



IN-STORE IMPACT OF ACTIVE DETERRENCE TECHNOLOGY

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INTRODUCTION

According to the 2019 National Retail Security Survey, the average shrink rate of 1.38% is estimated to cost the retail industry about \$50.6 billion annually. For this reason, retailers have turned to evidence-based technological solutions in an attempt reduce theft in their stores (Hayes, 2003; Johns, Hayes, Scicchitano, Grottini, 2017; Lab 2010).

Active deterrent technology in particular can provide many potential benefits to retailers. First, these technologies actively respond to behaviors in real time, making them more of a deterrent to offenders. Due to the audio and visual cues, they are more likely to be noticed by offenders, and finally their presence creates an enhanced sense of physical security and control designed to deter away potential offenders. All these elements work together to deter theft events before they happen.

In 2019, the Loss Prevention Research Council worked with CVS Health to better understand the effect of implementing the Indyme *SmartDome Active-Deterrent System* on shrink, offender deterrence, customer impact, and overall employee sentiment. Pre-test and post-test data were collected on shrink and sales, and qualitative interviews were utilized to further study the impact of the system. The goals of the research were to:

1. Examine the effects of implementing the technology on shrink and sales
2. Understand customer, offender, and associate perceptions of the *Indyme SmartDome Active Deterrent Technology*
3. Identify ways that the technology can be improved through open-ended feedback from employees, customers, and offenders

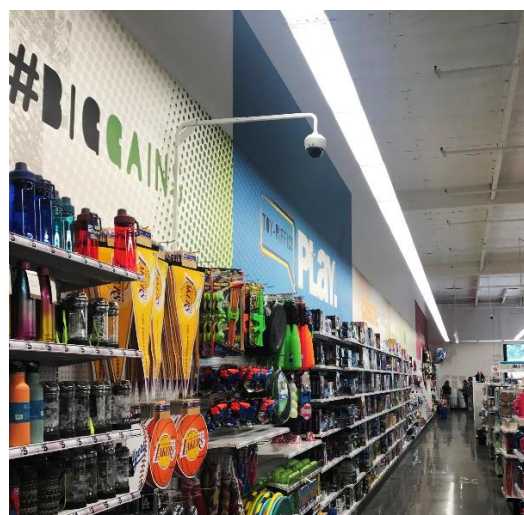
BACKGROUND

The state of loss prevention today is largely based on passive deterrents. Examples of passive deterrents are EAS tags, spiders, keepers, CCTV cameras and most PVMs. These are passive deterrents because they cannot “respond” to deviant behavior, but rather are static and are designed to inhibit the thief’s ability to steal large quantities or identify the thief after the fact. For example, while CCTV is able to collect valuable data, and the presence of “dome cameras” can act as a deterrent and thwart some theft, these systems are principally used after the fact for prosecution purposes. These passive systems often only provide evidence *after* the crime has been committed and do little to empower the interruption of in-progress crimes.

How It Works

Indyme's *SmartDome* technology represents a new breed of "active deterrent" systems that are able to respond in real time to deviant behaviors and cause offenders to abandon thefts in progress. *SmartDome* is an intelligent dwell detection, local deterrent, and store associate notification system. It is packaged to look like a dome camera that "activates" when it detects the presence of people or suspicious events. Once activated, it delivers a local tone or voice message, on-board LEDs flash in a record cadence, and optionally it can notify store associates over virtually any communications device, including the store PA. To fulfil the LPRC mantra of "See it, Get it, Fear it", *SmartDome* gains the attention of an offenders via an audible tone or voice announcement, it visually looks identical to a dome camera, and the flashing red LEDs create the impression of active remote surveillance. *SmartDome* can detect a range of threats, assign a risk level to those behaviors, and select from a range of deterrents – from mild to aggressive, to activate while the offender is in the area.

SmartDome is available in a battery-operated version with 2 – 3-year battery life, or a POE powered version. Similar to dome cameras, *SmartDome* can be mounted in several ways. Pole mount, gondola mount, and "clip to the grid" drop ceiling bulkhead mount. *SmartDome* can be deployed in Stand-Alone mode as a point solution, or part of a complete system utilizing Indyme's SmartResponse notification infrastructure.



This research seeks to explore the effectiveness of a retailer adopting *Indyme's SmartDome technology*. The impact on offenders were measured to determine if they *see, get, and fear* the technology. Shoppers were also interviewed to assess the impact on the customer experience. Finally, store personnel were interviewed to get their perspective on the system effectiveness and ease, and also to determine how *SmartDome* technology assists store personnel in deterring theft.

Modes and Mechanisms of Actions – *Effort, Risk, Reward*

Ronald Clarke's (1997) situational crime prevention model focuses on reducing the opportunity for crime, including:

1. Increasing the effort an offender must use to carry out a crime
2. Increasing the risk, or probability, of being caught
3. Reducing the rewards or benefits of the crime

It is theorized that one will be less likely to commit a crime if they believe the effort of committing the crime is too high, their risk of being caught is too great, or the benefits of committing the crime as being too low. Those technologies that accomplish all three are theorized to be the most effective deterrents of theft. The *Indyme SmartDome Active Deterrent System* touches on two of these dimensions directly, specifically effort and risk. The technology is also designed to improve communication of alerts, enhancing store personnel's ability to identify and communicate the presence of potential offenders.

Social control, as defined within the studies of sociology and criminology, refers to the regulation of individual or group-level behavior in society. *Formal social control* is typically defined as those carried out by formal agencies, such as law enforcement or employers, to encourage conformity through the use of established rules (i.e. laws or regulations) (Rosenbaum, 1988). In this case, store associates act as actors of formal social control. In terms of *effort*, offenders are forced to avoid or evade associates and the *SmartDomes* throughout the store, increasing the effort it takes to successfully steal from that store. Furthermore, the system heightens the *risk* that offenders will be caught, because it allows employees to quickly and discretely identify specifically where the offender is located throughout different areas, effectively increasing the surveillance across the store. Finally, if the *SmartDomes* are in close proximity to the targeted merchandise, offenders may be forced to choose other, less valuable, merchandise instead. Therefore, the *reward* for shoplifting may also decline due to the technology.

Modes and Mechanisms of Actions – *See, Get, Fear*

Effective deterrence of theft is also predicated on offenders noticing the technology, understanding its purpose, and finding that deterrent to be a credible threat. In other words, offenders must "*See, Get, and Fear*" the anti-theft technology. The survey instruments used for the data collection for this research were specifically designed in order to evaluate the *Indyme SmartDome Active Deterrent System* using the "*See, Get, and Fear*" model.

Research Design

In this study, nine CVS employees, thirty customers, and twelve self-admitted offenders were interviewed by the LPRC Research Team.

