

HOW CAN PHARMACEUTICAL COMPANIES LEVERAGE POLLEN DATA



Introduction

Pollen has adverse effects on people in different ways, similar to air pollution. The impacts of pollen on diverse demographics—the elderly, heart patients, and asthmatic patients—are different from those of other environmental factors, like air pollution. Pollen's seasonality is sensitive to both changes in climate as well as weather. Recent studies have revealed that pollen season is linked to increased mortality from cardiovascular and respiratory diseases⁽¹⁾.



A Finland-based research reports that the sudden commencement of the pollen season pushed up mortality owing to **respiratory diseases** up to **20%** and more.

Pollen-sensitive people often display a wide range of reactions to diverse kinds of pollen, and sometimes even pollen grains of the same species. Pollen trends also tend to show geographical differences throughout the season, featuring little or more allergenic constituents irritating people's immune systems and airways. The lack of on-ground pollen monitoring sensors creates a very challenging situation to predict reactions to pollen that different people might have in diverse locations at various times ⁽²⁾. Allergy sufferers are not just looking for information; they need insights to customize their preferences, needs, and sensitivities to prevent further escalation and harm. Therefore, pharmaceutical companies offering personalized healthcare products and services will provide significant value for patients seeking proactive management of their allergy symptoms.

Understanding the Pollen Trend

Over 30% of the global population suffers from one of the many allergy types triggered by airborne pollen, leaving debilitating effects on their health. These affected individuals rely on pharmaceutical companies to proffer drug remedies against these allergies. With only a few existing government-owned pollen monitoring stations and fungal spores/pollen monitoring networks in operation, the majority of the world's population has no access to pollen monitoring data. To solve this problem, environmental intelligence companies like Ambee aggregate data from various sources and present actionable insights to pharmaceutical companies. Effective solutions and targeted marketing campaigns are built around this data to tackle health challenges experienced by the patients as a result of pollen exposure.



What's in it for Pharmaceutical Companies?

Profit Maximization

Demand for allergy drugs increases every year during pollen seasons, and pharmaceutical companies prepare to manufacture allergy medicines to fulfill supply.

By **2040** the pollen count is expected to double ⁽¹⁾.

Hence, pharma companies look forward to making life easier for pollen allergy sufferers and those with higher sensitivities via personalized recommendations. Through these personal recommendations, pharmaceutical companies are developing a long-lasting, meaningful relationship with their customers. When personalized and hyper-local pollen information is integrated with pharmaceutical companies, customers understand the specific times to expect an increase in pollen levels in their locations and subsequently prevent them by taking precautionary measures.

Patients often look for personalized updates to manage their allergies, especially during pollen seasons, and pharma companies can leverage it to increase their sales. Thus, pharmaceutical companies who have access to reliable pollen data can provide information that helps patients (allergy sufferers) or individuals exposed to pollen to prepare according to their specific preferences, needs, and sensitivities. A personalized approach like this adds more value to the company's offerings in the marketplace. One such company is Kimberly Clark Corporation (KCC). The personal care products giant has incorporated Ambee's pollen data to alert its customers and help them understand when to take precautionary measures against a spike in pollen levels. Their product – Kleenex Anti-allergic facial tissues are also marketed to target customers depending on the pollen levels in the region. This not only helps the sufferers stay protected from allergies but also increases customer loyalty and sales of the product (Fig. 1).

