3 Maps of Stroke Hospitalizations, by Discharge Status and Race/Ethnicity

Stroke Hospitalizations: Discharged Home

Total Population

Overall, 51% of Medicare beneficiaries ages 65 and older who were hospitalized for stroke during 1995–2002 were discharged home. The frequency distribution indicates that for the majority of counties, the percentage discharged home was between 40% and 60%. Counties with the highest percentages (i.e., those in the top quintile, in which at least 54.8% of patients hospitalized for stroke were discharged home) were concentrated in parts of New York, Michigan, West Virginia, Alabama, Puerto Rico, and Alaska.

Blacks

Among black Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 45.2% were discharged home. The frequency distribution indicates that for the majority of counties, the percentage was between 30% and 52%. There did not appear to be a strong geographic pattern. Pockets of counties with the highest percentages (i.e., those in the top quintile, in which at least 49% of patients hospitalized for stroke were discharged home) were observed in New York, Michigan, Virginia, Georgia, Alabama, Mississippi, and Puerto Rico.

Hispanics

Among Hispanic Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 57.6% were discharged home. The frequency distribution indicates that for the majority of counties, the percentage was between 40% and 60%. Counties with the highest percentages (i.e., those in the top quintile, in which at least 59% of patients hospitalized for stroke were discharged home) were concentrated in Puerto Rico and isolated pockets in New York, Oklahoma, Oregon, and California.

Whites

Among white Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 51.6% were discharged home. The frequency distribution indicates that for the majority of counties, the percentage was between 40% and 60%. Counties with the highest percentages (i.e., those in the top quintile, in which at least 55.9% of patients hospitalized for stroke were discharged home) were concentrated in parts of New York, Michigan, West Virginia, Alabama, Puerto Rico, and the southeastern coastal states.

A Note on Methods

Stroke hospitalizations were defined as those for which the principal diagnosis on the Medicare hospital claim form was cerebrovascular disease, indicated by codes 430–434 and 436–438 according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). Hospitalizations for which the principal diagnosis was transient ischemic attacks (ICD-9-CM code 435) were excluded.

For each map, the counties are categorized according to quintile; the darkest color represents counties with the highest percentages, and the lightest color represents counties with the lowest percentages. All county-level percentages have been spatially smoothed to enhance the stability in counties with small populations. Counties are categorized as having "insufficient data" if the sum of stroke hospitalizations in the index county plus the neighboring counties is less than 20, the Medicare population is less than 10, or the relative standard error of the estimated percentage is ≥30%. For more details, see Appendix B.

The frequency distribution in the bottom right corner of each map shows the range of percentages observed among counties on the corresponding map. The vertical dotted lines and the graded color bar along the x-axis illustrate the quintiles into which counties were divided on the basis of these percentages.
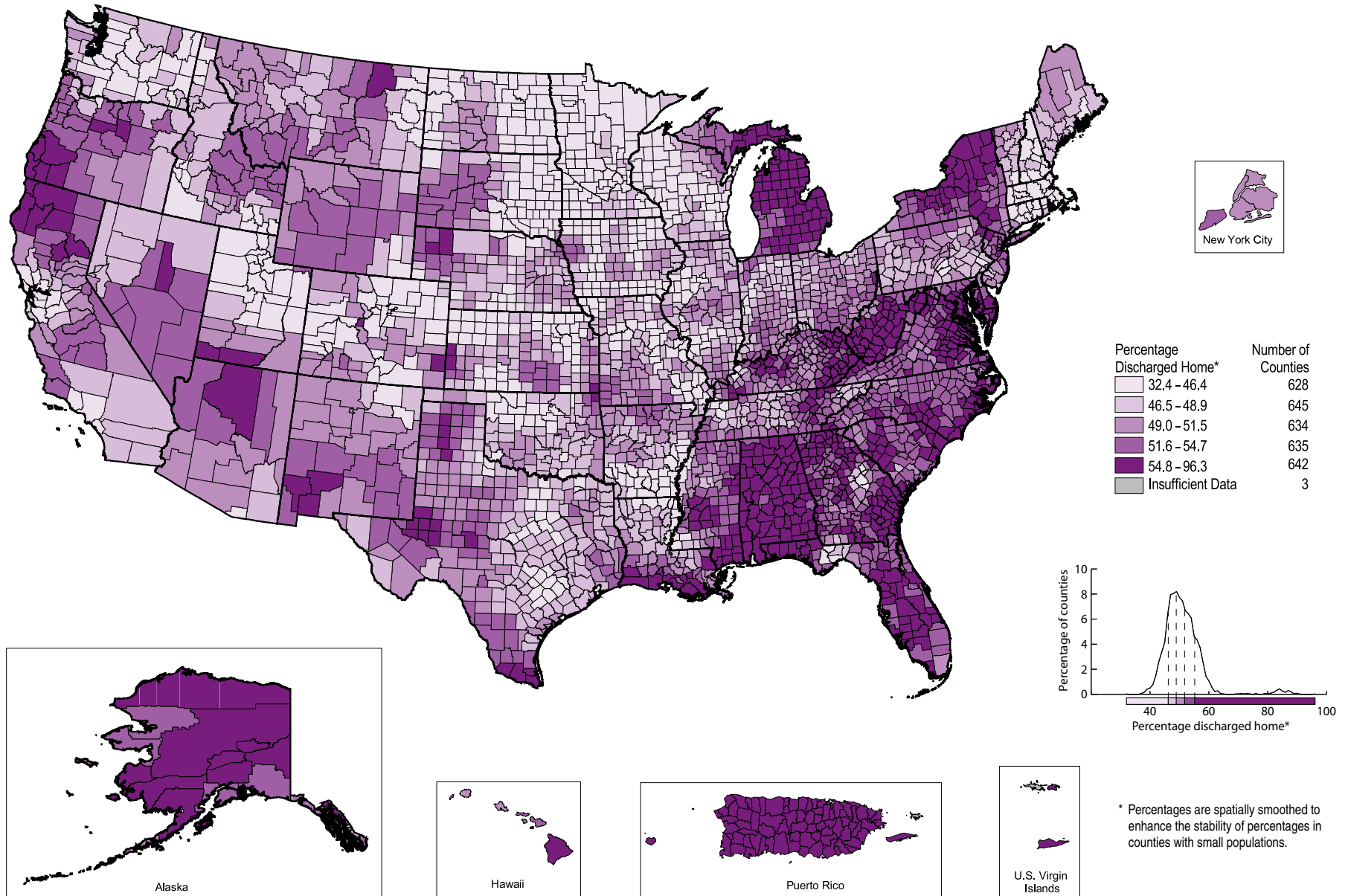
The quintiles do not always have equal numbers of counties because many counties have the same percentage of hospitalizations. For a detailed explanation of the methods, see Appendix B.

A Cautionary Note

In the Medicare data sets, the accuracy of codes for Hispanic race and ethnicity is limited because these codes are not reported separately. For example, a person who is white and Hispanic is reported as either white or Hispanic. This reporting practice can result in misclassification of race and ethnicity. According to 1996 data, the probability that the racial/ethnic designation on Medicare claim forms is correct is 96.6% for whites and 95.5% for blacks, but only 19.4% for Hispanics. At the same time, the probability that a person identified as Hispanic in the Medicare data set is actually Hispanic is 98% (Arday SL, Arday DR, Monroe A, Zhang MD. HCFA's racial and ethnic data: current accuracy and recent improvements. *Health Care Financing Review* 2000;21[4]:107–16). Together, these data suggest that Hispanics are underreported in the Medicare data sets and that this underreporting could introduce bias into the results presented here.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged Home
Total Population

Percentage Discharged Home*	Number of Counties
32.4 – 46.4	628
46.5 – 48.9	645
49.0 – 51.5	634
51.6 – 54.7	635
54.8 – 96.3	642
Insufficient Data	3

New York City

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage discharged home*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged Home
Blacks
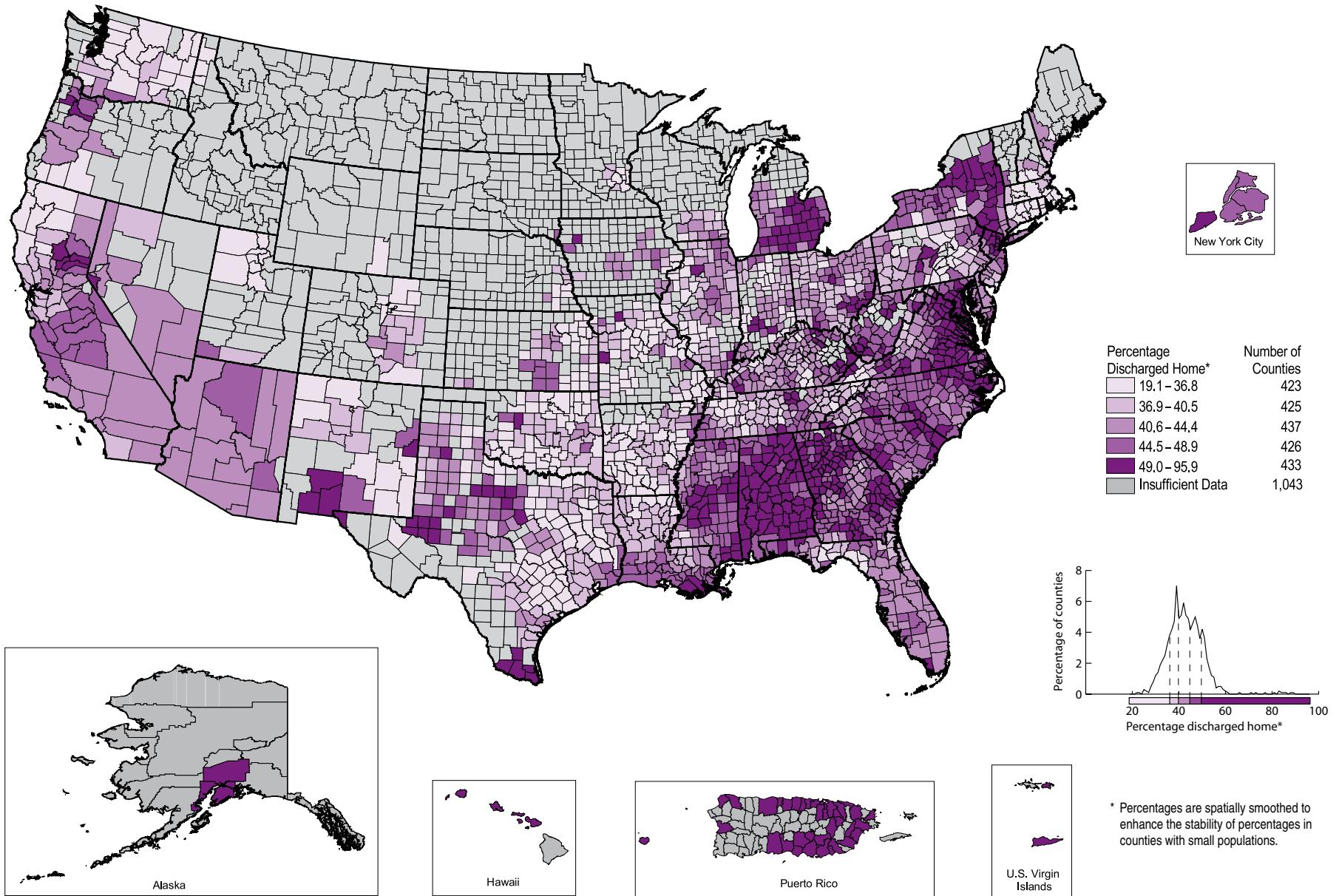
New York City

Percentage Discharged Home*	Number of Counties
19.1 – 36.8	423
36.9 – 40.5	425
40.6 – 44.4	437
44.5 – 48.9	426
49.0 – 95.9	433
Insufficient Data	1,043

