

The NC DHHS Data Office: Foundational Pillars and Strategic Initiatives

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Chief Data Officer, NC DHHS

September 2023

@jessiet1023



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**



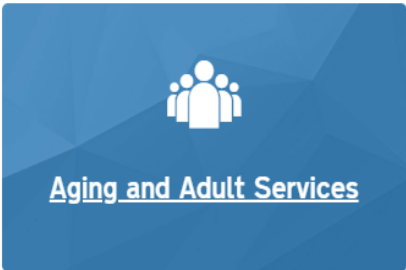
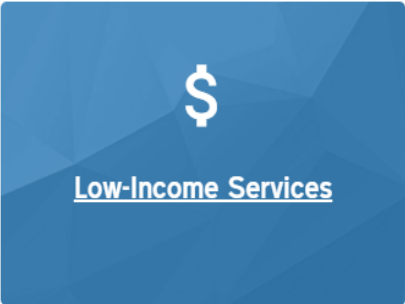
NC DHHS



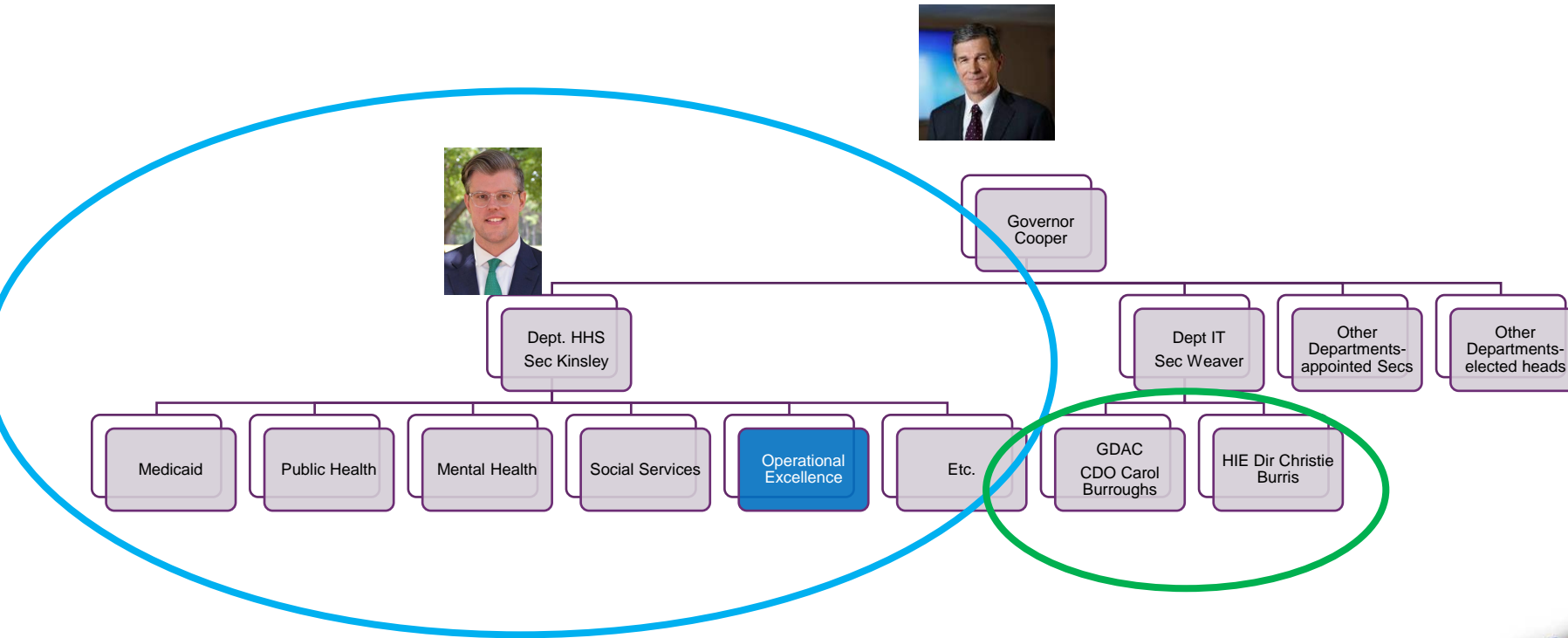
Sec. Kody Kinsley

NC Dept. of Health and Human Services

<https://www.ncdhhs.gov/>

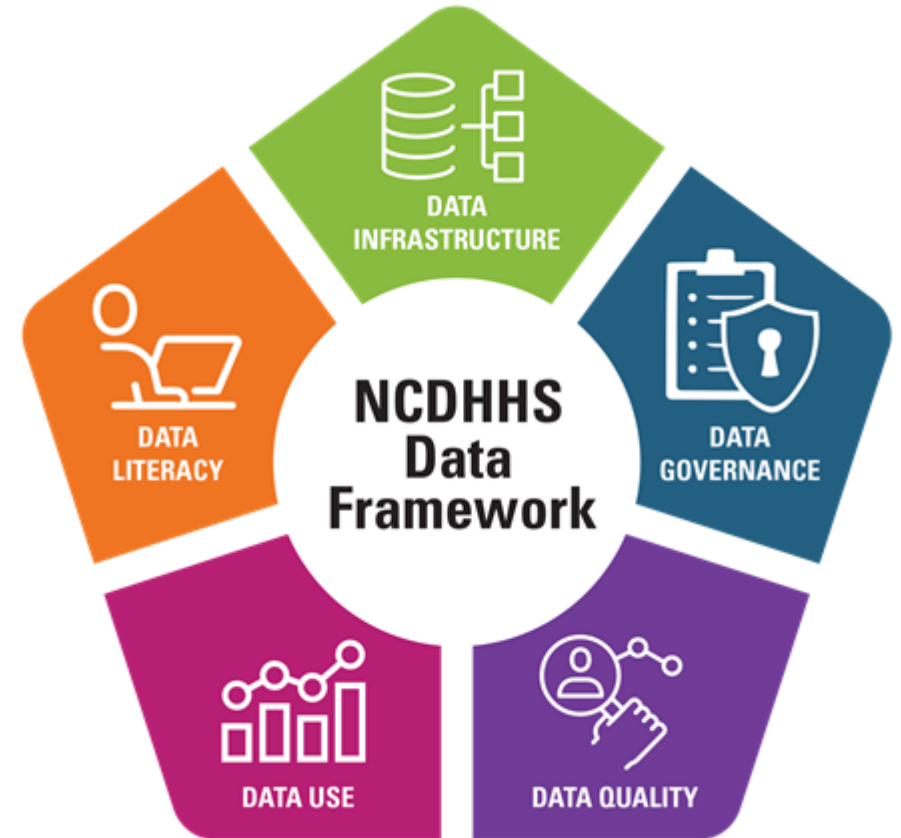


NC DHHS in context



NCDHHS Data Office

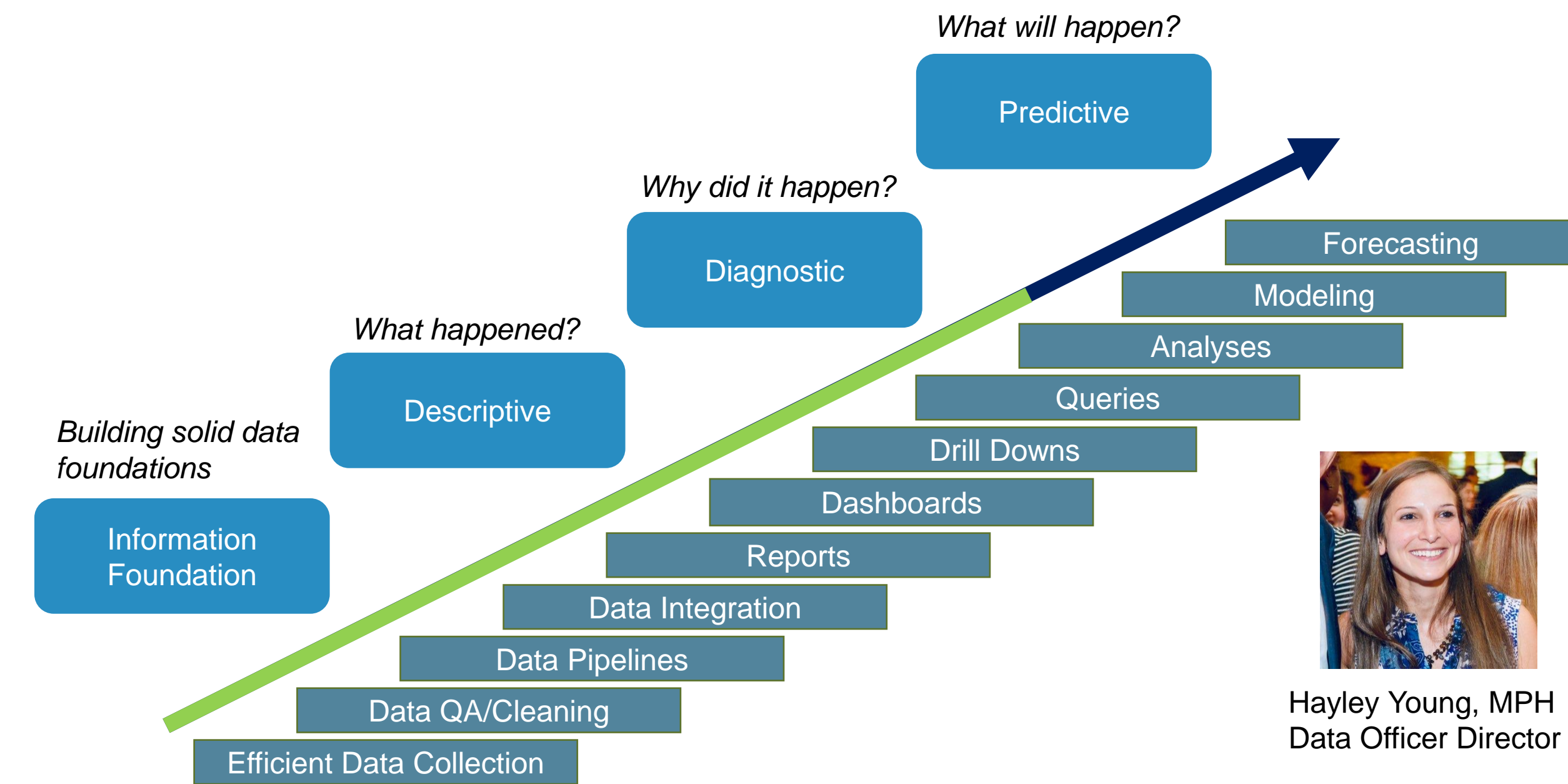
- **Established 2019**
- **Led by Chief Data Officer**
- **Drive Department-wide cultural transformation**
- **Data as 1st class citizen, strategic business asset**
- **Data strategy and roadmap based on 5 (now 4) data pillars**



