



WHITE PAPER

Benchmarking and improving distribution center metrics

Best practices to optimize warehouse operations and lift truck fleet utilization for 2024

Whether replenishing retail locations or facilitating direct-to-consumer deliveries, you're tasked with moving inventory more quickly than ever to meet growing demand, making flexibility and efficiency imperative.

And to compete as a modern warehouse, metrics are critical to help you identify latent inefficiencies in daily work and power through peak challenges. But what distribution center (DC) metrics are most valuable? What data should you lean on to track business strategies and ultimately drive operational efficiency?

The Warehousing Education and Research Council (WERC) surveys the distribution and fulfillment industry each year to understand these top metrics as a reflection of today's demands. This white paper presents the findings from the 2024 DC Measures Report and highlights best practices to help leverage lift truck fleets for best-in-class performance.



Top 12 warehouse operational metrics

The 2024 WERC Report revealed the new top 12 metrics identified by warehouse professionals.





1. Average warehouse capacity used
2. Peak warehouse capacity used
3. Dock-to-stock cycle time, in hours
4. On-time shipments
5. Inventory count accuracy by location (tied for 5th)
Part-time workforce to total workforce (tied for 5th)
7. Lines picked and shipped per hour
8. On-time ready to ship
9. Order fill rate
10. Percent of supplier orders received damage free
11. Lines received and put away per hour
12. Annual workforce turnover (tied for 12th)
Cross trained percentage (tied for 12th)

YEAR-OVER-YEAR CHANGES

Whereas the top 12 most popular measures in 2023 demonstrated a heavy emphasis on increasing customer satisfaction, the top metrics for 2024 reflect a shift in focus to protect profitability amid high inflation and a recessionary environment. An increase in operations- and capacity-based metrics highlights concerted efforts to extract cost savings through operational efficiency and asset utilization. The top four metrics from the 2023 ranking were all customer-facing measures that represented the four major components of a perfect order: delivered on-time, shipped damage-free, complete and with correct documentation. These metrics were entirely displaced, with all four falling out of the top 12 this year, usurped by metrics corresponding to utilization and efficiency. Another change worth highlighting: annual workforce turnover made the top 12 for the first time since 2018, and lines picked and shipped per hour made its first appearance since 2016.

Lift truck operations and best-in-class performance

In the WERC report, surveyed warehouse operations ranked the most important DC metrics, including average warehouse capacity used, dock-to-stock cycle time and on-time shipments. High performance is difficult to maintain across all aspects of warehouse operations, so DCs generally make strides in certain areas and run into greater challenges or setbacks with others. For this reason, there are instances where the measure for best-in-class performance does not improve, even as that metric grows in relative importance. Such is the case for annual workforce turnover and dock-to-stock cycle time, both of which saw their best-in-class measure only hold steady relative to the previous year, while average warehouse capacity used and on-time shipments experienced slight reductions in top-end performance. The table below summarizes what the 2024 WERC Report revealed as best-in-class performance for these metrics.

METRIC	DESCRIPTION	BEST-IN-CLASS MEASURE*	YEAR-OVER-YEAR TREND
 Average warehouse capacity used	Average amount of warehouse capacity used over a specific interval, such as a monthly or yearly window.	$\geq 92\%$	No change from the previous best-in-class performance classification, indicating consistent performance despite a reduced focus on the metric.
 Dock-to-stock cycle time	Time elapsed between the arrival of goods and when they are put away and recorded into inventory management systems.	<3 hours	No change in best-in-class cycle time, indicating warehouses have maintained but not significantly improved performance.
 On-time shipments	Percent of orders shipped at the planned time, meaning off the dock and in transit to its final destination.	$\geq 99.2\%$	Best-in-class performance decreased slightly from 99.5% to 99.2%, indicating a continued challenge for warehouses.
 Annual workforce turnover	The rate at which permanent employees are replaced, excluding casual or seasonal labor.	<5%	No change from the previous best-in-class performance classification, indicating consistent performance despite an increased focus on the metric.

*Best-in-class operations exhibit a level of performance that falls within the top 20% of all respondents.

