



# Current Report

**EXTENSION**

Oklahoma Cooperative Extension Fact Sheets are also available on our website at:  
[extension.okstate.edu](http://extension.okstate.edu)

## Mask-Wearing Beliefs in the State of Oklahoma and Surrounding Region

Courtney Bir  
Extension Economist

### Introduction

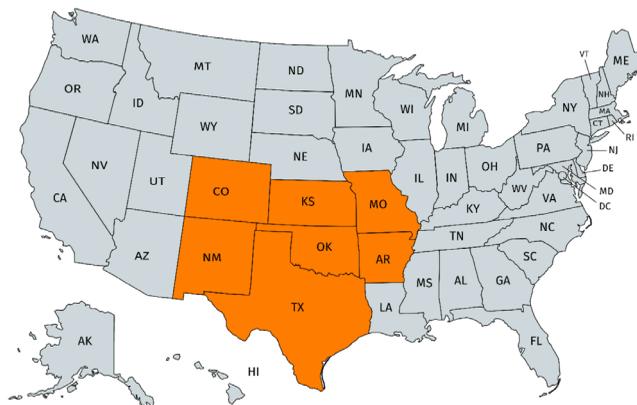
Since COVID-19 first appeared in Wuhan China December 31, 2019<sup>1</sup>, discussion surrounding how to best combat and treat the disease has varied. New information regarding asymptomatic (people who have the disease but never exhibit symptoms) and pre-symptomatic (people who have the disease but have not yet shown symptoms) spread of the virus has changed many recommendations<sup>2</sup>. The CDC now recommends “everyone wear cloth face coverings when leaving their homes, regardless of whether they have fever or symptoms of COVID-19.”<sup>3</sup> Some states and many individual cities and counties have implemented mandatory mask rules in an attempt to slow the spread of COVID-19, while keeping businesses open in hopes of minimizing economic impact. Governor Stitt of Oklahoma said he does not support mandatory masks in Oklahoma; however, individual cities including Stillwater and Norman have approved mask mandates<sup>4</sup>. In Texas, governor Greg Abbot has previously stated he would not support mandatory masks. As COVID-19 cases surged in Texas, Gov. Abbot issued a mandatory mask mandate for those counties with more than 20 coronavirus cases.<sup>5</sup>

The decisions regarding COVID-19 made within a state are likely to be influenced by the surrounding states, and increases in cases of COVID-19 are likely to cross state lines because there are many communities on state borders. Therefore, this analysis focuses on the beliefs and impact felt in Oklahoma (Oklahoma region) in comparison to the rest of the country. Beliefs regarding the impact of COVID-19 on daily life, as well as beliefs and current use of masks or other facial coverings to prevent viral spread is the focus of this analysis. This information is important for businesses, government agencies and individuals when making decisions surrounding COVID-19. Although it was found that 79% of respondents from the Oklahoma region believed masks have some potential role in U.S. society related to the spread of viral disease, many respondents’ beliefs regarding masks were not positive. A higher percentage of respondents from the Oklahoma region believed that wearing a mask does not prevent the spread

of COVID-19 and has negative health consequences for the mask wearer when compared to the rest of the country.

### Methods

Data were collected June 12, 2020 to June 20, 2020, as residents returned to some public places in much of the U.S. Kantar, a company which hosts a large opt-in panel database,<sup>6</sup> was used to obtain survey respondents, who were required to be 18 years of age or older to participate. The research process was approved by Oklahoma State University IRB (number: 20-283). COVID-19 does not recognize state borders; therefore, it was important to analyze not only Oklahoma, but the surrounding states because the beliefs and policies enacted by those residents are likely to have an impact. This method resulted in two groups of states Oklahoma region- Texas, New Mexico, Colorado, Kansas, Missouri and Arkansas; and all other states (Figure 1).



