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**SAMPLE**  
*2016 Cohort 19*  
**MEDICARE**  
**ADVANTAGE**  
**ORGANIZATION**

**BASELINE**  
**REPORT**

**Medicare Health**

**Outcomes Survey**

Centers  
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Advisory  
Group



DEPARTMENT OF HEALTH & HUMAN SERVICES  
Centers for Medicare & Medicaid Services  
7500 Security Boulevard  
Baltimore, Maryland 21244-1850



## CENTER FOR MEDICARE

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May 2017

Medicare Advantage Organizations,

The Centers for Medicare & Medicaid Services (CMS) is pleased to provide you with your Medicare Advantage Organization's (MAO) baseline results for *2016 Cohort 19* of the Medicare Health Outcomes Survey (HOS). The *2016 Cohort 19 Baseline* Report includes results from the Medicare HOS Version 3.0. CMS encourages MAOs to examine their results for use in quality improvement activities.

The HOS Baseline Report is distributed to help MAOs identify opportunities to improve their HOS results. Information on the HOS measures used in the Medicare Star Ratings, as well as additional resources to assist MAOs in their quality improvement efforts, are included in the report. The information indicates where beneficiaries are doing poorly, and identifies subgroups where the MAO performance differs from the national average for a specific measure.

For more program information, you may submit inquiries to [hos@HCQIS.org](mailto:hos@HCQIS.org), or contact Health Services Advisory Group (HSAG) through the HOS Information and Technical Support telephone line at (888) 880-0077, and you may visit the CMS HOS website at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/HOS/index.html>.

Sincerely,

Elizabeth Goldstein, PhD  
Director  
Division of Consumer Assessment & Plan Performance

# Medicare Health Outcomes Survey

## Sample MAO Report

The following is a **sample** version of the *Cohort 19 Baseline* Report made available to all Medicare Advantage Organizations (MAOs) participating in the *2016 Cohort 19 Baseline* Medicare Health Outcomes Survey.

The figures, tables, and text in this document contain example MAO and state level data; however, all references to the *HOS Total* reflect **actual** data.

The Medicare HOS Information and Technical Support Telephone Line (1-888-880-0077), and Email Address ([hos@HCQIS.org](mailto:hos@HCQIS.org)), are available to provide assistance with report questions and interpretation. A full description of the HOS program may be found at [www.HOSonline.org](http://www.HOSonline.org).

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## Executive Summary

This Medicare Health Outcomes Survey (HOS) Baseline Report presents aggregate results for Medicare Advantage Organizations (MAOs), as well as specific results for MAO HXXXXA based on data from the Medicare HOS 2016 Cohort 19 Baseline Survey. The 2016 Cohort 19 Baseline survey was fielded from April through June of 2016 and included a random sample of 537,259 beneficiaries, consisting of both the aged and disabled, from 459 MAOs. The number of beneficiaries represents a 4.9% decrease from the 565,150 beneficiaries sampled from 483 MAOs that participated in the HOS 2015 Cohort 18 Baseline Survey.

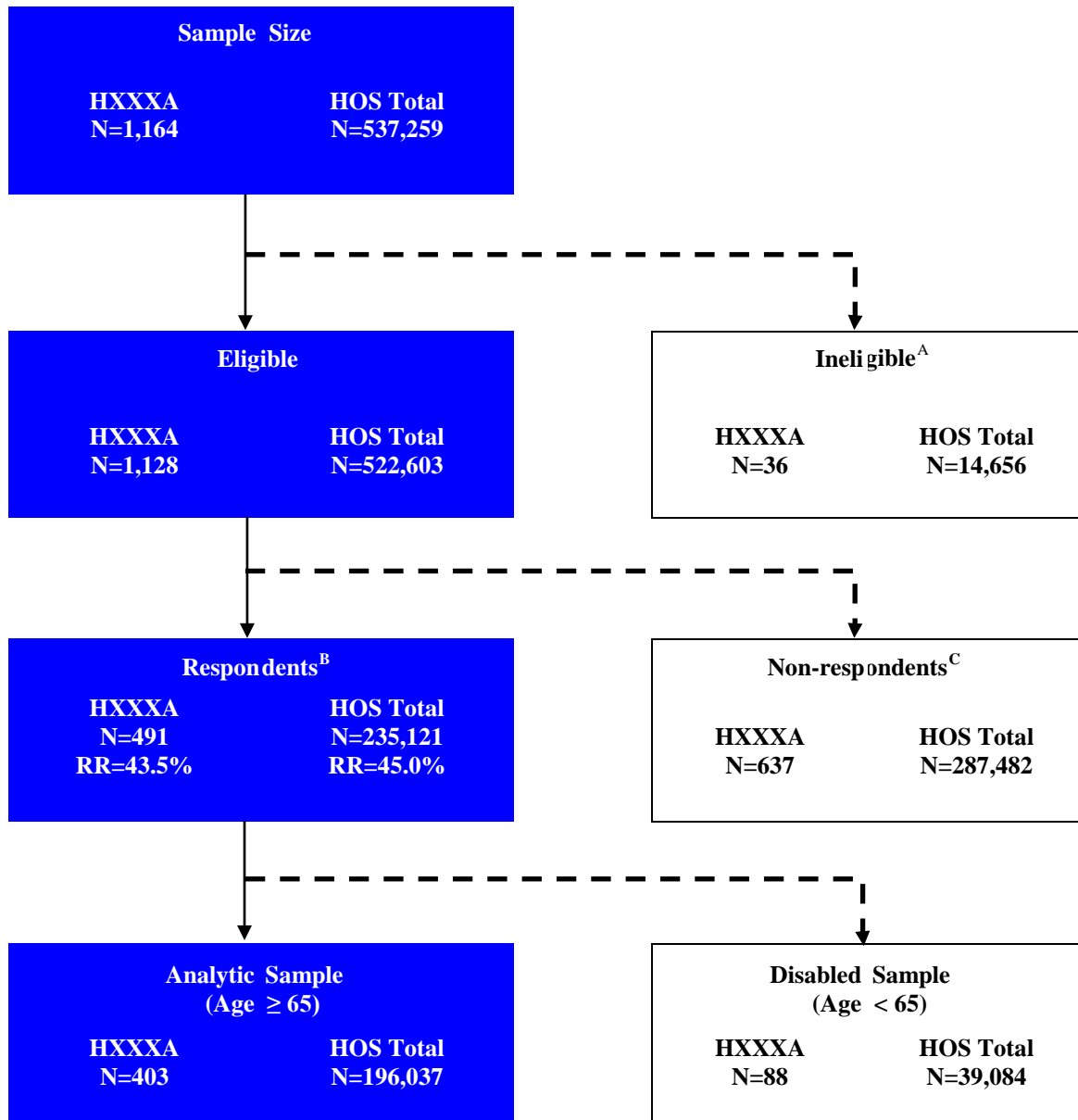
Figure 1 on the following page describes the distribution of the national HOS sample and the response rate for the HOS Total. Of the 537,259 beneficiaries originally sampled, 14,656 were determined to be ineligible during the survey administration. Ineligible beneficiaries met one of the following criteria: deceased; not enrolled in the MAO; had an incorrect address and phone number; had a language barrier; or were removed from the sample due to age less than 18 years. The exclusion of the ineligible beneficiaries from the total sample yields the Cohort 19 Baseline eligible sample of 522,603.

Of the total eligible sample, 235,121 (45.0%) completed the survey. For the purposes of this report, a completed survey is defined as one that could be used to calculate a physical component summary (PCS) score or mental component summary (MCS) score. Of those eligible and completing the survey, 196,037 were seniors ( $\geq 65$  years) who comprised the final 2016 Cohort 19 Baseline analytic sample. Respondents to this baseline cohort will be resurveyed for the Cohort 19 Follow Up Survey in the Spring/Summer of 2018. Results from the combined baseline and follow up surveys will be available in the 2016-2018 Cohort 19 Performance Measurement Report that is planned for distribution in the Summer of 2019.

The baseline results are intended to help MAOs identify areas for potential improvement and to identify areas where they are doing well. On the following pages of this Executive Summary, the reader will find MAO, state, and national results across key indicators of beneficiary health status. For instance, the baseline PCS and MCS scores are provided along with the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS<sup>®</sup>)<sup>1</sup> rates. In addition, trend results over three baseline cohorts are depicted in the MAO report for the summary scores and over three rounds of data for the HEDIS measures. Finally, this Executive Summary provides information about general and comparative health, healthy days, and obesity measures. More detailed information about the results is found in the Baseline Results and NCQA HEDIS Measures sections of the report.

For MAOs with a small number of respondents, caution should be exercised when drawing conclusions from the results throughout the HOS Baseline Report, as the sample size may be insufficient to allow meaningful interpretation. Note that the statistics for State and Region in any figures or tables are *not applicable* (NA) for Regional Preferred Provider Organizations (RPPO) and Private Fee-for-Service (PFFS) plans. For reporting purposes, these types of plans are not included in any specific State or Region numbers; however, they are included in the HOS Total number.

**Figure 1: 2016 Cohort 19 Baseline Distribution of the Sample and Response Rates for MAO HXXXXA and HOS Total**



<sup>A</sup> Deceased, not enrolled in MAO, incorrect address and phone, language barrier, or removed from sample due to age less than 18 years.

<sup>B</sup> Response Rate = [(Respondents/Eligible Sample) x 100%].

<sup>C</sup> Surveys for which PCS and MCS scores cannot be calculated.



## Summary Score Trends for MAO HXXXXA

### Physical and Mental Health Scores

The primary physical and mental health status measures for the HOS are the PCS and MCS scores.<sup>D</sup> These baseline scores (when combined with the two-year follow up scores and death status) are important components of the HOS results used for the Medicare Star Ratings for all MAOs.<sup>E</sup> In general, functional health status, as measured by the PCS score, is expected to decline over time in older age groups, while mental health status, as measured by the MCS score, may decline at a slower rate. The baseline PCS and MCS scores are case-mix adjusted to allow for equitable comparisons across all MAOs.<sup>F</sup> For the 2016 HOS national sample, a mean PCS score of 39.3 and a mean MCS score of 53.1 were calculated.

At the national level:

- The mean adjusted PCS score was highest for the 65-69 year age group with a mean PCS of 41.9. As expected, a steady decline with increasing age was pronounced for the physical health measure, with a mean PCS score of 40.3 for 70-74 year olds, 38.5 for 75-79 year olds, and 36.7 for 80-84 year olds. The lowest mean PCS score of 34.2 was calculated for those 85 or older.
- The mean adjusted MCS score was more consistent across age groups, with a mean score of 53.1 for 65-69 year olds, 53.4 for 70-74 year olds, and 53.3 for 75-79 year olds. The mean MCS score was slightly lower in the 80-84 year age group (52.9) and lowest among those 85 or older (52.1).

Table 1 presents the mean unadjusted and adjusted PCS and MCS scores for your MAO, the state, and HOS Total. The results presented in the table are from the *Cohort 19 Baseline* analytic sample. Additionally, in Appendix 3, Table 42 provides the mean unadjusted and adjusted PCS and MCS scores for all MAOs in your state, as well as the state and HOS Total. For detailed information about the scores, please refer to the Baseline Results section. Note that the baseline information summarized in this table is not suitable for MAO level comparisons, and should not be used for public release or marketing purposes.

**Table 1: 2016 Cohort 19 Baseline Mean Unadjusted and Adjusted PCS and MCS Scores for MAO HXXXXA, STXXXX and HOS Total<sup>†</sup>**

	Unadjusted PCS Score (SD)	Adjusted PCS Score (SD)	Unadjusted MCS Score (SD)	Adjusted MCS Score (SD)
HXXXXA	38.7 (12.4)	39.4 ( 7.1)	53.4 (10.4)	53.3 ( 5.4)
StateXX	39.4 (12.4)	39.5 ( 7.1)	53.5 (10.4)	53.4 ( 5.5)
HOS Total	39.3 (12.6)	39.3 ( 7.1)	53.1 (10.8)	53.1 ( 5.7)

<sup>†</sup>See Appendix 3, Table 42 results for all MAOs in the state.

<sup>D</sup> See Appendix 1 for more information about how PCS and MCS scores are derived from the HOS measure.

<sup>E</sup> For additional information, refer to the HOS and the Star Ratings section of this report.

<sup>F</sup> Case-mix adjustment is a statistical technique that controls for differences in demographics, socioeconomic characteristics, chronic medical conditions, and HOS study design variables.

Table 2 shows the trends in mean unadjusted and adjusted PCS and MCS scores for MAO HXXXXA over the most recent baseline cohorts, where available. The direction of these trends reflects the overall physical and mental health status of your MAO beneficiaries over time. While the demographics of your beneficiaries may change, negative trends indicate poorer health status across those questions comprising the PCS and MCS scores.

**Table 2: Trends in Mean Unadjusted and Adjusted PCS and MCS Scores over Three Baseline Cohorts for MAO HXXXXA**

	Unadjusted PCS Score (SD)	Adjusted PCS Score (SD)	Unadjusted MCS Score (SD)	Adjusted MCS Score (SD)
2016 Cohort 19	38.7 (12.4)	39.4 (7.1)	53.4 (10.4)	53.3 (5.4)
2015 Cohort 18	40.8 (12.2)	40.2 (6.7)	52.7 (11.2)	53.6 (5.4)
2014 Cohort 17	39.3 (12.6)	39.3 (7.0)	51.0 (11.3)	51.4 (6.0)

NA in a row indicates that the MAO did not have results for that cohort.

Please note: There were changes to the survey format beginning with the 2015 HOS 3.0 that have resulted in increases in MCS scores for the *Cohort 19 Baseline* mail mode administration.

## NCQA HEDIS Measure Trends for MAO HXXXXA

Four 2016 NCQA HEDIS Effectiveness of Care measures are collected for HOS seniors. Components of these HEDIS measures will be incorporated into the 2018 Medicare Star Ratings, which will be used as the basis for quality bonus payments in 2019. Table 3 depicts the mean rates for the four HEDIS measures for your MAO, the state, CMS Region, and the HOS Total. These results are from the combined Cohort 19 Baseline and Cohort 17 Follow Up data collected in 2016; i.e., a round of data. A HEDIS rate of *not applicable* (NA) indicates the rate was not calculated; see the NCQA HEDIS Measures section for more information. Additionally, in Appendix 3, Table 43 provides the HEDIS measures for all MAOs in your state, and HOS Total. Note that state and region results are *not applicable* (NA) for RPPO and PFFS plans.

**Table 3: 2016 NCQA HEDIS Rates for MAO HXXXXA, STXXXX, CMS Region XX and HOS Total<sup>†</sup>**

	MUI Discuss Rate	MUI Treat Rate*	MUI Impact Rate	PAO Discuss Rate	PAO Advise Rate*	FRM Discuss Rate	FRM Manage Rate*	OTO Testing Rate
HXXXXA	56.14%	44.12%	14.29%	55.87%	50.40%	31.93%	56.93%	77.06%
StateXX	58.10%	44.66%	15.34%	55.81%	50.68%	34.29%	58.20%	76.18%
CMS Region XX	57.76%	44.59%	14.99%	55.46%	50.54%	34.17%	57.97%	76.13%
HOS Total	58.21%	44.70%	15.57%	54.65%	50.90%	35.25%	58.58%	74.27%

\* Measures incorporated into the 2018 Medicare Star Ratings include the MAO 2016 Improving Bladder Control (MUI Treat Rate), Monitoring Physical Activity (PAO Advise Rate), and Reducing the Risk of Falling (FRM Manage Rate).

<sup>†</sup>See Appendix 3, Table 43 results for all MAOs in the state.

**Note:** The MAO Improving Bladder Control measure was revised in 2015 and was not reported in the 2016 or 2017 Medicare Star Ratings; however, the revised measure will be reported in the 2018 Medicare Star Ratings. The Osteoporosis Testing in Older Women display measure was also revised in 2015 (see the NCQA HEDIS Measures section).

The results in Table 4 show the trends in HEDIS results for your MAO over the current and previous two rounds, where available. Consider the direction of these trends when implementing preventative health interventions and care management efforts to improve HEDIS results. If the trend is in a negative direction across any of these HEDIS results, your MAO may consider allocating resources to address the causes of the decline and monitor future performance.

**Table 4: Trends in NCQA HEDIS Rates over Three Rounds of Data for MAO HXXXXA**

	MUI Discuss Rate	MUI Treat Rate*	MUI Impact Rate	PAO Discuss Rate	PAO Advise Rate*	FRM Discuss Rate	FRM Manage Rate*	OTO Testing Rate
2016 Round 19	56.14%	44.12%	14.29%	55.87%	50.40%	31.93%	56.93%	77.06%
2015 Round 18	58.90%	46.63%	14.77%	56.00%	50.59%	32.81%	56.59%	76.81%
2014 Round 17	58.99%	35.59%	NA	57.67%	50.87%	31.25%	57.64%	78.22%

\* Measures incorporated into the 2018 Medicare Star Ratings include the MAO 2016 Improving Bladder Control (MUI Treat Rate), Monitoring Physical Activity (PAO Advise Rate), and Reducing the Risk of Falling (FRM Manage Rate). NA in a row indicates that the MAO did not have results for that round.

**Note:** The MAO Improving Bladder Control measure was revised in 2015 and was not reported in the 2016 or 2017 Medicare Star Ratings; however, the revised measure will be reported in the 2018 Medicare Star Ratings. The Osteoporosis Testing in Older Women display measure was also revised in 2015 (see the NCQA HEDIS Measures section).

## Health Status Trends for MAO HXXXXA

The *2016 Cohort 19 Baseline* Report includes results for the Medicare population across different indicators of health: general health, comparative physical health, and comparative mental health. The indicator of general self-rated health is used in the calculation of PCS and MCS scores. The comparative health indicators are considered foundational measures of health-related quality of life (HRQOL), and are tracked by the Federal Government as part of the national Healthy People Health-Related Quality of Life 2020 Goals.<sup>2</sup>

Table 5 describes results for the general and comparative health status of beneficiaries in your MAO, the state, and HOS Total. Beneficiaries who indicated that their general health was “Fair” or “Poor,” or that their physical or mental health was “Slightly Worse” or “Much Worse” compared to one year ago may assume greater risk for mortality.<sup>3</sup> Thus, self-rated health status questions are sentinel indicators of underlying health problems that require effective identification and treatment.

**Table 5: 2016 Cohort 19 Baseline Self-Rated General and Comparative Health Status for MAO HXXXXA, STXXXX and HOS Total**

	General Health		Comparative Physical Health		Comparative Mental Health	
	Excellent to Good*	Fair or Poor	Much Better to About the Same*	Slightly Worse or Much Worse	Much Better to About the Same*	Slightly Worse or Much Worse
HXXXXA	71.5%	28.5%	74.3%	25.7%	88.2%	11.8%
StateXX	72.5%	27.5%	74.8%	25.2%	88.7%	11.3%
HOS Total	71.8%	28.2%	74.0%	26.0%	87.5%	12.5%

\* Categories for general health included “Excellent,” “Very good,” or “Good.” Categories for comparative health included “Much better,” “Slightly better,” or “About the same.”

Table 6 shows the results of general and comparative health status for your MAO over the current and previous two baseline cohorts, where available. These trends may change over time based on the composition of your MAO beneficiary population. Nevertheless, self-rated health status questions may help your MAO anticipate future health outcomes and health care utilization of your beneficiary population. Negative trends indicate a decline in perceived health status that may be influenced by current or future disease or injury outcomes.

**Table 6: Trends in Self-Rated General and Comparative Health Status Over Three Baseline Cohorts for MAO HXXXXA**

	General Health		Comparative Physical Health		Comparative Mental Health	
	Excellent to Good*	Fair or Poor	Much Better to About the Same*	Slightly Worse or Much Worse	Much Better to About the Same*	Slightly Worse or Much Worse
2016 Cohort 19	71.5%	28.5%	74.3%	25.7%	88.2%	11.8%
2015 Cohort 18	75.2%	24.8%	72.1%	27.9%	86.0%	14.0%
2014 Cohort 17	68.7%	31.3%	71.7%	28.3%	84.2%	15.8%

\* Categories for general health included “Excellent,” “Very good,” or “Good.” Categories for comparative health included “Much better,” “Slightly better,” or “About the same.”

NA in a row indicates that the MAO did not have results for that cohort.

Table 7 illustrates the percentage of beneficiaries with 14 or more days of poor physical health, poor mental health, and days of activity limitations in the past 30 days for your MAO, the state, and HOS Total. In general, 14 or more days of poor health or activity limitations are considered indicative of poor well-being.<sup>4</sup> These HRQOL measures help identify vulnerable sub-populations with the greatest risk for disease or injury.

**Table 7: 2016 Cohort 19 Baseline Healthy Days Measures for MAO HXXXXA, STXXXX and HOS Total**

	14 or More Days of Poor Physical Health	14 or More Days of Poor Mental Health	14 or More Days of Activity Limitations
HXXXXA	22.4%	9.5%	13.6%
StateXX	20.1%	11.5%	12.8%
HOS Total	20.8%	12.0%	14.5%

Table 8 below describes the Healthy Days results for your MAO over the current and previous two baseline cohorts, where available. Your MAO may consider using these HRQOL indicators as tools to evaluate the distal or environmental factors that influence health (i.e., access to care and social support).<sup>4</sup> The health status of your beneficiaries may improve as these broader influences on health are incorporated into quality improvement efforts.

**Table 8: Trends in Healthy Days Measures over Three Baseline Cohorts for MAO HXXXXA**

	14 or More Days of Poor Physical Health	14 or More Days of Poor Mental Health	14 or More Days of Activity Limitations
2016 Cohort 19	22.4%	9.5%	13.6%
2015 Cohort 18	19.0%	12.2%	12.4%
2014 Cohort 17	20.5%	13.5%	15.5%

NA in a row indicates that the MAO did not have results for that cohort.

Table 9 depicts the distribution of Body Mass Index (BMI)<sup>G</sup> for beneficiaries in your MAO, the state, and HOS Total. Healthy People 2020 set a target of at least 33% of adults to be at a normal body weight.<sup>5</sup> Underweight and obesity are threats to the health status of older adults. Underweight in the elderly is usually caused by disease and acts as an effect modifier on the relationship between aging and muscle loss. Rapid unintentional weight loss hastens the muscle loss usually associated with increasing age.<sup>6</sup> On the other hand, obesity increases the risk for chronic diseases such as hypertension and type-2 diabetes. According to an analysis of obesity prevalence in MAOs, beneficiaries who were obese accounted for significantly poorer health outcomes and higher utilization of health care services when compared to beneficiaries who were overweight.<sup>7</sup> Helping beneficiaries maintain a healthy weight may increase their quality of life and reduce health care expenditures.

**Table 9: 2016 Cohort 19 Baseline BMI Measures for MAO HXXXXA, STXXXX and HOS Total**

	Underweight (BMI <20)	Normal Weight (BMI 20 to 24.99)	Overweight (BMI 25 to 29.99)	Obese (BMI ≥30)
HXXXXA	3.9%	26.2%	35.9%	34.0%
StateXX	5.3%	25.3%	37.6%	31.8%
HOS Total	4.8%	26.2%	37.2%	31.7%

Table 10 illustrates the distribution of BMI categories for your MAO over the current and previous two baseline cohorts, where available. National trends show increasing rates of obesity across all the United States.<sup>8</sup> Although the composition of your MAO beneficiaries may change from year to year, these trend data allow your MAO to monitor the direction of the prevalence of obesity within your beneficiary population. Successful efforts to move beneficiaries into the normal weight category may reduce the incidence of negative health outcomes directly linked to either underweight or obesity.

**Table 10: Trends in BMI Measures over Three Baseline Cohorts for MAO HXXXXA**

	Underweight (BMI <20)	Normal Weight (BMI 20 to 24.99)	Overweight (BMI 25 to 29.99)	Obese (BMI ≥30)
2016 Cohort 19	3.9%	26.2%	35.9%	34.0%
2015 Cohort 18	4.2%	24.9%	42.4%	28.6%
2014 Cohort 17	6.4%	31.0%	35.6%	26.9%

NA in a row indicates that the MAO did not have results for that cohort.

<sup>G</sup> BMI is calculated as:  $BMI = [\text{weight in pounds} / (\text{height in inches})^2] \times 703$ , which uses the height and weight to produce the standard measure of  $\text{kg}/\text{m}^2$  units.

## Reader's Guide

The Reader's Guide is provided to assist Medicare Advantage Organizations (MAOs) use their Medicare Health Outcomes Survey (HOS) Baseline Report information effectively. This section will guide the reader to identify key topics, such as the CMS Medicare Star Ratings, and answer general questions about the reports and data. For further assistance, please refer to the Technical Assistance information below. Additionally, the What's New section in this report has information about new website content, webinars, and HOS program updates.

### Technical Assistance

The Medicare HOS Information and Technical Support Telephone Line (1-888-880-0077) and Email Address ([hos@HCQIS.org](mailto:hos@HCQIS.org)) are available to provide assistance with report questions and interpretation. Additionally, the CMS HOS website provides general information on the program (<https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/HOS/index.html>). A full description of the HOS program is available at [www.HOSonline.org](http://www.HOSonline.org).

### How to Use the Information Contained in this Report

The reports are designed to assist MAOs in identifying opportunities to reduce health disparities and explore potential programmatic interventions aimed at maintaining or improving the overall health of their Medicare population. Health status indicators are displayed within demographic groups to emphasize where beneficiaries are doing poorly. This additional detail is included to help plans identify potential areas for further investigation.

### What information can I find in this Baseline Report?

A random sample of Medicare beneficiaries is drawn from each participating MAO and surveyed every spring (i.e., the HOS questionnaire is administered to a different baseline cohort, or group, each year). The results for key health indicators derived from the HOS are provided in the report. Please refer to the description of each report section below and to the Table of Contents for the specific section pages.

- **Executive Summary:** highlights the sample distribution and response rates. MAO, state, and national results across key indicators, including physical and mental health summary measures, Healthcare Effectiveness Data and Information Set (HEDIS<sup>®</sup>)<sup>1</sup> Effectiveness of Care measures, and other general and comparative health indicators are provided. Trend tables for select measures over the most recent three cohorts are also provided in the MAO reports.
- **What's New in the HOS:** introduces new and updated HOS program information, self-paced training webinars, and website resources for MAOs and other data users.
- **HOS and the Star Ratings:** discusses the HOS measures that are currently used by CMS for the Medicare Star Ratings. Two of the HOS measures are reported in the HOS Performance Measurement Report: *Improving or Maintaining Physical Health* and *Improving or Maintaining Mental Health*. The three measures that are reported in the HOS Baseline Report include the following: *Improving Bladder Control*, *Monitoring*

*Physical Activity*, and *Reducing the Risk of Falling*. Please note that the MAO *Improving Bladder Control* (MUI Treat Rate) measure was revised in 2015 and was not reported in the 2016 or 2017 Medicare Star Ratings; however, the revised measure will be reported in the 2018 Medicare Star Ratings. Beginning with the 2012 Medicare Star Ratings, the *Osteoporosis Testing in Older Women* measure was moved to the display measures on the CMS website and is not part of the Star Ratings.

- **2016 Cohort 19 Baseline Results:** provides results for the MAO and national HOS Total analytic samples including a summary of the number of participating beneficiaries, the response rates, and demographic information. Detailed results are also provided for key health indicators derived from the HOS, such as physical component summary (PCS) and mental component summary (MCS) scores, General Health and Comparative Health, Depression, Pain, Chronic Medical Conditions, Activities of Daily Living (ADLs), Healthy Days Measures, Body Mass Index (BMI) and Sleep Measures. In this section, demographic tables compare the MAO to the HOS Total, where estimates highlighted in **red** indicate groups in the MAO that are worse off than the overall HOS sample.
- **2016 NCQA HEDIS Measures:** includes information about the following HEDIS Effectiveness of Care measures: *Management of Urinary Incontinence in Older Adults*, *Physical Activity in Older Adults*, *Fall Risk Management*, and *Osteoporosis Testing in Older Women*. Data values are provided to the second decimal place for HEDIS rates since specific elements of these measures are used in the Medicare Star Ratings.
- **Appendix 1:** provides a description of the program, sampling methodology, survey administration, and the HOS 3.0 instrument. Information is included about the questions used in the calculation of PCS and MCS scores, and case-mix adjustment of the scores.
- **Appendix 2:** displays graphs for selected survey questions. Please note that the percentages in the graphs may not add to 100% due to rounding.
- **Appendix 3:** provides two additional tables that report PCS and MCS scores, and HEDIS rates for all MAOs in the state, the state, and HOS Total.
- **References:** lists journal articles, technical reports, and website references that are provided throughout the report.

### **Where can I find additional HOS Program information, such as sampling methodology, and timelines for the reporting and data distribution?**

An overview of the HOS Program, the sampling schedule, and program timelines, are available on the Program page of the HOS website. A table of MAO report and data distribution is provided on the Data page of the website.

