How Pollen Influences Allergy Medication Sales: Insights from Ambee's Research

ambee

Introduction

As the world wakes up to the beauty of spring, an increasing number of individuals are reluctantly embracing the return of pollen allergies. Recent trends have shown a significant surge in pollen allergy cases, propelling the allergic medicine market into a whirlwind of innovation and growth.

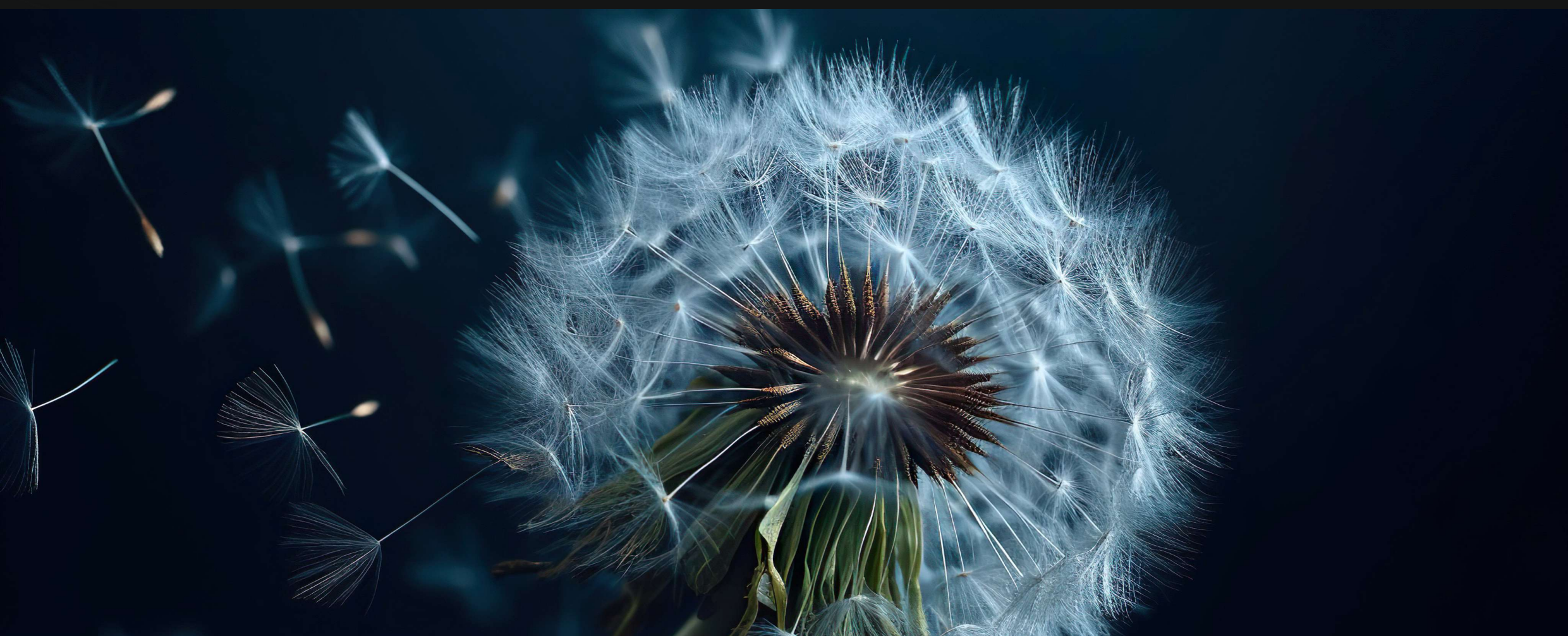
The shifting climate and environmental factors have intensified and prolonged pollen seasons, exposing a larger population to allergens. This escalation is attributed to global warming, which triggers an early onset of spring, elevated atmospheric carbon dioxide levels, and heightened pollen production by plants. As a result, pollen allergy sufferers are enduring heightened symptoms, ranging from mild discomfort to severe respiratory distress.

In response to these growing health concerns, the pharmaceutical industry is actively developing novel and more effective allergic medications. Recent trends demonstrate a remarkable shift from traditional treatments to advanced immunotherapies, reflecting the industry's constant pursuit of superior solutions. While the allergy market is projected to continue its growth due to the increasing number of people with allergies, there remains ample scope for innovation that can elevate allergy-relief products in the market, providing better, personalized relief to sufferers.