The purpose of the study was two-fold: First, we were interested in the impact of the technology on shrink, sales, and criminal incidents. Data was collected before and after installation and compared in the analysis phase to determine the overall effect of the technology. We were also interested in the perceptions of the Indyme *SmartDome Active Deterrent System*, more specifically, we sought to understand the impact of the system on the three main groups of people exposed to this technology.

First, we were interested in the impact of the active deterrent system on customers within the retail space. During data collection, an LPRC Researcher intercepted and interviewed customers to gather their feedback on the technology. The purpose of these intercepts was to determine if the customers noticed the technology, if they approved of the technology when engaged by it, and if the customers are negatively or positively affected by the technology.

We next evaluated the impact of the technology on offenders using the “*See, Get, Fear*” framework. We also evaluated if the offender’s believed that they were being actively surveilled and their perception of the effectiveness of the system compared to common passive deterrent technologies. They were also encouraged to give their feedback and recommendations to improve the technology. These offenders were recruited by the LPRC specifically for this project and the interviews were conducted within the test store in Zone 2 (the area in close proximity to the technology).

Finally, the LPRC Research Team conducted interviews with CVS associates to evaluate whether they believe the technology benefits their workplace performance, increases customer service, and/or helps deter crime in-store. They were also encouraged to provide feedback on the unit themselves and recommendations to improve the technology. We specifically measured the employees’ feedback in terms of ease of use, ease of implementation, and preference compared to other alternatives.

Results

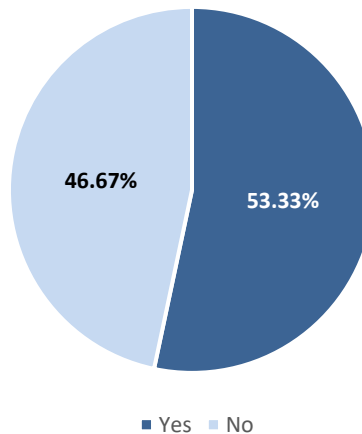
Customer Feedback

While collecting data within the CVS location, LPRC Researchers intercepted thirty CVS customers in order to get their perspective on the technology and how it may affect their experience while shopping.

We first asked customers if they could point out any loss prevention or anti-theft technology in the area. 76.67% (23) of those surveyed were able to locate some form of anti-theft technology in the area. When asked to point out the specific anti-theft technologies that they located, 63.33% (19) of the surveyed customers were able to correctly identify the Indyme *SmartDome System*.

We next asked customers if they were familiar with this technology or had they seen it in other stores previously. Of those that we surveyed, 53.33% (16) said they had while 46.67% (14) said that they did not (See Figure 5.)

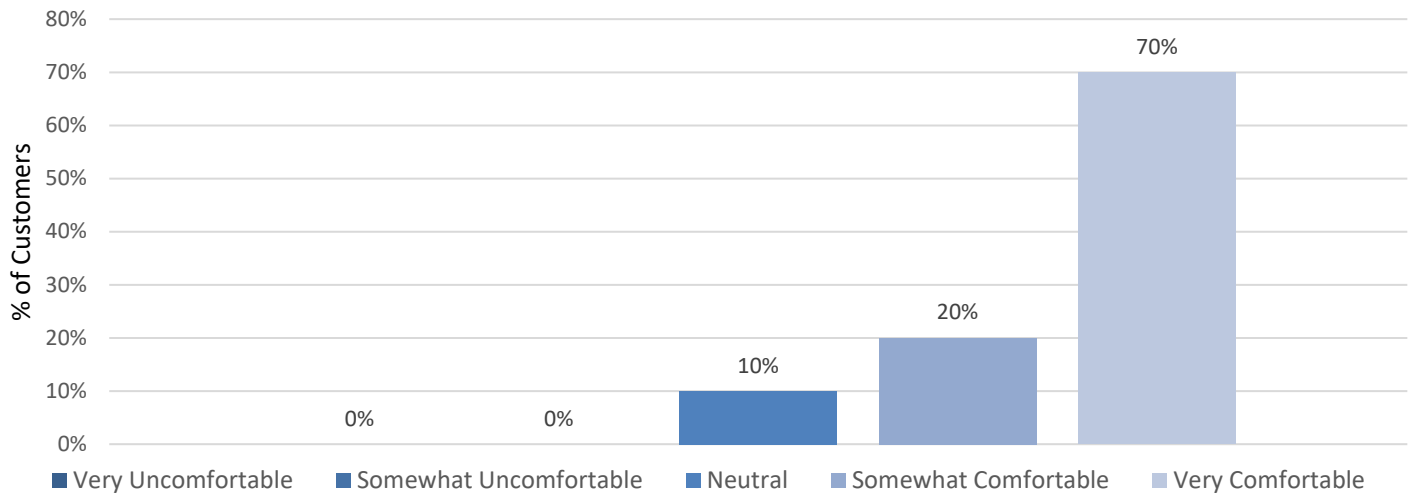
Figure 5. Have you noticed this technology in stores before?



Next, we asked customers how they thought the Indyme *SmartDome Active Deterrent System* worked. All of the customers that answered this question believed that the *SmartDome System* was a camera system that monitored the section that it was installed in. One customer correctly identified that it triggered an alert and had further sensing abilities than the average CCTV camera.

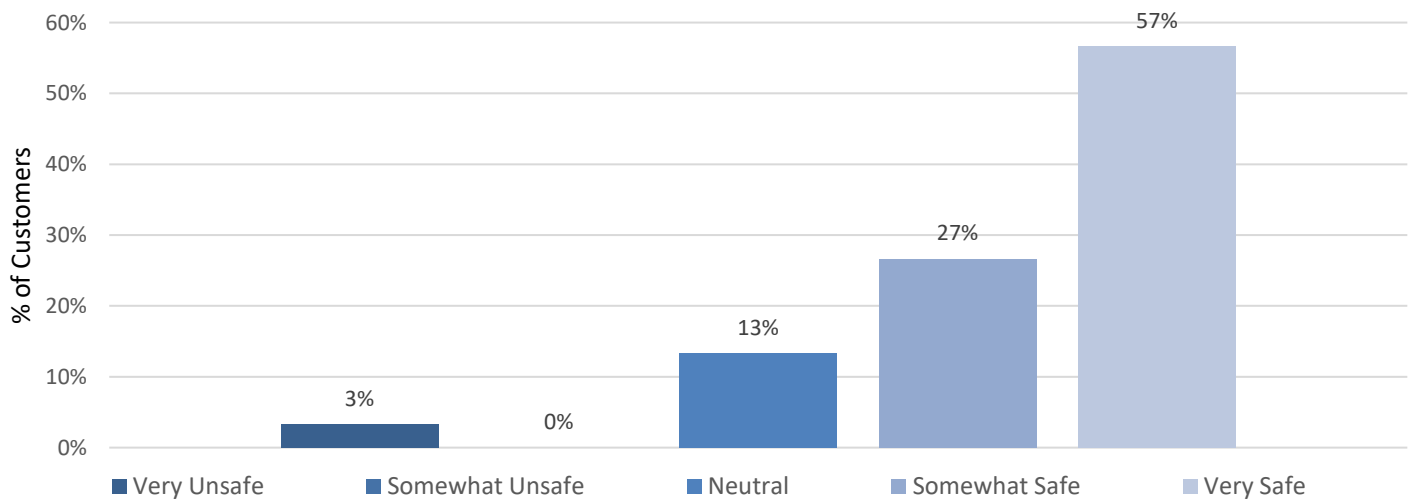
After we explained the basic functions of the technology, we wanted to assess how customers felt in the presence of it. We first asked them how comfortable they felt. 90% (27) of customers said that they were either “Somewhat Comfortable” or “Very Comfortable”, with 70% (21) saying that were “Very Comfortable” (See Figure 5).

