Mortality in a Multi-State Cohort of Former State Prisoners, 2010-2015

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Background

- For those who are in prison, mortality rates are consistently lower than groups with similar characteristics in the resident population
- In contrast, formerly imprisoned individuals tend to have higher mortality rates than their demographic counterparts
- Most studies on mortality risk for the formerly incarcerated focus on one state
- We used data from 35 states to explore the factors associated with the probability of dying within 5 years of prison release
- Results Preview:
  - Mortality rates for this sample are higher than the general population, though they vary widely by race, Hispanic origin, and other demographics
  - Risk of death is highest for former prisoners in the first month of release

Data

- 2010 National Corrections Reporting Program (NCRP) cohort of released state prisoners from 35 states

- NCRP data includes some demographic information, as well as data on sentence and release characteristics

- About 84 percent of 2010 NCRP release cohort had a unique Protected Identification Key (PIK) assigned for record linkage

- The NCRP was linked to:
  - The 2019 Census Numident to identify deaths between 2010 and 2015, within 5 years of a person's release
  - Previous decennial censuses and survey responses to obtain self-reported race and Hispanic origin

Select Descriptive Statistics

Characteristics	With PIK (no duplicates)	Pct of Total	PIK rate
Total	478,000	100.0	84.0
Hispanic origin and race			
Non-Hispanic white	204,000	42.7	87.8
Non-Hispanic black	179,000	37.5	83.9
Non-Hispanic all others	18,000	3.8	93.2
Hispanic	76,000	15.9	73.7
Missing	1,100	0.2	60.0
Age at release[1]			
Less than 25 years	82,500	17.3	85.0
25-34 years	173,000	36.2	84.3
35-44 years	120,000	25.1	84.2
45-54 years	80,500	16.8	83.5
55-64 years	19,000	4.0	80.0
65 years and older	3,000	0.6	79.5
Missing	(D)	(D)	(D)
Sex			
Male	421,000	88.1	83.9
Female	57,000	11.9	83.8
Missing	<15	(D)	(D)

Characteristics	With PIK (no duplicates)	Pct of Total	PIK rate
Education reported in NCRP			
Less than high school	142,000	29.7	83.9
High school or GED	119,000	24.9	86.0
Some college	16,500	3.5	89.5
College or higher	2,700	0.6	87.5
Missing	198,000	41.4	82.3
Time served[2]			
Less than 1 year	271,000	56.7	82.4
1-1.9 years	96,000	20.1	87.6
2-2.9 years	42,500	8.9	85.3
3-4.9 years	35,000	7.3	85.7
5-6.9 years	13,000	2.7	83.9
7-9.9 years	9,600	2.0	85.2
10 or more years	11,500	2.4	85.2
Release type[3]			
Conditional	311,000	65.1	84.2
Unconditional	145,000	30.3	82.6
Missing	22,000	4.6	85.7

Table approved for release by the Census Bureau's Disclosure Review Board, CBDRB-FY21-123 and CBDRB-FY21-CES010-011.

Source: 1983-2016 National Corrections Reporting Program, 2019 Census Numident, and Previous Census Data.

Note: All counts are rounded to be in compliance with the Census Bureau's disclosure avoidance policies.

[1] Age at release was calculated using date of birth and release date.

