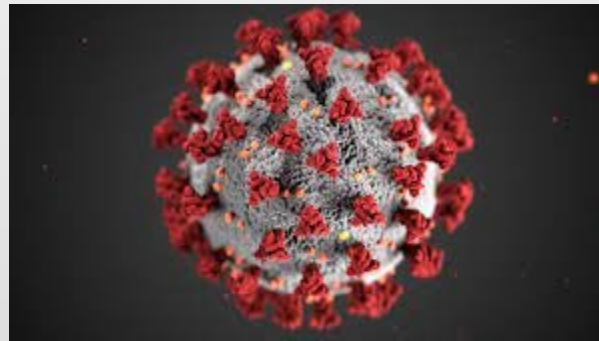


# Impact of COVID-19 on Vascular Care in Florida



Salvatore T. Scali, MD, FACS  
Division of Vascular Surgery & Endovascular Therapy  
University of Florida, Gainesville

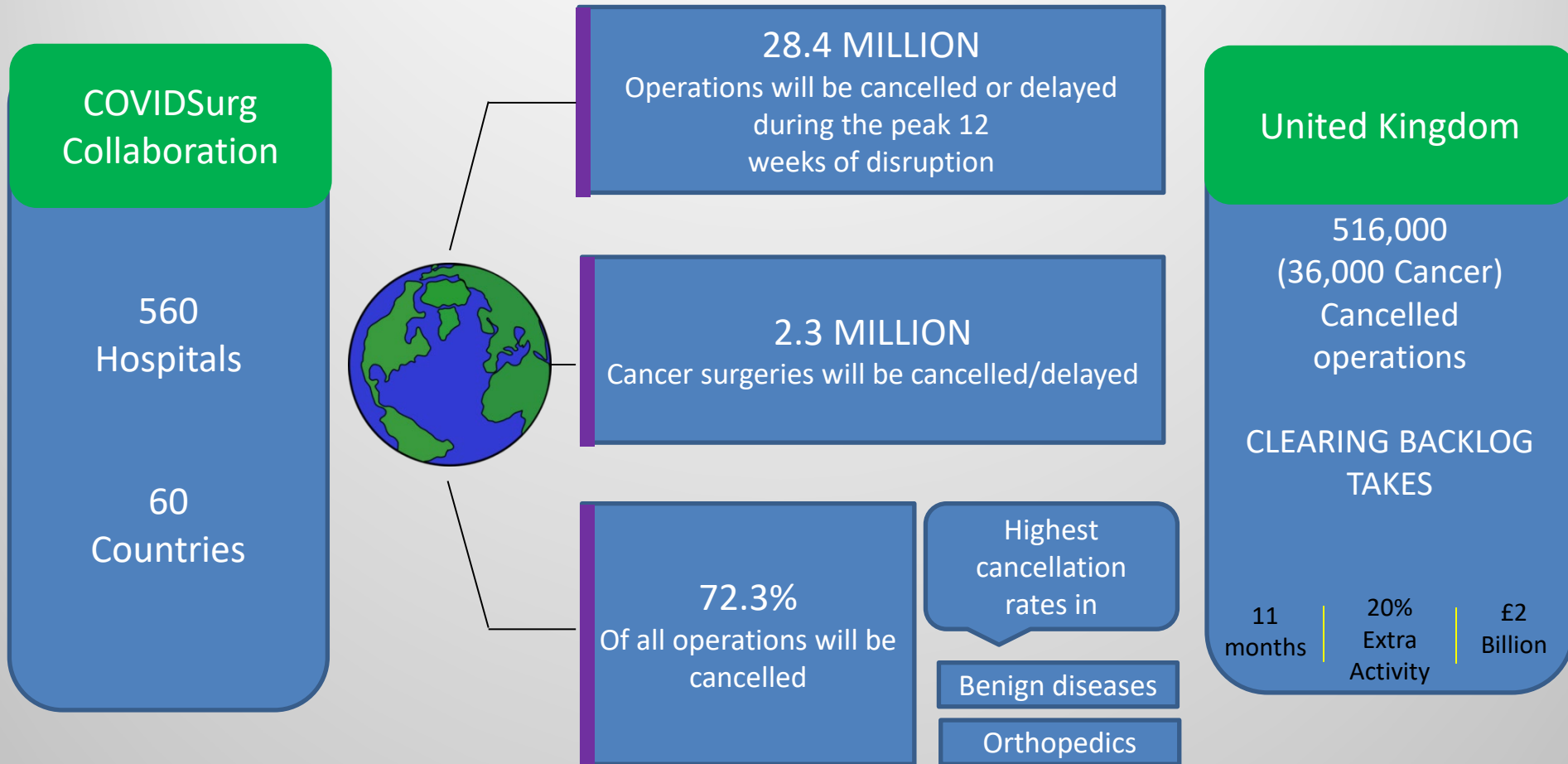
# Disclosures

- None

# COVID-19 Pandemic

- **March 2020**
  - Watershed moment in global healthcare
- Significant reduction in elective surgery
- Incredible strain on healthcare systems internationally
- Tremendous uncertainty anxiety (patients/health care providers, etc.)

