The Health and Medical App Marketplace

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Overview

- Clinical and consumer health apps are becoming a more common way to find health information, track health, access medical records and manage patient care.

- Today's session will:
  - Present findings from a current-state assessment of API use in health care
  - Discuss implications for app development
  - Summarize the technical capabilities of the third-party apps available through market leading EHRs
  - Quantify adoption and use of these apps
  - Provide an overview of federal efforts to establish structures that facilitate data sharing for medical research.

Findings from the App Marketplace

ONC, Office of Technology, Data Analysis Branch

Presented by: Wesley Barker and Christian Johnson

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Background

- Purpose: Measure and assess the types of apps developed for clinicians and patients found in public app stores.

- Several large developers and SMART curate galleries of clinical and patient applications.

  - Athenahealth, Allscripts, Cerner, and Epic provide EHRs for over 60% of both hospitals and clinicians in practice groups.

- We can pull this information from the public websites and organize the data in computable formats.

Use Cases

- This is a routine, automated process that can be regularly performed.

- We can use this data to assess changes in the app market over time, specifically after rule making is finalized.

- Data can be used to
  - supplement measurement of FHIR adoption among app developers;
  - identify apps deployed across several developers or for just single developers;
  - understand the purpose and functionality of the apps, including whether the app is desktop or mobile.

- Data collected from galleries can be merged with data from Apple and Google app stores to better understand the overall use of any apps that are deployed for smartphone use.

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At the end of 2019, 600 applications from 517 developers were listed in the 5 app galleries we analyzed.


Number of Listings, Unique Applications, and Unique Developers in App Galleries
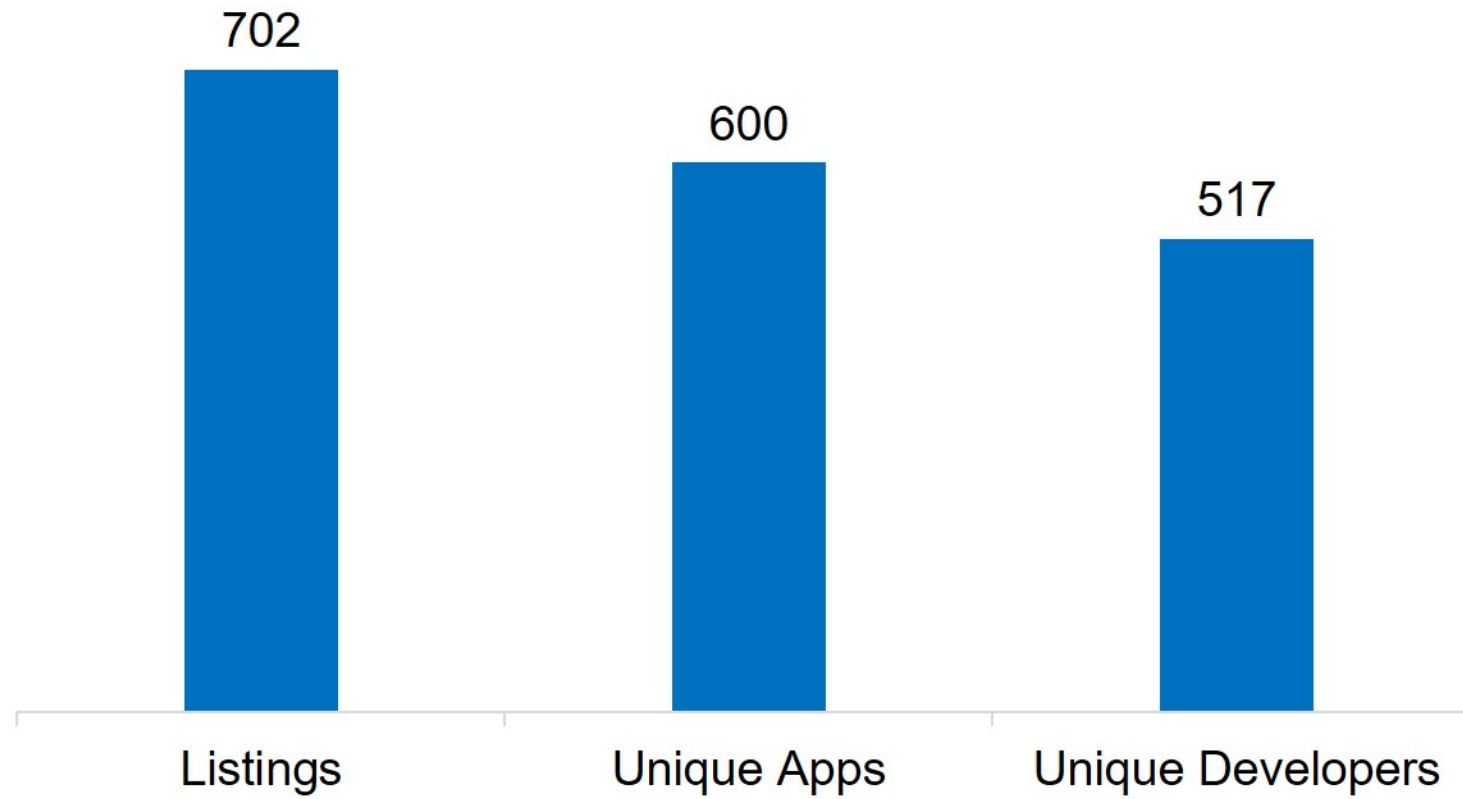
Note: Denominator represents applications and developers listed in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.

