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Department  
of Health

# NYS Health Homes Program

Business Analytics Capstone  
May 8, 2020

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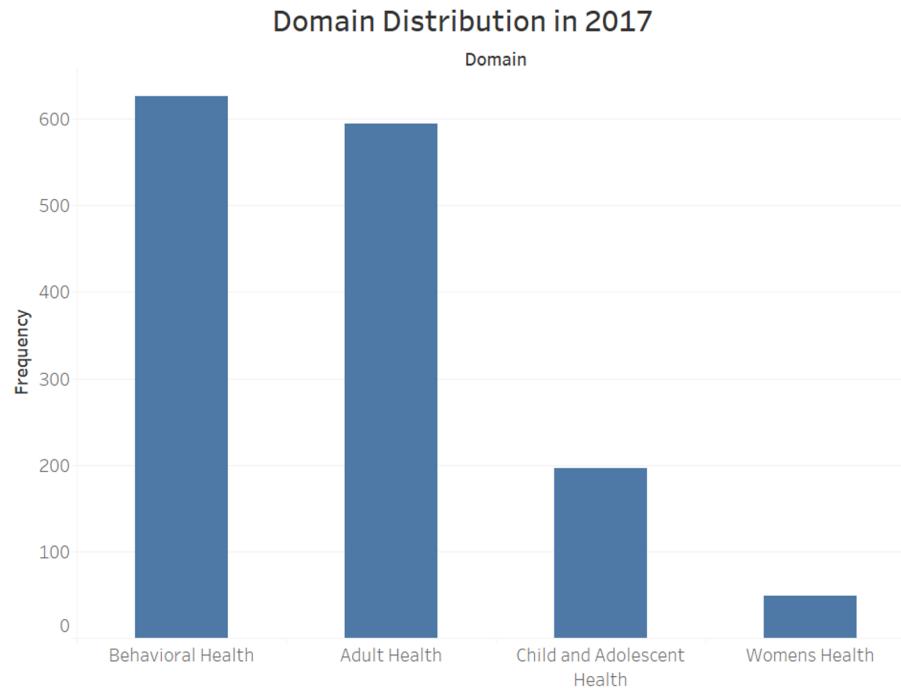
# Exploratory Data Analysis



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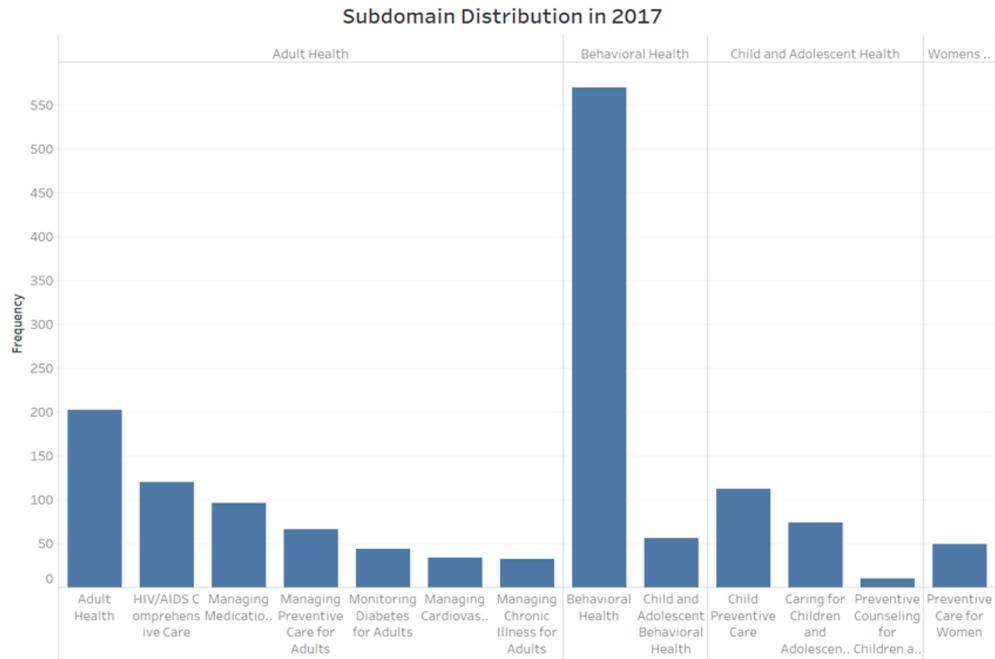
# EDA (Quality Dataset)