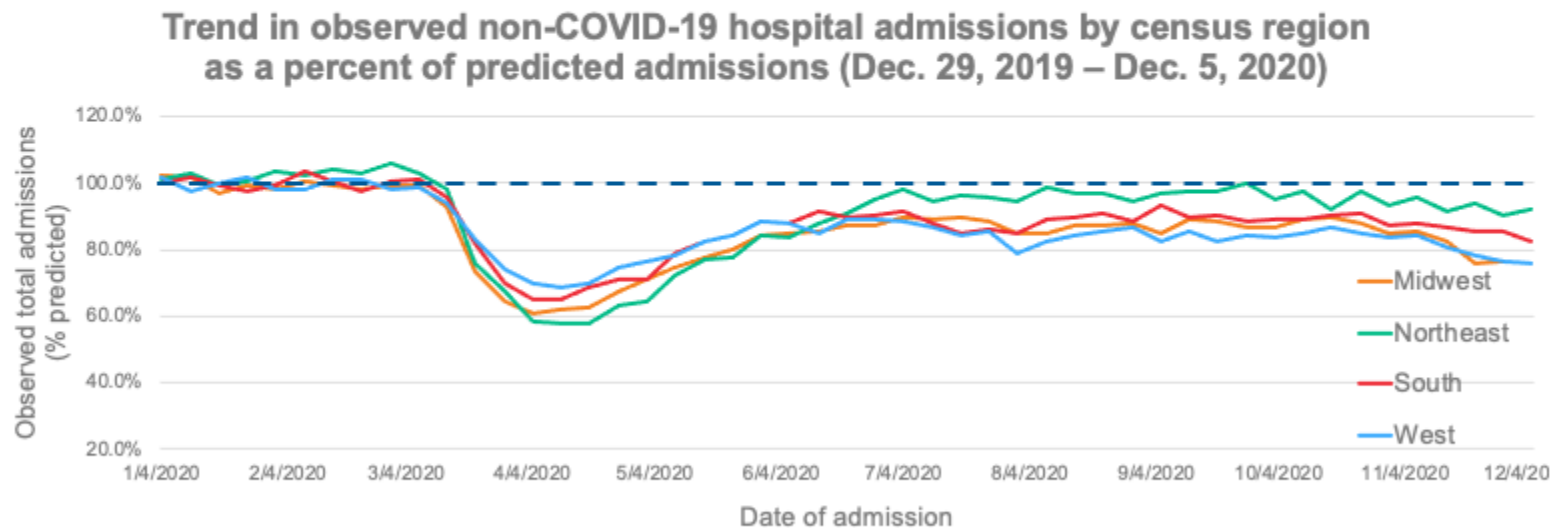
# Global Predictive Models



# National Trends in Hospital Admissions

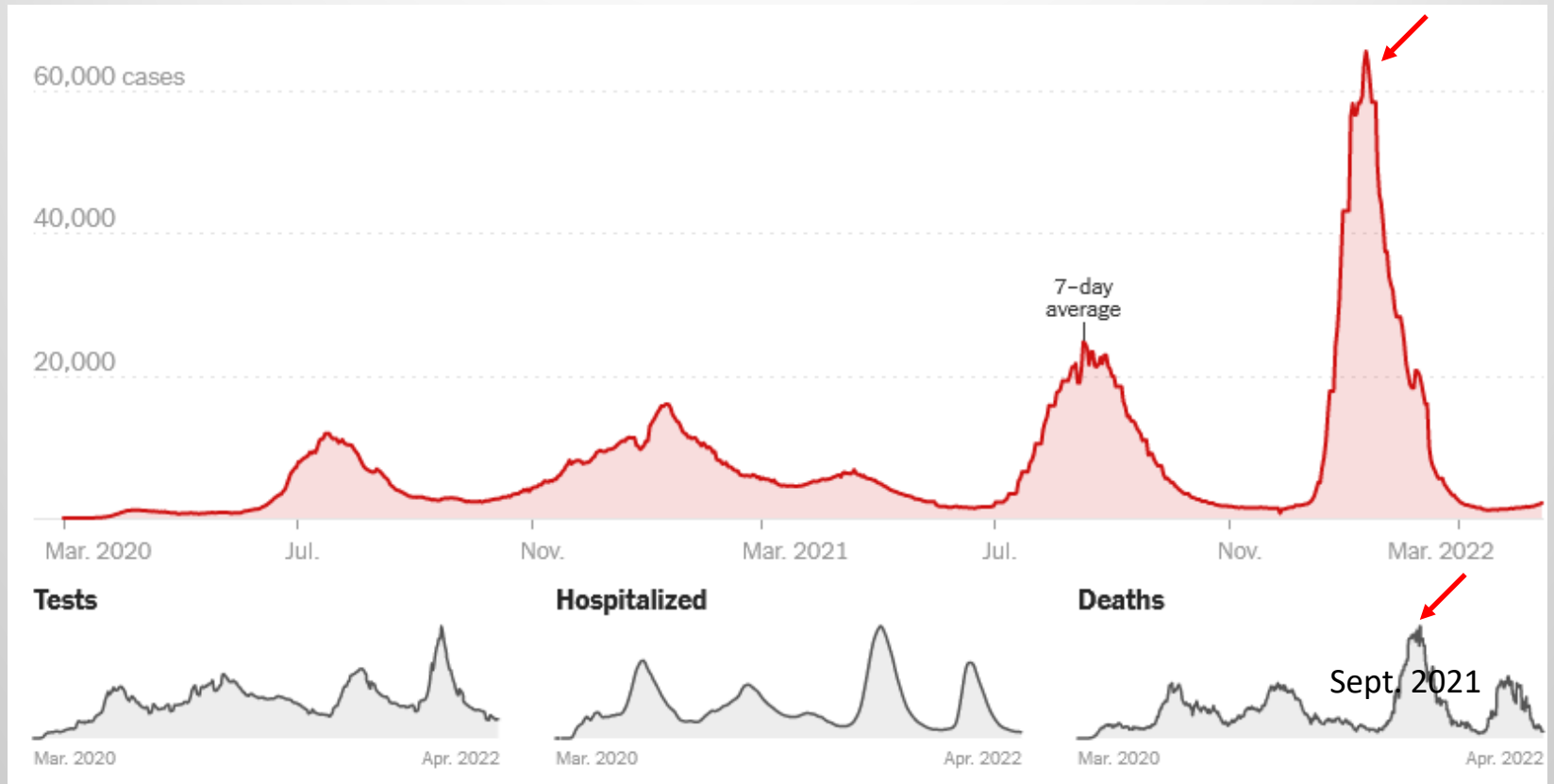
Figure 3

After A Steep Drop in Non-COVID-19 Admissions in the Spring, There Was Second Decline in the Midwest and West in the Fall



SOURCE: Epic and KFF analysis of Epic Health Record System COVID-19 related data as of January 2021.

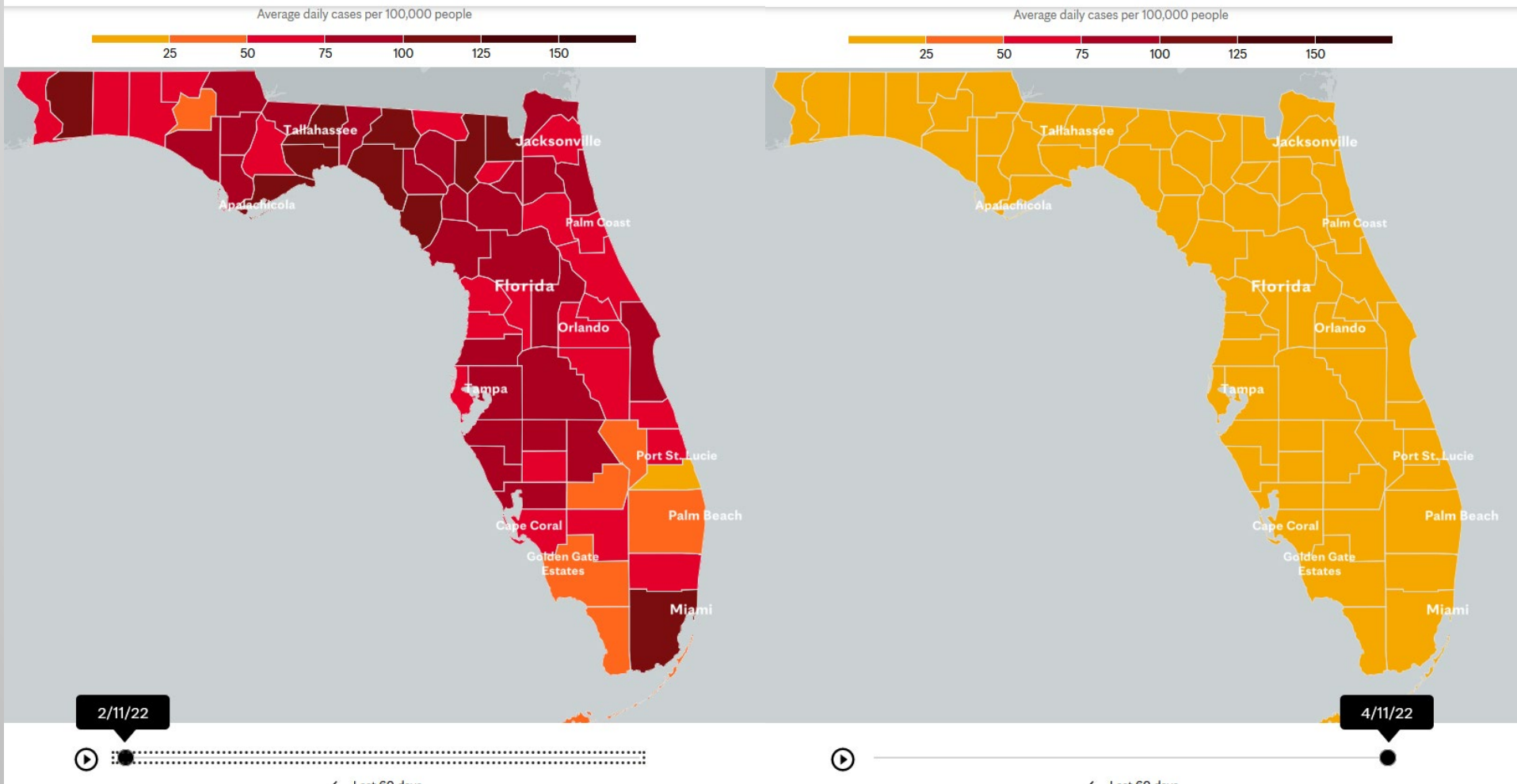
# Florida COVID-19 Cases



<b>Total Cases</b>	<b>5,875,505</b>
<b>Deaths</b>	<b>73,656</b>

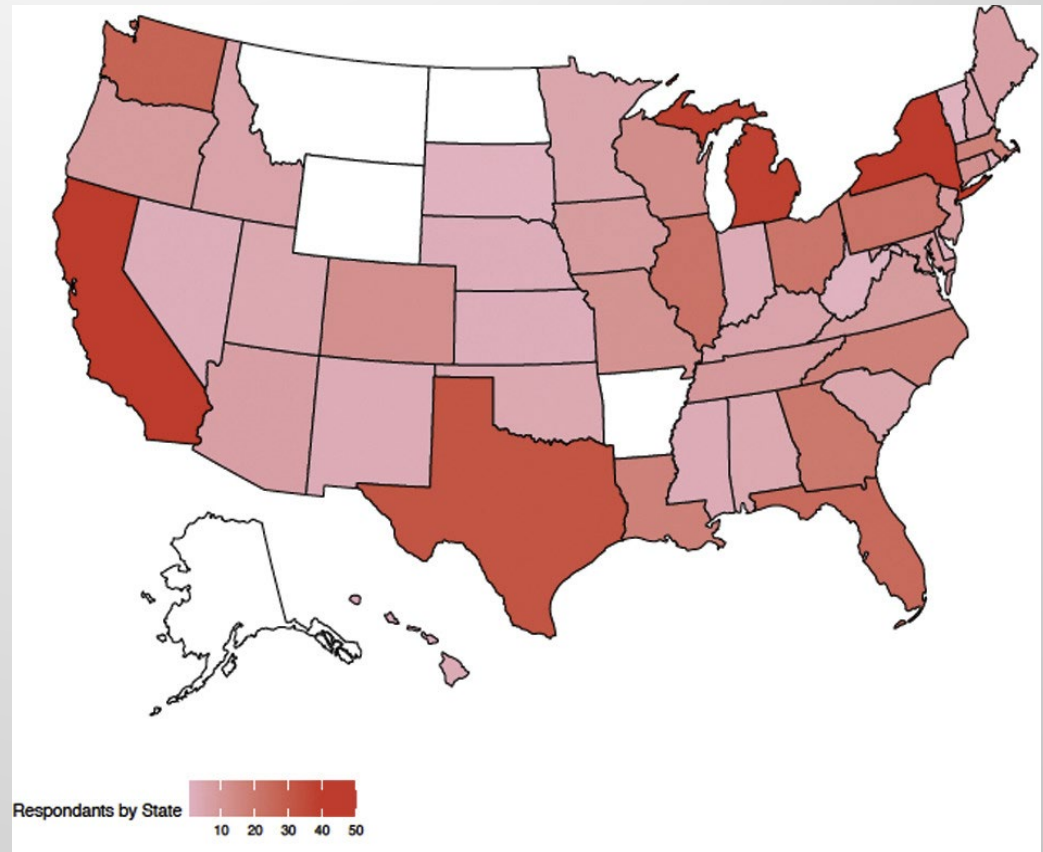
- 1 in 4 residents have been infected at least once
- 1 in 292 residents died
- January 2022 = month with highest average cases
- September 2021 = month with highest average deaths
- 67% fully vaccinated (all ages)
- 79% at least one vaccine dose (all ages)

