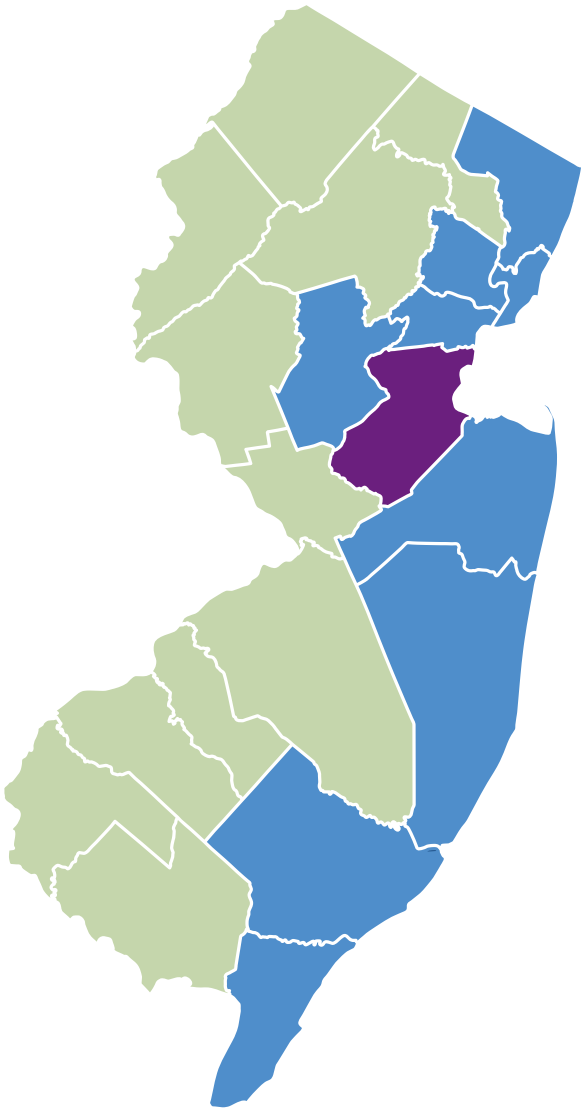
Enhancing Coordination of Behavioral Health Services after Superstorm Sandy: Planning for Future Disasters

Identifying at-Risk Communities



Initial Data Profile: Middlesex County

Demographics, Behavioral Health Conditions, and Utilization of Health Services (Medicare Fee-for-Service Beneficiaries)

January 7, 2014

This material was prepared by Healthcare Quality Strategies, Inc. (HQSI), the Medicare Quality Improvement Organization for New Jersey, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. 10SOW-NJ-SSS-13-25 12/13

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Preface

On October 29, 2012, Superstorm Sandy hit the Eastern Seaboard, impacting more than a dozen states. New Jersey, which took the brunt of the storm along its densely populated coastline, was devastated. Thousands of residents were displaced, their homes and communities damaged or destroyed.

Lessons learned from prior natural disasters showed that victims of storms like Superstorm Sandy are often at an elevated risk for acute or chronic behavioral health issues such as post-traumatic stress disorder (PTSD), depression, suicide, and alcohol abuse. While disaster-related issues subside over time, evidence shows that victims can experience a prolonged period of elevated risk, especially those with pre-existing chronic mental health issues. Older adults and disabled residents with chronic mental health conditions are at increased risk of deteriorating health, depression, increased isolation, and breakdown in the continuum of health care. Additionally, past natural disasters also show that access to informational resources on disaster-related mental health disorders, outcomes, and service utilization are important factors to consider.

This initial county profile – one of 10 being created for each of the Federal Emergency Management Agency (FEMA)-declared disaster counties in New Jersey – explores potential county and community level health status and health determinants of post-disaster spikes in behavioral health issues and treatments. Subsequent county profiles, to be produced in spring 2014, will include more comprehensive post-Sandy data and an analytic treatment of the predictive value of the initial county profiles in planning for and coordinating post-disaster response resources.

Introduction

Enhancing Coordination of Behavioral Health Services after Superstorm Sandy: Planning for Future Disasters is a Special Innovation Project funded by the Centers for Medicare & Medicaid Services (CMS). As part of this project, Healthcare Quality Strategies, Inc. (HQSI), the CMS quality improvement organization (QIO) for New Jersey, studied data on prevalence and incidence of selected behavioral health conditions, the utilization of health services, and demographic information from the Medicare claims database for Medicare Fee-for-Service (FFS) beneficiaries residing in the 10 New Jersey FEMA-declared disaster counties after Superstorm Sandy. These counties include Atlantic, Bergen, Cape May, Essex, Hudson, Ocean, Middlesex, Monmouth, Somerset, and Union.

From its analysis, HQSI created data profiles for each of these FEMA-designated counties. This is the initial profile for Middlesex County. Separate county profiles have been developed for each of the FEMA-declared disaster counties. The county profiles can be used to determine and compare the baseline prevalence of the selected behavioral health conditions and utilization of services among all 10 FEMA-declared disaster counties pre-Superstorm Sandy.

In January 2014, additional profiles will be released that will feature a subset of 10 communities. These communities were selected because they had high rates of Medicare FFS beneficiaries both with and at risk for depression or proxy disorders. The community profiles can be used to determine and compare the baseline prevalence of the selected behavioral health conditions and utilization of services in the selected communities compared to their counties.

The county and community profiles are based on Medicare FFS claims data and provide a glimpse into the prevalence and incidence of selected behavioral health conditions and risk factors for depression, as well as the utilization of Medicare-covered behavioral health services among Medicare beneficiaries residing in the selected counties or communities before and after Superstorm Sandy. Since patients with behavioral health conditions may receive other health services because of medical problems caused by their behavioral health conditions or they may avoid utilizing behavioral health services, this report also looks at the utilization of non-behavioral health services.

These profiles are being shared with state and local governments and agencies, healthcare providers, community-based organizations, and the research community to support a community-based approach to enhance the coordination of behavioral health services after a natural disaster, and to increase utilization of the Medicare depression screening benefit which became a covered service in January 2012.

Methodology

Each county profile compares one county's statistics to the aggregate of the 10 counties and to the other nine counties. Primary data sources include Medicare FFS Part A and Part B claims, the Medicare enrollment database and U.S. Census data. The Medicare enrollment database includes basic demographic statistics such as age, gender, and race while the U.S. Census data provides a proxy indicator (average household income) for socio-economic status. Based on the ICD-9-CM (International Classification of Disease, Ninth Revision, Clinical Modification), CPT (Current Procedural Terminology) or HCPCS (Healthcare Common Procedure Coding System) codes in Medicare Part A and Part B claims, beneficiaries were identified for chronic conditions including diseases/conditions related to behavioral health, such as depression. Appendices A through F contain documentation, technical notes, codes, algorithms, data sources, and references.

Medicare Part A claims were also used to analyze utilization of health services in or by acute care hospitals, skilled nursing facilities, medical rehabilitation facilities, home health agencies, hospice, and inpatient psychiatric facilities. Medicare Part A and Part B claims provide information on the utilization of mental health outpatient services for assessment (e.g., depression screening, diagnostic psychological tests) and treatment (e.g., individual psychotherapy, biofeedback therapy).

To identify beneficiaries with an elevated risk of depression after the storm, HQSI conducted a literature review on risk factors for depression (see Appendix B). Previous studies identified psychosocial and biological factors, increased age, history of cancer, Parkinson's disease, Alzheimer's disease, changes in mental function, and medication side effects as risk factors for developing depression. Based on findings from the literature review and factors available through Medicare claims, logistic regression analysis was conducted with Medicare claims, and the top five risk factors (Alzheimer's disease and related disorders or senile dementia, hip/pelvic fractures, amputations, substance or alcohol abuse or tobacco use, and sleep disturbance) were used to identify beneficiaries with high risk for developing depression or proxy disorders.

Measurement Time Frames

This profile includes data from January 1, 2011 through March 31, 2013. October 1, 2012 through December 31, 2012 (Q4 2012) is defined as the quarter during which Superstorm Sandy occurred. The post-storm quarter is defined as Q1 2013 (January 1 – March 31, 2013). Results are presented using three different measurement time frames as follows:

- The pre-Sandy time period was defined as January 1, 2011 through September 30, 2012. Statistics on demographics, prevalence of behavioral health conditions and utilization of health services are presented for this 21-month period. These statistics allowed for comparison across affected counties prior to Superstorm Sandy.

- Annual prevalence with rolling quarters of behavioral health conditions and utilization statistics are included to adjust for seasonal variation and to examine possible changes pre- and post-Superstorm Sandy. The time period used for this analysis was January 1, 2011 through March 31, 2013. This time period includes six data time points.
- Quarterly new incidence of the behavioral health conditions that includes five quarters of data from Q1 2012 (January 1, 2012 – March 31, 2012) through Q1 2013 (January 1, 2013 – March 31, 2013) allows the identification of new cases in a quarter when compared to the prior year. It also allows identification of possible changes after the storm when comparing Q1 2013 data against Q1 2012.

Data Considerations

The available data relating to behavioral health issues as a result of Superstorm Sandy are new, given that the disaster occurred recently. Currently, there is only one quarter of post-storm data available. To examine possible changes, profiles will be updated in 2014 (when another quarter of post-storm data will be available). Claims data processing lag (at least six months), coupled with the one-year project time frame, reduces the optimal time frame for more accurate estimation of post-Sandy effects.

Identification of beneficiaries with behavioral health conditions is based on diagnoses being reported in Medicare FFS claims and could result in underestimation. There is currently no accurate way to identify when certain health conditions began and ended.

According to the subject matter experts consulted for this project, unlike other conditions, behavioral health issues are often underdiagnosed in our society and the stigma associated with behavioral health conditions may prevent people from seeking care in mental health facilities.

This type of county profile can be used to provide a baseline for the prevalence and incidence rates of eight selected behavioral health conditions (see page 13) based on the ICD-9-CM codes through the Medicare claims database. Possibly, after further data collection and analytic development using post-Sandy data, it can also be used to prioritize and plan community and county preparation for the care, tracking, and monitoring of Medicare beneficiary behavioral health status and health care utilization patterns.

HQSI will produce updated profiles in spring 2014 that will include additional data for the post-Superstorm Sandy time period.

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KEY OBSERVATIONS

1. In the 21 months prior to Superstorm Sandy, 23.6% of Medicare FFS beneficiaries (236.32 per 1,000 beneficiaries) in Middlesex County experienced depression or proxy disorders (anxiety and adjustment disorders).

2. In the 21 months prior to Superstorm Sandy, 16.3% of Medicare FFS beneficiaries (163.31 per 1,000 beneficiaries) in Middlesex County were at risk for depression or proxy disorders.

3. The utilization rate of the Medicare depression screening benefit was low among all 10 counties. In Middlesex County the rate was 7.50 per 1,000 Medicare FFS beneficiaries.

4. The most frequently used behavioral health assessment service in Middlesex County was psychiatric diagnostic procedures (7.4%).

5. Middlesex County had the highest rate of health and behavior assessment (1.58 per 1,000 Medicare FFS beneficiaries) among all 10 counties.

6. The most frequently used behavioral health therapy in Middlesex County was individual psychotherapy (6.8%).

7. Middlesex County had the highest rate of biofeedback therapy (2.18 per 1,000 beneficiaries) among all 10 counties.

The *Snapshot of Middlesex County* (Figure 1) summarizes the prevalence of the behavioral health conditions, as well as risk factors for depression or proxy disorders, analyzed for this county profile. This *Snapshot* also lists the most frequently performed behavioral health assessments and therapies in Middlesex County compared to the average among all 10 counties included in this project. The non-behavioral health utilization measures that were calculated for this profile are not included in the *Snapshot*.

Figure 1. Snapshot of Middlesex County

Behavioral Health Disorders	Prevalence per 1,000 Beneficiaries (21 Months Prior to Superstorm Sandy)	
	Middlesex County	10 County Average
Depression or Proxy Disorders	236.32	251.86
• Depression alone	156.07	164.75
• Anxiety Disorders alone	131.79	144.53
• Adjustment Disorders alone	37.58	43.45
PTSD	5.71	5.36
Alcohol or Substance Abuse	35.12	43.26
• Substance Abuse alone	19.58	23.75
Suicide and Intentional Self-Inflicted Injury	5.60	6.80
Top Five Risk Factors for Depression or Proxy Disorders*	163.31	175.56
• Alzheimer's Disease and related disorders or Senile Dementia	48.66	49.25
• Sleep Disturbance	33.49	32.26
• Substance or Alcohol Abuse or Tobacco Use	89.12	104.94
• Hip/Pelvic Fractures	12.06	10.99
• Amputations	1.49	1.50
Behavioral Health Services	**Utilization per 1,000 Beneficiaries (21 Months Prior to Superstorm Sandy)**	
	Middlesex County	**10 County Average**
Assessments		
• Depression Screening	7.50	4.81
• Psychiatric Diagnostic Procedures	74.20	81.61
• Neuropsychological Test	11.22	14.18
Therapy		
• Individual Psychotherapy	68.07	69.31
• Family Psychotherapy	4.60	5.09
• Group Psychotherapy	6.69	3.88
Psychiatric Hospital Admissions	10.33	12.56

* The top five risk factors were identified based on findings from a literature review (Appendix B) and factors available through Medicare claims. Logistic regression analysis was conducted with Medicare claims.

Medicare FFS Demographics

At A Glance

Total Medicare FFS Population – 115,895

Females – 64,920	(56.02%)
Males – 50,975	(43.98%)
White	(77.29%)
Black	(7.65%)
Asian	(6.26%)
Hispanic	(3.48%)
Other	(5.32%)
Average Age	70.51

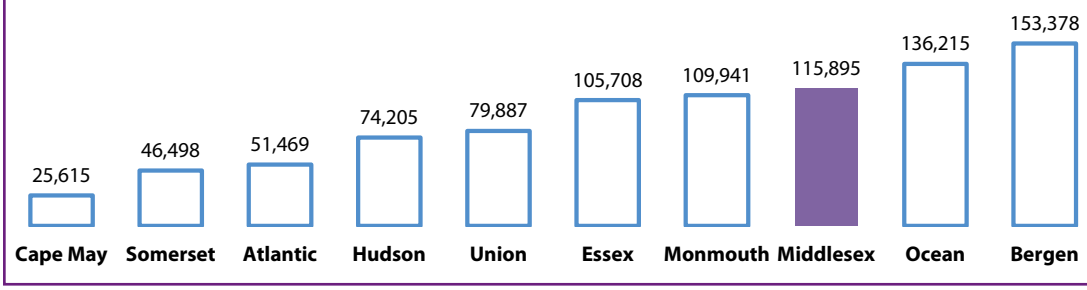
Source: Medicare Claims Database

Middlesex County

Total Medicare FFS Beneficiary Population by County

The total Medicare FFS beneficiary population of Middlesex County is 115,895 (Figure 2).

Figure 2. Total Medicare FFS Beneficiaries by County (January 1, 2011 – March 31, 2013)



Percent of Medicare FFS Beneficiary Population by Gender by County

Females make up 56.02% of the entire Medicare FFS population in Middlesex County and males 43.98% (Figure 3).

Figure 3. Percent of Medicare FFS Beneficiary Population by Gender by County (January 1, 2011 – March 31, 2013)

County	Percent of Males	Percent of Females
Atlantic	45.03	54.97
Bergen	43.14	56.86
Cape May	46.10	53.90
Essex	42.89	57.11
Hudson	42.80	57.20
Middlesex	**43.98**	**56.02**
Monmouth	43.89	56.11
Ocean	43.01	56.99
Somerset	43.45	56.55
Union	43.04	56.96
Average of 10 counties*	**43.47**	**56.53**

*Computing the average of all 10 counties in this table will not equal the average shown, as some beneficiaries moved from one county to another during this time frame.

Percent of Medicare FFS Beneficiary Population by Race by County

The majority of this population is White (77.29%) followed by Black (7.65%), Asian (6.26%), Other (5.32%), and Hispanic (3.48%) (Figure 4).

Figure 4. Percent of Medicare FFS Beneficiary Population by Race by County (January 1, 2011 – March 31, 2013)

County	Percent of Whites	Percent of Blacks	Percent of Hispanics	Percent of Asians	Percent of Other
Atlantic	78.45	14.09	2.50	2.90	2.06
Bergen	83.43	4.85	2.46	4.57	4.69
Cape May	94.48	3.63	0.40	0.40	1.09
Essex	54.00	36.02	4.24	1.81	3.93
Hudson	61.15	12.20	14.82	5.29	6.54
Middlesex	**77.29**	**7.65**	**3.48**	**6.26**	**5.32**
Monmouth	87.67	7.01	0.80	1.55	2.97
Ocean	95.47	1.98	0.56	0.56	1.42
Somerset	82.59	6.77	1.37	4.36	4.91
Union	69.39	19.68	5.52	1.84	3.58
10 counties*	**78.42**	**11.21**	**3.49**	**3.08**	**3.80**

*Computing the average of all 10 counties in this table will not equal the average shown, as some beneficiaries moved from one county to another during this time frame.

Percent of Medicare FFS Beneficiary Population by Age by County

The beneficiary population in Middlesex County varies by age group with the largest group between ages 65 and 74 years old followed by beneficiaries younger than 65 years old. The average age of beneficiaries in this county is 70.51 (Figure 5).

Figure 5. Percent of Medicare FFS Beneficiary Population by Age by County (January 1, 2011 – March 31, 2013)

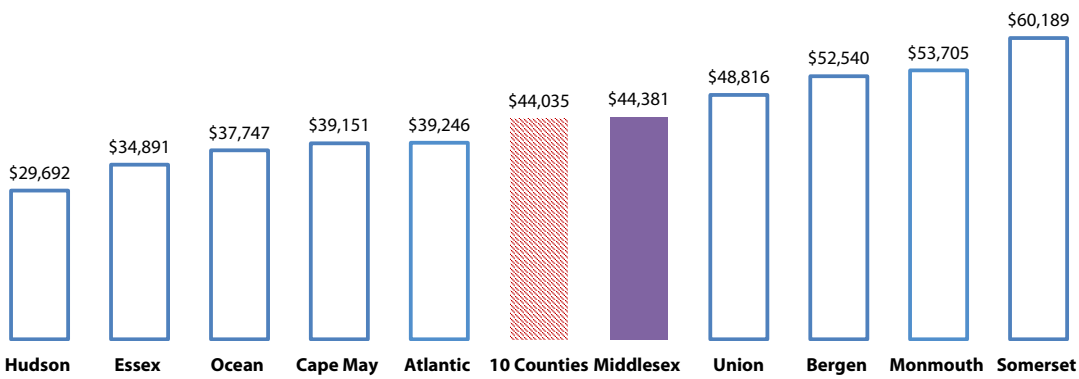
County	<65	65 – 74	75 – 84	85 and Above	Average Age by County (January 1, 2011 – March 31, 2013)
Atlantic	29.99	38.06	22.08	9.87	69.06
Bergen	21.57	38.27	26.67	13.49	72.08
Cape May	26.28	39.31	24.02	10.40	70.20
Essex	29.31	36.96	22.34	11.39	69.46
Hudson	28.69	37.76	23.29	10.26	69.55
Middlesex	**26.36**	**37.27**	**24.57**	**11.80**	**70.51**
Monmouth	26.33	38.08	23.62	11.97	70.59
Ocean	22.85	37.89	26.50	12.75	71.51
Somerset	23.73	39.98	24.28	12.01	71.15
Union	26.28	36.41	24.23	13.09	70.77
10 counties*	**25.56**	**37.86**	**24.56**	**12.02**	**70.72**

*Computing the average of all 10 counties in this table will not equal the average shown, as some beneficiaries moved from one county to another during this time frame.

Socioeconomic Status by County

According to U.S. Census data from 2012, residents aged 65 and over in Middlesex County had a median household income of $44,381 (Figure 6).

Figure 6. 2012 Median Household Income (65 years and above)



Source: U.S. Census Bureau, American Community Survey (ACS), 2012 http://www.census.gov/.

Prevalence and Incidence

Using Medicare FFS claims data, eight behavioral health conditions were analyzed: depression, depression or proxy disorders, adjustment disorder, anxiety disorder, post-traumatic stress disorder (PTSD), substance abuse, alcohol or substance abuse, and suicide and intentional self-inflicted injury.

Claims data can underestimate the real incidence of depression in the population and individuals with depression could be diagnosed as having anxiety or adjustment disorders, as noted by the subject matter experts consulted for this project. Therefore, HQSI created a combination measure for depression (depression or proxy disorders) which includes beneficiaries who were reported for either depression, anxiety, or adjustment disorders.

The behavioral health data from January 1, 2011 to March 31, 2013 for these different measures were calculated to quantify disease occurrence:

1. Prevalence of the condition for the pre-Sandy time frame (Q1 2011 – Q3 2012, or 21 months)
2. Quarterly new incidence compared to prior year (Q1 2012 – Q1 2013)
3. The yearly prevalence of the condition with quarterly rolling trends to account for seasonal variation

Refer to Appendix A for measurement calculation and Appendix E for quarterly time frames and formulae.

Summary

Prevalence of the selected behavioral health conditions in the 21 months prior to Superstorm Sandy in the 10 counties is color coded with highest (red) and lowest (light blue) for each condition.

In the 21 months prior to Superstorm Sandy, Middlesex County had a higher than average rate of PTSD among all 10 counties (Figure 7).

Figure 7. Prevalence of Selected Behavioral Health Conditions per 1,000 Medicare FFS Beneficiaries – Pre-Sandy (Q1 2011 – Q3 2012)

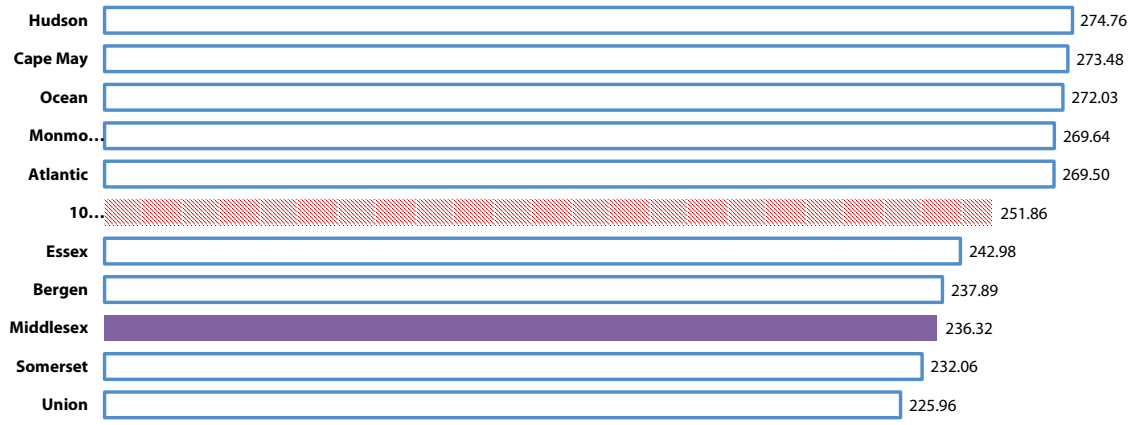
County	Depression or Proxy Disorders	Depression	Anxiety Disorder	Adjustment Disorder	PTSD	Alcohol or Substance Abuse	Substance Abuse	Suicide and Intentional Self-Inflicted Injury
Atlantic	269.50	171.36	163.83	45.32	7.13	**60.37**	**34.67**	**9.24**
Bergen	237.89	160.41	131.36	38.14	3.25	28.04	14.04	5.44
Cape May	273.48	169.64	168.71	36.62	6.74	55.75	28.95	6.22
Essex	242.98	158.79	124.32	54.16	4.92	56.59	33.80	7.02
Hudson	**274.76**	**181.03**	161.26	48.85	4.29	44.84	22.94	7.13
Middlesex	236.32	156.07	131.79	37.58	5.71	35.12	19.58	5.60
Monmouth	269.64	176.30	155.45	**55.08**	6.59	48.02	23.81	8.07
Ocean	272.03	173.97	**170.82**	42.95	**7.48**	50.61	30.52	8.47
Somerset	232.06	152.38	131.07	40.32	5.77	37.67	21.12	5.90
Union	225.96	148.14	126.46	31.27	3.32	34.96	17.45	5.12
10 counties	**251.86**	**164.75**	**144.53**	**43.45**	**5.36**	**43.26**	**23.75**	**6.80**

Highest Lowest

Depression or Proxy Disorders

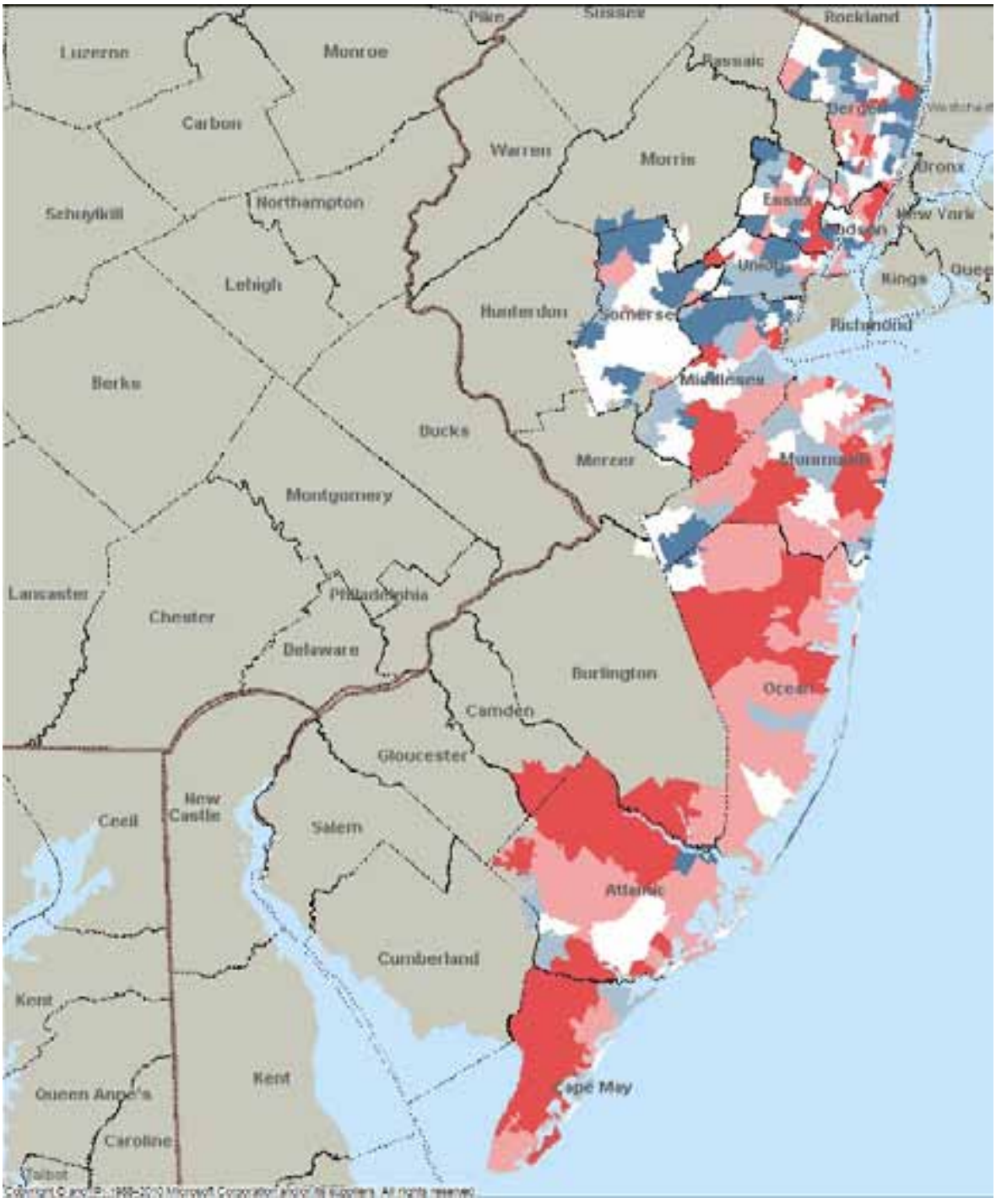
The prevalence rate of depression or proxy disorders in Middlesex County in the 21 months prior to Superstorm Sandy was 236.32 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 8).

