Supplementary material

Supplementary Table 1. Sensitivity analysis using linear distance variable.

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| Variable | | Beta-Coefficient | 95% Confidence Interval | *p*-value |
| Distance | | | | |
|  | Linear (per mile) | 0.021 | (0.015, 0.028) | <0.001 |
| Age | | 0.076 | (0.050, 0.102) | <0.001 |
| Race/Ethnicity | | | | |
|  | White | Referent | -- | -- |
| Black | 2.069 | (1.206, 2.931) | <0.001 |
| Hispanic | 4.897 | (3.963, 5.832) | <0.001 |
| Other | 1.386 | (0.067, 2.705) | 0.039 |
| Charleson Comorbidity Score | | | | |
|  | 0 | Referent | -- | -- |
| 1 | −0.616 | (−1.535, 0.304) | 0.190 |
| ≥2 | 0.294 | (−1.713, 2.301) | 0.774 |
| Urbanization | | | | |
|  | Metro (population >1 million) | Referent | -- | -- |
| Metro (population 250,000 to 1 million) | −2.424 | (−3.197, −1.652) | <0.001 |
| Metro (population <250,000) | −2.674 | (−3.798, −1.550) | <0.001 |
| Urban (population ≥20,000, adjacent to metro) | −2.029 | (−3.500, −0.558) | 0.007 |
| Urban (population ≥20,000, not adjacent to metro) | −1.81 | (−4.353, 0.733) | 0.163 |
| Urban (population 2500 to 19,999, adjacent to metro) | −3.975 | (−5.333, −2.616) | <0.001 |
| Urban (population 2500 to 19,999, not adjacent to metro) | −4.898 | (−6.792, −3.004) | <0.001 |
| Rural (completely rural or <2500 urban population, adjacent to metro) | −7.094 | (−10.546, −3.641) | <0.001 |
| Rural (completely rural or <2500 urban population, not adjacent to metro) | −7.802 | (−10.988, −4.616) | <0.001 |
| Insurance Status | | | | |
|  | Private Insurance/Managed Care | Referent | -- | -- |
| Medicaid | 4.856 | (4.091, 5.622) | <0.001 |
| Medicare | 1.139 | (0.146, 2.131) | 0.025 |
| Other Government | 0.948 | (−1.598, 3.494) | 0.465 |
| Uninsured | 4.742 | (3.697, 5.788) | <0.001 |
| Income (Zip Code) | | | | |
|  | Quartile 1 (lowest) | Referent | -- | -- |
| Quartile 2 | −0.176 | (−1.059, 0.706) | 0.696 |
| Quartile 3 | −0.226 | (−1.202, 0.751) | 0.651 |
| Quartile 4 (highest) | −0.213 | (−1.397, 0.970) | 0.724 |
| Education (% without high school diploma by zip code) | | | | |
|  | 21% or more | Referent | -- | -- |
| 13%–20.9% | −1.923 | (−2.771, −1.075) | <0.001 |
| 7%–12.9% | −2.405 | (−3.389, −1.421) | <0.001 |
| Less than 7% | −3.719 | (−4.956, −2.483) | <0.001 |
| Year of Diagnosis | | | | |
|  | 2004 | Referent | -- | -- |
| 2005 | 1.355 | (−0.274, 2.985) | 0.103 |
| 2006 | 1.809 | (0.175, 3.444) | 0.030 |
| 2007 | 3.804 | (2.206, 5.402) | <0.001 |
| 2008 | 3.312 | (1.771, 4.853) | <0.001 |
| 2009 | 4.422 | (2.907, 5.937) | <0.001 |
| 2010 | 4.2 | (2.693, 5.707) | <0.001 |
| 2011 | 3.968 | (2.463, 5.472) | <0.001 |
| 2012 | 4.818 | (3.317, 6.320) | <0.001 |
| 2013 | 4.369 | (2.875, 5.862) | <0.001 |
| 2014 | 6.142 | (4.656, 7.629) | <0.001 |
| 2015 | 6.41 | (4.924, 7.895) | <0.001 |
| Stage at Diagnosis | | | | |
|  | 1A | Referent | -- | -- |
| 1B | 8.149 | (7.310, 8.988) | <0.001 |
| 2A | 5.934 | (4.315, 7.552) | <0.001 |
| 2B | 2.57 | (1.357, 3.782) | <0.001 |
| 3A | 0.645 | (−1.982, 3.272) | 0.630 |
| 3B | −0.43 | (−1.562, 0.701) | 0.456 |
| 4A | −6.112 | (−8.059, −4.166) | <0.001 |
| Initial Treatment Modality | | | | |
|  | Surgery | Referent | -- | -- |
| Radiation | 16.436 | (15.634, 17.239) | <0.001 |
| Intercept (Beta\_0) | | 12.033 | (10.120, 13.946) | <0.001 |

Supplementary Table 2. Sensitivity analysis excluding patients with time to treatment of zero days.

