



HEALTH CARE  
COST INSTITUTE

# Outpatient Imaging: Selected Quality Measure Performance

A public report on behalf of the  
Centers for Medicare and Medicaid  
Services Qualified Entity program

January 21, 2020



## The Report

This report presents six measures of outpatient imaging efficiency using a combined data set of Medicare Fee-for-Service, Medicare Advantage, and employer-sponsored insurance claims. The measures are currently reported by the Centers for Medicare & Medicaid Services (CMS) using claims for Medicare Fee-for-Service beneficiaries as part of the Hospital Outpatient Quality Reporting Program and are available to the public on the Hospital Compare website. This report provides national rates for each of the six measures using the combined data set, as well as the national rates by payer type, over 2012 to 2017. This report is updated annually to include the most recent data and incorporate any methodology changes adopted by CMS.

## The Measures

Together, the six measures in this report evaluate the use of outpatient medical imaging in situations where such use is often unnecessary or against clinical recommendations. These measures provide information on the degree to which patients may be exposed to unnecessary radiation, contrast materials, or stress and anxiety as a result of undergoing such imaging studies. In general, lower rates suggest more efficient use of medical imaging.

OP-8: MRI Lumbar Spine for Low Back Pain [NQF #0514]  
OP-9: Mammography Follow-Up Rates  
OP-10: Abdomen Computed Tomography—Use of Contrast Material  
OP-11: Thorax Computed Tomography—Use of Contrast Material [NQF #0513]  
OP-13: Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery [NQF #0669]  
OP-14: Simultaneous Use of Brain Computed Tomography and Sinus Computed Tomography

## The Data

The measures are calculated using an integrated data set containing HCCI's commercial data holdings and the Medicare fee-for-service data it receives as a national Qualified Entity. The reported measures combining data from all payer types are not weighted to reflect the distribution of insurance coverage across the U.S. population. All measures in this report are based on national data. The definitions of each payer type is as follows:

- Medicare FFS – claims data for individuals covered by traditional Medicare fee-for-service where Medicare is the primary payer (regardless of age).
- Medicare Advantage – claims data for individuals aged 65 and over covered by a Medicare Advantage plan sponsored by one of HCCI's data contributors.
- Employer-sponsored insurance – claims data for individuals under the age of 65 who receive insurance through an employer, including both employees and their dependents (i.e., spouses and children), where the plan is sponsored by one of HCCI's data contributors.



# MRI for Low Back Pain

**Description:** This measure calculates the share of MRIs for low back pain that were done without the individual first trying conservative treatments, such as physical therapy or chiropractic evaluation.

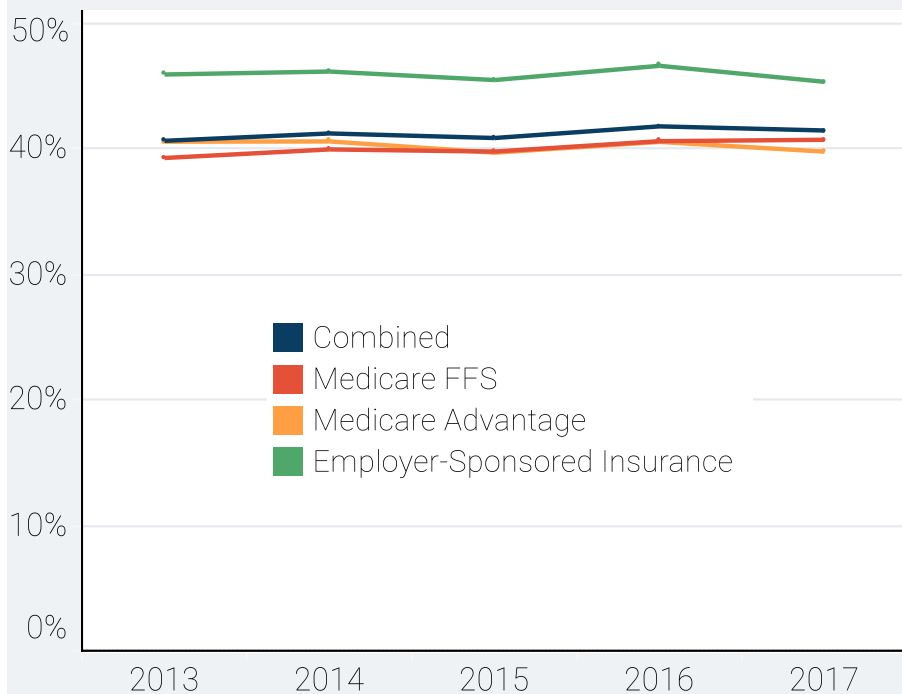
- Measures are reported at the national level for combined data and by payer type.
- Lower percentages are better. Higher percentages may indicate that unnecessary MRIs are being performed.

