



# 2019 Interchange Fee Revenue, Covered Issuer Costs, and Covered Issuer and Merchant Fraud Losses Related to Debit Card Transactions

May 2021





# 2019 Interchange Fee Revenue, Covered Issuer Costs, and Covered Issuer and Merchant Fraud Losses Related to Debit Card Transactions

May 2021

This and other Federal Reserve Board reports and publications are available online at  
<https://www.federalreserve.gov/publications/default.htm>.

To order copies of Federal Reserve Board publications offered in print,  
see the Board's Publication Order Form (<https://www.federalreserve.gov/files/orderform.pdf>)  
or contact:

Printing and Fulfillment  
Mail Stop K1-120  
Board of Governors of the Federal Reserve System  
Washington, DC 20551  
(ph) 202-452-3245  
(fax) 202-728-5886  
(email) [Publications-BOG@frb.gov](mailto:Publications-BOG@frb.gov)

# Contents

Preface .....	1
Highlights .....	3
Card Use .....	3
Interchange Fees, Network Fees, and Incentives .....	3
Fraud .....	4
Issuer Costs .....	4
Data Collections .....	5
Background .....	5
Payment Card Network Survey .....	6
Debit Card Issuer Survey .....	6
Detailed Discussion .....	9
Card Use .....	9
Interchange Fees, Network Fees, and Incentives .....	11
Fraud .....	16
Issuer Costs .....	20
Appendix: Tables .....	25



# Preface

An efficient, effective, and safe U.S. and global payment and settlement system is vital to the U.S. economy, and the Federal Reserve plays an important role in helping maintain that system's integrity. The U.S. dollar payment and settlement system is composed of payment instruments and methods, systems, and institutions that have changed over time. The Federal Reserve provides currency and operates some elements of this system.

In 2010, the Dodd-Frank Act provided the Board additional authority to regulate and supervise certain payment, clearing, and settlement systems and activities that have been designated as systemically important, as well as prescribe rules related to debit card interchange fees.

The Electronic Fund Transfer Act requires the Federal Reserve Board to biennially publish data on costs incurred, and interchange fees charged or received, by debit card issuers and payment card networks. The Board conducted the first [Payment Card Network](#) and [Debit Card Issuer](#) surveys in 2010, collecting data for calendar year 2009. The information from the first data collection assisted the Board in developing Regulation II and was included in a report published in June 2011.<sup>1</sup>

---

<sup>1</sup> Board of Governors of the Federal Reserve System, *2009 Interchange Fee Revenue, Covered Issuer Costs, and Covered Issuer and Merchant Fraud Losses Related to Debit Card Transactions* (Washington: Board of Governors, March 2011), [https://www.federalreserve.gov/paymentsystems/files/debitfees\\_costs.pdf](https://www.federalreserve.gov/paymentsystems/files/debitfees_costs.pdf).





# Highlights

## Card Use

- In 2019, payment card networks in the United States processed 79.2 billion debit and general-use prepaid card transactions valued at \$3.1 trillion. Dual-message networks, which traditionally processed mainly signature-authenticated transactions, accounted for 65.4 and 66.7 percent of the total by volume and value, respectively. Single-message networks, which traditionally processed PIN-authenticated transactions, accounted for the rest.
- Total transaction volume grew 7.0 percent in 2019, largely in line with the 7.8 percent average annual growth rate from 2009 to 2018. Similarly, total transaction value grew 7.6 percent in 2019, largely in line with the 8.1 percent average annual growth rate observed from 2009 to 2018.
- In 2019, dual-message networks experienced faster volume growth than single-message networks, at 7.6 and 6.0 percent, respectively. While single-message network volume grew faster from 2015 to 2017, from 2017 to 2019 dual-message network volume growth once again surpassed that of single-message networks, as it did from 2009 to 2014.
- While card-not-present (CNP) transaction volume was only 22.8 percent of total debit card volume in 2019, it grew much faster in 2019 than the volume of card-present (CP) transactions. In particular, the CNP volume growth rate of 17.9 percent was more than four times the CP volume growth rate of 4.2 percent over the same period. This large difference in volume growth rates between CNP and CP transactions was already present in 2009 and persisted throughout every data collection.
- Similar to previous years, in 2019, the average transaction value of CNP transactions was nearly double that of CP transactions, at \$61.36 and \$32.65, respectively.

- Issuers subject to Regulation II's interchange fee standard (covered issuers) experienced similar volume growth to issuers not subject to the interchange fee standard (exempt issuers), with growth rates in 2019 of 6.9 and 7.2 percent, respectively.
- The growth in the volume of prepaid card transactions in 2019 was 12.0 percent, a decrease relative to the average annual growth rate of 16.3 percent observed from 2009 to 2018. By contrast, the growth in the volume of non-prepaid debit card transactions in 2019 was much lower, at 6.4 percent, a small decline relative to the average annual growth rate of 7.4 percent from 2009 to 2018.

## Interchange Fees, Network Fees, and Incentives

- In 2019, interchange fees across all debit and general-use prepaid card transactions totaled \$24.31 billion, an increase of 7.4 percent since 2018.
- The average level of interchange fees did not change materially for covered transactions after Regulation II took effect in the fourth quarter of 2011. In 2019, the average interchange fee for covered transactions processed over single-message networks was \$0.24, and that for covered transactions processed over dual-message networks was \$0.22.
- The average interchange fee for exempt transactions processed over dual-message networks gradually increased after Regulation II took effect, from \$0.51 in the fourth quarter of 2011 to \$0.54 in 2019. By contrast, the average interchange fee for exempt transactions processed over single-message networks gradually fell after Regulation II took effect, from \$0.31 in the fourth quarter of 2011 to \$0.25 in 2019.
- Network fees totaled \$8.26 billion in 2019. Acquirers paid 64.4 percent of these fees; issuers paid the

rest. After Regulation II took effect, the share paid by acquirers increased slightly while the share paid by issuers correspondingly decreased.

- The average network fee per transaction was \$0.10 in 2019, almost unchanged from 2018. Additionally, the average network fee per transaction as a percentage of average transaction value, 0.3 percent in 2019, did not change materially after Regulation II took effect.
- Payments and incentives (P&I) offered by networks totaled \$2.45 billion in 2019, a growth of 23.7 percent since 2018. While this growth rate in P&I was substantially higher than the 7.4 percent average annual growth rate observed from 2009 to 2018, it was in line with the 23.0 percent growth observed in 2018.
- Issuers received 49.1 percent of total P&I in 2019; acquirers and merchants received the rest. After Regulation II took effect, the share received by issuers progressively decreased from its peak of 74.5 percent in 2011 to its 2019 value. By contrast, the share received by acquirers and merchants correspondingly increased, and 2019 marks the first time since 2009 that acquirers and merchants received the majority of total P&I.

## Fraud

- Across all debit and general-use prepaid card transactions for covered issuers, fraud losses to all parties as a share of the transaction value were 12.4 basis points in 2019, or \$12.40 per \$10,000 in transaction value. This value is a product of a

steady increase in fraud losses from 7.8 basis points in 2011.

- In 2019, merchants absorbed 56.3 percent of losses from fraudulent transactions reported by covered issuers, up from 52.8 percent in 2017, while issuers absorbed 35.4 percent, down from 42.5 percent in 2017. Cardholders absorbed the remainder.
- From 2011 to 2019, the percentage of losses from fraudulent transactions reported by covered issuers absorbed by merchants steadily increased from 38.3 to 56.3 percent, while the percentage of losses absorbed by issuers steadily decreased from 59.8 to 35.4 percent. At the same time, the percentage of losses from fraudulent transactions reported by covered issuers absorbed by cardholders increased from 1.8 to 8.3 percent.

## Issuer Costs

- The average per-transaction authorization, clearing, and settlement (ACS) cost, excluding issuer fraud losses, for covered issuers equaled \$0.039 in 2019, approximately half of the 2009 value.
- In 2019, the base interchange fee standard in Regulation II of \$0.21 plus 5 basis points times the value of a transaction exceeded the average per-transaction ACS costs, including issuer fraud losses, for 78.6 percent of covered issuers and 99.4 percent of covered transactions. These values constitute a slight increase in the percentage of covered issuers and a slight decrease in the percentage of covered transactions compared with 2017.

# Data Collections

## Background

The Electronic Fund Transfer Act requires the Federal Reserve Board to biennially publish data on costs incurred, and interchange fees charged or received, by debit card issuers and payment card networks.<sup>2</sup> The Board conducted its first data collection in 2010, collecting data from payment card networks and issuers on a voluntary basis for 2009. The information from the first voluntary data collection assisted the Board in developing Regulation II and was included in a report published in 2011.<sup>3</sup> Four subsequent reports summarized data collected since the initial data collection. The most recent report, released in 2019, contained information through 2017.<sup>4</sup> The present report is the sixth in the series and contains data through 2019.<sup>5</sup>

Regulation II establishes an interchange fee standard under which covered issuers may not receive or charge an interchange fee for an electronic debit transaction that is greater than \$0.21 plus 5 basis points times the value of the transaction.<sup>6</sup> An issuer that is subject to the standard may be eligible to receive an additional one cent adjustment to the interchange fee it charges or receives if the issuer meets fraud-prevention standards specified in the regulation. Electronic debit transactions made using debit cards issued pursuant to government-administered payment programs and certain reload-

able general-use prepaid cards are exempt from the interchange fee standard.<sup>7</sup>

The Board conducts two surveys to collect information about the debit card industry, both of which are mandatory under Regulation II. The Payment Card Network (PCN) survey is conducted every year and surveys payment card networks that process debit card transactions. The Debit Card Issuer (DCI) survey is conducted every two years and surveys issuers that are subject to the interchange fee standard in Regulation II.

The surveys ask respondents to report information on all debit card transactions that they process in a given calendar year.<sup>8</sup> The surveys distinguish between general-use prepaid cards and other debit cards. Prepaid cards are cards, other payment codes, or devices that are issued on a prepaid basis for a specified amount, whether or not that amount may be increased or reloaded, in exchange for payment. General-use prepaid cards, covered by the PCN and DCI surveys, can be redeemed upon presentation at multiple unaffiliated merchants.<sup>9</sup> Although Regulation II defines prepaid cards to be a subset of debit cards, for ease of exposition, this report uses terminology that distinguishes between prepaid cards and non-prepaid debit cards. In particular, the report uses the term “debit cards” to mean non-prepaid debit cards. It further uses the term “prepaid cards”

<sup>2</sup> 15 U.S.C. 1693o-2(a)(3)(B) (2014).

<sup>3</sup> See 76 Fed. Reg. 43,394 (July 20, 2011).

<sup>4</sup> The reports, survey instruments, and historical data are available on the Board’s public website at [www.federalreserve.gov/paymentsystems/regii-data-collections.htm](http://www.federalreserve.gov/paymentsystems/regii-data-collections.htm).

<sup>5</sup> Because of the disruptions caused by the coronavirus disease 2019 (COVID-19), the reporting deadline for the Regulation II surveys was extended from May 1, 2020, to August 31, 2020. This one-time extension was intended to provide survey respondents with additional time to complete the surveys in light of staffing priorities and disruptions caused by COVID-19.

<sup>6</sup> One basis point is equal to one one-hundredth of 1 percent.

<sup>7</sup> A reloadable general-use prepaid card must meet certain conditions to be exempt from the interchange fee standard, such as not being marketed or labeled as a gift card or gift certificate.

<sup>8</sup> Under Regulation II, debit cards are cards, or other payment codes or devices, that are issued or approved for use through a payment card network to debit a transaction, savings, or other asset account and that can be used at multiple unaffiliated merchants. The surveys exclude cards that can access only automated teller machine (ATM) networks and cannot be used as a form of payment.

<sup>9</sup> General-use prepaid cards contrast with private-label prepaid cards, which can be used only at an individual merchant or a group of affiliated merchants. Because Regulation II does not cover cards, including prepaid cards, that can only be used at an individual merchant or a group of affiliated merchants, the surveys do not collect information on such cards.

to mean general-use prepaid cards that are covered by the definition of debit card in Regulation II.

The surveys also distinguish between dual-message and single-message networks. A dual-message network typically uses separate messages to authorize and clear a transaction. Traditionally, these networks processed signature-authenticated transactions.<sup>10</sup> Increasingly, however, transactions processed over these networks may not require signature authentication or may involve other methods of cardholder authentication, such as entry of a personal identification number (PIN) or biometric authentication. By contrast, a single-message network typically uses a single message to authorize and clear a transaction. Traditionally, these networks processed PIN-authenticated transactions.<sup>11</sup> Increasingly, however, transactions processed over single-message networks, such as small-value purchases and CNP transactions, may not require PIN authentication. Over time, the distinction between single-message and dual-message networks has become less clear from a functional perspective, as methods of cardholder authentication change and both types of networks develop new functionalities.<sup>12</sup> This report continues to categorize networks as single-message or dual-message because this categorization serves to distinguish networks into groupings that are widely used by the industry.

## Payment Card Network Survey

The Board collected data for 2018 and 2019 through the two most recent PCN surveys, conducted in 2019 and 2020, respectively. All 13 card networks that processed debit card transactions in 2018 and 2019 completed the survey for each of those years.<sup>13</sup> In addi-

tion to using data from these latest PCN surveys for this report, the Board used the data to calculate the information it published in mid-2019 and late 2020 on the average interchange fees received by issuers across different networks.<sup>14</sup>

As in previous years, the most recent PCN surveys asked respondents to report information separately for issuers covered by the interchange fee standard (covered issuers) and issuers exempt from the interchange fee standard (exempt issuers). The surveys further asked respondents to distinguish between prepaid card transactions that were covered by or exempt from the interchange fee standard. Starting from the 2013 data collection, the PCN surveys asked respondents to distinguish exempt prepaid transactions initiated with cards issued by exempt issuers from those initiated with cards issued by covered issuers. This distinction allows transactions reported in the PCN surveys to be categorized as either exempt or covered.<sup>15</sup>

As [figure 1](#) illustrates, the difference between the transaction volume of covered issuers, which includes transactions initiated with exempt prepaid cards issued by covered issuers, and the volume of covered transactions, which excludes those transactions, was equal to 3.1 percent of total transaction volume of covered issuers or 2.0 percent of total transaction volume of all issuers in 2019, in line with previous years. Depending on the context, this report alternatively decomposes the data by transaction status under Regulation II (that is, exempt versus covered transactions) or by issuer status (that is, exempt versus covered issuers).

## Debit Card Issuer Survey

The Board collected data from covered issuers for 2019 through the latest DCI survey, conducted in 2020. As in previous data collections, respondents

<sup>10</sup> Because dual-message networks traditionally processed signature-authenticated transactions, they are sometimes referred to as “signature networks,” which is a term that was used in previous reports in this series.

<sup>11</sup> Because single-message networks traditionally processed PIN-authenticated transactions, they are sometimes referred to as “PIN networks,” which is a term that was used in previous reports in this series.

<sup>12</sup> For example, in some instances, a dual-message network may use a single message to authorize and clear a given transaction. Similarly, in some instances, a network that typically uses single messages to authorize and clear transactions may use separate messages to authorize and clear a given transaction. This report categorizes each network based on the primary type of messaging that is used for the transactions that it processes.

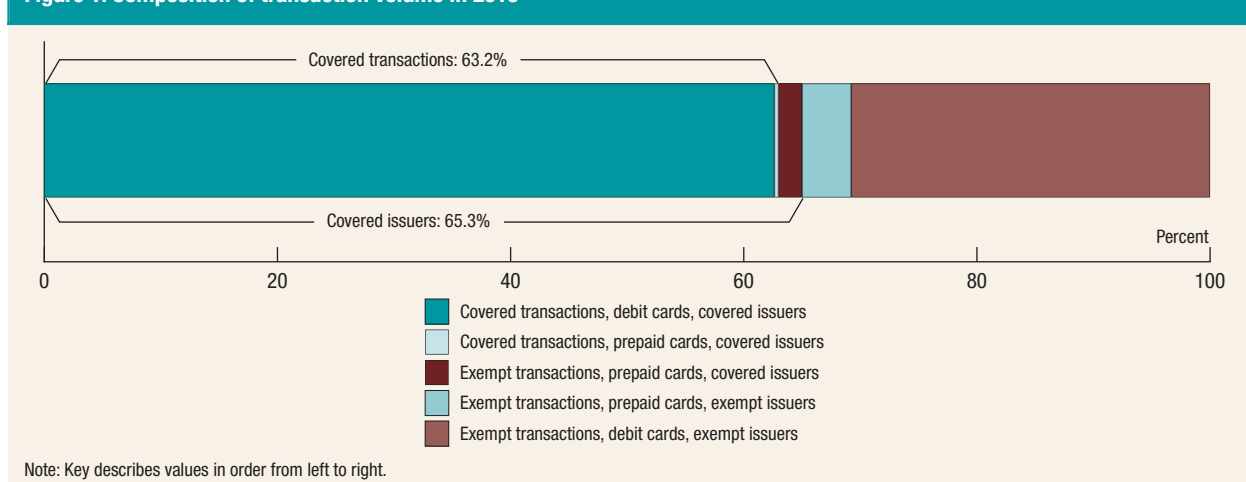
<sup>13</sup> The survey instructed network companies that had both dual-message and single-message networks to provide separate responses for each network. Similarly, if a network company processed both single-message and dual-message transactions over a single network, the survey instructed the network com-

pany to provide separate responses for each type of transaction performed over the network. Based on these reporting conventions, there were 18 total responses to the PCN survey for 2019.

