

The COVID-19 Pandemic: Reversing 20 years of rural mortality improvement

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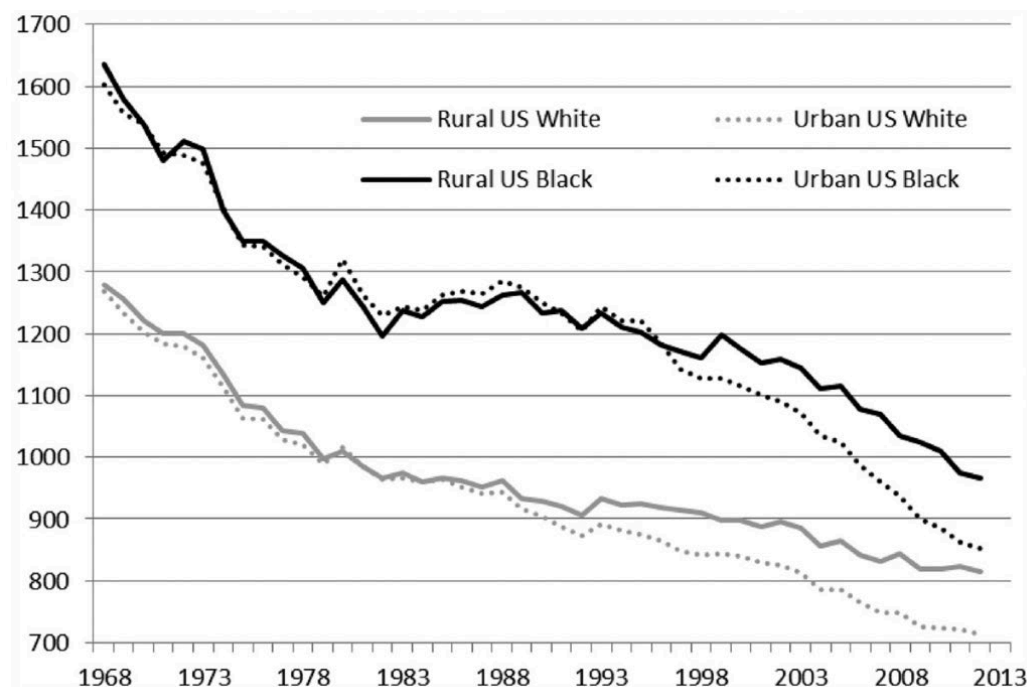


May 13, 2022



Rural mortality disparities

James & Cossman, 2017: Age-adjusted mortality by residence and race



COVID and Rural, 2020:

- Fewer health care professionals
- Fewer hospitals
- Lower rates of health insurance
- And behavioral differences
 - Lower adoption of NPIs (Probst et al 2021; Callaghan et al 2021)
 - More despair? (Brown & Schuman 2021)

What did COVID-19 mean for rural?

- Excess rural mortality, but why?
 - “It’s their fault” has dominated the discussion
 - But excess mortality is not limited to COVID
- Our perspective:
 - A weaker rural infrastructure resulted in excess COVID deaths
 - **AND** excess deaths across time-sensitive diagnoses

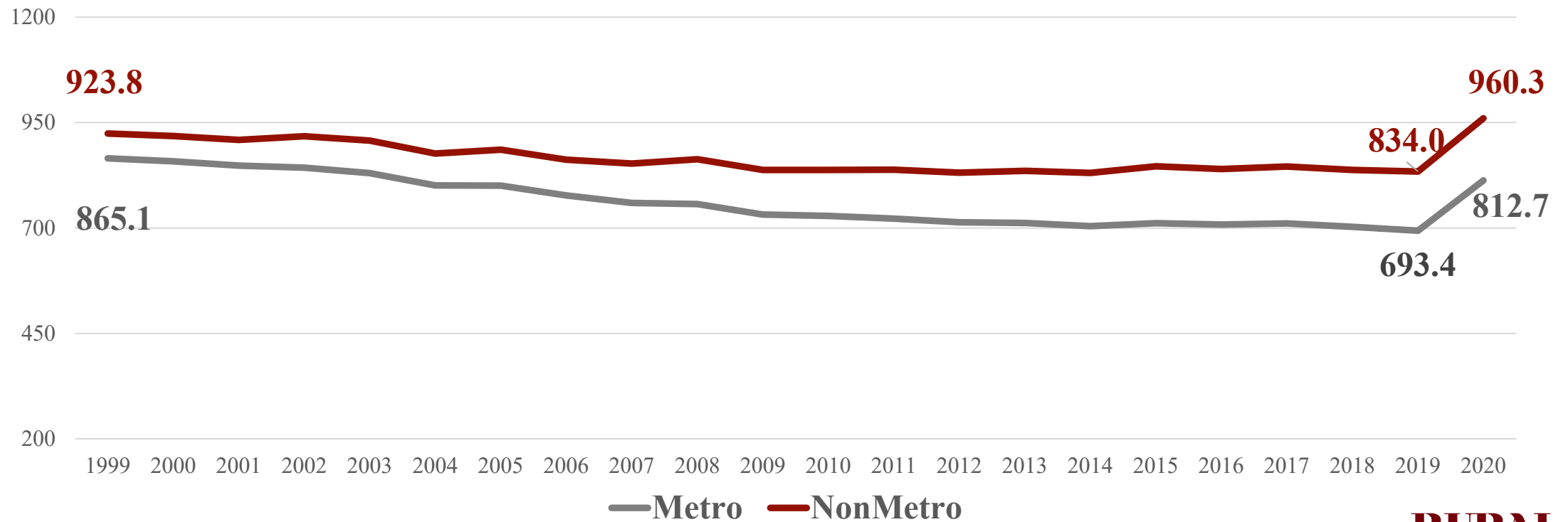
Method:

- Data extracted from CDC Wonder
 - Age adjusted mortality from final cause of death files
- COVID (ICD U07.1) mortality
 - Age-adjusted information is available only through 2020
 - Checked 2021 (not available as of April 20)
- Other causes of death, divided into:
 - “Nonemergent care:” cancer, depression
 - “Emergency care:” trauma (unintentional), diabetes

