

NATIONAL PATIENT AND PROCEDURE VOLUME TRACKER™

*Analysis of 2 Million Patient Encounters Reveals U.S. Hospitals are Losing \$60 Billion per Month;
Uninsured Patients Up 114% During COVID-19 Pandemic*

Version 5.11.2020

Table of Contents

Summary	3
Analysis of Admissions, Observation Stays, Emergency Room and Hospital Outpatient Visits	11
Analysis of Clinical Service Lines and Sub Service Lines	17
Clinical Service Line Volume and Revenue Trends	23
Financial Impact Analysis	54
Appendix	58

help HEAL healthcare

NATIONAL PATIENT AND PROCEDURE VOLUME TRACKER™

Summary

Version 5.11.2020

Background

The impact of the coronavirus pandemic is pushing many hospitals to the brink of a financial collapse. Even before COVID-19, hospitals were operating with razor thin margins of 2% and close to one-third of them were operating at a loss. COVID-19 has delivered the “double whammy” of higher costs and significantly lower revenue, with the potential to push many hospitals into bankruptcy without government help.

Costs have risen as they have purchased personal protective equipment (PPE) and ventilators, expanded lab and testing capacity, and converted surgical and other revenue-producing rooms to treat COVID-19 patients. They have also eliminated many capital projects and other critical investments due to their uncertain future.

At the same time, revenue has dropped precipitously due to the cancelation of all elective procedures. And a doubling of the number of self-pay patients has meant significant reductions in reimbursement and, therefore, revenue for hospitals.

The Federal Government has set in motion a number of initial programs providing billions in financial support. Hospitals, led by the American Hospital Association, are asking Congress for more bailout money to help them deal with the financial impact of the pandemic.

THREE PRIMARY QUESTIONS

1

What is the financial impact of cancelling elective procedures?

2

As elective procedures resume, when and how much of that volume and revenue will come back?

3

How much funding will be required from the Federal Government to adequately support hospitals on the front lines to avoid financial collapse?

Methodology

As a proxy for analyzing the impact of COVID-19 on patient and procedure volume, the data science team at Strata aggregated data from a cohort of 228 hospitals in 51 healthcare delivery systems, a subset of the over 1,000 hospitals and 220 healthcare delivery systems that use the company's StrataJazz® financial planning, analytics and performance platform.

Collectively these hospitals serve nearly 65 million Americans, account for \$68 billion in annual operating expense, and represent a broad national view across 40 states and all census regions with varying incidence rates of COVID-19 cases.

Two separate models were then created and analyzed to understand the impact of COVID-19 on 1) patient volume and 2) procedure volume. See page 60 for details.

		Region				Total
		Midwest	Northeast	South	West	
Hot Spot Status	High	9	17	1	2	29
	Medium	55	4	64	18	141
	Low	22	11	13	12	57
	Total	86	32	78	32	228

Based on New York Times "Hot Spot" Definitions

DATA COHORT

228	Hospitals
51	Healthcare Systems
65M	Patients Served
\$68B	Annual Operating Expense
40	States

Findings: 54.5% Average Decrease in the Number of Patients Accessing Care

The analysis reveals that across all service lines and in every region of the country there was an average decrease in the number of unique patients who sought care in a hospital setting of 54.5%.

The sharp drop in encounters is linked to the cancellation of elective surgeries during this time period, along with resource constraints and ongoing concerns for the safety of patients and staff.

Millions of patients who put off care or had it delayed during the pandemic can soon be expected to flood hospitals and physician offices seeking care.

Clinical service lines that saw the sharp drops in patient encounters included those with life-threatening illnesses in clinical service lines such as a 57% decrease in cardiology, a 55% decrease in breast health with a 37% decline in cancer overall. Many facilities will likely be hard-pressed to handle the surge while simultaneously maintaining capacity for COVID-19 patients.

Estimated Volume Losses by Service Line 2019 vs 2020

Ophthalmology	Spine	Gynecology	Orthopedics	ENT	Endocrine
81%	76%	75%	74%	72%	68%
Dermatology	Gastroenterology	Rheumatology	Neurosciences	General Medicine	Urology
67%	67%	66%	66%	64%	62%
Genetics	Vascular	Hepatology	Cardiology	Pulmonology	Breast Health
60%	59%	58%	57%	56%	55%
General Surgery	Nephrology	Hematology	Allergy & Immunology	Behavioral Health	Burns & Wounds
54%	52%	49%	48%	45%	44%
Cancer	Obstetrics	Infectious Disease	Neonatology	Not Assigned	Normal Newborn
37%	30%	23%	20%	4%	2%

Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)

Findings: Major Declines in Top 10 Inpatient Procedures

Inpatient procedures and surgeries account for the majority of revenue for hospitals. The top ten procedures account for over 50% of the total payments made to hospitals.

There were significant declines in the number of hip (-79%) and knee (-99%) replacement surgeries as well as in spinal fusions (-81%) and repair of fractures (-38%). Coronary stents (-44%) and diagnostic catheterization (65%) also saw significant declines.

Overall diagnostic volume declined by 60%. Both normal delivery (1%) and c-section (2%) saw increases. Mechanical ventilation increased by 24% due to treatment of COVID-19 patients.

Impact to Top 10 Inpatient Procedures and Surgeries

Primary Knee Replacement	- 99%	Percutaneous Coronary Intervention	- 44%
Lumbar/Thoracic Spinal Fusion	- 81%	Fracture Repair	- 38%
Primary Hip Replacement	- 79%	C-Section	+ 2%
Diagnostic Catheterization	- 65%	Regular Delivery	+ 1%
Diagnostics	- 60%	Mechanical Ventilation	+ 24%

Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)

Findings: Reduction in the Number of People Accessing Care

Access to clinical care for patients with life-threatening conditions declined significantly including congestive heart failure (-55%), heart attacks (-57%) and stroke (-56%).

Access by patients for chronic conditions also fell for patients with hypertension (-37%) and diabetes (-67%).

The high volume patient visits and procedures that dropped the most were for cataracts (97%), sleep apnea (-91%) and osteoarthritis (-88%) and glaucoma (-88%).

Additionally, health screenings that are designed to provide early detection but are often seen as less urgent were down significantly in volume, increasing the risk of undiagnosed disease.

Preventive wellness visits, gynecologic wellness and screenings, and GI benign neoplasms and polyps—which includes colonoscopies with removal of polyps—all saw volumes drop by over 75% in the cohort group.

Impact to Inpatient and Outpatient Encounters

Cataracts	-97%	Chronic Otitis Media and Sinusitis (ear infection/sinuses)	-75%	Asthma	-62%
Sleep Apnea (often a harbinger of cardiac disorders)	-91%	Hypertension	-74%	Ischemic Stroke	-56%
Glaucoma	-88%	Hyperlipidemia	-74%	Congestive Heart Failure	-55%
Osteoarthritis	-88%	Neuro Pain and Neuropathy	-71%	Chest Pain (non-cardiac)	-44%
Coronary Heart Disease	-75%	Care for Diabetes	-67%	Prostate Cancer	-44%

Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
Care Family definition per Sg2 Care Group™

Findings: Volume and Revenues Decrease as Self Pay Increases by 114%

-54.5%
VOLUME

Across all service lines there was an average 54.5% decrease in the number of unique patients who sought care in a hospital setting during the study period.

-\$60.1B
REVENUE

The 228 hospitals lost an estimated \$1.3 billion in revenue compared to the prior year—the equivalent of \$60.1 billion per month in revenue loss for hospitals nationwide.

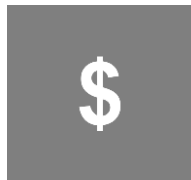
+114%
SELF PAY

The number of uninsured and self pay has increased dramatically. Early results from May indicate 15% of patients in the cohort are uninsured, an increase of 114%.

Conclusion

While volumes will gradually recover, dramatic increases in the number of self-pay patients will likely continue to be a drag on hospitals' revenue until the economy recovers and more people regain employer-sponsored health insurance.

The primary implications of these findings for healthcare providers, policymakers and key stakeholders is the following:



Additional funding in the range of over \$300 billion may be needed to cover hospitals for 2020 or more than three times what has been provided to date by the Federal Government



The increase in the number of self-pay patients will need to be monitored as it may be a significant financial challenge for hospitals in the future.



Hospitals will have to monitor specific services lines and procedures carefully as they restore elective procedures, while simultaneously reforecasting budgets which have been rendered irrelevant by COVID-19

Hospitals across the country are eager to open their doors to elective procedures so they can serve their community, care for their patients, and survive economically but how they get there is literally a hundred-billion-dollar question.

NATIONAL PATIENT AND PROCEDURE VOLUME TRACKER™

Analysis of Admissions, Observation Stays, Emergency Room and Hospital Outpatient Visits