<sup>14</sup> Information on average interchange fees is available on the Board’s website at [www.federalreserve.gov/paymentsystems/regii-average-interchange-fee.htm](http://www.federalreserve.gov/paymentsystems/regii-average-interchange-fee.htm).

<sup>15</sup> In data collections before 2013, it was only possible to distinguish between covered and exempt issuers; that is, transactions initiated with cards issued by issuers who were covered by the interchange fee standard versus transactions initiated with cards issued by issuers who were exempt from the standard. However, some transactions initiated with cards issued by issuers who are covered by the standard may actually be exempt, if the card is an exempt prepaid card.

Figure 1. Composition of transaction volume in 2019



ranged from the largest debit card issuers in the United States to issuers with consolidated assets greater than \$10 billion but small debit card programs.<sup>16</sup> The DCI survey asked for information

<sup>16</sup> The Board distributed surveys to holding companies of covered financial institutions. These financial institutions included bank and thrift holding companies with consolidated assets of at least \$10 billion; independent commercial banks, thrifts, and credit unions with assets of at least \$10 billion; and U.S. branches and agencies of foreign banking organizations with worldwide assets of at least \$10 billion. Assets were computed using the Consolidated Financial Statements for Bank Holding Companies (FR Y-9C; OMB No. 7100-0128), the Consolidated Reports of Condition and Income (Call Reports) for independent commercial banks (FFIEC 031 & 041; OMB No. 7100-0036) and for U.S. branches and agencies of foreign banks (FFIEC 002; OMB No. 7100-0032), the Thrift Financial Reports (OTS 1313; OMB No. 1550-0023) for thrift holding companies and thrift institutions, and the Credit Union Reports of Condition and Income (NCUA 5300/5300S; OMB No. 3133-0004) for credit unions. The ownership structure of banking organizations was established using the Federal Financial Institutions Examination Council's National Information Center structure database. Participation was mandatory for institutions that were covered by the interchange fee standard in 2020, based on their consolidated assets as of December 31, 2019, and had debit card programs in 2019. Institutions that indicated that they did not have a debit card program in 2019 were not required to complete a survey. These institutions were typically either foreign banking organizations or other financial institutions with large nonbank affiliates that do not provide retail banking services.

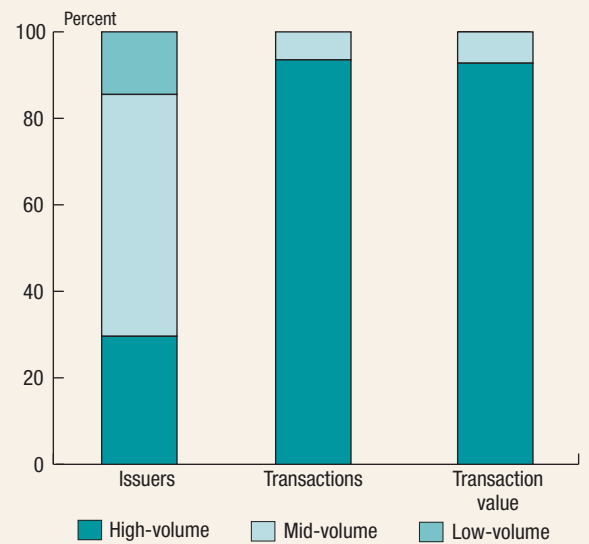
related to the volume and value of debit and prepaid card transactions; ACS costs as well as other costs associated with a particular debit card transaction; the incidence of and losses related to debit and prepaid card fraud; fraud-prevention and data-security costs; and interchange fee revenue. The DCI survey instructed respondents to provide the requested information separately for debit card transactions processed over dual-message networks, debit card transactions processed over single-message networks, and prepaid card transactions for issuers with prepaid card programs.<sup>17</sup>

A total of 152 covered issuers responded to the 2019 DCI survey, compared to 115 respondents for 2017. This change reflects a number of factors, including newly covered issuers that passed the \$10 billion asset threshold because of either organic asset growth or mergers and acquisitions, institutions that had assets above \$10 billion in the past and previously reported not issuing debit cards but reported issuing cards in 2019, and changes in reporting practices of some covered issuers.

<sup>17</sup> Unlike the PCN survey, the DCI survey does not distinguish between general-use prepaid cards that were covered by the interchange fee standard and those that were exempt.

Figure 2 shows the percentage that high-, mid-, and low-volume issuers represented out of total covered issuers and the total number and value of covered issuers' transactions in 2019. In particular, 29.6 percent of the respondents processed more than 100 million debit card transactions (high-volume issuers), while 14.5 percent processed fewer than 1 million debit card transactions (low-volume issuers). The remaining 55.9 percent of respondents processed between 1 million and 100 million transactions (mid-volume issuers). As in previous data collections, high-volume issuers accounted for the vast majority of transaction volume and value. In 2019, high-volume issuers accounted for 93.5 (92.8) percent of transaction volume (value), mid-volume issuers accounted for 6.5 (7.2) percent of transaction volume (value), and low-volume issuers accounted for 0.01 (0.02) percent of transaction volume (value).

**Figure 2. Composition of covered issuers and transaction volume/value of covered issuers in 2019**



Note: Key describes bars in order from bottom to top. Low-volume issuers accounted for 0.01 percent of transaction volume and 0.02 percent of transaction value.

# Detailed Discussion

## Card Use

The PCN surveys have provided information about total card usage on a yearly basis since 2009.<sup>18</sup> From 2009 to 2019, the volume of total card usage progressively grew from 37.6 billion transactions in 2009 to 79.2 billion transactions in 2019, with an average growth of 4.2 billion transactions or 7.7 percent per year (see figure 3). The total value of purchase transactions also increased, growing from \$1.43 trillion in 2009 to \$3.10 trillion in 2019, with an average growth of \$0.17 trillion or 8.0 percent per year since 2009.

For context, the *Federal Reserve Payments Study* found that the total volume of prepaid and non-

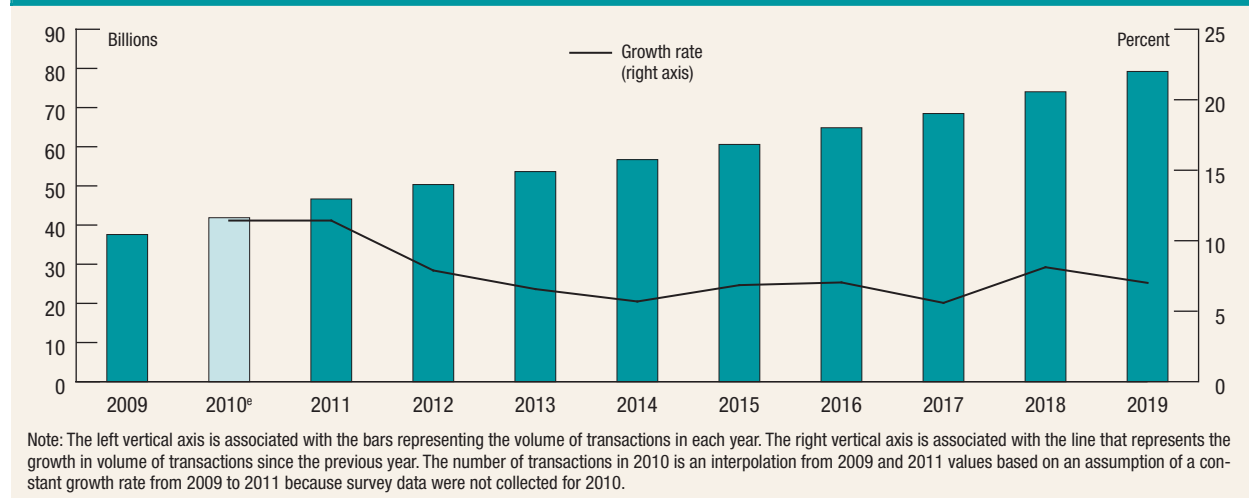
prepaid general-purpose debit card transactions grew 8.0 percent per year from 2009 to 2018.<sup>19</sup> By comparison, the growth rate calculated using PCN data from 2009 to 2018 was 7.8 percent.<sup>20</sup> The *Federal Reserve Payment Study* found that general-purpose credit card transactions were the only payment category with a comparable growth rate from 2009 to 2018, at 8.3 percent per year, while ACH and wire

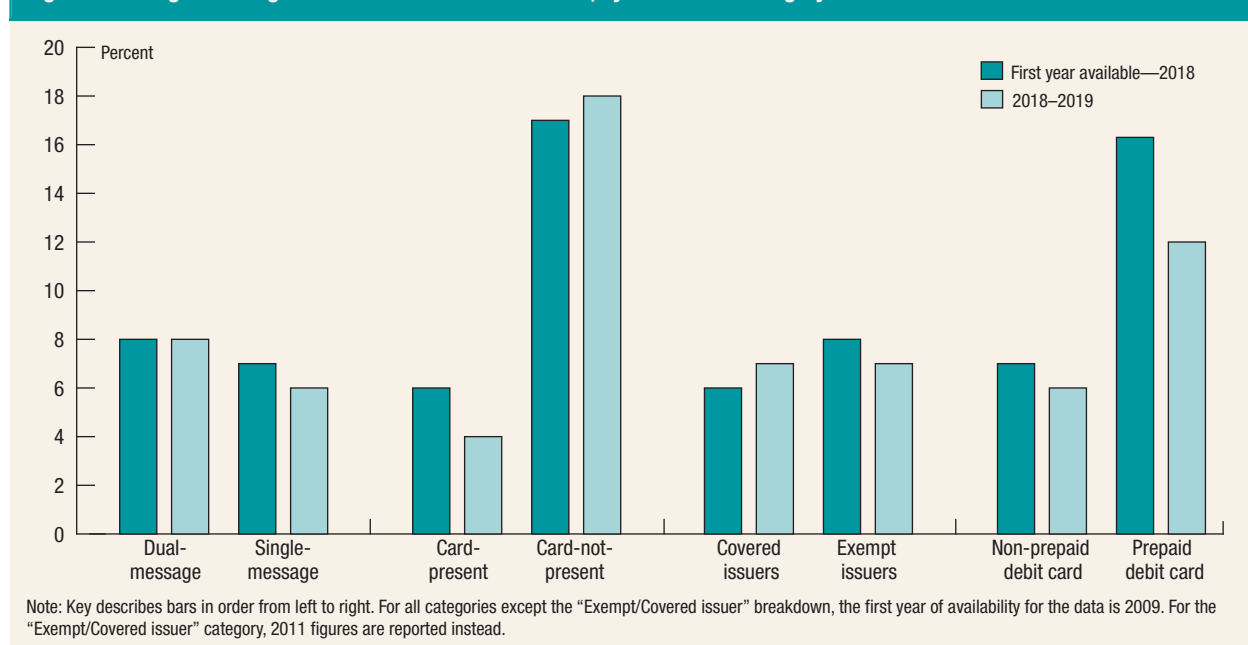
<sup>18</sup> Both the PCN survey and the DCI survey ask respondents for data pertaining to the number and value of settled purchase transactions on debit cards. Settled purchase transactions include transactions that are later charged back or returned and exclude ATM transactions, funds loads to card accounts for prepaid cards, and any card activity in which value was not transferred between a cardholder and a merchant, such as denials, errors, or authorizations that did not clear or were not presented for settlement. A comparison of data from the two surveys suggests a high level of consistency across network and issuer responses. Because the DCI survey only includes covered issuers, the figures in this section come from PCN survey data.

<sup>19</sup> See Board of Governors of the Federal Reserve System, *The 2019 Federal Reserve Payments Study: Detailed Data Release* (Washington: Board of Governors, December 2019), available at <https://www.federalreserve.gov/paymentsystems/fr-payments-study.htm>. The growth rate of the total volume of debit card transactions is calculated as the compound annual growth rate of the sum of the total transaction volume of prepaid and non-prepaid debit card transactions. While the *Federal Reserve Payments Study* reports two distinct growth rates reflecting findings from its two key surveys, the Depository and Financial Institution Payments Survey and the Networks, Processors, and Issuers Payments Survey, the growth rate of total debit card transactions from 2009 to 2018 was only marginally different in the two data collections (8.05 percent and 7.96 percent, respectively).

<sup>20</sup> The reported growth rates and underlying totals differ because the *Federal Reserve Payments Study* covers a broader set of payments, including three-party network transactions not covered by Regulation II. That study also reports totals as “net, authorized and settled transactions,” which not only include net purchase transactions as defined in this report, but also include chargebacks, returns and adjustments, and cash back amounts.

**Figure 3. Volume and growth rate of purchase transactions over time**



**Figure 4. Average annual growth rate in transaction volume, by transaction category**

payments experienced lower growth rates in transaction volume during the same time period, and the volume of checks processed steadily declined.<sup>21</sup>

Figure 4 examines growth rates in transactions by category in 2019 compared with average annual growth rates from the first year the data were collected through 2018. The average annual growth rate in the volume of transactions processed over dual-message networks remained fairly stable at 7.6 percent in 2019 compared with the average annual growth rate of 8.3 percent per year observed from 2009 to 2018. By comparison, the average annual growth rate in the volume of transactions processed over single-message networks remained lower than the corresponding value for dual-message networks and decreased slightly from an average annual growth rate of 7.0 percent per year from 2009 to 2018 to 6.0 percent in 2019.<sup>22</sup>

In 2019, CNP transactions were the fastest-growing category, as they had been since 2013, per table 3 of

historical data.<sup>23</sup> Growth in CNP transaction volume accelerated slightly, increasing from an average annual growth rate of 17.4 percent per year from 2009 to 2018 to 17.9 percent in 2019. By contrast, growth in CP transaction volume, at 4.2 percent in 2019, was much lower. Moreover, growth in CP transactions in 2019 fell compared with the average annual growth rate of 6.3 percent per year from 2009 to 2018.

As shown by the third set of bars in figure 4, the growth rate in volume processed by covered issuers increased slightly from an average annual growth rate of 6.3 percent per year from 2011 to 2018 to 6.9 percent in 2019. At the same time, while higher than the growth experienced by covered issuers, growth in transaction volume processed by exempt issuers slowed slightly, from an average annual growth rate of 7.8 percent from 2011 to 2018 to 7.2 percent in 2019.