Distribution of Measure counts -  
by Domain



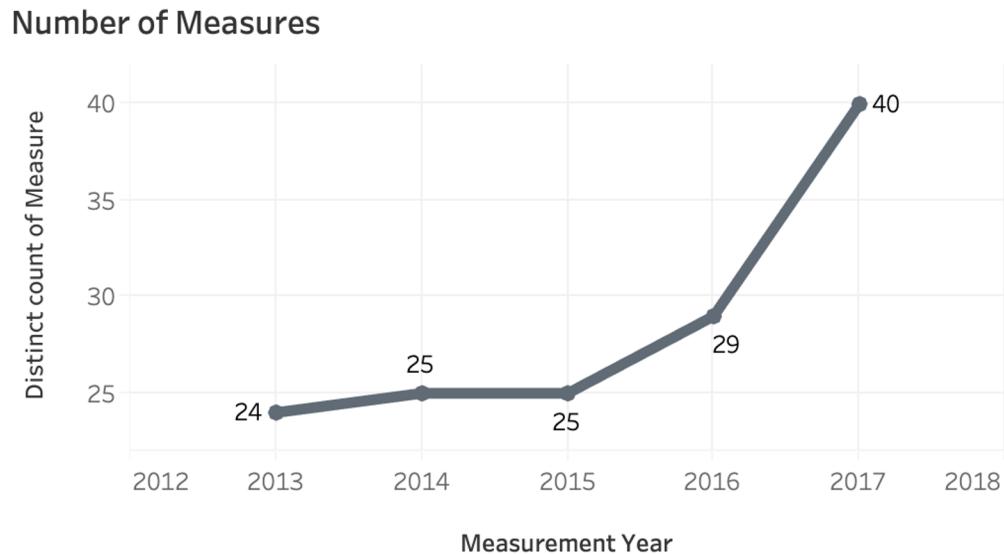
# EDA (Quality Dataset)

Distribution of Measure counts -  
by Sub Domain



# EDA (Quality Dataset)

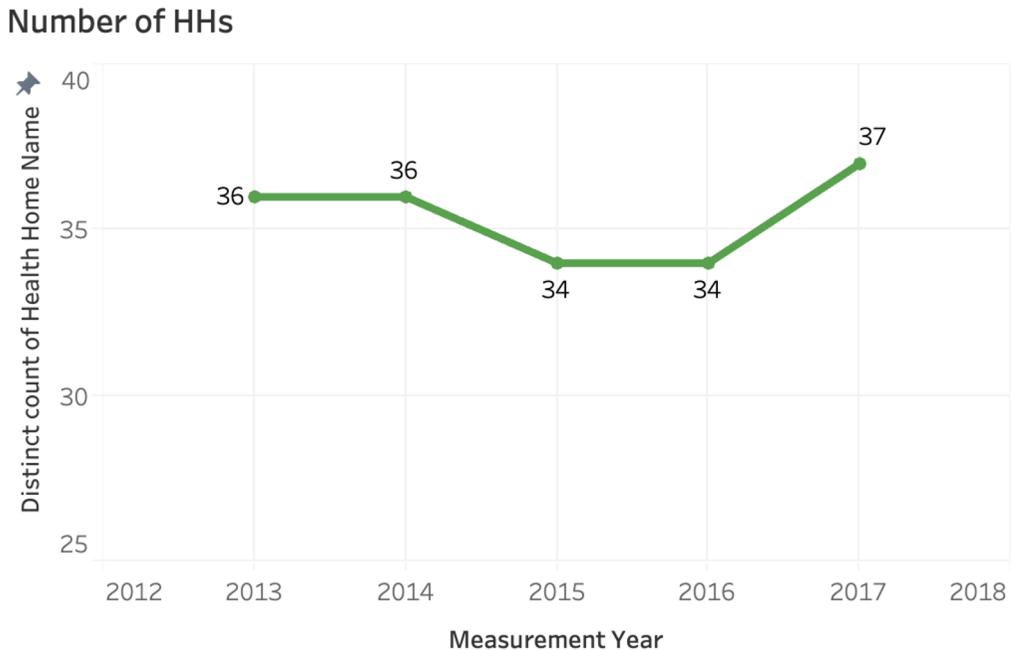
Distribution of Measure counts  
- by Year



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# EDA (Quality Dataset)

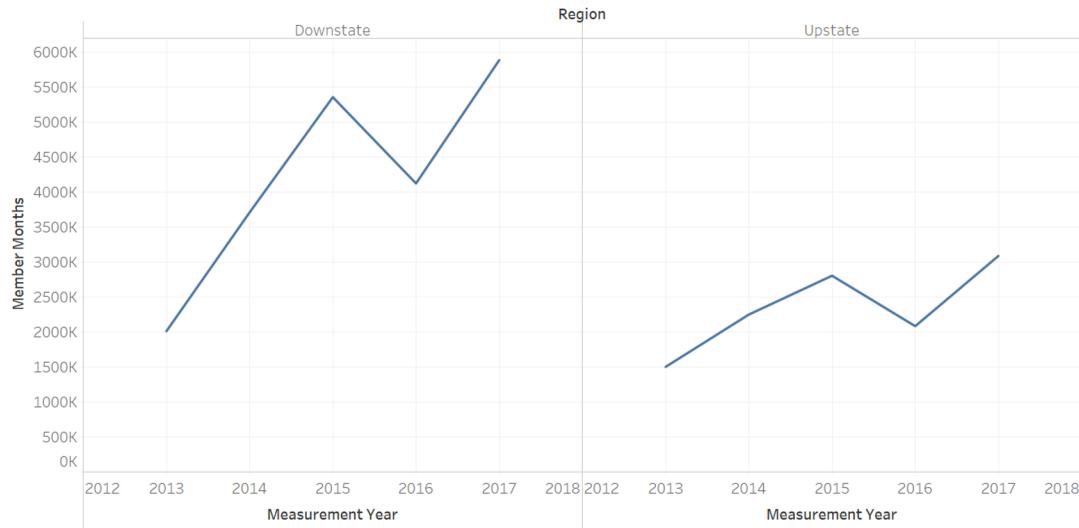
Distribution of the number of Health Home - by Year