Figure 5. How comfortable would you feel in the presence of this technology?



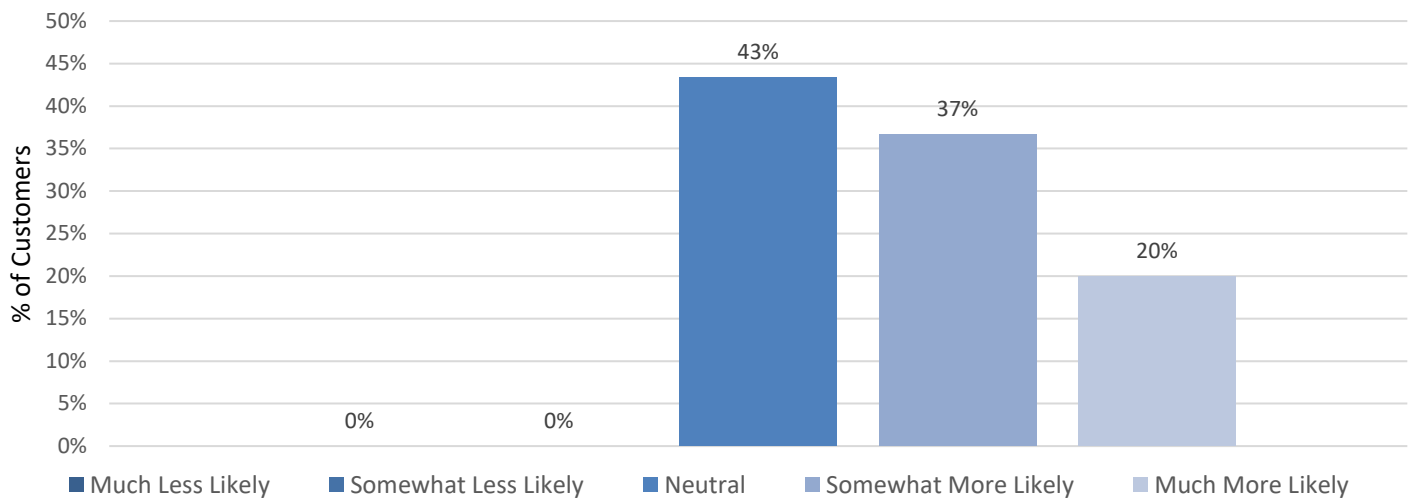
We next asked customers about their perceived level of safety in the presence of this technology. 56.67% (17) of surveyed customers indicated that they feel “Very Safe” in the presence of the technology while 26.67% indicated that they feel “Somewhat Safe” in the presence of the technology (See Figure 6).

Figure 6. How safe do you feel in the presence of this technology?

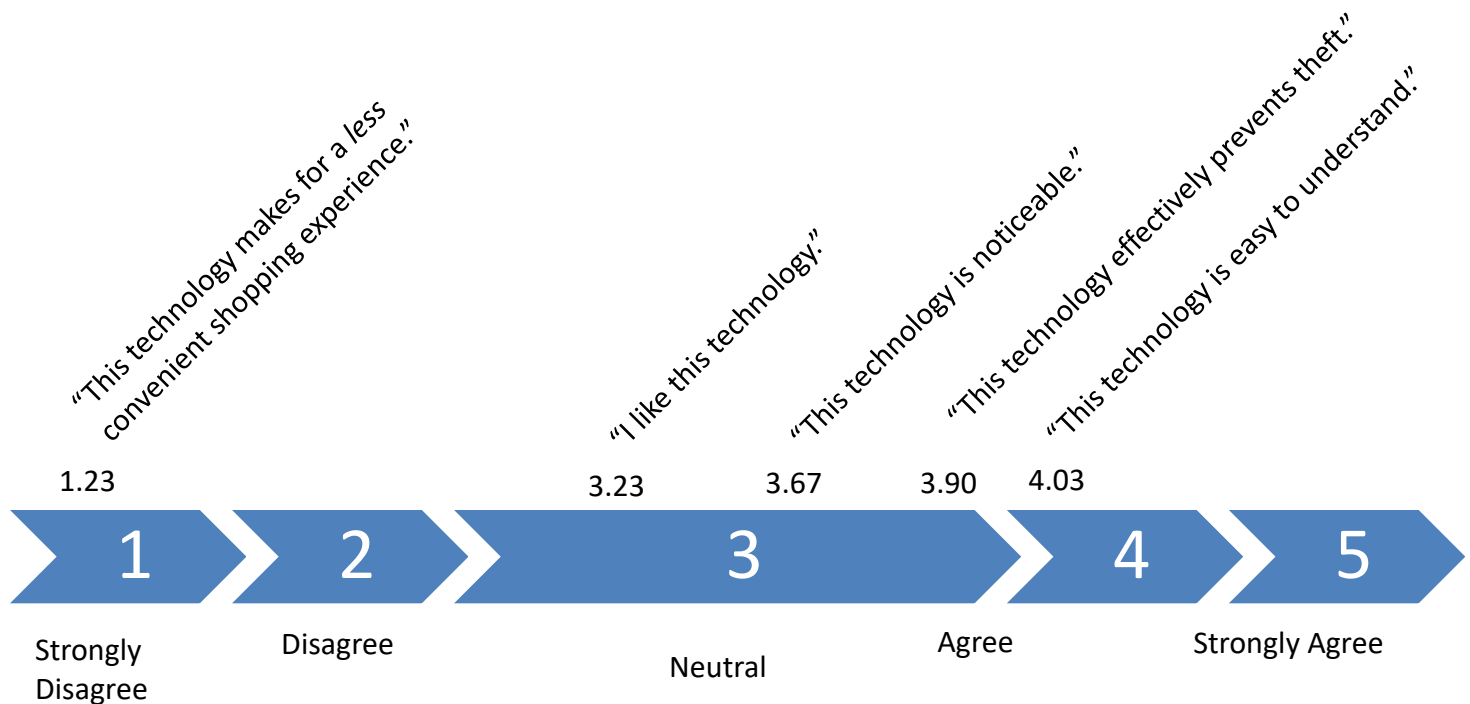


Next, we asked customers to assess whether this technology has an impact on their likelihood of shopping in a store that has it installed. 43.33% (13) of surveyed customers indicated that it would have no impact on their likelihood to shop at a store (See Figure 7). 56.67% (17) of surveyed customers indicated that it would have a positive impact on the likelihood of them shopping there (See Figure 7).

