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

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

Demographics, Behavioral Health Conditions, and Utilization of Health Services

April 11, 2014
This page left intentionally blank
Preface .................................................................................................................................1
Introduction ..........................................................................................................................2
HQSI Project Team ..............................................................................................................7
Acknowledgements .............................................................................................................8
Executive Summary .............................................................................................................9
Demographics .....................................................................................................................11
   • Total Medicare FFS Beneficiary Population by County .............................................11
   • Percent of Medicare FFS Beneficiaries in the General Population .........................12
   • Percent of Medicare FFS Beneficiary Population by Gender by County ...............12
   • Percent of Medicare FFS Beneficiary Population by Race by County..................13
   • Percent of Medicare FFS Beneficiary Population by Age by County .................14
   • Income Status by County .........................................................................................15
Behavioral Health Conditions ..........................................................................................17
   • Prevalence and Incidence .........................................................................................17
      – Summary ..............................................................................................................18
      – Depression or Proxy Disorders ..........................................................................21
      – Depression ..........................................................................................................27
      – Anxiety Disorders ............................................................................................28
      – Adjustment Disorders ....................................................................................29
      – Post-Traumatic Stress Disorder ......................................................................30
      – Alcohol or Substance Abuse .........................................................................31
      – Substance Abuse Alone ..................................................................................32
      – Suicide and Intentional Self-Inflicted Injury ....................................................33
   • Risk Factors for Depression or Proxy Disorders .....................................................34
      – Summary ............................................................................................................34
      – Any of the Top Five Risk Factors for Depression or Proxy Disorders ..........35
      – Alzheimer's Disease and Related Disorders or Senile Dementia .................38
      – Sleep Disturbance ............................................................................................38
      – Substance or Alcohol Abuse or Tobacco Use ..................................................39
      – Hip/Pelvic Fractures .........................................................................................39
      – Amputations ....................................................................................................40
Utilization ............................................................................................................................41
   • Outpatient Behavioral Health Services ................................................................41
      – Assessments ......................................................................................................41
         › Summary .......................................................................................................41
         › Depression Screening .................................................................................43
         › Diagnostic Psychological Tests ..................................................................46
Table of Contents

- Health and Behavior Assessment/Intervention .................................. 47
- Neuropsychological Tests .................................................................. 48
- Psychiatric Diagnostic Procedures .................................................. 49
- Therapies ........................................................................... 50
  - Summary ........................................................................ 50
  - Individual Psychotherapy ...................................................... 52
  - Family Psychotherapy .......................................................... 53
  - Group Psychotherapy ............................................................ 54
  - Electroconvulsive Therapy ....................................................... 55
  - Biofeedback Therapy ............................................................. 56
- Types of Providers ........................................................................... 57
- Inpatient Services ........................................................................... 59
  - Summary ........................................................................... 59
- Psychiatric Hospital Admissions ........................................................ 61
- Acute Care Hospitals ...................................................................... 62
  - Admissions ........................................................................ 62
  - Observation Stays .................................................................. 63
  - Emergency Department Visits .................................................. 64
- Within 30 Days of Acute Care Hospital Discharge .......................... 65
  - Summary ........................................................................... 65
  - 30-Day Hospital Readmissions ................................................ 67
  - Observation Stays Within 30 Days of Discharge .......................... 68
  - Emergency Department Visits Within 30 Days of Discharge .... 69
- Other Settings ............................................................................. 70
  - Summary ........................................................................... 70
  - Home Health Agency Services ................................................ 72
  - Skilled Nursing Facility Services ............................................. 73
  - Hospice Services ................................................................... 74
  - Medical Rehabilitation Services ............................................. 75

Appendices ................................................................................... 77
- Appendix A: Behavioral Health Conditions .................................... 77
- Appendix B: Risk Factors for Depression or Proxy Disorders .......... 79
- Appendix C: Utilization of Outpatient Mental Health Services .... 83
- Appendix D: Utilization of Services – Inpatient and Other Settings 85
- Appendix E: Time Frames and Formulae .................................... 87
- Appendix F: Professional Type by Behavioral Health Services .... 88
- Appendix G: References ............................................................ 89

Index of Figures ........................................................................... 91
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 Atlantic 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 that reflect the 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. 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.

**Carol Benevy, MSW**  
New Jersey Hope and Healing Project  
Barnabas Health Institute for Prevention

**Mary Ditri, MA, CHCC**  
New Jersey Hospital Association

**Adrienne Fessler-Belli, MSW, LCSW**  
New Jersey Department of Human Services  
Disaster & Terrorism Branch

**Mark Firth, MA, MSW**  
New Jersey Department of Human Services  
Division of Mental Health and Addiction Services

**Mary Goepfert, MPA, APR, CPM**  
New Jersey Group for Access and Integration Needs in Emergencies and Disasters

**Connie Greene, MA, CAS, CSW, CPS**  
Barnabas Health Institute for Prevention

**Bob Kley**  
Mental Health Association in New Jersey, Inc.

**Lynn Kovitch, MEd**  
New Jersey Department of Human Services  
Division of Mental Health and Addiction Services

**Karen McCoy, RN, BSN**  
Home Care Association of New Jersey

**Elyse Perweiler, MPP, RN**  
NJ Institute for Successful Aging

**Lynn Stefanowicz, MA, LCSW**  
Meridian Behavioral Health

**Megan Sullivan, LPC, LCADC, DRCC**  
New Jersey Department of Human Services  
Disaster & Terrorism Branch

**Pete Summers**  
The New Jersey Association of County and City Health Officials (NJACCHO)

**Sheldon Green**  
New Jersey Primary Care Association
**Key Observations**

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

1. There was a 1.42% relative increase in the rate of depression or proxy disorders and a 3.62% relative increase in the rate of anxiety disorders in Atlantic County.

2. There was a relative decrease in the rates of alcohol or substance abuse (7.44%), substance abuse alone (11.99%), PTSD (1.88%), and suicide and intentional self-inflicted injuries (7.43%) in Atlantic County.

3. Atlantic County ranked highest in the prevalence of suicide and intentional self-inflicted injuries (5.98 per 1,000 Medicare FFS beneficiaries) among all 10 counties.

4. There was a 0.88% relative decrease in Atlantic County in the prevalence of any of the top five risk factors for depression or proxy disorders.

5. Utilization of depression screening in Atlantic County increased from 1.12 per 1,000 Medicare FFS beneficiaries to 9.8, representing the highest relative increase among all 10 counties.

6. There was a 28.57% relative increase in neuropsychological testing in Atlantic County.

7. Atlantic County had the highest utilization rate of psychiatric diagnostic procedures (55.02 per 1,000 Medicare FFS beneficiaries) among all 10 counties despite experiencing a relative decrease in this service.

8. Atlantic County experienced a relative decrease in the utilization of individual psychotherapy (2.63%), family psychotherapy (37.94%), and group psychotherapy (21.52%).

9. Atlantic County ranked highest in the utilization of acute care hospital admissions (353.89 per 1,000 Medicare FFS beneficiaries), emergency department visits (283.79 per 1,000 beneficiaries), and emergency department visits that occurred within 30 days of discharge (89.74 per 1,000 beneficiaries) among all 10 counties.

10. Atlantic County had a 13.15% relative increase in observation stays and a 17.02% increase in observation stays that occurred within 30 days of discharge.

11. There was a relative increase in the utilization of hospice services (2.32%) and a relative decrease in the use of home health (2.63%), skilled nursing facility (3.04%), and medical rehabilitation (3.36%) services.