# EDA (Utilization Dataset)

- Total member months per year for upstate and downstate health homes
- *Member months* - number of individuals that are a part of a health home multiplied by 12 months

Upstate vs. Downstate Member Months by Year



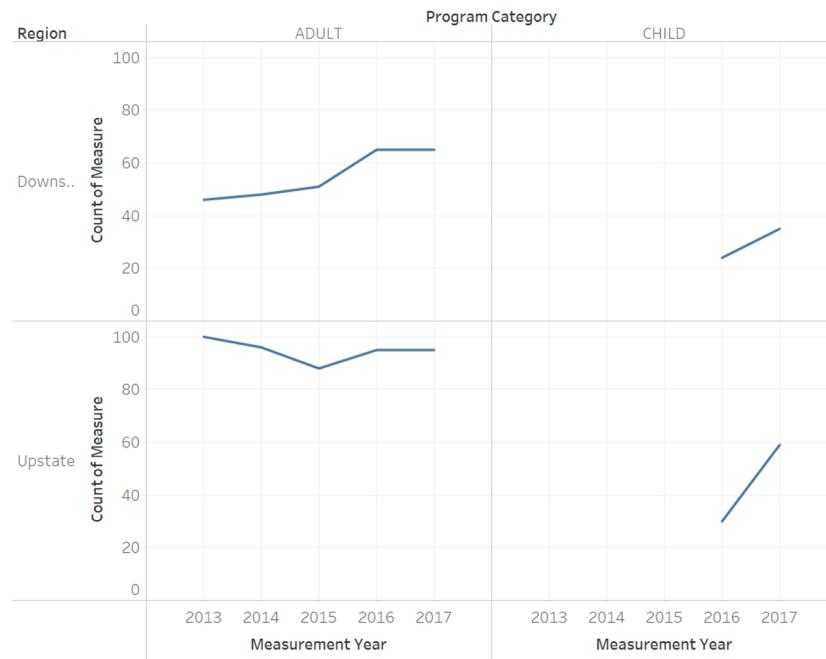
The trend of sum of Member Months for Measurement Year broken down by Region. The data is filtered on Health Home Name, which excludes STATEWIDE. The view is filtered on sum of Member Months, which keeps non-Null values only.



# EDA (Utilization Dataset)

- Total number of measures provided by upstate and downstate health homes for different program categories over the years
- Upstate's health home has more measures than downstate's but there is a rising trend for downstate.

Number of Measures by Program Category from 2013-2017 between Regions  
(excluding 'ALL')



# Methods



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# Quality Dataset

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- Compare the Significance Level among different Health Homes
- Compare the rate of a same measure among different Health Homes
- Compare the yearly trend of a same measure by different Health Homes
- Compare the Significance Level, the number of measures, and the number of Health Homes by region (upstate/downstate)



# Utilization Dataset

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- Compare utilization rates of same measure among different health homes
- Compare utilization rates of different measures within a single health home
- Compare rates based on region (upstate/downstate)
- View yearly trends in number of member months



