

Supplementary Online Content

Washington SL III, Jeong CW, Lonergan PE, et al. Regional variation in active surveillance for low-risk prostate cancer in the US. *JAMA Netw Open*. 2020;3(12):e2031349. doi:10.1001/jamanetworkopen.2020.31349

eFigure 1. Data Flow Diagram

eFigure 2. Nationwide Treatment Trends for Men With Low-Risk Prostate Cancer Excluding Unknown Treatments

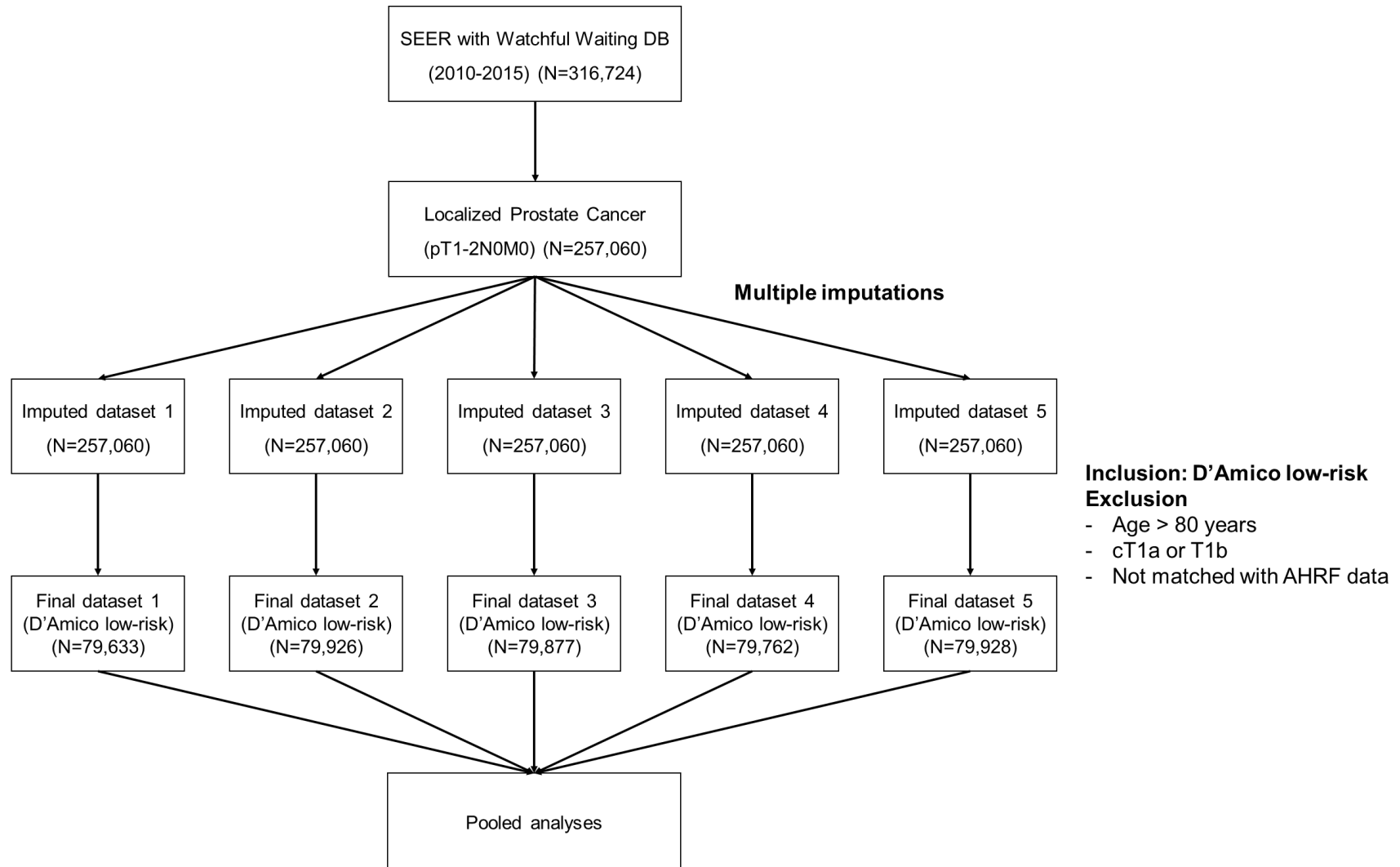
eFigure 3. Treatment Trends for Men With Low-Risk Prostate Cancer by County Excluding Unknown Treatments

