

Letters

RESEARCH LETTER

Leading Causes of Death Among Adults Aged 25 to 44 Years by Race and Ethnicity in Texas During the COVID-19 Pandemic, March to December 2020

In the United States, adults aged 25 to 44 years had the largest relative increase in all-cause mortality during the COVID-19 pandemic in 2020, with disproportionate increases among Black, Hispanic, and Latino adults.^{1,2} In the first 6 months of the pandemic, the number of COVID-19-attributed deaths among people aged 25 to 44 years in regions with major outbreaks was similar to or exceeded the number to deaths from drug overdoses, which has been the usual lead-

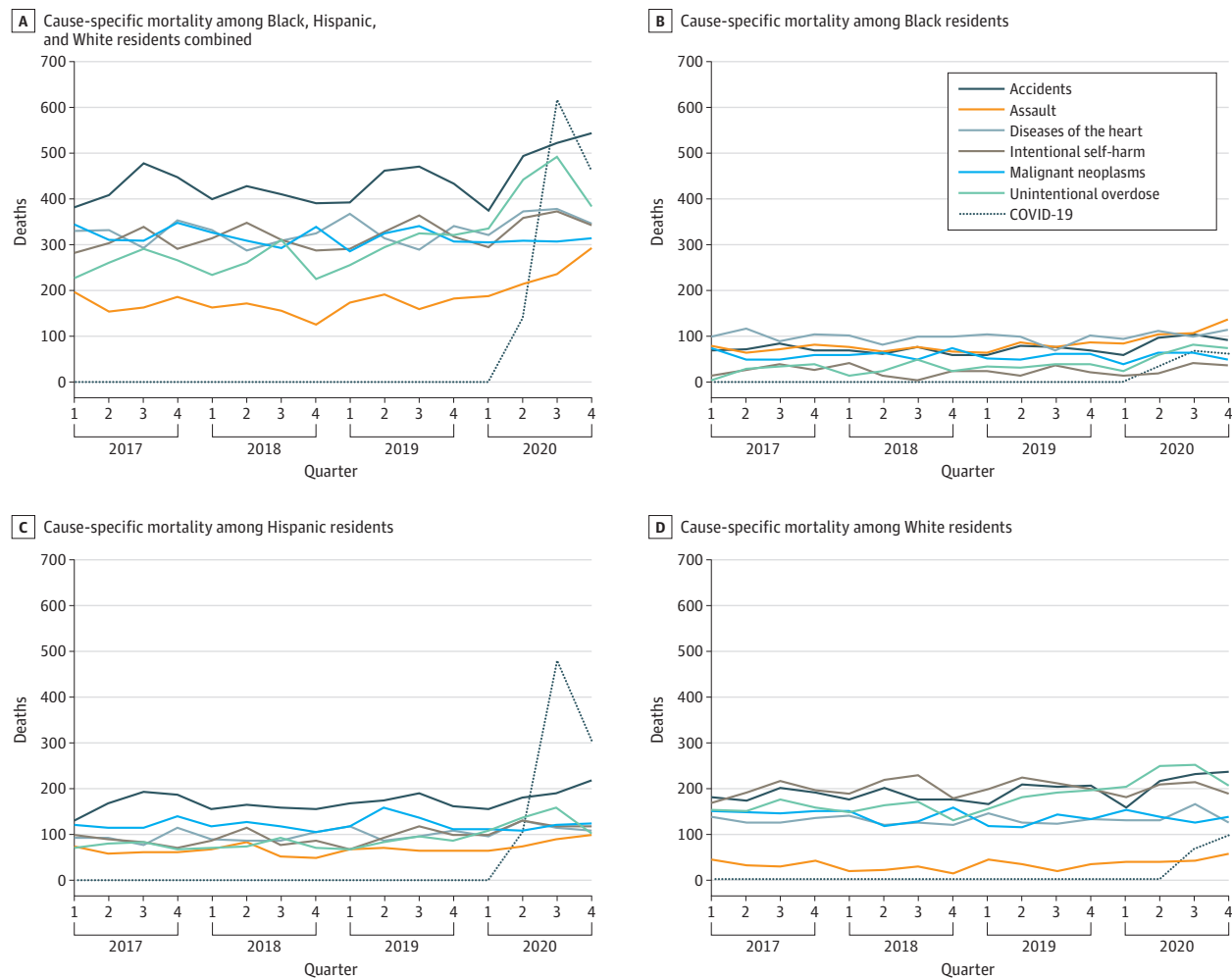


Supplemental content

ing cause of death in this age group in prior years.³ To better understand excess mortality among adults aged 25 to 44 years during the early months of the COVID-19 pandemic, we examined mortality data from Texas, a racially and ethnically diverse state.

