# Double Trouble: Inventory Splits and Tax Consolidation

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# Background to the "Sudden-death" problem

**Background**

- The medical device company has registered its subsidiary companies into new consolidated entities for tax savings
- As a result, new licenses need to be obtained for all SKUs
- In certain "restricted markets," when licenses are approved, all existing inventory with old licenses becomes obsolete.

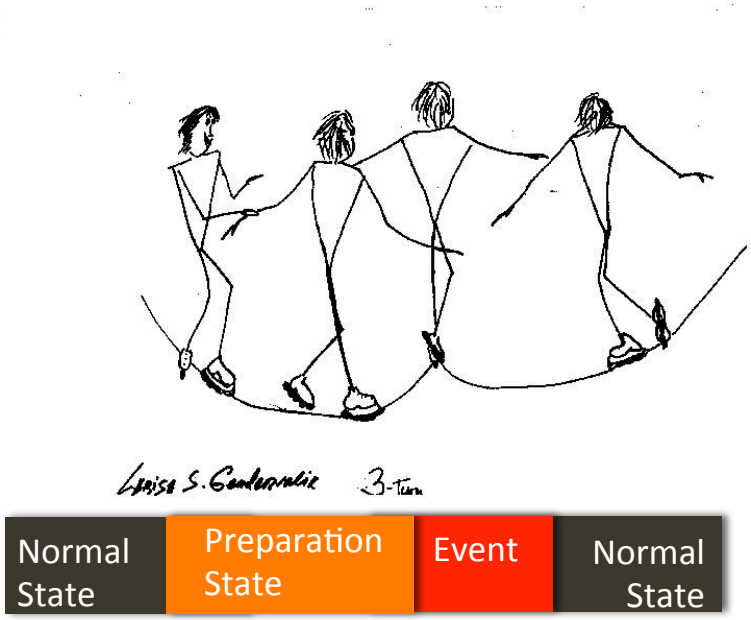
# As a result a new inventory policy is needed in order to avoid:

- Exceeding the time limit for tax compliancy
- Service interruptions triggered by sudden-death
- Cascading inventory costs and over-capacitated production

# Risk Planning for a Zero-Sum Outcome:

## A Wrinkle in the Normal Paradigm

- Recourse demands a well-executed "scientific" procedure for an organization not "trained" for such procedure
- Analogy to "turning on a dime," when one is used to moving straight