Most developers (88%) have only one application listed throughout the app galleries.

## Percent of Developers with Multiple Applications Listed in App Galleries

88%
One Application Listed

12%
Multiple Applications Listed
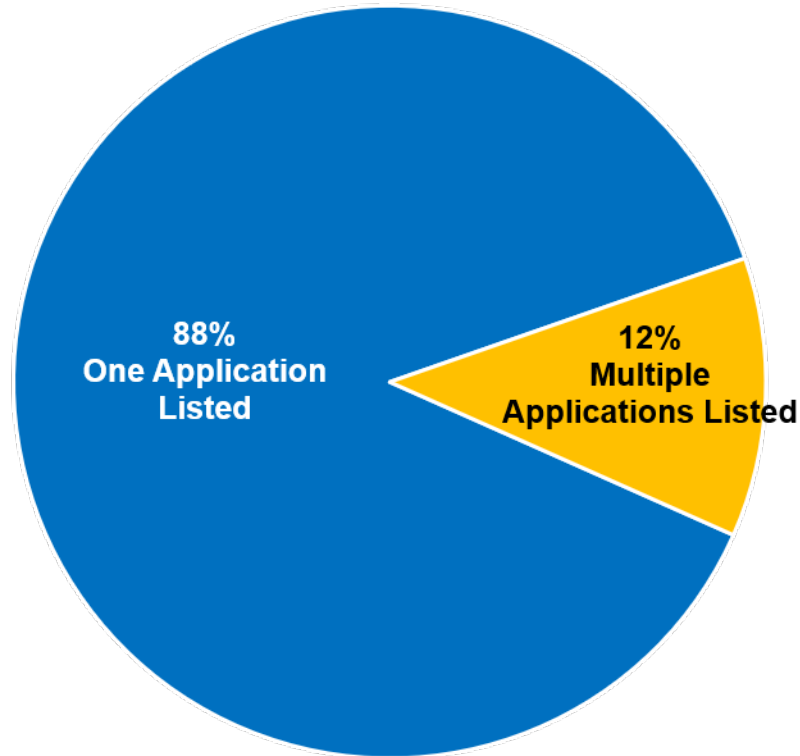
# of Applications	Examples of Developers
1	Apple, 1Up Health, Health Grades
2	Care Evolution, Geisinger/Merck, Patient Link Enterprises
3	American Well, Health Finch, MedStar
4	Elsevier, Hitek Solutions
5	IBM
8	Boston Children's Hospital

Note: Denominator (n=517) represents developers with applications listed in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.

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# The number of applications listed varies by gallery.

Number of Applications by App Gallery.
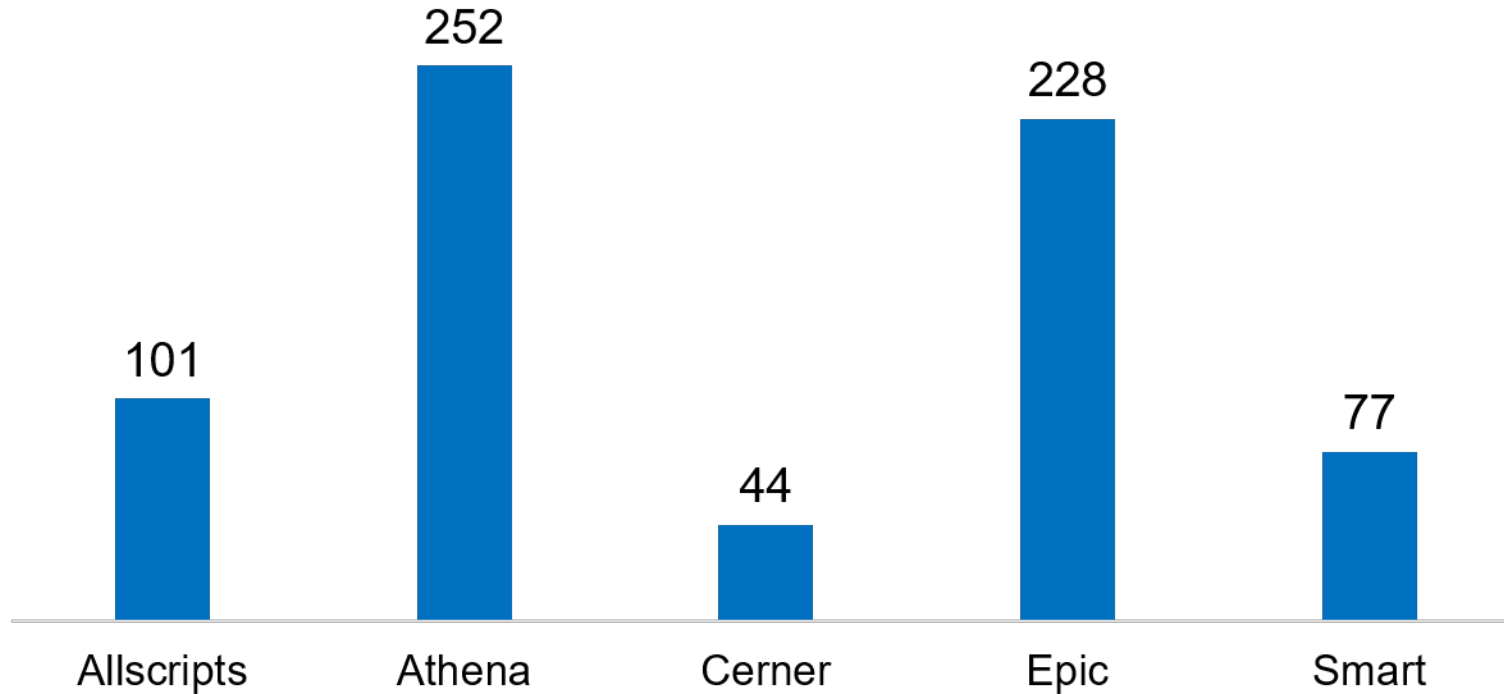
Note: Denominator (n=702) represents the number of application listings in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.

