

## **Health Care Cost and Utilization Report: 2011**

### **Analytic Methodology**

September 2012

Version 1.2

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# 1. Introduction and Approach

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FIGURE 1: PROCESS FLOW



Medical and prescription drug claims data serve as the basis for analysis for *Health Care Cost and Utilization Report: 2010*, *Children’s Health Spending Report: 2007—2010*, and *Health Care Cost and Utilization Report: 2011*. The following sections detail the data collection, aggregation, and analysis methods used by HCCI for the three reports. Figure 1 briefly outlines the process.

HCCI used its claims database to estimate per capita health expenditures. HCCI divided claims into four categories of service: inpatient facility, outpatient facility (visits to outpatient facilities or outpatient services performed in other facilities), professional procedures (including physician and nonphysician services), and prescriptions. In the reports, estimated health care expenditures were determined by the prices paid for each service and the utilization or number of services. If individuals increase the quantity of services they use or if the price paid goes up, spending will rise. HCCI also decomposed prices into a complexity of services component and a standard price component, to help isolate whether price increases were driven by intensity of care or rising unit prices.

To make our findings representative of the entire younger than 65 population with ESI, HCCI weighted the data. HCCI used United States Census Bureau data to create age, gender, and geographic weights that allowed HCCI to extrapolate the raw data into national estimates. HCCI captured per capita health care spending on people with ESI by summing all the weighted dollars directly spent on health care services for filed claims, and dividing it by the total number of people with ESI in our weighted dataset. The per capita health expenditure in these reports therefore estimates the cost per beneficiary, even for beneficiaries who did not use health care services. No adjustment was performed for inflation, so the estimated dollars in these reports are nominal.

HCCI estimated total expenditure by multiplying the weighted per capita expenditure by the weighted total number of group employer sponsored insurance (ESI ) beneficiaries in the United States. This metric is a subset of overall national health care spending and may

not be comparable to other metrics of national spending because it only covers persons with group ESI who are younger than 65 years.

The general methodology outlined above was followed in all three reports. However for *Health Care Cost and Utilization Report: 2011*, some changes were made. HCCI added 7 million covered lives per year to its datasets. HCCI performed *completion* on the 2010 and 2011 data, whereas in the 2010 report HCCI did not use completion. Completion is a standard actuarial practice designed to allow for the calculation of utilization, prices, spending, and intensity of health care services when a full set of claims is not reported. Services that have outstanding claims may have a missing or incomplete record. Completion allows for the estimation of the impact of those outstanding claims so that estimates do not under-count or under-project trends. HCCI also reported in 2011 on several sub-categories not addressed in the 2010 report, including: aggregate spending and utilization without skilled nursing facilities data; additional outpatient metrics; brand name and generic prescription metrics, and uncategorizable claims for prescriptions.

#### A Note on Premiums

HCCI does not report on premiums or their determinants. For more information on health insurance premiums and the multiple factors that affect them (including health care expenditure; beneficiary, group and market characteristics; benefit design; and the regulatory environment) see Congressional Research Service, *Private Health Insurance Premiums and Rate Reviews, 2011*<sup>i</sup>; American Academy of Actuaries, *Critical Issues in Health Reform: Premium Setting in the Individual Market, 2010*<sup>ii</sup>; and Congressional Budget Office, *Key Issues in Analyzing Major Health Insurance Proposals, Chapter 3, Factors Affecting Insurance Premiums, 2008*.<sup>iii</sup>

## 1.1 Data Collection

HCCI has access to roughly 6 billion health insurance claims. Of these, 4.5 billion claims are for more than 40 million individuals covered by ESI (2007-2011) including both fully insured and self-funded benefit programs (Table 1). This data was contributed to HCCI by a set of large health insurers who collectively represent almost 40 percent of the U.S. private health insurance market. The claims used in this report represent about 25 percent of all individuals younger than 65 with ESI, making this one of the largest collections of data on the privately insured ever assembled.

TABLE 1: TOTAL COVERED LIVES AND CLAIMS BY CALENDAR YEAR USED IN THE REPORTS

	<u>2010 Reports</u>		<u>2011 Reports</u>	
<u>Year</u>	<u>Covered Lives</u>	<u>Total Claims</u>	<u>Covered Lives</u>	<u>Total Claims</u>
<b>2007</b>	33,400,000	689,900,000	40,700,000	806,400,000
<b>2008</b>	34,000,000	746,800,000	41,200,000	860,300,000
<b>2009</b>	34,100,000	818,100,000	41,100,000	929,600,000
<b>2010</b>	33,100,000	777,600,000	40,000,000	959,000,000
<b>2011</b>	*	*	39,500,000	947,200,000

Source: HCCI, 2012. Note: Data only refers to HCCI holdings of claims for beneficiaries covered by employer-sponsored health insurance, and younger than age 65. HCCI datasets include additional data on the individually insured, Medicare Advantage, and other covered beneficiaries not used in these reports.

HCCI received from the data contributors de-identified, Health Insurance Portability and Accountability Act (HIPAA) compliant data that included the allowed cost, or actual prices paid to providers for services. The numbers in this report reflect the actual expenditure on health care by payers and beneficiaries who filed claims with their group ESI. A listing of key data types is available on the HCCI Website (<http://www.healthcostinstitute.org>).

