Data-Driven Inventory Distribution

An Analytical Solution for Proportional Stock Allocation

The Business Challenge

1,500 Units

of a Key Product to Distribute

The task was to allocate a new shipment of 1,500 shirts proportionally across all regions based on past sales demand and current stock levels.

The Data Problem: Inconsistent & Messy Data

The two main data sources—stock levels and shipment history—used different naming conventions for the same locations, making a direct comparison impossible.

Example Inconsistency:
Stock Sheet Cluster: `"Москва, МО и Дальние регионы"`
Shipment Sheet Cluster: `"Москва"`

My Solution: A 4-Step Analytical Process

I developed and documented a logical, step-by-step process to clean the data, calculate true demand, and create a fair and accurate distribution plan.

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1. Clean & Standardize

First, I cleaned and standardized the 'Cluster' and 'Warehouse' columns in the raw data to create consistent location names across all datasets.

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2. Calculate Demand

Next, I calculated each city's 'Demand Share' by analyzing its proportion of total sales over the previous 3 months.

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3. Determine Need

I translated the demand share into an 'Expected Need' for each city by multiplying it against the total available stock.

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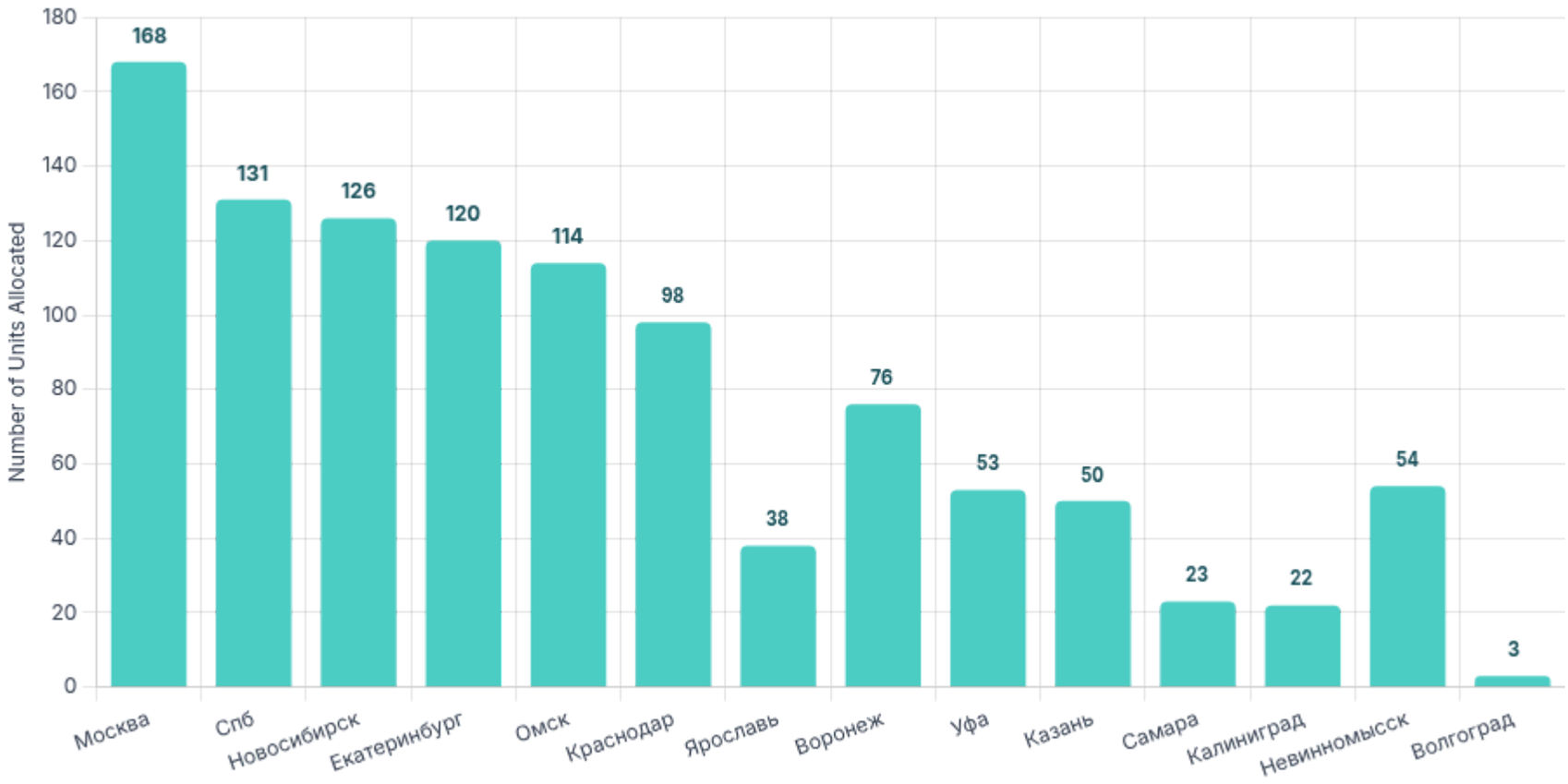
4. Final Distribution

Finally, I implemented a rounding correction algorithm to distribute the 1,500 units, ensuring the final allocation exactly matched the available stock.

The Result: A Data-Driven Distribution Plan

The analysis resulted in a clear, fair, and mathematically sound distribution plan that allocates the new inventory to the cities with the highest demonstrated demand.



This project demonstrates a complete analytical workflow, from handling messy real-world data to delivering a precise, actionable, and documented business solution.