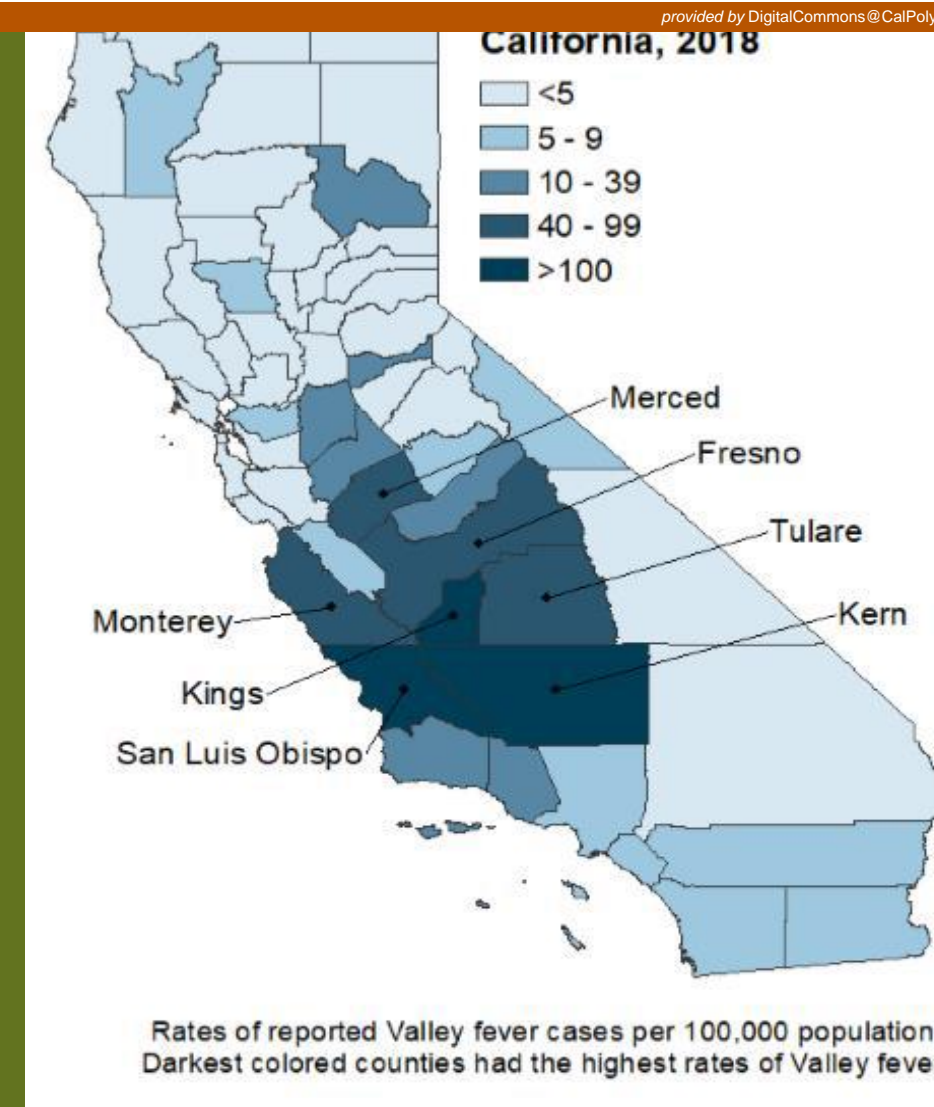




# Brochure for California Counties Affected by Coccidioidomycosis

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## Introduction

In many areas of California, workers involved in construction and agriculture are susceptible to a soil-borne fungus which can cause coccidioidomycosis, or valley fever. The disease, which can be contracted by breathing in dirt or dust on a site, is contagious and can sometimes lead to serious and/or fatal symptoms without proper treatment (CDPH, 2018).

Valley fever has been one of the most prevalent diseases in recent years for San Luis Obispo County (VF Brochure, 2018). To counter the increasing number of cases, San Luis Obispo County and the Public Health Department collaborated to inform as many people as possible about Valley Fever. This was done through the distribution of informational brochures specifically tailored to workers in agriculture.