The analytical subset of the data consisted of all non-Medicare claims on behalf of beneficiaries under the age of 65 with private employer-sponsored health insurance whose claim was filed with a contributing health plan between 2007 and 2011. No Medicare Advantage claims were present in this dataset. A total of 4.5 billion claims were analyzed in the report. They represent the privately insured health care spending of an average of 40 million beneficiaries per year with or without a claim 2007 and 2011 (Table 1).

Claims data was provided to HCCI between January, 2012 and July, 2012. Data was de-identified and transferred to HCCI's data manager. The data manager confirmed the data

integrity of each claims file with the providing health plan. The integrity of all files was confirmed by July 30, 2012. From these base datasets, a single categorized, aggregated, and weighted dataset was constructed for analysis.

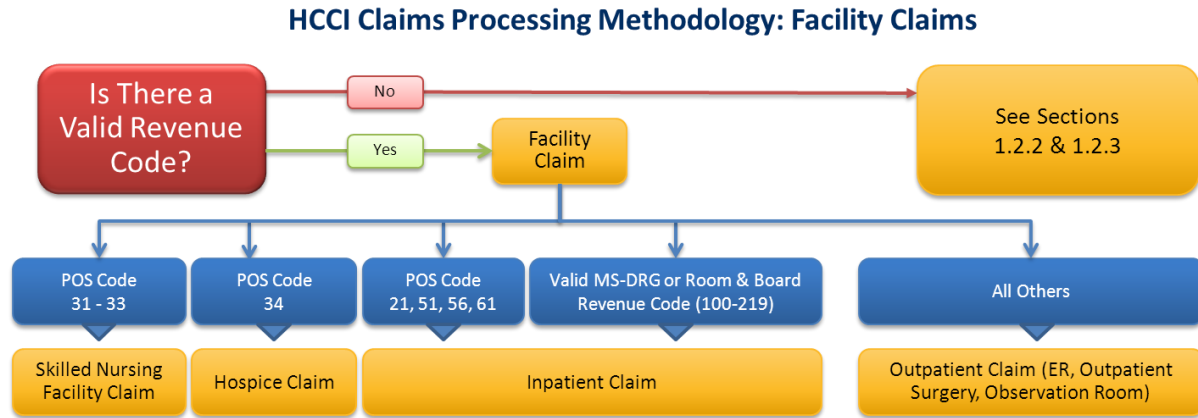
## 1.2 Claims Categorization

At the highest level, claims data were processed into 3 categories: *Facility*, *Professional*, and *Prescription Drug*. HCCI also divided claims into 4 major categories of service and several sub-categories: inpatient facility, outpatient facility (visits or other services), professional procedures (including physician and nonphysician services), and prescriptions (brand and generic). Inpatient claims are from hospitals, skilled nursing facilities (SNF), and hospices where there is evidence that the insured stayed overnight. Outpatient facility claims are claims that did not require an overnight stay and include observation and emergency room claims. Both outpatient and inpatient claims comprise only the facility charges associated with such claims. HCCI classified professional services provided by physicians and nonphysicians in those facilities according to procedure codes commonly used in the industry. HCCI also categorized professional claims into primary care or specialist care. HCCI coded prescription claims into 30 therapeutic classes and to simplify analysis, HCCI grouped them as either generic or brand name prescriptions.

### 1.2.1 Facility Claims

Facility claims are charges received from a facility where a medical service was provided. For facility services, costs generally vary by place of treatment or type of facility. Professional claims are claims filed by a health care professional for medical services provided. Medical claims with a valid revenue code (i.e., a code assigned to a medical service or treatment for receiving proper payment) were assumed to be facility claims. Failing that, claims were assumed to be a professional claim. All lines within a claim are for services delivered by a single provider, so if at least one of the claim lines had a valid revenue code (denoting a facility provider type), all service lines of the claim were categorized as facility. Once processed, facility claims were grouped into two major service categories—inpatient and outpatient (Figure 2).

FIGURE 2: FACILITY CLAIMS PROCESS



Inpatient was split into several major admission types. Inpatient services are rendered when patients are kept overnight for treatment and/or observation. This category was assumed for POS codes 21, 51, 56, and 61, or when the claim had either a valid Medicare Severity Diagnosis-Related Group (MS-DRG) code or a Room & Board revenue code of 100-219. The inpatient claims category also included skilled nursing facility and hospice claims.

- Each of these was further classified into one of the following four categories based on MS-DRG: *Medical, Surgical, Deliveries & Newborns, or Mental Health & Substance Abuse* (Appendix 2.1).
- All Inpatient services were also grouped into Major Diagnostic Categories (MDC), which are formed by dividing all possible principal diagnoses (from ICD-9-CM) into 27 mutually exclusive diagnosis areas (Appendix 2.2).
- Skilled Nursing Facility (SNF & Hospice) - A SNF is a facility providing nursing and rehabilitation services, but with less care intensity than would be received in a hospital. This category was used when the Place of Service (POS) code was 31-33.<sup>iv</sup> Hospice is special care provided by a program or facility for the terminally ill and their family. This category was used when the POS code was 34. Claims with revenue codes 650-659 were also included in Hospice.

