

The academic research: Retail Food Waste - Sell More, Waste Less

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Where innovation starts

Pleased to meet you

- Assistant Professors in Retail Operations
- Background in Econometrics (Karel) and Biotechnology and Operations Research (Rob)
- Research areas: Inventory Management (incl. fresh products), Warehousing and Transportation, Promotion Forecasting



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- Summary of “Sell More, Waste Less” project
- Five recommendations
- Recent findings from research
- Recent findings from industry



The project

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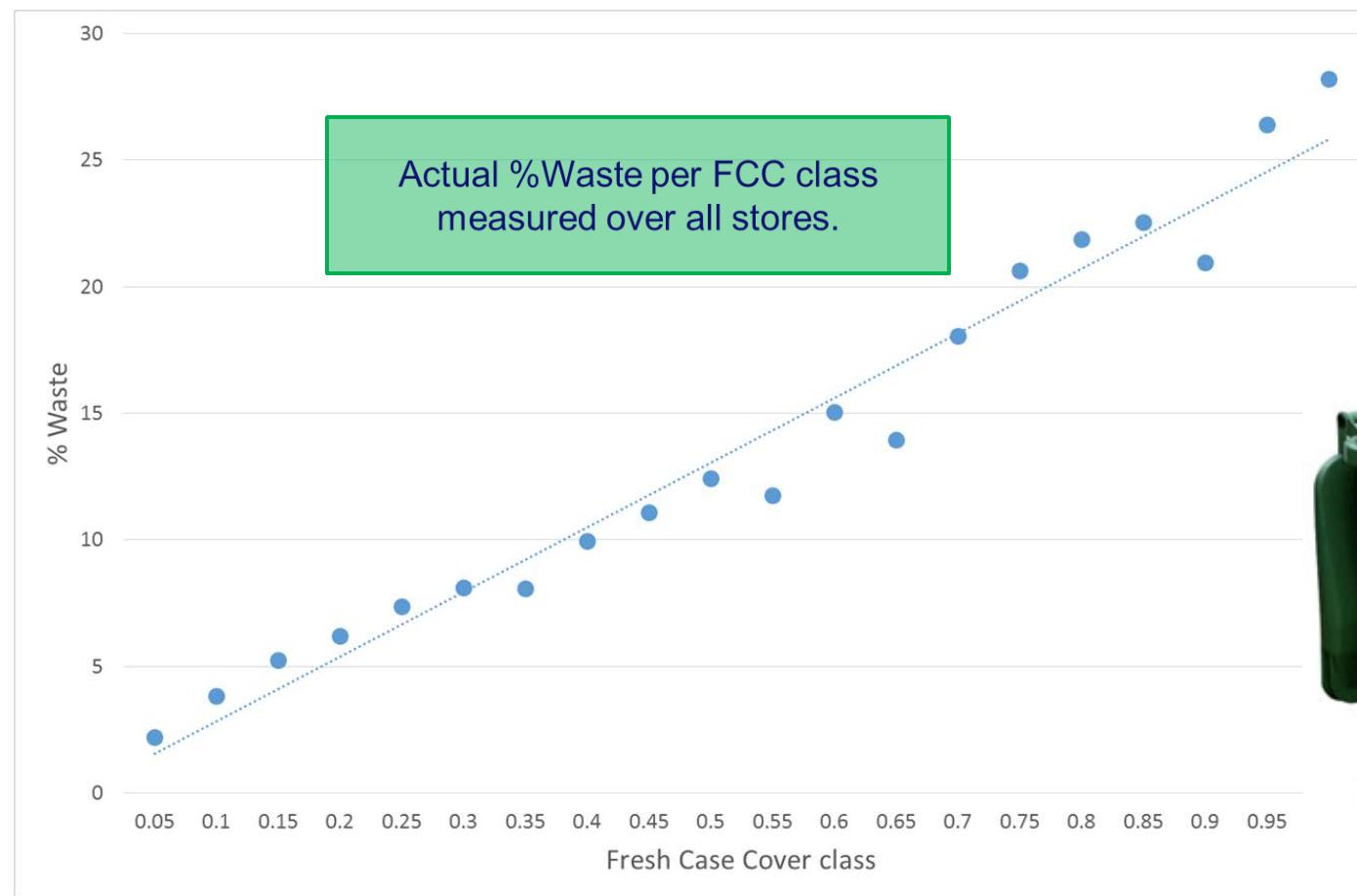
- **Goal:**
 - improve the performance of the fresh supply chains
- **Methods:**
 - Analysing data from 3 retailers (categories Fruit & Vegetables, Fresh Meat, and Convenience from 27 supermarkets),
 - Interviews, and
 - Literature review
- **Output:**
 - ✓ The final report,
 - ✓ A best practice checklist, and
 - ✓ A tool to quantify waste and OSA



