

North Carolina Department of Information Technology Data Division

Overview of the Government Data Analytics Center (GDAC)

John Correllus
Chief Data Officer
GDAC Director

Christie Burris
Executive Director
Health Information
Exchange Authority

Carol Burroughs
Analytics Director
GDAC Assistant Director

Jackie Keener
Analytics Assistant
Director – Longitudinal
and Performance

January 27, 2021



Agenda

- Overview of the Data Division/GDAC
- NC's Health Information Exchange
- Longitudinal & Performance
- Enterprise Entity Resolution
- Technical Deep Dive Discussion



Data Division/Government Data Analytics Center

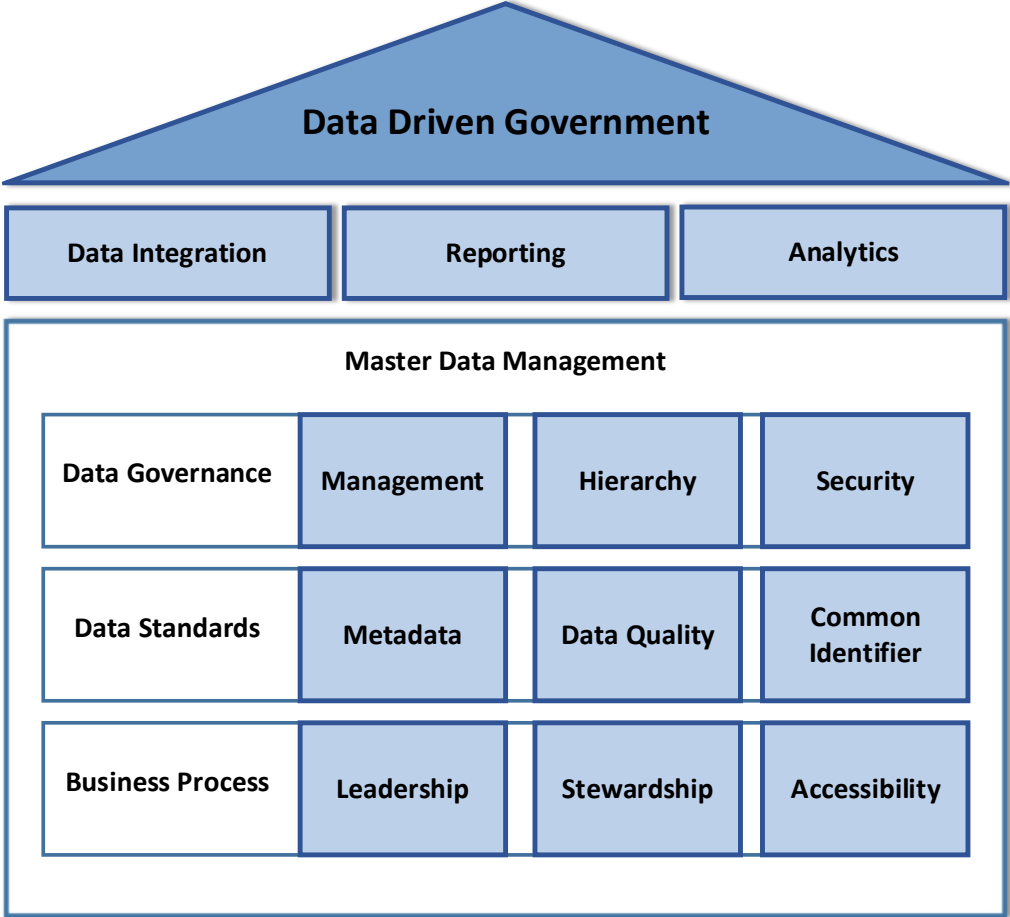
Chief Data Office

Vision

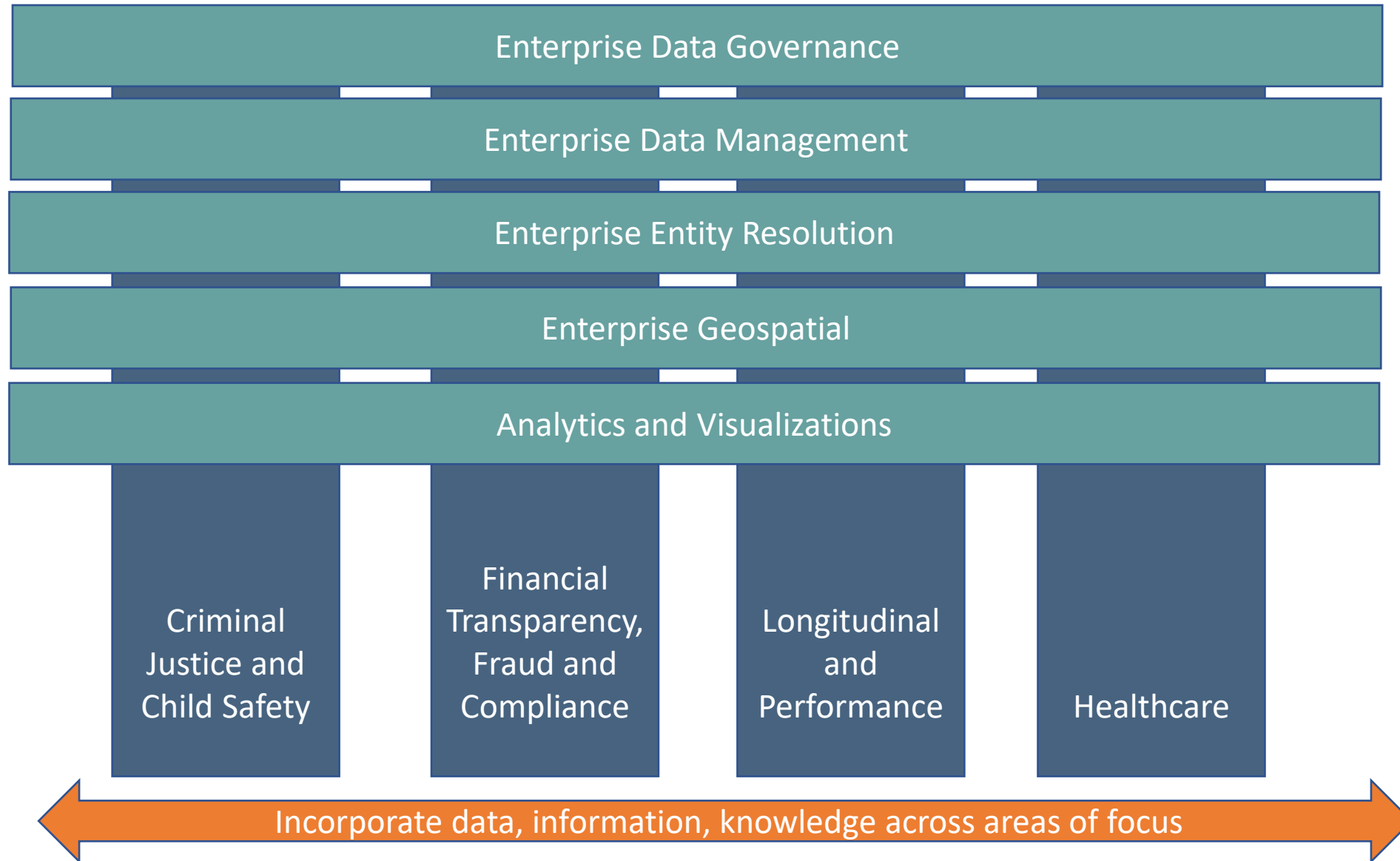
Trusted partner and leader for enabling the sharing of data assets

