

# IMAGINE

EDUCATION, STATE, AND LOCAL LEADERS



SLG102

# From systems to systemic change

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# CalHEERS

(California Healthcare  
Eligibility, Enrollment, and  
Retention System)

# Modernization



# Agenda

*AWS Imagine*

## *The CalHEERS Journey*

Mandate

Background

CalHEERS at a Glance

Technology Modernization Strategy

The Future



# Mandate

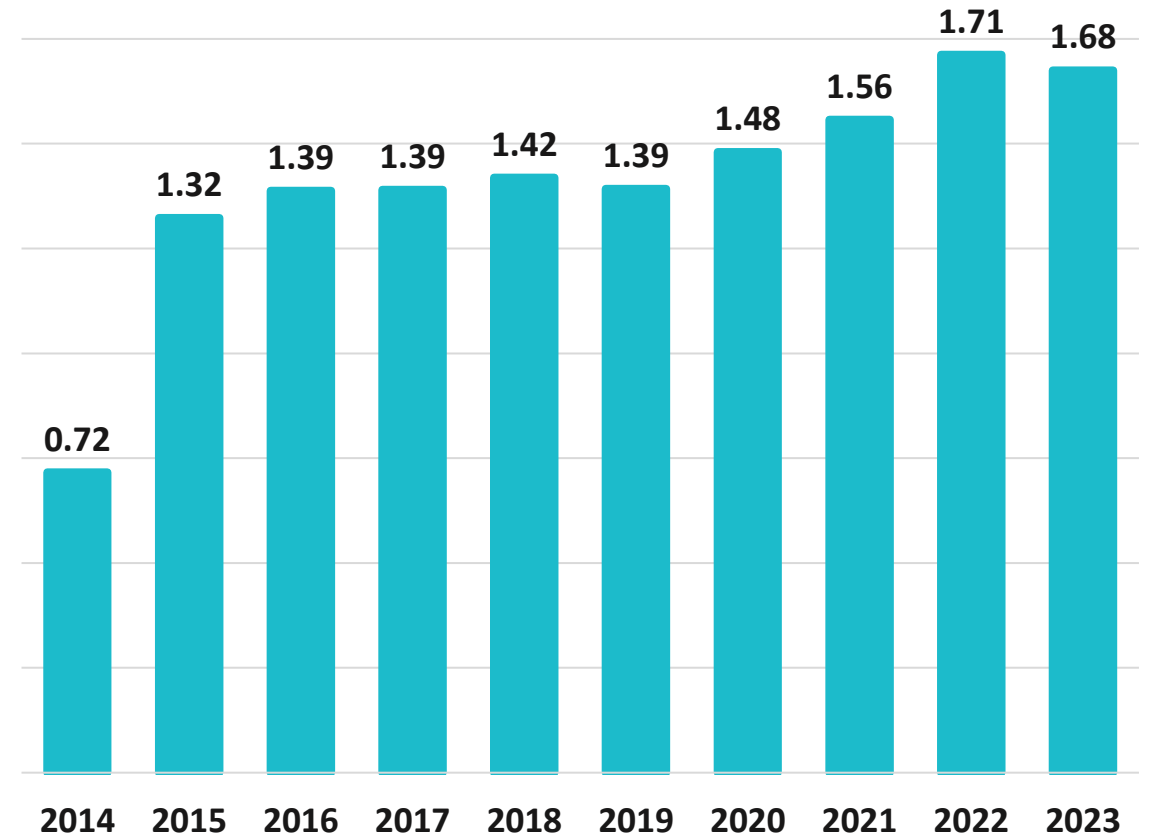
*Provide Every Californian with Access to Affordable, High-Quality Care*

**2010: Patient Protection and Affordability Care Act (ACA) becomes law**

**2012: California Health Benefit Exchange (Covered California) established**

**2013: CalHEERS system operational**

CalHEERS Enrollment By Year (millions)



# CalHEERS At a Glance

**9.2<sub>M</sub>**

User Accounts

**288<sub>k</sub>**

Consumer Visits a Day  
(peak OE)

**450<sub>TB</sub>**

Production Data

**43**

Partner Agencies

**72**

External Interface  
Connections

**540<sub>+</sub>**

Servers

**3/46**

Zones / Environments

**1200<sub>+</sub>**

COTS & Open-Source  
Technologies

A Collaboration Between



**Deloitte.**



# Cloud Journey

## CalHEERS Modernization

**2013**

### Initial Deployment

On-premise stack

- On-premise Oracle (exa-data, exalogic) hardware/software
- 2 geo-distant data centers

**2020 – 2021**

### Cloud Migration

- Capex Avoidance
- Lift and Shift

- Decommission on-premise data centers
- Sunset EOL/EOS legacy hardware
- Deploy 3 AWS AZ hybrid active model

**2022 – 2023**

### Modernization

- Best of Breed/Multi-Cloud
- Custom Enrollment Sys

- Replace existing software with open source, cloud native
- Serverless, containerization & lightweight services

**Up Next**

### Innovation

Adaptively Leverage Technology

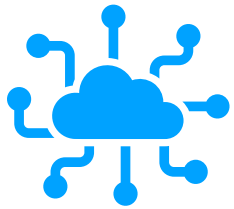
- AI/ML and GenAI
- Content personalization, A/B testing
- API factory
- DevSecOps maturation