Result 1: A strong indicator for waste

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The **Fresh Case Cover or FCC** (= case pack size divided by the demand during the shelflife) is shown to be a strong indicator for waste at the retailer



Recommendation 1: Check with your own data

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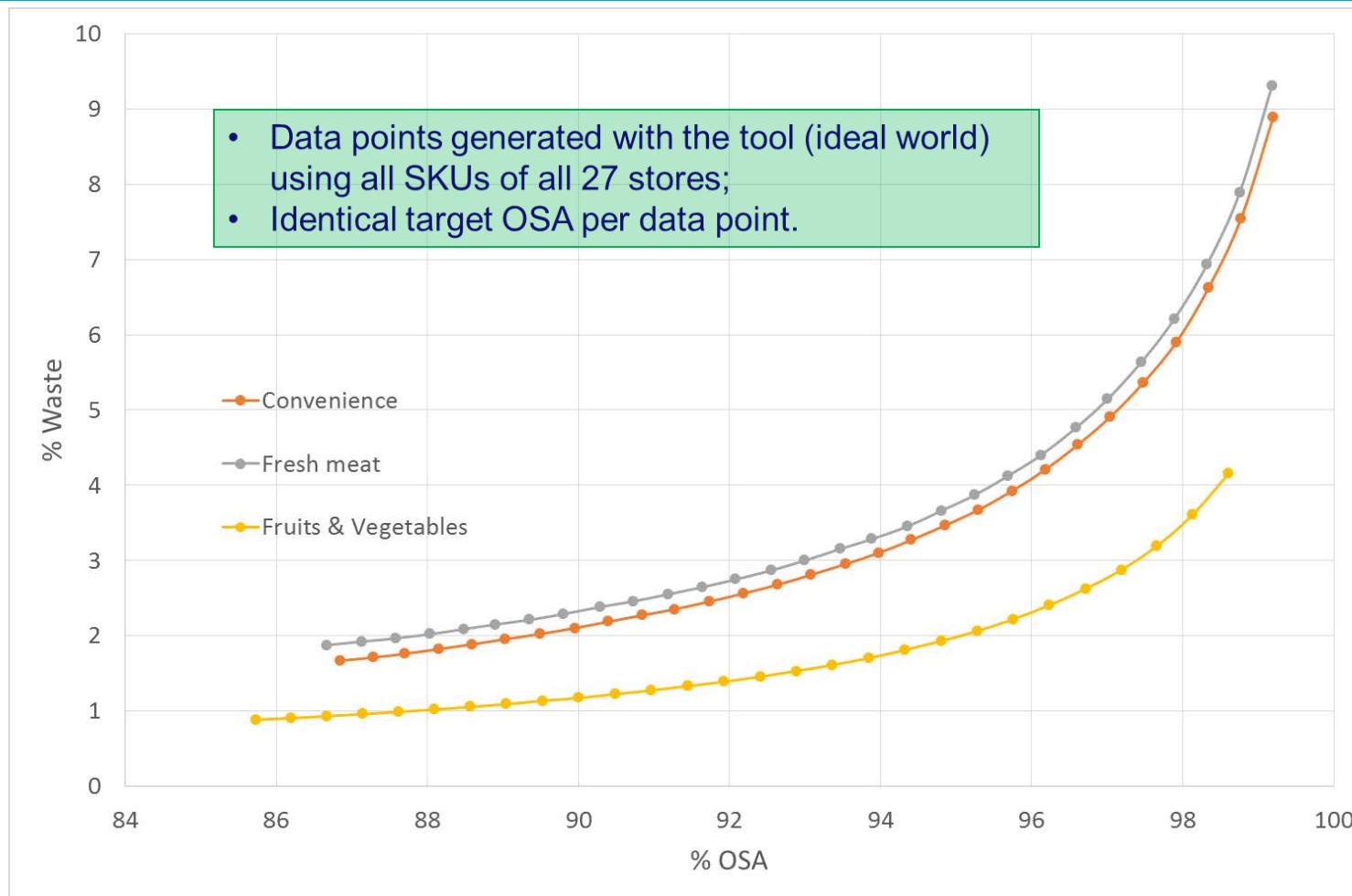
- Check with your own data whether a similar relationship holds for your company.



