



# Recommendations for The City of Worthington Based on Results from a Residential Opinion Survey on Deer Populations and Potential Management Strategies

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## **Executive Summary**

The City of Worthington, Ohio, developed The Worthington Deer Task Force to respond to resident complaints regarding the unmanaged deer population. Senior Capstone students at The Ohio State University were charged with creating a survey to give the city an understanding of resident opinions before taking action. The objectives were to develop and deploy a survey to the Worthington community and to create recommendations based on the analysis of survey data. The survey questions covered demographics, deer population opinions, desired management results, costs incurred, support for management methods, areas of concern, and open-ended comments. A demographic analysis showed that the survey captured a representative sample of the population compared to Worthington census data. The majority of respondents report seeing deer almost daily and shared that they would like to see the deer population decrease. Primary concerns for growing deer presence stem from deer-vehicle accidents and nearly \$1.5 million in property damage. Each of the survey-proposed categories of deer-related concerns received high ratings for concern with little variation. The feeding of deer is illegal in the City of Worthington and the survey reported that only 71% of respondents knew feeding deer was illegal prior to the survey. Though reportedly uncommon, respondents perceived that those who do feed deer are not held accountable for breaking the No-Feeding Ordinance. Despite the desire to see a decrease in the deer population, there was conflicting support for lethal means of removal with archery or firearms programs. The highest area of concern was for public safety, and open responses suggested that many residents believe birth control or sterilization to be a viable option. If the city were to implement a lethal program, it is recommended that the public be assured of their safety and informed why birth control and sterilization are not feasible. No matter the decision, the Worthington community has expressed a strong desire for the city to take further action.

## **Introduction and Background**

Human-deer interactions have become increasingly prevalent in the City of Worthington, Ohio, due to factors such as lack of predators, hunting prohibition, and plentiful food sources. In recent years, the deer presence has become an economical and societal issue, prompting concerns about the management of the burgeoning population. To address the issue properly, the concerns and priorities of the public need to be understood. This report details the findings of a preliminary survey conducted within the Worthington community to gauge public sentiments regarding the growing deer population. By exploring the attitudes and preferences of Worthington residents regarding deer management, this research aims to provide valuable insights into the perceived dynamics between humans and deer. These insights will inform future policy decisions for sustainable coexistence with and effective management of the Worthington deer population.

## **Survey Methods**

### Survey Development

To ensure only data of interest was collected, question composition and order were discussed in collaboration with Worthington City Manager Robyn Stewart, the Worthington Deer Task Force, and The Ohio State University wildlife survey experts Dr. Jeremy Bruskotter and Dr. Kristina Slagle (Bruskotter & Wilson, 2014; Carlson et al., 2023). Several questions were also drawn from existing deer-opinion surveys in communities similar to Worthington, Ohio<sup>1</sup>. It was

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<sup>1</sup> Other communities from which survey questions were drawn include: Parma, OH (City of Parma Deer Survey); Douglas, MI (Douglas Deer Survey); Whitehall, PA (Hoffmann et al., 2018); and Farmington, MI (Deer Survey Results).

determined that the survey should retrieve information on the following subjects: respondent demographics, personal engagement with deer, general desire for deer management, and opinions on lethal management strategies. After about two months of continuous revision, the survey was finalized after a Deer Task Force Meeting on February 21, 2024. The full survey, as it was printed for distribution in paper form, is available in Appendix C. The finalized questions were then transferred into the survey instrument Qualtrics, for online distribution.

### Survey Distribution

The survey was available to residents of Worthington from February 24, 2024, to March 25, 2024. Several methods of dissemination were employed to maximize engagement and access to the survey. First, the survey was linked on the City of Worthington's Instagram and website. Additionally, a Meta advertisement containing survey information and a QR-code link to the survey was purchased for \$300, targeting residents of the ZIP code 43085. A total of 6,034 households within the 43085 ZIP code also received a postcard containing a link to information on the deer presence in Worthington (Appendix D), a QR-code link to the survey, and locations of paper copies. For accessibility, a paper version of the survey was made available at the Worthington Municipal Building, Griswold Center, and Community Center. Team members also attended the Worthington Farmers' Market on March 2, 2024, and Family Night events at the Worthington Community Center on March 1, 2024 and March 15, 2024, to disseminate paper and online versions. Respondents indicated that 46.0% had learned about the survey from social media, 35.6% from the At-Home Mailer, 11.8% by Word of Mouth, and 6.6% at Community Events.

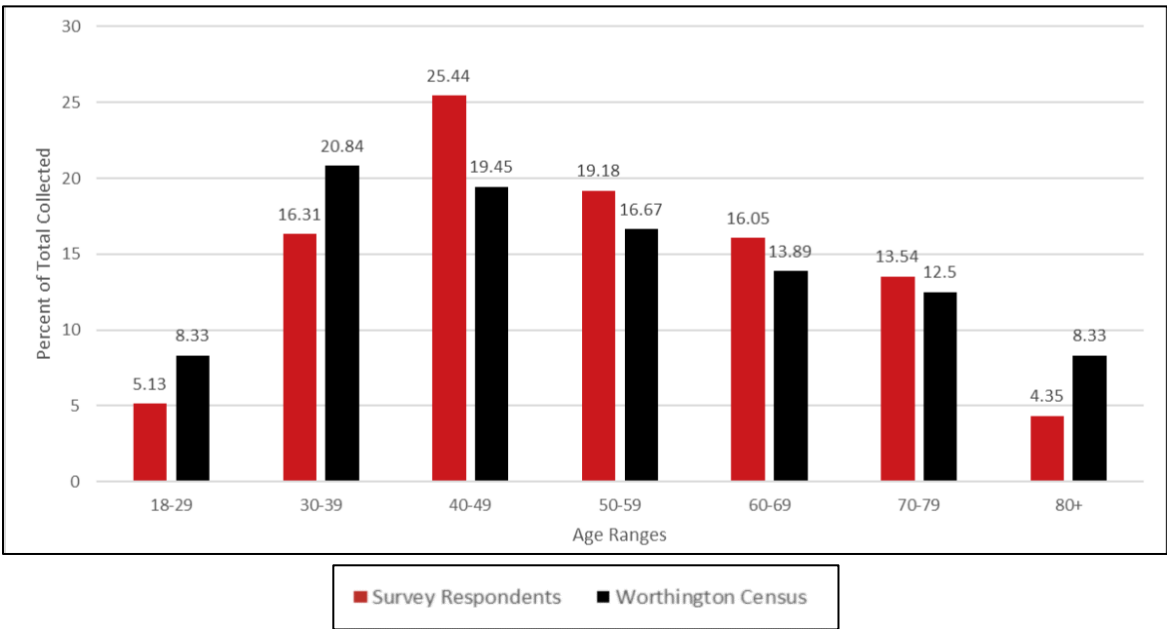
## Survey Findings

### Comparison to Census Data

The number of respondents who identified themselves as current residents within the city limits of Worthington was 3,112. The number of residents within the city limits of Worthington, according to the 2022 U.S. census, was 14,986 (Explore Census Data, 2022). Given this sample size, the survey instrument produced results carrying a confidence level of 99%, with less than a 3% margin of error.

Differences between respondents and census data were evaluated for three demographics of concern: age, gender, and geographic distribution (Zone) based on the map shared in the body of the survey (Appendix E). This data was then compared to information from census and residency data from 2022.

**Figure 1.** *Age Distribution Comparison*

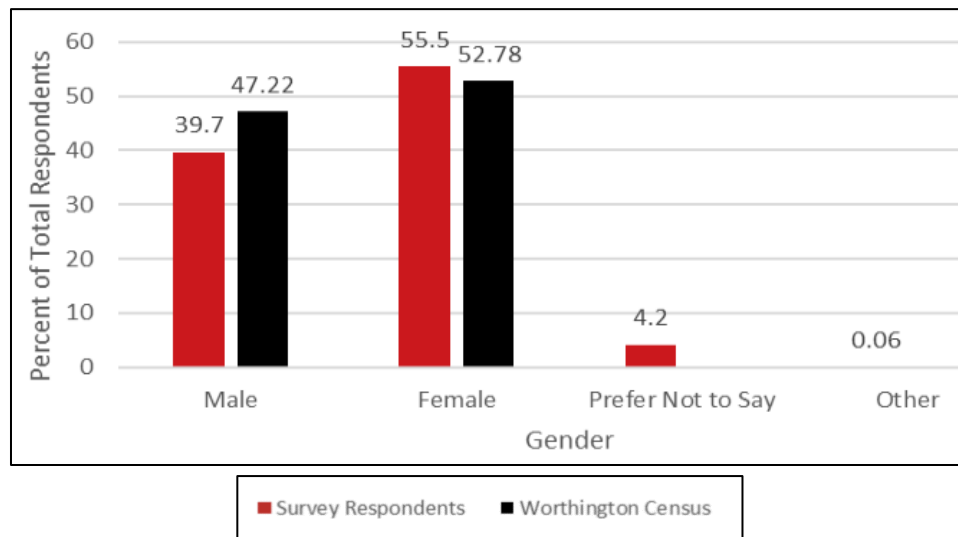


*Note.* 542 respondents chose not to share their age in the survey.