[2] Persons who died in prison, were transferred, or escaped from prison were removed from analyses.
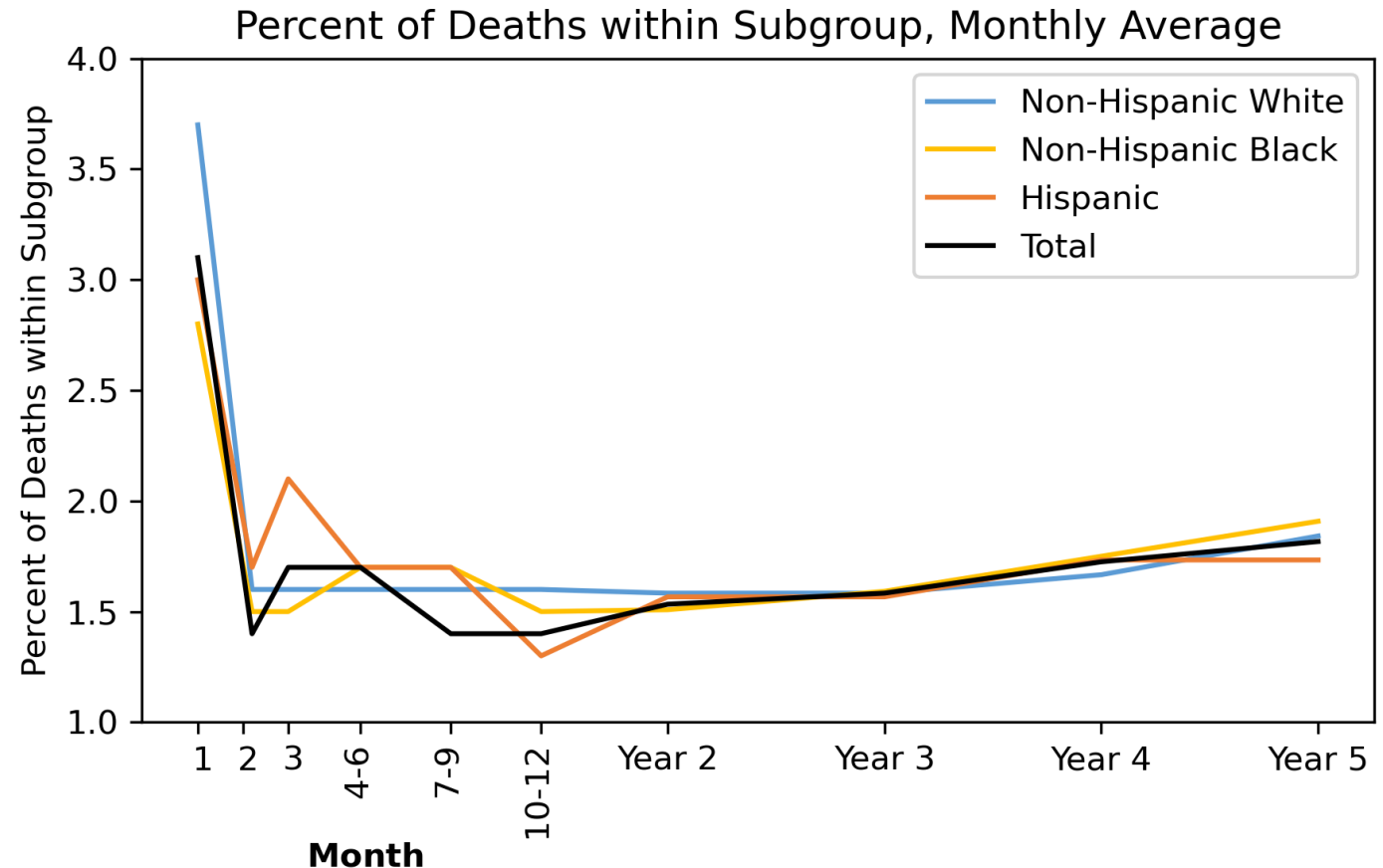
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Summary of Deaths within 5 years of Release

- About 4 percent of 2010 releasees died within five years

- The mortality rate is highest for non-Hispanic whites and lowest for non-Hispanic blacks