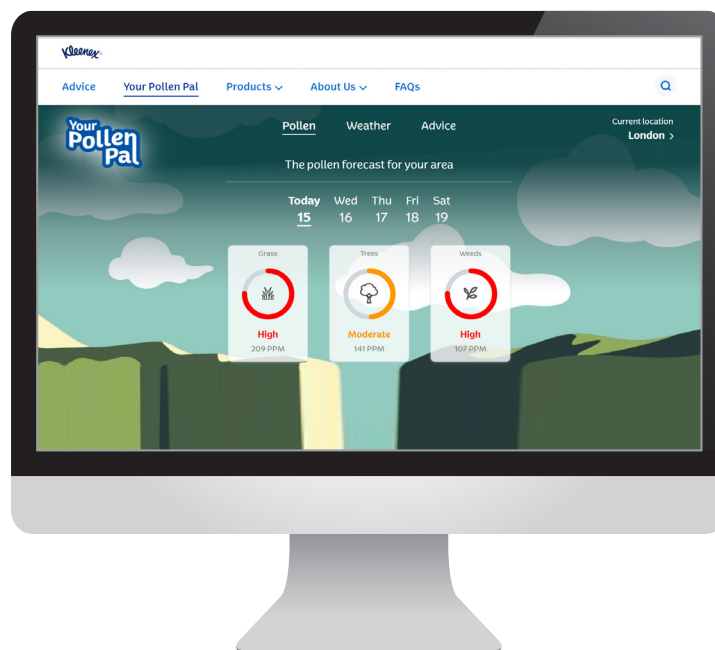


Fig.1: KCC's pollen report

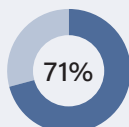
Expansive Business Opportunities

The big business bang for pharmaceutical companies is to increase their customer loyalty for a specific allergy medication that they manufacture. With personalization in place, they can offer customers the desired level of customization to address their needs. For example, Taisho Pharmaceutical, a Japanese company specializing in allergic remedies, developed and launched a pollen tracker to provide up-to-date, personalized information to allergy sufferers regardless of wherever they are located.

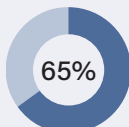


This business initiative from Taisho Pharmaceutical is in line with researchers' analysis on pollen data sets collected from different locations in the Northern Hemisphere for over 26 years.

In more than



of the **sites analyzed**, researchers **noticed an increase** in **total amounts of pollen produced** alongside a **significant increase** of up to



in the **length of the pollen-producing season**, averaging **0.9 days per annum across the globe**.

By integrating personalized intelligence, forward-thinking pharma firms can evolve to make life easier for people having sensitivities to allergies alongside developing meaningful and sustainable relationships with them ⁽²⁾.



Pollen is up by 65% and Pollen Season is increasing by 0.9 days per annum across world



Innovation Drivers

Pharmaceutical companies can use pollen data to carry out pollen tracking, using mobile applications to identify **specific allergy triggers like Tree, Grass Pollen, Ragweed**. Through this initiative, subscribers can efficiently manage their medications by proactively preparing for high pollen seasons. Since pollen exposure affects the health of humans through diverse seasonal allergies alongside its varying increase amongst patients with respiratory diseases, pollen tracking is extremely relevant ⁽³⁾.

The big question is: shouldn't pharmaceutical brands know in advance when there would be a spike in allergies? It is always a good idea for pharmaceutical companies in the business of manufacturing allergy medicines to recognize allergy season beforehand to maximize the profit for the season.

To predict spikes in allergic incidents, extensive pollen data and insights modeled by companies like Ambee are available to assist in building accurate forecasts. Pollen data helps pharmaceutical companies in sifting through the uncertainties and creating supply-demand plans capable of keeping operations afloat during allergy seasons. Especially with the increase in average pollen count and extending pollen seasons, pollen forecasting shows a steady increase in pollen count (Graph 1). With decreasing time for the pharmaceutical companies to prepare for the next season, technological innovations have found new applications in the industry. One thing is constant; we're in the data-driven era, and pharmaceutical companies need to show competence and a proactive approach to meeting the demand chain ⁽¹⁾.



Graph 1: The increase in pollen count over the years in Netherlands. The averages plotted in the graph depict a steady increase in pollen count in the last decade.

Research and Development

Evidence from recent studies submits that a weakened immune system is a common symptom of the majority of seasonal allergies ⁽²⁾. If pollen data can assist companies in predicting allergy season spikes, it can also assist them in predicting cold outbreaks. Rather than only making use of pollen data to expand the reach of allergy medicine, pharmaceutical firms should consider the trend of predicting cold outbreaks during traditional non-cold seasons. Pharmaceutical companies can educate allergy sufferers on specific types

of pollen in the air, alongside the types they are likely to be sensitive to, as well as what measures they can take to prevent it. The result of similar research is a collaboration by Lupin, an Indian pharma giant, and Aptar Pharma. This team designed a smart inhaler, Adhero, for asthmatic patients. These smart inhalers are integrated with mobile applications which alert patients during high levels of pollen and declining air quality. Asthmatic patients can utilize the trigger notifications provided by Ambee's intelligence via the mobile application to prevent chronic asthma attacks (Fig. 2). This information and assistance can significantly improve patient outcomes ⁽³⁾.