**Relevance:** The clinical consensus is that diagnostic imaging for low back pain provides little value, while having important cost implications.

### Results:

- The share of MRIs for low back pain without first trying more conservative therapies trended up for Medicare fee-for-service, while the share for Medicare Advantage and employer-sponsored insurance fell slightly.
- Medicare fee-for-service and Medicare Advantage had similar rates, while employer-sponsored insurance had higher rates.

## Share of MRIs for low back pain performed without prior treatment



	2013	2014	2015	2016	2017
Combined	40.6%	41.2%	40.8%	41.8%	41.4%
Medicare FFS	39.2%	39.9%	39.8%	40.6%	40.7%
Medicare Advantage	40.5%	40.6%	39.7%	40.5%	39.7%
Employer-Sponsored Insurance	45.9%	46.1%	45.4%	46.6%	45.3%

### Measure specifications for OP-8: MRI Lumbar Spine for Low Back Pain [NQF #0514]:

**Denominator eligibility:** MRI lumbar spine procedure with one of the following diagnoses: dorsopathies; osteopathies, chondropathies, and acquired musculoskeletal deformities; dislocation, sprains and strains of joints, adjacent muscles, and ligaments of lumbar spine and pelvis; spondylopathies; biomechanical lesion, not elsewhere classified.

**Numerator eligibility:** No prior antecedent conservative therapy, including: physical therapy in preceding 60 days; chiropractic evaluation in preceding 60 days; evaluation and management claim in 28 to 60 preceding days.

**Exclusion criteria:** Lumbar spine surgery in preceding 90 days; any of the following diagnoses in the specified time frame: cancer in previous 12 months, congenital spine and spinal cord malformations (5 years), inflammatory and autoimmune disorders (5 years), infectious conditions (1 year), spinal vascular malformations and/or the cause of occult subarachnoid hemorrhage (5 years), spinal cord infarction (12 months), neoplastic abnormalities (5 years), treatment fields for radiation therapy (5 years), spinal abnormalities associated with scoliosis (5 years), syringomyelia (5 years), postoperative fluid and soft tissue changes (12 months), IV drug abuse in previous 12 months, neurological impairment in previous 12 months, HIV in previous 12 months, unspecified immune deficiencies in previous 12 months, intraspinal abscess, trauma in previous 45 days.



# Mammography Follow-Up Rates

**Description:** This measure calculates the share of individuals having a screening mammography that have a follow-up diagnostic mammography, ultrasound, or breast MRI within 45 days of a screening mammography.