Figure 7. Does this technology make you more or less likely to shop in a store using it?



We next presented customers a series of statements and asked them to rate how much they agreed or disagreed with each statement. The aggregate results can be found below:



Our last question asked customers ways that they thought it could be improved and offer a better experience for the customer as whole. The most common and constructive feedback can be found below:

- “Add a different color light or let it get brighter”
- “It seems too sensitive, should be longer”
- “Add signs to make it more known”
- “Add more [SmartDomes] within the store”
- “A button to call associates over for help”
- “Pair it with cameras to help catch thieves”

Offender Feedback

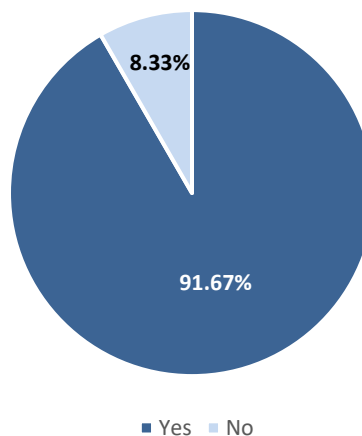
To gain perspective from the offender’s point of view, the LPRC recruited and interviewed twelve self-admitted shoplifters. Each of these offenders were given a screening interview by an LPRC Researcher in order to ensure that those taking part in the interview were not only experienced shoplifters but were able to explain their point of view and why they make the decisions that they do.

The demographics of the interviewed offenders are as follows:

- 58.33% (7) of surveyed offenders were male, 41.67% (5) of them were female
- 75% (9) of surveyed offenders were African American/ Black, 25% (3) were white
- Average age of interviewed offender was 37 years old, with a range of 21 to 65 years of age

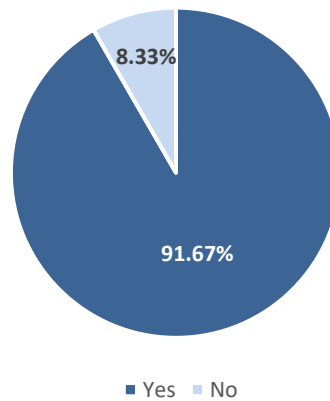
As mentioned previously in this report, we evaluated the Indyme *SmartDome Active Deterrent System* with offenders based upon the “*See, Get, Fear*” framework. First, we were interested in evaluating if offenders noticed the technology in the area. This is crucial as deterrence is predicated on being aware of the presence of the prospective deterrent. 91.67% (11) of recruited offenders noticed the technology when prompted to identify anti-theft technology within the store (See Figure 8).

Figure 8. Did the offender see the technology?



Next, we wanted to ascertain if the offenders understood not only the purpose of the technology, but the capabilities of the technology. 91.67% (11) of recruited offenders understood the purpose of the technology when surveyed, while 8.33% (1) did not recognize that the technology was used to prevent theft or deter shoplifters (See Figure 9).

Figure 9. Did the offender understand the purpose of the technology?



While asking offenders for their thoughts on the capabilities of the technology, a clear trend emerged. 100% (12) of the offenders that were interviewed overestimated the capabilities of the technology. All interviewed offenders thought that the *SmartDomes* were cameras, validating the deceptive design of the unit.

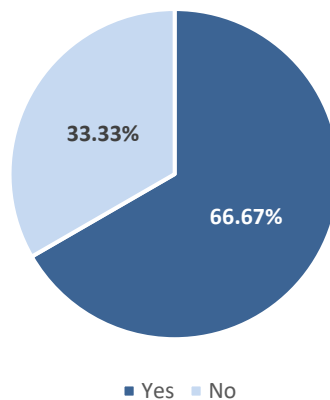
A few quotes about the capabilities from offenders can be found below:

- “It’s a camera that records everything; monitoring that camera constantly”
- “It looks a little different than a regular camera, bet there’s some nasty analysis in there”
- “Camera with facial recognition, for sure”
- “Cameras there are linked to the door, alarm or lock or something when they see somebody stealing. They’re tied to a bunch of screens in the back.”

When asked if they thought they were being actively surveilled through the technology, 66.67% (8) of the recruited offenders reported that they thought that they were being actively surveilled, while 33.33% (4) thought they were not (See Figure 10). The offenders that answered that they thought they were being surveilled through the technology were prompted further to understand how often they thought the device was being monitored. Some of their responses can be found below:

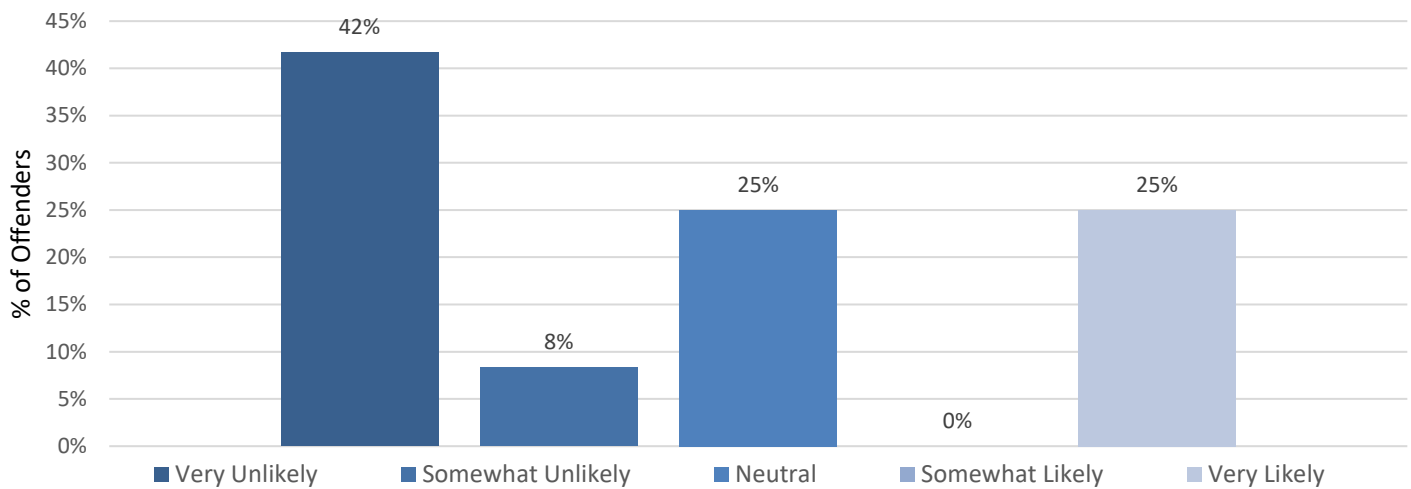
- “Only when it triggers”
- “Actively, that’s somebody’s job”
- “Puts people on alert when it goes off”
- “If a person ain’t watching, the computer is; AI or analytics or something”
- “All the time, multiple cameras on screen. There’s a set up in the back room.”