- The mortality rate increases with the age at release

- The mortality rate is similar across sexes

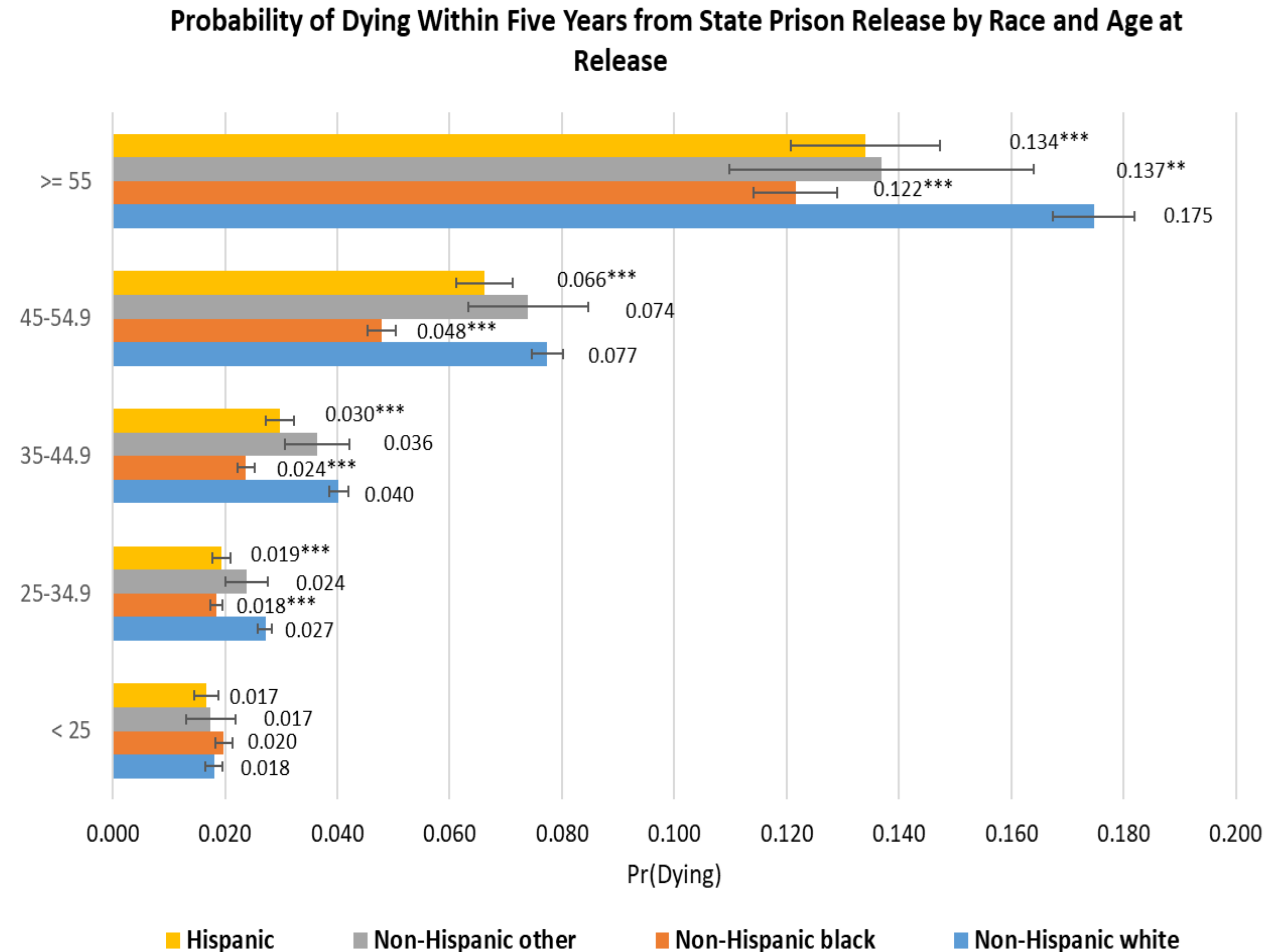| Characteristics	Number released in 2010 (with PIK, no duplicates)	Percent deceased within 5 years of release
	A	B
Total	478,000	3.8
Hispanic origin and race		
Non-Hispanic white	204,000	4.7
Non-Hispanic black	179,000	3.0
Non-Hispanic all other	18,000	3.6
Hispanic	76,000	3.2
Missing	1,100	3.6
Age at release[1]		
Less than 25 years	82,500	1.8
25-34 years	173,000	2.3
35-44 years	120,000	3.3
45-54 years	80,500	6.6
55-64 years	19,000	13.7
65 years and older	3,000	23.3
Missing	(D)	0.0
Sex		
Male	421,000	3.8
Female	57,000	3.5
Missing	<15	0.0

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Timing of Deaths

- Across all subgroups, deaths are highly elevated during the first month after release
- This spike is especially prominent for non-Hispanic whites
- Deaths even out in the second month and remain steady throughout the rest of the sample. Deaths tick upwards near the end of the time period.

Percent of Deaths within Subgroup, Monthly Average

Approved for release by the Census Bureau's Disclosure Review Board, CBDRB-FY21-123 and CBDRB-FY21-CES010-011.
Source: 1983-2016 National Corrections Reporting Program, 2019 Census Numident, and Previous Census Data.
Note: All counts are rounded to be in compliance with the Census Bureau's disclosure avoidance policies.