Results

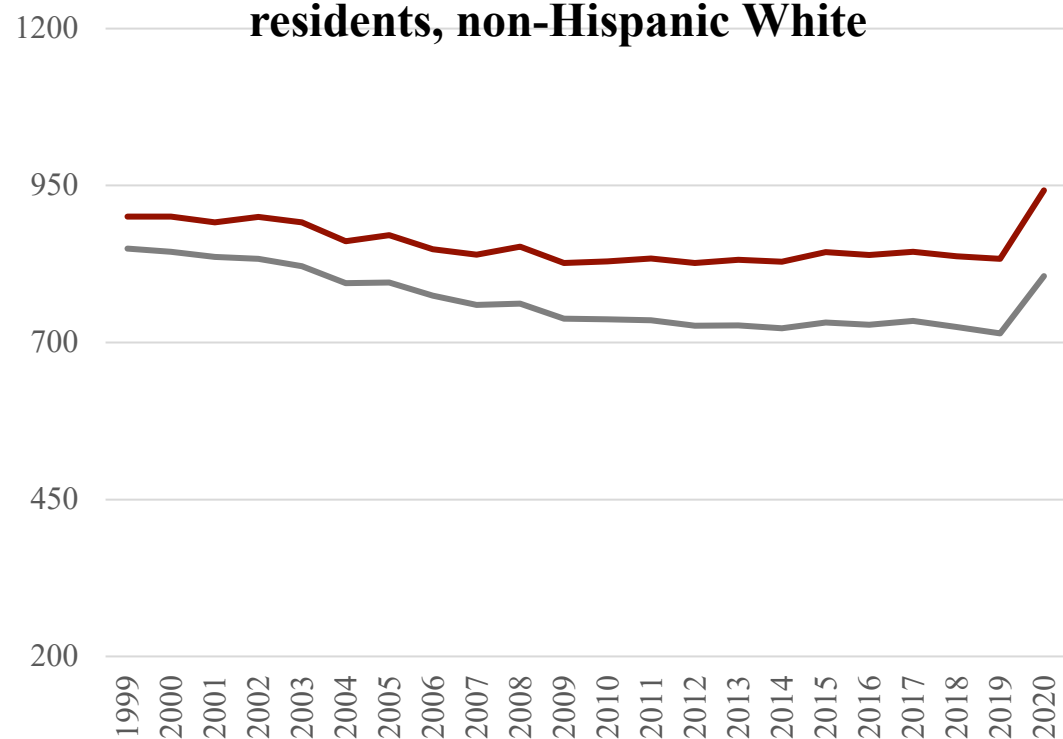
Rural mortality in 2020 exceeded 1999

Age-adjusted mortality per 100,000 residents. by rurality of county of residence

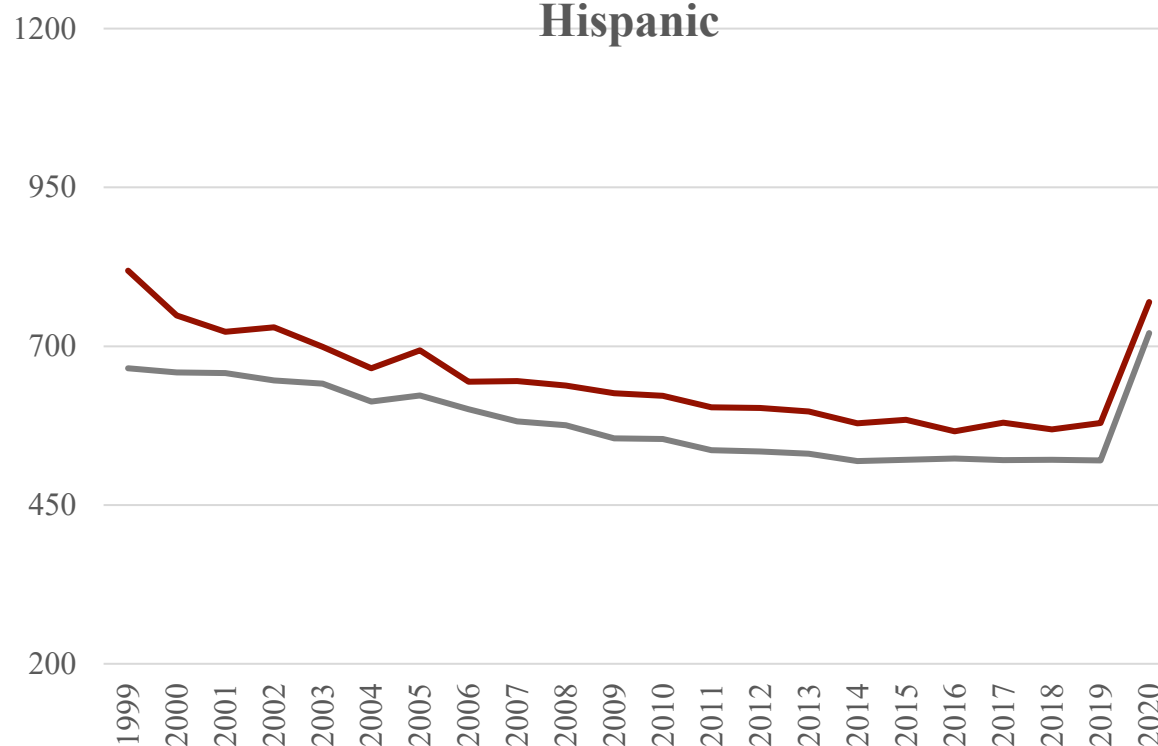


Quick examination by race/ethnicity

Age adjusted mortality per 100,00 residents, non-Hispanic White

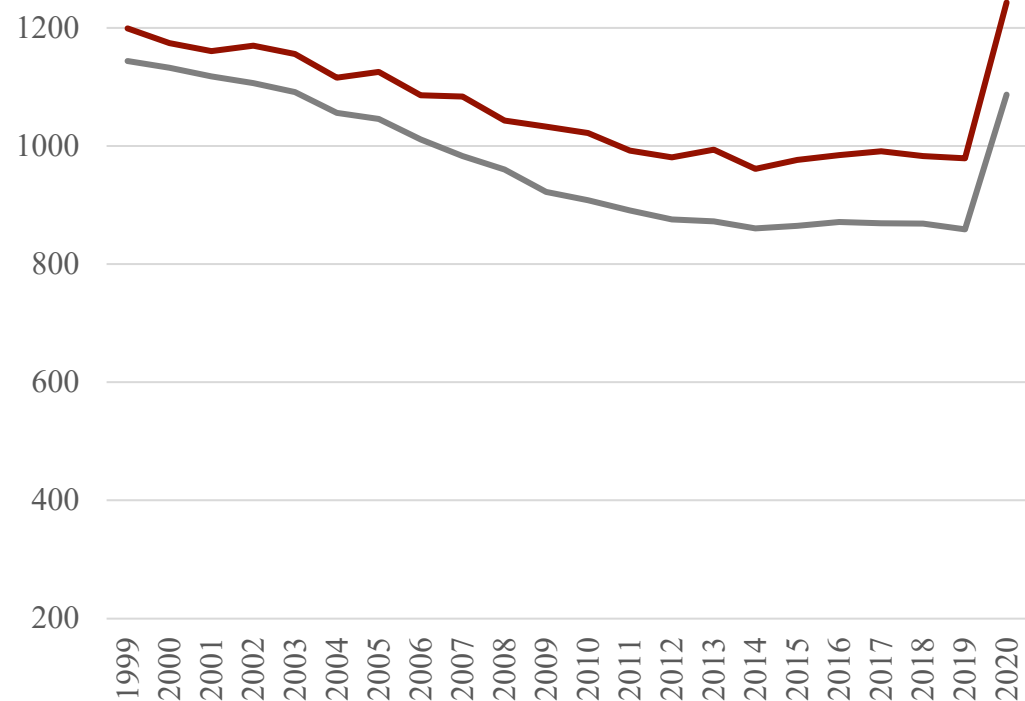


Age adjusted mortality per 100,00 residents, Hispanic

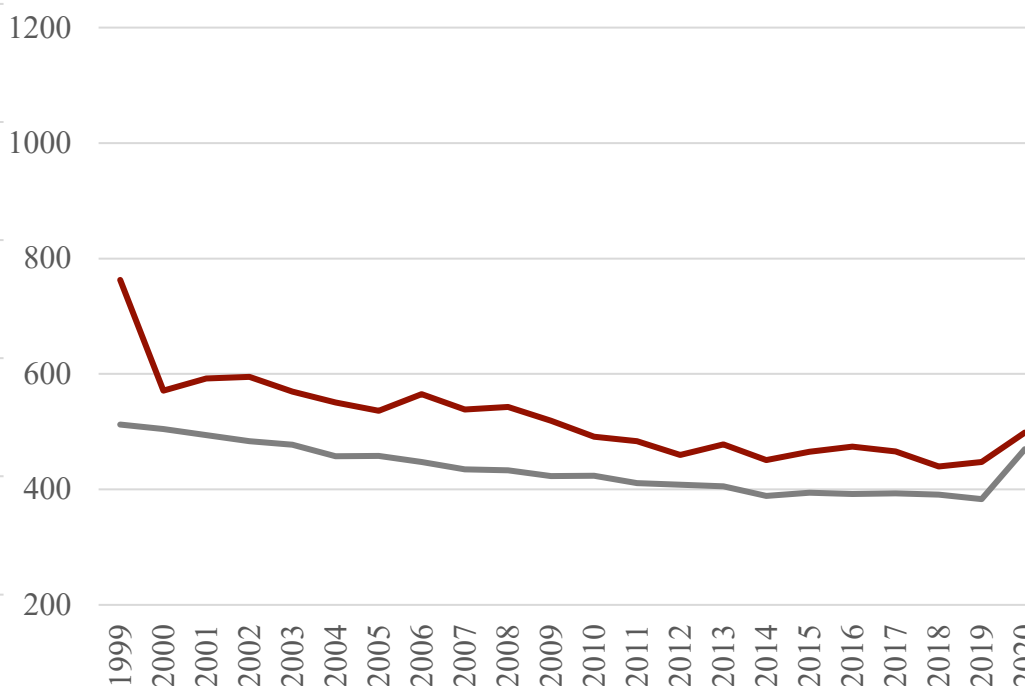


Quick examination by race/ethnicity

Age adjusted mortality per 100,00 residents, non-Hispanic Black

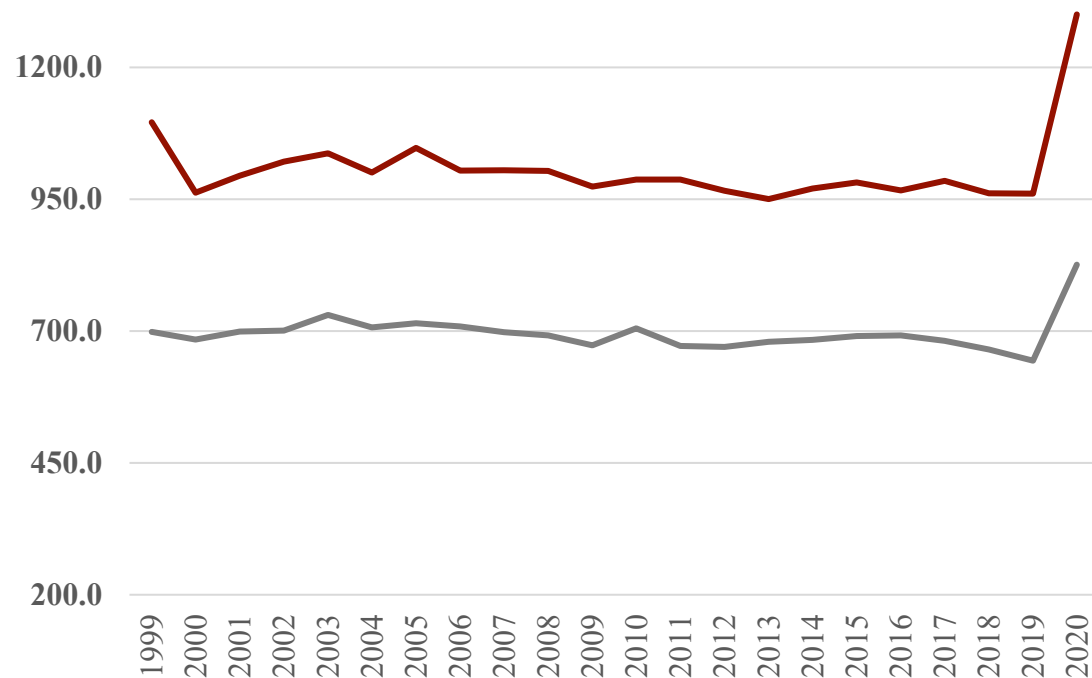


Age adjusted mortality per 100,00 residents, non-Hispanic A/PI



Quick examination by race/ethnicity

Age adjusted mortality per 100,00 residents, non-Hispanic AI/AN



