Healthcare Technology for Connected Communities

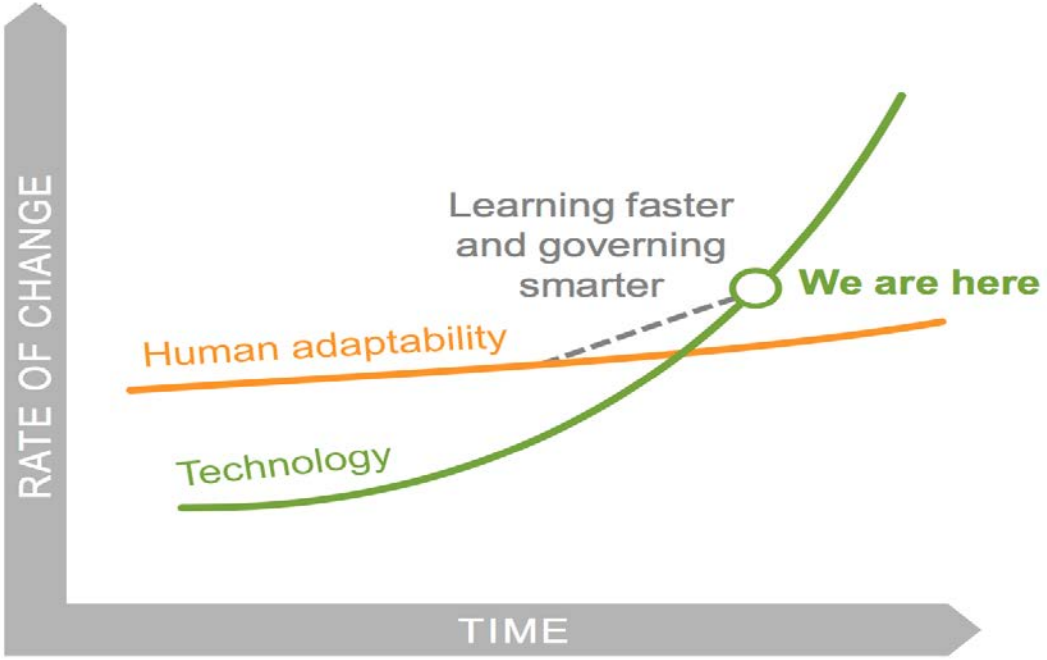
Steve Miff, PhD

May 14, 2019

AGENDA

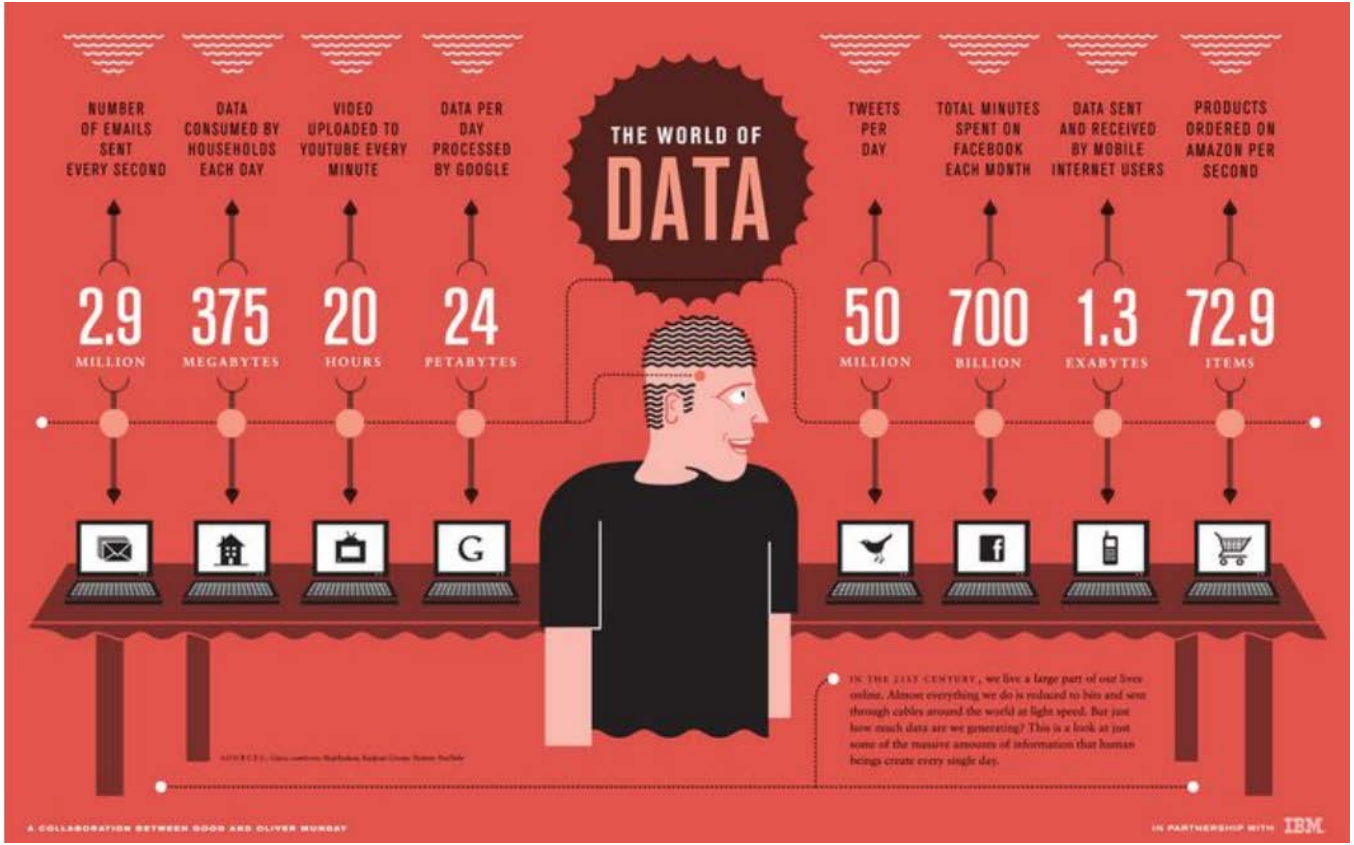
- Key Innovations Driving Technology and AI for SDoH
- Case Studies

HEALTHCARE INNOVATION IS GROWING FASTER THAN EVER



Source: Adapted from Sg2 and Friedman T. *Thank You for Being Late, An Optimist's Guide to Surviving in an Age of Acceleration*. Farrar, Straus & Giroux: 2016.

