

Responsive Management



DELAWARE RESIDENTS' ATTITUDES TOWARD AND BEHAVIORS THAT AFFECT WATER QUALITY

**Conducted for the Delaware
Department of Natural Resources and Environmental Control
by Responsive Management**

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EXECUTIVE SUMMARY

This study was conducted for the Delaware Department of Natural Resources and Environmental Control (DNREC) to assess Delaware residents' attitudes toward the environment and water quality issues, as well as their behaviors that affect water quality. The study entailed five focus groups conducted in Middletown, Wilmington, Dover, Lewes, and Delmar and a statewide telephone survey of Delaware residents. The telephone survey sample included residents of Delaware's five regions (North New Castle County, South New Castle County, Kent County, East Sussex County, and West Sussex County), and the data analyses considered the region in which the respondent lived.

The telephone survey questionnaire was developed cooperatively by Responsive Management and DNREC. Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday noon to 6:00 p.m., and Sunday from 3:00 p.m. to 7:00 p.m., all local time. A five-callback design was used to maintain the representativeness of the sample, to avoid bias toward people easy to reach by telephone, and to provide an equal opportunity for all to participate. A total of 1,200 completed interviews were obtained.

The software used for data collection was Questionnaire Programming Language 4.1 (QPL). The analyses of data were performed using Statistical Package for the Social Sciences (SPSS) software. The results were weighted so that the proportions of the sample among the regions matched their proportions within the state.

For this report, a nonparametric analysis examined how the various responses related to demographic characteristics. Responses for selected questions were tested by means of z-scores for relationships to demographic characteristics, such as gender, age, ethnicity, and the location of the respondent's residence. The analysis examined approximately 50 variables regarding demographic characteristics of the respondents. A positive z-scores means that the response and characteristic are positively related; a negative z-score means that the response and characteristic are negatively related.

ENVIRONMENTAL HEALTH AND WATER QUALITY IN GENERAL

- **Delaware residents were split regarding the health of Delaware's environment.**
 - In the telephone survey, 45% overall said Delaware's environment is somewhat or very healthy, but 47% overall said it is somewhat or very unhealthy.

- **Delaware residents expressed great concern about water quality.**
 - In the telephone survey, more respondents (46% overall) named water quality as one of the most important natural resource or environmental issue than named any other issue.
 - In the telephone survey, 81% of Delaware residents overall said that they were somewhat or very concerned about water quality.
 - In the telephone survey, the top reasons that respondents were concerned about water quality were the adverse impacts to drinking water; pollution in the water making it taste and look bad; and the adverse impacts to their own health and the public's health.
 - In the focus groups, health and safety issues were among the top concerns for many participants who engaged in environmentally conscious behaviors.
 - Focus group participant: *Water quality has to be a high priority because we are drinking it.*
 - Focus group participant: *Water quality. Where I live the nitrates have been really high. We don't have clean water to drink.*
 - Focus group participant: *I live near a lake, and we used to have a problem with nitrates in the water. I have a septic system. I had to go 340 feet deep for my well. Water quality is a big thing.*
 - Focus group participants felt that the state does not always set a good example for the public. For example, homeowners are encouraged to use less salt on their pavement in winter, yet residents see the state using salt on the highways in large quantities.
 - Additionally, among focus group participants, concern for environmental issues appeared to be generated by noticeable problems. For example, many focus group participants became concerned about water quality only after noticing a chlorine

smell in the tap water. Many individuals said that they pumped their septic system only when it backed up, another noticeable result of poor maintenance.

➤ **Industry/chemical companies were considered to be one of the top polluters of water, and homeowners were not considered as having a large impact on water pollution.**

- In the telephone survey, 56% of respondents said that industry/chemical companies are the largest polluters of water in Delaware, while homeowners/individuals were named as the largest polluters of water in Delaware by only 10% of respondents.
- In the telephone survey, only 6% of respondents said that homeowners/individuals have a major impact on water pollution, and 47% said that homeowners/individuals have a minor impact, while 44% said they have no impact.
- When asked in the telephone survey who should do more to help improve water quality, 51% said everyone, but the next largest percentages were of those who said government (29%) or who said business/industry (21%). Residents were named by only 15% of respondents.
- In the focus groups, there was a general understanding that individual actions can cause pollution, but the focus group participants overall felt that industry and large corporations contribute more to water pollution than do individual homeowners. It did not appear that people generally think about the effect of the *collective* actions of homeowners on water quality.
- Additionally, in the focus groups, many participants felt that industry and developers are not being held to the same standard as homeowners are. They felt that the large companies are allowed to get away with actions that should be prohibited. Therefore, the attitude seemed to be: Why is the government coming after the state's residents?
- In general, the focus groups revealed a high level of concern for the environment when the issues were in the abstract or in another individual's or organization's realm. However, when the actions of personal homeowners were indicated as a source of water pollution, most individuals in the focus groups became defensive and initially sought to justify their actions or blame others. However, there was an

underlying sense of guilt and acknowledgement that one's own actions do indeed contribute to water quality degradation in Delaware.

- Focus group participant: *I think that the general population has a responsibility, but that, proportionately, the corporations are much more at fault than are the every day households.*

➤ **The location of the respondent's residence had an important influence on opinions on environmental health and the issues that were deemed important, and gender and profession had a minor influence.**

- In the telephone survey, respondents from the less urbanized areas (Regions 3, 4, or 5, Kent or Sussex Counties) were more likely than were respondents from urban areas (Regions 1 and 2, New Castle County) to say the environment is healthy. Those from the more urbanized areas were more likely to say that they were concerned about water quality.
- In the telephone survey, respondents from Sussex County/Regions 4 and 5 were more likely than were others to name farmers/agriculture as one of the largest sources of water pollution; respondents from New Castle County/Regions 1 and 2 were more likely than were others to name industry/chemical companies as one of the largest sources of water pollution.
- In the telephone survey, males were more likely than were females to say that the overall environment in Delaware is healthy.
- In the telephone survey, those in industry were more likely than were those in other professions to say that the overall environment is healthy. Those in the teaching/education profession had a high propensity to say that water quality and quantity and air quality are important issues.

WATER QUALITY AND SEWER/SEPTIC SYSTEMS

➤ **The vast majority of respondents' residences are on a sewer system.**

- The results of the telephone survey show that 71% of respondents' residences are on a sewer system, and 23% of respondents' residences have a septic system.

- **The housing stock (those houses with a septic system) was relatively young, which in turn means that most septic systems are relatively young.**
 - The results of the telephone survey show that 75% of respondents' residences (those residences that have a septic system) are 30 years old or less, and 76% of respondents said their septic system is 20 years old or less.

- **Most people whose residence has a septic system had recently had the system pumped out, and they did so for general maintenance, not out of concern for the environment, despite the fact that most respondents agreed that septic systems can adversely impact water quality. Most respondents were reluctant to spend money to upgrade their septic systems to improve water quality.**
 - In the telephone survey, 71% of respondents whose residence has a septic system had pumped out their septic system within the prior 2 years to the survey.
 - According to the telephone survey, of those who had pumped out their septic system, 61% had done so for general maintenance, and an additional 22% had done so because the system had backed up. Only 2% had pumped out their septic system out of concern for the environment.
 - In the telephone survey, 63% of respondents moderately or strongly agreed that standard septic systems can impact water quality.
 - In the telephone survey, there was an inverse relationship between the cost of septic system upgrades and the percentage who would be willing to spend that amount to upgrade their septic system, and less than a majority of respondents (37%) were willing to spend even the lowest amount (\$4,000) that was discussed in the survey. The percentage willing to spend the given amount went down to 20% when the cost went up to \$10,000.
 - In the telephone survey, less than a majority of respondents (30%) said that they would be likely to upgrade their septic system knowing that developers were required to install state-of-the-art septic systems in new developments.
 - Focus group participant: *I wasn't aware there was a requirement; I pump it when it backs up. It has backed up once in 15 years. The line got plugged up, and the [maintenance] guy told me we needed it pumped out.*

- Focus group participant: *It falls under the maintenance category; I'm not sure that I was thinking of environmental concerns. I was thinking more about what I had to do to keep the system functioning.*
 - In the focus groups, costs were very important considerations for Delaware residents when evaluating methods to improve water quality in the state. The focus group participants desired a clear rationale if further costs are to be incurred. Also, the focus group participants reiterated that people tend to support the most inexpensive option.
 - Focus group participant: *I have a high concern, but how many homeowners could afford a \$12,000 retrofit?*
 - Focus group participant: *Retrofitting is a great idea if you have the money.*
 - Focus group participant: *People would support [retrofitting] if it were less expensive.*
- **Those respondents whose residences are on septic systems were fairly evenly split between those who would prefer to be on a sewer system and those who would not prefer to be on a sewer system.**
- In the telephone survey, 47% of respondents said they would prefer to be on a sewer system, and 42% said they would *not* prefer to be on a sewer system.
- **In the focus groups, although participants were generally aware of and concerned about environmental issues in Delaware, sewer/septic systems did not appear to be a “top-of-mind” issue for most participants.**
- The focus group participants felt that the public tends to have an “out-of-sight, out-of-mind” attitude. The public does not tend to think about what runs into the sewer or what happens when they flush the toilet.
- **The location of the respondent’s residence had an important influence on responses regarding water quality and septic systems in the telephone survey.**
- Obviously, those in rural areas are more likely to have a septic system than are those from urban areas.

- Those who agreed that septic systems can negatively impact water quality were more likely to be from a suburban area than from any other type of area.

WATER QUALITY AND LAWN CARE

- **A large percentage of the sample indicated that they have a lawn at their place of residence.**
 - In the telephone survey, 85% of respondents said they have a lawn at their place of residence, and of those who have a lawn, 58% said having a green, well-kept lawn is somewhat or very important to them.
 - Focus group participant: *Aesthetics is important to me; I like the way [a green lawn] looks. I hardly use the lawn, but I like the way it looks.*
- **Respondents expressed concern about the effect that lawn care practices have on water quality.**
 - In the telephone survey, 75% of respondents who have a lawn said that lawn care practices are a major or minor environmental concern, with 23% saying they are a major concern and 52% saying they are a minor concern.
 - In the telephone survey, 80% of respondents who have a lawn said they are somewhat or very concerned about the impacts of lawn care practices on water quality.
 - In the telephone survey, 69% of respondents who have a lawn said that they were aware before the survey that home lawn care practices can impact water quality in Delaware.
 - However, in the focus groups, although participants were generally aware of and concerned about environmental issues in Delaware, lawn care practices did not appear to be a “top-of-mind” issue for most participants.
 - Additionally, in the focus groups, aesthetic considerations were very important to some people in maintaining their lawn, which may color their opinions regarding the way lawn care practices affect water quality.

- **A large majority of respondents maintain their lawn, and most do not hire a lawn care company to maintain their lawn.**
 - The results of the telephone survey show that 86% of respondents who have a lawn said they maintain their lawn, and 27% have hired a lawn care company in the past to maintain their lawn.

- **Nutrient runoff was recognized as an important cause of water pollution, and farming/agriculture was most commonly named as the largest source of nutrient runoff, and homeowners' contribution to nutrient runoff was considered important by a very low percentage.**
 - In the telephone survey, 73% of respondents said nutrient runoff is a major or minor cause of water pollution, with 41% saying it is a major concern.
 - In the telephone survey, 42% of respondents named farming/agriculture as one of the largest sources of nutrient runoff, and only 8% named homeowners as one of the largest sources of nutrient runoff.
 - Focus group participant: *I don't really think about my lawn service putting too much fertilizer and chemicals on my lawn that are going to leach into the ground and affect my kids' kids. I'm aware of it, because I was in the pesticide business, but I also know what the regulations are. I trust the companies to follow the regulations. I have other things to worry about.*

- **Less than half of those who have a lawn and maintain it apply fertilizer to it, and most of those who apply fertilizer do so once or twice a year.**
 - In the telephone survey, 42% of those who have a lawn and maintain it said they apply fertilizer to it.
 - In the telephone survey, 74% of those who apply fertilizer to their lawn said they do so once or twice a year. The spring is the most common season in which they apply fertilizer.
 - Focus group participant: *I fertilize in the spring and fall. I live right in the middle of town, with no sewers or canals nearby. If there were a possibility of runoff into the sewer, then I wouldn't do it.*

- **Of those respondents who have a lawn and maintain it, just over half have obtained advice or information on how to take care of their lawn, typically from a lawn care company or retail store, but less than half who obtained advice or information changed their lawn care practices based on that advice or information.**
 - The results of the telephone survey show that 51% of those who have a lawn and maintain it have obtained advice or information on how to take care of their lawn.
 - The survey found that 47% of those who obtained advice or information obtained it from a lawn care company, and 12% obtained it from a retail store.
 - In the telephone survey, 58% of those who obtained advice or information *did not* change their lawn care practices based on the advice or information.

- **In general, there was broad support for lawn care practices that help mitigate adverse impacts to water quality.**
 - In the telephone survey, strong majorities practiced four of the seven lawn care practices that were listed in the survey: mow the lawn at a higher height (78% overall did this), reduce the amount of fertilizer they use (72% overall), leave grass clippings on the lawn (72% overall), and reduce the amount of turf by planting shrubs and trees (60% overall). Additionally, 50% plant native species that require less water and fertilizer.
 - On the other hand, 56% of respondents to the telephone survey were not willing to spend more on a smaller lot knowing that their neighborhood would then have a large area of open space.
 - However, in the focus groups, among some participants there was a high amount of trust in the regulatory process. For example, many focus group participants felt that they should not have to worry about applying fertilizers and pesticides to their lawn if the EPA designates them as safe.

- **There was not one demographic factor that stood out consistently as having a great influence on responses regarding water quality and lawn care in the telephone survey. The location of the respondent's residence was *not* an important factor.**

WATER QUALITY AND STORM WATER MANAGEMENT

- **Respondents expressed concern about the effect that storm water runoff has on water quality.**
 - In the telephone survey, 70% of respondents said that storm water runoff is a major or minor environmental concern, with 27% saying it is a major concern and 43% saying it is a minor concern.
 - In the telephone survey, 66% of respondents said that they were aware before the survey that home lawn care practices can impact water quality in Delaware.
 - However, in the focus groups, although participants were generally aware of and concerned about environmental issues in Delaware, storm water management did not appear to be a “top-of-mind” issue for most participants.

- **The most common types of storm water structures that respondents said were on their property or in their neighborhood are drains/gutters, followed by drainage ditches. Knowledge of the party responsible for maintaining the structures was not great.**
 - In the telephone survey, 25% of respondents said drains/gutters are on their property or in their neighborhood, and 19% said drainage ditches are on their property or in their neighborhood. The most popular answer, though, was that there are no storm water structures on their property or in their neighborhood.
 - In the telephone survey, 33% did not know who is responsible for maintaining the storm water structures.

- **The focus group participants did not highly support the use of storm water ponds in housing developments. Many individuals felt that the ponds are mosquito-breeding areas and a hazard to small children. When informed about other storm water structures, the focus groups showed higher support for rain gardens, swales, and constructed wetlands.**

- **Most respondents recognized that runoff from pet waste is an environmental concern.**
 - In the telephone survey, 63% of respondents said that runoff from pet waste is an environmental concern, with 15% saying it is a major concern and 48% saying it is a minor concern.

- **Most respondents do *not* have a stream or pond on their property. Nonetheless, of those who do, most keep an herbaceous border or mowed grass along it. Furthermore, nearly half of those who have a stream or pond and do *not* keep an herbaceous border or mowed grass along it are willing to plant an herbaceous border.**
 - According to the telephone survey, 11% of respondents have a stream or pond on their property.
 - Of those who have a stream or pond, 38% have an herbaceous border along it, and 35% have mowed grass along it.
 - In the telephone survey, 49% of those who have a stream or pond on their property but do not currently have an herbaceous border along it would consider planting a border to protect their property from erosion and to protect water quality.
 - In the telephone survey, 47% of those who have a stream or pond on their property but do not currently have an herbaceous border along it would consider planting a border if they were provided cost-sharing and technical support.
 - In the telephone survey, 49% of those who have a stream or pond on their property but do not currently have an herbaceous border along it would consider planting a border if they were provided an aesthetically pleasing design that provided a partial view of the stream or pond.
 - Focus group participant: *Buffering zones: that's an egregious term to agriculture people. It takes up too much valuable land.*

- **Strong majorities of respondents said they do several practices that help mitigate the adverse impacts that runoff has on water quality.**
 - In the telephone survey, 70% of respondents limit the use of salt on paved areas in winter, 63% of respondents are more diligent in keeping their street-side gutter clear, 60% of respondents moved their drain spouts so the runoff flows onto the lawn instead of the driveway, 59% of respondents clean up and properly dispose of pet waste, and 56% of respondents collect motor oil and dispose of it properly.

- **The demographic factors that have an important influence on responses regarding water quality and storm water management are ethnicity and residence location.**
 - Of the twelve activities listed in the survey that could help improve water quality, ethnicity factored in nine of them, with those identifying themselves as white more likely than were other ethnic groups to say that they would be likely to practice the particular activity.
 - Of the twelve activities listed in the survey that could help improve water quality, residence location factored in nine of them.

BEHAVIOR CHANGES AND WATER QUALITY

- **Strong majorities of respondents said they would be more likely to change their behavior to help improve water quality if they knew that poor water quality leads to the conditions listed in the survey.**
 - 79% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to unsafe drinking water.
 - 77% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to increased fish kills.
 - 77% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to health hazards from polluted water while wading or swimming.

- 76% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to genetic mutations and birth defects.
 - 76% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to degraded aquatic habitat.
 - 73% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to the closing of swimming areas.
 - 73% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to the closing of fishing areas.
 - 72% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to a less diverse ecosystem.
 - 70% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to lower property values.
- **Strong majorities of respondents to the telephone survey said they would be more likely to change their behavior to help improve water quality under each of the conditions listed in the survey.**
- 90% of respondents said they would be likely to change their behavior to help improve water quality if they knew that doing so would help protect future generations.
 - 78% of respondents said they would be likely to change their behavior to help improve water quality if they received a tax break for doing so.
 - 70% of respondents said they would be likely to change their behavior to help improve water quality if they received financial assistance for implementing conservation practices.

- 63% of respondents said they would be likely to change their behavior to help improve water quality if they had to pay a fee on their property tax bill but they knew it was being used for conservation purposes.
- **The focus group participants supported increased education efforts by DNREC. A majority of the focus group participants felt that the general public is virtually unaware of measures they can take to help improve water quality. The perception is that people need constant reminders to engage in behaviors that are environmentally conscious. A related concern was the inundation with too much information. The focus group participants felt that DNREC should consider focusing on a few key behaviors it would like the public to change.**
- Although many of the focus group participants felt that the general public is unaware of many of the issues discussed in this report, they also believed that most people would consider changing their behavior if they were presented with options, frequently reminded of the options, the options were convenient, they understood the rationale behind the options, and they were given the chance to debate and vote on certain measures through a referendum.
- **A slight majority of respondents to the telephone survey said that they already do as much as possible to help improve water quality.**
- In the telephone survey, 52% of respondents said that they do not take greater measures to improve water quality because they already do as much as possible.
 - Although the focus groups revealed a high level of concern for the environment when the issues were in the abstract or in another individual's or organization's realm, when the actions of personal homeowners were indicated as a source of water pollution, most individuals in the focus groups became defensive and initially sought to justify their actions or blame others.
 - In the focus groups, participants felt that the public needs to know *why* certain behavioral changes are necessary before they will be willing to change.

- Also, in the focus groups, among some participants, there was a high amount of trust in the regulatory process, and they felt that they should not have to worry about applying certain chemicals to their lawn if the EPA designates them as safe.
- **In the focus groups, many participants felt like they shouldn't have to "pay for someone else's mess" (such as the water quality problems created by the developers and corporations). Several individuals questioned why they should have to pay more taxes or fees, when the developers (and other larger entities) are contributing so much to the amount of impervious surface and runoff.**
 - In the focus groups, cost associated with improving the environment concerned many participants.
- **In the telephone survey, gender was a very important factor regarding potential behavior changes, and residence location was *not* an important factor.**
 - Gender was an important factor in the responses to eight of the eleven questions about potential behavior changes to address the problems listed (e.g., increased fish kills, unsafe drinking water), with females in all eight cases more likely than were males to say that they would change their behavior.

GENERAL WATER QUALITY ISSUES—STATEMENT RATINGS

- **Respondents rated each of nine statements in the survey as important reasons for taking greater measures to protect water quality.**
 - The statements were rated on a scale of 1 to 10, with 1 being the most important and 10 being the least important. While all statements had very low means for respondents overall (the highest was only 2.61 overall), the statements with the lowest means (i.e., the most important) were "It is important to protect Delaware's water quality so that we don't become sick from contaminants" (mean of 1.35 overall), "It is important to protect Delaware's water quality for future generations" (mean of 1.39 overall), and "A clean environment protects Delaware's residents' health" (mean of 1.48 overall).

DNREC POLICY MAKING AND PUBLIC INPUT

- **In the telephone survey, most people expressed interest in participating in policy making regarding water quality, and they said they would prefer to receive brochures through the mail to learn about what they can do.**
 - 58% of respondents said they would be interested in attending meetings to provide public input to the making of state policy on water quality.
 - 69% of respondents said they would prefer receiving information about water quality through brochures mailed to their home.
 - In the focus groups, there was a general feeling of lack of control, or lack of having a voice, in Delaware. Many individuals felt the need for greater interaction and coordination at all levels: counties, state, citizens, etc. Based on this feeling of lack of control expressed in the focus groups, it is likely a significant proportion of the public feels like any environmental actions they take don't matter and won't have a significant positive effect.

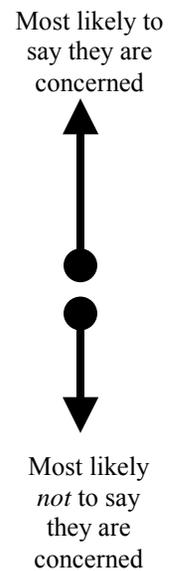
DEVELOPING EFFECTIVE COMMUNICATIONS AND OUTREACH STRATEGIES: SOME IMPORTANT CONSIDERATIONS

The research presented in this report can and should be used to develop communications and outreach strategies to guide Delaware residents through the conservation learning process from little or no awareness, to appreciation, to understanding, to concern, and then to action, as discussed by Henderson (see C. Henderson, 1984, "Publicity strategies and techniques for Minnesota's nongame wildlife checkoff," from *Transactions of the North American Wildlife and Natural Resources Conference*, 49: 181-189). However, it is essential that outreach/communication strategies to lead residents through the conservation learning process, thereby changing residents' behaviors, be *targeted to specific groups* with specific programs and messages. This is because Delaware residents do not speak with one voice; rather, varying groups within Delaware's general population have varying opinions on environmental issues and practice varying behaviors that affect water quality. This research provides those data that are essential for the development of targeted communication and outreach strategies, as provided in some examples from the research.

For instance, the results of Question 61 (see page 75) show that 16% of Delaware residents said that the impact of home lawn care on water quality is not a concern, and another 4% said that they did not know if it was a concern. This lack of awareness may be a problem in Delaware. The nonparametric analysis (also referred to as a “z-score” analysis) shows that those most likely *not* to say that the impact of home lawn care on water quality is not a concern have one or more of the following demographic characteristics: other race identified, retired, no high school diploma, male, in sales, and 65 years old and older (see tabulation below). For these groups, raising levels of concern would be an important goal. On the other hand, the groups most concerned have one or more of the following demographic characteristics: 35-44 years old, own less than 1 acre, female, neighborhood association member, income between \$20,000 and \$39,999, high school graduate or equivalent without college attendance, and white. For these groups, moving them from concern to action would be an important goal.

Q61. Would you say that you are very concerned, somewhat concerned, or not at all concerned about the impacts of home lawn care on water quality in Delaware? (Asked of those who said that they have a lawn.) (Response analyzed: very or somewhat concerned)

35-44 years old	3.08**
Owens less than 1 acre	2.72**
Female	2.66**
Neighborhood association member	2.32*
Income between \$20,000 and \$39,999	2.24*
High school graduate or equivalent	2.11*
White	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
65 years or older	-2.01*
Profession: Sales	-2.11*
Male	-2.60**
No high school diploma	-3.00**
Retired	-3.10**
Other race identified	-3.23**



In another example, 59% of pet owners said in Question 90 of the telephone survey that they clean up and properly dispose of their pet’s waste (see page 120). This research, then, identifies a problem: that 41% of pet owners do *not* clean up their pet’s waste. Furthermore, the

nonparametric analysis shows that those who are most likely *not* to say that they clean up and properly dispose of pet waste have one or more of the following demographic characteristics: 65 years or older; African-American; not a landowner; retired; and to a lesser extent, female (see tabulation below). Messages aimed at addressing the pet waste problem must reach these subgroups of the population.

Q90. Do you do any of the following activities (of those with a pet)? (Those who said clean up and properly dispose of pet's waste.)

White	4.02***
Profession: Teaching/education	2.63**
Income between \$80,000 and \$99,999	2.38*
45-54 years old	2.35*
Owns 1 to 20 acres	2.20*
Owns less than 1 acre	2.18*
High school graduate or equivalent	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-1.98*
Retired	-3.83***
Not a landowner	-3.94***
African-American	-3.95***
65 years or older	-4.00***

Most likely to say they clean up pet waste



Most likely *not* to say they clean up pet waste

Once specific subgroups, or target markets, are identified, as in the examples above, the next step is to develop messages that resonate well with the target markets. Fortunately, this research has identified differences in the way the messages were received by various subgroups of the population—some messages resonated better with some groups than they did with other groups. A more effective strategy than expecting *one* message to work for all Delaware residents is to develop *several* messages that each work well with a specific target market. In short, different groups of Delaware residents think differently about various water quality issues, and each group may need a message tailored to that group. The key to a successful communications and outreach strategy is to match the appropriate message to the specific target audience, keeping in mind that some target audiences need to be moved from lack of awareness to concern, while other target audiences need to be moved from concern to action, and also keeping in mind that the messages were not equally received among all groups.

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INTRODUCTION AND METHODOLOGY

This study was conducted for the Delaware Department of Natural Resources and Environmental Control (DNREC) to assess Delaware residents' attitudes toward the environment and water quality issues. The study entailed five focus groups and a telephone survey of Delaware residents. The telephone survey sample included residents of Delaware's five regions (North New Castle County, South New Castle County, Kent County, East Sussex County, and West Sussex County), and the data analyses considered the region in which the respondent lived. Specific aspects of the study methodology are discussed below.

FOCUS GROUP METHODOLOGY

Focus groups are group-depth interviews in which a small group of participants (8 to 12) are interviewed at length about select subjects. The use of focus groups is an accepted research technique for qualitative explorations of attitudes, opinions, perceptions, motivations, constraints, participation, and behaviors. The use of focus groups provides researchers with insights, new hypotheses, and understanding through the process of interaction. Most qualitative techniques, such as the focus groups used in this study, use small sample sizes. The conclusions rest on face validity and rely on the depth of analysis rather than breadth of analysis. The focus group research for this study, as does all qualitative research, sacrificed reliability or the ability to replicate results for the sake of increased validity.

A trained moderator from Responsive Management conducted the focus groups, as unobtrusively as possible. The moderator helped keep the discussion within design parameters without exerting a strong influence on the discussion content. The moderator used a discussion guide when conducting the focus groups. The discussion guide allowed for consistency in data collection. In this sense, the focus groups were non-directive group discussions and exposed spontaneous attitudes of the small groups. The focus groups were recorded on audio tape for further analysis. Analyses of the focus groups was conducted through observation of the focus group discussions and review of the audio tapes. Thus the analyses were performed in three iterations: 1) the actual focus group observation, 2) review of each focus group audio tape, and 3) the development of the final report.

TELEPHONE SURVEY METHODOLOGY

For the general population survey, telephones were selected as the preferred sampling medium because nearly all residents of Delaware have a telephone. In addition, a central polling site at the Responsive Management office allowed for rigorous quality control over the interviews and data collection. Responsive Management maintains its own in-house telephone interviewing facilities. These facilities are staffed by interviewers with experience conducting computer-assisted telephone interviews on the subject of natural resources and outdoor recreation for state fish and wildlife agencies. The telephone survey questionnaires were developed cooperatively by Responsive Management and DNREC. Responsive Management conducted pre-tests of each questionnaire, and revisions were made to the questionnaires based on the pre-tests.

To ensure that the telephone survey data collected were of the highest quality, Responsive Management has interviewers who have been trained according to the standards established by the Council of American Survey Research Organizations. Methods of instruction included lecture and role-playing. The Survey Center Managers conducted project briefings with the interviewers prior to the administration of the survey. Interviewers were instructed on type of study, study goals and objectives, handling of survey questions, interview length, termination points and qualifiers for participation, interviewer instructions within the survey instrument, reading of the survey instrument, skip patterns, and probing and clarifying techniques necessary for specific questions on the survey instrument. The Survey Center Managers randomly monitored telephone workstations without the interviewers' knowledge to evaluate the performance of each interviewer. After the surveys were obtained by the interviewers, the Survey Center Managers and/or statisticians edited each completed survey to ensure clarity and completeness.

Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday noon to 6:00 p.m., and Sunday from 3:00 p.m. to 7:00 p.m., all local time. A five-callback design was used to maintain the representativeness of the sample, to avoid bias toward people easy to reach by telephone, and to provide an equal opportunity for all to participate. When a respondent could not be reached on the first call, subsequent calls were placed on different days of the week and at different times of the day. A total of 1,200 completed interviews were obtained.

The software used for data collection was Questionnaire Programming Language 4.1 (QPL). The survey data were entered into the computer as each interview was being conducted, eliminating manual data entry after the completion of the survey and the concomitant data entry errors that may occur with manual data entry. The survey instrument was programmed so that QPL 4.1 branched, coded, and substituted phrases in the survey based on previous responses to ensure the integrity and consistency of the data collection. The analyses of data were performed using Statistical Package for the Social Sciences (SPSS) software. SPSS is a software package that is specifically designed for statistical analyses.

The results were weighted so that the proportions of the sample among the regions matched the distribution of the population statewide. In other words, the results were weighted so that 55% of the sample was from Region 1, which matches the state population, 55% of which reside in Region 1. The tabulation below shows the weighting factors.

Weighting Factors

Region	Actual Sample	Proportion of Total Sample	Weighting Factor	Weighted Proportion of Sample	Population Proportion in the Region
Region 1	346	28.8%	1.92	55.24%	55%
Region 2	163	13.6%	0.63	8.60%	9%
Region 3	325	27.1%	0.60	16.17%	16%
Region 4	94	7.8%	1.05	8.19%	8%
Region 5	272	22.7%	0.52	11.80%	12%
Total	1,200				

Note that n-values may sometimes appear to have discrepancies (i.e., although a total of 1,200 people were interviewed in the survey, some graphs have an n-value of 1,201). This is caused by the weighting, which in some cases led to fractional values or “partial people.” Small differences in the fractional values for those “partial people” often lead to different rounded “whole people” values when reporting n-values in graphs. On other graphs, the n-value is lower than 1,200 or 1,201 because some questions were not asked of all respondents.

For this report, a nonparametric analysis examined how the various responses related to demographic characteristics. Responses for selected questions were tested by means of z-scores

for relationships to demographic characteristics. The analysis examined approximately 50 variables regarding demographic characteristics of the respondents. A positive z-score means that the response and characteristic is positively related; a negative z-score means that the response and characteristic is negatively related.

The z-scores are calculated as shown in the formula below.

$$z = \frac{(p_1 - p_2)}{\sqrt{p(1-p) \left[\frac{1}{n_1} + \frac{1}{n_2} \right]}}$$

where: n_1 represents the number of observations in Row 1.
 n_2 represents the number of observations in Row 2.
 $p_1 = a/(a + b) = a/n_1$ and represents the proportion of observations in Row 1 that falls in Cell a . It is employed to estimate the population proportion Π_1 .
 $p_2 = c/(c + d) = c/n_2$ and represents the proportion of observations in Row 2 that falls in Cell c . It is employed to estimate the population proportion Π_2 .
 $p = (a + c)/(n_1 + n_2) = (a + c)/n$ and is a pooled estimate of the proportion of observations in Column 1 in the underlying population.

(Equation from *Handbook of Parametric and Nonparametric Statistical Procedures*, 2nd Edition by David J. Sheskin. © 2000, Chapman & Hall/CRC, Boca Raton, FL.)

The demographic characteristics examined include:

- gender,
- age,
- ethnicity,
- income level,
- education level,
- profession,
- location of residence—the county of residence, the region of residence, and the character of the location (i.e., rural, small city or town, suburban, urban or large city),
- length of time living in Delaware and whether the respondent is a native, and
- acreage owned.

Throughout this report, findings of the general population telephone survey are reported at a 95% confidence interval. For the entire sample of Delaware residents, the sampling error is at most plus or minus 2.83 percentage points. This means that if the survey were conducted 100 times on different samples that were selected in the same way, the findings of 95 out of the 100 surveys would fall within plus or minus 2.83% of each other. Sampling error was calculated using the formula described below, with a sample size of 1,200 and a population size of 783,600 Delaware residents 18 years of age and older in 2000, obtained from the U.S. Census Bureau.

Sampling error equation:

$$B = \left(\sqrt{\frac{N_p(.25) - .25}{N_s}} \right) (1.96)$$

Where: B = maximum sampling error (as decimal)

N_p = population size (e.g., total number of residents, total number of license holders)

N_s = sample size

Derived from formula: p. 206 in Dillman, D. A. 2000. *Mail and Internet Surveys*. John Wiley & Sons, NY.

Note: This is a simplified version of the formula that calculates the maximum sampling error using a 50:50 split (the most conservative calculation because a 50:50 split would give maximum variation).

FOCUS GROUP FINDINGS

This chapter summarizes the findings of five focus groups conducted by Responsive Management on behalf of DNREC in July 2002. The focus groups were conducted to identify the attitudes and opinions of Delaware residents toward environmental issues in Delaware, including water quality, septic systems, home lawn care, and storm water runoff.

The five focus groups were conducted on the following dates at the locations indicated: Monday, July 15, Middletown, DE (Appoquinimink Library); Tuesday, July 16, Wilmington, DE (Central Focus-focus group facility); Wednesday, July 17, Dover, DE (Delaware State University); Thursday, July 18, Lewes, DE (Lewes Public Library); and Friday, July 19, Delmar, DE (Delmar Public Library). Focus group participants were recruited based on residency in Delaware, whether their residence was on a septic system or sewer system, whether they maintained a lawn, and whether they were part of the agricultural community. These focus groups were conducted prior to the administration of a quantitative survey to aid in the design of the survey instrument.

Focus groups are an important method to begin studies such as this one because they allow for extensive probing, follow-up questions, group discussion, and observation of emotional reaction to various topics—aspects that cannot be measured in a traditional telephone or mail survey. Focus group research is considered “qualitative” research. Qualitative research sacrifices reliability for increased validity. This means that although focus group findings cannot be replicated statistically as can sample surveys (high reliability), they often give researchers a more valid understanding of issues at the heart of a study (high validity). Focus groups produce results with extremely high content validity but are not random sample surveys.

The analysis of these focus groups was an iterative process. The moderator took notes and observations at the time of the focus group. Next, the audiotapes and videotapes were reviewed. Detailed notes were taken, including quotations that would be incorporated into the focus group report. Then the focus group report was written. Quotations are always written verbatim, unless otherwise noted, and are written in italics to differentiate them from the text.

GENERAL ENVIRONMENTAL CONCERNS IN DELAWARE

Overall, the focus group participants were concerned about the health of Delaware's environment and were aware of many environmental problems facing Delaware. Although numerous environmental issues concerned the groups, the issues most frequently mentioned were water quality/quantity, air quality, overdevelopment/preservation of open space, and overpopulation. Other concerns were the high cancer rates in the state, disposal of solid waste, littering, ground contamination from past chemical spills, and the effect of septic systems.

Water quality. Where I live the nitrates have been really high. We don't have clean water to drink. Next, I would have to say littering; people throwing waste in ditches.

[The] population explosion is going to take a lot away from the resources. [So will] trash along highways and in the water. Anytime you overpopulate, there are a million things that happen. In the last 15-20 years, the population along the eastern shore has exploded.

I think what we're going to run out of first is water. It's harder to find other sources of water in the county. Sussex County has limited resources. Pollution may be more important because of the cancer rates, but I think useable water is going to run out first. We can't import water like Boston or New York City.

I live near a lake, and we used to have a problem with nitrates in the water. I have a septic system. I had to go 340 feet deep for my well. Water quality is a big thing. I can't see how the diesel smoke is good for us either, and they don't have to pass emissions [tests]. To me, it smells, and I think they should have to pass the same restrictions as I do. Water quality is the highest [priority for me], and air quality is the next.

Probably how we get rid of solid waste. We are down to one landfill, and sooner or later that land will be gone. Next, water quality depending on the depth you go after. There is treatment there, but I think eventually the issue will be how much is left in those aquifers; eventually it will be depleted. The problem will be in the future, but not that far away.

I agree with what everyone has said. One problem is the use of septic tanks in residential areas. I don't know what the percentage of failure is. Most will fail eventually. Unless there are places to hook up the septic systems, there will be a lot of unhealthy effects.

Open space. The issues are so overwhelming. The air is terrible, and there is no green space. The transportation system is abysmal. It seems like there is no planning to keep open space and say "no" to the developers.

Although the focus group participants mentioned numerous environmental concerns, overdevelopment was at the forefront of everyone's concerns. Participants in all of the focus

groups had strong feelings about the rate of urbanization taking place in Delaware. Many individuals questioned the standards to which developers and corporations are held at the expense of bringing in new revenue to the state. They seemed somewhat conflicted over the revenue that could be generated for the state and the subsequent tradeoff of losing open space in the countryside. The focus group participants appeared to struggle with a feeling of losing control over the rate of development. They felt that the state is not strategically planning its urbanization projects. It appears that this attitude may be generating negative feelings toward the state in terms of the state's role in protecting Delaware's environment. DNREC may want to evaluate its potential role in educating the public that collective actions of individual homeowners can prevent the same amount of nutrient runoff as is caused by industry and "unwanted development."

There is no long-term strategy for development in the state; it seems like a hodgepodge. [The state should] maintain a balance between growth and the environment. Sussex County is growing and getting a bigger population. These things are bringing in more money, which is good, but it is important to maintain a balance. It's getting crowded, compared to when I moved here 22 years ago.

I think the government is choosing not to exert control, because they want to bring companies into Delaware, but they are letting them get away with a lot. One chemical plant was warned about violations and [was put] on probation, but the government won't shut them down because of the political and economic repercussions.

Farmers can sell off lots along the front of their property [near the road]. There is a lot of poor planning, especially near the Outlet Mall, and it's a bottleneck.

Now it's just grow, grow, grow. Construction is out of control.

AWARENESS AND CONCERN ABOUT WATER QUALITY

Although *all* focus group participants did not immediately mention water quality when first questioned about their most pressing environmental concerns in the state, almost everyone agreed that water quality should be a high priority. Several focus group participants mentioned drinking water as a reason why water quality should be a priority. The Lewes focus group differed somewhat from the other focus groups in that there was a higher level of concern about eating fish from the waters. Overall, the focus group participants admitted becoming concerned about water quality due to first-hand observations, such as a chlorine smell in the tap water, advisories against eating fish from certain areas, and closed swimming areas. Very few participants said that water quality was only a medium to low priority for them. One individual mentioned that water quality does not carry a high priority for him because he is satisfied with his sewer system and drinking water.

Water quality has to be a high priority because we are drinking it.

I place it [water quality] really high. In Washington [State], the reservoirs are from rainwater and mountain runoff, and the water was always good quality. When I was living there, the water was the best-tasting water. When people from California started moving north, the watersheds started going dry, and the quality started going down. There's been explosive growth. I'm seeing Sussex County heading that way too. People put a big strain on the resource.

This whole side of the county is water based. People come here for the water. We are losing it. I think nutrient runoff is a big problem. Sea life—there are more fish kills in the canal between Lewes and Rehoboth.

We used to clam and crab in the inlet; now you don't find anything. The Delaware Fishing Guide recommended eating no more than 8 ounces of fish twice a year from certain waters around here. That scared me.

We were told to not eat raw seafood from around here. I would not clam or crab Rehoboth Bay now.

The bacteria in the water; they have closed a lot of swimming areas. Delaware has a lot of family places, and they were closed down. It [bacteria] gets into the drinking water. I've noticed a lot of algae in the water.

I've noticed that my water now has a chlorine smell, and I've started seeing rust deposits on my faucet.

I don't think that water quality carries a high priority with my life. I've got sewer systems; I don't need it. For me, and my living, I have good quality water and sewer systems, but when I see all the building going on, and all the septic systems going in, I wonder where it's going. It is probably a medium concern for me in the big picture.

BEHAVIORS THAT AFFECT WATER QUALITY

A majority of the focus group participants felt that the major sources of water pollution and nutrient runoff in Delaware are agriculture and industry. A few participants recognized that the actions of the general population also contribute to water pollution, but it appeared that the overall perception was that individuals were contributing much less to water pollution than were the larger entities. It appeared that very few focus group participants fully realized the collective effects that their own actions could have. Less than half of the participants in each focus group attributed their own actions as having a significant effect on water quality. Many of the participants appeared to have the attitude that water pollution was being caused by “someone else.”

The Delmar focus group contained individuals from the agricultural community. One farmer from this group remarked that farmers now have better technology to handle nutrient runoff. This individual felt that current poor water-quality conditions are a result of behaviors that took place years ago, and he did not feel, therefore, that his current actions were having a negative effect. One individual believed that water pollution in small ponds was predominantly caused by wildlife waste. One problem that DNREC may need to overcome is the relatively low level of public awareness regarding the effects that individual homeowners have on water quality and the collective effect of homeowners’ actions across the state.

In early spring, I think of giant piles of chicken manure sitting on the fields and then being spread. They have recently opened a plant (Perdue has done this) where they process some of the manure and ship it out to the Midwest. But a lot of the farmers just dump the manure.

I think that the general population has a responsibility, but that, proportionately, the corporations are much more at fault than are the every day households.

[It was the] chemical companies before, but now it’s the chicken farmers. It’s always the biggest industrial enterprises in the state.

Farms, the chemical plants, Dupont, refineries, poultry waste. Delaware is still a chicken state.

You take a large industry and can see how they have large pollution, but you also take the heavily populated areas, and they have the ChemLawns and storm sewers. It goes right into the estuary.

I believe the individual contributes more to general water pollution, just because of things like detergents and chemicals on their lawn. If a million people spill one gallon, it's like one big industry.

The general population. Everyone drives a car [and] sprays weed killer, and people have been dumping motor oil for years.

I think homeowners probably cover as many acres with chemicals as do the farmers, and there is no control over how much stuff we use.

There is a lot of runoff from the fields. But they are taking strides to handle it, and what to use/not to use. They aren't working on the animal problem, though.

In Sussex County, yes, agriculture is the main source [of nutrient runoff]. This is a farming area and probably will be for a long time. We don't have a lot of industrial plants, at least not big ones.

As of today, we [farmers] are going through nutrient management classes, and we are using better technology to handle nutrients. Fertilizer and nutrients cost us money, so we are trying to save money. Now we have manure spreaders that spread it more evenly. We use the bare minimum. I think some of the problems with the rivers are a result of what we did 20 years ago, so what we are doing now may take 20 years for the nutrient levels to come down.

The problem with development is that they say they are going to keep open space and what they do is put in a golf course where they are spraying on chemicals every day.

Depends where you are. Some of it [nutrient runoff] can't be helped, like the wildlife waste in the water.

SEWER SYSTEMS AND SEPTIC SYSTEMS

All of the focus groups contained nearly an equal number of individuals whose houses were on septic systems and on sewer systems, with the exception of the Wilmington group, whose houses were all on a sewer system. There appeared to be a wide discrepancy in awareness levels regarding how often septic systems need to be pumped. Some focus group participants pumped their system every other year, while a few others had waited as long as 18 years to pump or had never pumped. However, a majority of individuals pumped their system every 2 to 5 years. Overall, the focus groups were not very aware of the state mandate requiring septic systems to be pumped every 3 years.

Environmental concerns (for instance, concern about nutrient runoff) were not the predominant reasons that respondents had pumped their septic system. Focus group participants said they pumped their system because of the law (if they were aware of it), for general maintenance reasons, or for personal health (drinking water and their children's health). Those individuals who did not regularly pump their system said that they pumped only when the system backed up. Several individuals felt a need for more public education about septic system pumping and felt that the general public would be more likely to pump their systems if they knew that there is a requirement to do so or if they knew that regular pumping would reduce the likelihood of septic system failure.

There is a mandate by the state, but it is not enforced. You are supposed to pump every 2 to 3 years.

I wasn't aware there was a requirement; I pump it when it backs up. It has backed up once in 15 years. The line got plugged up, and the [maintenance] guy told me we needed it pumped out.

There is no public education about it. If people knew that, if they don't maintain their system, they would have to replace their drain field, they would do more about it. They could save themselves the time and money if they knew to pump every 2 to 3 years. I think there needs to be more education.

I was told you had to pump it every 3 years. My incentive [for pumping] was the law.

It falls under the maintenance category; I'm not sure that I was thinking of environmental concerns. I was thinking more about what I had to do to keep the system functioning.

I maintain my septic system because I don't want my kids [to] play... around in the overflow; it was backing up.

You're going to drink the water that goes out of your septic system if you have a well, so it is important to keep it functioning.

Many of the focus group participants said that they had never thought about the environmental effects of septic systems and sewer systems. A few focus group participants did, however, state that they had read about this issue in the newspapers and had thought about the issue.

I don't think about it [impacts of septic systems and sewer systems] every day. If my water test came back bad and I found that the water wasn't potable, then I would be upset and do something. But, my septic hasn't backed up, so I don't worry about it. Right now, it is a non-issue.

If you read the local papers, I don't see how you can't be aware of it.

I thought about it and read about it, but there are solutions. You need a plan, but it takes money, and when taxes are raised, people start complaining, and start complaining about the systems. We are told the average life of the septic system is 20 years, so I think we're going to have hundreds failing in the coming years.

Although some individuals acknowledged that both septic systems and sewer systems contribute to water pollution, individuals on sewer systems felt that septic systems have a much greater negative effect on water quality than do sewer systems. In turn, owners of septic systems were generally satisfied with their system and felt that septic system technology had improved over the years, leading to less substantial negative effects on water quality. However, all of the participants in the Middletown group preferred to be on a sewer system, predominantly because of the maintenance required for septic systems. The Middletown group also felt more comfortable with sewer systems because they had read that treatment plants produce high-quality water from the effluent, whereas they believed that septic systems do not.

We've always had septic systems, but we've always had a lot of land. We've never had one fail, and we pump it every year. It's ridiculous to have houses on tiny lots with septic systems.

I've always had a problem with septic systems; I always think sewers are better since they are treated.

Water coming out of a treatment plant is supposed to be better quality than most streams out there; I would rather be on a sewer system.

Newer septic systems are being put in today, and they are much safer than they were.

Modern systems are much better than they were before. As people are building new homes, they are using the modern, efficient systems, so to me, that's enough.

Overall, the focus group participants who owned a septic system were not strongly concerned about the effects of their *individual* septic systems on water quality, but they were more concerned about the aggregate effects of septic systems in new developments. Many participants felt that developers are at fault for the problems associated with septic systems because they build houses close together and install septic systems in very small properties without adequate space for proper drainage.

I'm not so concerned about individual septic systems, like mine; it's when you have the larger systems, in developments. That is a concern because it can drive contaminants into the ground.

Now, septic systems are designed to hold the nutrients; the problem is managing growth. Nutrient-wise, there shouldn't be any difference in impact between septic and sewer systems.

Most of the focus group participants said that septic or sewer systems would not influence their choice in buying a new property and felt that it would also not likely influence the public. Only one individual from Middletown said that it was on his “pro and con list” for purchasing a house. Another participant said that he preferred living in rural areas, which are more likely to have septic systems, but that the septic system itself is not what encouraged him to live outside of an urban center. The general impression of the focus groups was that the public does not consciously think about the effects of septic systems or sewer systems because as soon as something gets flushed, it becomes “out-of-sight, out-of-mind.”

I don't think that people think about septic [systems] versus sewers; as long as you flush it and it goes down is what the public thinks about.

Almost all of the focus group participants were hesitant about having the state impose extra costs (taxes or fees) on individual homeowners for retrofitting or for hooking current waste systems to sewer lines. Everyone was in agreement that it would take a significant amount of money to retrofit or hook houses with septic systems to sewer lines. Many of the participants questioned the imposition of more costs because they felt that the current taxation system should already provide money for new technology. The Delmar group was concerned that many people in Sussex County would not have the necessary funds (\$6,000-\$12,000) to retrofit their septic systems. In addition, some individuals expressed concern that retrofitting may not have a substantial effect if it is done on a voluntary basis. For example, one participant noted that even if he decided to retrofit, it did not necessarily mean that his neighbors would also retrofit.

Rather than imposing costs on current septic system owners, the focus groups felt that costs should be either built into the price of new homes, or that developers should be required to pay the costs for installing state-of-the-art septic systems. Several individuals also felt that tighter restrictions should be placed on developers regarding lot size when installing septic systems into new neighborhoods. As previously noted, many individuals felt that new, concentrated housing developments with septic systems are contributing to water-quality problems more so than are individual homeowners. Therefore, these individuals did not feel more costs were justified. This is not to say that support does not exist for retrofitting; rather, the focus groups felt that retrofitting or hooking up to sewer lines should be examined at a local level, with ample opportunities for public debate on the issue. A different solution that was suggested by an individual in the Wilmington group was to create a “penny-a-gallon” trust fund that could be funded from homeowners’ water bills.

A lot of people don't have \$6,000 to \$12,000 to spend. You would be making people choose between renting their residence or retrofitting their septic system. A lot of people in this county don't make lucrative wages, and I don't feel comfortable putting them in that kind of financial distress.

I have a high concern, but how many homeowners could afford a \$12,000 retrofit?

You can't sell people a \$100 fan for the bathroom; it goes back to the almighty dollar. People want to do things as inexpensively as possible.

You might pay the \$6,000, but it doesn't mean your neighbors will do it.

I see it [hooking up to sewer lines] as a local option.

I feel like the money is already there from taxes.

We all pay sewer bills. Why should we pay more?

I think the counties need to get together and force developers to quit using septic systems.

Maybe we need to create a "penny a gallon" trust fund.

Retrofitting is a great idea if you have the money.

There has to be a political argument to rationalize how the infrastructure repair is needed.

People would support [retrofitting] if it were less expensive.

HOME LAWN CARE

Overall, the focus group participants had various types of lawns, ranging from “green and beautiful” to “brown and ugly.” Some participants reported using fertilizers on a regular basis, while others did not fertilize at all. Most of the rural residents reported that they did not give their lawn much attention. The reasons for their lack of attention were that they simply did not place importance on having a green lawn, or they simply did not want to spend a lot of time and money on their lawn.

While some focus group participants did not care if they had a green lawn, the overall impression was that aesthetic considerations drive the public to keep a green lawn. There appeared to be a slight social stereotype associated with green lawns: beautiful houses, better neighborhoods, middle class. If this is the case, it may be difficult to change the behavior of people who live in certain types of neighborhoods, because they may feel like they have to keep their lawn up to the “neighborhood standard.”

It's about vanity; why else would you keep a green lawn? It's not for health reasons. People just like the look of a green lawn with a beautiful house.

I like grass to look like a putting green; I think everyone likes that. It is very middle class.

I think the point of living is to enjoy your yard and home.

Aesthetics is important to me; I like the way [a green lawn] looks. I hardly use the lawn, but I like the way it looks.

The better neighborhoods have green lawns; you can see the ChemLawn trucks.

Despite the importance of aesthetic considerations, several individuals appeared to have feelings of guilt for their actions and in their desire to have an aesthetically pleasing lawn. DNREC may want to consider promoting and emphasizing natural lawn care practices that produce an aesthetically pleasing lawn.

I use a ton of fertilizer to have a green lawn; it's awful. I know I shouldn't do it because the soil doesn't hold the fertilizer and it runs right into the sewers. I use too much of it so that I can have a green lawn and make the flowers look good. It's one of those things

that tears on you; you want your lawn and house to look good, but to do that, I have to use all these chemicals. My personal feeling is that it needs to be an individual responsibility. I should be taking care of my property in a responsible way, and I fudge sometimes. I take my cans to recycling; I do a bit, but I'm not perfect.

A few individuals said that they employ a lawn service company to take care of their lawn and that they trust the company to use the appropriate amounts of fertilizer and pesticides. Other individuals agreed with the idea of trusting the fertilizer and chemical companies that sell products in stores, because they feel that the Environmental Protection Agency (EPA) has set regulations that ensure that fertilizers and pesticides are safe for public use.

The lawn company comes in and tests, and they do what they have to do. They don't put on more [fertilizer] than they need to. I don't have any complaints; I trust them.

I fertilize in the spring and fall. I live right in the middle of town, with no sewers or canals nearby. If there were a possibility of runoff into the sewer, then I wouldn't do it. It's like Roundup—you can use it safely. We use it around the ponds, and some grass. It deteriorates, even if it doesn't go into the sewer.

No, I don't feel like I'm doing the environment in. Grass is a barometer of health. I believe what I am doing is okay because I feel comfortable with the regulations in place. You deal with the best information you have, and it is telling me that I'm not going to hurt anybody.

I don't really think about my lawn service putting too much fertilizer and chemicals on my lawn that are going to leach into the ground and affect my kids' kids. I'm aware of it, because I was in the pesticide business, but I also know what the regulations are. I trust the companies to follow the regulations. I have other things to worry about.

The pesticides we use today are a lot better than what we used 10 to 20 years ago.

Several focus group participants admitted having health and safety concerns regarding the use of lawn service companies. For example, one individual cancelled his ChemLawn contract because he became worried when he saw signs on his yard that advised people not to walk on the lawn for 2 days. A few individuals were concerned about using a lawn service purely because of environmental reasons, but this opinion was not expressed by a majority of focus group participants. Environmental concerns did not appear to be a significant factor in choosing a lawn care company. However, one individual felt that employing a more environmentally concerned

company was an added bonus, even though it was not his predominant reason for hiring the company.

I got out of my ChemLawn contract because I saw all the signs that said to not walk on the lawn for 2 days.

I thought they [lawn care services] were notorious for pouring on herbicides and fertilizers, which is why I wouldn't use one.

I have a green lawn. I water a small portion of it, but don't use pesticides or herbicides. I used to have ChemLawn, but I changed to a more environmental company; they charged less money. I don't worry about what they put on my yard; the EPA regulates that stuff, so I trust them. I don't think I would have hired the more environmental company if I had to pay them more, but I do think it was a plus to go with someone more environmental.

Most people who applied fertilizers did so for aesthetic reasons, while those who did not apply fertilizers did not do so because of time and money constraints. Overall, there was very little support for having the state place restrictions on the amount of fertilizer that a homeowner can use without explicit evidence that by doing so, improvements in water quality would occur. This relates to the perception of blame: as previously mentioned, most of the focus group participants felt that agriculture, developers, and industry are more at fault for negatively affecting water quality. With this perception, it is understandable that homeowners would want to know exactly how their behavior was affecting water quality before they submit to further regulations and restrictions.

If DNREC could show that by using less fertilizer it will have positive effects, I would consider it. But, I think there are other things that DNREC should be worried about than my fertilizer. I think that fertilizer use is an environmental issue in other areas [of the state] but not here [Sussex County].

[Further regulations] would be intrusive, but if they [DNREC] could show improvements or give evidence of improvements, then I would probably go for it.

I don't see how they [DNREC] could regulate [fertilizer and pesticide use]. Home Depot and Lowe's are telling everyone to use the products.

A majority of the focus group participants did not like the idea of leaving grass clippings on their lawn. Once again, it was an issue of aesthetics and being able to enjoy the lawn. One individual noted that clippings on the lawn made mowing difficult, and another individual did not enjoy walking on the lawn with clippings on it. Everyone generally supported soil testing, and several focus group participants said that they keep a compost pile. The overall attitude was that the public is not aware of natural lawn care practices or the reasons for implementing them.

It feels yucky to walk barefoot on a lawn with grass clippings.

Leaving clippings on the lawn makes it difficult to mow because they don't sink down.

STORM WATER RUNOFF

Overall, the focus group participants were aware that storm water runoff contributes to water pollution but were not highly concerned about this issue. Many individuals were aware of the presence of storm water structures in their neighborhood but had a low level of awareness regarding the actual function of the structures. Many individuals had negative opinions of storm water ponds in developments and saw these structures merely as mosquito-breeding areas. There was a high level of concern about safety, as many participants viewed storm water ponds as potential dangers to small children. When informed about other structures, the focus groups were more supportive of them, including swales, rain gardens, or constructed wetlands. One individual was concerned about the responsibility of managing and cleaning up the ponds in his neighborhood and felt that the county or state should be responsible for the ponds.

I would prefer something different than the ponds; they are ugly and dangerous. If we could put in swales, or buy land close by and put in ponds that you can't see [it would be better]. In developments, it's a problem.

I'm in a new development, and we have six ponds. It's our responsibility to take care of them; how efficient are they? When it rains, everything gets stirred up and it floods, so how is it working? We have one that is 12 feet deep; the state said it's only supposed to be 3 feet. At some point in time we're going to have to take them over; we shouldn't be responsible, it should be the state or the county. They should have the qualified people to take care of it when it needs cleaning out in a few years.

I'm aware of it, but that's all. It [storm water runoff] is a medium issue for me. I notice in new developments they are building these basins; you end up with a mosquito-breeding pond; I always worry about the kids' falling in.

To me, storm water ponds are a hazard for kids.

I never thought about it; I've seen swales but never knew what they were for. There is one in my development. I was always wondering why it was there.

I like the idea of rain gardens. My friend told me that you can plant certain species of trees that are better for the air, and you could plant these trees in swales to get a double benefit.

When provided with a list of preventative measures that individuals can take to reduce pollution runoff, the focus group participants had mixed opinions. Many individuals said that they already undertake some of the measures, such as disposing of motor oil properly. The problem of

convenience was mentioned several times. Convenience is an important factor in motivating people to change their behavior. For example, one individual described how he saves his motor oil but is frustrated because he has to drive to the next town to take it to the nearest collection center. This individual felt that people who dump their oil on the ground do so because they either do not know where to take it, or the collection center is not in a convenient location.

Farmers in the Delmar focus group were not particularly supportive of buffer zones, because they felt that too much valuable land would get taken out of production. The other focus groups were supportive of buffer zones, but had not constructed any on their own property. Several individuals questioned DNREC's encouraging residents to use less salt on pavement in winter because of the safety issues. In fact, several participants pointed out that the state always uses salt and felt that the state was not setting a very good example for how it wants the public to behave. One individual mentioned that he has reduced the amount of detergent when doing his laundry, but his motivation was the function of his washing machine rather than a concern for the environment.

Buffering zones: that's an egregious term to agriculture people. It takes up too much valuable land.

I think washing cars on the lawn is a silly idea; what kind of grass would you have? It would kill the grass. Try throwing soapy water on grass, it will kill it.

I would do these thing; I do some of them now.

How do you clean up something that was put there 50 years ago? Why blame homeowners for what was there before? The concern is water under the bridge. What are we supposed to do if the phosphorous binds to the soil and won't get broken down? We can prevent more from going in, but that's already being done, at least what is reasonable with the technology we have. I think it is used as a battle cry to just get more regulation put in, when enough is already being done.

I would rather not slip and fall and break my neck [instead of reducing salt on pavement].

I hadn't thought about washing cars on lawns. I recycle my motor oil. My yard is too small to create structures, but my yard is so flat that I don't really have runoff problems. I clean up after my dog, but I pitch it in a big field on my property. I don't think it hurts anything; it's just a little dog.

We've reduced our laundry soap use per load by 25% because it is harder on your machine to use more detergent.

I use kitty litter instead of salt, but the state always uses salt on the streets; so what are they going to do about it? When it snows, they still use salt. If I have to cut back, then the state should have to as well. It feels like the state is kicking you in the teeth.

EDUCATION

Although education was not a topic specifically discussed in the focus groups, the need for more general public education was brought up frequently enough to warrant discussion here. Focus group participants generally agreed that the public is not fully aware of steps they can take to help improve water quality. A majority of the participants supported the idea of having DNREC place greater emphasis on educating the public about water quality and measures that individual homeowners can take to prevent pollution.

Several participants noted the importance of procedure in presenting environmental information to the public and encouraged DNREC to use radio announcements or other methods that would not appear “preachy.” Many focus group participants remarked that the general public does not engage in certain environmentally friendly behaviors because they become lackadaisical and need reminders. Although the focus groups acknowledged that there would always be some people who would not change their behavior, they felt that, as a whole, people might be receptive to change as long as they are given rationales for why behavioral changes are necessary or why taxes might need to be increased. The general perception was that, as long as people feel like they are being presented options and feel as though they have some choice, they will be open to actions they can take to improve water quality.

I would still go back that there is some value for DNREC to educate and provide a rationale for implementing ways to go about preventing pollution of our resources. Provide rationale for why we should do these things, and what the alternatives are if you don't do these things, which eventually would be regulation if these things weren't done. We have to try education first. If it were done in a way that explains that the alternatives would have to be regulation, you would make people understand what the carrot is.

If people were better informed and presented with options, through a referendum through a county, I think you would get a response if you got the word out. If it took some new tax structure, or whatever, I think if it came through a referendum, they would know what they were getting into. If they could vote on it, I think they would probably vote “yes.”

The information needs to be out there, but there will only be small percentages that do it. But, as a responsible humanity, the information needs to be out there, and we, as individuals, should then do as we see fit.

A lot of it, too, is education. It may sound corny, but when I was a Boy Scout, I learned some things about conservation and how to save water. I think those things stick with you. Kids need training and need to learn techniques so it sticks with them.

It goes back to the issue of education. All summer I haven't seen any kind of notice saying that I have to regulate my water usage because we are in a drought. You look for folks to alert you, and if you don't hear an alert, you tend to overuse. Conservation is something [of which we need] to be reminded constantly.

We are notoriously a reactive rather than a proactive society, which is why I think education is important. It's like when a kid drowns; you put up a fence, but why not put up the fence first?

[The state] doesn't have a form to present all this stuff to people who aren't informed. You don't want to be singled out as an activist or troublemaker.

SUMMARY OF MAJOR FOCUS GROUP FINDINGS

Overall, there were several major findings revealed by the focus groups on environmental attitudes of Delaware residents. The highlights from these groups are summarized below.

- Although focus group participants were generally aware of and concerned about environmental issues in Delaware, the specific issues discussed in these focus groups (sewer systems and septic systems, home lawn care, and storm water runoff) did not appear to be “top-of-mind” issues for most people.
- The focus groups revealed a high level of concern for the environment when the issues were in the abstract or in another individual’s or organization’s realm. However, when the actions of personal homeowners were indicated as a source of water pollution, most individuals in the focus groups became defensive and initially sought to justify their actions or blame others. However, there was an underlying sense of guilt and acknowledgement that one’s own actions do indeed contribute to water quality degradation in Delaware. When developing messages to promote behavioral changes, DNREC may consider developing messages that are informative but do not personally attack the public.
- The focus group participants felt that the public tends to have an “out-of-sight, out-of-mind” attitude. The public does not tend to think about what runs into the sewer or what happens when they flush the toilet.
- The focus group participants felt that the state does not always set a good example for the public. For example, homeowners are encouraged to use less salt on their pavement in winter, yet residents see the state using salt on the highways in large quantities.
- Concern for environmental issues appeared to be generated by noticeable problems. For example, many focus group participants became concerned about water quality only after noticing a chlorine smell in the tap water. When promoting behavioral changes, DNREC may consider focusing on noticeable problems that result from water pollution. Many individuals said that they pumped their septic system only when it backed up, another noticeable result of poor maintenance. DNREC could promote pumping septic systems on a regular basis not only to potentially improve water quality but also to prevent possible septic system failures.

- Costs are very important considerations for Delaware residents when evaluating methods to improve water quality in the state. The focus group participants desired a clear rationale if further costs are to be incurred. Also, the focus group participants reiterated that people tend to support the most inexpensive option.
- There is a general understanding that individual actions can cause pollution, but the focus group participants overall felt that industry and large corporations contribute more to water pollution than do individual homeowners. It did not appear that people generally think about the effect of the *collective* actions of homeowners on water quality.
- Many focus group participants felt that industry and developers are not being held to the same standard as homeowners are. They felt that the large companies are allowed to get away with actions that should be prohibited. Therefore, the attitude seemed to be: why is the state coming after the individuals?
- The focus group participants did not highly support the use of storm water ponds in housing developments. Many individuals felt that the ponds are mosquito-breeding areas and a hazard to small children. When informed about other storm water structures, the focus groups showed higher support for rain gardens, swales, and constructed wetlands.
- There is a general feeling of lack of control, or lack of having a voice, in Delaware. The focus group participants felt that overdevelopment and overpopulation are major concerns, and that the state does not have a good strategy for planning its urbanization projects. Many individuals felt that the state doesn't place adequately stringent regulations on the developers and corporations. They also felt the need for greater interaction and coordination at all levels: counties, state, citizens, etc. Based on this feeling of lack of control expressed in the focus groups, it is likely a significant proportion of the public feels like any environmental actions they take don't matter and won't have a significant positive effect.
- Overall, the focus group participants felt that urbanization in Delaware is occurring without a strategic plan. The public needs to know *why* certain behavioral changes are required of them before they will willingly change.
- Many individuals felt like they shouldn't have to "pay for someone else's mess" (such as the water quality problems created by the developers and corporations). Several individuals questioned why they should have to pay more taxes or fees, when the

developers (and other larger entities) are contributing so much to the amount of impervious surface and runoff.

- Among some residents, there was a high amount of trust in the regulatory process. For example, many focus group participants felt that if the EPA designates certain fertilizers and pesticides as safe, they should not have to worry about applying them to their lawn.
- Aesthetic considerations were very important to some people in maintaining their lawn. Therefore, it may be difficult to change behaviors unless the behaviors allow the aesthetic characteristics of the lawn to remain. DNREC may consider promoting natural lawn care practices that will be aesthetically pleasing to the public, especially in areas with neighborhood associations where residents may be required to maintain their lawn at a certain standard.
- Time and cost associated with improving the environment concerned many focus group participants. DNREC may consider promoting environmentally conscious behavioral changes that are relatively effortless and providing reminders to the public.
- Health and safety issues were among the top concerns for many focus group participants who engaged in environmentally conscious behaviors. DNREC may consider focusing on issues that affect the public directly as a means to change behaviors. For example, the agency could focus on children's safety when encouraging homeowners to use less fertilizer and/or pesticides on their lawn, or the health risks associated with swimming in polluted waters. People need to realize that their actions can directly affect themselves and their families.
- The focus group participants supported increased education efforts by DNREC. A majority of the focus group participants felt that the general public is virtually unaware of measures they can take to help improve water quality. The perception is that people need constant reminders to engage in behaviors that are environmentally conscious. A related concern was the inundation with too much information. The focus group participants felt that DNREC should consider focusing on a few key behaviors it would like the public to change.
- Although many of the focus group participants felt that the general public is unaware of many of the issues discussed in this report, they also believed that most people would consider changing their behavior if they were presented with options, frequently

reminded of the options, the options were convenient, they understood the rationale behind the options, and they were given the chance to debate and vote on certain measures through a referendum.

