SMSU AG BOWL Milk Quality Cheese Matrix 2024

A. Maximum Moisture = 46%

B. Minimum Fat in Solids = 50%

C. Does Not Receive “Pasta Filata Treatment”

D. Salted in Brine

E. Cheese is unripened

F. Originated in United States

Milk Quality Exam
2024 SMSU Ag Bowl Scholarship Invitational

Marketing

1. A Federal Milk Marketing order is a regulation issued by the _____.
    a. Governor
    b. House of Representatives
    c. President
    d. Secretary of Agriculture

2. The top 2 cheese producing states are _____and _____.
    a. Idaho and Wisconsin
    b. California and Wisconsin
    c. Minnesota and New York
    d. Minnesota and Wisconsin

3. In the last 30 years the number of Federal Milk Marketing orders has _____.
    a. Increased
    b. Stayed the same
    c. Decreased
    d. None of the above

4. The law of supply states that producers will increase the amount of resources used when the milk price _____.
    a. Increases
    b. Does not change
    c. Decreases
    d. None of the above

5. Which of the following is in Class I?
    a. Cheese
    b. Fluid milk
    c. Butter
    d. Yogurt

6. The major component in milk is _____.
    a. Water
    b. Lactose
    c. Fat
    d. Protein

7. The primary spoilage organisms in milk are _____.
    a. Bacteria
    b. Mold
    c. Virus
    d. Unclean

8. Per capita consumption of this cheese has tripled since 1980.
    a. Feta
    b. Blue
    c. Mozzarella
    d. Cheddar

9. Who is regulated by a milk marketing order?
    a. All milk handers
    b. Milk haulers
    c. Grade A handlers
    d. Grade A and B handlers

10. Canadian dairy industry operates under a _____system.
    a. Free market
    b. Quota
    c. Futures market
    d. Paid diversion

11. Farmers are paid a premium by cheese plants for low somatic cell counts because _____.
    a. Shorten cheese making time
    b. Increase cheese shelf life
    c. Increase flavor
    d. Increase cheese yield

12. In a multiple component pricing system farmers are paid on the basis of _____.
    a. Fat and protein
    b. Lactose content
    c. Fat and lactose content
    d. Protein content

13. If a good is elastic consumers are _____.
    a. Not likely to buy an alternative product
    b. Not sensitive to price
    c. Sensitive to price
    d. None of the above

14. Which of the following is a portion of the milk check that a dairy farmer can not control?
    a. Milk quality
    b. Volume of milk
    c. Component levels
    d. Hauling rates

15. Which of the following is not a unique trait of milk that makes it difficult to market _____.
    a. Perishability
    b. Seasonal supply and demand
    c. Can be transformed into many products
    d. None of the above

16. Per capita consumption of cheese in the US is _____lbs.
    a. 10
    b. 30
    c. 75
    d. 100

17. In a competitive market, the equilibrium price is the only _____price.
    a. Competitive
    b. Possible
    c. Stable
    d. Unstable

18. Grade B milk can be used for Class _____dairy products.
    a. I
    b. II
    c. III
    d. All of the above

19. At what stages of transportation is milk tested?
    a. Before going into bulk tank
    b. Before going into truck
    c. Before unloading at creamery
    d. Both B and C

20. The law of supply states that producers will _____the amount of resources used when milk price increases.
    a. Decrease
    b. Not change
    c. Increase
    d. All of the above

21. When milkfat is skimmed from whole milk, _____is also removed to a large degree.
    a. Vitamins A, D, E and K
    b. Lactose
    c. Calcium
    d. Casein

AG BOWL
SCHOLARSHIP
INVITATIONAL

22. The rate per cwt of milk for February 2020 is _____.
    a. $10
    b. $14
    c. $17
    d. $21

23. If a dairy farmer wanted to raise the mailbox price per cwt for their milk, what components should they try to increase?
    a. Somatic cell
    b. Pounds
    c. Whey
    d. Butterfat

24. UHT milk _____.
    a. Is popular in the United States
    b. Has an extended shelf life
    c. Requires refrigeration
    d. All of the above

25. Today's creameries would rather purchase milk from _____.
    a. Local dairies
    b. Out of state dairies
    c. Larger dairies
    d. Smaller dairies

26. The actual cost of producing dairy products that is used in the Class III and IV pricing formula is called the _____.
    a. Milk-feed ratio price
    b. Cooperative bonus premium
    c. Federal Order price
    d. Make allowance