Figure 8. Prevalence of Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries – Pre-Sandy: Q1 2011 – Q3 2012



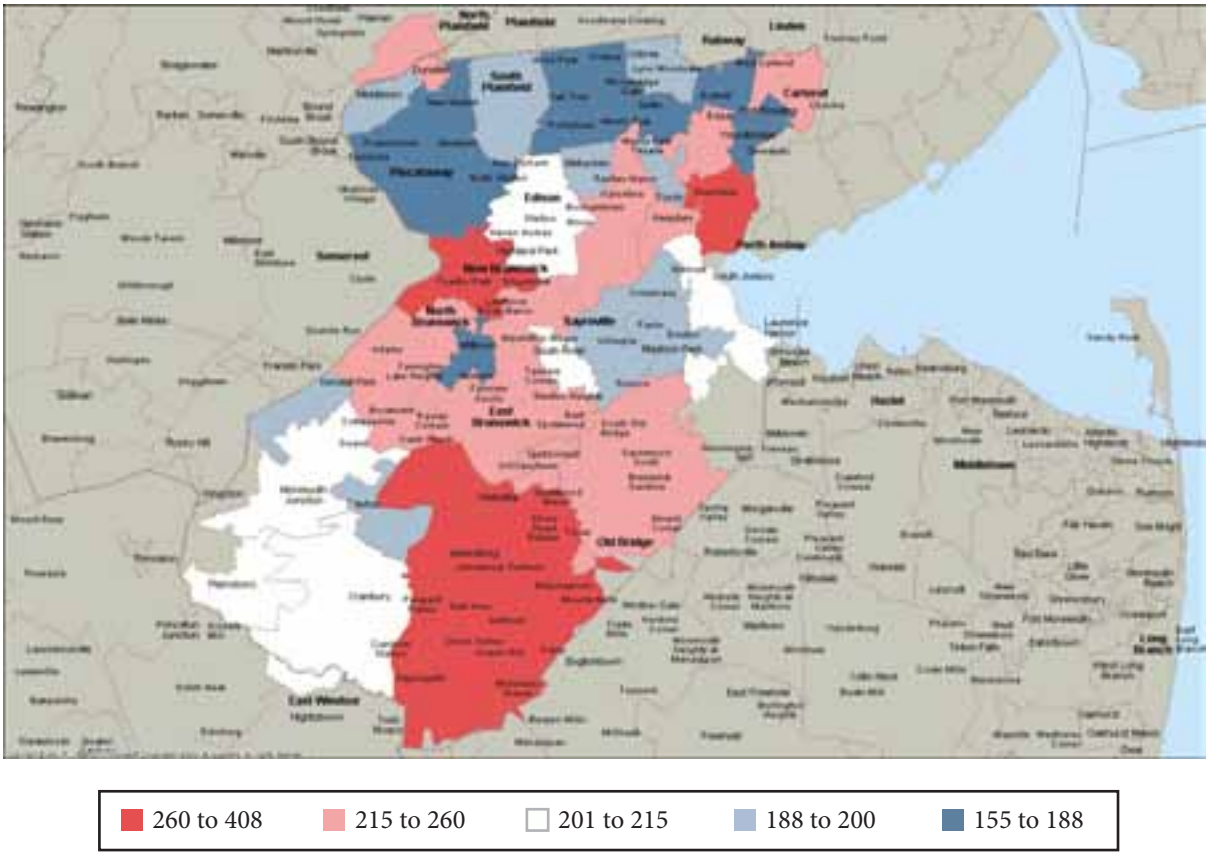
The color-coded map of New Jersey depicts prevalence of depression or proxy disorders from high (red) to low (blue) in the 10 FEMA-declared disaster counties. This map shows that parts of Middlesex, along with Monmouth, Ocean, Atlantic, and Cape May Counties had a higher prevalence of depression or proxy disorders than the other counties (Figure 9).

Figure 9. Prevalence of Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries in 10 Counties (Pre-Sandy: Q1 2011- Q3 2012)



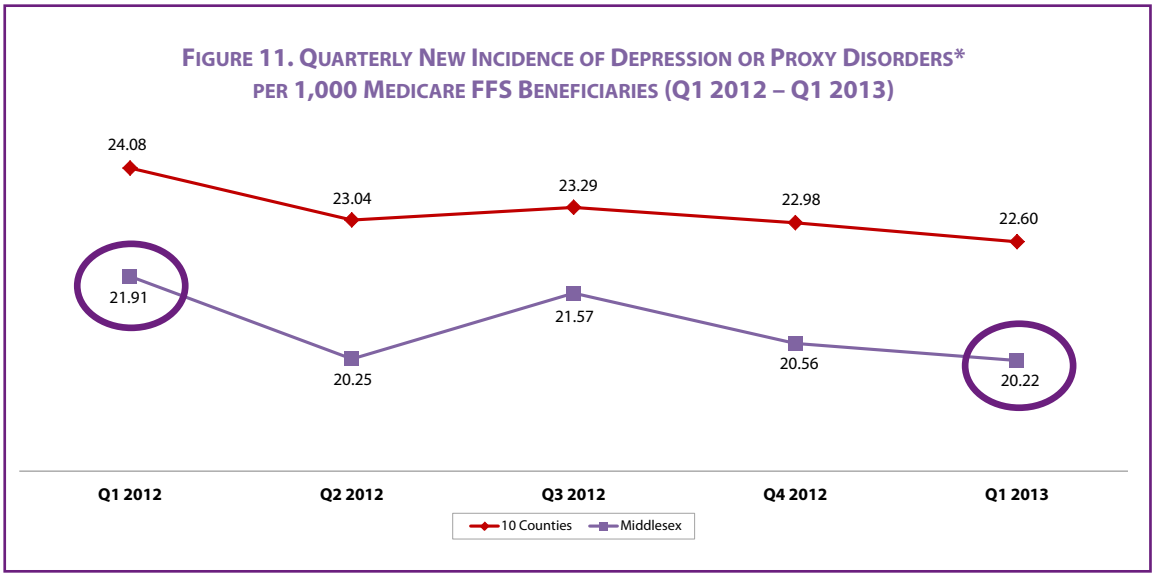
The color-coded map of Middlesex County depicts regional variation of prevalence of depression or proxy disorders from high (red) to low (blue). Some areas, such as Keasbey, Perth Amboy, and New Brunswick had higher rates of depression or proxy disorders than others (Figure 10).

Figure 10. Middlesex County Prevalence of Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries (Pre-Sandy: Q1 2011- Q3 2012)



For Q1 2013, there were 20.22 Medicare FFS beneficiaries newly diagnosed with depression or proxy disorders per 1,000 beneficiaries in Middlesex County compared Q1 2012, which was 21.91 per 1,000 beneficiaries. This was lower than the quarterly rate among all 10 counties in Q1 2013 (Figure 11).

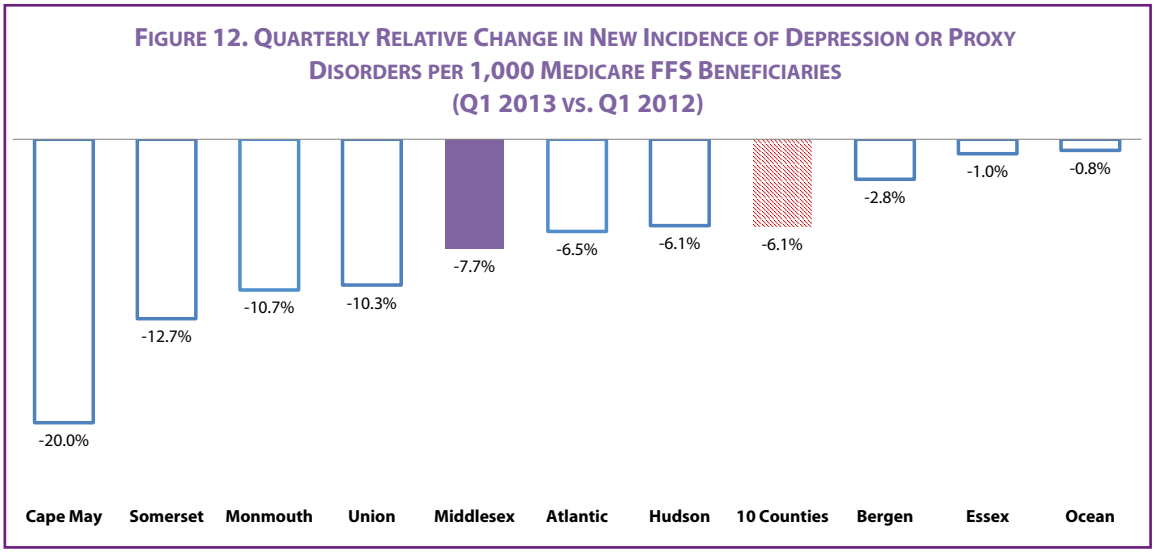
FIGURE 11. QUARTERLY NEW INCIDENCE OF DEPRESSION OR PROXY DISORDERS* PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2012 – Q1 2013)



* Quarterly new incidences compared to prior year.

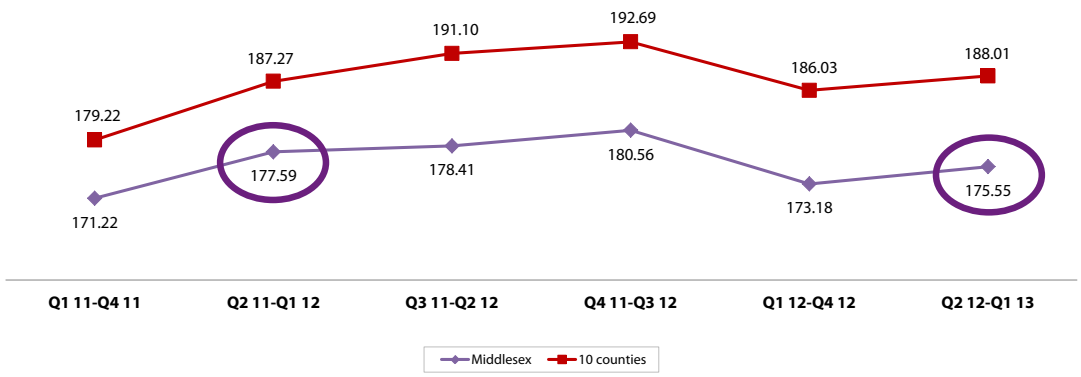
Comparing Q1 2013 to Q1 2012, there was a 7.7% relative decrease in new incidence of depression or proxy disorders in Middlesex County (Figure 12).

FIGURE 12. QUARTERLY RELATIVE CHANGE IN NEW INCIDENCE OF DEPRESSION OR PROXY DISORDERS PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2013 VS. Q1 2012)



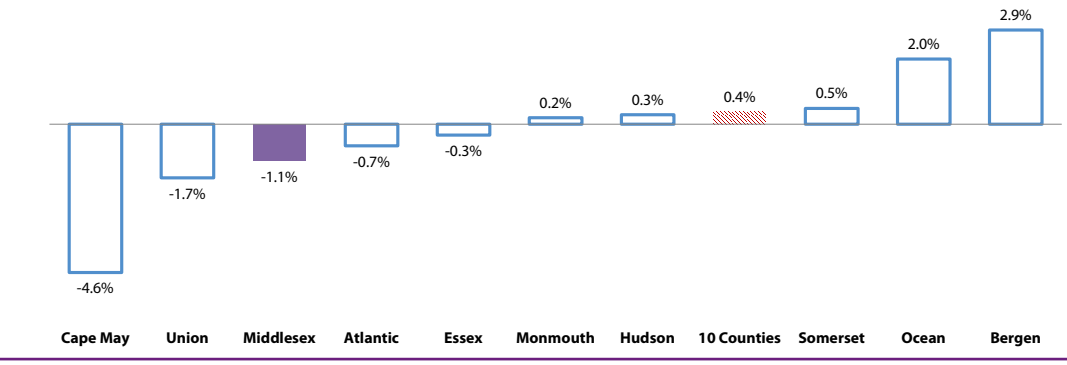
From Q2 2012 – Q1 2013, there was a 175.55 per 1,000 Medicare FFS beneficiaries yearly prevalence of depression or proxy disorders in Middlesex County compared to Q2 2011 – Q1 2012, which was 177.59 per 1,000 beneficiaries. Middlesex County's yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 13).

FIGURE 13. YEARLY PREVALENCE OF DEPRESSION OR PROXY DISORDERS PER 1,000 MEDICARE FFS BENEFICIARIES



Comparing Q2 2012 – Q1 2013 to Q2 2011 – Q1 2012, there was a 1.1% relative decrease in depression or proxy disorders in Middlesex County (Figure 14).

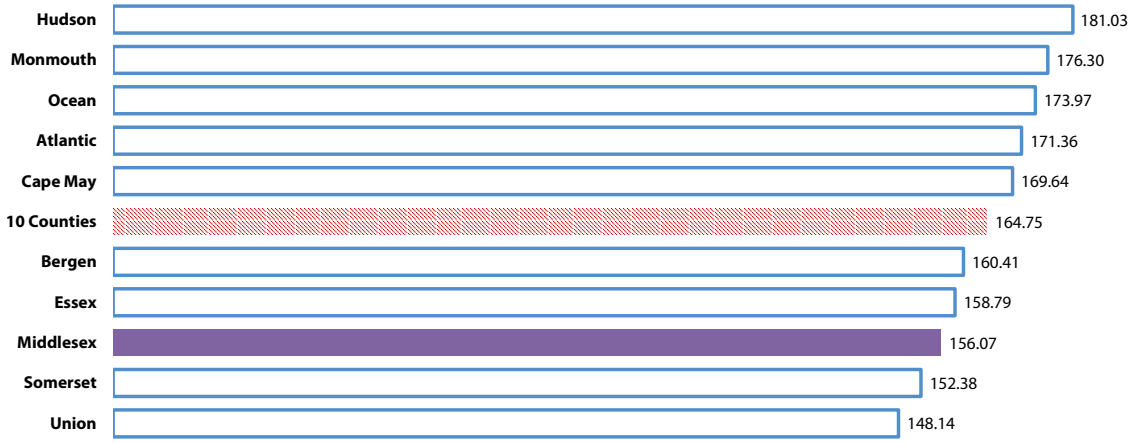
FIGURE 14. YEARLY RELATIVE CHANGE IN PREVALENCE OF DEPRESSION OR PROXY DISORDERS PER 1,000 MEDICARE FFS BENEFICIARIES (Q2 2012 – Q1 2013 VS. Q2 2011 – Q1 2012)



Depression

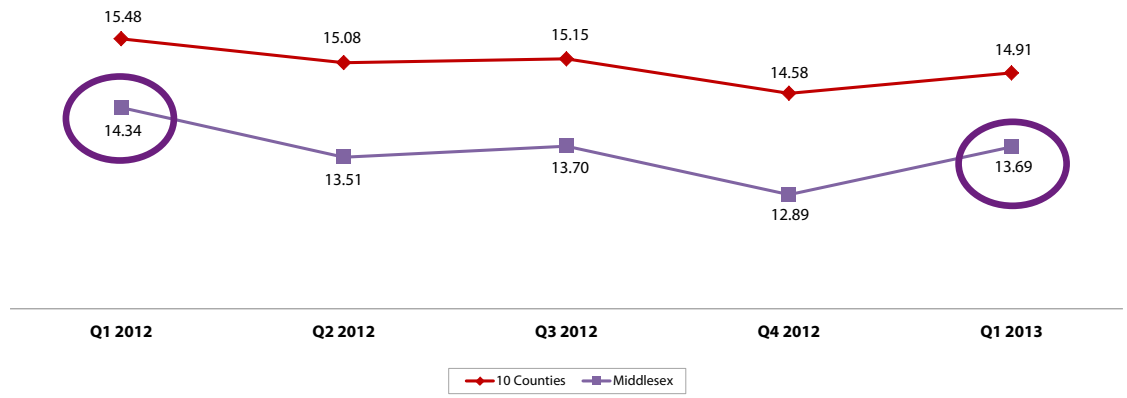
The prevalence rate of depression in Middlesex County in the 21 months prior to Superstorm Sandy was 156.07 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 15).

Figure 15. Prevalence of Depression per 1,000 Medicare FFS beneficiaries Pre-Sandy: Q1 2011 – Q3 2012



For Q1 2013, there were 13.69 Medicare FFS beneficiaries newly diagnosed with depression per 1,000 beneficiaries in Middlesex County compared to Q1 2012, which was 14.34 per 1,000 beneficiaries. This was lower than the quarterly rate among all 10 counties in Q1 2013 (Figure 16).

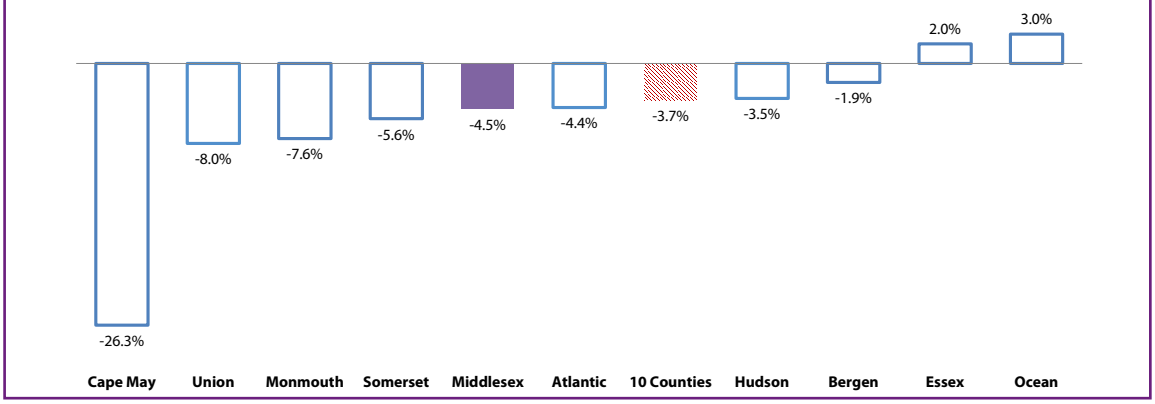
FIGURE 16. QUARTERLY NEW INCIDENCE OF DEPRESSION* PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2012 – Q1 2013)



* Quarterly new incidences compared to prior year.

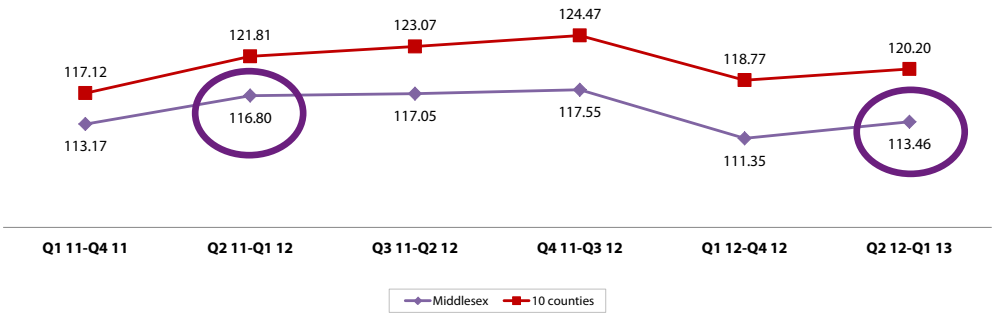
Comparing Q1 2013 to Q1 2012, there was a 4.5% relative decrease in new incidence of depression in Middlesex County (Figure 17).

FIGURE 17. QUARTERLY RELATIVE CHANGE IN NEW INCIDENCE OF DEPRESSION PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2013 VS. Q1 2012)



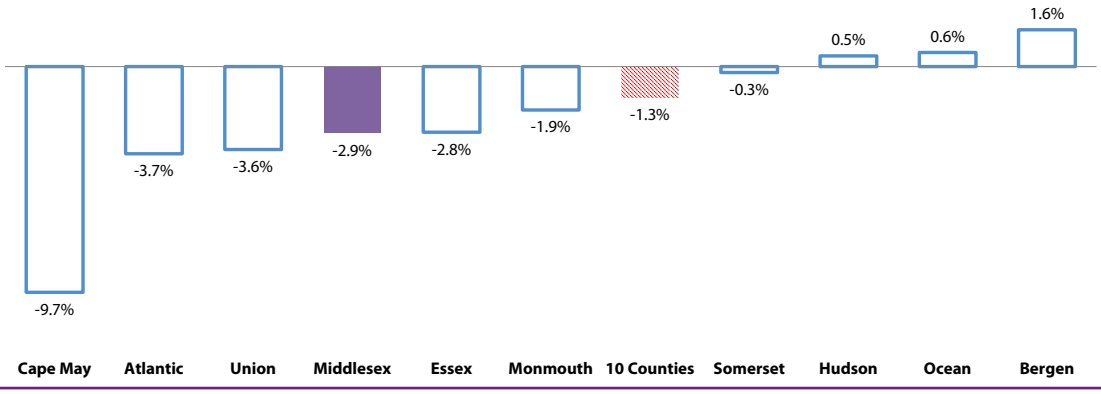
From Q2 2012 – Q1 2013, there was a 113.46 per 1,000 Medicare FFS beneficiaries yearly prevalence of depression in Middlesex County compared to Q2 2011 – Q1 2012, which was 116.80 per 1,000 beneficiaries. Middlesex County's yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 18).

Figure 18. Yearly Prevalence of Depression per 1,000 Medicare FFS Beneficiaries



Comparing Q2 2012 – Q1 2013 to Q2 2011 – Q1 2012, there was a 2.9% relative decrease in depression in Middlesex County (Figure 19).

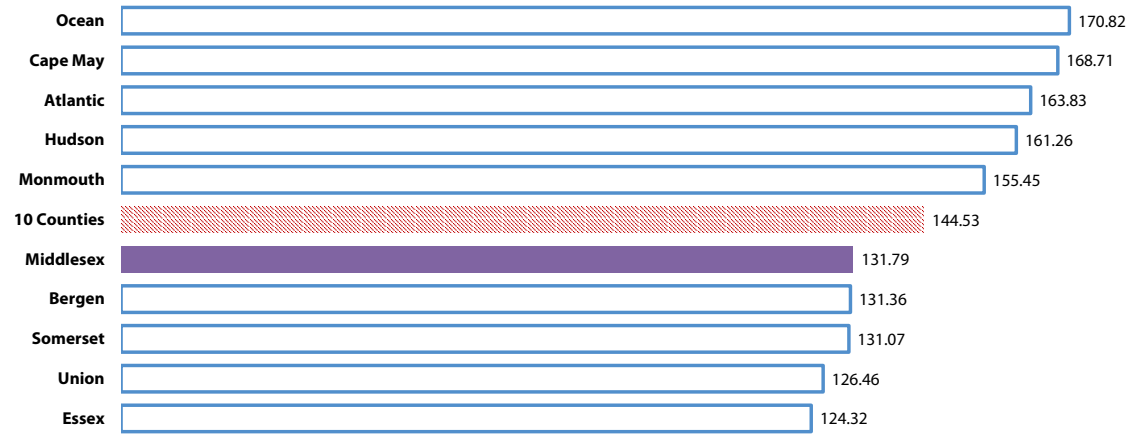
Figure 19. Yearly Relative Change in Prevalence of Depression per 1,000 Medicare FFS Beneficiaries (Q2 2012 – Q1 2013 vs. Q2 2011 – Q1 2012)



Anxiety Disorders

The prevalence rate of anxiety disorders in Middlesex County in the 21 months prior to Superstorm Sandy was 131.79 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 20).