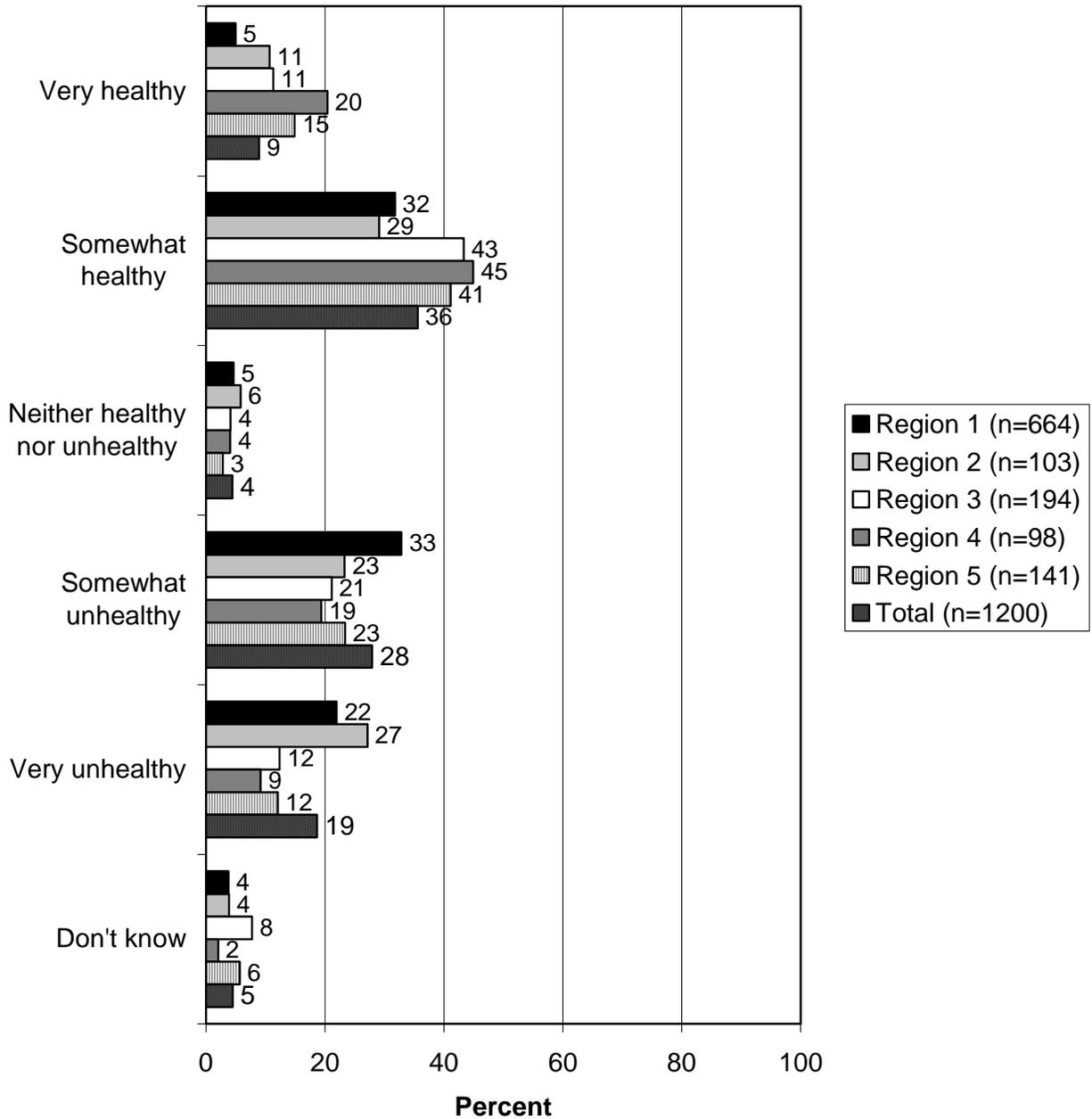
TELEPHONE SURVEY RESULTS

OVERALL HEALTH OF THE ENVIRONMENT AND IMPORTANT ISSUES

Q5. Slightly less than a majority (45% overall) of all respondents said that Delaware's environment is very or somewhat healthy. There was substantial regional variation, however, with a majority in Regions 3, 4, and 5 saying the environment is very or somewhat healthy, but less than a majority in Regions 1 and 2 saying the environment is very or somewhat healthy. Region 4, which is largely rural, had the highest percentage saying the environment is very or somewhat healthy (65%); Region 1, which is highly urbanized, had the lowest percentage (37%).

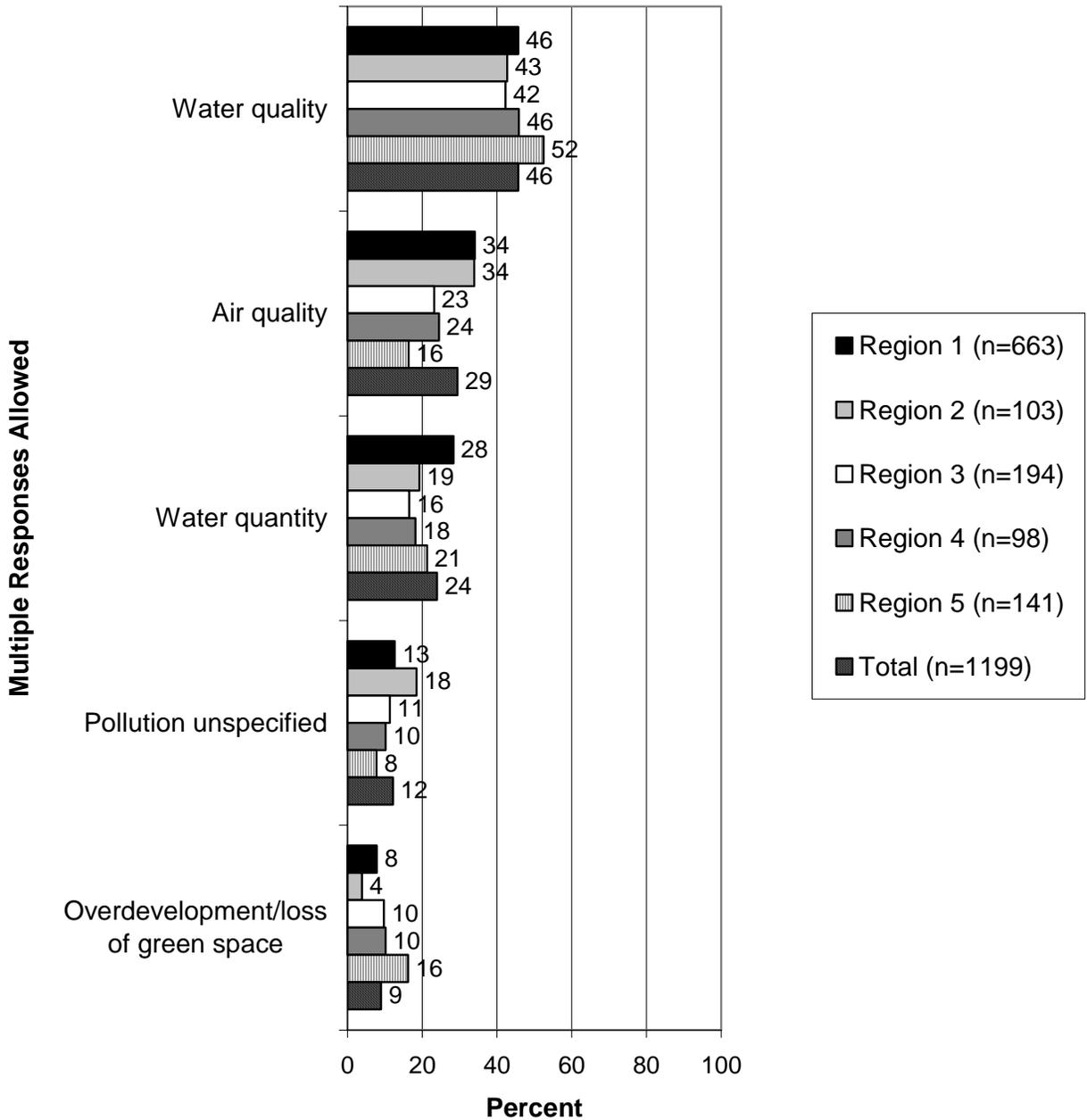
Q7. When asked to name the most important natural resource or environmental issues facing Delaware, more respondents said water quality than said any other issue: 46% of respondents overall said water quality, and among the regions, from 42% (Region 3) to 52% (Region 5) said water quality. The next most given answer overall and among all but Region 5 was air quality (Region 5's next most given answer was water quantity, then followed by air quality): 29% of respondents overall said air quality.

Q5. Overall, how healthy do you think the environment is in Delaware? Would you say it is healthy or unhealthy?

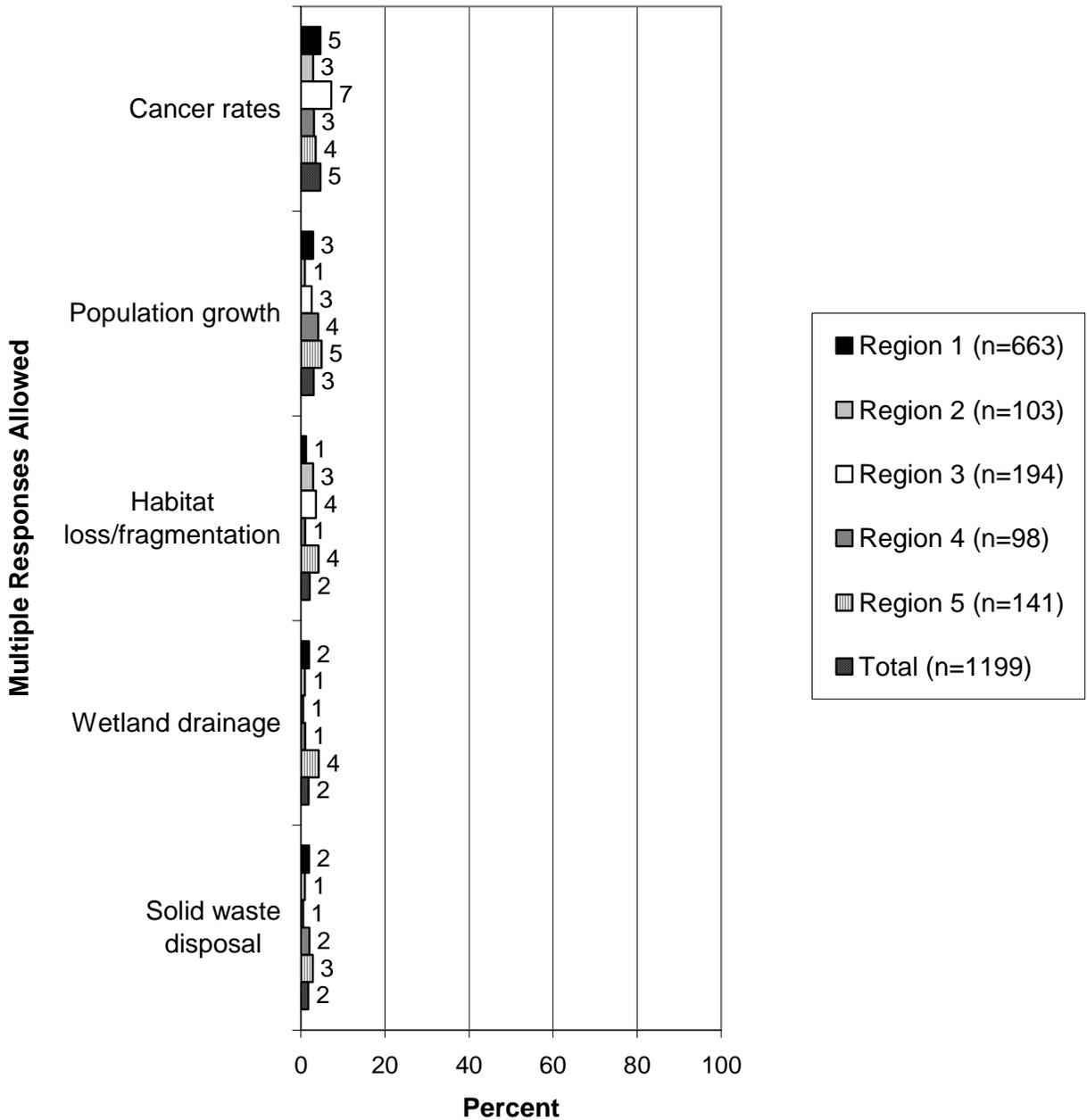


Q7. What do you think are the most important natural resource or environmental issues facing Delaware today?

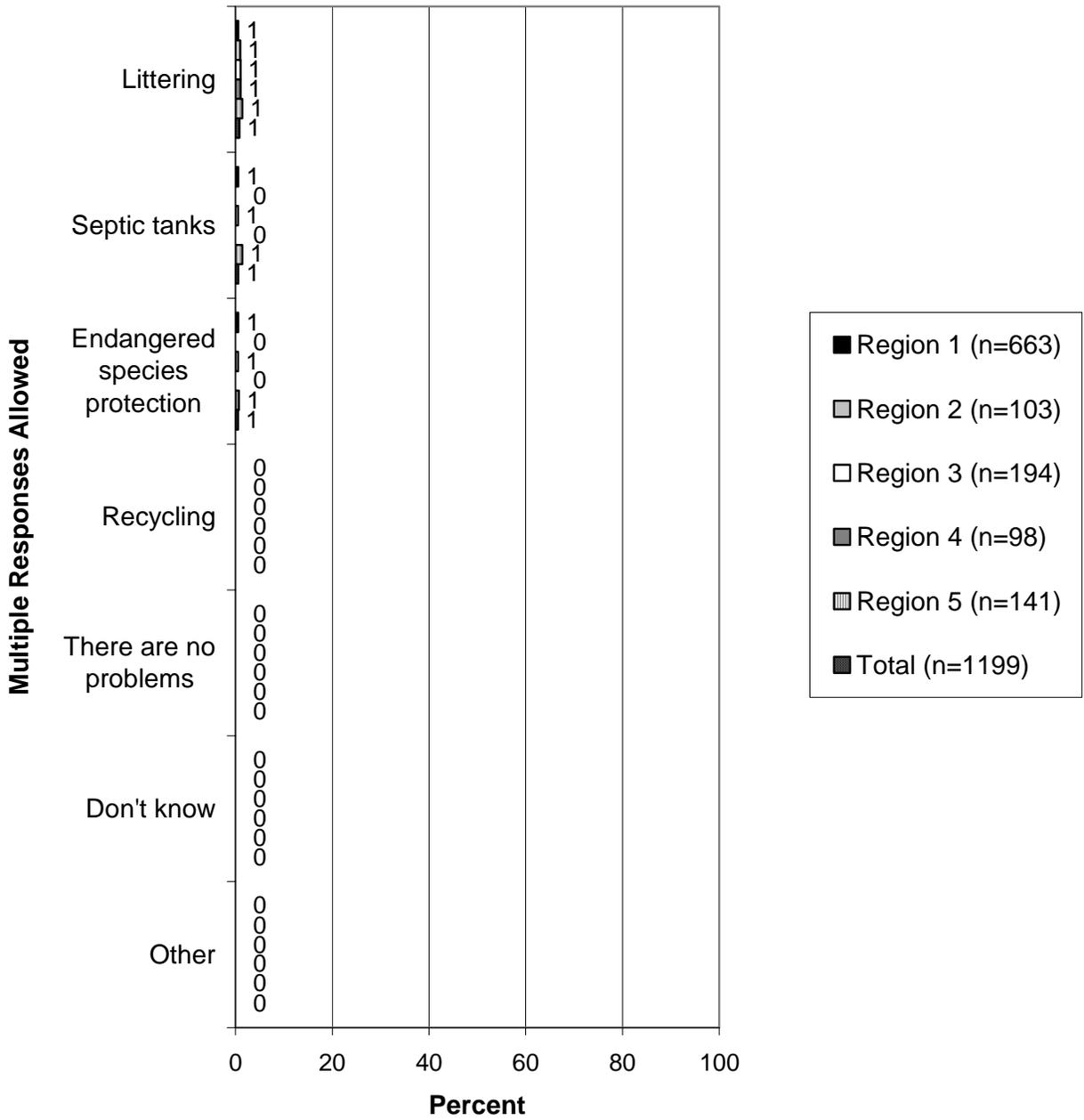
Part 1



Q7. What do you think are the most important natural resource or environmental issues facing Delaware today?
Part 2



Q7. What do you think are the most important natural resource or environmental issues facing Delaware today?
Part 3



OVERALL CONCERN ABOUT WATER QUALITY, WATER POLLUTION CAUSES, AND RESPONSIBILITY TO ADDRESS WATER QUALITY

Q9. Concern about water quality was quite high, with 81% of all respondents having said that they are very or somewhat concerned about water quality in Delaware. Although there was not a great variation among regions, it is interesting to note that Region 4 had the lowest percentage expressing concern (73%) and Regions 1 and 2 had the highest percentages expressing concern (both at 82%).

Q11. Those who expressed concern about water quality were asked to name the main reasons for being concerned, and a majority (56% overall) said drinking water, followed by polluted/bad-tasting and bad-looking water (38% overall), their own health and safety (33% overall), and public health and safety (30% overall). There was some regional variation. While drinking water was the top-ranked issue among all regions, the rankings of subsequent issues varied among regions, as shown in the tabulation below. For instance, in Region 4, the second-ranked issue was own health, followed by public health. There was also variation in the percentages who said a particular issue is important. For instance, the percentage who said that drinking water is an important issue ranged from 46% of Region 3 to 63% of Region 5. The largest variation occurred regarding the issue of polluted, bad-tasting and bad-looking water: 50% of Region 5 gave this answer, but only 20% of Region 4 gave this answer. In general, Region 5 was the most concerned about drinking water and polluted water, and Region 4 was most concerned about personal and public health. In the tabulation, the highest percentage for each issue is shown in bold.

Main Reasons for Being Concerned About Water Quality

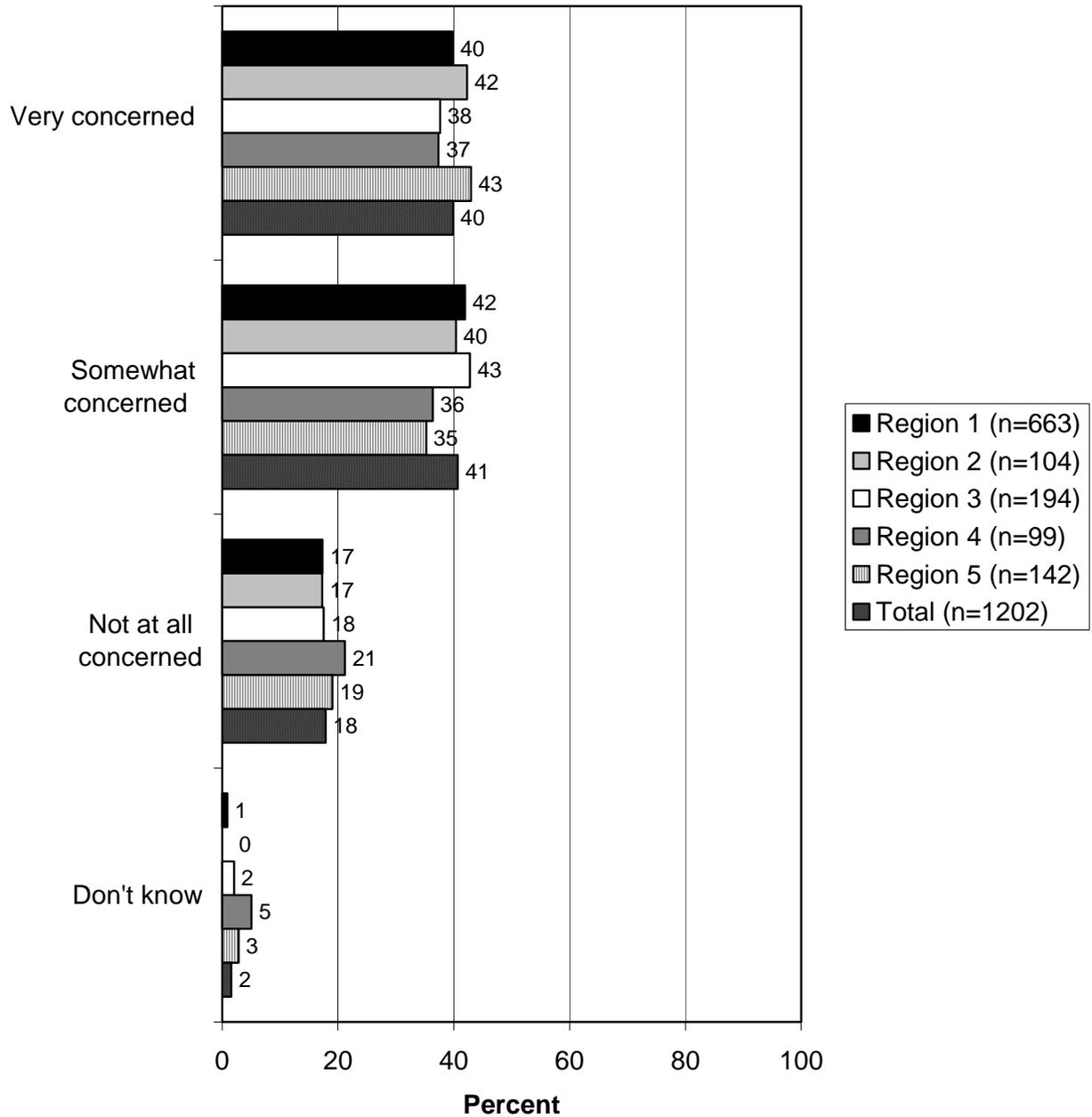
Issue	Region 1	Region 2	Region 3	Region 4	Region 5	Overall
Drinking water	59	49	46	52	63	56
Polluted, bad-tasting, bad-looking water	37	42	38	20	50	38
Own health	32	32	30	42	36	33
Public health	29	22	32	40	32	30
Drought, low water	27	16	13	13	7	21
Fish and wildlife	10	12	13	11	15	12
Recreation	7	5	6	4	6	7
Natural beauty, environment	7	6	5	4	6	7

Q14. Those who answered that public health and safety and/or their own health and safety are their main reasons for being concerned about water quality were asked to specify their concerns. The top answers were getting sick (58% overall), cancer (47% overall), pollution (45%), children getting sick (28% overall), and future generations getting sick (22% overall). There was some regional variation. The greatest variation was in the percentages who said that pollution is a main reason for being concerned about water quality, with 33% of Region 3 and Region 5 respondents having given this answer and 67% of Region 2 respondents having given this answer. It is notable that Region 4 had the highest percentage who said “children getting sick,” “future generations getting sick,” and “birth defects.” In the tabulation, the highest percentage for each issue is shown in bold.

Main Reason for Being Concerned About Health and Safety

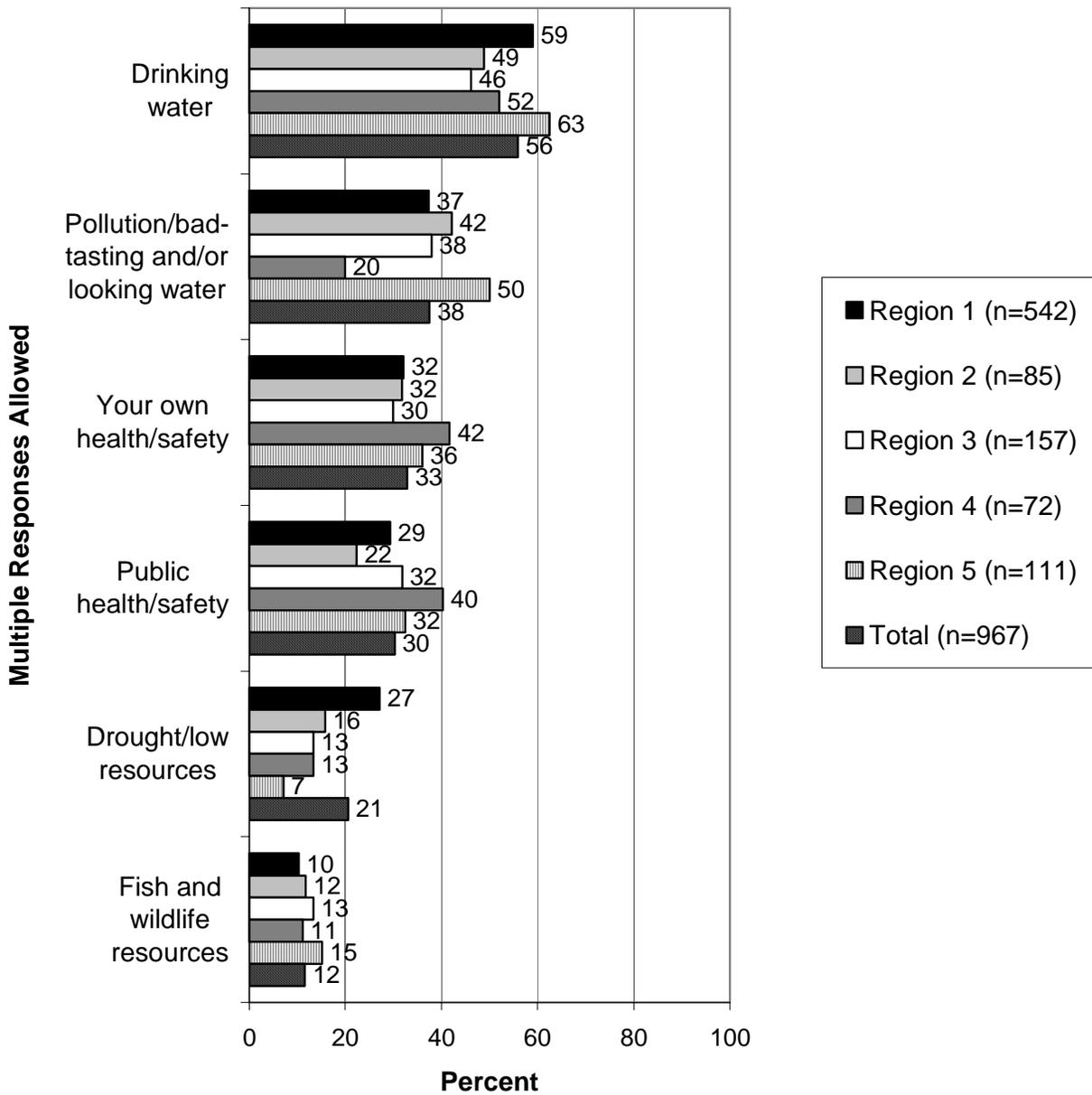
Main Reason	Region 1	Region 2	Region 3	Region 4	Region 5	Overall
Getting sick	55	66	63	54	68	58
Cancer	50	50	40	46	47	47
Pollution	46	67	33	50	33	45
Children getting sick	29	22	25	33	24	28
Future generations getting sick	22	26	17	31	20	22
General environmental concern	16	33	14	0	33	17
Birth defects	14	16	6	24	16	14
Lack of safe fishing	8	0	17	25	0	10

Q9. Would you say you are very concerned, somewhat concerned, or not at all concerned with water quality in Delaware?

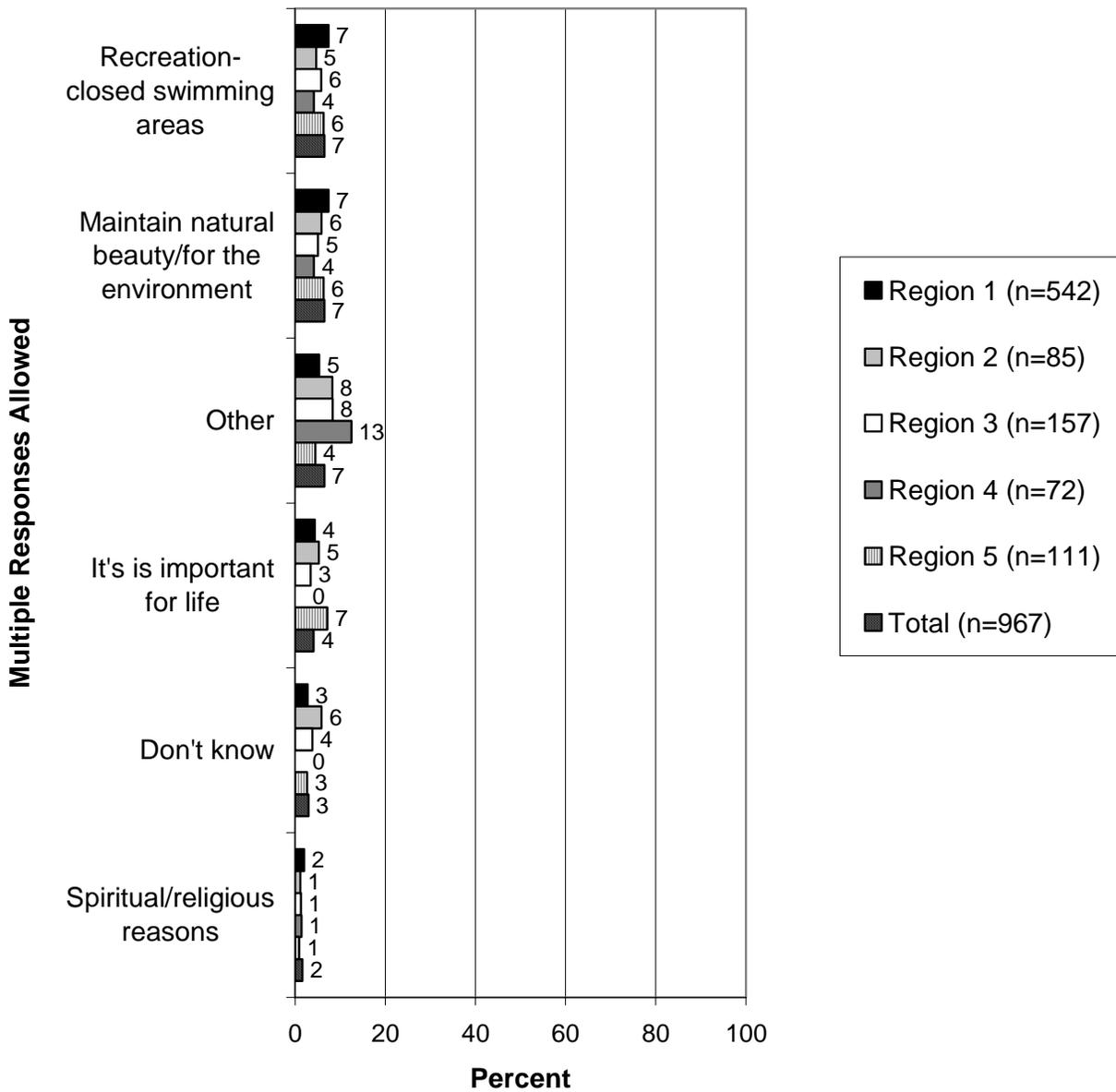


Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.)

Part 1

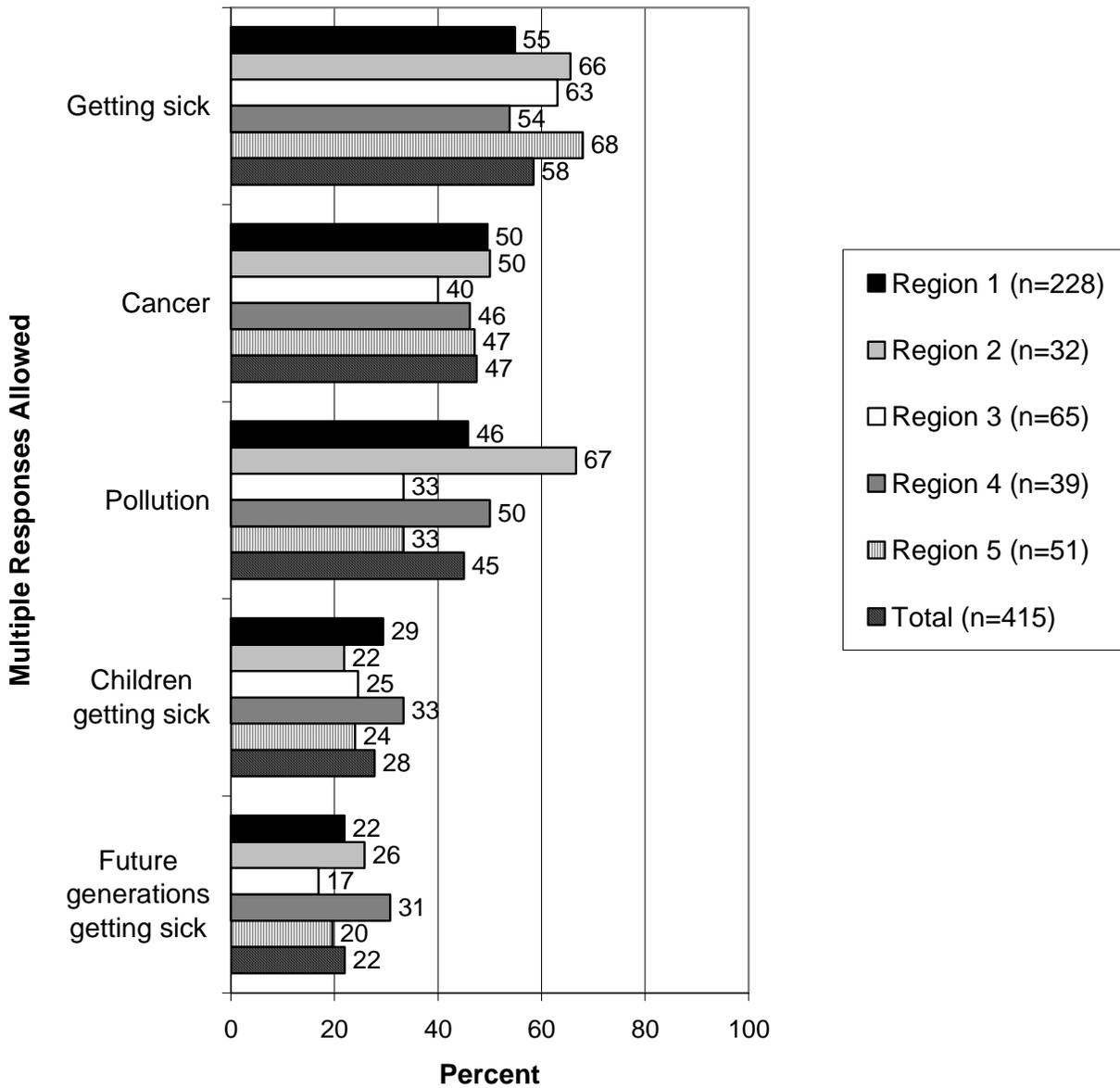


Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.)
Part 2



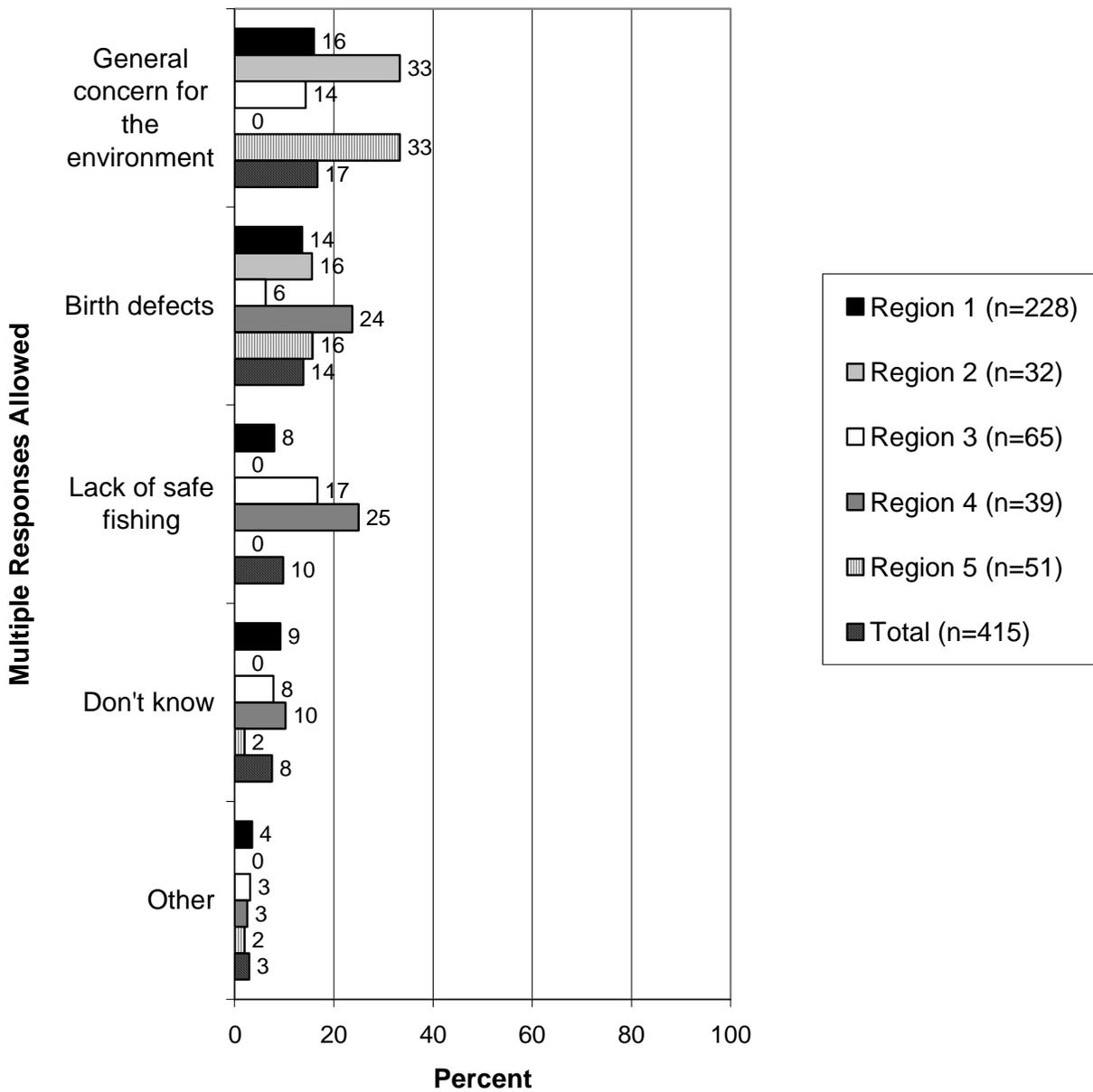
Q14. What specifically about health/safety are you concerned about? (Asked of those who said health/safety was one of their main reasons for being concerned about water quality.)

Part 1



Q14. What specifically about health/safety are you concerned about? (Asked of those who said health/safety was one of their main reasons for being concerned about water quality.)

Part 2

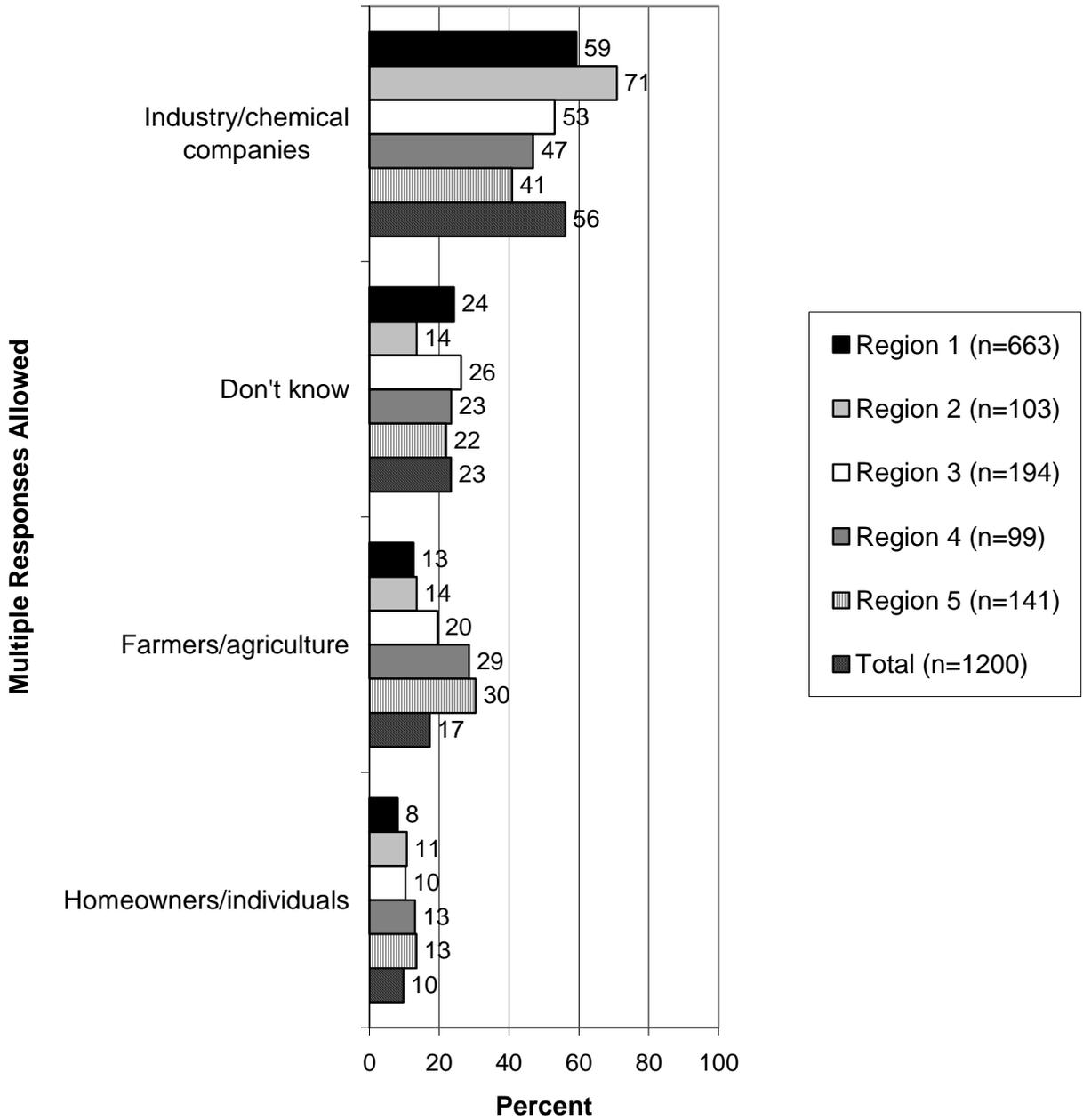


Q17. A majority of respondents (56%) said that industry/chemical companies are one of the largest polluters of water in Delaware. There was substantial regional variation, too, with 71% of Region 2 respondents, but only 41% of Region 5 respondents, having said that industry/chemical companies are one of the largest polluters of water. Homeowners/individuals were named as one of the largest polluters of water by 10% of respondents overall, with little regional variation in this answer.

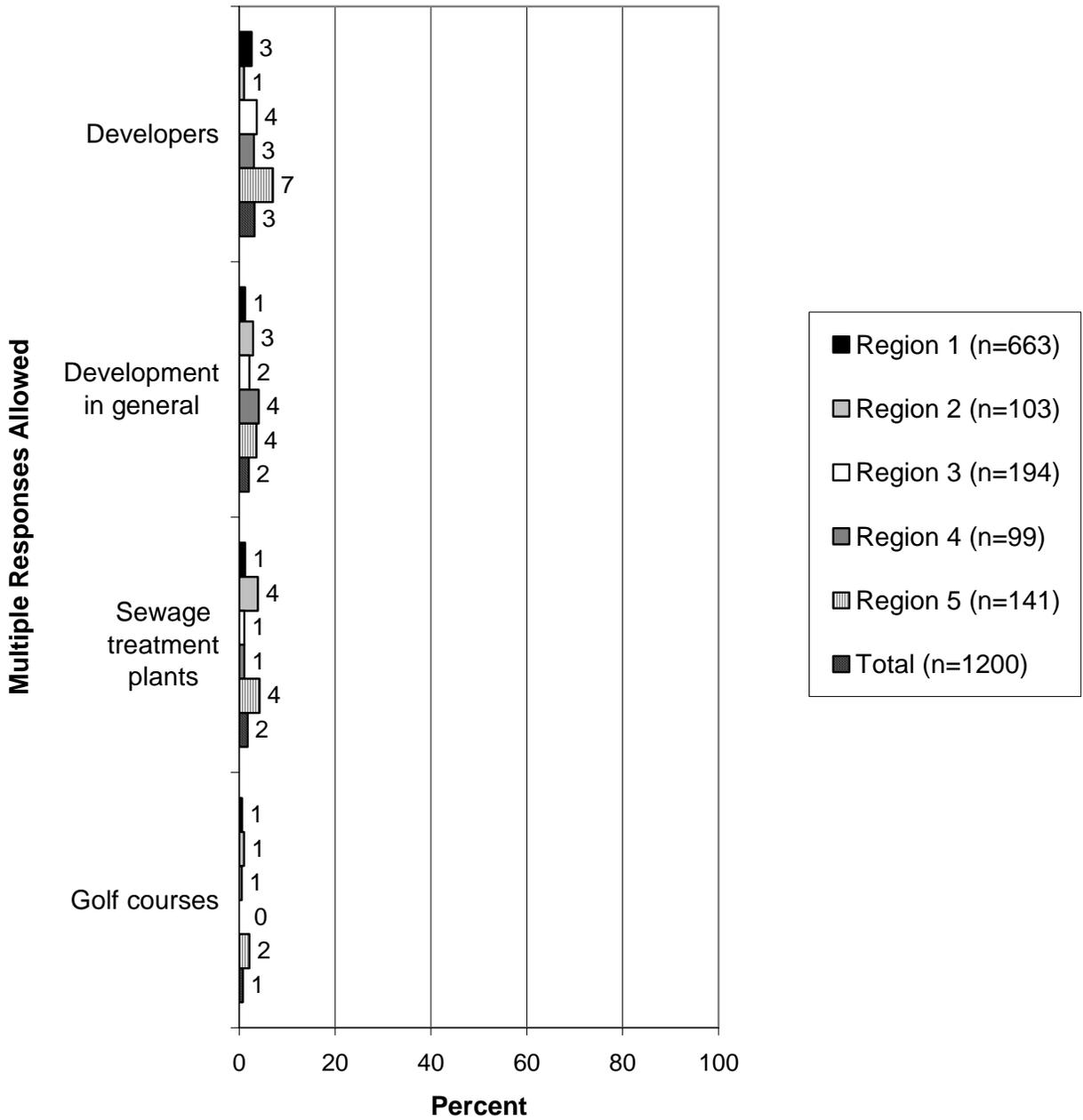
Q19. Regarding the individual's impact on water quality in Delaware, respondents were nearly equally split between those who said that their daily activities have a minor impact on water quality (47% overall) and those who said their daily activities have no impact (44% overall), with little variation among regions. Only 6% of respondents overall felt that their daily activities have a major impact on water quality.

Q114. When asked who should do more to help improve water quality in Delaware, a majority (51% overall) said everyone should do more, 29% overall said government should do more, 21% overall said business/industry should do more, and only 15% overall said residents should do more. There was not a great regional variation, with the exception of those saying the government should do more: 17% of Region 4 respondents said government should do more, but 34% of Region 5 respondents said government should do more.

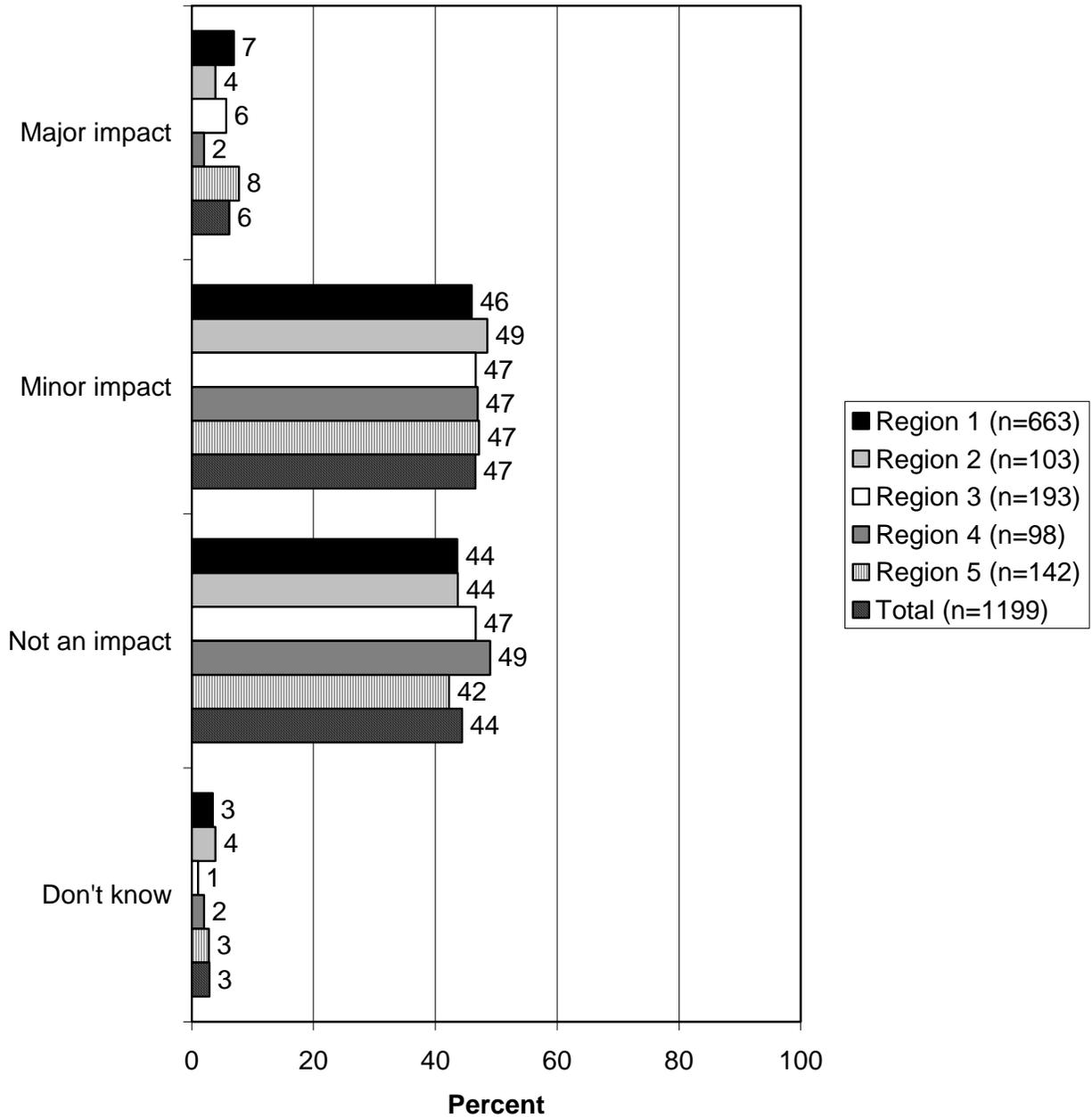
**Q17. Who do you think are the largest polluters of water in Delaware?
Part 1**



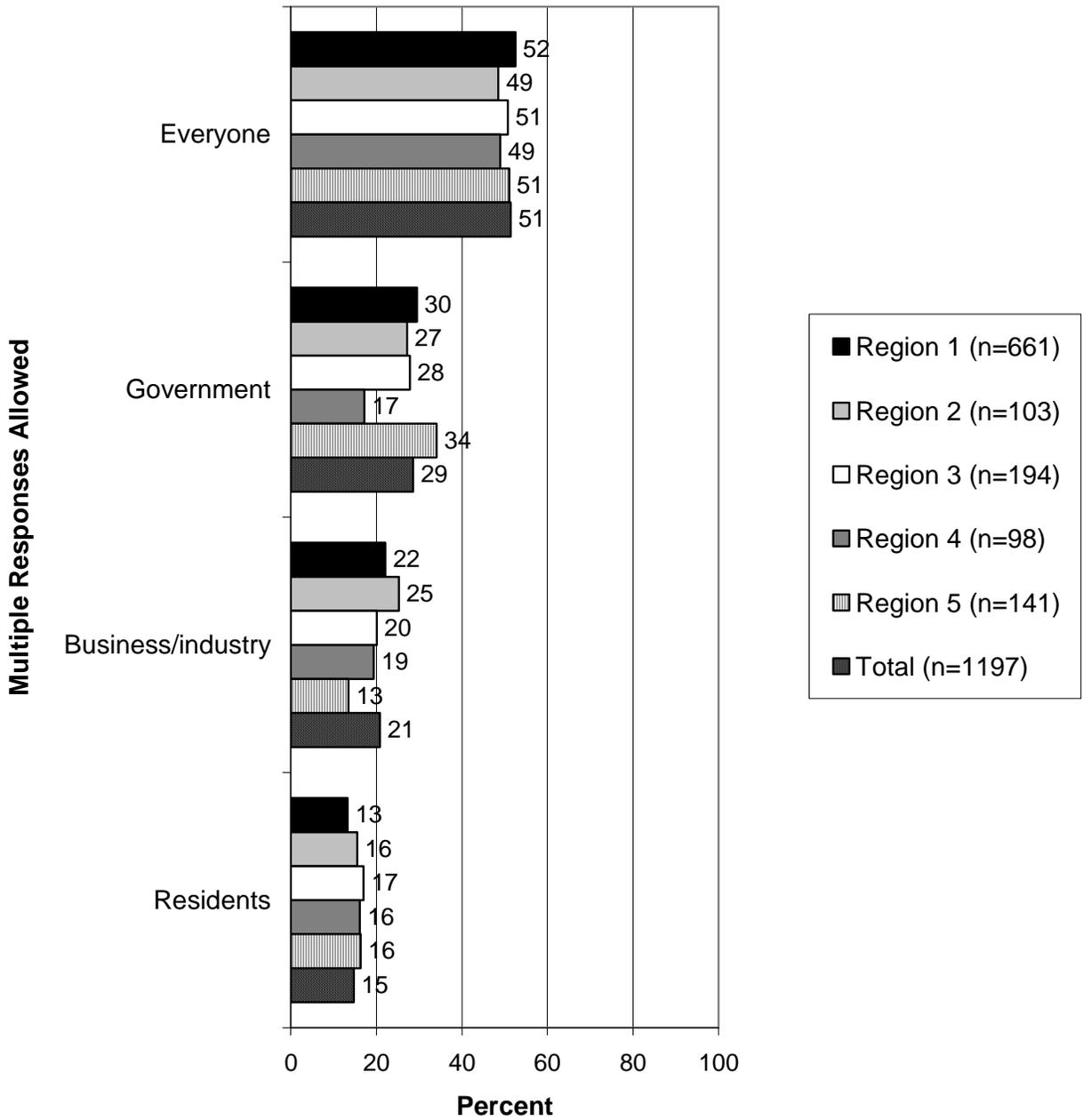
Q17. Who do you think are the largest polluters of water in Delaware? Part 2



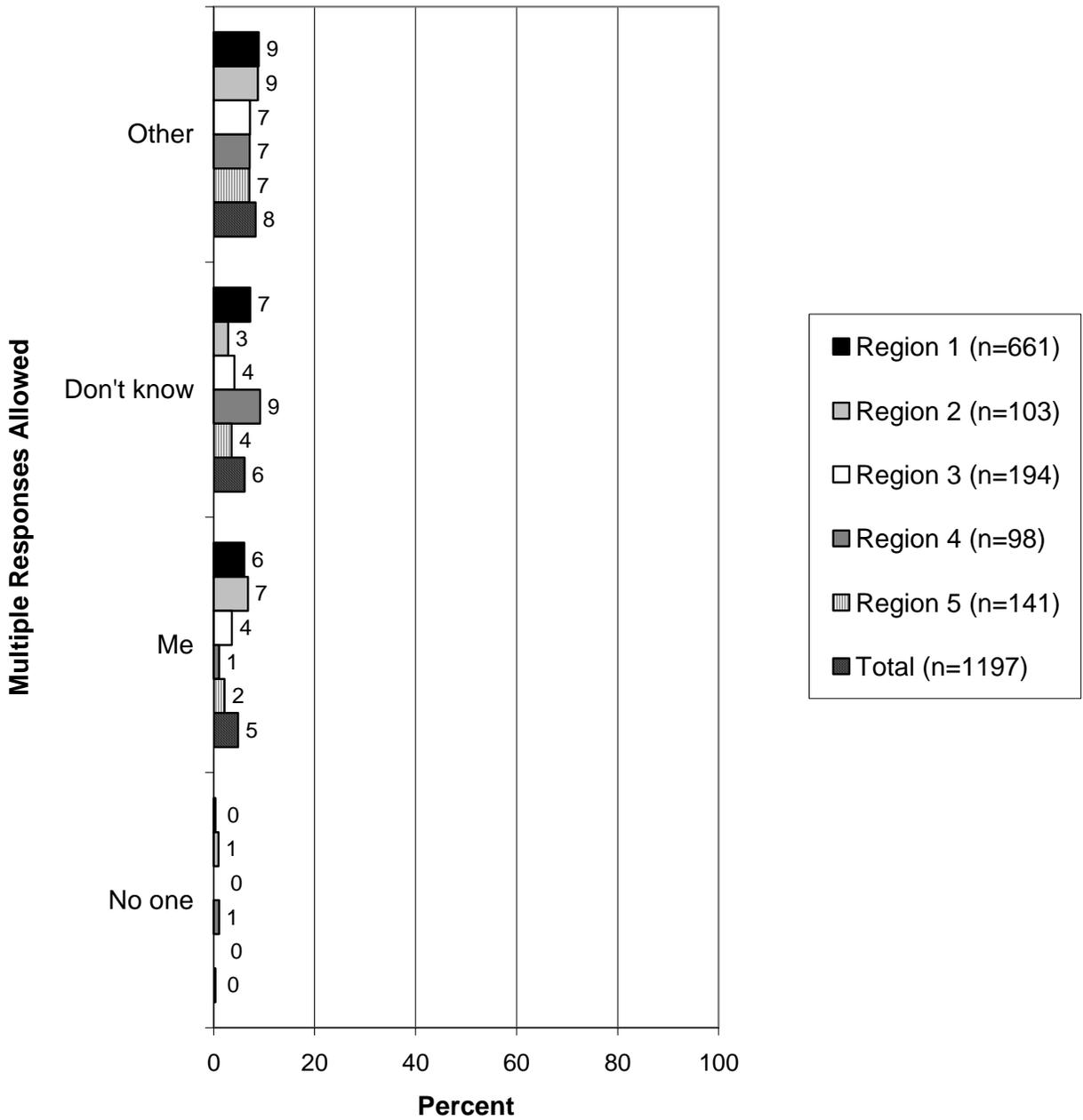
**Q19. How great of a negative impact do you feel your own daily activities have on water quality in Delaware?
Would you say they are a major impact, a minor impact, or not an impact?**



**Q114. Who do you think should do more to help improve water quality in Delaware?
Part 1**



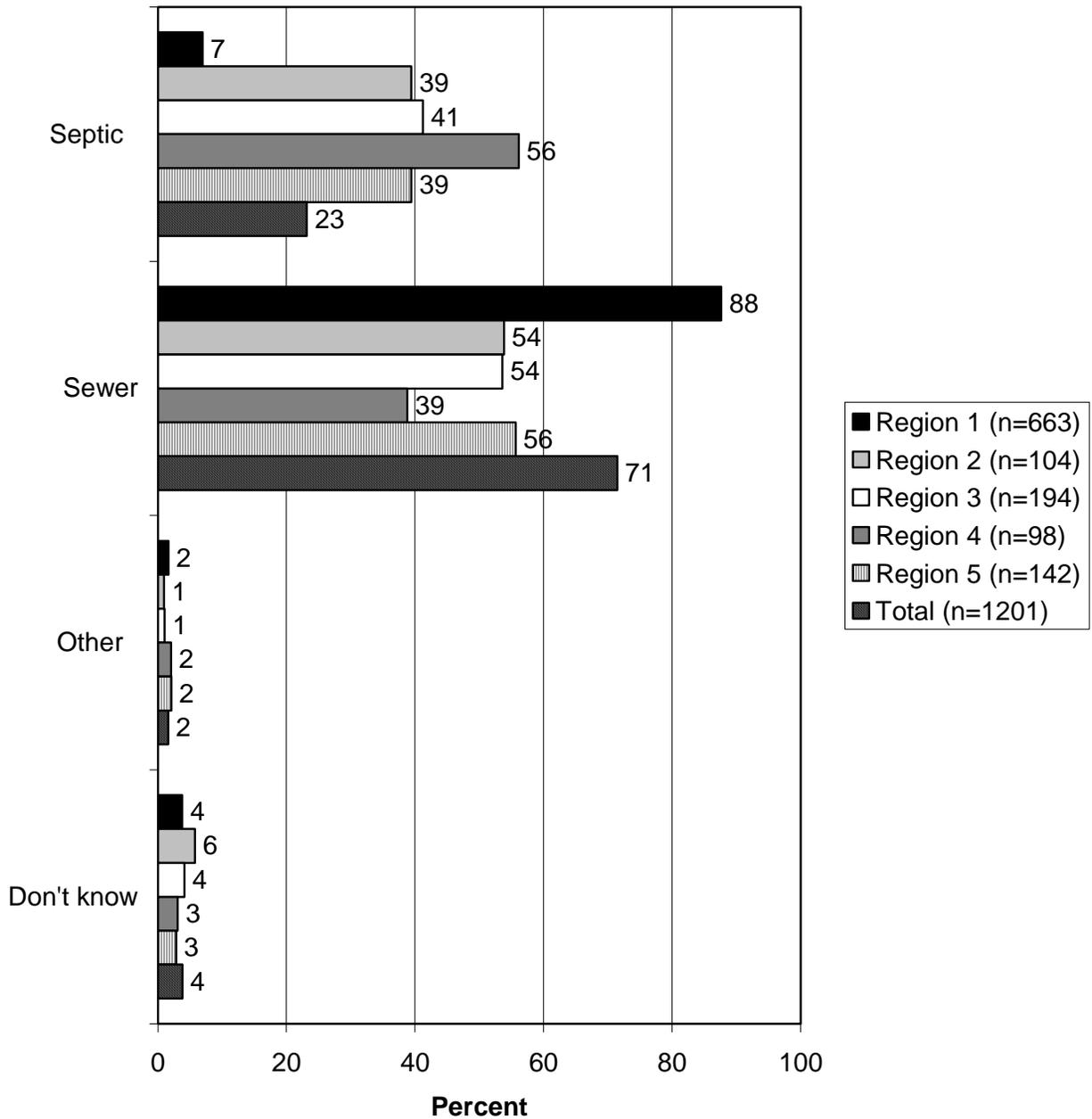
**Q114. Who do you think should do more to help improve water quality in Delaware?
Part 2**



WATER QUALITY AND SEPTIC/SEWER SYSTEMS

Q27. There was large variation among regions between those whose residence is on a sewer system and those whose residence has a septic system, which correlates with the amount of urbanization, because residences in urban areas are often on a municipal sewer system. While 7% of respondents' residences in Region 1 have a septic system, 56% of respondents' residences in Region 4 have a septic system. Overall, 23% of respondents' residences have a septic system. Conversely, 88% of respondents' residences in Region 1 are on a sewer system, and 39% of respondents' residences in Region 4 are on a sewer system. Overall, 71% of respondents' residences are on a sewer system.

Q27. Do you have a septic system, a sewer system, or do you have some other form of waste disposal?



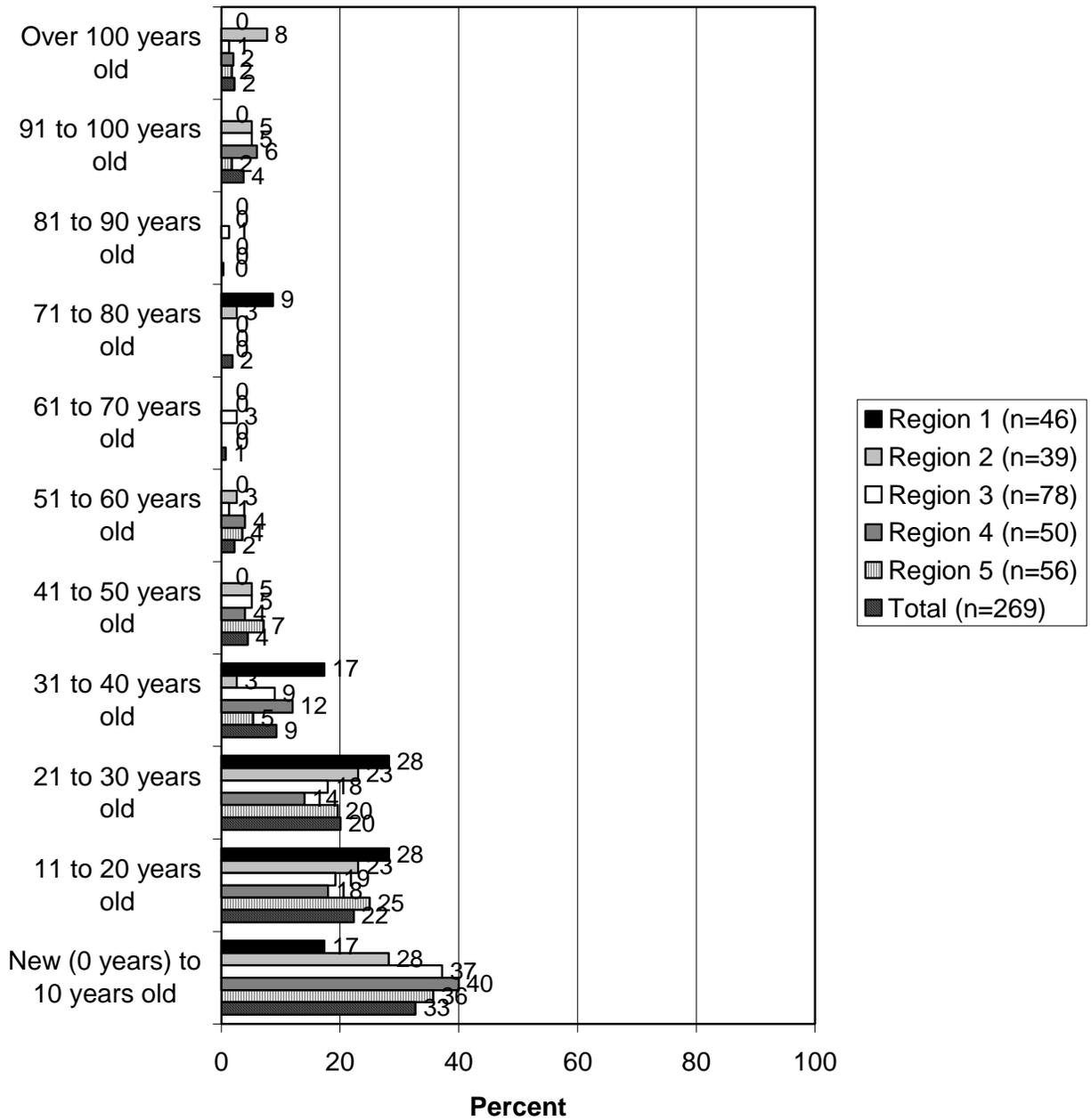
Q33. The vast majority of residences (those with a septic system) of respondents are 30 years old or less: 33% overall said 0 to 10 years old, 22% overall said 11 to 20 years old, and 20% overall said 21 to 30 years old. There was substantial regional variation. For instance, only 17% of Region 1 residences are 0 to 10 years old, but 40% of Region 4 residences are 0 to 10 years old. In looking at means, the oldest housing stock is in Region 2 (mean of ages of residences of 38.66 years); the newest housing stock is in Region 5 (mean of 23.88 years). The overall mean is 28.38 years.

Q34. The majority of septic systems (asked of those whose residence had a septic system) are 20 years old or less: 51% overall are from 0 to 10 years old, 25% overall are 11 to 20 years old. In looking at the means, the means of ages of septic systems range from 12.19 years old in Region 4 to 16.05 years old in Region 2. Overall, the mean of ages of septic systems is 14.27 years old.

