

## **Urban-rural differences in acute kidney injury mortality in the United States**

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**Appendix Table 1.** Age-standardized acute kidney injury-related mortality by demographics, urban and rural counties, 2001 and 2020

Characteristics	2001		2020	
	mortality per 100,000 (95% CI)		mortality per 100,000 (95% CI)	
	Urban (ref)	Rural	Urban (ref)	Rural
Crude	18.04 (17.83–18.26)	<b>23.34 (22.79–23.89)***</b>	33.77 (33.51–34.03)	<b>51.39 (50.60–52.17)***</b>
Age-standardized	18.95 (18.73–19.17)	<b>20.10 (19.63–20.58)***</b>	29.46 (29.23–29.69)	<b>38.24 (37.64–38.85)***</b>
Age group, year				
25–64	3.84 (3.73–3.94)	<b>4.16 (3.90–4.43)***</b>	10.78 (10.61–10.94)	<b>15.82 (15.31–16.34)***</b>
65–74	34.57 (33.63–35.52)	<b>35.57 (33.59–37.54)***</b>	57.65 (56.75–58.56)	<b>73.83 (71.55–76.11)***</b>
≥75	131.10 (129.18–133.01)	<b>145.74 (141.56–149.92)***</b>	177.91 (176.02–179.79)	<b>224.94 (220.25–229.63)***</b>
Sex				
Male	24.66 (24.24–25.07)	25.65 (24.77–26.52)	37.62 (37.23–38.01)	<b>46.37 (45.38–47.35)***</b>
Female	15.34 (15.08–15.60)	<b>16.56 (16.00–17.12)***</b>	23.00 (22.73–23.27)	<b>31.60 (30.86–32.35)***</b>
Race and ethnicity				
NH White	17.92 (17.68–18.16)	<b>19.49 (18.99–19.98)***</b>	26.38 (26.13–26.64)	<b>35.13 (34.51–35.75)***</b>

NH Black	30.54 (29.58–31.49)	28.74 (26.37–31.11)	44.14 (43.28–45.01)	<b>63.93 (60.81–67.05)***</b>
Hispanic	16.23 (15.35–17.12)	16.34 (13.29–19.38)	36.62 (35.85–37.39)	<b>53.09 (49.59–56.58)***</b>
NH Others <sup>a</sup>	13.71 (12.60–14.83)	17.53 (13.98–21.70)	21.99 (21.22–22.77)	<b>47.70 (43.51–51.90)***</b>
Region				
South	19.36 (18.97–19.75)	<b>22.41 (21.62–23.19)***</b>	31.91 (31.52–32.30)	<b>45.81 (44.80–46.83)***</b>
Northeast	19.42 (18.96–19.88)	21.01 (19.53–22.49)	25.23 (24.75–25.70)	<b>29.05 (27.45–30.65)***</b>
Midwest	20.70 (20.19–21.21)	<b>18.75 (17.99–19.51)**</b>	27.64 (27.13–28.15)	<b>34.16 (33.18–35.14)***</b>
West	16.13 (15.69–16.57)	15.25 (14.05–16.45)	30.26 (29.79–30.73)	<b>32.14 (30.66–33.62)***</b>

Note: Boldface indicates statistical significance ( $p < 0.05$ ) between urban and rural counties in 2001 and 2020, respectively. \* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$ .

Abbreviations: CI: confidence interval, ref: referent group, NH, non-Hispanic

<sup>a</sup>Others include non-Hispanic American Indian or Alaska Native and Asian or Pacific Islander.



Male	2001–2009	<b>4.0<sup>***</sup></b> <b>(3.4, 4.6)</b>	2009–2019	<b>-1.9<sup>***</sup></b> <b>(-2.3, -1.6)</b>	2001–2011	<b>4.2<sup>***</sup></b> <b>(3.6, 4.9)</b>	2011–2019	<b>-1.1<sup>**</sup></b> <b>(-1.9, -0.3)</b>
Female	2001–2009	<b>5.0<sup>***</sup></b> <b>(4.5, 5.4)</b>	2009–2019	<b>-2.0<sup>***</sup></b> <b>(-2.3, -1.7)</b>	2001–2011	<b>5.5<sup>***</sup></b> <b>(4.8, 6.2)</b>	2011–2019	<b>-1.5<sup>***</sup></b> <b>(-2.2, -0.9)</b>
Race and ethnicity								
NH White	2001–2010	<b>4.4<sup>***</sup></b> <b>(4.0, 4.7)</b>	2010–2019	<b>-2.2<sup>***</sup></b> <b>(-2.6, -1.9)</b>	2001–2011	<b>5.0<sup>***</sup></b> <b>(4.3, 5.7)</b>	2011–2019	<b>-1.2<sup>**</sup></b> <b>(-1.9, -0.5)</b>
NH Black	2001–2005	<b>3.8<sup>***</sup></b> <b>(2.7, 4.8)</b>	2005–2010 <sup>c</sup>	<b>1.4<sup>**</sup></b> <b>(0.5, 2.3)</b>	2001–2010	<b>5.5<sup>***</sup></b> <b>(3.9, 7.1)</b>	2010–2019	<b>-1.9<sup>**</sup></b> <b>(-3.2, -0.7)</b>
Hispanic	2001–2010	<b>3.9<sup>***</sup></b> <b>(3.4, 4.5)</b>	2010–2014 <sup>d</sup>	<b>-2.9<sup>*</sup></b> <b>(-5.6, -0.1)</b>	2001–2009	<b>5.6<sup>***</sup></b> <b>(2.9, 8.3)</b>	2009–2019	1.4 (-0.1, 2.9)
NH Others <sup>e</sup>	2001–2010	<b>5.1<sup>***</sup></b> <b>(4.2, 6.0)</b>	2010–2019	<b>-2.8<sup>***</sup></b> <b>(-3.8, -1.8)</b>	2001–2010	<b>7.7<sup>***</sup></b> <b>(5.8, 9.7)</b>	2010–2019	<b>-2.1<sup>**</sup></b> <b>(-3.5, -0.7)</b>

Note: Boldface indicates statistical significance ( $p < 0.05$ ). \* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$ .

Abbreviations: CI: confidence interval, NH, non-Hispanic

<sup>a</sup>Annual percent change of mortality with acute kidney disease as an underlying cause using the Joinpoint Trend Analysis Software available at [https://www.cdc.gov/nchs/data/series/sr\\_02/sr02\\_172.pdf](https://www.cdc.gov/nchs/data/series/sr_02/sr02_172.pdf). Annual percent change was age-standardized to 2000 US Standard Population except for age-specific estimates or crude estimates.

<sup>b</sup>Age 65–74 years in rural counties: Period 3 (2010–2019): -0.1 (-0.4, 0.3),  $p = 0.66$ .

<sup>c</sup>Non-Hispanic Black in urban counties: Period 3 (2010–2013): -5.0 (-8.1, -1.8),  $p = 0.01$ ; Period 4 (2013–2019): -1.5 (-2.3, -0.8),  $p = 0.001$ .

<sup>d</sup>Hispanic in urban counties: Period 3 (2014–2017): 2.3 (-4.3, 9.3),  $p = 0.45$ ; Period 4 (2017–2019): -3.8 (-10.5, 3.4),  $p = 0.26$ .

<sup>e</sup>Others include non-Hispanic American Indian or Alaska Native and Asian or Pacific Islander.