

GLOBAL FRAUD INDEX™

MAY 2017



FRAUD IN Q1 2017

-34.7%

Percentage decrease in total fraud
from Q1 2016 to Q1 2017



AMOUNT LOST

\$48.2 BILLION

Amount eight identified
industry segments are losing



INDUSTRY CONCENTRATIONS



+146.5%

Increase in fraud for
online Department Stores
from Q1 2016 to Q1 2017



+12.8%

Increase in fraud for
online Jewelry and
Precious Metals from Q1
2016 to Q1 2017

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ONLINE FRAUD INDEX SNAPSHOT Q1 2017

Overall fraud has decreased, but not fast enough

Ecommerce fraud as a percent of sales dollars peaked during the 2015 holiday season, and since Q1 2016 fraud across all industries has been declining, apart from Apparel, Department Stores and Jewelry and Precious Metals. However, fraud still accounts for billions of dollars lost, and perhaps even more lost due to transactions declined out of fear they might be fraudulent.



DEPARTMENT STORES



JEWELRY AND PRECIOUS METALS



**\$48.2
BILLION**

in potential fraud, in
the eight industries we studied

As expected, fraud rates rise significantly as order values increase

In Q1 2017, orders over \$500 had a total fraud rate of 10.93 percent, which is more than 20 times higher than orders that were under \$100, with a total fraud rate of 0.52 percent.

Q1 2017: Orders <\$100: **0.52%**

Q1 2017: Orders \$100-\$500: **3.87%**

Q1 2017: Orders >\$500: **10.93%**

THE GLOBAL FRAUD INDEX: EXECUTIVE SUMMARY

With the birth of eCommerce came its twin sibling: online payment fraud. In the early days of online payments, fraud was committed by teens looking to impress their friends by getting products for free using stolen credit card details or their parents' credit cards.

But fraud has since matured into a multi-billion dollar industry complete with advanced technology and international cyber criminal networks. For example, by 2003 fraudsters could collect keystrokes from computers they'd infiltrated, accessing bank accounts. To counter this, by 2005 the Federal Financial Institution Examination Council declared all banks must use two-factor authentication.¹ By 2009, fraudsters had developed new ways to grab data from online forms, working their way around two-factor authentication.² Since 2011, banks have been working on mobile authentication,³ but fraudsters are undoubtedly working on ways to render this useless as well.

Despite the prevalence of fraud, eCommerce continues to grow. To be precise, eCommerce has been growing about 15 percent per year⁴, and is estimated to grow at least 8 to 12 percent in the U.S. in 2017.⁵ With its growth will come more fraud and the game of cat and mouse will only intensify. But where are we now? How much fraud is going on, and how effective are attempts to combat fraud?

PYMNTS.com and Signifyd partnered together to track, analyze and report on the important trends in the world of fraud as it relates to payments and eCommerce. Each quarter, we will monitor how fraud attempts are trending on global eCommerce merchant websites. Here we've reviewed eight main industries: Alcohol, Tobacco and Cannabis; Apparel; Consumer Electronics; Cosmetics and Perfumes; Department Stores; Furniture, Appliances and Home Improvement; Health, Leisure and Hobbies; and Jewelry and Precious Metals. This quarter, we're focusing on trends in the U.S., but in later quarters we'll focus on other areas of the globe.

¹Mellinger, P. "Crime and Malware: A Short History of Computer Fraud," Computer World UK. November 7, 2011. <http://www.computerworlduk.com/security/crime-and-malware-a-short-history-of-computer-fraud-3316463/>. Accessed May 24, 2017.

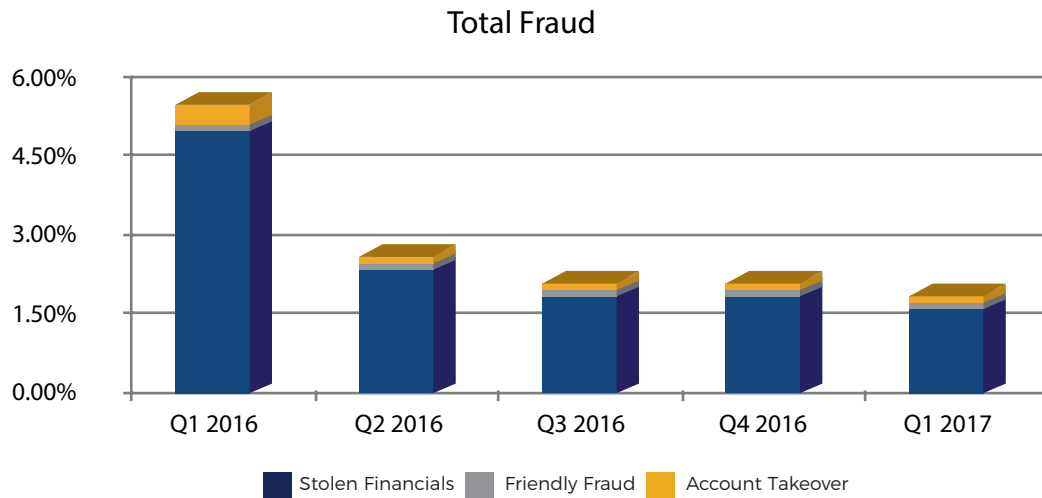
²Ibid.

³Ibid.

⁴U.S. Department of Commerce. Quarterly Retail E-Commerce Sales 1st Quarter 2017. May 16, 2017. https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf. Accessed May 24, 2017.

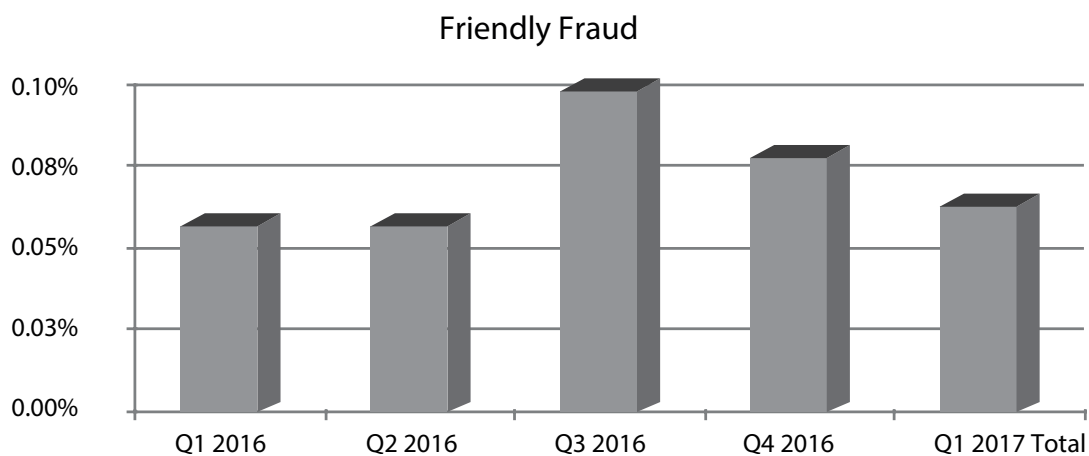
⁵BI Intelligence. "National Retail Federation Estimates 8-12% US E-Commerce Growth in 2017. February 10, 2017. <http://www.businessinsider.com/national-retail-federation-estimates-8-12-us-e-commerce-growth-in-2017-2017-2>. Accessed May 24, 2017.

Throughout the Global Fraud Index, we will classify eCommerce fraud in one of 3 categories: Friendly Fraud, Account Takeover and Stolen Financials. Overall, Stolen Financials account for 93 percent of all fraud, Account Takeover accounts for 5 percent and Friendly Fraud accounts for 2 percent.



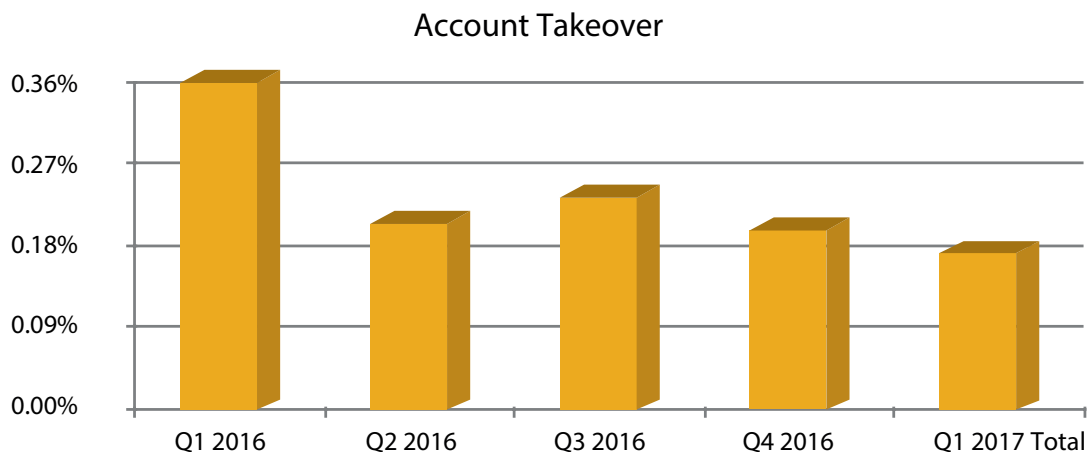
Friendly Fraud

Friendly Fraud occurs when a consumer makes a purchase with their own credit card or a family member's credit card and subsequently requests a chargeback after receiving the purchased goods or services.



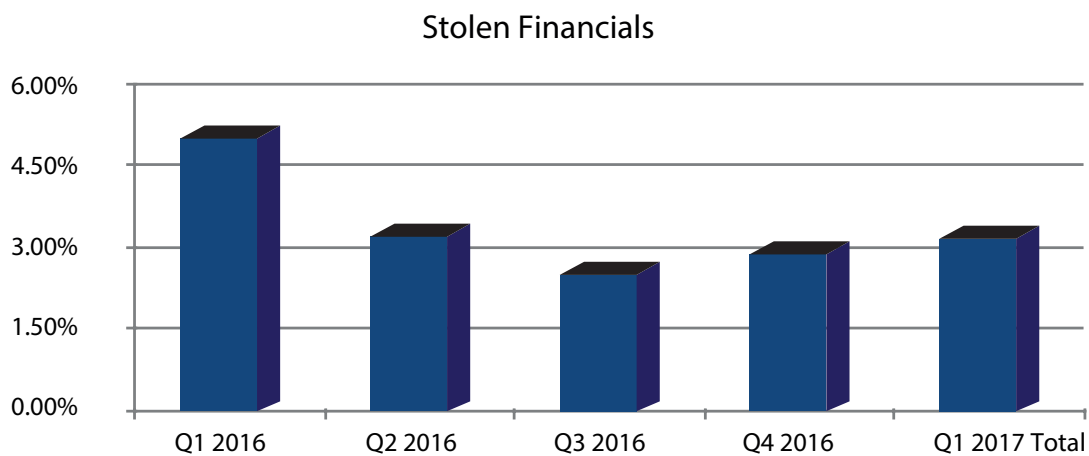
Account Takeover

Account Takeover occurs when a criminal gains control of another person's account, poses as the account holder, and then makes unauthorized transactions from that account.



