

# Lessons Learned: Examining the Association of My HealtheVet, Healthcare Utilization, and Costs

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Center of Innovation for Complex Chronic Healthcare

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**VA**  
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## Funding

- VA HSR&D IIR 14-401: *“Impact of My HealtheVet Use on Healthcare Utilization and Costs”*

*The views expressed in this presentation are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.*

# Overview

- What is My HealtheVet (MHV)?
- MHV DART Request Process
- Structure of MHV Data
- HSR&D Project – Impact of MHV on Costs
- Resources

## Poll #1: What is your role in the VA?

- Research investigator/PI
- Data manager, analyst, or programmer
- Project coordinator
- Clinical or operations staff
- Other – please describe via the Q&A function



## Poll #2: How would you describe your level of experience with MyHealtheVet?

- 1- Not worked with it at all
- 2
- 3
- 4
- 5- Very experienced with MHV



# Outline

- **What is My HealthVet (MHV)?**
- MHV DART Request Process
- Structure of MHV Data
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# My HealtheVet Background

The MHV patient portal is tethered to VA's electronic health record (EHR) and provides a suite of online tools to help Veterans engage in and manage their health:

**Self-enter and track** personal health information

**Conduct transactions** with the VA healthcare system

**Communicate** (asynchronously with VA healthcare team members)

**Access content** from the VA EHR



# Access to My HealtheVet Portal

## MHV follows a tiered access model

***Visitors to the portal***

***Registrants***



***Basic accounts or advanced accounts for VA patients correlated with the Master Veteran Index***

***Authenticated Users***

***Premium accounts for VA patients who complete a one-time process of identity authentication***



# My HealtheVet – Portal Layout


 

Q Search | About | Contact

Home ▾ Personal Information ▾ Pharmacy ▾ Research Health ▾ Get Care ▾ Track Health ▾ MHV Community ▾

Login to Manage Your Healthcare


LoginRegister



### Pharmacy

Refill your VA prescriptions, track delivery, view a list of your VA medications and other details.


[Read More](#)



### Appointments

Keep track of your upcoming VA medical appointments and get email reminders.


[Read More](#)



### Messages

Communicate securely online with your VA health care team and other VA staff about non-emergency information or questions.

[Read More](#)



### Health Records

View, print, or download a copy of your VA medical record information, or enter your own health information.

[Read More](#)

# My HealtheVet – Compelling Statistics

As of January 2018

## *Users*

**4.2M+**  
registered users

**2.5M+**  
identity-proofed  
VA patients

## *Use*

**114M+**  
VA prescription  
refills  
(since 2005)

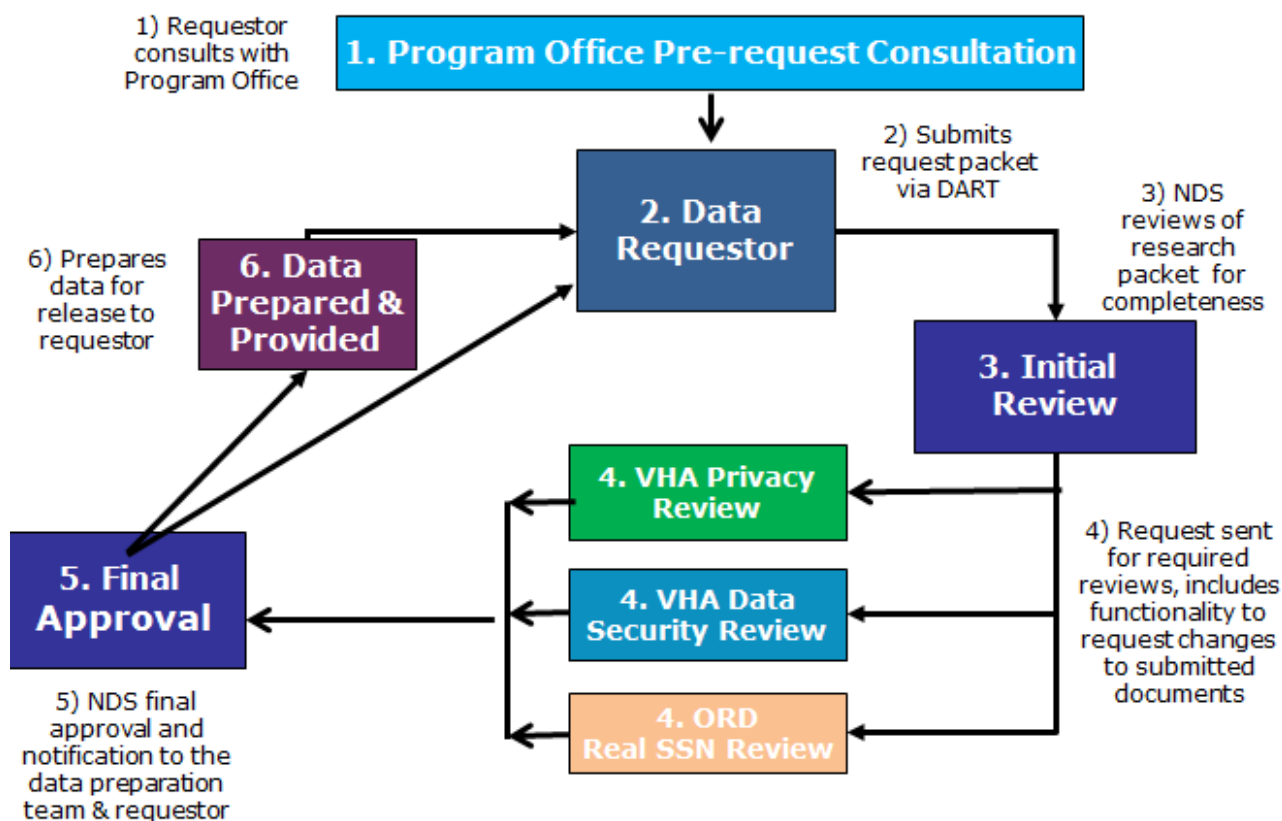
**57M+**  
secure messages  
exchanged  
(since 2008)