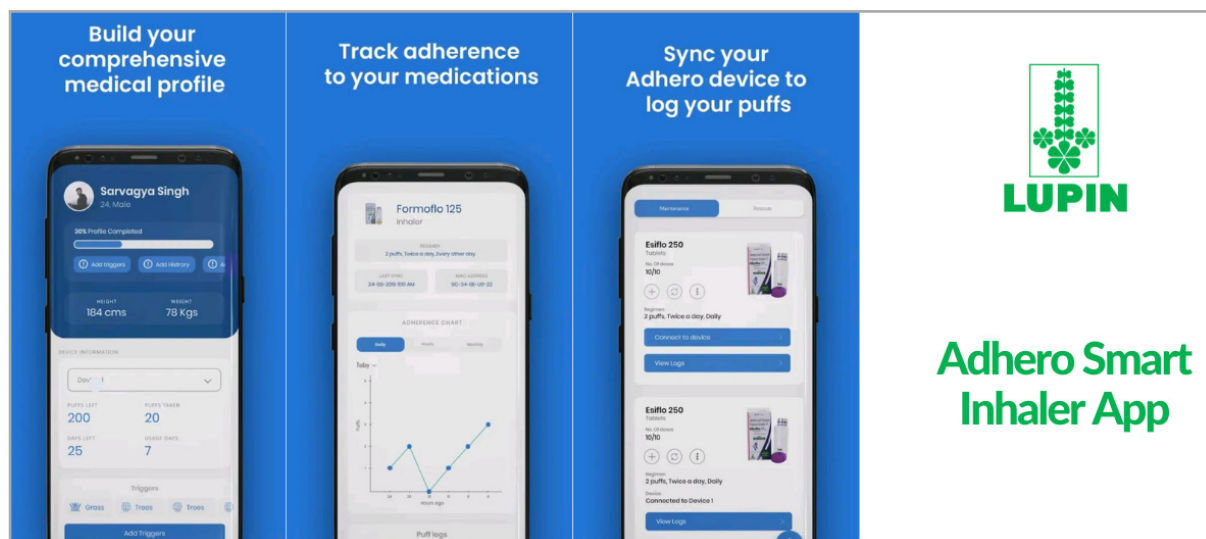


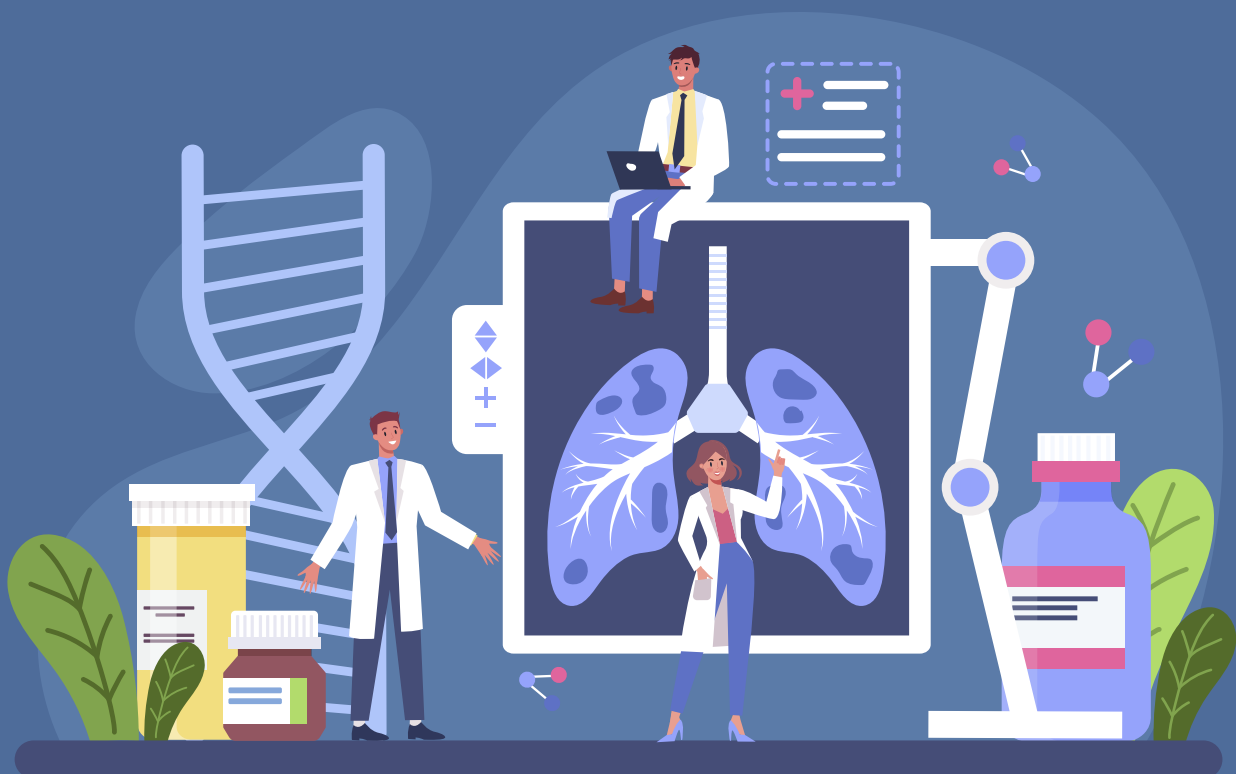
Fig. 2: Mobile App Screen

Stock Management

Pollen data plays a significant role in ensuring that pharmacies are never out of stock of allergy medications. The seasonal shifts across the year are mainly responsible for the rampant itchy eyes and runny noses, although with different symptoms depending on the weather. Weather conditions such as low temperatures and heavy rain mitigate allergies, while dry air and strong winds worsen them. By monitoring and predicting fluctuations in daily weather conditions, pharmaceutical companies can guarantee that their products are available when allergy symptoms become severe. Allergy season leaves pharmacies out of stock of allergy medicines and allied products. Therefore, pharmaceutical companies are expected to do all they can to ensure that allergy medicines do not run out of stock, especially when allergy sufferers need them the most. Also, the point here is about competition.

For example, an allergy sufferer could visit the store to purchase a specific allergy medicine (e.g., Zyrtec), only to realize that the drug is out of stock.

In this case, the non-availability of the medication may compel the allergy sufferer to buy the next available allergy medicine as they need something to alleviate their symptoms. Through this, pharmaceutical firms having a too frequent out-of-stock record can lose loyal customers to the in-stock competition. Their reputation might as well change, leaving them as “unreliable providers” in the minds of their customers. These marketers often receive negative feedback/complaints from customers, but they rather see these complaints as