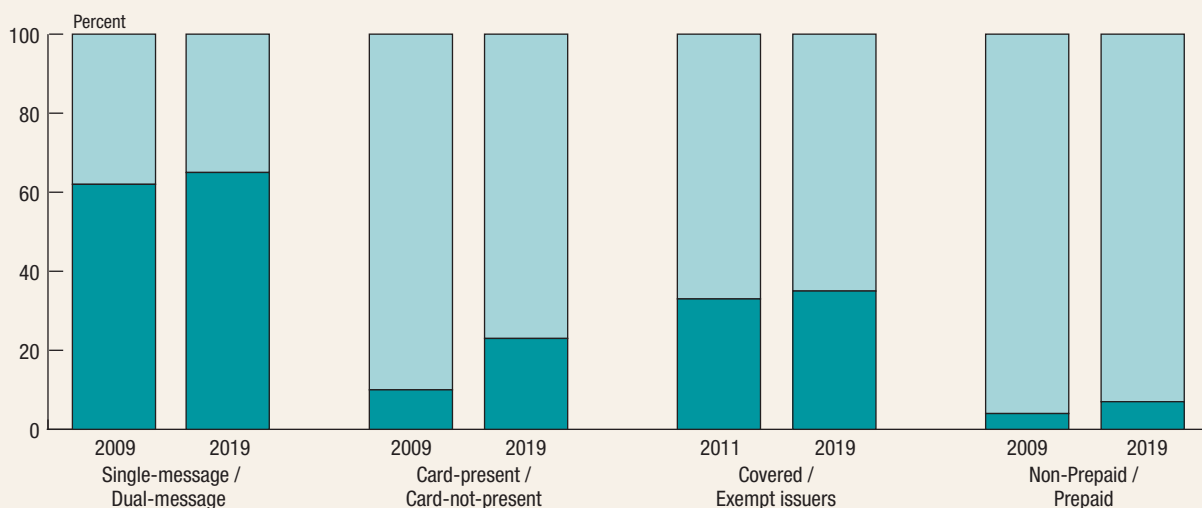
Finally, as shown by the final set of bars in figure 4, the average annual growth in volume of non-prepaid debit card transactions slowed from 7.4 percent per year from 2009 to 2018 to 6.4 percent in 2019. While the growth in volume of prepaid card transactions in 2019 also slowed relative to its average annual growth

<sup>21</sup> The reported growth rate for credit card transactions was calculated based on data collected through the Networks, Processors, and Issuers Payments Survey. The corresponding growth rate found using the data collected through the Depository and Financial Institution Payments Survey was 8.6 percent.

<sup>22</sup> As applicable, figures based on the total transaction volume for single-message networks include information on any dual-message transactions performed on those networks.

<sup>23</sup> Historical data can be found on the Federal Reserve Board’s website at <https://www.federalreserve.gov/paymentsystems/regii-data-collections.htm>. CNP transactions include internet, telephone, and mail-order transactions.



**Figure 5. Composition of total transaction volume in 2019, by transaction category**

Note: Axis labels identify bars from top to bottom. Values reported alongside the columns are per-category changes relative to 2009, except in the case of exempt or covered issuers, for which the change is relative to 2011.

rate of 16.3 percent per year from 2009 to 2018, it remained high at 12.0 percent.<sup>24</sup>

While figure 4 examines the growth rates in transaction volume across different transaction categories, figure 5 focuses on the composition of total transactions within each of these categories in 2019. To better understand how the composition itself evolved over time, figure 5 also illustrates the corresponding breakdown at the beginning of the data collection and the associated change in composition relative to that initial breakdown. In 2019, transactions processed over dual-message networks accounted for 65.4 percent of debit card transaction volume, with transactions processed over single-message networks accounting for the remaining 34.6 percent. The proportion of transactions processed over dual-message networks increased 3.0 percentage points from 2009 to 2019. Reflecting in large part the increased popularity of online retail, the share of CNP transactions out of total transaction volume steadily increased from 2009 to 2019, reaching 22.8 percent in 2019, up 13.2 percentage points since 2009. The share of transactions processed by exempt issuers increased to 35.0 percent in 2019, up 2.2 percentage points since 2011. Finally, the share of prepaid transactions reached 6.6 percent in 2019, up 3.4 percentage points since 2009.

<sup>24</sup> The high average annual growth in prepaid transactions observed from 2009 to 2018 was partially driven by the substantially higher growth rate that this category experienced from 2009 to 2011.

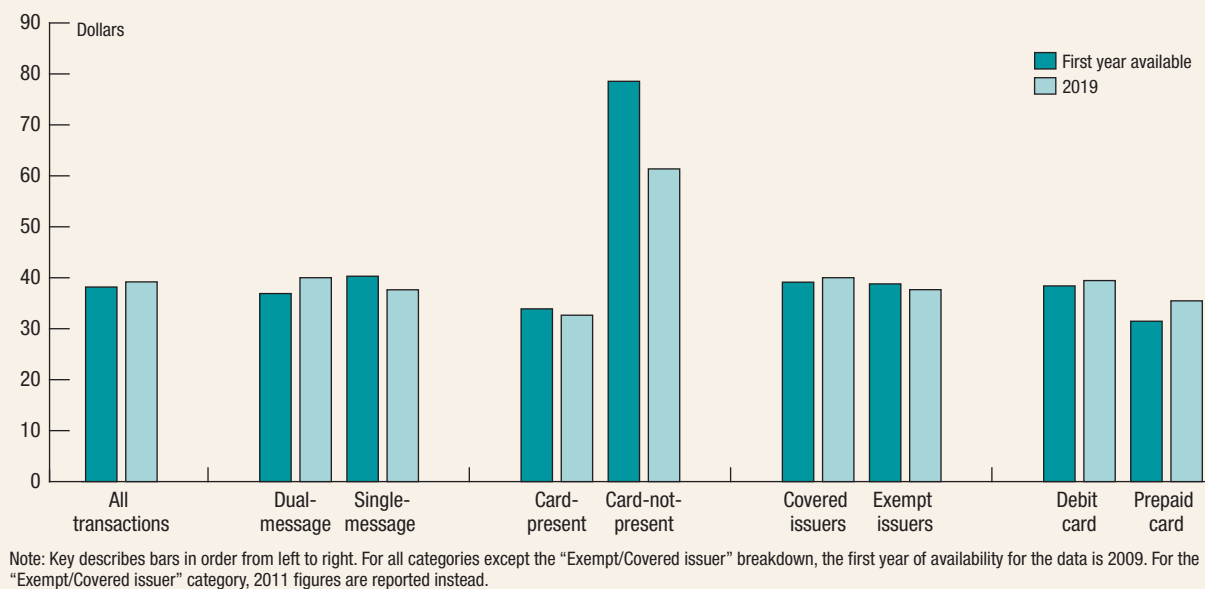
As shown in figure 6, in 2019 average transaction values did not differ substantially across different transaction categories. Moreover, average transaction values in 2019 were very similar to what they were in the first year the data were collected. CNP transactions were a notable exception in both cases. In 2019, the average value of CNP transactions was \$61.36, which is nearly double the corresponding value for CP transactions, equal to \$32.65. While the average value of CNP transactions was still considerably higher than for all other transaction categories in 2019, it had actually fallen by over \$17 from 2009.

## Interchange Fees, Network Fees, and Incentives

The PCN survey requests information about interchange fees; certain network fees; and P&I that are set, charged, or paid by payment card networks.<sup>25</sup> These fees and transfers vary from network to network; thus, the totals and averages reported in this

<sup>25</sup> Interchange fees are those fees set by the network, charged to acquirers, and received by issuers as part of a debit card transaction. The acquirer typically passes these fees on to the merchant, implying that interchange fees can be thought of as a cost to merchants. Network processing fees are total fees charged by payment card networks for services that are required for the processing of transactions by networks and do not include any fees for optional services related to transaction processing that may be provided by a payment card network or an affiliate of a payment card network, or any network fees that are not directly linked to the processing of transactions, such as membership or license fees.

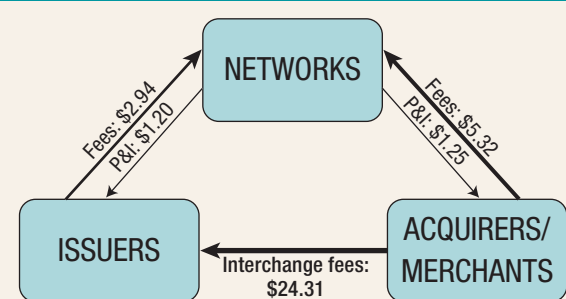
**Figure 6. Average transaction value, by transaction category**



section serve only as a general characterization of network practices. Moreover, P&I are usually bilateral arrangements between a network on one side and a merchant, acquirer, or issuer on the other. The figures reported in this section, calculated from network-reported totals, do not reflect the heterogeneity of these bilateral arrangements.

Figure 7 shows the main fees, as well as P&I, exchanged among networks, issuers, and acquirers/merchants in 2019. The total value of interchange fees transferred from acquirers to issuers was by far the largest: \$24.31 billion. Network fees paid by issuers and acquirers were \$2.94 billion and \$5.32 billion, respectively.

**Figure 7. Fees and payments/incentives among networks, issuers, and acquirers in 2019**



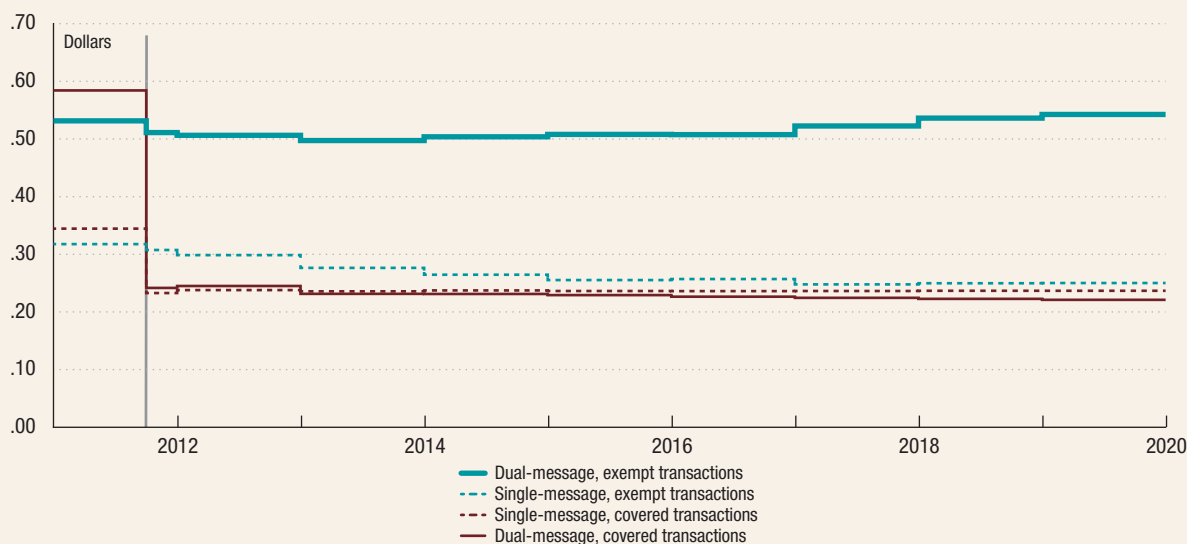
Note: Values are in billions of dollars. P&I is payments and incentives. The arrows represent the source and recipient of fees, payments, and incentives, rather than the actual path the money takes.

lion, respectively. In each case, these network fees were considerably higher than the P&I from networks to issuers and acquirers/merchants: \$1.20 billion and \$1.25 billion, respectively.

Figure 8 illustrates the evolution of average interchange fees over time, depending on network type and whether transactions were covered by, or exempt from, the interchange fee standard. Average interchange fees for covered transactions, both those processed over single-message and those processed over dual-message networks, did not change materially after Regulation II took effect in the fourth quarter of 2011. In 2019, these fees stood at \$0.24 and \$0.22, respectively. In both cases, the values were slightly less than the maximum that an issuer could receive under the regulation on an average covered transaction.<sup>26</sup> While average interchange fees on covered transactions were higher for dual-message networks immediately after the regulation took effect, their subsequent slow but steady decline meant that, after 2013, average interchange fees were higher for covered transactions processed over single-message networks.

<sup>26</sup> The allowable interchange fee under the Regulation II standard, plus the 1 cent fraud-prevention adjustment, was \$0.240 for an average covered transaction (\$40.10) in 2019. The actual average interchange fee for covered transactions in 2019 was \$0.221 for dual-message networks and \$0.237 for single-message networks.

**Figure 8. Average interchange fees over time, by network type and transaction status**



Note: Values for each period are represented by a data point at the end of the period: end of year for 2011:Q4, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019 data. Figures for 2013–19 represent a covered/exempt transaction breakout; for previous years, they represent a covered/exempt issuer breakout. The vertical line marks when Regulation II took effect.

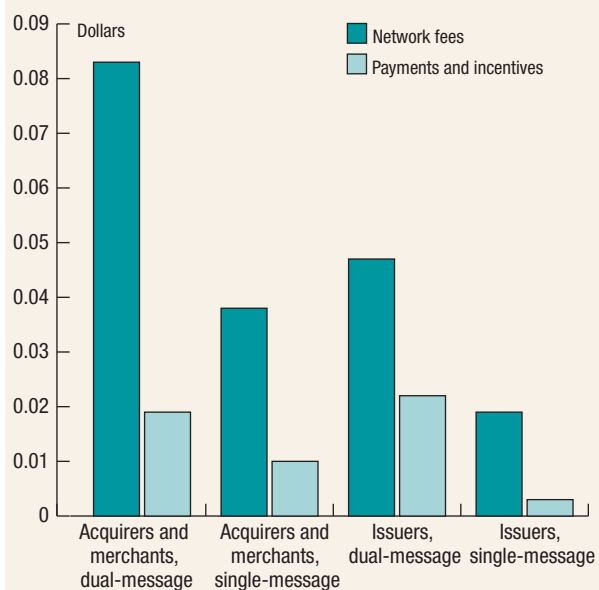
While the average interchange fee per exempt transaction processed over single-message networks was only slightly higher than that for covered transactions in 2019 (\$0.25 versus \$0.24), the average interchange fee per exempt transaction processed over dual-message networks was considerably higher than that for covered transactions (\$0.54 versus \$0.22). In addition, interchange fees for exempt transactions processed over dual-message networks increased after the regulation took effect, whereas average interchange fees for all other categories were either largely constant or falling over the same period. The average interchange fee for exempt transactions processed over single-message networks, in particular, fell from \$0.31 in 2011 to \$0.25 in 2019. The average interchange fee per covered transaction processed over dual-message networks declined the most, from \$0.58 in 2009 to \$0.22 in 2019.

Figure 9 illustrates, for 2019, (a) network fees paid by acquirers and issuers as well as (b) P&I received by acquirers/merchants and issuers from networks. Overall, for both types of networks, all parties paid more in network fees than they received from the networks in P&I. Moreover, dual-message networks consistently charged higher network fees and disbursed higher P&I than single-message networks.

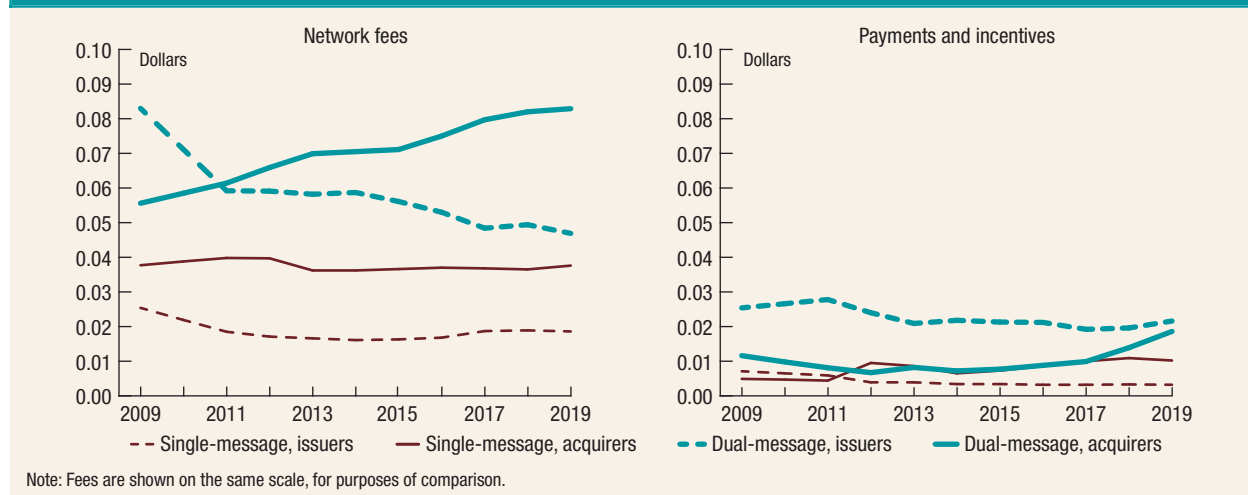
Focusing more closely on the data, network fees paid by acquirers were considerably higher, on a per-

transaction basis, than those paid by issuers for both dual-message and single-message networks. Network fees charged by dual-message networks were consid-

**Figure 9. Per-transaction network fees and payments/incentives in 2019, by network type and payer/recipient**



Note: Key describes bars in order from left to right. Although P&I are received by both acquirers and merchants, network fees are paid by acquirers and are not directly paid by merchants.

