

A Review of Mortality in Sonoma County 2020

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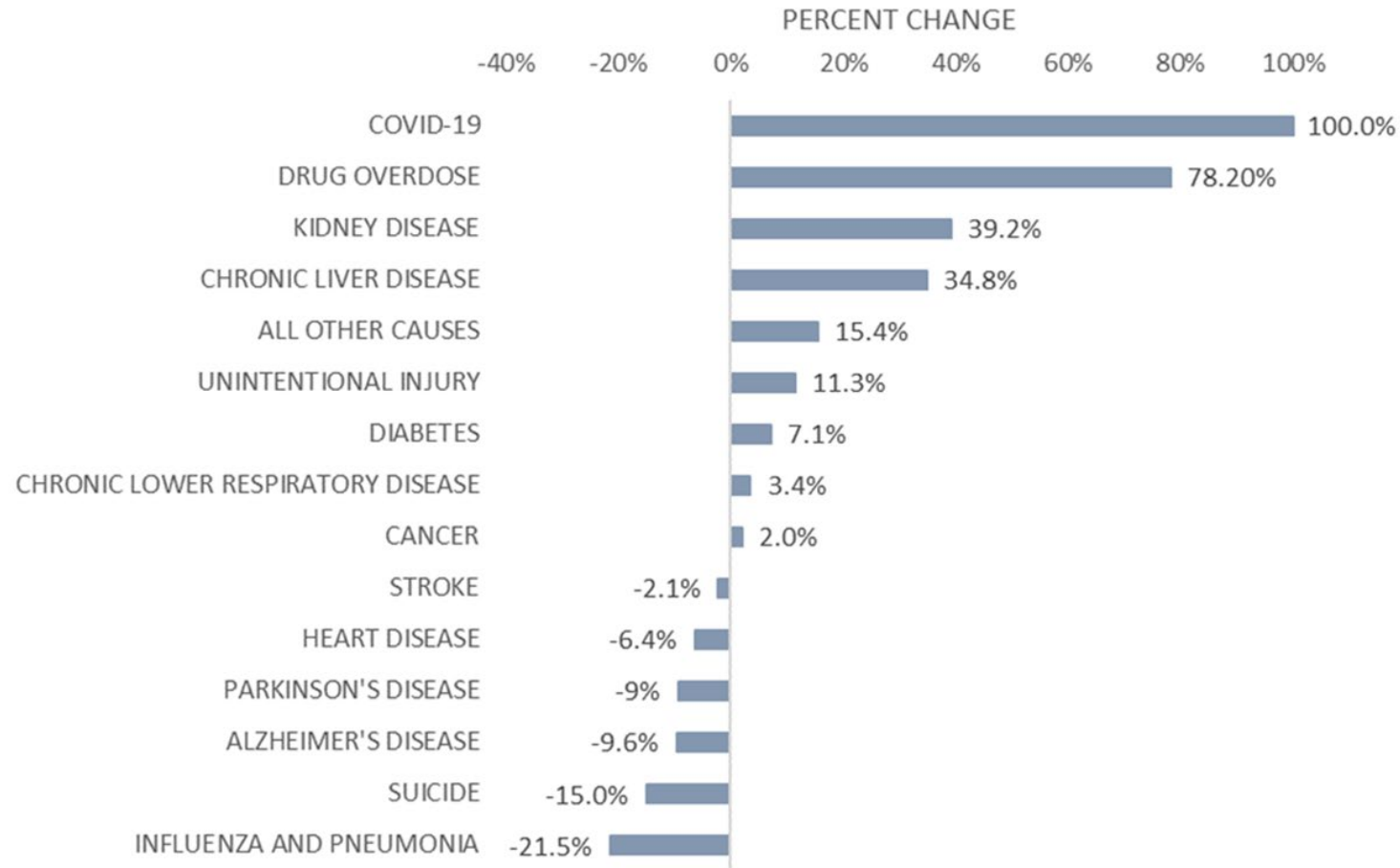
Objective

- Describe mortality in Sonoma County for 2020 compared to 2017-2019 3 year average by leading causes and population characteristics
 - Examine excess deaths – comparison of observed deaths (2020) to expected deaths (2017-2019 average)
 - Limited to Sonoma County residents

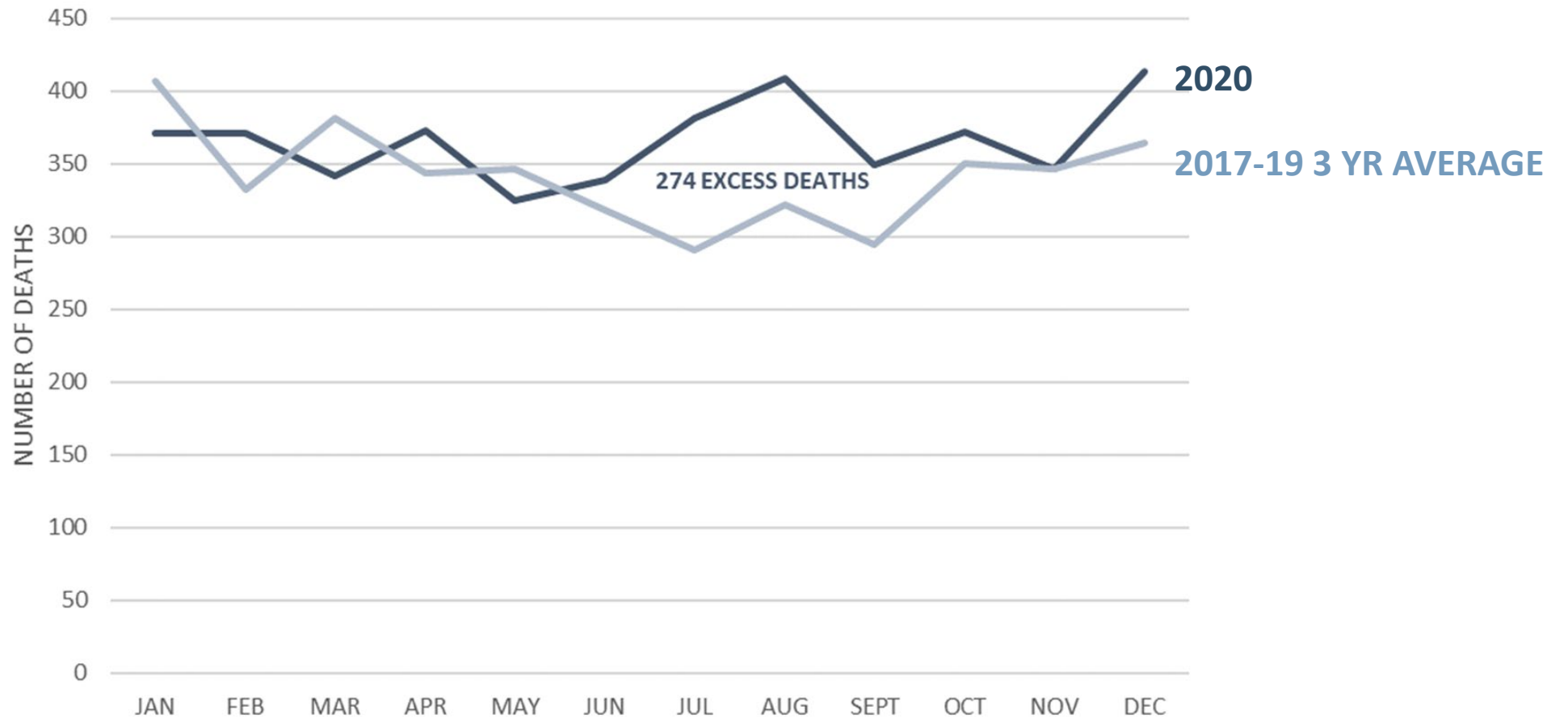
Leading Causes of Death 2017-19 and 2020*

