

Vocabulary Review Sheet

Lesson – Probability and Health Equity: Preventive Care Access

How to Use

- Review each word and example before your quiz.
- Connect **math definitions** to **real-world health fairness issues**.
- Keep this sheet in your *Equity in Numbers Student Journal*.
- Remember: *Probability is more than numbers — it's a tool to see who has access and why.*

Probability

- **Definition:** The chance that an event will happen, written as a fraction, decimal, or percent.
- **Math Example:** $P(\text{Visit}) = 750 / 1500 = 0.5 \rightarrow 50\%$.
- **Real-Life Example:** Half of all patients in a clinic received a wellness visit.
- **Fairness Example:** Probability shows who gets access to care and who does not.

Conditional Probability

- **Definition:** The chance of one event happening given that another has already occurred.
- **Math Example:** $P(\text{Visit} | A) = 300 / 500 = 0.60 \rightarrow 60\%$.
- **Real-Life Example:** 60% of patients in Group A had a checkup this year.
- **Fairness Example:** Comparing conditional probabilities helps us see whether care is equally accessible for each group.

Marginal Probability

- **Definition:** The overall probability of a single event, ignoring categories.

- **Math Example:** $P(\text{Visit}) = 750 / 1500 = 0.5$.
- **Real-Life Example:** Half of all surveyed people went to the doctor this year.
- **Fairness Example:** Looking only at the marginal rate can hide gaps between groups.

Joint Probability

- **Definition:** The chance that two events happen together.
- **Math Example:** $P(\text{Group A and Visit}) = 300 / 1500 = 0.20 \rightarrow 20\%$.
- **Real-Life Example:** 20% of all people in the dataset were from Group A who visited the clinic.
- **Fairness Example:** Joint probability helps show how different communities fit into overall health patterns.

Independence

- **Definition:** Two events are independent if one does not affect the probability of the other.
- **Math Example:** If $P(\text{Visit} | \text{Group}) = P(\text{Visit})$ for all groups, then events are independent.
- **Real-Life Example:** Health visit rates don't change based on group membership.
- **Fairness Example:** If events are not independent, it suggests systemic differences in access.

Two-Way Table

- **Definition:** A table that shows frequencies for two categories of data.
- **Math Example:** Rows = Groups; Columns = Visit vs No Visit.
- **Real-Life Example:** Clinic data tracking who attended a checkup by group.
- **Fairness Example:** Two-way tables help visually compare access across populations.

Relative Risk

- **Definition:** A ratio comparing one group's probability to another's.
- **Formula:** Relative Risk = (lower rate ÷ higher rate).
- **Math Example:** $0.40 \div 0.60 = 0.67 \rightarrow$ Group C is 67% as likely to visit as Group A.
- **Real-Life Example:** Shows how one group's chance of receiving care compares to another's.
- **Fairness Example:** Relative risk reveals disparities that need policy attention.

Gap (Percentage-Point Difference)

- **Definition:** The difference between two rates in percentage points.
- **Math Example:** $60\% - 40\% = 20$ points.
- **Real-Life Example:** Group C has a 20-point lower visit rate than Group A.
- **Fairness Example:** Every gap represents a barrier — closing it means more equity in care.

Complementary Events

- **Definition:** Two events that make up the whole set; their probabilities add to 1.
- **Math Example:** $P(\text{Visit}) + P(\text{No Visit}) = 1$.
- **Real-Life Example:** A patient either receives a checkup or does not.
- **Fairness Example:** Focusing on the “no-visit” side shows where support is most needed.

Intersection (n)

- **Definition:** Where two events happen together.
- **Math Example:** $P(A \cap \text{Visit}) = 0.20$.
- **Real-Life Example:** Patients who belong to Group A *and* had a checkup.

- **Fairness Example:** Identifying which communities are most served helps balance resources.

Union (U)

- **Definition:** When either one or both events occur.
- **Math Example:** $P(A \cup \text{Visit}) = P(A) + P(\text{Visit}) - P(A \cap \text{Visit})$.
- **Real-Life Example:** Anyone who is in Group A or who visited the clinic (or both).
- **Fairness Example:** Helps estimate the total reach of a health program across groups.

Interpretation

- **Definition:** Explaining what probabilities mean in real terms.
- **Math Example:** “Group C’s $P(\text{Visit} | C) = 0.40$ means only 4 of 10 people got checkups.”
- **Real-Life Example:** Turning numbers into stories of access and barriers.
- **Fairness Example:** Interpretation lets data speak for communities and guide solutions.

Summary of Math + Fairness Connections

Concept	Math Focus	Fairness Connection
Conditional Probability	$P(\text{event} \text{group})$	
Independence	Compare rates across groups	Equal rates = equal opportunity
Relative Risk	Ratio of probabilities	Measures strength of inequity
Gap Analysis	% difference between groups	Identifies barriers to care

Concept	Math Focus	Fairness Connection
Interpretation	Explain results in context	Turns math into advocacy for equity