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| --- | --- | --- | --- | --- |
| Variable | | Beta-Coefficient | 95% Confidence Interval | *p*-value |
| Distance | | | | |
|  | Quartile 1 (0–5.0 miles) | Referent | -- | -- |
| Quartile 2 (5.1–11.2 miles) | 1.235 | (0.323, 2.146) | 0.008 |
| Quartile 3 (11.3–29.4 miles) | 1.512 | (0.572, 2.452) | 0.002 |
| Quartile 4 (≥29.5 miles) | 2.971 | (1.882, 4.059) | <0.001 |
| Age | | 0.068 | (0.040, 0.097) | <0.001 |
| Race/Ethnicity | | | | |
|  | White | Referent | -- | -- |
| Black | 4.167 | (3.218, 5.116) | <0.001 |
| Hispanic | 6.443 | (5.409, 7.478) | <0.001 |
| Other | 2.013 | (0.556, 3.470) | 0.007 |
| Charleson Comorbidity Score | | | | |
|  | 0 | Referent | -- | -- |
| 1 | −0.159 | (−1.172, 0.853) | 0.758 |
| ≥2 | 1.153 | (−0.995, 3.301) | 0.293 |
| Urbanization | | | | |
|  | Metro (population >1 million) | Referent | -- | -- |
| Metro (population 250,000 to 1 million) | −3.503 | (−4.363, −2.643) | <0.001 |
| Metro (population <250,000) | −3.567 | (−4.829, −2.305) | <0.001 |
| Urban (population ≥20,000, adjacent to metro) | −3.789 | (−5.476, −2.101) | <0.001 |
| Urban (population ≥20,000, not adjacent to metro) | −3.399 | (−6.175, −0.623) | 0.016 |
| Urban (population 2500 to 19,999, adjacent to metro) | −5.362 | (−6.957, −3.768) | <0.001 |
| Urban (population 2500 to 19,999, not adjacent to metro) | −7.445 | (−9.544, −5.346) | <0.001 |
| Rural (completely rural or <2500 urban population, adjacent to metro) | −9.779 | (−13.522, −6.035) | <0.001 |
| Rural (completely rural or <2500 urban population, not adjacent to metro) | −9.862 | (−13.393, −6.331) | <0.001 |
| Insurance Status | | | | |
|  | Private Insurance/Managed Care | Referent | -- | -- |
| Medicaid | 6.248 | (5.403, 7.093) | <0.001 |
| Medicare | 2.394 | (1.318, 3.470) | <0.001 |
| Other Government | 3.161 | (0.250, 6.073) | 0.033 |
| Uninsured | 5.421 | (4.296, 6.547) | <0.001 |
| Income (Zip Code) | | | | |
|  | Quartile 1 (lowest) | Referent | -- | -- |
| Quartile 2 | −0.112 | (−1.076, 0.852) | 0.820 |
| Quartile 3 | −0.032 | (−1.114, 1.050) | 0.954 |
| Quartile 4 (highest) | −0.063 | (−1.391, 1.265) | 0.926 |
| Education (% without high school diploma by zip code) | | | | |
|  | 21% or more | Referent | -- | -- |
| 13%–20.9% | −1.977 | (−2.902, −1.052) | <0.001 |
| 7%–12.9% | −2.723 | (−3.805, −1.641) | <0.001 |
| Less than 7% | −4.452 | (−5.831, −3.073) | <0.001 |
| Year of Diagnosis | | | | |
|  | 2004 | Referent | -- | -- |
| 2005 | 0.554 | (−1.225, 2.333) | 0.542 |
| 2006 | 1.916 | (0.121, 3.711) | 0.036 |
| 2007 | 4.201 | (2.452, 5.950) | <0.001 |
| 2008 | 3.740 | (2.043, 5.438) | <0.001 |
| 2009 | 4.948 | (3.277, 6.620) | <0.001 |
| 2010 | 4.190 | (2.531, 5.849) | <0.001 |
| 2011 | 4.319 | (2.661, 5.976) | <0.001 |
| 2012 | 5.691 | (4.034, 7.348) | <0.001 |
| 2013 | 4.704 | (3.061, 6.347) | <0.001 |
| 2014 | 6.690 | (5.056, 8.323) | <0.001 |
| 2015 | 7.688 | (6.053, 9.324) | <0.001 |
| Stage at Diagnosis | | | | |
|  | 1A | Referent | -- | -- |
| 1B | −6.261 | (−7.415, −5.106) | <0.001 |
| 2A | −7.899 | (−9.727, −6.070) | <0.001 |
| 2B | −10.346 | (−11.823, −8.868) | <0.001 |
| 3A | −12.542 | (−15.308, −9.776) | <0.001 |
| 3B | −14.262 | (−15.664, −12.860) | <0.001 |
| 4A | −20.095 | (−22.224, −17.966) | <0.001 |
| Initial Treatment Modality | | | | |
|  | Surgery | Referent | -- | -- |
| Radiation | 3.235 | (2.353, 4.117) | <0.001 |
| Intercept (Beta\_0) | | 37.610 | (35.323, 39.896) | <0.001 |