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

Updated Data Profile: Ocean County Medicare Fee-for-Service Beneficiaries

Demographics, Behavioral Health Conditions, and Utilization of Health Services

April 11, 2014
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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 behavioral health issues such as post-traumatic stress disorder (PTSD), depression, and substance 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 mental health issues. Older adults and disabled residents with 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 county profile can help healthcare professionals learn more about the behavioral health status and healthcare utilization patterns of Medicare Fee-for-Service (FFS) beneficiaries before and after Superstorm Sandy. As such, it may be a useful tool in planning for future disasters. This profile is one of 10 created for each of the Federal Emergency Management Agency (FEMA)-declared disaster counties in New Jersey. The profiles explore potential county level health status and health determinants of post-disaster spikes in behavioral health issues and treatments. This update includes more comprehensive post-Sandy data than the initial profile, which was published in January 2014. A final update is planned for Summer 2014, when additional data is available.
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 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 for Medicare 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. The initial set of county profiles, which covered the period January 1, 2011 to March 31, 2013, was published in January 2014. This is the first of two updates planned for Ocean County and includes data from January 1, 2011 to September 30, 2013. The county profiles can be used to determine and compare the prevalence and incidence of the selected behavioral health conditions and utilization of services among all 10 FEMA-declared disaster counties before and after Superstorm Sandy.

HQSI also created profiles for 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 and other factors. The initial community profiles, produced in January 2014, are available at www.hqsi.org. The community profiles can be used to determine and compare the prevalence and incidence of the selected behavioral health conditions and utilization of services in the selected communities compared to their counties. Two updates are planned; the first is currently in production and the second will take place in Summer 2014.

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 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, health care 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 October 2011.
WHAT'S NEW IN THIS UPDATE

This updated profile includes an additional six months of post-Sandy data. It focuses on a 12-month pre-Sandy time period as opposed to 21 months used in the initial profile and includes pre and post-Sandy analyses comparing the rates from the year before and during/after the storm. In this profile, we reference October 2011 to September 2012 as the year before Superstorm Sandy and October 2012 to September 2013 as the year after Superstorm Sandy.

This profile now includes:

- Annual trend charts for the selected behavioral health conditions to allow the comparison of changes in prevalence over time (page 20)
- A summary of the prevalence of depression or proxy disorders rate by demographic characteristics (race, gender and age) to allow the comparison of rates across different demographic groups (page 22)
- State maps highlighting the 10 FEMA-declared disaster counties before and after Superstorm Sandy and county-specific maps reflecting changes in prevalence of depression or proxy disorder (pages 25 and 26), top five risk factors for depression (pages 36 and 37) and depression screening rates (pages 44 and 45)
- Summary tables that highlight changes across the 10 counties before and after Superstorm Sandy on annual prevalence of selected behavioral health conditions (page 18), utilization of outpatient behavioral health services for assessment (page 41) and therapies (page 50), utilization of inpatient services (page 59, 65) and utilization of other settings (page 70)
- Lastly, a section has been added to illustrate the types of professionals that the beneficiaries in the county seek out for behavioral health services (page 57, 58).

HOW TO USE THIS PROFILE

This profile includes an analysis of the eight behavioral health conditions which, based on literature review and feedback from the subject matter experts consulted for this project, were found to increase after natural disasters.

This profile is divided into the following sections, each of which is preceded by a user-friendly overview:

- Demographics (page 11)
- Prevalence and incidence of behavioral health conditions (page 18)
- Risk factors for depression or proxy disorders (page 34)
- Utilization of outpatient behavioral health assessments (page 41)
- Utilization of outpatient behavioral health therapies (page 50)
- Utilization of inpatient health services (page 59)
- Utilization of inpatient health services within 30 days of discharge (page 65)
- Other settings (page 70)
Here are some additional tips for using this profile:

- Use the Executive Summary (pages 9-10) for a quick overview of this profile's key points, as well as a snapshot table that summarizes the prevalence of the selected behavioral health conditions and utilization of behavioral health services before and after Sandy.

- Use the Behavioral Health Conditions section (pages 17-33) for in-depth analyses and graphical comparison on the prevalence and incidence of eight behavioral health conditions before and after Superstorm Sandy.

- Use the New Jersey and county maps to: identify areas with higher rates of Medicare FFS beneficiaries at risk for depression and proxy disorders (pages 25-26); and areas with low utilization of the depression screening benefit (pages 44-45).

**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 diseases/conditions related to behavioral health conditions such as depression. Appendices A through G contain documentation, technical notes, codes, algorithms, data sources, and references.

Medicare Part A claims were also used to analyze utilization of health services in 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 of 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 (i.e., anxiety and adjustment disorders).
**Measurement Time Frames**

This profile includes data from January 1, 2011 through September 30, 2013. The fourth quarter of 2012 (Q4 2012) is defined as October 1, 2012 through December 31, 2012, (the timeframe when Superstorm Sandy occurred). The time period after the storm is defined as January 1 – September 30, 2013 (Q1 2013 to Q3 2013). Results are presented using different charts and measurement timeframes as follows:

- Annual bar charts show the annual rates in the year before (October 1, 2011 to September 30, 2012) and during/after (October 1, 2012 to September 30, 2013) Superstorm Sandy. Statistics on demographics, prevalence of behavioral health conditions, and utilization of health services are presented for this 12-month period. These statistics allow for comparison across affected counties before and after Superstorm Sandy.

- Annual trend charts with rolling quarters for the behavioral health conditions and utilization statistics are included to adjust for seasonal variation and to examine possible changes in the year before and during/after Superstorm Sandy. The time period includes eight data points from January 1, 2011 to September 30, 2013.

- Annual percent change (relative change) bar charts show relative increase or decrease in rates from the year before and during/after Superstorm Sandy. These statistics allow for comparison across the 10 affected counties and to analyze the potential impact of Superstorm Sandy.

- Quarterly new incidence charts for eight behavioral health conditions include seven quarters of data from January 1, 2012 to September 30, 2013. This allows for the identification of new cases in a given quarter when compared to the prior year.

- Quarterly line charts show the trend in the utilization of depression screening for seven quarters from January 1, 2012 to September 30, 2013.

**Data Considerations**

Currently, there are three quarters of post-storm data available. This is the first of two planned profile updates. 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 no accurate way to identify when certain health conditions began and ended when claims data is used.
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. The subject matter experts also indicated that estimating the prevalence of depression using claims data can be particularly difficult as depression is often undiagnosed or not documented. Depression can be present with symptoms of anxiety and adjustment disorders. Based on this feedback, a combination measure named “depression or proxy disorders” was created to estimate prevalence and incidence of depression. If a patient has at least one of the three conditions reported in Medicare claims, he/she will be flagged as having depression or proxy disorders.

This county profile can be used to compare the prevalence and incidence rates of eight selected behavioral health conditions (see page 19) based on the ICD-9-CM codes through the analysis of Medicare claims. This profile may 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 a final update in summer 2014 that will include additional data for the post-Superstorm Sandy time period.
Special thanks to the subject matter experts who assisted with the project by providing feedback and guidance to the HQSI project team.

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KEY OBSERVATIONS

The following observations show Ocean County’s percent change and ranking among all 10 counties after Superstorm Sandy.

1. Ocean County had the highest prevalence of (218.09 per 1,000 Medicare FFS beneficiaries) and largest increase in (4.54%) depression or proxy disorders.

2. Ocean County had the largest increase in depression alone (1.83%).

3. Ocean County had the highest prevalence of (139.47 per 1,000 Medicare FFS beneficiaries) and largest increase in (11.23%) anxiety disorders.

4. Ocean County had the highest prevalence of (41.87 per 1,000 Medicare FFS beneficiaries) and largest increase in (18.54%) alcohol or substance abuse.

5. Ocean County experienced a relative increase in substance abuse (6.20%) and PTSD (8.76%) as well as the largest decrease in adjustment disorders (8.60%).

6. Ocean County had the highest prevalence of the top five risk factors for depression or proxy disorders (156.74 per 1,000 Medicare FFS beneficiaries) despite a 2.56% overall relative decrease.