**Table 1.** *Percent of Age Range Captured by Survey*

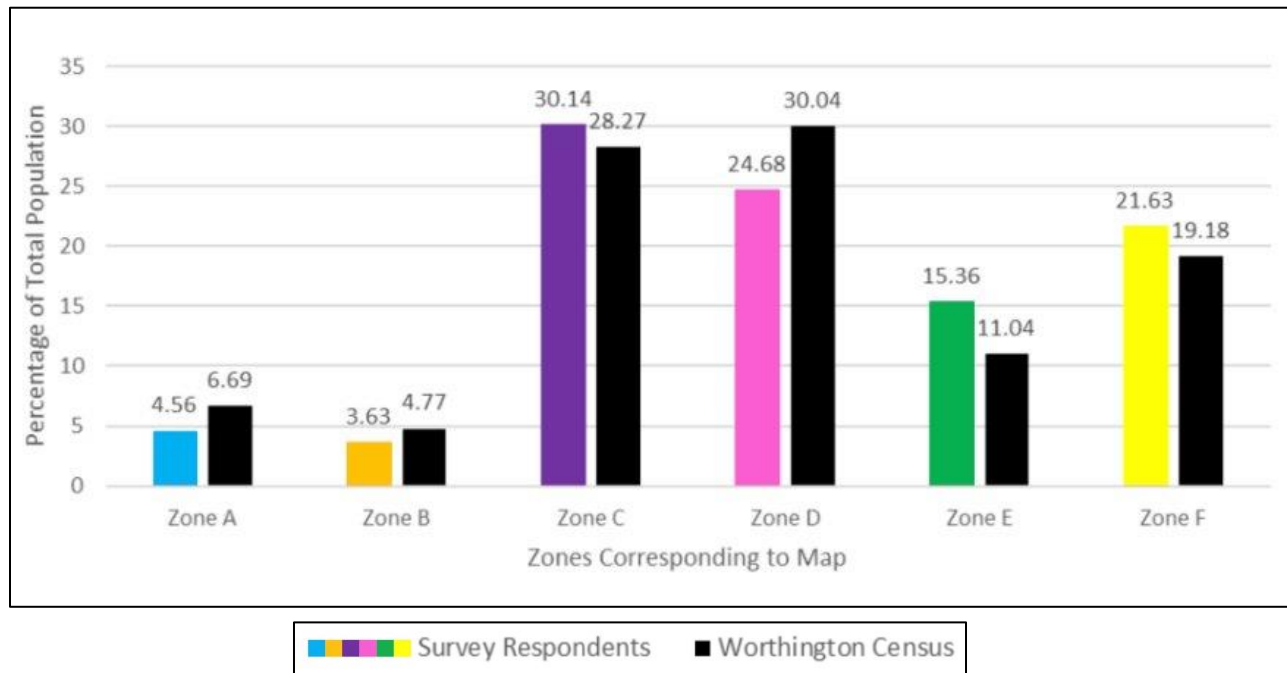
Age Range	Survey Respondent Count	Percent of Worthington Age Range Captured
18-29	172	19.13
30-39	547	24.32
40-49	853	40.64
50-59	643	35.74
60-69	538	35.89
70-79	454	33.65
80+	146	16.24

*Note.* The third column represents the percentage of Worthington residents in the given age range that was sampled. For example, 172 survey respondents from the 18-29 category indicates 19.13% of 18–29-year-old residents in Worthington responded to the survey.

**Figure 2.** *Gender Distribution Comparison*

*Note.* The U.S. census did not include an option for residents to select “Prefer Not to Say” or “Other”, whereas the survey did include these options.

**Figure 3. Geographic Distribution Comparison**



*Note.* A comparison of the percentage of survey respondents in each designated zone within Worthington's city limits to the percentage of total residents estimated to be living in each designated zone, based on estimates from Kimberly Myers, the City of Worthington's GIS Administrator.

The distribution of respondents follows the same general distribution of residents in Worthington, indicating a sample that reflects the population (Figure 1). Notably, at least 15% of the residents in each age category were sampled (Table 1), supporting the statistical significance of collected data.

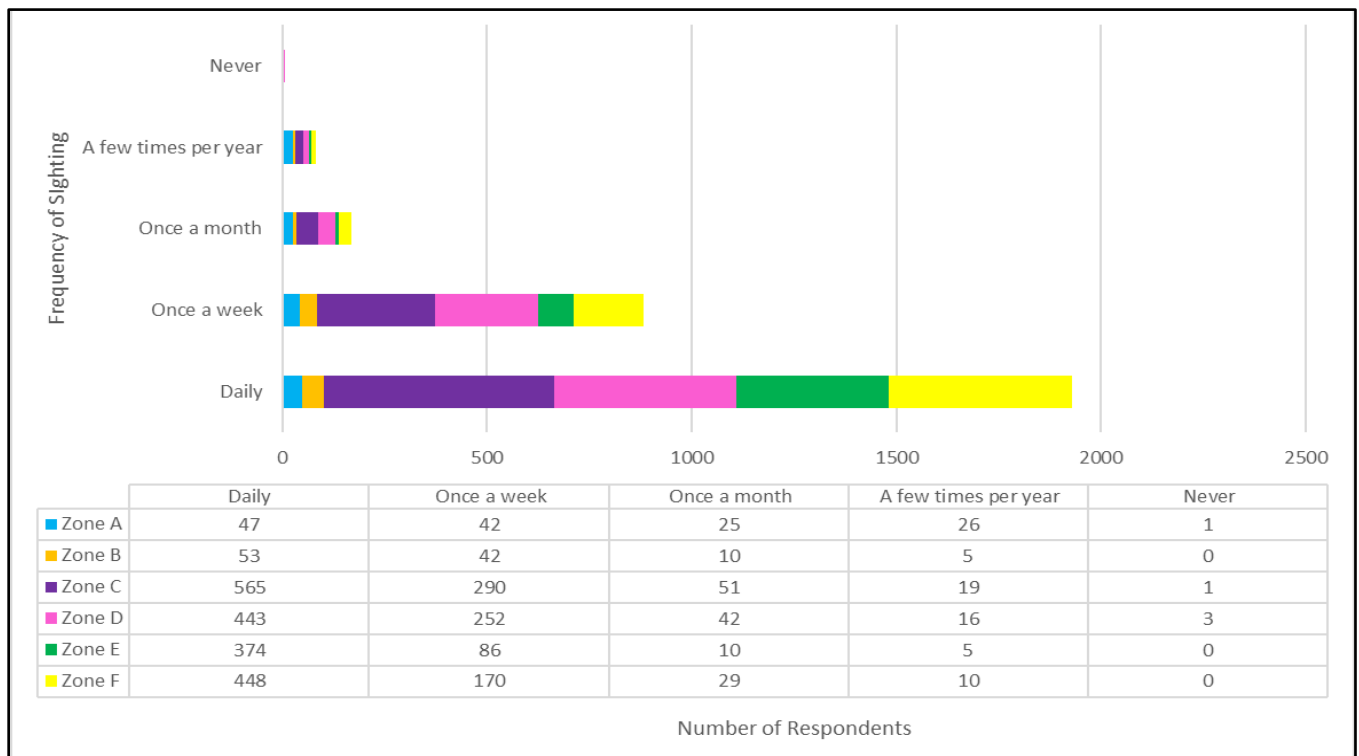
The survey reflected Worthington census data in its heavier representation of women than men but did slightly underrepresent men as compared to census data (Figure 2). Survey data on the geographical demographics of respondents also returned a distribution very similar to the City's population estimates. No category of respondent data differs from whole population estimates by greater than 6%, demonstrating a high level of accuracy in representing the population of interest.



