



# Getting Into the Zone

## A capital-light way to improve productivity

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Something for nothing? Many of today's distribution center managers are being asked to provide just that! In an economy where capital dollars are as scarce as a taxi on a rainy day, productivity must go up with little help from equipment or software. This can pose quite a quandary for many sites.

To help, The Progress Group has been researching a number of "capital light" methods for improving warehouse productivity. The purpose of this research has been not just to establish the value of these ideas as much as to sort out the fact from the fiction and provide new insights into how to deploy capital light techniques such as motion studies, labor standards, and slotting.

### It matters where you put something

One of our recent research projects has focused on Golden Zoning—the lesser cousin of Slotting. With Golden Zoning you ensure that the more popular piece picked items in a warehouse are slotted *vertically* where they can be more easily reached. We shot video of several operators in a couple of different facilities and then measured the time spent extracting product from different tiers of the site's forward pick area. This is what we found:

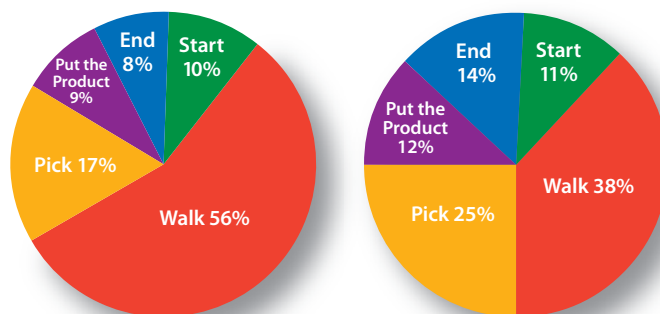
- Picking an item from the Golden Zone takes 15 percent to 40 percent LESS time than picking from other tiers of bin shelving or flow rack
- The Golden Zone can be different for different people.
- The overall benefit from doing this may be significant but depends on the number of SKUs involved, annual volumes, and systems support

The second point is worth expanding upon. It might be obvious that a 6' picker will have a different golden zone from that of a 5' picker, but what is not obvious is that if you zone it for the 6' picker you *may* make it more difficult for the 5' person to pick. A key finding is that you need to understand the height profile of your operators to determine really where the golden zone should be before implementing one.

### What does golden zoning impact?

This leads to the question: *When should you do this?* There are always a lengthy list of ideas that a facility can implement to improve productivity, but usually most of them are not worth the effort that goes into getting them going. Golden Zoning works better in different situations, too.

The pie charts below show how pickers at two different piece pick facilities spend their time.



Golden Zoning, because it only impacts the time to make a pick (i.e., the gold wedge), will potentially make a bigger difference in the facility on the right than it will in the site on the left because extracting the item is a larger part of a picker's day there. (Please Note: The graphs here are EXCLUSIVE of the activities that involve communicating or confirming the pick.)

It also helps if the pickers are more or less equal in height. Table I shows the added amount of time it takes five different pickers of different heights *in the same facility* to pick from tiers other than their Golden Zone. The yellow cell is the "golden zone" for that picker.

In this facility, if you choose Tier D as the "overall golden zone" and slot it accordingly, you will improve the productivity of Pickers 1, 2, 4 and 6, but it will take Picker #3 forty-nine percent more effort to pick from that tier than his or her golden zone and Picker #5 nineteen percent more. (Again, we are only talking about the "green wedge" i.e., physically extracting the product from the pick face.

**TABLE I AVERAGE TIME PER TIER**

TIER	PICKER 1	PICKER 2	PICKER 3	PICKER 4	PICKER 5	PICKER 6
A	104%	108%	30%	53%	23%	58%
B	63%	22%	25%	29%	27%	33%
C	38%	5%	49%	6%	0%	5%
D	0%	0%	49%	0%	19%	0%
E	15%	31%	0%	12%	22%	3%
F	107%	35%	NA	23%	45%	22%
G			181%	126%	36%	27%

**NOTE:** This only covers the time to grab merchandise from the pick location. It does not include walking or confirming the pick.

This seems to also suggest that the height of workers might be a variable worth considering in sites that golden zone and depend on it for higher worker productivity; pickers with different heights might need to be given different productivity targets!

### What's the savings associated with golden zoning?

It's a good idea to understand what kind of benefits this idea might generate before pursuing it. Using real data from three different warehouses, we analyzed the value of using golden zoning at three different types of piece picking sites: a Cart Picking, Serial Zone, and a Wave Based operation. All of these sites more or less assigned SKUs to locations in the forward pick area at random.