| 2017-2019 RANK | LEADING CAUSES OF DEATH | 2020 RANK |
|-------------------|--|--------------|
| 1 | CANCER | 1 |
| 2 | HEART DISEASE | 2 |
| 3 | ALZHEIMER'S DISEASE | 3 |
| 4 | STROKE | 4 |
| 5 | UNINTENTIONAL INJURY | 5 |
| | COVID-19 | 6 |
| 6 | CHRONIC LOWER RESPIRATORY DISEASE | 7 |
| 7 | DIABETES | 8 |
| 8 | CHRONIC LIVER DISEASE | 9 |
| 9 | SUICIDE | 10 |
| 10 | INFLUENZA AND PNEUMONIA | 12 |
| 11 | PARKINSON'S DISEASE | 11 |
| 12 | KIDNEY DISEASE | 13 |
| 13 | CONGENITAL ANOMALIES AND | 14 |
| 14 | HOMICIDE | 15 |
| 15 | CONDITIONS ORIGINATING IN THE PERINATAL PERIOD | 16 |

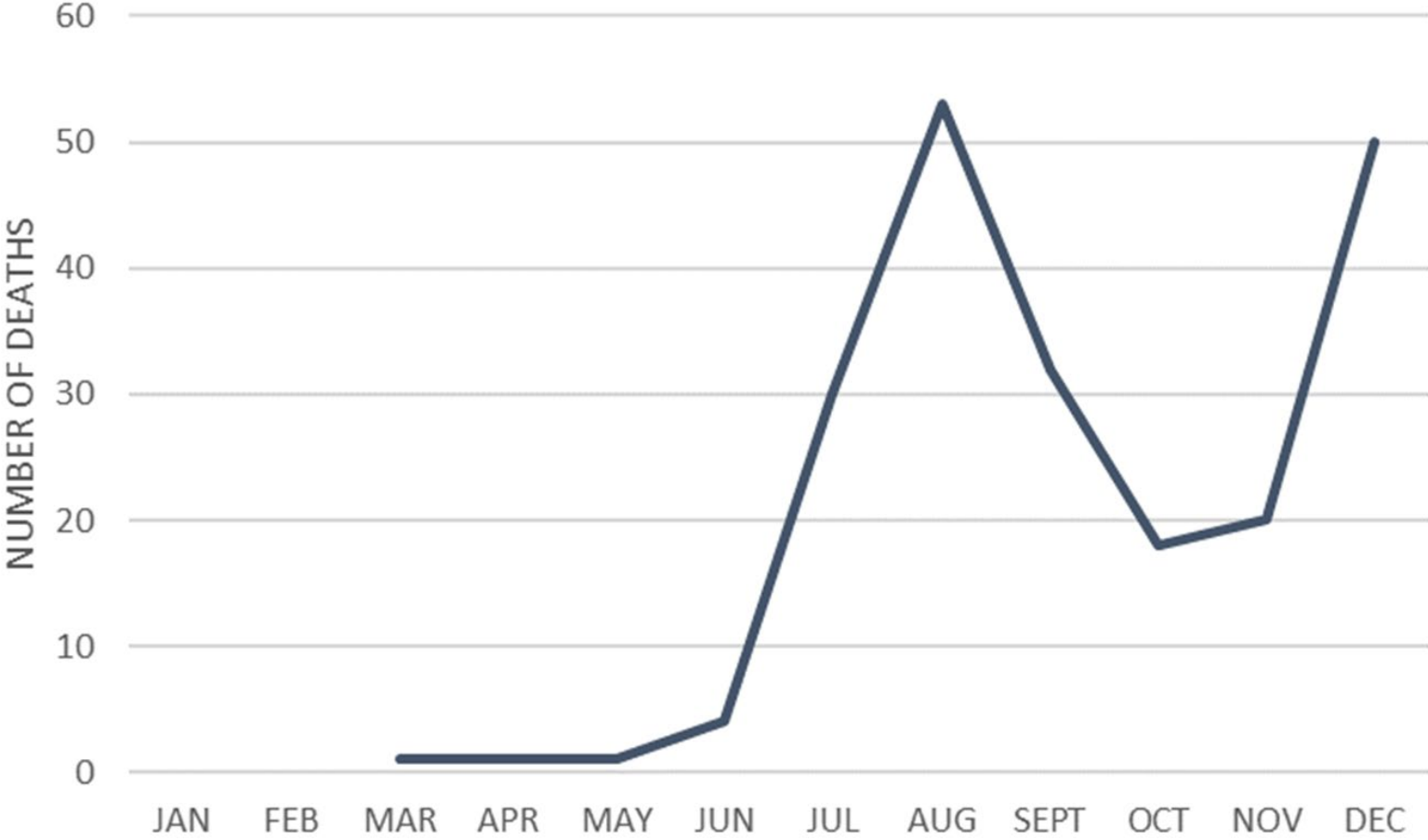
Leading Causes of Death 2017-19 and 2020