**27M+**  
Blue Button files  
downloaded  
(since 2010)

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# My HealtheVet DART Request Process for NDS Managed Data Access



# MyHealthVet DART Request Process for NDS Managed Data Access: Lessons

- Pre-request consultation with the MHV program office is a requirement
  - Because of the complexity of the data, this is extremely helpful
  - Plan ahead
- Note that some tables include other CDW data, and were created to address specific requests

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# VA MHV Data Catalog

**VA**



**U.S. Department of Veterans Affairs**

Veterans Health Administration

## **Department of Veterans Affairs (VA) My HealtheVet (MHV)**

Corporate Data Warehouse (CDW)

My HealtheVet (MHV) Data Catalog

Version 2.0

December 2017



## MHV Tables: Examples

<b>2</b>	<b>MHV - CDW DATA MART .....</b>	<b>2</b>
2.1	mhv.Activity.....	3
2.2	mhv.Addressee.....	4
2.3	mhv.Clinician_Triage_Group.....	5
2.4	mhv.Distribution_Group.....	6
2.5	mhv.FutureAppointments.....	7
2.6	mhv.Message_Activity .....	8
2.7	mhv.Message_Thread.....	9
2.8	mhv.MHV_Download_Audit.....	9
2.9	mhv.MHV_RxRefillRequest.....	12
2.10	mhv.Patient_Demog.....	13
2.11	mhv.Patient_Facility.....	14
2.12	mhv.Patient_Triage_Group.....	14
2.13	mhv.PCMMAssignment .....	15
2.14	mhv.Registered_MHV_IPA_Status.....	16
2.15	mhv.Secure_Message.....	17
2.16	mhv.sei_ACTIVITY_JOURNAL .....	18
2.17	mhv.sei_ALLERGIES .....	18

# MHV Activity Table

## 2.1 mhv.Activity

Provides counts for types of activities that the MHV users perform on the site, such as logins and requesting prescriptions.

**Table 1: Data Description for mhv.Activity**

Column Name	Data Type	Length/ Precision	Notes
ACTIVITY_ID	numeric	19	Unique auto generated number Identifies a record in the Activity Table
USER_PROFILE ID	numeric	19	Identifies a record in the User Profile Table
ACTION	varchar	48	See Master List of ACTION & ACTIVITY_TYPE
STATUS	smallint		Status of ACTION & ACTIVITY_TYPE Allowable entries are numbers: 0 = unsuccessful 1 = successful
PERFORMER_TYPE	varchar	23	Allowable entries are numbers: 0 = Self 1 = Help Desk Administrator 2 = MHV Authenticator 3 = System
DETAIL_VALUE	varchar	255	May contain specific details for individual actions
ACTIVITY_TYPE	varchar	24	See Master List of ACTION & ACTIVITY_TYPE
COMPLETION TIME	datetime		Date activity was completed

## MHV Activity Table Master List Example

ACTIVITY_TYPE ▾	ACTION ▾	First Logged in COMPLETION_TIM ▾	Last Logged in COMPLETION_TIM ▾	PERFORMER_TYP ▾	DETAIL_VALUE ▾	STATUS ▾	Trigger ▾
Account Upgrade	Account Connected	6/30/2017	1/7/2018	System	Remote System: Vets.Gov:VETS.GOV	1 = Successful	Account upgraded to Advanced
Appointments	View	7/23/2008	1/8/2018	Self	NULL, VA Appointment calendar viewing by user	1 = Successful	User selects VA Appointments
Download	Custom Download Requested	1/9/2011	1/8/2018	Self	NULL, None, Remote System: MHV Sanity Test, Remote System: Vets.Gov	0 = Unsuccessful 1 = Successful	User selected BB customize report
Manage VA Record Access	Set or Adjust my Preferences for sharing	6/21/2015	1/8/2018	Self	NULL, None	0 = Unsuccessful 1 = Successful	User selects Connect Your Docs badge
Notifications	Sent RX Tracking Email	3/27/2015	1/7/2018	System	Reminder sent to email address: veteran@email.com	0 = Unsuccessful 1 = Successful	Sent RX Tracking Email
Registration	Account Correlation Requested	3/17/2013	1/7/2018	System	Austin MHV	0 = Unsuccessful 1 = Successful	System sent account link request to MVI
Request to VB Handbook	My Veterans Benefits Handbook Requested	4/28/2013	9/16/2017	Self	Austin MHV, None	1 = Successful	User accesses the Veterans Benefits Handbook system
RxRefill	Request Refill	8/25/2007	1/8/2018	Self	example: ACETAMINOPHEN 300MG/CODEINE 30MG TAB, Remote System: VAMF- RxRefill, Remote System: Vets.Gov	1 = Successful	User submits prescription refill request
Secure Messaging	Launch Secure Messaging	4/30/2016	1/8/2018	Self	NULL, None	1 = Successful	User goes to Secure Messaging portal

