



THE POWER OF PRESCRIPTIVE ANALYTICS IN WAREHOUSE LABOR PLANNING:

Moving Beyond Predictive Models

Introduction: Why Prescriptive Models

Analytical models can be a powerful tool for decision-making in any data-rich environment. However, like any other tool or model, it's a question of picking the right one for the job. Not all approaches are the same, and there's a critical difference between the three **primary models**-Descriptive, Predictive and Prescriptive and the questions they answer:

Predictive analytics

For decades, warehouses have relied on **predictive analytics**, using historical data to forecast future labor needs. While this approach is better than flying blind, and can be somewhat useful to make educated guesses, the lack of true insights provide a fraction of the value compared to approaches that use actual data. And in today's highly competitive, variable and ever-changing environment, having a data-driven plan is a requirement for success.

PRIMARY MODELS:

Descriptive

What has happened?

Predictive

What could happen?

Prescriptive

What should we do?

The Fundamental Flaw of Predictive Analytics

Averages lie. There's no simpler way to say it. And in a warehouse environment, reliance upon on historical averages to forecast labor needs is a fatal flaw for modern warehouses.

Warehouse managers need real-time data for informed decision-making. Predictive models only answer the question: *“What will happen based on past trends?”* When managers use past trends—such as seasonal demand patterns or past order volumes—to generate labor forecasts, they fail to leverage existing data to more create more accurate forecasts. Consequently, these models can't account for:



Real-time disruptions

e.g., delayed shipments, machine breakdowns, no-shows.



Evolving demand signals

e.g., sudden e-commerce spikes, new client onboarding.

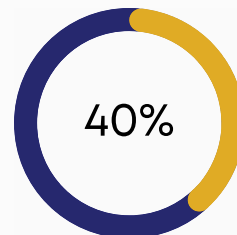


Hidden inefficiencies

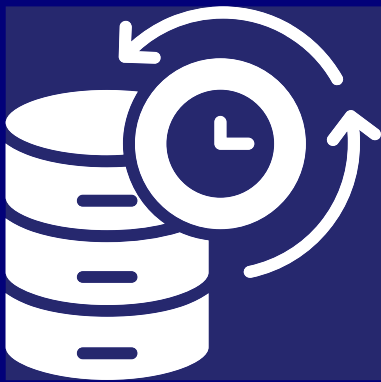
e.g., poor pick-path routing, SKU proliferation.

Example:

A warehouse using predictive analytics might schedule labor based on last year's Black Friday demand. But if this year's promotions drive **40% more volume**, the model cannot adjust in real time—leading to understaffing, delayed orders, and lost revenue.



Predictive is Guesswork, Prescriptive is Expected.



Over/Understaffing:

- Wages wasted on idle workers
- Overtime costs
- Shipment delays

Poor decision-making:

- Static outputs provide estimates
- There's no ability to account for disruptions
- e.g., equipment breakdown or shipment delay

Missed optimization opportunities:

- Inefficient labor allocation
- e.g., workers traveling too far between picks.



Prescriptive Analytics: The Smarter Approach

Prescriptive analytics goes beyond historical prediction—it answers: **“What should we do to optimize labor right now?”** The key to this approach is the inclusion of real-time data. By combining real-time data, AI-driven simulations, and operational constraints, you can derive a model that accurately prescribes an actionable plan for labor allocation.

How Prescriptive Analytics Works?



Ingests Live Data

- Order volumes, inbound shipments, workforce availability, equipment status.
- Integrates with WMS, IoT sensors, and ERP systems.



Simulates Multiple Scenarios

- Tests “what-if” outcomes (e.g., “If we cross-train 10 workers, how does this impact throughput?”).
- Balances trade-offs (cost vs. speed vs. resource availability).



Prescribes Optimal Actions

- “Shift eight workers.”
- “Emergency order is going to cause 3 hours of overtime.”

Why Prescriptive Outperforms Predictive?