# Method

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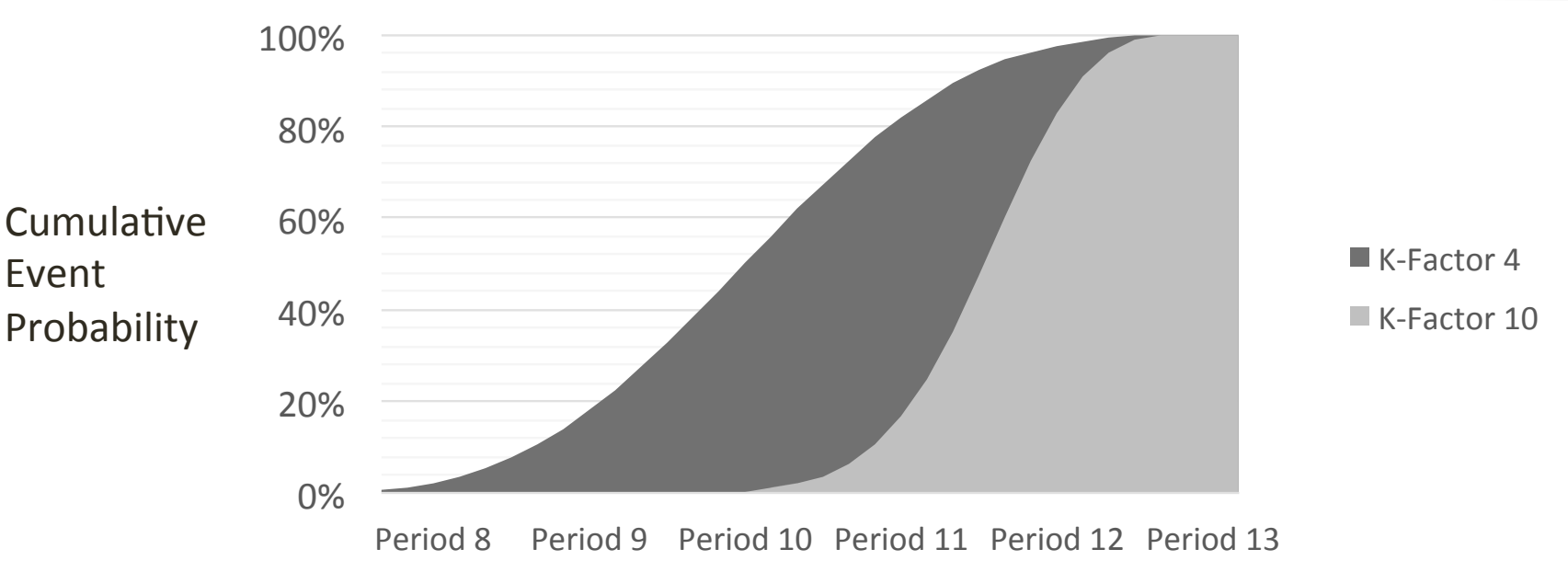
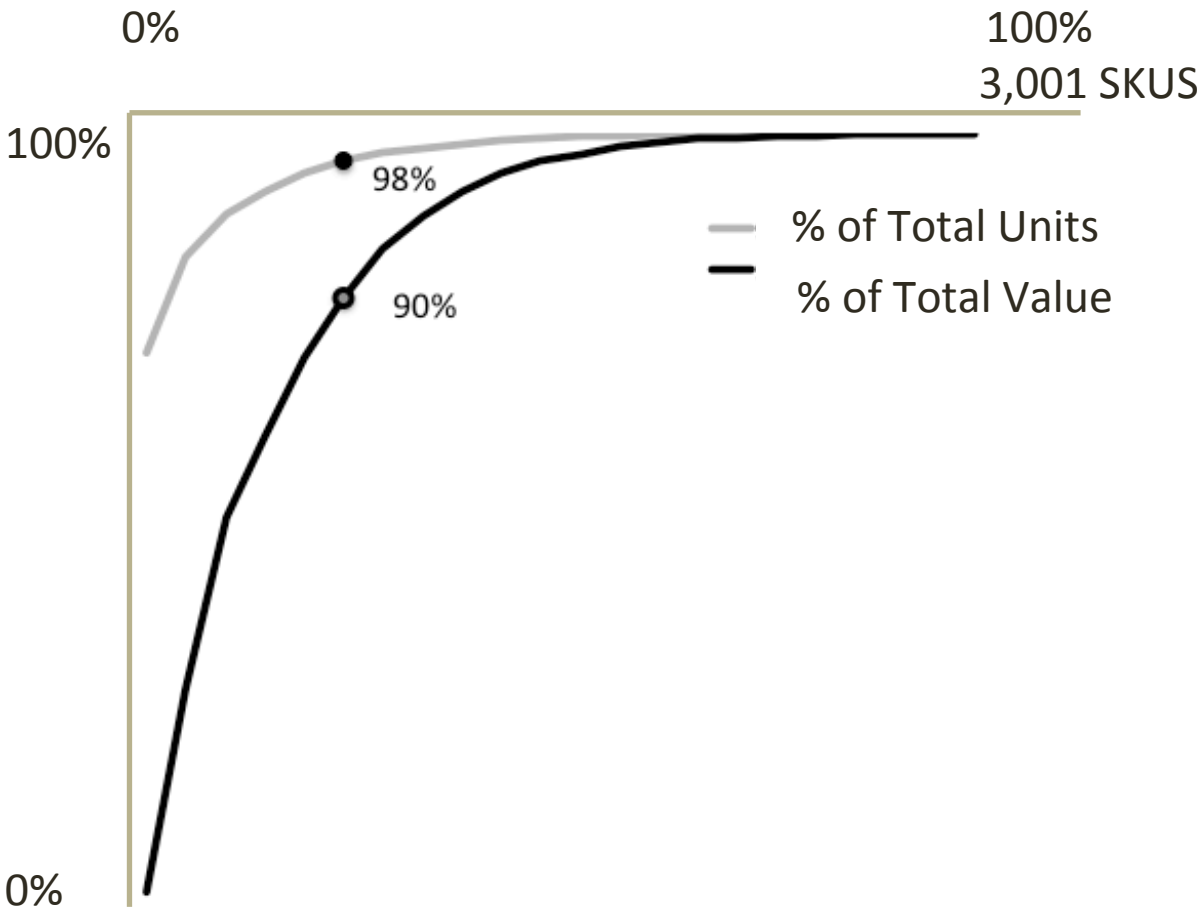
# Probability Model: Sudden-death cumulative probability distribution

- Based on minimum, maximum, and mode estimates
- Beta distribution better replicates realistic conditions
- Variance can be adjusted by altering “K-factor”