Mission

Transform data into information to facilitate decision support, increase operational efficiencies, and improve outcomes for the citizens of North Carolina by integrating and sharing data assets



Organizational Focus



Key Priorities



- Expand the Health Information Exchange, NC HealthConnex



- Modernize the Educational Longitudinal Data System (NCLDS)



- Increase Use of Data and Analytics Across All Domain Areas



- Extend the Enterprise Entity Resolution Initiative



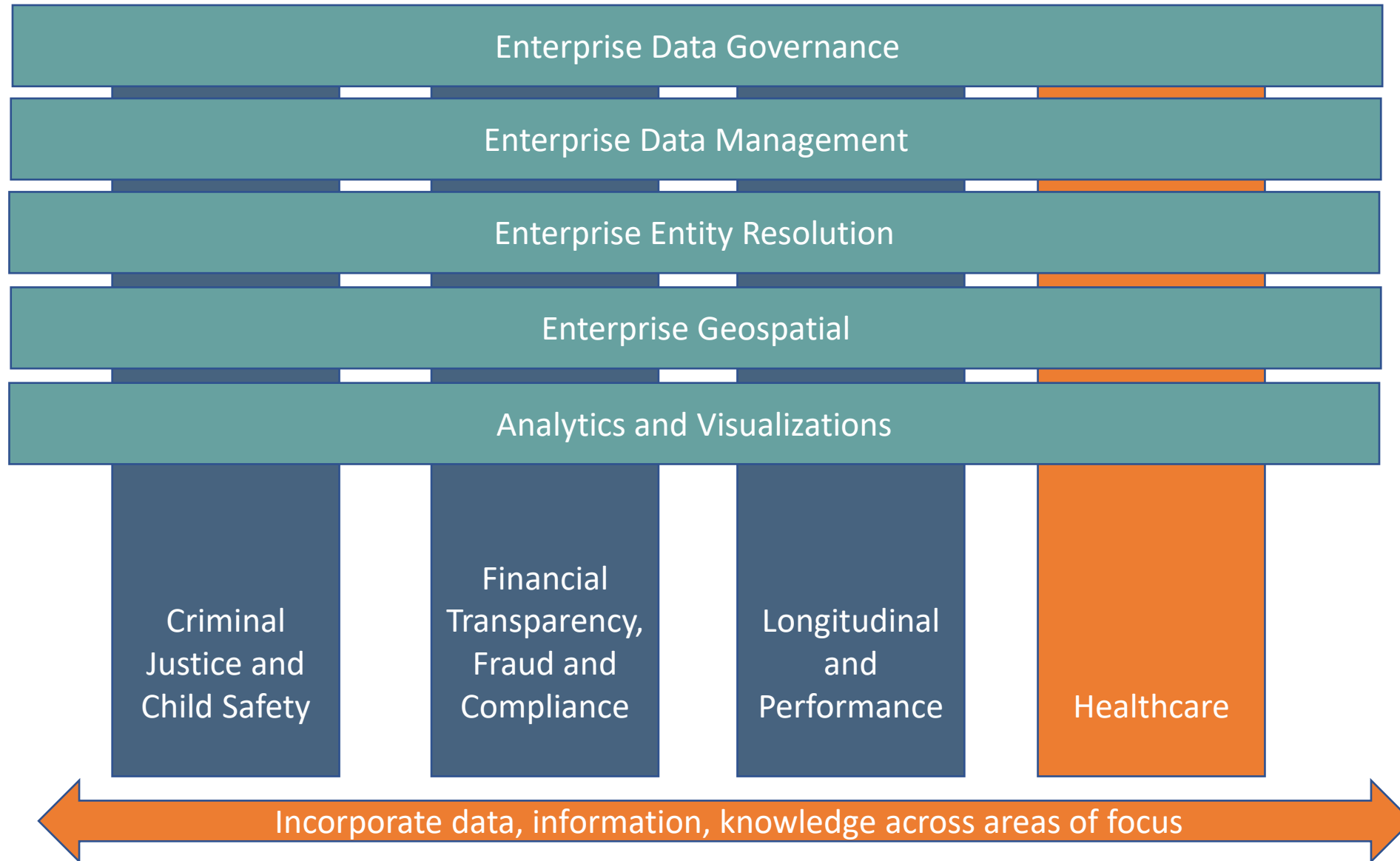
- Develop and Leverage Data as a Service (APIs)



Guiding Principles



Healthcare





NORTH CAROLINA HEALTH INFORMATION EXCHANGE AUTHORITY

*Christie Burris
Executive Director
January 27, 2021*



NC HIEA Advisory Board

Dr. Jeffrey M. Ferranti, Chairman
Chief Information Officer
Duke Medicine

*Representative of Health System or
IDN*

Dr. William G. Way, Vice Chairman
Director of Diagnostic Imaging
Radiologist, Wake Radiology
Representative of a Licensed Physician

Dr. Harriett Burns
Associate Medical Director
Director of Informatics
Piedmont Health Services
*Representative of Federally Qualified
Health Center*

Timothy N. Ferreira
Director of Quality &
Compliance Autism Society of
North Carolina *Patient
Representative*

Richard J. Pro
Chief Data and Analytics Officer
Cone Health

*Representative of Technical Expertise
in Data Analytics*

Donette Herring
Chief Information Officer
Vidant Health
*Representative of a Critical Access
Hospital*

Carolyn D. Spence
Chief Information Officer
Alexander Youth Network
*Representative of a Behavioral Health
Provider*

Dr. Donald Spencer
Chief Medical Informatics Officer
UNC Health System
*Individual with Technical Expertise in
Health IT*

Ex-Officio Members:

Secretary Thomas Parrish (non-voting)
North Carolina Department of
Information Technology

