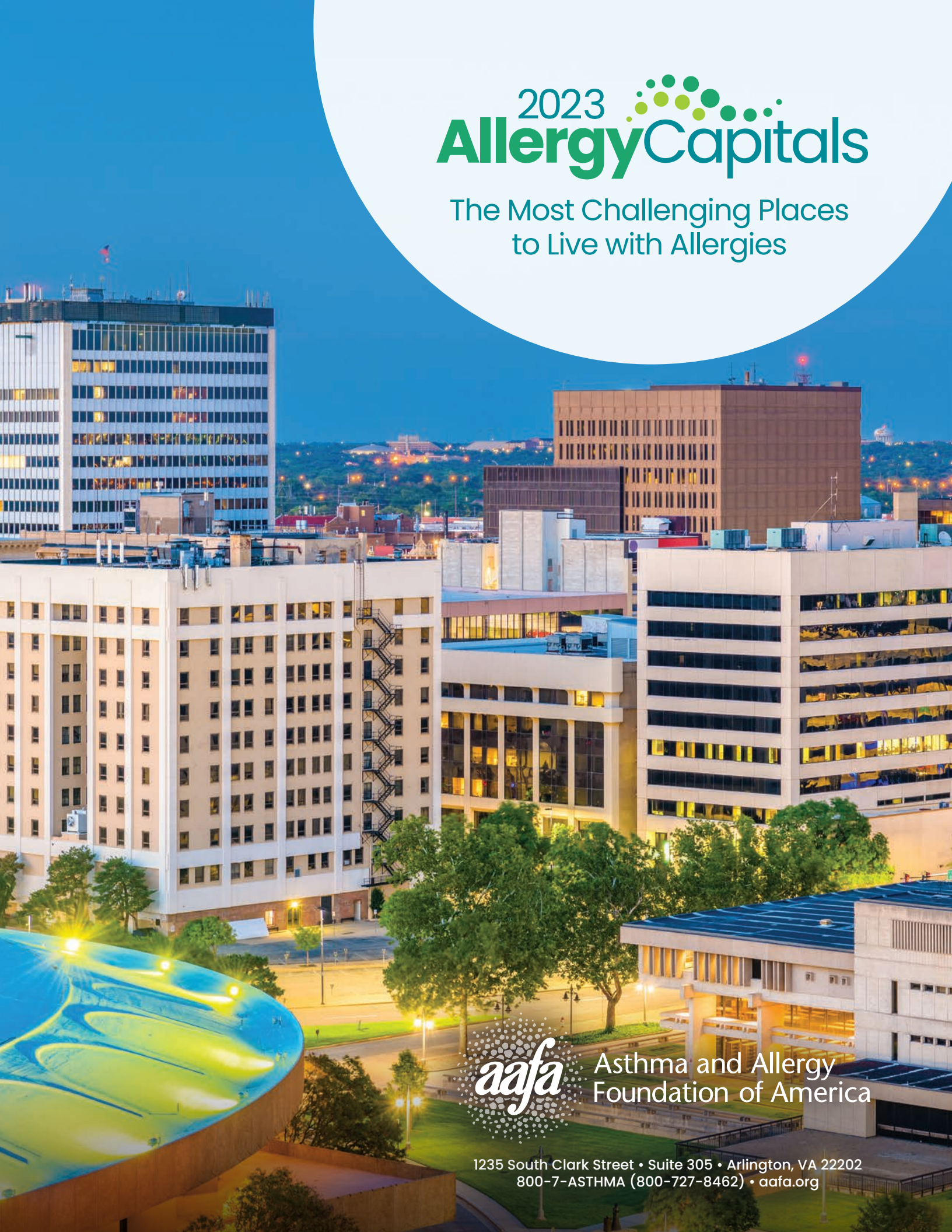
2023 Allergy Capitals

The Most Challenging Places to Live with Allergies



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2023 Allergy Capitals

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About the Asthma and Allergy Foundation of America (AAFA)
Founded in 1953, AAFA is the oldest and largest nonprofit patient organization dedicated to saving lives and reducing the burden of disease for people with asthma, allergies, and related conditions through research, education, advocacy, and support. AAFA offers extensive support for individuals and families affected by asthma and allergic diseases, such as food allergies and atopic dermatitis (eczema). Through its online patient support communities, network of local chapters, and affiliated support groups, AAFA empowers patients and their families by providing practical, evidence-based information and community programs and services. AAFA is the only asthma and allergy patient advocacy group that is certified to meet the standards of excellence set by the National Health Council. AAFA also helps consumers identify products to help them have healthier homes through the **asthma & allergy friendly®** Certification Program. For more information, visit **aafa.org**.

About This Report
The 2023 Allergy Capitals™ ranking is researched and reported by by the Asthma and Allergy Foundation of America. The ranking is based on analysis of data from the 100 most-populated Metropolitan Statistical Areas (MSAs) in the contiguous 48 states as determined by the most recent U.S. Census Bureau population estimates. The individual factors analyzed for the 2023 rankings are pollen scores for tree, grass, and weed pollen, over-the-counter medication use (allergy), and number of allergy specialists.

Acknowledgements
The 2023 Allergy Capitals report is an independent research project of the Asthma and Allergy Foundation of America, made possible by a research support grant from the Consumer Healthcare Products Association.

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Taking healthcare personally.

The views and opinions expressed in this report are those of the AAFA authors and do not necessarily reflect the policies or positions of other individuals, organizations, or companies. This comprehensive report would not be possible without the dedication of the AAFA staff responsible for this report: Hannah Jaffee, Tanya Bumgardner, Melanie Carver, Sanaz Eftekhari, Nicole Gaghan, and Kimberly Rafferty.

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Improving the Quality of Life for People with Seasonal Allergies

The Asthma and Allergy Foundation of America (AAFA) has produced Allergy Capitals™ reports since 2003 to help people recognize, prevent, and manage seasonal allergies. Since that first report, seasonal allergies have worsened.

Climate change has caused the growing seasons to get longer and warmer, leading to higher tree, grass, and weed pollen counts. Some parts of the United States now have pollen year-round. The warmer temperatures also get trapped in urban areas, which impact air pollution.

The 2023 Allergy Capitals report uses data from the previous year to rank how challenging it is to live with pollen allergies in the 100 largest cities in the continental United States. The report looks at five important factors:

- **Tree, grass, and weed pollen scores**
- **Over-the-counter allergy medicine use**
- **Availability of board-certified allergists/immunologists**

Through this report, AAFA raises awareness on:

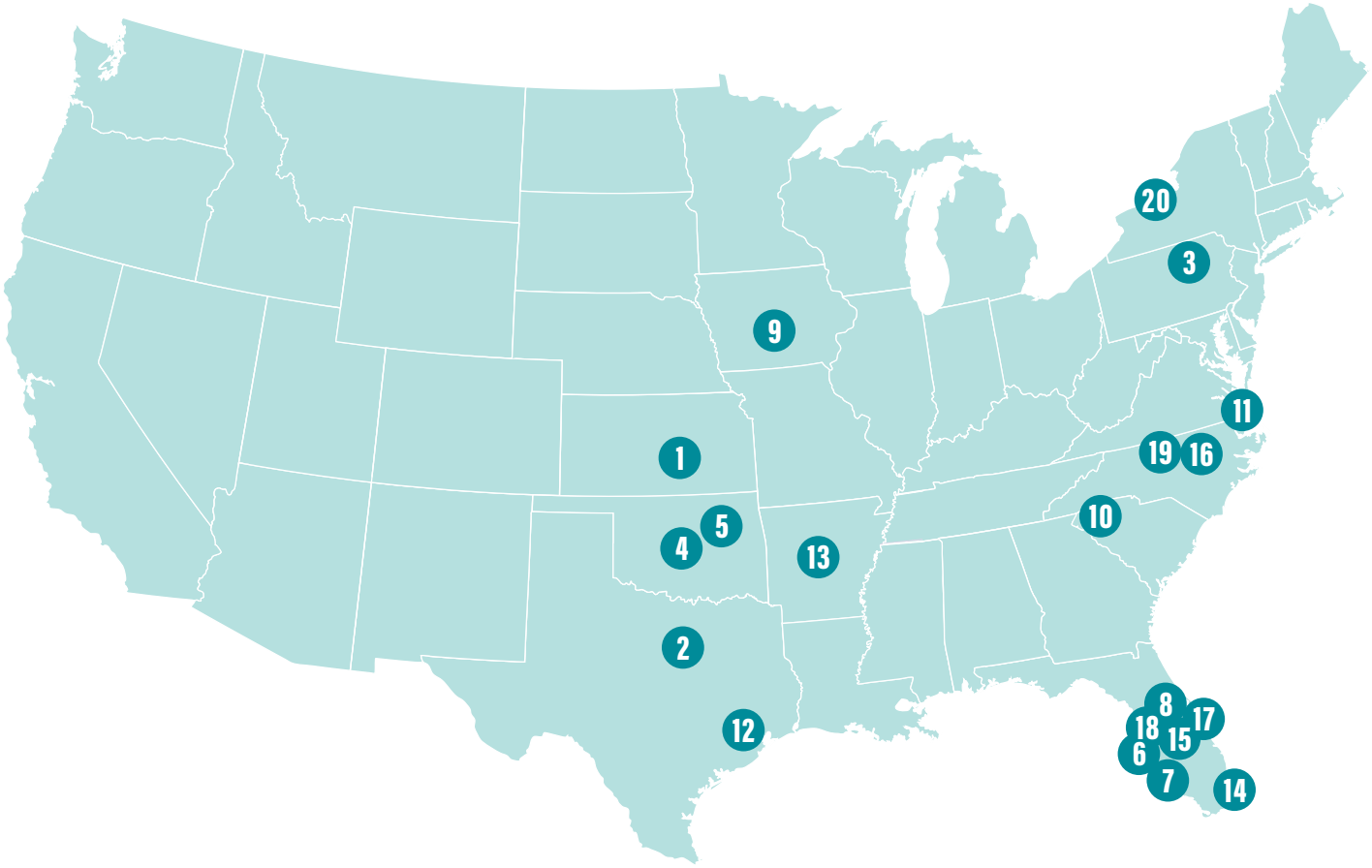
- The impact of seasonal allergies on health
- How to better manage pollen allergy and improve quality of life
- The importance of pollen sensors to inform people with accurate pollen data
- How climate change impacts allergy and respiratory health
- How urban heat islands and air pollution are related to pollen
- Health disparities experienced mainly by Black and Hispanic communities who have higher exposure to air pollution, and more limited access to specialists like allergists
- The impact of "botanical sexism" on people with seasonal allergies

Communities need to work together to provide solutions to the challenges raised by climate change, rising health care costs, and access to specialized care.

AAFA is dedicated to improving the quality of life for people with asthma and allergic diseases through education, advocacy, research, and support. We will continue to promote public policy ideas that improve and protect quality of life and treatment options for people affected. People with asthma and allergies should be able to find relief no matter where they live.

Inside This Report:

Map of the Top 20 Most Challenging Places to Live with Pollen Allergies in 2023



These are the top 20 Allergy Capitals based on total pollen scores (tree, grass, and weed), over-the-counter medication use (allergy), and number of allergy specialists. The burden of seasonal pollen allergies falls heavily on the eastern and southern parts of the country. The full list of top 100 cities can be found on page 5 in this report. Additionally, rankings by specific pollen types (tree, grass, or weed) can be found on page 18.

1. Wichita, KS
2. Dallas, TX
3. Scranton, PA
4. Oklahoma City, OK
5. Tulsa, OK
6. Sarasota, FL
7. Cape Coral, FL
8. Orlando, FL
9. Des Moines, IA
10. Greenville, SC
11. Virginia Beach, VA
12. Houston, TX
13. Little Rock, AR
14. Miami, FL
15. Lakeland, FL
16. Raleigh, NC
17. Palm Bay, FL
18. Tampa, FL
19. Greensboro, NC
20. Rochester, NY

2023 Allergy Capitals™

Overall Rankings ■ **Worse Than Average** ▲ **Average** ● **Better Than Average**

(Factors are not weighted equally. Total scores are rounded for the purposes of this chart.)

2023 Overall Ranking	Overall	Metropolitan Area	Total Score *(Avg. 71.49)*	Subtotal: All Pollen	Subtotal: Medicine Use	Subtotal: Specialists
1	■	Wichita, KS	100.00	■	■	■
2	■	Dallas, TX	87.26	■	■	▲
3	■	Scranton, PA	87.08	▲	■	■
4	■	Oklahoma City, OK	86.69	■	■	▲
5	■	Tulsa, OK	86.05	■	■	▲
6	■	Sarasota, FL	84.17	■	■	▲
7	■	Cape Coral, FL	81.32	■	■	▲
8	■	Orlando, FL	81.12	▲	■	▲
9	■	Des Moines, IA	80.76	▲	▲	■
10	■	Greenville, SC	79.43	▲	■	▲
11	■	Virginia Beach, VA	78.35	▲	■	▲
12	■	Houston, TX	78.33	■	▲	▲
13	■	Little Rock, AR	77.90	■	■	●
14	■	Miami, FL	77.64	■	▲	▲
15	■	Lakeland, FL	77.49	▲	▲	■
16	■	Raleigh, NC	77.33	▲	■	■
17	■	Palm Bay, FL	77.06	▲	■	■
18	■	Tampa, FL	77.02	■	■	▲
19	■	Greensboro, NC	76.76	▲	■	■
20	■	Rochester, NY	76.74	■	▲	●
21	■	Kansas City, MO	76.38	▲	▲	▲
22	■	New Orleans, LA	76.02	■	▲	●
23	■	Richmond, VA	75.79	▲	■	●
24	■	Daytona Beach, FL	75.78	▲	■	▲
25	■	McAllen, TX	75.64	■	●	▲
26	■	Grand Rapids, MI	75.57	■	▲	▲
27	■	Worcester, MA	75.46	▲	▲	■
28	■	Allentown, PA	75.46	▲	■	▲
29	■	Winston-Salem, NC	75.20	▲	■	▲
30	▲	Baton Rouge, LA	74.99	■	▲	▲
31	▲	Las Vegas, NV	74.86	▲	▲	■
32	▲	Charlotte, NC	74.71	▲	■	▲

Overall Rankings ■ Worse Than Average ▲ Average ● Better Than Average

(Factors are not weighted equally. Total scores are rounded for the purposes of this chart.)

2023 Overall Ranking	Overall	Metropolitan Area	Total Score *(Avg. 71.49)*	Subtotal: All Pollen	Subtotal: Medicine Use	Subtotal: Specialists
33	▲	Columbia, SC	74.60	▲	■	▲
34	▲	Springfield, MA	74.48	■	▲	▲
35	▲	Milwaukee, WI	74.27	■	▲	▲
36	▲	Hartford, CT	74.07	▲	▲	▲
37	▲	San Antonio, TX	73.75	■	●	▲
38	▲	Providence, RI	73.63	▲	▲	▲
39	▲	El Paso, TX	73.39	▲	▲	■
40	▲	Albany, NY	72.63	▲	▲	▲
41	▲	Pittsburgh, PA	72.58	▲	▲	▲
42	▲	Poughkeepsie, NY	72.45	▲	▲	▲
43	▲	Tucson, AZ	72.40	▲	▲	▲
44	▲	New Haven, CT	72.18	▲	▲	▲
45	▲	Chicago, IL	71.97	■	●	▲
46	▲	Chattanooga, TN	71.97	●	■	●
47	▲	Omaha, NE	71.94	▲	▲	▲
48	▲	Minneapolis, MN	71.80	■	●	▲
49	▲	Riverside, CA	71.57	■	●	■
50	▲	Boise, ID	71.44	▲	▲	▲
51	▲	Charleston, SC	71.42	●	■	●
52	▲	Oxnard, CA	71.19	▲	●	■
53	▲	Baltimore, MD	71.02	▲	▲	▲
54	▲	Memphis, TN	70.78	●	■	▲
55	▲	Boston, MA	70.54	▲	▲	●
56	▲	Bakersfield, CA	70.15	■	●	■
57	▲	Syracuse, NY	70.04	▲	▲	▲
58	▲	St. Louis, MO	70.04	▲	▲	●
59	▲	Spokane, WA	69.97	▲	●	▲
60	▲	Phoenix, AZ	69.94	▲	▲	▲
61	▲	Augusta, GA	69.94	●	■	▲
62	▲	Bridgeport, CT	69.69	▲	▲	●
63	▲	Knoxville, TN	69.62	●	■	●
64	▲	San Diego, CA	69.55	■	●	▲
65	▲	Stockton, CA	69.33	■	●	■
66	▲	Nashville, TN	69.33	●	■	●

Overall Rankings ■ Worse Than Average ▲ Average ● Better Than Average

(Factors are not weighted equally. Total scores are rounded for the purposes of this chart.)

