NSHA Performance and Analytics

COVID-19 Planning and Response

Please be advised that we are currently in a controlled vendor environment for the

One Person One Record project.

Please refrain from questions or discussion related to the

One Person One Record project.

Informatics…

"Utilizes health information and health care technology to enable patients to receive best treatment and best outcome possible."

Clinical Informatics…

“is the application of informatics and information technology to deliver health care.”

AMIA. (2017, January 13). Retrieved from https://www.amia.org/applications-infomatics/clinical-informatics

Analytics…

"is the discovery, interpretation, and communication of meaningful patterns in data."

"relies on the simultaneous application of analysis, statistics, computer programming and operations research to quantify performance."

Objectives

At the conclusion of this activity, participants will be able to…

- Identify what knowledge and skills health care providers will need to use information now and in the future.
- Prepare health care providers by introducing them to concepts and local experiences in Informatics.
- Acquire knowledge to remain current with new trends, terminology , studies, data and breaking news.
- Cooperate with a network of colleagues establishing connections and leaders that will provide assistance and advice for business issues, as well as for best-practice and knowledge sharing.

Conflict of Interest Declaration

- I do not have an affiliation (financial or otherwise) with a pharmaceutical, medical device, health care informatics organization, or other for-profit funder of this program.

Session Objectives

The specific objectives of this session are to help you understand the role of the NSHA Performance and Analytics Team, how that role played into the Pandemic Planning and Response of NSHA, and what we had to change or adapt to meet changing needs of the organization

01 Who we are / What we do

02 Our role in COVID-19

03 What changed?

04 Why did we change?

Problem Statement / Situation

Get Data

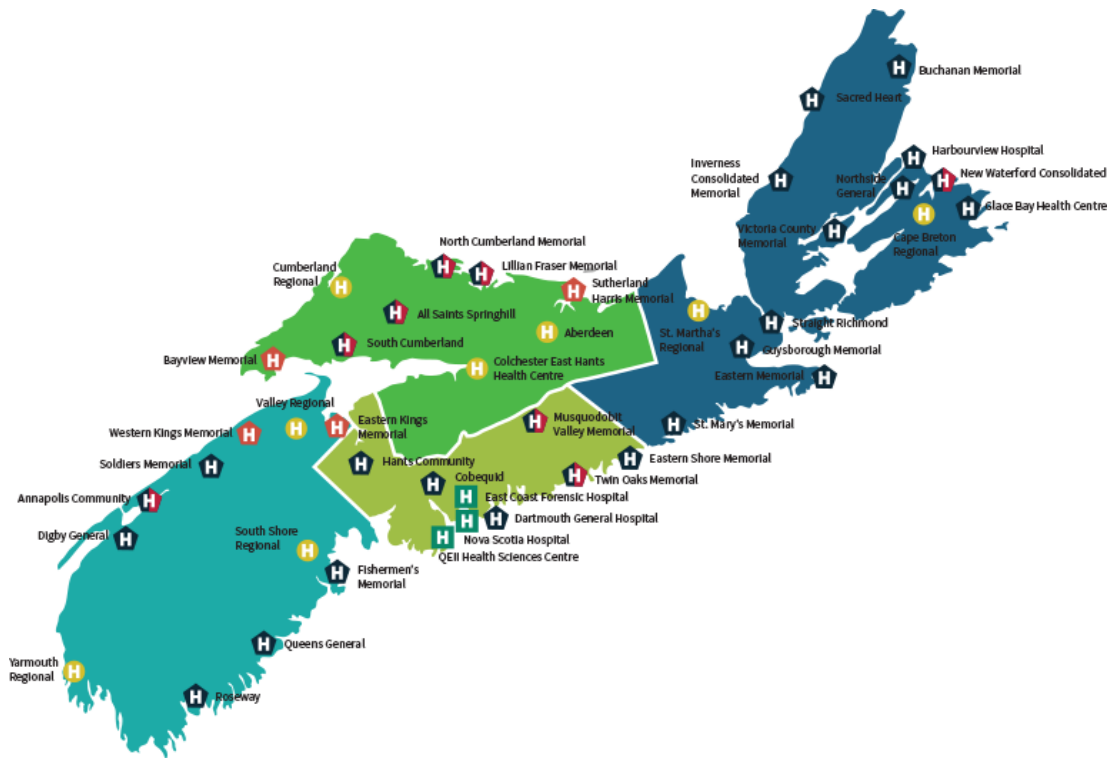
Analyze

Visualize

Publish

Collaborate

NSHA Performance and Analytics



01 Who we are / What we do

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Performance & Analytics Team

A team of 25 analysts spread across the province, endeavoring to provide data to drive decision making throughout NSHA

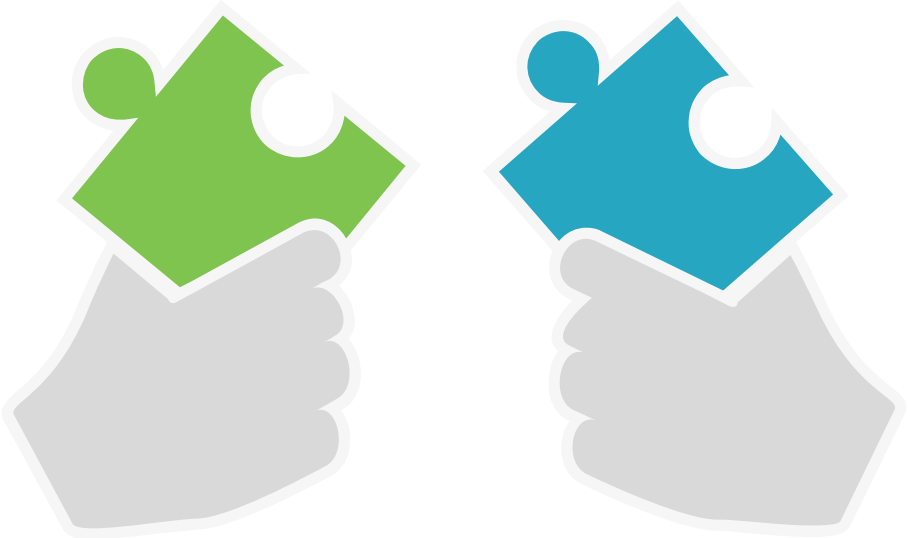
"Supporting evidence and data based decision making"

The team is made up of a mix of roles with team members having varied backgrounds and skill sets to support a wide range of analytical services and projects.

- Senior Decision Support Analysts
- Data Analysts
- Decision Support Analysts
- Research and Statistics Officers
- Health Records Analysts
- MIS Statistical Coordinators

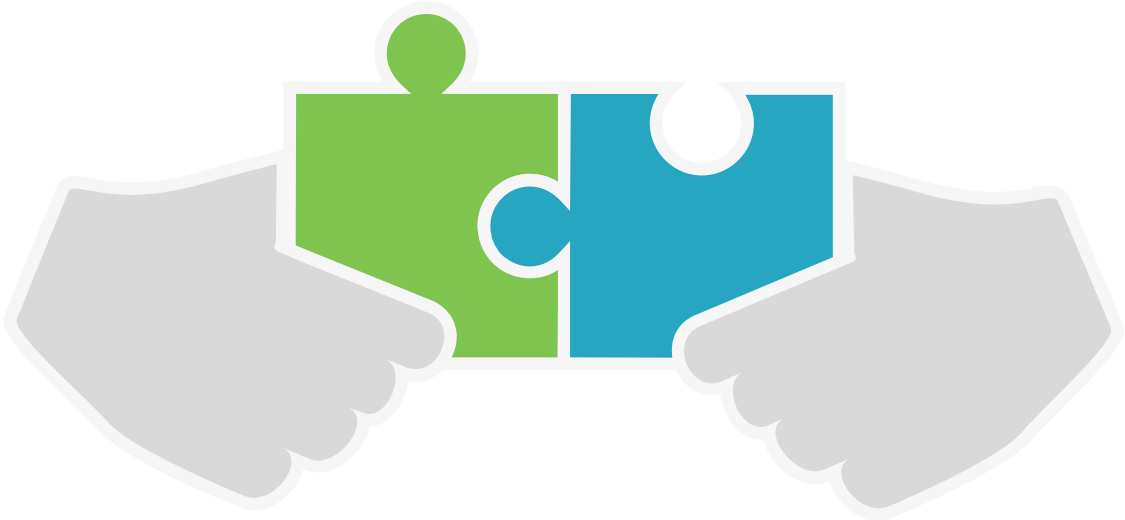
What we do: Objective of Analytics

From Data to Insight



Data

Data in different forms and formats held in disparate system across NSHA clinical and corporate domains



Insight

Data joined together to create metrics and insights for ongoing monitoring and improvement

What Do We Do

Performance & Analytics Team

Data Extraction and Staging

Data extraction and organize to support further analysis out of system. Recommendation on and development of data collection methods and secondary use of data.

