



Healthy Profits: An Interdisciplinary Retail Framework that Increases the Sales of Healthy Foods

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Abstract

Disruptive layouts, smart carts, suggestive signage, GPS alerts, and touch-screen preordering all foreshadow an evolution in how healthy foods will be sold in grocery stores. Although seemingly unrelated, they will all influence sales by altering either how convenient, attractive, or normal (CAN) it is to purchase a healthy target food. A Retail Intervention Matrix shows how a retailer's actions in these three areas can be redirected to target shoppers based on whether the shoppers are Health Vigilant, Health Predisposed, or Health Disinterested. For researchers, this review offers an organizing framework that integrates marketing, nutrition, psychology, public health, and behavioral economics to identify next generation research. For managers, this framework underscores how dozens of small, low cost, in-store changes are available to each that can surprisingly increase sales of entire categories of healthy food.

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Introduction

Our best and worst eating habits start in the grocery store. Although critics claim that retailers are primarily motivated to sell unhealthy processed food – Froot Loops instead of fruit or fish sticks instead of fish – the opposite is true for the savvy ones. If the fruit turns mushy and the fish begins to smell, retailers may lose more money in sunk inventory costs than they would otherwise gain by selling the processed versions. Grocers are motivated to sell healthy, profitable foods. Unfortunately, they do not know how to effectively do so (Chandon and Wansink 2012; Guthrie 2017; Inman and Nikolova 2016), so retail fruit and vegetable sales continue to drop (Haywood 2016; Produce for Better Health 2015).

Each issue of *Supermarket News* and *Progressive Grocer* highlights clever twists on how retailers can increase sales: novel POP displays, creative cross-promotions, compelling incentive

programs, colorful floor decals, and trendy planogram arrangements. Most of these tactics are driven by manufacturers of branded, less-than-healthy packaged goods. In contrast, most of the newest and most creative solutions for selling unbranded healthy products – such as fish, poultry, fruits, and vegetables – have been discovered in academia (Johnson et al. 2012).

Regretfully, however, many of these discoveries are not widely adopted or used beyond one or two field test stores (Inman 2012). First, these discoveries appear disorganized or disjoint because together they use a wide range of interventions to investigate a wide range of outcomes (such as sales, satisfaction, loyalty, repatronage, eye-tracking, and so on). This combination is overwhelming to a manager who is looking for a single solution, such as how to simply sell more fish. Instead of giving managers a useful toolbox of organized solutions, what we give them is more like a shoebox full of tax-time receipts.

The second reason our work is infrequently translated into practice is because its conclusions are either unconvincing or inconsistent (Vermeir and Van Kenhove 2005). We tend to focus on interactions or boundary conditions where an intervention might work with some customers and with some food categories, but not with others (List, Samek, and Zhu 2015). For instance,

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a Traffic Light rating system may be useful to some shoppers (Dzhogleva, Inman, and Maurer 2013; Grunert, Bolton, and Raats 2011; Trudel et al. 2015), but to others it might be a glaring warning sign that the food will taste bad (Werle et al. 2011). Academia thrives on interactions and exceptions, but the rest of the world runs on main effects.

The future of healthy retailing will be guided by the future of new research. All of the research in this review has been published or conducted after 2011 and half are still working papers.

They comprise a framework that integrates the newest discoveries in marketing, health psychology, public health, consumer research, nutrition, and behavioral economics to identify what might be the most actionable and compelling new research to influence practice and theory. First, the framework collapses the myriad of individual differences among shoppers into a three-segment hierarchy which summarizes their healthy shopping disposition. Second, it offers a useful way to organize the receipt box full of findings in a way that shows *how* various interventions work (improving convenience, attractiveness, and norms) and *where* they can work within grocery stores (by altering the signage, structure, service mix). Fig. 1 foreshadows how these pieces will combine to eventually create a Retail Intervention Matrix framework that can organize existing findings and stimulate useful new insights.

The Hierarchy of Health Predisposition

Not all shoppers shop alike. Health food enthusiasts shop differently than mothers shopping with kids; a “hot” fast-thinker shops differently than a “cold” slow-thinker; and variety-seekers shop differently than budget-constrained shoppers (Hui, Huang et al. 2013; Verhoef and van Doorn 2016). There will always

be an exception or an untested segment. This sometimes leads our results to appear frustratingly inconclusive when we have to admit that we do not know whether our new intervention works the same way with elderly shoppers as it does with shoppers using SNAP benefits (Guthrie 2017).

One solution is to only view shoppers based on how predisposed they are to making a healthier shopping decision. We can view them as belonging to one of three fluid groups that belong to a Hierarchy of Health Predisposition. The top segment of this hierarchy are Health Vigilant shoppers (Fig. 2). They are highly informed, conscious of calories, and are influenced by nutrition information. At the bottom extreme, Health Disinterested shoppers have little interest in changing their eating choices because of either the effort, sacrifice, or perceived futility. The segment in the middle are the Health Predisposed shoppers. They would prefer to make healthier food choices, but they have difficulty consistently doing so unless it involves very little sacrifice. This Predisposed segment is the one that buys the 100-calorie packages of snacks and the sugar-free yogurt. This segment is larger on New Year’s Day than it was in December; it was larger this past Monday morning than it was during the prior Friday night’s shopping trip.

One reason nutrition guidance systems (such traffic lights or Guiding Stars) have had only modest influences on the sales of healthy food (Cawley et al. 2015; Nikolova and Inman 2015) may be because they mainly resonate with only the top of the Hierarchy. Health Disinterested shoppers ignore these programs, and health predisposed shoppers inconsistently follow them. If the only segment they reach are the vigilant shoppers, interventions like this will have hardly any sizable impact on health since this segment is already shopping in a healthy way. Even if the same intervention is perfectly targeted at the bottom portion

