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

Final Data Profile: Cape May County Medicare Fee-for-Service Beneficiaries

Demographics, Behavioral Health Conditions, and Utilization of Health Services

June 17, 2014
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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 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 final 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 county-level health status and health determinants of post-disaster spikes in behavioral health issues and treatments. This last update includes one more quarter of comprehensive post-Sandy data than the previous profile, which was published in May 2014.
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. These profiles were then updated in May 2014 and covered the period from January 1, 2011 to September 30, 2013. This final profile is the last update planned for Cape May County and includes data from January 1, 2011 to December 31, 2013. This profile 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, along with the first updated version, 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.

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 profile 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 second updated profile shows four quarters of post-Sandy data, with the most updated claims from January 2011 to December 2013. This profile compares the 12-month rates from the year before and after the storm. In this profile, we reference October 2011 to September 2012 as the year before Superstorm Sandy and January 2013 to December 2013 as the year after the storm.

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 17)
- Risk factors for depression or proxy disorders (page 34)
- Utilization of outpatient behavioral health assessments (page 41)
- Utilization of outpatient behavioral health therapies (page 53)
- Utilization of inpatient health services (page 61)
- Utilization of inpatient health services within 30 days of discharge (page 67)
- Utilization of other settings (page 72)

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 45-46)
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 December 31, 2013. Results are presented using different charts and measurement time frames as follows:

- **Annual bar charts** show the annual rates in the year before (October 1, 2011 to September 30, 2012) and after (January 1, 2011 to December 31, 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 after Superstorm Sandy. The time period includes nine data points from January 1, 2011 to December 31, 2013.

- **Annual percent change (relative change)** bar charts show relative increase or decrease in rates from the year before and 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 eight quarters of data from January 1, 2012 to December 31, 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 eight quarters from January 1, 2012 to December 31, 2013.
DATA CONSIDERATIONS

There are now four quarters of post-storm data available, which is reflected in this final update. The claims data processing lag of 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.

This is the final update of these data profiles which includes one more quarter of data than the previous profile during the post-Superstorm Sandy time period as the project ends on July 31, 2014.
Enhancing Coordination of Behavioral Health Services after Superstorm Sandy: Planning for Future Disasters | Cape May County

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**Key Observations**

The following observations show Cape May County's percent change and ranking among all 10 counties after Superstorm Sandy among Medicare FFS beneficiaries.

1. Cape May County had the largest decrease in depression or proxy disorders (1.89%), depression alone (5.68%), alcohol or substance abuse (7.73%), substance abuse alone (14.47%) among all 10 counties.

2. Cape May County experienced an increase in the top five risk factors for depression or proxy disorders (2.83%), substance or alcohol abuse or tobacco use (3.28%), and sleep disturbance (18.95%).

3. Cape May County had the highest rate of sleep disturbance (34.09 per 1,000 beneficiaries) and the lowest rate of amputations (0.69 per 1,000 beneficiaries) among all 10 counties.

4. The highest rates of depression or proxy disorders in Cape May County were among Hispanic beneficiaries (262.50 per 1,000 beneficiaries), female beneficiaries (246.94 per 1,000 beneficiaries), and beneficiaries below 65 years old (352.18 per 1,000 beneficiaries).

5. Cape May County had the lowest rate of depression screening (0.92 per 1,000 beneficiaries) among all 10 counties as well as the smallest relative increase (41.54%) in utilization.

6. Cape May County had the lowest utilization rate of diagnostic psychological testing (1.97 per 1,000 beneficiaries) among all 10 counties.

7. Cape May County had the lowest rate of neuropsychological testing (5.95 per 1,000 beneficiaries) among all 10 counties as well as the only relative decrease (2.94%) in utilization.

8. Cape May County had the lowest utilization rate of individual psychotherapy (39.21 per 1,000 beneficiaries), family psychotherapy (0.92 per 1,000 beneficiaries), and group psychotherapy (0.64 per 1,000 beneficiaries) among all 10 counties.

9. Cape May County had the highest utilization rate of ECT (0.73 per 1,000 beneficiaries) among all 10 counties.

10. Cape May County had the lowest rate of psychiatric hospital admissions (5.10 per 1,000 beneficiaries) among all 10 counties as well as the smallest decrease (0.20%) in utilization.

11. Cape May County had the largest decrease in acute care hospital admissions (13.79%) and emergency department visits (15.51%) among all 10 counties.

12. Cape May County had the largest decrease in acute care hospital readmissions (21.59%) and emergency department visits that occurred within 30 days of an acute care hospital discharge (17.40%) among all 10 counties.
This Snapshot of Cape May County summarizes the prevalence of the behavioral health conditions, as well as risk factors for depression or proxy disorders, analyzed for this profile. This Snapshot also lists the most frequently performed behavioral health assessments and therapies in Cape May County compared to the average among all 10 counties. It illustrates the change in conditions and utilization of services before and after Sandy.

<table>
<thead>
<tr>
<th>Behavioral Health Conditions</th>
<th>Prevalence per 1,000 Medicare FFS Beneficiaries</th>
<th>Cape May County</th>
<th>10 County Rate</th>
<th>% Change</th>
<th>Cape May County</th>
<th>10 County Rate</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression or Proxy Disorders</td>
<td>208.71</td>
<td>204.77</td>
<td>-1.89</td>
<td>192.99</td>
<td>197.65</td>
<td>2.41</td>
<td></td>
</tr>
<tr>
<td>• Depression alone</td>
<td>125.89</td>
<td>118.74</td>
<td>-5.68</td>
<td>124.72</td>
<td>125.36</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>• Anxiety Disorders alone</td>
<td>123.98</td>
<td>125.15</td>
<td>0.94</td>
<td>105.70</td>
<td>113.91</td>
<td>7.77</td>
<td></td>
</tr>
<tr>
<td>• Adjustment Disorders alone</td>
<td>24.76</td>
<td>23.79</td>
<td>-3.92</td>
<td>29.82</td>
<td>29.09</td>
<td>-2.45</td>
<td></td>
</tr>
<tr>
<td>Alcohol or Substance Abuse</td>
<td>40.37</td>
<td>37.25</td>
<td>-7.73</td>
<td>30.51</td>
<td>33.73</td>
<td>10.55</td>
<td></td>
</tr>
<tr>
<td>• Substance Abuse alone</td>
<td>20.11</td>
<td>17.20</td>
<td>-14.47</td>
<td>16.71</td>
<td>17.54</td>
<td>4.97</td>
<td></td>
</tr>
<tr>
<td>PTSD</td>
<td>5.57</td>
<td>6.59</td>
<td>18.31</td>
<td>4.18</td>
<td>6.96</td>
<td>12.20</td>
<td></td>
</tr>
<tr>
<td>Suicide and Intentional Self-Inflicted Injury</td>
<td>4.09</td>
<td>4.44</td>
<td>8.56</td>
<td>4.40</td>
<td>4.39</td>
<td>-0.23</td>
<td></td>
</tr>
</tbody>
</table>