# Cloud Benefits

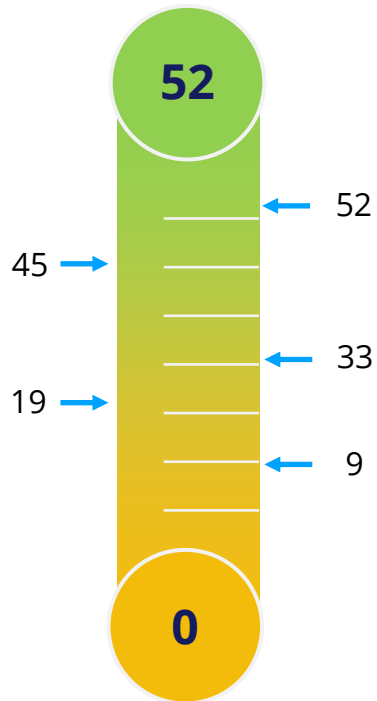
## CalHEERS Modernization Goals

### 1. Reduce Complexity

Convert monolithic system to lightweight components and microservices



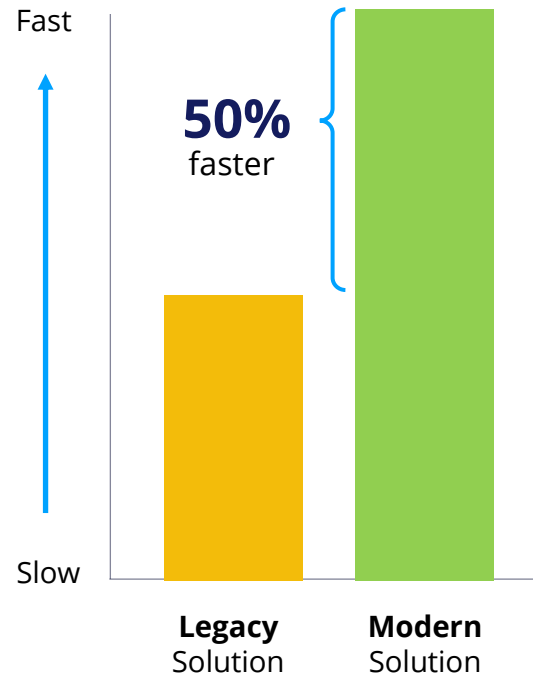
Modularize & Containerize



Count of LW Services Deployed

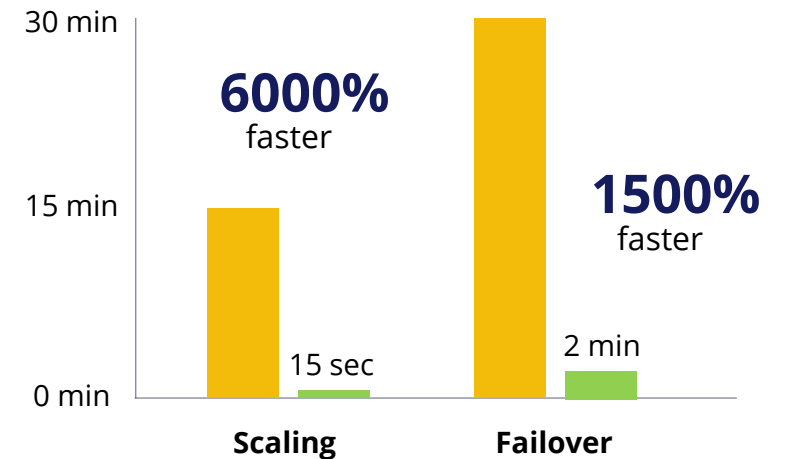
### 2. Improve Performance

Deliver consistent system performance with increased usage



### 3. Increase Resiliency / Decrease Cost

Cost-effectively speed feature delivery time-to-market and scale system to meet demand