In this context, the role of pollen data emerges as a potential game-changer, influencing how pharmaceutical companies conduct research, develop, distribute, and market their products. This whitepaper aims to comprehensively explore the significant and often underutilized impact that pollen data can have on allergy medication, offering valuable insights to drive advancements in this crucial field.

Table of contents

1. Prevalence of Pollen
2. From pollen to product–exploring options for relief
3. The pollen and sales correlation–a study by team Ambee
4. Applications and uses of Pollen Data
5. Conclusion



Prevalence of Pollen allergies.

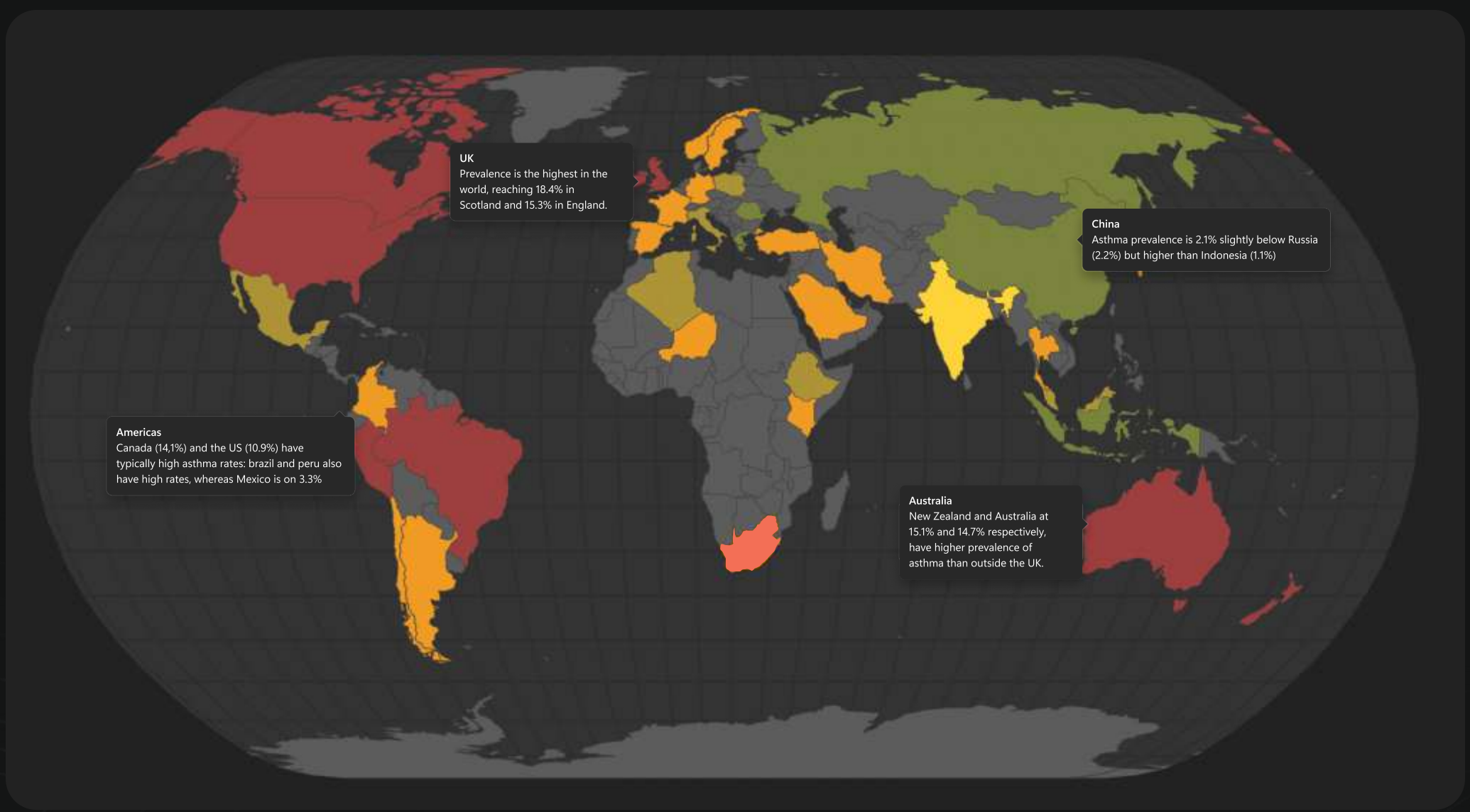
Pollen allergies– also known as hay fever or allergic rhinitis– have become a significant health concern worldwide. Characterized by sneezing, runny nose, itchy eyes, and congestion, pollen allergies affect millions of people, hindering their quality of life and straining healthcare systems.