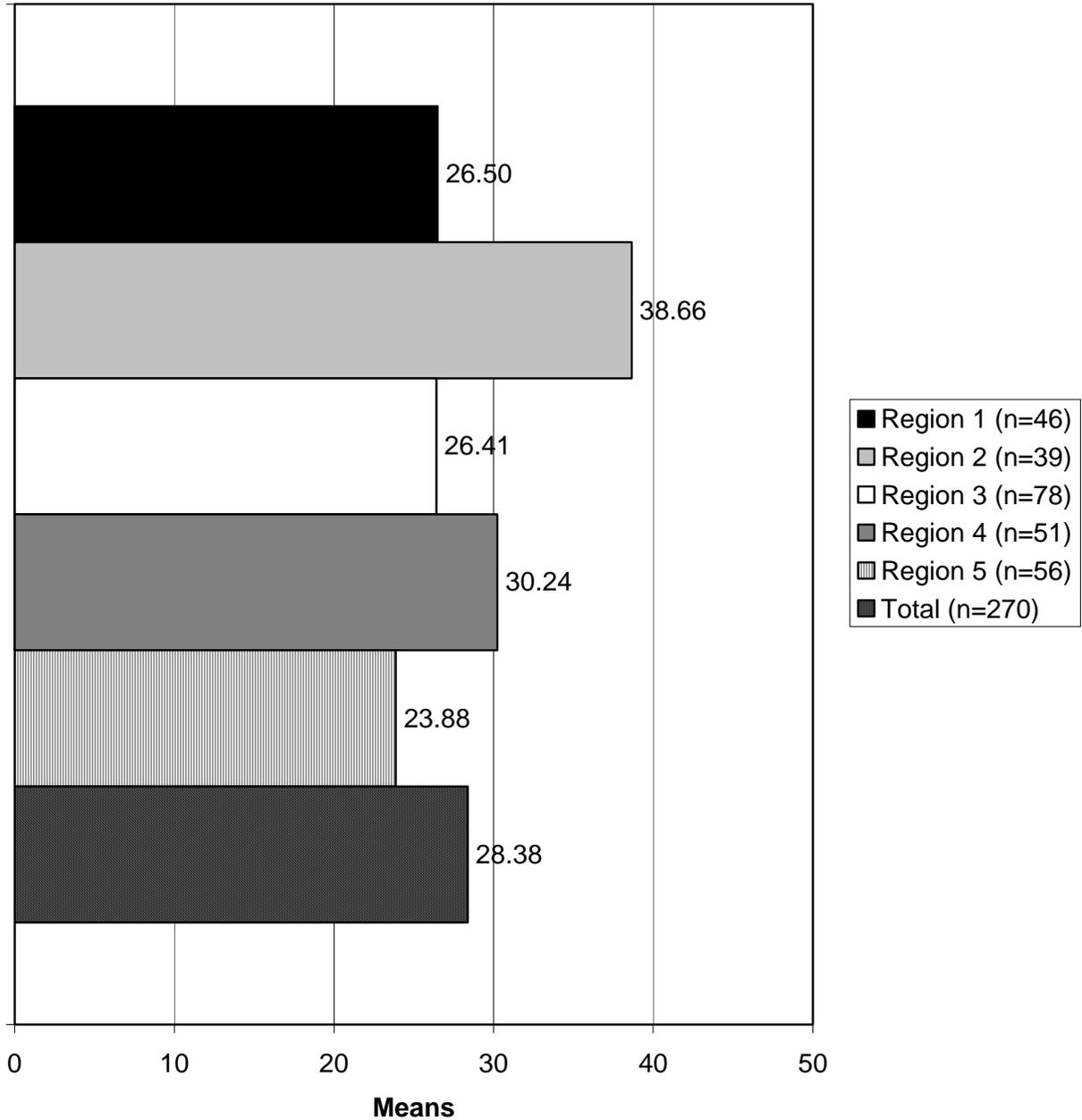
Q35. Those respondents whose residence had a septic system were asked when the last time they had pumped out their septic system. The most common answer was 1 year or less (49% overall), followed by 2 years (22%). There was some regional variation, with 39% of Region 4 respondents having pumped out their septic system within 1 year or less, but 59% of Region 2 respondents having given this answer. In looking at the means of the number of years since the septic system was last pumped, Region 1 has the lowest mean (1.31 years), and Region 3 has the highest mean (2.14 years).

Q37. A majority of those who indicated that they had pumped their septic system did so for general maintenance (61% overall) or because it had backed up (22%). A very low percentage did so because it is the law (5% overall, but 14% in Region 1), and an even lower percentage did so out of environmental concerns (2%).

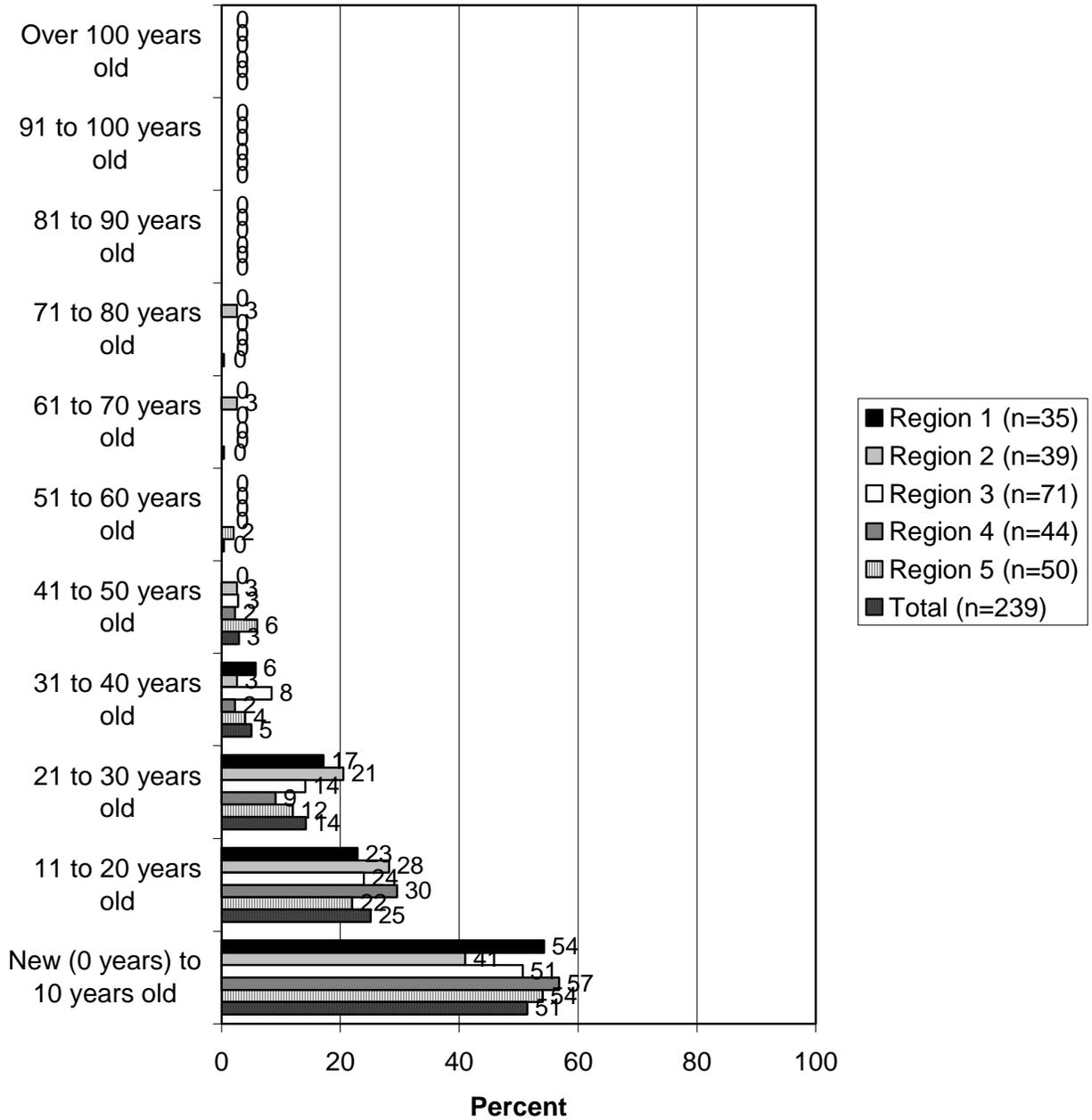
Q33. How old is your place of residence? (Asked of those who have a septic system.)



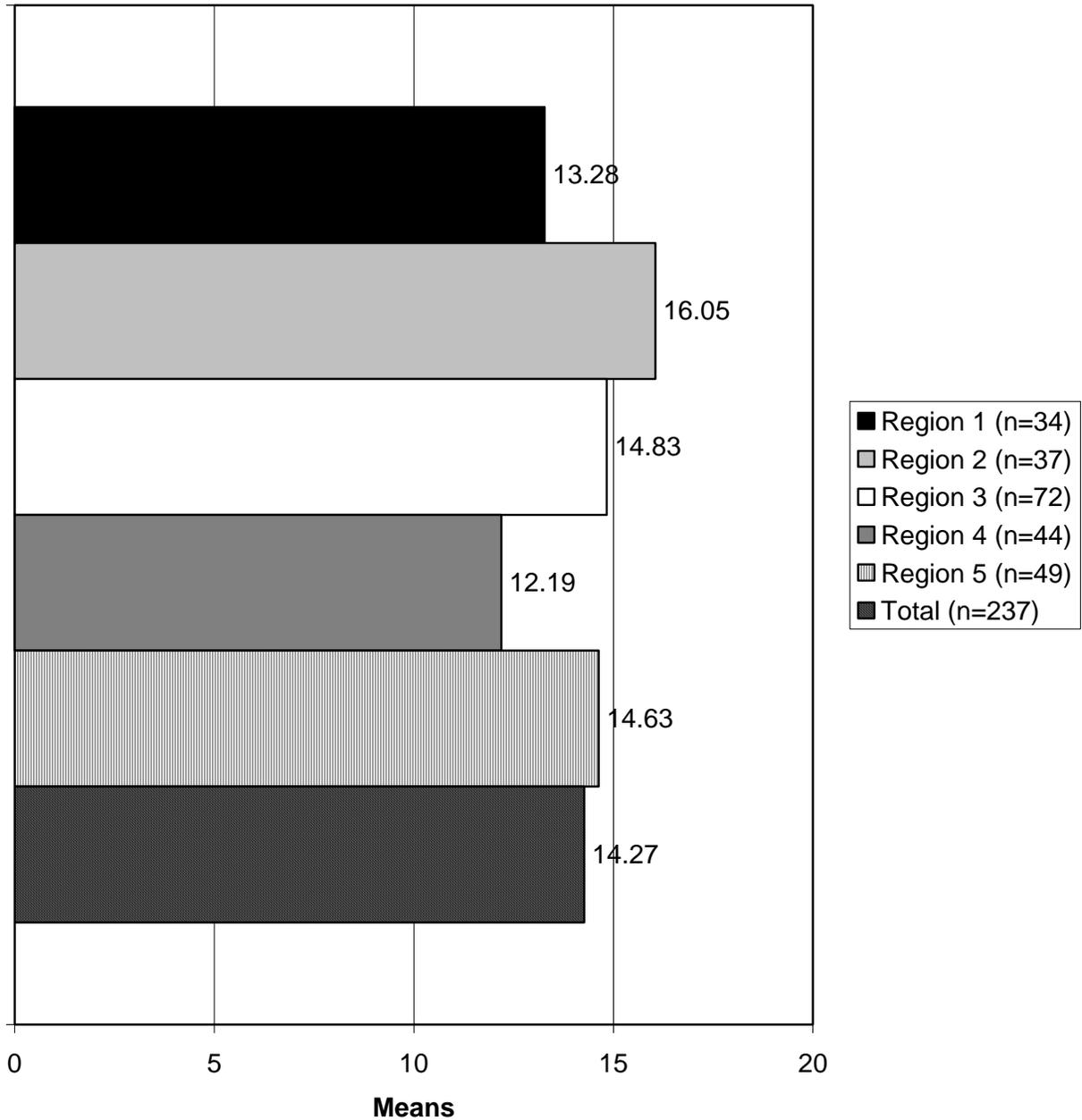
Q33. How old is your place of residence? (Asked of those who have a septic system.)



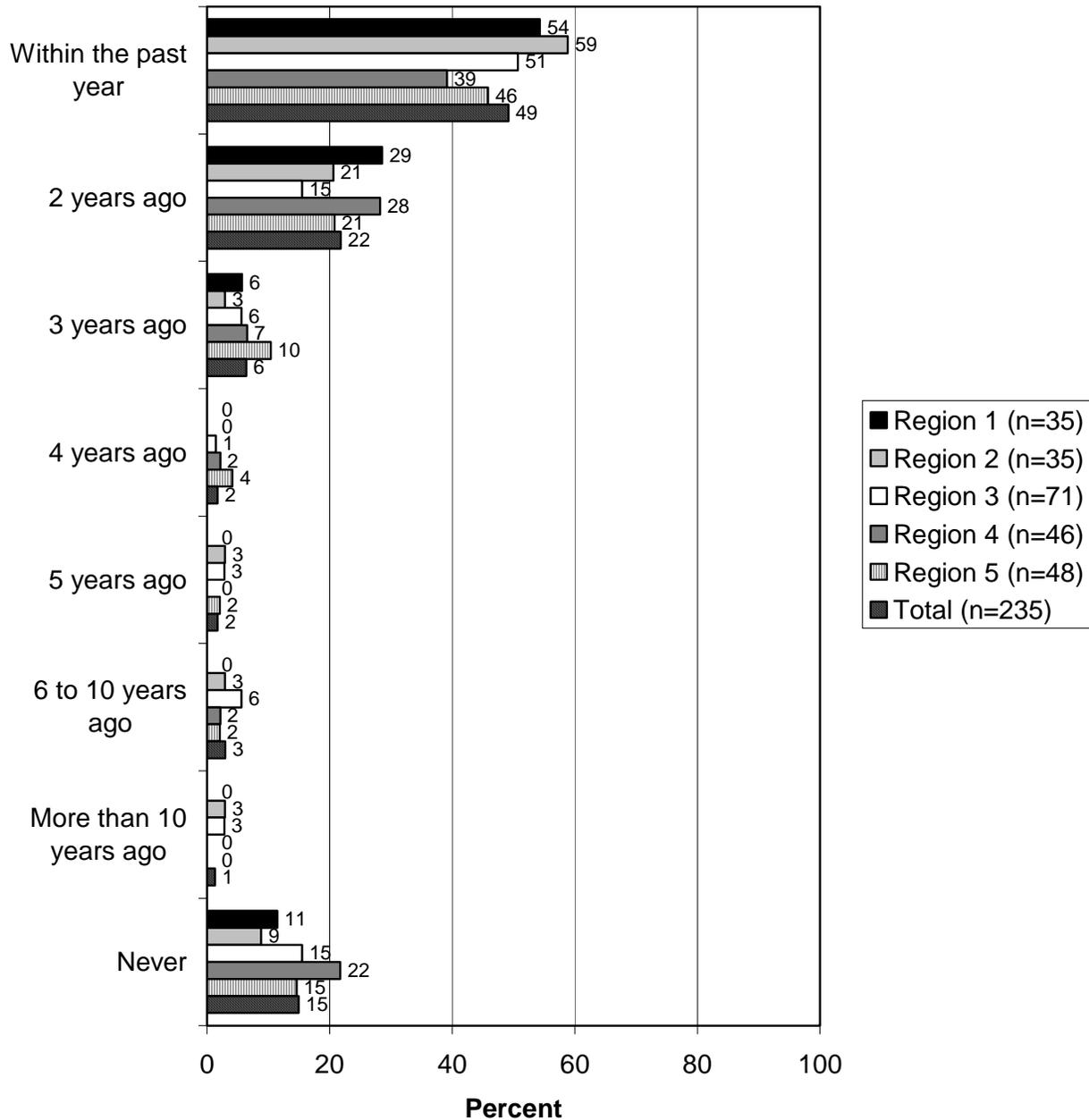
Q34. How old is your septic system? (Asked of those who have a septic system.)



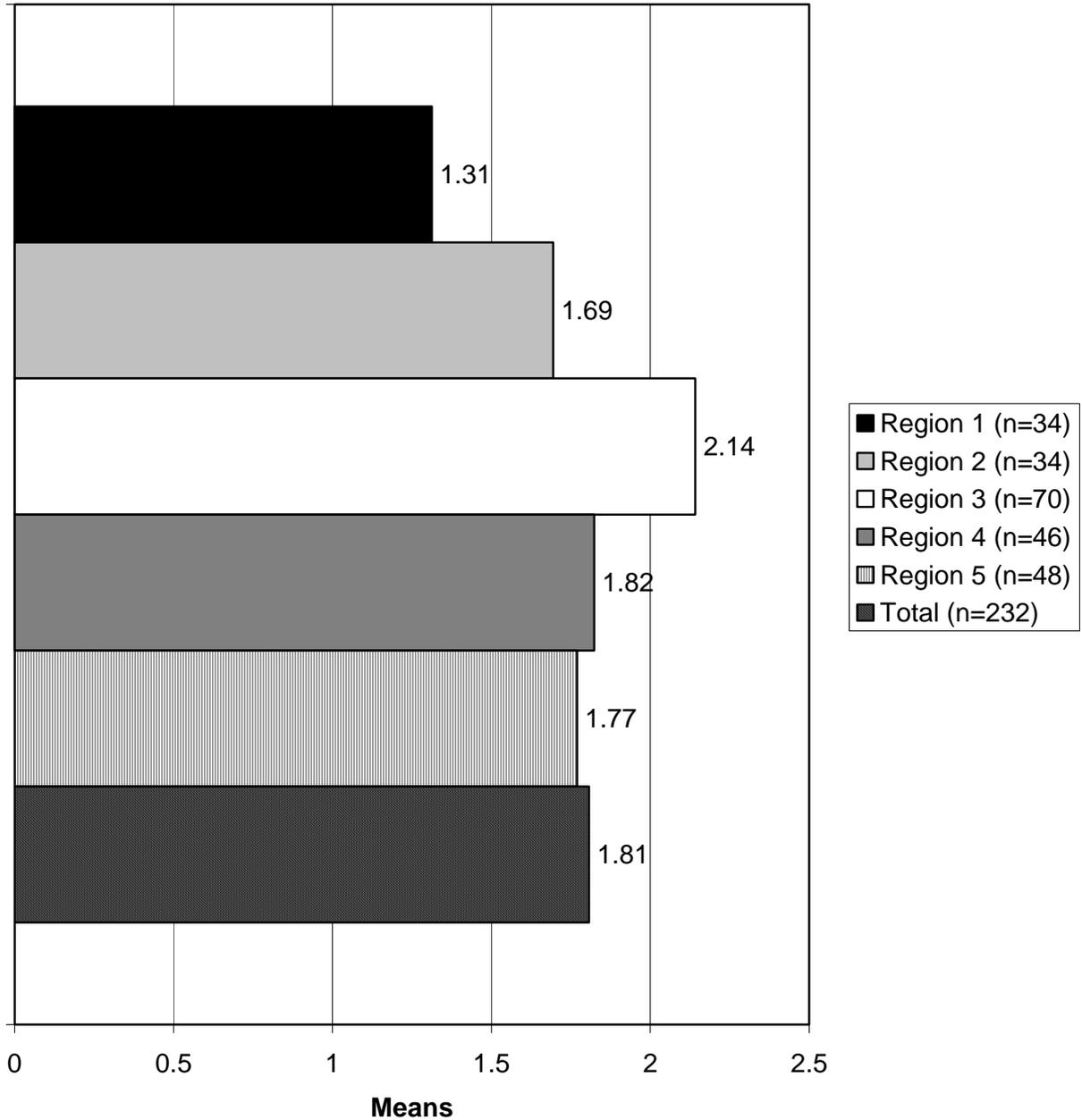
Q34. How old is your septic system? (Asked of those who have a septic system.)



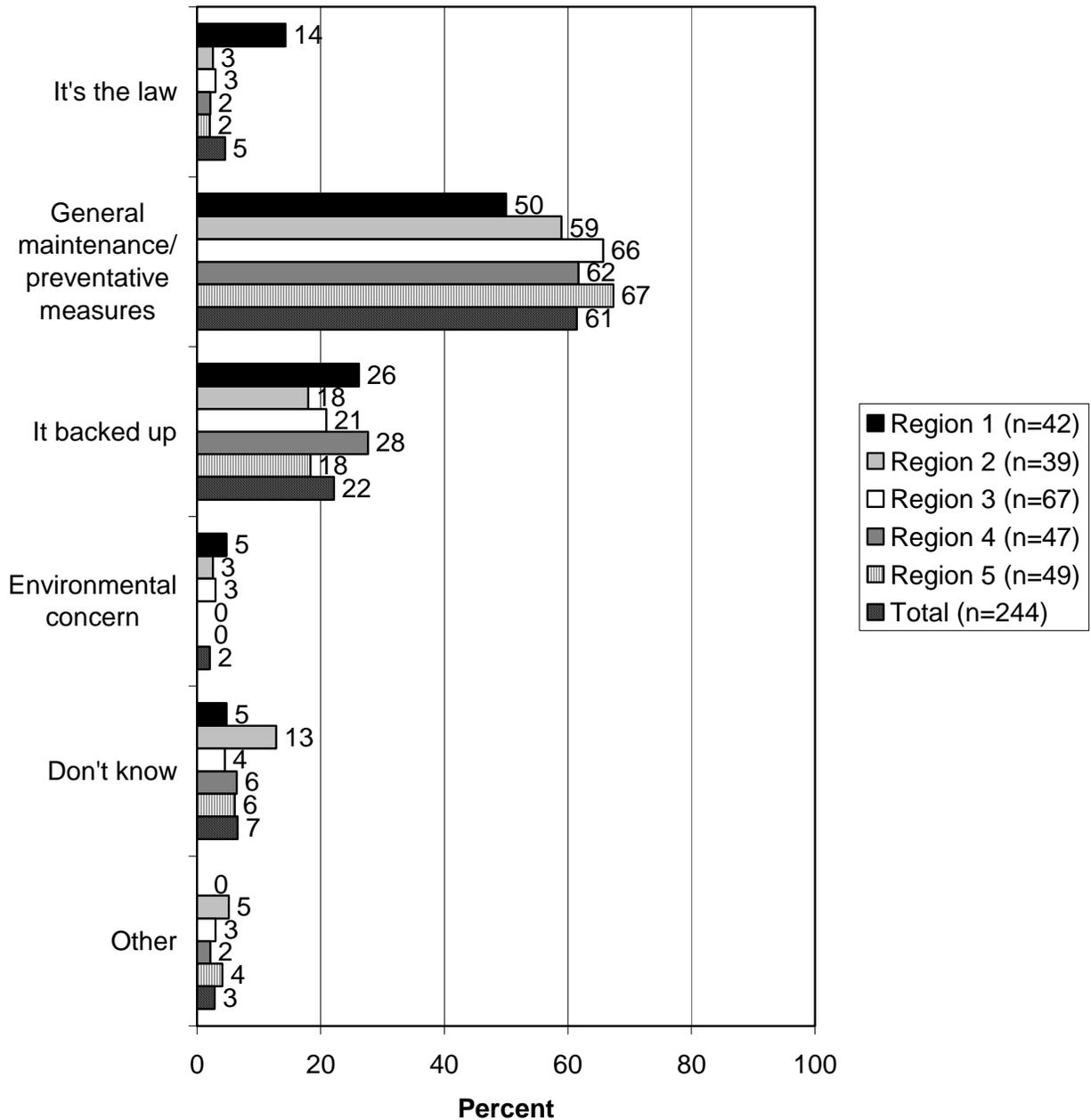
Q35. When was the last time you had your septic system pumped? (Asked of those who have a septic system.)



Q35. When was the last time you had your septic system pumped? (Asked of those who have a septic system.)

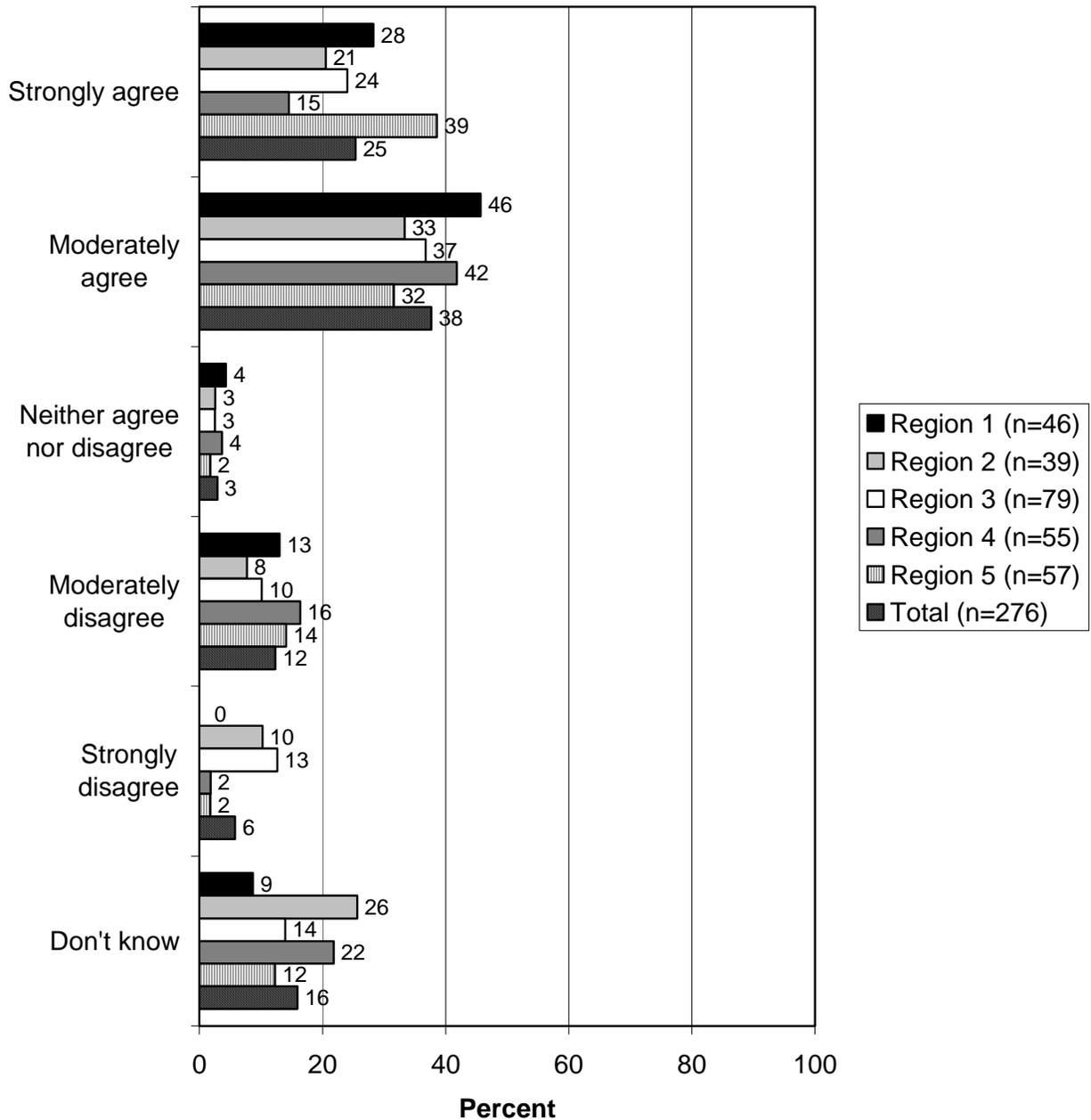


Q37. What are the main reasons you pump your septic tank? (Asked of those who indicated that they had pumped their septic system.)

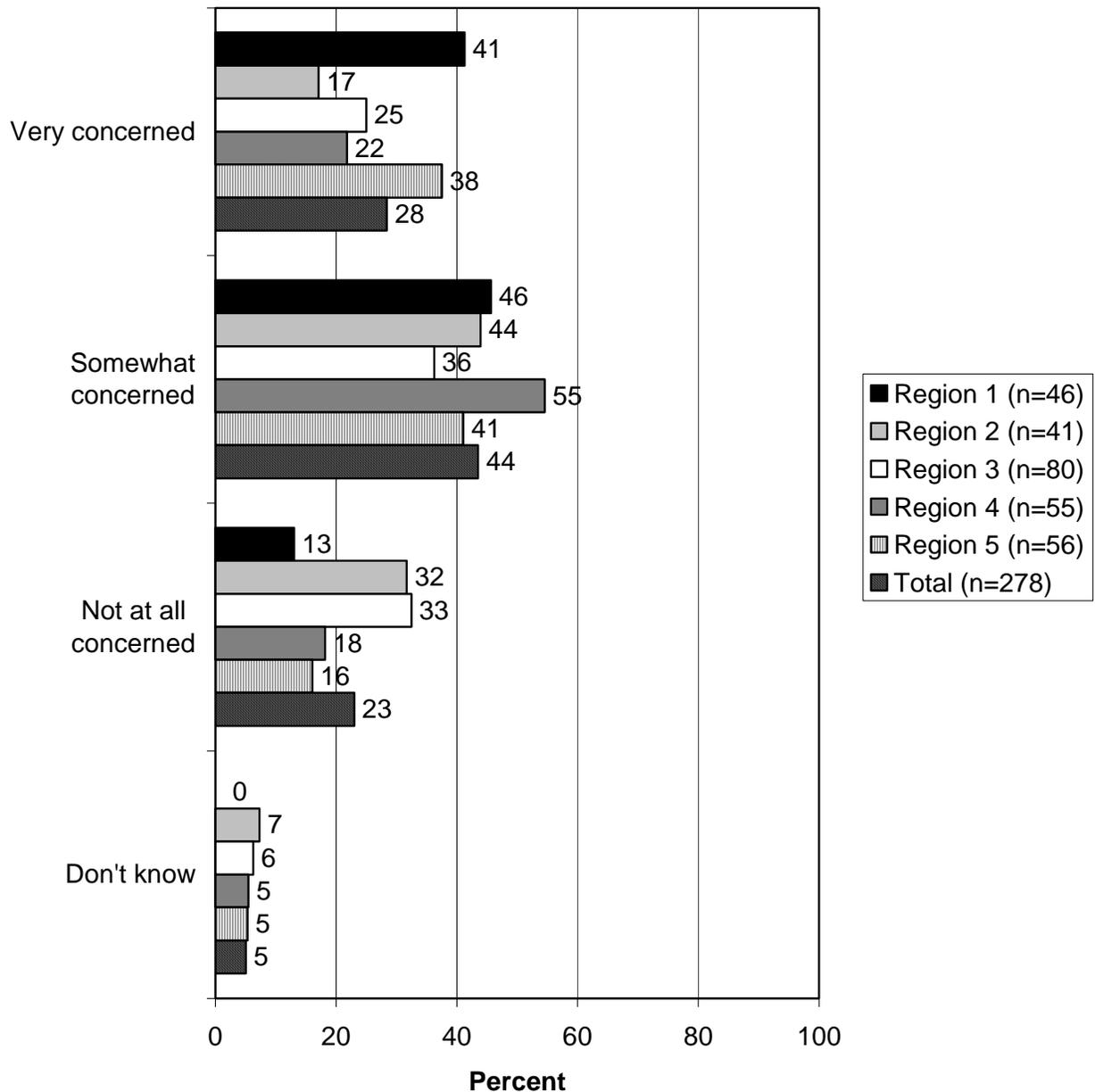


Q39 and 40. Despite the low percentage of respondents (those whose residence has a septic system) who said that they pumped their septic system out of concern for the environment (2%), a strong majority strongly or moderately agreed that standard septic systems can impact water quality (63%). Region 1 had the highest percentage who agreed (74%); Region 2 had the lowest percentage who agreed (54%). Also, a very strong majority (72%) of respondents whose residence has a septic system were very or somewhat concerned about the effects of septic systems on water quality in Delaware. There was notable regional variation in the answers, as well, with 87% of Region 1 respondents having said that they are very or somewhat concerned, and 61% of Region 2 and 3 respondents having expressed concern.

**Q39. Do you agree or disagree that standard septic systems can impact water quality in Delaware?
(Asked of those who have a septic system.)**



Q40. Would you say that you are very concerned, somewhat concerned, or not at all concerned about the effects of septic systems on water quality in Delaware? (Asked of those who have a septic system.)



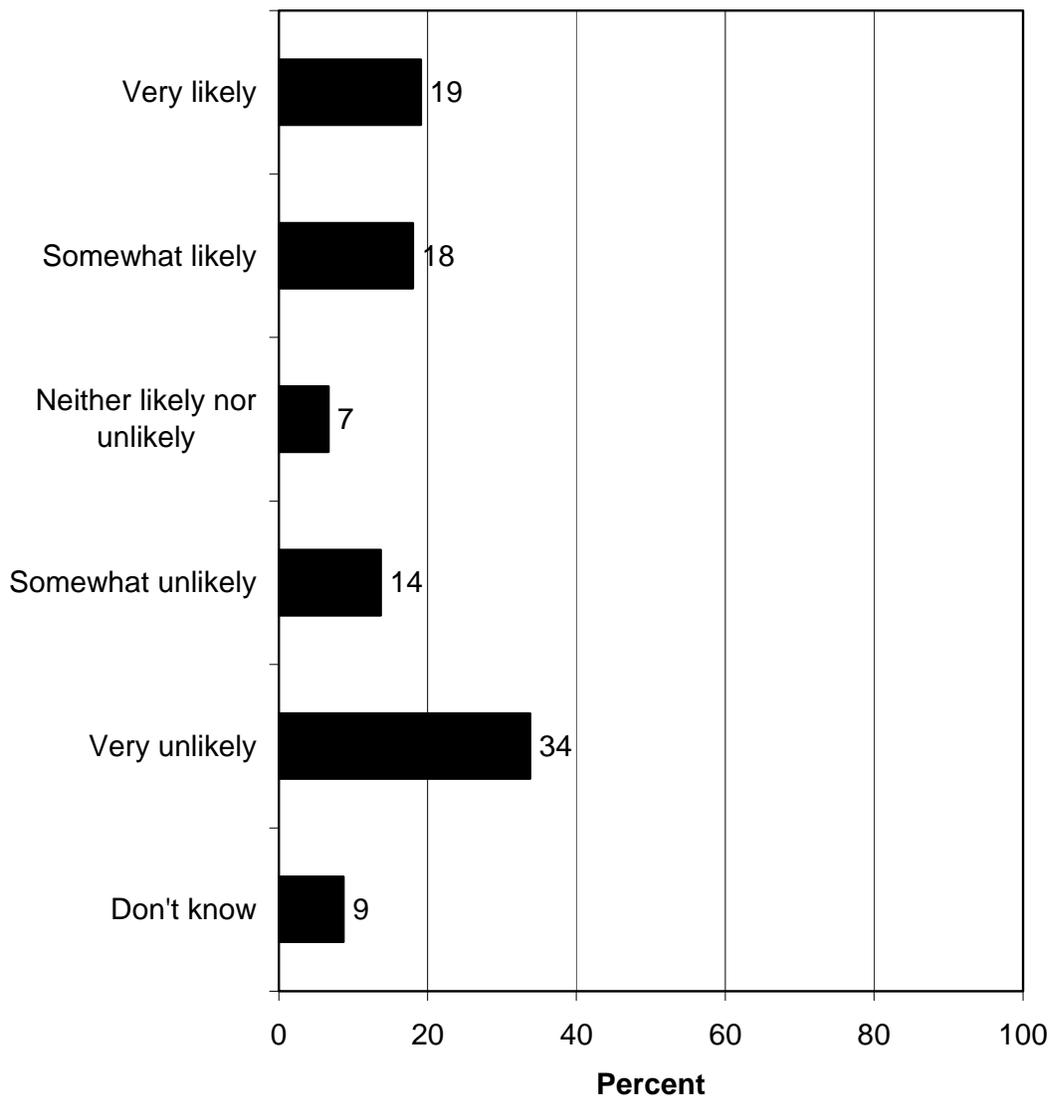
Q42, 43, 44, and 45. Each respondent who had previously indicated that his or her residence has a septic system was asked one of these four questions about the amount that he or she would be willing to spend to upgrade the residence's septic system. In looking at results overall, there is an inverse relationship, in general, between the cost and the percentages of respondents who would be willing to spend the given amount to upgrade their septic system: as the cost went up, the percentage of respondents who would be willing to spend that amount to upgrade their septic system went down, as shown in the following tabulation. The individual question results are shown on the following pages.

Cost of Upgrade	Percent Who Said They Would be Very or Somewhat Likely to Spend that Amount to Upgrade Their Septic System	Percent Who Said They Would be Very or Somewhat Unlikely to Spend that Amount to Upgrade Their Septic System
\$4,000	37	48
\$6,000	29	56
\$8,000	28	54
\$10,000	20	67

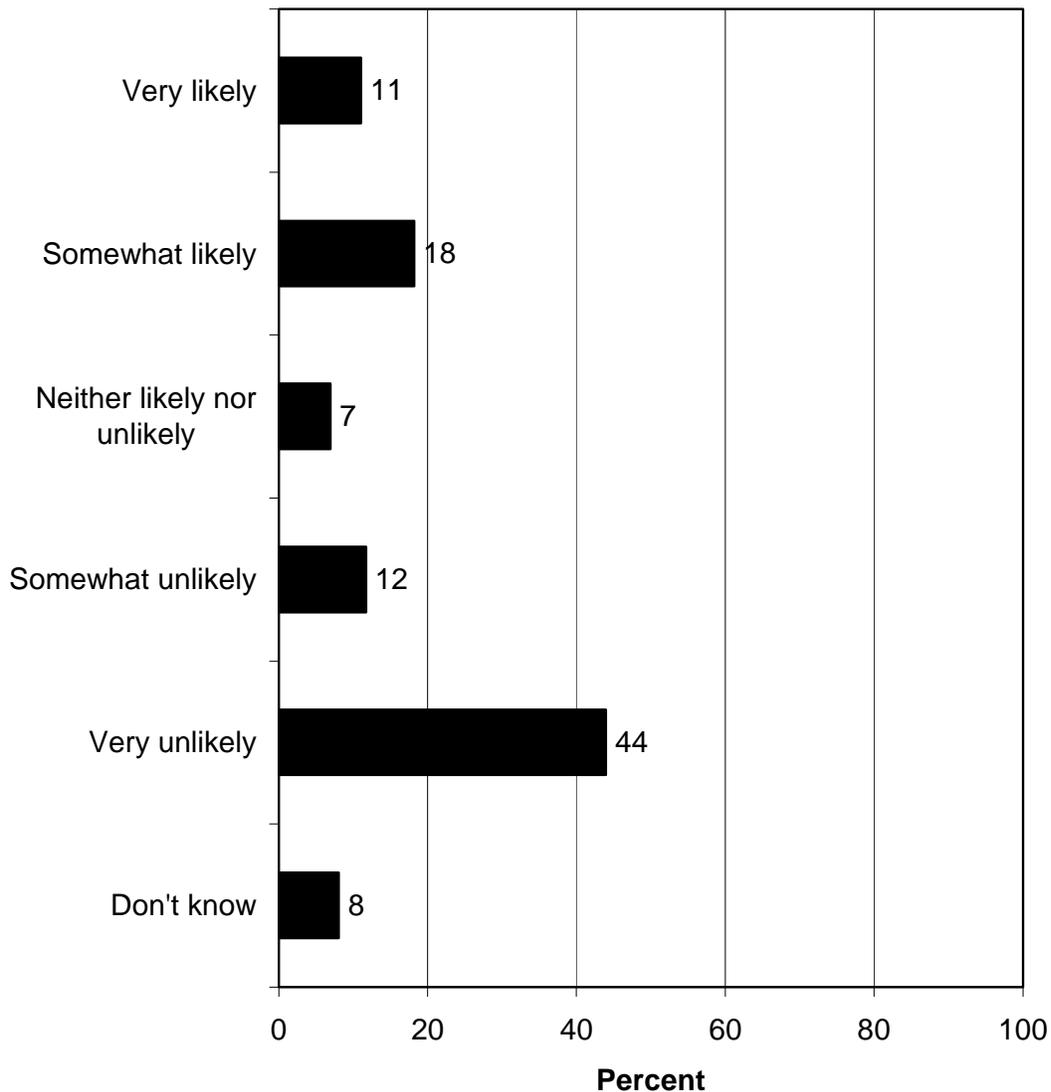
Q46. When asked how likely they would be to upgrade their septic system if they knew that developers are required to install state-of-the-art septic systems in new developments, 30% said that they would be very or somewhat likely to upgrade their septic system. However, a larger percentage (48%) said that they would be somewhat or very unlikely to do so. There was some regional variation, with those from Region 2 the most likely to upgrade their septic system (38% were very or somewhat likely to do so) and those from Region 3 the most unlikely to upgrade their septic system (57% were somewhat or very unlikely to do so).

Q47. Of those who have a septic system, 47% indicated that they would prefer to be on a sewer system, slightly higher than the percentage who would *not* prefer to be on a sewer system (42%). Region 1 had the greatest difference from the other regions, with 28% saying that they would *not* prefer to be on a sewer system, whereas the other regions had from 40% to 50% saying that they would *not* prefer to be on a sewer system.

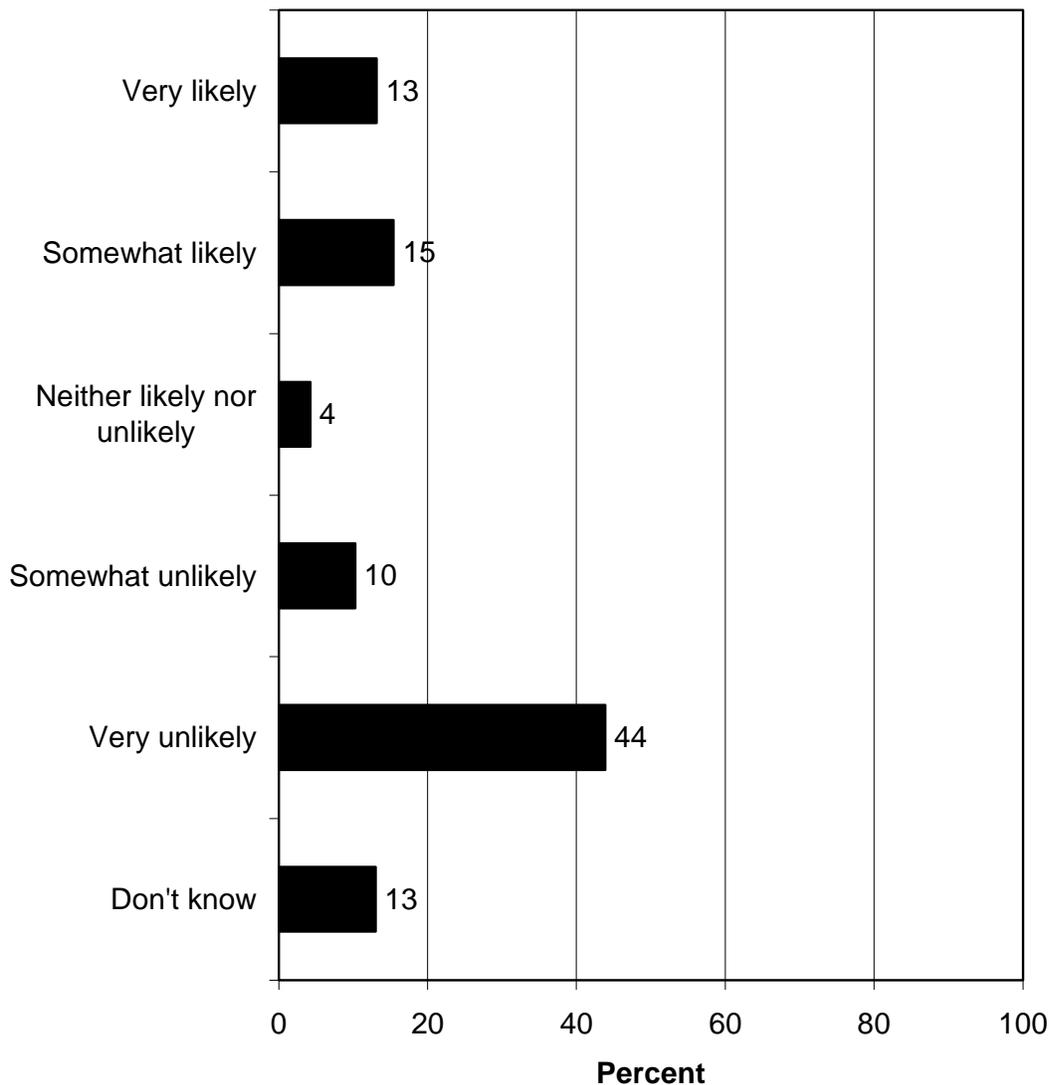
**Q42. How likely would you be to spend \$4,000 on upgrading your septic system if you knew that it could help improve water quality in Delaware? (Each respondent was asked one of four questions regarding the amount he or she would be likely to spend to upgrade the septic system – questions 42, 43, 44, and 45)
Statewide Results**



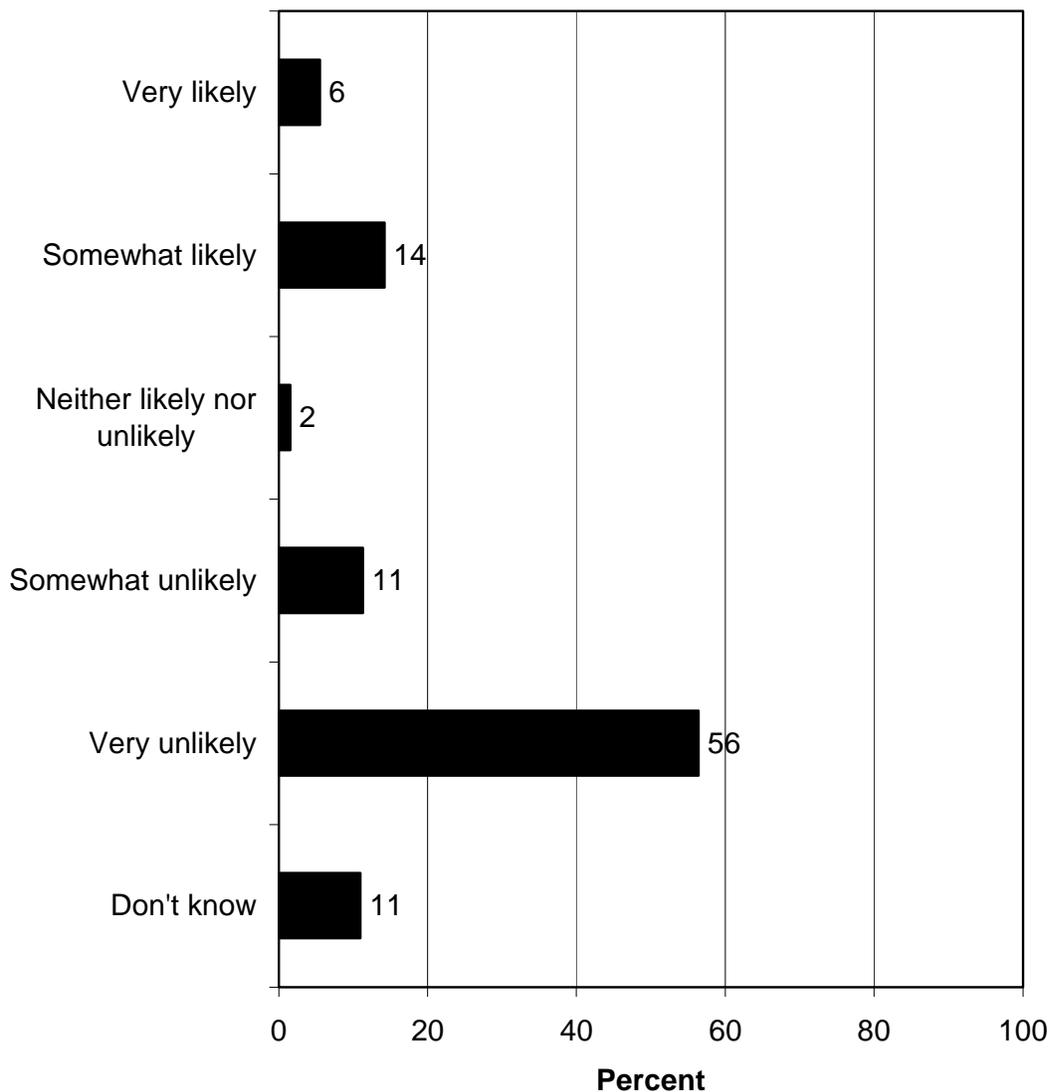
**Q43. How likely would you be to spend \$6,000 on upgrading your septic system if you knew that it could help improve water quality in Delaware? (Each respondent was asked one of four questions regarding the amount he or she would be likely to spend to upgrade the septic system – questions 42, 43, 44, and 45)
Statewide Results**



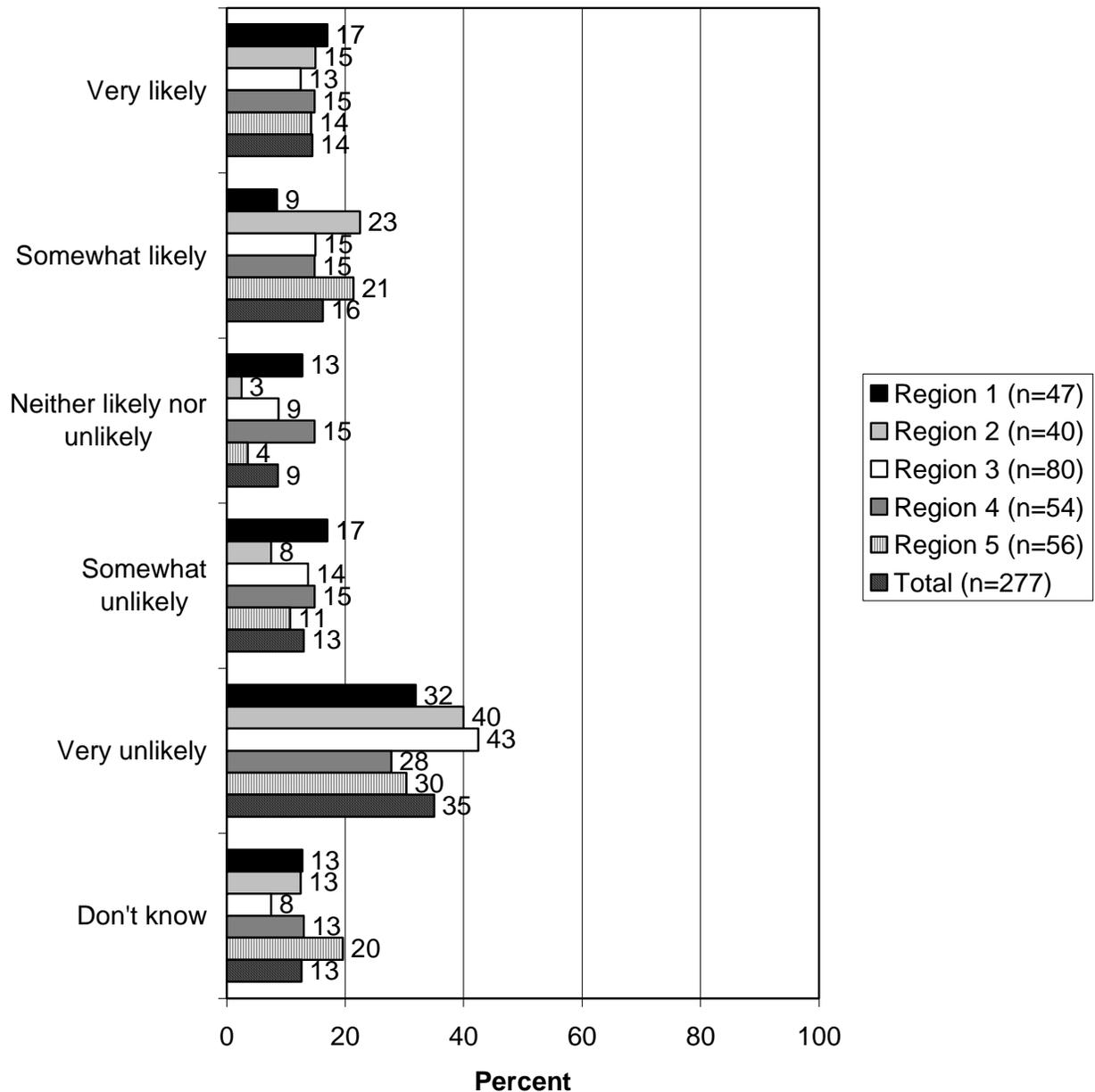
**Q44. How likely would you be to spend \$8,000 on upgrading your septic system if you knew that it could help improve water quality in Delaware? (Each respondent was asked one of four questions regarding the amount he or she would be likely to spend to upgrade the septic system – questions 42, 43, 44, and 45)
Statewide Results**



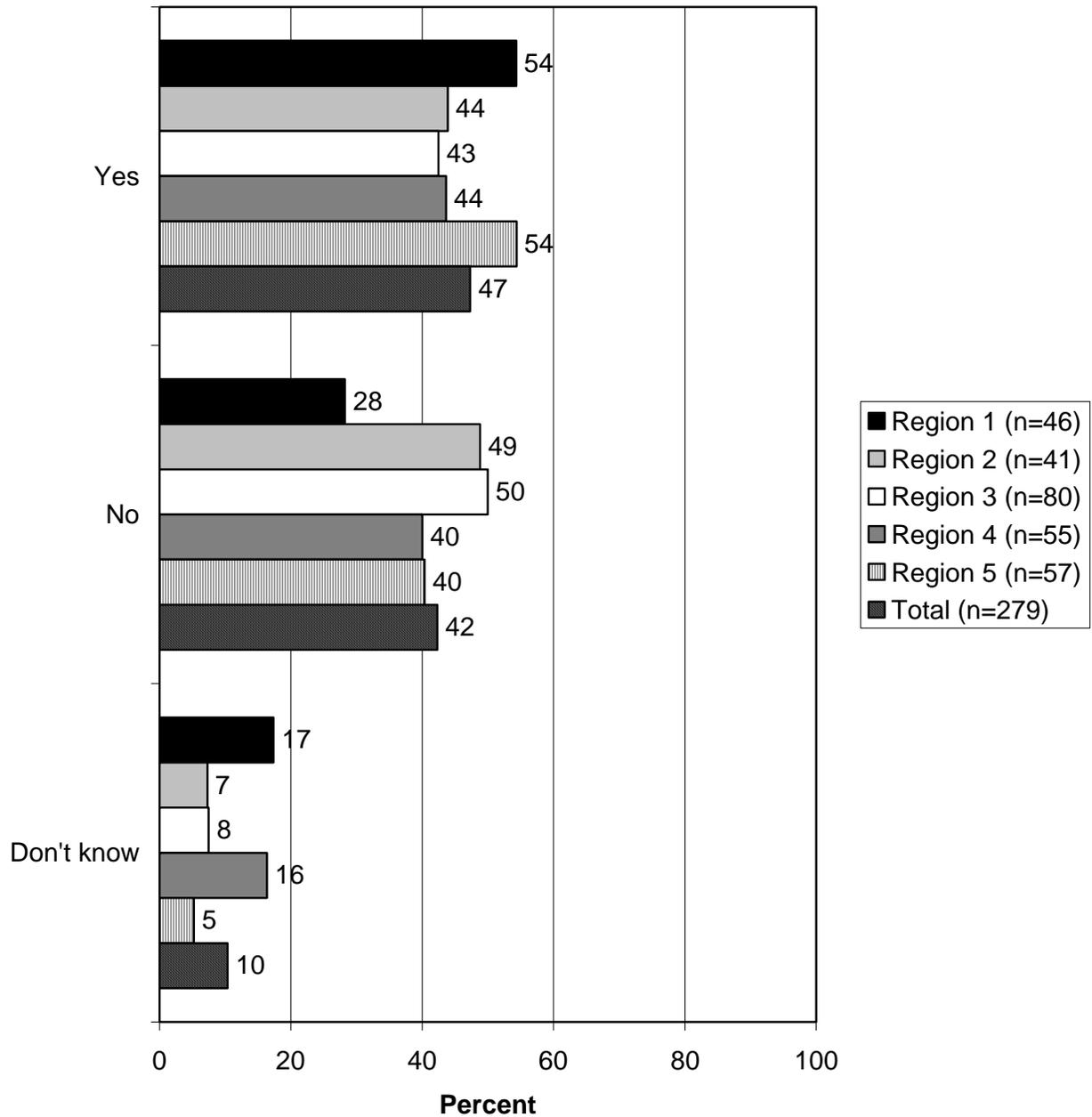
**Q45. How likely would you be to spend \$10,000 on upgrading your septic system if you knew that it could help improve water quality in Delaware? (Each respondent was asked one of four questions regarding the amount he or she would be likely to spend to upgrade the septic system – questions 42, 43, 44, and 45)
Statewide Results**



Q46. How likely would you be to upgrade your septic system if you knew that developers were required to install state-of-the-art septic systems in new developments? (Asked of those who have a septic system.)

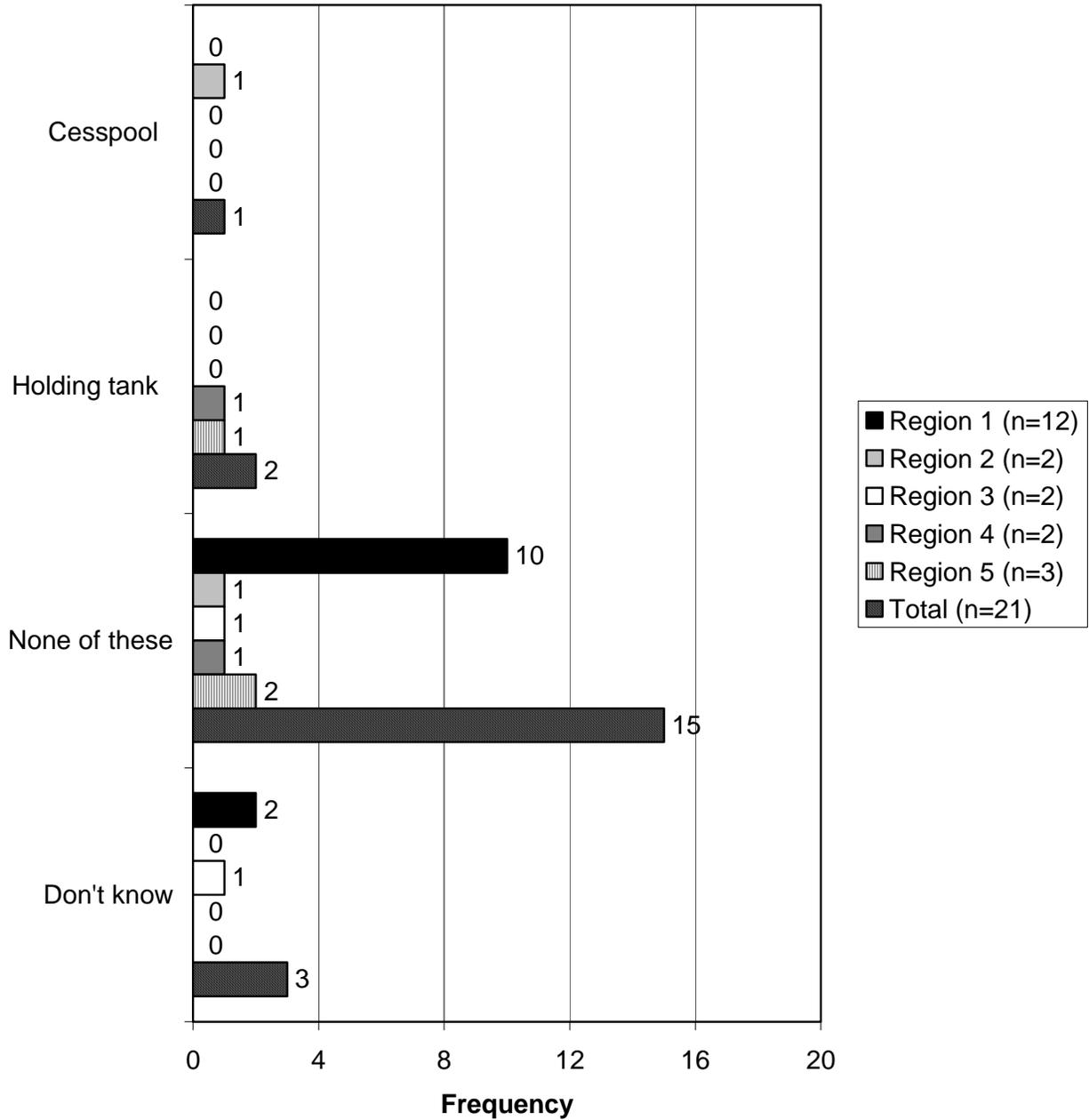


**Q47. Would you prefer to be on a sewer system?
(Asked of those who have a septic system.)**

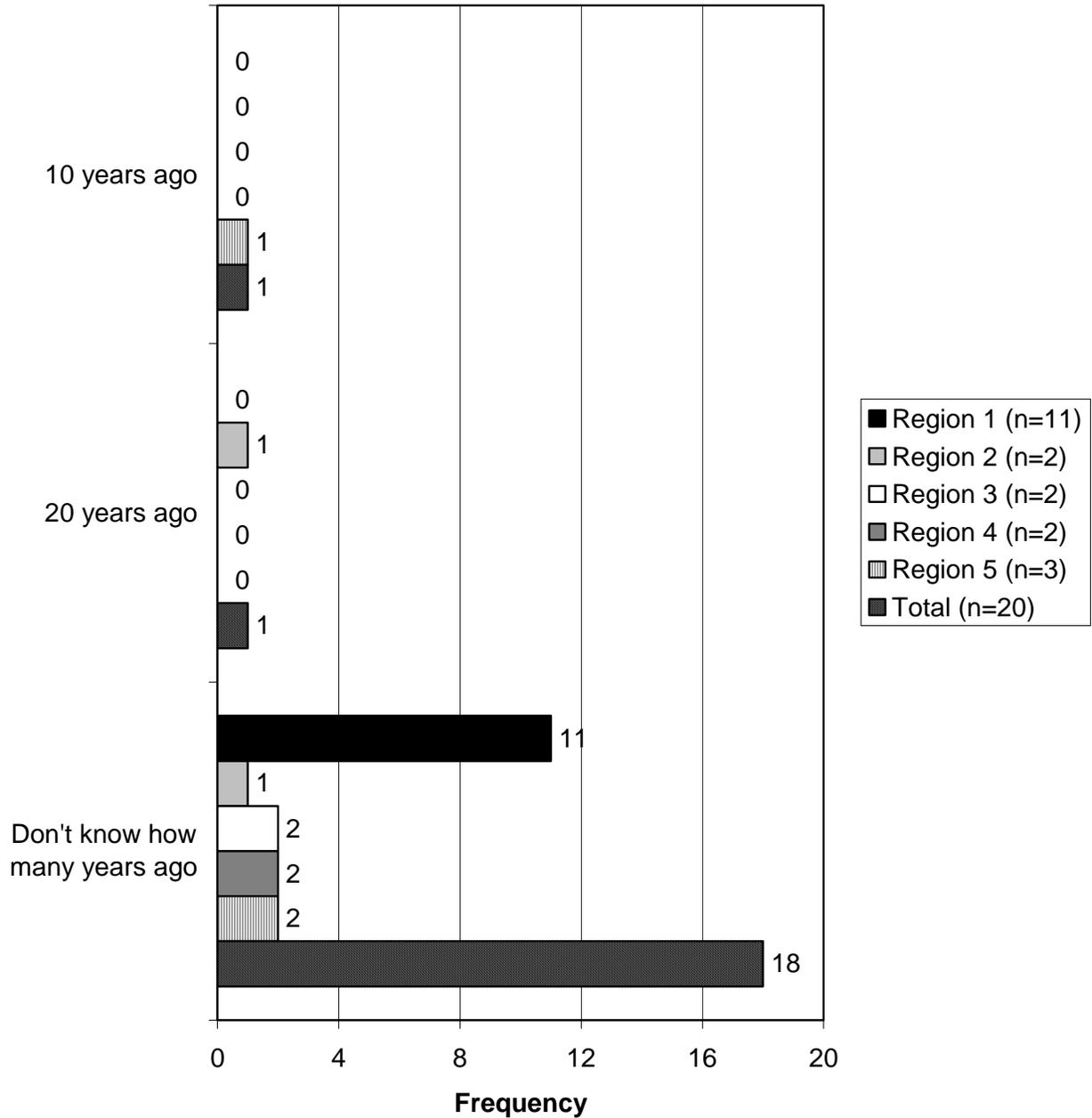


Q28 and 29. Question 28 was asked only of those who answered “other” in Question 27 regarding the type of waste disposal system their residence has. Of the 21 respondents who were asked Question 28, only 3 answered that their residence has a cesspool or holding tank (none has a seepage pit). Of those 3 respondents, only 2 could recall that it had been pumped out, with 1 saying it had been pumped out 10 years previous and the other saying it had been pumped out 20 years previous. Also of those 3 respondents, 2 pumped their cesspool or holding tank to comply with applicable laws, and the other pumped for general maintenance.

Q28. Do you have a cesspool, seepage pit, or a holding tank? (Asked of those who did not have a septic system or sewer system.)



Q29. When was the last time you had your cesspool, seepage pit, or a holding tank pumped? (Asked of those who have a cesspool, seepage pit, or holding tank.)



WATER QUALITY AND LAWN CARE

Q25. Large percentages of the sample have a lawn at their place of residence (85% overall). Regions 1 and 3 had the lowest percentage of those with a lawn (83%); Region 2 had the highest percentage of those with a lawn (93%).

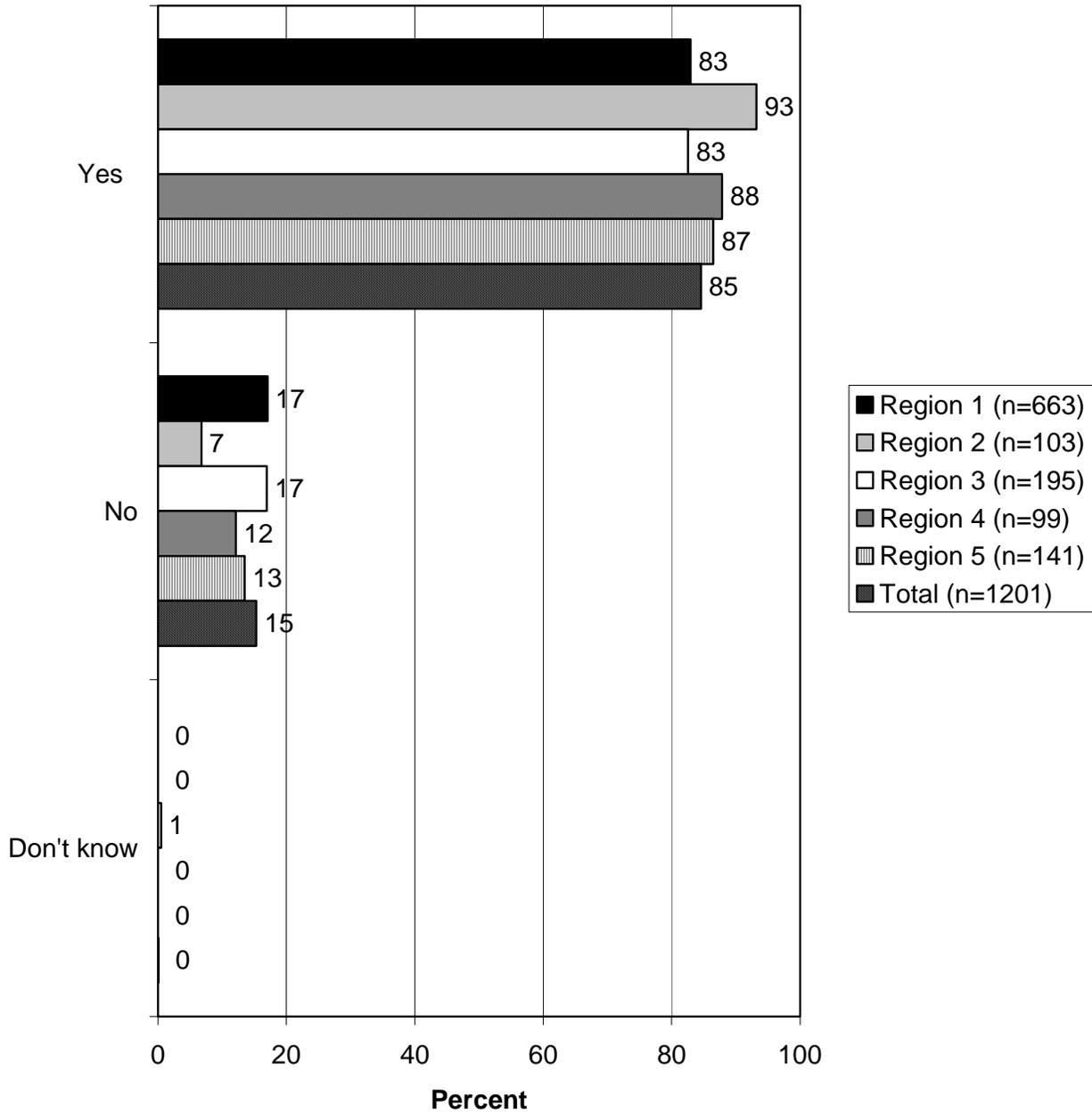
Q59. Those who have a lawn were asked whether lawn care practices are a major or minor environmental concern or not a concern. Nearly a quarter (23% overall) said lawn care practices are a major environmental concern, and a slight majority (52% overall) indicated that they are a minor concern, with little regional variation. Together, 75% overall said lawn care practices are a major or minor concern, and 17% overall said they are not a concern.