12

Software Components Modernized



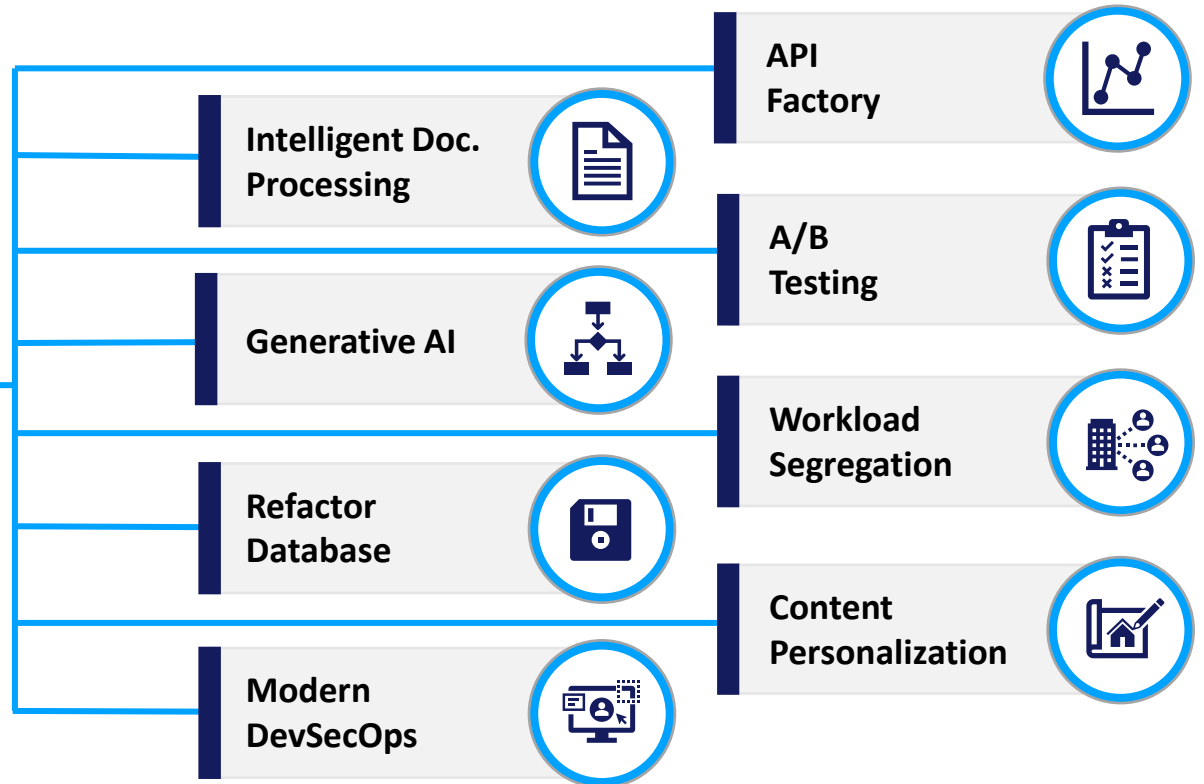
# The Future

*A Healthier California*

Technology innovation building trust  
and strengthening the relationship



between citizens and their government


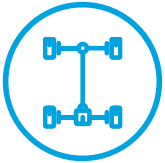






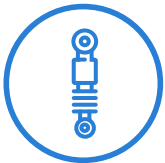




# Appendix

# Technology Refresh

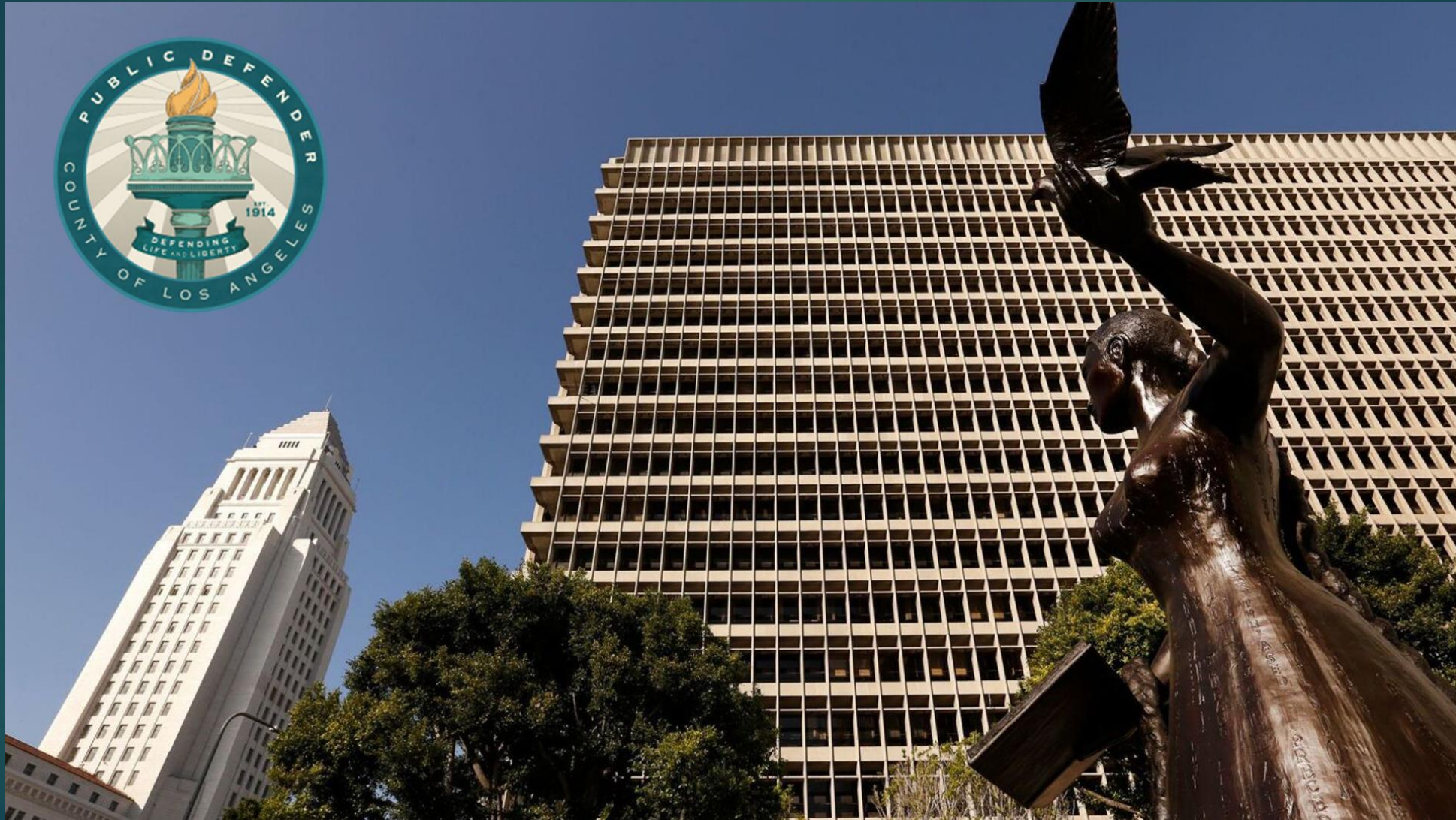
## CalHEERS Modernization

Modernization sprints towards a nimble, light-weight, containerized future ready architecture

 <b>Modernization Kick-off</b>	 <b>Platform</b> OpenShift Container <b>API Gateway</b> 3scale & FUSE <b>Address Validation</b> SmartyStreet <b>LW Phase 1 &amp; 2</b> <ul style="list-style-type: none"><li>• Foundation</li><li>• Demographics</li><li>• IVR</li></ul>	 <b>Security</b> ForgeRock Identity & Access Mgmt. Solution <b>Webserver</b> Apache <b>LW Phase 3</b> <ul style="list-style-type: none"><li>• Security</li><li>• Correspondence</li><li>• Dashboard</li></ul>	 <b>Data Warehouse</b> Databricks, Snowflake <b>LW Phase 4</b> <ul style="list-style-type: none"><li>• Eligibility</li><li>• Verification</li><li>• Document</li></ul>	 <b>LW Phase 5</b> <ul style="list-style-type: none"><li>• Account</li><li>• Administration</li><li>• Enrollment</li><li>• DevTools</li></ul>	 <b>LW Phase 6</b> Partner Flow	 <b>Content Delivery Network</b> Cloud Front	 <b>Database Modernization</b> Aurora PostgreSQL	 <b>Rules Engine</b> Drools Decision Manager <b>Partner Integrations</b> FUSE
	<b>February</b>	<b>May</b>	<b>July</b>	<b>September</b>	<b>February</b>	<b>April</b>	<b>May</b>	<b>June</b>
 <b>2022</b>					<b>2023</b>			



# LOS ANGELES COUNTY PUBLIC DEFENDER OFFICE



# Pre-Transformation

- **TCIS**
  - **Court's Mainframe 1960's Cobol system.**
- **DMS**
  - **Another Cobol built in 1980's for Adult Case Management**
- **JAI**
  - **Third Cobol for Juvenile Case Management**
- **PDARTS**
  - **Legacy Visual Basic Application – Index for location of physical files**
- **PDRS**
  - **Global360 - Windows 95 imaging/document management**