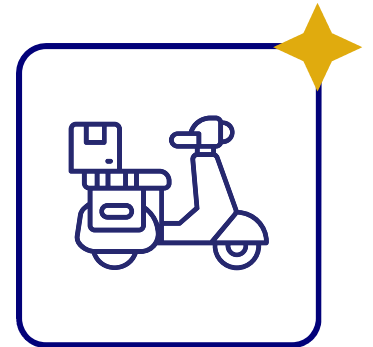
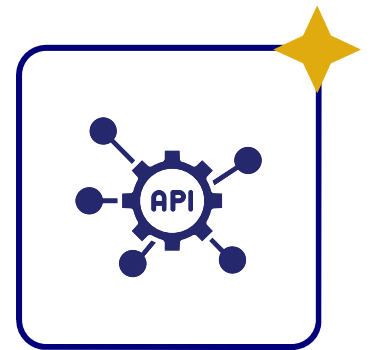
ASPECT	PREDICTIVE ANALYTICS	PRESCRIPTIVE ANALYTICS
Focus	Reactive decision-making	Proactive, AI-driven actions
Output	"Demand will rise by 20% next week."	"Hire 5 temp workers for inbound and extend shifts for 10 pickers on Days X/Y/Z."
Adaptability	Static; cannot adjust to real-time changes.	Dynamically updates as conditions shift (e.g., no-shows, demand spikes).
Decision Support	Provides raw data; managers must interpret.	Delivers actionable steps (e.g., "Reassign these workers now").
Cost Impact	Leads to over/understaffing.	Can reduce labor excess by 20–25%.

Proven Outcomes:

- 47% higher planning accuracy vs. predictive models (Ventana Research).
- 53% of supply chain managers lack tools to assess decision trade-offs (Ventana Research).

Prescriptive Decision-Making is Easier Than You Think

Integrating real-time data into your decision-making process doesn't require a technical revolution. In fact, often it can be done without the involvement of your company's IT team. First, there's no PII concerns because none of the data being accessed is personal. Second, the data only flows one-way out of your warehouse system, so there's no need to get permissions to integrate or pass data back. Third, there are multiple ways to access the data to meet the needs and requirements of the company.



Common approaches for integration include:

- 1 API integration into ERP/WMS/LMS
- 2 Flat file delivery
- 3 FTP upload

The Warehouse Labor Crisis: Why Prescriptive Is No Longer Optional

Labor is and will continue to be a problem. Industry reports are constantly coming out about the lack of available labor, the younger generations lack of interest in warehouse labor jobs and the rising costs of labor over the next 3-4 years. The limitations of predictive analytics, especially the lack of ability to plan for actual labor needs, exacerbate today's labor challenges.

And because labor accounts for Up to 65% of warehouse OpEx cost, it's a BIG problem. (Deloitte's Supply Chain Benchmarking)