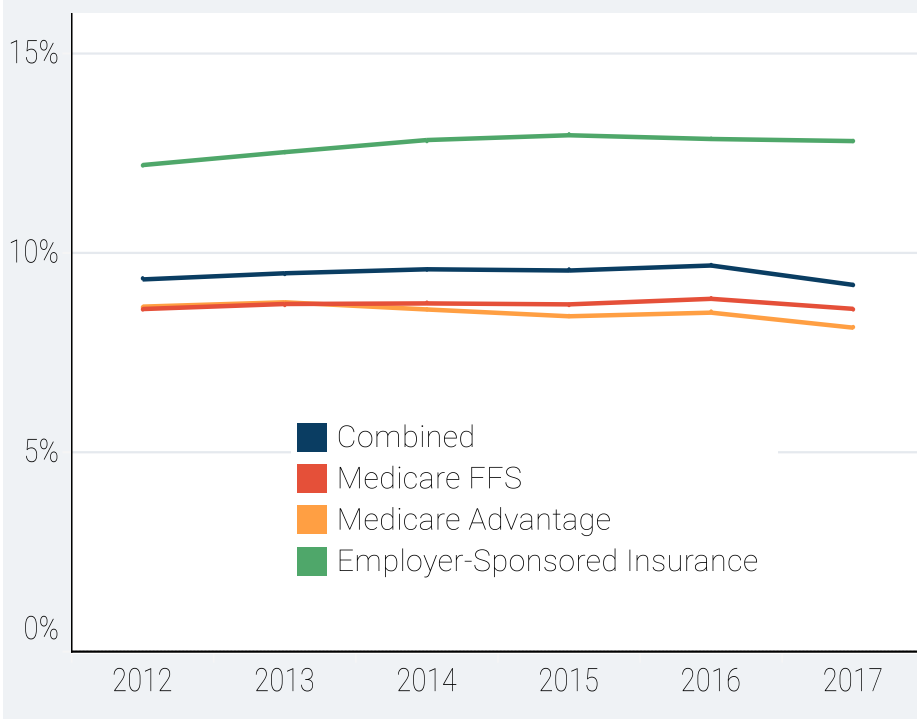
- Measures are reported at the national level for combined data and by payer type.
- A follow-up rate near 0% may result in missed cancer. Hospitals that are rated well have a percentage of about 9% among the Medicare population. Case-mix differences may justify higher rates in the employer-sponsored population.

**Relevance:** Follow-up rates after a screening mammography can be either too high or too low. When rates are too low, it may lead to delayed diagnoses or undetected cancers. When rates are too high, it may lead to overdiagnosis (false positives) increasing unnecessarily stress and anxiety.

**Results:**

- Follow-up rates after a screening mammography rise slightly from 2012 to 2016 before falling back to the 2012 rate in 2017 for Medicare fee-for-service.
- Medicare Advantage rates rose between 2012 and 2013, then dropped consistently through 2017.
- Rates for employer-sponsored insurance were higher than Medicare FFS or Medicare Advantage, rising steadily from 2012 to 2015.

### Share of Patients with screening mammography followed by diagnostic imaging



	2012	2013	2014	2015	2016	2017
Combined	9.3%	9.5%	9.6%	9.6%	9.7%	9.2%
Medicare FFS	8.6%	8.7%	8.7%	8.7%	8.8%	8.6%
Medicare Advantage	8.7%	8.8%	8.6%	8.4%	8.5%	8.1%
Employer-Sponsored Insurance	12.2%	12.5%	12.8%	13.0%	12.9%	12.8%

### Measure specifications OP-9: Mammography Follow-Up Rates:

**Denominator eligibility:** Receipt of screening mammography study.

**Numerator eligibility:** Receipt of a diagnostic mammography, ultrasound, or breast MRI within 45 days of the screening mammography study.