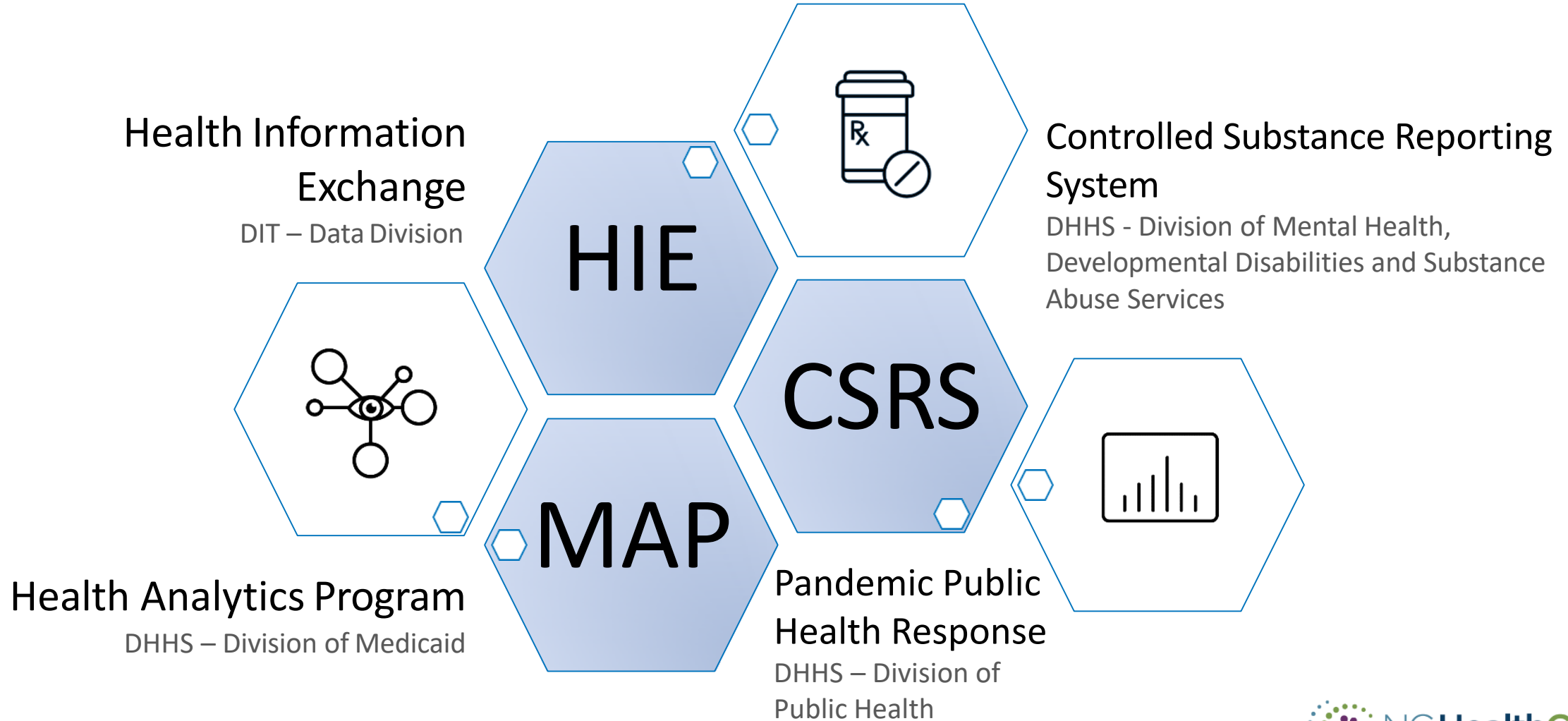
Secretary Mandy Cohen (non-voting)
North Carolina Department of Health
and Human Services

John Correllus (non-voting)
GDAC Director, Chief Data Officer North
Carolina Department of Information
Technology

Dee Jones (voting)
Executive Director
North Carolina State Health Plan

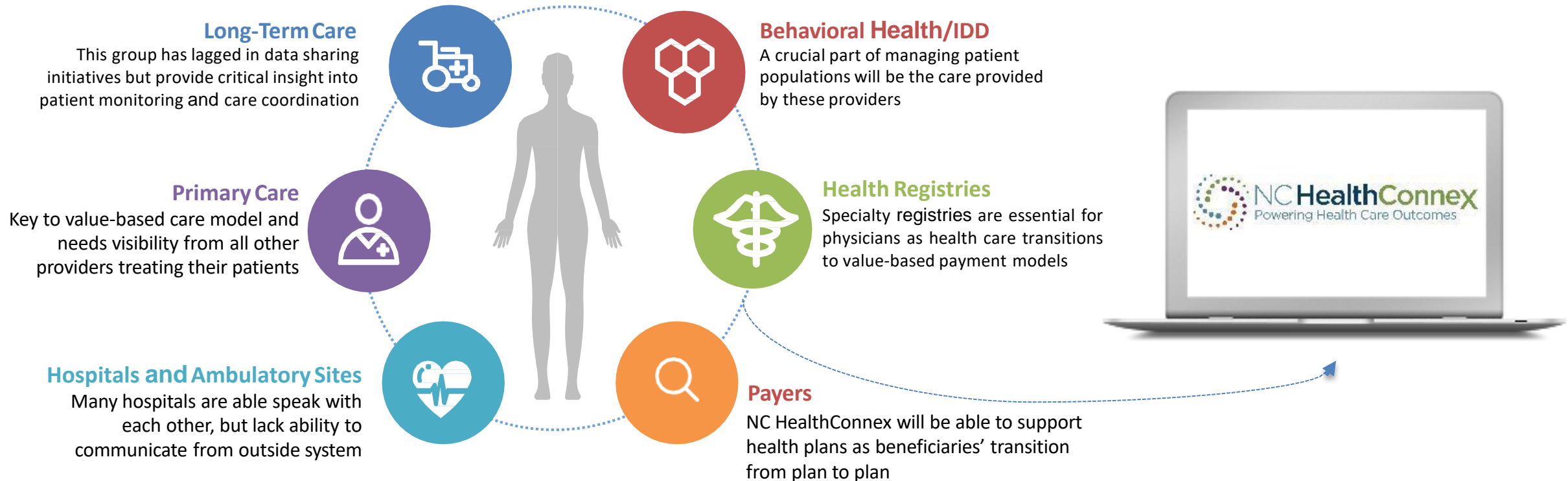


GDAC Health Care Portfolio



NC HealthConnex Health Information Exchange

An HIE is a secure, electronic network that gives authorized health care providers the ability to access and share health-related information across a statewide information highway.



NC HealthConnex By the Numbers:



STATE DESIGNATED



SECURE



PARTNERSHIP

- 60,000 + providers with contributed records
- 6,500 + health care facilities live submitting data, including 124 hospitals
- 6,000 + health care facilities in onboarding
- 120 million+ continuity of care documents (CCDs) exchanged
- 11M+ unique patient records
- 80 EHRs live; over 200 engaged
- 24 border and interstate HIEs connected, including connections to the Veterans Affairs (VHIE) and Department of Defense (DMIX)

Current Statewide Coverage

Medicaid

80%
of patients eligible for
Medicaid have data in
NC HealthConnex

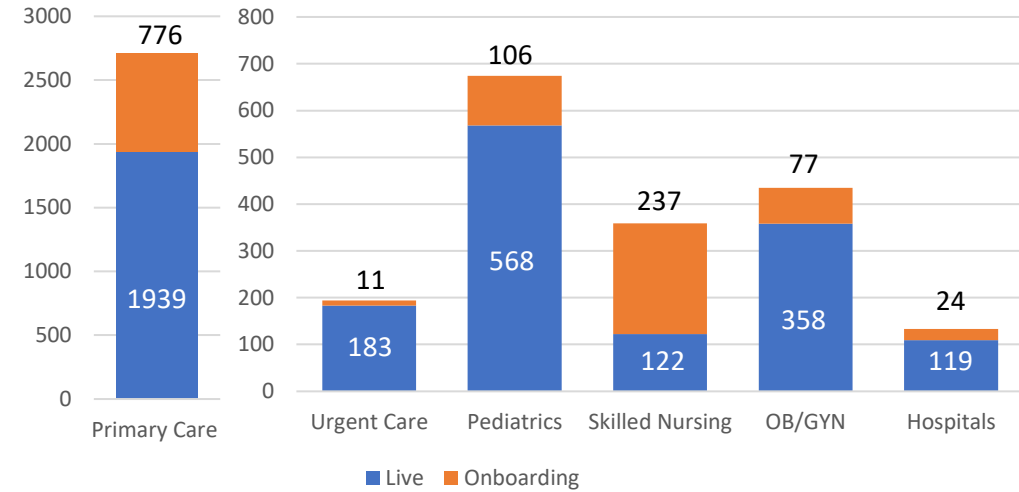
| | |
|--|-----------|
| Patients eligible for Medicaid as of December 1, 2020 | 2,455,677 |
| Patients found in NC HealthConnex | 1,984,055 |