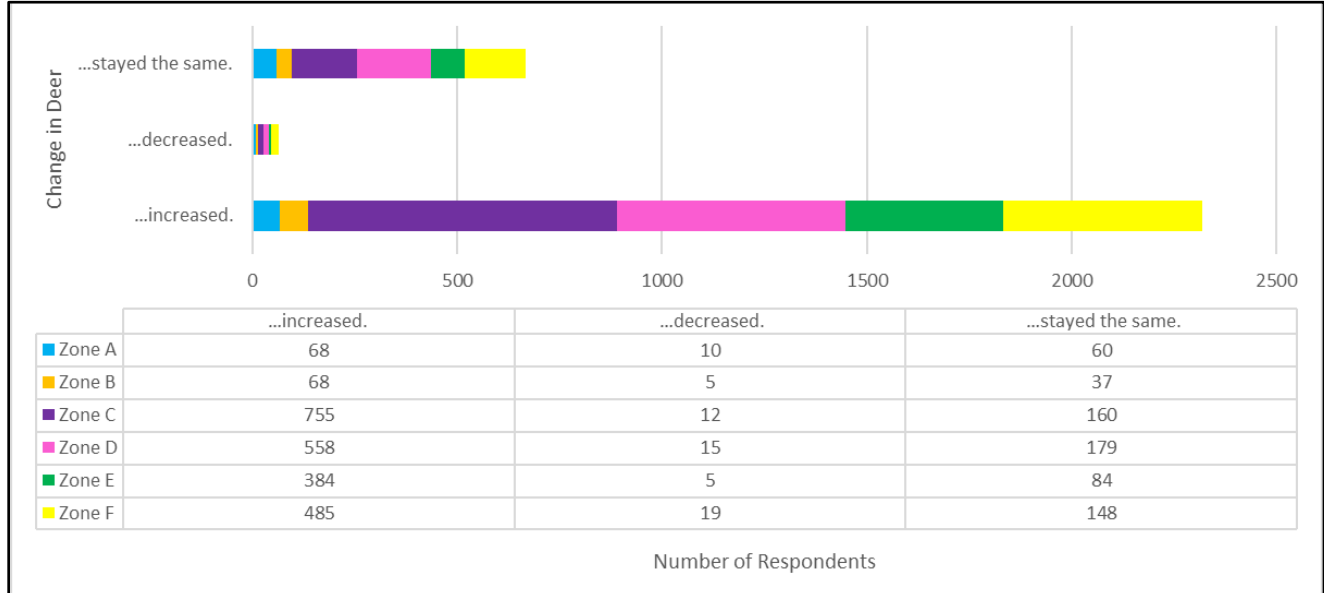
Perceptions of Strength of Deer Presence

Survey respondents were asked how often they saw deer on their property, and how this has changed in recent years. Regardless of location, most residents (91.7%) report seeing deer either daily or once per week (Figure 4). Reports of this frequency were lowest in Zone A, with just 63% of respondents reporting daily or weekly sightings. A majority (76%) of respondents reported an increase in the deer population in the last three years (Figure 5). All zones had more reports of an increase than a stable or decreasing population aside from Zone A, whose responses were equally split between observations of an increase and no change in population (Figure 5).

**Figure 4.** *How often have you seen deer on your property?*



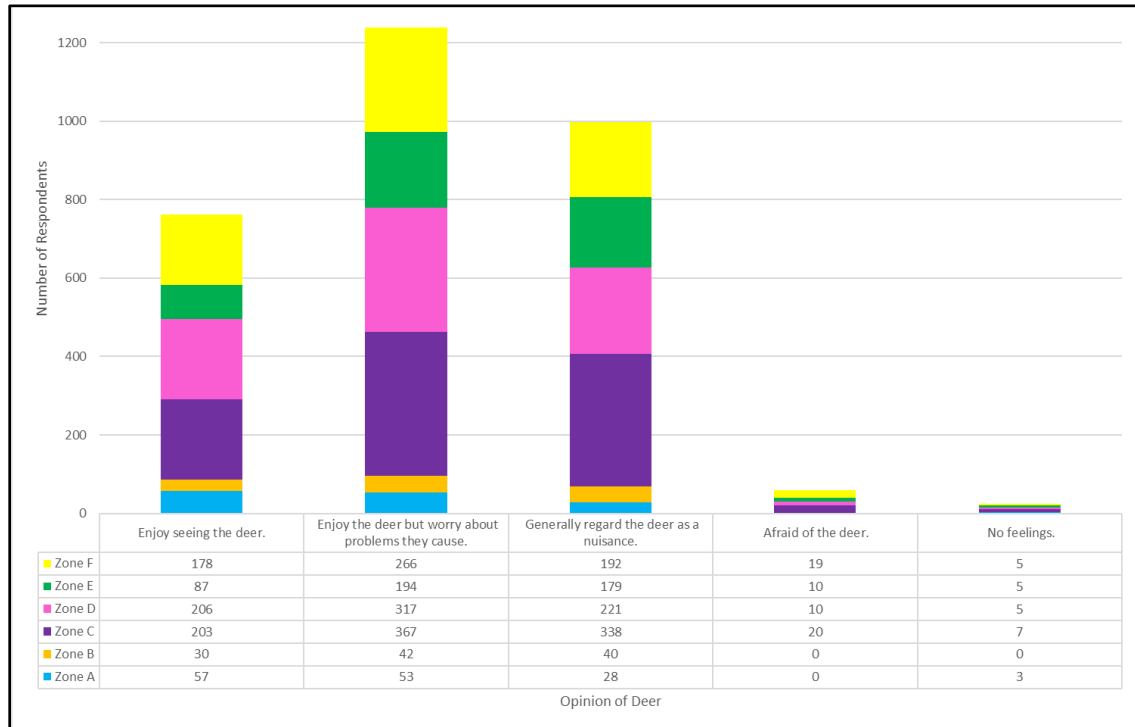
**Figure 5.** *In the last 3 years, the number of deer in my neighborhood has...*



Sentiments Toward Deer and Management

Respondents were asked to generalize their opinion into one of five categories. The results displayed a clear divide in the way people feel and emphasized why the problem in Worthington is such a complex issue. Over a quarter of respondents (25.6%) enjoy having the deer around (Figure 6). Respondents of this opinion generally shared the belief that deer should be left alone because “they were here first.” Opposingly, 31% of respondents generally regarded the deer as a nuisance (Figure 6). The largest response group for this question, at 40%, is people that enjoy seeing the deer but worry about the problems they cause (Figure 6). So, overall, most residents harbor some concerns about the deer.

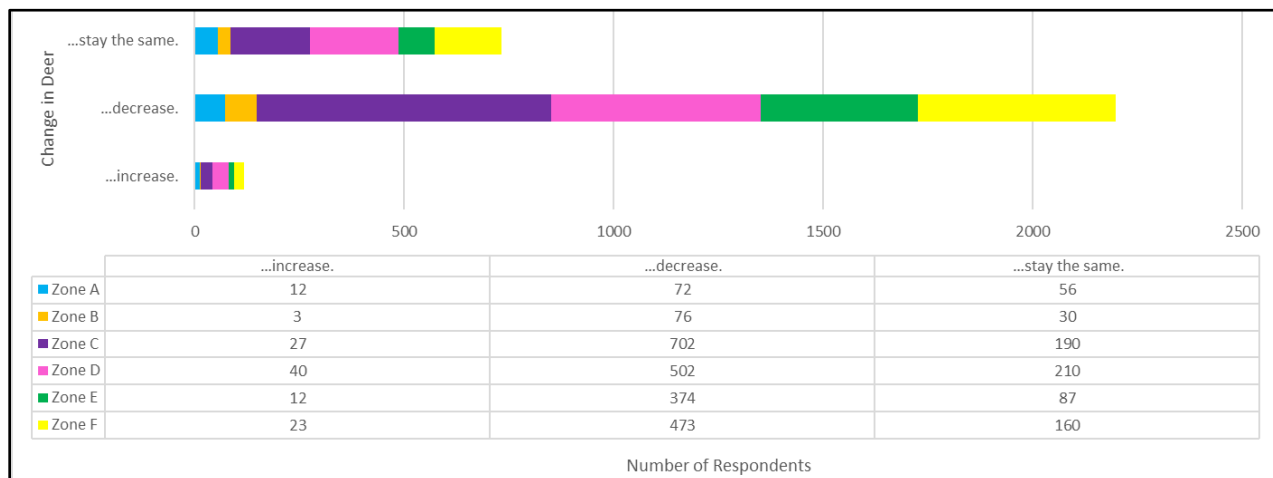
**Figure 6. General Respondent Opinions on Deer**



