

## A SURVEY ON MOSQUITO CONTROL KNOWLEDGE AND INSECTICIDE USE IN NEW ORLEANS, LA, 2020–2021

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**ABSTRACT.** Mosquitoes are a known public nuisance and can vector various diseases. Historically, New Orleans, LA, has long been acquainted with the burden of mosquito-borne diseases, such as malaria and yellow fever in the 20th century and West Nile virus in the 21st century. Government mosquito control awareness campaigns have been around for decades as has the use of organophosphate and pyrethroid insecticides by mosquito abatement districts. However, few data are available on public perception of mosquito control and public usage of insecticides to kill mosquitoes in New Orleans. We conducted a survey from August 2020 to July 2021 to evaluate New Orleans residents' 1) general knowledge regarding mosquito control and 2) what measures and products they use to control mosquitoes. The aim of this survey was to determine how residents contribute to backyard mosquito control by do-it-yourself or professional applications of insecticides. The survey was disseminated both online and via mail. Of the 396 survey participants, nearly all (99.48%) agreed that mosquito control is important in New Orleans because it prevents mosquito bites (30.85%), prevents mosquito borne-diseases (38.51%), and prevents nuisance mosquitoes (29.17%). More than one-third (35%) of survey participants indicated that they empty containers to reduce adult mosquitoes on their own property. More than two-thirds of the participants (69.95%) would not hire a pest management professional to spray their yard for adult mosquitoes, and only 20% of survey participants do apply a pesticide to kill adult mosquitoes on their own property. None of our findings were associated with the level of education, gender, or age of participants. This study suggests that the City of New Orleans Mosquito, Termite and Rodent Control Board educational and outreach campaigns may be an effective tool in spreading mosquito control awareness and contribute to residents' knowledge of mosquito control. The data we collected indicate that residents understand what mosquito control is and why it is important in New Orleans.

**KEY WORDS** Insecticide, knowledge, mosquito control, New Orleans, residential, survey

### INTRODUCTION

Two classes of insecticides, pyrethroids and organophosphates, are available for adult mosquito control in the continental United States (CDC 2019). While organophosphates are used, the use of pyrethroids is far more common due to lower toxicity levels in humans and other nontargets such as animals (Bao et al. 2020). Applications of pyrethroids as barrier treatments have become popularized by pest management professionals who advertise personalized mosquito control (Richards et al. 2017b, Williams et al. 2019). Insecticides, largely with a pyrethroid active ingredient, are also available for homeowners to purchase over the counter. The use of a pyrethroid-based insecticide applied as a barrier treatment has been shown to help reduce the adult mosquito population in residential areas (Unlu et al. 2017, Williams et al. 2019). Barrier treatments can be used in residential mosquito control to treat individual backyards and throughout neighborhoods on a small or large scale. However, little is known about how much residents contribute to backyard mosquito control by over-the-counter or professional applications of pyrethroids

(Tuiten et al. 2009, Richards et al. 2017b, Pokhrel and Ottea 2023).

Therefore, a survey was conducted from August 2020 to July 2021 to determine residents' knowledge of mosquito control practices and their use of insecticides in New Orleans, LA. The aim of this survey was to determine how residents contribute to backyard mosquito control by over-the-counter or professional applications of insecticides. The survey was carried out by the Louisiana State University, Department of Entomology, in partnership with the City of New Orleans Mosquito, Termite and Rodent Control Board (NOMTRCB). The Louisiana State University Institutional Review Board reviewed this project and determined that the research is considered exempt from human subject research.

### MATERIALS AND METHODS

A 25-question survey was developed with the Qualtrics online survey tool (2022) to evaluate residents' knowledge regarding mosquito control in general and what measures and products they use to control mosquitoes. The survey was disseminated electronically (Aryaprema et al. 2022) via various social media accounts belonging to the NOMTRCB, including X/Twitter, Instagram, and Facebook. It was also released to the public electronically via the City of New Orleans Neighborhood Engagement Department, who in turn sent a link to the survey to various neighborhood associations within New Orleans, and a link to the survey