Percentage of counties

Percentage discharged home*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged Home
Hispanics
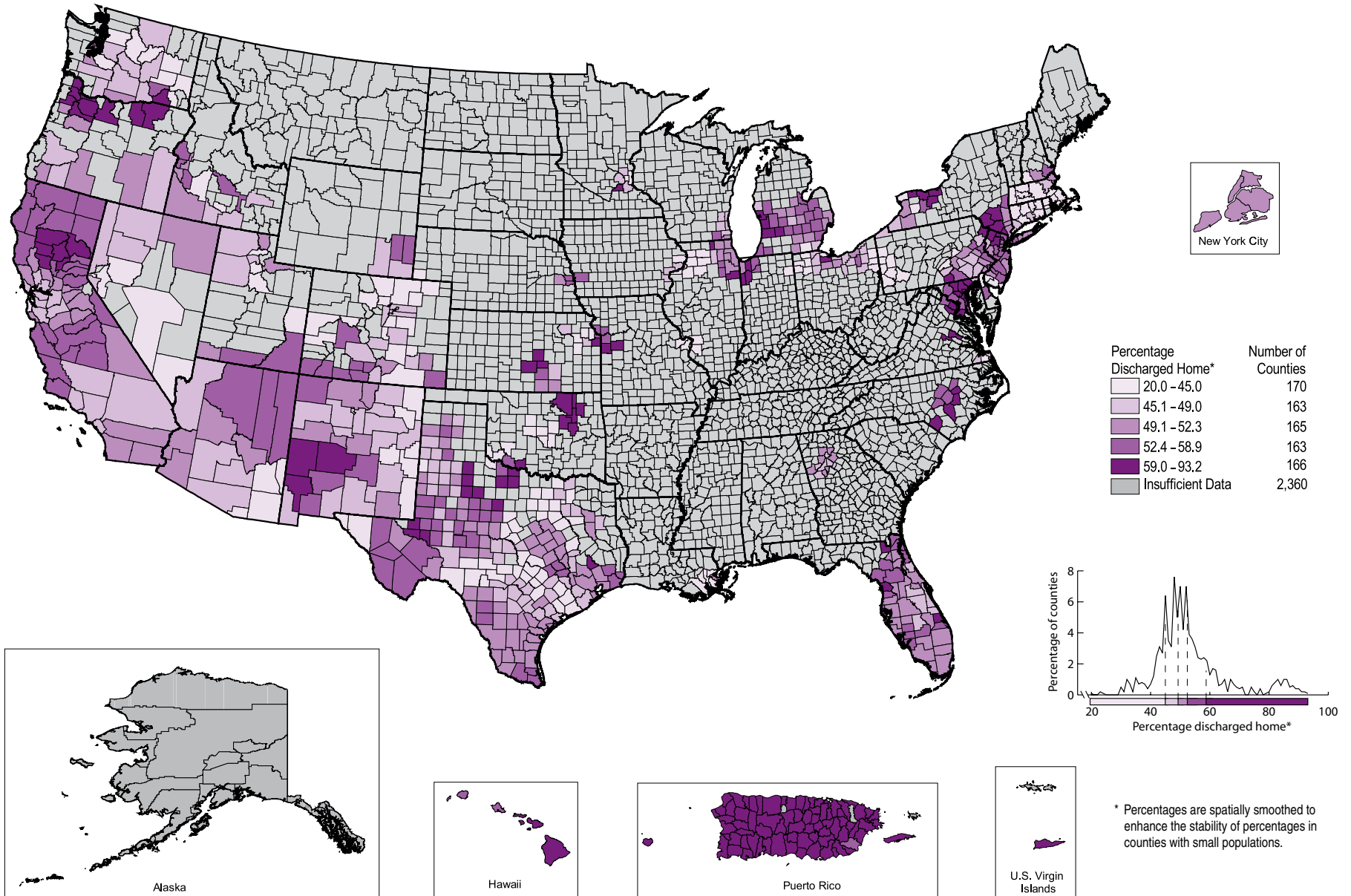
New York City

Percentage Discharged Home*	Number of Counties
20.0 – 45.0	170
45.1 – 49.0	163
49.1 – 52.3	165
52.4 – 58.9	163
59.0 – 93.2	166
Insufficient Data	2,360

Percentage of counties

Percentage discharged home*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged Home
Whites

New York City
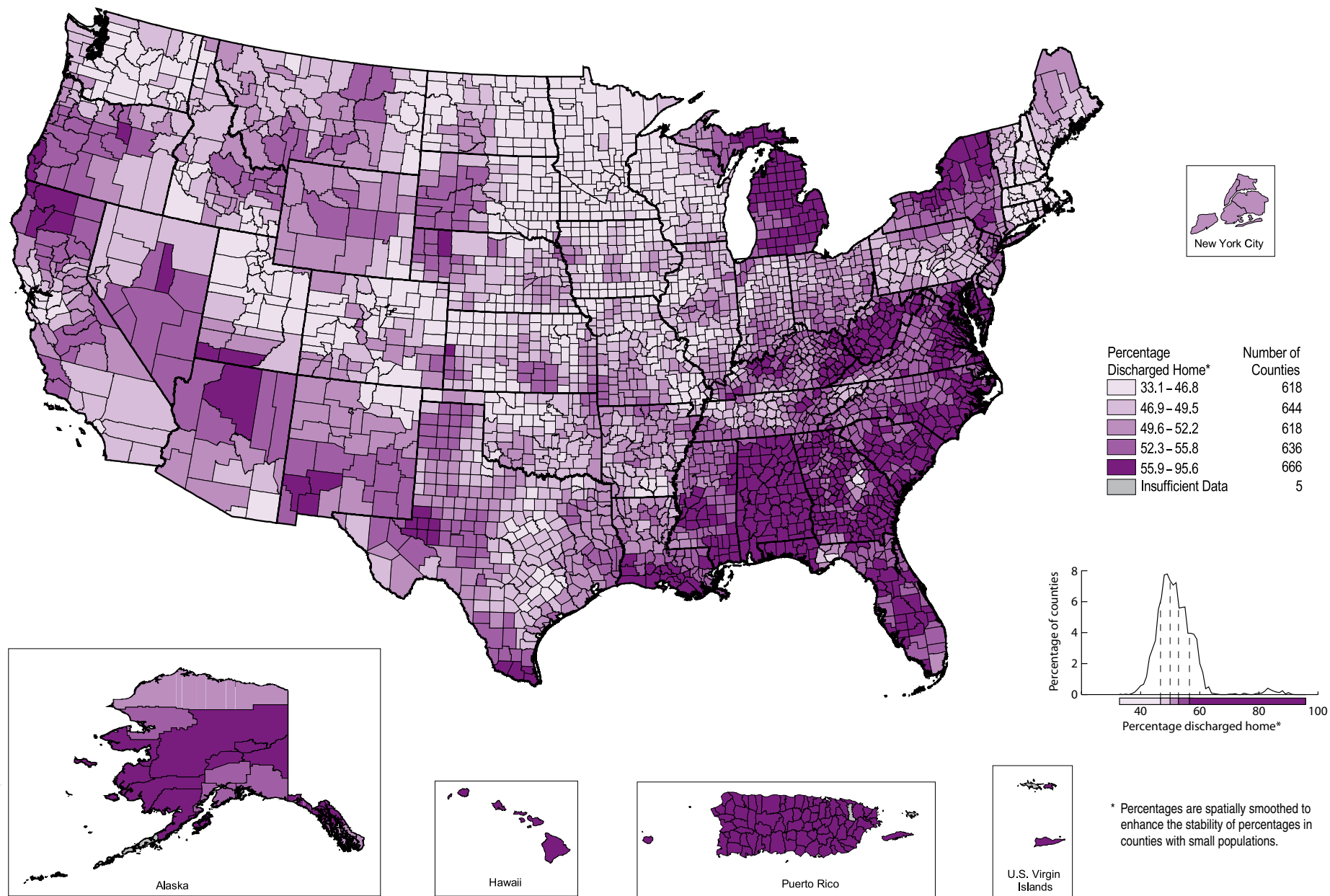
Percentage Discharged Home*	Number of Counties
33.1 – 46.8	618
46.9 – 49.5	644
49.6 – 52.2	618
52.3 – 55.8	636
55.9 – 95.6	666
Insufficient Data	5

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage discharged home*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Total Population

Overall, 21.1% of Medicare beneficiaries ages 65 and older hospitalized for stroke during 1995–2002 were discharged to a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage discharged to a skilled nursing facility was between 12% and 30%. Counties with the highest percentages (i.e., those in which at least 25.1% of patients hospitalized for stroke were discharged to a skilled nursing facility) were located primarily in the midwestern and western states.

Blacks

Among black Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 22.3% were discharged to a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage was between 12% and 35%. There did not appear to be a strong geographic pattern. However, concentrations of counties with the highest percentages (i.e., those in which at least 28.9% of patients hospitalized for stroke were discharged to a skilled nursing facility) appeared to be concentrated along the Pacific Coast in parts of California, Arizona, and Washington; were scattered across parts of the Midwest and New England; and were found in Florida.

Hispanics

Among Hispanic Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 15.7% were discharged to a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage was between 10% and 25%. Counties with the highest percentages (i.e., those in which at least 23.7% of patients hospitalized for stroke were discharged to a skilled nursing facility) were located primarily in California, Arizona, Florida, Massachusetts, and Connecticut.

Whites

Among white Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 21% were discharged to a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage was between 10% and 30%. Concentrations of counties with the highest percentages (i.e., those in which at least 25% of patients hospitalized for stroke were discharged to a skilled nursing facility) were found primarily in the midwestern and western states.

A Note on Methods

Stroke hospitalizations were defined as those for which the principal diagnosis on the Medicare hospital claim form was cerebrovascular disease, indicated by codes 430–434 and 436–438 according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). Hospitalizations for which the principal diagnosis was transient ischemic attacks (ICD-9-CM code 435) were excluded.

For each map, the counties are categorized according to quintile; the darkest color represents counties with the highest percentages, and the lightest color represents counties with the lowest percentages. All county-level percentages have been spatially smoothed to enhance the stability in counties with small populations. Counties are categorized as having "insufficient data" if the sum of stroke hospitalizations in the index county plus the neighboring counties is less than 20, the Medicare population is less than 10, or the relative standard error of the estimated percentage is ≥30%. For more details, see Appendix B.

The frequency distribution in the bottom right corner of each map shows the range of percentages observed among counties on the corresponding map. The vertical dotted lines and the graded color bar along the x-axis illustrate the quintiles into which counties were divided on the basis of these percentages. The quintiles do not always have equal numbers of counties because many counties have the same percentage of hospitalizations. For a detailed explanation of the methods, see Appendix B.
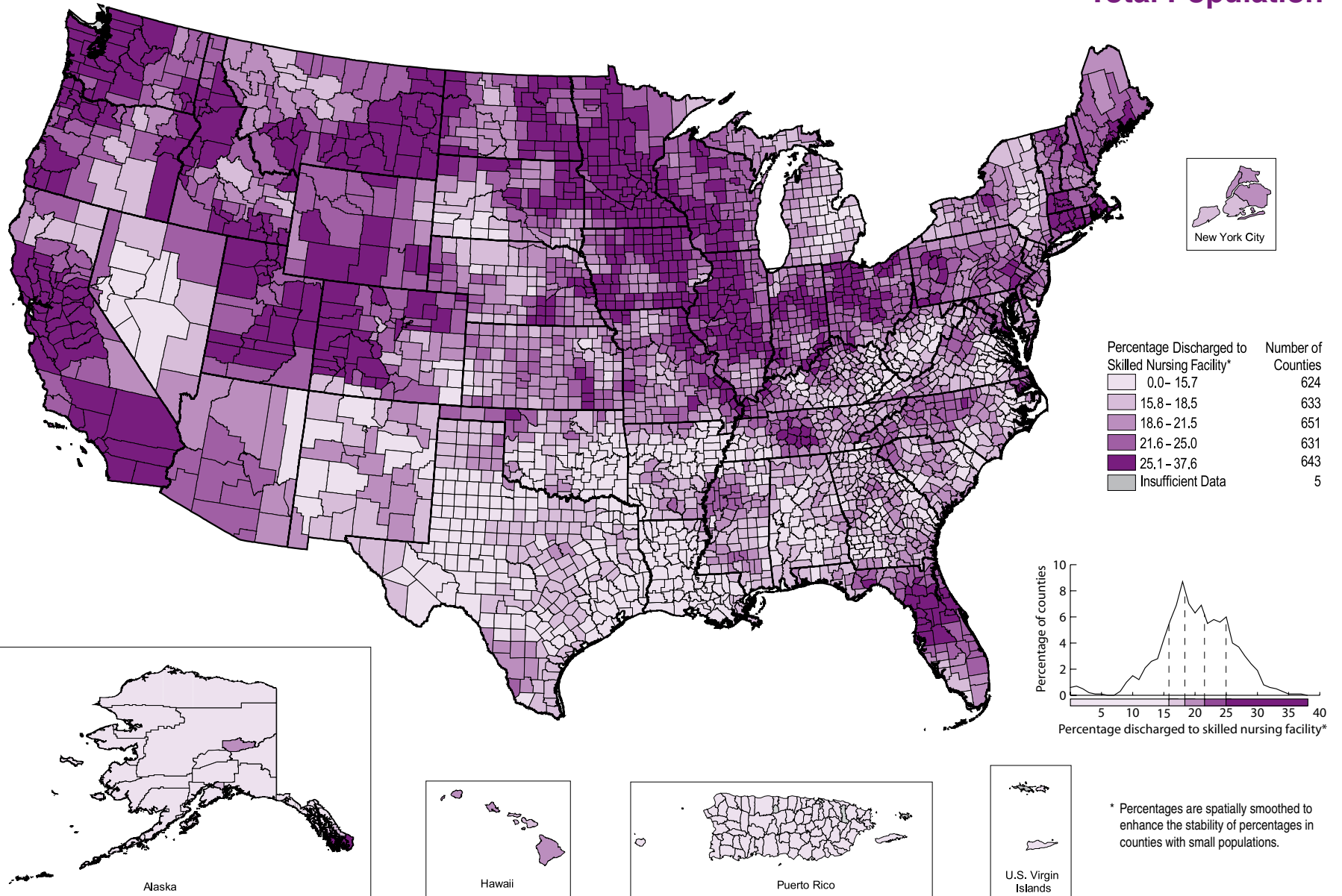
Skilled nursing facilities are defined by Medicare as facilities that meet specific regulatory certification requirements and that primarily provide inpatient skilled nursing care and related services to patients who require medical, nursing, or rehabilitative services but do not provide the level of care or treatment available in a hospital.