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The majority of applications (87%) are listed in only one gallery.

Number of Applications Listed in Multiple App Galleries.
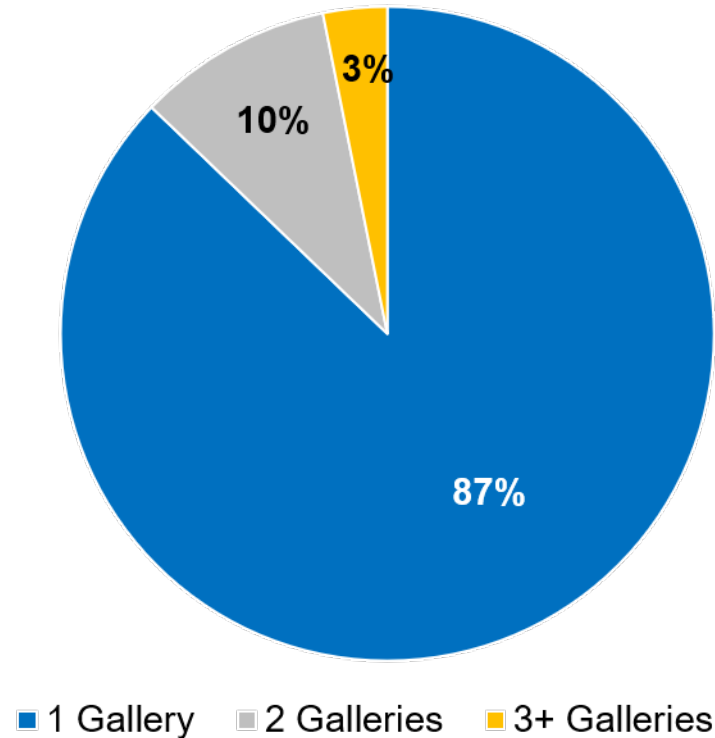
3%

10%

87%

■ 1 Gallery   ■ 2 Galleries   ■ 3+ Galleries

Note: Denominator (n=600) represents unique applications listed in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.

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About 1 in 5 applications (18%) listed in app galleries reported using Smart on FHIR.

Percent of Apps Listed that Use FHIR

3%

18%

79%

FHIR Only
(n=18)

Smart on FHIR
(n=110)

Not FHIR
(n=472)

Note: Denominator (n=600) represents unique applications listed in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.
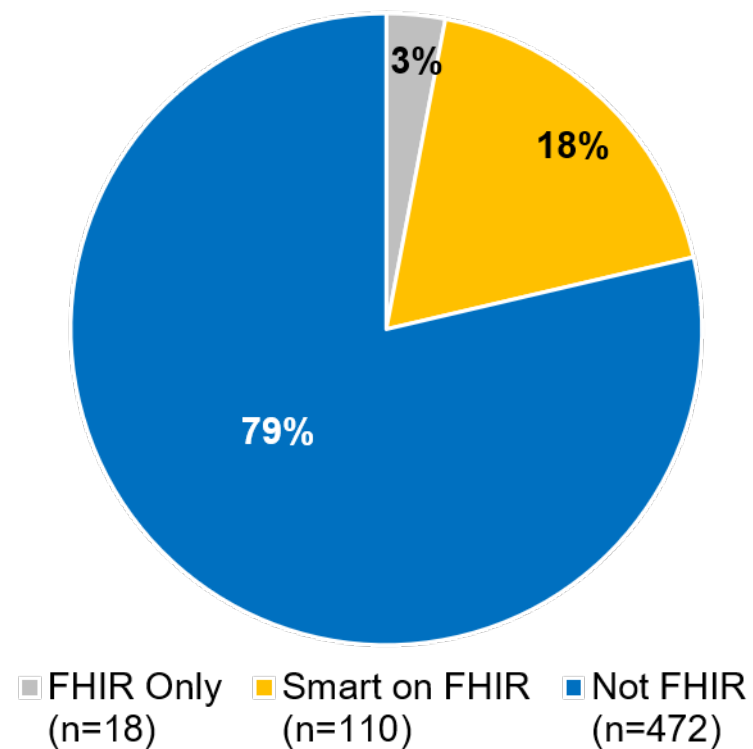
Applications listed in multiple galleries tend to use the Smart on FHIR standard.

