## CHAPTER 60

### Urinary-System Cancers, Females, 1940-1980

• Table 60-A, Column A, shows the female National MortRates from Urinary-System Cancers. Relative to most other sets of cancers studied in this book, the rates per 100,000 female population are very small numbers in every decade. Ordinarily, one should be wary of believing that a change from 4.0 to 3.0 is real, and we are wary. Nonetheless, the change occurs with such steadiness over the 1940-1980 period, and comes out of such a huge database, that a decline in the National MortRate is probably real.

• Box 1 shows that, by 1960 (Columns D and F), the MortRates are falling in the TopTrio and MidTrio, while rising in the LowTrio. By 1980 (Columns I and K), the MortRates are falling in all three Trios, but more in the TopTrio than in the LowTrio. These observations mean that a carcinogenic co-actor which can contribute to female MortRates, from Urinary-System Cancers, is operating more strongly in the LowTrio than in the TopTrio (Chapter 48, Part 5b). We must match the Census Divisions for this co-actor, whatever its identity. We believe that its identity is smoking.

Table 60-A
Urinary-System Cancers, Females: Fractional Causation by Medical Radiation over Time

| Year | Col.A Natl MR | Col.B Frac.C | Col.C R-Sq | Col.D X-Coef | Col.E StdErr | Col.F Coef/SE | Col.G Source |
|---|---|---|---|---|---|---|---|
| 1940 | 4.0 | 86% | 0.9395 | 0.0247 | 0.0024 | 10.4305 | Chap.12 |
| 1950 | 3.9 | 76% | 0.9508 | 0.0223 | 0.0019 | 11.6295 | Tab 60-B |
| 1960 | 3.6 | 77% | 0.9346 | 0.0211 | 0.0021 | 10.0025 | Tab 60-C |
| 1970 | 3.3 | 77% | 0.9263 | 0.0189 | 0.0020 | 9.3816 | Tab 60-D |
| 1980 | 3.0 | 78% | 0.9112 | 0.0161 | 0.0019 | 8.4777 | Tab 60-E |

Box 1, Chap. 60
Urinary-System Cancers, Females: Post-1940 Change in MortRates by Census Trios

1960 vs. 1940, by Trios: Col.D expresses change by ratios. Col.F expresses change by subtraction.
1980 vs. 1940, by Trios: Col.I expresses change by ratios. Col.K expresses change by subtraction.
MRs change inversely with PP. High-PP Trio has lowest growth-factor. Low-PP Trio has highest growth-factor.

| | Col.A 1940 MortRate Tab 12-A | Col.B 1960 MortRate Tab 12-A | Col.C Ratio Col.B /Col.A | Col.D Input from Col.C | Col.E Diff: Col.B minus A | Col.F Input from Col.E | Col.G 1980 MortRate Tab 12-A | Col.H Ratio Col.G /Col.A | Col.I Input from Col.H | Col.J Diff: Col.G minus A | Col.K Input from Col.J |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pacif | 4.1 | 3.3 | 0.805 | Avg Chg | -0.8 | Avg Chg | 2.8 | 0.683 | Avg Chg | -1.3 | Avg Chg |
| NewE | 4.7 | 3.9 | 0.830 | TopTrio | -0.8 | TopTrio | 3.4 | 0.723 | TopTrio | -1.3 | TopTrio |
| MidAtl | 4.9 | 4.0 | 0.816 | 0.817 | -0.9 | -0.8 | 3.2 | 0.653 | 0.686 | -1.7 | -1.4 |
| WNoCen | 3.7 | 3.3 | 0.892 | Avg Chg | -0.4 | Avg Chg | 3.0 | 0.811 | Avg Chg | -0.7 | Avg Chg |
| ENoCen | 4.1 | 3.9 | 0.951 | MidTrio | -0.2 | MidTrio | 3.0 | 0.732 | MidTrio | -1.1 | MidTrio |
| Mtn | 3.5 | 3.4 | 0.971 | 0.938 | -0.1 | -0.2 | 2.5 | 0.714 | 0.752 | -1.0 | -0.9 |
| WSoCen | 3.1 | 3.2 | 1.032 | Avg Chg | 0.1 | Avg Chg | 2.8 | 0.903 | Avg Chg | -0.3 | Avg Chg |
| ESoCen | 2.7 | 3.0 | 1.111 | LowTrio | 0.3 | LowTrio | 2.8 | 1.037 | LowTrio | 0.1 | LowTrio |
| SoAtl | 3.0 | 3.3 | 1.100 | 1.081 | 0.3 | 0.2 | 2.9 | 0.967 | 0.969 | -0.1 | -0.1 |

