

Inside the Emerging Landscape for Retail Payments

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Agenda

- Introduction
- Payments Landscape from 30k feet
- Key Enablers of Adoption
- Emerging Payment Initiatives
- Key Challenges
- Summary Thoughts – Looking Forward

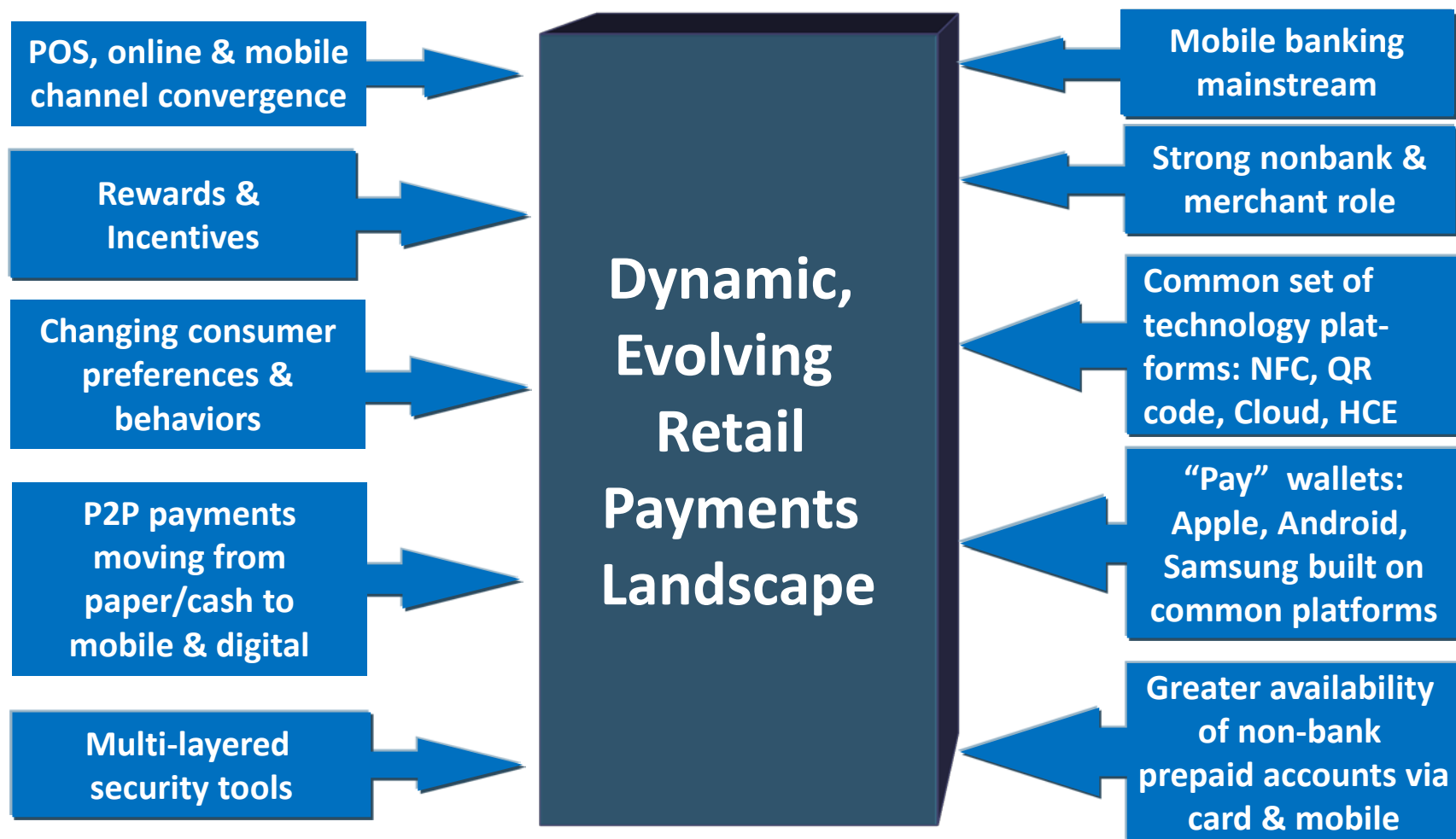
Introduction

- Purpose
 - Provide education and information to help FIs make more informed decisions about their payment strategies
- Scope
 - *Emerging payments*
 - Convergence of traditional and alternative payment methods in the retail landscape, including mobile, digital, P2P and prepaid
 - *Mobile and digital wallet payments*
 - Use of mobile device to make proximity/remote purchases, including POS, transit, P2P, ticketing, online goods/services, digital content
 - Wallet app that manages storage/access to actual or proxy payment credentials, personal & loyalty/coupon information. Payment credentials stored in cloud, mobile OS memory, or secure element on phone

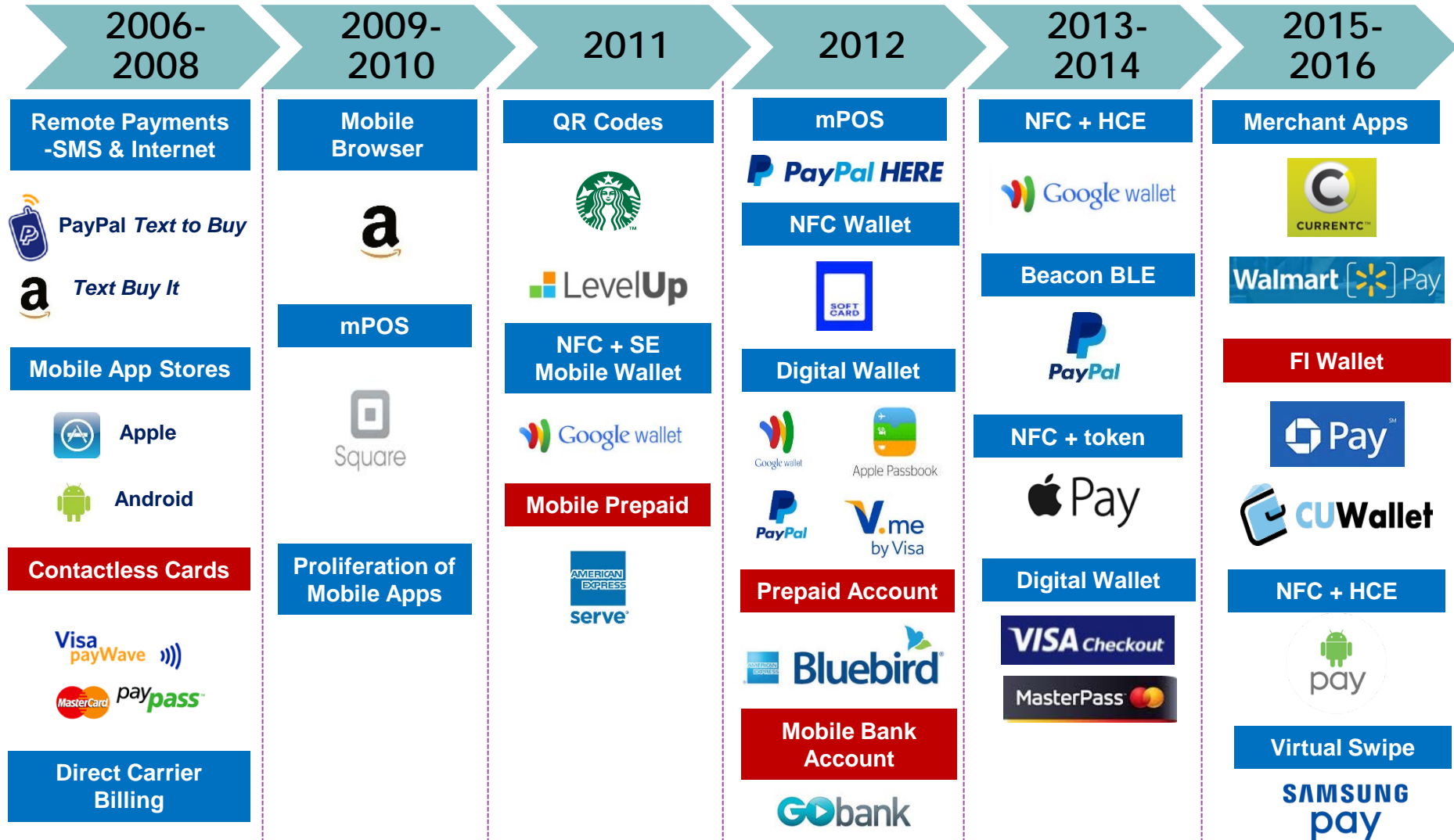
Payments landscape from 30k feet

- FIs are more active as mobile banking becomes mainstream
 - Larger FIs engaging in emerging payments innovation with partners
 - SME FIs following larger FIs with implementation of proven emerging solutions
- Consumer expectations for payment and financial services are evolving
- Mobile/digital technologies are gaining momentum in U.S. and enabling international payments as well
- EMV card migration expected to shift fraud from card present (CP) to card not present (CNP) payments
- Security and fraud threats are tracking new services and technologies
- Faster “near real-time” payments moving closer to reality

Key enablers of adoption

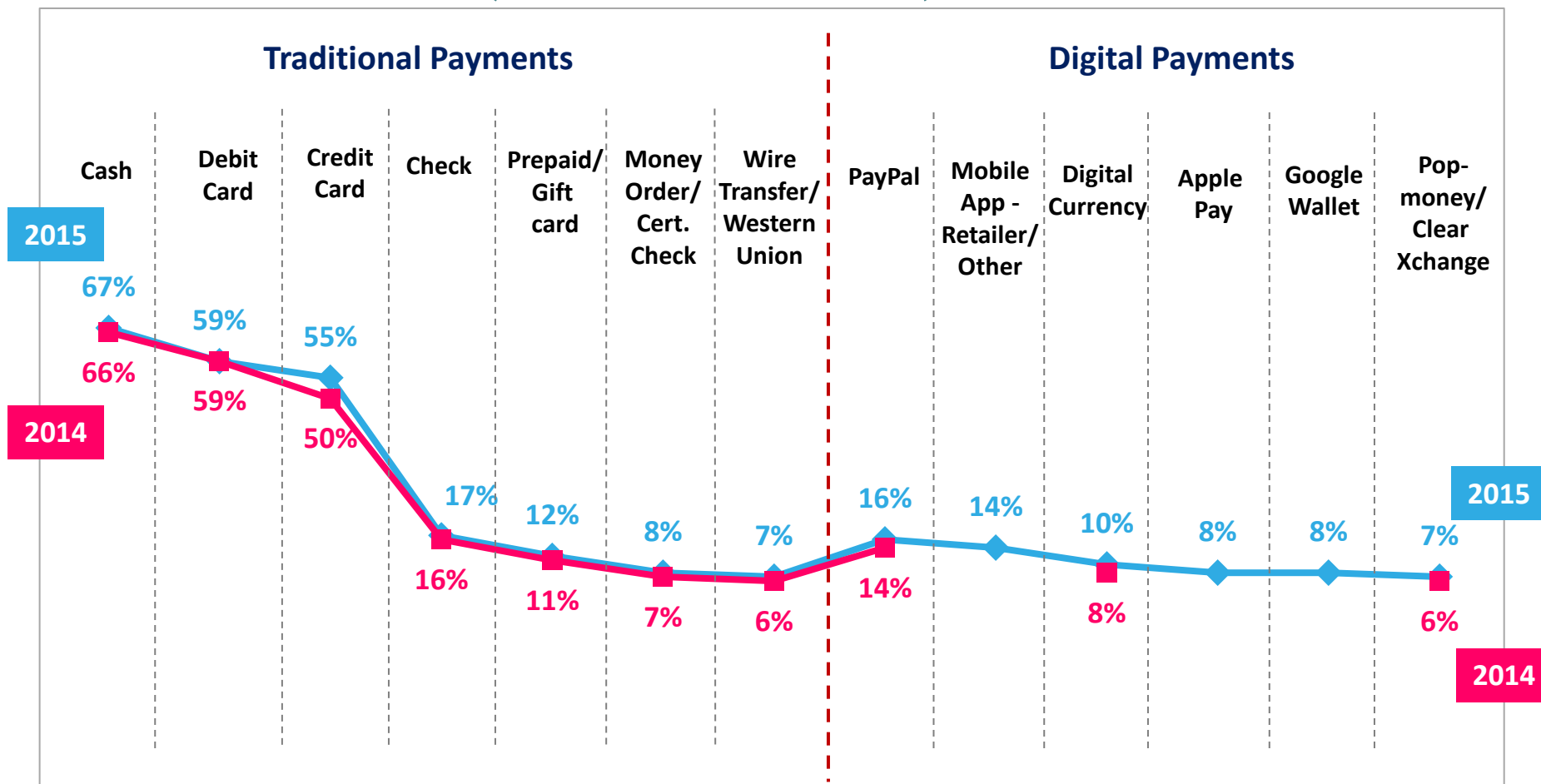


Emerging retail payments evolution



Consumer Perspective

Consumers use a broad array of payment instruments (2015 vs. 2014)



Q. How often do you use the different payment instruments to complete a transaction today? (At least daily/weekly), n=4,004

Source: Accenture, 2015

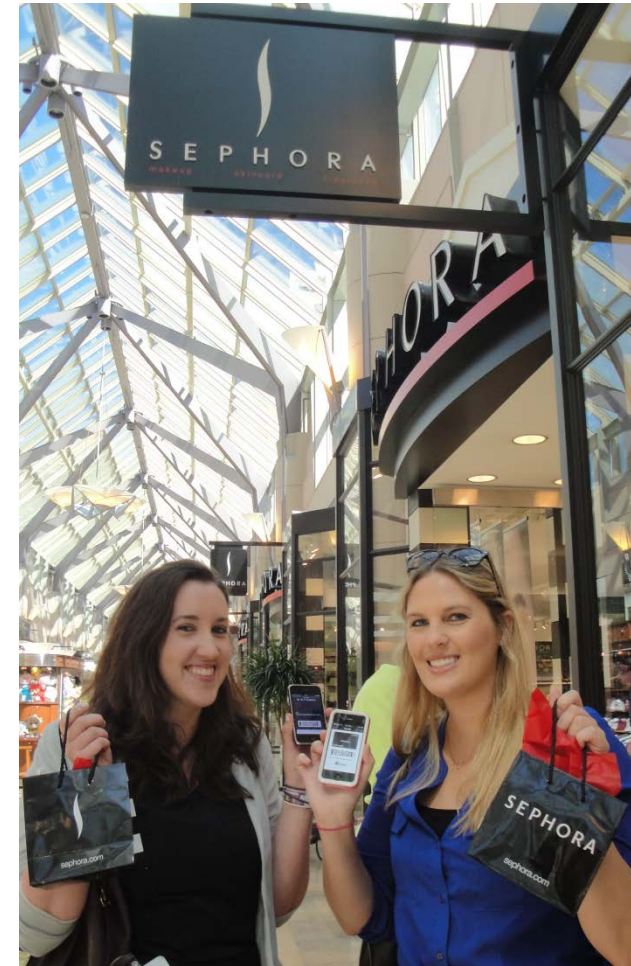
Consumer payment choices are evolving as expectations arise



- Immediacy of transaction completion – no waiting
- Convenience and ease of use/1-click option
- Familiarity and consistency of payment methods
- Rewards/value – custom offers
- Right balance of payment method choices
- Security is a given