12. Atlantic County ranked lowest in utilization of skilled nursing facility services (61.94 per 1,000 Medicare FFS beneficiaries) among all 10 counties.
The *Snapshot of Atlantic 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 Atlantic 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 Atlantic County

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

<table>
<thead>
<tr>
<th>Behavioral Health Disorders</th>
<th>Atlantic 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>Depression or Proxy Disorders</td>
<td>204.77</td>
<td>207.67</td>
</tr>
<tr>
<td>Depression alone</td>
<td>126.57</td>
<td>124.48</td>
</tr>
<tr>
<td>Anxiety Disorders alone</td>
<td>122.81</td>
<td>127.26</td>
</tr>
<tr>
<td>Adjustment Disorders alone</td>
<td>30.22</td>
<td>29.83</td>
</tr>
<tr>
<td>Alcohol or Substance Abuse</td>
<td>42.99</td>
<td>39.79</td>
</tr>
<tr>
<td>Substance Abuse alone</td>
<td>25.28</td>
<td>22.25</td>
</tr>
<tr>
<td>PTSD</td>
<td>5.32</td>
<td>5.22</td>
</tr>
<tr>
<td>Suicide and Intentional Self-Inflicted Injury</td>
<td>6.46</td>
<td>5.98</td>
</tr>
<tr>
<td>Any of the Top Five Risk Factors* for Depression or Proxy Disorders</td>
<td>144.86</td>
<td>143.58</td>
</tr>
<tr>
<td>Substance or Alcohol Abuse or Tobacco Use</td>
<td>89.34</td>
<td>88.23</td>
</tr>
<tr>
<td>Alzheimer’s Disease and related disorders or Senile Dementia</td>
<td>33.98</td>
<td>34.73</td>
</tr>
<tr>
<td>Sleep Disturbance</td>
<td>26.86</td>
<td>26.86</td>
</tr>
<tr>
<td>Hip/Pelvic Fractures</td>
<td>6.46</td>
<td>6.21</td>
</tr>
<tr>
<td>Amputations</td>
<td>1.17</td>
<td>1.20</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Behavioral Health Services</th>
<th>Atlantic 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>Assessments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression Screening**</td>
<td>1.12</td>
<td>9.80</td>
</tr>
<tr>
<td>Psychiatric Diagnostic Procedures</td>
<td>59.05</td>
<td>55.02</td>
</tr>
<tr>
<td>Neuropsychological Testing</td>
<td>7.14</td>
<td>9.18</td>
</tr>
<tr>
<td>Therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Psychotherapy</td>
<td>52.00</td>
<td>50.63</td>
</tr>
<tr>
<td>Family Psychotherapy</td>
<td>2.82</td>
<td>1.75</td>
</tr>
<tr>
<td>Group Psychotherapy</td>
<td>5.25</td>
<td>4.12</td>
</tr>
<tr>
<td>Psychiatric Hospital Admissions</td>
<td>7.14</td>
<td>7.00</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 Atlantic County prior to Superstorm Sandy was 47,576. After the storm, the population increased to 47,842.
Medicare FFS beneficiaries made up 17.27% of Atlantic County's general population in calendar year 2012.

**Percent of Medicare FFS Beneficiaries in the General Population**

![Figure 3. Percent of Medicare FFS Beneficiaries in the General Population in 2012*](image)


Prior to Superstorm Sandy, females made up 55.11% of the entire Medicare FFS population in Atlantic County and males 44.89%. After the storm, the female beneficiary population decreased to 54.96% and males increased to 45.04%.

**Percent of Medicare FFS Beneficiary Population by Gender by County**

<table>
<thead>
<tr>
<th>County</th>
<th>10/1/11-9/30/12</th>
<th>10/1/12-9/30/13</th>
<th>Absolute Change*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>55.11</td>
<td>54.96</td>
<td>-0.15</td>
</tr>
<tr>
<td>Bergen</td>
<td>57.01</td>
<td>56.78</td>
<td>-0.23</td>
</tr>
<tr>
<td>Cape May</td>
<td>53.96</td>
<td>53.80</td>
<td>-0.17</td>
</tr>
<tr>
<td>Essex</td>
<td>57.31</td>
<td>57.03</td>
<td>-0.29</td>
</tr>
<tr>
<td>Hudson</td>
<td>57.49</td>
<td>57.25</td>
<td>-0.24</td>
</tr>
<tr>
<td>Middlesex</td>
<td>56.31</td>
<td>56.10</td>
<td>-0.21</td>
</tr>
<tr>
<td>Monmouth</td>
<td>56.24</td>
<td>56.04</td>
<td>-0.20</td>
</tr>
<tr>
<td>Ocean</td>
<td>57.16</td>
<td>56.99</td>
<td>-0.17</td>
</tr>
<tr>
<td>Somerset</td>
<td>56.64</td>
<td>56.42</td>
<td>-0.22</td>
</tr>
<tr>
<td>Union</td>
<td>57.23</td>
<td>56.98</td>
<td>-0.25</td>
</tr>
<tr>
<td>10 counties</td>
<td>56.72</td>
<td>56.51</td>
<td>-0.21</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.
### Percent of Medicare FFS Beneficiary Population by Race by County

#### Figure 5. Percent of Medicare FFS Beneficiary Population by Race by County

<table>
<thead>
<tr>
<th>County</th>
<th>Atlantic</th>
<th>Bergen</th>
<th>Cape May</th>
<th>Essex</th>
<th>Hudson</th>
<th>Middlesex</th>
<th>Monmouth</th>
<th>Ocean</th>
<th>Somerset</th>
<th>Union</th>
<th>10 Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>10/1/11-9/30/12</td>
<td>78.72</td>
<td>83.77</td>
<td>54.93</td>
<td>61.84</td>
<td>77.79</td>
<td>87.88</td>
<td>95.60</td>
<td>82.96</td>
<td>70.06</td>
<td>78.95</td>
</tr>
<tr>
<td>White</td>
<td>10/1/12-9/30/13</td>
<td>78.68</td>
<td>83.08</td>
<td>55.00</td>
<td>61.02</td>
<td>77.07</td>
<td>87.57</td>
<td>95.29</td>
<td>82.05</td>
<td>69.35</td>
<td>78.57</td>
</tr>
<tr>
<td>Absolute Change</td>
<td>-0.04</td>
<td>-0.68</td>
<td>-0.06</td>
<td>0.07</td>
<td>-0.82</td>
<td>-0.72</td>
<td>-0.31</td>
<td>-0.30</td>
<td>-0.91</td>
<td>-0.71</td>
<td>-0.38</td>
</tr>
<tr>
<td>Black</td>
<td>10/1/11-9/30/12</td>
<td>14.00</td>
<td>4.81</td>
<td>3.67</td>
<td>35.35</td>
<td>12.01</td>
<td>7.55</td>
<td>7.00</td>
<td>1.96</td>
<td>6.68</td>
<td>19.39</td>
</tr>
<tr>
<td>Black</td>
<td>10/1/12-9/30/13</td>
<td>13.51</td>
<td>4.79</td>
<td>3.48</td>
<td>34.70</td>
<td>11.99</td>
<td>7.59</td>
<td>6.77</td>
<td>1.93</td>
<td>6.76</td>
<td>19.49</td>
</tr>
<tr>
<td>Absolute Change</td>
<td>-0.49</td>
<td>-0.02</td>
<td>-0.19</td>
<td>-0.65</td>
<td>-0.02</td>
<td>0.04</td>
<td>-0.23</td>
<td>-0.30</td>
<td>0.07</td>
<td>0.11</td>
<td>-0.19</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10/1/11-9/30/12</td>
<td>2.48</td>
<td>2.45</td>
<td>0.40</td>
<td>4.17</td>
<td>14.82</td>
<td>3.48</td>
<td>0.81</td>
<td>0.56</td>
<td>1.37</td>
<td>5.38</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10/1/12-9/30/13</td>
<td>2.38</td>
<td>2.27</td>
<td>0.36</td>
<td>3.84</td>
<td>13.78</td>
<td>3.16</td>
<td>0.75</td>
<td>0.53</td>
<td>1.32</td>
<td>5.07</td>
</tr>
<tr>
<td>Absolute Change</td>
<td>-0.10</td>
<td>-0.18</td>
<td>-0.03</td>
<td>-0.32</td>
<td>-1.03</td>
<td>-0.31</td>
<td>-0.05</td>
<td>-0.03</td>
<td>-0.05</td>
<td>-0.31</td>
<td>-0.27</td>
</tr>
<tr>
<td>Asian</td>
<td>10/1/11-9/30/12</td>
<td>2.95</td>
<td>4.59</td>
<td>0.39</td>
<td>1.83</td>
<td>5.31</td>
<td>6.28</td>
<td>1.56</td>
<td>0.57</td>
<td>4.40</td>
<td>1.86</td>
</tr>
<tr>
<td>Asian</td>
<td>10/1/12-9/30/13</td>
<td>2.78</td>
<td>4.42</td>
<td>0.36</td>
<td>1.76</td>
<td>5.09</td>
<td>5.90</td>
<td>1.45</td>
<td>0.55</td>
<td>4.20</td>
<td>1.76</td>
</tr>
<tr>
<td>Absolute Change</td>
<td>-0.17</td>
<td>-0.17</td>
<td>-0.03</td>
<td>-0.08</td>
<td>-0.22</td>
<td>-0.38</td>
<td>-0.11</td>
<td>-0.02</td>
<td>-0.21</td>
<td>-0.10</td>
<td>-0.15</td>
</tr>
<tr>
<td>Other</td>
<td>10/1/11-9/30/12</td>
<td>1.85</td>
<td>4.39</td>
<td>0.99</td>
<td>3.71</td>
<td>6.03</td>
<td>4.90</td>
<td>2.75</td>
<td>1.31</td>
<td>4.58</td>
<td>3.31</td>
</tr>
<tr>
<td>Other</td>
<td>10/1/12-9/30/13</td>
<td>2.65</td>
<td>5.43</td>
<td>1.31</td>
<td>4.70</td>
<td>8.11</td>
<td>6.27</td>
<td>3.45</td>
<td>1.70</td>
<td>5.67</td>
<td>4.32</td>
</tr>
<tr>
<td>Absolute Change</td>
<td>0.80</td>
<td>1.05</td>
<td>0.32</td>
<td>0.98</td>
<td>2.08</td>
<td>1.37</td>
<td>0.70</td>
<td>0.38</td>
<td>1.09</td>
<td>1.01</td>
<td>1.41</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.

