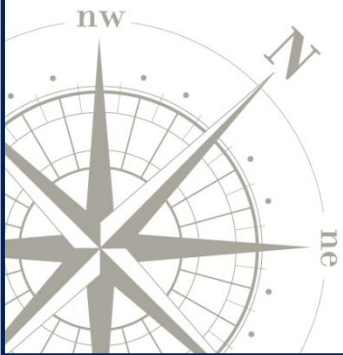


Study of Mobile Banking and Payments

Pays Spotlight



April 2017



Apple Pay, Android Pay, and Samsung Pay—collectively referred to as “the Pays”—have emerged as the early leaders in the mobile wallet space.

Pays Profiles



Launched October 2014	Launched September 2015	Launched August 2015
43% device market share	55% device market share	29% device market share*
1,809 participating issuers	691 participating issuers	867 participating issuers
NFC only	NFC only	NFC & MST
<ul style="list-style-type: none"> • In-store and in-app payments • Added support for store and loyalty cards in June 2015 • Added support for in-browser payments in Sept 2016 • Added charitable donations in November 2016 	<ul style="list-style-type: none"> • In-store and in-app payments • Added support for store and loyalty cards in Aug 2016 • Open NFC antenna and APIs • Announced push provisioning and a partnership with PayPal in April 2017 	<ul style="list-style-type: none"> • In-store and in-app payments • Added support for store and loyalty cards in May 2016 • Introduced Deals and Rewards programs in late 2016

First Annapolis began tracking adoption of the Pays in May 2015, shortly after the launch of Apple Pay; the most recent study findings are based on survey responses from 1,514 smartphone users age 18+ as of January 2017.

The Pays are gaining traction and have established pockets of devoted users, but untapped growth potential remains.

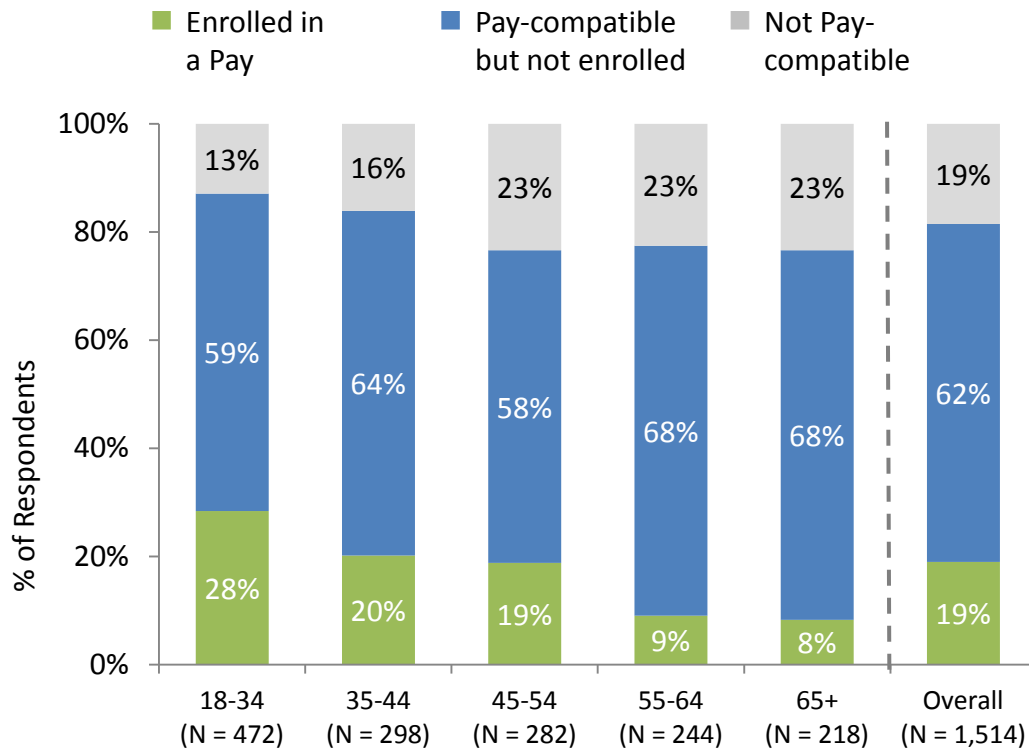
Findings

1. **1 out of 4** respondents with a Pay-compatible device have enrolled in a Pay service.
2. **Apple Pay** is the **most established** of the three Pays, with the highest awareness and enrollment levels, and the most established user base.
3. Most Pay users (**81%**) are **repeat users**, but their use is inconsistent.
 - **14%** say they try to use their Pay **wherever it is accepted**.
 - **28%** of repeat users are **frequent users** who use their Pay at least once a week.
4. The majority of Pays users (**80%**) have used their Pay to make an **in-store purchase**, and half say they have made an in-app purchase.
 - **Grocery stores, fast food/casual dining, and main line retail locations** are the most commonly cited venues for in-store purchases.
 - More than half of Pay users have added more than one card to their Pay wallet, with an average of **1.9 cards per user**.
5. Pay users tend to skew **male** and **younger**, with higher concentrations of **middle income** and **urban** respondents than the overall sample.
6. User **satisfaction levels are high**, but many consumers would prefer a mobile wallet provided **by their bank** rather than their device manufacturer.

Four out of five respondents now have a Pays-compatible device, and one out of five have enrolled in one or more Pay service.

Pay-Compatibility* & Enrollment by Age

N = 1,514



% of Compatible Devices	18-34 (N = 472)	35-44 (N = 298)	45-54 (N = 282)	55-64 (N = 244)	65+ (N = 218)	Overall (N = 1,514)
	33%	24%	25%	12%	11%	23%

Notes

- Younger consumers are most likely to have a Pays-compatible smart phone and to have enrolled in a Pay.
 - 87% of those under 35 have a Pays-compatible device.
 - Of those, 33% have enrolled in a Pays service.
- More than 70% of respondents within each age segment has a Pays-compatible smartphone.
- Penetration of Pays as a percentage of compatible devices decreases among more mature age segments:
 - 25% of those age 45-54 who have a Pays-compatible device have enrolled, compared to 11% of those 65+.