**Figure 10. Per-transaction network fees and payments/incentives for issuers and merchants/acquirers over time, by network type and payer/recipient**

erably higher than the fees charged by single-message networks for both acquirers and issuers. The amount of P&I that acquirers/merchants received from single-message networks corresponded to around 26.3 percent of the network fees that they paid. The corresponding value for issuers was almost half, at 15.8 percent. By contrast, the amount of P&I that issuers received from dual-message networks represented a much higher percentage (46.8 percent) of the network fees they paid than the corresponding value for acquirers/merchants (22.9 percent). Per-transaction P&I paid to issuers by dual-message networks were almost seven times as high as those paid by single-message networks.

Figure 10 shows trends over time in network fees, as well as in P&I. Focusing on network fees first, from 2009 to 2017, the average per-transaction network fee paid by issuers to both dual-message and single-message networks consistently decreased, and was roughly stable from 2017 to 2019. In 2019, the average per-transaction network fee paid by issuers to dual-message networks was more than double the fee paid to single-message networks.

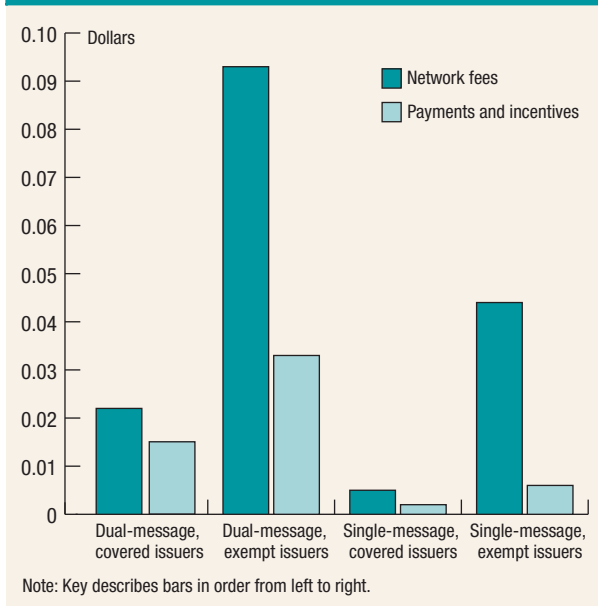
By contrast, the average per-transaction network fee paid by acquirers to dual-message networks rose consistently from 2009 to 2019 and was the highest average per-transaction network fee across all categories after 2011. The average per-transaction network fee paid by acquirers to single-message networks remained constant after 2009, equal to around \$0.04. In 2019, the average per-transaction network fee paid

by acquirers to dual-message networks was roughly double that paid to single-message networks.

Turning to P&I in figure 10, the amounts of P&I received by both acquirers/merchants and issuers from dual-message networks as a percentage of the network fees paid substantially increased from 2017 to 2019, while the same values for single-message networks decreased. The P&I paid to acquirers and merchants by dual-message networks were roughly double the P&I paid by single-message networks at the beginning of the data collection, from 2009 to 2011. This difference leveled out in later data collections, and the level of per-transaction P&I paid to merchants and acquirers was not significantly different between dual- and single-message networks from 2013 to 2017. However, the P&I paid to acquirers and merchants by dual-message networks increased once more after 2017 and in 2019 were once again almost double the P&I paid by single-message networks. Per-transaction P&I paid to issuers by both single-message and dual-message networks remained roughly stable from 2009 to 2019. Per-transaction P&I paid to issuers by dual-message networks were roughly 3.5 times as high as those paid by single-message networks in 2009, a difference that almost doubled from 2009 to 2019.

Figure 11 looks further at network fees, as well as P&I, and shows how they differed between covered and exempt issuers in 2019. As documented in tables 7 and 9 of historical data, exempt issuers paid higher per-transaction network fees from 2009 and received

**Figure 11. Per-transaction network fees and payments/incentives for issuers in 2019, by network type and issuer status**



higher per-transaction P&I from 2013 in absolute terms than covered issuers, with these differences arising for both dual-message and single-message networks.<sup>27</sup> P&I paid to exempt issuers by dual-message networks were over five times higher than those paid by single-message networks in 2019. P&I

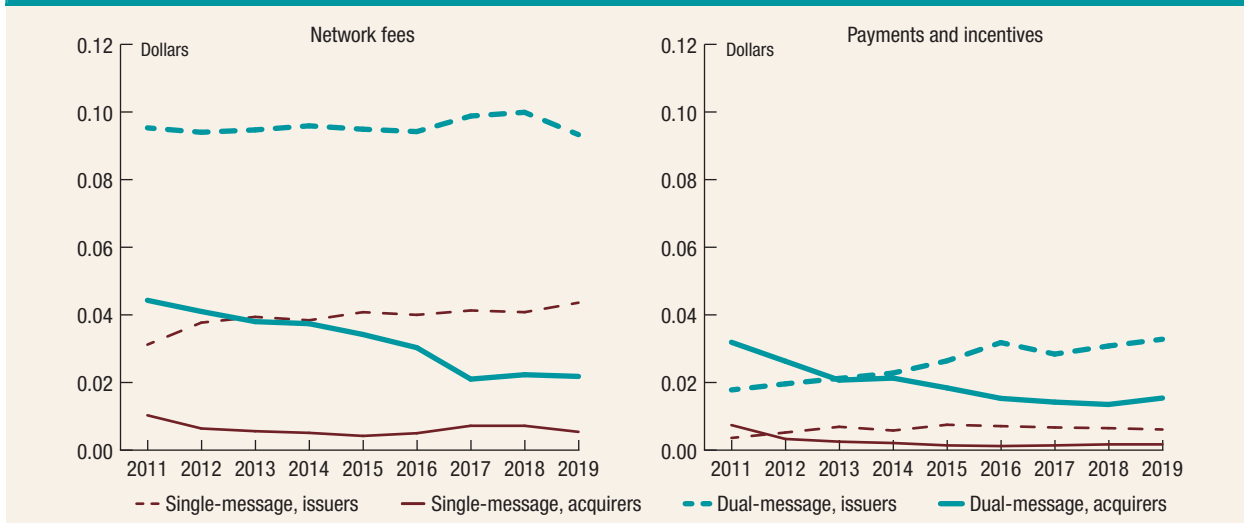
<sup>27</sup> Historical data can be found on the Federal Reserve Board’s website at <https://www.federalreserve.gov/paymentsystems/regii-data-collections.htm>.

paid to covered issuers by dual-message networks were over nine times higher than those paid by single-message networks in 2019. While covered issuers received P&I equal to 68.2 and 40.0 percent of the network fees that they paid to dual-message and single-message networks, respectively, the corresponding values for exempt issuers were only 35.5 and 13.6 percent.

Figure 12 examines how network fees, as well as P&I, for covered and exempt issuers changed after 2011. The average per-transaction network fee paid by covered issuers to dual-message networks consistently fell from 2011 to 2017 and remained stable in 2018 and 2019. The average per-transaction network fee paid by covered issuers to dual-message networks remained above the fee paid to single-message networks, which in turn remained stable at \$0.01 after Regulation II took effect. Turning to exempt issuers, the average per-transaction network fee paid to single-message networks gradually increased from 2011 to 2019, while the average network fee per transaction paid to dual-message networks remained roughly constant over the same time period, at a level that was more than double the fee paid by exempt issuers to single-message networks.

Turning to P&I, from 2011 to 2019, P&I paid to exempt issuers increased for both types of networks, whereas P&I paid to covered issuers fell for both types of networks. In 2011, both types of networks paid higher per-transaction P&I to covered issuers than to exempt issuers. This relationship inverted

**Figure 12. Per-transaction network fees and payments/incentives for issuers over time, by network type and issuer status**



after 2011, with both types of networks paying higher per-transaction P&I to exempt issuers.

## Fraud

The fraud data presented in this section are from the DCI survey and, therefore, only apply to covered issuers.<sup>28</sup> Because these issuers constitute a particular segment of the total population of debit card issuers, their fraud experience may not be representative of all debit card issuers. As a result, estimates of aggregate fraud that might be derived from these data could differ from those based on information that reflects a broader set of issuers.<sup>29</sup>

In recent years, the U.S. payment card industry has been embracing chip-based technology for in-person card payments. The widespread issuance of chip-based EMV cards and corresponding deployment of point-of-sale terminals that support chip-based payments began in 2015.<sup>30</sup> Since then, according to the *Federal Reserve Payments Study*, the number of chip-authenticated card payments has been steadily increasing and overtook the number of non-chip-authenticated card payments in 2018. The adoption of chip-based payment technology had the potential to increase the overall security of in-person card payments and therefore decrease overall fraud. However, fraud is ever-evolving and shifted toward new areas of vulnerability. For example, with the introduction of increased security for in-person card payments, card fraud shifted from in-person fraud toward CNP, or remote, fraud.

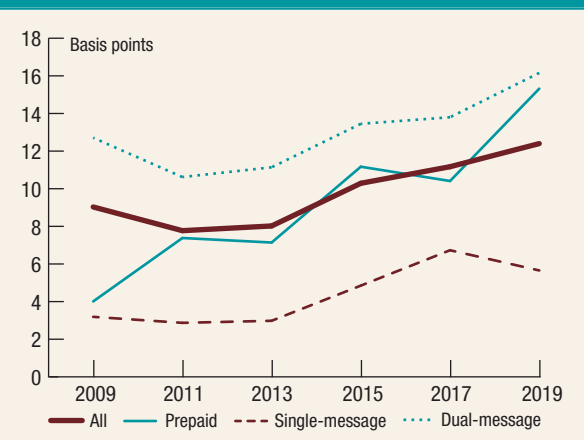
Figure 13 shows that overall fraud losses as a share of transaction value continued the upward trend observed after 2011, rising from 11.2 basis points in

<sup>28</sup> Respondents were instructed to exclude the incidence of and losses from fraudulent ATM withdrawals.

<sup>29</sup> The *Federal Reserve Payments Study* produces estimates of aggregate volumes and values of fraudulent transactions and aggregate fraud rates for various payment instruments, including debit cards, through surveys of a stratified sample of depository institutions, as well as surveys of card networks and processors. The most recent estimates from this study are presented in Board of Governors of the Federal Reserve System, *Changes in U.S. Payments Fraud from 2012 to 2016: Evidence from the Federal Reserve Payments Study* (Washington: Board of Governors, October 2018), <https://www.federalreserve.gov/publications/files/changes-in-us-payments-fraud-from-2012-to-2016-20181016.pdf>.

<sup>30</sup> EMV is a technical standard for microchip-based payment cards. The term EMV stands for “Europay, Mastercard, and Visa,” the three companies that created the standard. EMVCo, a consortium of financial companies, currently manages the standard.

**Figure 13. Fraud losses as a share of transaction value over time, by transaction category**



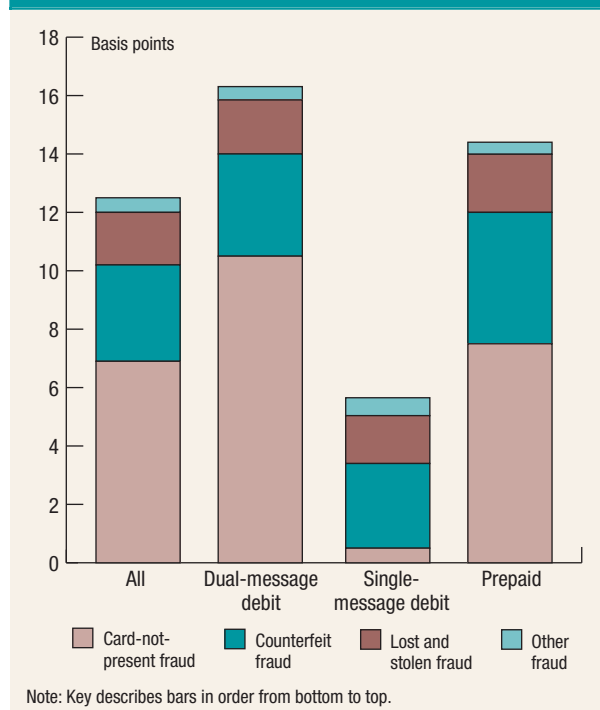
2017 to 12.4 basis points in 2019. The increase in overall fraud losses from 2017 to 2019 was driven by rising fraud losses for dual-message and prepaid transactions. In particular, fraud losses as a share of the value of prepaid transactions continued their steep increase and, at 15.3 basis points, were almost four times as high in 2019 as in 2009. By contrast, for the first time since 2011, fraud losses as a share of single-message transaction value declined from 2017 to 2019. Single-message transactions continued to experience the lowest fraud losses as a share of transaction value, at 5.7 basis points in 2019. By comparison, the corresponding share for dual-message transactions was almost three times as high, at 16.2 basis points.

Figure 14 illustrates the composition of fraud losses in 2019. In particular, figure 14 breaks down total fraud losses to all parties expressed as a share of transaction value into four types of fraud: (1) lost and stolen fraud, (2) counterfeit fraud, (3) CNP fraud, and (4) other fraud.<sup>31</sup> As figure 14 illustrates, CNP fraud, at 6.9 basis points, accounted for more than half of overall fraud in 2019.<sup>32</sup> The second-

<sup>31</sup> Lost and stolen fraud is fraud identified as having occurred through the use of a lost or stolen debit card. Counterfeit fraud is fraud identified as having occurred through the use of a counterfeit reproduction of a debit card. CNP fraud is fraud related to CNP transactions. Other fraud includes any fraud that cannot be categorized in the first three categories. For more information, refer to the 2019 Debit Card Issuer survey instrument, available at <https://www.federalreserve.gov/paymentsystems/files/2019DebitCardIssuersurvey.pdf>.

<sup>32</sup> The *Federal Reserve Payments Study* provides additional fraud statistics on remote and in-person card transactions. See Board of Governors of the Federal Reserve System, *Changes in U.S. Payments Fraud from 2012 to 2016: Evidence from the Federal Reserve Payments Study* (Washington: Board of Governors,

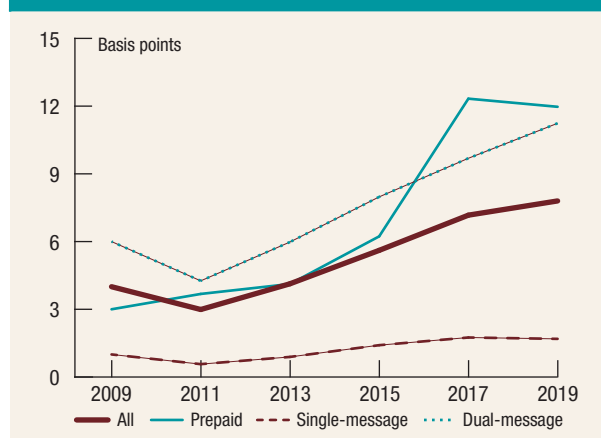
**Figure 14. Level and composition of fraud losses as a share of transaction value in 2019, by transaction category**



largest fraud source, counterfeit fraud, resulted in less than half as much fraud, at 3.3 basis points, while the third-largest, lost and stolen fraud, for only one-fourth as much fraud, at 1.8 basis points. Other fraud accounted for the remaining 0.5 basis points.

While lost and stolen fraud, counterfeit fraud, and other fraud varied little across different transaction categories in 2019, the magnitude and relative significance of CNP fraud varied substantially. For dual-message transactions, CNP fraud made up the majority of total fraud losses. In particular, CNP fraud losses for dual-message transactions, at 10.5 basis points, were three times the second biggest category, counterfeit fraud losses, at 3.5 basis points. For prepaid card transactions, similarly, CNP fraud losses were substantially higher than counterfeit fraud, at 7.5 and 4.5 basis points, respectively. By contrast, CNP fraud losses accounted for just 0.5 basis points of fraud losses for single-message transactions, considerably less than counterfeit fraud, which at 2.9 basis points made up the majority of fraud for single-message transactions.