eTable 1. Characteristics of 5 Imputed Datasets

eTable 2. Average Annual Change in Percentage Points in the Proportion of Men Managed With AS/WW

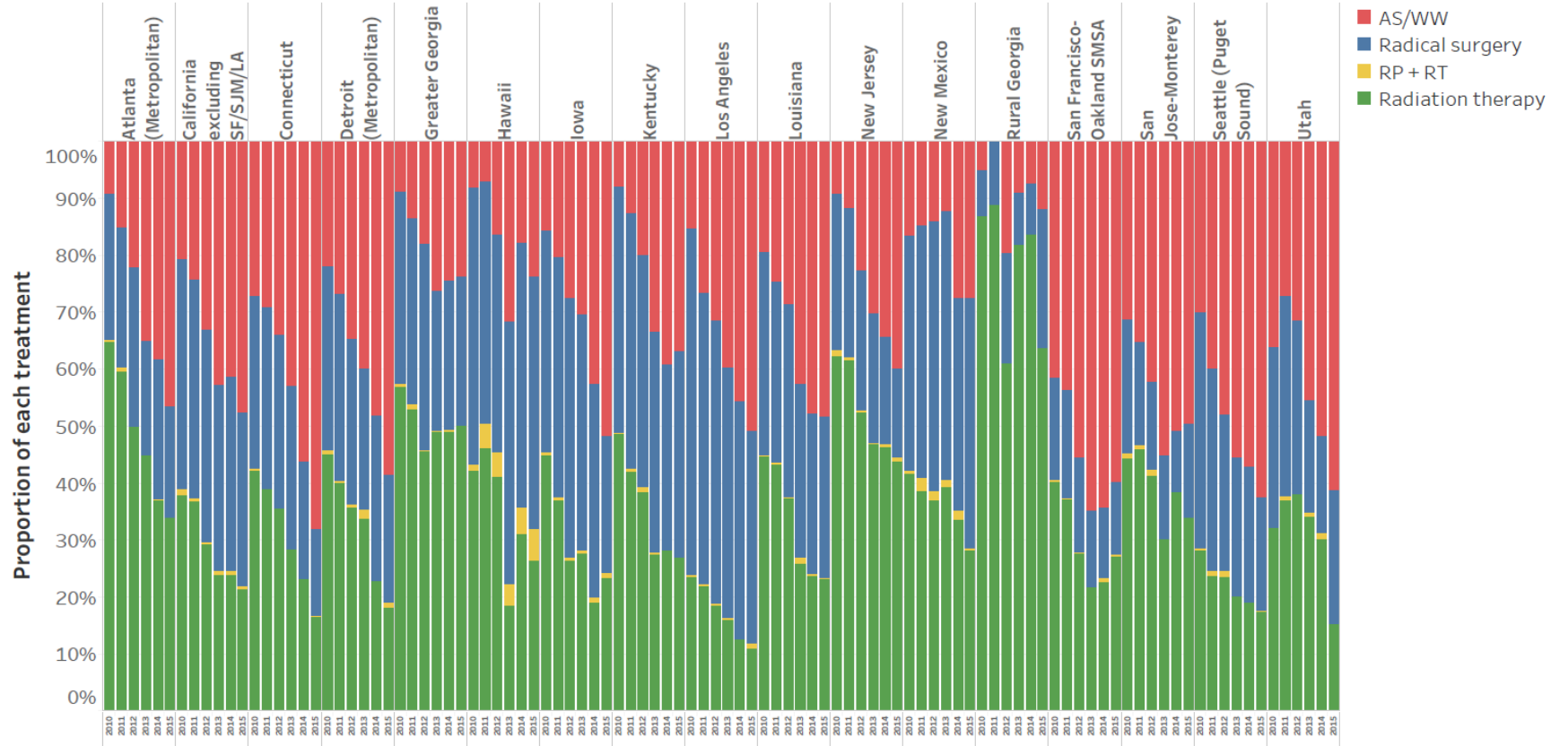
This supplementary material has been provided by the authors to give readers additional information about their work.