opportunities to improve customer experience. Negative feedback/complaints are usually challenging to resolve. They can destroy or hamper brands’ image and limit future business, particularly when it has to do with individuals suffering from debilitating allergies.



Enhanced Customer Relationship

In modern times, the primary focus of life sciences is on the patient-centric model featuring the assurance of meeting patients' needs and wants by healthcare providers. With a conventional linear supply chain employed in life sciences depends on companies nowadays. Companies thus need to transform into entities that enable a value network—a set of a responsive and dynamic market model centered on patients. To successfully implement this new model, pharmaceutical companies use environmental insights to improve patient outcomes and establish supply strategies to achieve compliant, predictable, and secure supply as needed by

patients. This is crucial, especially for allergy medication, because there is a higher market pull during dry and hot weather conditions. Although this is a relatively new concept, big pharma firms are already utilizing the benefits of analytics to serve allergy sufferers better. For example, Bayer, the producer of Claritin, an antihistamine, has its entire supply chain planned over nine months ahead of time using software that engages climate and weather patterns to predict allergen levels. Hence, they can meet up with the demand and supply chain. By employing weather data and carrying out pollen analytics, Bayer, with the help of Ambee, is categorizing Claritin to their target market and manufacturing it when their target market demands spike so that they can sell accordingly.

