**Percentage Revenue Increase Calculation**

Known details:

* **Actual Revenue (baseline):** $450,852
* **Optimized Revenue (model):** $490,735

**Step 1: Calculate the Increase**

Increase = 490,735 - 450,852

Increase = 39,883

**Step 2: Calculate the Percentage Increase**

Percentage Increase = (39,883/ 450,852) \* 100 ≃ 8.85%

**Answer:** The percentage revenue increase is approximately 8.85%.

**Why this percentage may be deceptive**

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| Reason | Explanation |
| No consideration of demand variability or customer behavior | The optimized revenue assumes a stable or predictable demand. However, in reality, customers may react negatively to higher prices, leading them to switch to competitors. This assumption is therefore unrealistic. |
| Model assumptions may not reflect reality | The model may assume ideal market conditions or neglect to consider weather-related factors, local events, or supply constraints. This assumption could prove to be erroneous and potentially lead to adverse outcomes. |
| Does not account for implementation costs | Implementing the optimized pricing strategy will incur operational costs, including system upgrades, price tag replacement, and staff training. This oversight is mostly due to over-optimistic thinking. |
| Selection bias or overfitting | The model may exhibit satisfactory performance on historical data but may fail to generalize effectively to future data, exemplifying a classic instance of overfitting. |
| Comparison is hypothetical | The optimized outcome is a simulation, not a tangible result. The business cannot guarantee achieving an additional 8.85% in a real-world scenario. |