

**Table 2 Univariate and multivariate regression analyses for OS**

| Characteristics                     | Univariate analysis<br>HR (95%CI) | P-value | Multivariate analysis<br>HR (95%CI) | P-value |
|-------------------------------------|-----------------------------------|---------|-------------------------------------|---------|
| <b>Age</b>                          |                                   |         |                                     |         |
| <45                                 | Ref.                              |         | Ref.                                |         |
| 45-64                               | 0.978 (0.792-1.210)               | 0.844   | 1.124(0.906-1.394)                  | 0.287   |
| 65-84                               | 1.541(1.247-1.903)                | <0.001* | 1.767(1.416-2.205)                  | <0.001* |
| >=85                                | 2.975(2.256-3.925)                | <0.001* | 2.998(2.193-4.099)                  | <0.001* |
| <b>Sex</b>                          |                                   |         |                                     |         |
| Female                              | Ref.                              |         |                                     |         |
| Male                                | 1.007(0.898-1.129)                | 0.906   |                                     |         |
| <b>Race</b>                         |                                   |         |                                     |         |
| White                               | Ref.                              |         | Ref.                                |         |
| Black                               | 1.392(1.153-1.681)                | <0.001* | 1.188(0.980-1.440)                  | 0.079   |
| Asian or Pacific<br>Islander        | 0.978(0.814-1.174)                | 0.810   | 1.008(0.837-1.212)                  | 0.937   |
| American<br>Indian/Alaska<br>Native | 0.552(0.229-1.330)                | 0.185   | 0.510(0.210-1.240)                  | 0.138   |
| <b>Marital</b>                      |                                   |         |                                     |         |
| Single                              | Ref.                              |         | Ref.                                |         |
| Married                             | 0.712(0.615-0.824)                | <0.001* | 0.741(0.637-0.862)                  | <0.001* |
| Divorced or<br>Separated            | 1.111(0.908-1.357)                | 0.309   | 1.138(0.925-1.398)                  | 0.220   |
| Widowed                             | 1.370(1.137-1.652)                | <0.001* | 0.854(0.694-1.051)                  | 0.136   |
| Unmarried or<br>Domestic<br>Partner | 1.099(0.454-2.664)                | 0.834   | 1.592(0.652-3.883)                  | 0.307   |
| <b>Radiation</b>                    |                                   |         |                                     |         |
| No                                  | Ref.                              |         | Ref.                                |         |
| Yes                                 | 0.739(0.641-0.851)                | <0.001* | 1.028(0.882-1.199)                  | 0.721   |
| <b>Chemotherapy</b>                 |                                   |         |                                     |         |
| No                                  | Ref.                              |         | Ref.                                |         |
| Yes                                 | 0.498(0.443-0.560)                | <0.001* | 0.468(0.408-0.537)                  | <0.001* |
| <b>Summary_stage</b>                |                                   |         |                                     |         |
| Regional                            | Ref.                              |         | Ref.                                |         |
| Distant                             | 3.356(2.979-3.781)                | <0.001* | 1.122(0.673-1.871)                  | 0.689   |
| <b>AJCC_Stage</b>                   |                                   |         |                                     |         |
| IIIA                                | Ref.                              |         | Ref.                                |         |
| IIIB                                | 2.116(1.582-2.831)                | <0.001* | 1.007(0.596-1.703)                  | 0.979   |
| IIIC                                | 3.112(2.289-4.229)                | <0.001* | 1.080(0.606-1.912)                  | 0.793   |
| IVA                                 | 6.139(4.529-8.320)                | <0.001* | 2.816(1.322-5.996)                  | 0.007*  |

| Characteristics                     | Univariate analysis<br>HR (95%CI) | P-value | Multivariate analysis<br>HR (95%CI) | P-value |
|-------------------------------------|-----------------------------------|---------|-------------------------------------|---------|
| IVB                                 | 10.779(7.854-14.792)              | <0.001* | 4.024(1.888-8.576)                  | <0.001* |
| <b>T</b>                            |                                   |         |                                     |         |
| T1                                  | Ref.                              |         | Ref.                                |         |
| T2                                  | 1.012(0.532-1.925)                | 0.971   | 0.971(0.507-1.861)                  | 0.929   |
| T3                                  | 2.440(1.346-4.424)                | 0.003*  | 1.830(0.871-3.847)                  | 0.111   |
| T4a                                 | 4.553(2.487-8.334)                | <0.001* | 2.832(1.333-6.017)                  | 0.007*  |
| T4b                                 | 5.213(2.806-9.683)                | <0.001* | 2.393(1.100-5.205)                  | 0.028*  |
| <b>N</b>                            |                                   |         |                                     |         |
| N1a                                 | Ref.                              |         | Ref.                                |         |
| N1b                                 | 1.272(1.086-1.492)                | 0.003*  | 1.229(1.046-1.443)                  | 0.012*  |
| N1c                                 | 2.212(0.709-6.903)                | 0.171   | 4.400(1.329-14.564)                 | 0.015*  |
| N2a                                 | 1.368(1.153-1.624)                | <0.001* | 2.021(0.579-7.050)                  | 0.270   |
| N2b                                 | 2.140(1.820-2.516)                | <0.001* | 2.563(0.733-8.964)                  | 0.141   |
| <b>Tumor_size</b>                   |                                   |         |                                     |         |
| ≤3.7cm                              | Ref.                              |         | Ref.                                |         |
| 3.8-5.6cm                           | 1.268(1.094-1.470)                | 0.002*  | 1.008(0.864-1.175)                  | 0.919   |
| ≥5.7cm                              | 1.711(1.461-2.003)                | <0.001* | 1.194(1.007-1.416)                  | 0.040*  |
| <b>Regional_nodes<br/>_examined</b> |                                   |         |                                     |         |
| 1-12                                | Ref.                              |         | Ref.                                |         |
| 13-16                               | 0.703(0.599-0.825)                | <0.001* | 0.742(0.630-0.874)                  | <0.001* |
| ≥17                                 | 0.652(0.568-0.748)                | <0.001* | 0.590(0.509-0.685)                  | <0.001* |
| <b>Regional_nodes<br/>_positive</b> |                                   |         |                                     |         |
| 1-3                                 | Ref.                              |         | Ref.                                |         |
| 4-8                                 | 2.061(1.131-1.469)                | <0.001* | 0.620(0.180-2.140)                  | 0.450   |
| ≥9                                  | 2.061(1.765-2.407)                | <0.001* | 0.844(0.243-2.930)                  | 0.789   |

\*: Statistical significance.