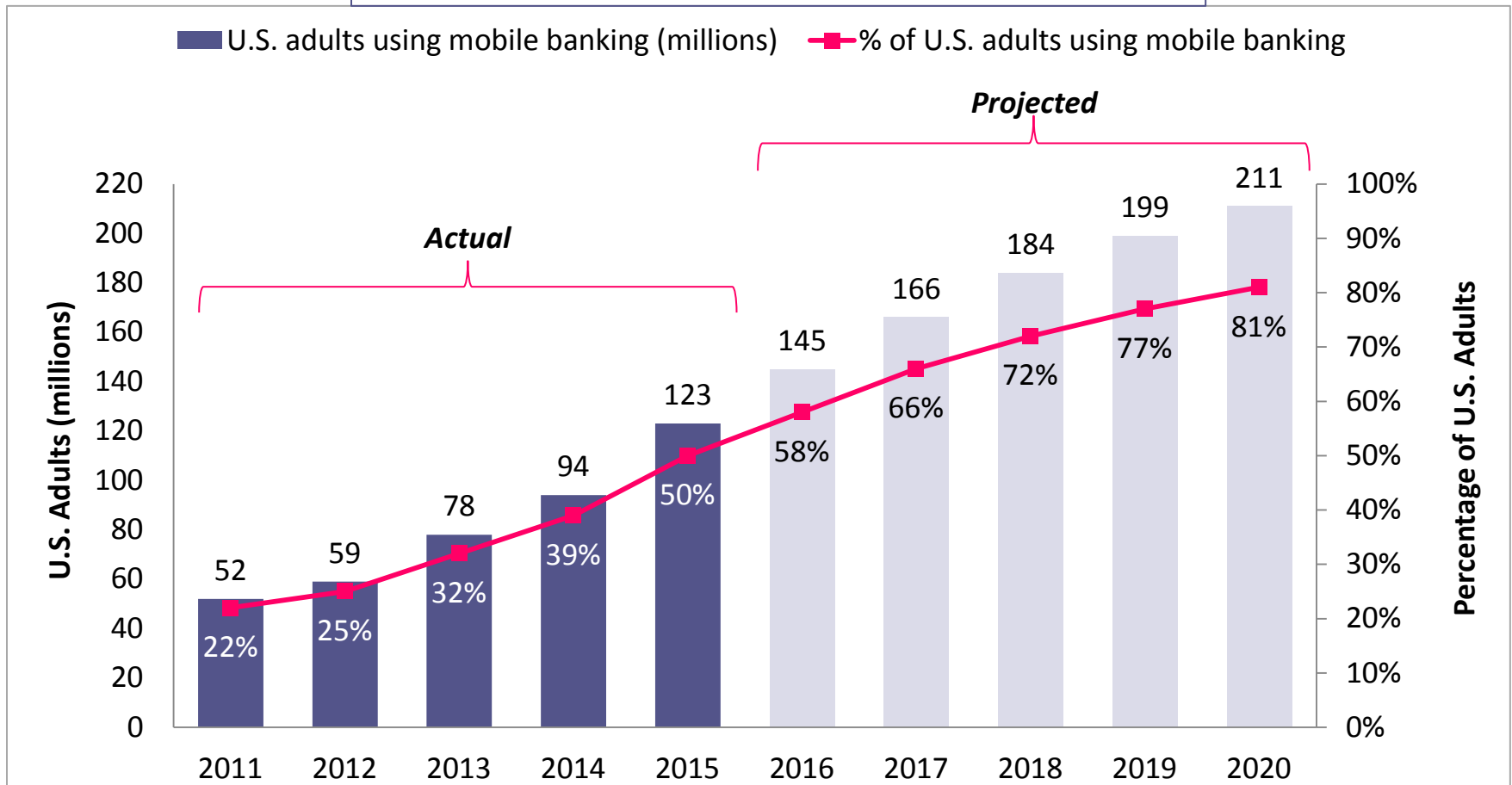
Consumer payment behaviors changing

- Influenced by key demographics, income and education
 - Age/generation (e.g., Millennials, Baby Boomers)
 - 94% of consumers under age 35 bank online
 - Over 20% have never written a paper check to pay a bill*
- Willing to adopt new technologies/payment models
 - Over 70% of U.S. mobile phone users have smartphones
- Shopping across multiple channels
 - 25% of smartphone owners pay with mobile/digital wallets
 - 64% have debit cards in their mobile wallets
 - 58% have credit cards
 - 45% have gift cards**
- Making more P2P payments via online and mobile
 - Leveraging social aspects (Facebook, Venmo)
- Banked and unbanked finding value in use of prepaid



Consumer adoption of mobile banking reached tipping point in 2015

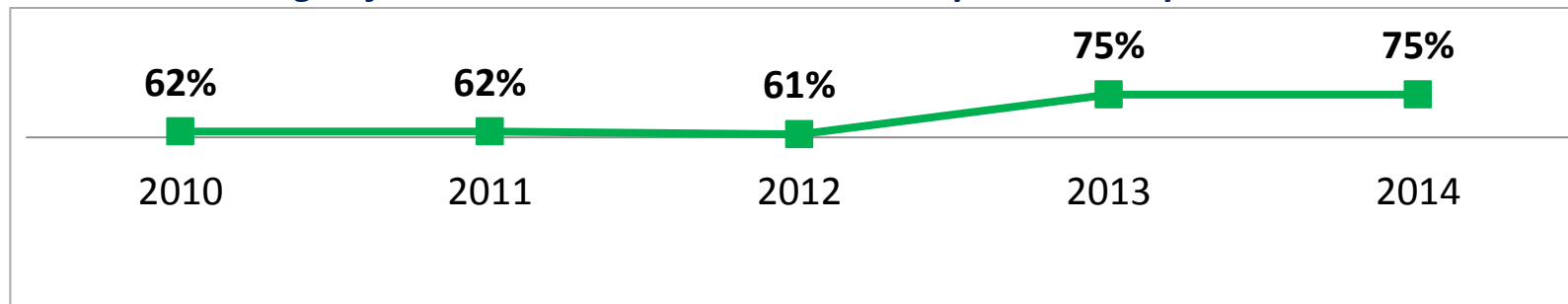
Forecast of U.S. Mobile Banking Adoption, 2011-2020



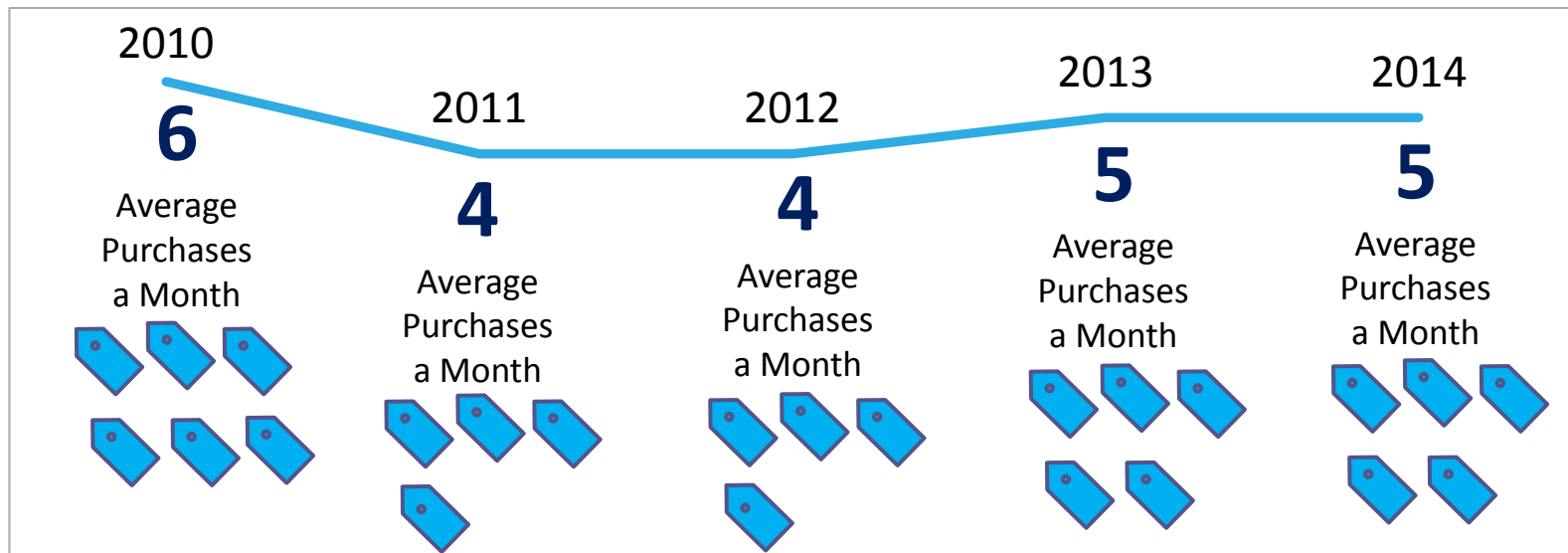
Source: GA Javelin LLC, December 2015

Over half of U.S. consumers now make online purchases

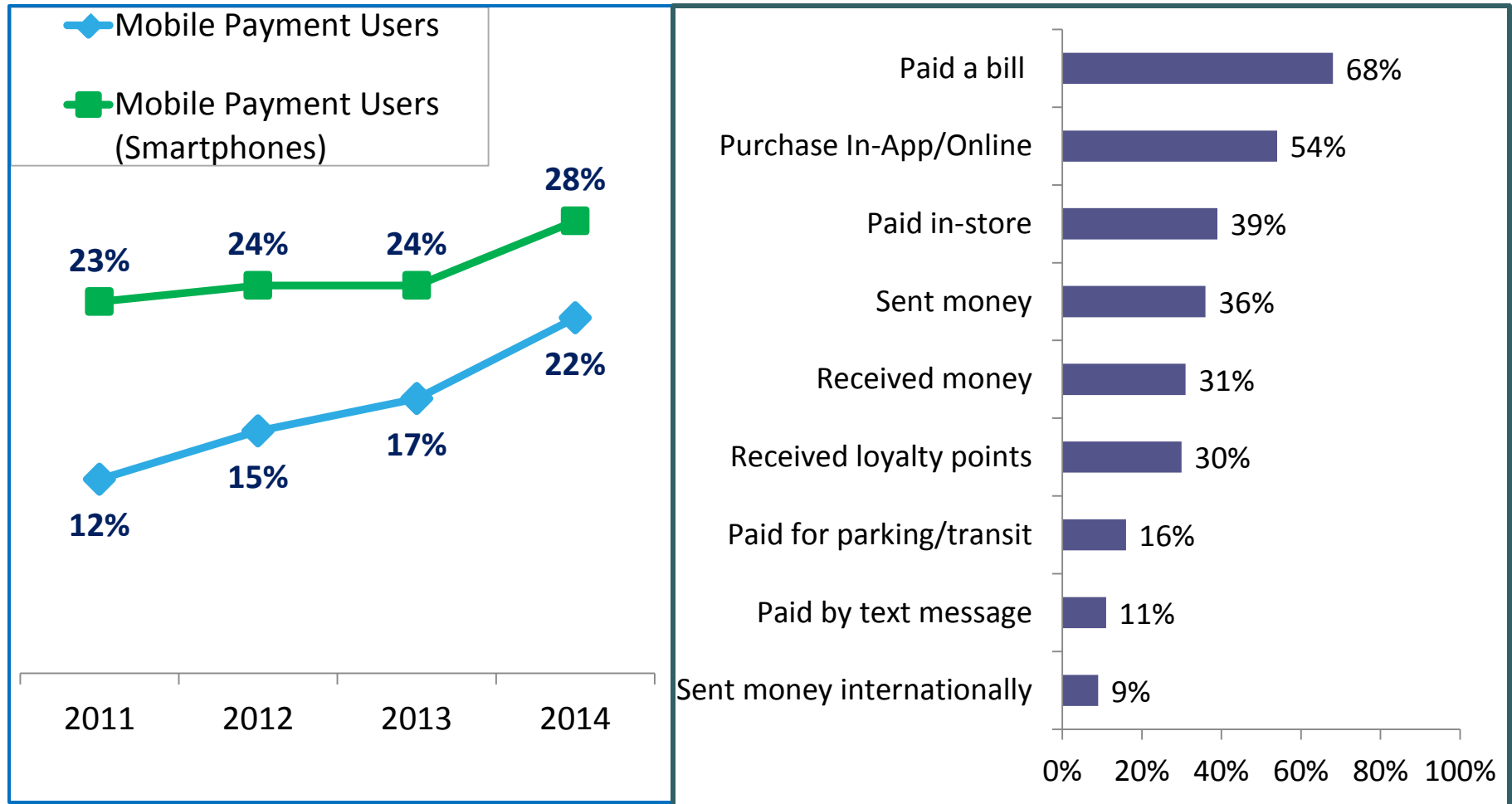
Percentage of consumers who made an online purchase in previous month