THE RAPIDLY EXPANDING WORLD OF “LIFE” DATA

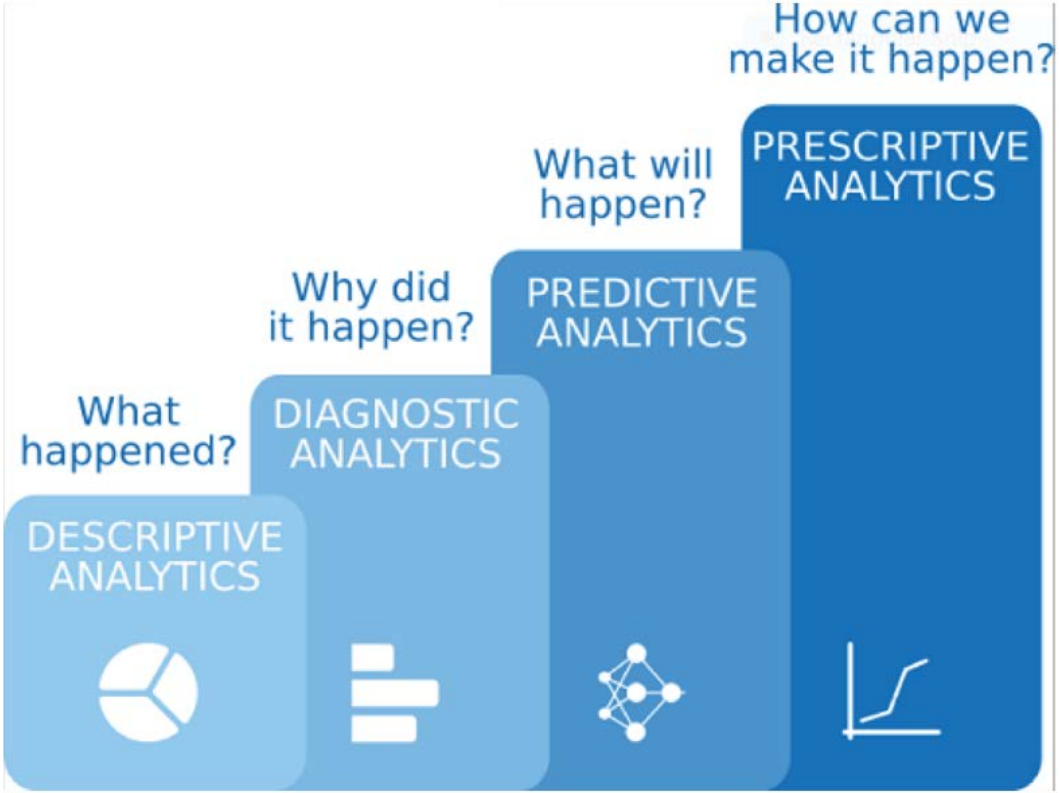


EXPANDING WORLD OF SOCIAL DETERMINANTS OF HEALTH DATA

Health vs. Health*care*

SDoH data is required for true population health.

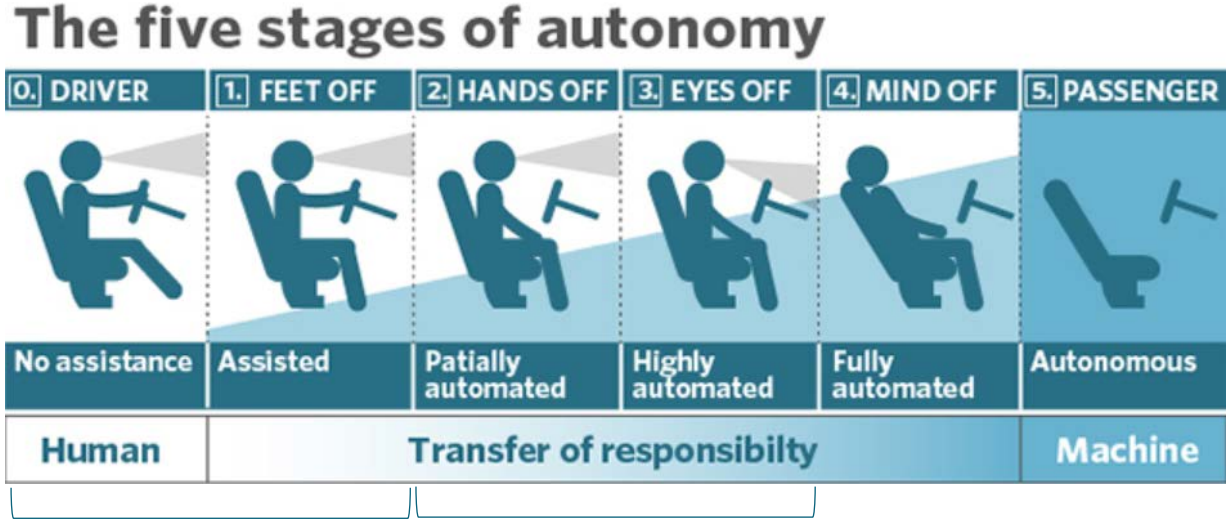
AI AND COGNITIVE COMPUTING ARE EVOLVING IN HEALTHCARE



AI/ML IN HEALTHCARE

APPLYING THE DRIVERLESS CAR FRAMEWORK TO HEALTHCARE

(referred and adapted from Eric Topol, MD)



We are here in healthcare

For clinical care we won't get beyond this. Back-office/admin workflows may get more automated but that is not PCCI's focus

Sources: Evercore ISI, SAE International

AI/ML IN HEALTHCARE – AREAS OF IMPACT

Safety & Quality	Applying ML on data to predict risk of poor outcomes (infections, falls), poor hand-offs in transitions of care
Drug Discovery & Therapy	Discovery of new drugs and assess efficacy of existing ones using clinical and genomics data
Diagnostics	Improve diagnostic accuracy and efficiency
Administrative	Claims, pre-authorization
Virtual Doctor/Nurse	Telehealth
Lifestyle and Preventative Care	Moving care upstream in the community and outpatient care
Mental Health	Better diagnosis and use of virtual therapies assisted by AI

AI AND PRESCRIPTIVE ANALYTICS REQUIRE NEW ECOSYSTEMS

Physical Sciences

End User Insights

Next-Gen Measures

Data Science strengths need to be complemented with other capabilities

Data Science Excellence

27 Co communication | 21 Sci science

Communication Science

Next-Gen Data Visualization

Data Emersion [AR/VR]