7. Ocean County had the highest prevalence of substance or alcohol abuse or tobacco use (102.61 per 1,000 Medicare FFS beneficiaries) despite a 2.01% overall relative decrease.

8. Utilization of depression screening in Ocean County increased from 9.49 per 1,000 Medicare FFS beneficiaries to 15.75 per 1,000 beneficiaries.

9. There was a 17.39% relative decrease in psychiatric diagnostic procedures and a 25.44% relative increase in neuropsychological testing in Ocean County.

10. Ocean County experienced the largest relative increase in the utilization of individual psychotherapy (10.56%) as well as a relative decrease in family psychotherapy (11.90%) and group psychotherapy (12.21%).

11. Ocean County experienced the largest relative increase in the utilization of observation stays (202.64%) and observation stays that occurred within 30 days of discharge (32.59%).

12. Ocean County had the highest utilization of home health agency services (95.63 per 1,000 Medicare FFS beneficiaries) despite a 4.44% overall relative decrease.

13. Ocean County had the highest utilization of hospice services (29.83 per 1,000 Medicare FFS beneficiaries) despite a 2.00% overall relative decrease.

14. Ocean County had the highest utilization of medical rehabilitation services (21.24 per 1,000 Medicare FFS beneficiaries) despite a 5.56% overall relative decrease.
The *Snapshot of Ocean County* 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 Ocean County compared to the average among all 10 counties. It illustrates the change in conditions and utilization of services before and after Sandy.

### Figure 1. Snapshot of Ocean County

#### Prevalence per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th>Behavioral Health Disorders</th>
<th>Ocean County</th>
<th>10 County Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depression or Proxy Disorders</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression alone</td>
<td>208.61</td>
<td>218.09</td>
</tr>
<tr>
<td>Anxiety Disorders alone</td>
<td>131.49</td>
<td>133.89</td>
</tr>
<tr>
<td>Adjustment Disorders alone</td>
<td>125.39</td>
<td>139.47</td>
</tr>
<tr>
<td>Alcohol or Substance Abuse</td>
<td>28.85</td>
<td>26.37</td>
</tr>
<tr>
<td>Substance Abuse alone</td>
<td>35.32</td>
<td>41.87</td>
</tr>
<tr>
<td>PTSD</td>
<td>5.82</td>
<td>6.33</td>
</tr>
<tr>
<td>Any of the Top Five Risk Factors* for Depression or Proxy Disorders</td>
<td>160.86</td>
<td>156.74</td>
</tr>
<tr>
<td>Substance or Alcohol Abuse or Tobacco Use</td>
<td>104.72</td>
<td>102.61</td>
</tr>
<tr>
<td>Alzheimer’s Disease and related disorders or Senile Dementia</td>
<td>39.74</td>
<td>35.52</td>
</tr>
<tr>
<td>Sleep Disturbance</td>
<td>25.73</td>
<td>27.24</td>
</tr>
<tr>
<td>Hip/Pelvic Fractures</td>
<td>7.74</td>
<td>7.03</td>
</tr>
<tr>
<td>Amputations</td>
<td>1.01</td>
<td>0.76</td>
</tr>
</tbody>
</table>

#### Utilization per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th>Behavioral Health Services</th>
<th>Ocean County</th>
<th>10 County Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessments</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression Screening**</td>
<td>9.49</td>
<td>15.75</td>
</tr>
<tr>
<td>Psychiatric Diagnostic Procedures</td>
<td>54.28</td>
<td>44.84</td>
</tr>
<tr>
<td>Neuropsychological Testing</td>
<td>9.75</td>
<td>12.23</td>
</tr>
<tr>
<td><strong>Therapy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Psychotherapy</td>
<td>48.75</td>
<td>53.90</td>
</tr>
<tr>
<td>Family Psychotherapy</td>
<td>2.69</td>
<td>2.37</td>
</tr>
<tr>
<td>Group Psychotherapy</td>
<td>1.72</td>
<td>1.51</td>
</tr>
<tr>
<td>Psychiatric Hospital Admissions</td>
<td>7.66</td>
<td>7.50</td>
</tr>
</tbody>
</table>

*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.

**Depression Screening comparison time-frames are different (October 1, 2012 – September 30, 2013 vs. January 1, 2012 – December 31, 2012) due to availability of depression screening data starting in January 2012.*
The total Medicare FFS beneficiary population of Ocean County prior to Superstorm Sandy was 126,655. After the storm, the population decreased to 125,721.
Medicare FFS beneficiaries made up 21.82% of Ocean County’s general population in calendar year 2012.

Prior to Superstorm Sandy, females made up 57.16% of the entire Medicare FFS population in Ocean County and males 42.84%. After the storm, the female beneficiary population decreased to 56.99% and males increased to 43.01%.

* Source: Medicare Claims Database, U.S. Census Bureau, American Community Survey (ACS), 2012 [http://www.census.gov/].

* Due to rounding, the absolute change may not be the same as the difference subtracted from the two time frames shown.
Both before and after Superstorm Sandy, the majority of Medicare FFS beneficiaries in Ocean County were White followed by Black, Asian, and Hispanic.
Both before and after Superstorm Sandy, the largest age group of the Medicare FFS beneficiary population in Ocean County was between ages 65 and 74 years old followed by beneficiaries between ages 75 and 84 years old.

The average age of Medicare FFS beneficiaries in this county decreased from 72.32 before the storm to 72.29 after the storm.
According to U.S. Census data from 2012, residents aged 65 and over in Ocean County had a median household income of $37,747. This was lower than the average income among all 10 counties.
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**Prevalence and Incidence**

Using Medicare FFS claims data, eight behavioral health conditions were analyzed: depression or proxy disorders, depression, adjustment disorder, anxiety disorder, post-traumatic stress disorder (PTSD), alcohol or substance abuse, substance abuse alone, and suicide and intentional self-inflicted injury. These conditions were chosen based on literature review and feedback from subject matter experts.

Claims data can underestimate the real prevalence and 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 September 30, 2013 for these different measures were calculated to quantify disease occurrence:

1. The annual prevalence bar chart compares rates in two annual time-frames among all 10 counties
2. New incidence in a quarter for the specified disease that was not present in the prior 12 months (Q1 2012 – Q3 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.
Prevalence of the selected behavioral health conditions before and after Superstorm Sandy in the 10 counties is color coded with highest (red) and lowest (light blue) for each condition.

In the 12 months prior to Superstorm Sandy, Ocean County had the highest prevalence rate of anxiety disorders and PTSD. After the storm, Ocean County no longer had the highest rate of PTSD, but it still had the highest rate of anxiety disorders, as well as the highest rates of depression or proxy disorders and alcohol or substance abuse.
Ocean County experienced an increase in depression or proxy disorders, as well as depression alone, anxiety disorders, alcohol or substance abuse, substance abuse alone, and PTSD.

The charts above reflect quarterly trending in new incidence of the selected behavioral health conditions among Medicare FFS beneficiaries in Ocean County.
The charts above reflect annual trending in the prevalence of the selected behavioral health conditions among Medicare FFS beneficiaries in Ocean County.
Depression or Proxy Disorders

This table displays the number and percentage of Medicare FFS beneficiaries of each race, gender, and age diagnosed with depression or proxy disorders before and after Superstorm Sandy. There were 23,945 beneficiaries diagnosed with depression or proxy disorders in Ocean County before the storm. This increased to 25,114 beneficiaries after the storm.