## MHV Activity Table: Lessons Learned

- Important to use Activity\_Type and Action variables, as some values for Activity\_Type are associated with multiple values of action
  - Example:

run 1/8/2018	grey means retired			
Reference Number count 148	ACTIVITY_TYPE	ACTION	First Logged in COMPLETION_TIM	Last Logged in COMPLETION_TIM
46	Download	VA Medical Images and Report: Download Initiated	10/14/2017	1/8/2018
47	Download	VA Medical Images and Report: Download PDF	11/29/2016	1/8/2018
48	Download	VA Medical Images and Report: Download Requested	10/14/2017	1/8/2018

## MHV Activity Table: More Lessons Learned

- Be careful with dates! See handy timeline in data catalog:

**Table A-1: High-Level Summary of MHV Milestones**

Year	Milestone
1999	My HealthVet Pilot at 9 VA Medical Centers
2003	National My HealthVet Portal deployed
2004	New user registration module deployed Expansion of self-entered data modules
2005	Online Prescription (Rx) Refill requests Additional self-entered modules
2006	In Person Authentication to Upgrade to Premium Account
2007	Account Activity History Forgot User ID and Password Support Upgraded Health Calendar ForeSee Survey launched
2008	Secure Messaging deployed for voluntary provider use Master Veteran Index Synchronization
2009	VA Wellness Reminders
2010	VA Blue Button Feature (Download My Data)
2011	VA Appointments VA Allergies VA Chemistry/Hematology Lab Results DoD Military Service Information Display Rx Medication Name in addition to RX Number



# MHV SEI Tables

- SEI tables include a flag to indicate a user entered data. The actual data entered is not in these tables.
- Important note for many of these tables: they do not always use the same column name to identify users.
- Each type of SEI (allergies, blood pressure, blood sugar, etc.) has own table

### 2.16 mhv.sei\_ACTIVITY\_JOURNAL

SEI Tables do not contain the actual entries. They contain a record that entries were made.

**Table 16: Data Description for mhv.sei\_ACTIVITY\_JOURNAL**

Column Name	Data Type	Length/ Precision	Notes
ACTIVITY_ID_SEQ	bigint	22	Unique Record Identifier for this table
USER_PROFILE_USER_PROFILE_ID	bigint	22	Corresponds to User_Profile_ID in User Profile

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# HSR&D Project:

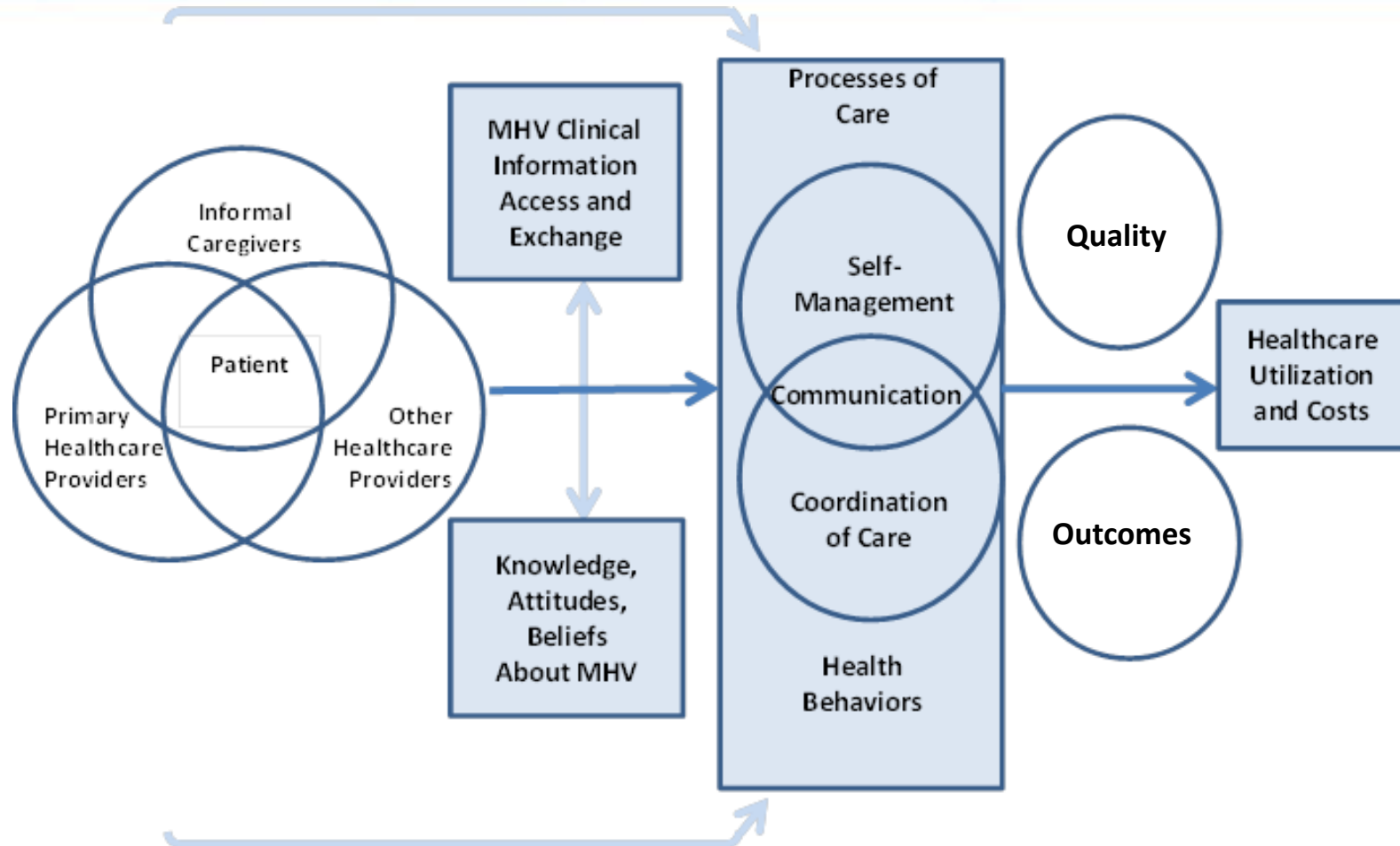
## Impact of My HealtheVet on Healthcare Use and Costs