# The Matrix

November		S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	2020						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							
116	Myers-A-M					31					V							31								31	T	D				Myers-A-M	116					
117	Valeriano-A					32					E							32									32	H	A				Valeriano-A	117				
118	Dalal-A					33					T							33									33	A	Y				Dalal-A	118				
119	Rico-A					34					E							34									34	N					Rico-A	119				
120	Mejia-A					35					R							35									35	K	A				Mejia-A	120				
121	Langiner-BM					36					A							36									36	S	F				Langiner-BM	121				
122	Katano-A					37					N							37									37	G	T				Katano-A	122				
123	Hoskins-A					38					S							38									38	I	E				Hoskins-A	123				
124	Campbell-B									31								31										V	R		31		Campbell-B	124				
125	Mercado-B									32		D						32										I						Mercado-B	125			
126	Yang-A									33		(CHELSEA)						33										N	T					Yang-A	126			
127	J. Chung-A									34		(HUGHES)						34										G	H					J. Chung-A	127			
128	Bell-A									35								35										A						Bell-A	128			
129	King-A									36		(HUGHES)						36										D	N					King-A	129			
130	Hayes-B									37								37										A	K					Hayes-B	130			
131	Wiley-B									38								38										Y	S					Wiley-B	131			
132	Schneider-B		31								31								31										G						Schneider-B	132		
133	Vargas-A		32								32								32										I						Vargas-A	133		
134	Ramadan-B		33								33								33										V						Ramadan-B	134		
111	-B		34								34								34										I						-B	111		
112	Begle-B		35								35								35										N						Begle-B	112		
113	Olen-A		36								36								36										G						Olen-A	113		
114	-A		37								37								37																	-A	114	
115	Chu -A		38								38								38																	Chu -A	115	
116	Hashim-B-M		31									31							31																	Hashim-B-M	116	
117	Cordova-B		32									32							32																	Cordova-B	117	
118	Saltzman-B		33									33							33																		Saltzman-B	118
119	Diaz-B		34									34							34																		Diaz-B	119
120	Kirby-A-M		35									35							35																	Kirby-A-M	120	
121	-B		36									36							36																	-B	121	
122	Kelly-B-M		37									37							37																	Kelly-B-M	122	
123	Miner-B-M		38									38							38																	Miner-B-M	123	
124	Burnham-A		31										31							31																Burnham-A	124	
125	Hawkins-A		32										32							32																Hawkins-A	125	
126	Prescop-B		33										33							33																	Prescop-B	126
127	Canas-B		34										34							34																	Canas-B	127
128	Wang-B		35										35							35																	Wang-B	128
129	Lee-A-M		36										36							36																Lee-A-M	129	
130	Birka-WhiteA		37										37							37																Birka-WhiteA	130	
131	Branen-A		38										38							38																	Branen-A	131
132	Glover-A		31																31																		Glover-A	132
133	Saul-B		32																32																		Saul-B	133
134	Munoz-A		33																33																		Munoz-A	134
111	Hardgrove-A		34																34																		Hardgrove-A	111
112	Kazemi-A-M		35																35																		Kazemi-A-M	112
113	Haghighat-B		36																36																		Haghighat-B	113
114	Wolfe-B		37																37																		Wolfe-B	114
115	Clayton-B		38																38																		Clayton-B	115

# The “Datacenter”





# The Data



# 3 years after

- ▶ 23 legacy systems > Single, Cloud Based System
- ▶ Reverse Engineered Decades of Case Centric Data to People Centric
- ▶ Digitized over 100,000 Boxes of Paper Records
- ▶ Decommissioned both Data Centers, 100% SaaS/PaaS
- ▶ Built integrations with law enforcement and prosecutorial agencies to deliver thousands of documents in digital form.
- ▶ AI/ML to process documents, video, and other digital evidence.







# Sharing insights from behavioral health & social services data

Scott Green

Senior Vice President & Managing Director  
Netsmart

# Agenda

01

Evolving  
behavioral  
health  
landscape

02

Data needs to  
support whole  
person care

03

Platform  
strategy to  
connect the  
ecosystem

04

State of  
Missouri  
use case

# Evolving behavioral health systems present new opportunities



# Data challenges



Receiving data in the same format from all providers



Combining data from multiple sources for aggregate analysis



Complying with federally mandated quality measure reporting



Turning timely data back around to providers to support activities like continuous quality improvement, SDOH efforts, and data-driven care



Making the case for continued, improved, or different investment in behavioral health using data linked to both cost and outcomes