Industry Data Confirms, Warehouse Labor is a Problem

65%

Labor accounts for 65% of warehouse OpEx

35,000+

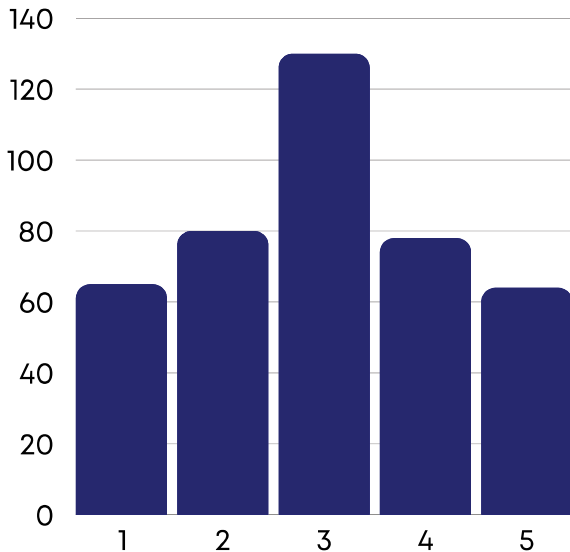
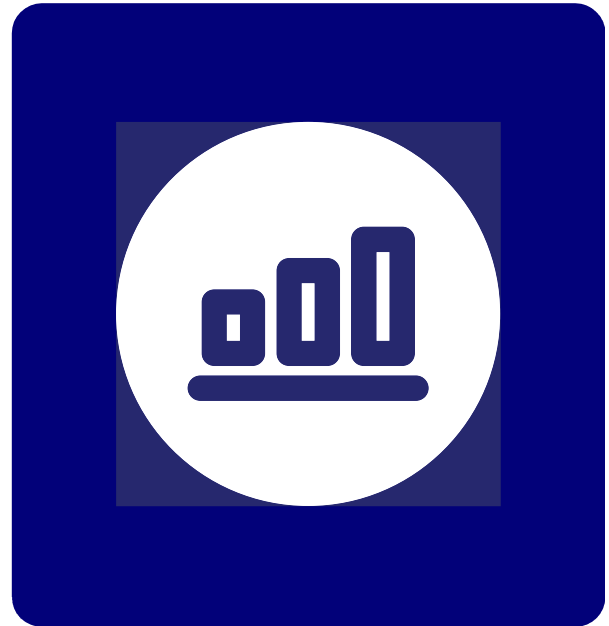
Unfilled U.S. warehouse jobs

>150%

Turnover rates > 150% at major 3PLs. MHI's Annual Industry Report

78%

Lack real-time data to align labor with demand



64%

Of warehouses forfeit >25% revenue due to staffing gaps. PwC's 2022 Warehouse Productivity Survey.

How Prescriptive Analytics Solves The Labor Shortage

Mitigates Turnover Impact

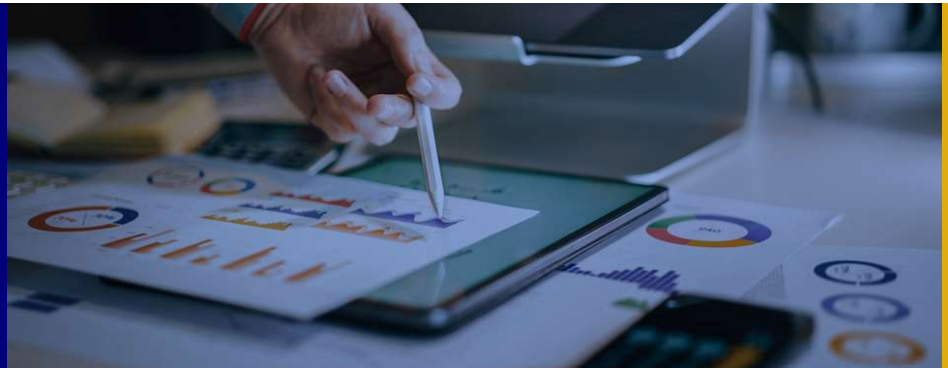
- Automatically adjusts for no-shows by reprioritizing critical tasks.
- Identifies cross-training opportunities to fill skill gaps.

Maximizes Scarce Labor Resources

- Prescribes optimal headcounts per activity (e.g., “0.39 FTEs for receiving”).
- Flags inefficiencies (e.g., pick-path waste, SKU congestion).

Reduces Reliance on Costly Flexibility

- Minimizes overuse of temp labor by optimizing permanent workforce allocation.
- Cuts overtime costs through smarter shift planning.