### Significance

- My HealtheVet may **increase access to healthcare** by providing patients access to their providers through secure messaging
- Providing specific estimates on the association between the use of My HealtheVet and outcomes such as missed appointments, VA utilization, and costs, will **inform strategies regarding directions for development and implementation** of features of My HealtheVet
- While the number of Veterans who use My HealtheVet continues to increase, **little is known about the impact My HealtheVet use has on healthcare utilization and cost**, and the duplication of services and medications between VA and Medicare

**Study Aim:** Assess the impact of My HealtheVet use on VA healthcare utilization and costs.

## Conceptual Framework



## Methods

**Time Period: October 1, 2012 - September 30, 2016 (FY2013 - FY2016)**

MHV Cohort

Veterans who were new users during FY2013

Comparison  
Cohort

Those who never used MHV

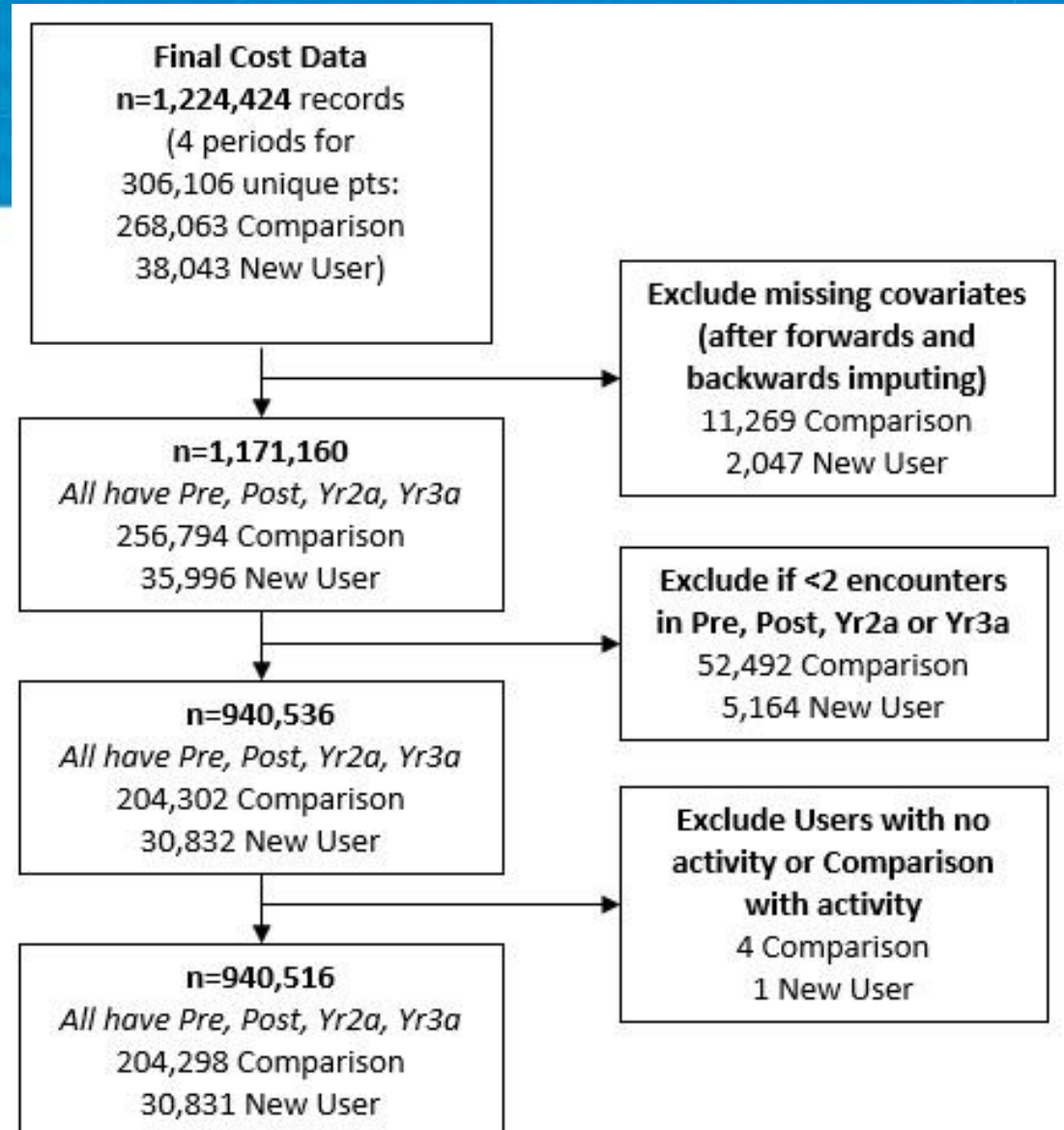
## Methods: Data Sources

Data source	Data elements
<b>CDW : My HealtheVet</b>	Information on dates of registration, authentication, and type of feature used
<b>CDW: Inpatient</b>	Demographics, clinical diagnoses, inpatient utilization
<b>CDW: Outpatient</b>	Demographics, clinical diagnoses outpatient utilization and telephone encounters
<b>CDW: Pharmacy BCMA; Pharmacy Outpatient; NonVA Meds; Unit Dose</b>	Information on dates of prescriptions, types of prescriptions