Outpatient services are rendered by a section of a hospital that provides medical services that do not require an overnight stay or hospitalization (e.g., emergency room (ER), outpatient surgery, observation room). These services can also be provided at freestanding outpatient facilities. The outpatient category was used for all facility claims not fitting in

the inpatient category.

- Outpatient claims were classified into service categories based on both revenue code and Current Procedural Terminology/ Healthcare Common Procedure Coding System (CPT/HCPCS) code. Outpatient claims may have multiple services billed on the same claim, so a hierarchy system was used to determine which detail line to use for categorization (Appendix 2.3).
- The categories with the highest ranking values were ER, outpatient surgery and observation. Claims with these services were categorized as visits, with all the detailed records within the claim grouped together in a single visit, and assigned to the detailed category with the highest hierarchy value.
- Outpatient services not categorized as ER, outpatient surgery or observation were counted as “procedures” in the *Health Care Cost and Utilization Report: 2010* and as “outpatient other” in the *Children’s Health Spending Report: 2007—2010* and *Health Care Cost and Utilization Report: 2011*. Therefore, each service on the claim was categorized and counted separately.
- Outpatient exceptions: Claims without the presence of a revenue code for services with CPT/HCPCS codes for ambulance, home health, and durable medical equipment (DME)/prosthetics/supplies were mapped into the ancillary services outpatient service category.

## 1.2.2 Professional Claims

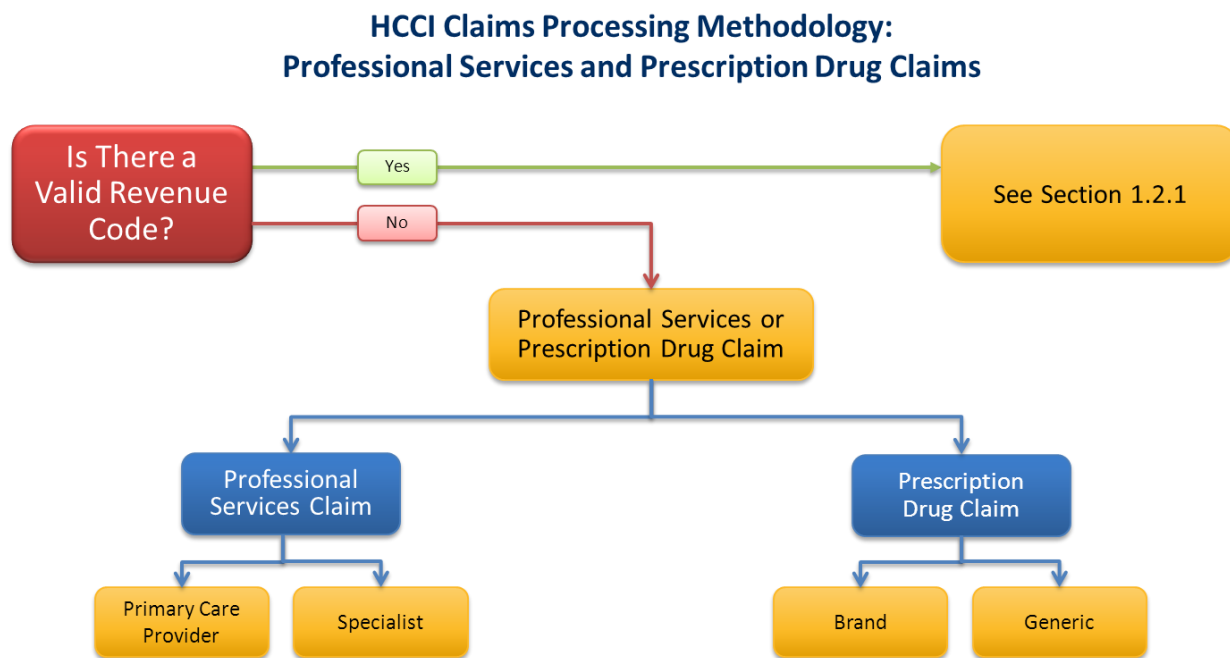
Professional Claims are claims filed by a health care professional for medical services provided. Medical claims with a valid revenue code (i.e., a code assigned to a medical service or treatment for receiving proper payment) were assumed to be facility claims. Failing that, claims were assumed to be a professional claim. Non-facility medical claims were categorized in the following manner (Figure 3).

Claims were classified into HCCI professional service categories based on the CPT/HCPCS code (Appendix 2.4). Exceptions: All facility-administered drugs, CPT/HCPCS codes J0000-J9999, were mapped to the Administered Drugs service category within professional procedures, regardless of whether a revenue code was present on the claim.

Each claim was also categorized by the specialty of the provider type listed on the claim. Of specific note, physicians and other professionals were categorized as Primary Care Providers if they were coded as Family Practice, Geriatric Medicine, Internal Medicine, Pediatrics, or Preventive Medicine.