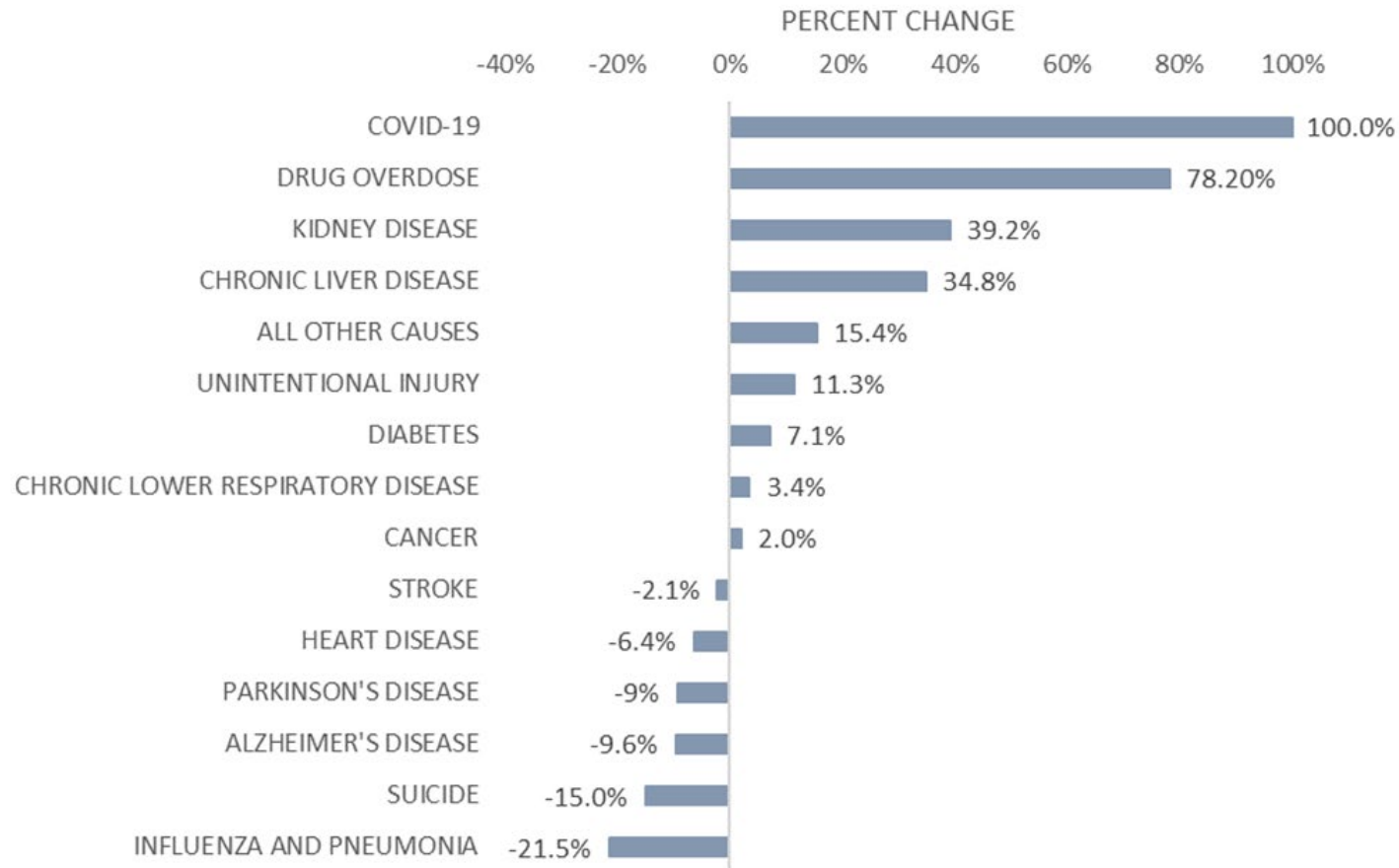
Deaths by Month 2017-2019 and 2020



COVID-19 Deaths by Month - 2020

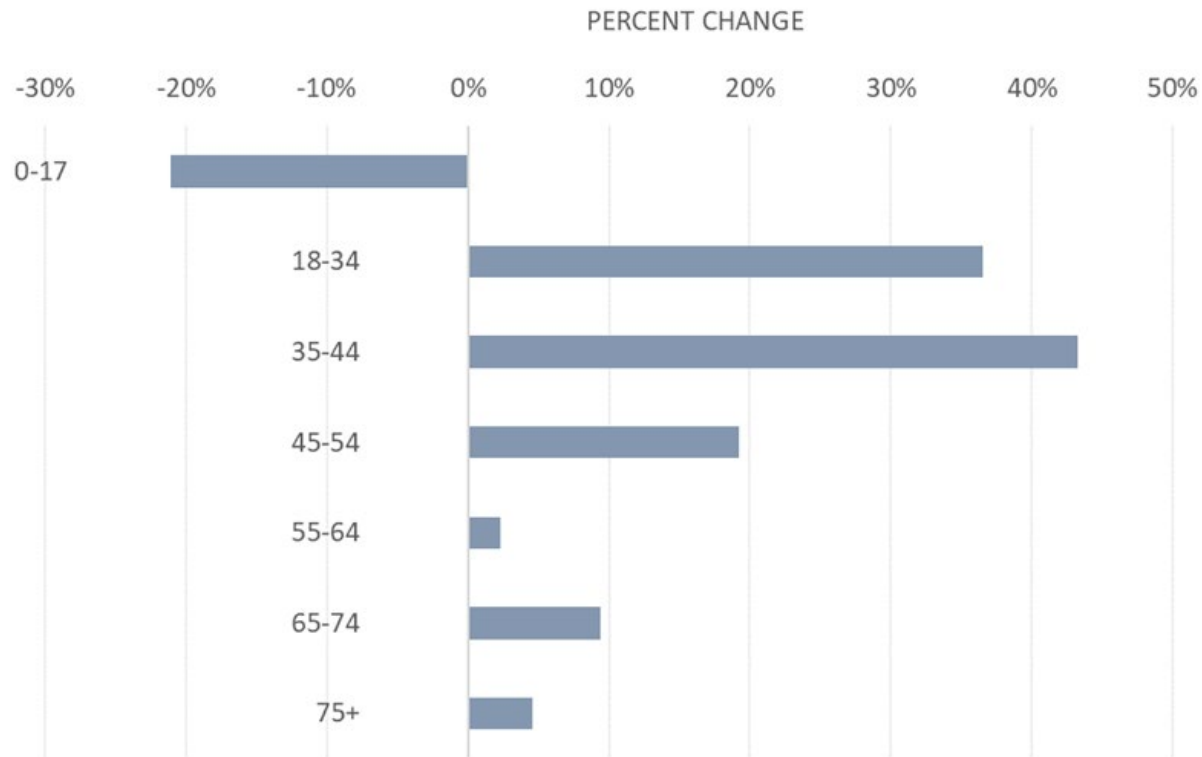


Excess Deaths by Leading Cause



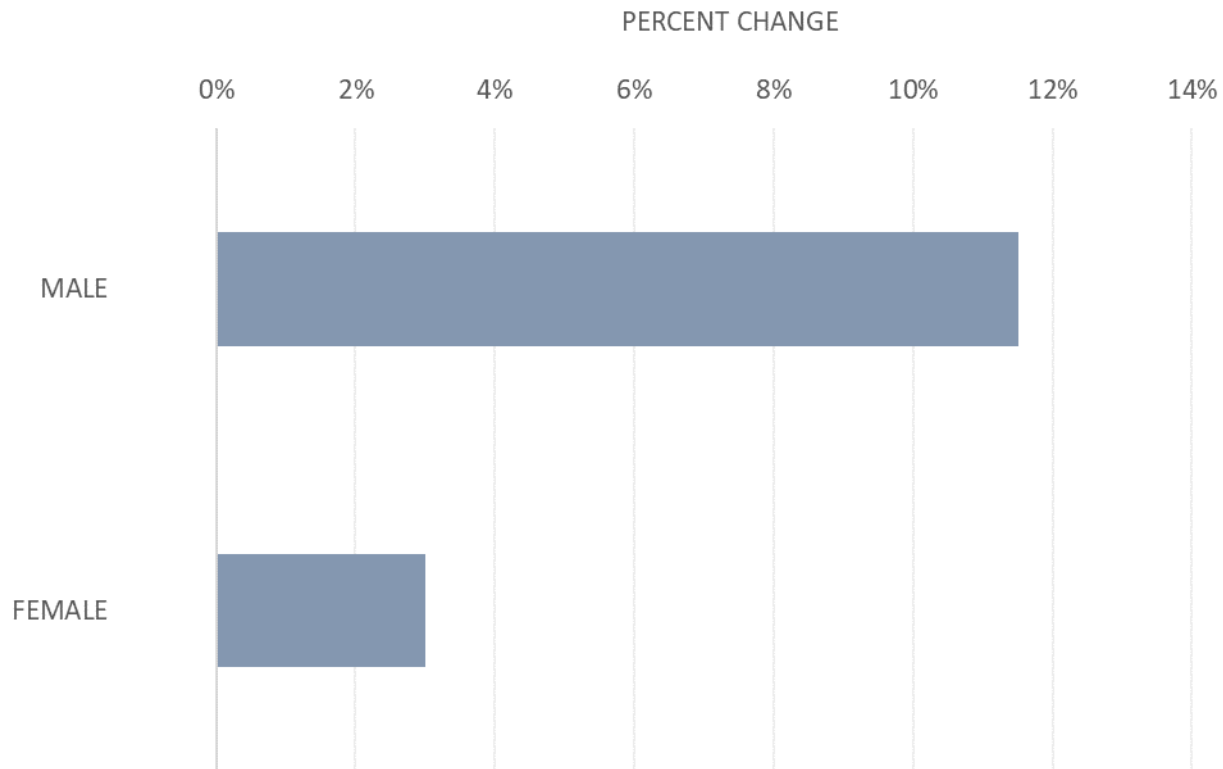
| DEATHS 2017-19 3 YR AVE | DEATHS 2020 | | SMR |
|----------------------------------|----------------|-----------------------------------|------|
| 0 | 194 | COVID-19 | |
| 80 | 142 | DRUG OVERDOSE | 1.78 |
| 32 | 45 | KIDNEY DISEASE | 1.41 |
| 59 | 80 | CHRONIC LIVER DISEASE | 1.36 |
| 876 | 1011 | ALL OTHER CAUSES | 1.15 |
| 203 | 226 | UNINTENTIONAL INJURY | 1.11 |
| 122 | 133 | DIABETES | 1.07 |
| 186 | 192 | CHRONIC LOWER RESPIRATORY DISEASE | 1.03 |
