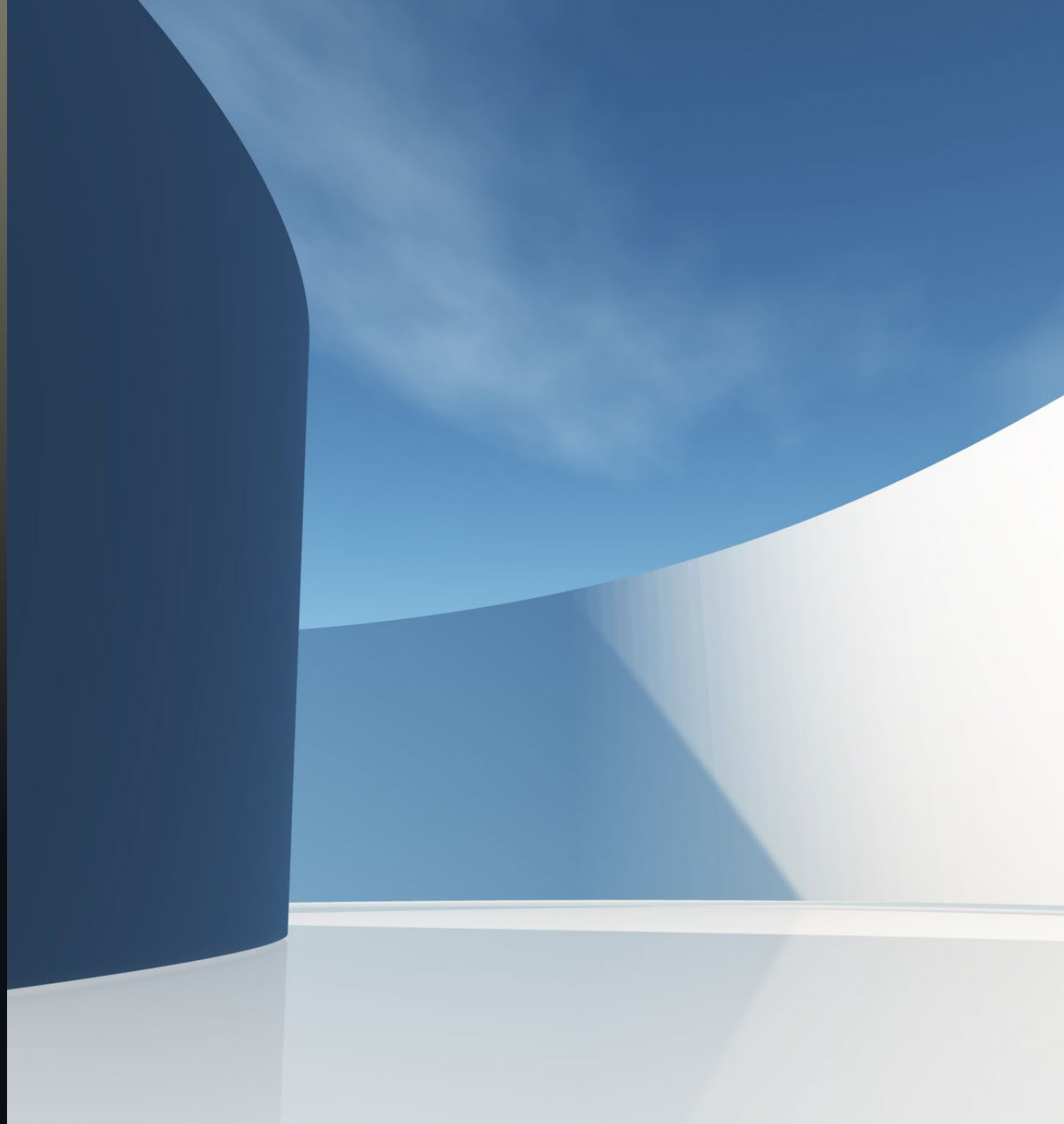# Oregon EJ Mapping Tool Decision Points

BACKGROUND INFORMATION

Decision Points: Why are they important?

Composite indices are complex and there are many options for the EJ Council to choose from that will determine how the Oregon EJ Mapping Tool is structured and how the information is displayed.

HB 4077, sections 10-12 include language that will help guide the EJ Council through the decision-making process, but the content leaves a lot of room for flexibility.

All environmental justice mapping tools get evaluated, critiqued, and scrutinized. Therefore, it is important to have a rationale that supports each decision made in the development of the Oregon EJ Mapping Tool.

DECISION POINTS 1-10

#1
- Indicator domain selection

#2
- Geographic units (tracts, grids, etc.)

#3
- Geographic designations
- Geographic comparisons

#4
- Domain/indicator weighting

#5
- Domain aggregation (multiplicative, additive, etc.)