FIGURE 3: PROFESSIONAL AND PRESCRIPTION CLAIMS PROCESS



### 1.2.3 Prescription Drug Claims

Prescription drug or pharmacy claims were categorized as either brand or generic, based on their National Drug Code (NDC). Administered drugs and any devices categorized as a procedure and not a script were tallied as Professional. Prescription claims were also classified into one of the 30 American Hospital Formulary Service (AHFS) therapeutic classes based on the NDC. AHFS therapeutic classes are developed and maintained by the American Society of Health-System Pharmacists (ASHP).

## 1.3 Grouping & Counting Methodologies

### 1.3.1 Unit Counting (Utilization) Methodology

In all major service categories, an adjusted utilization count was created to account for claims with zero or negative allowed reimbursement dollars. Adjustments to HCCI's source data were created using the following rules:

- If the allowed reimbursement dollars for an admission/visit/procedure were equal to 0, then the utilization count was set equal to 0.
- If the allowed reimbursement dollars for an admission/visit/procedure were less than 0, then the utilization count was set equal to -1. Negative reimbursement amounts occur from claim reversals, making it important to reverse the utilization count as well.
- If the allowed reimbursement dollars for an admission/visit/procedure were greater than 0, then the utilization count was set equal to 1.

Major Service Category-specific rules are enumerated below.

- Inpatient, SNF, Hospice, and Facility
  - If multiple claims had the same patient identification, facility categorization (IP, SNF, or Hospice), and provider, with overlapping or contiguous admit and/or discharge dates, they were grouped into one admission.
  - The Length of Stay (LOS) was determined as the discharge date less the admit date. If multiple claims were combined into one admission, the discharge date used was the latest discharge date among all claims; the admit date used was the earliest admit date among all the claims.
- Outpatient Facility
  - For Emergency Room, Outpatient Surgery, and Observation claims:
    - A visit was defined as all claims for the same patient, same provider and same beginning service date.
    - If a claim had multiple beginning service dates among its various detail claim lines, the minimum date was used as the beginning service date for the entire claim.
  - For all other outpatient categories, utilization counts were simply record counts adjusted for the allowed reimbursement dollars (as described above). They are referred to as “procedure” counts in *Health Care Cost and Utilization Report: 2010* and as “outpatient other” counts in *Children’s Health Care Spending Report: 2007—2010* and *Health Care Cost and Utilization Report: 2011*.
- Professional
  - For all professional claims, utilization counts were simply record counts adjusted for the allowed reimbursement dollars (as described above), and are referred to as procedure counts.
- Prescription
  - Prescription drug claims were captured by scripts filled. HCCI also calculated days’ supply. Each prescription refill is a claim, as is every prescription. Therefore, if a prescription was filled 4 times, then 4 claims were counted. If a script was more than 30 days it was still a single claim.

Therefore one 90 day prescription and one 30 day prescription were each counted as a claim, but one claim had 90 days' supply and one claim had 30 days' supply.

### 1.3.2 Intensity Weights Methodology

Within the reports, price per service is divided into two components—unit price and intensity per service. The following provides details on how weights were assigned by major service category. Our methodology bears some resemblance to that employed in Dunn, Shapiro, and Liebman (2011)<sup>v</sup>, and White (2012)<sup>vi</sup>.

#### 1.3.2.1 Inpatient Facility—Non-SNF, Non-Hospice

Each admission was assigned a weight based on its diagnosis related group (MS-DRG or DRG). The weights used were for FY 2011 as published by the Centers for Medicare & Medicaid (CMS). CMS assigns every DRG a weight based on the average costs to Medicare of patients in that DRG. The weight reflects the average level of resources for an average Medicare patient in the DRG, relative to the average level of resources for all Medicare patients. DRGs which are more expensive to treat get a higher weight and vice versa. In this way, DRG weights reflect intensity of treatment.

For each reported category (such as Medical admissions or Surgical admissions):

$$\text{Inpatient Intensity} = \text{Sum [MS-DRG (or DRG) weights]} / \text{Sum [Utilization]}$$

This provided a measure of how much care is required for an average inpatient admission in a given category. Using the DRG weights allows HCCI to measure differences in how much service a typical admission gets, based on the DRGs in that admission.

$$\text{Inpatient Unit Price} = \text{Sum [Price Paid for Service]} / \text{Sum [MS-DRG (or DRG) weights]}$$

Unit, or intensity-adjusted, price gives HCCI the allowed cost per inpatient admission, deflated by the sum of the DRG weights across all the DRGs that appear, or average price per DRG weight. Since DRG weights are a measure of how much care is required to treat a patient in a given DRG, their sum is a measure of the total amount, or intensity of care, delivered. This then gives HCCI a measure of unit price per service, where the amount of service is measured by the care required.