Q61. Those who have a lawn were asked about their level of concern about the impacts of home lawn care on water quality, and similar to Question 59, 26% overall are very concerned and 54% overall are somewhat concerned, while 16% overall are not at all concerned. There was little regional variation.

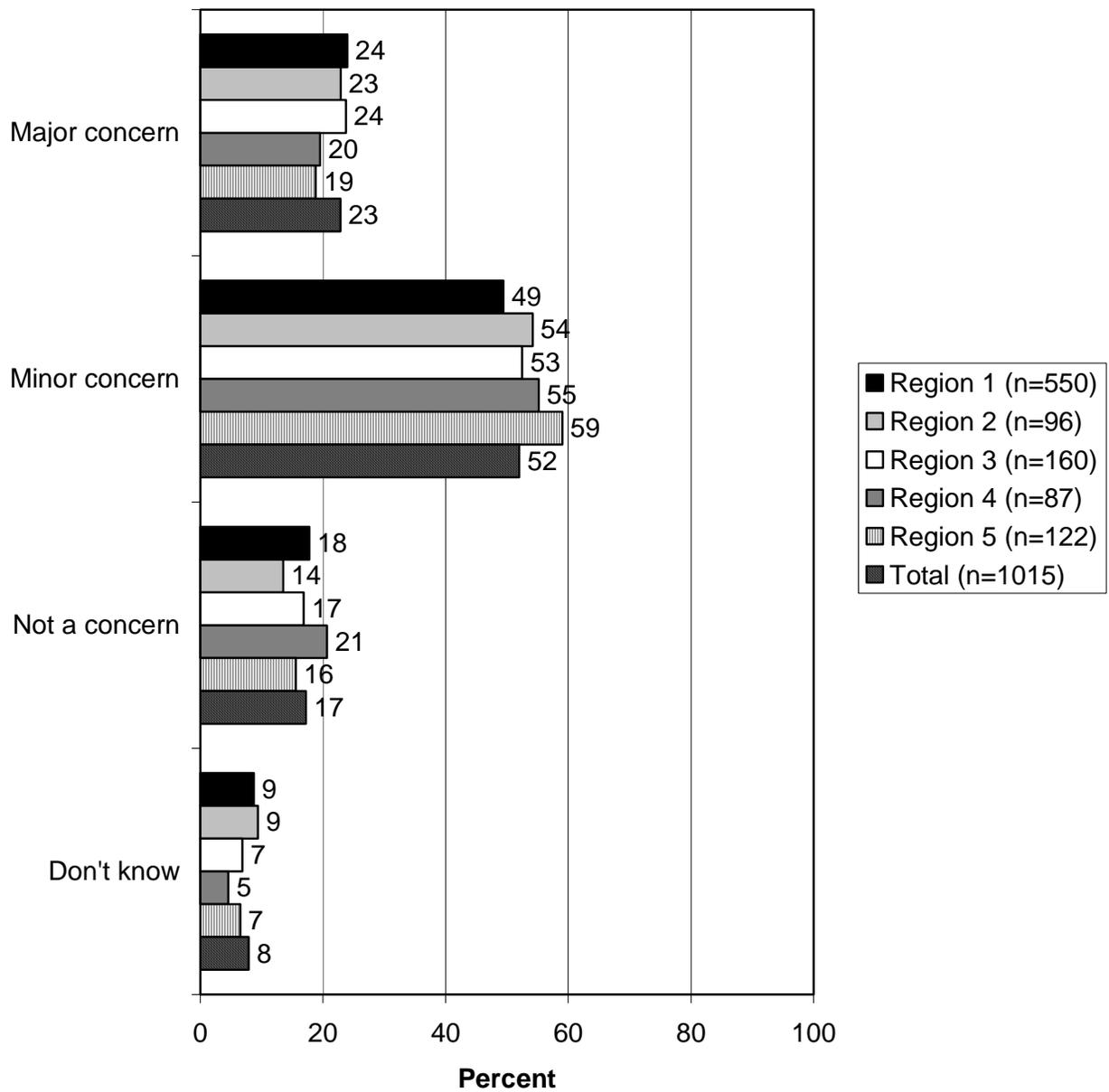
Q60. A strong majority of those who have a lawn (69% overall) were aware before the survey that home lawn care practices can impact water quality in Delaware. The percentages who said they were aware ranged from 65% of Region 2 respondents to 76% of Region 5 respondents.

Q48. Of those who have a lawn and maintain it, a majority (58% overall) said having a green, well-kept lawn is very or somewhat important to them, with Region 3 respondents having the highest percentage saying it is very or somewhat important (64%) and Region 4 having the lowest percentage (52%). Overall, 36% said it is somewhat or very unimportant.

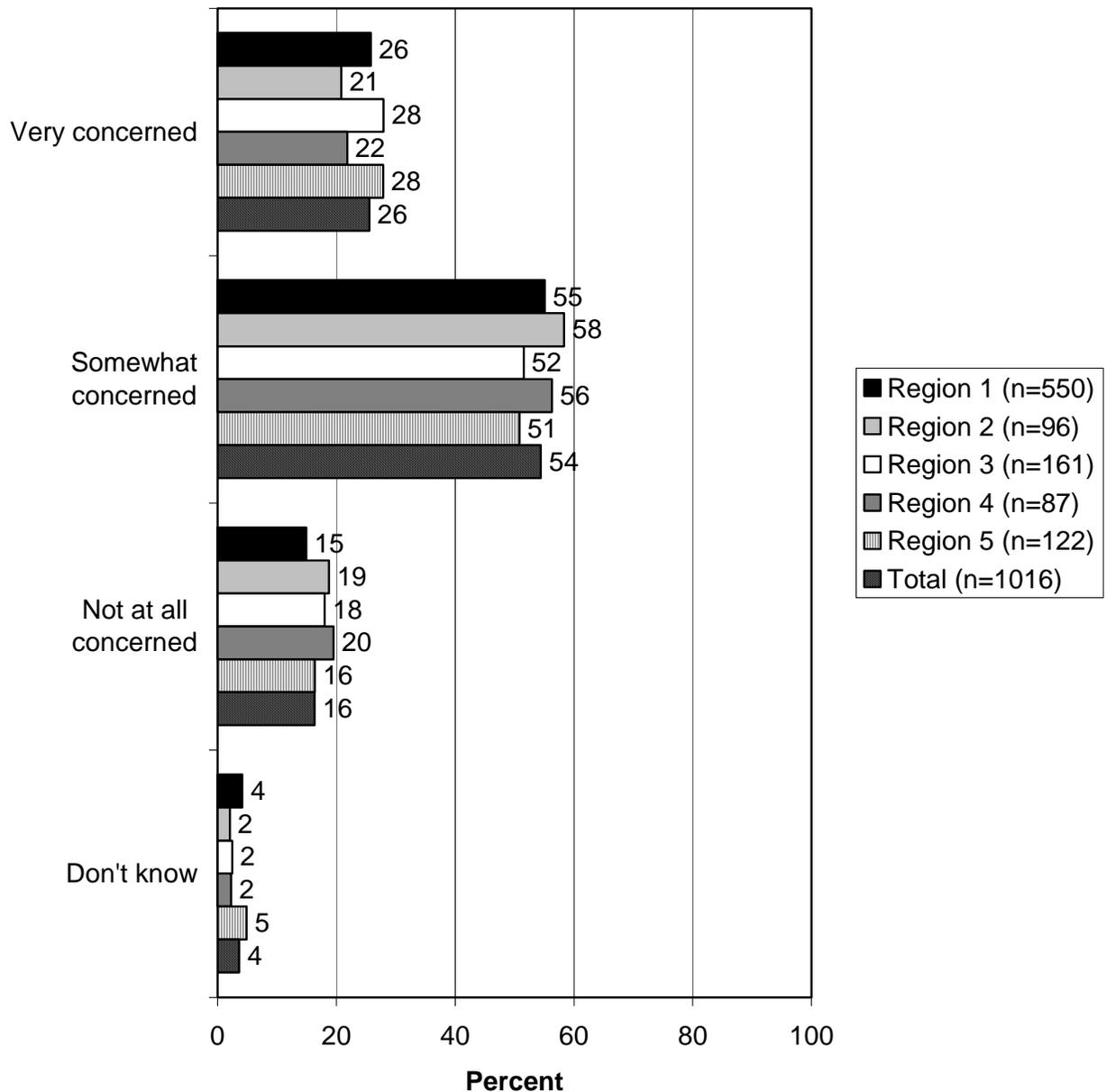
Q25. Do you have your own lawn at your place of residence?



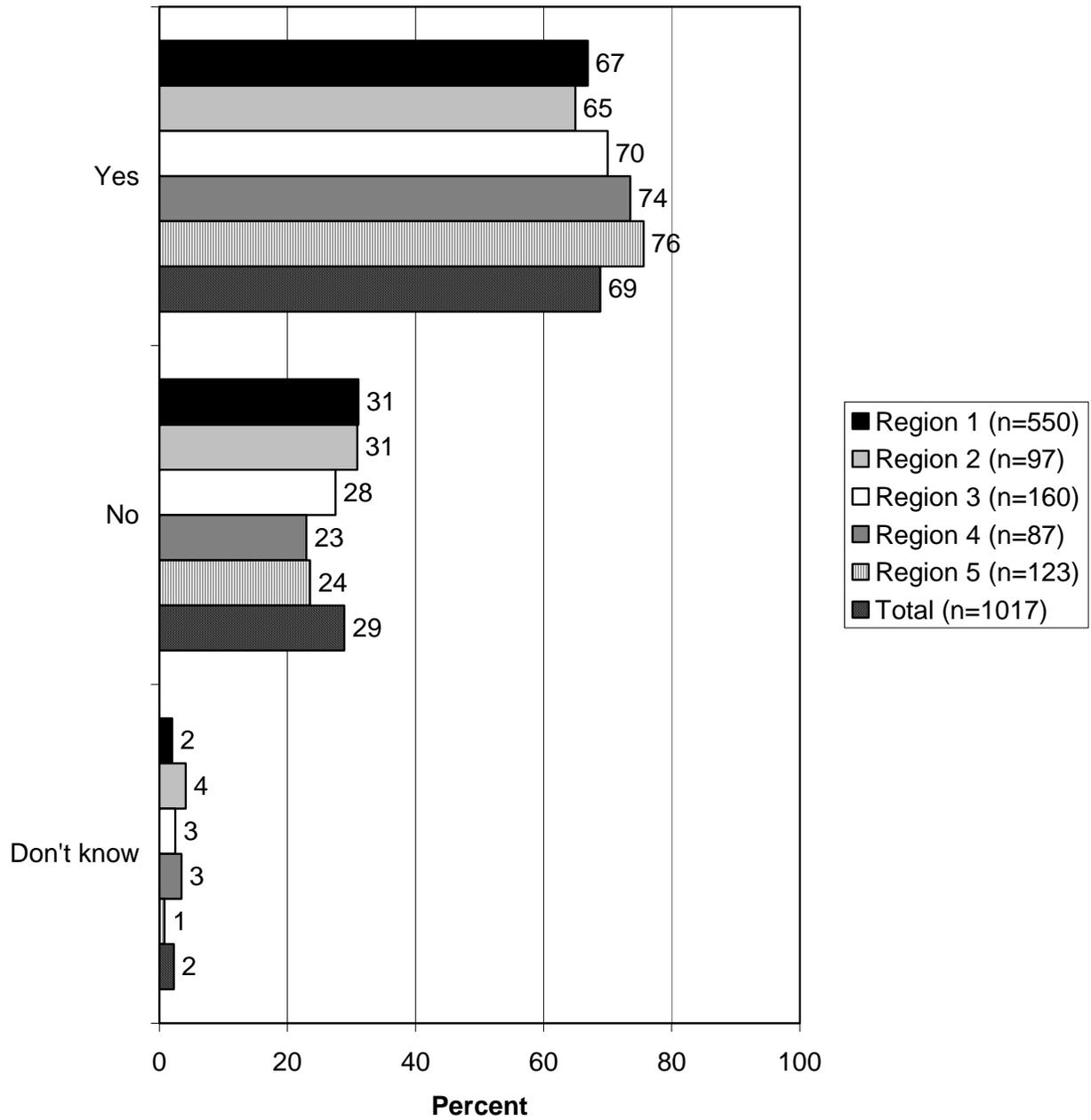
Q59. Would you say that home lawn care practices are a major environmental concern, a minor environmental concern, or not an environmental concern in Delaware? (Asked of those who said that they have a lawn.)



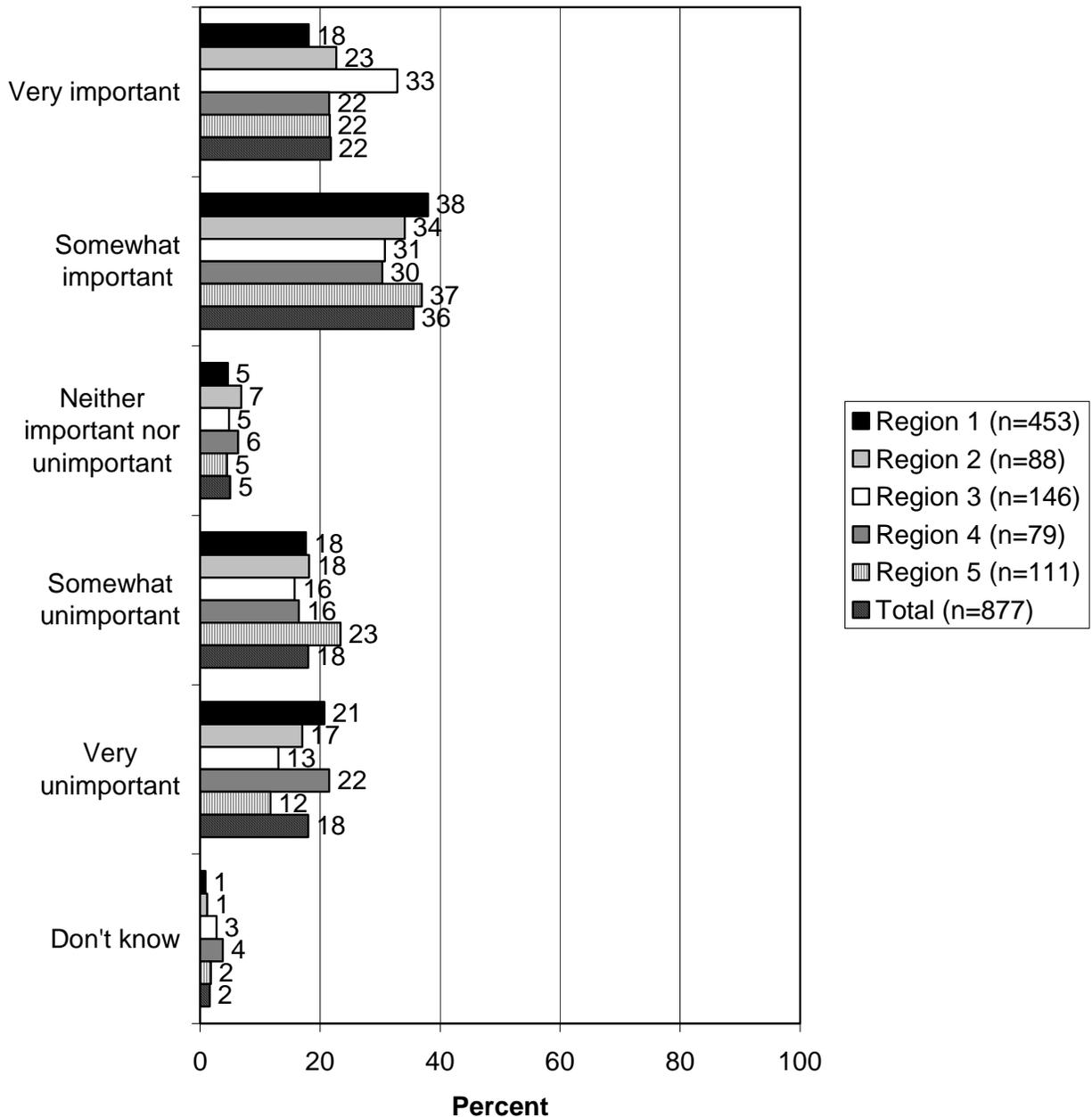
Q61. Would you say that you are very concerned, somewhat concerned, or not at all concerned about the impacts of home lawn care on water quality in Delaware? (Asked of those who said that they have a lawn.)



Q60. Before this survey, were you aware that home lawn care practices can impact water quality in Delaware? (Asked of those who said that they have a lawn.)



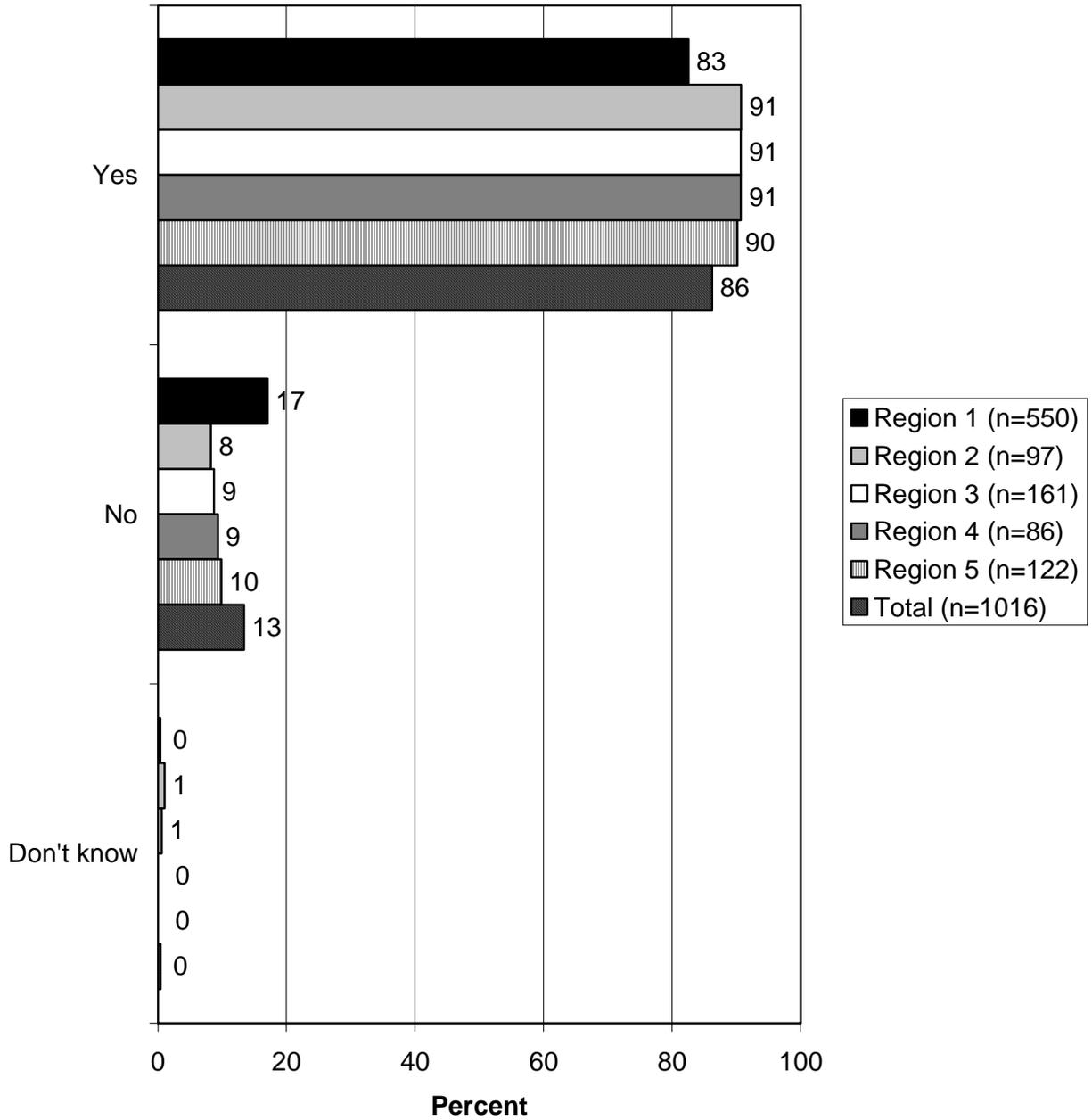
Q48. Would you say it is important or unimportant to you to have a green, well-kept lawn? (Asked of those who said they have a lawn and maintain their lawn.)



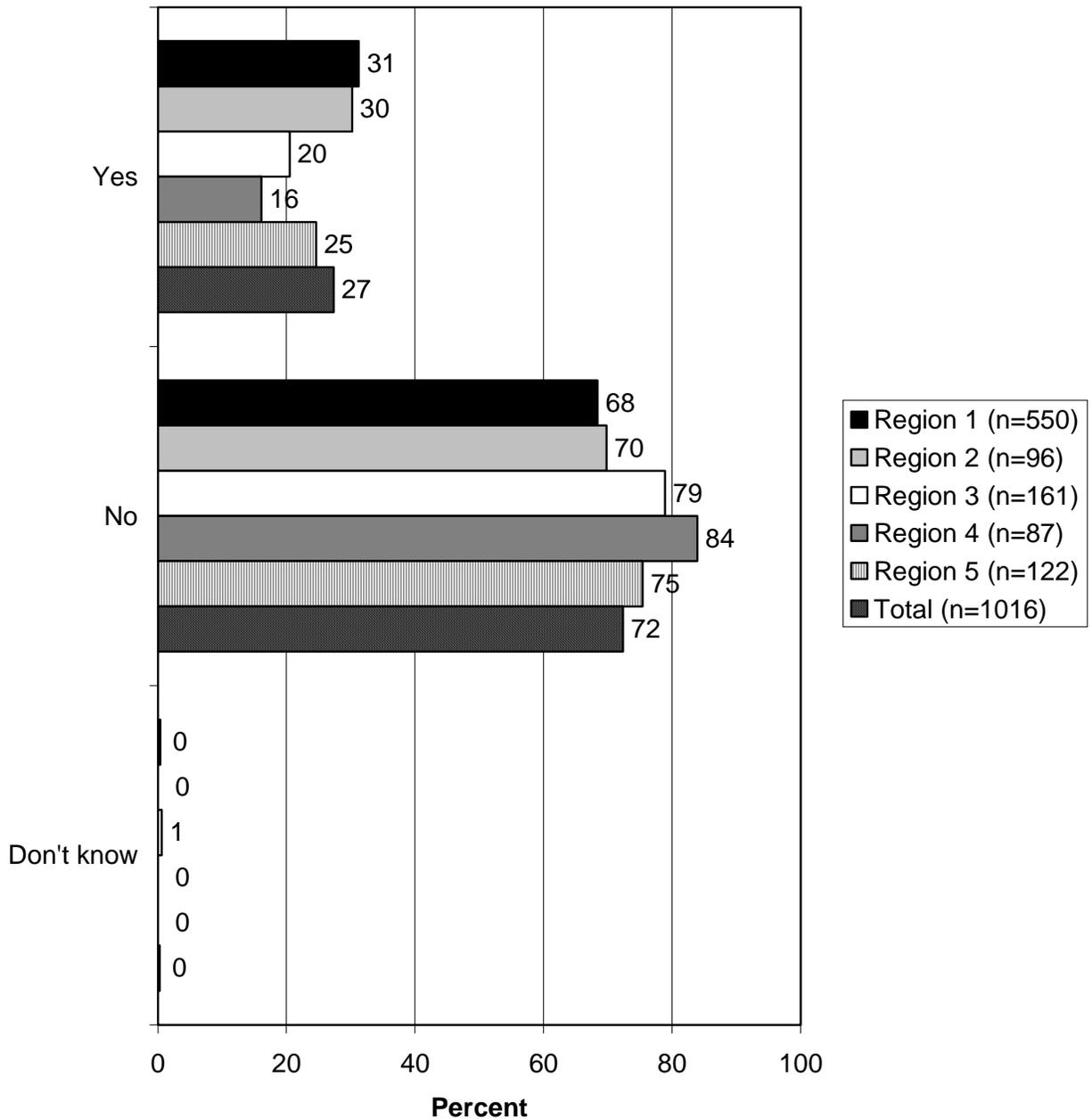
Q26. Of those who indicated that they have a lawn at their place of residence, very large percentages said that they maintain that lawn, ranging from 83% of those in Region 1 to 91% of those in Regions 2, 3, and 4. Overall, 86% maintain the lawn at their place of residence.

Q58. Of those who have a lawn at their residence, 27% overall have hired a professional lawn care company, but most (72% overall) have not. Regions 1 and 2 had the highest percentages having hired a lawn care company (31% and 30%, respectively); Region 4 had the lowest percentage having hired a lawn care company (16%).

Q26. Do you maintain the lawn at your place of residence? (Asked of those who said they had a lawn at their place of residence.)



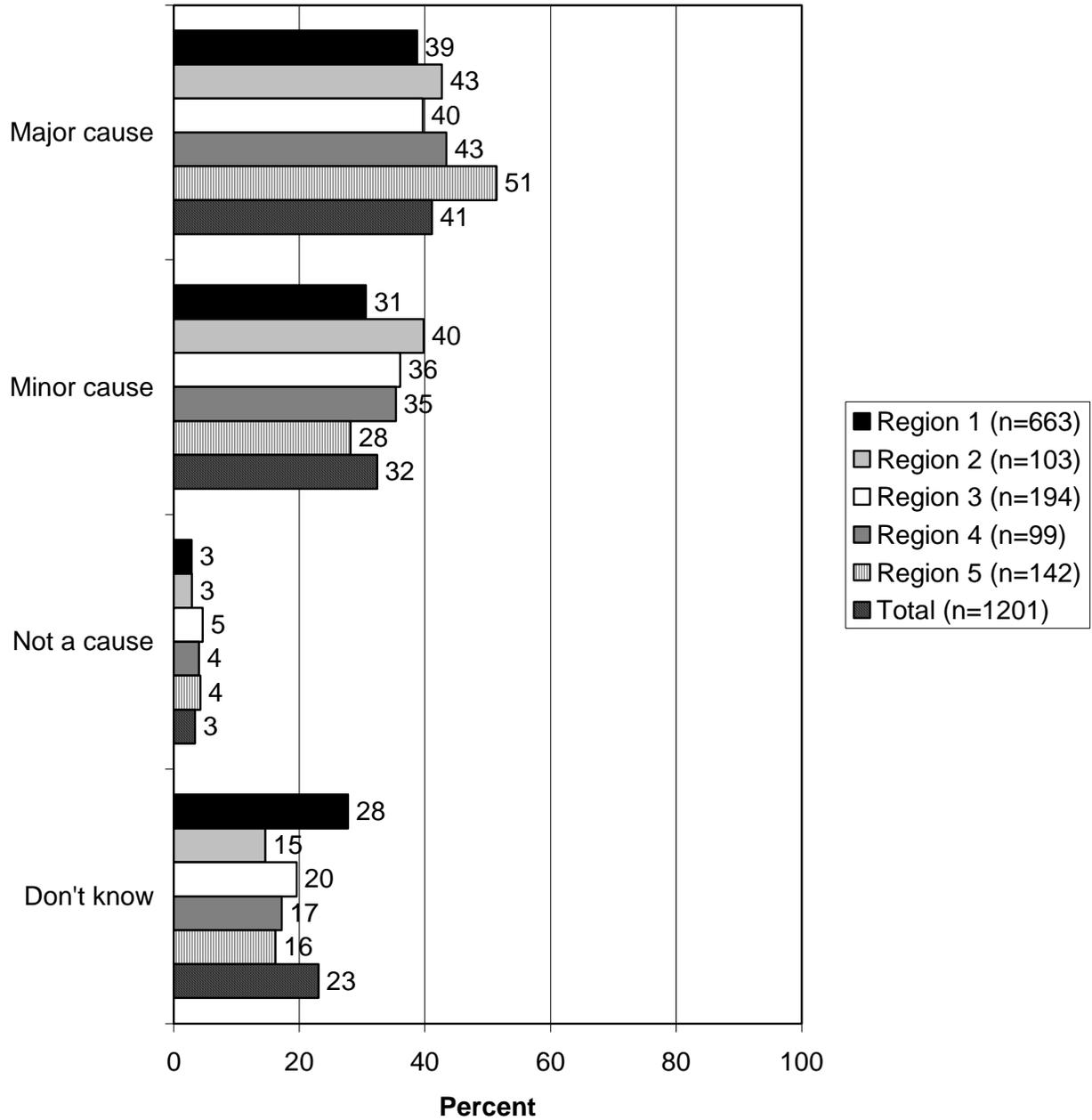
Q58. Have you ever hired a professional lawn care company? (Asked of those who said that they have a lawn.)



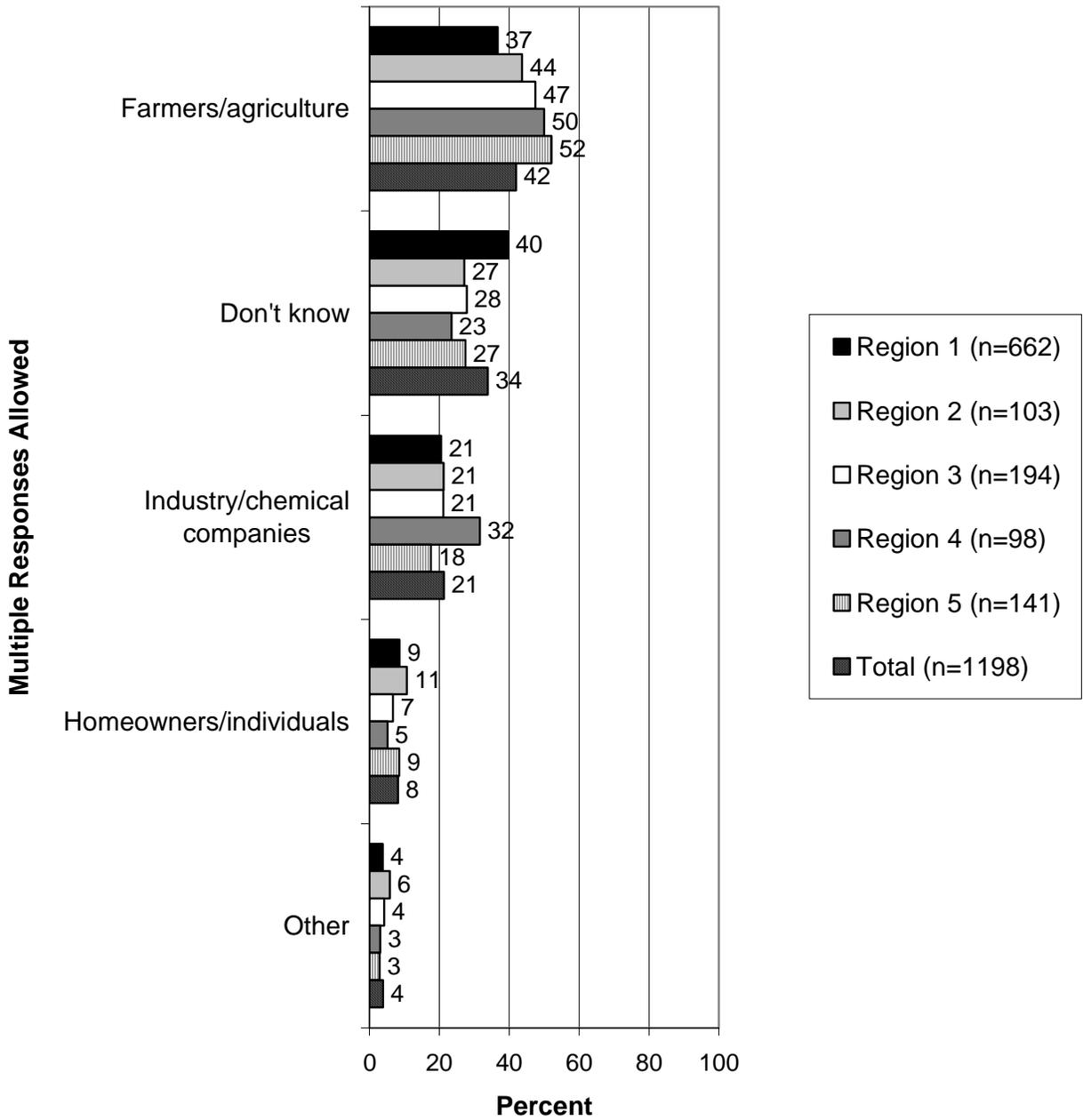
Q20. Although a majority of each region recognized nutrient runoff as a cause of water pollution in Delaware, they were split between whether it is a major or minor cause of water pollution. There was a slightly higher percentage of those who said it is a major cause (41% overall) than said it is a minor cause (32% overall). A very low percentage said that nutrient runoff is not a cause of water pollution (3% overall), and a substantial percentage did not know (23% overall).

Q22. The most common answer given by respondents when asked who contributes the most to nutrient runoff pollution was farmers/agriculture (42% overall), with the results among regions ranging from 37% of Region 1 respondents to 52% of Region 5 respondents. Homeowners/individuals were named as one of the largest contributors to nutrient runoff by 8% of respondents overall, with little regional variation in this answer.

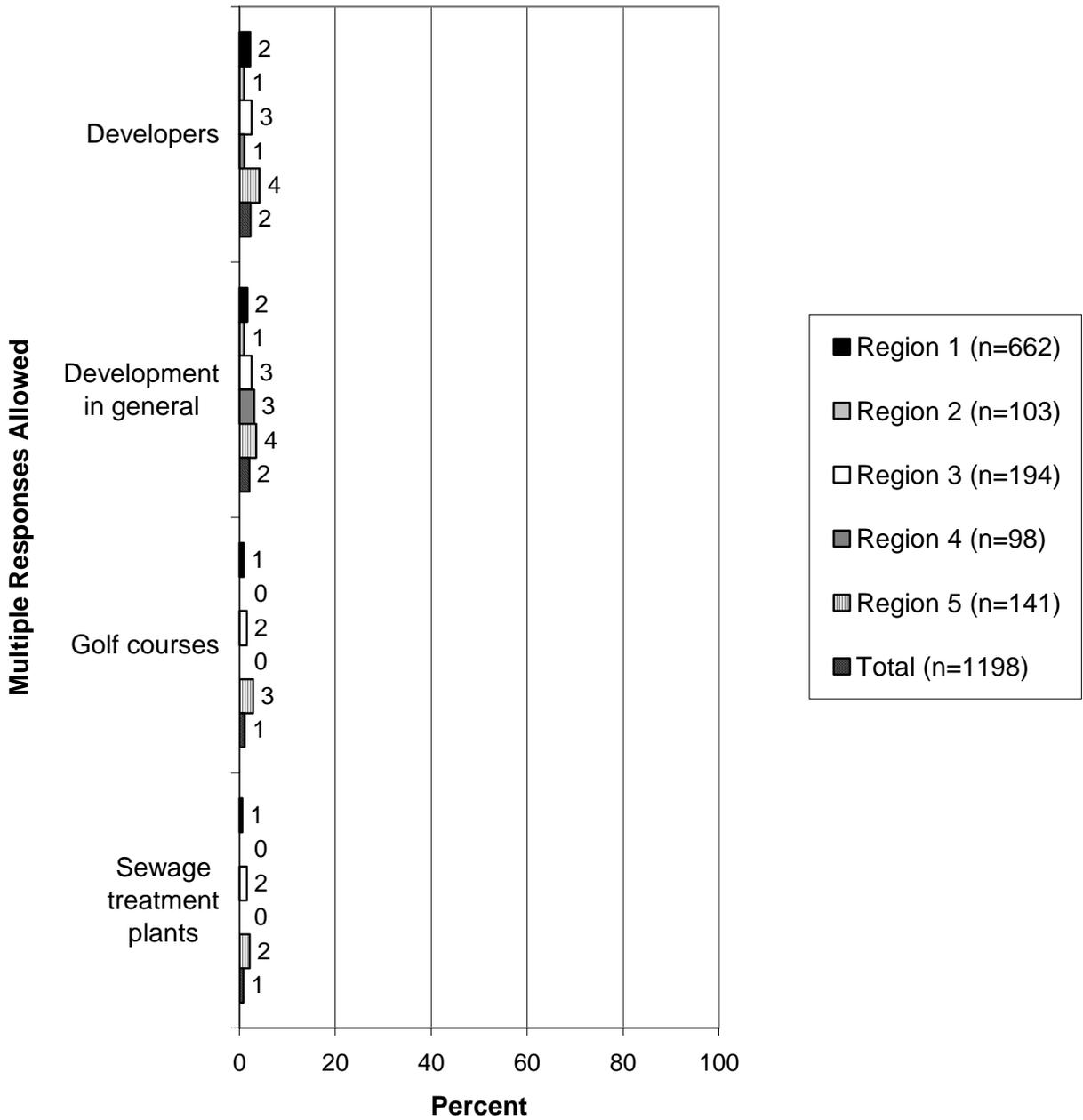
Q20. Would you say that nutrient runoff (nitrogen and phosphorous) is a major cause, a minor cause, or not a cause of water pollution in Delaware?



**Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware?
Part 1**



**Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware?
Part 2**

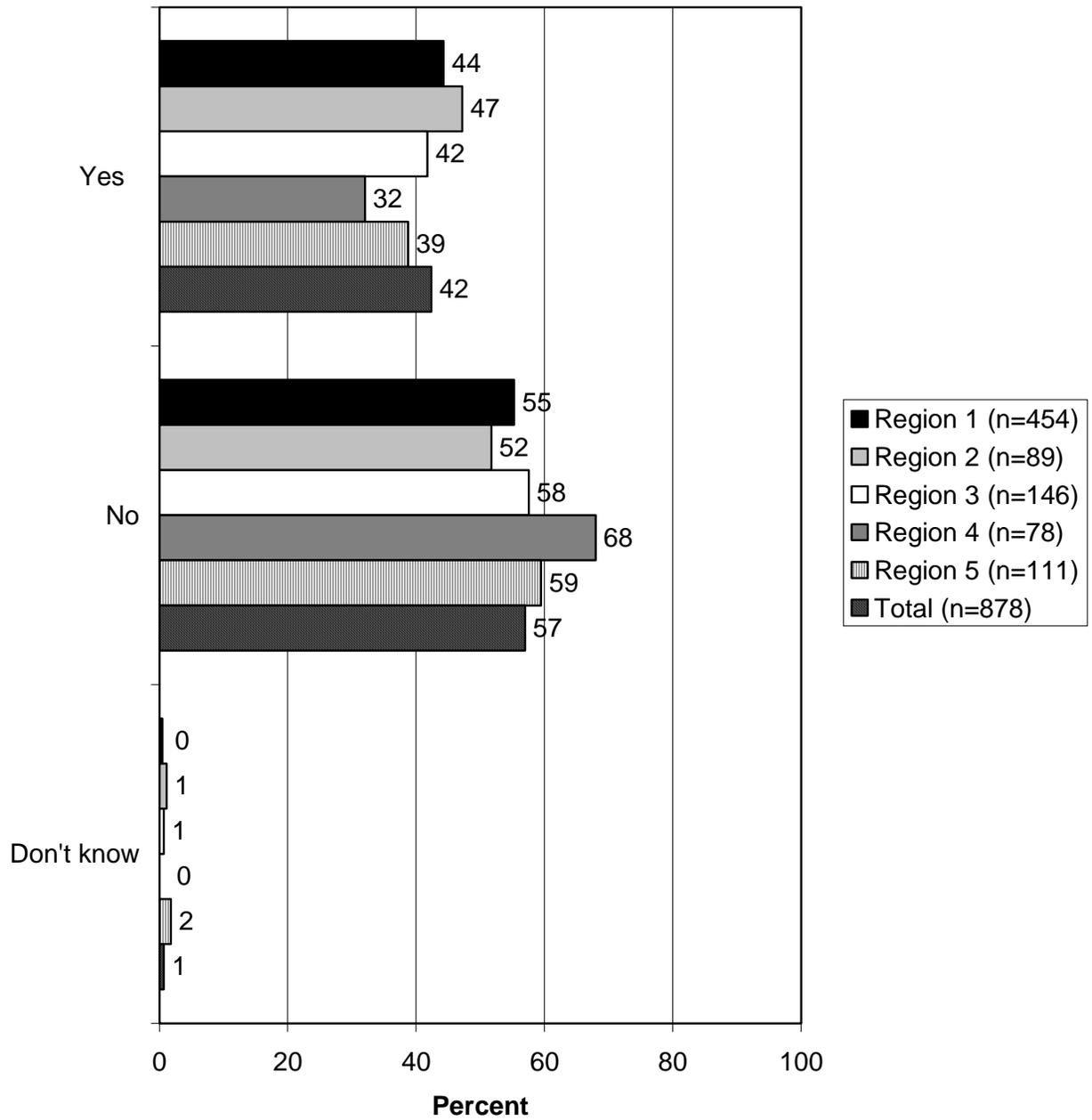


Q49. Of those who have a lawn and maintain it, less than a majority (42% overall) apply fertilizer to their lawn. There was some regional variation, with Region 2 respondents the most likely to apply fertilizer (47% applied fertilizer) and Region 4 respondents the least likely to do so (32% applied fertilizer).

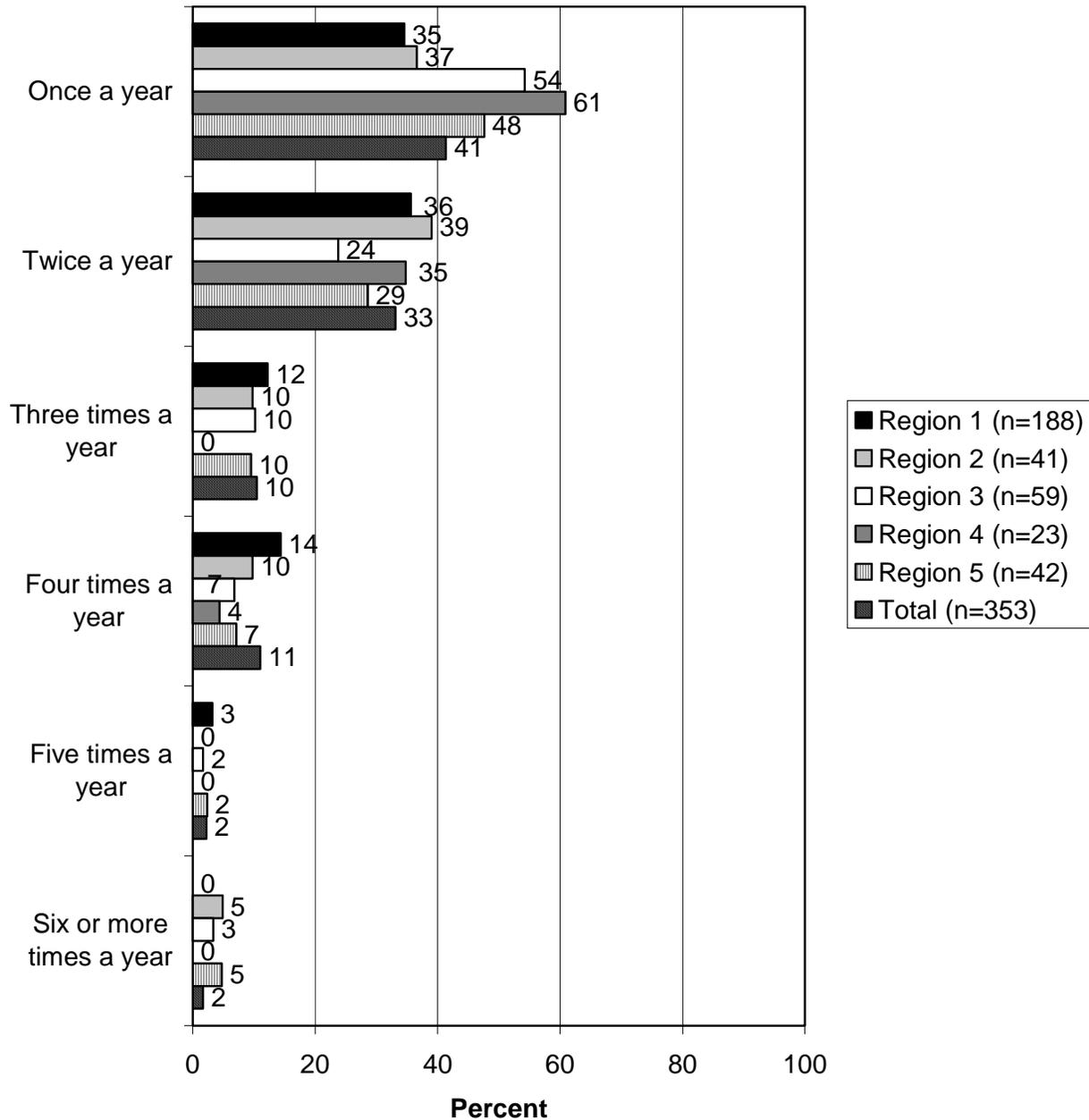
Q50. Of those who have a lawn and apply fertilizer to it, 74% apply it one or two times a year, roughly split between those who apply it once a year (41%) and those who apply it twice a year (33%). There was some regional variation, with those from Region 4 having the highest percentage applying fertilizer one or two times a year (96%) and those from Region 1 having the lowest percentage applying fertilizer one or two times a year (71%).

Q52. Of those who have a lawn and apply fertilizer to it, the vast majority (83% overall) said they apply fertilizer in the spring, and a slight majority (56% overall) said they apply it in the fall. Region 4 showed the greatest variation from the other regions, with the lowest percentage (68%) who said they apply fertilizer in the spring and the lowest percentage (8%) who said they apply it in the summer. The other regions ranged from 79% (Region 3) to 86% (Region 1) who apply it in the spring, and 16% (Region 3) to 29% (Region 2) who said they apply fertilizer in the summer.

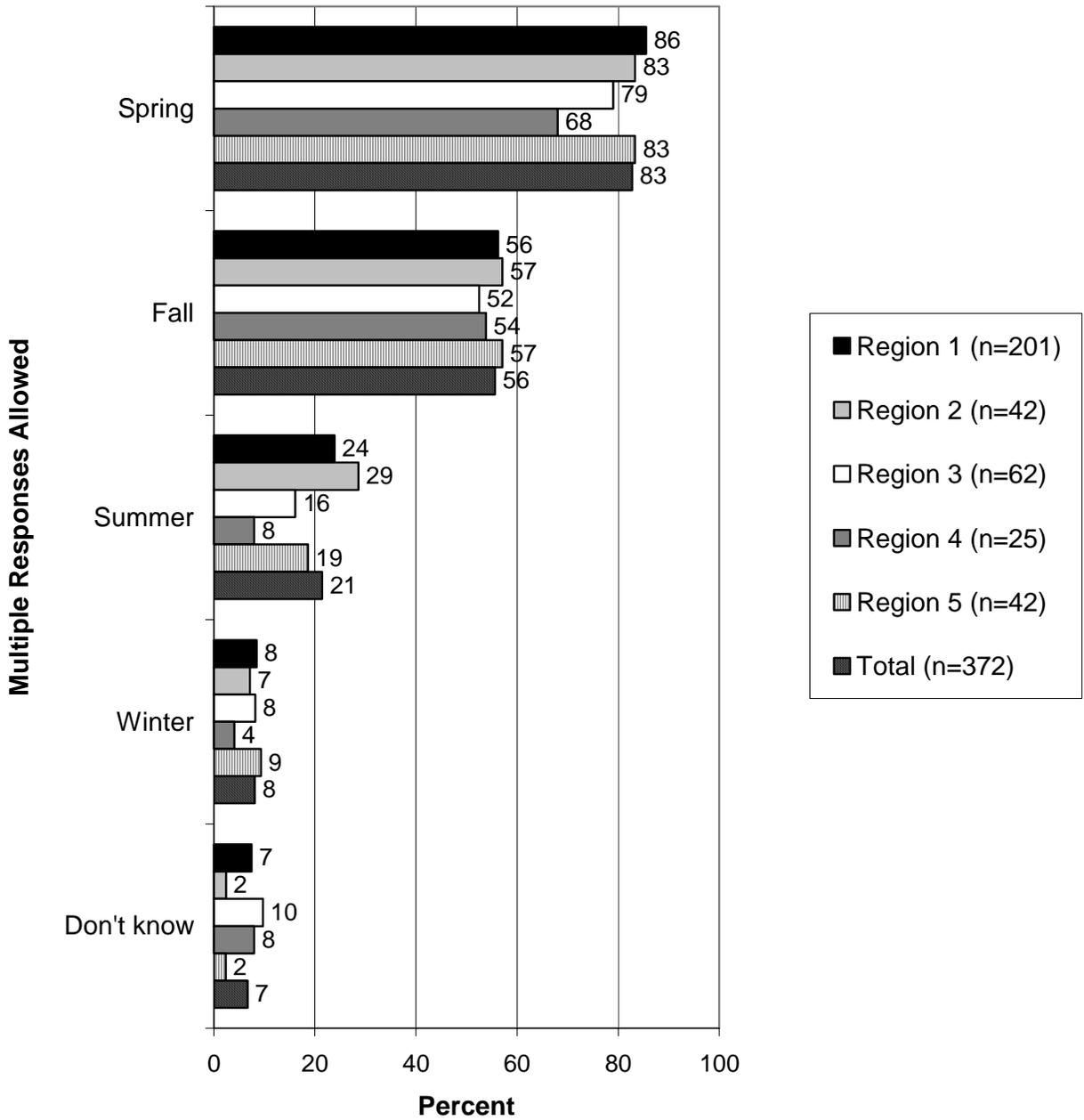
Q49. Do you apply fertilizer to your lawn? (Asked of those who said they have a lawn and maintain their lawn.)



Q50. How many times per year do you apply fertilizer to your lawn? (Asked of those who said they apply fertilizer to their lawn.)



Q52. In what seasons do you apply fertilizer to your lawn? (Asked of those who said they apply fertilizer to their lawn.)

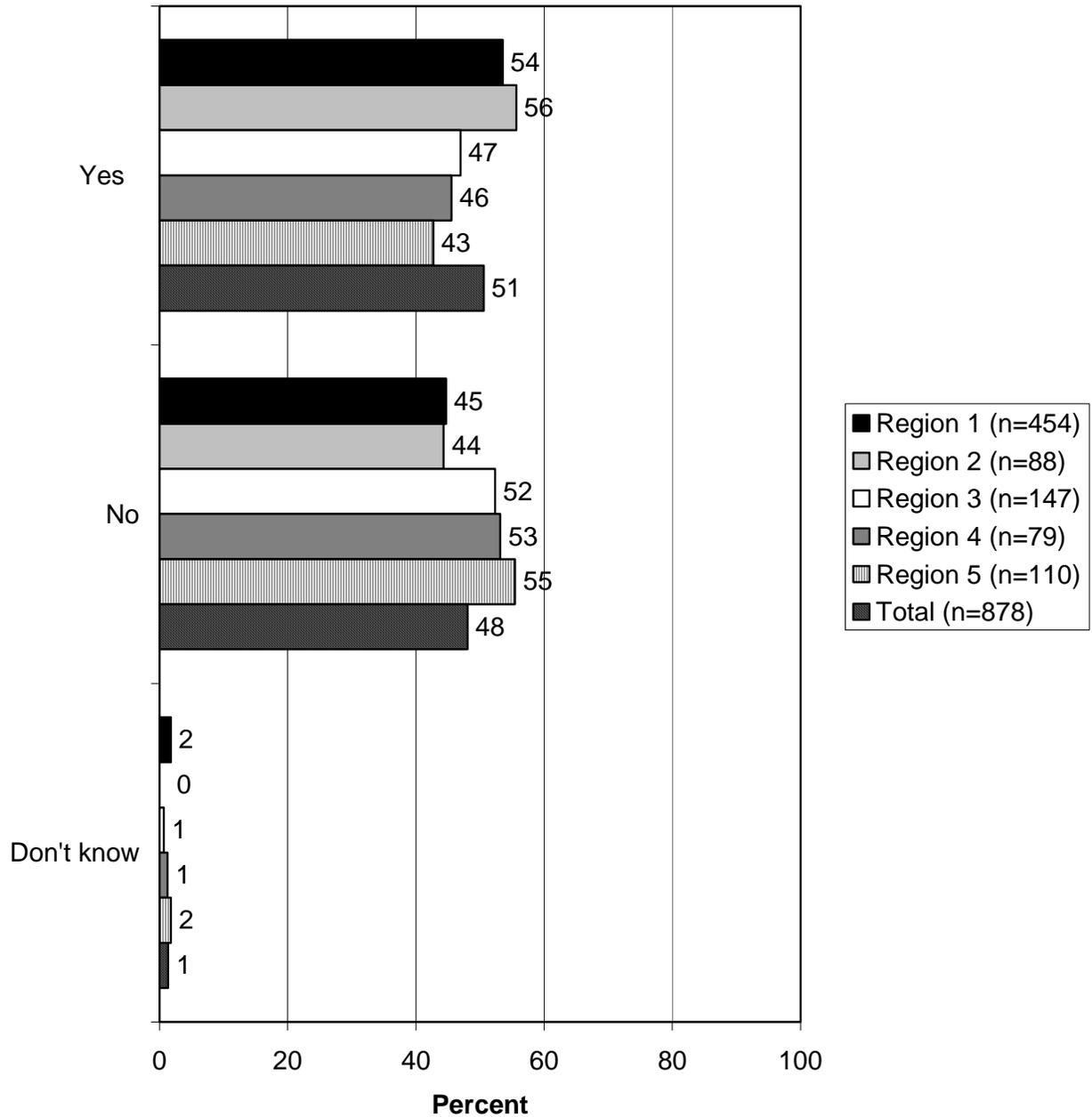


Q53. Of those who have a lawn and maintain it, just over half (51%) have obtained advice or information on how to take care of their lawn. Region 2 respondents were the most likely to have obtained advice or information (56% had done so); Region 5 respondents were the least likely to have obtained advice or information (43% had done so).

Q55. The most popular source of information or advice on lawn care (of those who have obtained information or advice) is lawn care companies (47% overall obtained information or advice from this source). Retail stores are also an important source of information or advice (12% overall) There was not great regional variation in the results to this question.

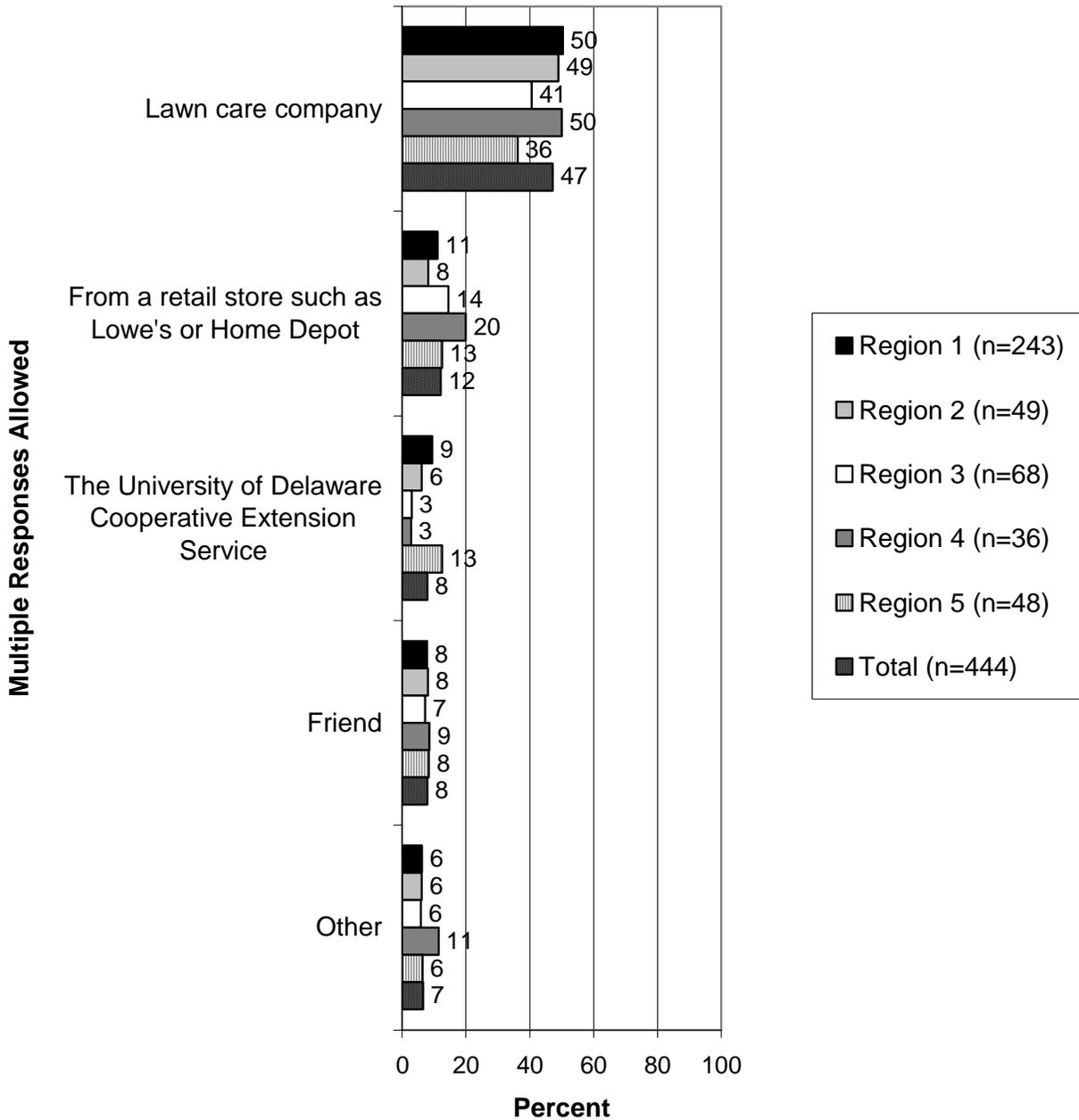
Q57. Of those who have a lawn and have obtained advice or information on lawn care, 40% overall changed the way they care for their lawn, but most (58% overall) did not change the way they care for their lawn, based on the advice or information. There was some regional variation, with Region 5 respondents the most likely to have changed their lawn care practices based on the advice or information (51% changed their practices) and Region 4 respondents the least likely to have changed their lawn care practices (29% changed their practices).

Q53. Have you ever gotten advice or information on how to take care of your lawn? (Asked of those who said they have a lawn and maintain their lawn.)



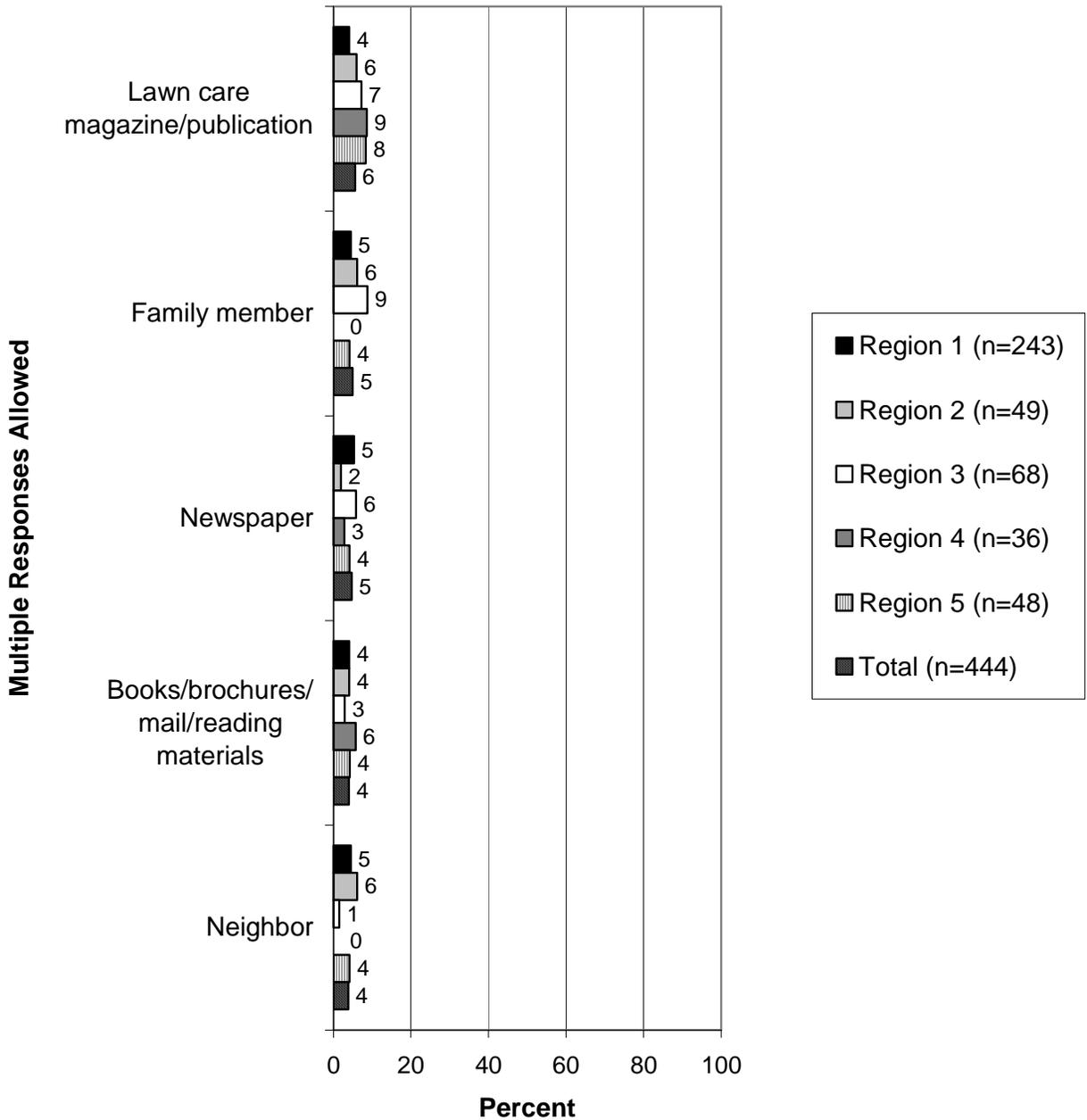
Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.)

Part 1



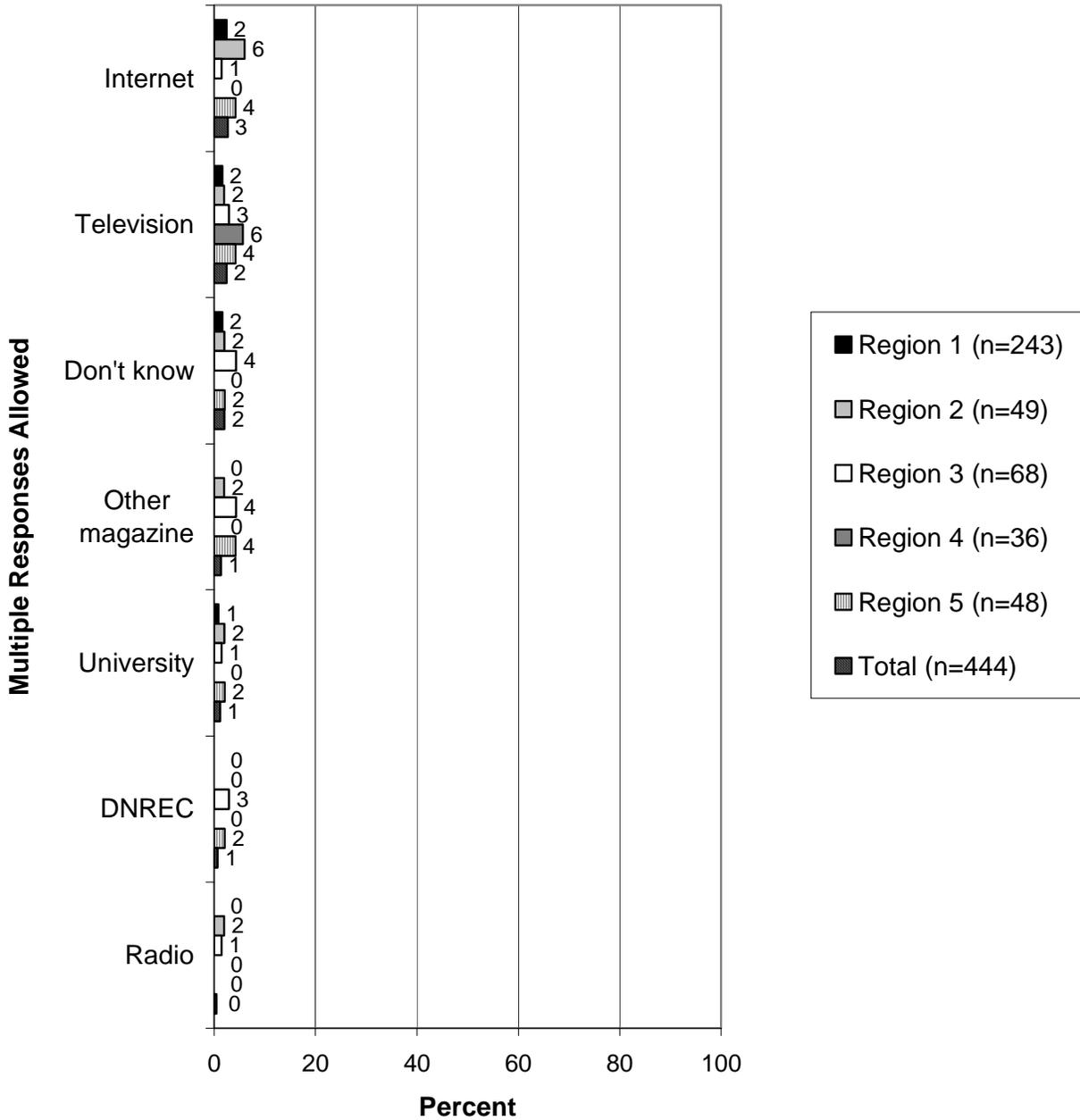
Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.)