# Disparate systems create manual work for staff



Provider EHR



**Staff compile data manually to drive reporting and analysis**



Claims data



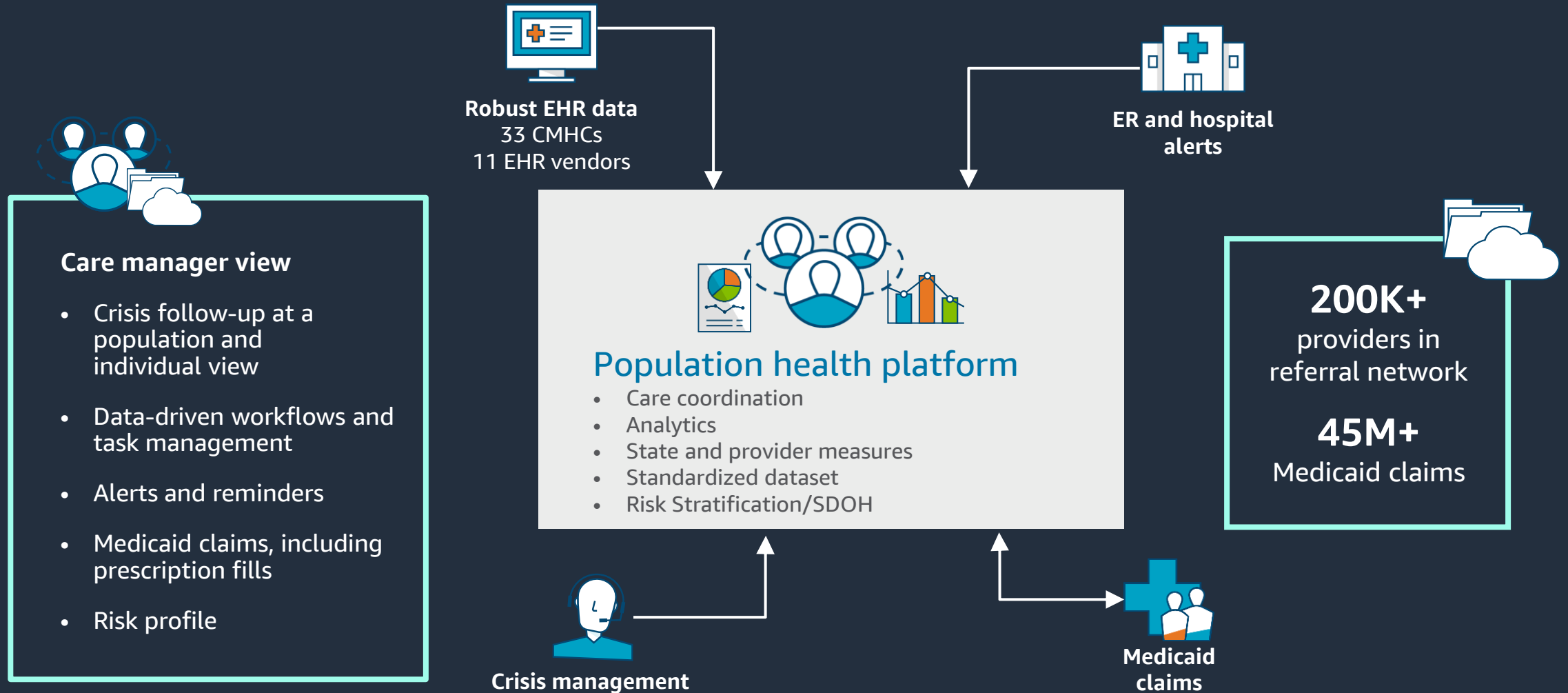
Health information exchange

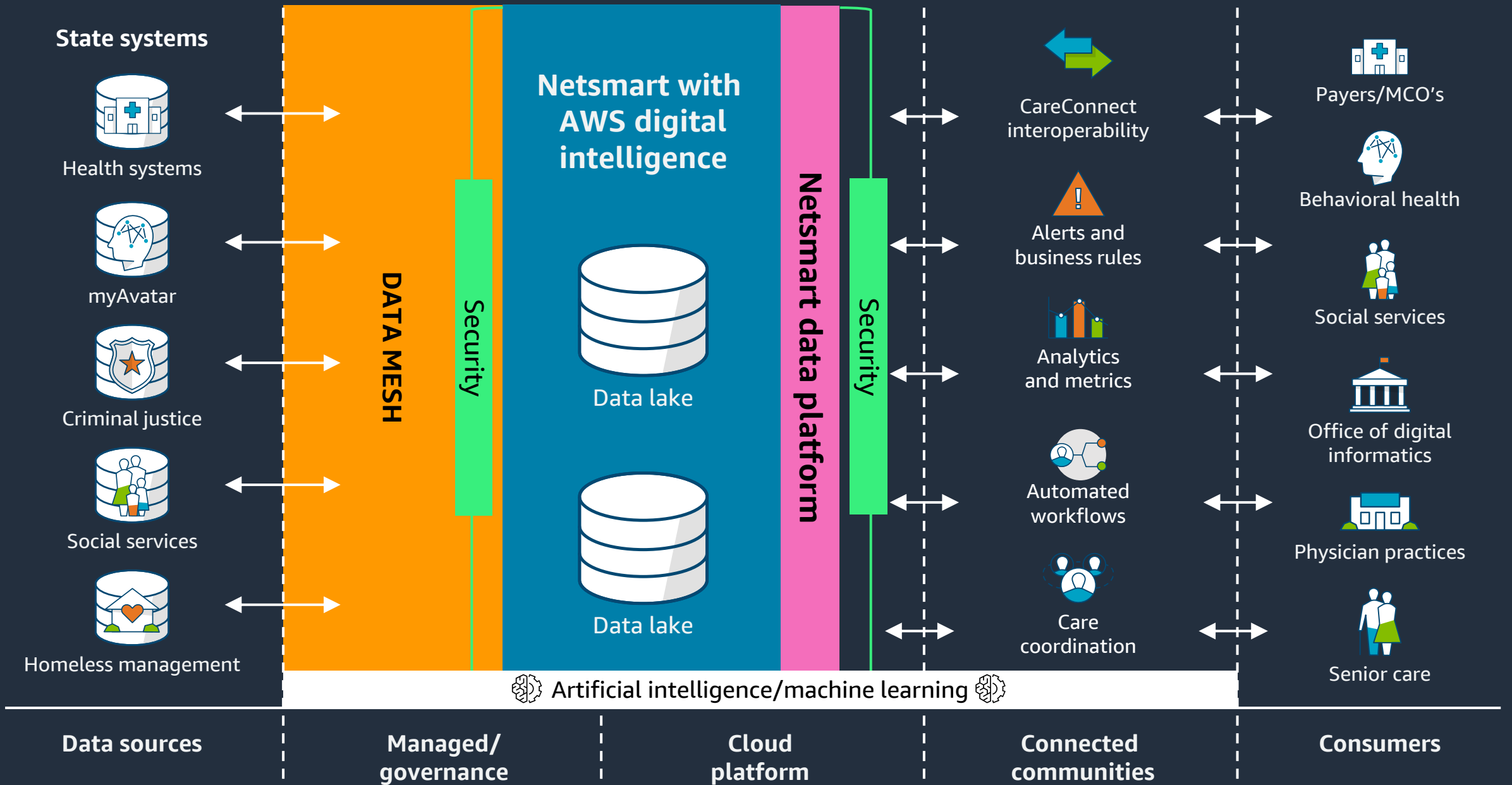


Hospital Utilization

# Population health management platform

STATEWIDE POPULATION HEALTH PLATFORM: MISSOURI



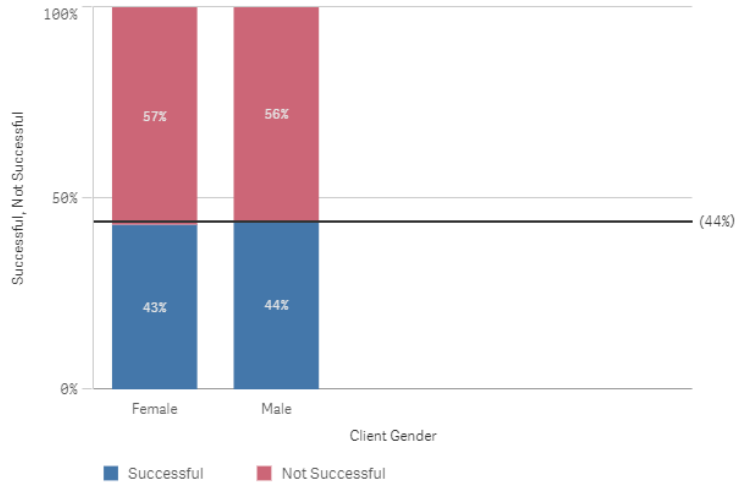


# DEI dashboard: Real world use case

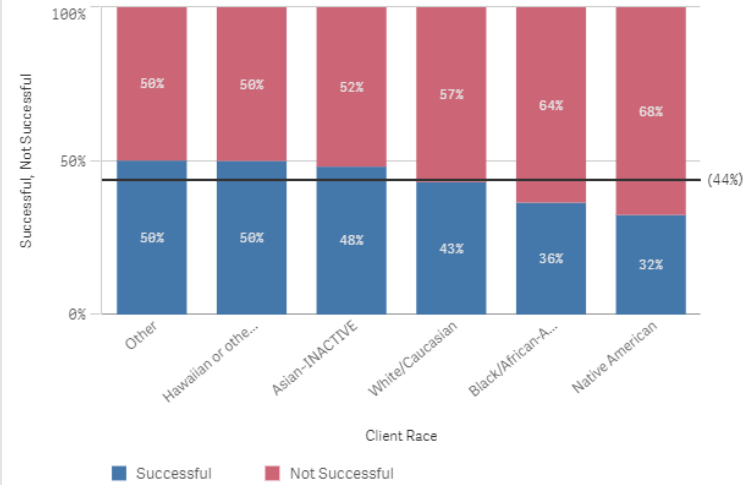
DEI