**Figure 1. Oklahoma region (in orange). The surrounding states are New Mexico, Colorado, Kansas, Missouri, Arkansas and Texas.**

The results of demographic questions were compared between the Oklahoma region and rest of the country using the test of proportions.<sup>7</sup> Respondents also were asked on a scale of 1 (not impacted) to 5 (impacted) the level of impact from COVID-19 they experienced for five different daily activities. The activities included the ability to purchase food and supplies and to work, travel and engage in daily activities. The mean responses were compared between the Oklahoma and the rest of the country using a t-test.<sup>8,9</sup> Respondents were presented with the question: “Do you agree that masks (meaning any face covering that covers your nose and mouth) have any role in U.S. society related to the spread of viral disease, especially COVID-19, in the June to December 2020 time frame?” and could select the answer “No-they have absolutely no role whatsoever in U.S. society”, or “Yes-they have some potential role in U.S. society.” Respondents also were asked a series of questions related to beliefs surrounding masks ranging from “wearing a mask helps prevent the spread of COVID-19” to “wearing a mask has negative health consequences for the mask wearer.” Respondents who believed masks had a role in U.S. society were asked a follow up set of questions regarding their behavior at specific locations. If respondents indicated the location was open in their community, and that it was a location they attended, respondents were asked their mask-wearing status. The percentage of respondents who indicated they wore a mask voluntarily, they were required to wear a mask or they did not wear a mask was tabulated and statistically compared. Respondents also were asked their level of agreement on a scale of 1 (strongly disagree)

to 5 (strongly agree) their level of agreement that someone in their household, or that they frequently spend time with, is at a higher risk of complications of COVID-19 and the level of agreement the respondent was at a higher risk. According to the CDC, older adults and people with certain underlying medical conditions are at increased risk of severe illness from COVID-19.<sup>10</sup> Underlying medical conditions that increase risk of severe illness from COVID-19 include: chronic kidney disease, COPD, immunocompromised states, obesity, serious heart condition, sickle cell disease and type 2 diabetes.<sup>11</sup> The mean response for the two questions for each state grouping is reported, and a t-test was used to statistically compare the Oklahoma the rest of the country.

## Results and Discussion

Demographics of the Oklahoma region were very similar to the rest of the country with a few exceptions. A higher percentage of respondents from the Oklahoma region were between the ages of 18 to 24 and a lower percentage were greater than 65 years old when compared to the rest of the country.

Respondents were asked on a scale from 1 (not impacted) to 5 (impacted) the level of impact COVID-19 had on five different activities (Table 2). Respondents also had the opportunity to select “this does not apply to me”. The mean response for those that the activity applied to was calculated. While daily life was interrupted considerably by COVID-19, it impacted their ability to acquire food and paper products the least. Most of the interruptions concerned their ability to work, attend school

**Table 1. Demographics for Oklahoma region and the rest of the country. (Percentage of respondents).**

Demographic Variable	Oklahoma + surrounding states Respondents n=151	Rest of U.S. Respondents n=1,047	U.S. Census
Gender			
Male	47	47	49
Female	53	52	51
Age			
18-24	16 <sup>1</sup>	9 <sup>1</sup>	13
25-34	20	17	18
35-44	16	16	16
45-54	18	18	17
55-65	14	17	17
65 +	14 <sup>1</sup>	21 <sup>1</sup>	19
Income			
\$0-\$24,999	25	24	22
\$25,000-\$49,999	24	25	23
\$50,000-\$74,999	18	18	17
\$75,000-\$99,999	13	13	12
\$100,000 and higher	19	19	26
Education			
Did not graduate from high school	4	2	13
Graduated from high school, did not attend college	32	28	28
Attended college, no degree earned	27	23	21
Attended college, associates or bachelor’s degree earned	25	32	27
Attended college, graduate or professional degree earned	11	14	12

<sup>1</sup> Indicates the percentage of respondents from that category from Oklahoma and surrounding states is statistically different than the rest of the country at the <0.05 level.