A Cautionary Note

In the Medicare data sets, the accuracy of codes for Hispanic race and ethnicity is limited because these codes are not reported separately. For example, a person who is white and Hispanic is reported as either white or Hispanic. This reporting practice can result in misclassification of race and ethnicity. According to 1996 data, the probability that the racial/ethnic designation on Medicare claim forms is correct is 96.6% for whites and 95.5% for blacks, but only 19.4% for Hispanics. At the same time, the probability that a person identified as Hispanic in the Medicare data set is actually Hispanic is 98% (Arday SL, Arday DR, Monroe A, Zhang MD. HCFA's racial and ethnic data: current accuracy and recent improvements. *Health Care Financing Review* 2000;21[4]:107–16). Together, these data suggest that Hispanics are underreported in the Medicare data sets and that this underreporting could introduce bias into the results presented here.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged to Skilled Nursing Facility
Total Population

New York City

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage Discharged to Skilled Nursing Facility*	Number of Counties
0.0 – 15.7	624
15.8 – 18.5	633
18.6 – 21.5	651
21.6 – 25.0	631
25.1 – 37.6	643
Insufficient Data	5

Percentage of counties

Percentage discharged to skilled nursing facility*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged to Skilled Nursing Facility
Blacks

New York City

Percentage Discharged to Skilled Nursing Facility*	Number of Counties
0.8 – 17.5	392
17.6 – 21.4	395
21.5 – 24.7	384
24.8 – 28.8	390
28.9 – 52.5	389
Insufficient Data	1,237

Percentage of counties

Percentage discharged to skilled nursing facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

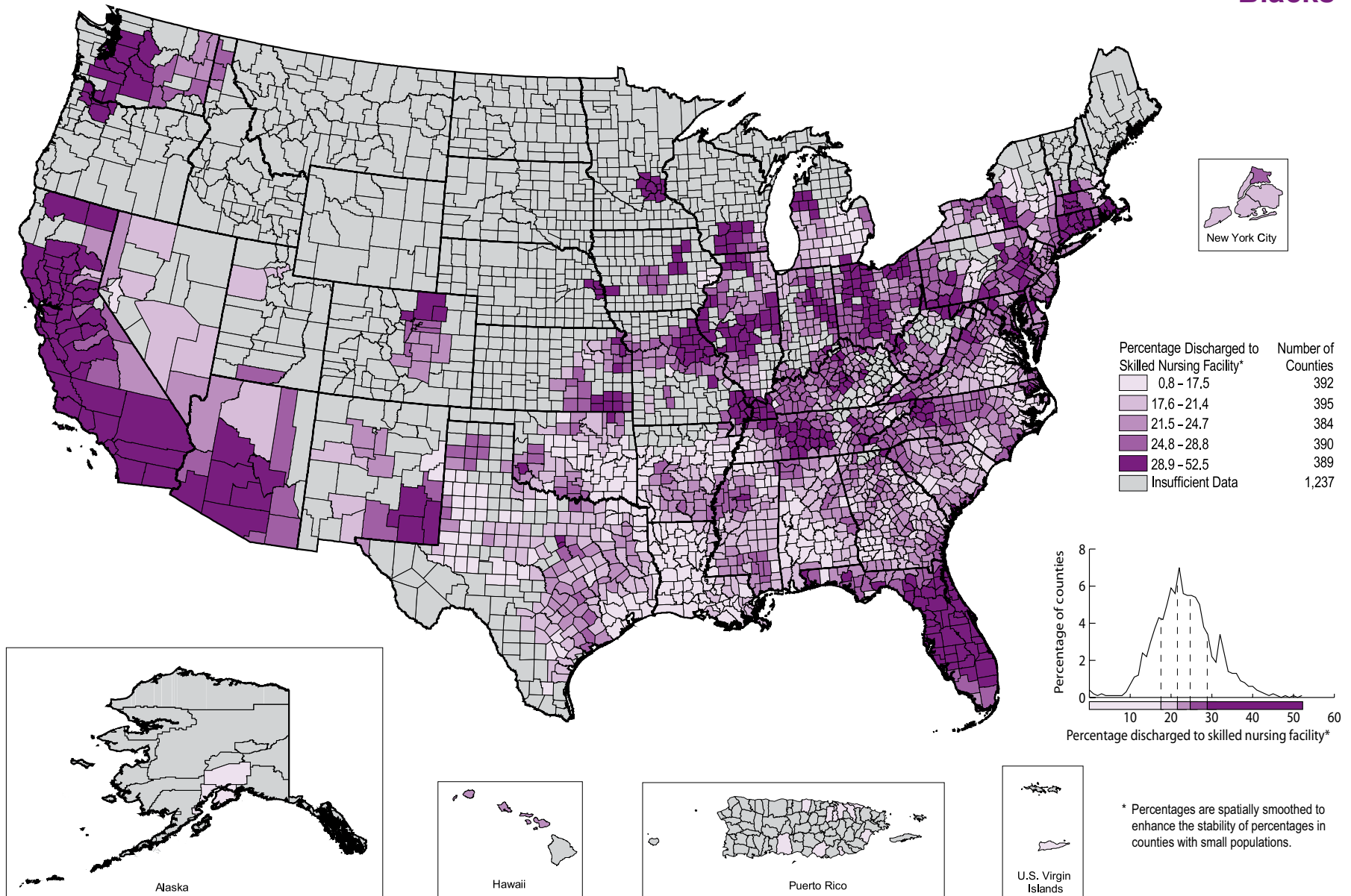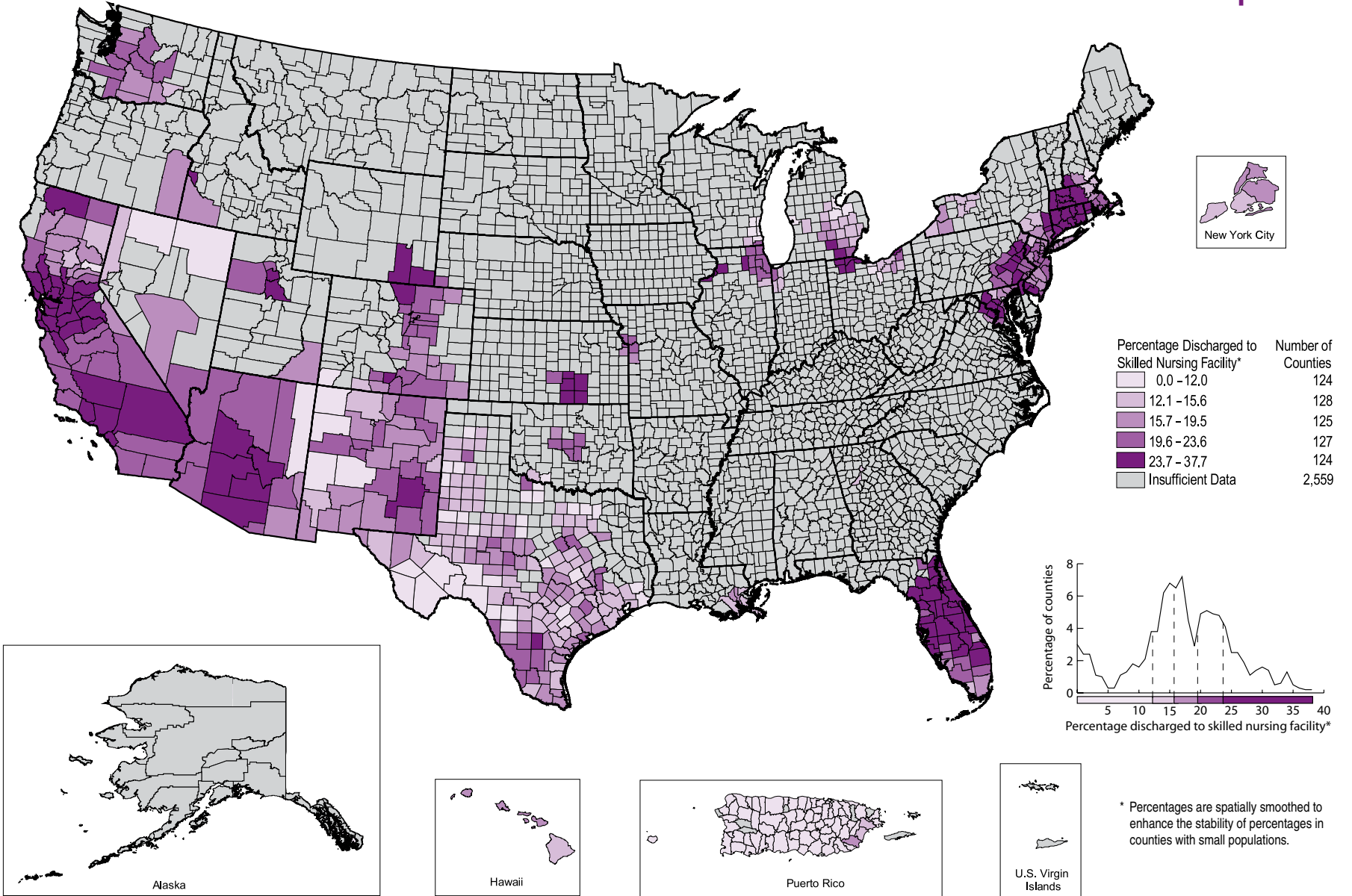* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged to Skilled Nursing Facility
Hispanics

New York City

Percentage Discharged to Skilled Nursing Facility*	Number of Counties
0.0 – 12.0	124
12.1 – 15.6	128
15.7 – 19.5	125
19.6 – 23.6	127
23.7 – 37.7	124
Insufficient Data	2,559

Percentage of counties

Percentage discharged to skilled nursing facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

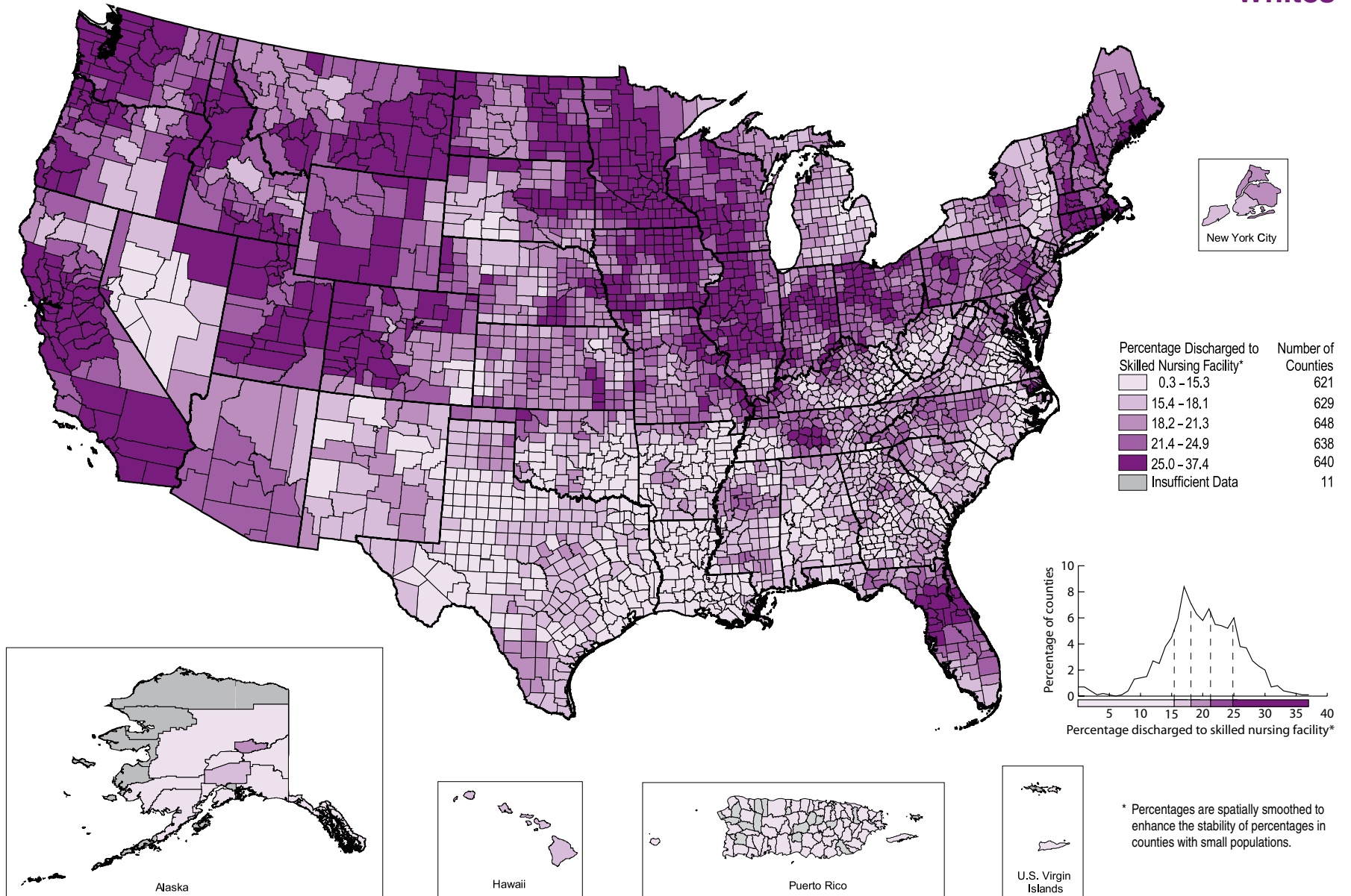## Stroke Hospitalizations: Discharged to Skilled Nursing Facility
Whites