### **Are HOS measures part of the CMS Medicare Star Ratings?**

HOS measures are included in the Medicare Star Ratings, which CMS developed to provide consumer information about MAOs and to reward high performing health plans. CMS displays MAO information in the Medicare Plan Finder (MPF) tool on the <http://www.medicare.gov/find-a-plan> website and awards quality bonus payments to high performing health plans. For information about the Star Ratings, refer to the HOS and the Star Ratings section in this report.

### **How are the Baseline Reports distributed?**

All reports are distributed electronically to participating MAOs through the CMS Health Plan Management System (HPMS), which requires an HPMS User ID. The HOS Baseline Reports are distributed in a ZIP file one year after data collection. Downloads include the PDF report and the summary-level data in a CSV file that can be opened in Excel and contains contract-level survey responses, demographic data, and the HEDIS rates from the Medicare Star Ratings. If assistance is required regarding HPMS access, please contact CMS at [hpms\\_access@cms.hhs.gov](mailto:hpms_access@cms.hhs.gov).

### **When will MAOs receive beneficiary level data for *Cohort 19 Baseline*?**

The merged baseline and follow up beneficiary level data will be distributed to the MAOs in the Fall of 2019, after completion of the 2018 follow up survey and the release of the *2016-2018 Cohort 19 Performance Measurement Report* in 2019. MAOs are notified via the HPMS about the availability of their merged data and how to request it.

### **Where can I find overall survey results information for earlier HOS cohorts that can be compared to the information in this report?**

The Survey Results section under the Survey page on the HOS website provides a table depicting general status information at the national HOS level, including sample sizes, completed surveys, and response rates, for the baseline and follow up cohorts administered and reported to date. Participating MAOs may also access their earlier reports through the HPMS.

### **Need More Help?**

- MAOs are encouraged to contact the HOS Technical Support Team at Health Services Advisory Group at [hos@HCQIS.org](mailto:hos@HCQIS.org) with questions.
- Additional information about peer-reviewed articles, technical reports, and manuals related to the HOS is available on the Resources page of the HOS website ([www.HOSonline.org](http://www.HOSonline.org)). Consult the Home page for a listing of new reports and general updates.
- A glossary consisting of definitions relevant to the Medicare HOS may be accessed from the “Glossary” link at the bottom of site webpages.
- The 2016 HOS 3.0 questionnaire may be downloaded from the Survey page of the HOS website. In addition, the HOS questionnaire is found in the NCQA HEDIS 2016, Volume 6 Specifications for the Medicare Health Outcomes Survey Manual on the HOS website.<sup>9</sup> The manual is now available online for download from the Survey Administration section under the Program page. Copies of other HEDIS Volume 6 publications may also be purchased by calling the NCQA Customer Support Telephone Line at 1-888-275-7585 or via NCQA’s Secure Online Order Center ([www.ncqa.org](http://www.ncqa.org)).



## What's New in the HOS

### Implementation of HOS 3.0

The 2016 survey administration used the HOS 3.0 that was implemented in 2015. Like the previous versions (HOS 2.0 and 2.5), the HOS 3.0 uses the Veterans RAND 12-Item Health Survey (VR-12) as the core physical and mental health outcomes measures, and the four HEDIS Effectiveness of Care measures are the *Management of Urinary Incontinence in Older Adults*, *Physical Activity in Older Adults*, *Fall Risk Management*, and *Osteoporosis Testing in Older Women*. Modifications from the HOS 2.5 included: changes to questions about leakage of urine, osteoporosis testing in older women, sleep duration and quality, and primary language spoken in the home. In 2015, a formatting change in the survey uses a two column layout for each page. The 2016 HOS 3.0 is available on the Survey page of the HOS website ([www.HOSonline.org](http://www.HOSonline.org)).

### HOS Website Enhancements

To improve access, usability, and function, the HOS website has been migrated to an improved web content management platform with site design and navigability enhancements.

The HOS website is a resource that provides:

- Historical overview of the project
- Updates on project activities
- Reports of ongoing research efforts
- Access to public use files and supporting documentation
- Clearinghouse of electronic information about journal articles, bibliographies, and technical reports relating to the HOS
- Links to project partners

### Semi-Annual HOS Newsletters

The HOS Newsletters contain information about HOS products, services, and timelines; program updates; self-paced training programs; and other relevant topics, such as sharing of best practices. HOS Newsletters are circulated semi-annually via email, in winter and summer, to MAO contacts and users of the HOS technical support, and are posted on the HOS website. If you would like to receive the HOS Newsletters, contact the HOS Information and Technical Support team at [hos@HCQIS.org](mailto:hos@HCQIS.org).

### CMS Approved Survey Vendors

The Survey Vendors section under the Program page on the HOS website provides a list of CMS approved survey vendors. There are six survey vendors approved to administer the HOS.

## Frequently Asked Questions (FAQs)

The “FAQs” link at the bottom of site webpages ([www.HOSonline.org](http://www.HOSonline.org)) provides answers to frequently asked questions about the Medicare HOS. Examples are questions about where to find the current survey administration documents and HOS questionnaires, how MAOs may obtain their reports and data, and where to find quality improvement ideas. Information is also provided about the types of files available for researchers and how to obtain the files.

## Self-Paced Training Webinars

A series of basic to advanced self-paced training webinars are available on the HOS website. The webinars run approximately 30 minutes in length and may be accessed at any time at the convenience of the user. To access the webinars, go to the Trainings section under the Resources page on the HOS website.

- **Introduction to the Medicare Health Outcomes Survey (HOS):** a basic training session appropriate for MAOs that are new to the HOS or those wanting to obtain an overview of the HOS. In addition, the introductory training program provides some practical guidance about how to obtain HOS reports and data.
- **Getting the Most from Your Medicare Health Outcomes Survey (HOS) Baseline Report:** an intermediate training session that builds on the information from the basic tutorial described above. The training discusses maximizing the use of the HOS Baseline Report to provide information on the health of beneficiaries and incorporating chronic care improvement programs (CCIPs) in quality improvement activities.
- **Using Your Medicare Health Outcomes Survey (HOS) Data:** an intermediate training session assisting MAOs with using their HOS data to identify priorities and assess the impact of interventions. It also demonstrates the advantages of linking HOS data with your own MAO data.
- **Understanding the Medicare Health Outcomes Survey (HOS) Performance Results Used in the MA Plan Ratings:** an advanced training session describing the methodology used in calculating the Performance Measurement Results. The tutorial discusses the primary health outcomes collected from the survey, the PCS and MCS scores, and how they are used to describe changes in the functional status of MAO beneficiaries over a two-year period. It also discusses how the HOS results are used in the MA Plan Ratings, also called the Medicare Star Ratings.

## Veterans RAND 12-Item Health Survey (VR-12) Website

Information about the VR-36, VR-12, and VR-6D instruments is available on the Boston University School of Public Health website. The website offers details on development, applications, and references for the VR-12, which is the core health outcomes measure in the Medicare HOS and HOS-M. For information about the instruments and to request permission to use the documentation and scoring algorithms, go to: <http://www.bu.edu/sph/research/research-landing-page/vr-36-vr-12-and-vr-6d>.

## **National Cancer Institute (NCI) SEER-MHOS Linked Data Sets**

The Surveillance, Epidemiology, and End Results (SEER) and the Medicare Health Outcomes Survey (MHOS) linked data sets are available for researchers. The data sets contain data from cancer patient surveillance linked with patient-reported outcome measures. These data provide researchers with the potential to investigate the health status and Health-Related Quality of Life (HRQOL) of older adults enrolled in MAOs with and without a cancer diagnosis. The SEER-MHOS data sets include SEER data linked with HOS data from baseline and follow up surveys collected during the same time period. Direct person identifiers (i.e., name, address, SSN, and the Medicare Health Insurance Claim number) and plan identifiers (i.e., contract number and plan name) are removed from the linked datasets. Researchers who are interested in using this linked data in their investigations may go to the following website for information:

<https://healthcaresdelivery.cancer.gov/seer-mhos>.

## HOS and the Star Ratings

### Medicare Star Ratings

CMS developed the Medicare Star Ratings to help consumers compare health plans and providers based on quality and performance; to make accurate data more transparent and standardized among plans; and to reward top-performing health plans. Consumers can use the Medicare Plan Finder (MPF) tool ([www.medicare.gov/find-a-plan](http://www.medicare.gov/find-a-plan)) to search for health plans in their geographic area and compare cost estimates and coverage information. CMS rates the relative quality of service and care provided by MAOs based upon a five-star ratings scale that uses HOS measures combined with other measurement results. Up to 47 unique quality measures are included in the 2017 Medicare Part C and D Star Ratings. These measures include: providing preventive services, managing chronic illness, access to care, HEDIS measures, the Consumer Assessment of Healthcare Providers and Systems (CAHPS<sup>®</sup>) survey, and responsiveness.

The Medicare Part C Star Ratings include five contract level HOS measures: two measures of functional health and three HEDIS Effectiveness of Care measures. The HEDIS Effectiveness of Care measure *Improving Bladder Control* was not reported in the 2016 and 2017 Medicare Star Ratings due to revisions to the measure; however, the revised measure will be reported in the 2018 Medicare Star Ratings.

The functional health measures are reported in each MAO's annual HOS Performance Measurement Report. The results are derived from the (VR-12) portion of the HOS, which serves as the core source for the PCS and MCS scores. The final measures are based on the case-mix adjusted PCS and MCS change scores between baseline and follow up surveys, as well as death status. The *Improving or Maintaining Physical Health* measure is the "Physical Health Percent Better or Same" result in the Performance Measurement Report, and the *Improving or Maintaining Mental Health* measure is the "Mental Health Percent Better or Same" result.

The HEDIS Effectiveness of Care measures are reported in each MAO's annual HOS Baseline Report. These measures are calculated from questions about information and care beneficiaries receive from their healthcare providers, using data for the baseline and follow up cohorts from the same measurement year (i.e., a round of data). Beneficiary responses are used to derive the HEDIS measures: Management of Urinary Incontinence in Older Adults, Physical Activity in Older Adults, Fall Risk Management, and Osteoporosis Testing in Older Women. CMS uses three components of these four measures for the Medicare Star Ratings. Further information is available in the NCQA HEDIS Measures section of the HOS Baseline Report:

- *Improving Bladder Control* is the Treatment of Urinary Incontinence rate (not reported in 2016 or 2017 ratings; revised measure reported in 2018 ratings)
- *Monitoring Physical Activity* measure is the Advising Physical Activity rate
- *Reducing the Risk of Falling* measure is the Managing Fall Risk rate

## 2017 and 2018 Medicare Part C Star Ratings

The HOS cohorts related to data collection, report dissemination, and CMS Medicare Part C Star Ratings results are provided in the Medicare HOS Survey Administration Timeline Table below. This information will guide MAOs in understanding the sources of data used for specific Medicare Star Ratings Measures.

The 2017 Medicare Part C Star Ratings will be used by CMS as the basis for quality bonus payments to reward high performing contracts in the MA program in the 2018 quality bonus payment year. The 2018 quality bonus payments are based on two HOS datasets (refer to the **green** highlighted section in the table below). For instance, the HOS *2013-2015 Cohort 16 Merged Baseline and Follow Up* dataset was used for the two PCS and MCS functional health measures, and the combined *2015 Cohort 18 Baseline and 2015 Cohort 16 Follow Up* dataset was used for the two HEDIS Effectiveness of Care measures.

The 2018 Medicare Part C Star Ratings will be used by CMS as the basis for quality bonus payments in the 2019 quality bonus payment year (refer to the **yellow** highlighted section in the Table below). For the 2019 quality bonus payments, the *2014-2016 Cohort 17 Merged Baseline and Follow Up* dataset will be used for the two PCS and MCS functional health measures, and the combined *2016 Cohort 19 Baseline and 2016 Cohort 17 Follow Up* dataset will be used for the three HEDIS Effectiveness of Care measures.

For more information about the Medicare Star Ratings, go to the CMS website at <http://go.cms.gov/partcanddstarratings>. For any questions related to Medicare Part C and D Star Ratings, you may send an email inquiry directly to [PartCandDStarRatings@cms.hhs.gov](mailto:PartCandDStarRatings@cms.hhs.gov). Please be sure to include your contract number in the email.

**Medicare HOS Survey Administration and Star Ratings Timeline Table**

Year	Baseline Data Collected	Follow Up Data Collected	Baseline Reports	Follow Up Reports	2-yr PCS/MCS Change for Star Ratings	HEDIS Measures for Star Ratings	Star Rating Year	Quality Bonus Payment Year
2019	<i>Cohort 22</i>	<i>Cohort 20</i>	<i>Cohort 21</i>	<i>Cohort 19</i>	<i>2015-2017 Cohort 18</i>	<i>2017 Cohort 20 Baseline &amp; 2017 Cohort 18 Follow-up</i>	2019	2019
2018	<i>Cohort 21</i>	<i>Cohort 19</i>	<i>Cohort 20</i>	<i>Cohort 18</i>	<i>2014-2016 Cohort 17</i>	<i>2016 Cohort 19 Baseline &amp; 2016 Cohort 17 Follow-up</i>	2018	2018
2017	<i>Cohort 20</i>	<i>Cohort 18</i>	<i>Cohort 19</i>	<i>Cohort 17</i>	<i>2013-2015 Cohort 16</i>	<i>2015 Cohort 18 Baseline &amp; 2015 Cohort 16 Follow-up</i>	2017	2017
2016	<i>Cohort 19</i>	<i>Cohort 17</i>	<i>Cohort 18</i>	<i>Cohort 16</i>	<i>2012-2014 Cohort 15</i>	<i>2014 Cohort 17 Baseline &amp; 2014 Cohort 15 Follow Up</i>	2016	2016
2015	<i>Cohort 18</i>	<i>Cohort 16</i>	<i>Cohort 17</i>	<i>Cohort 15</i>	<i>2011-2013 Cohort 14</i>	<i>2013 Cohort 16 Baseline &amp; 2013 Cohort 14 Follow Up</i>	2015	2015

\* Four HEDIS Effectiveness of Care Measures collected by the HOS are calculated from the combined round of baseline and follow up data by reporting year: *Management of Urinary Incontinence in Older Adults*; *Physical Activity in Older Adults*; *Fall Risk Management*; and *Osteoporosis Testing in Older Women*. Beginning with the 2012 Medicare Star Ratings, the Osteoporosis Testing in Older Women measure has moved to the display measures on the CMS website and is not part of the Star Ratings. **Note:** The MUI measure was revised in 2015 and was not reported for the 2016 or 2017 Medicare Star Ratings; however, the revised measure will be reported in the 2018 Medicare Star Ratings.

## MAO Resources for Best Practices and the Star Ratings

A study titled “Analysis of Key Drivers of Improving or Maintaining Medicare Health Outcomes Survey (HOS) Scores” is available on the HOS website at [http://www.hosonline.org/globalassets/hos-online/publications/key\\_drivers\\_medicare\\_hos\\_scores\\_2013.pdf](http://www.hosonline.org/globalassets/hos-online/publications/key_drivers_medicare_hos_scores_2013.pdf).<sup>10</sup> The study describes how two-year mortality and two-year changes in the VR-12 items relate to key HOS measures used in the Medicare Star Ratings. The HOS measures relate to maintaining and improving health and are derived from changes in the PCS and MCS scores. The results from this study clarify the properties of several CMS quality measures and identify which items most influence contract-level PCS and MCS scores.

A resource guide titled “Opportunities for Improving Medicare HOS Results through Practices in Quality Preventive Health Care for the Elderly” is available on the HOS website at [http://hosonline.org/globalassets/hos-online/publications/opportunities\\_for\\_improving\\_medicare\\_hos\\_results\\_2012.pdf](http://hosonline.org/globalassets/hos-online/publications/opportunities_for_improving_medicare_hos_results_2012.pdf).<sup>11</sup> This guide helps MAOs develop and apply strategies that address the HOS items used in the CMS Medicare Part C Star Ratings. The guide includes an overview of the HOS, national performance results on HOS items included in the Medicare Part C Star Ratings, best practices in promoting quality preventive health care for the elderly, and HOS resources available to MAOs. Section 1 discusses the prevalence of conditions measured by the HOS items and summarizes national HOS results to highlight opportunities for improvement and intervention strategies. Section 2 provides examples of interventions that some MAOs have used to promote patient/physician communication, screening services, or maintenance of functional status among their beneficiaries.

A companion literature review titled “Functional Status in Older Adults: Intervention Strategies for Impacting Patient Outcomes” is available on the HOS website at [http://www.hosonline.org/globalassets/hos-online/publications/functional\\_status\\_in\\_older\\_adults\\_2011.pdf](http://www.hosonline.org/globalassets/hos-online/publications/functional_status_in_older_adults_2011.pdf).<sup>12</sup> This literature review synthesizes selected articles about functional status outcomes in older adults and supplements the resource guide. The included outcomes target assessments of health from well-established questionnaires that span the physical to psychological. In addition, outcome measures include ADLs that capture functional limitations in MA recipients. The articles were selected because they describe interventions that could impact functional status outcomes in elderly populations.

All three resources are available on the Resources page; the study results may be found in the Applications section and both the resource guide and literature review may be downloaded from the Trainings section at [www.HOSonline.org](http://www.HOSonline.org).

## 2016 Cohort 19 Baseline Results

This report presents the Medicare HOS *2016 Cohort 19 Baseline* results for MAO HXXXXA and the national HOS Total. Additionally, the MAO level frequency distributions for the majority of the survey questions are available in Appendix 2 of this report. The aggregate data are provided to facilitate internal quality improvement activities. **Please be advised that the information in this report is not suitable for MAO level comparisons. Therefore, these data should not be used for public release or marketing purposes.**

### Distribution of the Sample and Response Rates

The HOS *2016 Cohort 19 Baseline* included a random sample of 537,259 beneficiaries, both the aged and disabled, from 459 MAOs. The number of beneficiaries represents a 4.9% decrease from the 565,150 beneficiaries from 483 MAOs in the HOS *2015 Cohort 18 Baseline*.

Of the 537,259 beneficiaries originally sampled for the *2016 Cohort 19 Baseline*, 14,656 were determined to be ineligible during the survey administration. Ineligible beneficiaries of the sample met one of the following criteria: deceased; not enrolled in the MAO; had an incorrect address and phone number; had a language barrier; or were removed from the sample due to age less than 18 years. Removing the ineligible beneficiaries from the total sample yielded the *Cohort 19 Baseline* eligible sample of 522,603.

Of the 522,603 beneficiaries in the eligible sample, 45.0% (235,121) completed the baseline survey. For the purposes of this report, a completed survey was defined as one that could be used to calculate a PCS or MCS score.<sup>H</sup>

The 522,603 beneficiaries of the *Cohort 19 Baseline* eligible sample included 419,835 seniors (age 65 or older). Of the 419,835 eligible seniors sampled, 196,037 completed the baseline survey. This group of seniors comprised the *Cohort 19 Baseline* analytic sample. Please refer to Figure 2 on the following page for a graphical depiction of the response rates and distribution of the sample. MAOs with a small number of respondents should exercise **caution** when drawing conclusions from the results as the sample size may be insufficient to allow meaningful interpretation.

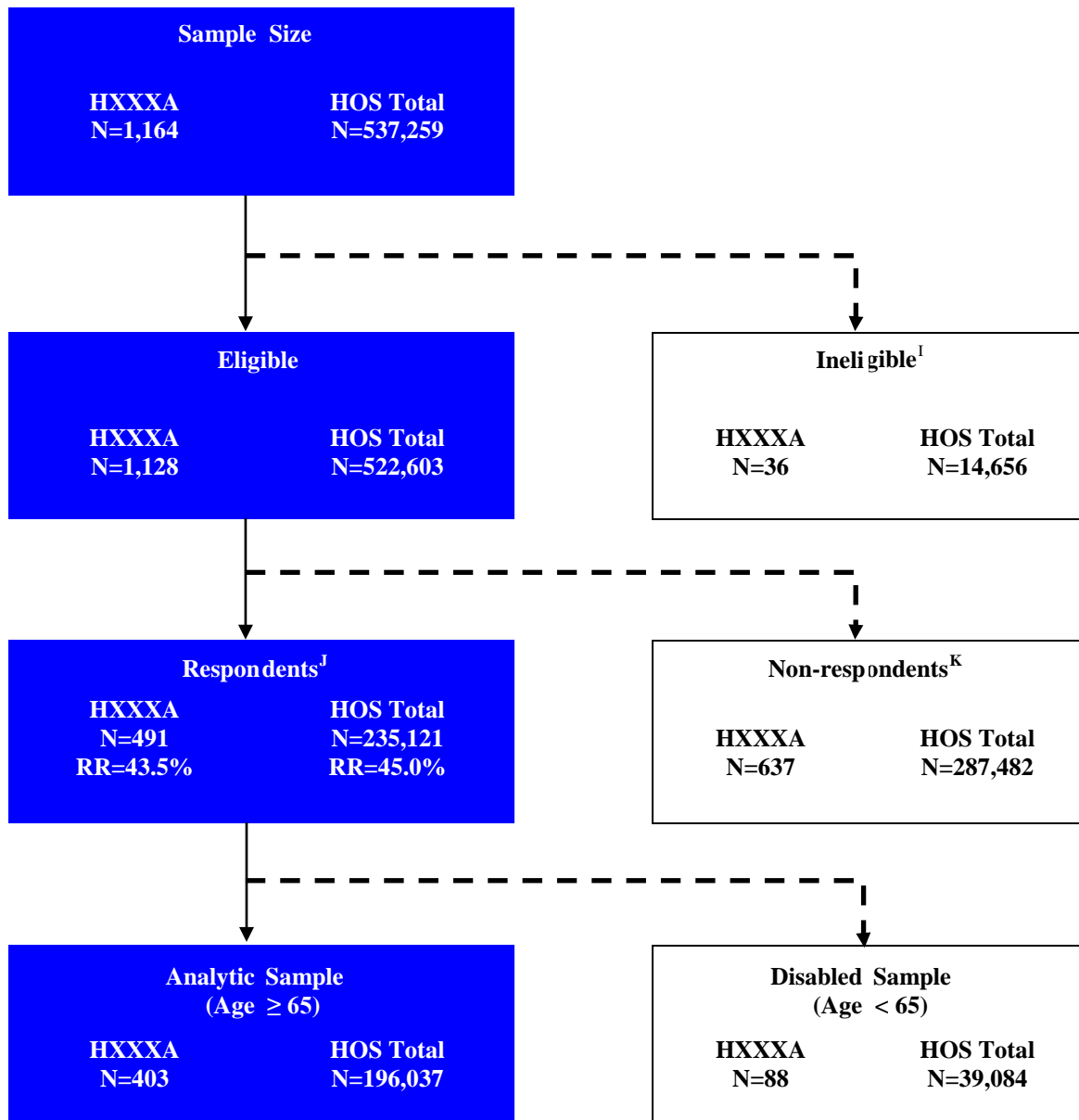
The average number of senior respondents per MAO was 427, with a minimum of 9 and a maximum of 716 respondents. The top 25% of MAOs had 521 or more senior respondents, while 25% had 356 or less. Ten percent of the MAOs had 571 or more respondents, and 10% had 221 or fewer respondents. Based on the analytic criteria, the mean MAO level response rate at baseline for seniors was 46.4%, with a minimum response rate of 4.0% and a maximum of 66.9%. The top 25% of MAOs had a response rate of 51.1% or greater, while 25% had a response rate of 42.9% or less. Ten percent of the MAOs had a response rate of 55.4% or higher and 10% had a response rate of 36.8% or lower.

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<sup>H</sup> The overall response rates in the report are calculated after data processing and score calculation. An initial overall survey completion rate was calculated by NCQA following the data collection and used the criteria of at least 80% completion of survey items and all 6 Activity of Daily Living (ADL) questions answered. This initial rate may be reported elsewhere and will differ from the overall response rate in this report.

Figure 2 illustrates the calculation of the response rates, the distribution of the eligible sample, and the process for determining the number of beneficiaries in the analytic sample for the HOS Total and MAO HXXXXA. All analyses in this report use the *Cohort 19 Baseline* analytic sample, except for the NCQA HEDIS Measures section.

**Figure 2: 2016 Cohort 19 Baseline Distribution of the Sample and Response Rates for MAO HXXXXA and HOS Total**



<sup>I</sup> Deceased, not enrolled in MAO, incorrect address and phone, language barrier, or removed from sample due to age less than 18 years.

<sup>J</sup> Response Rate = [(Respondents/Eligible Sample) x 100%].

<sup>K</sup> Surveys for which PCS and MCS scores cannot be calculated.



## Demographics

Table 11 presents demographics for MAO HXXXXA and the HOS Total. The mean age for the HOS Total sample was 74.6 years (not shown in the table). HOS demographics in the table are detailed by sub-categories within the age, gender, race, marital status, education, annual household income, and Medicaid status groups.

**Table 11: 2016 Cohort 19 Baseline Demographics for MAO HXXXXA and HOS Total**

HOS Demographic	MAO HXXXXA N (%)	HOS Total N (%)
<b>Age</b>	(N=403)	(N=196,037)
65-69	110 (27.3%)	59,183 (30.2%)
70-74	126 (31.3%)	52,157 (26.6%)
75-79	77 (19.1%)	37,482 (19.1%)
80-84	47 (11.7%)	25,084 (12.8%)
85+	43 (10.7%)	22,131 (11.3%)
<b>Gender</b>	(N=403)	(N=196,037)
Male	160 (39.7%)	80,498 (41.1%)
Female	243 (60.3%)	115,539 (58.9%)
<b>Race</b>	(N=403)	(N=196,037)
White	315 (78.2%)	154,132 (78.6%)
Black	45 (11.2%)	22,768 (11.6%)
Other/Unknown	43 (10.7%)	19,137 (9.8%)
<b>Marital Status</b>	(N=382)	(N=185,525)
Married	207 (54.2%)	96,501 (52.0%)
Widowed	91 (23.8%)	45,984 (24.8%)
Divorced or Separated	65 (17.0%)	33,417 (18.0%)
Never Married	19 (5.0%)	9,623 (5.2%)
<b>Education</b>	(N=378)	(N=183,119)
Did Not Graduate HS	72 (19.0%)	38,195 (20.9%)
High School Graduate	110 (29.1%)	58,648 (32.0%)
Some College	100 (26.5%)	46,050 (25.1%)
4 Year Degree or Beyond	96 (25.4%)	40,226 (22.0%)
<b>Annual Household Income</b>	(N=349)	(N=171,189)
Less than \$10,000	34 (9.7%)	22,884 (13.4%)
\$10,000-\$19,999	78 (22.3%)	30,644 (17.9%)
\$20,000-\$29,999	52 (14.9%)	25,439 (14.9%)
\$30,000-\$49,999	77 (22.1%)	33,156 (19.4%)
\$50,000 or More	80 (22.9%)	37,347 (21.8%)
Don't Know	28 (8.0%)	21,719 (12.7%)
<b>Medicaid Status</b>	(N=403)	(N=196,001)
Medicaid	94 (23.3%)	45,111 (23.0%)
Non-Medicaid	309 (76.7%)	150,890 (77.0%)

## Physical and Mental Component Summary Scores

### Definition of Measures

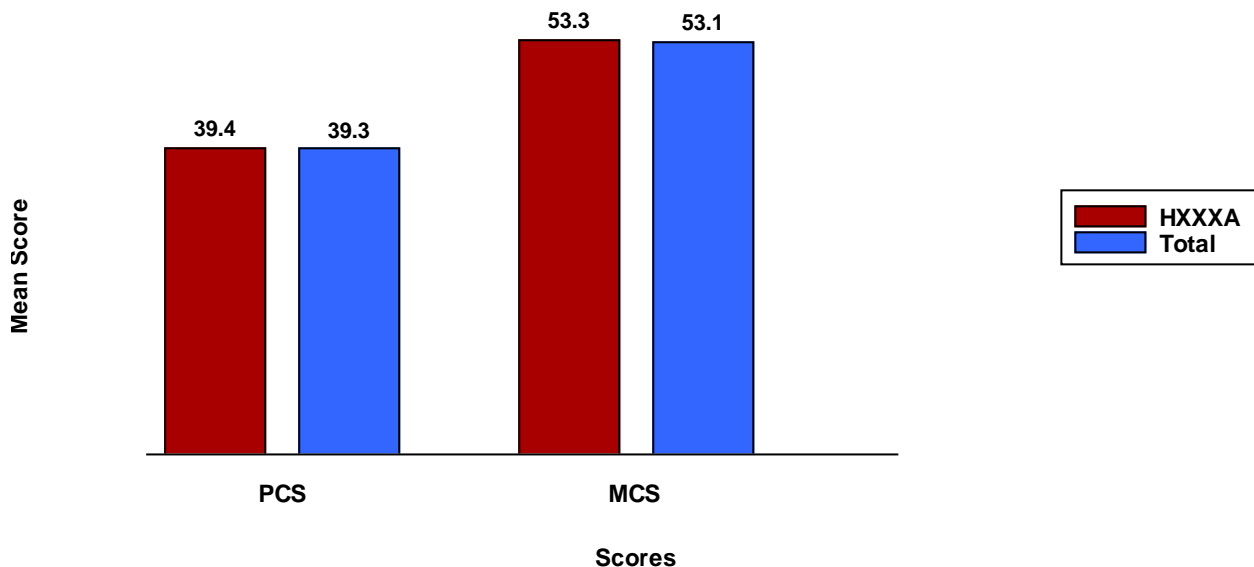
- The HOS health status measures are the PCS score and the MCS score. These scores are calculated from the VR-12 (Questions 1-7 in the 2016 HOS 3.0) which asks respondents about their usual activities and how they would rate their health.
- The VR-12 is a barometer of physical and mental health status. Concepts included in the measures are: physical functioning, role limitations due to physical problems (role-physical), bodily pain, general health, vitality, role limitations due to emotional problems (role-emotional), social functioning, and mental health.
- A higher PCS or MCS score reflects better health status. The PCS and MCS scores are case-mix adjusted<sup>L</sup> to allow for equitable comparisons across all MAOs.

