Quality Payment
PROGRAM

Merit-Based Incentive Payment System (MIPS): Total Per Capita Costs for All Attributed Beneficiaries

Measure Information Form
2018 Performance Period

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1.0 Background

1.1 Measure Name

Total Per Capita Costs for All Attributed Beneficiaries (TPCC)

1.2 Measure Description

The Total Per Capita Costs for All Attributed Beneficiaries (TPCC) measure is a payment-standardized, annualized, risk-adjusted, and specialty-adjusted1 measure that evaluates the overall cost of care provided to beneficiaries attributed to clinicians, as identified by a unique Taxpayer Identification Number/National Provider Identifier (TIN-NPI). The Total Per Capita Costs for All Attributed Beneficiaries measure can be reported at the TIN or the TIN-NPI level.[2]

1.3 Rationale

To support the efforts of providers who are working to provide high-quality care to their Medicare Fee-for-Service (FFS) beneficiaries, the TPCC measure provides meaningful information about the costs associated with delivering care to beneficiaries attributed to their TIN-NPIs.

The TPCC measure was originally developed for use in the Physician Value-Based Modifier program, and was updated (see Section 4.0 for details) for inclusion in the Merit-based Incentive Payment System (MIPS) cost performance category.

2.0 Overview of Measure Calculation

Using Medicare Part A and Part B claims, with certain exclusions, the TPCC measure calculates the risk-adjusted per capita costs for beneficiaries attributed to a clinician (TIN-NPI), with reporting at the TIN or the TIN-NPI level.

2.1 Measure Numerator

The numerator for the measure is the sum of the annualized, risk-adjusted, specialty-adjusted Medicare Part A and Part B costs across all beneficiaries attributed to a TIN-NPI, within a TIN or TIN-NPI (depending on the level of reporting).

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[1] See the descriptions of payment standardization, annualization, risk adjustment, and specialty adjustment in Section 3.0 for more information.

[2] Medicare Program; Merit-Based Incentive Payment System (MIPS) and Alternative Payment Model (APM) Incentive Under the Physician Fee Schedule, and Criteria for Physician Focused Payment Models Final Rule. 2017. https://www.federalregister.gov/d/2016-25240/p-2250

2.2 Measure Denominator

The denominator for the measure is the number of all Medicare beneficiaries who received Medicare-covered services and are attributed to a TIN-NPI, within a TIN or TIN-NPI (depending on the level of reporting), during the performance period.

2.3 Eligibility and Exclusion Criteria

Beneficiaries are excluded from the population measured if they meet any of the following conditions:

- were not enrolled in both Medicare Part A and Part B for every month during the performance period, unless part year enrollment was the result of new enrollment or death
- were enrolled in a private Medicare health plan (for example, a Medicare Advantage HMO/PPO or a Medicare private FFS plan) for any month during the performance period
- resided outside the United States, its territories, and its possessions during any month of the performance period

After applying the exclusions outlined above, all Medicare beneficiaries who received Medicare-covered services and are attributed to a TIN-NPI during the performance period are included in the calculation of the TPCC measure. Beneficiary attribution follows a two-step process (described in Section 3.0, Step 1) that assigns a beneficiary to a single TIN-NPI based on the amount of primary care services received and the clinician specialties that performed these services.

2.4 Data Source

This measure is calculated from Medicare Part A and Part B final action claims for services provided during the performance period that include: inpatient hospital; outpatient hospital; skilled nursing facility; home health; hospice; durable medical equipment, prosthetics, orthotics, and supplies (DMEPOS); and Medicare Part B Carrier (non-institutional physician/supplier) claims.

The measure also uses Medicare beneficiary enrollment data to capture patient characteristics. This measure does not require any additional measure submission by TIN-NPIs or TINs. Medicare Part A and Part B final action claims are used to attribute beneficiaries to TIN-NPIs for this measure, as described below.

Part D-covered prescription drug costs are not included in the calculation of the TPCC measure.

3.0 Detailed Measure Calculation Methodology

Calculation of the TPCC measure is divided into seven steps:

1) Attribute beneficiaries to TIN-NPI,
2) Calculate payment-standardized per capita costs,
3) Annualize costs,
4) Risk-adjust costs,
5) Specialty-adjust costs,
6) Calculate the TPCC measure for the TIN-NPI or TIN, and
7) Report the TPCC measure for the TIN-NPI or TIN.