Other counties in California are also at risk of valley fever but may not take the same precautions as San Luis Obispo County. This project goes beyond San Luis Obispo County's work to examine whether or not other counties in California are taking the same preventative measures. The author chose to analyze different sources in order to see which counties in California show a prevalence of valley fever, and if those counties have informative resources about the dangers of the disease.

## Results

The author conducted research showing four counties in California with endemic traits for valley fever (Lassen, Amador, Tuolumne and Merced county) do not provide preventative information for the disease on their county websites. The other 11 counties with endemic traits for valley fever (San Joaquin, Stanislaus, Monterey, Santa Barbara, Ventura, Madera, Fresno, Tulare, San Luis Obispo, Kings and Kern county) do provide preventative information.

The four counties without any preventative information provided are all counties with particularly low rates of valley fever (6.0-20.9 cases per 100,000 people in 2018). While these counties experience less of a danger of exposure to valley fever than others, preventative information is still necessary to make these rates lower.

The author designed a brochure, with inspiration from the California Department of Public Health and the San Luis Obispo County Department of Public Health, in order to create information for these counties to display on their websites. The end result is a two-page, six-panel brochure providing information about valley fever, how it is transmitted, its symptoms, a map of 2018 county rates, diagnosis, treatment, and individuals most susceptible to the disease.

## Background

Even though a majority of infected individuals don't experience symptoms, those with symptoms can experience fever, shortness of breath, skin rash, coughing, body aches, night sweats, chest pain, joint pain, and/or fatigue. On rare occasions, symptoms will continue to spread and worsen. Worsened symptoms include high fever, extreme fatigue, nodules or skin ulcers; skull, spine, or bone lesions, swollen joints, headaches and/or back pain. 1-5% of individuals experience these worsened symptoms which may lead to death. Individuals of African-American, Hispanic, Native American and Filipina descent as well as those with weakened immune systems are the most susceptible to infection. While anyone can become infected with valley fever, agricultural and construction workers are typically the most susceptible (VF Brochure, 2018 and Cummings et. al., 2010).

The California Department of Public Health offers a list of contact information regarding each California county. In order to find out which counties provide preventative information regarding valley fever, these counties must be contacted and/or investigated through web searching. It is also important to deduce whether or not these counties are simply using the CDPH's general information about valley fever or their own tailored information.

When going through the list of individual counties and if they have had cases of valley fever, a noteworthy concept to look for is if valley fever is endemic in those areas. When a disease is endemic, this means that it persists in a specific geographical location for consistent periods of time without external influence. A research article providing updates on emerging infections reiterates CDC statistics showing how often Valley Fever occurs in the state of California alone (Rouhani et. al., 2016). The article specifies that California shows endemic trends for valley fever, but not specifically which parts. This means that further research is crucial in finding out which counties/areas are affected the most.

A major outbreak of valley fever occurred in California's Central Valley on two construction sites of a solar farm. A research article written from the American Journal for Public Health looks to see if certain work conditions contributed to the outbreak that occurred (Sondermeyer et. al., 2017). Knowing what these conditions are and how to correct for their safety should be the first step in preventative efforts for valley fever. The article highlights certain work practices that can reduce the chance of contracting the disease such as wearing protective face masks, working during mornings, and avoiding windy days.

## Methodology

The goal of this project was to create preventative information for counties to put directly on their department websites instead of putting a link to a third-party website or not having any at all. The first step in assessing counties is to search for a map of cases per county per year in California (this can be done by searching for valley fever rates by county on the California Department of Public Health website). Valley fever is said to only be considered endemic in a county if the average number of cases per 100,000 people per year fluctuates above five (A. Rouhani et. al., 2016). With this information, look to see which counties show rates of valley fever above this. Create a list of every endemic county and the average number of cases per year each one has in order from least to greatest.

Once a list has been created, visit each listed county's site (either the normal county site or the county's Health Department site) to check for any available information on valley fever. When searching on county sites, make sure to search the disease's common name (valley fever) and its scientific name (coccidioidomycosis). If county information is readily available, mark on the list that it is. If it is not, mark on the list that it is not. If a county provides a link to third-party information, mark on the list that information is provided that the county does not own. Once every county has been searched and marked, assess which counties don't provide information at all and what rates for the disease correlate. The rates and locations of these counties will dictate information in the brochure to be created.