Both before and after Superstorm Sandy, the majority of Medicare FFS beneficiaries in Atlantic County were White followed by Black, Asian, and Hispanic.
Prior to Superstorm Sandy, the largest age group of the Medicare FFS beneficiary population in Atlantic County was between ages 65 and 74 years old followed by beneficiaries below 65 years old. After the storm, the largest age group 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 69.90 before the storm to 69.94 after the storm. This is also the lowest average age of Medicare FFS beneficiaries among all 10 counties.
According to U.S. Census data from 2012, residents aged 65 and over in Atlantic County had a median household income of $39,246. This was lower than the average income among all 10 counties.
This page left intentionally blank
**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.
## Summary

**Figure 8. Annual Prevalence of Selected Behavioral Health Conditions per 1,000 Medicare FFS Beneficiaries**

<table>
<thead>
<tr>
<th>County</th>
<th>Depression or Proxy Disorders</th>
<th>Depression</th>
<th>Anxiety Disorder</th>
<th>Adjustment Disorder</th>
<th>Alcohol or Substance Abuse</th>
<th>Substance Abuse Alone</th>
<th>PTSD</th>
<th>Suicide and Intentional Self-Inflicted Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 1, 2011 – September 30, 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td>204.77</td>
<td>126.57</td>
<td>122.81</td>
<td>30.22</td>
<td>42.99</td>
<td>25.28</td>
<td>5.32</td>
<td>6.46</td>
</tr>
<tr>
<td>Bergen</td>
<td>183.75</td>
<td>123.41</td>
<td>96.54</td>
<td>26.46</td>
<td>19.69</td>
<td>9.87</td>
<td>2.53</td>
<td>3.47</td>
</tr>
<tr>
<td>Cape May</td>
<td>208.45</td>
<td>125.82</td>
<td>123.78</td>
<td>24.71</td>
<td>40.27</td>
<td>19.97</td>
<td>5.57</td>
<td>4.09</td>
</tr>
<tr>
<td>Essex</td>
<td>183.88</td>
<td>119.31</td>
<td>88.07</td>
<td>36.72</td>
<td>38.53</td>
<td>22.87</td>
<td>3.66</td>
<td>4.76</td>
</tr>
<tr>
<td>Hudson</td>
<td>211.22</td>
<td>137.93</td>
<td>116.97</td>
<td>32.56</td>
<td>31.73</td>
<td>16.42</td>
<td>3.28</td>
<td>4.34</td>
</tr>
<tr>
<td>Middlesex</td>
<td>180.56</td>
<td>117.55</td>
<td>95.88</td>
<td>25.48</td>
<td>25.46</td>
<td>14.47</td>
<td>4.62</td>
<td>3.48</td>
</tr>
<tr>
<td>Monmouth</td>
<td>206.69</td>
<td>132.99</td>
<td>114.24</td>
<td>39.09</td>
<td>34.22</td>
<td>17.18</td>
<td>5.12</td>
<td>5.27</td>
</tr>
<tr>
<td>Ocean</td>
<td>208.61</td>
<td>131.49</td>
<td>125.39</td>
<td>28.85</td>
<td>35.32</td>
<td>20.66</td>
<td>5.82</td>
<td>5.33</td>
</tr>
<tr>
<td>Somerset</td>
<td>176.87</td>
<td>114.27</td>
<td>95.26</td>
<td>28.30</td>
<td>26.79</td>
<td>14.81</td>
<td>4.51</td>
<td>3.87</td>
</tr>
<tr>
<td>Union</td>
<td>171.66</td>
<td>111.31</td>
<td>91.36</td>
<td>21.78</td>
<td>24.12</td>
<td>12.03</td>
<td>2.46</td>
<td>3.44</td>
</tr>
<tr>
<td>10 counties</td>
<td>192.69</td>
<td>124.47</td>
<td>105.52</td>
<td>29.75</td>
<td>30.43</td>
<td>16.65</td>
<td>4.16</td>
<td>4.40</td>
</tr>
</tbody>
</table>

| October 1, 2012 – September 30, 2013 |
| Atlantic        | 207.67                        | 124.48     | 127.26           | 29.83               | 39.79                       | 22.25                 | 5.22     | 5.98                                        |
| Bergen          | 189.34                        | 125.56     | 103.62           | 26.43               | 22.88                       | 11.43                 | 2.51     | 3.54                                        |
| Cape May        | 201.63                        | 115.94     | 123.79           | 24.00               | 36.96                       | 17.25                 | 6.39     | 4.24                                        |
| Essex           | 182.09                        | 115.45     | 92.26            | 34.64               | 37.63                       | 22.97                 | 4.30     | 4.79                                        |
| Hudson          | 209.47                        | 135.33     | 118.21           | 31.98               | 36.09                       | 17.38                 | 3.33     | 4.50                                        |
| Middlesex       | 182.13                        | 117.04     | 102.14           | 25.09               | 27.28                       | 15.05                 | 5.08     | 3.67                                        |
| Monmouth        | 205.98                        | 130.67     | 117.85           | 37.33               | 38.19                       | 17.50                 | 5.50     | 5.12                                        |
| Ocean           | 218.09                        | 133.89     | 139.47           | 26.37               | 41.87                       | 21.94                 | 6.33     | 5.30                                        |
| Somerset        | 178.98                        | 115.14     | 100.17           | 29.06               | 29.96                       | 15.59                 | 5.03     | 4.23                                        |
| Union           | 171.39                        | 108.26     | 95.40            | 22.50               | 25.08                       | 12.89                 | 2.55     | 2.66                                        |
| 10 counties     | 194.94                        | 123.58     | 111.63           | 28.88               | 32.91                       | 17.17                 | 4.48     | 4.36                                        |

The 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, Atlantic County had the highest prevalence rate of alcohol or substance abuse, substance abuse alone, and suicide and intentional self-inflicted injury. After the storm, Atlantic County had the highest rate of suicide and intentional self-inflicted injury despite its decrease in prevalence.
Atlantic County experienced an increase in depression or proxy disorders, as well as anxiety disorders.