<b>CDW: Appointment</b>	Dates of missed appointments
<b>Medical SAS Inpatient Datasets</b>	Demographics, clinical diagnoses, inpatient utilization
<b>Medical SAS Outpatient Care Datasets</b>	Demographics, clinical diagnoses outpatient utilization and telephone encounters
<b>Patient Enrollment Database</b>	Priority category (as an indicator of whether Veterans have a copayment for all, some, or no medications and service connection status)

## Methods: Data Sources

Data source	Data elements
Vital Status File	Date of death
U.S. Census Data	Zip code level socioeconomic status
MCA Files	Cost data for VA healthcare use
Medicare Part D Denominator Database	Enrollment status in Medicare Part D
Medicare Denominator File	Demographics
Medicare claims data (Medicare Provider Analysis and Review [MedPAR] files, Outpatient files, Carrier files), Part D Utilization Database	Healthcare utilization, costs, and comorbid conditions, Medicare pharmacy data
PSSG Geocode Enrollee Data	Geographic information

## Cohort Diagram



## Demographics

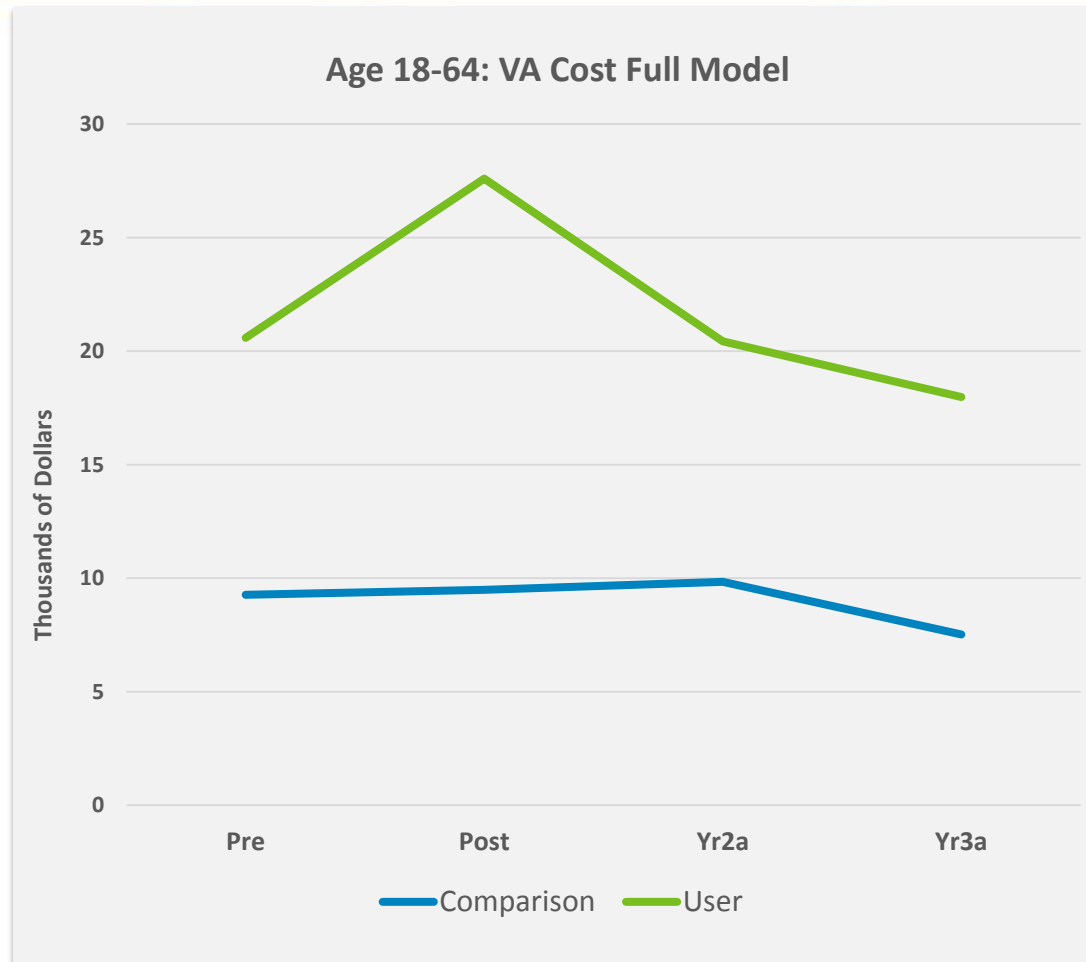
Characteristic		MHV Users	Non-Users	p-value
AGE	18-24	3.6%	1.5%	<.0001
	25-49	44.8%	23.0%	.
	50-64	30.5%	36.9%	.
	65-74	17.0%	25.8%	.
	75-84	3.3%	9.7%	.
	85-105	0.8%	3.1%	.
GENDER	Male	82.6%	91.5%	<.0001
	Female	17.4%	8.5%	.
MARITAL	Not Married	40.0%	42.2%	0.0013
	Married	60.0%	57.8%	.
RACE	White	76.4%	79.1%	<.0001
	Black	20.7%	18.4%	.
	Other	2.9%	2.5%	.