State Health Plan

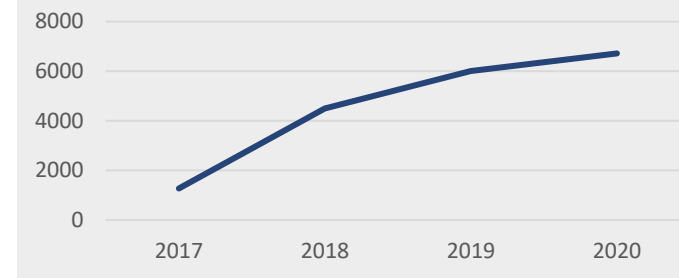
86%
of State Health Plan
members with data in
NC HealthConnex

| | |
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| State Health Plan Members as of November 30, 2020 | 573,820 |
| Patients found in NC HealthConnex | 493,947 |

Connecting Core Provider Types

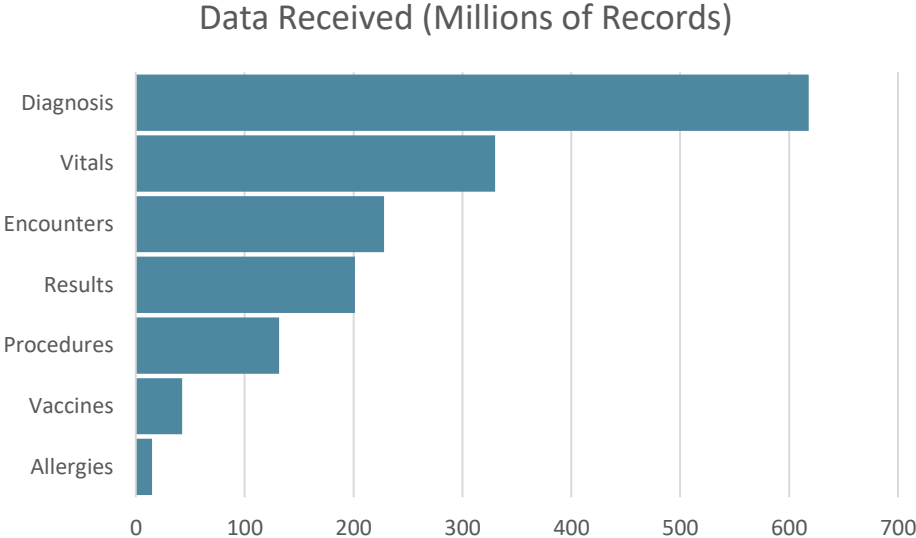
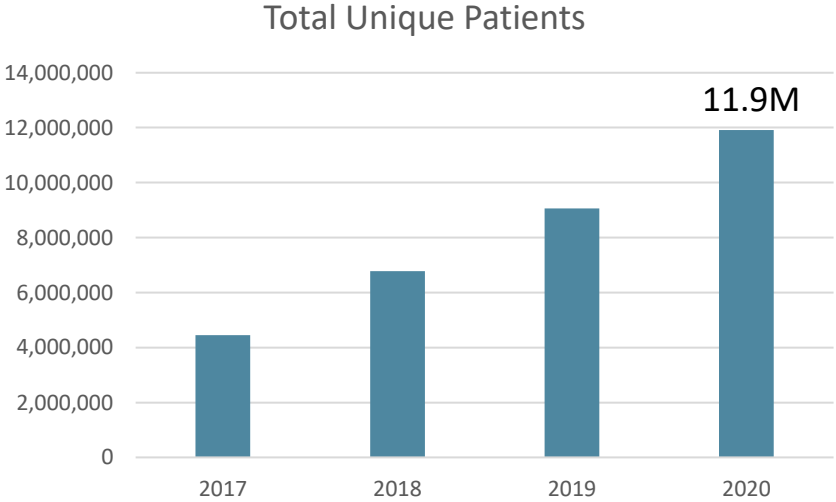


Total Facilities Connected



Clinical Data Volumes

In the first full year on the modern HIE platform, NC HealthConnex has supported an explosive growth in data received and exchanged. Total patient records have **increased 40% per year** since 2017. The HIE is nearing the 1M messages per day mark.



Daily inbound messages: 909k

- 156k CCDs
- 753k HL7

COVID Focus Areas

NC HealthConnex is supporting the public health response in partnership with the DHHS Division of Public Health as well as working on behalf of its participant and stakeholder communities to provide access to COVID-19 data from NC DHHS.

This work is broken into four key focus areas:

DHHS Data Sharing

- Longitudinal Data on Positive Patients (NC EDDS)
- Statewide Disease Surveillance (NC DETECT)
- Vaccine Administration (CVMS Support)

NC Medicaid Tools

- Enhanced Cohort Monitor
- COVID Dashboard

COVID-19 Data Delivery

- NC*Notify COVID Positive Alerts
- NC*Notify Lab Result Routing

Analytic Insights

- COVID Long Term Care Risk Analysis
- NC HIEA COVID Dashboard

NC Medicaid COVID Dashboard



NCDHHS
NC Medicaid
Division of Health Benefits

Use Case: NC Medicaid needs to understand impacts of COVID-19 on the Medicaid population

Stakeholders: NC Department of Health Benefits

Timeline: Phase 1 - July 2020; Phase 2 - Q4 2020

Phase 1

- Tracking cases with HIE cohort monitor
- Population filtered by Medicaid global eligibility file
- Geographic, Facility, and comorbidity detailed views
- Comparison of HIE full population to Medicaid

Phase 2 Dashboard Enhancements:

- Weekly processing of the eligibility file for changes in data
- Stratification of patients receiving telehealth
- Medicaid program, eligibility, disability and living arrangement flags
- Additional cohorts for outcomes – extended, recovered, deaths (HIE)
- Expansion of comorbidities/patient attributes such as smoking and depression
- Date Range Slider to locate COVID-19 hotspots over time
- Path Analysis of patient movement among cohorts over time



