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 \( b \)

\[ b = \frac{1.6296 \times 27,490,000}{(1.6235 \times 5,418,000) + (1.6296 \times 27,490,000)} = 0.8359 \]

a. Definition \( b \) = the proportion of \( k \) that are in patients \( \geq \) 65 year of age

b. Source of numbers

i. 1.6296 = Rate of NMSC procedures per person \( \geq \) 65 in 2006. From 2006 5% Sample LDS SAF Physician/Supplier Claims.

ii. 1.6235 = Rate of NMSC procedures per person < 65 in 2006. From 2006 5% Sample LDS SAF Physician/Supplier Claims

iii. 27,490,000 = Number of persons \( \geq \) 65 enrolled in Medicare B FFS in 2006. From Heath Care Financing Review 2007 Statistical Supplement(HCFR), 2006.
iv. 5,418,000 = Number of persons < 65 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 ≥ 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. \[ \frac{27,490,000 \text{ persons}}{37,253,065 \text{ persons}} = 0.7379 \]
         \[ d = \frac{27,490,000 \text{ persons}}{37,253,065 \text{ persons}} \]

7. Find e
   \[ e = \frac{c}{d} = \frac{1,604,477 \text{ procedures}}{0.7379} = 2,174,383 \text{ procedures} \]
   a. Definition e = number of skin procedures for NMSC in 2006 in total U.S. in persons ≥ 65 years of age

8. Find f
   \[ f = \frac{2,482,801}{4,003,887} = 0.62 \]
   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 = 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  
   \[ g = \frac{e}{f} = 3,507,069 \]
   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 \( a = 2,048,517 \)
   a. Definition \( a \) = the number of skin procedures for cancer in 2006 in Medicare B Fee-for-Service (FFS) for all ages.

2. Find \( j = 0.937 \)
   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 \( k = a \times j = 1,919,460 \)
   a. Definition \( k \) = the number of procedures for NMSC in 2006 in Medicare B FFS

4. Find \( b = (102,437 - 4,436) / 102,437 = 0.9567 \)
   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 \( c = k \times b = 1,836,347 \)
   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. 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 Health 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

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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  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  k = a x j = 2,191,079

   a. Definition k = the number of procedures for NMSC in 2012 in Medicare B FFS

4. Find b  b = (116,083 – 5,213) / 116,083 = 0.9551

   Definition b = the proportion of k that are in patients ≥ 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  c = a x b = 2,092,670

   a. Definition c = number of procedures for NMSC in 2012 in Medicare B FFS for persons ≥ 65 years of age

6. Find d  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  

\[ e = \frac{c}{d} = \frac{2,092,670}{0.6313} = 3,314,858 \]

  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: \( f = 0.55 \)
\( p = 261,221,2 = \) weighted frequency of NAMCS visits with a procedure for NMSC for persons \( \geq 65 \)
\( r = 477,104,4 = \) weighted frequency of NAMCS visits with a procedure for NMSC for all persons

2009: \( f = 0.61 \)
\( p = 282,916,6 = \) weighted frequency of NAMCS visits with a procedure for NMSC for persons \( \geq 65 \)
\( r = 461,682,0 = \) weighted frequency of NAMCS visits with a procedure for NMSC for all persons

2010: \( f = 0.67 \)
\( p = 377,397,5 = \) weighted frequency of NAMCS visits with a procedure for NMSC for persons \( \geq 65 \)
\( r = 561,831,0 = \) weighted frequency of NAMCS visits with a procedure for NMSC for all persons

9. Find \( g \)
\[ g = \frac{e}{f} = \frac{3,314,858}{0.61} = 5,434,193 \]

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 \( i \)
\[ i = \frac{g}{h} = \frac{5,434,193}{1.645} = 3,303,461 \]

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

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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