### How Is Your MAO Doing?

Figure 3 depicts the mean adjusted PCS and MCS scores for MAO HXXXXA and the HOS Total. For the HOS Total, the mean PCS of 39.3 indicates that the physical health status of seniors is substantially lower, on average, than the mean PCS of 50 (SD=10) for the general U.S. population. The mean MCS of 53.1 indicates that the mental health status of seniors is slightly higher, on average, than the mean MCS of 50 (SD=10) for the general U.S. population.

For additional mean unadjusted and adjusted PCS and MCS scores, refer to the Executive Summary section. **Please note that only adjusted scores are displayed in the tables and graphs in the remainder of the report.**

**Figure 3: 2016 Cohort 19 Baseline Mean Adjusted PCS and MCS Scores for MAO HXXXXA and HOS Total**



<sup>L</sup> Case-mix adjustment is a statistical technique that controls for differences in demographics, socioeconomic characteristics, chronic medical conditions, and HOS study design variables. For additional information about case-mix adjustment and scoring for the VR-12, please refer to Appendix 1.

## General Health and Comparative Health

### Definition of Measures

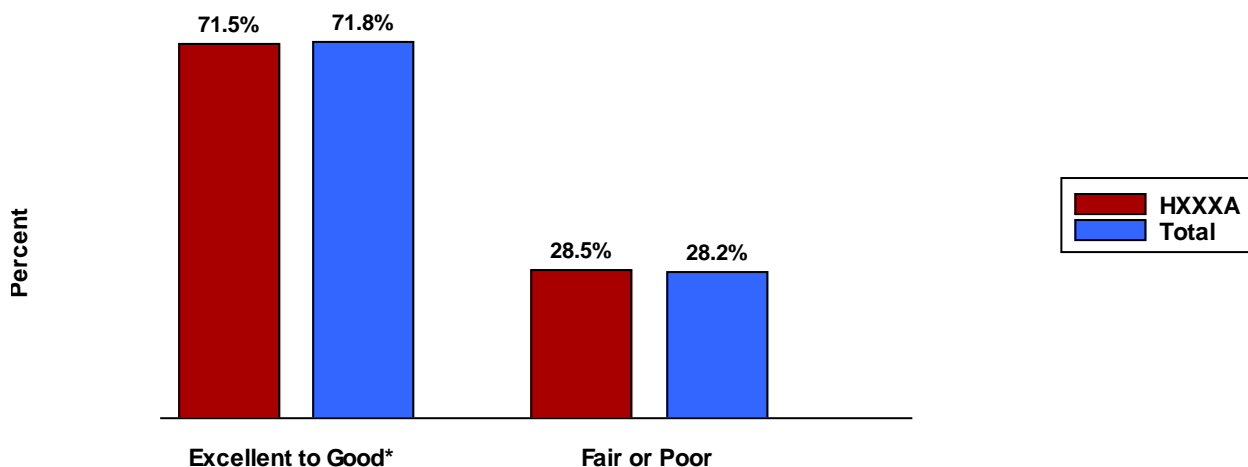
- General health status is a self-reported measure of health perception using ratings of “Excellent,” “Very good,” “Good,” “Fair,” or “Poor.”<sup>13</sup> This measure is found in Question 1.
- Two measures of physical and mental health compared to one year ago use ratings of “Much better,” “Slightly better,” “About the same,” “Slightly worse,” or “Much worse.” These measures are found in Questions 8 and 9.

General self-rated health status is a valid and reliable method for assessing health across different populations.<sup>2</sup> Individuals who indicate that their general health was “Fair” or “Poor,” or that their physical or mental health compared to one year ago was “Slightly worse” or “Much worse,” are known to be at increased risk for near future hospitalization, use of mental health services, and mortality.<sup>14,15</sup>

### How Is Your MAO Doing?

Figure 4 displays the respondents’ self-reported general health status for your MAO and the HOS Total.

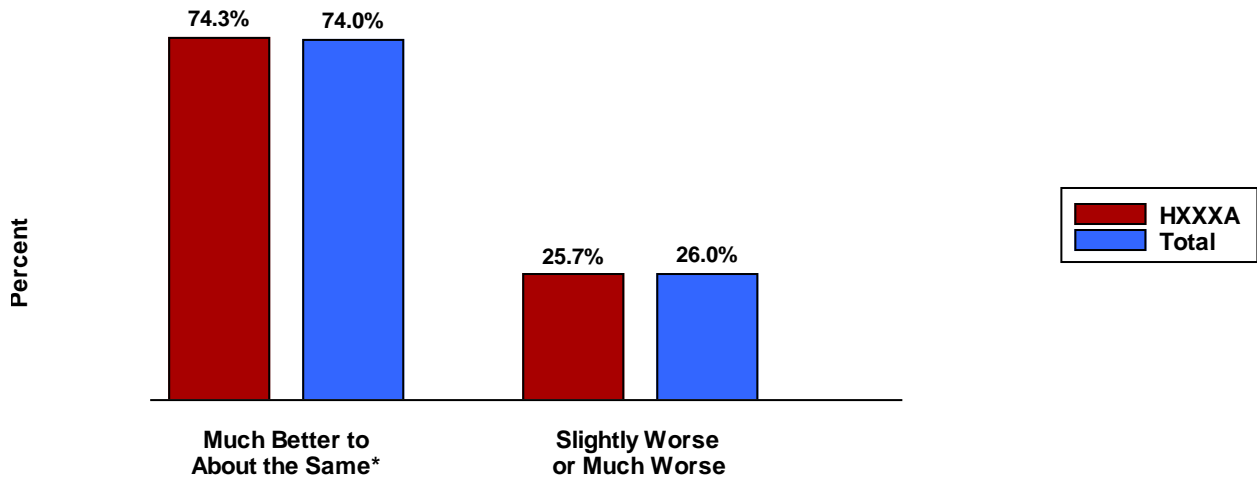
**Figure 4: 2016 Cohort 19 Baseline Self-Rated General Health Status for MAO HXXXXA and HOS Total**



\* Categories for general health included “Excellent,” “Very good,” or “Good.”

Figure 5 displays the respondents' self-reported physical health status as compared to one year ago for your MAO and the HOS Total.

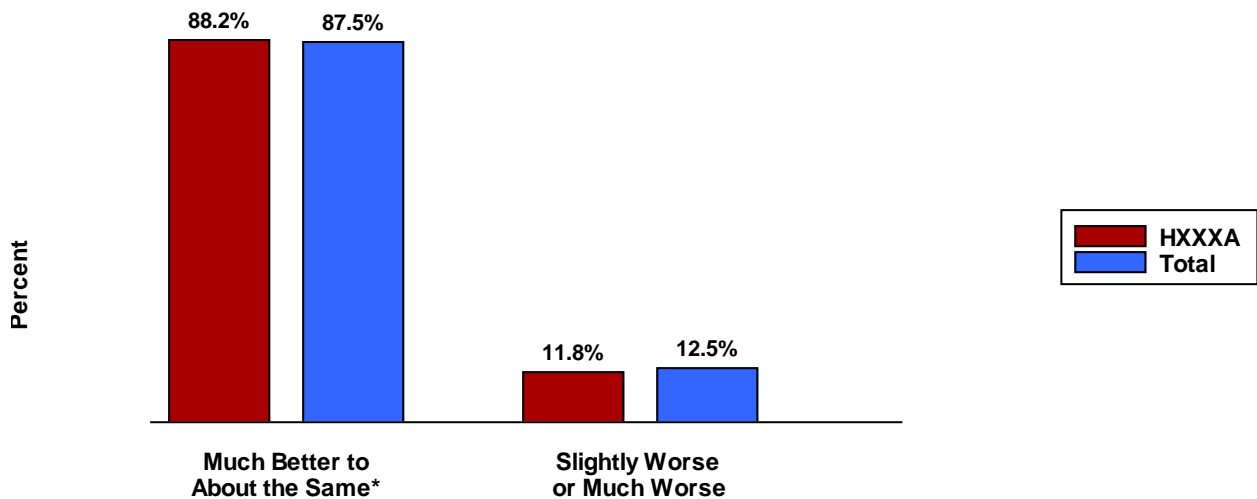
**Figure 5: 2016 Cohort 19 Baseline Self-Rated Physical Health Compared to One Year Ago for MAO HXXXXA and HOS Total**



\* Categories for comparative health included "Much better," "Slightly better," or "About the same."

Figure 6 displays the respondents' self-reported mental health status as compared to one year ago for your MAO and the HOS Total.

**Figure 6: 2016 Cohort 19 Baseline Self-Rated Mental Health Compared to One Year Ago for MAO HXXXXA and HOS Total**



\* Categories for comparative health included "Much better," "Slightly better," or "About the same."

Table 12 compares the self-reported general and comparative health status measures by adjusted PCS and MCS scores for MAO HXXXXA and the HOS Total.

**Table 12: 2016 Cohort 19 Baseline Mean Adjusted Scores by Self-Rated General and Comparative Health Status for MAO HXXXXA and HOS Total**

Self-Rated Health Status	MAO HXXXXA		HOS Total	
	PCS Mean (SD)	MCS Mean (SD)	PCS Mean (SD)	MCS Mean (SD)
<b>General Health</b>				
Excellent to Good*	41.6 (6.3)	54.7 (4.7)	41.2 (6.4)	54.5 (4.9)
Fair or Poor	34.2 (6.3)	49.8 (5.5)	34.4 (6.5)	49.6 (6.0)
<b>Comparative Health-Physical</b>				
Much Better to About the Same*	41.0 (6.7)	54.1 (5.1)	40.7 (6.7)	54.0 (5.2)
Slightly Worse or Much Worse	35.2 (7.0)	50.9 (5.9)	35.6 (7.1)	50.8 (6.3)
<b>Comparative Health-Mental</b>				
Much Better to About the Same*	40.1 (7.0)	53.8 (5.1)	40.0 (6.9)	53.8 (5.3)
Slightly Worse or Much Worse	35.4 (7.7)	49.4 (6.5)	34.9 (7.5)	48.5 (6.6)

\* Categories for general health included “Excellent,” “Very good,” or “Good.”

Categories for comparative health included “Much better,” “Slightly better,” or “About the same.”

## Depression

### Definition of Measure

- The HOS includes two questions (Questions 39a and 39b) that serve as a screening measure for depression.<sup>M</sup> Each question is assigned points depending on the response given, from 0 (“not at all”) to 3 (“nearly every day”). For this report, a Medicare beneficiary is considered to have a positive depression screen when he or she scores three points or greater on the combined total points of the two depression questions, when both questions are answered.

Individuals with a positive depression screen may be at risk for depressive disorders. Depression is underdiagnosed in the elderly Medicare population, and is a significant health problem that has been linked to poor health outcomes.<sup>16, 17</sup> Older adults may suffer mental distress associated with limitations in daily activities, physical impairments, grief from loss of loved ones, changes in living situations, or untreated mental illness.<sup>18</sup> Additionally, depression is significantly associated with other psychological dysfunction, as well as the presence of common chronic medical conditions, such as diabetes.<sup>19, 20</sup> Depression screening tools have been developed for use in clinical settings to rapidly identify individuals at risk for major depression. Those with positive depression screens should be followed-up by more comprehensive diagnostic evaluations to identify whether or not they have major depression.<sup>21, 22</sup> Evidence-based programs have been developed to improve mental health among older adults. Social supports through local area agencies may also be effective.<sup>18</sup>

### How Is Your MAO Doing?

Table 13 depicts beneficiaries with a positive depression screen, and the distribution of responses to the two individual depression questions for MAO HXXXXA and the HOS Total.

**Table 13: 2016 Cohort 19 Baseline Frequency of Positive Depression Screen for MAO HXXXXA and HOS Total**

Depression Screening Questions	MAO HXXXXA N (%)	HOS Total N (%)
<b>Little interest or pleasure in doing things in past two weeks</b>		
Not at all (0 pt)	255 (68.5%)	124,571 (68.0%)
Several days (1 pt)	66 (17.7%)	34,199 (18.7%)
More than half the days (2 pt)	28 (7.5%)	12,666 (6.9%)
Nearly every day (3 pt)	23 (6.2%)	11,820 (6.4%)
<b>Feeling down, depressed, or hopeless in past two weeks</b>		
Not at all (0 pt)	276 (74.0%)	137,077 (74.5%)
Several days (1 pt)	70 (18.8%)	32,108 (17.5%)
More than half the days (2 pt)	16 (4.3%)	8,319 (4.5%)
Nearly every day (3 pt)	11 (2.9%)	6,476 (3.5%)
<b>Positive Depression Screen*</b>	49 (13.3%)	23,412 (12.9%)

\* A positive depression screen is defined as scoring 3 points or greater on the sum total of the two depression questions, when both questions are answered.

<sup>M</sup> Beginning with the 2013 HOS 2.5, two depression screening questions from the Patient Health Questionnaire-2 (PHQ-2) replaced the questions that served as the depression screening measure in previous versions of the HOS. Due to the new depression screening methodology, estimates of the proportion with positive depression screens in this report are not comparable to estimates produced using the HOS versions 1.0 or 2.0.

# Pain

## Definition of Measure

- The HOS includes three questions to measure self-reported pain over the previous seven days. Question 36 asks how much pain interfered with day-to-day activities and question 37 asks how often pain kept the beneficiary from socializing. Both questions 36 and 37 have five possible categorical responses. Question 38 asks the beneficiary to rate his/her average pain, ranging from 1 (“no pain”) to 10 (“worst imaginable pain”).

Self-reported pain is common among seniors. Without proper pain management, opioid abuse<sup>23, 24</sup> and alcohol abuse<sup>25</sup> are increasing among seniors as they attempt to control their pain. Several organizations have published recommendations on what should be done to improve the safety of opioid prescribing, including decreasing the risk of addiction and abuse.<sup>26</sup>

Pain screening is the initial step in establishing an appropriate pain management program for elderly beneficiaries. In fact, The Joint Commission requires assessment of pain when clinically indicated for patients in accredited hospitals, clinics, and long-term care facilities.<sup>26</sup> Physical activity and complementary medicine techniques may be helpful alternatives in relieving certain types of pain.<sup>27</sup>

## How Is Your MAO Doing?

Figure 7 shows the distribution of self-reported pain scores, grouped into categories, for MAO HXXXXA and the HOS Total.

**Figure 7: 2016 Cohort 19 Baseline Frequency of Self-Rated Pain Score for MAO HXXXXA and HOS Total**

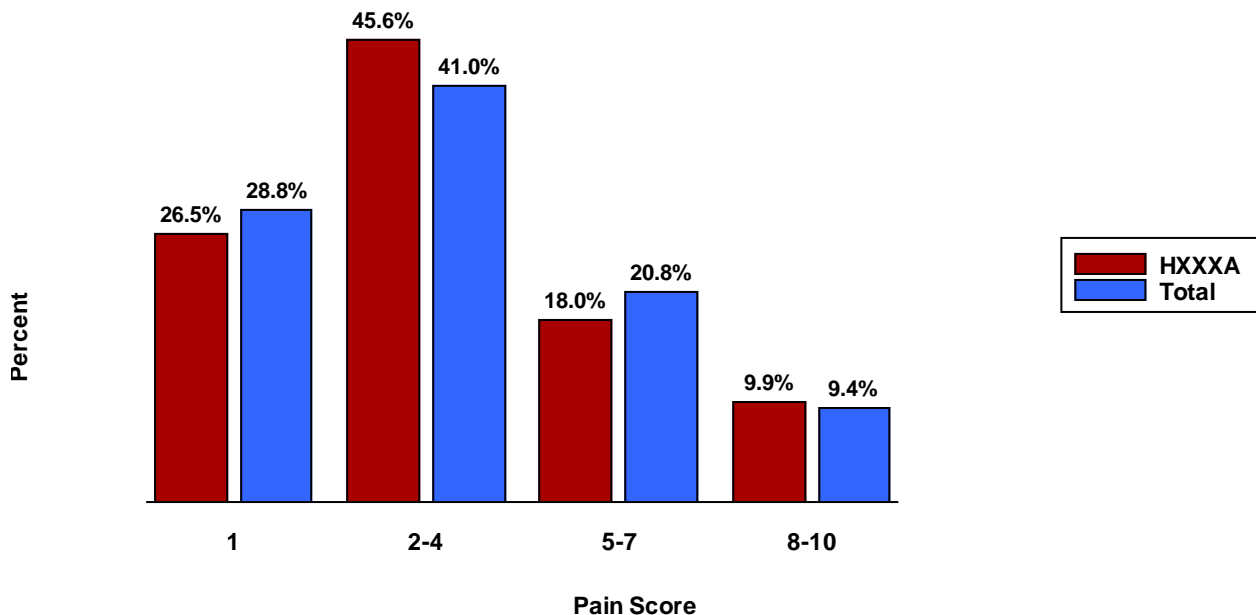


Figure 8 illustrates the relationship between the reported extent that pain interfered with day-to-day activities and mean adjusted PCS score for MAO HXXXA and the HOS Total.

**Figure 8: 2016 Cohort 19 Baseline Mean Adjusted PCS Score by Extent Pain Interfered with Day-to-Day Activities for MAO HXXXA and HOS Total**

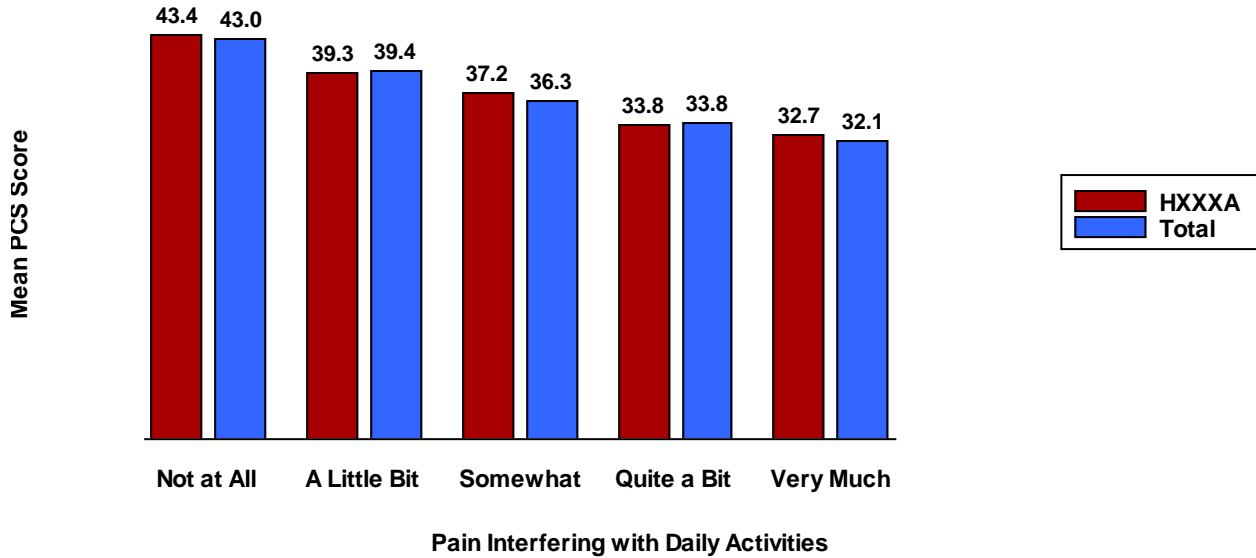
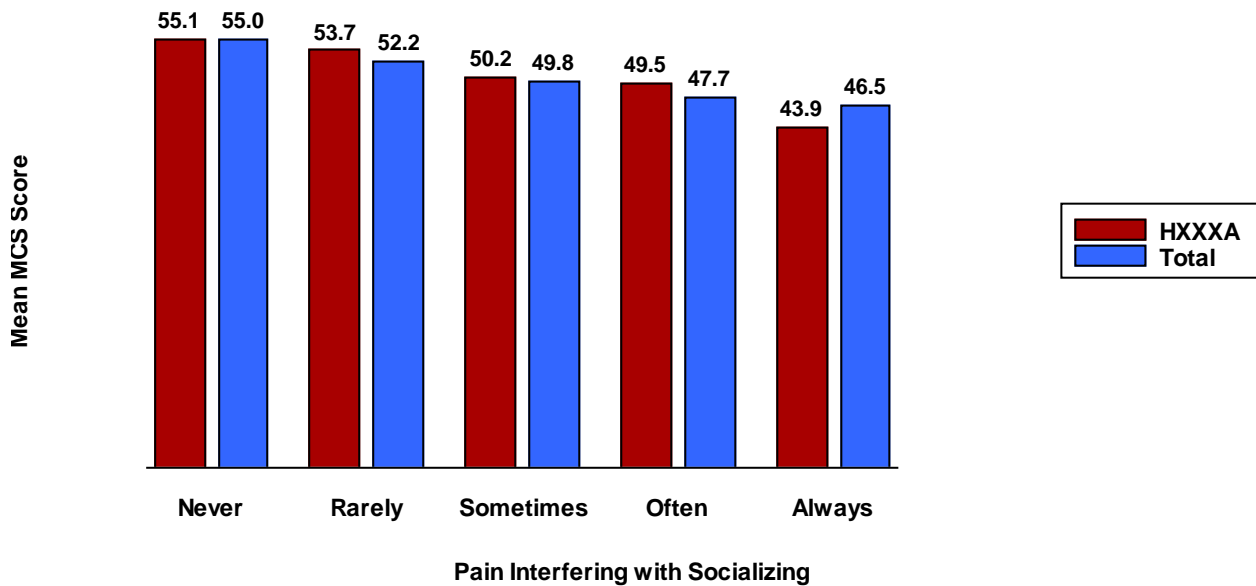


Figure 9 shows the relationship between the reported extent that pain interfered with socialization with others and mean adjusted MCS score for MAO HXXXA and the HOS Total.

**Figure 9: 2016 Cohort 19 Baseline Mean Adjusted MCS Score by Extent Pain Interfered with Socializing with Others for MAO HXXXA and HOS Total**





## Chronic Medical Conditions

### *Definition of Measures*

- Chronic medical conditions are multiple measures of the prevalence of chronic disease across the beneficiary lifespan. Chronic conditions are those that last a year or more, and require ongoing medical attention and/or limit activities of daily living. Fifteen measures are found in Questions 20-34.

For older adults, the presence of chronic medical conditions can reduce the quality of life, accelerate a decline in functioning, and lead to conflicting medical advice when care is not coordinated.<sup>28</sup> The increased cost associated with chronic disease is an important factor driving overall Medicare spending.<sup>29</sup> According to the U.S. Department of Health and Human Services, two of three adults over the age of 65 have two or more chronic conditions and the need for coordinated care.<sup>30</sup> An important feature of the Medicare HOS is the ability to report and quantify self-reported chronic conditions in the Medicare Advantage (MA) population. A longitudinal study using HOS data concluded that multiple conditions at baseline and the 2-year follow up were associated with worse health in terms of ADLs and HRQOL, and are important outcomes for intervention to improve long-term health.<sup>31</sup>

### *How Is Your MAO Doing?*

Table 14 shows the prevalence of 15 chronic medical conditions in your MAO and the HOS Total. Depression was added to the list of chronic medical conditions in the 2013 HOS 2.5. The chronic medical conditions are quantified in the HOS when beneficiaries positively respond to the question, “Has a doctor ever told you that you had (the specified condition)?”

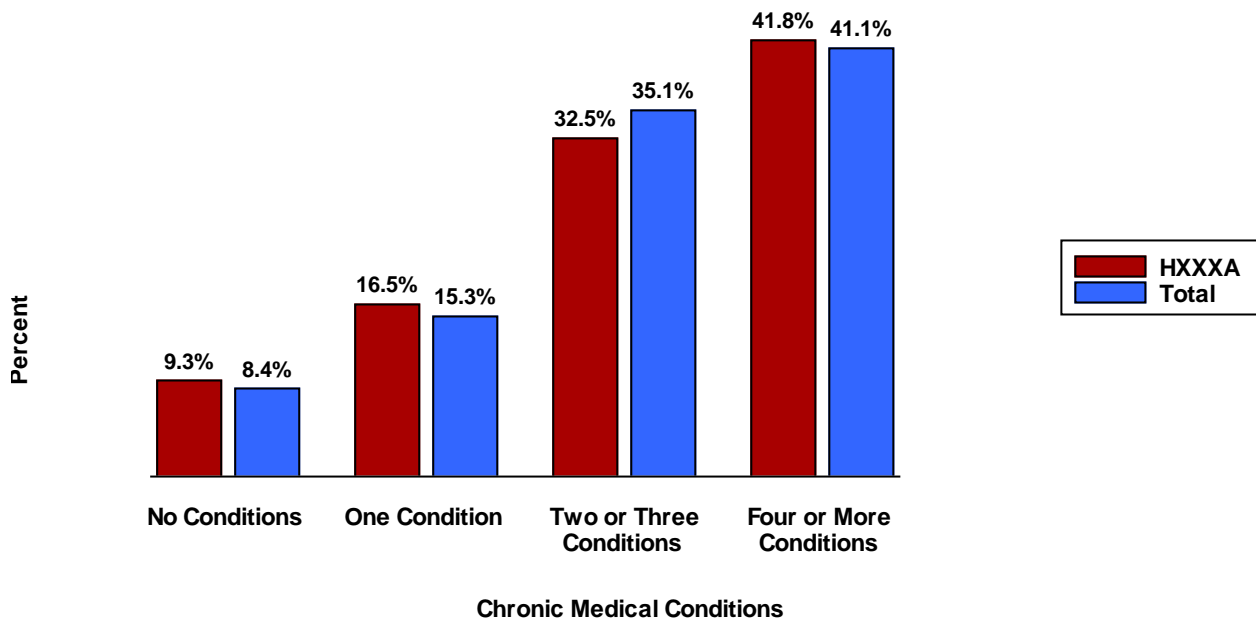
**Table 14: 2016 Cohort 19 Baseline Prevalence of Chronic Medical Conditions for MAO HXXXXA and HOS Total**

Medical Condition	MAO HXXXXA N (%)	HOS Total N (%)
Hypertension	270 (70.1%)	124,459 (66.6%)
Arthritis - Hip or Knee	174 (45.9%)	81,852 (44.0%)
Arthritis - Hand or Wrist	146 (38.0%)	67,722 (36.4%)
Diabetes	106 (27.5%)	51,798 (27.7%)
Sciatica	96 (25.3%)	47,256 (25.5%)
Other Heart Conditions	85 (22.2%)	38,948 (21.0%)
Osteoporosis	73 (19.5%)	37,559 (20.3%)
Depression	70 (18.3%)	35,825 (19.3%)
Pulmonary Disease	58 (15.1%)	33,246 (17.8%)
Any Cancer (except skin cancer)	61 (16.2%)	26,535 (14.7%)
Coronary Artery Disease	43 (11.4%)	23,935 (12.9%)
Myocardial Infarction	31 ( 8.2%)	16,384 ( 8.8%)
Congestive Heart Failure	33 ( 8.7%)	15,987 ( 8.6%)
Stroke	33 ( 8.6%)	14,674 ( 7.9%)
Gastrointestinal Disease	17 ( 4.5%)	9,522 ( 5.1%)

An earlier study of HOS beneficiaries found that beneficiaries with multiple chronic conditions and risk for depression had the largest mental health decline over the two-year follow up period. In this study, people with multiple chronic conditions had greater risks for mortality, poor functional status, unnecessary hospitalizations, adverse drug events, duplicative tests, and conflicting medical advice.<sup>32</sup>

Figure 10 illustrates the distribution of beneficiaries by number of chronic medical conditions, including categories of none, one, two or three, and four or more chronic conditions for MAO HXXXXA. Compare the percentage of beneficiaries in your MAO who have multiple chronic conditions with the HOS Total.

**Figure 10: 2016 Cohort 19 Baseline Distribution of Chronic Medical Conditions for MAO HXXXXA and HOS Total**



## Activities of Daily Living

### Definition of Measures

- ADLs refer to a set of common daily tasks that are necessary for personal self-care and independent living.<sup>33</sup> ADLs include bathing, dressing, eating, getting in or out of chairs, walking, and using the toilet. These measures are found in Question 10. Impairment with ADLs is defined as beneficiaries who reported either difficulty or inability to perform the specific ADL (“Yes, I have difficulty” or “I am unable to do this activity”).
- Instrumental activities of daily living (IADLs) assess independent living skills that are more complex than ADLs.<sup>34, 35</sup> IADLs include preparing meals, managing money, and taking medications. These measures are found in Question 11. For IADLs, impairment is defined as beneficiaries who reported difficulty performing the specific IADL (“Yes, I have difficulty”).