Disruptive/ Enabling Platforms

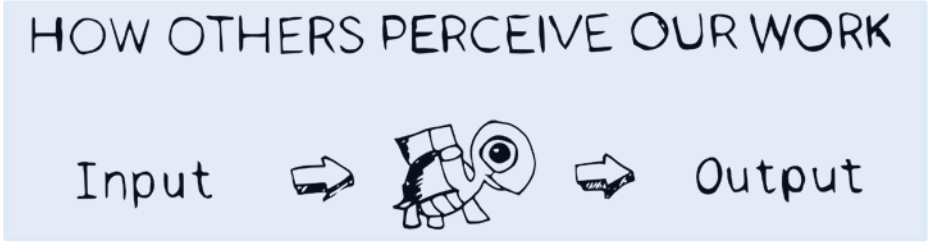
PCCI: Creating a World of Connected Communities Where Every Health Outcome is Positive

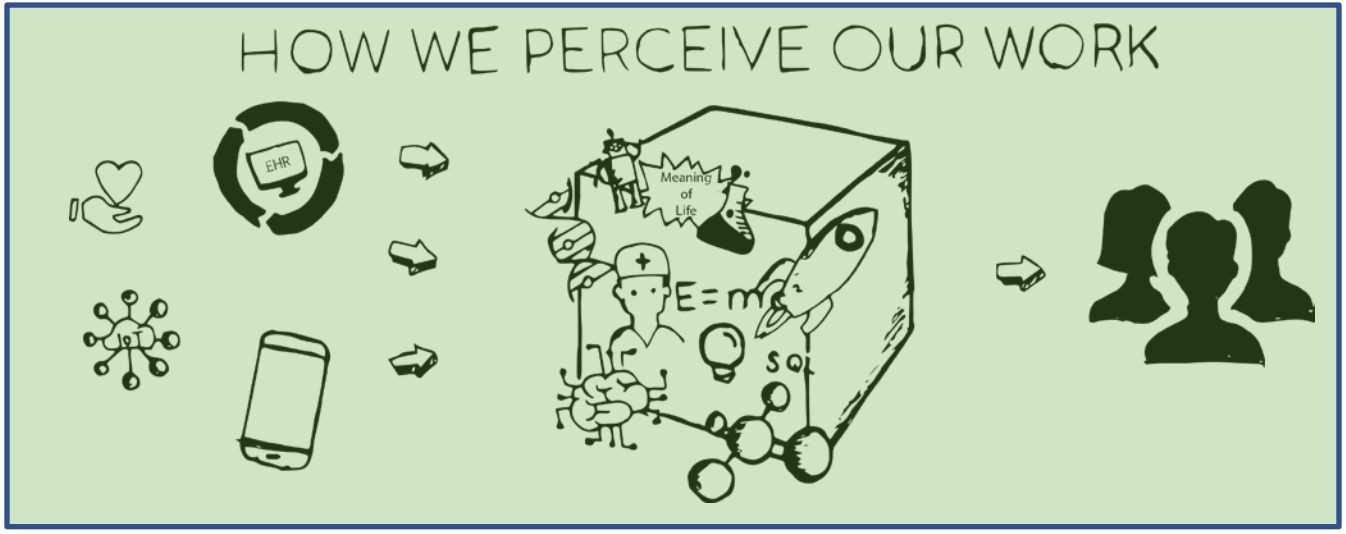
Health begins where we live, learn, work and play

CASE STUDIES

- Connecting Clinicians with Community Based Organizations to Address SDOH
- Developing a Multi-Channel Population Health Model