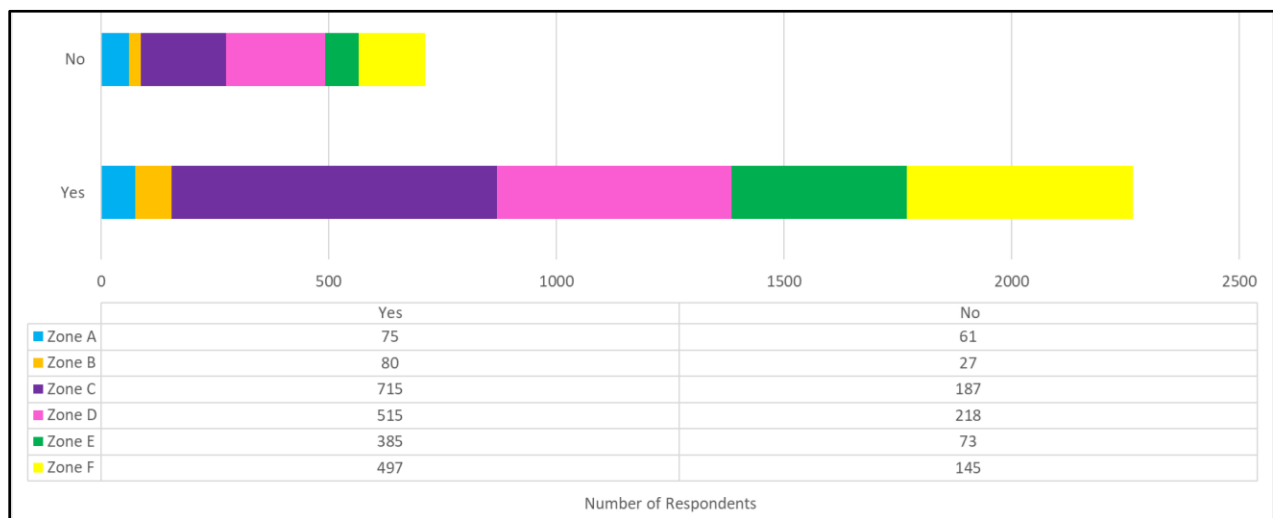
Survey respondents were then asked what they would like to see happen to the deer population in the next few years (Figure 7). Respondents were also asked if they believed public funds should be used to address the deer presence in Worthington, though no data was collected on the quantity of public funds respondents felt would be appropriate (Figure 8).

A vast majority of respondents, regardless of zone, identified their preference as in favor of a decreasing deer population (71.0%) and using public funds to address the deer (74.9%), as illustrated in Figure 7 and Figure 8, respectively. Worthington residents make it clear, amidst a deteriorating human-deer population relationship, that they would like to see the deer population decrease and are comfortable using their tax dollars to fund deer management programs.

**Figure 7.** *In the next few years, I would like to see the deer population...*



**Figure 8.** *Should public funds be used to address the deer presence in Worthington?*



Greatest Respondent Concerns Regarding Deer

To consider potential motivators for these feelings, the survey asked residents to rate their level of concern for seven different potential consequences of deer presence, with an option to also include other concerns. Respondents rated each concern individually on a scale from 1 (Not Concerned) to 5 (Most Concerned). The mean value of survey respondent concerns was

calculated for each concern and separated based on geographic location of the respondents. The open-ended responses were evaluated for common themes that appeared. Allowing for multiple themes in the same response, the number of times these themes appeared in responses was recorded. The full list of open-ended concerns is included in Appendix B, Table 12.

**Table 2.** *Mean Strength of Concerns by Zone*

	Private Property Damage	Disease	Public Property Damage	Decline in Deer Health	Aggression Toward Humans	Aggression Toward Pets	Deer- Vehicle Accidents	Other
<b>Zone A</b>	2.9	2.7	2.6	2.9	2.2	2.2	<b>3.6</b>	3.1
<b>Zone B</b>	3.3	2.8	3	3.3	2.4	2.5	<b>3.9</b>	2.7
<b>Zone C</b>	3.6	2.9	3.3	3	2.8	2.9	<b>3.7</b>	2.98
<b>Zone D</b>	3.3	2.8	2.9	3	2.6	2.7	<b>3.6</b>	3
<b>Zone E</b>	<b>3.8</b>	3.1	3.4	3.1	2.9	2.97	3.7	3.5
<b>Zone F</b>	3.4	2.9	2.9	3.1	2.95	2.95	<b>3.5</b>	3.2
<b>All Zones</b>	3.4	2.9	3	3.1	2.8	2.8	<b>3.7</b>	3
<b>Within Worthing- ton City Limits</b>	3.49	2.89	3.08	3.07	2.76	2.83	<b>3.63</b>	3.11

*Note.* Mean values of concerns of survey respondents, as represented on a scale from 1 (Not Concerned) to 5 (Most Concerned). The potential consequence with which respondents were most concerned is highlighted in red.

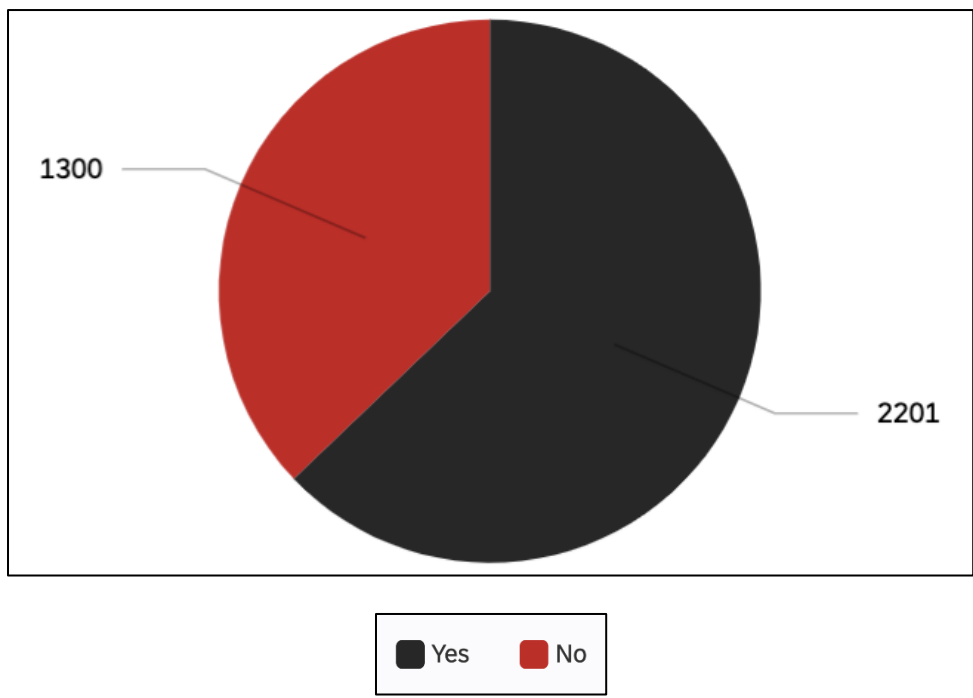
The greatest concern tended to be deer-vehicle accidents, followed closely by private property damage (Table 2). The most minimal concern was aggressive behavior of the deer toward humans (Table 2). There is only around one point of difference between the greatest and least concerns of respondents, regardless of geographic designation. Coupled with the sentiments

of respondents as recorded in Figure 6, this demonstrates respondents' lack of concern with any one potential effect, and rather points to a general frustration with the deer in Worthington.