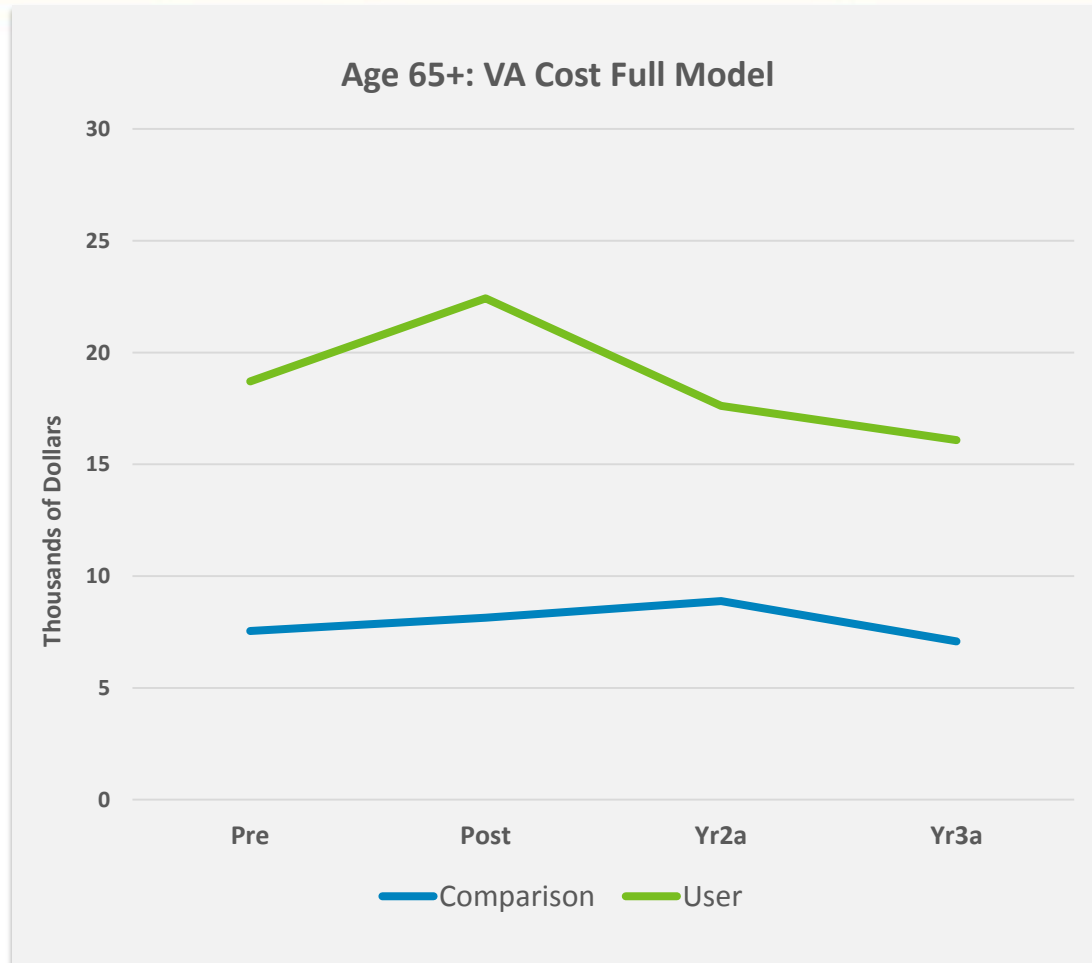
## Results: T-tests

Characteristic	n	Mean	SD	p
Age				
MHV-Users	30831	56.79	15.70	< .0001
Non-Users	204298	66.33	13.79	
Distance to nearest Medicare				
MHV-Users	30831	8.82	21.88	< .0001
Non-Users	204298	9.26	17.01	
Score Community				
MHV-Users	30831	0.39	0.41	< .0001
Non-Users	204298	0.52	0.46	
Median household income				
MHV-Users	30831	51887.8	13403.2	< .0001
Non-Users	204298	50573.4	12700.3	