<table>
<thead>
<tr>
<th>Race</th>
<th>Number of Beneficiaries</th>
<th>Percent (%)</th>
<th>Number of Beneficiaries</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>23,045</td>
<td>96.24</td>
<td>24,171</td>
<td>96.25</td>
</tr>
<tr>
<td>Black</td>
<td>455</td>
<td>1.90</td>
<td>453</td>
<td>1.80</td>
</tr>
<tr>
<td>Hispanic</td>
<td>162</td>
<td>0.68</td>
<td>165</td>
<td>0.66</td>
</tr>
<tr>
<td>Asian</td>
<td>71</td>
<td>0.30</td>
<td>67</td>
<td>0.27</td>
</tr>
<tr>
<td>Other</td>
<td>212</td>
<td>0.89</td>
<td>258</td>
<td>1.03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of Beneficiaries</th>
<th>Percent (%)</th>
<th>Number of Beneficiaries</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>7,686</td>
<td>32.10</td>
<td>8,080</td>
<td>32.17</td>
</tr>
<tr>
<td>Females</td>
<td>16,259</td>
<td>67.90</td>
<td>17,034</td>
<td>67.83</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Beneficiaries</th>
<th>Percent (%)</th>
<th>Number of Beneficiaries</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 65</td>
<td>4,802</td>
<td>20.05</td>
<td>4,739</td>
<td>18.87</td>
</tr>
<tr>
<td>65-74</td>
<td>7,779</td>
<td>32.49</td>
<td>8,453</td>
<td>33.66</td>
</tr>
<tr>
<td>75-84</td>
<td>6,453</td>
<td>26.95</td>
<td>6,692</td>
<td>26.65</td>
</tr>
<tr>
<td>85 and Above</td>
<td>4,911</td>
<td>20.51</td>
<td>5,230</td>
<td>20.83</td>
</tr>
</tbody>
</table>

Total: 23,945 (100.00) - 25,114 (100.00)
<table>
<thead>
<tr>
<th>Race</th>
<th>Numerator</th>
<th>Denominator*</th>
<th>Rate per 1,000 Beneficiaries</th>
<th>Numerator</th>
<th>Denominator*</th>
<th>Rate per 1,000 Beneficiaries</th>
</tr>
</thead>
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<td>White</td>
<td>23,045</td>
<td>109,957.68</td>
<td>209.58</td>
<td>24,171</td>
<td>109,956.10</td>
<td>219.82</td>
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<td>208.90</td>
<td>453</td>
<td>2,163.30</td>
<td>209.40</td>
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<td>Hispanic</td>
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<td>613.43</td>
<td>264.09</td>
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<td>Asian</td>
<td>71</td>
<td>646.52</td>
<td>109.82</td>
<td>67</td>
<td>628.35</td>
<td>106.63</td>
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<td>Other</td>
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<td>1,400.09</td>
<td>151.42</td>
<td>258</td>
<td>1,787.16</td>
<td>144.36</td>
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<table>
<thead>
<tr>
<th>Gender</th>
<th>Numerator</th>
<th>Denominator*</th>
<th>Rate per 1,000 Beneficiaries</th>
<th>Numerator</th>
<th>Denominator*</th>
<th>Rate per 1,000 Beneficiaries</th>
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<tr>
<td>Males</td>
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<td>48,961.73</td>
<td>156.98</td>
<td>8,080</td>
<td>49,357.29</td>
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<td>Females</td>
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<td>65,834.04</td>
<td>246.97</td>
<td>17,034</td>
<td>65,785.78</td>
<td>258.93</td>
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<table>
<thead>
<tr>
<th>Age</th>
<th>Numerator</th>
<th>Denominator*</th>
<th>Rate per 1,000 Beneficiaries</th>
<th>Numerator</th>
<th>Denominator*</th>
<th>Rate per 1,000 Beneficiaries</th>
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<tr>
<td>Below 65</td>
<td>4,802</td>
<td>12,670</td>
<td>378.99</td>
<td>4,739</td>
<td>12,627</td>
<td>375.30</td>
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<tr>
<td>65-74</td>
<td>7,779</td>
<td>49,243</td>
<td>157.97</td>
<td>8,453</td>
<td>50,519</td>
<td>167.32</td>
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<tr>
<td>75-84</td>
<td>6,453</td>
<td>34,611</td>
<td>186.44</td>
<td>6,692</td>
<td>33,909</td>
<td>197.35</td>
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<td>85 and Above</td>
<td>4,911</td>
<td>18,271</td>
<td>268.78</td>
<td>5,230</td>
<td>18,088</td>
<td>289.14</td>
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<tr>
<td>Total</td>
<td>23,945</td>
<td>114,796</td>
<td>208.59</td>
<td>25,114</td>
<td>115,143</td>
<td>218.11</td>
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</table>

* Total eligible beneficiaries (denominator) computed after adjusting for total enrolled FFS days divided by the total measurement days in the timeframe.

This table displays the rate of Medicare FFS beneficiaries per 1,000 diagnosed with depression or proxy disorders by race, gender, and age both before and after Superstorm Sandy by different demographic groups. The numerator is the number of beneficiaries with a claim for depression or proxy disorders; the denominator is the total number of beneficiaries in the county for each group.
Hispanic Medicare FFS beneficiaries have the highest rate of depression or proxy disorders followed by White and Black beneficiaries. In the 12 months prior to Superstorm Sandy, 264.09 per 1,000 Hispanic Medicare FFS beneficiaries were diagnosed with depression or proxy disorders. After the storm, this rate increased to 271.31 per 1,000 beneficiaries.

In the 12 months prior to Superstorm Sandy, 246.97 per 1,000 female Medicare FFS beneficiaries were diagnosed with depression or proxy disorders. After the storm, this rate increased to 258.93 per 1,000 female beneficiaries. Female beneficiaries have a higher rate of depression or proxy disorder compared to males.

In the 12 months prior to Superstorm Sandy, among Medicare FFS beneficiaries ages 85 and above, 268.78 per 1,000 were diagnosed with depression or proxy disorders. After the storm, this rate increased to 289.14 per 1,000 beneficiaries.
The prevalence rate of depression or proxy disorders in Ocean County in the 12 months prior to Superstorm Sandy was 208.61 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 218.09 per 1,000 beneficiaries, the highest rate among all 10 counties. This change reflects a 4.54% relative increase, the largest increase among all 10 counties.

This chart reflects trending of quarterly new incidence of depression or proxy disorders among Medicare FFS beneficiaries in Ocean County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
Figure 21. Prevalence of Depression or Proxy Disorders* per 1,000 Medicare FFS Beneficiaries in 10 Counties

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 before and after Superstorm Sandy.

* Mapped using ZIP codes of the 10 counties.
**Figure 22. Ocean County Prevalence of Depression or Proxy Disorders* per 1,000 Medicare FFS Beneficiaries**

October 1, 2011 – September 30, 2012

October 1, 2012 – September 30, 2013

The color-coded map of Ocean County depicts regional variation of prevalence of depression or proxy disorders from high (red) to low (blue) before and after Superstorm Sandy.

* Mapped using ZIP codes; may not display all the city names located within the ZIP code.
The prevalence rate of depression in Ocean County in the 12 months prior to Superstorm Sandy was 131.49 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 133.89 per 1,000 beneficiaries. This change reflects a 1.83% relative increase, the largest increase among all 10 counties.

**Figure 24. Quarterly New Incidence of Depression* per 1,000 Medicare FFS Beneficiaries**

This chart reflects trending of quarterly new incidence of depression among Medicare FFS beneficiaries in Ocean County.

*Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of anxiety disorders in Ocean County in the 12 months prior to Superstorm Sandy was 125.39 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 139.47 per 1,000 beneficiaries, the highest rate among all 10 counties. This change reflects an 11.23% relative increase, the largest increase among all 10 counties.

**Figure 25. Anxiety Disorders per 1,000 Medicare FFS Beneficiaries**

This chart reflects trending of quarterly new incidence of anxiety disorders among Medicare FFS beneficiaries in Ocean County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of adjustment disorders in Ocean County in the 12 months prior to Superstorm Sandy was 28.85 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 26.37 per 1,000 beneficiaries. This change reflects an 8.60% relative decrease, the largest decrease among all 10 counties.

This chart reflects trending of quarterly new incidence of adjustment disorders among Medicare FFS beneficiaries in Ocean County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of PTSD in Ocean County in the 12 months prior to Superstorm Sandy was 5.82 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 6.33 per 1,000 beneficiaries, reflecting an 8.76% relative increase.