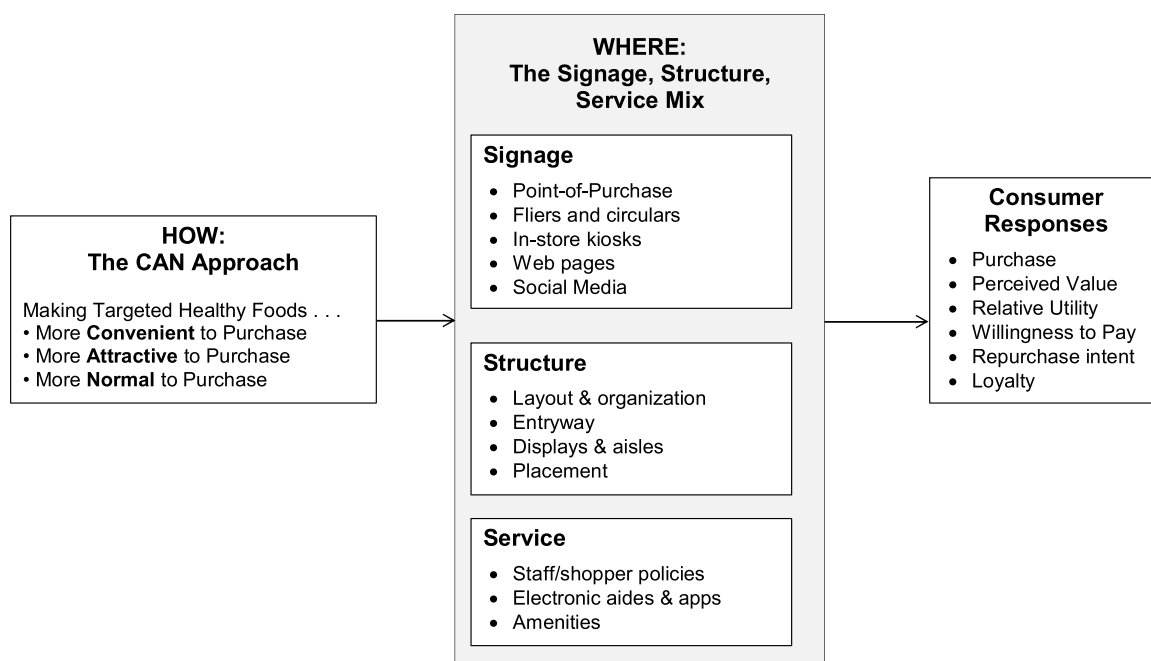
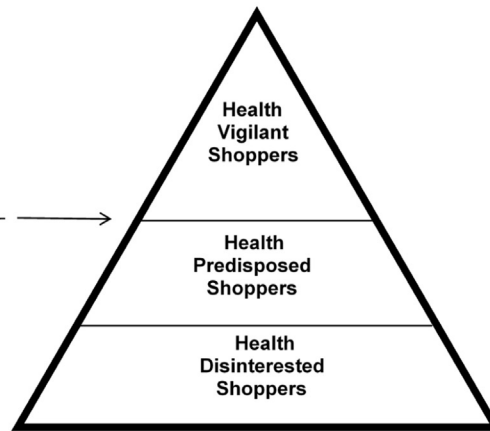


Fig. 1. How and where retail interventions can influence shoppers.

Individual Difference Factors

- Knowledge Level
- Involvement Level
- Need for Cognition
- Parental Involvement
- Nutritional Gatekeeper
- Nutritional Awareness
- Ego Depletion
- Hunger Level
- Family size



Which Interventions Are Effective?

- Recipe Kiosks
- “Traffic Lights”
- Web Resources
- Divided Shopping Carts
- POP Meal Ideas
- Front-of-store Fruit Displays
- A Candy-free Check-out Aisle

Fig. 2. The hierarchy of health predisposition.

of the Hierarchy, it would have hardly any impact because the bottom segment does not care.

The CAN Approach to Improving Healthy Shopping

Changing widespread eating behavior does not happen by convincing shoppers that an apple is healthier than a Snickers nor does it happen by coaching them to improve their imperfect willpower. While these may be reminders to Health Vigilant shoppers, they will not reliably work with Health Predisposed shoppers, and almost certainly will not work with Health Disinterested shoppers. Instead, a more sensible and cost-effective solution would be to simply make sure that the apple is much more convenient, attractive, and normal to choose than the Snickers. Offering an apple sample at the front of the store primes more fruit sales (Tal and Wansink 2015) and offering an apple display at the checkout helps pre-empt Snickers sales (Winkler et al. 2017). Such changes are effective because they influence passive shoppers and not just the vigilant ones.

In 2011, Denmark started a public health initiative to reduce obesity—partly by trying to increase the sales of fish, fruits, and vegetables (fresh, frozen, and canned) in grocery stores (thereby hopefully decreasing the sales of less healthy foods). Starting with a list of dozens of retail changes that were believed to be revenue positive (see Appendix A), six were selected to be implemented over a two-year period on the isolated Danish island of Bornholm (population 42,000). The six interventions selected were ones that retailers believed would both be profitable and easy to implement and maintain:

1. Fruit displays within 10-ft of the entrance
2. At least one candy-free check-out line
3. Traffic interrupters (displays of healthy foods in the wider aisles)
4. End-aisle displays of fish
5. Traffic Light (“Green Key”) labeling
6. In-Store Promotions = ½ Plate Rule Guidance System

In combination, these retail interventions were successful because they made it more convenient, attractive, and normal to purchase fish, fruits, and vegetables. For instance, putting fruit in an attractive display made it appear more *normal* (typical, or reasonable) to take fruit—partly because it was now also more *convenient* and looked more *attractive*. It was the *CAN* approach to changing behavior (Wansink 2015). Looking toward the future of retailing, the key to doing this successfully is to not handicap our imagination by too narrowly defining what is meant by convenient, attractive, and normal (Bommelaer and Wansink, 2017).

More Convenient to Select

As Fig. 3 illustrates, a manager can help make healthy foods more convenient to see, to consider, and to purchase (Desai and Trivedi 2014; Gilbride, Inman, and Stilley 2015). For instance, one of the biggest barriers to purchasing fish is that many shoppers are not confident about how to prepare and serve it. With these shoppers, no nutrition scale or promotion would lead a person to buy more fish until they understood that it could be integrated into cooking routines that were familiar and convenient for them. This was similar with tofu and to counter this, the largest tofu manufacturer in the US launched an in-store campaign that clearly illustrated that tofu is convenient to buy and to cook (“Fridge to pan in 10 minutes” and “Cooks like chicken”) which helped increase both shopper confidence and retail sales (Hsu 2014).