Figure 10. Does the offender believe that they are actively surveilled through the technology?



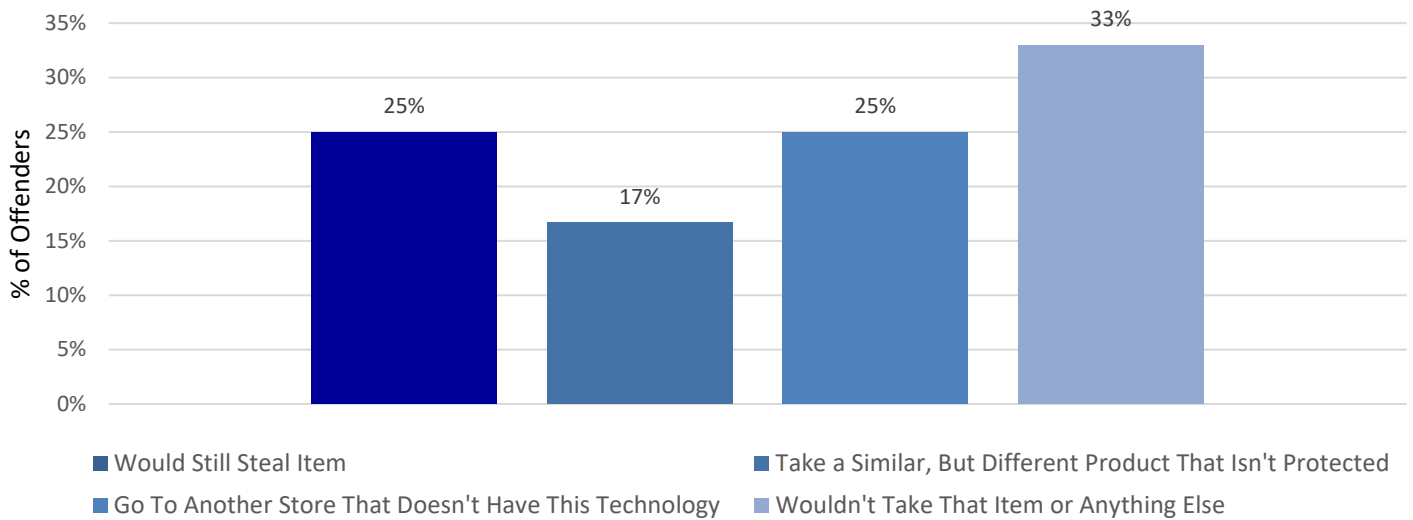
The final paradigm we wanted to evaluate in the “*See, Get, Fear*” model is the fear portion. For a security technology to be an effective deterrent, it needs to be seen as a credible threat. We measured this in two ways. First, we asked the offenders to rank how likely they felt they would be to steal an item protected by the Indyme *SmartDome Active Deterrent System* on a scale of 1-5 where 1 was “Very Unlikely” and 5 was “Very Likely”. 41.67% (5) of the interviewed offenders indicated that it would be “Very Unlikely” to steal an item protected by this technology, while 25% (3) indicated that they would be “Very Likely” to steal an item protected by the technology (See Figure 11). The average for the interviewed offenders was 2.58, indicating that offenders on average were somewhat unlikely to steal an item protected by just this technology.

Figure 11. How likely would you be to steal an item protected by this technology?



Next, we evaluated how the interviewed offenders would respond to the Indyme *SmartDome Active Deterrent System* if they encountered it while attempting to shoplift from the store. When asked how they would respond, only 25% (3) of offenders stated that they would still steal the product they were looking to steal (See Figure 12). The other 75% of offenders stated that their behavior would be deterred in some form. 33% (4) of offenders stated that it would stop them from taking any items at all during their shopping trip, while 25% (3) indicated that they would leave the store and go to another place to get what they were targeting (See Figure 12).

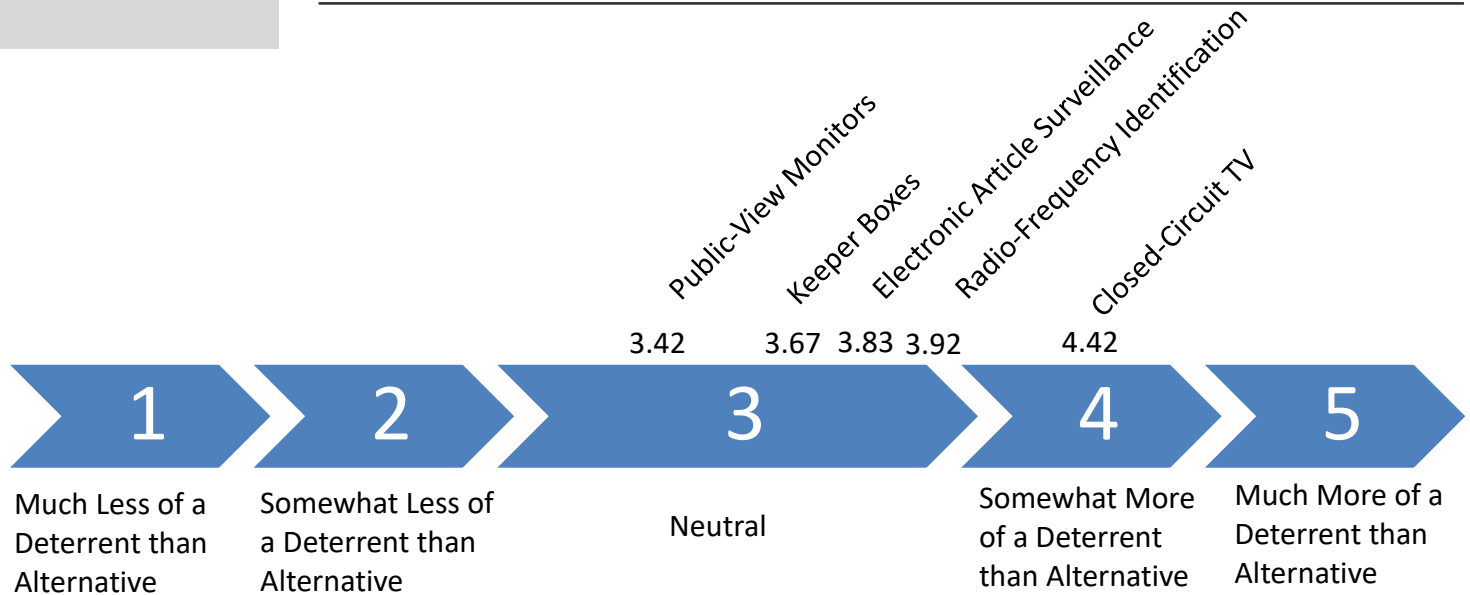
Figure 12. How would you respond to this treatment if you encountered it while shoplifting?