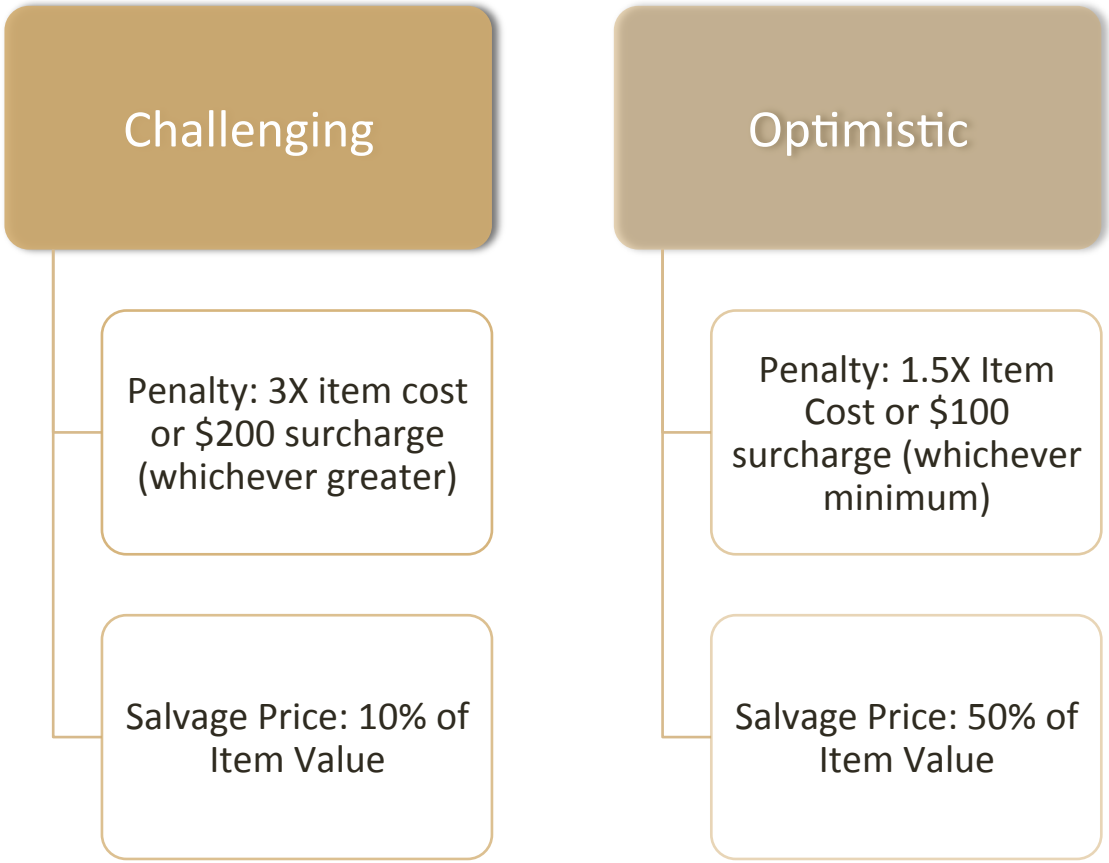


# SKU Segmentation

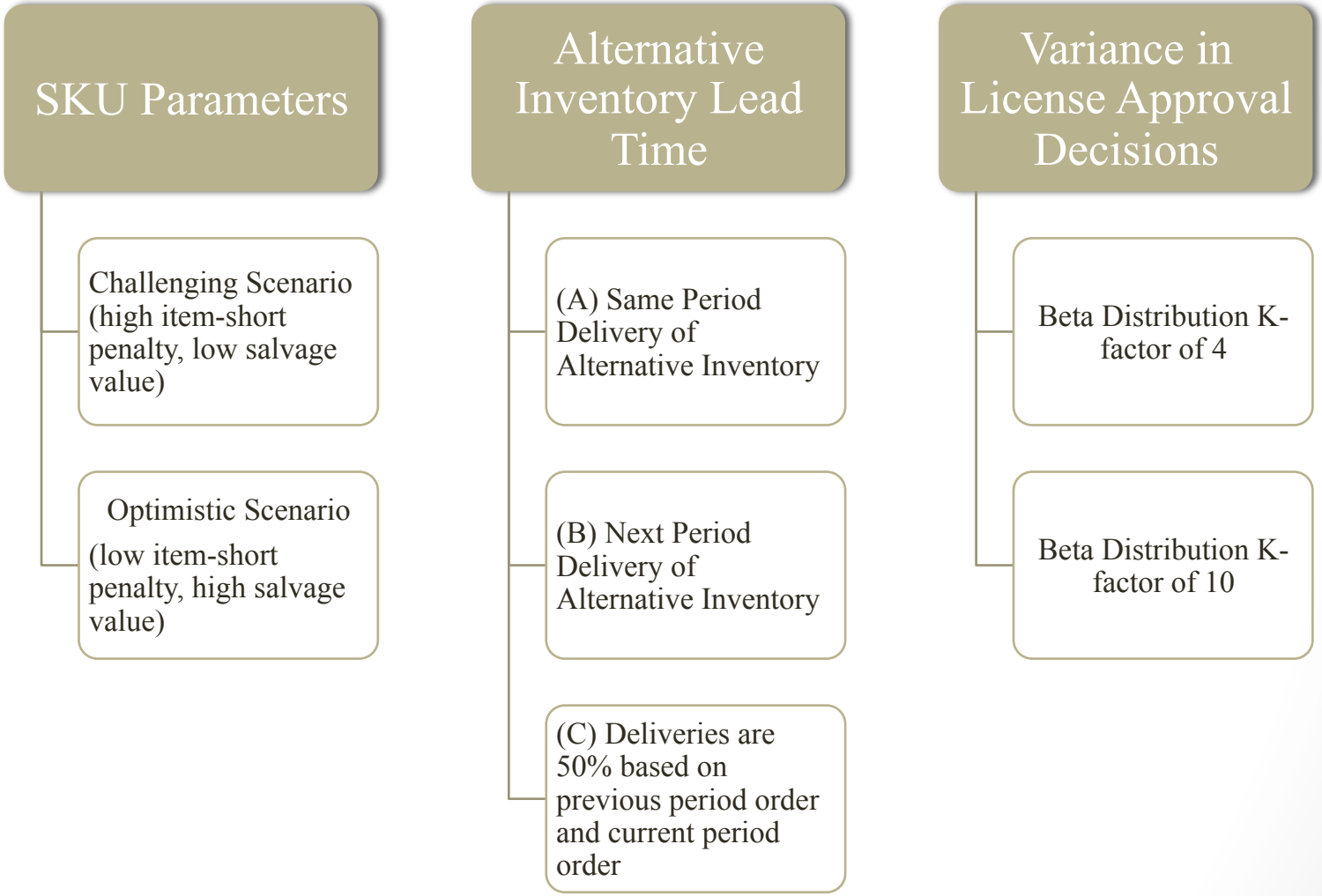
## Cumulative Value of SKUs in Scope: (Top 600 out of 3000 SKUs)



# Operating Context Scenarios



# Simulation Test-Factors (12 iterations per SKU)



# Results

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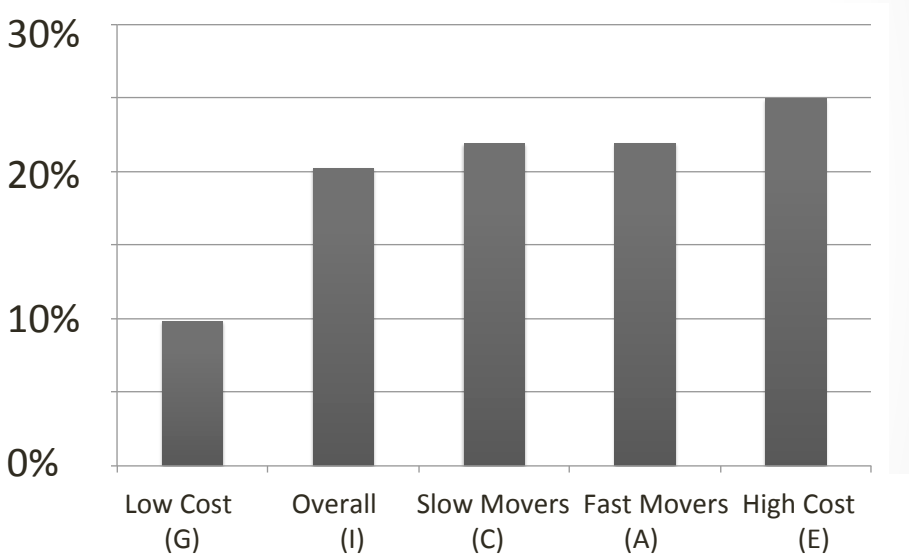
# Benefits for Planning for Bulk System Optimization Versus Individual SKUs

- Overall for individual SKUs estimated cost improvement of >60% , aggregates>20%
- Additional significant increase possible through adjustment of penalty cost (>50% gain)
- Only modest gains in improved lead-time **BUT** major changes in inventory ramp-up required by a switch in the parameter