This chart reflects trending of quarterly new incidence of PTSD among Medicare FFS beneficiaries in Ocean County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
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 Ocean County in the 12 months prior to Superstorm Sandy was 35.32 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 41.87 per 1,000 beneficiaries, the highest rate among all 10 counties. This change reflects an 18.54% relative increase, the largest increase among all 10 counties.

This chart reflects trending of quarterly new incidence of alcohol or substance abuse among Medicare FFS beneficiaries in Ocean County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of substance abuse alone in Ocean County in the 12 months prior to Superstorm Sandy was 20.66 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 21.94 per 1,000 beneficiaries, reflecting a 6.20% relative increase.

This chart reflects trending of quarterly new incidence of substance abuse alone among Medicare FFS beneficiaries in Ocean County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of suicide and intentional self-inflicted injury in Ocean County in the 12 months prior to Superstorm Sandy was 5.33 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 5.30 per 1,000 beneficiaries, reflecting a 0.56% relative decrease.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
**Risk Factors for Depression or Proxy Disorders**

To identify Medicare FFS beneficiaries at risk of developing depression or proxy disorders, HQSI 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 regression 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 before and after Superstorm Sandy.

**Summary**

<table>
<thead>
<tr>
<th>Any of the Top Five Risk Factors for Depression or Proxy Disorders</th>
<th>10/1/11 – 9/30/12</th>
<th>10/1/12 – 9/30/13</th>
<th>% Change</th>
<th>10/1/11 – 9/30/12</th>
<th>10/1/12 – 9/30/13</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocean County</td>
<td>160.86</td>
<td>156.74</td>
<td>-2.56</td>
<td>136.20</td>
<td>134.19</td>
<td>-1.48</td>
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<tr>
<td>10 County Average</td>
<td>104.72</td>
<td>102.61</td>
<td>-2.01</td>
<td>78.20</td>
<td>79.94</td>
<td>2.23</td>
</tr>
<tr>
<td>Alzheimer’s Disease and Related Disorders or Senile Dementia</td>
<td>39.74</td>
<td>35.52</td>
<td>-10.62</td>
<td>39.09</td>
<td>35.50</td>
<td>-9.18</td>
</tr>
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<td>Sleep Disturbance</td>
<td>25.73</td>
<td>27.24</td>
<td>5.87</td>
<td>24.21</td>
<td>23.93</td>
<td>-1.16</td>
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<tr>
<td>Hip/Pelvic Fractures</td>
<td>7.74</td>
<td>7.03</td>
<td>-9.17</td>
<td>7.96</td>
<td>7.62</td>
<td>-4.27</td>
</tr>
<tr>
<td>Amputations</td>
<td>1.01</td>
<td>0.76</td>
<td>-24.75</td>
<td>1.11</td>
<td>0.98</td>
<td>-11.71</td>
</tr>
</tbody>
</table>

Ocean County experienced a decrease in the top five risk factors for depression or proxy disorders, as well as a decrease in substance or alcohol abuse or tobacco use, Alzheimer’s disease and related disorders or senile dementia, hip/pelvic fractures, and amputations.
Figure 38. Annual Prevalence Trend for Risk Factors of Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries

This chart reflects annual trending in prevalence of the top five risk factors for depression or proxy disorders among Medicare FFS beneficiaries in Ocean County.

Any of the Top Five Risk Factors for Depression or Proxy Disorders

Figure 39. Annual Prevalence of Any of the Top Five Risk Factors for Depression or Proxy Disorders per 1,000 Medicare FFS Beneficiaries

The prevalence rate of Medicare FFS beneficiaries with any of the top five risk factors for depression or proxy disorders in Ocean County in the 12 months prior to Superstorm Sandy was 160.86 per 1,000 beneficiaries. After the storm, the rate decreased to 156.74 per 1,000 beneficiaries. However, this was still the highest rate among all 10 counties.
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 before and after Superstorm Sandy.

* Mapped using ZIP codes of the 10 counties.
The color-coded map of Ocean County depicts regional variation of prevalence of any of the top five risk factors from high (red) to low (blue) before and after Superstorm Sandy.

* Mapped using ZIP codes; may not display all the city names located within the ZIP code.
The prevalence rate of Medicare FFS beneficiaries with Alzheimer’s disease and related disorders or senile dementia in Ocean County in the 12 months prior to Superstorm Sandy was 39.74 per 1,000 beneficiaries. After the storm, the rate decreased to 35.52 per 1,000 beneficiaries.

Sleep Disturbance

The prevalence rate of Medicare FFS beneficiaries with sleep disturbance in Ocean County in the 12 months prior to Superstorm Sandy was 25.73 per 1,000 beneficiaries. After the storm, the rate increased to 27.24 per 1,000 beneficiaries.
Substance or Alcohol Abuse or Tobacco Use

**Figure 44. Annual Prevalence of Substance or Alcohol Abuse or Tobacco Use per 1,000 Medicare FFS Beneficiaries**

The prevalence rate of Medicare FFS beneficiaries with substance or alcohol abuse or tobacco use in Ocean County in the 12 months prior to Superstorm Sandy was 104.72 per 1,000 beneficiaries. After the storm, the rate decreased to 102.61 per 1,000 beneficiaries. However, this was still the highest rate among all 10 counties.

Hip/Pelvic Fractures

**Figure 45. Annual Prevalence of Hip/Pelvic Fractures per 1,000 Medicare FFS Beneficiaries**

The prevalence rate of Medicare FFS beneficiaries with hip/pelvic fractures in Ocean County in the 12 months prior to Superstorm Sandy was 7.74 per 1,000 beneficiaries. After the storm, the rate decreased to 7.03 per 1,000 beneficiaries.
The prevalence rate of Medicare FFS beneficiaries with amputations in Ocean County in the 12 months prior to Superstorm Sandy was 1.01 per 1,000 beneficiaries. After the storm, the rate decreased to 0.76 per 1,000 beneficiaries.
Outpatient Behavioral Health Services

Assessments

Summary

<table>
<thead>
<tr>
<th>County</th>
<th>Depression Screening*</th>
<th>Psychiatric Diagnostic Procedures</th>
<th>Neuropsychological Tests</th>
<th>Diagnostic Psychological Tests</th>
<th>Health and Behavior Assessment/Intervention</th>
</tr>
</thead>
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<tr>
<td>October 1, 2011 – September 30, 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Atlantic</td>
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<td>59.05</td>
<td>7.14</td>
<td>3.22</td>
<td>1.03</td>
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<td>Bergen</td>
<td>4.33</td>
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<td>48.03</td>
<td>6.13</td>
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<td>Essex</td>
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<td>58.40</td>
<td>8.28</td>
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<tr>
<td>Hudson</td>
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<td>16.87</td>
<td>7.83</td>
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<td>Middlesex</td>
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<td>47.91</td>
<td>7.81</td>
<td>5.44</td>
<td>0.98</td>
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<td>Monmouth</td>
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<td>61.40</td>
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<td>6.73</td>
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<td>Ocean</td>
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<td>54.28</td>
<td>9.75</td>
<td>3.37</td>
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<tr>
<td>Somerset</td>
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<td>47.31</td>
<td>7.20</td>
<td>1.77</td>
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<tr>
<td>Union</td>
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<td>46.81</td>
<td>6.77</td>
<td>1.99</td>
<td>0.61</td>
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<tr>
<td>10 counties</td>
<td>4.81</td>
<td>53.21</td>
<td>9.47</td>
<td>4.32</td>
<td>0.65</td>
</tr>
</tbody>
</table>

| October 1, 2012 – September 30, 2013 | | | | | |
| Atlantic   | 9.80                   | 55.02                             | 9.18                     | 3.41                            | 1.52                                        |
| Bergen     | 9.31                   | 46.64                             | 11.06                    | 3.28                            | 0.40                                        |
| Cape May   | 0.68                   | 41.75                             | 5.93                     | 2.05                            | 0.87                                        |
| Essex      | 4.62                   | 54.43                             | 9.22                     | 3.37                            | 0.74                                        |
| Hudson     | 8.53                   | 45.28                             | 18.28                    | 9.14                            | 0.14                                        |
| Middlesex  | 9.41                   | 39.11                             | 8.19                     | 5.61                            | 0.80                                        |
| Monmouth   | 10.90                  | 54.64                             | 10.56                    | 5.95                            | 0.41                                        |
| Ocean      | 15.75                  | 44.84                             | 12.23                    | 4.95                            | 0.28                                        |
| Somerset   | 18.28                  | 42.43                             | 10.23                    | 3.88                            | 0.50                                        |
| Union      | 7.36                   | 38.08                             | 8.91                     | 2.81                            | 0.60                                        |
| 10 counties | 10.01                  | 46.52                             | 10.67                    | 4.60                            | 0.55                                        |

* Depression screening comparison time-frames are different (January 1, 2012 – December 31, 2012 vs. October 1, 2012 – September 30, 2013)

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).