Data Strategy Framework

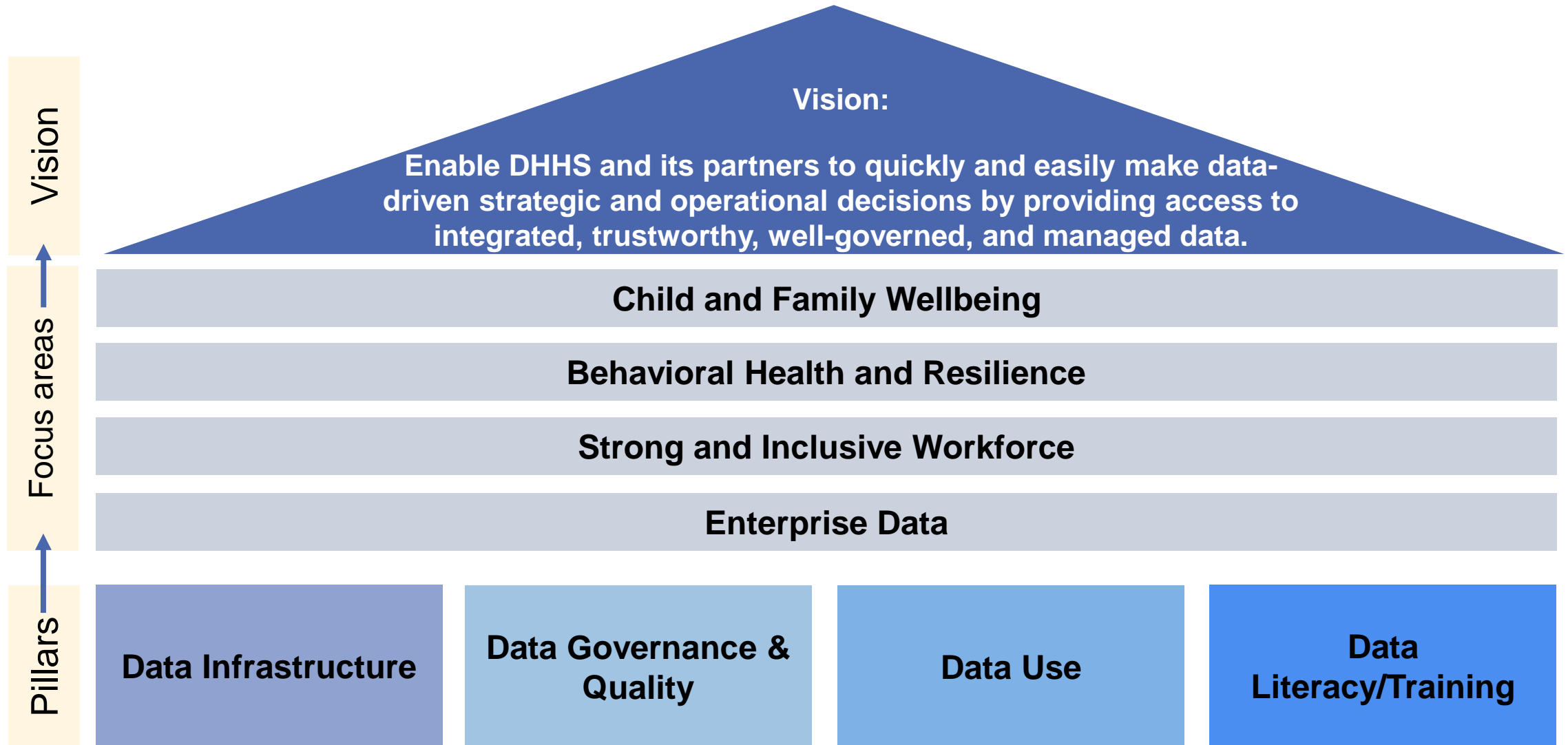
- **Data Infrastructure:** Technology used to store, exchange, and access data
- **Data Governance:** People, processes, and technology for data security, management, and access
- **Data Literacy:** Workforce training across all levels of baseline knowledge
- **Data Use:** Reports, visualization, and analysis

Moving from descriptive to predictive

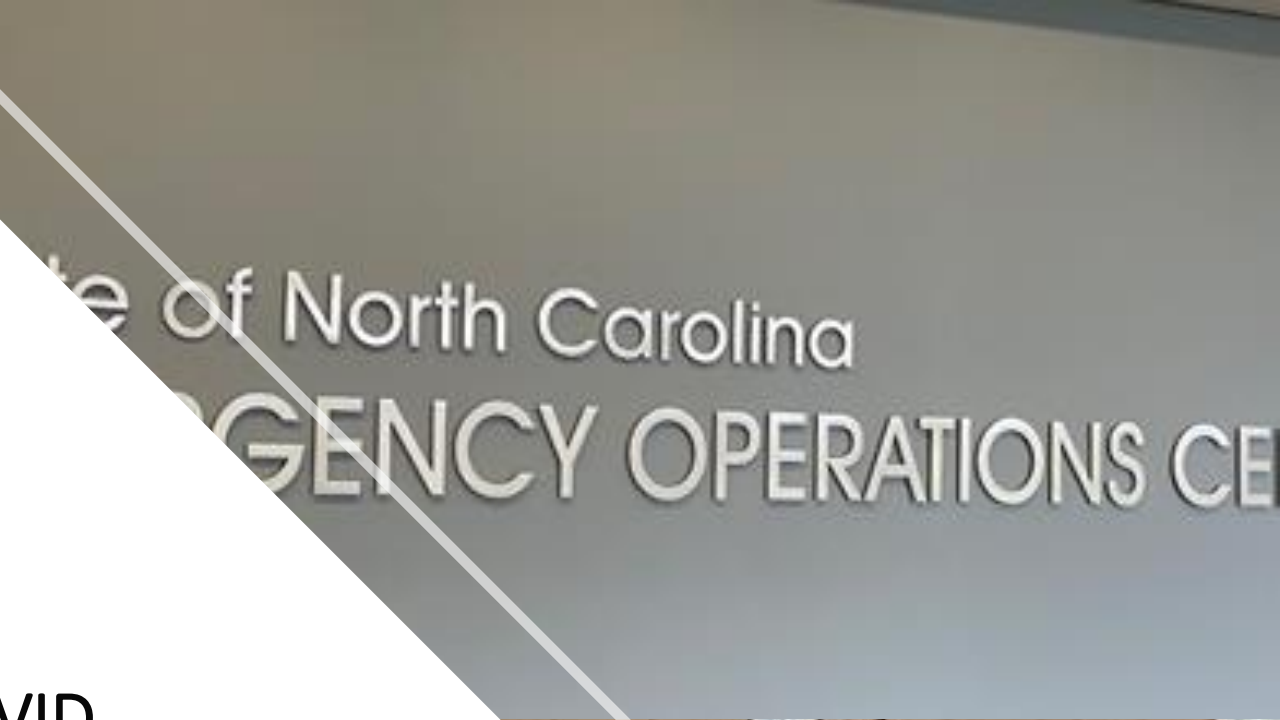
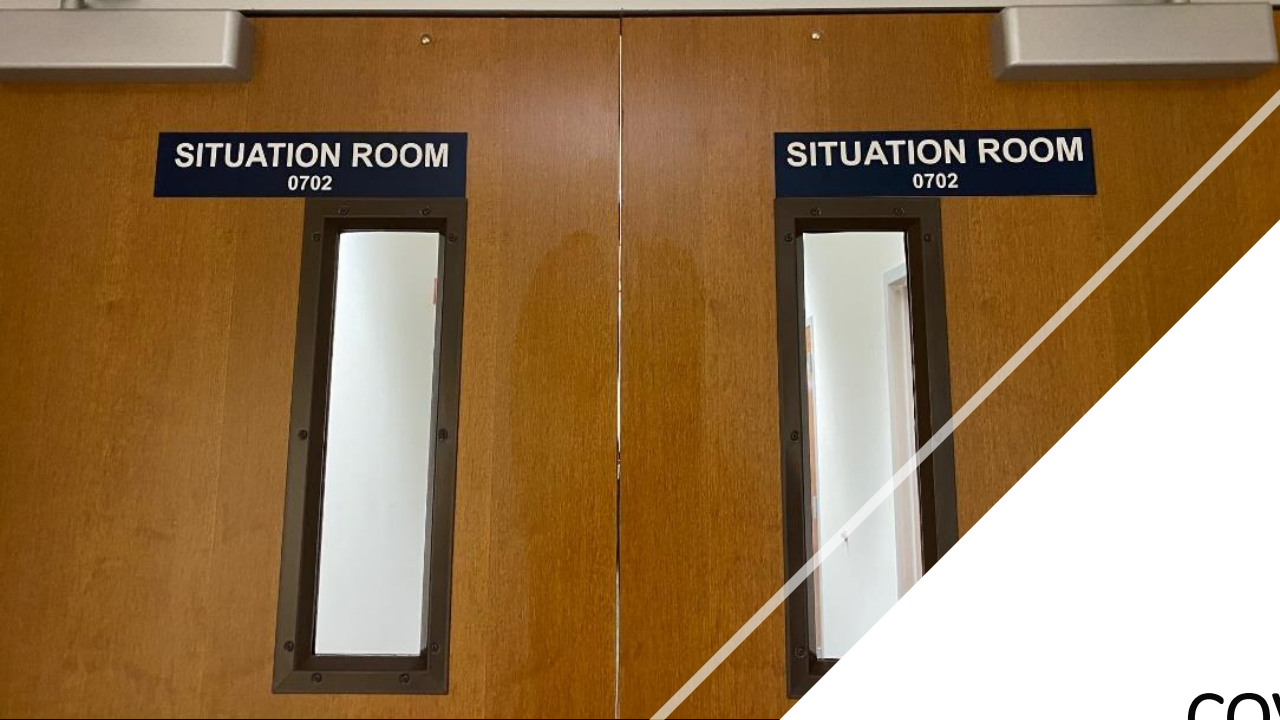


Hayley Young, MPH
Data Officer Director

DATA OFFICE VISION



Initiatives



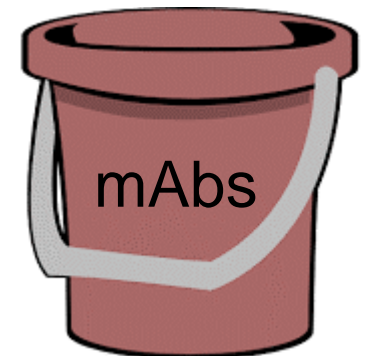
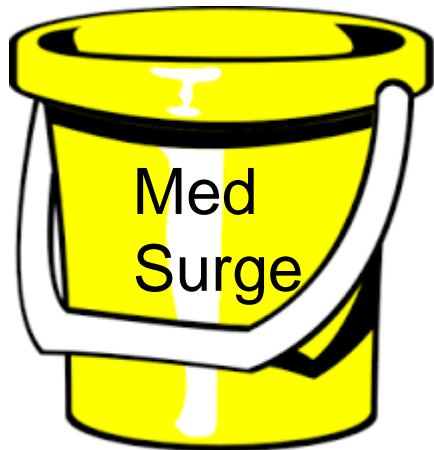
COVID

