No. Expected value is an average calculated across many possible outcomes; the most likely outcome is the one that has the greatest chance of happening on a single play. They answer different questions, and confusing them can make casino odds seem more predictable than they are.

Expected value is useful as a baseline for casino math. It helps describe the average financial result of repeating a wager under the same conditions. But it does not tell you what will happen next, what a typical short session will look like, or whether the average result is even an outcome the game can produce.

To see why, it helps to separate three ideas: expected value, probability, and the distribution of possible results. Together, they explain why a game can have a clear mathematical average while a player's actual session feels random.

Expected value: an average across possible outcomes

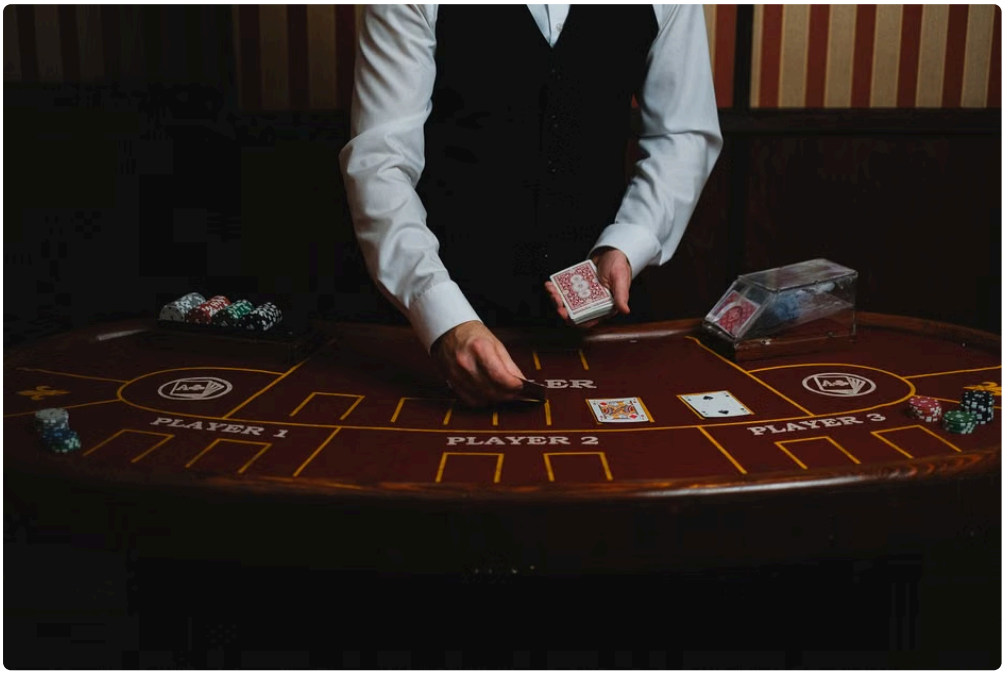
Expected value, often abbreviated as EV, is the probability-weighted average of all possible results. To calculate it, multiply each result by its probability, then add the products together.

For example, imagine a simple wager with two equally likely results: you win $10 or lose $10. Its expected value is:

EV = (50% × $10) + (50% × −$10) = $0

That does not mean the player will break even on the next wager. In fact, breaking even is not one of the two possible results. The player will either win $10 or lose $10. Zero is the average of those outcomes, not the most likely result—or even a result the wager can produce.

This is the core distinction in **expected value vs probability**. Probability describes how likely an outcome is. Expected value describes the average result implied by all outcomes and their probabilities.



Most likely outcome: what has the highest probability?

The most likely outcome is the single result with the largest probability. That result can be much more common than any other individual result without being close to the expected value.

Suppose a game pays $1 on 90% of plays and $20 on 10% of plays. The expected payout is:

EV = (90% × $1) + (10% × $20) = $2.90

The most likely payout is $1, not $2.90. In this example, $2.90 may not be an available prize at all. The average is pulled upward by the less frequent $20 payout.

That gap is not a mathematical error. It is a consequence of the distribution—the pattern of probabilities attached to the possible **quantifiedstrategies** results. A distribution with many small outcomes and a few large ones can have an average that most individual plays do not match.

RTP and house edge: two sides of the same calculation

Casino games often express expected results using return to player, or RTP, and house edge. RTP is the theoretical share of wagers returned to players over a very large number of plays. House edge is the casino's theoretical advantage, expressed as a percentage of the amount wagered.

Measure What it describes Typical relationship RTP The theoretical proportion of total wagers returned as prizes 100% − house edge House edge The theoretical proportion of wagers retained by the casino over time 100% − RTP

For a game with a 96% RTP, the corresponding house edge is 4%, assuming the figures use the same wager basis and there are no additional costs or adjustments. If a player makes $100 in total wagers, the theoretical average return is $96 and the theoretical average loss is $4.

That $4 is an average, not a prediction that a particular player will lose exactly $4. One player might finish ahead; another might lose more than $4; another might lose less. And the "$100 wagered" could mean one $100 bet or many smaller bets. The number of plays and the way prizes are distributed affect how actual results vary around the theoretical average.

