Odds and Log Odds

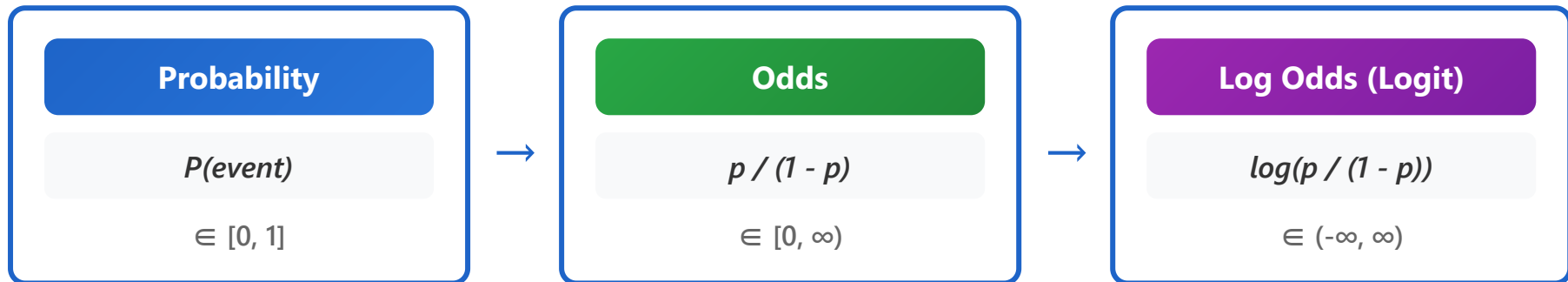| **Probability**		**Odds**		**Log Odds (Logit)**
$P(event)$	$\rightarrow$	$p / (1 - p)$	$\rightarrow$	$log(p / (1 - p))$
$\in [0, 1]$		$\in [0, \infty)$		$\in (-\infty, \infty)$

Key Insight:

Log odds can take any real value!

Linear model for log odds instead of probability

Example:

P = 0.8 → Odds = 4 → Log odds = 1.39

Bridge to Logistic Regression Formulation