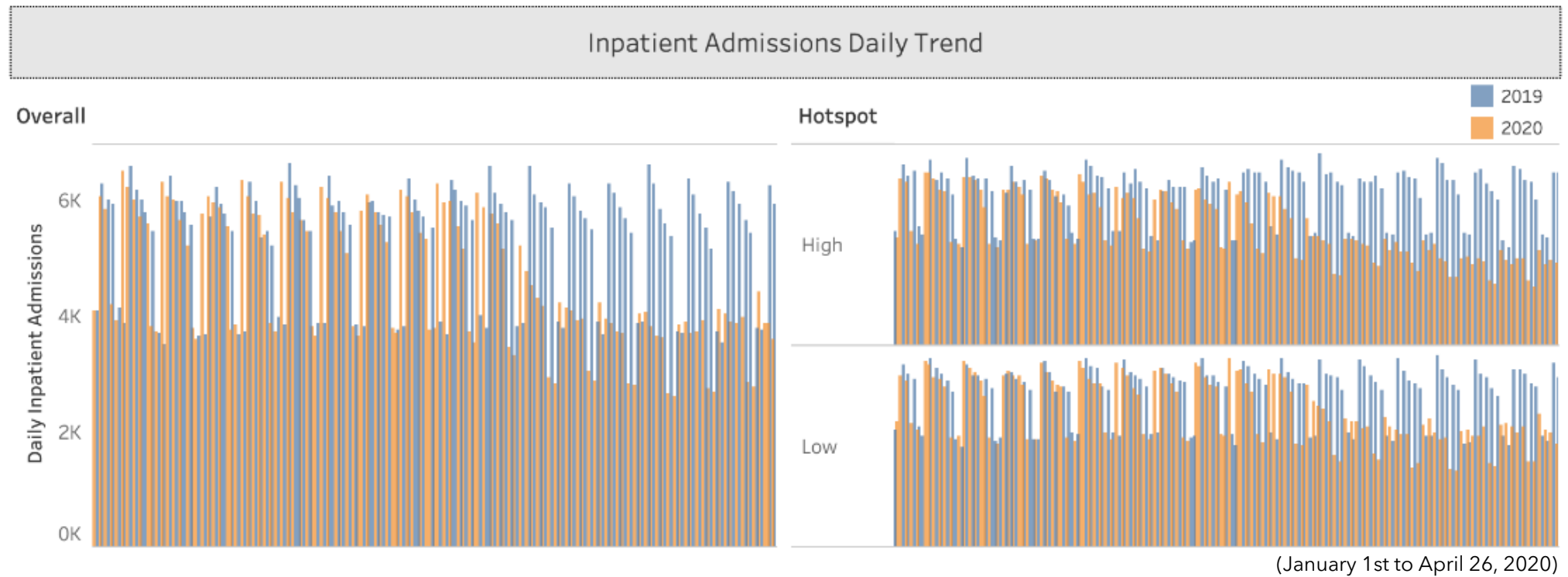
Version 5.11.2020

Admissions, Stays & Visits Total and “Hot Spots” vs. non “Hot Spot” Hospitals

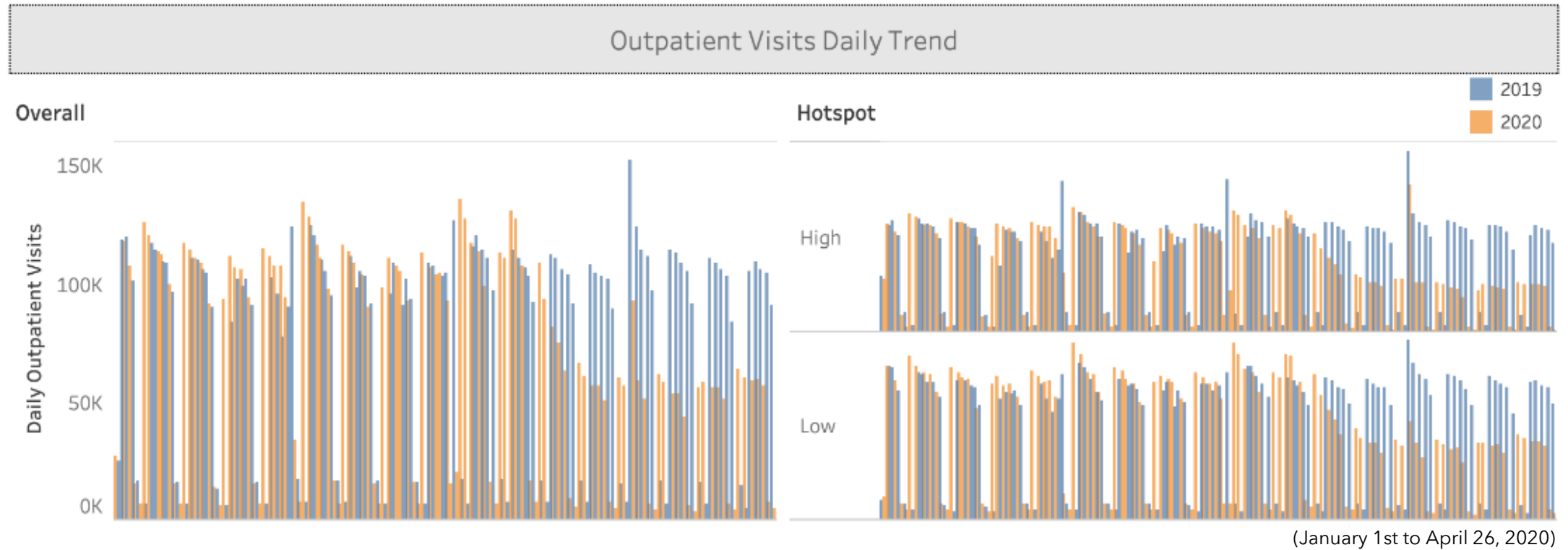
Metric	Avg. Last30DayChange	Avg. Last7DayChange	Hot Spot	Metric	Avg. Last30DayChange	Avg. Last7DayChange
Daily Emergency Visits	▼ -49.69%	▼ -50.98%	High	Daily Emergency Visits	▼ -60.24%	▼ -63.92%
Daily Inpatient Admissions	▼ -33.43%	▼ -32.64%		Daily Inpatient Admissions	▼ -42.38%	▼ -45.82%
Daily Observation Visits	▼ -50.30%	▼ -46.38%		Daily Observation Visits	▼ -61.09%	▼ -57.52%
Daily Outpatient Visits	▼ -47.12%	▼ -43.62%		Daily Outpatient Visits	▼ -52.70%	▼ -52.77%
			Low	Daily Emergency Visits	▼ -44.42%	▼ -45.31%
				Daily Inpatient Admissions	▼ -28.65%	▼ -27.04%
				Daily Observation Visits	▼ -43.51%	▼ -41.02%
				Daily Outpatient Visits	▼ -44.22%	▼ -39.25%

- Inpatient admissions, emergency visits and outpatient visits fell at a greater rate in high incidence rates areas (“Hot Spot Hospitals”).
- In hot spot areas, inpatient admissions were down by 42.4%, emergency visits were down 60.2% and outpatient visits fell by 52.7% in the last 30 days.
- As of April 26, 2020

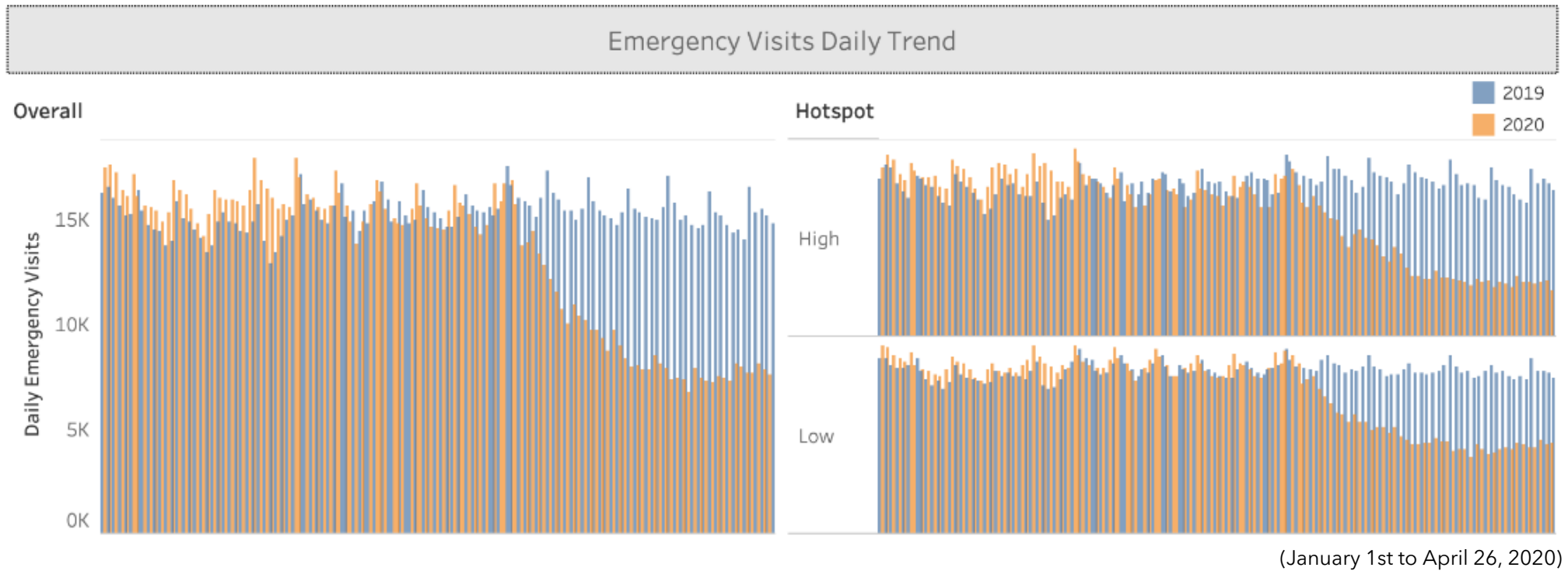
Impact to Daily Inpatient Admissions



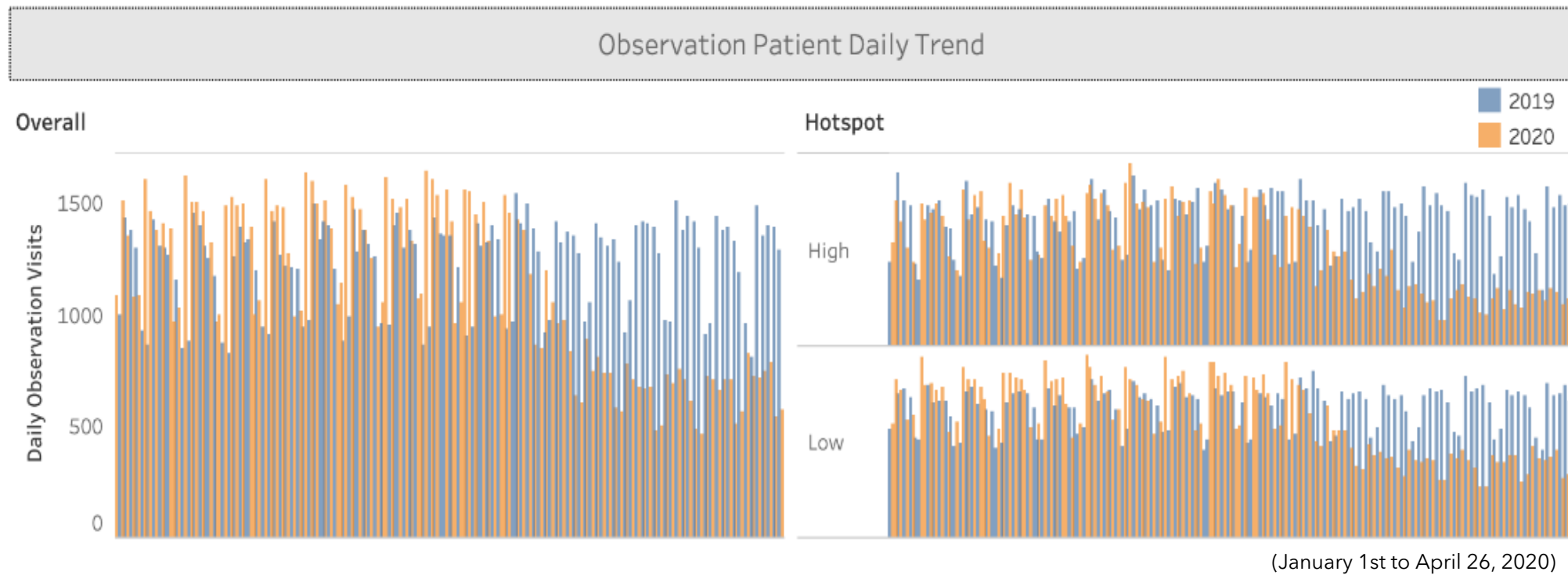
Impact to Daily Outpatient Visits



Impact to Daily Emergency Visits



Impact to Daily Observation Visits



help HEAL *healthcare*

NATIONAL PATIENT AND PROCEDURE VOLUME TRACKER™

Analysis of Clinical Service Lines and Sub Service Lines

Version 5.11.2020

Background

Strata reviewed a total of 2.0 million procedures across 225 common procedure types that took place in a two-week period of 2019 and compared that to the same period of 2020.