Early Questions to Enable Data Driven Policy

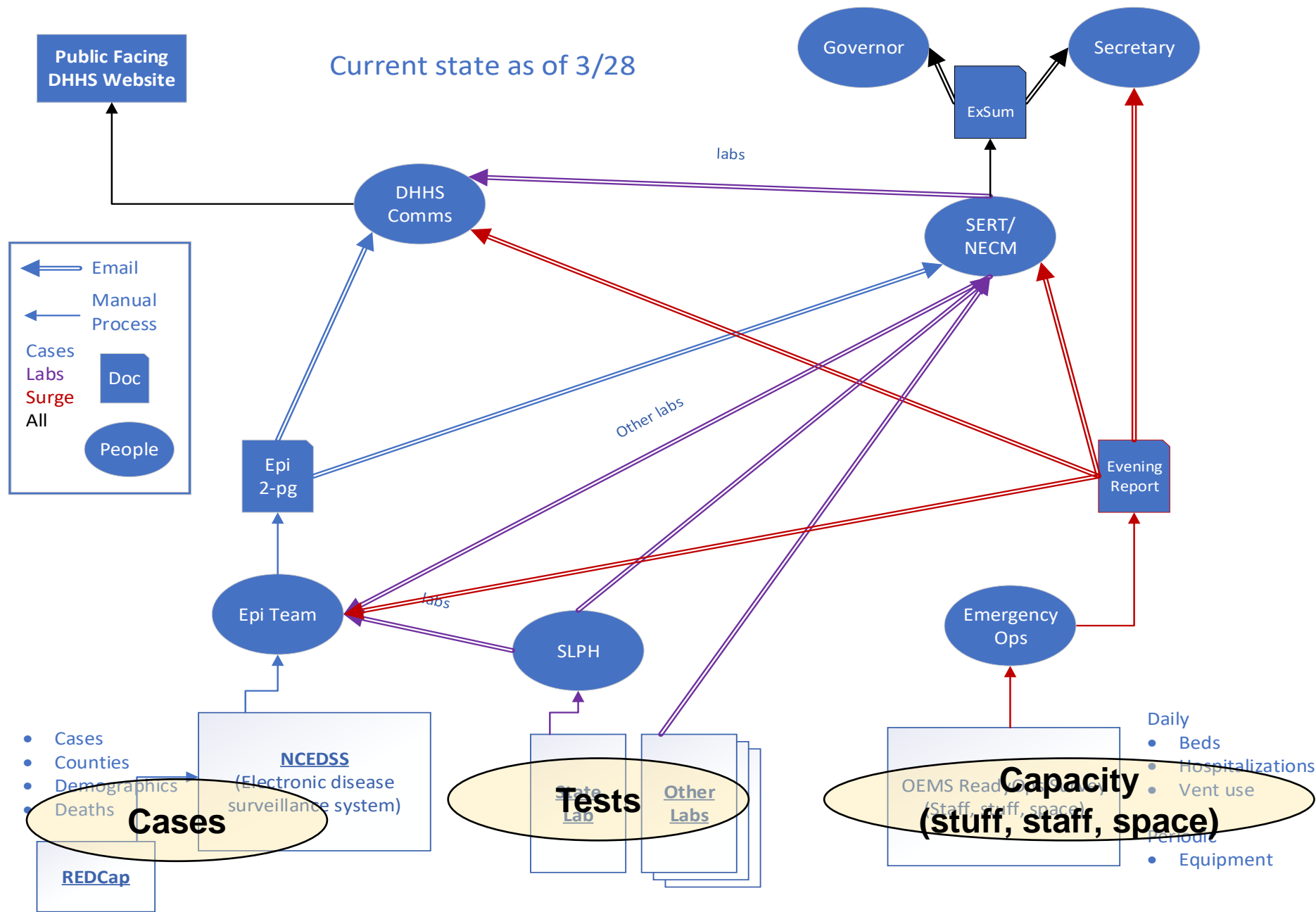
- How many cases will we see? When will our “epi curve” peak?
- How much (extra) PPE is needed, and where can we get it from?
- Will we run out of hospital beds? ICU beds? Ventilators?
- Should we shut down bars and restaurants? Schools? Businesses?
- How can we support families who are unable to work (either because workplace is shut down, or childcare is unavailable)?



Buckets of NC DHHS COVID-19 Data

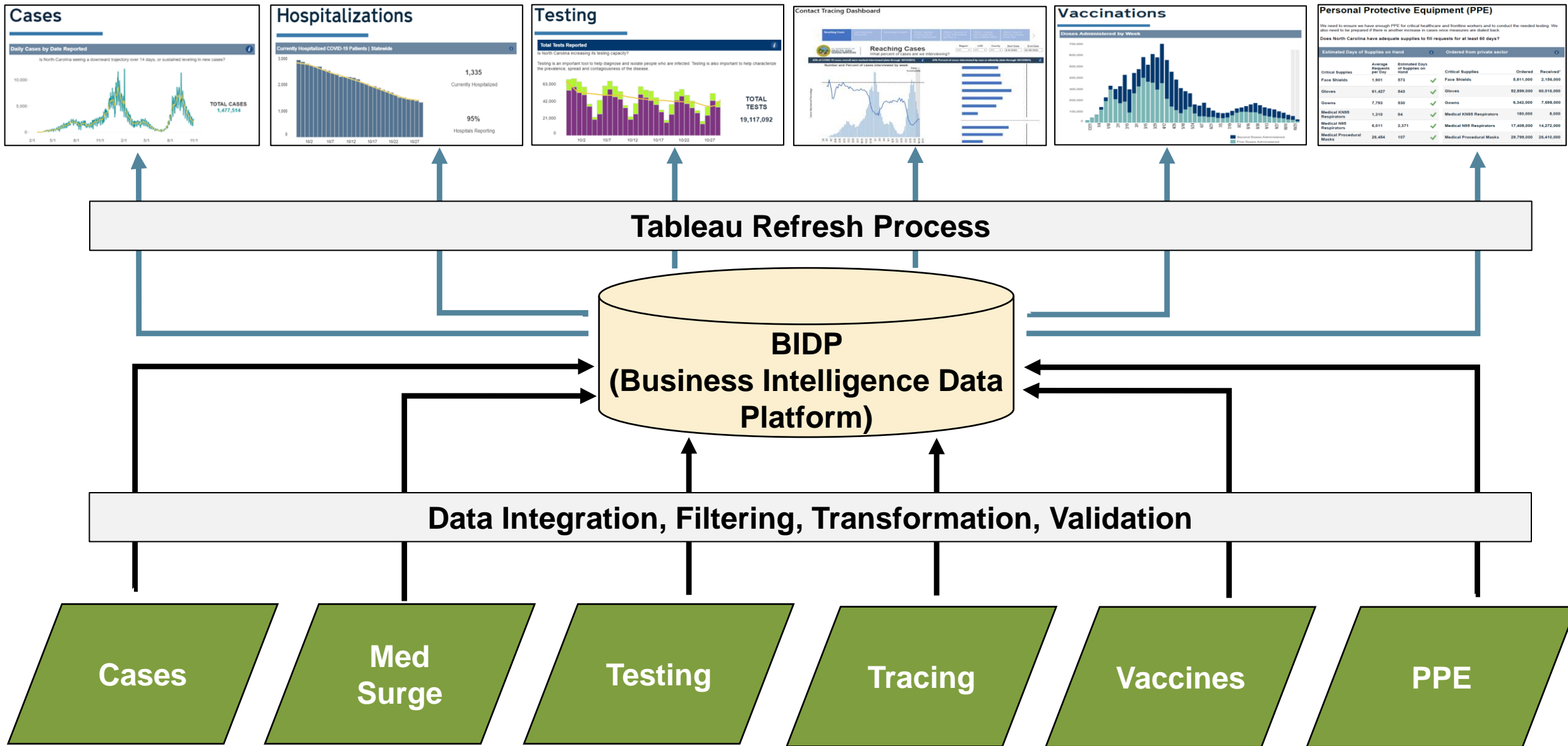


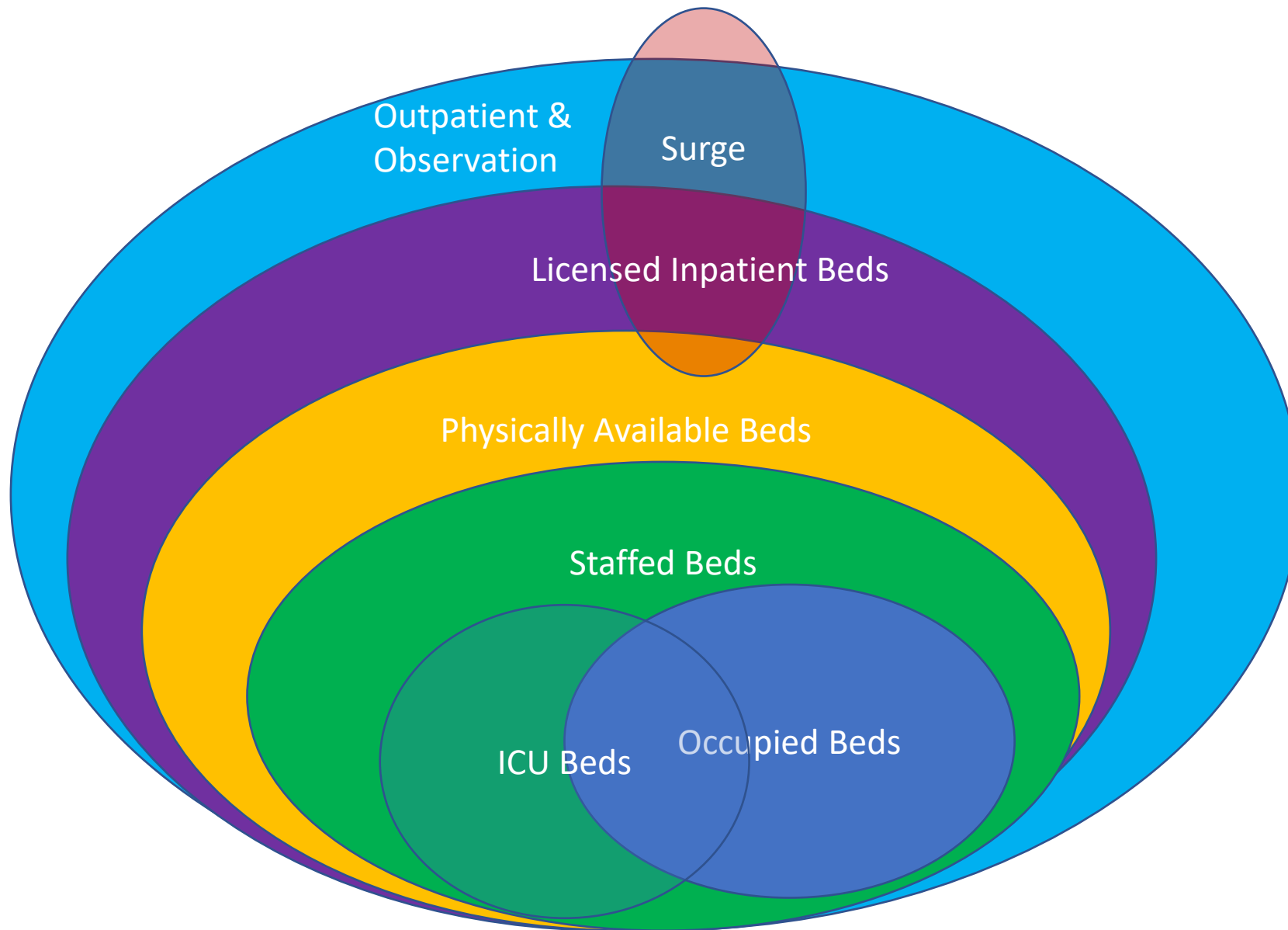
Baseline Data Flow (as of March 2020)



