccine-Preventable Disease