Admission dates were between March 24 and April 6th in 2019 and March 22nd and April 4th in 2020. This represents \$2.3 billion in revenue for the 228 hospitals.

The 2020 timeline was chosen to reflect the first full weeks of widespread closures and shelter-in-place orders. The end date was chosen to ensure enough time for patient discharge and diagnosis coding to take place. Validated revenue and costed encounter data available for the spring of 2019 and 2020.

All hospital billing encounters with nonzero charges were pulled. All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities).

Change in patient volume between equivalent time periods in 2019 and 2020 was used to estimate changes in revenue and margin. These must be estimated rather than directly measured, because the length of the billing and payment cycle (60 to 90 days) means that payment information from late March and April is substantially incomplete.

2M	<i>Procedures</i>
225	<i>Most Common Diagnoses Types</i>
\$2.3B	<i>Revenue</i>
2	<i>Week Period</i>

Findings: Fewer Americans Sought Hospital Care

Among the findings from the Tracker are significant recent reductions in patient encounters (both inpatient and outpatient) for so-called elective care that is crucial to maintaining the health of millions of Americans

- Daily inpatient days decreased by 33.4% on average for all hospitals and 42.4% in hot spot areas. Days are declining less rapidly due to long COVID-19 stays.
- Daily emergency room visits decreased by 49.7% on average for all hospitals and 60.2% in hot spot areas
- Daily outpatient visits decreased by 47.1% on average for all hospitals and 52.7% in hot spot areas

	All	High Hot Spots
Inpatient Days ↓	-33%	-42%
ER Visits ↓	-50%	-60%
Outpatient Visits ↓	-47%	-53%

(Through April 26, 2020)

Estimated Volume Losses by Service Line 2019 vs 2020

Ophthalmology	Spine	Gynecology	Orthopedics	ENT	Endocrine
81%	76%	75%	74%	72%	68%
Dermatology	Gastroenterology	Rheumatology	Neurosciences	General Medicine	Urology
67%	67%	66%	66%	64%	62%
Genetics	Vascular	Hepatology	Cardiology	Pulmonology	Breast Health
60%	59%	58%	57%	56%	55%
General Surgery	Nephrology	Hematology	Allergy & Immunology	Behavioral Health	Burns & Wounds
54%	52%	49%	48%	45%	44%
Cancer	Obstetrics	Infectious Disease	Neonatology	Not Assigned	Normal Newborn
37%	30%	23%	20%	4%	2%

Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)

Impact to Top 10 Inpatient Procedures and Surgeries

Primary Knee Replacement	- 99%	Percutaneous Coronary Intervention	- 44%
Lumbar/Thoracic Spinal Fusion	- 81%	Fracture Repair	- 38%
Primary Hip Replacement	- 79%	C-Section	+ 2%
Diagnostic Catheterization	- 65%	Regular Delivery	+ 1%
Diagnostics	- 60%	Mechanical Ventilation	+ 24%

Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)

Impact to Inpatient and Outpatient Encounters

Cataracts	- 97%	Chronic Otitis Media and Sinusitis	- 75%	Asthma	- 62%
Sleep Apnea	- 91%	Hypertension	- 74%	Ischemic Stroke	- 56%
Glaucoma	- 88%	Hyperlipidemia	- 74%	Congestive Heart Failure	- 55%
Osteoarthritis	- 88%	Neuro Pain and Neuropathy	- 71%	Chest Pain (non-cardiac)	- 44%
Coronary Heart Disease	- 75%	Care for Diabetes	- 67%	Prostate Cancer	- 44%

Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
Care Family definition per Sg2 Care Grouper™

help HEAL healthcare

NATIONAL PATIENT AND PROCEDURE VOLUME TRACKER™

Clinical Service Line Volume and Revenue Trends

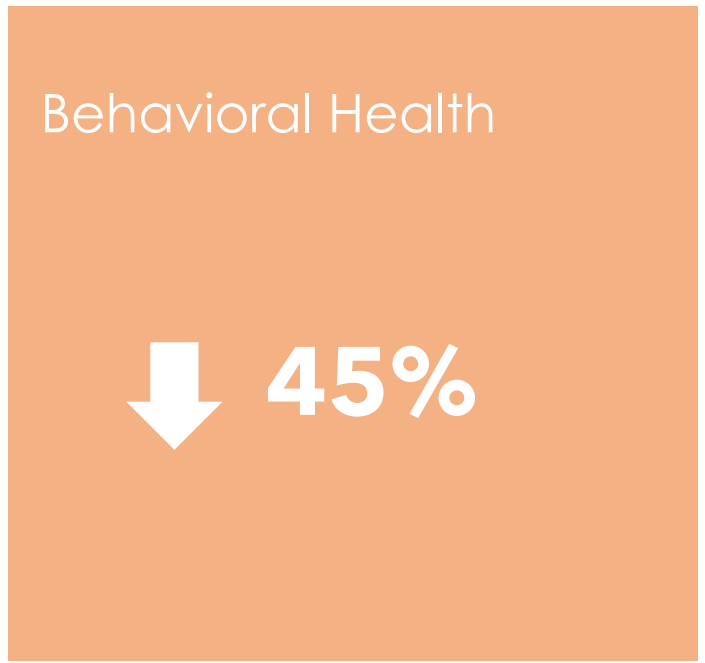
Version 5.11.2020

Allergy & Immunology

 **48%**

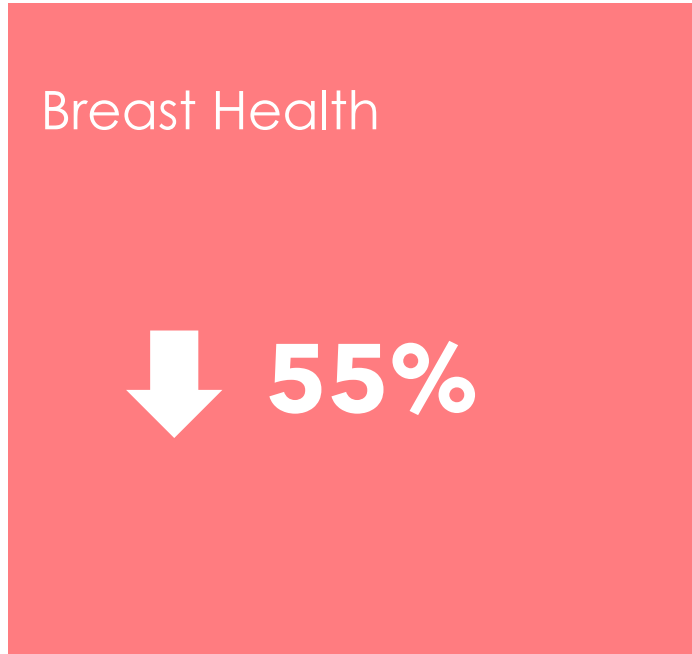
- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)

Care Family	Volume Loss (%)
Allergy	-65%
Transplant Aftercare	-28%
Immunological Deficiency	-28%



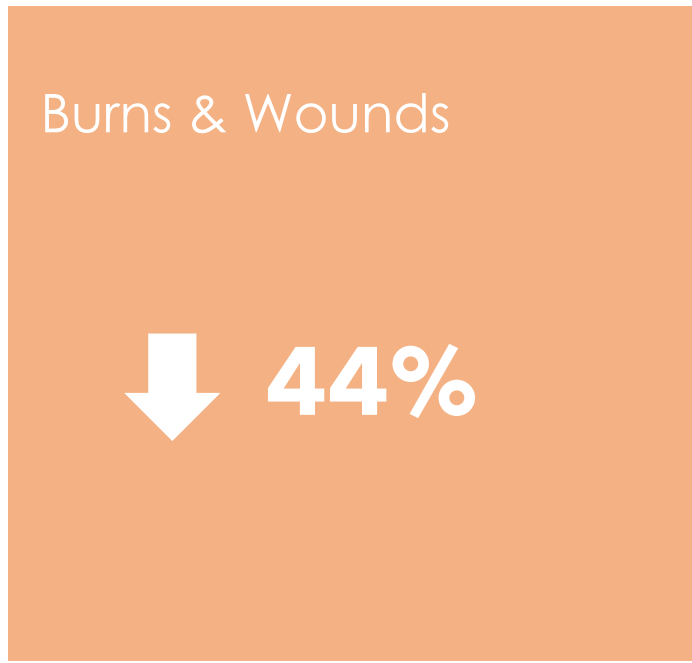
Care Family	Volume Loss (%)
Learning Disorders	-85%
Autism	-75%
Adjustment Disorders	-61%
Eating Disorders	-60%
Attention Deficit Hyperactivity Disorder	-49%
Mood Disorders, Episodic	-49%
Anxiety and Personality Disorders	-47%
Substance Use Disorders	-46%
Trauma-Related Disorders	-40%
Mood Disorders, Persistent	-35%
Bipolar Disorders	-25%
Psychosis	-22%
Poisonings - Commonly Abused Drugs	-10%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



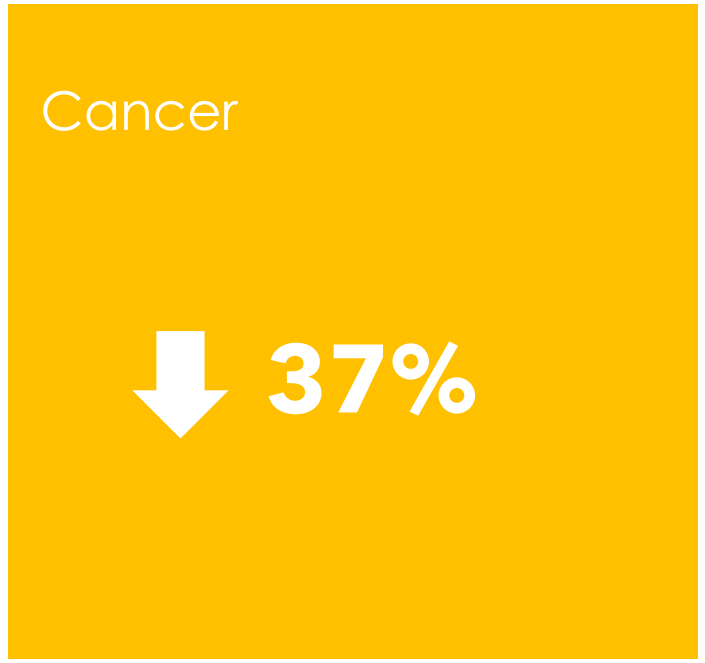
Care Family	Volume Loss (%)
Breast Conditions - Non-Cancer	-55%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