### Top Five Risk Factors* for Depression or Proxy Disorders

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Cape May County</th>
<th>10 County Rate</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Any of the Top Five Risk Factors</td>
<td>149.07</td>
<td>153.29</td>
<td>2.83</td>
</tr>
<tr>
<td>• Substance or Alcohol Abuse or Tobacco Use</td>
<td>94.86</td>
<td>97.97</td>
<td>3.28</td>
</tr>
<tr>
<td>• Alzheimer’s Disease and related disorders or Senile Dementia</td>
<td>33.77</td>
<td>32.17</td>
<td>-4.74</td>
</tr>
<tr>
<td>• Sleep Disturbance</td>
<td>28.66</td>
<td>34.09</td>
<td>18.95</td>
</tr>
<tr>
<td>• Hip/Pelvic Fractures</td>
<td>6.97</td>
<td>6.73</td>
<td>-3.44</td>
</tr>
<tr>
<td>• Amputations</td>
<td>1.16</td>
<td>0.69</td>
<td>-40.52</td>
</tr>
</tbody>
</table>

### Utilization per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th>Behavioral Health Services</th>
<th>Prevalence per 1,000 Medicare FFS Beneficiaries</th>
<th>Cape May County</th>
<th>10 County Rate</th>
<th>% Change</th>
<th>Cape May County</th>
<th>10 County Rate</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Depression Screening**</td>
<td>0.65</td>
<td>0.92</td>
<td>41.54</td>
<td>4.81</td>
<td>12.03</td>
<td>150.10</td>
<td></td>
</tr>
<tr>
<td>• Psychiatric Diagnostic Procedures</td>
<td>48.08</td>
<td>41.41</td>
<td>-13.87</td>
<td>53.41</td>
<td>45.69</td>
<td>-14.45</td>
<td></td>
</tr>
<tr>
<td>• Neuropsychological Tests</td>
<td>6.13</td>
<td>5.95</td>
<td>-2.94</td>
<td>9.48</td>
<td>10.85</td>
<td>14.45</td>
<td></td>
</tr>
<tr>
<td>Therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Psychotherapy</td>
<td>38.97</td>
<td>39.21</td>
<td>0.62</td>
<td>54.56</td>
<td>53.07</td>
<td>-2.73</td>
<td></td>
</tr>
<tr>
<td>Family Psychotherapy</td>
<td>0.98</td>
<td>0.92</td>
<td>-6.12</td>
<td>3.43</td>
<td>2.42</td>
<td>-29.45</td>
<td></td>
</tr>
<tr>
<td>Group Psychotherapy</td>
<td>1.39</td>
<td>0.64</td>
<td>-53.96</td>
<td>2.98</td>
<td>2.71</td>
<td>-9.06</td>
<td></td>
</tr>
<tr>
<td>Psychiatric Hospital Admissions</td>
<td>5.11</td>
<td>5.10</td>
<td>-0.20</td>
<td>8.50</td>
<td>7.13</td>
<td>-16.06</td>
<td></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.

The total Medicare FFS beneficiary population of Cape May County prior to Superstorm Sandy was 23,769. After the storm, the population decreased to 23,291.
Percent of Medicare FFS Beneficiaries in the General Population

Figure 3. Percent of Medicare FFS Beneficiaries in the General Population in 2012*

<table>
<thead>
<tr>
<th>County</th>
<th>10/1/11-9/30/12</th>
<th>1/1/13-12/31/13</th>
<th>Absolute Change*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>55.11</td>
<td>54.99</td>
<td>-0.12</td>
</tr>
<tr>
<td>Bergen</td>
<td>57.00</td>
<td>56.73</td>
<td>-0.28</td>
</tr>
<tr>
<td>Cape May</td>
<td>53.96</td>
<td>53.88</td>
<td>-0.08</td>
</tr>
<tr>
<td>Essex</td>
<td>57.32</td>
<td>57.08</td>
<td>-0.23</td>
</tr>
<tr>
<td>Hudson</td>
<td>57.49</td>
<td>57.18</td>
<td>-0.31</td>
</tr>
<tr>
<td>Middlesex</td>
<td>56.31</td>
<td>56.06</td>
<td>-0.24</td>
</tr>
<tr>
<td>Monmouth</td>
<td>56.24</td>
<td>56.01</td>
<td>-0.23</td>
</tr>
<tr>
<td>Ocean</td>
<td>57.16</td>
<td>56.96</td>
<td>-0.20</td>
</tr>
<tr>
<td>Somerset</td>
<td>56.63</td>
<td>56.23</td>
<td>-0.40</td>
</tr>
<tr>
<td>Union</td>
<td>57.23</td>
<td>57.04</td>
<td>-0.19</td>
</tr>
<tr>
<td>10 counties</td>
<td>56.72</td>
<td>56.48</td>
<td>-0.24</td>
</tr>
</tbody>
</table>

* Due to rounding, the absolute change may not be the same as the difference subtracted from the two time frames shown.

Medicare FFS beneficiaries made up 23.92% of Cape May County's general population in calendar year 2012. This was the largest beneficiary population among all 10 counties.