Six ADLs are included in the HOS to examine reported difficulty with the performance of daily tasks. The ability to perform these tasks is predictive of current disease status and mortality risk.<sup>36, 37</sup> Regular assessment of functional status is recommended for improving the effectiveness of care, especially for older adults prior to hospital discharge and those living with dementia.<sup>37</sup> Like the Healthy Days Measures, ADLs are considered foundational health indicators; therefore, they are tracked by the federal Healthy People 2020 program.<sup>13</sup>

There are three IADLs in the HOS that examine reported difficulty with the performance of tasks of independence. In comparison to the ADLs, IADLs are considered to recognize earlier changes in functioning, and can be used as an indication of the need for intervention or further medical work-up.<sup>35</sup>

### How Is Your MAO Doing?

Table 15 highlights the prevalence of impairments in performing ADLs and IADLs for beneficiaries in MAO HXXXXA and the HOS Total.

**Table 15: 2016 Cohort 19 Baseline Prevalence of Impairments in ADLs and IADLs for MAO HXXXXA and HOS Total**

Impairment Type	MAO HXXXXA Impairments N (%)	HOS Total Impairments N (%)
<b>Activities of Daily Living</b>		
Walking	128 (33.3%)	60,747 (32.3%)
Getting in or out of chairs	94 (24.4%)	39,932 (21.2%)
Bathing	68 (17.5%)	28,845 (15.3%)
Dressing	50 (12.9%)	22,310 (11.8%)
Using the Toilet	36 (9.3%)	15,904 (8.4%)
Eating	18 (4.6%)	9,162 (4.8%)
<b>Instrumental Activities of Daily Living*</b>		
Preparing meals	42 (12.1%)	18,476 (10.9%)
Managing money	20 (5.5%)	9,782 (5.5%)
Taking medication as prescribed	15 (4.1%)	9,202 (5.1%)

\*Respondents that indicated “I don’t do this activity” to IADL questions were removed from the denominator.

Table 16 presents the mean adjusted PCS scores for MAO HXXXXA and the HOS Total by level of impairment across ADLs and IADLs. You may compare those beneficiaries with and without impairments in your MAO to the HOS Total.

**Table 16: 2016 Cohort 19 Baseline Mean Adjusted PCS Score by ADL and IADL Impairment Status for MAO HXXXXA and HOS Total**

Impairment Type	MAO HXXXXA		HOS Total	
	Impairment PCS Mean (SD)	No Impairment PCS Mean (SD)	Impairment PCS Mean (SD)	No Impairment PCS Mean (SD)
<b>Activities of Daily Living</b>				
Walking	34.7 (6.1)	42.0 (6.5)	34.5 (6.6)	41.7 (6.2)
Getting in or out of chairs	34.9 (6.2)	41.1 (6.8)	33.8 (6.8)	40.9 (6.5)
Bathing	34.5 (6.4)	40.6 (6.9)	33.0 (6.8)	40.5 (6.6)
Dressing	34.0 (6.8)	40.3 (6.9)	32.7 (7.1)	40.3 (6.7)
Using the Toilet	32.7 (7.2)	40.3 (6.8)	32.4 (7.2)	40.0 (6.8)
Eating	33.3 (6.1)	39.8 (7.1)	32.5 (7.4)	39.7 (7.0)
<b>Instrumental Activities of Daily Living*</b>				
Preparing meals	33.1 (6.9)	41.0 (6.6)	33.4 (6.7)	40.7 (6.5)
Managing money	32.5 (4.2)	40.4 (6.8)	33.8 (7.1)	40.1 (6.8)
Taking medication as prescribed	31.1 (7.9)	40.0 (6.9)	32.4 (7.3)	39.8 (6.8)

\*Respondents that indicated “I don’t do this activity” to IADL questions were removed from the denominator.

Table 17 presents the mean adjusted MCS scores for MAO HXXXXA and the HOS Total by level of impairment across ADLs and IADLs. You may compare those beneficiaries with and without impairments to the HOS Total.

**Table 17: 2016 Cohort 19 Baseline Mean Adjusted MCS Score by ADL and IADL Impairment Status for MAO HXXXXA and HOS Total**

Impairment Type	MAO HXXXXA		HOS Total	
	Impairment MCS Mean (SD)	No Impairment MCS Mean (SD)	Impairment MCS Mean (SD)	No Impairment MCS Mean (SD)
<b>Activities of Daily Living</b>				
Walking	50.6 (5.7)	54.7 (4.9)	50.4 (6.2)	54.4 (5.0)
Getting in or out of chairs	50.7 (5.5)	54.2 (5.1)	49.8 (6.4)	54.0 (5.1)
Bathing	49.5 (5.7)	54.1 (5.1)	48.7 (6.3)	53.9 (5.2)
Dressing	49.4 (6.0)	53.9 (5.2)	48.4 (6.4)	53.8 (5.3)
Using the Toilet	48.9 (5.8)	53.8 (5.2)	48.1 (6.5)	53.6 (5.4)
Eating	49.0 (5.8)	53.5 (5.4)	47.5 (6.5)	53.4 (5.5)
<b>Instrumental Activities of Daily Living*</b>				
Preparing meals	48.5 (5.8)	54.3 (4.8)	49.0 (6.3)	54.0 (5.1)
Managing money	48.1 (5.0)	54.0 (4.9)	47.9 (6.3)	53.8 (5.3)
Taking medication as prescribed	46.4 (7.0)	53.7 (5.1)	47.2 (6.4)	53.6 (5.4)

\*Respondents that indicated “I don’t do this activity” to IADL questions were removed from the denominator.

Table 18 shows the survey respondents by the number of ADL impairments including categories of none, one, two, and three or more ADL impairments for beneficiaries in MAO HXXXXA and the HOS Total.

**Table 18: 2016 Cohort 19 Baseline Number of ADL Impairments for MAO HXXXXA and HOS Total**

Number of ADL Impairments	MAO HXXXXA N (%)	HOS Total N (%)
None	235 (60.4%)	119,271 (62.7%)
1 ADL Impairment	54 (13.9%)	26,638 (14.0%)
2 ADL Impairments	37 (9.5%)	17,126 (9.0%)
3 or More ADL Impairments	63 (16.2%)	27,129 (14.3%)

Figure 11 shows the relationship between increasing numbers of ADL impairments and mean adjusted PCS scores for MAO HXXXXA and the HOS Total.

**Figure 11: 2016 Cohort 19 Baseline Mean Adjusted PCS Scores by Number of ADL Impairments for MAO HXXXXA and HOS Total**

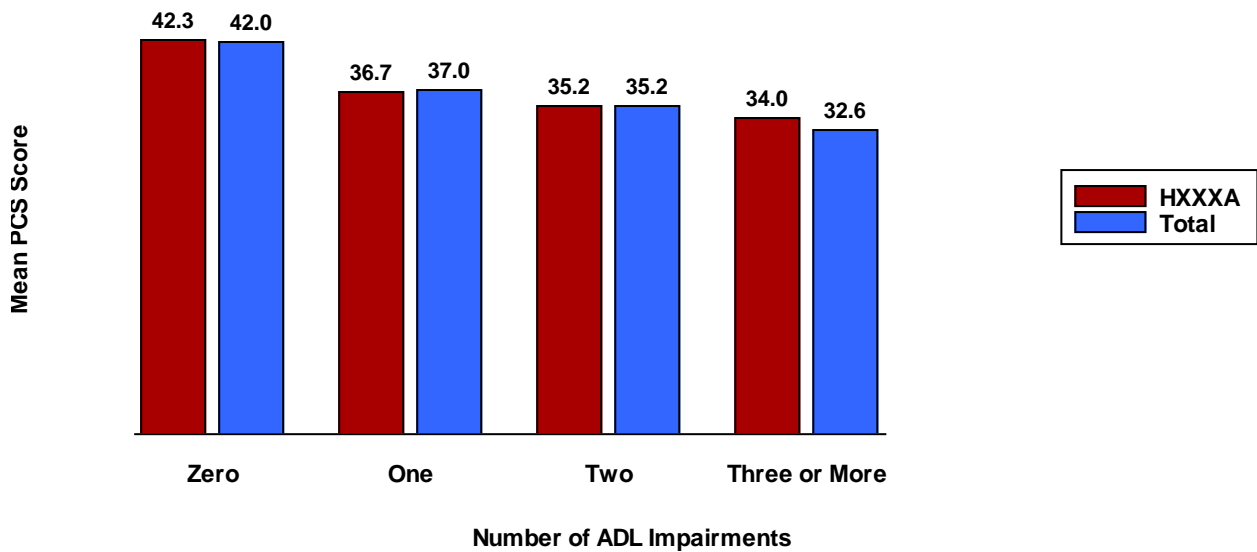
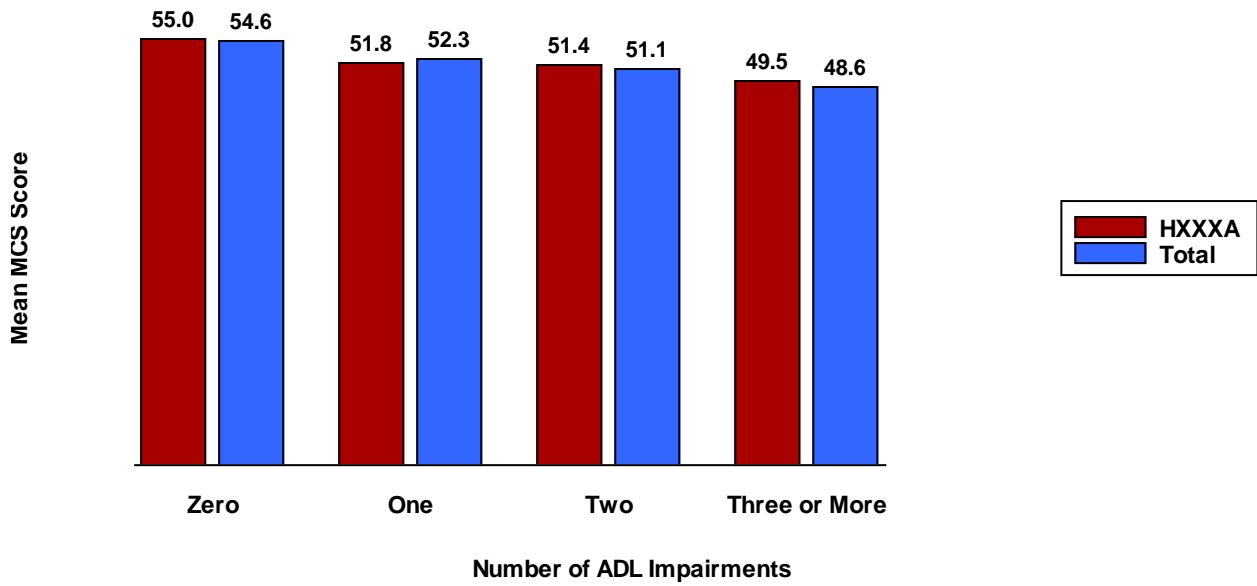


Figure 12 illustrates the relationship between increasing numbers of ADL impairments and mean adjusted MCS scores for MAO HXXXXA and the HOS Total.

**Figure 12: 2016 Cohort 19 Baseline Mean Adjusted MCS Scores by Number of ADL Impairments for MAO HXXXXA and HOS Total**



## Healthy Days Measures

### *Definition of Measures*

- Physically unhealthy days is a self-reported measure of the number of days during the past 30 days when physical health was not good. The measure is found in Question 12.
- Mentally unhealthy days is a self-reported measure of the number of days during the past 30 days when mental health was not good. The measure is found in Question 13.
- Days with activity limitations is a self-reported measure of the number of days during the past 30 days when poor physical or mental health kept the beneficiary from usual activities. The measure is found in Question 14.

Healthy Days Measures provide key information on the functional status of vulnerable sub-populations, and are used to assess the HRQOL<sup>38</sup> across the U.S. As sentinel indicators of present and future disease and injury risk, MAOs may use Healthy Days Measures to identify vulnerable sub-populations for effective preventative care and disease management. According to the CDC, “In recent years, several organizations have found these Healthy Days Measures useful at the national, state, and community levels for (1) identifying health disparities, (2) tracking population trends, and (3) building broad coalitions around a measure of population health compatible with the World Health Organization’s definition of health.”<sup>39</sup> The CDC HRQOL program considers 14 or more unhealthy days in the past 30 days as an indicator of poor well-being.<sup>4</sup>

### *How Is Your MAO Doing?*

Table 19 provides the frequency distributions of Healthy Days Measures for the MAO and HOS Total.

**Table 19: 2016 Cohort 19 Baseline Distribution of Healthy Days Measures for MAO HXXXXA and HOS Total**

Healthy Days Measures	MAO HXXXXA N (%)	HOS Total N (%)
<b>Physically Unhealthy Days</b>		
None	173 (46.8%)	96,054 (53.3%)
1-13	114 (30.8%)	46,506 (25.8%)
14-30*	83 (22.4%)	37,495 (20.8%)
<b>Mentally Unhealthy Days</b>		
None	252 (68.3%)	121,339 (67.3%)
1-13	82 (22.2%)	37,480 (20.8%)
14-30*	35 (9.5%)	21,598 (12.0%)
<b>Days with Activity Limitations</b>		
None	251 (67.1%)	125,847 (69.4%)
1-13	72 (19.3%)	29,226 (16.1%)
14-30*	51 (13.6%)	26,247 (14.5%)

\*Fourteen or more unhealthy days in the previous 30 days indicates poor well-being.

Figure 13 depicts the relationship between the reported number of days with activity limitations during the previous 30 days and mean adjusted PCS scores.

**Figure 13: 2016 Cohort 19 Baseline Mean Adjusted PCS Scores by Number of Days with Activity Limitations for MAO HXXXA and HOS Total**

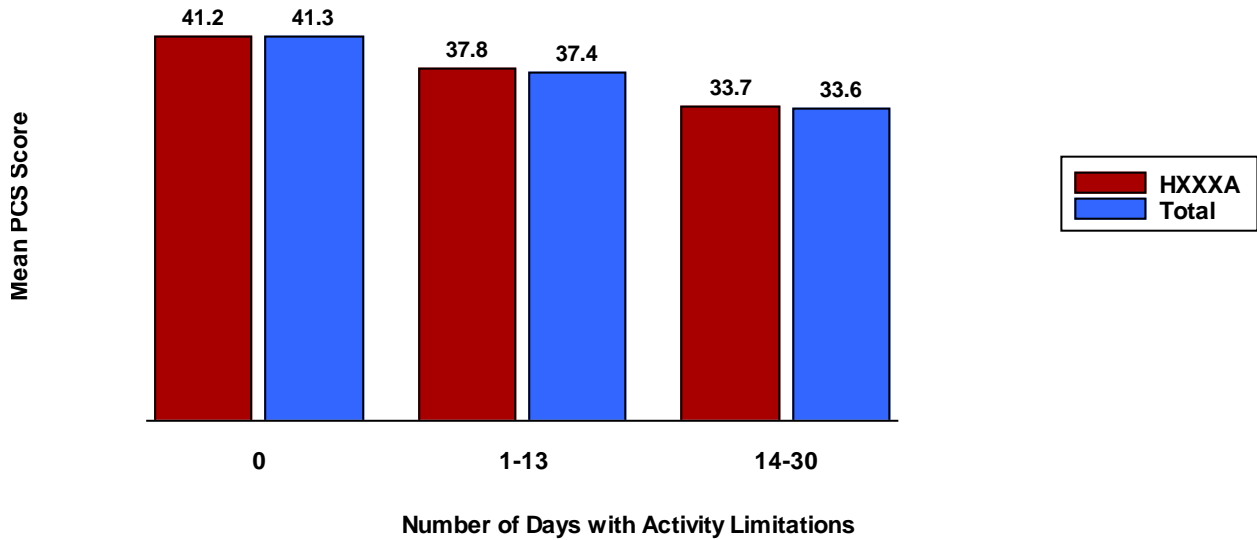
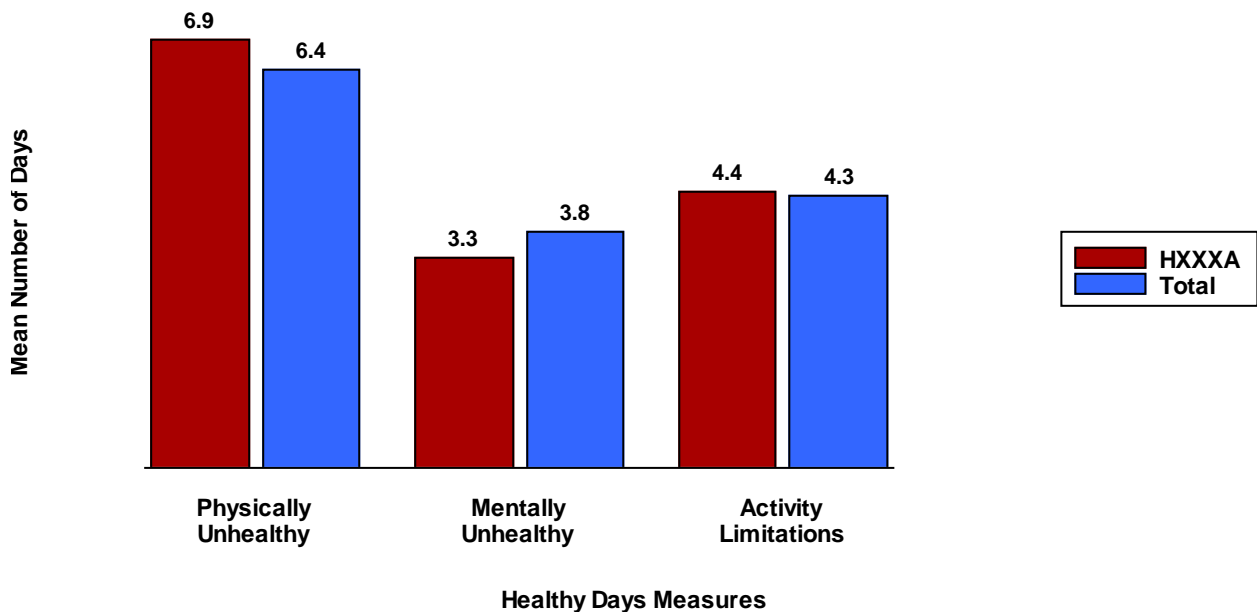


Figure 14 presents the mean numbers of reported physically unhealthy days, mentally unhealthy days, and days with activity limitations during the previous 30 days in MAO HXXXA and the HOS Total.

**Figure 14: 2016 Cohort 19 Baseline Mean Number of Unhealthy Days for the Healthy Days Measures for MAO HXXXA and HOS Total**





## Body Mass Index

### Definition of Measure

- Self-reported height and weight values are used to calculate BMI,<sup>N</sup> a measure that correlates with the amount of body fat in adult men and women. BMI is derived from Questions 55 and 56.<sup>O</sup>

A BMI of 30 or higher is considered obese and increases risk for several chronic conditions including: hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea, and some cancers.<sup>40</sup> Being overweight (BMI 25-29.9) or obese has been shown to accelerate the aging process.<sup>41</sup> Physical activity, diet, age, gender, ethnicity, and educational status are known to influence the risk for obesity.<sup>42</sup> For instance, females are at higher risk of developing morbid obesity than males. The prevalence of obesity among older adults has risen significantly over the past 30 years.<sup>43,44</sup> A BMI under 20 is considered underweight. Rapid weight loss often indicates an underlying disease and can accelerate the loss of muscle mass, which naturally occurs with the aging process.<sup>45</sup>

A study using the HOS 2006-2008 Cohort 9 Merged Baseline and Follow Up data explored the prevalence of obesity in MA beneficiaries age 65 or older.<sup>7</sup> In this study, most of the reported health conditions were significantly more prevalent among obese than normal weight beneficiaries, in particular, high blood pressure (75.8% of obese vs. 53.9% of normal weight), diabetes (34.8% vs. 12.7%), and arthritis of the hip or knee (55.3% vs. 31.3%). Exceptions were osteoporosis and stroke. Osteoporosis was significantly less prevalent among the obese (16.1% vs. 26.9%). The prevalence of stroke increased only slightly with BMI (7.9% vs 7.3%). The results also indicated that obese beneficiaries had substantially greater limitations with ADLs than normal weight beneficiaries.<sup>7</sup>

### How Is Your MAO Doing?

Table 20 shows the distribution of BMI categories by gender including underweight (BMI less than 20), normal weight (BMI of 20-24.99), overweight (BMI of 25-29.99), and obese (BMI of 30 or more) for MAO HXXXXA and the HOS Total.

**Table 20: 2016 Cohort 19 Baseline Distribution of BMI Categories by Gender for MAO HXXXXA and HOS Total**

BMI Category	MAO HXXXXA		HOS Total	
	Male N (%)	Female N (%)	Male N (%)	Female N (%)
Underweight (<20)	3 ( 2.1%)	11 ( 5.1%)	2,153 ( 3.0%)	6,202 ( 6.1%)
Normal (20-24.99)	39 (26.9%)	55 (25.7%)	17,184 (24.0%)	28,244 (27.9%)
Overweight (25-29.99)	62 (42.8%)	67 (31.3%)	31,161 (43.4%)	33,243 (32.8%)
Obese (≥30)	41 (28.3%)	81 (37.9%)	21,232 (29.6%)	33,656 (33.2%)

<sup>N</sup> BMI is calculated as:  $BMI = [\text{weight in pounds} / (\text{height in inches})^2] \times 703$ , which uses the height and weight to produce the standard measure of  $\text{kg}/\text{m}^2$  units.

<sup>O</sup> Beginning in 2012, questions for weight and height changed from categorical responses to open ended responses.

Table 21 presents the mean adjusted PCS and MCS scores by BMI categories for MAO HXXXXA and the HOS Total.

**Table 21: 2016 Cohort 19 Baseline Mean Adjusted PCS and MCS Scores by BMI Categories for MAO HXXXXA and HOS Total**

BMI Category	MAO HXXXXA		HOS Total	
	PCS Mean (SD)	MCS Mean (SD)	PCS Mean (SD)	MCS Mean (SD)
Underweight (<20)	39.1 (9.5)	52.5 (6.6)	39.1 (7.5)	52.6 (5.9)
Normal (20-24.99)	40.8 (7.6)	53.7 (5.7)	40.6 (7.3)	53.7 (5.6)
Overweight (25-29.99)	40.5 (7.6)	53.9 (5.0)	40.2 (7.1)	53.7 (5.6)
Obese (≥30)	38.1 (6.3)	53.1 (5.6)	38.1 (7.2)	52.6 (5.9)

Table 22 shows the mean number of chronic conditions by BMI categories for MAO HXXXXA and the HOS Total. Obesity exacerbates chronic conditions such as diabetes, hyperlipidemia, and hypertension, increasing medical costs and negatively affecting quality of life.<sup>46, 47</sup>

**Table 22: 2016 Cohort 19 Baseline Mean Number of Chronic Conditions by BMI Categories for MAO HXXXXA and HOS Total**

BMI Category	MAO HXXXXA Number of Conditions Mean (SD)	HOS Total Number of Conditions Mean (SD)
Underweight (<20)	2.8 (2.6)	3.1 (2.3)
Normal (20-24.99)	2.8 (2.2)	2.8 (2.2)
Overweight (25-29.99)	3.2 (2.7)	3.1 (2.2)
Obese (≥30)	4.1 (2.1)	4.0 (2.4)

## Sleep Measures

### *Definition of Measures*

- Sleep duration is a self-reported measure of the average number of hours of actual sleep at night during the past month. The measure is found in Question 53.
- Sleep quality is a self-reported measure that rates the overall sleep quality during the past month. The measure is found in Question 54.

Two sleep questions that were new in the 2015 HOS 3.0 were drawn from the Pittsburgh Sleep Quality Index (PSQI). The questions focus on “habitual” (i.e., past month) sleep duration and quality, rather than past week measures, in order to capture more chronic sleep disturbances. The PSQI has a high test-retest reliability and good validity in patients with insomnia.<sup>48</sup>

Over half of older adults suffer from symptoms of insomnia, a common problem related to aging.<sup>49</sup> Sleep disorders in the elderly can be caused by a number of factors, including medication, diseases, poor sleeping habits, and age-related changes in circadian sleep/wake regulation. There is substantial evidence linking insufficient sleep duration and poor sleep quality to mental and physical health morbidity and mortality.<sup>50</sup> Various epidemiologic findings associate sleep duration with obesity, diabetes, impaired glucose tolerance, hypertension, and mortality. People who report fair or poor health are less likely to overestimate sleep hours and report shorter sleep hours on average than those with better self-rated health.<sup>51</sup> These observations provide a basis for future studies on weight control interventions and maintenance of daily routines in sleep habits to increase the quantity and quality of sleep.

### *How Is Your MAO Doing?*

Table 23 provides frequency distributions of sleep duration (“less than 5,” “5–6,” “7–8,” and “9 or more hours”) and sleep quality (“Very good,” “Fairly good,” “Fairly bad,” and “Very bad”) for MAO HXXXA and the HOS Total.

**Table 23: 2016 Cohort 19 Baseline Distributions of Sleep Duration and Quality for MAO HXXXA and HOS Total**

<b>Sleep Questions</b>	<b>MAO HXXXA N (%)</b>	<b>HOS Total N (%)</b>
<b>Hours of actual sleep</b>		
Less than 5 hours	28 ( 7.4%)	14,904 ( 8.1%)
5-6 hours	150 (39.7%)	69,441 (37.7%)
7-8 hours	178 (47.1%)	88,578 (48.1%)
9 or more hours	22 ( 5.8%)	11,223 ( 6.1%)
<b>Overall sleep quality</b>		
Very Good	87 (23.0%)	46,990 (25.4%)
Fairly Good	234 (61.9%)	108,050 (58.5%)
Fairly Bad	43 (11.4%)	24,063 (13.0%)
Very Bad	14 ( 3.7%)	5,682 ( 3.1%)

## Health Status by Baseline Demographic Groups for MAO HXXXXA

Evidence from several studies suggests the differences in health among Medicare eligible beneficiaries by age, gender, racial, and socioeconomic groups.<sup>52, 53, 54, 55</sup> The following tables show differences in health status by demographic categories, including potential disparities within your MAO, and comparisons of your MAO with the HOS Total. Groups are defined by the sub-categories for a demographic characteristic (e.g., the 65-69 age group or White race). Estimates for the MAO that are highlighted in red indicate groups worse off than their HOS counterparts.

**Table 24: 2016 Cohort 19 Baseline Mean Adjusted PCS and MCS Scores by Selected Demographic Characteristics for MAO HXXXXA and HOS Total**

HOS Demographic	Adjusted PCS		Adjusted MCS	
	MAO HXXXXA Mean (SD)*	HOS Total Mean (SD)	MAO HXXXXA Mean (SD)*	HOS Total Mean (SD)
<b>Total</b>	<b>39.4 (7.1)</b>	39.3 (7.1)	<b>53.3 (5.4)</b>	53.1 (5.7)
<b>Age</b>				
65-69	<b>42.3 (7.3)</b>	41.9 (6.9)	<b>53.1 (5.9)</b>	53.1 (5.9)
70-74	<b>40.0 (6.7)</b>	40.3 (6.7)	<b>53.6 (5.2)</b>	53.4 (5.6)
75-79	<b>38.7 (7.0)</b>	38.5 (6.6)	<b>53.6 (5.8)</b>	53.3 (5.5)
80-84	<b>37.5 (5.3)</b>	36.7 (6.3)	<b>53.5 (4.3)</b>	52.9 (5.4)
85+	<b>34.1 (6.1)</b>	34.2 (6.4)	<b>51.9 (5.5)</b>	52.1 (5.6)
<b>Gender</b>				
Male	<b>41.0 (7.3)</b>	40.4 (7.0)	<b>54.1 (5.3)</b>	53.7 (5.3)
Female	<b>38.4 (6.8)</b>	38.5 (7.1)	<b>52.7 (5.5)</b>	52.6 (5.8)
<b>Race</b>				
White	<b>40.0 (6.8)</b>	39.7 (7.1)	<b>53.8 (5.4)</b>	53.8 (5.5)
Black	<b>36.7 (7.2)</b>	36.8 (6.5)	<b>51.1 (5.2)</b>	50.9 (5.1)
Other/Unknown	<b>38.5 (8.7)</b>	38.7 (7.5)	<b>51.5 (5.2)</b>	50.0 (5.9)
<b>Marital Status</b>				
Married	<b>41.0 (7.1)</b>	41.1 (7.0)	<b>54.6 (5.1)</b>	54.4 (5.4)
Widowed	<b>37.0 (7.0)</b>	36.6 (7.1)	<b>52.2 (5.6)</b>	52.0 (5.8)
Divorced or Separated	<b>39.7 (7.3)</b>	38.7 (7.0)	<b>52.6 (5.5)</b>	51.9 (6.0)
Never Married	<b>36.5 (6.4)</b>	39.2 (6.9)	<b>48.8 (5.9)</b>	51.8 (5.8)
<b>Education</b>				
Did Not Graduate HS	<b>34.2 (7.1)</b>	35.5 (6.9)	<b>49.7 (5.1)</b>	49.7 (5.7)
High School Graduate	<b>38.6 (5.7)</b>	38.6 (6.7)	<b>53.0 (5.1)</b>	53.3 (5.4)
Some College	<b>40.8 (6.5)</b>	40.2 (6.8)	<b>54.9 (5.0)</b>	54.3 (5.5)
4 Year Degree or Beyond	<b>43.7 (7.1)</b>	43.7 (6.6)	<b>55.3 (5.3)</b>	55.4 (5.1)
<b>Annual Household Income</b>				
Less than \$10,000	<b>34.1 (7.1)</b>	35.1 (6.8)	<b>50.1 (5.4)</b>	49.3 (5.7)
\$10,000-\$19,999	<b>36.0 (6.3)</b>	36.4 (6.7)	<b>51.6 (5.1)</b>	51.2 (5.6)
\$20,000-\$29,999	<b>38.9 (6.0)</b>	38.6 (6.5)	<b>52.9 (4.9)</b>	53.2 (5.3)
\$30,000-\$49,999	<b>41.5 (6.6)</b>	41.1 (6.4)	<b>54.8 (5.3)</b>	54.9 (5.0)
\$50,000 or More	<b>44.2 (6.9)</b>	44.8 (6.3)	<b>56.1 (5.0)</b>	56.4 (4.6)
Don't Know	<b>38.7 (6.7)</b>	37.8 (6.6)	<b>52.2 (5.8)</b>	51.8 (5.8)
<b>Medicaid Status</b>				
Medicaid	<b>35.8 (6.3)</b>	35.2 (6.6)	<b>50.2 (5.0)</b>	49.3 (5.7)
Non-Medicaid	<b>40.6 (7.0)</b>	40.5 (6.8)	<b>54.2 (5.2)</b>	54.2 (5.2)

\* Means for demographic groups in the MAO column(s) highlighted in red are lower by ten percent or more compared to the corresponding groups in the HOS Total column(s). In this report, estimates highlighted in red indicate groups worse off than their HOS Total counterparts.