**Figure 10. Quarterly New Incidence Trend of Selected Behavioral Health Conditions: Depression or Proxy Disorders* per 1,000 Medicare FFS Beneficiaries**

* 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 Atlantic County.
The charts above reflect annual trending in the prevalence of the selected behavioral health conditions among Medicare FFS beneficiaries in Atlantic County.
### Depression or Proxy Disorders

**Figure 14. Demographics of Depression or Proxy Disorders among Medicare FFS Beneficiaries**

<table>
<thead>
<tr>
<th></th>
<th>10/1/11 – 9/30/12</th>
<th>10/1/12 – 9/30/13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td>Number of Beneficiaries</td>
<td>Percent (%)</td>
</tr>
<tr>
<td>White</td>
<td>7,291</td>
<td>83.10</td>
</tr>
<tr>
<td>Black</td>
<td>1,026</td>
<td>11.69</td>
</tr>
<tr>
<td>Hispanic</td>
<td>249</td>
<td>2.84</td>
</tr>
<tr>
<td>Asian</td>
<td>117</td>
<td>1.33</td>
</tr>
<tr>
<td>Other</td>
<td>91</td>
<td>1.04</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>2,887</td>
<td>32.90</td>
</tr>
<tr>
<td>Females</td>
<td>5,887</td>
<td>67.10</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 65</td>
<td>2,498</td>
<td>28.47</td>
</tr>
<tr>
<td>65-74</td>
<td>2,835</td>
<td>32.31</td>
</tr>
<tr>
<td>75-84</td>
<td>2,065</td>
<td>23.54</td>
</tr>
<tr>
<td>85 and Above</td>
<td>1,376</td>
<td>15.68</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8,774</td>
<td>100</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 8,774 beneficiaries diagnosed with depression or proxy disorders in Atlantic County before the storm. This increased to 9,047 beneficiaries after the storm.
### Figure 15. Demographics of Depression or Proxy Disorders Rate per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th></th>
<th>10/1/11 – 9/30/12</th>
<th>Rate per 1,000 Beneficiaries</th>
<th>10/1/12 – 9/30/13</th>
<th>Rate per 1,000 Beneficiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Numerator</td>
<td>Denominator*</td>
<td>Numerator</td>
<td>Denominator*</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>7,291</td>
<td>33,972</td>
<td>7,561</td>
<td>34,458</td>
</tr>
<tr>
<td>Black</td>
<td>1,026</td>
<td>5,889</td>
<td>994</td>
<td>5,749</td>
</tr>
<tr>
<td>Hispanic</td>
<td>249</td>
<td>1,026</td>
<td>249</td>
<td>1,024</td>
</tr>
<tr>
<td>Asian</td>
<td>117</td>
<td>1,234</td>
<td>116</td>
<td>1,233</td>
</tr>
<tr>
<td>Other</td>
<td>91</td>
<td>731</td>
<td>127</td>
<td>985</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>2,887</td>
<td>19,128</td>
<td>3,031</td>
<td>19,490</td>
</tr>
<tr>
<td>Females</td>
<td>5,887</td>
<td>23,724</td>
<td>6,016</td>
<td>23,958</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 65</td>
<td>2,498</td>
<td>7,160</td>
<td>2,584</td>
<td>7,139</td>
</tr>
<tr>
<td>65-74</td>
<td>2,835</td>
<td>19,194</td>
<td>3,026</td>
<td>19,907</td>
</tr>
<tr>
<td>75-84</td>
<td>2,065</td>
<td>11,131</td>
<td>2,054</td>
<td>11,013</td>
</tr>
<tr>
<td>85 and Above</td>
<td>1,376</td>
<td>5,367</td>
<td>1,383</td>
<td>5,390</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8,774</td>
<td>42,853</td>
<td>9,047</td>
<td>43,448</td>
</tr>
</tbody>
</table>

*T 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, 242.58 per 1,000 Hispanic Medicare FFS beneficiaries were diagnosed with depression or proxy disorders. After the storm, this rate increased to 243.28 per 1,000 beneficiaries.

In the 12 months prior to Superstorm Sandy, 248.14 per 1,000 female Medicare FFS beneficiaries were diagnosed with depression or proxy disorders. After the storm, this rate increased to 251.11 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 below the age of 65, 348.87 per 1,000 were diagnosed with depression or proxy disorders. After the storm, this rate decreased to 262.05 per 1,000 beneficiaries. However, the rate of diagnosis among beneficiaries from ages 65-74, 75-84, and 85 and above increased.
The prevalence rate of depression or proxy disorders in Atlantic County in the 12 months prior to Superstorm Sandy was 204.77 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 207.67 per 1,000 beneficiaries, reflecting a 1.42% relative increase.

**Figure 20. Quarterly New Incidence of Depression or Proxy Disorders* per 1,000 Medicare FFS Beneficiaries**

This chart reflects trending of quarterly new incidence of depression or proxy disorders among Medicare FFS beneficiaries in Atlantic 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. Atlantic 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 Atlantic 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 Atlantic County in the 12 months prior to Superstorm Sandy was 126.57 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 124.48 per 1,000 beneficiaries, reflecting a 1.65% relative decrease.

**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 Atlantic County.

* Quarterly new incidences of conditions that were non-existent (not reported) in the last 12 months.
The prevalence rate of anxiety disorders in Atlantic County in the 12 months prior to Superstorm Sandy was 122.81 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 127.26 per 1,000 beneficiaries, reflecting a 3.62% relative increase.

This chart reflects trending of quarterly new incidence of anxiety disorders among Medicare FFS beneficiaries in Atlantic 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 Atlantic County in the 12 months prior to Superstorm Sandy was 30.22 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 29.83 per 1,000 beneficiaries, reflecting a 1.29% 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 Atlantic County.

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

The prevalence rate of PTSD in Atlantic County in the 12 months prior to Superstorm Sandy was 5.32 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 5.22 per 1,000 beneficiaries, reflecting a 1.88% relative decrease.

This chart reflects trending of quarterly new incidence of PTSD among Medicare FFS beneficiaries in Atlantic 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 Atlantic County in the 12 months prior to Superstorm Sandy was 42.99 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 39.79 per 1,000 beneficiaries, reflecting a 7.44% relative decrease.

**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 Atlantic 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 Atlantic County in the 12 months prior to Superstorm Sandy was 25.28 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 22.25 per 1,000 beneficiaries, reflecting a 11.99% relative decrease.

This chart reflects trending of quarterly new incidence of substance abuse alone among Medicare FFS beneficiaries in Atlantic 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 Atlantic County in the 12 months prior to Superstorm Sandy was 6.46 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 5.98 per 1,000 beneficiaries, reflecting a 7.43% relative decrease.

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

Atlantic County experienced an increase in Alzheimer's disease and related disorders or senile dementia 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 Atlantic 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 Atlantic County in the 12 months prior to Superstorm Sandy was 144.86 per 1,000 beneficiaries. After the storm, the rate decreased to 143.58 per 1,000 beneficiaries.
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 Atlantic 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

The prevalence rate of Medicare FFS beneficiaries with Alzheimer’s disease and related disorders or senile dementia in Atlantic County in the 12 months prior to Superstorm Sandy was 33.98 per 1,000 beneficiaries. After the storm, the rate increased to 34.73 per 1,000 beneficiaries.