Let's also not forget that one of the most intense and life-threatening effects of pollen is triggering severe asthma.

As climate change continues to unfold, the impact on pollen seasons is becoming more pronounced, exacerbating the prevalence and severity of pollen allergies across the globe.

Asthma around the world

Global studies confirm an association with westernized lifestyles



Prevalence of clinical asthma as proportion of total of population (%)

Standardized
data available

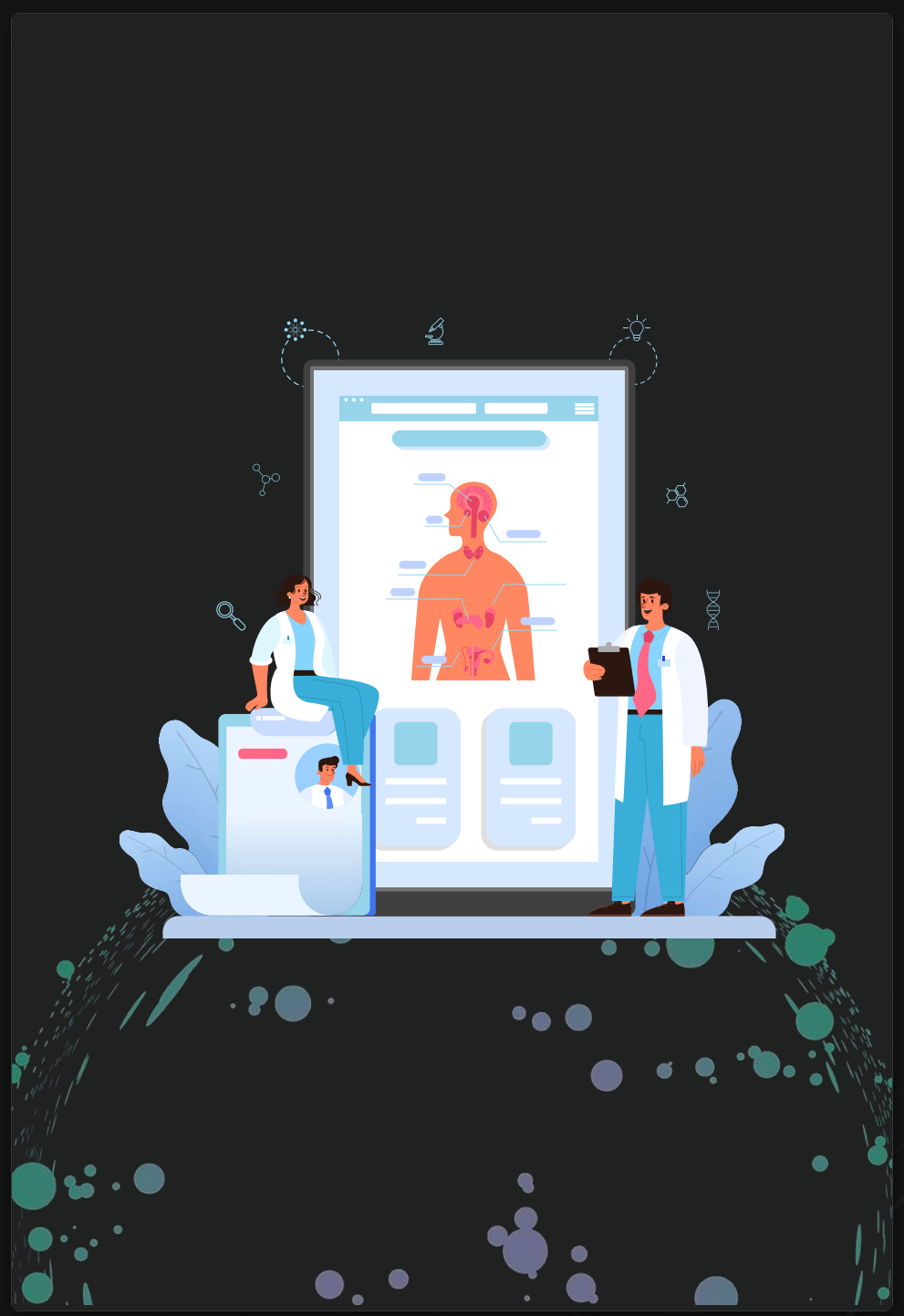
This visualization shows the spread of allergy-induced asthma roughly 2 decades ago. Since then, the occurrence of pollen allergies has almost doubled, according to the World Allergy Organization.