Data Linkage

Linking datasets based on patient information, dates, and/or geography. Using the linked data makes it possible to gain a greater understanding.

Clinical Analytics

Measurement and reporting on key clinical care processes that are linked to health outcomes.

Operational Analytics

Reporting and analytics for the purpose of improving operational efficiency by reducing delays in service times and improving the flow of patients across the continuum of care

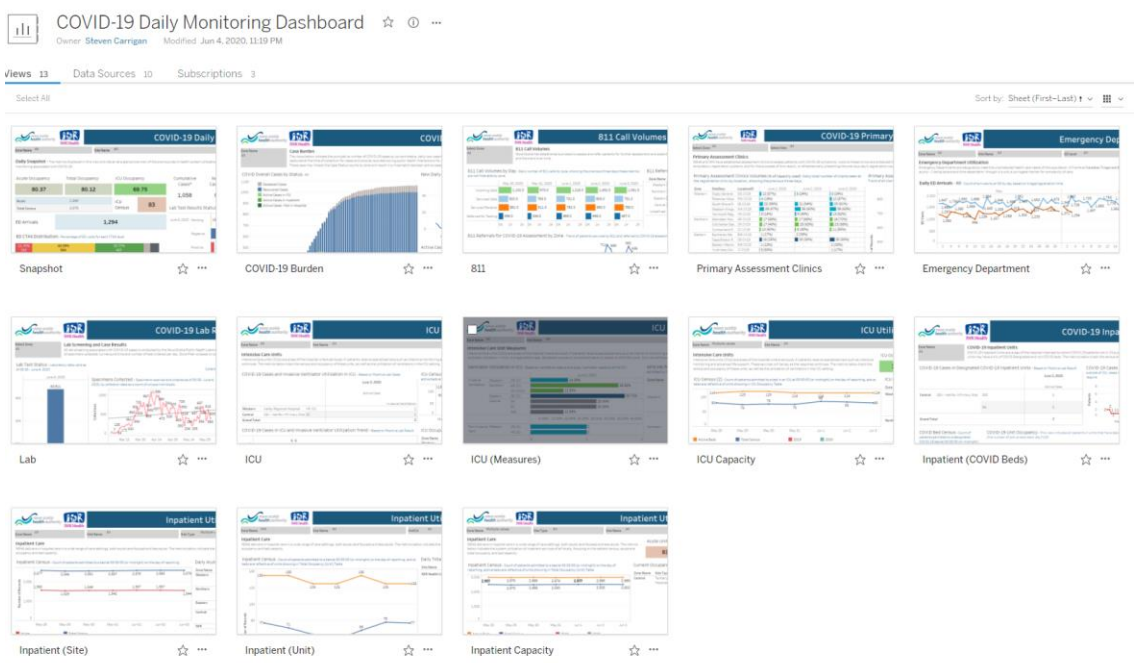
Performance Measurement

Regular measurement of what we do and how well we do it, in terms of access, efficiency, outcomes and value for NSHA programs

Applied Analytics

Utilizing statistical methods and innovative tools to create reliable and scalable operational solutions, applying theory to the practice of health system planning and management.

NSHA Performance and Analytics



01 Who we are / What we do

02 Our role in COVID-19

03 What changed?

04 Where to now?

Our Role in COVID-19

- Get Data
- Analyze
- Visualize
- Publish
- Collaborate

NSHA Performance and Analytics

01 Who we are / What we do

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Driving a shift in culture

Data as a Utility

We needed to change how we think of data to leverage analytics in the NSHA

Utility vs. Luxury

We were treating data as a luxury, we locked it away so that only approved people could access it. The NSHA needed to treat data like water. Life can’t exist without it. We all need it. We wouldn’t go anywhere without it. This is how we wanted our organization to think of data.

Performance Indicators and Reports

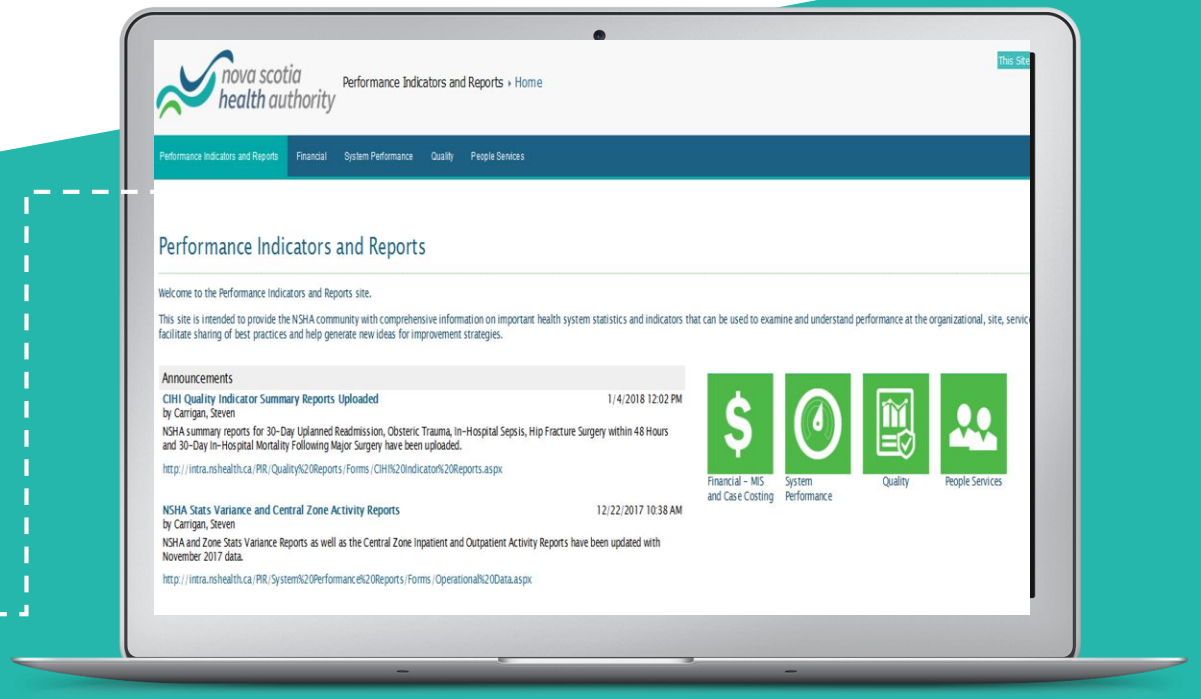
NSHA Intranet Site http://intra.nshealth.ca/PIR

Purpose

- Based on historical report repositories across the NSHA
- This site is intended to provide the NSHA community with comprehensive information on important health system statistics and indicators that can be used to examine and understand performance at the organizational, site, service, and unit levels.

Important Info

- The reports uploaded to the site work best when access through Internet Explorer
- Must use Internet Explorer when going to the PIR site



COVID-19 Daily Monitoring Snapshot

Zone Name All | Site Name All

Daily Snapshot - The metrics displayed in this view provide an at a glance overview of the previous day's health system utilization and monitoring associated with COVID-19.

System Utilization Metrics Updated as of 00:00 - **June 4, 2020**

Case Data Metrics Updated as of 05:30 - **June 4, 2020**

Acute Occupancy	Total Occupancy	ICU Occupancy
80.37	80.12	69.75

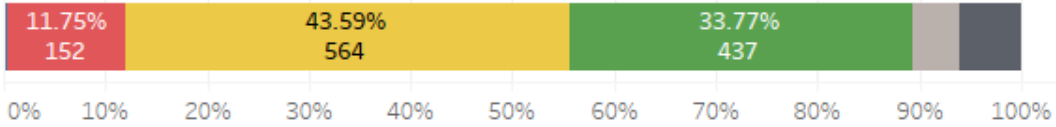
Acute	1,544
Total Census	2,579

ICU Census: 83

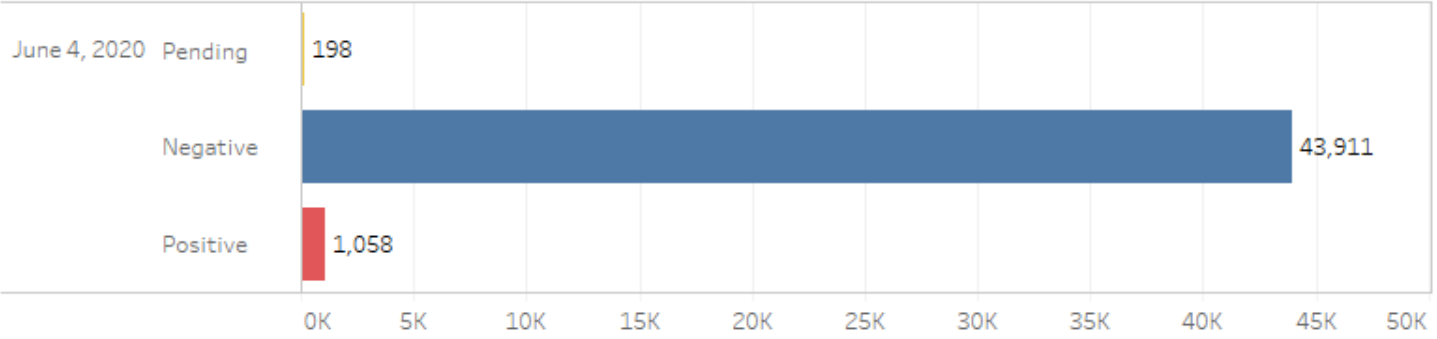
Cumulative Cases*	New Cases*	Total Recovered*	Total Deceased	Currently Hospitalized (exc. ICU)	Currently in ICU
1,058					