Average warehouse capacity used

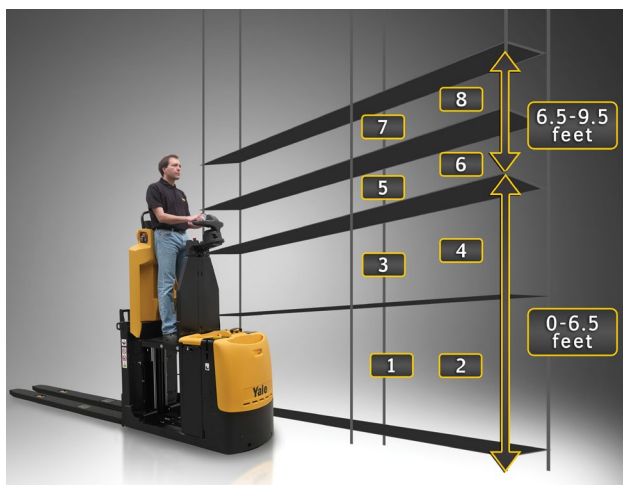
Best-in-class operations, on average, utilize 92% of available warehouse space. Operations can improve their response to shifting inventory demands by using lift truck fleets that are designed to support optimized storage configurations and efficient workflow strategies. Best practices that support optimization include:

- Implementing slotting and storage strategies
- Using cross-docking

IMPLEMENTING SLOTTING AND STORAGE STRATEGIES

Growing SKUs and order counts can complicate efficient use of space. These conditions can force DCs to expand their picking footprint, reduce slot sizes and reduce inventory in each pick slot, risking decreased efficiency and productivity. Conducting a slotting analysis can determine the optimal storage space and location for each item – some of which might be at height. The conversation then shifts to enlisting the right equipment, with appropriate speed, dimensions and vertical heights to access the loads.

For instance, a low-level order picker can raise operators vertically to expand the “golden zone” of the pick face. This can enable new slotting strategies to help increase pick positions up to 400% and slot capacity 140% within the same footprint.



Warehouse configurations with tall, narrow aisles can benefit from reach trucks with double-deep reach capabilities that allow operations to maximize storage density by easily storing and retrieving loads from storage positions that are two pallets deep. When lifting and placing loads at height, characteristics such as strong visibility through the mast are especially important for productivity. A significant front field of view for the operator helps optimize visibility of the forks and load for precise, efficient handling. Other tools like wireless cameras, built-in fork LED lights or even fork laser levels can help boost precision and accuracy when picking and placing loads at height.

USING CROSS-DOCKING

Cross-docking involves transferring incoming merchandise from receiving directly to shipping – without spending time in storage. This workflow can help move goods more rapidly, reducing inventory levels and permitting for more efficient use of existing warehouse storage capacity.

Dock-to-stock cycle time

According to the WERC Report, best-in-class operations are able to move inventory from the receiving dock to storage and record it in inventory management systems in less than 3 hours. But operations are challenged with two major trends: accommodating growing SKU counts and deliveries, and labor shortages, leaving warehouse positions unfilled and turning over regularly. Best practices to enhance put away include:

- Using technology to move product more efficiently
- Eliminating unnecessary product touches

USING TECHNOLOGY TO MOVE PRODUCT MORE EFFICIENTLY

Because automated lift trucks reliably handle a range of repetitive functions without intensive supervision and intervention, they can help operations more efficiently move loads to storage with less labor. For instance, an automated counterbalanced stacker can be deployed to pick up pallets that have been offloaded from trailers and independently move them to designated drop-off locations in racking, even elevated storage locations.



One day, automated solutions will also shape how operations handle products in dark warehouses. But operator assist systems (OAS) are a step that warehouses can take today, speeding up dock-to-stock times by supporting both operator confidence and productivity. Disruptions like crashes or tip overs can delay product put away and result in equipment downtime that further hampers productivity. An OAS can help to limit the risk of these accidents by increasing reaction time and reinforcing adherence to best practices.

ELIMINATING UNNECESSARY PRODUCT TOUCHES

Unnecessary product touches and movements are wasteful and slow cycle times. Using telemetry systems, operations can track movements to eliminate unnecessary steps, minimizing product touches and reducing put away times.

On-time shipments

Best-in-class operations ship more than 99.2% of orders on time, meaning off the dock and in transit to the customer. To reach this level of efficiency, operations must make sure lift truck fleets are running at peak efficiency, with minimal downtime. Three factors that can contribute to peak efficiency include:

- Using best-fit power solutions
- Delegating repetitive tasks to robotics
- Ensuring proper maintenance and parts availability

USING BEST-FIT POWER SOLUTIONS

Lift truck power options are now more robust than ever, with newer technologies like lithium-ion batteries and thin plate pure lead (TPPL) proving their worth. By implementing the right lift truck power source, operations can unlock greater productivity.

