

**Meeting Between Federal Reserve Board Staff; Representatives of Merchants, Merchant Trade Associations, Debit Networks, a Consumer Association; and their Counsels  
October 23, 2017**

**Participants:** Jeffery Marquardt, Stephanie Martin, Susan Foley, David Mills, Mark Manuszak, Krzysztof Wozniak, and Clinton Chen (Federal Reserve Board)

David Chiappetta (Perkins Coie); Mallory Duncan (NRF); Owen Glist and Jeffery Shinder (Constantine Cannon); Mark Horwedel (Merchant Advisory Group); Austen Jensen (RILA); Douglas Kantor (Steptoe & Johnson); Dan Kramer (Shazam); Reed Luhtanen (Walmart); Suzanne Martindale (Consumers Union); Stephanie Martz (NRF); Elizabeth Provenzano (Merchant Advisory Group); Judith McGuire (PULSE); Hannah Walker (Food Marketing Institute); Neil Wilcox (First Data); Heather Kennedy (Home Depot)

**Summary:** Representatives of merchants, merchant trade associations, debit networks, a consumer association, and their respective counsels met with Federal Reserve Board staff to discuss their observations of market developments related to the EMV migration, application ID prioritization, card-not-present transactions, tokenization services, and cardholder verification. The representatives and their counsels expressed their views on how these developments affect merchant routing of debit transactions.

Attachments

## Comparison of 2016 and 2017 Survey Results:

Group	2016 Survey	2017 Survey
#1: "Visa Debit"/"US Debit"	20 (25%)	16 (15%)
#2: "Credit"/"Debit"	7 (9%)	9 (8%)
<b>#3: Highest-priority AID</b>	<b>13 (16%)</b>	<b>19 (18%)</b>
#4: Auto Common AID	30 (38%)	55 (51%)
#5: Unknown (no AID on receipt)	9 (11%)	8 (7%)
<b>Total</b>	<b>79 (100%)</b>	<b>107 (100%)</b>

## Comparison of Terminals Installed Prior to Initial Survey, and those Installed Between the Surveys:

Group	2017 Pre-Existing Terminals	2017 Newly-Installed
#1: "Visa Debit"/"US Debit"	10 (13%)	6 (20%)
#2: "Credit"/"Debit"	5 (6%)	4 (13%)
<b>#3: Highest-priority AID</b>	<b>12 (16%)</b>	<b>7 (23%)</b>
#4: Auto Common AID	43 (56%)	12 (40%)
#5: Unknown (no AID on receipt)	7 (9%)	1 (3%)
<b>Total</b>	<b>77 (100%)</b>	<b>30 (100%)</b>

## Comparison of First Tier (Top 150) and Second Tier (Next 150) Merchants in 2017 Survey:

Group	2017 First Tier	2017 Second Tier	2017 Total
#1: "Visa Debit"/"US Debit"	3 (6%)	12 (26%)	15 (16%)
#2: "Credit"/"Debit"	3 (6%)	2 (4%)	5 (5%)
<b>#3: Highest-priority AID</b>	<b>6 (13%)</b>	<b>11 (23%)</b>	<b>17 (18%)</b>
#4: Auto Common AID	31 (66%)	18 (38%)	49 (52%)
#5: Unknown (no AID on receipt)	4 (9%)	4 (9%)	8 (9%)
<b>Total</b>	<b>47 (100%)</b>	<b>47 (100%)</b>	<b>94 (100%)</b>

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## MEMORANDUM

TO: The First Data Corporation  
FROM: Douglas Graham  
DATE: August 14, 2017  
RE: EMV Terminal Survey Results

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We conducted the following two surveys.

First, during July to October of 2016, and in February 2017, we attempted purchases using Visa-branded EMV debit cards at selected major retailers in the Washington D.C. metropolitan area and gathered data regarding how the Application Identifier (AID) was selected at retailers' terminals (the "**2016 Survey**"). We recorded our interactions with the EMV terminals and with the sales clerks. Our findings were set forth in a memorandum dated May 9, 2017, from Doug Graham to the First Data Corporation (the "**2016 Survey Memorandum**").

Second, between June 22, 2017, and July 28, 2017, we again attempted purchases using Visa-branded EMV debit cards at the same selected major retailers in the Washington D.C. metropolitan area that we had surveyed in the 2016 Survey, and we again gathered data regarding how the AID was selected at retailers' terminals (the "**2017 Survey**"). We recorded our interactions with the EMV terminals and the sales clerks. Our findings are set forth herein.

Section I describes our mission. Section II describes our methodology. Section III sets forth our findings from the 2017 Survey. Section IV compares those findings against our findings from the 2016 Survey. We found that a number of retailers that did not have operational EMV chip card readers at the time of the 2016 Survey had them in the 2017 Survey. Several other retailers changed the configuration of their readers in the interim between the 2016 Survey and the 2017 Survey.

### I. MISSION

We sought to identify the different methods by which the selection between AID A0000000980840 (the "**Common AID**") and AID A0000000031010 (the "**Global AID**") was made at terminals installed at major selected retailers using U.S.-issued EMV debit cards branded with the Visa logo.<sup>1</sup> We sought to identify which retailers' terminals required the cardholder to choose the AID (whether directly or indirectly), and how the choice was presented to the cardholder. We also sought to identify which retailers' terminals automatically selected the AID (without requiring or permitting cardholders to do so), and which AID they selected.

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<sup>1</sup> For a list of AIDs, see <https://www.eftlab.co.uk/index.php/site-map/knowledge-base/211-emv-aid-rid-pix>.

## II. METHODOLOGY

In July 2016, we generated a list of retailers to be surveyed. We started with the National Retail Federation's Top 100 Retailers Chart for 2015, and used Google Maps searches to determine that 68 of those retailers operated stores in the Washington D.C. metropolitan area. We also compiled a list of the 300 largest public retailers of "consumer discretionary" goods and "consumer staples," based on publicly-available, trailing-twelve-month revenue data as reported at the time on the website of brokerage firm Fidelity Investments. Using Google Maps searches, we determined that 110 of those retailers (not including those that also appeared on the National Retail Federation's Top 100 Retailers Chart for 2015) operated in the Washington D.C. metropolitan area. We combined the list of 68 retailers with the list of 110 retailers to yield a list of 178 retailers to be surveyed. From that list, we omitted two retailers—Lusby, which had closed all its stores in the Washington D.C. area, and Monro Muffler Brake, which had no merchandise for sale at the location we visited—leaving 176 retailers to be surveyed.

During the 2016 Survey, we were able to confirm that 79 of the 176 retailers had operational EMV chip card readers. We were unable to confirm whether sit-down restaurants had operational EMV chip card readers.

During the 2017 Survey, we were instructed to and did exclude the 24 sit-down restaurants from the list of 176 retailers, and surveyed the remaining 152 retailers between June 22, 2017, and July 11, 2017. We were able to confirm that 107 of the 152 retailers had operational EMV chip card readers.