LaborAI's Prescriptive Approach: Data-Driven Labor Alignment

Step 1: AI-Powered Work Content Profiling

LaborAI ingests two critical documents to quantify labor demand:

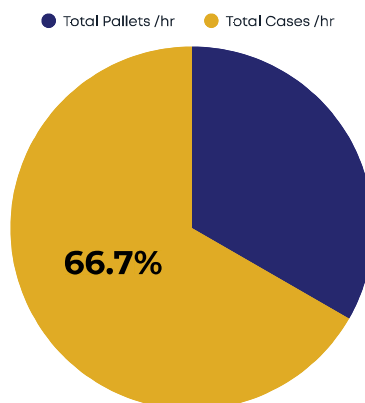
- 1. Order File** (e.g., 500 pallets, 2,000 cases).
- 2. Inventory Master** (e.g., 30% high-velocity SKUs).

Step 2: AI-driven Labor Calculations

LaborAI applies up to 1,000 Industrial Averaged Standards across 37 warehouse touchpoints.

Output: It generates a report with precise metrics for each activity:

RECEIVING	MEASURE	MIN RATE
Palletized	Total Pallets	25/hr
Manual Receipts	Total Cases	50/hr



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Step 3: Dynamic Labor Prescriptions

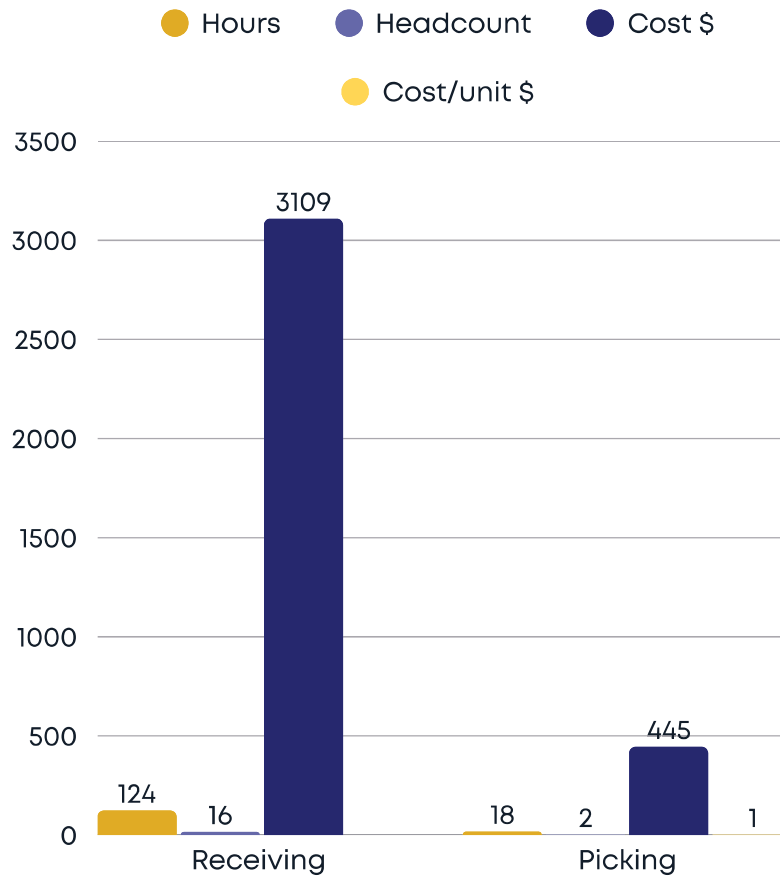
LaborAI uses a comprehensive database of industrial standards to determine the work required. Our standards are tested 95% accurate compared to Engineered Labor Standards.

Key Output: The system prescribes:

- 1. Optimal headcounts** (e.g., 0.39 FTEs for receiving).
- 2. Cost-per-unit transparency** to identify inefficiencies.