Sleep Disturbance

The prevalence rate of Medicare FFS beneficiaries with sleep disturbance in Atlantic County in the 12 months prior to Superstorm Sandy was 26.86 per 1,000 beneficiaries. After the storm, the rate remained the same.
The prevalence rate of Medicare FFS beneficiaries with substance or alcohol abuse or tobacco use in Atlantic County in the 12 months prior to Superstorm Sandy was 89.34 per 1,000 beneficiaries. After the storm, the rate decreased to 88.23 per 1,000 beneficiaries.

The prevalence rate of Medicare FFS beneficiaries with hip/pelvic fractures in Atlantic County in the 12 months prior to Superstorm Sandy was 6.46 per 1,000 beneficiaries. After the storm, the rate decreased to 6.21 per 1,000 beneficiaries.
The prevalence rate of Medicare FFS beneficiaries with amputations in Atlantic County in the 12 months prior to Superstorm Sandy was 1.17 per 1,000 beneficiaries. After the storm, the rate increased to 1.20 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>
<tbody>
<tr>
<td></td>
<td>October 1, 2011 – September 30, 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td>1.12</td>
<td>59.05</td>
<td>7.14</td>
<td>3.22</td>
<td>1.03</td>
</tr>
<tr>
<td>Bergen</td>
<td>4.33</td>
<td>52.11</td>
<td>10.51</td>
<td>2.98</td>
<td><strong>0.42</strong></td>
</tr>
<tr>
<td>Cape May</td>
<td><strong>0.65</strong></td>
<td>48.03</td>
<td><strong>6.13</strong></td>
<td><strong>1.72</strong></td>
<td>0.70</td>
</tr>
<tr>
<td>Essex</td>
<td>0.83</td>
<td>58.40</td>
<td>8.28</td>
<td>5.48</td>
<td>0.53</td>
</tr>
<tr>
<td>Hudson</td>
<td>2.83</td>
<td>50.63</td>
<td>16.87</td>
<td>7.83</td>
<td>0.44</td>
</tr>
<tr>
<td>Middlesex</td>
<td>7.50</td>
<td>47.91</td>
<td>7.81</td>
<td>5.44</td>
<td>0.98</td>
</tr>
<tr>
<td>Monmouth</td>
<td>4.71</td>
<td>61.40</td>
<td>10.46</td>
<td>6.73</td>
<td>0.62</td>
</tr>
<tr>
<td>Ocean</td>
<td>9.49</td>
<td>54.28</td>
<td>9.75</td>
<td>3.37</td>
<td>0.59</td>
</tr>
<tr>
<td>Somerset</td>
<td>7.11</td>
<td>47.31</td>
<td>7.20</td>
<td>1.77</td>
<td>0.97</td>
</tr>
<tr>
<td>Union</td>
<td>3.02</td>
<td>46.81</td>
<td>9.47</td>
<td>4.32</td>
<td>0.61</td>
</tr>
<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>
<tr>
<td></td>
<td>October 1, 2012 – September 30, 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td>9.80</td>
<td>55.02</td>
<td>9.18</td>
<td>3.41</td>
<td>1.52</td>
</tr>
<tr>
<td>Bergen</td>
<td>9.31</td>
<td>46.64</td>
<td>11.06</td>
<td>3.28</td>
<td>0.40</td>
</tr>
<tr>
<td>Cape May</td>
<td><strong>0.68</strong></td>
<td>41.75</td>
<td><strong>5.93</strong></td>
<td><strong>2.05</strong></td>
<td>0.87</td>
</tr>
<tr>
<td>Essex</td>
<td>4.62</td>
<td>54.43</td>
<td>9.22</td>
<td>3.37</td>
<td>0.74</td>
</tr>
<tr>
<td>Hudson</td>
<td>8.53</td>
<td>45.28</td>
<td>18.28</td>
<td>9.14</td>
<td><strong>0.14</strong></td>
</tr>
<tr>
<td>Middlesex</td>
<td>9.41</td>
<td>39.11</td>
<td>8.19</td>
<td>5.61</td>
<td>0.80</td>
</tr>
<tr>
<td>Monmouth</td>
<td>10.90</td>
<td>54.64</td>
<td>10.56</td>
<td>5.95</td>
<td>0.41</td>
</tr>
<tr>
<td>Ocean</td>
<td>15.75</td>
<td>44.84</td>
<td>12.23</td>
<td>4.95</td>
<td>0.28</td>
</tr>
<tr>
<td>Somerset</td>
<td>18.28</td>
<td>42.43</td>
<td>10.23</td>
<td>3.88</td>
<td>0.50</td>
</tr>
<tr>
<td>Union</td>
<td>7.36</td>
<td>38.08</td>
<td>8.91</td>
<td>2.81</td>
<td>0.60</td>
</tr>
<tr>
<td>10 counties</td>
<td>10.01</td>
<td>46.52</td>
<td>10.67</td>
<td>4.60</td>
<td><strong>0.55</strong></td>
</tr>
</tbody>
</table>

* 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, Atlantic County still had the highest utilization of the health and behavior assessment/intervention. After the storm, Atlantic County had the highest utilization rate of the health and behavior assessment/intervention. Psychiatric diagnostic procedures utilization after the storm is the highest among all 10 counties, despite a 6.82% decrease.
Figure 48. Percent Change of Behavioral Health Service Utilization – Assessments per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th>Service</th>
<th>Atlantic County</th>
<th>10 County Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Depression screening*</td>
<td>1.12</td>
<td>4.81</td>
</tr>
<tr>
<td>Psychiatric Diagnostic Procedures</td>
<td>59.05</td>
<td>53.21</td>
</tr>
<tr>
<td>Neuropsychological Tests</td>
<td>7.14</td>
<td>9.47</td>
</tr>
<tr>
<td>Diagnostic Psychological Tests</td>
<td>3.22</td>
<td>4.32</td>
</tr>
<tr>
<td>Health and Behavior Assessment/Intervention</td>
<td>1.03</td>
<td>0.65</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 Atlantic County was 8.75 times 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 Atlantic 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 Atlantic County for calendar year 2012 was 1.12 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 9.80 per 1,000 beneficiaries, reflecting a 775.00% relative increase, the largest 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 Atlantic 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.
The color-coded map of Atlantic 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 Atlantic County in the 12 months prior to Superstorm Sandy was 3.22 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 3.41 per 1,000 beneficiaries.

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

The rate of health and behavior assessment/intervention in Atlantic County in the 12 months prior to Superstorm Sandy was 1.03 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 1.52 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 Atlantic County in the 12 months prior to Superstorm Sandy was 7.14 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 9.18 per 1,000 beneficiaries, reflecting a 28.57% 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 Atlantic County in the 12 months prior to Superstorm Sandy was 59.05 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 55.02 per 1,000 beneficiaries, reflecting a 6.82% relative decrease.
Therapies

Summary

In the 12 months prior to Superstorm Sandy, Atlantic County’s most utilized behavioral health therapy service was individual psychotherapy. After the storm, despite a 2.63% relative decrease, individual psychotherapy was still the most utilized and ranked the highest among the 10 counties. There was also an increase in the utilization of biofeedback and electroconvulsive therapy.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individual Psychotherapy</td>
<td>Family Psychotherapy</td>
</tr>
<tr>
<td>Atlantic</td>
<td>52.00</td>
<td>2.82</td>
</tr>
<tr>
<td>Bergen</td>
<td>62.79</td>
<td>4.20</td>
</tr>
<tr>
<td>Cape May</td>
<td>38.92</td>
<td>0.98</td>
</tr>
<tr>
<td>Essex</td>
<td>62.13</td>
<td>4.11</td>
</tr>
<tr>
<td>Hudson</td>
<td>56.96</td>
<td>5.04</td>
</tr>
<tr>
<td>Middlesex</td>
<td>53.33</td>
<td>3.07</td>
</tr>
<tr>
<td>Monmouth</td>
<td>53.48</td>
<td>3.56</td>
</tr>
<tr>
<td>Ocean</td>
<td>48.75</td>
<td>2.69</td>
</tr>
<tr>
<td>Somerset</td>
<td>57.17</td>
<td>3.82</td>
</tr>
<tr>
<td>Union</td>
<td>43.64</td>
<td>2.01</td>
</tr>
<tr>
<td>10 counties</td>
<td>54.44</td>
<td>3.41</td>
</tr>
</tbody>
</table>