Even when shopping for familiar foods in familiar aisles, small changes can conveniently guide shoppers to make healthier choices. Vegetables placed near the front entrances are selected eight percent more than those that are not (Wilson et al. 2016), floor decals that guide people to other vegetable displays increased sales by nine percent (Payne and Niculescu 2012), and center-of-aisle “traffic interrupter” displays repeatedly increased one-day sales of overlooked vegetables by 400% in Denmark. Convenience also helps explain why about 43% of interior aisle grocery sales are within 12-in. of eye level (Stein 2018). This “you buy what you see” continues all the way to the checkout

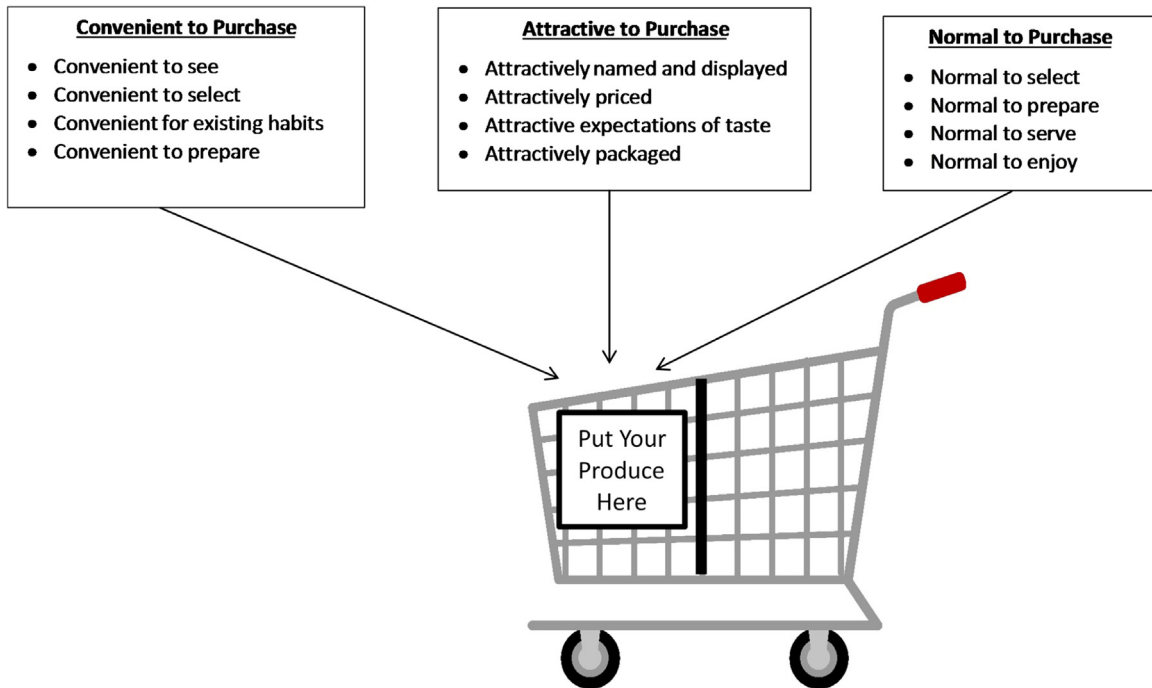


Fig. 3. The CAN approach to influencing shopping decisions.

where fruit displays can increase short-term sales by 35% (van Kleef, Often, and van Trijp 2012).

Along with saving physical effort, convenience can also refer to saving cognitive effort. This ranges from using easier-to-understand product category layouts (de Wijk et al. 2016; van Herpen 2016) to leveraging technology in the form of GPS alerts or personal shopping profiles (Sciandra and Inman 2014). Such reminders can guide shoppers to healthier choices by making it both more cognitively convenient to select and more convenient to visualize this food being prepared and eaten at a home meal (Hui, Inman et al. 2013; Lowe, Souza-Monteiro, and Fraser 2013).

More Attractive to Select

The second principle of the CAN approach is that the healthy choice needs to be made more attractive *relative* to less healthy (but usually more tastier) options. It could be more attractively named, more attractive in appearance, more attractively priced (Hampson and McGoldrick 2013), or it could evoke more attractive taste expectations than it usually does (Trivedi, Sridhar, and Kumar 2016; Vega Zamora et al. 2014). Fruit that is haphazardly piled onto a flat table is less attractive than fruit that is angled on a display with a colored frame around it (Stein 2018). Even simply giving a fruit or vegetable a descriptive name – crisp carrots or Michigan cherries – makes them more attractive and increases a person’s taste expectations (Spence and Piqueras-Fiszman, 2014) and selection by sixteen percent or more (Wansink et al. 2012).

Attractive packaging, descriptive names, color, labels, and appearance have all been shown to bias evaluations of taste. Food can also be more attractive simply by being novel (curried pump-

kin), attention-getting (heirloom Indian corn), or even more ethically attractive (meat-free turkey). Both the sustainability movement and the “ugly vegetable” movement have capitalized on ethically-motivated shoppers who find sustainable products to be more attractive.

Making a food more attractive by altering its price is a popular tool of behavioral economists, and it takes the standard form of taxes, subsidies, rebates, coupons, and bundling (Carroll, Samek, and Zepeda 2016). Unfortunately, when price rebates have been offered on fruits and vegetables, they can sometimes backfire by increasing both the sales of healthy produce *in addition* to the sales of unhealthy foods—especially in low-income households (Cawley et al. 2016). That is, the money saved on fruit is then spent on Froot Loops (Cawley et al. 2016).

More Normal to Select

Last, many shoppers often prefer to buy the foods they believe are normal or popular to purchase, serve, and eat. For instance, signs that told people that chick peas were the favorite bean in that area (Harlem) shifted 21% of all bean selections over to chick peas (Bhana 2017). This also works with quantities. Shopping cart signs that stated that the average shopper purchased at least five fruits and vegetables increased produce sales by ten percent (Payne et al. 2014). Moreover, even the size of the store might subtly suggest to a customer how much is normal to purchase during a shopping trip (Ailawadi, Ma, and Grewal 2016).