and travel. Although grocers in Oklahoma admitted there were empty shelves and a particular item may not have been available, there was plenty of food on the shelves in general (Hoferock, 2020). The Oklahoma region indicated they experienced a lower level of impact related to the ability to find paper products when compared to the rest of the country. The Oklahoma region experienced higher levels of impact in their ability to execute travel plans and activities related to the respondent's work/school. On March 24th, 2020, Oklahoma Governor Kevin Stitt ordered all non-essential businesses to close for 21 days starting March 25th, 2020.<sup>12</sup> The closing was extended until April 22, 2020 when phased reopening was allowed.<sup>13</sup> Many of the states surrounding Oklahoma had similar shelter-in-place type orders, which likely had a high level of impact on the respondents.

Seventy-nine percent of respondents from the Oklahoma region indicated that "yes-masks have some potential role in U.S. society related to the spread of viral disease, especially COVID-19" (Table 3). This was not different from the rest of the country. A lower percentage of respondents in the Oklahoma region indicated wearing a mask helps prevent the spread of COVID-19, helps prevent me (the respondent) from getting COVID-19 and helps prevent me from spreading COVID-19

when compared to the rest of the country. According to the CDC, cloth face coverings work as a barrier to prevent respiratory droplets from traveling into the air and onto other people during normal activities such as talking, coughing or sneezing (CDCb, 2020). Respiratory droplets play a role in spreading COVID-19; therefore face coverings are recommended.<sup>14</sup> Wearing a mask is more beneficial in terms of preventing the spread of the disease, as opposed to protecting the wearer from the disease as the eyes are still exposed.<sup>15,16</sup> However, if everyone is wearing a mask, the number of droplets that can reach an individual decreases, minimizing exposure.<sup>16</sup> This is especially important when considering asymptomatic (people who have the disease but never exhibit symptoms) and pre-symptomatic (people who have the disease but have not shown symptoms yet) spread.<sup>16</sup> A lower percent of respondents from the Oklahoma region believed wearing a mask will help prevent future lock-downs in their community related to COVID-19 when compared to the rest of the country. It is unclear if respondents believed the overall number of cases would not decrease from mask usage, and therefore a future lock-down would be inevitable or if they believed masks just are not enough. Evaluating the potential economic benefit of masks, a study by economists at Goldman Sachs states that \$1 trillion in the U.S. GDP can

**Table 2. Impact level of COVID-19 on daily life for Oklahoma region and the rest of the country and mean response for both groups for all respondents who did not select "does not apply to me."**

Activity	1 (Not impacted)		2		3		4		5 (Impacted)		Does not apply to me		Mean	
	OK	Other	OK	Other	OK	Other	OK	Other	OK	Other	OK	Other	OK	Other
Respondents daily activities outside of work/school	17	12	10	8	17	18	19	22	30	32	6	8	3.38ab <sup>1</sup>	3.59a N=142 N=964
Ability to buy paper products (e.g., toilet paper, paper towels)	21	13	14	9	15	20	23	25	24	30	3	2	3.16ac <sup>2</sup>	3.50a <sup>2</sup> N=142 N=1026
Ability to find meat, milk and perishable grocery items	21	20	17	16	23	22	19	23	17	17	3	3	2.93c	3.02b N=147 N=1020
Ability to execute travel plans	16	10	3	4	11	10	13	14	42	40	16	23	3.72bd	3.91c N=127 N=808
Activities related to respondent's work/school	13	15	12	5	11	9	14	13	33	30	17	28	3.52ad	3.54a N=125 N=755

<sup>1</sup> Matching letters indicate the mean is statistically different down the column. For example for Oklahoma region the mean response for respondents daily activities outside of work/school is not statistically different from ability to buy paper products, but ability to find meat, milk and perishable grocery items is different at the <0.05 level.

<sup>2</sup> Indicates the mean is statistically different between Oklahoma region and the rest of the country for that activity at the <0.05 level.