Using video of actual pickers in action we determined what proportion of a picker's time at each site was consumed by physically *extracting* an item from the pick face. The results below show that in no warehouse was the time more than 25 percent. This begins to reveal the upper bound on the payback that can occur due to Golden Zoning; you are *not* going to save 50 percent in picking labor with this concept, but the savings are still significant.

These three warehouses used different "pick mediums" to communicate the pick to the picker. The cart

picking environment used paper; the serial zone environment RF terminals, and the wave picking environment used labels to communicate and confirm picks. The time, however, spent scanning, keying, labeling, or marking pick lists was NOT considered as part of the time spent to extract items from the pick face, i.e., the green wedge.

Also using video of multiple pickers at each site, we computed the average time to pick from different tiers for different people. We then used actual order data and a computer program to simulate the total time spent picking when the SKUs were assigned a tier at random within the forward pick area and the total pick time when

**TABLE II**

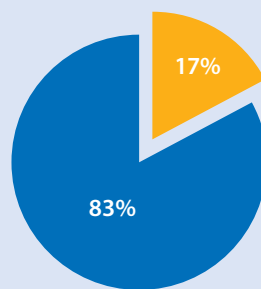
Piece Picking Method	Pick Medium	% of Time Spent Extracting	% Reduction in Extracting Alone	% Picking Reduction if Golden Zoned
Multi-Order Cart Picking	Paper	17%	19%	3.3%
Serial Zone Picking	RF Terminals	13%	1%	0.1%
Wave Picking w/Carts	Labels	19%	38%	7.2%

the facility *used golden zoning*. The savings at the three different sites is shown in Table II.

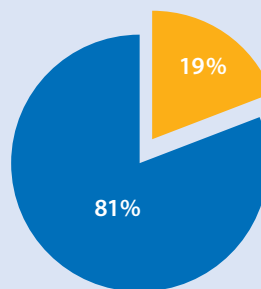
The total savings is small, but it is not insignificant. At the Multi-Order Cart Picking site we estimate that 3.3 percent of each picker's day could be saved if the site

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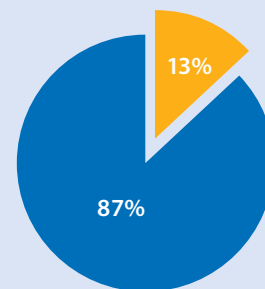
The gold wedges at right represent the proportion of the picking activity tied to the physical motion associated with **EXTRACTING** pieces from a pick face. This means that if a picker works 420 minutes a day at the Serial Zone site, he or she will only spend 13 percent or 55 minutes extracting pieces from various pick faces. The rest of his or her time is spent walking, scanning, etc.



Multi-Order Cart Picking



Wave Picking with Carts



Serial Zone Picking

were to be golden zoned. At the wave picking site, the savings was even higher.

### How much does it cost to do?

We tell clients that Golden Zoning has the potential to generate a 3 to 5 percent improvement in most piece picking operations, but those gains only will come about if the most popular SKUs are moved into the more accessible tiers. There are three different ways to do this.

The least expensive way to accomplish this is to set up a pair of “virtual zones” within your forward pick area. One zone should contain only those locations that are in the golden zone. The other zone can contain all the other locations. You then must configure rules in your warehousing system to direct any replenishments of the popular A items into the golden zone and replenishments of all other items into locations within the non-golden zone. In this way, setting up the golden zone is “free.” We call this the “free approach.”

To use the free approach, you need a large number of empty locations in the golden zone or be setting up

the warehouse for the first time. It is common to have more empty locations in the non-golden zone area in most warehouses, however. A variation on the free-approach exists where an operator sweeps through an existing forward pick area removing slow moving SKUs that are in the golden zone first — placing them in open non-golden zone spots elsewhere. Later the warehouse software replenishes fast movers into the now empty golden zone locations. We call this the “almost free” approach.

Of course, the free and the almost-free approach require that your warehouse system support *random* pick locations. Most places aren’t so lucky. The third approach is targeted at those sites. We call this method the “swapping” approach. An operator with a cart is sent into the forward pick zone *when no one is picking* and swaps slow mover SKUs that are in the golden zone for fast movers that are not. Usually he will remove four slow movers in good locations and then go to an aisle where he will swap the four slow movers for four fast movers in bad locations. To complete the process, he returns to the original aisle and puts away the four fast movers into the now open four locations within the golden zone.