The prevalence of pollen allergies has been steadily increasing over the past few decades. According to the World Allergy Organization (WAO), approximately 10-30% of the global population suffers from pollen allergies. In some regions, such as North America and Europe, the numbers are even higher, affecting up to 40% of the population.

Furthermore, another 40% of the population, which isn't allergic yet, is highly sensitive to developing them. And with the pollen attack becoming stronger, it's only a matter of time before it does. Especially in Asiatic countries that are witnessing a surge in pollen allergy cases, with several countries reporting higher prevalence rates in urban areas due to increased pollution and airborne allergens.

Africa and South America, once less affected by pollen allergies, are now also experiencing a rise in cases as urbanization and changing environmental conditions expose more individuals to allergens.

One thing is for certain, pollen seasons are only getting stronger, enticing the need for more accessible and efficient solutions.
On that very note, have a look at an interesting conversation we had with Dr. Adam Bohr to understand pollen-caused diseases better and innovative solutions to tackle them.



From pollen to product–exploring options for relief

There are various types of allergy-relief offerings in the market, the primary care routes are: medications, immunotherapies, and lifestyle measures.

The pharmaceutical industry is booming with innovative allergy relief options, such as antihistamines (Claritin, Zyrtec, Allegra) and decongestants (Sudafed, Afrin) for short-term relief. Nasal corticosteroids (Flonase, Nasonex) address nasal inflammation, and combination meds (Claritin-D, Allegra-D) offer comprehensive symptom relief with antihistamines and decongestants.

Immunotherapies provide long-term solutions by desensitizing the immune system to specific allergens. Allergy shots (Allergen Immunotherapy) involve regular injections of allergen extracts, reducing allergic reactions over time. Sublingual Immunotherapy (SLIT) is an alternative with allergen drops or tablets placed under the tongue, offering convenience after the initial healthcare setting dose.

And to complement treatments, lifestyle changes can help reduce allergenic exposure. Ideally, the first step is to keep windows closed during peak seasons to prevent pollen from entering inside, and indoor HEPA filters do best in reducing the number of airborne pollen. Additionally, it's essential to monitor local pollen forecasts before planning

outdoor activities, wear sunglasses and hats, shower after being outside, and limit outdoor exposure on windy days to reduce the chances of allergen contact.

The pharmaceutical industry is booming with innovative allergy relief options, such as antihistamines (Claritin, Zyrtec, Allegra) and decongestants (Sudafed, Afrin) for short-term relief. Nasal corticosteroids (Flonase, Nasonex) address nasal inflammation, and combination meds (Claritin-D, Allegra-D) offer comprehensive symptom relief with antihistamines and decongestants.

Exploring the correlation between pollen and pharma retail sales

At Ambee, we conducted a study to understand the correlation between pollen levels and the sales of commonly used antihistamine medications. The Data Scientists at Ambee developed multiple General Linear Models (GLMs) to predict current and future sales on a daily, weekly, and monthly basis.

To achieve this, we utilized two datasets - the publicly available sales data of various drugs from the last 6 years and Ambee's Gspatial dataset for pollen (2016 - 2019) in specified areas.

The results were insightful, to say the least. It was able to uncover correlations between pollen levels and antihistamine sales, highlighting the impact of allergens on medication purchase behavior.

For more detailed information, you can read our blog on the untapped potential of pollen data in demand forecasting.