**Figure 15. Incidence of fraudulent transactions as a percentage of total transactions over time, by transaction category**



The relatively low value of CNP fraud losses for single-message transactions was partially driven by the fact that, in 2019, single-message networks were rarely used for CNP transactions. In particular, as table 2 documents, in 2019 both the number and value of CNP transactions were substantially lower for single-message networks than for dual-message networks. As table 2 further notes, the percentage of CNP transactions out of the total number and value of transactions processed over single-message networks, at 3.9 and 4.8 percent, respectively, were also significantly lower than the analogous percentages for dual-message networks, at 32.8 and 51.0 percent, respectively. In fact, covered issuers representing slightly more than 50 percent of the total number and value of all covered transactions reported that none of their CNP transactions were processed over single-message networks in 2019.

Figures 13 and 14 focused on fraud losses as a share of transaction value. The next two figures decompose fraud losses into two key factors: (a) fraud incidence, or the share of transactions that are fraudulent (figure 15), and (b) average fraud loss per fraudulent transaction (figure 16). The product of these two factors yields the average fraud loss per transaction.<sup>33</sup>

Figure 15 shows that overall fraud incidence exhibited a very similar trend from 2009 to 2019 as fraud losses as a share of transaction value, shown in figure 13. In particular, fraud incidence rose from

October 2018), <https://www.federalreserve.gov/publications/files/changes-in-us-payments-fraud-from-2012-to-2016-20181016.pdf>.

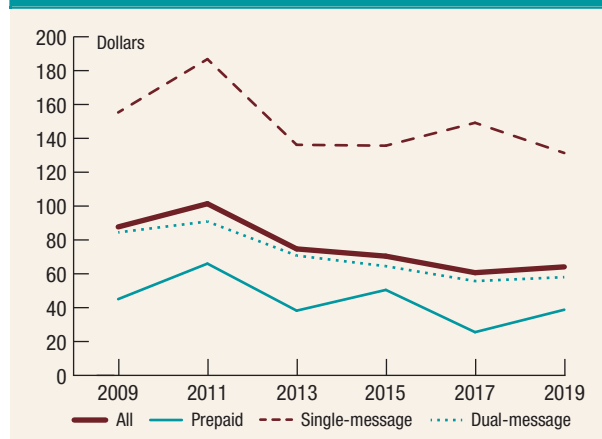
<sup>33</sup> The average fraud loss per transaction divided by the average transaction value yields fraud losses as a share of transaction value.

7.2 basis points in 2017 to 7.8 basis points in 2019, continuing the upward trend observed after 2011. All in all, overall fraud incidence more than doubled from 2011 to 2019. Unlike the trend for fraud losses as a share of transaction value, shown in figure 13, the increase in overall fraud incidence from 2017 to 2019 was driven entirely by the continued increase in the incidence of fraudulent dual-message transactions. By contrast, the incidence of fraudulent prepaid transactions fell from 0.123 to 0.120 percent over the same period, while the incidence of fraudulent single-message transactions remained broadly stable. As had been the case since 2009, prepaid and dual-message transactions exhibited a considerably higher fraud incidence than single-message transactions in 2019.

Figure 16 shows that the average loss per fraudulent transaction across all transactions changed little from 2017 to 2019. As had been the case since 2009, in 2019 the average loss per fraudulent dual-message transaction was almost identical to the average loss across all transactions. At the same time, the average loss per fraudulent prepaid transaction remained the lowest across all transaction categories, despite increasing from \$25.53 in 2017 to \$38.78 in 2019. Similarly, the average loss per fraudulent single-message transaction remained the highest across all transaction categories. In fact, despite decreasing from \$149.19 in 2017 to \$131.35 in 2019, the average loss for single-message transactions was more than double the corresponding value for dual-message transactions, and more than triple the corresponding value for prepaid transactions.

Further lessons can be drawn from comparing figures 15 and 16. In particular, while figure 15 shows that single-message transactions consistently exhibited the lowest incidence of fraud from 2009 to 2019,

**Figure 16. Average loss per fraudulent transaction over time, by transaction category**





**Figure 17. Composition of fraud losses in 2019, by transaction category and fraud type**

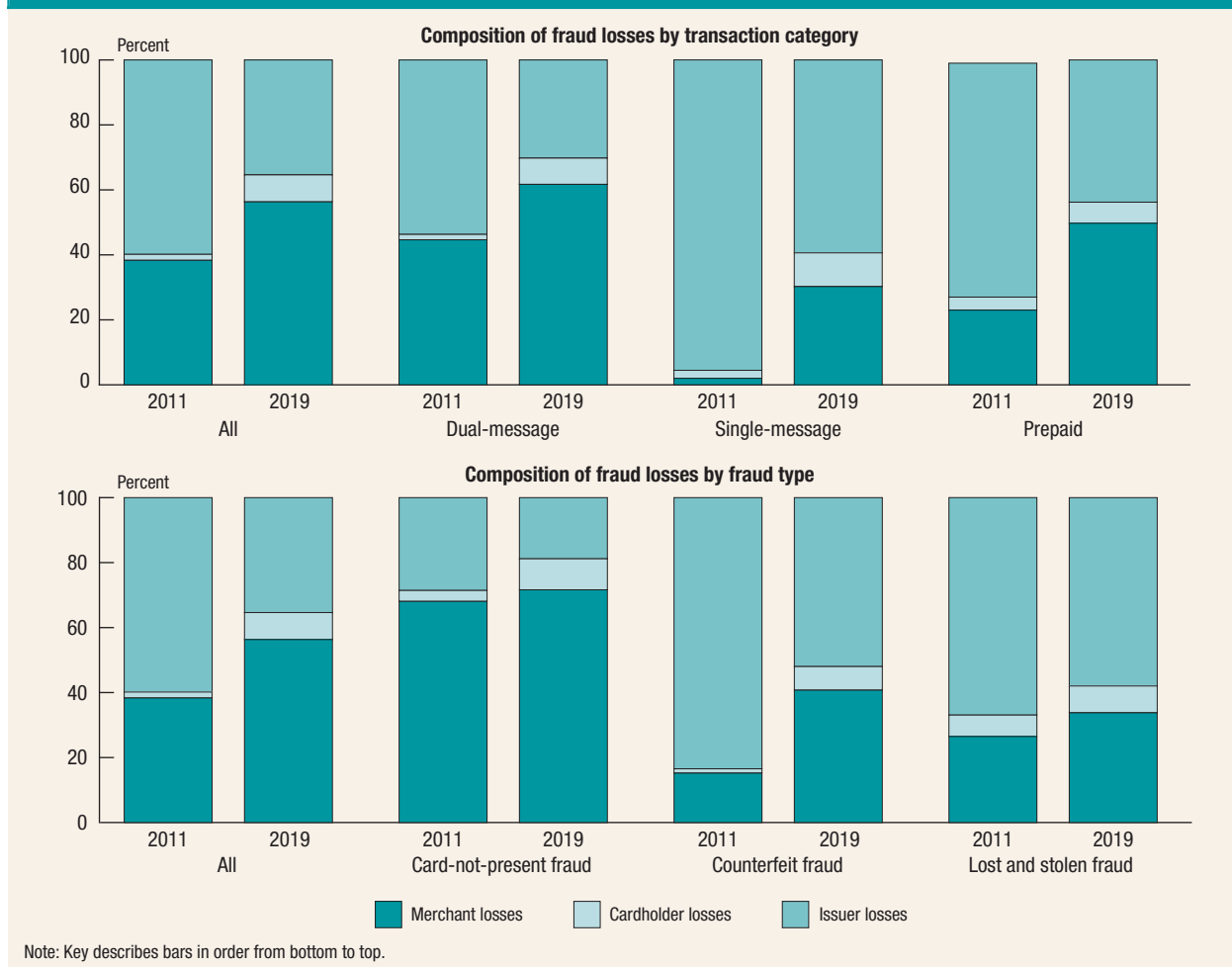


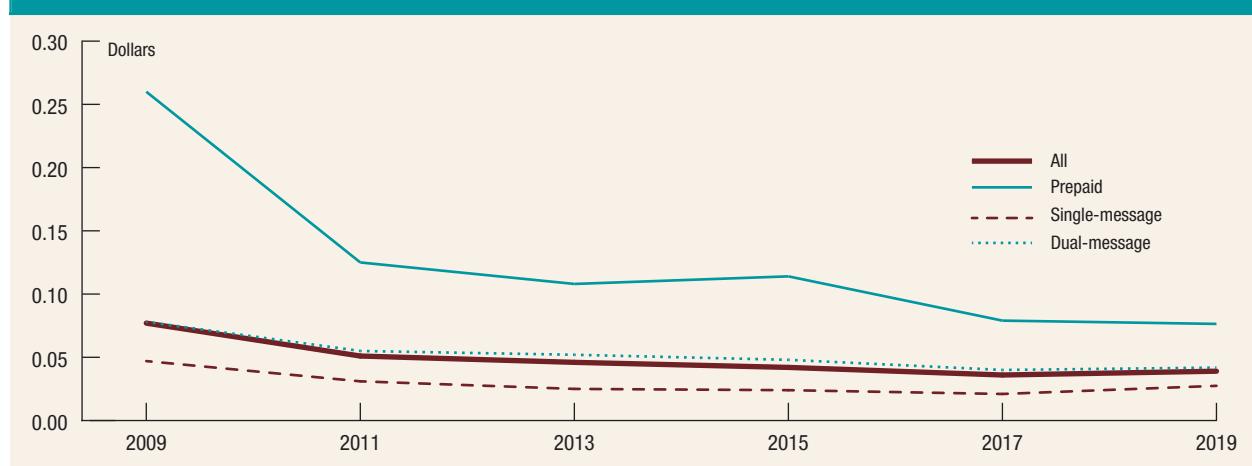
figure 16 shows that the average loss per fraudulent transactions was much higher for single-message transactions than for other transaction categories. Overall, though, the lower fraud incidence for single-message transactions outweighs the higher average fraud loss per fraudulent transaction, resulting in single-message transactions having the lowest fraud losses as a share of transaction value from among all transaction categories, as shown in figure 13.

Figure 17 turns from fraud losses to all parties to examine the shares of fraud losses that were absorbed by merchants, cardholders, and issuers in 2011 and 2019.<sup>34</sup> In both years, the vast majority of

fraud losses across all transaction categories and fraud types were absorbed by issuers and merchants. Although cardholders absorbed only around 8 percent of all fraud losses in 2019, this nonetheless represented a nearly fourfold increase over 2011.

The share of fraud losses absorbed by issuers and merchants changed significantly from 2011 to 2019, with issuers absorbing a smaller share and merchants absorbing a larger share across all transaction categories and fraud types. From 2011 to 2019, the share of all fraud losses absorbed by issuers declined from 59.8 percent to 35.4 percent. At the same time, the share of all losses absorbed by merchants increased from 38.3 percent in 2011 to 56.3 percent in 2019. This shift reflects a number of factors. First, as discussed beforehand and as evident in table 3 of historical data, CNP transactions were the fastest-growing transaction category from 2013 to 2019. Second, as shown in figure 14, CNP fraud accounted

<sup>34</sup> The vast majority of fraud losses were absorbed by issuers, merchants, and cardholders. The data presented on merchant fraud losses assume that acquirers pass on to merchants all of the fraud losses that issuers charge back to acquirers. Data were not collected on fraud losses absorbed by networks, which are assumed to be negligible.

**Figure 18. Average ACS costs per transaction, excluding issuer fraud losses over time, by transaction category**

for more than half of overall fraud in 2019, and its burden fell more heavily on merchants, who covered almost three-fourths of all CNP fraud in 2019, as illustrated in the second panel of figure 17. Third, merchants absorbed an increasing share of losses across all transaction categories and fraud types in 2019 relative to 2011. The largest increase in the burden of fraud losses absorbed by merchants was due to single-message transactions. Their share of fraud losses absorbed in this transaction category increased from 2.0 percent in 2011 to 30.2 percent in 2019.

Focusing on the composition of fraud losses in 2019, the share of losses absorbed by merchants versus issuers varied significantly across transaction categories and types of fraud. At one extreme, merchants absorbed 30.2 percent of losses on single-message transactions, with issuers absorbing 59.4 percent. At the other extreme, merchants absorbed 71.6 percent of CNP fraud losses, whereas issuers absorbed just 18.9 percent. By comparison, fraud losses absorbed by cardholders were similar across all categories of transactions and types of fraud in 2019, ranging from 6.5 to 10.4 percent.

## Issuer Costs

Like fraud data presented in the previous section, issuer cost data presented in this section come from the DCI survey and, therefore, apply only to covered issuers. Figure 18 presents average per-transaction ACS costs over time for different transaction categories.<sup>35</sup> Overall, average costs for all transactions

<sup>35</sup> Unless otherwise noted, the average of ACS costs in this section is calculated on a transaction-weighted basis and excludes issuer fraud losses. The average cost per transaction reflects data from all covered issuers who reported their total ACS costs in the DCI survey. Only a subset of those issuers reported a breakdown of their ACS costs across cost categories. (Table 13 shows both sets of averages). These cost categories include transaction-monitoring costs, in-house costs, third-party processing fees, network processing fees, and fraud losses. Fraud losses, which generally result from an issuer's authorization, clearance, or settlement of a particular transaction that later turns out to be fraudulent, are addressed in the previous section of this report and are not included in the issuer ACS costs reported here unless noted otherwise. Issuers were instructed not to include costs related to corporate overhead, account relationships, rewards programs, nonsufficient-funds handling, nonsufficient-funds losses, cardholder inquiries, card produc-

gradually decreased over time, nearly halving from \$0.077 in 2009 to \$0.039 in 2019. Looking across transaction categories, in 2019 the average ACS cost of a prepaid card transaction (\$0.076) was nearly twice the cost of a dual-message debit transaction (\$0.042) and nearly three times the cost of a single-message debit transaction (\$0.027). This relationship, with prepaid card transactions being the most costly and single-message transactions being the least costly, did not change after 2009. Nonetheless, the difference between the transaction categories shrank substantially as costs declined from 2009 to 2019. In particular, the highest-cost category (prepaid) exhibited the largest decline of over 70 percent from 2009 to 2019, while the lowest-cost category (single-message) saw the smallest decline of just over 40 percent over the same period.

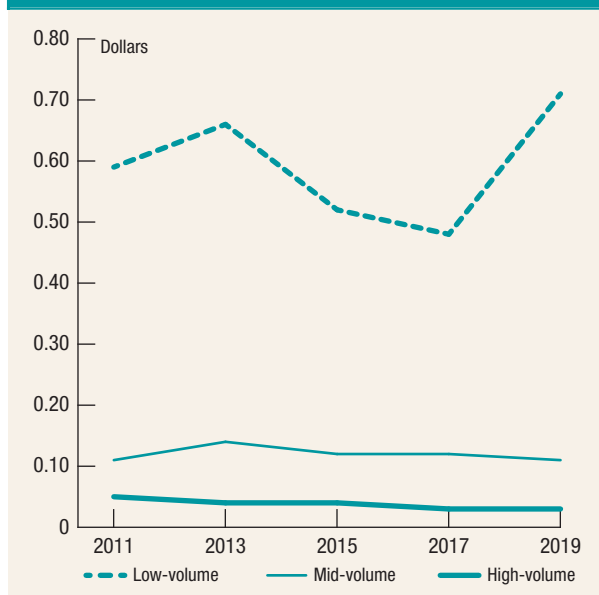
Figure 19 presents the average ACS costs over time by issuer size. Overall, for all years issuers who processed more transactions consistently had lower per-transaction ACS costs on average.<sup>36</sup> In 2019, the average ACS cost for mid-volume issuers (\$0.107)

---

tion and delivery, fraud-prevention costs that are not incurred as part of authorization, costs associated with funds loads (or deposits), or costs of account set-up and maintenance. Issuers were instructed to include costs for purchase transactions, chargebacks, and other non-routine transactions.