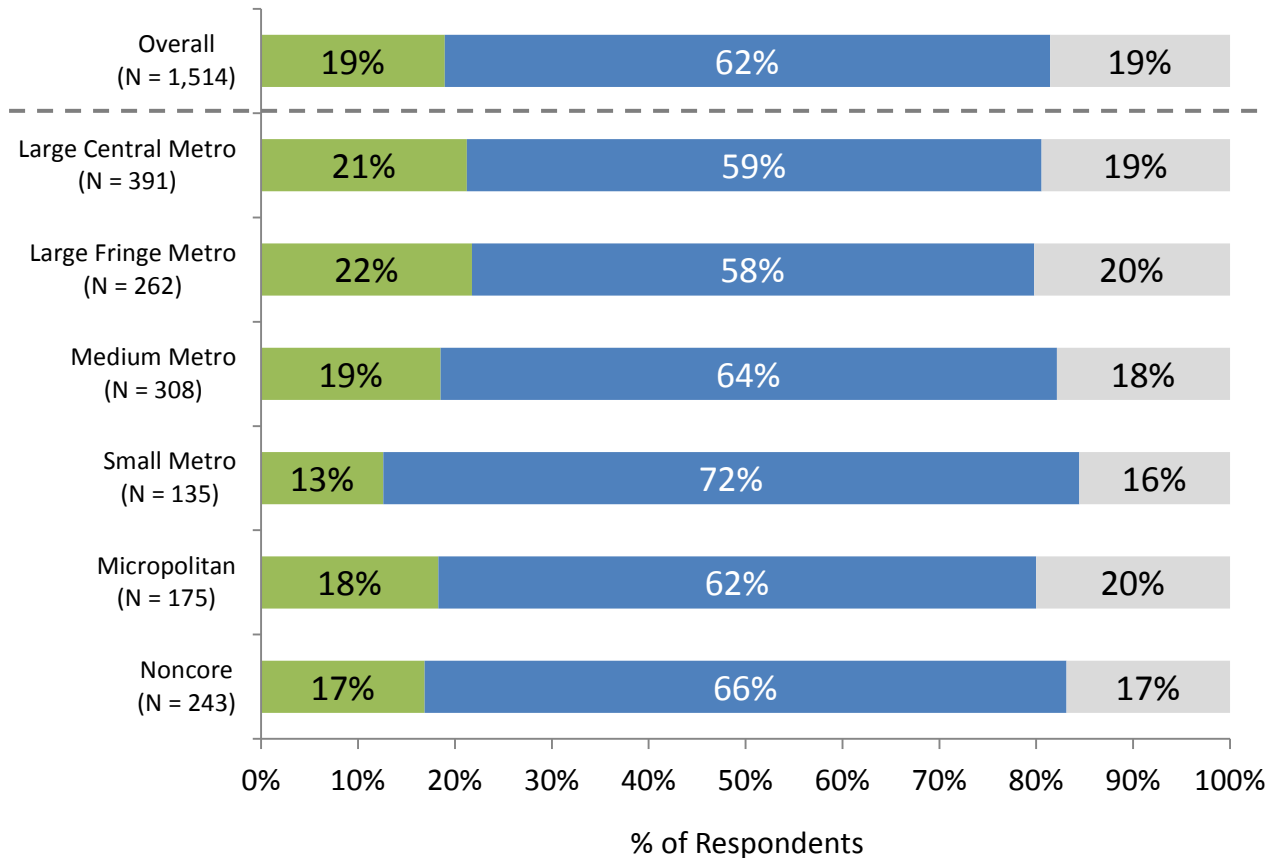
Enrollment is highest among younger consumers, but not insignificant among more mature segments.

Device compatibility and Pays enrollment are relatively consistent among smartphone users in urban and rural areas.

Pay-Compatibility & Enrollment by Urban Classification*

■ Enrolled in a Pay ■ Pay-compatible but not enrolled ■ Not Pay-compatible enrolled

More Urban
↑
↓
More Rural



Our hypothesis that Pays enrollment would be significantly higher among respondents in more urban markets proved to be unfounded.

*Urban vs. rural classifications were defined at the county level (based on respondents' zip codes) using the CDC's 2013 NCHS Urban-Rural Classification Scheme for Counties (https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf); survey sample is in-line with U.S. census distributions.

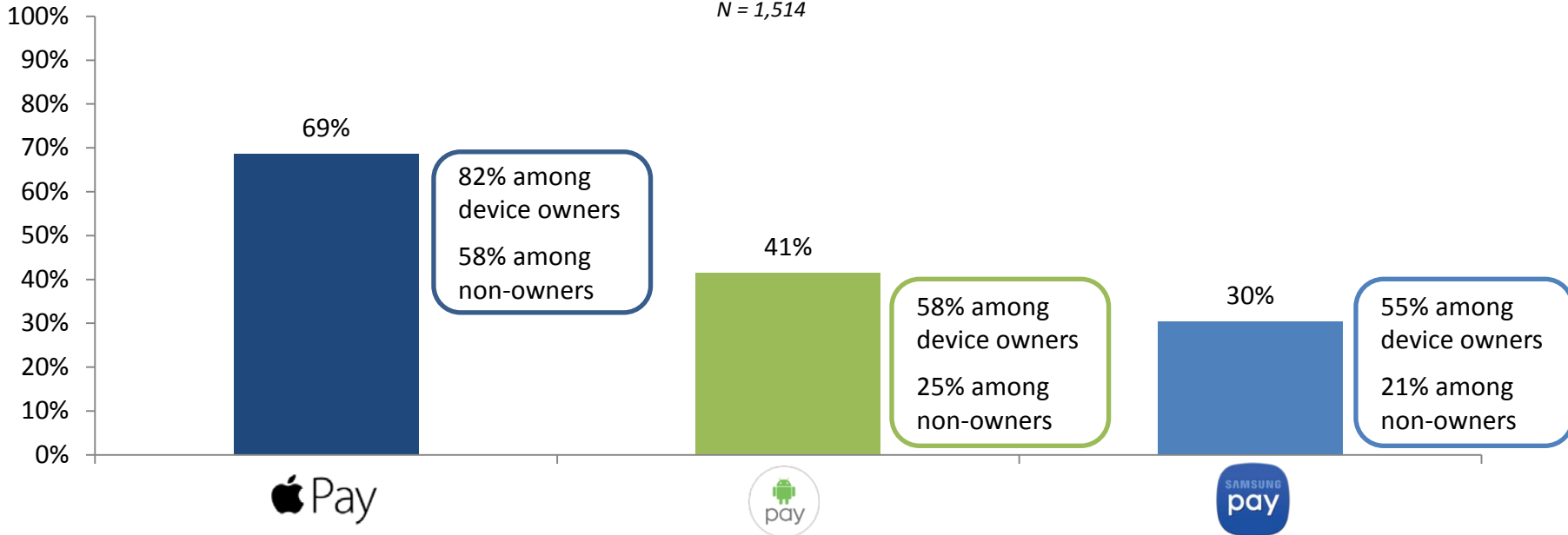
Note, survey results are based on smartphone users only; variations in smartphone penetration between urban and rural areas are not reflected in this data

Apple Pay has the highest awareness of all the Pays; awareness of Android Pay and Samsung Pay is lower, even among Android and Samsung device owners.