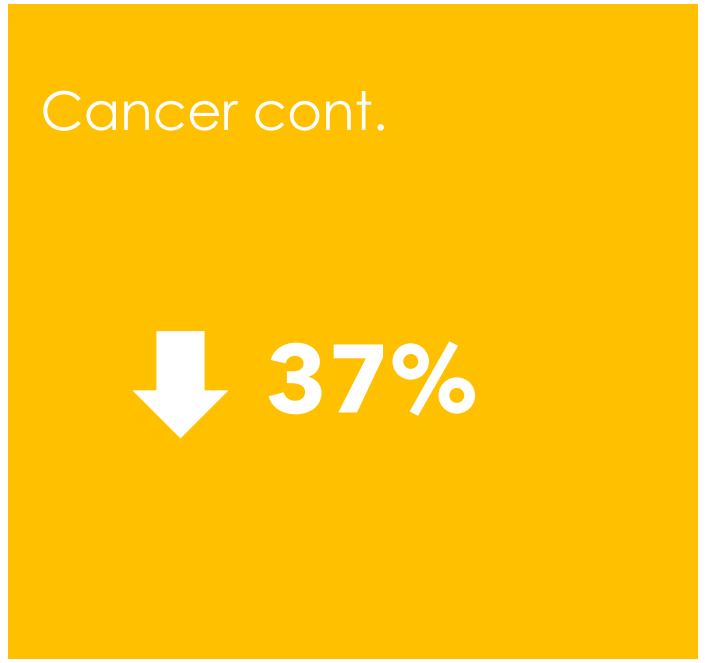
Care Family	Volume Loss (%)
Soft Tissue Ulcers and Gangrene	-53%
Open or Superficial Wounds	-42%
Burns	-41%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



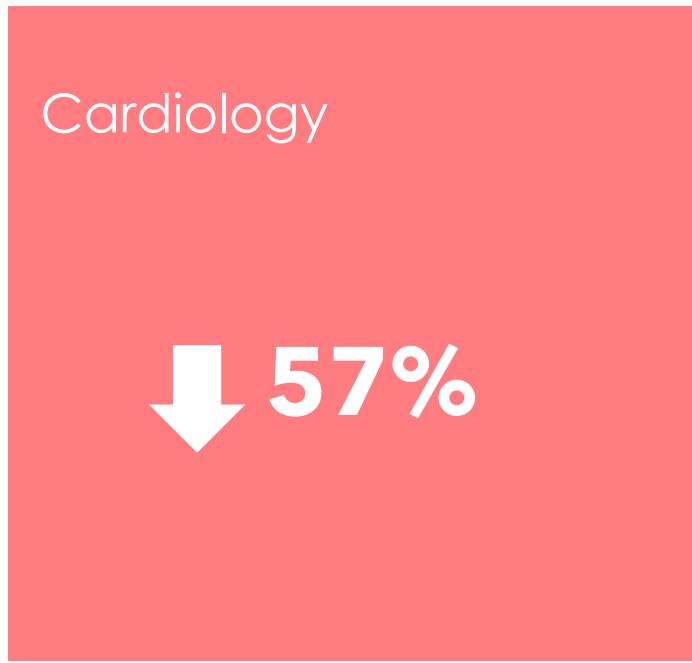
Care Family	Volume Loss (%)
Ovarian Cancer	-37%
Multiple Myelomas	-36%
Hodgkin's Lymphoma	-36%
Head and Neck Cancers	-34%
Liver Cancer	-33%
Other GI Cancers, Including Stomach and Esophagus	-33%
Lung Cancer	-32%
Not Otherwise Classified and Other Cancers	-31%
Leukemias	-30%
Colorectal Cancer	-28%
Testicular and Other Male Genitourinary Cancers	-28%
Melanoma	-28%
Pancreas Cancer	-16%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



Care Family	Volume Loss (%)
Uterine Cancer	-43%
Thyroid Cancer	-49%
Liver Cancer	-33%
Bladder Cancer	-37%
Ovarian Cancer	-37%
Bone Cancer and Other Sarcomas	-40%
Renal Cancer	-42%
Pancreas Cancer	-16%
Melanoma	-28%
Bone Metastases	-39%
Hodgkin's Lymphoma	-36%
Testicular and Other Male Genitourinary Cancers	-28%
Neuroblastoma and Adrenal Cancer	-38%
Liver Cancer	-33%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



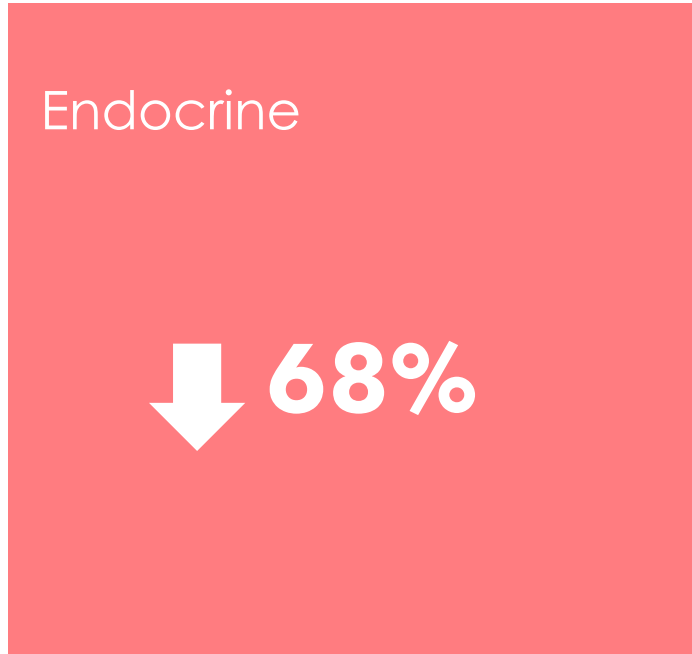
Care Family	Volume Loss (%)
Cardiac Anomaly - Septal Defects	-76%
Coronary Heart Disease	-75%
Pulmonary and Other Heart Disease	-73%
Cardiac Anomaly - Tetralogy of Fallot	-73%
Cardiac Anomaly - Other	-69%
Heart Valve Disease	-69%
Cardiac Anomaly - Single Ventricle Defects	-67%
Carditis and Cardiomyopathy	-63%
Myocardial Infarction	-57%
Congestive Heart Failure	-55%
Dysrhythmia	-50%
Chest Pain - Noncardiac	-44%
Complication of Device, Implant or Graft - Cardiovascular	-44%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



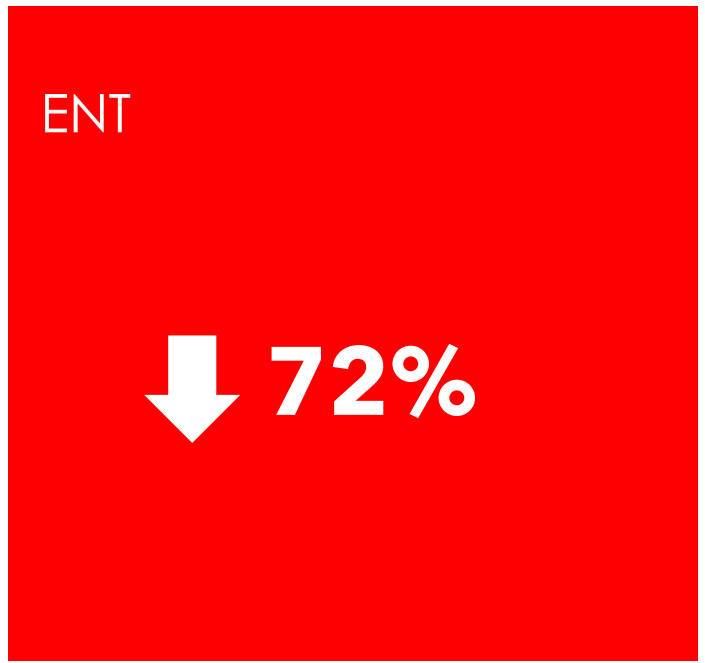
Care Family	Volume Loss (%)
Benign Skin Neoplasms	-81%
Dermatologic Disorders	-77%
Dermatitis and Rashes	-73%
Skin Infection	-54%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



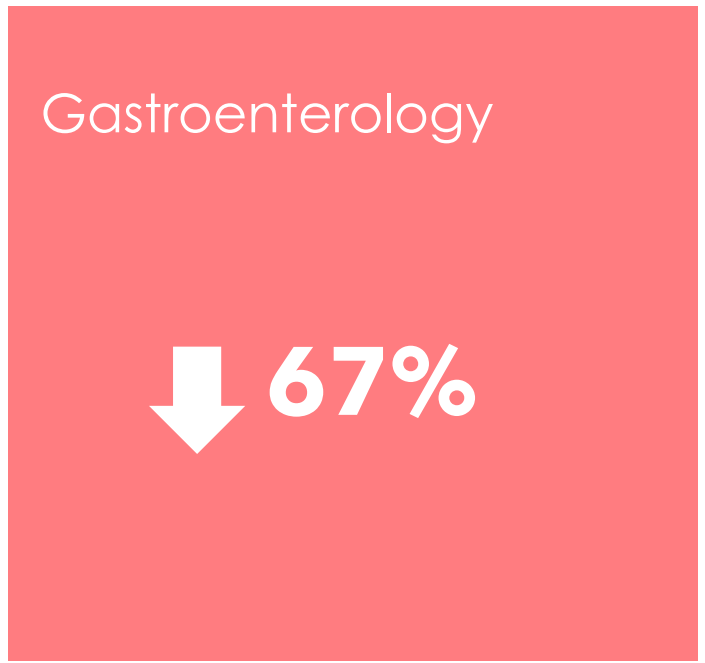
Care Family	Volume Loss (%)
Thyroid Disorders	-71%
Diabetes Mellitus	-67%
Other Endocrine Disorders	-62%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



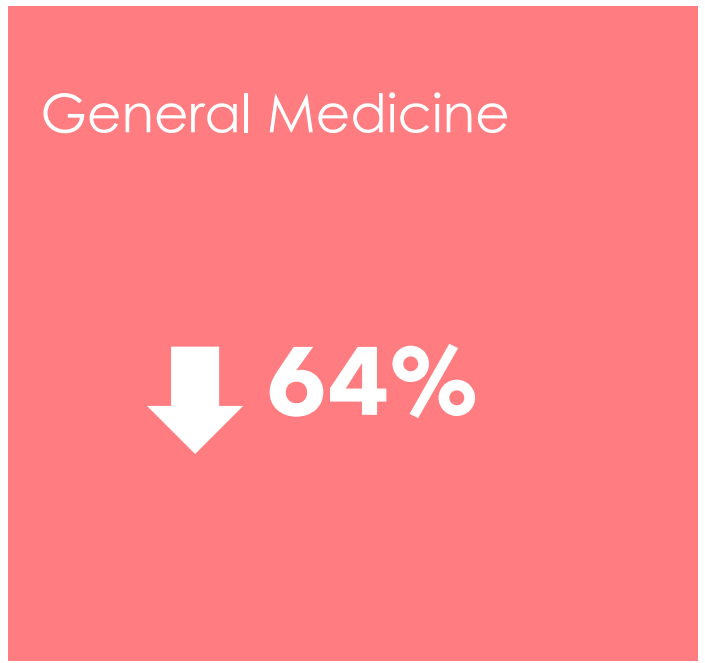
Care Family	Volume Loss (%)
ENT/Cleft Lip Anomaly	-86%
Hearing Loss	-84%
Chronic Otitis Media and Sinusitis	-75%
Airway Abnormality Including Peritonsillar Abscess	-74%
Acute Otitis Media and Sinusitis	-74%
Other Ear Disease	-74%
Dizziness	-68%
Tonsillitis	-65%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