NC Medicaid COVID Dashboard

Filters: NC Only x



COVID-19 Dashboard

Region Selection

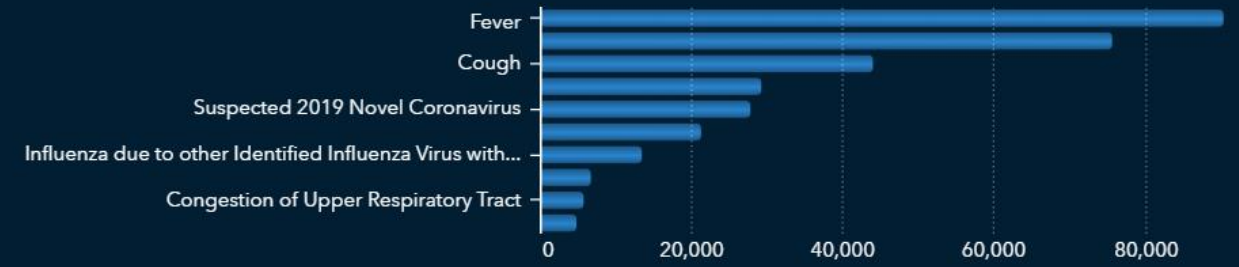
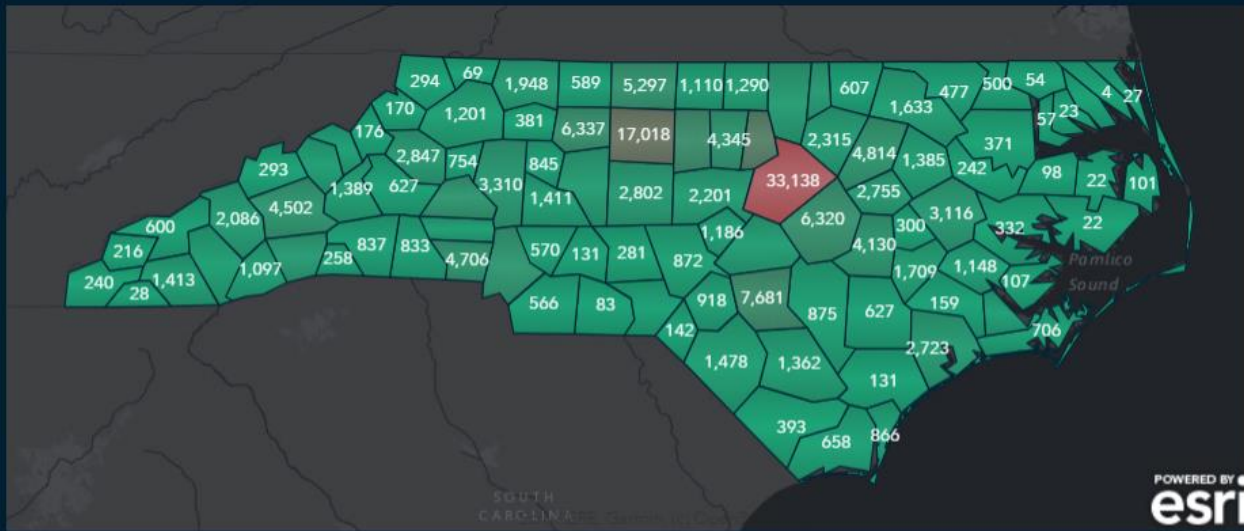
- NC Only
- Plus 40 Miles

Cohort Selection

Cohort ▼

< Cases Cases per 100k Pop Cases per 100k HIE SVI Facilities >

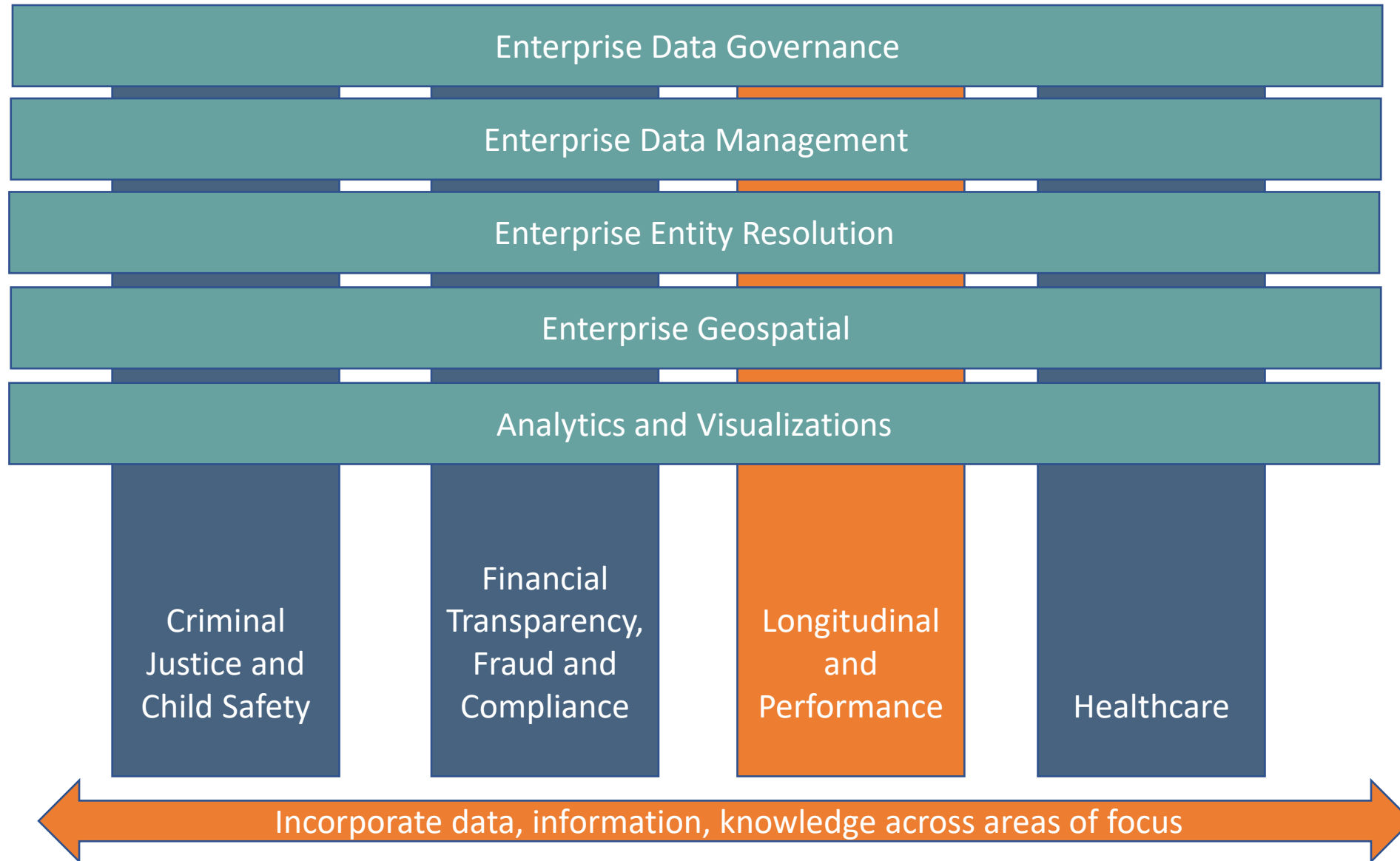
< Diagnoses Comorbidities >



< Gender by Age Gender Age Race Ethnicity >



Longitudinal & Performance



Longitudinal & Performance

Portfolio

- Covid-19 Economic Recovery Dashboard (ERD)
- Covid-19 Metric Dashboards
- Veteran's Information Platform Project (VIPP)
- Human Asset Resource Project (HARP)
- Division of Adult & Juvenile Justice Recidivism Reporting
- NC SchoolWorks
- Early Childhood Integrated Data System (ECIDS)
- Common Follow-Up System (CFS)
- NCLDS Modernization Plan