Awareness

“Which of the following mobile payment applications/services have you heard of?”

N = 1,514



18 – 34	70%	49%	36%
35 – 44	73%	46%	35%
45 – 54	67%	41%	28%
55-64	67%	31%	25%
65+	64%	30%	20%

Awareness of the Pays tends to be highest among younger consumers.

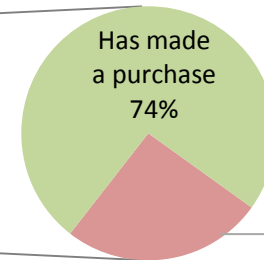
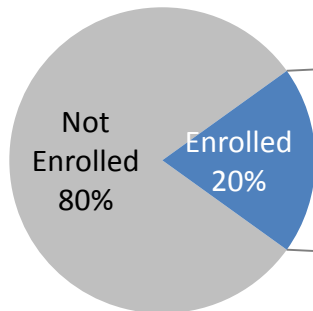
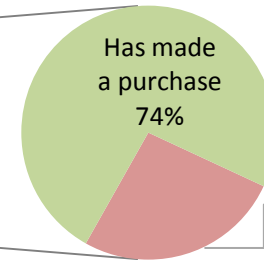
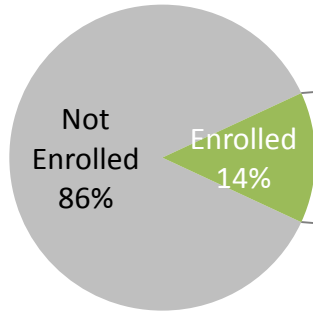
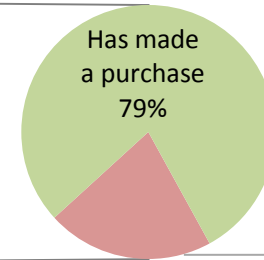
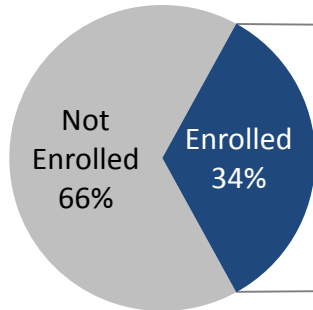
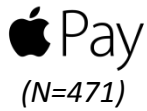
Apple has the highest penetration of compatible devices; trial usage rates are similar across the Pays, with 75-80% of those enrolled having used their Pay to make a purchase.

Pay Enrollment

"Have you enrolled in Apple Pay/Android Pay/Samsung Pay?"

Purchase Activity

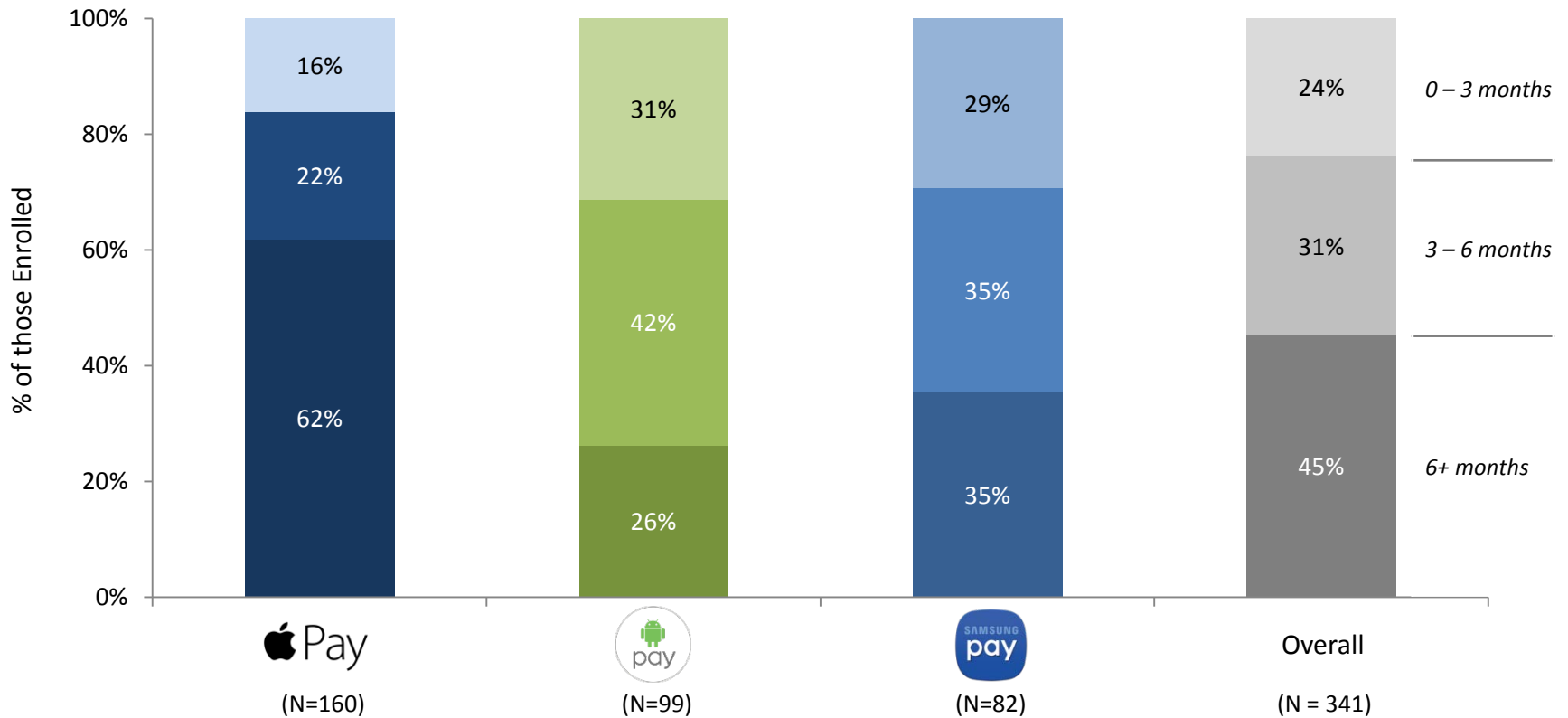
"Have you made a purchase using Apple Pay/Android Pay/Samsung Pay?"



Nearly half (45%) of Pay users have been enrolled in the service for 6 months or longer.

Length of Enrollment

“How long have you been enrolled in Apple Pay/Android Pay/Samsung Pay?”