Today's Data Flow

Tableau Dashboards

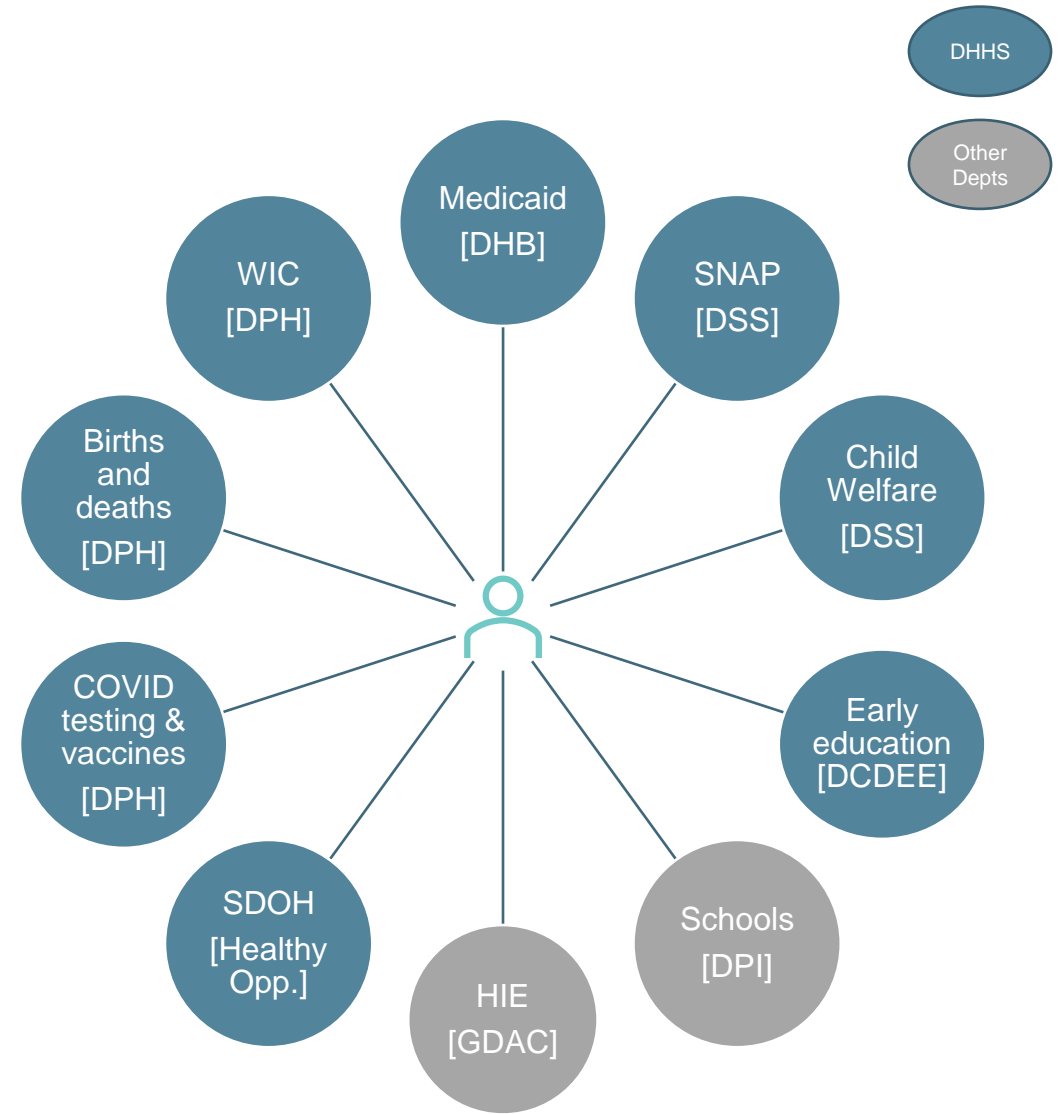




IDHub

Motivation: Whole Person Health

- Business Goal: the ability to link data between DHHS Divisions, and other Departments, to facilitate a “Whole Person Health” view of the people we serve.
 - Real-time individual level – connect individuals with services
 - Aggregate analysis – inform policy
- Requires the ability to integrate data across divisional silos
- Which requires ability to link records between systems



Motivating Questions (Examples)

- **What % of Medicaid beneficiaries have been vaccinated against COVID?**
- **Which children in foster care have prescriptions for >4 psychotropic medications?**
- **Who receives regular food assistance referrals and therefore may benefit from SNAP but is not enrolled?**
- **What % of people experiencing homelessness have been vaccinated?**
- **What is the relationship between early grade outcomes (e.g., third grade reading) and different early childhood conditions (e.g., early learning, health, housing, child welfare)?**

In order to achieve Whole Person Health, need 2 things:

1. The ability to integrate data between divisional silos (“Data Integration”)



2. The ability to identify and link the same individual from different datasets (“Entity Resolution”)



ID: 123456
Name: Waldo



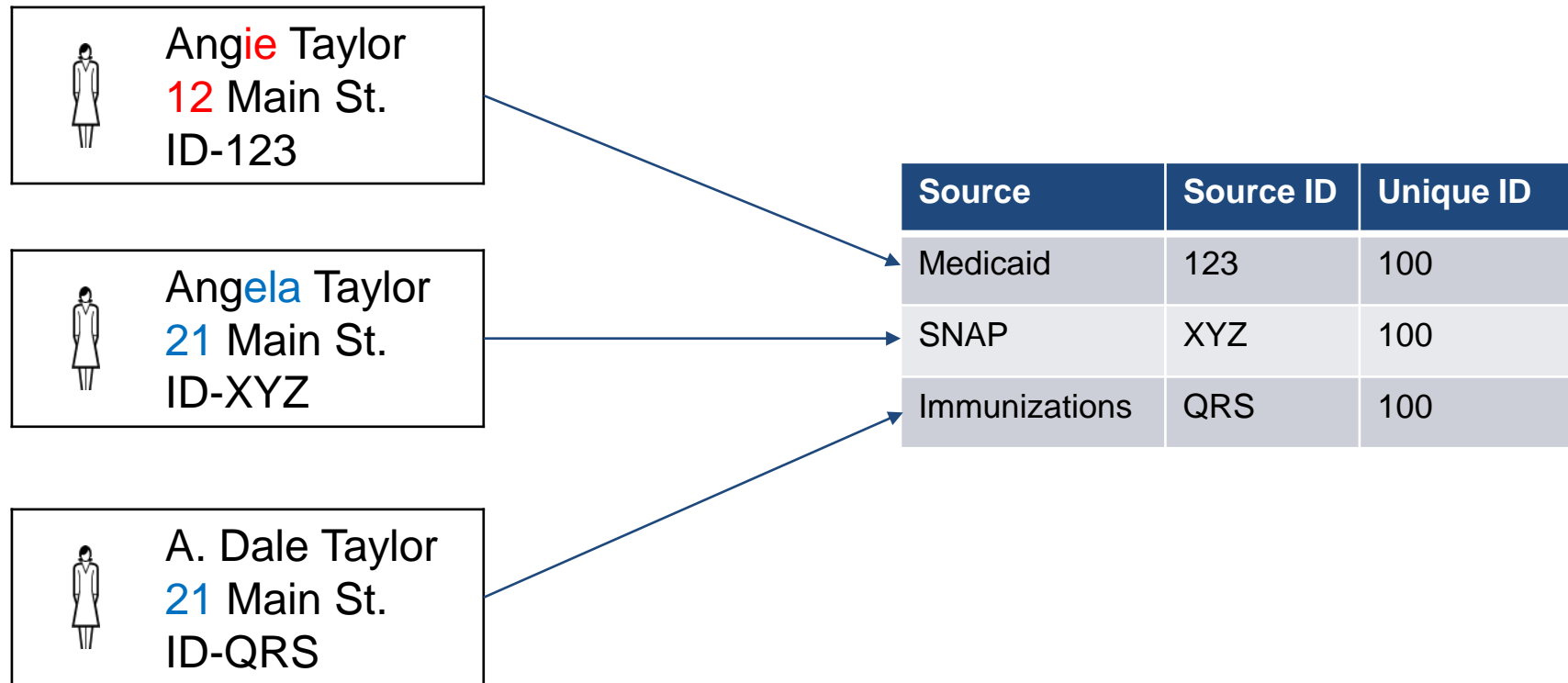
ID: 123456
Name: Waldo

Options for “solving” entity resolution

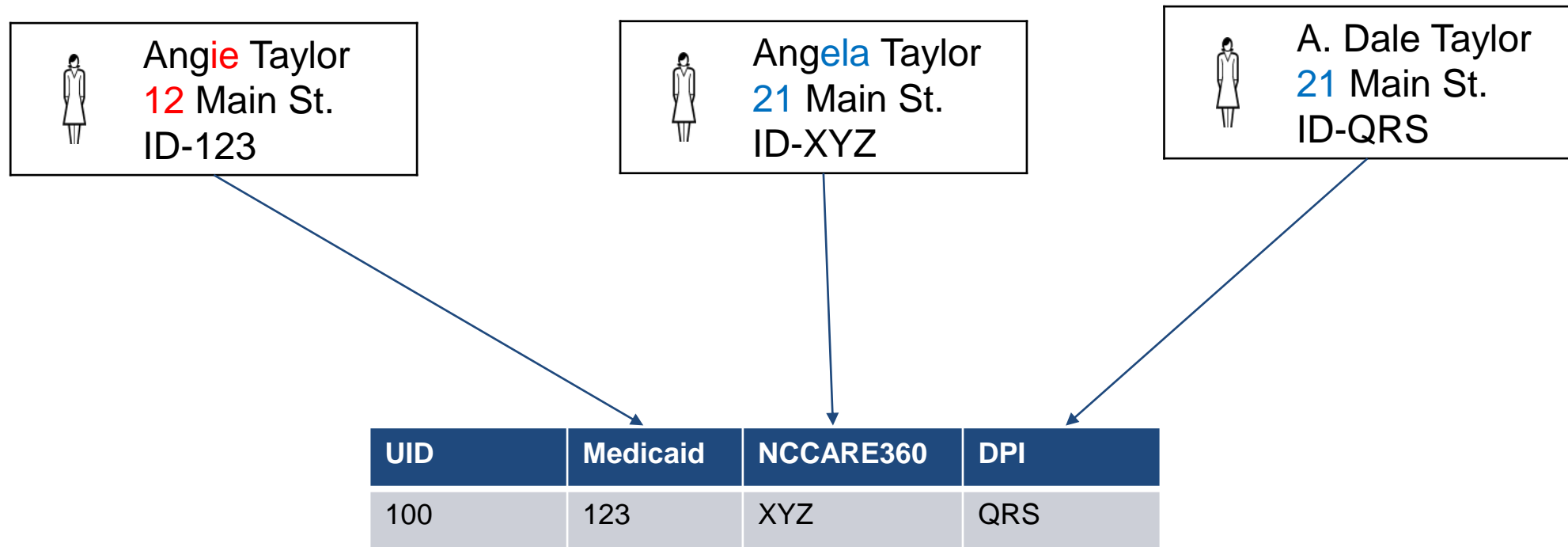
1. Each system uses its own ID, probabilistic “fuzzy match” between systems as needed
2. One ID to rule them all
3. Somewhere in between
 - a. Multiple “standard” identifiers
 - b. Map them to each other!
 - c. Refer to that mapping for efficient data integration



Map each ID to a universal unique identifier...