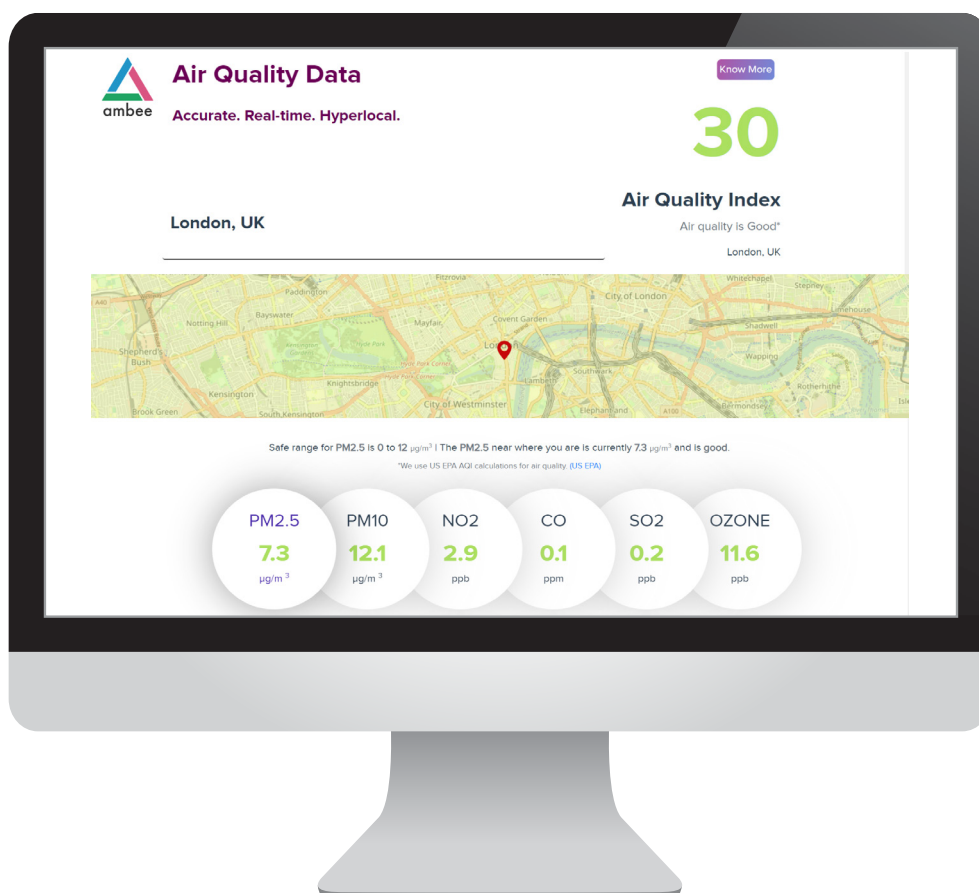


Final Words: Integrate to Alleviate

The penetration of pollen analytics into diverse health spheres has molded a new pathway for pharmaceutical companies to identify the gaps in marketing plans. It has also assisted these companies in identifying the linkage of allergies with colds, sneezing, itchy throat, nasal congestion, itchy red watery and swollen eyes, and more, to market fluctuations. With these inputs, pharmaceutical companies can increase ROI during the pollen seasons.

Environmental intelligence companies such as Ambee are working towards creating a future with people freed from the reins of

allergies caused by pollen and decreasing air quality. They use proprietary algorithms to process the data collected from thousands of on-ground sensors and earth observatory satellites. Ambee believes that the integration of accurate data can trigger change for good if pharmaceutical companies work with intelligence companies to better manage the production and marketing of medication. By working together, pharma companies can devise an efficient plan to tackle allergic reactions and increase the overall quality of life for the customers.



Globalairpollution.com by Ambee



References

1. Adams-Groom, B., Skjøth, C., Selby, K., Pashley, C., Satchwell, J., Head, K., & Ramsay, G. (2020). Regional calendars and seasonal statistics for the United Kingdom's main pollen allergens. *Allergy: European Journal of Allergy and Clinical Immunology*, 75(6), 1492-1494.
2. Codina, R., & Lockey, R. F. (2017). Pollen used to produce allergen extracts. *Annals of Allergy, Asthma & Immunology*, 118(2), 148-153.
3. Sánchez-Mesa, J. A., Serrano, P., Cariñanos, P., Prieto-Baena, J. C., Moreno, C., Guerra, F., & Galan, C. (2005). Pollen allergy in Cordoba city: frequency of sensitization and relation with antihistamine sales. *Journal of Investigational Allergology and Clinical Immunology*, 15(1), 50-56.
4. Sarabu, C., Steyaert, S., & Shah, N. R. (2021). Predicting Environmental Allergies from Real World Data Through a Mobile Study Platform. *Journal of asthma and allergy*, 14, 259.