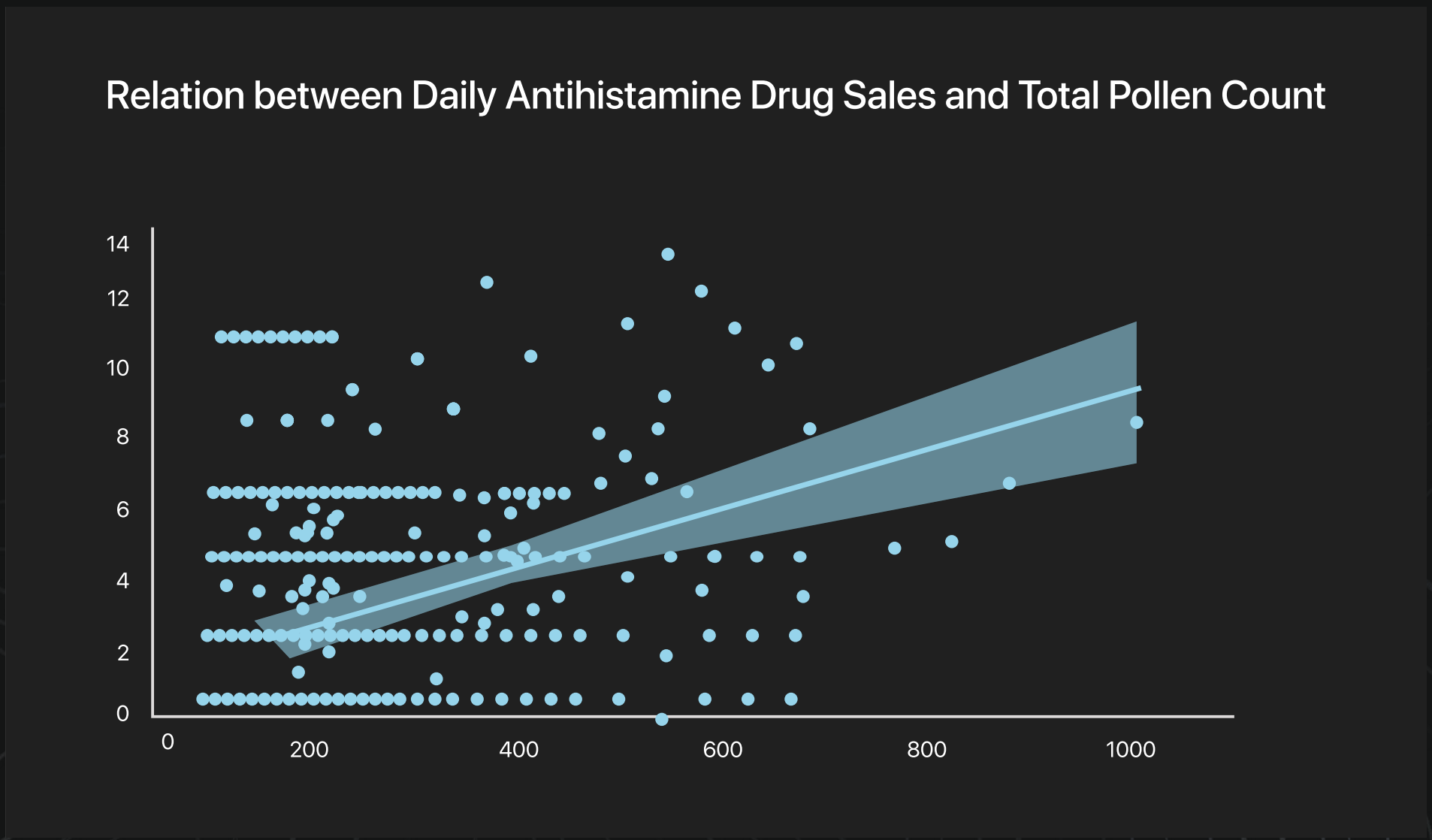
Here's what we found out:

Daily levels

Comparing daily pollen levels with that same day's sales didn't show a very strong correlation showing only a moderate Spearman R of 41%.

Overall, at the daily level, both the total pollen count and sales data exhibited greater variance and noise, as seen below.

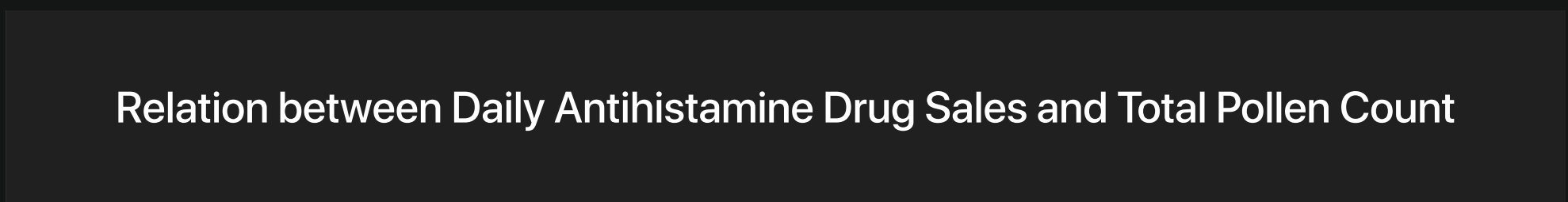
From daily levels and up to 14 days, it didn't show a very strong and significant correlation and retained a moderate Spearman R of 41%.