The following sections explain those steps in more detail.

Step 1: Attribute Beneficiaries to TIN-NPI

For the TPCC measure, beneficiaries are attributed to a single TIN-NPI in a two-step process that takes into account the level of primary care services received (as measured by Medicare allowed charges during the performance period) and the clinician specialties that performed these services. Only beneficiaries who received a primary care service during the performance period are considered in attribution.

The following two steps are used to attribute beneficiaries to a TIN-NPI for the TPCC measure:

a) A beneficiary is attributed to a TIN-NPI in the first step if the beneficiary received more primary care services (PCS) from primary care physicians (PCPs), nurse practitioners (NPs), physician assistants (PAs), and clinical nurse specialists (CNSs)3 in that TIN-NPI than in any other TIN-NPI or CMS Certification Number (CCN). If the beneficiary received more PCS from PCPs, NPs, PAs and CNSs from a CCN than any other TIN-NPI, this beneficiary would be attributed to the CCN, would not be attributed to any TIN-NPIs, and would be excluded from risk adjustment. Primary care services include evaluation and management services provided in office and other non-inpatient and non–emergency-room settings, as well as initial Medicare visits and annual wellness visits.4 If two TIN-NPIs tie for the largest share of a beneficiary's primary care services, the beneficiary will be attributed to the TIN-NPI that provided primary care services most recently.
b) If a beneficiary did not receive a primary care service from any PCP, NP, PA, or CNS during the performance period, the beneficiary is attributed to a TIN-NPI in the second step if the beneficiary received more primary care services from non-primary care physicians within the TIN-NPI than in any other TIN-NPI or CCN.[5] If two TIN-NPIs tie for the largest share of a beneficiary's primary care services, the beneficiary will be attributed to the non-primary care

[3] See Table 3 in Section 5.0 for CMS specialty codes used to identify clinicians in the first step of attribution.
[4] See Table 2 in Section 5.0 for the lists of the Healthcare Common Procedure Coding System (HCPCS) codes that identify primary care services.
[5] See Table 4 in Section 5.0 for the CMS specialty codes used to identify clinicians in the second step of attribution. Table 5 summarizes the Practitioners and Therapists not included in the first or second step of attribution.

TIN-NPI that provided primary care services most recently. If the beneficiary received more PCS from non-primary care physicians from a CCN than any TIN-NPI, this beneficiary would be attributed to the CCN, would not be attributed to any TIN-NPIs, and would be excluded from risk adjustment. If the beneficiary did not receive any primary care service via PCP, NP, PA, CNS or non-primary care physician, then the beneficiary would not be attributed.

Step 2: Calculate Payment Standardized Per Capita Costs

The TPCC measure is payment standardized to take into account payment factors that are unrelated to the care provided (such as payments supporting larger Medicare program goals like indirect medical education add-on payments, or geographic variation in Medicare payment policies). This allows for a more equitable comparison across providers. More information on the payment standardization algorithm is available in an overview document titled "*CMS Price (Payment) Standardization - Basics*" and a more detailed document titled "*CMS Price (Payment) Standardization - Detailed Methods*," at the webpage referenced in Section 4.0.

Step 3: Annualize Costs

In performance year 2017, part year beneficiaries (those who were enrolled in Medicare Part A and Part B for only part of the year) may be attributed to TIN-NPIs if the reason for their part year enrollment was either that they were new enrollees in Medicare at some time other than the start of the calendar year or they died during the calendar year. In order to ensure valid comparisons between TIN-NPIs with part year beneficiaries and those without any part year beneficiaries, CMS annualizes the costs of part year beneficiaries before calculating the TPCC measure by dividing the total payment standardized costs for each beneficiary for the calendar year by the fraction of the year the beneficiary had both Medicare Part A and Part B coverage. For example, if a beneficiary had both Medicare Part A and Part B coverage from January through September, died in October, and had total costs of $1,350 over 9 months of full coverage, then the beneficiary's annualized costs would be equal to $1,800:

$$\text{Annualized cost} = \frac{\$1{,}350}{\left(\frac{9 \text{ months}}{12 \text{ months}}\right)} = \$1{,}800$$

For the purpose of this explanatory document, all subsequent instances of "cost" refer to "annualized, payment-standardized cost."