The brochure can be created on a variety of design platforms, including but not limited to Adobe InDesign, Canva, or Microsoft Word. The content of the brochure, generally, should include what valley fever is, how it is diagnosed, what activities promote its spread, what the symptoms are, and how it is treated. In terms of distribution, contacting the health departments of counties without valley fever information by phone or email can suffice. Tell them your name, school, major and subject of the project. Explain how you would like to provide free, customized information for them to use on their website or as a reference.

County	Provides information?	Rate of infection per 100,000 people (2018)
Lassen	No	6.0-20.9
Amador	No	6.0-20.9
San Joaquin	Yes	6.0-20.9
Tuolumne	No	6.0-20.9
Stanislaus	Yes	6.0-20.9
Merced	No	6.0-20.9
Monterey	Yes	6.0-20.9
Santa Barbara	Yes	6.0-20.9
Ventura	Yes	6.0-20.9
Madera	Yes	21.0-50.9
Fresno	Yes	21.0-50.9
Tulare	Yes*	21.0-50.9
San Luis Obispo	Yes	51.0-99.9
Kings	Yes	>100.0
Kern	Yes*	>100.0

\*Link to third-party website provided

### Valley Fever

**What is Valley Fever?**

Valley Fever, also known as coccidioidomycosis, is a disease that originates from fungal spores in certain soils.

**How is Valley Fever Transmitted?**

When soil is disturbed and pushed into an airborne state, fungal spores can be breathed in. As a result, Valley Fever can be transmitted through the lungs or other parts of the body.

**Diagnosis and Treatment:**

Flu-like symptoms persisting or worsening after three weeks, within an exposure time to dirt or dust, may indicate a diagnosis of Valley Fever. Healthcare professionals can administer blood or other bodily fluid tests, chest X-rays, or skin tests to find out if you are or have ever been infected.

Even though most people recover without treatment, a diagnosis for worsening symptoms of Valley Fever can be treated with antifungal medication. Serious cases may require surgery and/or lifelong medicinal treatment.

**Signs of Valley Fever**

Even though a majority of infected individuals don't experience symptoms, those with symptoms can experience:

- Fever
- Shortness of breath
- Skin rash
- Coughing
- Body aches
- Night sweats
- Chest pain
- Joint pain
- Fatigue

On rare occasions, symptoms will continue to spread and worsen. Worsened symptoms include:

- High fever
- Extreme fatigue
- Nodules or skin ulcers
- Skull, spine, or bone lesions
- Swollen joints
- Headaches or back pain

**Sources**

California Department of Public Health  
(916) 558-1784

San Luis Obispo County Department of Public Health  
(805) 781-5500

**Who can get Valley Fever?**

Valley Fever can affect anyone that lives in or visits an area where the fungus is present. Higher likelihoods of exposure are present in settings involving dirt or dust such as farm work or construction work.

Even though a majority of infected individuals experience mild or no symptoms, 1-5% experience severe symptoms which may lead to death. Individuals of African-American, Hispanic, Native American and Filipina descent as well as those with weakened immune systems are the most susceptible to infection.

## Discussion

Based on the results of the author's research, there is no definitive reason as to why Lassen, Amador, Tuolumne and Merced county don't have preventative information available for valley fever.

One theory for a lack of information would be that, minus Merced county, these counties have less than 100,000 people in their overall populations; thus, the amount of cases is considerably lower than some other endemic counties with similar rates. This is not means for a justification as to why these counties shouldn't still provide preventative information online.

## Conclusions

In 2018, 15 California counties showed endemic rates for valley fever.

There are four endemic California counties (Lassen, Amador, Tuolumne and Merced county) that do not directly provide preventative information or links to third-party information on their websites.

The other 11 endemic California counties (San Joaquin, Stanislaus, Monterey, Santa Barbara, Ventura, Madera, Fresno, Tulare, San Luis Obispo, Kings and Kern county) do directly provide preventative information or links to third-party information on their websites.

Counties can't directly publish citizen-made information, but can use said information as an example to create their own.

## Contact

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