Benchmarks provide visual purchase norms. Consider two benchmarks that increase fruit and vegetable sales. One is the Half-Plate rule which was originally designed to help consumers operationalize the spirit of USDA’s MyPlate guidance system

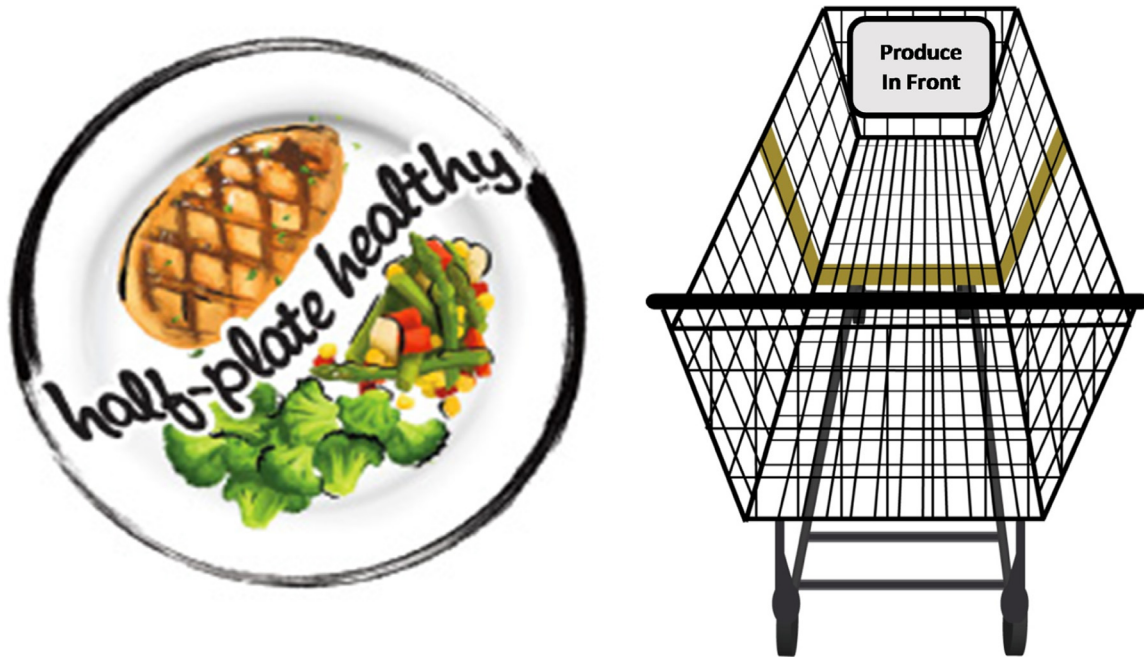


Fig. 4. The Half-Plate rule and the Half-Cart both suggest larger portion size norms for fruits and vegetables.

(Wansink and Tran 2017). The Half-Plate rule simply states that in order to eat more balanced meals, half of your plate needs to be fruits, vegetables, or salad and the other half can be whatever you wanted. You can have a second or third helping if you want, but half of your plate always has to be fruits, vegetables, or salad. This was successfully implemented in the leading grocery chain in the United States (Kell 2016) as “Half-Plate Healthy” because it had been shown to encourage shoppers to buy “considerably more” produce (Wansink 2014). After all, if consumers were going to eat half-plate healthy, they needed to shop half-plate healthy (see Fig. 4).

One of the reasons the half-plate healthy approach was effective for this leading retailer was because it offered a simple visual benchmark about how much fruit and vegetables are the right amount to eat—half the plate. Similarly, when consumers shop, little thought may be given as to whether a food is healthy or not. Yet if asked to categorize and separate each food they buy according to whether it is either a fruit or a vegetable (versus neither), it forces more mindful shopping. One set of studies involved shopping carts that had been physically divided across the middle and were accompanied with a sign in the front that instructed people to place their fruits and vegetables (fresh, frozen, or canned) in the front half of the cart and everything else in the back half. Using this Half-Cart approach increased the sales of fruits and vegetables by eighteen percent (Wansink, Payne, and Herbst 2017). In a second set of studies, when the proportion of the cart allocated to fruits and vegetables was either at the 35% level or the 65% level, the amount that shoppers spent increased from \$14.97 to \$17.54 (Wansink, Soman, and Herbst 2017). When the same type of dividing lines were added to on-line shopper order forms for grocery delivery, the same results were found. The size of partitions indeed matters to shoppers.

Nearly all healthy interventions in retailing influence shoppers by increasing how convenient, attractive, or normal it is to

purchase one food instead of another—an apple or a fish instead of crackers and beef (Bommelaer and Wansink, 2017). By organizing how our discoveries work, we open up new possibilities of influence. The CAN approach enables us to organize *how* our interventions influence shoppers. As Table 1 foreshadows, the next section shows *where* they will work best in a store.

The Signage, Structure, Service Mix: Where Retailers Can Best Change Behavior

Although nearly all shopping interventions influence shoppers by altering how convenient, attractive, or normal it is to buy a product, there are endless ways they can do so. There are also three different areas where retailers can influence shoppers by using these tools. Shoppers can be influenced through *signage* (inside and outside the store), by the *structure* of the store (layout and product positioning), and by the *service* the store provides (on-line, in-person, or on-site). This signage, structure, service mix influences different shoppers in different ways. Improving service might work best for Health Vigilant shoppers (because they are most likely to seek out the extra information or assistance). Improving signage might work best for Health Predisposed shoppers (as well as those who are and Vigilant). Changing the store’s structure might work well for all three segments.

Signage

Signage overlaps with the traditional “Promotion P” of the 4-P’s framework. It involves all out-of-store, in-store, and on-line efforts that are directed toward influencing what a shopper buys (Kovacheva and Inman 2014). Outside the store it includes fliers, circulars, commercials, outdoor advertising, and coupons. Inside the store it includes posters, signs, shelf-hangers, floor

Table 1
How sample findings fit into the retail intervention matrix.

	More convenient to purchase	More attractive to purchase	More normal to purchase
Signage	<ul style="list-style-type: none"> Floor decal arrow stickers asking people to follow the arrows to eat more nutritiously lead to a nine percent increase in produce sales (Payne et al. 2014) Joint efforts to provide fish dinner recipe cards and grilling instruction brochures were part of a larger campaign that increased fish sales by 28% (Karevold, Tran, and Wansink 2017) 	<ul style="list-style-type: none"> New recipe ideas, co-promotions, and end-of-aisle displays increased canned fish sales by eighteen percent (Toft et al. in preparation) Starring items as more healthy decreased the purchase of unstarred (less healthy foods) by two percent (Cawley et al. 2015) 	<ul style="list-style-type: none"> Signage stating that garbonzo beans were the most popular beans, increased selection by fourteen percent (Bhana 2017) Shopping cart signs stating that the average shopper purchased at least five fruits and vegetables increased produce sales by ten percent (Payne et al. 2014)
Structure	<ul style="list-style-type: none"> A fruit display near cash register increased sales 35%, even when product was not discounted (van Kleef, Often, and van Trijp 2012) Items (including produce) that was within 12-in. of a shopper's eye-level comprised over 43% of all sales (Stein 2018) 	<ul style="list-style-type: none"> Fruit samples provided to consumers upon entering the store increased sales fruit sales by seven percent (Tal and Wansink 2015) People were sixteen percent more likely to purchase a product from the first full aisle they entered than any subsequent aisle (Stein 2017) 	<ul style="list-style-type: none"> Visually diving a shopping cart in half and suggesting that half should be used for fruits and vegetables, increased their sales by fourteen percent (Wansink, Payne, and Herbst 2017; Wansink, Soman, and Herbst 2017; Wansink, Tran, and Karevold 2017) Using more islands than aisles in produce aisles increased shopping time and items purchased (Mukund, Atakan, and Wansink 2018)
Service	<ul style="list-style-type: none"> Healthy "Grab and Go" lines in in store cafeterias led to a 82% increase in healthy food sales (Hanks et al. 2012) Mobil apps that indicated what percent of your food is healthy and which were missing, was rating as being most attractive to in-store consumers (Mao and Atakan 2017) 	<ul style="list-style-type: none"> In-store suggestions by staff contributed to increased fish sales (Karevold, Tran, and Wansink 2017) One loyalty program rewarded fruit and vegetable purchases by providing a scaled discount based on how much was purchased^a 	<ul style="list-style-type: none"> "Half-Plate Healthy" on-line planner, led to higher produce sales and more balanced meals^a Shopping receipt "scorecards" showed consumers how the percentage of fruits and vegetables purchased in this trip compared with past trips (based on loyalty card data)^a