Stolen Financials

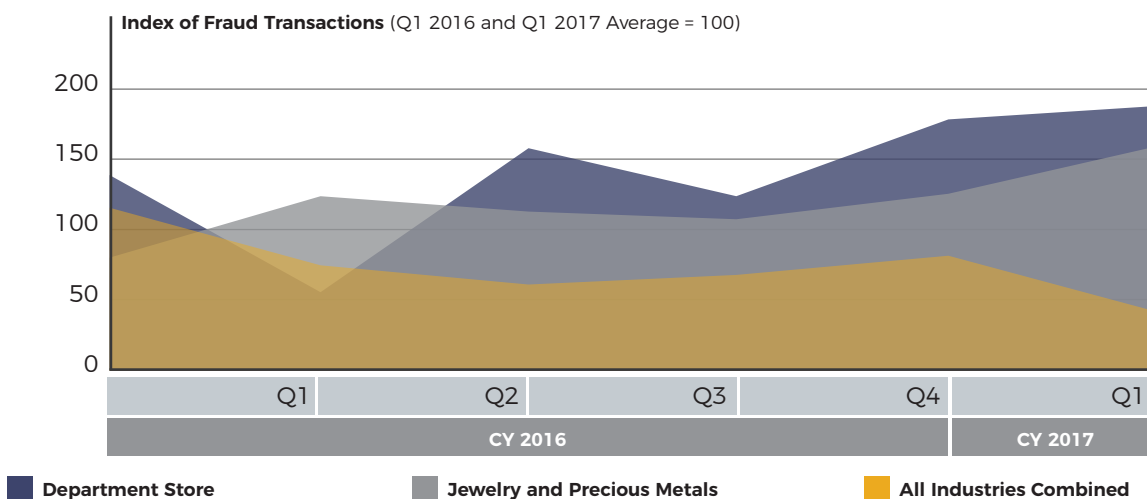
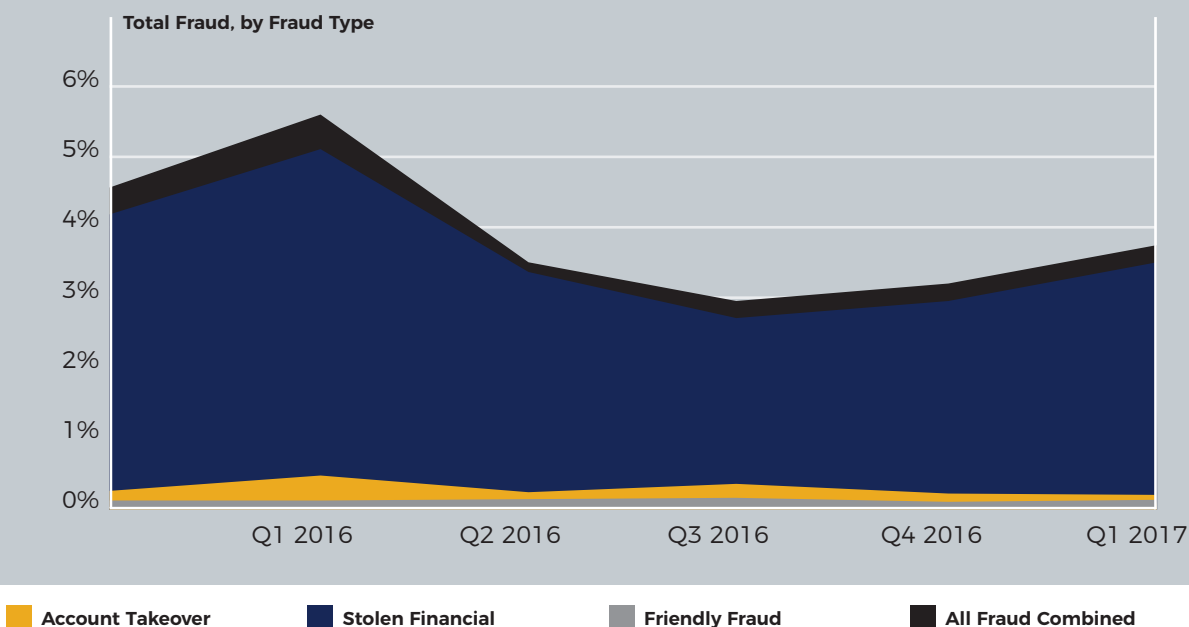
Stolen Financial Fraud occurs when a criminal obtains a person's credit card details and then makes transactions. Stolen Financials can be found on the black market and are often used by criminals to open new accounts or when using "Guest" checkout capabilities on a merchant's site.



KEY TRENDS

- **Fraud as a percentage of overall sales has declined, but not for Department Stores or Jewelry and Precious Metals**

Since early 2016 eCommerce fraud has been declining in most industries, with two notable exceptions: Department Stores and Jewelry and Precious Metals. One of the main reasons behind the decline is the increasing use of machine learning in fraud prevention solutions. The latest machine learning solutions are evidently doing a better job of distinguishing real orders from fraudulent orders than previous solutions, which relied on static rules.



While fraud in most industries is declining as a percentage of eCommerce sales and as a percentage of total transactions, this trend is reversed for both Department Stores and Jewelry and Precious Metals. In those industries, fraudsters are targeting more transactions at higher values and more transactions overall, indicating that fraud is actually growing faster than eCommerce sales.

- **Last-Mile Fraud is increasing**

Last-Mile Fraud, also known as front porch fraud (see Department Stores section), happens when packages are swiped from the customer's front porch. This has become a bigger issue in recent years, with customers even installing security cameras to catch thieves in the act. A growing number of customers are also receiving empty boxes implying delivery and postal service workers play a role in fraud as well.

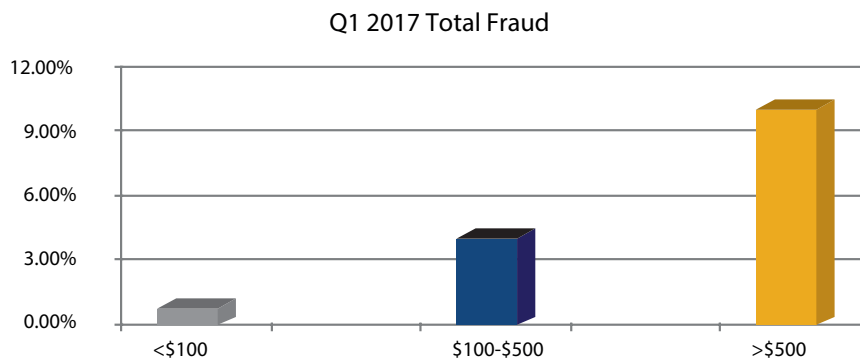
Despite the introduction of self-service lockers and pickup stations, most consumers still expect delivery of their online purchase at their homes and hold merchants responsible for any problems. In the past year, merchants have changed some of their delivery practices including stripping branding from their packaging to avoid having their packages stolen. We'll discuss this issue in more depth in our industry section on Department Stores.

- **Higher value orders have higher fraud rates**

Higher-value transactions have a fraud rate almost twenty times higher than the fraud rate for lower-value transactions. This trend is consistent across most industries, except Alcohol, Tobacco and Cannabis.

Fraud comes in all sorts of shapes and sizes. For example, an American business man made \$50 million by overcharging customers on lightbulbs.⁶ In this case, the fraud worked because the amounts were too small to be noticed and the fraudster was willing to operate the same fraud several times over—and by several, we mean millions. But in general, fraudsters are more likely to target higher-value products and industries with high order values, so they can get more dollars for less work.

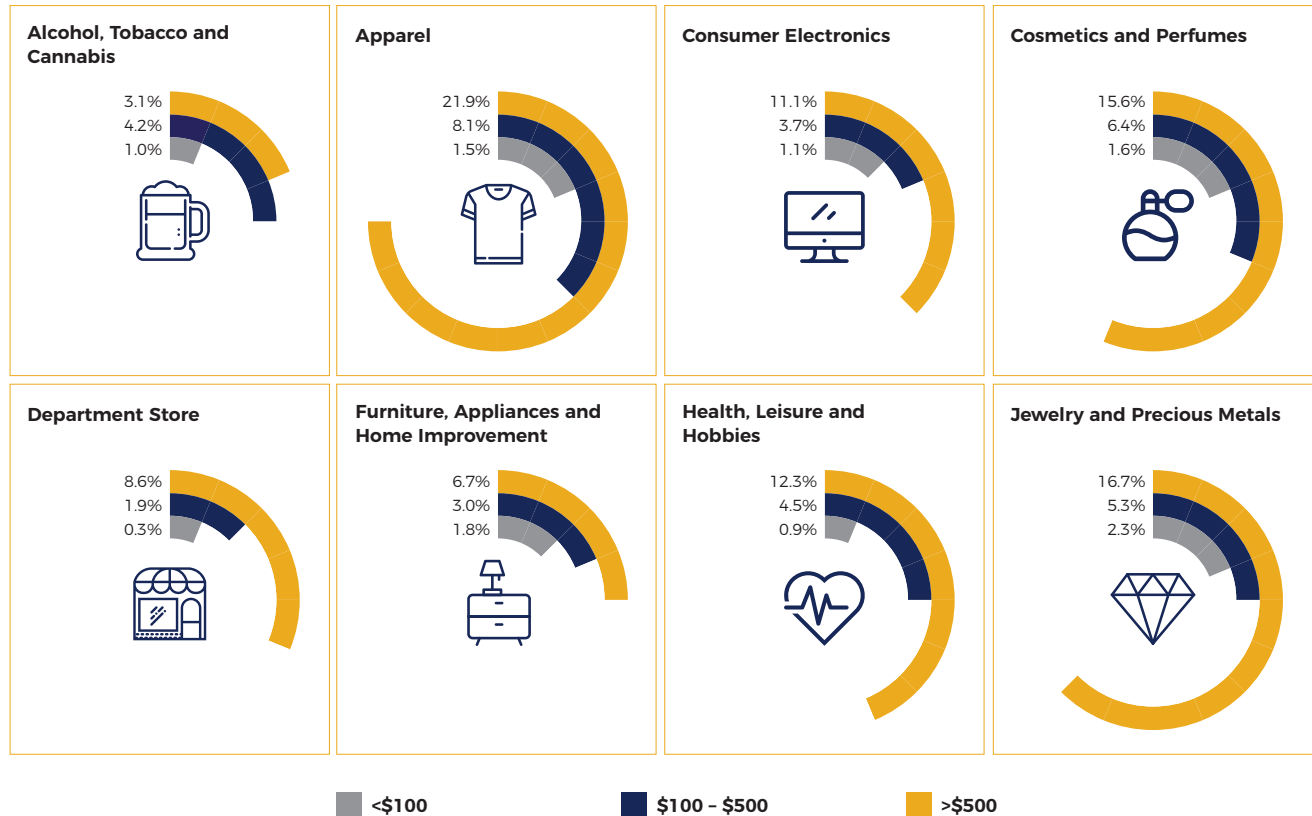
Since fraud varies greatly depending on the value of each order we divided up our data into different categories: orders under \$100, orders between \$100-\$500, and orders over \$500. Unsurprisingly, we found there were more fraud attempts on higher value orders.



⁶Wallen, B. "Missing Businessman Charged in \$50 Million Fraud," WBALTV11. May 10, 2016. <http://www.wbal.tv.com/article/missing-businessman-charged-in-50-million-fraud/7100537>. Accessed May 24, 2017.



Q1 2017 FRAUD BY ORDER VALUE AND INDUSTRY



FRAUD BY INDUSTRY

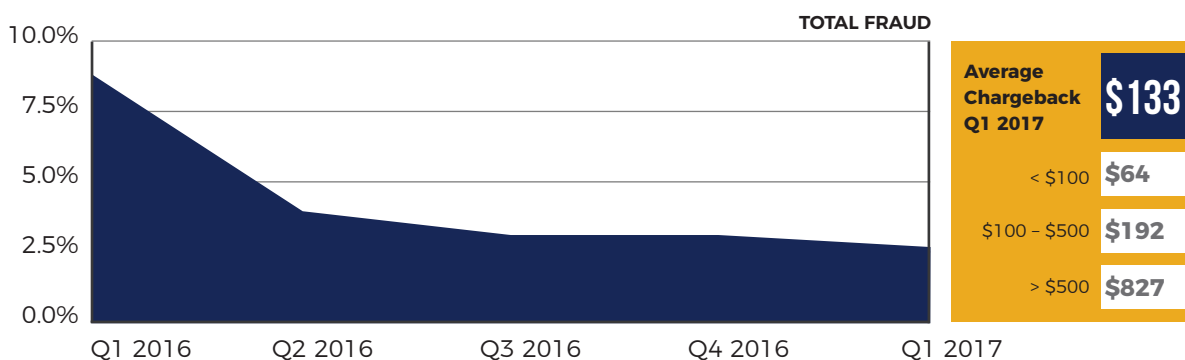
Total fraud has been decreasing since Q2 2016, but how are specific industries faring? We divided our data into eight main industries, collectively accounting for 63 percent of all eCommerce sales in terms of the total dollars spent.

Merchant Industry Segment	% of Total eCommerce Sales
Alcohol, Tobacco and Cannabis	0.2%
Apparel (Clothing, Accessories, Shoes, Sunglasses)	12.4%
Consumer Electronics	10.6%
Cosmetics and Perfumes	0.3%
Department Stores	19.1%
Furniture, Appliances and Home Improvement	8.2%
Health, Leisure and Hobbies (Outdoor, Fitness, Sporting Goods, Weapons)	10.5%
Jewelry and Precious Metals	1.5%
All Tracked Industries	62.9%



Alcohol, Tobacco and Cannabis

The Alcohol, Tobacco and Cannabis industry includes merchants selling these substances and their related accessories and paraphernalia. For Cannabis specifically, the data was heavily sourced from vendors selling accessories/paraphernalia, as there are more of these vendors online than vendors selling the dry herb or its derivatives.