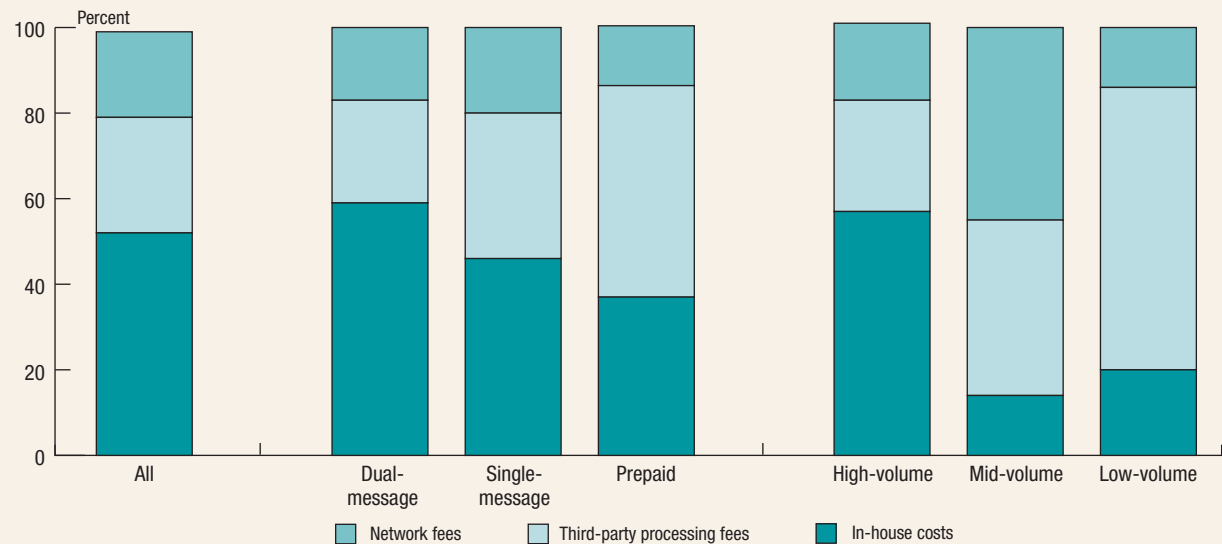
<sup>36</sup> Breakdown by issuer volume is not available for 2009 data. As in the earlier discussion of the composition of covered issuers by transaction volume, high-volume issuers are defined as those that process more than 100 million debit card transactions annually, mid-volume issuers as those that process between 1 million and 100 million debit card transactions, and low-volume issuers as those that process fewer than 1 million debit card transactions.

**Figure 19. Average ACS costs per transaction, excluding issuer fraud losses over time, by issuer size**



was over three times higher than the cost for high-volume issuers (\$0.035), whereas the cost for low-volume issuers (\$0.711) was more than 20 times higher than the cost for high-volume issuers. Although average per-transaction ACS cost increased overall from 2017 to 2019 for low-volume issuers, average ACS costs were fairly steady for both mid- and high-volume issuers.

Figure 20 illustrates the breakdown of ACS costs in 2019 across three categories: (a) in-house costs, (b) third-party processing fees, and (c) network

**Figure 20. Composition of average ACS costs, excluding issuer fraud losses, in 2019, by transaction category and issuer size**

Note: Key describes bars in order from top to bottom. Breakdown excludes costs of transaction monitoring, which were not allocated to in-house costs and third-party processing fees.

fees.<sup>37</sup> Overall, in-house costs constituted more than half of total ACS costs, at 52 percent. Third-party processing fees constituted 27 percent, while network fees made up the rest. The split, especially between in-house costs and third-party processing fees, varied across transaction categories and issuer sizes. In particular, while in-house costs constituted almost 60 percent of total costs for dual-message transactions, they made up less than 40 percent of costs for prepaid-card transactions. Instead, third-party processing fees constituted 49 percent of costs for prepaid cards, more than twice the share for dual-message transactions. By contrast, network fees' share of total costs was relatively consistent across the different transaction categories. Across issuer sizes, in-house costs constituted the highest share of

total costs for high-volume issuers, network fees constituted the highest share of total costs for mid-volume issuers, and third-party processing fees constituted the highest share of total costs for low-volume issuers. As documented in table 14 of historical data, these patterns did not change markedly after 2009.<sup>38</sup>

Figure 21 illustrates how in 2019 the average per-transaction ACS costs compared with other costs borne by issuers that are directly related to their debit card activities. Overall, per-transaction ACS costs constituted around one-third of average debit card costs, including issuer fraud losses. From among all types of costs, ACS costs varied most across transaction categories and, in particular, across issuer volume tiers.

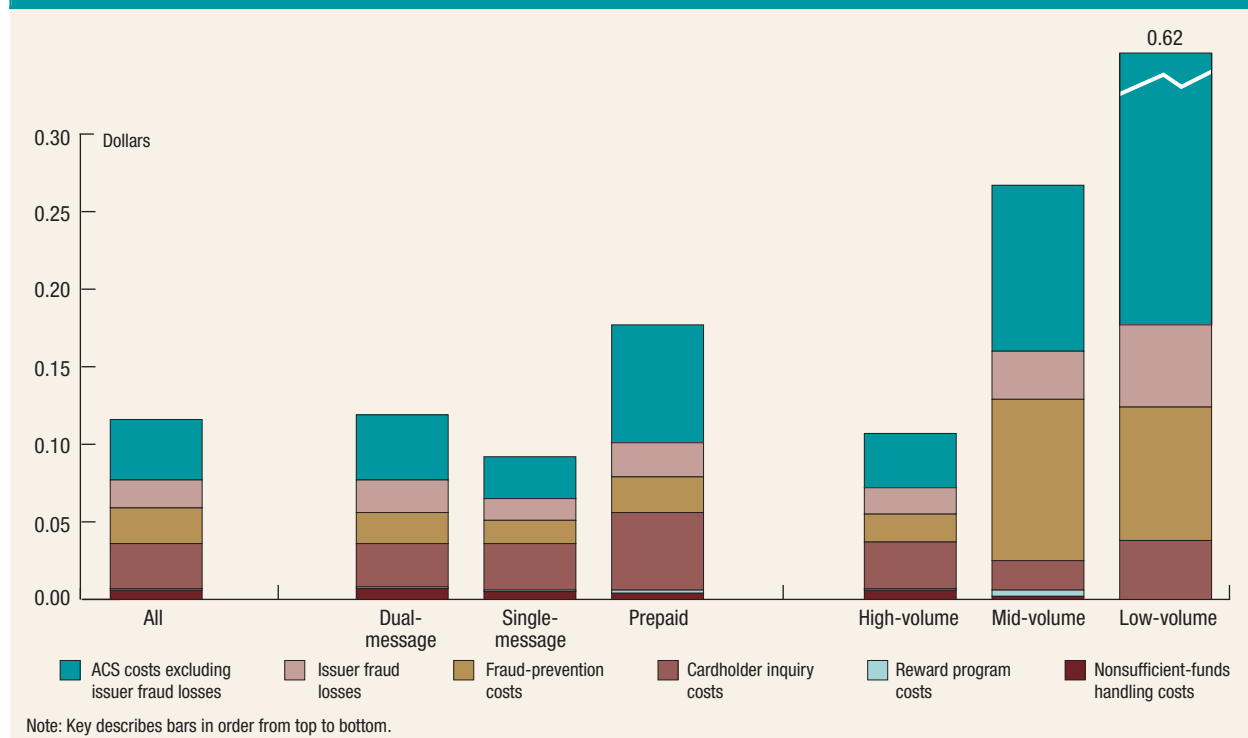
Fraud-prevention costs also varied substantially across issuer volume tiers.<sup>39</sup> However, unlike the

<sup>37</sup> In-house costs are ACS costs that are not outsourced to third parties and include costs incurred by the card issuer or its affiliated processor (that is, a processor in the same holding company). Third-party processing fees are fees paid to external service providers for services related to the authorization, clearance, and settlement of debit card transactions that are performed by those service providers on behalf of the debit card issuer. Service providers may include payment card networks or affiliates of payment card networks to the extent that such parties provide optional services related to transaction processing. They do not include other fees charged by a payment card network or an affiliated processor for services that are required for the network processing of transactions. The 2019 DCI survey did not request that transaction-monitoring costs be broken out into in-house costs and third-party processing fees. As a result, the breakdown of costs into in-house costs, third-party processing fees, and network fees does not include transaction-monitoring costs.

<sup>38</sup> Historical data can be found on the Federal Reserve Board's website at <https://www.federalreserve.gov/paymentsystems/regii-data-collections.htm>. The breakdown by issuer size has only been collected since 2011; all other data have been collected since 2009.

<sup>39</sup> Fraud-prevention and data security costs are costs related to activities aimed at identifying and preventing debit card fraud; costs related to the monitoring of the incidence of, reimbursements received for, and losses incurred from debit card fraud; costs related to responding to suspected and realized debit card fraud in order to prevent or limit losses; costs incurred in securing the data processing and communications infrastructure of

Figure 21. Composition of issuer costs per transaction, in 2019, by transaction category and issuer size



clear negative relationship exhibited between ACS costs and issuer volume, fraud-prevention costs and issuer volume were less highly correlated. In particular, while fraud-prevention costs for mid-volume issuers (\$0.104) were nearly six times higher than for high-volume issuers (\$0.018), they were also higher than for low-volume issuers (\$0.086). Issuer fraud losses were slightly higher for dual-message and prepaid transactions than for single-message transactions and were considerably higher for low-volume issuers than for high-volume and mid-volume issuers. Cardholder inquiry costs were similar between single- and dual-message transactions and highest for prepaid transactions; by volume, these costs were highest for low-volume issuers and lowest for mid-volume issuers. By contrast, nonsufficient-funds handling costs were highest for dual-message transactions and high-volume issuers and lowest for prepaid transactions and low-volume issuers. Reward program costs varied from \$0.000 to \$0.004 across categories but were generally a negligible component of average issuer costs per transaction, constituting less than 0.01 percent of overall debit card costs.<sup>40</sup>

debit card operations; and costs incurred in the development or improvement of fraud-prevention technologies.

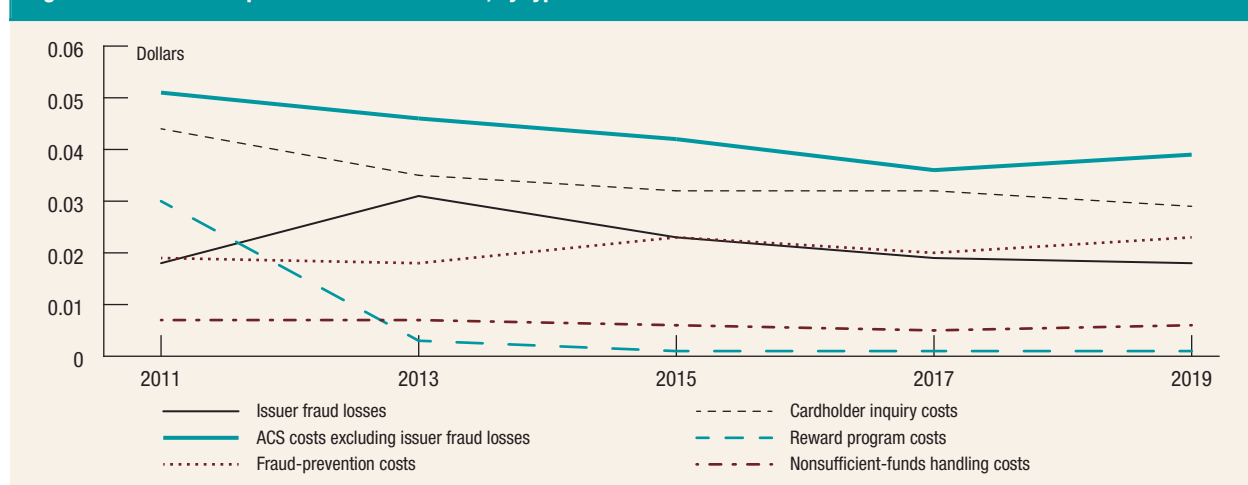
<sup>40</sup> Costs associated with cardholder inquiries include costs associated with cardholder communication with a debit card issuer

Figure 22 illustrates how average per-transaction ACS costs and other costs borne by issuers changed over time. Overall, the total issuer per-transaction cost gradually decreased from \$0.17 in 2011 to \$0.12 in 2019.<sup>41</sup> After 2015, the average per-transaction cost for every type of cost was largely stable, with small changes from year to year. After Regulation II took effect, ACS costs, cardholder inquiry costs, and reward program costs declined, whereas issuer fraud losses first increased, then progressively decreased to their 2011 levels. By contrast, fraud-prevention costs and nonsufficient-funds handling costs remained broadly stable after 2011.

related to specific debit card transactions, such as inquiries about transactions details, errors, and potential fraudulent activity. These communications do not include inquiries that are not related to specific debit card transactions, such as inquiries related to account balances, rewards programs, credit card transactions, and ATM transactions. Rewards and other incentives costs are incentive payments given to cardholders as a result of particular debit card transactions. Costs associated with nonsufficient-funds handling are the costs of handling events in which an account does not have enough funds to settle an authorized debit card transaction between the time of authorization of that transaction and the settlement of that transaction.

<sup>41</sup> The per-transaction cost for each year can also be calculated from the historical tables for table 14, available on the Federal Reserve Board's website at <https://www.federalreserve.gov/paymentsystems/regii-data-collections.htm>.

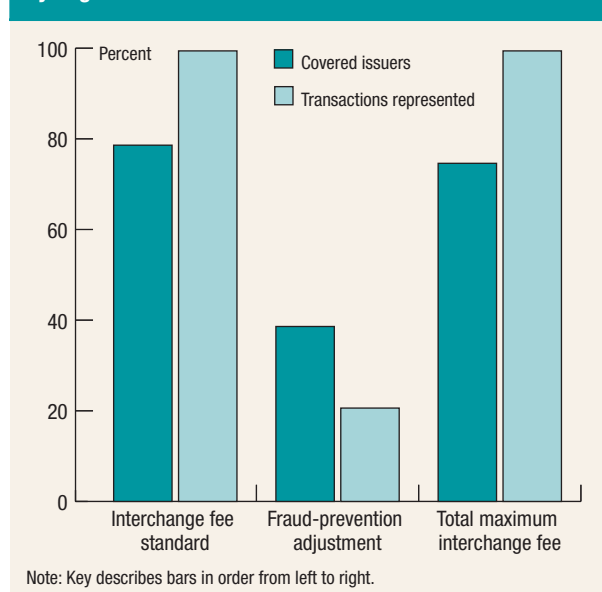
**Figure 22. Issuer costs per transaction over time, by type of cost**



The first two columns in figure 23 show the percentage of covered issuers and transactions for which the sum of ACS costs and issuer fraud losses was less than or equal to the interchange fee permitted by the interchange fee standard. In particular, the percentage of issuers with per-transaction ACS costs, including issuer fraud losses, less than or equal to the permissible amount was 78.6 percent in 2019, up from 76.0 percent in 2017, as shown in table 15. In 2019, transactions associated with these issuers represented 99.4 percent of the total, down from

99.7 percent in 2017, as shown in table 15. The difference between the percentage of issuers under the maximum and percentage of transactions under the maximum reflects the fact that issuers under the maximum processed, on average, more transactions than issuers above the maximum.

**Figure 23. Percentage of covered issuers and transactions with ACS costs, including fraud issuer losses, and fraud prevention costs in 2019 below the maximums permitted by Regulation II**



As figure 23 further shows, the percentages of both covered issuers and covered transactions with per-transaction fraud-prevention costs below the one cent permitted by the fraud-prevention adjustment were substantially lower than those for which per-transaction ACS costs, including issuer fraud losses, were lower than the interchange fee standard. In 2019, 38.6 percent of covered issuers representing 20.6 percent of covered transactions had fraud-prevention costs less than or equal to \$0.01. These values correspond to an increase of 0.4 and 3.0 percentage points, respectively, compared with 2017.<sup>42</sup>

Finally, as shown in the final part of figure 23 and table 15, when combined ACS costs, issuer fraud losses, and fraud-prevention costs are compared to the total amount allowed by the interchange fee standard plus the fraud-prevention adjustment, 74.6 percent of covered issuers, representing 99.4 percent of covered transactions, had combined costs lower than the total permissible interchange fee in 2019. As with the percentages of issuers and transactions below the individual components of the maximum amount, these percentages remained largely unchanged after 2017.

<sup>42</sup> This analysis assumes all covered issuers are eligible for the fraud-prevention adjustment.