**Table 25: 2016 Cohort 19 Baseline Distribution of Self-Rated General Health Status, and Physical and Mental Health Status Compared to One Year Ago by Demographic Group for MAO HXXXA and HOS Total**

HOS Demographic	General Health Status Fair or Poor		Comparative Health-Physical Slightly Worse or Much Worse		Comparative Health-Mental Slightly Worse or Much Worse	
	MAO HXXXA N (%)*	HOS Total N (%)	MAO HXXXA N (%)*	HOS Total N (%)	MAO HXXXA N (%)*	HOS Total N (%)
<b>Total</b>	<b>113 (28.5%)</b>	54,437 (28.2%)	<b>100 (25.7%)</b>	49,193 (26.0%)	<b>45 (11.8%)</b>	23,245 (12.5%)
<b>Age</b>						
65-69	29 (26.6%)	14,969 (25.6%)	27 (25.7%)	12,955 (22.5%)	12 (11.9%)	6,657 (11.7%)
70-74	32 (25.6%)	12,904 (25.1%)	29 (23.4%)	11,589 (22.9%)	13 (10.7%)	5,451 (11.0%)
75-79	22 (29.3%)	10,341 (28.0%)	17 (22.4%)	9,306 (25.7%)	9 (12.2%)	4,276 (12.0%)
80-84	9 (19.6%)	7,850 (31.9%)	9 (20.9%)	7,285 (30.4%)	4 (9.3%)	3,256 (13.9%)
85+	21 (50.0%)	8,373 (38.7%)	18 (43.9%)	8,058 (38.6%)	7 (17.1%)	3,605 (17.6%)
<b>Gender</b>						
Male	36 (22.6%)	21,165 (26.6%)	40 (25.8%)	19,825 (25.5%)	16 (10.5%)	8,865 (11.6%)
Female	77 (32.4%)	33,272 (29.2%)	60 (25.6%)	29,368 (26.4%)	29 (12.7%)	14,380 (13.2%)
<b>Race</b>						
White	74 (23.9%)	37,928 (24.9%)	80 (26.1%)	38,684 (26.0%)	33 (11.0%)	17,523 (12.0%)
Black	20 (44.4%)	9,102 (40.8%)	10 (24.4%)	5,409 (24.8%)	8 (20.0%)	2,822 (13.2%)
Other/Unknown	19 (45.2%)	7,407 (39.4%)	10 (23.8%)	5,100 (28.0%)	4 (10.3%)	2,900 (16.1%)
<b>Marital Status</b>						
Married	39 (18.8%)	21,696 (22.7%)	47 (23.2%)	22,271 (23.4%)	17 (8.5%)	9,862 (10.5%)
Widowed	35 (39.3%)	15,121 (33.4%)	26 (28.9%)	13,502 (30.0%)	12 (13.3%)	6,627 (14.9%)
Divorced or Separated	23 (37.1%)	10,668 (32.4%)	18 (28.1%)	9,228 (28.1%)	10 (16.4%)	4,617 (14.3%)
Never Married	10 (52.6%)	3,088 (32.5%)	5 (26.3%)	2,341 (24.8%)	5 (29.4%)	1,138 (12.3%)
<b>Education</b>						
Did Not Graduate HS	41 (57.7%)	18,182 (48.4%)	20 (28.6%)	11,860 (31.7%)	10 (14.7%)	6,419 (17.4%)
High School Graduate	27 (25.0%)	15,963 (27.6%)	31 (28.2%)	14,913 (25.8%)	15 (14.0%)	6,890 (12.1%)
Some College	21 (21.4%)	9,755 (21.4%)	21 (21.2%)	11,277 (24.9%)	7 (7.3%)	4,960 (11.1%)
4 Year Degree or Beyond	15 (15.6%)	5,435 (13.6%)	23 (24.5%)	8,605 (21.7%)	11 (11.8%)	3,590 (9.2%)
<b>Annual Household Income</b>						
Less than \$10,000	20 (62.5%)	10,672 (47.5%)	10 (30.3%)	7,480 (33.4%)	7 (21.9%)	4,078 (18.4%)
\$10,000-\$19,999	34 (43.6%)	11,334 (37.5%)	28 (36.4%)	9,682 (32.1%)	10 (13.2%)	4,876 (16.4%)
\$20,000-\$29,999	10 (19.6%)	6,819 (27.1%)	14 (26.9%)	6,937 (27.7%)	7 (14.0%)	3,216 (13.0%)
\$30,000-\$49,999	12 (16.0%)	6,262 (19.1%)	17 (22.1%)	7,757 (23.7%)	11 (14.5%)	3,246 (10.0%)
\$50,000 or More	12 (15.0%)	3,956 (10.7%)	16 (20.8%)	6,854 (18.6%)	3 (4.0%)	2,635 (7.2%)
Don't Know	8 (28.6%)	7,948 (37.3%)	2 (7.4%)	5,610 (26.4%)	1 (3.7%)	2,853 (13.7%)
<b>Medicaid Status</b>						
Medicaid	56 (61.5%)	22,705 (51.4%)	32 (35.6%)	15,087 (35.3%)	15 (17.2%)	8,382 (19.9%)
Non-Medicaid	57 (18.6%)	31,725 (21.3%)	68 (22.7%)	34,093 (23.3%)	30 (10.2%)	14,858 (10.3%)

\* Percentages for demographic groups in the MAO column(s) highlighted in red are greater by ten percentage points or more compared to corresponding groups in the HOS Total column(s). In this report, estimates highlighted in red indicate groups worse off than their HOS Total counterparts.

**Table 26: 2016 Cohort 19 Baseline Distribution of Positive Depression Screen by Demographic Group for MAO HXXXA and HOS Total**

HOS Demographic	MAO HXXXA Positive Screen N (%)*	HOS Total Positive Screen N (%)
<b>Total</b>	<b>49 (13.3%)</b>	23,412 (12.9%)
<b>Age</b>		
65-69	13 (13.3%)	6,954 (12.5%)
70-74	13 (10.9%)	5,428 (11.1%)
75-79	9 (12.7%)	4,248 (12.3%)
80-84	4 (10.0%)	3,149 (13.9%)
85+	10 (24.4%)	3,633 (18.7%)
<b>Gender</b>		
Male	12 ( 8.1%)	8,628 (11.5%)
Female	37 (16.8%)	14,784 (13.9%)
<b>Race</b>		
White	32 (11.0%)	15,950 (11.1%)
Black	12 (30.8%)	4,196 (20.6%)
Other/Unknown	5 (12.8%)	3,266 (19.0%)
<b>Marital Status</b>		
Married	15 ( 7.7%)	8,951 ( 9.6%)
Widowed	15 (17.2%)	7,032 (16.2%)
Divorced or Separated	13 (20.6%)	5,299 (16.6%)
Never Married	5 (26.3%)	1,472 (16.1%)
<b>Education</b>		
Did Not Graduate HS	13 (20.3%)	8,449 (23.6%)
High School Graduate	16 (15.1%)	7,063 (12.5%)
Some College	9 ( 9.2%)	4,234 ( 9.5%)
4 Year Degree or Beyond	8 ( 8.6%)	2,334 ( 6.0%)
<b>Annual Household Income</b>		
Less than \$10,000	7 (23.3%)	5,212 (24.1%)
\$10,000-\$19,999	13 (17.1%)	5,201 (17.7%)
\$20,000-\$29,999	4 ( 7.7%)	2,966 (12.1%)
\$30,000-\$49,999	11 (14.7%)	2,579 ( 8.0%)
\$50,000 or More	1 ( 1.3%)	1,512 ( 4.1%)
Don't Know	5 (19.2%)	3,875 (19.3%)
<b>Medicaid Status</b>		
Medicaid	25 (30.5%)	10,594 (26.5%)
Non-Medicaid	24 ( 8.4%)	12,813 ( 9.1%)

\* Percentages for demographic groups in the MAO column highlighted in red are greater by ten percentage points or more compared to the corresponding groups in the HOS Total column. In this report, estimates highlighted in red indicate groups worse off than their HOS Total counterparts.

**Table 27: 2016 Cohort 19 Baseline Distribution of Pain Interfering with Daily Activities and Socializing by Demographic Group for MAO HXXXA and HOS Total**

HOS Demographic	Pain Interfering with Daily Activities Quite a Bit or Very Much		Pain Limiting Socialization Often or Always	
	MAO HXXXA N (%)*	HOS Total N (%)	MAO HXXXA N (%)*	HOS Total N (%)
<b>Total</b>	<b>59 (15.4%)</b>	30,521 (16.4%)	<b>40 (10.6%)</b>	16,481 ( 8.9%)
<b>Age</b>				
65-69	<b>17 (16.7%)</b>	9,249 (16.3%)	<b>14 (14.3%)</b>	5,113 ( 9.0%)
70-74	<b>19 (15.2%)</b>	7,406 (14.9%)	<b>11 ( 8.9%)</b>	3,939 ( 7.9%)
75-79	<b>9 (12.7%)</b>	5,632 (15.9%)	<b>9 (12.5%)</b>	2,898 ( 8.2%)
80-84	<b>6 (14.0%)</b>	4,026 (17.2%)	<b>2 ( 4.8%)</b>	2,136 ( 9.1%)
85+	<b>8 (19.5%)</b>	4,208 (20.8%)	<b>4 ( 9.8%)</b>	2,395 (11.9%)
<b>Gender</b>				
Male	<b>17 (11.2%)</b>	10,481 (13.7%)	<b>13 ( 8.7%)</b>	5,387 ( 7.1%)
Female	<b>42 (18.3%)</b>	20,040 (18.3%)	<b>27 (11.9%)</b>	11,094 (10.2%)
<b>Race</b>				
White	<b>43 (14.3%)</b>	22,046 (15.0%)	<b>28 ( 9.4%)</b>	11,449 ( 7.8%)
Black	<b>8 (19.5%)</b>	4,902 (23.0%)	<b>7 (17.1%)</b>	2,659 (12.5%)
Other/Unknown	<b>8 (19.5%)</b>	3,573 (20.1%)	<b>5 (13.5%)</b>	2,373 (13.4%)
<b>Marital Status</b>				
Married	<b>22 (10.8%)</b>	12,253 (12.9%)	<b>16 ( 7.9%)</b>	6,080 ( 6.4%)
Widowed	<b>19 (21.6%)</b>	9,013 (20.1%)	<b>12 (13.6%)</b>	5,003 (11.2%)
Divorced or Separated	<b>13 (20.3%)</b>	6,829 (20.8%)	<b>8 (13.3%)</b>	3,955 (12.1%)
Never Married	<b>5 (26.3%)</b>	1,626 (17.3%)	<b>4 (21.1%)</b>	966 (10.3%)
<b>Education</b>				
Did Not Graduate HS	<b>17 (24.3%)</b>	9,840 (26.5%)	<b>12 (18.2%)</b>	5,855 (15.8%)
High School Graduate	<b>16 (15.1%)</b>	9,387 (16.3%)	<b>15 (14.0%)</b>	4,822 ( 8.4%)
Some College	<b>14 (14.1%)</b>	6,645 (14.7%)	<b>8 ( 8.1%)</b>	3,362 ( 7.4%)
4 Year Degree or Beyond	<b>10 (10.4%)</b>	3,282 ( 8.3%)	<b>3 ( 3.2%)</b>	1,577 ( 4.0%)
<b>Annual Household Income</b>				
Less than \$10,000	<b>7 (21.2%)</b>	6,522 (29.2%)	<b>5 (16.7%)</b>	3,997 (17.9%)
\$10,000-\$19,999	<b>23 (30.3%)</b>	6,853 (22.8%)	<b>16 (21.1%)</b>	3,934 (13.1%)
\$20,000-\$29,999	<b>10 (19.6%)</b>	4,137 (16.6%)	<b>6 (12.2%)</b>	2,108 ( 8.5%)
\$30,000-\$49,999	<b>8 (10.7%)</b>	3,806 (11.7%)	<b>4 ( 5.2%)</b>	1,746 ( 5.4%)
\$50,000 or More	<b>4 ( 5.1%)</b>	2,486 ( 6.8%)	<b>3 ( 3.8%)</b>	953 ( 2.6%)
Don't Know	<b>3 (10.7%)</b>	4,037 (19.1%)	<b>2 ( 7.1%)</b>	2,359 (11.2%)
<b>Medicaid Status</b>				
Medicaid	<b>24 (27.9%)</b>	12,822 (30.7%)	<b>17 (21.5%)</b>	8,089 (19.5%)
Non-Medicaid	<b>35 (11.8%)</b>	17,691 (12.3%)	<b>23 ( 7.7%)</b>	8,388 ( 5.8%)

\* Percentages for demographic groups in the MAO column(s) highlighted in **red** are greater by ten percentage points or more compared to the corresponding groups in the HOS Total column(s). In this report, estimates highlighted in **red** indicate groups worse off than their HOS Total counterparts.

**Table 28: 2016 Cohort 19 Baseline Distribution of Beneficiaries Reporting Multiple Chronic Medical Conditions<sup>§</sup> in MAO HXXXA and HOS Total**

HOS Demographic	MAO HXXXA Multiple Conditions <sup>§</sup> N (%) <sup>*</sup>	HOS Total Multiple Conditions <sup>§</sup> N (%)
<b>Total</b>	<b>288 (74.2%)</b>	143,803 (76.2%)
<b>Age</b>		
65-69	59 (57.3%)	41,145 (71.6%)
70-74	99 (78.6%)	38,090 (75.4%)
75-79	59 (79.7%)	28,315 (78.5%)
80-84	37 (86.0%)	19,320 (80.9%)
85+	34 (81.0%)	16,933 (81.8%)
<b>Gender</b>		
Male	107 (69.0%)	55,978 (72.3%)
Female	181 (77.7%)	87,825 (79.0%)
<b>Race</b>		
White	226 (74.1%)	112,648 (75.8%)
Black	32 (78.0%)	17,699 (81.6%)
Other/Unknown	30 (71.4%)	13,456 (73.6%)
<b>Marital Status</b>		
Married	145 (70.0%)	70,088 (73.2%)
Widowed	73 (82.0%)	37,234 (81.8%)
Divorced or Separated	49 (76.6%)	25,991 (78.4%)
Never Married	15 (78.9%)	7,158 (75.0%)
<b>Education</b>		
Did Not Graduate HS	55 (77.5%)	31,209 (82.4%)
High School Graduate	89 (81.7%)	45,184 (77.7%)
Some College	69 (69.7%)	34,713 (76.0%)
4 Year Degree or Beyond	66 (68.8%)	27,546 (69.1%)
<b>Annual Household Income</b>		
Less than \$10,000	28 (82.4%)	18,805 (83.0%)
\$10,000-\$19,999	62 (81.6%)	24,961 (82.1%)
\$20,000-\$29,999	38 (74.5%)	19,829 (78.7%)
\$30,000-\$49,999	51 (66.2%)	24,484 (74.4%)
\$50,000 or More	56 (70.0%)	25,531 (68.9%)
Don't Know	21 (75.0%)	16,632 (77.2%)
<b>Medicaid Status</b>		
Medicaid	71 (80.7%)	36,118 (84.5%)
Non-Medicaid	217 (72.3%)	107,661 (73.8%)

§ Multiple chronic medical conditions are defined as having two or more conditions.

\* Percentages for demographic groups in the MAO column highlighted in red are greater by ten percentage points or more compared to the corresponding groups in the HOS Total column. In this report, estimates highlighted in red indicate groups worse off than their HOS Total counterparts.



**Table 29: 2016 Cohort 19 Baseline Distribution of Multiple ADL Impairments<sup>§</sup> by Demographic Group for MAO HXXXXA and HOS Total**

HOS Demographic	MAO HXXXXA ADL Impairments <sup>§</sup> N (%) <sup>*</sup>	HOS Total ADL Impairments <sup>§</sup> N (%)
<b>Total</b>	<b>100 (25.7%)</b>	44,255 (23.3%)
<b>Age</b>		
65-69	23 (21.7%)	10,535 (18.2%)
70-74	26 (21.0%)	9,379 (18.5%)
75-79	16 (21.1%)	8,138 (22.4%)
80-84	9 (21.4%)	6,978 (28.9%)
85+	26 (63.4%)	9,225 (43.8%)
<b>Gender</b>		
Male	31 (19.9%)	16,129 (20.7%)
Female	69 (29.6%)	28,126 (25.1%)
<b>Race</b>		
White	75 (24.6%)	32,712 (21.9%)
Black	12 (29.3%)	6,702 (30.5%)
Other/Unknown	13 (30.2%)	4,841 (26.2%)
<b>Marital Status</b>		
Married	38 (18.7%)	17,197 (18.0%)
Widowed	33 (36.7%)	14,315 (31.5%)
Divorced or Separated	19 (29.2%)	8,496 (25.7%)
Never Married	6 (31.6%)	2,563 (26.9%)
<b>Education</b>		
Did Not Graduate HS	31 (43.7%)	12,953 (34.3%)
High School Graduate	25 (22.7%)	13,796 (23.8%)
Some College	17 (17.2%)	9,486 (20.8%)
4 Year Degree or Beyond	23 (24.5%)	5,608 (14.1%)
<b>Annual Household Income</b>		
Less than \$10,000	12 (35.3%)	8,452 (37.3%)
\$10,000-\$19,999	28 (36.4%)	9,666 (31.9%)
\$20,000-\$29,999	15 (28.8%)	6,126 (24.3%)
\$30,000-\$49,999	15 (19.5%)	5,877 (17.9%)
\$50,000 or More	13 (16.9%)	3,940 (10.7%)
Don't Know	6 (22.2%)	5,827 (27.0%)
<b>Medicaid Status</b>		
Medicaid	39 (42.9%)	17,892 (41.3%)
Non-Medicaid	61 (20.5%)	26,354 (18.0%)

§ Multiple ADL impairments are defined as having two or more impairments.

\* Percentages for demographic groups in the MAO column highlighted in **red** are greater by ten percentage points or more compared to the corresponding groups in the HOS Total column. In this report, estimates highlighted in **red** indicate groups worse off than their HOS Total counterparts.

**Table 30: 2016 Cohort 19 Baseline Mean Number of Unhealthy Physical, Mental, and Activity Limitation Days by Demographic Group in MAO HXXXA and HOS Total**

HOS Demographic	MAO HXXXA			HOS Total		
	Number of Unhealthy Days			Number of Unhealthy Days		
	Physical Mean (SD)*	Mental Mean (SD)*	Activity Mean (SD)*	Physical Mean (SD)	Mental Mean (SD)	Activity Mean (SD)
<b>Total</b>	6.9 (10.0)	3.3 (7.2)	4.4 (8.6)	6.4 (9.9)	3.8 (7.8)	4.3 (8.7)
<b>Age</b>						
65-69	7.3 (10.6)	2.8 (6.8)	4.1 (8.3)	6.1 (9.6)	4.0 (7.9)	4.2 (8.3)
70-74	5.2 (7.8)	2.6 (5.2)	3.6 (7.2)	5.7 (9.5)	3.4 (7.3)	3.8 (8.1)
75-79	7.9 (11.0)	3.7 (8.3)	3.6 (8.1)	6.2 (9.8)	3.5 (7.5)	4.1 (8.5)
80-84	6.0 (10.4)	3.0 (7.8)	6.2 (10.5)	6.8 (10.2)	3.8 (7.7)	4.6 (9.0)
85+	9.7 (11.2)	6.7 (9.9)	7.5 (11.3)	8.5 (11.2)	4.9 (9.0)	6.4 (10.7)
<b>Gender</b>						
Male	6.4 (10.0)	2.3 (6.1)	3.2 (6.9)	5.9 (9.8)	3.2 (7.4)	4.0 (8.5)
Female	7.2 (9.9)	4.1 (7.8)	5.3 (9.5)	6.7 (10.0)	4.2 (8.0)	4.6 (8.8)
<b>Race</b>						
White	6.9 (10.2)	3.2 (7.2)	4.4 (8.7)	6.1 (9.8)	3.5 (7.5)	4.1 (8.5)
Black	7.3 (9.0)	4.9 (8.7)	5.0 (8.0)	7.7 (10.3)	4.8 (8.6)	5.1 (9.2)
Other/Unknown	6.3 (9.5)	2.9 (5.8)	4.5 (8.9)	7.0 (10.1)	4.7 (8.6)	5.2 (9.3)
<b>Marital Status</b>						
Married	5.8 (9.5)	2.2 (6.3)	3.7 (8.1)	5.4 (9.3)	3.0 (7.0)	3.6 (8.1)
Widowed	7.0 (9.1)	4.8 (7.2)	5.0 (8.6)	7.4 (10.4)	4.5 (8.4)	5.2 (9.4)
Divorced or Separated	7.9 (10.6)	3.8 (7.7)	5.6 (9.0)	7.4 (10.4)	4.8 (8.5)	5.2 (9.2)
Never Married	13.5 (13.3)	8.1 (11.9)	7.8 (12.6)	6.9 (10.1)	4.5 (8.4)	4.7 (8.9)
<b>Education</b>						
Did Not Graduate HS	9.7 (11.2)	5.1 (9.2)	7.0 (10.3)	8.8 (11.0)	5.7 (9.4)	6.4 (10.2)
High School Graduate	6.8 (9.7)	4.2 (7.8)	4.0 (8.1)	6.5 (10.0)	3.8 (7.7)	4.4 (8.8)
Some College	5.6 (9.0)	2.2 (5.9)	3.8 (7.8)	6.0 (9.6)	3.3 (7.2)	3.9 (8.2)
4 Year Degree or Beyond	6.2 (10.0)	2.4 (6.1)	4.1 (8.8)	4.3 (8.4)	2.4 (6.1)	2.8 (7.0)
<b>Annual Household Income</b>						
Less than \$10,000	8.5 (10.0)	5.8 (9.5)	6.6 (8.9)	9.5 (11.0)	6.3 (9.6)	7.0 (10.4)
\$10,000-\$19,999	9.7 (11.5)	5.9 (9.4)	7.4 (10.9)	8.3 (10.7)	5.2 (8.8)	6.0 (9.8)
\$20,000-\$29,999	7.6 (10.2)	2.4 (6.2)	3.5 (7.2)	6.6 (10.0)	3.8 (7.7)	4.5 (8.8)
\$30,000-\$49,999	5.8 (9.0)	3.0 (6.7)	4.0 (8.9)	5.3 (9.2)	2.9 (6.7)	3.4 (7.8)
\$50,000 or More	5.0 (9.4)	1.6 (4.7)	3.4 (7.9)	3.6 (7.7)	1.8 (5.2)	2.1 (6.2)
Don't Know	4.4 (8.0)	2.4 (5.8)	2.4 (6.4)	7.1 (10.3)	4.5 (8.5)	4.9 (9.3)
<b>Medicaid Status</b>						
Medicaid	10.0 (11.1)	5.6 (9.3)	7.7 (10.3)	10.2 (11.3)	6.8 (9.9)	7.9 (10.9)
Non-Medicaid	5.9 (9.4)	2.7 (6.3)	3.5 (7.8)	5.3 (9.2)	2.9 (6.8)	3.4 (7.7)

\* Means for demographic groups in the MAO column(s) highlighted in red are greater by ten percent or more compared to the corresponding groups in the HOS Total column(s). In this report, estimates highlighted in red indicate groups worse off than their HOS Total counterparts.

**Table 31: 2016 Cohort 19 Baseline Distribution of BMI Categories by Demographic Group for MAO HXXXA and HOS Total**

HOS Demographic	MAO HXXXA		HOS Total	
	Underweight (<20 BMI) N (%)*	Obese (≥30 BMI) N (%)*	Underweight (<20 BMI) N (%)	Obese (≥30 BMI) N (%)
<b>Total</b>	<b>14 (3.9%)</b>	<b>122 (34.0%)</b>	8,355 (4.8%)	54,888 (31.7%)
<b>Age</b>				
65-69	3 (3.2%)	29 (30.9%)	2,038 (3.8%)	20,197 (37.5%)
70-74	1 (0.8%)	54 (45.4%)	1,808 (3.9%)	16,250 (34.7%)
75-79	6 (8.6%)	20 (28.6%)	1,535 (4.7%)	9,996 (30.4%)
80-84	3 (7.9%)	10 (26.3%)	1,246 (5.8%)	5,329 (24.9%)
85+	1 (2.6%)	9 (23.7%)	1,728 (9.5%)	3,116 (17.2%)
<b>Gender</b>				
Male	3 (2.1%)	41 (28.3%)	2,153 (3.0%)	21,232 (29.6%)
Female	11 (5.1%)	81 (37.9%)	6,202 (6.1%)	33,656 (33.2%)
<b>Race</b>				
White	11 (3.9%)	99 (34.7%)	6,401 (4.6%)	43,457 (31.5%)
Black	2 (5.4%)	19 (51.4%)	829 (4.3%)	7,715 (40.4%)
Other/Unknown	1 (2.7%)	4 (10.8%)	1,125 (7.1%)	3,716 (23.4%)
<b>Marital Status</b>				
Married	8 (4.1%)	63 (32.6%)	3,467 (3.9%)	27,399 (30.4%)
Widowed	5 (6.1%)	24 (29.3%)	2,738 (6.6%)	12,887 (30.8%)
Divorced or Separated	1 (1.6%)	27 (42.9%)	1,541 (5.0%)	11,042 (35.6%)
Never Married	0	6 (35.3%)	529 (6.0%)	3,072 (35.1%)
<b>Education</b>				
Did Not Graduate HS	3 (4.8%)	23 (36.5%)	1,800 (5.3%)	11,958 (35.3%)
High School Graduate	7 (6.9%)	37 (36.6%)	2,618 (4.8%)	18,347 (33.8%)
Some College	1 (1.0%)	37 (38.5%)	1,950 (4.5%)	14,216 (32.9%)
4 Year Degree or Beyond	3 (3.3%)	23 (25.3%)	1,789 (4.7%)	9,330 (24.4%)
<b>Annual Household Income</b>				
Less than \$10,000	4 (13.3%)	11 (36.7%)	1,277 (6.2%)	7,314 (35.5%)
\$10,000-\$19,999	1 (1.4%)	24 (34.8%)	1,515 (5.4%)	9,919 (35.1%)
\$20,000-\$29,999	5 (9.6%)	14 (26.9%)	1,092 (4.6%)	7,987 (33.7%)
\$30,000-\$49,999	0	34 (45.9%)	1,200 (3.8%)	10,058 (32.1%)
\$50,000 or More	1 (1.3%)	25 (32.5%)	1,312 (3.7%)	9,607 (26.8%)
Don't Know	0	5 (23.8%)	1,193 (6.2%)	6,020 (31.5%)
<b>Medicaid Status</b>				
Medicaid	5 (6.3%)	28 (35.4%)	2,268 (6.1%)	13,720 (36.6%)
Non-Medicaid	9 (3.2%)	94 (33.6%)	6,086 (4.5%)	41,157 (30.4%)

\* Percentages for demographic groups within the MAO column(s) highlighted in red are greater by ten percentage points or more compared to the corresponding groups in the HOS Total column(s). In this report, estimates highlighted in red indicate groups worse off than their HOS Total counterparts.