# Research Results

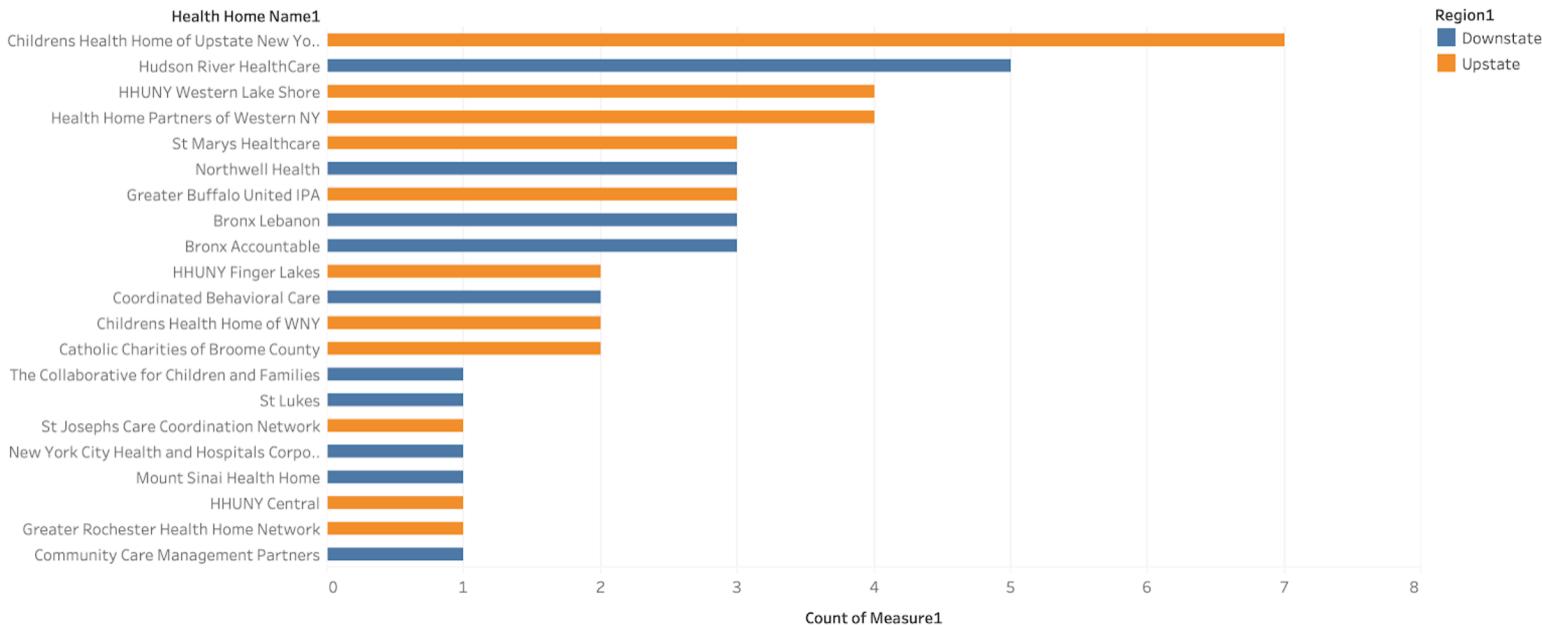


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# Quality Dataset

## ○ Comparison of Health Home Performance -- Significant Level comparison

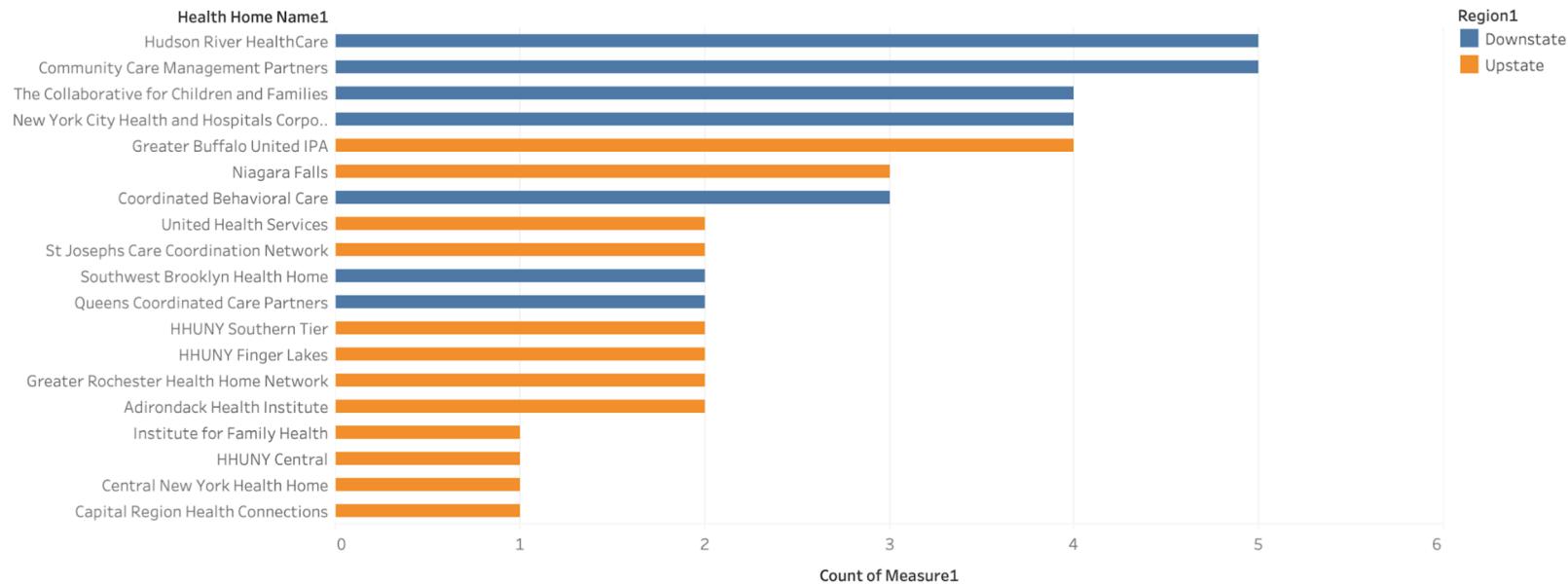
Performance of Measures in each Health Home in 2017-significant better