2023 Overall Ranking	Overall	Metropolitan Area	Total Score *(Avg. 71.49)*	Subtotal: All Pollen	Subtotal: Medicine Use	Subtotal: Specialists
67	▲	Jacksonville, FL	69.32	●	■	▲
68	▲	Denver, CO	68.71	▲	▲	●
69	▲	Colorado Springs, CO	68.16	●	▲	●
70	▲	Fresno, CA	68.13	■	●	▲
71	▲	Toledo, OH	68.09	●	▲	▲
72	▲	Portland, OR	67.89	▲	●	▲
73	▲	Harrisburg, PA	67.84	●	■	●
74	●	Sacramento, CA	67.78	▲	●	▲
75	●	Los Angeles, CA	66.97	■	●	▲
76	●	Philadelphia, PA	66.90	▲	▲	●
77	●	Jackson, MS	66.77	●	▲	●
78	●	Cincinnati, OH	66.28	●	▲	▲
79	●	Durham, NC	65.99	▲	●	▲
80	●	Provo, UT	65.94	▲	●	■
81	●	Birmingham, AL	65.91	●	■	▲
82	●	Ogden, UT	65.53	●	●	▲
83	●	Indianapolis, IN	65.41	●	▲	▲
84	●	San Jose, CA	64.94	■	●	●
85	●	Madison, WI	64.46	▲	●	●
86	●	New York, NY	64.27	▲	●	●
87	●	San Francisco, CA	64.19	■	●	●
88	●	Dayton, OH	64.16	●	■	▲
89	●	Louisville, KY	63.76	●	■	●
90	●	Atlanta, GA	63.73	●	▲	▲
91	●	Salt Lake City, UT	63.31	●	●	▲
92	●	Columbus, OH	63.04	●	▲	▲
93	●	Albuquerque, NM	61.51	●	■	▲
94	●	Detroit, MI	61.10	●	●	●
95	●	Washington, DC	60.64	●	▲	●
96	●	Akron, OH	60.27	●	●	▲
97	●	Austin, TX	59.41	▲	●	●
98	●	Cleveland, OH	57.68	●	●	●
99	●	Seattle, WA	54.43	●	●	▲
100	●	Buffalo, NY	48.71	▲	●	▲

About Allergic Rhinitis

About Allergic Asthma

Allergies are a major health concern. Allergic conditions are among the most common medical conditions affecting people in the United States. More than 100 million Americans are affected by various types of allergies every year.[1,2] People with allergies need to know what allergens trigger their symptoms, find ways to reduce their exposure to those allergens, and have access to the right treatments for their needs.

One of the most common allergic conditions is seasonal allergic rhinitis, often called "hay fever." About 26% of adults and 19% of children have been diagnosed with seasonal allergic rhinitis.[1,2] It causes symptoms such as:

- Sneezing
- Stuffy nose (due to blockage or nasal congestion)
- Runny nose (also known as rhinorrhea – usually a thin, clear discharge)
- Red, and watery eyes
- Itchy nose, eyes, ears, or mouth
- Swelling around the eyes

Symptoms of seasonal allergic rhinitis occur most often in spring, summer, and/or fall. Allergic sensitivity to airborne pollen from trees, grasses, or weeds causes allergy symptoms. Pollen allergies can worsen asthma as well.

There is no cure for allergies. But allergies can be managed with prevention and treatment. A good allergy treatment plan is based on medical history, the results of allergy tests, and symptom severity. See "Spotlight: Self-Care for Seasonal Allergies" on **page 13** for tips on ways to manage your allergy symptoms.

Many people with asthma also have allergies. In fact, allergens are the most common asthma trigger. This is called allergic asthma. Allergic asthma is most common in early childhood and steadily decreases through adulthood.

Allergens are substances that cause an allergic reaction. Allergens can enter the body by being inhaled, swallowed, touched or injected. They cause an allergic reaction in people with allergies because the body thinks the allergens are harmful. The immune system responds by releasing an antibody called immunoglobulin E (or IgE). Too much IgE can trigger inflammation and swelling of the airways. This is an asthma flare-up or asthma attack and makes it harder to breathe. A similar process happens in the nose and sinus areas with allergic rhinitis.

The common signs and symptoms of allergic asthma are the same as other types of asthma:

- Shortness of breath
- Cough
- Chest tightness or pain
- Wheeze (a whistling sound when you breathe)
- Waking at night due to asthma symptoms
- A drop in your peak flow meter reading (if you use one)

In addition to experiencing common asthma symptoms, people with allergic asthma also experience allergy symptoms such as red and itchy eyes, sneezing, and runny nose.

Asthma may lead to a medical emergency. It is important to know the **signs of a severe asthma episode** (or asthma attack). During times of high pollen counts, more people have asthma emergencies.

About Pollen Allergies

People with seasonal allergic rhinitis may have symptoms that get worse during one season over another. Why? Different types of pollen allergens peak at different times of the year. In the early spring, tree pollen is more common. During late spring and summer, grass pollen is most prevalent. And in the fall, weed pollen peaks.

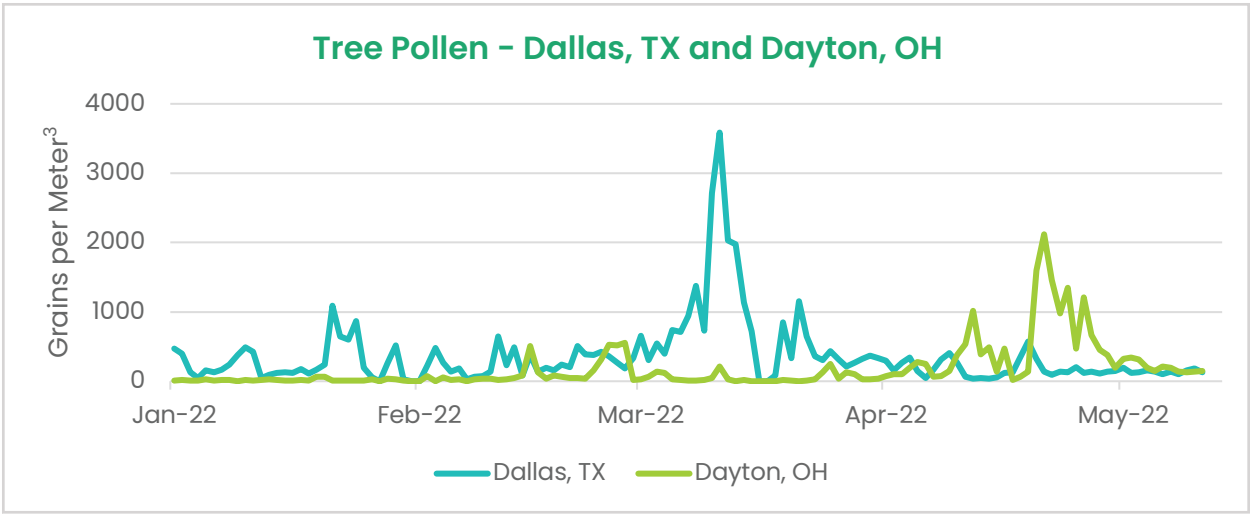
Tree Pollen

Tree pollen causes most springtime seasonal allergies. It is the first pollen to appear each year in the United States. Throughout the U.S., trees produce the most pollen from February through June. But in some regions, such as the South, trees may produce pollen as early as December or January and peak at multiple times during the year.[3]

There are some trees that produce pollen you can see (a fine, yellow dust that covers outdoor surfaces). Other trees produce pollen that is very small and can't be seen. All tree pollen is usually light and easily carried by the wind.

The most common tree pollen culprits are:

- Alder
- Ash
- Aspen
- Beech
- Birch
- Box elder
- Cedar
- Cottonwood
- Elm
- Hickory
- Juniper
- Maple
- Mulberry
- Oak
- Olive
- Pecan
- Poplar
- Walnut
- Willow



In 2022, Dallas, TX had the highest sum of "high" and "very high" days for tree pollen. Dayton, OH, had the lowest sum of these days. In Dallas, tree pollen was detected as early as December of the previous year and peaked in March and April. In Dayton, tree pollen was detected around February and peaked around May.
Source: graph created by AAFA using daily pollen data from Pollen Sense and scale for interpreting pollen levels from the National Allergy Bureau. For tree pollen, 90-1499 grains per cubic meter are interpreted as "high" and 1500+ grains per cubic meter are interpreted as "very high."