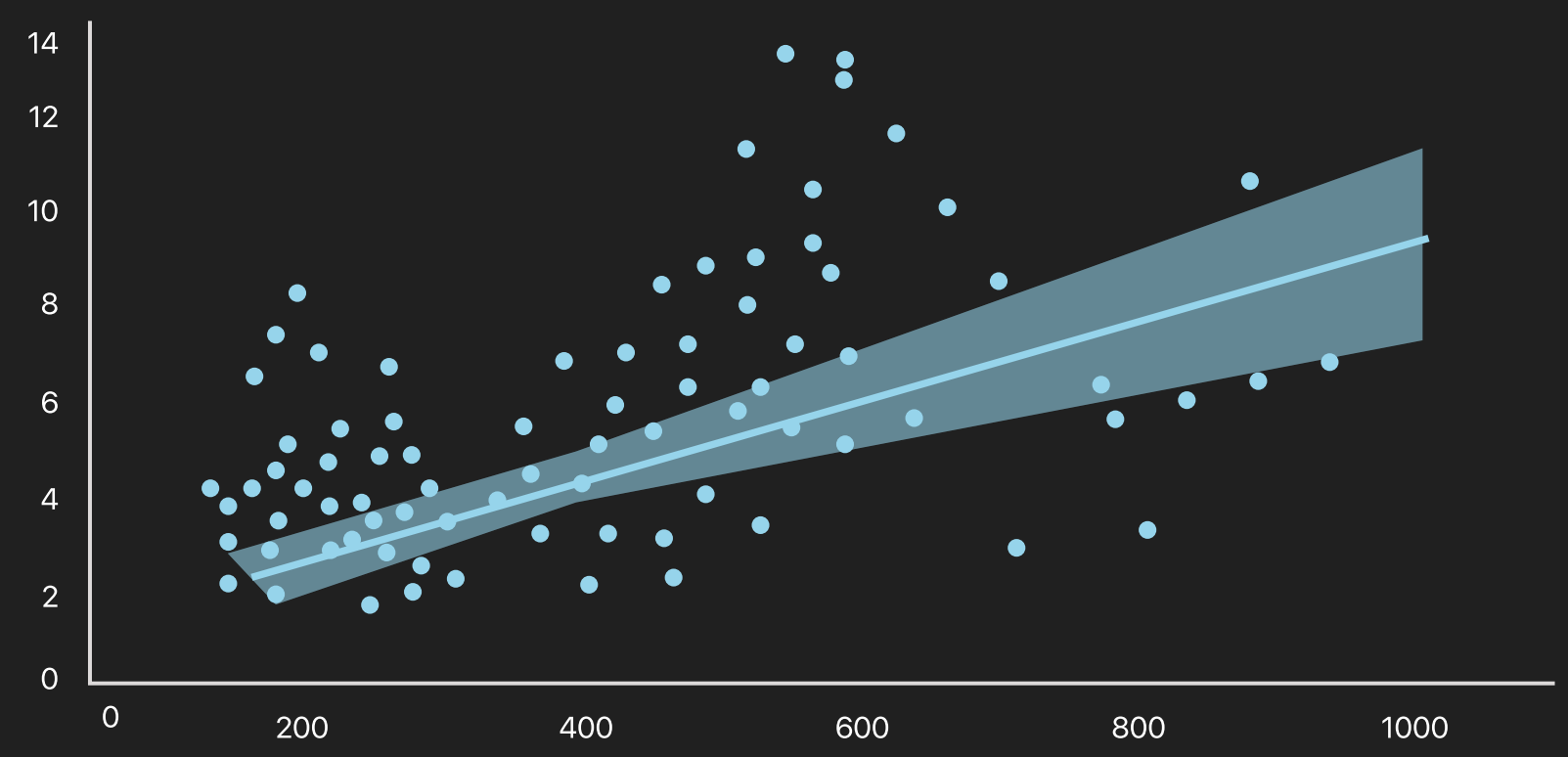


Weekly level

But when we combined the data for each week instead of each day, we noticed that a lot of the variations were removed, and the information became more consistent and easy to work with. This improvement allowed us to see a stronger connection between the weekly total sales and pollen count, with the correlation increasing from 41% to 70%.

However, when after shifting the pollen data by 8 days and then summing it on a weekly basis, we observed a notable increase in correlation. This indicates that the pollen levels today may have a slightly stronger influence on antihistamine sales eight days later compared to the immediate impact on sales on the same day.





Monthly Level

At the monthly levels, the correlation becomes even stronger. improvement in the Spearman R correlation between the monthly total sales and total pollen count, reaching an impressive 82%.