One important point to consider is that each of the offenders that indicated that they would steal the item being protected mentioned that they would have to modify their behavior due to the security treatment. They mentioned that they would either have to find a blind spot or move more quickly than they would have otherwise. As mentioned earlier in the paper, increasing the effort of shoplifting will be more likely to deter away potential offenders.

We also wanted to see how much of a deterrent the Indyme *SmartDome Active Deterrent System* is when compared to other common anti-theft systems. We asked the surveyed offenders to rate each technology on a scale of one to five, where one is that the Indyme *SmartDome Active Deterrent System* is much less of a deterrent than the compared technology and five is that the Indyme *SmartDome Active Deterrent System* is much more of a deterrent than the compared technology.

The results can be found below:



We also asked for feedback from the recruited offenders on ways that they thought that the technology could be made more noticeable, easier to understand, and appear to be a more credible threat. You can find the most common and constructive feedback below.

Do you have any suggestions on how to make this security more noticeable?

- “Change color of poles, make the color blend less with the surroundings.”
- “Brighter flashing light, not completely noticeable upon entry”
- “Mount the units on the shelves, add more cameras, and add a sign that says ‘live-feed cameras’”
- “Larger units or add signage to the area saying something like ‘This is watching you’”
- “Red lights are good, maybe more or brighter lights. Maybe make flashes more in sequence, once at a time.”
- “Flash police light colors when they go off”

Do you have any suggestions on making the function of this security easier to understand?

- “Put up some signs explaining it”
- “Make the device talk and light up more”
- “Self-explanatory upon lengthy observation, clearly a higher functioning device than a normal camera but if I didn’t know how they work, I’d think they were regular cameras.”

Do you have any suggestions on making this appear to be a more credible threat to shoplifters?

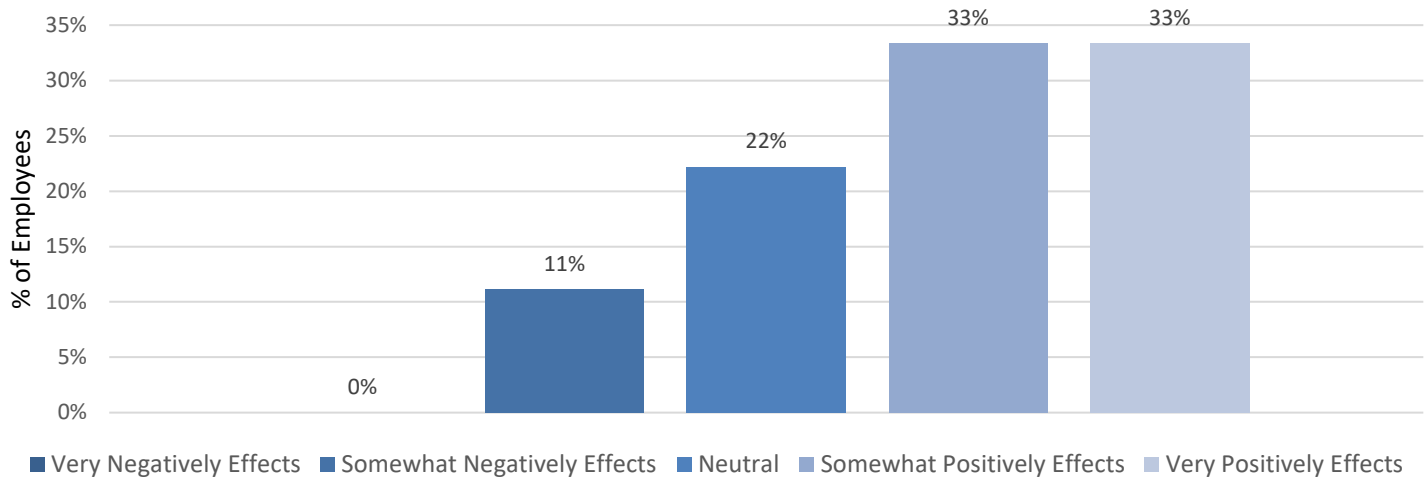
- “Use codes rather than obvious alerts, it’ll make it more confusing to the [offender]”
- “Different colored cameras would be more noticeable”
- “Bring units closer to the ground, more in your face”
- “Make the light flash constantly instead of only when set off”
- “Attach a [Public-View Monitor] to them
- “Add signage that explains it”
- “More red lights or a strip of red tape around the thing ‘you’re being watched’ or ‘anti-theft system’. You see that everywhere; you’ll get people scared. You could also make the voice on the speakers more masculine, stern. “

Employee Feedback

The LPRC Research Team interviewed nine CVS employees from a diverse pool of positions ranging from Manager to Front-End Cashier. In total there were five different positions among the nine employees surveyed in this test. The employees surveyed had been employed on average at this location for 3.85 years with a range of three months to fifteen years.