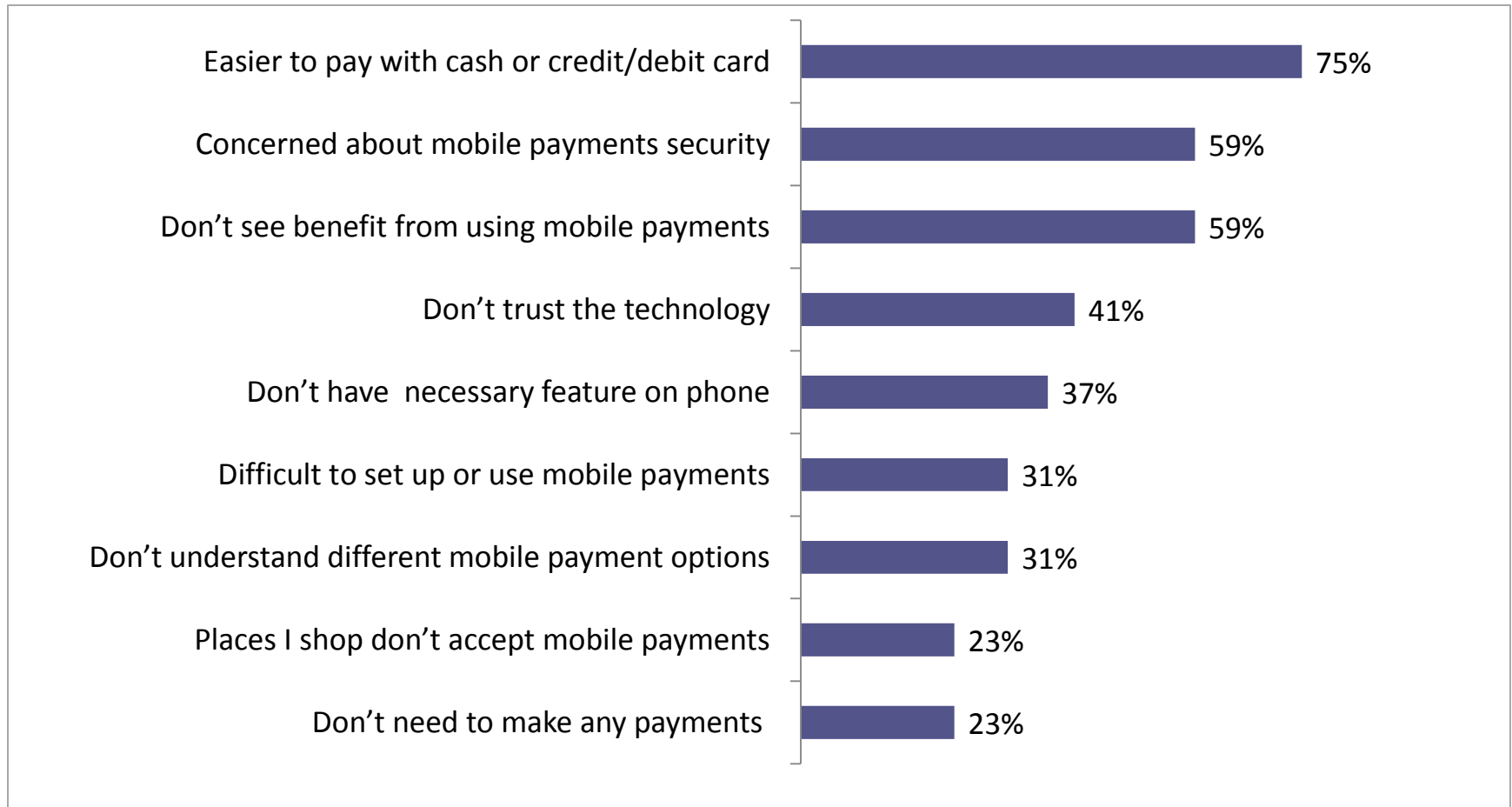
Average number of purchases per month



About a quarter of consumers adopting mobile payments for POS & online purchases



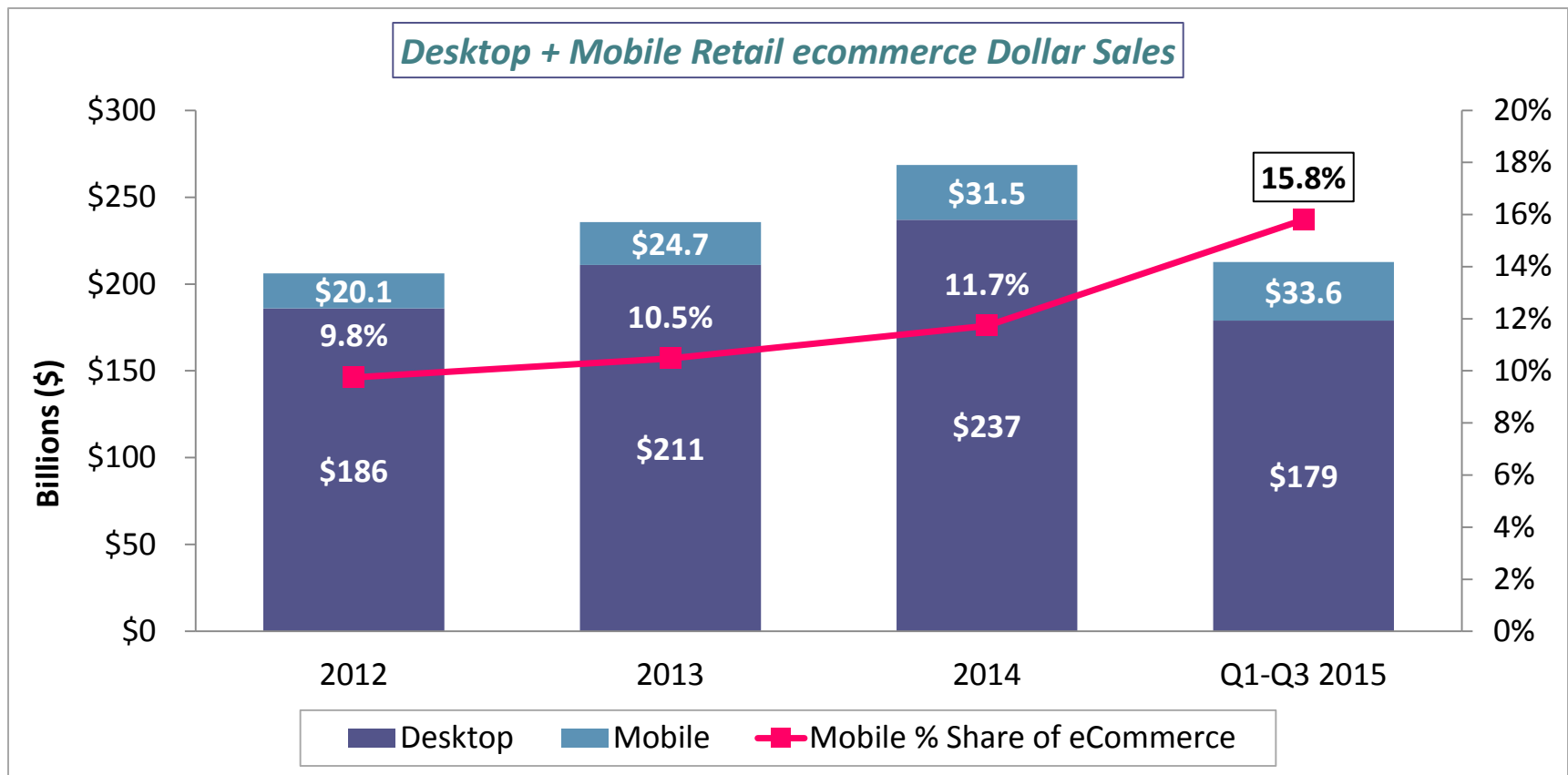
However barriers to consumer adoption of mobile/digital payments remain



Source: Board of Governors of the Federal Reserve System, Consumers and Mobile Financial Services, March 2015

Higher percentage of mobile transactions driving increase in ecommerce volume

7.2% of total U.S. retail sales came from **ecommerce** in Q3 2015, and mobile apps generated ~ 50% of mobile transactions for the largest ecommerce retailers



FI Perspective

FIs are evolving from traditional to new payment services via mobile / digital channels

Mobile Banking

- Deliver traditional payment services via mobile channel (e.g., bill pay, funds transfer, A2A)
- Mimic / replicate online services and experience

Mobile Banking+

- Provide greater app-based mobile services (e.g., P2P and RDC payments)
- Unique mobile customer experience

Mobile Payments

- Mobile payment services (e.g., for purchases at POS)
- Next-generation app / wallet models

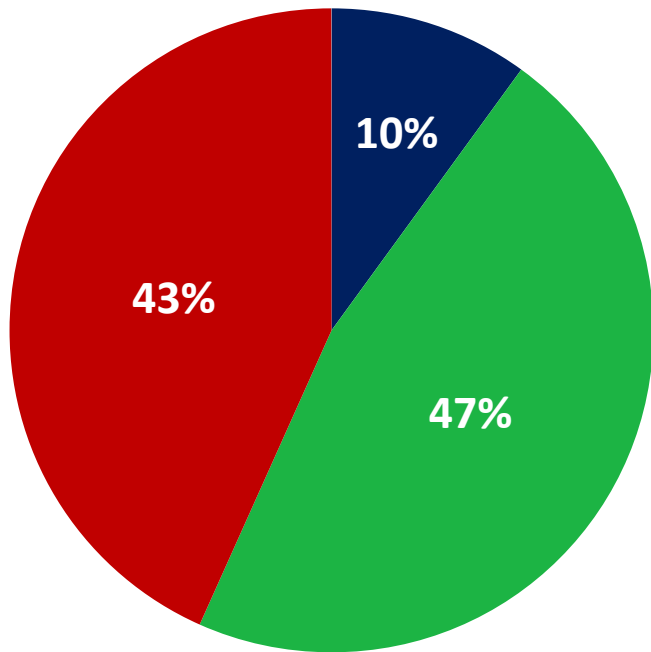
Social Payments

- Expanding in-app and payments from social networks (e.g., Facebook Messenger)

57 percent of FIs plan to have mobile payment services by 2017

Consolidated, n=625

- Currently offer mobile payments
- Plan to offer mobile payments within next 1-2 years
- Do not plan to offer mobile payments



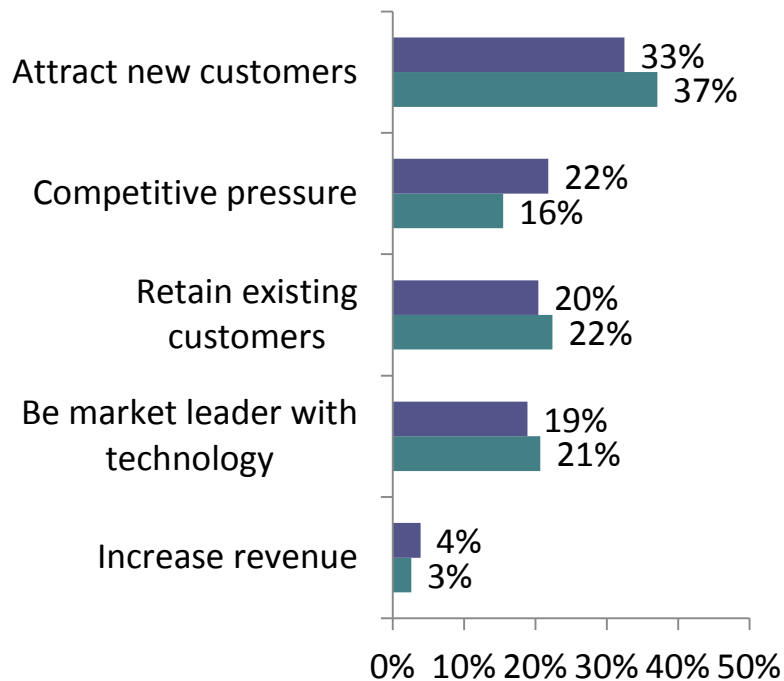
New England FIs:

- 8% currently offer mobile payments
- 51% plan to offer mobile payments by end of 2016
- 41% do not plan to offer mobile payments

FIs agree that mobile payments attract new customers

Increasing customer adoption is key, but protecting customer base is compelling

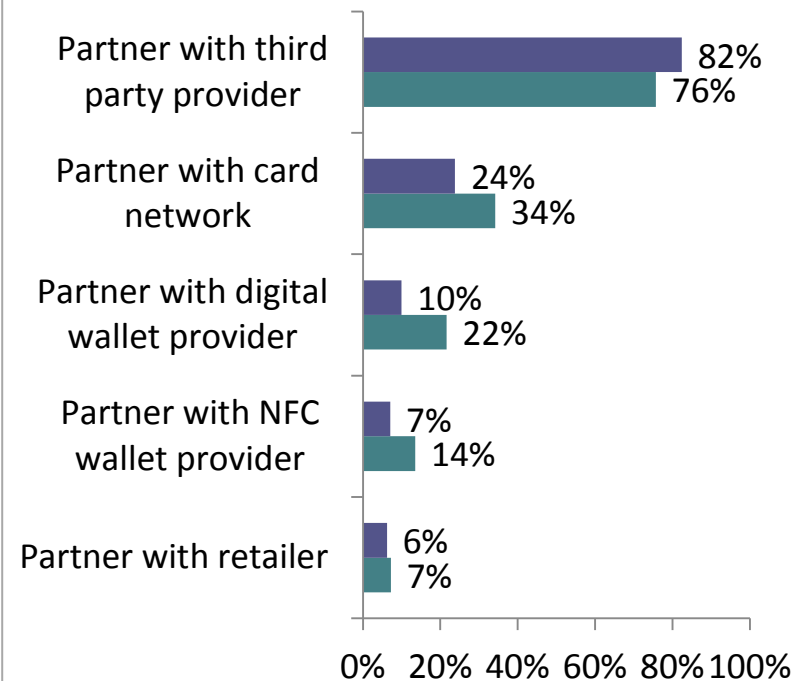
■ Banks, n=206 ■ Credit Unions, n=116



Q. If you (plan to) offer mobile payment services, what is your primary business reason? (Check only ONE)

Partnering is go-to-market strategy

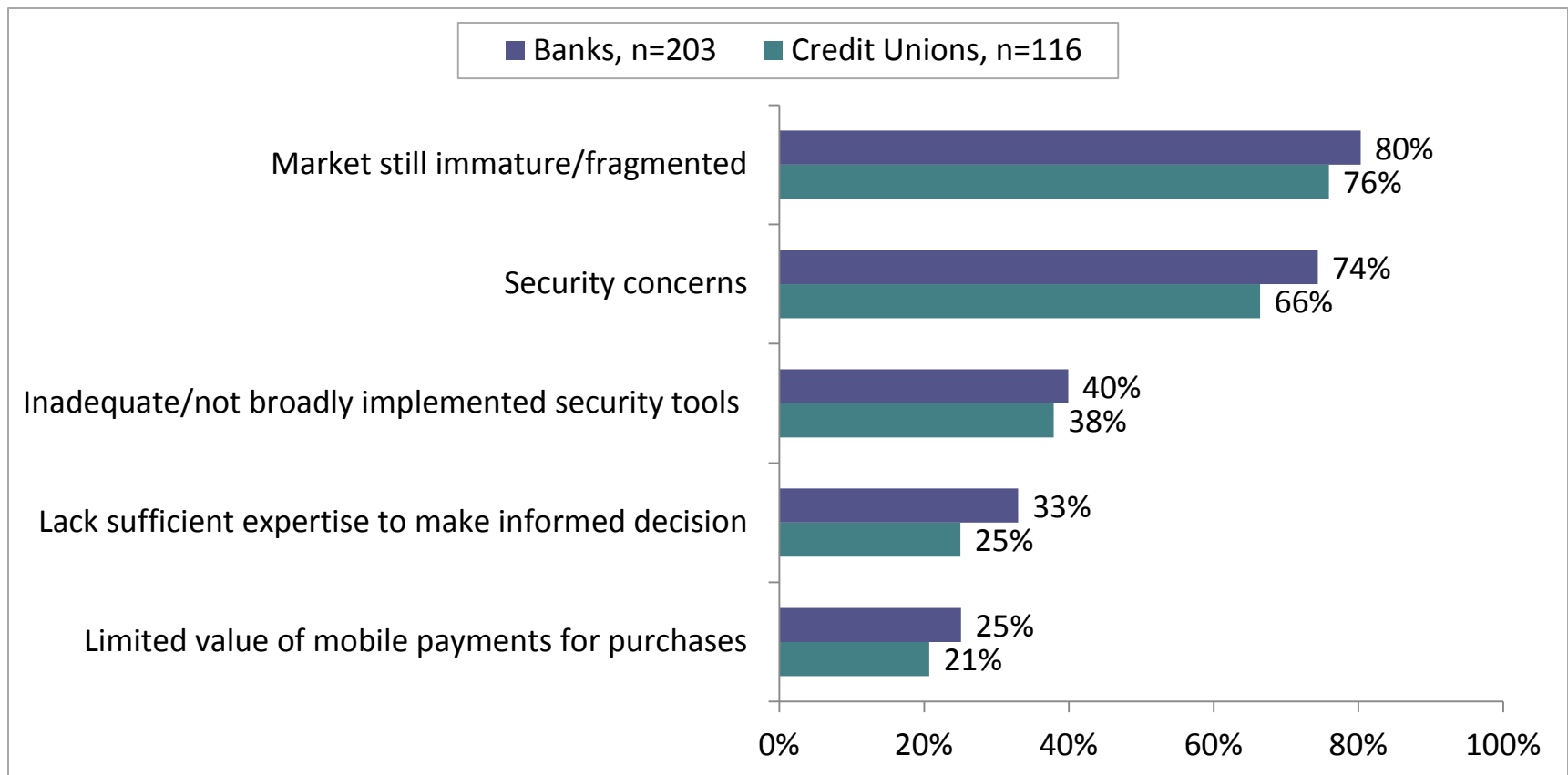
■ Banks, n=210 ■ Credit Unions, n=111



Q. How do you (plan to) offer mobile payment services? (Check ALL that apply)

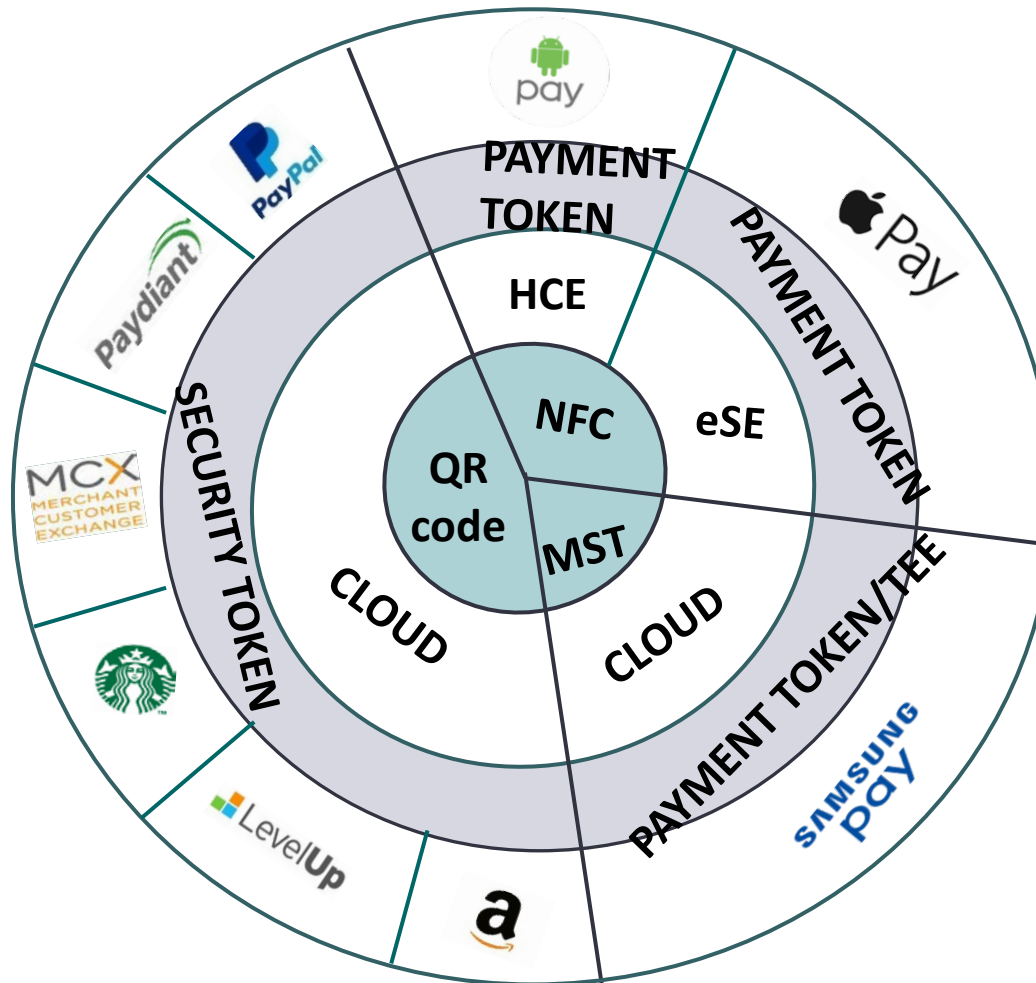
FIs perceive several barriers to offering mobile payments