# Quality Dataset

## ○ Comparison of Health Home Performance -- Significant Level comparison

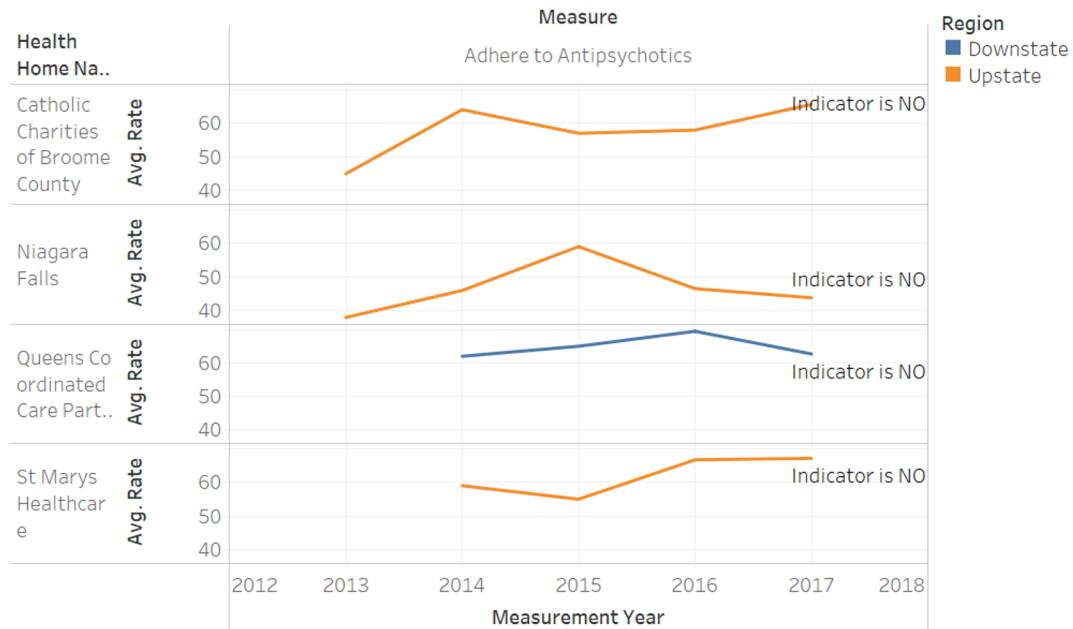
Performance of Measures in each Health Home in 2017-significant worse



# Quality Dataset

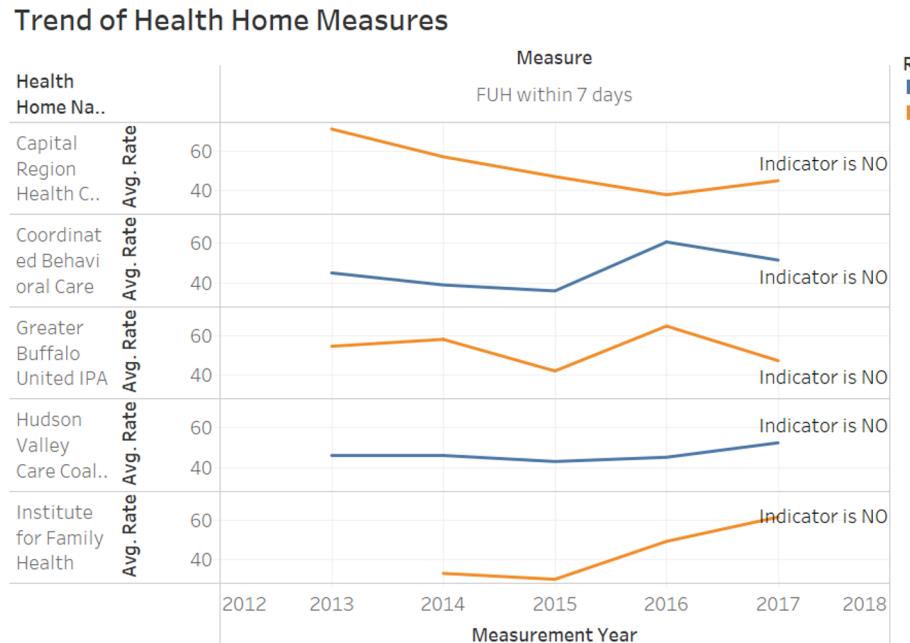
- Detailed comparison of Health Homes for Performance for Specific Measures
  - Adhere to Antipsychotics  
(Adherence to Antipsychotics for Individuals with Schizophrenia)
- There is no significant difference between the rate of adherence to antipsychotics for each Health Home
- The values of rates fluctuate roughly between 50 and 60 from 2013 to 2017

Trend of Health Home Measures



# Quality Dataset

- Detailed comparison of Health Homes for Performance for Specific Measures
  - FUH within 7 days  
(Follow- up After Hospitalization for Mental Illness Within 7 Days)
  - The rates of FUH within 7 days change differently between each Health Home
  - There are not clear differences between the performance of Upstate and Downstate Health Homes



# Utilization Dataset

- Comparison of utilization rates for measures within a Health Home
- Based on rates, there are no noticeable improvements in utilization by viewing the trends