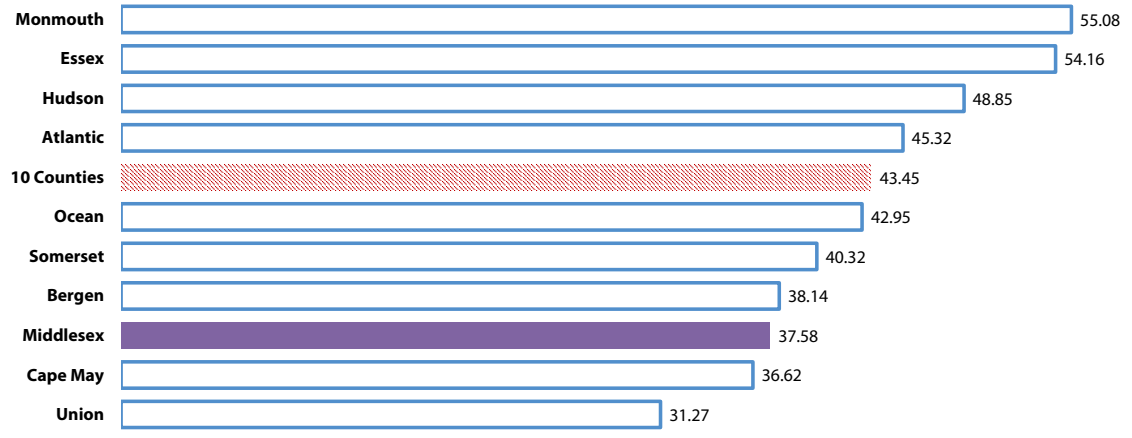
FIGURE 20. PREVALENCE OF ANXIETY DISORDERS PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



Adjustment Disorders

The prevalence rate of adjustment disorders in Middlesex County in the 21 months prior to Superstorm Sandy was 37.58 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 21).

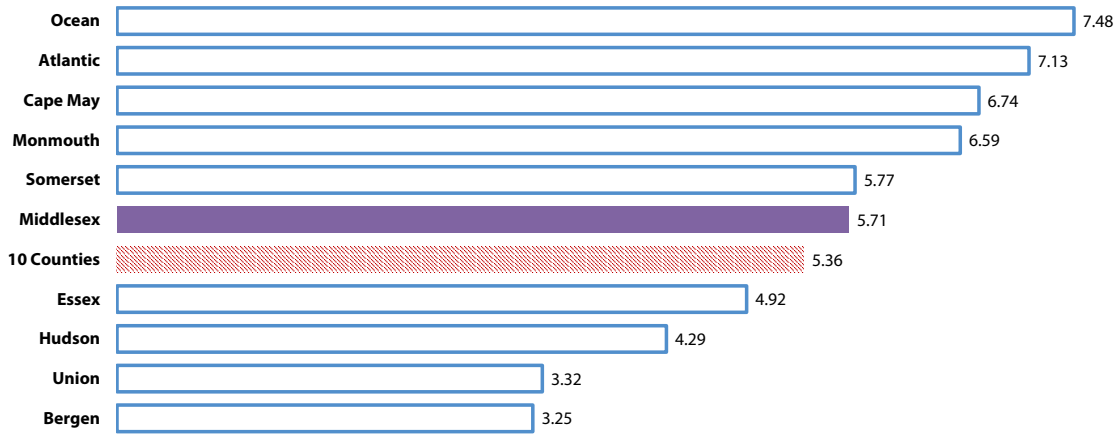
FIGURE 21. PREVALENCE OF ADJUSTMENT DISORDERS PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



Post-Traumatic Stress Disorder (PTSD)

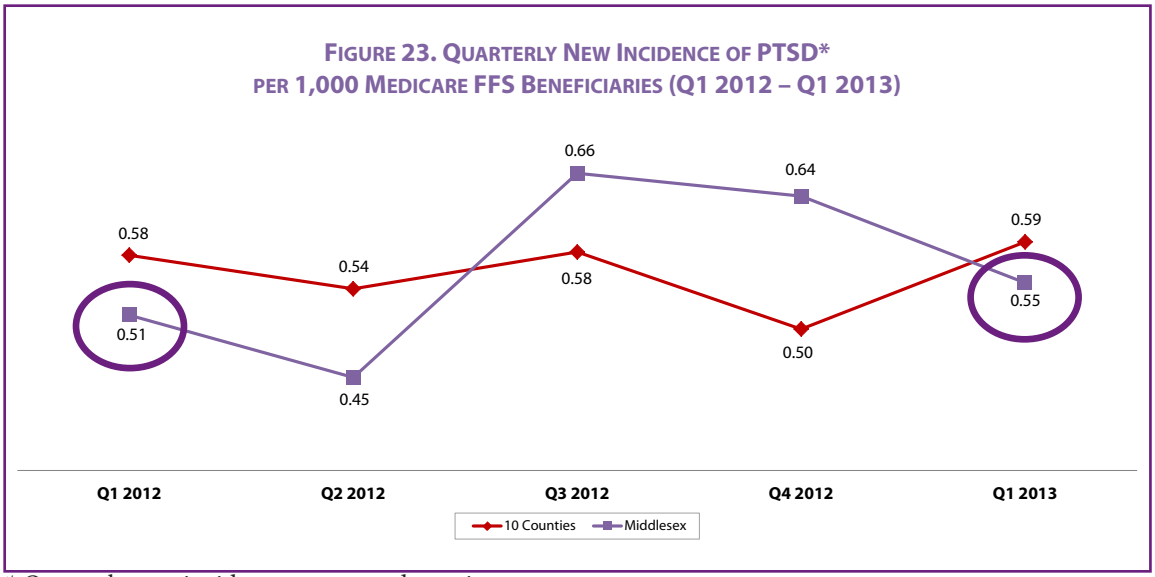
The prevalence rate of PTSD in Middlesex County in the 21 months prior to Superstorm Sandy was 5.71 per 1,000 Medicare FFS beneficiaries. This was higher than the prevalence rate among all 10 counties (Figure 22).

Figure 22. Prevalence of PTSD per 1,000 Medicare FFS beneficiaries Pre-Sandy: Q1 2011 – Q3 2012



For Q1 2013, there were 0.55 Medicare FFS beneficiaries newly diagnosed with PTSD per 1,000 beneficiaries in Middlesex County compared to Q1 2012, which was 0.51 per 1,000 beneficiaries. This was lower than the rate among all 10 counties in Q1 2013 (Figure 23).

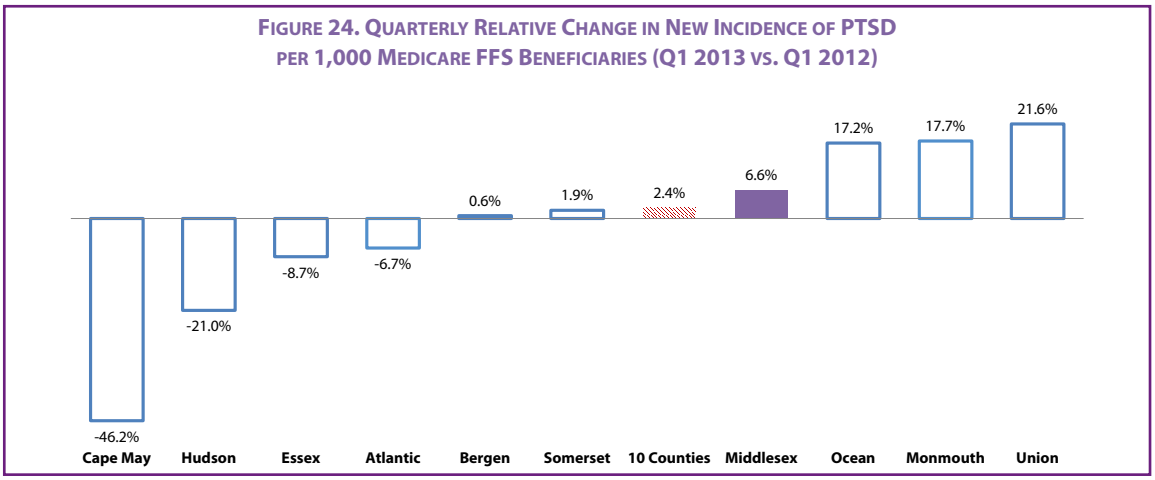
FIGURE 23. QUARTERLY NEW INCIDENCE OF PTSD*
PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2012 – Q1 2013)



* Quarterly new incidences compared to prior year.

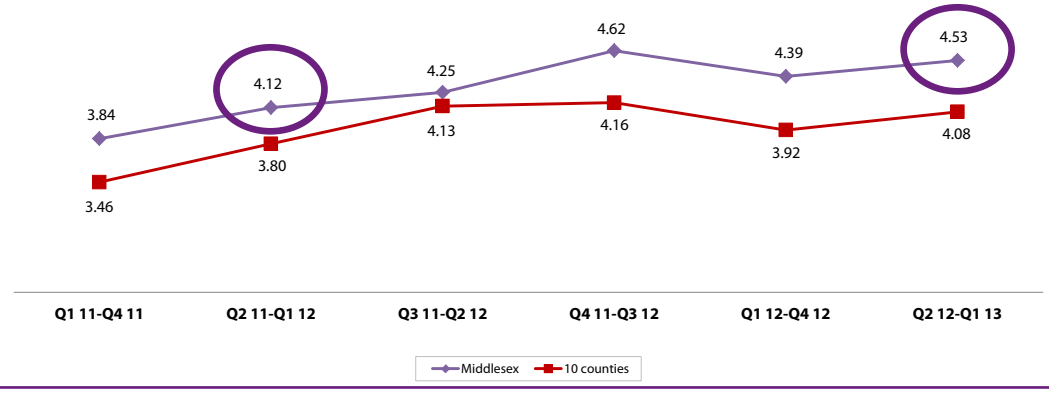
Comparing Q1 2013 to Q1 2012, there was a 6.6% relative increase in new incidence of PTSD in Middlesex County (Figure 24).

FIGURE 24. QUARTERLY RELATIVE CHANGE IN NEW INCIDENCE OF PTSD
PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2013 VS. Q1 2012)



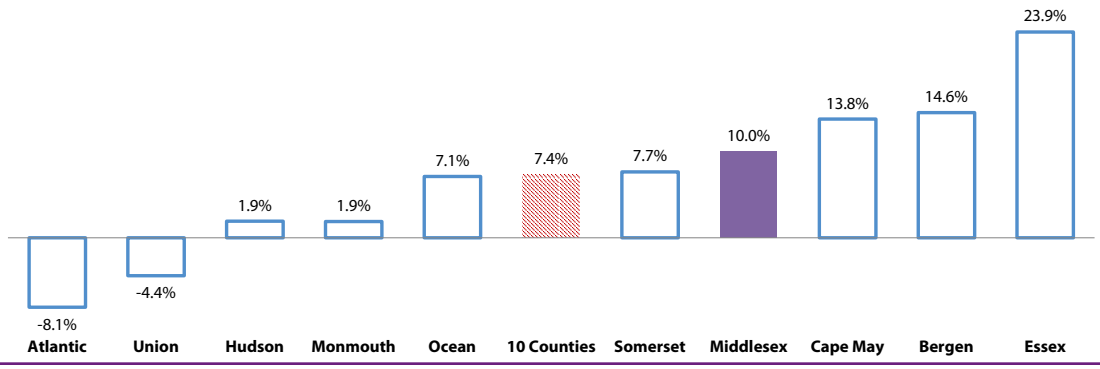
From Q2 2012 – Q1 2013, there was a 4.53 per 1,000 Medicare FFS beneficiaries yearly prevalence of PTSD in Middlesex County compared to Q2 2011 – Q1 2012, which was 4.12 per 1,000 beneficiaries. The yearly rate of PTSD with rolling quarters was higher than the rate among all 10 counties (Figure 25).

Figure 25. Yearly Prevalence of PTSD per 1,000 Medicare FFS Beneficiaries



Comparing Q2 2012 – Q1 2013 to Q2 2011 – Q1 2012, there was a 10.0% relative increase in PTSD in Middlesex County (Figure 26).

Figure 26. Yearly Relative Change in Prevalence of PTSD per 1,000 Medicare FFS Beneficiaries (Q2 2012 – Q1 2013 vs. Q2 2011 – Q1 2012)

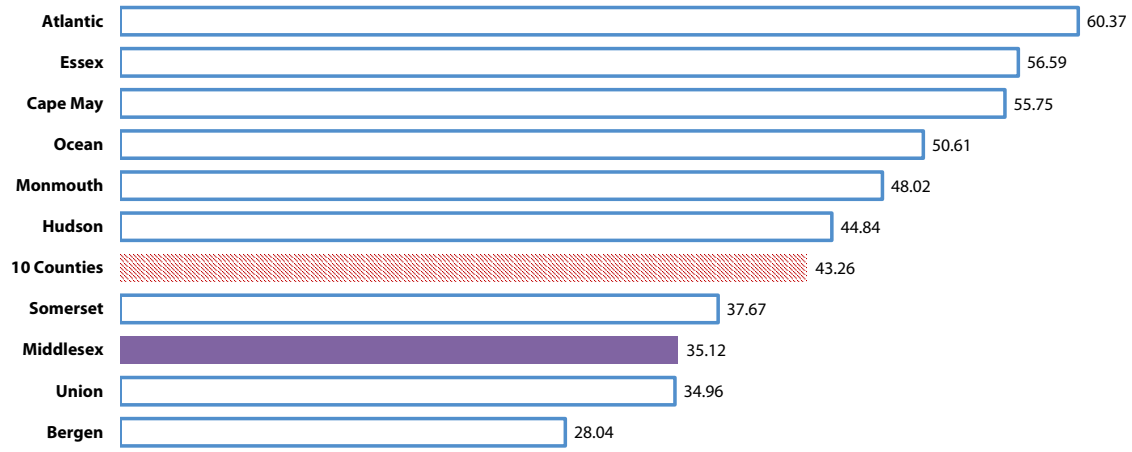


Alcohol or Substance Abuse

The alcohol or substance abuse measure includes Medicare FFS beneficiaries who were reported for either alcohol abuse or substance abuse.

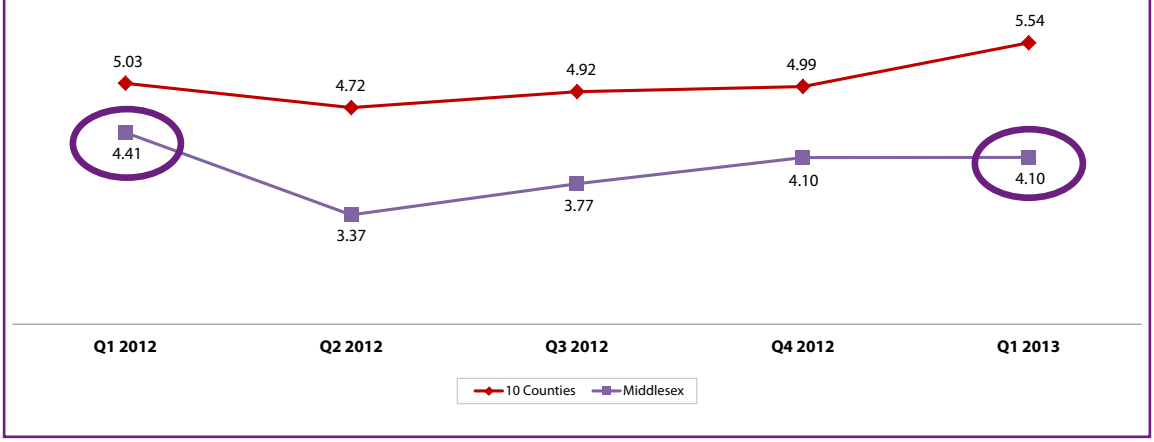
The prevalence rate of alcohol or substance abuse in Middlesex County in the 21 months prior to Superstorm Sandy was 35.12 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 27).

Figure 27. Prevalence of Alcohol or Substance Abuse per 1,000 Medicare FFS Beneficiaries – Pre-Sandy: Q1 2011 – Q3 2012



For Q1 2013, there were 4.10 Medicare FFS beneficiaries newly diagnosed with alcohol or substance abuse per 1,000 beneficiaries in Middlesex County compared to Q1 2012, which was 4.41 per 1,000 beneficiaries. This was lower than the quarterly rate among all 10 counties in Q1 2013 (Figure 28).

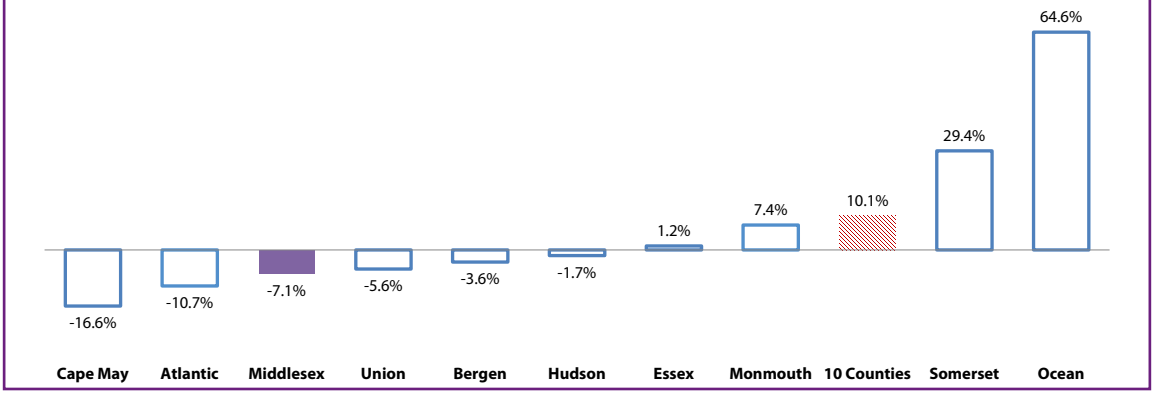
FIGURE 28. QUARTERLY NEW INCIDENCE OF ALCOHOL OR SUBSTANCE ABUSE* PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2012 – Q1 2013)



* Quarterly new incidences compared to prior year.

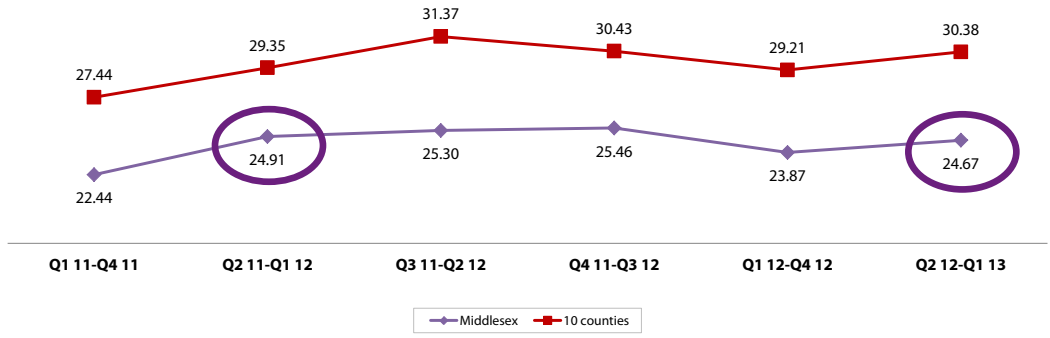
Comparing Q1 2013 to Q1 2012, there was a 7.1% relative decrease in new incidence of alcohol or substance abuse in Middlesex County (Figure 29).

FIGURE 29. QUARTERLY RELATIVE CHANGE IN NEW INCIDENCE OF ALCOHOL OR SUBSTANCE ABUSE PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2013 VS. Q1 2012)



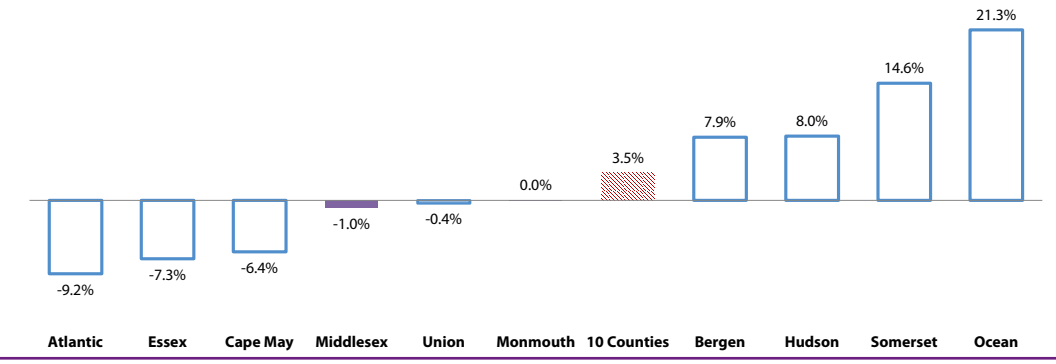
From Q2 2012 – Q1 2013, there was a 24.67 per 1,000 Medicare FFS beneficiaries yearly prevalence of alcohol or substance abuse in Middlesex County compared to Q2 2011 – Q1 2012, which was 24.91 per 1,000 beneficiaries. The yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 30).

FIGURE 30. YEARLY PREVALENCE OF ALCOHOL OR SUBSTANCE ABUSE PER 1,000 MEDICARE FFS BENEFICIARIES



Comparing Q2 2012 – Q1 2013 to Q2 2011 – Q1 2012, there was a 1.0% relative decrease in alcohol or substance abuse in Middlesex County (Figure 31).

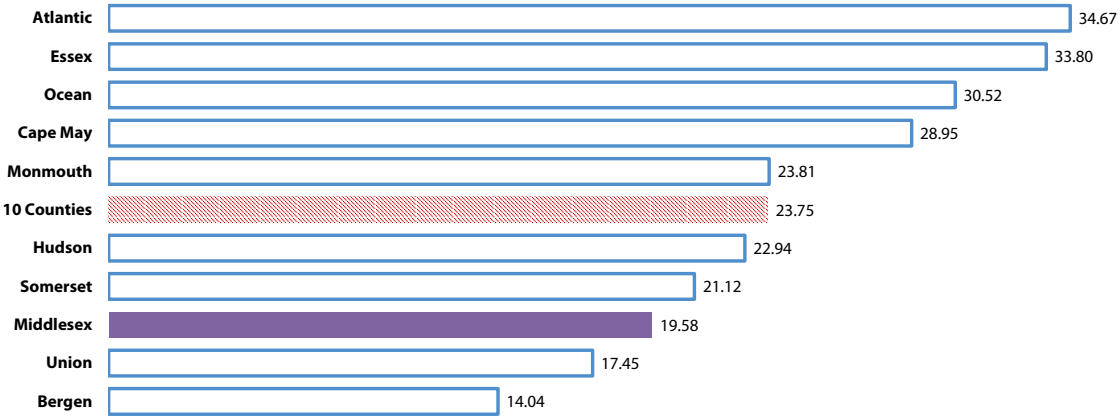
FIGURE 31. YEARLY RELATIVE CHANGE IN PREVALENCE OF ALCOHOL OR SUBSTANCE ABUSE PER 1,000 MEDICARE FFS BENEFICIARIES (Q2 2012 – Q1 2013 VS. Q2 2011 – Q1 2012)



Substance Abuse

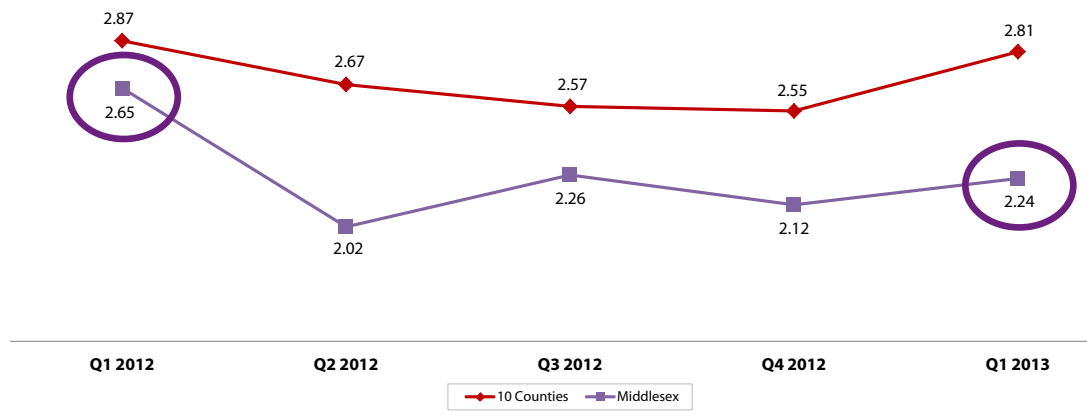
The prevalence rate of substance abuse in Middlesex County in the 21 months prior to Superstorm Sandy was 19.58 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 32).

Figure 32. Prevalence of Substance Abuse per 1,000 Medicare FFS Beneficiaries – Pre-Sandy: Q1 2011 – Q3 2012



For Q1 2013, there were 2.24 Medicare FFS beneficiaries newly diagnosed with substance abuse per 1,000 beneficiaries in Middlesex County compared to Q1 2012, which was 2.65 per 1,000 beneficiaries. This was lower than the quarterly rate among all 10 counties in Q1 2013 (Figure 33).

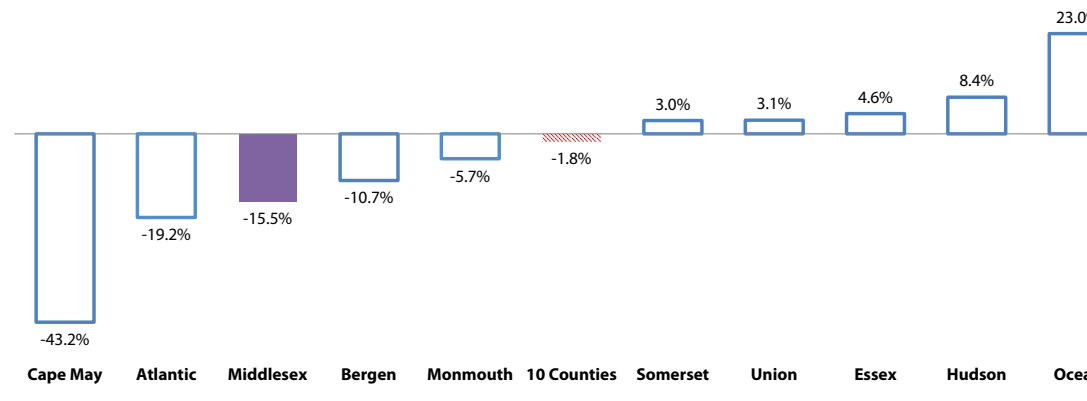
FIGURE 33. QUARTERLY NEW INCIDENCE OF SUBSTANCE ABUSE* PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2012 – Q1 2013)



* Quarterly new incidences compared to prior year.