Industry Snapshot

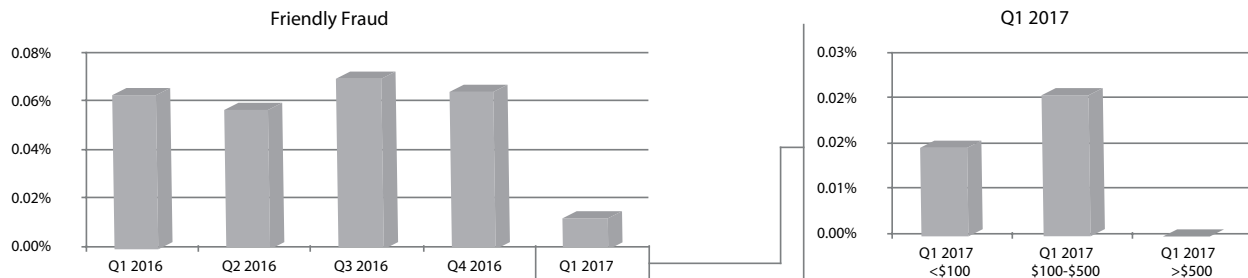
For both online and offline retailers, 2016 was a record-setting year in the Alcohol, Tobacco, and Cannabis industry. Online sales matched brick-and-mortar growth, aided in part by changing regulations for cannabis consumption and sales. In additional good news for the industry, the fraud growth rate remained lower than the overall growth rate of the industry. Overall fraud dropped from 9.02 percent during Q1 2016 to 2.81 percent during Q1 2017.

No Longer the Flavor of the Month

In early 2016, several tobacco and cannabis products were introduced to the market and demand far outpaced supply—a formula ripe for fraud, since many customers were willing to make purchases from alternate channels. However, supply has increased to meet demand and fraud has become less lucrative.

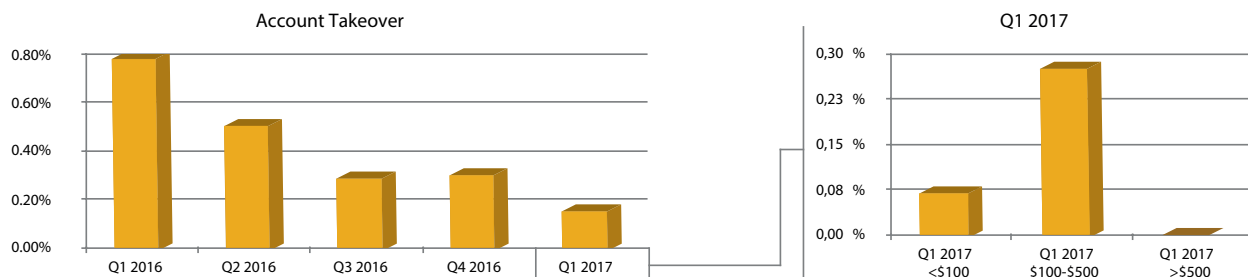
Friendly Fraud

Friendly Fraud for Alcohol, Tobacco and Cannabis was dropped dramatically from Q1 2016 from 0.06 percent to 0.01 percent. However, it was slightly higher (0.02 percent) for orders between \$100 and \$500.



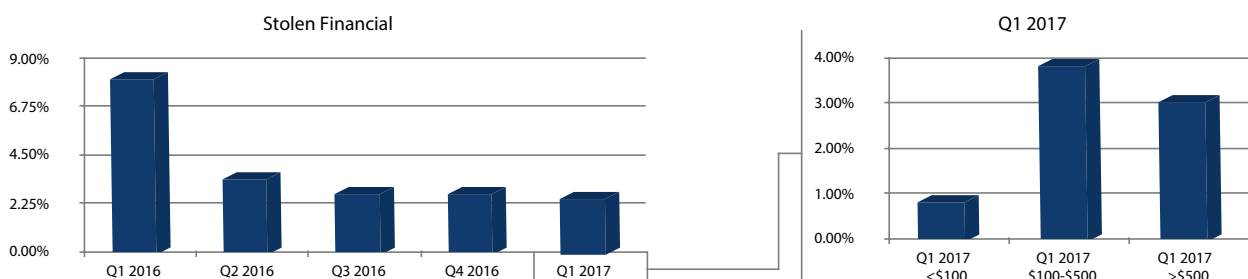
Account Takeover

Account Takeover rates also dropped from Q1 2016 from 0.79 percent to 0.16 percent. However, orders between \$100 and \$500 saw four times as many fraud attempts as orders below \$100.



Stolen Financials

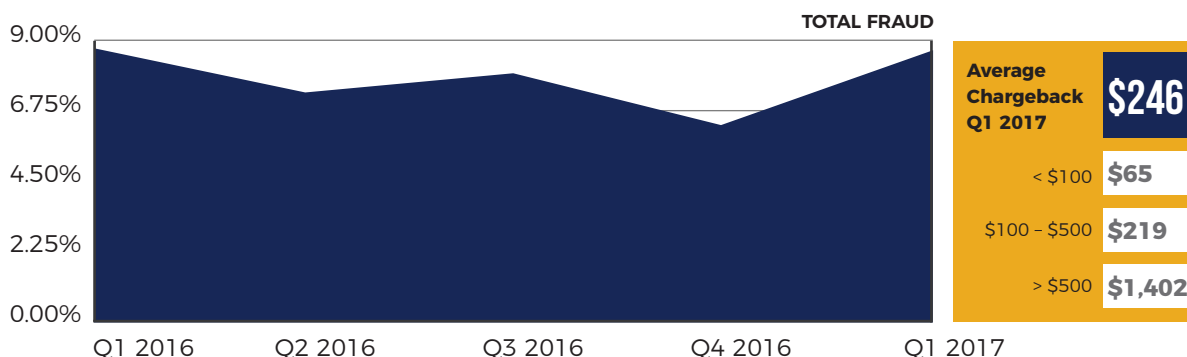
A dramatic reduction in Stolen Financials from 8.16 percent during Q1 2016 to 2.64 percent this quarter completes the downward trend for fraud in this industry. Stolen Financials dropped by 68 percent over the course of just one year.





Apparel

Apparel covers all clothing, shoes, and accessories such as belts, hats, and sunglasses. Given the universal market for such goods the range of products and brands in our analysis includes discount stores, global luxury brands and everything in between.



Industry Snapshot

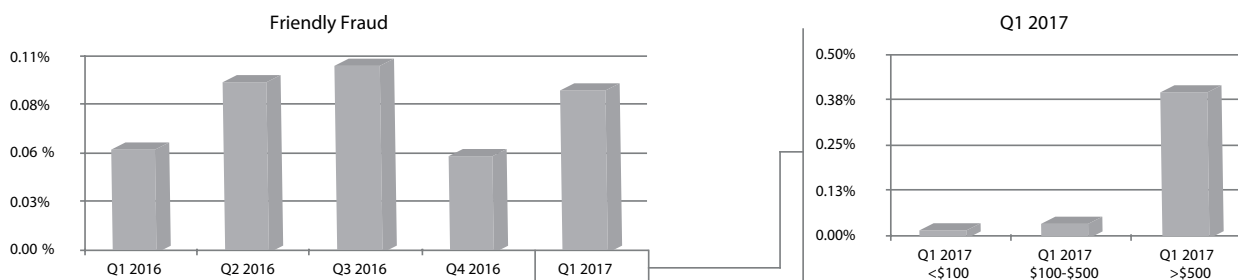
Apparel eCommerce merchants fought a tough battle against fraudsters during 2016. By Q1 2017, fraud rates were only slightly higher than they were a year ago: they increased from 8.78 percent during Q1 2016 to 8.89 percent during this quarter. For orders over \$500 fraud rates rose dramatically to 21.89 percent this quarter, and they were also high for orders between \$100 to \$500: 8.05 percent this quarter. However, since a large portion of apparel purchases are under \$100 and had a lower fraud rate of 1.53 percent, this brought down the overall industry's average.

An Empire State of Fraud

While Paris might be the global fashion capital, New York is America's fashion center and that comes at a price. Within the U.S., New York accounted for 25.8 percent of the fraud in online apparel—a disproportionate amount, since New York only accounts for 15 percent of fraud across all industries. In fact, during 2016, apparel fraud rates in New York outpaced major states such as California, Texas and Florida and may have hit an all-time high this quarter.

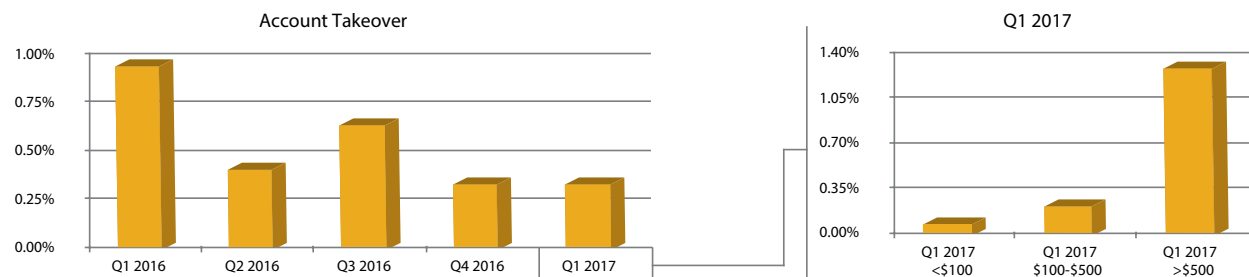
Friendly Fraud

Friendly Fraud has increased from 0.06 percent during Q1 2016 to 0.09 percent this quarter. The rate of Friendly Fraud on orders over \$500 is higher than it is for any other industry: 0.41 percent. One possible explanation for this might be the growing demand from consumers for easier return policies. Merchants who make returns difficult for customers are seeing higher rates of Friendly Fraud as customers may find it easier to file a chargeback instead of trying to navigate the merchant's complex return policies.



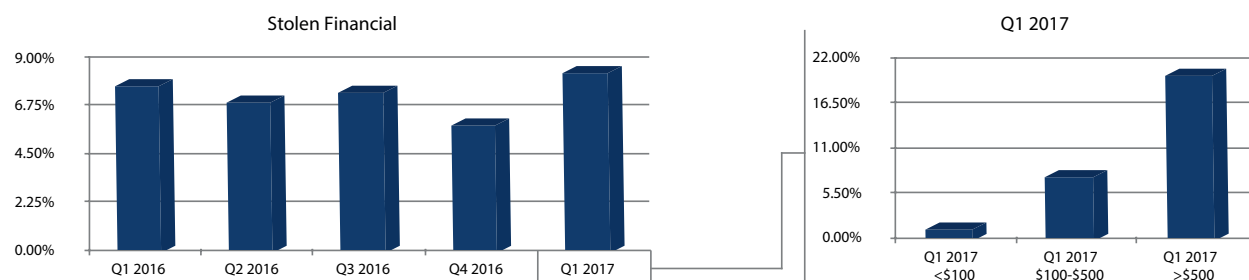
Account Takeover

Account Takeover is down from Q1 2016's 0.95 percent to 0.34 percent this quarter, but is higher for orders above \$500: 1.3 percent. Apparel merchants are especially attractive targets for Account Takeover since they rely on "guest" accounts. Purchases from "guest" accounts make up the majority of the Stolen Financials fraud apparel merchants see. Fraud originating from existing accounts is harder to identify.



Stolen Financials

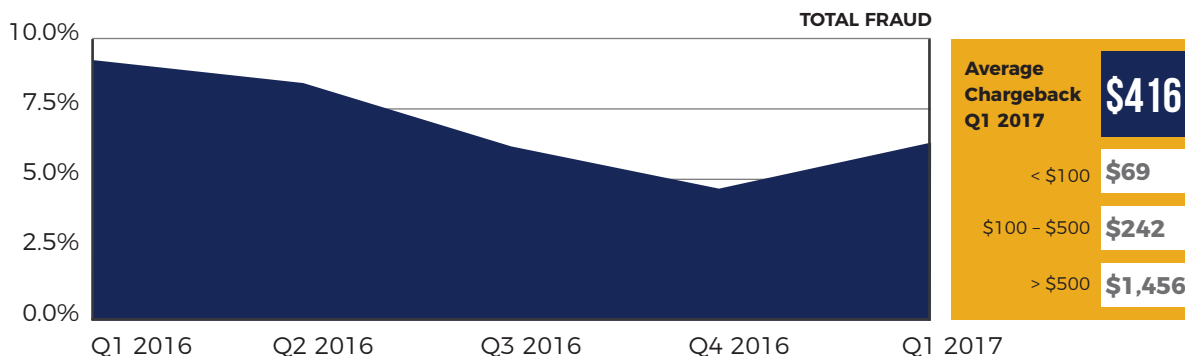
Stolen Financials fraud for apparel increased from 7.77 percent during Q1 2016 to 8.45 percent during Q1 2017. For orders between \$100 to \$500 and orders above \$500, the Apparel industry has the highest amount of Stolen Financials fraud compared to all other industries: 7.78 percent and 20.18 percent respectively. For Q1 2017, the rate of Stolen Financials fraud for Apparel was almost twice as high as it was for Consumer Electronics.





Consumer Electronics

Consumer electronics covers items as varied as televisions, laptops, digital cameras, flash drives, drones, electric scooters, hover boards and wireless earbuds. If it's powered by batteries, it'll likely fall into this category.



Industry Snapshot:

Despite being one of the fastest growing industries for online merchants, Consumer Electronics saw its total fraud rate drop over the past year from 9.21 percent to 6.49 percent. However, the industry still has the second-highest average chargeback amount for orders over \$500: \$1,456.