ED Arrivals: 1,294

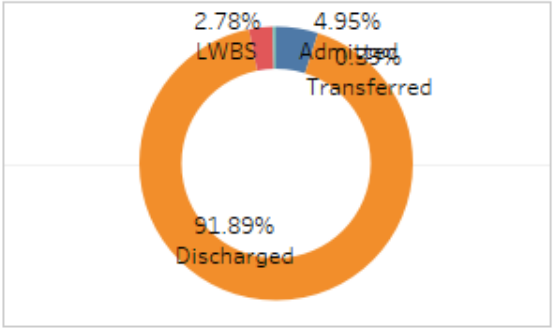
ED CTAS Distribution - Percentage of ED visits for each CTAS level



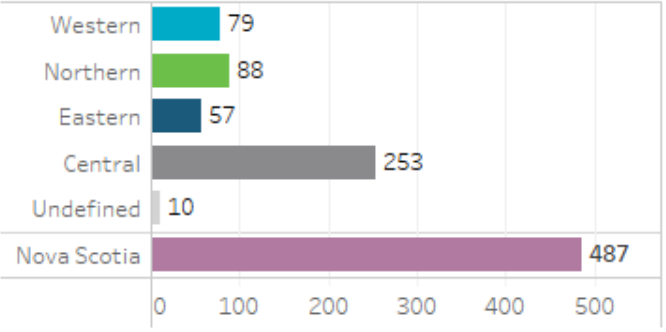
Lab Test Results Status - Laboratory data valid as of 05:30 - June 4, 2020