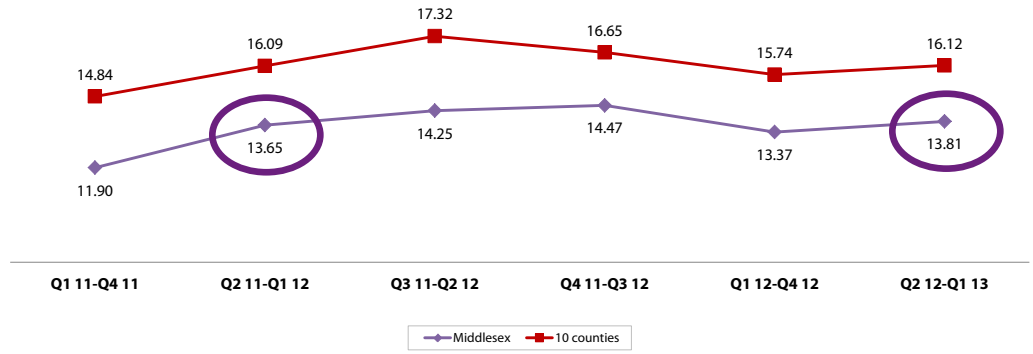
Comparing Q1 2013 to Q1 2012, there was a 15.5% relative decrease in new incidence of substance abuse in Middlesex County (Figure 34).

FIGURE 34. QUARTERLY RELATIVE CHANGE IN NEW INCIDENCE OF SUBSTANCE ABUSE PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2013 VS. Q1 2012)



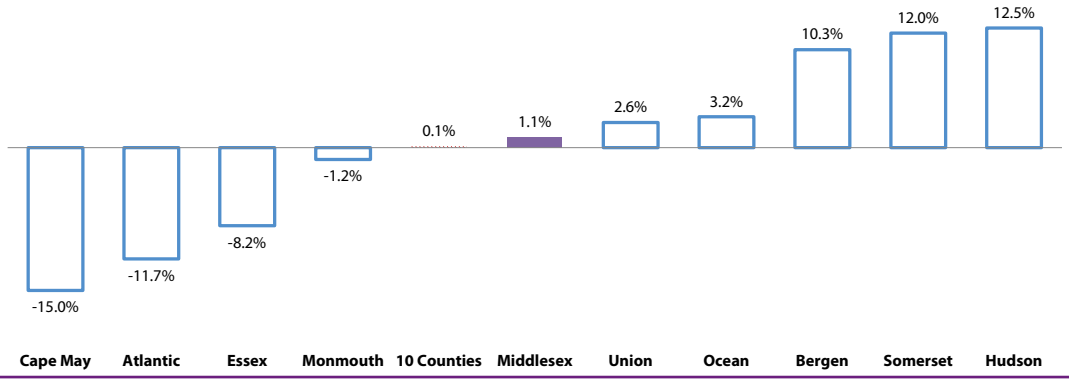
From Q2 2012 – Q1 2013, there was a 13.81 per 1,000 Medicare FFS beneficiaries yearly prevalence of substance abuse in Middlesex County compared to Q2 2011 – Q1 2012, which was 13.65 per 1,000 beneficiaries. The yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 35).

Figure 35. Yearly Prevalence of Substance Abuse per 1,000 Medicare FFS Beneficiaries



Comparing Q2 2012 – Q1 2013 to Q2 2011 – Q1 2012, there was a 1.1% relative increase in substance abuse in Middlesex County (Figure 36).

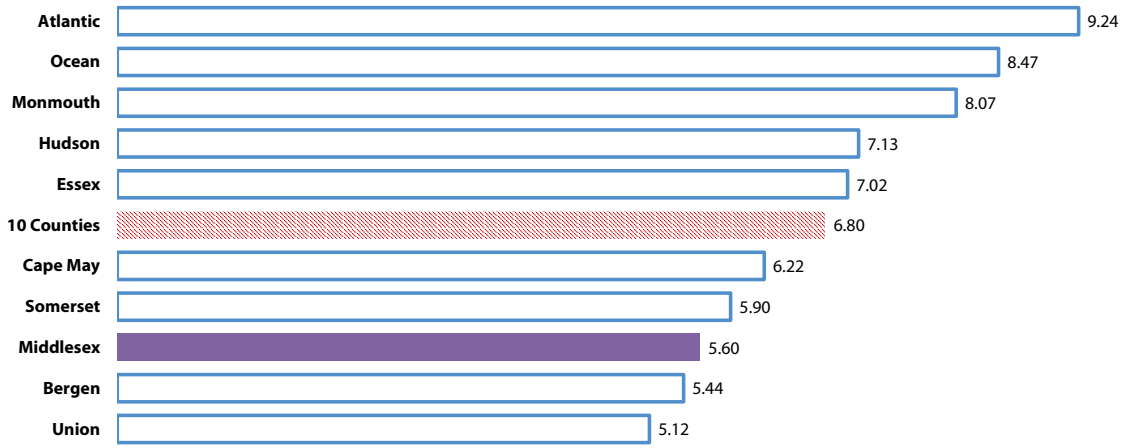
Figure 36. Yearly Relative Change in Prevalence of Substance Abuse per 1,000 Medicare FFS Beneficiaries (Q2 2012 – Q1 2013 vs. Q2 2011 – Q1 2012)



Suicide and Intentional Self-Inflicted Injury

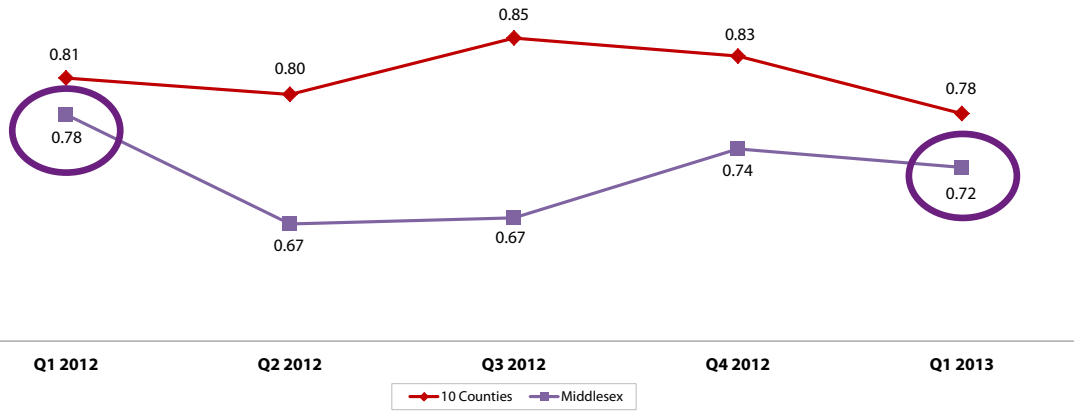
The prevalence rate of suicide and intentional self-inflicted injury in Middlesex County in the 21 months prior to Superstorm Sandy was 5.60 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 37).

Figure 37. Rate of Suicide and Intentional Self-Inflicted Injury per 1,000 Medicare FFS Beneficiaries – Pre-Sandy: Q1 2011 – Q3 2012



For Q1 2013, there were 0.72 Medicare FFS beneficiaries newly diagnosed with suicide and intentional self-inflicted injury per 1,000 beneficiaries in Middlesex County, compared to Q1 2012, which was 0.78 per 1,000 beneficiaries. This was lower than the quarterly rate among all 10 counties in Q1 2013 (Figure 38).

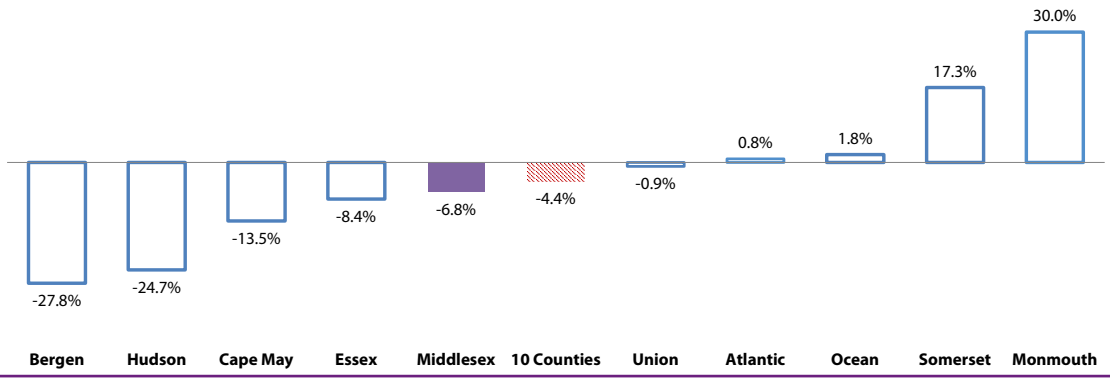
FIGURE 38. QUARTERLY NEW INCIDENCE OF SUICIDE AND INTENTIONAL SELF-INFLICTED INJURY* PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2012 – Q1 2013)



* Quarterly new incidences compared to prior year.

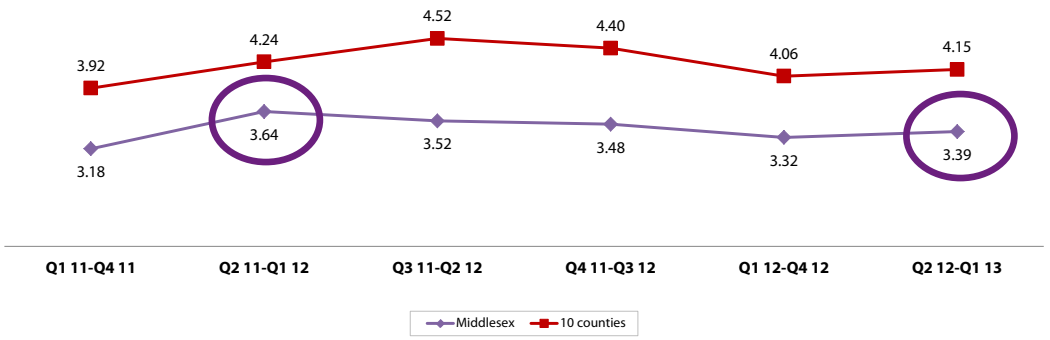
Comparing Q1 2013 to Q1 2012, there was a 6.8% relative decrease in new incidence of suicide and intentional self-inflicted injury in Middlesex County (Figure 39).

FIGURE 39. QUARTERLY RELATIVE CHANGE IN NEW INCIDENCE OF SUICIDE AND INTENTIONAL SELF-INFLICTED INJURY PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2013 VS. Q1 2012)



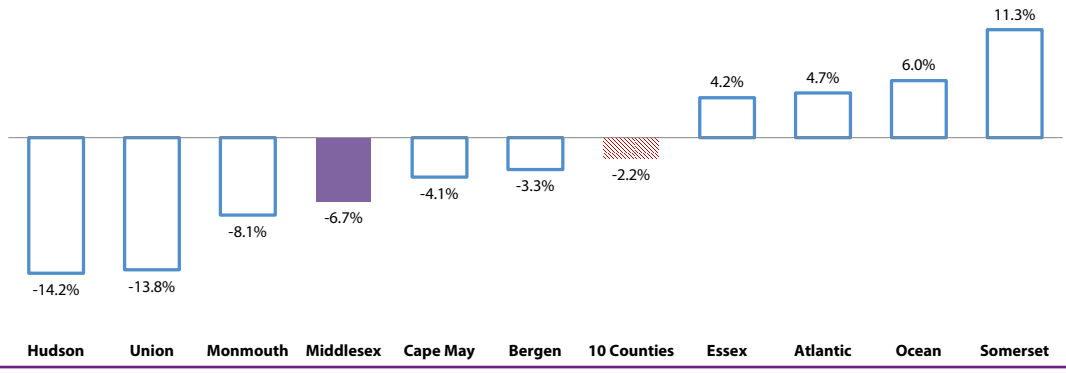
From Q2 2012 – Q1 2013, there was a 3.39 per 1,000 Medicare FFS beneficiaries yearly prevalence of suicide and intentional self-inflicted injury in Middlesex County compared to Q2 2011 – Q1 2012, which was 3.64 per 1,000 beneficiaries. The yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 40).

FIGURE 40. YEARLY RATE OF SUICIDE AND INTENTIONAL SELF-INFLICTED INJURY PER 1,000 MEDICARE FFS BENEFICIARIES



Comparing Q2 2012 – Q1 2013 to Q2 2011 – Q1 2012, there was a 6.7% relative decrease in suicide and intentional self-inflicted injury in Middlesex County (Figure 41).

FIGURE 41. YEARLY RELATIVE CHANGE IN RATE OF SUICIDE AND INTENTIONAL SELF-INFLICTED INJURY PER 1,000 MEDICARE FFS BENEFICIARIES (Q2 2012 – Q1 2013 VS. Q2 2011 – Q1 2012)



Risk Factors for Depression or Proxy Disorders

To identify beneficiaries at risk of developing depression or proxy disorders, HQSI initially conducted a literature review on the potential risk factors for depression or proxy disorders. Previous studies suggested that psychosocial factors, biological factors, deteriorating physical functioning, and medication side effects could increase the risk of depression or proxy disorders.

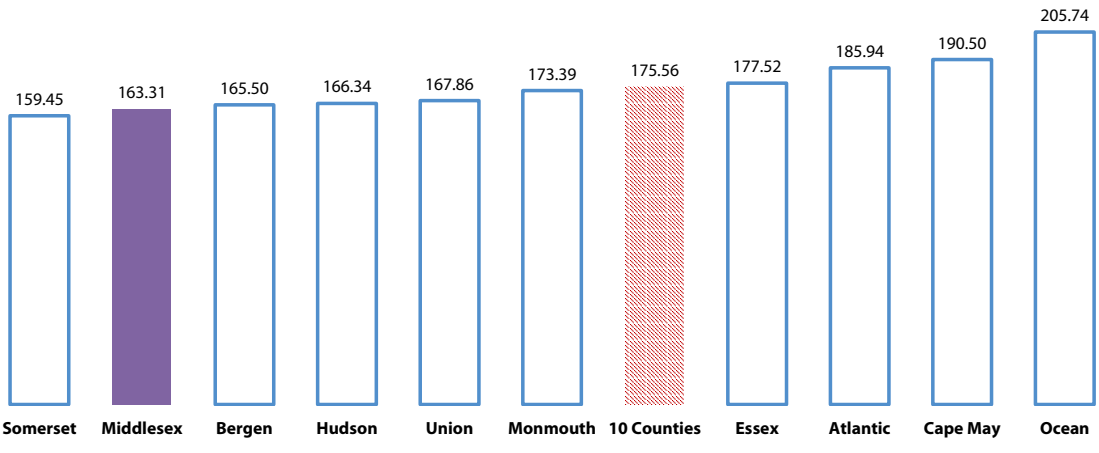
Based on the literature review and running models using factors available through Medicare claims data, the top five risk factors for depression or proxy disorders were identified as: Alzheimer's disease and related disorders or senile dementia, sleep disturbance, substance or alcohol abuse or tobacco use, hip/pelvic fractures, and amputations (see Appendix B).

These risk factors were reported prior to the diagnosis of depression or proxy disorders thus indicating development of risk factors before diagnosis. The following figures show the prevalence rates for these five conditions in the 21 months prior to Superstorm Sandy.

Top Five Risk Factors for Depression or Proxy Disorders

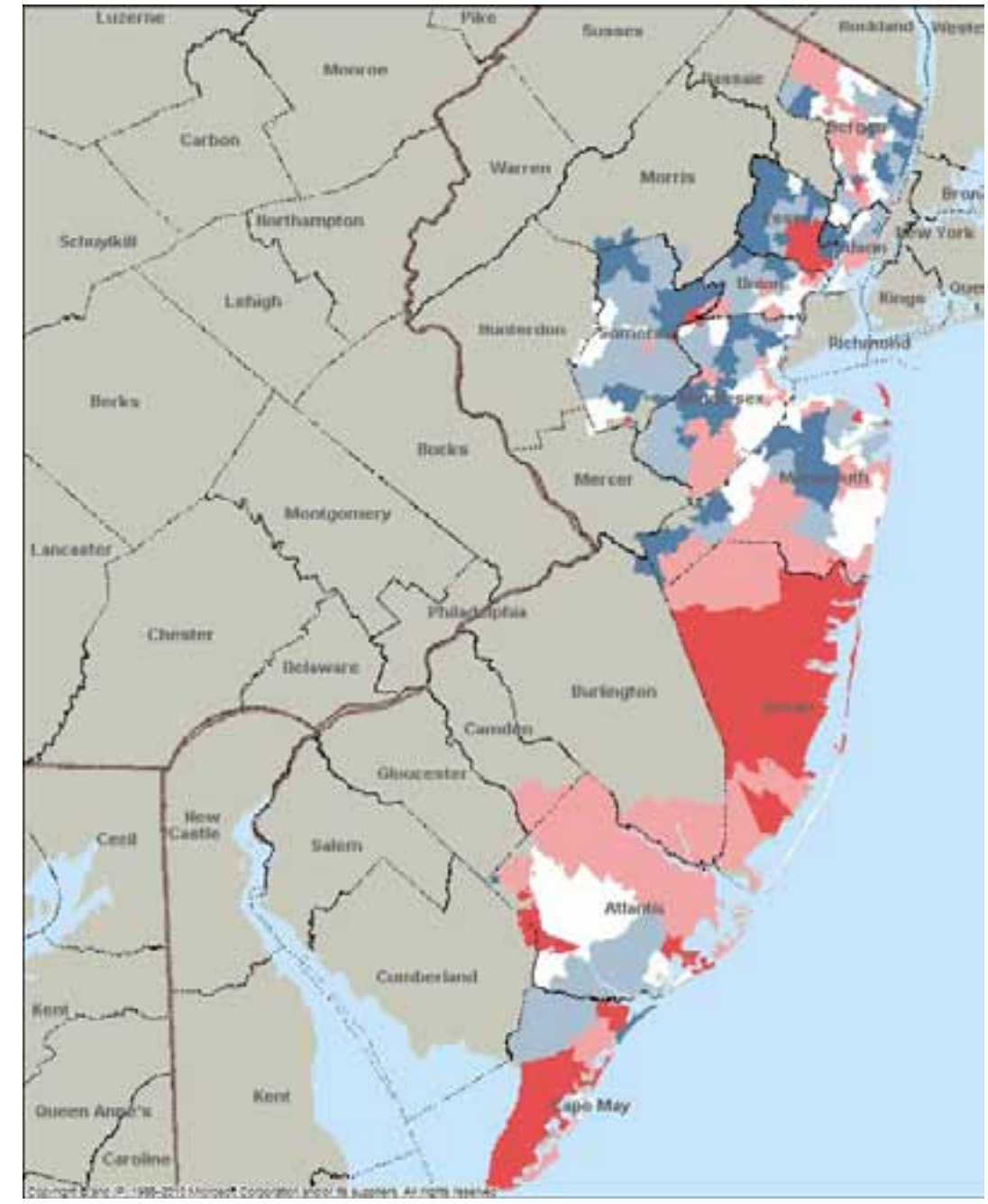
The prevalence rate of beneficiaries with one or more of the top five risk factors for depression or proxy disorders in Middlesex County in the 21 months prior to Superstorm Sandy was 163.31 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 42).

Figure 42. Prevalence of Top Five Risk Factors for Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries – Pre-Sandy Q1 2011 – Q3 2012



The color-coded map of New Jersey depicts prevalence of any of the top five risk factors from high (red) to low (blue) in the 10 FEMA-declared disaster counties. This map shows that parts of Middlesex, along with Monmouth, Ocean, Atlantic, and Cape May Counties had higher prevalence of one or more of the top five risk factors for depression or proxy disorders (Figure 43).

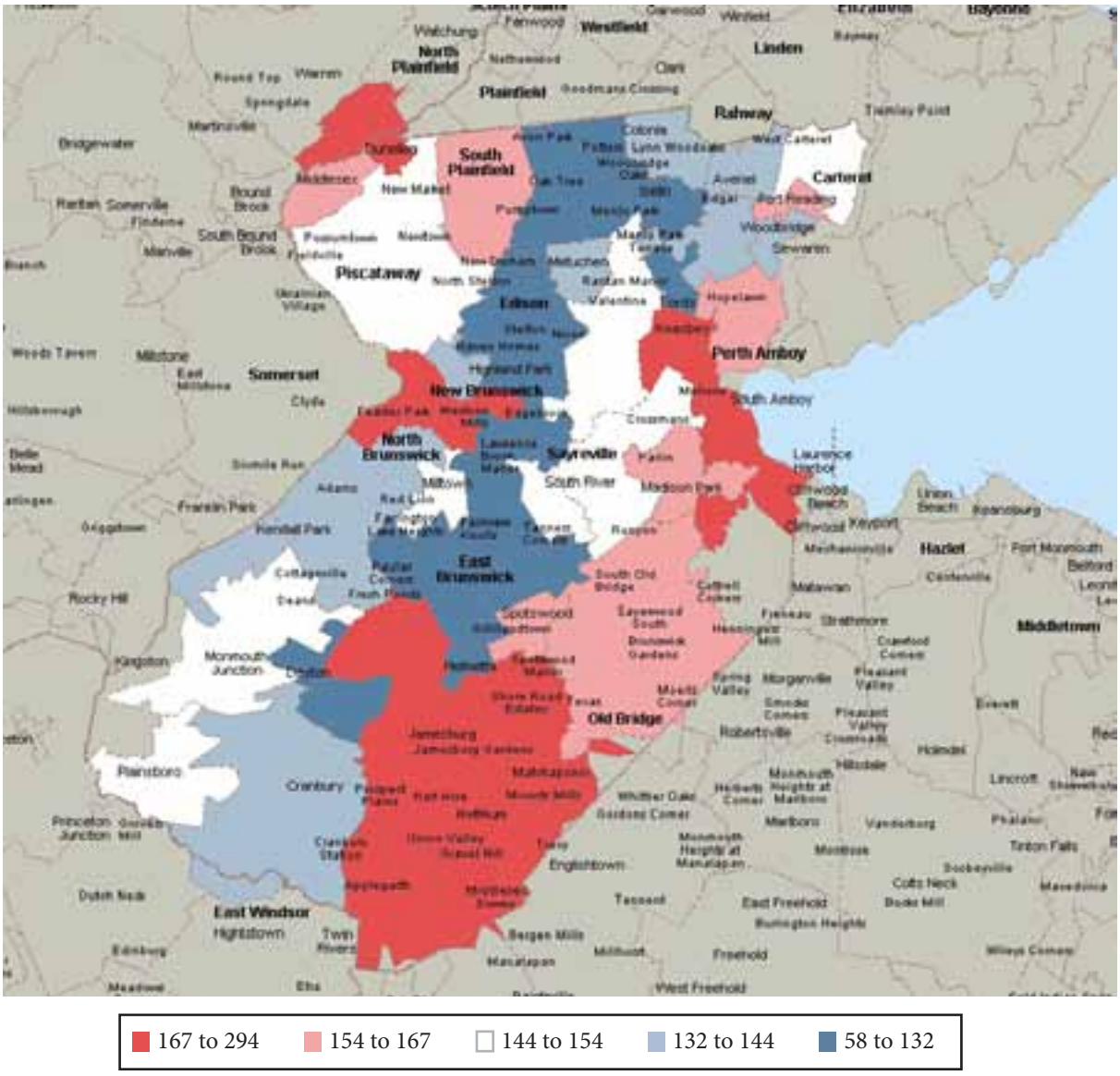
Figure 43. Prevalence of Top Five Risk Factors for Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries in 10 Counties (Pre-Sandy: Q1 2011 – Q3 2012)



182.34 to 344.11 | 164.20 to 182.33 | 150.62 to 164.19 | 137.10 to 150.61 | 41.99 to 137.09

The color-coded map of Middlesex County depicts regional variation of prevalence of any of the top five risk factors from high (red) to low (blue). Some areas, such as Keasbey, Perth Amboy, South Amboy, Laurence Harbor, and New Brunswick had higher prevalence of one or more of the top five risk factors for depression or proxy disorders (Figure 44).

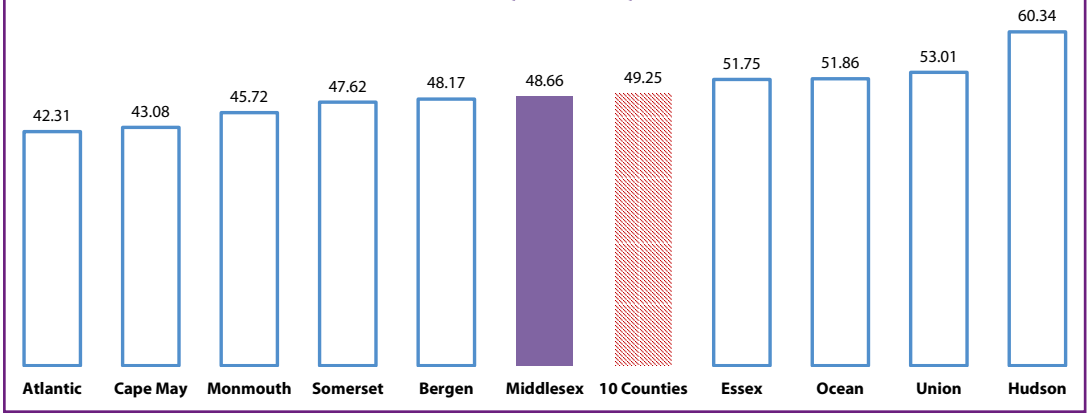
Figure 44. Middlesex County Prevalence of Top Five Risk Factors for Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries (Pre-Sandy: Q1 2011 – Q3 2012)



Alzheimer's Disease and Related Disorders or Senile Dementia

The prevalence rate of Alzheimer's disease and related disorders or senile dementia in Middlesex County in the 21 months prior to Superstorm Sandy was 48.66 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 45).