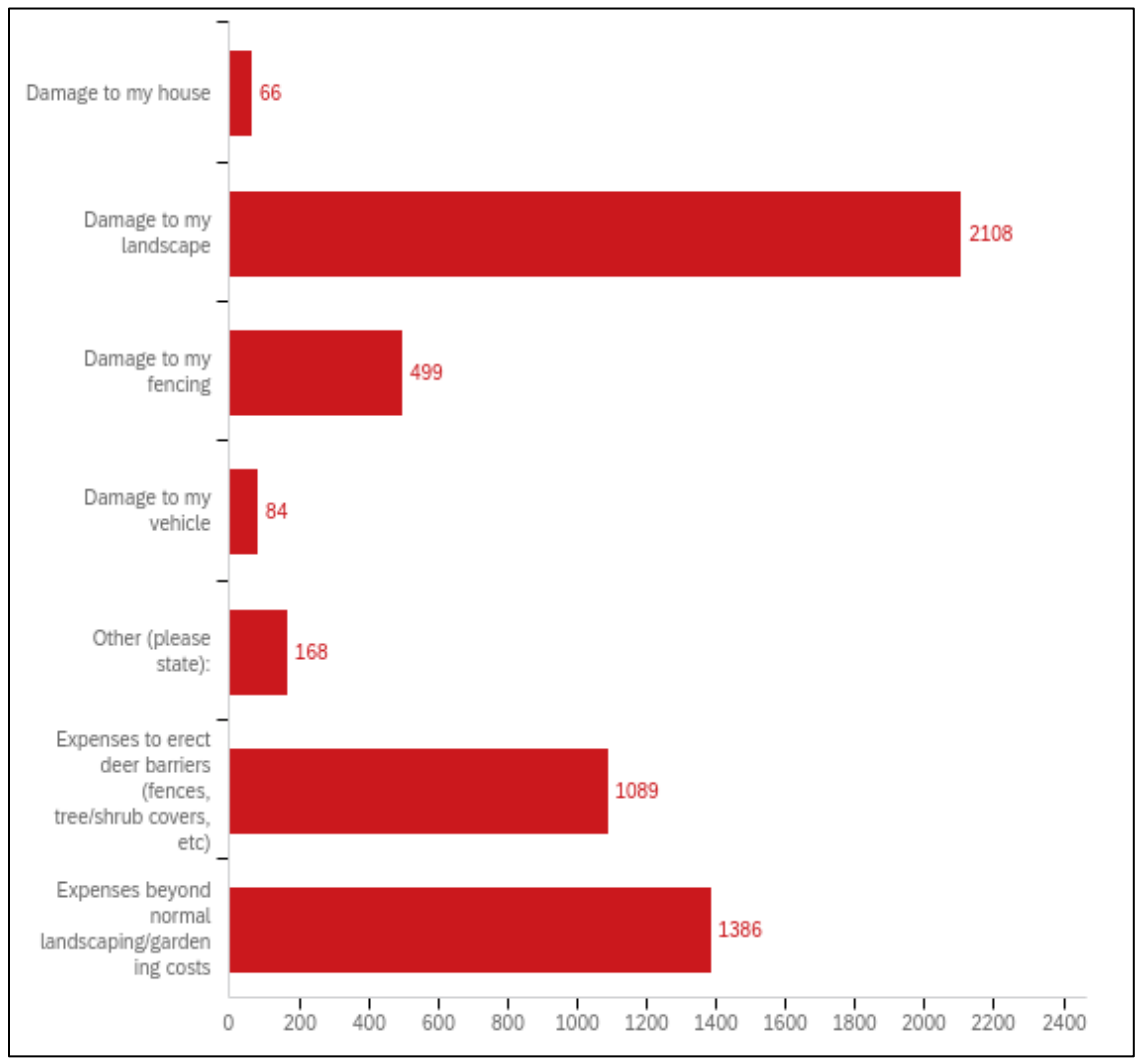
Property and Other Deer-Related Damages

While deer-vehicle accidents are of most concern, a second prominent concern is property damage (Table 2). When asked, about 63% of respondents indicated that they have suffered property damage and/or expenses due to deer in the last three years (Figure 9). Those indicating property damage from deer were then asked to indicate the nature of the damage. With two-thirds of the respondents experiencing property damage from deer, it is apparent that deer are a cause of burden for, and hinderance on, the quality of life for homeowners. It is important to note that 96% of respondents own the property whose landscape they manage.

**Figure 9.** *Have you suffered property damage or other property expenses in Worthington due to deer in the last 3 years?*



**Figure 10.** *Nature of Damages Suffered*



Of the 2,201 respondents who have experienced property damage, almost all have experienced landscape damage. Additionally, 1,386 respondents have incurred expenses beyond normal landscape costs (deer resistant plantings, repellants, plant replacements, etc.). Outside of direct landscape damage, 1,089 respondents shared that they have invested in deer barriers such as fences and vegetation coverings. Of the remaining categories, damage to fencing, other damage, damage to vehicle, and damage to house were reported (in this order).

To quantify the impact of this damage further, respondents were asked to indicate the financial cost they have incurred. Most respondents have lost in the range of \$100-\$499 from deer related damage (Table 3). Using the range minimum dollar amounts, respondents report that deer-caused property damage in Worthington has cost at least \$1.476 million for residents.

**Table 3.** *Financial Cost of Damages*

<b>Financial Cost of Deer-Related Property Damage Incurred</b>	<b>Number of Responses</b>
Less than \$100	328
\$100 - \$499	903
\$500 - \$999	442
\$1,000 - \$2,999	310
\$3,000 - \$4,999	110
\$5,000 - \$9,999	49
Greater than \$10,000	28

In the last three years, 139 respondents within city limits reported a car-deer incident in Worthington (Table 4). Of those 139 individuals, only 20 filed a police report (Table 4). Therefore, it seems certain that the official number of deer-vehicle accidents reported in Worthington Police records significantly underrepresents the actual number of deer-related vehicle incidents occurring in Worthington. Additionally, 7.7% of respondents shared that someone in their household had been involved in an incident with a deer that caused an injury to themselves or their pet, including non-vehicle accidents (Table 5).



**Table 4.** *"In the past three years, were you involved in a deer-vehicle incident?"*

	City Limits	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F
Yes	139	7	9	36	32	27	28
No	2893	132	100	878	713	438	624
Police Report Filed for Incident	20	1	1	4	6	3	5

**Table 5.** *In the past three years, has anyone in your household been involved in an incident with deer in Worthington that caused injury to people or pets?*

	City Limits	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F
Yes	237	9	4	87	46	33	57
No	2777	129	105	827	692	427	591

### No-Feeding Ordinance

On 1 June 2022, The City of Worthington enacted a No-Feeding Ordinance, making it illegal for residents to “purposely feed or make food available for consumption by deer on private or public property within the City” (City of Worthington, 2022). To gauge adherence to this law, the survey asked respondents how strongly they agreed with statements surrounding deer feeding in the community. Participants reported that most people in their neighborhoods do not feed deer, but that those who do are not held accountable. Additionally, participants reported that many people think it acceptable to feed other wildlife (Table 6)<sup>2</sup>. Participants were asked if

<sup>2</sup> While it is legal to feed other wildlife like birds or outside pets, it can be helpful to eliminate food sources such as these to reduce the amount of unwanted wildlife impact. Deer may eat out of bird feeders, for instance, and other wildlife like raccoons will frequent outdoor feeders.

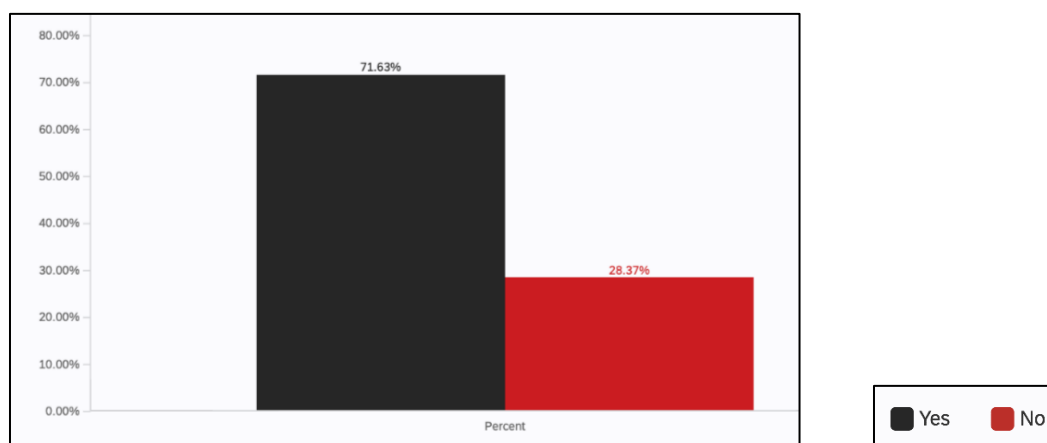
they were aware of the No-Feeding Ordinance before the survey. The survey revealed that 71% of participants were aware prior to the survey that feeding deer is illegal (Figure 11).

**Table 6.** *Respondent Opinions on Resident Attitudes Toward Feeding*

	Disagree (somewhat and strongly)	Neither agree nor disagree	Agree (somewhat and strongly)
In my neighborhood, it is common to feed deer.	47.4	27.7	24.9
Most people in my neighborhood think it's acceptable to feed deer.	51.8	30.5	17.8
People who feed deer are held accountable by our community.	49.3	39.7	11
Most people in my neighborhood think it's acceptable to feed wildlife (e.g. birds) and outdoor cats.	13.7	29.3	57

*Note.* Responses by percentage (%) to Question 14 “On a scale of 1-5 (Strongly disagree to Strongly agree) how much do you disagree or agree with the following statements.” The red text identifies the highest value in each section.