Box 2, Chap. 60
Urinary-System Cancers, Females: Calculation of Adjustment Factor

This adjustment is discussed fully in Chapter 49.

• Part 1: Calculate average population-weighted MortRate for the combined TopTrio Census Divs.

| Census Div. | Col.A 1940 MR Tab 12-A | Col.B 1940 Pop'n Tab 3-B | Col.C 1940 Popn /45,710,039 | Col.D Col.A * Col.C |
|---|---|---|---|---|
| Pacific | 4.1 | 9,733,262 | 0.2129 | 0.87 |
| NewEng | 4.7 | 8,437,290 | 0.1846 | 0.87 |
| Mid-Atl | 4.9 | 27,539,487 | 0.6025 | 2.95 |
| 1940 | | Sum TopTrio | Sum | TopTrio |
| | | 45,710,039 | 1.0000 | 4.693 |

| Census Div. | Col.A 1950 MR Tab 12-A | Col.B 1950 Pop'n Tab 3-B | Col.C 1950 Popn /53,964,513 | Col.D Col.A * Col.C |
|---|---|---|---|---|
| Pacific | 3.9 | 14,486,527 | 0.2684 | 1.05 |
| NewEng | 3.9 | 9,314,453 | 0.1726 | 0.67 |
| Mid-Atl | 4.5 | 30,163,533 | 0.5590 | 2.52 |
| 1950 | | Sum TopTrio | Sum | TopTrio |
| | | 53,964,513 | 1.0000 | 4.235 |

| Census Div. | Col.A 1960 MR Tab 12-A | Col.B 1960 Pop'n Tab 3-B | Col.C 1960 Popn /65,875,863 | Col.D Col.A * Col.C |
|---|---|---|---|---|
| Pacific | 3.3 | 21,198,044 | 0.3218 | 1.06 |
| NewEng | 3.9 | 10,509,367 | 0.1595 | 0.62 |
| Mid-Atl | 4.0 | 34,168,452 | 0.5187 | 2.07 |
| 1960 | | Sum TopTrio | Sum | TopTrio |
| | | 65,875,863 | 1.0000 | 3.759 |

| Census Div. | Col.A 1970 MR Tab 12-A | Col.B 1970 Pop'n Tab 3-B | Col.C 1970 Popn /75,017,000 | Col.D Col.A * Col.C |
|---|---|---|---|---|
| Pacific | 3.1 | 26,087,000 | 0.3477 | 1.08 |
| NewEng | 3.7 | 11,781,000 | 0.1570 | 0.58 |
| Mid-Atl | 3.6 | 37,149,000 | 0.4952 | 1.78 |
| 1970 | | Sum TopTrio | Sum | TopTrio |
| | | 75,017,000 | 1.0000 | 3.442 |

| Census Div. | Col.A 1980 MR Tab 12-A | Col.B 1980 Pop'n Tab 3-B | Col.C 1980 Popn /80,615,000 | Col.D Col.A * Col.C |
|---|---|---|---|---|
| Pacific | 2.8 | 31,523,000 | 0.3910 | 1.09 |
| NewEng | 3.4 | 12,322,000 | 0.1528 | 0.52 |
| Mid-Atl | 3.2 | 36,770,000 | 0.4561 | 1.46 |
| 1980 | | Sum TopTrio | Sum | TopTrio |
| | | 80,615,000 | 1.0000 | 3.074 |

| Census Div. | Col.A 1988 MR Tab 12-A | Col.B 1990 Pop'n Tab 3-B | Col.C 1990 Popn /88,495,000 | Col.D Col.A * Col.C |
|---|---|---|---|---|
| Pacific | -- | 37,837,000 | 0.4276 | -- |
| NewEng | -- | 12,998,000 | 0.1469 | -- |
| Mid-Atl | -- | 37,660,000 | 0.4256 | -- |
| 1988 | | Sum TopTrio | Sum | TopTrio |
| | | 88,495,000 | 1.0000 | -- |