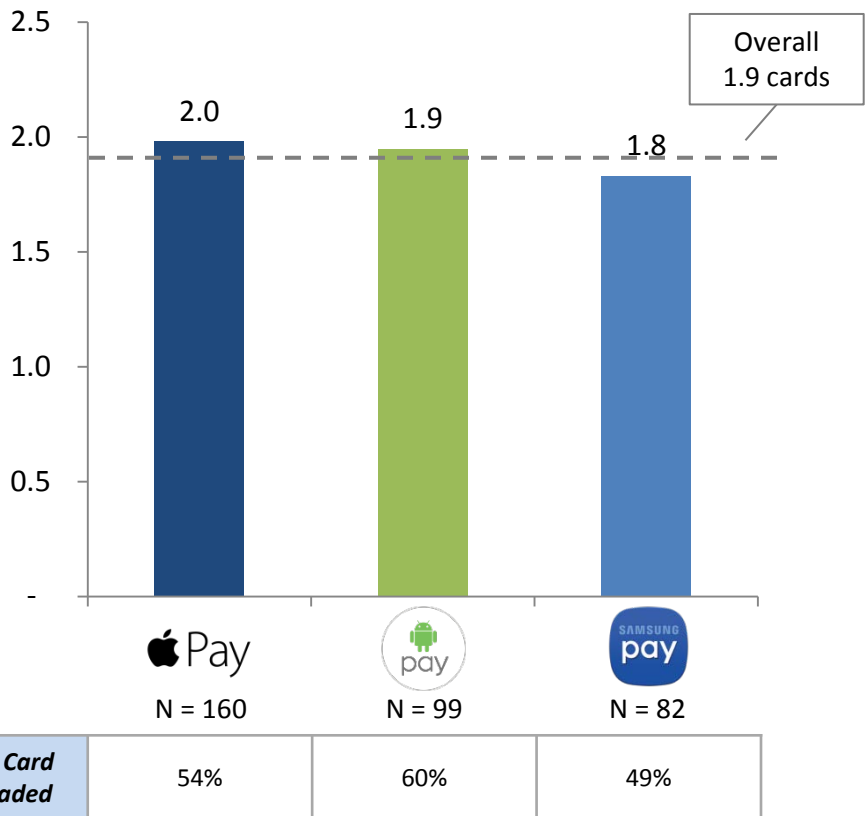


Apple Pay users are the most tenured: two-thirds have been enrolled for more than 6 months, compared to one-third of Samsung Pay users and one-quarter of Android Pay users

More than half of Pay users have added more than one card to their Pay wallet, with an average of 1.9 cards per user.

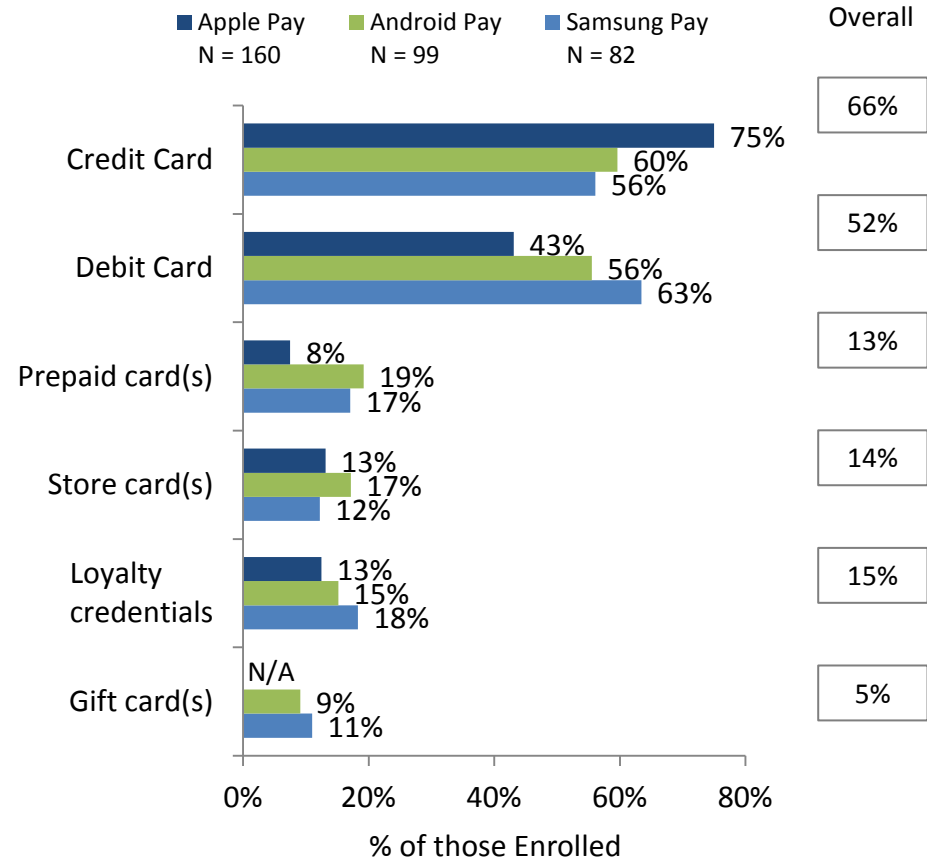
Average Cards Loaded

“How many different cards have you loaded into Apple Pay/Android Pay/Samsung Pay?”



Types of Cards Loaded

“Which types of card(s) have you loaded into Apple Pay/Android Pay/Samsung Pay?”

