

Overview of the Hazel Score™

Overview

Based on years of research at Stanford, UCLA, and UMD, the Hazel Score is Hazel Analytics' proprietary scoring methodology that standardizes results from thousands of health departments (HD) by computing a percentile-based 0-to-100 score for each inspection, enabling comparisons across regions and brands.

Benefits

❖ HD Score Challenges	Examples	✔ Hazel Score Benefits
HDs that provide scores tend to be lenient, with grade curves that obfuscate risk and low performing facilities	More than 90% of inspections in Los Angeles County receive an A	The Hazel Score clearly differentiates between high and low performers
Many HDs do not publish scores, precluding any ability to do cross-jurisdictional comparison	40%+ of HDs do not publish any form of score	All inspections receive a Hazel Score, enabling comparisons across regions and time
HDs vary in score types, inspection criteria, and enforcement behavior, hampering analysis at scale	Contra Costa and San Mateo are neighboring county HDs, w/ avg violations per inspection at 5.62 and 2.12, respectively	Scoring methodology is designed to normalize for idiosyncrasies between jurisdictions

Methodology

How Hazel Scores are calculated:

- 1 Map and tally violations against Hazel categories (temperature, contamination, facility, employee) using violation descriptions in a machine learning model
- 2 Adjust category scores based on violation severity and frequency
- 3 Calculate overall scores based on category scores, taking into account the patterns of each health department's enforcement behavior
- 4 Compute final percentile-scores (i.e. Hazel Scores) by assessing relative performance against historical jurisdiction results

Interpretation

An inspection with a Hazel Score of 50 represents average performance, compared to all inspections in the same jurisdiction. Only perfect inspections – those with zero violations – receive a Hazel Score of 100. An inspection receiving a Hazel Score of 41 can be interpreted as having performed equal to or better than 41% of inspections in its local jurisdiction. The most noticeable differences between the Hazel Score and the HD score occur in inspections with only one or two violations: while the HD may give such an inspection its highest grade, the Hazel Score may fall in the 60s or 70s, since we factor in comparative and historical data. To help users more easily interpret its scores, Hazel offers the following rating buckets:

- Excellent 100 only
- Good 50 to 99
- Fair 25 to 49
- Poor 0 to 24

Appendix - Hazel Score Case Study

One of the key benefits of the Hazel Score is that it puts a spotlight on high risk inspections and facilities. In contrast to scoring systems used by health departments that cluster scores at the top end of a range, the percentile-based system used by Hazel creates separation in scores to delineate between lower and higher performing facilities. To illustrate this point, let's take a look at how the Hazel Score stacks up in Los Angeles County.

First, let's do a comparison of Hazel Scores vs. Los Angeles County's letter grades. On the left side of the table below, we see that nearly 95% of all inspections receive an A by Los Angeles County. Only 5% of inspections are given a B, and hardly any inspections are receiving a C or lower. Meanwhile, the Hazel Score on the right is distributing results in a much more useful way.

Health Dept Grade	% of Inspections	Hazel Score	% of Inspections
A	94.40%	Excellent	2.40%
B	5.04%	Good	48.05%
C	0.49%	Fair	24.81%
Below	0.04%	Poor	24.69%
Total	100.00%	Total	100.00%

Next, since Los Angeles County bases their letter grades on the same 0-to-100 numeric range used by Hazel Scores, we can graph the relative distribution of scores within both scoring systems.