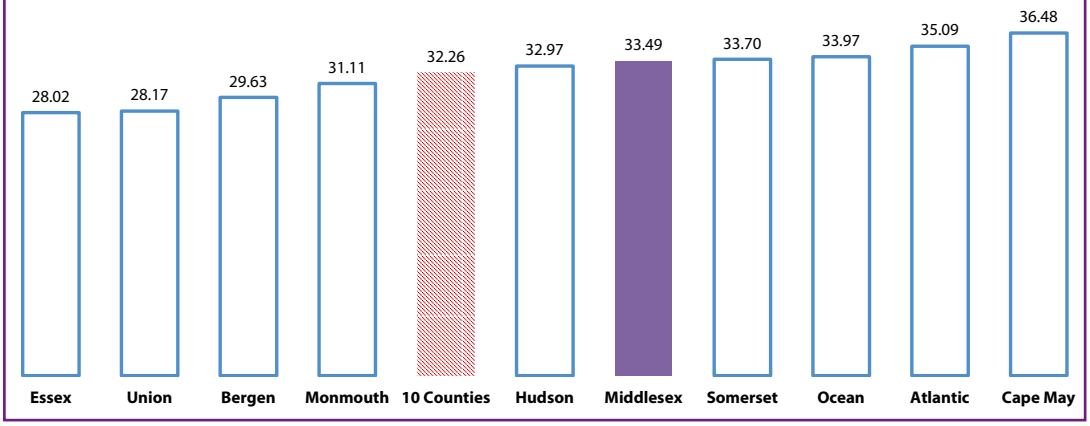
FIGURE 45. PREVALENCE OF ALZHEIMER'S DISEASE AND RELATED DISORDERS OR SENILE DEMENTIA PER 1,000 MEDICARE FFS BENEFICIARIES PRE-SANDY Q1 2011 – Q3 2012



Sleep Disturbance

The prevalence rate of sleep disturbance in Middlesex County in the 21 months prior to Superstorm Sandy was 33.49 per 1,000 Medicare beneficiaries. This was higher than the prevalence rate among all 10 counties (Figure 46).

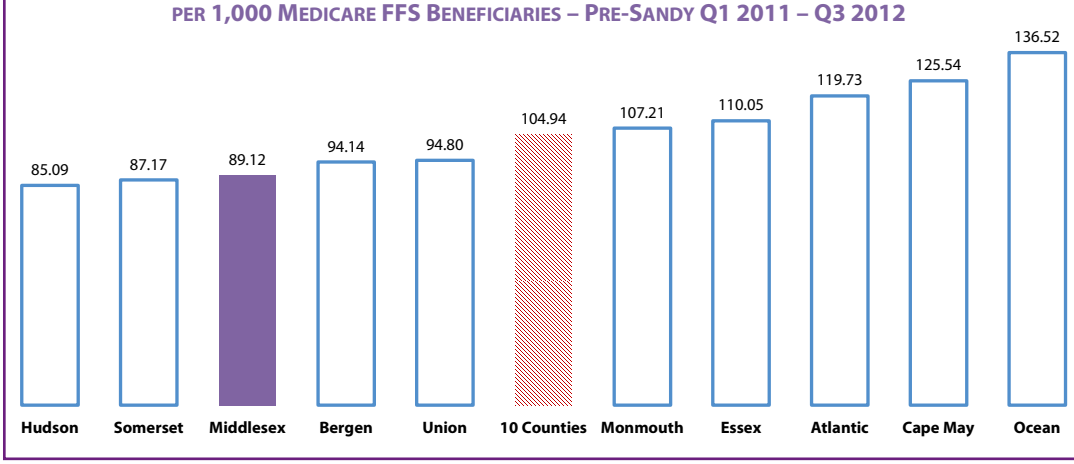
FIGURE 46. PREVALENCE OF SLEEP DISTURBANCE PER 1,000 MEDICARE FFS BENEFICIARIES PRE-SANDY Q1 2011 – Q3 2012



Substance or Alcohol Abuse or Tobacco Use

The prevalence rate of substance or alcohol abuse or tobacco use in Middlesex County in the 21 months prior to Superstorm Sandy was 89.12 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 47).

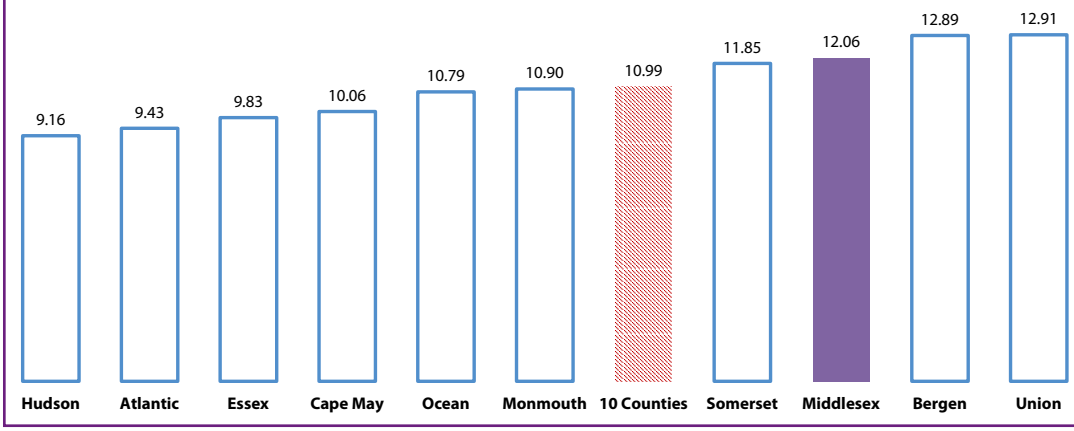
Figure 47. Prevalence of Substance or Alcohol Abuse or Tobacco Use per 1,000 Medicare FFS Beneficiaries – Pre-Sandy Q1 2011 – Q3 2012



Hip/Pelvic Fractures

The prevalence rate of hip/pelvic fractures in Middlesex County in the 21 months prior to Superstorm Sandy was 12.06 per 1,000 Medicare FFS beneficiaries. This was higher than the prevalence rate among all 10 counties (Figure 48).

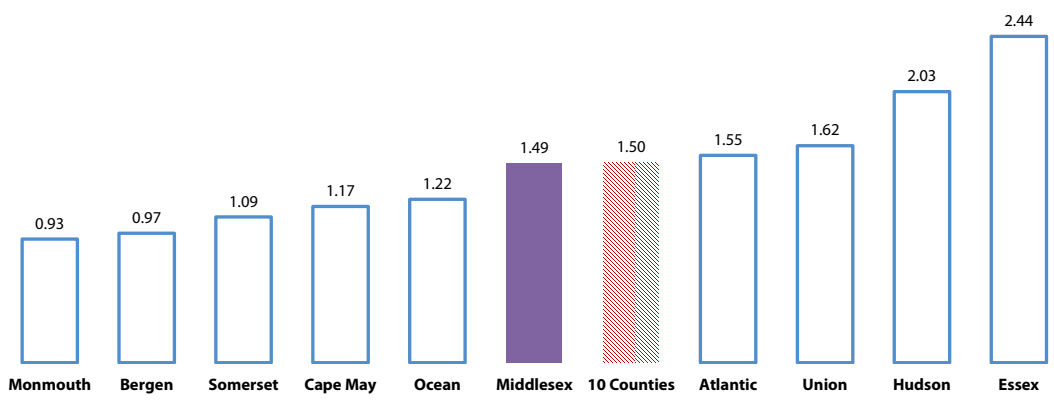
Figure 48. Prevalence of Hip/Pelvic Fractures per 1,000 Medicare FFS Beneficiaries – Pre-Sandy Q1 2011 – Q3 2012



Amputations

The prevalence rate of amputations in Middlesex County in the 21 months prior to Superstorm Sandy was 1.49 per 1,000 Medicare FFS beneficiaries. This was lower than the prevalence rate among all 10 counties (Figure 49).

Figure 49. Prevalence of Amputations per 1,000 Medicare FFS Beneficiaries Pre-Sandy Q1 2011 – Q3 2012



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Outpatient Behavioral Health Services

Summary

HQSI analyzed five behavioral health assessment services and five behavioral health therapies. Utilization of outpatient health services is color coded with lowest (red) and highest (light blue).

Middlesex County had the highest utilization of health and behavior assessment/intervention among all 10 counties (Figure 50).

Figure 50. Utilization of Outpatient Behavioral Health Services per 1,000 Medicare FFS Beneficiaries – Pre-Sandy Q1 2011 – Q3 2012 Assessments

County	Depression Screening*	Diagnostic Psychological Tests	Health and Behavior Assessment/ Intervention	Neuropsychological Tests	Psychiatric Diagnostic Procedures
Atlantic	1.12	4.59	1.46	12.04	90.99
Bergen	4.33	4.12	**0.82**	15.55	79.98
Cape May	**0.65**	2.71	0.94	**8.98**	72.68
Essex	0.83	7.81	0.97	12.77	88.05
Hudson	2.83	8.92	0.96	24.69	78.45
Middlesex	7.50	6.39	1.58	11.22	74.20
Monmouth	4.71	8.23	1.36	15.42	94.74
Ocean	9.49	4.39	1.03	14.83	82.92
Somerset	7.11	**2.36**	1.48	10.37	72.93
Union	3.02	2.63	1.33	10.60	**71.56**
10 counties	**4.81**	**5.53**	**1.16**	**14.18**	**81.61**

* Depression screening rates are for Calendar Year 2012.

Lowest Highest

Middlesex County had the highest utilization of biofeedback therapy among all 10 counties (Figure 51).

Figure 51. Utilization of Outpatient Behavioral Health Services per 1,000 Medicare FFS Beneficiaries – Pre-Sandy Q1 2011 – Q3 2012 Therapies

County	Biofeedback Therapy	Electroconvulsive Therapy	Family Psychotherapy	Group Psychotherapy	Individual Psychotherapy
Atlantic	1.20	**0.40**	4.02	7.83	69.00
Bergen	1.56	0.54	5.89	2.81	79.79
Cape May	0.89	0.98	**1.64**	**2.01**	**50.28**
Essex	0.88	0.63	6.04	3.23	78.83
Hudson	1.78	0.52	8.27	2.70	71.79
Middlesex	2.18	0.70	4.60	6.69	68.07
Monmouth	**0.45**	0.99	5.39	4.37	68.01
Ocean	0.80	0.84	3.76	2.11	61.53
Somerset	0.88	1.07	6.08	5.46	73.16
Union	0.84	0.54	3.25	3.29	55.35
10 counties	**1.19**	**0.70**	**5.09**	**3.88**	**69.31**

Lowest Highest

Assessments

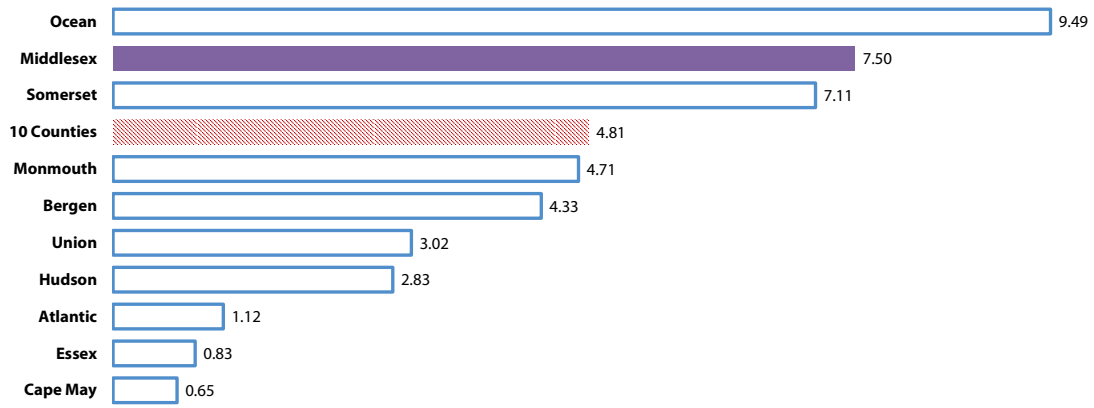
Depression Screening

One of the long-term goals of this project is to increase the awareness and use of Medicare-covered depression screening among at-risk Medicare FFS beneficiaries residing in the 10 counties during Superstorm Sandy. The depression screening utilization rates have been low in all 10 counties.

Beginning January 2012, depression screening became a Medicare-covered service. According to the CMS Screening for Depression Booklet, Medicare Part B covers an annual screening for depression of 15 minutes in length for Medicare FFS beneficiaries in primary care settings when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up.

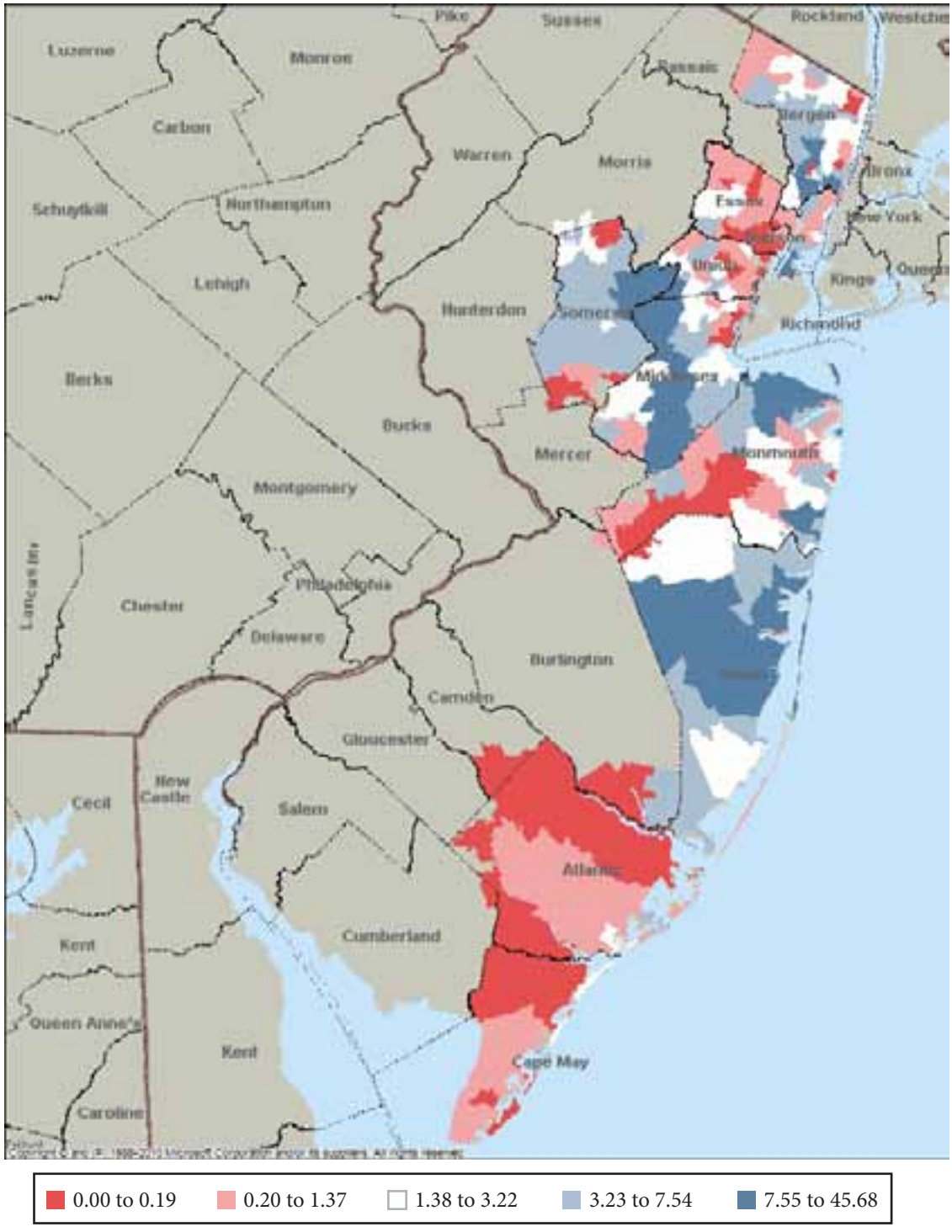
The rate of depression screening in Middlesex County for calendar year 2012 was 7.50 per 1,000 Medicare FFS beneficiaries. This was higher than the rate among all 10 counties (Figure 52).

FIGURE 52. DEPRESSION SCREENING PER 1,000 MEDICARE FFS BENEFICIARIES – CALENDAR YEAR 2012



The color-coded map of New Jersey depicts the use of depression screening from low (red) to high (blue) in the 10 FEMA-declared disaster counties (Figure 53).

FIGURE 53. DEPRESSION SCREENING PER 1,000 MEDICARE FFS BENEFICIARIES IN 10 COUNTIES (CALENDAR YEAR 2012)



The color-coded map of Middlesex County depicts regional variation in the rates of the use of the depression screening benefit from low (red) to high (blue). Some areas, such as Keasbey, Perth Amboy, South Amboy, and Laurence Harbor had lower use of the depression screening benefit than others (Figure 54).

Figure 54. Middlesex County Depression Screening per 1,000 Medicare FFS Beneficiaries (Calendar Year 2012)

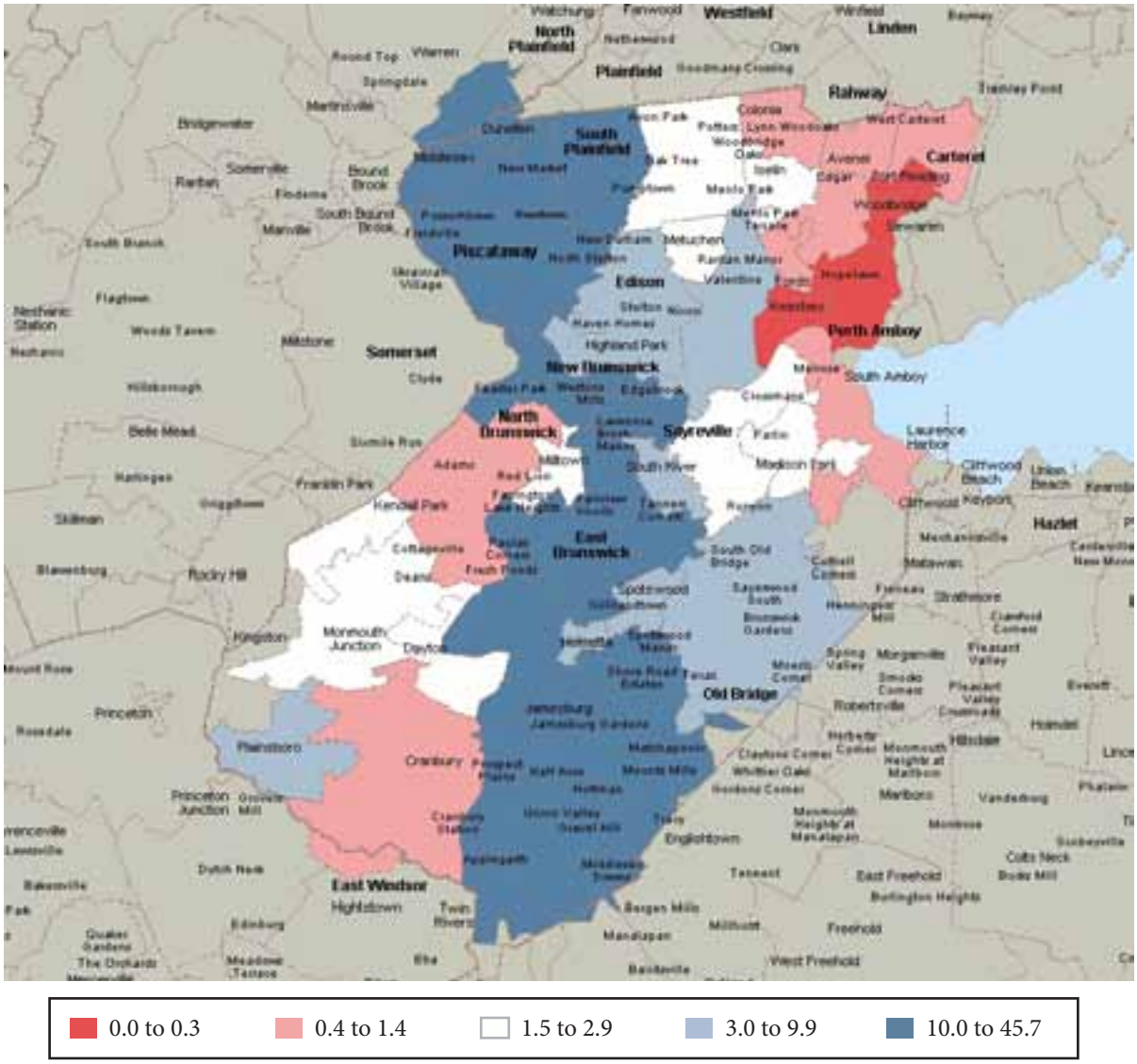
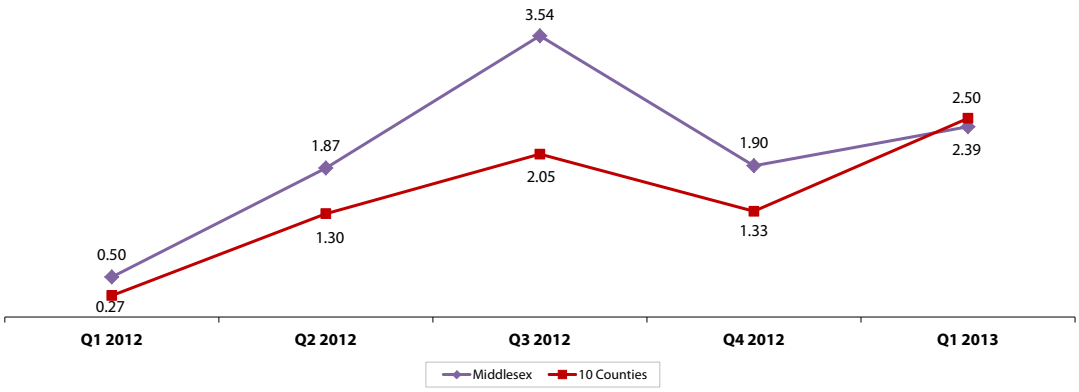


Figure 55 shows five quarters of data to reflect trending in the use of the depression screening benefit per 1,000 Medicare FFS beneficiaries in Middlesex County and in the 10 FEMA-declared disaster counties.

FIGURE 55. QUARTERLY DEPRESSION SCREENING PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2012-Q1 2013)

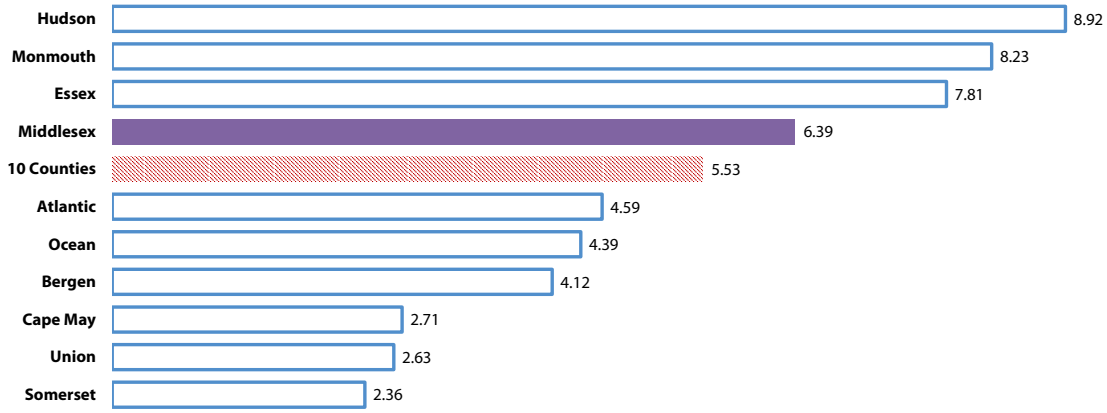


Diagnostic Psychological Tests

According to the CMS Mental Health Services Billing Guide, psychological testing includes psychodiagnostic assessment of emotionality, intellectual abilities, personality, and psychopathology (e.g., Minnesota Multiphasic Personality Inventory, Rorschach, or Wechsler Adult Intelligence Scale).

The rate of psychological testing in Middlesex County in the 21 months prior to Superstorm Sandy was 6.39 per 1,000 Medicare FFS beneficiaries. This was higher than the rate among all 10 counties (Figure 56).

FIGURE 56. DIAGNOSTIC PSYCHOLOGICAL TESTS PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012

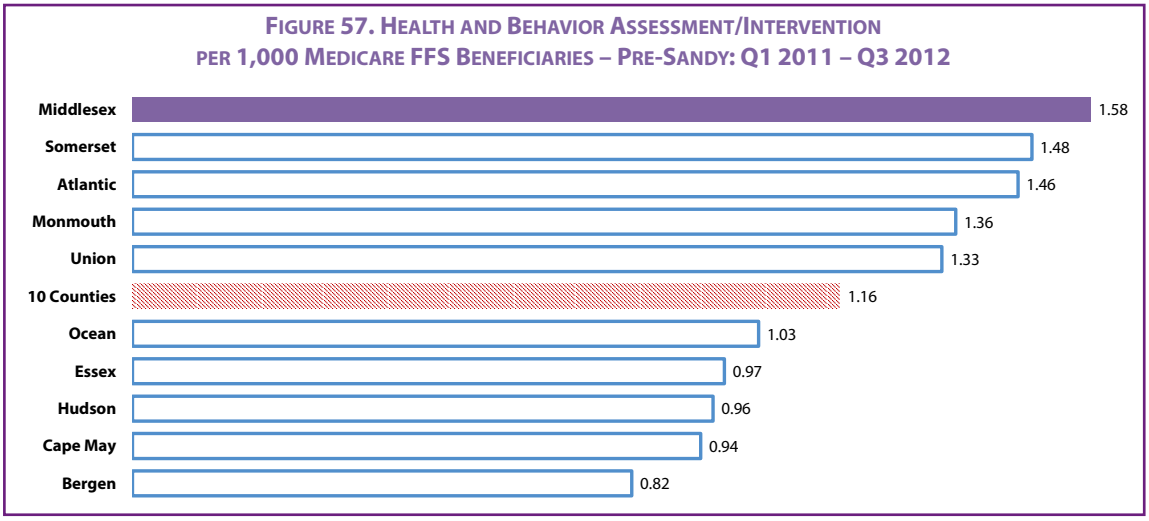


Health and Behavior Assessment/Intervention

According to the CMS Mental Health Services Billing Guide, health and behavior assessments are used to identify the psychological, behavioral, emotional, cognitive, and social factors important to the prevention, treatment, or management of physical health problems.