• Part 2: Take ratios of these TopTrio MortRates, with 1940 as the denominator of each ratio.
Col.D modifies Col.C by separate PhysPop adjustments for MidTrio and LowTrio Census Divisions.

| | Col.A TopTrio Mean MR | Col.B 1940 TopTrio Mean MR | Col.C = Col.A / Col.B | Col.D ppAdju Tab 47-B | Col.E = Col.C * Col.D | URINARY-SYSTEM CANCERS. Females. |
|---|---|---|---|---|---|---|
| | | | | MidTrio | | |
| 1950 | 4.235 | 4.693 | 0.903 | 0.99 | 0.89 | = MidTrio Adjustment Factor, 1950 |
| 1960 | 3.759 | 4.693 | 0.801 | 0.97 | 0.78 | = MidTrio Adjustment Factor, 1960 |
| 1970 | 3.442 | 4.693 | 0.733 | 0.95 | 0.70 | = MidTrio Adjustment Factor, 1970 |
| 1980 | 3.074 | 4.693 | 0.655 | 0.94 | 0.62 | = MidTrio Adjustment Factor, 1980 |
| 1988 | -- | 4.693 | -- | 0.94 | -- | = MidTrio Adjustment Factor, 1988 |
| | | | | LowTrio | | |
| 1950 | 4.235 | 4.693 | 0.903 | 1.00 | 0.90 | = LowTrio Adjustment Factor, 1950 |
| 1960 | 3.759 | 4.693 | 0.801 | 1.01 | 0.81 | = LowTrio Adjustment Factor, 1960 |
| 1970 | 3.442 | 4.693 | 0.733 | 1.02 | 0.75 | = LowTrio Adjustment Factor, 1970 |
| 1980 | 3.074 | 4.693 | 0.655 | 1.04 | 0.68 | = LowTrio Adjustment Factor, 1980 |
| 1988 | -- | 4.693 | -- | 1.07 | -- | = LowTrio Adjustment Factor, 1988 |

Table 60-B

Urinary-System Cancers, Females: Fractional Causation in 1950

Part 1.

Calculation of the 6 Adjusted MortRates (Col.F) and the National Adjusted MortRate (Col.G).

The last six entries in Part 1, Col.F, are the products of (Col.D * Col.E), as discussed in Chap. 49.

| Trio-Sequence | Col.A 1950 PopFrac Tab 3-B | Col.B 1950 Obs MR Tab 12-A | Col.C A * B | Col.D 1940 MR Mid,Low Tab 12-A | Col.E AdjuFact Bx2,Pt2 Col.E | Col.F 1950 Adju MortRates | Col.G A * F |
|---|---|---|---|---|---|---|---|
| Pacific | 0.0961 | 3.9 | 0.375 | | | 3.9 | 0.375 |
| New England | 0.0618 | 3.9 | 0.241 | | | 3.9 | 0.241 |
| Mid-Atlantic | 0.2002 | 4.5 | 0.901 | | | 4.5 | 0.901 |
| WestNoCentral | 0.0933 | 3.6 | 0.336 | 3.7 | 0.89 | 3.29 | 0.307 |
| EastNoCentral | 0.2017 | 4.2 | 0.847 | 4.1 | 0.89 | 3.65 | 0.736 |
| Mountain | 0.0337 | 3.5 | 0.118 | 3.5 | 0.89 | 3.12 | 0.105 |
| WestSoCentral | 0.0965 | 3.4 | 0.328 | 3.1 | 0.90 | 2.79 | 0.269 |
| EastSoCentral | 0.0762 | 3.6 | 0.274 | 2.7 | 0.90 | 2.43 | 0.185 |
| SouthAtlantic | 0.1406 | 3.6 | 0.506 | 3.0 | 0.90 | 2.70 | 0.380 |
| | | Sum = | 3.9 | | | | Sum = |
| 1950 Observed MR from Table 12-B | | | 3.9 | 1950 Natl Adjusted MR = | | | 3.4989 |