Percent of Applications that Use FHIR by Number of
Galleries the App is Listed

■ Smart on FHIR   ■ FHIR Only

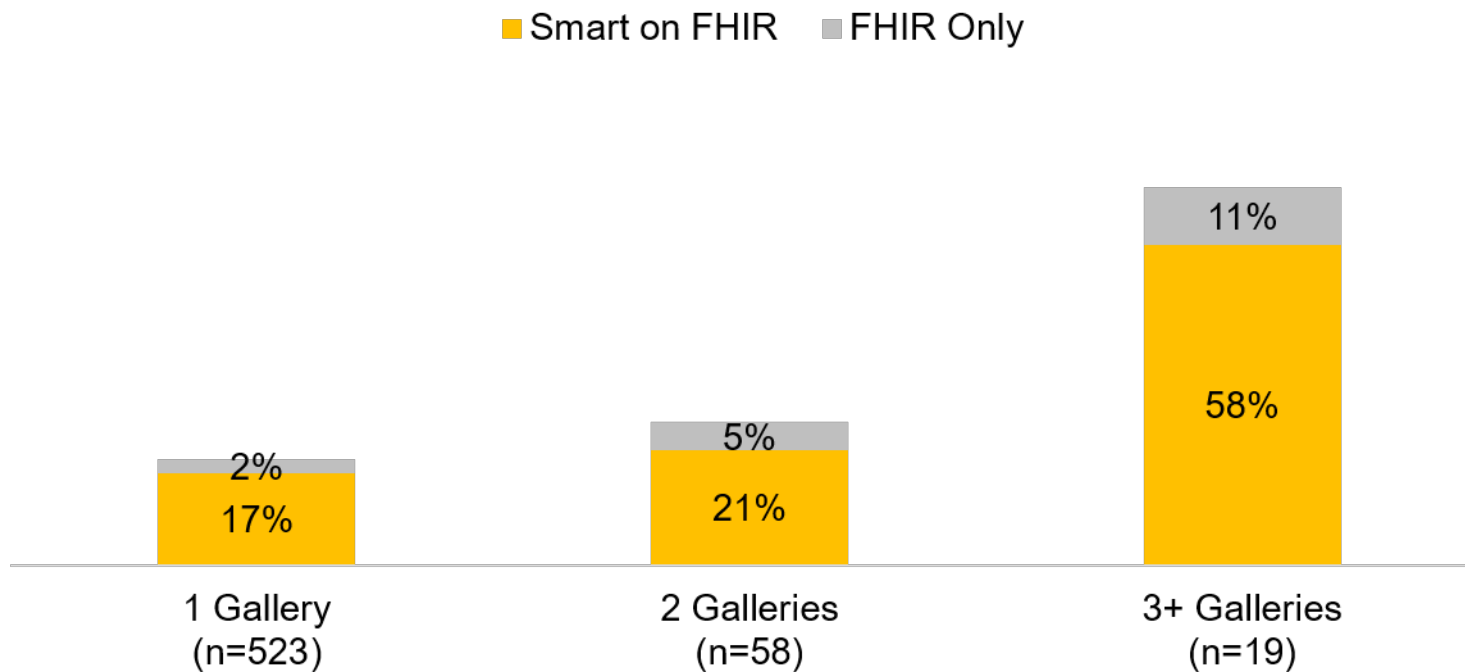|	1 Gallery (n=523)	2 Galleries (n=58)	3+ Galleries (n=19)
FHIR Only	2%	5%	11%
Smart on FHIR	17%	21%	58%

Note: Denominator (n=600) represents unique applications listed in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.

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The most common functional categories of applications listed in galleries are for clinical use and administrative tasks.
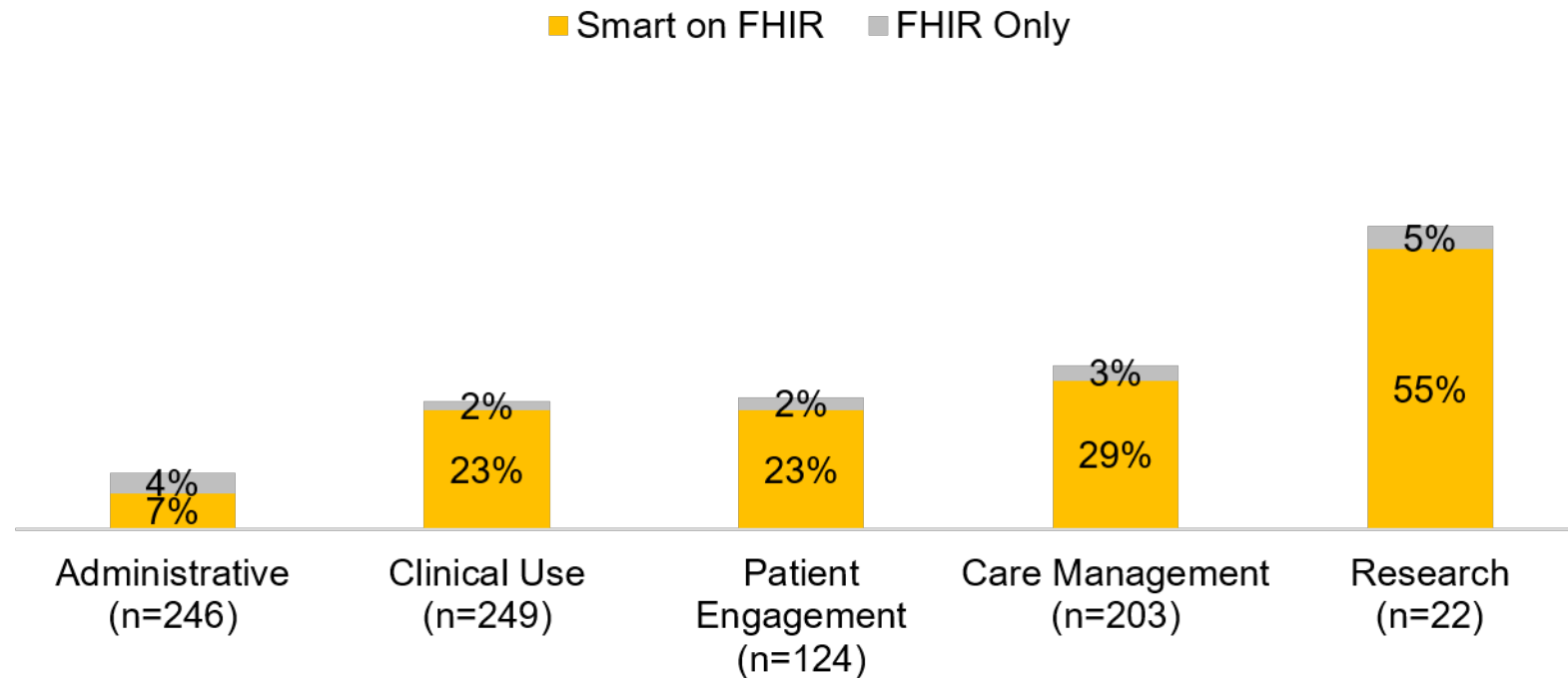
Percent of Applications by Functional Category