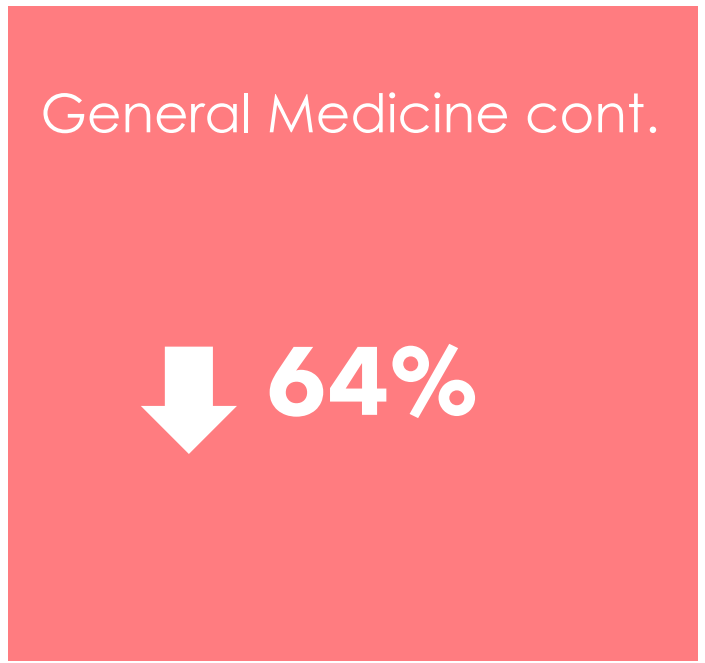
Care Family	Volume Loss (%)
GI Benign Neoplasms and Polyps	-84%
Esophageal Disease Including GERD	-77%
Other Gastrointestinal Diagnosis	-71%
Gastritis and Gastroduodenal Ulcer	-69%
Diseases of the Anus/Rectum	-68%
Gastrointestinal Congenital Anomaly	-66%
Inflammatory Bowel Disease	-56%
Gastrointestinal Hemorrhage	-45%
Pancreatic Disease	-43%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



Care Family	Volume Loss (%)
Obesity	-80%
Preventative Wellness Visits	-79%
Conjunctivitis	-75%
Screenings and Follow-Up Encounters	-75%
Hypertension	-74%
Hyperlipidemia	-74%
Nutritional Deficiencies	-71%
Fatigue	-68%
Oral and Dental Disease	-65%
Other Diagnoses of Pain	-63%
Nausea and Vomiting	-63%
Abdominal Pain	-62%
Syncope	-59%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



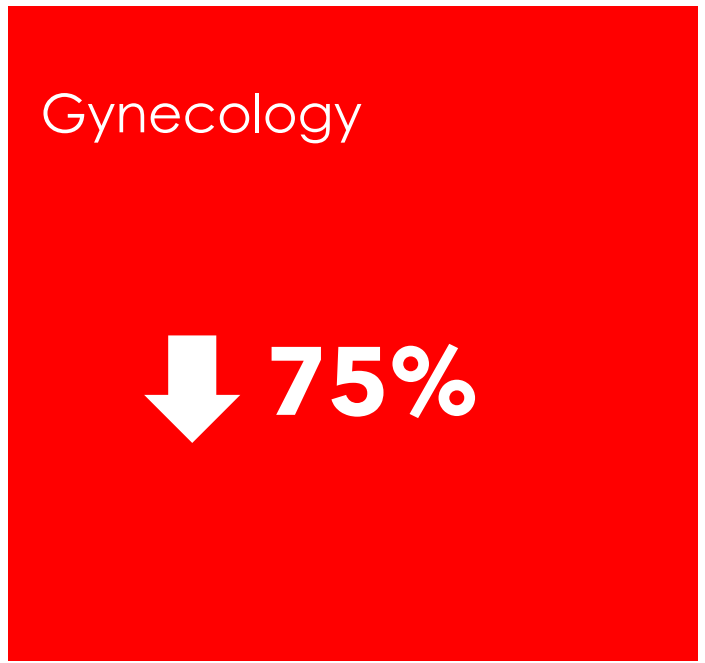
Care Family	Volume Loss (%)
Abuse and Maltreatment	-57%
Other Therapy and Education	-55%
Urinary Tract Infection	-47%
Unclassified	-47%
Fluid/Electrolyte Disorder	-46%
Poisonings and Toxic Exposures	-37%
Shock	-33%
Nonspecific Clinical and Laboratory Findings	-32%
Bronchitis and Other Upper Respiratory Disease	-26%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



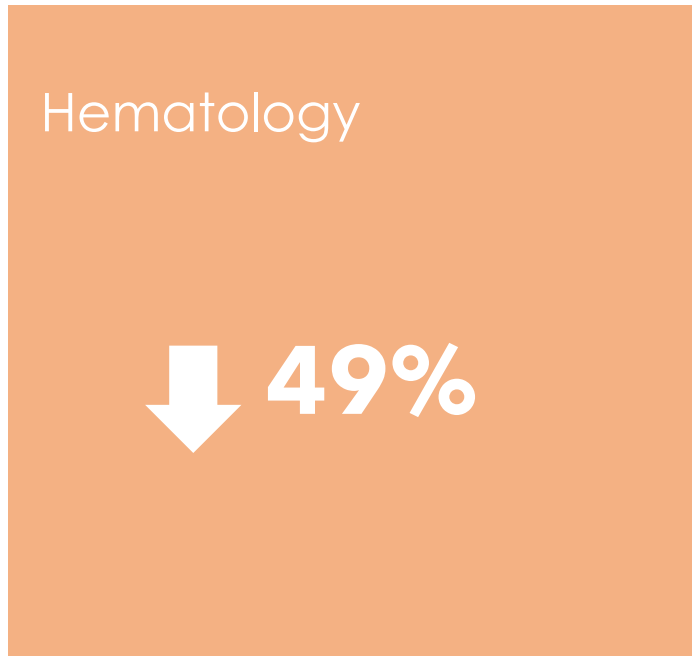
Care Family	Volume Loss (%)
Genetic Syndromes	-73%
Inborn Errors of Metabolism	-51%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



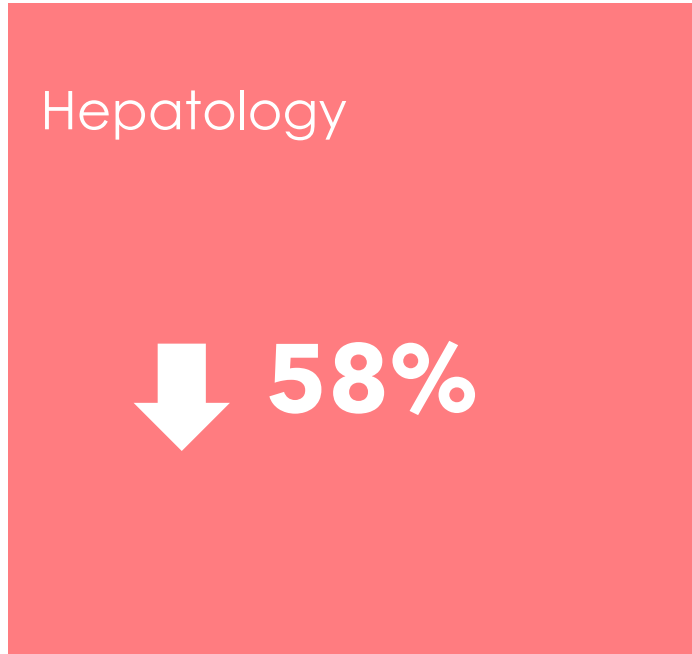
Care Family	Volume Loss (%)
Gynecologic Wellness and Screening	-86%
Pelvic Floor Disorders	-74%
Benign Gynecologic Neoplasms	-70%
Gynecologic Hormonal Disorders	-68%
Gynecologic Infectious Disease	-65%
Contraception	-63%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



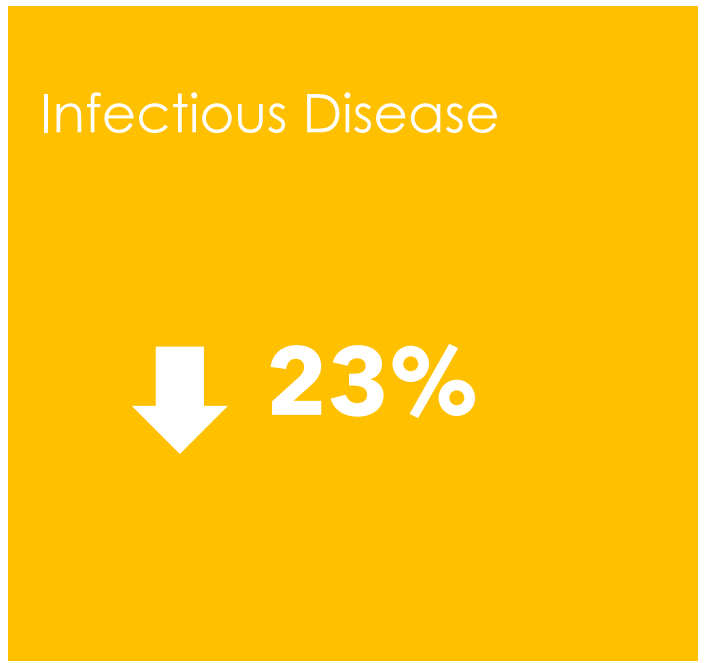
Care Family	Volume Loss (%)
Anemia	-53%
Disorders of Hemoglobin, Including Sickle Cell	-46%
Other Hematologic Disorders	-44%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