| 956 | 975 | CANCER | 1.02 |
| 248 | 243 | STROKE | 0.98 |
| 886 | 830 | HEART DISEASE | 0.94 |
| 68 | 62 | PARKINSON'S DISEASE | 0.91 |
| 282 | 255 | ALZHEIMER'S DISEASE | 0.90 |
| 75 | 64 | SUICIDE | 0.85 |
| 71 | 56 | INFLUENZA AND PNEUMONIA | 0.79 |

Excess Deaths by Age Category



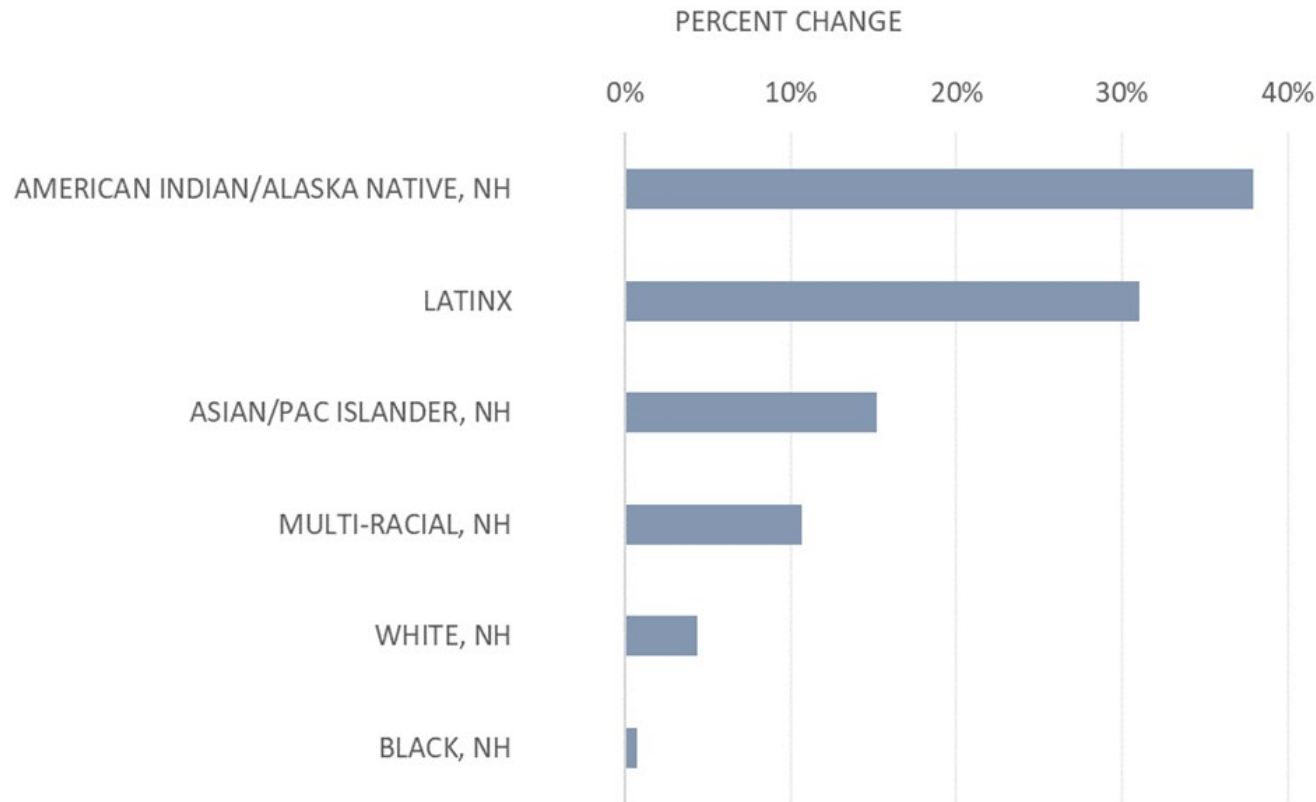
| DEATHS 2017-19 3 YR AVE | 2020 | | SMR |
|-------------------------------|------|-----------|------|
| 25 | 20 | 0-17 YRS | 0.80 |
| 85 | 116 | 18-34 YRS | 1.37 |
| 82 | 117 | 35-44 YRS | 1.43 |
| 177 | 211 | 45-54 YRS | 1.19 |
| 441 | 451 | 55-64 YRS | 1.02 |
| 788 | 862 | 65-74 YRS | 1.09 |
| 2499 | 2614 | 75+ YRS | 1.05 |