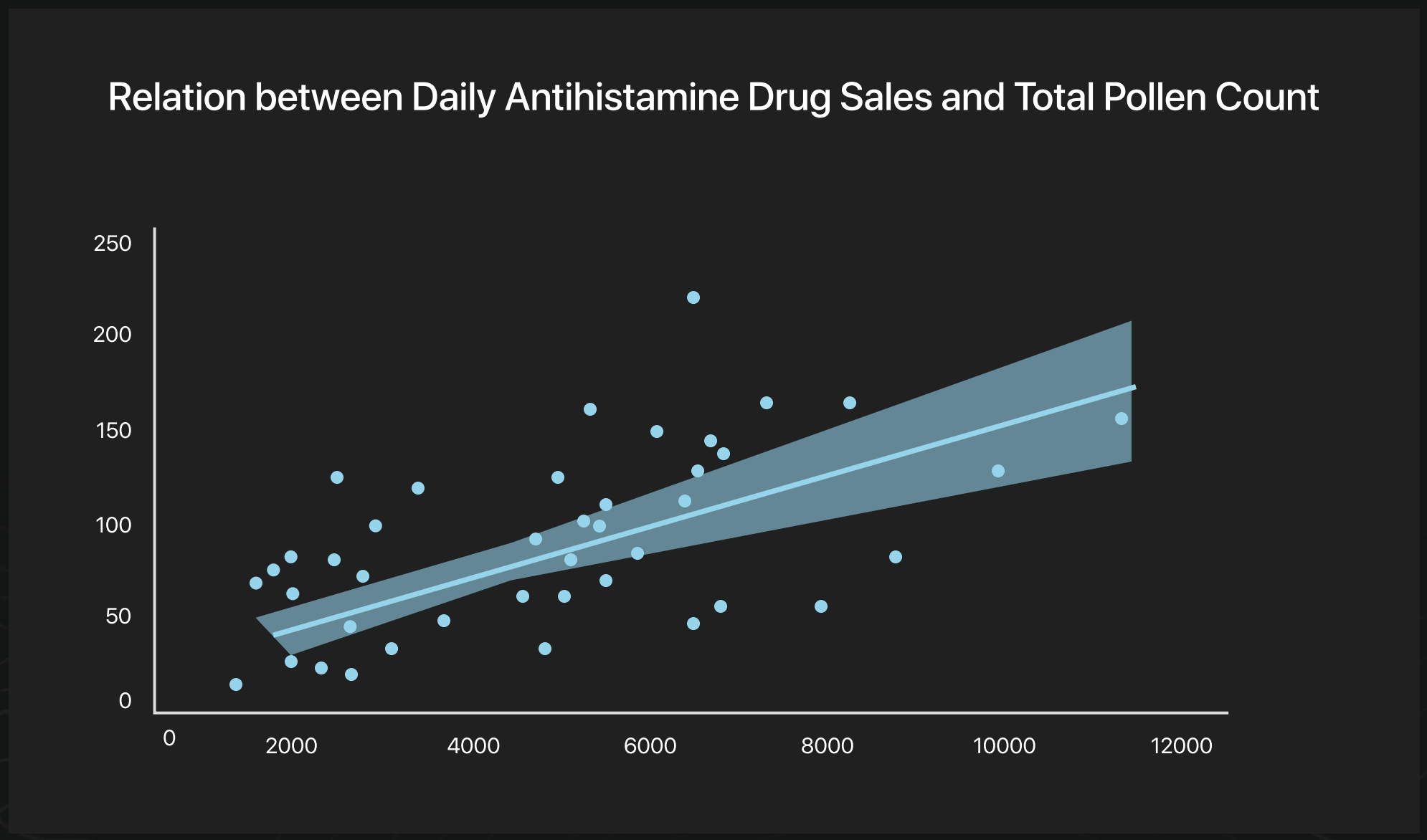
When we shifted the data up to 14 days and looked at monthly totals, the correlation increased to 88%. Using a 7-day shift didn't improve it further, but a 28-day shift still had a correlation of around 87%, higher than the current month's correlation of 80%.

This suggests that pollen might affect antihistamine sales with a delay of about 14 days.

If you're interested in reading the entire study, here is where you can find it.

Now that we have these strong results, the question then arises: What can be done about it on a product level?