# Recent Average Daily COVID-19 Cases



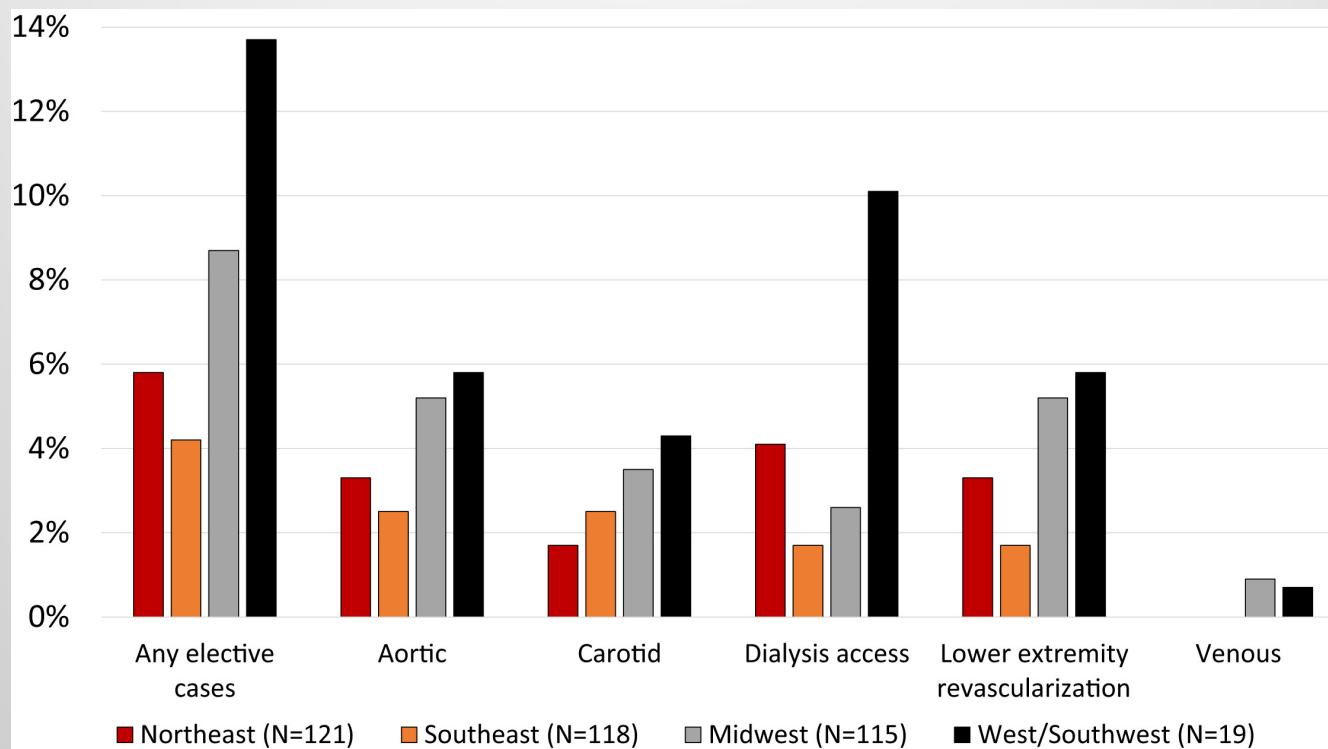
# Impact of COVID19 & U.S. Vascular Practice

- 535 Vascular surgeons responded
- Regions-  
Northeast, Midwest, Southeast, and West/Southwest