New York City

Percentage Discharged to Skilled Nursing Facility*	Number of Counties
0.3 – 15.3	621
15.4 – 18.1	629
18.2 – 21.3	648
21.4 – 24.9	638
25.0 – 37.4	640
Insufficient Data	11

Percentage of counties

Percentage discharged to skilled nursing facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Stroke Hospitalizations: Discharged to Other Care Facility

Total Population

Overall, 17.6% of Medicare beneficiaries ages 65 and older were discharged to a health care facility that was not a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage discharged to a care facility other than a skilled nursing facility was between 12% and 28%. Counties with the highest percentages (i.e., those in which at least 23% of patients hospitalized for stroke were discharged to a health care facility other than a skilled nursing facility) were located mostly in Texas, Oklahoma, Arkansas, and Louisiana, as well as in parts of other states located along the central corridor of the United States.

Blacks

Among black Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 21.6% were discharged to a health care facility that was not a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage was between 12% and 36%. Counties with the highest percentages (i.e., those in which at least 28.9% of patients hospitalized for stroke were discharged to a health care facility other than a skilled nursing facility) were located mostly in Texas, Oklahoma, Arkansas, Louisiana, and the central part of New Mexico.

Hispanics

Among Hispanic Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 15.8% were discharged to a health care facility that was not a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage was between 10% and 30%. Counties with the highest percentages (i.e., those in which at least 25.6% of patients hospitalized for stroke were discharged to a health care facility other than a skilled nursing facility) were located mostly in Texas.

Whites

Among white Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 17.1% were discharged to a health care facility that was not a skilled nursing facility. The frequency distribution indicates that for the majority of counties, the percentage was between 12% and 28%. Counties with the highest percentages (i.e., those in which at least 22.6% of patients hospitalized for stroke were discharged to a health care facility other than a skilled nursing facility) were located mostly in Texas, Oklahoma, Arkansas, and Louisiana, as well as in parts of other states located along the central corridor of the United States.

A Note on Methods

Stroke hospitalizations were defined as those for which the principal diagnosis on the Medicare hospital claim form was cerebrovascular disease, indicated by codes 430–434 and 436–438 according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). Hospitalizations for which the principal diagnosis was transient ischemic attacks (ICD-9-CM code 435) were excluded.

For each map, the counties are categorized according to quintile; the darkest color represents counties with the highest percentages, and the lightest color represents counties with the lowest percentages. All county-level percentages have been spatially smoothed to enhance the stability in counties with small populations. Counties are categorized as having "insufficient data" if the sum of stroke hospitalizations in the index county plus the neighboring counties is less than 20, the Medicare population is less than 10, or the relative standard error of the estimated percentage is ≥30%. For more details, see Appendix B.

The frequency distribution in the bottom right corner of each map shows the range of percentages observed among counties on the corresponding map. The vertical dotted lines and the graded color bar along the x-axis illustrate the quintiles into which counties were divided on the basis of these percentages.

The quintiles do not always have equal numbers of counties because many counties have the same percentage of hospitalizations. For a detailed explanation of the methods, see Appendix B.
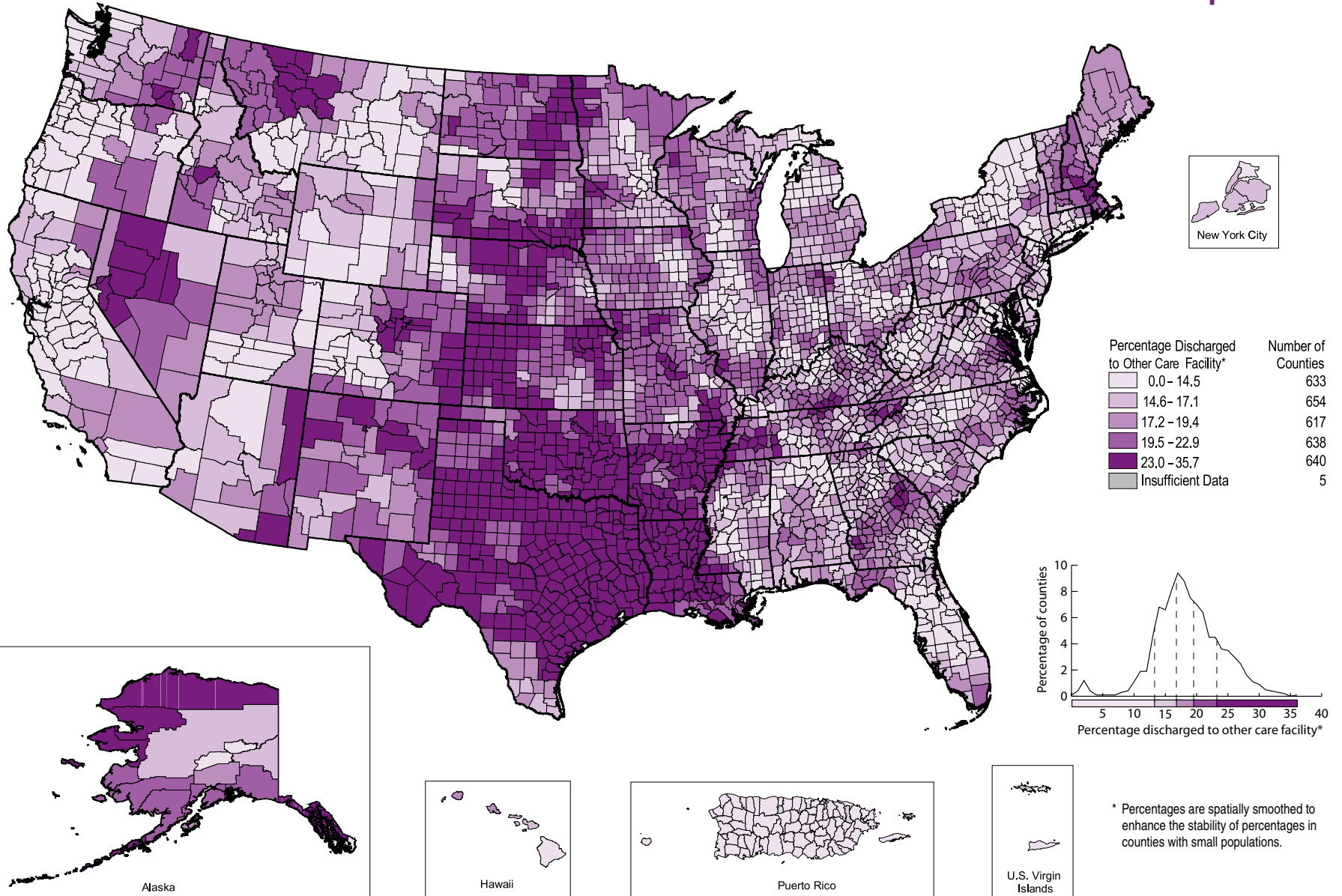
Care facilities other than skilled nursing facilities are defined by Medicare as intermediate care, short-term care, or other types of facilities.

A Cautionary Note

In the Medicare data sets, the accuracy of codes for Hispanic race and ethnicity is limited because these codes are not reported separately. For example, a person who is white and Hispanic is reported as either white or Hispanic. This reporting practice can result in misclassification of race and ethnicity. According to 1996 data, the probability that the racial/ethnic designation on Medicare claim forms is correct is 96.6% for whites and 95.5% for blacks, but only 19.4% for Hispanics. At the same time, the probability that a person identified as Hispanic in the Medicare data set is actually Hispanic is 98% (Arday SL, Arday DR, Monroe A, Zhang MD. HCFA's racial and ethnic data: current accuracy and recent improvements. *Health Care Financing Review* 2000;21[4]:107–16). Together, these data suggest that Hispanics are underreported in the Medicare data sets and that this underreporting could introduce bias into the results presented here.

Medicare Beneficiaries Ages 65 and Older
1995–2002

Stroke Hospitalizations: Discharged to Other Care Facility
Total Population

New York City

Percentage Discharged to Other Care Facility*	Number of Counties
0.0 – 14.5	633
14.6 – 17.1	654
17.2 – 19.4	617
19.5 – 22.9	638
23.0 – 35.7	640
Insufficient Data	5

Percentage of counties

Percentage discharged to other care facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

New York City

Percentage Discharged to Other Care Facility*	Number of Counties
0.0 – 16.4	372
16.5 – 19.7	372
19.8 – 23.1	375
23.2 – 28.8	372
28.9 – 46.1	377
Insufficient Data	1,319

Percentage of counties

Percentage discharged to other care facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

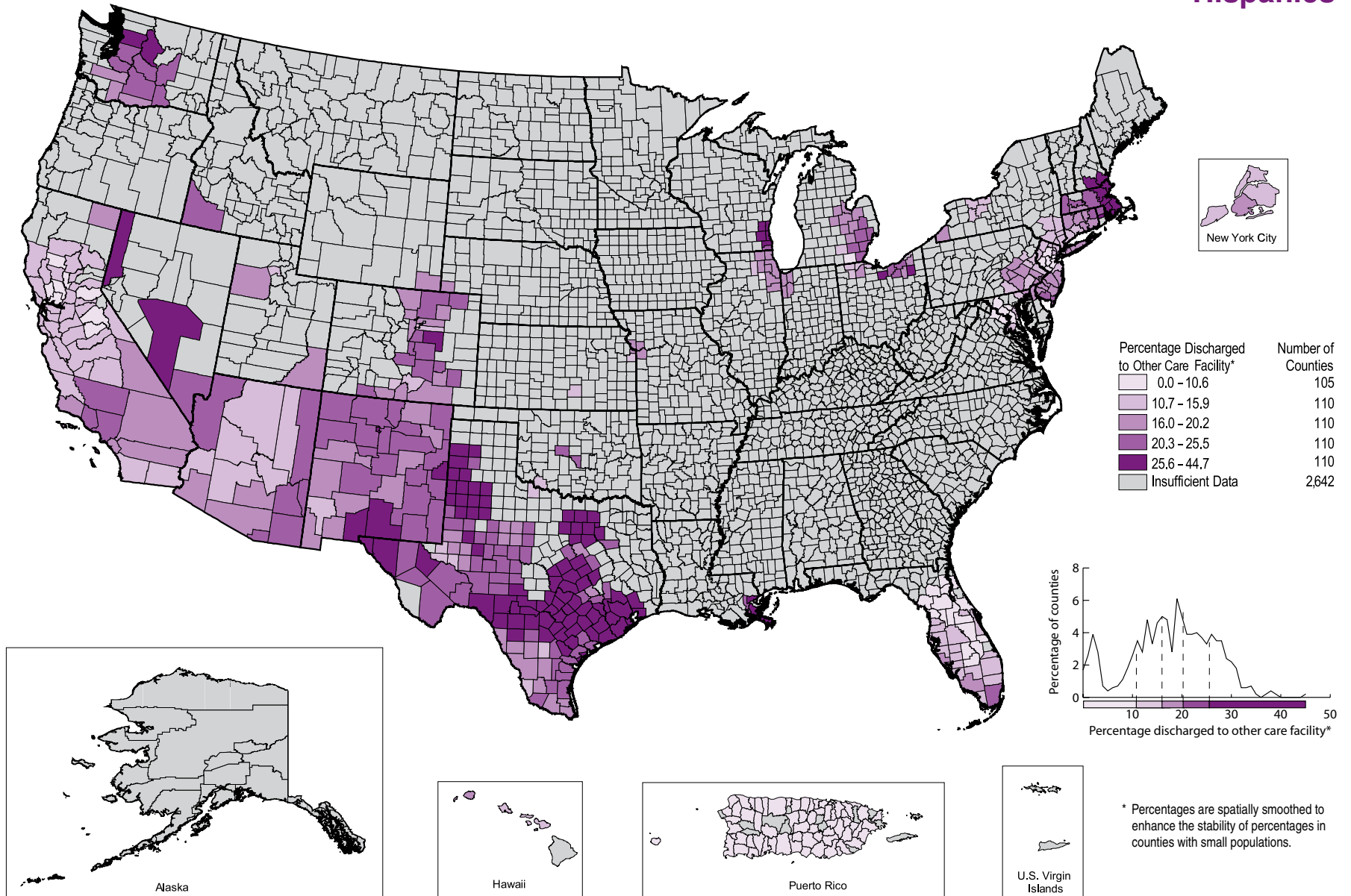* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged to Other Care Facility
Hispanics