Methods | Using records from the Texas Department of State Health Services, we obtained monthly mortality data (stratified by race and ethnicity [Hispanic, non-Hispanic Black, and non-Hispanic White]) among adults aged 25 to 44 years residing in Texas for the 6 leading causes of death (2015-2020) and COVID-19 (March-December 2020).⁴ The 6 leading causes of death were accidents (excluding unintentional overdoses), malignant neoplasms, diseases of the heart, intentional self-harm, assault (homicide), and unintentional overdoses (see eAppendix in the Supplement for

Figure. Cause-Specific Mortality Among Texas Residents Aged 25 to 44 Years, January 2017 Through December 2020



The solid lines indicate raw cause-specific death counts for usual leading causes of death from January 2017 through December 2020. The dotted dark blue lines indicate raw COVID-19-attributed death counts from March through December 2020.

Table. All-Cause Deaths, Excess Deaths, and Disease-Specific Causes of Death in Texas Residents Aged 25 to 24 Years by Race and Ethnicity, March 1 to December 31, 2020

Category	No. ^a	Incidence rate (95% CI)										
		March	April	May	June	July	August	September	October	November	December	March-December
Deaths among all races and ethnicities^b												
All cause	18 576	18 572	18 731	19 173	26 487	23 894	19 891	21 228	23 446	27 012	217 010	72.75 (72.45-73.06)
COVID-19	99	934	964	1 435	6 968	5 146	2 341	2 868	5 223	7 556	33 534	11.24 (11.12-11.36)
Aged 25-44 y												
Observed	1045	1097	1207	1272	1606	1475	1190	1214	1308	1401	12 815	15.35 (15.09-15.62)
Expected	1136	911	1140	914	915	1146	919	920	1152	923	10 076	12.07 (11.84-12.31)
Excess	-91	186	67	358	691	329	271	294	156	478	2 739	3.28 (3.16-3.41)
COVID-19	2	47	24	92	337	193	106	103	179	220	1303	1.56 (1.48-1.65)
Disease-specific cause, all races and ethnicities												
Accidents	111	124	180	189	185	198	139	198	160	186	1 670	2.00 (1.91-2.10)
Assaults	58	75	74	66	94	85	57	90	114	88	801	0.96 (0.89-1.03)
Diseases of the heart	119	116	136	121	131	135	112	118	104	124	1 216	1.46 (1.38-1.54)
Intentional self-harm	107	106	135	117	132	123	117	106	128	109	1 180	1.41 (1.33-1.50)
Malignant neoplasms	95	91	112	106	109	102	96	103	98	112	1 024	1.23 (1.15-1.30)
Unintentional overdose	130	138	154	150	165	175	151	117	124	143	1 447	1.73 (1.65-1.83)
COVID-19	3	42	21	80	331	186	101	98	164	200	1 226	1.47 (1.39-1.55)
Disease-specific cause, Black residents												
Accidents	17	25	36	35	31	34	37	46	21	23	305	2.70 (2.40-3.02)
Assaults	27	36	40	26	41	41	24	49	45	42	371	3.28 (2.95-3.63)
Diseases of the heart	30	39	38	33	32	40	27	40	38	36	353	3.12 (2.80-3.46)
Intentional self-harm	10	1	16	1	12	12	16	12	10	14	104	0.92 (0.75-1.11)
Malignant neoplasms	13	17	23	22	22	18	22	17	16	16	186	1.64 (1.42-1.90)
Unintentional overdose	13	18	19	21	22	31	27	17	30	27	225	1.99 (1.74-2.27)
COVID-19	1	16	1	14	43	12	10	13	16	34	160	1.41 (1.20-1.65)
Disease-specific cause, Hispanic residents												
Accidents	45	44	64	74	68	83	38	66	73	79	634	1.84 (1.70-1.99)
Assaults	20	24	23	28	35	22	32	24	45	30	283	0.82 (0.73-0.92)
Diseases of the heart	34	34	55	43	45	36	33	42	32	34	388	1.13 (1.02-1.24)
Intentional self-harm	38	35	53	44	42	37	39	35	45	38	406	1.18 (1.07-1.30)
Malignant neoplasms	35	33	42	35	40	40	41	42	41	43	392	1.14 (1.03-1.26)
Unintentional overdose	44	41	43	52	65	53	42	35	33	35	443	1.29 (1.17-1.41)
COVID-19	1	25	19	65	258	156	69	69	112	122	896	2.60 (2.43-2.78)
Disease-specific cause, White residents												
Accidents	49	55	80	80	86	81	64	86	66	84	731	2.30 (2.14-2.48)
Assaults	11	15	11	12	18	22	1	17	24	16	147	0.46 (0.39-0.54)
Diseases of the heart	55	43	43	45	54	59	52	36	34	54	475	1.50 (1.36-1.64)
Intentional self-harm	59	70	66	72	78	74	62	59	73	57	670	2.11 (1.95-2.28)
Malignant neoplasms	47	41	47	49	47	44	33	44	41	53	446	1.40 (1.28-1.54)
Unintentional overdose	73	79	92	77	78	91	82	65	61	81	779	2.45 (2.28-2.63)
COVID-19	1	1	1	1	30	18	22	16	36	44	170	0.54 (0.46-0.62)

