MMM STRATEGY

Sunday, July 20, 2025 6:21 PM

MMM Strategy: A Statistical Framework for Trading Precision

The **MMM Strategy** (Mean, Median, Mode) is a quantitative trading framework designed to decode price behavior using foundational statistical metrics. It combines probabilistic modeling, volatility assessment, and trend validation to identify high-probability trade setups, key support/resistance levels, and risk-adjusted trade entries.

🔍 Core Pillars of the MMM Strategy

1. Mean

The **mean** is the average price and serves as the primary "fair value" benchmark.

- **Mean High-Low (Mean HL)** = (High + Low) / 2
  - Defines the middle of a trading range—useful for mean-reversion entries/exits.
- **Mean Moving Average (Mean MA)** = SMA of price (e.g., close) over lenMA
  - Represents dynamic fair value and trend direction.
  - Rising Mean MA → Bullish trend; Falling Mean MA → Bearish trend.

2. Median

The **median** is the middle value in a sorted price series.

- **Why it matters**:
  - Immune to price spikes/outliers.
  - Serves as a stable "fair price."
- **Application**:
  - Use as a conservative take-profit zone.
  - Median reversion is common in choppy/volatile markets.

3. Mode

The **mode** is the most frequently occurring price over a look-back period.

- **Purpose**:
  - Acts like a **magnet**: price is statistically likely to revisit the mode.

- Highlights hidden support/resistance zones ignored by traditional indicators.
- **Why it works**:
  - Represents the price where market participants transact most frequently.
  - Pure frequency-based, independent of volume.

📈 Supporting Analytics

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Standard Deviation (SD)
– Volatility Gauge

- Measures average deviation from the mean.
- Used to define upper/lower boundaries (±1σ, ±2σ).
- Outlier flags are triggered when price breaches ±2σ.

σ-Range	Probability	Trading Use Case
±1σ	~68%	Normal price activity
±2σ	~95%	High stretch zone / outlier zone
±3σ	~99.7%	Extremely rare; fade or reverse

Smaller SD = tighter market, large SD = increased volatility.

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Trend + Volume Bias

- **Trend** is derived from Mean MA slope:
  - If Mean MA > Mean MA[1], trend = ↑ Up
  - If Mean MA < Mean MA[1], trend = ↓ Down
- **Volume Bias**:
  - Bullish bias if up-volume > down-volume over the look-back.
  - Used as a confirmation filter for entry alignment.

🧠 Probability Forecasts

Each key level (Mean, Median, Mode, ±SD) is assigned:

- **Forecast Price** – predicted future movement
- **Rank %** – relative likelihood (0-100%)
- **Abs %** – absolute hit-probability using a modified z-score
- **Success %** – cumulative probability that price will hit the target before stop-loss, based on your defined entry.

Probability → Readouts

Metric	What it Shows	How to Use
Prob → Mode	Likelihood of price reverting to	High % → strong reversion pull

	Mode	
Prob → Median	Probability of returning to Median	Good for target setting
Prob → Up σ	Chance of reaching upper volatility edge	Entry + confirmation of breakout trade
Prob → Lo σ	Chance of falling to lower band	Validates bearish momentum trades

These are recalculated in real-time and update each bar.

 The Ladder System (Top 10 Probable Levels)

- A dynamic probability ladder ranks the 10 next most statistically likely price levels.
- Each level is assigned a rank based on:
  - Trend alignment
  - Volume bias
  - Distance from current price (damped)
  - Probability of being touched (z-score based)

This forms the backbone of the success forecast engine.

Strategy Inputs Explained

Input	Description
High/Low Look-back	Period used to calculate Mean HL, Mode bounds
MEAN-MA Look-back	Period for calculating Mean MA and SD
Mode Bins	Number of buckets in histogram for determining Mode
Std-Dev Multiplier	Scales the ±SD bands (commonly 2x for 95% probability coverage)
Hit-probability Horizon	Number of future bars to estimate how likely price touches levels
Price Basis	Choose price series used for all calculations (Close or HL2)
Market Type	Adjusts tick/price increments (Stocks or Futures)
Price Increment	Defines the granularity of levels in the forecast model
Manual Entry / Stop / Profit	User-defined overrides for suggested levels

📌 Strategy Logic & Use Cases

✅ Ideal Use Cases:

1. **Mean-Reversion**:
   - Enter at ±2σ or near Mode
   - Exit at Mean/Median
   - Use Prob → Mode or Median as confirmation
2. **Breakout Trades**:
   - Confirm breakout when price pushes ±2σ with volume/trend
   - Use Prob → ±σ and ladder alignment
3. **Volatility-Based Positioning**:
   - High SD → wider stops/targets
   - Low SD → tighten ranges
4. **Manual Mode (Advanced)**:
   - Override entry, stop, and target to test risk-reward scenarios
   - Realtime forecast (Success %) updates accordingly

🧭 Trade Setup Flow (Visual/Manual Logic)

step	Action	Tip
1	Observe trend + volume bias	Must align for conviction
2	Check if price is an outlier (±2σ breach)	Enter only if fading or following a breakout
3	Note Prob → levels	Highest % = most likely destination
4	Scan ladder table	Visually spot optimal price targets
5	Set Entry, Stop, and Profit	Use manual inputs or suggested levels
6	Use Success % to validate trade setup	>70% = high-probability scenario