27. To make one pound of whole milk cheese requires approximately _____pounds of whole milk.
    a. 5
    b. 10
    c. 20
    d. 40

28. Based on Federal Order pricing, which component of milk is the most valuable?
    a. Fat
    b. Other Solids
    c. Protein
    d. Somatic Cells

29. If a good is elastic, consumers are _____.
    a. Not sensitive to price
    b. Sensitive to price
    c. Not Likely to by an alternative product
    d. None of the above

30. What percentage of milk produced in the US is used to make cheese?
    a. 15%
    b. 70%
    c. 50%
    d. 35%

Production

31. DHIA provides _____.
    a. Milk testing
    b. Payments
    c. Premiums
    d. None of the above

32. _____disease is a wasting disease and animals lose weight even when they eat.
    a. Ketosis
    b. Mastitis
    c. Johne's
    d. Milk Fever

33. Farmers are paid a premium by some cheese plants for low somatic cell counts because low counts _____.
    a. Increase cheese yield
    b. Decrease cheese yield
    c. Increase shelf life
    d. Shorten process

34. Healthy open cows will start a new reproductive cycle every _____days.
    a. 5-7
    b. 21-28
    c. 30-34
    d. 47-50

35. The formation of fatty acids causes a _____off flavor in milk.
    a. Bitter
    b. Salty
    c. Rancid
    d. Garlic

36. A gallon of milk weighs _____lbs.
    a. 5.6
    b. 7.2
    c. 8.6
    d. 9.4

37. The _____test measures the fat content of milk.
    a. Kjeldahl
    b. Mohr Titration
    c. Dumas
    d. Babcock

38. The standard plate count of milk reports the _____.
    a. Aerobic bacteria
    b. Anaerobic bacteria
    c. Somatic cell
    d. Percent protein

39. A CMT test appearance with a strong gel formation that tends to adhere to the paddle and forms a distinct central peak would be a leukocyte per ml of _____.
    a. Below 200,000
    b. 150,000-500,000
    c. 800,000-5,000,000
    d. Over 5,000,000

40. Generally, which breed produces the milk with the highest protein percentage?
    a. Holstein
    b. Ayrshire
    c. Brown Swiss
    d. Jersey

41. Milkstone on dairy equipment is often caused by _____.
    a. Use of hard water for cleaning
    b. Failure to use acid sanitizers
    c. Failure to use adequate detergent
    d. All of the above

42. Where is the sale of raw milk legal in Minnesota?
    a. On the farm it was produced
    b. Nowhere
    c. Farmers markets
    d. Grocery stores

43. To check if water has been illegally added to milk, what test is used?
    a. Titratable
    b. Calcium
    c. Freezing point
    d. Acid test

44. The sugar of milk that bacteria convert to acid is _____.
    a. Maltose
    b. Trehalose
    c. Lactose
    d. Fructose

45. What should be used on teats after milking to prevent mastitis?
    a. Teat dip
    b. Paper towel
    c. Chlorine
    d. Bag balm

46. Generally, which breed is known for high production?
    a. Jersey
    b. Holstein
    c. Brown Swiss
    d. Milking shorthorn

47. Milk from a cow with mastitis will have _____.
    a. High somatic cell count
    b. Abnomal freezing point
    c. Both a and b
    d. None of the above

48. The major group of proteins in milk are _____.
    a. Caseins
    b. Serum albumin
    c. Whey proteins
    d. Fructose

49. Milk in a bulk tank, when picked up by hauler should be at _____.
    a. 32 degrees
    b. 39 degrees
    c. 45 degrees
    d. 50 degrees

50. Which state has the least number of dairy cattle?
    a. Alabama
    b. Alaska
    c. Minnesota
    d. Hawaii

51. Normal pH of milk is _____.
    a. Slightly basic
    b. Slightly acid
    c. Very basic
    d. Very acidic

52. Dairy producers use stainless steel equipment because _____
    a. Surfaces can be polished to a smooth finish
    b. Surfaces do not corrode easily
    c. Surfaces can be cleaned easily
    d. All of the above

53. Which of the following fatty acids in milk that is associated with health benefits in humans tends to increase with pasture feeding of cows?
    a. Butyric acid
    b. Linoleic acid
    c. Lactic acid
    d. Caproic acid