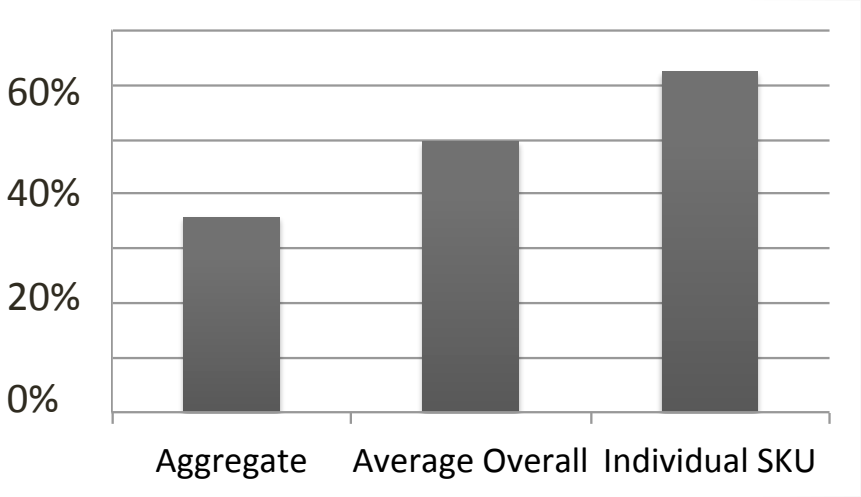



% Increase in profit after optimization compared to normal policy (aggregate SKUs)

# Island of Profit One: Improving the Probabilistic Model

- Increasing K-factor to 10

results in narrow event probability range, and vastly increases potential performance

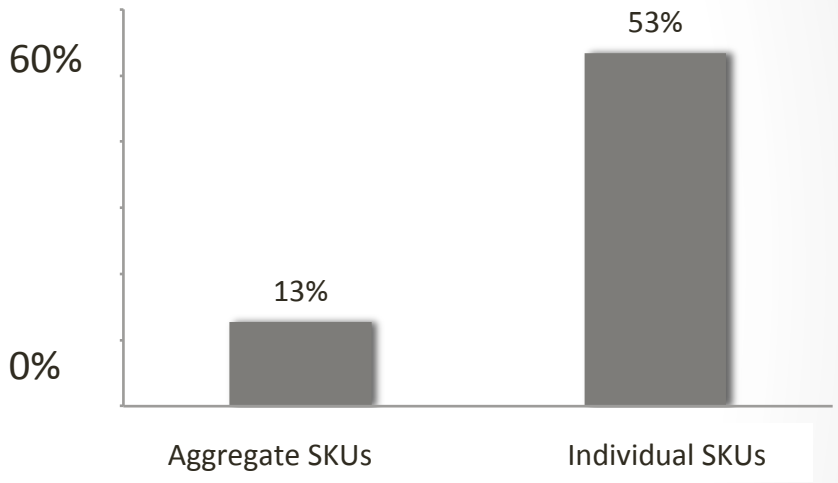



Cost improvement with greater probability certainty (***ADDITIONAL** % after optimization run)*

Results

# Island of Profit Two: Improving Alternative Distribution Plan and Parameters

- Changes in alternative inventory cost and salvage price had a far greater impact on individual SKU optimizations




(***ADDITIONAL*** *% of value saved after optimization run for optimistic versus challenging scenarios )*