Consistent pattern across all groups

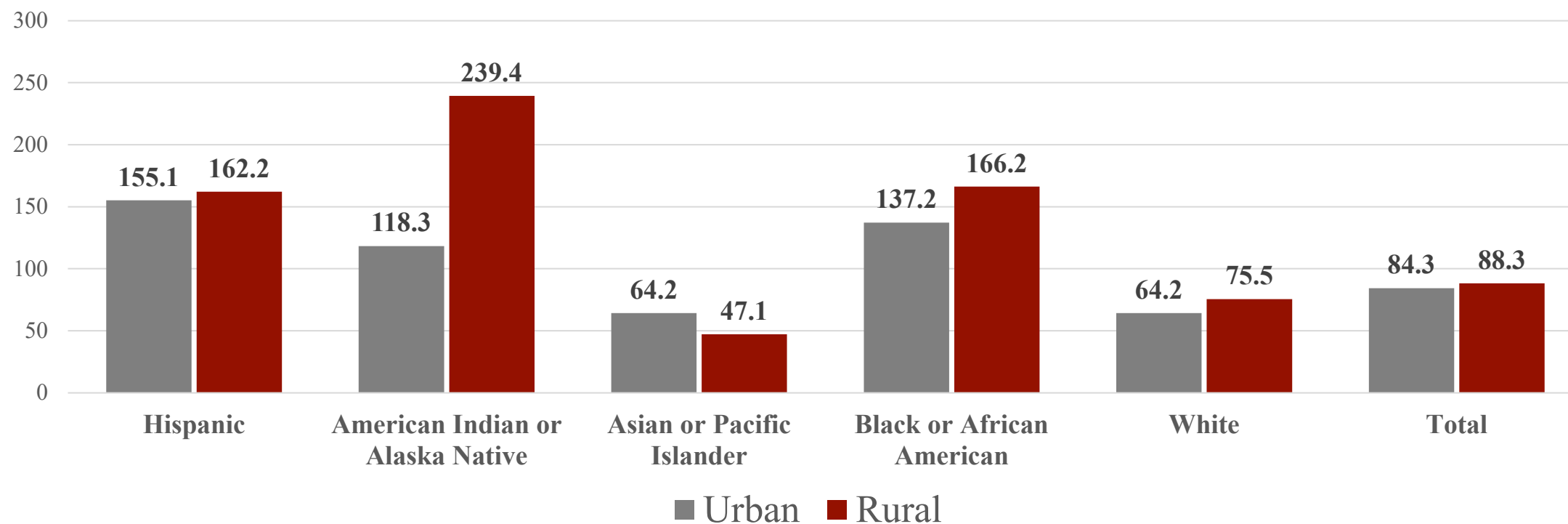
- Rural mortality exceeds urban mortality
- Sharp uptick in 2020

Next

- Increases in mortality were noted across all rural populations in 2020
- What caused these increases?

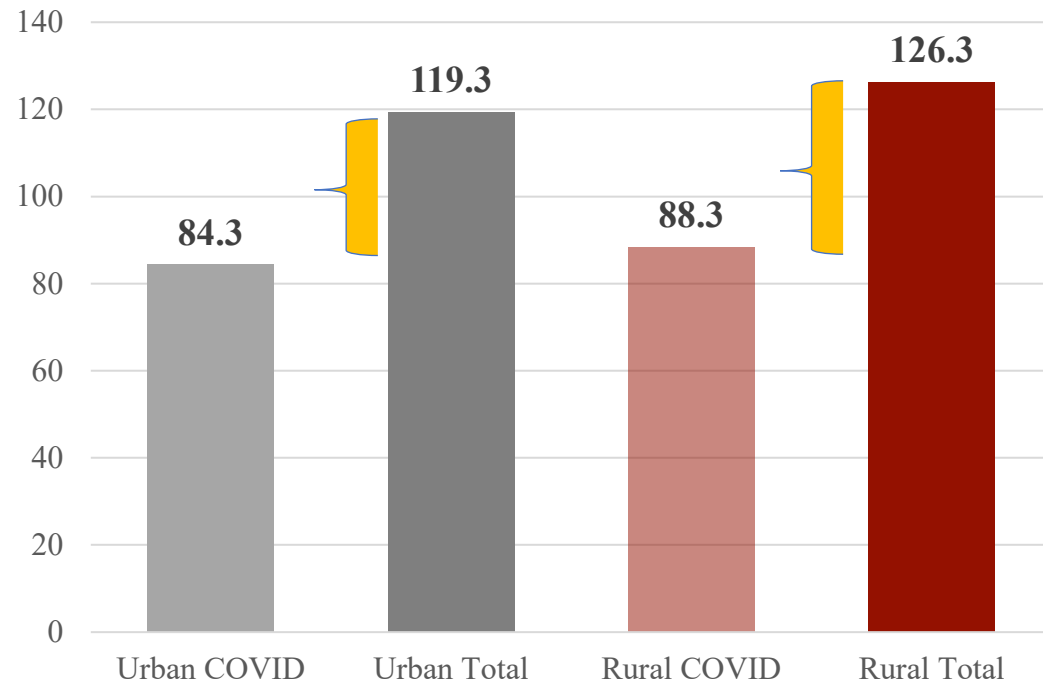
Clear contributor: COVID-19

Age adjusted COVID death rate per 100,000 residents, 2020



BUT: COVID does not fully account for increased death rates, 2019 - 2020

Difference in age-adjusted mortality per 100,00 residents, 2020 v 2019



Gaps: Approximately 3 in 10 excess deaths have other causes

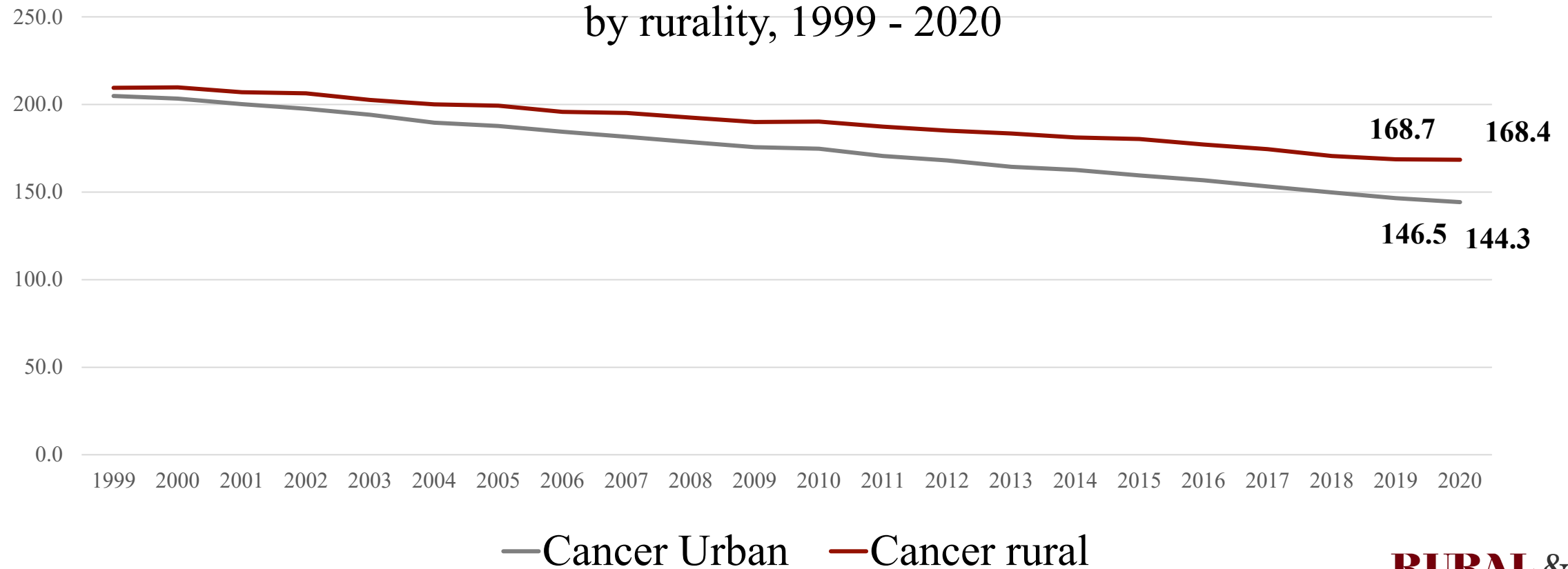
- 35.0 per 100,00 for urban, 29% of total
- 38.0 per 100,00 for rural, 30% of total