...enabling mapping each separate ID to the others



UIDs can (and do!) change over time

- **UIDs are frequently merged as more data are incorporated**

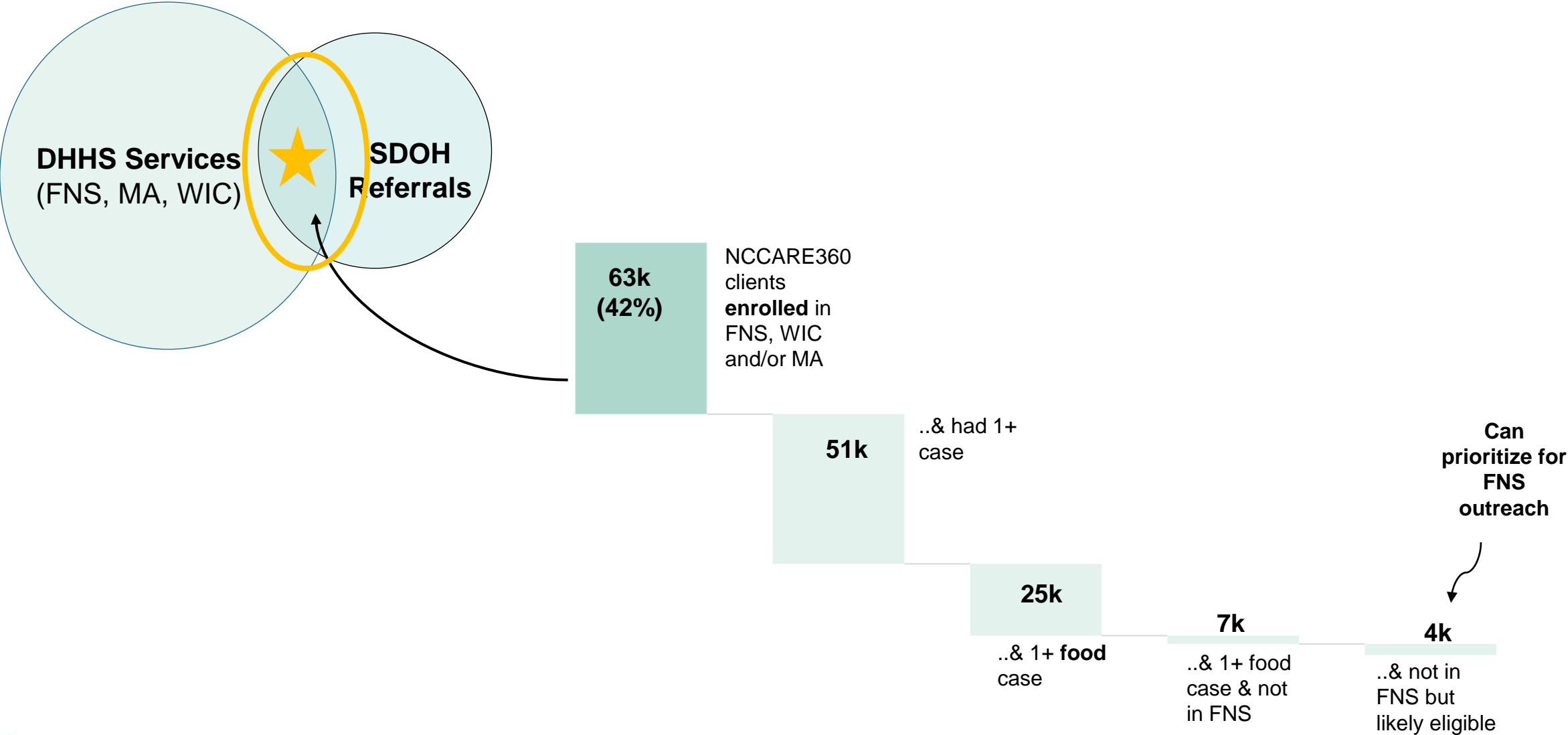
Jessie
Address A
UID 111

Jessica
Address B
UID ~~222~~ 111

Jessie
Address B
UID 111

- **Splits (after a “false positive” match) far rarer and more challenging to handle**

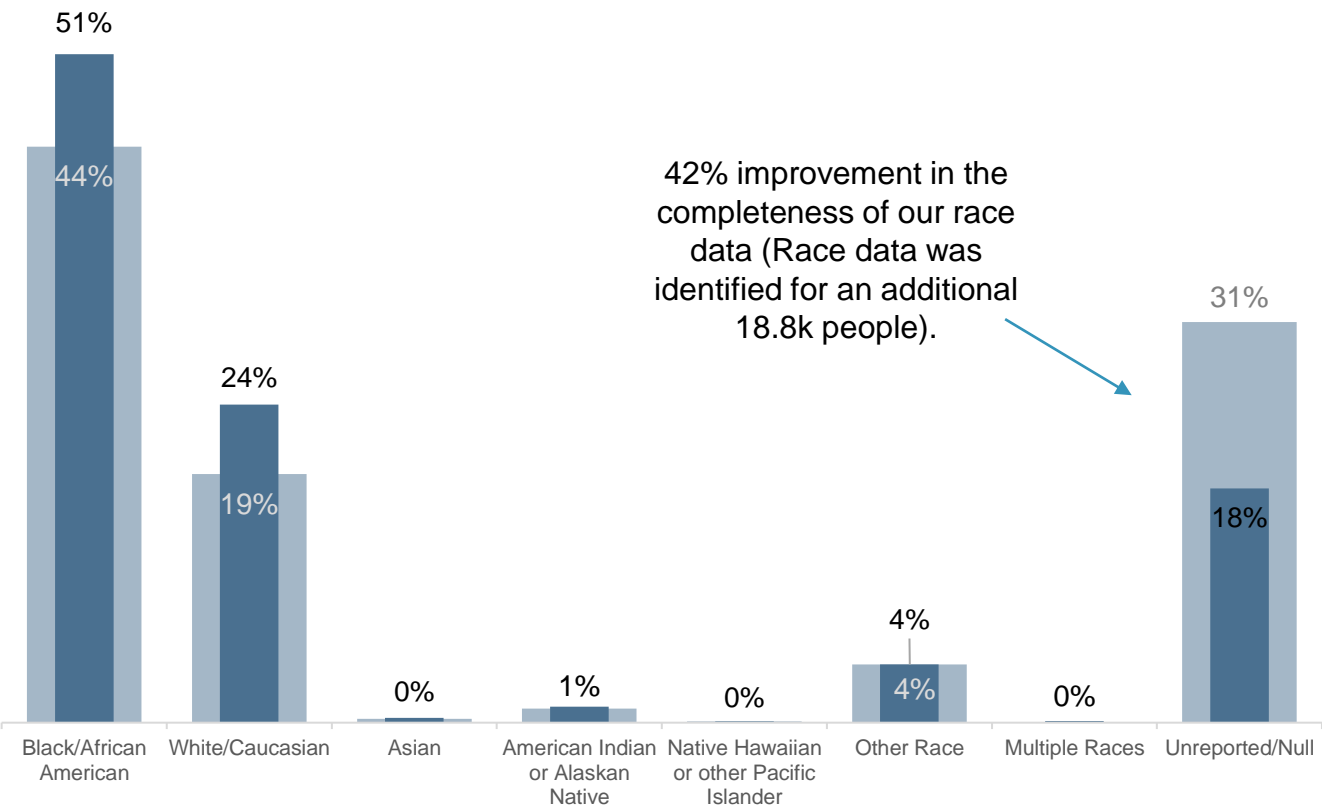
LINKING DATASETS FOR TARGETED OUTREACH



OTHER DIRECTIONS: DEMOGRAPHIC DATA ENRICHMENT

Enriched Demographics (Race)

■ Enriched Distribution ■ Non-Enriched Distribution



Overall Data Quality Improvements

- Unreported Races decreased by 42%
- Unreported Ethnicities decreased by 43%
- Unreported Gender decreased by 44%

Data Sharing Guidebook and Legal Framework



[ABOUT](#)

[AISP NETWORK](#)

[DATA SHARING](#)

[RESOURCES](#)

[ENGAGE WITH US](#)

Helping state and local governments collaborate and responsibly use data to improve lives.