54. Robots are becoming more popular in milk production, how do producers justify the original cost?
    a. Lower labor cost
    b. More consistent milking
    c. Better data collection
    d. All of the above

55. Princess Kay of the Milky Way, is an important asset to Minnesota's dairy industry, name the 65th.
    a. Ann Miron
    b. Rebekka Paskewitz
    c. Stephanie Brandt
    d. Amy Kyllo

56. What is a major reason for limiting the use of antibiotics with lactating dairy cows?
    a. Antibiotics are toxic to cows
    b. Antibiotics may be found in the milk for many hours after treatment
    c. Antibiotics are ineffective when they contact milk
    d. Antibiotics cost more than dairymen can afford

57. A cryoscope is an important tool that tests for _____in milk.
    a. Antibiotics
    b. Butterfat
    c. Pesticides
    d. Added Water

58. _____disease is a wasting disease and animals loose weight even when they eat well.
    a. Ketosis
    b. Mastitis
    c. Johne's
    d. Milk Fever

59. A gallon of milk weighs _____lbs.
    a. 5.6
    b. 7.2
    c. 8.6
    d. 9.4

60. The sides of your tongue are most sensitive to _____.
    a. Sweet
    b. Sour
    c. Bitterness
    d. Salty

AG BOWL
SCHOLARSHIP
INVITATIONAL

Dairy farm numbers hover near 40,000

The dairy industry said good-bye to 1,600 operations the past year. On a percentage basis, losses were the largest in the Southeast and Midwest.

by Corey Geiger, Managing Editor, Hoard's Dairyman

As DAIRY cow numbers climbed to a 22-year high point, dairy farm numbers reached a modern-day low of 40,219. Those diverging trend lines highlight an industry that continues to consolidate. In 1995, there were 111,825 dairy operations with permits to sell milk. With a collective national dairy herd of 9.461 million cows that year, the average herd size was 85 cows. With 40,219 herds remaining and 9.392 million cows on those farms, herd size has climbed to a record 234 cows per herd.

While dairy cows and farms continue to consolidate into clusters, herd losses were equally steady among states with the most dairy farms and those that rank fewer in numbers. When evaluating the top 10 dairy states with 1,000 or more farms, that group lost 3.82 percent of its farms last year. For the remaining 40 states, losses totaled 3.83 percent. Typically, attrition has occurred at a faster pace in the latter group.

In reviewing the prior year's report, USDA added 10 herds to its 2016 estimate, raising the total from 41,809 to 41,819. In the updated data shown to the right, Vermont had 10 more herds.

Table 1. Licensed U.S. dairy farms

Year	Number	% change
1992	131,509	
1993	124,945	-5.0
1994	117,732	-5.8
1995	111,825	-5.0
1996	106,181	-5.3
1997	99,413	-6.4
1998	91,508	-8.0
1999	87,527	-4.4
2000	82,937	-5.2
2001	76,875	-7.3
2002	74,012	-3.7
2003	70,375	-4.9
2004	66,830	-5.0
2005	64,540	-3.4
2006	62,070	-3.8
2007	59,130	-4.7
2008	57,127	-3.4
2009	54,932	-3.8
2010	53,132	-3.3
2011	51,291	-3.5
2012	49,281	-3.9
2013	46,975	-4.7
2014	44,809	-4.6
2015	43,534	-2.8
2016	41,819	-3.9
2017	40,219	-3.8

Table 1 details the 26-year history of dairy farms holding permits to sell milk. Since 1992, the drop in licensed, or so-called commercial, dairy farms has declined 91,290 from 131,509 to 40,219. That's a 69 percent drop during that time.

Table 2 provides an overview of the last 26 years of change. Nationally, average herd size has grown 217 percent, from 74 to 234 cows. Over the past year, herd size grew from 223 cows to 234 cows, up 11 head.

Regionally, the West (+329) and the Midwest (+210) have seen the largest percentage gains in herd size. During that time, herd sizes in the Northeast and Southwest grew at half that pace found in the Midwest.

Western herds added 40 cows per herd last year, bringing its average to 1,129. That represented stronger growth in herd size compared to the prior year's 34 cows. This year's 40-cow pace approached the growth that took place from 2012 to 2014 when herd sizes grew 49, 33, and 47 cows, respectively.