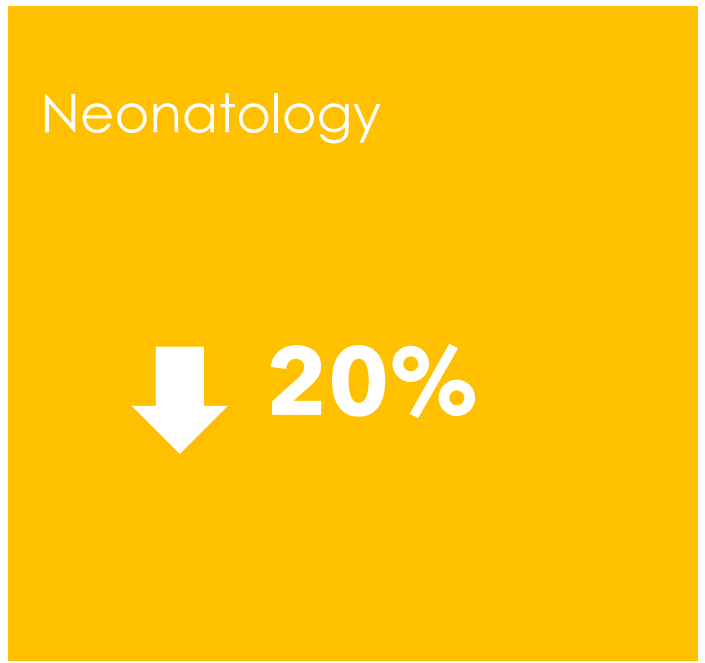
Care Family	Volume Loss (%)
Hepatitis	-73%
Fatty Liver Disease	-73%
Advanced Liver Disease	-56%
Liver Disease, Noninfective	-48%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



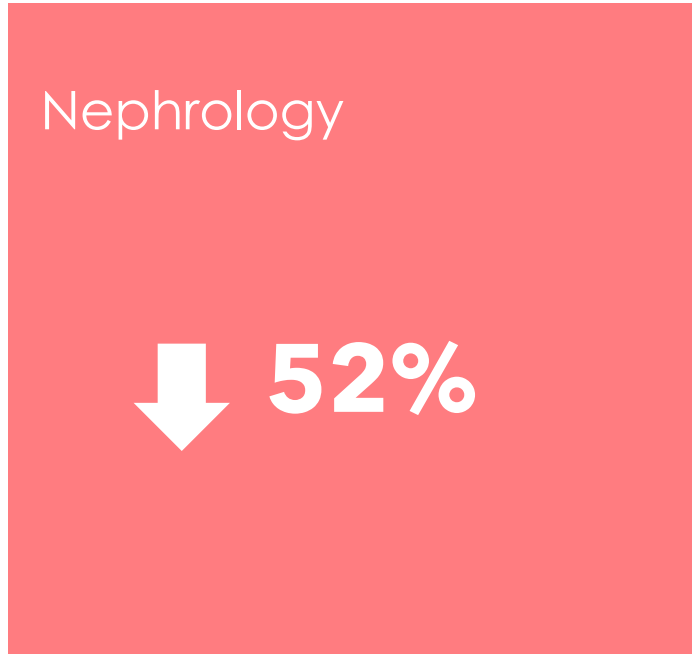
Care Family	Volume Loss (%)
Influenza	-88%
HIV Infection	-69%
Gastroenteritis and Intestinal Infections	-65%
CNS Infections	-60%
Sexually Transmitted Diseases	-52%
Clostridium Difficile	-46%
Abscess	-41%
Septic Arthritis and Osteomyelitis	-31%
Pneumonia Including Aspiration Pneumonia	-19%
Tuberculosis	-12%
Septicemia	2%
Other Infectious and Parasitic Diseases	29%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



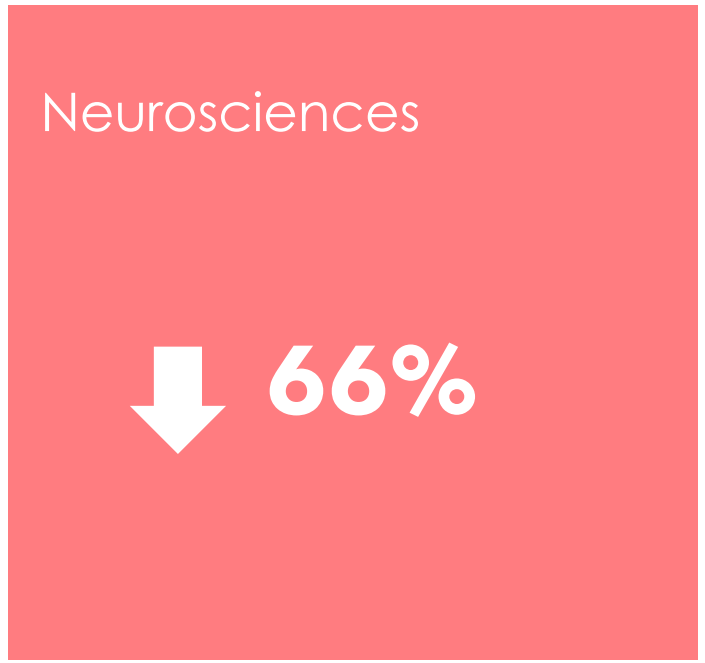
Care Family	Volume Loss (%)
Neonates, Died or Transferred to Another Acute Care Facility	-44%
Prematurity w/o Major Problems	-38%
Extreme Immaturity or Respiratory Distress Syndrome, Neonate	-34%
Prematurity w/ Major Problems	-20%
Neonate w/ Other Significant Problems	-16%
Full Term Neonate w/ Major Problems	-9%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



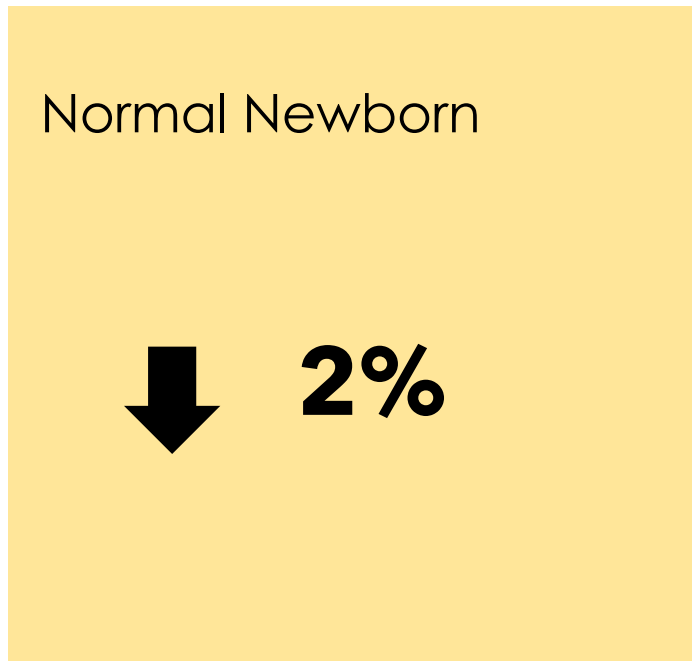
Care Family	Volume Loss (%)
Chronic Kidney Disease	-57%
End Stage Renal Disease	-45%
Acute Renal Failure	-43%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



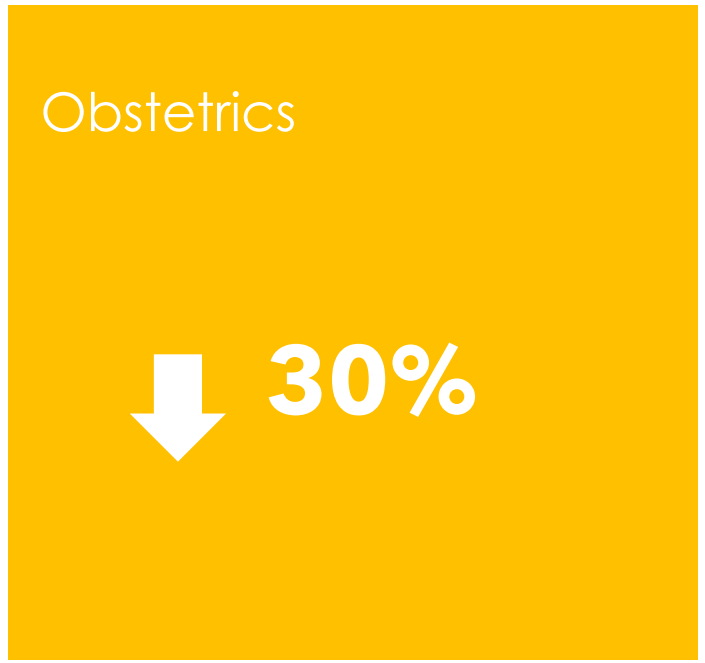
Care Family	Volume Loss (%)
Parkinson's and Movement Disorders	-83%
Cerebral Palsy and Paralysis	-79%
Sleep Disorders	-77%
Hydrocephalus and Spina Bifida	-74%
Neurologic Disease - Other	-72%
Neurovascular Diseases	-70%
Neuro Pain and Neuropathy	-70%
Headache/Migraine	-68%
Concussion	-65%
Epilepsy and Seizure Disorders	-62%
Late Effects of Neuro Trauma, Neurovascular Disease	-61%
Neuromuscular Disease	-58%
Spinal Cord Injury	-58%
Dementia and Cognitive Disorders	-57%
Ischemic Stroke	-56%
Multiple Sclerosis and Demyelinating Diseases	-54%
Transient Ischemic Attack	-48%
Skull Fracture and Major Brain Injury	-43%
Hemorrhagic Stroke	-40%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



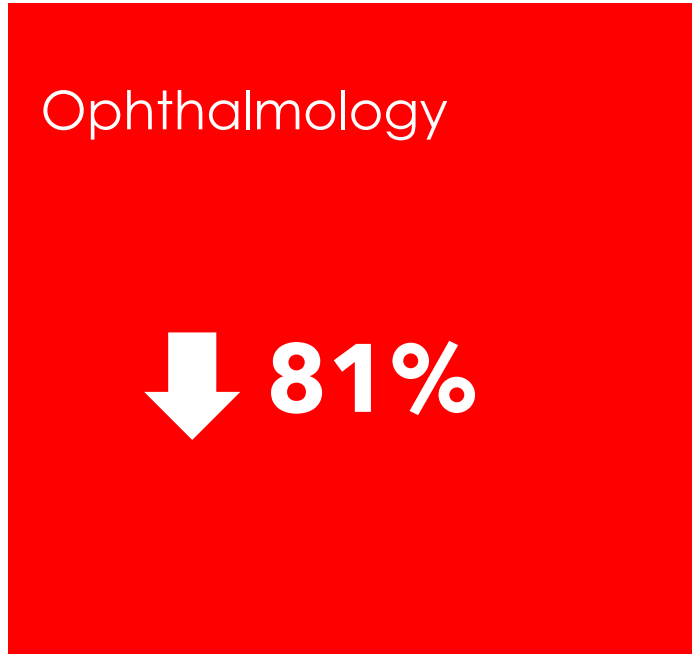
Care Family	Volume Loss (%)
Perinatal Jaundice	-25%
Liveborn	3%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