Age and Race

- For all races/Hispanic origin, individuals released at older ages were more likely to die within 5 years compared to their younger counterparts.

- After age 25, non-Hispanic whites were more likely to die within 5 years of prison release than individuals of any other race/Hispanic origin in the same age group, though the difference is not significant for the non-Hispanic other grouping.

Probability of Dying Within Five Years from State Prison Release by Race and Age at Release

Age	Hispanic	Non-Hispanic other	Non-Hispanic black	Non-Hispanic white
>= 55	0.134***	0.137**	0.122***	0.175
45-54.9	0.066***	0.074	0.048***	0.077
35-44.9	0.030***	0.036	0.024***	0.040
25-34.9	0.019***	0.024	0.018***	0.027
< 25	0.017	0.017	0.020	0.018

Pr(Dying)

Legend: Hispanic · Non-Hispanic other · Non-Hispanic black · Non-Hispanic white

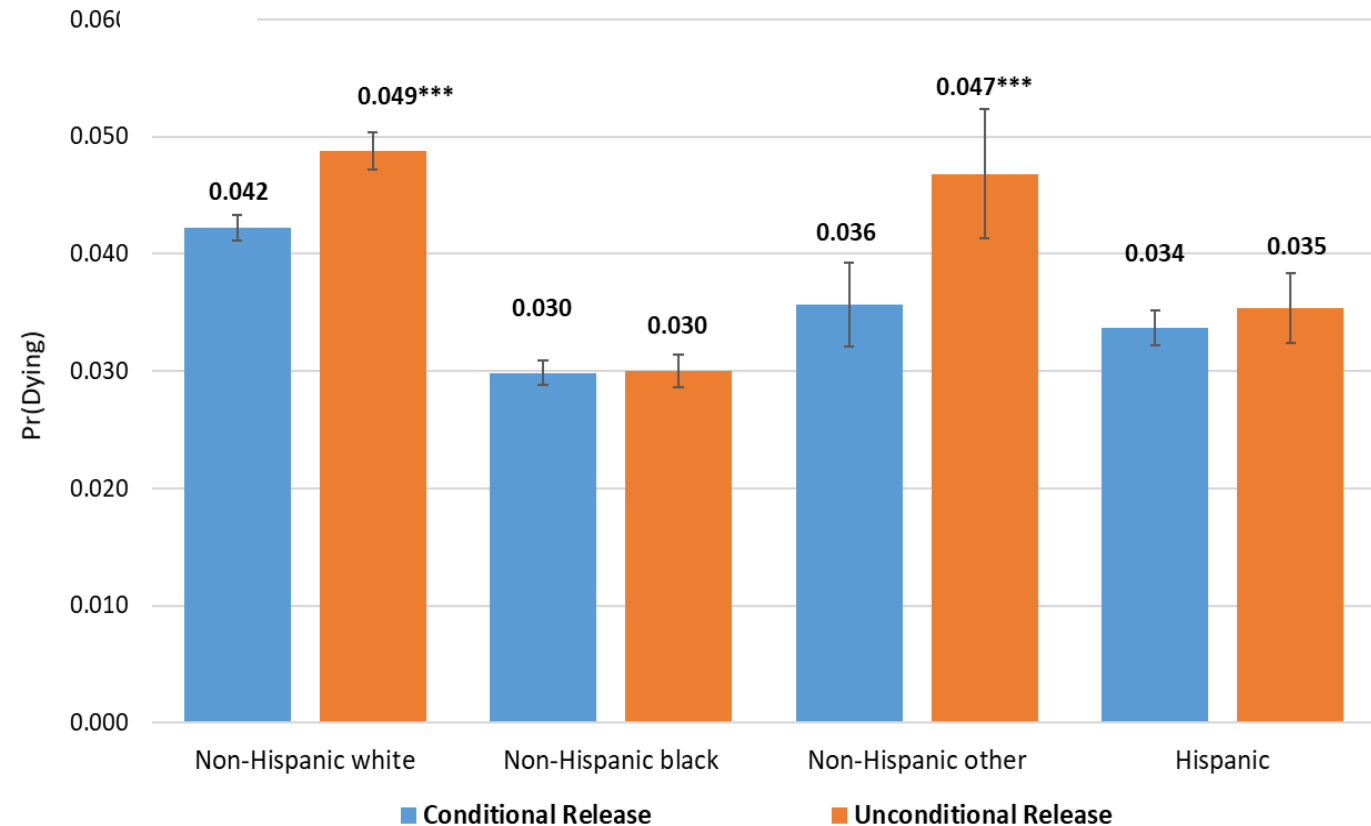Approved for release by the Census Bureau's Disclosure Review Board, CBDRB-FY21-123.
Source: 1983-2016 National Corrections Reporting Program, 2019 Census Numident, and Previous Census Data.
Asterisks indicate significant difference in comparison to non-Hispanic white in the same age group *p<.05, **p<.01, ***p<.001