Excess Deaths by Sex



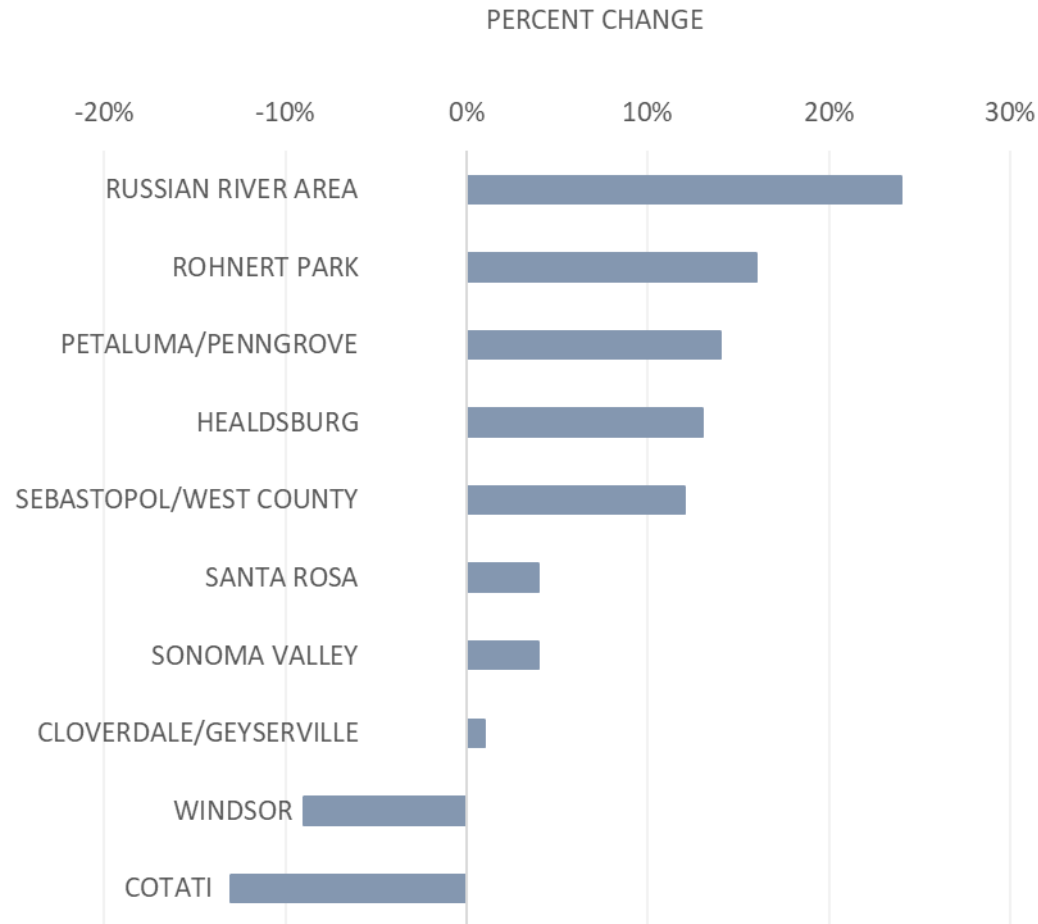
| DEATHS 2017-19 3 YR AVERAGE | DEATHS 2020 | | SMR |
|--------------------------------------|----------------|--------|------|
| 2011 | 2242 | MALE | 1.12 |
| 2086 | 2149 | FEMALE | 1.02 |

Excess Deaths by Race/Ethnicity



| DEATHS 2017-19 3 YR AVE | DEATHS 2020 | | SMR |
|-------------------------------|----------------|------------------------|------|
| 29 | 40 | AMERICAN INDIAN/AK, NH | 1.38 |
| 341 | 448 | LATINX | 1.31 |
| 109 | 126 | ASIAN/PAC ISLANDER, NH | 1.16 |
| 41 | 45 | MULTI-RACIAL, NH | 1.10 |
| 3481 | 3633 | WHITE, NH | 1.04 |
| 51 | 51 | BLACK, NH | 1.01 |

Excess Deaths by Geography



| 2017-19 3 YR AVE | 2020 | | SMR |
|------------------|------|------------------------|------|
| 129 | 159 | RUSSIAN RIVER AREA | 1.23 |
| 271 | 316 | ROHNERT PARK | 1.17 |
| 620 | 705 | PETALUMA/PENNGROVE | 1.14 |
| 136 | 153 | HEALDSBURG | 1.14 |
| 288 | 323 | SEBASTOPOL/WEST COUNTY | 1.12 |
| 1781 | 1856 | SANTA ROSA | 1.04 |
| 436 | 418 | SONOMA VALLEY | 1.04 |
| 128 | 129 | CLOVERDALE/GEYSERVILLE | 1.01 |
| 206 | 188 | WINDSOR | 0.9 |
| 60 | 52 | COTATI | 0.9 |

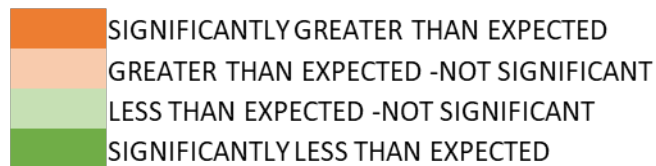
Excess Deaths –Sex and Age by Race/Ethnicity

| | WHITE, NH | LATINX | ASIAN/PI | BLACK | AMERICAN INDIAN/AK NATIVE | MULTI RACIAL |
|-----------|-----------|--------|----------|-------|---------------------------|--------------|
| FEMALE | 1.01 | 1.29 | 0.95 | 0.90 | 1.13 | 1.17 |
| MALE | 1.08 | 1.33 | 1.43 | 1.07 | 1.69 | 1.04 |
| 0-17 YRS | 0.81 | 0.90 | 1.00 | - | - | 0.67 |
| 18-34 YRS | 1.28 | 1.59 | 1.00 | 2.00 | 1.00 | 1.00 |
| 35-44 YRS | 1.35 | 1.55 | 2.00 | 2.00 | 3.00 | 1.67 |
| 45-54 YRS | 1.04 | 1.37 | 1.80 | 1.20 | 2.00 | 1.33 |
| 55-64 YRS | 0.98 | 1.38 | 0.75 | 1.30 | 1.20 | 1.20 |
| 65-74 YRS | 1.07 | 1.28 | 0.76 | 1.13 | 1.67 | 1.30 |
| 75+ YRS | 1.03 | 1.23 | 1.31 | 0.74 | 1.17 | 0.85 |

- SIGNIFICANTLY GREATER THAN EXPECTED
- GREATER THAN EXPECTED -NOT SIGNIFICANT
- LESS THAN EXPECTED -NOT SIGNIFICANT
- SIGNIFICANTLY LESS THAN EXPECTED