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was placed on the NOMTRCB website. Twelve hundred addresses from five zip codes (GNOCDC 2005) within New Orleans were purchased from InfoGroup, Inc. (St. Louis, MO). A 95% confidence interval (CI) and a 50% prevalence of the variable was used to calculate a sample size of 384 (Cochran 1977, Israel 2013, U.S. Census Bureau 2020) plus 10% for nonresponse (422). An additional 20% was added to account for vacant or abandoned residences for a total of 500 residences, 100 from each zip code. Random sampling was used to select survey addresses to provide equal chances of being picked for each member of the target population. The survey was sent out via the US Postal Service to 500 addresses within the five zip-code areas. A second round of the survey was mailed out to another 500 addresses, six months after the first, 100 from each zip code. Zip-code selection was based on NOMTRCB routine adult mosquito surveillance zones. These zones are indicative of where the NOMTRCB collect adult mosquitoes for identification, where they perform various methods of mosquito control, and where they conduct insecticide resistance testing as part of their integrated pest management program.

All data were imported into an online Qualtrics survey database and into an Excel spreadsheet (Microsoft, Albuquerque, NM). All data were analyzed with Qualtrics Stat iQ and Sigma Plot (Sigma Plot version 11.2; InPixon, Palo Alto, CA). Frequency tables were reported for each survey question, and where demographic percentages were reported, a 95% CI was included. Chi-square tests were used for most questions. Criteria for knowledge of mosquito control were determined by 1) participants' selection of one or more of the definitions of mosquito control, 2) participants' selection of one or more reasons why mosquito control is important in New Orleans (comprehension that mosquitoes are not just vectors for disease), 3) participants' selection of one or more of the ways to reduce mosquitoes, and 4) participants' selection of one or more of the potential water-filled breeding sites for immature mosquitoes (comprehension that the immature stage of mosquitoes is aquatic) (Haenchen et al. 2016, CDC 2019, Pogreba-Brown et al. 2020, Rampold et al. 2020, Moise et al. 2022). Differences between knowledge of mosquito control and the use of mosquito insecticides between gender, age, and education demographics were figured in as well. Differences with a  $P < 0.05$  are considered statistically significant.

## RESULTS

*Demographic features of survey participants:* The survey had a total of 396 responses, exceeding the required number needed; 263 surveys were taken electronically, and the remaining 133 surveys had been mailed out and returned via prepaid postage by the US Postal Service (13.3% response rate for mailed surveys).

Most participants were age 55 or older and female (Table 1). More than half of participants identified as white or Caucasian, and 25% of participants

identified as black or African American. More than two-thirds of respondents had a bachelor's degree or graduate degree, and 1.11% had less than a high school education. More than half of the respondents were married or in a domestic partnership and employed full-time or self-employed. Just over one-quarter of participants were retired. More than one-third of participants answered that they earned more than \$100,000 a year when asked about household income; 11.4% earned between \$75,000 and \$99,999; 17.54% earned between \$50,000 and \$74,999; 12.57% earned between \$35,000 and \$49,999; 11.11% earned between \$20,000 and 34,999; and 13.16% earned less than \$20,000. More than three-quarters of participants reported residing in an owner-occupied home, and fewer than one-quarter of participants reported living in a rental property.

*Residents' knowledge of mosquito biology and control:* Nearly all survey participants (99.48%) agreed that mosquito control is important in New Orleans because it prevents mosquito bites (30.85%), prevents mosquito borne-diseases (38.51%), and prevents nuisance mosquitoes (29.17%) (Table 2). Participants selected all five of the definitions of mosquito control listed in the survey, but the number one answer selected was empty water-holding containers (22.25%) as a measure of mosquito control. Respondents were given the option to write in other definitions for mosquito control. These other definitions of mosquito control included use of protective clothing, bats, sanitation, mosquito traps, plants that deter mosquitoes, and use of genetically modified mosquitoes. The top three answers selected by survey participants for potential water-filled breeding sites for mosquito larvae were garbage can lids (15.15%), empty coolers (15.32%), and tires (15.1%). Eliminating standing water (19.47%) was the number one answer selected on ways to reduce mosquitoes, with cover water-filled containers (18.42%) as the second most selected answer. When asked if spraying pesticides is the best method to reduce mosquitoes, 42.26% of participants selected no and 12.26% said yes; however, 45.15% selected maybe or I don't know. Over half the respondents (52.86%) selected themselves as the entity responsible for mosquito control on their property, and 28.44% of participants said the City of New Orleans is responsible for mosquito control on their property.

Almost half the participants considered the use of repellents (47.89%) as the most effective way to prevent mosquito bites, and participants considered removing or emptying containers filled with water (18.42%) as the second most effective way to prevent mosquito bites.