Disorders with a long-term treatment profile

- Cancer
- Depression (suicide as an indicator of inadequately addressed depression)

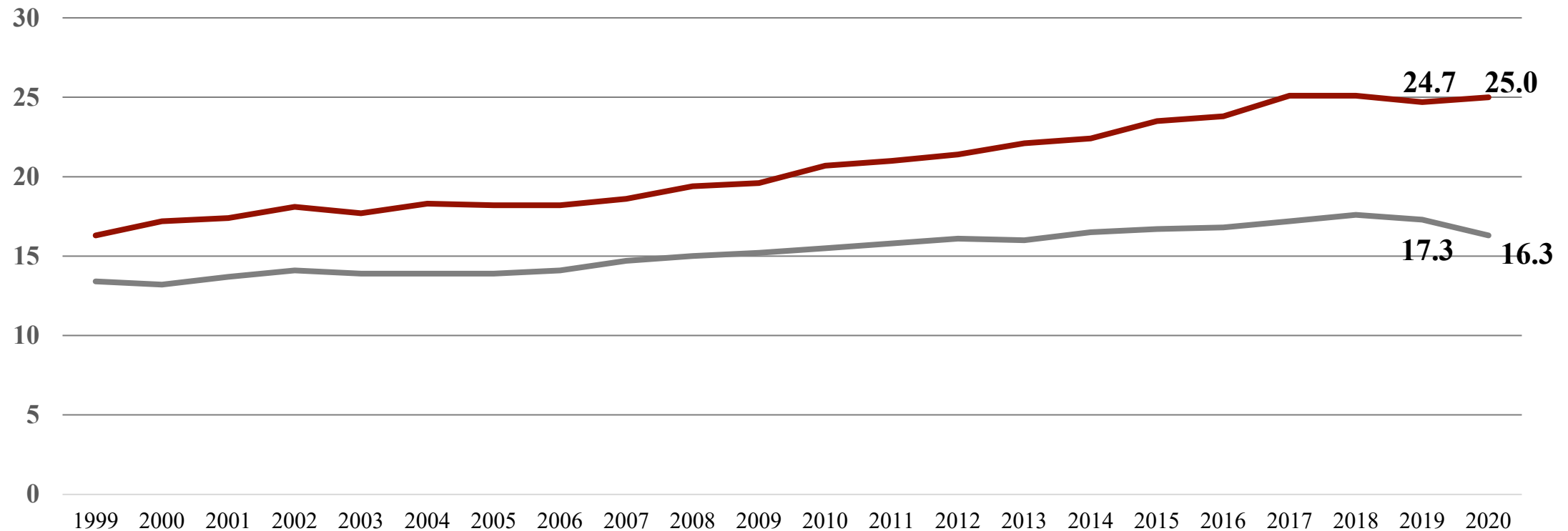
Cancer mortality: no increase 2019-2020

Age-adjusted mortality per 100,000 residents, malignant neoplasms,
by rurality, 1999 - 2020



Suicide among adults: no increase 2019-2020

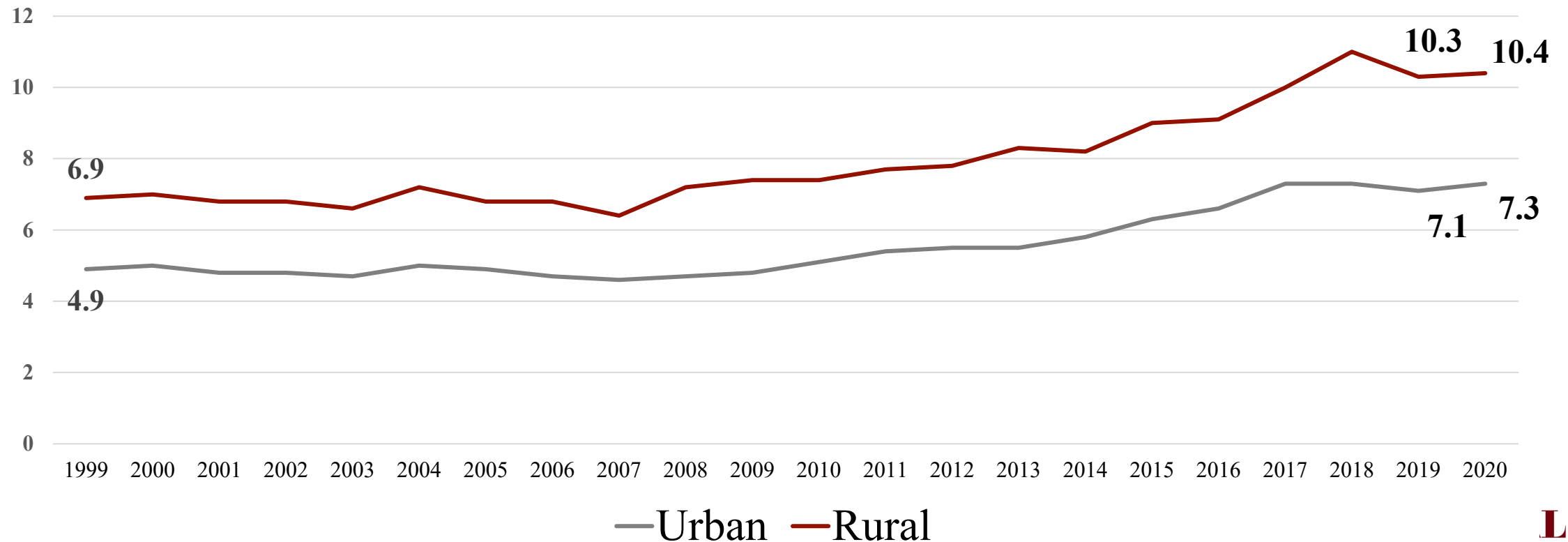
Age adjusted mortality per 100,000, persons age 25 and older, intentional self harm, by rurality, 1999 - 2020