#### 1.3.2.2 Outpatient Facility

- Each claim line is mapped with an Ambulatory Payment Classification (APC) based on the CPT/HCPCS code on the line. For claims able to be mapped with an APC, relative APC weights for calendar year 2010 as published by CMS were used.
- For claims unable to be mapped with an APC, weights were assigned based on relative value units (RVUs) for facility procedure codes.
- RVU weights were adjusted to the same basis as APC weight based on the difference between calendar year 2010 RVU conversion factor and calendar year 2010 APC base rate.
- Once weights were assigned to outpatient services, HCCI calculated intensity and intensity-adjusted price for each service as follows:

**Outpatient Intensity = Sum [APC or RVU Weights] / Sum [Procedures or Visits]**

**Outpatient Unit Price = Sum [Price Paid per Service] / Sum [APC or RVU Weights]**

### **1.3.2.3 Professional**

- Each CPT/HCPCS code was assigned a relative value unit (RVU), either facility or non-facility, based on the place of service. Professional procedures can occur in hospitals, outpatient facilities or during office visits. The RVUs for calendar year 2010 as published by CMS were used. Commercial adjustments were made to account for procedures not commonly seen in Medicare, as well as procedures such as Anesthesia. The commercial modifiers are proprietary, and therefore HCCI cannot publish them.

**Professional Procedure Intensity = Sum [RVUs] / Sum [Procedures]**

**Professional Procedure Unit Price = Sum [Price Paid per Service] / Sum [RVUs]**

#### 1.3.2.4 Methodology for Imputing Missing Weights

For Outpatient and Professional services, if a claim line was not assigned with a weight after the methods described above, an analysis was conducted to impute a weight. Details for the imputation analysis used are as follows:

- For each of the procedure codes or revenue codes to be imputed (referred to as imputed codes), their detailed service category was determined (see 1.2.1 and 1.2.2).
- The average allowed price and average APC/RVU weight for each detailed service category were calculated based on the claims with *assigned* weights.

**Average Price for Detailed Service Category = Sum [Allowed Dollars for All Claims with an Assigned Weight] / Sum [Visits/Procedures with an Assigned Weight]**

**Average APC/RVU Weight for Detailed Service Category = Sum [APC/RVU Weights for All Claims with an Assigned Weight] / Sum [Visits/Procedures with an Assigned Weight]**

- The price ratio between each imputed code and the average price of the corresponding detailed service category was calculated as follows.

**Imputed Code Price Ratio = [Imputed Code Allowed Price] / [Average Price for Corresponding Detailed Service Category]**

- The weights for each imputed code were calculated as follows.

**Imputed Weight = [Imputed Code Price Ratio] x [Average APC/RVU Weight for Corresponding Detailed Service Category]**

## 1.4 Adjustment Methodologies

### 1.4.1 Claims Completion Methodology

Claims data reflect health care services performed (i.e. claims incurred) in the year noted. Most claims take at least a month, and sometimes several months, to be submitted to the payer, processed, and have final payments made to the provider (sometimes called the claim payment lag time or run-out period).

*For Health Care Cost and Utilization Report: 2010 and Children's Health Care Spending Report: 2007—2010*, 2010 was the most recent year of data and claims were collected after December 31, 2011. For those reports, HCCI did not perform completion.

*For Health Care Cost and Utilization Report: 2011*, the claims from 2010 were collected again, this time 18 months after calendar close. The 2011 claims were collected after 6 months of lag time, paid as of June 30, 2012. Claims from 2007 to 2009 were assumed to be adjudicated. Therefore, an adjustment was needed to account for the remaining 2010 and 2011 claims that would be paid after June 30, 2012. These adjustments (i.e. completion factors) varied by type of measure (i.e. dollars, unit counts, and intensity weights), and detailed service category (i.e. sub-groups within inpatient facility, outpatient facility, and professional). The factors were based on historical claims payment patterns specific to the HCCI dataset. They were developed using a standard actuarial model for incurred-but-not-paid analysis, as described by Bluhm.<sup>vii</sup> Prescriptions were considered complete, and were not adjusted with completion factors.

### 1.4.2 Population Weighting Methodology

A combination of U.S. Census Bureau surveys was used in HCCI's estimation process of the national employer-sponsored beneficiary population. First and foremost, the American Community Survey (ACS) was used to establish a distribution of privately-insured people across demographic and geographic characteristics.<sup>viii</sup>

To develop demographic/geographic weights, the 3 year averages from the 2008 to 2010 ACS survey were used (single year estimates were not used as they may fluctuate in some of the smaller counties). Estimates of the privately-insured population were calculated as:

**ACS Privately Insured<sup>ix</sup> = ACS All Insured – ACS Public Insured**

Demographic and geographic divisions used were as follows:

- Geographic divisions used: Core-Based Statistical Area – Metropolitan Statistical Area (CBSA-MSA), and state. Counties which did not map to a

CBSA-MSA code were aggregated by state, i.e. a single “rural area” of counties was created for each state.

- Age divisions used: Less than 6 years of age, 6-17, 18-24, 25-44, and 45-64 (Individuals over age 64 were excluded)

The distribution of privately-insured members for these 4,992 distinct age/sex/geographic cells were developed and used for all years. (Please see Appendix for “Population Weighting Example.”)