Unsure where to place bets; worry about security



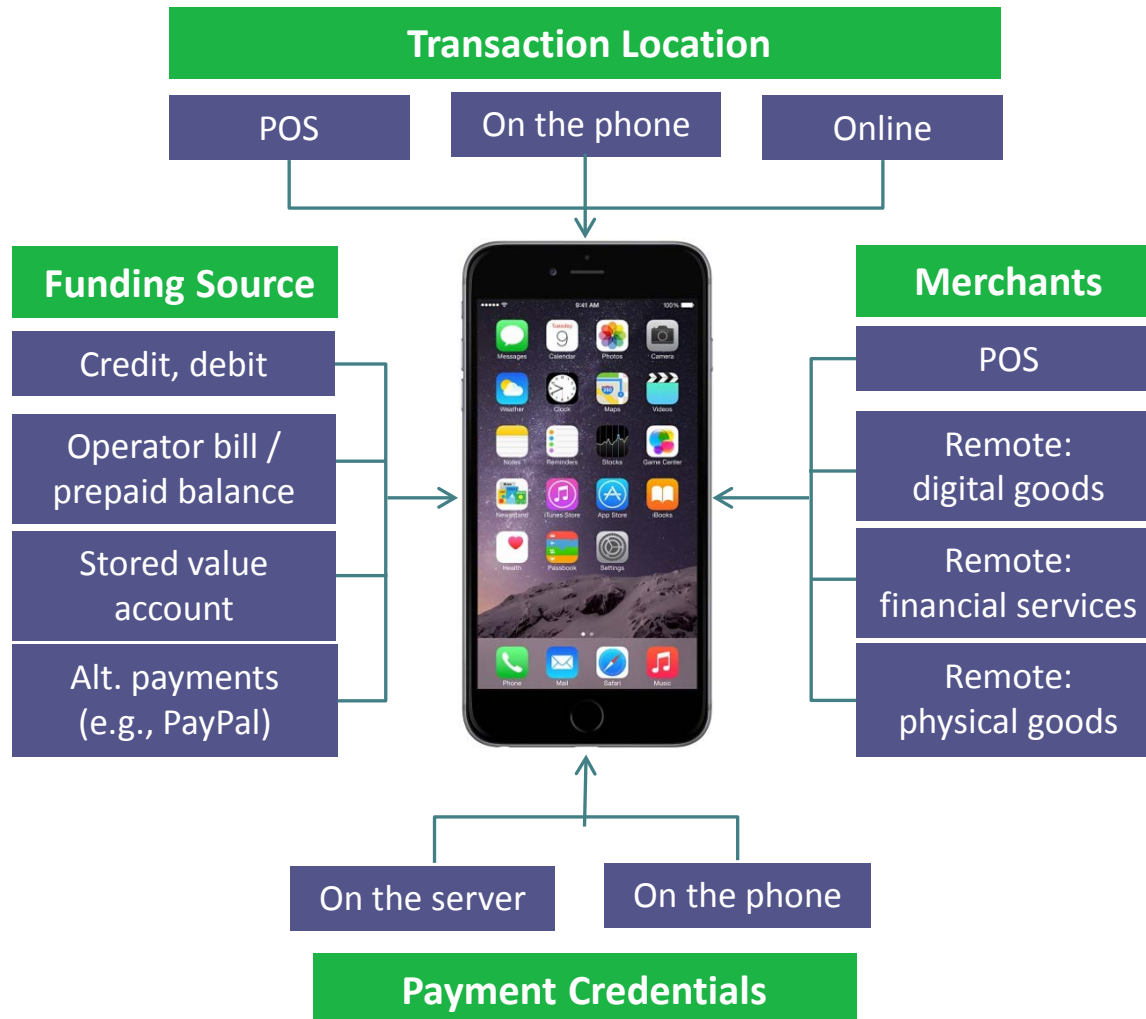
Emerging Payment Initiatives

Convergence of business models



Solutions leveraging combination of payment methods and platforms

Overview of digital/mobile wallets



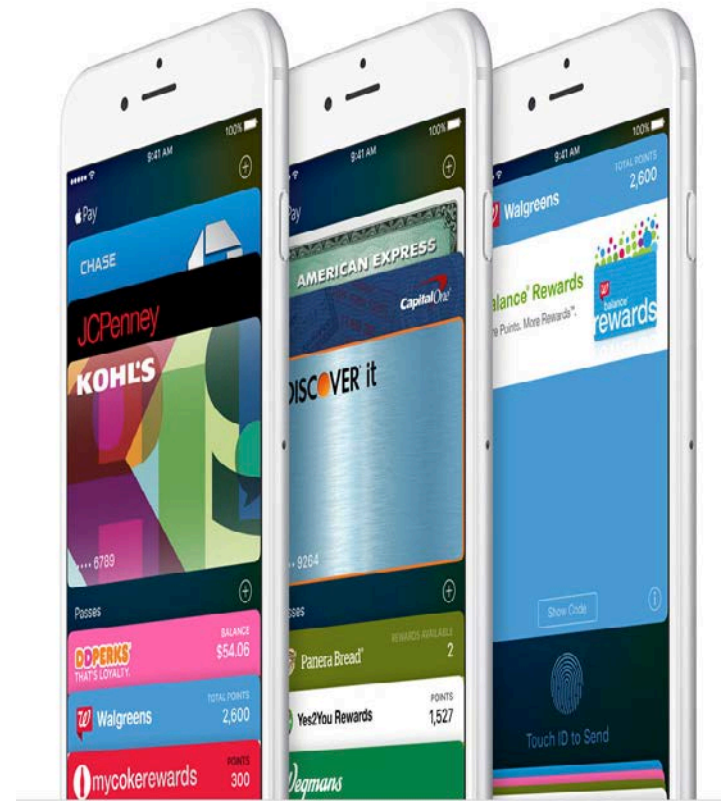
Wallet Features:

- Prepaid account funded by other source (e.g., credit/debit card or bank account)
- Centralization of multiple payment instruments in one virtual location (e-wallet)
- Loyalty offers and incentives
- Secure element – consumer ID / account numbers reside in the cloud or on phone



Launch of Apple Pay

- Launched October 2014
- Large issuers:
 - BoA, Chase, Citi, Wells, AmEx, Cap One, USBank, Navy FCU, USAA, PNC, Barclays
- Over 900 FIs to-date; many more in the queue
- Visa, MC, AmEx & Discover
- BoA: 800k customers signed up as of Jan 2015
- Chase: 1M cards provisioned in Apple Pay as of Feb 2015; 69% credit cards





What is appeal of Apple Pay?

- Sets a 'standard' for NFC mobile wallets
- iPhone 6/6+ for POS and in-app purchases
- Consumer's iTunes account stored on file is default payment account
- Added tokenization and dynamic cryptogram to replace sensitive payment credentials
- Token stored in embedded secure element/Apple Pay Wallet
- Touch ID to scan fingerprint for authentication into Apple Pay
- Works with card issuers to verify account, create token and provision to Apple Pay wallet

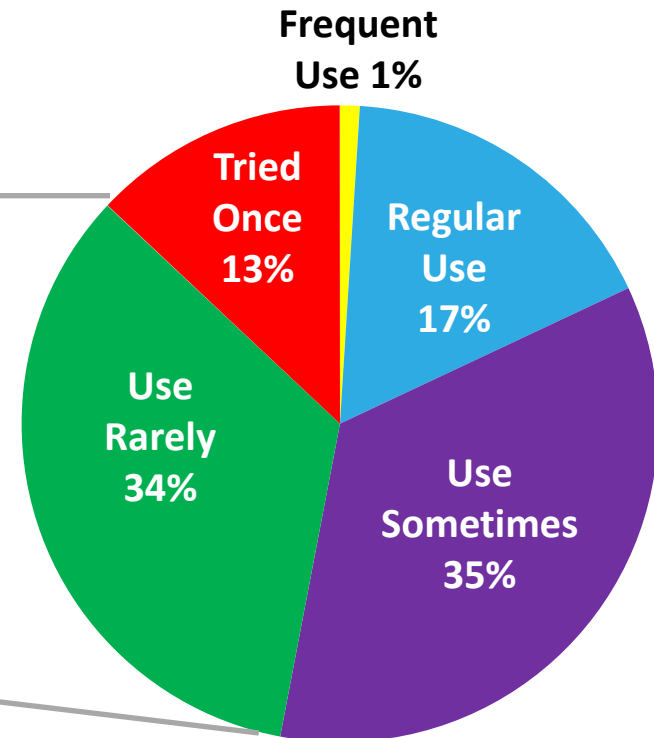
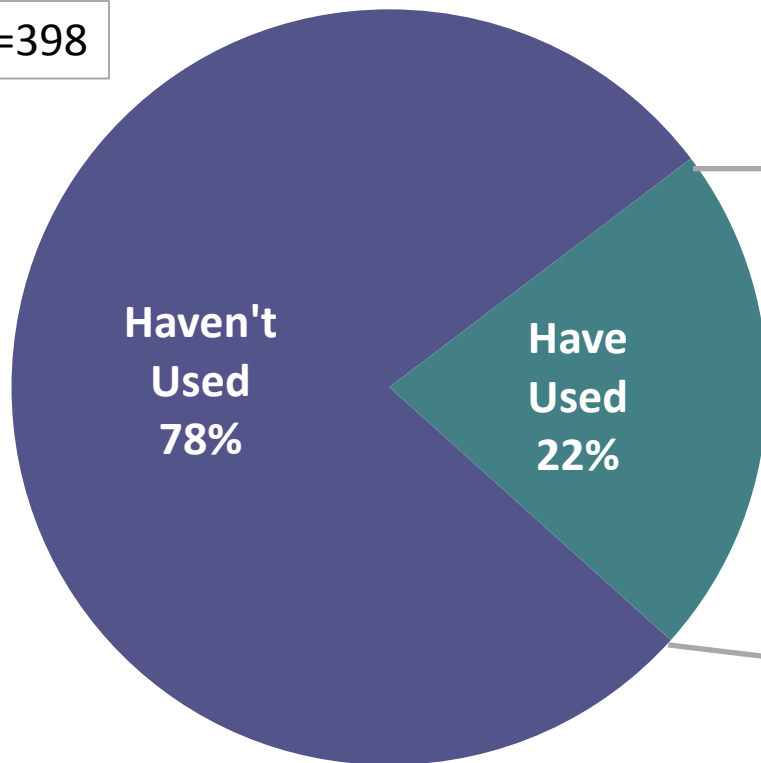




Generates strong awareness but not much adoption yet

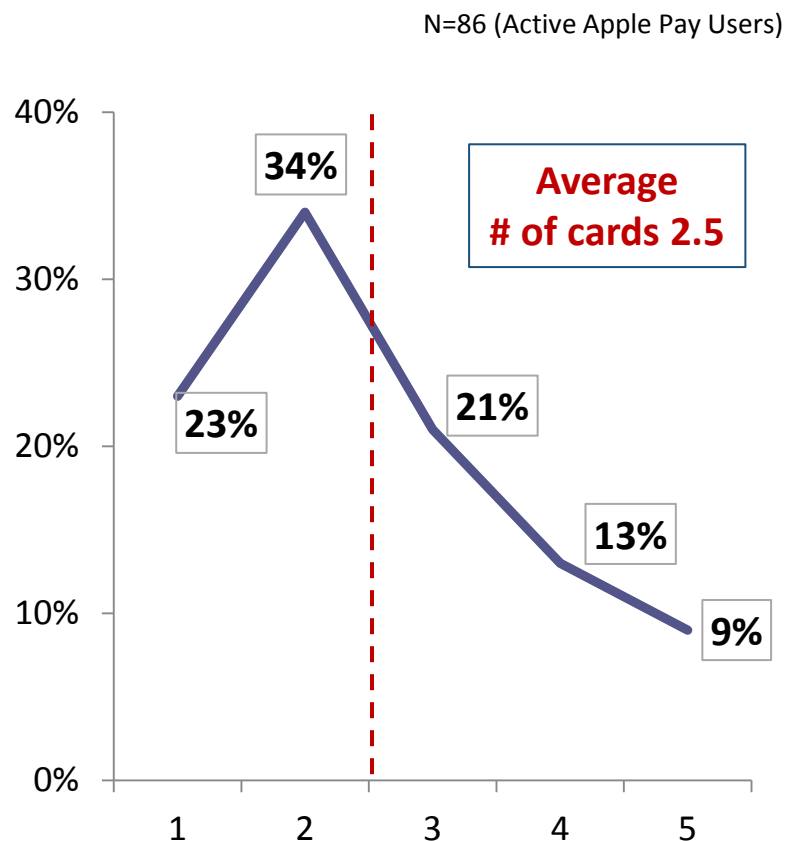
90% of iPhone users aware of Apple Pay, but only 20% of iPhone 6 owners used Apple Pay in 1st half of 2015