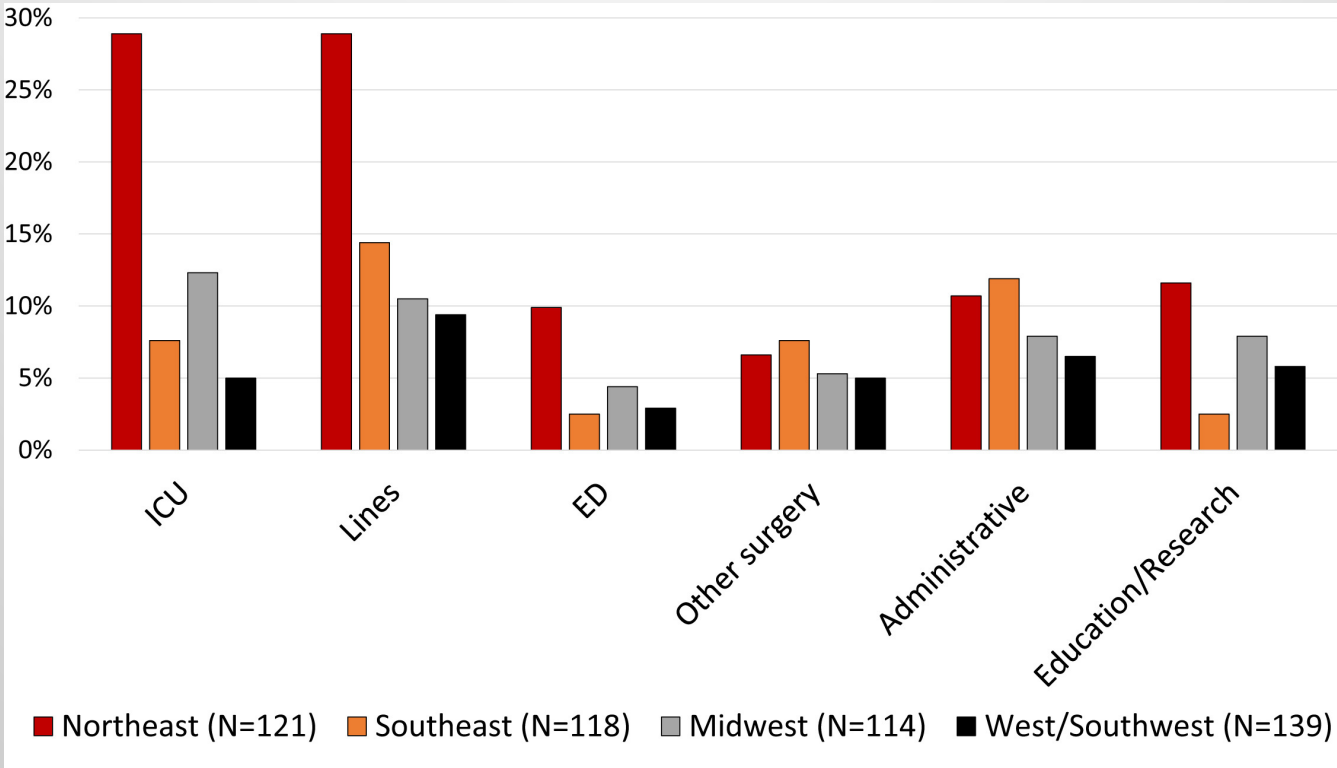




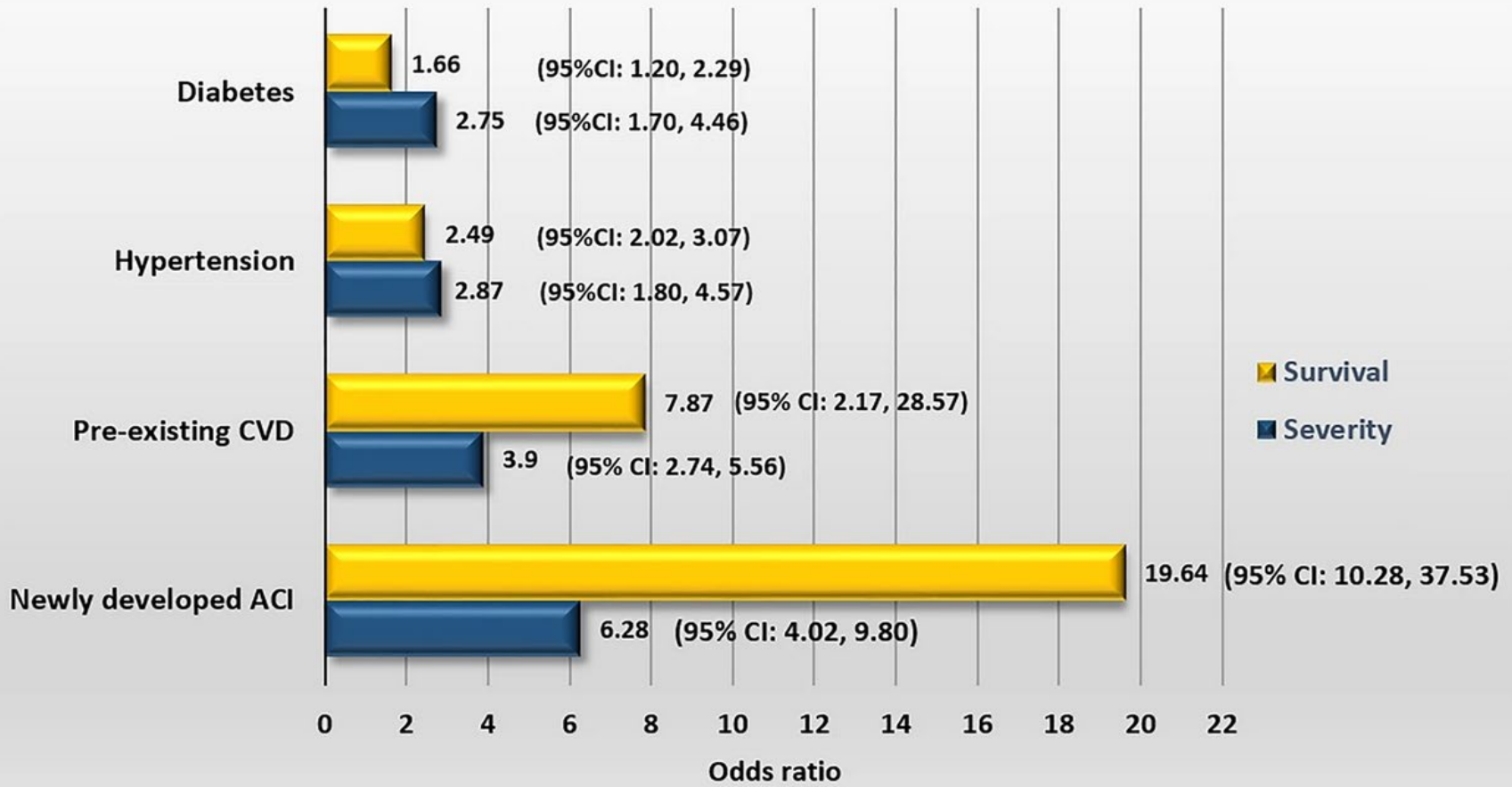
# Regional Distribution of Continued Elective Cases



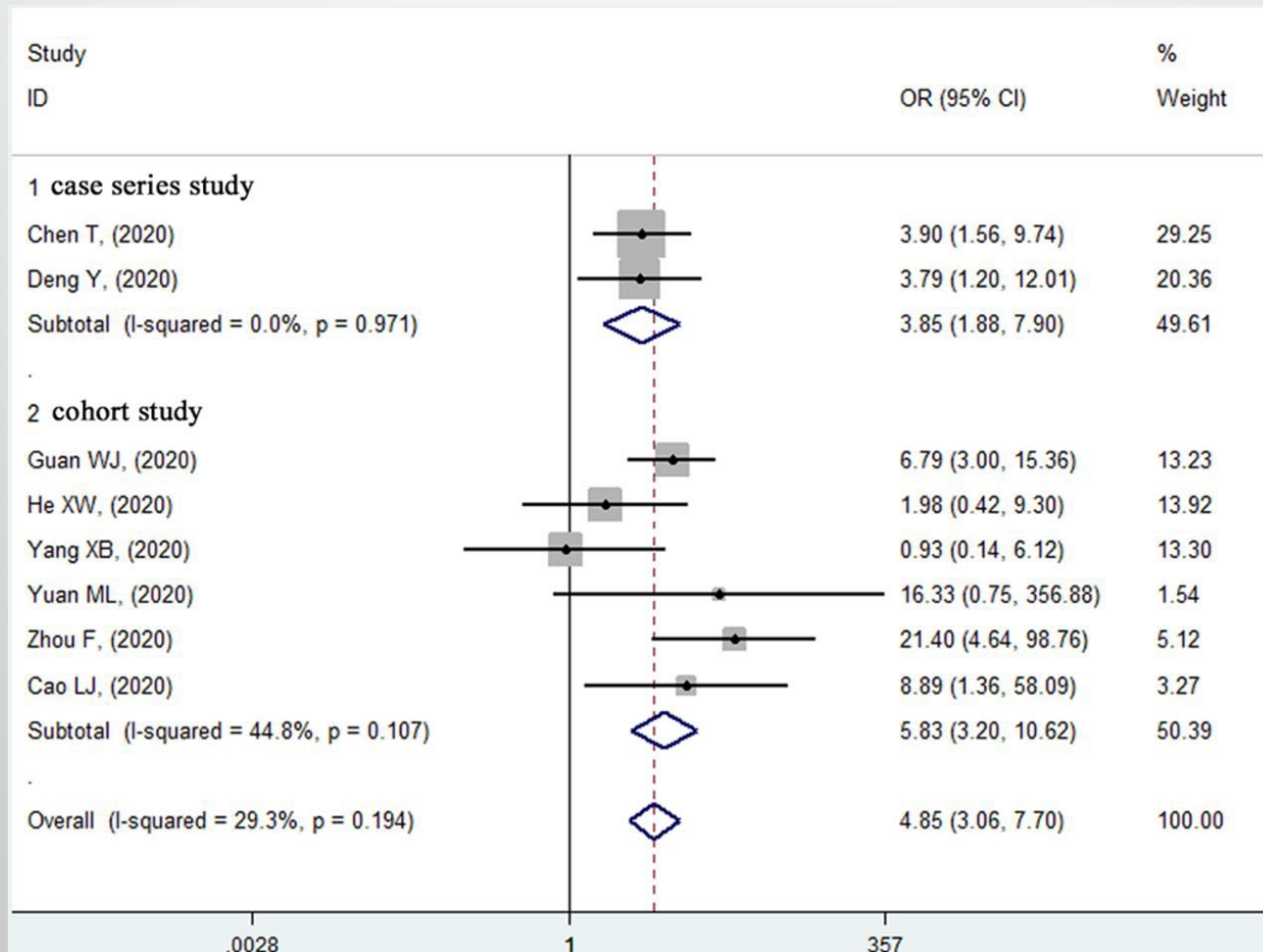
# Regional Distribution of Duties for Redeployment