Step 4: Risk-Adjust Costs

Risk adjustment accounts for beneficiary-level risk factors that can affect medical costs, regardless of the care provided. To estimate the expected per capita cost for each beneficiary, the TPCC methodology uses an ordinary least squares regression model to risk adjust for two measures of beneficiary risk. Prior to estimation of the regression model, extreme values of per capita costs are adjusted in a process called Winsorization: the top and bottom 1 percentile of the distribution of beneficiary costs is replaced with the 99th and 1st percentile value.

The two measures of beneficiary risk used in the risk adjustment algorithm are the beneficiary's CMS-Hierarchical Condition Category (CMS-HCC) risk score and End Stage Renal Disease (ESRD) status. To ensure that the model measures the influence of health status (as measured by diagnoses) on the treatment provided (costs incurred), rather than capturing the influence of treatment on a beneficiary's health status, the risk adjustment model uses prior year (2016) risk factors to predict current year (2017) total per capita costs. The CMS-HCC model generates a risk score for each beneficiary that summarizes each beneficiary's expected cost of care relative to other beneficiaries. Separate CMS-HCC models exist for new enrollees and continuing enrollees. The new enrollee model accounts for each beneficiary's age, sex, disability status, original reason for Medicare entitlement (age or disability), and Medicaid eligibility, and is used when a beneficiary has less than 12 months of medical history. The community model is used when a beneficiary has at least 12 months of medical history. The community model includes the same demographic information as the new enrollee model but it also accounts for clinical conditions as measured by Hierarchical Condition Categories (HCCs).[6] A CMS-HCC risk score of 1 indicates risk associated with expenditures for the average beneficiary nationwide. A beneficiary risk score greater than 1 indicates above average risk and a risk score less than 1 indicates below average risk.

Risk-adjusted total per capita costs are then calculated to compare the TIN's or TIN-NPI's actual per capita costs with its expected per capita costs.[7] A TIN's or TIN-NPI's risk-adjusted costs are calculated as the ratio of the TIN's or TIN-NPI's observed non–risk-adjusted total per capita costs to its expected total per capita costs, multiplied by the average non–risk-adjusted costs across all beneficiaries who are attributed to any TIN-NPI nationwide.[8] The observed total per capita costs and expected total per capita costs in the ratio are both averaged across all beneficiaries attributed to TIN-NPIs in the TIN (or across all beneficiaries attributed to the TIN-NPI, in the case of TIN-NPI reporting). For example, the below figure shows how a TIN-NPI's risk-adjusted total per capita cost would be calculated (the example shows "TIN-NPI calculation," but "TIN calculation" would be done the same way):

[6] Table 1 in Section 5.0 lists the 79 HCCs included in the community CMS-HCC risk adjustment model used for continuing beneficiaries.
[7] Since the Total Per Capita Cost for All Attributed Beneficiaries measure can be reported at the TIN or the TIN-NPI level, the calculation of the risk-adjusted cost and measure is done at the TIN or the TIN-NPI level, depending on which level of reporting is chosen.
[8] The TIN or TIN-NPI's observed-to-expected Total Per Capita cost ratio is multiplied by the national average non-risk-adjusted cost in order to convert the ratio into a dollar amount.

TIN-NPI's risk-adjusted per capita cost =

$$\left[\frac{\text{TIN-NPI's observed non-risk adjusted per capita cost}}{\text{TIN-NPI's expected per capita cost}}\right] * \text{national average non-risk-adjusted cost}$$

To summarize, the risk-adjusted total per capita cost is calculated using the following steps:

a) Replace the top and bottom 1 percentile of the distribution of beneficiary costs with the 99th and 1st percentile value, respectively (referred to as Winsorization).
b) Determine the expected total per capita cost based on risk adjustment algorithms that account for the beneficiary risk score – based on age, sex, disability status, original reason for entitlement (age or disability), Medicaid eligibility, and CMS-HCCs (for continuing enrollees only) – and ESRD status of attributed beneficiaries.
c) Compute the ratio of the TIN's or TIN-NPI's observed total per capita cost to its expected total per capita cost.
d) Multiply the TIN's or TIN-NPI's observed-to-expected ratio by the average non–risk-adjusted cost across all beneficiaries attributed to any TINs or TIN-NPIs. The result is the TIN's or TIN-NPI's risk-adjusted total per capita cost.