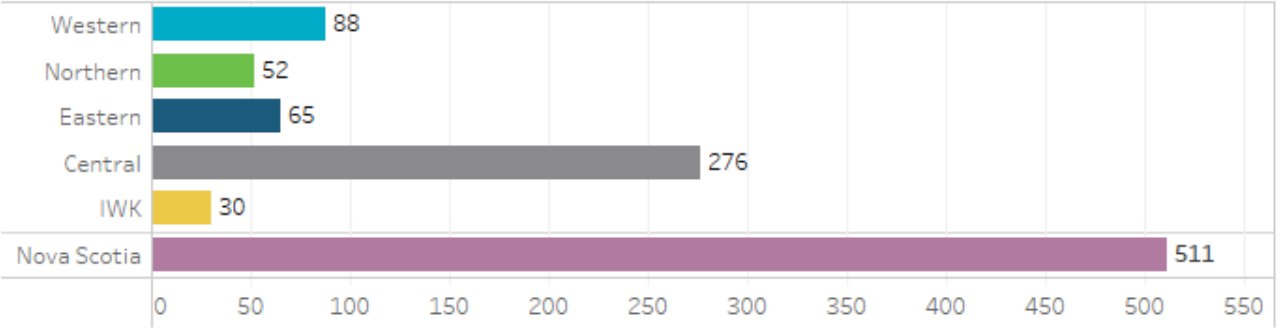
ED Visits by Discharge Disposition



811 Referrals - June 3, 2020

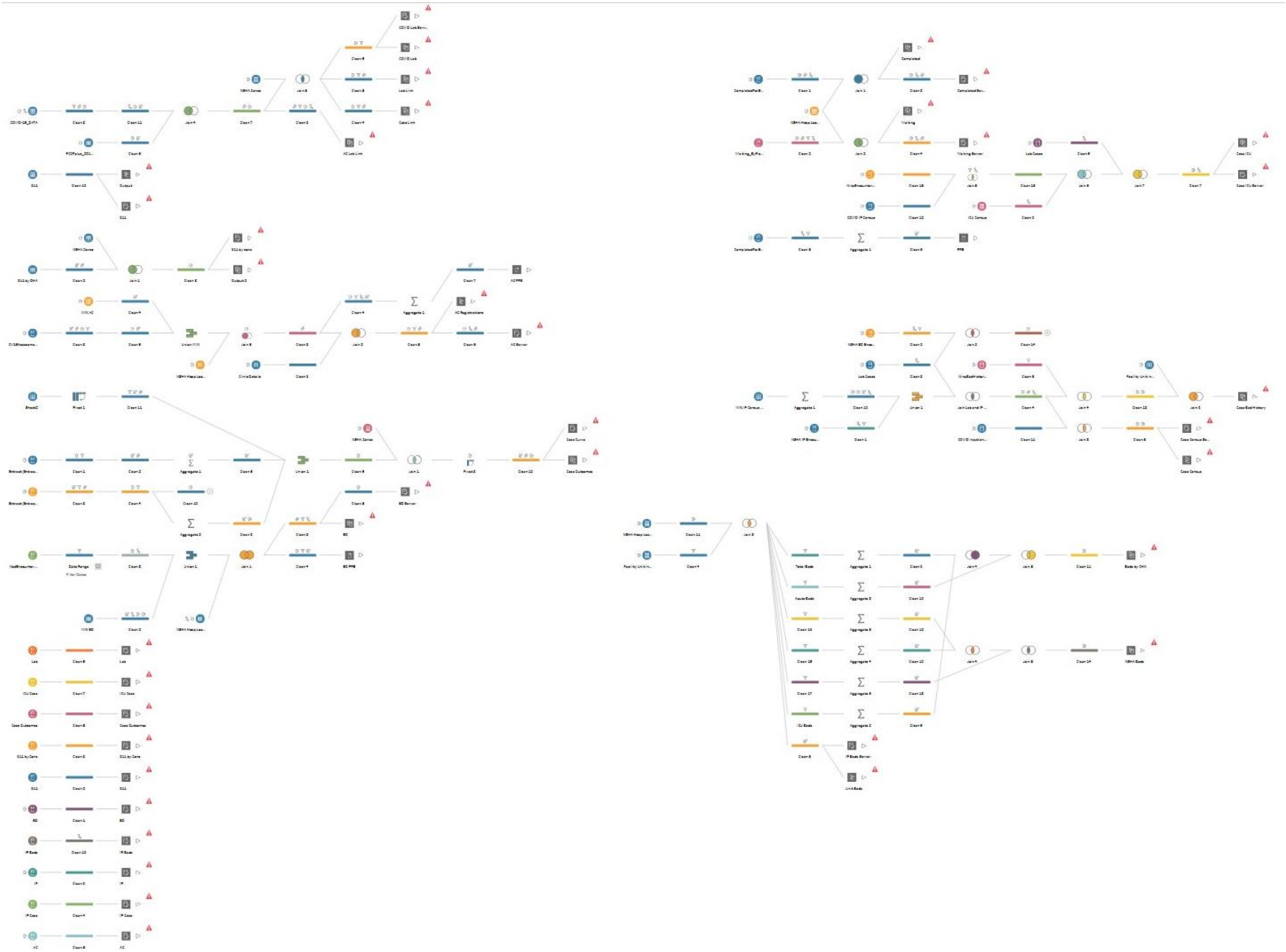


Primary Assessment Clinics



Data source(s): Meditech, STAR, EDIS, Public Health Lab, 811

Prepared by: NSHA Performance and Analytics



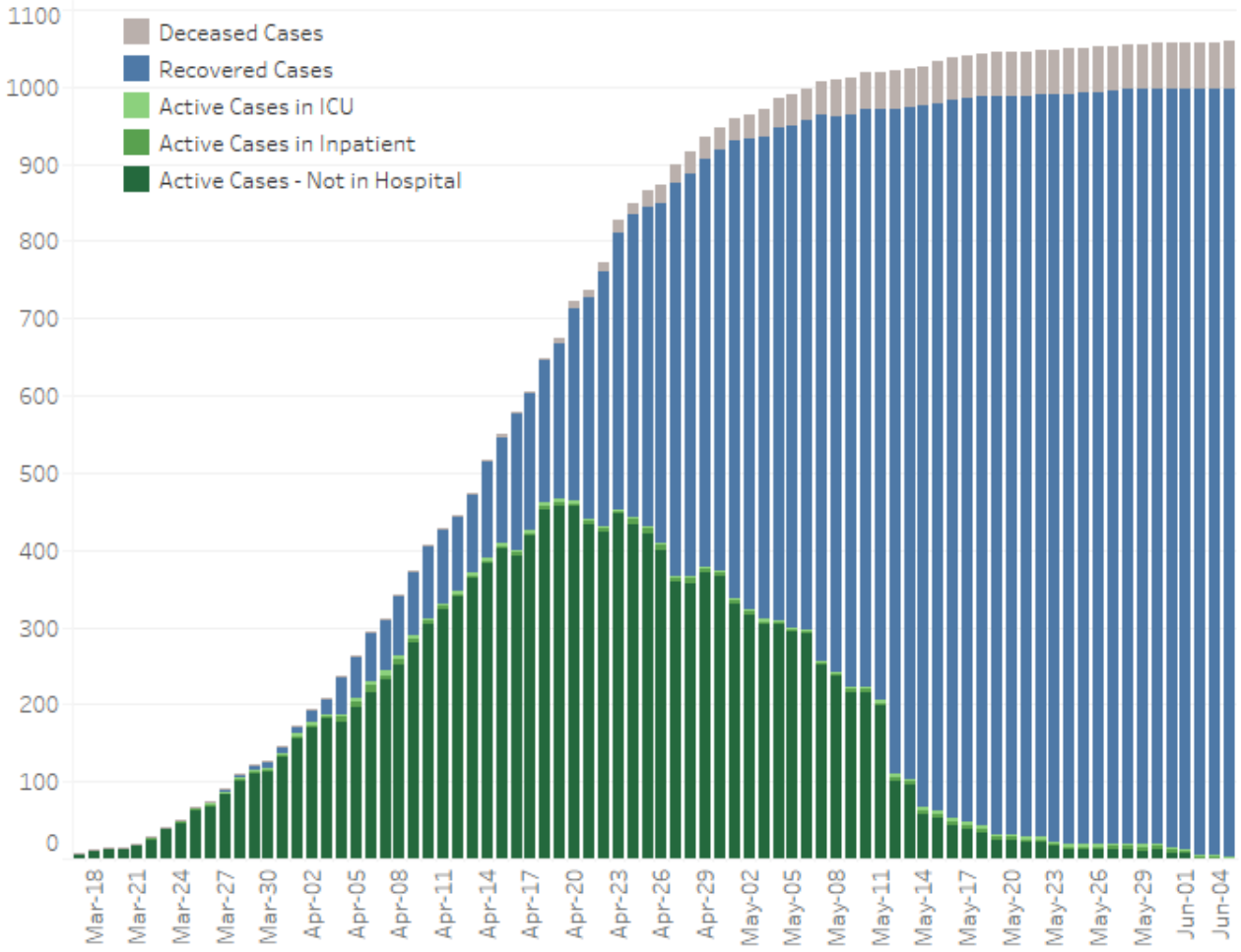
COVID-19 Burden

Zone Name
All

Case Burden

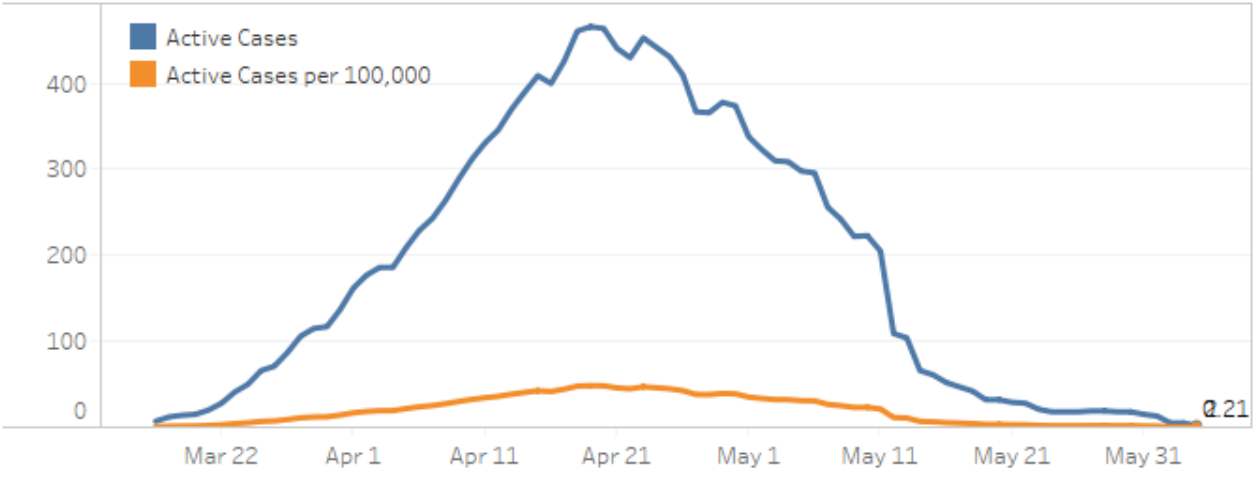
The views below indicate the cumulative number of COVID-19 cases by current status, daily new case trend and active cases total and per 100,000 population. Zone filter is based on zone of residence captured at the time of collection for cases and zone as recorded during public health interactions for recoveries and deaths, some individuals may be misaligned between the two types of counts as a result. These case may impact the Case Status counts by zone and result in a missmatch between active cases and recoveries.

COVID Overall Cases by Status - All



New Daily Cases Trend - All

Active Cases Trend (excludes recovered and deceased cases)



Data source(s): Nova Scotia Public Health

Prepared by: NSHA Performance and Analytics

ICU Utilization

Zone Name All | Site Name All | ICU Unit All

Intensive Care Units

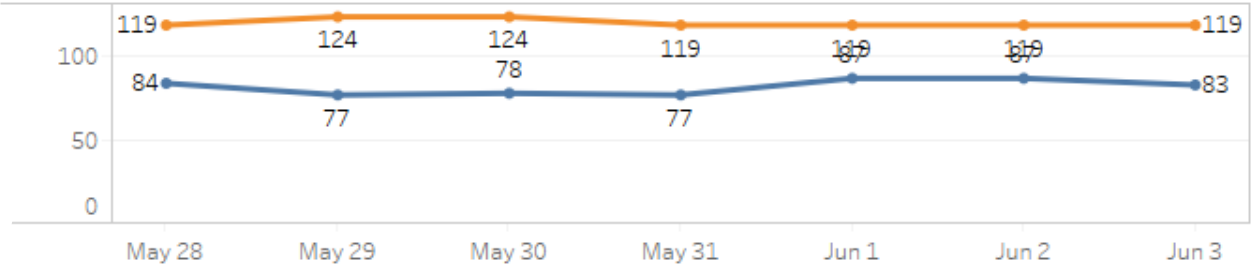
Intensive Care units (ICUs) are areas of the hospital where seriously ill patients receive specialized care such as intensive monitoring and advanced life support. These services will be key as the response continues. The metrics below track the census and occupancy of these units, as well as the utilization of ventilators in the ICU setting.

Active Beds
Total Census

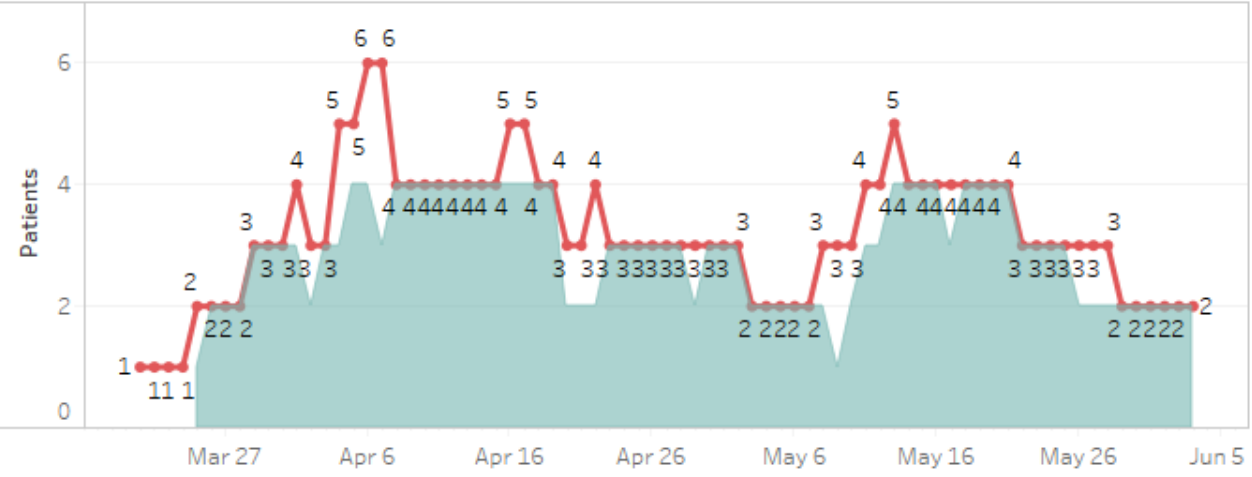
COVID-19 Cases and Invasive Ventilator Utilization in ICU - Based on Positive Lab Cases