# Appendix: Tables

**Table 1. Non-prepaid and prepaid transactions, 2019**

Transactions	Number (billions)	Percent	Value (\$ billions)	Percent	Average (\$)
<b>All transactions</b>	<b>79.23</b>		<b>3,104.73</b>		<b>39.19</b>
Non-prepaid debit card	73.83	93.19	2,912.16	93.80	39.45
Prepaid card	5.23	6.60	185.35	5.97	35.47
Dual-message networks	51.80	65.38	2,072.28	66.75	40.01
Non-prepaid debit card	48.10	92.87	1,937.63	93.50	40.28
Prepaid card <sup>1</sup>	3.69	7.13	134.66	6.50	36.47
Single-message networks	27.43	34.62	1,032.44	33.25	37.64
Non-prepaid debit card	25.73	93.78	974.54	94.39	37.88
Prepaid card <sup>1</sup>	1.53	5.59	50.69	4.91	33.06

<sup>1</sup> Prepaid card transactions were not reported by network type in 2009. Values and volumes of prepaid card transactions in 2009 by network type are estimated using the proportion of prepaid card transactions by network type for each network in 2011.

**Table 2. Card-present and card-not-present transactions, 2019**

Transactions	Number (billions)	Percent	Value (\$ billions)	Percent	Average (\$)
<b>All transactions<sup>1</sup></b>	<b>79.23</b>		<b>3,104.73</b>		<b>39.19</b>
Card-present	61.18	77.22	1,997.30	64.33	32.65
Card-not-present	18.05	22.78	1,107.43	35.67	61.36
Dual-message networks <sup>1</sup>	51.80	65.38	2,072.28	66.75	40.01
Card-present	34.82	67.23	1,014.76	48.97	29.14
Card-not-present	16.97	32.77	1,057.52	51.03	62.31
Single-message networks <sup>1</sup>	27.43	34.62	1,032.44	33.25	37.64
Card-present	26.36	96.08	982.54	95.17	37.28
Card-not-present	1.07	3.92	49.91	4.83	46.46

<sup>1</sup> Prepaid card transactions are included under both dual-message and single-message networks.

**Table 3. Covered and exempt debit card transactions, 2019**

Transactions	Number (billions)	Percent	Value (\$ billions)	Percent	Average (\$)
<b>All transactions</b>	<b>79.23</b>		<b>3,104.73</b>		<b>39.19</b>
Covered transactions	49.89	62.98	2,000.83	64.44	40.10
Non-prepaid	49.62	99.44	1,992.68	99.59	40.16
Prepaid	0.28	0.56	8.15	0.41	29.26
Exempt transactions	29.33	37.02	1,103.90	35.56	37.64
Non-prepaid	24.38	83.13	926.70	83.95	38.01
Prepaid	4.95	16.87	177.20	16.05	35.82
Covered issuer	1.59	32.19	59.16	33.39	37.15
Exempt issuer	3.35	67.81	118.03	66.61	35.19
Dual-message networks	51.80		2,072.28		40.01
Covered transactions	32.42	62.60	1,327.01	64.04	40.93
Non-prepaid	32.19	99.29	1,320.25	99.49	41.01
Prepaid	0.23	0.71	6.76	0.51	29.37
Exempt transactions	19.37	37.40	745.27	35.96	38.47
Non-prepaid	15.91	82.13	617.38	82.84	38.80
Prepaid	3.46	17.87	127.89	17.16	36.94
Covered issuer	1.15	33.16	43.80	34.24	38.14
Exempt issuer	2.31	66.84	84.10	65.76	36.34
Single-message networks	27.43		1,032.44		37.64
Covered transactions	17.47	63.70	673.82	65.26	38.57
Non-prepaid	17.42	99.72	672.43	99.79	38.59
Prepaid	0.05	0.28	1.39	0.21	28.70
Exempt transactions	9.96	36.30	358.63	34.74	36.01
Non-prepaid	8.47	85.09	309.33	86.25	36.50
Prepaid	1.48	14.91	49.30	13.75	33.20
Covered issuer	0.44	29.93	15.37	31.17	34.58
Exempt issuer	1.04	70.07	33.93	68.83	32.61

**Table 4. Interchange fee revenue, 2019**

Transactions	Interchange fee revenue (\$ billions)	Percent	Fee per transaction (\$) <sup>1</sup>	Fee as % of transaction value <sup>1</sup>
<b>All transactions</b>	<b>24.31</b>		<b>0.31</b>	<b>0.78</b>
Non-prepaid debit card	21.70	89.27	0.29	0.75
Prepaid card	2.57	10.56	0.49	1.39
Dual-message networks	17.68	72.73	0.34	0.85
Non-prepaid debit card	15.52	87.81	0.32	0.80
Prepaid card <sup>2</sup>	2.15	12.19	0.58	1.60
Single-message networks	6.63	27.27	0.24	0.64
Non-prepaid debit card	6.17	93.16	0.24	0.63
Prepaid card <sup>2</sup>	0.41	6.22	0.27	0.81

<sup>1</sup> Interchange fee revenue is divided by the number or value of purchase transactions. In the 2009 data report, interchange fee revenue was divided by the number or value of purchase transactions net of returns.

<sup>2</sup> The distribution of interchange fee revenue from prepaid card transactions between dual-message and single-message networks in 2009 is estimated based on 2011 proportions.

**Table 5. Interchange fee revenue from covered and exempt debit card transactions, 2019**

Transactions	Interchange fee revenue (\$ billions)	Percent	Fee per transaction (\$) <sup>1</sup>	Fee as % of transaction value <sup>1</sup>
<b>All transactions</b>	<b>24.31</b>		<b>0.31</b>	<b>0.78</b>
Covered transactions	11.30	46.51	0.23	0.56
Non-prepaid	11.25	99.49	0.23	0.56
Prepaid	0.06	0.51	0.20	0.70
Exempt transactions	13.00	53.49	0.44	1.18
Non-prepaid	10.49	80.69	0.43	1.13
Prepaid	2.51	19.31	0.51	1.42
Covered issuer	0.82	32.57	0.51	1.38
Exempt issuer	1.69	67.43	0.50	1.43
Dual-message networks	17.68		0.34	0.85
Covered transactions	7.17	40.54	0.22	0.54
Non-prepaid	7.12	99.36	0.22	0.54
Prepaid	0.05	0.64	0.20	0.68
Exempt transactions	10.51	59.46	0.54	1.41
Non-prepaid	8.40	79.93	0.53	1.36
Prepaid	2.11	20.07	0.61	1.65
Covered issuer	0.71	33.87	0.62	1.63
Exempt issuer	1.39	66.13	0.60	1.66
Single-message networks	6.63		0.24	0.64
Covered transactions	4.14	62.41	0.24	0.61
Non-prepaid	4.13	99.72	0.24	0.61
Prepaid	0.01	0.28	0.23	0.82
Exempt transactions	2.49	37.59	0.25	0.69
Non-prepaid	2.09	83.9	0.25	0.68
Prepaid	0.40	16.1	0.27	0.81
Covered issuer	0.10	25.79	0.23	0.67
Exempt issuer	0.30	74.21	0.29	0.88

<sup>1</sup> Interchange fee revenue is divided by the number or value of purchase transactions.



**Table 6. Payments and incentives paid by networks, 2019**

Recipients	Payments and incentives (\$ billions)	Percent	Payment per transaction (\$) <sup>1</sup>	Payment as % of transaction value <sup>1</sup>
<b>All recipients</b>	<b>2.45</b>		<b>0.031</b>	<b>0.08</b>
Paid to merchants/acquirers	1.25	50.87	0.016	0.04
Paid to issuers	1.20	49.13	0.015	0.04
Dual-message networks <sup>2</sup>	2.08	84.96	0.040	0.10
Paid to merchants/acquirers	0.97	46.39	0.019	0.05
Paid to issuers	1.12	53.61	0.022	0.05
Single-message networks <sup>2</sup>	0.37	15.04	0.013	0.04
Paid to merchants/acquirers	0.28	76.16	0.010	0.03
Paid to issuers	0.09	23.84	0.003	0.01

<sup>1</sup> Payments and incentives are divided by the number or value of purchase transactions. In the 2009 data report, payments and incentives were divided by the number or value of purchase transactions plus returns.

<sup>2</sup> The distribution of payments and incentives paid on prepaid card transactions between dual-message and single-message networks in 2009 is estimated based on 2011 proportions.

**Table 7. Payments and incentives paid to issuers by networks, 2019**

Issuers	Payments and incentives (\$ billions)	Percent	Payment per transaction (\$) <sup>1</sup>	Payment as % of transaction value <sup>1</sup>
<b>All issuers</b>	<b>1.20</b>		<b>0.015</b>	<b>0.04</b>
Covered issuers	0.55	45.46	0.011	0.03
Exempt issuers	0.66	54.54	0.024	0.06
Dual-message networks	1.12	92.70	0.022	0.05
Covered issuers	0.52	46.38	0.015	0.04
Exempt issuers	0.60	53.62	0.033	0.09
Single-message networks	0.09	7.30	0.003	0.01
Covered issuers	0.03	33.86	0.002	0.00
Exempt issuers	0.06	66.14	0.006	0.02

<sup>1</sup> Payments and incentives are divided by the number or value of purchase transactions. In the 2009 data report, payments and incentives were divided by the number or value of purchase transactions plus returns.

**Table 8. Network fees, 2019**

Recipients	Network fee payments (\$ billions)	Percent	Fee per transaction (\$) <sup>1</sup>	Fee as % of transaction value <sup>1</sup>
<b>All recipients</b>	<b>8.26</b>		<b>0.104</b>	<b>0.27</b>
Paid by acquirers	5.32	64.42	0.067	0.17
Paid by issuers	2.94	35.58	0.037	0.09
Dual-message networks <sup>2</sup>	6.72	81.35	0.130	0.32
Paid by acquirers	4.29	63.85	0.083	0.21
Paid by issuers	2.43	36.15	0.047	0.12
Single-message networks <sup>2</sup>	1.54	18.65	0.056	0.15
Paid by acquirers	1.03	66.90	0.038	0.10
Paid by issuers	0.51	33.10	0.019	0.05

<sup>1</sup> Network fees are divided by the number or value of purchase transactions. In the 2009 data report, network fees were divided by the number or value of purchase transactions plus returns.

<sup>2</sup> The distribution of network fees paid on prepaid card transactions between dual-message and single-message networks in 2009 is estimated based on 2011 proportions.

**Table 9. Network fees paid by issuers, 2019**

Issuers	Network fee payments (\$ billions)	Percent	Fee per transaction (\$) <sup>1</sup>	Fee as % of transaction value <sup>1</sup>
<b>All issuers</b>	<b>2.94</b>		<b>0.037</b>	<b>0.09</b>
Covered issuers	0.83	28.12	0.016	0.04
Exempt issuers	2.11	71.88	0.076	0.20
Dual-message networks	2.43	82.65	0.047	0.12
Covered issuers	0.73	30.07	0.022	0.05
Exempt issuers	1.70	69.93	0.093	0.24
Single-message networks	0.51	17.35	0.019	0.05
Covered issuers	0.10	18.79	0.005	0.01
Exempt issuers	0.41	81.21	0.044	0.12

<sup>1</sup> Network fees are divided by the number or value of purchase transactions. In the 2009 data report, network fees were divided by the number or value of purchase transactions plus returns.

**Table 10. Fraudulent debit card activity reported by covered issuers, 2019**

Transactions	Fraud as percent of purchase transactions <sup>1</sup>	Average loss per fraudulent transaction (dollars) <sup>2</sup>
<b>All transactions</b>	<b>0.08</b>	<b>64.09</b>
Card-not-present fraud	0.05	54.82
Counterfeit fraud	0.02	78.97
Lost and stolen fraud	0.01	78.11
Other fraud	0.00	122.00
Dual-message debit transactions <sup>3</sup>	0.11	58.02
Card-not-present fraud	0.08	54.01
Counterfeit fraud	0.02	65.66
Lost and stolen fraud	0.01	65.49
Other fraud	0.00	91.96
Single-message debit transactions <sup>4</sup>	0.02	131.35
Card-not-present fraud	0.00	79.05
Counterfeit fraud	0.01	143.73
Lost and stolen fraud	0.01	123.58
Other fraud	0.00	194.51
Prepaid transactions	0.12	38.78
Card-not-present fraud	0.08	32.02
Counterfeit fraud	0.03	52.83
Lost and stolen fraud	0.01	48.10
Other fraud	0.00	44.97

<sup>1</sup> Number of fraudulent transactions divided by the total number of purchase transactions.

<sup>2</sup> Total fraud losses to all parties (merchants, cardholders, and issuers) divided by the number of fraudulent transactions.

<sup>3</sup> Dual-message debit transactions are transactions initiated with non-prepaid debit cards processed over dual-message networks.

<sup>4</sup> Single-message debit transactions are transactions initiated with non-prepaid debit cards processed over single-message networks.

**Table 11. 2019 fraud losses reported by covered issuers**

Transactions	All fraud <sup>1</sup>		Card-not-present fraud <sup>2</sup>		Counterfeit fraud		Lost and stolen fraud	
	Loss per transaction (\$) <sup>3</sup>	Loss as share of transaction value (bp) <sup>4</sup>	Loss per transaction (\$) <sup>3</sup>	Loss as share of transaction value (bp) <sup>4</sup>	Loss per transaction (\$) <sup>3</sup>	Loss as share of transaction value (bp) <sup>4</sup>	Loss per transaction (\$) <sup>3</sup>	Loss as share of transaction value (bp) <sup>4</sup>
<b>All transactions</b>	<b>0.050</b>	<b>12.40</b>	<b>0.028</b>	<b>6.93</b>	<b>0.013</b>	<b>3.31</b>	<b>0.007</b>	<b>1.79</b>
Merchant losses	0.028	6.98	0.020	4.96	0.005	1.35	0.002	0.60
Cardholder losses	0.004	1.03	0.003	0.66	0.001	0.24	0.001	0.15
Issuer losses	0.018	4.39	0.005	1.31	0.007	1.72	0.004	1.04
Dual-message debit transactions <sup>5</sup>	0.066	16.16	0.043	10.47	0.014	3.46	0.008	1.85
Merchant losses	0.041	9.97	0.031	7.63	0.007	1.62	0.003	0.64
Cardholder losses	0.005	1.30	0.004	0.94	0.001	0.19	0.001	0.17
Issuer losses	0.020	4.89	0.008	1.89	0.007	1.65	0.004	1.04
Single-message debit transactions <sup>6</sup>	0.022	5.66	0.002	0.50	0.011	2.92	0.006	1.64
Merchant losses	0.007	1.71	0.001	0.14	0.003	0.80	0.002	0.53
Cardholder losses	0.002	0.59	0.001	0.13	0.001	0.34	0.000	0.11
Issuer losses	0.013	3.36	0.001	0.22	0.007	1.78	0.004	1.00
Prepaid transactions	0.048	15.32	0.025	7.55	0.014	4.45	0.007	1.99
Merchant losses	0.024	7.62	0.018	5.60	0.008	2.46	0.003	0.86
Cardholder losses	0.003	0.99	0.001	0.31	0.000	0.01	0.000	0.05
Issuer losses	0.021	6.71	0.005	1.64	0.006	1.98	0.004	1.09

Note: Statistics exclude responses in which the issuer reported issuer fraud losses but was unable to report gross fraud losses. Therefore, statistics may differ from those in table 14, which include responses in which the issuer was able to report only issuer fraud losses.

<sup>1</sup> Card-not-present, counterfeit, and lost and stolen fraud losses do not necessarily sum to all fraud losses. Some fraud losses could not be categorized by issuers into the categories above but are still included under all fraud losses.

<sup>2</sup> Card-not-present fraud losses may also be reported in another second category.

<sup>3</sup> Fraud losses divided by the number of purchase transactions (both fraudulent and non-fraudulent).

<sup>4</sup> Fraud losses divided by the value of purchase transactions (both fraudulent and non-fraudulent).

<sup>5</sup> Dual-message transactions are transactions initiated by non-prepaid debit cards over dual-message networks.

<sup>6</sup> Single-message transactions are transactions initiated by non-prepaid debit cards over single-message networks.

**Table 12. Covered issuers by 2019 volume**

Issuers	Number of covered issuers	Percent	Percent of transactions <sup>1</sup>	Percent of transaction value <sup>1</sup>	Average transaction value (\$) <sup>2</sup>
<b>All covered issuers</b>	<b>131</b>				<b>39.21</b>
High-volume issuers (more than 100 million transactions)	31	23.66	94.04	93.60	39.03
Mid-volume issuers (1–100 million transactions)	63	48.09	5.94	6.37	42.04
Low-volume issuers (fewer than 1 million transactions)	37	28.24	0.02	0.03	73.85

<sup>1</sup> The percentage of the total number or value of covered issuer transactions. Covered issuers represent about 65 percent of all debit card transactions.