*Residents' willingness for participation in mosquito control:* More than one-third of participants eliminated standing water (34.57%) to reduce the number of mosquitoes on their property, and 21.38% cover water-filled containers to reduce the number of mosquitoes on their property (Table 3). One-fifth (20.38%) of participants use a pesticide to kill adult or immature mosquitoes on their property. Roughly two-thirds of participants (65.66%) do not apply a pesticide product in their yard to kill adult mosquitoes. For those who did apply a pesticide

Table 1. Sociodemographic characteristics of survey participants in New Orleans, LA, in 2020–2021 (*n* = 396).

Characteristics	Count ( <i>n</i> )	Percentage (%)	95% CI
<b>Age group (years)</b>			
18–24	2	0.056	0.00–0.18
25–34	52	14.44	0.050–0.23
35–44	65	18.06	0.10–0.27
45–54	47	13.06	0.04–0.22
55 +	194	53.89	0.49–0.59
<b>Gender</b>			
Male	124	34.35	0.28–0.41
Female	219	60.66	0.57–0.65
Transgender female	0	0	0
Transgender male	0	0	0
Nonbinary/nonconforming	4	1.11	0–0.18
Prefer not to answer	14	3.88	0–0.15
<b>Education</b>			
Less than a high school diploma	4	1.11	0–0.18
High school degree or equivalent (e.g., GED)	54	14.96	0.06–0.24
Associate’s degree (e.g., AA, AS)	21	5.82	0–0.16
Bachelor’s degree (e.g., BA, BS, BFA)	148	41	0.35–0.47
Master’s degree	92	25.48	0.17–0.33
Professional degree (e.g., MD, DDS, DVM, JD)	20	5.54	0–0.16
Doctorate (e.g., PhD, EdD)	22	6.09	0–0.16
<b>Marital status</b>			
Single (never been married)	80	22.16	0.14–0.30
Married or in a domestic relationship	201	55.68	0.51–0.60
Widowed	17	4.71	0–0.18
Divorced	35	9.7	0.004–0.19
Separated	5	1.39	0–0.57
Prefer not to answer	23	6.37	0–0.17
<b>Employment status</b>			
Employed full-time (35 or more hours)	159	44.17	0.38–0.5
Employed part-time (up to 34 hours)	23	6.39	0–0.17
Unemployed	16	4.44	0–0.15
Student	5	1.39	0–0.57
Self-employed	36	10	0.007–0.19
Retired	96	26.67	0.19–0.34
Unable to work	9	2.5	0–0.14
Prefer not to answer	16	4.44	0–0.152
<b>Household income in 2019</b>			
Less than \$20,000	45	13.16	0.04–0.22
\$20,000 to \$34,999	38	11.11	0.017–0.21
\$35,000 to \$49,999	43	12.57	0.03–0.22
\$50,000 to \$74,999	60	17.54	0.08–0.26
\$80,000 to \$99,999	39	11.4	0.02–0.21
Over \$100,000	117	34.21	0.27–0.41
<b>Residential status</b>			
Owner occupied	284	78.24	0.76–0.81
Rental	77	21.21	0.13–0.29
Other	2	2	0–0.19
<b>Ethnic/racial identifiers</b>			
Black or African American	97	25	0.17–0.32
Hispanic	17	4.35	0–0.15
Middle Eastern	2	0.51	0–0.18
North African	2	0.51	0–0.18
Vietnamese	5	1.28	0–0.15
White or Caucasian	231	59.08	0.55–0.63
Native Hawaiian or other Pacific Islander	3	0.77	0–0.18
American Indian or Alaskan Native	9	2.3	0–0.14
Asian (other than Vietnamese)	6	1.53	0–0.14
Other	19	4.86	0–0.15

Table 2. Knowledge of mosquito control by survey participants in New Orleans, LA, in 2020–2021.