Step 5: Specialty-Adjust Costs

CMS recognizes that costs vary across specialties and across TINs or TIN-NPIs with varying specialty mixes. To support the goal of comparing TINs' or TIN-NPIs' costs more accurately to an expected cost that is reflective of their practice, CMS applies specialty adjustment to the TPCC measure. Specialty adjustment is different from risk adjustment. Specialty-adjusted costs for a TIN with a disproportionate number of eligible professionals in specialties with high national average costs, or for a TIN-NPI with those specialties, will be lower than the TIN's or TIN-NPI's non–specialty-adjusted costs, because the expected costs will exceed the average cost across all TINs or TIN-NPIs; similarly, specialty-adjusted costs will be higher than non–specialty-adjusted costs for TINs that have a disproportionate number of clinicians in specialties with low national average costs, or for TIN-NPIs with those specialties.

Eligible professional specialties are identified based on the CMS specialty code listed with the most allowable charges on Medicare Part B claims for services rendered by the professional during the performance year. In the case of a tie, the specialty listed on the most recent claim is selected.

Once a single specialty is identified for each TIN-NPI, the specialty is determined (whether or not it is an eligible professional) based on the CMS specialty code table. Then, only eligible professionals are included, and CMS adjusts the cost measures to account for each TIN-NPI's specialty and each TIN's specialty composition using three steps:

Step 5.1: Calculate a national average per capita cost for each specialty

First, calculate a national average per capita cost for each specialty. This national specialty-specific cost is the weighted average of each TIN's or TIN-NPI's risk-adjusted costs. The weights reflect the number of beneficiaries attributed to each TIN or TIN-NPI, as well as the number and share of practitioners of the relevant specialty in each TIN or TIN-NPI. For TIN-NPIs, there will be only one eligible professional, so the share will be one, or not weighted.

Step 5.2: Estimate the specialty-adjusted expected cost

Second, estimate the specialty-adjusted expected cost. Specialty-adjusted expected cost for the TIN is calculated by weighting the national specialty-specific cost by the Part B line provider payment share within the TIN. Specialty-adjusted expected cost for a TIN-NPI is the national specialty-specific cost for the specialty of that TIN-NPI, and since we only have 1 specialty for a TIN-NPI, the national expected cost for that specialty, calculated in step 5.1, is used.

Step 5.3: Construct the specialty-adjusted cost

Last, construct the ratio of risk-adjusted cost to specialty-adjusted expected cost. Multiply this ratio by the national average total per capita cost of all TINs or TIN-NPIs regardless of size.

Step 6: Calculate TPCC Measure

Measure calculation for TIN or TIN-NPI is completed in Step 5.3 above. The measure constructed in Steps 1-5 can be equivalently expressed in the manner implied by the numerator and denominator in Section 2.0: The sum of risk-adjusted, specialty-adjusted total per capita cost across all attributed beneficiaries for a TIN or TIN-NPI (depending on the level of reporting), divided by the number of attributed beneficiaries for the TIN or TIN-NPI.

Step 7: Report TPCC Measure for Each TIN-NPI or TIN

Although TPCC is attributed at the TIN-NPI level, reporting can be at either the TIN or TIN-NPI level. Under MIPS, the case minimum for reporting is 20 episodes, regardless of reporting level.

4.0 Additional References

For more information about the methodology used in payment standardization, please refer to the CMS Price (Payment) Standardization documents on QualityNet.

More details on MIPS may be found in the CY 2017 and CY 2018 QPP Final Rules, including updates from previous versions of TPCC.

5.0 Tables

The following tables present variables used to calculate the TPCC measure, as referenced in Section 3.0.