In both the 2016 Survey and the 2017 Survey, for retail companies owning multiple retail outlets or brands, we chose one outlet or brand to survey based on logistical criteria.<sup>2</sup> For example, Signet Jewelers owns Kay Jewelers, Zales, and Jared. We chose to survey only Kay Jewelers because they had a store within close proximity to other survey locations. We denote which brand or outlet we chose by including its name in parentheses after listing the parent company in the tables herein.

At each retailer surveyed, we attempted purchases using Bank of America debit cards with a "Visa" logo printed on the front and an embedded EMV computer chip. As requested, our surveyors followed specific instructions, including the following:

- (1) If presented with a screen asking the cardholder to choose between "Visa Debit" and "US Debit," we ran two transactions. We selected "Visa Debit" in one and "US Debit" in the other.
- (2) If presented with a screen asking the cardholder to choose between "Credit" and "Debit," we ran two transactions. We selected "Credit" in one and "Debit" in the other.
- (3) If presented with the ability to bypass entry of a Personal Identification Number (PIN), we ran two transactions. We entered a PIN in one and bypassed PIN entry in the other.

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<sup>2</sup> The only exception was Genesco Inc., which owns both the Lids and the Locker Room retail stores. We conducted one transaction at Lids and one at Locker Room.

During both the 2016 Survey and the 2017 Survey, at the retailers with operational EMV chip card readers, we collected information regarding (1) whether the retailer’s terminal selected the AID based on input from the cardholder, and if so, which inputs; (2) which AID the terminal ultimately selected; and (3) which terminal brand was deployed by the retailer.

We prepared records of our interactions with the terminals. Our records from the 2016 Survey provided the basis for the findings reported in the 2016 Survey Memorandum. Our records from the 2017 Survey provide the basis for the findings reported in this memorandum.

### III. FINDINGS FROM THE 2017 SURVEY

Of the 152 retailers we surveyed, we found that 5 retailers<sup>3</sup> had either closed completely or had closed all their retail locations in the Washington D.C. area. Of the remaining 147 retailers, 107 retailers had operational EMV terminals, and 40 retailers did not.<sup>4</sup> Appendix A identifies the 40 retailers who did not have operational EMV chip card readers.

The 107 retailers with operational EMV readers may generally be grouped as follows (these are the same 5 Groups used in the 2016 Survey):

Group	Description	Number of retailers
<b>Group #1</b>	Cardholders prompted to choose between “Visa Debit” and “US Debit” (or otherwise to confirm whether they wanted “Visa Debit”). Terminal selected Global AID when cardholder chose “Visa Debit,” and selected Common AID (or did not indicate which AID was selected) when cardholder chose “US Debit” or otherwise indicated desire not to use “Visa Debit.”	16 (15%)
<b>Group #2</b>	Cardholders prompted to choose between “Credit” and “Debit” (or otherwise to confirm whether they wanted to use card as a credit card). Terminal selected Global AID when cardholder chose “Credit,” and selected Common AID when cardholder chose “Debit” or otherwise indicated desire not to use card as a credit card.	9 (8%)
<b>Group #3</b>	Terminal either selected Global AID regardless of input from cardholder, or would not complete an EMV transaction with anything other than Global AID.	19 (18%)
<b>Group #4</b>	Terminal either selected Common AID regardless of input from cardholder, or would not complete an EMV transaction with anything other than Common AID.	55 (51%)
<b>Group #5</b>	Terminal printed receipt that did not conclusively indicate which AID was used to route transaction.	8 (7%)

**Total: 107 (100%)**

Each of the above 5 groups are discussed in greater detail in the sections that follow.

<sup>3</sup> (1) Bebe; (2) Deckers Outdoor (Ugg); (3) HHGREGG Inc.; (4) Papa Murphy’s Holdings Inc.; and (5) Trans World Entertainment (FYE).

<sup>4</sup> Ikea’s main store does not have a working EMV reader, although its cafeteria had a working EMV reader at the location surveyed. The cafeteria reader asked the surveyor to choose between “Visa Debit” and “US Debit,” but did not print the AID on the receipt. Because Ikea’s main store did not have a working EMV reader, for purposes of this report we consider Ikea to be one of the 40 retailers that did not have a working EMV terminal.

**1. Group #1: “Visa Debit” vs. “US Debit” (16 retailers)**

Terminals at the 16 retailers identified in Table 1.1 prompted cardholders to choose between “Visa Debit” and “US Debit” (or otherwise to confirm whether they wanted “Visa Debit”) in order to complete the transaction, and selected the Global AID when cardholders chose “Visa Debit,” and selected the Common AID (or did not indicate which AID was selected) when cardholders chose “US Debit” or otherwise indicated that they did not want “Visa Debit.” Variations and other details are set forth in the “Notes” column.

*Table 1.1.*

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Abercrombie & Fitch Co	Verifone	
Ace Hardware	Ingenico	Cardholder prompted to “Confirm app: VISA DEBIT” by selecting “Yes” or “No”; selecting “Yes” resulted in Global AID; selecting “No” resulted in Common AID
Buckle Inc.	Ingenico	When cardholder selected “US Debit,” receipt did not indicate AID
Carters Inc.	Verifone	
Childrens Place Inc.	Verifone	
Kate Spade and Company	Verifone	
Lumber Liquidators Holdings Inc. New	Ingenico	
Michael Kors Holdings Ltd.	Verifone	
Movado Group Inc.	Ingenico	
New York and Company Inc.	Verifone	
Nike Inc.	Verifone	Cardholder prompted to choose between “Visa” and “US Debit”; selecting “Visa” resulted in Global AID; selecting “US Debit” resulted in Common AID
Perry Ellis International Inc. (Original Penguin)	Verifone	
Staples	Equinox	
Steven Madden Ltd.	Verifone	
Tumi Holdings Inc.	Verifone	When cardholder selected “US Debit,” receipt did not indicate AID
Verizon Wireless	Verifone	

The terminal at Lumber Liquidators Holdings Inc. had a physical label affixed to it stating: “Please select VISA DEBIT or MASTERCARD DEBIT.” When asked what the screen showing “Visa Debit” and “US Debit” meant, the clerk said to “just choose Visa, because we cannot do debit.” Choosing “US Debit” resulted in the Common AID, and choosing “Visa Debit” resulted in the Global AID.

The retailers identified in Table 1.2 had a Group #1 configuration in the 2016 Survey, but no longer did in the 2017 Survey.

**Table 1.2.**

<b>Retailer</b>	<b>New configuration in 2017 Survey</b>
American Eagle Outfitters	Group #4
Bebe	(closed all stores)
Big Lots	Group #4
Caleres (Famous Footwear)	Group #4
Coach	Group #3
Express	Group #4
Kohl's	Group #4
Nordstrom	Group #4
Royal Ahold (Giant Grocery)	Group #4
Signet Jewelers (Kay)	Group #5
Under Armour	Group #4
Village Super Market (Shop Rite)	Group #4

The retailers identified in Table 1.3 did not have a Group #1 configuration in the 2016 Survey, but had one in the 2017 Survey.