Excess Deaths –Underlying Cause by Sex and Age

| | MALE | FEMALE | 0-17 YRS | 18-34 YRS | 35-44 YRS | 45-54 YRS | 55-64 YRS | 65-74 YRS | 75+ YRS |
|-----------------------------------|------|--------|----------|-----------|-----------|-----------|-----------|-----------|---------|
| KIDNEY DISEASE | 1.00 | 1.92 | - | 2.00 | 2.00 | - | 2.00 | 1.13 | 1.40 |
| CHRONIC LIVER DISEASE | 1.13 | 1.68 | - | 5.00 | 2.75 | 1.40 | 1.12 | 1.00 | 1.30 |
| ALL OTHER CAUSES | 1.15 | 1.16 | 1.20 | 1.31 | 1.54 | 1.00 | 1.14 | 1.16 | 1.15 |
| UNINTENTIONAL INJURY | 1.26 | 0.86 | 1.00 | 1.40 | 1.79 | 1.30 | 1.24 | 0.57 | 0.71 |
| DIABETES | 1.01 | 1.16 | - | 3.00 | 1.33 | 1.13 | 1.69 | 0.75 | 1.03 |
| CHRONIC LOWER RESPIRATORY DISEASE | 0.99 | 1.08 | - | 2.00 | - | 0.67 | 0.47 | 0.96 | 1.15 |
| CANCER | 1.11 | 0.94 | 0.67 | 1.00 | 1.33 | 1.07 | 0.92 | 1.07 | 1.10 |
| STROKE | 1.22 | 0.84 | - | 2.00 | 0.67 | 1.17 | 1.00 | 1.18 | 0.94 |
| HEART DISEASE | 0.99 | 0.88 | 2.00 | 0.75 | 1.00 | 1.21 | 0.84 | 0.95 | 0.93 |
| PARKINSON'S DISEASE | 0.98 | 0.78 | - | - | - | - | - | 2.00 | 0.79 |
| ALZHEIMER'S DISEASE | 0.90 | 0.91 | - | - | - | - | 1.50 | 1.31 | 0.88 |
| SUICIDE | 0.80 | 1.00 | - | 1.00 | 0.73 | 1.00 | 0.50 | 1.33 | 0.75 |
| INFLUENZA AND PNEUMONIA | 0.88 | 0.70 | 2.00 | 2.00 | 2.00 | 2.00 | 1.43 | 0.60 | 0.65 |
| DRUG OVERDOSE | 1.90 | 1.63 | 2.00 | 1.91 | 2.13 | 1.42 | 1.83 | 1.44 | 2.00 |



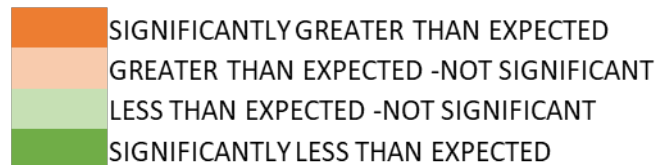
Excess Deaths –Underlying Cause by Race/Ethnicity

| | WHITE, NH | LATINX | ASIAN/PI | BLACK | AMERICAN INDIAN/AK NATIVE | MULTI RACIAL |
|-----------------------------------|-----------|--------|----------|-------|---------------------------|--------------|
| KIDNEY DISEASE | 1.38 | 2.25 | 0.67 | - | 1.00 | - |
| CHRONIC LIVER DISEASE | 1.27 | 1.27 | 1.00 | 2.00 | 3.00 | 2.00 |
| ALL OTHER CAUSES | 1.13 | 1.22 | 1.70 | 0.77 | 2.67 | 1.33 |
| UNINTENTIONAL INJURY | 1.06 | 1.95 | 1.20 | 3.00 | 0.67 | 1.00 |
| DIABETES | 1.04 | 1.18 | 0.67 | 2.00 | 0.75 | 0.50 |
| CHRONIC LOWER RESPIRATORY DISEASE | 1.01 | 1.75 | 0.75 | 0.67 | 2.00 | 1.00 |
| CANCER | 1.02 | 1.01 | 0.88 | 2.00 | 0.50 | 1.00 |
| STROKE | 0.97 | 1.05 | 1.00 | 1.67 | 0.25 | 1.33 |
| HEART DISEASE | 0.94 | 0.94 | 1.10 | 0.53 | 1.83 | 1.33 |
| PARKINSON'S DISEASE | 0.89 | 1.50 | 1.00 | - | - | - |
| ALZHEIMER'S DISEASE | 0.91 | 1.05 | 0.17 | 0.33 | - | 2.00 |
| SUICIDE | 0.78 | 1.75 | 0.67 | - | - | 0.50 |
| INFLUENZA AND PNEUMONIA | 0.75 | 1.25 | - | 1.00 | 1.00 | 1.00 |
| DRUG OVERDOSE | 1.58 | 2.75 | 2.00 | 5.00 | 2.00 | 1.67 |

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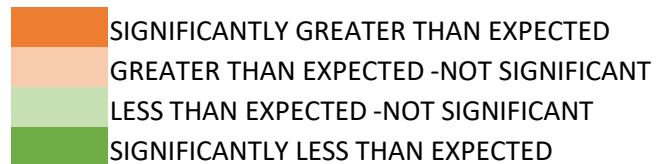
Excess Deaths –Sex and Age by Geography

| | CLOVERDALE/ GEYSERVILLE | COTATI | HEALDSBURG | PETALUMA/ PENNGROVE | ROHNERT PARK | RUSSIAN RIVER AREA | SANTA ROSA | SEBASTOPOL/ WEST COUNTY | SONOMA VALLEY | WINDSOR |
|-----------|----------------------------|--------|------------|------------------------|-----------------|-----------------------|------------|-------------------------------|------------------|---------|
| FEMALE | 1.2 | 0.9 | 1.2 | 1.1 | 1.1 | 1.5 | 1.0 | 1.1 | 1.1 | 0.7 |
| MALE | 0.9 | 0.8 | 1.1 | 1.9 | 1.3 | 1.5 | 1.1 | 1.2 | 1.0 | 1.1 |
| 0-17 YRS | - | 1.0 | - | 1.0 | 1.3 | 2.0 | 0.3 | 1.0 | 0.5 | 1.0 |
| 18-34 YRS | 0.3 | 1.0 | 0.7 | 0.5 | 2.8 | 1.0 | 1.6 | 2.0 | 0.7 | 4.0 |
| 35-44 YRS | - | 4.0 | 2.0 | 1.4 | 2.0 | 0.8 | 1.3 | 1.3 | 3.0 | 0.8 |
| 45-54 YRS | 1.3 | 0.3 | 2.0 | 1.5 | 1.1 | 1.0 | 1.4 | 0.7 | 0.9 | 0.8 |
| 55-64 YRS | 0.9 | 0.9 | 0.7 | 1.1 | 1.0 | 1.5 | 1.0 | 1.0 | 0.9 | 1.1 |
| 65-74 YRS | 0.8 | 0.7 | 1.1 | 1.2 | 1.3 | 1.1 | 1.1 | 1.3 | 1.0 | 0.9 |
| 75+ YRS | 1.2 | 0.9 | 1.2 | 1.1 | 1.0 | 1.3 | 1.0 | 1.1 | 1.1 | 0.8 |