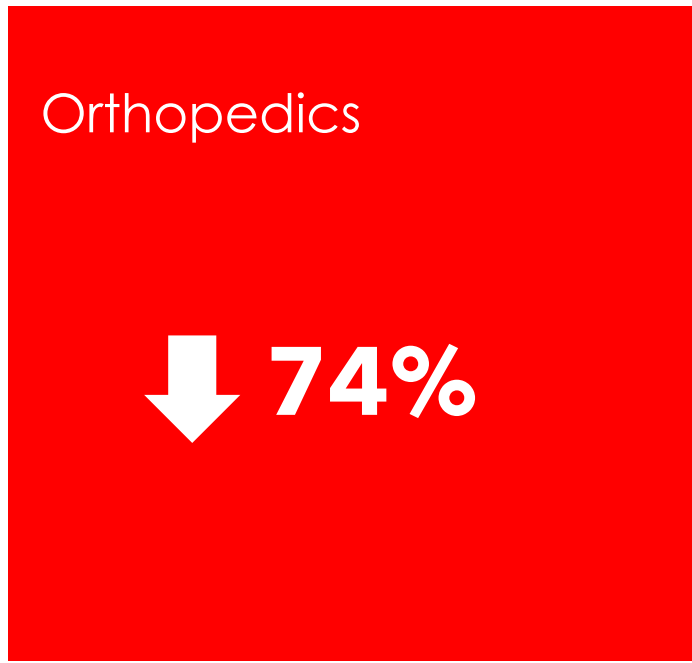
Care Family	Volume Loss (%)
Infertility	-83%
Early Pregnancy w/ Complication or Abortive Outcome	-30%
Antepartum Conditions and High Risk Pregnancy	-30%
Normal Pregnancy/Delivery	-28%
Complications of Labor, Delivery or Postpartum Period	-23%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)
- Note: Normal Newborns, slight increase YoY, are not in Obstetrics Category



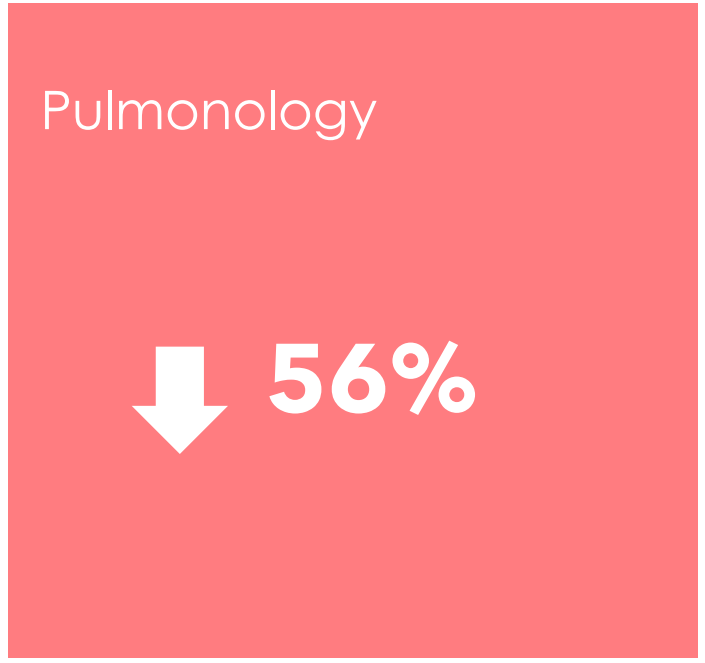
Care Family	Volume Loss (%)
Cataract	-97%
Glaucoma	-88%
Eye and Vision Conditions	-77%
Retinal Conditions	-71%
Corneal Conditions	-66%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



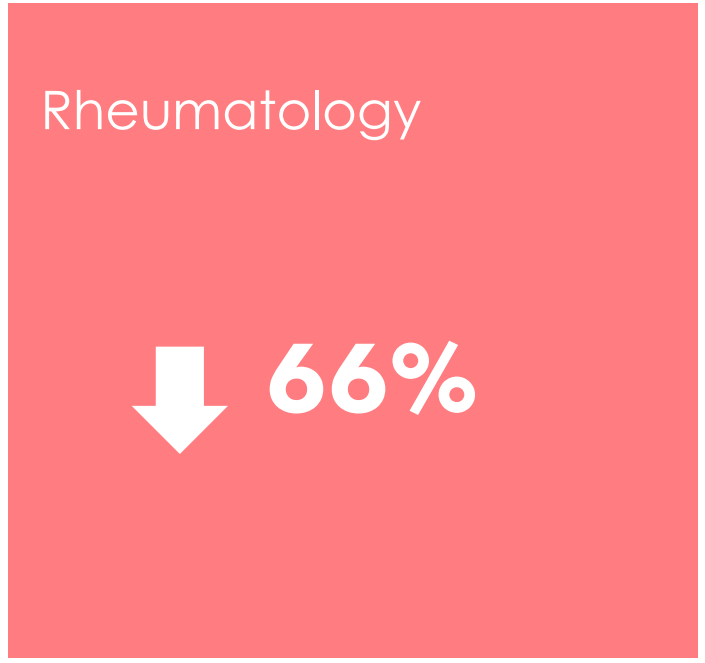
Care Family	Volume Loss (%)
Osteoarthritis	-85%
Musculoskeletal Injury - Knee	-80%
Orthopedic Congenital Anomaly	-78%
Musculoskeletal Injury - Pelvis/Hip/Femur	-77%
Other Musculoskeletal Injuries and Conditions	-76%
Musculoskeletal Injury - Shoulder/Elbow/Upper Arm	-76%
Nonspecific Musculoskeletal Pain	-73%
Musculoskeletal Injury - Lower Leg/Foot/Ankle	-69%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



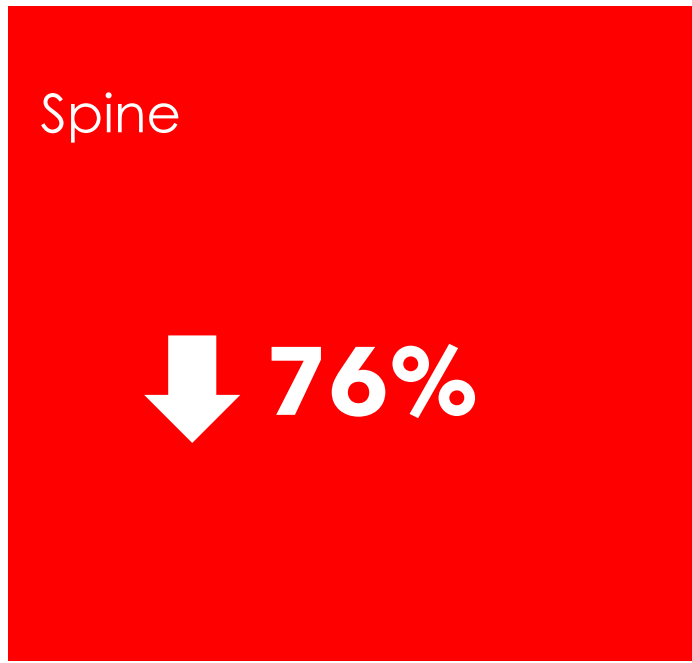
Care Family	Volume Loss (%)
Sleep Apnea	-91%
Pulmonary Congenital Anomaly	-78%
Cystic Fibrosis	-77%
Chronic Lung Disease	-69%
Chronic Obstructive Pulmonary Disease	-68%
Asthma	-62%
Chronic Respiratory Failure and Tracheostomy	-52%
Acute Respiratory Failure	-41%
Respiratory Conditions, including Pleural Effusions	-33%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



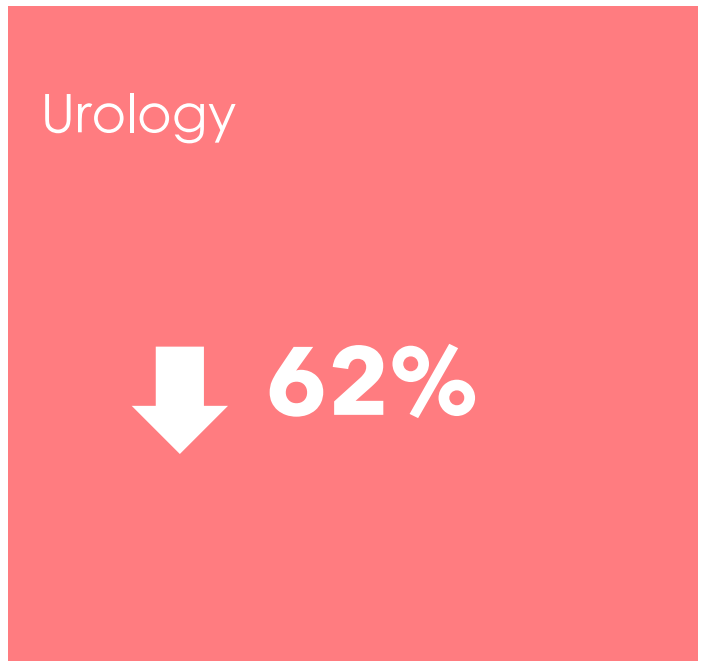
Care Family	Volume Loss (%)
Other Connective Tissue Disorders	-73%
Inflammatory and Autoimmune Diseases	-67%
Rheumatoid Arthritis	-57%
Vasculitis	-50%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



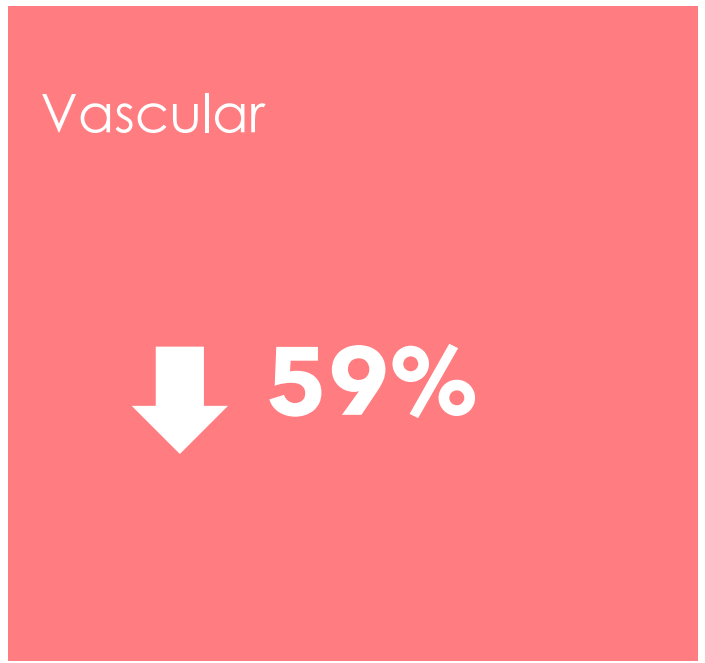
Care Family	Volume Loss (%)
Spine Congenital Anomaly	-86%
Deformities and Curvature of Spine	-86%
Degenerative Spine and Disc Injury	-78%
Nonspecific Back and Neck Pain	-76%
Complication of Device, Implant or Graft - Spine	-55%
Spinal Fracture or Dislocation	-54%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



Care Family	Volume Loss (%)
Genitourinary Congenital Anomaly	-85%
Men's Reproductive Health	-78%
Benign Prostatic Hyperplasia	-76%
Incontinence	-65%
Other Kidney, Bladder and Genitourinary Disease	-62%
Urinary Calculus	-50%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)



Care Family	Volume Loss (%)
Aneurysms	-72%
Disease of Venous System (Varicose Veins, Phlebitis, Hemorrhoids)	-65%
Peripheral Vascular Disease	-62%
Arterial Embolism	-51%
Venous Thromboembolism	-41%

- Model examined YoY comparison for a 2 week period (March 24 - April 6, 2019 and March 22 - April 4, 2020)
- Note: All encounters were processed through the 2020 Sg2 Care Grouper™ to assign Service lines and CARE Families (clinical groupings of like activities)

help HEAL healthcare

NATIONAL PATIENT AND PROCEDURE VOLUME TRACKER™

Financial Impact Analysis

Version 5.11.2020

Increase in Self Pay & Uninsured

The study found that the number of uninsured or self-pay patients has increased dramatically in the last 90 days, mirroring the rise in the national unemployment rate.