ICD-10 codes: X60-X84

Suicide among young persons: no increase 2019-2020

Age adjusted mortality per 100,000 residents, ages 5 - 24



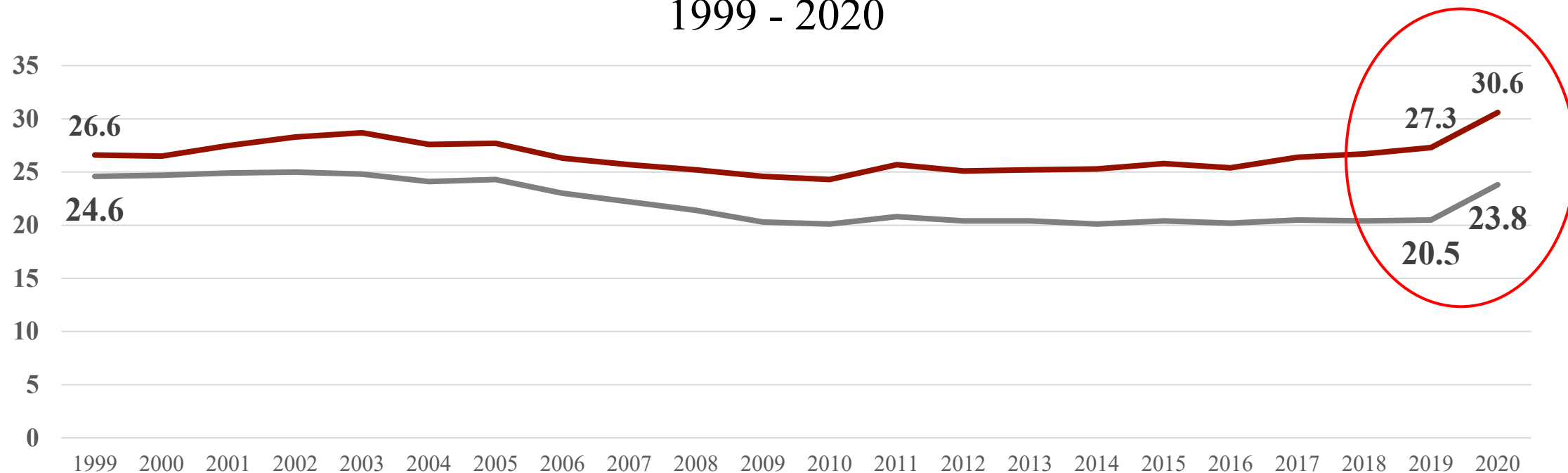
ICD-10 codes: X60-X84

Diagnoses with potential short-term harms

- Disorders needing access to primary care
- Disorders with emergent episodes

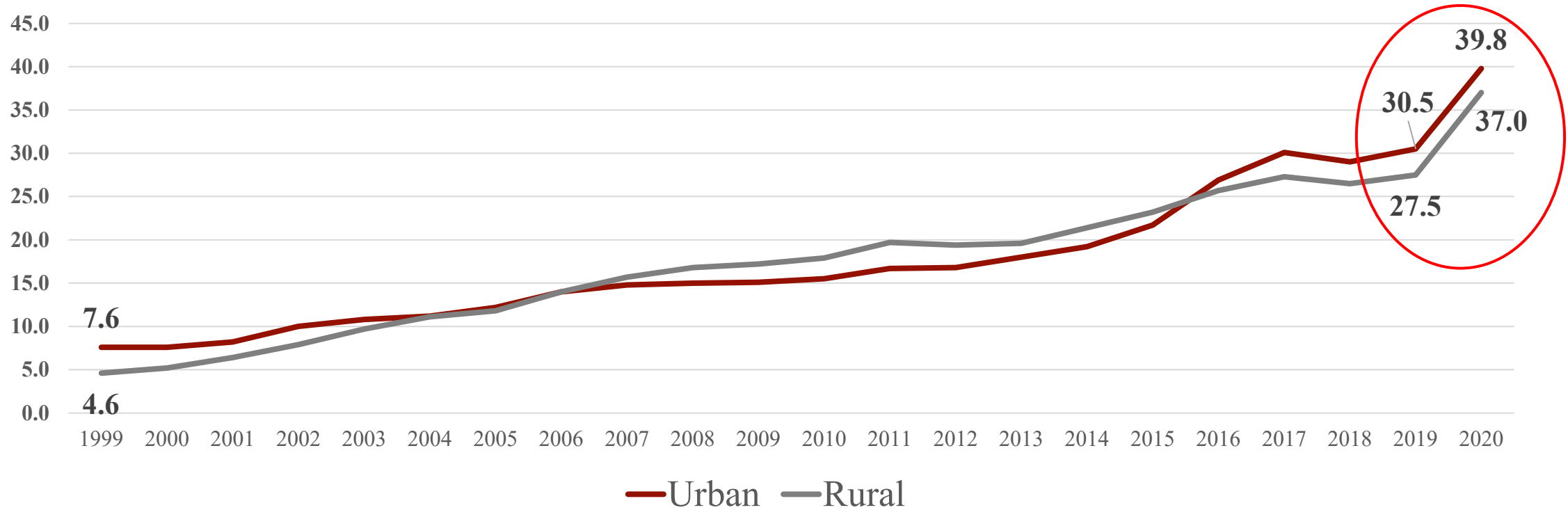
Diabetes: Ambulatory care sensitive condition with potential emergent episodes

Age adjusted mortality per 100,000 residents, diabetes, by rurality,
1999 - 2020



Accidental deaths, alcohol & other drugs

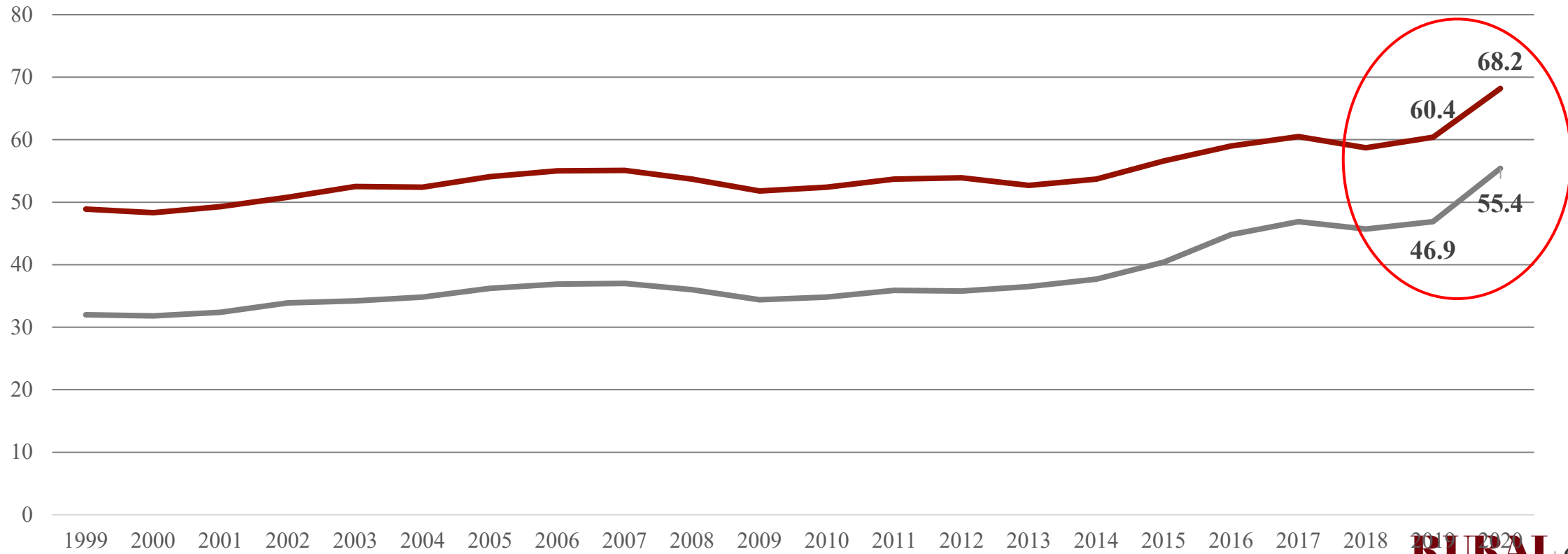
Age-adjusted mortality per 100,000 residents age 25 and older, by rurality



ICD-10 codes: X40-X45, Y10-Y15

Unintentional injury: emergent care

Age adjusted mortality per 100000, transport and other unintentional injury, by rurality, 1999 - 2020

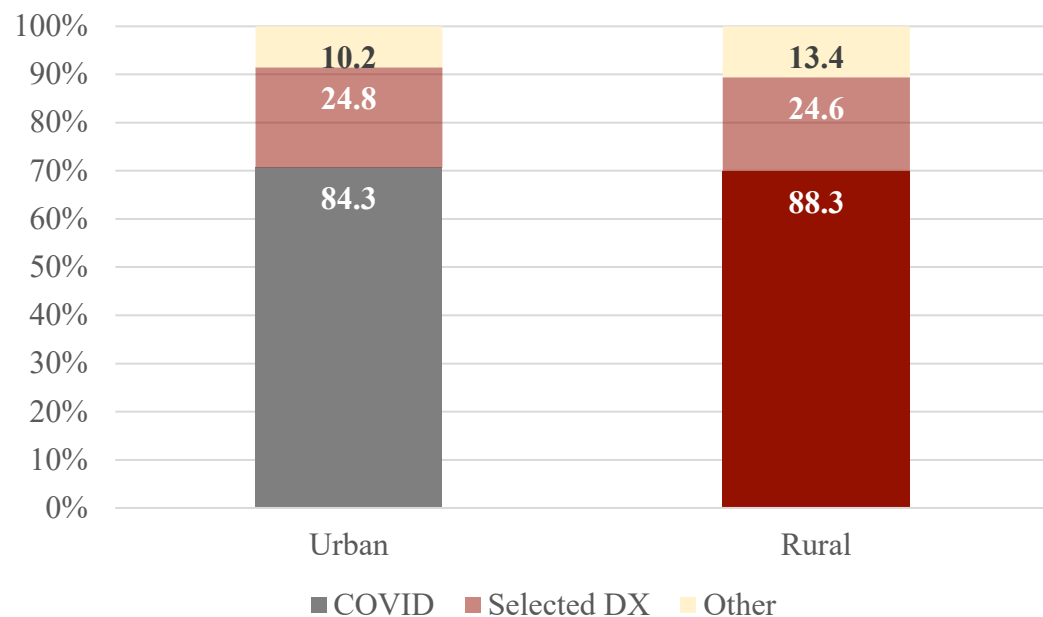


ICD-10 Codes: V01-V99 (Transport accidents); W00-X59 (Other external causes of accidental injury)

COVID plus time sensitive diagnoses..