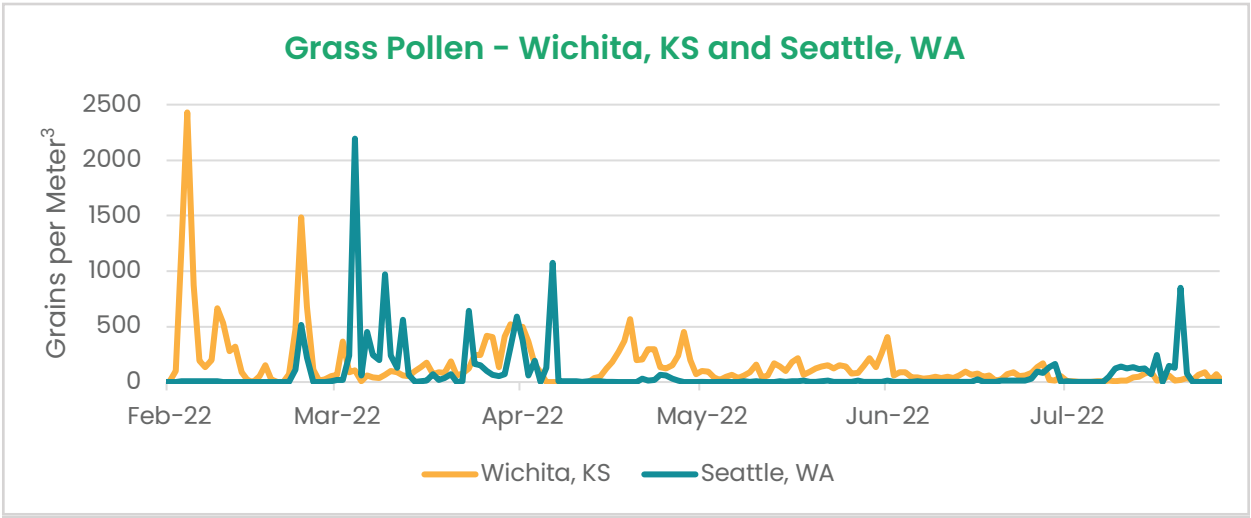
Grass Pollen

Grasses cause most late spring and summer pollen allergy symptoms. It is most common from April through early June.[4] But, grass pollen can sometimes be found year-round in warmer parts of the country. It can overlap with tree pollen or weed pollen seasons.

When you have a grass pollen allergy, you will only have symptoms when the pollen you are allergic to is in the air. Even though there are hundreds of types of grasses, only a few cause allergy symptoms.

The most common grasses that cause allergies are:

- Bahia
- Bermuda
- Fescue
- Johnson
- Kentucky blue
- Orchard
- Rye
- Sweet vernal
- Timothy



In 2022, Wichita, KS had peak levels of grass pollen in February. Grass pollen in Wichita remained in the "high" or "very high" levels steadily through June. In Seattle, WA, grass pollen peaked in March and April, then decreased significantly until increasing again around July.
Source: graph created by AAFA using daily pollen data from Pollen Sense and scale for interpreting pollen levels from the National Allergy Bureau. For grass pollen, 20-199 grains per cubic meter are interpreted as "high" and 200+ grains per cubic meter are interpreted as "very high."

Did You Know?

Pollen may be responsible for allergic reactions to fruits or vegetables. Symptoms of an allergic reaction (like itchiness) in your mouth or throat when eating certain fruits, vegetables, or nuts may be related to **pollen food allergy syndrome (PFAS)**, also called **oral allergy syndrome (OAS)**. PFAS occurs because the proteins in some fruits, vegetables, and nuts are similar to some tree, grass, or weed pollen, and your immune system can't tell the difference. Birch, alder, and ragweed pollen cause many PFAS reactions. If you think you may have PFAS, talk with an allergist.

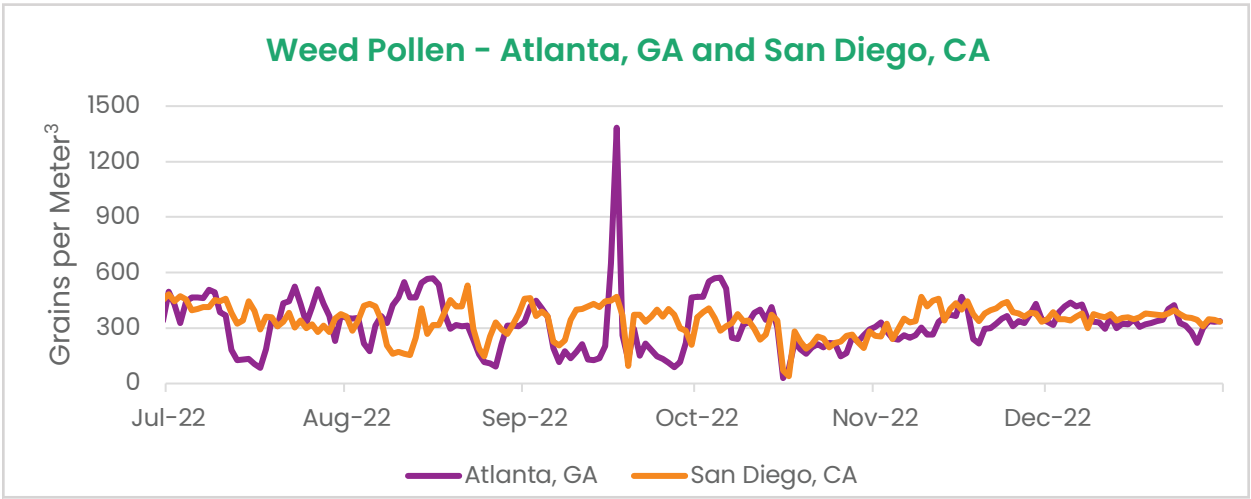
Weed Pollen

When it comes to weed pollen allergies, ragweed pollen is the worst offender. Ragweed allergy is the most common weed pollen allergy. About 15% of people in the U.S. are allergic to ragweed pollen.[5] Ragweed is a weed that grows throughout the country, especially in the Eastern and Midwestern states.

One ragweed plant can produce billions of light, dry pollen grains, which can then travel for hundreds of miles. Depending on your location, ragweed season may last six to 10 weeks, peaking in mid-September in most areas in the United States.

Other weed pollen can cause symptoms as well. These plants are responsible for causing the most pollen allergy symptoms in the fall:

- Burning bush
- Cocklebur
- Lamb's-quarters
- Mugwort
- Pigweed
- Ragweed
- Russian thistle
- Sagebrush
- Tumbleweed



In 2022, Atlanta, GA, had the most "very high" days for weed pollen, while San Diego, CA, had the least. Weed pollen is prevalent in all 100 cities of our report, peaking around September in many cities. Ragweed, in particular, grows in every state except Alaska.
Source: graph created by AAFA using daily pollen data from Pollen Sense and scale for interpreting pollen levels from the National Allergy Bureau. For weed pollen, 50-499 grains per cubic meter are interpreted as "high" and 500+ grains per cubic meter are interpreted as "very high."

The Role of Pollen Sensors

Pollen reports are valuable tools in helping people manage their seasonal allergies. But not all reports are equal. Some reports are pollen counts and some are pollen forecasts. Pollen counts are taken from samples of pollen at monitoring sites (using pollen counters or sensors) and are based on actual data. Pollen forecasts are predictions of expected pollen counts based on historical data.

While pollen forecasts can be helpful, pollen counts are more accurate. The National Allergy Bureau™ (NAB™) from the American Academy of Allergy, Asthma & Immunology (AAAAI) is the most well-known resource for pollen counts. The NAB has around 100 certified sites for pollen monitoring across the U.S., though not all are actively reporting.

Pollen monitoring sites can be helpful for many purposes, such as helping diagnose and treat allergies, studying the impact of climate change, and producing crop forecasts.[6,7] Most pollen counting sites use manual systems, where pollen is collected and placed on a microscopic slide and then counted by hand. Manual systems are the standard. But it can take up to nine days for counts to be published.[6]

Another limitation with manual pollen counting sites is that many places across the U.S. don't have devices to collect the pollen grains. Without monitoring stations, these areas don't have access to accurate pollen counts, so people in these places don't have a complete idea of pollen in their area.