- In January, 7% of all inpatient and outpatient encounters in the study cohort were with patients who lacked health insurance.
- By April that figure had risen to 11%
- Early results from May indicate 15% of all patients in the cohort are now uninsured¹
- This represents an increase of 114% in just 90 days

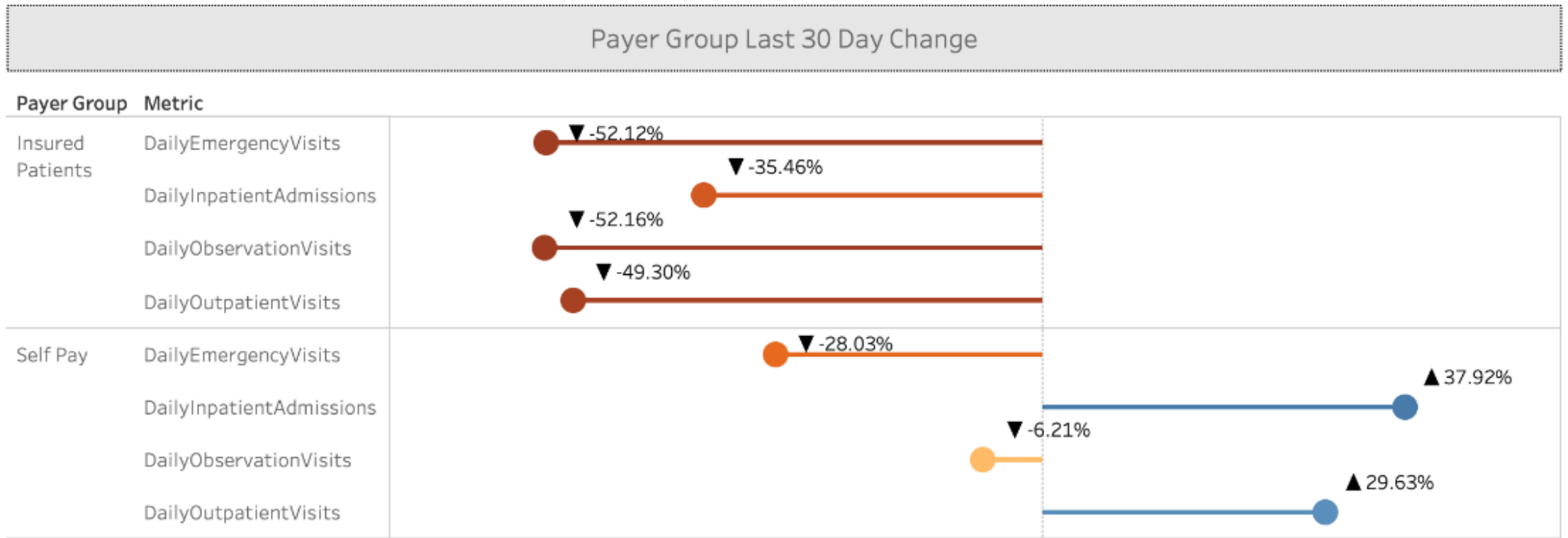
Many of these can be expected to end up on Medicaid rolls, further straining state budgets.

Self Pay Percentage by Month



¹ May results are accurate but preliminary given typical coding delays

Year over Year Variation of the Number of Self-Pay Patients



(January 1st to April 26, 2020)

Analysis of Lost Revenue for Hospitals

According to the Centers for Medicare and Medicaid Services (CMS), hospital care accounts for 33% of healthcare spend, and physician and clinical services account for 20%.

Taken together, the provider side of healthcare accounts for 53% or \$2.1 trillion of the projected \$4 trillion in national health expenditures in 2020.

Assuming that a 50% drop in patient and procedure volume translates into an equivalent loss of revenue, the monthly impact would be \$60.1 billion

If the impact of COVID-19 were to continue at half the current impact for the second half of the year, an additional relief package of over \$300 billion would be needed in 2020 alone.

The relief would only account for recovery of lost revenue and does not factor in or cover the additional costs that hospitals have incurred.

Annual Spend (source: Centers for Medicare and Medicaid)	
Projected National Healthcare Spend in 2020	\$ 4,014,200,000,000
Hospital Care (33% of Total)	\$ 1,324,686,000,000
TOTAL	\$ 1,324,686,000,000
Monthly Spend	
Projected NHE Spend in 2020	\$ 333,333,333,333
Hospital Care	\$ 110,390,500,000
Total per Month	\$ 110,390,500,000
Impact of Loss in Volume	
Hospital Care	\$ 60,162,822,500
Total per Month	\$ 60,162,822,500
<small>(source: https://www.cms.gov/files/document/highlights.pdf and https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected)</small>	
<small>Note: Hospital Care = 33% of total spend, Physician and Clinical Services = 20% of total spend)</small>	

help HEAL healthcare

NATIONAL PATIENT AND PROCEDURE VOLUME TRACKER™

Appendix

Version 5.11.2020

Methodology Details

Analysis of volumes and payer source of admissions, observation stays, emergency room and hospital outpatient visits trends for comparable three month, 30 and 7 day periods in 2019 and 2020

- Data Source: Health System billing encounter data for all 209 short term acute care hospitals from 49 health systems.
- Timeframe: January 1st to April 26th.
- Updates: The data will be updated weekly.
- Data Processing Considerations:
 - Patient Days: Includes inpatient and observation encounters with a length of stay greater than one day. Newborns are excluded from the calculation. For patients without a discharge date, the current date is used as a default date for calculation purposes only.
 - Self Pay: The hospital billing encounter's primary insurance plan and financial class were analyzed to identify patients that did not have insurance.
 - Hot Spots: Hot Spot counties comes from The New York Times (<https://github.com/nytimes/covid-19-data>), based on reports from state and local health agencies. Counties with fewer than 200 total cases are categorized as "Low." Otherwise, the prevalence (number of cases per 100,000 residents) is computed for each county across the StrataSphere combined health system. Counties above the 75th percentile prevalence are categorized as "High," counties between the 25th and 75th percentiles as "Medium," and below the 25th percentile as "Low."

Methodology Details

Analysis of impact of COVID-19 on volumes and revenue by clinical service line and sub service lines

- Data Source: 51 StrataSphere health systems with decision support and valid costed encounter data available for the spring of both 2019 and 2020. Data was originally pulled for 54 health systems; 3 were excluded because some data was missing or not comparable. All hospital billing encounters with nonzero charges were pulled.
- Timeframe:
 - Baseline: Admit dates between March 24 and April 6, 2019.
 - COVID era: Admit dates between March 22 and April 4, 2020.
 - The COVID era timeline was chosen to reflect the first full weeks of widespread closures and shelter-in-place orders. The end date was chosen to ensure sufficient time for patient discharge and diagnosis coding to take place. The time frame will be expanded as time passes.
- Data Processing: All encounters were run through the [2020 Sq2 Care Grouper™](#) to obtain service lines and CARE families. Total actual payments were normalized to be positive across all systems.
- Methodology and Output
 - Use change in patient volume between equivalent time periods in 2019 and 2020 to estimate changes in revenue and margin. These must be estimated rather than directly measured, because the length of the billing and payment cycle (60 to 90 days) means that final payment information from late March and April is substantially incomplete.
 - For all columns, data was aggregated by either service line or CARE family, and the metrics were calculated using the aggregate values.
 - The columns in the output were calculated as follows:
 - Baseline encounters: Total number of encounters in the 2019 time frame.
 - COVID-era encounters: Total number of encounters in the 2020 time frame.
 - Volume loss: Baseline encounters minus COVID-era encounters.
 - Percent volume loss: Volume loss divided by baseline encounters.
 - Baseline total payments: Sum total of actual payments in the 2019 time frame.
 - Est. loss in total payments: Baseline total payments multiplied by percent volume loss. This assumes that a loss of volume corresponds to an equivalent loss in revenue

Additional Resources

Understanding the ongoing impact of COVID-19 on patient and procedure volume will be mission critical to effectively navigate our healthcare delivery system through this crisis. In addition to the National Patient and Procedure Volume Tracker, Strata has developed a series of resources and best practices to help hospitals tackle the planning, analytics and performance challenges resulting from the COVID-19 outbreak.

- **COVID-19 Cost Capture Recovery Model:** Accessing reimbursement, relief and funding programs at both the federal and state levels will require the complete and accurate accounting of costs related to COVID-19 by hospital and healthcare delivery systems. The COVID-19 Cost Capture and Recovery Model provides a complete process for understanding the cost and revenue impact of COVID-19 in order to support the efforts of healthcare providers. [Learn more about the model.](#)
- **COVID-19 Assumption Tracker:** Available exclusively to Strata customers, this tool provides a consolidated list of assumptions health systems should now consider when building a financial forecast which takes into account the impacts of COVID-19.
- **COVID-19 Starter Set Dashboards:** Strata has created a specific set of dashboards to eliminate time needed from your analytics team to develop new COVID-19 specific reports. The dashboards combine insight from Strata's experts and the 200+ healthcare delivery systems within the Strata network and are available free for Strata customers

Additional resources including a webinar series and articles can also be found here: www.stratadecision.com/covid_help

Contributors



Jennifer Ittner
Senior Director
StrataDataScience



Steve Lefar
Executive Director,
StrataDataScience & StrataSphere



Dan Michelson
Chief Executive Officer,
Strata Decision Technology



Xun Pei
Data Scientist
StrataDataScience



Tom Scanlan
Data Scientist
StrataDataScience



Aaron Wilson
Data Scientist
StrataDataScience