The rate of health and behavior assessment in Middlesex County in the 21 months prior to Superstorm Sandy was 1.58 per 1,000 Medicare FFS beneficiaries. This was the highest rate among all 10 counties (Figure 57).

FIGURE 57. HEALTH AND BEHAVIOR ASSESSMENT/INTERVENTION PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



Neuropsychological Tests

According to the CMS Mental Health Services Billing Guide, neuropsychological tests are evaluations designed to determine the functional consequences of known or suspected brain injury through testing of the neurocognitive domains responsible for language, perception, memory, learning, problem solving, and adaptation.

The rate of neuropsychological testing in Middlesex County in the 21 months prior to Superstorm Sandy was 11.22 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 58).

FIGURE 58. NEUROPSYCHOLOGICAL TESTS PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012

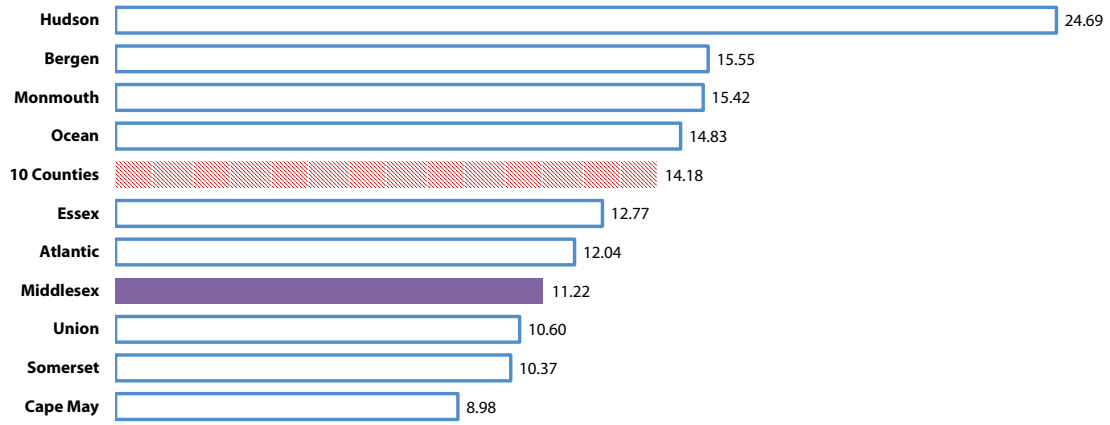
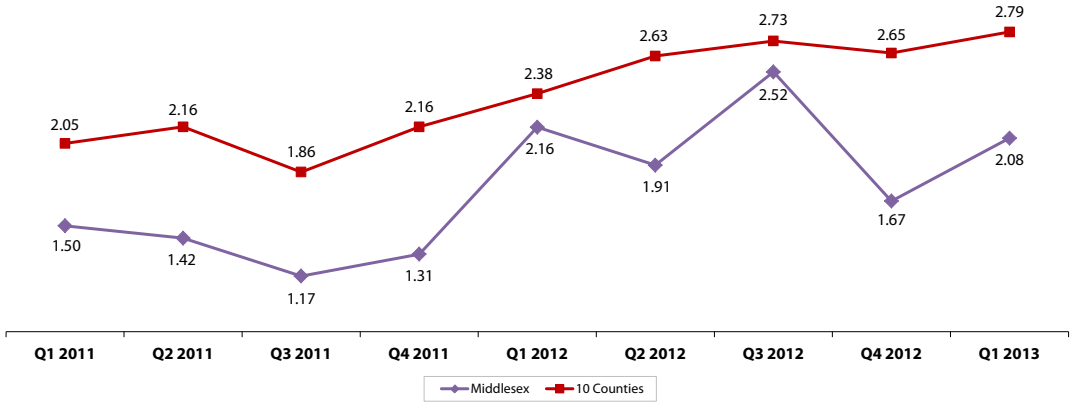


Figure 59 shows nine quarters of data to reflect trending in the use of neuropsychological testing per 1,000 Medicare FFS beneficiaries in Middlesex County and in the 10 FEMA-declared disaster counties.

FIGURE 59. QUARTERLY NEUROPSYCHOLOGICAL TESTS PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2011-Q1 2013)



Psychiatric Diagnostic Procedures

According to the CMS Mental Health Services Billing Guide, psychiatric diagnostic evaluation is an integrated biopsychosocial assessment, including history, mental status, and recommendations. The evaluation may include communication with family or other sources and review of diagnostic studies.

The utilization rate of psychiatric diagnostic procedures in Middlesex County in the 21 months prior to Superstorm Sandy was 74.20 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 60).

FIGURE 60. PSYCHIATRIC DIAGNOSTIC PROCEDURES PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012

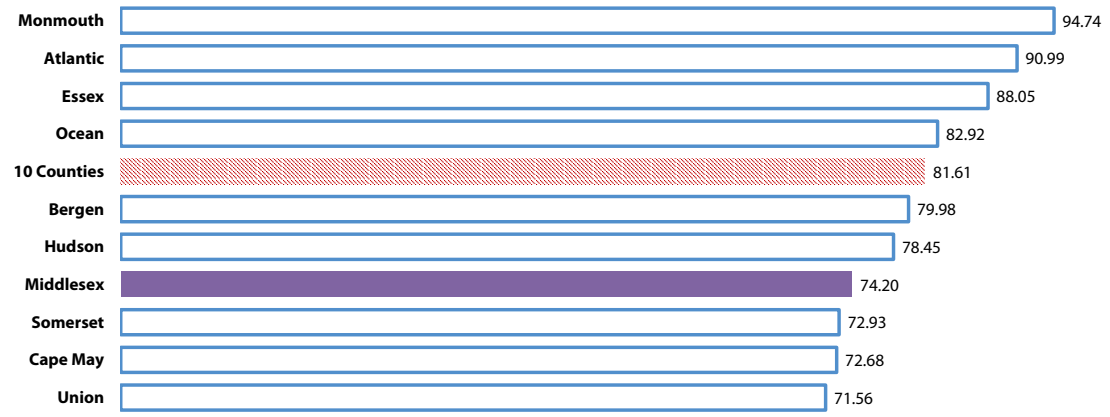
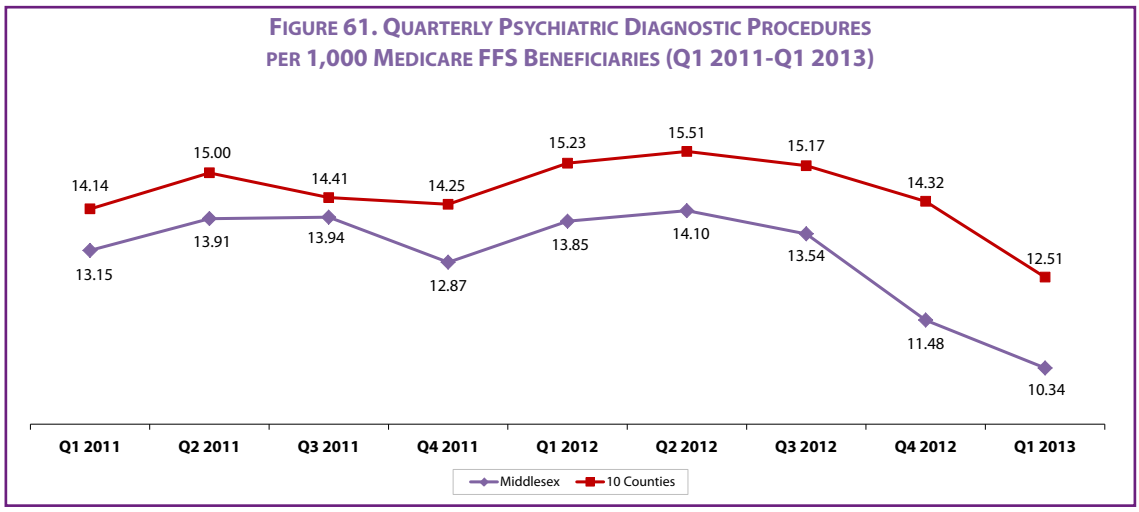


Figure 61 shows nine quarters of data to reflect trending in the use of psychiatric diagnostic procedures per 1,000 Medicare FFS beneficiaries in Middlesex County and in the 10 FEMA-declared disaster counties.

FIGURE 61. QUARTERLY PSYCHIATRIC DIAGNOSTIC PROCEDURES PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2011-Q1 2013)



Therapies

Individual Psychotherapy

According to the CMS Mental Health Services Billing Guide, individual psychotherapy is the treatment of mental illness and behavioral disturbances where the physician or other qualified health professional attempts to alleviate the emotional disturbances, reverse or change maladaptive patterns of behavior, and encourage personality growth and development. This is done through the use of definitive therapeutic communication.

The utilization rate of individual psychotherapy in Middlesex County in the 21 months prior to Superstorm Sandy was 68.07 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 62).

FIGURE 62. INDIVIDUAL PSYCHOTHERAPY PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2011

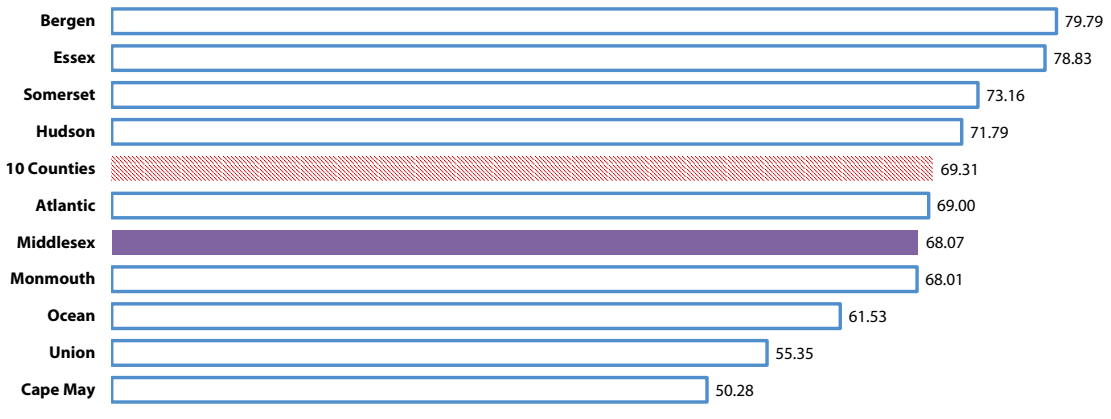
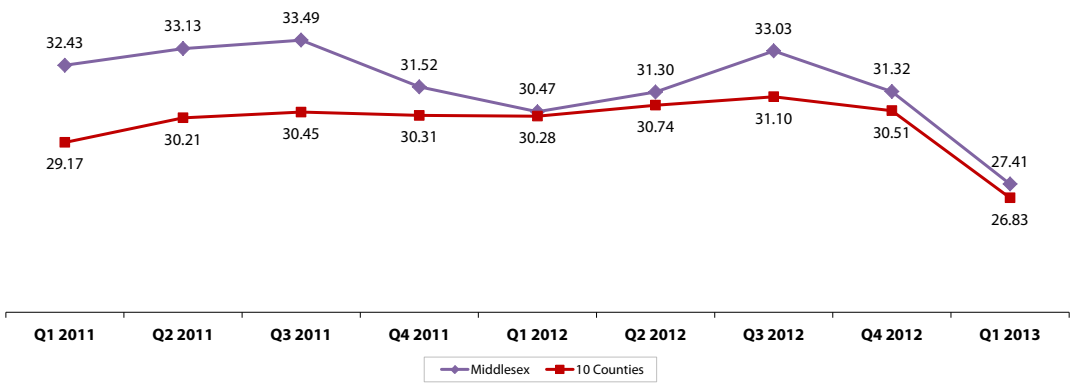


Figure 63 shows nine quarters of data to reflect trending in the use of individual psychotherapy per 1,000 Medicare FFS beneficiaries in Middlesex County and in the 10 FEMA-declared disaster counties.

FIGURE 63. QUARTERLY INDIVIDUAL PSYCHOTHERAPY PER 1,000 MEDICARE FFS BENEFICIARIES (Q1 2011-Q1 2013)



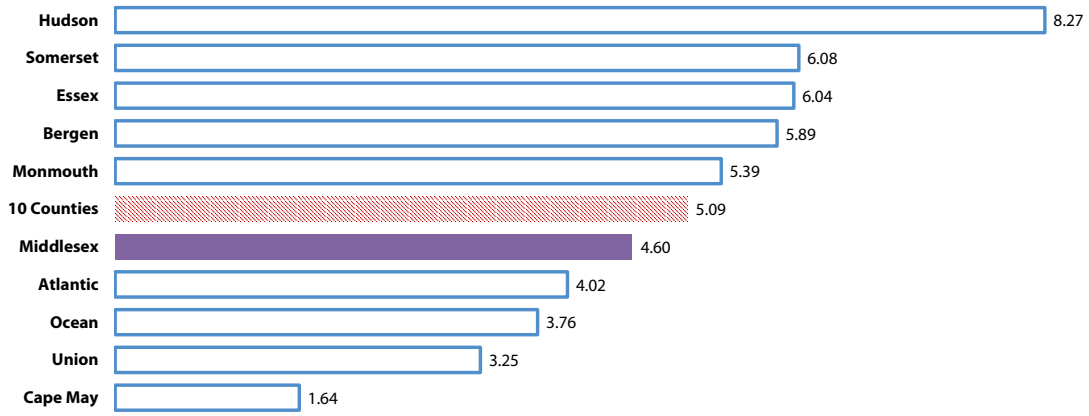
Family Psychotherapy

According to the CMS Mental Health Services Billing Guide, family psychotherapy describes the treatment of the family unit when maladaptive behaviors of family members are exacerbating the beneficiary's mental illness or interfering with treatment. It can also be used to assist the family in addressing the maladaptive behaviors of the patient and improve treatment compliance.

The utilization rate of family psychotherapy was 4.60 per 1,000 Medicare FFS beneficiaries in Middlesex County in the 21 months prior to Superstorm Sandy. This was lower than the rate among all 10 counties (Figure 64).

Due to these low numbers, no quarterly trending data has been provided for this therapy.

FIGURE 64. FAMILY PSYCHOTHERAPY PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



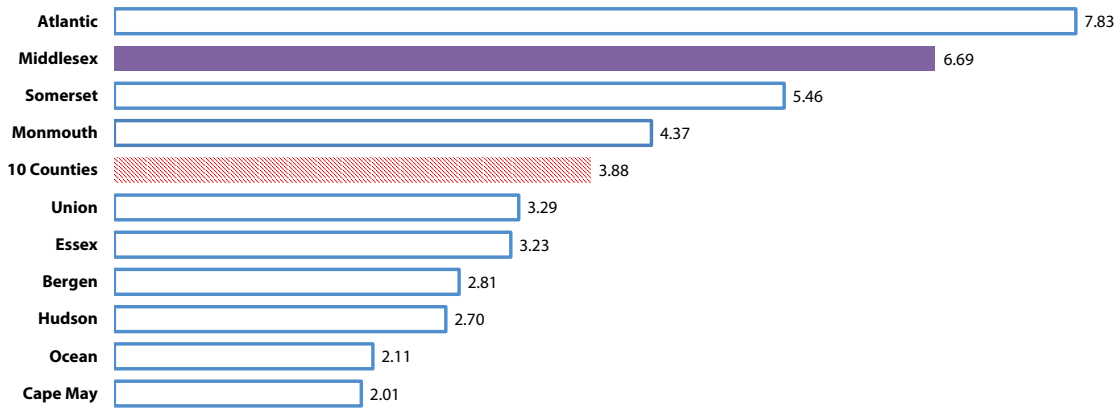
Group Psychotherapy

According to the CMS Mental Health Services Billing Guide, group psychotherapy is a form of treatment where a selected group of patients are guided by a licensed psychotherapist for the purpose of helping to change maladaptive patterns which interfere with social functioning and are associated with a diagnosable psychiatric illness.

The utilization rate of group psychotherapy was 6.69 per 1,000 Medicare FFS beneficiaries in Middlesex County in the 21 months prior to Superstorm Sandy. This was higher than the rate among all 10 counties (Figure 65).

Due to these low numbers, no quarterly trending data has been provided for this therapy.

FIGURE 65. GROUP PSYCHOTHERAPY PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



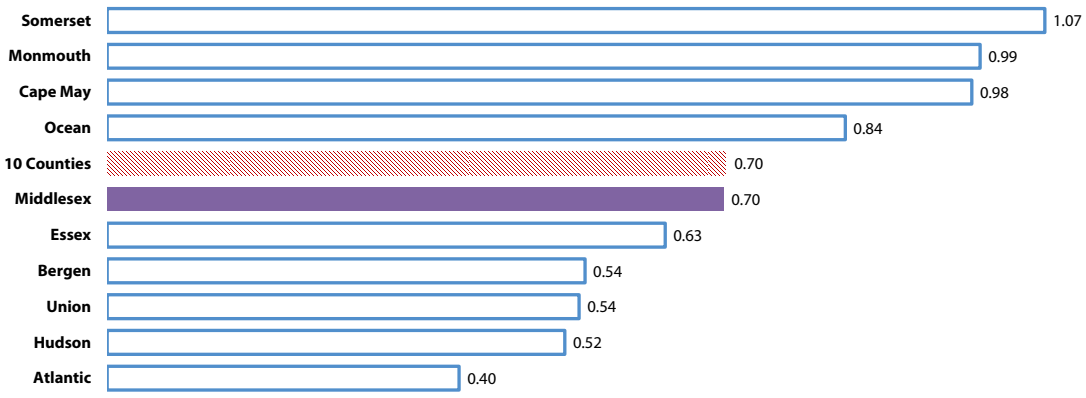
Electroconvulsive Therapy

According to the CMS Mental Health Services Billing Guide, electroconvulsive therapy (ECT) is the application of electric current to the brain through scalp electrodes to induce a single seizure to produce a therapeutic effect. It is used primarily to treat major depressive disorder when antidepressant medication should not be used because it may be harmful to the patient. This type of therapy can be used for certain other clinical conditions as well.

The utilization rate of ECT was 0.70 per 1,000 Medicare FFS beneficiaries in Middlesex County in the 21 months prior to Superstorm Sandy. This was the same as the rate among all 10 counties (Figure 66).

Due to these low numbers, no quarterly trending data has been provided for this therapy.

FIGURE 66. ELECTROCONVULSIVE THERAPY PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



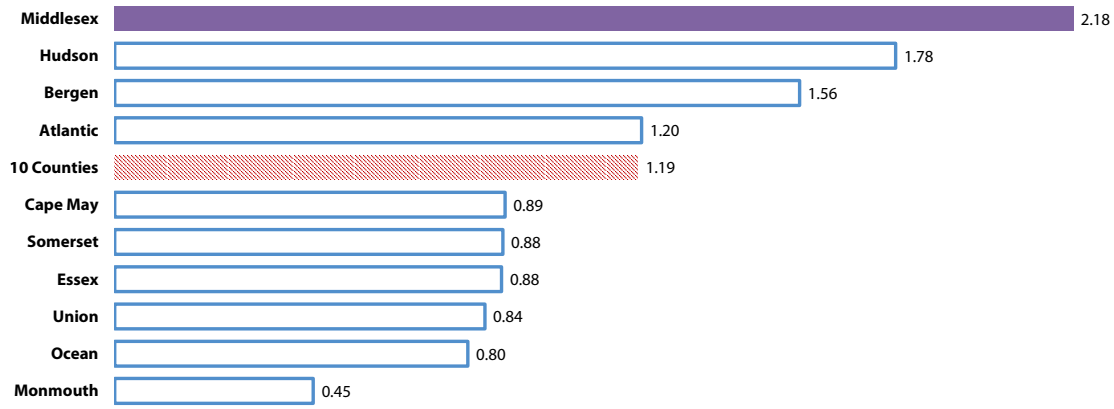
Biofeedback Therapy

According to the CMS Mental Health Services Billing Guide, biofeedback therapy provides visual, auditory, or other evidence of the status of certain body functions so that a person can exert voluntary control over those functions, and thereby alleviate an abnormal bodily condition.

The utilization rate of biofeedback therapy rate was 2.18 per 1,000 Medicare FFS beneficiaries in Middlesex County in the 21 months prior to Superstorm Sandy. This was the highest rate among all 10 counties (Figure 67).

Due to these low numbers, no quarterly trending data has been provided for this therapy.

FIGURE 67. BIOFEEDBACK THERAPY PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



Inpatient Services

Summary

Utilization of inpatient health services per 1,000 Medicare FFS beneficiaries in the 21 months prior to Superstorm Sandy in the 10 counties is color coded with highest (red) and lowest (light blue) for each measure. These additional services were analyzed because beneficiaries with underlying behavioral health issues may seek non-behavioral health services.

Inpatient services included four measures of service utilization: inpatient psychiatric facilities, acute care hospital admissions, observation stays with or without a subsequent hospital admission, and emergency department visits with or without a subsequent hospital admission. The second set of measures is tied to utilization of services within 30 days of an acute care episode, often used as proxy indicators of care coordination, and include all-cause 30-day hospital readmissions, observation stays within 30 days of discharge, and emergency department visits within 30 days of discharge.

Middlesex County had a higher than average rate of observation stays among all 10 counties (Figure 68).

Figure 68. Utilization of Inpatient Health Services per 1,000 Medicare FFS Beneficiaries – Pre-Sandy (Q1 2011-Q3 2012)

County	Psychiatric Hospital Admissions	Acute Care Hospital Admissions	Observation Stays	Emergency Department Visits
Atlantic	10.58	**642.49**	25.54	**510.52**
Bergen	13.31	514.96	11.18	390.06
Cape May	7.81	639.80	8.00	474.60
Essex	**14.35**	625.28	**53.49**	502.88
Hudson	14.25	611.20	34.01	459.27
Middlesex	10.33	535.00	25.09	427.85
Monmouth	13.96	575.84	8.23	448.58
Ocean	12.34	602.84	7.82	455.17
Somerset	12.58	502.79	8.34	392.45
Union	11.77	500.74	12.13	395.58
10 counties	**12.56**	**567.94**	**19.45**	**440.57**

Highest Lowest

Middlesex County had a higher than average rate of observation stays within 30 days of discharge among all 10 counties (Figure 69).

Figure 69. Utilization of Inpatient Health Services per 1,000 Medicare FFS Beneficiaries Within 30 Days of Discharge Pre-Sandy (Q1 2011-Q3 2012)

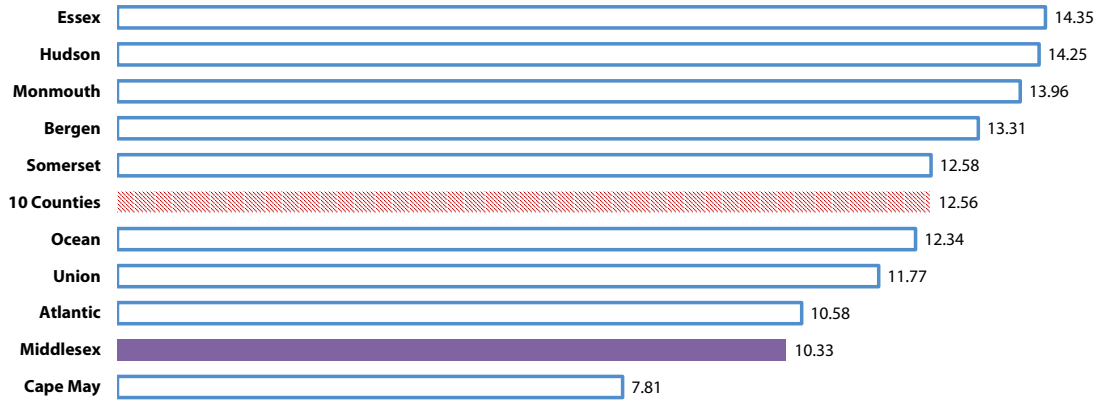
County	30-Day Hospital Readmissions	Observation Stays	Emergency Department Visits
Atlantic	129.80	14.35	**167.45**
Bergen	96.03	7.45	112.75
Cape May	117.17	10.66	150.19
Essex	**142.86**	**21.39**	164.37
Hudson	139.88	19.76	155.26
Middlesex	104.29	12.81	124.80
Monmouth	109.54	9.46	132.57
Ocean	115.31	11.52	143.97
Somerset	93.09	7.72	112.03
Union	92.61	9.08	110.27
10 counties	**112.70**	**12.25**	**134.83**

Highest Lowest

Psychiatric Hospital Admissions

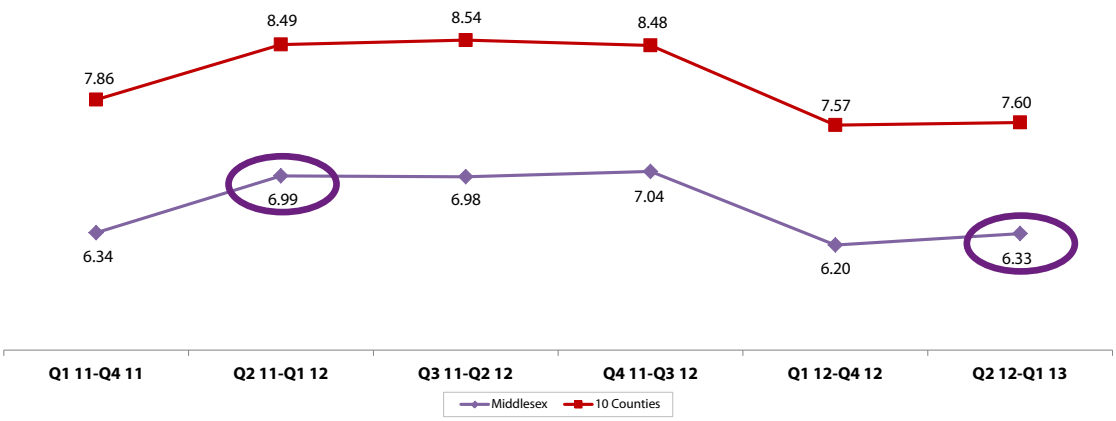
Standalone psychiatric hospitals or distinct part psychiatric units in acute care hospitals in Middlesex County in the 21 months prior to Superstorm Sandy had an admissions rate of 10.33 per 1,000 Medicare FFS beneficiaries (Figure 70).