Table 1. HCCs included in the CMS-HCC risk adjustment model

Indicator Variable	Description Label
HCC1	HIV/AIDS
HCC2	Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock
HCC6	Opportunistic Infections
HCC8	Metastatic Cancer and Acute Leukemia
HCC9	Lung and Other Severe Cancers
HCC10	Lymphoma and Other Cancers
HCC11	Colorectal, Bladder, and Other Cancers
HCC12	Breast, Prostate, and Other Cancers and Tumors
HCC17	Diabetes with Acute Complications
HCC18	Diabetes with Chronic Complications
HCC19	Diabetes without Complication
HCC21	Protein-Calorie Malnutrition
HCC22	Morbid Obesity
HCC23	Other Significant Endocrine and Metabolic Disorders
HCC27	End-Stage Liver Disease
HCC28	Cirrhosis of Liver
HCC29	Chronic Hepatitis
HCC33	Intestinal Obstruction/Perforation
HCC34	Chronic Pancreatitis
HCC35	Inflammatory Bowel Disease
HCC39	Bone/Joint/Muscle Infections/Necrosis
HCC40	Rheumatoid Arthritis and Inflammatory Connective Tissue Disease
HCC46	Severe Hematological Disorders
HCC47	Disorders of Immunity
HCC48	Coagulation Defects and Other Specified Hematological Disorders

Indicator Variable	Description Label
HCC54	Drug/Alcohol Psychosis
HCC55	Drug/Alcohol Dependence
HCC57	Schizophrenia
HCC58	Major Depressive, Bipolar, and Paranoid Disorders
HCC70	Quadriplegia
HCC71	Paraplegia
HCC72	Spinal Cord Disorders/Injuries
HCC73	Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease
HCC74	Cerebral Palsy
HCC75	Myasthenia Gravis/Myoneural Disorders, Inflammatory and Toxic Neuropathy
HCC76	Muscular Dystrophy
HCC77	Multiple Sclerosis
HCC78	Parkinson's Disease and Huntington's Disease
HCC79	Seizure Disorders and Convulsions
HCC80	Coma, Brain Compression/Anoxic Damage
HCC82	Respirator Dependence/Tracheostomy Status
HCC83	Respiratory Arrest
HCC84	Cardio-Respiratory Failure and Shock
HCC85	Congestive Heart Failure
HCC86	Acute Myocardial Infarction
HCC87	Unstable Angina and Other Acute Ischemic Heart Disease
HCC88	Angina Pectoris
HCC96	Specified Heart Arrhythmias
HCC99	Cerebral Hemorrhage
HCC100	Ischemic or Unspecified Stroke
HCC103	Hemiplegia/Hemiparesis
HCC104	Monoplegia, Other Paralytic Syndromes
HCC106	Atherosclerosis of the Extremities with Ulceration or Gangrene
HCC107	Vascular Disease with Complications
HCC108	Vascular Disease
HCC110	Cystic Fibrosis
HCC111	Chronic Obstructive Pulmonary Disease
HCC112	Fibrosis of Lung and Other Chronic Lung Disorders
HCC114	Aspiration and Specified Bacterial Pneumonias
HCC115	Pneumococcal Pneumonia, Empyema, Lung Abscess
HCC122	Proliferative Diabetic Retinopathy and Vitreous Hemorrhage
HCC124	Exudative Macular Degeneration
HCC134	Dialysis Status
HCC135	Acute Renal Failure

Indicator Variable	Description Label
HCC136	Chronic Kidney Disease, Stage 5
HCC137	Chronic Kidney Disease, Severe (Stage 4)
HCC157	Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone
HCC158	Pressure Ulcer of Skin with Full Thickness Skin Loss
HCC161	Chronic Ulcer of Skin, Except Pressure
HCC162	Severe Skin Burn or Condition
HCC166	Severe Head Injury
HCC167	Major Head Injury
HCC169	Vertebral Fractures without Spinal Cord Injury
HCC170	Hip Fracture/Dislocation
HCC173	Traumatic Amputations and Complications
HCC176	Complications of Specified Implanted Device or Graft
HCC186	Major Organ Transplant or Replacement Status
HCC188	Artificial Openings for Feeding or Elimination
HCC189	Amputation Status, Lower Limb/Amputation Complications

Table 2. Healthcare Common Procedure Coding System (HCPCS) Primary Care Service Codes