## Results: Predicted Costs after Propensity Score Weighting and Adjustment for Covariates

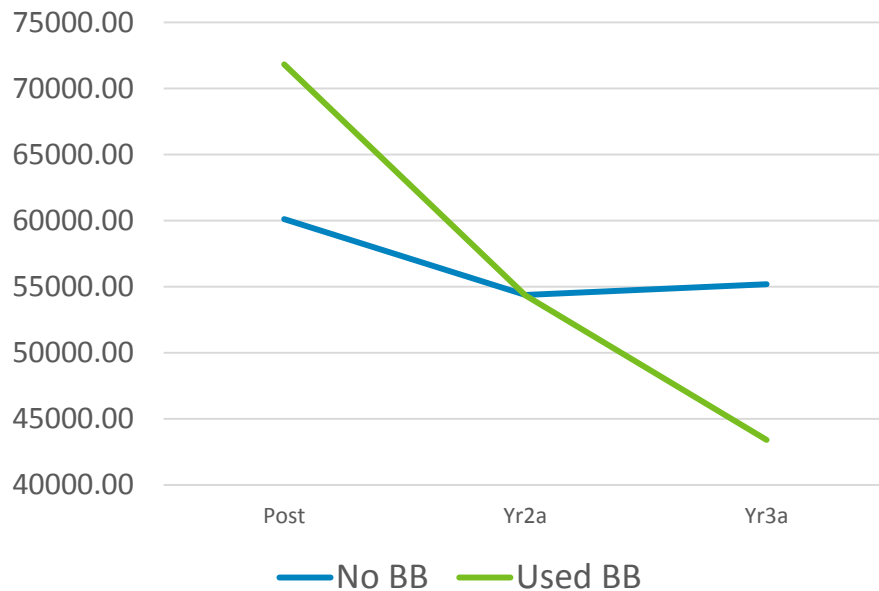


## Results: Predicted Costs after Propensity Score Weighting and Adjustment for Covariates

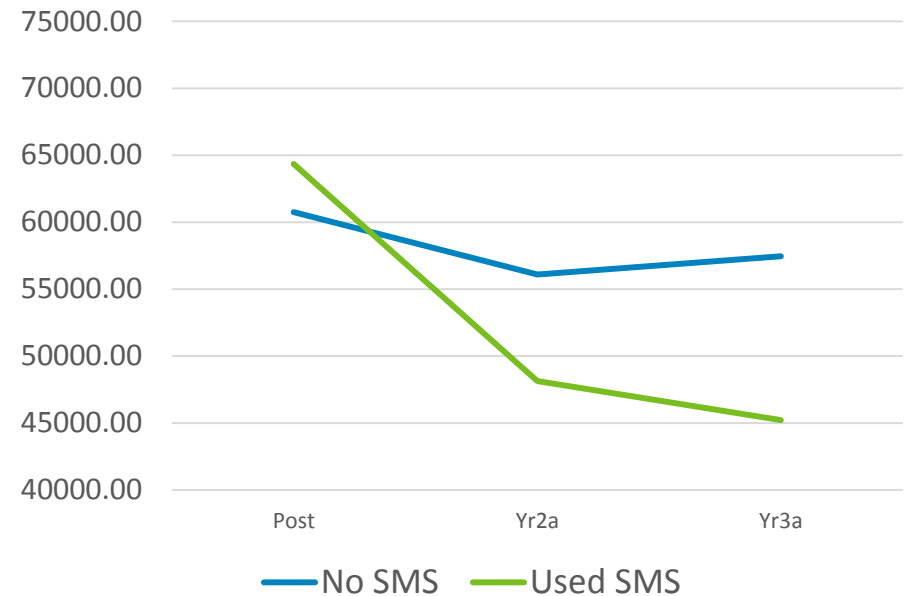


## Results: Predicted Inpatient Costs by MHV Activity

Blue Button: Total Inpatient Full Model

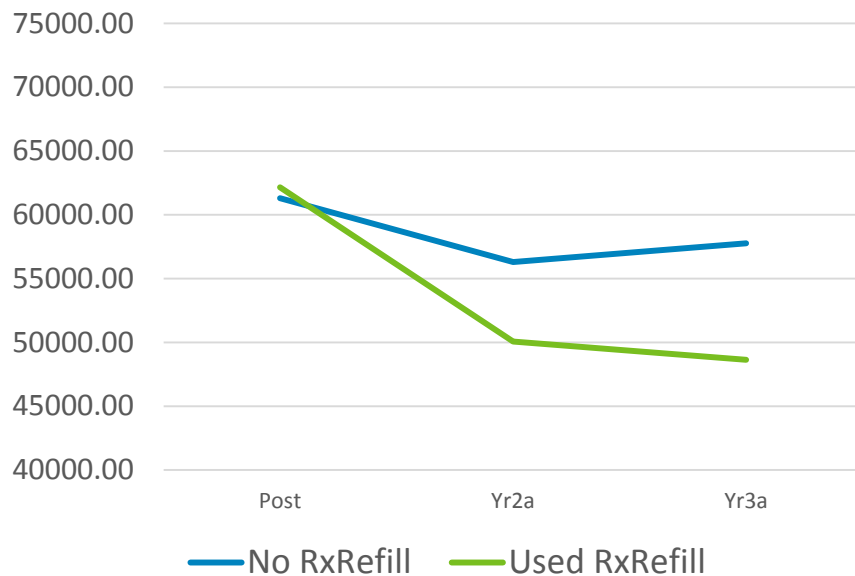


Secure Messaging: Total Inpatient Full Model

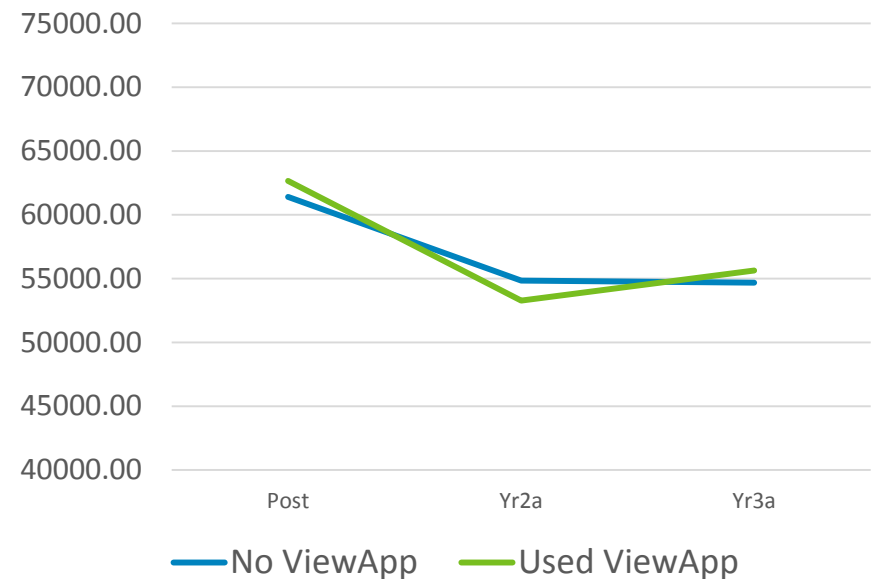


## Results: Predicted Inpatient Costs by MHV Activity

Rx Refill: Total Inpatient Full Model



View App: Total Inpatient Full Model



## Lessons Learned

- **Engage operational stakeholders** (e.g., MHV Program; Office of Connected Care) in your research  
*What is the “right” level of engagement given the goals of a particular study?*
- **Communicate** with those stakeholders early and often
- Strive to **balance your needs** as a researcher with those of the operational stakeholder  
*What are the short-term and long-term research and evaluation priorities?*
- **Manage expectations** for what can be accomplished in a given study  
*Consider outcomes, claims, timelines*
- **Be flexible**

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# Resources

VIReC Cyberseminar. **Veteran Engagement and Access to Health Information: Collaboration in the Evaluation of the Blue Button Feature of My HealtheVet.** Presented by Carolyn Turvey.

[https://www.hsrd.research.va.gov/for\\_researchers/cyber\\_seminars/archives/video\\_archive.cfm?SessionID=2277](https://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=2277)

For more information about MHV, visit the **My HealtheVet website** at [www.myhealth.va.gov](http://www.myhealth.va.gov)

For information about using secure messaging in research: “Guidance for VA Researchers on the Use of My HealtheVet Secure Messaging. This document been placed on the ORD Policies and Guidance webpage at: [https://www.research.va.gov/resources/policies/human\\_research.cfm](https://www.research.va.gov/resources/policies/human_research.cfm)