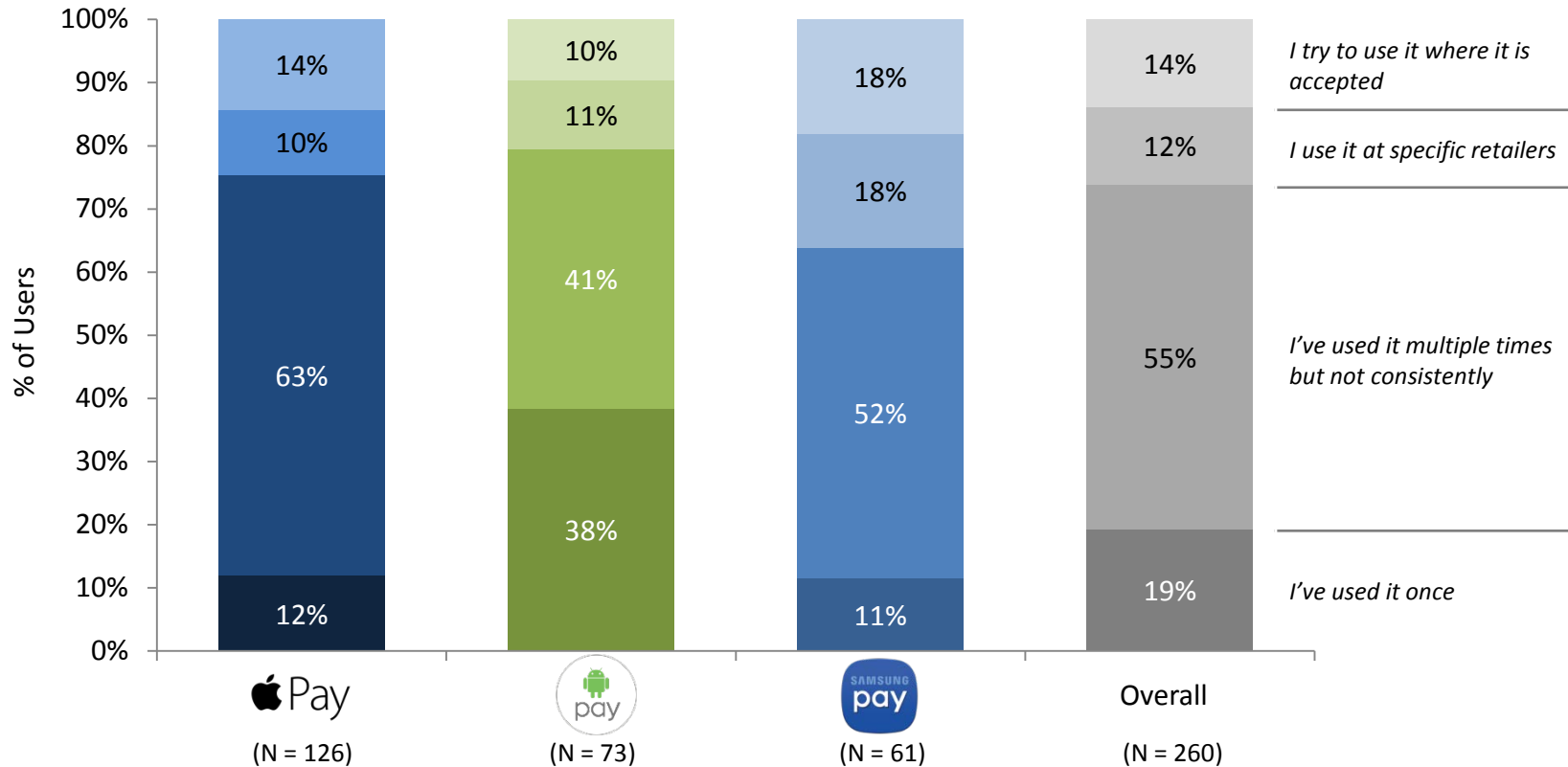


Credit cards are the most common cards added to Apple Pay, while debit cards are the most common for Samsung Pay.

Nearly 15% of Pay users say they try to use their Pay wherever it is accepted; most users (81%) are repeat users, but their use is inconsistent.

Characterization of Use

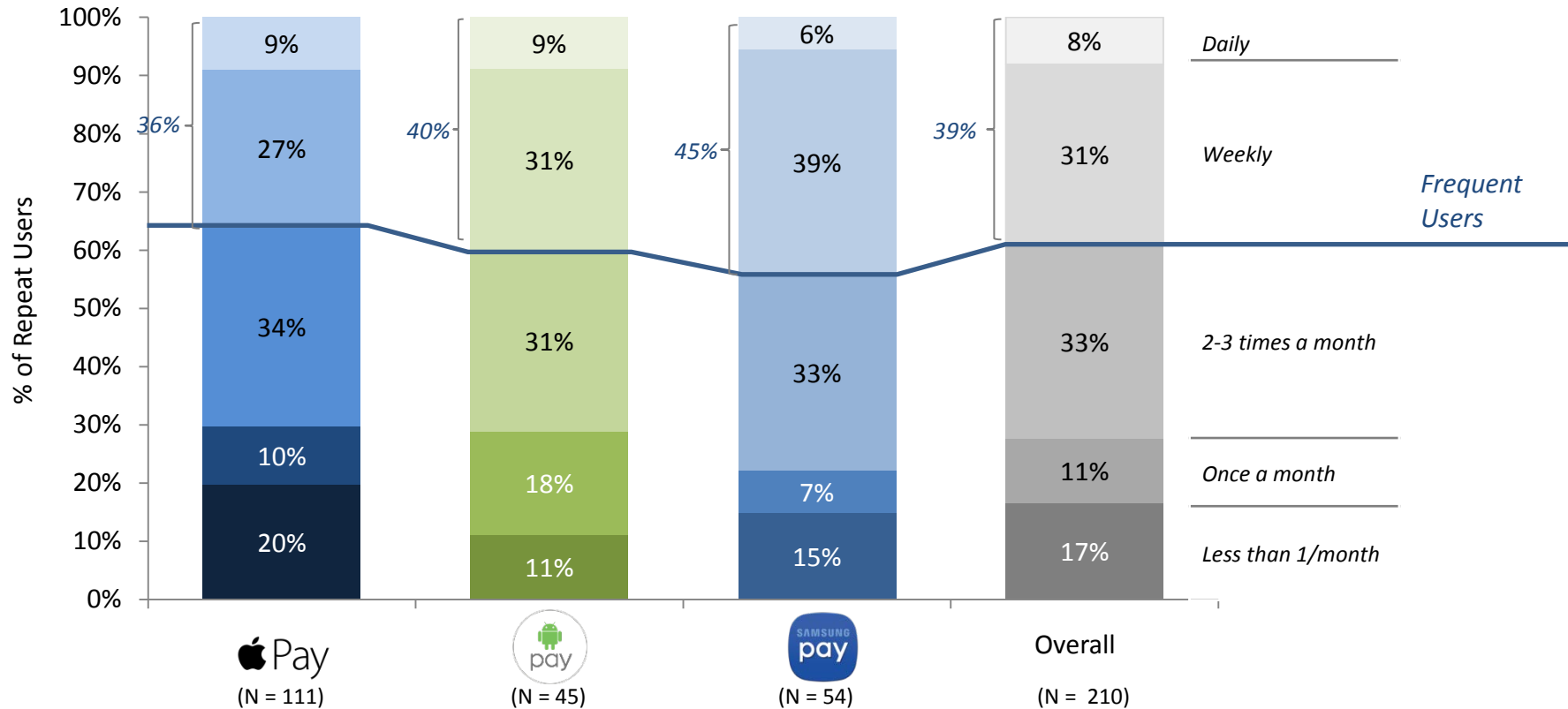
“How would you characterize your use of Apple Pay/Android Pay/Samsung Pay?”