[LEARN MORE →](#)



***ACTIONABLE* INTELLIGENCE**

FOR SOCIAL POLICY



Amy Hawn Nelson

We now have metadata,
processes, forms, roles,
and improved data flow

<https://www.ncdhhs.gov/about/administrative-offices/data-office/data-sharing-guidebook>



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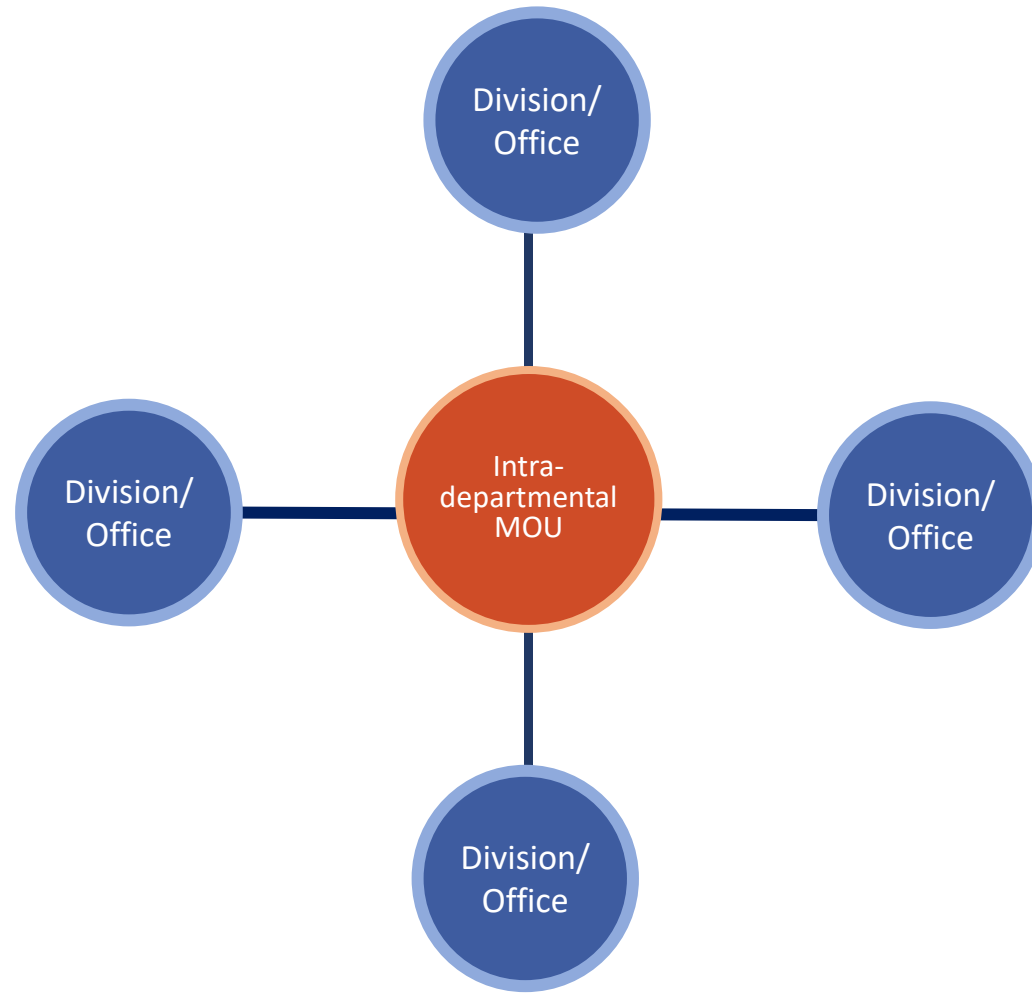
Data Sharing Guidebook
September 2021

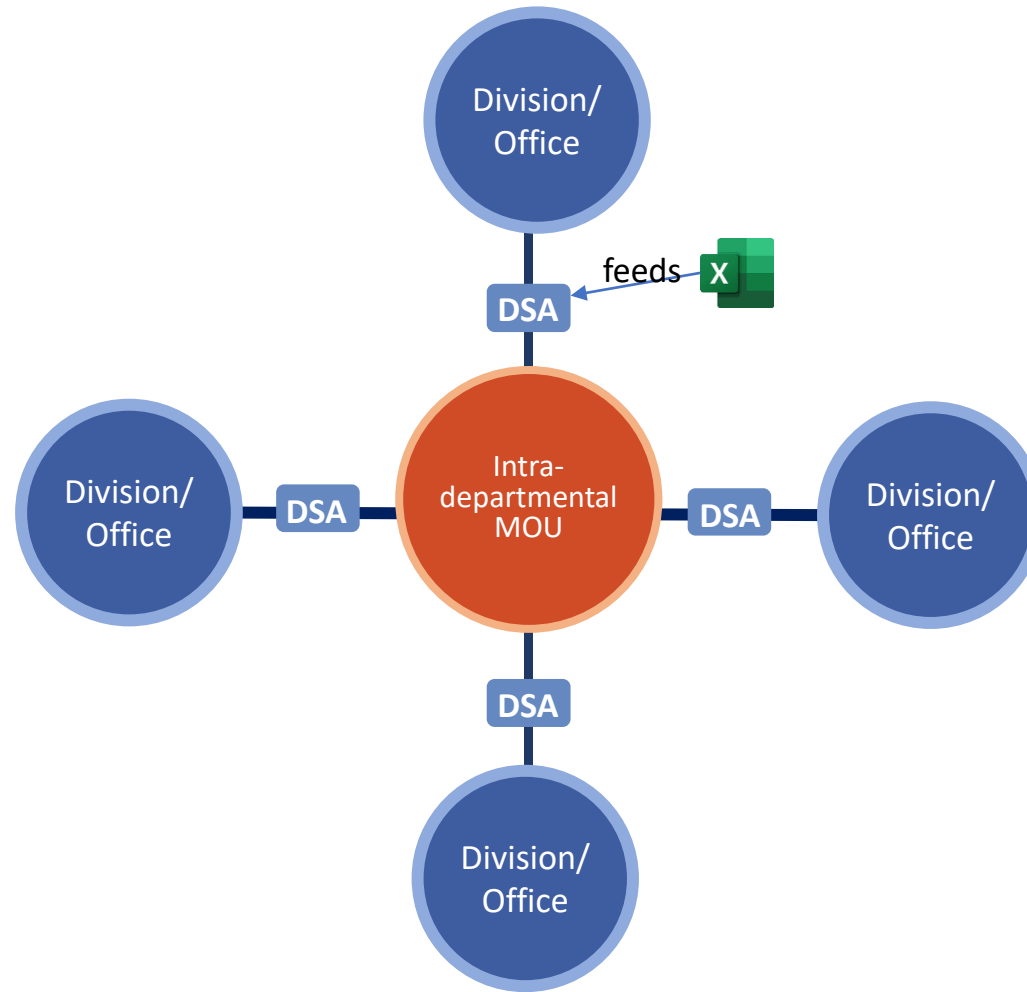
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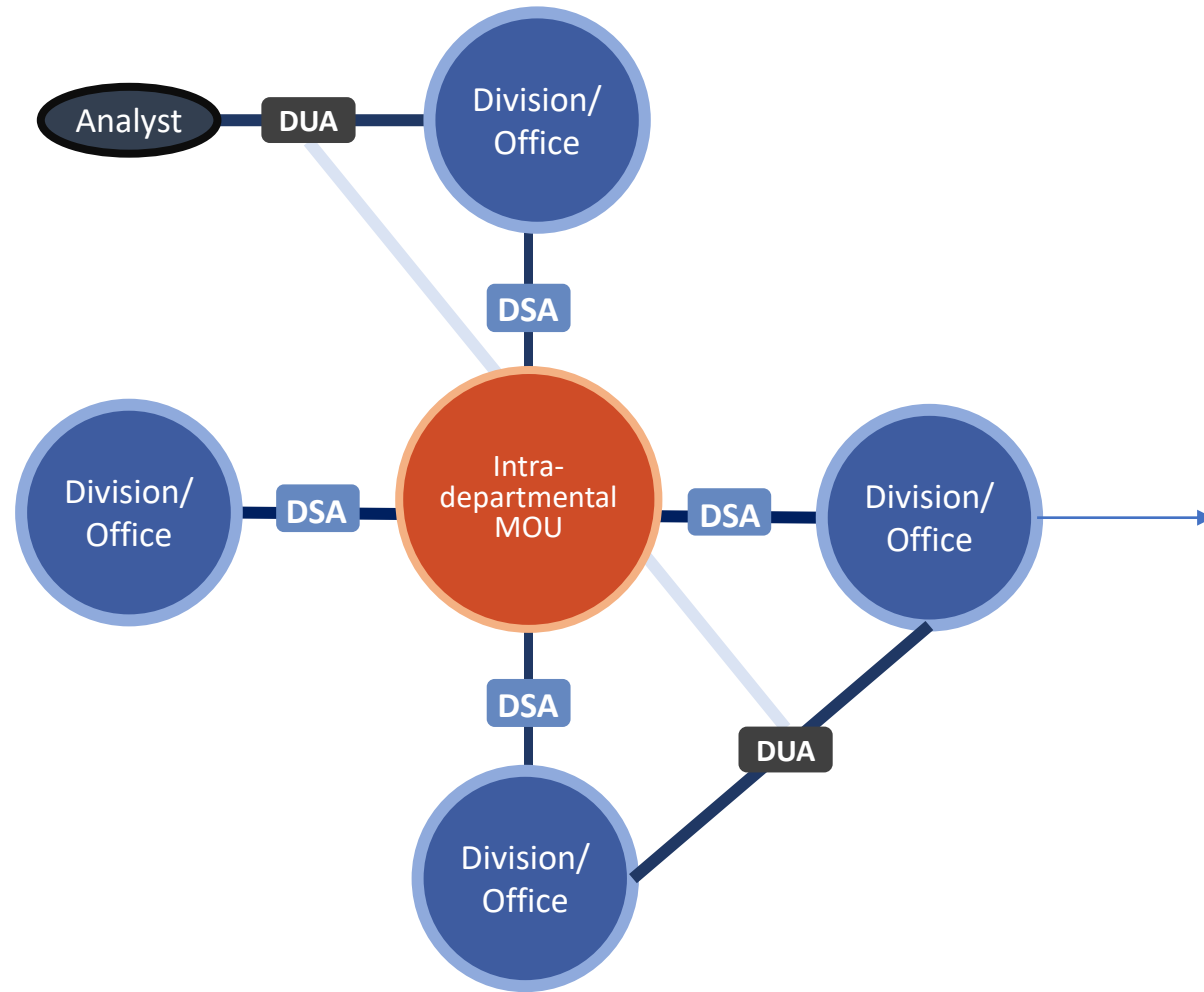
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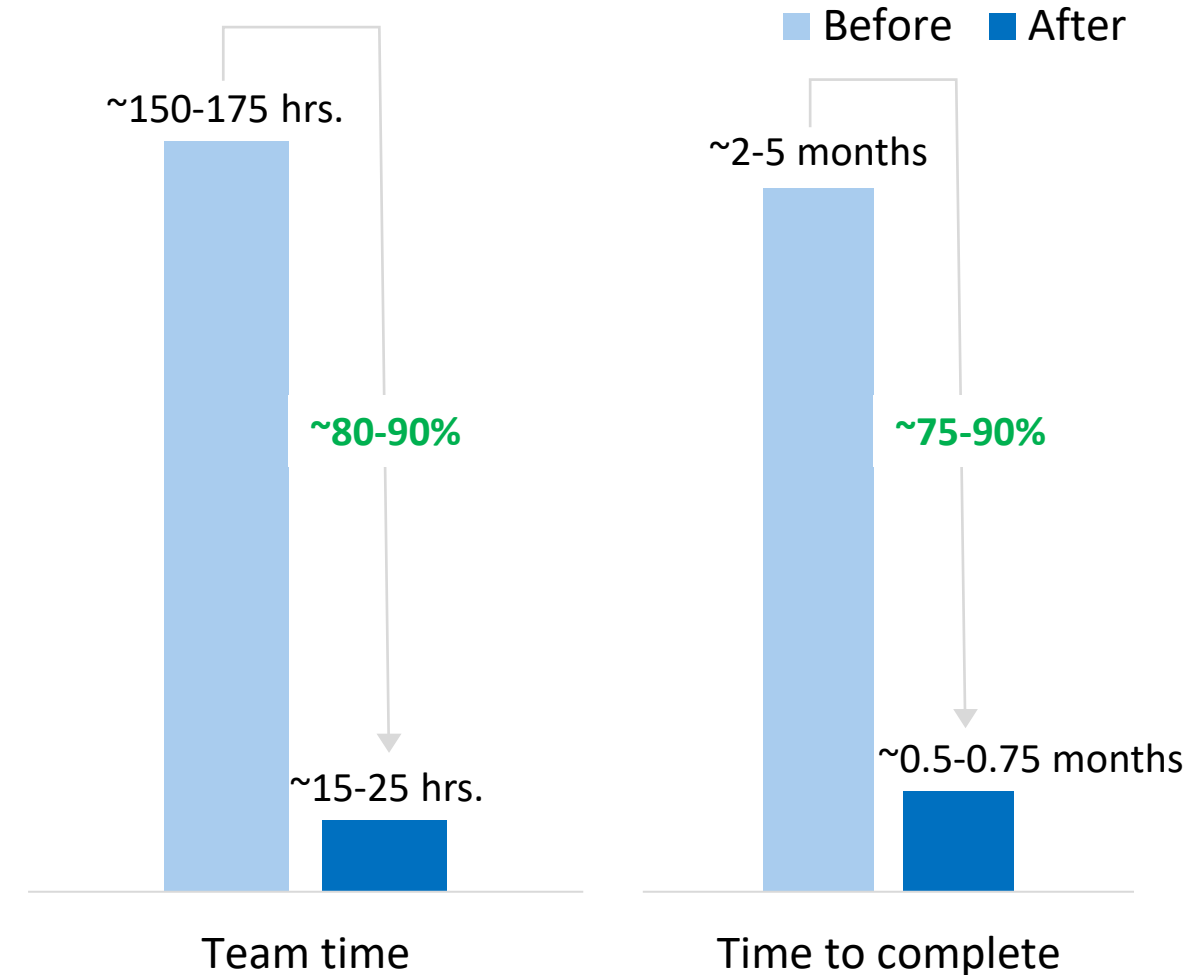
INTRA-DHHS DATA SHARING: BENEFITS OF NEW LEGAL / DATA GOVERNANCE FRAMEWORK