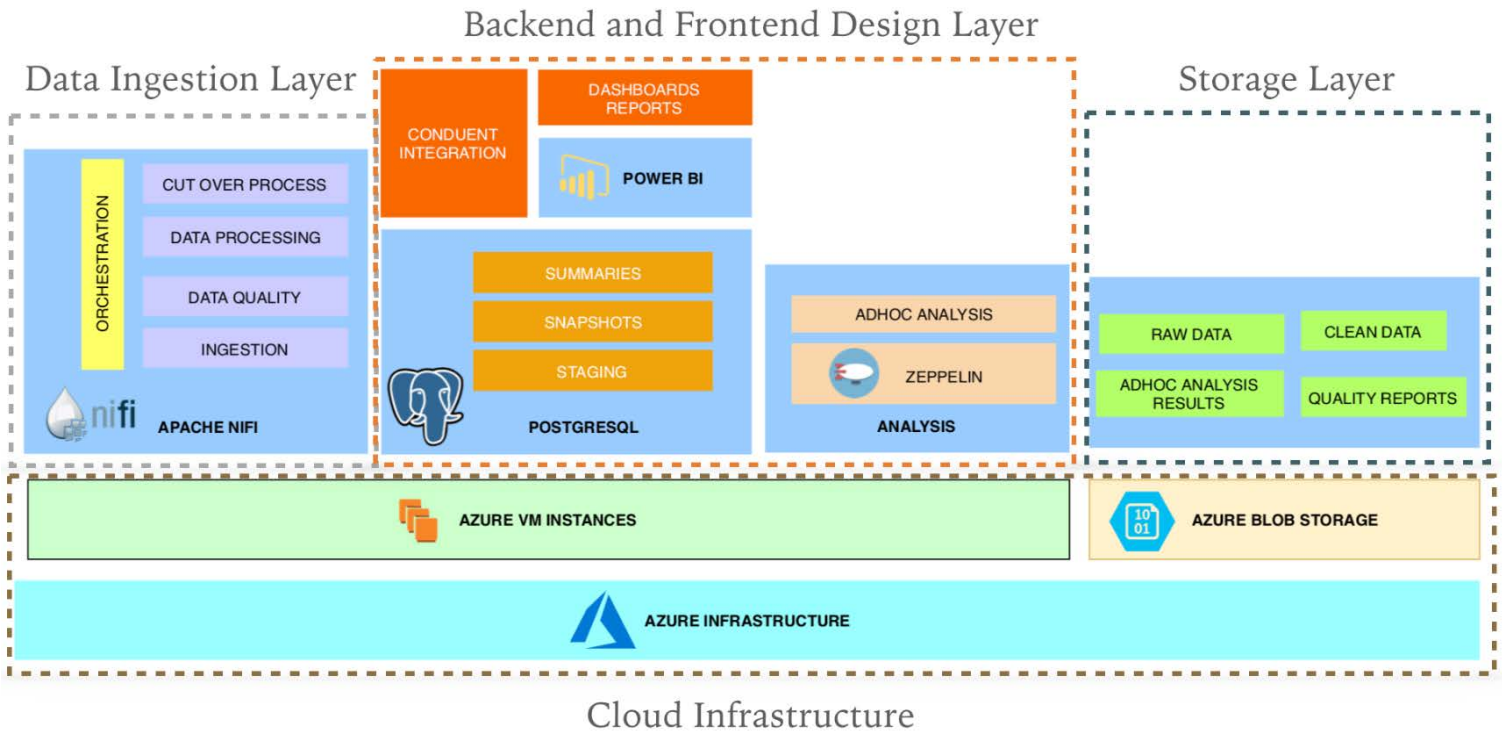
TECHNOLOGY INNOVATION





TECHNOLOGY PLATFORM

PCCI Technology Platform



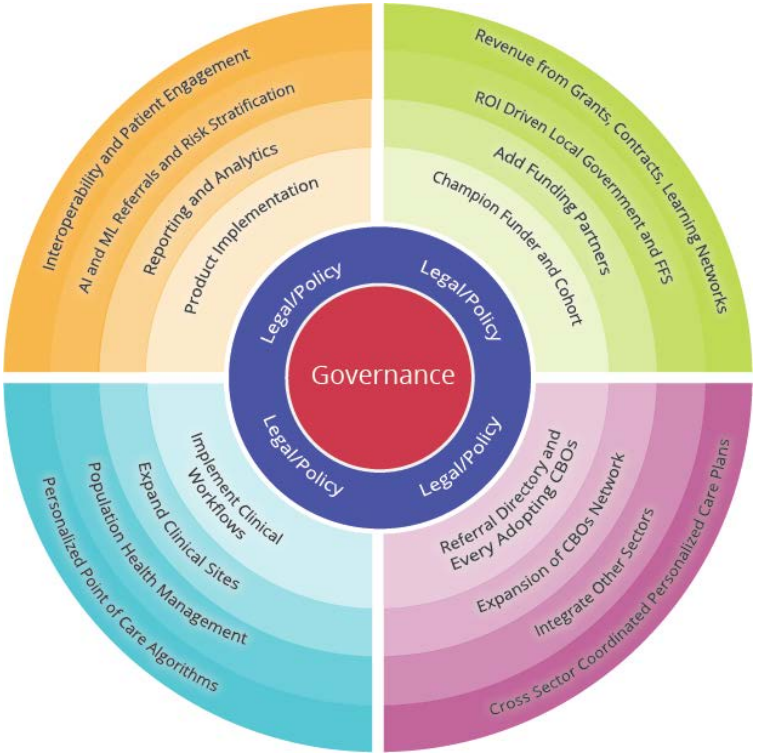
THE MODEL

Technology

Pieces Iris™ technology to create bi-directional exchange of information, smart referrals and individual tracking.

Clinical

Build clinical workflows and utilize predictive analytics and AI to prevent readmissions, save lives and reduce healthcare costs.



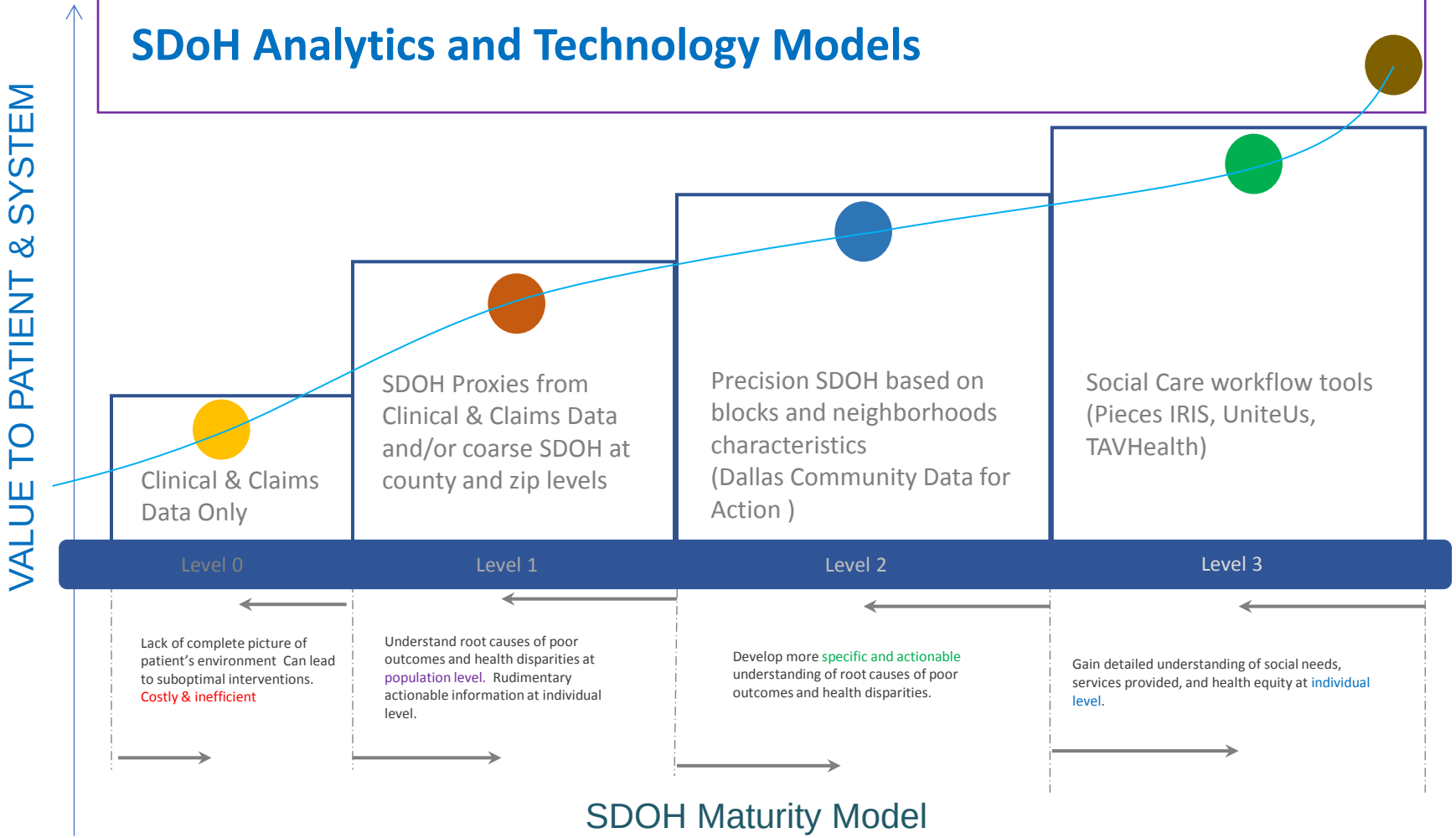
Sustainability

ROI and SROI to support ecosystem to provide better healthcare to the individuals in their communities. Strive to improve healthcare trends across the national continuum.

Community

Develop **CBO** workflows and understand SDOH's impact on quality of life and how connected communities build a support system for a path to self sufficiency.