A significant number of Android Pay users (nearly 40%) say they have used it only once, compared to ~10% of Apple Pay and Samsung Pay users.

Thirty-nine percent of repeat users are frequent users who say they use their Pay at least once a week; 8% say they use it daily.

Frequency of Use
 "How frequently do you use your Pay?"

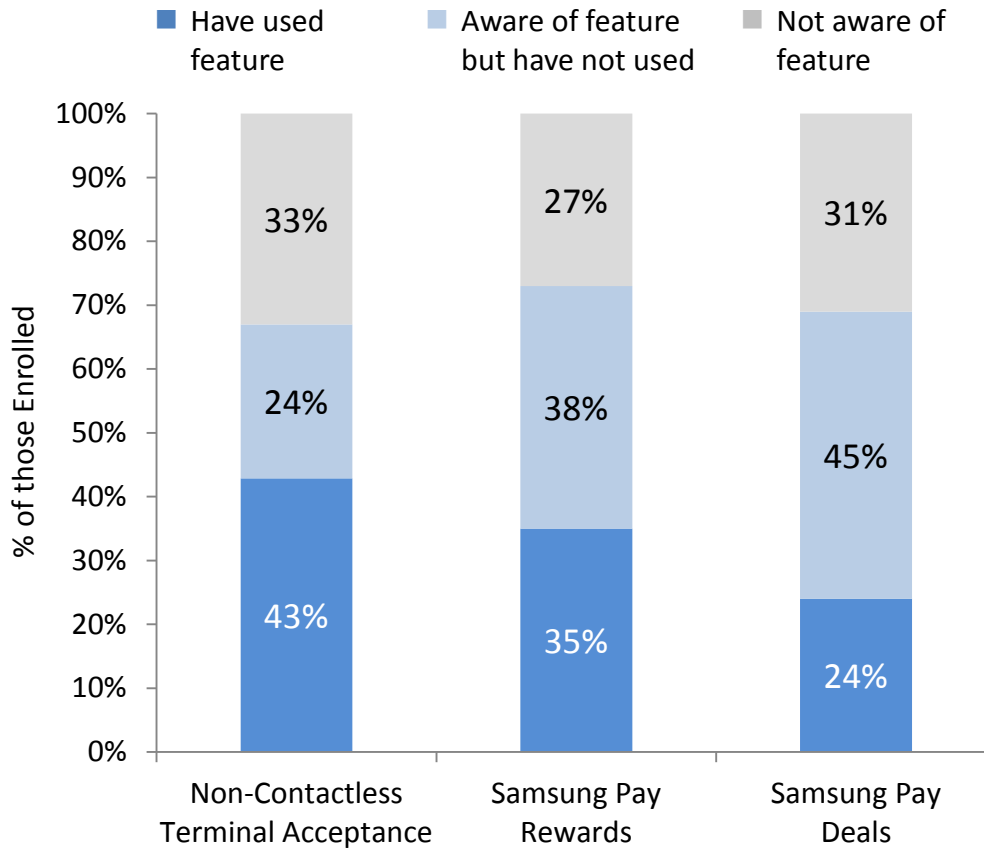


Samsung Pay has the highest frequency of use, with 45% of repeat users indicating that they use it at least once a week.

Samsung Pay has some unique features, such as its MST technology and rewards program, that may be contributing to its higher use levels.

Samsung Pay Differentiators

(N = 82)



Samsung Pays' magnetic stripe transmission (MST) technology enables it to be used at any type of card reader, not just ones that are equipped with contactless technology, which gives it nearly universal acceptance.

Samsung Pay Deals are coupons for nearby merchants; note, in addition to the 24% who have used a Samsung Pay Deals, 22% have tried to use a Deal, but said it was not accepted by the merchant.

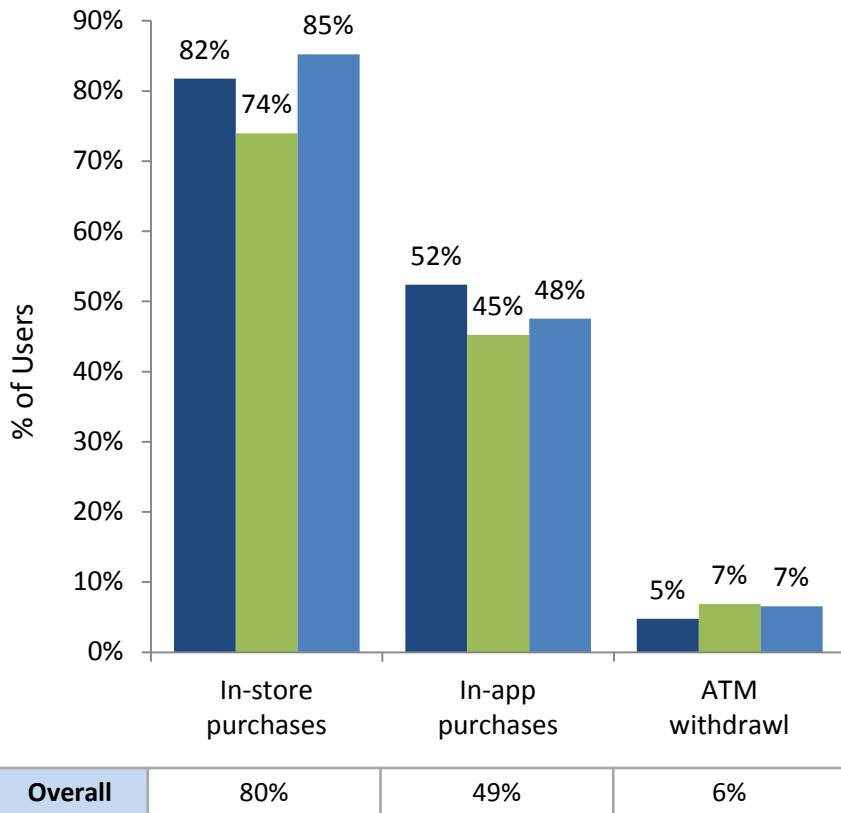
While awareness of individual features is relatively high, full product understanding is inconsistent: only 27% of users were aware of all three features

The majority of Pays users (80%) have used their Pay to make an in-store purchase, and half say they have made an in-app purchase.

Pays Use Cases

“How have you used Apple Pay/Android Pay/Samsung Pay?”