Part 2.

| Trio-Seq. | Col.A Mean1940 thru1950 PPs from Tab 47-A x' | Col.B 1950 Adju MRs from Col.F Part 1 y | Col.C Urinary Sys Ca. Females: 1950 Adjusted MortRates regressed on Mean 1940 thru 1950 PPs Regression Output: | | Col.D 1940 PPs from Table 3-A (TrioSeq) x'' | Col.E Urinary Sys Ca. Females: 1950 Adjusted MortRates regressed on 1940 PhysPops Regression Output: | |
|---|---|---|---|---|---|---|---|
| Pac | 154.16 | 3.9 | Constant | 0.5306 | 159.72 | Constant | 0.5040 |
| NewEng | 162.03 | 3.9 | Std Err of Y Est | 0.1603 | 161.55 | Std Err of Y Est | 0.1475 |
| MidAtl | 169.24 | 4.5 | R Squared | 0.9508 | 169.76 | R Squared | 0.9583 |
| WNoCen | 121.60 | 3.29 | No. of Observation | 9 | 123.14 | No. of Observation | 9 |
| ENoCen | 128.53 | 3.65 | Degrees of Freedom | 7 | 133.36 | Degrees of Freedom | 7 |
| Mtn | 119.64 | 3.12 | | | 119.89 | | |
| WSoCen | 102.64 | 2.79 | X Coefficient(s) | 0.0223 | 103.94 | X Coefficient(s) | 0.0222 |
| ESoCen | 84.44 | 2.43 | Std Err of Coef. | 0.0019 | 85.83 | Std Err of Coef. | 0.0018 |
| SoAtl | 99.91 | 2.70 | XCoef / S.E. = | 11.6295 | 100.74 | XCoef / S.E. | 12.6873 |

Part 3-A.
Calculation of Fractional Causation from Averaged PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.C) = 0.5306

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 3.4989) minus Nonradiation rate (0.5306) = 2.9684

3. 1950 Fractional Causation is radiation rate (2.9684) divided by OBSERVED Natl MR Part 1,Col.C= 3.9 = 0.76

Part 3-B.
Calculation of Fractional Causation from 1940 PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.E) = 0.5040

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 3.4989) minus Nonradiation rate (0.5040) = 2.9949

3. 1950 Fractional Causation is radiation rate (2.9949) divided by OBSERVED Natl MR Part 1, Col.C= 3.9 = 0.77

Table 60-C

Urinary-System Cancers, Females: Fractional Causation in 1960

Part 1.

Calculation of the 6 Adjusted MortRates (Col.F) and the National Adjusted MortRate (Col.G).
The last six entries in Part 1, Col.F, are the products of (Col.D * Col.E), as discussed in Chap. 49.

| Trio-Sequence | Col.A 1960 PopFrac Tab 3-B | Col.B 1960 Obs MR Tab 12-A | Col.C A * B | Col.D 1940 MR Mid,Low Tab 12-A | Col.E AdjuFact Bx2,Pt2 Col.E | Col.F 1960 Adju MortRates | Col.G A * F |
|---|---|---|---|---|---|---|---|
| Pacific | 0.1182 | 3.3 | 0.390 | | | 3.3 | 0.390 |
| New England | 0.0586 | 3.9 | 0.229 | | | 3.9 | 0.229 |
| Mid-Atlantic | 0.1905 | 4.0 | 0.762 | | | 4.0 | 0.762 |
| WestNoCentral | 0.0858 | 3.3 | 0.283 | 3.7 | 0.78 | 2.89 | 0.248 |
| EastNoCentral | 0.2020 | 3.9 | 0.788 | 4.1 | 0.78 | 3.20 | 0.646 |
| Mountain | 0.0382 | 3.4 | 0.130 | 3.5 | 0.78 | 2.73 | 0.104 |
| WestSoCentral | 0.0945 | 3.2 | 0.302 | 3.1 | 0.81 | 2.51 | 0.237 |
| EastSoCentral | 0.0672 | 3.0 | 0.202 | 2.7 | 0.81 | 2.19 | 0.147 |
| SouthAtlantic | 0.1448 | 3.3 | 0.478 | 3.0 | 0.81 | 2.43 | 0.352 |
| | | Sum = | 3.6 | | | | Sum = |
| 1960 Observed MR from Table 12-B | | | 3.6 | 1960 Natl Adjusted MR = | | | 3.1146 |