Results

# Island of Risk : Different lead-time conditions result in similar cost results after optimization

- Profit stayed within a close limit of 20-21% over business-as-normal policies

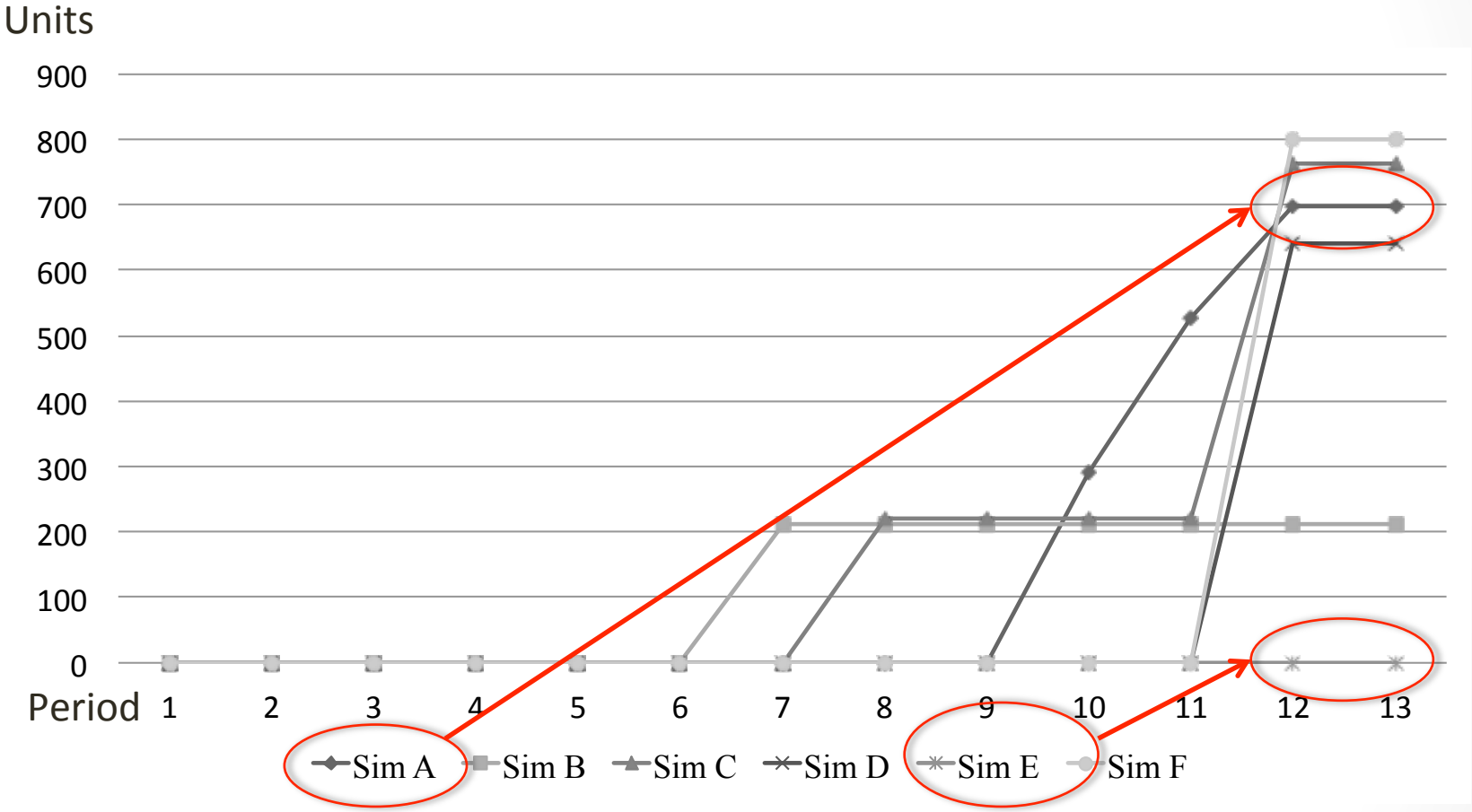

% change of value from normal policy when using different alternative lead-time conditions