**2008-2010 AgeSexGeo Weight = (ACS-Estimated Privately-Insured Population for that AgeSexGeo category) / (2008-2010 ACS Average National Privately-Insured Population Estimate)**

The HCCI data were also aggregated by geographic division, age group, and sex. This enabled the development of weights using the survey-based targets discussed above. The weights were then applied to membership and claims, resulting in representative estimates of the national employer-sponsored privately-insured population younger than age 65. For example, weights by age group and sex for 2011 were calculated as follows:

**2011 CBSA AgeSex Weight = (2008-2010 AgeSexGeo Weight at CBSA-MSA level) \* (HCCI 2011 Total Insured Count) / (HCCI 2011 Insured Count at CBSA-MSA level for members in that CBSA-MSA)**

**2011 Non-CBSA AgeSex Weight = (2008-2010 AgeSexGeo Weight at state level for members in non-CBSA counties) \* (HCCI 2011 Total Insured Count) / (HCCI 2011 Insured Count at state level for members without a CBSA-MSA code)**

### **1.4.3 Aggregate Spending Methodology**

The Annual Social & Economic Supplement to the Current Population Survey (CPS ASEC) was used for its detail on the type of private insurance held (breaking private insurance into direct purchase and employment-based categories) to determine aggregate values for total expenditure.<sup>x</sup> Per capita metrics developed using the methodology described above (Section 1.4.2) were multiplied by year-specific employment-based private health insurance statistics to determine estimated total expenditure on health care by the younger than 65, ESI population.

**2011 Total Expenditure = (HCCI-Estimated 2011 Total Per Capita) \* (2011 Employment-Sponsored Private Insurance CPS Population Estimate)**

## 1.5 Analysis

The final dataset analyzed comprised of data on spending, allowed costs, utilization, and intensity for beneficiaries younger than 65 covered by employer-sponsored health insurance. Observations were analyzed at weighted region-age-gender-category levels. Analysis consisted of summary statistics on spending and the components of spending. Analysis was performed on

- Nationally representative statistics;
- Four US Census Regions;
- All ages younger than 65;
- Four age subgroupings, ages: 0-18, 19-44, 45-54, and 55-64;
- Three claims categories (facility fees, professional, and prescriptions);
- Nine second-level categories: (inpatient (all), inpatient without skilled nursing facility claims, outpatient (all), outpatient visits, outpatient procedures, professional claims, prescriptions (all), generic prescriptions, and brand name prescriptions); and
- Multiple third-level categories.



## 2. Appendix

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### 2.1 MS-DRG (v26.0) Mapping to Inpatient Service Category

Medical	Surgical	Deliveries & Newborns	Mental Health & Substance Abuse
52 - 103	1 - 13	765 - 768	876
121 - 125	20 - 42	774 & 775	880 - 887
146 - 159	113 - 117	789 - 793	894 - 897
175 - 208	129 - 139	794 & 795	
280 - 316	163 - 168		
368 - 395	215 - 265		
432 - 446	326 - 358		
533 - 566	405 - 425		
592 - 607	453 - 517		
637 - 645	573 - 585		
682 - 700	614 - 630		
722 - 730	652 - 675		
754 - 761	707 - 718		
776 - 782	734 - 750		
808 - 816	769 & 770		
834 - 849	799 - 804		
862 - 872	820 - 830		
913 - 923	853 - 858		
933 - 935	901 - 909		
945 - 951	927 - 929		
963 - 965	939 - 941		
974 - 977	955 - 959		
998	969 & 970		
	981 - 989		

## 2.2 Major Diagnostic Category (MDC) to MS-DRG Mapping

MDC	MDC Description	MS-DRG
1	Nervous system	020 - 103
2	Eye	113 - 125
3	Ear, Nose, Mouth & Throat	129 - 159
4	Respiratory System	163 - 208
5	Circulatory System	215 - 316
6	Digestive System	326 - 395
7	Hepatobiliary System & Pancreas	405 - 446
8	Musculoskeletal System & Connective Tissue	453 - 566
9	Skin, Subcutaneous Tissue & Breast	573 - 607
10	Endocrine, Nutritional & Metabolic System	614 - 645
11	Kidney & Urinary Tract	652 - 700
12	Male Reproductive System	707 - 730
13	Female Reproductive System	734 - 761
14	Pregnancy; Childbirth	765 - 782; 998
15	Newborns & Neonates (Perinatal Period)	789 - 795
16	Blood, Blood Forming Organs & Immunological Disorders	799 - 816
17	Myeloproliferative Diseases & Disorders	820 - 849
18	Infectious & Parasitic Disease & Disorders	853 - 872
19	Mental Diseases & Disorders	876 - 887
20	Alcohol/Drug Use or Induced Mental Disorders	894 - 897
21	Injuries, Poison & Toxic Effects of Drugs	901 - 923
22	Burns	927 - 935
23	Factors influencing Health Status	939 - 951
24	Multiple Significant Trauma	955 - 965
25	Human Immunodeficiency Virus Infections	969 - 977
26	Transplants	001 - 013
27	Extensive Procedures Unrelated to Principal Diagnosis	981-989, 999