One possible solution for these issues is automated pollen sensors. Automated sensors could reach areas where manual counting stations are not available. In recent years, automated pollen counting has improved in quality and gained popularity. There are several ways automated sensors can work, including using digital images or electric signals.[7] Automated pollen counting allows pollen information to be captured in a reliable and timely manner. They can produce reliable hourly counts instead of daily counts.[6]

Automatic sensors also help remove some of the challenges that come with manual counting, like differences between counters, inaccurate samples caused by changes in airflow, and uncertainty with low pollen concentrations. Studies show automated sensors perform well compared to manual counting.[6]

Pollen in Alaska and Hawaii

Based on local data, we know that Alaska and Hawaii have pollen seasons that are likely different from the rest of the United States. Alaska is the only state that is not impacted by ragweed, but has large bursts of tree, grass, and other weed pollen during its short growing seasons. Hawaii has a wide variety of pollen-producing plants, and warm temperatures allow for year-long plant growth. However, Alaska and Hawaii are often not included in national pollen monitoring systems. These states instead rely on local efforts to collect and analyze pollen data, or use pollen forecasts to make estimates based on historical data. AAFA supports efforts to include these states in pollen surveillance systems, which is needed to accurately compare pollen data across the entire United States.

SPOTLIGHT: Self-Care for Seasonal Allergies

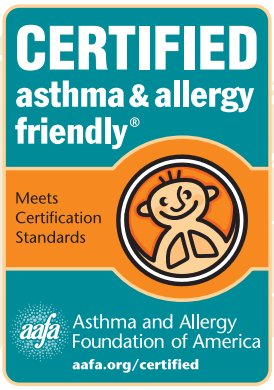
If you have seasonal allergies, you can manage your allergy symptoms with self-care and an allergy treatment plan. There are many available and accessible options to help you find relief. Consider the tips and options below as you work with your doctor to create your allergy treatment plan.

Manage Your Contact with Pollen

Allergy self-care involves a few steps. Limiting your contact with pollen is one part of your allergy management plan. Take these actions to reduce pollen contact:

- Check pollen counts or forecasts daily and plan outdoor activities on low pollen days.
- Keep windows closed during pollen season or peak pollen times.
- Use central air conditioning or air cleaners with a CERTIFIED **asthma & allergy friendly®** filter and/or HEPA filtration.
- Remove your shoes before entering your home.
- Limit close contact with pets that spend a lot of time outdoors. Wipe furry animals off when they come inside or bathe them weekly (if appropriate).
- Dry laundry in a clothes dryer or on an indoor rack, not on an outdoor line.
- Wear a mask outside to block much of the pollen in the air from getting into your nose, mouth, and lungs.
- Wear sunglasses to limit the amount of pollen that gets into your eyes.
- Cover your hair with a hat or other hair covering when outdoors so pollen doesn't collect in your hair.
- Change and wash clothes after outdoor activities.
- Shower before bed to keep pollen out of your bedding.
- Wash bedding in hot, soapy water once a week.
- Clean your blinds or curtains regularly.
- Vacuum your carpets, rugs, and fabric furniture once a week. (A CERTIFIED **asthma & allergy friendly®** vacuum will trap pollen, dust mites, and pet dander and stop it from spreading in the air while vacuuming.)

Through the **asthma & allergy friendly®** Certification Program, we have tested and certified products to help you reduce allergens in your home. When you are shopping for products for your home, look for the CERTIFIED **asthma & allergy friendly®** mark. Visit **aafa.org/certified** to search for CERTIFIED products and learn more about our program.



Take Allergy Medicine

There are many over-the-counter and prescription options to help you prevent or treat allergy symptoms. Some of these treatments work best if you start them a couple weeks before your allergy season begins.

Nasal corticosteroid sprays reduce inflammation (swelling) in the nose and block allergic reactions. They are the most effective medicine type for allergic rhinitis because they can reduce all symptoms, including nasal congestion. Nasal corticosteroids have few side effects. (Examples include Nasacort®, FLONASE®, and RHINOCORT®)

Antihistamines are available as pills, liquids, nasal sprays, or eye drops. They can relieve sneezing and itching in the nose and eyes. They also reduce a runny nose and, to a lesser extent, nasal stuffiness. Look for a long-acting, non-drowsy antihistamine. (Examples include ZYRTEC®, Claritin®, Allegra®, CLARINEX®, Astepro®) These newer medicines do not carry the risk of toxicity and death that has been associated with older antihistamines. Cetirizine (ZYRTEC®) and loratadine (Claritin®) are the antihistamines of choice for use during pregnancy.

Diphenhydramine and related short-acting antihistamines should be avoided. Diphenhydramine (known under the brand name BENADRYL®) is not a good choice to take for allergy symptoms because of its short-term action to manage symptoms and several known negative side effects. The major side effects of diphenhydramine include drowsiness, sedation, and fatigue. It can also impair alertness, concentration, multitasking, and memory. In turn, this antihistamine can affect important functions, such as learning and test performance in children, as well as operation of machinery and cars in adults.

Decongestants are available as pills, liquids, nasal sprays, or nasal drops. They help shrink the lining of the nasal passages and relieve nasal stuffiness. They generally are only used for a short time. (Examples include SUDAFED®, Vicks Sinex™, Afrin®) Read the instructions carefully and do not use them for extended amounts of time.

Some allergy medicines combine an antihistamine with a decongestant. (Examples include Allegra-D®, Claritin-D®, ZYRTEC-D®). Certain types of combo medicines (such as the ones that contain pseudoephedrine as the decongestant) are available "behind the counter" in many states. Behind-the-counter products are available without a prescription, but have limitations on purchases due to state and federal laws.

Check with your doctor before using decongestants if you have high blood pressure, glaucoma, thyroid disease, or trouble urinating. They may cause issues if you have any of these conditions and they may interact with other prescription medicines.

Cromolyn sodium is a nasal spray that blocks the release of chemicals that cause allergy symptoms, including histamine and leukotrienes. This medicine has few side effects, but you must take it four times a day. (Examples include NasalCrom®)

Leukotriene receptor antagonists (or modifiers) block the action of important chemical messengers (other than histamine) that are involved in allergic reactions. (Examples include SINGULAIR®*, Zyflo CR®, ACCOLATE®)

**Note: Montelukast (brand name SINGULAIR®) has a black box warning. This is a safety warning from the Food and Drug Administration (FDA). This means you need to be aware of a drug's side effects or important instructions for safe use of the drug. We encourage you to speak with your health care provider before, during, and after the start of any new medicine. If your doctor recommends montelukast, talk with them about possible risks and concerns.*

Rinse Out Your Nose

A nasal rinse can help clear your sinuses and nose. This can help remove pollen and mucus. It may be best to do a rinse before you use a medicine nasal spray. To do a nasal rinse, you'll need a warm saline solution (salt water) and a special rinse bottle, bulb syringe, or neti pot. You can buy nasal saline drops, saline packets, or saline kits in most pharmacies. (Examples include Ayr®, NeilMed®). You can also follow the **recipe** below to make your own nasal saline rinse.

Once you have a saline solution, fill the bottle, bulb syringe, or neti pot with the saline solution. Stand with your head over a sink (or in the shower) and tilt your head to one side. Squeeze the solution gently into the top nostril. Breathe normally through your mouth. The solution should come out through your other nostril. Rotate your head and repeat the process on your other nostril. If needed, adjust your head position so the solution does not go down the back of your throat or into your ears. After using the rinse, blow your nose very gently to prevent the solution from going into your ear and causing discomfort.

Another option is to breathe hot steam through your nose for 10 to 15 minutes, three to four times a day. Do not use steam if it triggers your asthma or makes it hard to breathe.

Nasal rinse saline solution recipe

In a clean, small, airtight container, mix 3 teaspoons of iodide-free salt and 1 teaspoon of baking soda. Add 1 teaspoon of the mixture to 8 ounces (1 cup) of lukewarm distilled or boiled water.

You can store the leftover mixture in the airtight container. To use the rinse, you'll need a soft rubber ear bulb syringe, infant nasal bulb or a commercial nasal saline rinse bottle from the pharmacy.

Recipe from American Academy of Allergy, Asthma & Immunology

Ask Your Doctor About Immunotherapy

If you do not get complete relief from medicines that treat allergy symptoms, talk with your allergy doctor about immunotherapy. Immunotherapy is a long-term treatment that can help prevent allergic reactions or make them less severe. It can change the body's immune response to allergens.

There are two types of immunotherapy: allergy shots and sublingual immunotherapy.