SDoH Analytics and Technology Models



DALLAS COMMUNITY DATA FOR ACTION (DCDA)

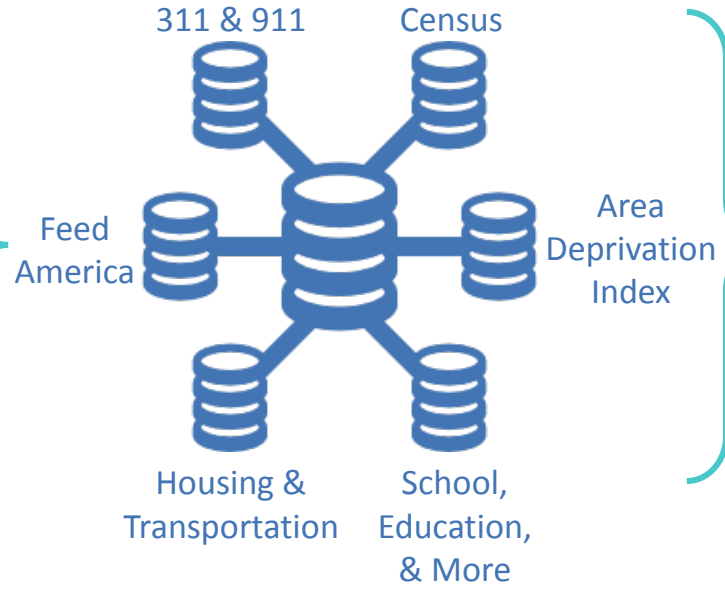
Provide Community and City Leaders with real time data driven insights to ***alleviate poverty and improve the quality of life and the environment*** in their municipalities

PCCI Community Council

Advancing Solutions...Empowering Lives

The Institute for Urban Policy Research at The University of Texas at Dallas

DFWHC FOUNDATION



Dashboard with Actionable Insights

Enables CBOs, funders, & local civic leaders to:

- Assess community needs
- Evaluate program effectiveness
- Redirect funding
- Apply for grants
- Inform key stakeholders
- Make and track goals
- Monitor and forecast trends

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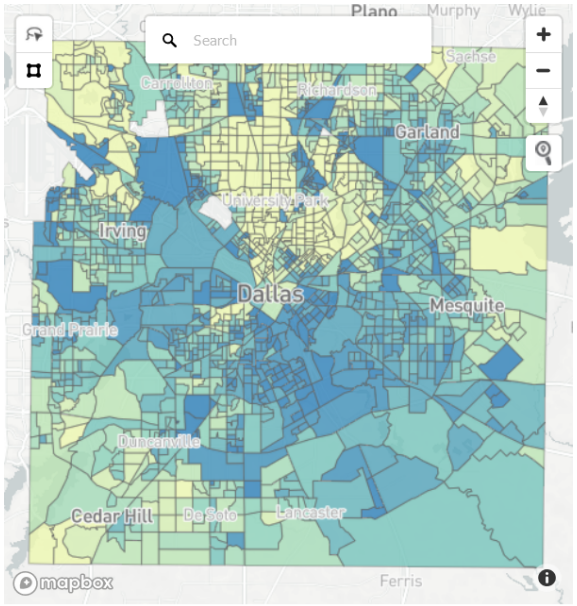
DALLAS COMMUNITY DATA FOR ACTION

Indicator

- Children
- Doctorate
- Female
- High School
- Household Size 1
- Household Size 2
- Household Size 3
- Household Size 4
- Household Size 5 Or More
- Households
- Male
- Masters
- Median Income
- Median Rent
- Population
- Poverty
- Primary School
- School Age Children
- Senior Citizens
- Single Parent Households
- Snap Assistance
- Transportation Cost
- Unemployment
- Young Adults