Discharge Status by Gender



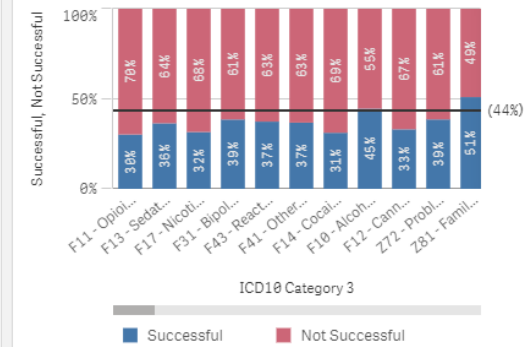
Discharge Status by Race



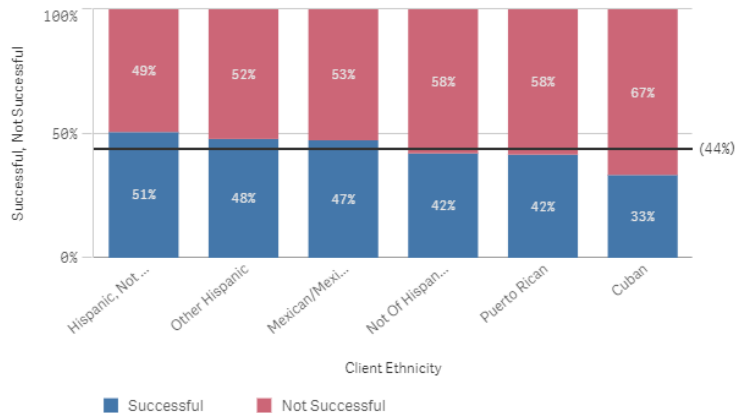
Client Count

9,139

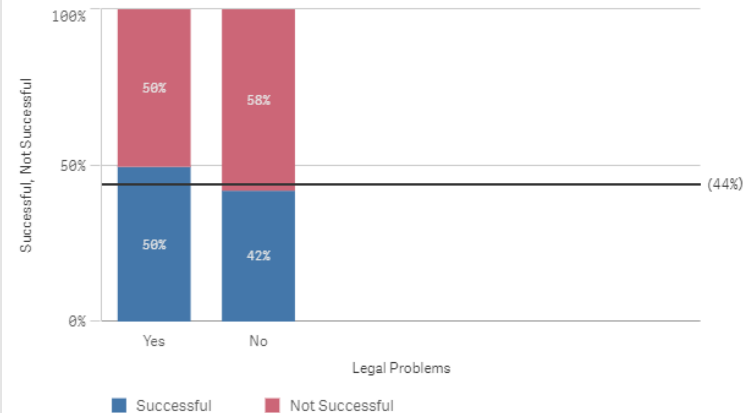
Discharge Status by Diagnosis



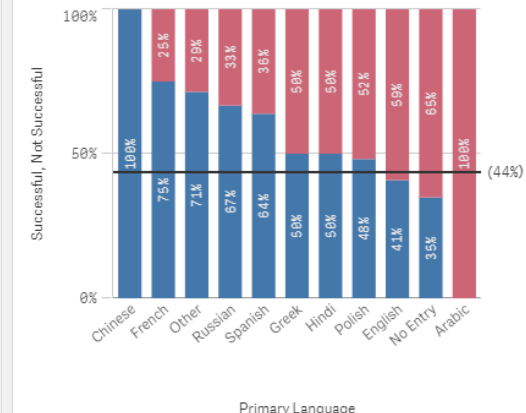
Discharge Status by Ethnicity



Discharge Status by Criminal Justice Status



Discharge Status by Primary Language



- General
- Admission
- Service
- Client
- Diagnosis
- Financial
- Appointments
- Medication
- Calendar
- Fiscal Calendar