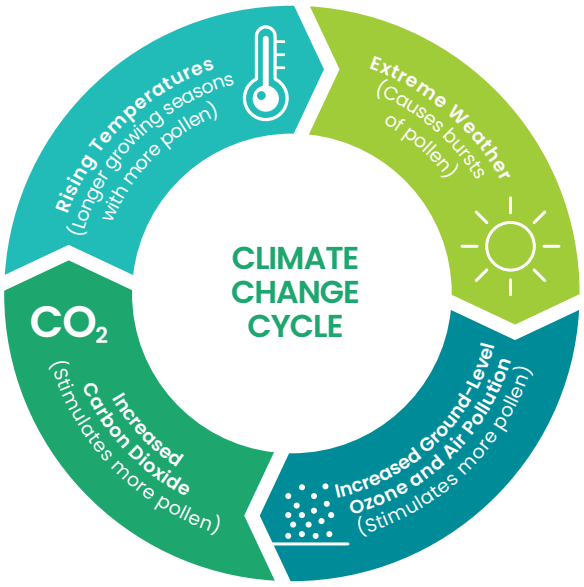
Allergy shots – subcutaneous immunotherapy (SCIT) has been around for more than 100 years and can provide long-lasting symptom relief. SCIT is a series of shots that have larger amounts of allergen in each shot. The allergen will be injected into the fat under the skin. Over time, allergic symptoms generally improve. Many people get complete relief within one to three years of starting SCIT. Many people also feel the benefits for at least several years after the shots stop.

Sublingual immunotherapy (SLIT) involves placing a tablet with the allergen under your tongue for one to two minutes and then swallowing it. The FDA has approved three types of under-the-tongue tablets to treat allergies to grass (GRASTEK®, Oralair®) and ragweed (RAGWITEK®) pollens. You take SLIT tablets daily before and during grass or ragweed season. This treatment offers people with these allergies a potential alternative to allergy shots.

(Your doctor may also customize SLIT in the form of allergy drops, although this is not approved by the FDA at this time.)

SPOTLIGHT: Climate Change and Allergies

The National Climate Assessment from the U.S. Global Change Research Program confirms that climate change is a major threat to public health.[8] The science clearly shows that communities across the nation are seeing the health impacts of climate change, causing a public health emergency. Everyone's health is at risk. But some populations are at an even greater risk. This includes infants, children, seniors, low-income communities, communities of color, people with disabilities, and people with chronic diseases like asthma or who are pregnant.



Climate change is a dangerous cycle. As global temperatures rise, extreme weather events become worse. Weather changes – such as heat waves and droughts – can lead to stagnant air (a lack of air flow). When the air doesn't move, pollutants react together in the heat and sun. This increases ground-level ozone.[9]

Ground-level ozone is a major part of urban smog. More air pollution and smog cause higher levels of carbon dioxide (CO_2). This results in warmer temperatures. And the cycle continues.

Longer and more intense allergy seasons and increased asthma/allergy triggers caused by climate change particularly impact people with allergies and asthma.[10,11,12] Warmer temperatures and increased levels of CO_2 lead to longer growing seasons that change flowering time and increase pollen. Research shows pollen seasons now start 20 days earlier, and last 10 days longer, compared to 30 years ago.[13, 14]

The length of the growing season refers to the number of days when plant growth takes place. Higher concentrations of pollen are linked to increased CO_2 levels. And longer growing seasons increase exposure to allergens that trigger asthma and other respiratory and allergic responses.[15]

Researchers found that climate change is responsible for about 50% of the increase in pollen seasons and about 8% of the increase in pollen concentrations. Pollen particles in the air have known health effects, especially in the lungs and airways. Previous research has shown that increased pollen can have negative effects on allergies and asthma, viral infections, school performance, and emergency room visits.[13]

Trees are effective tools at helping regulate climate. Most trees are monoecious, which means they have pollinating and fruit-, seed-, and nut-bearing flowers on the same plant. But there are some fruit-, seed-, and nut-bearing trees that do not release pollen. These trees rely on small animals and insects to transfer pollen. Other trees release pollen but do not produce fruit, seeds, or nuts. They rely on the wind to carry pollen to other trees for pollination.

Many urban planners have chosen wind-pollinating trees instead of fruiting trees when designing communities, streets, and parks. More wind-pollinating trees can lead to increased pollen production. Since 1990, pollen seasons have 21% more pollen.

Tree pollen levels saw bigger increases than grass or weed pollen.[14] "Botanical sexism" (the preference to plant "male" trees), may be partly to blame for this increase in tree pollen. (Wind-pollinating trees are sometimes called "male" trees, and fruit-bearing trees are sometimes called "female" trees.)

By planting more fruit-, seed-, and nut-bearing trees, it may help regulate surface temperature while also reducing the amount of pollen in nearby areas.

Urban Heat Islands

Many of the health impacts of climate change are felt more in urban centers. Warmer temperatures and extreme heat waves are made worse in urban areas due to an effect called an "urban heat island" (UHI). A UHI is a metropolitan area that has higher temperatures than its surrounding areas. Buildings, roads, infrastructure, population density, and a lack of green space can make cities several degrees warmer than nearby more rural areas.[16] Climate change is expected to intensify the UHI effect.[17]

Extreme heat made worse by UHIs increases air pollution and can increase allergic sensitivity.[18] CO_2 pollution from vehicles, power plants, and industry in cities can be very high and can impact pollen production. One study on ragweed pollen found that it could be seven times higher in a city that averaged 3.6° F warmer and had 30% more CO_2 than the city's rural surrounding area.[19]

Source: Climate Central; U.S. EPA 2012
This graphic shows how daytime and nighttime temperatures can vary depending on location. Temperatures are highest both during the day and night in downtown, urban areas. This is the urban heat island (UHI) effect.

Black and Hispanic populations bear the disproportionate burden of both the UHI effect and air pollution.[20,21] This is the result of a long history of housing policies in the U.S. that discriminate against these groups. These policies have pushed people of color to live in undesirable neighborhoods with greater environmental and social risks. As a result of systemic racism in U.S. policies, governance, and culture, racial and ethnic minority populations are more vulnerable to the health impacts of climate change.

It is critical to slow the cycle of climate change to improve health and social justice. If we don't act, pollen counts will only get worse, temperatures will continue to rise, and urban centers will continue to experience the harsh effects of climate change.

How do we fix the issue of climate change and its impact on people with allergies? Laws created to reduce emissions and air pollution can make a difference. We need policymakers to act now to slow down climate change, reduce its impact on human health, and combat environmental injustice. Join AAFA at **aafa.org/join** and follow our blog for Advocacy Action Alerts. We offer simple ways to contact your representatives to encourage them to act on issues important to the health of people with allergies and asthma.

2023 Rankings by Pollen Type

The following rankings are determined by isolating specific pollen types (tree, grass, or weed) in addition to allergy medicine use and access to specialist care, whereas the overall ranking on **page 5** calculates scores based on all five data points (tree pollen, grass pollen, weed pollen, allergy medicine use, and availability of specialists). Factors are not weighted equally.

Tree Pollen Ranking	
1	Wichita, KS
2	Dallas, TX
3	Sarasota, FL
4	Oklahoma City, OK
5	Cape Coral, FL
6	Tulsa, OK
7	Des Moines, IA
8	Rochester, NY
9	Miami, FL
10	Milwaukee, WI
11	Scranton, PA
12	Houston, TX
13	Orlando, FL
14	Grand Rapids, MI
15	Springfield, MA
16	Minneapolis, MN
17	Little Rock, AR
18	Spokane, WA
19	Columbia, SC
20	Kansas City, MO
21	San Antonio, TX
22	Tampa, FL
23	Chicago, IL
24	Lakeland, FL
25	Las Vegas, NV
26	Palm Bay, FL
27	Memphis, TN
28	Daytona Beach, FL
29	McAllen, TX
30	Greenville, SC

Grass Pollen Ranking	
1	Wichita, KS
2	Scranton, PA
3	Tulsa, OK
4	Dallas, TX
5	Oklahoma City, OK
6	Greenville, SC
7	Virginia Beach, VA
8	Orlando, FL
9	Sarasota, FL
10	Houston, TX
11	McAllen, TX
12	Worcester, MA
13	Richmond, VA
14	Allentown, PA
15	Providence, RI
16	Raleigh, NC
17	San Antonio, TX
18	Cape Coral, FL
19	Hartford, CT
20	Lakeland, FL
21	Tampa, FL
22	Greensboro, NC
23	New Orleans, LA
24	Little Rock, AR
25	New Haven, CT
26	Baton Rouge, LA
27	Winston-Salem, NC
28	Albany, NY
29	Pittsburgh, PA
30	Boston, MA