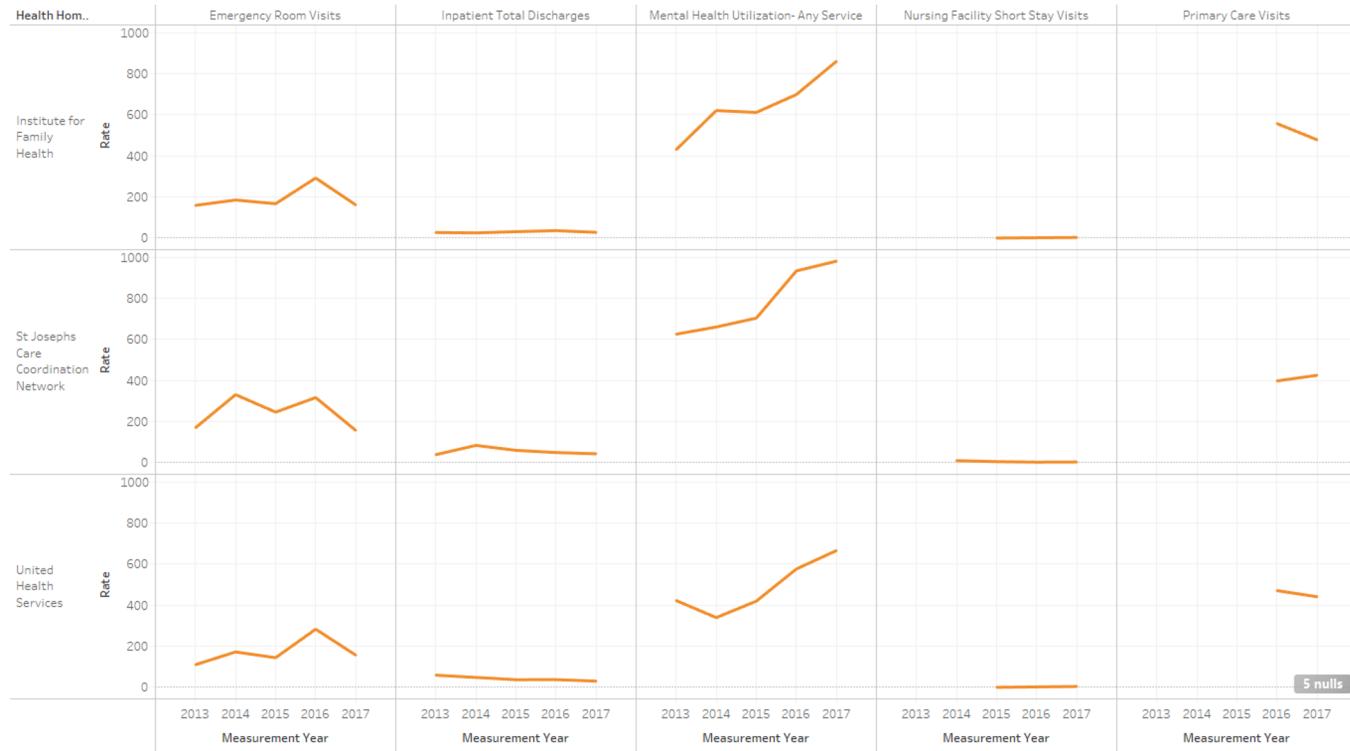
# Utilization Dataset

- Trend of utilization rates for measures of downstate Health Homes
- Based on the trends, Bronx Accountable, Coordinated Behavioral Care, and New York Presbyterian show improvements in Mental Health Utilization



# Utilization Dataset

- Trend of utilization rates for measures of upstate Health Homes
- Based on the trends, Institute for Family Health, St. Josephs Care Coordination Network and United Health Services show improvements in Mental Health Utilization and Emergency Room Visits



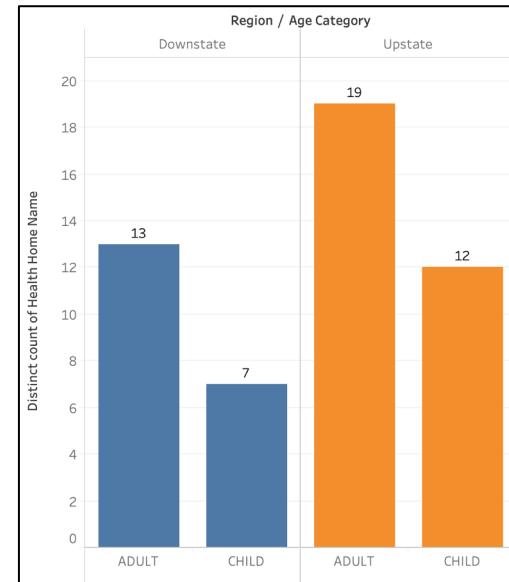
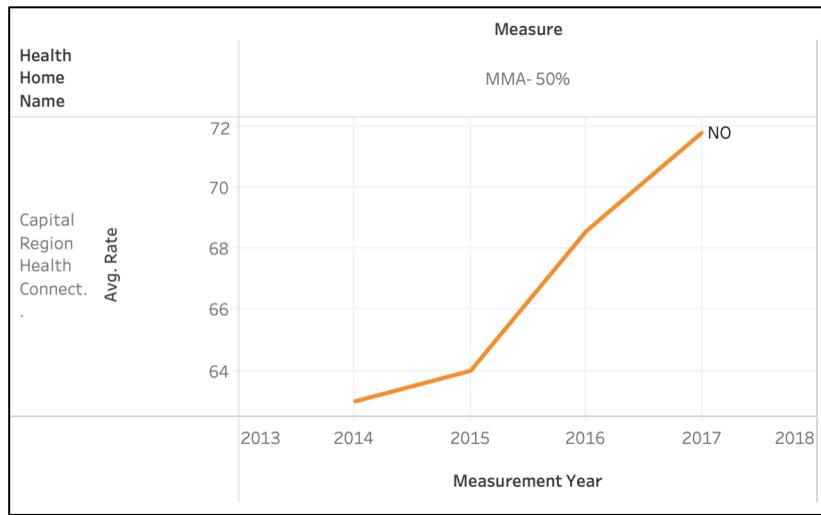
# Dashboard