In the 12 months prior to Superstorm Sandy, Atlantic County’s most utilized behavioral health therapy service was individual psychotherapy. After the storm, despite a 2.63% relative decrease, individual psychotherapy was still the most utilized and ranked the highest among the 10 counties. There was also an increase in the utilization of biofeedback and electroconvulsive therapy.
Enhancing Coordination of Behavioral Health Services after Superstorm Sandy: Planning for Future Disasters | Atlantic County

Figure 59. Percent Change of Behavioral Health Service Utilization – Therapies per 1,000 Medicare FFS Beneficiaries

<table>
<thead>
<tr>
<th>Service</th>
<th>Atlantic 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>Individual Psychotherapy</td>
<td>52.00</td>
<td>50.63</td>
</tr>
<tr>
<td>Family Psychotherapy</td>
<td>2.82</td>
<td>1.75</td>
</tr>
<tr>
<td>Group Psychotherapy</td>
<td>5.25</td>
<td>4.12</td>
</tr>
<tr>
<td>Biofeedback Therapy</td>
<td>0.58</td>
<td>0.83</td>
</tr>
<tr>
<td>Electroconvulsive Therapy</td>
<td>0.28</td>
<td>0.39</td>
</tr>
</tbody>
</table>

Similar to the 10 counties, Atlantic County experienced a decrease in individual, family, and group psychotherapy 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 Atlantic 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 61. Individual Psychotherapy Per 1,000 Medicare FFS Beneficiaries**

The rate of individual psychotherapy in Atlantic County in the 12 months prior to Superstorm Sandy was 52.00 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 50.63 per 1,000 beneficiaries, reflecting a 2.63% relative decrease.
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 Atlantic County in the 12 months prior to Superstorm Sandy was 2.82 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 1.75 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.6

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

The rate of group psychotherapy in Atlantic County in the 12 months prior to Superstorm Sandy was 5.25 per 1,000 Medicare FFS beneficiaries. After the storm, this rate decreased to 4.12 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.\textsuperscript{8}

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

The rate of ECT in Atlantic County in the 12 months prior to Superstorm Sandy was 0.28 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 0.39 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 Atlantic County in the 12 months prior to Superstorm Sandy was 0.58 per 1,000 Medicare FFS beneficiaries. After the storm, this rate increased to 0.83 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.

**Figure 66. Depression Screening* Claims for Medicare FFS Beneficiaries**

<table>
<thead>
<tr>
<th>Provider</th>
<th>1/1/12-12/31/12</th>
<th>10/1/12-9/30/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician</td>
<td>99.63%</td>
<td>97.92%</td>
</tr>
<tr>
<td>Nurse</td>
<td>0.37%</td>
<td>2.08%</td>
</tr>
<tr>
<td>Other</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

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

In calendar year 2012, 97.92% of depression screening claims were filed by physicians and 2.08% were filed by nurses. After the storm, 99.63% were filed by physicians and 0.37% were filed by others.

**Figure 67. Psychiatric Diagnostic Procedures Claims* for Medicare FFS Beneficiaries**

<table>
<thead>
<tr>
<th>Provider</th>
<th>10/1/11-9/30/12</th>
<th>10/1/12-9/30/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician</td>
<td>50.62%</td>
<td>46.90%</td>
</tr>
<tr>
<td>Psychologist</td>
<td>34.69%</td>
<td>30.41%</td>
</tr>
<tr>
<td>Nurse</td>
<td>12.47%</td>
<td>9.60%</td>
</tr>
<tr>
<td>Social Worker</td>
<td>8.49%</td>
<td>4.72%</td>
</tr>
<tr>
<td>Other</td>
<td>1.23%</td>
<td>0.88%</td>
</tr>
</tbody>
</table>

* 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, 50.62% of psychiatric diagnostic procedures claims were filed by physicians, 30.41% were filed by psychologists, 9.60% were filed by nurses, 8.49% were filed by social workers, and 0.88% were filed by others.

After the storm, 46.90% of psychiatric diagnostic procedures claims were filed by physicians, 34.69% were filed by psychologists, 12.47% were filed by social workers, 4.72% were filed by nurses, and 1.23% were filed by others.
In the 12 months prior to Superstorm Sandy, 68.33% of neuropsychological testing claims were filed by physicians, 29.33% were filed by psychologists, 0.59% were filed by nurses, and 1.76% were filed by others.

After the storm, 84.22% of neuropsychological testing claims were filed by physicians, 14.75% were filed by psychologists, 0.20% were filed by nurses, and 0.82% were filed by others.

In the 12 months prior to Superstorm Sandy, 20.46% of individual psychotherapy claims were filed by physicians, 46.87% were filed by psychologists, 1.11% were filed by nurses, 30.18% were filed by social workers, and 1.37% were filed by others.

After the storm, 11.38% of individual psychotherapy claims were filed by physicians, 47.27% were filed by psychologists, 0.43% were filed by nurses, 38.82% were filed by social workers, and 2.10% were filed by others.
**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.

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, Atlantic County had the highest utilization of acute care hospital admissions and emergency department visits. After the storm, Atlantic County still had the highest utilization of acute care hospital visits and emergency department visits, and also experienced an increase in observation stays.
Atlantic County experienced an increase in observation stays and a decrease in psychiatric and acute care hospital admissions as well as a decrease in emergency department visits.

**Figure 71. Percent Change of Inpatient Health Service Utilization per 1,000 Medicare FFS Beneficiaries**

<table>
<thead>
<tr>
<th></th>
<th>Atlantic County 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>Psychiatric Admissions</td>
<td>7.14</td>
<td>7.00</td>
<td>-1.96</td>
<td>8.48</td>
<td>7.94</td>
<td>-6.37</td>
</tr>
<tr>
<td>Acute Care Hospital Admissions</td>
<td>369.31</td>
<td>353.89</td>
<td>-4.18</td>
<td>318.07</td>
<td>301.66</td>
<td>-5.16</td>
</tr>
<tr>
<td>Emergency Department Visits</td>
<td>293.53</td>
<td>283.79</td>
<td>-3.32</td>
<td>246.11</td>
<td>236.31</td>
<td>-3.98</td>
</tr>
<tr>
<td>Observation Stays</td>
<td>16.80</td>
<td>19.01</td>
<td>13.15</td>
<td>11.95</td>
<td>12.86</td>
<td>7.62</td>
</tr>
</tbody>
</table>

This chart reflects annual trending in the utilization of inpatient health services among Medicare FFS beneficiaries in Atlantic 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 Atlantic County had an admissions rate of 7.14 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 7.00 per 1,000 beneficiaries, reflecting a 1.96% 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 Atlantic County had an acute care admissions rate of 369.31 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 353.89 per 1,000 beneficiaries, reflecting a 4.18% 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 Atlantic County had a rate of 16.80 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 19.01 per 1,000 beneficiaries, reflecting a 13.15% relative increase.
In the 12 months prior to Superstorm Sandy, emergency department visits in Atlantic County had a rate of 293.53 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 283.79 per 1,000 beneficiaries, reflecting a 3.32% 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.

Both before and after the storm, Atlantic County had the highest utilization of emergency department visits within 30 days of discharge compared to all 10 counties. After the storm, it also experienced an increase in observation stays within 30 days of discharge.
Atlantic County experienced a 17.02% relative increase in observation stays within 30 days of discharge, while the 10 County average change is only 1.79%.