- Then use FCC as a simple communication tool to explain where and why waste emerged and what can be done to reduce it or to increase On-Shelf Availability (OSA).

Result 2: A tool to determine the Efficient Frontier

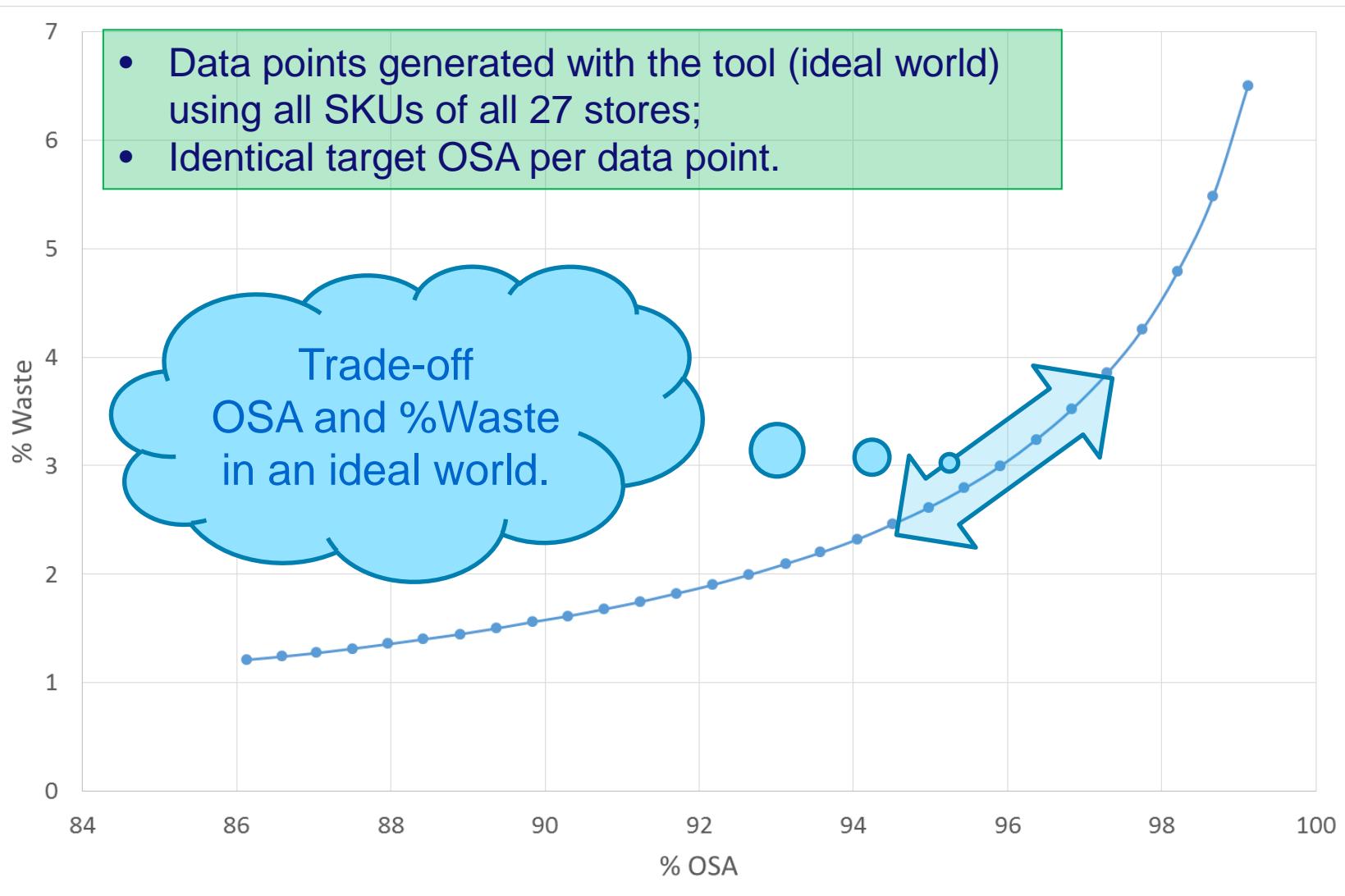
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The relationship between On-Shelf Availability (OSA) and %Waste in an ideal world is called the **Efficient Frontier**