Longitudinal Early Childhood/Education/Workforce Continuum Collaborative Projects

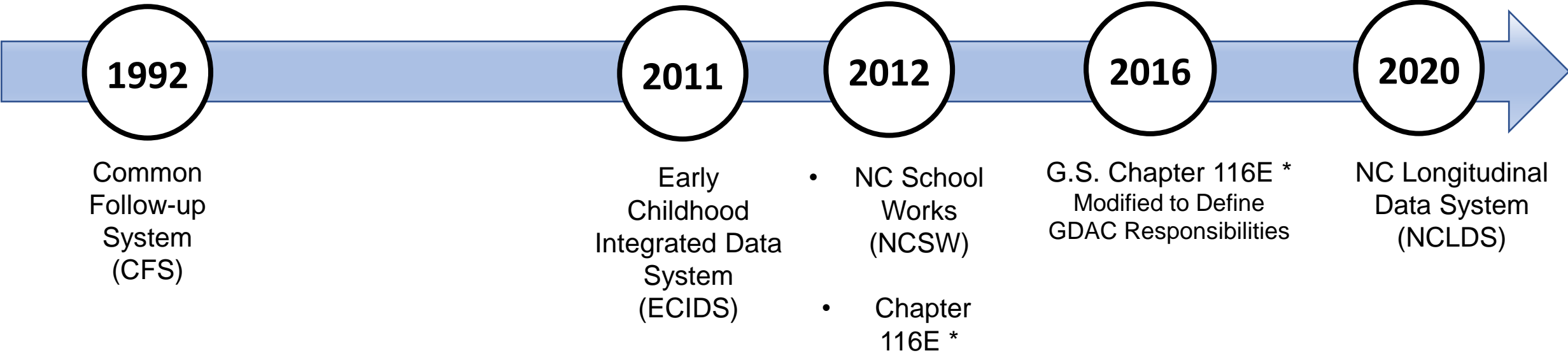
- ECIDS – Integrates selected early childhood education, health, and social services program data
- NC SchoolWorks – Integrates education and workforce (employment) data
- CFS – Integrates publicly supported education, employment and training program data

Shared Goal – Evidenced based policy (outputs/outcomes)



NC Educational Longitudinal Data System (NCLDS)

North Carolina vision is to build a statewide longitudinal data system which leverages past efforts



* Chapter 116E – Educational Longitudinal Data System Law



NCLDS Recent Progress

- Authorized – G.S. Chapter 116 E (2012, 2016)
- Education Cabinet – Data Sharing Subcommittee
- Development of Administrative Rules
- NCLDS Contributor MOU
- Collaborate on State Research Agenda (Hunt Institute)
- NCLDS Modernization Plan – Study (UNC EPIC)





The NCLDS roadmap draws on input from NC stakeholders, comparison state interviews, and best practice

NC Stakeholders

- Governor's Office
- OSBM
- NCGA Fiscal Research
- NCGA Legislative Analysis Division
- NC Department of Commerce
- NC Department of Health & Human Services
- NC Department of Information Technology
- NC Department of Public Instruction
- State Board of Education
- UNC System
- NC Community College System
- NC Independent Colleges and Universities
- myFutureNC
- Carolina Demography
- The Hunt Institute

Comparison States

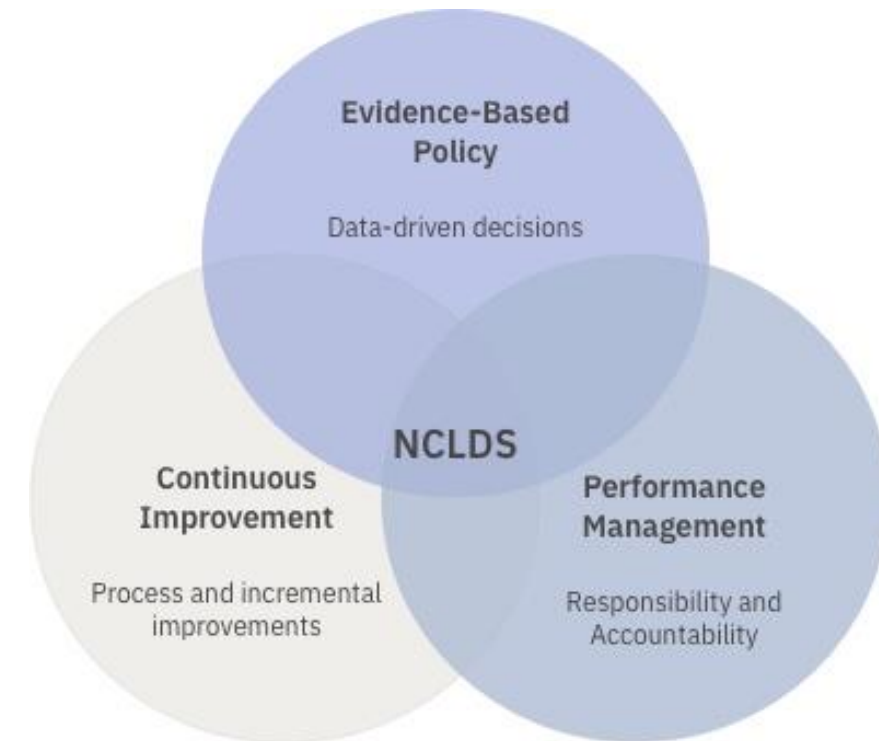
- Connecticut
- Georgia
- Kentucky
- Maryland
- Minnesota
- Rhode Island
- Washington
- Wisconsin

National experts

- Data Quality Campaign
- SLDS Grant Program
- SLDS Research Project
- US Department of Education

NCLDS should provide high-quality, aggregated and record-level data to:

- Help answer some of the state's most complex policy questions around the transitions, trajectories, and outcomes of young children, students, and workforce participants
- Support performance management and continuous improvement of programs designed to improve early childhood, education, and workforce outcomes
- Equip policymakers, other state leaders, and agencies/entities with information to plan strategically on the future needs of North Carolina's young children, students, workforce, and industries



Stakeholders viewed trust as the key building block

- Trust strengthens:
 - relationships between partners—from system leaders to program and data experts
 - collaboration across agencies

- Trust can be strengthened by:
 - a transparent formalized process that authorizes access to and use of NCLDS data
 - a secure technical infrastructure, housed by a neutral entity, that safeguards high-quality, confidential data