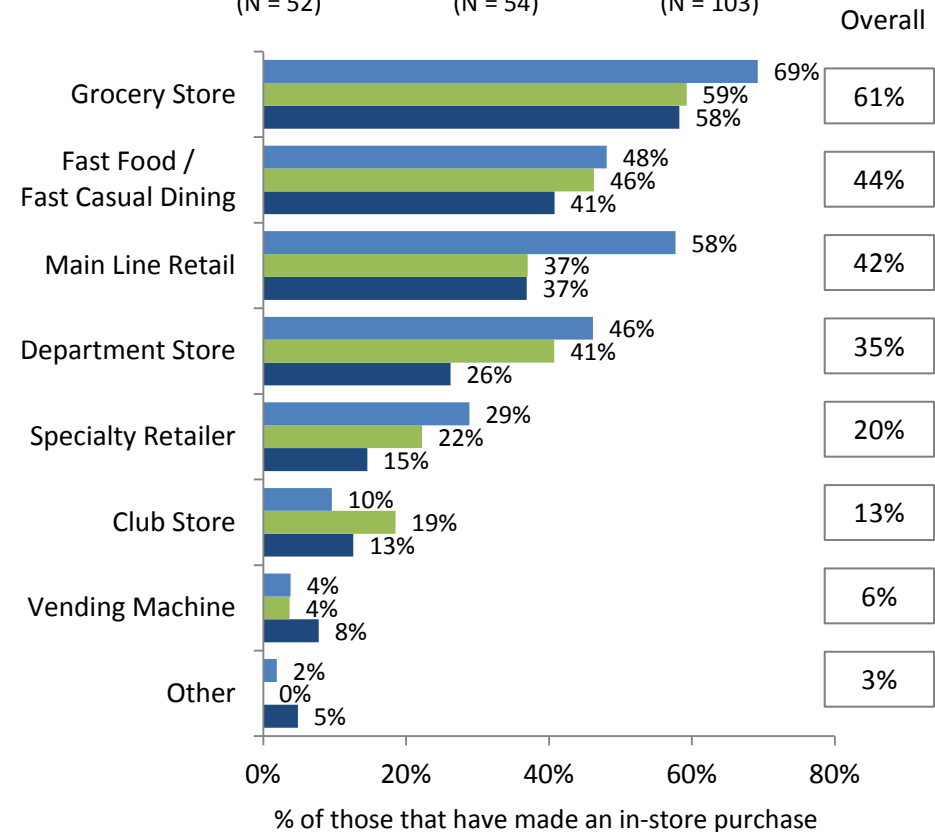
■ Apple Pay (N = 126) ■ Android Pay (N = 73) ■ Samsung Pay (N = 61)



Pays Use by Retail Type

“At which types of retailer(s) have you used Apple Pay/Android Pay/Samsung Pay?”

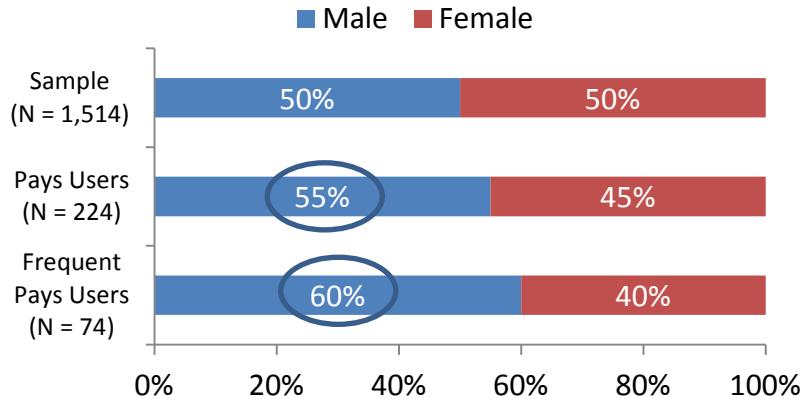
■ Samsung Pay (N = 52) ■ Android Pay (N = 54) ■ Apple Pay (N = 103)



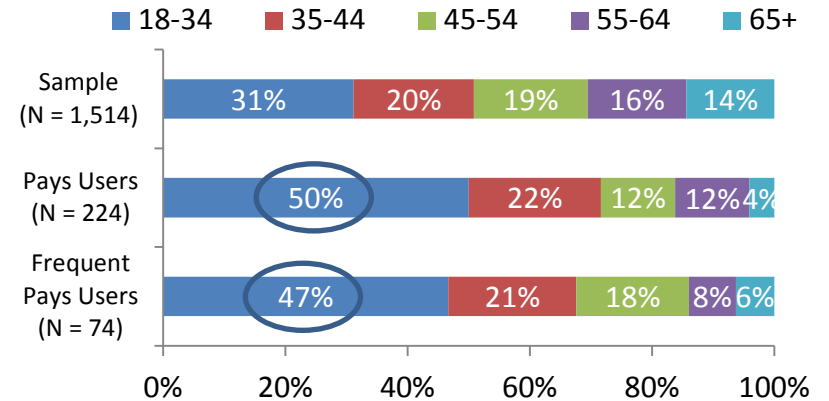
Samsung Pay users have made purchases across a wider variety of retail types, likely because they can.

Pay users (and frequent users*) tend to skew male and younger, with higher concentrations of middle income and urban respondents than the overall sample.