^a Unpublished findings based on proprietary studies.

decals, and kiosks as well as take-home media such as recipes, brochures, and magazines, and more stylized or person-based media, such as tailored ads, feedback or messages on shopping receipts (Otterbring et al. 2014), and GPS alerts for promotions. On-line it includes the website, on-line tools, social media, email alerts, sponsored apps, and GPS alerts for promotions that can be triggered both in and out of the store.

Signage builds awareness, offers reminders, changes attitudes, encourages comparisons, and so on. It can change the perceived convenience of purchasing healthy foods by making it more convenient or easy to consider ("Having turkey for dinner sounds good"), by changing perceptions of how attractive it would be to add organic parsnips into a routine meal, or changing how normal it would be to have a full fruit bowl sitting out when the kids return home from school (see Fig. 5).

Structure

The structure of a store includes its layout and where and how foods are positioned, such as whether the healthier foods are nearest the door, at eye level, co-promoted with other displayed products, and whether they are located in the first two aisles where a consumer shops. But structure also influences people before they even enter the store. Starting in the entryway, the size and shape of the shopping carts structurally influences how much

is purchased (bigger carts lead to bigger shopping trips) and what is purchased (divided carts lead to more fruit and vegetable sales). Any changes related to shopping carts and hand baskets continue to influence shoppers throughout their entire shopping trip, but shopping carts have their biggest impact before it fills up because this makes a shopper's budget constraints more salient (van Ittersum et al. 2013).

A store's structure can be changed by using traffic interrupters and islands (instead of aisles) in the produce section. A recent analysis of 1242 shoppers in four different sections of various grocery stores shows that while purchases in many sections of a grocery store (such as meat and cereal) begin to level off after two minutes of shopping, the total number of dollars spent in the produce section continues rising for about 12 min at a rate of \$1.84/min. One objective for a store, therefore, is to determine how to keep people shopping in the produce section for up to 12 min. Islands (instead of aisles) may help. They appear to slow shoppers down which relates to them spending more money on produce (Mukund, Atakan, and Wansink 2018).

Service

Most obviously, service includes the sunny appearance, helpfulness, and friendliness of greeters, butchers, and cashiers (Huneke et al. 2015; Keeling, McGoldrick, and Sadhu 2013),

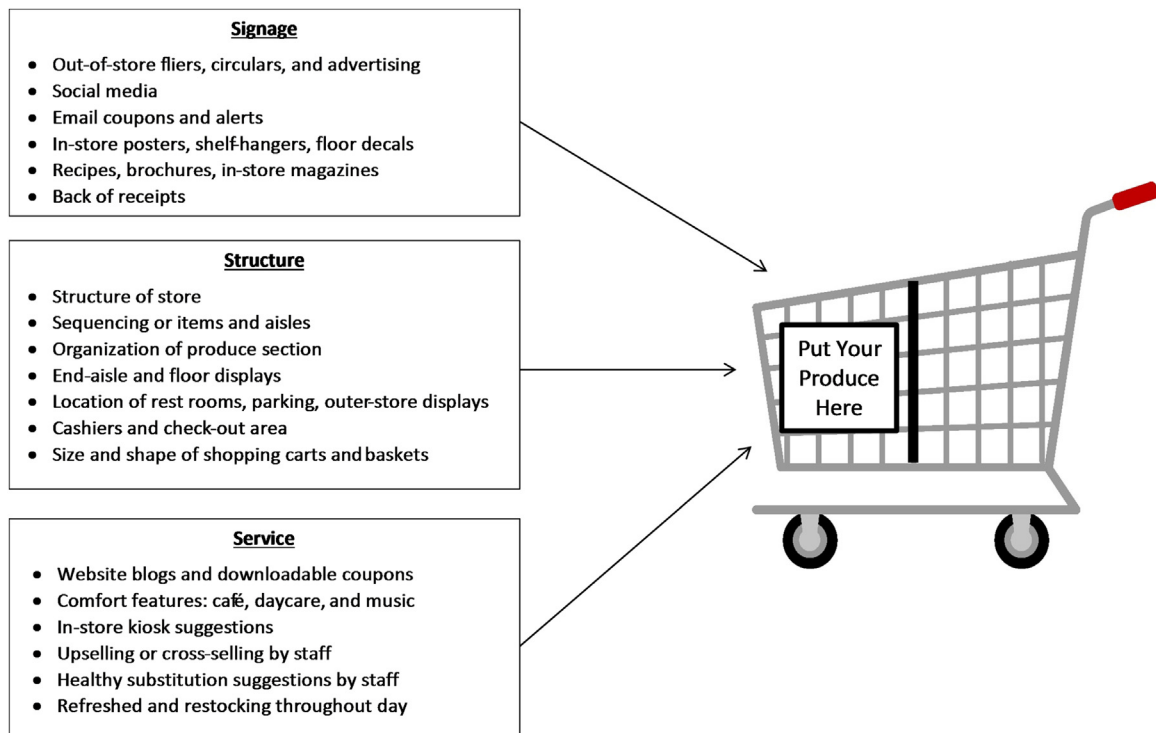


Fig. 5. The signage-structure-service mix.