In the 12 months prior to Superstorm Sandy, Ocean County had the highest utilization of the depression screening benefit. After the storm, despite an increase in utilization, Ocean County no longer had the highest rate of depression screening.
## Figure 48. Percent Change of Behavioral Health Service Utilization – Assessments per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th>Service Type</th>
<th>10/1/11 – 9/30/12</th>
<th>10/1/12 – 9/30/13</th>
<th>% Change</th>
<th>10/1/11 – 9/30/12</th>
<th>10/1/12 – 9/30/13</th>
<th>% Change</th>
</tr>
</thead>
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<td>Annual Depression screening*</td>
<td>9.49</td>
<td>15.75</td>
<td>65.96</td>
<td>4.81</td>
<td>10.01</td>
<td>108.11</td>
</tr>
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<td>Psychiatric Diagnostic Procedures</td>
<td>54.28</td>
<td>44.84</td>
<td>-17.39</td>
<td>53.21</td>
<td>46.52</td>
<td>-12.57</td>
</tr>
<tr>
<td>Diagnostic Psychological Tests</td>
<td>3.37</td>
<td>4.95</td>
<td>46.88</td>
<td>4.32</td>
<td>4.60</td>
<td>6.48</td>
</tr>
<tr>
<td>Health and Behavior Assessment/Intervention</td>
<td>0.59</td>
<td>0.28</td>
<td>-52.54</td>
<td>0.65</td>
<td>0.55</td>
<td>-15.38</td>
</tr>
</tbody>
</table>

* Depression screening comparison time-frames are different (January 1, 2012 – December 31, 2012 vs. October 1, 2012 – September 30, 2013)

Annual depression screening in Ocean County showed a relative improvement of 65.96% compared to calendar year 2012.

## Figure 49. Annual Utilization Trend of Behavioral Health Assessment Services per 1,000 Medicare FFS Beneficiaries

This chart reflects annual trending in the utilization of behavioral health assessment services among Medicare FFS beneficiaries in Ocean County.
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.

Beginning October 2011, 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 beneficiaries in primary care settings when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up. The first quarter of data in this profile for depression screening starts on January 2012 since there were only 14 claims filed for depression screening in the last quarter of 2011.

**Figure 50. Depression Screening per 1,000 Medicare FFS Beneficiaries**

The rate of depression screening in Ocean County for calendar year 2012 was 9.49 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 15.75 per 1,000 beneficiaries, reflecting a 65.96% relative increase.

**Figure 51. Quarterly Depression Screening* per 1,000 Medicare FFS Beneficiaries**

This chart reflects trending of quarterly utilization of depression screening among Medicare FFS beneficiaries in Ocean County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
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 before and after Superstorm Sandy.

* Mapped using ZIP codes of the 10 counties.
**Figure 53. Ocean County Depression Screening* per 1,000 Medicare FFS Beneficiaries**

January 1, 2012 – December 31, 2012  
October 1, 2012 – September 30, 2013

The color-coded map of Ocean County depicts regional variation in the rates of the use of the depression screening benefit from low (red) to high (blue) before and after Superstorm Sandy.

* Mapped using ZIP codes; may not display all the city names located within the ZIP code.
**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).\(^8\)

**Figure 54. Diagnostic Psychological Tests per 1,000 Medicare FFS Beneficiaries**

The rate of diagnostic psychological testing in Ocean County in the 12 months prior to Superstorm Sandy was 3.37 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 4.95 per 1,000 beneficiaries.

Due to these low numbers, no percent change data has been provided for this assessment.
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.\(^8\)

**Figure 55. Health and Behavior Assessment/Intervention per 1,000 Medicare FFS Beneficiaries**

The rate of health and behavior assessment/intervention in Ocean County in the 12 months prior to Superstorm Sandy was 0.59 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 0.28 per 1,000 beneficiaries.

Due to these low numbers, no percent change data has been provided for this assessment.
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.⁸

**Figure 56. Neuropsychological Tests per 1,000 Medicare FFS Beneficiaries**

The rate of neuropsychological testing in Ocean County in the 12 months prior to Superstorm Sandy was 9.75 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 12.23 per 1,000 beneficiaries, reflecting a 25.44% relative increase.
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.8

**Figure 57. Psychiatric Diagnostic Procedures per 1,000 Medicare FFS Beneficiaries**

The rate of psychiatric diagnostic procedures in Ocean County in the 12 months prior to Superstorm Sandy was 54.28 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 44.84 per 1,000 beneficiaries, reflecting a 17.39% relative decrease.
Therapies

Summary

In the 12 months prior to Superstorm Sandy, Ocean County’s most utilized behavioral health therapy service was individual psychotherapy.
Similar to the 10 counties, Ocean County experienced a decrease in family, group, and ECT therapy after Superstorm Sandy.

**Figure 60. Annual Utilization Trend of Behavioral Health Therapy Services per 1,000 Medicare FFS Beneficiaries**

This chart presents annual trending in the yearly utilization of behavioral health therapies among Medicare FFS beneficiaries in Ocean County.
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.

**Figure 61. Individual Psychotherapy per 1,000 Medicare FFS Beneficiaries**

The rate of individual psychotherapy in Ocean County in the 12 months prior to Superstorm Sandy was 48.75 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 53.90 per 1,000 beneficiaries. This change reflects a 10.56% relative increase, the largest increase among all 10 counties.
**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.8

**Figure 62. Family Psychotherapy per 1,000 Medicare FFS Beneficiaries**

The rate of family psychotherapy in Ocean County in the 12 months prior to Superstorm Sandy was 2.69 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 2.37 per 1,000 beneficiaries.

Due to these low numbers, no percent change data has been provided for this therapy.
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.8

Figure 63. Group Psychotherapy per 1,000 Medicare FFS Beneficiaries

The rate of group psychotherapy in Ocean County in the 12 months prior to Superstorm Sandy was 1.72 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 1.51 per 1,000 beneficiaries.

Due to these low numbers, no percent change data has been provided for this therapy.
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.8

Figure 64. Electroconvulsive Therapy per 1,000 Medicare FFS Beneficiaries

The rate of ECT in Ocean County in the 12 months prior to Superstorm Sandy was 0.58 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 0.53 per 1,000 beneficiaries.

Due to these low numbers, no percent change data has been provided for this therapy.
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.8

**Figure 65. Biofeedback Therapy per 1,000 Medicare FFS Beneficiaries**

The rate of biofeedback therapy in Ocean County in the 12 months prior to Superstorm Sandy was 0.47 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 0.48 per 1,000 beneficiaries.

Due to these low numbers, no percent change data has been provided for this therapy.
Types of Providers

The tables below illustrate the type of health care providers most frequently visited by Medicare FFS beneficiaries for depression screening, psychiatric diagnostic procedures, neuropsychological testing, and individual psychotherapy before and after Superstorm Sandy. Totals may not add up to 100% due to rounding.

* Depression screening is a one-time benefit in 12 months.

In calendar year 2012, 99.64% of depression screening claims were filed by physicians, 0.18% were filed by nurses, and 0.18% were filed by others. After the storm, 99.47% were filed by physicians, 0.29% were filed by others, and 0.24% were filed by nurses.