N=398

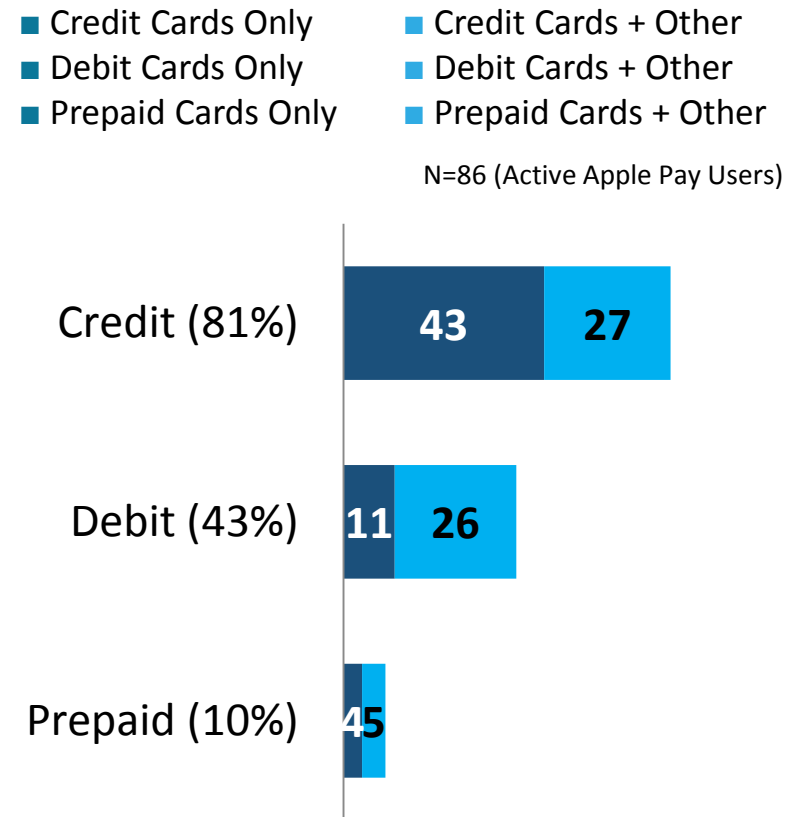


Consumers prefer credit cards in Apple Pay wallet

How many cards consumers loaded

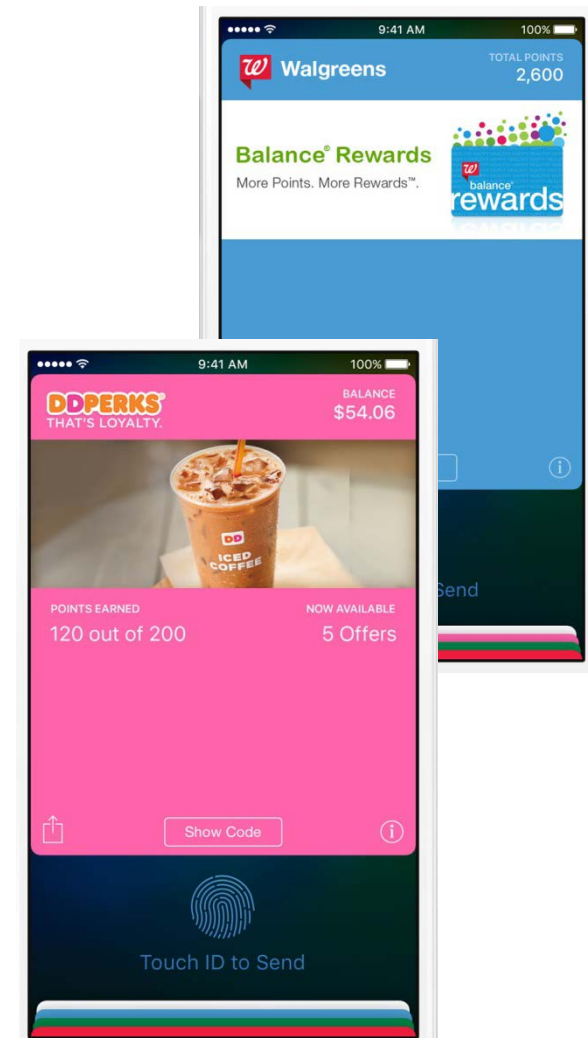


Types of cards loaded



Apple Pay What's holding Apple Pay back?

- Few U.S. merchants accept NFC payments
 - Over 1M U.S. merchant locations are NFC enabled, including ~ 200k vending machines
 - Most big merchants missing
- Apple Pay works only with newest iPhone models (iPhone 6 and 6+)
- Initial launch consumer credit and debit cards only
 - Mid-2015 announced support for closed-loop branded cards and loyalty cards
- Community banks and credit unions still determining business value
 - Consumer demand
 - Top of wallet cards



Is Apple Pay the 'rising tide lifting all boats?'

(Google) Android Pay (9/2015)

- NFC and Host Card Emulation (HCE) – no secure element
- Tokenized payment account number (PAN) stored in phone memory or cloud
- Limited NFC mobile phones
- Android KitKat 4.0 OS or higher
- Fingerprint authentication
- Fund with credit/debit/prepaid
- Loyalty and rewards



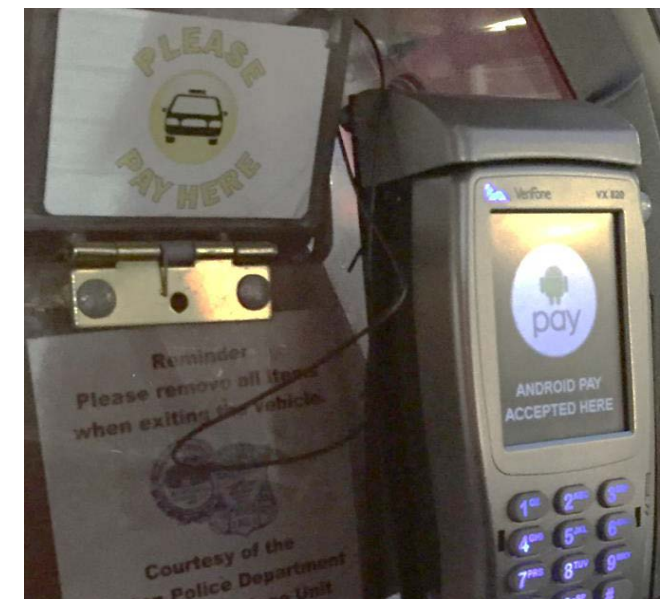
Samsung Pay (9/2015)

- Two platforms in one phone:
 - NFC with Trusted Execution Environment (TEE) to store PAN
 - Magnetic secure transmission (MST)
- Tokenization of PAN; fingerprint auth.
- Android OS and limited NFC-enabled Samsung mobile phones
- Funding: credit/debit/prepaid/gift cards
- Loyalty and rewards

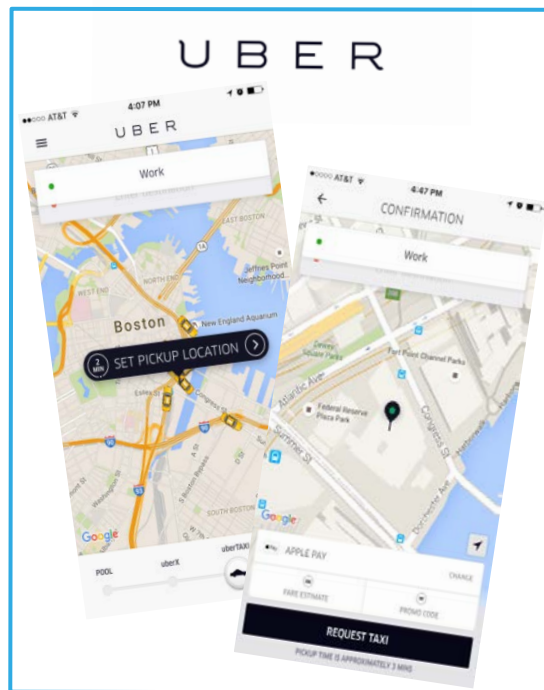


Maybe, but merchants want to influence consumer choice

- Steer consumers to lowest cost payment methods
- Control what mobile payment solutions they accept
- Will offer multiple mobile solutions if enough customer demand to increase business
 - NFC is a separate investment decision from EMV chip card



Large merchants want their own mobile wallet solutions, while smaller businesses rely on third party solutions



Large merchants developed their own mobile commerce network



- MCX has over 70 U.S. merchants/110,000 locations
 - Represent over \$1 trillion in annual payments
- CurrentC is the MCX mobile wallet app
 - Payment credentials stored in cloud
 - Pay with QR code
 - Merchant deals and loyalty programs
 - Customer data not shared
 - POS payments processed real-time over EFT/ACH network
 - Currently soft launch in selected cities
- Chase Pay/MCX partnership to debut mid-2016
 - Enable Chase mobile wallet customers to pay with CurrentC
 - Access to 94M Chase credit, debit and prepaid accounts



CurrentC will be offered by a variety of merchants



Card networks offer digital wallets



- Digital wallet service for online shopping, easy checkout
 - Stores payment and shipping info in secure, central location
 - Check out with username/mobile number and password
 - Card-on-file: no need to re-enter card information
 - Both wallets accept all major credit or debit cards
 - AmEx accepts only AmEx members
 - Online merchants must enroll with wallets

Credit unions have their own mobile wallet



- White label mobile wallet developed by Paydiant for credit unions
- Launched in 2015
- 80 participating credit unions
 - 30 of top 100 credit unions in U.S
- New England credit unions
 - DCU, New England FCU, The Credit Union League of Connecticut
- Supports NFC, cloud, QR code and Bluetooth Beacons
 - Early focus on QR codes to attract more merchants
- Relevant Solutions enables integration of merchant offers and promotions with CU Wallet

Mobile/digital wallet challenges

- Lack of standard platforms for interoperability
 - Even wallets on same technology platforms have differences (e.g. Apple Pay vs. Android Pay)
- Inconsistency creates confusing customer experience across merchant venues
- Varying levels of security
- Despite differences, industry analysts project increasing adoption of wallets over next few years; but need greater merchant participation and consumer education about value, benefits and risks

Emerging P2P payments

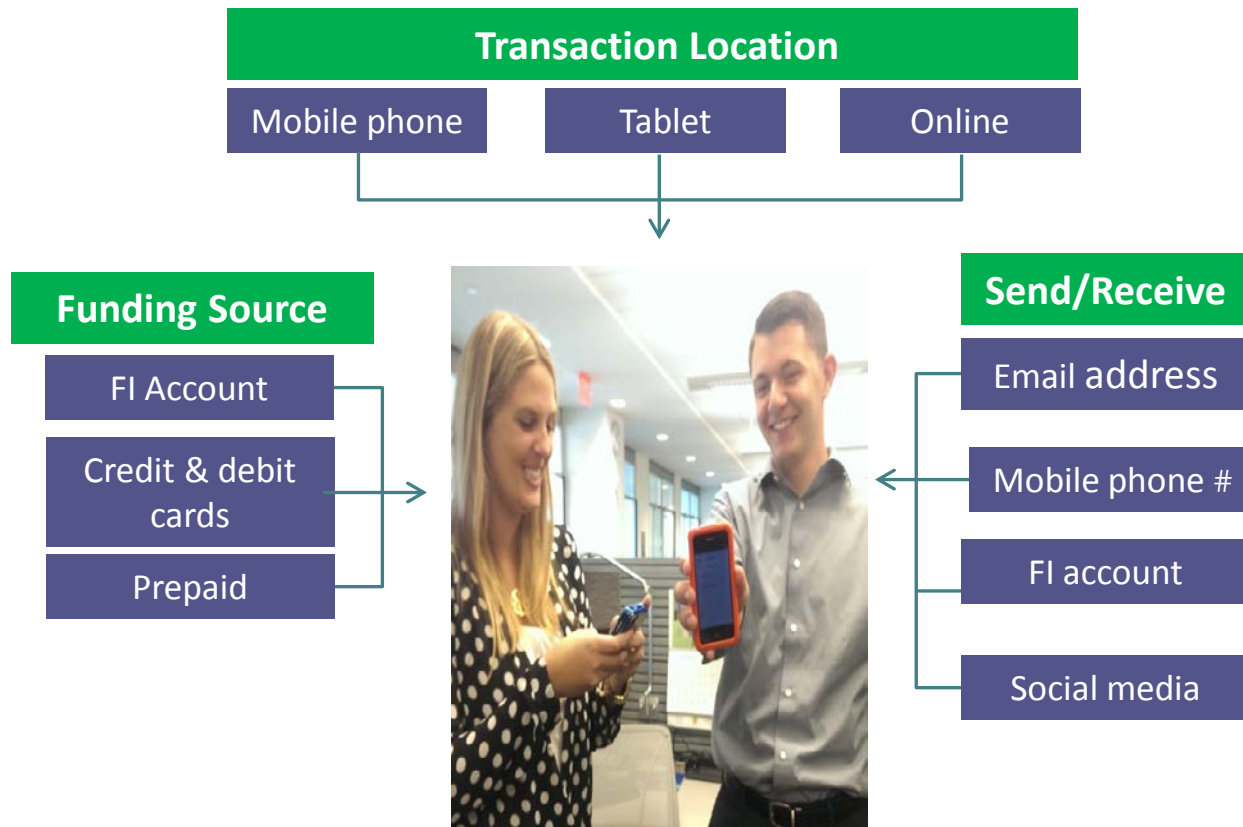
Person-to-person payments

“A consumer-initiated transfer of funds to another consumer using multiple channels and payment methods” *TowerGroup, 2009*

- On-us payments between accounts at two financial institutions
- Cash and checks still dominate P2P payments
- Online banking and bill payment technologies allow a variety of online P2P options (for senders and receivers)
- Mobile payment technology and digital services foster new ways to pay and expand the business model
- Cross-border remittances typically not considered “P2P”

Overview of new, emerging P2P

P2P platform being integrated with real-time money movement

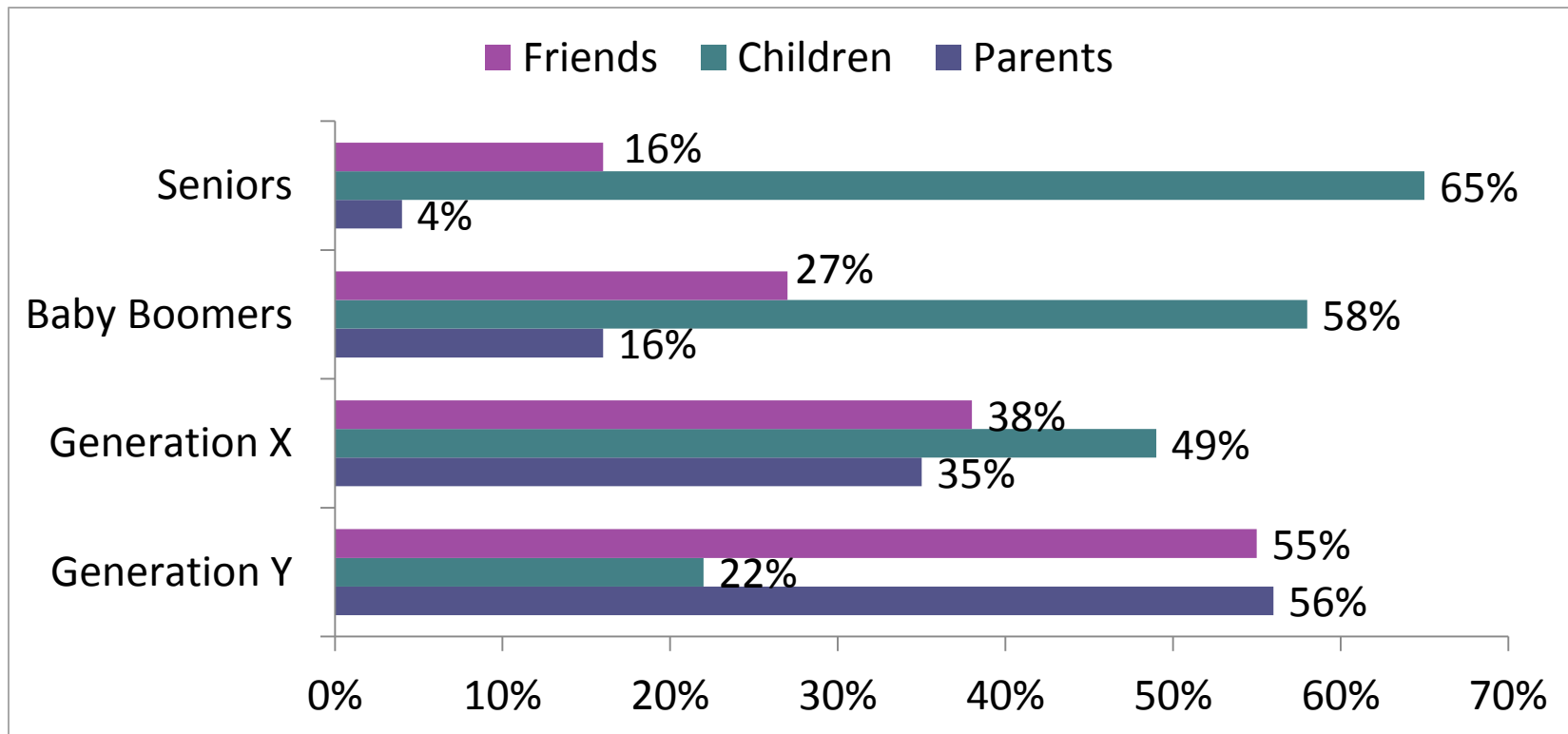


P2P process:

- Sender selects account, dollar amount, receiver's name, and email or mobile number
- Receiver gets notice of payment via email or text message; logs in to provider site to confirm with email, phone #, etc.
- 'Enrollment' may be required by sender's P2P service

Who is paying whom using P2P?