Increase in age-adjusted mortality, 2020 vs 2019, by cause

Proportion of increase due to specified diagnoses



- The age-adjusted rural COVID death rate was only slightly higher than the urban rate

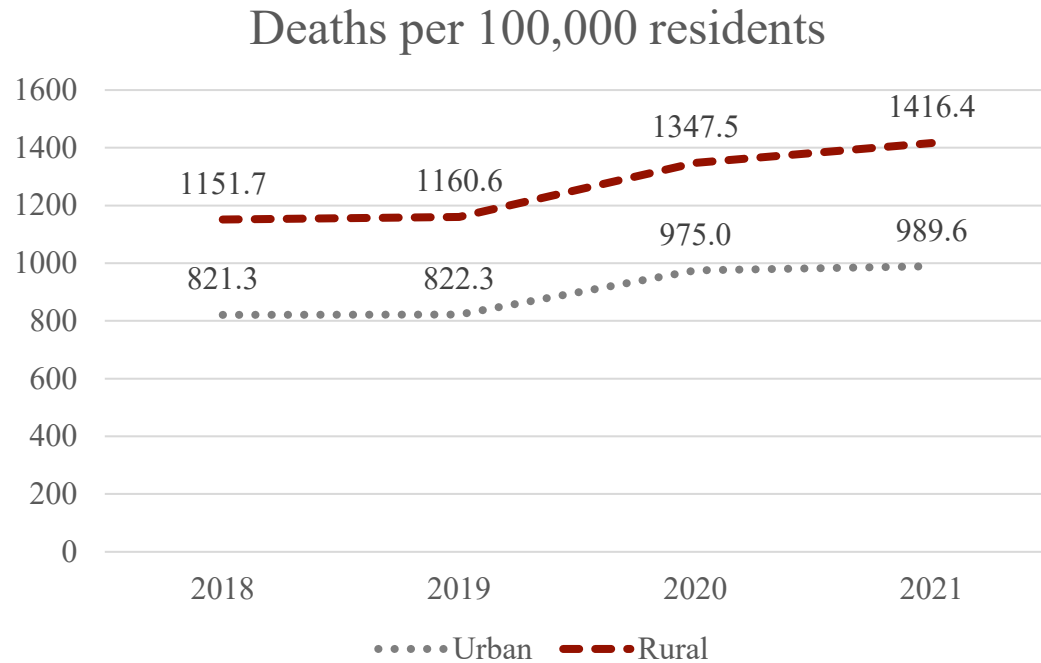
And

- **Both** urban and rural counties showed increases in death rates for diagnoses associated with both preventive and emergent care

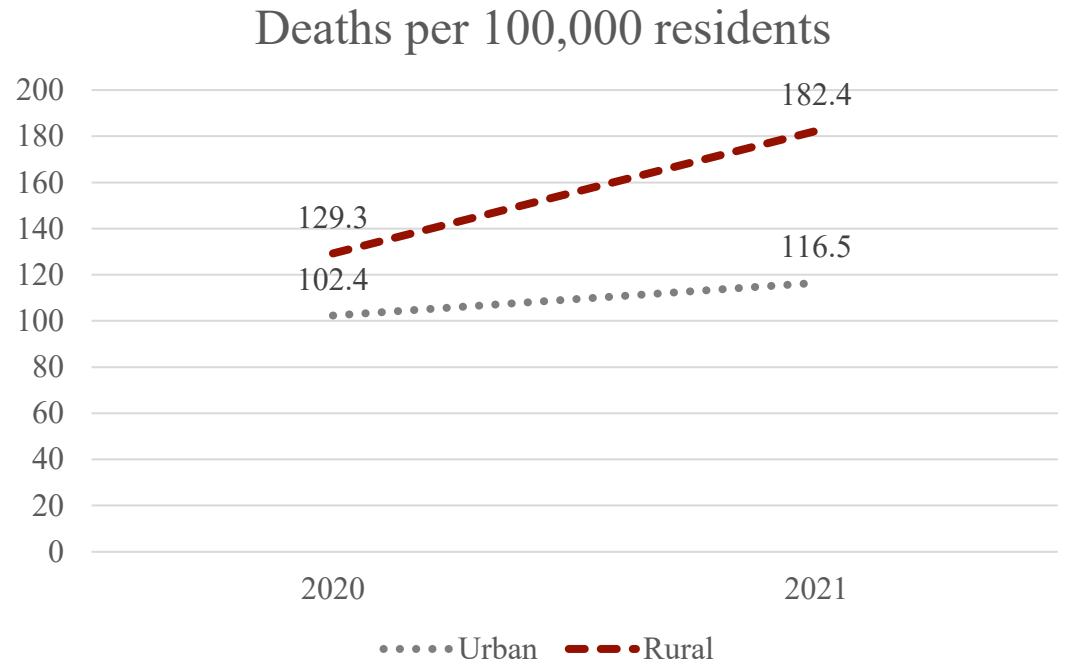
How does 2021 look?

COVID mortality, overall mortality not trending well

Crude mortality rates, 2018-2021



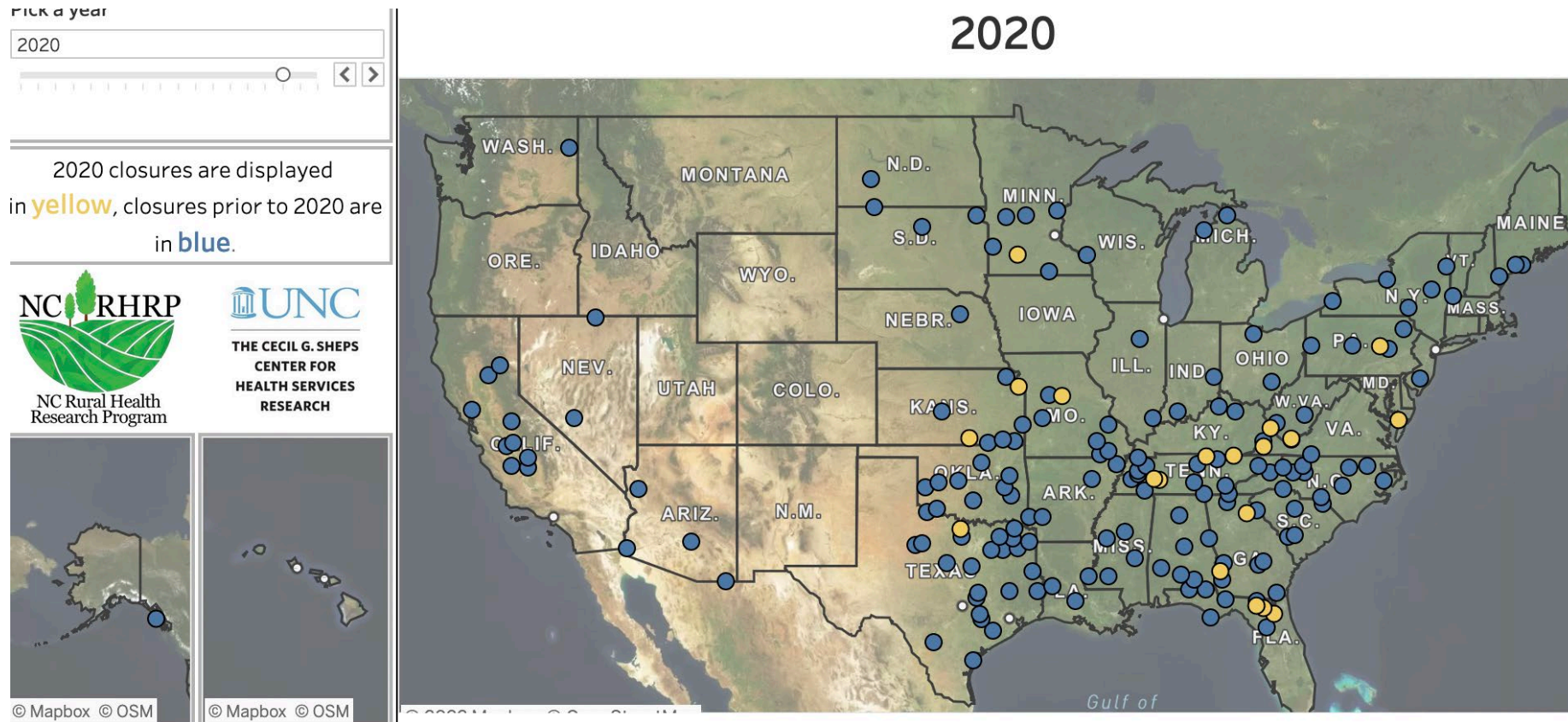
Crude mortality, COVID, 2020 - 2021



Conclusions

- Both rural and urban healthcare systems were overwhelmed in 2020 and persons with emergent needs died
- The question: what's next?