Percent of Medicare FFS Beneficiary Population by Gender by County

Prior to Superstorm Sandy, females made up 53.96% of the entire Medicare FFS population in Cape May County and males 46.04%. After the storm, the female beneficiary population decreased to 53.88 and males increased to 46.12%.
Both before and after Superstorm Sandy, the majority of Medicare FFS beneficiaries in Cape May County were White followed by Black, Hispanic, and Asian.
Both before and after Superstorm Sandy, the largest age group of the Medicare FFS beneficiary population in Cape May 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 increased from 72.05 before the storm to 72.10 after the storm.
According to U.S. Census data from 2012, residents aged 65 and over in Cape May County had a median household income of $39,151. This was lower than the average income among all 10 counties.
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 December 31, 2013 for these different measures were calculated to quantify condition 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 condition that was not present in the prior 12 months (Q1 2012 – Q4 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, the prevalence of PTSD in Cape May County was 5.57 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 6.59 per 1,000 beneficiaries.
Cape May County experienced an increase in PTSD and suicide and intentional self-inflicted injuries.

**Figure 10. Quarterly New Incidence Trend of Selected Behavioral Health Conditions: Depression or Proxy Disorders**

* Quarterly new incidence of conditions that were not diagnosed in the prior year.

**Figure 11. Quarterly New Incidence Trend of Other Selected Behavioral Health Conditions**

* Quarterly new incidence of conditions that were not diagnosed in the prior year.

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

<table>
<thead>
<tr>
<th>Figure 14. Demographics of Depression or Proxy Disorders among Medicare FFS Beneficiaries</th>
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</thead>
<tbody>
<tr>
<td>10/1/11 – 9/30/12</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Race</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>Hispanic</td>
</tr>
<tr>
<td>Asian</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Males</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Below 65</td>
</tr>
<tr>
<td>65-74</td>
</tr>
<tr>
<td>75-84</td>
</tr>
<tr>
<td>85 and Above</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

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 4,493 beneficiaries diagnosed with depression or proxy disorders in Cape May County before the storm. This decreased to 4,475 beneficiaries after the storm.
<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>
<tbody>
<tr>
<td>White</td>
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<td>20,386</td>
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<td>4,253</td>
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<td>783</td>
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<td>80</td>
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<td>Other</td>
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<td>200</td>
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<td>37</td>
<td>262</td>
<td>141.22</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>
</tr>
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<tbody>
<tr>
<td>Males</td>
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<td>9,894</td>
<td>158.18</td>
<td>1,568</td>
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<td>Females</td>
<td>2,928</td>
<td>11,636</td>
<td>251.63</td>
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<td>11,772</td>
<td>246.94</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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</thead>
<tbody>
<tr>
<td>Below 65</td>
<td>1,078</td>
<td>2,905</td>
<td>371.08</td>
<td>1,003</td>
<td>2,848</td>
<td>352.18</td>
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<td>65-74</td>
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<td>9,730</td>
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<td>75-84</td>
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<td>85 and Above</td>
<td>734</td>
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<td>257.36</td>
<td>745</td>
<td>2,849</td>
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<td>Total</td>
<td>4,493</td>
<td>21,530</td>
<td>208.69</td>
<td>4,475</td>
<td>21,856</td>
<td>204.75</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 time frame.

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, 307.69 per 1,000 Hispanic beneficiaries were diagnosed with depression or proxy disorders. After the storm, this rate decreased to 262.50 per 1,000 beneficiaries.

Female Medicare FFS beneficiaries have a higher rate of depression or proxy disorders. In the 12 months prior to Superstorm Sandy, 251.63 per 1,000 female beneficiaries were diagnosed with depression or proxy disorders. After the storm, this rate decreased to 246.94 per 1,000 beneficiaries.

Medicare FFS beneficiaries below the age of 65 have the highest rate of depression or proxy disorders followed by beneficiaries ages 85 and above. In the 12 months prior to Superstorm Sandy, 371.08 per 1,000 beneficiaries below the age of 65 were diagnosed with depression or proxy disorders. After the storm, this rate decreased to 352.18 per 1,000 beneficiaries.
The prevalence rate of depression or proxy disorders in Cape May County in the 12 months prior to Superstorm Sandy was 208.71 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 204.77 per 1,000 beneficiaries, reflecting a 1.89% relative decrease. This was the largest decrease among all 10 counties.

This chart reflects trending of quarterly new incidence of depression or proxy disorders among Medicare FFS beneficiaries in Cape May 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

October 1, 2011 – September 30, 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 before and after Superstorm Sandy.

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

October 1, 2011 – September 30, 2012


The color-coded map of Cape May 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 Cape May County in the 12 months prior to Superstorm Sandy was 125.89 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 118.74 per 1,000 beneficiaries, reflecting a 5.68% relative decrease. This was the largest decrease 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 Cape May County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of anxiety disorders in Cape May County in the 12 months prior to Superstorm Sandy was 123.98 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 125.15 per 1,000 beneficiaries, reflecting a 0.94% relative increase.

The chart shows the quarterly incidence of anxiety disorders among Medicare FFS beneficiaries in Cape May County. This chart reflects trending of quarterly new incidence of anxiety disorders among Medicare FFS beneficiaries in Cape May County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
Adjustment Disorders

**Figure 27. Adjustment Disorders per 1,000 Medicare FFS Beneficiaries**

The prevalence rate of adjustment disorders in Cape May County in the 12 months prior to Superstorm Sandy was 24.76 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 23.79 per 1,000 beneficiaries, reflecting a 3.92% relative decrease.

**Figure 28. Quarterly New Incidence of Adjustment Disorders* per 1,000 Medicare FFS Beneficiaries**

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

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of PTSD in Cape May County in the 12 months prior to Superstorm Sandy was 5.57 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 6.59 per 1,000 beneficiaries, reflecting an 18.31% relative increase.

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

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
Alcohol or Substance Abuse

**Figure 31. Alcohol or Substance Abuse per 1,000 Medicare FFS Beneficiaries**

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 Cape May County in the 12 months prior to Superstorm Sandy was 40.37 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 37.25 per 1,000 beneficiaries, reflecting a 7.73% relative decrease. This was the largest decrease among all 10 counties.

**Figure 32. Quarterly New Incidence of Alcohol or Substance Abuse* per 1,000 Medicare FFS Beneficiaries**

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

*Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
Substance Abuse Alone

**Figure 33. Substance Abuse Alone Per 1,000 Medicare FFS Beneficiaries**

The prevalence rate of substance abuse alone in Cape May County in the 12 months prior to Superstorm Sandy was 20.11 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 17.20 per 1,000 beneficiaries, reflecting a 14.47% relative decrease. This was the largest decrease among all 10 counties.