^a Cells with 1 reported indicate that between 1 and 9 deaths were reported but the exact value was suppressed by the Texas Department of State Health Services. ^b Deaths for all races and ethnicities were obtained from the National Center for Health Statistics (<https://data.cdc.gov/NCHS/Provisional-COVID-19-Deaths-by-Place-of-Death-and-/4Va6-ph5s>).

diagnosis codes). To estimate 2020 population data, we used Centers for Disease Control and Prevention data for 2015 through 2019 and autoregressive integrated moving averaging as previously reported.³ We calculated incident mortality rates and corresponding 95% CIs for cause-specific mortality. For each racial and ethnic group, the cause of death with the greatest incident rate was considered the leading cause, as well as any other cause whose 95% CI overlapped with the 95% CI of the leading cause. Statistical analyses were performed in R, version 4.0.2 (R Foundation for Statistical Computing). The Texas Department of State Health Services' Center for Health Statistics, per institutional policy, exempted the study from institutional review board approval.

Results | Among Black, Hispanic, and White persons aged 25 to 44 years residing in Texas during March through December 2020, COVID-19 was the leading cause of death during the third quarter of 2020 and the second leading cause during the fourth quarter (Figure, A and Table). During July, November, and December, COVID-19 was the numeric leading cause of death in this combined group (Table). The leading cause of death for March through December 2020 was accidents (Figure, A).

Among Black individuals aged 25 to 44 years, COVID-19 was the sixth leading cause of death from March through December 2020 (Figure, B), though in July COVID-19 was numerically the leading cause of death (Table). The leading causes of death were assault, diseases of the heart, and accidents (Figure, B and Table).

Among Hispanic individuals aged 25 to 44 years, COVID-19 was the leading cause of death from March through December 2020 (Figure, C and Table) and during the third and fourth quarters of 2020. During the third quarter, more COVID-19-attributed deaths were recorded among Hispanic individuals aged 25 to 44 years than for the next 2 most-common causes combined (accidents and unintentional overdoses).

Among White individuals aged 25 to 44 years, COVID-19 was the sixth leading cause from March through December 2020 (Figure, D). The leading causes of death were unintentional overdoses and accidents (Figure, D and Table).

Discussion | Results of this cohort study demonstrated that during March through December 2020, the first 10 months of the COVID-19 pandemic in the US, COVID-19 was the second leading cause of death among Black, Hispanic, and White residents of Texas aged 25 to 44 years, and the most common cause during the third quarter of 2020, with a markedly disproportionate increase in mortality among Hispanic residents. One possible explanation may be that Hispanic persons were more likely to be essential workers and, therefore, were less able to avoid exposure to SARS-CoV-2, which has previously been linked to socioeconomic factors.^{5,6} Another possible explanation is that Hispanic residents were less likely to have access to primary care and, therefore, more likely to experience unmanaged medical comorbidities associated with worse COVID-19 outcomes. Limitations of this study include the accuracy of data from death certificates and the preliminary nature of 2020 data. Nevertheless, these findings highlight the markedly disparate effects of the COVID-19 pandemic in different populations of young adults, particularly among Hispanic residents of Texas.