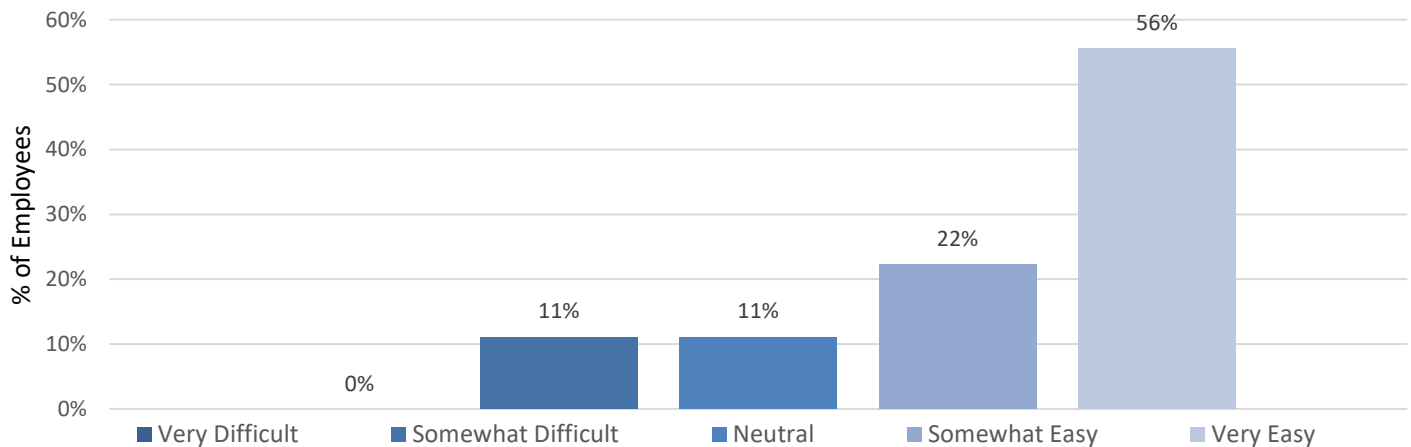
We first asked employees how the technology affected their overall ability to provide customer service. Of those polled, 66.66% (6) of respondents rated that the technology either somewhat positively effects or very positively effects their ability to provide customer service (Figure 1). None of the surveyed employees rated that it very negatively affected their ability to provide customer service and only one rated that it somewhat negatively affected it. This individual indicated that they rated it that way due to the frequency of the alerts.

Figure 1. How does this technology affect your overall ability to provide customer service?



We next surveyed the employees on the ease of incorporating the alerts from the *SmartDome System* into their workflow. 55.56% of surveyed employees indicated that it was very easy to incorporate the alerts in their workflow (See Figure 2). Another 22.22% indicated that it was somewhat easy (See Figure 2). Only one employee rated the technology as somewhat difficult and no one indicated that it was very difficult (See Figure 2).

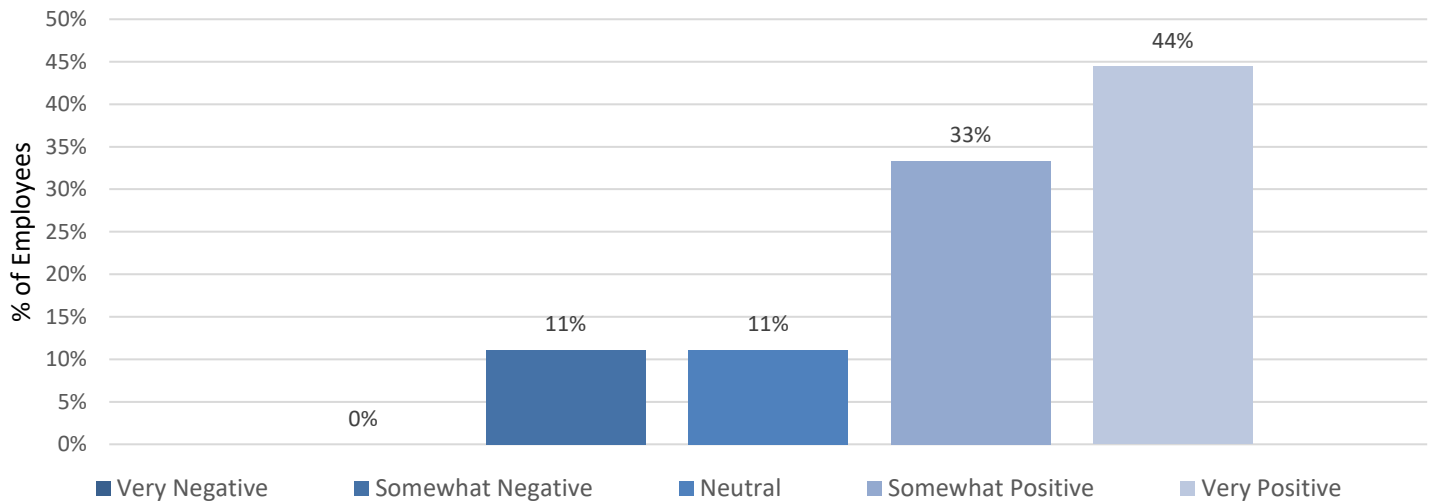
Figure 2. How easy do you find it to incorporate the alerts from the technology into your workflow?



We asked employees to rate their overall experience of the Indyme *SmartDome* technology. Overall, employees that we surveyed appeared to have good experiences with the technology. 44.44% (4) of surveyed employees rated their experience with the technology as “Very Positive”, while another 33.33% (3) rated their experience as “Somewhat Positive” (See Figure 3). Only one (11.11%) employee rated their experience as

somewhat negative and no employees rated their experience as very negative (See Figure 3).

Figure 3. How would you rate your overall experience with the Indyme SmartDome technology?



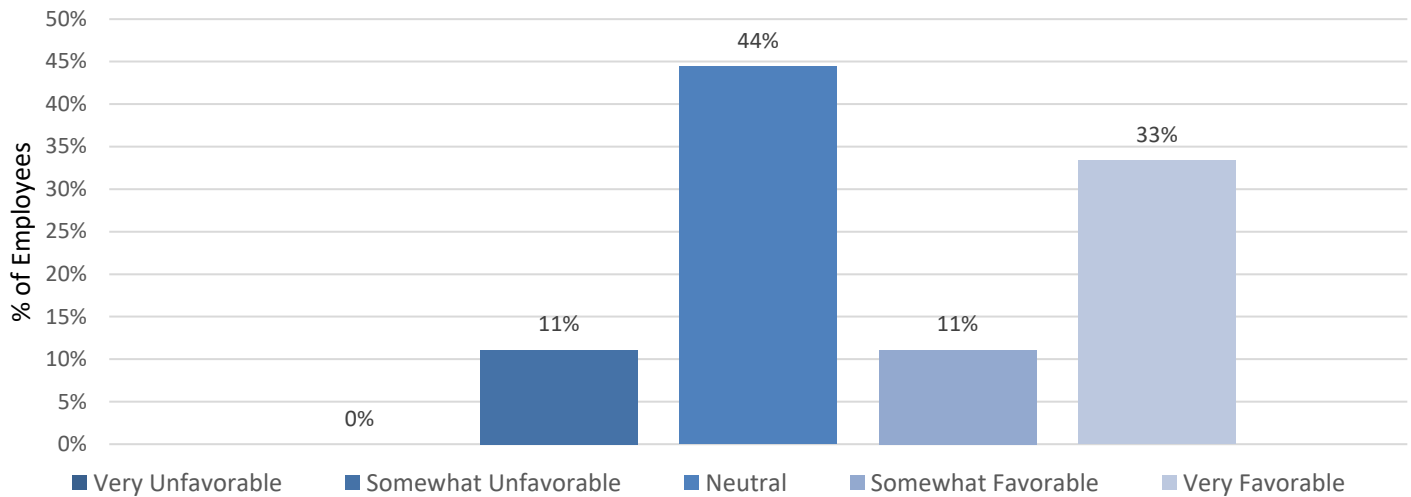
We also evaluate how the technology effects the job duties of the employees. Of the employees that we surveyed, 100% (9) indicated that the technology did not hinder their ability to do their job duties in any way.