Area Deprivation Index 2013



10.00 — 100.00

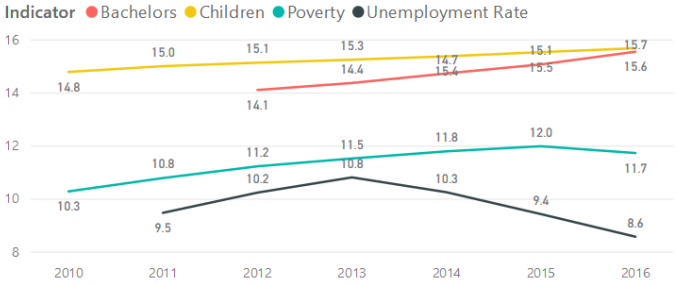
Raw values | Scaled values

Indicator

Multiple selections

units

Percentile

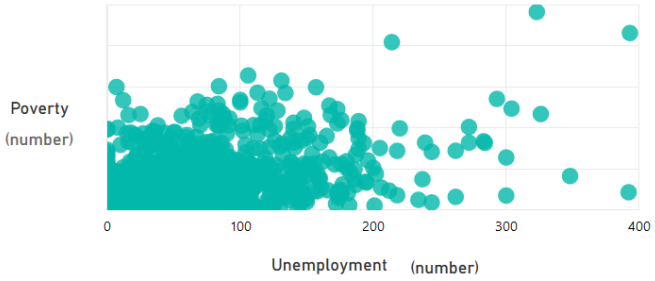


X Scatter Plot

Unemployment

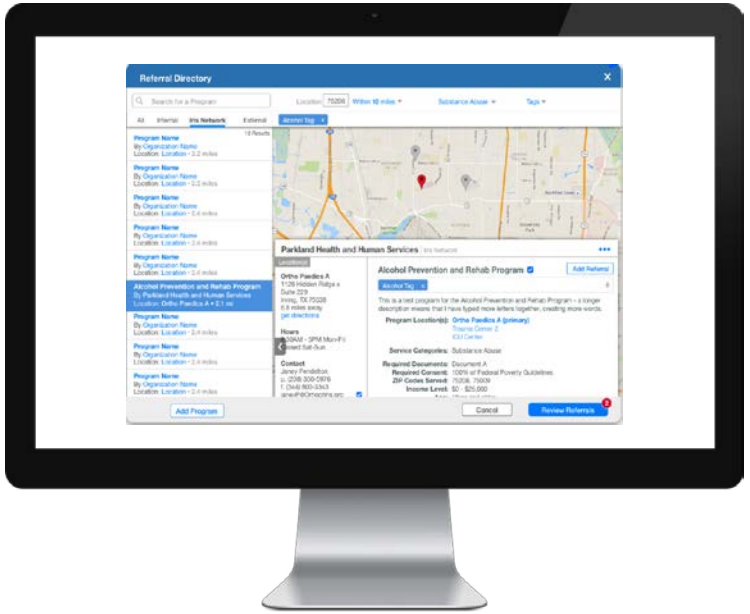
Y Scatter Plot

Poverty

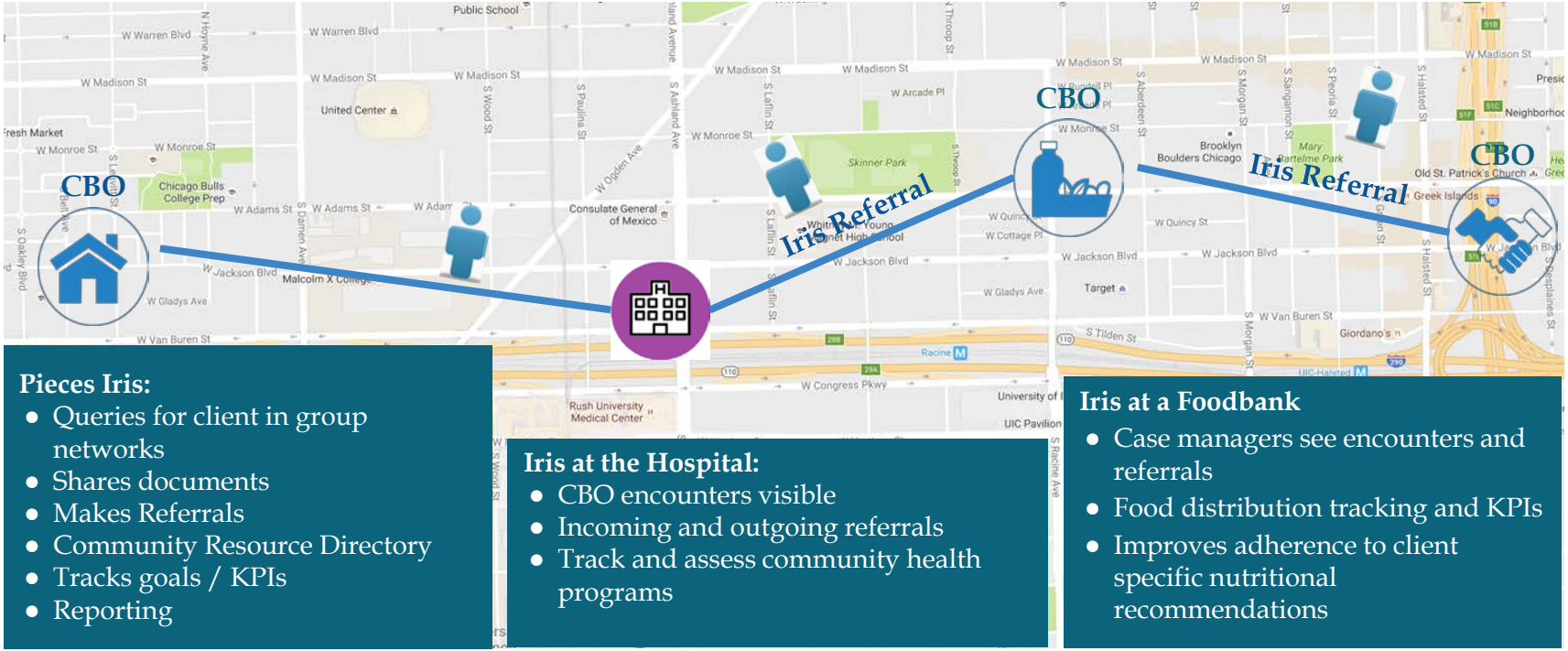


CONNECTING SDoH NEEDS TO COMMUNITY RESOURCES

- Cloud-based: accessible anywhere you get the internet
- Updated geo-mapped, referral directory
- Simple, configurable intake forms
- Security:
  - HIPAA compliant
  - 2-factor security
- Multiple levels of consent
- Multiple user roles to handle sensitive information
- Custom quick reports
- Training, legal documents, workflows



TRACKING LONGITUDINAL PATIENT SURVEILLANCE*



Pieces Iris:

- Queries for client in group networks
- Shares documents
- Makes Referrals
- Community Resource Directory
- Tracks goals / KPIs
- Reporting

Iris at the Hospital:

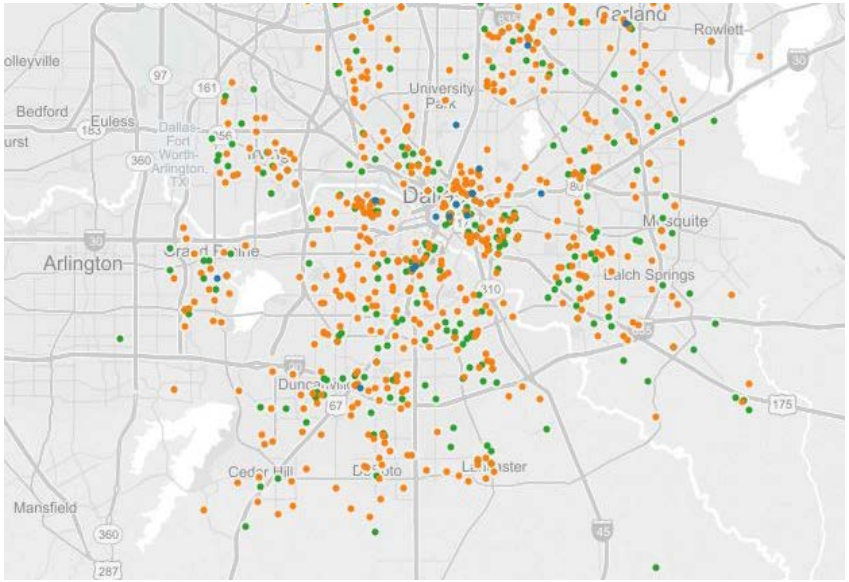
- CBO encounters visible
- Incoming and outgoing referrals
- Track and assess community health programs

Iris at a Foodbank

- Case managers see encounters and referrals
- Food distribution tracking and KPIs
- Improves adherence to client specific nutritional recommendations

*Illustrative only

COMMUNITY ADOPTION



1 million services documented; 215K+ unique individuals impacted

Community:

- Over 100 organizations in DFW
- Two major umbrella organizations:
  - North Texas Food Bank
  - Metro Dallas Homeless Alliance
- Mental Health; Criminal Justice
  Prevent Blindness Texas, VNA

Providers: Parkland, Baylor, Children's, Methodist, Metrocare

ACCOUNTABLE HEALTH COMMUNITIES

Parkland

- De Haro COPC
- Oak West COPC
- Garland ARC
- Bluitt Flowers COPC
- Hatcher COPC
- Southeast COPC

