A good one-sentence definition of house edge is: *House edge is the casino's theoretical average advantage on each amount wagered, expressed as the share of that amount players are expected to lose over the long run.*

That sentence captures the central idea, but each part matters. "Theoretical average" does not predict what will happen in your next session. "Each amount wagered" is not necessarily the same as the money you bring to the casino. And "over the long run" describes a statistical tendency, not a promise that the casino will win every hand or every night.

House edge is one of the most useful concepts in casino math because it gives players a common way to describe the expected cost of a game. It is also easy to misread. The figure is not a forecast of your personal loss, a measure of how lucky you will be, or a guarantee of the casino's profit on a particular bet. It is a probability-based average calculated from the rules and payouts.

Start With Expected Value

The foundation of a sound house edge definition is **expected value** (EV). Expected value is the average result you would get if the same wager were repeated many times under the same conditions. To calculate it, list the possible outcomes, multiply each outcome's net result by its probability, and add those amounts together.

For example, imagine a simple game in which a $1 wager has two possible outcomes: you win $1 with probability 48%, or lose your $1 with probability 52%. The expected net result is:

(0.48 × $1) + (0.52 × −$1) = −$0.04

The expected loss is four cents per $1 wagered. That corresponds to a 4% house edge. It does not mean a player will lose exactly four cents on every spin, hand, or turn. A single result is either a win or a loss. The four-cent figure is an average across many repetitions of the same wager.

This distinction is why expected value is the baseline for casino math. It lets you compare the built-in economics of different bets without pretending to know which outcome will happen next. If a wager has a negative expected value for the player, repeating it does not make the wager profitable on average. It makes the average easier to estimate.

House Edge and RTP: Related, but Not Mathematical Inverses

For a game or wager with a stated return to player (RTP), house edge and RTP are usually complements: **house edge = 100% − RTP**, when both figures use the same basis and cover the same game conditions.

Measure What it describes Example RTP The share of total stakes expected to be returned to players as winnings over time 96% House edge The share of total stakes the game is expected to retain over time 4%

In everyday search terms, people sometimes call house edge the "inverse of RTP." That phrase is understandable if "inverse" means "the other side of the picture," but it is not mathematically precise. The house edge is generally the **complement** of RTP, not its reciprocal. If RTP is 96%, the house edge is 4%; it is not 1 divided by 96%.

RTP is also not the percentage of a player's original deposit that will come back. It is typically calculated against the total amount wagered. A player may wager the same $10 repeatedly after wins or losses, generating more than $10 in total stakes. The RTP figure applies to those stakes, not necessarily to the starting bankroll.

What "Expected Casino Margin" Means

House edge can be read as an **expected casino margin** on wagers, subject to the game's rules and the definition used for the calculation. If a game has a 4% house edge, then over a sufficiently large volume of comparable wagers, the theoretical average is about $4 retained for every $100 staked.

That does not mean the casino takes exactly $4 from every $100 a particular customer brings in. A customer might lose $100, win $200, or leave close to even. The casino's actual result can also vary across tables, machines, players, and time periods. House edge describes the built-in expectation of the wager; actual revenue is what happens in practice.

Nor should the figure be confused with profit. Operating costs, taxes, marketing, staffing, and other expenses affect a business's profit. The house edge is a feature of the game's probabilities and payouts, not a complete measure of the casino's financial performance.

A Simple Example: European Roulette

On a standard European roulette wheel, there are 37 pockets: numbers 1 through 36 and a single zero. A straight-up bet on one number pays 35 to 1. If you stake $1, you receive $35 in winnings if your number hits, risk tolerance gambling along with the returned $1 stake; otherwise, you lose the $1.

The chance of winning is 1 in 37, while the chance of losing is 36 in 37. The expected net result is:

(1/37 × $35) + (36/37 × −$1) = −$1/37



That is an expected loss of about 2.70 cents per $1 wagered, or a house edge of about 2.70% on that bet. The same basic edge applies to many standard roulette bets because the payout structure is set against the 37 possible pockets. Different roulette variants, such as American roulette with an extra double-zero pocket, have different probabilities and therefore a different house edge.

