

Unlocking Health Information Exchange Value and Return on Investment with Insights from Claims Analysis



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Session Objectives

1. Outline the successful partnership between APCD and HIE
2. Share an innovative framework for calculating HIE ROI
3. Illustrate a real-world application of ROI analysis
4. Leave you with a framework you can adapt for your needs

Agenda

1. Contexture's Approach to Demonstrating HIE ROI
2. Partnership with CIVHC for Evaluation and Findings
3. Reflections and Next Steps
4. Discussion & Questions

About Contexture

- **Who We Are**

Contexture is the health information exchange (HIE) for Arizona and Colorado. We are the largest health information organization in the Western region.

- **What We Do**

Contexture is a nonprofit regional organization that provides strategic, technical and administrative support to communities committed to advancing health through information sharing.

- **Our Mission**

Advancing individual and community health and wellness through the delivery of actionable information and analysis.



Contexture by the Numbers

688

DATA
SENDERS
AZ

12K

USERS
PER
MONTH

884

DATA
SENDERS
CO

13.2M

PATIENTS
AZ



12.8M

DATA
SENDERS
CO

11.7M

ALERTS
PER MONTH
AZ

56+M

CCD/HL7
TRANSACTIONS
PER MONTH

17.2M

ALERTS
PER MONTH
CO

Data Accurate as of Nov 2023



Contexture's Approach to Demonstrating HIE ROI

Strategic Goal – Demonstrate and reinforce HIE value to our participants and stakeholders

1. Identify Return on Investment (ROI) Value Propositions

Comprehensive review of existing research literature and interviews with participants

2. Deploy ROI Calculators for Participants

Model healthcare and administrative cost savings from HIE solutions based on research

3. Use Claims Data to Evaluate Patient Outcomes for Participants

Partner with CIVHC to develop quantitative analysis to demonstrate actual impacts

Return on Investment Value Propositions

Interviews and research identified the following key value propositions for HIE:

- Allow providers to quickly access information prior to and during visits
- Reduce administrative burden on providers to respond to record requests
- Reduce duplicative imaging, labs, and visits just to obtain medical records
- Reduce inpatient readmissions and emergency department visits

HIE Solutions Save Time, Save Money, and Save Lives

- Improving Patient Outcomes
- Increasing Administrative Efficiency

Review of Current Research Literature

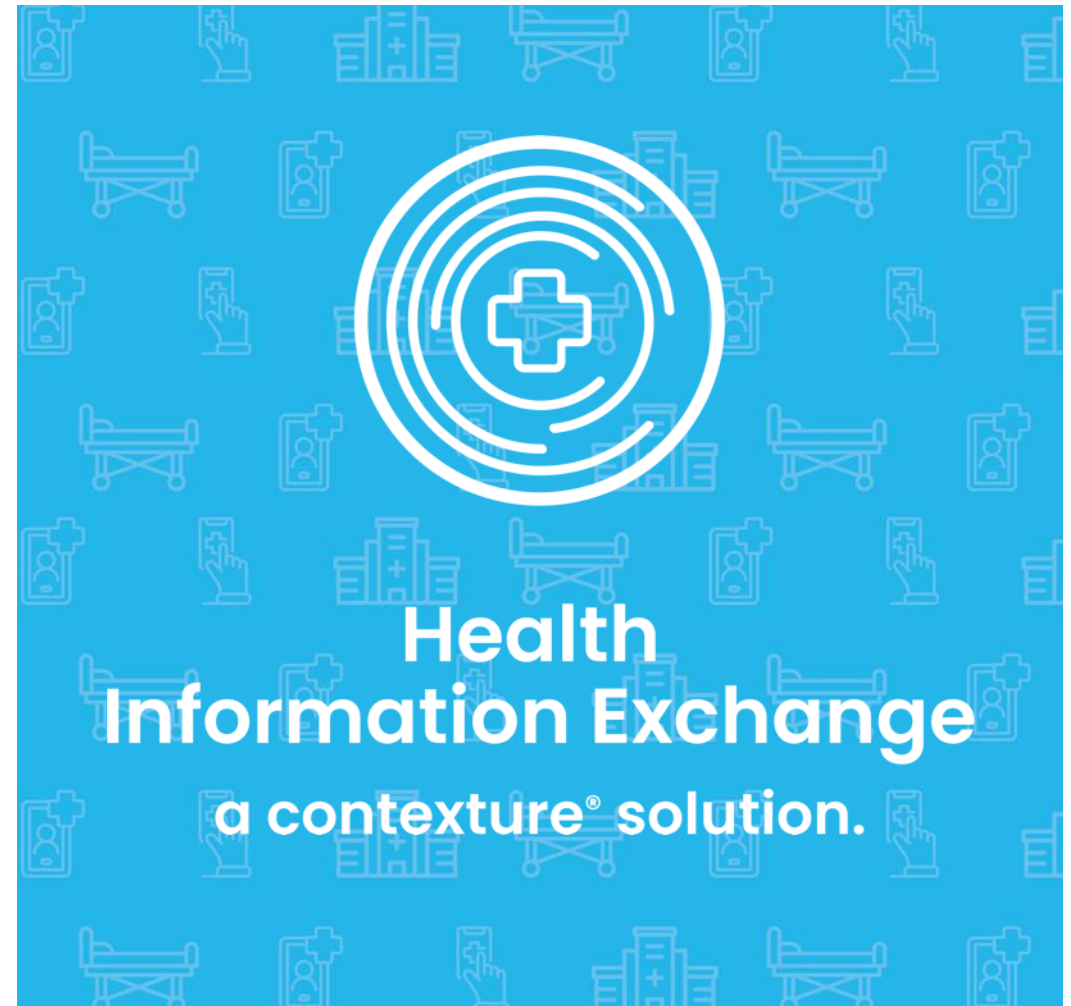
- PCPs who look up patients in the HIE within 30 days of discharge reduce ED visits by 53% and rehospitalizations by 61%
 - [The Impact of Community Health Information Exchange Usage on Time to Reutilization of Hospital Services \(2023\)](#)
- HIEs can enable a 44% to 67% reduction in repeat or redundant ED imaging
 - [Does health information exchange reduce redundant imaging? Evidence from emergency departments \(2014\)](#)
- Cost savings of \$2,000 per ED patient due to avoided labs, radiologic studies, consultations, and admissions, improved quality of care for 87% of patients, and 120 minutes saved per patient per year
 - [Observational study and estimate of cost savings from use of a health information exchange in an academic emergency department \(2013\)](#)