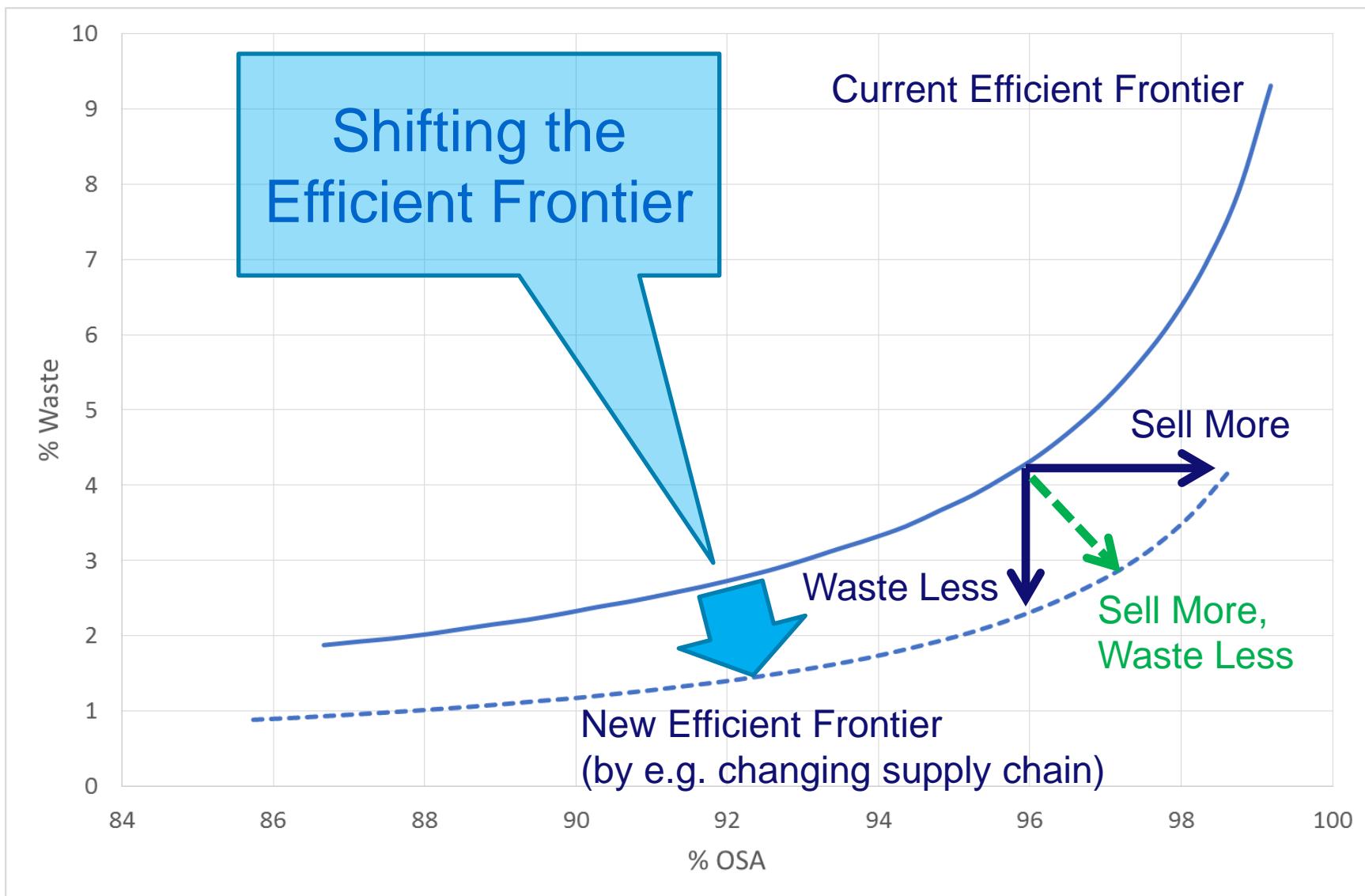
Recommendation 2: Find the optimal mix between OSA and %Waste for your company