**Exclusions:** None

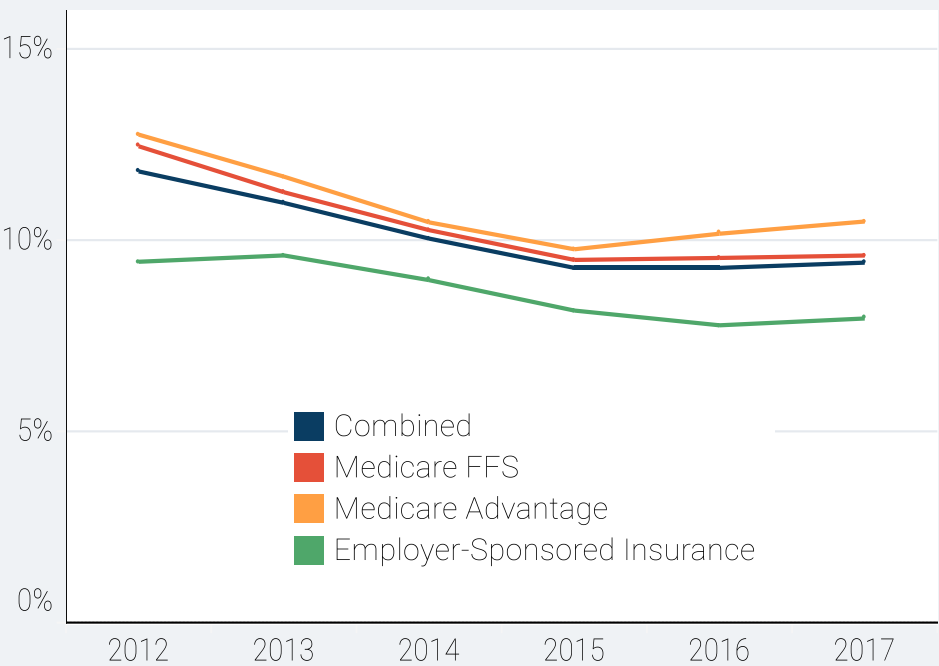
# Abdomen CT Scans – Use of Contrast

**Description:** This measure calculates the percentage of abdomen and abdominopelvic computed tomography (CT) studies that are performed without and with contrast, out of all abdomen and abdominopelvic CT studies performed (those without contrast, those with contrast, and those with both).

- Measures are reported at the national level for combined data and by payer type.
- Lower percentages are better. Higher percentages may indicate that patients are being given a double scan when a single scan is all that is needed

**Relevance:** Combined CT studies (those performed with and without contrast) are unnecessary and pose potential harmful side effects due to increased exposure to radiation and contrast materials.

Share of abdomen CT scans performed with and without contrast



	2012	2013	2014	2015	2016	2017
Combined	11.8%	11.0%	10.0%	9.3%	9.3%	9.4%
Medicare FFS	12.5%	11.3%	10.3%	9.5%	9.5%	9.6%
Medicare Advantage	12.8%	11.7%	10.5%	9.8%	10.2%	10.5%
Employer-Sponsored Insurance	9.4%	9.6%	9.0%	8.2%	7.8%	8.0%

**Results:**

- Rates of combined CT studies declined for all payer types between 2012 and 2017.
- Medicare Advantage has slightly higher rates of combined studies, while employer-sponsored insurance has the lowest rates.

**Measure specifications OP-10: Abdomen Computed Tomography—Use of Contrast Material:**

**Denominator eligibility:** An abdomen CT with contrast, without contrast, or with and without contrast.

**Numerator eligibility:** Abdomen CT with and without contrast.

**Exclusions:** Any of the following diagnoses on the imaging claim: adrenal mass, diseases of urinary system, hematuria, infections of kidney, jaundice, liver lesion, malignant neoplasm of bladder, malignant neoplasm of pancreas, non-traumatic aortic disease, pancreatic disorder, unspecified disorder of kidney and ureter.

