# **Predictions on Allergy Rates Project**

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Overall Goal:

Predict the global levels of consumer-product related allergies in the next 10 years, to understand **where, when and who may see a rise in sensitivity to consumer product intolerance** based on the convergence of CGP sales, environmental factors (eg, UV, pollution, seasonal allergies), co-morbidities (eg, skin diseases, asthma and other respiratory illness) and climate changes.

### Specific Objectives:

* Can we predict the levels of allergies and atopic disease (eczema, atopic dermatitis) in key marketplaces across the globe to understand the future need for personal skin care products to design formulas to support the more delicate skin of these consumers?
* Can we achieve epidemiological insights without being an epidemiologist?

Possible knowledge bases:

* Medical literature to identify global allergy trends and rates of inflammatory skin diseases.

***Some references / articles are downloaded and will be shared***

* Scientific/medical literature and online reviews to identify consumer product intolerance trends

***Some references / articles are downloaded and will be shared***

* Global non-profit/government reports on environmental trends on pollution and climate change. Here are some examples:

<https://www.oecd.org/environment/indicators-modelling-outlooks/49928853.pdf>

<https://www.epa.gov/clean-air-act-overview/air-pollution-current-and-future-challenges>

* Sources for meteorological predictions of global weather

<https://www.weather.gov/hun/climateforecast>

<https://www.wpc.ncep.noaa.gov/>

* Sources of descriptions for global lifestyle comparisons
* Information from global sources/non-profits:

International Eczema Council  - <https://www.eczemacouncil.org>

OECD - <https://www.oecd.org>

NIH - <https://www.nih.gov>

NSF - <https://www.nsf.gov>

FDA - <https://www.fda.gov>

## Knowledge base

Articles and reposts from public sources as given above

## Key information to be extracted:

* What are the most reliable / most researched risk factors (up to 6) with strongest connections to Atopic Dermatitis / eczema / skin allergy?
* Predicted “incidence rate” of Atopic Dermatitis / eczema / skin allergy in ~10 years (2035) / in ~25 years (2050)
* Trends for Atopic Dermatitis / eczema / skin allergy based on predicted changes in our current environment for a given region of interest (i.e. US)

## Goal:

* Based on the key resources and literature that is shared for you (and any other sources that you want to include), leverage LLMs and generative AI models for the following challenges:
  + Challenge 1: What is the best understood relationship between allergies and all the additional factors?
  + Challenge 2: Based on your learnings and models in Challenge 1 and based on the various public resources (reports, medical/scientific literature, weather predictions, etc.), build a predictive model for allergy rates for the next 10 & 25 years.
* What could be the strategies for building a more structured approach that makes use of further AI tools & available data that might be gathered?