



**CASE STUDY**

**AI Checkout reduces theft and loss compared to industry averages**

# Does Mashgin AI-assisted checkout result in less theft?

Every store wants shorter lines, faster checkout, and more sales with lower labor costs. But, does achieving these results with AI-assisted checkout also cause increased theft. The short answer - NO. Stores that implement Mashgin do not see increased theft.

We studied thousands of transactions across several stores to scientifically answer this question and give you the insights you need to understand how AI checkout impacts your business.

Mashgin's 1.07% dollar loss from all causes sit well below the industry-average loss of 1.62%—reported by [one 2020 NRF study](#).

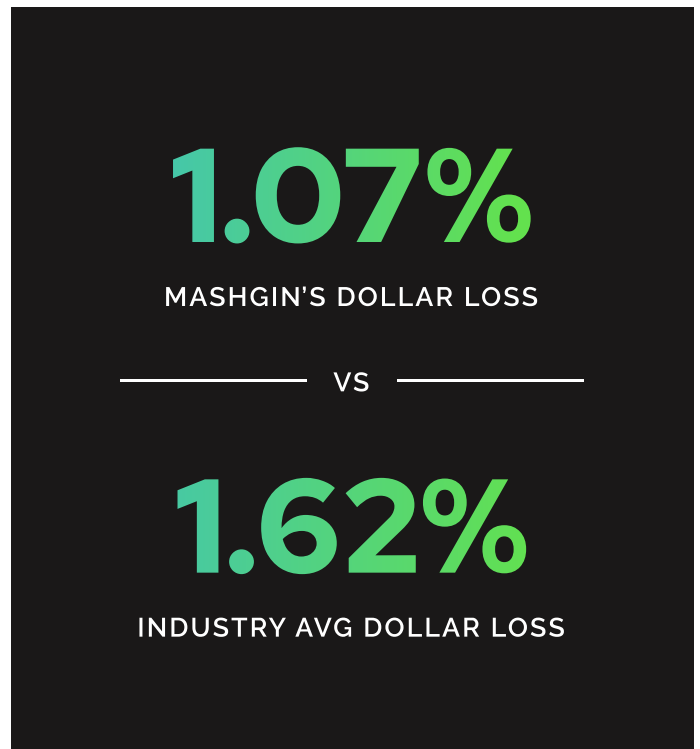
Digging deeper, just 0.17% dollar loss came from instances of intentional or accidental misuse of Mashgin's assisted checkout technology.

## Here's how we did it:

To analyze theft, we audited video of 2,000 completed transactions to identify theft, sampling 10 convenience store locations across 3 major [clients](#). In other words, our team manually watched all of these transactions from start to finish to analyze customer actions and behavior. This included both intentional theft of items and misuse of Mashgin's technology (hiding or not ringing up items).

1,000 transactions had at least 1 age-restricted SKU (e.g., tobacco, alcohol, etc.); the others had none.

We were able to do this because Mashgin automatically captures multiple angles of every transaction. Stores using Mashgin's technology have access to this same level of detailed recordings.



Video Audit Parameter	Details
Transactions watched	2,000
Split	1,000 with age-restricted items 1,000 with no age-restricted items
What counts as "theft"?	Plausible intent. Disregard accidental user error or technical errors resulting in loss.

# The results: Total loss with Mashgin was 1.07% and only 0.17% from misuse of technology

Total dollar loss from all causes at Mashgin-powered stores was **1.07%**, with only a small percentage of loss coming from theft as a result misuse or abuse of Mashgin's technology.

Looking deeper into theft directly tied to misuse of Mashgin, in carts with age-restricted items, we saw a dollar theft rate<sup>2</sup> of **0.04%** and an item theft rate<sup>3</sup> of **0.10%**. In carts without age-restricted items, it was slightly higher: **0.47%** and **0.57%** respectively.

1. No significant differences were observed between the control and test groups.
2. Theft incidents remained consistent across both samples.
3. Age-restricted items did not correlate with higher theft rates.

Transactions Audited	Segment	\$ Theft Rate	Item Theft Rate
1,000	With age-restricted items	0.04%	0.10%
1,000	Without age-restricted items	0.47%	0.57%

Taking these results of theft due to misuse of assisted checkout, the overall rates for the total population of transactions audited amounted to **0.17%** of gross revenue and **0.31%** of items sold. Comparatively, [NRF reports](#) an industry-average loss of 1.62% from all causes, with roughly 1% coming directly from theft.

## Theft rates overall

Transactions Audited	\$ Theft Rate	Item Theft Rate
2,000	0.17%	0.31%



# How theft happens (and what can be done)?

Where we observed misuse of Mashgin, it happened because of deliberate stacking of items or because customers never presented items to the kiosk. The good news: Mashgin is developing mitigations. Automated detection of stacking and merchandise left off the kiosk base will enable realtime, situational alerting.

Beyond technology and process, the next step in understanding theft is analyzing motive and intent. While there will be a small percentage of shoppers that enter stores with the express intent of committing theft, for everyone else the shopping experience may influence whether or not they attempt to steal.

The largest contributing factor is length of lines and wait times in stores. In instances where stores are more crowded and wait times to make purchases are long, shoppers have a higher tendency to leave without paying. Technologies like Mashgin, that allow customers to go from shopping to paying to on-their-way faster reduce likelihood of opportunistic theft. Furthermore, assisted checkout technologies allow for retail staff to have a better vantage over several shoppers simultaneously. These factors contribute to the lower rate of theft seen with Mashgin compared to industry averages.

Misuse vector	Details
Deliberate Stacking	Customer takes advantage of blindspots in computer vision system (e.g., by stacking merchandise)
Off-base Placement	Customer deliberately leaves merchandise off kiosk base where it would have been identified and added to cart

## Conclusion

So, does AI-assisted-checkout increase theft? Much depends on the specific technology deployed and its operation. Mashgin's 0.17% dollar theft due to misuse and 1.07% dollar loss from all causes sit well below the industry-average loss of 1.62%—reported by [NRF](#). Mashgin is not only the fastest, most accurate AI-powered-checkout, but our clients can boost revenue and bank labor savings without profit erosion from theft.



Learn how Mashgin  
can transform your  
business today.