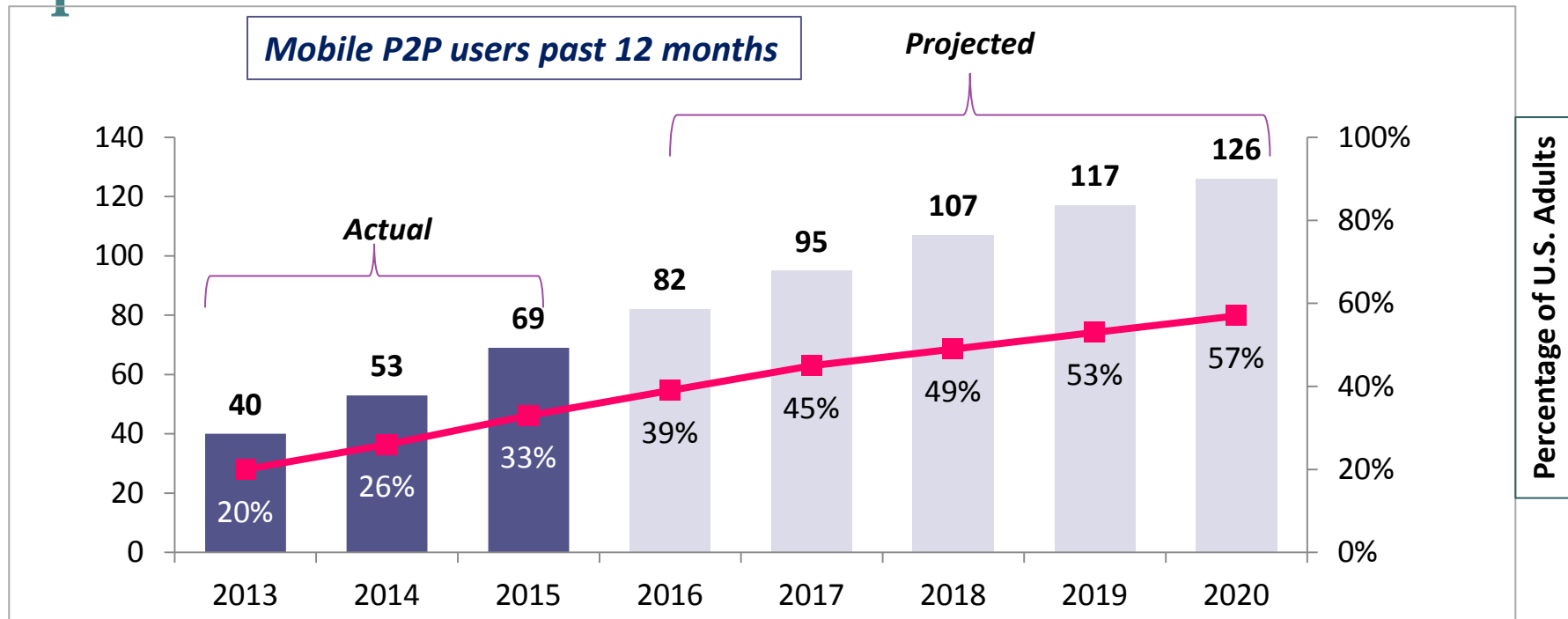
Millennials aged 25-34 are mobile P2P power users



Source: Fiserv Survey; How Americans Pay Each Other, 2013

Top 3 purposes: gifts (39%), bill pay (38%), repay friend for entertainment (29%) (Source: Javelin 2015 consumer market survey)

Mobile P2P projections for stronger consumer uptake



BENEFITS of P2P:

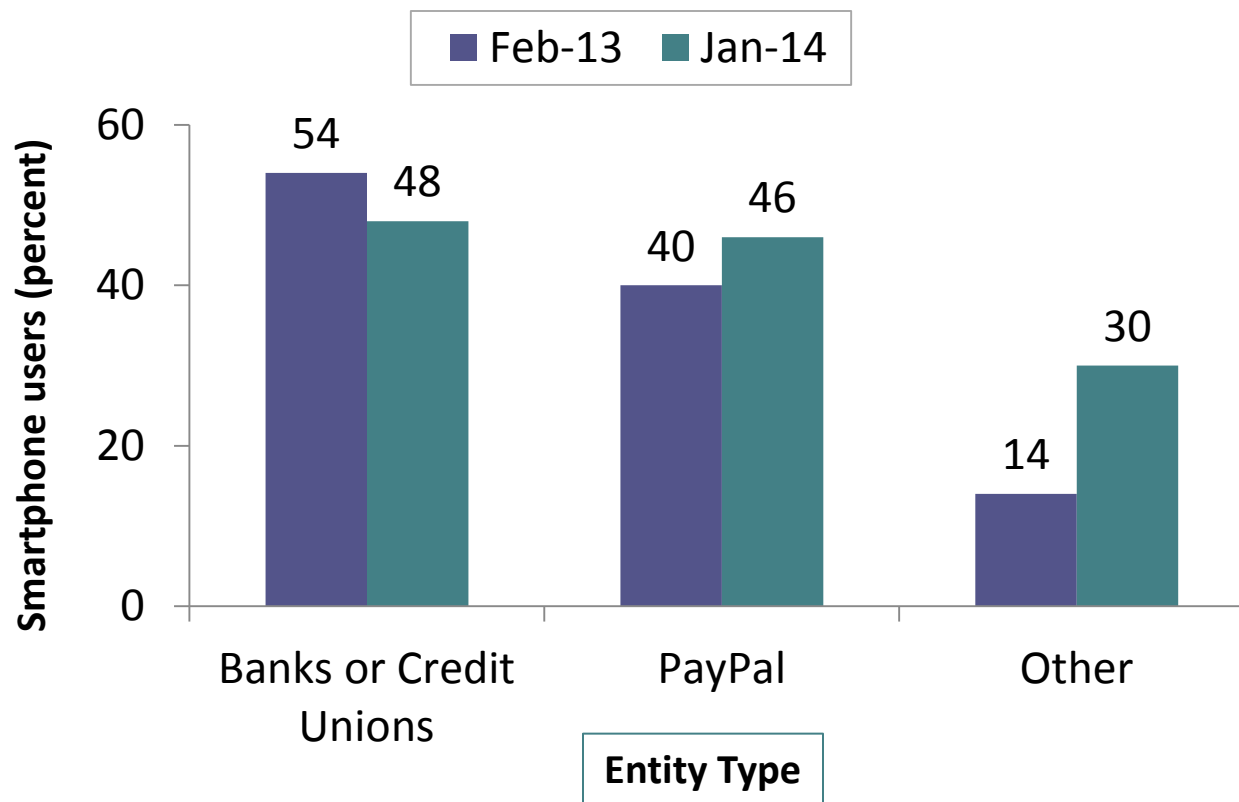
- Reduces need to write checks or carry cash
- Service offered by a “trusted brand”
- Simple, convenient, secure
- Funding account flexibility
- Online access to payment history
- Social capabilities

Source: Javelin,
Sep & Dec 2015

FIs losing smartphone share to non-bank providers

But consumers tend to make higher value digital payments through FIs

(Javelin, Dec 2015)



- Consumer P2P payments via mobile device rose from 10.3% in April 2013 to 13.2% in January 2014
- 44% of smart-phone users (vs. 27% of all consumers) want to use phone for P2P

A fragmented P2P payment landscape

Range of bank and non-bank solutions - from FI providers and money transmitters to technology and social media companies

WESTERN UNION
moving money for better

 **MoneyGram**

P2P Cash
THE FUTURE OF MONEY

PayPal[™]

facebook

fiserv. **popmoney**
Pay Other People MoneySM

FIS

jack henry
BANKING[™]
A DIVISION OF JACK HENRY & ASSOCIATES, INC.[®]

 **clearXchange**



MasterCard Send

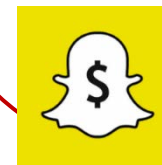
VISA Direct



Square Cash

Google

 **DWOLLA**



venmo

Walmart 

ClearXchange - Big banks' answer to PayPal

Cutting out the middleman with FI2FI transfers



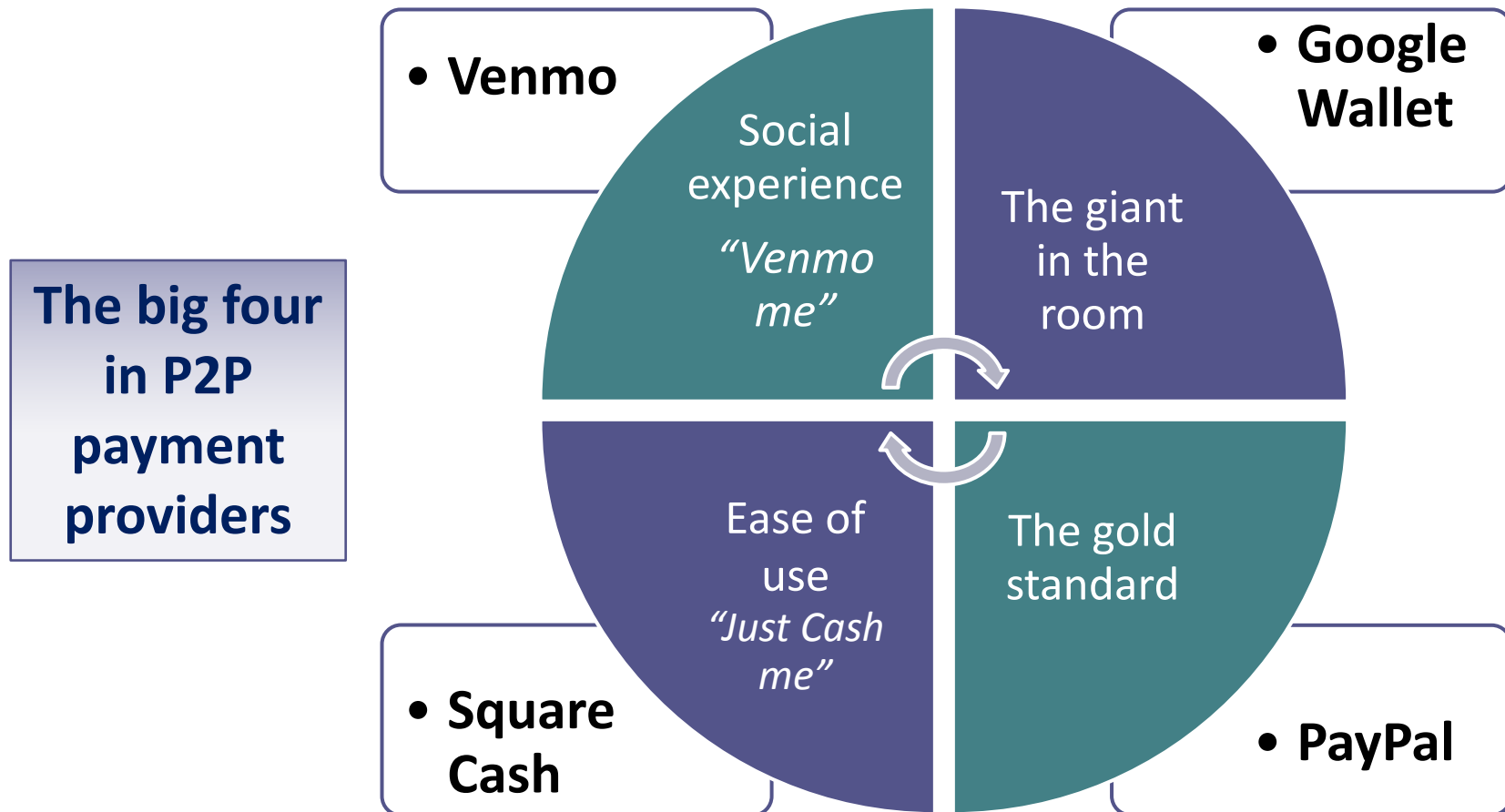
The screenshot shows the ClearXchange website homepage. At the top, the ClearXchange logo is on the left, and navigation links (Home, Company, About, How It Works, FAQs, Log In) are on the right. The main headline reads "Receive and send money with an email address or mobile number". Below this, there are three columns: "Convenient" (Receive money and respond to requests from customers of member banks.), "Nationwide" (Use your existing bank account at any U.S. non-member bank.), and "Secure" (Keep your bank account information secure and confidential.). To the right of these columns is a "Start Now" button and a "Log In" link. At the bottom, there is a footer with navigation links (Home, About, How it Works, Blog, FAQs, Log In, Sitemap, Contact Us), contact information (1-866-839-3488, 1-501-748-8506), and legal links (Terms of Use, Service Agreement, E-Sign, Privacy & Information Security, Back to top). The copyright notice is ©2016 clearXchange Intellectual Property. All rights reserved.

- Founded May 2011
- Owned by Bank of America, Capital One, Chase, U.S. Bank, & Wells Fargo
- First U.S. P2P payment network created by FIs for FIs
- Reaches > 50% U.S. consumer online banking customers
- Customers of non-member banks can receive P2P payments & respond to payment requests
- Email address or mobile number
- NEW real-time option

Core providers have solutions for banks and credit unions

Fiserv PopMoney	FIS PeoplePay	Jack Henry iPay Consumer Bill Pay	Co-op Financial Services
Send/receive money from FI account	Send real-time good funds from DDA	Send via FI website	Send/receive P2P payments via online or mobile
Send via email address or mobile phone number of recipient	Send via email address or mobile phone number of recipient	Send via name and email address of recipient	Supports P2P and A2A in-network
Instant Payments for real-time P2P online & mobile	Can receive funds in bank account, gift card, check	U.S. only	Incorporates FIS PayNet Platform
Offered by 2400+ FIs	White-label to FIs	Over 2,350 FIs	

Mobile driving more social, richer P2P payment services



Some side-by-side comparisons – a moving target

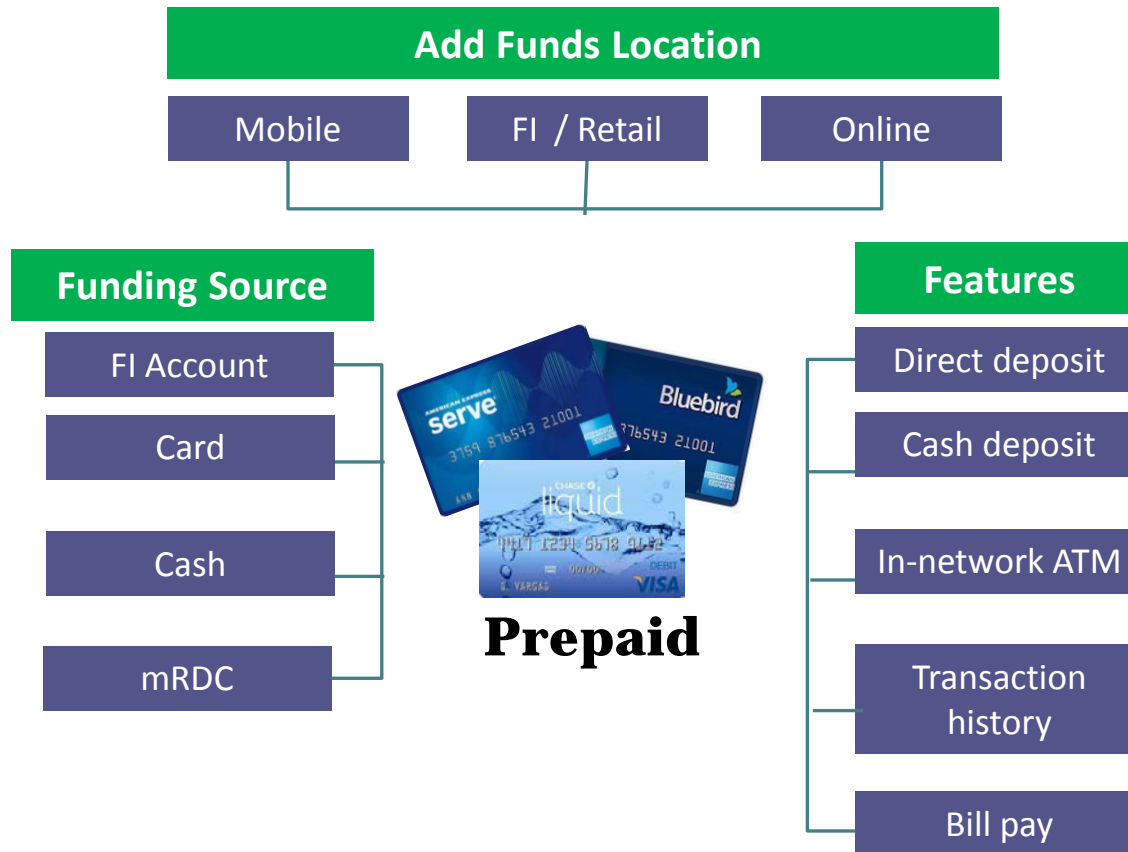
P2P App	Payment Options	Factoids	Cost
Google Wallet	Debit card, Wallet balance; linked FI account	Must have Gmail account; instant notifications	Free to consumer
PayPal / PayPal.me	ACH, credit or debit card – based on friend's mobile phone # or email address	More than 173 million active accounts worldwide (Q3 2015)	Free if use linked FI or PP account; otherwise fees apply; PayPal.me charges businesses the PP rate.
Square Cash	MasterCard debit card to send or receive money; requires friend's email address or mobile phone #	Receiver does not have to register to get payment, just enters debit card info	Free to consumer New: 1.5% transaction fee to business customers
Venmo (a PayPal company)	ACH, credit or debit card, Venmo funds <ul style="list-style-type: none"> Payee can 'cash out' funds to FI account or use in-app 	Social: add messages, share with friends; Uses mobile address book or Facebook to find friends on Venmo	Free for linked FI or Venmo account; 3% fee per payment for CC and non-major debit cards