**Figure 34. Quarterly New Incidence of Substance Abuse Alone* Per 1,000 Medicare FFS Beneficiaries**

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

*Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
Suicide and Intentional Self-Inflicted Injury

**Figure 35. Suicide and Intentional Self-Inflicted Injury per 1,000 Medicare FFS Beneficiaries**

The prevalence rate of suicide and intentional self-inflicted injury in Cape May County in the 12 months prior to Superstorm Sandy was 4.09 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 4.44 per 1,000 beneficiaries, reflecting an 8.56% relative increase.

**Figure 36. Quarterly New Incidence of Suicide and Intentional Self-Inflicted Injury per 1,000 Medicare FFS Beneficiaries**

This chart reflects trending of quarterly new incidence of suicide and intentional self-inflicted injury among Medicare FFS beneficiaries in Cape May County.

* 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>Cape May County</th>
<th>10 County Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/1/11 – 9/30/12, 1/1/13 – 12/31/13</td>
<td>% Change</td>
<td>10/1/11 – 9/30/12, 1/1/13 – 12/31/13</td>
</tr>
<tr>
<td>149.07</td>
<td>153.29</td>
<td>2.83</td>
</tr>
<tr>
<td>Substance or Alcohol Abuse or Tobacco Use</td>
<td>94.86</td>
<td>97.97</td>
</tr>
<tr>
<td>Alzheimer's Disease and Related Disorders or Senile Dementia</td>
<td>33.77</td>
<td>32.17</td>
</tr>
<tr>
<td>Sleep Disturbance</td>
<td>28.66</td>
<td>34.09</td>
</tr>
<tr>
<td>Hip/Pelvic Fractures</td>
<td>6.97</td>
<td>6.73</td>
</tr>
<tr>
<td>Amputations*</td>
<td>1.16</td>
<td>0.69</td>
</tr>
</tbody>
</table>

* Rates lower than 5 per 1,000 beneficiaries.

Cape May County experienced a relative decrease in the following risk factors: Alzheimer's disease and related disorders or senile dementia, hip/pelvic fractures, and amputations.
This chart reflects annual trending in prevalence of the top five risk factors for depression or proxy disorders among Medicare FFS beneficiaries in Cape May County.

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

The prevalence rate of Medicare FFS beneficiaries with any of the top five risk factors for depression or proxy disorders in Cape May County in the 12 months prior to Superstorm Sandy was 149.07 per 1,000 beneficiaries. After the storm, the rate increased to 153.29 per 1,000 beneficiaries.
Figure 40. Prevalence of Any of the Top Five Risk Factors for Depression or Proxy Disorders* per 1,000 Medicare FFS Beneficiaries in 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.
Figure 41. Cape May County Prevalence of Any of the Top Five Risk Factors for Depression or Proxy Disorders* per 1,000 Medicare FFS Beneficiaries

October 1, 2011 – September 30, 2012


The color-coded map of Cape May 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.
Alzheimer's Disease and Related Disorders or Senile Dementia

Figure 42. Annual Prevalence of Alzheimer's Disease and Related Disorders or Senile Dementia per 1,000 Medicare FFS Beneficiaries

The prevalence rate of Medicare FFS beneficiaries with Alzheimer's disease and related disorders or senile dementia in Cape May County in the 12 months prior to Superstorm Sandy was 33.77 per 1,000 beneficiaries. After the storm, the rate decreased to 32.17 per 1,000 beneficiaries.

Sleep Disturbance

Figure 43. Annual Prevalence of Sleep Disturbance per 1,000 Medicare FFS Beneficiaries

The prevalence rate of Medicare FFS beneficiaries with sleep disturbance in Cape May County in the 12 months prior to Superstorm Sandy was 28.66 per 1,000 beneficiaries. After the storm, the rate increased to 34.09 per 1,000 beneficiaries, the highest rate among all 10 counties.
Enhancing Coordination of Behavioral Health Services after Superstorm Sandy: Planning for Future Disasters | Cape May County

Substance or Alcohol Abuse or Tobacco Use

The prevalence rate of Medicare FFS beneficiaries with substance or alcohol abuse or tobacco use in Cape May County in the 12 months prior to Superstorm Sandy was 94.86 per 1,000 beneficiaries. After the storm, the rate increased to 97.97 per 1,000 beneficiaries.

Hip/Pelvic Fractures

The prevalence rate of Medicare FFS beneficiaries with hip/pelvic fractures in Cape May County in the 12 months prior to Superstorm Sandy was 6.97 per 1,000 beneficiaries. After the storm, the rate decreased to 6.73 per 1,000 beneficiaries.
Amputations

**Figure 46. Annual Prevalence of Amputations per 1,000 Medicare FFS Beneficiaries**

The prevalence rate of Medicare FFS beneficiaries with amputations in Cape May County in the 12 months prior to Superstorm Sandy was 1.16 per 1,000 beneficiaries. After the storm, the rate decreased to 0.69 per 1,000 beneficiaries, the lowest rate among all 10 counties.
## 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>
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</thead>
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<tr>
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<td></td>
<td></td>
<td></td>
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<td>Atlantic</td>
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<tr>
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<tr>
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<td>10 counties</td>
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<td><strong>53.41</strong></td>
<td><strong>9.48</strong></td>
<td><strong>4.39</strong></td>
<td><strong>0.65</strong></td>
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<tr>
<td><strong>January 1, 2013 – December 31, 2013</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
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<td>52.76</td>
<td>8.96</td>
<td>3.73</td>
<td>1.41</td>
</tr>
<tr>
<td>Bergen</td>
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<td>8.94</td>
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<td><strong>45.69</strong></td>
<td><strong>10.85</strong></td>
<td><strong>4.61</strong></td>
<td><strong>0.66</strong></td>
</tr>
</tbody>
</table>


** Rates lower than 5 per 1,000 beneficiaries.

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).