**Updates:** Removed blunt abdominal trauma from exclusions.

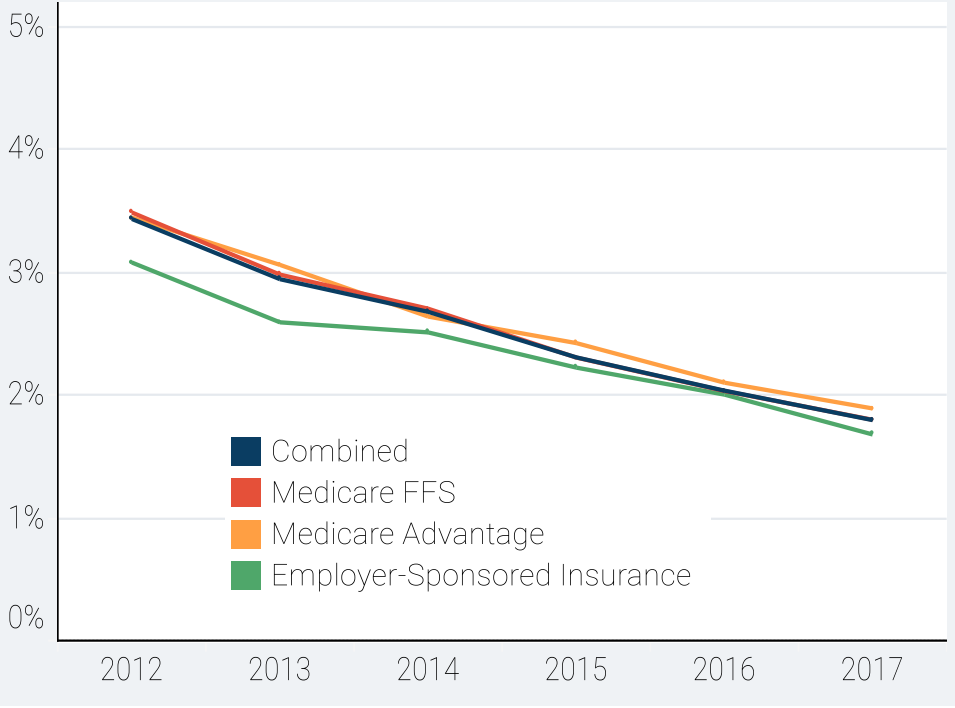
# Thorax CT Scans – Use of Contrast

**Description:** This measure calculates the percentage of thorax computed tomography (CT) studies that are performed without and with contrast, out of all thorax CT studies performed (those without contrast, those with contrast, and those with both).

- Measures are reported at the national level for combined data and by payer type.
- Lower percentages are better. Higher percentages may indicate that patients are being given a double scan when a single scan is all that is needed

**Relevance:** Clinical guidelines generally recommend against the use of combined CT studies because of the increased exposure to radiation and contrast materials.

Share of thorax CT scans performed with and without contrast



**Results:**

- The share of combined CT studies declines year-to-year between 2012 and 2017.
- The rates are more similar across payer types in 2017, ranging from 1.7% to 1.9%, than in 2012, when the range was 3.1% to 3.5%.

**Measure specifications OP-11: Thorax CT—Use of Contrast Material [NQF #0513]:**

**Denominator eligibility:** A thorax CT with contrast, without contrast, or with and without contrast.

**Numerator eligibility:** Thorax CT with and without contrast.

**Exclusions:** Any of the following diagnoses on the imaging claim; non-traumatic aortic disease.

**Updates:** Remove from exclusions: crushing injury; internal injury of chest, abdomen, and pelvis.



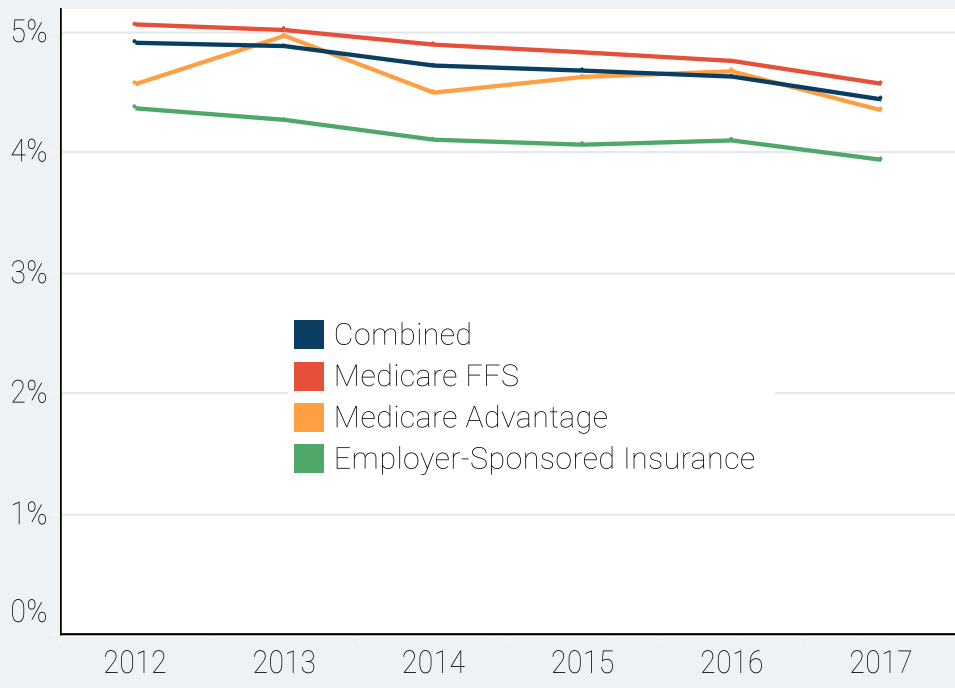
# Cardiac Imaging Before Low-Risk Surgery