**Table 1.3.**

<b>Retailer</b>	<b>Prior configuration in 2016 Survey</b>
Ace Hardware	(no operational EMV reader)
Buckle Inc.	(no operational EMV reader)
Movado Group Inc.	Group #3
Nike Inc.	(no operational EMV reader)
Perry Ellis Int'l Inc. (Original Penguin)	(no operational EMV reader)
Steven Madden Ltd.	(no operational EMV reader)
Tumi Holdings Inc.	(no operational EMV reader)
Verizon Wireless	Group #5

As reflected in Table 1.2 and Table 1.3, most retailers that left Group #1 went to Group #4. Most retailers that joined Group #1 did not previously have operational EMV readers.

## **2. Group #2: “Credit” vs. “Debit” (9 retailers)**

Terminals (or, in the case of Williams-Sonoma, the store clerk) at the 9 retailers identified in Table 2.1 prompted cardholders to choose between “Credit” and “Debit” (or otherwise to confirm whether they wanted to use their card as a credit card) in order to complete the transaction. The terminals selected the Global AID when cardholders chose “Credit,” and selected the Common AID when cardholders chose “Debit” or otherwise indicated a desire not to use their card as a credit card. Variations and other details are set forth in the “Notes” column.

**Table 2.1.**

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Ascena Retail Group (Dress Barn)	Verifone	Cardholder prompted to choose to either enter PIN or “press cancel to process as credit”; entering PIN resulted in Common AID; choosing to “process as credit” resulted in Global AID
Dollar Tree	Verifone	
Family Dollar Stores	Verifone	
GNC Holdings Inc.	Verifone	Cardholder prompted to enter PIN or “For debit cards, press enter to process as credit.” Entering PIN resulted in Common AID. Pressing enter or red “X” button resulted in screen asking: “Use this card as a credit card?” and prompting cardholder to select “Yes” or “No.” Surveyor attempted the following combinations with the following results: 1. red “X” button; “No” → Common AID 2. red “X” button; “Yes” → Global AID 3. enter; “Yes” → Common AID 4. enter; “No” → Common AID Although GNC was unique, we included it in Group #2, because the terminal did select between the Common AID and the Global AID based on cardholder indication of whether to use to use the card as a credit card.
PVH Corp. (Calvin Klein)	Verifone	
Safeway	Verifone	Cardholder prompted to choose between “Debit” and “Other”; clerk informed cardholder that “Other” meant “Credit”; selecting “Debit” resulted in Common AID; selecting “Other” resulted in Global AID
Trader Joe’s	Verifone	Cardholder prompted to choose between “Debit” and “Credit”; selecting “Debit” resulted in “US DEBIT” being printed on receipt; selecting “Credit” resulted in “VISA DEBIT” bring printed on receipt
Wegmans Food Market	Verifone	
Williams-Sonoma	Verifone	Cardholder orally prompted by clerk to select “credit” or “debit” at outset of transaction; although terminal subsequently prompted cardholder to choose between “Visa Debit” and “US Debit,” the initial oral selection of “credit” or “debit” governed AID selection. Surveyor attempted all four combinations, resulting in AID selection as follows: 1. Debit, US Debit → Common AID 2. Debit, Visa Debit → declined 3. Credit, US Debit → declined 4. Credit, Visa Debit → Global AID



The retailers identified in Table 2.2 had a Group #2 configuration in the 2016 Survey, but no longer did in the 2017 Survey.

**Table 2.2.**

<b>Retailer</b>	<b>New configuration in 2017 Survey</b>
CVS Caremark	Group #4
Delhaize America (Food Lion)	Group #4
G III Apparel Group Ltd (Wilson's Leather)	Group #3
Whole Foods Market	Group #4

The retailers identified in Table 2.3 did not have a Group #2 configuration in the 2016 Survey, but had one in the 2017 Survey.

**Table 2.3.**

<b>Retailer</b>	<b>Prior configuration in 2016 Survey</b>
Ascena Retail Group (Dress Barn)	(no operational EMV reader)
Dollar Tree	(no operational EMV reader)
Family Dollar Stores	Group #3
Safeway	(no operational EMV reader)
Wegmans Food Market	(no operational EMV reader)
Williams-Sonoma	Group #4

As reflected in Table 2.2 and Table 2.3, most retailers that left Group #2 went to Group #4. Most retailers that joined Group #2 did not previously have operational EMV readers.

### **3. Group #3: Automatic selection of Global AID (19 retailers)**

Terminals at the 19 retailers identified in Table 3 either selected the Global AID regardless of input from the cardholder, or would not complete an EMV transaction with anything other than the Global AID. Variations and other details are set forth in the “Notes” column.

**Table 3.**

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Apple Store / iTunes	Verifone	
Coach Inc.	Verifone	Cardholder prompted to choose between “Visa Debit” and “US Debit”; selecting “Visa Debit” resulted in Global AID and was only way to complete the transaction; selecting “US Debit” resulted in card being declined
Crocs Inc.	Verifone	
Doctor's Assoc. (Subway)	Verifone	
Finish Line Inc.	Verifone	
Five Below Inc.	Verifone	
G III Apparel Group Ltd (Wilson's Leather)	Verifone	

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Gap	Verifone	
Genesco Inc. (Lids and Locker Room)	Verifone	Cardholder prompted to choose between "Credit" and "Debit"; selecting "Credit" resulted in Global AID; selecting "Debit" canceled EMV transaction and required swipe
Hanesbrands Inc.	Ingenico	Cardholder prompted to choose between "Credit" and "Debit," but both options resulted in Global AID
Haverty Furniture Companies Inc.	Verifone	
J.C. Penney Co.	Verifone	
Lowe's Companies	Verifone	Cardholder prompted to choose between "Credit" and "Debit"; selecting "Credit" resulted in Global AID; selecting "Debit" canceled EMV transaction and required swipe
Oxford Industries Inc. (Tommy Bahama)	Verifone	
Petsmart	Verifone	
Rite Aid	Verifone	Cardholder prompted to choose between "Credit" and "Debit"; selecting "Credit" resulted in Global AID; selecting "Debit" resulted in prompt to enter PIN for debit or press green button for credit; entering PIN cancelled EMV transaction and required swipe; pressing green button resulted in Global AID
Vera Bradley Inc.	Verifone	
West Marine Inc.	Verifone	Cardholder prompted to choose between "Credit" and "Debit"; selecting "Credit" resulted in Global AID; selecting "Debit" canceled EMV transaction and required swipe
Wolverine World Wide Inc. (Sperry)	Verifone	

The terminal configuration at Lowe's was different than other terminals we encountered. The terminal prompted the surveyor to "Select Payment Type" and gave 8 options: "Lowe's Credit," "Gift Card," "Merchandise Credit," "Comm. Srvcs/Business Acct.," "Debit," "Credit," "Check," and "Other Payment" (the "Initial Selection Screen"). When the surveyor selected "Credit" at the Initial Selection Screen, he then dipped the debit card into the EMV reader, and was subsequently prompted to select between two options, both of which were labeled "Visa Debit." After selecting "Visa Debit" (the only available option), the surveyor was prompted to choose between "Credit" and "Debit." Selecting "Debit" canceled the EMV transaction, and required the surveyor to swipe the debit card. Selecting "Credit" resulted in the Global AID.