Metrocare SERVICES

- Metrocare Aging & Disability Resource Center (ADRC)

children's health

- Children's Medical Center
- Pediatrics & Adolescent CARE

Methodist HEALTH SYSTEM

- Methodist Charlton Medical Center
- Methodist Dallas Medical Center

BaylorScott&White HEALTH

- Baylor University Medical Center ED

Prevent Blindness Texas
Our Vision Is Vision®

- Mission East Dallas

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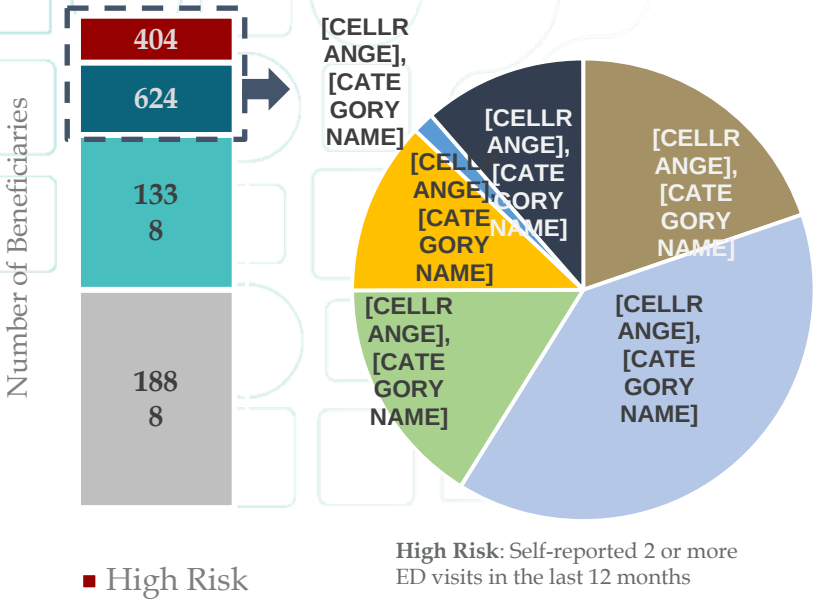
SDoH Individual Needs

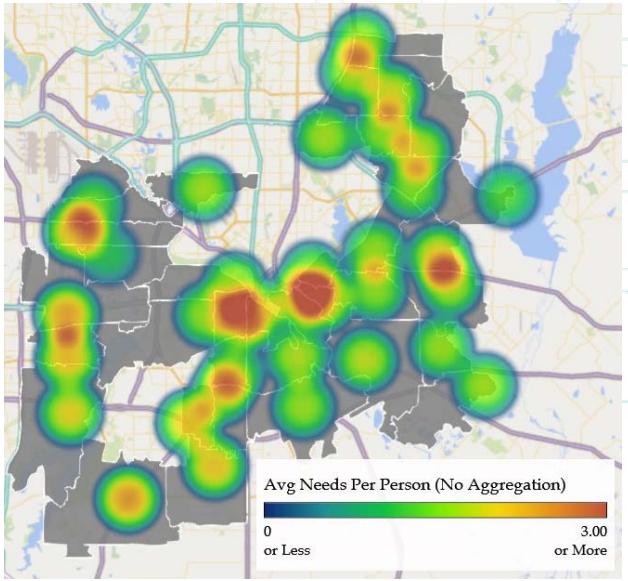
Food, Housing and Transportation Continue to be the Greatest Reported Needs



High Risk: Self-reported 2 or more ED visits in the last 12 months

Low Risk: Self-reported 1 or fewer ED visits in the last 12 months

Across the AHC Zip Codes, we are seeing on average 2 needs per person



CASE STUDY: CHRONIC CONDITIONS AND FOOD INSECURITY

Data Across Sectors for Health

Objective

The objective for the project is to decrease adverse health events among food insecure and under-resourced populations with hypertension or diabetes in the Dallas metropolitan area by improving multisector care coordination through data sharing and collaboration between the Parkland Health & Hospital System (PHHS) and hunger relief agencies that regularly serve this population.

Results

- 8% drop in ED visits vs 46% increase in non-intervention group
- 90% agree or strongly agree the program – and the support from the CBOs – has made them more able to manage their disease, fill their prescriptions and keep clinic appointments

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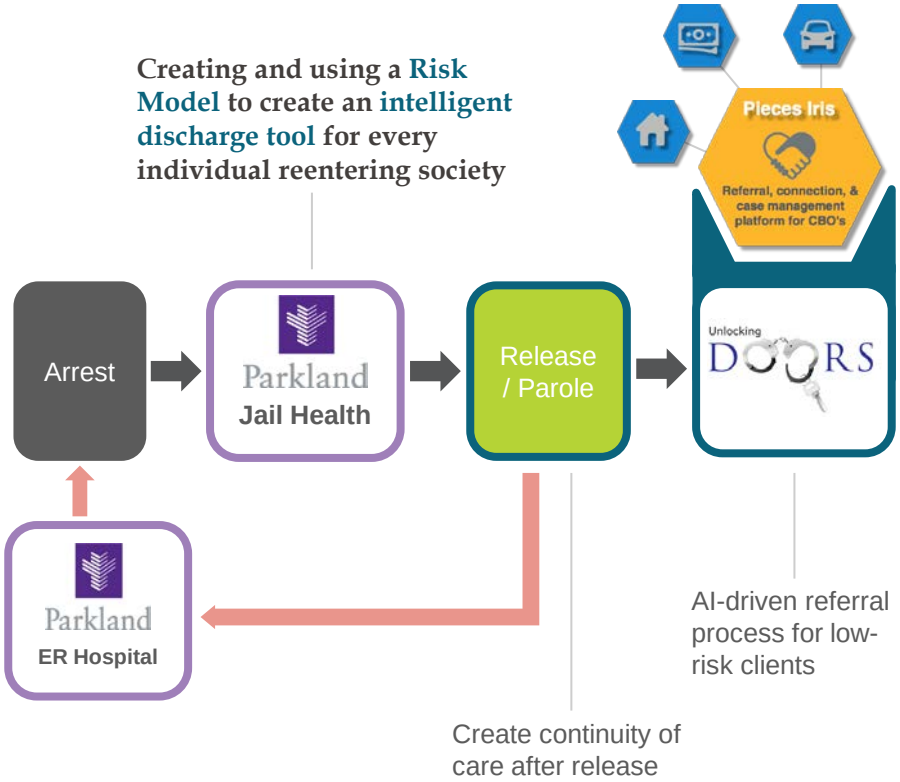
JAIL HEALTH PROGRAM



GOAL: to enable successful transition of individuals from the criminal justice system back into productive citizens through artificial intelligence (AI) & machine learning (ML) AND connected communities of care