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Conditional Release and Race

- For non-Hispanic whites and the non-Hispanic other grouping, conditional release was associated with lower mortality within 5 years of prison release.

- Type of release was not a significant factor in the probability of dying for non-Hispanic blacks and Hispanics.

Figure 3. Probability of Dying Within Five Years From State Prison Release by Race and Type of Release in 2010

	Non-Hispanic white	Non-Hispanic black	Non-Hispanic other	Hispanic
Conditional Release	0.042	0.030	0.036	0.034
Unconditional Release	0.049***	0.030	0.047***	0.035

■ Conditional Release   ■ Unconditional Release

Approved for release by the Census Bureau's Disclosure Review Board, CBDRB-FY22-CES014-004.
Source: 1983-2016 National Corrections Reporting Program, 2019 Census Numident, and Previous Census Data.
Asterisks indicate significant differences in comparison between conditional and unconditional release for each race/Hispanic origin category *p<.05, **p<.01, ***p<.001

Logistic Regression with Full Sample Predicting the Mortality of Prisoners Released in 2010, Odds Ratios

Characteristics	Deceased w/in 5 yrs of release (Alive is omitted category)
Hispanic origin and race	
Non-Hispanic white (omitted)	
Non-Hispanic black	0.65***
Non-Hispanic all others	0.88***
Hispanic	0.76***
Age at release	
Less than 25 years (omitted)	
25-34 years	1.14***
35-44 years	1.61***
45-54 years	3.20***
55 years and older	7.66***
Sex	
Male (omitted)	
Female	0.83***
Education reported in NCRP	
Less than high school (omitted)	
High school or GED	0.94**
Some college	0.92*
College or higher	0.83*
Missing	0.96
Time served	
Less than 1 year (omitted)	
1-1.9 years	0.94**
2-4.9 years	0.91***
5 or more years	0.81***

*p<.05, **p<.01, ***p<.001

Table approved for release by the Census Bureau's Disclosure Review Board, CBDRB-FY21-123 and CBDRB-FY22- CES014-004.

Source: 1983-2016 National Corrections Reporting Program, 2019 Census Numident, and Previous Census Data. Note: All counts are rounded to be in compliance with the Census Bureau's disclosure avoidance policies.

Logistic Regression with Full Sample Predicting the Mortality of Prisoners Released in 2010, Odds Ratios (cont.)

