

STANDARD DEVIATION IN NORMAL DISTRIBUTIONS FOR PROPERTY INVESTMENTS

1. Quantifies the dispersion (volatility) of returns

Standard deviation measures how widely the actual returns of a property investment are spread around the expected (mean) return.

- A higher standard deviation = greater uncertainty / higher risk.
- A lower standard deviation = more predictable returns / lower risk.

2. Provides a single, comparable risk metric

It converts the variability of historical or forecast returns into one number that can be compared across:

- Different properties
- Different property sectors (retail, office, industrial, residential)
- Property versus other asset classes (equities, bonds, etc.)

3. Relies on the properties of the Normal Distribution

When returns are assumed to be (approximately) normally distributed:

- About 68% of outcomes fall within ± 1 standard deviation of the mean
- About 95% fall within ± 2 standard deviations
- About 99.7% fall within ± 3 standard deviations

This allows investors to make probabilistic statements about the range of possible returns and the likelihood of extreme losses or gains.

4. Supports risk-adjusted performance analysis

Standard deviation is the denominator (or a key input) in widely used risk-adjusted measures such as:

- Sharpe Ratio
 - Coefficient of Variation
- These help answer: “Am I being adequately compensated for the risk I am taking?”

5. Facilitates portfolio construction and diversification analysis

In modern portfolio theory applied to property:

- Standard deviation of individual assets and the covariance/correlation between them determine the overall portfolio risk.
- It helps identify the risk-reduction benefits of combining properties or mixing property with other assets.

6. Practical decision-making tool

Investors and analysts use it to:

- Set risk budgets or tolerance levels
- Compare the relative riskiness of different investment strategies
- Stress-test expected returns under different volatility assumptions
- Communicate risk in a statistically grounded way to clients, investment committees or lenders

In short:

Standard deviation turns the abstract idea of “risk” into a measurable, comparable and probabilistically interpretable figure, which is especially useful when property returns are modelled as following (or approximating) a normal distribution.