eFigure 1. Data flow diagram



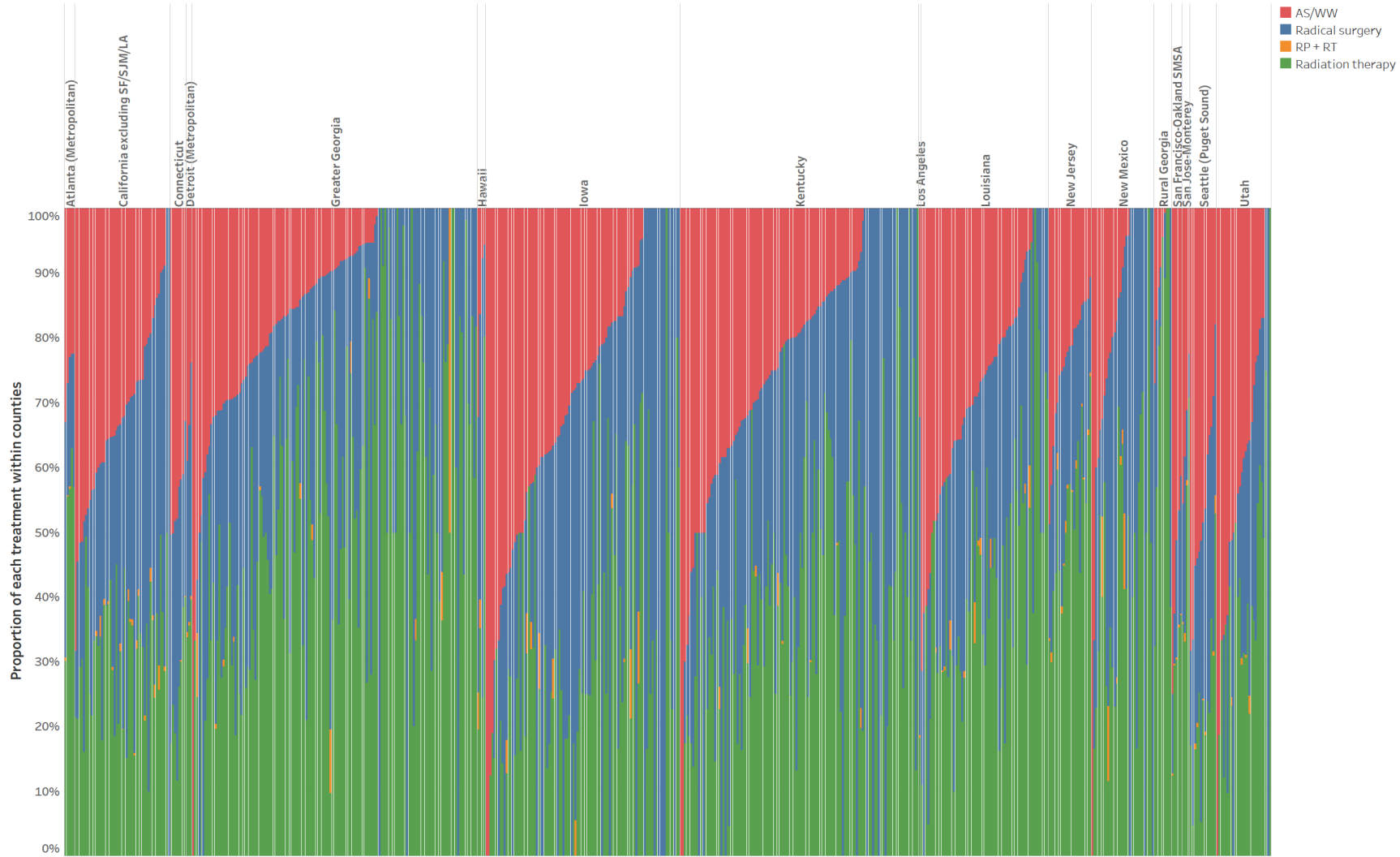
eFigure 2. Nationwide treatment trends for men with low-risk prostate cancer excluding unknown treatments.