	June 3, 2020	
	Active Case	Invasive Ventilation
Western		
Central		
Grand Total		

ICU Census - Count of patients admitted to a bed in an ICU at 00:00:00 (or midnight) on the day of reporting, active beds are reflective of units showing in ICU Occupancy Table



COVID-19 Cases in ICU and Invasive Ventilator Utilization Trend - Based on Positive Lab Result



Patient Count
Patients on Invasive Ventilation

ICU Occupancy - (ICU Census /the number of active beds each day)*100

Zone Name	Site Name	UnitCd	May 28, ..	May 29, ..	May 30, ..	May 31, ..	June 1, 2..	June 2, 2..	June 3, 2..
Western	South Shor..	SS.3ICU	80.0%	100.0%	100.0%	60.0%	60.0%	80.0%	80.0%
	Valley Regi..	VR.ICU	85.7%	42.9%	42.9%	42.9%	42.9%	42.9%	57.1%
	Yarmouth R..	YR.ICU	42.9%	57.1%	57.1%	57.1%	57.1%	42.9%	57.1%
Northern	Aberdeen H..	AR.ICU	83.3%	83.3%	100.0%	100.0%	100.0%	100.0%	83.3%
	Colchester ..	CR.C2ICU	100.0%	100.0%	75.0%	50.0%	75.0%	75.0%	75.0%
	Cumberlan..	CC.ICU	60.0%	20.0%	40.0%	40.0%	60.0%	60.0%	60.0%
Eastern	Cape Breton	CB.CCU		20.0%	20.0%				
	Regional	CB.ICU	78.6%	78.6%	85.7%	92.9%	85.7%	85.7%	85.7%
	Hospital	CB.IMCU	50.0%	75.0%	75.0%	75.0%	75.0%	100.0%	100.0%
	St. Martha'..	ST.ICU	33.3%	33.3%	50.0%	83.3%	83.3%	66.7%	66.7%
Central	Dartmouth ..	D41	87.5%	87.5%	87.5%	87.5%	87.5%	75.0%	87.5%
	QEII - Halifax	51	75.0%	83.3%	66.7%	58.3%	75.0%	83.3%	66.7%
	Infirmary	52	75.0%	58.3%	50.0%	58.3%	75.0%	66.7%	58.3%
	Site	64	75.0%	41.7%	66.7%	83.3%	91.7%	75.0%	83.3%
	QEII - Victor..	3A	25.0%	25.0%	25.0%	12.5%	50.0%	62.5%	25.0%
IWK	IWK Health ..	IWK.PICU	80.0%	60.0%	40.0%	40.0%	40.0%	80.0%	60.0%

Data source(s): ICU Database, Public Health Lab, Meditech, STAR

Prepared by: NSHA Performance and Analytics

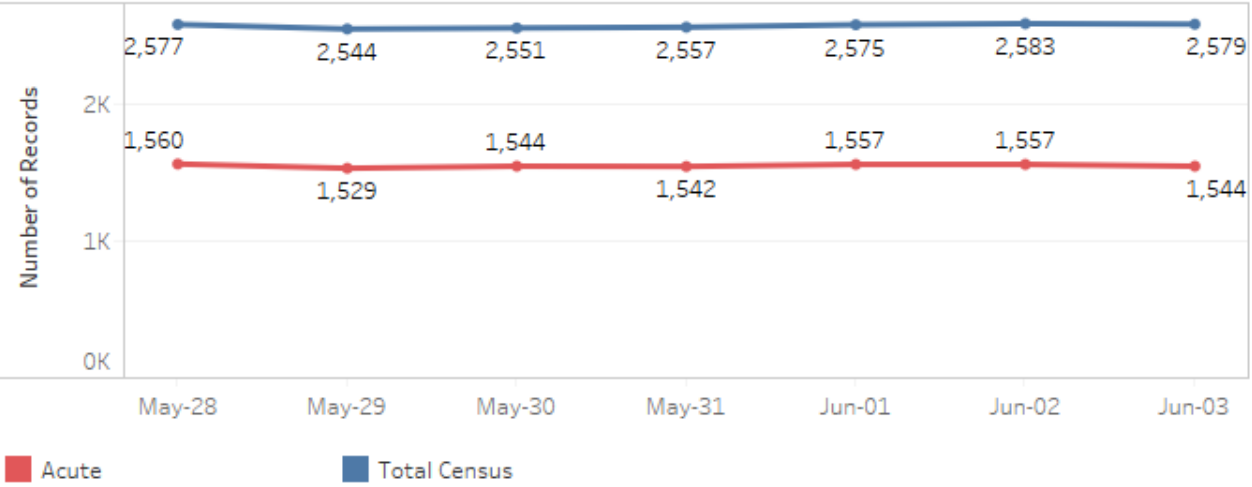
Inpatient Utilization - Site Level

Zone Name: All | Site Name: All | Site Type: Multiple values

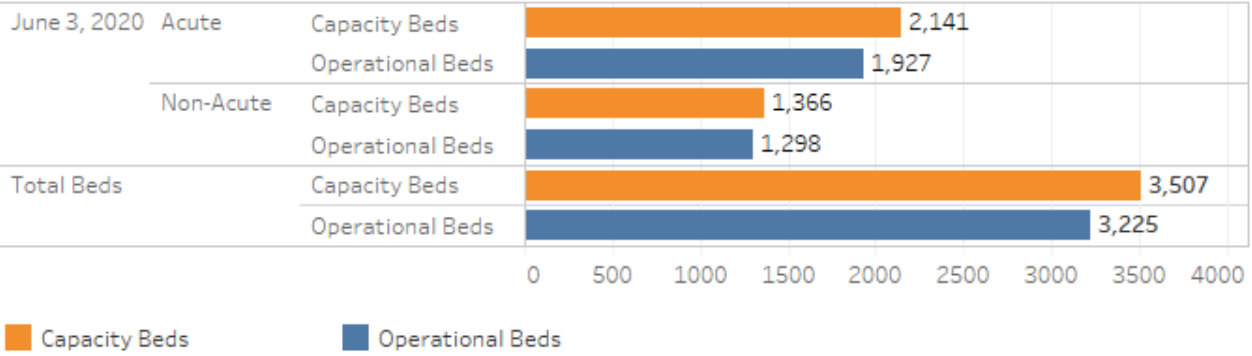
Inpatient Care

NSHA delivers in hospital care in a wide range of care settings, both acute care focused and less acute. The metrics below indicate the system utilization of inpatient services of all levels, focusing on the patient census, acute and total occupancy and bed capacity.

Inpatient Census - Count of patients admitted to a bed at 00:00:00 (or midnight) on the day of reporting



Inpatient Beds Operational and Capacity - Count of beds each day



Daily Acute Unit Occupancy - (Acute Unit Census /the number of active beds each day)*100

Zone Name	Site Name	May-28	May-29	May-30	May-31	Jun-01	Jun-02	Jun-03
Western	South Shore Regional Hos..	84.1%	84.1%	81.2%	78.3%	72.5%	76.8%	76.8%
	Valley Regional Hospital	72.4%	68.7%	70.1%	69.4%	67.2%	71.6%	73.1%
	Yarmouth Regional Hospi..	64.1%	65.6%	71.9%	76.6%	82.8%	73.4%	75.0%
Northern	Aberdeen Hospital	86.8%	79.4%	91.2%	86.8%	83.8%	85.3%	82.4%
	Colchester East Hants He..	78.6%	84.5%	81.0%	75.0%	73.8%	70.2%	72.6%
	Cumberland Regional Hea..	73.4%	67.2%	60.9%	64.1%	67.2%	71.9%	70.3%
Eastern	Cape Breton Regional Hos..	69.5%	69.0%	71.1%	69.5%	71.1%	73.8%	73.8%
	St. Martha's Regional Hos..	78.9%	82.5%	86.0%	91.2%	86.0%	77.2%	84.2%
Central	Dartmouth General Hospi..	113.3%	115.8%	115.0%	120.8%	121.7%	117.5%	109.2%
	QEII - Halifax Infirmary Site	88.6%	86.8%	89.1%	89.6%	91.6%	89.8%	88.4%
	QEII - Victoria General (V..	83.6%	80.9%	79.6%	82.9%	84.2%	80.9%	82.2%
IWK	IWK Health Centre	49.2%	42.6%	37.7%	32.0%	38.5%	41.8%	42.6%