Traditional lead-acid batteries can suffer performance degradation during the second half of their charge, leaving operators with a less-capable lift truck. This can negatively impact performance metrics, including the percent of shipments that leave later than expected.

TPPL offers a middle ground between lead-acid and lithium-ion. Relative to lead-acid, TPPL enables opportunity charging and eliminates battery maintenance requirements, and also provides faster recharging and less of a power output decline as the charge depletes. Lithium-ion batteries, meanwhile, deliver consistent power until full depletion and charge up to two times faster than lead-acid.





DELEGATING REPETITIVE TASKS TO AUTOMATION

Advances in sensor technology and processing power permit automated lift trucks to pick up, transport and drop off pallets independently and reliably. By providing smooth, consistent operation of repetitive tasks, automated lift trucks help increase operational uptime and productivity, while reducing errors associated with misplaced or damaged goods.

ARRANGING PROPER MAINTENANCE AND PARTS AVAILABILITY

Factory-trained, certified technicians offer superior product knowledge to help keep lift trucks running and shipments moving. The combined geographic footprint of the lift truck original equipment manufacturer (OEM) and dealer network affects service capacity and how quickly unscheduled service issues can be addressed. The larger the dealer network, the faster the response, the less downtime.

Additionally, telemetry systems with fault-code monitoring can automatically contact the service organization to initiate maintenance if a fault code is triggered. This can prevent minor issues that may not be apparent to operators from escalating into more serious problems.

Annual workforce turnover

According to the WERC Report, best-in-class operations replace less than 5% of their permanent workforce annually, which reduces the burden of constantly hiring and training new employees. A longer tenured staff may also contribute to greater efficiency and fewer disruptions than one with a significant share of inexperienced operators. Strategies to retain warehouse talent include:

- Providing ergonomic equipment
- Fostering a culture of safety
- Minimizing repetitive, arduous tasks

PROVIDING ERGONOMIC EQUIPMENT

With busy shifts, long travel distances, complex order profiles and manual labor, work in warehouses can be physically demanding and mentally taxing. Employers that equip operators with lift trucks and technology designed to support comfort and convenience can not only help operators fight fatigue and stay productive but incentivize them to stay. Consider lift truck features that reduce the vibration transmitted to the operator or the effort required to steer, as well as designs that provide ample space and freedom for the operator to find a comfortable operating position. Intuitive controls and technologies that support operator confidence and productivity can also help build job satisfaction.



FOSTERING A CULTURE OF SAFETY

Everyone wants to return home safely after their workday, so safety is an important ingredient in employee retention. Comprehensive [lift truck operator training](#) that meets Occupational Safety and Health Administration (OSHA) requirements provides a complete understanding of how to operate a lift truck, teaches safe operation per manufacturer guidelines and OSHA standards, and can help reduce accidents.

While there is no substitute for proper operator training as the foundation for safe, efficient lift truck operation, [OAS](#) can automatically intervene to help reduce the risk of accidents and close calls like a pedestrian unexpectedly walking in front of a lift truck or an operator traveling too quickly around turns.

MINIMIZING REPETITIVE, ARDUOUS TASKS

Delegating mundane workflows to [automated lift trucks](#) can enable employees to focus on more engaging responsibilities that create a more positive work experience and support retention. For instance, assigning automated lift trucks to repetitive jobs like waste handling, milk runs and transportation of rejected goods to quarantine can allow employees to spend time on more challenging, rewarding tasks like picking orders and building pallets.

Rising to best-in-class DC performance

You can't afford to settle for status quo solutions and strategies - achieving best-in-class performance requires both the attention and resources for continuous improvement. Top DCs strive to constantly improve velocity and accuracy, while fostering a culture of self-examination that enables warehouses to identify and remove inefficiencies.

The labor, safety and productivity challenges that make it so difficult for operations to attain and uphold high levels of performance should directly inform materials handling solutions. At Yale, customer challenges are the foundation of product design and engineering, so that resulting equipment and technologies are precisely matched solutions to help address these issues.

For a deeper conversation about achieving best-in-class performance, contact a solutions expert at your local [Yale® dealer](#).