Clinical Use (42%)	Administrative Tasks (41%)	Care Management (34%)	Patient Engagement (21%)	Research (4%)
• Automated Tasks (n=128) • Population Health (n=90) • Clinical Decision Support (n=66) • Telehealth (n=26)	• Scheduling and Check-In (n=172) • Billing and Payment (n=117)	• Information Management (n=83) Disease Management (n=44) • Care Plan (n=41) • Medication Management (n=17) • Patient Monitoring (n=18)	• Patient Education (n=106) • Patient Satisfaction Surveys (n=73) • Secure Messaging (n=52) • Patient Access (n=11)	• Clinical Research (n=22)

Note: Automated Tasks include: data visualization tools, risk calculators, and natural language processing. Denominator (n=600) represents unique applications listed in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.

Research and Care Management applications have the highest rates of FHIR use among functional categories.

Percent of Applications that Use FHIR by Functional Category

■ Smart on FHIR   ■ FHIR Only

Administrative (n=246): 7% Smart on FHIR, 4% FHIR Only
Clinical Use (n=249): 23% Smart on FHIR, 2% FHIR Only
Patient Engagement (n=124): 23% Smart on FHIR, 2% FHIR Only
Care Management (n=203): 29% Smart on FHIR, 3% FHIR Only
Research (n=22): 55% Smart on FHIR, 5% FHIR Only

Note: Denominator (n=600) represents unique applications listed in the Allscripts, Athenahealth, Cerner, Epic, and Smart App Galleries. Data accessed: 12/31/2019.

Linkage to Apple and Google App Stores

- The apps marketed in the EHR developer and SMART galleries are not all mobile or deployed as smartphone applications.

- Of the 600 unique apps discovered in these galleries, 80 have verified smartphone applications in the Apple or Google app stores.
  - ➢ This is about 13%.

- The smartphone applications vary in functionality and purpose.
  - ➢ E.g., telehealth, appointment scheduling, clinical documentation, and transcription

- Looking at the Apple and Google medical apps as a whole (beyond those discovered in the app galleries), you can see how people are using their phones to track and manage their health.

Developer	App	Category
GoodRx – Save On Prescriptions	GoodRx	Rx prices
Hear My Baby Heartbeat App	Fat Cigar Productions Ltd	Track health
Prime Sleep Recorder	Apirox, s.r.o.	Track health
Monash University FODMAP diet	Monash University	Health information
MyChart	Epic	Medical records
Human Anatomy Atlas 2020	Visible Body	Medical reference
K Health	Symptoms, Doctors	K Health Inc.	Health information
Baby Connect (Activity Log)	Seacloud Software LLC	Track health
SnoreLab : Record Your Snoring	Reviva Softworks Ltd	Track health
Essential Anatomy 5	3D4Medical.com, LLC	Medical reference
SingleCare - Rx Coupons	SingleCare	Rx prices
healow	eClinicalWorks LLC	Medical records
Instant ECG - Mastery of EKG	iAnesthesia LLC	Track health
Weedmaps: Marijuana & Cannabis	WeedMaps	Health information

Top Apple Store Medical Apps

App data accessed 1-15-2020

- Consumers use smartphone apps to manage their health, track activity and health data, and view their medical records.

- Both clinical and consumer medical apps are highly ranked.

- This shows that both health care professionals and consumers are using smartphones to perform a number of health care activities.

- Consumers are using their smartphones to access their health records (MyChart and Healow), track health (Sleep Recorder) and find health information (GoodRx, K Health and FODMAP).

- Health care professionals are using their smartphones for medical reference (Anatomy).