## 2.3 CPT/HCPCS/Revenue Code Mapping to Outpatient Service Category

HCCI Service Category	Revenue Codes Mapping (standard UB92 codes only)	2009 CPT/HCPCS Codes Mapping (standard 2009 codes)	Hierarchy Ranking
Emergency Room	450-452; 456; 459	99281-99292; 99466-99476	1
Outpatient Surgery	360-362; 367; 369; 481; 490; 499; 790; 799	10021-36410; 36420-58999; 60000-69990; 93501-93581; 0016T-0198T	2
Observation	760-762; 769	99217-99220	3
Ambulance		A0021-A0999	N/A
DME/Prosthetics/Supplies		A4206-A5200; A5500-A5513; A6000-A9999; E0100-E8002; K0001-K0899; L0112-L4398; L5000-L9900	N/A
Home Health		99500-99602	N/A
Lab/Pathology	300-307; 309-312; 314; 319	36415; 36416; 80047-80440; 80500-80502; 81000-88399; 88720-89356; ATP02-ATP22; P2028-P9615	N/A
Other Outpatient Services	420-424; 429-434; 439-444; 449; 480; 482-483; 489; 720-724; 729-732; 739; 800-804; 809; 820-825; 829-835; 839-845; 849-855; 859; 880-882; 889; 900-919; 944-945; 1000-1005	59000-59899; 90801-90899; 90935-90999; 92626-92633; 92950-93352; 93600-93799; 97001-98943; A4651-A4932; E1500-E1699; H0001-H2037	N/A
Radiology Services	320-324; 329-333; 335, 339, 340-344; 349-352; 359, 400-404; 409, 610-619	70010-70332; 70336; 70350-70390; 70450-70498; 70540-70559; 71010-71130; 72010-72120; 72170-72190; 71250-71275; 71550-71555; 72125-72133; 72141-72159; 72191-72198; 72200-73140; 73200-73206; 73218-73225; 73500-73660; 73700-73706; 73718-73725; 74000-74022; 74150-74175; 74181-74185; 74190-74775; 75557-75564; 75600-75630; 75635; 75650-76350; 76376-76380; 76390; 76496-76499; 76506-76999; 77001-77003; 77011-77014; 77021-77022; 77031-77059; 77071-77083; 77084; 77261-77799; 78000-79999; 96401-96571; R0070-R0076	N/A

## 2.4 CPT/HCPCS Mapping to Professional Service Category

HCCI Service Category	CPT/HCPCS Code Range
Administered Drugs, including Chemo Drugs	J0000-J9999
Allergy	95004-95075, 95115-95199
Anesthesia	00100-02020, 99100-99140
Cardiovascular	92950-93352, 93501-93581, 93600-93799, 93875-93990
Consultations	99241-99255
Emergency Room/Critical Care	99281-99292, 99466-99476
Immunizations/Injections	90281-90749, 96360-96379, G0008-G0010
Inpatient Visits	99217-99239, 99304-99340, 99477, 99478-99480
Office Visits	99201-99215, 99341-99350
Ophthalmology	92002-92499, V2020-V2799
Pathology/Lab	80047-89398, P2028-P9615, ATP02-ATP22
Physical Medicine	97001-98943
Preventive Visits	99381-99387, 99391-99429, 99460-99464
Psychiatry & Biofeedback	90801-90911
Radiology	70010-79999, R0070-R0076
Surgery	10021-69990 excluding 36415-36416; 0016T-0222T
Other Professional Services	36415-36416, 90935-90999, 91000-91299, 92502-92700, 94002-94799, 95250-95251, 95803-96125, 96150-96155, 96401-96571, 96900-96999, 98960-99091, 99143-99199, 99354-99360, 99363-99380, 99441-99444, 99450-99456, 99465, 99499, 99605-99607, B4034-B9999, C1300-C9899, D0120-D9999, G0027-G9142, H0001-H2037, M0064-M0301, Q0035-Q9968, S0012-S9999, T1000-T5999, V5008-V5299, V5336-V5364, W0000-ZZZZ

## 2.5 Claims Completion Example

The following is an example of the estimation of incurred but not paid claims. Please note the numbers in this section are for illustration purposes only—they are NOT real numbers.

Month	Paid \$ to Date [1]	Completion Factor [2]	Estimated Incurred
Jan-11	\$ 21,675,364	1.00	\$ 21,727,186
Feb-11	17,339,406	1.00	17,402,178
Mar-11	18,271,837	1.00	18,289,514
Apr-11	20,286,106	1.00	20,339,892
May-11	19,356,580	1.00	19,426,260
Jun-11	17,751,856	0.99	17,945,588
Jul-11	18,256,838	0.99	18,355,884
Aug-11	17,732,384	0.98	18,083,643
Sep-11	17,489,161	0.95	18,481,283
Oct-11	16,893,933	0.93	18,120,909
Nov-11	15,981,513	0.86	18,681,099
Dec-11	11,217,486	0.62	18,028,238
Total	\$ 212,252,463	0.94	\$ 224,881,674

[1] \$ incurred in the month, paid to evaluation date 2/28/2012

[2] Completion factors will be developed using lag triangle method

## 2.6 Population Weighting Example

The following is an example of how population adjustment weights were calculated. Please note the numbers in this section are for illustration purposes only—they are NOT real numbers.