Part 2

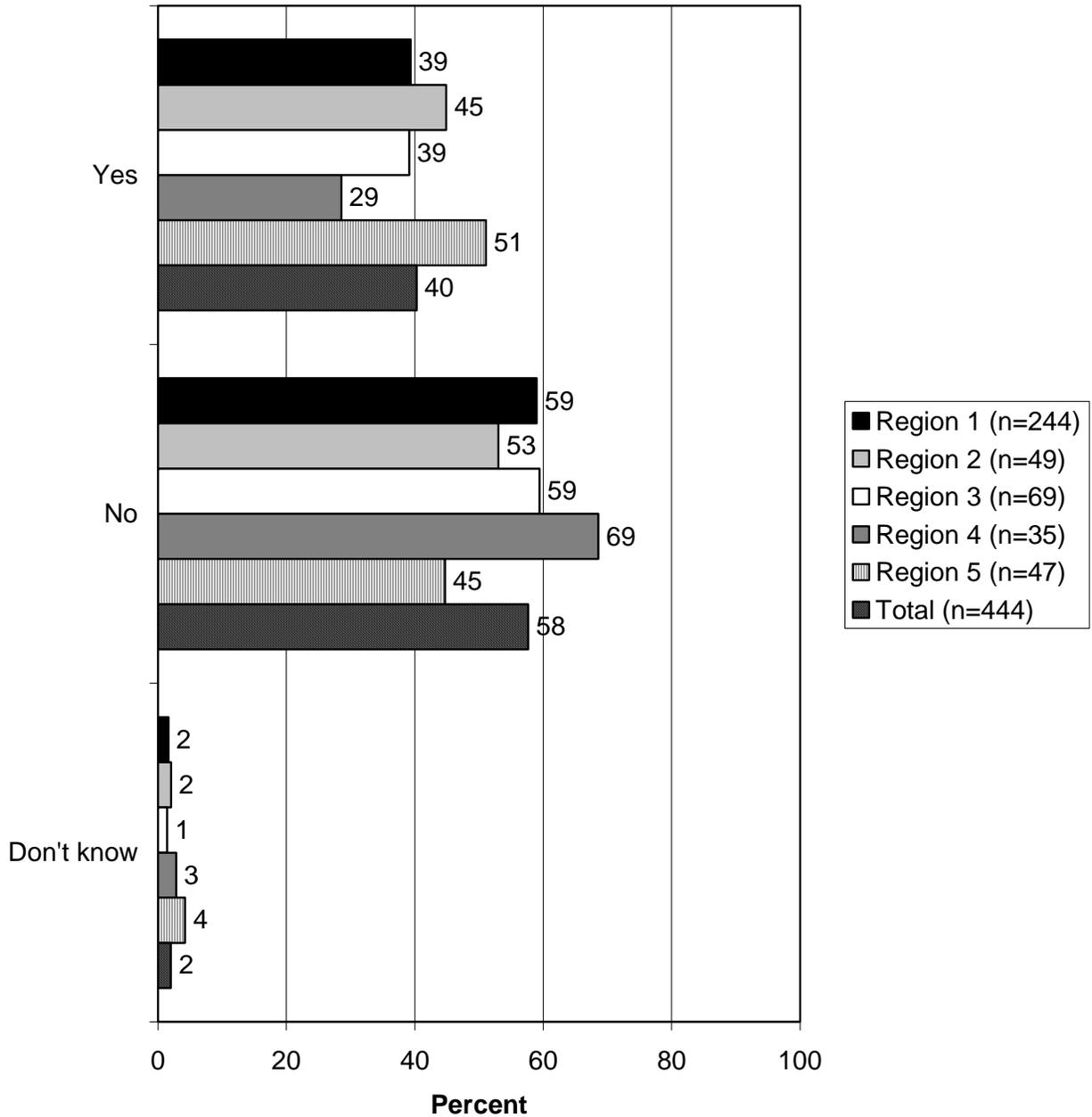


Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.)

Part 3



Q57. Did the information or advice cause you to change the way you care for your lawn? (Asked of those who have gotten advice on how to take care of their lawn.)



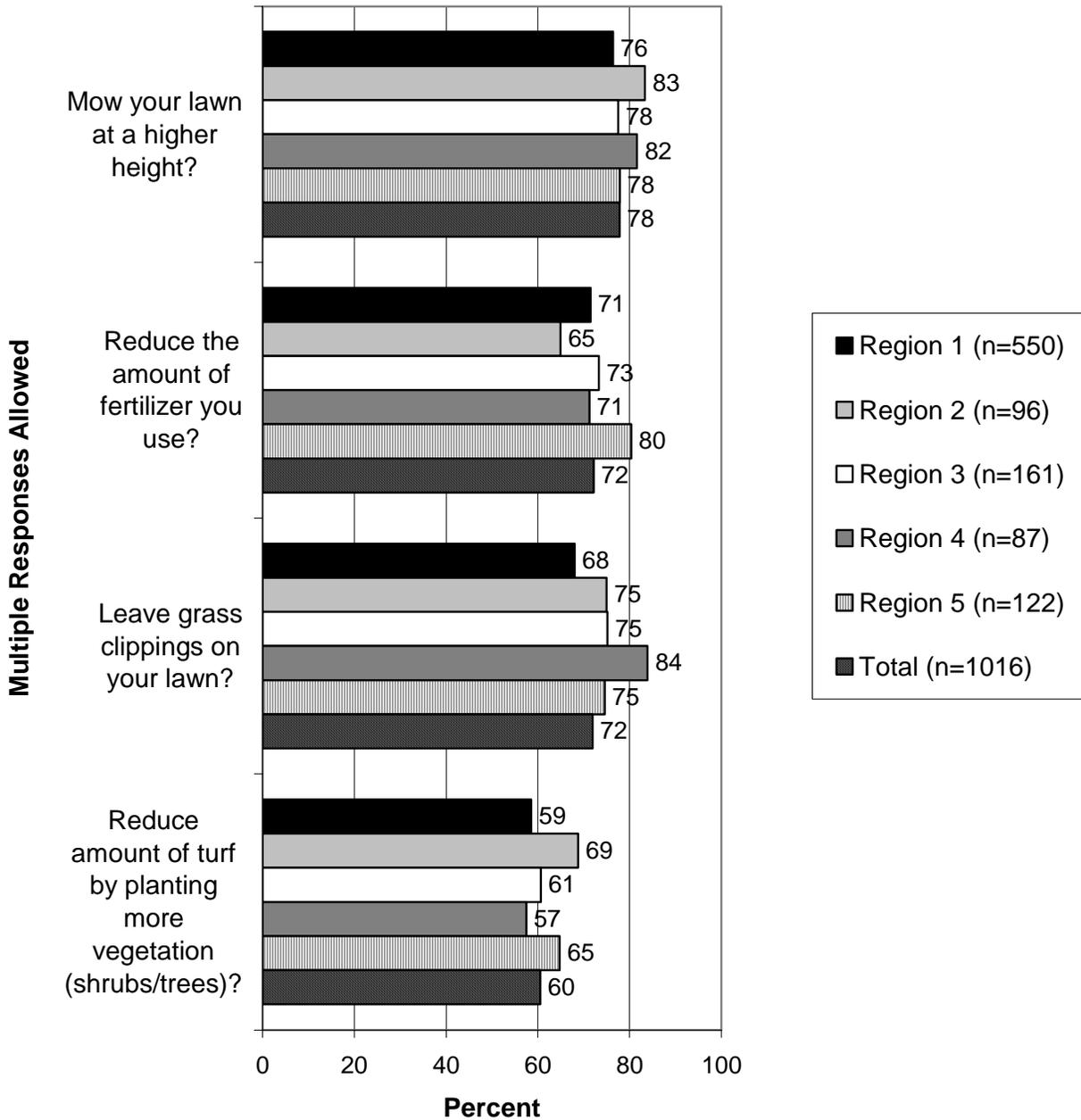
Q63. Regarding several lawn care practices that help to mitigate adverse impacts to water quality, strong majorities practice four of the seven that were listed in the survey: mow the lawn at a higher height (78% overall did this), reduce the amount of fertilizer they use (72% overall), leave grass clippings on the lawn (72% overall), and reduce the amount of turf by planting shrubs and trees (60% overall). The other three practices were not as popular: 50% overall plant native species that require less water and fertilizer, 31% overall use organic lawn care products, and 13% test soil for nitrates/phosphorous on a regular basis. There was little regional variation.

Q65. Of those who do not do any of the lawn care practices listed in Question 63, 14% said they do not do any of the practices because they do not think their current behavior is wrong, 9% said they are not concerned, and 7% said they are not aware that their behavior is a problem.

Q67. Finally, regarding lawn care, a majority (56% overall) were not willing to spend more on a smaller lot if they knew that their neighborhood would have a large area of open space. Nonetheless, a third (33% overall) were willing to spend more on a lot knowing that the neighborhood would have a large area of open space. There was some regional variation, with Region 1 respondents the most likely to say they are willing to spend more on a smaller lot knowing there would be open space in the neighborhood (37%) and Region 3 respondents the least likely to say they are willing to spend more money on a smaller lot knowing that there would be an open area in the neighborhood (24%).

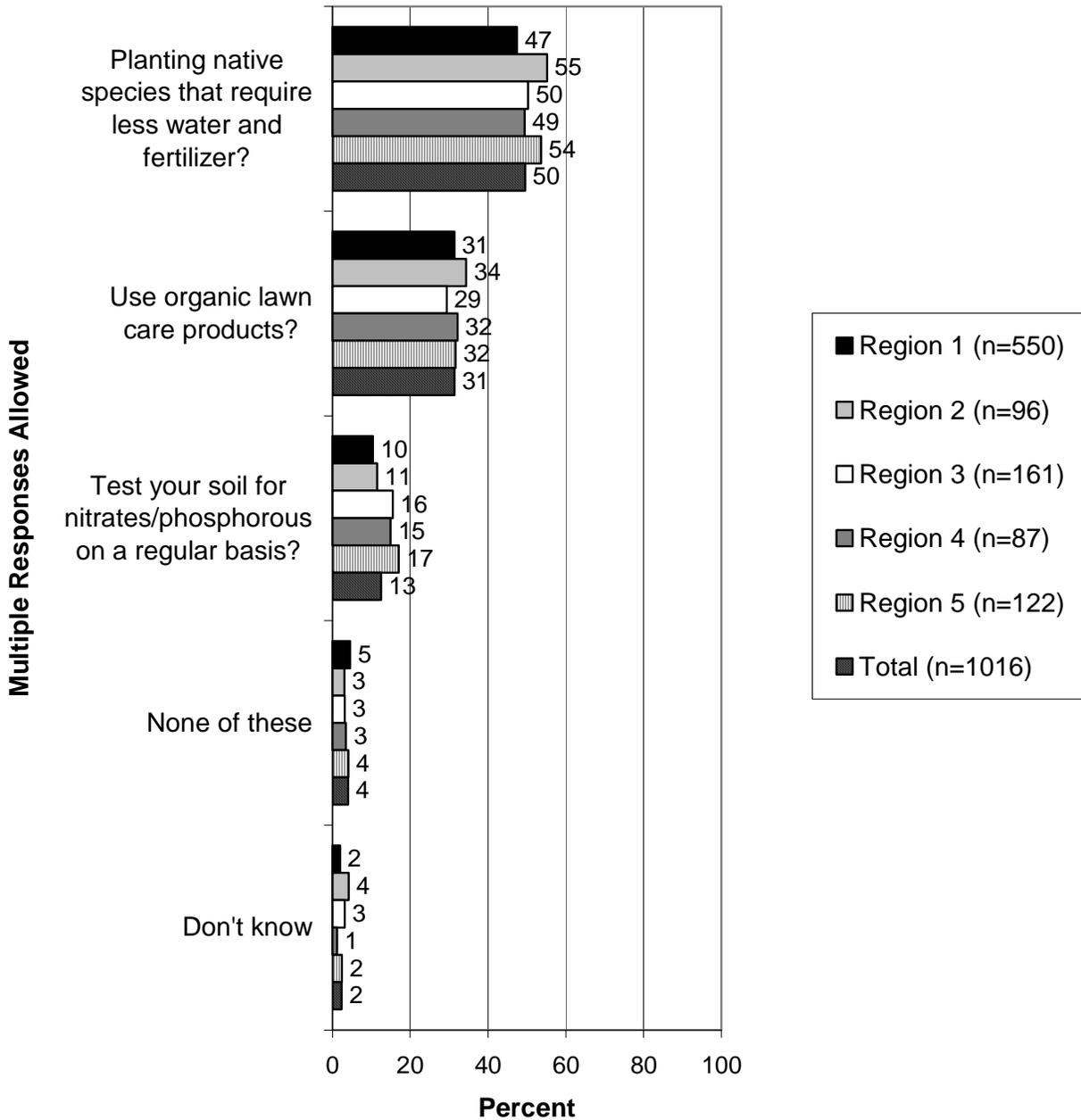
Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.)

Part 1



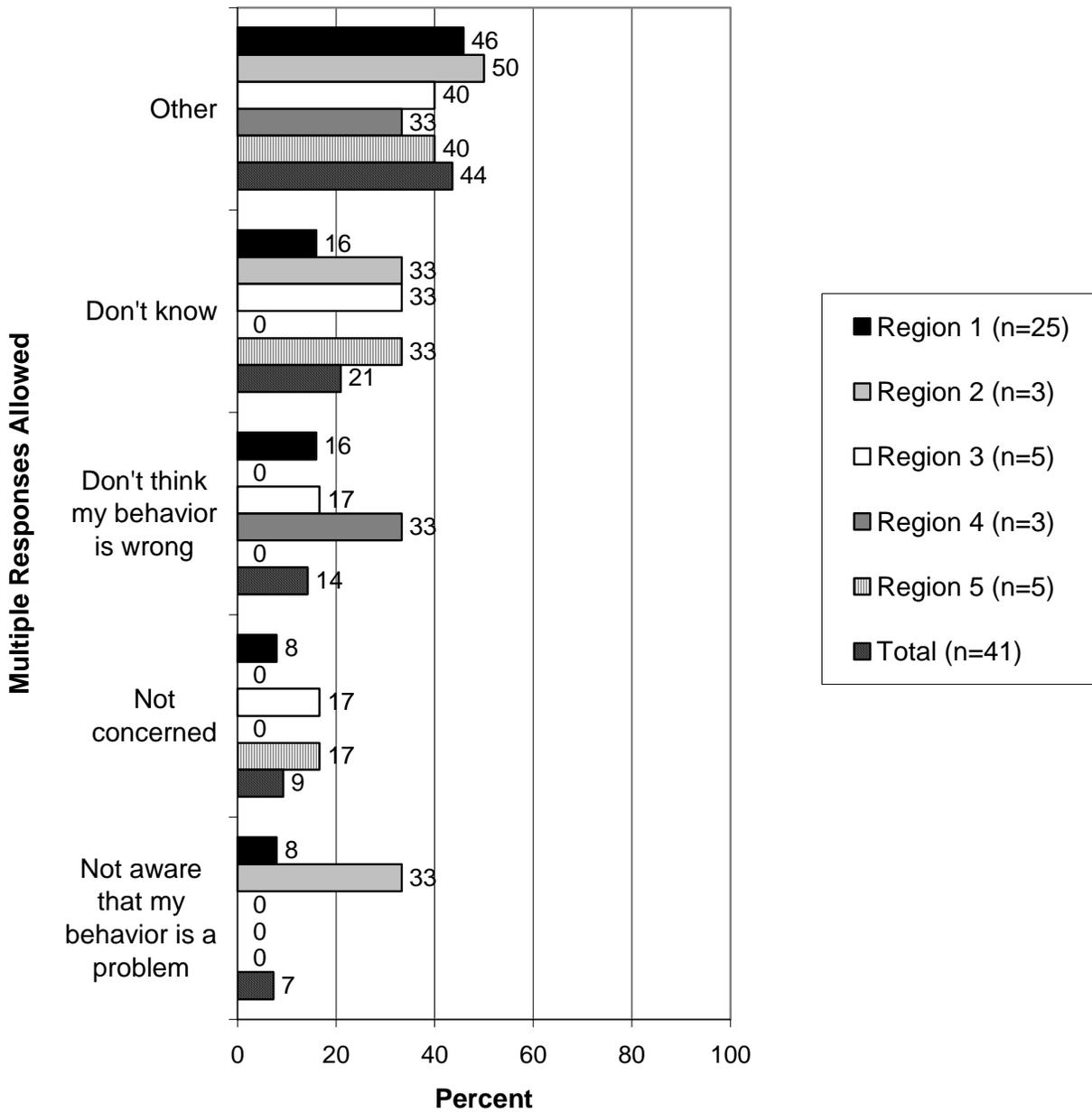
Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.)

Part 2



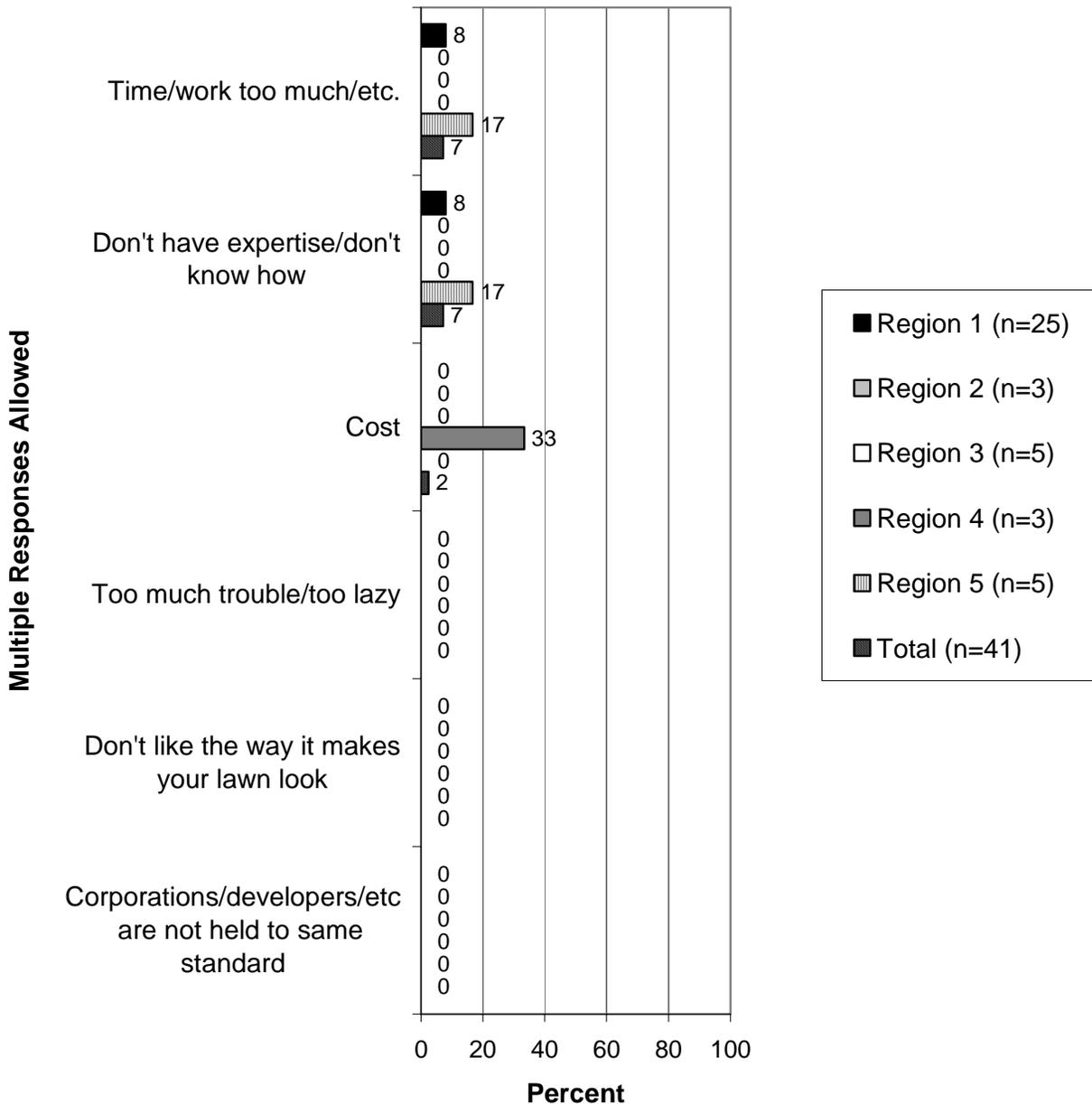
Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.)

Part 1

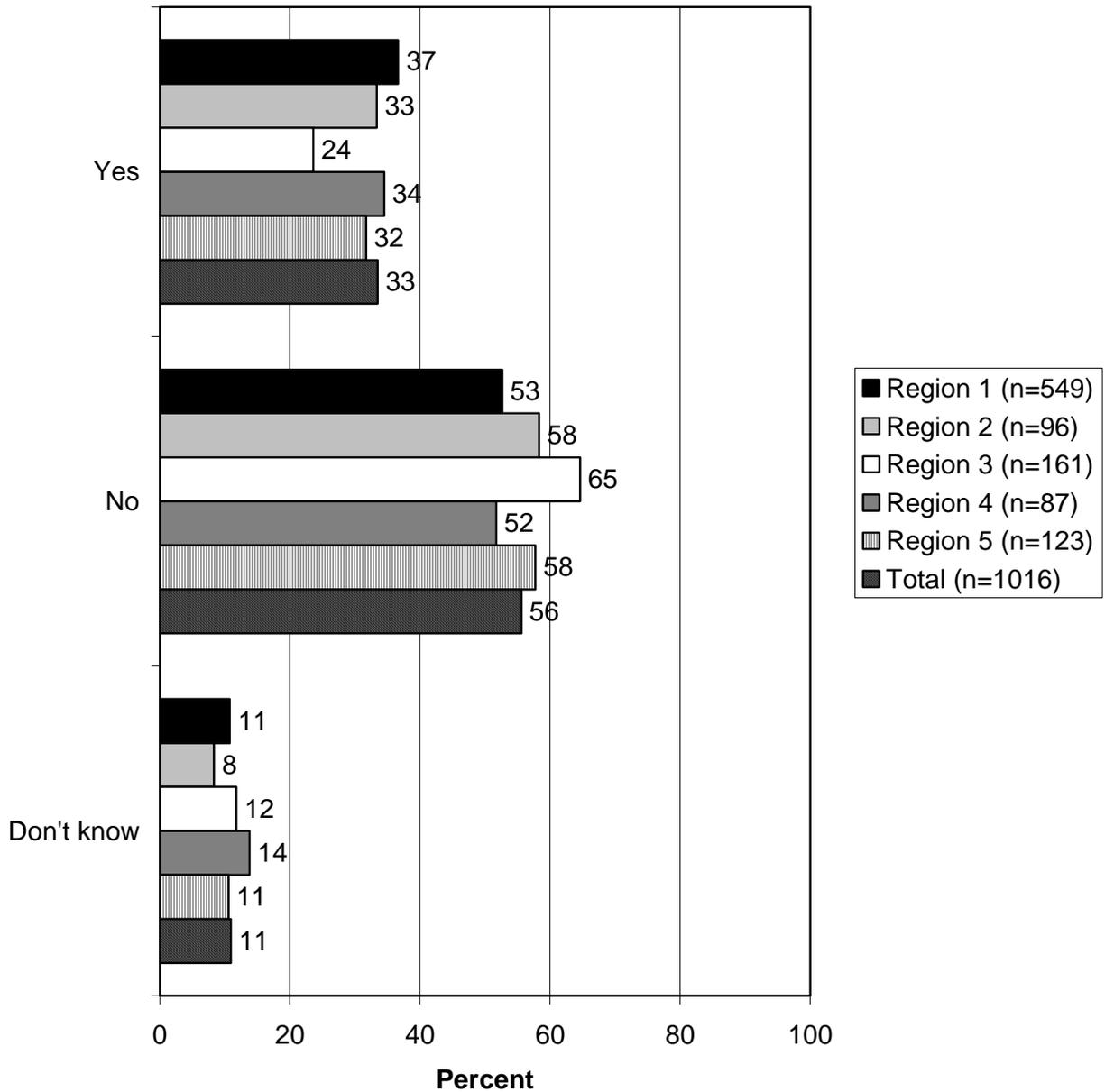


Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.)

Part 2



Q67. Would you be willing to spend more money on a smaller property lot if you knew that the neighborhood would have a large area of open space? (Asked of those who said that they have a lawn.)



WATER QUALITY AND STORM WATER MANAGEMENT

Q74. A majority of respondents (70% overall) said that storm water runoff is a major or minor environmental concern in Delaware (27% said major concern, 43% said minor concern). There was little regional variation in those saying it was a major or minor concern. However, while 16% overall said storm water runoff is not a concern, there was some regional variation in this answer, with 26% of Region 4 respondents having said it is not a concern and 13% of Region 5 respondents having said it is not a concern.

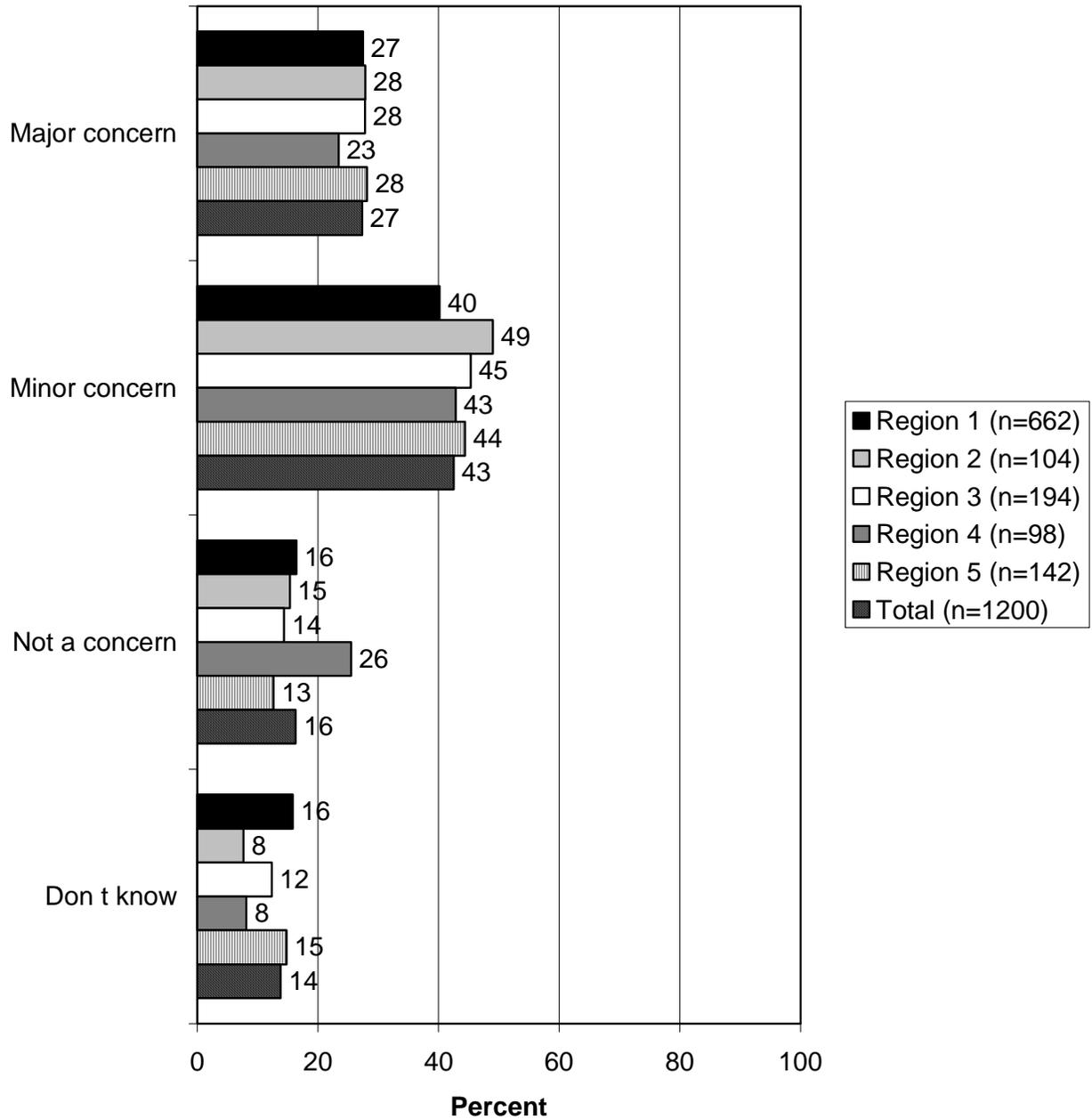
Q75. Respondents were asked whether they were aware before the survey that storm water runoff can impact water quality, and 66% overall said they were aware, and 30% overall were not aware. There was little regional variation in the results of this question.

Q77. When asked where they thought storm water runoff goes, 60% overall said into streams and other waterways, 22% overall said into the soil, 18% overall did not know, and 9% overall said into a treatment plant.

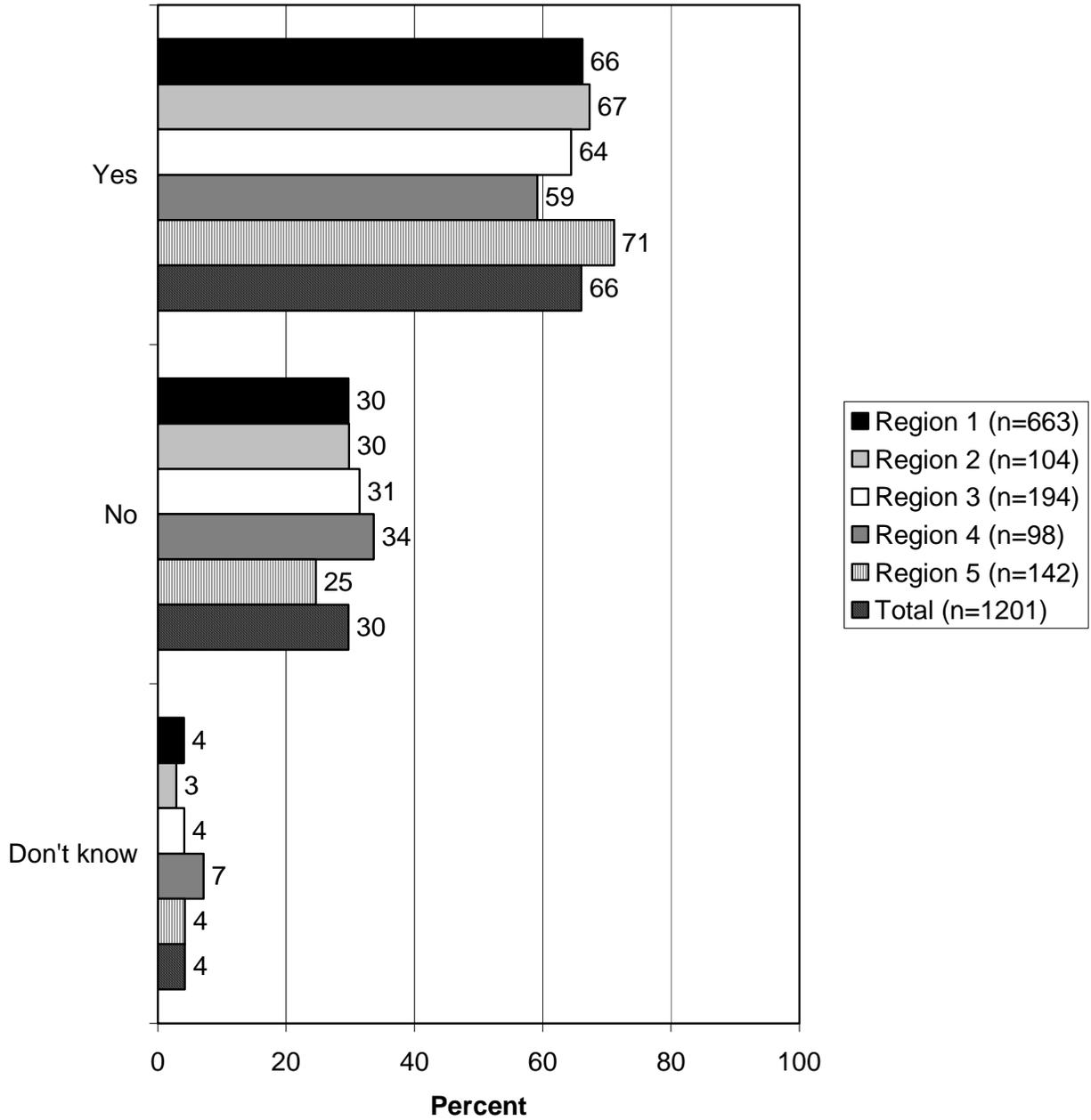
Q69. The most popular answer regarding the types of storm water structures on the respondent's property or in the respondent's neighborhood was that there are no storm water structures (38% overall), with some regional variation—33% of Region 1 respondents and 49% of Region 5 respondents said there are no storm water structures. Otherwise, the most common structures are storm drains/gutters (25% overall have these on their property or in their neighborhood), drainage ditches (19% overall), and storm water ponds (7% overall).

Q72. When those who said that their property or neighborhood contained storm water structures were asked who maintains those structures, 33% overall said they did not know, 26% overall said the city, and 9% overall said the state or the county. Individual homeowners were named by 10% of respondents overall.

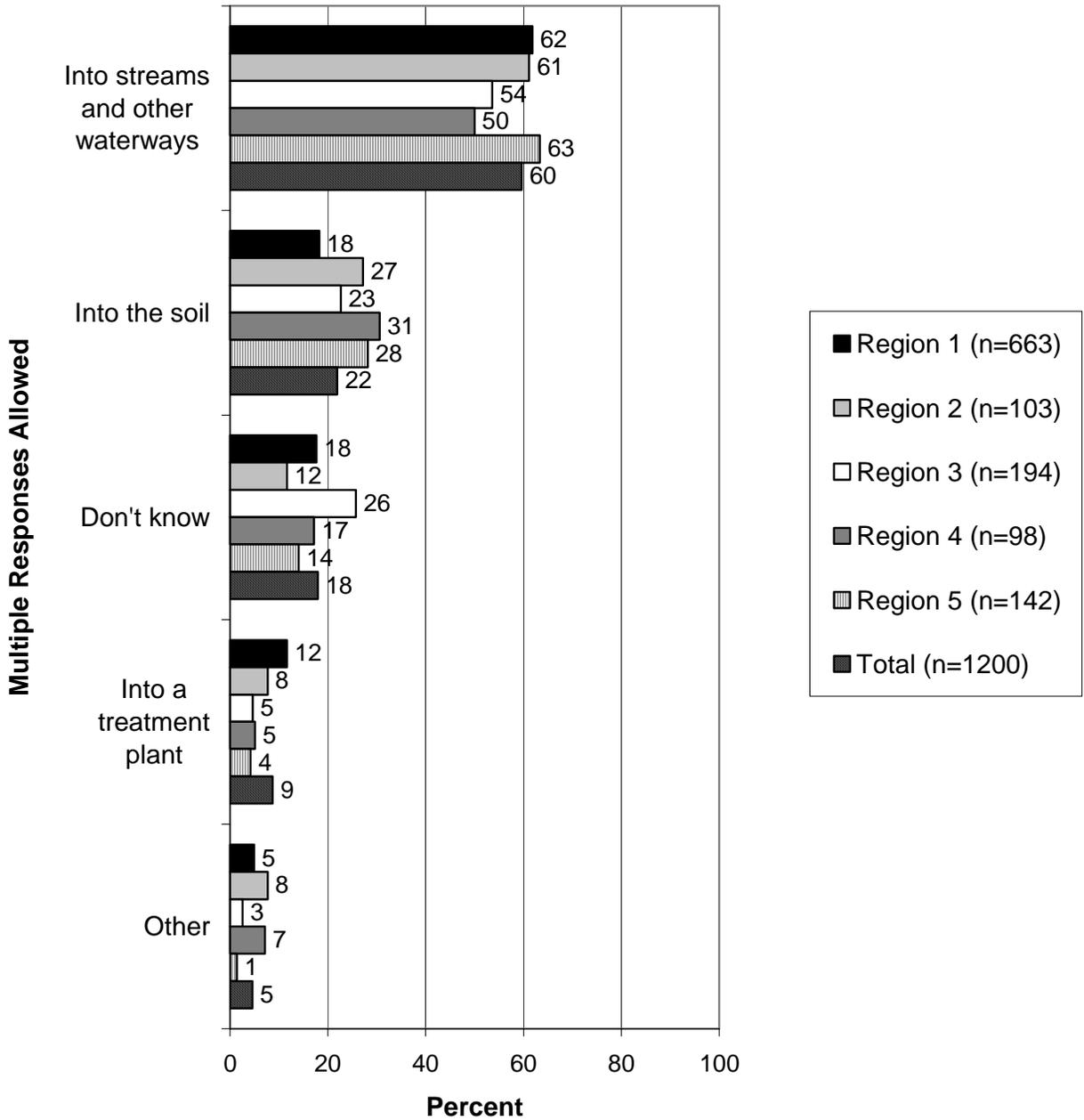
Q74. Would you say that storm water runoff is a major environmental concern, a minor environmental concern, or not an environmental concern in Delaware?



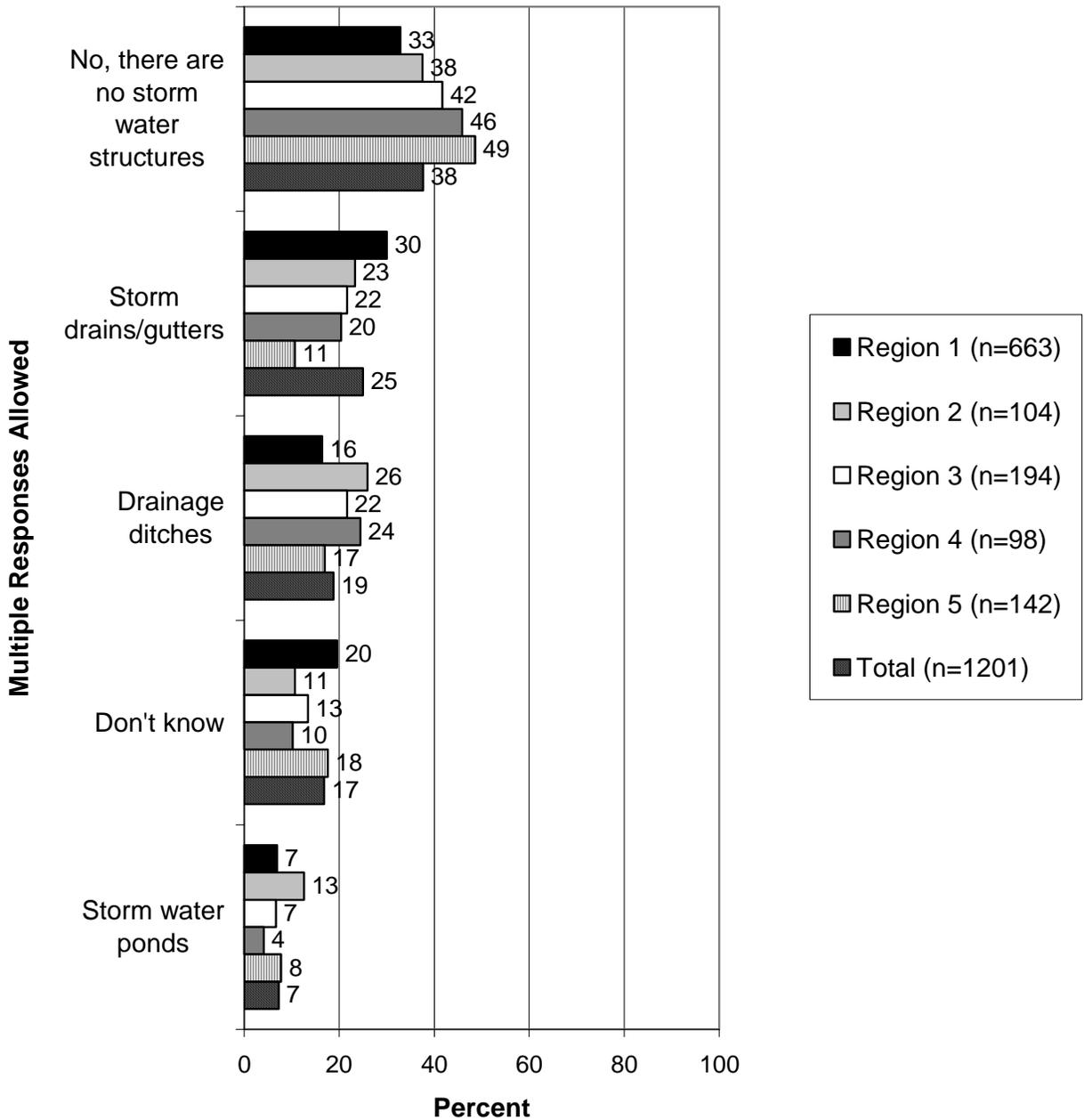
Q75. Before this survey, would you say that you were aware that storm water runoff can impact water quality in Delaware?



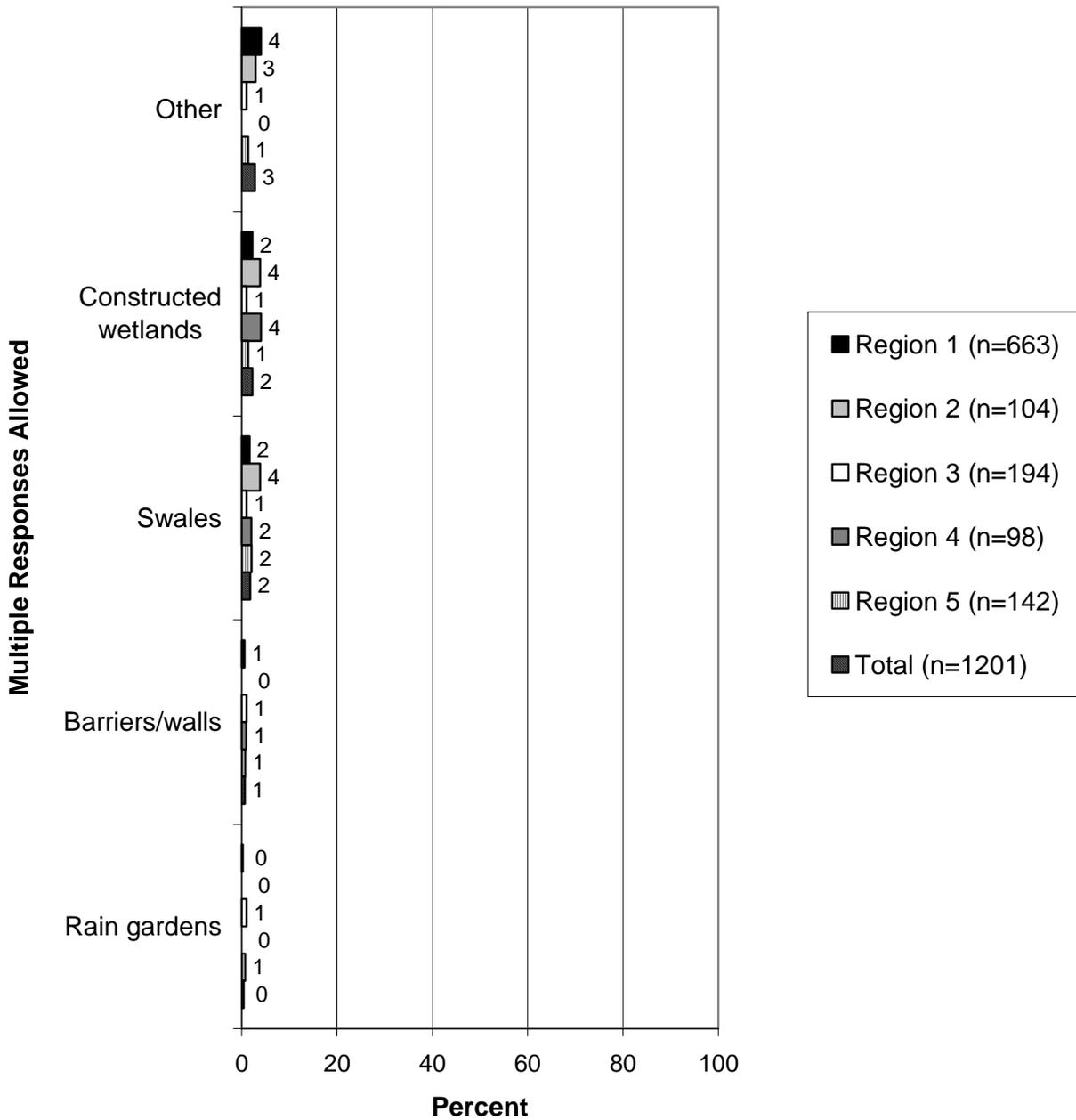
Q77. Where do you think that storm water runoff goes?



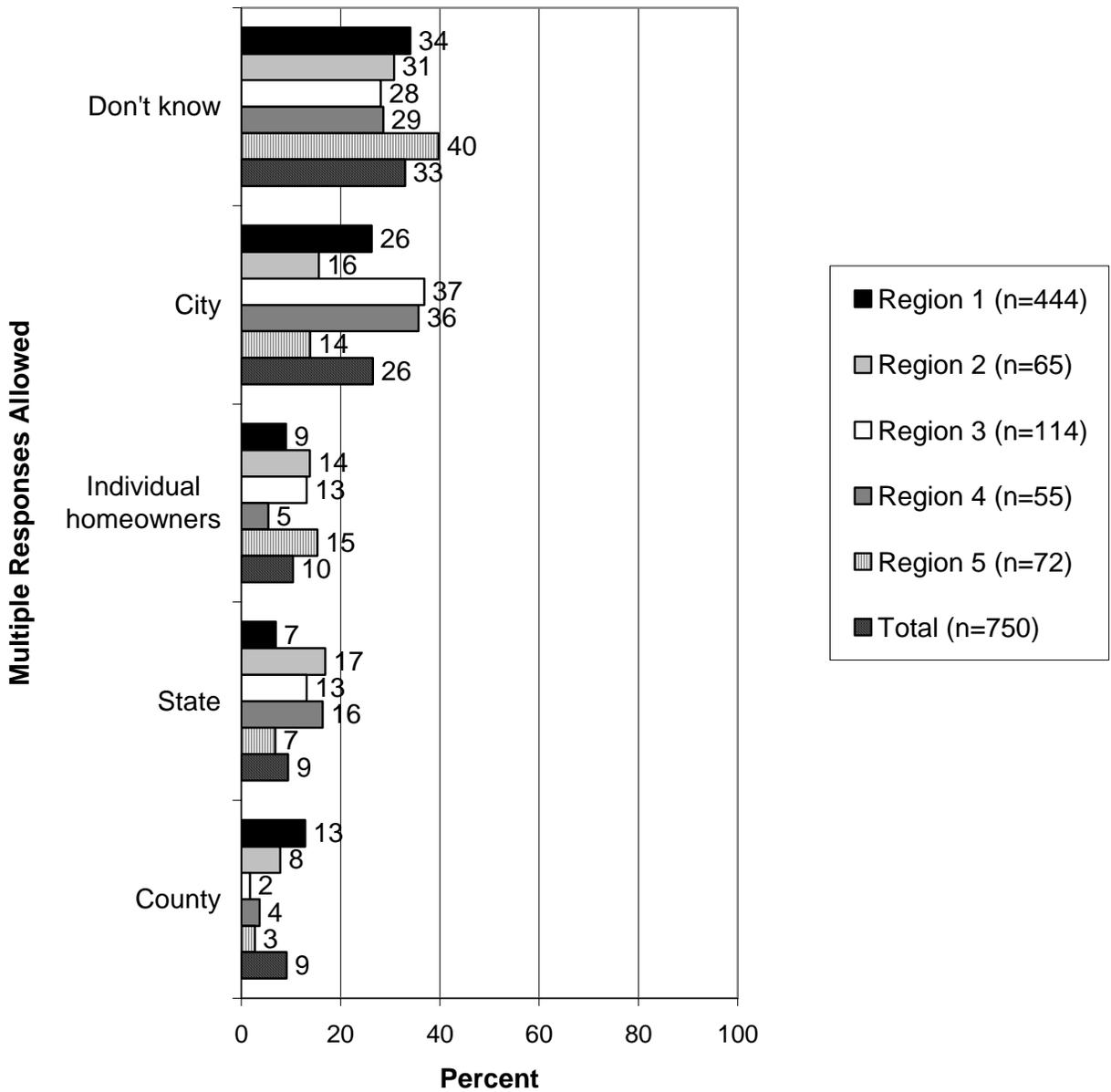
Q69. Does your property or neighborhood contain storm water structures? If yes: What types?
Part 1



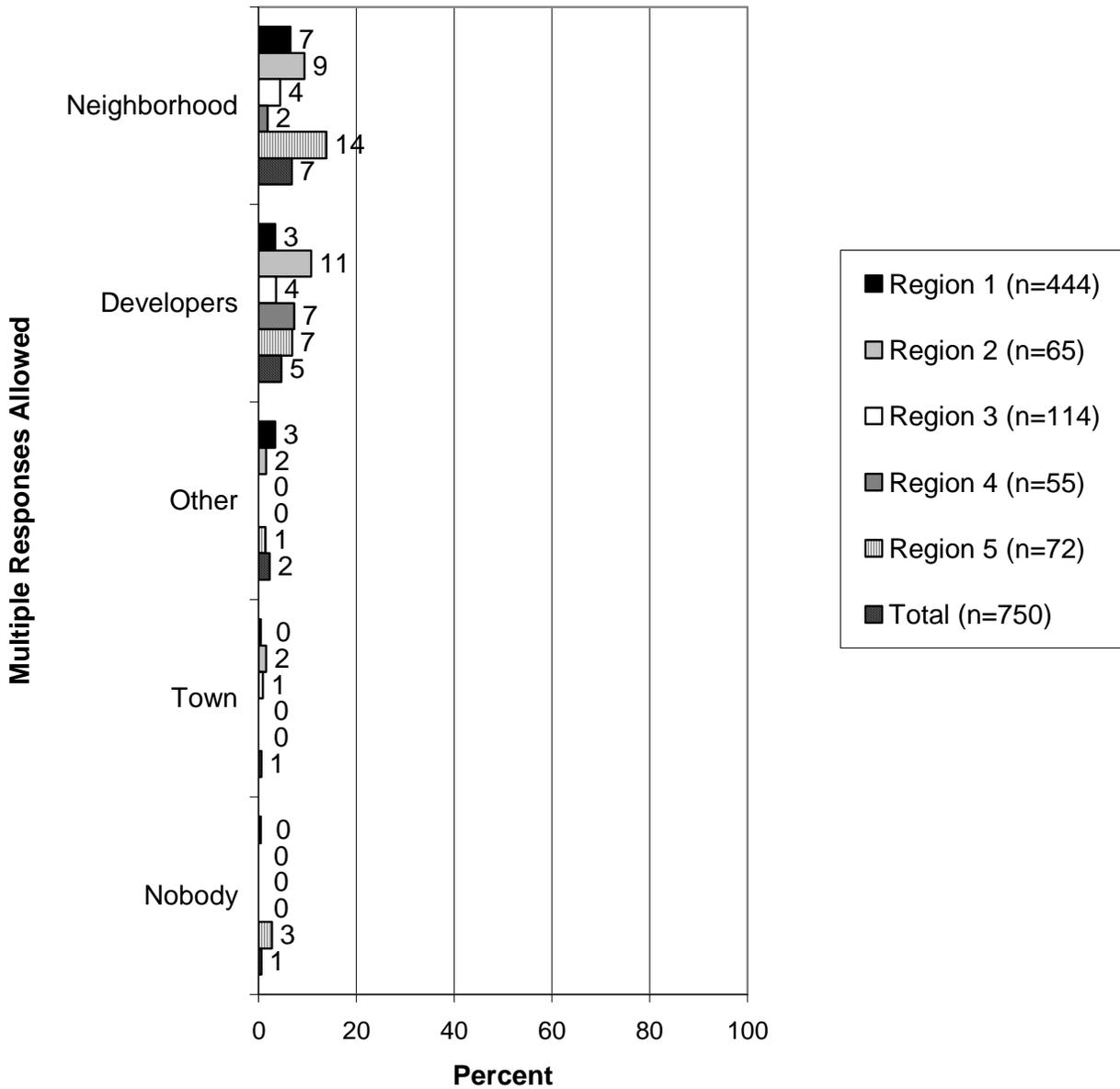
Q69. Does your property or neighborhood contain storm water structures? If yes: What types?
Part 2



**Q72. Who maintains these storm water structures?
(Asked of those who said that their property or
neighborhood has storm water structures.)
Part 1**

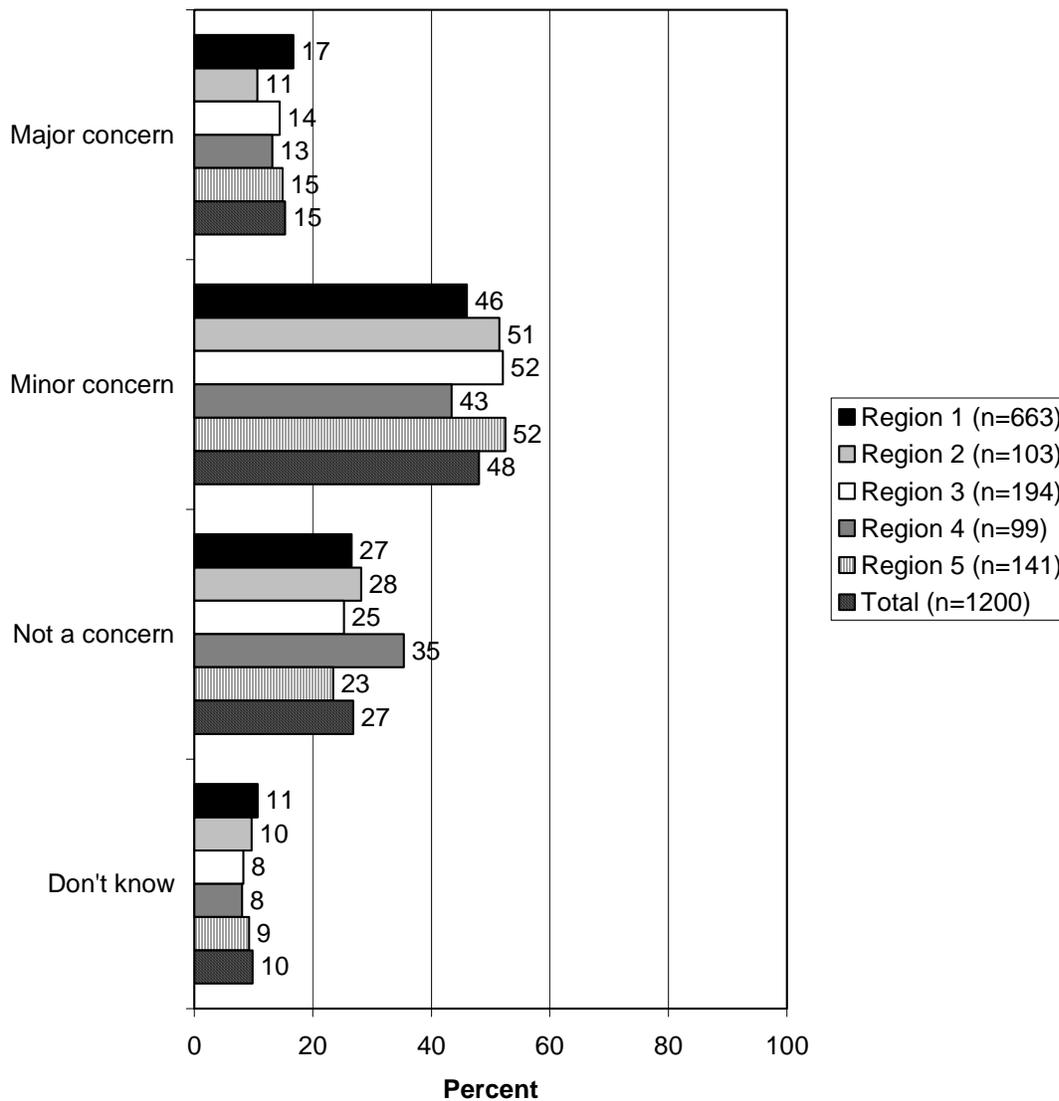


**Q72. Who maintains these storm water structures?
 (Asked of those who said that their property or
 neighborhood has storm water structures.)
 Part 2**



Q87. When asked if runoff from pet waste is an environmental concern, 15% overall said it is a major concern, 48% overall said it is a minor concern (for a total of 63% overall expressing concern), and 27% overall said it is not a concern. There was not a great regional variation.

Q87. Would you say that runoff from pet waste is a major environmental concern, a minor environmental concern, or not an environmental concern in Delaware?



Q79. Overall, 11% of respondents indicated that they have a stream or pond on their property, with little variation among regions.

Q80. Of those who have a stream or pond on their property, 38% have an herbaceous border along the bank (the sum of those who answered “herbaceous border” and “both”), 35% have mowed grass along it (the sum of those who answered “mowed grass” and “both”), and 30% have neither along it. There was some regional variation: those having an herbaceous border along the stream or bank ranged from 30% of Region 1 respondents to 57% of Region 4 respondents; those having mowed grass along the stream or bank ranged from 27% of Region 1 respondents to 48% of Region 3 respondents.

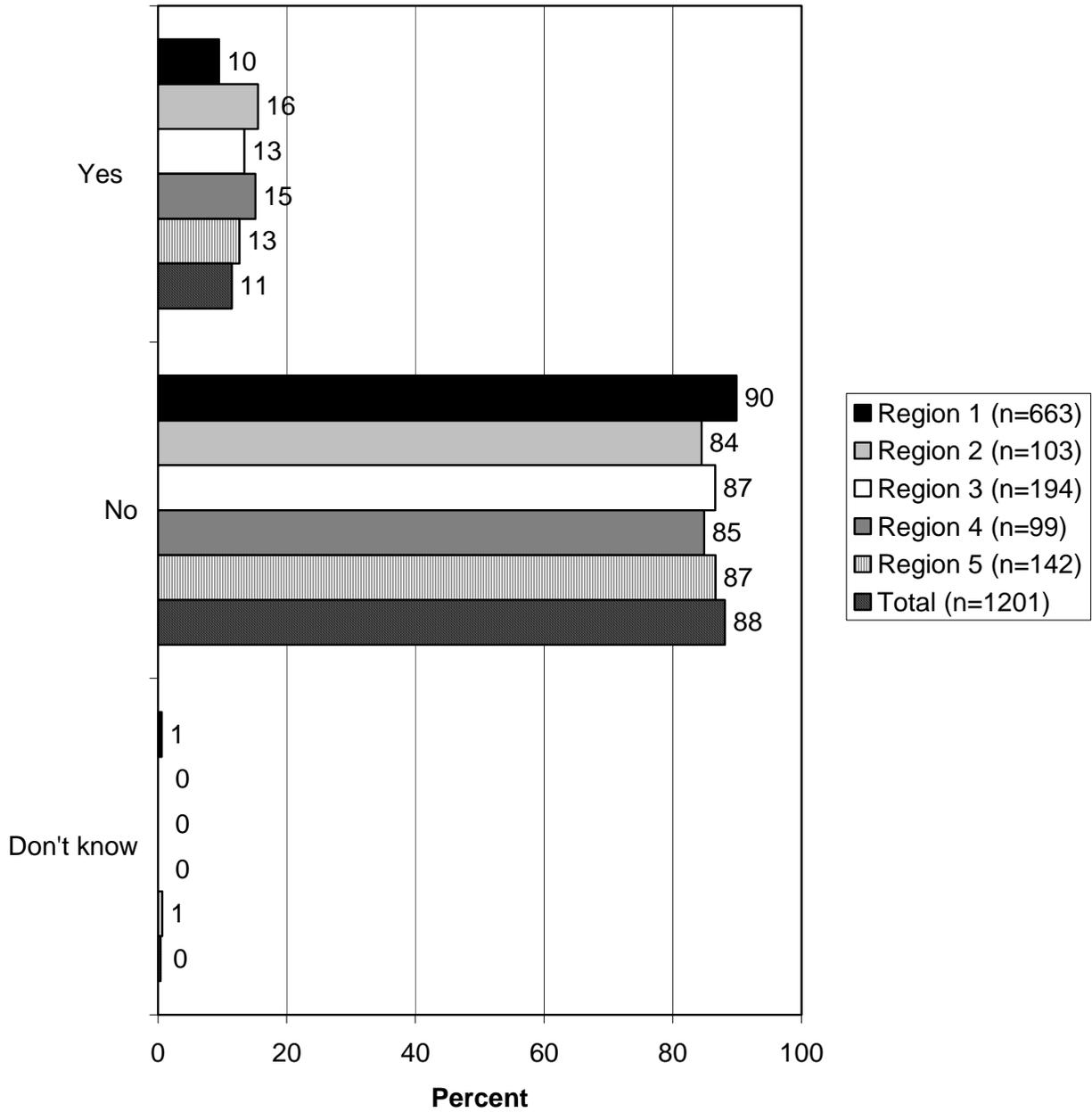
Q81. Of those who have a stream or pond on their property and who do not maintain an herbaceous border along it, 49% indicated that they would consider planting a border to protect their property from erosion and to protect water quality, but 29% said they would not consider doing so. Region 4 respondents were the least likely to consider planting an herbaceous border (44%); Regions 2 and 5 were the most likely to do so (60%).

Q83. Of those who said they would not plant an herbaceous border along the stream or pond on their property, only 3 respondents overall said that they would not do so because they do not think their behavior (i.e., not doing so) is wrong, 3 respondents overall said they did not have the time to do so, and 2 respondents overall said the cost was prohibitive, said they were not concerned, said they did not like the way it looks, or said an herbaceous border would attract undesirable animals and/or insects.

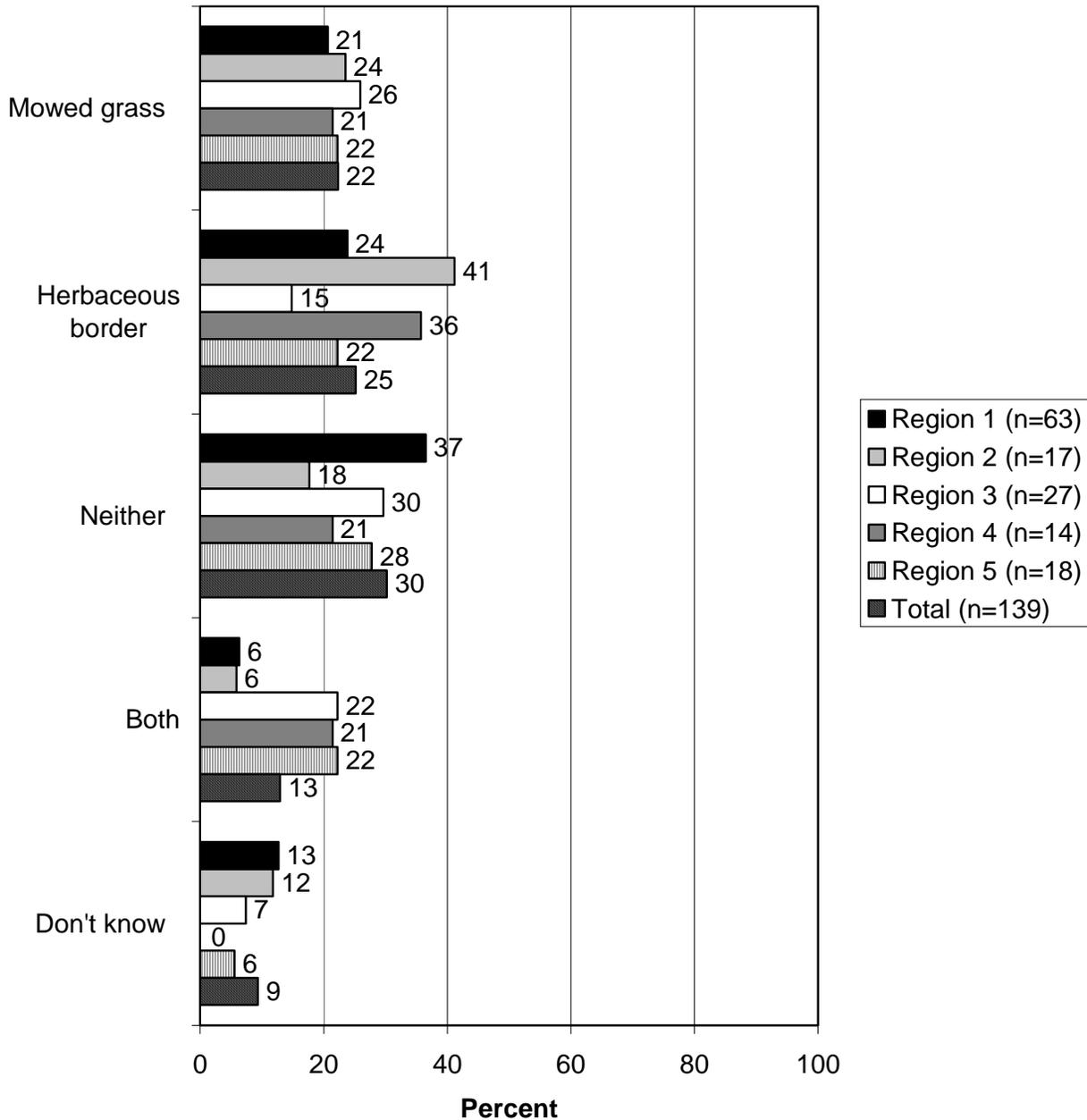
Q85. Of those who have a stream or pond on their property and who do not maintain an herbaceous border along it, 47% overall said they would be very or somewhat likely to plant an herbaceous border if they were provided cost-sharing and technical support, and 30% overall would be somewhat or very unlikely to do so.

Q86. Of those who have a stream or pond on their property and who do not maintain an herbaceous border along it, 49% overall said they would be very or somewhat likely to plant an herbaceous border if they were provided an aesthetically pleasing design that maintains a partial view of the stream or pond, but 25% overall said they would be somewhat or very unlikely to do so.