Here's a rundown:



Applications for Pollen Data

This correlation establishes a solid foundation for completely optimizing the way companies approach allergy-relief offerings. Now that we know with certainty that consumer behavior is directly influenced by pollen levels, this opens the door to adding value at each step of the process. From research to distribution, data-based strategies can and have improved significant business results.

Product research and development

Accurate pollen data can be invaluable for allergy product manufacturers during the research and development phase. By understanding the specific pollen types and their seasonal patterns, it can guide the creation of targeted allergy relief products.

Using this, manufacturers can tailor formulations and optimize product features to address prevalent allergens during peak seasons. This data-driven approach can result in more effective products that cater to customers' needs and provide better relief from allergy symptoms.

Demand forecasting

By analyzing historical pollen patterns, manufacturers can anticipate when and where allergies are likely to be most severe. Armed with this information, they can adjust production and distribution plans accordingly, ensuring that sufficient stock is available in high-demand areas during peak allergy seasons. This proactive approach can help manufacturers avoid stockouts, minimize excess inventory, and optimize their resources to effectively meet consumer needs.

Marketing outreach

By aligning their promotional efforts with the expected allergy seasons in specific regions, manufacturers can effectively reach their target audience at the most opportune times. They can use the data to craft compelling messaging that resonates with allergy sufferers, emphasizing the relevance and efficacy of their products during peak pollen periods. This strategic approach allows manufacturers to capitalize on the heightened demand for allergy relief products when consumers are seeking solutions the most.
By leveraging data-driven insights, they can tailor their marketing campaigns to address the unique needs and concerns of their target customers, ultimately driving increased sales and brand loyalty.

Supply chain management

Pollen data can significantly impact supply chain management for allergy product manufacturers. Understanding the regions with the highest pollen counts helps in optimizing the distribution network. Manufacturers can strategically position their warehouses and distribution centers to ensure swift and efficient product delivery to areas most affected by allergies. Additionally, real-time pollen monitoring can aid in identifying unexpected spikes in demand, allowing manufacturers to respond quickly and prevent supply disruptions.

Ambee's Pollen Data in Use

Kleenex

Ambee assisted Kimberly-Clark Corporation in producing Pollen Pal, a digital health solution, for their customers to make informed decisions. This helped KCC not only alert their customers on pollen count and share insights on associated risks but also enhance customer engagement. The product allowed users in Europe to understand the impact of pollen actively and provided a way for those looking to reduce pollen exposure and live healthier lives. Their platform garnered 100k visits in the first week alone and now has around 30,000 unique visitors daily. As a result, the campaign was deemed 'exceptional' in terms of return on ad spending.
Read more about how Ambee's pollen data helped Kleenex.

Wellthy

Due to the rising risks of air quality-related health issues, Wellthy Therapeutics aimed to achieve better diagnoses and create personalized treatment plans for its customers. In collaboration with Ambee, they provide detailed information on a patient's exposure to hazardous pollutants directly to the patient or even to the patient's physician if authorized. This helps the customers better understand the air around them to minimize the effects.
Here are the details of this partnership.

juli

To help minimize the effects, juli, a digital health company, turned to air quality and pollen data by Ambee. They added Ambee's air quality and pollen data to their digital health platform to help customers better identify how these factors impact their health and help them manage their conditions with data-backed decisions.
This partnership also initiated a massive app retention rate (26%) and customer engagement (2.2 times per week on average) for juli while simultaneously making lives easier for their customers. Read more.

Sonohaler

Ambee also partnered with Sonohaler, a digital healthcare company, to provide real-time air quality and pollen data for their smart asthma devices. This helps their customers stay alert about their environment's pollen or pollution levels and help them live healthier lives.

Conclusion

The surge in pollen allergies worldwide has propelled substantial growth in the allergy medication market. As climate changes intensify pollen seasons, millions of individuals face discomfort and respiratory distress. In response, the pharmaceutical industry is embracing innovative solutions, leaning towards advanced immunotherapies. While short-term relief is offered by antihistamines, decongestants, and nasal corticosteroids, immunotherapies provide a long-term desensitization approach.

At Ambee, our rigorous analysis has unveiled a robust correlation between pollen levels and antihistamine sales, indicating a delayed impact on sales. This valuable data has the potential to revolutionize product research, demand forecasting, marketing, and supply chain management for manufacturers. As the allergy market continues to expand, data-driven strategies will optimize relief offerings for pollen allergy sufferers worldwide.

To explore how our pollen offerings can elevate your products to the next level, don't hesitate to contact us. Together, we can shape a more allergy-resilient future.

ambee