**Figure 11.** *Prior to this survey, were you aware that feeding deer is illegal in the city of Worthington?*

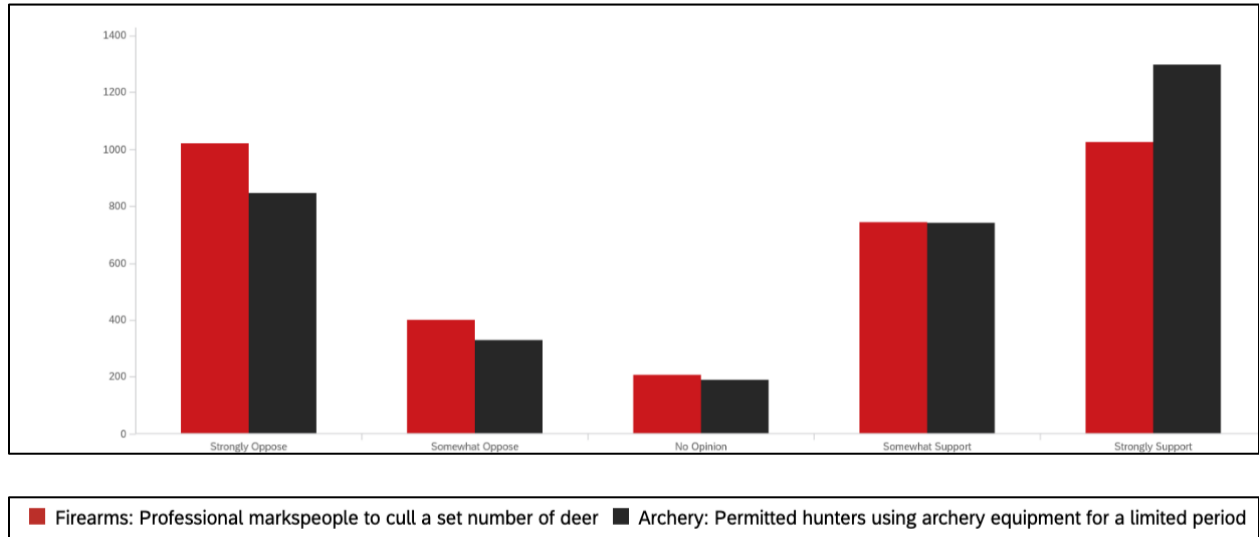


## Opinions on Lethal Measures for Deer Population Management

To gauge community support for lethal measures, the survey asked respondents to share their support for two potential management strategies: professional marks-people using firearms to cull a set number of deer, and permitted hunters using archery equipment for a limited period. Support levels were measured in 5 categories: Strongly Oppose, Somewhat Oppose, No Opinion, Somewhat Support, and Strongly Support, and assigned a number 1 (Strongly Oppose) through 5 (Strongly Support). Respondents marginally supported both lethal measures more than they opposed them, though the support for archery was greater than for firearm use (Figure 12). However, this is not due to respondents selecting support levels near the given means (3.10 for firearm usage and 3.39 for archery use), but rather because the distribution is bimodal, with concentrations at “Strongly Oppose” and “Strongly Support” (Figure 12).

There were no demographic categories for which there was greater support for the use of firearms than the use of archery as a management method. Men, though, showed stronger support for both firearms and archery than women (Table 7). Also, all geographic zones showed some support for archery (Table 9). In the case of firearm use, though, Zones A, D, and F showed varying levels of opposition, while Zones B, C, and E showed varying levels of support (Table 8).

**Figure 12. Overall Respondent Opinions Regarding Use of Lethal Means**



**Table 7. Mean Opinions of Residents Regarding Use of Lethal Means Based on Gender**

	Mean - Firearms	Number of Responses - Firearms	Mean - Archery	Number of Responses - Archery
<b>All Respondents</b>	3.10	3397	3.39	3406
<b>Men</b>	3.41	1331	3.75	1336
<b>Women</b>	2.93	1857	3.16	1855
<b>Prefer Not to Say</b>	3.47	141	3.87	142
<b>Other</b>	3.06	18	3.67	18

*Note.* Some respondents chose not to share any information about gender, which is why the number of responses for the sub-categories do not sum to the number of responses for the “All Respondents” category.

**Table 8. Mean Opinions of Residents Regarding Firearm Use Based on Zone**

	All Within City Limits	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F
<b>Mean</b>	3.12	2.91	3.22	3.20	2.97	3.48	2.93
<b>Number of Responses</b>	2964	137	101	901	725	459	633

**Table 9.** *Mean Opinions of Residents Regarding Archery Use Based on Zone*

	<b>All Within City Limits</b>	<b>Zone A</b>	<b>Zone B</b>	<b>Zone C</b>	<b>Zone D</b>	<b>Zone E</b>	<b>Zone F</b>
<b>Mean</b>	3.39	3.02	3.63	3.46	3.25	3.62	3.30
<b>Number of Responses</b>	2970	137	105	903	724	459	634

Lack of support for lethal programs could stem from common areas of concern, including public safety, deer welfare, and cost. Survey respondents were asked to rate these three issues from 1 (No Concern) to 5 (Most Concern). Additionally, 143 respondents chose to share other, open-ended concerns. The three most common issue areas (comprising 104 total responses) were the following: only supporting non-lethal measures, such as birth control, sterilization, or physical relocation; concerns about the effectiveness and/or efficiency of lethal management options; concern for what will be done with the remains of the harvested deer, with many specifically suggesting donation of venison to non-profits in the local area (Table 10). It is clear, though, that the greatest concern of respondents regarding the use of lethal management methods was public safety (Table 10).

**Table 10.** *Frequency of Rating of Highest Concern by Issue*

<b>Issue of Most Concern</b>	<b>Response Frequency</b>
Public Safety	1038
Deer welfare	678
Cost of removal programs	347
Other: support for non-lethal measures only	45
Other: effectiveness/efficiency	30
Other: what will be done with carcasses?	29

### Suggested Non-Lethal Methods from Respondents

Participants were asked if they knew of effective deer management strategies in suburban environments not mentioned in the survey. Of 465 responses, the most common suggestion was for birth control and sterilization methods (203 appearances) (Table 2). Birth control in Worthington is not viable because the deer are an open population and current technology is too costly (Barnhardt, 2022), which may be a point of public education for the Worthington Deer Task Force to consider. The second most frequent response (90 appearances) supported allowing residents or professionals to hunt deer with arrows and firearms (Table 2). Other responses advocated for capture and relocation of deer, referred to other community programs, or did not answer the question. Capture and relocation have been found to be too costly, have low chances of deer survival after displacement, and increased risk of disease spread. The remaining responses advocated for deer repellent practices like high fencing, plants that deer do not like to eat, noise/water deterrents, and stronger enforcement of the no-feeding ordinance (Appendix B, Table 14).

### Open-Ended Responses

Given the opportunity, 1,399 respondents chose to express further concerns in an open-ended format. The most frequent response theme was an expression of support for reducing the deer population (Table 11). This theme does not include mention of which method to do so is supported, but instead includes words like cull, reduce, and control. The second most frequent theme mentioned was garden and landscape damage, and the third was concern that deer in Worthington have become aggressive and/or are not scared of humans (Table 11). A full list of open-ended response categories and frequencies is available in Appendix B, Table 15.

**Table 11. Open-Ended Responses**

Theme	Frequency
Express support for reducing the deer population (use of words like cull, reduce, and control).	335
Express having experienced garden/landscape destruction.	233
Express personal experience and concern that deer in Worthington have become aggressive and/or are not scared of humans.	195

### Recommendations to Worthington

Regardless of demographic factors, respondents asserted that the deer presence in Worthington is an issue. Additionally, most respondents who reside within the city limits of Worthington feel that the city should act using public funds. Despite this desire for management, respondents were divided on the use of lethal methods. For this reason, the Deer Task Force may find it most helpful to create a two-pronged plan moving forward: working with other capstone groups to identify the least polarizing management options by addressing areas of concern, and further analyzing data to identify regional differences in opinion that may be used to develop more specialized plans of address. The City of Worthington may also find the results of this survey useful in identifying areas of misunderstanding about deer or deer management in Worthington, from which they may seek to develop educational programming and materials that can complement any plan moving forward.

## Conclusion

This survey sought to provide insight into how the Worthington community, particularly property owners, feel about the deer population in Worthington. The survey received a very robust response rate, and responses are well-distributed across the ages, genders, and locations represented in Worthington census/zone data. The Worthington City Council and the Worthington Deer Task Force should therefore have confidence in using these results to inform decision making and policy.

While this report did not analyze ecological dimensions of deer habitat, it is clear from these results that Worthington residents overwhelmingly report a perceived increase in deer in recent years, a desire to reduce deer numbers in Worthington, and support for using public funds to manage deer. In addition, current levels of the deer population are evidently creating financial issues related to property damage and deer vehicle accidents, and concerns related to deer-resident and deer-pet conflicts.

There is strong division among residents particularly on the prospect of lethal means of managing deer in Worthington; more residents support than oppose lethal means, but there is also a low level of understanding of the available options for managing deer numbers, what the most effective management practices would be for Worthington, and the safety track record of lethal deer management programs in other communities. Further study, public education, and discussion of management options are needed, but these results should help Worthington policy makers implement management plans that can reduce the amount of conflict with deer while still providing healthy habitat for aesthetic enjoyment of the landscape, and its wildlife, in Worthington.