<sup>2</sup> Average transaction values in this table are calculated from the Debit Card Issuer survey. Average transaction values reported in tables 1–3 are calculated from the Payment Card Network survey.

**Table 13. Average authorization, clearing, and settlement costs, excluding issuer fraud losses, per transaction (dollars), 2019**

Transactions	All covered issuers	High-volume issuers	Mid-volume issuers	Low-volume issuers
All issuers <sup>1</sup>				
<b>All transactions<sup>2</sup></b>	<b>0.039</b>	<b>0.035</b>	<b>0.107</b>	<b>0.711</b>
Dual-message debit transactions <sup>2</sup>	0.042	0.039	0.117	0.905
Single-message debit transactions <sup>2</sup>	0.027	0.025	0.092	0.973
Prepaid transactions <sup>2, 3</sup>	0.076	0.068	0.431	
Only issuers providing cost breakdown <sup>1</sup>				
<b>All transactions<sup>2</sup></b>	<b>0.036</b>	<b>0.034</b>	<b>0.098</b>	<b>0.596</b>
In-house costs	0.017	0.017	0.012	0.103
Third-party processing fees	0.009	0.008	0.036	0.349
Network fees	0.007	0.005	0.039	0.075
Dual-message debit transactions <sup>2, 3</sup>	0.040	0.039	0.094	1.107
In-house costs	0.021	0.021	0.010	0.000
Third-party processing fees	0.008	0.008	0.029	1.062
Network fees	0.006	0.006	0.040	0.000
Single-message debit transactions <sup>2, 3</sup>	0.025	0.024	0.090	0.899
In-house costs	0.010	0.010	0.020	0.197
Third-party processing fees	0.007	0.007	0.023	0.570
Network fees	0.004	0.004	0.038	0.047
Prepaid transactions <sup>2, 3</sup>	0.069	0.067	0.196	
In-house costs	0.023	0.023	0.005	
Third-party processing fees	0.031	0.030	0.118	
Network fees	0.009	0.008	0.041	

<sup>1</sup> First set of rows in table reports statistics from transactions processed by all covered issuers, regardless of the level of detail in their cost reporting. Second set of rows reports statistics from transactions including only those issuers that provided a breakdown of their costs by category.

<sup>2</sup> ACS costs include transactions monitoring costs. However, transactions monitoring costs are not included in the breakout into in-house costs and third-party processing fees.

<sup>3</sup> Prepaid figures for low-volume issuers, as well as the breakdown by cost category among low-volume issuers for dual-message, single-message and prepaid transactions, are not reported because of the small number of respondents.

**Table 14. 2019 covered issuer costs per transaction (dollars) and fraud losses as share of transaction value (basis points)**

Transactions	All covered issuers					High-volume issuers				
	Transaction-weighted average	Issuer-weighted average	Issuer percentiles			Transaction-weighted average	Issuer-weighted average	Issuer percentiles		
			25th	50th	75th			25th	50th	75th
<b>All transactions</b>										
ACS costs, excluding fraud losses <sup>1</sup>	0.039	0.645	0.045	0.100	0.161	0.035	0.052	0.026	0.038	0.081
Fraud-prevention costs <sup>2</sup>	0.023	0.156	0.006	0.015	0.039	0.018	0.018	0.006	0.012	0.020
Cardholder inquiry costs <sup>3</sup>	0.029	0.033	0.002	0.011	0.032	0.030	0.019	0.005	0.016	0.031
Reward program costs	0.001	0.004	-	-	-	0.001	0.001	-	-	-
NSF handling costs <sup>4</sup>	0.006	0.003	-	-	0.002	0.006	0.005	0.001	0.002	0.007
Issuer fraud losses	0.018	0.062	0.013	0.020	0.039	0.017	0.017	0.012	0.017	0.021
Dual-message debit transactions <sup>5</sup>										
ACS costs, excluding fraud losses <sup>1</sup>	0.042	0.721	0.040	0.086	0.150	0.039	0.058	0.025	0.038	0.084
Fraud-prevention costs <sup>2</sup>	0.020	0.055	0.006	0.014	0.036	0.020	0.021	0.006	0.013	0.030
Cardholder inquiry costs <sup>3</sup>	0.028	0.022	0.002	0.009	0.030	0.028	0.019	0.006	0.015	0.030
Reward program costs	0.001	0.004	-	-	-	0.001	0.001	-	-	<0.001
NSF handling costs <sup>4</sup>	0.007	0.004	-	<0.001	0.003	0.007	0.006	0.001	0.002	0.007
Issuer fraud losses	0.021	0.073	0.016	0.023	0.047	0.020	0.023	0.015	0.019	0.030
Single-message debit transactions <sup>6</sup>										
ACS costs, excluding fraud losses <sup>1</sup>	0.027		0.024	0.070	0.159	0.025	0.048	0.016	0.032	0.068
Fraud-prevention costs <sup>2</sup>	0.015	0.073	0.005	0.013	0.037	0.015	0.017	0.005	0.010	0.021
Cardholder inquiry costs <sup>3</sup>	0.030	0.027	0.002	0.009	0.033	0.031	0.017	0.004	0.013	0.026
Reward program costs	0.001	0.005	-	-	-	0.001	0.001	-	-	-
NSF handling costs <sup>4</sup>	0.005	0.002	-	-	0.001	0.005	0.004	<0.001	0.001	0.006
Issuer fraud losses	0.014		0.004	0.012	0.031	0.013	0.013	0.004	0.011	0.018
Prepaid transactions <sup>7</sup>										
ACS costs, excluding fraud losses <sup>1</sup>	0.076	2.231	0.045	0.092	0.185	0.068	0.090	0.035	0.064	0.120
Fraud-prevention costs <sup>2</sup>	0.023	0.032	0.005	0.015	0.043	0.022	0.025	0.005	0.013	0.042
Cardholder inquiry costs <sup>3</sup>	0.050	0.824	0.005	0.035	0.127	0.049	0.074	0.009	0.033	0.103
Reward program costs	0.002	<0.001	-	-	-	0.002	0.000	-	-	-
NSF handling costs <sup>4</sup>	0.004	0.002	-	-	0.002	0.005	0.003	-	-	0.004
Issuer fraud losses	0.022	0.030	0.004	0.019	0.036	0.021	0.027	0.009	0.023	0.035
<b>Covered issuer fraud losses (bp)<sup>8</sup></b>	<b>4.48</b>	<b>9.36</b>	<b>3.20</b>	<b>4.40</b>	<b>7.14</b>	<b>4.30</b>	<b>4.50</b>	<b>3.37</b>	<b>4.12</b>	<b>5.45</b>
Dual-message debit transactions <sup>5</sup>	5.04	11.01	3.77	5.39	9.61	4.86	5.76	3.94	4.83	7.02
Single-message debit transactions <sup>6</sup>	3.46	Inf	1.10	2.76	6.95	3.27	3.26	1.12	2.65	4.38
Prepaid transactions <sup>7</sup>	7.17	9.51	1.02	5.79	9.87	7.29	8.81	2.76	7.79	10.11

<sup>1</sup> Authorization, clearing, and settlement costs include transactions monitoring costs and exclude issuer fraud losses, which are reported separately.

<sup>2</sup> Fraud-prevention costs include fraud-related cardholder inquiry costs and exclude transactions monitoring costs, which are counted as part of ACS costs.

<sup>3</sup> Cardholder inquiry costs exclude fraud-related cardholder inquiry costs, which are counted as part of fraud-prevention costs.

<sup>4</sup> Nonsufficient-funds (NSF) handling costs.

<sup>5</sup> Dual-message debit transactions are transactions initiated with non-prepaid debit cards processed over dual-message networks.

<sup>6</sup> Single-message debit transactions are transactions initiated with non-prepaid debit cards processed over single-message networks.

<sup>7</sup> Prepaid figures for low-volume issuers are not reported because of the small number of respondents in this category.

<sup>8</sup> Covered issuer fraud losses for all transactions include covered issuers that could not allocate fraud losses among dual-message debit, single-message debit, and prepaid transactions.

**Table 14. 2019 Covered issuer costs per transaction (dollars) and fraud losses as share of transaction value (basis points)—continued**

Transactions	Mid-volume issuers					Low-volume issuers				
	Transaction-weighted average	Issuer-weighted average	Issuer percentiles			Transaction-weighted average	Issuer-weighted average	Issuer percentiles		
			25th	50th	75th			25th	50th	75th
<b>All transactions</b>										
ACS costs, excluding fraud losses <sup>1</sup>	0.107	0.144	0.062	0.106	0.150	0.711	3.902	0.837	1.143	3.576
Fraud-prevention costs <sup>2</sup>	0.104	0.185	0.006	0.015	0.037	0.086	0.397	0.042	0.095	0.474
Cardholder inquiry costs <sup>3</sup>	0.019	0.025	0.001	0.009	0.032	0.038	0.110	-	-	0.049
Reward program costs	0.004	0.007	-	-	-	-	-	-	-	-
NSF handling costs <sup>4</sup>	0.002	0.001	-	-	<0.001	-	-	-	-	-
Issuer fraud losses	0.031	0.044	0.015	0.024	0.044	0.053	0.221	-	0.016	0.062
Dual-message debit transactions <sup>5</sup>										
ACS costs, excluding fraud losses <sup>1</sup>	0.106	0.173	0.071	0.117	0.163	0.905	6.093	0.993	1.334	3.583
Fraud-prevention costs <sup>2</sup>	0.015	0.023	0.006	0.016	0.031	0.141	0.475	0.072	0.146	0.920
Cardholder inquiry costs <sup>3</sup>	0.018	0.030	0.002	0.009	0.044	0.002	0.005	-	-	-
Reward program costs	0.003	0.008	-	-	-	-	-	-	-	-
NSF handling costs <sup>4</sup>	0.003	0.003	-	-	<0.001	-	-	-	-	-
Issuer fraud losses	0.041	0.059	0.020	0.035	0.061	0.077	0.269	-	0.019	0.077
Single-message debit transactions <sup>6</sup>										
ACS costs, excluding fraud losses <sup>1</sup>	0.092	-	0.047	0.099	0.162	<0.001	3.157	0.798	1.160	3.507
Fraud-prevention costs <sup>2</sup>	0.019	0.076	0.005	0.016	0.045	0.072	0.308	-	0.057	0.110
Cardholder inquiry costs <sup>3</sup>	0.023	0.045	0.002	0.009	0.050	0.034	0.019	-	-	0.038
Reward program costs	0.004	0.010	-	-	-	-	-	-	-	-
NSF handling costs <sup>4</sup>	<0.001	<0.001	-	-	-	-	-	-	-	-
Issuer fraud losses	0.035	-	0.005	0.023	0.068	0.069	0.189	-	0.006	0.062
Prepaid transactions <sup>7</sup>										
ACS costs, excluding fraud losses <sup>1</sup>	0.431	8.119	0.098	0.260	0.824	-	-	-	-	-
Fraud-prevention costs <sup>2</sup>	0.035	0.052	0.003	0.026	0.037	-	-	-	-	-
Cardholder inquiry costs <sup>3</sup>	0.083	3.674	0.001	0.038	0.133	-	-	-	-	-
Reward program costs	-	-	-	-	-	-	-	-	-	-
NSF handling costs <sup>4</sup>	-	-	-	-	-	-	-	-	-	-
Issuer fraud losses	0.051	0.036	0.001	0.011	0.039	-	-	-	-	-
<b>Covered issuer fraud losses (bp)<sup>8</sup></b>	<b>6.82</b>	<b>8.40</b>	<b>3.74</b>	<b>5.10</b>	<b>8.67</b>	<b>6.96</b>	<b>22.92</b>	<b>-</b>	<b>3.31</b>	<b>10.06</b>
Dual-message debit transactions <sup>5</sup>	9.03	12.12	4.01	6.97	11.23	11.75	22.98	-	2.72	12.41
Single-message debit transactions <sup>6</sup>	8.26	Inf	1.27	5.33	15.73	5.96	21.89	-	1.36	4.00
Prepaid transactions <sup>7</sup>	6.27	10.78	0.32	1.12	7.93	-	-	-	-	-

<sup>1</sup> Authorization, clearing, and settlement costs include transactions monitoring costs and exclude issuer fraud losses, which are reported separately.

<sup>2</sup> Fraud-prevention costs include fraud-related cardholder inquiry costs and exclude transactions monitoring costs, which are counted as part of ACS costs.

<sup>3</sup> Cardholder inquiry costs exclude fraud-related cardholder inquiry costs, which are counted as part of fraud-prevention costs.

<sup>4</sup> Nonsufficient-funds (NSF) handling costs.

<sup>5</sup> Dual-message debit transactions are transactions initiated with non-prepaid debit cards processed over dual-message networks.

<sup>6</sup> Single-message debit transactions are transactions initiated with non-prepaid debit cards processed over single-message networks.

<sup>7</sup> Prepaid figures for low-volume issuers are not reported because of the small number of respondents in this category.

<sup>8</sup> Covered issuer fraud losses for all transactions include covered issuers that could not allocate fraud losses among dual-message debit, single-message debit, and prepaid transactions.

**Table 15. Covered issuers with costs/losses below the levels permitted by the interchange fee standard and fraud-prevention adjustment**

Percent

Issuers	2011		2013		2015		2017		2019	
	Covered issuers <sup>1</sup>	Transactions represented <sup>2</sup>	Covered issuers <sup>1</sup>	Transactions represented <sup>2</sup>	Covered issuers <sup>1</sup>	Transactions represented <sup>2</sup>	Covered issuers <sup>1</sup>	Transactions represented <sup>2</sup>	Covered issuers <sup>1</sup>	Transactions represented <sup>2</sup>
<b>All covered issuers</b>										
Total maximum interchange fee <sup>3</sup>	58.40	98.90	58.20	99.40	61.80	99.40	73.96	99.69	74.60	99.39
Interchange fee standard <sup>4</sup>	61.10	99.50	59.10	99.40	64.50	99.50	76.04	99.70	78.57	99.44
Fraud-prevention adjustment <sup>5</sup>	43.10	25.60	37.30	21.00	34.50	16.60	38.24	17.64	38.64	20.62
<b>High-volume issuers</b>										
Total maximum interchange fee <sup>3</sup>	96.70	99.60	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Interchange fee standard <sup>4</sup>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Fraud-prevention adjustment <sup>5</sup>	48.40	23.50	45.50	19.30	34.30	15.20	38.89	16.77	37.21	18.74
<b>Mid-volume issuers</b>										
Total maximum interchange fee <sup>3</sup>	65.40	87.60	62.00	87.10	61.50	84.80	76.60	90.17	74.29	89.15
Interchange fee standard <sup>4</sup>	67.30	90.90	62.00	87.10	67.30	88.70	78.72	90.42	81.43	90.02
Fraud-prevention adjustment <sup>5</sup>	47.50	59.80	40.70	56.20	34.50	48.80	43.14	43.62	42.47	52.19
<b>Low-volume issuers</b>										
Total maximum interchange fee <sup>3</sup>	9.70	33.80	3.60	8.60	8.30	18.70	0.00	0.00	12.50	33.35
Interchange fee standard <sup>4</sup>	12.90	42.10	7.10	8.70	8.30	18.70	7.14	11.95	12.50	33.35
Fraud-prevention adjustment <sup>5</sup>	30.30	38.30	22.60	22.90	34.60	45.90	20.00	15.40	25.00	22.42

<sup>1</sup> Percentage of covered issuers in the relevant category with average ACS costs, including issuer fraud losses, and fraud-prevention costs below the level permitted by the interchange fee standard and the fraud-prevention adjustment. All covered issuers are included, but some of these issuers may not have been eligible for the fraud-prevention adjustment.

<sup>2</sup> Percentage of purchase transactions represented by covered issuers in the relevant category with average ACS costs, including fraud losses, and fraud-prevention costs below the level permitted by the interchange fee standard and the fraud-prevention adjustment. All covered issuer transactions are included although certain prepaid transactions were exempt from the interchange fee standard.

<sup>3</sup> Average ACS costs, including issuer fraud losses, plus fraud-prevention costs per transaction of 22 cents plus 5 basis points of the issuer's average transaction value or less.

<sup>4</sup> Average ACS costs, including issuer fraud losses, per transaction of 21 cents plus 5 basis points of the issuer's average transaction value or less.

<sup>5</sup> Average fraud-prevention costs per transaction of 1 cent or less.