## 2016 NCQA HEDIS Measures

Four Effectiveness of Care measures from the Healthcare Effectiveness Data and Information Set (HEDIS) were included in the 2016 Medicare HOS: *Management of Urinary Incontinence in Older Adults* (MUI), *Physical Activity in Older Adults* (PAO), *Fall Risk Management* (FRM), and *Osteoporosis Testing in Older Women* (OTO). The results for the HEDIS measures are calculated by NCQA using data collected in the combined baseline and follow up survey samples from the same measurement year; i.e., a round of data. For the 2016 measurement year, the round of data (*Cohort 19 Baseline* and *Cohort 17 Follow Up* data) are combined. *Please note that for all other sections of this report, only the 2016 Cohort 19 Baseline sample is used.*

For each of the HEDIS measures, the MAO’s rate may or may not be reported depending on the denominator size. There must be at least 100 responses in the denominator for the MAO to obtain a reportable result for each rate. If there were fewer than 100 responses in the denominator, NCQA assigned a result of *not applicable* (NA) for the rate. For additional HEDIS measure results, please refer to the NCQA HEDIS Measures Table in the Executive Summary section.

The HEDIS summary table below presents the numerators, denominators, and percentages for the HEDIS measure results for your MAO. The subsequent pages present specific information on the relevance and calculations for each of the measures, as well as the aggregated mean rates for the state, CMS Region, and HOS Total. For a list of the states within each CMS Region, visit [www.cms.gov/About-CMS/Agency-Information/RegionalOffices/](http://www.cms.gov/About-CMS/Agency-Information/RegionalOffices/).

For detailed information about the NCQA HEDIS measures, please refer to the HEDIS 2016 Volume 6, Specifications for the Medicare Health Outcomes Survey Manual.<sup>9</sup>

**Table 32: 2016 NCQA HEDIS Performance Measures for MAO HXXXXA**

HEDIS Measure	Numerator	Denominator	Percentage
<b>MUI</b>			
Discussing Urinary Incontinence	96	171	56.14%
Treatment of Urinary Incontinence*	75	170	44.12%
Impact of Urinary Incontinence	25	175	14.29%
<b>PAO</b>			
Discussing Physical Activity	276	494	55.87%
Advising Physical Activity*	252	500	50.40%
<b>FRM</b>			
Discussing Fall Risk	106	332	31.93%
Managing Fall Risk*	115	202	56.93%
<b>OTO</b>			
Osteoporosis Testing in Older Women	215	279	77.06%

\* Measures incorporated into the 2018 Medicare Star Ratings include the MAO 2016 Improving Bladder Control (MUI Treat Rate), Monitoring Physical Activity (PAO Advise Rate) and Reducing the Risk of Falling (FRM Manage Rate).

**Note:** The MAO Improving Bladder Control measure was revised in 2015 and was not reported in the 2016 or 2017 Medicare Star Ratings; however, the revised measure will be reported in the 2018 Medicare Star Ratings. Values are provided to the second decimal place for the Star Ratings. HEDIS names are abbreviated in this table.

If the denominator for the MAO was less than 100 responses, NCQA assigned a result of *not applicable* (NA).

## Management of Urinary Incontinence in Older Adults

### HEDIS Measure

The *Management of Urinary Incontinence in Older Adults* (MUI) measure is comprised of four questions to gather data on leakage of urine, also called urinary incontinence (UI), UI interference with daily activities and sleep, patient/provider discussion of UI, and patient/provider discussion of UI treatment options. The questions were revised in 2015 to include all adults with UI in the *Discussing Urinary Incontinence* and *Treatment of Urinary Incontinence* denominators; and the *Treatment of Urinary Incontinence* numerator now assesses whether treatment options are discussed (vs. received). The *Impact of Urinary Incontinence* indicator was added to assess the impact of UI on daily activities and sleep. The following components of this measure assess different facets of managing urinary incontinence in older adults:

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#### *Discussing Urinary Incontinence*

The percentage of Medicare members 65 years of age and older who reported having urinary incontinence in the past six months and who discussed their incontinence with a health care provider.

*Denominator* Member response choices must be as follows to be included in the denominator:

Q42 = “Yes.”

Q44 = “Yes” or “No.”

*Numerator* Member response choices must be as follows to be included in the numerator:

Q44 = “Yes.”

---

#### *Treatment of Urinary Incontinence*

The percentage of Medicare members 65 years of age and older who reported having any urinary incontinence in the past six months and who discussed treatment options for their urinary incontinence with a health care provider.

*Denominator* Member response choices must be as follows to be included in the denominator:

Q42 = “Yes.”

Q45 = “Yes” or “No.”

*Numerator* Member response choices must be as follows to be included in the numerator:

Q45 = “Yes.”

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### Impact of Urinary Incontinence

The percentage of Medicare members 65 years of age and older who reported having any urinary incontinence in the past six months and who reported that urine leakage made them change their daily activities or interfered with their sleep a lot.

**Note:** A lower rate indicates better performance for this indicator.

*Denominator* Member response choices must be as follows to be included in the denominator:

Q42 = “Yes.”

Q43 = “A lot” or “Somewhat” or “Not at all”

*Numerator* Member response choices must be as follows to be included in the numerator:

Q43 = “A lot”

---

### HOS Total Results

**Table 33: Discussing Urinary Incontinence Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
StateXX	58.10	1.72	56.14	57.30	57.41	59.13	60.50	56.14	60.50
CMS Region XX	57.76	1.30	56.13	57.30	57.58	58.12	59.82	56.12	60.50
HOS Total	58.21	5.81	52.34	54.42	57.64	61.11	64.60	38.60	83.18

**Note:** If there was only one MAO in the state, the standard deviation (SD) for the state was *not calculated* (NC); and the 10<sup>th</sup> (P10), the 25<sup>th</sup> (P25), 50<sup>th</sup> (Median), 75<sup>th</sup> (P75), and 90<sup>th</sup> (P90) percentiles, and minimum and maximum rates will equal the MAO's rate. If the number of responses in the denominator for the MAO rate was less than 100, the HEDIS rate was *not applicable* (NA). If the rates for all MAOs in a state were NA, the HEDIS rate was also NA for the state. Statistics for State and Region were *not applicable* (NA) for Regional Preferred Provider Organizations (RPPO) and Private Fee-for-Service (PFFS) plans.

**Table 34: Treatment of Urinary Incontinence Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
StateXX	44.66	0.56	44.12	44.23	44.57	44.91	45.50	44.12	45.50
CMS Region XX	44.59	0.54	44.00	44.23	44.45	44.91	45.48	43.89	45.50
HOS Total	44.70	4.99	38.62	41.36	44.56	47.81	51.27	28.76	59.86

Please see the note accompanying HEDIS Table 33 above for the meaning of NC and NA.

**Table 35: Impact of Urinary Incontinence Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
StateXX	15.34	0.92	14.29	14.80	15.18	15.79	16.67	14.29	16.67
CMS Region XX	14.99	1.01	13.59	14.29	14.99	15.76	16.23	13.20	16.67
HOS Total	15.57	6.95	8.54	10.59	13.94	19.05	25.00	4.55	46.23

Please see the note accompanying HEDIS Table 33 above for the meaning of NC and NA.

## Why Is It Important?

UI may cause a wide range of morbidities, including cellulitis, pressure ulcers, urinary tract infections, falls with fractures, sleep deprivation, social withdrawal, depression, and sexual dysfunction.<sup>56, 57</sup> Persons with UI are not often being asked about their UI by a health care professional.<sup>58</sup> Consequently, UI remains significantly underreported and underdiagnosed.<sup>59</sup>

## Risk Factors

Women are most likely to develop incontinence during pregnancy and childbirth, or after the hormonal changes of menopause. Older men may become incontinent as a result of bladder obstruction or prostate surgery. Pelvic trauma, spinal cord damage, decreased mobility, cognitive impairment, and some medications can contribute to episodes of UI.<sup>56, 60</sup>

## Treatment

Evidence in the literature shows that treatment may reduce or eliminate UI in most patients. Effective treatments include behavioral therapies such as bladder training and techniques for pelvic muscle rehabilitation.<sup>61</sup> Low-intensity behavioral therapies are ideal first-line interventions that are inexpensive, low risk, and can be initiated effectively by primary care providers. Pharmacologic therapies include anticholinergic agents and tricyclic anti-depressants, and surgical therapies include injections with bulking agents, and sling procedures.<sup>56, 57, 60</sup>

## Physical Activity in Older Adults

### HEDIS Measure

The *Physical Activity in Older Adults* (PAO) measure is comprised of two questions to gather data on a patient's discussion of physical activity with a doctor or other health provider. The following components of this measure assess different facets of promoting physical activity in older adults:

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#### *Discussing Physical Activity*

The percentage of Medicare members 65 years of age and older who had a doctor's visit in the past 12 months and who spoke with a doctor or other health provider about their level of exercise or physical activity.

*Denominator* Member response choices must be as follows to be included in the denominator:

Q46 = "Yes" or "No."

*Numerator* Member response choices must be as follows to be included in the numerator:

Q46 = "Yes."

---

#### *Advising Physical Activity*

The percentage of Medicare members 65 years of age and older who had a doctor's visit in the past 12 months and who received advice to start, increase, or maintain their level of exercise or physical activity.

**Note:** Beneficiaries who respond to Q46, "I had no visits in the past 12 months," are excluded from results calculation for Q47.

*Denominator* Member response choices must be as follows to be included in the denominator:

Q47 = "Yes" or "No."

*Numerator* Member response choices must be as follows to be included in the numerator:

Q47 = "Yes."

---



## HOS Total Results

**Table 36: Discussing Physical Activity Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
StateXX	55.81	2.15	52.61	55.14	55.87	57.31	58.15	52.61	58.15
CMS Region XX	55.46	1.84	52.83	54.13	55.47	57.31	57.79	52.61	58.15
HOS Total	54.65	6.88	45.92	50.00	54.62	59.40	63.24	32.60	81.64

Please see the note accompanying HEDIS Table 33 for the meaning of NC and NA.

**Table 37: Advising Physical Activity Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
StateXX	50.68	1.39	48.60	50.40	50.84	51.14	52.42	48.60	52.42
CMS Region XX	50.54	1.31	48.75	49.33	50.68	51.14	52.40	48.60	52.42
HOS Total	50.90	5.83	43.34	47.03	51.08	54.71	58.27	31.12	67.56

Please see the note accompanying HEDIS Table 33 for the meaning of NC and NA.

### Why Is It Important?

Engaging in physical activity is more influential than genetic factors in avoiding the deterioration issues that come with aging.<sup>62</sup> In community-dwelling older people, exercise reduces the impact of age on mortality and confers the greatest benefits to improvements in the health status of the frail elderly.<sup>63, 64</sup> Regular physical activity is associated with decreased risk for heart disease, hypertension, diabetes, certain cancers, arthritis, high cholesterol, osteoporosis, and premature mortality.<sup>18, 65</sup> Lack of physical activity and poor diet are the major causes of obesity. The annual healthcare costs for obesity were estimated at \$147 billion as of 2008.<sup>66</sup> Physical activity also improves muscle strength and balance, reducing the risk of falls. Fall-related injuries are projected to cost the nation more than \$32.4 billion by the year 2020.<sup>67</sup> Regular physical activity improves physical functioning, fosters a sense of well-being, reduces fall risk, and reduces risk of depressive symptoms and anxiety.<sup>68, 69, 70, 71</sup>

### Risk Factors

Physical activity decreases with increasing age. Of those age 65-74 years, approximately 25% participate in regular leisure time physical activity, while 20% of those age 75-84 and 11% of those 85 years and older participate. There are gender, racial, and geographic differences in participation in regular physical activity: men are more likely than women, Whites are more likely than Blacks or Hispanics, and those in the North-Central and Western States are more likely to engage in regular physical activity. The goal of Healthy People 2010 had been to increase the proportion of all adults who engage in regular physical activity to 30%.<sup>44, 72</sup> In 2008, the US Department of Health and Human Services issued new physical activity guidelines for Americans in English and Spanish that describe the types and amounts of physical activity that offer substantial health benefits to Americans.<sup>73</sup> The new goals of Healthy People 2020 include reducing the proportion of adults who engage in no leisure-time physical activity and increasing the proportion of adults who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity.<sup>74</sup>

## Recommendations

Older adults should consult their health care provider to determine what level of physical activity is safe and appropriate. Sedentary older adults should begin physical activity with short intervals of moderate activity (5 to 10 minutes).<sup>75, 76</sup> Older adults should aim to do at least 150 minutes of moderate-intensity physical activity a week, or 75 minutes of vigorous-intensity activity a week. When older adults cannot meet these goals because of chronic conditions, they should be as physically active as their abilities allow. Aerobic activities such as jogging, walking, rolling a wheelchair, or swimming should be engaged in at least 3 days per week. Strength training involving multiple muscle groups, such as calisthenics, weight lifting, carrying laundry or groceries, chair exercises, or working in the yard, should be done at least 2 days per week.<sup>67, 73, 74</sup>

## Fall Risk Management

### HEDIS Measure

The *Fall Risk Management* (FRM) measure consists of four questions to ascertain whether beneficiaries had a history of falls or problems with balance or walking, whether they discussed falls with a medical provider, and their provider's management of fall risk. The following components of this measure assess different facets of fall risk management:

---

#### *Discussing Fall Risk*

The percentage of Medicare members 75 years of age and older, or 65–74 years of age with balance or walking problems or a fall in the past 12 months, who were seen by an MAO practitioner in the past 12 months, and who discussed falls or problems with balance or walking with their current practitioner.

*Denominator* Criteria for inclusion in the denominator depend on member age.

**Members 65–74 years of age as of December 31 of the measurement year**

Member response choices must be as follows to be included in the denominator:

Q48 = “Yes” or “No.”

Q49 = “Yes” or Q50 = “Yes.”

**Members 75 years of age and older as of December 31 of the measurement year**

Member response choices must be as follows to be included in the denominator:

Q48 = “Yes” or “No.”

*Numerator* Member response choices must be as follows to be included in the numerator:

Q48 = “Yes.”

---

#### *Managing Fall Risk*

The percentage of Medicare members 65 years of age and older who had a fall or had problems with balance or walking in the past 12 months, who were seen by an MAO practitioner in the past 12 months, and who received fall risk intervention from their current practitioner.

*Denominator* Member response choices must be as follows to be included in the denominator:

Q48 = “Yes” or “No.”

Q49 = “Yes” or Q50 = “Yes.”

Q51 = “Yes” or “No.”

*Numerator* Member response choices must be as follows to be included in the numerator:

Q51 = “Yes.”

---

## HOS Total Results

**Table 38: Discussing Fall Risk Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
<b>StateXX</b>	34.29	1.67	31.93	33.91	34.50	34.53	36.60	31.93	36.60
<b>CMS Region XX</b>	34.17	1.21	32.63	33.72	34.04	34.53	35.88	31.93	36.60
<b>HOS Total</b>	35.25	6.61	28.51	31.04	33.83	37.34	44.98	22.26	61.79

Please see the note accompanying HEDIS Table 33 for the meaning of NC and NA.

**Table 39: Managing Fall Risk Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
<b>StateXX</b>	58.20	1.50	56.92	56.93	57.55	59.53	60.08	56.92	60.08
<b>CMS Region XX</b>	57.97	1.17	56.81	56.93	57.64	58.60	59.81	56.71	60.08
<b>HOS Total</b>	58.58	8.86	48.73	52.53	56.79	63.14	70.70	39.83	90.63

Please see the note accompanying HEDIS Table 33 for the meaning of NC and NA.

### Why Is It Important?

More than 30% of adults age 65 or older fall each year and falls are the most common cause of injuries and fatalities among the elderly.<sup>77, 78, 79, 80</sup> Falls are also a common cause of nursing home admissions among older adults.<sup>81</sup> Fall related injuries, such as hip fractures, are associated with significant functional decline, limited mobility, loss of ability to live independently, and decreased quality of life. In 2010 among adults age 65 and older, 21,759 fatal fall related injuries and 2.35 million non-fatal fall related injuries were treated in emergency rooms.<sup>82</sup> On average, the medical cost for a fall injury in an adult age 65 and older is \$18,010.<sup>82</sup> Fractures are the most common and most costly type of non-fatal injuries. Although only one third of non-fatal injuries are fractures, they account for 61% of the costs or \$12 billion.<sup>83</sup> The annual direct and indirect costs associated with falls are projected to reach \$54.9 billion (in 2007 dollars) by 2020.<sup>84, 85</sup>

### Risk Factors

The risk of fall related injuries increases with age. Adults 85 and older were four to five times more likely to have fall related injuries than adults 65-74 years of age.<sup>86</sup> Females are more likely than males to have non-fatal fall injuries, whereas males are more likely than females to have fatal fall injuries. Other risk factors for falls include: lack of physical activity, misuse of alcohol, taking of specific prescription drugs (e.g., psychotropic or narcotic medications), hearing or visual impairments, and unsafe home environments.<sup>86, 87</sup>

### Prevention

Regular exercise and exercise programs, e.g., tai chi, may increase strength and improve balance among older adults.<sup>77</sup> Regular medication reviews by physicians or pharmacists can help reduce side effects and drug interactions. Annual eye checkups are important for maintaining eye health. Home assessment and modifications may reduce hazards in the home, such as improper lighting, that can lead to falls.<sup>84</sup> Fall prevention programs may need to provide and install safety devices to effectively reduce environmental hazards.<sup>87, 88</sup>

## Osteoporosis Testing in Older Women

### HEDIS Measure

The *Osteoporosis Testing in Older Women* (OTO) measure assesses the percentage of women age 65-85 who report ever having received a bone density test to check for osteoporosis. The age criteria for the measure were revised in 2015 to add an upper age limit.

### *Osteoporosis Testing in Older Women*

This measure assesses the number of women 65-85 years of age who report ever having received a bone density test to check for osteoporosis.

*Denominator* Member response choices must be as follows to be included in the denominator:

Q52 = “Yes” or “No.”

*Numerator* Member response choices must be as follows to be included in the numerator:

Q52 = “Yes.”

### HOS Total Results

**Table 40: Osteoporosis Testing in Older Women Rate for STXXXX, CMS Region XX and HOS Total**

	Mean	SD	P10	P25	Median	P75	P90	Min	Max
StateXX	76.18	1.01	74.48	76.18	76.47	76.74	77.06	74.48	77.06
CMS Region XX	76.13	1.89	73.18	75.86	76.38	77.06	78.19	71.88	79.00
HOS Total	74.27	9.88	60.00	67.77	75.75	81.79	86.47	46.00	94.93

Please see the note accompanying HEDIS Table 33 for the meaning of NC and NA.

### Why Is It Important?

Osteoporosis is the most common bone disease. It is characterized by low bone mass and deterioration of bone strength, which leads to an increased risk of fractures.<sup>89, 90, 91</sup> An estimated 10 million Americans age 50 and older have osteoporosis and 34 million have low bone mass. By 2020, half of all Americans age 50 and over could be at risk for osteoporosis.<sup>92</sup> Osteoporosis is a major cause of disability and mortality in older adults. Over 1.5 million fractures per year are attributable to osteoporosis. Each year, these fractures account for \$12-18 billion in direct health care costs, 500,000 hospitalizations, 800,000 emergency room visits, 2.6 million physician visits, and 180,000 nursing home admissions.<sup>93</sup> Prevention, diagnosis, and treatment of osteoporosis decreases injury and disability, improves quality of life for patients, and reduces costs to patients, caregivers, health care systems, and society.<sup>94</sup>

### Risk Factors

The risk of developing osteoporosis increases with age and is higher in females than males. Among females, risk is higher in the postmenopausal than in the pre-menopausal period. Risk is also higher in Whites and Asians than other race/ethnicity groups.<sup>95</sup> Other risk factors include:

smoking, family history of osteoporosis, low weight and BMI, history of prior fracture, and taking certain medications that cause bone loss; e.g., oral glucocorticoids.<sup>91, 92, 93, 94, 95</sup>

### Prevention and Treatment

Adequate amounts of calcium and vitamin D, avoiding smoking and excessive alcohol, and regular weight bearing exercise all can help prevent osteoporosis.<sup>96</sup> Medications for prevention and treatment of osteoporosis include: bisphosphonates (e.g., alendronate and risedronate), calcitonin, estrogen replacement, and selective estrogen receptor antagonists.<sup>97</sup> Since 2007, zoledronic acid has been available as a once-yearly intravenous therapy.<sup>89</sup> Aerobics, weight bearing, resistance exercises, and walking are effective in increasing the bone mineral density (BMD) of the spine and the hip.<sup>98</sup>

## Appendix 1

### Program Background

This section provides a brief introduction to the Medicare HOS. A complete description of the HOS program, the program timeline, the HOS 3.0 instrument, previous survey results, and supporting documents are available on the HOS website at [www.HOSonline.org](http://www.HOSonline.org).

CMS is committed to monitoring the quality of care provided by MAOs. The HOS results continue to be an important part of the CMS quality improvement activities, to ensure that medical care paid for under the Medicare program meets professionally recognized standards of health care. Section 722 of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) mandates collecting, analyzing, and reporting health outcomes information. This legislation also specifies that data collected on quality, outcomes, and beneficiary satisfaction to facilitate consumer choice and program administration must use the same types of data that were collected prior to November 1, 2003. Collected since 1998, the Medicare HOS is the first patient-reported outcomes measure in Medicare managed care, and therefore remains a critical part of assessing MAO quality. In addition, CMS includes the HOS results as one component of their performance assessment program.

The goal of the HOS program is to gather valid and reliable health status data in Medicare managed care for use in quality improvement activities, public reporting, MAO accountability, and improving health outcomes. This HOS Baseline Report is part of a larger CMS effort to increase the health care industry's capacity to improve the health status of its Medicare population. The baseline results are intended to help MAOs identify areas for potential improvement. The report contains information on baseline measures of physical and mental health, chronic medical conditions, functional status (e.g., ADLs), clinical measures, NCQA HEDIS measures, and other health status indicators. The HOS Baseline Report is made available to all participating MAOs after each annual baseline cohort data collection is completed.

### 2016 Medicare Advantage Organization Participation

MAOs with Medicare contracts in effect on or before January 1, 2015, and a minimum enrollment of 500 beneficiaries were required to report the Baseline HOS in 2016:

- All coordinated care plans, including local and regional preferred provider organizations (PPO), health maintenance organizations (HMO), and contracts with Special Needs Plan (SNP) benefit packages
- Section 1876 cost contracts, even if closed for enrollment
- Private Fee-for-Service (PFFS) contracts
- Medical savings account (MSA) contracts
- Employer/union only contracts
- Medicare Medicaid Plans (MMP)

MAOs that administered the HOS Baseline Survey in 2014 were required to administer the HOS Follow-Up Survey in 2016.

All Program of All-Inclusive Care for the Elderly (PACE) organizations with Medicare contracts in effect on or before January 1, 2015, and with a minimum enrollment of 30

beneficiaries as of October 1, 2015, were required by CMS to administer the HOS-Modified (HOS-M) in 2016.

MAOs sponsoring Fully Integrated Dual Eligible (FIDE) SNPs within Medicare contracts in effect on or before January 1, 2015, and with a minimum enrollment of 50 beneficiaries could request a frailty adjustment assessment. The assessment determined eligibility for a frailty adjustment payment, similar to those payments provided to PACE programs that use HOS-M data. In 2016, plans were also permitted to choose whether their assessments would be calculated based on ADLs reported in the HOS or on a separate sample of beneficiaries who completed the HOS-M. Voluntary reporting for frailty assessment at the FIDE SNP level is in addition to standard HOS requirements for quality reporting at the contract level.

## **2016 Methodology and Design**

### Cohort 19 Baseline Sampling

- MAOs with fewer than 500 beneficiaries were not required to report HOS.
- For MAOs with 500 to 1,200 beneficiaries, all eligible beneficiaries were included in the sample.
- For MAOs with more than 1,200 beneficiaries and less than 3,000 beneficiaries, a simple random sample of 1,200 beneficiaries was selected for the baseline survey.
- For MAOs with 3,000 or more beneficiaries, beneficiaries who responded to the previous year's baseline survey were excluded from the random sample of 1,200 for the current year.
- Beneficiaries were defined as eligible if they were 18 years or older on the date the sample was drawn. The six months enrollment requirement was waived beginning in 2009, and beneficiaries with End Stage Renal Disease (ESRD) were no longer excluded from the sampling beginning in 2010.

### Survey Administration

- MAOs contracted with a CMS approved survey vendor to administer the survey following the protocol specified in the HEDIS 2016, Volume 6, Specifications for the Medicare Health Outcomes Survey Manual. The manual detailed the methods for mail, telephone, and mixed methods of data collection.
- The mail component of the survey used prenotification letters, a standardized questionnaire, survey letters, and reminder/thank you postcards. Sample respondents completed the HOS in English, Spanish, or Chinese language versions of the mail survey.
- Survey vendors attempted telephone follow up in English or Spanish (with at least six attempts) in those instances when beneficiaries failed to respond after the second mail survey or returned an incomplete mail survey in order to obtain responses for missing items. A standardized version of an Electronic Telephone Interviewing System script was used to collect telephone interview data for the survey.
- Survey vendors performed initial data cleaning and follow up with survey respondents, as necessary.



## Data Cleaning

The entire HOS data file was reviewed using SAS<sup>®</sup> 9.3 programs to verify the quality of the data submitted by survey vendors. Reliable and valid HOS data are essential for maintaining the integrity of HOS measures used in the Medicare Star Ratings. Data files were reviewed for errors prior to merging the files into a final HOS dataset. Vendor generated errors were identified for correction, while errors attributable to the survey respondent, such as skip pattern errors, were left 'as is' in the final HOS dataset.

- Data consistency checks were performed to identify:
  - Out of range dates and response values
  - Duplicate Beneficiary Link Keys, Health Insurance Claim (HIC) numbers and Social Security Numbers (SSN)
  - Data shifts in value assignment
  - Inconsistencies in data distributions of survey response values among vendors
  - Discrepancies in the percent complete and survey disposition codes
  - Inconsistent assignment of survey variables (such as survey disposition, round number, and survey language)
- Text files from vendors were concatenated into the final HOS dataset.
- Additional fields were created and added to the final HOS dataset such as the percent of survey completed, the number of ADL questions answered, indicators for ineligible and completed surveys, and the PCS and MCS Scores.

## Medicare HOS 3.0 Instrument

The 2016 survey administration used the HOS 3.0 that was implemented in 2015. The HOS 3.0 evaluates the HRQOL of Medicare Advantage beneficiaries by measuring their physical and mental health status using the VR-12.<sup>99</sup> Modifications in the HOS 3.0 from the previous version (HOS 2.5) included: changes to questions about leakage of urine, osteoporosis testing in older women, sleep duration and quality, and primary language spoken in the home. In a formatting change, the survey uses a two column layout for each page.

The HOS also contains questions about: socio-demographics, ADLs, IADLs, chronic medical conditions, self-rated health, number of unhealthy days in the past 30 days, depression risk, cognitive functioning, memory, pain, living arrangements, and height and weight used for calculation of BMI. Four HEDIS Effectiveness of Care measures are included to evaluate management of urinary incontinence, physical activity, osteoporosis testing, and fall risk management. Questions regarding race, ethnicity, sex, primary language, and disability status are included to comply with standards established by Section 4302 of the Affordable Care Act. The 2016 HOS 3.0 and previous versions of HOS instruments are available on the Survey page of the HOS website ([www.HOSonline.org](http://www.HOSonline.org)).