The proportion of each treatment excluding unknown treatments in men with clinically localized, low-risk prostate cancer by SEER registry from 2010-2015.



eFigure 3. Treatment trends for men with low-risk prostate cancer by county excluding unknown treatments.

The proportion of each treatment in men with clinically localized, low-risk prostate cancer by county within each SEER registry from 2010-2015.



eTable 1. Characteristics of 5 imputed datasets

| Characteristics | Dataset 1 (N=79,633) | Dataset 2 (N=79,926) | Dataset 3 (N=79,877) | Dataset 4 (N=79,762) | Dataset 5 (N=79,928) | p |
|--------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------|
| Patient-level variables | | | | | | |
| Treatment | | | | | | 0.981 |
| AS/WW | 17,553 (22.0) | 17,638 (22.1) | 17,603 (22.0) | 17,691 (22.2) | 17,701 (22.1) | |
| Active Treatment | 46,178 (58.0) | 46,332 (58.0) | 46,259 (57.9) | 46,267 (58.0) | 46,248 (57.9) | |
| Other/Unknown | 15,902 (20.0) | 15,956 (20.0) | 16,015 (20.0) | 15,804 (19.8) | 15,979 (20.0) | |
| Age, y (mean ± SD) | 62.7 ± 7.6 | 62.8 ± 7.6 | 62.8 ± 7.6 | 62.8 ± 7.6 | 62.8 ± 7.6 | 0.146 |
| Age, y | | | | | | 0.896 |
| <50 | 4,753 (6.0) | 4,703 (5.9) | 4,731 (5.9) | 4,739 (5.9) | 4,734 (5.9) | |
| 51-60 | 25,426 (31.9) | 25,417 (31.8) | 25,395 (31.8) | 25,389 (31.8) | 25,370 (31.7) | |
| 61-70 | 36,964 (46.4) | 36,982 (46.3) | 36,967 (46.3) | 36,837 (46.2) | 37,007 (46.3) | |
| 71-80 | 12,490 (15.7) | 12,824 (16.0) | 12,784 (16.0) | 12,797 (16.0) | 12,817 (16.0) | |
| Race/ethnicity | | | | | | 1.000 |
| Non-Hispanic White | 55,228 (69.4) | 55,519 (69.5) | 55,376 (69.3) | 55,424 (69.5) | 55,488 (69.4) | |
| Non-Hispanic Black | 11,321 (14.2) | 11,280 (14.1) | 11,327 (14.2) | 11,252 (14.1) | 11,281 (14.1) | |
| Hispanic | 7,476 (9.4) | 7,498 (9.4) | 7,529 (9.4) | 7,490 (9.4) | 7,535 (9.4) | |
| Asian/Pacific islander | 3,154 (4.0) | 3,195 (4.0) | 3,192 (4.0) | 3,190 (4.0) | 3,183 (4.0) | |

| | | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|-------|
| Other/Unknown | 2,454 (3.1) | 2,434 (3.0) | 2,453 (3.1) | 2,406 (3.0) | 2,441 (3.1) | |
| Health insurance status | | | | | | 0.951 |
| Private and/or Medicare | 74,744 (93.9) | 75,011 (93.9) | 75,065 (94.0) | 74,855 (93.8) | 75,035 (93.9) | |
| Medicaid | 3,534 (4.4) | 3,533 (4.4) | 3,465 (4.3) | 3,522 (4.4) | 3,553 (4.4) | |
| Uninsured/unknown | 1,355 (1.7) | 1,382 (1.7) | 1,347 (1.7) | 1,385 (1.7) | 1,340 (1.7) | |
| Marital status | | | | | | 0.980 |
| Married | 60,905 (76.5) | 61,188 (76.6) | 61,196 (76.6) | 61,084 (76.6) | 61,174 (76.5) | |
| Single | 18,728 (23.5) | 18,738 (23.4) | 18,681 (23.4) | 18,678 (23.4) | 18,754 (23.5) | |
| Year of diagnosis | | | | | | 1.000 |
| 2010 | 17,011 (21.4) | 17,083 (21.4) | 17,110 (21.4) | 17,080 (21.4) | 17,140 (21.4) | |
| 2011 | 17,167 (21.6) | 17,212 (21.5) | 17,226 (21.6) | 17,216 (21.6) | 17,226 (21.6) | |
| 2012 | 13,394 (16.8) | 13,481 (16.9) | 13,482 (16.9) | 13,470 (16.9) | 13,476 (16.9) | |
| 2013 | 12,173 (15.3) | 12,146 (15.2) | 12,164 (15.2) | 12,117 (15.2) | 12,141 (15.2) | |
| 2014 | 10,043 (12.6) | 10,159 (12.7) | 10,063 (12.6) | 10,093 (12.7) | 10,104 (12.6) | |
| 2015 | 9,845 (12.4) | 9,845 (12.3) | 9,832 (12.3) | 9,786 (12.3) | 9,841 (12.3) | |
| PSA at diagnosis, ng/ml (mean ± SD) | 5.5 ± 1.9 | 5.5 ± 1.9 | 5.5 ± 1.9 | 5.5 ± 1.9 | 5.5 ± 1.9 | 0.942 |
| Clinical T stage, n (%) | | | | | | 0.939 |
| T1c | 66,554 (83.6) | 66,811 (83.6) | 66,864 (83.7) | 66,752 (83.7) | 66,855 (83.6) | |
| T2a | 13,079 (16.4) | 13,115 (16.4) | 13,013 (16.3) | 13,010 (16.3) | 13,073 (16.4) | |