Developer	App	Category
WebMD Check Symptoms Find Doctors Rx Savings	WebMD LLC	Health information
My Calendar Period Tracker	SimpleInnovation	Track health
Blood Pressure	Klimaszewski Szymon	Track health
GoodRx Drug Prices and Coupons	GoodRx	Rx prices
MyChart	Epic Systems Corporation	Medical records
Pregnancy Tracker Baby Due Date Calculator	Mobile Dimension LLC	Track health
Pregnancy Week By Week	Amila	Track health
Leafly Find your cannabis and CBD	Leafly Holdings Inc	Health information
Ovia Pregnancy Tracker Baby Due Date Countdown	Ovia Health	Track health
FollowMyHealth	Allscripts Healthcare Solutions Inc	Medical records
Pill Reminder Medication Tracker MyTherapy	MyTherapy	Track health
Drugs com Medication Guide	Drugs com	Health information
Ovia Fertility Ovulation Cycle Tracker	Ovia Health	Track health
mySugr Diabetes App Blood Sugar Tracker	mySugr GmbH	Track health

Top Google Store Medical Apps

App data accessed 1-15-2020

- Consumers use smartphone apps to manage their health, track activity and health data and view their medical records.

- This shows consumers are using their smartphone to perform a number of health care activities.

- Consumers are commonly using their smartphones to access their medical records (MyChart and FollowMyHealth), track their health (blood pressure, blood sugar and women's health) and find health information (WebMD and GoodRx).

Developer	App	Category
Teladoc	Teladoc	Telehealth
MDLIVE, Inc.	MDLIVE	Telehealth
Solv Health	Solv: Convenient healthcare	Scheduling
American Well	Amwell: Doctor Visits 24/7	Telehealth
Doximity	Doximity - Medical Network	Networking
Blink Health	Blink Health Lowest Rx Prices	Rx prices
MD Aware, LLC	MDCalc Medical Calculator	Clinical decision support
Oscar Health	Oscar Health	Scheduling/insurance
Health Grades, Inc.	Healthgrades Care Organizer	Scheduling
Hale Health	Hale Health	Telehealth
NeuroFlow, Inc.	NeuroFlow	Wellness
TytoCare	TytoCare	Telehealth
InstaMed Communications, LLC	InstaMed	Bill payment
MedActionPlan.com	MyMedSchedule Plus	Medication management

Top Apple Store Medical Apps from App Galleries

App data accessed 1-15-2020

- The table shows the top Apple app store smartphone apps discoverable through the EHR app marketplaces.
  - Ranking and number of reviews were used to order apps.

- 5 of the apps are telehealth.

- 3 apps allow patients to schedule appointments online.

Developer	App	Category
Teladoc Inc	Teladoc	Telehealth
American Well	Amwell Doctor Visits	Telehealth
MD Aware LLC	MDCalc Medical Calculator	Clinical decision support
Blink Health	Blink Health Rx Best Discount Pharmacy Prices	Rx drug prices
MDLIVE Inc	MDLIVE Talk to a Doctor	Telehealth
VisualDx	VisualDx	Clinical decision support
Doximity Inc	Doximity Medical Network	Networking
Oscar Health	Oscar	Scheduling/insurance
InstaMed Communications LLC	InstaMed	Bill payment
Healthgrades	Healthgrades Find doctors manage your healthcare	Scheduling
eScription One	eScription One	Documentation
Aunt Bertha a Public Benefit Corporation	Aunt Bertha Program Search	Social services
TytoCare	TytoCare	Telehealth
NeuroFlow	NeuroFlow	Wellness

Top Google Store Medical Apps from App Galleries

App data accessed 1-15-2020

- The table shows the top Google app store smartphone apps discoverable through the EHR app marketplaces.
  - Order based off installs of app

- Telehealth is the most common function among these top apps.

- Functions, like CDS, documentation and networking, lead among clinician-focused apps.

Findings from the app stores

- Overall, we find that consumers use their smartphone apps to manage their health, track activity and health data, and view their medical records.

- The smartphone is not just a tool to access information, but actively track and manage one's health.

- Considering only those smartphone apps that are discoverable through the EHR developer marketplaces and SMART, we find a different set of common functionalities.
  - The most commonly used apps are more directly related to patient care, like telehealth, CDS and appointment scheduling.
  - Apps most often have a direct utility to the clinician, rather than the patient.

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Foundations for Research

ONC, Chief Scientist Division

Presented by: Kevin Chaney

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Health IT is Foundational to Research

- New approaches to date storage, access, and analysis

- Portable electronic health information exchanged among health care providers, researchers, and individuals

https://www.healthit.gov/topic/scientific-initiatives

Sync for Science (S4S)

- Goal: Promote patient-mediated access to data; establish structures that facilitate data sharing with *All of Us*