Emerging Prepaid

As Prepaid market expands, GPR prepaid drives adoption

- According to a 2014 Mercator study
 - Consumers loaded \$76.7 billion onto prepaid cards in 2014
 - Projected to exceed \$168.4 billion by 2015
 - Open-loop market forecast to surpass traditional closed loop (i.e., gift cards) by 2017
- General Purpose Reloadable (GPR) cards offer convenience and mobility
 - GPR card usage grew 50% from 2012 to 2014
 - 9.4% U.S. adults used GRP prepaid card at least monthly (*Pew, June 2015*)
 - Serving underbanked and, increasingly, banked consumers
 - 2014: 2.6% and 6.7% of U.S. adults, respectively (*Pew*)
 - 2012-2014: unbanked adoption was flat; banked adoption rose from 4% to 7% of adults (*Pew*)
 - Age, then income, key factors in GPR card ownership/adoption (*Phil. FRB, Sep 2014, based on Phoenix Marketing research*)
 - Strongest among the youngest adults – higher income ‘power users’




Overview of prepaid card accounts



GPR cards functioning more like FI accounts:

- Online / mobile transaction history
- Direct deposit of payroll, benefits, etc.
- Personal financial management tools
- FDIC insurance (most cases)
- GPR cards can carry purchase, re-load, monthly, or other fees

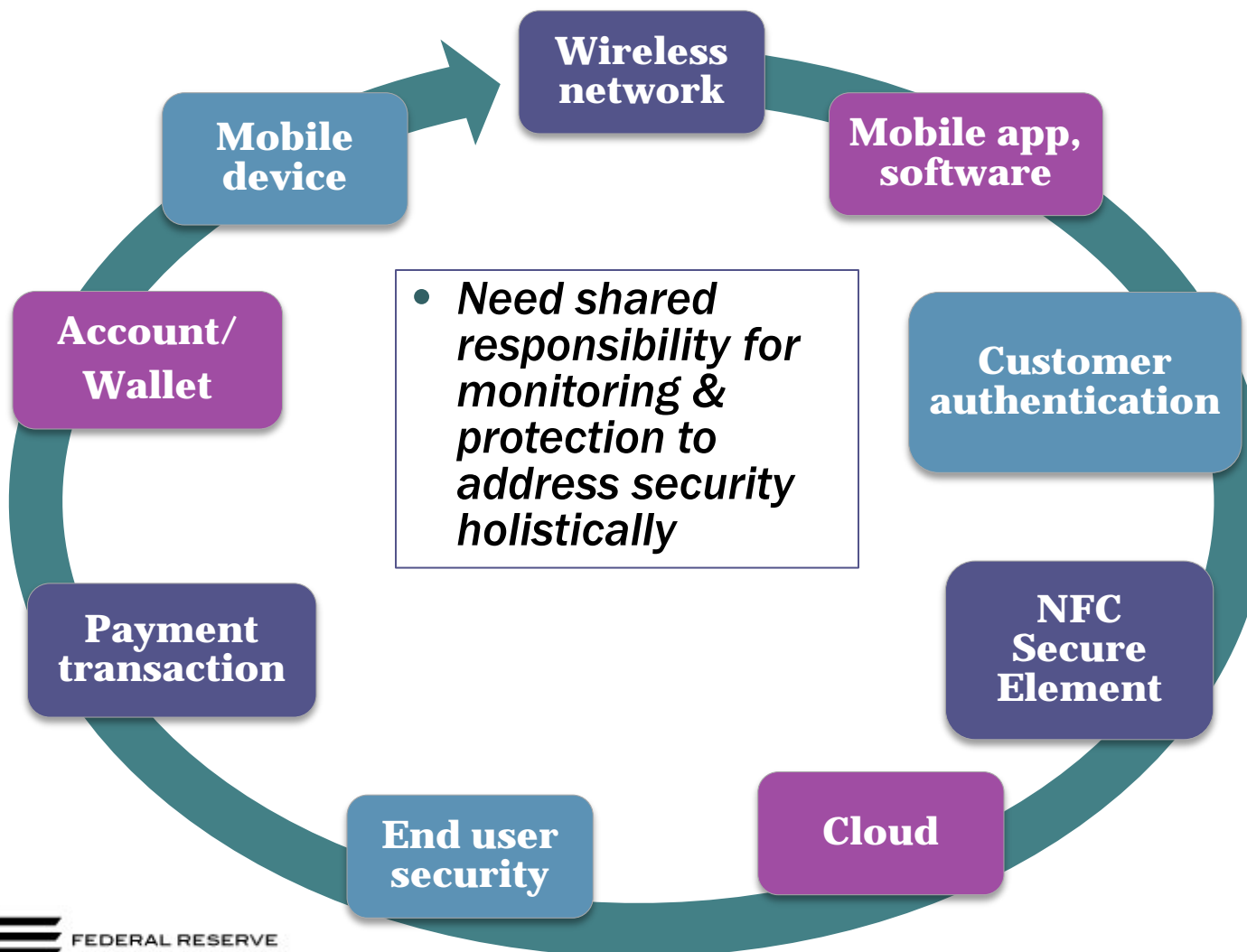
Prepaid mobile banking solutions gain traction

	<ul style="list-style-type: none"> • FDIC-insured GPR prepaid account • Plastic card and mobile app • Direct deposit, alerts, bill pay, P2P, mRDC, ATM access, family accounts & PFM tools • Cash reload at Walmart; savings; few fees
	<ul style="list-style-type: none"> • FDIC-insured GPR prepaid account card • Card and mobile app; standard services plus bill pay, statements; integrated with Chase QuickPay • Free reload/withdrawal at Chase ATMs & branches • \$4.95 monthly service charge
	<ul style="list-style-type: none"> • FDIC-insured branchless mobile bank account • Open new account, alerts, mRDC, P2P, bill pay, direct deposit, ATM network, PFM, savings • Cash deposits at some retail/convenience stores • No credit check to get a card; \$5.95 monthly fee

Key emerging payment challenges

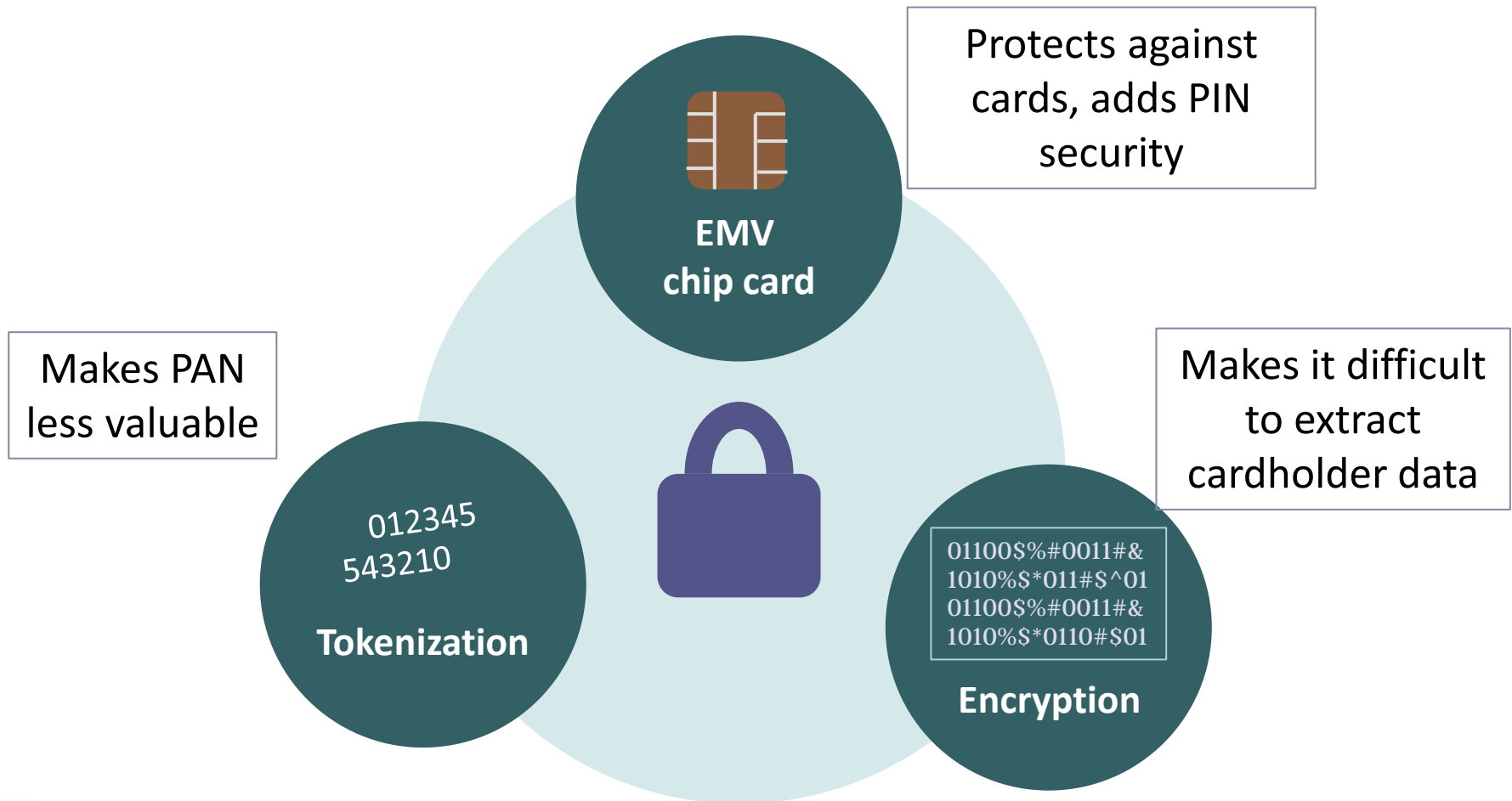
Security, Standards & Regulation

Security of digital/mobile payments involves multiple elements



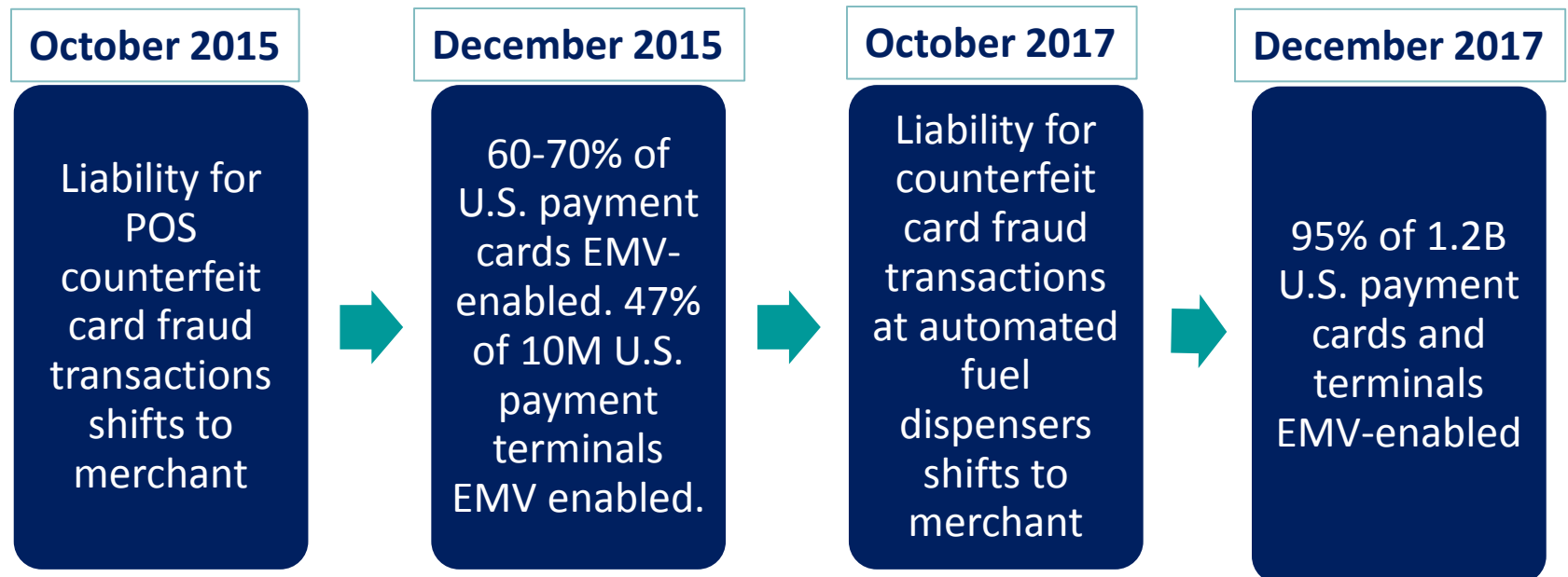
- Layered approach to address end-to-end payment process, including wallet provisioning.
- Stronger authentication
- Tools/controls being developed not yet standardized for implementation:
 - EMV
 - Tokenization
 - Geo-location
 - Biometrics

Building blocks for authentication and payments security



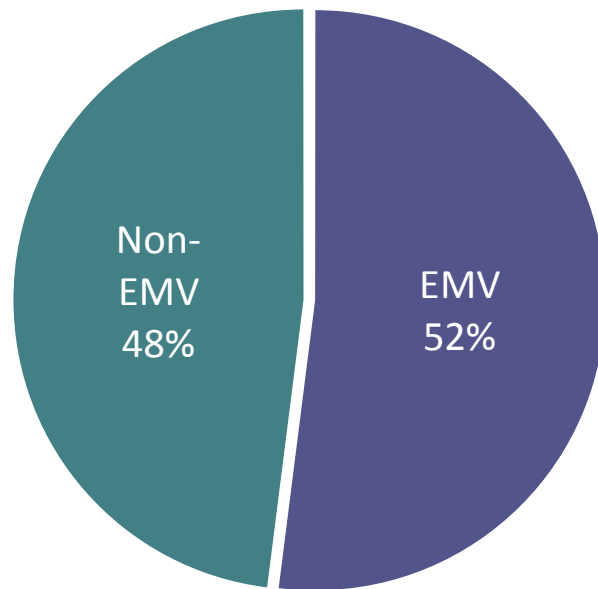
EMV card migration status

- EMV chip embedded in card creates unique cryptogram for each POS transaction
- One time code prevents counterfeit or copy of account data to use for fraudulent transactions
- EMV POS terminals accept the EMV cards and read the chip
- Will take some time to see full effect of EMV in reducing U.S. POS counterfeit check fraud