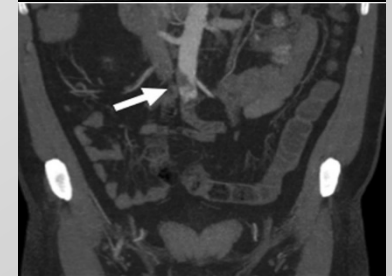
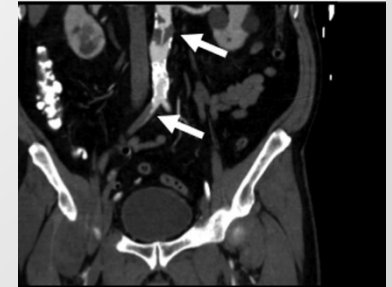
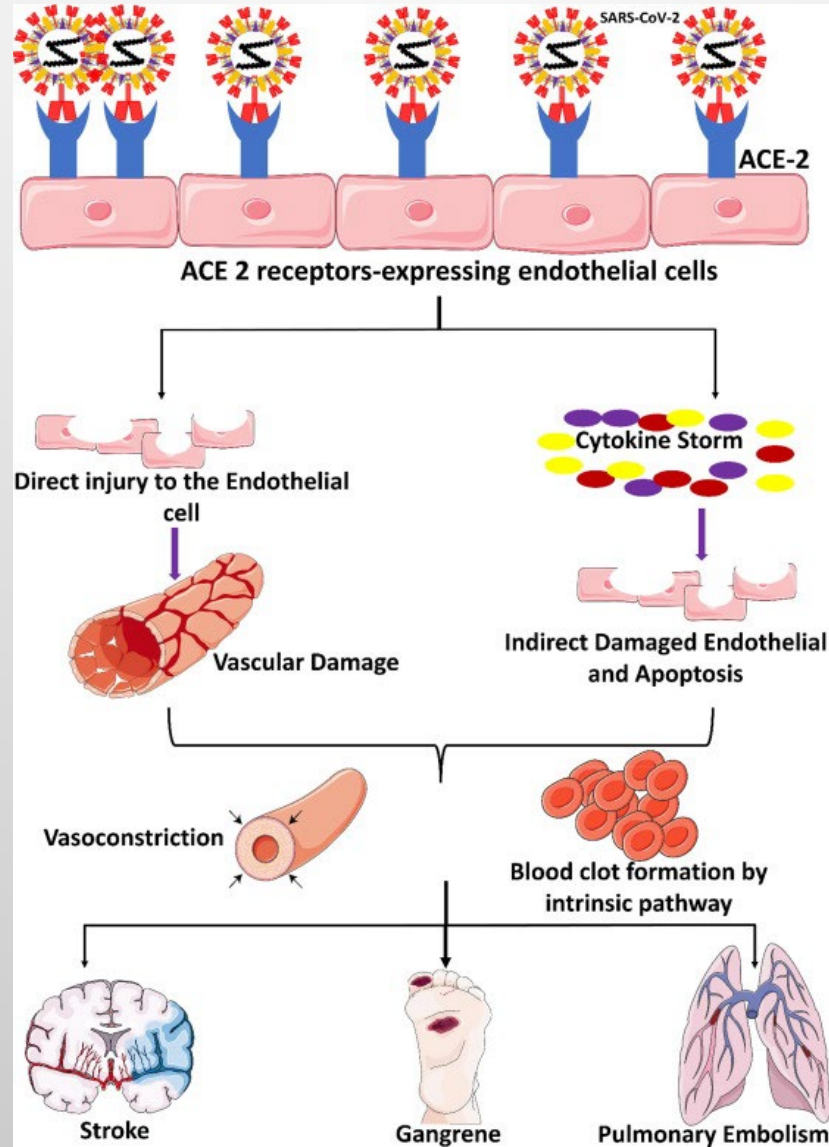
# Comorbidities and COVID19



# Pre-existing cardiovascular disease and in-hospital mortality with COVID-19



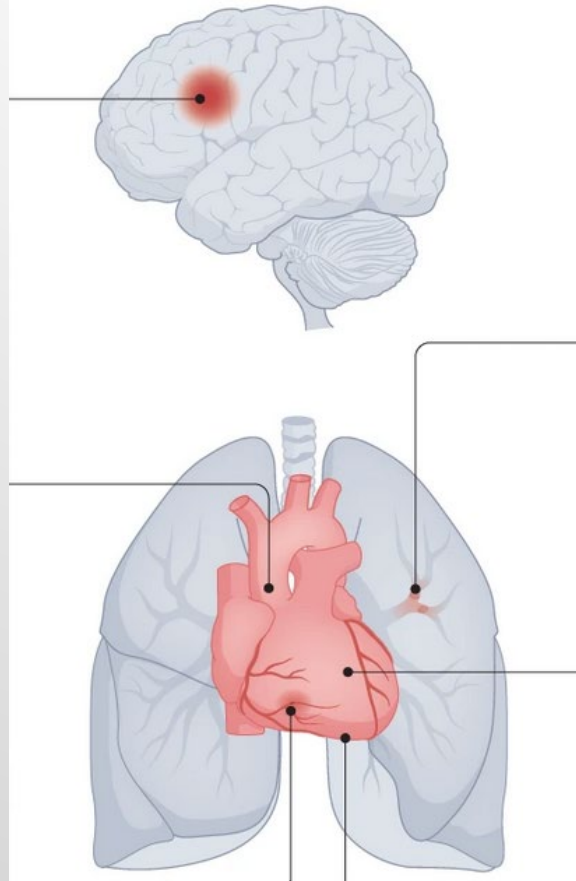
# COVID-19 Acute Limb Ischemia



# COVID19 and Vascular Diseases

## Stroke

- Hypercoagulability
- Inflammatory milieu
- Bleeding diathesis



## DVT/PE

- Hypercoagulability
- Anti-phospholipid Ab
- Small vessel thrombosis

## Arrhythmia

- Vfib, Vtach, Afib, Aflutter, heart block
- Due to hypoxia, cytokine storm
- Long-term sequelae poorly defined; +palpitations

## Ventricular dysfunction

- Due to myocarditis, stress-cardiomyopathy
- Usually transient
- Long-term sequelae poorly defined

## MI

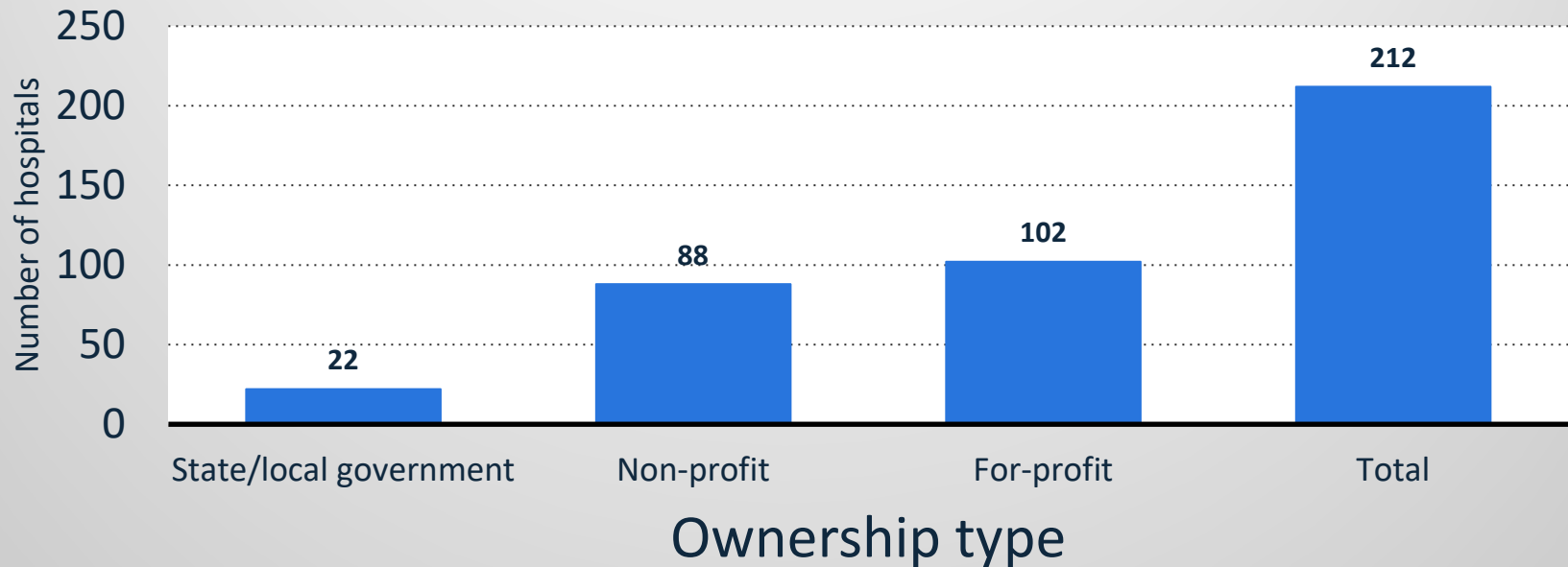
- Inflammation, plaque destabilization
- Late presentations, delayed treatments

## Pericarditis

- +/- troponinemia
- Relative risk w/ COVID19 vs. Non-COVID19 pericarditis unclear