Both before and after Superstorm Sandy, Cape May County had the lowest utilization of the depression screening benefit, neuropsychological tests, and diagnostic psychological tests.
Enhancing Coordination of Behavioral Health Services after Superstorm Sandy: Planning for Future Disasters | Cape May County

### Figure 48. Percent Change of Behavioral Health Service Utilization – Assessments per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th>Service</th>
<th>Cape May County 10/1/11 – 9/30/12</th>
<th>1/1/13 – 12/31/13 % Change</th>
<th>% Change</th>
<th>10 County Rate 10/1/11 – 9/30/12</th>
<th>1/1/13 – 12/31/13 % Change</th>
<th>% Change</th>
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</table>


** Rates lower than 5 per 1,000 beneficiaries.

Annual depression screening in Cape May County increased from 0.65 per 1,000 beneficiaries before the storm to 0.92 per 1,000 beneficiaries after the storm.

### 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 Cape May 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.

The rate of depression screening in Cape May County for calendar year 2012 was 0.65 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 0.92 per 1,000 beneficiaries, the lowest rate among all 10 counties. This change also reflects a 41.54% relative increase, the smallest increase among all 10 counties.
**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 Cape May County.

**Figure 52. Depression Screening* Claims for Medicare FFS Beneficiaries**

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

In calendar year 2012, all depression screening claims were filed by physicians. After the storm, 95.00% of depression screening claims were filed by physicians and 5.00% were filed by others.
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.
The color-coded map of Cape May 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.
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 55. Diagnostic Psychological Tests per 1,000 Medicare FFS Beneficiaries

The rate of diagnostic psychological tests in Cape May County in the 12 months prior to Superstorm Sandy was 1.77 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 1.97 per 1,000 beneficiaries, the lowest rate among all 10 counties.

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

**Figure 56. Health and Behavior Assessment/Intervention per 1,000 Medicare FFS Beneficiaries**

The rate of health and behavior assessment/intervention in Cape May County in the 12 months prior to Superstorm Sandy was 0.70 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 1.19 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 57. Neuropsychological Tests per 1,000 Medicare FFS Beneficiaries**

The rate of neuropsychological tests in Cape May County in the 12 months prior to Superstorm Sandy was 6.13 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 5.95 per 1,000 beneficiaries, the lowest rate among all 10 counties. This change also reflects a 2.94% relative decrease, the only decrease among all 10 counties.
In the 12 months prior to Superstorm Sandy, 40.76% of neuropsychological tests claims were filed by psychologists, 38.22% were filed by physicians, 20.38% were filed by others, 0.64% were filed by nurses, and none were filed by social workers.

After the storm, 45.14% of neuropsychological tests claims were filed by physicians, 29.17% were filed by psychologists, 24.31% were filed by others, 1.39% were filed by nurses, and none were filed by social workers.
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 59. Psychiatric Diagnostic Procedures per 1,000 Medicare FFS Beneficiaries**

The rate of psychiatric diagnostic procedures in Cape May County in the 12 months prior to Superstorm Sandy was 48.08 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 41.41 per 1,000 beneficiaries, reflecting a 13.87% relative decrease.
In the 12 months prior to Superstorm Sandy, 34.34% of psychiatric diagnostic procedures claims were filed by physicians, 31.60% were filed by psychologists, 18.86% were filed by nurses, 14.14% were filed by social workers, and 1.06% were filed by others.

After the storm, 33.89% of psychiatric diagnostic procedures claims were filed by psychologists, 25.55% were filed by physicians, 17.47% were filed by social workers, 12.47% were filed by nurses, and 10.62% were filed by others.

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

Summary

<table>
<thead>
<tr>
<th>County</th>
<th>Individual Psychotherapy</th>
<th>Family Psychotherapy*</th>
<th>Group Psychotherapy</th>
<th>Biofeedback Therapy*</th>
<th>Electroconvulsive Therapy*</th>
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<tr>
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<tr>
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<th>Group Psychotherapy</th>
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</table>

* Rates lower than 5 per 1,000 beneficiaries.

In the 12 months prior to Superstorm Sandy, Cape May County had the lowest utilization rate of individual psychotherapy, family psychotherapy, and group psychotherapy. After the storm, these rates continued to decrease and Cape May still had the lowest utilization rates of these three therapies. It also had the highest utilization rate of ECT.
Cape May County experienced a relative increase in the utilization of individual psychotherapy as well as ECT.

**Figure 62. Percent Change of Behavioral Health Service Utilization – Therapies per 1,000 Medicare FFS Beneficiaries**

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<td>Electroconvulsive Therapy</td>
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<td>0.73</td>
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</table>

* Rates lower than 5 per 1,000 beneficiaries.

This chart presents annual trending in the yearly utilization of behavioral health therapies among Medicare FFS beneficiaries in Cape May 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.8

**Figure 64. Individual Psychotherapy per 1,000 Medicare FFS Beneficiaries**

The rate of individual psychotherapy in Cape May County in the 12 months prior to Superstorm Sandy was 38.97 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 39.21 per 1,000 beneficiaries, the lowest rate among all 10 counties. This change also reflects a 0.62% relative increase.
In the 12 months prior to Superstorm Sandy, 42.04% of individual psychotherapy claims were filed by psychologists, 32.87% were filed by social workers, 21.26% were filed by physicians, 3.16% were filed by nurses, and 0.67% were filed by others.

After the storm, 37.71% of individual psychotherapy claims were filed by social workers, 34.69% were filed by psychologists, 17.67% were filed by physicians, 9.39% were filed by others, and 0.54% were filed by nurses.
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 66. Family Psychotherapy per 1,000 Medicare FFS Beneficiaries**

The rate of family psychotherapy in Cape May County in the 12 months prior to Superstorm Sandy was 0.98 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 0.92 per 1,000 beneficiaries, the lowest rate among all 10 counties.

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 67. Group Psychotherapy Per 1,000 Medicare FFS Beneficiaries**

The rate of group psychotherapy in Cape May County in the 12 months prior to Superstorm Sandy was 1.39 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 0.64 per 1,000 beneficiaries, the lowest rate among all 10 counties.

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 68. Electroconvulsive Therapy per 1,000 Medicare FFS Beneficiaries

The rate of ECT in Cape May County in the 12 months prior to Superstorm Sandy was 0.56 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 0.73 per 1,000 beneficiaries, the highest rate among all 10 counties.

