Supplementary Online Content


eAppendix. Online Addendum.

This supplementary material has been provided by the authors to give readers additional information about their work.
Online Addendum

Original Method A 2006

Goal: To calculate the number of non-melanoma skin cancer (NMSC) and the number of persons of any age in the U.S. with NMSC in 2006

1. Find \(a\) \(a = 2,048,517\)
   a. Definition \(a\) = the number of skin procedures for cancer in 2006 in Medicare B Fee-for-Service (FFS) for all ages.

2. Find \(j\) \(j = 0.937\)
   a. Definition \(j\): the proportion of procedures for cancer in 2006 specific for NMSC
   b. Source: 2006 5% Sample LDS SAF Physician/Supplier Claims

3. Find \(k\) \(k = a \times j = 1,919,460\)
   a. Definition \(k\) = the number of procedures for NMSC in 2006 in Medicare B FFS

4. Find \(b\)
   a. Definition \(b\) = the proportion of \(k\) that are in patients \(\geq 65\) year of age
   b. Source of numbers
      i. \(1.6296 = \text{Rate of NMSC procedures per person } \geq 65\text{ in 2006. From 2006 5\% Sample LDS SAF Physician/Supplier Claims.}\)
      ii. \(1.6235 = \text{Rate of NMSC procedures per person } < 65\text{ in 2006. From 2006 5\% Sample LDS SAF Physician/Supplier Claims}\)
      iii. \(27,490,000 = \text{Number of persons } \geq 65\text{ enrolled in Medicare B FFS in 2006. From Heath Care Financing Review 2007 Statistical Supplement(HCFR), 2006.}\)
iv. $5,418,000 = $\text{Number of persons } < 65 \text{ enrolled in Medicare B FFS in 2006}$

**Heath Care Financing Review 2007 Statistical Supplement (HCFR), 2006**

5. Find $c$

   $c = 1,604,477$

   a. Definition $c$ = number of procedures for NMSC in 2006 in Medicare B FFS for persons $\geq 65$ years of age

6. Find $d$

   a. Definition $d$ = Among all persons over age 65 in the U.S. population, the proportion enrolled in Medicare B FFS.

   b. Source of numbers:

      i. $27,490,000 = $\text{Number of persons } \geq 65 \text{ enrolled in Medicare B FFS in 2006. From Heath Care Financing Review 2007 Statistical Supplement (HCFR), 2006}$


7. Find $e$

   \[
   e = \frac{c}{d} = \frac{1,604,477 \text{ procedures}}{.7379} = 2,174,383 \text{ procedures}
   \]

   a. Definition $e$ = number of skin procedures for NMSC in 2006 in total U.S. in persons $\geq 65$ years of age

8. Find $f$

   $f = \frac{2,482,801}{4,003,887} = 0.62$

   a. Definition $f$ = of the visits with a procedure for NMSC, the proportion of visits that were for persons 65 and older.

   b. Source of numbers:

      i. $2482801 = $\text{weighted frequency of NAMCS visits with a procedure for NMSC for persons } \geq 65 \text{ for 2006.}$

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ii. 4003887 = weighted frequency of NAMCS visits with a procedure for NMSC for all persons for 2006.

9. Find \( g \)
   \[ g = \frac{e}{f} = 3,507,069 \]
   a. Definition \( g \) = total number of skin procedures for NMSC in U.S.

10. Find \( h \)
    \[ h = 1.6293 \]
    a. Definition \( h \) = number of procedures for NMSC per person in Medicare B FFS in 2006.
    b. Source: From 2006 5% Sample LDS SAF Physician/Supplier Claims.

11. Find \( i \)
    \[ i = \frac{g}{h} = \frac{3,507,069}{1.6293} = 2,152,500 \]
    a. Definition \( i \) = number of persons in the U.S. with NMSC in 2006
Revised Method A 2006

Goal: To calculate the number of non-melanoma skin cancer (NMSC) and the number of persons of any age in the U.S. with NMSC in 2006

1. Find a
   \[ a = 2,048,517 \]
   a. Definition: \( a \) = the number of skin procedures for cancer in 2006 in Medicare B Fee-for-Service (FFS) for all ages.