FIGURE 70. PSYCHIATRIC HOSPITAL ADMISSIONS PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, there were 6.33 per 1,000 Medicare FFS beneficiaries admitted to psychiatric hospitals in Middlesex County compared to Q2 2011 – Q1 2012, which was 6.99 per 1,000 beneficiaries. The yearly rate of psychiatric hospital admissions with rolling quarters was lower than the rate among all 10 counties (Figure 71).

FIGURE 71. YEARLY PSYCHIATRIC HOSPITAL ADMISSIONS PER 1,000 MEDICARE FFS BENEFICIARIES



Acute Care Hospitals

Admissions

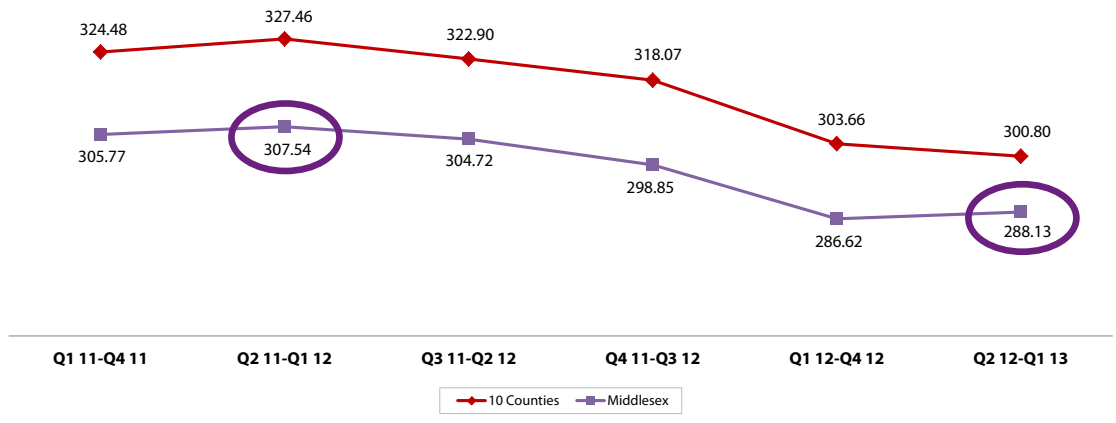
The following data shows all-cause utilization measures and includes all Medicare FFS beneficiaries, not just beneficiaries with behavioral health conditions. The data are ranked from lowest utilization (top) to the highest utilization (bottom).

The rate of hospital admissions in Middlesex County in the 21 months prior to Superstorm Sandy was 535.00 per 1,000 Medicare FFS beneficiaries. This was lower than the admissions rate among all 10 counties (Figure 72).

FIGURE 72. ACUTE CARE HOSPITAL ADMISSIONS PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012

From Q2 2012 – Q1 2013, the hospital admissions rate was 288.13 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 307.54 per 1,000 beneficiaries. The yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 73).

FIGURE 73. YEARLY ACUTE CARE HOSPITAL ADMISSIONS PER 1,000 MEDICARE FFS BENEFICIARIES

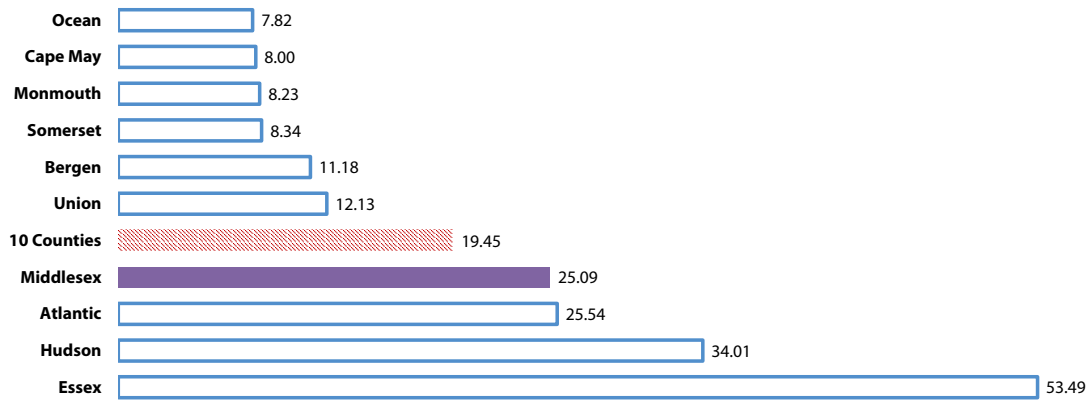


Observation Stays

According to the U.S. Department of Health and Human Services, observation stays are short-term treatments and assessments provided to outpatients to determine whether Medicare FFS beneficiaries require further treatment as inpatients or can be discharged.

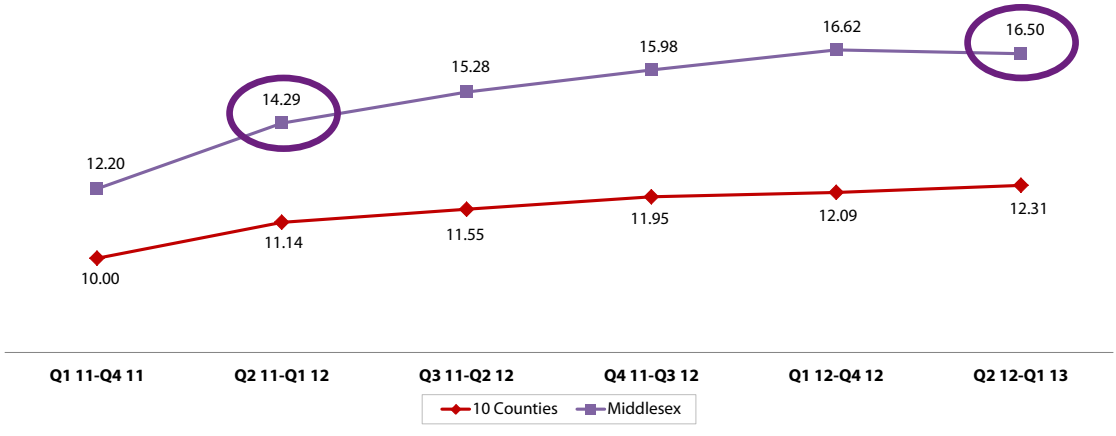
The rate of observation stays in Middlesex County in the 21 months prior to Superstorm Sandy was 25.09 per 1,000 Medicare FFS beneficiaries. This was higher than the rate among all 10 counties (Figure 74).

FIGURE 74. OBSERVATION STAYS PER 1,000 MEDICARE FFS BENEFICIARIES PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, the rate of observation stays was 16.50 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 14.29 per 1,000 beneficiaries. The yearly rate with rolling quarters was higher than the rate among all 10 counties (Figure 75).

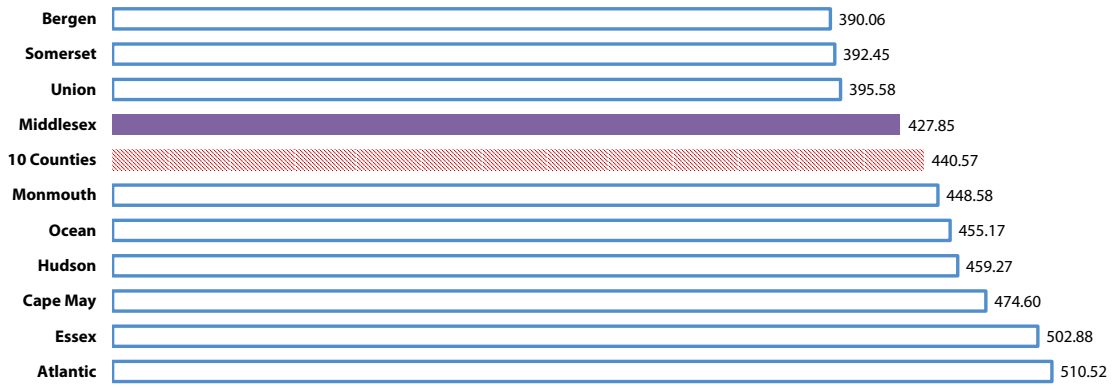
FIGURE 75. YEARLY OBSERVATION STAYS PER 1,000 MEDICARE FFS BENEFICIARIES



Emergency Department Visits

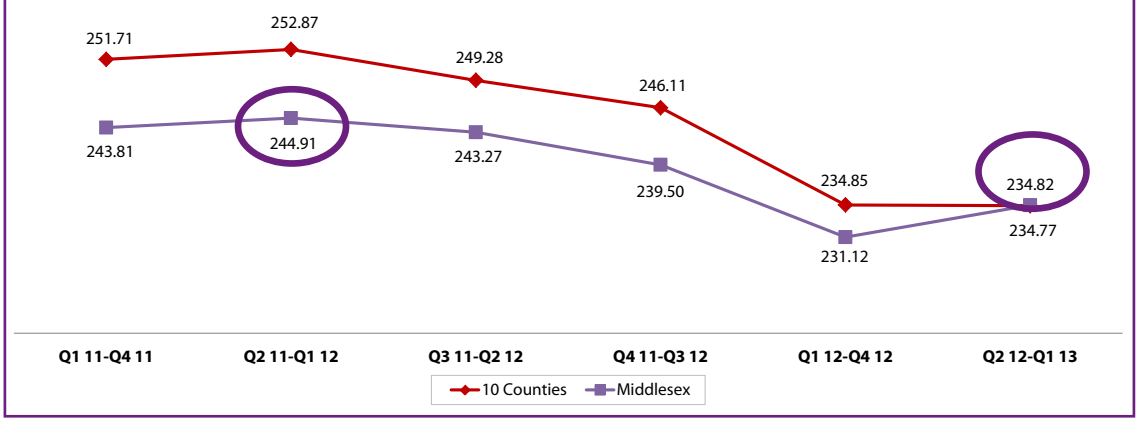
The rate of emergency department visits in Middlesex County in the 21 months prior to Superstorm Sandy was 427.85 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 76).

FIGURE 76. EMERGENCY DEPARTMENT VISITS PER 1,000 MEDICARE FFS BENEFICIARIES PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, the rate of emergency department visits was 234.82 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 244.91 per 1,000 beneficiaries (Figure 77).

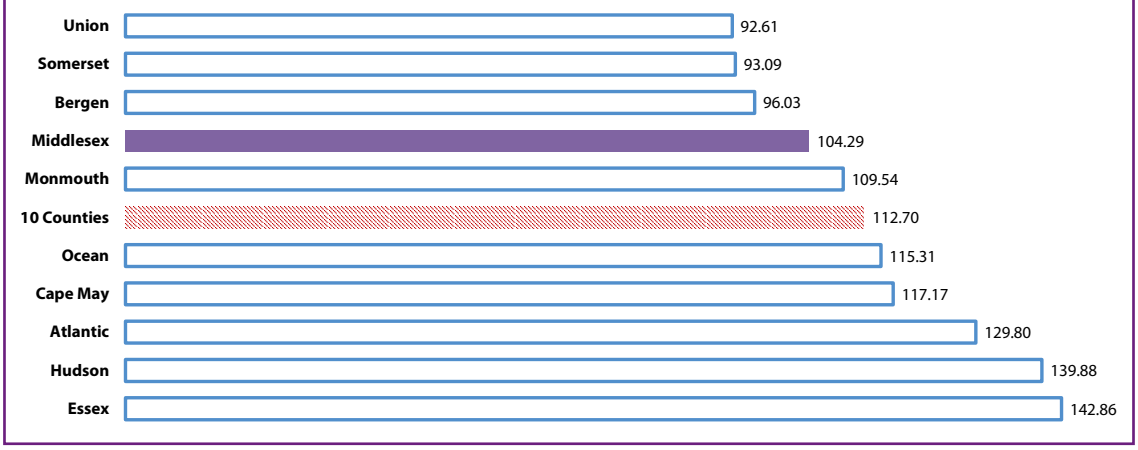
FIGURE 77. YEARLY EMERGENCY DEPARTMENT VISITS PER 1,000 MEDICARE FFS BENEFICIARIES



30-Day Hospital Readmissions

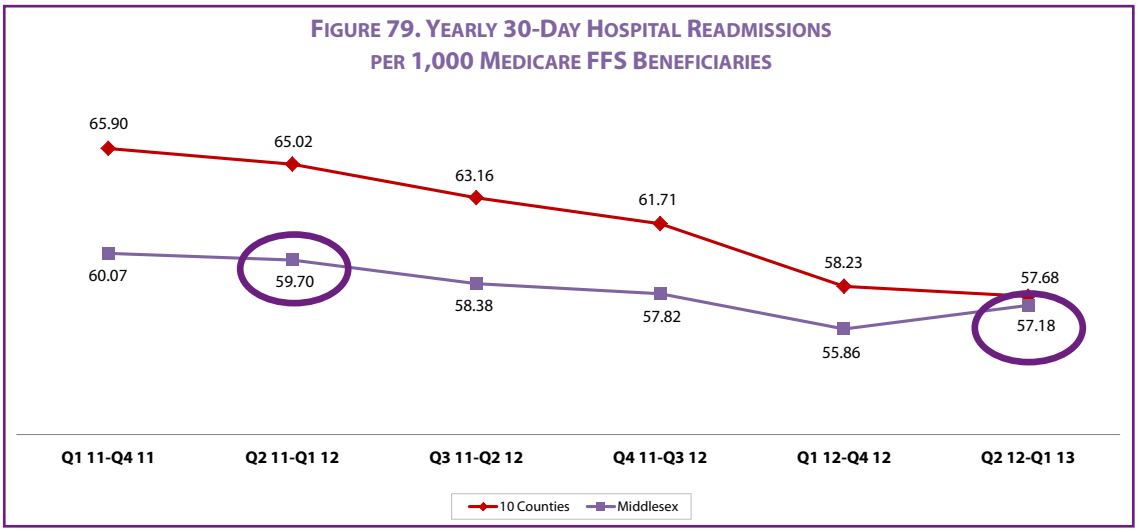
The rate of 30-day hospital readmissions in Middlesex County in the 21 months prior to Superstorm Sandy was 104.29 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 78).

FIGURE 78. 30-DAY HOSPITAL READMISSIONS PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, the rate of 30-day hospital readmissions was 57.18 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 59.70 per 1,000 beneficiaries. The yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 79).

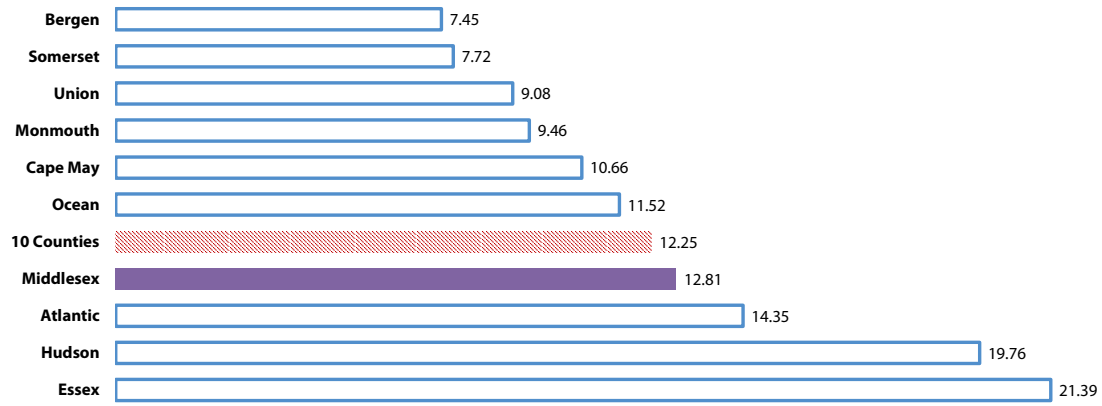
FIGURE 79. YEARLY 30-DAY HOSPITAL READMISSIONS PER 1,000 MEDICARE FFS BENEFICIARIES



Observation Stays Within 30 Days of Discharge

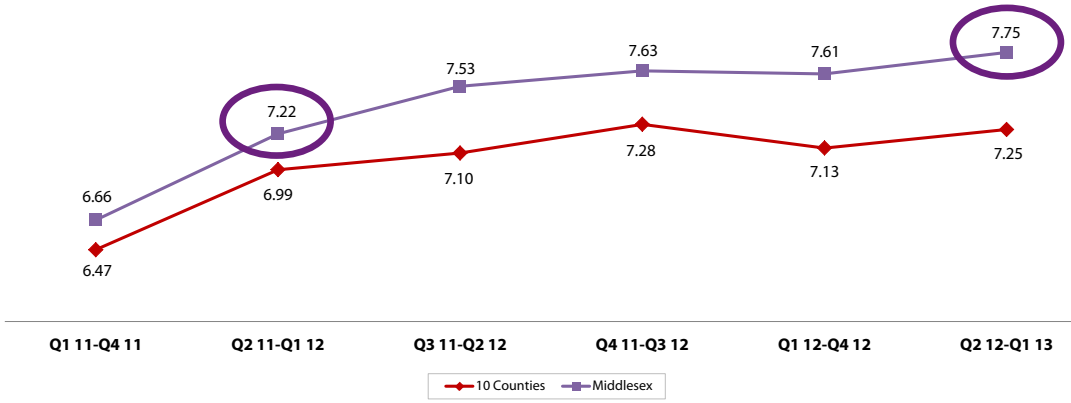
The rate of observation stays within 30 days of discharge in Middlesex County in the 21 months prior to Superstorm Sandy was 12.81 per 1,000 Medicare FFS beneficiaries. This was higher than the rate among all 10 counties (Figure 80).

FIGURE 80. OBERVATION STAYS WITHIN 30 DAYS OF DISCHARGE PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, the rate of observation stays within 30 days of discharge was 7.75 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 7.22 per 1,000 beneficiaries. The yearly rate of observation stays within 30 days of discharge with rolling quarters was higher than the rate among all 10 counties (Figure 81).

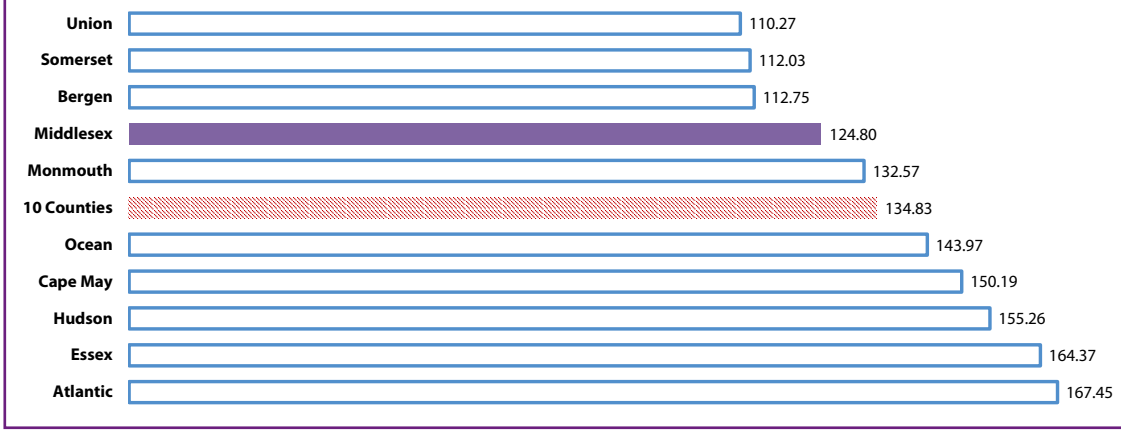
FIGURE 81. YEARLY OBSERVATION STAYS WITHIN 30 DAYS OF DISCHARGE PER 1,000 MEDICARE FFS BENEFICIARIES



Emergency Department Visits Within 30 Days of Discharge

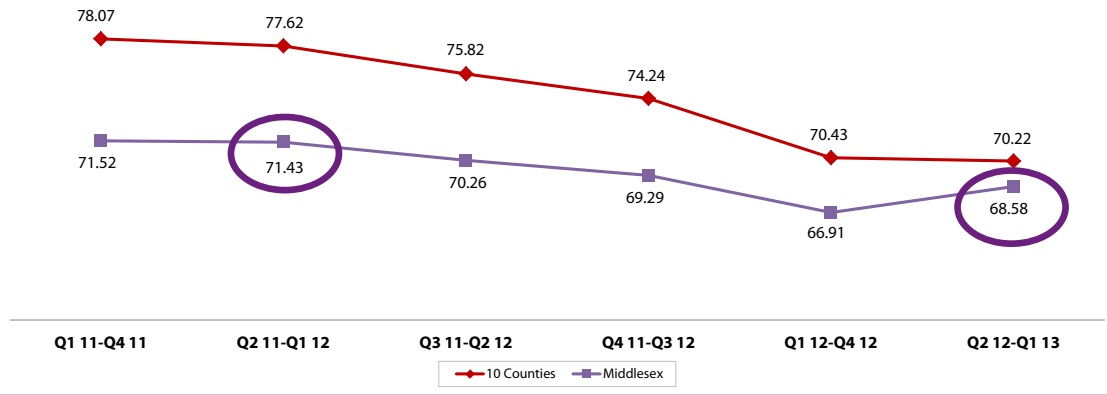
The rate of emergency department visits within 30 days of discharge in Middlesex County in the 21 months prior to Superstorm Sandy was 124.80 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 82).

FIGURE 82. EMERGENCY DEPARTMENT VISITS WITHIN 30 DAYS OF DISCHARGE PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, the rate of emergency department visits within 30 days of discharge was 68.58 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 71.43 per 1,000 beneficiaries. The yearly rate of emergency department visits within 30 days of discharge with rolling quarters was lower than the rate among all 10 counties (Figure 83).

FIGURE 83. YEARLY EMERGENCY DEPARTMENT VISITS WITHIN 30 DAYS OF DISCHARGE PER 1,000 MEDICARE FFS BENEFICIARIES



Other Settings

Summary

This profile also looks at the utilization of home health agency, skilled nursing facility, hospice, and medical rehabilitation services. These additional services were analyzed because Medicare FFS beneficiaries with underlying behavioral health issues may seek these non-behavioral health services. Utilization of health services per 1,000 Medicare FFS beneficiaries for these settings in the 21 months prior to Superstorm Sandy in the 10 counties is color coded with highest (red) and lowest (light blue) for each measure.

Middlesex County had a lower than average utilization rate of home health agency, skilled nursing facility, hospice, and medical rehabilitation services among all 10 counties (Figure 84).

Figure 84. Utilization of Health Services per 1,000 Medicare FFS Beneficiaries – Pre-Sandy (Q1 2011-Q3 2012)

County	Home Health Agency Services	Skilled Nursing Facility Services	Hospice Services	Medical Rehabilitation Services
Atlantic	144.57	99.09	44.90	22.65
Bergen	134.21	103.49	34.63	18.52
Cape May	141.72	106.74	46.96	13.94
Essex	121.71	**118.04**	31.68	15.32
Hudson	138.52	110.10	27.96	13.43
Middlesex	124.56	107.09	34.23	15.01
Monmouth	146.06	112.50	48.77	26.61
Ocean	**153.02**	**118.04**	**49.43**	**36.49**
Somerset	125.70	103.72	39.73	16.60
Union	126.23	109.34	33.87	15.52
10 counties	**135.89**	**109.87**	**38.86**	**20.79**

Highest Lowest

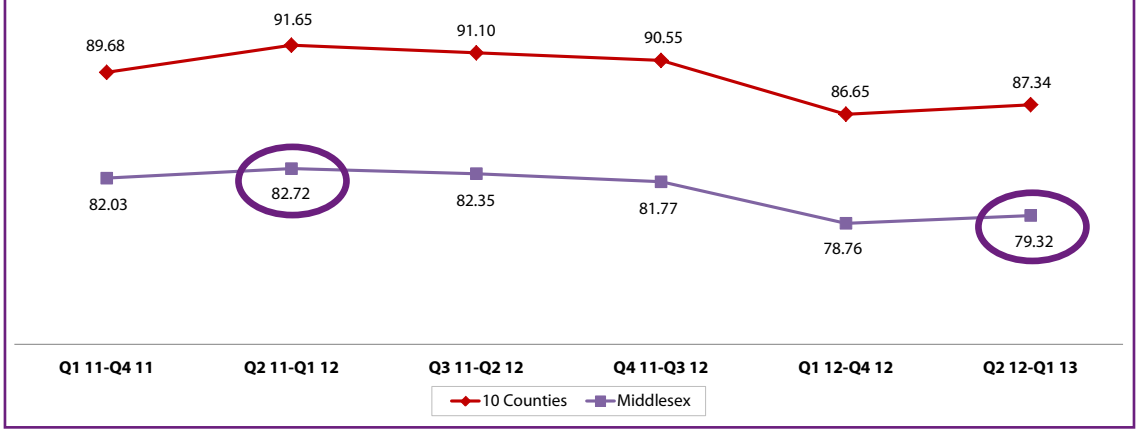
Home Health Agency Services

The rate of home health agency use in Middlesex County in the 21 months prior to Superstorm Sandy was 124.56 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 85).

FIGURE 85. UTILIZATION OF HOME HEALTH AGENCY SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012

From Q2 2012 – Q1 2013, the utilization rate of home health agency services was 79.32 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 82.72 per 1,000 beneficiaries. The yearly rate of home health agency use with rolling quarters was lower than the rate among all 10 counties (Figure 86).