| | | | | | | |
|---|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------|
| Percentage biopsy positive cores | | | | | | 0.990 |
| <33% | 52,102 (65.4) | 52,237 (65.4) | 52,259 (65.4) | 52,224 (65.5) | 52,306 (65.4) | |
| ≥33%, <50% | 15,241 (19.1) | 15,333 (19.2) | 15,258 (19.1) | 15,283 (19.2) | 15,388 (19.3) | |
| ≥50% | 12,290 (15.4) | 12,356 (15.5) | 12,360 (15.5) | 12,255 (15.4) | 12,234 (15.3) | |
| Follow-up, months (mean ± SD) | 38.7 ± 20.4 | 38.7 ± 20.4 | 38.7 ± 20.4 | 38.7 ± 20.4 | 38.7 ± 20.4 | 0.994 |
| Follow-up, months (median, [IQR]) | 40 (22-56) | 40 (22-56) | 40 (22-56) | 40 (22-56) | 40 (22-56) | 0.994 |
| County-level variables | | | | | | |
| City type, population | | | | | | |
| Metropolitan, ≥1 million | 50,802 (63.8) | 51,020 (63.8) | 50,971 (63.8) | 50,879 (63.8) | 50,960 (63.8) | |
| Metropolitan, 250k – 1 million | 15,126 (19.0) | 15,141 (18.9) | 15,162 (19.0) | 15,132 (19.0) | 15,190 (19.0) | |
| Metropolitan, <250k | 5,891 (7.4) | 5,944 (7.4) | 5,944 (7.4) | 5,934 (7.4) | 5,979 (7.5) | |
| Urban, ≥20k | 2,936 (3.7) | 2,937 (3.7) | 2,900 (3.6) | 2,924 (3.7) | 2,911 (3.6) | |
| Urban, 2,500-19,999 | 4,027 (5.1) | 4,024 (5.0) | 4,032 (5.0) | 4,033 (5.1) | 4,015 (5.0) | |
| Rural/Urban, <2,500 | 851 (1.1) | 860 (1.1) | 868 (1.1) | 860 (1.1) | 873 (1.1) | |
| Household income, \$ (median, [IQR]) | 68611.0 [60203.0;86003.0] | 68611.0 [60203.0;86003.0] | 68611.0 [60203.0;86003.0] | 68611.0 [60203.0;86366.0] | 68611.0 [60203.0;86366.0] | 0.995 |
| Median education per 100k | | | | | | |
| < HS diploma (median, [IQR]) | 13,024 (10,204-17,690) | 13,024 (10,236-17,824) | 13,024 (10,236-17,690) | 13,024 (10,236-17,690) | 13,024 (10,236-17,690) | 0.013 |
| HS diploma or more (median, [IQR]) | 86,976 (82,310-89,797) | 86,976 (82,176-89,764) | 86,976 (82,310-89,764) | 86,976 (82,310-89,764) | 86,976 (82,310_89,764) | 0.062 |

| | | | | | | |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|-------|
| 4+ years of college (median, [IQR]) | 30,347 (22,683-38,043) | 30,347 (22,683-38,043) | 30,347 (22,683-38,043) | 30,347 (22,683-38,043) | 30,347 (22,683-38,043) | 0.291 |
| Urologists per 100k, n (median, [IQR]) | 3.1 (1.9-4.3) | 3.1 (1.9-4.3) | 3.1 (1.9-4.3) | 3.1 (1.9-4.3) | 3.1 (1.9-4.3) | 0.336 |
| Radiation oncologists per 100k, n (median, [IQR]) | 1.5 (0.7-2.1) | 1.5 (0.7-2.1) | 1.5 (0.7-2.1) | 1.5 (0.7-2.1) | 1.5 (0.7-2.1) | 0.389 |
| PCPs per 100k, n (median, [IQR]) | 75.5 (58.8-97.6) | 75.3 (58.6-97.6) | 75.5 (58.8-97.6) | 75.5 (58.8-97.6) | 75.5 (58.8-97.6) | 0.429 |
| Hospital beds per 100k, n (median, [IQR]) | 228.6 (172.6-325.7) | 228.6 (172.6-323.6) | 228.6 (172.6-325.7) | 228.6 (172.6-325.7) | 228.6 (172.6-325.7) | 0.009 |
| Regional variables | | | | | | |
| SEER Registry | | | | | | 1.000 |
| Atlanta (Metropolitan) | 3,264 (4.1) | 3,286 (4.1) | 3,283 (4.1) | 3,239 (4.1) | 3,292 (4.1) | |
| California excluding SF/SJM/LA | 16,336 (20.5) | 16,416 (20.5) | 16,394 (20.5) | 16,409 (20.6) | 16,389 (20.5) | |
| Connecticut | 3,747 (4.7) | 3,737 (4.7) | 3,752 (4.7) | 3,736 (4.7) | 3,737 (4.7) | |
| Detroit (Metropolitan) | 4,357 (5.5) | 4,339 (5.4) | 4,325 (5.4) | 4,362 (5.5) | 4,346 (5.4) | |
| Greater Georgia | 6,679 (8.4) | 6,663 (8.3) | 6,665 (8.3) | 6,645 (8.3) | 6,615 (8.3) | |
| Hawaii | 644 (0.8) | 633 (0.8) | 645 (0.8) | 652 (0.8) | 645 (0.8) | |
| Iowa | 2,075 (2.6) | 2,088 (2.6) | 2,083 (2.6) | 2,069 (2.6) | 2,089 (2.6) | |
| Kentucky | 3,971 (5.0) | 3,981 (5.0) | 3,984 (5.0) | 3,968 (5.0) | 3,975 (5.0) | |
| Los Angeles | 6,501 (8.2) | 6,542 (8.2) | 6,522 (8.2) | 6,515 (8.2) | 6,520 (8.2) | |
| Louisiana | 5,566 (7.0) | 5,577 (7.0) | 5,598 (7.0) | 5,588 (7.0) | 5,655 (7.1) | |
| New Jersey | 11,545 (14.5) | 11,602 (14.5) | 11,655 (14.6) | 11,624 (14.6) | 11,636 (14.6) | |
| New Mexico | 1,425 (1.8) | 1,416 (1.8) | 1,423 (1.8) | 1,414 (1.8) | 1,432 (1.8) | |