Contexture HIE Solutions – ROI Calculators

- For each solution, identified administrative efficiency and healthcare savings:
 - PatientCare 360 Portal
 - Save 2 minutes per visit; Reduce imaging by 1.0%
 - Inbound Data
 - Save 3 minutes per record request; Reduce visits to obtain records by 5.0%
 - ADT Notifications
 - Save 20 minutes per admission/discharge; Reduce readmission by 1.0%
 - Quick Results
 - Save 0.5 minutes per visit; Reduce labs by 1.0%
- Developed interactive model loaded with conservative assumptions
 - Assumed much lower time savings and % impacts than interviews or research
 - Demonstrates that in nearly all scenarios HIE solutions generate net positive ROI from admin savings (time/dollars) and healthcare costs (system savings)

Focus on Core HIE Solutions for CIVHC Evaluation

- PatientCare 360 Portal
 - Web-based platform to seamlessly access and query individual patients' comprehensive health records
 - Review demographic data, discharge summaries, lab/rad/path reports, and Emergency Department encounters
- Results Delivery
 - Delivers patient results, including lab/rad/path/trans reports, pushed directly into the participant's EHR using provider based routing
 - Provides immediate access at point of care within participant workflow v. requesting reports and compiling results manually
- Most participants start with PatientCare 360 and then can layer on Results Delivery



CIVHC Evaluation & Findings

CIVHC's Mission

- To equip partners and communities in Colorado and across the nation with the resources, services and unbiased data needed to improve health and health care.

How We Serve



Public CO APCD Data

Identify opportunities for improvement in your community through interactive reports and publications



Non-Public CO APCD Data

License data from the most comprehensive claims database in CO to address your specific project needs

- Administrator of the Colorado All Payer Claims Database
- Research & Evaluation Services
- Program Focus Areas: Advance Care Planning, Palliative Care
- Community Engagement

What's in the CO APCD



Over 1 Billion Claims (2013-2022)



Over 70% of Covered Lives (medical only, 2021)



5.5+ Million Lives*, Including 1M of self-insured



48 Commercial Payers, + Medicaid & Medicare*



Trend information (2013-Present)

**Reflects 2022 calendar year only*

What's not in the CO APCD



Federal Programs - VA, Tricare, Indian Health Services



Uninsured and self-pay claims



Majority of ERISA-based self-insured employers

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Background of Partnership

- Several years of work on formulating a project proposal with several iterations
- A Master Services Agreement was put into place, requiring several iterations from each organization
- Two projects with CIVHC requiring Data Use Agreements and Scopes of Work

Evaluation Process

Build partnership – mutual learning

Identify priority areas

Co-Design evaluation

Evaluation implementation and delivery

Post-delivery support

Long term collaboration and involvement

Research and Evaluation



Evaluation Questions

1. Determine the rate of higher-level care utilization before and after provider enrollment in HIE services.
2. Determine patients' annual health care cost before and after provider enrollment in Results Delivery and Patient Care 360.
3. Determine the rate of repeat imaging services for patients before and after provider enrollment in Results Delivery and Patient Care 360.