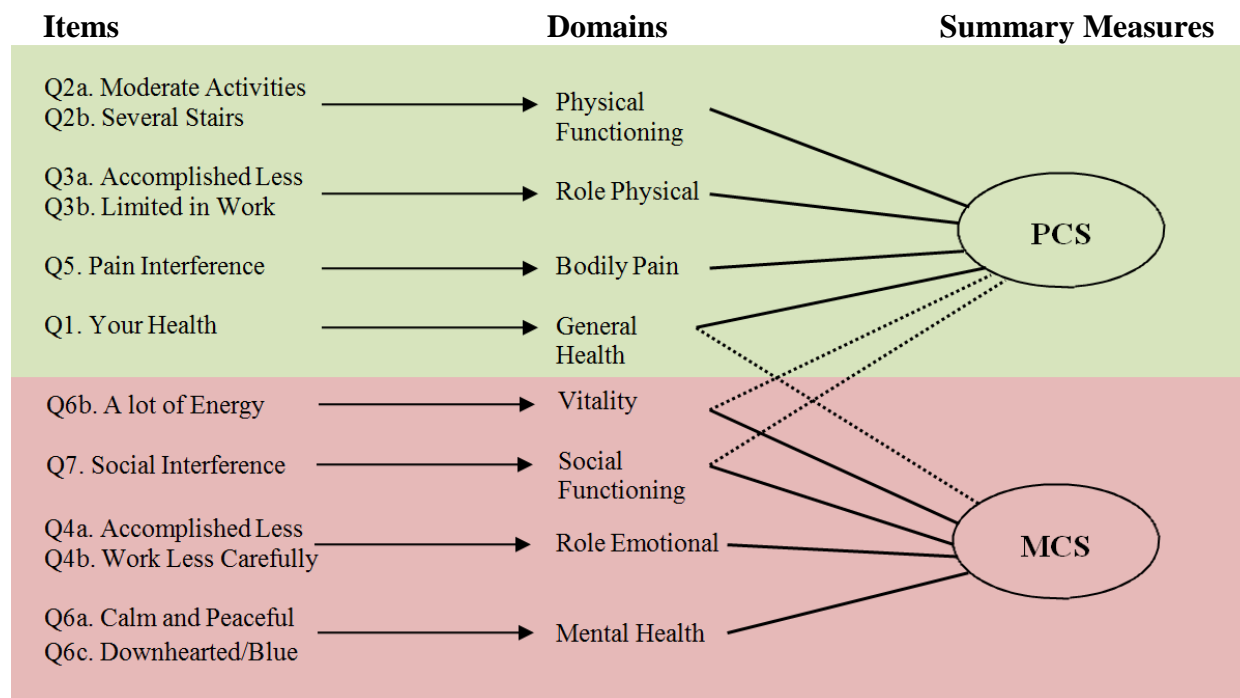
The VR-12 was derived from the Veterans RAND 36-Item Health Survey (VR-36).<sup>100, 101, 102</sup> The VR-12 is a generic, multipurpose health survey, which consists of the 12 most important items from the VR-36 for construction of the physical and mental health summary scores (questions Q1-Q7) and two items that assess change in physical and emotional health compared to one year ago (Q8 and Q9) that are not used in the calculation of the summary scores. The shorter instrument was adopted to reduce response burden and survey costs, while maintaining comparability of HOS results over time. The body of literature supports the shorter survey as a

reliable and valid substitute for the 36-item health survey. In addition, conversion formulas have been developed and validated for comparison of the VR-12 with the earlier 36-item survey that allows reliable comparisons of HOS results.<sup>103</sup>

In comparison with the earlier 36-item survey, two modifications were made in the VR-12 and previously in the VR-36. The first modification was an increase in the number of response choices for the items used for role limitations due to physical problems (Q3a and Q3b) and role limitations due to emotional problems (Q4a and Q4b), from a two point choice of “Yes” or “No” to a five-point Likert scale (“No, none of the time,” “Yes, a little of the time,” “Yes, some of the time,” “Yes, most of the time,” and “Yes, all of the time”). The role-physical questions assess whether respondents’ physical health limits them in the kind of work or other usual activities they perform, while the role-emotional questions assess whether emotional problems have caused respondents to accomplish less in their work or other usual activities. The second modification was that two questions were used to assess health change, one focusing on physical health (Q8) and one on emotional problems (Q9), in contrast to the one general change item in the 36-item survey.<sup>104, 105</sup>

The VR-12 measures the same eight health domains as the 36-item health survey: 1) Physical Functioning, 2) Role-Physical, 3) Role-Emotional, 4) Bodily Pain, 5) Social Functioning, 6) Mental Health, 7) Vitality, and 8) General Health. Each domain aggregates one or two items and all eight domains are used to calculate the two summary measures, as illustrated in the VR-12 mapping model that follows in Figure 15.

**Figure 15: Mapping of HOS VR-12 to 8 Health Domains and 2 Summary Measures**



**Note:** Domains contributing the most to each summary measure are indicated by a solid line. Domains contributing to a lesser degree are indicated by a broken line; however, all domains contribute to some extent to the scoring of both summary measures (PCS and MCS).

### Physical and Mental Component Summary Scores

- The PCS and MCS scores were calculated from the VR-12 using the Modified Regression Estimate (MRE) for scoring and imputation of missing data.<sup>99</sup> For those beneficiaries with complete responses across the VR-12, the following steps<sup>106</sup> were taken to calculate PCS and MCS:
  - Step One: New variables were created for each response level choice with one level omitted. Using the 59 total response categories across the VR-12 questions, 47 indicator variables were created.
  - Step Two: Aggregate PCS and MCS scores were created separately from a regression equation that weighted each of the 47 indicator variables. The weights were derived from the Veterans SF-36 PCS and MCS Scales using the 1999 Large Health Survey of Veteran Enrollees.<sup>107</sup>
  - Step Three: A constant was added to each of the estimates obtained from Step Two. The scores were then standardized using normative values from a 1990 U.S. general population. Therefore, a mean score of 50 represents the national average, a 10-point difference above and below the mean score is one standard deviation, and, with few exceptions, the scores have a range of zero through 100 (higher being better).
- When a beneficiary had missing data across the VR-12 items, PCS and MCS scores were imputed using the MRE. Using the MRE algorithm, PCS and MCS scores can be calculated in as many as 90% of the cases in which one or more VR-12 responses are missing.<sup>108</sup> Depending on the pattern of missing item responses for a beneficiary, a different set of regression weights was required to compute that individual's PCS and/or MCS scores.<sup>106</sup> For each combination of missing data, the beneficiaries' data were merged with the stored regression weights and the PCS or MCS scores were computed and then standardized using the normative values from Step Three.
- Beneficiary PCS and MCS results were mode adjusted for the impact of telephone administration compared to the reference mode of mail administration. Comparisons across the VR-12 of matched HOS and Veterans Administration surveys for the same respondents showed that PCS and MCS scores were, on average, 1.9 and 4.5 points greater respectively for telephone compared to mail administered surveys.<sup>109</sup> Therefore, for telephone surveys, 1.9 points were subtracted from the PCS score and 4.5 points were subtracted from the MCS score.
- For the physical health summary measure, very high scores indicate no physical limitations, disabilities, or decline in well-being; high energy level; and a rating of health as "excellent."
- For the mental health summary measure, very high scores indicate frequent positive affect, absence of psychological distress, and no limitations in usual social and role activities due to emotional problems.

### Case-Mix Adjustment for Comparison of MAOs at Baseline

- Beneficiaries are not randomly assigned to MAOs. Therefore, unadjusted PCS and MCS scores may be biased by demographic and chronic health characteristics that are disproportionately represented in some MAOs. For this reason, the PCS and MCS scores were case-mix adjusted to allow for equitable comparisons across all MAOs. In the context of the HOS, case-mix refers to those beneficiary characteristics measured at

baseline (such as age and the presence of chronic conditions) that are outside the control and influence of the MAO, but that may contribute to better or worse physical and/or mental health summary scores.<sup>108</sup> Case-mix adjustment is a statistical technique that uses multiple regression models to control for those differences, thus allowing comparisons in performance and quality across MAOs.

- Models used to adjust the summary scores included variables to control for differences in demographic and socioeconomic characteristics, chronic medical conditions, and HOS study design variables.
  - Demographic and socioeconomic characteristics included age, gender, race, education, marital status, and annual household income.
  - Chronic medical conditions were measured from 15 questions about medical conditions.
  - HOS study design variables included who completed the survey, CMS Region, and the survey vendor.
- Three different generalized linear regression models were used to adjust PCS and MCS scores since not all beneficiaries responded to all survey questions. Only one model, the most comprehensive model possible, was used to calculate an adjusted score for each beneficiary.
  - Model One: If a beneficiary had completed data for all of the covariates, then the adjusted scores were calculated using Model One, which contains all variables.
  - Model Two: If the beneficiary had completed data for all covariates except annual household income, which traditionally has the highest rate of missing data, then Model Two was used.
  - Model Three: If a beneficiary did not have enough completed data for Model One or Two, then Model Three was used. Age, gender, race, CMS Region, and survey vendor were included in Model Three because they were available for all sampled beneficiaries.
- Adjusted MAO scores can only be calculated with use of the complete HOS dataset.

**Table 41: Covariates Used in the Case Mix Adjustment of PCS and MCS Scores**

DEMOGRAPHICS COVARIATES	MODELS		
	ONE	TWO	THREE
Age (Integer)	√	√	√
Gender (Male or Female)	√	√	√
CMS Race (Black, Other Minority)	√	√	√
Education	√	√	
Marital Status	√	√	
Annual Household Income	√		
<b>CHRONIC MEDICAL CONDITIONS</b>			
Hypertension or high blood pressure	√	√	
Angina pectoris or coronary artery disease	√	√	
Congestive heart failure	√	√	
Myocardial infarction or heart attack	√	√	
Other heart conditions, such as problems with heart valves or arrhythmias	√	√	
Stroke	√	√	
Emphysema, or asthma, or COPD (Chronic Obstructive Pulmonary Disease)	√	√	
Crohn's disease, ulcerative colitis, or inflammatory bowel disease	√	√	
Arthritis of the hip or knee	√	√	
Arthritis of the hand or wrist	√	√	
Osteoporosis	√	√	
Sciatica	√	√	
Diabetes, high blood sugar, or sugar in the urine	√	√	
Depression	√	√	
Any cancer (other than skin cancer)	√	√	
<b>HOS STUDY DESIGN VARIABLES</b>			
Who Completed Survey (Self or Other)	√	√	
CMS Region	√	√	√
Survey Vendor	√	√	√

**Note:** Model One included all covariates listed in Table 41 and was used for beneficiaries with completed data for all of the covariates. Model Two was used for beneficiaries with completed data for all of the covariates except annual household income. Model Three was limited to age, gender, race, CMS Region, and survey vendor, and was used for beneficiaries who did not have enough completed data for Model One or Model Two. The variables included in Model Three were available for all participating beneficiaries.

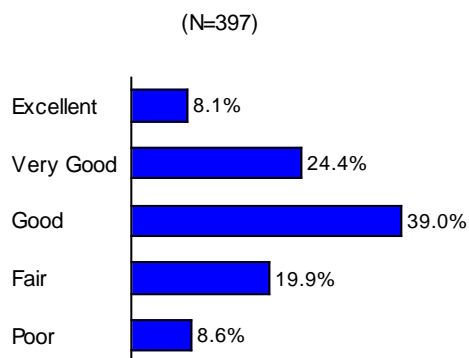
## Appendix 2

### 2016 Cohort 19 Baseline Frequencies of Survey Fields for MAO HXXXXA

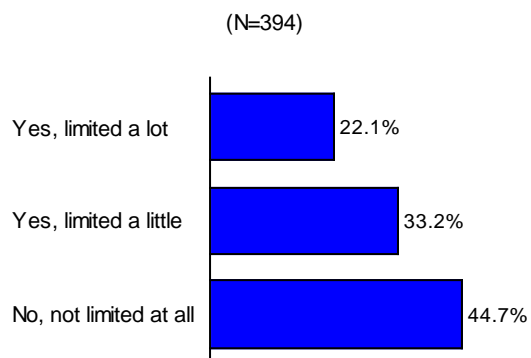
The frequency graphs on the following pages are available for the majority of questions for your MAO's 2016 Cohort 19 Baseline analytic sample, with the exception of the demographic information in Q55 through Q68, which is provided in the Demographics and BMI tables in the Baseline Results section.<sup>P</sup> Please note that the percentages in the graphs may not add to 100% due to rounding.

Note that the response frequencies in graphs for questions used in the four HEDIS Effectiveness of Care measures (Q42-Q52) are displayed for the 2016 Cohort 19 Baseline analytic sample only, and not the combination of the complete round of data (2016 Cohort 19 Baseline and 2016 Cohort 17 Follow Up data), as reported in the NCQA HEDIS Measures section.

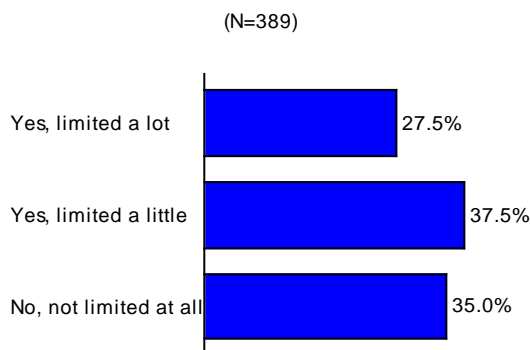
Q1. In general, would you say your health is:



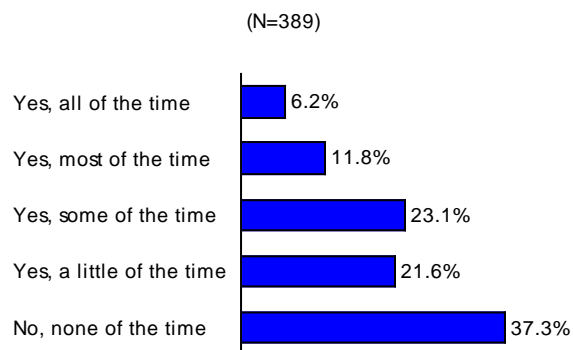
Q2a. Does your health now limit you in moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?



Q2b. Does your health now limit you in climbing several flights of stairs?

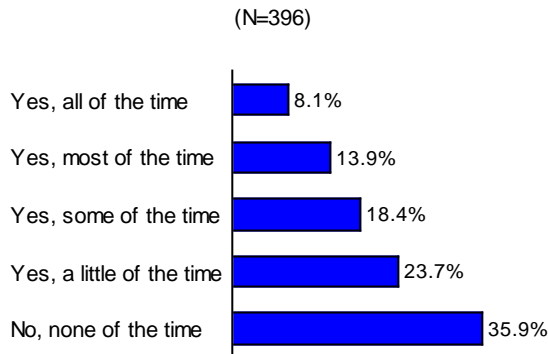


Q3a. During the past 4 weeks, have you accomplished less than you would like with your work or other regular daily activities as a result of your physical health?

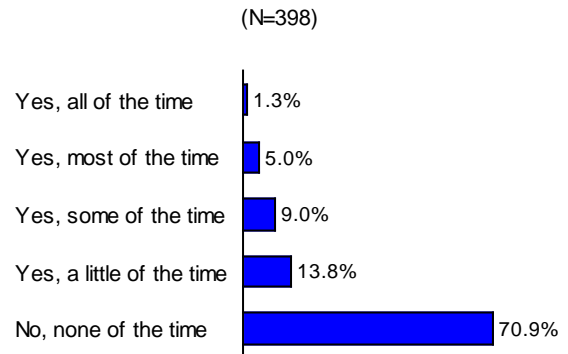


<sup>P</sup> The actual phrasing for the 2016 Medicare HOS 3.0 survey questions is available on the HOS website at [http://hosonline.org/globalassets/hos-online/survey-instruments/hos\\_2016\\_survey.pdf](http://hosonline.org/globalassets/hos-online/survey-instruments/hos_2016_survey.pdf).

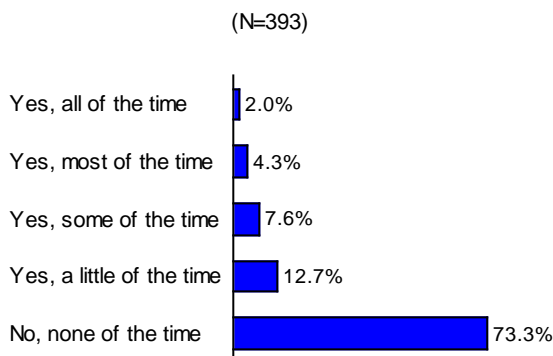
Q3b. During the past 4 weeks, were you limited in the kind of work or other activities as a result of your physical health?



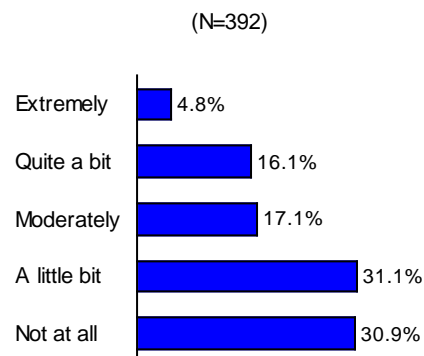
Q4a. During the past 4 weeks, have you accomplished less than you would like with your work or other regular daily activities as a result of any emotional problems?



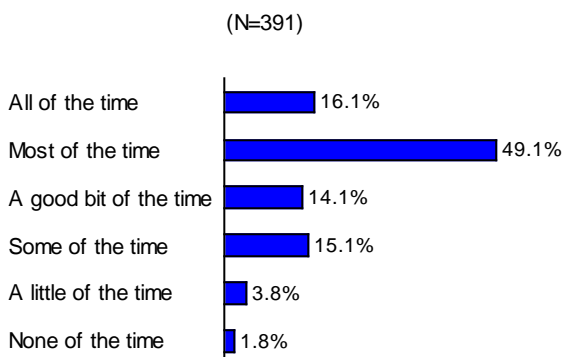
Q4b. During the past 4 weeks, did you not do work or other activities as carefully as usual as a result of any emotional problems?



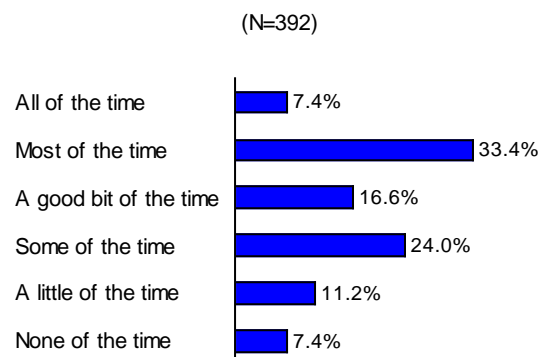
Q5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?



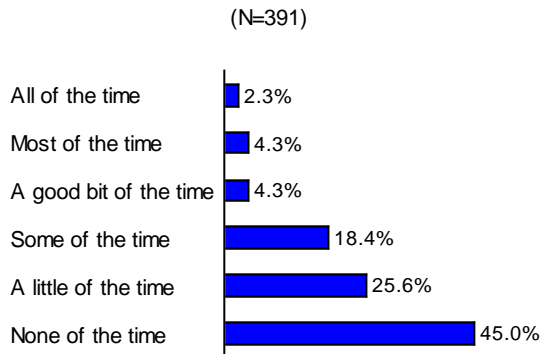
Q6a. How much of the time during the past 4 weeks: Have you felt calm and peaceful?



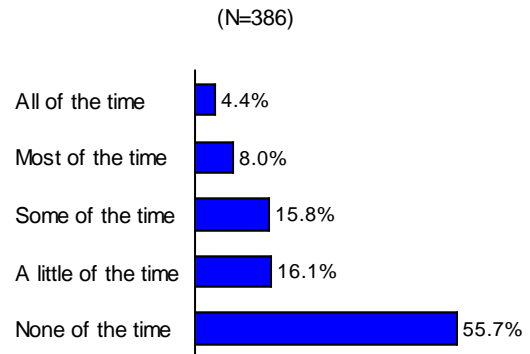
Q6b. How much of the time during the past 4 weeks: Did you have a lot of energy?



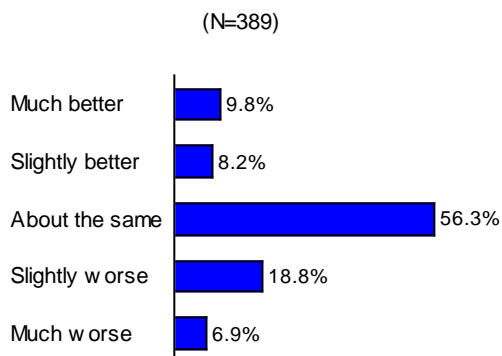
Q6c. How much of the time during the past 4 weeks: Have you felt downhearted and blue?



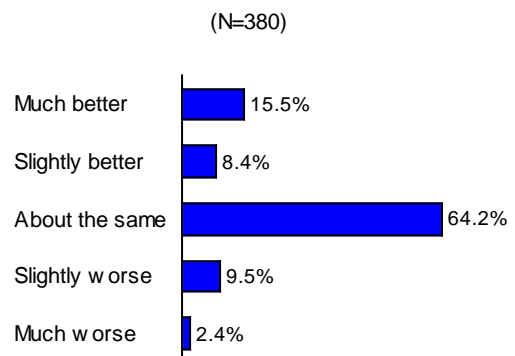
Q7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?



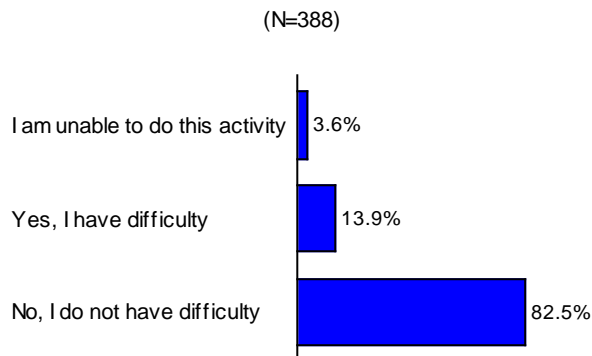
Q8. Compared to one year ago, how would you rate your physical health in general now?



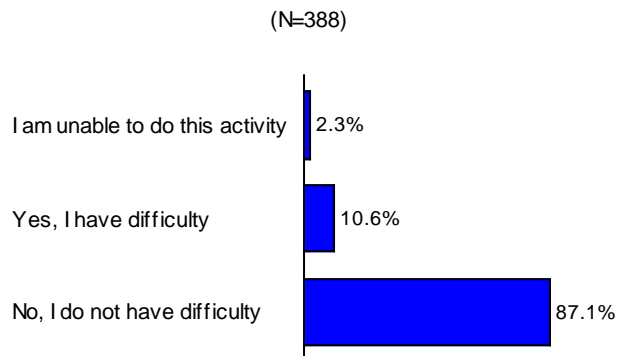
Q9. Compared to one year ago, how would you rate your emotional problems (such as feeling anxious, depressed or irritable) in general now?



Q10a. Because of a health or physical problem, do you have any difficulty doing the following activities without special equipment or help from another person: Bathing?

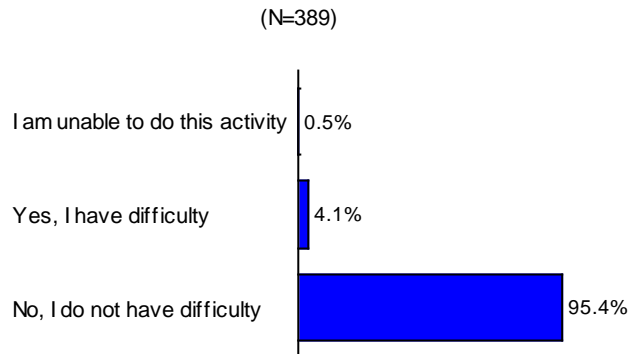


Q10b. Because of a health or physical problem, do you have any difficulty doing the following activities without special equipment or help from another person: Dressing?

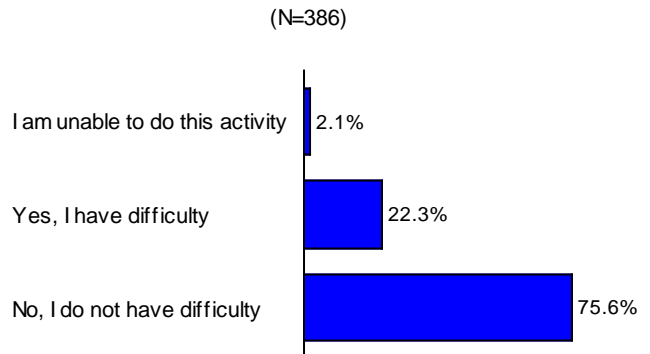




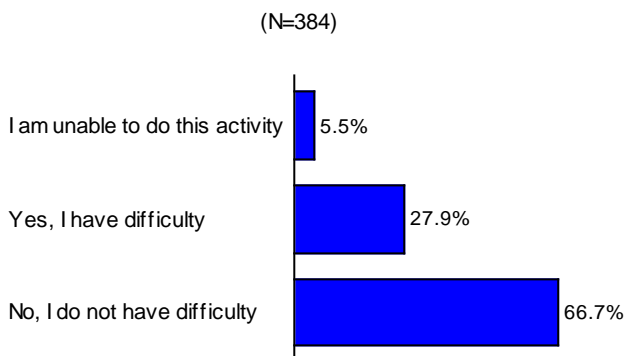
Q10c. Because of a health or physical problem, do you have any difficulty doing the following activities without special equipment or help from another person: Eating?



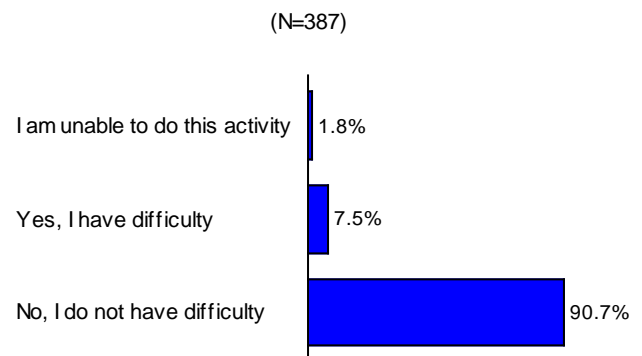
Q10d. Because of a health or physical problem, do you have any difficulty doing the following activities without special equipment or help from another person: Getting in or out of chairs?



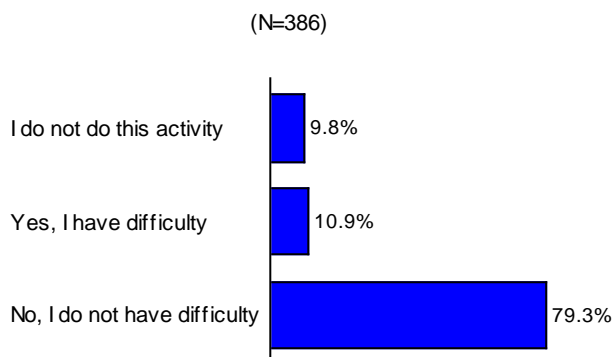
Q10e. Because of a health or physical problem, do you have any difficulty doing the following activities without special equipment or help from another person: Walking?



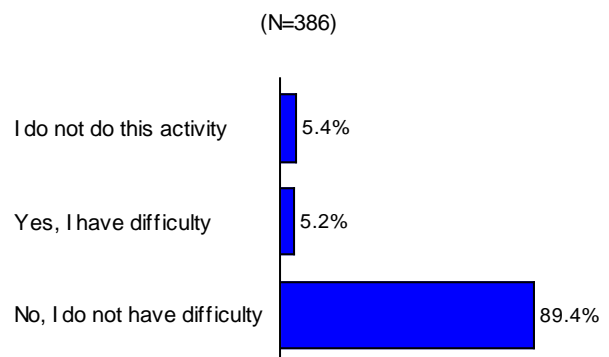
Q10f. Because of a health or physical problem, do you have any difficulty doing the following activities without special equipment or help from another person: Using the toilet?



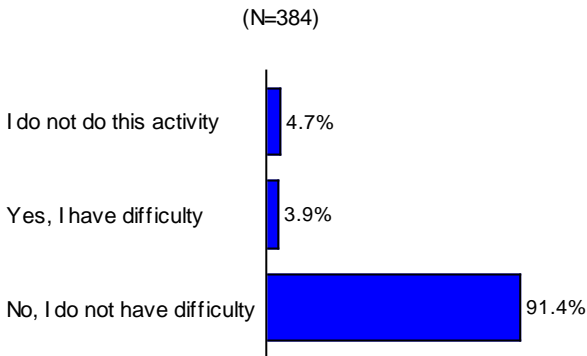
Q11a. Because of a health or physical problem, do you have any difficulty preparing meals?



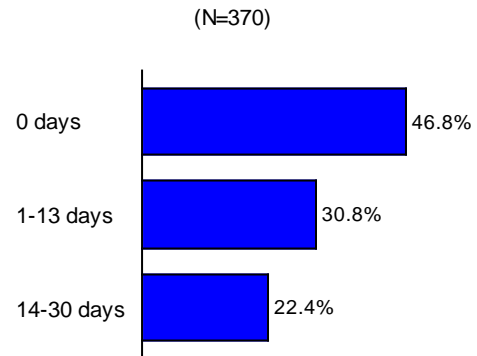
Q11b. Because of a health or physical problem, do you have any difficulty managing money?



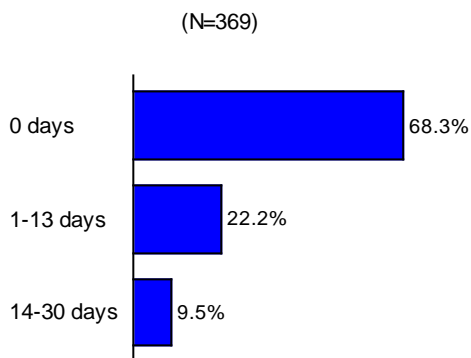
Q11c. Because of a health or physical problem, do you have any difficulty taking medication as prescribed?



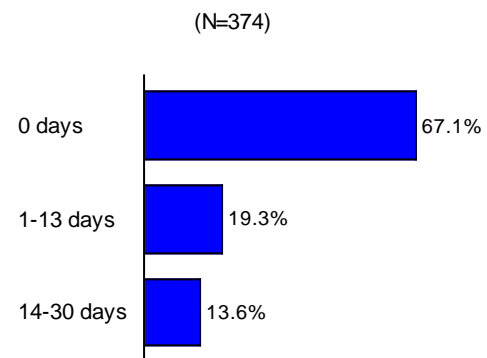
Q12. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?