ACTIVITY	HOURS	HEADCOUNT	COST	COST/UNIT
Receiving	124	15.5	\$3,109	\$0.96
Picking	18	2.25	\$445	\$1.22

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Step 4: Real-Time Adjustment Engine

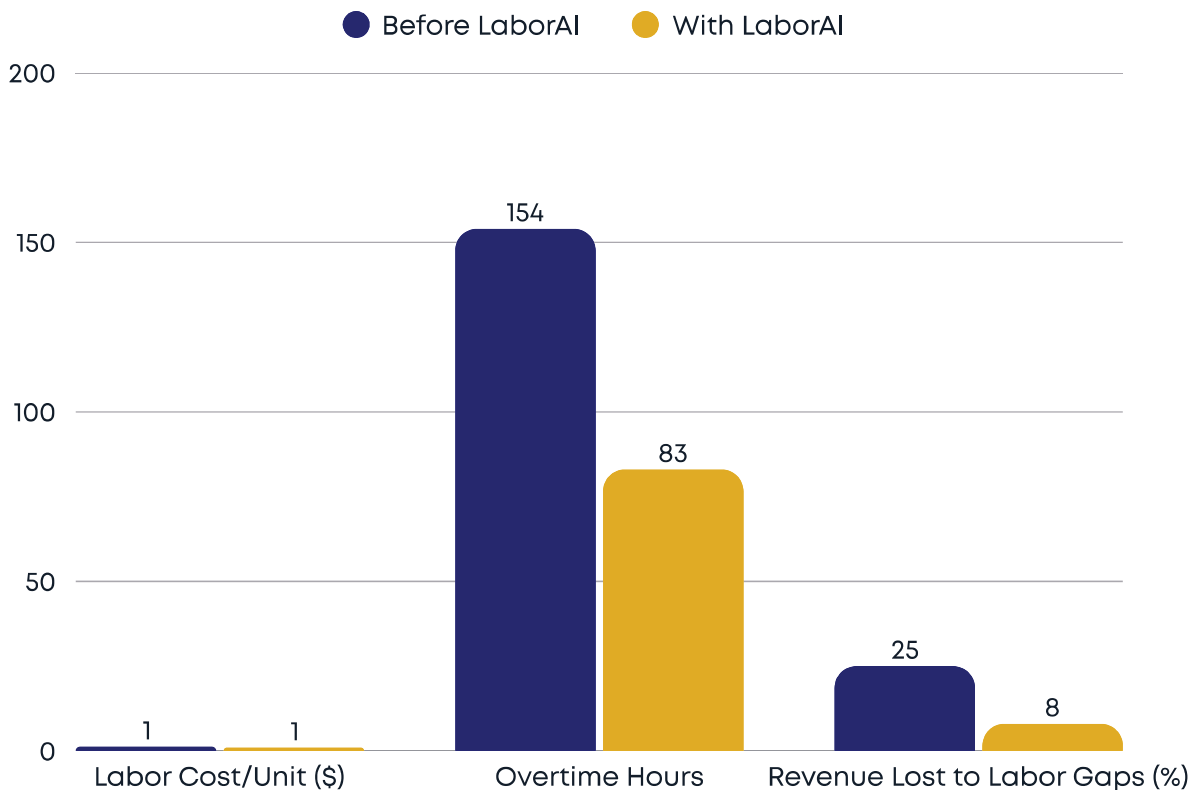
1. Automated Reallocation:

Shifts labor between tasks (e.g., "Move 3 workers from receiving to picking at 2 PM").

2. Turnover Mitigation:

Adjusts for no-shows by reprioritizing high-impact tasks.

The Impact: Turning Labor Costs into Competitive Advantage



Case Study:

A 500K sq. ft. warehouse reduced labor costs by **\$1.8M/year** by:

- Using prescriptive headcounts to cut overstaffing.
- Dynamically reassigning labor during demand spikes.

Conclusion: The Future of Labor Planning

Predictive analytics is reactive—prescriptive analytics is proactive. In an era of labor shortages and rising costs, warehouses can no longer afford to rely on historical averages.

LaborAI's prescriptive platform empowers warehouses to:



Eliminate revenue leaks from labor misalignment.



Thrive amid turnover via AI-driven adaptability.



Benchmark globally to uncover optimal practices.

LaborAI

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