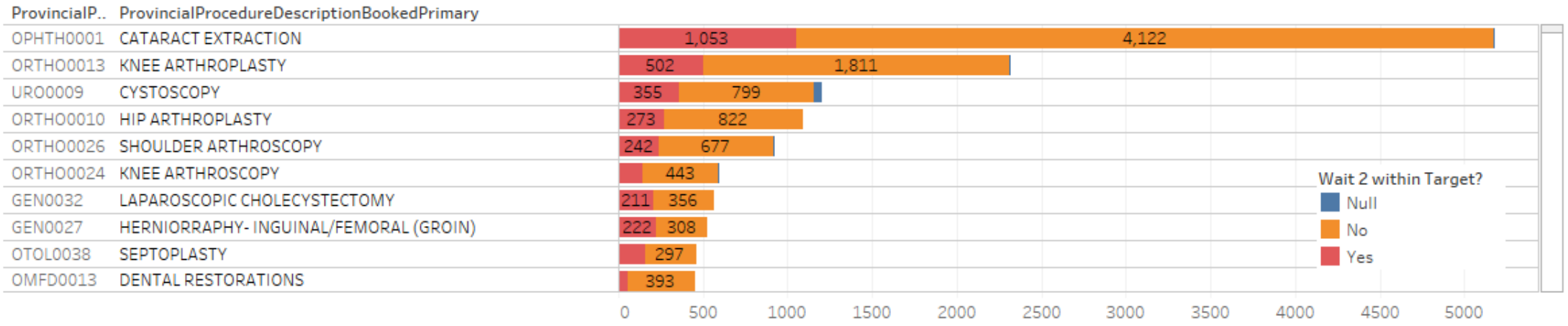
Daily Total Occupancy - (Total Census /the number of active beds each day)*100

Zone Name	Site Name	May-28	May-29	May-30	May-31	Jun-01	Jun-02	Jun-03
Western	South Shore Regional Hos..	78.5%	79.7%	77.2%	77.2%	73.4%	77.2%	77.2%
	Valley Regional Hospital	69.8%	67.8%	69.8%	68.5%	65.8%	69.8%	71.1%
	Yarmouth Regional Hospi..	72.0%	72.0%	75.4%	80.5%	81.4%	77.1%	78.0%
Northern	Aberdeen Hospital	91.7%	84.4%	91.7%	89.6%	88.5%	90.6%	88.5%
	Colchester East Hants He..	81.1%	87.7%	83.0%	79.2%	77.4%	75.5%	77.4%
	Cumberland Regional Hea..	73.4%	67.2%	60.9%	64.1%	67.2%	71.9%	70.3%
Eastern	Cape Breton Regional Hos..	69.2%	68.5%	68.5%	67.8%	68.5%	71.8%	73.3%
	St. Martha's Regional Hos..	80.9%	82.0%	85.4%	92.1%	87.6%	83.1%	87.6%
Central	Dartmouth General Hospi..	113.3%	115.8%	115.0%	120.8%	121.7%	117.5%	109.2%
	QEII - Halifax Infirmary Site	79.8%	79.0%	80.5%	80.7%	81.8%	80.7%	80.6%
	QEII - Victoria General (V..	111.7%	108.9%	106.7%	108.9%	112.8%	111.2%	114.5%
	The Nova Scotia Hospital	73.6%	72.7%	72.7%	70.9%	70.9%	68.2%	68.2%
IWK	IWK Health Centre	42.1%	38.8%	34.4%	31.1%	37.2%	42.6%	42.1%

Data source(s): Meditech, STAR

Prepared by: NSHA Performance and Analytics

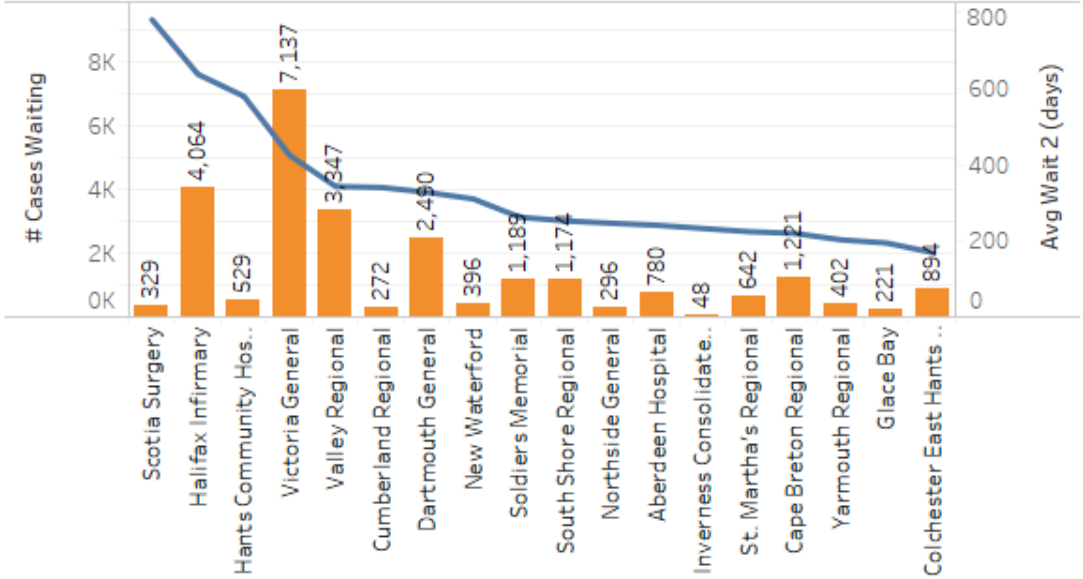
By Procedure



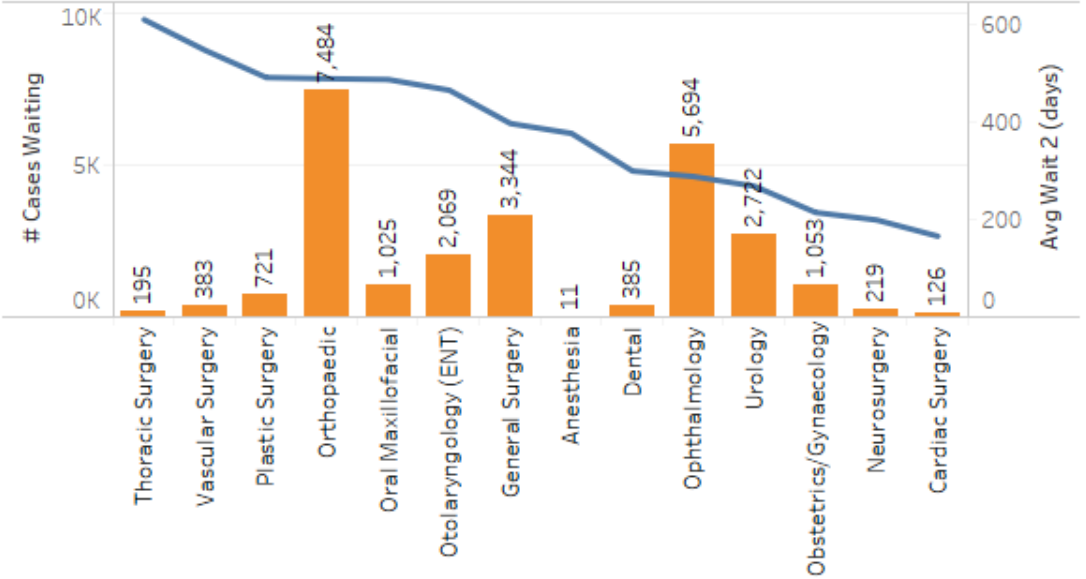
cases waiting

Avg Wait 2 (days)