Percentage Discharged to Other Care Facility*	Number of Counties
0.0 – 10.6	105
10.7 – 15.9	110
16.0 – 20.2	110
20.3 – 25.5	110
25.6 – 44.7	110
Insufficient Data	2,642

New York City

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage discharged to other care facility*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged to Other Care Facility
Whites

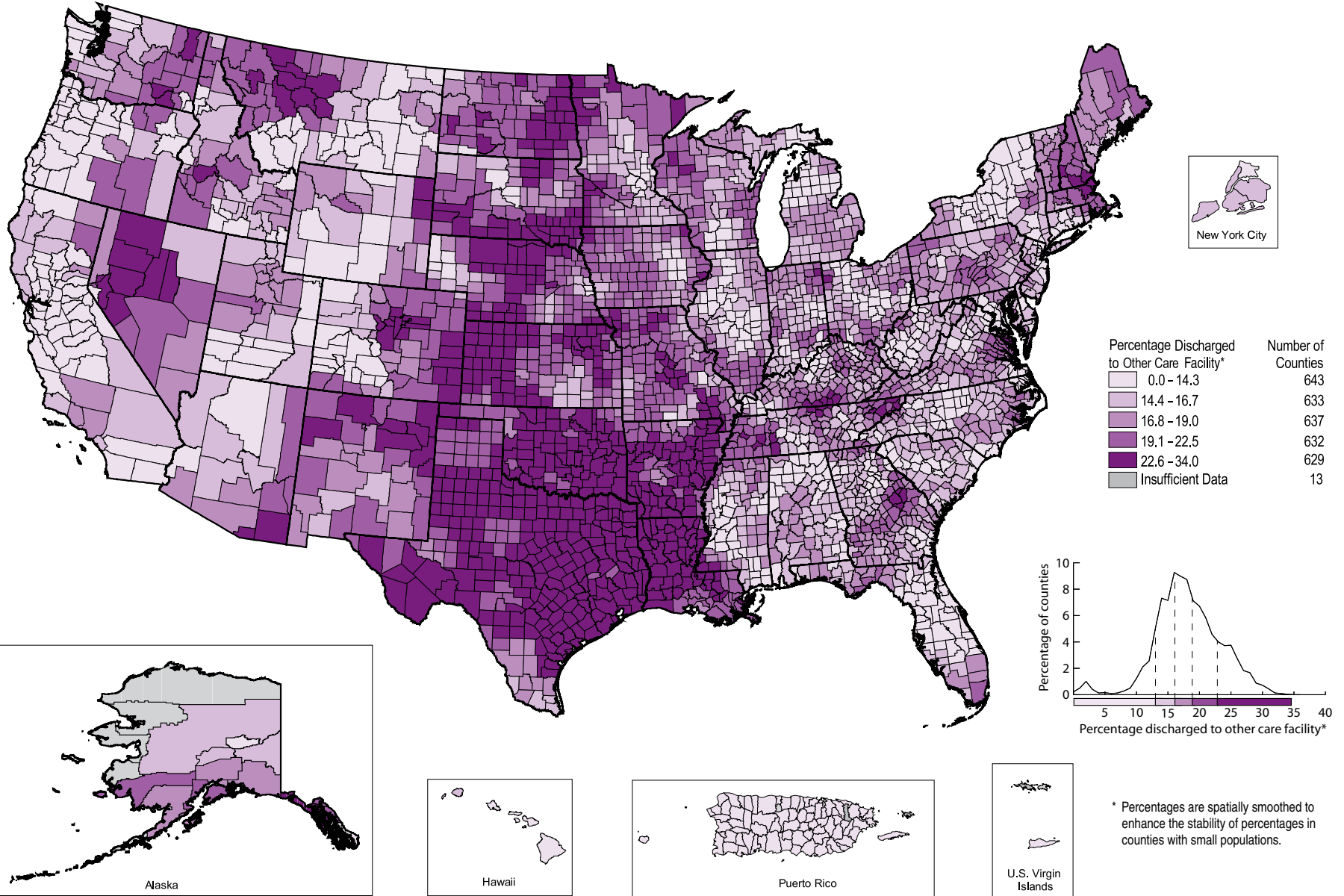New York City

Percentage Discharged to Other Care Facility*	Number of Counties
0.0 – 14.3	643
14.4 – 16.7	633
16.8 – 19.0	637
19.1 – 22.5	632
22.6 – 34.0	629
Insufficient Data	13

Percentage of counties

Percentage discharged to other care facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Total Population

Overall, 38.7% of Medicare beneficiaries ages 65 and older during 1995–2002 were discharged to some type of health care facility (e.g., skilled nursing facility, intermediate care facility, other short-term general hospital, other type of institution). The frequency distribution indicates that for the majority of counties, the percentage discharged to any care facility was between 30% and 50%. Counties with the highest percentages (i.e., those in which at least 43.6% of patients hospitalized for stroke were discharged to any type of health care facility) were located primarily in the north-central section of the United States, New England, and parts of the West.

Blacks

Among black Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 43.9% were discharged to some type of health care facility (e.g., skilled nursing facility, intermediate care facility, other short-term general hospital, other type of institution). The frequency distribution indicates that for the majority of counties, the percentage was between 35% and 56%. Counties with the highest percentages (i.e., those in which at least 52.5% of patients hospitalized for stroke were discharged to any type of health care facility) were located primarily in Connecticut, Massachusetts, Missouri, Arkansas, Oklahoma, Texas, New Mexico, Washington, western Oregon, and northern California.

Hispanics

Among Hispanic Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 31.5% were discharged to some type of health care facility (e.g., skilled nursing facility, intermediate care facility, other short-term general hospital, other type of institution). The frequency distribution indicates that for the majority of counties, the percentage was between 30% and 46%. Pockets of counties with the highest percentages (i.e., those in which at least 43.7% of patients hospitalized for stroke were discharged to any type of health care facility) were located primarily in Massachusetts, Connecticut, Pennsylvania, Ohio, Illinois, Texas, New Mexico, Nevada, California, and Washington.

Whites

Among white Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 38.1% were discharged to some type of health care facility (e.g., skilled nursing facility, intermediate care facility, other short-term general hospital, other type of institution). The frequency distribution indicates that for the majority of counties, the percentage was between 30% and 48%. Counties with the highest percentages (i.e., those in which at least 43.3% of patients hospitalized for stroke were discharged to any type of health care facility) were located primarily in the north-central section of the United States, New England, and parts of the West.

A Note on Methods

Stroke hospitalizations were defined as those for which the principal diagnosis on the Medicare hospital claim form was cerebrovascular disease, indicated by codes 430–434 and 436–438 according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). Hospitalizations for which the principal diagnosis was transient ischemic attacks (ICD-9-CM code 435) were excluded.

For each map, the counties are categorized according to quintile; the darkest color represents counties with the highest percentages, and the lightest color represents counties with the lowest percentages. All county-level percentages have been spatially smoothed to enhance the stability in counties with small populations. Counties are categorized as having "insufficient data" if the sum of stroke hospitalizations in the index county plus the neighboring counties is less than 20, the Medicare population is less than 10, or the relative standard error of the estimated percentage is ≥30%. For more details, see Appendix B.
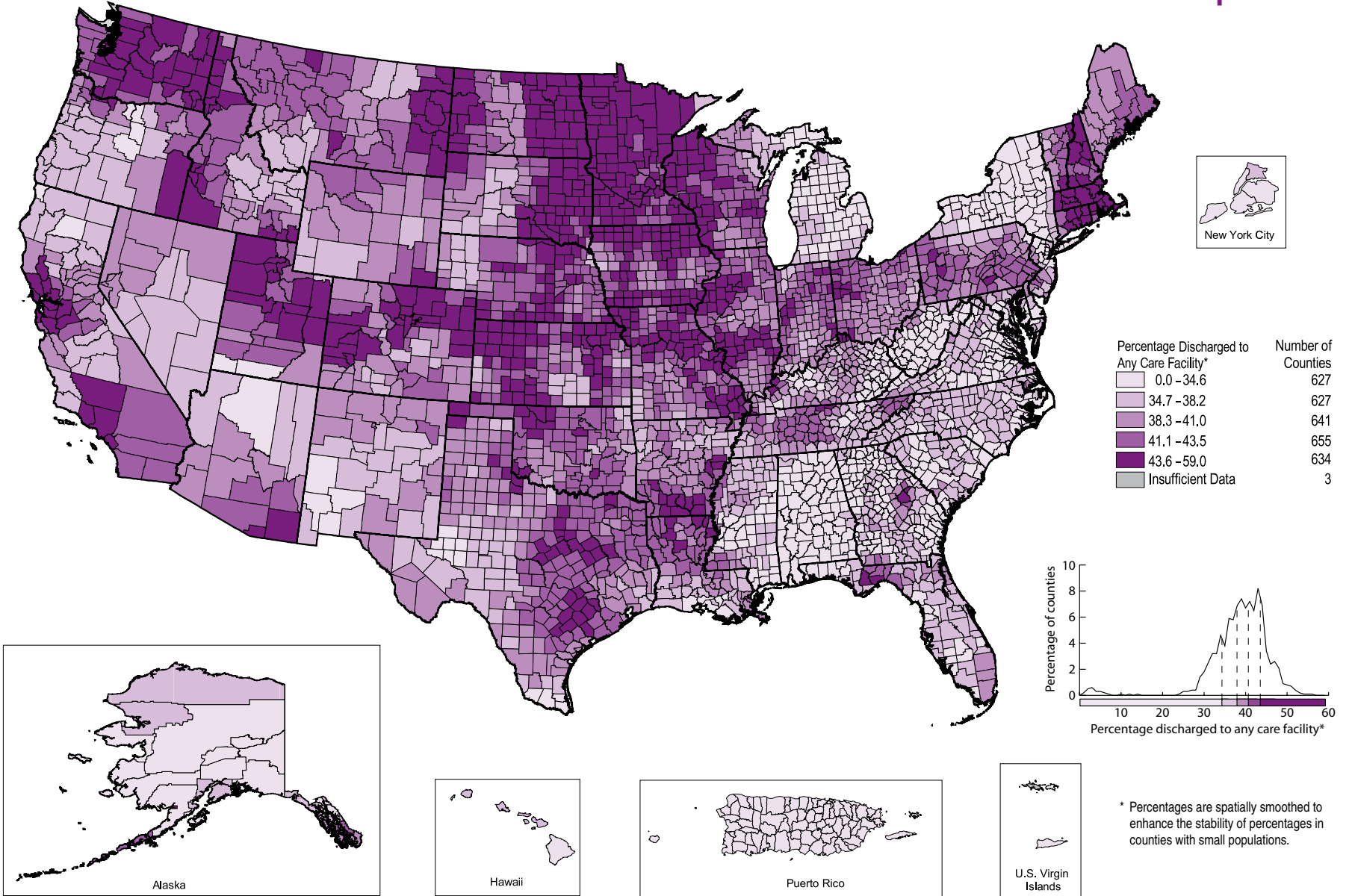
The frequency distribution in the bottom right corner of each map shows the range of percentages observed among counties on the corresponding map. The vertical dotted lines and the graded color bar along the x-axis illustrate the quintiles into which counties were divided on the basis of these percentages. The quintiles do not always have equal numbers of counties because many counties have the same percentage of hospitalizations. For a detailed explanation of the methods, see Appendix B.