- National collaboration among EHR developers, NIH, ONC, and Harvard Medical School's Department of Biomedical Informatics
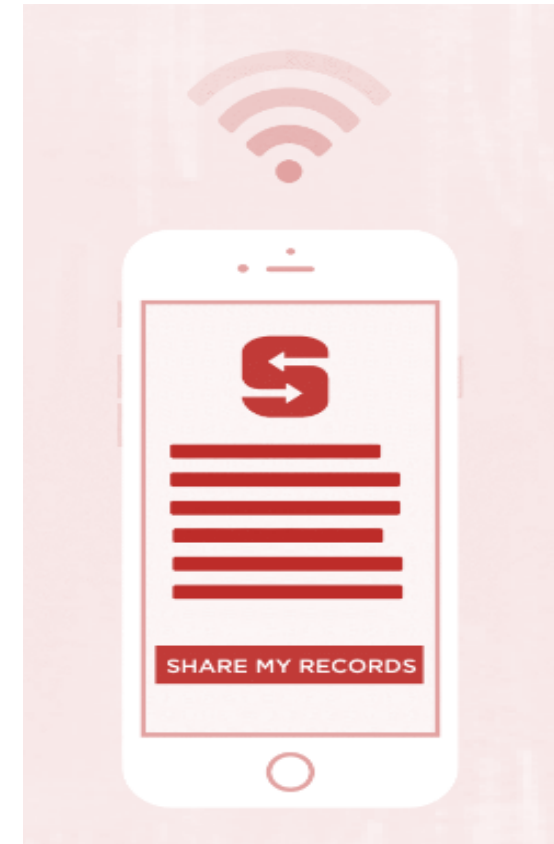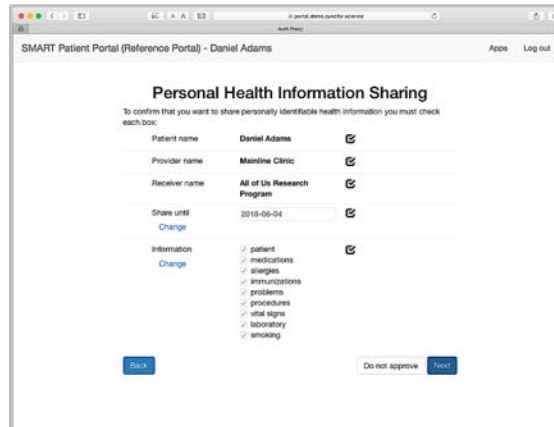

Patients Sharing EHR Data

https://www.healthit.gov/topic/sync-science

Launch Patient Portal

Receive share token

In a few clicks, patients can share their medical data for research, consumer, or clinical purposes
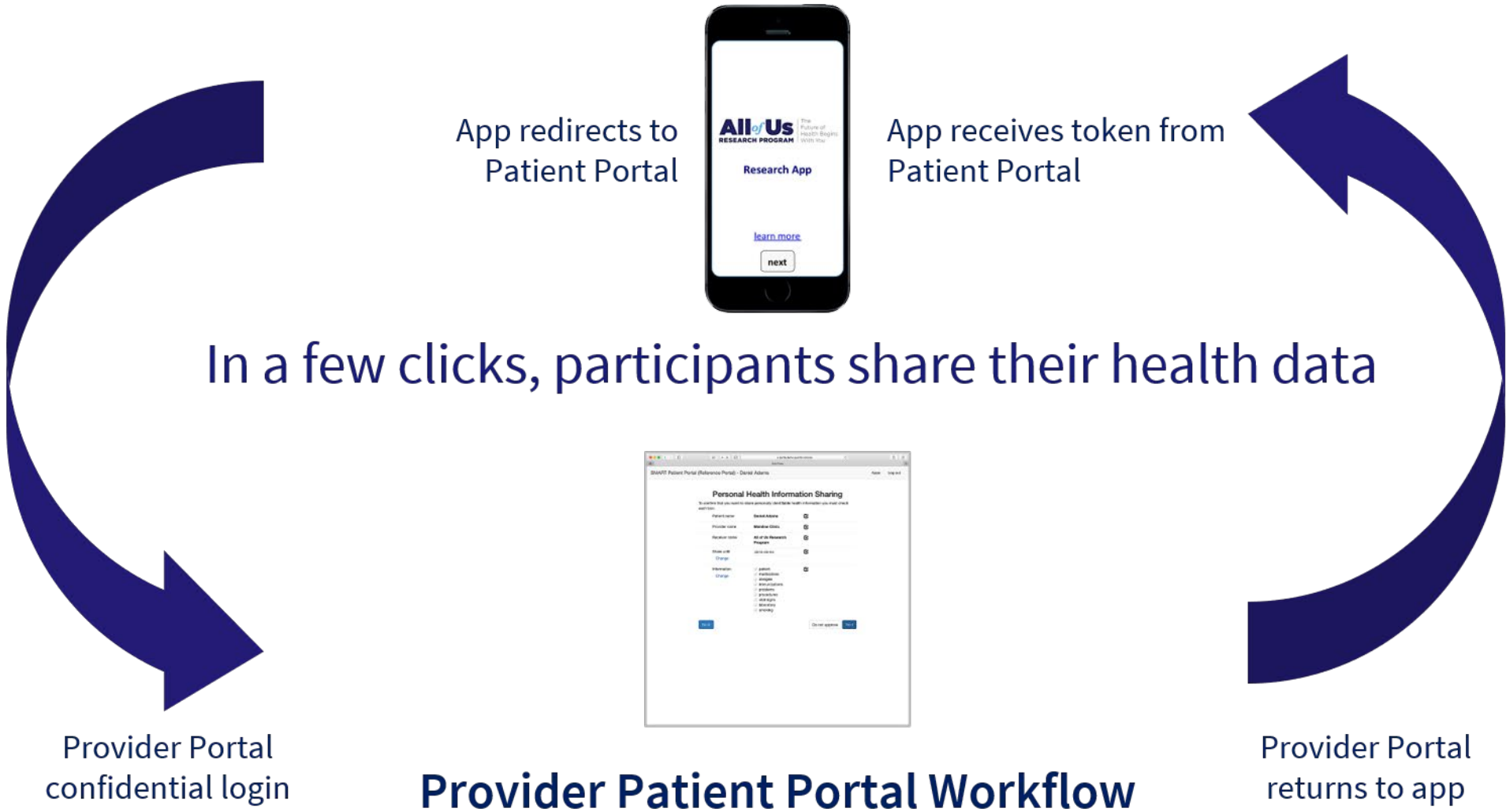
Provider's EHR
Patient Portal Login