HCPCS Codes	Brief description
99201–99205	New patient, office, or other outpatient visit
99211–99215	Established patient, office, or other outpatient visit
99304–99306	New patient, nursing facility care
99307–99310	Established patient, nursing facility care
99315–99316	Established patient, discharge day management service
99318	New or established patient, other nursing facility service
99324–99328	New patient, domiciliary or rest home visit
99334–99337	Established patient, domiciliary or rest home visit
99339–99340	Established patient, physician supervision of patient (patient not present) in home, domiciliary, or rest home
99341–99345	New patient, home visit
99347–99350	Established patient, home visit
99495-99496	Transitional care management
99490	Chronic care management
G0402	Initial Medicare visit
G0438	Annual wellness visit, initial
G0439	Annual wellness visit, subsequent
G0463	Hospital outpatient clinic visit (Electing Teaching Amendment hospitals only)

Note: Services billed with HCPCS code 99304-99318 that are performed in a skilled nursing facility (place of service code 31) will not be considered as primary care services.

Table 3. CMS Specialty Codes for PCPs and Non-Physician Practitioners Included in the First Step of Attribution

Specialty Description (CMS Specialty Code)
Primary Care Physicians
General Practice (01)
Family Practice (08)
Internal Medicine (11)
Geriatric Medicine (38)
Non-physician Practitioners
Clinical Nurse Specialist (89)
Nurse Practitioner (50)
Physician Assistant (97)

Note: For claims for either FQHC or RHC services: All primary care services are considered in the first step of attribution unless the FQHC or RHC participates in an ACO but the attending physician does not. If the FQHC or RHC participates in an ACO but the attending physician does not, then the service is considered in the first step only if the attending physician is a PCP as defined in the table (Medicare Shared Savings Program 2014)

Table 4. Medical Specialists, Surgeons, and Other Physicians Included in the Second Step of Attribution

Specialty Description (CMS Specialty Code)	
Medical Specialists	**Other Physicians**
Addiction Medicine (79)	Anesthesiology (05)
Allergy/Immunology (03)	Chiropractic (35)
Cardiac Electrophysiology (21)	Diagnostic Radiology (30)
Cardiology (06)	Emergency Medicine (93)
Critical Care (Intensivists) (81)	Interventional Radiology (94)
Dermatology (07)	Nuclear Medicine (36)
Dentist (C5)	Optometry (41)
Endocrinology (46)	Pain Management (72)
Gastroenterology (10)	Pathology (22)
Geriatric Psychiatry (27)	Pediatric Medicine (37)
Hematology (82)	Podiatry (48)
Hematology/Oncology (83)	Radiation Oncology (92)
Hospice and Palliative Care (17)	Single or Multispecialty Clinic or Group Practice (70)
Infectious Disease (44)	Sports Medicine (23)
Interventional Cardiology (C3)	Unknown Physician Specialty (99)
Interventional Pain Management (09)	
Medical Oncology (90)	
Nephrology (39)	
Neurology (13)	
Neuropsychiatry (86)	
Osteopathic Manipulative Medicine (12)	
Physical Medicine and Rehabilitation (25)	
Preventive Medicine (84)	
Psychiatry (26)	
Pulmonary Disease (29)	
Rheumatology (66)	
Sleep Medicine (C0)	
Surgeons	
Cardiac Surgery (78)	
Colorectal Surgery (28)	
General Surgery (02)	
Gynecological/Oncology (98)	
Hand Surgery (40)	
Maxillofacial Surgery (85)	
Neurosurgery (14)	
Obstetrics/Gynecology (16)	
Ophthalmology (18)	
Oral Surgery (Dentists Only) (19)	
Orthopedic Surgery (20)	
Otolaryngology (04)	

Specialty Description (CMS Specialty Code)	
Peripheral Vascular Disease (76)	
Plastic and Reconstructive Surgery (24)	
Surgical Oncology (91)	
Thoracic Surgery (33)	
Urology (34)	
Vascular Surgery (77)	

Table 5. Practitioners and Therapists not included in the First or Second Step of Attribution

Specialty Description (CMS Specialty Code)
Practitioners
Anesthesiologist Assistant (32)
Audiologist (Billing Independently) (64)
Certified Nurse Midwife (42)
Certified Registered Nurse Anesthetist (43)
Clinical Psychologist (68)
Clinical Psychologist (Billing Independently) (62)
Licensed Clinical Social Worker (80)
Registered Dietician/Nutrition Professional (71)
Therapists
Occupational Therapist in Private Practice (67)
Physical Therapist in Private Practice (65)
Speech Language Pathologists (15)