Part 2.

| Trio-Seq. | Col.A Mean1940 thru1960 Adju MRs PPs from Tab 47-A x' | Col.B 1960 Adju MRs from Col.F Part 1 y |
|---|---|---|
| Pac | 155.69 | 3.3 |
| NewEng | 162.81 | 3.9 |
| MidAtl | 167.04 | 4.0 |
| WNoCen | 118.15 | 2.89 |
| ENoCen | 123.87 | 3.20 |
| Mtn | 117.40 | 2.73 |
| WSoCen | 102.31 | 2.51 |
| ESoCen | 85.63 | 2.19 |
| SoAtl | 101.72 | 2.43 |

| Col.C Urinary Sys Ca. Females: 1960 Adjusted MortRates regressed on Mean 1940 thru 1960 PPs Regression Output: | |
|---|---|
| Constant | 0.3602 |
| Std Err of Y Est | 0.1742 |
| R Squared | 0.9346 |
| No. of Observation | 9 |
| Degrees of Freedom | 7 |
| X Coefficient(s) | 0.0211 |
| Std Err of Coef. | 0.0021 |
| XCoef / S.E. = | 10.0025 |

| Col.D 1940 PPs from Table 3-A (TrioSeq) x'' |
|---|
| 159.72 |
| 161.55 |
| 169.76 |
| 123.14 |
| 133.36 |
| 119.89 |
| 103.94 |
| 85.83 |
| 100.74 |

| Col.E Urinary Sys Ca. Females: 1960 Adjusted MortRates regressed on 1940 PhysPops Regression Output: | |
|---|---|
| Constant | 0.3525 |
| Std Err of Y Est | 0.1731 |
| R Squared | 0.9355 |
| No. of Observation | 9 |
| Degrees of Freedom | 7 |
| X Coefficient(s) | 0.0207 |
| Std Err of Coef. | 0.0021 |
| XCoef / S.E. | 10.0723 |

Part 3-A.
Calculation of Fractional Causation from Averaged PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.C) = 0.3602

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 3.1146) minus Nonradiation rate (0.3602) = 2.7544

3. 1960 Fractional Causation is radiation rate (2.7544) divided by OBSERVED Natl MR Part 1,Col.C= 3.6 = 0.77

Part 3-B.
Calculation of Fractional Causation from 1940 PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.E) = 0.3525

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 3.1146) minus Nonradiation rate (0.3525) = 2.7621

3. 1960 Fractional Causation is radiation rate (2.7621) divided by OBSERVED Natl MR Part 1, Col.C= 3.6 = 0.77

Table 60-D

Urinary-System Cancers, Females: Fractional Causation in 1970

Part 1.

Calculation of the 6 Adjusted MortRates (Col.F) and the National Adjusted MortRate (Col.G).
The last six entries in Part 1, Col.F, are the products of (Col.D * Col.E), as discussed in Chap. 49.