Illustrative

Key benefits

1. **Clarifies requirements and guidelines** (e.g., who the permitted signatories are)
2. Provides **approved language & templates** for agreements, preventing rework while also **mitigating risk**
3. **Saves team time & effort for business and legal**, often by not requiring an additional Data Use Agreement
4. **Gets to data insights & program action faster**, given quicker time to completion

Time savings per use – estimated median experience*

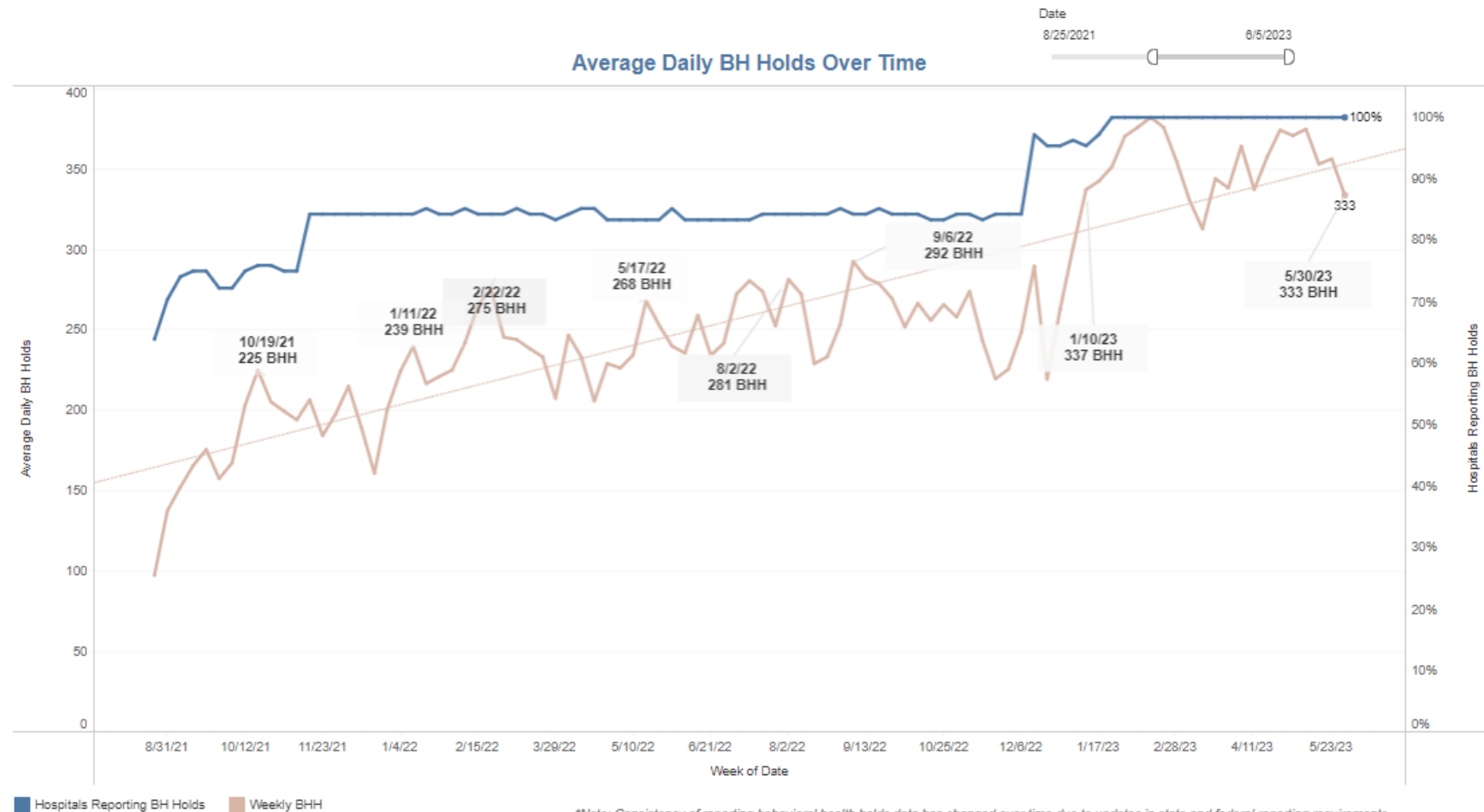


*Use cases that do not fit into DSA or are external to DHHS may be outside of this construct and require more time

Automated surveillance of behavioral health holds

HOSPITAL BASED **MANUAL** REPORTING OF BHH VIA APPRISS OPENBEDS

- Behavioral Health Hold reporting was Implemented in COVID ED reporting, dating back to 2020
- Facilities submit daily behavioral health hold counts
- Milestone: 100% of facilities have reported BH Holds (n=108) as of late April
- Average daily behavioral health hold counts trending upward, ~ 333 per day



REVIEW OF DATA SYSTEMS FOR CAPTURING BEHAVIORAL HEALTH HOLDS

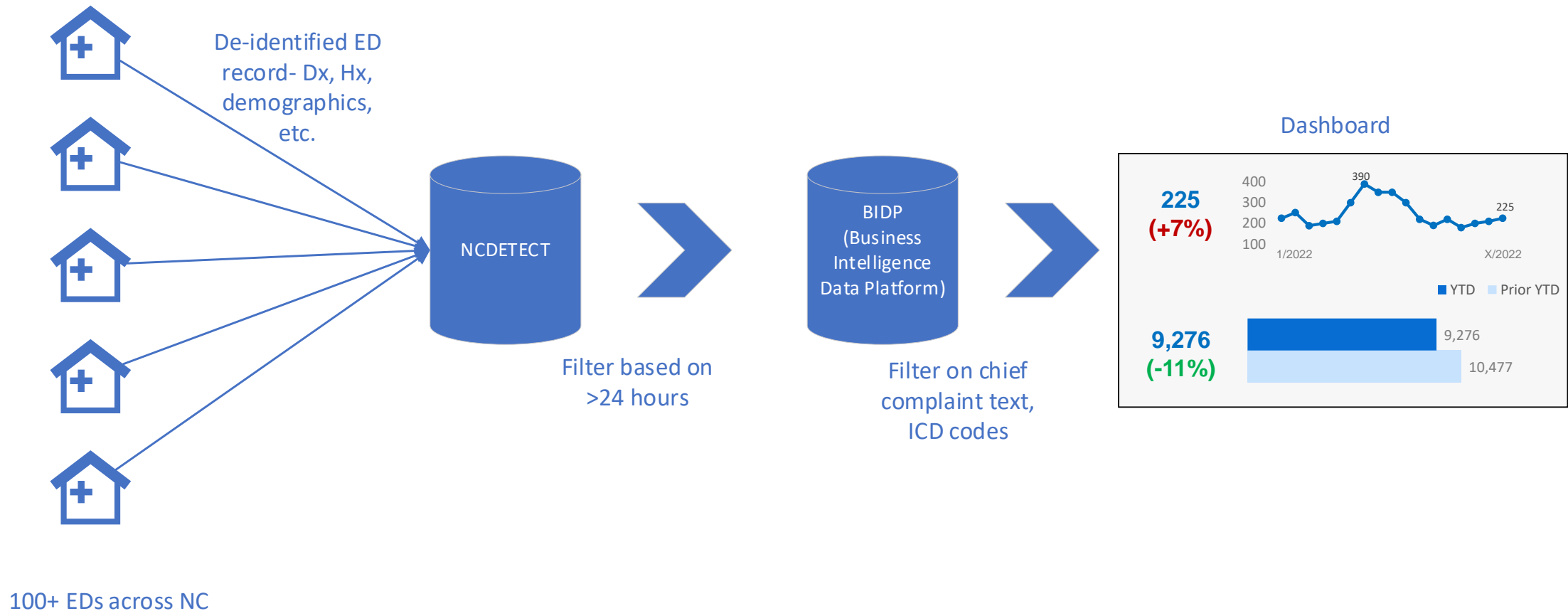
Appriss Open Beds Reporting

- Self Reported Counts
 - Focused, but inconsistent measurement
- Spun up during COVID response and may not be sustainable
- Limited visibility into patient demographics and community burden

NC DETECT (ED Encounters)

- Systematic collection of encounter data
 - Case definitions offer consistency in selection criteria
- ED encounter-level granularity provides basis for estimation of trends and population measures

BH Holds from Surveillance Data Overview



NCDETECT = NC surveillance system of ED's, e.g. flu-like illness, COVID-like illness, etc.

