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. $1.6296 =$ 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 Health 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 \( \geq 65 \) 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 = Number of persons \( \geq 65 \) enrolled in Medicare B FFS in 2006. From Heath Care Financing Review 2007 Statistical Supplement (HCFR), 2006

7. Find e
   \[ e = \frac{c}{d} = \frac{1,604,477 \text{ procedures}}{.7379} = 2,174,383 \text{ procedures} \]
   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 = weighted frequency of NAMCS visits with a procedure for NMSC for persons \( \geq 65 \) 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 $a = 2,048,517$
   
   a. Definition $a = \text{the number of skin procedures for cancer in 2006 in Medicare B Fee-for-Service (FFS) for all ages.}$
   

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

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

4. Find $b = (102,437 – 4,436) / 102,437 = 0.9567$
   
   a. Definition $b = \text{the proportion of } k \text{ that are in patients } \geq 65 \text{ year of age}$
   
   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 $c = k \times b = 1,836,347$
   
   a. Definition $c = \text{number of procedures for NMSC in 2006 in Medicare B FFS for persons } \geq 65 \text{ years of age}$

6. Find $d$
   
   d. Definition $d = \text{Among all persons over age 65 in the U.S. population, the proportion enrolled in Medicare B FFS.}$

   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 = c/d = 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 = 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 = e/f = 4,013,890

    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 = g/h = 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 $a = 2,321,058$
   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  
\[ e = \frac{c}{d} = \frac{2,092,670}{0.6313} = 3,314,858 \]

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: \( f = 0.55 \)
\( p=2612212 \) = 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 \( g \)
\[ g = \frac{e}{f} = \frac{3,314,858}{0.61} = 5,434,193 \]
\( a. \) 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