Trends not favorable: 22 rural hospitals closed in 2020



What we don't know yet....

- Impact of the pandemic on rural healthcare workforce not yet known
- Impact of pandemic on outpatient service availability (FQHC's, RHCs) not yet known

Policy Brief

March 2022



Screen

**COVID-19 and the Rural Health Workforce:
The Impact of Federal Pandemic Funding to Address Workforce Needs**

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Action items

- Eyes on rural! COVID → increased attention to rural disparities; ride this momentum
- Continued attention to rural funding policies and adjustment
- Pushing “rural in all policies” across health, education and economic development spheres

Disclosures & Thanks

- The presenters have no conflicts to disclose
- This presentation has been approved by Sam the rural health advoCATE.
- Our web site:
 - rhr.sph.sc.edu
- Contact:
 - jprobst@sc.edu





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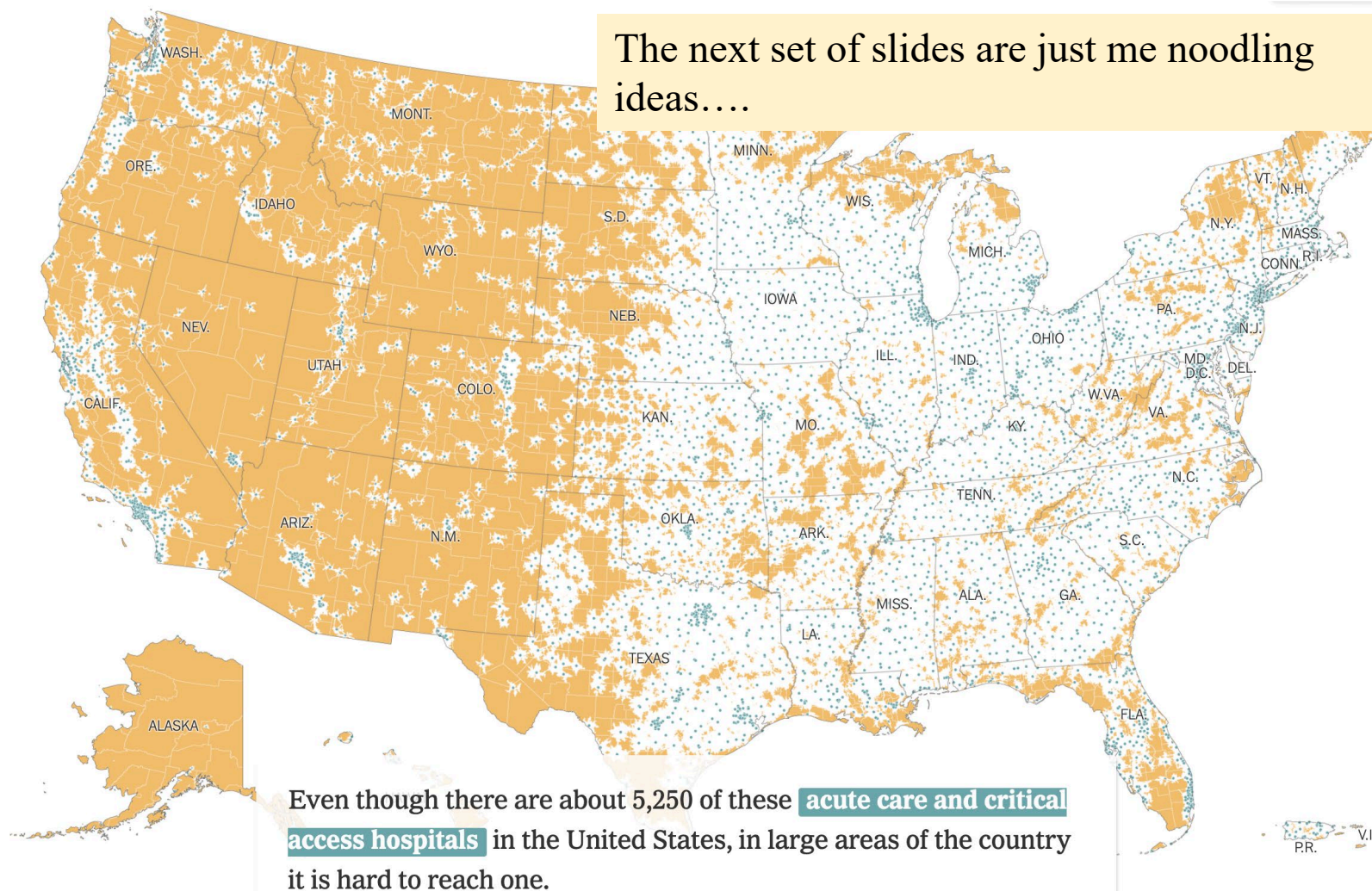


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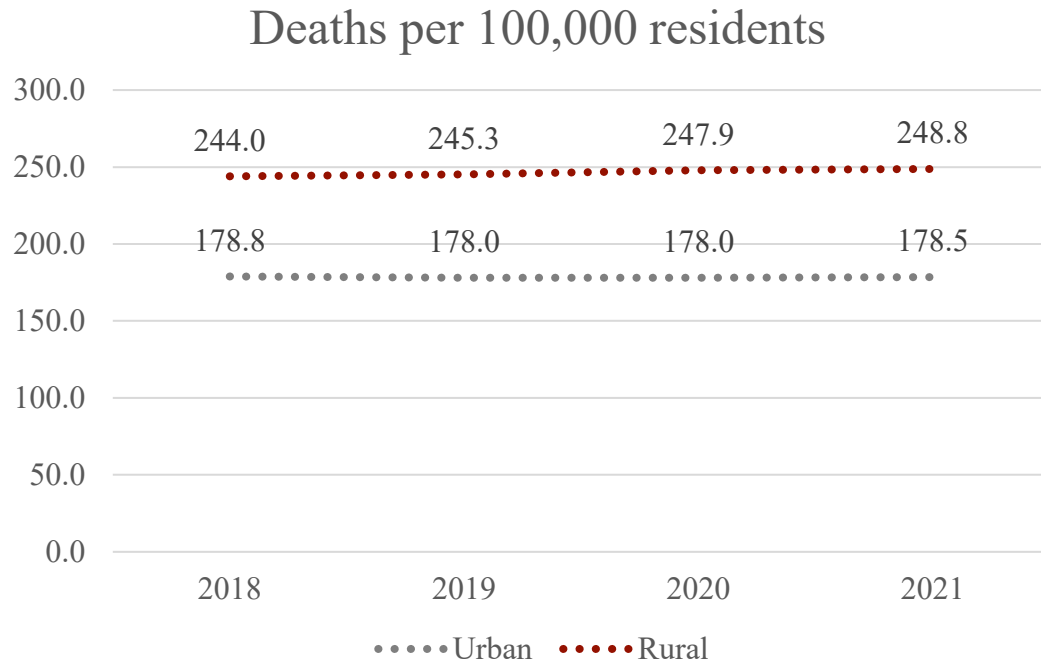
Hospital/emergency care gaps