Phoning It In

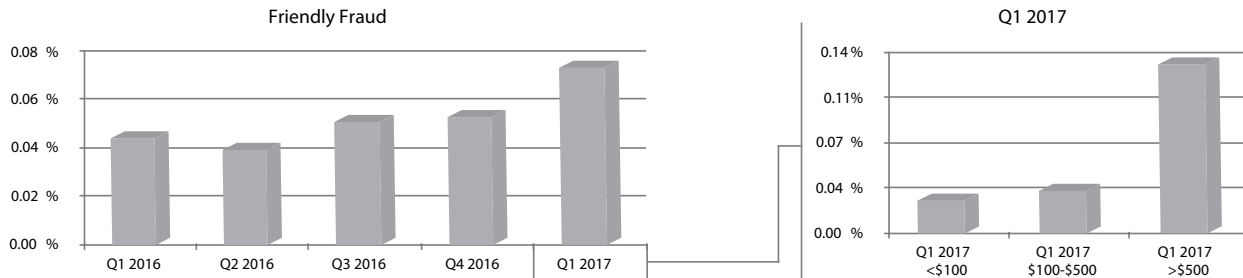
A common fraud technique for this industry is for fraudsters to call in an order and ask for it be rushed. Fraudsters know merchants in this industry are more tech savvy and likely to invest in fraud prevention and security. However, these security measures are not in place over the phone and merchants should be particularly wary of buyers willing to be upsold on extra fees or add-ons. The upselling will only result in a higher chargeback for the merchant.

California Dreaming

In addition, merchants should keep an eye on orders from California: California accounted for 24.4 percent of all fraud for this industry this quarter. That's almost as much as Florida, Texas and New York combined.

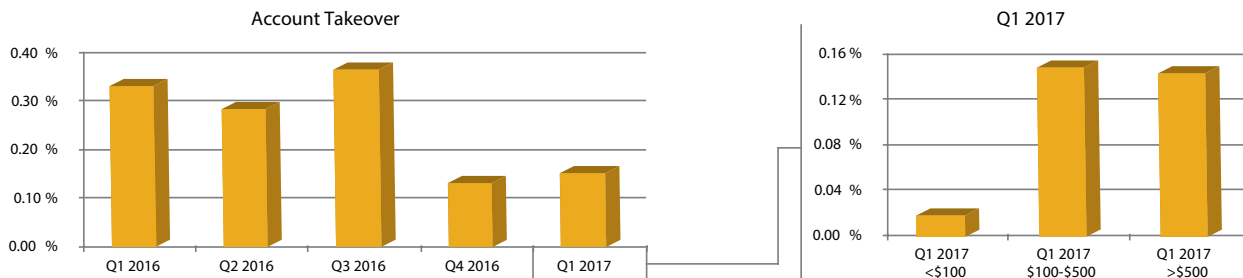
Friendly Fraud

Friendly Fraud is up from Q1 2016's rate of 0.04 percent to 0.07 percent. Consumer Electronics now has the second highest Friendly Fraud rate across all industries.



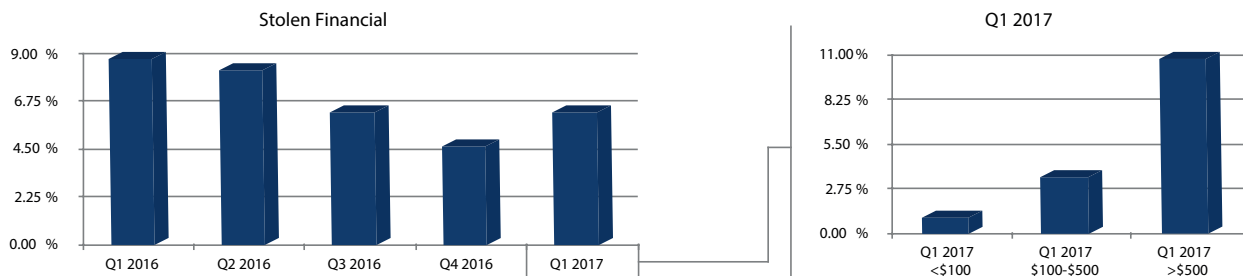
Account Takeover

Account Takeover has dropped by over 50 percent since last year, from 0.33 percent during Q1 2016 to 0.15 percent this quarter. This type of fraud doesn't appear to be a dominant strategy for fraudsters in this industry.



Stolen Financials

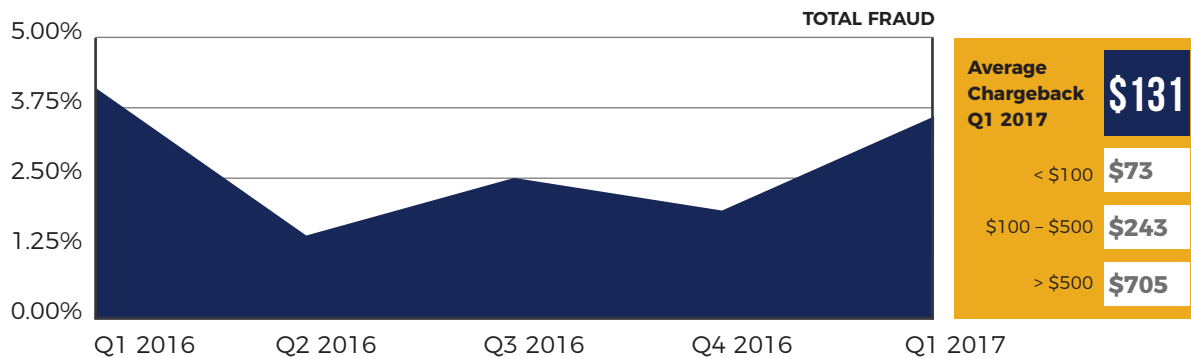
While Stolen Financials fraud is down from Q1 2016's 8.83 percent to 6.26 percent, orders over \$500 are still experiencing fraud at an alarming attempt rate of 10.87 percent.





Cosmetics and Perfumes

Cosmetics and perfumes includes fragrances, make-up, wigs and skin care for men and women.



Industry Snapshot

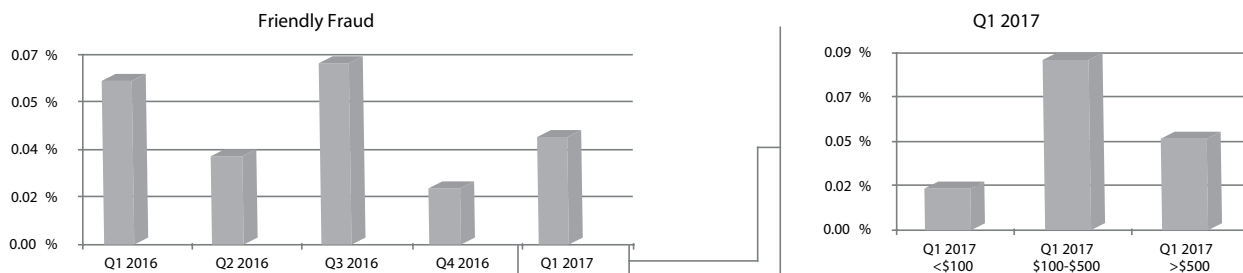
The holiday shopping season accounts for the bulk of the sales in this industry, so fraud rates are, unsurprisingly, very cyclical in nature. During Q1 2016 fraud rates were 4.05 percent, but this dropped to 3.64 percent during Q1 2017.

Which Emerging Market?

Merchants selling major brands have improved their order acceptance and authentication process for high value orders from the Middle East. Previously such orders were declined due to fears about fraud. However, orders originating from other emerging markets are still subject to scrutiny as merchants worry about the potential for fraud.

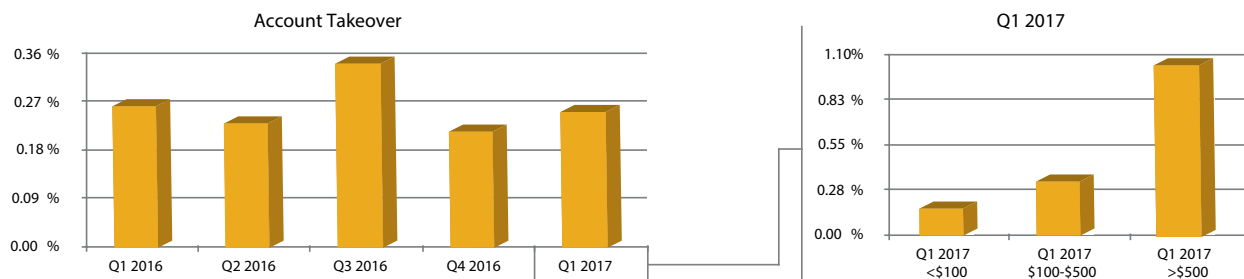
Friendly Fraud

Friendly Fraud is 0.04 percent, lower than in Q1 2016—when it was 0.06 percent. However, Cosmetics and Perfumes has the highest Friendly Fraud rate across all industries for orders between \$100 and \$500: 0.09 percent.



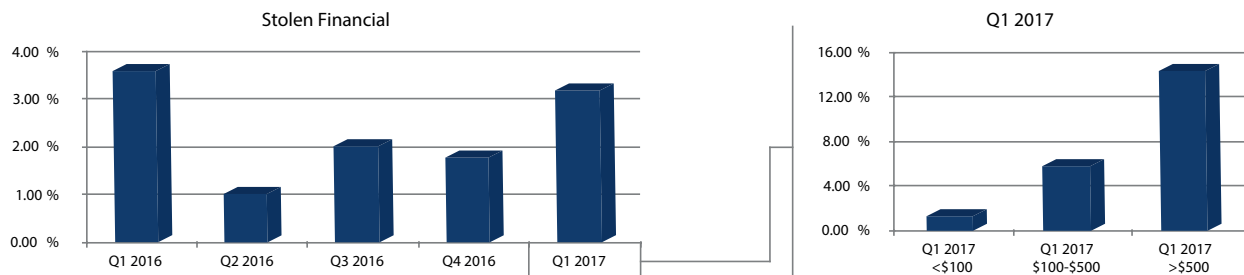
Account Takeover

For orders between \$100 to \$500, Cosmetics and Perfumes represents the highest Account Takeover fraud rate across all industries: 0.38 percent.



Stolen Financials

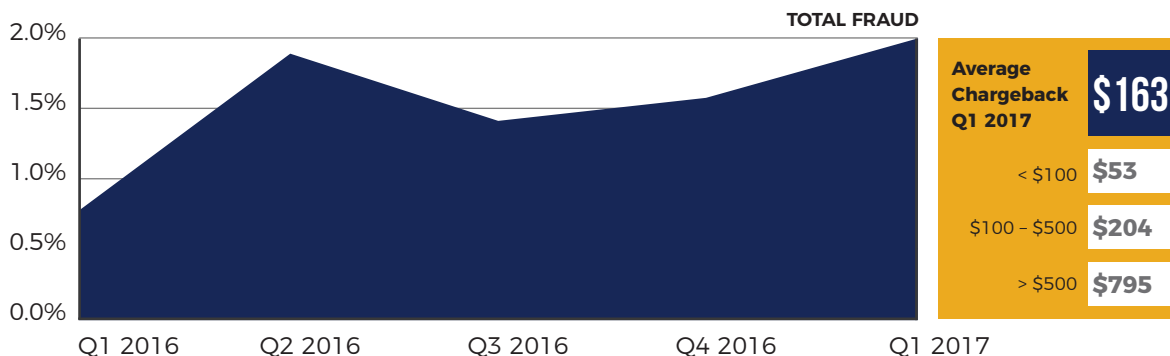
For orders between \$100 to \$500, Cosmetics and Perfumes has the second highest Stolen Financials fraud rate across all industries: 5.9 percent.





Department Stores

Department Stores are classified here as eCommerce merchants selling a wide variety of household products intended to save the consumer a trip to their local grocery store and/or the Department Store. The products sold may overlap with Apparel, Cosmetics and Perfumes or Consumer Electronics merchants.



Industry Snapshot:

A growing number of consumers are purchasing their daily essentials online, and correspondingly fraud rates have shot up by 163 percent since Q1 2016: from 0.83 percent to 2.05 percent this quarter. This is the largest increase in any industry. One contributing factor to the rise in fraud could be that Department Store merchants are adding higher value products to their inventory in search of larger profit margins.