# Number of hospitals in Florida in 2019, by ownership type

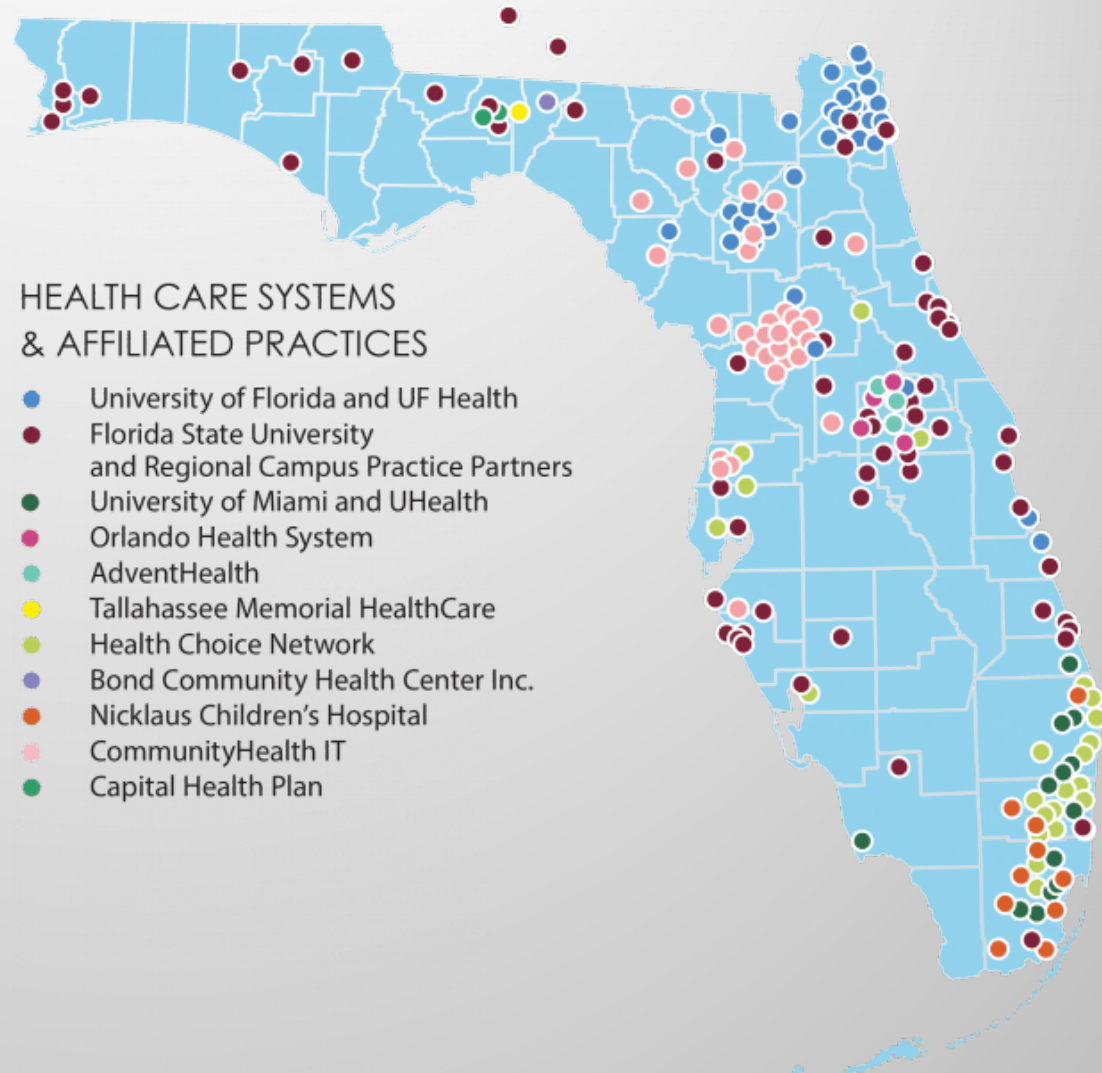


Note(s): United States

Further information regarding this statistic can be found on [page 8](#).

Source(s): American Hospital Association; Kaiser Family Foundation; ID 202824

# OneFlorida Clinical Research Consortium



- 11 Healthcare networks
- >1200 providers
- >17 Million patients
- Jan 2012-present
- ~40-45% of Florida population
- Combined EHR, claims & death data



# Vascular Care in Florida

- Total Population: 21.8 MILLION (#3 in U.S.)
- ~21% ≥ age 65 (#2 in U.S.)
- 51% women
- 53% White
- 26% Hispanic/Latino
- 17% Black/African American

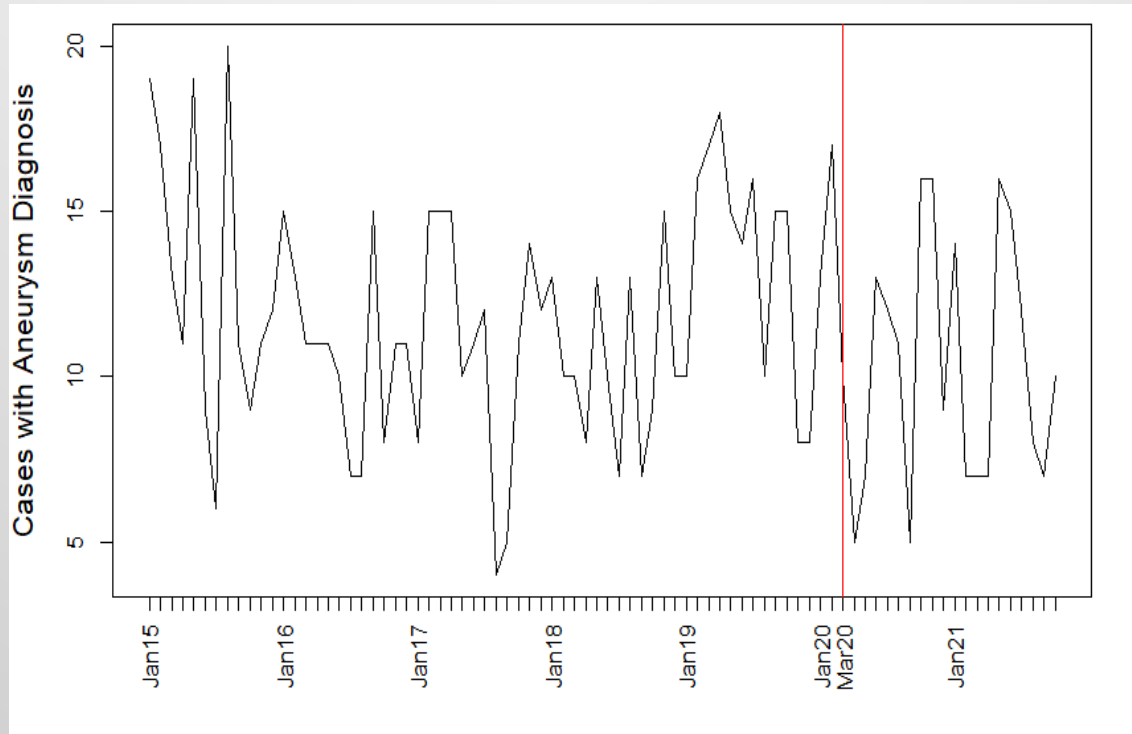


# Pre vs. Post COVID-19 Admission Diagnosis for Acute Cardiovascular Disease

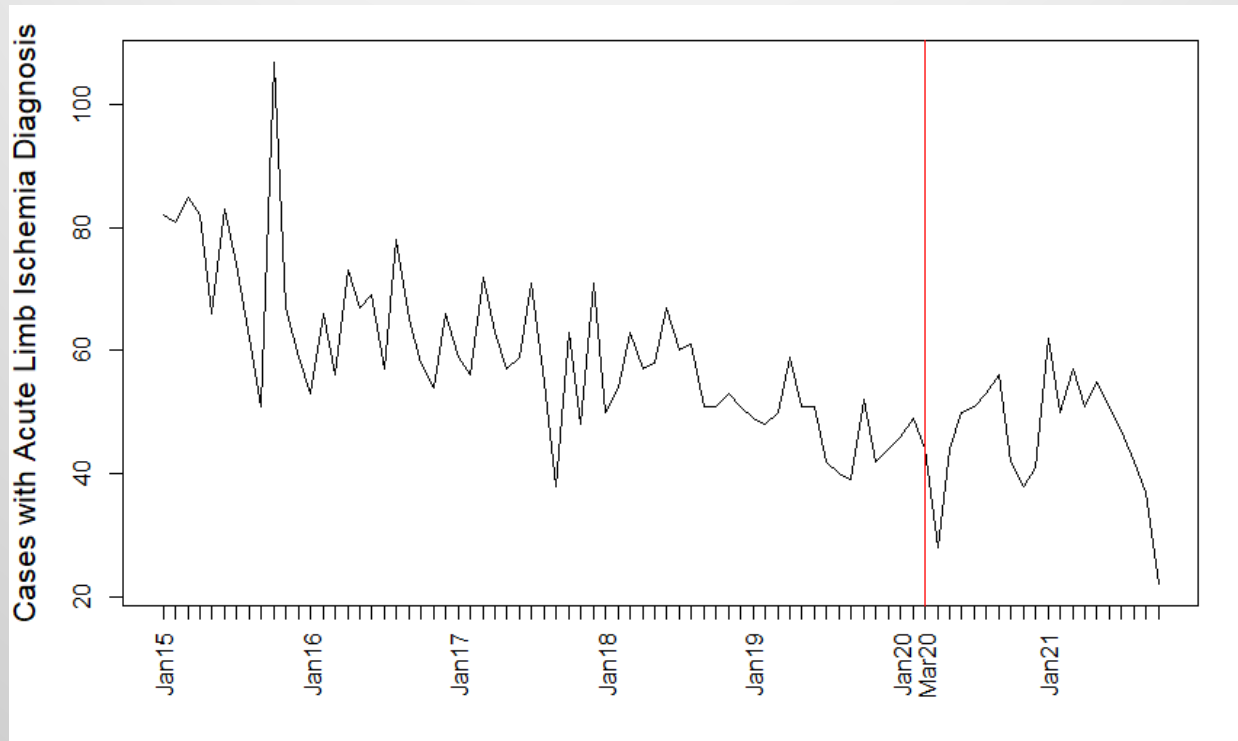
N = 57 hospitals

<b>Diagnosis, monthly mean(SD)</b>	<b>Cases/month Pre COVID 1/1/2015 - 2/28/2020 (N = 51,258 patients)</b>	<b>Cases/month COVID 3/1/2020 - 10/31/2022 (N = 15,352 patients)</b>	<b>P-value</b>
<b>MI</b>	288 (48.5)	274 (49.1)	.4
<b>DVT</b>	212 (76.0)	188 (33.8)	.9
<b>Stroke</b>	200 (29.8)	199 (28.5)	.9
<b>PE</b>	123 (43.4)	127 (34.6)	.1
<b>Acute limb ischemia</b>	59.9 (12.9)	46.1 (9.8)	<.0001
<b>AAA</b>	11.9 (3.6)	10.4 (3.7)	.1