Date Sort: Service Date

Service Date: 2020-01-01 to 2022-09-27



# Quality measures visibility



Dashboard Agency Summary Population Quality

Common Selectors

Populations

Agency

Common Selectors

Team Role

Staff Name

Payor Selectors

Payor Name

Medicaid/Medicare

Reporting Period

Reporting Period

Adult Youth Care Transitions

Number	Description	Percentage	Results	Goal
MoCo 0036	Asthma Medication Adherence (Adult)		$\frac{0}{115}$	
MoCo 0059	Blood Pressure Control for Diabetes (Adult)		$\frac{2248}{3458}$	
MoCo 0059	Hemoglobin HbA1c Control for Diabetes (Adult)		$\frac{2031}{3458}$	

# Electronic Visit Verification – Evolving at the Point of Care

- *Mobile Insights*

- Driving Value from the Mandate

- Identifying Social Determinants of Health
- Closing care gaps
- Impacting CAHPS Scores

- Flexible Options

- Reflexive questions
- Survey Catalog
- Flex by Populations
- Enable/Manage/Adjust/Tweak

- Leverage Trust

- High touchpoint Caregivers
- Supplement internal Care/Case Managers

The image shows a smartphone screen with a survey application. At the top, there is a blue header with a back arrow and the word "Survey". Below the header, the patient's name "Sim, Sandra" is displayed in a white box. The survey consists of three questions, each with radio button options and an "Add Note" button (a blue plus sign in a circle):

- Question 1: "Within the past 12 months, have you worried that your food would run out before you got money to buy more?\*" with options "Yes" and "No".
- Question 2: "Do you put off or neglect going to the doctor because of distance or transportation?\*" with options "Yes" and "No".
- Question 3: "How often does this describe you? I don't have enough money to pay my bills?\*" with options "Never", "Rarely", and "Sometimes".

At the bottom of the screen, there are three buttons: "Signature", "Save", and "Cancel".



MISSOURI BEHAVIORAL  
HEALTH COUNCIL

# Systemic Change



# Missouri's impact report: Year 5

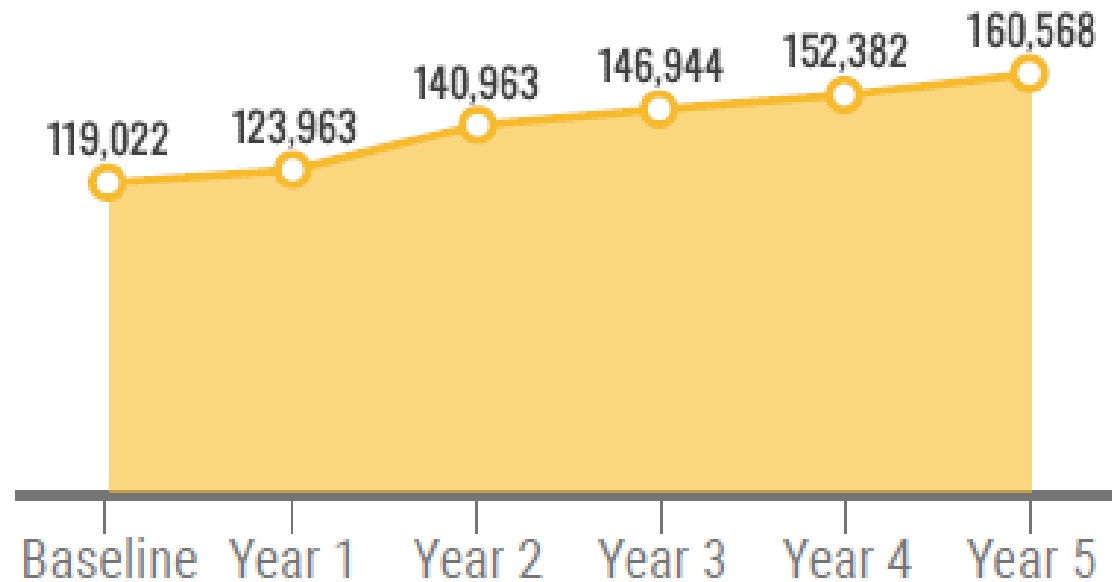
IMPROVING OUTCOMES AND ACCESS TO CARE

 **35%**

Increase in patient  
access to care

Overall increase in patients  
served from baseline (2017) to  
Year 5 (2022)