Weed Pollen Ranking	
1	Wichita, KS
2	Scranton, PA
3	Chattanooga, TN
4	Des Moines, IA
5	Orlando, FL
6	Greenville, SC
7	Augusta, GA
8	Virginia Beach, VA
9	Tulsa, OK
10	Knoxville, TN
11	Raleigh, NC
12	Greensboro, NC
13	Palm Bay, FL
14	Oklahoma City, OK
15	Nashville, TN
16	Sarasota, FL
17	Columbia, SC
18	Daytona Beach, FL
19	Lakeland, FL
20	Charleston, SC
21	Richmond, VA
22	Albuquerque, NM
23	Allentown, PA
24	Winston-Salem, NC
25	Birmingham, AL
26	Dallas, TX
27	El Paso, TX
28	Las Vegas, NV
29	Little Rock, AR
30	Jacksonville, FL

Tree Pollen Ranking	
31	New Orleans, LA
32	Omaha, NE
33	Jacksonville, FL
34	Denver, CO
35	Augusta, GA
36	Chattanooga, TN
37	Portland, OR
38	Baton Rouge, LA
39	Raleigh, NC
40	Boise, ID
41	Greensboro, NC
42	St. Louis, MO
43	Stockton, CA
44	Virginia Beach, VA
45	Knoxville, TN
46	Oxnard, CA
47	Winston-Salem, NC
48	Charlotte, NC
49	Sacramento, CA
50	San Diego, CA
51	Tucson, AZ
52	Charleston, SC
53	Riverside, CA
54	El Paso, TX
55	Atlanta, GA
56	Madison, WI
57	Fresno, CA
58	Richmond, VA
59	Bakersfield, CA
60	San Jose, CA
61	Phoenix, AZ
62	Ogden, UT
63	Allentown, PA
64	Hartford, CT
65	Colorado Springs, CO

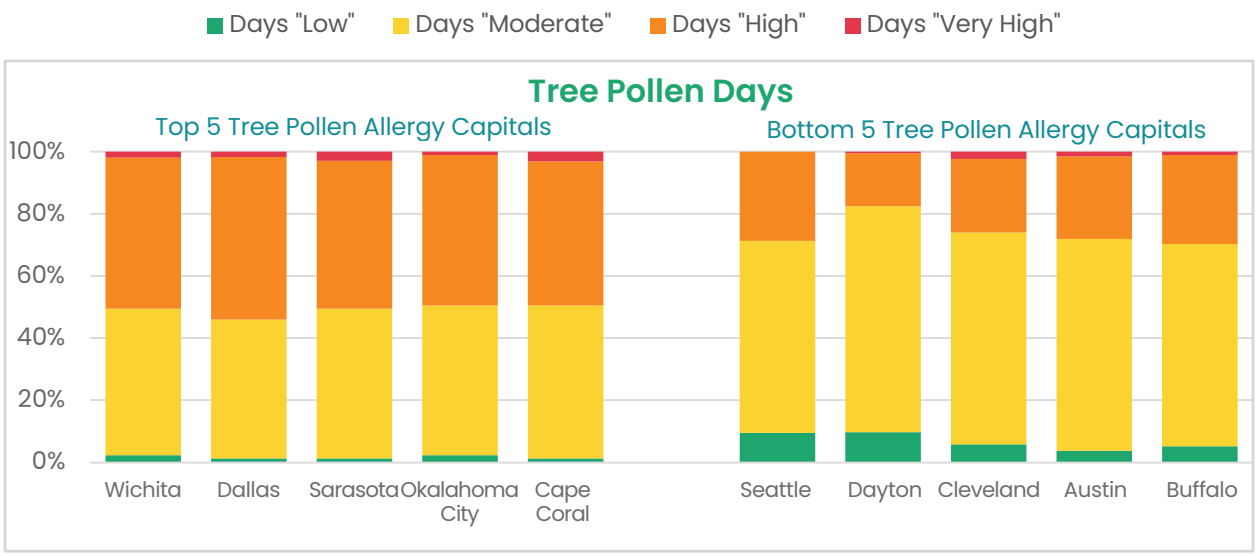
Grass Pollen Ranking	
31	Baltimore, MD
32	Palm Bay, FL
33	Miami, FL
34	Charlotte, NC
35	Poughkeepsie, NY
36	Kansas City, MO
37	Des Moines, IA
38	Daytona Beach, FL
39	Syracuse, NY
40	Riverside, CA
41	Grand Rapids, MI
42	El Paso, TX
43	Springfield, MA
44	Bakersfield, CA
45	Tucson, AZ
46	Rochester, NY
47	Las Vegas, NV
48	Bridgeport, CT
49	Oxnard, CA
50	Milwaukee, WI
51	San Diego, CA
52	New York, NY
53	Boise, ID
54	Los Angeles, CA
55	Phoenix, AZ
56	Chicago, IL
57	Columbia, SC
58	Fresno, CA
59	Omaha, NE
60	Durham, NC
61	Minneapolis, MN
62	Stockton, CA
63	Charleston, SC
64	Harrisburg, PA
65	Sacramento, CA

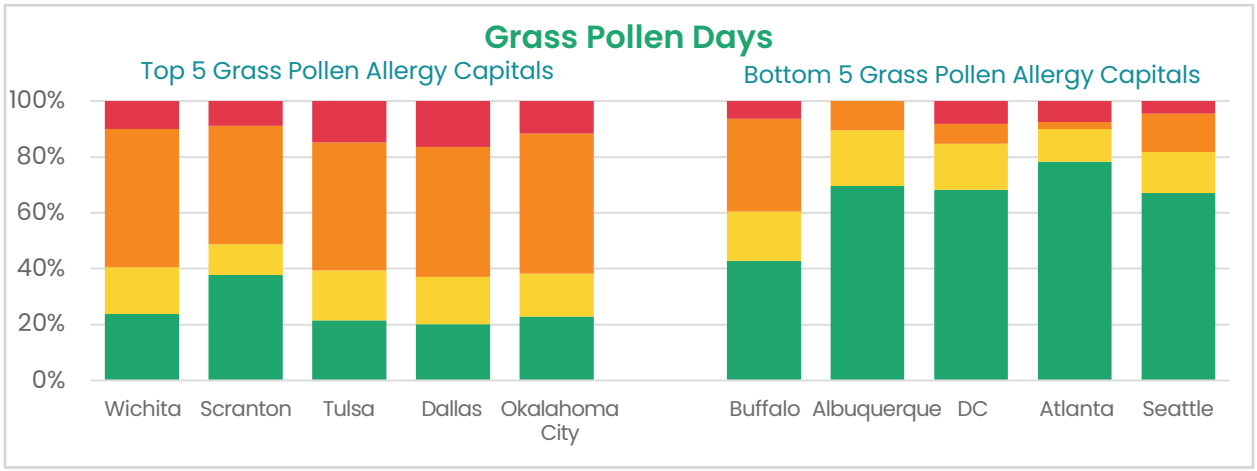
Weed Pollen Ranking	
31	Charlotte, NC
32	Toledo, OH
33	Cape Coral, FL
34	Kansas City, MO
35	Memphis, TN
36	Worcester, MA
37	Louisville, KY
38	Atlanta, GA
39	Harrisburg, PA
40	Dayton, OH
41	Tampa, FL
42	Hartford, CT
43	Colorado Springs, CO
44	New Orleans, LA
45	Albany, NY
46	Jackson, MS
47	St. Louis, MO
48	Pittsburgh, PA
49	Indianapolis, IN
50	Poughkeepsie, NY
51	Tucson, AZ
52	Providence, RI
53	Cincinnati, OH
54	Grand Rapids, MI
55	Rochester, NY
56	Baton Rouge, LA
57	Omaha, NE
58	New Haven, CT
59	Houston, TX
60	Syracuse, NY
61	Philadelphia, PA
62	Baltimore, MD
63	Phoenix, AZ
64	Bridgeport, CT
65	Miami, FL