For the thirteenth time in the past 15 years, the Southeast had the largest share of farms calling it quits this past year (Table 3). The 6.4 percent total yielded 165 fewer dairy farms. Since 1992, the Southeast has lost more operations than any other area as farms fell from 12,057 to 2,410 . . . a drop of 9,647 farms or 80 percent. Cow numbers followed suit; there are 730,000 fewer cows, a 58 percent drop.

Next was the Midwest, which lost 4.8 percent of its dairy operations. Outside of the Southeast, the Midwest has been the only other region to post the largest reduction in dairy farms. The Midwest lost the most dairies in 2011 and 2014. Overall, its 4.8 percent reduction in farm numbers was the most since 2014. Within the region, Wisconsin lost 430 dairy farms, making that the largest loss in the region. However, on a percentage basis, the Badger State bucked recent trends by being under the regional average at 4.5 percent.

The West and Northeast retained the most dairy farms on a percentage basis, as both regions only fell 2.2 percent. On a total basis, however, the Northeast lost 300 farms compared to 80 in the West.

Table 2. How our industry changed from 1992 to 2017

	1992			2017			Percent change		
	Herds	Cows (1,000s)	Cows/ herd	Herds	Cows (1,000s)	Cows/ herd	Herds	Cows	Cows/ herd
Midwest	80,135	4,100	51	21,120	3,354	159	-74	-18	210
Northeast	29,758	1,824	61	13,060	1,419	109	-56	-22	77
Southeast	12,057	1,253	104	2,410	523	217	-80	-58	109
West	9,559	2,515	263	3,629	4,098	1,129	-62	63	329
U.S.	131,509	9,692	74	40,219	9,394	234	-69	-3	217

Table 3. Dairy farm numbers by state and region

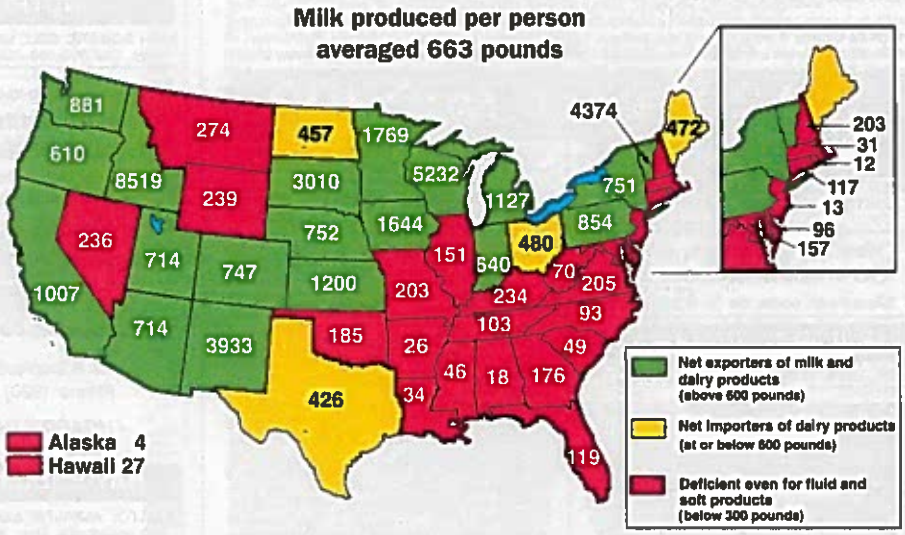
State/Region	2016	2017	Change	Percent change
Midwest				
Illinois	640	630	-10	-1.6
Indiana	1,145	1,070	-75	-6.6
Iowa	1,265	1,200	-65	-5.1
Kansas	290	290	0	0.0
Michigan	1,810	1,750	-60	-3.3
Minnesota	3,350	3,210	-140	-4.2
Missouri	1,100	1,040	-60	-5.5
Nebraska	175	155	-20	-11.4
North Dakota	85	80	-5	-5.9
Ohio	2,560	2,380	-180	-7.0
South Dakota	235	225	-10	-4.3
Wisconsin	9,520	9,090	-430	-4.5
Region total	***22,175***	***21,120***	***-1,055***	***-4.8***
Northeast				
Connecticut	120	110	-10	-8.3
Delaware	35	30	-5	-14.3
Maine	250	250	0	0.0
Maryland	420	400	-20	-4.8
Massachusetts	140	140	0	0.0
New Hampshire	120	110	-10	-8.3
New Jersey	60	55	-5	-8.3
New York	4,650	4,490	-160	-3.4
Pennsylvania	6,650	6,570	-80	-1.2
Rhode Island	10	10	0	0.0
Vermont	830	820	-10	-1.2
West Virginia	75	75	0	0.0
Region total	***13,360***	***13,060***	***-300***	***-2.2***
Southeast				
Alabama	35	35	0	0.0
Arkansas	60	55	-5	-8.3
Florida	120	110	-10	-8.3
Georgia	210	180	-30	-14.3
Kentucky	630	600	-30	-4.8
Louisiana	100	95	-5	-5.0
Mississippi	75	70	-5	-6.7
North Carolina	210	190	-20	-9.5
Oklahoma	160	160	0	0.0
South Carolina	60	60	0	0.0
Tennessee	300	270	-30	-10.0
Virginia	615	585	-30	-4.9
Region total	***2,575***	***2,410***	***-165***	***-6.4***
West				
Alaska	2	2	0	0.0
Arizona	110	100	-10	-9.1
California	1,420	1,390	-30	-2.1
Colorado	120	120	0	0.0
Hawaii	2	2	0	0.0
Idaho	520	510	-10	-1.9
Montana	65	65	0	0.0
Nevada	20	20	0	0.0
New Mexico	150	150	0	0.0
Oregon	230	230	0	0.0
Texas	400	400	0	0.0
Utah	180	180	0	0.0
Washington	480	450	-30	-6.3
Wyoming	10	10	0	0.0
Region total	***3,709***	***3,629***	***-80***	***-2.2***
U.S. Total	**41,819**	**40,219**	**-1,600**	**-3.8**