This chart reflects annual trending in utilization of inpatient health services within 30 days of discharge among Medicare FFS beneficiaries in Atlantic County.
In the 12 months prior to Superstorm Sandy, acute care hospitals in Atlantic County had a 30-day readmissions rate of 75.20 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 67.00 per 1,000 beneficiaries, reflecting a 10.90% relative decrease.
In the 12 months prior to Superstorm Sandy, the rate of observation stays within 30 days of discharge in Atlantic County was 8.40 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 9.83 per 1,000 beneficiaries, reflecting a 17.02% relative increase.
In the 12 months prior to Superstorm Sandy, the rate of emergency department visits within 30 days of discharge in Atlantic County was 96.76 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 89.74 per 1,000 beneficiaries, reflecting a 7.26% 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.

<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><strong>October 1, 2011 – September 30, 2012</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td>98.05</td>
<td>63.88</td>
<td>28.03</td>
<td>13.98</td>
</tr>
<tr>
<td>Bergen</td>
<td>90.63</td>
<td>67.51</td>
<td>21.82</td>
<td>11.58</td>
</tr>
<tr>
<td>Cape May</td>
<td>96.10</td>
<td>67.91</td>
<td>29.91</td>
<td>7.80</td>
</tr>
<tr>
<td>Essex</td>
<td>80.76</td>
<td><strong>77.14</strong></td>
<td>20.15</td>
<td>9.78</td>
</tr>
<tr>
<td>Hudson</td>
<td>97.45</td>
<td>72.42</td>
<td>18.22</td>
<td>8.05</td>
</tr>
<tr>
<td>Middlesex</td>
<td>81.77</td>
<td>68.80</td>
<td>21.03</td>
<td>8.93</td>
</tr>
<tr>
<td>Monmouth</td>
<td>95.92</td>
<td>71.29</td>
<td>30.02</td>
<td>16.02</td>
</tr>
<tr>
<td>Ocean</td>
<td><strong>100.07</strong></td>
<td>76.53</td>
<td><strong>30.44</strong></td>
<td><strong>22.49</strong></td>
</tr>
<tr>
<td>Somerset</td>
<td>81.43</td>
<td>66.98</td>
<td>24.92</td>
<td>10.37</td>
</tr>
<tr>
<td>Union</td>
<td>84.17</td>
<td>69.48</td>
<td>20.56</td>
<td>9.15</td>
</tr>
<tr>
<td><strong>10 counties</strong></td>
<td><strong>90.55</strong></td>
<td>70.97</td>
<td>24.22</td>
<td>12.73</td>
</tr>
<tr>
<td><strong>October 1, 2012 – September 30, 2013</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td>95.47</td>
<td>61.94</td>
<td>28.70</td>
<td>13.51</td>
</tr>
<tr>
<td>Bergen</td>
<td>90.59</td>
<td>67.76</td>
<td>22.39</td>
<td>11.30</td>
</tr>
<tr>
<td>Cape May</td>
<td>92.41</td>
<td>65.30</td>
<td>28.34</td>
<td>7.53</td>
</tr>
<tr>
<td>Essex</td>
<td>79.82</td>
<td><strong>75.95</strong></td>
<td>20.12</td>
<td>9.30</td>
</tr>
<tr>
<td>Hudson</td>
<td>92.93</td>
<td>75.22</td>
<td>16.43</td>
<td>7.19</td>
</tr>
<tr>
<td>Middlesex</td>
<td>79.76</td>
<td>68.56</td>
<td>21.33</td>
<td>9.40</td>
</tr>
<tr>
<td>Monmouth</td>
<td>91.98</td>
<td>70.68</td>
<td>28.62</td>
<td>15.77</td>
</tr>
<tr>
<td>Ocean</td>
<td><strong>95.63</strong></td>
<td>73.51</td>
<td><strong>29.83</strong></td>
<td><strong>21.24</strong></td>
</tr>
<tr>
<td>Somerset</td>
<td>80.32</td>
<td>63.73</td>
<td>23.41</td>
<td>7.97</td>
</tr>
<tr>
<td>Union</td>
<td>79.35</td>
<td>67.61</td>
<td>21.48</td>
<td>9.40</td>
</tr>
<tr>
<td><strong>10 counties</strong></td>
<td><strong>87.91</strong></td>
<td>69.97</td>
<td>23.97</td>
<td>12.27</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, Atlantic County had the lowest utilization of skilled nursing facility services. After the storm, Atlantic County still had the lowest utilization of skilled nursing facility services and experienced an increase in the utilization of hospice services.
Atlantic County experienced a 2.39% relative increase in hospice services. Whereas the 10 counties experienced a decrease in all other health services.

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

<table>
<thead>
<tr>
<th>Service</th>
<th>Atlantic 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>98.05</td>
<td>95.47</td>
</tr>
<tr>
<td>Skilled Nursing Facility</td>
<td>63.88</td>
<td>61.94</td>
</tr>
<tr>
<td>Hospice</td>
<td>28.03</td>
<td>28.70</td>
</tr>
<tr>
<td>Medical Rehabilitation</td>
<td>13.98</td>
<td>13.51</td>
</tr>
</tbody>
</table>

This chart reflects annual trending in the utilization of other health services among Medicare FFS beneficiaries in Atlantic County.

**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 Atlantic County.
In the 12 months prior to Superstorm Sandy, the utilization rate of home health agency services in Atlantic County was 98.05 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 95.47 per 1,000 beneficiaries, reflecting a 2.63% relative decrease.
In the 12 months prior to Superstorm Sandy, the utilization rate of skilled nursing facility services in Atlantic County was 63.88 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 61.94 per 1,000 beneficiaries, reflecting a 3.04% 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 Atlantic County was 28.03 per 1,000 Medicare FFS beneficiaries. After the storm, the rate increased to 28.70 per 1,000 beneficiaries, reflecting a 2.39% relative increase.
In the 12 months prior to Superstorm Sandy, the utilization rate of medical rehabilitation services in Atlantic County was 13.98 per 1,000 Medicare FFS beneficiaries. After the storm, the rate decreased to 13.51 per 1,000 beneficiaries, reflecting a 3.36% relative decrease.
This page left intentionally blank
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, 31387, 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, 3010, 3020, 3021, 3022, 3023, 3029, 303, 3005, 30089, 309, 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, 30540, 30541, 30542, 30543, 30550, 30551, 30552, 30553, 30560, 30561, 30562, 30563, 30570, 30571, 30572, 30573, 30579, 30580, 30581, 30582, 30583, 30590, 30591, 30592, 30593, 64830, 64831, 64832, 64833, 64834, 65550, 65551, 65553, 76072, 76073, 76074, 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, 29300, 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, 30579, 30580, 30581, 30582, 30583, 30590, 30591, 30592, 30593, 64830, 64831, 64832, 64833, 64834, 65550, 65551, 65553, 76072, 76073, 76074, 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>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, 82038, 8209</td>
</tr>
<tr>
<td>Amputations</td>
<td>8870, 8871, 8872, 8873, 8874, 8875, 8876, 8877, 8860, 8961, 8962, 8963, 8970, 8971, 8972, 8973, 8974, 8975, 8976, 8977, 8979, 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 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>
</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>
</tr>
<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, 90821, 90822, 90823, 90824, 90826, 90827, 90828, 90829, 90837, 90838, 90839, 90840</td>
</tr>
<tr>
<td>Family Psychotherapy</td>
<td>90846, 90847</td>
</tr>
<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 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>
Appendix E: Time Frames and Formulae

<table>
<thead>
<tr>
<th>Time Frames</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarters</td>
<td>Dates</td>
</tr>
<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

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
APPENDIX G: REFERENCES


This page left intentionally blank
Executive Summary
Figure 1. Snapshot of Atlantic County

Demographics
Figure 2. Total Medicare FFS Beneficiaries by County
Figure 3. Percent of Medicare FFS Beneficiaries in the General Population in 2012
Figure 4. Percent of Medicare FFS Beneficiary Population by Female by County
Figure 5. Percent of Medicare FFS Beneficiary Population by Race by County
Figure 6. Percent of Medicare FFS Beneficiary Population by Age by County
Figure 7. 2012 Median Household Income (65 years and above)