NC DETECT DATA ON “LONG ENCOUNTERS”



NC DEPARTMENT OF
HEALTH AND HUMAN SERVICES
Division of Public Health



UNC
SCHOOL OF MEDICINE

- Beginning December 2022, data exchange began on Emergency Department encounters **greater than 24 hours** long
- Demographics (age, sex, race, ethnicity), diagnosis codes, chief complaint, disposition, **ED arrival and discharge** times
- ED Encounters over 24 hours encompass
a wide variety of care situations

A case definition must be implemented to identify likely behavioral health holds

ICD-10 Diagnosis Codes and Chief Complaint provide this specificity

ICD-10 Diagnosis	Count of Encounters
Suicidal ideations	7131
Anxiety disorder, unspecified	2486
Depression, unspecified	2062
Other psychoactive substance abuse, uncomplicated	1368
Contact with and (suspected) exposure to COVID-19	1307
Other symptoms and signs involving appearance and behavior	1272
Unspecified psychosis not due to a substance or known physiological condition	1034
Encounter for general psychiatric examination, requested by authority	896
Poisoning by unspecified drugs, medicaments and biological substances, accidental (unintentional)	878
Schizophrenia, unspecified	806

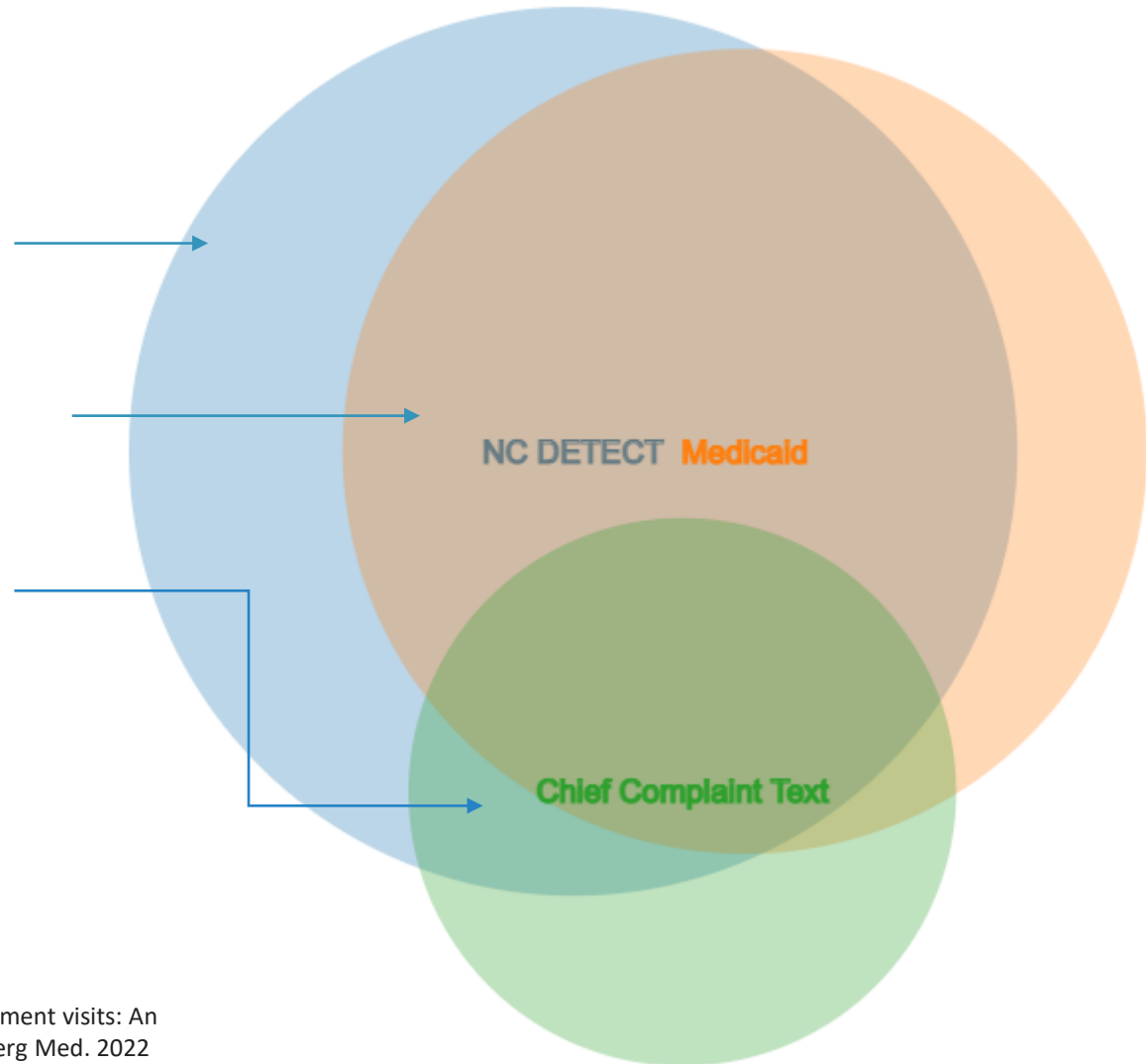
Term	Encounters Listing:
IVC	5158
SI	3505
SUICIDAL	2473
PSYCH EVAL	2385
OVERDOSE	2073
ANXIETY	1905
BEHAVIORALHEALTHCONCERN	1706
IVC,	1571
PSYCHIATRIC EVALUATION	1461
PSYCH	1387
DETOX	1209
MENTAL HEALTH PROBLEM	985
OD	919
DRUG OVERDOSE	785
SI,	704

MENTAL HEALTH CASE DEFINITIONS

NC DETECT Mental Health Case Definition*:
(Diagnosis Codes)

Medicaid BH Diagnosis List for MH Eligibility:
(Diagnosis Codes)

Chief Complaint (Free Text Classification)



A. OVERVIEW & TRENDS

Illustrative – NOT real BH data

Filter by: County Health System Race Ethnicity Age group Gender Insurance Type
 Tailored Plan Region

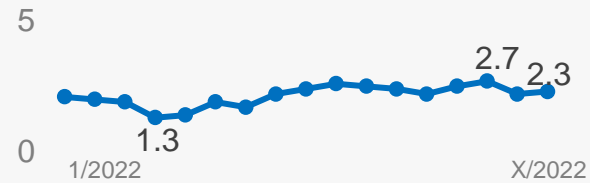
Key indicators

Weekly

(week over week change)

**Rate per 100,000,
patients per
100,000 residents, by
visit date**

2.3
(+5%)



Year To Date

(year over year change)

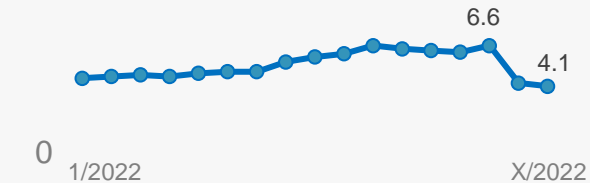
■ YTD ■ Prior YTD

10.5
(-8%)



Length of stay:
Median in days, by
visit date

4.1
(+5%)

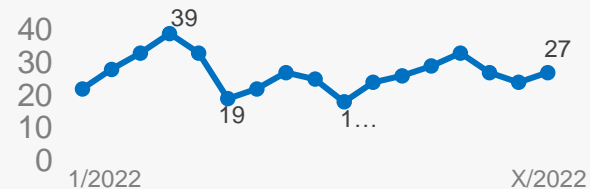


5.6
(+8%)



Length of stay:
Maximum in days, by
visit date

27.3
(+5%)



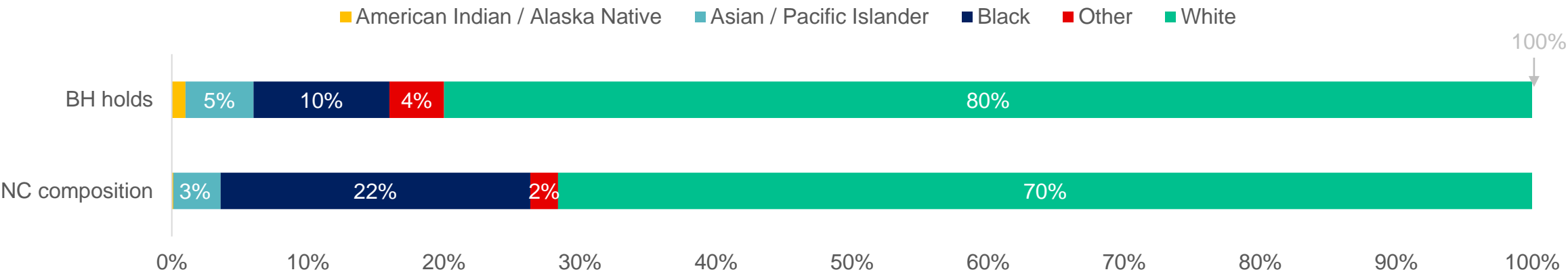
27.0
(+17%)



B. BY DEMOGRAPHICS: RACE

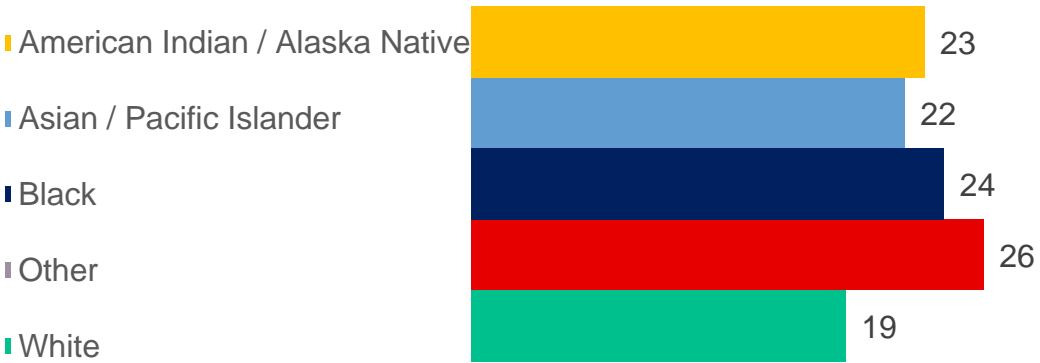
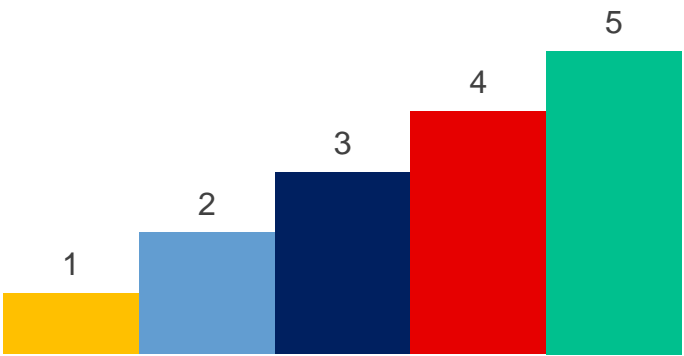
Illustrative – NOT real BH data

Filter by: County Health System Race Ethnicity Age group Gender Insurance Type
Tailored Plan Region
Composition of BH holds, % total



Rate of BH holds per 100,000 people

Length of stay, median days



Data table by county

Grid of data for the metrics above, per race

Thank you!

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