Parameters	<i>n</i>	%
How would you define mosquito control? Check all that apply.		
Spray a pesticide	310	20.17
Apply a pesticide	303	19.71
Cover water-filled containers	313	20.36
Empty water-holding containers	342	22.25
Use repellent	240	15.61
Other	29	1.89
Is control of mosquitoes important in New Orleans?		
Yes	379	99.48
No	2	0.52
Why would control of mosquitoes be important in New Orleans? Check all that apply.		
Does not apply. It's not important.	1	0.1
Prevents mosquito bites	294	30.85
Prevents mosquito-borne diseases	367	38.51
Reduces nuisance mosquitoes	278	29.17
Other	13	1.36
What are potential water-filled breeding sites for immature mosquitoes (larvae or wigglers)?		
Garbage can lids	342	15.15
Empty coolers	346	15.32
Trash bags	284	12.58
Debris (empty glass bottles, plastic cups)	336	14.88
Tires	341	15.1
Tree holes	284	12.58
Gutters	325	14.39
What are ways to reduce mosquitoes? Check all that apply.		
Eliminate standing water	373	19.47
Spray a pesticide (chemical) that kills adult mosquitoes	302	15.76
Apply a pesticide (chemical/nonchemical) that kills immature mosquitoes	323	16.86
Place fish in water-filled containers (fountains)	241	12.58
Cover water-filled containers (rain barrels)	353	18.42
Clean gutters	324	16.91
Is spraying pesticides (chemicals) always the best method to reduce adult mosquitoes?		
Yes	48	12.6
Maybe	68	17.85
No	161	42.26
I don't know	104	27.3
Who is responsible for reducing mosquitoes on your property? Check all that apply.		
You	342	52.86
Your neighbor	91	14.06
City of New Orleans Mosquito Control	184	28.44
I don't know	26	4.02
None of the above	4	0.62
Which of these measures do you consider most effective to prevent mosquito bites?		
Pick one.		
Use repellents	182	47.89
Use pesticides	23	6.05
Covered water-containers	5	1.32
Use protective clothing	29	7.63
Use screens in windows and doors	18	4.74
Removing or emptying containers filled with water	70	18.42
Use of citronella candles	7	1.84
Use fans	13	3.42
Outdoor plants (lavender, eucalyptus, etc.)	6	1.58
Essential oils	6	1.58
Other	14	3.68
Nothing	7	1.84

Table 3. Practices regarding mosquito control, New Orleans, LA.

Parameters	n	%
What do you do to reduce the number of adult mosquitoes on your property?		
Eliminate standing water	346	34.57
Use a pesticide (chemical) that kills adult mosquitoes	100	9.99
Use a pesticide (chemical or nonchemical) that kills immature mosquitoes	104	10.39
Put fish in water-filled containers	39	3.9
Cover water-filled containers	214	21.38
Clean gutters	169	16.88
Other	29	2.9
Name a pesticide (chemical) product you have used to kill adult mosquitoes in your yard?		
Does not apply	239	65.66
Product name	49	13.46
I don't remember name of product	76	20.88
If you apply a pesticide product, how much of the pesticide product label do you read?		
Does not apply	242	67.04
0%	9	2.49
25%	19	5.26
50%	23	6.37
75%	20	5.54
100%	48	13.3
How often do you apply the pesticide product (listed in question 7)?		
Does not apply	251	69.15
One-time application	33	9.09
Weekly	16	4.41
Monthly	28	7.71
Other	35	9.64
Did you hire a commercial pesticide applicator to spray your yard for adult mosquitoes in 2019/2020?		
Yes	20	5.51
No	343	94.49
If you hired a commercial pesticide applicator to spray your yard for mosquitoes in 2019/2020, how many times did they spray your yard?		
Does not apply	326	91.83
One time only	5	1.41
Monthly basis	16	4.51
Twice a month	2	0.56
Other	6	1.69
Would you hire a commercial pesticide applicator to spray your yard for mosquitoes?		
Yes	110	30.05
No	256	69.95
Which of the following do you do to prevent mosquito bites? Check all that apply.		
Use repellents	314	16.66
Use pesticides	66	3.5
Use screens in windows and doors	263	13.95
Use fans	162	8.59
Use citronella candles	165	8.75
Use protective clothing (long pants/long sleeves)	240	12.73
Remain indoors during peak mosquito hours	234	12.41
Outdoor plants (lavender, eucalyptus, etc.)	71	3.77
Use essential oils	62	3.29
Removing or emptying containers filled with water	289	15.33
Other	14	0.74
Nothing	5	0.27

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product (34.34%), only 13.46% knew the name of the product they used. Pesticides reportedly used by participants themselves to kill mosquitoes in their own yards were Ortho products (Scotts Company, Maryville, OH), Spectracide products (Spectrum Brands, Madison, WI), Termidor (BASF, Florham Park, NJ), Triazicide (Spectrum Brands), Bug Stop (Spectrum Brands), Bonide Pyrethrin spray (Bonide, Oriskany, NY), Hi-Yield Bug

Blaster (Voluntary Purchasing Group, Bonham, TX), Malathion Insect Control (Bonide), and an unnamed product by Bayer (Bayer, Research Triangle, NC). The remaining participants who reported using a pesticide in their yard named mosquito foggers, repellents, or devices that kill adult mosquitoes such as OFF Yard Treatment (S. C. Johnson & Son, Racine, WI), OFF Patio Coils (S. C. Johnson), Yard Guard (S. C.