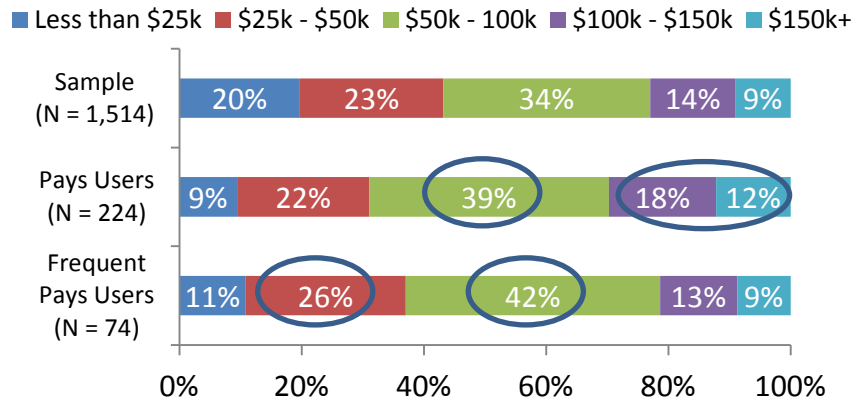
Gender Distribution



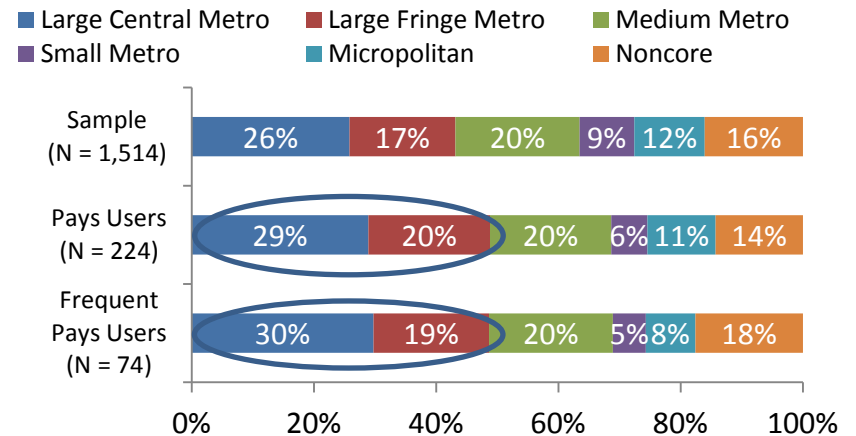
Age Distribution



Income Distribution



Urban Distribution



*Frequent users are those who report using a Pay service once a week or more

Note: Sample demographics are in-line with U.S. census distributions for gender, age, and urban/rural classifications; income distributions skew slightly towards middle-income segments

The Pays scored an average 4.1 satisfaction rating, on a scale of 1 to 5, with 71% of all Pay users indicating they are somewhat or very satisfied with their respective Pay.

Satisfaction (Percent of Pay Users)

“Overall, how satisfied or dissatisfied are you with the Apple Pay / Android Pay / Samsung Pay experience?”

Very Dissatisfied (1) Somewhat Dissatisfied (2) Neutral (3) Somewhat Satisfied (4) Very Satisfied (5)

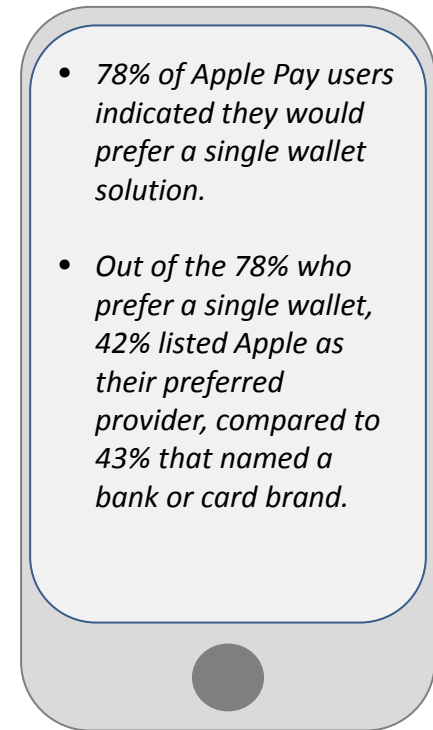
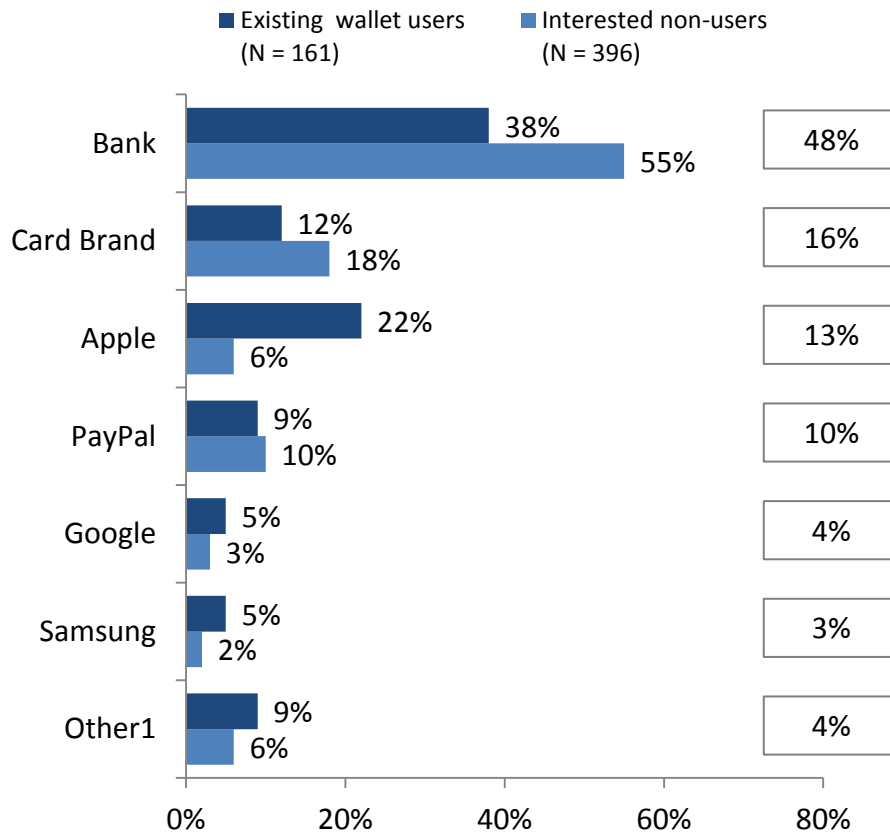


Few users report any level of dissatisfaction with their Pay.

User satisfaction levels are high—but many consumers show a strong preference for a mobile wallet provided by their bank rather than their device manufacturer.

Wallet Preferences

Of those that prefer a single wallet: “If you were to choose one provider of a mobile wallet app, which would be your preferred provider?”
(N = 677)



Banks are taking different approaches to partnering with the Pays, and options for issuers to participate in wallet provisioning continue to expand.

Issuer Wallet Spectrum

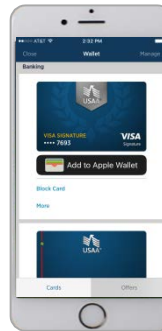


Pays Enablement



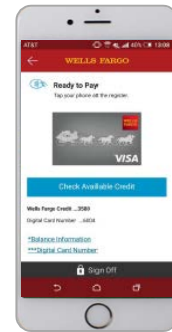
- No mobile banking integration
- Supports all three Pays
- Facilitates cardholder choice, but risks top-of-wallet
- Functionality controlled by wallet provider

Integrated Provisioning



- Allows cardholders to add their cards to their Pay from their mobile banking app
- Apple offers this feature through a limited number of large issuers
- Android announced partnerships with several issuers, including Bank of America, Discover, and USAA, in April 2017

Proprietary Wallet



- Integrated into mobile banking for Android devices (e.g., Wells Fargo Wallet)
- May be limited to bank's own payment cards
- Supports more features than the "Pays"

We expect to see more banks offering Pays support and wallet provisioning as part of a branded customer experience.



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