Dairy cow numbers reached a 22-year high

As THE nation's dairy herd inched toward the 9.4 million-cow plateau in 2017, it reached numbers not seen since 1994's 9.461 million head. Back then, total milk production was 155.6 billion pounds with 16,451 pounds per cow. Fast-forward 22 years, and the 9.392 million cows collectively produced 215.5 billion pounds for a 22,941-pound average per cow.

Overall, U.S. milk flow climbed 1.4 percent last year, equally split on growth of cow numbers, up 0.7 percent, and milk per cow, up 0.7 percent. Milk per cow ranged from Michigan's industry-leading 26,302 pounds down to Alaska's 9,667.

Year	Billions of pounds	Percent change
2008	190.0	2.3
2009	189.2	-0.3
2010	192.9	1.8
2011	196.3	1.8
2012	200.6	2.1
2013	201.2	0.3
2014	206.1	2.4
2015	208.6	1.3
2016	212.4	1.8
2017	215.5	1.4



2017 milk production

State	Milk output in million pounds	% change from 2016	Rank
Alabama	89	-3.3	46
Alaska	3	-17.1	50
Arizona	5,010	3.6	13
Arkansas	79	-1.3	47
California	39,798	-1.7	1
Colorado	4,189	6.7	15
Connecticut	420	2.7	34
Delaware	93	-2.8	45
Florida	2,496	0.0	20
Georgia	1,840	0.5	23
Hawaii	39	11.5	48
Idaho	14,627	-0.3	4
Illinois	1,929	0.9	22
Indiana	4,264	2.7	14
Iowa	5,172	2.7	12
Kansas	3,496	5.0	16
Kentucky	1,041	-0.6	27
Louisiana	160	-5.3	40
Maine	630	0.0	33
Maryland	953	-0.4	28
Massachusetts	211	-4.5	39
Michigan	11,231	3.3	6
Minnesota	9,864	2.0	8
Mississippi	137	-4.9	42
Missouri	1,240	-1.6	26
Montana	288	-2.4	36
Nebraska	1,444	3.2	25
Nevada	709	7.4	31
New Hampshire	273	-4.9	37
New Jersey	119	-2.5	44
New Mexico	8,212	6.5	9
New York	14,912	0.9	3
North Carolina	952	-1.3	29
North Dakota	345	0.3	35
Ohio	5,591	0.8	11
Oklahoma	728	5.2	30
Oregon	2,529	-2.5	19
Pennsylvania	10,938	1.1	7
Rhode Island	13	-7.8	49
South Carolina	247	-1.2	38
South Dakota	2,618	2.8	18
Tennessee	693	-0.4	32
Texas	12,054	11.9	5
Utah	2,215	5.7	21
Vermont	2,728	0.0	17
Virginia	1,736	0.8	24
Washington	6,526	-1.9	10
West Virginia	127	-5.2	43
Wisconsin	30,320	0.7	2
Wyoming	138	-1.1	41
U.S.	**215,466**	**1.4**	