Areas more than 30 minutes from a hospital, 2020

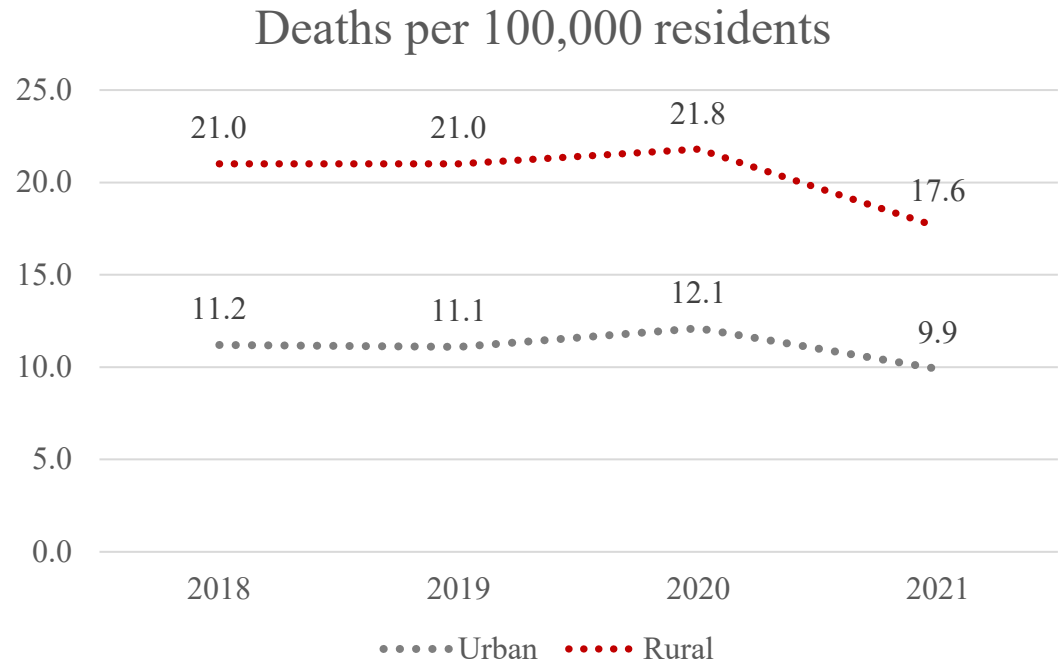


Decline in transport deaths but increased travel in 2021

Crude mortality, cancer, 2018 - 2021



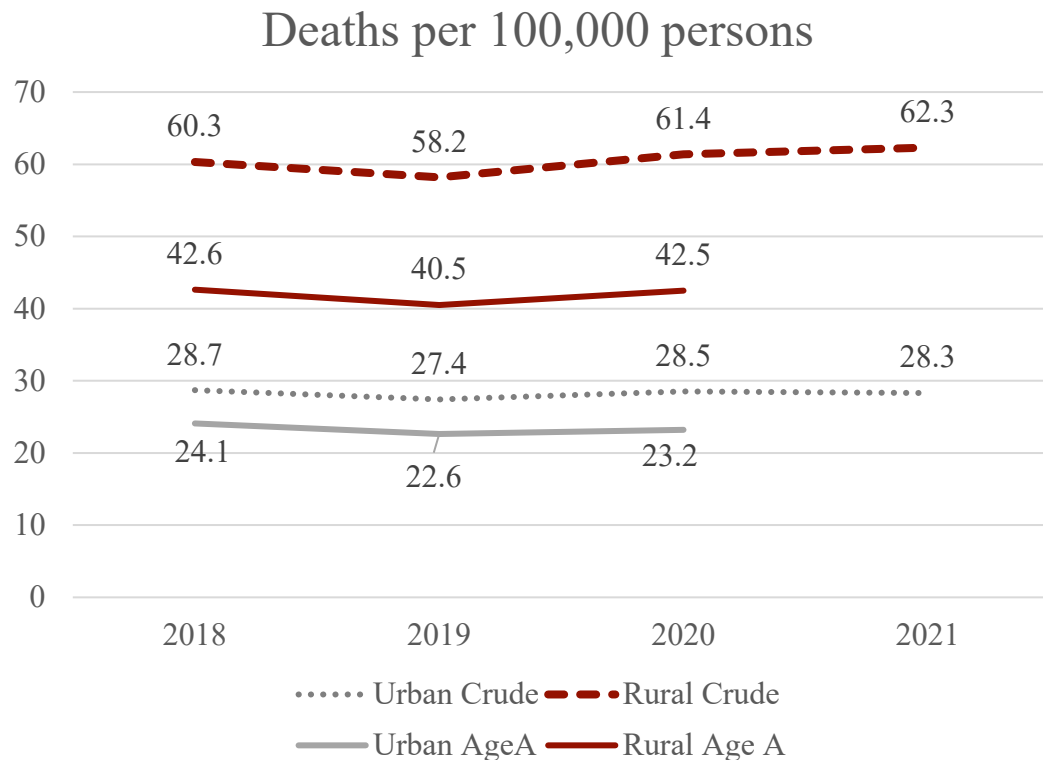
Crude mortality, transportation accidents, 2018 - 2021



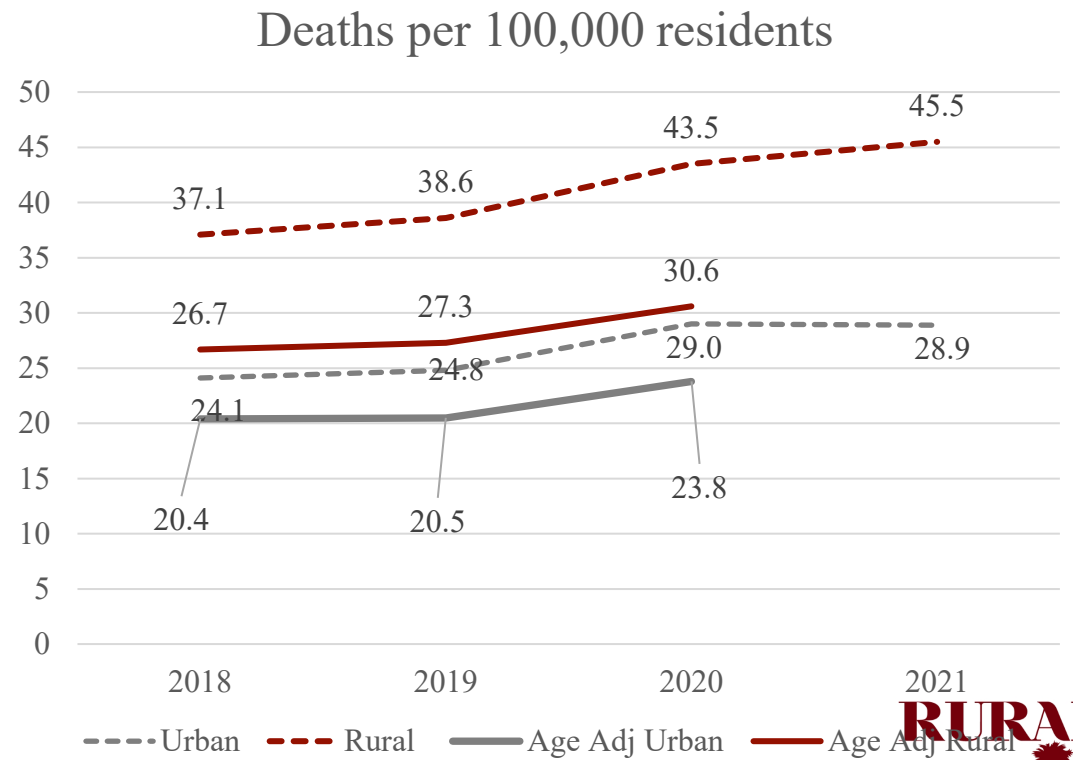
U.S. driving soars in 2021 to 3.23 trillion miles, up 11.2%

For conditions like AMI that strike late, crude is really off from age-adjusted...

Crude & AA mortality, Acute Myocardial Infarction, 2018-2021

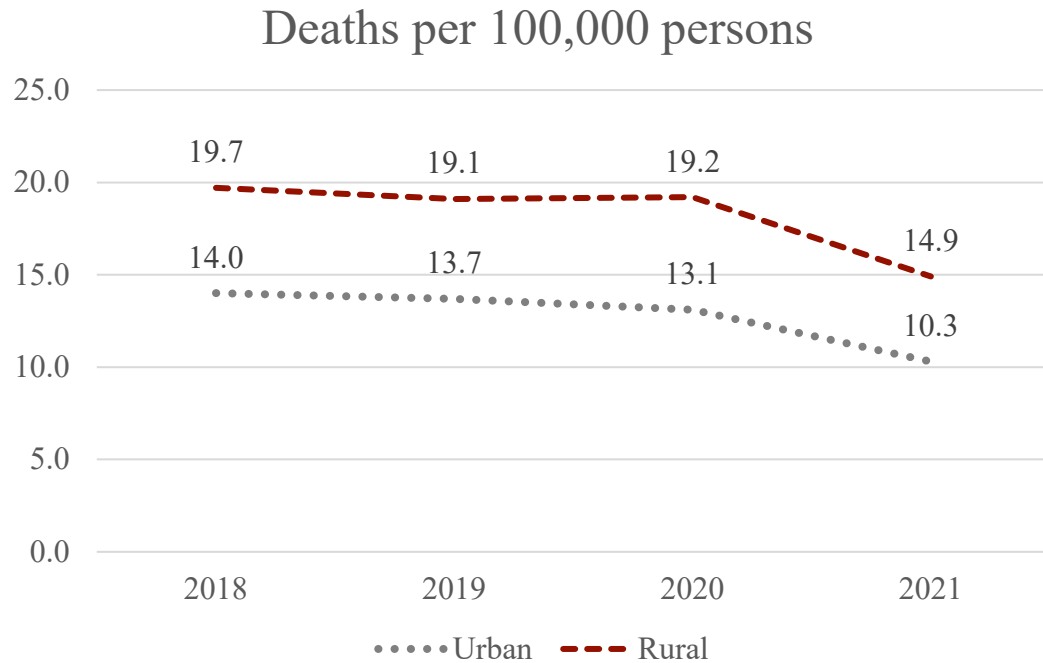


Crude Mortality, Diabetes, 2018 - 2021



Some trends improved:

Crude mortality, suicide, all ages, 2018-2021



Crude mortality, accidental alcohol/drug overdose, all ages, 2018-2021