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 69. Biofeedback Therapy per 1,000 Medicare FFS Beneficiaries**

The rate of biofeedback therapy in Cape May County in the 12 months prior to Superstorm Sandy was 0.56 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 0.41 per 1,000 beneficiaries.

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

## Summary

Inpatient services included four measures of utilization: inpatient psychiatric facilities, acute care hospital admissions, observation stays with a subsequent hospital admission, and emergency department visits with a subsequent hospital admission.

### Figure 70. Annual Utilization of Inpatient Health Services per 1,000 Medicare FFS Beneficiaries

<table>
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<th>Psychiatric Hospital Admissions</th>
<th>Acute Care Hospital Admissions</th>
<th>Emergency Department Visits*</th>
<th>Observation Stays*</th>
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<td><strong>11.62</strong></td>
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<th>County</th>
<th>Psychiatric Hospital Admissions</th>
<th>Acute Care Hospital Admissions</th>
<th>Emergency Department Visits*</th>
<th>Observation Stays*</th>
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* Emergency department visits and observation stay rates were based on inpatient Part A claims only.

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, Cape May County had the lowest utilization of psychiatric hospital admissions. After the storm, Cape May County still had the lowest utilization of psychiatric hospital admissions among all 10 counties.
Cape May County experienced an increase in observation stays.

This chart reflects annual trending in the utilization of inpatient health services among Medicare FFS beneficiaries in Cape May 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 Cape May County had an admissions rate of 5.11 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 5.10 per 1,000 beneficiaries, the lowest rate among all 10 counties. This change also reflects a 0.20% relative decrease, the smallest decrease among all 10 counties.
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 Cape May County had an acute care admissions rate of 357.46 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 308.15 per 1,000 beneficiaries. This change reflects a 13.79% relative decrease, the largest decrease among all 10 counties.
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 Cape May County had a rate of 4.88 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 5.97 per 1,000 beneficiaries, reflecting a 22.34% relative increase.
Emergency Department Visits

**Figure 76. Emergency Department Visits per 1,000 Medicare FFS Beneficiaries**

In the 12 months prior to Superstorm Sandy, emergency department visits in Cape May County had a rate of 264.97 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 223.86 per 1,000 beneficiaries. This change reflects a 15.51% relative decrease, the largest decrease among all 10 counties.
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 hospital readmissions, observation stays, and emergency department visits that occurred within 30 days of discharge. The emergency department visits is measured as with or without a subsequent hospital admission and observation stays is measured as with or without a subsequent hospital admission.

Cape May County experienced a decrease in the utilization of 30-day hospital readmissions, observation stays that occurred within 30 days of discharge, and emergency department visits that occurred within 30 days of discharge.

<table>
<thead>
<tr>
<th>County</th>
<th>30-Day Hospital Readmissions</th>
<th>Emergency Department Visits*</th>
<th>Observation Stays*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>October 1, 2011 – September 30, 2012</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td>75.10</td>
<td>96.67</td>
<td>8.31</td>
</tr>
<tr>
<td>Bergen</td>
<td>53.19</td>
<td>62.71</td>
<td>4.09</td>
</tr>
<tr>
<td>Cape May</td>
<td>64.06</td>
<td>83.85</td>
<td>5.95</td>
</tr>
<tr>
<td>Essex</td>
<td><strong>79.02</strong></td>
<td>90.77</td>
<td><strong>12.02</strong></td>
</tr>
<tr>
<td>Hudson</td>
<td>75.79</td>
<td>82.47</td>
<td>11.99</td>
</tr>
<tr>
<td>Middlesex</td>
<td>57.82</td>
<td>69.31</td>
<td>7.62</td>
</tr>
<tr>
<td>Monmouth</td>
<td>57.80</td>
<td>71.78</td>
<td>6.16</td>
</tr>
<tr>
<td>Ocean</td>
<td>62.43</td>
<td>78.93</td>
<td>7.18</td>
</tr>
<tr>
<td>Somerset</td>
<td>50.97</td>
<td>61.32</td>
<td>4.69</td>
</tr>
<tr>
<td>Union</td>
<td>50.82</td>
<td>61.30</td>
<td>5.74</td>
</tr>
<tr>
<td><strong>10 counties</strong></td>
<td><strong>61.76</strong></td>
<td><strong>74.31</strong></td>
<td><strong>7.28</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County</th>
<th>30-Day Hospital Readmissions</th>
<th>Emergency Department Visits*</th>
<th>Observation Stays*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>January 1, 2013 – December 31, 2013</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td>61.02</td>
<td><strong>81.44</strong></td>
<td>9.19</td>
</tr>
<tr>
<td>Bergen</td>
<td>44.29</td>
<td>53.65</td>
<td>3.88</td>
</tr>
<tr>
<td>Cape May</td>
<td>50.23</td>
<td>69.26</td>
<td>5.60</td>
</tr>
<tr>
<td>Essex</td>
<td>63.44</td>
<td>76.10</td>
<td>8.70</td>
</tr>
<tr>
<td>Hudson</td>
<td><strong>65.97</strong></td>
<td>78.58</td>
<td><strong>10.93</strong></td>
</tr>
<tr>
<td>Middlesex</td>
<td>52.02</td>
<td>63.65</td>
<td>8.37</td>
</tr>
<tr>
<td>Monmouth</td>
<td>46.09</td>
<td>61.90</td>
<td>5.86</td>
</tr>
<tr>
<td>Ocean</td>
<td>50.03</td>
<td>66.11</td>
<td>9.82</td>
</tr>
<tr>
<td>Somerset</td>
<td>40.27</td>
<td>50.98</td>
<td>4.23</td>
</tr>
<tr>
<td>Union</td>
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<td>55.02</td>
<td>4.81</td>
</tr>
<tr>
<td><strong>10 counties</strong></td>
<td><strong>51.37</strong></td>
<td><strong>64.36</strong></td>
<td><strong>7.16</strong></td>
</tr>
</tbody>
</table>

* Emergency department visits and observation stay rates were based on both inpatient and outpatient Part A claims.

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 hospital readmissions, observation stays, and emergency department visits that occurred within 30 days of discharge. The emergency department visits is measured as with or without a subsequent hospital admission and observation stays is measured as with or without a subsequent hospital admission.