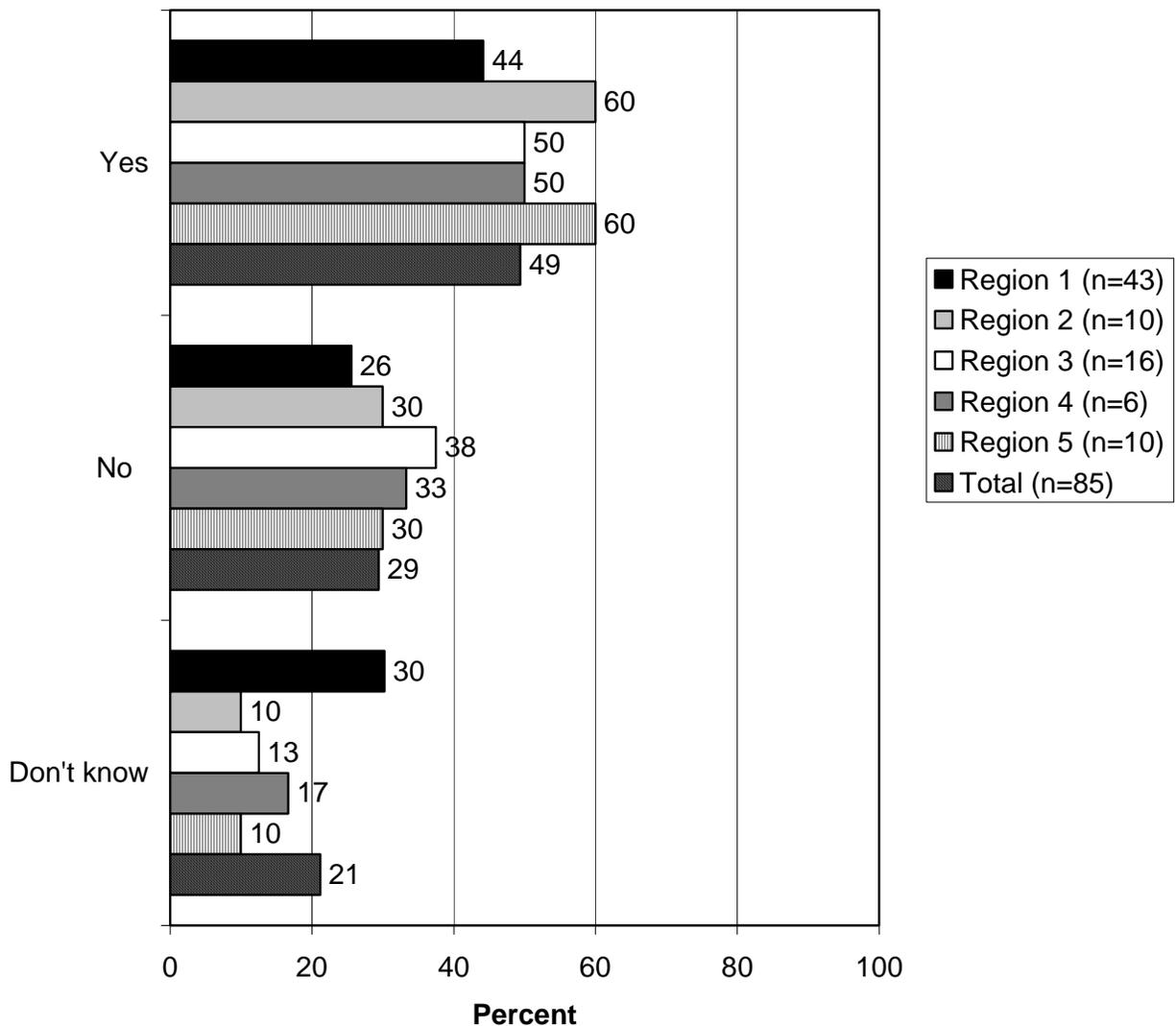
Q79. Do you have a stream or a pond on your property?



Q80. Do you maintain mowed grass or an herbaceous border along the bank? (Asked of those who said that they have a stream or pond on their property.)

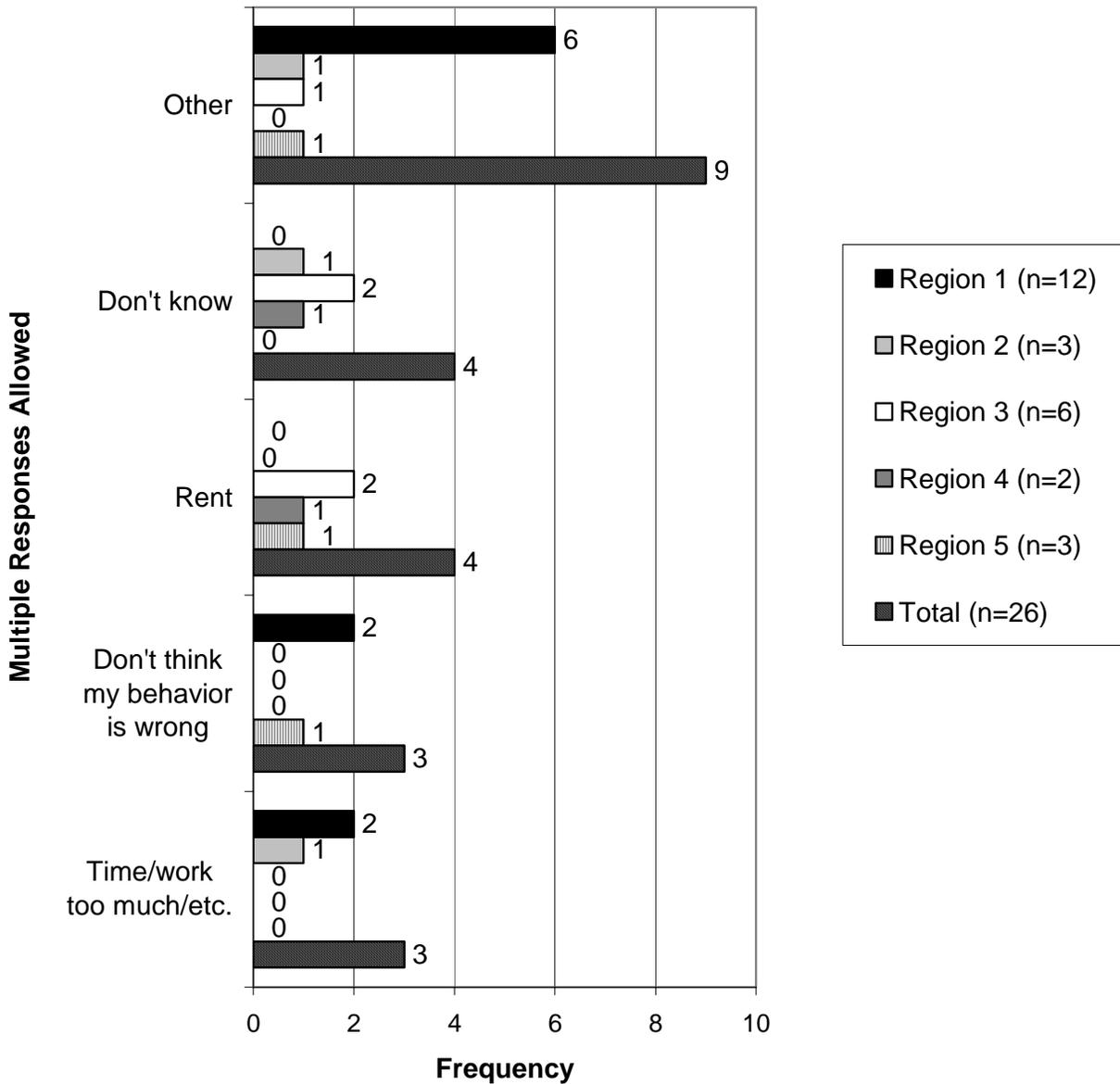


Q81. Would you consider planting an herbaceous border if you knew that it would protect your property from erosion and protect overall stream and water quality? (Asked of those who said they have a stream or pond on their property and they do not plant an herbaceous border along it.)



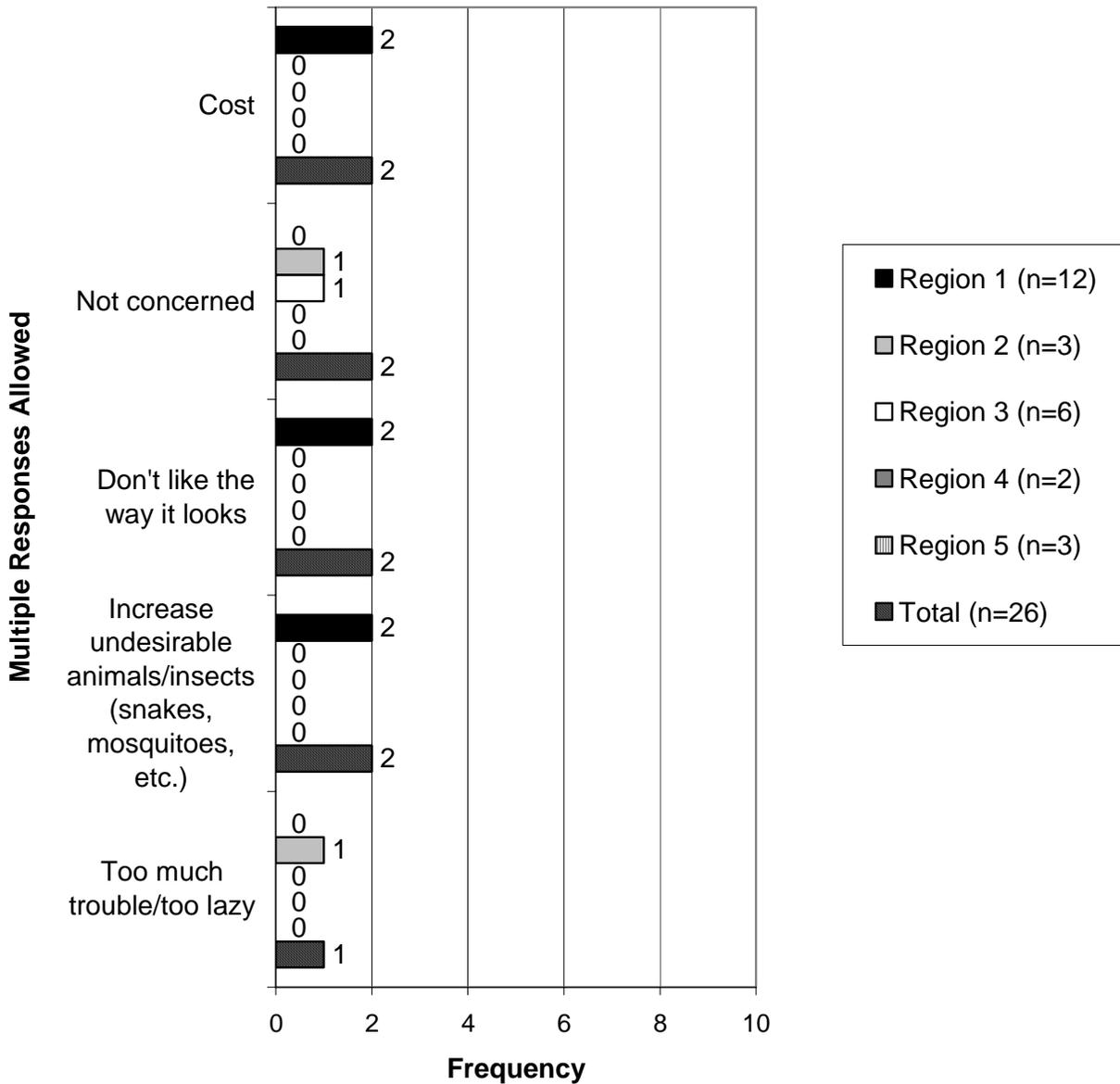
Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.)

Part 1

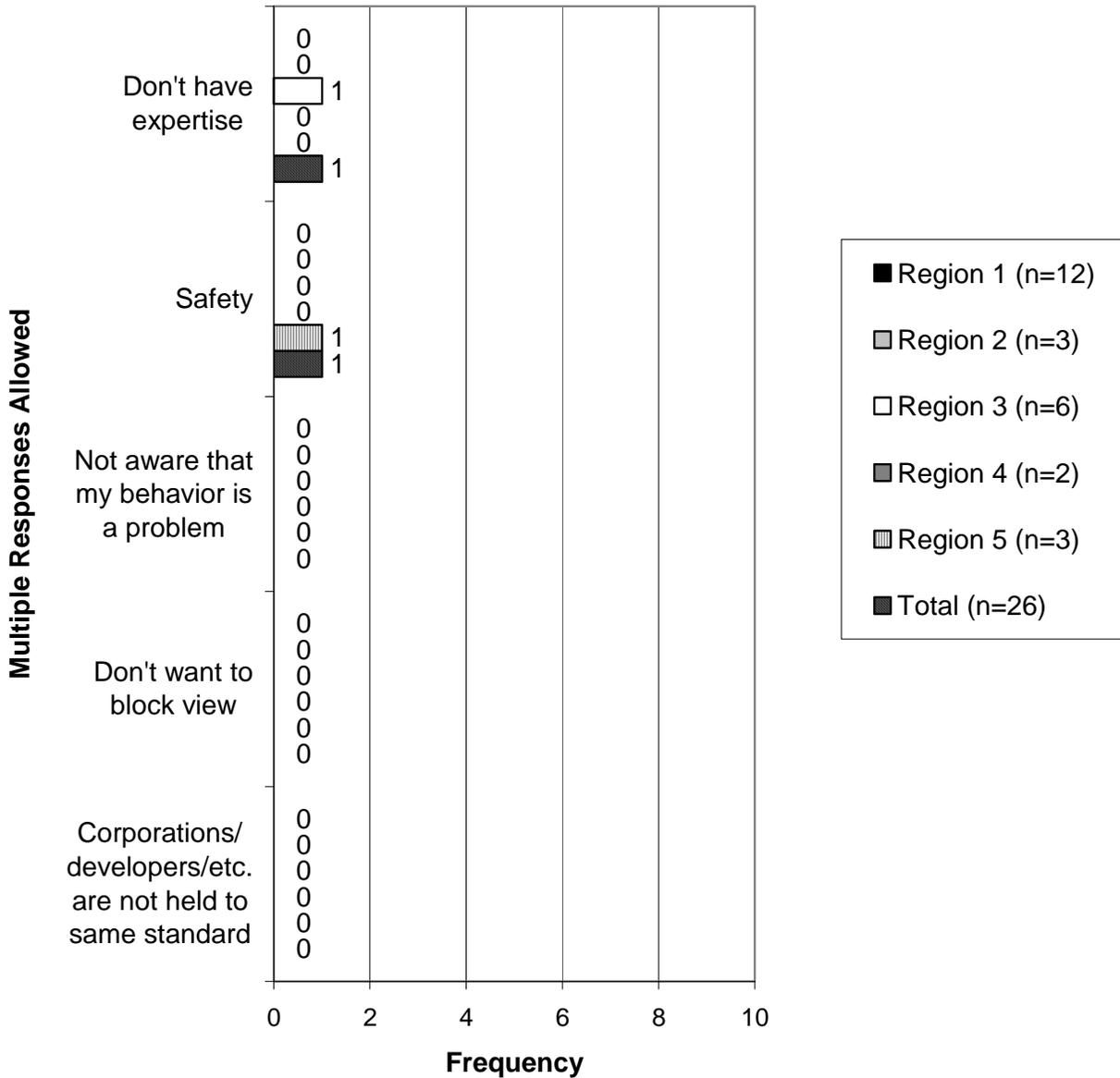


Q83. What are the main reasons you would not consider planting a herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.)

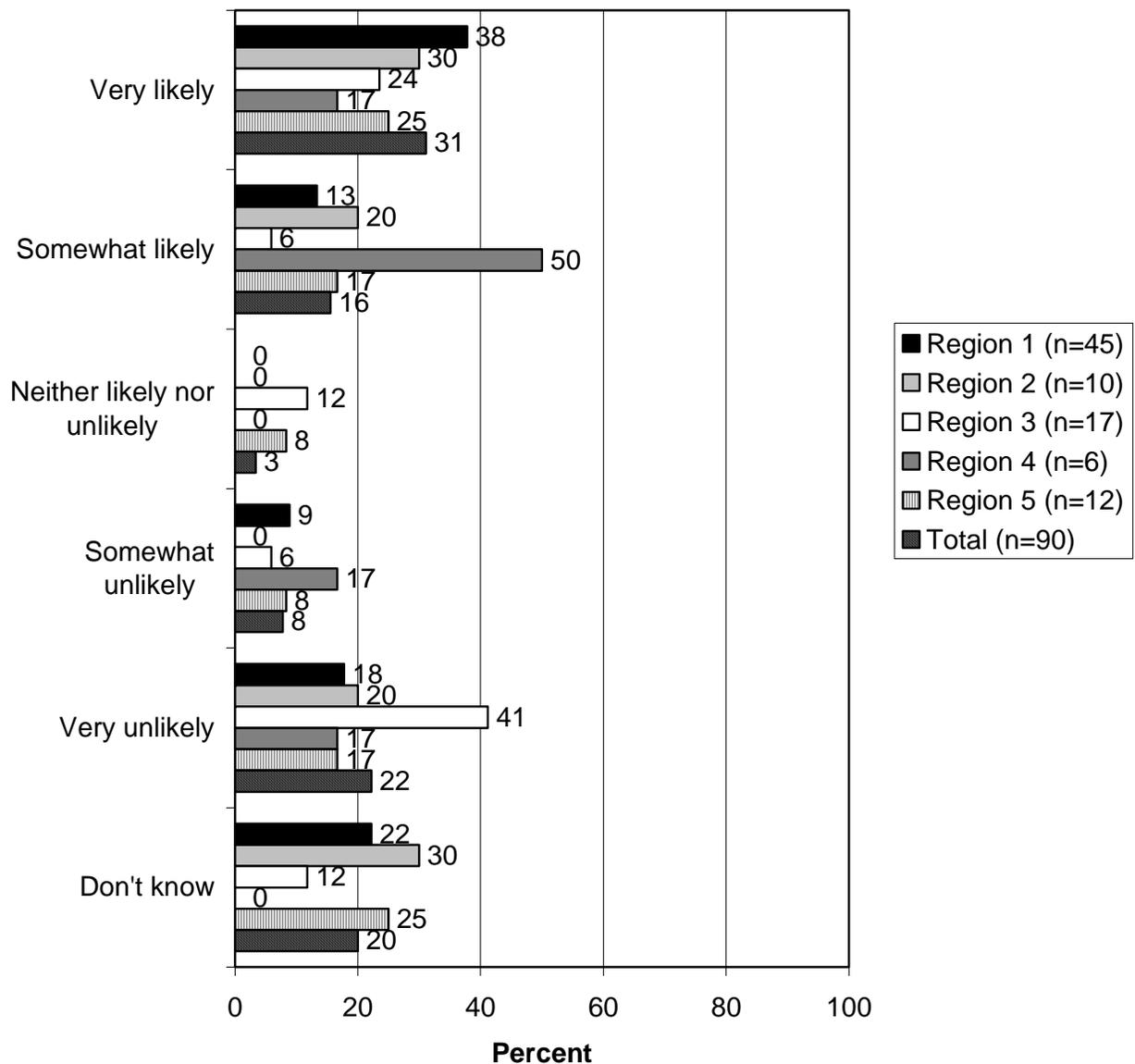
Part 2



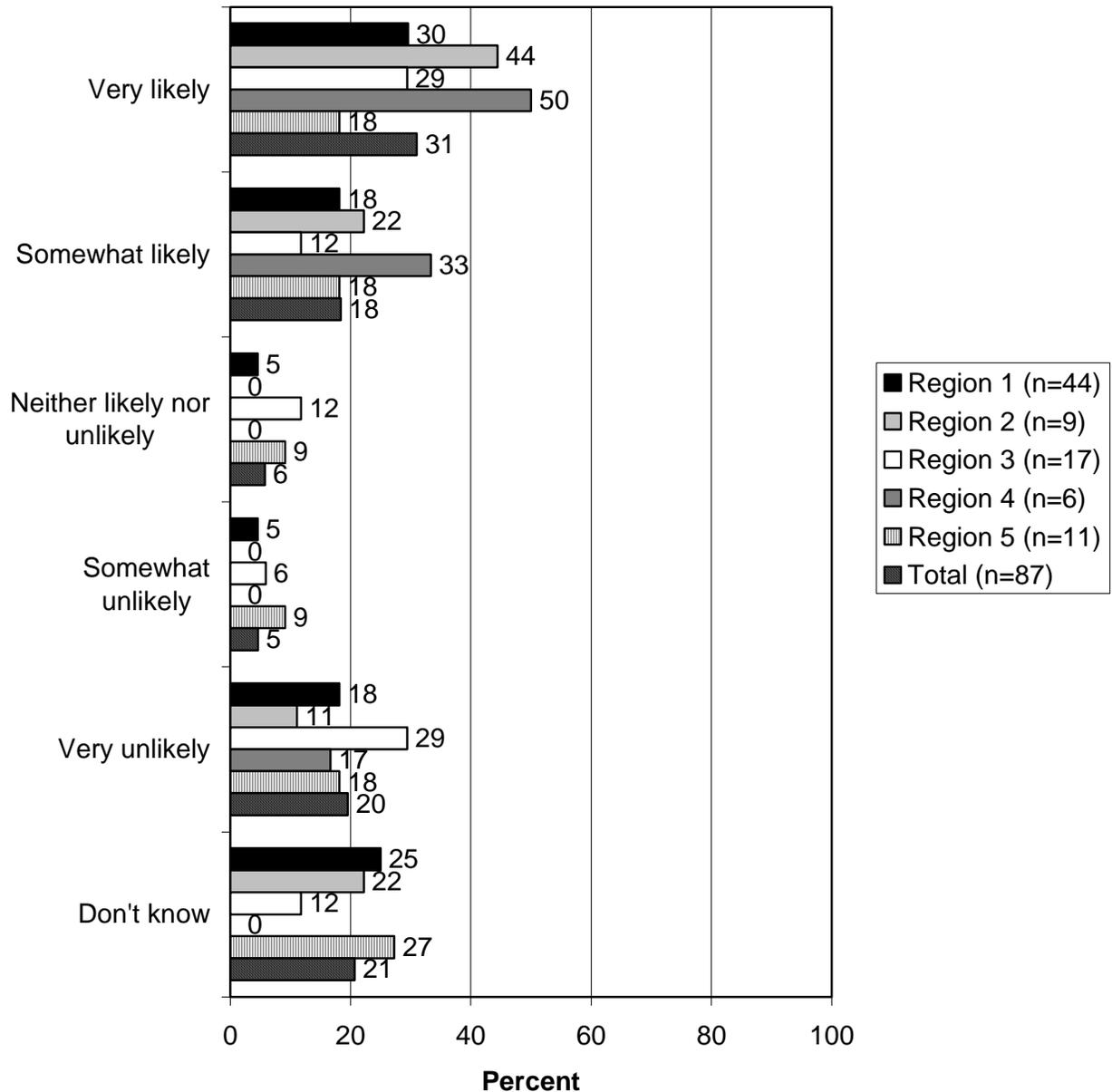
Q83. What are the main reasons you would not consider planting a herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.)
Part 3



Q85. If you received cost-sharing and technical support, would you be likely or unlikely to plant a stream or pond bank border? (Asked of those who said they have a stream or pond on their property and they do not plant an herbaceous border along it.)



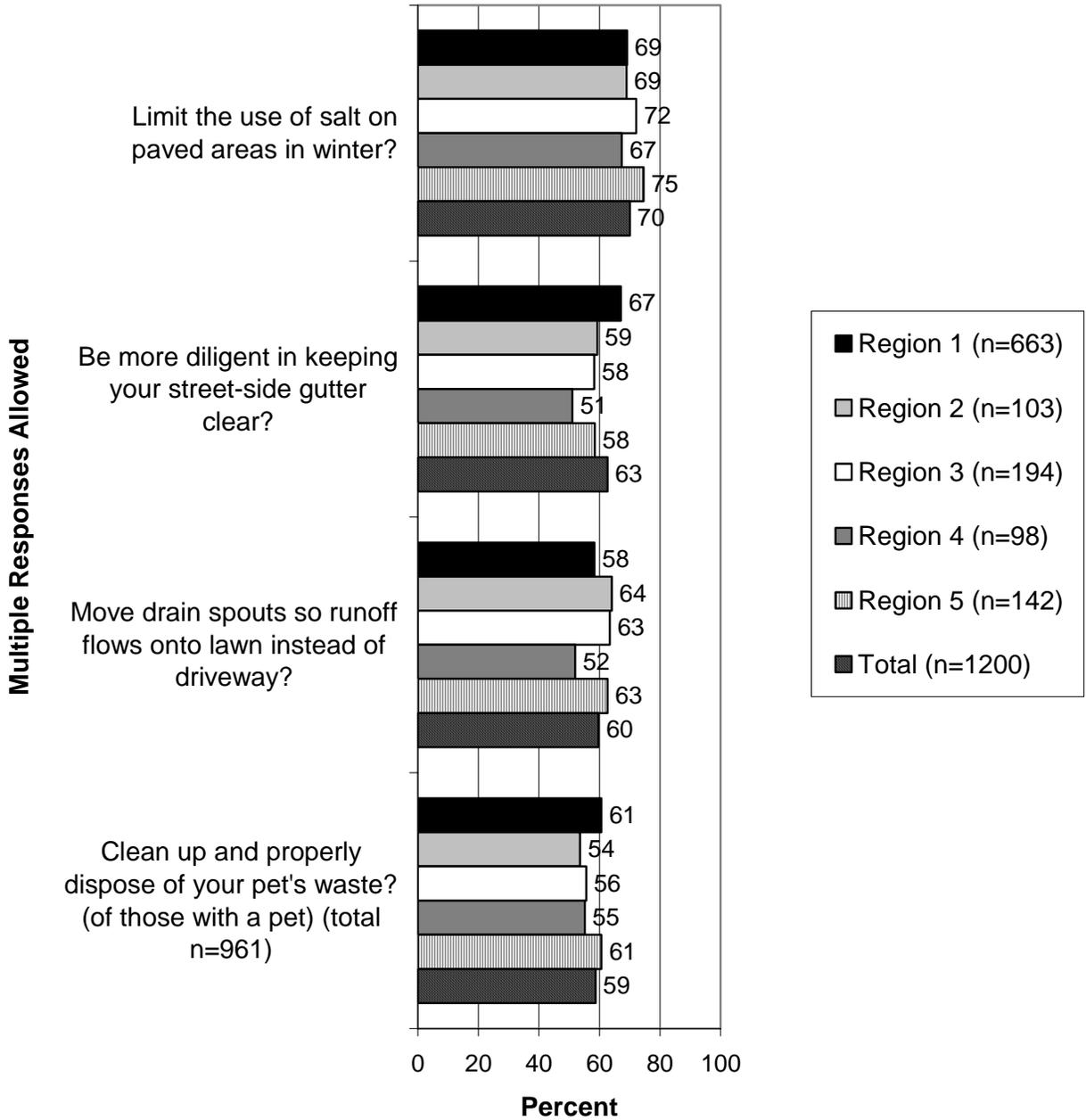
Q86. Would you plant an herbaceous border if you were provided a design that is pleasing to the eye and maintains a partial view of the stream or pond? (Asked of those who said they have a stream or pond on their property and they do not plant an herbaceous border along it.)



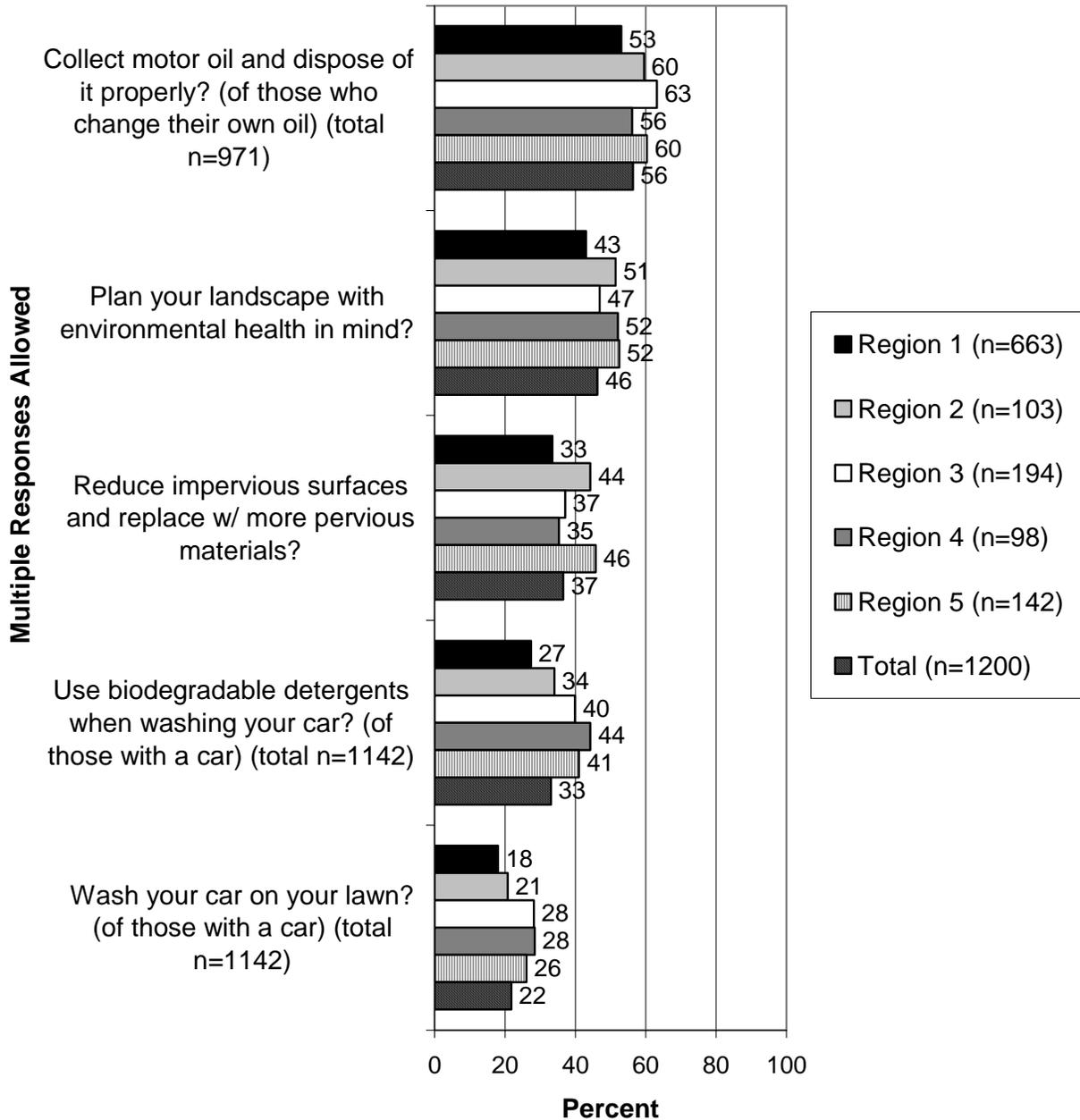
Q90. Respondents were asked if they do any of several practices that help to mitigate adverse impacts to water quality from storm water runoff. The following answers were given by a majority of respondents: limiting the use of salt on paved areas in winter (70% overall did this), followed by being more diligent in keeping their street-side gutter clear (63% overall), moving their drain spouts so the runoff flows onto the lawn instead of the driveway (60% overall), cleaning up and properly disposing of pet waste (59% overall), and collecting motor oil and disposing of it properly (56% overall). There was little regional variation in the results.

Q92. Of those who do not do the practices to mitigate adverse impacts to water quality, 30% overall said that they do not know their behavior is a problem, and 10% overall said that they do not think their behavior is wrong.

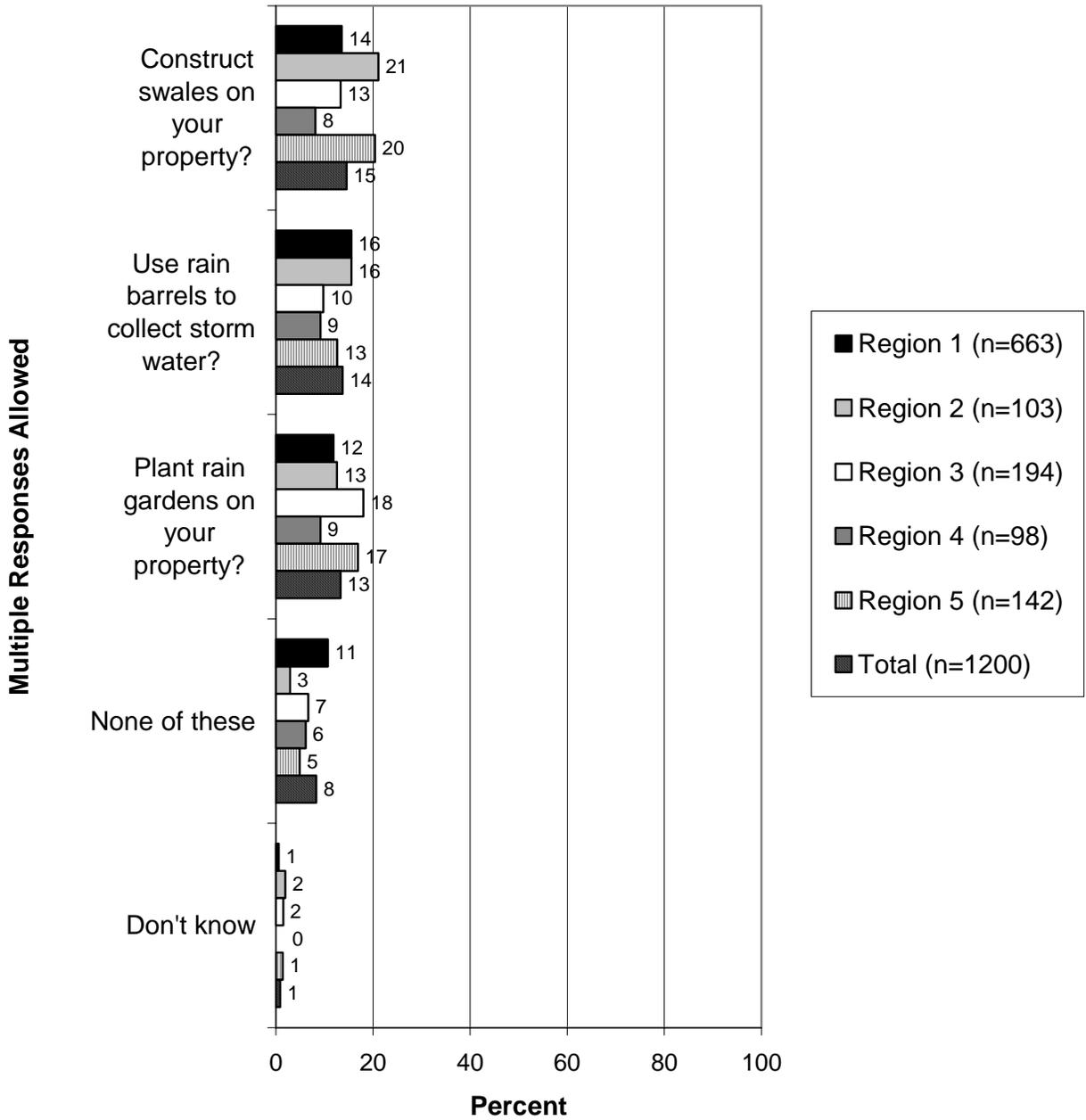
Q90. Do you do any of the following activities? Part 1



Q90. Do you do any of the following activities? Part 2

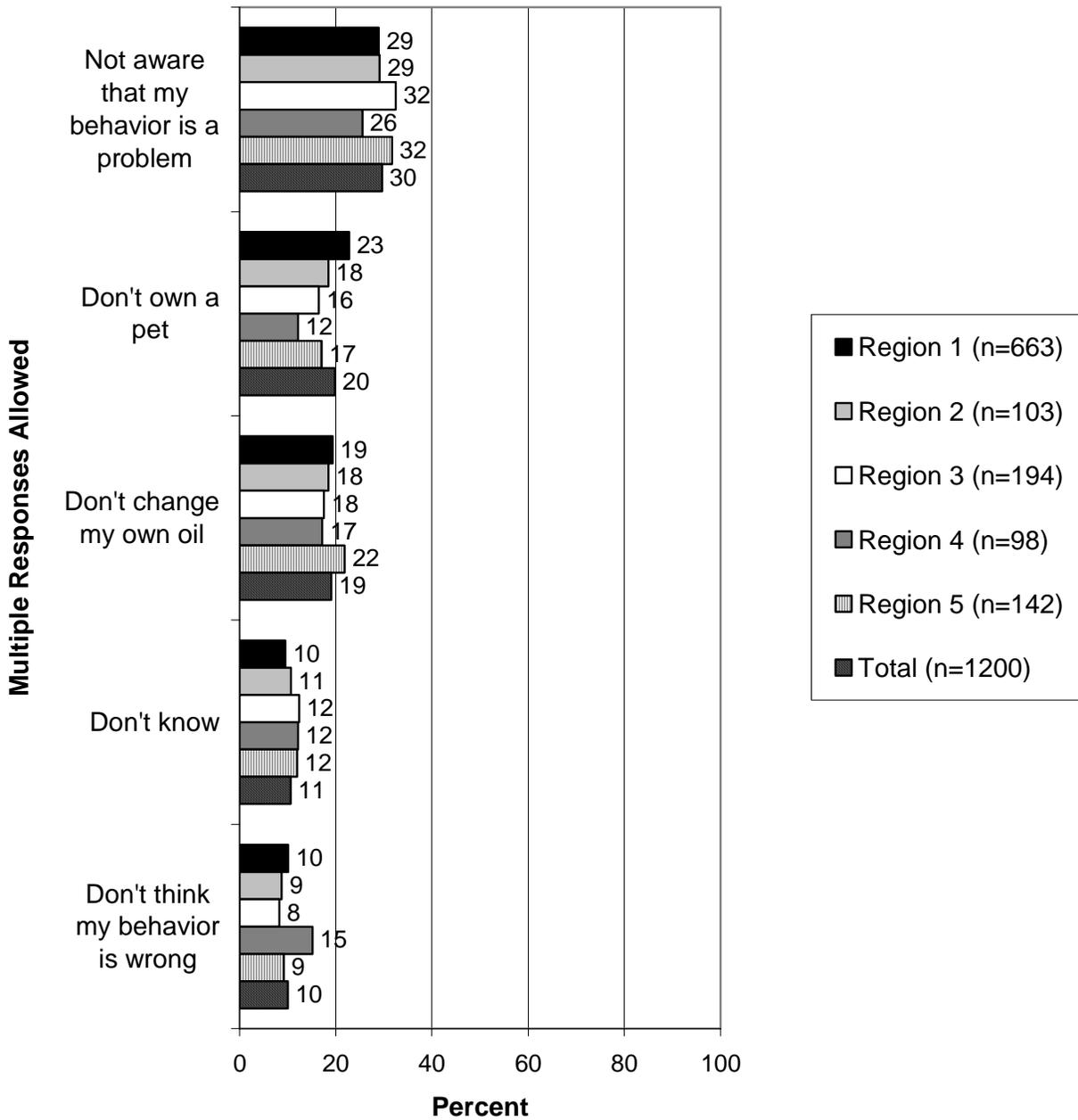


Q90. Do you do any of the following activities? Part 3



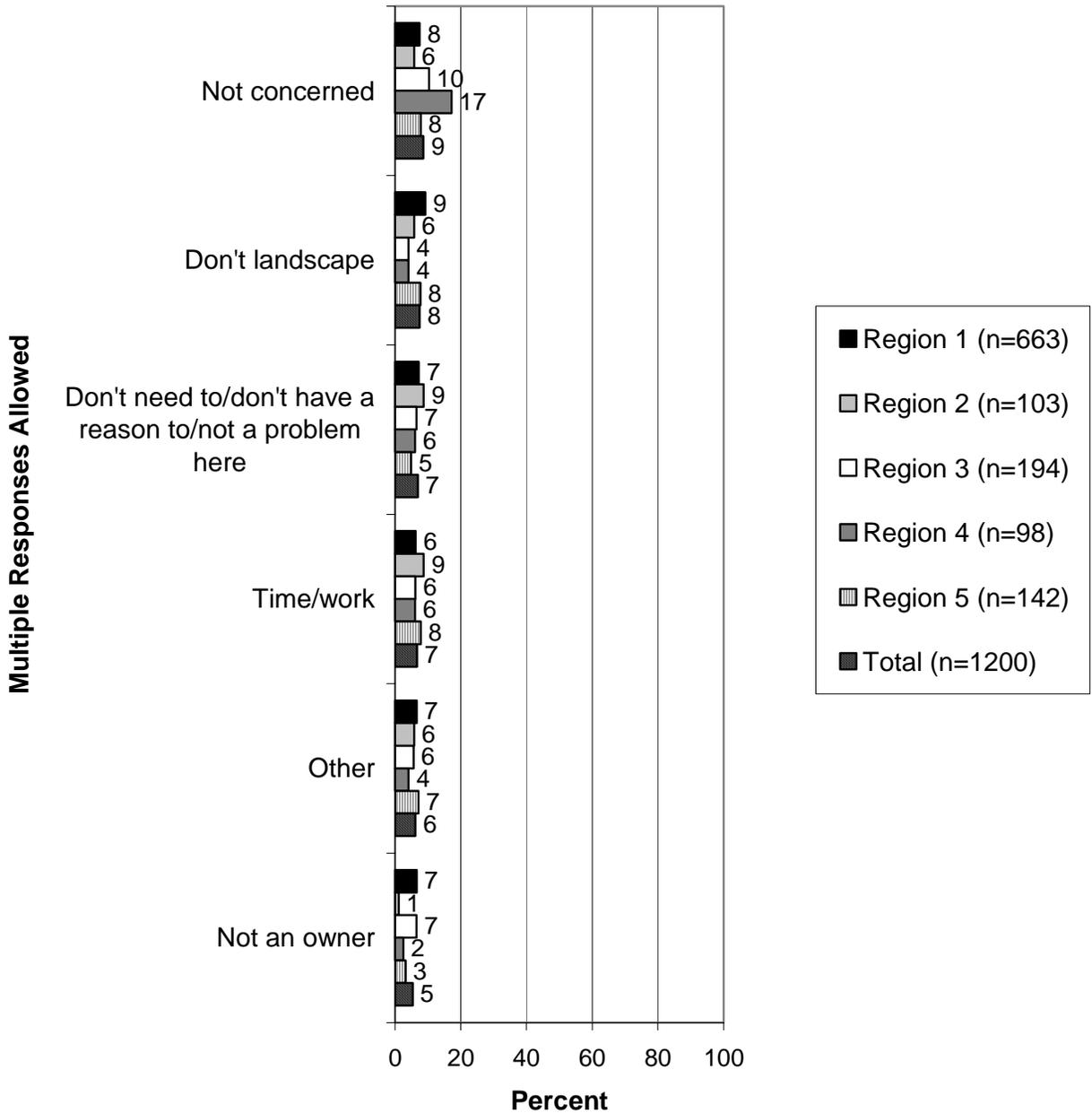
Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property?

Part 1

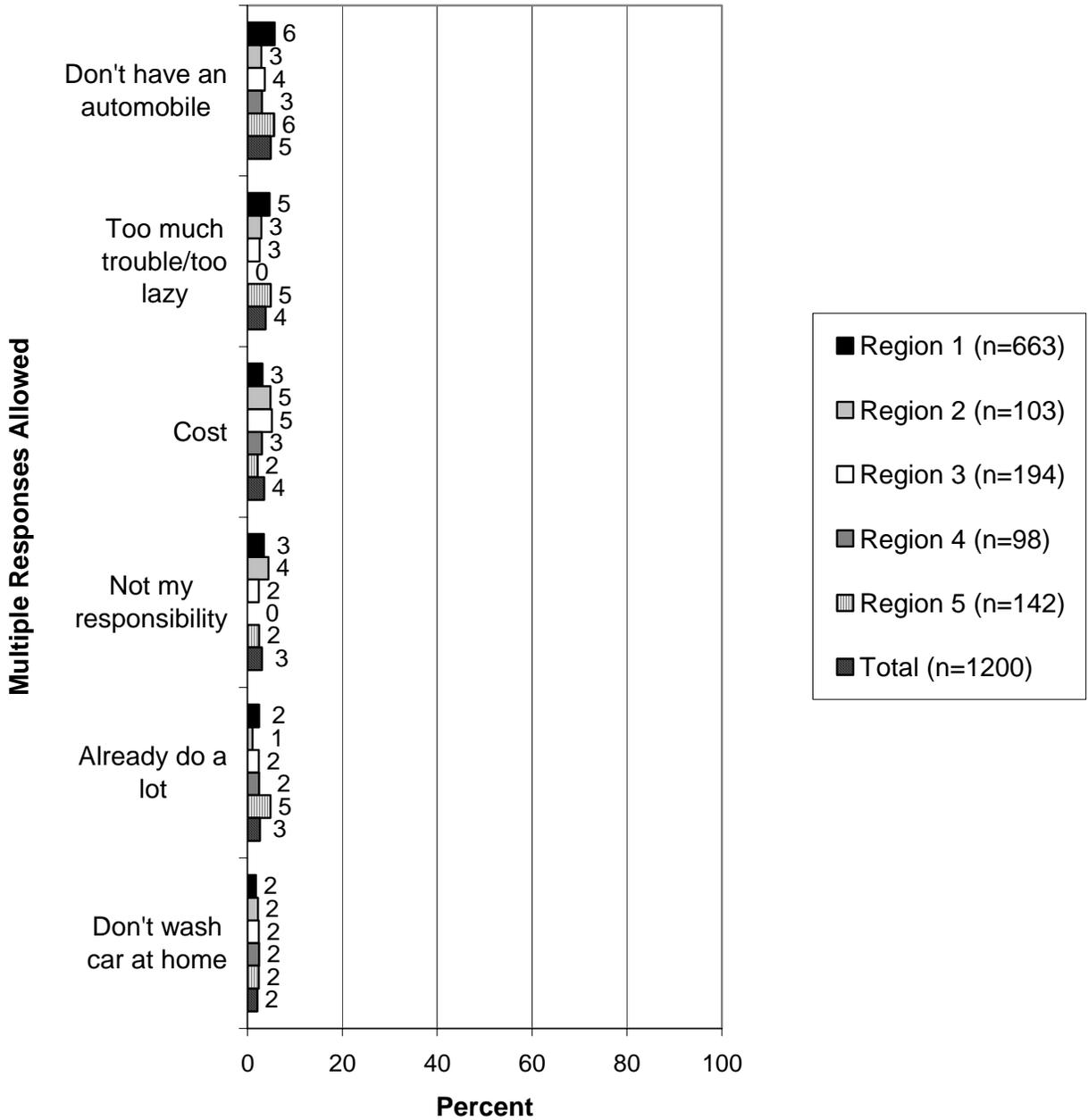


Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property?

Part 2

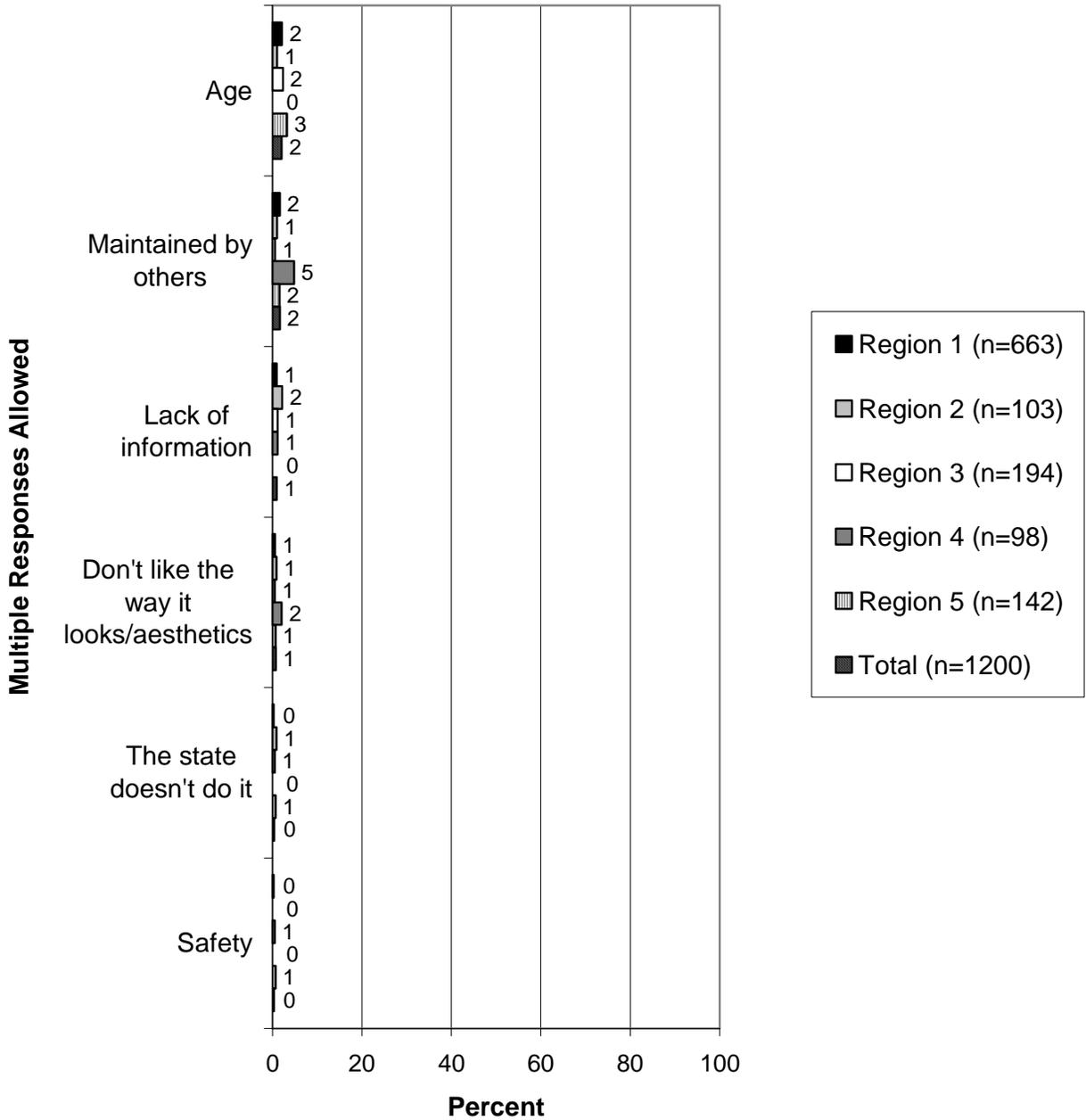


Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property?
Part 3



Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property?

Part 4



BEHAVIOR CHANGES AND WATER QUALITY

Q95. Respondents were asked if they would be more likely to change their behavior to help improve water quality if they knew that poor water quality leads to certain conditions. Large majorities (70% or more overall) said they would be more likely to change their behavior to help improve water quality if they knew each of the conditions listed may result, with little regional variation.

Q96. Respondents were asked if they would be more or less likely to change their behavior to help improve water quality if they knew that doing so would help protect future generations, and 90% overall said they would be much more likely or somewhat more likely to do so in that situation. There was little regional variation. Of the four questions about behavior changes and water quality (Questions 96 through 99), this question had the highest percentage saying they would be much more likely or somewhat more likely to change their behavior to help improve water quality in the given situation.

Q97. Respondents were asked if they would be more or less likely to change their behavior to help improve water quality if they received a tax break for doing so, and 78% overall said they would be much more likely or somewhat more likely to do so in that situation. There was little regional variation.

Q98. Respondents were asked if they would be more or less likely to change their behavior to help improve water quality if they had to pay a small fee on their property tax bill but they knew it was being used for conservation purposes, and 63% overall said they would be much more likely or somewhat more likely to do so in that situation. There was little regional variation. Of the four questions about behavior changes and water quality, this question had the lowest percentage saying they would be much more likely or somewhat more likely to change their behavior to help improve water quality in the given situation.

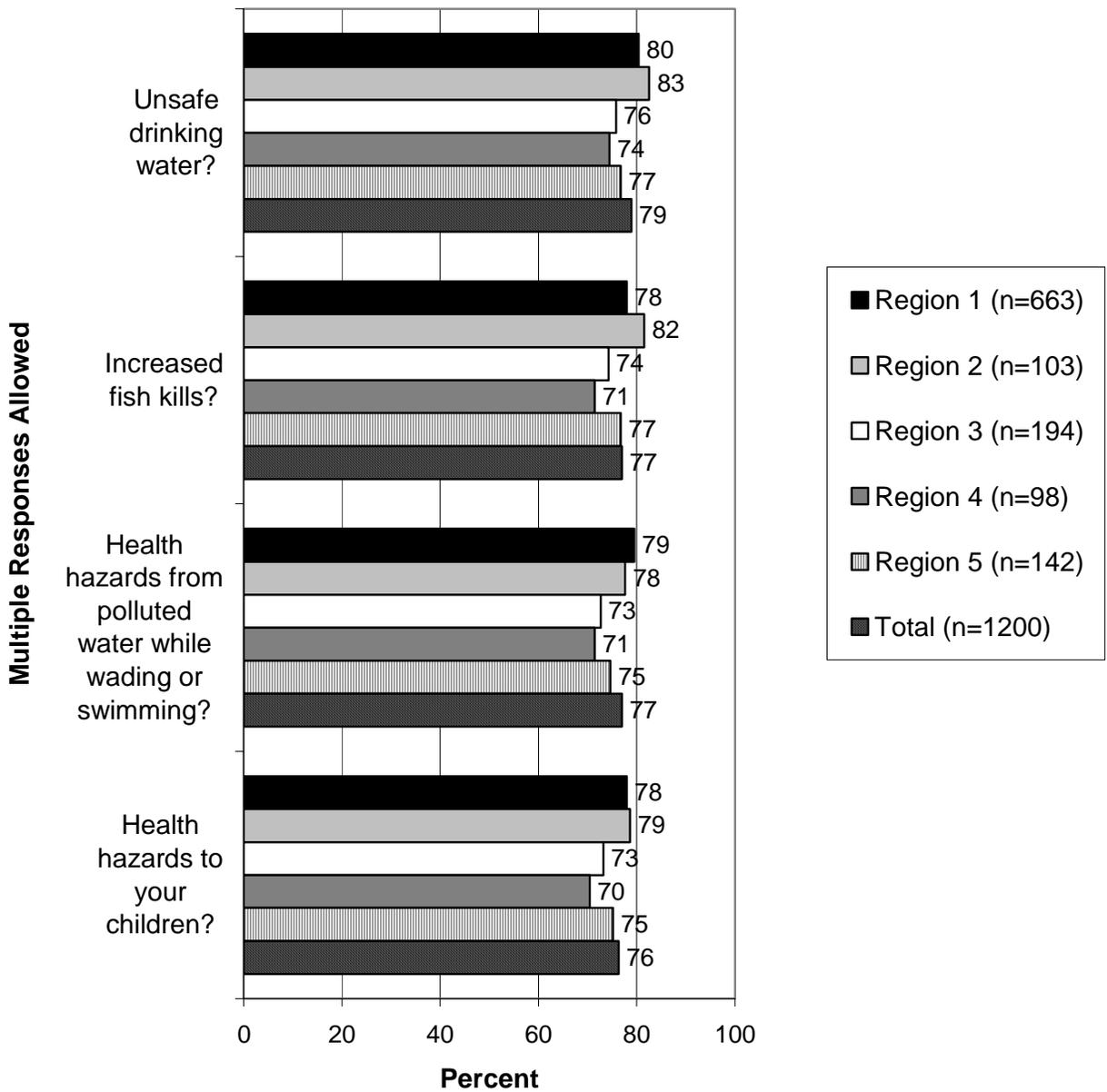
Q99. Respondents were asked if they would be more or less likely to change their behavior to help improve water quality if they received financial assistance for implementing conservation practices to reduce storm water runoff, and 70% overall said they would be much more likely or

somewhat more likely to do so in that situation. There was a slight regional variation, with 66% of Region 5 respondents having said that they would be much more likely or somewhat more likely to do so and 81% of Region 2 respondents having said that they would be much more likely or somewhat more likely to do so.

Q101. Finally, respondents were asked for the main reasons that they do not take greater measures to improve water quality, and a majority (52% overall) said that they already do as much as possible. Relatively low percentages answered that they are not aware of the problem (12% overall) or do not know what to do (11% overall).

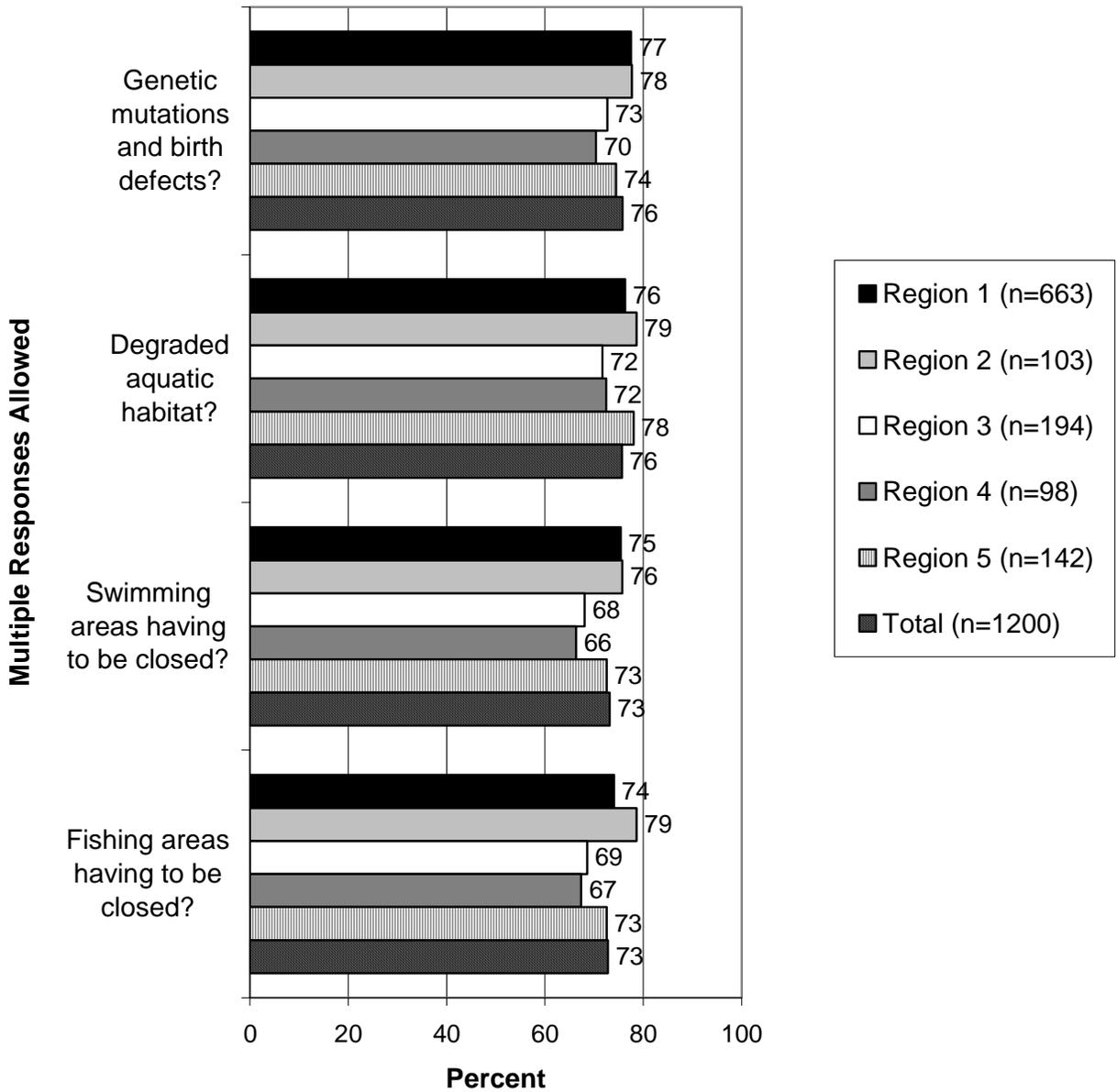
Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following?

Part 1



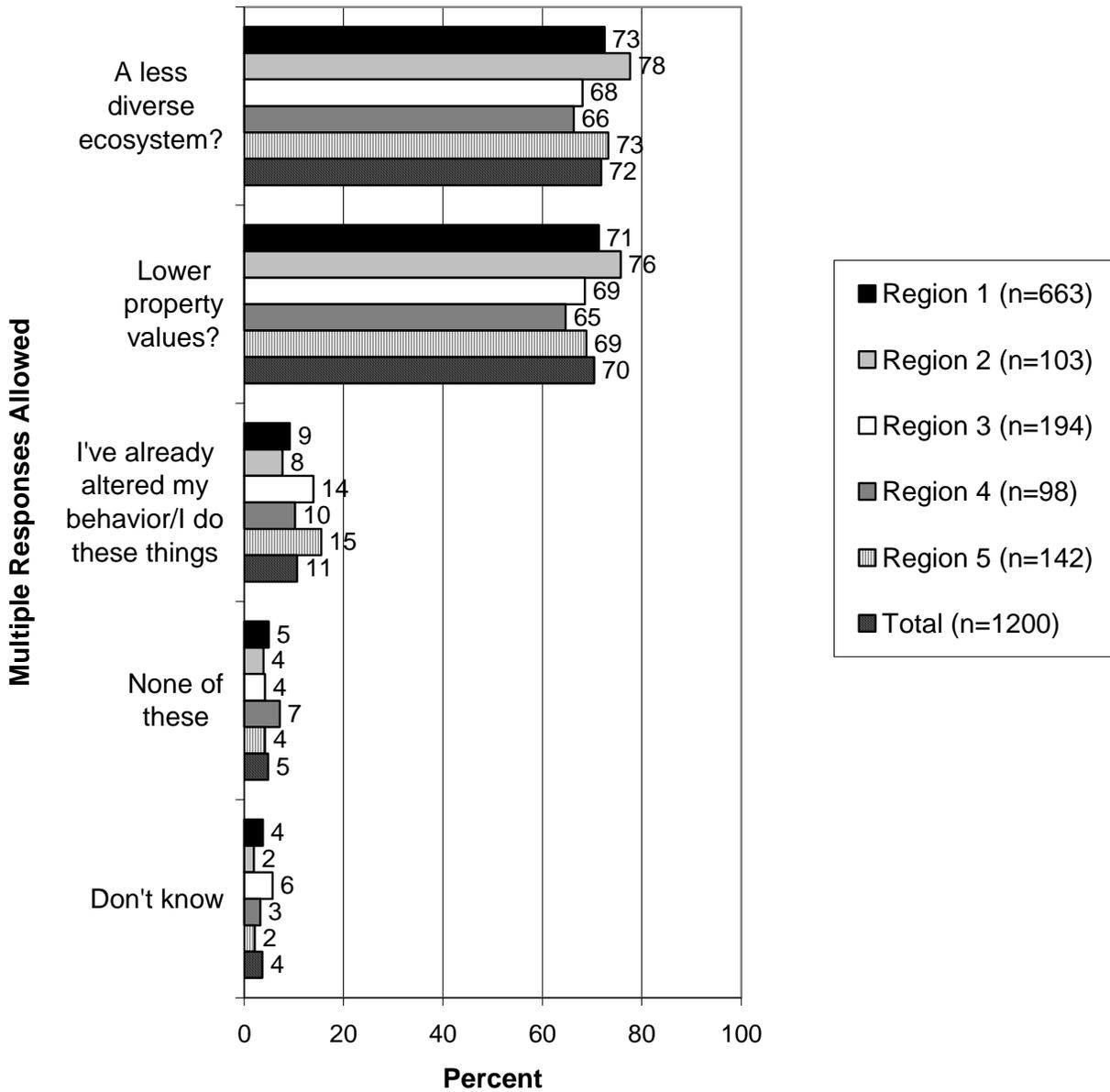
Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following?

Part 2

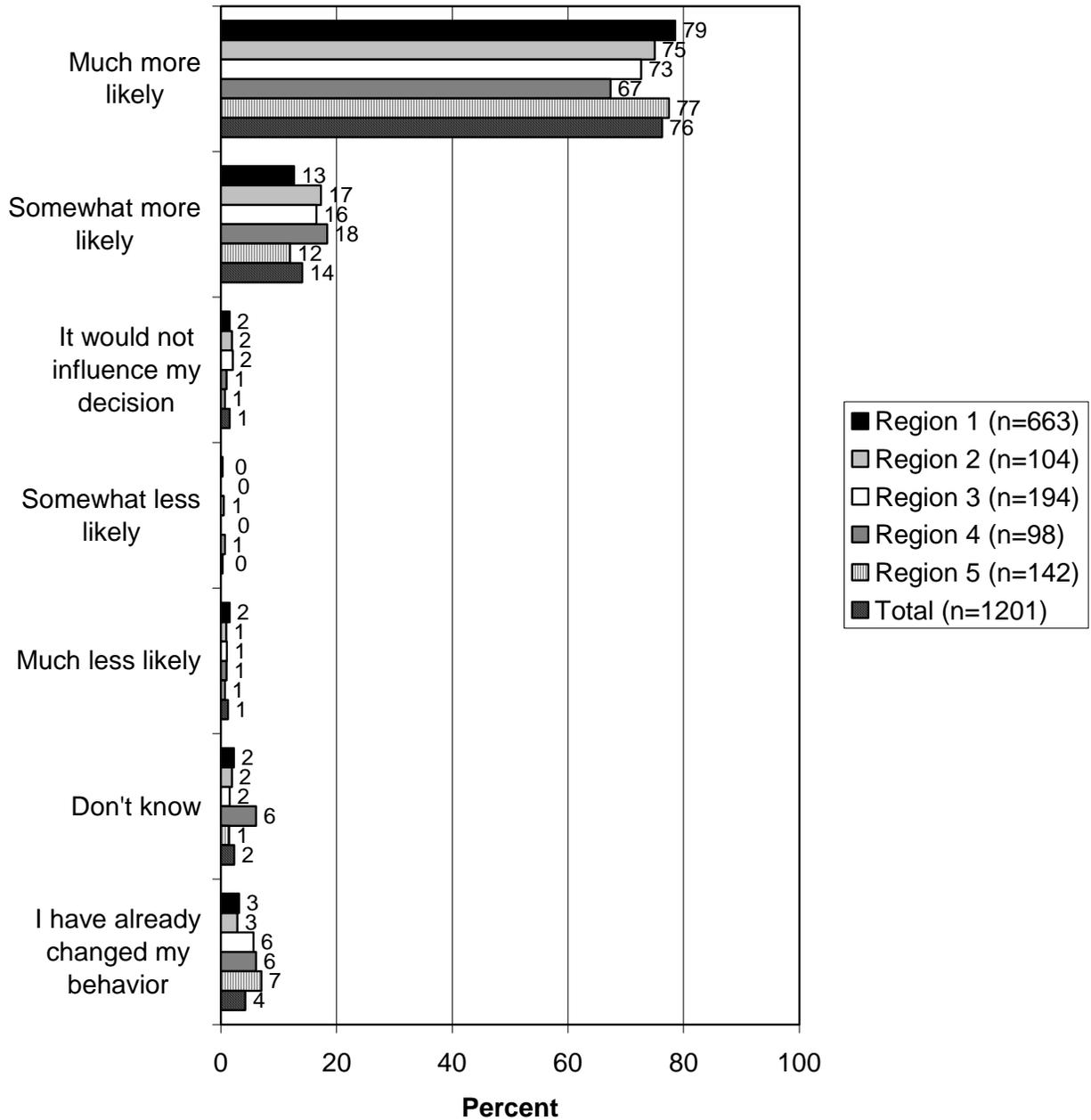


Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following?