**Table 3. Percentage of respondents who agree with mask-related statements.**

	Oklahoma region N=151	Rest of U.S. N=1,047
YES - masks have some potential role in U.S. society related to the spread of viral disease, especially COVID-19	79 <sup>1</sup>	84 <sup>1</sup>
Wearing a mask helps prevent the spread of COVID-19	62 <sup>1,2</sup>	71 <sup>1,2</sup>
Wearing a mask helps prevent me from getting COVID-19	45 <sup>2</sup>	54 <sup>1,2</sup>
Wearing a mask helps prevent me from spreading COVID-19	55 <sup>2</sup>	65 <sup>1,2</sup>
Wearing a mask will help prevent future lock-downs in my community related to COVID-19	36 <sup>1,2</sup>	49 <sup>2</sup>
There is social pressure in my community to wear a mask	31 <sup>1</sup>	31 <sup>1</sup>
Wearing a mask does not prevent the spread of COVID-19	19 <sup>1,2</sup>	13 <sup>1,2</sup>
Wearing a mask has negative health consequences for the mask wearer	15 <sup>1,2</sup>	12 <sup>1,2</sup>

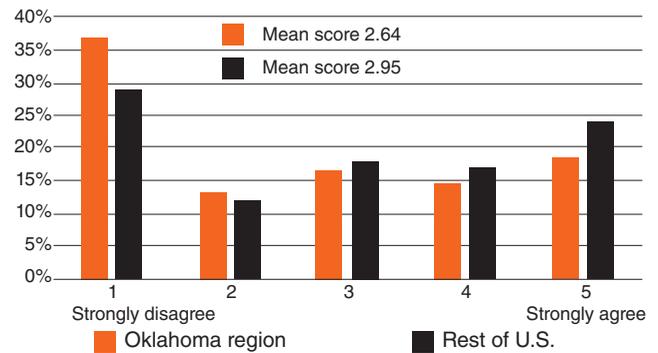
<sup>1</sup> Indicates the percentage of respondents is statistically different between those who selected they agreed with the statement and those who did not at the <0.05 level. Those who did not select they agreed with the statement and those who did sum to 100% within a category (i.e. Indiana and surrounding states) and were not included for brevity with the exception of the role of masks in society.

<sup>2</sup> Indicates the percentage of respondents between the two levels within a category, for example men vs women, or high total vs low total are statistically different at the <0.05 level

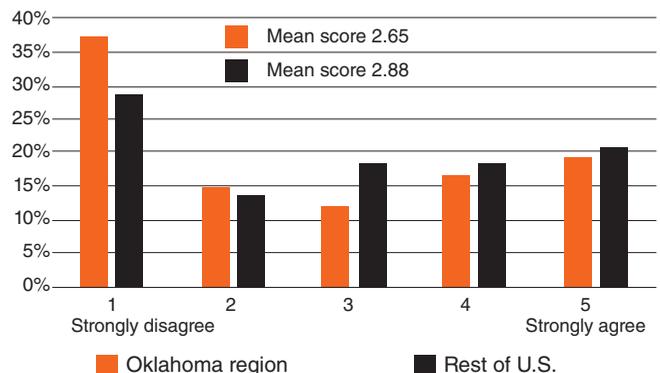
be saved by preventing the need for lockdowns.<sup>17</sup> A higher percentage of respondents from the Oklahoma region believed wearing a mask does not prevent the spread of COVID-19 and has negative health consequences for the mask wearer when compared to the rest of the country.

Respondents who indicated masks had at least some role in society were provided with a list of locations and asked to indicate if that type of business is not open in their community; if they visited that location and whether they wore a mask voluntarily or were required; or if they did not wear a mask. For this analysis, only those who did go to that location, and who had that location open in their community were included. For in-person religious services, big-box grocery stores/supermarket, the gym, restaurants and retail stores (other than a grocery, clothing or home improvement store), a higher percentage of respondents in the Oklahoma region indicated they did not wear a mask when compared to the rest of the country. Even among those who believe masks have a role, between 21% and 34% of respondents were still not wearing a mask. If mask-wearing compliance to prevent the spread of COVID-19 is the goal of a business or state, interventions beyond explaining the role masks can play may be necessary.