Portal Redirects
Return to App

Clinical, Financial, Imaging Data-Sharing

EHR data sharing is a 100% Digital Experience

App redirects to Patient Portal

App receives token from Patient Portal

In a few clicks, participants share their health data
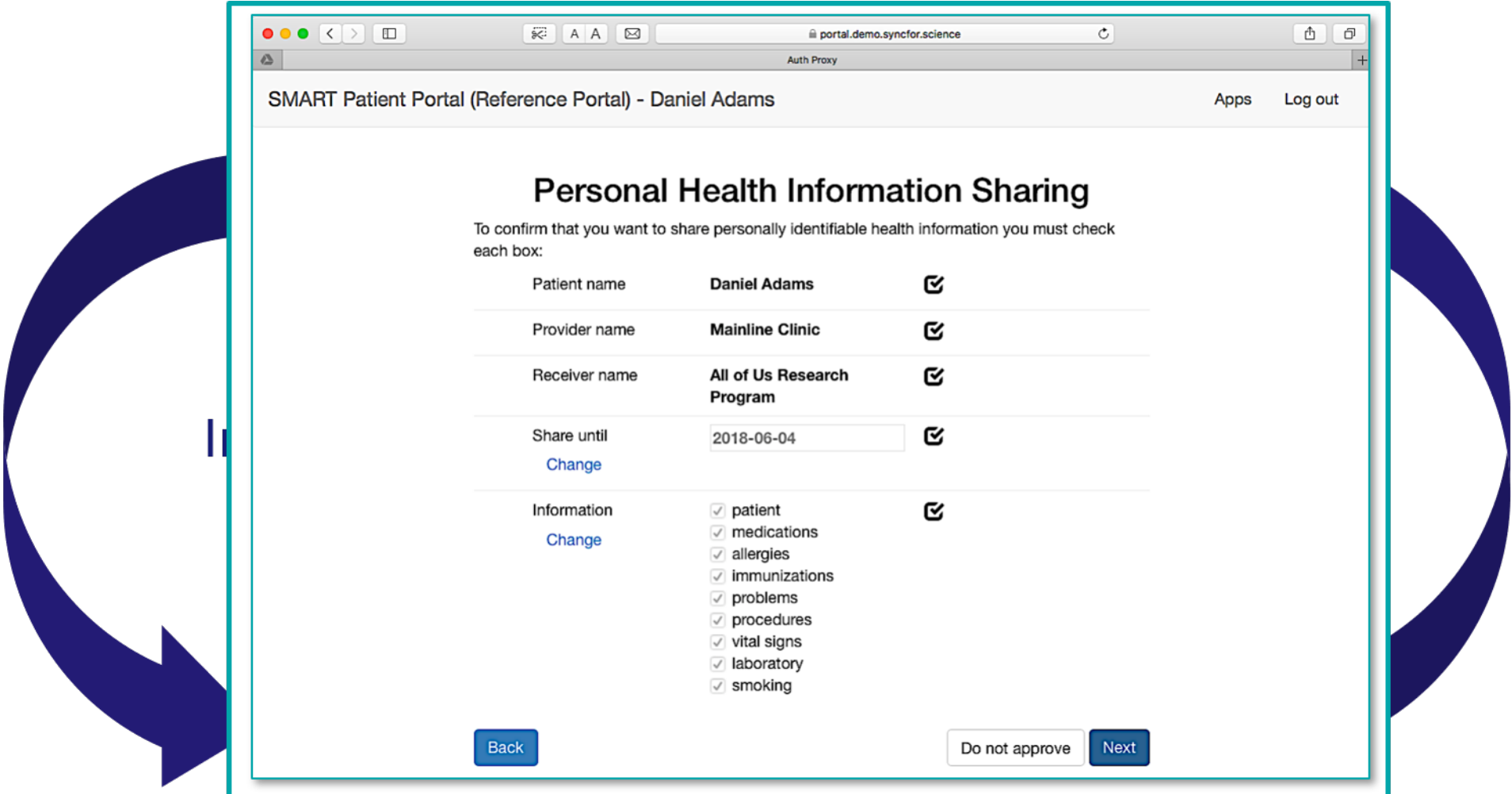
Provider Portal confidential login

Provider Patient Portal Workflow

Provider Portal returns to app

EHR data sharing is a 100% Digital Experience

Provider Patient Portal Workflow

Provider Portal
confidential login

Provider Portal
returns to app

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Using S4S to Connect to *All of Us*

Allscripts™

Cerner

eClinicalWorks

Epic

Getting Connected to All of Us			
S4S Connected to AoU App	**Provider Live – Available to Patients**	**Expand Patient Enrollment & Use**	**Broad Expansion – Reach AoU Goals**

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Using S4S to Connect to *All of Us*

Technically Ready
(Not connected to *All of Us*)

S4S Capable EHR

S4S Ready to Connect to any FHIR Apps

S4S Ready to Connect to *All of Us* App

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