When the surveyor selected "Debit" at the Initial Selection Screen, he then dipped the debit card into the EMV reader, and was subsequently prompted to choose between "Debit" and "Credit." (The surveyor was not presented with the screen giving the choice between the two options

labeled “Visa Debit.”) Selecting “Debit” canceled the EMV transaction, and required the surveyor to swipe the debit card. Selecting “Credit” resulted in the Global AID.

The retailers identified in Table 3.2 had a Group #3 configuration in the 2016 Survey, but no longer did in the 2017 Survey.

**Table 3.2.**

<b>Retailer</b>	<b>New configuration in 2017 Survey</b>
Family Dollar Stores	Group #2
Foot Locker	Group #4
Movado Group Inc.	Group #1
Natural Grocers by Vitamin Cottage Inc.	Group #4

The retailers identified in Table 3.3 did not have a Group #3 configuration in the 2016 Survey, but had one in the 2017 Survey.

**Table 3.3.**

<b>Retailer</b>	<b>Prior configuration in 2016 Survey</b>
Coach Inc.	Group #1
Doctor’s Assoc. (Subway)	Group #5
G III Apparel Group Ltd (Wilson’s Leather)	Group #2
Genesco Inc. (Lids and Locker Room)	(no operational EMV reader)
Haverty Furniture Companies Inc.	(no operational EMV reader)
J.C. Penney Co.	(no operational EMV reader)
Oxford Industries Inc. (Tommy Bahama)	(no operational EMV reader)
Petsmart	(no operational EMV reader)
Vera Bradley Inc.	(no operational EMV reader)
West Marine Inc.	(no operational EMV reader)

As reflected in Table 3.2 and Table 3.3, half of the retailers that left Group #3 went to Group #4. Most retailers that joined Group #3 did not previously have operational EMV readers.

#### **4. Group #4: Automatic selection of Common AID (55 retailers)**

Terminals at the 55 retailers identified in Table 4.1 either selected the Common AID regardless of input from the cardholder, or would not complete an EMV transaction with anything other than the Common AID. Some terminals did not ask cardholders for any input, while others prompted cardholders for input, but selected the Common AID regardless of that input. Variations and other details are set forth in the “Notes” column.

**Table 4.1.**

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
7-Eleven	Ingenico	Terminal used Common AID whether PIN entered or bypassed

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Advance Auto Parts	Verifone	Terminal used Common AID whether PIN entered or bypassed
Alimentation Couche-Tard (Circle K)	Ingenico	Terminal used Common AID whether PIN entered or bypassed
American Eagle Outfitters Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
AT&T Wireless	Ingenico	Terminal used Common AID whether PIN entered or bypassed
AutoZone	Ingenico	Terminal used Common AID whether PIN entered or bypassed
Barnes & Noble	Verifone	Terminal used Common AID whether PIN entered or bypassed
Bed Bath & Beyond	Verifone	Terminal used Common AID whether PIN entered or bypassed
Best Buy	Ingenico	Terminal used Common AID whether PIN entered or bypassed
Big Lots	Verifone	Terminal used Common AID whether PIN entered or bypassed
Caleres Inc. (Famous Footwear)	Verifone	Terminal used Common AID whether PIN entered or bypassed
Citi Trends Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
CVS Caremark	Verifone	Terminal used Common AID whether PIN entered or bypassed
Delhaize America (Food Lion)	Verifone	Terminal used Common AID whether PIN entered or bypassed
Destination XL Group Inc. (Rochester Big & Tall)	Verifone	PIN bypass resulted in Common AID; PIN entry resulted in receipt without AID
Dick's Sporting Goods	Verifone	Terminal used Common AID whether PIN entered or bypassed
Dollar General	Ingenico	Terminal used Common AID whether PIN entered or bypassed
DSW Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
Express Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
Foot Locker	Verifone	Terminal used Common AID whether PIN entered or bypassed
Fossil Group Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
GameStop	Verifone	Terminal used Common AID whether PIN entered or bypassed
Kohl's	Verifone	Terminal used Common AID whether PIN entered or bypassed
L Brands (Victoria Secret)	Verifone	Terminal used Common AID whether PIN entered or bypassed
Luxottica Group Spa (Sunglass Hut)	Verifone	Terminal used Common AID whether PIN entered or bypassed
Macy's	Verifone	Terminal used Common AID whether PIN entered or bypassed
McDonald's	Verifone	

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Michaels Stores	Verifone	Terminal used Common AID whether PIN entered or bypassed
Natural Grocers by Vitamin Cottage Inc.	Ingenico	Terminal used Common AID whether PIN entered or bypassed
Neiman Marcus	Verifone	
Nordstrom	Verifone	Terminal used Common AID whether PIN entered or bypassed
Office Depot	Ingenico	Terminal used Common AID whether PIN entered or bypassed
Party City Holdco Inc.	Verifone	Cardholder prompted to choose "Credit" or "Debit," and permitted to enter/bypass PIN; all combinations resulted in Common AID
Penske Automotive Group Inc.	Equinox	PIN required to complete transaction
Ralph Lauren Corporation	Verifone	Terminal used Common AID whether PIN entered or bypassed
Ross Stores	Verifone	Terminal used Common AID whether PIN entered or bypassed
Royal Ahold / Ahold USA (Giant Grocery Stores)	Verifone	Terminal used Common AID whether PIN entered or bypassed
Sears Holdings	Equinox	Terminal used Common AID whether PIN entered or bypassed
Stein Mart Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
Supervalu Inc. (Shoppers)	Verifone	Terminal used Common AID whether PIN entered or bypassed
Tailored Brands Inc. (Men's Wearhouse)	Ingenico	Terminal used Common AID whether PIN entered or bypassed
Target	Verifone	Terminal used Common AID whether PIN entered or bypassed
The Home Depot	Ingenico	Terminal used Common AID whether PIN entered or bypassed
Tiffany and Co.	Verifone	Terminal used Common AID whether PIN entered or bypassed
TJX (TJ Maxx)	Verifone	Terminal used Common AID whether PIN entered or bypassed
Toys "R" Us	Verifone	Terminal used Common AID whether PIN entered or bypassed
Tractor Supply Co.	Verifone	Terminal used Common AID whether PIN entered or bypassed
True Value Co.	First Data	Terminal used Common AID whether PIN entered or bypassed
Under Armour Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
Urban Outfitters Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
Village Super Market Inc. (Shop Rite)	Verifone	PIN bypass resulted in Common AID; PIN entry resulted in receipt without AID
Vitamin Shoppe Inc.	Verifone	Terminal used Common AID whether PIN entered or bypassed
Walgreens	(unknown)	Terminal used Common AID whether PIN entered or bypassed

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Wal-Mart Stores	Ingenico	Cardholder prompted to choose “Credit” or “Debit,” and permitted to enter/bypass PIN; all combinations resulted in Common AID
Whole Foods Market	Verifone	Terminal used Common AID whether PIN entered or bypassed

The retailers identified in Table 4.2 had a Group #4 configuration in the 2016 Survey, but no longer did in the 2017 Survey.