Notice what the calculation does not say. It does not say that a player will lose 2.70 cents on each $1 spin. On any one spin, the player either wins a large amount or loses the stake. The edge appears in the average across many spins.

Long-Run Averages Are Not Short-Run Predictions

"Over the long run" is important, but it is often used too casually. It does not mean that a player's results must gradually move toward the theoretical average in a predictable way. There is no rule requiring a game to repay a

player after a losing streak, or to stop paying after a win.

Instead, as the number of comparable wagers grows, the average result tends to become more stable relative to the total amount wagered. A tiny sample can be dominated by a few unusual outcomes. A much larger sample generally gives the game's underlying probabilities more opportunity to show through. But even then, the actual result can differ from the expectation.

That is why an advertised RTP should not be treated as a personal session forecast. A 96% RTP does not mean that a player who wagers $100 is certain to get $96 back. It means that, under the relevant game rules and assumptions, the game is designed to return an average of about $96 for every $100 wagered across a very large number of plays.

Why Sessions Feel Random: Variance and Volatility

House edge describes the average advantage, but it does not tell you how bumpy the ride will be. That is where **variance** and **volatility** come in. They describe how widely results can swing around their expected value.

A low-volatility game may produce frequent small wins and losses. A high-volatility game may produce longer stretches without a meaningful win, interrupted by a less frequent, larger payout. Two games can have similar RTPs or house edges while feeling completely different because their payout patterns differ.

For example, consider two games that each return 96% on average. One might pay small amounts often; another might pay little for many rounds and occasionally award a large prize. Their expected returns can be similar, but a short session on the second game may be much more volatile. The player's outcome over that session could sit far above or far below the average.

Volatility does not change the underlying house edge by itself. It changes the spread of possible short-term outcomes. A high-volatility game is not automatically worse value, and a low-volatility game is not automatically better value. To compare the average cost, examine the house edge or RTP; to understand how results may fluctuate, look at the payout structure and volatility information, where available.

What a House Edge Figure Can—and Cannot—Tell You

A house edge figure is useful when it is based on the exact game, wager, and rules you are considering. It can help you compare bets, understand the average cost of play, and see why different versions of a game may have different returns.

Before relying on a figure, check what it applies to. A game may offer different rule sets, pay tables, or bonus features. A house edge quoted for one strategy may assume that players make particular decisions. Side bets often have their own odds and can have a different edge from the main game. A promotional offer may affect the effective cost of play, but its terms and wagering requirements need to be considered separately.

Keep these points in mind:

- **The edge is a percentage of wagering, not necessarily of your deposit or bankroll.**
- **It describes an average, not a guaranteed result for an individual session.**
- **Different bets within the same game can have different expected values.**
- **Volatility affects how widely results swing, not the definition of house edge.**
- **A lower house edge means a lower theoretical average cost, not a promise of a win.**

A Practical Way to Read the Numbers

When you see an RTP or house edge, translate it into a simple statement about total stakes. If RTP is 97%, the corresponding house edge is 3%, assuming the figures refer to the same conditions. In theoretical terms, that is about $3 of expected loss per $100 wagered over a large volume of play. It is not a prediction that you will personally lose $3 after wagering $100.

Then ask a second question: how variable are the possible outcomes? A low edge can coexist with high volatility, and a modest edge can coexist with frequent small payouts. The percentage tells you about the average; the game's payout pattern tells you more about the range of short-term experiences.

Finally, treat the number as information, not as a strategy for overcoming the odds. Understanding expected value can help you make clearer comparisons and set realistic expectations. It cannot identify a guaranteed winning sequence, eliminate randomness, or make independent outcomes "due" to change.

The Short Version

The best concise house edge definition is that it is the casino's theoretical average advantage, measured as a share of the amount wagered. For a given game and consistent calculation basis, it is generally 100% minus RTP—not the mathematical reciprocal of RTP. It expresses expected casino margin across many wagers, while variance and volatility explain why an individual player's results can look very different in the short run.



That is the key distinction: **house edge tells you about the average built into the game; it does not tell you what your next session will do.**