* Number of claims, instead of unique beneficiaries were used in this analysis because a beneficiary can have multiple encounters for the procedure.

In the 12 months prior to Superstorm Sandy, 41.00% of psychiatric diagnostic procedures claims were filed by physicians, 32.05% were filed by psychologists, 12.49% were filed by social workers, 11.63% were filed by nurses, and 2.83% were filed by others.

After the storm, 38.74% of psychiatric diagnostic procedures claims were filed by psychologists, 33.23% were filed by physicians, 13.40% were filed by social workers, 9.92% were filed by nurses, and 4.71% were filed by others.
In the 12 months prior to Superstorm Sandy, 65.54% of neuropsychological testing claims were filed by physicians, 32.13% were filed by psychologists, and 2.32% were filed by others. After the storm, 63.84% of neuropsychological testing claims were filed by physicians, 31.20% were filed by psychologists, and 4.96% were filed by others.

*Figure 68. Neuropsychological Tests Claims* for Medicare FFS Beneficiaries

* Number of claims, instead of unique beneficiaries were used in this analysis because a beneficiary can have multiple encounters for the procedure.

In the 12 months prior to Superstorm Sandy, 43.60% of individual psychotherapy claims were filed by psychologists, 36.06% were filed by social workers, 14.22% were filed by physicians, 4.01% were filed by nurses, and 2.11% were filed by others. After the storm, 42.25% of individual psychotherapy claims were filed by psychologists, 34.86% were filed by social workers, 15.28% were filed by physicians, 4.09% were filed by nurses, and 3.52% were filed by others.

*Figure 69. Individual Psychotherapy Claims* for Medicare FFS Beneficiaries

* Number of claims, instead of unique beneficiaries were used in this analysis because a beneficiary can have multiple encounters for the procedure.
**Inpatient Services**

**Summary**

Inpatient services included four measures of 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.

<table>
<thead>
<tr>
<th>County</th>
<th>Psychiatric Hospital Admissions</th>
<th>Acute Care Hospital Admissions</th>
<th>Emergency Department Visits</th>
<th>Observation Stays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>7.14</td>
<td><strong>369.31</strong></td>
<td><strong>293.53</strong></td>
<td>16.80</td>
</tr>
<tr>
<td>Bergen</td>
<td>9.01</td>
<td>290.93</td>
<td>220.07</td>
<td>6.51</td>
</tr>
<tr>
<td>Cape May</td>
<td>5.16</td>
<td>358.52</td>
<td>265.30</td>
<td>4.88</td>
</tr>
<tr>
<td>Essex</td>
<td>9.97</td>
<td><strong>350.60</strong></td>
<td>283.57</td>
<td><strong>30.42</strong></td>
</tr>
<tr>
<td>Hudson</td>
<td>9.77</td>
<td>340.23</td>
<td>245.91</td>
<td>21.66</td>
</tr>
<tr>
<td>Middlesex</td>
<td>7.04</td>
<td>298.85</td>
<td>239.50</td>
<td>15.98</td>
</tr>
<tr>
<td>Monmouth</td>
<td>9.45</td>
<td>319.96</td>
<td>249.46</td>
<td>6.64</td>
</tr>
<tr>
<td>Ocean</td>
<td>7.66</td>
<td>337.02</td>
<td>254.05</td>
<td>4.54</td>
</tr>
<tr>
<td>Somerset</td>
<td>8.89</td>
<td>278.91</td>
<td>216.87</td>
<td>4.79</td>
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<tr>
<td>Union</td>
<td>8.25</td>
<td>278.49</td>
<td>220.47</td>
<td>7.96</td>
</tr>
<tr>
<td>10 counties</td>
<td>8.48</td>
<td><strong>318.07</strong></td>
<td>246.11</td>
<td><strong>11.95</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County</th>
<th>Psychiatric Hospital Admissions</th>
<th>Acute Care Hospital Admissions</th>
<th>Emergency Department Visits</th>
<th>Observation Stays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
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<td><strong>353.89</strong></td>
<td><strong>283.79</strong></td>
<td>19.01</td>
</tr>
<tr>
<td>Bergen</td>
<td>8.31</td>
<td>275.35</td>
<td>206.83</td>
<td>5.64</td>
</tr>
<tr>
<td>Cape May</td>
<td>5.98</td>
<td>330.06</td>
<td>239.53</td>
<td>5.52</td>
</tr>
<tr>
<td>Essex</td>
<td>9.19</td>
<td>325.40</td>
<td>266.35</td>
<td>22.63</td>
</tr>
<tr>
<td>Hudson</td>
<td>9.43</td>
<td><strong>323.51</strong></td>
<td>264.14</td>
<td><strong>22.80</strong></td>
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<tr>
<td>Middlesex</td>
<td>6.55</td>
<td>293.11</td>
<td>239.56</td>
<td>19.06</td>
</tr>
<tr>
<td>Monmouth</td>
<td>8.65</td>
<td>300.94</td>
<td>240.31</td>
<td>7.09</td>
</tr>
<tr>
<td>Ocean</td>
<td>7.50</td>
<td>316.33</td>
<td>230.77</td>
<td>13.74</td>
</tr>
<tr>
<td>Somerset</td>
<td>7.77</td>
<td>261.74</td>
<td>206.60</td>
<td>4.48</td>
</tr>
<tr>
<td>Union</td>
<td>7.52</td>
<td>272.67</td>
<td>216.87</td>
<td>6.95</td>
</tr>
<tr>
<td>10 counties</td>
<td>7.94</td>
<td><strong>301.66</strong></td>
<td><strong>236.31</strong></td>
<td><strong>12.86</strong></td>
</tr>
</tbody>
</table>

Utilization of inpatient health services per 1,000 Medicare FFS beneficiaries before and after 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.

In the 12 months prior to Superstorm Sandy, Ocean County had the lowest utilization of observation stays. After the storm, this rate nearly tripled and Ocean County no longer had the lowest utilization rate of observation stays.
Ocean County experienced a decrease in psychiatric hospital admissions, acute care hospital admissions, and emergency department visits.

**Figure 72. Annual Utilization Trend of Inpatient Health Services per 1,000 Medicare FFS Beneficiaries**

This chart reflects annual trending in the utilization of inpatient health services among Medicare FFS beneficiaries in Ocean County.
Psychiatric Hospital Admissions

**Figure 73. Psychiatric Hospital Admissions per 1,000 Medicare FFS Beneficiaries**

In the 12 months prior to Superstorm Sandy, standalone psychiatric hospitals or distinct part psychiatric units in acute care hospitals in Ocean County had an admissions rate of 7.66 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 7.50 per 1,000 beneficiaries, reflecting a 2.09% relative decrease.
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.

**Figure 74. Acute Care Hospital Admissions per 1,000 Medicare FFS Beneficiaries**

In the 12 months prior to Superstorm Sandy, acute care hospitals in Ocean County had an acute care admissions rate of 337.02 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 316.33 per 1,000 beneficiaries, reflecting a 6.14% relative decrease.
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.

**Figure 75. Observation Stays per 1,000 Medicare FFS Beneficiaries**

In the 12 months prior to Superstorm Sandy, observation stays in acute care hospitals in Ocean County had a rate of 4.54 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 13.74 per 1,000 beneficiaries. This change reflects a 202.64% relative increase, the largest increase among all 10 counties.
In the 12 months prior to Superstorm Sandy, emergency department visits in Ocean County had a rate of 254.05 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 230.77 per 1,000 beneficiaries, reflecting a 9.16% relative decrease.
Within 30 Days of Acute Care Hospital Discharge

Summary

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.