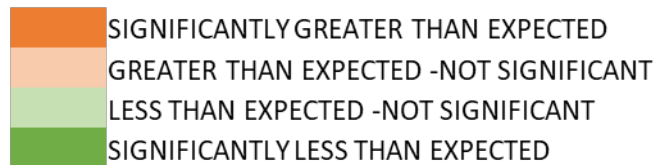
Excess Deaths –Race/Ethnicity by Geography

| | CLOVERDALE/ GEYSERVILLE | COTATI | HEALDSBURG | PETALUMA/ PENNGROVE | ROHNERT PARK | RUSSIAN RIVER AREA | SANTA ROSA | SEBASTOPOL/ WEST COUNTY | SONOMA VALLEY | WINDSOR |
|---------------------------|----------------------------|--------|------------|------------------------|-----------------|-----------------------|------------|-------------------------------|------------------|---------|
| WHITE, NH | 1.0 | 0.8 | 1.1 | 1.1 | 1.1 | 1.2 | 1.0 | 1.1 | 1.0 | 0.9 |
| LATINX | 1.1 | 1.4 | 1.2 | 1.4 | 1.1 | 1.1 | 1.3 | 1.3 | 1.6 | 1.0 |
| ASIAN/PI | 0.5 | 0.3 | 4.0 | 1.2 | 1.1 | 1.0 | 1.3 | 0.8 | 0.7 | 3.0 |
| BLACK | - | 2.0 | - | 1.0 | 1.0 | 3.0 | 0.9 | 1.5 | 0.5 | 1.0 |
| AMERICAN INDIAN/AK NATIVE | 1.0 | - | 2.0 | 4.0 | 0.5 | 2.0 | 1.1 | 3.0 | 1.0 | 0.7 |
| MULTI RACIAL | - | 1.0 | 1.0 | 0.7 | 1.7 | 0.5 | 1.3 | 1.0 | - | 3.0 |



Excess Deaths –Underlying Cause by Geography

| | CLOVERDALE/ GEYSERVILLE | COTATI | HEALDSBURG | PETALUMA/ PENNGROVE | ROHNERT PARK | RUSSIAN RIVER AREA | SANTA ROSA | SEBASTOPOL/ WEST COUNTY | SONOMA VALLEY | WINDSOR |
|-----------------------------------|----------------------------|--------|------------|------------------------|-----------------|-----------------------|------------|-------------------------------|------------------|---------|
| KIDNEY DISEASE | 2.0 | - | 2.0 | 2.7 | 2.5 | 2.0 | 1.3 | - | 1.0 | 1.0 |
| CHRONIC LIVER DISEASE | 1.0 | - | 2.0 | 1.2 | 2.0 | 2.0 | 1.5 | 0.8 | 0.5 | 1.7 |
| ALL OTHER CAUSES | 1.4 | 1.2 | 1.4 | 1.1 | 1.0 | 0.9 | 1.2 | 1.4 | 1.2 | 0.9 |
| UNINTENTIONAL INJURY | 0.2 | 1.3 | 0.6 | 1.0 | 1.9 | 0.9 | 1.1 | 1.2 | 1.2 | 0.9 |
| DIABETES | 1.3 | 0.5 | 0.7 | 1.7 | 1.2 | 2.3 | 0.9 | 0.9 | 1.3 | 0.6 |
| CHRONIC LOWER RESPIRATORY DISEASE | 0.8 | 1.3 | 1.4 | 0.8 | 0.9 | 1.5 | 0.9 | 1.4 | 0.9 | 1.4 |
| CANCER | 1.2 | 0.5 | 1.1 | 1.0 | 1.2 | 1.1 | 1.0 | 1.1 | 0.9 | 0.8 |
| STROKE | 0.4 | 0.3 | 0.5 | 0.9 | 1.5 | 2.8 | 1.0 | 0.9 | 0.9 | 0.6 |
| HEART DISEASE | 0.7 | 0.6 | 1.0 | 1.1 | 1.3 | 1.0 | 0.9 | 1.1 | 0.9 | 0.8 |
| PARKINSON'S DISEASE | 1.5 | - | 1.0 | 0.9 | 2.0 | 0.5 | 0.9 | 1.3 | 0.8 | - |
| ALZHEIMER'S DISEASE | 0.8 | - | 0.7 | 1.2 | 0.6 | 1.8 | 0.8 | 0.8 | 0.9 | 0.9 |
| SUICIDE | 0.5 | 0.5 | 1.0 | 0.9 | 0.5 | 0.5 | 0.9 | 0.8 | 0.8 | 1.2 |
| INFLUENZA AND PNEUMONIA | 2.0 | 3.0 | - | 1.0 | 1.8 | 0.8 | 0.7 | 0.8 | 0.5 | 0.3 |
| DRUG OVERDOSE | 0.7 | 0.7 | 2.0 | 1.1 | 3.3 | 1.5 | 1.7 | 1.5 | 3.7 | 2.0 |