A Cautionary Note

In the Medicare data sets, the accuracy of codes for Hispanic race and ethnicity is limited because these codes are not reported separately. For example, a person who is white and Hispanic is reported as either white or Hispanic. This reporting practice can result in misclassification of race and ethnicity. According to 1996 data, the probability that the racial/ethnic designation on Medicare claim forms is correct is 96.6% for whites and 95.5% for blacks, but only 19.4% for Hispanics. At the same time, the probability that a person identified as Hispanic in the Medicare data set is actually Hispanic is 98% (Arday SL, Arday DR, Monroe A, Zhang MD. HCFA's racial and ethnic data: current accuracy and recent improvements. *Health Care Financing Review* 2000;21[4]:107–16). Together, these data suggest that Hispanics are underreported in the Medicare data sets and that this underreporting could introduce bias into the results presented here.

Medicare Beneficiaries Ages 65 and Older
1995–2002

<div align="right">

Stroke Hospitalizations: Discharged
to Any Care Facility
Total Population

</div>

New York City

Percentage Discharged to Any Care Facility*	Number of Counties
0.0 – 34.6	627
34.7 – 38.2	627
38.3 – 41.0	641
41.1 – 43.5	655
43.6 – 59.0	634
Insufficient Data	3

Percentage of counties

Percentage discharged to any care facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

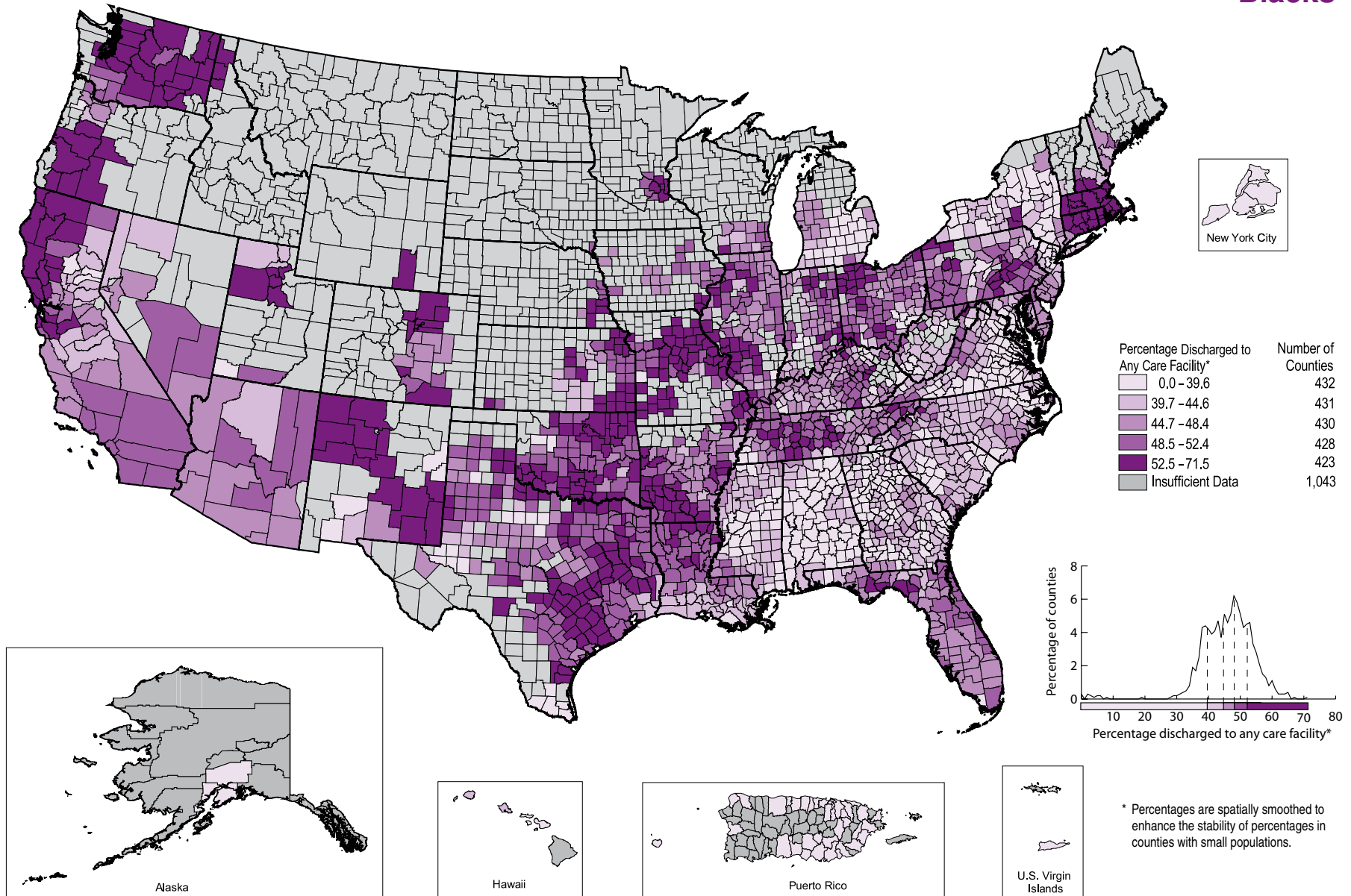* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged to Any Care Facility
Blacks

New York City

Percentage Discharged to Any Care Facility*	Number of Counties
0.0 – 39.6	432
39.7 – 44.6	431
44.7 – 48.4	430
48.5 – 52.4	428
52.5 – 71.5	423
Insufficient Data	1,043

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage discharged to any care facility*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older
1995–2002

New York City

Percentage Discharged to Any Care Facility*	Number of Counties
0.0 – 30.9	167
31.0 – 36.6	167
36.7 – 40.2	163
40.3 – 43.6	165
43.7 – 66.7	165
Insufficient Data	2,360

Percentage of counties

Percentage discharged to any care facility*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

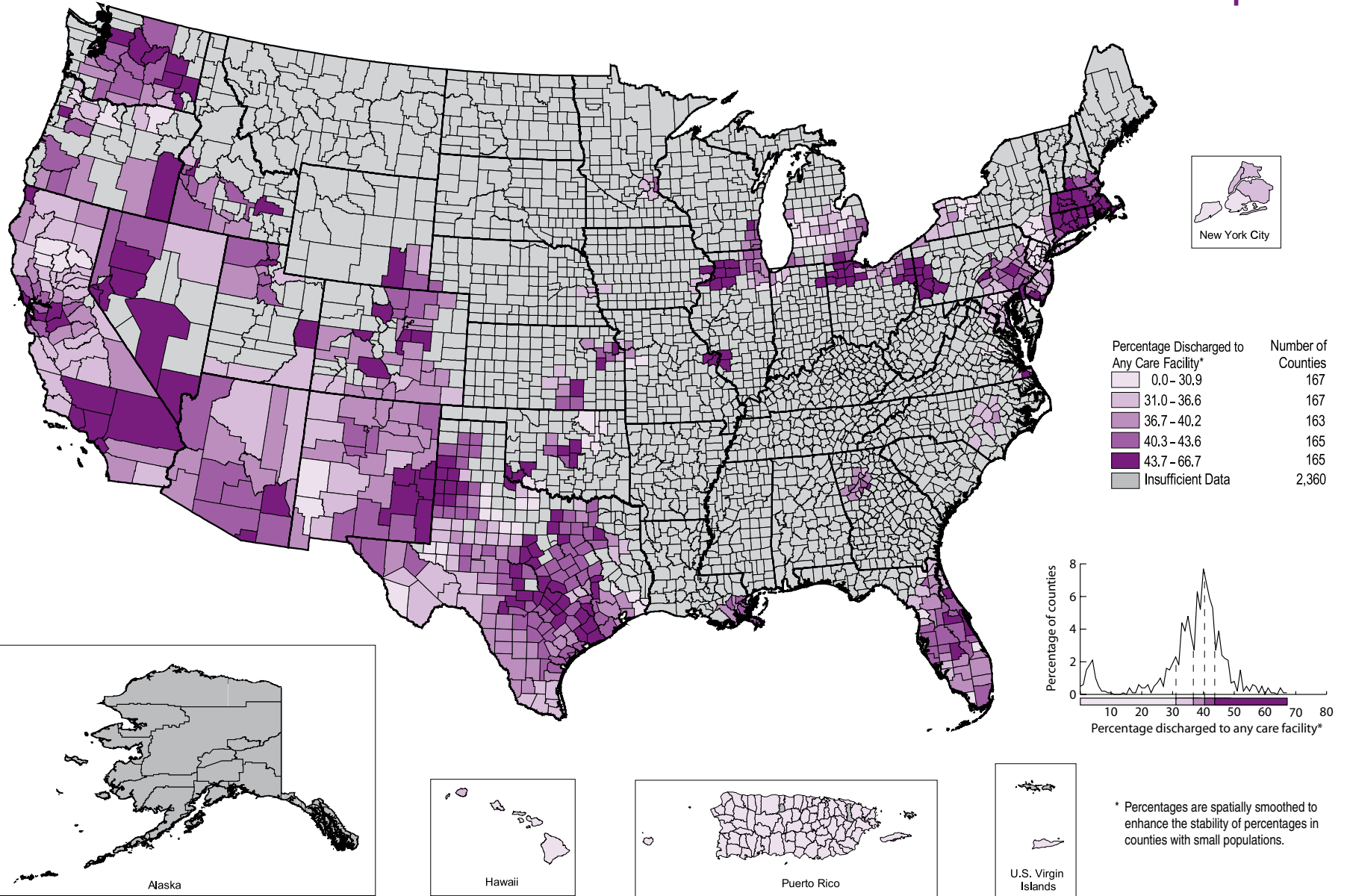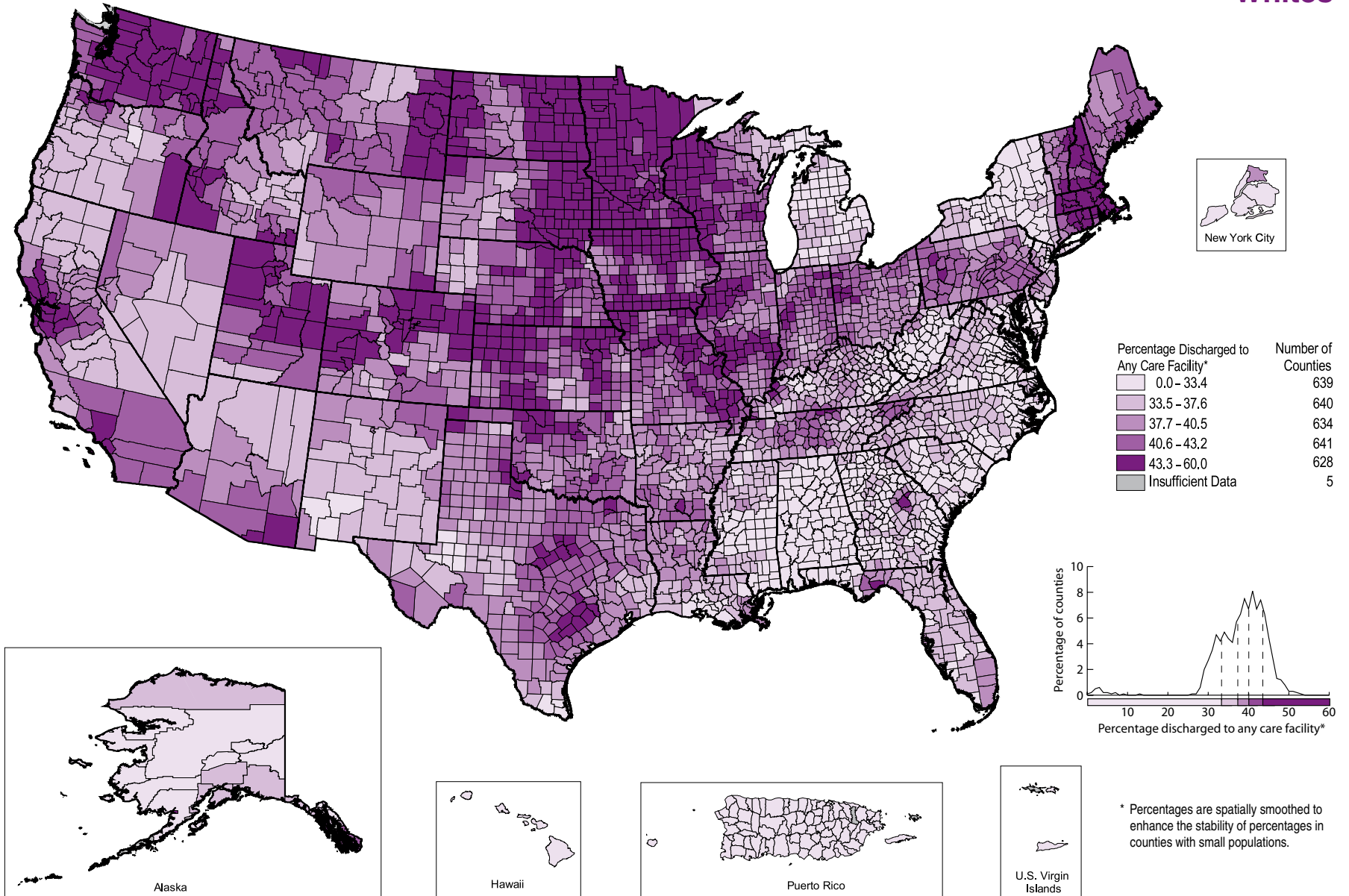* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Discharged to Any Care Facility
Whites

New York City

Percentage Discharged to Any Care Facility*	Number of Counties
0.0 – 33.4	639
33.5 – 37.6	640
37.7 – 40.5	634
40.6 – 43.2	641
43.3 – 60.0	628
Insufficient Data	5

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Stroke Hospitalizations: Died Before Discharge

Total Population

Among Medicare beneficiaries ages 65 and older who were hospitalized for stroke during 1995–2002, 8.8% died before they were discharged. The frequency distribution indicates that for the majority of counties, the percentage of deaths before discharge was between 6% and 11%. Counties with the highest percentages (i.e., those in which at least 9.6% of patients hospitalized for stroke died before being discharged) were scattered throughout the United States, with concentrations in the Northeast, New Mexico, Puerto Rico, parts of the Southeast, and parts of the West.