**Table 4.2.**

<b>Retailer</b>	<b>New configuration in 2017 Survey</b>
HHGregg Inc.	(closed its stores)
Williams-Sonoma	Group #2

The retailers identified in Table 4.3 did not have a Group #4 configuration in the 2016 Survey, but had one in the 2017 Survey.

**Table 4.3.**

<b>Retailer</b>	<b>Prior configuration in 2016 Survey</b>
Advance Auto Parts	(no operational EMV reader)
Alimentation Couche-Tard (Circle K)	(no operational EMV reader)
American Eagle Outfitters Inc.	Group#1
AT&T Wireless	(no operational EMV reader)
Big Lots	Group#1
Caleres Inc. (Famous Footwear)	Group#1
Citi Trends Inc.	(no operational EMV reader)
CVS Caremark	Group#2
Delhaize America (Food Lion)	Group#2
Destination XL Group Inc. (Rochester Big & Tall)	(no operational EMV reader)
Express Inc.	Group#1
Foot Locker	Group#3
Fossil Group Inc.	(no operational EMV reader)
Kohl's	Group#1
McDonald's	(no operational EMV reader)
Natural Grocers by Vitamin Cottage Inc.	Group#3
Nordstrom	Group#1
Penske Automotive Group Inc.	(no operational EMV reader)
Ross Stores	(no operational EMV reader)
Royal Ahold / Ahold USA (Giant Grocery Stores)	Group#1
Tailored Brands Inc. (Men's Wearhouse)	(no operational EMV reader)
Tiffany and Co.	(no operational EMV reader)
Under Armour Inc.	Group#1
Urban Outfitters Inc.	Group#5
Village Super Market Inc. (Shop Rite)	Group#1

<b>Retailer</b>	<b>Prior configuration in 2016 Survey</b>
Vitamin Shoppe Inc.	(no operational EMV reader)
Whole Foods Market	Group#2

As reflected in Table 4.2, only two retailers left Group #4, one of which (HHGregg) closed its stores. As reflected in Table 4.3, of the 27 retailers that joined Group #4, 12 did not previously have operational EMV readers, and 14 came from Group #1, Group #2, or Group #3.

### 5. Group #5: Unknown AID (8 retailers)

Terminals at the 8 retailers identified in Table 5.1 printed receipts that did not conclusively indicate which AID was used to route the transaction. As indicated in the “Notes” column, however, several terminals stated “Visa” or “Debit” on the receipt depending on whether a PIN was entered or bypassed.

**Table 5.1.**

<b>Retailer</b>	<b>Terminal brand</b>	<b>Notes</b>
Build A Bear Workshop Inc.	Verifone	PIN bypass and PIN entry both resulted in receipt without AID
Burlington Coat Factory	Verifone	PIN bypass and PIN entry both resulted in receipt without AID
Lululemon Athletica Inc.	Verifone	
Signet Jewelers (Kay)	Verifone	Cardholder prompted to choose “Visa Debit” or “US Debit”; both resulted in receipt with no AID
Starbucks	Verifone	
Ulta Salon Cosmetics and Fragrance Inc. (Ulta)	Verifone	PIN bypass resulted in “Visa” below “Total” line on receipt; PIN entry resulted in “Debit Card” below “Total” line on receipt; unclear which AID was selected in either case
V F Corp. (North Face)	Verifone	PIN bypass resulted in “Visa” below “Amount Tendered” line on receipt; PIN entry resulted in “Debit” below “Amount Tendered” line on receipt; unclear which AID was selected in either case; in both cases, receipt said: “Entry method: swiped,” even though card was dipped into terminal
Zumiez Inc.	Ingenico	PIN bypass resulted in “Visa (S)” below “Total” line on receipt; PIN entry resulted in “Debit (S)” below “Total” line on receipt; unclear which AID was selected in either case

The retailers identified in Table 5.2 had a Group #5 configuration in the 2016 Survey, but no longer did in the 2017 Survey.

**Table 5.2.**

<b>Retailer</b>	<b>New configuration in 2017 Survey</b>
Doctor's Assoc. (Subway)	Group #3
Urban Outfitters Inc.	Group #4
Verizon Wireless	Group #1

The retailers identified in Table 5.3 did not have a Group #5 configuration in the 2016 Survey, but had one in the 2017 Survey.

**Table 5.3.**

<b>Retailer</b>	<b>Prior configuration in 2016 Survey</b>
Signet Jewelers (Kay)	Group #1
Zumiez Inc.	(no operational EMV reader)

**IV. COMPARISON OF FINDINGS FROM THE 2017 SURVEY WITH FINDINGS FROM THE 2016 SURVEY**

**1. Allocation and Movement Among the 5 Groups**

As shown in Table 6, from the time of the 2016 Survey to the time of the 2017 Survey, the percentage of retailers in Group #1 declined from 25% to 15%, and the percentage of retailers in Group #4 increased from 38% to 51%. The changes in Groups #2 and #3 were more modest.

**Table 6.**

<b>Group</b>	<b>2016 Survey</b>	<b>2017 Survey</b>
#1: "Visa Debit"/"US Debit"	20 (25%)	16 (15%)
#2: "Credit"/"Debit"	7 (9%)	9 (8%)
#3: Auto Global	13 (16%)	19 (18%)
#4: Auto Common	30 (38%)	55 (51%)
#5: Unknown	9 (11%)	8 (7%)
<b>Total</b>	<b>79 (100%)</b>	<b>107 (100%)</b>

Table 7 shows the movement of retailers from one Group to another between the time of the 2016 Survey and the time of the 2017 Survey. For example, from the 2016 Survey to the 2017 Survey, 9 retailers moved from Group #1 to Group #4, and zero retailers moved from Group #4 to Group #1. A total of 15 retailers moved from other groups to Group #4, and 12 retailers that previously did not have operational EMV chip readers joined Group #4. Only 1 retailer (Williams-Sonoma) moved away from Group #4 to another group.