Ocean County experienced a decrease in 30-day hospital readmissions and emergency department visits that occurred within 30 days of discharge, and experienced an increase in the rate of observation stays that occurred within 30 days of discharge.
Figure 78. Percent Change of Inpatient Health Service Utilization Within 30 Days of Discharge per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th></th>
<th>Ocean County</th>
<th>10 County Average</th>
<th>% Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10/1/11 – 9/30/12</td>
<td>10/1/12 – 9/30/13</td>
<td>10/1/11 – 9/30/12</td>
<td>10/1/12 – 9/30/13</td>
</tr>
<tr>
<td>30-Day Hospital Readmissions</td>
<td>62.40</td>
<td>55.13</td>
<td>-11.65</td>
<td>61.71</td>
</tr>
<tr>
<td>Emergency Department Visits</td>
<td>78.88</td>
<td>70.14</td>
<td>-11.08</td>
<td>74.24</td>
</tr>
<tr>
<td>Observation Stays</td>
<td>7.15</td>
<td>9.48</td>
<td>32.59</td>
<td>7.28</td>
</tr>
</tbody>
</table>

Ocean County experienced a 32.59% relative increase in observation stays within 30 days of discharge, while the 10 County average increase was 1.79%.

Figure 79. Annual Utilization Trend of Inpatient Health Services Within 30 Days of Discharge per 1,000 Medicare FFS Beneficiaries

This chart reflects annual trending in utilization of inpatient health services within 30 days of discharge among Medicare FFS beneficiaries in Ocean County.
30-Day Hospital Readmissions

**Figure 80. 30-Day Hospital Readmissions per 1,000 Medicare FFS Beneficiaries**

In the 12 months prior to Superstorm Sandy, acute care hospitals in Ocean County had a 30-day readmissions rate of 62.40 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 55.13 per 1,000 beneficiaries, reflecting an 11.65% relative decrease.
In the 12 months prior to Superstorm Sandy, the rate of observation stays within 30 days of discharge in Ocean County was 7.15 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 9.48 per 1,000 beneficiaries. This change reflects a 32.59% relative increase, the largest increase among all 10 counties.
In the 12 months prior to Superstorm Sandy, the rate of emergency department visits within 30 days of discharge in Ocean County was 78.88 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 70.14 per 1,000 beneficiaries, reflecting an 11.08% relative decrease.
Other Settings

Summary

This profile also examines 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.

![Figure 83. Annual Utilization of Other Health Services per 1,000 Medicare FFS Beneficiaries](chart)

Utilization of health services per 1,000 Medicare FFS beneficiaries for these settings before and after Superstorm Sandy in the 10 counties is color coded with highest (red) and lowest (light blue) for each measure.

In the 12 months prior to Superstorm Sandy, Ocean County had the highest utilization of home health agency, hospice, and medical rehabilitation services. After the storm, Ocean County still had the highest utilization of these three services.
Similar to the 10 county average, Ocean County experienced a relative decrease in all other health service utilization.

**Figure 84. Percent Change of Other Health Services Utilization per 1,000 Medicare FFS Beneficiaries**

<table>
<thead>
<tr>
<th></th>
<th>Ocean County</th>
<th>10 County Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10/1/11 – 9/30/12</td>
<td>10/1/12 – 9/30/13</td>
</tr>
<tr>
<td>Home Health Agency</td>
<td>100.07</td>
<td>95.63</td>
</tr>
<tr>
<td>Skilled Nursing Facility</td>
<td>76.53</td>
<td>73.51</td>
</tr>
<tr>
<td>Hospice</td>
<td>30.44</td>
<td>29.83</td>
</tr>
<tr>
<td>Medical Rehabilitation</td>
<td>22.49</td>
<td>21.24</td>
</tr>
</tbody>
</table>

Similar to the 10 county average, Ocean County experienced a relative decrease in all other health service utilization.

**Figure 85. Annual Utilization Trend in Other Health Services per 1,000 Medicare FFS Beneficiaries**

This chart reflects annual trending in the utilization of other health services among Medicare FFS beneficiaries in Ocean County.
Home Health Agency Services

**Figure 86. Home Health Agency Services per 1,000 Medicare FFS Beneficiaries**

In the 12 months prior to Superstorm Sandy, the utilization rate of home health agency services in Ocean County was 100.07 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 95.63 per 1,000 beneficiaries. This was the highest rate among all 10 counties despite a 4.44% relative decrease in utilization.
In the 12 months prior to Superstorm Sandy, the utilization rate of skilled nursing facility services in Ocean County was 76.53 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 73.51 per 1,000 beneficiaries, reflecting a 3.95% relative decrease.
In the 12 months prior to Superstorm Sandy, the utilization rate of hospice services in Ocean County was 30.44 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 29.83 per 1,000 beneficiaries. This was the highest rate among all 10 counties despite a 2.00% relative decrease in utilization.
In the 12 months prior to Superstorm Sandy, the utilization rate of medical rehabilitation services in Ocean County was 22.49 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 21.24 per 1,000 beneficiaries. This was the highest rate among all 10 counties despite a 5.56% relative decrease in utilization.
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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 FFS Part A and Part B claims data and denominator file

Reference Time Period

- Annual prevalence of risk factors for depression or proxy disorders comparing October 1, 2011 – September 30, 2012 to October 1, 2012 – September 30, 2013
- Annual prevalence trend for risk factors for depression or proxy disorders consists of eight points of data with rolling quarters (starting January 2011 and ending September 2013)
- Quarterly new incidence trend charts of the selected behavioral health conditions contains data from January 1, 2012 to September 30, 2013 and allows for the identification of new cases in a given quarter when compared to the prior year

Mapping Tool

- Source: ZIP code boundaries based on the 2013 U.S. Census Tiger Files

Denominator

- Denominator was the sum of all eligible Medicare FFS beneficiaries who were in the CMS denominator file during the measurement timeframe
- Eligible beneficiaries were computed after adjusting for total enrolled FFS days divided by the total measurement days in the timeframe
- Where Medicare FFS enrolled days > 0

Numerator

- Unique Medicare FFS beneficiaries with disease-specific inpatient or outpatient claims 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 Medicare 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:

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

<table>
<thead>
<tr>
<th>Behavioral Health Conditions</th>
<th>Numerator: Valid ICD-9-CM Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression or Proxy Disorders (Depression, Anxiety Disorders or Adjustment Disorders)</td>
<td>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</td>
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<td>Depression</td>
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</tr>
<tr>
<td>Anxiety Disorders</td>
<td>29384, 30000, 30001, 30002, 30009, 3010, 30020, 30021, 30022, 30023, 30029, 3003, 3005, 30089, 3009, 3080, 3081, 3082, 3083, 3084, 3089, 3130, 3131, 31321, 31322, 3133, 31382, 31383</td>
</tr>
<tr>
<td>Adjustment Disorders</td>
<td>3090, 3091, 30922, 30923, 30924, 30928, 30929, 3093, 3094, 30981, 30982, 30983, 30989, 3099</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder (PTSD)</td>
<td>30981</td>
</tr>
<tr>
<td>Alcohol or Substance Abuse</td>
<td>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, 30534, 30540, 30541, 30542, 30543, 30550, 30551, 30552, 30553, 30554, 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</td>
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<tr>
<td>Alcohol Abuse</td>
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<tr>
<td>Substance Abuse Alone</td>
<td>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, 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</td>
</tr>
</tbody>
</table>
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 FFS Part A and Part B claims data and denominator file

Reference Time Period
- Annual prevalence of risk factors for depression or proxy disorders comparing October 1, 2011 – September 30, 2012 to October 1, 2012 – September 30, 2013
- Annual prevalence trend for risk factors for depression or proxy disorders consists of eight points of data with rolling quarters (starting January 2011 and ending September 2013)

Mapping Tool
- Source: ZIP code boundaries based on the 2013 U.S. Census Tiger Files

Denominator
- Denominator was the sum of all eligible Medicare FFS beneficiaries who were in the CMS denominator file during the measurement timeframe
- Eligible beneficiaries were computed after adjusting for total enrolled FFS days divided by the total measurement days in the timeframe
- Where Medicare FFS enrolled days > 0

Numerator
- Unique Medicare FFS beneficiaries with disease-specific inpatient or outpatient claims 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 Medicare 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:

**Literature Review References for Risk Factors for Depression or Proxy Disorders**


Missouri Department of Mental Health. CPS Facts: Depression and Older Adults [Internet]. Jefferson City(MO): Missouri Department of Mental Health, [date unknown, cited 2013 Sep 26], 2 p. Available from: http://dmh.mo.gov/docs/mentalillness/elderlydepress.pdf


Oriol W. Psychosocial Issues for Older Adults in Disasters [Internet]. Washington (DC): Emergency Services and Disaster Relief Branch, Center for Mental Health Services (CMHS), Substance Abuse and Mental Health Services Administration; 1999 [cited 2013 Sep 30]; DHHS Publication No. ESDRB SMA 99-3323. 79 p. Available from: http://store.samhsa.gov/shin/content/SMA99-3323/SMA99-3323.pdf
The following table shows the ICD-9-CM codes for the top five risk factors for depression or proxy disorders:

<table>
<thead>
<tr>
<th>Top Five Risk Factors for Depression or Proxy Disorders*</th>
<th>Numerator: Valid ICD-9-CM Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alzheimer's Disease and Related Disorders or Senile Dementia</td>
<td>3311, 33111, 33119, 3312, 3317, 2900, 29010, 29011, 29012, 29013, 29020, 29021, 2903, 29040, 29041, 29042, 29043, 2940, 2941, 29410, 29411, 2948, 797</td>
</tr>
<tr>
<td>Sleep Disturbance</td>
<td>04672, 29182, 29285, 30740, 30741, 30742, 30748, 30749, 32700, 32701, 32702, 32709, 78050, 78051, 78052, 78059</td>
</tr>
<tr>
<td>Substance or Alcohol Abuse or Tobacco Use</td>
<td>2910, 2911, 2912, 2913, 2914, 2915, 2918, 29181, 29182, 29189, 2919, 2920, 2921, 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, 30554, 30555, 30560, 30561, 30562, 30563, 30570, 30571, 30572, 30573, 30580, 30581, 30582, 30583, 30590, 30591, 30592, 30593, 33392, 3375, 4255, 5335, 53530, 53531, 5710, 5711, 5712, 5713, 64830, 64831, 64832, 64833, 64834, 65550, 65551, 65552, 67071, 67072, 67073, 67075, 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</td>
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<tr>
<td>Hip/Pelvic Fractures</td>
<td>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</td>
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<tr>
<td>Amputations</td>
<td>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</td>
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* 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 FFS Part A and Part B claims data and denominator file

Reference Time Period
- Annual utilization trend consists of eight points of data with rolling quarters (starting January 2011 and ending September 2013)
- Quarterly utilization trend charts for depression screening contains data from January 1, 2012 to September 30, 2013 and allows for the identification of new cases in a given quarter when compared to the prior year

Mapping Tool
- Source: ZIP code boundaries based on the 2013 U.S. Census Tiger Files

Denominator
- Denominator was the sum of all eligible Medicare FFS beneficiaries who were in the CMS denominator file during the measurement timeframe
- Eligible beneficiaries were computed after adjusting for total enrolled FFS days divided by the total measurement days in the timeframe
- Where Medicare FFS enrolled days > 0

Numerator
Unique Medicare FFS beneficiaries with specific outpatient mental health service claims

Exclusions
- HMO coverage period
- Age <18 or >= 110
- Eligible Medicare 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.
The following table shows the CPT/HCPCS codes for the outpatient mental health services:

<table>
<thead>
<tr>
<th>Mental Health Services</th>
<th>Numerator: CPT/HCPCS Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessments</td>
<td></td>
</tr>
<tr>
<td>Depression Screening</td>
<td>G0444</td>
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<tr>
<td>Diagnostic Psychological Tests</td>
<td>96101, 96102, 96103, 96105, 96110, 96111</td>
</tr>
<tr>
<td>Health and Behavior Assessment/Intervention</td>
<td>96150, 96151, 96152, 96153, 96154, 96155</td>
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<tr>
<td>Neuropsychological Tests</td>
<td>96116, 96118, 96119, 96120</td>
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<tr>
<td>Psychiatric Diagnostic Procedures</td>
<td>90801, 90802, 90791, 90792</td>
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<tr>
<td>Therapies</td>
<td></td>
</tr>
<tr>
<td>Individual Psychotherapy</td>
<td>90804, 90805, 90832, 90833, 90806, 90807, 90834, 90836, 90808, 90809, 90810, 90811, 90812, 90813, 90814, 90815, 90816, 90817, 90818, 90819, 90820, 90821, 90822, 90823, 90824, 90826, 90827, 90828, 90829, 90830, 90831, 90832, 90833, 90834, 90835, 90836, 90837, 90838, 90839, 90840</td>
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<tr>
<td>Family Psychotherapy</td>
<td>90846, 90847</td>
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<tr>
<td>Group Psychotherapy</td>
<td>90849, 90853, 90857</td>
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<tr>
<td>Electroconvulsive Therapy</td>
<td>90870</td>
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<tr>
<td>Biofeedback Therapy</td>
<td>90901, 90911</td>
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</tbody>
</table>
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 FFS Part A claims data and denominator file

Reference Time Period
- Annual utilization trend consists of eight points of data with rolling quarters (starting January 2011 and ending September 2013)

Denominator
- Denominator was the sum of all eligible Medicare FFS beneficiaries who were in the CMS denominator file during the measurement timeframe
- Eligible beneficiaries were computed after adjusting for total enrolled FFS days divided by the total measurement days in the timeframe
- Where Medicare FFS enrolled days > 0

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

Utilization Measure
Refer to Appendix E.
## Numerator

<table>
<thead>
<tr>
<th>Utilization Measure Description</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatric Hospital Admissions</td>
<td>Number of eligible beneficiaries with at least one psychiatric hospital admission claim</td>
</tr>
<tr>
<td>Acute Care Hospital Admissions</td>
<td>Number of acute care hospital admissions</td>
</tr>
<tr>
<td>Observation Stays</td>
<td>Number of observation stays</td>
</tr>
<tr>
<td>Emergency Department Visits</td>
<td>Number of emergency department visits</td>
</tr>
<tr>
<td>30-Day Hospital Readmissions</td>
<td>Number of 30-day hospital readmissions</td>
</tr>
<tr>
<td>Observation Stays Within 30 Days of Hospital Discharge</td>
<td>Number of observation stays within 30 days of hospital discharge</td>
</tr>
<tr>
<td>Emergency Department Visits Within 30 Days of Hospital Discharge</td>
<td>Number of emergency department visits within 30 days of hospital discharge</td>
</tr>
<tr>
<td>Home Health Agency Services</td>
<td>Number of eligible beneficiaries with at least one home health agency claim</td>
</tr>
<tr>
<td>Skilled Nursing Facility Services</td>
<td>Number of eligible beneficiaries with at least one skilled nursing facility claim</td>
</tr>
<tr>
<td>Hospice Services</td>
<td>Number of eligible beneficiaries with at least one hospice claim</td>
</tr>
<tr>
<td>Medical Rehabilitation Services</td>
<td>Number of eligible beneficiaries with at least one medical rehabilitation claim</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Time Frames</th>
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<tbody>
<tr>
<td>Quarters</td>
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</tr>
<tr>
<td>Q2</td>
</tr>
<tr>
<td>Q3</td>
</tr>
<tr>
<td>Q4</td>
</tr>
</tbody>
</table>

**Formulae**

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

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

Utilization = \( \frac{\text{(Number of beneficiaries or measures with specific service utilization)}}{\text{(Total eligible beneficiaries in the population during the time frame)}} \)

Relative change = \( \frac{\text{(Current rate-Former rate)}}{\text{(Former rate)}} \)
APPENDIX F: PROFESSIONAL TYPE BY BEHAVIORAL HEALTH SERVICES

The following defines the data source and time period for the provider summary tables and listings:

Data Source
New Jersey Medicare FFS Part B claims data

Reference Time Period

Professional Type Credentials
• Physicians: DO, MD
• Psychologists: PhD, PsyD, EdD
• Social Workers: MSW, LCSW
• Nurses: APN, RN, NP
• Others: Other
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