| Trio-Sequence | Col.A 1970 PopFrac Tab 3-B | Col.B 1970 Obs MR Tab 12-A | Col.C A * B | Col.D 1940 MR Mid,Low Tab 12-A | Col.E AdjuFact Bx2,Pt2 Col.E | Col.F 1970 Adju MortRates | Col.G A * F |
|---|---|---|---|---|---|---|---|
| Pacific | 0.1293 | 3.1 | 0.401 | | | 3.1 | 0.401 |
| New England | 0.0584 | 3.7 | 0.216 | | | 3.7 | 0.216 |
| Mid-Atlantic | 0.1842 | 3.6 | 0.663 | | | 3.6 | 0.663 |
| WestNoCentral | 0.0805 | 3.2 | 0.258 | 3.7 | 0.70 | 2.59 | 0.208 |
| EastNoCentral | 0.1993 | 3.5 | 0.698 | 4.1 | 0.70 | 2.87 | 0.572 |
| Mountain | 0.0408 | 3.0 | 0.122 | 3.5 | 0.70 | 2.45 | 0.100 |
| WestSoCentral | 0.0948 | 3.0 | 0.284 | 3.1 | 0.75 | 2.33 | 0.220 |
| EastSoCentral | 0.0631 | 2.9 | 0.183 | 2.7 | 0.75 | 2.03 | 0.128 |
| SouthAtlantic | 0.1496 | 3.1 | 0.464 | 3.0 | 0.75 | 2.25 | 0.337 |
| | | Sum = | 3.3 | | | | Sum = |
| 1970 Observed MR from Table 12-B | | | 3.3 | 1970 Natl Adjusted MR = | | | 2.8453 |

Part 2.

| Trio-Seq. | Col.A Mean1940 thru1970 PPs from Tab 47-A x' | Col.B 1970 Adju MRs from Col.F Part 1 y |
|---|---|---|
| Pac | 162.72 | 3.1 |
| NewEng | 168.74 | 3.7 |
| MidAtl | 173.28 | 3.6 |
| WNoCen | 119.56 | 2.59 |
| ENoCen | 124.70 | 2.87 |
| Mtn | 122.37 | 2.45 |
| WSoCen | 105.03 | 2.33 |
| ESoCen | 89.44 | 2.03 |
| SoAtl | 108.97 | 2.25 |

Col.C — Urinary Sys Ca. Females: 1970 Adjusted MortRates regressed on Mean 1940 thru 1970 PPs

| Regression Output: | |
|---|---|
| Constant | 0.3018 |
| Std Err of Y Est | 0.1726 |
| R Squared | 0.9263 |
| No. of Observation | 9 |
| Degrees of Freedom | 7 |
| X Coefficient(s) | 0.0189 |
| Std Err of Coef. | 0.0020 |
| XCoef / S.E. = | 9.3816 |

Col.D — 1940 PPs from Table 3-A (TrioSeq) x''

| |
|---|
| 159.72 |
| 161.55 |
| 169.76 |
| 123.14 |
| 133.36 |
| 119.89 |
| 103.94 |
| 85.83 |
| 100.74 |

Col.E — Urinary Sys Ca. Females: 1970 Adjusted MortRates regressed on 1940 PhysPops

| Regression Output: | |
|---|---|
| Constant | 0.2882 |
| Std Err of Y Est | 0.1679 |
| R Squared | 0.9303 |
| No. of Observation | 9 |
| Degrees of Freedom | 7 |
| X Coefficient(s) | 0.0193 |
| Std Err of Coef. | 0.0020 |
| XCoef / S.E. | 9.6658 |

Part 3-A.
Calculation of Fractional Causation from Averaged PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.C) = 0.3018

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 2.8453) minus Nonradiation rate (0.3018) = 2.5434

3. 1970 Fractional Causation is radiation rate (2.5434) divided by OBSERVED Natl MR Part 1,Col.C= 3.3 = 0.77

Part 3-B.
Calculation of Fractional Causation from 1940 PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.E) = 0.2882

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 2.8453) minus Nonradiation rate (0.2882) = 2.5571

3. 1970 Fractional Causation is radiation rate (2.5571) divided by OBSERVED Natl MR Part 1, Col.C= 3.3 = 0.77

Table 60-E

Urinary-System Cancers, Females: Fractional Causation in 1980

Part 1.