**Description:** Percentage of ambulatory non-cardiac, low-risk surgeries that are preceded by preoperative cardiac imaging.

- Measures are reported at the national level for combined data and by payer type.
- Lower percentages are better. Higher percentages may indicate that unnecessary cardiac scans are being performed.

**Relevance:** Clinical guidelines recommend preoperative cardiac tests only for patients whose treatment may be influenced by the result. Low-risk beneficiaries, undergoing low-risk surgeries are unlikely to benefit.

### Share of abdomen CT scans performed with and without contrast



	2012	2013	2014	2015	2016	2017
Combined	4.9%	4.9%	4.7%	4.7%	4.6%	4.4%
Medicare FFS	5.1%	5.0%	4.9%	4.8%	4.8%	4.6%
Medicare Advantage	4.6%	5.0%	4.5%	4.6%	4.7%	4.4%
Employer-Sponsored Insurance	4.4%	4.3%	4.1%	4.1%	4.1%	3.9%

### Results:

- The combined rate of preoperative cardiac imaging declines from 2012 to 2017.
- Employer-sponsored insurance rates are lower than Medicare FFS or Medicare Advantage throughout the period.

### Measure specifications OP-13: Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery [NQF #0669]:

**Denominator eligibility:** Stress echocardiography, SPECT MPI, stress MRI, and CCTA studies performed.

**Numerator eligibility:** Non-cardiac, low-risk surgery following cardiac imaging in one of the following categories: breast, accessory sinuses, larynx, trachea and bronchi, lungs and pleura, esophagus, intestines, rectum, anus, biliary tract, abdomen, peritoneum, omentum, kidney, ureter, bladder, cervix uteri, corpus uteri, oviduct/ovary, anterior segment of eye and ocular adnexa, other specified surgeries.

**Exclusions:** Patients with at least three of the following diagnoses in the specified time frame: diabetes mellitus (1 year), renal insufficiency (1 year), stroke/transient ischemic attack (3 years), prior heart failure (3 years), ischemic heart disease (3 years); exclude any cardiac imaging performed in the ER.