Blacks

Among black Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 9% died before they were discharged. The frequency distribution indicates that for the majority of counties, the percentage was between 6% and 13%. There did not appear to be a strong geographic pattern. However, pockets of counties with the highest percentages (i.e., those in which at least 10.6% of patients hospitalized for stroke died before being discharged) were observed in New York, South Carolina, Tennessee, Alabama, Mississippi, and Arkansas.

Hispanics

Among Hispanic Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 9.1% died before they were discharged. The frequency distribution indicates that for the majority of counties, the percentage was between 5% and 12%. There did not appear to be a strong geographic pattern. However, pockets of counties with the highest percentages (i.e., those in which at least 10.3% of patients hospitalized for stroke died before being discharged) were found primarily in the Southwest.

Whites

Among white Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 8.7% died before they were discharged. The frequency distribution indicates that for the majority of counties, the percentage was between 7% and 11%. There did not appear to be a strong geographic pattern. However, pockets of counties with the highest percentages (i.e., those in which at least 9.6% of patients hospitalized for stroke died before being discharged) were located in the Northeast, New Mexico, Puerto Rico, parts of the Southeast, and parts of the West.

A Note on Methods

Stroke hospitalizations were defined as those for which the principal diagnosis on the Medicare hospital claim form was cerebrovascular disease, indicated by codes 430–434 and 436–438 according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). Hospitalizations for which the principal diagnosis was transient ischemic attacks (ICD-9-CM code 435) were excluded.

For each map, the counties are categorized according to quintile; the darkest color represents counties with the highest percentages, and the lightest color represents counties with the lowest percentages. All county-level percentages have been spatially smoothed to enhance the stability in counties with small populations. Counties are categorized as having "insufficient data" if the sum of stroke hospitalizations in the index county plus the neighboring counties is less than 20, the Medicare population is less than 10, or the relative standard error of the estimated percentage is ≥30%. For more details, see Appendix B.

The frequency distribution in the bottom right corner of each map shows the range of percentages observed among counties on the corresponding map. The vertical dotted lines and the graded color bar along the x-axis illustrate the quintiles into which counties were divided on the basis of these percentages.
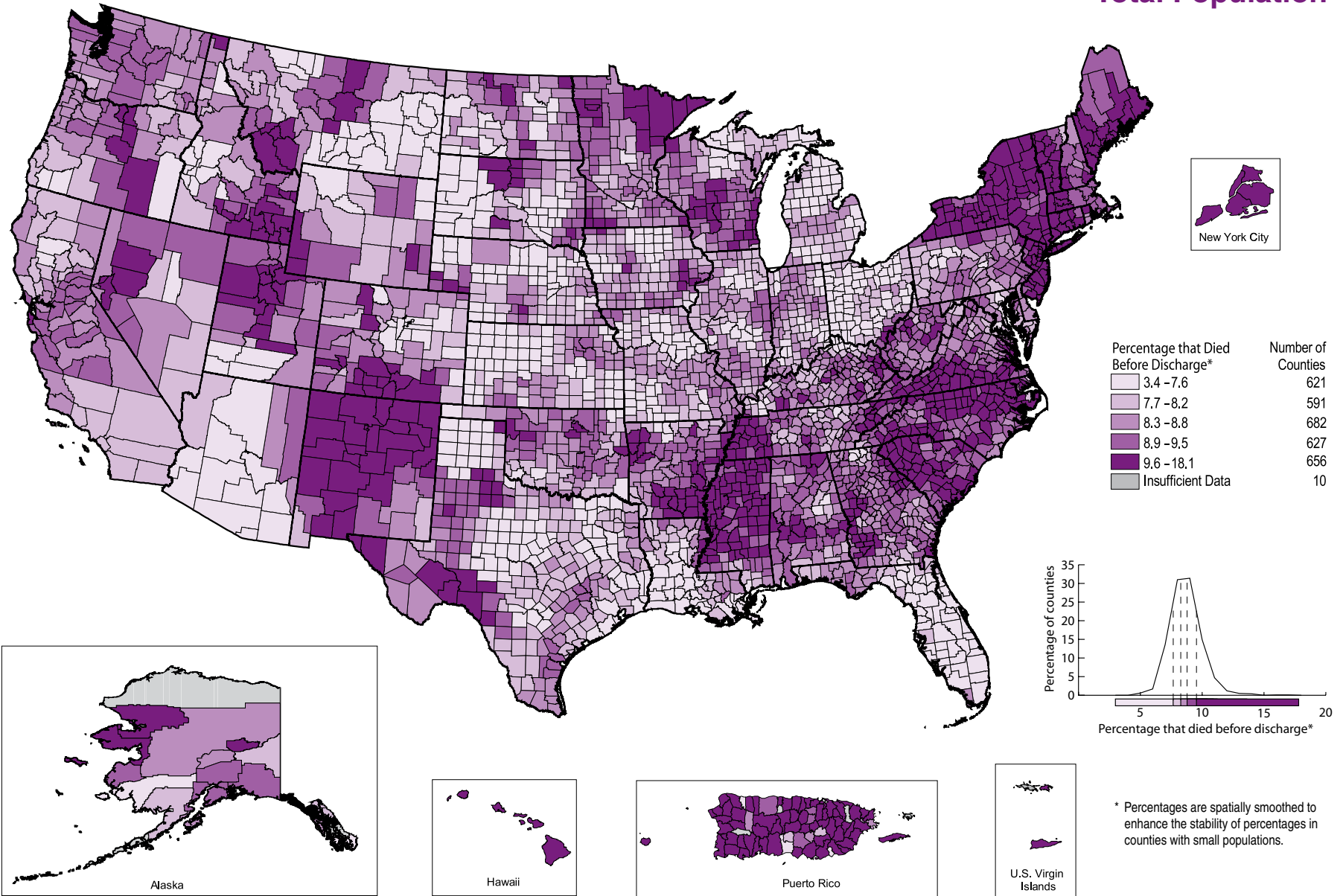
The quintiles do not always have equal numbers of counties because many counties have the same percentage of hospitalizations. For a detailed explanation of the methods, see Appendix B.

A Cautionary Note

In the Medicare data sets, the accuracy of codes for Hispanic race and ethnicity is limited because these codes are not reported separately. For example, a person who is white and Hispanic is reported as either white or Hispanic. This reporting practice can result in misclassification of race and ethnicity. According to 1996 data, the probability that the racial/ethnic designation on Medicare claim forms is correct is 96.6% for whites and 95.5% for blacks, but only 19.4% for Hispanics. At the same time, the probability that a person identified as Hispanic in the Medicare data set is actually Hispanic is 98% (Arday SL, Arday DR, Monroe A, Zhang MD. HCFA's racial and ethnic data: current accuracy and recent improvements. *Health Care Financing Review* 2000;21[4]:107–16). Together, these data suggest that Hispanics are underreported in the Medicare data sets and that this underreporting could introduce bias into the results presented here.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Died Before Discharge
Total Population

New York City

Percentage that Died Before Discharge*	Number of Counties
3.4 – 7.6	621
7.7 – 8.2	591
8.3 – 8.8	682
8.9 – 9.5	627
9.6 – 18.1	656
Insufficient Data	10

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Died Before Discharge
Blacks
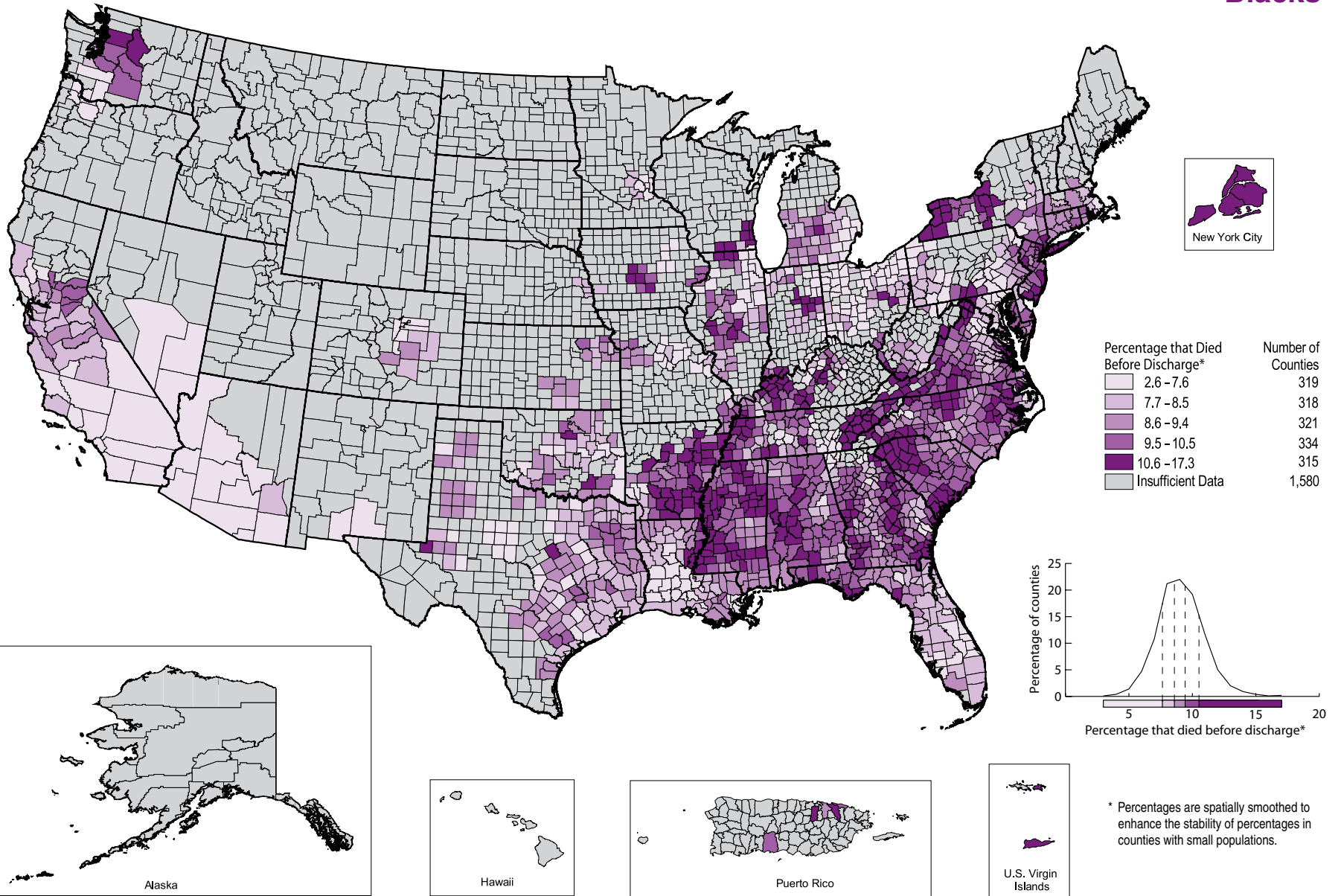
New York City

Percentage that Died Before Discharge*	Number of Counties
2.6 – 7.6	319
7.7 – 8.5	318
8.6 – 9.4	321
9.5 – 10.5	334
10.6 – 17.3	315
Insufficient Data	1,580

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage that died before discharge*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Stroke Hospitalizations: Died Before Discharge
Hispanics

New York City

Percentage that Died Before Discharge*	Number of Counties
3.1 – 6.7	69
6.8 – 7.9	70
8.0 – 9.0	71
9.1 – 10.2	69
10.3 – 17.3	71
Insufficient Data	2,837

Percentage of counties

Percentage that died before discharge*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older
1995–2002

New York City

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage that Died Before Discharge*	Number of Counties
3.5 –7.6	681
7.7 –8.3	675
8.4 –8.8	601
8.9 –9.5	628
9.6 –17.1	581
Insufficient Data	21

Percentage of counties

Percentage that died before discharge*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Total Population

Overall, 13.9% of Medicare beneficiaries ages 65 and older who were hospitalized for stroke during 1995–2002 died within 30 days of being admitted to the hospital. The frequency distribution indicates that for the majority of counties, the percentage was between 12% and 17%. There did not appear to be a strong geographic pattern. However, counties with the highest percentages (i.e., those in which at least 15.4% of patients hospitalized for stroke died within 30 days) were located primarily in the western half of the United States and Puerto Rico.