**Table 7.**

		<b>To (2017)</b>					
		Group#1	Group#2	Group#3	Group#4	Group#5	Closed
<b>From (2016)</b>	Group#1	8	0	1	9	1	1
	Group#2	0	3	1	3	0	0
	Group#3	1	1	9	2	0	0
	Group#4	0	1	0	28	0	1
	Group#5	1	0	1	1	6	0
	no EMV	6	4	7	12	1	0

Appendix B contains the data supporting Table 7.

## 2. Grouping Terminal Manufacturers

As shown in Table 8, in both the 2016 Survey and the 2017 Survey, Verifone accounted for the largest share of terminals at retailers we surveyed with operating EMV readers. Verifone accounted for 71% of the terminals in the 2016 Survey, and 79% in the 2017 Survey.

**Table 8.**

<b>Terminal Brand</b>	<b>Number of Terminals (2016 Survey)</b>	<b>Number of Terminals (2017 Survey)</b>
Verifone	56 (71%)	85 (79%)
Ingenico	12 (15%)	17 (16%)
Equinox	1 (1%)	3 (3%)
First Data	1 (1%)	1 (1%)
(unknown)	9 (11%)	1 (1%)
<b>Total</b>	<b>79 (100%)</b>	<b>107 (100%)</b>

Table 9.1 and Table 9.2 show the allocation of each terminal brand across the 5 different configurations at the retailers with operating EMV readers for the 2016 Survey and the 2017 Survey. For example, in the 2016 Survey, 32% of the Verifone terminals we encountered had a Group #1 configuration (selected AID based on cardholder choice between “Visa Debit” and “US Debit”), while in the 2017 Survey, 13% of the Verifone terminals we encountered had a Group #1 configuration. As another example, in the 2016 Survey, 8% of the Ingenico terminals we encountered had a Group #1 configuration. In the 2017 Survey, that number had grown to 24%.

**Table 9.1.**

2016 Survey					
	Verifone	Ingenico	Equinox	First Data	Unknown
#1: "Visa Debit"/ "US Debit"	18 (32%)	1 (8%)	0 (0%)	0 (0%)	1 (11%)
#2: "Credit"/ "Debit"	7 (13%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
#3: Auto Global	7 (13%)	3 (25%)	0 (0%)	0 (0%)	3 (33%)
#4: Auto Common	18 (32%)	8 (67%)	1 (100%)	1 (100%)	2 (22%)
#5: Unknown (no AID on receipt)	6 (11%)	0 (0%)	0 (0%)	0 (0%)	3 (33%)
<b>Total</b>	<b>56 (100%)</b>	<b>12 (100%)</b>	<b>1 (100%)</b>	<b>1 (100%)</b>	<b>9 (100%)</b>

**Table 9.2.**

2017 Survey					
	Verifone	Ingenico	Equinox	First Data	Unknown
#1: "Visa Debit"/ "US Debit"	11 (13%)	4 (24%)	1 (33%)	0 (0%)	0 (0%)
#2: "Credit"/ "Debit"	9 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
#3: Auto Global	18 (21%)	1 (6%)	0 (0%)	0 (0%)	0 (0%)
#4: Auto Common	40 (47%)	11 (65%)	2 (67%)	1 (100%)	1 (100%)
#5: Unknown (no AID on receipt)	7 (8%)	1 (6%)	0 (0%)	0 (0%)	0 (0%)
<b>Total</b>	<b>85 (100%)</b>	<b>17 (100%)</b>	<b>3 (100%)</b>	<b>1 (100%)</b>	<b>1 (100%)</b>

Table 10.1 and Table 10.2 are similar to Tables 9.1 and 9.2, but they combine Group #1, Group #2, and Group #3 (the three groups that select the Global AID, either automatically or based on cardholder input). As shown in Table 10.1, in the 2016 Survey, 57% of Verifone terminals had a Group #1, Group #2, or Group #3 configuration. As shown in Table 10.2, in the 2017 Survey, that number dropped to 45%.

**Table 10.1.**

2016 Survey					
	Verifone	Ingenico	Equinox	First Data	Unknown
Global AID (Group #1, #2, #3)	32 (57%)	4 (33%)	0 (0%)	0 (0%)	4 (44%)
Common AID (Group #4)	18 (32%)	8 (67%)	1 (100%)	1 (100%)	2 (22%)
Unknown (Group #5)	6 (11%)	0 (0%)	0 (0%)	0 (0%)	3 (33%)
<b>Total</b>	<b>56 (100%)</b>	<b>12 (100%)</b>	<b>1 (100%)</b>	<b>1 (100%)</b>	<b>9 (100%)</b>

**Table 10.2.**

2017 Survey					
	Verifone	Ingenico	Equinox	First Data	Unknown
Global AID (Group #1, #2, #3)	38 (45%)	5 (29%)	1 (33%)	0 (0%)	0 (0%)
Common AID (Group #4)	40 (47%)	11 (65%)	2 (67%)	1 (100%)	1 (100%)
Unknown (Group #5)	7 (8%)	1 (6%)	0 (0%)	0 (0%)	0 (0%)
<b>Total</b>	<b>85 (100%)</b>	<b>17 (100%)</b>	<b>3 (100%)</b>	<b>1 (100%)</b>	<b>1 (100%)</b>

### 3. Comparing Largest Retailers to Other Retailers

We were able to obtain trailing twelve-month revenue (“TTM”) data from public sources for most of the retailers that had operational EMV chip card readers.<sup>5</sup>

For the 2016 Survey, we had TTM data for 72 of the 79 retailers with operational EMV chip card readers, and we used the TTM data to divide those 72 retailers into two groups: the top 36 by TTM (“2016 First Tier” retailers), and the next 36 by TTM (“2016 Second Tier” retailers). Appendix C identifies the 2016 First Tier retailers and 2016 Second Tier retailers.

Table 11.1 shows how the terminal configurations at 2016 First Tier retailers compared with those at 2016 Second Tier retailers.

*Table 11.1.*

	2016 First Tier	2016 Second Tier	Total
Global AID (Group #1, #2, #3)	14 (39%)	24 (67%)	38 (53%)
Common AID (Group #4)	19 (53%)	7 (19%)	26 (36%)
Unknown (Group #5)	3 (8%)	5 (14%)	8 (11%)
<b>Total:</b>	<b>36 (100%)</b>	<b>36 (100%)</b>	<b>72 (100%)</b>

For the 2017 Survey, we had TTM data for 94 of the 107 retailers with operational EMV chip card readers, and we used the TTM data to divide those 94 retailers into two groups: the top 47 by TTM (“2017 First Tier” retailers), and the next 47 by TTM (“2017 Second Tier” retailers). Appendix D identifies the 2017 First Tier retailers and 2017 Second Tier retailers.

Table 11.2 shows how the terminal configurations at 2017 First Tier retailers compared with those at 2017 Second Tier retailers.