Front Porch Theft

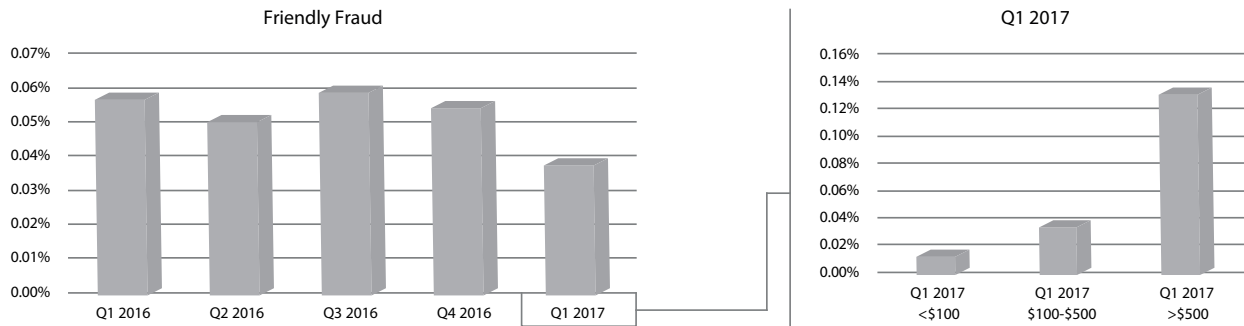
According to a 2015 study a reported 23 million Americans had packages stolen from their front porch.⁷ Online Department Stores are feeling the burn of this theft particularly since their packages often feature distinctive branding, making them easy targets. Two main types of fraudsters commit “front porch theft.”

- (1) **Local thieves:** The first type is a local thief who follows delivery trucks around a targeted neighborhood, keeping an eye out for packages with certain types of brands. Well-known brands are targeted because the fraudster knows the package will have a new, easily re-sellable item.
- (2) **Cybercriminals:** The second type is a ring of cybercriminals working with crews in specific locations. Fraudsters order the package using Stolen Financials and then ship it to the cardholder’s address to reduce suspicion. They then alert a crew member in the cardholder’s area and the crew member picks up the package. The cardholder remains completely unaware of the transaction unless they monitor their card statement, are at home at the time of delivery, or have a neighbor/security camera notify them of the stolen package they never ordered.

⁷DiUlio, N. “Worst Holiday Hazards – From ‘Porch Pirates’ to Tree Fires – and How to Avoid Them,” insuranceQuotes, December 2, 2016. <http://www.insurancequotes.com/home/holiday-hazards-120215>. Accessed May 24, 2017.

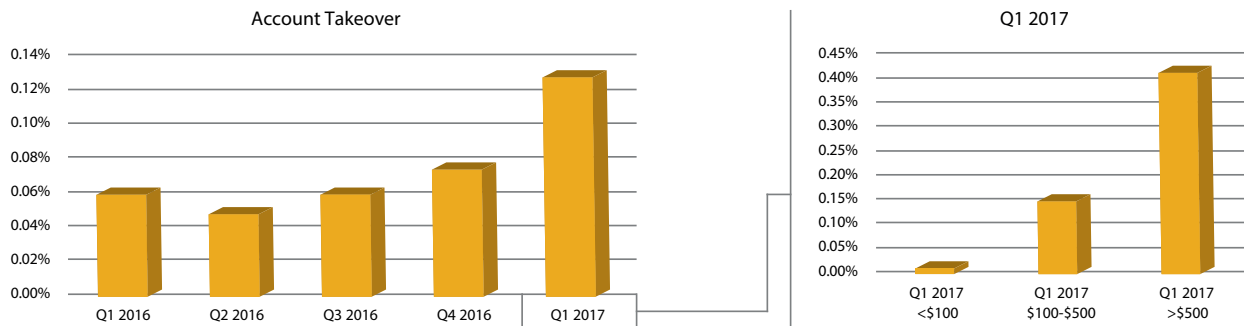
Friendly Fraud

Friendly Fraud has dropped from 0.06 percent during Q1 2016 to 0.04 percent this quarter. However, Department Store orders over \$500 have the second highest Friendly Fraud rate across all industries: 0.13 percent.



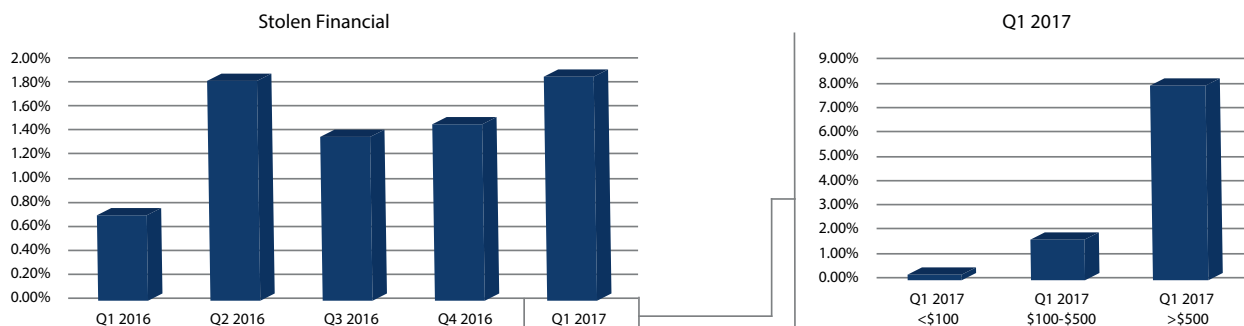
Account Takeover

Account Takeover has more than doubled from 0.06 percent during Q1 2016 to 0.13 percent during Q1 2017. Orders over \$500 see the highest hits at 0.42 percent.



Stolen Financials

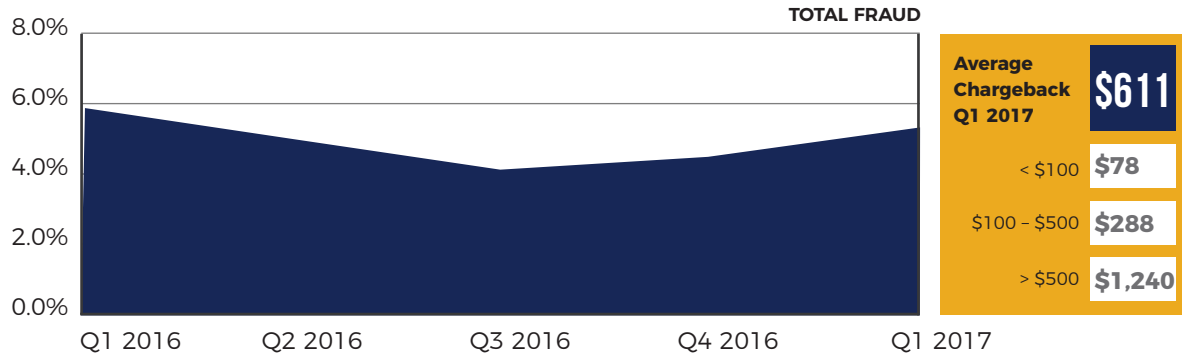
Stolen Financials have increased 165 percent since Q1 2016 from 0.71 percent to 1.88 percent. The fraud attempt rate on orders over \$500 has grown to 8.06 percent.





Furniture, Appliances and Home Improvement

Furniture, Appliances and Home Improvement includes all major purchases for the home or other properties as well as purchases intended for the repair or improvement of such properties.



Industry Snapshot

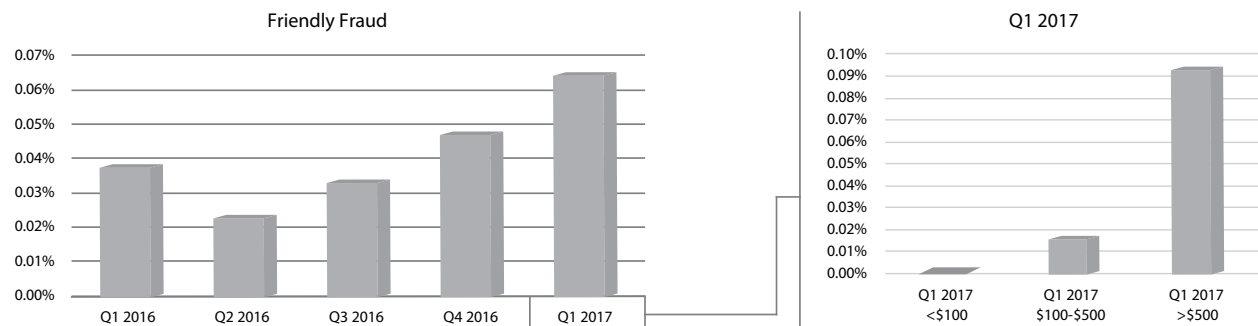
Fraud dropped from 5.99 percent at the beginning of 2016 to 5.54 percent at the beginning of 2017. However, not all the news is good. Furniture, Appliances and Home Improvement merchants with orders between \$100-\$500 have the highest average chargeback amount: \$288.

Home Improvements, Florida-Style

In the U.S., Florida represents a disproportionate amount of fraud in this industry: 20.2 percent. On the bright side, its share of fraud is currently lower than it was during Q1 2016, when it peaked. Merchants have struggled with orders from Florida particularly due to re-shippers who send goods abroad. Even industry merchants located in Florida are concerned about fraud from local customers.

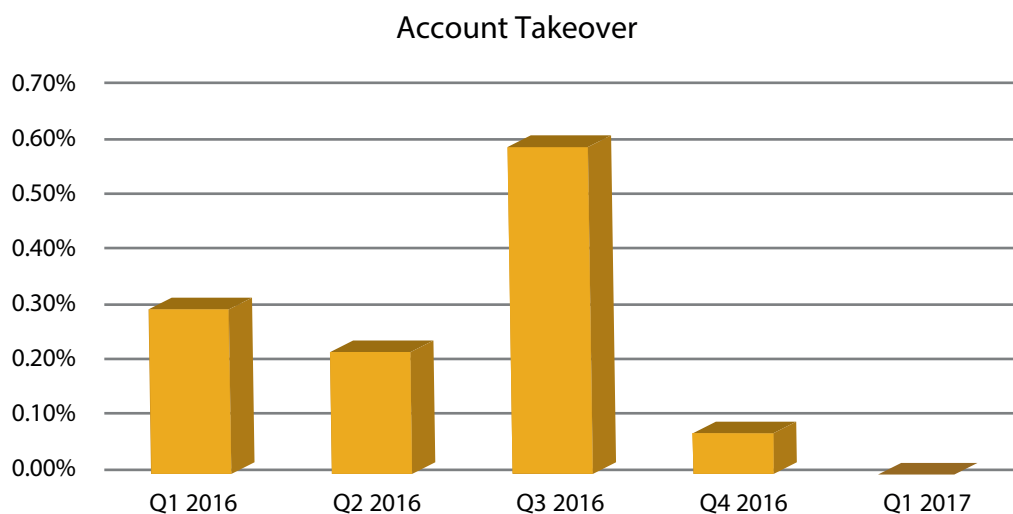
Friendly Fraud

Friendly Fraud increased from 0.4 percent to 0.6 percent over the last year, due largely to a higher rate of fraud (6.71 percent) for orders over \$500.



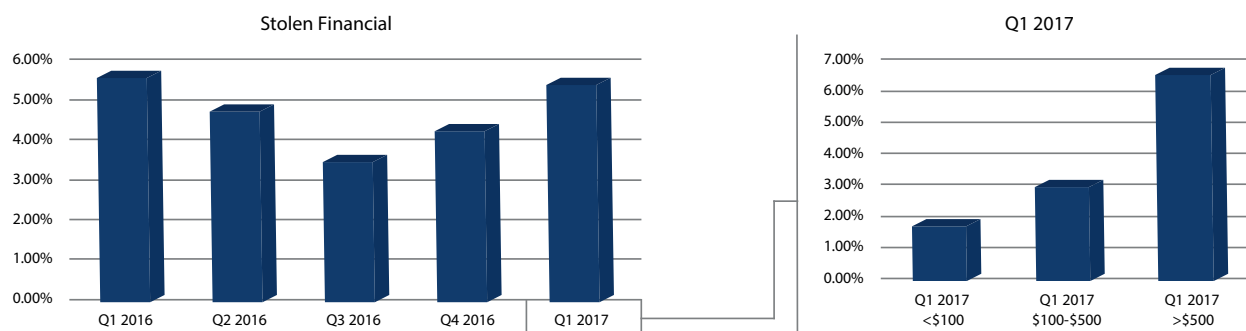
Account Takeover

Account Takeover dropped from 0.30 percent to an almost negligible (0.00 percent) over the past year bringing this industry's total fraud down with it.