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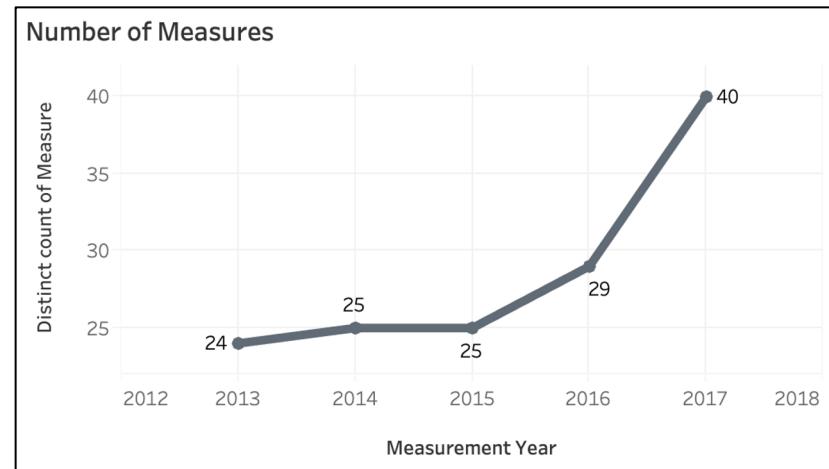
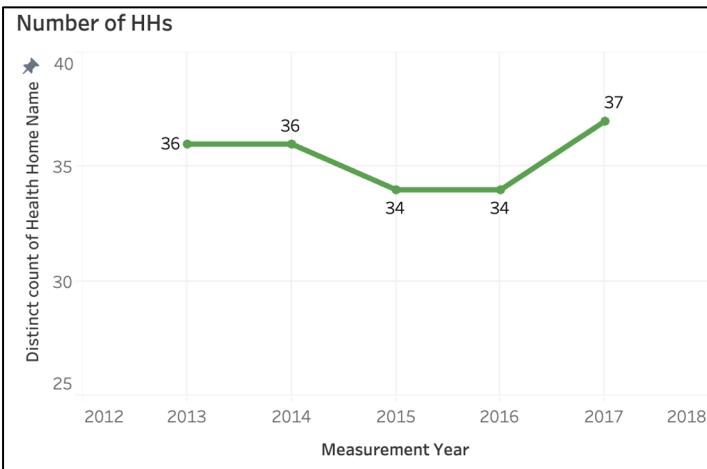
# Quality Dataset

1. The trend of a specific measure of specific health homes in different years.
2. The number of health homes in different regions (upstate or downstate) and age categories.



# Quality Dataset

3. The total number of health homes in New York State in different years.
4. The distinct measures provided by all health homes in different years.



# Quality Dataset

5. Distinct count of Health Home Name for each measure broken down by Domain. The Indicators for each measure are labeled.

6. % of total count of number of records broken down by level of significance for each health homes.