| | | | | | | |
|----------------------------|-------------|-------------|-------------|-------------|-------------|--|
| Rural Georgia | 173 (0.2) | 174 (0.2) | 171 (0.2) | 170 (0.2) | 173 (0.2) | |
| San Francisco-Oakland SMSA | 4,551 (5.7) | 4,583 (5.7) | 4,598 (5.8) | 4,586 (5.7) | 4,599 (5.8) | |
| San Jose-Monterey | 2,639 (3.3) | 2,653 (3.3) | 2,642 (3.3) | 2,640 (3.3) | 2,659 (3.3) | |
| Seattle (Puget Sound) | 4,189 (5.3) | 4,220 (5.3) | 4,172 (5.2) | 4,133 (5.2) | 4,183 (5.2) | |
| Utah | 1,971 (2.5) | 2,016 (2.5) | 1,965 (2.5) | 2,012 (2.5) | 1,983 (2.5) | |

eTable 2. Average annual change in percentage points in the proportion of men managed with AS/WW

| Registry | AS rate in 2010 | AS rate in 2015 | Mean annual increase in AS rate | Mean annual % increase in AS rate |
|--------------------------------|-----------------|-----------------|---------------------------------|-----------------------------------|
| Atlanta (Metropolitan) | 6.7 | 28.9 | 4.4 | 67% |
| California excluding SF/SJM/LA | 12.7 | 34.0 | 4.3 | 34% |
| Connecticut | 18.4 | 51.5 | 6.6 | 36% |
| Detroit (Metropolitan) | 13.9 | 26.8 | 2.6 | 19% |
| Greater Georgia | 5.1 | 14.2 | 1.8 | 36% |
| Hawaii | 4.9 | 15.8 | 2.2 | 45% |
| Iowa | 10.7 | 40.3 | 5.9 | 55% |
| Kentucky | 5.2 | 24.6 | 3.9 | 75% |
| Los Angeles | 10.7 | 38.5 | 5.5 | 52% |
| Louisiana | 11.8 | 31.2 | 3.9 | 33% |
| New Jersey | 5.9 | 29.7 | 4.8 | 81% |
| New Mexico | 9.5 | 12.5 | 0.6 | 6% |
| Rural Georgia | 2.3 | 6.6 | 0.9 | 37% |
| San Francisco-Oakland SMSA | 32.3 | 44.6 | 2.4 | 8% |
| San Jose-Monterey | 23.8 | 43.8 | 4.0 | 17% |
| Seattle (Puget Sound) | 18.4 | 42.0 | 4.7 | 26% |
| Utah | 23.8 | 39.4 | 3.1 | 13% |