Jeremy Samuel Faust, MD, MS
Alexander Junxiang Chen
Max Jordan Nguemeni Tiako, MD, MS
Chengan Du, PhD
Shu-Xia Li, PhD
Harlan M. Krumholz, MD, SM
Michael L. Barnett, MD, MS

Author Affiliations: Department of Emergency Medicine, Brigham and Women's Hospital, Boston, Massachusetts (Faust); Harvard University, Cambridge, Massachusetts (Chen); Division of General Internal Medicine and Primary Care, Department of Medicine, Brigham and Women's Hospital, Boston, Massachusetts (Nguemeni Tiako); Center for Outcomes Research and Evaluation, Yale University School of Medicine, New Haven, Connecticut (Du, Li, Krumholz); Department of Health Policy and Management, Harvard T.H. Chan School of Public Health, Boston, Massachusetts (Barnett).

Accepted for Publication: September 30, 2021.

Published Online: November 22, 2021. doi:10.1001/jamainternmed.2021.6734

Corresponding Author: Jeremy Samuel Faust, MD, MS, Department of Emergency Medicine, Brigham and Women's Hospital, 10 Vining St, Boston, MA 02115 (jsfaust@gmail.com).

Author Contributions: Dr Faust had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Faust, Nguemeni Tiako, Barnett.

Acquisition, analysis, or interpretation of data: All authors.

Drafting of the manuscript: Faust, Nguemeni Tiako.

Critical revision of the manuscript for important intellectual content: Faust, Chen, Du, Li, Krumholz, Barnett.

Statistical analysis: Faust, Nguemeni Tiako, Li, Barnett.

Administrative, technical, or material support: Chen.

Supervision: Li, Barnett.

Conflict of Interest Disclosures: Dr Krumholz reports expenses and/or personal fees from UnitedHealth, IBM Watson Health, Element Science, Aetna, Facebook, Siegfried & Jensen law firm, Arnold & Porter law firm, Martin/Baughman law firm, F-Prime Capital, and the National Center for Cardiovascular Diseases in Beijing, China; owns Refactor Health and Hugo Health; and has grants and/or contracts from the Centers for Medicare & Medicaid Services, Medtronic, the US Food and Drug Administration, Johnson & Johnson, Foundation for a Smoke-Free World, the Connecticut Department of Public Health, and the Shenzhen Center for Health Information. Dr Barnett reports being retained as an expert witness by government plaintiffs in lawsuits against opioid manufacturers. No other disclosures were reported.

Additional Contributions: We thank the Center for Health Statistics' Vital Events Data Management program of the Texas Department of State Health Services for helpfully providing data. There was no compensation for the contribution.

- Rossen LM, Branum AM, Ahmad FB, Sutton P, Anderson RN. Excess deaths associated with COVID-19, by age and race and ethnicity—United States, January 26–October 3, 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(42):1522-1527. doi:10.15585/mmwr.mm6942e2
- Simon P, Ho A, Shah MD, Shetgiri R. Trends in mortality from COVID-19 and other leading causes of death among Latino vs White individuals in Los Angeles County, 2011-2020. *JAMA.* 2021;326(10):973-974. doi:10.1001/jama.2021.11945
- Faust JS, Krumholz HM, Du C, et al. All-cause excess mortality and COVID-19-related mortality among US adults aged 25-44 years, March-July 2020. *JAMA.* 2021;325(8):785-787. doi:10.1001/jama.2020.24243
- National Center for Health Statistics. Weekly counts of deaths by jurisdiction and age. Centers for Disease Control and Prevention. Updated October 13, 2021. Accessed October 18, 2021. <https://data.cdc.gov/NCHS/Weekly-Counts-of-Deaths-by-Jurisdiction-and-Age/y5bj-9g5w>
- Chen Y-H, Glymour MM, Catalano R, et al. Excess mortality in California during the coronavirus disease 2019 pandemic, March to August 2020. *JAMA Intern Med.* 2021;181(5):705-707. doi:10.1001/jamainternmed.2020.7578
- Chen Y-H, Glymour M, Riley A, et al. Excess mortality associated with the COVID-19 pandemic among Californians 18-65 years of age, by occupational sector and occupation: March through November 2020. *PLoS One.* 2021;16(6):e0252454. doi:10.1371/journal.pone.0252454