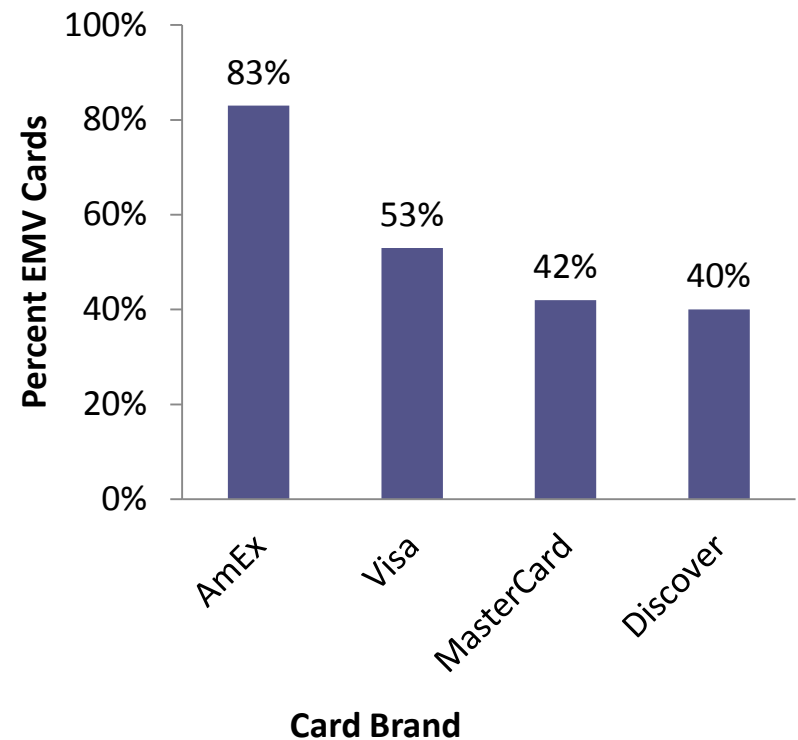


Over 50% of cards being presented in the U.S. have EMV chips

Split of card with and without EMV chips presented at U.S. Merchants



Percent of cards presented at U.S. merchants with EMV chips, by card brand

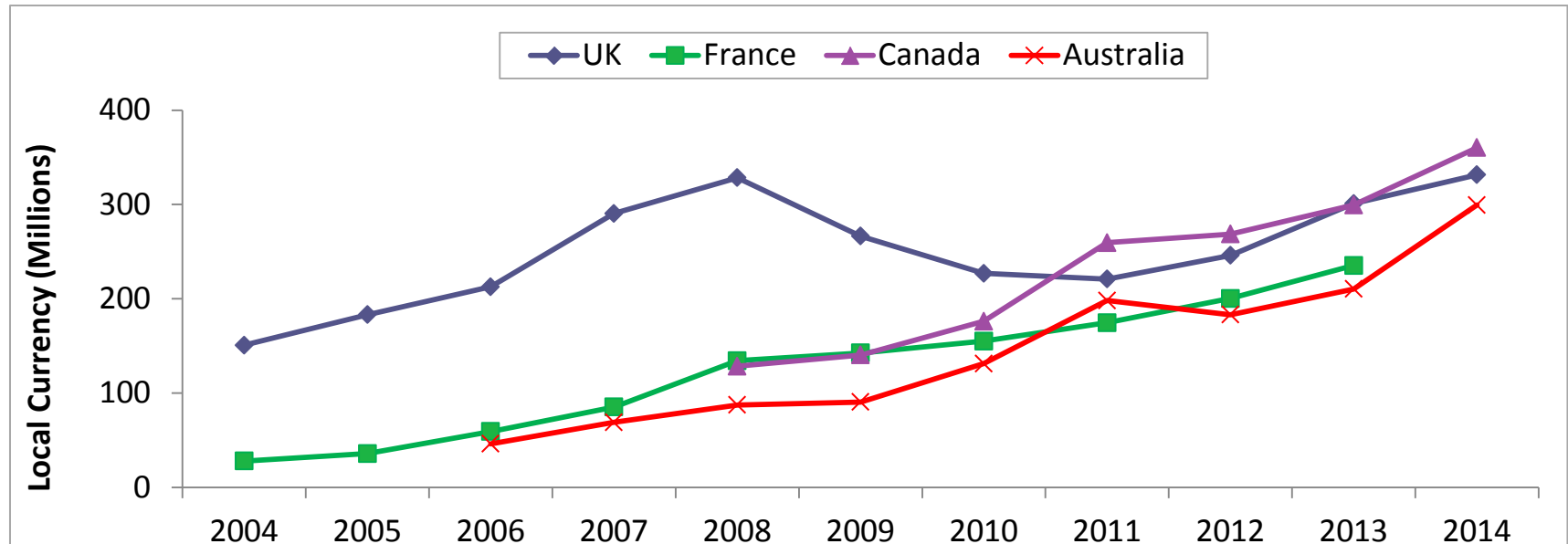


Source: Sample of all card present transactions through Cardflight gateway, October 15-December 4, 2015

U.S. CNP fraud experience

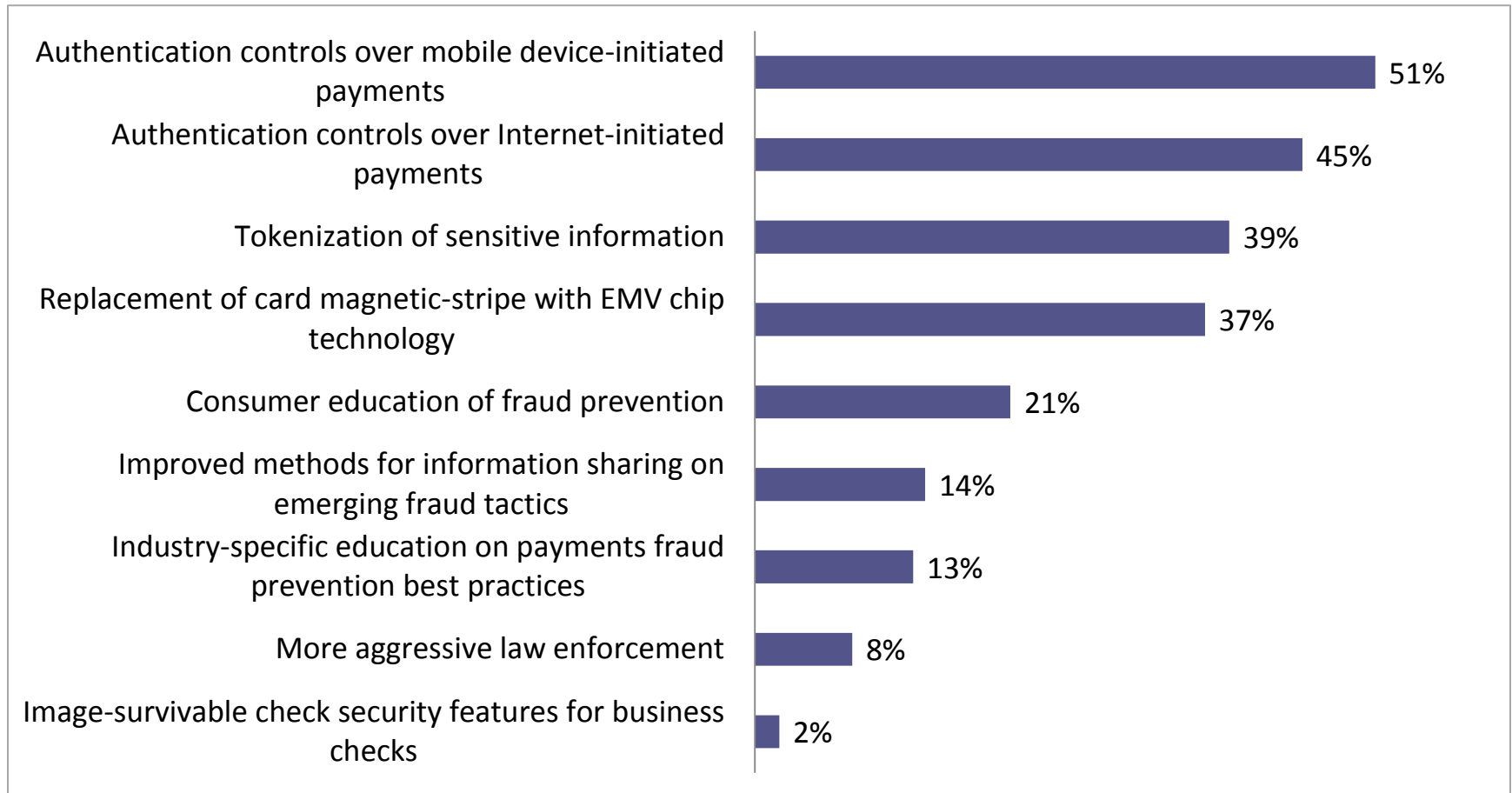
- EMV card migration expected to push more fraud to CNP space but not sure how much or how fast in U.S.
- CNP fraud
 - Occurs when criminal uses stolen payment card credentials to pay for purchase online, via call center, mobile device or mail order.
 - Estimated at 25% of total global fraud losses in 2015 (~ \$4B) (*Nilson Report*)
 - Represents 45% of total U.S. card fraud (*RSA, 2015*)
- Retailers lose 20% of customers because they lack enhanced payment security options (*Acquity Group*)
 - Retailers are applying holistic approach to fraud risk as they expand into omni-channel commerce
 - This will help protect them from expected increase in CNP fraud due to explosive growth of ecommerce (*EMV Migration Forum, 2015*)

CNP fraud lessons learned from other countries



- UK CNP fraud is 70% of total fraud losses, up from 54% in 2008*
- Since 2008 the **value** of UK CNP fraud losses grew only 1% from \$509m to \$513m; while total ecommerce spending doubled
- Much European card fraud did not initiate within their borders
- UK debit card cross-border fraud increased by 25%
 - 47% occurred in the U.S.**
 - Increase attributed to U.S. being last country to adopt EMV

Security methods most needed to reduce payment fraud apply to card-present and CNP payments



Source: *Mobile Payments Today*. "Payment Strategy – Renew the Old, Ring in the New." 2015.

Many payment standards exist but lack coordination and interoperability

- Potential standards gaps
 - Mobile provisioning and transaction processes
 - Authentication of payment credentials
 - Tokenization and encryption for data in-transit and at-rest
 - Overall mobile payment security
- Barriers
 - Implementation cost vs. perceived value
 - Consensus on requirements and timing
 - No sense of urgency
 - Nascent market; risk stifling innovation or limiting consumer choice

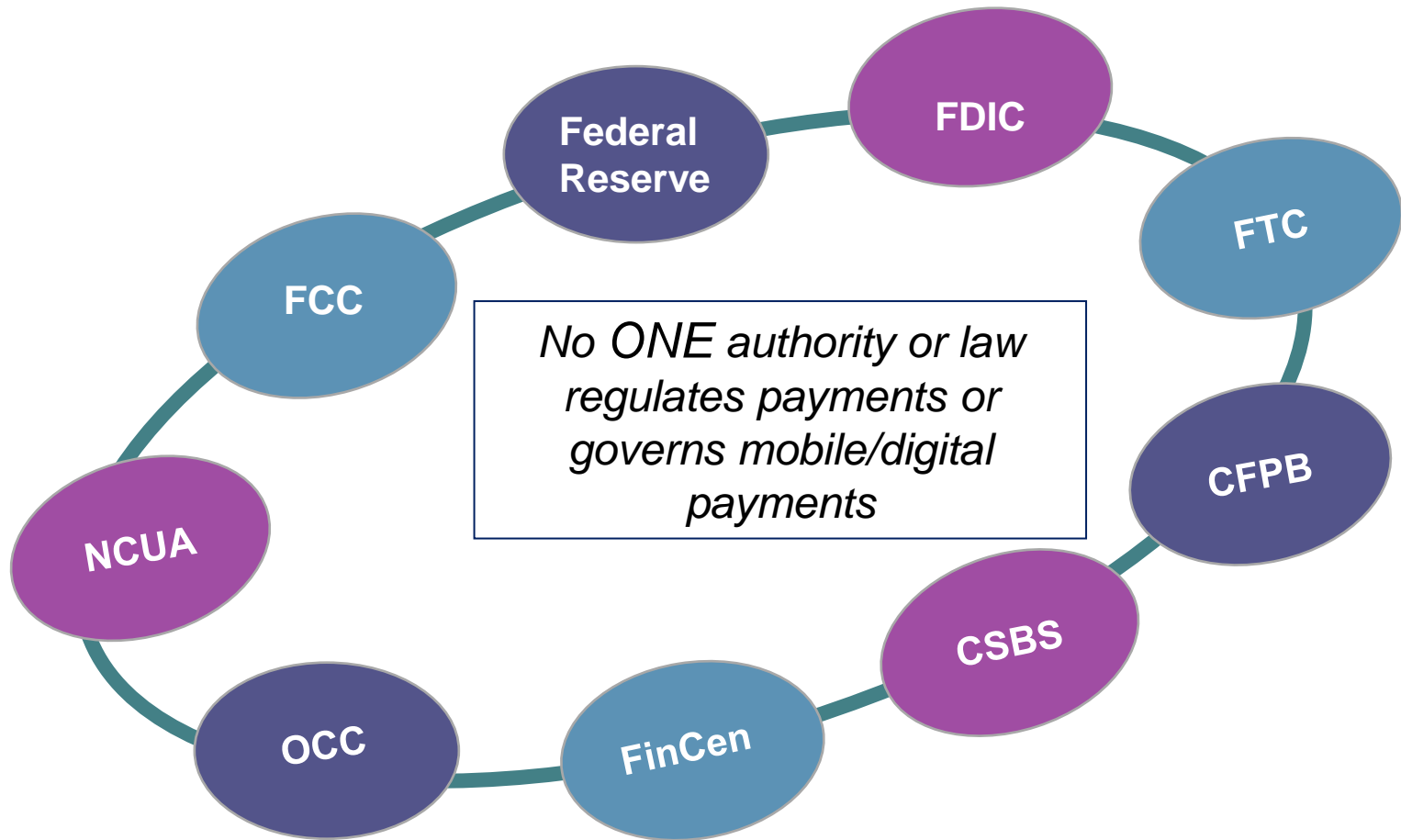


Secure Payments Task Force

Why Standards play an important role in adoption of mobile/digital payments

- Support holistic approach to ensure compatibility across retail venues and platforms/technologies and a common framework for provisioning, transacting, authentication, security, etc.
 - Can help create familiarity and a secure, but user-friendly, experience across platforms
- Encourage collaboration by engaging stakeholders in development of priorities, use cases, responsibilities and ownership
 - End-to-end transaction process
 - Cross-channel (POS, online, mobile)
 - Interoperability of technology platforms and wallet solutions
 - Security requirements

U.S. Payment regulatory structure is complex



But regulation not a major impediment to U.S. mobile/digital payments adoption

- No major regulatory changes in U.S. regarding mobile/digital payments in past year
 - No changes to Reg. Z (credit card) or Reg. E (debit card) specifically to address mobile payments
- Mobile payment volume low; not much fraud, so little pressure for U.S. regulators to do anything yet
- Hard to construct efficient regulatory framework without standardization of mobile technology platforms
- Not sure regulation would help increase U.S. adoption
 - Possible issues could arise related to consumer protection and data privacy but situation still unclear

Summary thoughts – looking forward

- The pace of change in retail payment services continues to accelerate – nothing is static
 - Like weather in New England, “if you don’t like it, wait 10 minutes”
- New technologies, mobile in particular, are gaining momentum – enabling consumers to “have it their way”
- Competition is intense – everyone is a payments expert
- Fraud and risk track to new technologies – criminals are innovative too
- There is opportunity for FIs in this environment, even with current regulation
- There are varied and evolving drivers for expanded adoption of retail payment mechanisms and models
- The move to a “near” real-time payment system is underway – Prepare now!

Questions?

Thank you

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