On a scale from 1 (strongly disagree) to 5 (strongly agree) respondents were asked to indicated their level of agreement they or someone in their household, or someone they frequently spend time with is at a higher risk of complications of COVID-19. The mean score for the Oklahoma region was statistically lower (2.64) when compared to the rest of the country (2.95) in reference to someone in the household or someone they frequently spend time with being in the higher risk group (Figure 2). Similarly, when asked about their risk of complication of COVID-19 the mean score for the Oklahoma region was lower (2.65) when compared to the rest of the country (2.88) (Figure 3). This indicates that people in the Oklahoma region believe they, and those around them, are not at a higher risk of complications of COVID-19. According to the Oklahoma state Department of Health, the percent of the adult population with diabetes is higher than the rest of the U.S.<sup>18</sup> In 2018, Oklahoma was ranked 10th in the nation



**Figure 2. From a scale of 1 (strongly disagree) to 5 (strongly agree) respondents level of agreement that someone in their household, or that they frequently spend time, with is at higher risk of complications of COVID-19. Note: The mean score between Oklahoma region and the rest of the country is statistically different at the <0.05 level.**



**Figure 3. From a scale of 1 (strongly disagree) to 5 (strongly agree) respondents level of agreement that they are at higher risk of complications of COVID-19. Note: The mean score between Oklahoma region and the rest of the country is statistically different at the <0.05 level.**

for obesity, with many surrounding states also having high rates of obesity.<sup>19</sup> Higher rates of diabetes and obesity means more Oklahomans are at a higher risk of complication of COVID-19, and this is just considering commonly reported/monitored underlying conditions.

## Conclusion

Although people in the Oklahoma region have felt the impact of COVID-19 in their daily lives, they have been less impacted than other states when it comes to the ability to purchase paper products. Additionally those in the Oklahoma region experienced a lower impact on the ability to find meat, milk and perishable grocery items compared to other activities. Although 79% of respondents in the Oklahoma region believe wearing a mask has some potential role in U.S. society related to the spread of viral disease, especially COVID-19, many are still not wearing a mask to some locations. Between 21% and 34% of respondents who attend the locations and believe masks have a role in society are still not wearing a mask to in-person religious service, big-box grocery stores, gyms, restaurants and other retail stores. Lower percentages of respondents in the Oklahoma region believed masks prevent the spread of COVID-19 in general and help prevent the wearer from spreading COVID-19. Increasing the availability of reliable information and explanations regarding the role of droplets in spreading COVID-19 as well as the prevalence of asymptomatic and pre-symptomatic people may help increase compliance. However, the percentage of people who believe masks have a role but still do not wear a mask indicates multiple strategies may be required to achieve widespread mask usage to prevent the spread of COVID-19.

For analysis between different regions and additional COVID-19 mask analysis please visit: [https://agribusiness.purdue.edu/consumer\\_corner/](https://agribusiness.purdue.edu/consumer_corner/)