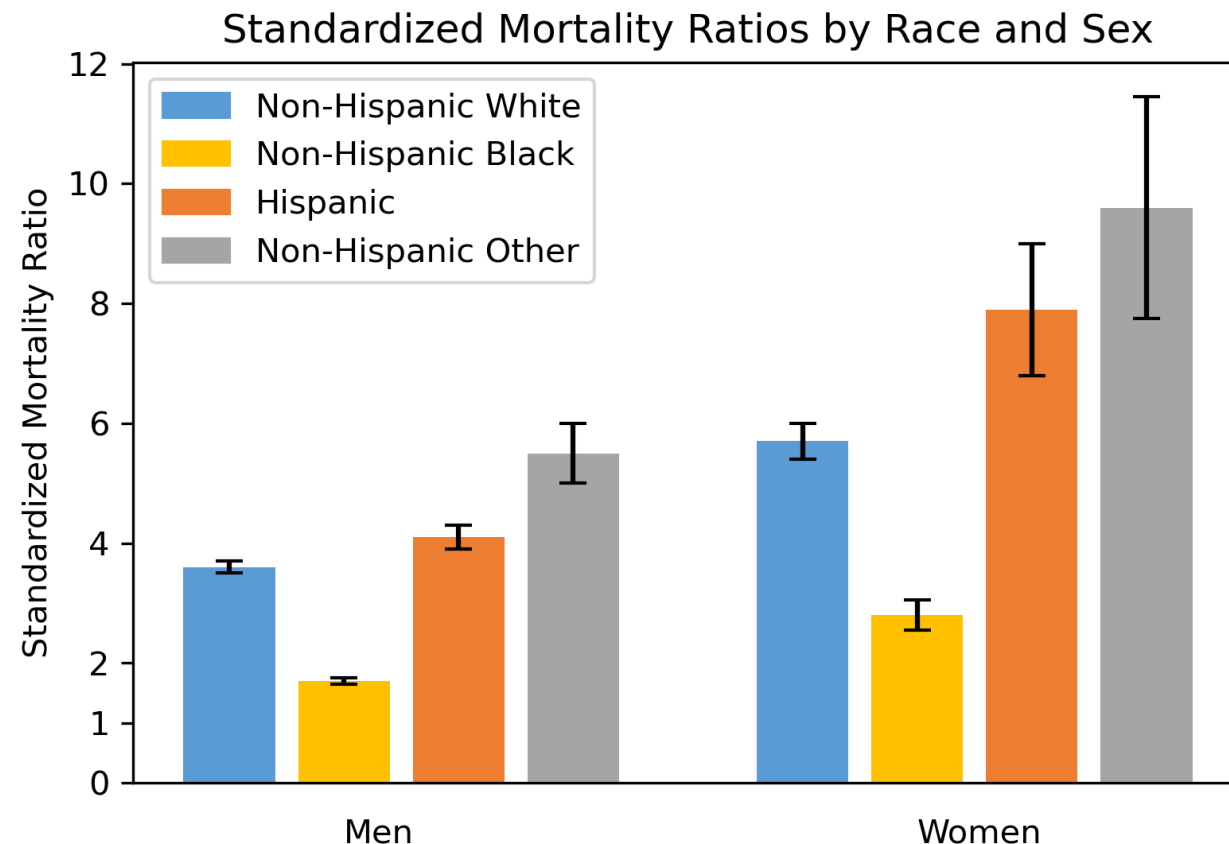| Characteristics	Deceased w/in 5 yrs of release (Alive is omitted category)
Additional terms served between 2005 and 2010	
0 terms (omitted)	
1 term	1.18***
2 or more terms	1.50***
Release type	
Conditional (omitted)	
Unconditional	1.06**
Most serious offense	
Violent (omitted)	
Property	1.04
Drugs	0.98
Public order	1.05*
Region	
South (omitted)	
Midwest	1.02
Northeast	0.94
West	0.94*
Reimprisoned after 2010 release	
No (omitted)	
Yes	0.41***
Sample size	451000
Deceased within 5 years of release	17000
Pseudo R-Square	0.0766

Standardized Mortality Ratios (SMRs)

- Standardized mortality ratios (SMRs) express the ratio of deaths in the study relative to expected deaths in the general population

$$SMR = \frac{Deaths\ in\ Sample}{E[Deaths\ in\ Sample\ |\ demographics]}$$

- If an SMR is greater than 1, it means that mortality rates are elevated relative to the general population.

SMRs – Race & Sex

- SMRs are above one for all groups, meaning they are elevated relative to the general population.

- Within each sex, SMRs are the lowest for non-Hispanic blacks and the highest for the non-Hispanic other grouping