Cape May County experienced a decrease in the utilization of 30-day hospital readmissions, observation stays that occurred within 30 days of discharge, and emergency department visits that occurred within 30 days of discharge.
Similar to the 10 counties, Cape May County experienced a relative decrease in the utilizations of all inpatient health services within 30 days of discharge.

* Emergency department visits and observation stay rates were based on both inpatient and outpatient Part A claims.

This chart reflects annual trending in utilization of inpatient health services within 30 days of discharge among Medicare FFS beneficiaries in Cape May County.
In the 12 months prior to Superstorm Sandy, acute care hospitals in Cape May County had a 30-day readmission rate of 64.06 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 50.23 per 1,000 beneficiaries. This change reflects a 21.59% relative decrease, the largest decrease among all 10 counties.
In the 12 months prior to Superstorm Sandy, the rate of observation stays within 30 days of discharge in Cape May County was 5.95 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 5.60 per 1,000 beneficiaries, reflecting a 5.88% relative decrease.
In the 12 months prior to Superstorm Sandy, the rate of emergency department visits within 30 days of discharge in Cape May County was 83.85 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 69.26 per 1,000 beneficiaries. This change reflects a 17.40% relative decrease, the largest decrease among all 10 counties.
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.

<table>
<thead>
<tr>
<th>County</th>
<th>Home Health Agency Services</th>
<th>Skilled Nursing Facility Services</th>
<th>Hospice Services</th>
<th>Medical Rehabilitation Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>98.16</td>
<td>64.48</td>
<td>28.04</td>
<td>14.01</td>
</tr>
<tr>
<td>Bergen</td>
<td>90.68</td>
<td>67.60</td>
<td>21.85</td>
<td>11.60</td>
</tr>
<tr>
<td>Cape May</td>
<td>96.11</td>
<td>67.91</td>
<td>29.92</td>
<td>7.80</td>
</tr>
<tr>
<td>Essex</td>
<td>80.94</td>
<td>77.28</td>
<td>20.20</td>
<td>9.81</td>
</tr>
<tr>
<td>Hudson</td>
<td>97.65</td>
<td>72.46</td>
<td>18.25</td>
<td>8.03</td>
</tr>
<tr>
<td>Middlesex</td>
<td>81.86</td>
<td>68.88</td>
<td>21.07</td>
<td>8.93</td>
</tr>
<tr>
<td>Monmouth</td>
<td>96.00</td>
<td>71.39</td>
<td>30.11</td>
<td>16.06</td>
</tr>
<tr>
<td>Ocean</td>
<td>100.09</td>
<td>76.58</td>
<td>30.49</td>
<td>22.50</td>
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<tr>
<td>Somerset</td>
<td>81.46</td>
<td>66.98</td>
<td>24.98</td>
<td>10.37</td>
</tr>
<tr>
<td>Union</td>
<td>84.19</td>
<td>69.60</td>
<td>20.56</td>
<td>9.19</td>
</tr>
<tr>
<td>10 counties</td>
<td>90.62</td>
<td>71.08</td>
<td>24.27</td>
<td>12.75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County</th>
<th>Home Health Agency Services</th>
<th>Skilled Nursing Facility Services</th>
<th>Hospice Services</th>
<th>Medical Rehabilitation Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>92.63</td>
<td>57.91</td>
<td>27.06</td>
<td>13.18</td>
</tr>
<tr>
<td>Bergen</td>
<td>88.45</td>
<td>64.69</td>
<td>21.19</td>
<td>11.06</td>
</tr>
<tr>
<td>Cape May</td>
<td>89.44</td>
<td>61.43</td>
<td>28.05</td>
<td>7.42</td>
</tr>
<tr>
<td>Essex</td>
<td>77.98</td>
<td>72.56</td>
<td>19.36</td>
<td>8.71</td>
</tr>
<tr>
<td>Hudson</td>
<td>88.29</td>
<td>72.27</td>
<td>15.52</td>
<td>6.75</td>
</tr>
<tr>
<td>Middlesex</td>
<td>76.38</td>
<td>64.56</td>
<td>20.92</td>
<td>9.25</td>
</tr>
<tr>
<td>Monmouth</td>
<td>88.13</td>
<td>65.96</td>
<td>27.72</td>
<td>15.27</td>
</tr>
<tr>
<td>Ocean</td>
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<td>68.46</td>
<td>28.24</td>
<td>20.55</td>
</tr>
<tr>
<td>Somerset</td>
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<td>58.33</td>
<td>22.84</td>
<td>7.62</td>
</tr>
<tr>
<td>Union</td>
<td>76.61</td>
<td>64.12</td>
<td>20.80</td>
<td>8.87</td>
</tr>
<tr>
<td>10 counties</td>
<td>85.02</td>
<td>65.99</td>
<td>23.01</td>
<td>11.86</td>
</tr>
</tbody>
</table>

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, Cape May County had the lowest utilization of medical rehabilitation services. After the storm, Cape May County no longer had the lowest utilization rate of medical rehabilitation services, despite a further decrease in utilization.
Similar to the 10 counties, Cape May 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 Cape May County.
In the 12 months prior to Superstorm Sandy, the utilization rate of home health agency services in Cape May County was 96.11 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 89.44 per 1,000 beneficiaries, reflecting a 6.94% relative decrease.
In the 12 months prior to Superstorm Sandy, the utilization rate of skilled nursing facility services in Cape May County was 67.91 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 61.43 per 1,000 beneficiaries, reflecting a 9.54% relative decrease.
Hospice Services