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Recommendation 3: Develop strategies to shift the Efficient Frontier

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Sell More: improvement projects

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Project	%Waste Reduction	%OSA Increase
Increase shelf life for the store with 1 day.	1.4	3.4
Unpack all SKUs in DC (case pack size store is 1).	4.6	2.0
Increase shelf life for the store with 1 day AND unpack all SKUs in DC.	4.8	4.4
Differentiate service levels = lower OSA with 3% for slow movers (80% of assortment) and increase with 3% for fast movers.	0.5	1.3

- All improvement projects were evaluated with the tool using all 27 stores.
- $\%Waste_Reduction = 100\% * (\text{Waste}_{\text{Base}} - \text{Waste}_{\text{Project}}) / \text{Waste}_{\text{Base}}$
- $\%OSA_Increase = 100\% * (\text{OSA}_{\text{Project}} - \text{OSA}_{\text{Base}}) / \text{OSA}_{\text{Base}}$

Waste Less: improvement projects

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Project	%Waste Reduction	%OSA Increase
Increase shelf life for the store with 1 day.	42.8	0.0
Unpack all SKUs in DC (case pack size store is 1).	32.5	0.0
Increase shelf life for the store with 1 day AND unpack all SKUs in DC.	66.3	0.0
Lower OSA with 2% for all SKUs.	19.0	-2.0
Differentiate service levels = lower OSA with 3% for slow movers (80% of assortment) and increase with 1.5% for fast movers.	12.0	0.2
Delist 10% from the assortment (slow movers, which results in 0.6% less sales).	7.5	-0.6

- All improvement projects were evaluated with the tool using all 27 stores.
- $\%Waste_Reduction = 100\% * (\text{Waste}_{\text{Base}} - \text{Waste}_{\text{Project}}) / \text{Waste}_{\text{Base}}$
- $\%OSA_Increase = 100\% * (\text{OSA}_{\text{Project}} - \text{OSA}_{\text{Base}}) / \text{OSA}_{\text{Base}}$

Recommendation 3 (continued)