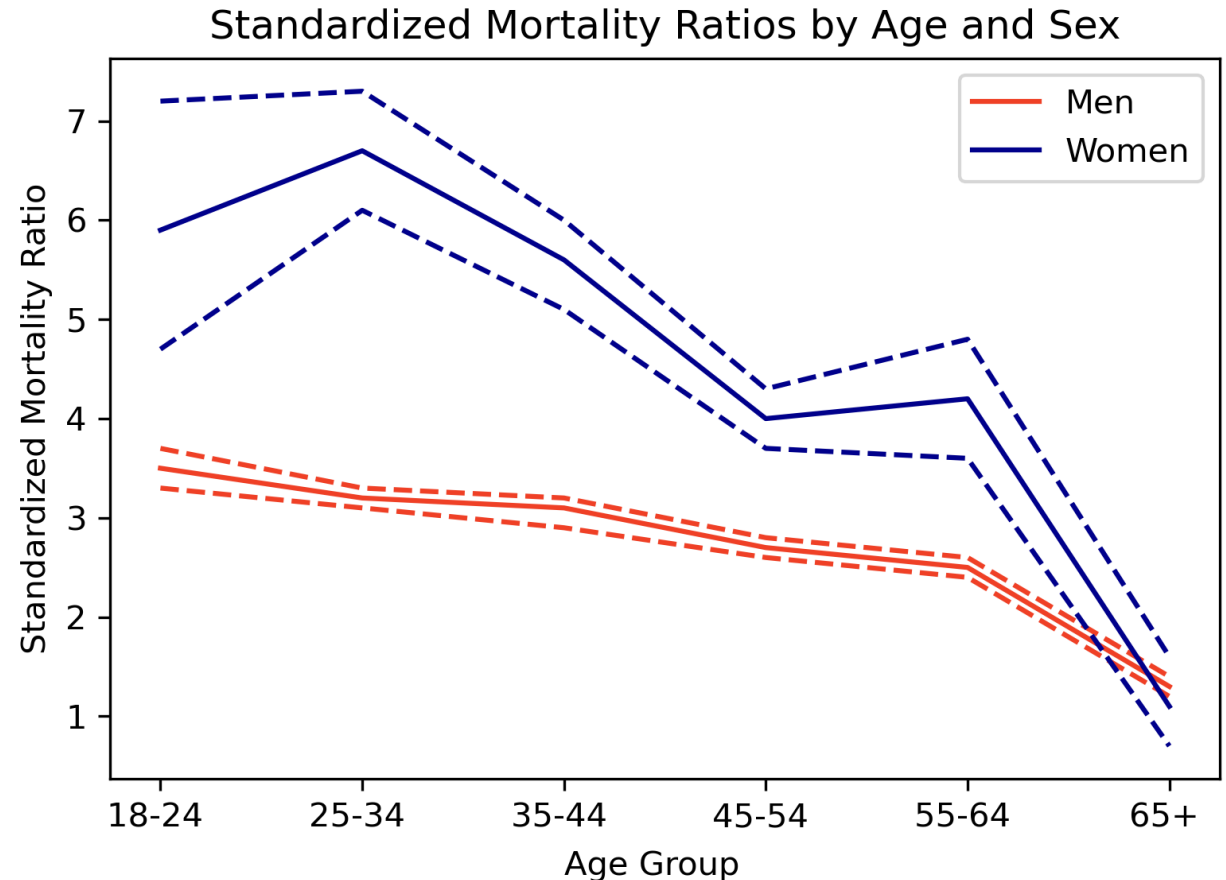- Within each group, the SMRs for women are higher than they are for men.

Standardized Mortality Ratios by Race and Sex

Approved for release by the Census Bureau's Disclosure Review Board, CBDRB-FY21-123.
Source: 1983-2016 National Corrections Reporting Program, 2019 Census Numident, Previous Census Data and national and state mortality rates obtained from the CDC Wide-Ranging Online Data for Epidemiologic Research (CDC-WONDER) for years 2010-2015

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SMRs – Age & Sex

- SMRs for women are higher than for men at all age groups, other than for those who are 65+ when released
- SMRs generally decline with the age at release for both sexes
- For those under 65, mortality rates are at least twice as high as they are for the general population. Mortality rates are the most elevated for 25-34 year old women and are nearly 7 times as high as they are in the general population.

Standardized Mortality Ratios by Age and Sex

Conclusion & Next Steps

- Mortality in the sample of prisoners released in 2010 in 35 states is elevated relative to the general population

- Mortality rates are highest the first month after release

- Though they have lower mortality rates, women's mortality is more highly elevated relative to the general population than for men

- Non-Hispanic whites have the highest mortality rates, while mortality is most elevated for the non-Hispanic all other races grouping relative to the general population

- Next Steps:
  - Analyzing cause of death information from National Death Index for the 2010 cohort of released prisoners in this study