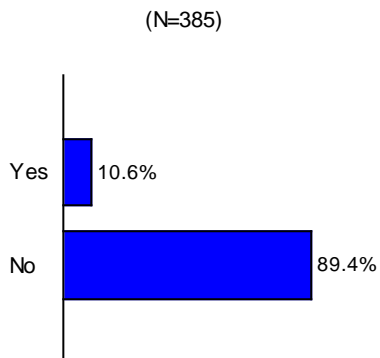
Q13. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?



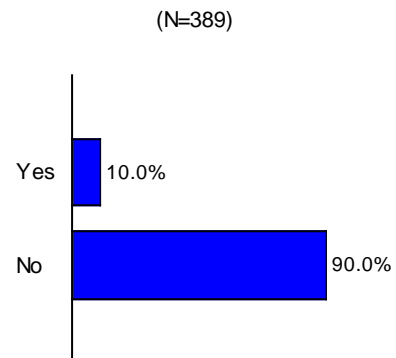
Q14. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?



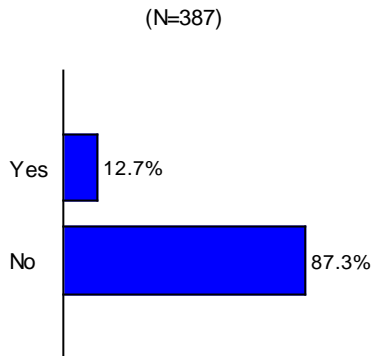
Q15. Are you blind or do you have serious difficulty seeing, even when wearing glasses?



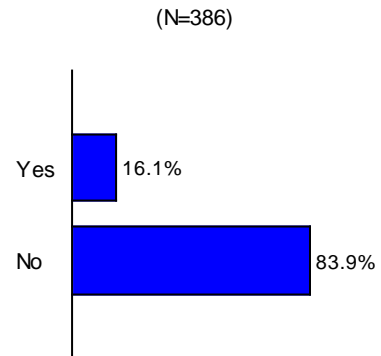
Q16. Are you deaf or do you have serious difficulty hearing, even with a hearing aid?



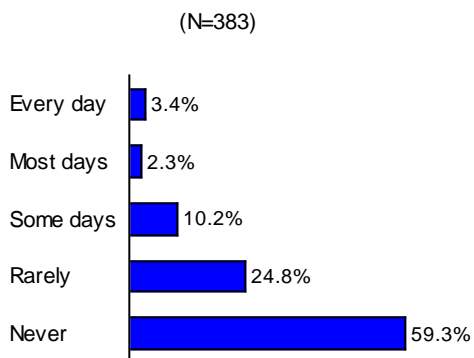
Q17. Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering or making decisions?



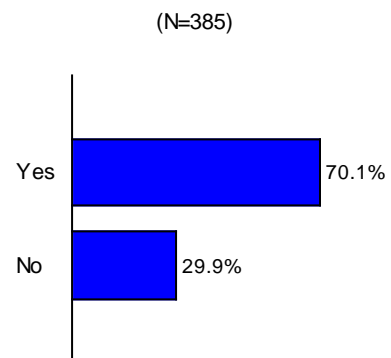
Q18. Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?



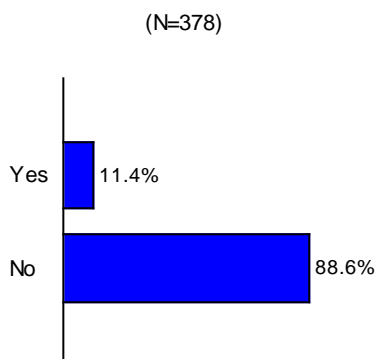
Q19. In the past month, how often did memory problems interfere with your daily activities?



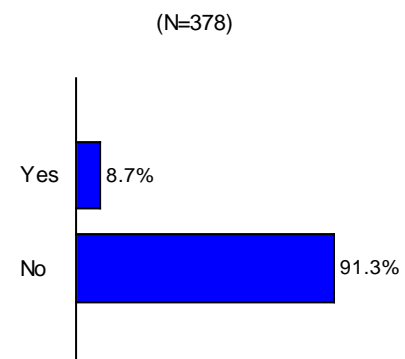
Q20. Has a doctor ever told you that you had: Hypertension or high blood pressure?



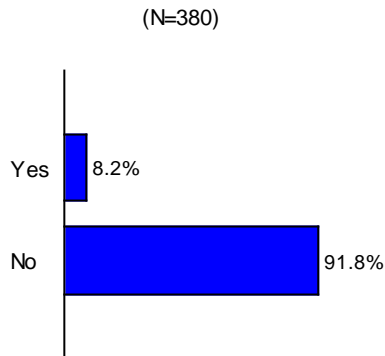
Q21. Has a doctor ever told you that you had: Angina pectoris or coronary artery disease?



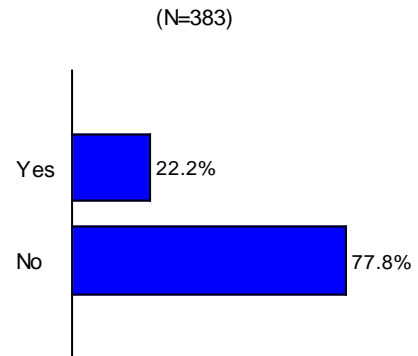
Q22. Has a doctor ever told you that you had: Congestive heart failure?



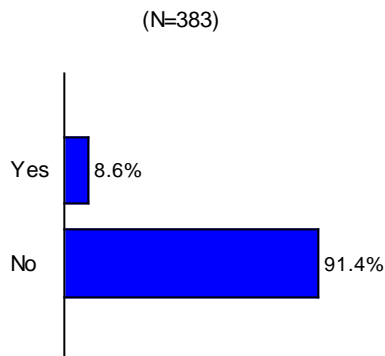
Q23. Has a doctor ever told you that you had:  
A myocardial infarction or heart attack?



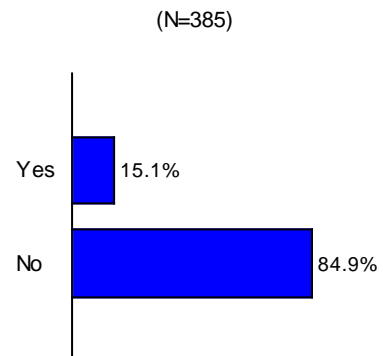
Q24. Has a doctor ever told you that you had:  
Other heart conditions, such as problems with heart  
valves or the rhythm of your heartbeat?



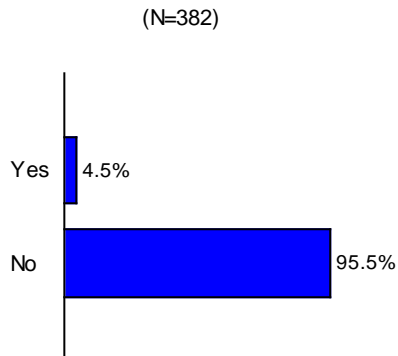
Q25. Has a doctor ever told you that you had:  
A stroke?



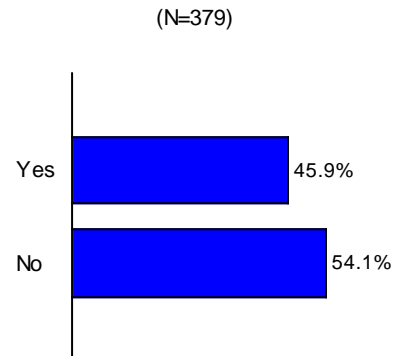
Q26. Has a doctor ever told you that you had:  
Emphysema, or asthma, or COPD (chronic obstructive  
pulmonary disease)?



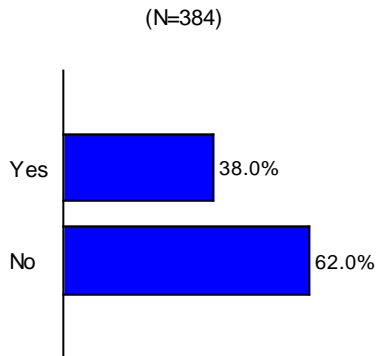
Q27. Has a doctor ever told you that you had:  
Crohn's disease, ulcerative colitis, or inflammatory  
bowel disease?



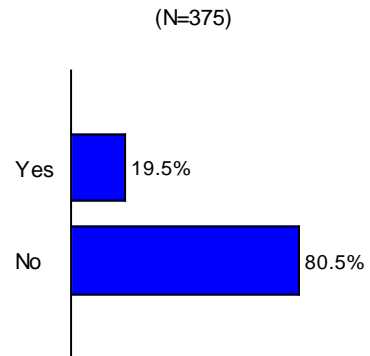
Q28. Has a doctor ever told you that you had:  
Arthritis of the hip or knee?



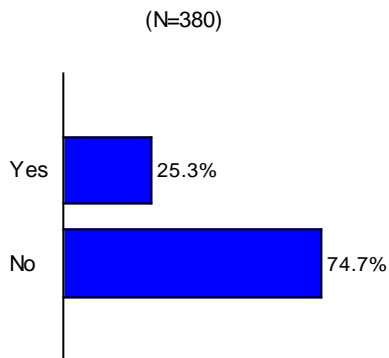
Q29. Has a doctor ever told you that you had:  
Arthritis of the hand or wrist?



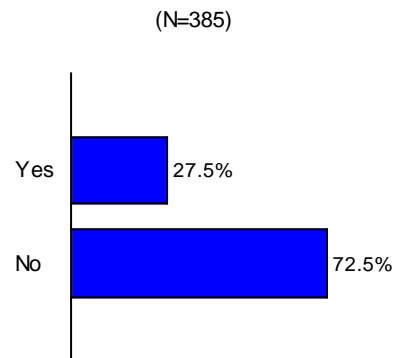
Q30. Has a doctor ever told you that you had:  
Osteoporosis, sometimes called thin or brittle bones?



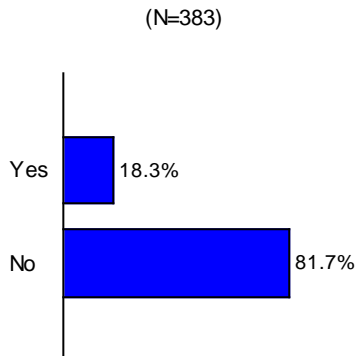
Q31. Has a doctor ever told you that you had:  
Sciatica (pain or numbness that travels down your leg  
to below your knee)?



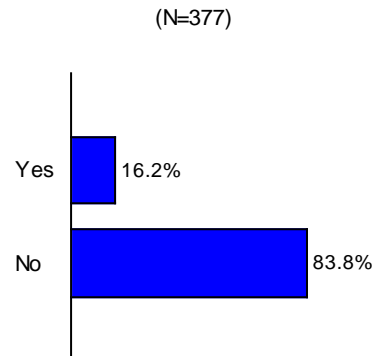
Q32. Has a doctor ever told you that you had:  
Diabetes, high blood sugar, or sugar in the urine?



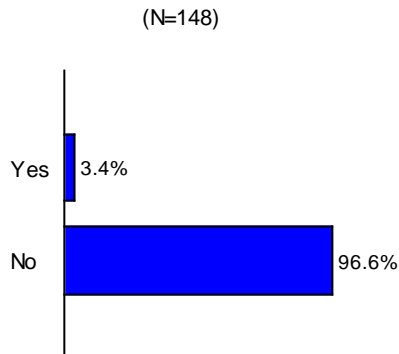
Q33. Has a doctor ever told you that you had:  
Depression?



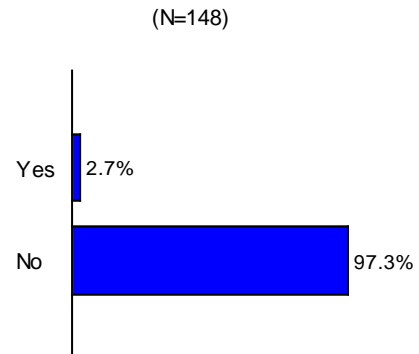
Q34. Has a doctor ever told you that you had:  
Any cancer (other than skin cancer)?



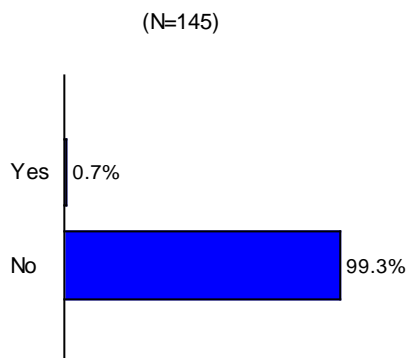
Q35a. Are you currently under treatment for: Colon or rectal cancer?



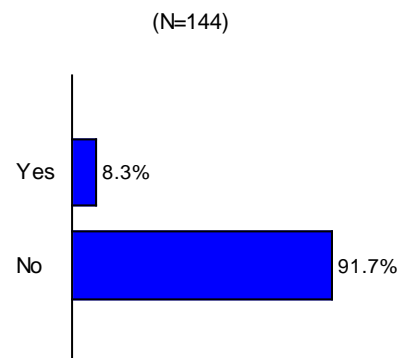
Q35b. Are you currently under treatment for: Lung cancer?



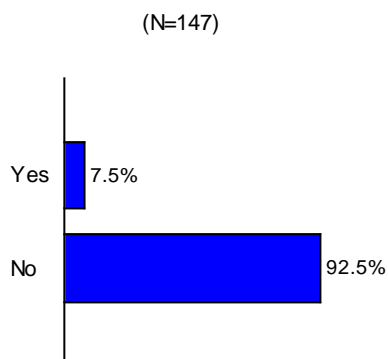
Q35c. Are you currently under treatment for: Breast cancer?



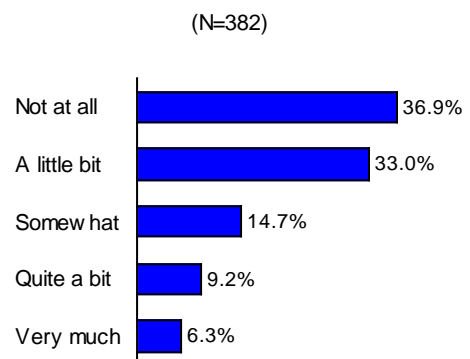
Q35d. Are you currently under treatment for: Prostate cancer?



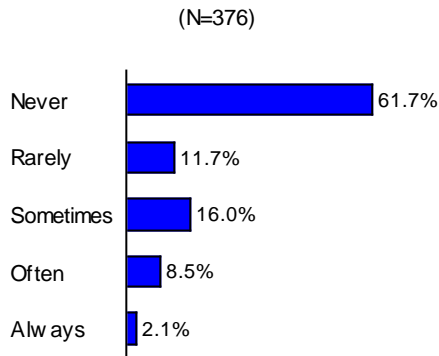
Q35e. Are you currently under treatment for: Other cancer (other than skin cancer)?



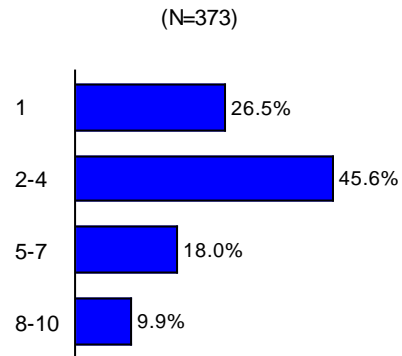
Q36. In the past 7 days, how much did pain interfere with your day to day activities?



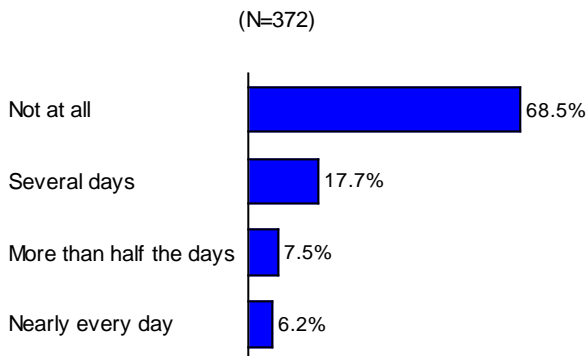
Q37. In the past 7 days, how often did pain keep you from socializing with others?



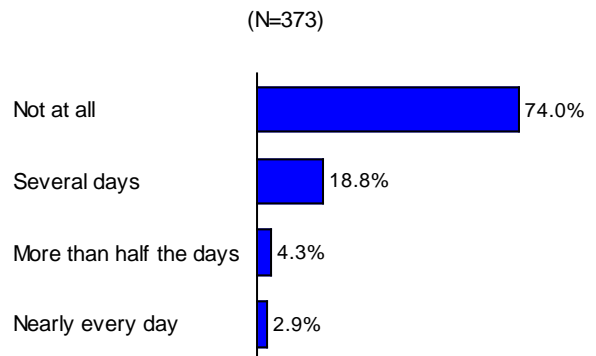
Q38. In the past 7 days, how would you rate your pain on average?



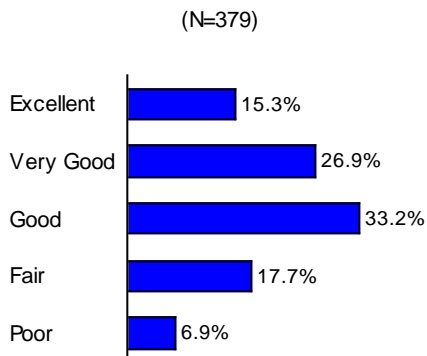
Q39a. Over the past 2 weeks, how often have you had little interest or pleasure in doing things?



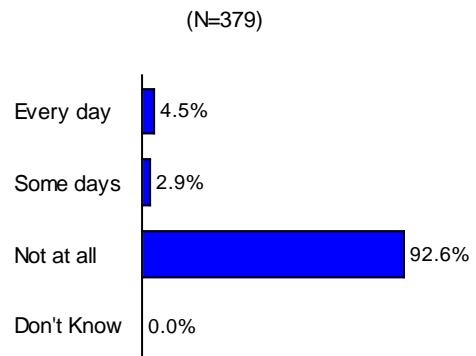
Q39b. Over the past 2 weeks, how often have you felt down, depressed or hopeless?



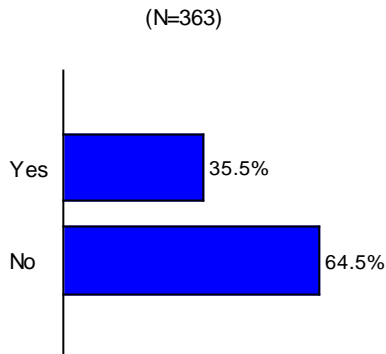
Q40. In general, compared to other people your age, would you say that your health is:



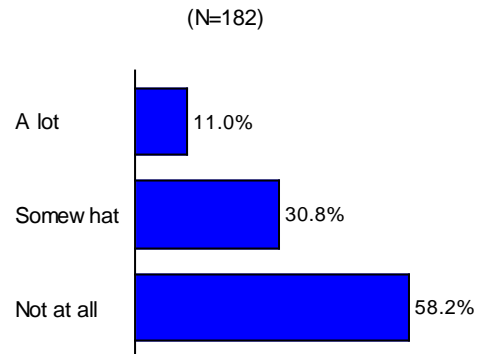
Q41. Do you now smoke every day, some days, or not at all?



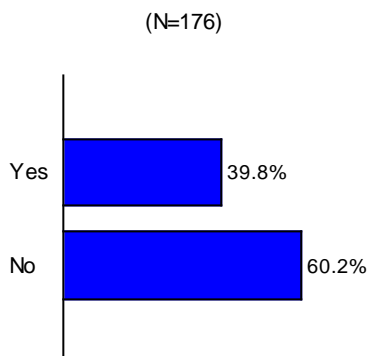
Q42. Many people experience leakage of urine, also called urinary incontinence. In the past six months, have you experienced leaking of urine?



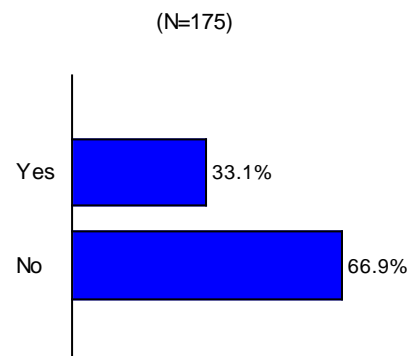
Q43. During the past six months, how much did leaking of urine make you change your daily activities or interfere with your sleep?



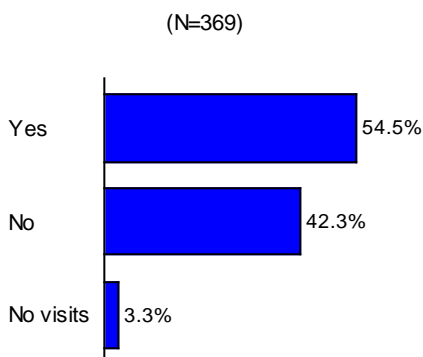
Q44. Have you ever talked with a doctor, nurse or other health care provider about leaking of urine?



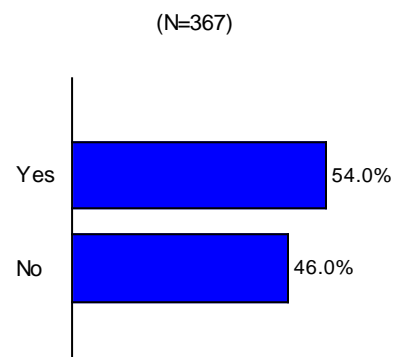
Q45. Have you ever talked with a doctor, nurse, or other health care provider about any of these approaches? (bladder training, exercises, medication, surgery)



Q46. In the past 12 months, did you talk with a doctor or other health provider about your level of exercise or physical activity?

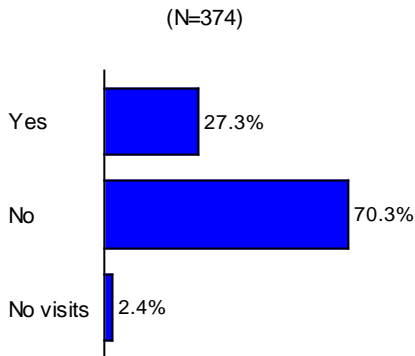


Q47. In the past 12 months, did a doctor or other health provider advise you to start, increase or maintain your level of exercise or physical activity?

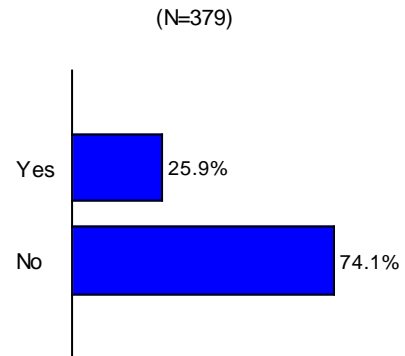




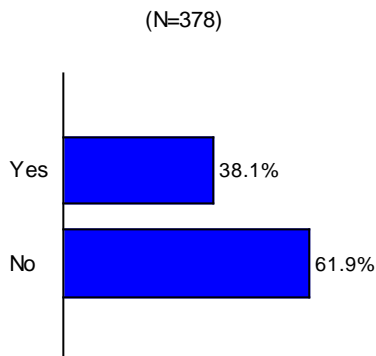
Q48. A fall is when your body goes to the ground without being pushed. In the past 12 months, did you talk with your doctor or other health provider about falling or problems with balance or walking?



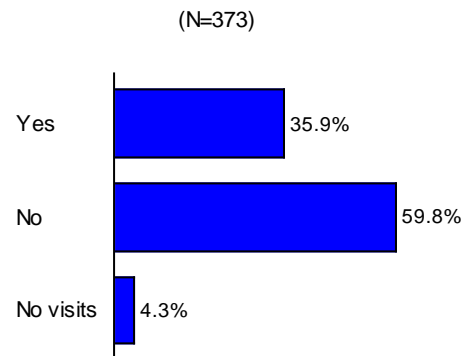
Q49. Did you fall in the past 12 months?



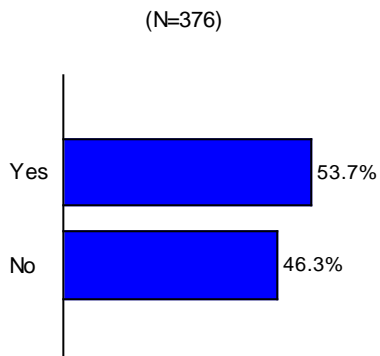
Q50. In the past 12 months, have you had a problem with balance or walking?



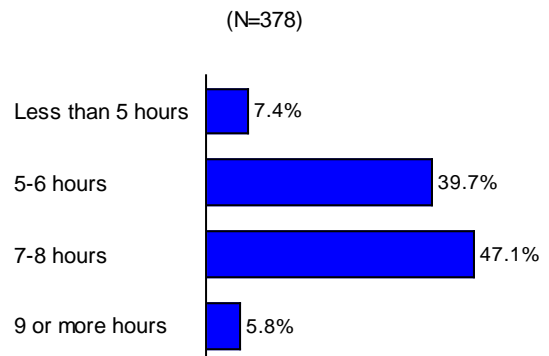
Q51. Has your doctor or other health provider done anything to help prevent falls or treat problems with balance or walking?



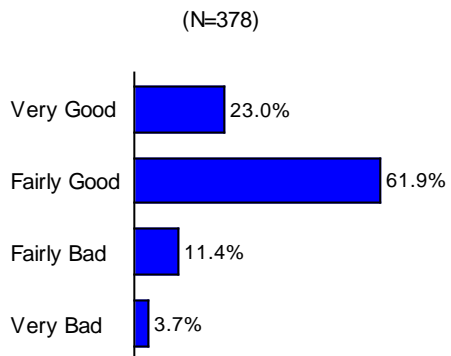
Q52. Have you ever had a bone density test to check for osteoporosis, sometimes thought of as 'brittle bones'?



Q53. During the past month, on average, how many hours of actual sleep did you get at night?



Q54. During the past month, how would you rate your overall sleep quality?



## Appendix 3

**Table 42: 2016 Cohort 19 Baseline Mean Unadjusted and Adjusted PCS and MCS Scores for All MAOs in STXXXX and HOS Total**

	Unadjusted PCS Score (SD)	Adjusted PCS Score (SD)	Unadjusted MCS Score (SD)	Adjusted MCS Score (SD)
HXXXXA	38.7 (12.4)	39.4 ( 7.1)	53.4 (10.4)	53.3 ( 5.4)
HXXXXB	39.7 (12.9)	39.5 ( 7.4)	53.5 (10.6)	53.4 ( 5.7)
HXXXXC	40.1 (12.2)	39.6 ( 7.1)	53.6 (10.4)	53.3 ( 5.5)
HXXXXD	39.7 (12.3)	39.4 ( 7.1)	53.3 (10.7)	53.3 ( 5.7)
HXXXXE	38.8 (12.5)	39.5 ( 6.7)	53.9 (10.2)	53.6 ( 5.2)
StateXX	39.4 (12.4)	39.5 ( 7.1)	53.5 (10.4)	53.4 ( 5.5)
HOS Total	39.3 (12.6)	39.3 ( 7.1)	53.1 (10.8)	53.1 ( 5.7)

**Table 43: 2016 NCQA HEDIS Rates for All MAOs in STXXXX, CMS Region XX, and HOS Total**

	MUI Discuss Rate	MUI Treat Rate	MUI Impact Rate	PAO Discuss Rate	PAO Advise Rate	FRM Discuss Rate	FRM Manage Rate	OTO Testing Rate
HXXXXA	56.14%	44.12%	14.29%	55.87%	50.40%	31.93%	56.93%	77.06%
HXXXXB	59.13%	44.23%	16.67%	55.14%	50.84%	34.50%	59.53%	74.48%
HXXXXC	60.50%	45.50%	15.79%	58.15%	52.42%	36.60%	60.08%	76.47%
HXXXXD	57.30%	44.57%	15.18%	57.31%	51.14%	34.53%	57.55%	76.74%
HXXXXE	57.41%	44.91%	14.80%	52.61%	48.60%	33.91%	56.92%	76.18%
StateXX	58.10%	44.66%	15.34%	55.81%	50.68%	34.29%	58.20%	76.18%
CMS Region XX	57.76%	44.59%	14.99%	55.46%	50.54%	34.17%	57.97%	76.13%
HOS Total	58.21%	44.70%	15.57%	54.65%	50.90%	35.25%	58.58%	74.27%

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- <sup>1</sup> HEDIS<sup>®</sup> is a registered trademark of the National Committee for Quality Assurance.
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- <sup>12</sup> Center for the Assessment of Pharmaceutical Practices (CAPP), Department of Health Policy and Management, Boston University School of Public Health. *Functional Status in Older Adults: Intervention Strategies for Impacting Patient Outcomes*. 2011. Available at: [http://hosonline.org/globalassets/hos-online/publications/functional\\_status\\_in\\_older\\_adults\\_2011.pdf](http://hosonline.org/globalassets/hos-online/publications/functional_status_in_older_adults_2011.pdf). Accessed on: Feb 13, 2017.
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