By Site



By Specialty



ActivityType
Surgical Activity

Zone Name
Multiple values

Facility
All

Specialty
All

Procedure
All

PriorityLevel
All

Suspected/Proven Cancer
All

Inpatient or Outpatient
All

Wait 2 within Target?
All

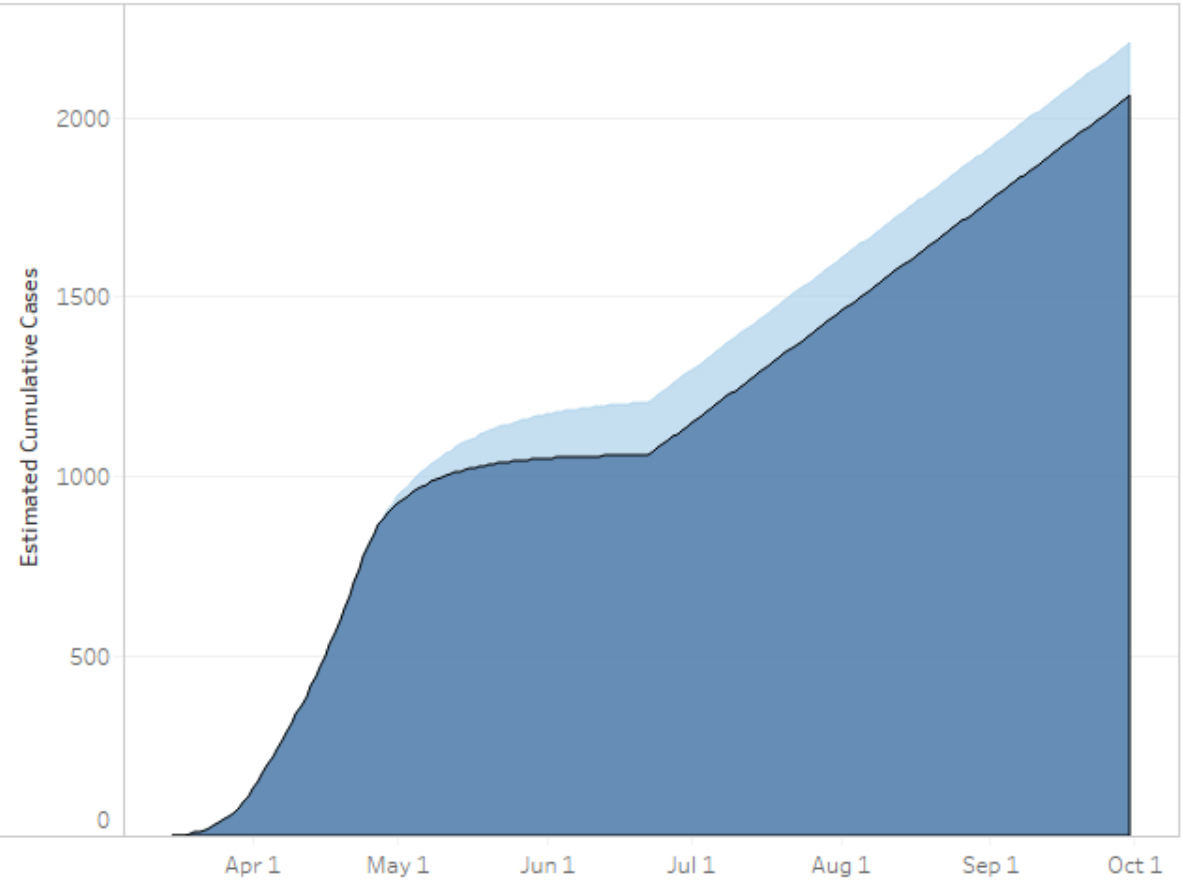
Wait 2 Colour Status
All

Nova Scotia COVID-19 Forecast

DHW Advanced Analytics and NSHA and IWK Performance and Analytics teams have collaborated to develop a short term forecast to predict the spread and impact of COVID-19 in Nova Scotia over the next 30-70 days. This forecast will be used support operational decisions within the health system. Note: the estimated daily cases and other metrics are a function of the cumulative cases, the Base metrics represents a scenario where social distancing was 75% implemented and the High metrics social distancing 50% implemented, both Base and High utilize the same average parameters.

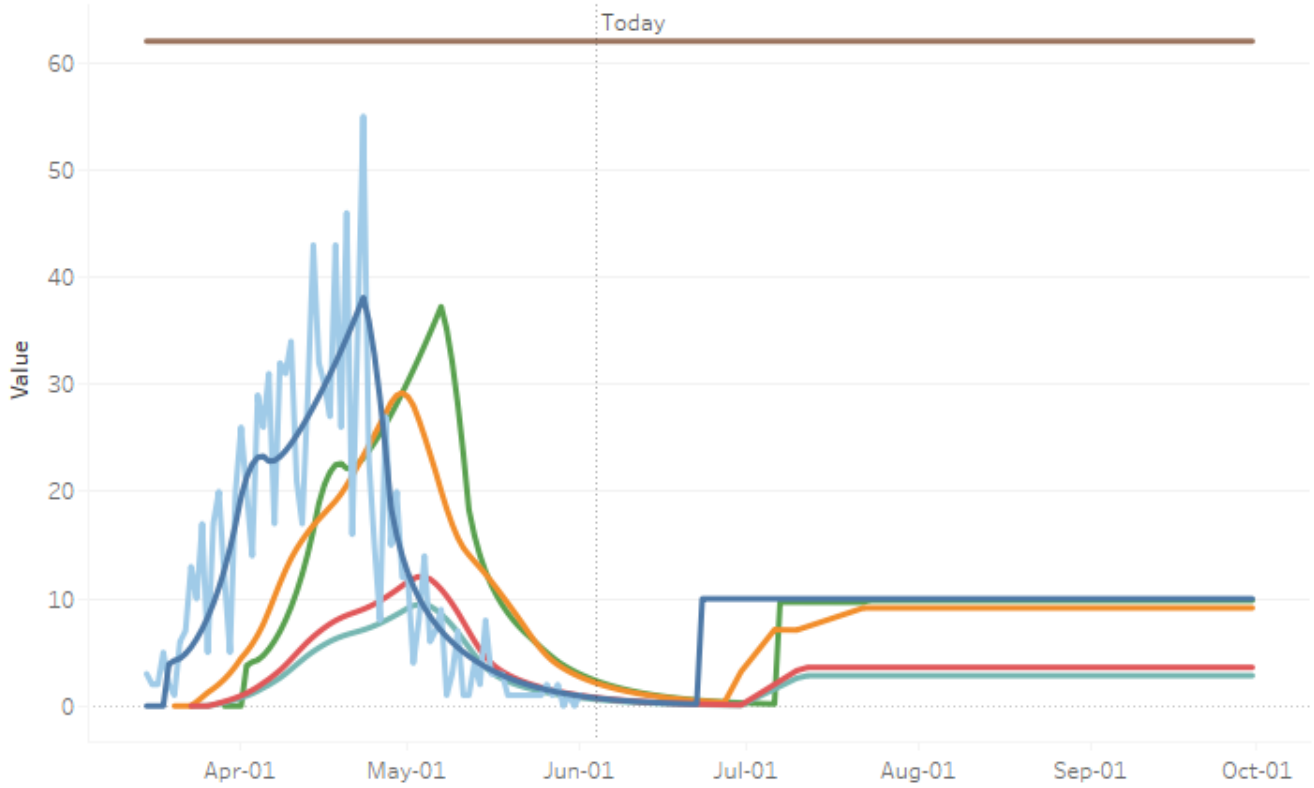
Estimated ICU Beds Avaliable for COVID-19 Patients (Bed capacity can be adjusted by entering a value 0-1)
50%

Estimated range of cumulative cases



Estimated Cumulative Cases (BASE)
Estimated cumulative under Social Distancing 50% (HIGH)

Estimated daily Inpatient, ICU and Ventilator Utilization associated with COVID-19 if social distancing practiced well



ICU Bed Adjuster
Estimated Daily New Cases (BASE)
Actual New Cases
Active in ICU (Base)
Active in Acute Care (Base)
Ventilator Need (Base)
Recovered (Base)