## APPENDICES

### Appendix A: Sources

- Barnhardt, E.C., (2022). *Deer Management and the City of Worthington*. The City of Worthington Deer Task Force.  
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Appendix B: Comprehensive Tables

**Table 12.** *Open-Ended Resident Concerns*

Concern	Frequency
Eating Plants	117
Feces	75
Overt Deer Presence	61
Property Damage	54
Children	35
Deer Suffering	33
Carcasses in Public	32
Hunters	27
Pets	22
Disease/Vectors	22
Vehicle Collisions	18
Feeding the Deer	18
Divide in Public Opinion	16
Predators	10
Baby Deer	8
Inaction	6
Mental Health	4
More Concerned about Other Animals	3
Noise	2

*Note.* In the survey, “Eating Plants,” “Property Damage,” and “Children” were offered as predetermined selections, so the novel consequence with which residents were most concerned was “Feces.” Allowing for multiple themes in the same response, the number of times these themes appeared in responses was recorded.

**Table 13.** *Overall Opinions on Attitudes Toward Feeding*

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
In my neighborhood, it is common to feed deer	28.9	18.5	27.7	17.7	7.1
Most people in my neighborhood think it's acceptable to feed deer	27.8	24	30.5	13.9	3.8

---

People who feed deer are held accountable by our community	32.9	16.4	39.7	6.5	4.5
Most people in my neighborhood think it's acceptable to feed wildlife (e.g. birds) and outdoor cats	5.3	8.4	29.3	36.8	20.2

---

**Table 14.** *Full List of Other Respondent Management Suggestions*

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Response	Frequency
Birth control/sterilization	203
Support for culling/residential hunting permits	90
Capture and relocate	35
Deterrent: noise, water, light, chemical, dogs, lights	17
Fencing	13
Referenced Sharon Woods Metro Park	10
No-feeding ordinance enforcement	9
Anti-deer plants	9
Habitat expansion	8
Introduction/increase of predator	7
Humans are the problem	4
Do not kill	4
Referenced Cleveland	4
“City needs to take action”	4
Do nothing	3
Education	3
Tagging/tracking	3
Referenced Hilton Head South Carolina	3
Euthanasia	2
Referenced Highbanks Metro Park	2
Do not capture and relocate	2
Referenced Pennsylvania	2
Shared that they read website and report	2
Have witnessed illegal hunting	2
Free removal of deceased deer	1
Divine intervention	1
Goats to remove food source	1
“Do not spend money”	1
Trained dogs (no explanation)	1

---

Reduce speed limit to reduce accidents	1
Increase food by river	1
Birth control does not work	1
Hunting will not work	1
Referenced Granville Ohio	1
No-Feeding does not work	1
Wants to be contacted, left #	1
Deterrents do not work	1
Does not want to change personal vegetation or bird feeding habits	1
Sharing that deer destroy landscape	1
No-Feeding is working	1
Does not like survey	1
Culling does not work	1
Referenced Blendon Woods Park	1
Shared that they have filed complaints prior	1
Link to wildlife management site	1
Education does not work	1

**Table 15.** *All Open-Ended Response Categories, Expansion of Table 11*

<b>Themes</b>	<b>Frequency</b>
Express support for reducing the deer population (use of words like cull, reduce, and control).	335
Express having experienced garden/landscape destruction.	233
Express personal experience and concern that deer in Worthington have become aggressive and/or are not scared of humans.	195
Utilize wording such as “that city must do something”, “do something”, “something must be done”, and/or “the city has put this off for far too long”.	188
Express feelings that "there are too many deer" and/or that “the deer population is out of control”.	187
Express concern regarding the explosion of population size in recent years.	122
Express support for lethal methods (either archery or firearms).	111
Do not support lethal measures at all.	103
Express concern and/or personal experience regarding deer-car collisions.	97
Express that they enjoy the deer but admit that population size has become a problem.	91
Express their love of the deer.	83
Express that deer are no problem at all.	79
Express sentiment "the deer were here first" and feel over development of the area is the problem.	74
Express concern regarding a noticed decline in deer health.	73
Express support for birth control.	72
If culled, want the meat to be donated.	71
Do not want the city to interfere with the deer.	69

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Express concern and/or personal experience regarding pet safety.	66
Express concern and/or personal experience regarding children's safety.	63
Express concern and/or personal experience regarding deer waste.	59
Express concern regarding disease (risk to humans).	58
Express support for increased enforcement of the feeding ban.	58
Have experienced property damage.	50
Express concerns regarding taxes being spent on deer (feel that other needs are better addressed with public funds).	36
Express that the deer are a feature of why they live in Worthington.	35
Express support for a "humane" method.	35
Express support for lethal method (bow + arrow).	35
Express preference for non-lethal methods first.	35
Express support for relocation.	33
Express support for city responsibility for dead deer removal.	30
Express concern and/or personal experience regarding Lyme disease.	25
Express concerns regarding the safety of utilizing lethal measures in the community.	23
Express that deer disrupt the quality of life in Worthington ("make me want to move out of the town").	22
Express support for community education.	22
Express concern and/or personal experience regarding poaching occurring in the community.	16
Express support for new zoning rules to allow for fences.	10

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## Appendix C: Full Survey

### Worthington Deer Survey

Welcome!

The City of Worthington has appointed a task force to examine the impact of the white-tailed deer population on our community. This short survey will provide the Worthington Deer Task Force with a better understanding of the community's general sentiments surrounding the local deer population and potential deer management strategies. The Task Force will use your input to help identify practical ways to manage issues associated with Worthington's deer population.

Thank you for helping us achieve this goal!

What is your connection to Worthington?

- I live within the Worthington city limits.
- I live in the Worthington area but outside the Worthington city limits.
- I am not a resident, but I work within the Worthington city limits. |
- I am not a resident, but I work within the Worthington area, outside the Worthington city limits.
- I do not live or work in Worthington.

Are you responsible for exterior management and maintenance of your residence or any other Worthington property?

- Yes
- No

Do you rent or own the property [whose](#) exterior you manage?

- I RENT this [property](#).
- I OWN this [property](#).
- I am employed to manage this [property](#).

How long have you lived/worked in Worthington?

- Less than a year
- 1-3 years
- 4-10 years
- 11-20 years
- Over 20 years
- I do not live or work in [Worthington](#)

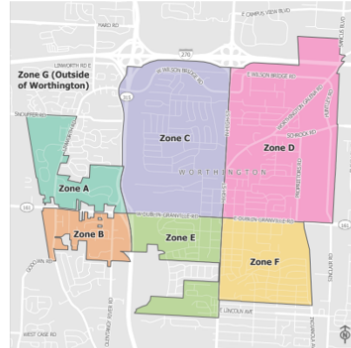
What year were you born?

---

In which zone of Worthington do you live/work in? (see map below)

- Zone A: West of SR-315 & north of SR-161 inside the city limits of Worthington.
- Zone B: West of SR-315 & south of SR-161 inside the city limits of Worthington.
- Zone C: Northwest of High Street & SR-161, south of I-270 and east of SR-315.
- Zone D: Northeast of High Street & SR-161, south of I-270 and west of Huntley.
- Zone E: Southwest of High Street & SR-161, east of SR-315 and north of Clintonville.
- Zone F: Southeast of High Street & SR-161, west of Sinclair and north of Clintonville.
- Outside the city limits of Worthington.

This is a map that corresponds to the areas outlined in the question above:



Select the option that most closely describes your feelings about deer in Worthington:

- I enjoy seeing and having deer [around](#)
- I enjoy seeing a few deer but worry about the problems they [cause](#)
- I generally regard deer as a [nuisance](#)
- I am afraid of the [deer](#)
- I have no feelings about [deer](#)

What changes, if any, have you noticed in the deer population in your neighborhood in the last three years? The number of deer in my neighborhood has...

- ...increased
- ...decreased
- ...stayed the [same](#)

What would you like to see happen to the deer population in Worthington in the next few years? I would like to see the deer population...

- ...increase
- ...decrease
- ...stay the [same](#)

In the last year, how often have you seen deer on your property or street in Worthington?

- Daily
- Once a week
- Once a month
- A few times per year
- Never

How concerned are you about these potential effects of deer in Worthington?

	1 (Not Concerned)	2	3 (Moderately Concerned)	4	5 (Most Concerned)
Private property damage (landscape, home, fence)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transmission of diseases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Damage to public property through over browsing or antler rubbing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decline in deer health due to overpopulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aggressive behavior toward humans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aggressive behavior toward pets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deer-vehicle accidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please state):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have you suffered property damage or other property expenses in Worthington due to deer in the last 3 years?

- Yes
- No

In the past three years, has anyone in your household been involved in a car-deer incident within the City of Worthington?

- Yes
- No

Did you file a police report for the incident?