2. Find j
   \[ j = 0.937 \]
   a. Definition: \( j \) = the proportion of procedures for cancer in 2006 specific for NMSC
   b. Source: 2006 5% Sample LDS SAF Physician/Supplier Claims

3. Find k
   \[ k = a \times j = 1,919,460 \]
   a. Definition: \( k \) = the number of procedures for NMSC in 2006 in Medicare B FFS

4. Find b
   \[ b = \frac{102,437 - 4,436}{102,437} = 0.9567 \]
   a. Definition: \( b \) = the proportion of \( k \) that are in patients \( \geq 65 \) year of age
      - Total number of procedures in 2006 for NMSC (all ages) = 102,437
      - Total number of procedures in 2006 for NMSC for Medicare FFS beneficiaries < 65 years old = 4,436
   b. Source: 2006 5% Sample LDS SAF Physician/Supplier Claims

5. Find c
   \[ c = k \times b = 1,836,347 \]
   c. Definition: \( c \) = number of procedures for NMSC in 2006 in Medicare B FFS for persons \( \geq 65 \) years of age

6. Find d
   \[ d = \frac{27,490,000 \text{ persons}}{37,253,065 \text{ persons}} = .7379 \]
   d. Definition: \( d \) = Among all persons over age 65 in the U.S. population, the proportion enrolled in Medicare B FFS.
   e. Source of numbers:

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i. 27,490,000 = Number of persons ≥ 65 enrolled in Medicare B FFS in 2006. From Heath Care Financing Review 2007 Statistical Supplement (HCFR), 2006


7. Find e
   \[ e = \frac{c}{d} = \frac{1,836,347}{0.7379} = 2,488,612 \]
   f. Definition e = number of skin procedures for NMSC in 2006 in total U.S. in persons ≥ 65 years of age

8. Find f
   \[ f = \frac{2,482,801}{4,003,887} = 0.62 \]
   g. Definition f = of the visits with a procedure for NMSC, the proportion of visits that were for persons 65 and older.
   h. Source of numbers:
      i. 2482801 = weighted frequency of NAMCS visits with a procedure for NMSC for persons ≥ 65 for 2006.
      ii. 4003887 = weighted frequency of NAMCS visits with a procedure for NMSC for all persons for 2006.

9. Find g
   \[ g = \frac{e}{f} = \frac{4,013,890}{0.62} \]
   i. Definition g = total number of skin procedures for NMSC in U.S.

10. Find h
    \[ h = 1.6293 \]
    j. Definition h = number of procedures for NMSC per person in Medicare B FFS in 2006.
    k. Source: From 2006 5% Sample LDS SAF Physician/Supplier Claims.

11. Find i
    \[ i = \frac{g}{h} = \frac{4,013,890}{1.6293} = 2,463,567 \]
    l. Definition i = number of persons in the U.S. with NMSC in 2006
Revised Method A 2012

Goal: To calculate the number of non-melanoma skin cancer (NMSC) and the number of persons of any age in the U.S. with NMSC in 2012

1. Find a  \( a = 2,321,058 \)
   a. Definition \( a \) = the number of skin procedures for cancer in 2012 in Medicare B Fee-for-Service (FFS) for all ages.
   b. Source: Medicare physician/supplier procedure summary master file. Time Series Data Col. AL Row 51

2. Find \( j = 0.944 \)
   a. Definition \( j \): the proportion of procedures for skin cancer in 2012 specific for NMSC
   b. Source: 2012 5% Sample LDS SAF Physician/Supplier Claims Overview Col G Row 12

3. Find \( k = a \times j = 2,191,079 \)
   a. Definition \( k \) = the number of procedures for NMSC in 2012 in Medicare B FFS

4. Find \( b = (116,083 - 5,213) / 116,083 = 0.9551 \)
   Definition \( b \) = the proportion of \( k \) that are in patients \( \geq 65 \) year of age
   Total number of procedures in 2012 for NMSC (all ages) = 116,083
   Total number of procedures in 2012 for NMSC for Medicare FFS beneficiaries < 65 years old = 5,213
   a. Source: 2012 5% Sample LDS SAF Physician/Supplier Claims