The authors built a labor model to estimate the man-hours associated with a typical swapping process using MOST pre-engineered standards. We estimated that if cartons needed to be scanned in and out of locations using RF terminals (as most WMS systems require) to facilitate golden zoning, an associate could execute about 37 of these swaps per hour as long as the swaps

Our Assumptions	
Picking Savings	3%
% of SKUs that are A Items	20%
% of Lines Tied to As	80%
Swapping Cases/ MHR	65
Picking lines / MHR	100
Operating Days	220

TABLE III PAYBACK ON SWAPPING CARTONS INTO GOLDEN ZONE							
TOTAL # OF SKUs	500	1,000	2,000	5,000	10,000	20,000	40,000
100,000	11.66	5.83	2.91	1.17	0.58	0.29	0.15
80,000	9.32	4.66	2.33	0.93	0.47	0.23	0.12
60,000	6.99	3.50	1.75	0.70	0.35	0.17	0.09
40,000	4.66	2.33	1.17	0.47	0.23	0.12	0.06
20,000	2.33	1.17	0.58	0.23	0.12	0.06	0.03
15,000	1.75	0.87	0.44	0.17	0.09	0.04	0.02
10,000	1.17	0.58	0.29	0.12	0.06	0.03	0.01
5,000	0.58	0.29	0.15	0.06	0.03	0.01	0.01
2,000	0.23	0.12	0.06	0.02	0.01	0.01	0.00
1,000	0.12	0.06	0.03	0.01	0.01	0.00	0.00
500	0.06	0.03	0.01	0.01	0.00	0.00	0.00

1Qtr or Less Payback  1 Year or more Payback

were between locations that were not too far from one another (a couple of aisles at most) and the cart the associate used could hold four cases at a time.

Based on the above assumptions, we calculated the payback (in years) on the swapping activity for a given set of SKUs and a given outbound volume measured in lines per day. We also assumed golden zoning could save 3 percent in picking labor to help pay for the swaps.

The results are shown in Table III. Green cells indicate it takes less than a quarter to pay for the swap. Yellow means it takes less than a year to make the swap pay, but more than a quarter. If it takes more than a year, the cell is Red.


This table seems to suggest that the practice of Golden Zoning is useful and worth doing in mid to large direct-to-consumer operations. Small B2C operations may just not accrue enough picking savings to pay to swap the cartons. They may need to rely on the "free approach" which will take time.

Based on our experience golden zoning would seem to apply to most retailers or consumer goods companies shipping into retail stores. It might be important, however, to keep in mind the lifespan of the products. Some retail products have lifespans that are 12 to 16 weeks. The payback on swapping these has to be very fast to justify swapping the products; it is better to plan out where they are to start with.

Due to the large number of SKUs at distributors and service parts operations, golden zoning might not be a practice worth pursuing; it probably is something that should be evaluated at each site.

## Conclusion

Golden Zoning does help improve picking productivity 2 to 3 percent. The issue that should be carefully evaluated is the cost of *converting* a forward pick area to support this concept. If the warehouse operator is not careful, the conversion can erase a lot of the savings. This is especially true in warehouses with short life cycle, popular products. It also seems to make no sense to try and reslot all the items; worry only about the fast movers or what many call the "A Items."

When capital is in low supply, managers must look to other places to meet their annual improvement goals. At some sites, they might find gold with golden zoning. 

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employees can be just as productive, and probably more loyal, than their able-bodied counterparts. The bonus, he says, is that if you can serve your shareholders at the same time you serve this population, you are serving your community.

## It's about individuals

"The impact of having people with disabilities working side-by-side with your other employees is that it makes everyone recognize how frail life is," Lewis explains. "You deal with people as people first. Management learns to treat each person as an individual. When you do this, you get a great workforce."

Walgreens finds most of its disabled employees through agencies like SubCon. "We work with a lot of agencies because much of the disabled population has given up on trying to find work and this is a good way to reach them," says Lewis. "But there are good agencies and bad agencies, so you need to be selective about who you work with."

To really appreciate how productive the disabled population can be in a DC, Lewis recommends getting out to an on-site visit at companies that are good examples. "Sears, Best Buy and Lowes are all doing great jobs with this now," he says. "The biggest impediment to hiring the disabled is fear that they won't be productive. If you see it in action, you can see that's not the case."

Most companies who take the plunge and hire the disabled will see it is the right move not only for their culture, but for their bottom line too, claims Lewis. "I know of no one who has tried this and had a single regret," he says. 

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**"Management learns to treat each person as an individual. When you do this, you get a great workforce."**

Randy Lewis

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