the cleanliness of the store, and the restocking and upkeep of shelves (Robinson et al. 2016). Yet much of the service that really guides shoppers to healthier choices is surprisingly less face-to-face. It starts with how technology can influence the goals and expectations customers have before they enter the store (Gustafsson et al. 2016; Hunneman, Verhoef, and Sloot 2015; Lee 2015), such as when a Health Vigilant shopper reads a store blog on healthy food substitutes and prints off the related coupons. Once in the store, service can be efficiently boosted by new technologies, such as kiosks that give tailored recipes or a GPS cart-mounted tablet that gives real-time shopping advice (Block and Platt 2014). Last, service can influence a shopper's comfort and mood (Atalay and Meloy 2011; Chen, Lee, and Yap 2011). While the location of the restrooms and drinking fountains or the availability of near-the-entrance parking for new mothers appears to have little to do with sales, it increases a person's shopping time and store satisfaction, and it may indirectly trigger healthier sales (Atakan and Finch 2018).

Signage, structure, and service are the areas of the store where the CAN approach can be much more creatively leveraged to sell healthier foods. Still, aggressively pressuring shoppers to fill their shopping carts with healthy foods has diminishing returns, especially as their shopping trip progresses (Biswas, Szocs, and Inman 2016; Sheehan and van Ittersum 2016; Van der Heide, van Ittersum, and van Doorn 2016). There is a limit to how much more produce shoppers can be nudged to take (Toft et al. in preparation; Trivedi, Gauri, and Ma 2016). Unless total shopping volume rises, a short intervention study might heroically claim 30% increases in fruit and vegetable purchases, but a sustained long-term sales increase of three percent would be more realistic.

Although a long-term increase in sales of three percent for one intervention is much less exciting than 30%, there is an entire shopping experience or journey that needs to be taken into account (Beatty et al. 2015; Lemon and Verhoef 2016). This gradual healthy shift in the entire shopping experience could form the habits (Cleeran et al. 2016) that can nurture healthier store loyalty and healthier bodies.

Shaping Future Healthy Shopping

Organizing our findings into a Retail Intervention Matrix helps us make them more useful to retailers. If we can better see *how* one of our new discoveries influences choice (through the CAN Approach), and then better imagine *where* it will work best (the signage, structure, service mix of a store), we can help retailers far more than if we give them a nuanced, isolated finding. Moreover, knowing that there are three segments of shoppers with different degrees of health disposition (Vigilant, Predisposed, and Disinterested), helps us more realistically point to who we will have an impact on and who we will not.

Thinking Deeper

Within the signage, structure, service mix, much of the interdisciplinary retailing research focuses on using signage to make a healthy food more attractive through the way it is positioned or priced (Shah et al. 2013). As the upper right corner of Fig. 6 indicates, what is less known is how signage can be used to establish new purchase norms or consumption norms (Van Doorn and Verhoef 2015). For instance, over the past 40 years,

HOW Retailers Can Best Influence Shoppers

		Convenient	Attractive	Norms
WHERE Retailers Can Best Influence Shoppers	Signage	Research Is Needed	Research Is Needed	Research Is <u>Highly</u> Needed
	Structure	Research Is Needed	Research Is <u>Most</u> Needed	Research Is <u>Most</u> Needed
	Service	Research Is <u>Highly</u> Needed	Research Is <u>Highly</u> Needed	Research Is <u>Most</u> Needed

Fig. 6. Where research is most needed.

foods like yogurt and granola have gone from being foreign oddities to favorite staples. Knowing what created these new norms could help engineer sustainable healthy food trends of the future—regardless of whether they involve tofu or lab-grown meat (Purdy 2016).

In contrast to signage, changes in “structure” have generally focused only on making a healthy food more convenient: Move the fruit to front of the store, over to the cash register, to eye level, to an end-aisle display, and so on. Now it is time for bigger questions such as how structure can make a healthy food more attractive or more normal or popular to buy. Again, consider healthy, high-margin, environmentally sustainable tofu (Groening, Inman, and Ross 2014). Using a store’s structure to make tofu become more popular and trendy could be surprisingly transforming for retailers, manufacturers, and consumers.

Service is sometimes too narrowly defined as face-to-face or voice-to-voice encounters. New technologies both inside and outside the store give service the most unrealized potential by leveraging eye-tracking, smart shopping carts, video-tracking, and GPS technology (Hue et al. 2013; Nikolova et al. 2014). Whereas most interventions cannot easily show which of the three Hierarchy of Health predisposition segments they impact most, new technologies could show the results of these interven-

tions by either directly linking them to sales or indirectly doing so through shopper loyalty cards.

Applying Wider

Some of what we know about improving healthy shopping in grocery stores has already been systematically adopted into the growing 24-h lifestyle of convenience stores, corner stores, and mini-stores (Lenard and Schnare 2016). In 2016, the National Association of Convenience Stores launched a new toolkit titled, “Ideas That Work to Grow Better-for-You Sales,” and they include evidence-based tactics including (1) grab them immediately, (2) variety sells produce, (3) use creative adjectives, (4) remember the convenience factor, (5) have multiple displays, (6) let your store “talk,” (7) direct their feet, and (8) remind them (Lenard and Schnare 2016). Given this success in C-Stores (note the fruit baskets that are now near most cash registers), there are three other retailing frontiers that are deserving of our attention.

Concessions and Kiosks

Entrenched managers in food concessions and kiosks have long justified their unhealthy food portfolio mix my reactively claiming they simply “sell what people buy.” Yet they say this

without really having given healthier food much of a chance. Indeed, when a healthier range of snacks (fruit, chicken sandwiches, granola bars, low-fat string cheese, trail mix, and so on) were offered alongside existing concession foods during one Iowa football season, sales of healthy snacks rose with each high school game until they comprised nine percent of sales in less than two months because of both switching and new sales (Laroche et al. 2015). When Disney World followed by changing the defaults on kids' meals at their kiosks and offering fruit instead of french fries, it too generated more praise than push-back (Peters et al. 2016). Discovering simple, evidence-based steps that help retail concessions profitably move from selling snack foods to selling meal substitutes could be game changing (Laroche et al. 2017).

On-line Shopping and Delivery

After its initial growing pains, on-line shopping and delivery has been consistently growing across both North America and Europe. Yet the new adopters of this service are often families with children who steadily use the service once a week for a month; use it less consistently for the next two months; and often become inactive after that. Other than focusing on price promotions or loyalty programs (Bodur, Klein, and Arora 2015), a better solution would be to determine how to increase retention in a way that transforms *how* they eat in the same way it transformed *how* they order (Marinova et al. 2016). The opportunity to help people transform the way they view themselves (and their health) because of how they order food could sustain both this industry and their families (Lund and Marinova 2014).