One of the other topics we wanted to understand was how effective employees felt that the Indyme *SmartDome System* was at deterring shoplifting activities. When we asked employees for their feedback of the effectiveness of the deterrent, all employees rated the technology as being either “Somewhat Effective” (55.56%) or “Very Effective” (44.44%).

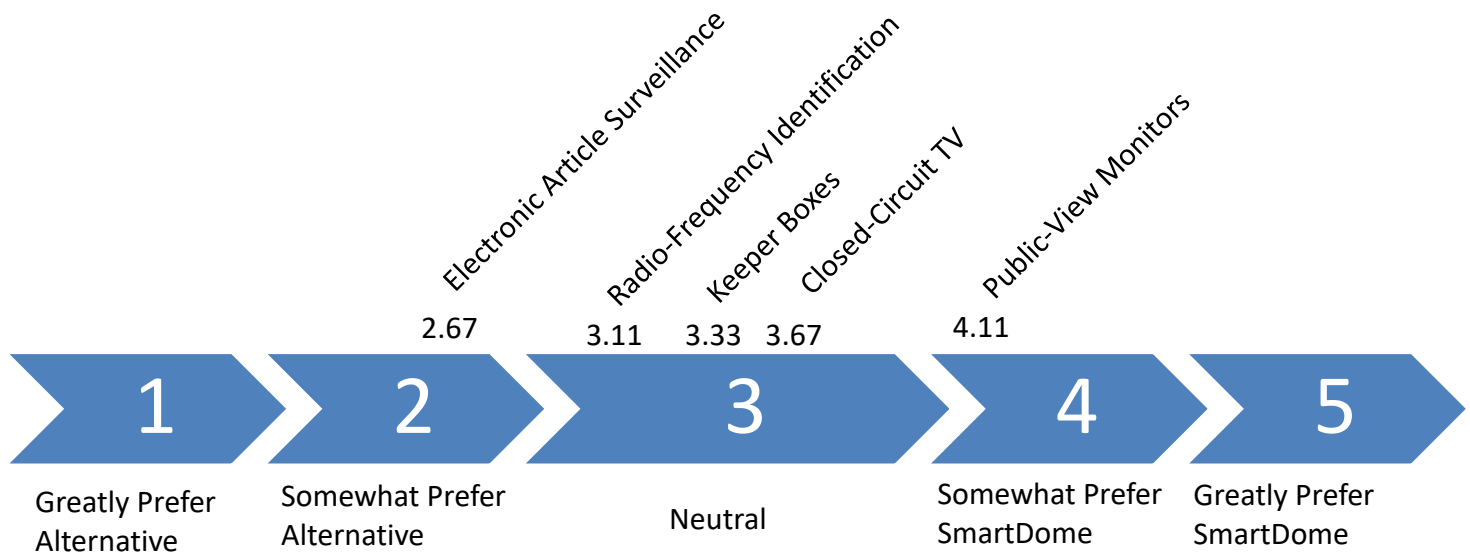
The employees were then asked to provide feedback on the customer experience as well. We asked them how often they are approached by customers about the technology. 44.44% (4) of the employees surveyed indicated that were never approached about the technology. 33.33% (3) of employees said they were rarely approached by the technology. None of those that were surveyed indicated that were approached every time by customers about the technology.

We also asked the employees to rate the overall customer experience based upon their experiences with the technology. When surveyed, 33.33% (3) of employees stated that the overall customer experience was “Very Favorable” (See Figure 4). While 44.44% (4) of employees thought that the overall customer experience was “Neutral” (See Figure 4). The employees indicated during the survey process that many customers would have a neutral experience with the technology due to them not noticing or triggering the alerts from the Indyme *SmartDome System* during their shopping experience.

Figure 4. How would you rate the customer experience with this technology?



Finally, an LPRC Researcher asked employees to rate their preference of the Indyme *SmartDome System* in comparison to other common anti-theft technologies, all of them being passive deterrents.



Employees that were interviewed viewed the Indyme *SmartDome System* as a useful addition to their overall anti-shrink plan but did not think that the system itself would alone work as a complete deterrent. The employees interviewed enjoy having solutions that alarmed the pedestals at the door - this store in particular placed RFID stickers on a large number of their products. Switching RFID stickers for this system could offer labor cost benefits in this example.

Our last question asked the test store employees what things they would change about the technology. Some of the common suggestions are listed below:

- Allowing the store to adjust the dwell timing themselves
- The system could have an adjustable volume depending on ambient noise
- Adding an assist button that customers can use to trigger a different alert over the speakers [this technology is available but not deployed at this test store]
- Increased visual cues for the staff. Combine with a camera system that allows the employees at the register to see the aisle that the alert is being triggered on [this is in use at other CVS stores via a quad view monitor above the cash registers]

CVS Cosmetics Trial Results

Indyme's *SmartDome Active Deterrent System* was installed in 95 CVS stores in May 2018. The test was conducted in high shrink stores where *SmartDomes* and touch sensors were deployed to protect the historically difficult cosmetics category. The pilot was run over a 12-month period. This pilot program provided the ability to collect a large amount of shrink and sales data in order to accurately determine the impact of the system on the category sales and shrink. Test store results were compared to control stores over the same time period. Stores with the Indyme system installed showed a 1-2% increase in cosmetics category sales over control stores. Cosmetics category shrink improvement ranged from 10-15% in test stores over control stores. These shrink and sales improvements can be attributed to the deployment of the Indyme system including *SmartDome Active Deterrent System*.

The LPRC would like to acknowledge the assistance CVS provided in conducting this research. This research would not have been possible without their excellent cooperation.

COVID-19 Social Distance Messaging Update to *SmartDome* Technology

Following the completion of this research project, during the COVID-19 pandemic, Indyme innovated a Social Distance Messaging Solution to their *SmartDome* technology. The *SmartDome* software is modified to play a social distance reminder message once triggered by shopper presence. This plug and play solution enables retailers to rapidly deploy and self-install this solution to reinforce social distance mandates. These gentle reminder messages allow customers to feel safe shopping in stores and help keep store personnel protected. Once the COVID-19 pandemic subsides, this Social Distance version of *SmartDome* can be re-purposed to product protection duties with the simple flip of an internal switch.

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