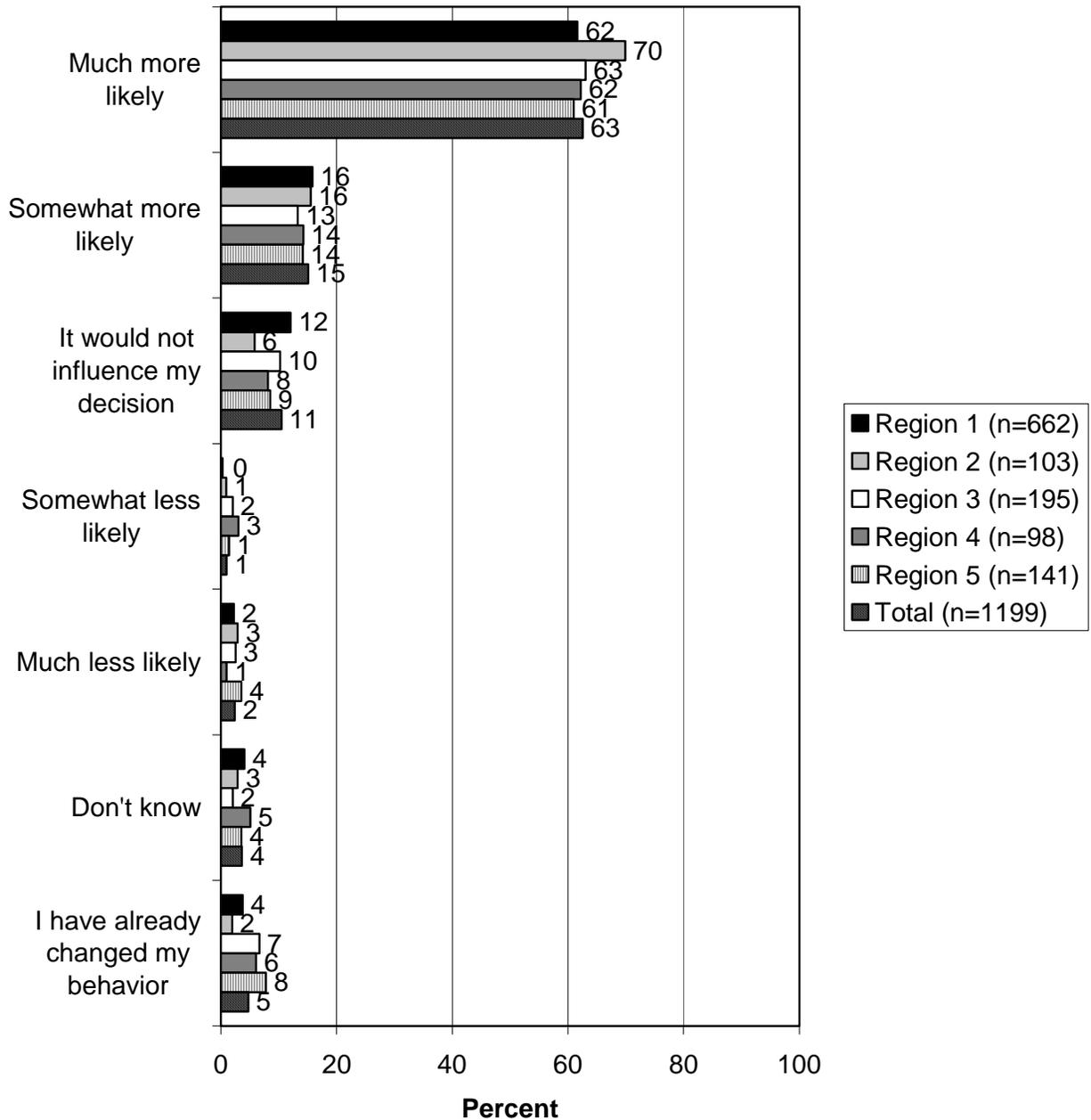
Part 3



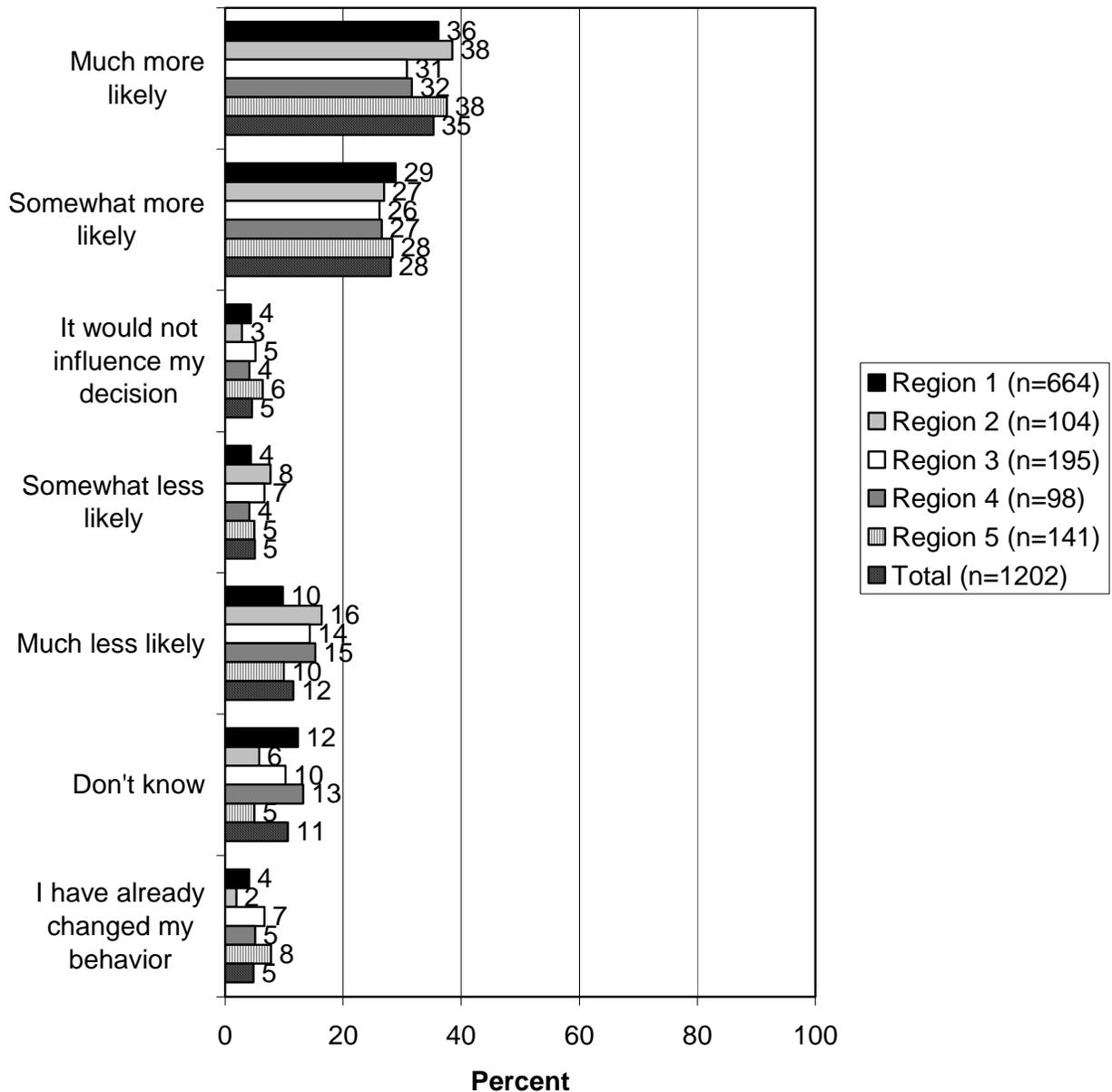
Q96. Would you be more or less likely to change your behavior to help improve water quality if you knew that you could help protect future generations?



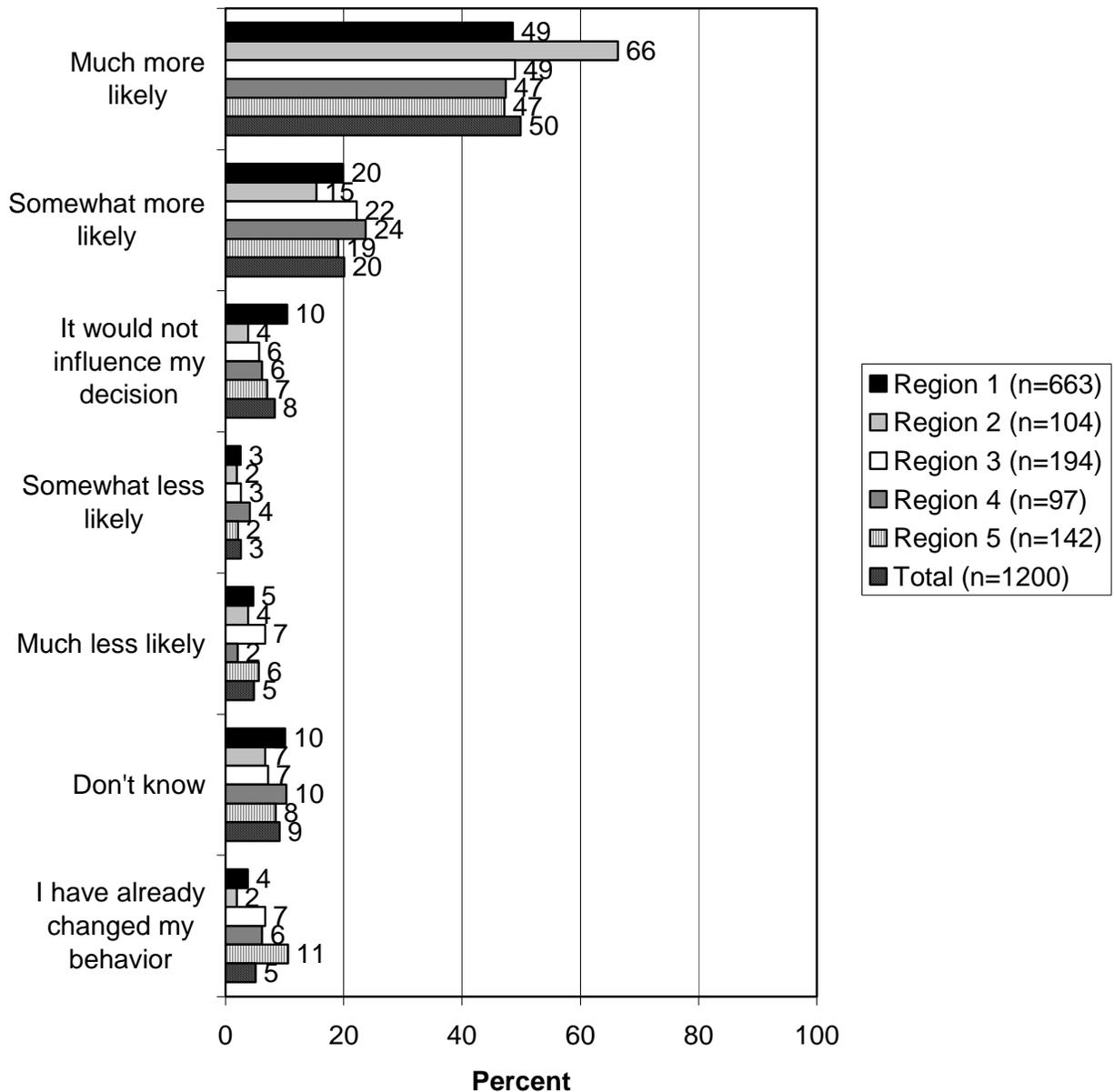
Q97. Would you be more or less likely to change your behavior to help improve water quality if you received a tax break?



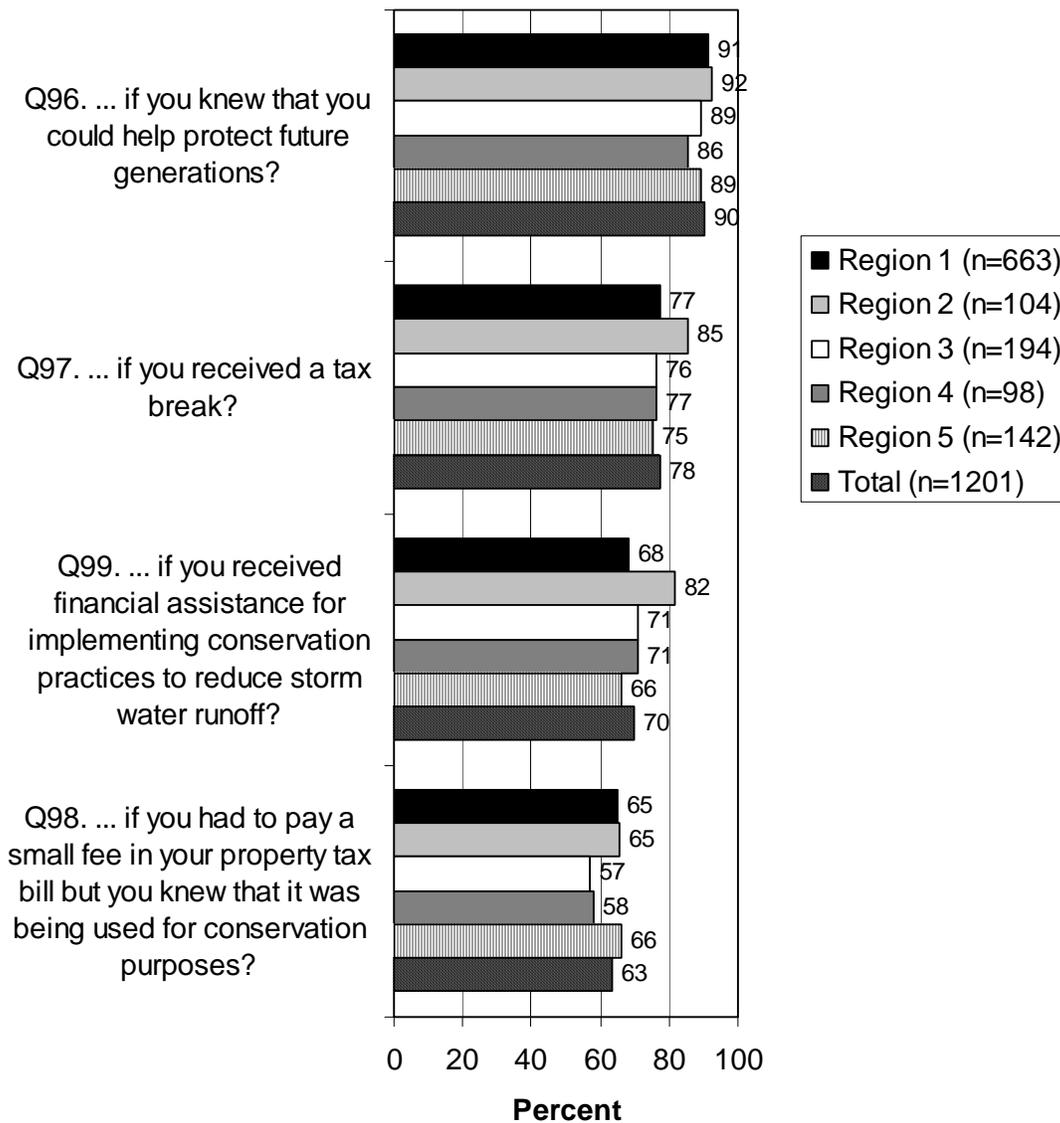
Q98. Would you be more or less likely to change your behavior to help improve water quality if you had to pay a small fee in your property tax bill but you knew that it was being used for conservation purposes?



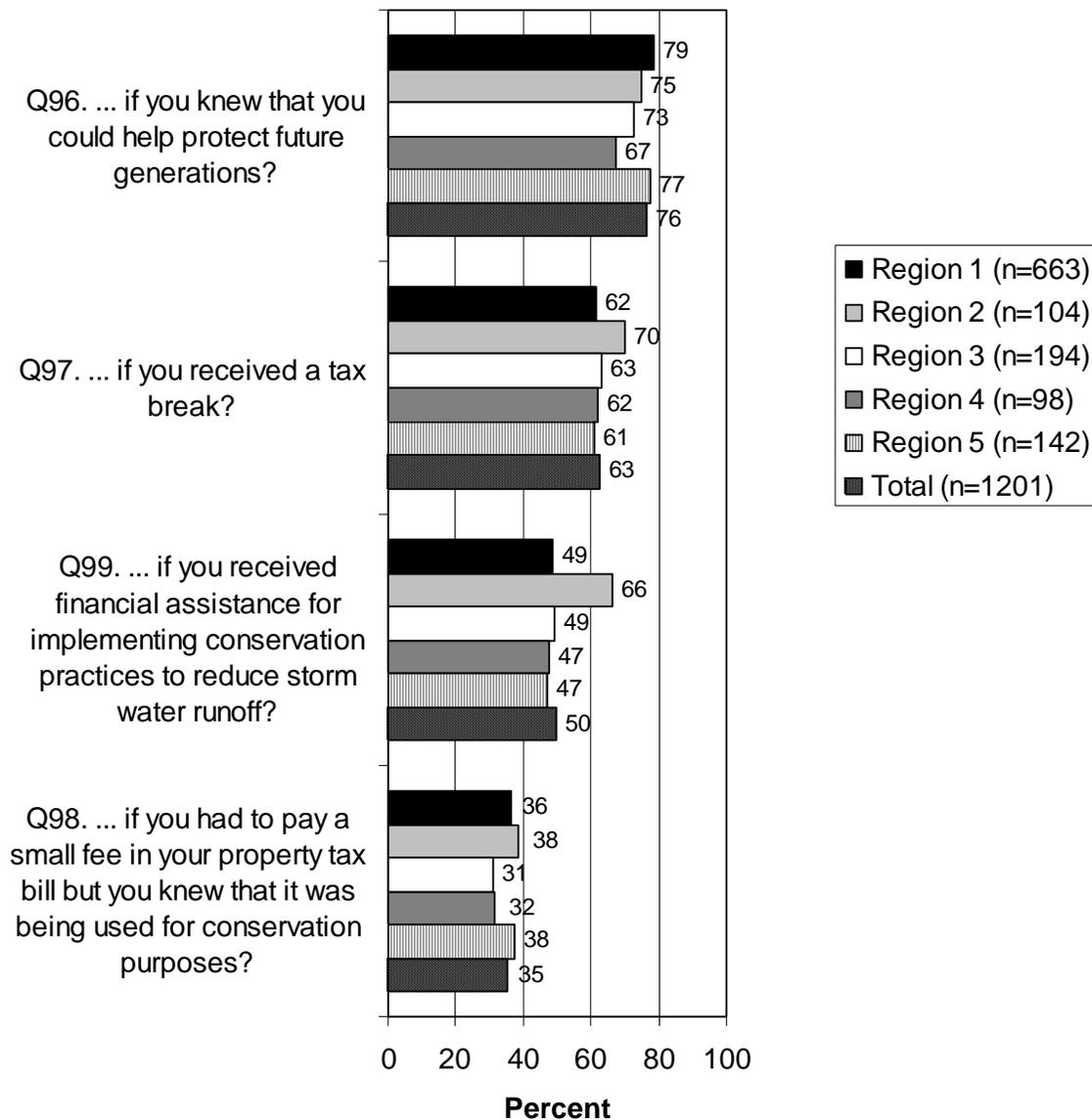
Q99. Would you be more or less likely to change your behavior to help improve water quality if you received financial assistance for implementing conservation practices to reduce storm water runoff?



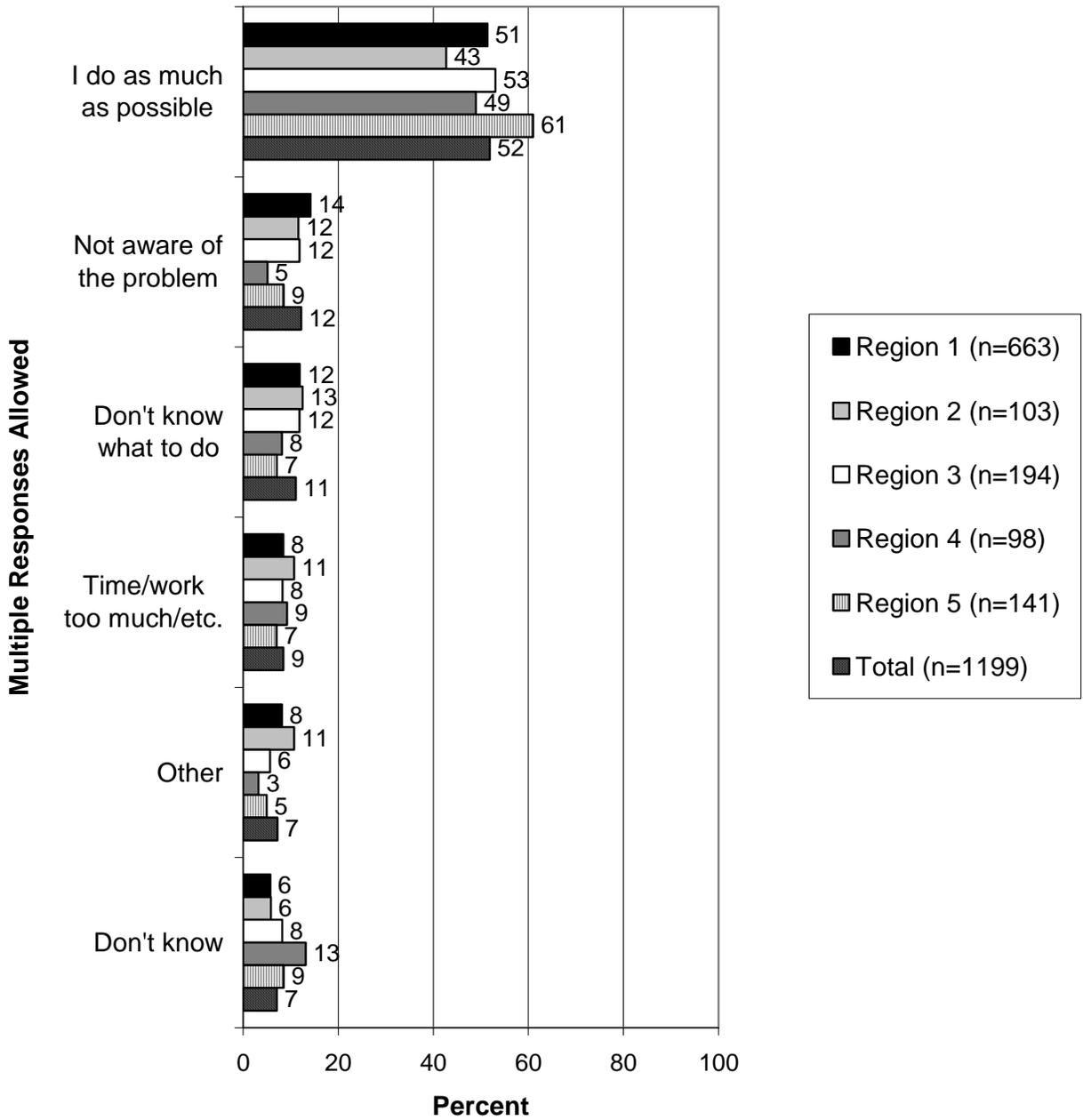
Q96-Q99. Percent saying they would be much more or somewhat more likely to change their behavior to help improve water quality under the following conditions/situations (not including those who responded that they had already changed their behavior).



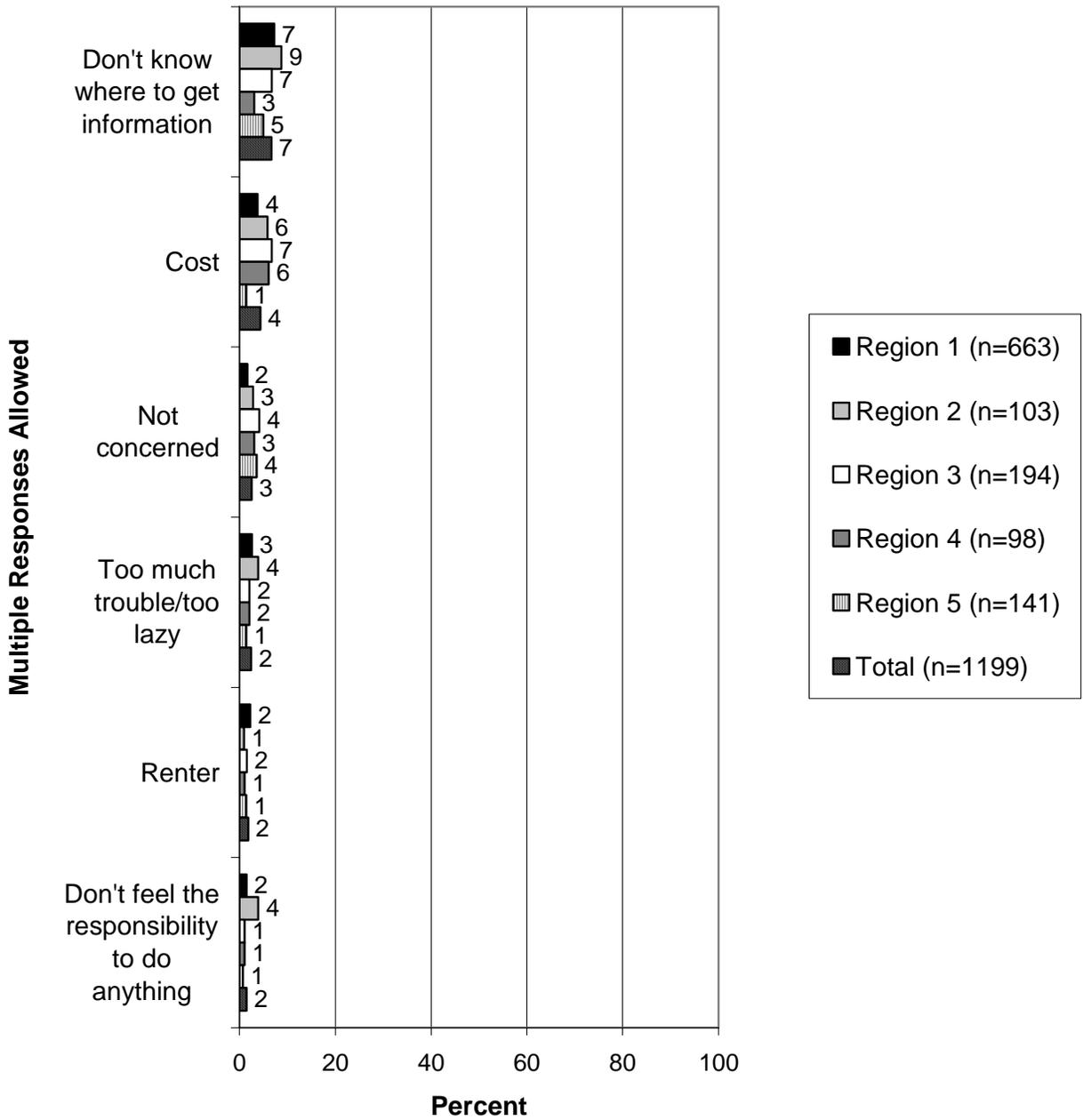
Q96-Q99. Percent saying they would be much more likely to change their behavior to help improve water quality under the following conditions/situations (not including those who responded that they had already changed their behavior).



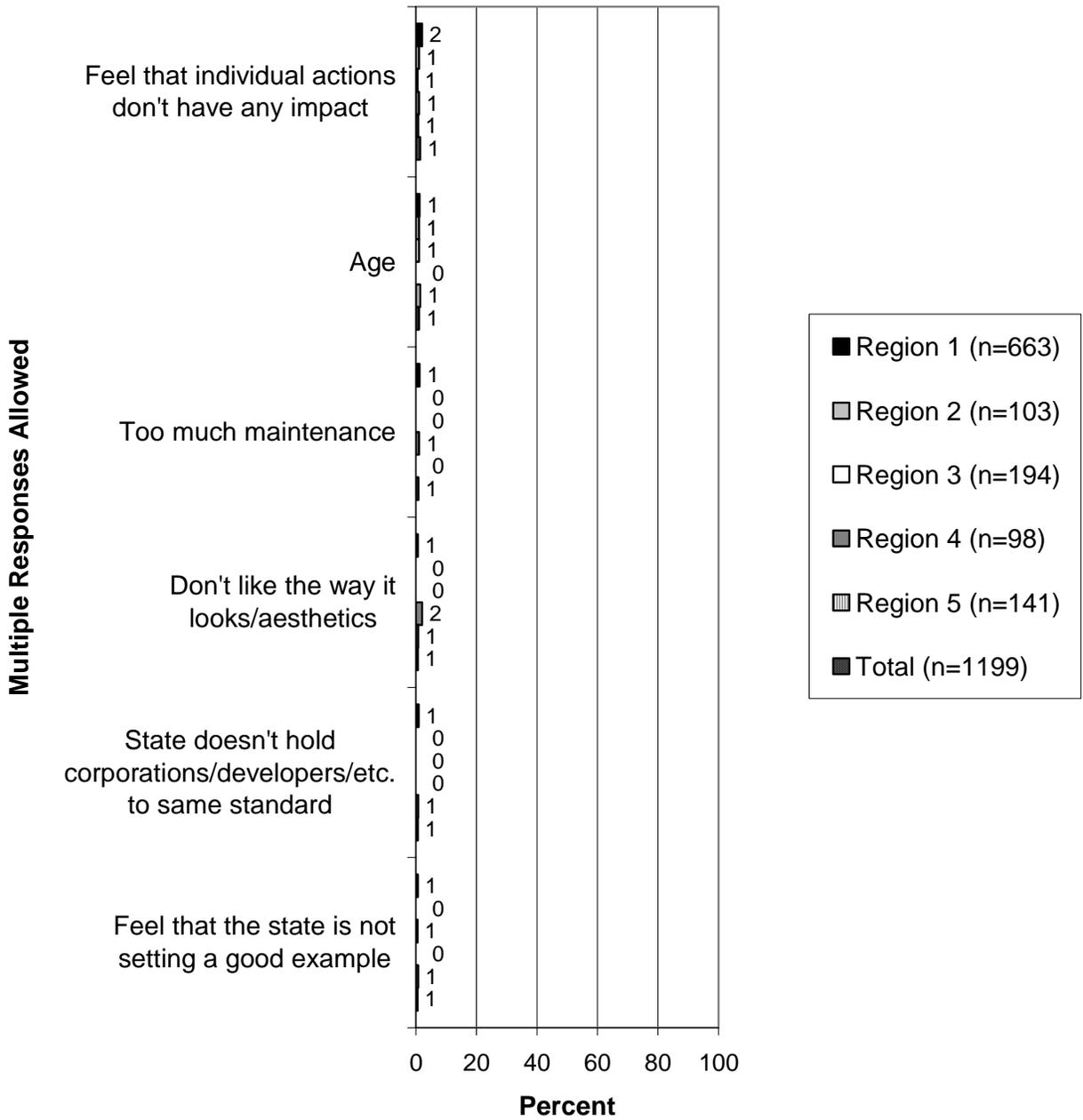
**Q101. What are the reasons that you do not take greater measures to improve water quality?
Part 1**



Q101. What are the reasons that you do not take greater measures to improve water quality?
Part 2



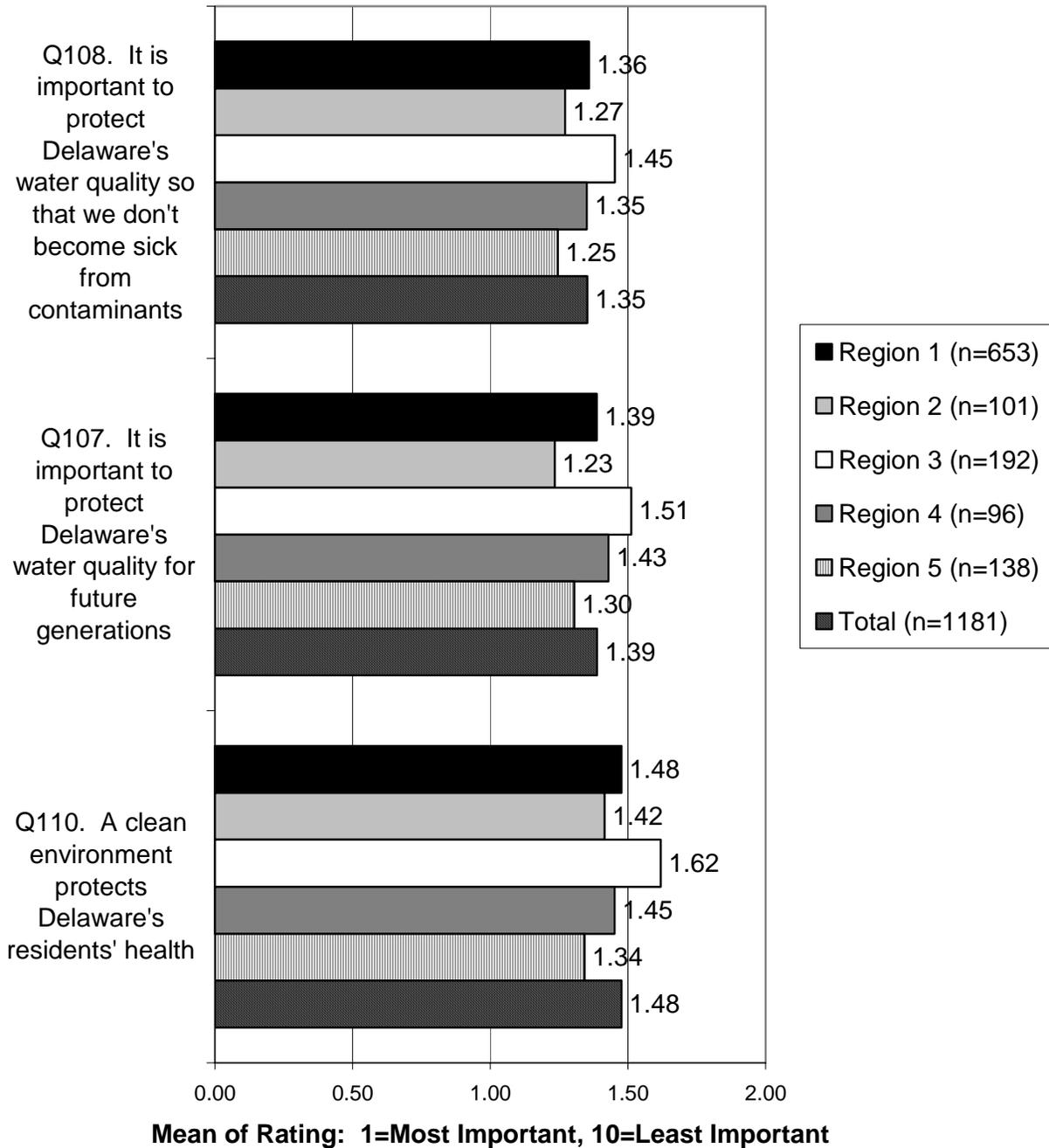
**Q101. What are the reasons that you do not take greater measures to improve water quality?
Part 3**



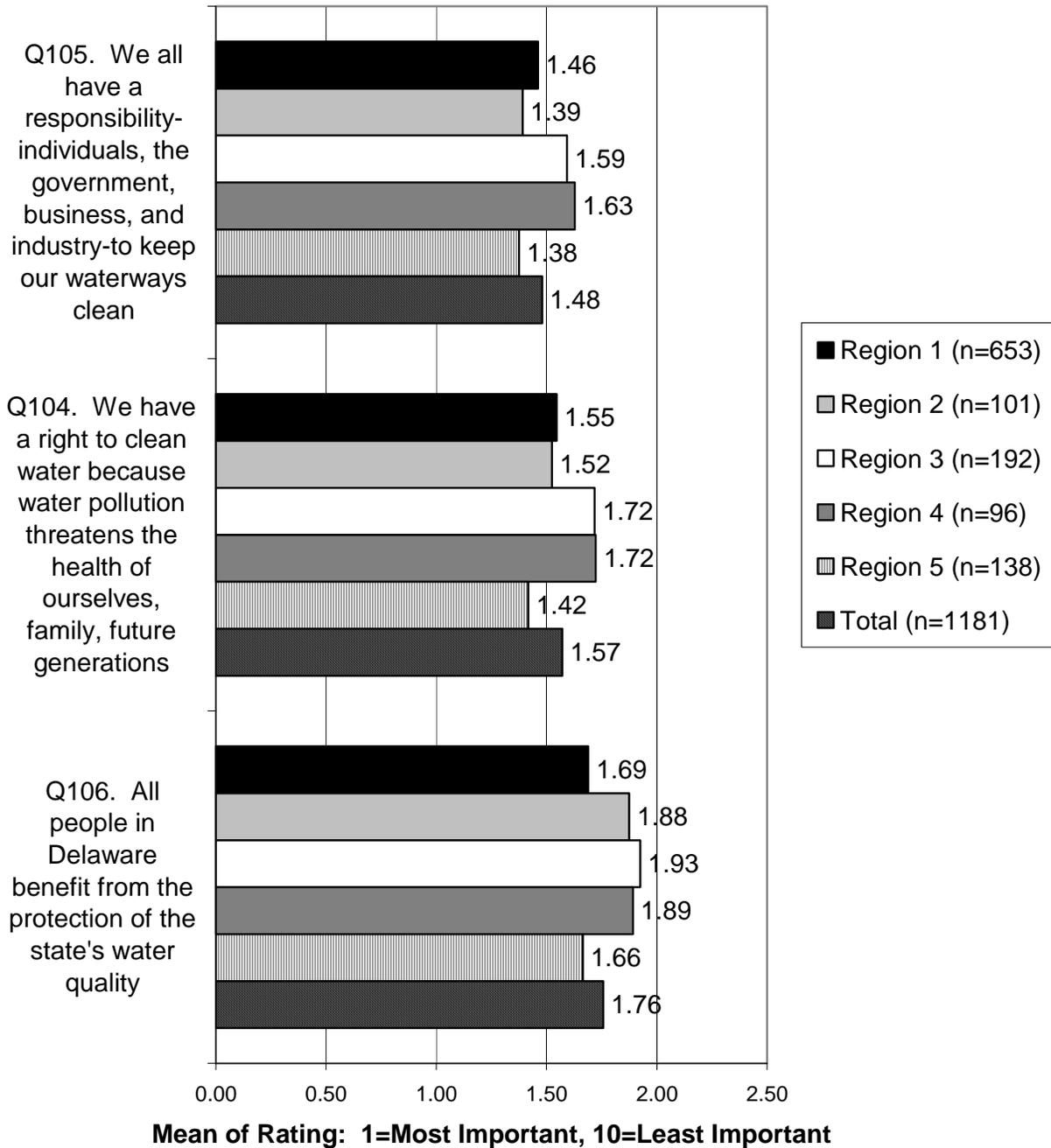
GENERAL WATER QUALITY ISSUES—STATEMENT RATINGS

Q104-112. Respondents were asked to rate nine statements regarding their importance as a reason for taking greater measures to protect Delaware's water quality. The statements were rated on a scale of 1 to 10, with 1 being the most important and 10 being the least important. While all statements have very low means for respondents overall (the highest was only 2.61 overall), the statements with the lowest means (i.e., the most important) are "It is important to protect Delaware's water quality so that we don't become sick from contaminants" (mean of 1.35 overall), "It is important to protect Delaware's water quality for future generations" (mean of 1.39 overall), and "A clean environment protects Delaware's residents' health" (mean of 1.48 overall). The statement with the highest mean rating (i.e., the least important) is "Keeping Delaware's inland and coastal waterways in good health is important for tourism" (mean of 2.61 overall).

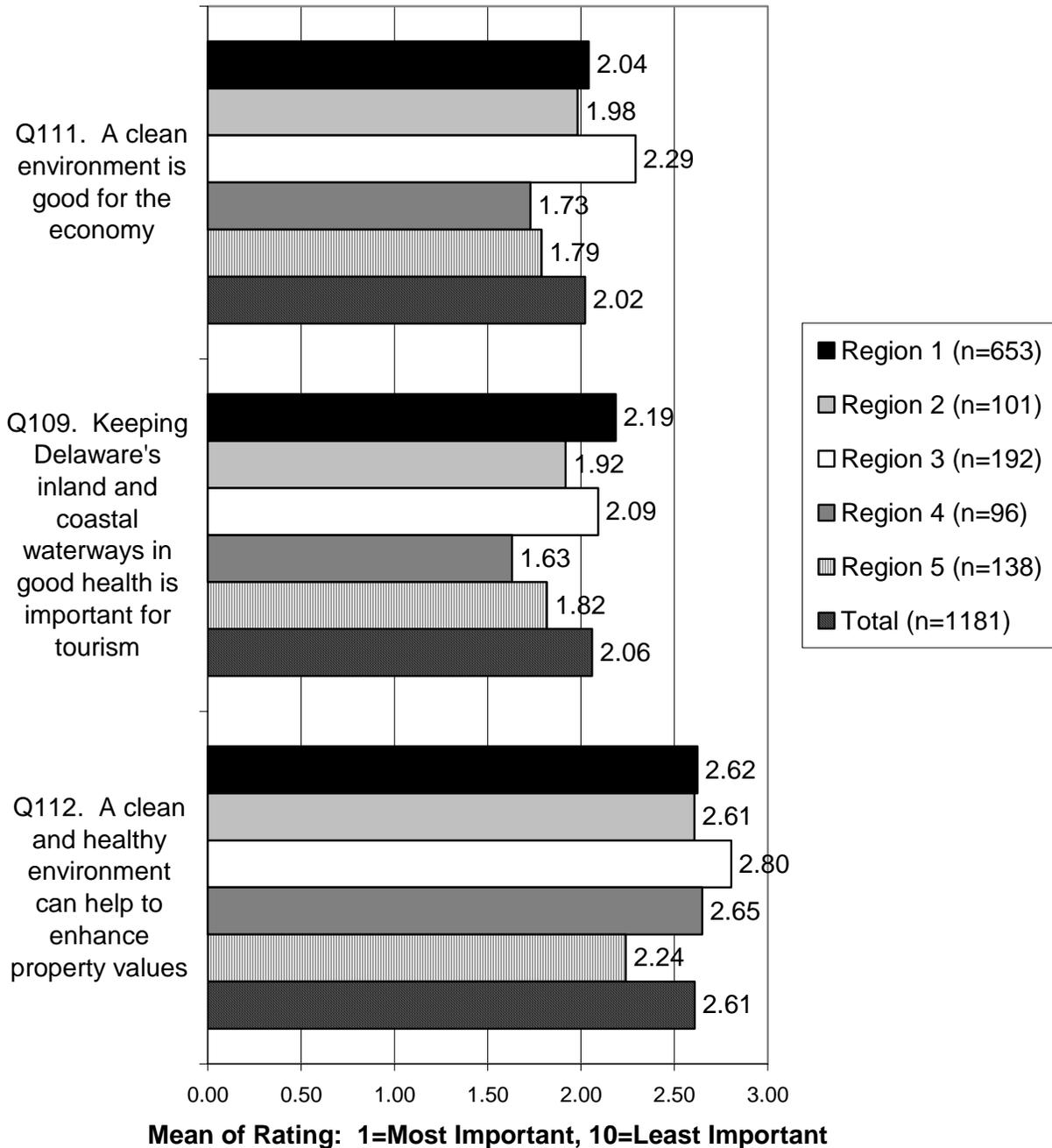
Q104-Q112. Rate the importance of the following statements as a reason to take greater measures to protect water quality. Part 1



Q104-Q112. Rate the importance of the following statements as a reason to take greater measures to protect water quality. Part 2



Q104-Q112. Rate the importance of the following statements as a reason to take greater measures to protect water quality. Part 3

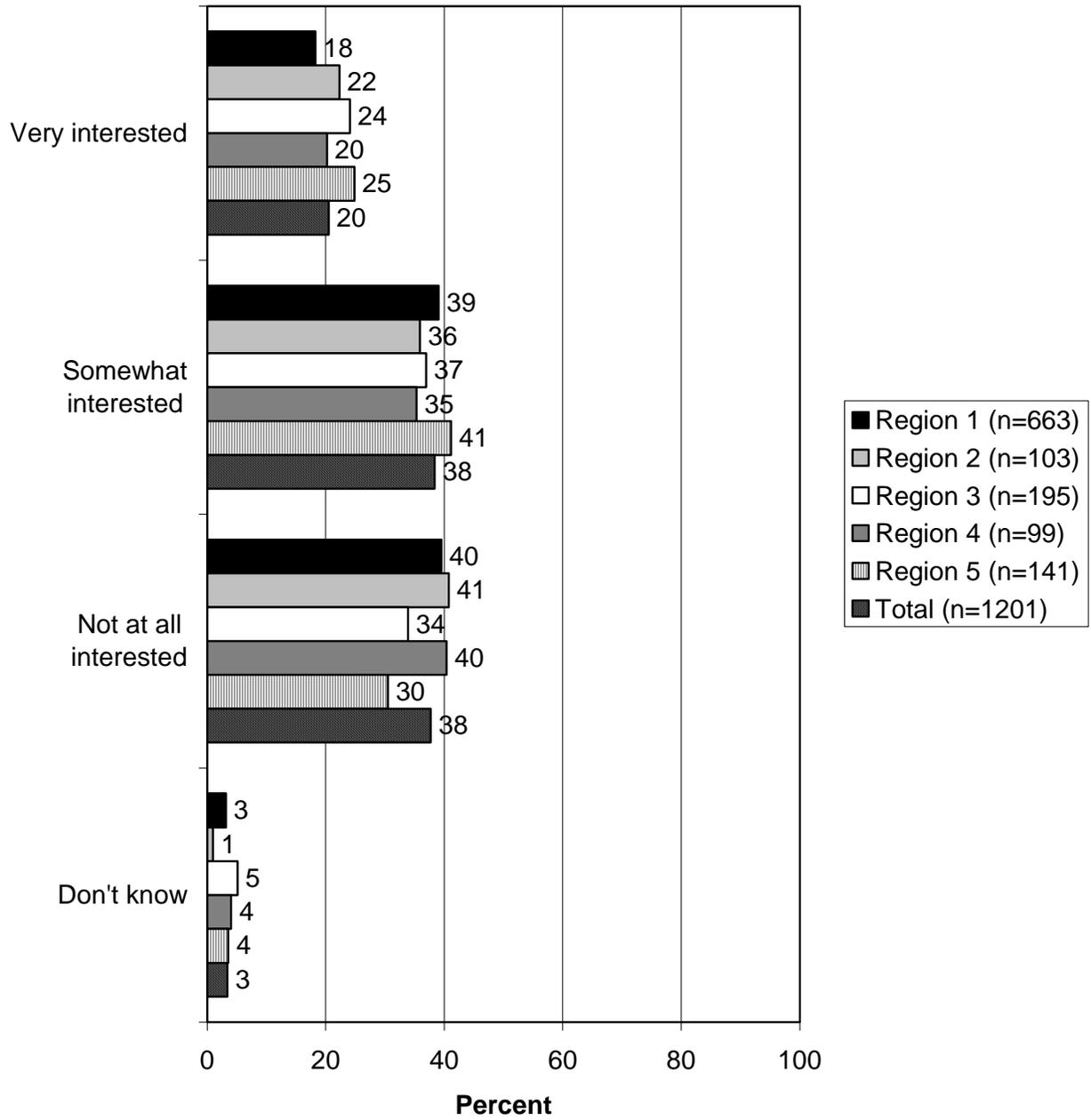


DNREC POLICY MAKING AND PUBLIC INPUT

Q116. A majority of respondents (58% overall) said they would be very or somewhat interested in attending meetings to provide public input into state policy on water quality, with little regional variation in the results.

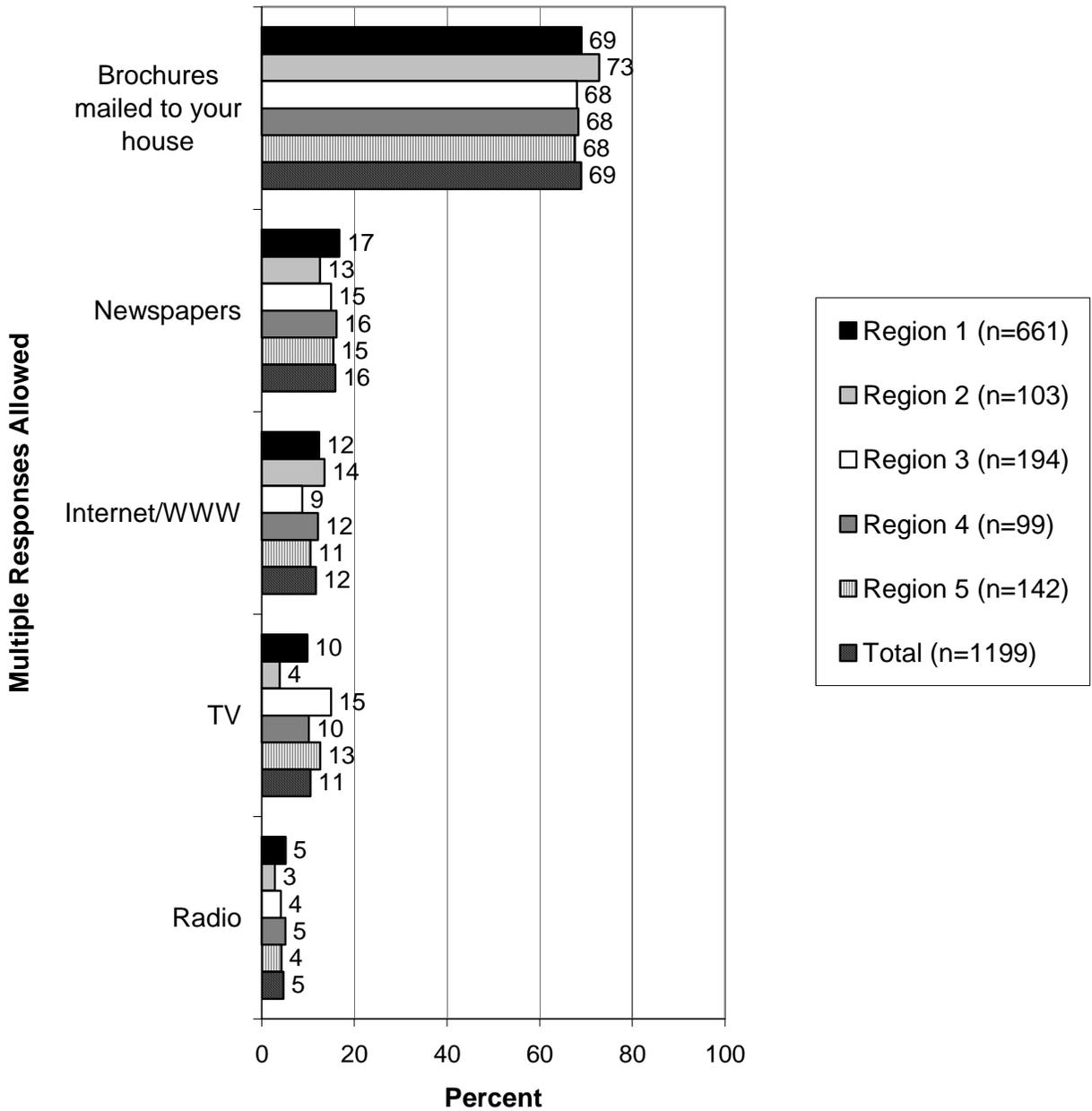
Q118. Asked about their preferred method of receiving information about water quality, a majority (69% overall) said brochures mailed to their house would be the preferred method, by far the leading answer. Newspapers were the preferred method of 16% overall, the Internet was the preferred method of 12% overall, and television was the preferred method of 11% overall. There was little regional variation.

Q116. If you knew that DNREC is seeking public input to help shape state policy on water quality, would you be interested in attending these meetings?



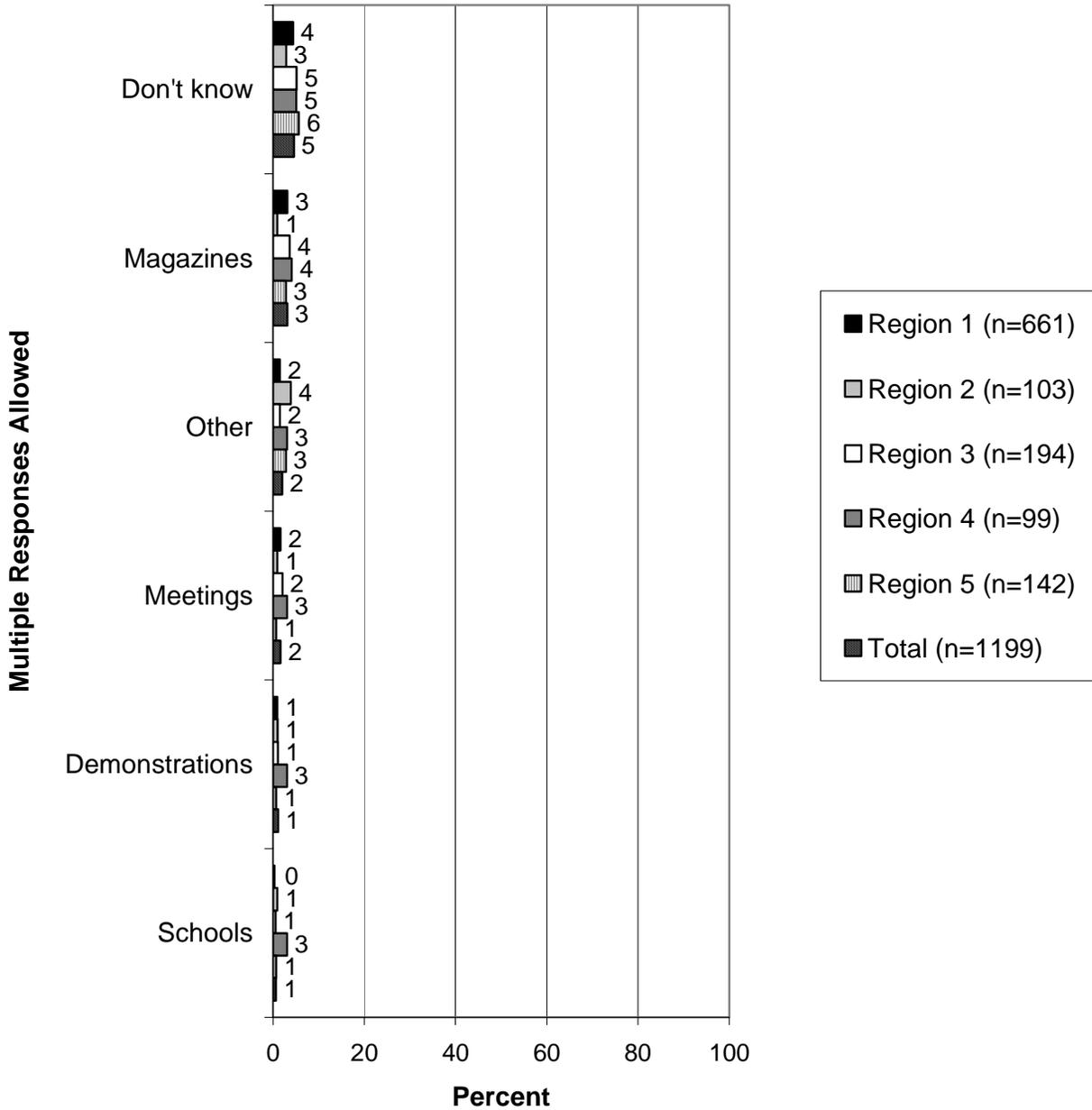
Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality?

Part 1



Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality?

Part 2



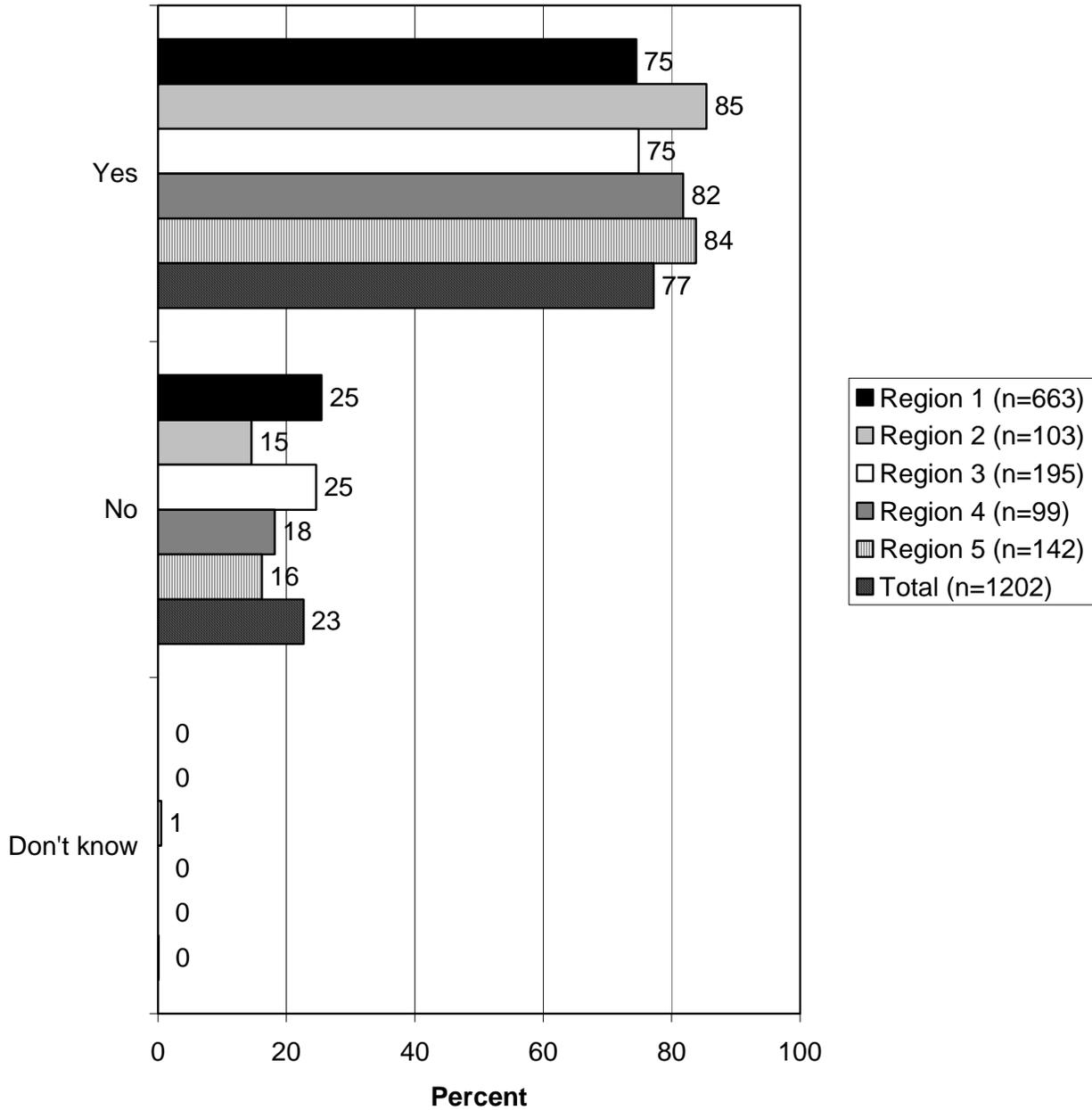
CHARACTERISTICS OF SAMPLE AND OTHER DEMOGRAPHIC DATA

Q24. The need to match survey participants to Delaware's regions necessitated the use of listed telephone numbers with known locations. For this reason, there was a higher percentage of homeowners in the sample than in the general population (according to the Delaware Economic Development Office, 71.7% of Delaware residents owned their own home in 1998—see http://www.state.de.us/dedo/new_web_site/frames/demographic.html). This occurred because the sampling procedure intentionally favored those with known, established addresses, which in turn biased against transient people (i.e., renters) who do not own property. Among the sample, 77% are homeowners. Regions 1 and 3 had the lowest percentage of homeowners (75%); Region 2 had the highest percentage of homeowners (85%).

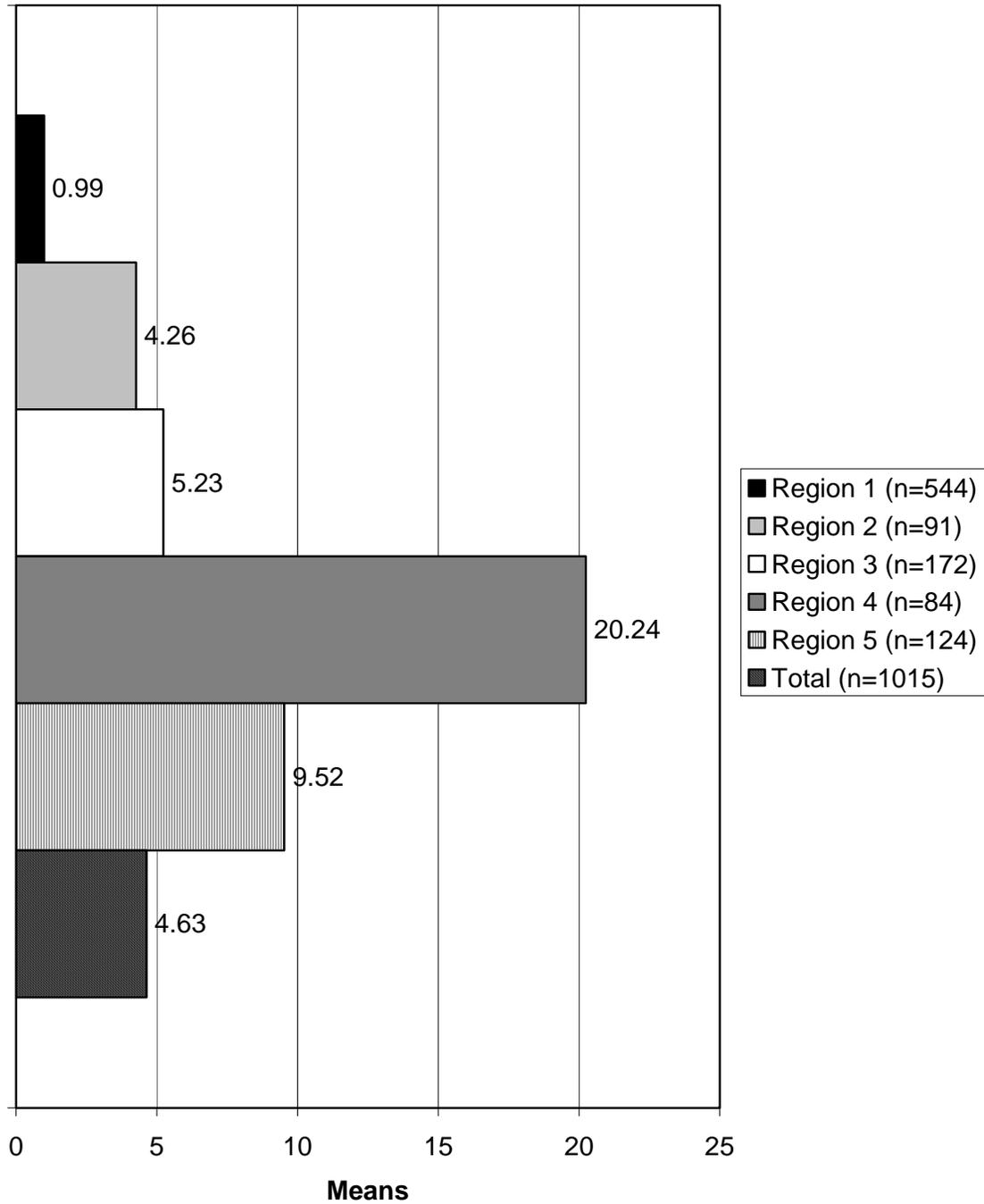
Q125. In looking at the means of acreage owned, there is substantial regional variation: Region 1 respondents have the smallest mean lot (0.99 acres); Region 4 respondents have the largest mean lot (20.24 acres). The mean of all respondents' lots is 4.63 acres.

Q126. While 41% of respondents overall were part of a neighborhood association and 53% of respondents overall were not part of a neighborhood association, there was much regional variation. Region 1 had the highest percentage of respondents in a neighborhood association (51%), and Regions 4 and 3 had the lowest percentage of respondents in a neighborhood association (17% and 19%, respectively).

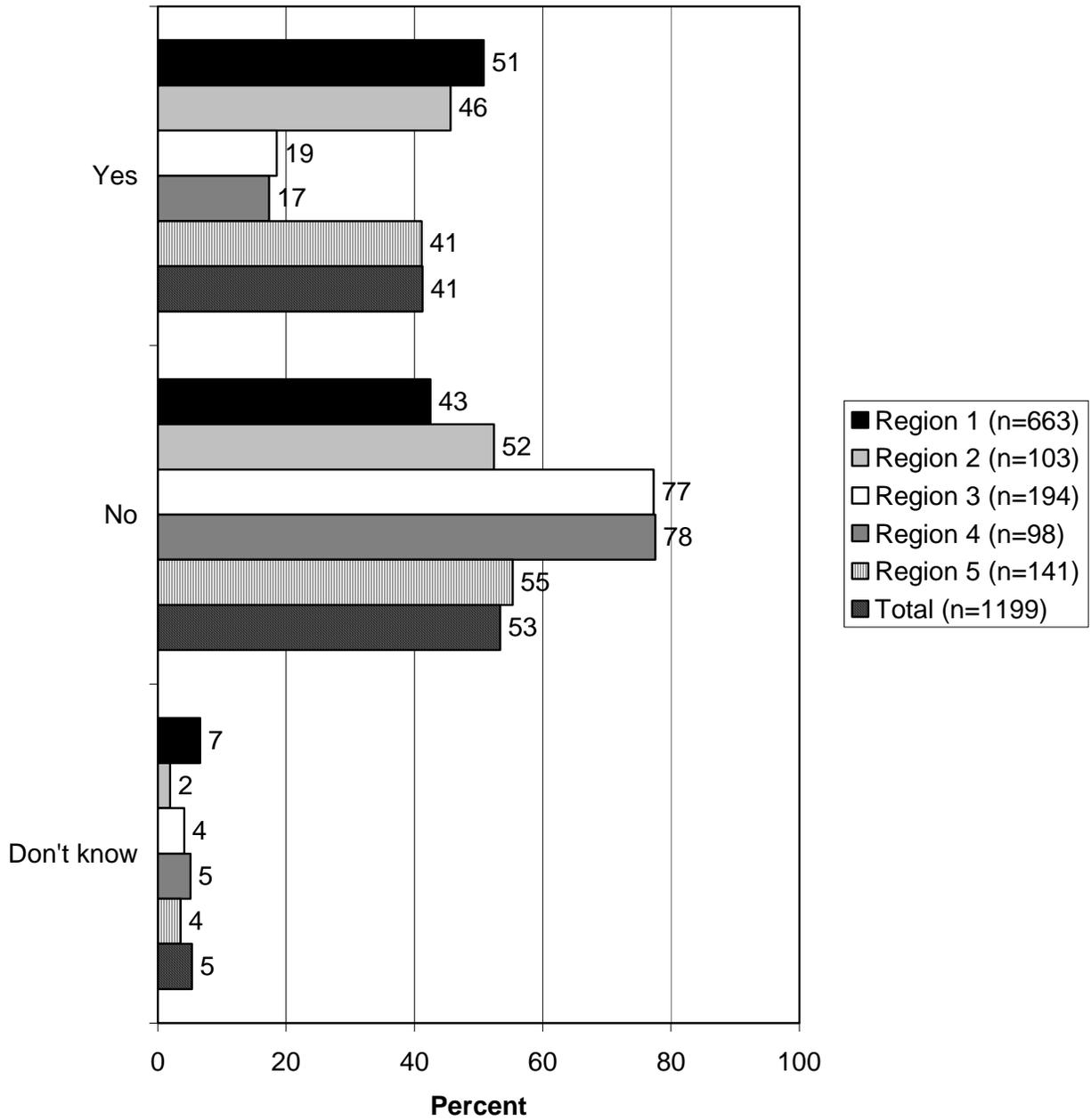
Q24. Are you a homeowner?



Q125. What is the total number of acres you own in Delaware?