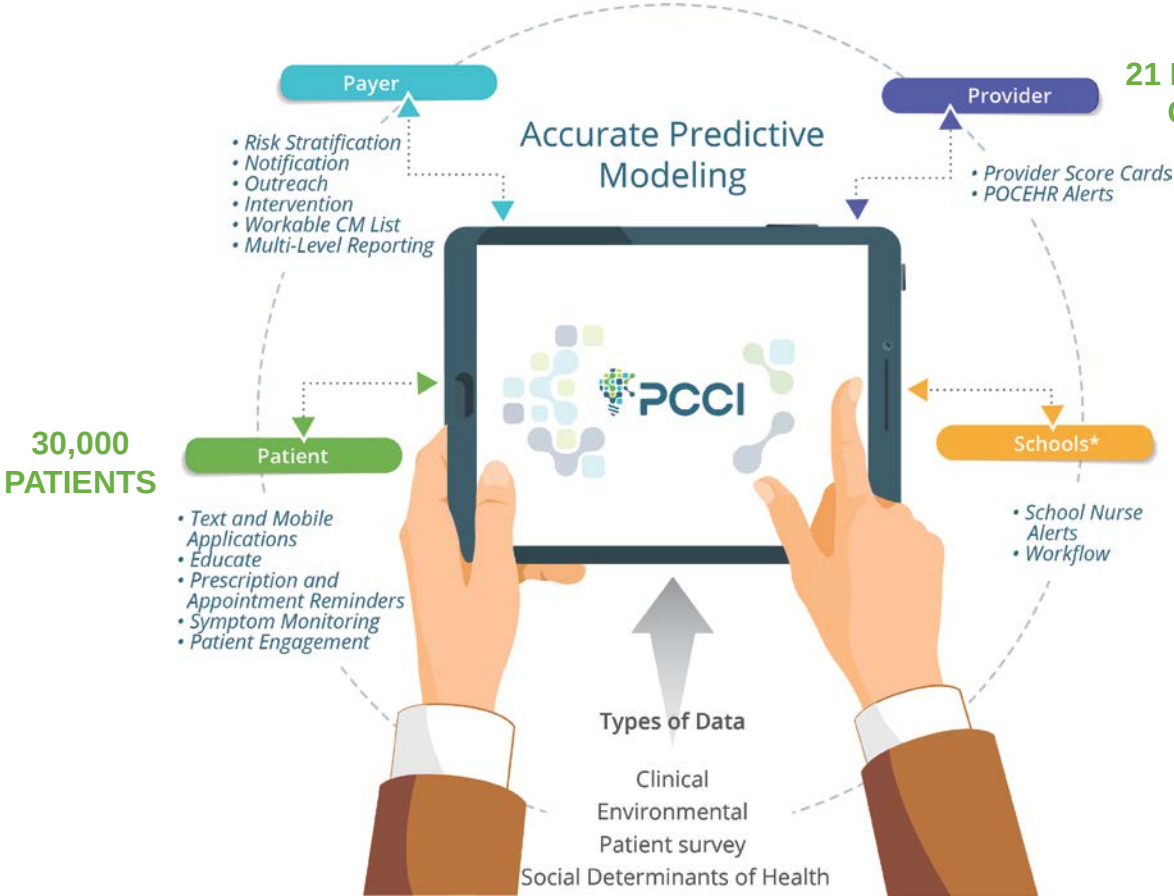
OFFERINGS

- Develop a risk-stratification algorithm and establish additional social determinants of health data collection
- An Intelligent discharge tool driven by clinical, social and mental factors for inmates that will connect those being released with community resources to prevent return to Parkland ED or jail.
- Leverage Pieces IRIS™ to connect Jail health with clinical providers and community
- Support continuity of clinical care after jail release through connection with proper community and clinical resources

CASE STUDIES

- Developing a Multi-Channel Population Health Model

MULTI-CHANNEL PROGRAM FRAMEWORK

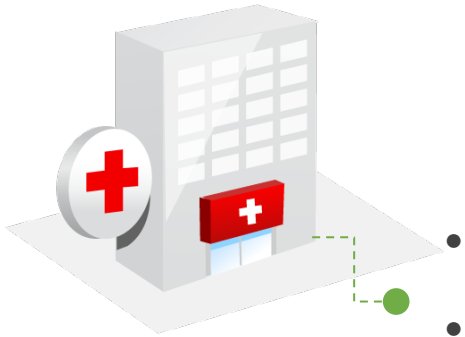


RESULTS... $18M in Savings

Clinical Improvement

- **32% - 50%** improvement in asthma controller medication prescription
- **15%** improvement in the asthma medication ratio (*HEDIS metric*)
- **Patient engagement** - **70%** high satisfaction and engagement score

Utilization Improvement

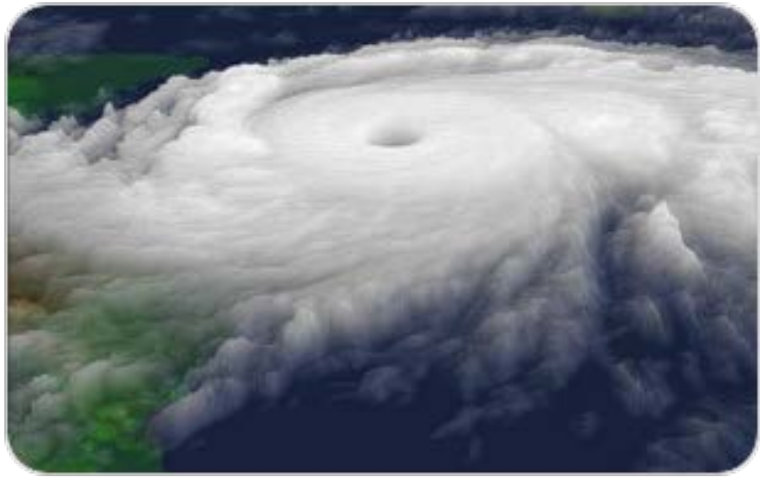


- **31%** drop in annual rates of asthma ED visits
- **42%** drop in annual rates of asthma inpatient admissions

Financial Improvement

- **40%** drop in total annual costs
- **$18M** savings

CHOLUTECA BRIDGE, HONDURAS



1998 Hurricane Mitch

- Rained 75 inches in less than four days
- Destroyed 150 bridges in Honduras
- Did not destroy the Choluteca Bridge

… AFTER HURRICANE MITCH

"The graceful arches of the Choluteca Bridge stand abandoned, a white concrete sculpture far from shore, linking nothing to nowhere.

The Choluteca Bridge itself is perfect… except that it now straddles dry land."

"We Can Do It If…." Vs. *"We Can't Do It Because…"*

THANK YOU