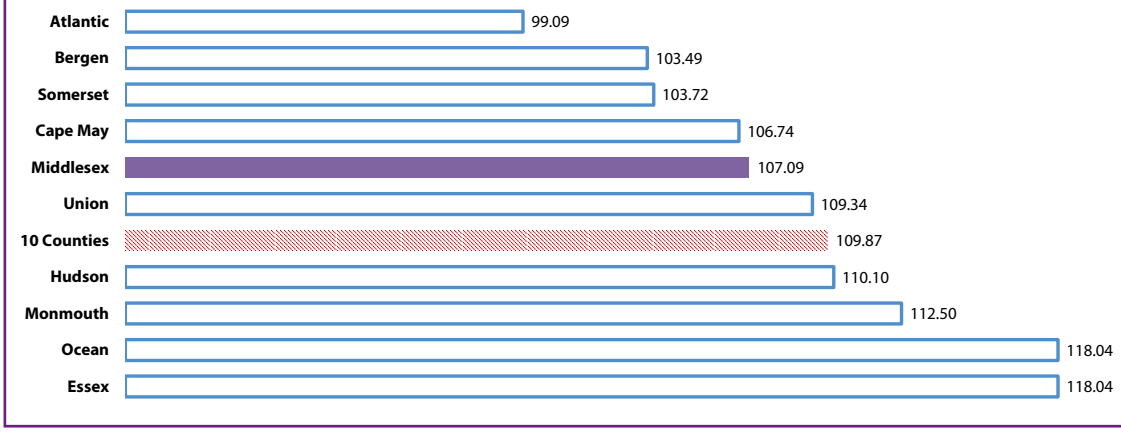
FIGURE 86. YEARLY UTILIZATION OF HOME HEALTH AGENCY SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES



Skilled Nursing Facility Services

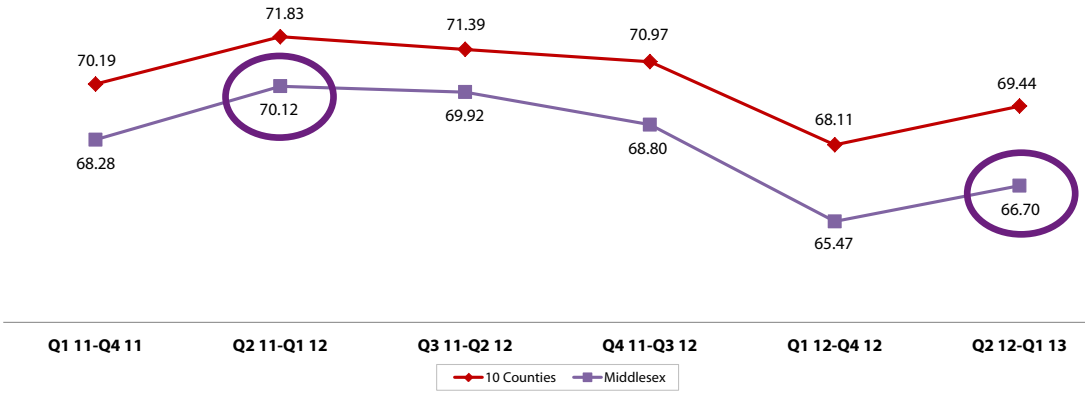
The rate of skilled nursing facility services in Middlesex County in the 21 months prior to Superstorm Sandy was 107.09 per 1,000 Medicare FFS beneficiaries. This was lower than the utilization rate among all 10 counties (Figure 87).

FIGURE 87. UTILIZATION OF SKILLED NURSING FACILITY SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 201



From Q2 2012 – Q1 2013, the utilization rate of skilled nursing facility services was 66.70 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 70.12 per 1,000 beneficiaries. The yearly rate of skilled nursing facility use with rolling quarters was lower than the rate among all 10 counties (Figure 88).

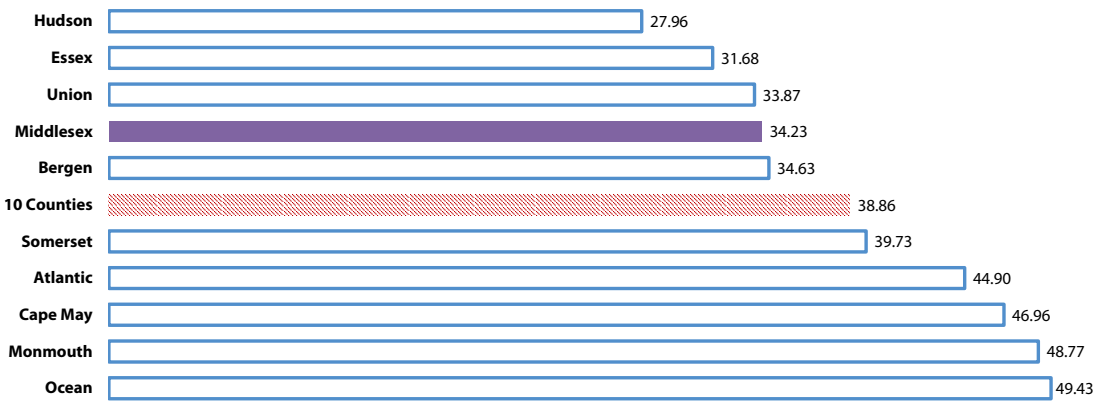
FIGURE 88. YEARLY UTILIZATION OF SKILLED NURSING FACILITY SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES



Hospice Services

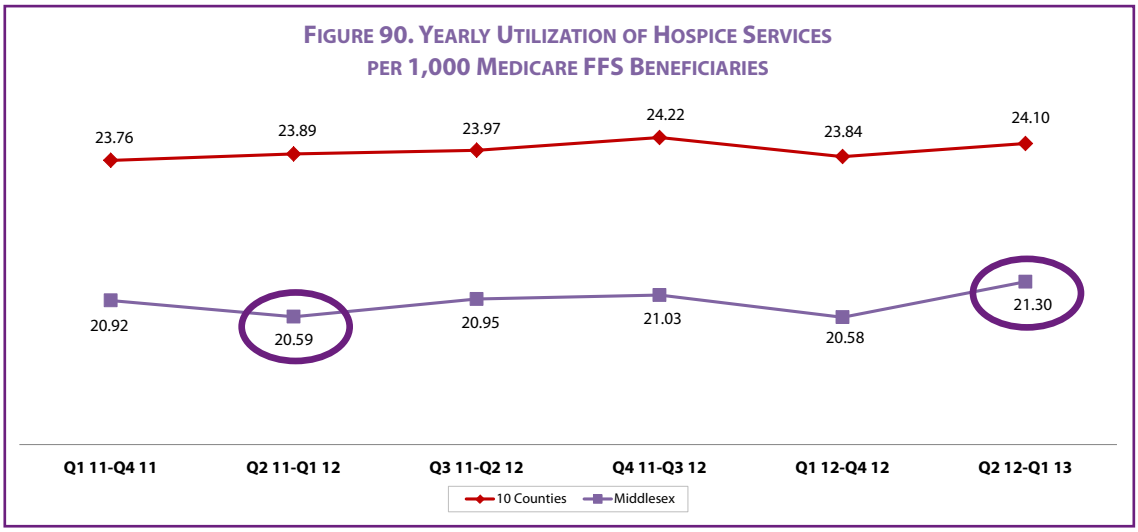
The rate of hospice use in Middlesex County in the 21 months prior to Superstorm Sandy was 34.23 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 89).

FIGURE 89. UTILIZATION OF HOSPICE SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, the rate of hospice use was 21.30 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 20.59 per 1,000 beneficiaries. The yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 90).

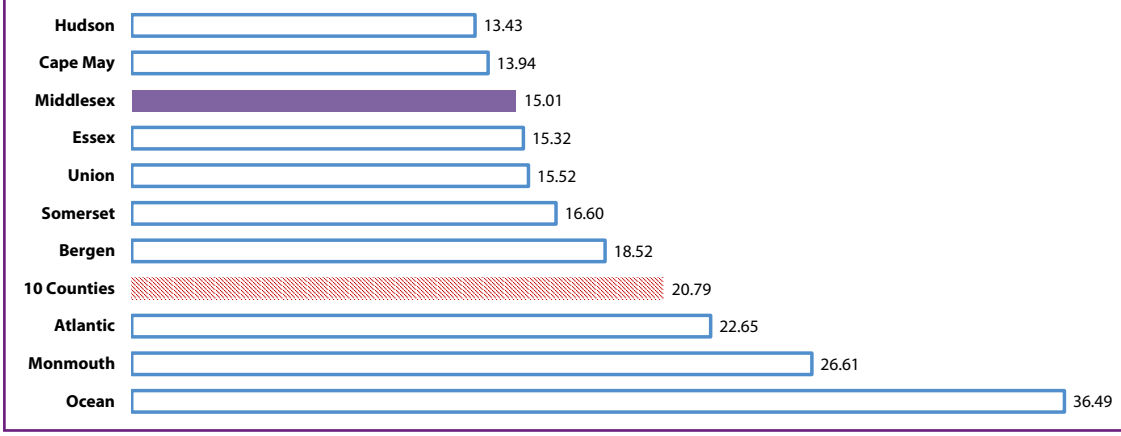
FIGURE 90. YEARLY UTILIZATION OF HOSPICE SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES



Medical Rehabilitation Services

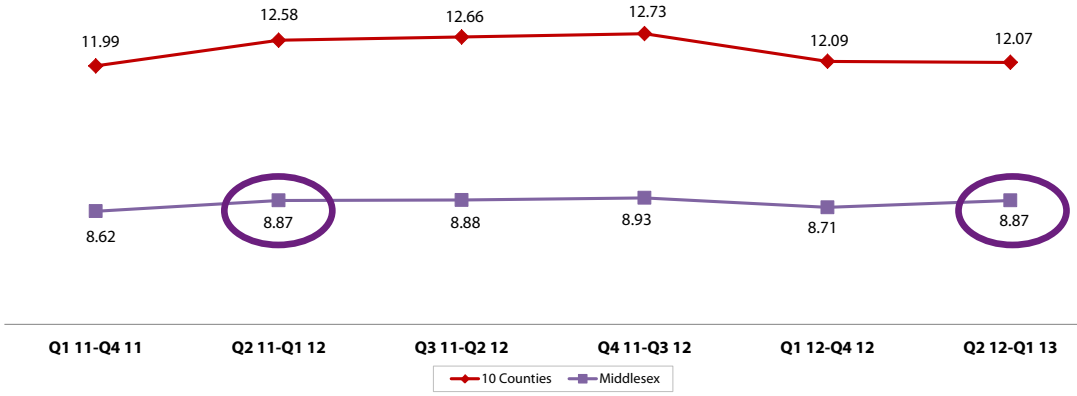
The rate of medical rehabilitation use in Middlesex County in the 21 months prior to Superstorm Sandy was 15.01 per 1,000 Medicare FFS beneficiaries. This was lower than the rate among all 10 counties (Figure 91).

FIGURE 91. UTILIZATION OF MEDICAL REHABILITATION SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES – PRE-SANDY: Q1 2011 – Q3 2012



From Q2 2012 – Q1 2013, the rate of medical rehabilitation use was 8.87 per 1,000 Medicare FFS beneficiaries in Middlesex County compared to Q2 2011 – Q1 2012, which was 8.87 per 1,000 beneficiaries. The yearly rate with rolling quarters was lower than the rate among all 10 counties (Figure 92).

FIGURE 92. YEARLY UTILIZATION OF MEDICAL REHABILITATION SERVICES PER 1,000 MEDICARE FFS BENEFICIARIES



Appendix A: Behavioral Health Conditions

Documentation and Technical Notes

The following defines the study population, the time frames, and the exclusion and inclusion criteria:

Data Source

- New Jersey Medicare Part A and Part B FFS claims data and denominator file

Reference Time Period

- Prevalence of the condition for the pre-Sandy time frame (Q1 2011- Q3 2012 or 21 months)
- Yearly prevalence of the condition with quarterly rolling (Q1 2011-Q1 2013)
- Quarterly new incidence of conditions that were not existent (not reported) in the prior year

Denominator

- All Medicare beneficiaries who were in CMS denominator file during measurement time frame
- With FFS coverage AND eligible enrollment in FFS days/total measurement days > 0

Numerator

- Unique beneficiaries with disease-specific inpatient OR outpatient claim during the time frame
- CCW and AHRQ disease diagnosis code match (ICD-9-CM codes) Part A dgns_cd_1-25 and dgns_e_cd_1-3; Match Part B dgns_cd_1_12

Exclusions

- HMO coverage period
- Age <18 or >= 110
- Eligible FFS days/total measurement days = 0

Resources

More information on the classification codes, requirements, and processing of the behavioral health conditions highlighted in this profile can be located at the following links:

- https://www.ccwdata.org/cs/groups/public/documents/document/clin_cond_algo_req_proc.pdf
- http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

Appendix A

The following table shows the ICD-9-CM codes for the eight behavioral health conditions:

Behavioral Health Conditions	Numerator: Valid ICD-9-CM Codes
Depression or Proxy Disorders (Depression, Anxiety Disorders or Adjustment Disorders)	29384, 29620, 29621, 29622, 29623, 29624, 29625, 29626, 29630, 29631, 29632, 29633, 29634, 29635, 29636, 30000, 30001, 30002, 30009, 30010, 30020, 30021, 30022, 30023, 30029, 3003, 3004, 3005, 30089, 3009, 3080, 3081, 3082, 3083, 3084, 3089, 3090, 3091, 30922, 30923, 30924, 30928, 30929, 3093, 3094, 30981, 30982, 30983, 30989, 3099, 311, 3130, 3131, 31321, 31322, 3133, 31382, 31383, V790
Depression	29620, 29621, 29622, 29623, 29624, 29625, 29626, 29630, 29631, 29632, 29633, 29634, 29635, 29636, 3004, 311, V790
Anxiety Disorders	29384, 30000, 30001, 30002, 30009, 30010, 30020, 30021, 30022, 30023, 30029, 3003, , 3005, 30089, 3009, 3080, 3081, 3082, 3083, 3084, 3089, 3130, 3131, 31321, 31322, 3133, 31382, 31383
Adjustment Disorders	3090, 3091, 30922, 30923, 30924, 30928, 30929, 3093, 3094, 30981, 30982, 30983, 30989, 3099
Post-Traumatic Stress Disorder (PTSD)	30981
Alcohol or Substance Abuse	2920, 29211, 29212, 2922, 29281, 29282, 29283, 29284, 29285, 29289, 2929, 30400, 30401, 30402, 30403, 30410, 30411, 30412, 30413, 30420, 30421, 30422, 30423, 30430, 30431, 30432, 30433, 30440, 30441, 30442, 30443, 30450, 30451, 30452, 30453, 30460, 30461, 30462, 30463, 30470, 30471, 30472, 30473, 30480, 30481, 30482, 30483, 30490, 30491, 30492, 30493, 30520, 30521, 30522, 30523, 30530, 30531, 30532, 30533, 30540, 30541, 30542, 30543, 30550, 30551, 30552, 30553, 30560, 30561, 30562, 30563, 30570, 30571, 30572, 30573, 30580, 30581, 30582, 30583, 30590, 30591, 30592, 30593, 64830, 64831, 64832, 64833, 64834, 65550, 65551, 65553, 76072, 76073, 76075, 7795, 96500, 96501, 96502, 96509, V6542 Alcohol Abuse: 2910, 2911, 2912, 2913, 2914, 2915, 2918, 29181, 29182, 29189, 2919, 30300, 30301, 30302, 30303, 30390, 30391, 30392, 30393, 30500, 30501, 30502, 30503, 76071, 9800
Substance Abuse	2920, 29211, 29212, 2922, 29281, 29282, 29283, 29284, 29285, 29289, 2929, 30400, 30401, 30402, 30403, 30410, 30411, 30412, 30413, 30420, 30421, 30422, 30423, 30430, 30431, 30432, 30433, 30440, 30441, 30442, 30443, 30450, 30451, 30452, 30453, 30460, 30461, 30462, 30463, 30470, 30471, 30472, 30473, 30480, 30481, 30482, 30483, 30490, 30491, 30492, 30493, 30520, 30521, 30522, 30523, 30530, 30531, 30532, 30533, 30540, 30541, 30542, 30543, 30550, 30551, 30552, 30553, 30560, 30561, 30562, 30563, 30570, 30571, 30572, 30573, 30580, 30581, 30582, 30583, 30590, 30591, 30592, 30593, 64830, 64831, 64832, 64833, 64834, 65550, 65551, 65553, 76072, 76073, 76075, 7795, 96500, 96501, 96502, 96509, V6542
Suicide and Intentional Self-Inflicted Injury	E9500, E9501, E9502, E9503, E9504, E9505, E9506, E9507, E9508, E9509, E9510, E9511, E9518, E9520, E9521, E9528, E9529, E9530, E9531, E9538, E9539, E954, E9550, E9551, E9552, E9553, E9554, E9555, E9556, E9557, E9559, E956, E9570, E9571, E9572, E9579, E9580, E9581, E9582, E9583, E9584, E9585, E9586, E9587, E9588, E9589, E959, V6284

Appendix B: Risk Factors for Depression or Proxy Disorders

Documentation and Technical Notes

The following defines the study population, the time frame, the exclusion and inclusion criteria, and the literature review references:

Data Source

- New Jersey Medicare Part A and Part B FFS claims data and denominator file

Reference Time Period

- Prevalence of the condition for the pre-Sandy time frame (January 2011 – September 2012 or 21 months)

Denominator

- All Medicare beneficiaries who were in CMS denominator file during measurement time frame
- With FFS coverage AND eligible enrollment in FFS days/total measurement days > 0

Numerator

- Unique beneficiaries with disease-specific inpatient OR outpatient claim during the time frame
- CCW and AHRQ disease diagnosis code match (ICD-9-CM codes) Part A dgns_cd_1-25 and dgns_e_cd_1-3; Match Part B dgns_cd_1_12

Exclusions

- HMO coverage period
- Age <18 or >= 110
- Eligible FFS days/total measurement days = 0

Model

- Logistic Regression Models were used to determine the top five risk factors with the highest Odds Ratios (OR) ($p<0.001$)

Resources

More information on the classification codes, requirements, and processing of the combination measure of depression or proxy disorders which includes beneficiaries reported for either depression, anxiety, or adjustment disorders can be located at the following links:

- https://www.ccwdata.org/cs/groups/public/documents/document/clin_cond_algo_req_proc.pdf
- http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

APPENDIX B

Literature Review References for Risk Factors for Depression or Proxy Disorders

National Alliance on Mental Illness. Information Helpline: Depression in Older Persons Fact Sheet [Internet]. Arlington (VA): National Alliance on Mental Illness; 2009 Oct [cited 2013 Sep 17]. Available from: http://www.nami.org/Template.cfm?Section=Helpline1&Template=/ContentManagement/ContentDisplay.cfm&ContentID=144039

National Institute of Mental Health. Depression: Causes and Risk Factors [Internet]. Bethesda (MD): National Institute of Mental Health; 2013 Jul [cited 2013 Sep 17]. Available from: http://nihseniorhealth.gov/depression/causesandriskfactors/01.html

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Appendix B

The following table shows the ICD-9-CM codes for the top five risk factors for depression or proxy disorders:

Top Five Risk Factors for Depression or Proxy Disorders*	Numerator: Valid ICD-9-CM Codes
Alzheimer's Disease and Related Disorders or Senile Dementia	3311, 33111, 33119, 3312, 3317, 2900, 29010, 29011, 29012, 29013, 29020, 29021, 2903, 29040, 29041, 29042, 29043, 2940, 2941, 29410, 29411, 2948, 797
Sleep Disturbance	04672, 29182, 29285, 30740, 30741, 30742, 30748, 30749, 32700, 32701, 32702, 32709, 78050, 78051, 78052, 78059
Substance or Alcohol Abuse or Tobacco Use	2910, 2911, 2912, 2913, 2914, 2915, 2918, 29181, 29182, 29189, 2919, 2920, 29211, 29212, 2922, 29281, 29282, 29283, 29284, 29285, 29289, 2929, 30300, 30301, 30302, 30303, 30390, 30391, 30392, 30393, 30400, 30401, 30402, 30403, 30410, 30411, 30412, 30413, 30420, 30421, 30422, 30423, 30430, 30431, 30432, 30433, 30440, 30441, 30442, 30443, 30450, 30451, 30452, 30453, 30460, 30461, 30462, 30463, 30470, 30471, 30472, 30473, 30480, 30481, 30482, 30483, 30490, 30491, 30492, 30493, 30500, 30501, 30502, 30503, 3051, 30510, 30511, 30512, 30513, 30520, 30521, 30522, 30523, 30530, 30531, 30532, 30533, 30540, 30541, 30542, 30543, 30550, 30551, 30552, 30553, 30560, 30561, 30562, 30563, 30570, 30571, 30572, 30573, 30580, 30581, 30582, 30583, 30590, 30591, 30592, 30593, 33392, 3575, 4255, 5353, 53530, 53531, 5710, 5711, 5712, 5713, 64830, 64831, 64832, 64833, 64834, 65550, 65551, 65553, 76071, 76072, 76073, 76075, 7795,7903,96500, 96501, 96502, 96509, 9800, V110, V111, V112, V113, V114, V118, V119, V154, V1541, V1542, V1549, V1582, V6285, V6542, V663, V701, V702, V7101, V7102, V7109, V790, V791, V792, V793, V798, V799
Hip/Pelvic Fractures	73314, 73315, 73396, 73397, 73398, 8080, 8081, 8082, 8083, 80841, 80842, 80843, 80849, 80851, 80852, 80853, 80859, 8088, 8089, 82000, 82001, 82002, 82003, 82009, 82010, 82011, 82012, 82013, 82019, 82020, 82021, 82022, 82030, 82031, 82032, 8208, 8209
Amputations	8870, 8871, 8872, 8873, 8874, 8875, 8876, 8877, 8960, 8961, 8962, 8963, 8970, 8971, 8972, 8973, 8974, 8975, 8976, 8977, 9059, 99760, 99761, 99762, 99769

* Other risk factors for depression or proxy disorders analyzed include Acute Myocardial Infarction (AMI), Stroke/Transient Ischemic Attack, Coronary Artery Bypass Graft Surgery (CABG), Parkinson's Disease, Chronic Obstructive Pulmonary Disease and Bronchiectasis (COPD), Diabetes, Chronic Kidney Disease, Rheumatoid Arthritis/Osteoarthritis (RA/OA), Macular Degeneration, Disability, History of Cancer, Heart Failure, and Acquired Hypothyroidism.

Appendix C: Utilization of Outpatient Mental Health Services

Documentation and Technical Notes

The following defines the study population, the time frame, and the exclusion and inclusion criteria:

Data Source

- New Jersey Medicare Part A and Part B FFS claims data and denominator file

Reference Time Period

- Utilization during pre-Sandy time frame (January 2011 – September 2012 or 21 months)
- Depression Screening: Calendar Year (CY) 2012
- Quarterly utilization (January 2011 – March 2013 or nine quarters)

Denominator

- All Medicare beneficiaries who were in CMS denominator file during measurement time frame
- With FFS coverage AND eligible enrollment in FFS days/total measurement days > 0

Numerator

Unique beneficiaries with specific outpatient mental health service claims

Exclusions

- HMO coverage period
- Age <18 or >= 110
- Eligible FFS days/total measurement days =0

Resources

More information on the definitions and uses of the outpatient mental health services highlighted in this profile can be located at http://www.medicarenhic.com/providers/pubs/REF-EDO-0012MentalHealthBillingGuide2013.pdf.

Appendix C

The following table shows the CPT/HCPCS codes for the outpatient mental health services:

Mental Health Services	Numerator: CPT/HCPCS Codes
Assessments	
Depression Screening	G0444
Diagnostic Psychological Tests	96101, 96102, 96103, 96105, 96110, 96111
Health and Behavior Assessment/Intervention	96150, 96151, 96152 96153, 96154, 96155
Neuropsychological Tests	96116, 96118, 96119, 96120
Psychiatric Diagnostic Procedures	90801, 90802, 90791, 90792
Therapies	
Individual Psychotherapy	90804, 90805, 90832, 90833, 90806, 90807, 9083490836, 90808, 90809, 90810, 90811, 90812, 90813, 90814, 90815, 90816, 90817, 90818, 90819, 90821, 90822, 90823, 90824, 90826, 90827, 90828, 90829, 90837, 90838, 90839, 90840
Family Psychotherapy	90846, 90847
Group Psychotherapy	90849, 90853, 90857
Electroconvulsive Therapy	90870
Biofeedback Therapy	90901, 90911

Appendix D: Utilization of services – Inpatient and Other Settings

Documentation and Technical Notes

The following defines the study population, the time frame, and the exclusion and inclusion criteria:

Data Source

New Jersey Medicare Part A and Part B FFS claims data and denominator file

Reference Time Period

- Utilization during pre-Sandy time frame (January 2011 – September 2012 or 21 months)
- Quarterly utilization of services (January 2011 – March 2013 or nine quarters)
- Yearly utilization of services with quarterly rolling (January 2011 – March 2013)

Denominator

- All Medicare beneficiaries who were in CMS denominator file during measurement time frame
- With FFS coverage AND eligible enrollment in FFS days/total measurement days>0

Exclusions

- HMO coverage period
- Age <18 or >= 110
- Eligible FFS days/total measurement days =0

Utilization Measure

Refer to Appendix E.

Appendix D

Numerator

Utilization Measure Description	Numerator
Psychiatric Hospital Admissions	Number of eligible beneficiaries with at least one psychiatric hospital admission claim
Acute Care Hospital Admissions	Number of acute care hospital admissions
Observation Stays	Number of observation stays
Emergency Department Visits	Number of emergency department visits
30-Day Hospital Readmissions	Number of 30-day hospital readmissions
Observation Stays Within 30 Days of Hospital Discharge	Number of observation stays within 30 days of hospital discharge
Emergency Department Visits Within 30 Days of Hospital Discharge	Number of emergency department visits within 30 days of hospital discharge
Home Health Agency Services	Number of eligible beneficiaries with at least one home health agency claim
Skilled Nursing Facility Services	Number of eligible beneficiaries with at least one skilled nursing facility claim
Hospice Services	Number of eligible beneficiaries with at least one hospice claim
Medical Rehabilitation Services	Number of eligible beneficiaries with at least one medical rehabilitation claim

Appendix E: Time Frames and Formulae

Time Frames	
Quarters	**Dates**
Q1	January 1 to March 31
Q2	April 1 to June 30
Q3	July 1 to September 30
Q4	October 1 to December 31

Formulae

$$\text{Incidence} = \frac{\text{(Number of new cases in a time frame, not present in prior year)}}{\text{(Total beneficiaries at risk during the time frame)}}$$

$$\text{Prevalence} = \frac{\text{(Number of cases in a time frame)}}{\text{(Total beneficiaries in the population during the time frame)}}$$

$$\text{Utilization} = \frac{\text{(Number of beneficiaries or measures with specific service utilization)}}{\text{(Total beneficiaries)}}$$

$$\text{Relative change} = \frac{\text{(Current rate-Former rate)}}{\text{(Former rate)}}$$

APPENDIX F

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