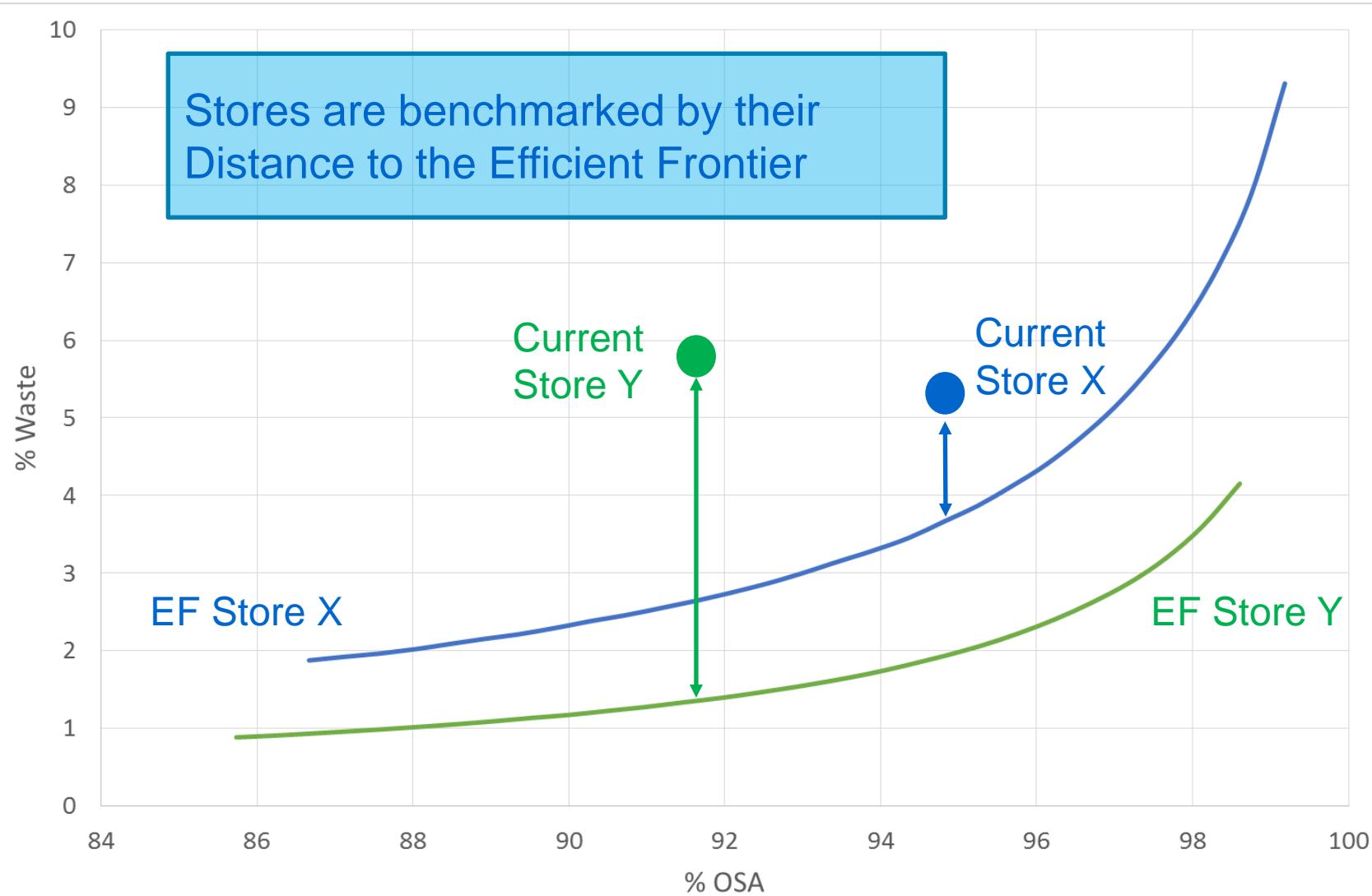
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- Use your own data to quantify the improvement potential within your company
- When increasing shelf life with one day, focus on items with shelf lives (when entering the store) up to 8 days