Outcome Measures

Per MBR per period
ED Admissions
Inpatient Admissions

Several Project Iterations

20 months 2017-2020

- Removed five months due to possible COVID effects
- Utilization was lower outside of MFF, MA

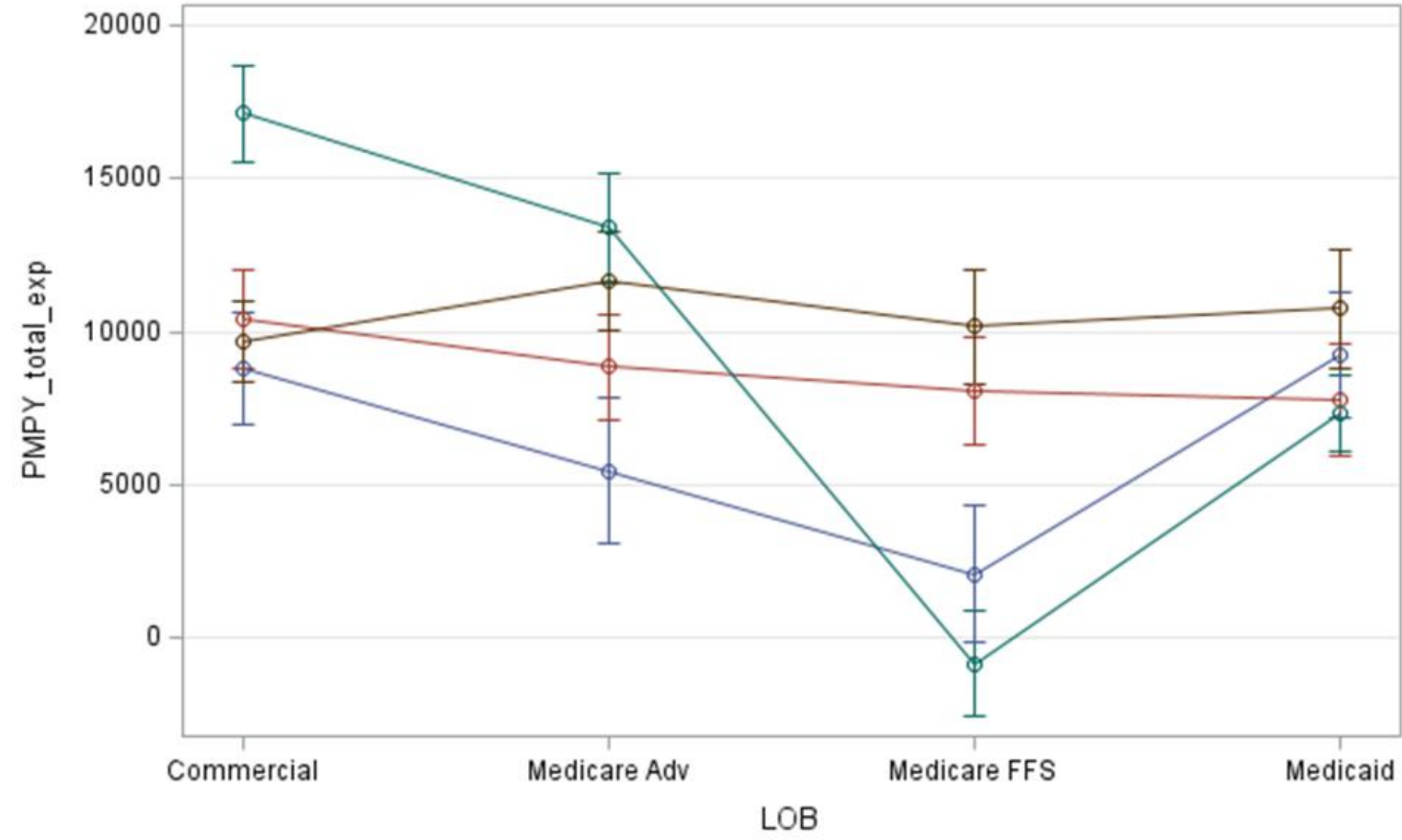
15 Months of Contexture Products

- Costs trended higher
- Outliners were removed, and inflation .05 was added to adjust for natural increases in expenditures year over year