Number of HHs for each Measures

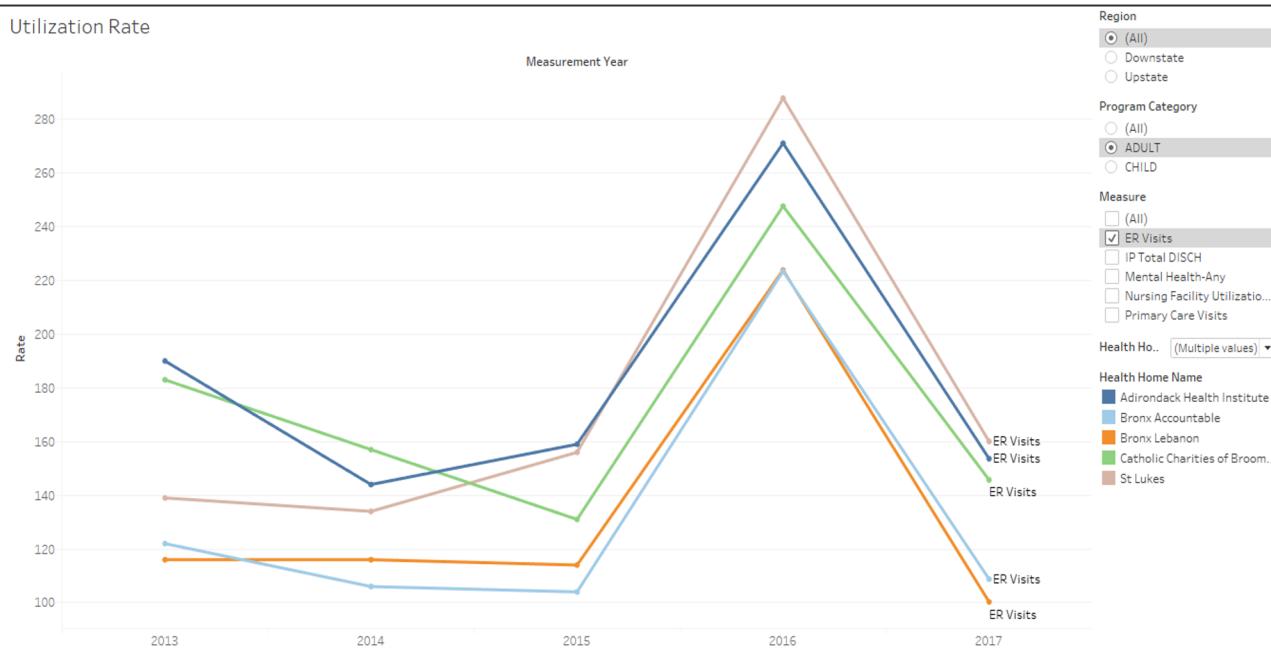
Measure	Indicator	Region	Domain			
			Adult Health	Behavioral ..	Child and A..	Womens H..
ADHD-Continua..	NO	Downstate			7	
		Upstate			9	
ADHD-Initiation	NO	Downstate			7	
		Upstate			10	
Adhere to Antipsychotics	NO	Downstate		14		
		Upstate		21		
Adhere to Mood Stabilizers	NO	Downstate		15		
		Upstate		21		
Adol Immu-HPV	NO	Downstate			7	
		Upstate			10	
Adol WC Visits	NO	Downstate			15	
		Upstate			22	
Adult BMI	NO	Downstate	13			
		Upstate	19			

Significance Level Percentage (relative to HHs)

Health Home Name	Level of Significance				Null
	better than sta..	worse than sta..	small sample s..	Null	
Southwest Brooklyn Heal..	28.57%	7.14%	3.57%	71.43%	
Health Home Partners of ..	28.57%	7.14%	3.57%	60.71%	
Greater Buffalo United IP..	25.00%	25.00%	3.57%	46.43%	
HHUNY Western Lake Sh..	25.00%	10.71%	3.57%	60.71%	
Childrens Health Home of..	25.00%	8.33%	27.78%	38.89%	
Bronx Lebanon	21.43%	10.71%	7.14%	60.71%	
HHUNY Finger Lakes	20.69%	17.24%	3.45%	58.62%	
New York City Health and..	17.86%	28.57%		53.57%	
Hudson River HealthCare	12.31%	15.38%	23.08%	49.23%	
St Lukes	10.71%	14.29%		75.00%	
Queens Coordinated Care..	10.34%	17.24%	6.90%	65.52%	
HHUNY Southern Tier	10.34%	13.79%	6.90%	68.97%	
Coordinated Behavioral C..	8.96%	11.94%	25.37%	53.73%	



# Utilization Dataset



- Compare trends in utilization rates for desired health homes and measures
- Drill down by region, age category, measure, or health home name



# Utilization Dataset

## Member Months

Region	Health Home Name	Program Category / Measurement Year						
		ADULT					CHILD	
		2013	2014	2015	2016	2017	2016	2017
Downstate	Bronx Accountable	45608	73969	87204	42125	82293		2276
	Bronx Lebanon	28356	42002	61389	33208	83878		
	St Lukes	5920	18498	41175	24508	59418		
Upstate	Adirondack Health Institu..	7384	15290	19367	11364	22408	419	4081
	Catholic Charities of Broo..	2652	5448	7349	4788	13697	608	9283
	Childrens Health Home of ..						11887	

- View trends in member months using same filters as rate
- Health homes separated by region



# Summary of insights

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1. For some measures, most health homes have the same varying tendency, which indicates a statewide improvement or deterioration. For these measures, it is advisable to identify factors leading to the changed performance, which will be helpful to improve the performances of other measures.
2. Analyze the differences among health homes for certain measures. The trend of some health home is quite different from others, we can try to determine whether this difference has caused better or worse results, and make suggestions according to that.
3. In-depth analysis of the factors that lead to regional differences, thereby promoting balanced development in different regions.



# Future Work and Implementation

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- For the same indicator, the trend of some health homes varied sharply from 2013 to 2017, while others were more stable. Based on the two datasets, we do not have enough information to find the answer, so we may need to conduct background research to learn more.
- Continuously improve in designing our dashboards in order to make them more effective and visible. We may need to have more communications with our clients to confirm their needs and their desired visualizations.
- Possibly access related data and measurements on other states and compare the New York State Health Home Programs to other states





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