Johnson), Cutter Outdoor Fogger (Spectrum Brands), Thermacell (Thermacell Repellents, Bedford, MA), bug lamps, citronella candles, and Avon Skin So Soft (Avon Products, New York, NY). Of the 34.34% of respondents who applied a pesticide to their own yard, 13.3% reported they read all of the pesticide product label; and 9.09% did a one-time application, 7.71% did a monthly application of the product, 4.41% did a weekly application, and 9.64% did other.

More than 90% of respondents (94.49%) did not hire a pest management professional to spray their yard for adult mosquitoes. More than 5.51% participants did hire a pest management professional, and 4.51% hired them to spray their yard for adult mosquitoes on a monthly basis. More than two-thirds of the participants (69.95%) would not hire a pest management professional to spray their yard for adult mosquitoes. The number one thing that participants chose to prevent mosquito bites themselves was use repellents (16.66%), removing or emptying containers filled with water (15.33%) was the number two answer, and use of pesticides to prevent mosquito bites by participants (3.5%) was minimal.

*Respondents' mosquito control knowledge and use versus education, gender, and age:* The majority (99.48%) of the survey participants selected that control of mosquitoes is important in New Orleans. This level of knowledge was not significantly associated with the level of education ( $P > 0.05$ ), gender ( $\chi^2 = 0.3626$ ,  $P > 0.05$ ), and age ( $\chi^2 = 1.8475$ ,  $P > 0.05$ , 0.985337).

The majority of survey participants selected that controlling mosquito populations can reduce mosquito-borne diseases (38.51%), prevent mosquito bites (30.85%), and reduce nuisance mosquitoes (29.17%). These findings were associated neither with the level of education ( $\chi^2 = 1.5904$ ,  $P = 0.991103$ ) nor with gender ( $\chi^2 = 1.2847$ ,  $P > 0.05$ , 0.972494) or age ( $\chi^2 = 1.8475$ ,  $P > 0.05$ , 0.985337).

The majority of participants defined mosquito control as source reduction such as emptying water-holding containers (22.25%) and covering water containers and other mosquito breeding sites (20.36%). These findings were associated neither with the level of education ( $\chi^2 = 1.9098$ ,  $P > 0.05$ , 0.999532) nor with gender ( $\chi^2 = 4.4209$ ,  $P > 0.05$ , 0.974587) or age ( $\chi^2 = 3.0795$ ,  $P > 0.05$ , 0.999798).

More than 42% of survey participants replied that spraying a chemical is not the best way to kill mosquitoes. More than one-third (35%) of survey participants selected that they empty containers to reduce adult mosquitoes on their own property, while 20% of survey participants do apply a pesticide to kill adult mosquitoes on their property. These findings were associated neither with the level of education ( $\chi^2 = 12.565$ ,  $P = 0.704256$ ) nor with gender ( $\chi^2 = 3.4598$ ,  $P = 0.48401$ ) or age ( $\chi^2 = 6.8893$ ,  $P = 0.975427$ ) of participants.

## DISCUSSION

This study found that good knowledge and practices towards mosquito control and insecticide use among

residents in New Orleans. The overall knowledge of the definitions of mosquito control and of the importance of mosquito control in New Orleans by survey respondents was positive. Our study agreed with the Tuiten et al. (2009) study in New York and the Roslan et al. (2019) study in Malaysia that equated knowledge with "preventative measures," for example, emptying water holding containers, which was the number one definition of mosquito control selected by our survey respondents. The New Orleans residents' knowledge of mosquito control regardless of education level contradicts Moise et al. (2022) whose knowledge, attitude, and practices (KAP) study conducted in New Orleans found that low education level was associated with low knowledge of mosquito control. This contradiction could be due to the NOMTRCB's and City of New Orleans's increased mosquito control outreach and education activities, especially online, during 2020 and 2021, and that the Moise et al. (2022) study was conducted between 2017 and 2018, prior to the current study. The Moise et al. (2022) study also focused more on illegal tire dumping rather than knowledge and use of mosquito control, and they concluded that further evaluation of residents' mosquito control knowledge was needed.