Results



# **But** start of inventory ramp-up dramatically impacted by lead-time conditions ("what a difference a month makes"):

## Fast-mover aggregate SKU A simulation runs

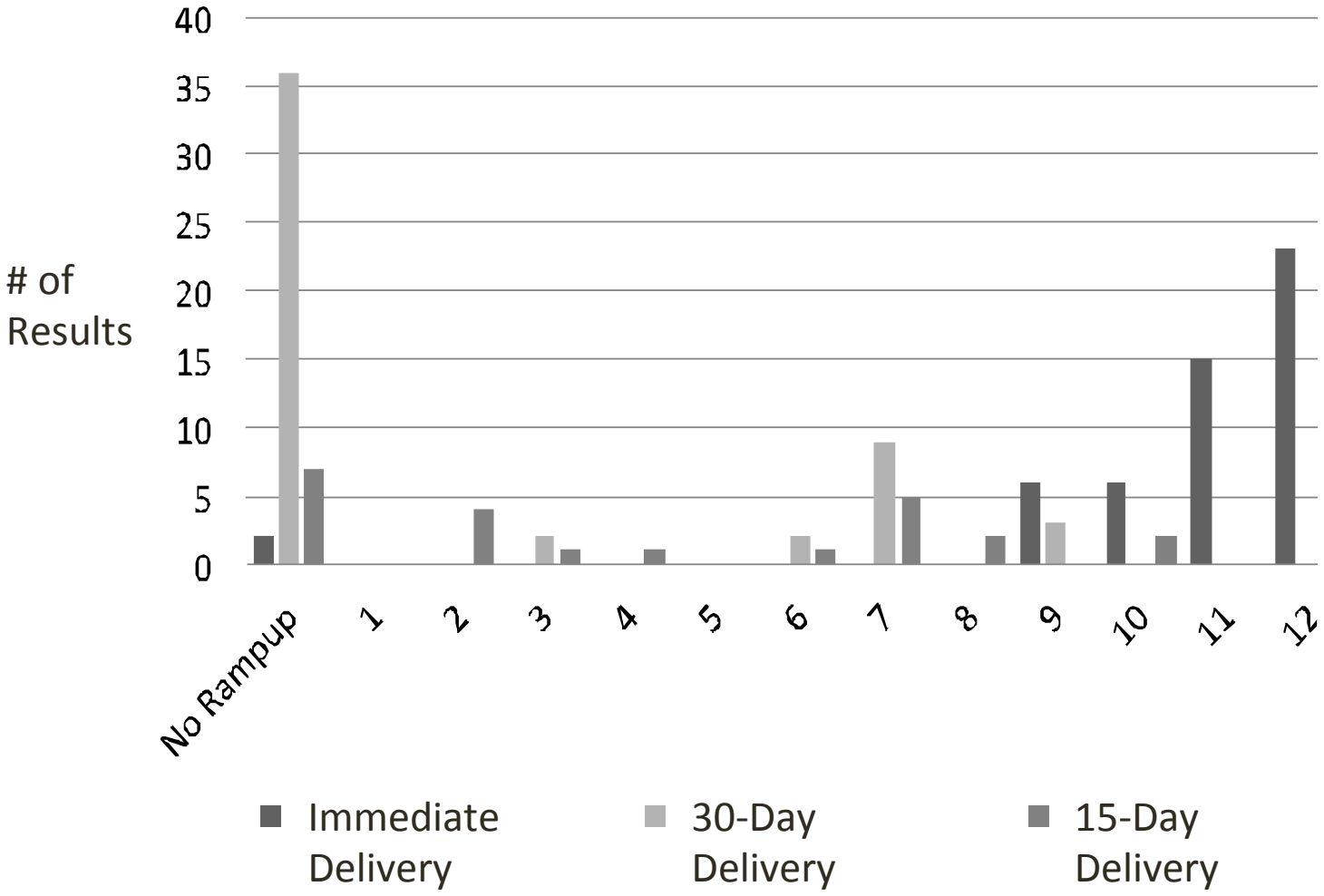



Major ramp-up when lead-time is same-period

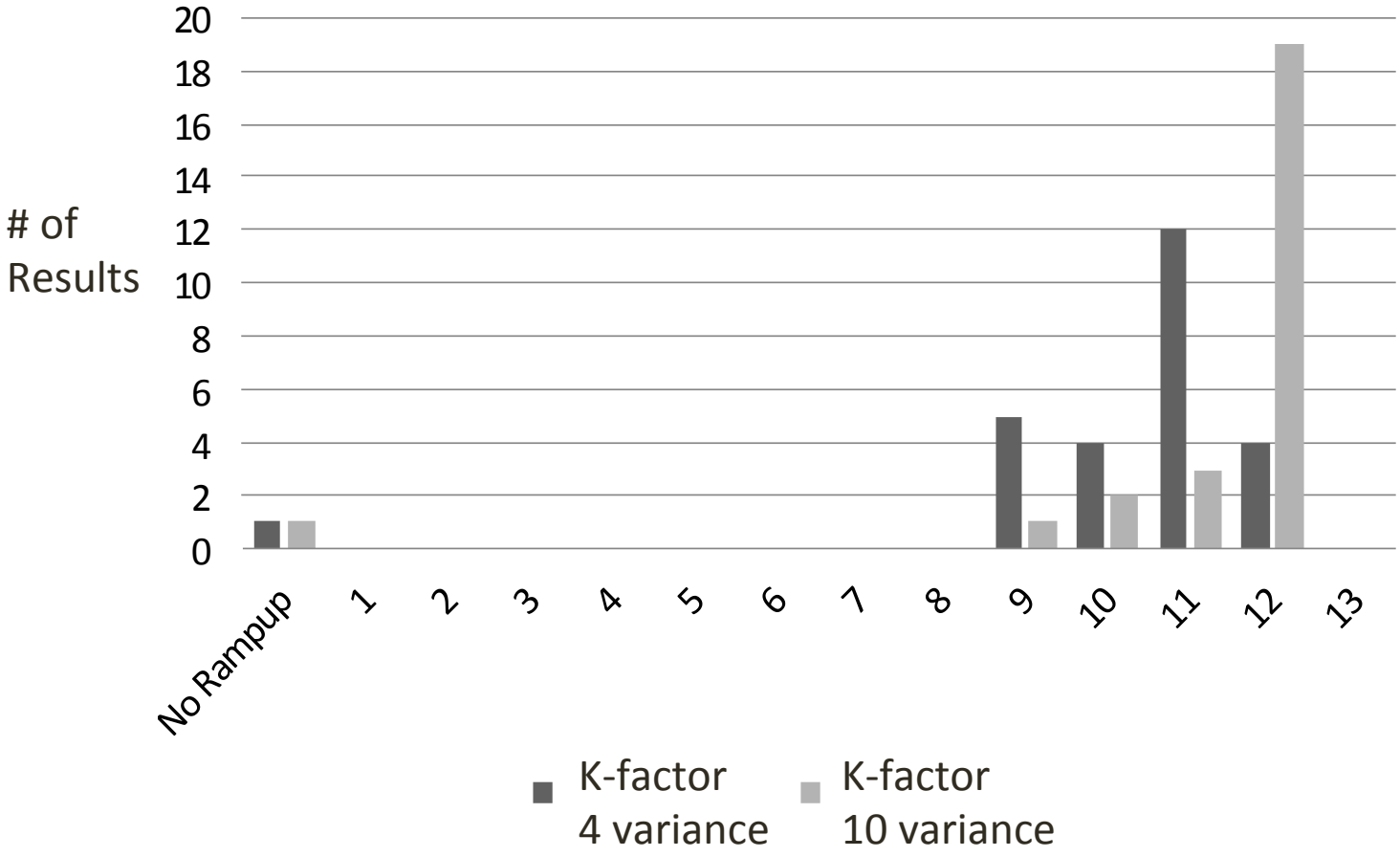
No ramp-up justified with lead-time delay of one-month