Broken Down by Clinic

- Added an interaction term, Line of Business, clinic, and Contexture product.
- Drawback: it was challenging to apply an interaction term to an ROI

Fit for PMPY_total_exp
With 95% Confidence Limits



Product —○— Both —○— Patient —○— Results —○— Control

Fit computed at prepost=pre clinic=46

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Adjusted model

- Interaction indicates that impact of one variable on another variable differs based on a third variable
- Interaction terms tested:
 - Prepost*product type
 - **LOB*product type**
 - Prepost*clinic

Adjusted Conclusions

- The analysis showed that the intervention group, payer type/insurance product type, and clinic were significant predictors of total PMPY expenditure ($p < 0.0001$).
- Contexture products positively impacted PMPY health care expenditure relative to the Control group.
- Subscription to Contexture products was also associated with a reduction in inpatient admissions, ED expenditures, and repeat imaging and expenditures.
- The impact of Contexture products varied by payer type.

Project Iterations Continued

New Cohorts

- Results Delivery and Both into one cohort
- Costs trended higher

Non-parametric test due to left-skewed (Many non-users)

- Uses the mode, not the median
- Helped lower cost a little

Compared to the State

- Removed inflation factor
- Outliners not removed
- Healthy non-users in the state
- Reduced the appearing effect of Contexture products with the comparison to non-users

Final Study Design

- A pre-post evaluation design to understand Contexture products' impact on subscribing clinic patients.
- Between 2017 and 2019, covering 15 months before and after provider subscription enrollment.
- State: Removed healthy non-users
- Used to generalize Contexture effects across all settings with five clinics for each Contexture product and 14 control clinics

Member Months

- Member Months: if one person is fully insured ~ 12 months of eligibility

Control

Pre: 22,284 ~**1857** individuals
Post: 30,612 ~**2,551** individuals

Portal

Pre: 15,204 ~**1267** individuals
Post: 17,232 ~**1436** individuals

Results Delivery

Pre: 32,424 ~**2702** individuals
Post: 36,276 ~**3023** individuals

Preliminary Final Results

- CIVHC evaluated ED and IP utilization for patients of providers using Contexture solutions, pre- and post-implementation, as compared to a control group
 - The control group included **17** clinics covering **2,500** estimated lives and the intervention group included **14** clinics covering **4,500** estimated lives
- Contexture solutions are associated with meaningful reductions in ED Visits, compared to the control group
 - For All Payers, ED Visits were **3.7%** lower with PatientCare 360 and **6.4%** lower with Results Delivery
 - For Medicaid, ED Visits were **16.8%** lower with PatientCare 360 and **29.0%** lower with Results Delivery
- Contexture solutions are associated with meaningful reductions in IP Admissions, compared to the control
 - For All Payers, IP Admissions were **6.2%** *higher* with PatientCare 360, but **11.1%** lower with Results Delivery
 - For Medicaid, IP Admissions were **32.5%** lower with PatientCare 360 and **40.3%** lower with Results Delivery

Preliminary Final Results

Emergency Department Visits	All Payers	Medicaid
PatientCare 360	-3.7%	-16.8%
PatientCare 360 & Results Delivery	-6.4%	-29.0%

Inpatient Admissions	All Payers	Medicaid
PatientCare 360	6.2%	-32.5%
PatientCare 360 & Results Delivery	-11.1%	-40.3%

Preliminary Final Results

- Participants using both PatientCare 360 and Results Delivery saw a greater reduction in utilization than those using just PatientCare 360 alone
- Utilization for Contexture participants increased between the pre-and post-periods but still compares favorably to higher increases for the control group
- Despite the decreases in ED and IP utilization, CIVHC also observed increases in PMPM expenses that may be attributable to increased preventive care

Reflections & Next Steps

- Reflections

- Analysis of claims data can help meet the need for quantitative analysis of HIE ROI
- Partnership between APCD and HIE was developed over multiple years to enable this work
- Highly collaborative, iterative process necessary to produce valid analysis

- Next Steps

- Validating preliminary final results to communicate to a broader audience
- Will consider alternative evaluation models / options going forward



Questions



Connect with Us!

- www.contexture.org
 - hello@contexture.org
- <https://civhc.org/programs-and-services/>
 - RPI@civhc.org

CHECK OUT OUR AGENDA!

SCAN