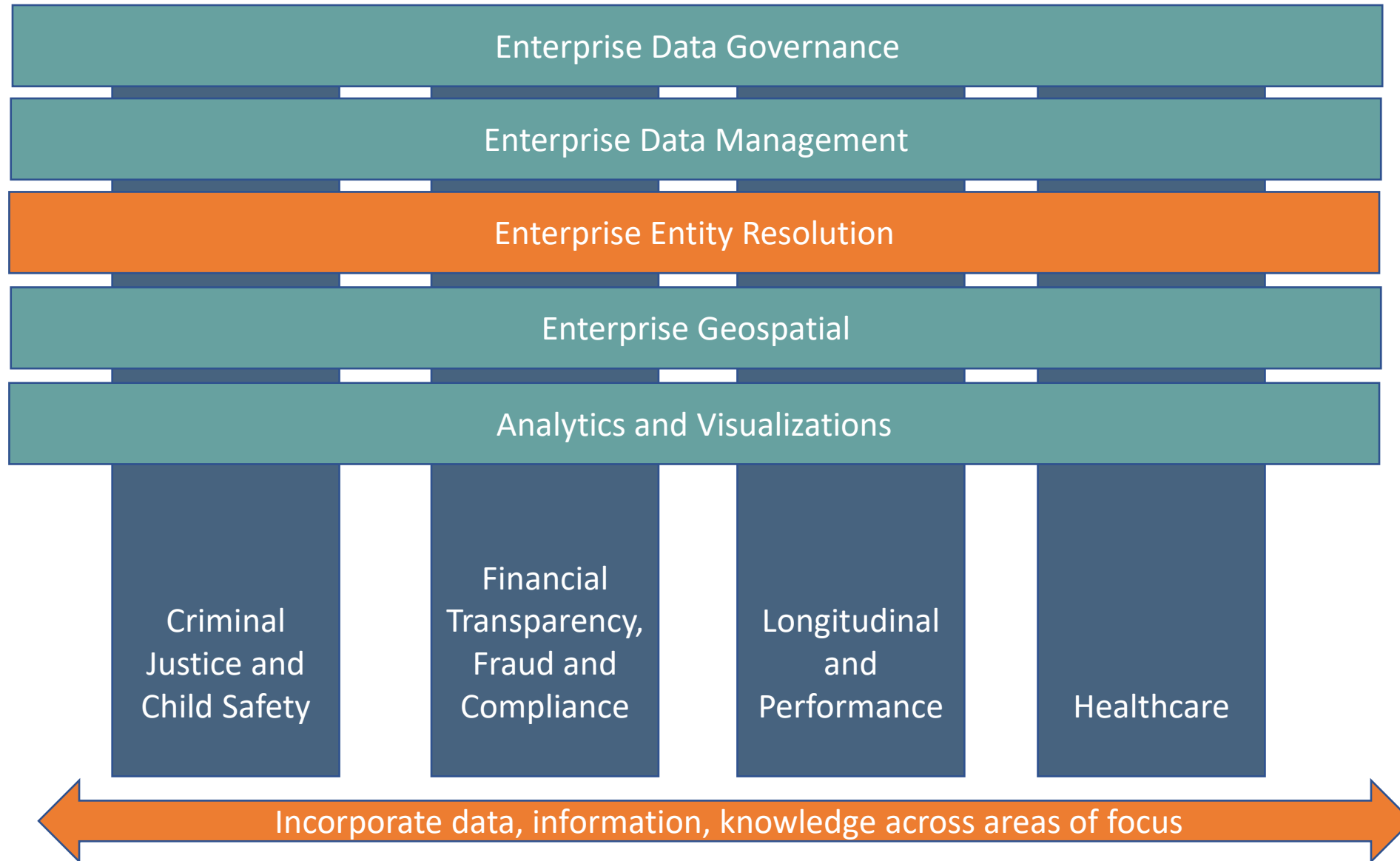


A Roadmap to NCLDS

Putting people and Processes in place

- Reaffirm the NCLDS vision as a “System of Systems” that links data from across agencies and over time to support evidence-based policy, performance management, and continuous improvement
- Craft a stakeholder engagement strategy to build support for NCLDS
- Establish NCLDS governance and organizational Structures
- Prioritize NCLDS requirements for phased implementation
- Develop a system architecture to meet NCLDS technical and functional requirements
- Build analytic capacity to support NC’s evaluation and research priorities
- Develop an external research agenda to prioritize data requests and formation of research-practice partnerships
- Develop a collective investment plan to address sustainability and fund NCLDS

Enterprise Entity Resolution

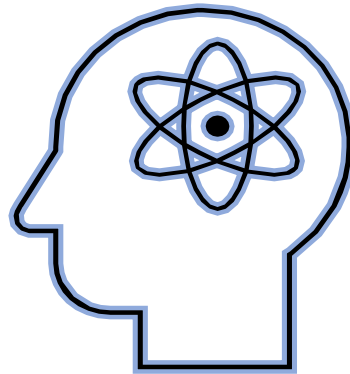


Data Analytics

Intelligence Mindset

Transform data into
information assets.....

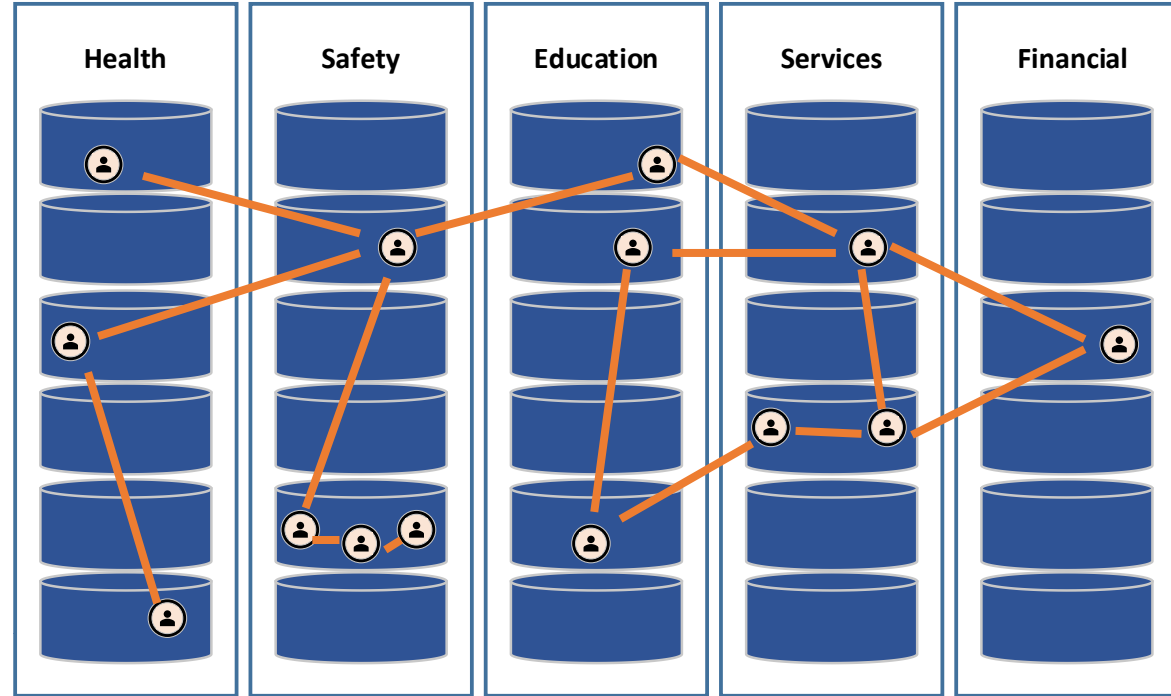
Its not about the
matching of records -
but the layering of data
that enlightens
decisions, improves
performance and
informs policy.....