Results

# Impact of lead-conditions on initial period ramp-up results in very different ramp-up strategies across the board.



# Start of Inventory ramp-up also dramatically changes based on probability distribution, with k-factor 10 variance resulting in near-last period ramp-up



# Conclusion and Future Steps

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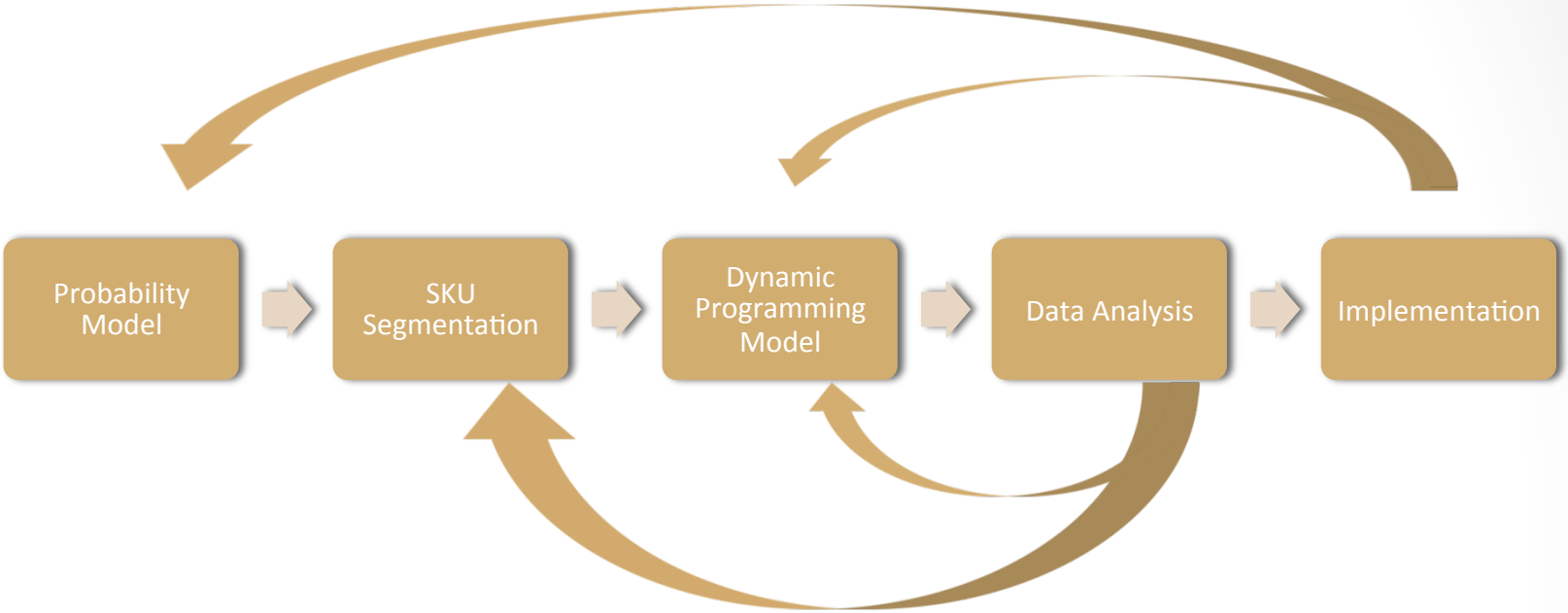
# Iterative Process Mapping




- The organization should focus on improving understanding of likely license approval behavior to drive key value creation
- Alternative distribution strategies such as postponement or alternative pushing strategies can be explored with above parameters
- Feasible lead-time scenarios can be assessed and then used to drive ramp-up strategies for bulk or individual product lines

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