## References

1. Taylor, Derrick Bryson. 2020. A Timeline of the Coronavirus. The New York Times. 2020 Jul 8. [cited 2020 Mar 2]. Available from: <https://www.nytimes.com/article/coronavirus-timeline.html>
2. Eikenberry E, Mancuso M, Iboi E, et al. To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic. *Infect Dis Model*. 2020; 5: 293-308. doi:10.1016/j.idm.2020.04.001.
3. CDC. Important information about your cloth face coverings. CDC. 2020 [cited 2020 Jun 22]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/downloads/cloth-face-covering.pdf>.
4. Cummings, Lily. Governor Stitt says not to be 'mask shamers,' communities don't want to mask. KTUL News. 2020 Jul 10 [Cited 2020 Jun 22]. Available from: <https://ktul.com/news/local/gov-stitt-says-not-to-be-mask-shamers-while-communities-dont-want-to-mask>.
5. Svitek, Patrick. Governor Greg Abbot orders Texans in most counties to wear masks in public. *The Texas Tribune*. 2020 July 2 [cited 2020 Jul 13] Available from: <https://www.texastribune.org/2020/07/02/texas-mask-order-greg-abbott-coronavirus/>
6. Kantar. About Kantar. Kantar. 2020 [cited 2020 Jun 29]. Available from: <https://www.kantar.com/about>
7. Acock, A. C. A Gentle Introduction to Stata 6th ed. College Station: Stata Press; 2018.
8. Gosset, WS. The probable error of a mean. *Biometrika*. 1908; 6: 1–25.
9. Welch, BL. The generalization of 'student's' problem when several different population variances are involved. *Biometrika*. 1947; 34: 28–35.
10. CDC. People who are at increased risk for severe illness. CDC. 2020 Jun 25 [cited 2020 Jul 13]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-increased-risk.html>
11. CDC. People of any age with underlying medical conditions. 2020 Jun 25 [cited 2020 Jul 13]. Available from: [https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fneed-extra-precautions%2Fgroups-at-higher-risk.html](https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fneed-extra-precautions%2Fgroups-at-higher-risk.html)
12. News 9. COVID-19 In Oklahoma: What is a non-essential Business? 2020 Mar 24 [cited 2020 Jul 13]. Available from: <https://www.news9.com/story/5e7e3af1065c486efd6d1727/covid19-in-oklahoma-what-is-a-nonessential-business>
13. State of Oklahoma. Governor Stitt announces "Open us and recover safely" plan. 2020 Apr 22 [cited 2020 Jul 13]. Available from: [https://www.governor.ok.gov/articles/press\\_releases/gov-stitt-announces-open-up-and-recovery-plan](https://www.governor.ok.gov/articles/press_releases/gov-stitt-announces-open-up-and-recovery-plan)
14. CDCb. Considerations for wearing cloth face coverings. CDC. 2020 Jun 28 [cited 2020 Jul 13]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html>
15. Bai, Nina. Still confused about masks? Here's the science behind how face masks prevent coronavirus. UCSF. 2020 Jun 26 [cited 2020 Jul 18]. Available from: <https://www.ucsf.edu/news/2020/06/417906/still-confused-about-masks-heres-science-behind-how-face-masks-prevent>
16. Prather KM, Wang C, Schooley R. Reducing transmission of SARS-COV-2. *Science Magazine*. Available from: <https://science.sciencemag.org/content/sci/368/6498/1422.full.pdf>
17. Egan, Matt. Goldman Sachs: Nationwide mask mandate could prevent more lockdowns, avoid \$1 trillion economic loss. KOCO News 5. 2020 Jun 30 [cited 2020 Jul 13]. Available from: <https://www.koco.com/article/goldman-sachs-nationwide-mask-mandate-could-prevent-more-lockdowns-avoid-dollar1-trillion-economic-loss/33014283>
18. Oklahoma State Department of Health (OSDH). Diabetes in Oklahoma. 2020 [cited 2020 Jul 13] Available from: [https://www.ok.gov/health/Health\\_Promotion/Diabetes/index.html](https://www.ok.gov/health/Health_Promotion/Diabetes/index.html)
19. Trotter, Matt. Oklahoma a Top-10 State for Obesity. 2019 Sep 13 [cited 2020 Jul 13] Available from: <https://www.publicradiotulsa.org/post/oklahoma-top-10-state-obesity>

## **The Oklahoma Cooperative Extension Service** ***Bringing the University to You!***

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Oklahoma State University, as an equal opportunity employer, complies with all applicable federal and state laws regarding non-discrimination and affirmative action. Oklahoma State University is committed to a policy of equal opportunity for all individuals and does not discriminate based on race, religion, age, sex, color, national origin, marital status, sexual orientation, gender identity/ expression, disability, or veteran status with regard to employment, educational programs and activities, and/or admissions. For more information, visit <https://eeo.okstate.edu>.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 20 cents per copy. July 2020 GH.