Food Pantries

Helping food pantry shoppers make healthier decisions has typically involved research replicated from other contexts (Bhana and Contento 2017; Wilson 2016). There are limited numbers of products in food pantries and there are binding constraints (such as how much one can carry, or how much a person is allowed to take from a category such as pastries). Yet these limitations are precisely why a food pantry is a rich context for discovery. Without economic considerations, how do food shoppers behave? If they still take no fruits and vegetables, this might suggest that subsidizing cucumbers and taxing cupcakes may not have the intended policy impact that public health policy makers believe it would have (Bhana 2017; Cawley et al. 2015). Aside from being a rich context for research, applying useful insights to food pantries provides a world of value far from the office.

Why Healthy Field Study Interventions Appear to Fail

Applying this Retail Intervention Matrix framework is enticing. Yet one frustration when applying our theories deeper and wider is that health-focused interventions often fail when we move from the lab to the field (e.g., van Herpen et al. 2016). We usually believe it was because of poor implementation by our retail partner, or it was because of a noisy measurement problem. Instead, there are two reanalyses we could make ex post to more precisely determine if an intervention was more effective than

it initially appears. We need to analyze the right people, and we need to analyze the right days of the week.

We Do Not Analyze the Right Consumer Segment

Not all interventions work with all people (recall Fig. 2). An expensive, digital, in-store calorie education program with a hip spokesperson and viral social media support will still have no impact on the top or bottom segments of this hierarchy. This is because the Health Vigilant Shoppers already know it, and the Health Disinterested Shoppers do not care. Yet most retail field studies show disappointingly modest results because they do not try to disaggregate the data and focus their analysis on the segment it was most intended to influence. A more targeted analysis could be done by segmenting shoppers into the Vigilant, Predisposed, or Disinterested segments based on their purchase history (which is linked to their loyalty cards) and then reanalyzing each segment.

Different interventions influence different segments (Table 2). Setting up a study when and where it is most likely to influence a targeted segment will better help sift out which interventions are actually working in the way they intended. Aside from segmenting shoppers based on their loyalty card purchase records, shoppers could also be segmented or targeted by where they shop (e.g., Whole Foods, Target, Wal-Mart, the Co-op, and so on). If neither is possible, shoppers could be targeted by the time of the day or the day of the week *when* they shop.

We Do Not Analyze the Right Days of the Week

It is not surprising that people shop much less healthy at the end of the year – October through December – than they do after January 1st. The dollar amount of the healthy food we purchase increases 29.4% right after the first of the year (Pope et al. 2014). This is not surprising but it would suggest that if an intervention has any chance of working, it would be better to test it in mid-January than in mid-December or even mid-June. In general, a healthy intervention's effectiveness might continually decline throughout the year. That is, healthy shopping-focused interventions may be most effective in the first quarter, moderately effective in the second quarter and third quarter, and least effective in the fourth quarter.

Yet if shoppers are on their best healthy shopping behavior during January, something similar may happen the beginning of each week in a smaller way. After a weekend of indulging, some people might have an unstated resolution to try and shop better, which makes them more susceptible to in-store nudges on a Monday than they would have been the prior Friday night. This Monday Morning Effect has been recently shown in both in cafeterias and grocery stores (Wansink, Tran, and Karevold 2017). In a three-month study of over 15,000 diners, putting fish first (and beef last) on a buffet line increased fish selections on Mondays to Wednesdays but had no influence after Wednesday. Analogous results were found in grocery stores. Among people who made larger purchases (over \$50 USD), interventions were most effective early in the week (Monday–Wednesday) than on Thursday–Sunday. If a field study intervention does not seem to have worked, reanalyze the sales results for only Mondays, Tuesdays, and Wednesdays. It may give a more accurate assess-

Table 2
 A Retail Intervention Matrix of How Scandinavian retailers doubled the sales of frozen fish.

Mix element	More convenient to purchase	More attractive to purchase	More normal to purchase
Signage	<ul style="list-style-type: none"> Created recipe cards titled “Fish in 15” (min) Offered a “Grill Tips” flier for the grilling salmon 	<ul style="list-style-type: none"> Co-promoted the fish with vegetables (such as leeks and broccoli) Named select fish and included a map showing the part of the world where it was caught 	<ul style="list-style-type: none"> Created “Native Norway” logos to promote fish as local Used “Local Favorite” and “Managers Special” stickers
Structure	<ul style="list-style-type: none"> Utilized vertical display cases; moved fish to eye level and processed foods to the bottom 	<ul style="list-style-type: none"> Moved fish displays immediately after vegetables Included a buffer of frozen vegetables between the fish and the beef so people would not make an unfair sensory comparison with beef 	<ul style="list-style-type: none"> Placed the single servings of fish and some of the lower priced “sales specials” near the highest traffic edges of the displays
Service	<ul style="list-style-type: none"> Offered frozen freezer packages to keep fish frozen until home Offered plastic bags to put shrink-wrapped fish in for extra separation protection from other foods in the basket 	<ul style="list-style-type: none"> Offered smaller, one-portion servings Put markings on the wrapper to show how much to prepare for one, two, three, or four persons Email promotions were sent to loyalty card holders, with recipe ideas and web-links to downloadable coupons 	<ul style="list-style-type: none"> Employees were instructed to suggest the two best selling types of fish and the two most common items with which they were prepared (e.g., rice pilaf and broccoli) Employees were trained to suggest additional items commonly bought along with specific types of fish

ment of whether the intervention is worth dropping, reporting, or improving.

Using the Retail Intervention Matrix to Sell More Fish

Until now, the Retail Intervention Matrix has been presented as a way to organize research findings based on *how* they work (making healthier foods more convenient, attractive, or normal) and *where* they are implemented in the store (within the signage, structure, service mix). This framework can be used to organize key findings into a sensible pattern that is also useful in practice.

For example, a large Scandinavian grocer had the marketing objective of growing their market share by repositioning itself as the most environmentally sustainable retailer in Norway. One way they planned to accomplish this was by increasing their sales of fresh and frozen fish, which are much more environmentally sustainable than beef, pork, and lamb. They planned to first increase the variety of fish they offered (types, sizes, packaging, and so on) and to more actively promote this fish through advertising campaigns and price promotions. In addition to these traditional 4-P marketing mix methods of growing this category, the Retail Intervention Matrix was then used to create a broader set of interventions that could be used to further push the sales of fish by focusing on changes in the signage, structure, and service mix.