Community involvement can help spread mosquito control awareness (Bartlett-Healy et al. 2011). More than 50% of respondents (52.86%) reported that it was their responsibility to reduce mosquitoes on their property, and fewer than one-third (28.44%) reported that the City of New Orleans was responsible, while 14.06% reported their neighbor was responsible for reducing mosquitoes on the respondent's property. This current study agrees with both Dowling et al. (2013) whose KAP study in Washington, DC, and Morse et al. (2019) whose KAP study in Mobile, AL, found that more than 65% of respondents thought residents themselves and local public agencies should be responsible for mosquito control.

We can conclude that survey respondents hold themselves responsible for their own mosquito control on their property and therefore for their own protection against mosquito-borne diseases and/or nuisance mosquitoes. Respondents also hold both their neighbors and the City of New Orleans accountable for mosquito control, which translates to a holistic approach, requiring a community effort to control mosquitoes in New Orleans.

Respondents' awareness of the definitions of mosquito control and the importance of mosquito control in New Orleans could be because the City of New Orleans has a department specifically designated to mosquito control. The New Orleans Mosquito, Termite & Rodent Control Board has been increasing education and outreach throughout the city over the last 10 years. Use of social media, including Facebook, X/Twitter, and Instagram, has perhaps played a role in raising this awareness about mosquito control. This idea is supported by the number of responses received electronically and that none of our findings were significantly associated with the level of

education, gender, or age of survey respondents. Past studies have shown that education and outreach campaigns were associated with increased public knowledge of mosquito control (Winch et al. 2002; Trout Freyxiell et al. 2022) especially when social media is used (Low et al. 2022).

Almost all respondents (95%) did not use a barrier treatment to control mosquitoes. Only 20% of respondents applied a pesticide themselves to their own backyard to kill adult mosquitoes. However, for the 20% of respondents who did apply a known pesticide to their own yard, most of these products are not marketed to kill adult mosquitoes, but to kill other general pests. A regional survey of mosquito control in North Carolina by Richards et al. (2017a) found approximately one-third of participants use an insecticide on their property. However, they did not determine how North Carolina residents defined insecticide or if they considered personal protection (use of repellents) as mosquito control. Our findings agreed with this lack of information. New Orleans residents reported use of repellents as an insecticide, which indicates that there may be some confusion over the definitions of what an insecticide that kills adult mosquitoes really is versus repellents and general pest treatments. An international survey of mosquito repellents conducted by Moore et al. (2018) was designed to specifically find unconventional methods used to repel mosquitoes, which included household chemicals, hygiene products, supplements, etc., as well as alternative mosquito control methods. In the future we need to define what an adult mosquitoicide is versus a repellent to better assess residents' practices of mosquito control. We also need to dispel myths of mosquito control to address respondents' beliefs reported in this study that plants and bats are an effective mosquito control option (Moore et al. 2018). This will help identify improper use of certain pesticides and create more citizen awareness (Duval et al. 2022).

This survey had limitations and biases that must be addressed. Caucasian participants made up 59% of survey respondents; however, only 36% of the population in New Orleans was Caucasian and 59% of the population was African American in 2020 (U.S. Census Bureau 2020). The median age in New Orleans was 37 in 2020; however, most of the participants in our survey were age 55 and older. A majority of women made up 60% of New Orleans residents in 2020, and although women did make up the majority of our survey, they made up only 53% of the participants (U.S. Census Bureau 2020). The respondents of this survey do not fully represent the population of New Orleans. The survey was disseminated during the COVID-19 pandemic, and the media coverage or available time due to the "stay-at-home order" may have biased more residents to be concerned with prevention and control of diseases, therefore affecting their responses. Further studies could be conducted to reach a greater segment of the New Orleans population.

Our results suggest that the NOMTRCB outreach and education campaigns are effective; however, they should not be taken for granted, and NOMTRCB should remain vigilant so as not to let residents become complacent when it comes to mosquito control awareness (Haenchen et al. 2016, Rampold et al. 2020). To conclude, the data collected through this survey provide us with a better comprehension of New Orleans residents' knowledge of mosquito control and what types of mosquito control they are using.

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