Data Source: DHW/NSHA/IWK COVID-19 Model

Prepared by: NSHA Performance and Analytics / DHW Advanced Analytics

NSHA Performance and Analytics

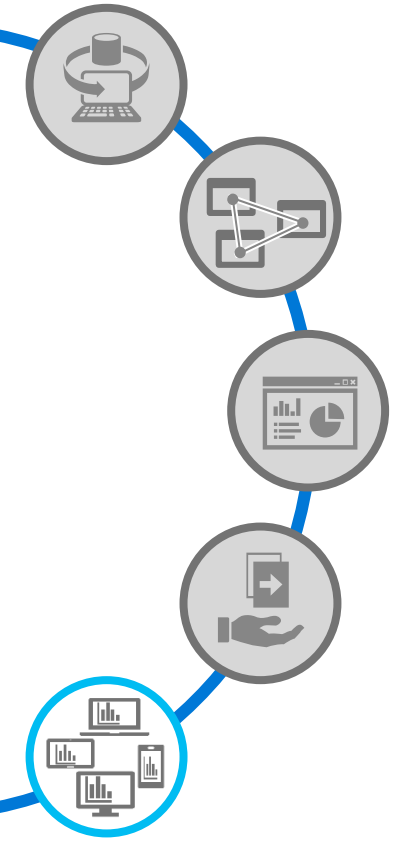
01 Who we are / What we do

02 Our role in COVID-19

03 What changed?

04 Why did we change?

Why did we change? Empowering our organization



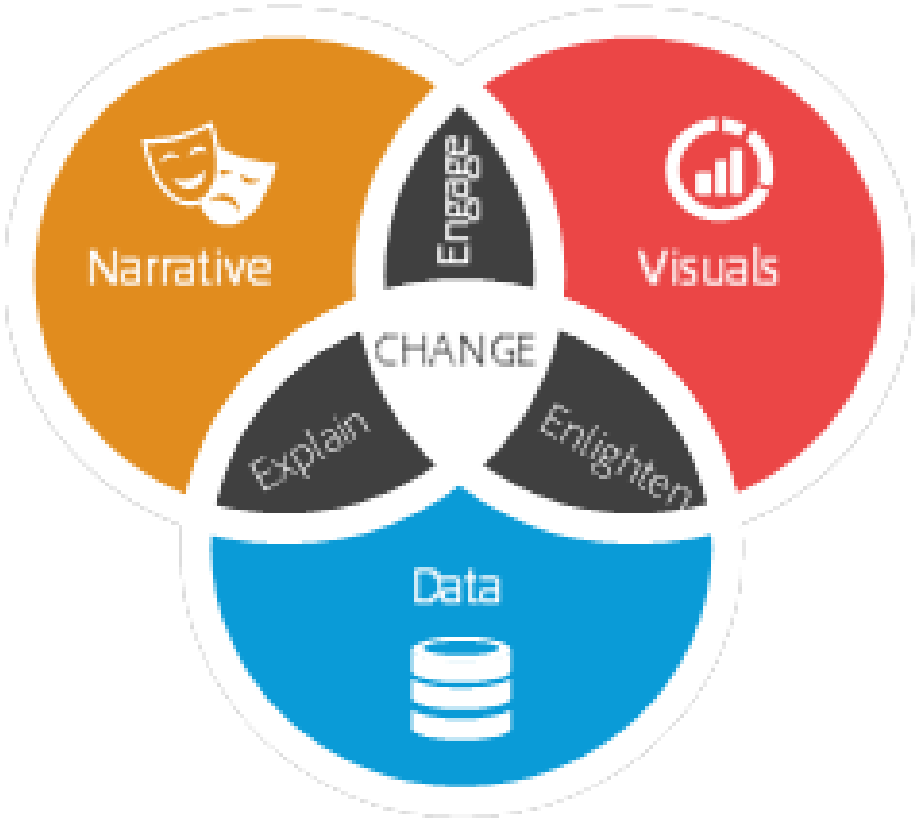
Provide access to reports and dashboards anywhere on any device

Enable users to ask questions and discover insights from the data through self-serve analytics or interaction with our team

Deliver insights through new mediums

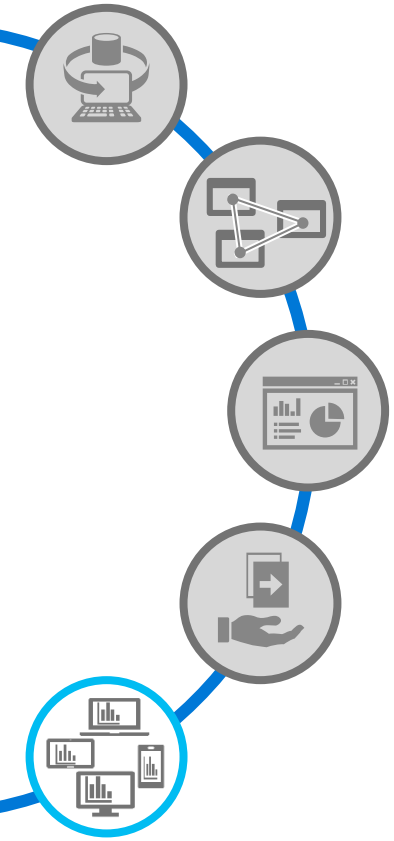
Enhance patient care delivery and support population health

Decisions Don’t Start with Data



- Data can provide new insights and evidence to inform our toughest decisions, but numbers alone won’t convince others.

Where do we go now?

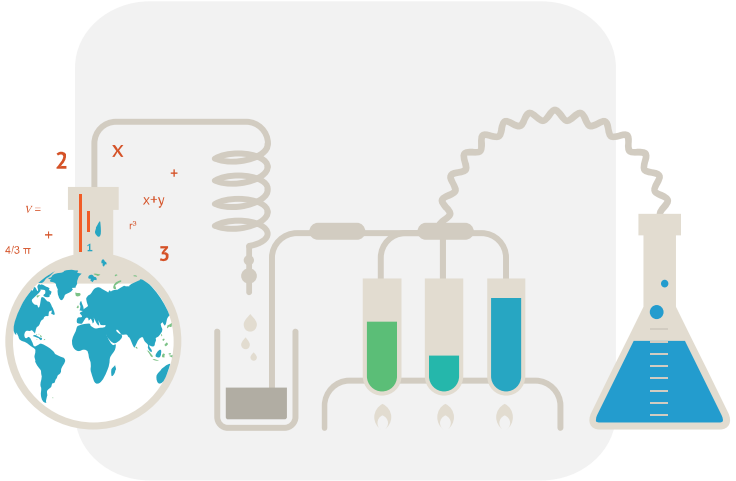


Expand visualization platform

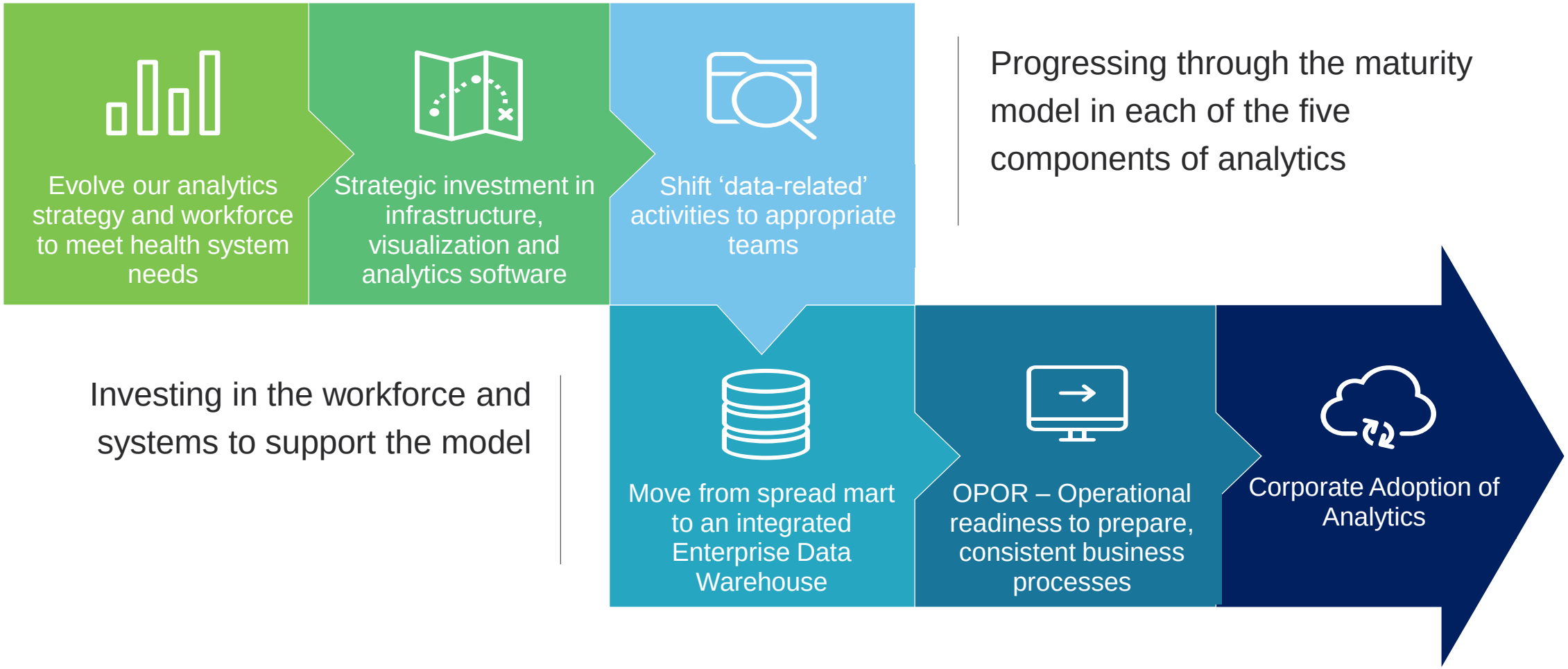
Enhance backend infrastructure to support more timely analytics

Focus on organizational data fluency

Use analytics to optimize quality and minimize cost



Moving as an Enterprise



Progressing through the maturity model in each of the five components of analytics

Investing in the workforce and systems to support the model

THANK YOU

Question ?