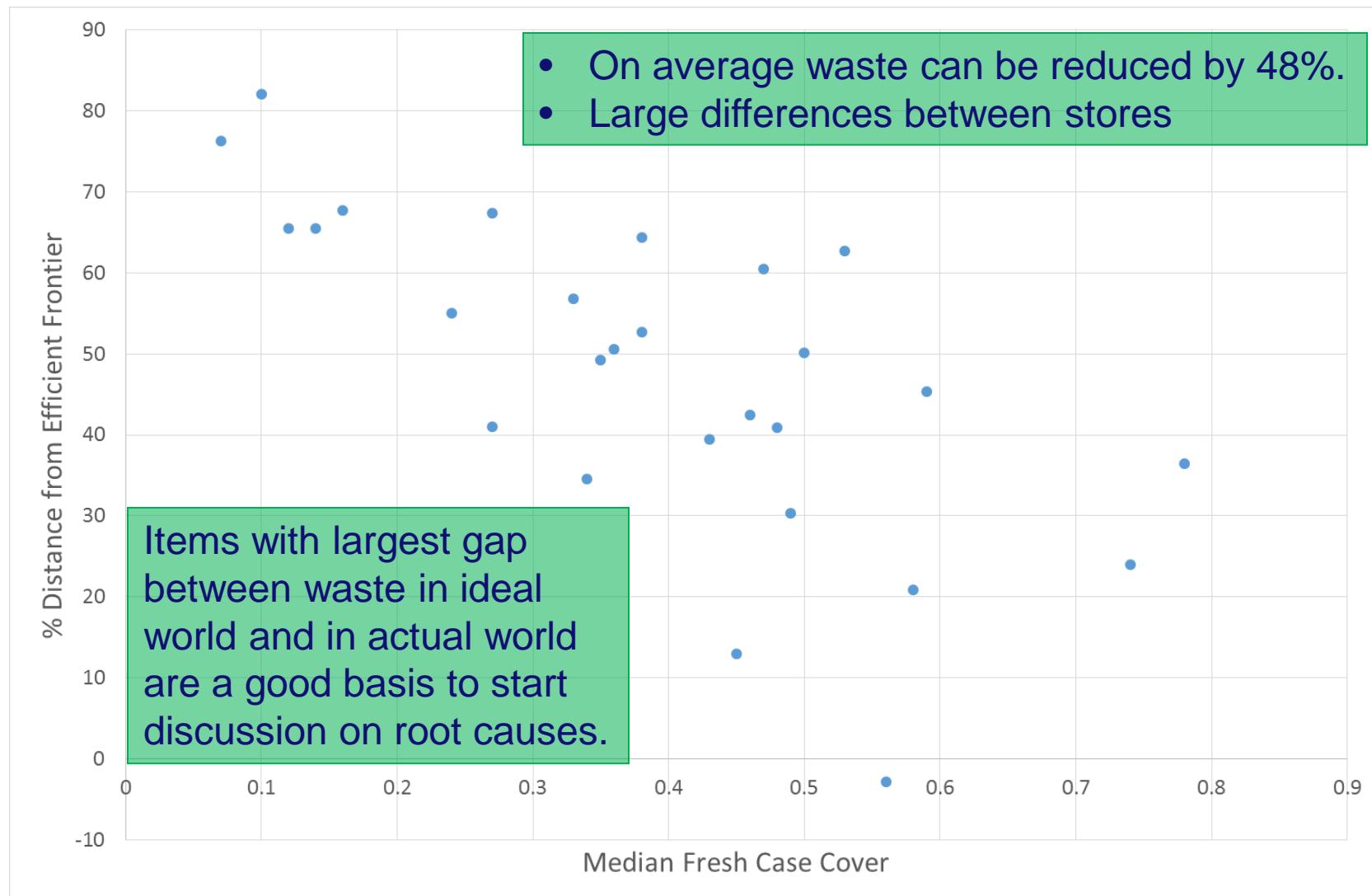
Recommendation 4: Benchmark stores and analyse their behaviour

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Distance to Efficient Frontier per store

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Recommendation 5: Use the checklist to identify new ideas to reduce waste

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A checklist is provided with more than 65 suggestions which may help to reduce waste and/or increase sales in the fresh departments, including suggestions how the suppliers can help to improve the performance of the fresh supply chain



Recent findings from research

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- With a *lower* service level at the DC, the freshness in the stores improves and waste is reduced. Alternatively, retailers can increase their OSA.
- Unpacking in the DC is shown not only to reduce waste (or increase OSA) but also to be cost optimal for a wide range of SKU's.



Master thesis projects with 5 retailers:

- Projects often include unpacking at the DC and/or change in flow type (e.g. cross-docking)
- Other improvement options studied:
 - Improving the replenishment logic in the DC
 - Training to create awareness of the root causes for waste and to use this to increase OSA



Lessons learnt:

- Confirmation of very large potential to increase profit
- Keep in mind how change affects different actors (large stores versus small stores, supplier versus retailer)
- Align the reorder levels when changing the minimum order quantities in the stores



Feedback from other retailers

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Major Australian retailer:

Everything rings true. After building this logic and controls into our automated replenishment system a few years ago (batch dates, FIFO%, markdown at end of life, etc) we did see big jumps in availability in many of our stores.

We use a concept similar to FCC to group items into 'range health' buckets. ...it's a helpful analysis tool to allow us to pinpoint whether high markdowns and waste are related to a FCC issue, or to operational execution, forecasting or something else.

Strongly agree with segmented availability targets – makes a big difference in meeting customer and business expectations (we started implementing this a few years ago).

The biggest challenge I face into though, is education around the extent to which sales and order plans can be improved

Key Takeaways

- The improvement potential is huge
- Especially increasing the shelf life with 1 day and reducing minimal order quantities for stores bring very large benefits
- Retailers find the FCC an easy way to get started: easy to explain and captures key performance drivers
- Many other tools and interventions available (for free) in the final report; see www.ecr-shrink-group.com

The final result

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More sales

Less waste

Fresher food, and

Happy consumers !!!



Questions

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