Stolen Financials

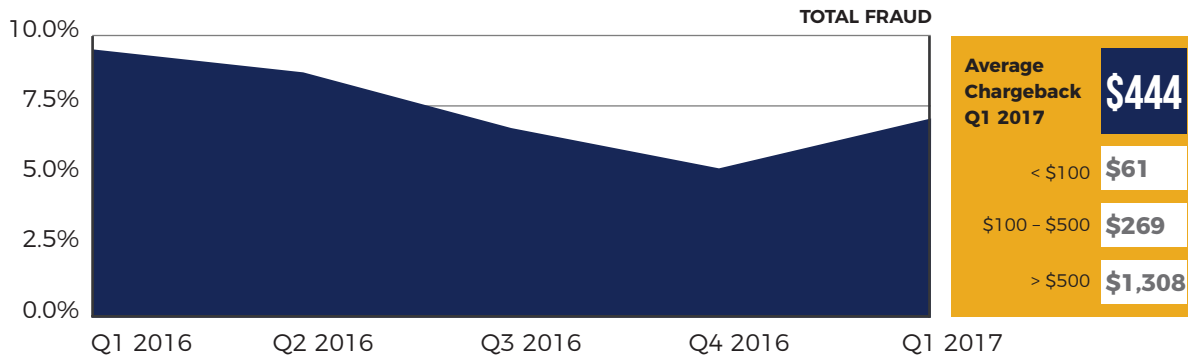
Stolen Financials dropped slightly from 5.65 percent to 5.48 percent. For orders under \$100, this industry had the second highest Stolen Financial fraud attempt rate (1.8 percent), though Stolen Financials fraud was relatively low for orders between \$100-\$500 (only 3.03 percent) and orders above \$500 (only 6.62 percent).





Health, Leisure and Hobbies

Health, Leisure and Hobbies (which include Outdoors, Fitness, Sporting Goods and Weapons) covers many disparate sub-categories of merchants who sell items such as fishing equipment, swords, training weights and even board games.



Industry Snapshot

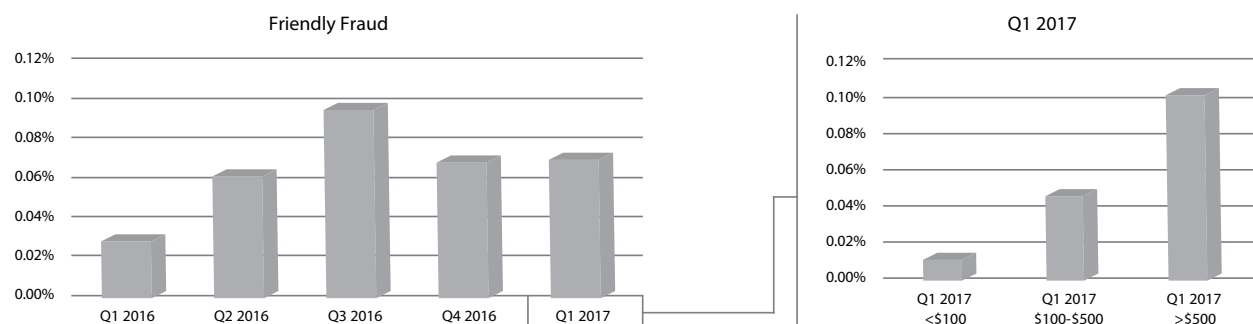
While total fraud dropped from 9.17 percent to 7.65 percent from Q1 2016 to Q1 2017, merchants with orders between \$100-\$500 should note the Average Chargeback Amount is the second highest across all industries.

Surf's Up

One sub-segment that's seen improved sales performance over the past year is surfboards and related gear to overseas customers. Since expedited shipping is now more readily available, merchants are receiving legitimate orders for recreational sports equipment, like surf boards and paddle boards from customers on vacation. Given the location of these orders, merchants were previously hesitant to ship to certain countries, and thus declined such orders due to fear of fraud.

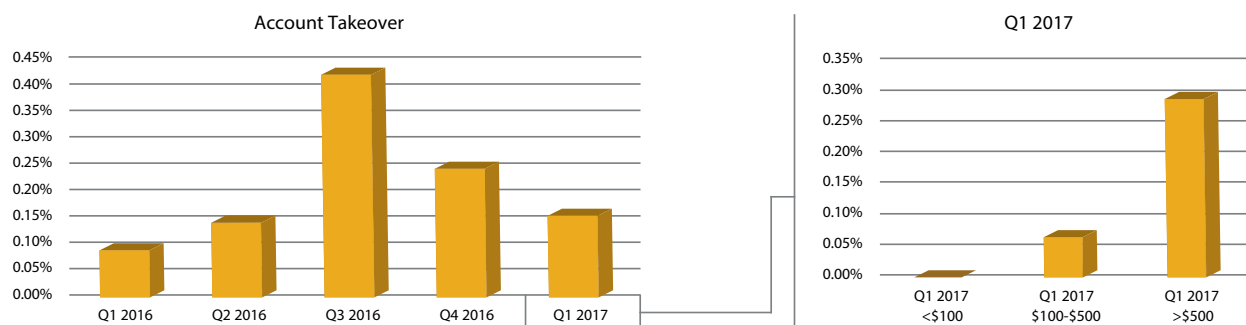
Friendly Fraud

Friendly Fraud has more than doubled from Q1 2016 from 0.03 percent to 0.07 percent with a higher rate of 0.10 percent for orders over \$500. For merchants selling weapons, Friendly Fraud from minors looking to purchase weapons with their parents' credit cards remains an ongoing concern.



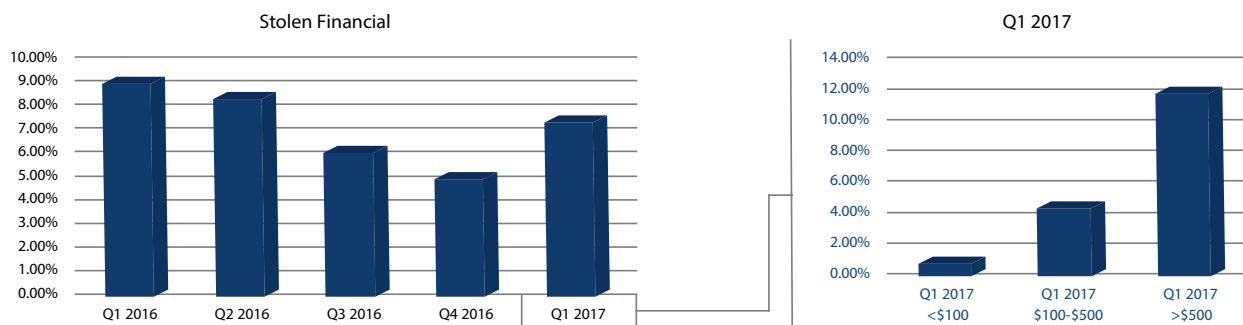
Account Takeover

Account Takeover has also increased since Q1 2016 from 0.09 percent to 0.16 percent, again with a higher rate of 0.29 percent for orders over \$500.



Stolen Financials

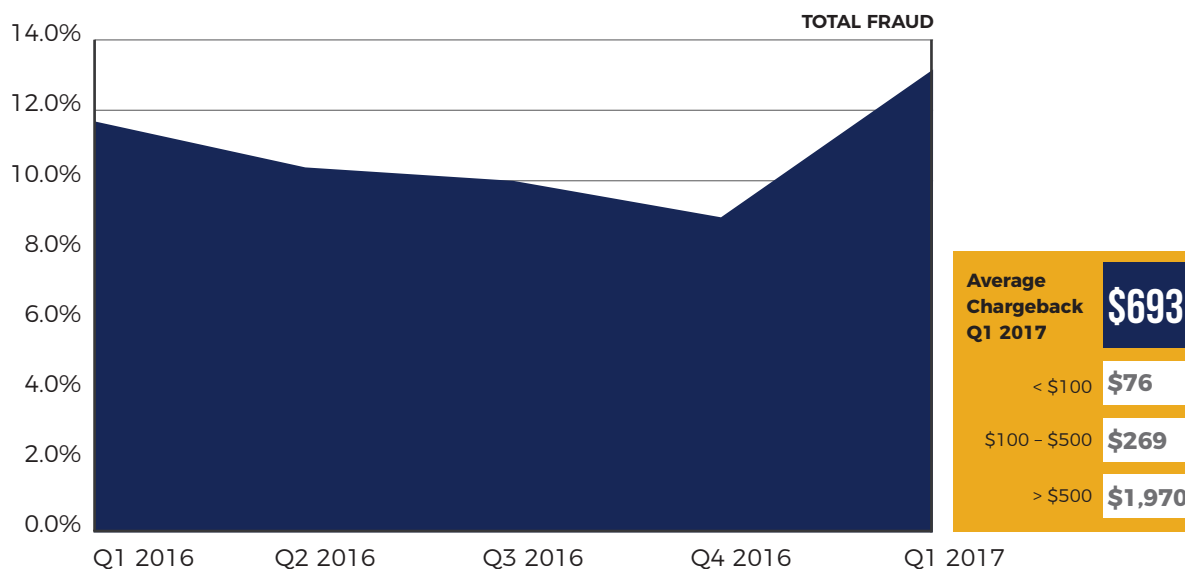
Stolen Financials fraud has dropped from 9.04 percent to 7.42 percent since Q1 2016 but it remains high for orders over \$500: 11.89 percent.





Jewelry and Precious Metals

Jewelry and Precious Metals includes designer and personalized jewelry of varying values as well as precious metals and coins for collectors.



Industry Snapshot

This industry is a favorite for fraudsters. Fraud rates rose over the past year from 11.72 percent to 13.27 percent: one of very few industries where the fraud rate actually increased. Jewelry and Precious Metals has some of the highest fraud rates for each different type of fraud and the highest Average Chargeback amount for orders over \$500.

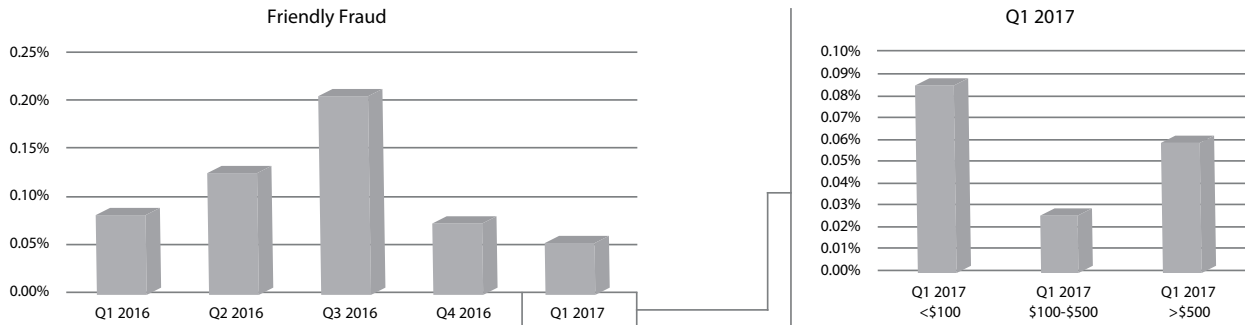
Not All That Glitters

A few factors may be contributing to the industry's ongoing battle with fraud.

- (1) **Over-reliance on Blacklisting:** Maintaining lists of fraudsters and blocking them using identifiers such as name, credit card details, email and IP address is a common practice in this industry. However, it comes with a few drawbacks:
 - a. **Static Rule:** Like any static rule, fraudsters can combine different factors in their orders and make multiple attempts until they figure out a winning combination. After that, the fraudster simply repeats the process until the merchant wises up and blocks them. Then the entire cycle begins again.
 - b. **Account Takeover:** Account Takeover is ten times higher in this industry than the average, so the potential for false declines due to reliance on blacklists is very high. For example, when the customer regains control of their credit card account, their orders may continue to be unfairly declined, leading to fewer sales for the merchant.
- (2) **Data Secrecy:** Historically there's been intense competition for high value customers. As a result, many Jewelry and Precious Metals merchants remain unwilling to share enough data about their customers and transactions to allow them to use advanced fraud detection and protection.
- (3) **Universal Currency:** Jewelry and Precious Metals are still seen as viable alternatives to currencies and financial investments in turbulent markets, which means demand remains high. Fraudsters are easily able to resell stolen goods and are assured of a global marketplace for such goods.

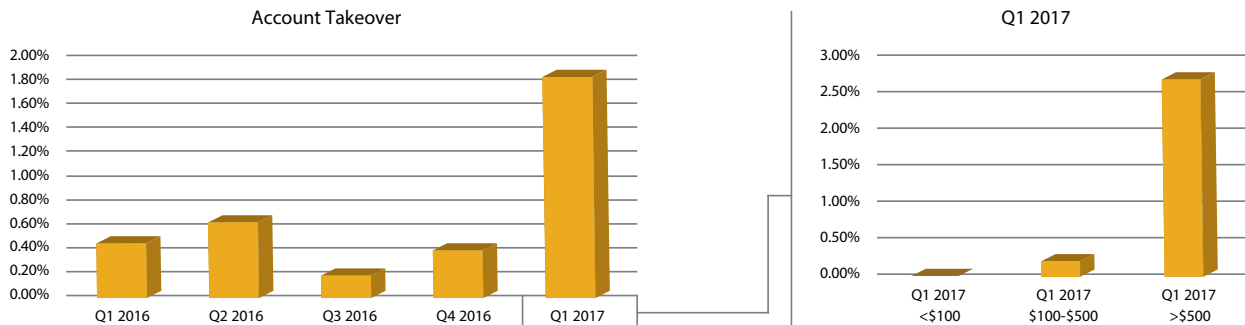
Friendly Fraud

Friendly Fraud has dipped from 0.08 percent to 0.05 percent but this industry still maintains the highest amount of Friendly Fraud for orders below \$100: 0.02 percent.