Calculation of the 6 Adjusted MortRates (Col.F) and the National Adjusted MortRate (Col.G).
The last six entries in Part 1, Col.F, are the products of (Col.D * Col.E), as discussed in Chap. 49.

| Trio-Sequence | Col.A 1980 PopFrac Tab 3-B | Col.B 1980 Obs MR Tab 12-A | Col.C A * B | Col.D 1940 MR Mid,Low Tab 12-A | Col.E AdjuFact Bx2,Pt2 Col.E | Col.F 1980 Adju MortRates | Col.G A * F |
|---|---|---|---|---|---|---|---|
| Pacific | 0.1398 | 2.8 | 0.391 | | | 2.8 | 0.391 |
| New England | 0.0546 | 3.4 | 0.186 | | | 3.4 | 0.186 |
| Mid-Atlantic | 0.1630 | 3.2 | 0.522 | | | 3.2 | 0.522 |
| WestNoCentral | 0.0759 | 3.0 | 0.228 | 3.7 | 0.62 | 2.29 | 0.174 |
| EastNoCentral | 0.1846 | 3.0 | 0.554 | 4.1 | 0.62 | 2.54 | 0.469 |
| Mountain | 0.0502 | 2.5 | 0.126 | 3.5 | 0.62 | 2.17 | 0.109 |
| WestSoCentral | 0.1049 | 2.8 | 0.294 | 3.1 | 0.68 | 2.11 | 0.221 |
| EastSoCentral | 0.0646 | 2.8 | 0.181 | 2.7 | 0.68 | 1.84 | 0.119 |
| SouthAtlantic | 0.1624 | 2.9 | 0.471 | 3.0 | 0.68 | 2.04 | 0.331 |
| | | Sum = | 3.0 | | | | Sum = |
| 1980 Observed MR from Table 12-B | | | 3.0 | 1980 Natl Adjusted MR = | | | 2.5220 |

Part 2.

| Trio-Seq. | Col.A Mean1940 thru1980 PPs from Tab 47-A x' | Col.B 1980 Adju MRs from Col.F Part 1 y | Col.C Urinary Sys Ca. Females: 1980 Adjusted MortRates regressed on Mean 1940 thru 1980 PPs Regression Output: | | Col.D 1940 PPs from Table 3-A (TrioSeq) x'' | Col.E Urinary Sys Ca. Females: 1980 Adjusted MortRates regressed on 1940 PhysPops Regression Output: | |
|---|---|---|---|---|---|---|---|
| Pac | 177.35 | 2.8 | Constant | 0.1957 | 159.72 | Constant | 0.2578 |
| NewEng | 185.86 | 3.4 | Std Err of Y Est | 0.1725 | 161.55 | Std Err of Y Est | 0.1764 |
| MidAtl | 186.11 | 3.2 | R Squared | 0.9112 | 169.76 | R Squared | 0.9072 |
| WNoCen | 128.82 | 2.29 | No. of Observation | 9 | 123.14 | No. of Observation | 9 |
| ENoCen | 133.71 | 2.54 | Degrees of Freedom | 7 | 133.36 | Degrees of Freedom | 7 |
| Mtn | 133.45 | 2.17 | | | 119.89 | | |
| WSoCen | 114.66 | 2.11 | X Coefficient(s) | 0.0161 | 103.94 | X Coefficient(s) | 0.0173 |
| ESoCen | 99.46 | 1.84 | Std Err of Coef. | 0.0019 | 85.83 | Std Err of Coef. | 0.0021 |
| SoAtl | 124.62 | 2.04 | XCoef / S.E. = | 8.4777 | 100.74 | XCoef / S.E. | 8.2714 |

Part 3-A.
Calculation of Fractional Causation from Averaged PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.C) = 0.1957

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 2.522) minus Nonradiation rate (0.1957) = 2.3263

3. 1980 Fractional Causation is radiation rate (2.3887) divided by OBSERVED Natl MR Part 1,Col.C= 3.0 = 0.78

Part 3-B.
Calculation of Fractional Causation from 1940 PhysPops

1. Nonradiation rate is Adjusted Constant (Part 2, Col.E) = 0.2578

2. Radiation rate is Natl Adjusted MortRate (Part 1, Col.G = 2.522) minus Nonradiation rate (0.2578) = 2.2642

3. 1980 Fractional Causation is radiation rate (2.2642) divided by OBSERVED Natl MR Part 1, Col.C= 3.0 = 0.75