				[A]	[B]	[C]=[A]-[B]	[D]	[E]=[C]/[D]
				ACS Statistics		Estimated	Claims	Population Adjustment Weight
CBSA-MSA	State	Sex	Age Group	Any Ins.	Public Ins.	Commercial Population	Population	
Anniston-Oxford		F	1	3,460	1,558	1,902	400	4.76
Anniston-Oxford		F	2	9,443	4,687	4,756	1,400	3.40
Anniston-Oxford		F	3	3,951	648	3,303	800	4.13
Anniston-Oxford		F	4	10,363	1,915	8,448	2,000	4.22
Anniston-Oxford		F	5	13,433	3,348	10,085	2,800	3.60
Anniston-Oxford		M	1	3,398	1,771	1,627	500	3.25
Anniston-Oxford		M	2	9,330	4,170	5,160	1,200	4.30
Anniston-Oxford		M	3	4,459	1,030	3,429	800	4.29
Anniston-Oxford		M	4	11,945	3,111	8,834	2,000	4.42
Anniston-Oxford		M	5	14,102	3,698	10,404	3,000	3.47
.....		.....	.....	.....	.....	.....	.....	.....
Rural (Non-CBSA)	AL	F	1	31,153	18,439	12,714	2,500	5.09
Rural (Non-CBSA)	AL	F	2	92,918	43,828	49,090	8,750	5.61
Rural (Non-CBSA)	AL	F	3	31,473	6,104	25,369	4,500	5.64
Rural (Non-CBSA)	AL	F	4	93,547	16,024	77,523	14,000	5.54
Rural (Non-CBSA)	AL	F	5	127,888	35,008	92,880	17,000	5.46
Rural (Non-CBSA)	AL	M	1	32,662	18,632	14,030	2,375	5.91
Rural (Non-CBSA)	AL	M	2	86,851	39,502	47,349	7,500	6.31
Rural (Non-CBSA)	AL	M	3	34,490	10,205	24,285	4,250	5.71
Rural (Non-CBSA)	AL	M	4	100,960	21,463	79,497	16,000	4.97
Rural (Non-CBSA)	AL	M	5	136,492	36,834	99,658	15,000	6.64

## 2.7 EndNotes

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<sup>i</sup> Congressional Research Service. Private Health Insurance Premiums and Rate Reviews [Internet]. Washington (DC): CRS; 2011 Jan [cited 2012 May 11]. Available from: [http://assets.opencrs.com/rpts/R41588\\_20110111.pdf](http://assets.opencrs.com/rpts/R41588_20110111.pdf).

<sup>ii</sup> American Academy of Actuaries. Critical Issues in Health Reform: Premium Setting in the Individual Market [Internet]. Washington (DC): AAA; 2010 March [cited 2012 May 11]. Available from: [http://www.actuary.org/pdf/health/premiums\\_mar10.pdf](http://www.actuary.org/pdf/health/premiums_mar10.pdf).

<sup>iii</sup> Congressional Budget Office. Key Issues in Analyzing Major Health Insurance Proposals, Chapter 3, Factors Affecting Insurance Premiums [Internet]. Washington (DC): CBO; 2008 December [cited 2012 May 11]. Available from: <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/99xx/doc9924/12-18-keyissues.pdf>. For additional information on insurers' administrative costs and profits, see Centers for Medicare and Medicaid Services. National Health Expenditure Accounts: tables 2010 [Internet]. Baltimore (MD): CMS; 2012 Jan [cited 2012 May 11]. Available from: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/tables.pdf>.

<sup>iv</sup> Centers for Medicare and Medicaid Services. Medicare Claims Processing Manual: Chapter 26 – Completing and Processing Form CMS-1500 Data Set [Internet]. Baltimore (MD): CMS; 2011 Dec [cited 2012 May 18]. Available from: <https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/clm104c26.pdf>

<sup>v</sup> Abe Dunn, Adam Hale Shapiro, and Eli Liebman. "Geographic Variation in Commercial Medical Care Expenditures: A Decomposition Between Price and Utilization." Bureau of Economic Analysis, U.S. Department of Commerce, July 15, 2011.

<sup>vi</sup> Chapin White. "Health Status and Hospital Prices Key to Regional Variation in Private Health Care Spending." Research Brief No. 7, Center for Studying Health System Change, February 2012.

<sup>vii</sup> Bluhm WF, editor. Group Insurance. 4<sup>th</sup> ed. Winsted: ACTEX Publications, Inc; 2003. P. 811-27.

<sup>viii</sup> US Department of Commerce. US Census Bureau. American Community Survey Office. Data and Documentation [Internet]. Washington (DC): Census; 2010 March [cited 2012 May 11]. Available from: [http://www.census.gov/acs/www/data\\_documentation/data\\_main](http://www.census.gov/acs/www/data_documentation/data_main).

<sup>ix</sup> If a member has both public and commercial insurance, s/he is only counted towards public insurance.

<sup>x</sup> US Department of Commerce. US Census Bureau. Health Insurance. Historical Tables - HIB Series [Internet]. Washington (DC): Census; 2010 March [cited 2012 May 11]. Available from: [http://www.census.gov/hhes/www/hlthins/data/historical/HIB\\_tables.html](http://www.census.gov/hhes/www/hlthins/data/historical/HIB_tables.html).