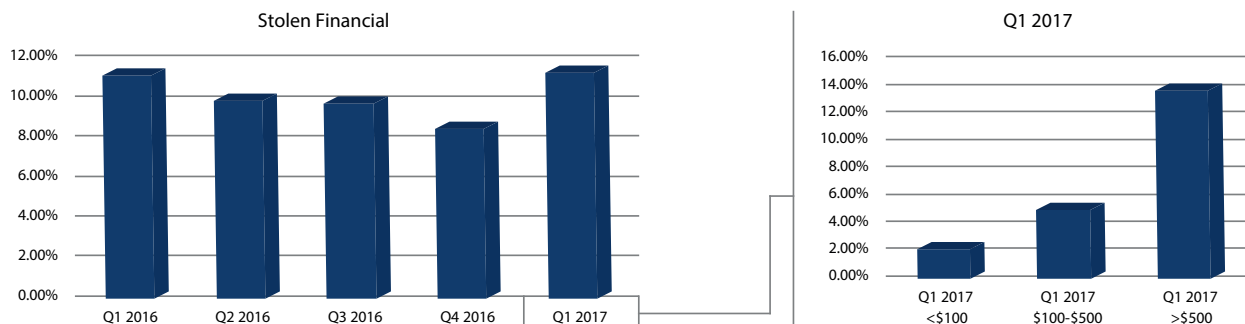
Account Takeover

Account Takeover has risen significantly and seen a 304.3 percent increase since Q1 2016 from 0.46 percent to 1.86 percent. For orders over \$500, Account Takeover is twice as high as for Apparel: 2.73 percent. Fraudsters are using Account Takeover aggressively, finding it a very effective way to procure merchandise from an industry that's wary of new customers.



Stolen Financials

Stolen Financials jumped slightly from 11.22 percent to 11.35 percent over the past year. Stolen Financials for orders below \$100 is the highest for any industry at 2.24 percent, and the second highest for orders over \$500 at 13.88 percent.



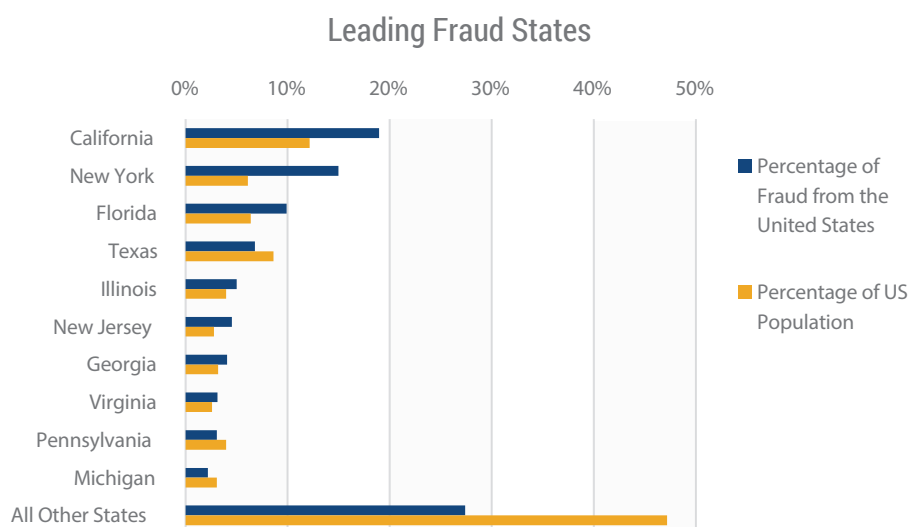
FEATURED COUNTRY

Featured Country: United States of America

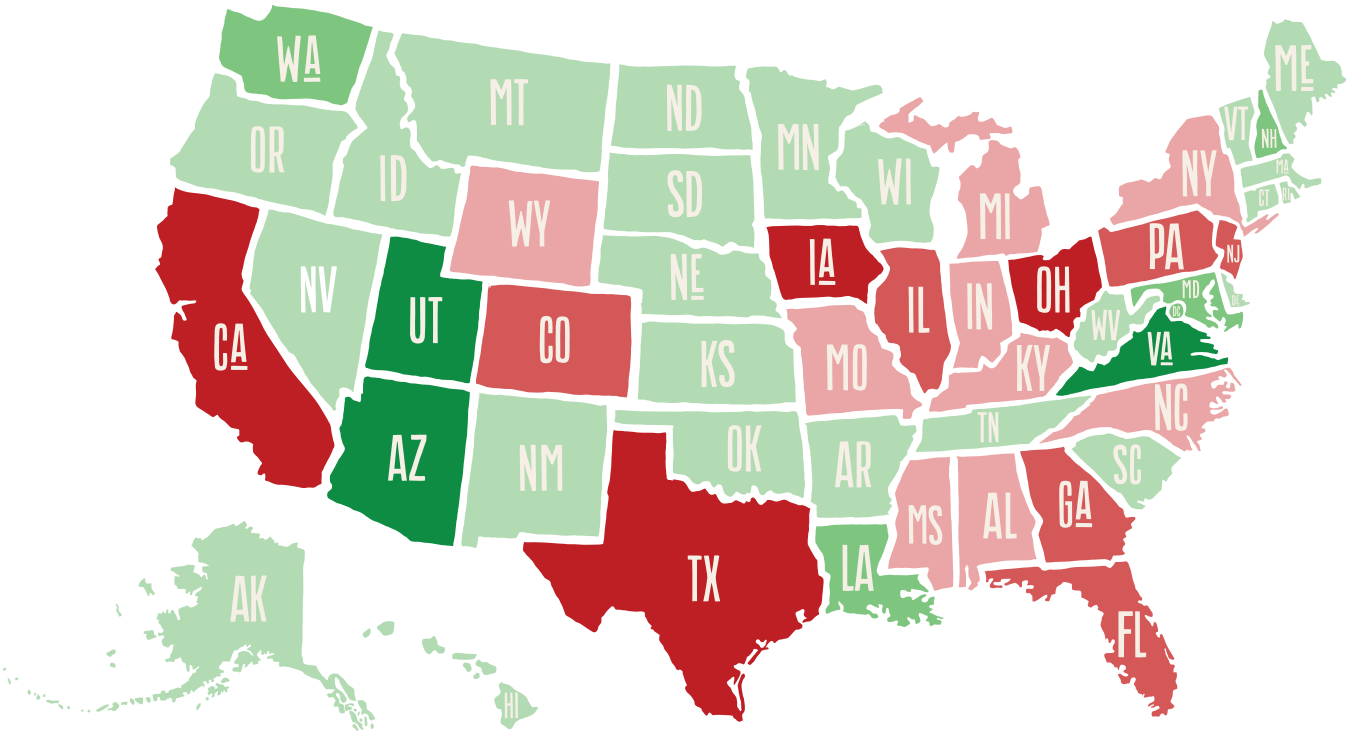
We have data from over 5,000 eCommerce merchants spread across North America, Asia and Europe. Each quarter we will focus on specific countries and analyze the latest and greatest trends in fraud for those countries. This quarter we've decided to start off with the United States. Merchants selling to consumers in the U.S. have seen a rise of IP Masking by overseas fraudsters, making it difficult to determine exactly how much fraud is originating from within the U.S..

The "State" of Fraud

We have broken down fraud by state, for greater clarity. Just as most fraud originates from a few large countries, fraud within the U.S. originates predominantly from California, New York and Florida. Fraud is correlated with state population (correlation coefficient of 0.910), and this correlation has been consistently strong over the past five quarters.



The heat map on the next page breaks down whether fraud has increased or decreased in each state over the past year. Increases are shown in red and decreases in green.

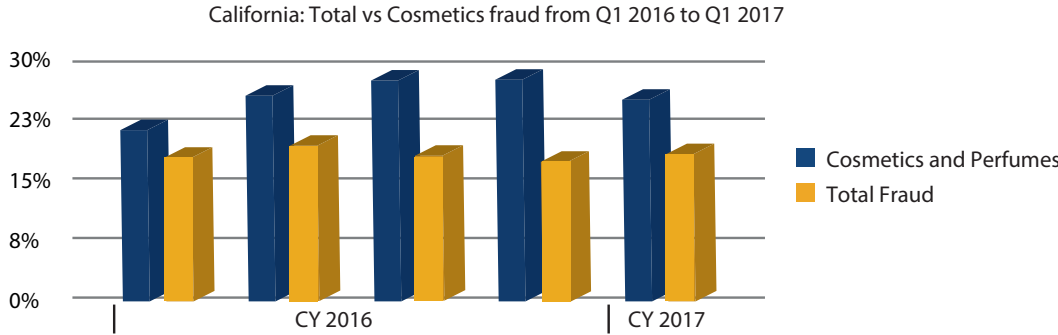


INCREASING FRAUD	<0.2%	0.2 - 0.5%	>0.5%
DECREASING FRAUD	<0.2%	0.2 - 0.5%	>0.5%

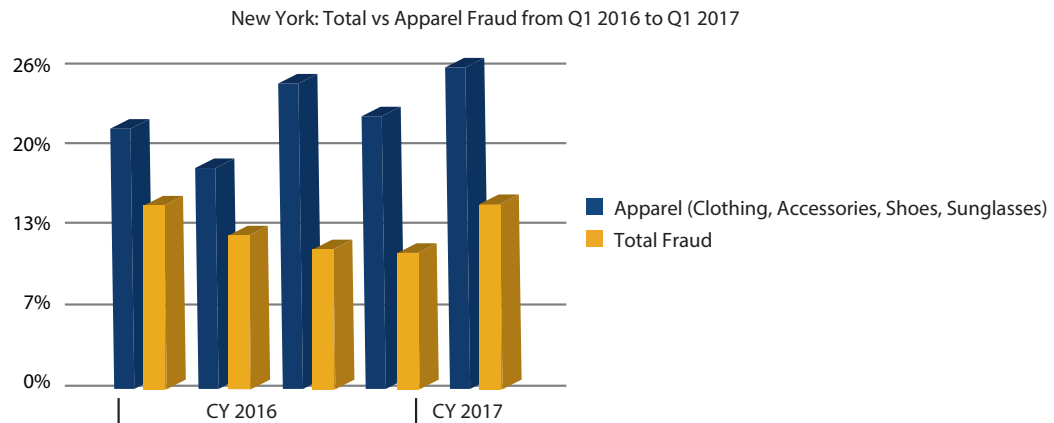
California, New York and Florida are fraud hotspots for different industries

California, New York and Florida each have a unique relationship with fraud in one or more specific industries.

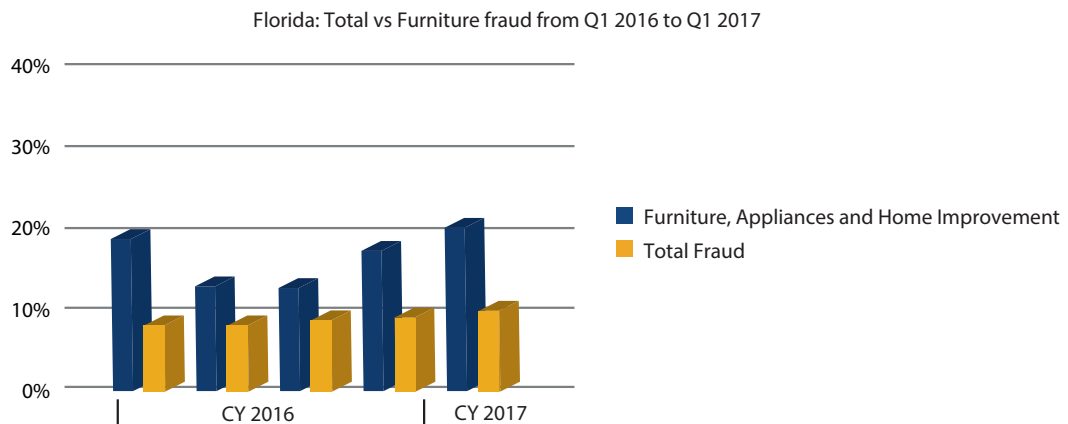
In Q1 2017, California accounted for 18.9 percent of the total fraud in the U.S. across all tracked industries. Yet California accounted for 25.4 percent of the total fraud for Cosmetics and Perfumes.



New York accounted for 15.0 percent of total fraud in the U.S. across all tracked industries. However, New York accounted for 25.8 percent of the total fraud in the Apparel industry.