All 457 stores in the chain used the traditional marketing mix approach of altering the variety, packaging, advertising, and price promotions of fish. Over a two-year period, these marketing efforts consistently increased sales by nine percent. Following this, 239 stores selected various additional changes to make (see the Retail Intervention Matrix for increasing fish sales in Table 2). Because of these changes, the average store generated 28% more fresh fish sales per transaction than those stores

that had initially changed only the marketing mix (Karevold, Tran, and Wansink 2017).

This brief example involving Norwegian fish shows one way research findings can be extrapolated, organized, and presented in a way that is compelling for managers who have little time or tolerance for ambiguity and nuance. Showing how an intervention might work (the CAN approach) and where it can be implemented (through the signage, structure, service mix) enabled this retailer to provide a menu of actions or changes that each of its stores could pick and choose from. Similar adoptions of retail-based findings are also being explored by an American consortium of grocers (Borstein 2015) who are assembling an industry-wide Grocery Retail Scorecard that will show retailers how they can profitably help their customers shop healthier (Convergencepolicy.org/scorecard/).

Conclusion

Retailing research in the future will be different than that of the past. It will be partly judged on whether it delivers fresh, useful solutions. A common view in the past was that an academic’s role was to generate insights, and the role of managers was to determine how to use them. In the future, determining and discovering which insights have the biggest impact will be broadly rewarded. Using the Retail Intervention Matrix – including the CAN approach and the signage, structure, service mix – can help determine what is known and what needs to be discovered. Last, the Hierarchy of Health Predisposition can show where an intervention can be most effective, most immediately.

Appendix A. An abbreviated scorecard to help retailers by organizing sample findings into the retail intervention matrix.^{a,b,c}

	More convenient to purchase	More attractive to purchase	More normal to purchase
Signage	<ul style="list-style-type: none"> • Use display signs to draw attention to and promote the store’s selection seasonal fruits and vegetables with display signs • Provide information sheets on healthier ways to shop near all entrances • Directs traffic entering the store such that most shoppers begin in the produce section • Provide a circular/ad publication featuring and promoting healthier value options at least once per week 	<ul style="list-style-type: none"> • Use a guidance system, such as Guiding Stars or a stoplight approach, at the shelf edge • Use display signs to draw attention to and promote seasonal fruits and vegetables with display signs • Use signs which provide “Did You Know?” health benefit facts, positive messages about specific healthful foods throughout the store, or both • Bundle recipe ingredients for family meals next to recipe cards for a healthy meal • Make sure that soda and low-nutrient snacks (i.e., chips) are not displayed or merchandised in the produce section 	<ul style="list-style-type: none"> • Display educational posters around the store that encourage healthy eating, such as the Half-Plate Rule • Co-promote healthier options together in snack aisles • Highlight healthy alternative entrée options such as the salad bar on posters or signs within all dining areas • Place posters displaying healthier foods or a guidance system such as the Half-Plate Rule in visible areas in the dining area
Structure	<ul style="list-style-type: none"> • Offer a “grab and go” area in the front of the store with a small selection of low fat milk, eggs, 100% juice, low-fat yogurt, and whole grain bread for the in-and-out shopper • Organize ingredients for a healthy meal by preparation method, such as a stir-fry section that includes mushrooms, eggplants, peppers, and so forth • Place healthier foods conveniently at eye level • Make available one percent or fat free milk, 100% juice, and water in all mini fridges in checkout aisles • Make sure there is at least one checkout aisle in which the only food for sale qualifies as healthier (no candy aisle) • Make sure that all beverage coolers have both water and low-fat non-flavored milk stocked and available 	<ul style="list-style-type: none"> • Assign designated parking spots near at least one entrance for pregnant women and mothers with infants (similar to handicapped spots) • Create a fresh produce display in the seafood section including items such as lemons, tomatoes, beans, and asparagus • Display whole fruits such as oranges, apples, pears, nectarines, and apricots next to prepared desserts • Make sure that there is at least one checkout aisle in which the only food for sale qualifies as healthier (no candy aisle) 	<ul style="list-style-type: none"> • Offer at least three healthier foods for sale at all entrances to prime healthier shopping • Offer pre-printed shopping lists of basic staples near all entrances • Offer healthier food samples or demonstrations near at least one entrance and at least once per week • Offer half portions for all entrées and desserts that are served or pre-packaged, smaller containers for self-service entrees and desserts, or both • Make sure that takeout boxes are available for leftovers not eaten in the dining area • Offer divided shopping carts with a “place fruits and vegetables here” section
Service	<ul style="list-style-type: none"> • Supply simple five-ingredient recipes as tear-off cards next to specific produce in-store, on the store’s website, mobile phone app, or both • Make pre-cut vegetables available in the meat section • Provide an area in the store for shoppers to sit and relax^d • Provide an area in the store for shoppers to eat^d • Offer a salad bar that includes lower calorie dressings options such as oil and vinegar • Promote mobile phone apps that encourage healthful eating such as Fooducate, MyFitnessPal or other Barcode/QR code scanners • Offer tips, features, or videos involving better shopping and better living on the store’s website or social media outlets 	<ul style="list-style-type: none"> • Provide calorie information on different types and cuts of meat in the form of posters, brochures, or labels • Make sure that the store’s website, mobile app, or both (if they have one) has Shopper Loyalty specials that include deals on healthier items • Provide a loyalty card program which rewards customers with incentives such as bonus points or coupons for purchasing fruits and vegetables, making healthier choices, or both • Offer a discount for customers if a certain percentage of purchases are fruits and vegetables • Offer at least two daily healthier grab & go breakfast, lunch, and dinner options 	<ul style="list-style-type: none"> • Supply useful tips related to preparation, storage, and food safety in produce section, via mobile phone app, or both • Use a receipt program which can create an itemized list indicating what percentage of purchases were fruits and vegetables, low-fat meat, and low-fat dairy • Use a receipt program that uses loyalty card information to show how much was spent on fruits and vegetables, and compares this amount to past trips

^aReprinted, with permission, ©Slim by Design, Wansink (2014).

^bFindings are from published papers, working papers, and unpublished pilot studies (Wansink 2014).

^cComfort measures reduce stress. People make better food decisions when they are under lower stress conditions.

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