**Figure 88. Hospice Services per 1,000 Medicare FFS Beneficiaries**

In the 12 months prior to Superstorm Sandy, the utilization rate of hospice services in Cape May County was 29.92 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 28.05 per 1,000 beneficiaries, reflecting a 6.25% relative decrease.
In the 12 months prior to Superstorm Sandy, the utilization rate of medical rehabilitation services in Cape May County was 7.80 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 7.42 per 1,000 beneficiaries, reflecting a 4.87% relative decrease.
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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 trend with quarterly rolling for the selected behavioral health conditions (data starting from January 1, 2011 to December 31, 2013)
- Quarterly new incidence trend of conditions that were not existent (not reported) in the past 12 months of the selected eight behavioral health conditions (data starting from January 1, 2012 to December 31, 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 time frame
- Eligible beneficiaries were computed after adjusting for total enrolled FFS days divided by the total measurement days in the time frame
- 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; Age calculated as end date of time frame or date of death – birth date
- 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, 30034, 30039, 3009, 3080, 3081, 3082, 3083, 3084, 3089, 3090, 3091, 30922, 30923, 30924, 30925, 30928, 30929, 3093, 3094, 30981, 30982, 30983, 30989, 3099, 311, 3130, 3131, 31321, 31322, 3133, 31382, 31383, 31386, V790</td>
</tr>
<tr>
<td>Depression</td>
<td>29620, 29621, 29622, 29623, 29624, 29625, 29626, 29630, 29631, 29632, 29633, 29634, 29635, 3004, 311, V790</td>
</tr>
<tr>
<td>Anxiety Disorders</td>
<td>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</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, 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</td>
</tr>
<tr>
<td>Alcohol Abuse:</td>
<td>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</td>
</tr>
<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, 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</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 trend for risk factors for depression or proxy disorders consists of nine points of data with rolling quarters (starting January 1, 2011 and December 31, 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 time frame
- Eligible beneficiaries were computed after adjusting for total enrolled FFS days divided by the total measurement days in the time frame
- 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; Age calculated as end date of time frame or date of death – birth date
- 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, 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, 70671, 70672, 70673, 70675, 7795, 7903, 95000, 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>
</tr>
<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>
</tr>
<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>
</tr>
</tbody>
</table>

* 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 nine points of data with rolling quarters (starting January 1, 2011 and ending December 31, 2013)
- Quarterly utilization trend charts for depression screening contains data from January 1, 2012 to December 31, 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 time frame
- Eligible beneficiaries were computed after adjusting for total enrolled FFS days divided by the total measurement days in the time frame
- 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; Age calculated as end date of time frame or date of death – birth date
- 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.cmsbilling.org/forms/NHIC_Medicare_B_Mental_Health_billing_guide_2008.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><strong>Assessments</strong></td>
<td></td>
</tr>
<tr>
<td>Depression Screening</td>
<td>G0444</td>
</tr>
<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>
</tr>
<tr>
<td>Neuropsychological Tests</td>
<td>96116, 96118, 96119, 96120</td>
</tr>
<tr>
<td>Psychiatric Diagnostic Procedures</td>
<td>90801, 90802, 90791, 90792</td>
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<tr>
<td><strong>Therapies</strong></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, 90821, 90822, 90823, 90824, 90826, 90827, 90828, 90829, 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>
</tr>
<tr>
<td>Electroconvulsive Therapy</td>
<td>90870</td>
</tr>
<tr>
<td>Biofeedback Therapy</td>
<td>90901, 90911</td>
</tr>
</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 nine points of data with rolling quarters (starting January 1, 2011 and ending December 31, 2013)

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

Exclusions
- HMO coverage period
- Age <18 or >= 110; Age calculated as end date of time frame or date of death – birth date
- 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>Acute Care Hospital Admission</td>
<td>Number of inpatient admissions (Nch_clm_type_cd = 60, 61)</td>
</tr>
<tr>
<td>30-Day Hospital Readmissions</td>
<td>Number of readmissions that occurred within 30 days of hospital discharge (Nch_clm_type_cd = 60, 61)</td>
</tr>
<tr>
<td>Emergency Department Visits</td>
<td>Number of emergency department visits, with subsequent inpatient admission (Nch_clm_type_cd = 60, 61 and revenue code in ‘0450’ ‘0451’ ‘0452’ ‘0456’ ‘0459’ ‘0981’)</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, with or without subsequent admission (Nch_clm_type_cd = 60, 61, 40 and revenue code in ‘0450’ ‘0451’ ‘0452’ ‘0456’ ‘0459’ ‘0981’)</td>
</tr>
<tr>
<td>Observation Stays</td>
<td>Number of observation stays, with subsequent inpatient admission (Nch_clm_type_cd = 60, 61 and revenue code in ‘0762’)</td>
</tr>
<tr>
<td>Observation Stays within 30 Days of Hospital Discharge</td>
<td>Number of observation stays within 30 days of hospital discharge, with or without subsequent admission (Nch_clm_type_cd = 60, 61, 40 and revenue code in ‘0762’)</td>
</tr>
<tr>
<td>Home Health Agency Services</td>
<td>Number of eligible beneficiaries with at least one home health agency claim (Nch_clm_type_cd = 10)</td>
</tr>
<tr>
<td>Skilled Nursing Facility Services</td>
<td>Number of eligible beneficiaries with at least one skilled nursing facility claim (Nch_clm_type_cd =20, 30)</td>
</tr>
<tr>
<td>Hospice Services</td>
<td>Number of eligible beneficiaries with at least one hospice claim (Nch_clm_type_cd = 50)</td>
</tr>
<tr>
<td>Medical Rehabilitation Services</td>
<td>Number of eligible beneficiaries with at least one medical rehabilitation claim (Nch_clm_type_cd = 60, 61 and hsp_id format: xxTxxx or between xx3025 and xx3099)</td>
</tr>
<tr>
<td>Psychiatric Hospital Admissions</td>
<td>Number of eligible beneficiaries with at least one psychiatric hospital admission claim (Nch_clm_type_cd = 60, 61 and hsp_id format: xxSxxx or between xx4000 and xx4499)</td>
</tr>
</tbody>
</table>
**APPENDIX E: TIME FRAMES AND FORMULAE**

<table>
<thead>
<tr>
<th>Time Frames</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>January 1 to March 31</td>
</tr>
<tr>
<td>Q2</td>
<td>April 1 to June 30</td>
</tr>
<tr>
<td>Q3</td>
<td>July 1 to September 30</td>
</tr>
<tr>
<td>Q4</td>
<td>October 1 to December 31</td>
</tr>
</tbody>
</table>

**Formulae**

\[
\text{Incidence} = \frac{\text{(Number of unique beneficiaries with new cases during the time frame, condition not present in the past 12 months)}}{\text{(Total unique beneficiaries in the population during the time frame)}}
\]

\[
\text{Prevalence} = \frac{\text{(Number of unique beneficiaries with the condition during the time frame)}}{\text{(Total unique beneficiaries in the population during the time frame)}}
\]

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

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