# AAA Diagnosis Admission Volume by Month

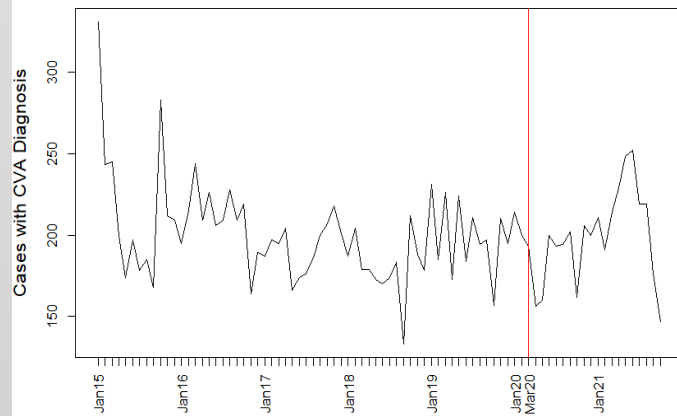


# Acute Limb Ischemia Admission Volume by Month

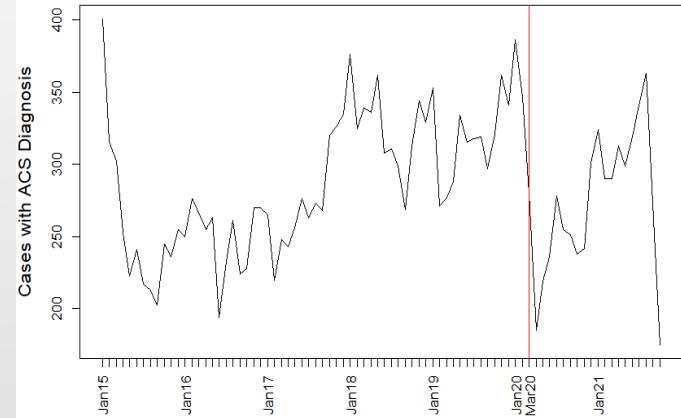


# Monthly Admissions Stroke, MI, DVT, PE

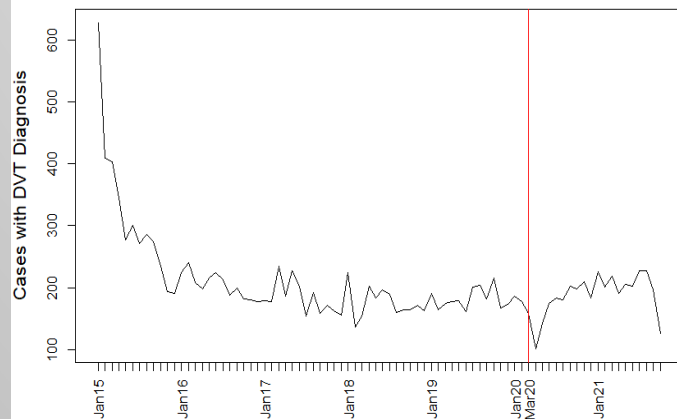
CVA Case Volume by Month (N=57 Hospitals)



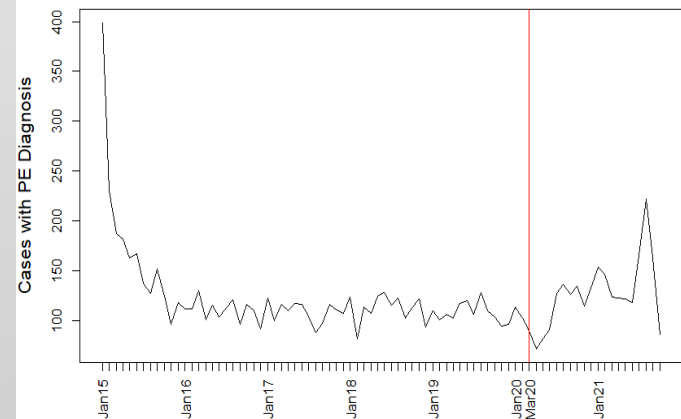
ACS Case Volume by Month (N=57 Hospitals)



DVT Case Volume by Month (N=57 Hospitals)



PE Case Volume by Month (N=57 Hospitals)



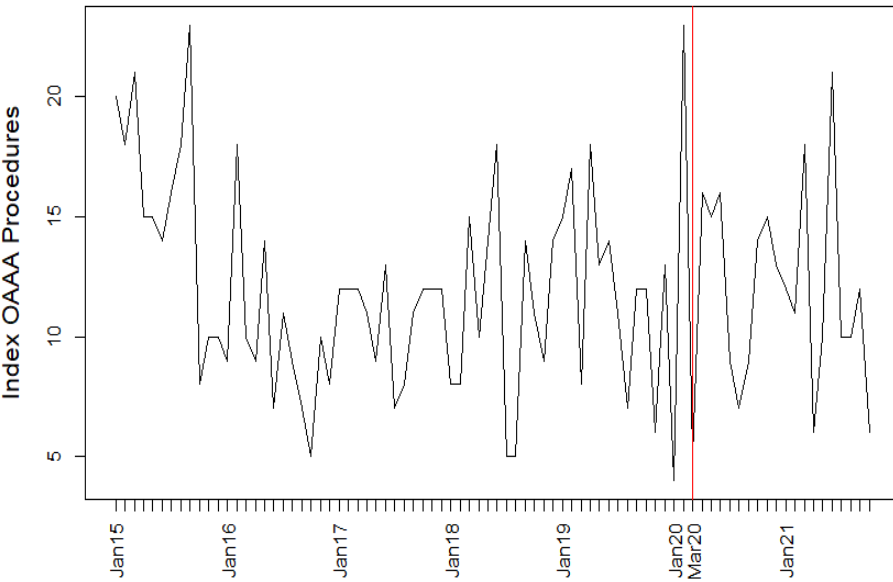
# Selected Vascular Surgical Procedure Monthly Case Volumes

N = 57 hospitals

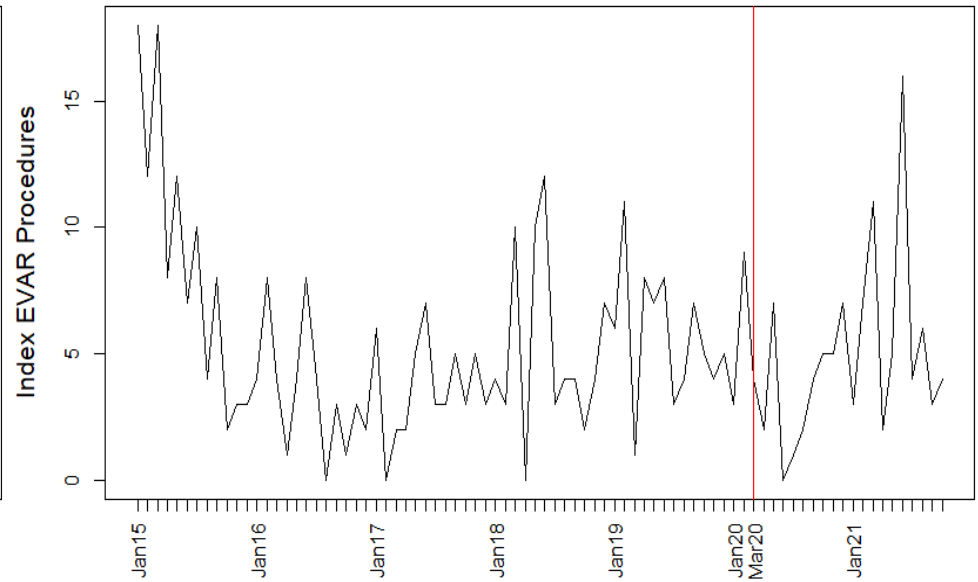
Procedure, monthly mean(SD)	Pre-COVID (N=70,213, 74%)	Post-COVID (N=24,984, 26%)	P-value
Open AAA repair	11.9 (4.4)	11.8 (4.3)	.9
EVAR	5.4 (3.9)	4.9 (3.9)	.6
INFRA/SUPRA bypass	43.7 (8.7)	41.7 (7.1)	.3
Peripheral vascular Intervention	51.5 (16.4)	44.3 (7.6)	.2
TEVAR	71.6 (11.4)	85.9 (14.3)	<.0001
Carotid Endarterectomy	17.5 (5.4)	20.5 (5.9)	.03