- Yes
- No

In the past three years, has anyone in your household been involved in an incident with deer in Worthington that caused injury to people or pets?

- No
- Yes (please briefly describe) \_\_\_\_\_

How much financial cost have you incurred due to vehicle repairs or injury/medical bills due to any incidents with deer within Worthington?

- Less than \$1,000
- \$1,000 - \$2,499
- \$2,500 - \$4,999
- \$5,000 - \$9,999
- Greater than \$10,000

What was the nature of the property damage or other property expenses (select all that apply)?

- Damage to my house
- Damage to my landscape
- Damage to my fencing
- Damage to my vehicle
- Expenses to erect deer barriers (fences, tree/shrub covers, etc)
- Expenses beyond normal landscaping/gardening costs (deer resistant plantings, deer repellants, replacement of deer-browsed plants, etc)
- Other (please state): \_\_\_\_\_

How much financial cost have you incurred due to property damage from deer or in order to avoid property damage by deer?

- Less than \$100
- \$100 - \$499
- \$500 - \$999
- \$1,000 - \$2,999
- \$3,000 - \$4,999
- \$5,000 - \$9,999
- Greater than \$10,000

On a scale of 1-5 (Strongly disagree to Strongly agree) how much do you disagree or agree with the following statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
In my neighborhood, it is common to feed deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people in my neighborhood think it's acceptable to feed deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People who feed deer are held accountable by our community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people in my neighborhood think it's acceptable to feed wildlife (e.g., birds) and outdoor cats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you feel that public funds should be used to address the deer presence in the City of Worthington?

- Yes
- No



As the City of Worthington explores potential deer management options, what is your opinion about use of lethal methods for reducing the local deer population in Worthington, assuming regulations are established for safety?

	Strongly Oppose	Somewhat Oppose	No Opinion	Somewhat Support	Strongly Support
Lethal Means - Firearms: Professional <del>mark</del> people to cull a set number of deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lethal Means - Archery: Qualified, permitted hunters using archery equipment for a limited time period	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How concerned are you about the following issues with deer removal programs?

	1 (Not Concerned)	2	3 (Moderately Concerned)	4	5 (Most Concerned)
Individual welfare of deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of administering removal programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please explain)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What attempts have you made to deter deer from your property and how successful were your efforts?

	Did not attempt	Not successful at all	Not sure if it was successful	Somewhat successful	Very successful
Disturbance techniques (making noise, bright lights, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fencing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deer-repellent plants or sprays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Removed food sources (birdfeeders, stopped feeding, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please explain):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are you aware of effective deer management strategies in suburban environments that may not have been mentioned in this survey?

- Yes. Please describe. \_\_\_\_\_
- No

Do you have any other thoughts or concerns you would like to share? If so, please describe in 100 words or less.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_


Prior to this survey, were you aware that feeding deer is illegal in the city of Worthington?

- Yes
- No

What is your gender?

- Male
- Female
- Prefer not to say
- Other \_\_\_\_\_

Appendix D: Mailer



City of Worthington  
6550 N. High Street  
Worthington, OH 43085

**Interested in learning more?**

Visit  
[worthington.org/deer](http://worthington.org/deer)



**Tell us what you think about the Deer in Worthington**

**We want your opinion!**

- The Worthington Deer Task Force is looking for input into what action the City could take regarding the deer population.
- We want to ensure all voices are heard when deciding how to move forward on this important issue.



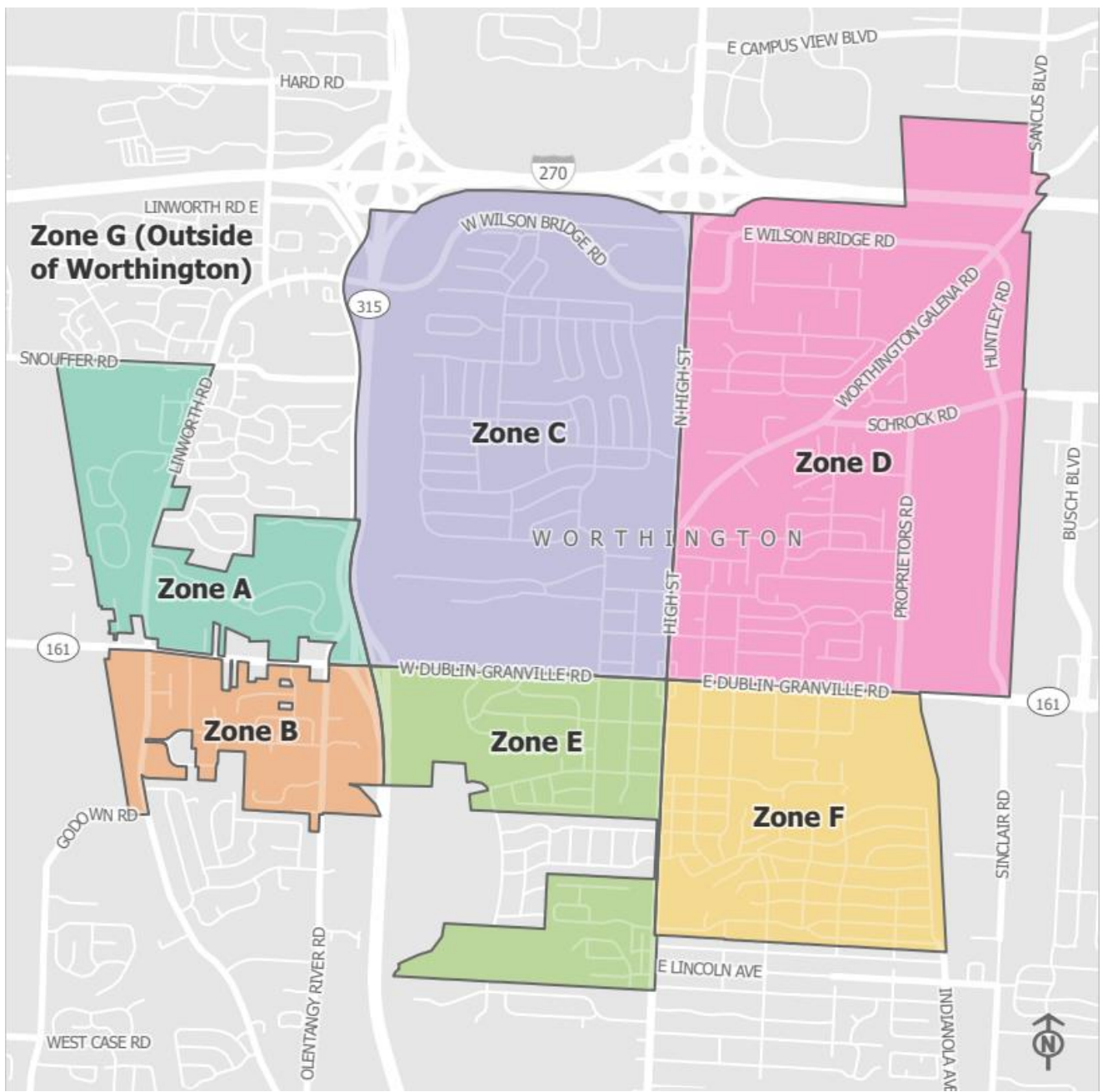
**Take the survey**



[worthington.org/deer](http://worthington.org/deer)  
Paper surveys are available at the Community Center, Griswold Center, and Municipal Building.

**Survey Deadline: March 25, 2024**

Appendix E: Map of Worthington Zones



## Appendix F: Meta Data

### Dataset #1: Age\_Deer\_Survey.xlsx

Source: Worthington Deer Survey Expanded (2024)

Description: This dataset includes results from the survey regarding age and analyzes the age range of respondents and compares the age distribution with results from the Worthington census.

### Dataset #2: Deer\_openresponse\_other\_suggestions.xlsx

Source: Worthington Deer Survey Expanded (2024)

Description: This dataset lists all the raw data gathered from the open-ended question section of the survey and a condensed version.

### Dataset #3: Deer\_Zone\_Analysis.xlsx

Source: Worthington Deer Survey Expanded (2024)

Description: This dataset includes survey results from respondents regarding demographics, deer opinions, damages and costs, deer feeding, lethal means, etc. with the results distinguished by zone.

### Dataset #4: Open\_Ended\_Deer\_Survey.xls

Source: Worthington Deer Survey Expanded (2024)

Description: This dataset includes all relevant information regarding the open-ended responses including the raw data, frequency, common factors mentioned, and analysis of the most common themes.

### Dataset #5: Resident\_Concerns.xlsx

Source: Worthington Deer Survey Expanded (2024)

Description: This dataset includes the responses from the “Other” option in question 10 on the survey (“How concerned are you about these potential effects of deer in Worthington?”) and the frequency of said concerns.