2017 cow numbers

State	Milk cows 1,000s	% change from 2016	Rank
Alabama	6.0	-14.3	43-T
Alaska	0.3	0.0	50
Arizona	203.0	3.6	13
Arkansas	6.0	0.0	43-T
California	1,749.0	-0.7	1
Colorado	160.0	6.0	15
Connecticut	19.0	0.0	34
Delaware	5.0	0.0	47
Florida	124.0	0.8	18
Georgia	84.0	0.0	25
Hawaii	2.3	-4.2	48
Idaho	600.0	0.8	4
Illinois	93.0	-1.1	22
Indiana	187.0	1.6	14
Iowa	218.0	2.3	12
Kansas	152.0	4.1	16
Kentucky	56.0	-3.4	27
Louisiana	12.0	0.0	39-T
Maine	30.0	0.0	33
Maryland	48.0	0.0	28
Massachusetts	12.0	0.0	39-T
Michigan	427.0	1.9	8
Minnesota	458.0	-0.7	7
Mississippi	9.0	-10.0	41
Missouri	85.0	0.0	24
Montana	13.0	-7.1	37-T
Nebraska	60.0	0.0	26
Nevada	32.0	6.7	32
New Hampshire	13.0	-7.1	37-T
New Jersey	6.0	-14.3	43-T
New Mexico	329.0	4.4	9
New York	623.0	0.5	3
North Carolina	45.0	-2.2	29
North Dakota	16.0	0.0	35
Ohio	263.0	-0.8	11
Oklahoma	39.0	5.4	31
Oregon	124.0	-0.8	19
Pennsylvania	525.0	-0.8	5
Rhode Island	0.8	0.0	49
South Carolina	15.0	0.0	36
South Dakota	117.0	1.7	20
Tennessee	40.0	-4.8	30
Texas	511.0	7.6	6
Utah	95.0	3.3	21
Vermont	129.0	-0.8	17
Virginia	87.0	-3.3	23
Washington	274.0	-0.7	10
West Virginia	8.0	-11.1	42
Wisconsin	1,278.0	-0.1	2
Wyoming	6.0	0.0	43-T
U.S.	**9,392.0**	**0.7**	

2017 milk per cow

State	Milk per cow (pounds)	% change from 2016	Rank
Alabama	14,833	12.9	46
Alaska	9,667	-17.1	50
Arizona	24,680	0.0	4
Arkansas	13,167	-1.2	49
California	22,755	-0.9	16
Colorado	26,181	0.7	2
Connecticut	22,105	2.7	20
Delaware	18,560	-2.8	38
Florida	20,129	-0.8	32
Georgia	21,905	0.5	21
Hawaii	16,913	16.3	41
Idaho	24,378	-1.1	5
Illinois	20,742	2.0	30
Indiana	22,802	1.0	15
Iowa	23,725	0.4	9
Kansas	23,000	0.9	14
Kentucky	18,589	3.0	37
Louisiana	13,333	-5.3	48
Maine	21,000	0.0	27-T
Maryland	19,854	-0.4	34
Massachusetts	17,583	-4.5	39
Michigan	26,302	1.3	1
Minnesota	21,537	2.7	23
Mississippi	15,222	5.7	45
Missouri	14,588	-1.6	47
Montana	22,154	5.1	19
Nebraska	24,067	3.2	6
Nevada	22,156	0.7	18
New Hampshire	21,000	2.4	27-T
New Jersey	19,833	13.8	35
New Mexico	24,960	2.0	3
New York	23,936	0.4	7
North Carolina	21,156	0.8	25
North Dakota	21,563	0.3	22
Ohio	21,259	1.5	24
Oklahoma	18,667	-0.2	36
Oregon	20,395	-1.7	31
Pennsylvania	20,834	1.9	29
Rhode Island	16,250	-7.8	43
South Carolina	16,467	-1.2	42
South Dakota	22,376	1.1	17
Tennessee	17,325	4.6	40
Texas	23,589	4.0	11
Utah	23,316	2.4	12
Vermont	21,147	0.8	26
Virginia	19,954	4.2	33
Washington	23,818	-1.1	8
West Virginia	15,875	6.6	44
Wisconsin	23,725	0.8	10
Wyoming	23,033	-1.1	13
U.S.	**22,941**	**0.7**	