Blacks

Among black Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 12.9% died within 30 days of being admitted to the hospital. The frequency distribution indicates that for the majority of counties, the percentage was between 10% and 18%. Pockets of counties with the highest percentages (i.e., those in which at least 15.6% of patients hospitalized for stroke died within 30 days) were located primarily in parts of the Southeast, the Delta Region, and Washington.

Hispanics

Among Hispanic Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 13% died within 30 days of being admitted to the hospital. The frequency distribution indicates that for the majority of counties, the percentage was between 9% and 20%. There did not appear to be a strong geographic pattern. However, counties with the highest percentages (i.e., those in which at least 15.5% of patients hospitalized for stroke died within 30 days) were located mainly in Arizona, New Mexico, Colorado, and Puerto Rico.

Whites

Among white Medicare beneficiaries ages 65 and older who were hospitalized for stroke, 13.9% died within 30 days of being admitted to the hospital. The frequency distribution indicates that for the majority of counties, the percentage was between 12% and 17%. There did not appear to be a strong geographic pattern. However, counties with the highest percentages (i.e., those in which at least 15.4% of patients hospitalized for stroke died within 30 days) were located primarily in the western half of the United States and Puerto Rico.

A Note on Methods

Stroke hospitalizations were defined as those for which the principal diagnosis on the Medicare hospital claim form was cerebrovascular disease, indicated by codes 430–434 and 436–438 according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). Hospitalizations for which the principal diagnosis was transient ischemic attacks (ICD-9-CM code 435) were excluded.

For each map, the counties are categorized according to quintile; the darkest color represents counties with the highest percentages, and the lightest color represents counties with the lowest percentages. All county-level percentages have been spatially smoothed to enhance the stability in counties with small populations. Counties are categorized as having "insufficient data" if the sum of stroke hospitalizations in the index county plus the neighboring counties is less than 20, the Medicare population is less than 10, or the relative standard error of the estimated percentage is ≥30%. For more details, see Appendix B.

The frequency distribution in the bottom right corner of each map shows the range of percentages observed among counties on the corresponding map. The vertical dotted lines and the graded color bar along the x-axis illustrate the quintiles into which counties were divided on the basis of these percentages.
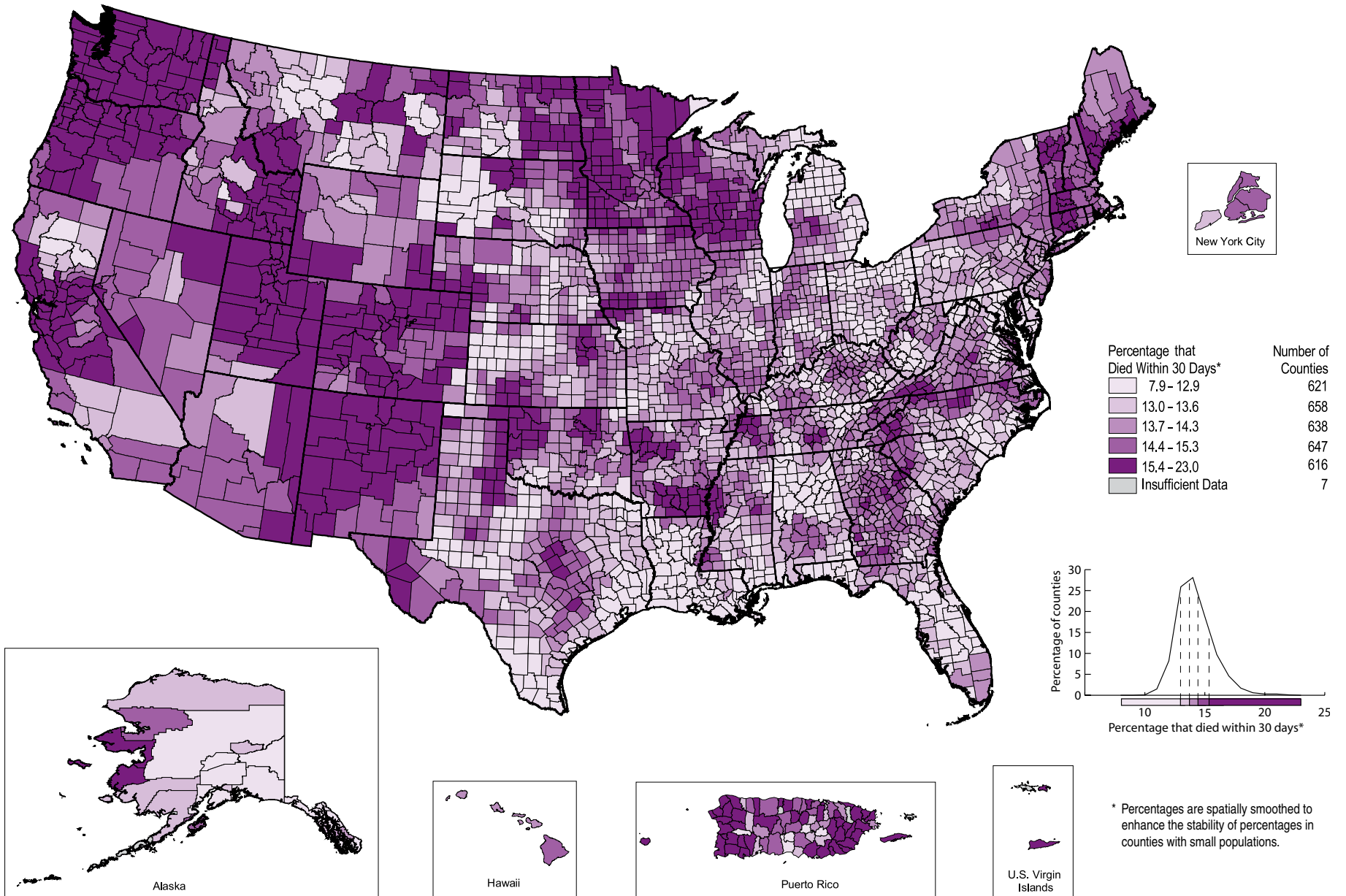
The quintiles do not always have equal numbers of counties because many counties have the same percentage of hospitalizations. For a detailed explanation of the methods, see Appendix B.

A Cautionary Note

In the Medicare data sets, the accuracy of codes for Hispanic race and ethnicity is limited because these codes are not reported separately. For example, a person who is white and Hispanic is reported as either white or Hispanic. This reporting practice can result in misclassification of race and ethnicity. According to 1996 data, the probability that the racial/ethnic designation on Medicare claim forms is correct is 96.6% for whites and 95.5% for blacks, but only 19.4% for Hispanics. At the same time, the probability that a person identified as Hispanic in the Medicare data set is actually Hispanic is 98% (Arday SL, Arday DR, Monroe A, Zhang MD. HCFA's racial and ethnic data: current accuracy and recent improvements. *Health Care Financing Review* 2000;21[4]:107–16). Together, these data suggest that Hispanics are underreported in the Medicare data sets and that this underreporting could introduce bias into the results presented here.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Died Within 30 Days
Total Population

New York City

Percentage that Died Within 30 Days*	Number of Counties
7.9 – 12.9	621
13.0 – 13.6	658
13.7 – 14.3	638
14.4 – 15.3	647
15.4 – 23.0	616
Insufficient Data	7

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage that died within 30 days*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Died Within 30 Days
Blacks
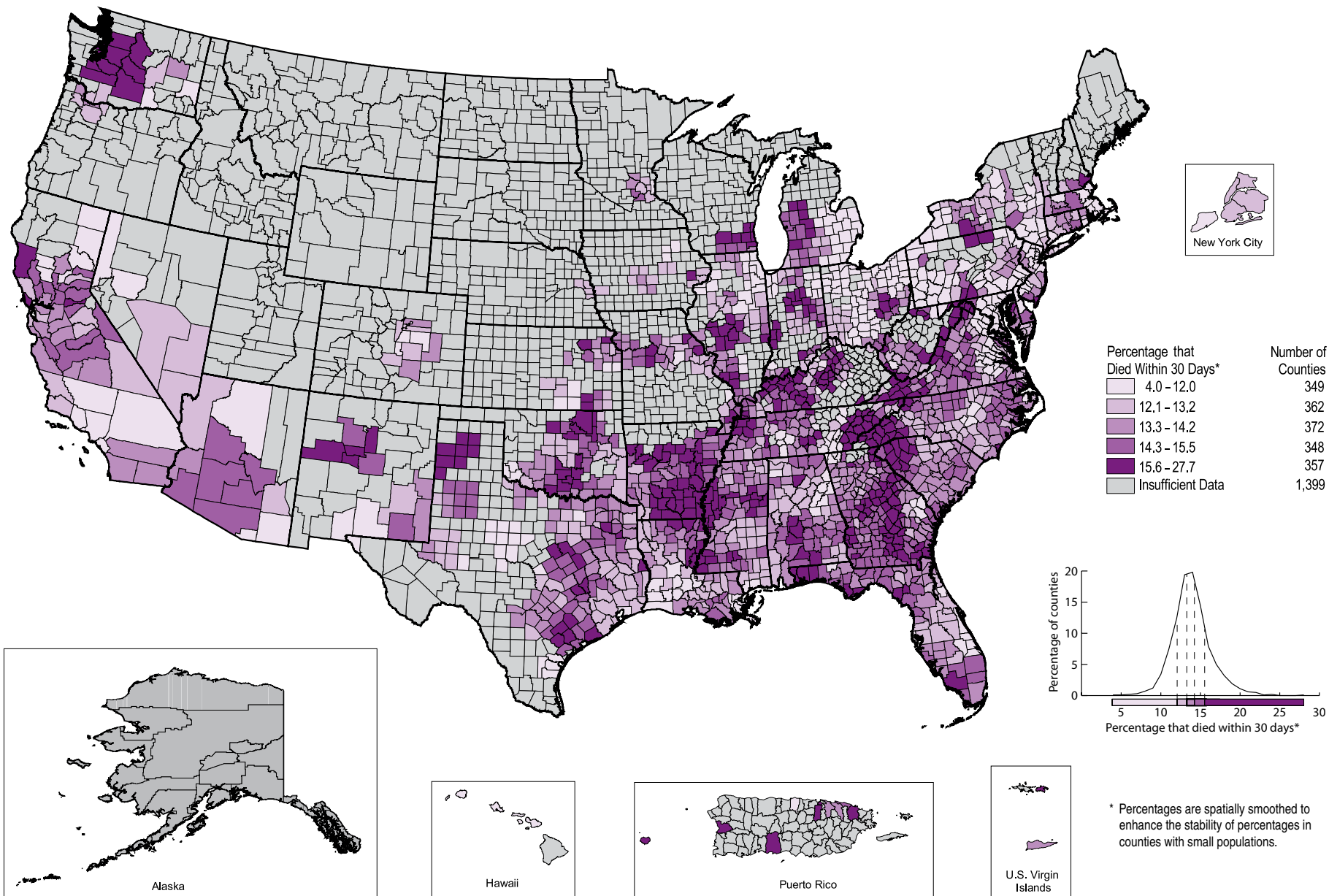
New York City

Percentage that Died Within 30 Days*	Number of Counties
4.0 – 12.0	349
12.1 – 13.2	362
13.3 – 14.2	372
14.3 – 15.5	348
15.6 – 27.7	357
Insufficient Data	1,399

Percentage of counties

Percentage that died within 30 days*

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Died Within 30 Days
Hispanics

New York City

Percentage that Died Within 30 Days*	Number of Counties
5.6 – 10.5	94
10.6 – 11.9	97
12.0 – 13.3	99
13.4 – 15.4	95
15.5 – 17.3	100
Insufficient Data	2,702

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage that died within 30 days*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.

Medicare Beneficiaries Ages 65 and Older 1995–2002

Stroke Hospitalizations: Died Within 30 Days
Whites

New York City

Percentage that Died Within 30 Days*	Number of Counties
8.1 – 12.9	653
13.0 – 13.6	653
13.7 – 14.3	609
14.4 – 15.3	627
15.4 – 27.2	630
Insufficient Data	15

Alaska

Hawaii

Puerto Rico

U.S. Virgin Islands

Percentage of counties

Percentage that died within 30 days*

* Percentages are spatially smoothed to enhance the stability of percentages in counties with small populations.