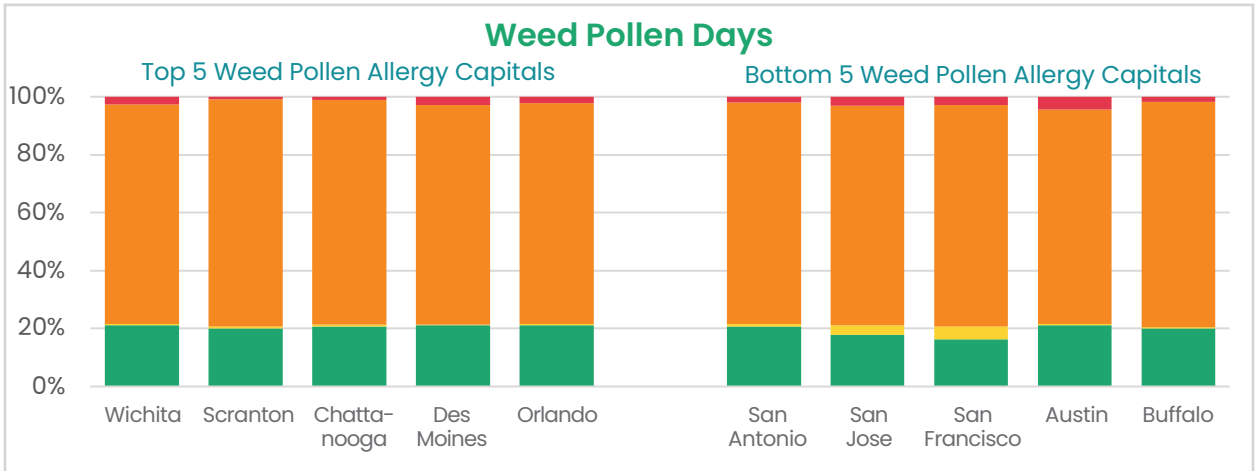
Tree Pollen Ranking	
66	Worcester, MA
67	Birmingham, AL
68	Columbus, OH
69	Provo, UT
70	San Francisco, CA
71	Poughkeepsie, NY
72	Providence, RI
73	Nashville, TN
74	Pittsburgh, PA
75	Los Angeles, CA
76	Albany, NY
77	New Haven, CT
78	Washington, DC
79	Bridgeport, CT
80	Salt Lake City, UT
81	Jackson, MS
82	Toledo, OH
83	Philadelphia, PA
84	Baltimore, MD
85	Boston, MA
86	Syracuse, NY
87	Harrisburg, PA
88	Durham, NC
89	Albuquerque, NM
90	Cincinnati, OH
91	Indianapolis, IN
92	Detroit, MI
93	New York, NY
94	Akron, OH
95	Louisville, KY
96	Seattle, WA
97	Dayton, OH
98	Cleveland, OH
99	Austin, TX
100	Buffalo, NY

Grass Pollen Ranking	
66	Philadelphia, PA
67	Cincinnati, OH
68	Toledo, OH
69	St. Louis, MO
70	Nashville, TN
71	Austin, TX
72	San Francisco, CA
73	San Jose, CA
74	Indianapolis, IN
75	Spokane, WA
76	Jackson, MS
77	Provo, UT
78	Colorado Springs, CO
79	Dayton, OH
80	Denver, CO
81	Memphis, TN
82	Chattanooga, TN
83	Portland, OR
84	Louisville, KY
85	Knoxville, TN
86	Ogden, UT
87	Jacksonville, FL
88	Augusta, GA
89	Akron, OH
90	Detroit, MI
91	Madison, WI
92	Salt Lake City, UT
93	Birmingham, AL
94	Cleveland, OH
95	Columbus, OH
96	Buffalo, NY
97	Albuquerque, NM
98	Washington, DC
99	Atlanta, GA
100	Seattle, WA

Weed Pollen Ranking	
66	Boise, ID
67	Columbus, OH
68	Springfield, MA
69	Denver, CO
70	Boston, MA
71	Washington, DC
72	Ogden, UT
73	Milwaukee, WI
74	Oxnard, CA
75	Chicago, IL
76	Spokane, WA
77	Riverside, CA
78	Salt Lake City, UT
79	Portland, OR
80	McAllen, TX
81	Detroit, MI
82	Bakersfield, CA
83	Provo, UT
84	Minneapolis, MN
85	Madison, WI
86	Stockton, CA
87	Akron, OH
88	Durham, NC
89	Sacramento, CA
90	San Diego, CA
91	Fresno, CA
92	Los Angeles, CA
93	Seattle, WA
94	Cleveland, OH
95	New York, NY
96	San Antonio, TX
97	San Jose, CA
98	San Francisco, CA
99	Austin, TX
100	Buffalo, NY







Graphs above show percentage of days in each concentration level for the top 5 and bottom 5 Tree Pollen Allergy Capitals, Grass Pollen Allergy Capitals, and Weed Pollen Allergy Capitals for 2023, respectively.
Source: graphs created by AAFA using daily pollen data from Pollen Sense (for 12-month period in 2022) and scale for interpreting pollen levels from the National Allergy Bureau. Scales vary among the three pollen types.
Note: graphs above illustrate only pollen data for the specific pollen type. The pollen rankings on the previous pages are calculated using pollen data, medicine data, and specialist data.

Methodology

The 2023 Allergy Capitals™ research and ranking is reported by the Asthma and Allergy Foundation of America (AAFA). The ranking is based on analysis of data from the 100 most-populated Metropolitan Statistical Areas (MSAs) in the contiguous 48 states as determined by the most recent U.S. Census Bureau population estimates (2021). The five individual factors analyzed for the 2023 rankings are pollen scores for tree, grass, and weed pollen, over-the-counter medication use (allergy), and number of allergy specialists.

For each factor, AAFA used the most recently available 12-month data. Weights are applied to each factor; factors are not weighted equally. Total scores are calculated as a composite of all five factors, and cities are ranked from highest total score (city rank #1) to lowest total score (city rank #100). Cities are assigned icons for ■ worse than average, ▲ average, and ● better than average. Icons were assigned based on 0.5 standard deviation from the average.

Pollen Scores

For each MSA, AAFA obtained daily pollen counts for each growth form (tree, grass, and weed) from January 20-December 31, 2022. Data were obtained from Pollen Sense, LLC Automated Particulate Sensors (APS). These sensors automatically detect particulate matter collected from ambient air, and use a neural network algorithm to identify individual pollen species and calculate daily pollen counts. Using these daily pollen counts, AAFA calculated the number of days each MSA had within the "high" or "very high" levels for each growth form, as determined by the National Allergy Bureau (NAB). "Very high" days had a higher weight than "high" days for the final calculation of pollen scores.

Medication Use

For each MSA, AAFA obtained over-the-counter sinus and allergy medication sales data per patient prevalence. Data were obtained from the IRI Medication Sales Database for the most recent calendar year (2022).

Number of Allergy Specialists

For each MSA, AAFA obtained the number of board-certified allergists/immunologists per patient prevalence. Data were obtained from the Komodo Health Prism Health Care Database for the most recent calendar year (2022).

Limitations

Data presented in this report have limitations that AAFA would like to acknowledge. Estimates for pollen and medicine use are limited in Alaska and Hawaii, and therefore data in these states are not included in this report. Estimates for prevalence included in the calculations for medicine use and specialist access were gathered from the most recent national data. There are no comprehensive prevalence data for seasonal allergy at the MSA or county level. More localized data are needed to get a better sense of medicine and health care use per patient population within each city.

Additionally, pollen data were missing for January 1-January 19, 2022, and therefore not included in analysis. Pollen scores were calculated using the National Allergy Bureau (NAB) concentration levels for tree, grass, and weed pollen levels. These levels were developed using data from NAB counting stations, which use hand-counting methods. However, the pollen data used in the report are collected from automated sensors, which collect and analyze data at a much larger scale than hand-counting methods. Standardized risk levels for pollen collected by automated sensors have not yet been established. Additionally, pollen data were analyzed by how many days a city had pollen counts above the "high" and "very high" thresholds. However, this does not account for how much higher above these thresholds the data can go, therefore data from some cities with pollen counts much higher than these thresholds can get diluted. Pollen data also do not account for the allergenicity of pollen, or for population sensitivity to pollen.

Finally, our medication sales data uses only estimates for over-the-counter allergy medication sales. While many people use over-the-counter medicine for pollen allergies, the data may not capture individuals who use only prescription medicines for allergies. Additionally, this category of medicine includes over-the-counter decongestants, which may be used for other purposes, such as colds.

It is important to note that due to changes in data sources, data availability, and report methodology, the Allergy Capitals rankings are not intended to be compared year-over-year.

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