**Updates:** Added exclusion of cardiac imaging performed in the ER.



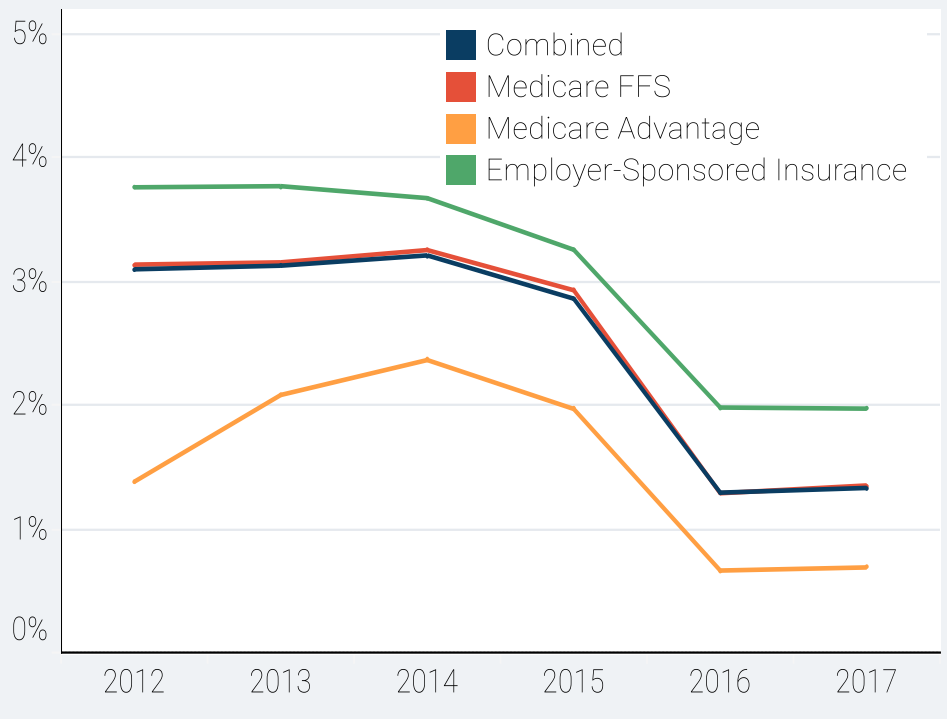
# Simultaneous Brain and Sinus CT Scans

**Description:** Percentage of brain CT imaging studies that are conducted with a simultaneous sinus CT.

- Measures are reported at the national level for combined data and by payer type.
- Lower percentages are better. Higher percentages may indicate that patients are being given a double scan when a single scan is all that is needed.

**Relevance:** Simultaneous sinus and brain imaging is considered inappropriate in most circumstances because the studies are generally duplicative.

### Share of brain CT scans performed with simultaneous sinus CT scan



	2012	2013	2014	2015	2016	2017
Combined	3.1%	3.1%	3.2%	2.9%	1.3%	1.3%
Medicare FFS	3.1%	3.2%	3.3%	2.9%	1.3%	1.4%
Medicare Advantage	1.4%	2.1%	2.4%	2.0%	0.7%	0.7%
Employer-Sponsored Insurance	3.8%	3.8%	3.7%	3.3%	2.0%	2.0%

### Results:

- The share of simultaneous brain and sinus CT studies was flat or increasing from 2012 to 2014, declining through 2016, and then remained flat through 2017.
- Medicare Advantage rates are about half the Medicare fee-for-service rates, while employer-sponsored insurance rates are highest throughout.

### Measure specifications OP-14: Simultaneous Use of Brain Computed Tomography and Sinus CT:

**Denominator eligibility:** Brain CT study

**Numerator eligibility:** Simultaneous brain and sinus CT study.

**Exclusions:** Any of the following diagnoses on the imaging claim: neoplasms, intracranial abscess, orbital cellulitis, trauma





# About HCCI

**Health Care Cost Institute (HCCI):** HCCI’s mission is to get to the heart of the key issues impacting the U.S. health care system — by using the best data to get the best answers. HCCI stands for truth and consensus around the most important trends in health care, particularly those economic issues that are critical to a sustainable, high-performing health system.

HCCI is a non-partisan, nonprofit organization that conducts and enables health care research based on its best in class datasets. HCCI holds claims data for around 100 million lives each year, including commercially-insured employer-sponsored and individual market populations, Medicare Advantage enrollees, and 100% of Medicare fee-for-service beneficiaries.

**The Qualified Entity Program:** The Centers on Medicare and Medicaid Services (CMS) makes 100 percent of Parts A, B, and D Medicare Fee-for-Service data available to approved organizations to facilitate the evaluation of health care quality and provider performance. Approved Qualified Entities are required to produce CMS-approved public reports combining the Medicare data and their own data holdings.



## Methodology

HCCI follows the measure specifications described in the annual reevaluation reports on each measure prepared for CMS. Updates to that methodology are applied to all years included in the analysis. All procedure and diagnoses codes used to identify eligible claims and impose restrictions are obtained from the Value Set Authority Center (VSAC) maintained by the National Library of Medicine (NLM). The annual reevaluation reports include the organizational ID corresponding to the code categories. Both ICD-9 and ICD-10 codes are used.