Prevalence and Incidence
Figure 8. Annual Prevalence of Selected Behavioral Health Conditions
Figure 9. Percent Change of Prevalence of Selected Behavioral Health Conditions
Figure 10. Quarterly New Incidence Trend of Selected Behavioral Health Conditions:
          Depression or Proxy Disorders
Figure 11. Quarterly New Incidence Trend of Other Selected Behavioral Health Conditions
Figure 12. Annual Prevalence Trend of Selected Behavioral Health Conditions: Depression
          or Proxy Disorders
Figure 13. Annual Prevalence Trend of Other Selected Behavioral Health Conditions
Figure 14. Demographics of Depression or Proxy Disorders
Figure 15. Demographics of Depression or Proxy Disorders Rate
Figure 16. Depression or Proxy Disorders Rate by Race
Figure 17. Depression or Proxy Disorders Rate by Gender
Figure 18. Depression or Proxy Disorders Rate by Age Group
Figure 19. Depression or Proxy Disorders (Annual Prevalence, Annual Trend, and
          Percent Change)
Figure 20. Quarterly New Incidence of Depression or Proxy Disorders
Figure 21. Prevalence of Depression or Proxy Disorders in 10 Counties
Figure 22. Atlantic County Prevalence of Depression or Proxy Disorders
Figure 23. Depression (Annual Prevalence, Annual Trend, and Percent Change)
Figure 24. Quarterly New Incidence of Depression
Figure 25. Anxiety Disorders (Annual Prevalence, Annual Trend, and Percent Change)
Figure 26. Quarterly New Incidence of Anxiety Disorders
Figure 27. Adjustment Disorders (Annual Prevalence, Annual Trend, and Percent Change)
Figure 28. Quarterly New Incidence of Adjustment Disorders
Figure 29. PTSD (Annual Prevalence, Annual Trend, and Percent Change)
Figure 30. Quarterly New Incidence of PTSD
Figure 31. Alcohol or Substance Abuse (Annual Prevalence, Annual Trend, and
          Percent Change)
Figure 32. Quarterly New Incidence of Alcohol or Substance Abuse
Figure 33. Substance Abuse Alone (Annual Prevalence, Annual Trend, and Percent Change)
Figure 34. Quarterly New Incidence of Substance Abuse Alone
Figure 35. Suicide and Intentional Self-Inflicted Injury (Annual Prevalence, Annual
          Trend, and Percent Change)
Figure 36. Quarterly New Incidence of Suicide and Intentional Self-Inflicted Injury
Risk Factors for Depression or Proxy Disorders

Figure 37. Percent Change of Prevalence of the Top Five Risk Factors of Depression or Proxy Disorders 34
Figure 38. Annual Prevalence Trend for Risk Factors of Depression or Proxy Disorders 35
Figure 39. Annual Prevalence of Any of the Top Five Risk Factors for Depression or Proxy Disorders 35
Figure 40. Prevalence of Any of the Top Five Risk Factors for Depression or Proxy Disorders in 10 Counties 36
Figure 41. Atlantic County Prevalence of Any of the Top Five Risk Factors for Depression or Proxy Disorders 37
Figure 42. Annual Prevalence of Alzheimer’s Disease and Related Disorders or Senile Dementia 38
Figure 43. Annual Prevalence of Sleep Disturbance 38
Figure 44. Annual Prevalence of Substance or Alcohol Abuse or Tobacco Use 39
Figure 45. Annual Prevalence of Hip/Pelvic Fractures 39
Figure 46. Annual Prevalence of Amputations 40

Outpatient Behavioral Health Services

Assessments

Figure 47. Annual Utilization of Behavioral Health Assessment Services 41
Figure 48. Percent Change of Behavioral Health Service Utilization – Assessments 42
Figure 49. Annual Utilization Trend of Behavioral Health Assessment Services 42
Figure 50. Depression Screening (Annual Utilization, Annual Trend, and Percent Change) 43
Figure 51. Quarterly Depression Screening 43
Figure 52. Depression Screening in 10 Counties 44
Figure 53. Atlantic County Depression Screening 45
Figure 54. Diagnostic Psychological Tests (Annual Utilization and Annual Trend) 46
Figure 55. Health and Behavior Assessment/Intervention (Annual Utilization and Annual Trend) 47
Figure 56. Neuropsychological Tests (Annual Utilization, Annual Trend, and Percent Change) 48
Figure 57. Psychiatric Diagnostic Procedures (Annual Utilization, Annual Trend, and Percent Change) 49

Therapies

Figure 58. Annual Utilization of Behavioral Health Therapy Services 50
Figure 59. Percent Change of Behavioral Health Service Utilization – Therapies 51
Figure 60. Annual Utilization Trend of Behavioral Health Therapy Services 51
Figure 61. Individual Psychotherapy (Annual Utilization, Annual Trend, and Percent Change) 52
Figure 62. Family Psychotherapy (Annual Utilization and Annual Trend) 53
Figure 63. Group Psychotherapy (Annual Utilization and Annual Trend) 54
Figure 64. Electroconvulsive Therapy (Annual Utilization and Annual Trend) 55
Figure 65. Biofeedback Therapy (Annual Utilization and Annual Trend) 56
Types of Providers
Figure 66. Depression Screening Claims for Medicare FFS Beneficiaries 57
Figure 67. Psychiatric Diagnostic Procedures Claims for Medicare FFS Beneficiaries 57
Figure 68. Neuropsychological Tests Claims for Medicare FFS Beneficiaries 58
Figure 69. Individual Psychotherapy Claims for Medicare FFS Beneficiaries 58

Inpatient Services
Figure 70. Annual Utilization of Inpatient Health Services 59
Figure 71. Percent Change of Inpatient Health Service Utilization 60
Figure 72. Annual Utilization Trend of Inpatient Health Services 60
Figure 73. Psychiatric Hospital Admissions (Annual Utilization, Annual Trend, and Percent Change) 61

Acute Care Hospitals
Figure 74. Acute Care Hospital Admissions (Annual Utilization, Annual Trend, and Percent Change) 62
Figure 75. Observation Stays (Annual Utilization, Annual Trend, and Percent Change) 63
Figure 76. Emergency Department Visits (Annual Utilization, Annual Trend, and Percent Change) 64

Within 30 Days of Acute Care Hospital Discharge
Figure 77. Annual Utilization of Inpatient Health Services Within 30 Days of Discharge 65
Figure 78. Percent Change of Inpatient Health Service Utilization Within 30 Days of Discharge 66
Figure 79. Annual Utilization Trend of Inpatient Health Services Within 30 Days of Discharge 66
Figure 80. 30-Day Hospital Readmissions (Annual Utilization, Annual Trend, and Percent Change) 67
Figure 81. Observation Stays Within 30 Days of Discharge (Annual Utilization, Annual Trend, and Percent Change) 68
Figure 82. Emergency Department Visits Within 30 Days of Discharge (Annual Utilization, Annual Trend, and Percent Change) 69

Other Settings
Figure 83. Annual Utilization of Other Health Services 70
Figure 84. Percent Change of Other Health Services Utilization 71
Figure 85. Annual Utilization Trend in Other Health Services 71
Figure 86. Home Health Agency Services (Annual Utilization, Annual Trend, and Percent Change) 72
Figure 87. Skilled Nursing Facility Services (Annual Utilization, Annual Trend, and Percent Change) 73
Figure 88. Hospice Services (Annual Utilization, Annual Trend, and Percent Change) 74
Figure 89. Medical Rehabilitation Services (Annual Utilization, Annual Trend, and Percent Change) 75
This page left intentionally blank
557 Cranbury Road, Suite 21
East Brunswick, NJ 08816
T 732-238-5570 • F 732-238-7766
www.hqsi.org