#6
- Data standardization (percentiles, z-scores, other)

#7
- Indicator selection - community listening session priorities and data gaps

#8
- Sensitivity analysis results - revisit indicator selection and data gaps

#9
- EJ community thresholds/flags

#10
- EJ mapping tool visualizations & reporting

April 11, 2024

3

Data Standardization

ENVIRONMENTAL JUSTICE MAPPING

DECISION POINT 6

OCTOBER 10, 2024 RECORDING LINK

DECISION POINT #6 – DATA STANDARDIZATION

Introduction to Data Standardization

Raw indicator data units can differ a lot and are often incompatible for aggregation inside a composite index. For example, it would not make sense to combine median income in census tracts with percent of population living with a disability because one value is monetary and the other is a percentage. Therefore, it is necessary to normalize the data by converting it to quantiles like percentiles or z-scores.
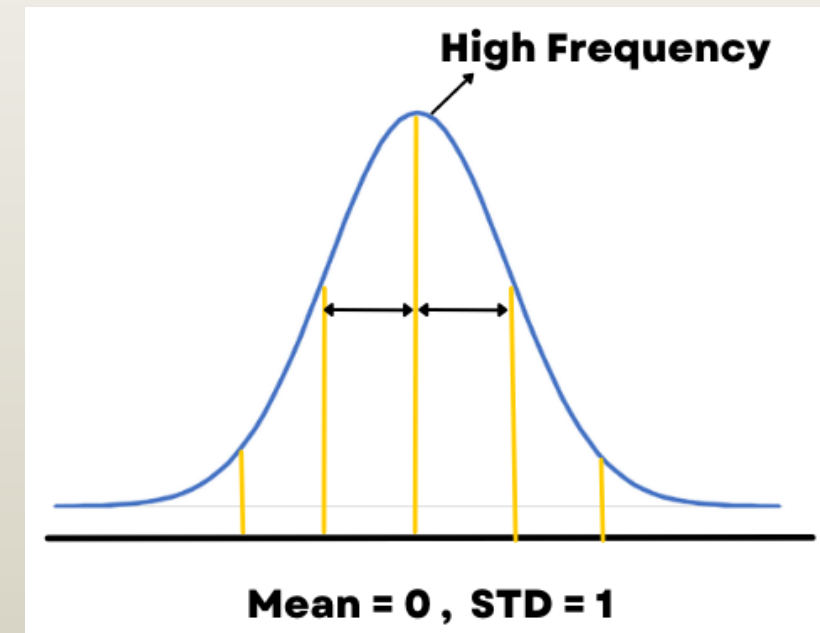
DECISION POINT #6 – DATA STANDARDIZATION

Key Terms:

Quantile - values that split sorted data into equal parts. Common quantiles are quartiles (four groups), deciles (ten groups), and percentiles (100 groups).

Percentile - quantiles obtained by adopting a subdivision into 100 groups. The nth percentile of a set of data is the value at which n percent of the data is below it. For example, a percentile score of 25 means that 25% of the other scores are lower. A high percentile means the value is relatively uncommon.

Z-score – the distance and direction of an observation away from the population mean. If a z-score is equal to 0, it is on the mean. A positive z-score indicates the raw score is higher than the mean average. For example, if a z-score is equal to +1, it is 1 standard deviation above the mean.

DECISION POINT #6 – RECOMMENDATION

The Methodology Workgroup recommends:

- Standardizing raw indicator values using z-scores.
- Reducing the effects of extreme outliers in the data.
- Using a process called "winsorization" to reduce outliers and rescale the z-scores.
- Rescaling winsorized z-scores between 1-99 percent for easier interpretation.

- For future versions of the Oregon EJ Mapping Tool, explore the feasibility of identifying optimal indicator scores and scale the data by distance from the optimal score or reference point.

DECISION POINT #6 – RATIONALE

- A percentile does not describe the magnitude of the difference between two or more communities. For example, a community ranked in the 30th percentile is not necessarily three times more impacted than a community ranked in the 10th percentile.
- Investments in communities should be made where risks are the worst. Z-scores are more accurate than percentiles at identifying outliers and similarities between communities. Indicators with extreme values thus have a greater effect on the composite index.
- It may be necessary to cap high and low z-scores to avoid skewing the mean indicator scores.
- The Methodology Workgroup endorses further exploration of setting reference points for indicators because it can show whether a goal is achieved for a community or how far it is away from reaching a goal.

ADOPTED DECISION POINT 6

- Standardizing raw indicator values using z-scores.
- Reducing the effects of extreme outliers in the data.
- Using a process called "winsorization" to reduce outliers and rescale the z-scores.
- Rescaling winsorized z-scores between 1-99 percent for easier interpretation.
- For future versions of the Oregon EJ Mapping Tool, explore the feasibility of identifying optimal indicator scores and scale the data by distance from the optimal score or reference point.