Enterprise Entity Resolution Analytics

Integration-as-a-Service

- Trusted source for the linkage of entities across data systems
- Dynamic clustering with a static common identifier
- Strong data governance practices



Enterprise Entity Resolution Analytics

Program Approach

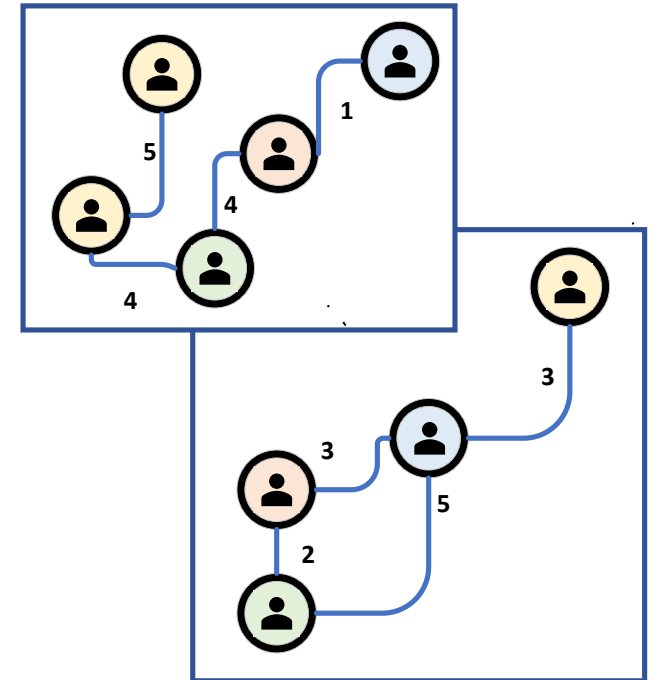
- Start with data that has high quality and has been verified at the source. (State Revenue, DMV, Payroll, etc.)
- Utilize multiple years of data to reflect changes to identities over time (name, address, etc.)
- Develop a weighting methodology to support the use case (health records need high confidence, policy questions may utilize a lower tolerance)



Enterprise Entity Resolution Analytics

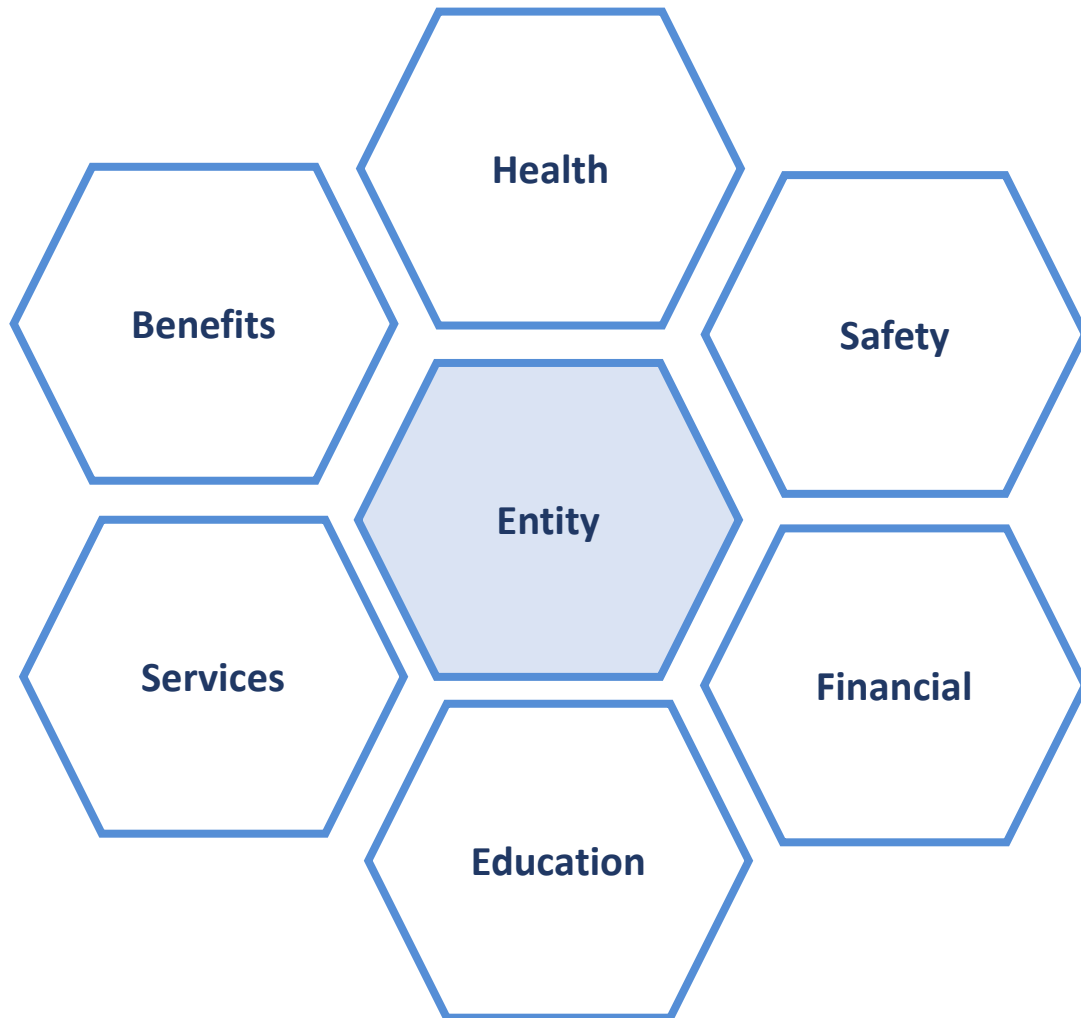
Program Methodology

- Linkages
 - 12 standard linkage rules
 - Additional rules specific to data sources
- Clustering
 - Matching of linkages through common attributes
- Confidence Scoring
 - The number linkages in a cluster in comparison to the linked weight of a rule



Enterprise Entity Resolution Analytics

Connecting Data Assets



For Government to be effective an ecosystem of data sharing is paramount.

Enterprise Entity Resolution Analytics

Next Steps

- Continue to expand the integration of data assets
- Implement and operate platform services supporting both API and bulk load matching
- Build a responsive model for common questions...
 - Is the individual deceased?
 - What is the most current address on record?
 - What is the veteran status?
- Explore funding opportunities to enable continuous improvement



Questions & Discussion

Continuing the Conversation

John Correllus

john.correllus@nc.gov



NC Enabling Legislation

Supporting a Statewide Data Strategy

- **Government Data Analytics Center – N.C. G.S. 143B-1385**
 - Manage and coordinate enterprise data integration efforts
[GS 143B-1385.pdf \(ncleg.gov\)](#)
- **Health Information Exchange Authority - N.C. G.S. Chapter 90-414**
 - Statewide health information exchange network for the secure electronic transmission of health information
[Article 29B.pdf \(ncleg.gov\)](#)
- **Educational Longitudinal Data System - N.C. G.S. Chapter 116 E**
 - Linkage of student data and workforce data
[Chapter 116E.pdf \(ncleg.gov\)](#)



Let's Connect!



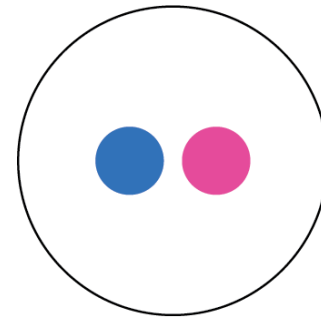
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