## Missourians Served by CCBHCs



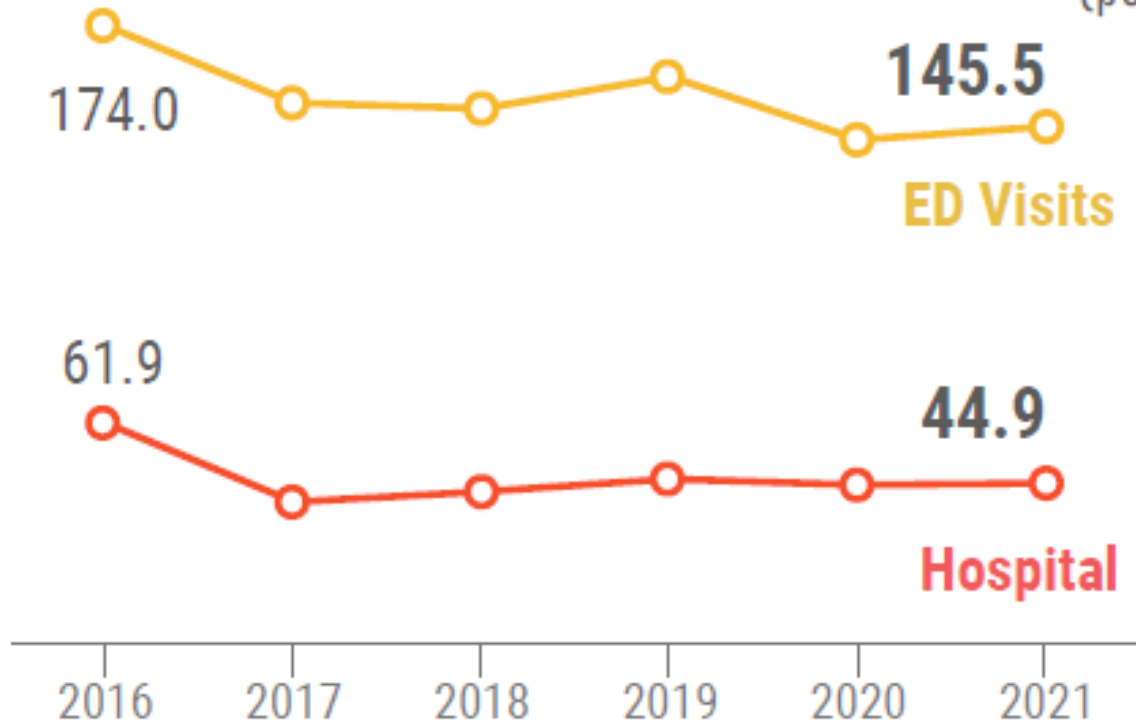


# Missouri's impact report: Year 5

IMPROVING OUTCOMES AND ACCESS TO CARE

## Reducing Hospital & ED Utilization

CCBHCs have shown a reduction in the number of ED and hospital encounters (per 1,000 member months)



**16%**

Decrease in ED visits from baseline (2016) to 2021



**27%**

Decrease in hospitalizations from baseline (2016) to 2021

# Missouri's impact report: Year 5

IMPROVING OUTCOMES AND ACCESS TO CARE

# 3,185

Veterans & active military  
served by CCBHCs

↑ 26%

Overall increase in  
veterans and active  
military served from  
baseline to Year 5



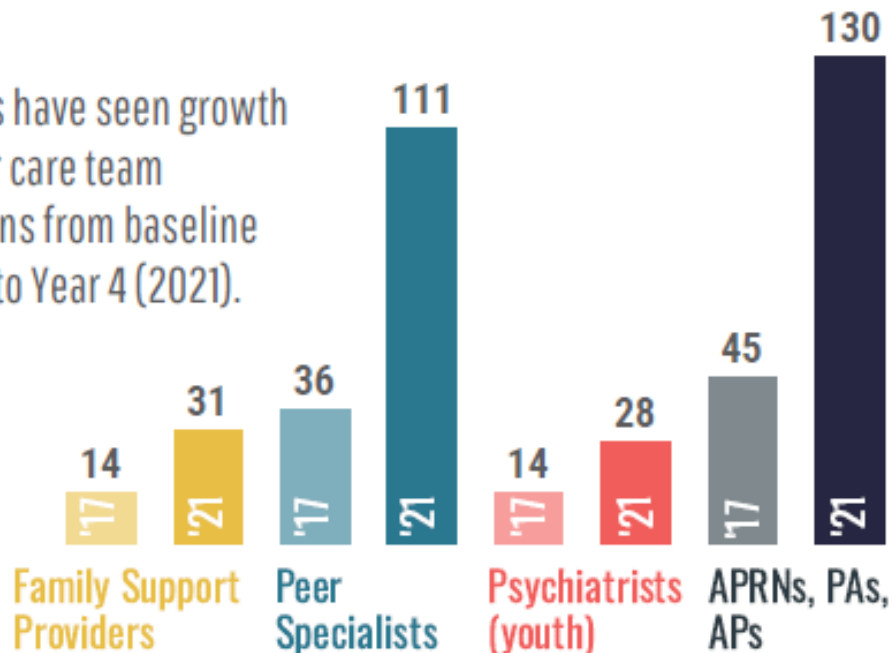
# Missouri's impact report: Year 5

CERTIFIED COMMUNITY BEHAVIORAL HEALTH CLINICS

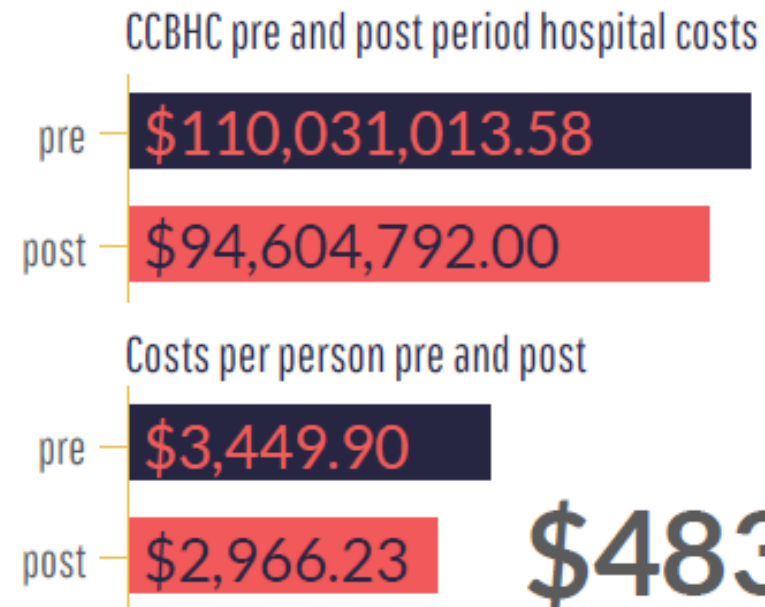


## Workforce Recruitment

CCBHCs have seen growth in their care team positions from baseline (2017) to Year 4 (2021).



## Cost Savings



**14%**

Decrease from pre to post period hospital costs totaling

**\$15.4**  
million in savings

**\$483.67** savings per person

This report was prepared by the Missouri Behavioral Health Council using data reported by the Missouri Department of Mental Health and CCBHCs as of August 2022. Jefferson City, Missouri | mobhc.org



# Thank you!



# Thank you!

Kevin Cornish

Mohammed Al Rawi

Scott Green

Will Sellheim





Please complete  
the session survey