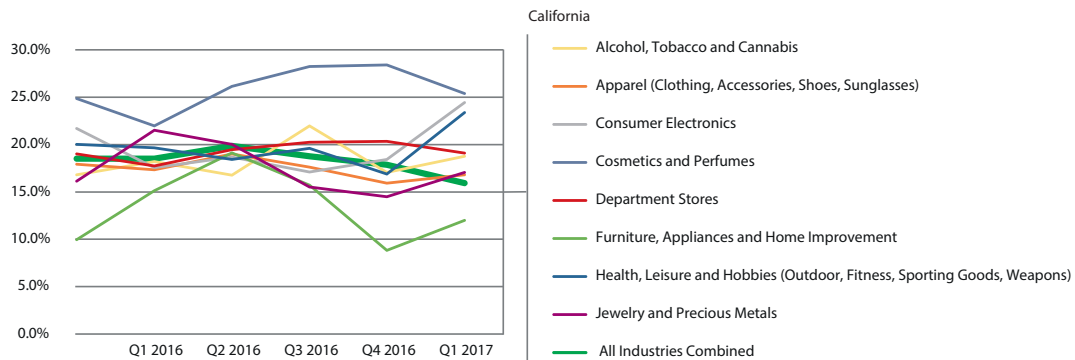


Florida accounted for 9.9 percent of total fraud in the U.S. across all tracked industries. However, for Furniture, Appliances and Home Improvement, Florida accounted for 20.2 percent of total fraud.



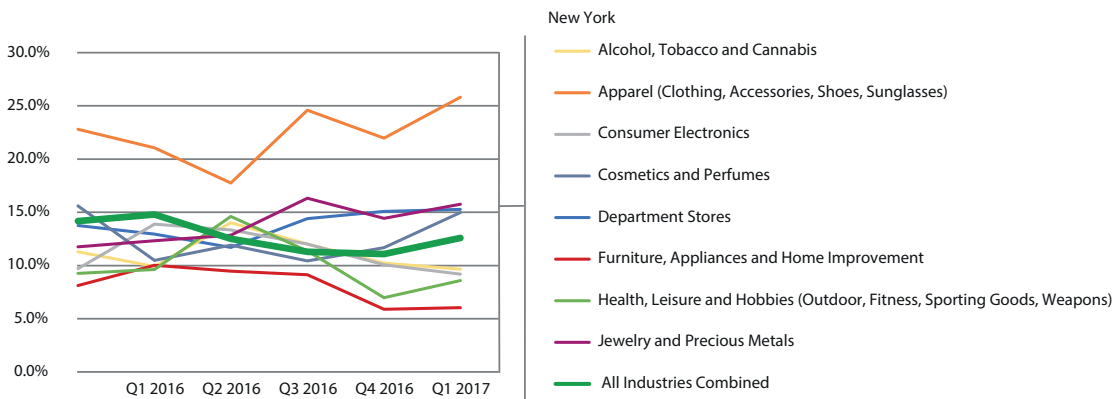
California

Historically, fraud for cosmetics and perfumes has been high in California as the state accounts for 18.9 percent of total fraud but has 25.4 percent of all fraud for cosmetics and perfumes. However, as of Q1 2017, consumer electronics is catching up to cosmetics and perfumes, and thus it remains to be seen which industry will have the highest fraud rate in California.



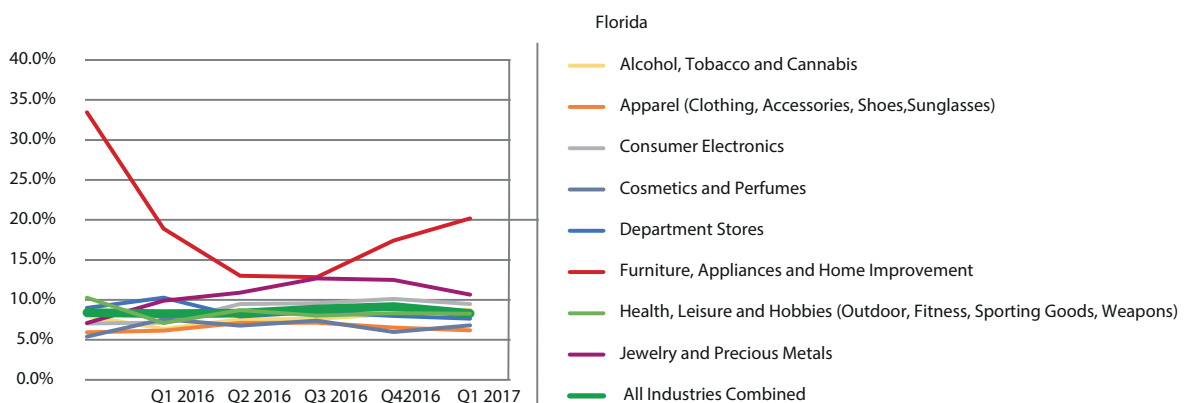
New York

New York accounts for 15.0 percent of total fraud but 25.8 percent of all fraud for apparel. New York fraudsters have made their preference for apparel clear since the 2015 holiday season and have pretty much focused on it consistently since then.



Florida

Florida accounts for 9.9 percent of total fraud but 20.2 percent of all fraud for furniture, appliances, and home improvement. During Q3 2016, Floridian fraudsters expressed an interest in jewelry that nearly rivaled their interest in furniture, appliances and home improvement. However, this infatuation was short-lived and lasted for only one quarter, and furniture, appliances and home improvement quickly became the favorite again by Q4 2016.



METHODOLOGY



What is the Index?

The Global Fraud Index™ measures the growth (or decline) of attempted fraud⁸ on eCommerce merchant websites. It also lays out the potential cost of these attempts.

The index is created by comparing the current quarter's fraud rate to the average fraud rate during the most recent four quarters. For example, eCommerce fraud as a portion of \$100 in sales for the four quarters of 2016 were \$5.51, \$3.64, \$2.98 and \$3.07. The average of that is \$3.80 and this becomes the index baseline. Since the eCommerce fraud for the first quarter of 2017 increased to \$3.60, it is 5.26 percent lower than the \$3.80 index baseline. We calculate our index baseline to be 100 and therefore the index value of the first quarter of 2017 is 94.74.

Index Development

We base our analysis on data we have collected on the fraud rate, plus the total amount of eCommerce sales in the market since Q1 2016. For Q1 2017, we segmented the data based on the geographic location of the fraudster, the merchant's industry, the value of the order, and by the fraud type.

Average Chargeback Amount

Signifyd also provided data on the average chargeback amount for three levels of orders, <\$100, \$100-\$500, and >\$500.

Total eCommerce Revenues

The total value of eCommerce sales for each of the product categories was based on data from the U.S. Census Bureau. Detailed eCommerce data is only available by year and only through 2014. Total quarterly eCommerce sales, however, are available quarter-by-quarter through the Q4 2016.

The U.S. Census Bureau provides data at a 3-digit NAICS level and a break-out of sales by product type for all "non-store retailers" based on NAICS code 454. Some of the product groups fall into more detailed categories than the three-digit level, however. In these cases, we use 6-digit data from the economic census (which provides data for total sales, not just eCommerce sales). This data is made available once every 5 years and is currently available through 2012.

Because sales at the 3-6-digit level are constant, following consistent trends over time, we assumed that the ratio of total eCommerce sales followed consistent patterns as well. We estimated segment sales using a two-step process.

⁸Attempted fraud is defined as all sales transactions which are identified as potential fraud, both successful and unsuccessful.

First, we estimated the annual segment ratio for each year since 2014:

$$\text{Segment Ratio}_{2014} = \text{Segment sales in 2014} / \text{Total ecommerce sales in 2014}$$

$$\text{Segment Ratio}_{2013} = \text{Segment sales in 2013} / \text{Total ecommerce sales in 2013}$$

$$\text{Segment Ratio}_{2015} = \text{Segment Ratio}_{2014} + (\text{Segment Ratio}_{2014} - \text{Segment Ratio}_{2013})$$

$$\text{Segment Ratio}_{2016} = \text{Segment Ratio}_{2015} + (\text{Segment Ratio}_{2015} - \text{Segment Ratio}_{2014})$$

Next, we used the ratio to estimate the segment sales for each quarter:

$$\text{Segment Ecommerce Sales}_{\text{current quarter}} = \text{Total Ecommerce sales}_{\text{current quarter}} * \text{Segment Ratio}_{\text{current year}}$$

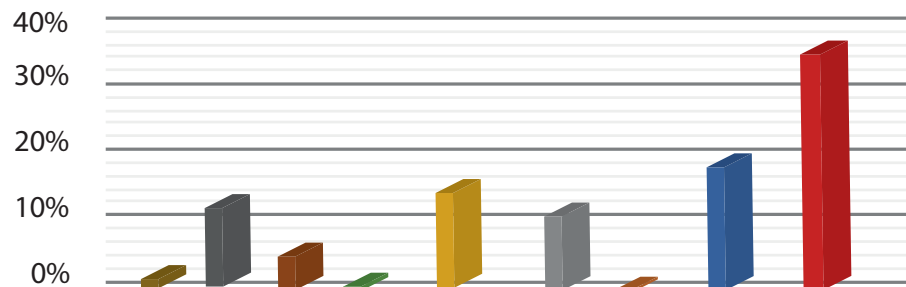
Merchant Segments

The total fraud rate and fraud index calculated in this report cover all merchant segments. This report also identifies the following merchant segments for more detailed analysis, however:

- **ALCOHOL, TOBACCO AND CANNABIS:** Covers merchants selling these substances and their related accessories and paraphernalia. For Cannabis specifically, the data includes more vendors selling accessories and paraphernalia, as they are much greater in number than those selling actual dry herb or its derivatives directly to consumers online.
- **APPAREL:** Is a broad category and covers all clothing, shoes and accessories such as belts, hats and sunglasses. Given the universal market for such goods, the range of products and brands included varies greatly from discount stores to global luxury brands.
- **CONSUMER ELECTRONICS:** Covers items as varied as televisions, laptops, digital cameras, flash drives, drones, electric scooters, hover boards and wireless earbuds. Excepting vehicles, if it's powered by batteries, it will likely fall into this category.
- **COSMETICS AND PERFUMES:** Covers fragrances, make-up, wigs and skincare products for both men and women.
- **DEPARTMENT STORES:** Are classified as eCommerce merchants selling a wide variety of household products intended to save the consumer a trip to their local grocery store and/or the brick-and-mortar department store. Given the selection of items at such stores, the products sold by these merchants may overlap with apparel, cosmetics and perfumes, or consumer electronics merchants.
- **FURNITURE, APPLIANCES AND HOME IMPROVEMENT:** Covers all major purchases for the home or other properties, including those purchases intended to repair/improve such properties.
- **HEALTH, LEISURE AND HOBBIES (OUTDOOR, FITNESS, SPORTING GOODS, WEAPONS):** Covers many disparate sub-categories of merchants selling items such as fishing equipment, swords, training weights and board games.
- **JEWELRY AND PRECIOUS METALS:** Includes designer and personalized jewelry of varying values and precious metals and coins for collectors.

These selected industries specifically identify higher-risk targets for analysis. These industries account for approximately 63 percent of the dollars for all eCommerce sales, but only about 25 percent of all eCommerce transactions.

Share of Total eCommerce Sales



- Jewelry and Precious Metals: 1.5 percent
- Health, Leisure and Hobbies (Outdoor, Fitness, Sporting Goods, Weapons): 10.5 percent
- Furniture, Appliances and Home Improvement: 8.2 percent
- Alcohol, Tobacco and Cannabis: 0.2 percent
- Apparel (Clothing, Accessories, Shoes, Sunglasses): 12.4 percent
- Consumer Electronics: 10.6 percent
- Cosmetics and Perfumes: 0.3 percent
- Department Stores: 19.1 percent
- Non-segmented merchants: 37.1 percent

ABOUT

About Signifyd

Signifyd was founded to make fraud-free eCommerce available to every business. Signifyd solves the challenges that growing eCommerce businesses persistently face: billions of dollars lost in chargebacks, customer dissatisfaction from mistaken declines, and operational costs due to tedious, manual transaction investigation.

As the world's largest provider of Guaranteed Fraud Protection, Signifyd provides a 100% financial guarantee against fraud and chargebacks on every approved order. This effectively shifts the liability for fraud away from eCommerce merchants allowing them to increase sales and open new markets while reducing risk. The company has integrations and partnerships with Salesforce Commerce Cloud, Magento, Shopify, BigCommerce, ThreatMetrix and TSYS. Signifyd is also available through the Interceptas® platform offered by Accertify, an American Express company.

Signifyd is in use by multiple companies on the Fortune 1000 and Internet Retailer Top 500 list. Signifyd was recognized by Forbes as one of the "50 Most Innovative Companies in Fintech", by Bloomberg as one of the "50 Most Promising Startups You've Never Heard Of" and as the Fraud Innovation Firm of the Year at the Finance Monthly Fintech Awards. Signifyd benefits from its location in the heart of San Jose's AI/machine learning hotbed, where it has cultivated an award-winning culture that earned it a spot in Entrepreneur's Top Company Cultures in America list for 2017 and as one of the Bay Area's Best Places to Work as recognized by the San Francisco Business Times and Silicon Valley Business Journal .

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