*Table 11.2.*

	2017 First Tier	2017 Second Tier	Total
Global AID (Group #1, #2, #3)	12 (26%)	25 (53%)	37 (39%)
Common AID (Group #4)	31 (66%)	18 (38%)	49 (52%)
Unknown (Group #5)	4 (9%)	4 (9%)	8 (9%)
<b>Total:</b>	<b>47 (100%)</b>	<b>47 (100%)</b>	<b>94 (100%)</b>

As shown in Table 11.1 and Table 11.2, in both the 2016 Survey and the 2017 Survey, most First Tier retailers had terminals configured to automatically select the Common AID (Group #4), while most Second Tier retailers had terminals configured to provide for selection of the Global AID, either automatically or based on selections made by the cardholder during the transaction (Group #1, #2, or #3).

Approximately 66% of terminals at 2017 First Tier retailers were configured to automatically select the Common AID, while only 38% of 2017 Second Tier retailers were configured in that manner. Approximately 53% of 2017 Second Tier retailers were configured to provide for

<sup>5</sup> We were unable to obtain trailing twelve-month revenue data for some of the privately-held retailers.

selection of the Global AID, either automatically or based on selections made by the cardholder during the transaction (Group #1, #2, or #3), while only 26% of terminals at 2017 First Tier retailers were configured in that manner.

###

## APPENDIX A

The following 40 retailers did not have operating EMV chip card readers at the time of the 2017 Survey (this list does not include the 24 sit-down restaurants that we did not survey in the 2017 Survey; we do not know whether those restaurants have operating EMV chip card readers):

1. Aldi
2. Bojangles Inc
3. Burger King Worldwide
4. Chick-fil-A
5. Chicos FAS Inc (Chicos)
6. Chipotle Mexican Grill
7. Columbia Sportswear Company
8. Container Store Group Inc
9. Cosi Inc
10. Cracker Barrel Old Country Store Inc
11. Domino's Pizza
12. Dunkin' Brands Group
13. Francescas Holdings Corporation
14. Guess Inc
15. Ikea North America Services (main store)
16. Jamba Inc
17. Kirklands's
18. Krispy Kreme Doughnuts Inc
19. Noodles and Company
20. Outerwall Inc (Redbox)
21. Panera Bread Company
22. Papa Johns International Inc
23. Perfumania Holdings Inc
24. Pier 1 Imports Inc
25. Popeyes Louisiana Kitchen Inc
26. Potbelly Corporation
27. Restoration Hardware Holdings Inc
28. Sally Beauty Holdings Inc
29. Select Comfort Corporation (Sleep Number)
30. Shake Shack Inc
31. Sherwin-Williams
32. Skechers Usa
33. Sonic
34. Stage Stores Inc (Peebles)
35. Tile Shop Holdings Inc
36. Tillys Inc
37. Tuesday Morning Corp
38. Vince Holding Corp
39. Wendy's
40. YUM! Brands (Taco Bell)

## APPENDIX B

<b>Name</b>	<b>2016 Group</b>	<b>2017 Group</b>
Bebe	1	(closed)
HHGregg Inc.	4	(closed)
Abercrombie & Fitch Co	1	1
Ace Hardware	(no EMV)	1
Buckle Inc.	(no EMV)	1
Carters Inc.	1	1
Childrens Place Inc.	1	1
Kate Spade and Company	1	1
Lumber Liquidators Holdings Inc. New	1	1
Michael Kors Holdings Ltd.	1	1
Movado Group Inc.	3	1
New York and Company Inc.	1	1
Nike Inc.	(no EMV)	1
Perry Ellis International Inc. (Original Penguin)	(no EMV)	1
Staples	1	1
Steven Madden Ltd.	(no EMV)	1
Tumi Holdings Inc.	(no EMV)	1
Verizon Wireless	5	1
Ascena Retail Group (Dress Barn)	(no EMV)	2
Dollar Tree	(no EMV)	2
Family Dollar Stores	3	2
GNC Holdings Inc.	2	2
PVH Corp. (Calvin Klein)	2	2
Safeway	(no EMV)	2
Trader Joe's	2	2
Wegmans Food Market	(no EMV)	2
Williams-Sonoma	4	2
Apple Store / iTunes	3	3
Coach Inc.	1	3
Crocs Inc.	3	3
Doctor's Assoc. (Subway)	5	3
Finish Line Inc.	3	3
Five Below Inc.	3	3
G III Apparel Group Ltd (Wilson's Leather)	2	3
Gap	3	3
Genesco Inc. (Lids and Locker Room)	(no EMV)	3
Hanesbrands Inc.	3	3
Haverty Furniture Companies Inc.	(no EMV)	3
J.C. Penney Co.	(no EMV)	3
Lowe's Companies	3	3

Oxford Industries Inc. (Tommy Bahama)	(no EMV)	3
Petsmart	(no EMV)	3
Rite Aid	3	3
Vera Bradley Inc.	(no EMV)	3
West Marine Inc.	(no EMV)	3
Wolverine World Wide Inc. (Sperry)	3	3
7-Eleven	4	4
Advance Auto Parts	(no EMV)	4
Alimentation Couche-Tard (Circle K)	(no EMV)	4
American Eagle Outfitters Inc.	1	4
AT&T Wireless	(no EMV)	4
AutoZone	4	4
Barnes & Noble	4	4
Bed Bath & Beyond	4	4
Best Buy	4	4
Big Lots	1	4
Caleres Inc. (Famous Footwear)	1	4
Citi Trends Inc.	(no EMV)	4
CVS Caremark	2	4
Delhaize America (Food Lion)	2	4
Destination XL Group Inc. (Rochester Big & Tall)	(no EMV)	4
Dick's Sporting Goods	4	4
Dollar General	4	4
DSW Inc.	4	4
Express Inc.	1	4
Foot Locker	3	4
Fossil Group Inc.	(no EMV)	4
GameStop	4	4
Kohl's	1	4
L Brands (Victoria Secret)	4	4
Luxottica Group Spa (Sunglass Hut)	4	4
Macy's	4	4
McDonald's	(no EMV)	4
Michaels Stores	4	4
Natural Grocers by Vitamin Cottage Inc.	3	4
Neiman Marcus	4	4
Nordstrom	1	4
Office Depot	4	4
Party City Holdco Inc.	4	4
Penske Automotive Group Inc.	(no EMV)	4
Ralph Lauren Corporation	4	4
Ross Stores	(no EMV)	4
Royal Ahold / Ahold USA (Giant Grocery Stores)	1	4

Sears Holdings	4	4
Stein Mart Inc.	4	4
Supervalu Inc. (Shoppers)	4	4
Tailored Brands Inc. (Men's Wearhouse)	(no EMV)	4
Target	4	4
The Home Depot	4	4
Tiffany and Co.	(no EMV)	4
TJX (TJ Maxx)	4	4
Toys "R" Us	4	4
Tractor Supply Co.	4	4
True Value Co.	4	4
Under Armour Inc.	1	4
Urban Outfitters Inc.	5	4
Village Super Market Inc. (Shop Rite)	1	4
Vitamin Shoppe Inc.	(no EMV)	4
Walgreens	4	4
Wal-Mart Stores	4	4
Whole Foods Market	2	4
Build A Bear Workshop Inc.	5	5
Burlington Coat Factory	5	5
Lululemon Athletica Inc.	5	5
Signet Jewelers (Kay)	1	5
Starbucks	5	5
Ulta Salon Cosmetics and Fragrance Inc. (Ulta)	5	5
V F Corp. (North Face)	5	5
Zumiez Inc.	(no EMV)	5