## A few references:

Hogan TP, Luger TM, Volkman JE, Rocheleau M, Mueller N, Barker AM, Nazi KM, Houston TK, Bokhour BG. Patient Centeredness in Electronic Communication: Evaluation of Patient-to-Health Care Team Secure Messaging. J Med Internet Res. 2018 Mar 8;20(3).

Hogan TP, Nazi KM, Luger TM, Amante DJ, Smith BM, Barker A, Shimada SL, Volkman JE, Garvin L, Simon SR, Houston TK. Technology-assisted patient access to clinical information: an evaluation framework for blue button. JMIR Res Protoc. 2014 Mar 27;3(1):e18.

Turvey CL, Klein DM, Witry M, Klutts JS, Hill EL, Alexander B, Nazi KM. Patient Education for Consumer-Mediated HIE. A Pilot Randomized Controlled Trial of the Department of Veterans Affairs Blue Button. Appl Clin Inform. 2016 Aug 3;7(3):765-76.

Keith McInnes D, Shimada SL, Rao SR, Quill A, Duggal M, Gifford AL, Brandt CA, Houston TK, Ohl ME, Gordon KS, Mattocks KM, Kazis LE, Justice AC. Personal health record use and its association with antiretroviral adherence: survey and medical record data from 1871 US veterans infected with HIV. AIDS Behav. 2013 Nov;17(9):3091-100. doi: 10.1007/s10461-012-0399-3. PubMed PMID: 23334359.

Shimada SL, Allison JJ, Rosen AK, Feng H, Houston TK. Sustained Use of Patient Portal Features and Improvements in Diabetes Physiological Measures. J Med Internet Res. 2016 Jul 1;18(7):e179. doi: 10.2196/jmir.5663.

Haun JN, Lind JD, Shimada SL, Martin TL, Gosline RM, Antinori N, Stewart M, Simon SR. Evaluating user experiences of the secure messaging tool on the Veterans Affairs' patient portal system. J Med Internet Res. 2014 Mar 6;16(3):e75.

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A collage of various colored paper scraps (blue, pink, yellow, orange, green) scattered and overlapping. Each scrap features a large, bold, black question mark. In the center, a light pink scrap is tilted, and the word "Questions?" is written in a large, blue, sans-serif font over it.

# Questions?

**Next Session: Tuesday, May 15<sup>th</sup> at 12pm Eastern**



**Using Data & Information Systems  
in Partnered Research Cyberseminar Series**

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*Survey Data Collection Using VA REDCap*

Bonnie Paris, PhD  
VA Information Resource Center