A roulette example

Consider a $1 bet on red at American roulette, which has 18 red pockets and 20 non-red pockets: 18 black pockets and two green pockets. If red wins, the net result is +$1. If it does not, the net result is −$1.

EV = (18/38 × $1) + (20/38 × −$1) = −$2/38 ≈ −$0.0526

The expected loss is about 5.26 cents per $1 wagered. That corresponds to a house edge of about 5.26% and an RTP of about 94.74%. But neither 5.26 cents nor 94.74 cents is the result of a single $1 bet. The bet produces either a $1 net win or a $1 net loss. The expected value summarizes the long-run average across repeated bets.

Long-run average versus short-run result

Casino RTP and house edge are theoretical long-run measures. They do not promise that a game will return a particular percentage during one visit, one hour, or even a large-looking number of plays. The actual result over a limited sample can differ substantially from the expected result.

Consider the roulette example. The expected loss across 100 one-dollar bets is about $5.26. But the player does not steadily lose a nickel after every spin. Each spin produces a one-dollar win or loss. After 100 bets, the final result depends on how many times red appeared. A small difference between wins and losses can produce a session result far from the expected loss.

As the number of plays grows, the average result tends to move closer to the theoretical average, provided the game and wager conditions stay the same. This is a statistical tendency, not a deadline or guarantee. It does not mean a player who has lost will soon win, or that an unusually good run must be “paid back” by bad luck.

Each independent spin, card draw from a freshly shuffled deck, or random game event has its own probabilities. Previous results do not generally change the next result. A roulette wheel that has landed on black several times is not therefore due to land on red.

Why sessions feel random: variance and volatility

Expected value gives the average; variance describes how widely outcomes tend to spread around that average. Volatility is a commonly used, less formal term for how much results fluctuate. Two games can have the same RTP but very different distributions—and therefore very different session experiences.

For example, one game might return small prizes frequently, while another returns nothing on most plays but occasionally pays a large prize. If their theoretical RTPs match, their long-run average returns may be similar. Yet the second game is likely to feel more volatile: long losing stretches may be interrupted by infrequent, larger wins.

This is a distribution effect. RTP compresses a complicated set of possible outcomes into one average. It does not show how often prizes occur, how large they are, or how much a session might swing around that average. To understand those features, you need information about the game’s payout distribution, not just its RTP.

Average versus typical result

The phrase **average vs typical result** captures an important distinction. In a highly skewed distribution, the mean—or expected value—can be pulled upward by rare, large prizes. The median, by contrast, is the middle result: half of outcomes are at or below it and half are at or above it. The most common outcome, called the mode, is the result that occurs most often.

These measures can all differ. A slot game might have a theoretical average return that reflects occasional large jackpots, while most individual spins pay less than the wager. The expected value remains useful for comparing the mathematical average, but it is not a promise about the typical spin or session.

Even the median is not a complete picture. It does not reveal the range of possible losses, how rare the largest prizes are, or the chance of reaching a particular result within a chosen number of plays. Those questions require looking at more of the distribution.

What expected value can—and cannot—tell you

Expected value is valuable because it provides a consistent way to compare wagers and understand the basic mathematical advantage. But it is only one part of the picture.



- **It can describe** the theoretical average net result per wager under specified rules and conditions.
- **It can help compare** games or bet choices when the assumptions and wager amounts are stated clearly.
- **It cannot predict** the outcome of the next spin, hand, or round.
- **It does not show by itself** how frequent wins are, how large they tend to be, or how volatile results may feel.
- **It does not make** a negative-expectation wager safe or profitable over a short session.

When reading an RTP figure, also check what it applies to. Game rules, bet choices, bonus features, and promotional terms can change the relevant calculation. In regulated gambling markets, disclosures are intended to help explain game mechanics and theoretical returns, but an RTP figure should still be read as a long-run theoretical statistic—not as a personal forecast.

A practical way to read casino numbers

When you encounter an odds or payout claim, use this sequence to avoid mixing up averages and likely outcomes:

1. **Identify the measure.** Is the number a probability, an RTP, a house edge, or an expected net result?
2. **Check the basis.** Does it refer to each wager, total money wagered, or the return including the original stake?
3. **List the possible outcomes.** A game's average can hide a wide range of wins and losses.
4. **Ask about the distribution.** Are results frequent and modest, or rare and large?
5. **Keep the time horizon in mind.** Long-run averages do not predict the result of a short session.

The bottom line

Expected value is not the same as the most likely outcome. It is a probability-weighted average across all possible outcomes. The most likely outcome is simply the one with the highest chance of occurring on a particular play.

RTP and house edge express expected results over the long run, while variance and volatility help explain why real sessions can swing far from those averages. When considering **expected value vs probability**, or the difference between an **average vs typical result**, remember that the distribution matters. A theoretical average is a useful baseline for casino math—but it is not a forecast of what any individual player will see next.