5. Find \( c = a \times b = 2,092,670 \)
   a. Definition \( c \) = number of procedures for NMSC in 2012 in Medicare B FFS for persons \( \geq 65 \) years of age

6. Find \( d = 27,239,770 / 43,145,356 = .6313 \)
   a. Definition \( d \) = Among all persons over age 65 in the U.S. population, the proportion enrolled in Medicare B FFS.
   b. Source of numbers:

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7. Find e  
   e = c/d = 2,092,670/0.6313 = 3,314,858
   a. Definition e = number of skin procedures for NMSC in 2012 in total U.S. in persons ≥ 65 years of age

8. Find f  
   f = 0.61
   a. Definition f = of the visits with a procedure for NMSC, the proportion of visits that were for persons 65 and older. This is an average of 2008-2010 because 2010 is the most recent year available. There is no trend up or down during this time period.

   b. Source of numbers:
      i. p = weighted frequency of NAMCS visits with a procedure for NMSC for persons ≥ 65 for the indicated year.
      ii. r = weighted frequency of NAMCS visits with a procedure for NMSC for all persons for the indicated year.

2006: f = 0.62  
p = 2482801 = weighted frequency of NAMCS visits with a procedure for NMSC for persons ≥ 65  
r = 4003887 = weighted frequency of NAMCS visits with a procedure for NMSC for all persons

2007: f = 0.66  
p = 3997181 = weighted frequency of NAMCS visits with a procedure for NMSC for persons ≥ 65  
r = 6023271 = weighted frequency of NAMCS visits with a procedure for NMSC for all persons
2008: \( f = 0.55 \)
\( p = 2612212 \) = weighted frequency of NAMCS visits with a procedure for NMSC for persons \( \geq 65 \)
\( r = 4771044 \) = weighted frequency of NAMCS visits with a procedure for NMSC for all persons

2009: \( f = 0.61 \)
\( p = 2829166 \) = weighted frequency of NAMCS visits with a procedure for NMSC for persons \( \geq 65 \)
\( r = 4616820 \) = weighted frequency of NAMCS visits with a procedure for NMSC for all persons

2010: \( f = 0.67 \)
\( p = 3773975 \) = weighted frequency of NAMCS visits with a procedure for NMSC for persons \( \geq 65 \)
\( r = 5618310 \) = weighted frequency of NAMCS visits with a procedure for NMSC for all persons

9. Find \( g \)
\[ g = e/f = 3,314,858/0.61 = 5,434,193 \]
   a. Definition \( g \) = total number of skin procedures for NMSC in U.S.

10. Find \( h \)
    \[ h = 1.645 \]
   a. Definition \( h \) = number of procedures for NMSC per person in Medicare B FFS in 2012.
   b. Source: From 2012 5% Sample LDS SAF Physician/Supplier Claims.

11. Find \( i \)
    \[ i = g/h = 5,434,193/1.645 = 3,303,461 \]
   a. Definition \( i \) = number of persons in the U.S. with NMSC in 2012

12. Find the percentage of BCC’s and SCC’s treated in the Medicare population in 2012
   Source: From 2012 5% Sample LDS SAF Physician/Supplier Claims
   a. Number of unspecified malignant neoplasms of the skin (icd-9 173.X0) = 104,700
   b. Number of basal cell carcinomas of the skin (icd-9 173.X1) = 1,029,660
   c. Number of invasive squamous cell carcinomas of the skin (icd-9 173.X2) = 837,940
d. Number of other specified malignant neoplasms of the skin (icd-9 173.X9) = 29,040

e. Number of squamous cell carcinomas in situ of the skin (icd-9 232.X) = 189,760

Total number of procedure codes for NMSC from 2012 = 2,191,100

f. BCC = 47.0% of total procedures. Invasive SCC = 38.24%. SCC in situ = 8.66%. Other specified and unspecified malignant cutaneous neoplasms = 6.1%

13. Ratio of BCC to invasive SCC = 51,483/41,897 = 1.23

14. Ratio of BCC to invasive and in situ SCC = 1,029,660/1,027,700 = 1.00