## APPENDIX C

### **2016 First Tier retailers**

1. Apple Store / iTunes
2. AUTOZONE INC
3. BED BATH AND BEYOND INC
4. BEST BUY COMPANY
5. CVS HEALTH CORPORATION
6. Delhaize America (Food Lion)
7. DICKS SPORTING GOODS INC
8. DOLLAR GENERAL CORPORATION
9. FOOT LOCKER INC
10. GAMESTOP CORP HOLDING COMPANY
11. GAP INC
12. HOME DEPOT INC
13. KOHLS CORPORATION
14. KONINKLIJKE AHOLD NV
15. L BRANDS INC
16. LOWES COMPANIES INC
17. LUXOTTICA GROUP SPA (Sunglass Hut)
18. MACYS INC
19. NORDSTROM INC
20. OFFICE DEPOT INC
21. PVH CORP (Calvin Klein/Tommy Hilfiger)
22. RALPH LAUREN CORPORATION
23. RITE AID CORP
24. SEARS HOLDINGS CORPORATION
25. SIGNET JEWELERS LTD
26. STAPLES INC
27. STARBUCKS CORPORATION
28. SUPERVALU INC (Shoppers)
29. TARGET CORP
30. TJX COMPANIES INC
31. TRACTOR SUPPLY COMPANY
32. V F CORP (North Face)
33. Verizon
34. WALGREEN BOOTS ALLIANCE INC
35. WALMART STORES INC
36. WHOLE FOODS MARKET INC

### **2016 Second Tier retailers**

1. ABERCROMBIE AND FITCH CO
2. AMERICAN EAGLE OUTFITTERS
3. BARNES AND NOBLE INC
4. BEBE STORES INC
5. BIG LOTS INC
6. Build-A-Bear Work Shop
7. BURLINGTON STORES INC
8. CALERES INC (Famous Footwear)
9. CARTERS INC
10. CHILDRENS PLACE INC
11. COACH INC
12. CROCS INC
13. DSW INC
14. EXPRESS INC
15. FINISH LINE INC
16. FIVE BELOW INC
17. G III APPAREL GROUP LTD (Kenneth Cole)
18. GNC HOLDINGS INC
19. HANESBRANDS INC
20. HHGREGG INC
21. KATE SPADE AND COMPANY
22. LULULEMON ATHLETICA INC
23. LUMBER LIQUIDATORS HOLDINGS
24. MICHAEL KORS HOLDINGS LTD
25. MICHAELS COMPANIES INC
26. MOVADO GROUP INC
27. NATURAL GROCERS BY VITAMIN COTTAGE INC
28. NEW YORK AND COMPANY INC
29. PARTY CITY HOLDCO INC
30. STEIN MART INC
31. ULTA SALON COSMETICS AND FRAGRANCE INC (Ulta)
32. UNDER ARMOUR INC
33. URBAN OUTFITTERS INC
34. VILLAGE SUPER MARKET INC (Shop Rite)
35. WILLIAMS SONOMA
36. WOLVERINE WORLD WIDE INC (Sperry)

## APPENDIX D

### 2017 First Tier retailers

1. Advance Auto Parts
2. Apple Store / iTunes
3. Ascena Retail Group (Dress Barn)
4. AutoZone
5. Bed Bath and Beyond Inc.
6. Best Buy Company
7. Big Lots Inc.
8. Burlington Coat Factory
9. CVS Caremark
10. Delhaize America (Food Lion)
11. Dick's Sporting Goods
12. Dollar General
13. Dollar Tree
14. Foot Locker Inc.
15. GameStop Corp Holding Co
16. Gap Inc.
17. Hanesbrands Inc.
18. J.C. Penney Co.
19. Kohl's Corp.
20. L Brands Inc. (Victoria's Secret)
21. Lowe's Companies
22. Luxottica Group Spa (Sunglass Hut)
23. Macy's Inc.
24. McDonald's
25. Nike Inc.
26. Nordstrom Inc.
27. Office Depot
28. Penske Automotive Group Inc.
29. PVH Corp. (Calvin Klein)
30. Ralph Lauren Corp.
31. Rite Aid
32. Ross Stores
33. Royal Ahold / Ahold USA (Giant Grocery Stores)
34. Sears Holdings
35. Signet Jewelers (Kay)
36. Staples
37. Starbucks
38. Supervalu Inc. (Shoppers)
39. Target
40. The Home Depot
41. TJX (TJ Maxx)
42. Tractor Supply Co.
43. V F Corp. (North Face)
44. Verizon Wireless
45. Walgreens
46. Wal-Mart Stores
47. Whole Foods Market

### 2017 Second Tier retailers

1. Abercrombie & Fitch Co
2. American Eagle Outfitters Inc.
3. Barnes & Noble
4. Buckle Inc.
5. Build A Bear Workshop Inc.
6. Caleres Inc. (Famous Footwear)
7. Carters Inc.
8. Childrens Place Inc.
9. Citi Trends Inc.
10. Coach Inc.
11. Crocs Inc.
12. Destination XL Group (Rochester Big & Tall)
13. DSW Inc.
14. Express Inc.
15. Finish Line Inc.
16. Five Below Inc.
17. Fossil Group Inc.
18. G III Apparel Group (Wilson's Leather)
19. Genesco Inc. (Lids and Locker Room)
20. GNC Holdings Inc.
21. Haverty Furniture Companies Inc.
22. Kate Spade and Company
23. Lululemon Athletica Inc.
24. Lumber Liquidators Holdings Inc. New
25. Michael Kors Holdings Ltd.
26. Michaels Stores
27. Movado Group Inc.
28. Natural Grocers by Vitamin Cottage Inc.
29. New York and Company Inc.
30. Oxford Industries Inc. (Tommy Bahama)
31. Party City Holdco Inc.
32. Perry Ellis Int'l Inc. (Original Penguin)
33. Stein Mart Inc.
34. Steven Madden Ltd.
35. Tailored Brands Inc. (Men's Wearhouse)
36. Tiffany and Co.
37. Tumi Holdings Inc.
38. Ulta Salon Cosmetics & Fragrance Inc.
39. Under Armour Inc.
40. Urban Outfitters Inc.
41. Vera Bradley Inc.
42. Village Super Market Inc. (Shop Rite)
43. Vitamin Shoppe Inc.
44. West Marine Inc.
45. Williams-Sonoma
46. Wolverine World Wide Inc. (Sperry)
47. Zumiez Inc.