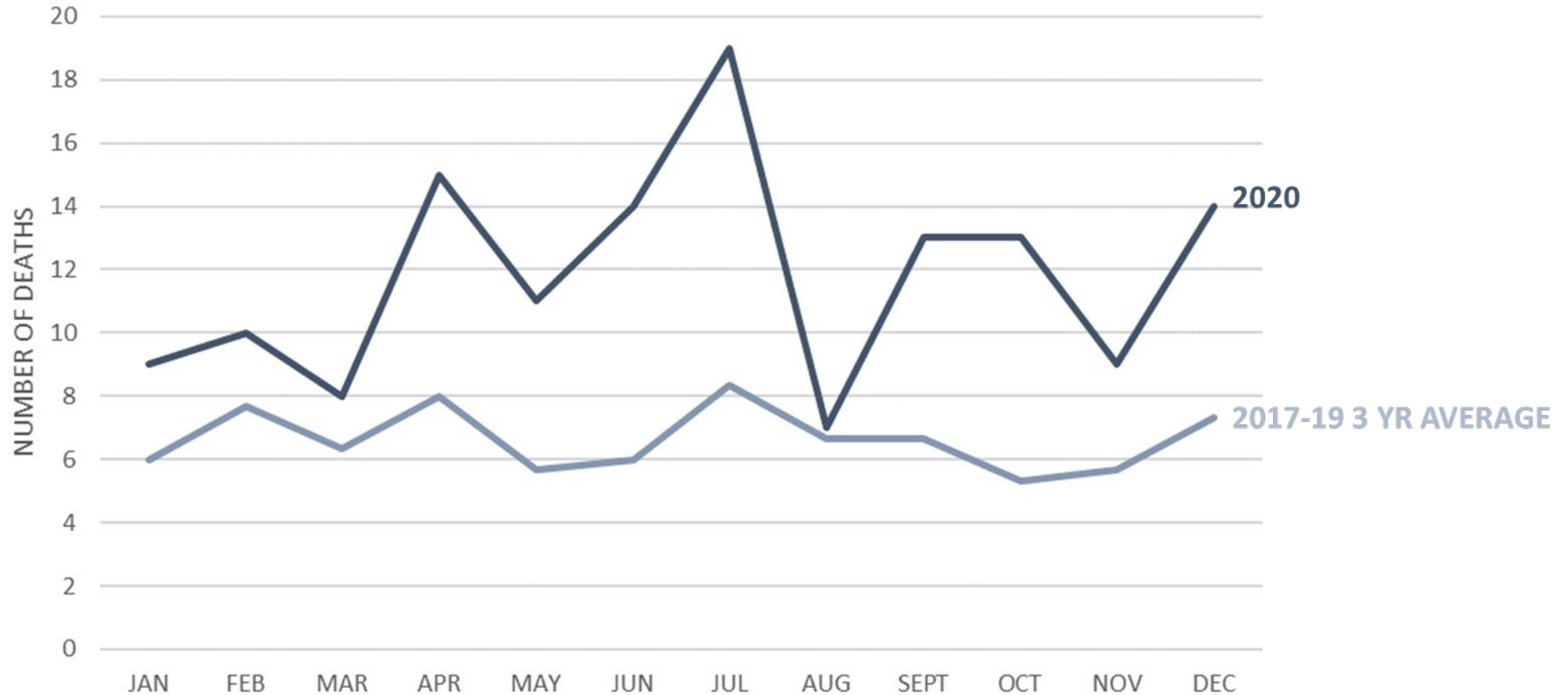
Excess Deaths – By Underlying Cause

Unintentional Injury

- Unintentional injuries excluding drug overdoses
 - Significant less deaths than would be expected (SRM=.68)
 - Not significantly less than expected for MVA or falls overall but for some subgroups

| | MALE | FEMALE | 0-17 YRS | 18-34 YRS | 35-44 YRS | 45-54 YRS | 55-64 YRS | 65-74 YRS | 75+ YRS |
|--|------|--------|----------|-----------|-----------|-----------|-----------|-----------|---------|
| UNINTENTIONAL INJURY EXC DRUG OVERDOSE | 0.83 | 0.43 | 0.50 | 0.72 | 1.20 | 0.93 | 0.63 | 0.30 | 0.67 |
| MOTOR VEHICLE COLLISIONS | 0.88 | 0.31 | - | 0.92 | 1.00 | 0.71 | 0.86 | 0.22 | 0.40 |
| FALLS | 0.87 | 0.47 | - | - | 2.00 | 4.00 | 1.00 | 0.20 | 0.66 |

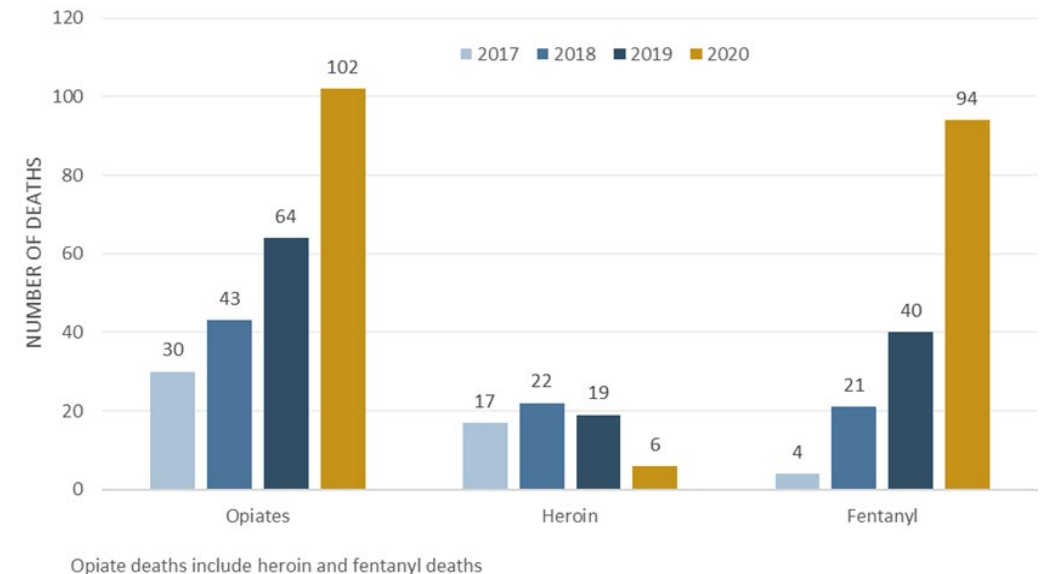
Drug Overdose Deaths by Month



Excess Deaths—Drug Overdose

- Greater than expected increase for unintentional drug overdoses
- Increase in deaths due to fentanyl
- Fentanyl involved in 92% of all opiate overdose deaths

| DEATHS 2017-19 3 YR AVERAGE | DEATHS 2020 | | SMR |
|-----------------------------------|----------------|---------------|------|
| 69 | 135 | UNINTENTIONAL | 1.96 |
| 12 | 9 | INTENTIONAL | 0.67 |
| 1 | 1 | OTHER | 1.00 |





Excess Deaths – All Other Causes

Other causes of death

- “Other” causes with > 5 excess deaths
- Other ill defined typically get re-assigned after review

| | EXCESS DEATHS | SMR |
|---|---------------|------------|
| MENTAL AND BEHAVIOR DISORDER | 51 | 1.3 |
| VASCULAR DEMENTIA, UNSPEC | 30 | 1.6 |
| UNSPEC, DEMENTIA | 11 | 1.1 |
| ALCOHOL DEPENDENCE SYNDROME | 10 | 1.8 |
| DISEASES OF NERVOUS SYSTEM | 23 | 1.1 |
| OTHER ILL DEFINED AND UNSPEC CAUSES | 20 | 3.2 |
| HYPERLIPIDEMIA UNSPEC | 13 | 1.6 |
| OTHER SEPTICEMIA | 11 | 1.4 |
| UNSPEC SEVERE PROTEIN MALNUTRITION | 10 | 2.4 |
| PERIPHERAL VASCULAR DISEASE UNSPEC | 9 | 2.5 |
| INTERSTITIAL PULMONARY DISEASE, UNSPEC | 7 | 1.4 |
| PHLEBITIS AND THROMBO OF OTHER DEEP VESSELS LOW EXT | 6 | 2.2 |
| OBESITY, UNSPECIFIED | 6 | 2.5 |

 SIGNIFICANTLY GREATER THAN EXPECTED
 GREATER THAN EXPECTED -NOT SIGNIFICANT

Questions