**Results Report — Scenario Comparison & Sensitivity**

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**Executive Summary (decision-oriented)**

* Best risk-adjusted performance: alt\_outlier (Sharpe 0.61, Return 13.5%, Vol 19.0%) — higher upside with a modest volatility increase.
* Safest/stablest: baseline (Sharpe 0.56, Return 12.0%, lowest Vol 18.0%).
* Avoid switching to mean imputation: alt\_impute underperforms (Sharpe 0.49, Return 11.0%, Vol 18.5%).

**Figure 1 — Risk vs Return by Scenario**

**A graph with numbers and points

Description automatically generated**

Scatter of Return (y-axis) vs Volatility (x-axis) for each scenario

**What the plot shows:**

* alt\_outlier sits higher and slightly right (higher return, slightly higher risk).
* baseline is lower risk with mid-level return.
* alt\_impute is lower return without any risk advantage vs baseline.

**Key insight for stakeholders:**   
If you can tolerate a small increase in volatility, alt\_outlier offers the best upside; otherwise, baseline provides a smoother ride with competitive returns.

**Assumptions / limitations.**

* Single-period summary; add confidence intervals (e.g., bootstrap over time) for error bars on return/vol.

**Figure 2 — Scenario Impact on Sharpe**

**A graph with blue rectangles

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**Assumptions / limitations.**

* Point estimates without CI

**Figure 3 — Metric A Over Time by Category**

**A graph with a line

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Line (with markers) of MetricA across Date for each Category.

**What the plot shows:**

* With more observations per category, trends/seasonality would be clearer.

**Assumptions / limitations.**

* This sample is sparse (few dates); treat as illustrative until more data accrue

**Sensitivity Analysis**

| **Scenario** | **Return** | **Volatility** | **Sharpe** | **ΔReturn** | **ΔVol** | **ΔSharpe** |
| --- | --- | --- | --- | --- | --- | --- |
| baseline | 0.120 | 0.180 | 0.56 | — | — | — |
| alt\_impute | 0.110 | 0.185 | 0.49 | −0.010 | +0.005 | −0.07 |
| alt\_outlier | 0.135 | 0.190 | 0.61 | +0.015 | +0.010 | +0.05 |

**Interpretation.**

* Outlier rule (3σ): best trade-off — higher return and higher Sharpe with a small risk increase.
* Mean imputation: strictly worse than baseline here — lower return and Sharpe with no risk benefit.

**Decision Implications — “What this means for you”**

* Growth-oriented: Adopt alt\_outlier (Sharpe +0.05, Return +1.5 pts) with guardrails: risk caps, adaptive threshold, drawdown alerts.
* Stability-first: Keep baseline (lowest volatility) and pilot the outlier rule on a small slice before broad rollout.
* **Next steps:** Add uncertainty bands (95% CIs), expand time coverage, and track weekly **Sharpe / vol / drawdown** by **Category** to catch drift early.