# AAA Care in Florida Pre- and Post-COVID

Index OAAA Case Volume by Month (N=57 Hospitals)

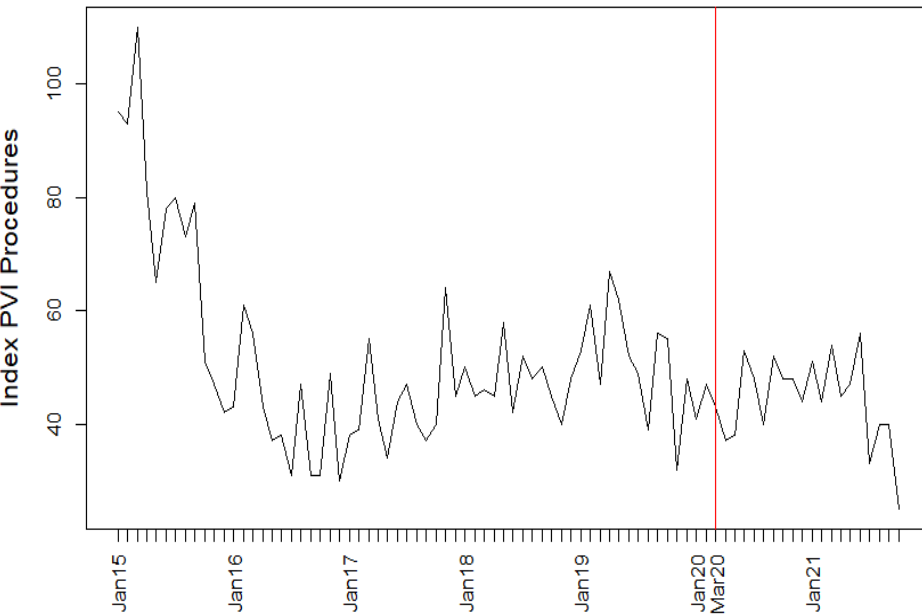


Index EVAR Case Volume by Month (N=57 Hospitals)

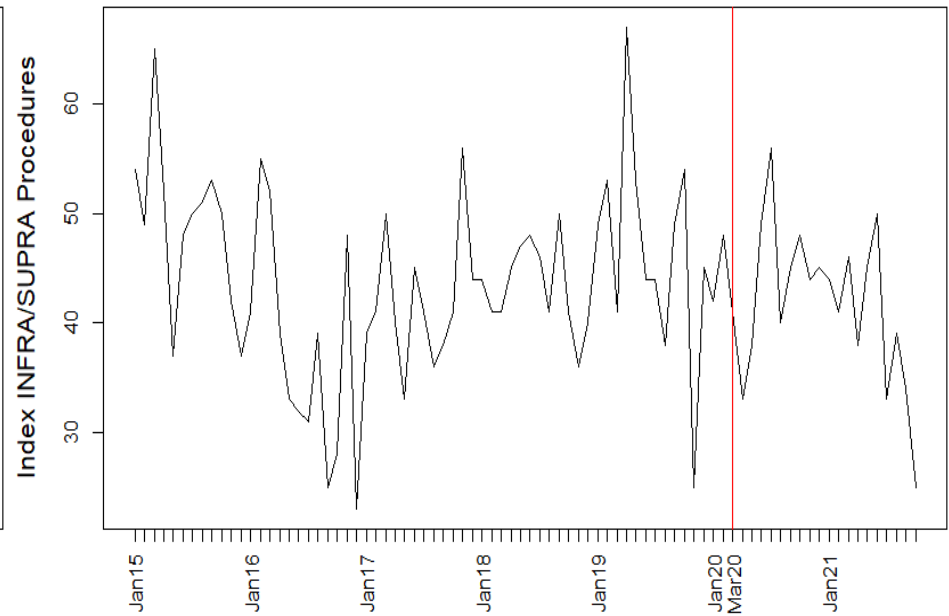


# PAD Care in Florida Pre- and Post-COVID

Index PVI Case Volume by Month (N=57 Hospitals)



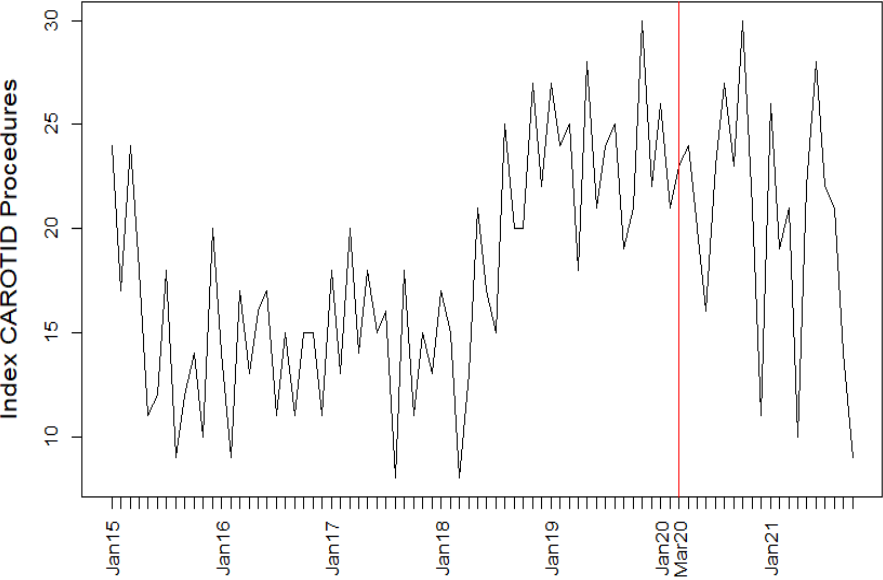
Index INFRA/SUPRA Case Volume by Month (N=57 Hospitals)



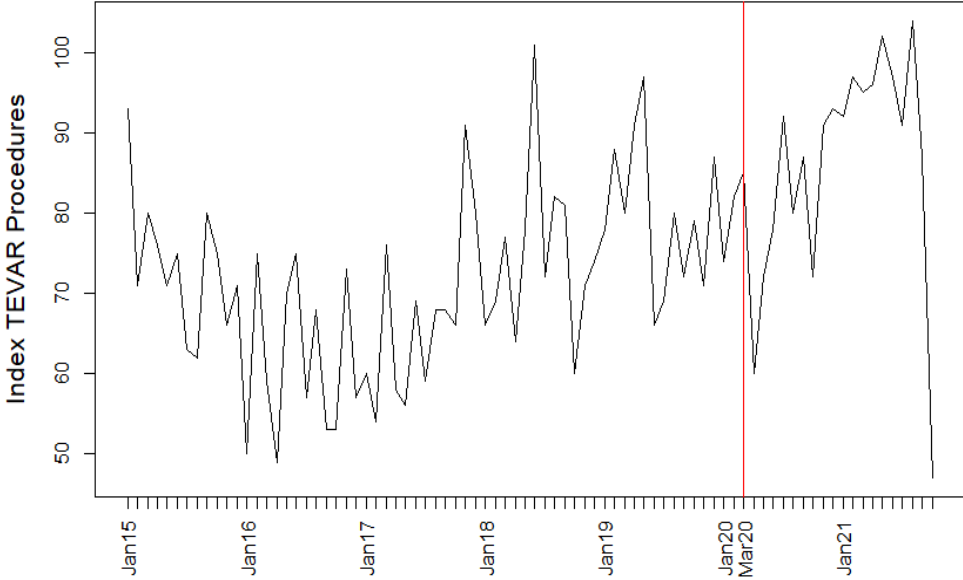


# Carotid and TEVAR Care in Florida Pre- and Post-COVID

Index CAROTID Case Volume by Month (N=57 Hospitals)



Index TEVAR Case Volume by Month (N=57 Hospitals)



# Discussion

- Vascular care in Florida experienced significant variation as a result of the pandemic but overall monthly care volumes appear to have recovered
- Significant increase in Carotid & TEVAR cases
  - Etiology is unclear
- Further analysis needed to understand if excess morbidity or mortality occurred at different time intervals during the pandemic due to delays and/or access to care that resulted from the pandemic