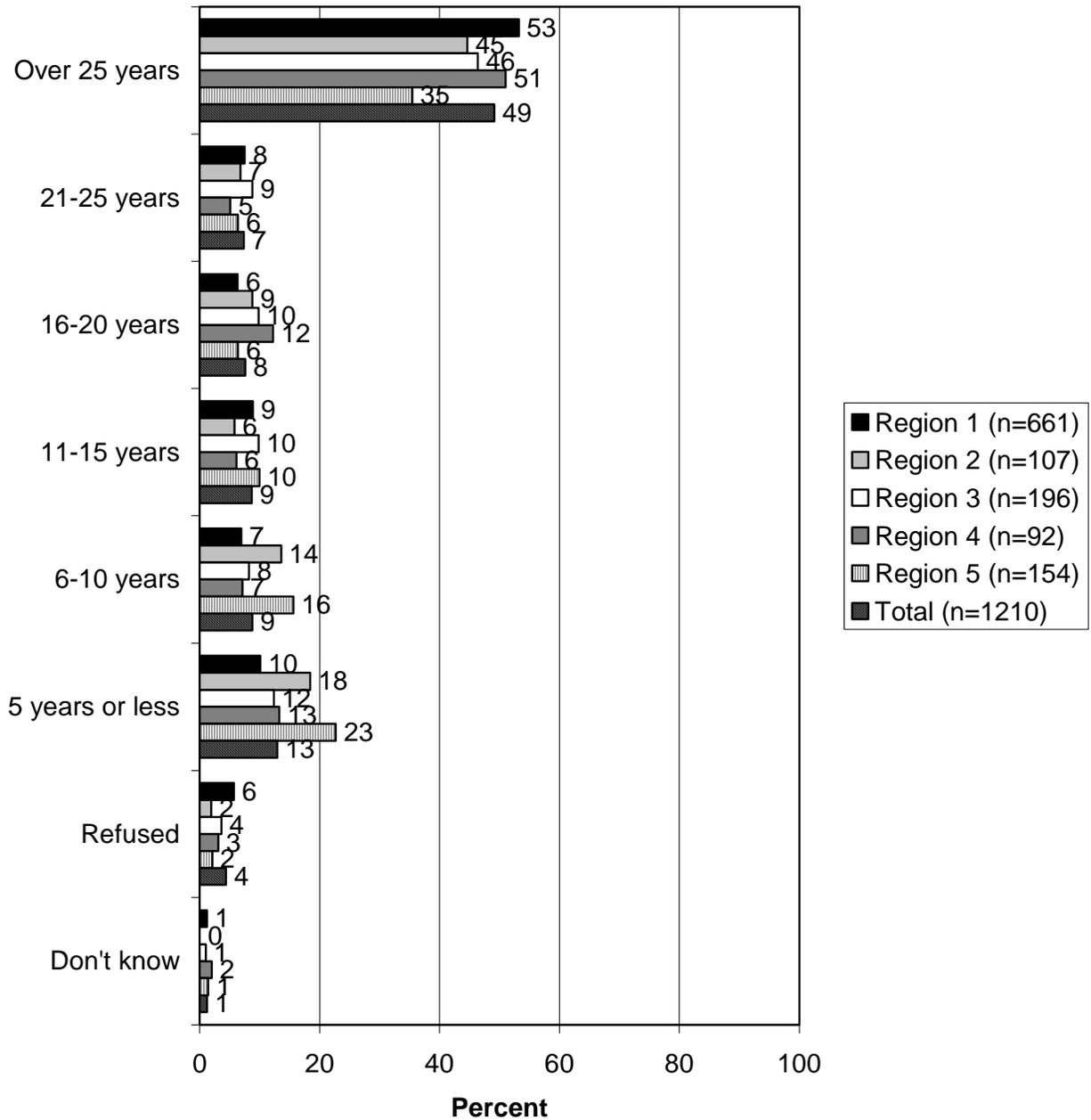
Q126. Are you part of a neighborhood association?



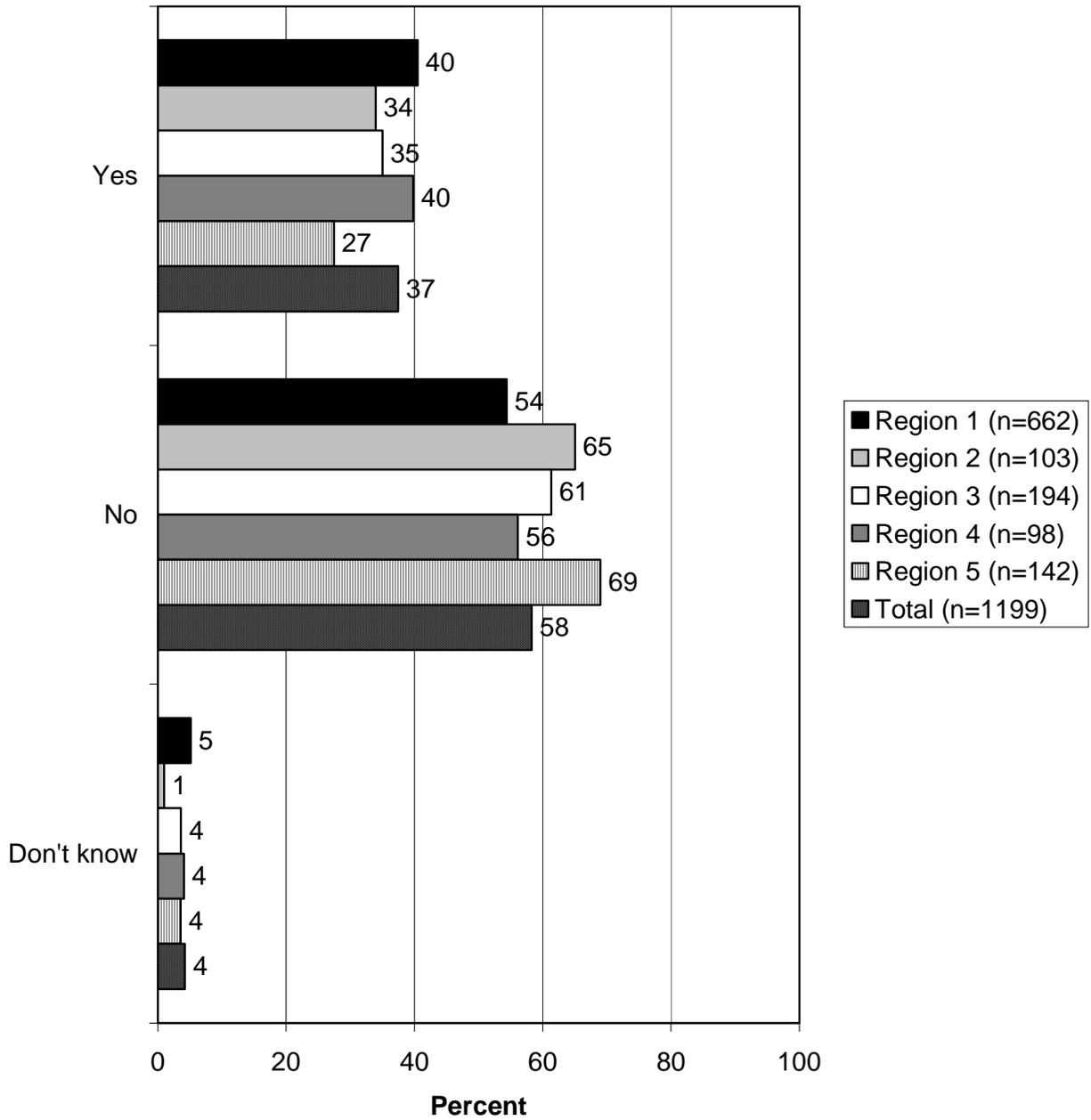
Q122. The most commonly given answer overall and among each region regarding the number of years the respondent has lived in Delaware was over 25 years (49% overall, ranging from 35% of Region 5 respondents to 53% of Region 1 respondents). Otherwise, the responses were fairly well distributed among categories.

Q123. A majority of respondents overall (58% overall) and in each region did not consider themselves Delaware natives. Region 5 had the highest percentage of respondents who were not native (69%); Region 1 had the lowest percentage of non-natives (54%).

Q122. For how many years have you lived in Delaware?

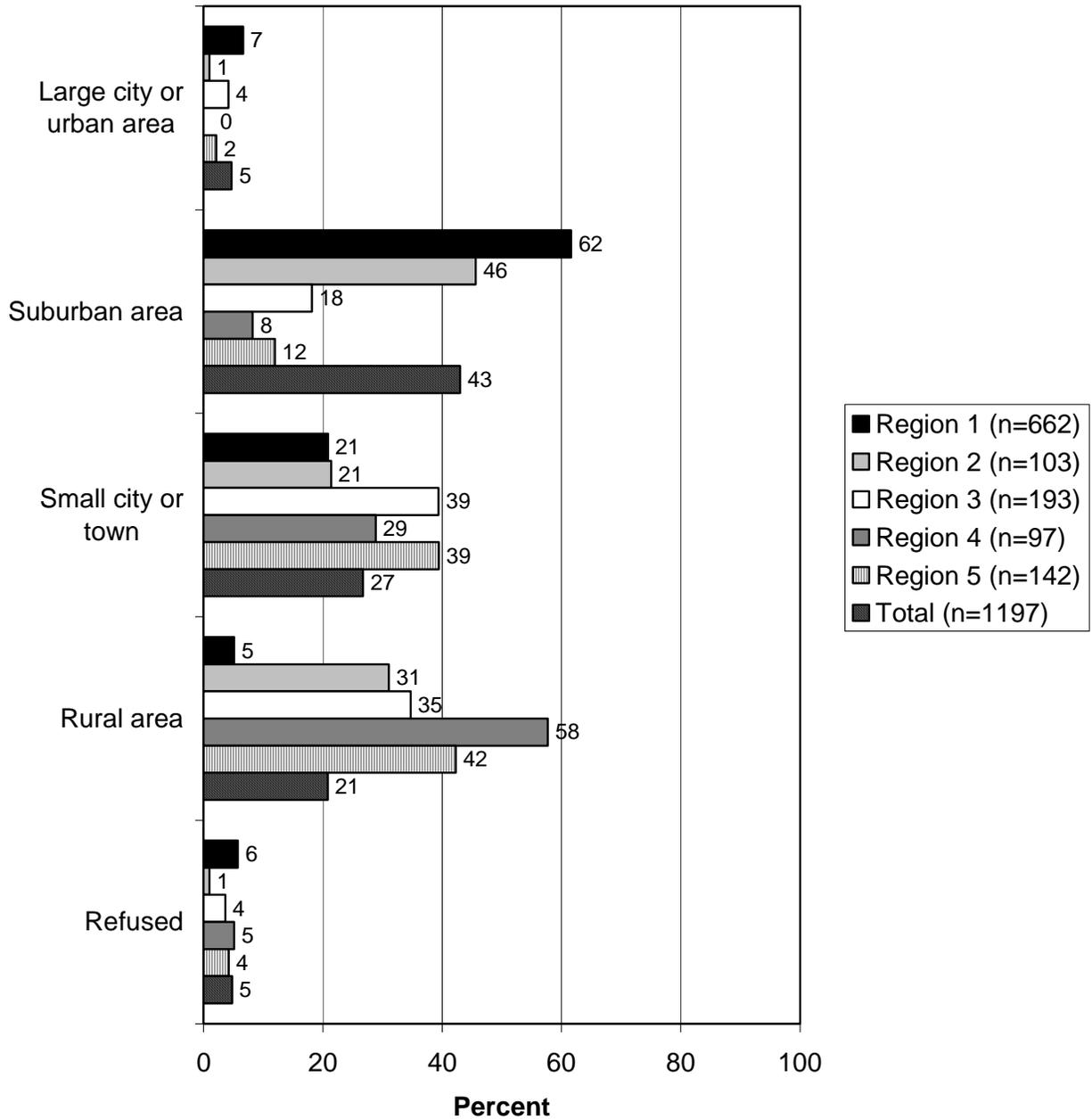


Q123. Are you a Delaware native?

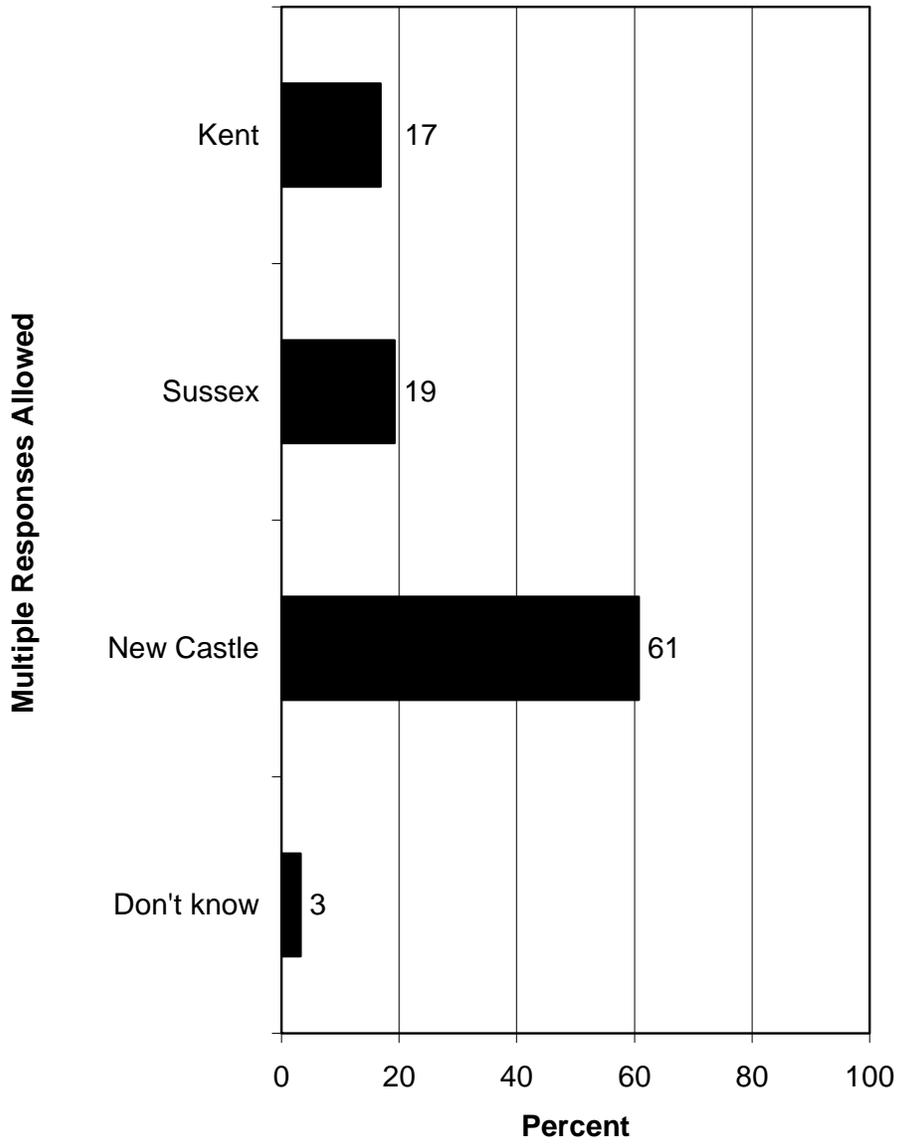


Q121 and 124. A plurality of respondents indicated that their place of residence is in a suburban area (43% overall), followed by small city or town (27%) and rural area (21%). Only 5% considered their place of residence to be in a large city or urban area. Regions 1 and 2 are the most urbanized; Regions 4 and 5 are the most rural. Following the graph for place of residence is the graph for county of residence for respondents overall.

Q121. Do you consider your place of residence to be in a large city, a suburban area, a small city/town, or a rural area?



Q124. What is your county of residence?



Q127. The need to match survey participants to Delaware's regions necessitated the use of listed telephone numbers with known locations. For this reason, there may be a higher percentage of retired people in the sample than in the general population. This would occur because the sampling procedure intentionally favored those with known, established addresses, which in turn biased against transient people (i.e., renters), who typically are younger and are actively engaged in the work force. The following formula was used to judge the accuracy of the percentage of retirees.

$$\text{Total \% Working} = [\text{Total Labor Force} \div (\text{Total Population} - \text{Those Under 16})] \times 100$$

The numbers that were used, from 1998, are as follows, obtained from the Delaware Economic Development Office—see http://www.state.de.us/dedo/new_web_site/frames/demographic.html:

$$\text{Total \% Working} = [413,400 \div (760,600 - 173,300)] \times 100$$

$$\text{Total \% Working} = [413,400 \div 587,300] \times 100$$

$$\text{Total \% Working} = [.7039] \times 100$$

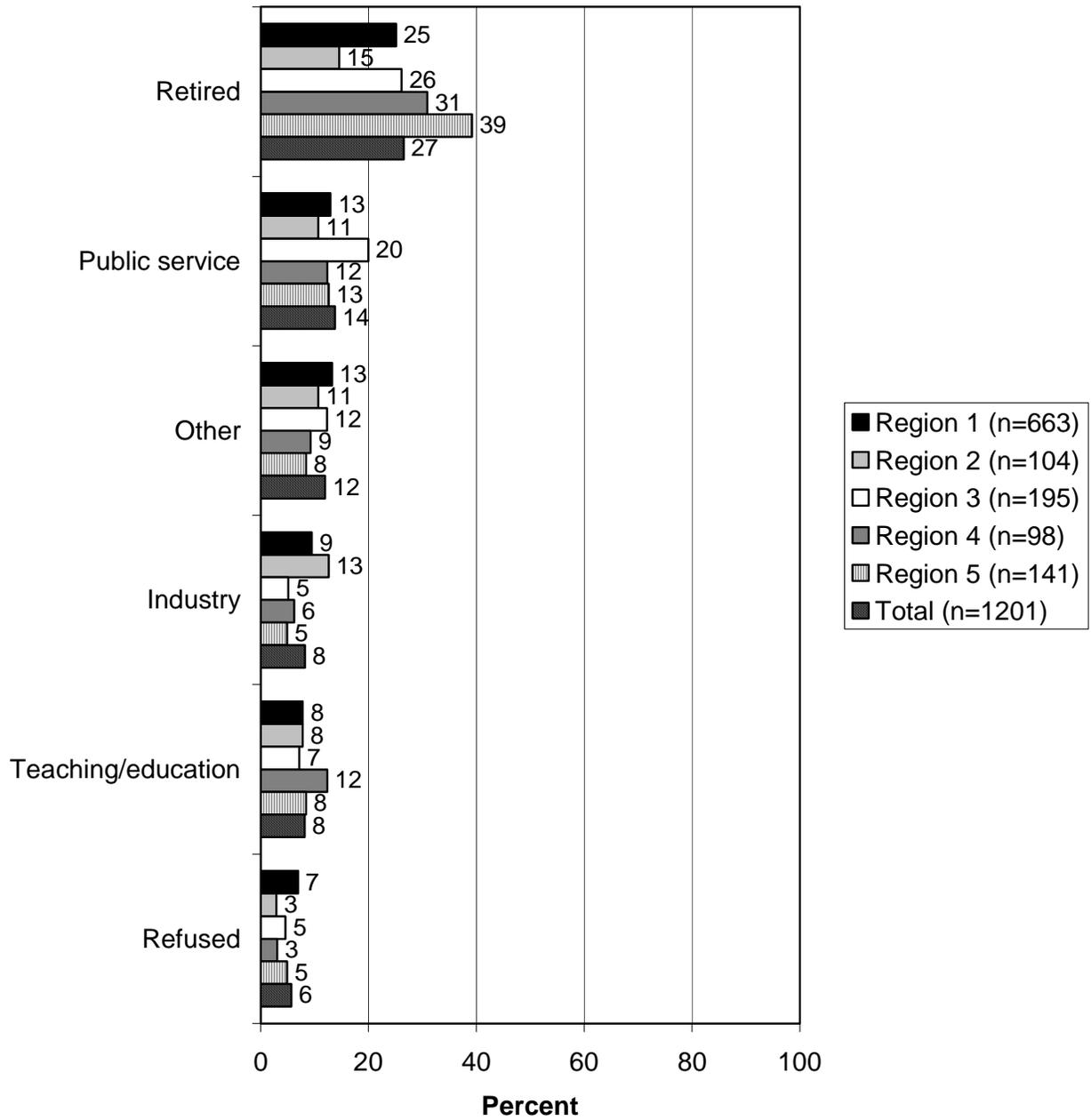
$$\text{Total \% Working} = 70.39\%$$

This formula found that 70.4% of the population was actively engaged in the work force in 1998, which means that 29.6% were not. This compares well with the percentage of the sample who indicated that they are retired (27%). The categories of respondents' profession are shown in the graphs on the following pages. The top answer was retired (27% overall), with substantial regional variation—Region 2 had the lowest percentage saying they are retired (15%), and Region 5 had the highest percentage saying they are retired (39%).

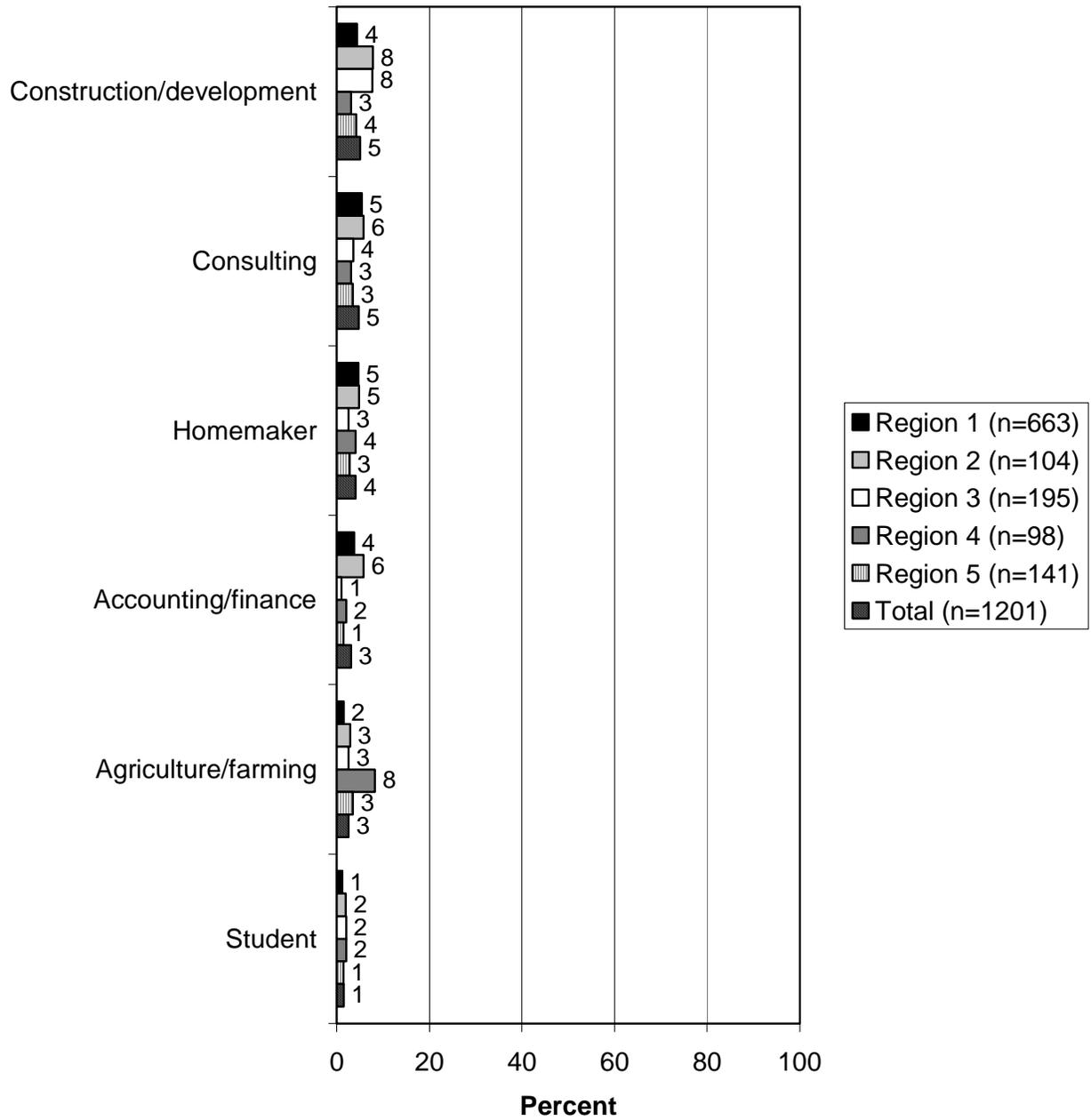
Q129. Overall, 61% of respondents had taken some college courses, and 39% overall had graduated from college. While there is little variation among regions in college attendance (the percentage having taken some college courses ranged from 57% of Region 3 respondents to 66% of Region 2 respondents), there is some variation in those having graduated from college: 29% of those from Regions 3 and 4 graduated from college, but 44% of those from Region 1 had graduated college.

Q132. Household incomes, in general, followed a bell curve with the peak overall in the \$20,000 to \$39,999 category. The regional variation was most evident in Region 2 responses, which were skewed to the high end (for instance, 17% of Region 2 respondents said their total household income is in the category of \$100,000 to \$149,999, the next highest percentage in this category is 8% of Region 1 respondents).

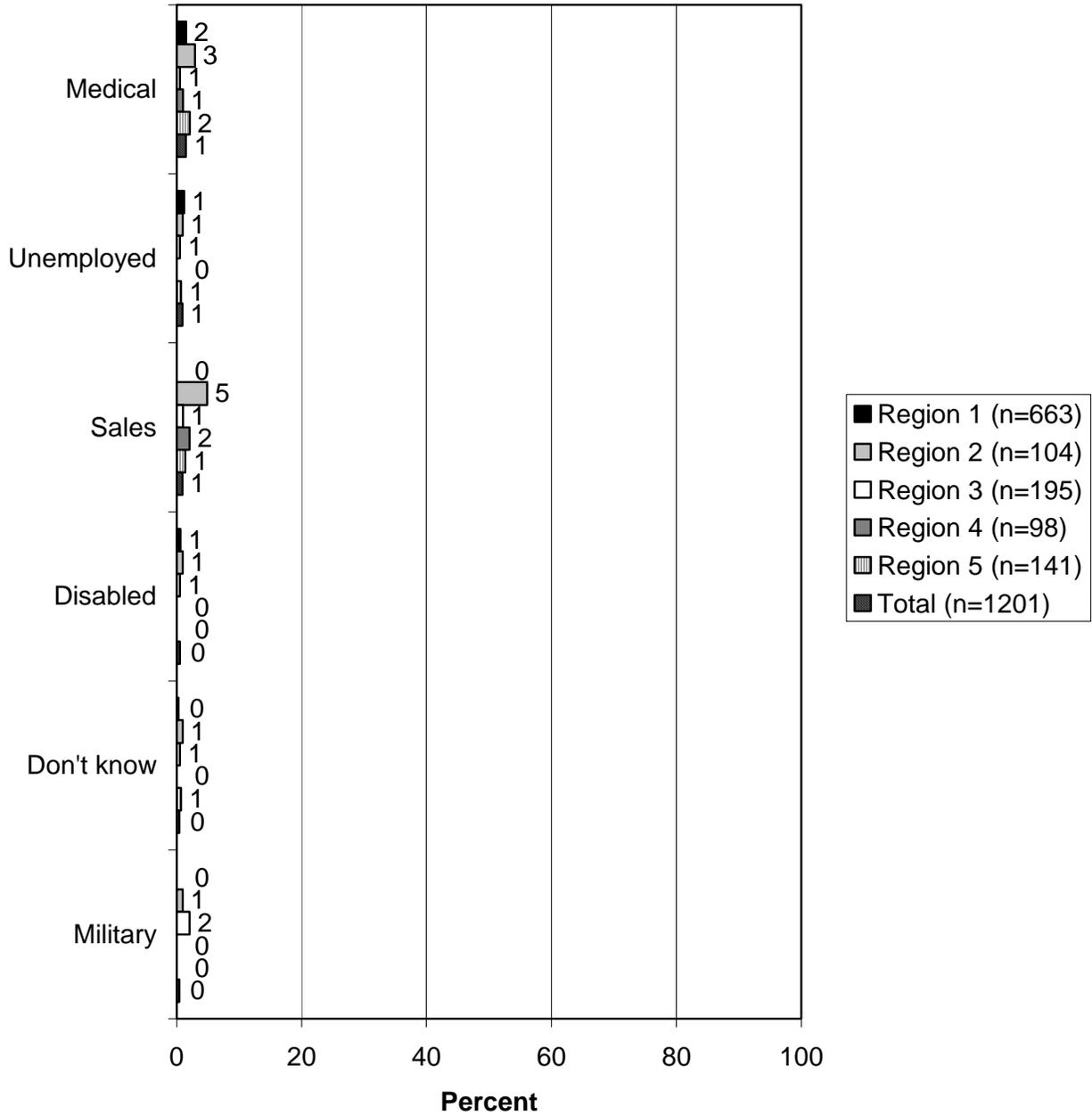
**Q127. Which of these categories best describes your profession?
Part 1**



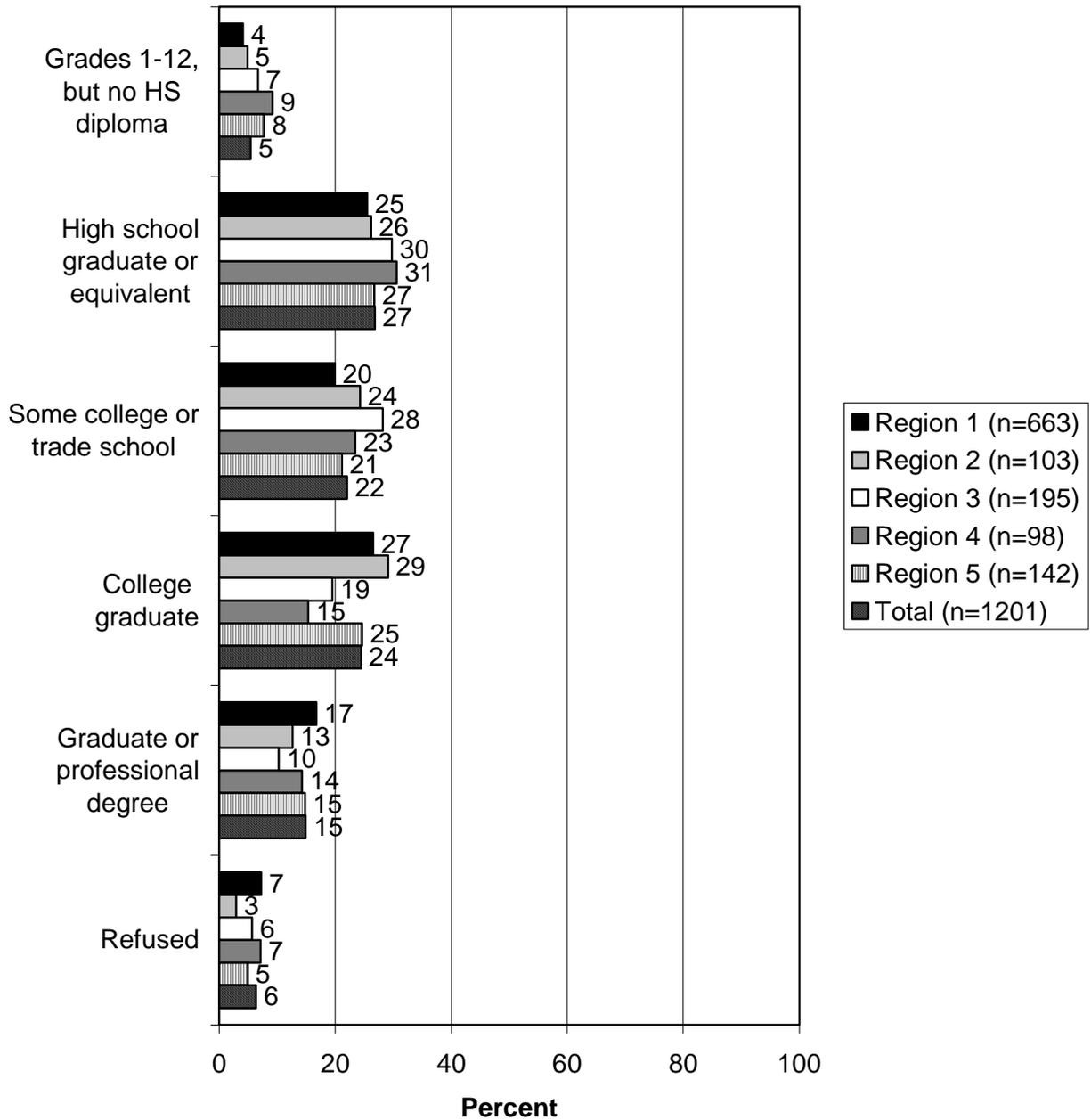
**Q127. Which of these categories best describes your profession?
Part 2**



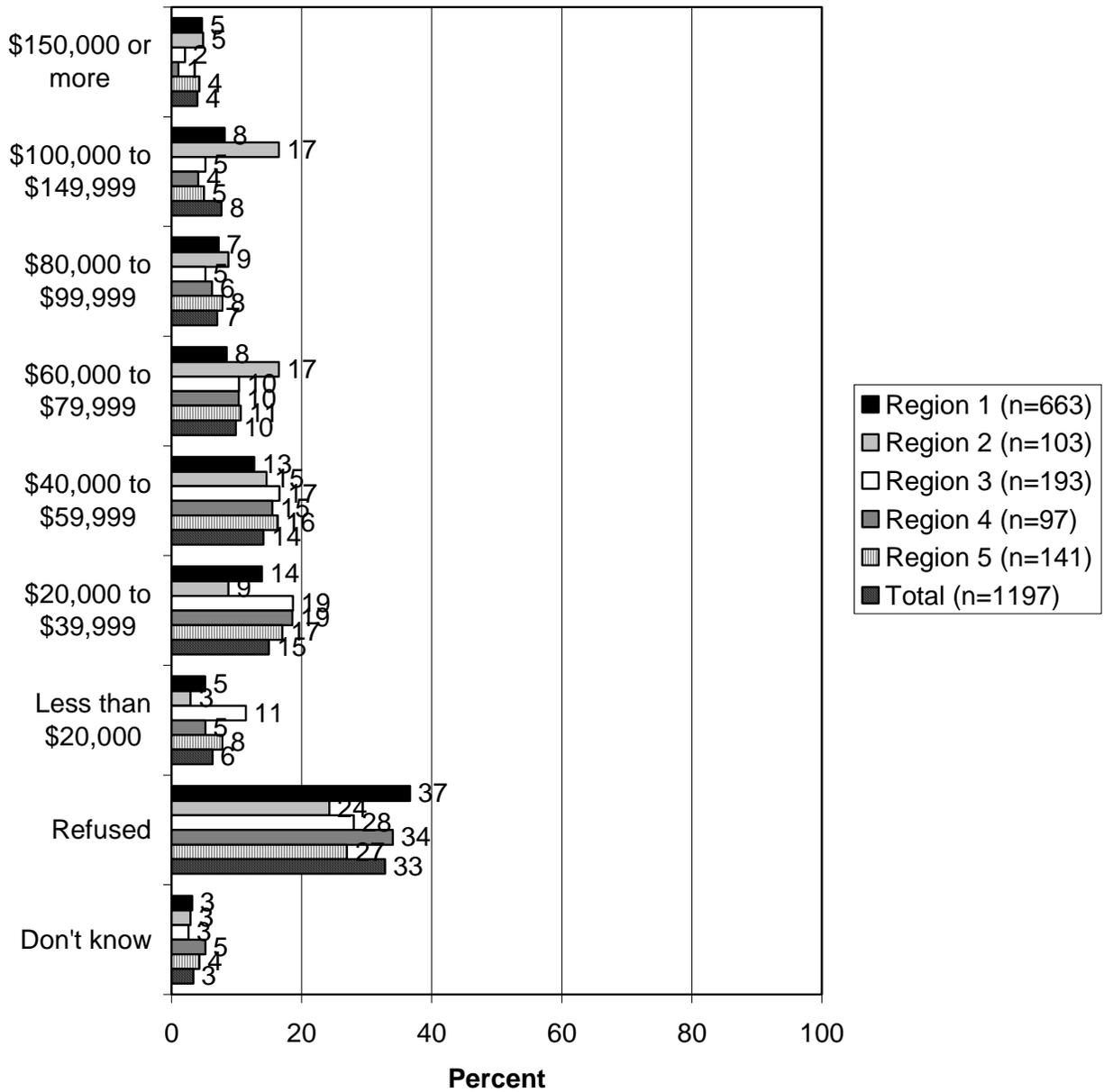
Q127. Which of these categories best describes your profession?
Part 3



Q129. What is the highest grade level you have completed in school?



Q132. Which of these categories best describes your total household income before taxes last year?

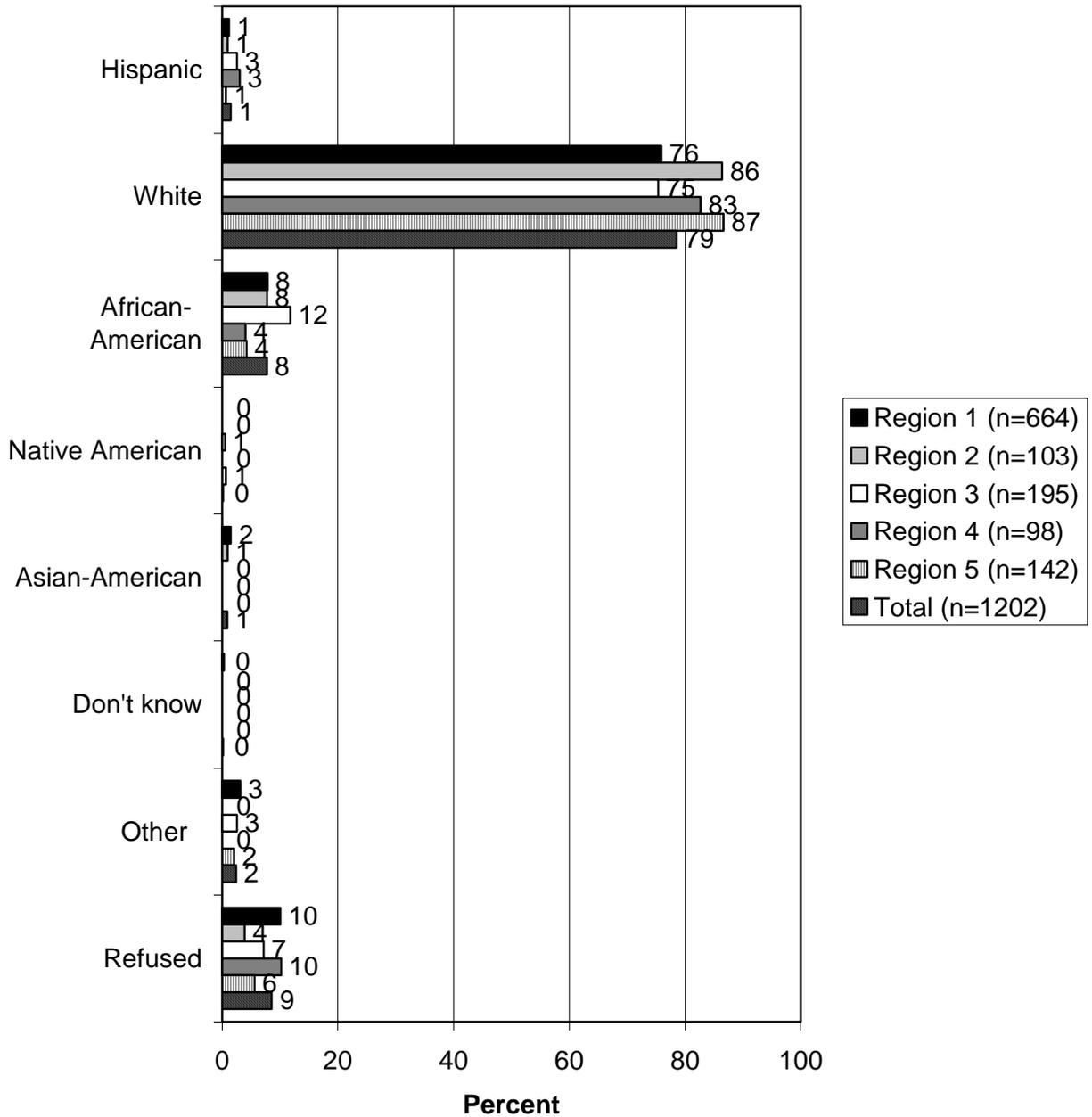


Q130. A strong majority of respondents (79% overall) identified themselves as white; the next largest group is African-Americans (8% overall). Regions 2 and 5 are the most white (86% and 87%, respectively); Regions 1 and 3 are the least white (76% and 75%, respectively).

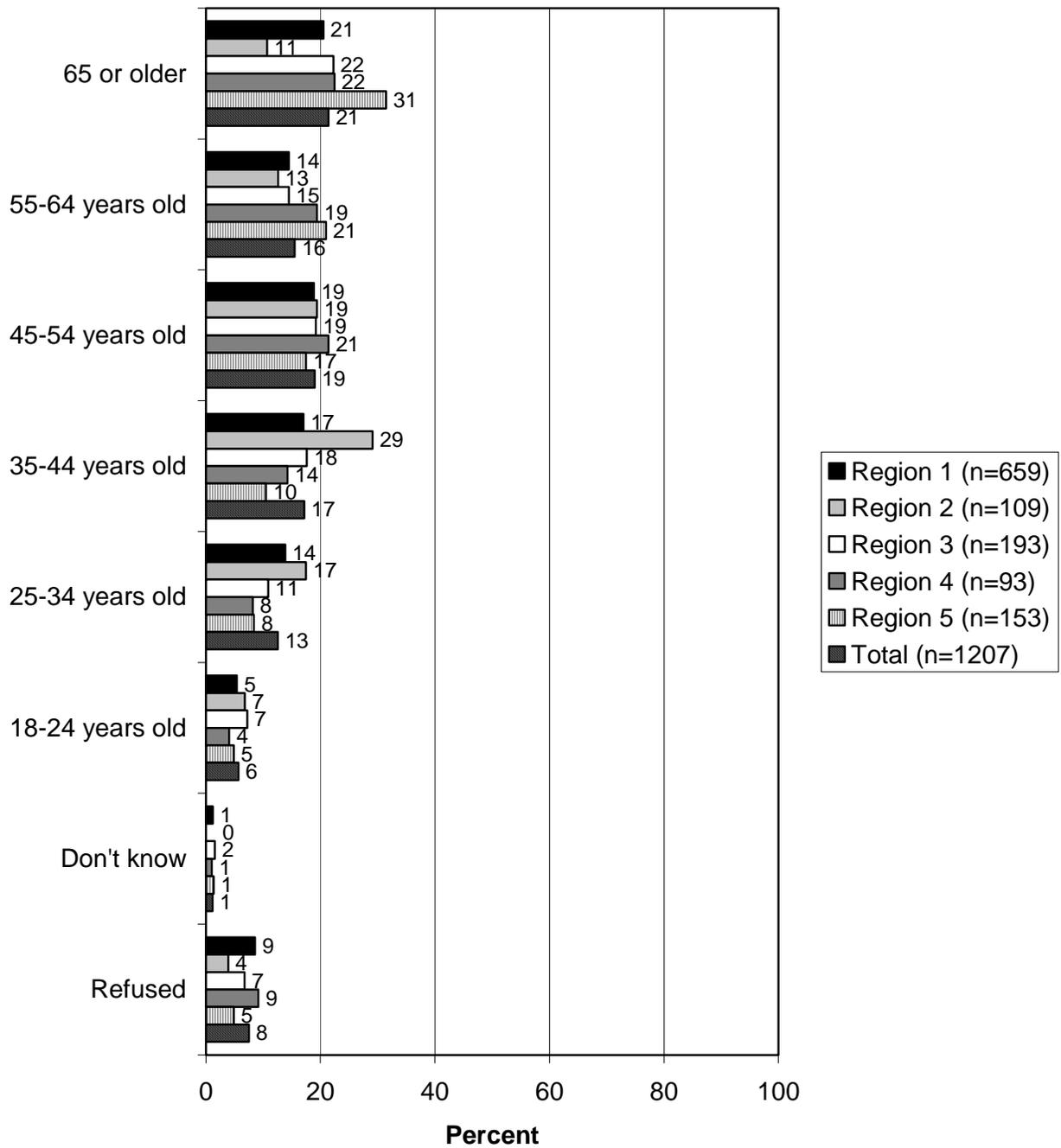
Q133. The ages of respondents overall were fairly evenly distributed among categories. The regional variation that is most evident is in Region 2 responses, which are skewed to the younger age categories, and Region 5 responses, which are skewed to the older age categories. For instance, only 11% of Region 2 respondents were in the 65 years old or older category, but 31% of Region 5 respondents were in this category. Also, 29% of Region 2 respondents were in the 35 to 44 years old category, compared with 18% or less for all other regions in this category.

Q135. Overall, 43% of the sample were male, and 57% were female, with little regional variation.

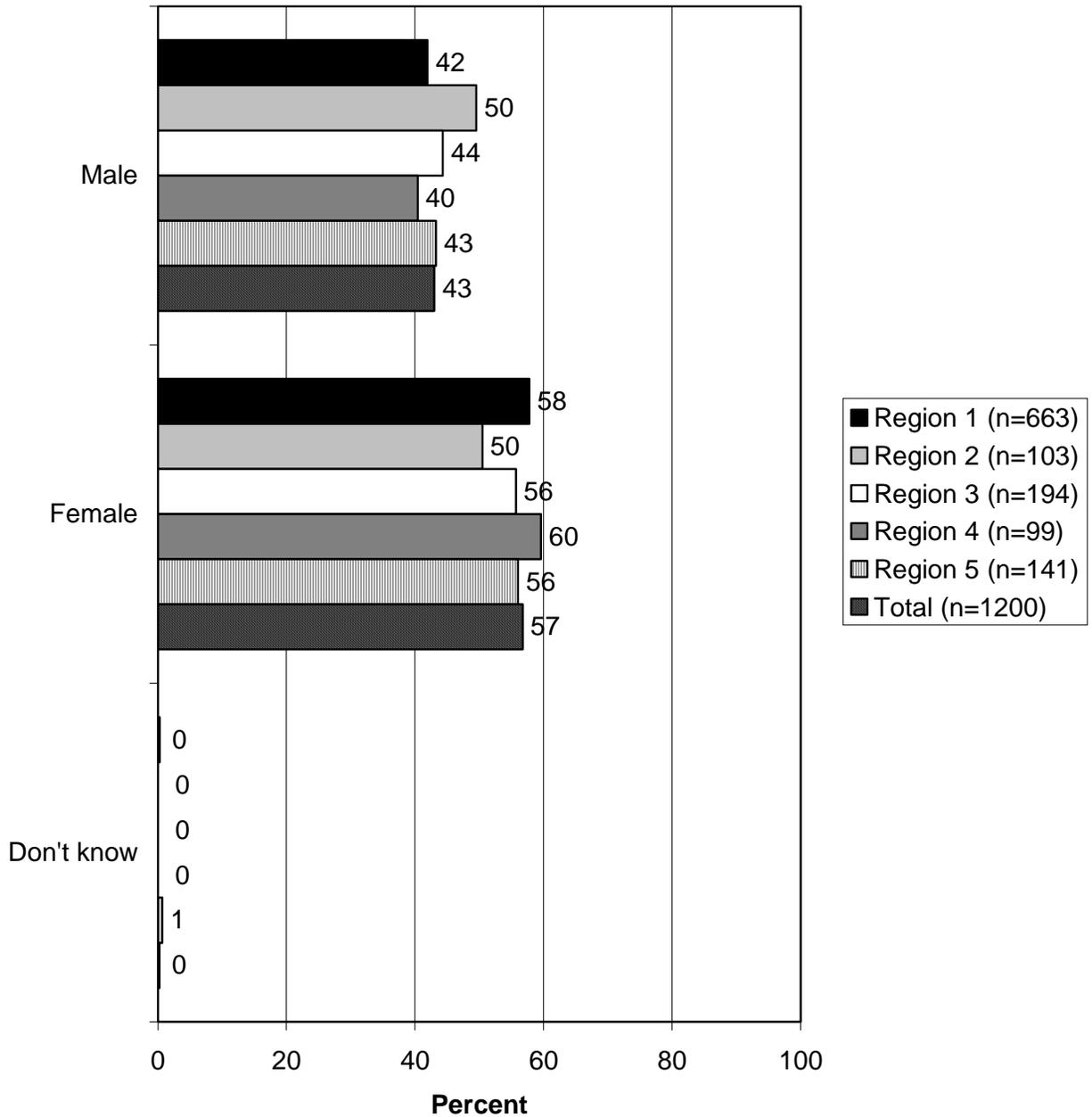
Q130. What race or ethnic background do you consider yourself?



Q133. And finally, may I ask your age?



Q135. Gender of respondent (not asked, but observed by interviewer)



ADDITIONAL COMMENTS

Q134. That's the end of the questionnaire, thank you very much for your time and cooperation! (Enter any additional comments)

A lot of polluters that aren't monitored at the point of discharge were found to pollute, nothing's done because of politics.
I appreciate what you are doing and believe it is a worthy cause.
Catch basins are good, but they attract lots of mosquitoes, so something needs to be done.
I'm concerned that muskrat and other wildlife populations are decreasing.
These issues are democratic bullshit.
Development deeply affects water pollution because the water has nowhere to return.
DNREC is doing a good job.
DNREC should pay more attention to the Indian river. Power plants and poultry plants ought to be regulated on it better.
I'm a doctor of pathology and am interested in survey results.
Educating the public and showing methods—maybe a model house showing conservation methods.
I'm glad to see that something can be done.
Helpful information in survey, I will try to do more now that I am more informed.
I am a fisherman, and water quality is very important to me. I appreciate this survey.
I do not feel that an individual's actions are really responsible for water quality. It is the industries that have an effect.
I think that air quality is just as important too.
I think you are doing a great job. It is good to inform the public about these issues.
If DNREC wants to do public service announcements about water, it would be good to inform the public about the issues.
Ignorance is what is destroying the environment.
In order to get the ball rolling with improving water quality, you need to get the politicians to improve legislation.
Individual homeowners need to be aware of their impact. Runoff should be in the forefront.
Fine industry polluters.
I am interested in receiving any information you have to offer.
The more education that DNREC applies to the businesses and residents, and financial aid, etc.—things will be better. Education!
Most people would welcome knowing how they could improve environmental areas.
I realize that environmental issues at these times is very important.
Since the land is being utilized, where is all of the water going to come from?
The state should be aware of overall environmental deterioration.
The state should have mandatory recycling laws.
The chemical companies and the farmers will continue to win because they have the money.
The county doesn't do its part in New Castle or Sussex, and water quality is very poor.
There needs to be a lot more information sent out on water to the public.

Additional Comments (continued)

Tip: You can use water from dehumidifiers to water plants. It conserves water during this drought.
UAP needs to be made to clean up the spill that occurred on 6/10. It has never been cleaned up. DNREC needs to get on the bus.
Web-based information would be nice.
Well water needs to be tested; the state no longer offers this service, and I believe it is incredibly important.
Why do I have to pay water taxes and have to buy bottled water.
I work for DNREC. I am very interested in which portion is sponsoring this survey.

ANALYSIS OF DEMOGRAPHIC CHARACTERISTICS ON SURVEY RESPONSES

ANALYSIS METHODOLOGY

For this report, a nonparametric analysis examined how the various responses related to demographic characteristics. Responses for selected questions were tested by means of z-scores for relationships to demographic characteristics. A positive z-score means that the response and characteristic are positively related; a negative z-score means that the response and characteristic are negatively related. For each z-score tabulation, only the statistically significant relationships are shown, which are those greater than +1.96 (positive correlation) or those less than -1.96 (negative correlation). If no statistically significant relationships exist for a particular question (i.e., if all the z-scores for a particular question were less than +1.96 and more than -1.96), there is no table.

The top of the tabulation shows the strongest *positive* correlation; the bottom of the tabulation shows the strongest *negative* correlation. The arrows show that the positive correlation increases towards the top of the tabulation and the negative correlation increases towards the bottom of the tabulation. The absence of arrows on some small tables was simply due to lack of room to graphically portray the arrows.

The asterisks on the z-scores show the strength of the relationship between the demographic characteristics and the response to the question. Those z-scores that have an absolute value of 3.30 or above have three asterisks—three asterisks indicate that the relationship is so strong that it would happen by chance only 1 out of 1,000 times. Those z-scores that have an absolute value of 2.58 to 3.29 have two asterisks—two asterisks indicate that the relationship is so strong that it would happen by chance only 1 out of 100 times. Finally, those z-scores that have an absolute value of 1.96 to 2.58 have one asterisk—one asterisk indicates that the relationship is so strong that it would happen by chance only 5 out of 100 times.

The z-scores are calculated as shown in the formula below.

$$z = \frac{(p_1 - p_2)}{\sqrt{p(1-p) \left[\frac{1}{n_1} + \frac{1}{n_2} \right]}}$$

where:

n_1 represents the number of observations in Row 1.

n_2 represents the number of observations in Row 2.

$p_1 = a/(a + b) = a/n_1$ and represents the proportion of observations in Row 1 that falls in Cell a . It is employed to estimate the population proportion Π_1 .

$p_2 = c/(c + d) = c/n_2$ and represents the proportion of observations in Row 2 that falls in Cell c . It is employed to estimate the population proportion Π_2 .

$p = (a + c)/(n_1 + n_2) = (a + c)/n$ and is a pooled estimate of the proportion of observations in Column 1 in the underlying population.

(Equation from *Handbook of Parametric and Nonparametric Statistical Procedures*, 2nd Edition by David J. Sheskin. © 2000, Chapman & Hall/CRC, Boca Raton, FL.)

The demographic characteristics examined include:

- gender,
- age,
- ethnicity,
- income level,
- education level,
- profession,
- location of residence—the county of residence, the region of residence, and the character of the location (i.e., rural, small city or town, suburban, urban or large city),
- length of time living in Delaware and whether the respondent is a native, and
- acreage owned.

OVERALL HEALTH OF THE ENVIRONMENT AND IMPORTANT ISSUES

The demographic characteristics correlate to opinions on overall health and the natural resource/environmental issues that are deemed to be important as follows:

- **Gender:** Males were more likely than were females to say that the overall environment in Delaware is healthy.
- **Age:** Those over 65 years of age were more likely than were those in other age groups to say that water quality and water quantity are *not* important issues.
- **Ethnicity:** Whites were more likely than were those in other ethnic groups *not* to say that the overall environment in Delaware is healthy.
- **Income Level:** Those with household incomes less than \$40,000 were more likely than were those in other income groups to say that water quantity is an important issue.
- **Education Level:** Those with a graduate or professional degree were more likely than were those in other education groups *not* to say that the overall environment in Delaware is healthy. Those without a high school diploma were more likely than were those from other education groups *not* to say that water quality and water quantity are important issues.
- **Profession:** Those in industry were more likely than were those in other professions to say that the overall environment is healthy. Those in consulting or teaching/education professions were more likely than were those in other professions to say that water quality and water quantity are important issues, and those in teaching/education were more likely than were those in other professions to say that air quality is an important issue.
- **Residence Location:** The location of respondent's residence had a large effect on the responses, as demonstrated by the following findings. Those in Region 4, 3, or 5 were

more likely than were those from Region 1 or 2 to say that the overall environment in Delaware is healthy; those in Sussex or Kent County were more likely than were those in New Castle County to say that the overall environment in Delaware is healthy; and those in a rural area or a small city/town were more likely than were those in other types of residential location to say that the overall environment in Delaware is healthy.

Those in New Castle County, particularly Region 1, were more likely than were those from other counties/regions to say that water quantity and air quality are important issues. Those living in a suburban area were more likely than were those from other types of residential location to say that air quality is an important issue. Those in Region 5 and those living in a rural area were more likely than were those from other regions or types of residential areas to say that overdevelopment is an important issue.

- **Length of Time Living in Delaware and Nativity:** Those who are not a Delaware native were more likely than were those who are a Delaware native to say that the overall environment is healthy.

Those who have lived in Delaware over 25 years were more likely than were those who have lived in Delaware for 25 or fewer years to say that water quantity is an important issue. Those who are a Delaware native were more likely than were those who are not a Delaware native to say that air quality is an important issue. Those who are not a Delaware native were more likely than were those who are a Delaware native to say that overdevelopment is an important issue.

- **Acreage Owned:** Those who own more than 100 acres were more likely than were those who own 100 acres or less to say that the overall environment in Delaware is healthy.

Q5. Overall, how healthy do you think the environment is in Delaware? Would you say it is healthy or unhealthy? (Response analyzed: healthy)

Male	4.67***
Resides in Region 4	4.23***
Sussex County resident	3.84***
Kent County resident	3.76***
Not a neighborhood association member	3.14**
Resides in Region 3	3.13**
Resides in Region 5	2.95**
Resides in rural area	2.56*
Asian-American	2.51*
Owns over 100 acres	2.50*
Not a Delaware native	2.18*
Profession: Industry	2.10*
Resides in small city or town	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Homemaker	-2.00*
55-64 years old	-2.03*
White	-2.03*
Unemployed	-2.37*
Graduate or professional degree	-2.65**
Is a Delaware native	-2.98**
Neighborhood association member	-3.95***
Resides in suburban area	-4.10***
Female	-4.51***
Resides in Region 1	-6.02***
New Castle County resident	-6.51***

Most likely to say the environment is healthy



Most likely *not* to say the environment is healthy

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said water quality.)

Profession: Consulting	4.08***
35-44 years old	2.95**
Some college or trade school	2.72**
Profession: Teaching/education	2.49*
Hispanic	2.36*
Profession: Public service	2.21*
Lived in Delaware 16-20 years	2.06*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$20,000 and \$39,999	-2.25*
Retired	-2.45*
No high school diploma	-2.48*
65 years or older	-2.50*

Most likely to say water quality is important



Most likely *not* to say water quality is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said water quantity.)

Resides in Region 1	3.94***
Lived in Delaware 21-25 years	3.36***
Graduate or professional degree	3.32***
Income between \$100,000 and \$149,999	3.05**
Profession: Teaching/education	2.92**
New Castle County resident	2.56*
Profession: Consulting	2.34*
Owns less than 1 acre	2.08*
Some college or trade school	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Other type of profession	-2.06*
65 years or older	-2.08*
Owns 1 to 20 acres	-2.10*
Lived in Delaware over 25 years	-2.33*
Income between \$20,000 and \$39,999	-2.62**
Resides in Region 3	-2.67**
Is a Delaware native	-2.71**
Sussex County resident	-2.77**
Resides in rural area	-2.78**
No high school diploma	-3.15**
Income less than \$20,000	-3.38***
High school graduate or equivalent	-4.43***

Most likely to say water quantity is important



Most likely *not* to say water quantity is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said air quality.)

New Castle County resident	4.68***
Resides in suburban area	4.59***
Resides in Region 1	3.93***
Income between \$40,000 and \$59,999	3.32***
Profession: Teaching/education	2.66**
Is a Delaware native	2.03*
Some college or trade school	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Kent County resident	-1.97*
Resides in Region 3	-2.08*
Hispanic	-2.68**
High school graduate or equivalent	-3.26**
Sussex County resident	-3.27**
Resides in Region 5	-3.64***
Resides in rural area	-3.89***

Most likely to say air quality is important



Most likely *not* to say air quality is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said overdevelopment/loss of green space.)

Resides in Region 5	3.20**
Profession: Agriculture/farming	2.71**
Resides in rural area	2.59**
Not a Delaware native	2.59**
35-44 years old	2.30*
Not a neighborhood association member	2.02*
College graduate	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Is a Delaware native	-2.10*
New Castle County resident	-2.14*
Other type of profession	-2.15*

Most likely to say over-development is important



Most likely *not* to say over-development is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said solid waste disposal.)

Lived in Delaware 21-25 years	3.59***
Income between \$60,000 and \$79,999	3.47***
Income between \$40,000 and \$59,999	2.42*
Income over \$150,000	2.38*
Other type of profession	2.32*
Is a Delaware native	2.12*
Profession: Consulting	2.08*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
High school graduate or equivalent	-2.39*

Most likely to say waste disposal is important

Most likely *not* to say waste disposal is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said littering.)

Profession: Sales	2.86**
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.00*
Owns less than 1 acre	-2.07*

Most likely to say littering is important

Most likely *not* to say littering is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said habitat loss /fragmentation.)

White	2.58*
Owns 21 to 40 acres	2.57*
Owns 41 to 60 acres	2.57*
Income between \$60,000 and \$79,999	2.39*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 1	-2.36*

Most likely to say habitat loss is important

Most likely *not* to say habitat loss is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said population growth.)

Owens 81 to 100 acres	3.79***
Income between \$80,000 and \$99,999	2.85**
Lived in Delaware 6-10 years	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Public service	-2.03*
Not a landowner	-2.42*

Most likely to say population growth is important

Most likely *not* to say population growth is important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said wetland drainage.)

Some college or trade school	3.81***
Student	2.90**
Income between \$40,000 and \$59,999	2.61**
Sussex County resident	2.45*
Resides in Region 5	2.28*
White	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say wetland drainage is important



Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said cancer rates.)

Lived in Delaware over 25 years	3.69***
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 5 years or less	-2.54*

Most likely to say cancer rates are important

Most likely *not* to say cancer rates are important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said endangered species protection.)

Native American	9.94***
Some college or trade school	2.64**
Profession: Public service	2.57*
55-64 years old	2.34*
Is a Delaware native	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say endangered species protection is important



Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said septic tanks.)

Owens 1 to 20 acres	2.52*
Income between \$80,000 and \$99,999	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say septic tanks are important

Q7. What do you think are the most important natural resource or environmental issues facing Delaware today? (Those who said pollution unspecified.)

Lived in Delaware 11-15 years	2.27*
Neighborhood association member	2.19*
Owens less than 1 acre	2.19*
Resides in Region 2	2.04*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-2.01*
Not a landowner	-3.14**

Most likely to say pollution (unspecified) is important

Most likely *not* to say pollution (unspecified) is important

OVERALL CONCERN ABOUT WATER QUALITY, WATER POLLUTION CAUSES, AND RESPONSIBILITY TO ADDRESS WATER QUALITY

The demographic characteristics correlate to overall concern about water quality as follows:

- **Gender:** Males were more likely than were females to say that one of the main reasons that they are concerned about water quality is the effect it has on fish and wildlife resources. Males were also more likely to say polluted and bad-tasting, bad-looking water is a main reason that they are concerned about water quality. Females, on the other hand, were more likely than were males to say that the specific problem that is of most concern regarding water quality's effect on health and safety is having children get sick and having future generations get sick.
- **Age:** Those who are 65 years old and older were more likely than were those in other age groups *not* to say that they are concerned about water quality in Delaware.
- **Ethnicity:** African-Americans were more likely than were those in other ethnic groups to say that they are concerned about water quality in Delaware. African-Americans were also more likely than were those in other ethnic groups to say that one of their main reasons for being concerned about water quality is the drinking water, and they were more likely to say the specific concern that they have regarding water quality's effect on health and safety is getting sick from the water.

White people were more likely than were those in other ethnic groups to say that one of the main reasons for being concerned about water quality is its effect on fish and wildlife resources. They were also more likely than were those in other ethnic groups to say that cancer is what they are specifically concerned about regarding water quality's effect on health and safety.

- **Income Level:** Those with household incomes of less than \$20,000 were more likely than were those in other income groups to say that their own health/safety is one of their main reasons for being concerned about water quality. Those with household incomes

over \$150,000 were more likely than were those in other income groups *not* to say the specific concern that they have regarding water quality's effect on health and safety is getting sick from the water.

- **Education Level:** Those with a graduate or professional degree were more likely than were those in other education groups to say that they are concerned about water quality in Delaware. Also, those without a high school diploma were more likely than were those in other education groups *not* to say that they are concerned about water quality in Delaware.

College graduates (including those with post-graduate or professional degrees) were more likely than were those without college degrees to say that one of their main reasons for being concerned about water quality is the closing of swimming areas. Also, those with graduate or professional degrees were more likely than were those in other education groups to say that one of their main reasons for being concerned about water quality is its effect on fish and wildlife resources, and they were more likely to say that drought/low resources is a main reason for being concerned about water quality.

- **Profession:** Those in the teaching/education and consulting professions were more likely than were those in other professions to say that they are concerned about water quality in Delaware. Furthermore, those in teaching/education, consulting, and public service were more likely to express concern about water quality issues than were those in other professions. For instance, those in teaching/education had a high propensity to say that their own health and safety, the maintenance of the natural beauty, drinking water, drought/low resources, and birth defects were some of their main reasons for being concerned about water quality. Those in consulting had a high propensity to say that public health and safety and the maintenance of the natural beauty were some of their main reasons for being concerned about water quality. Finally, those in public service had a high propensity to say that closed swimming areas were one of their main reasons for being concerned about water quality.

- **Residence Location:** Again, where the respondent lived apparently played an important role in the formation of opinions about water quality. For instance, New Castle County residents were more likely than were those from Kent or Sussex Counties to say that they are concerned about water quality, and they were also more likely to say that drought/low resources is one of their main reasons for being concerned about water quality. However, New Castle County residents were more likely than those in the other counties *not* to say that public health and safety is one of their main reasons for being concerned about water quality. Sussex County residents were more likely than were those from the other counties to say that public health and safety is one of their main reasons for being concerned about water quality.

Those in Region 1 were more likely than were those in other regions to say that drinking water and drought/low resources are some of their main reasons for being concerned about water quality. Those in Region 3 were more likely than others *not* to say that drinking water is one of their main reasons for being concerned about water quality.

Those residing in a suburban area were more likely than were those in other types of residential location *not* to say that fish and wildlife resources is one of their main reasons for being concerned about water quality, but they were more likely than others to say that drought/low resources is one of their main reasons. Those who reside in a small city or town were more likely than were others to say that polluted, bad-tasting and bad-looking water is one of their main reasons for being concerned about water quality.

- **Length of Time Living in Delaware and Nativity:** Those who have lived in Delaware for over 25 years were more likely than were others *not* to say that they are concerned about water quality in Delaware, but they were more likely than were others to say that drought/low resources and cancer are some of their main reasons for being concerned about water quality. Delaware natives were more likely than were non-natives to say that the maintenance of the natural beauty and cancer are some of their main reasons for being concerned about water quality.

The demographic characteristics correlate to opinions on the causes of water pollution as follows:

- **Age:** Those who are 65 years old or older were more likely than were others *not* to say that industry/chemical companies is one of the largest sources of water pollution in Delaware, and they were also more likely than were others *not* to say that their own activities have a major or minor negative impact on water quality.
- **Ethnicity:** Those who are white or Hispanic were more likely than were others to say that farmers/agriculture is one of the largest sources of water pollution in Delaware.
- **Income Level:** Those with a household income of over \$150,000 were more likely than were those from other income groups to say that farmers/agriculture is one of the largest sources of water pollution in Delaware.
- **Education Level:** Those with a graduate or professional degree were more likely than were those from other education groups to say that farmers/agriculture is one of the largest sources of water pollution in Delaware; conversely, those without a high school diploma were more likely than were others *not* to say that farmers is one of the largest sources of water pollution. Additionally, those without a high school diploma were more likely *not* to say that industry/chemical companies is one of the largest sources of water pollution, and they were more likely *not* to say that their own activities have a major or minor negative impact on water quality.
- **Profession:** Those in teaching/education had a high propensity to say that farmers/agriculture and industry/chemical companies are some of the largest sources of water pollution in Delaware, and they were also more likely than were others to say their own activities have a major or minor negative impact on water quality. Those in public service were more likely than were others *not* to say that farmers/agriculture is one of the largest sources of water pollution in Delaware.

- **Residence Location:** Regarding homeowners/individuals, New Castle County residents, particularly those from Region 1, were more likely than were others *not* to say that homeowners/individuals is one of the largest sources of water pollution.

Regarding farmers/agriculture, Sussex County/Region 4 and 5 residents were more likely than were others to name farmers/agriculture as one of the largest sources of water pollution. Conversely, New Castle County residents, particularly those from Region 1, were more likely *not* to name farmers/agriculture as one of the largest sources of water pollution.

Regarding industry/chemical companies, New Castle County/Region 1 and 2 residents and those residing in a suburban area were more likely to name industry/chemical companies as one of the largest sources of water pollution in Delaware. Conversely, Sussex County residents, particularly those in Region 5, and those living in a rural area were more likely *not* to name industry/chemical companies as one of the largest sources of water pollution in Delaware.

Finally, those residing in a rural area were more likely than were those from other types of areas to say that their own activities have a major or minor negative impact on water quality.

- **Length of Time Living in Delaware and Nativity:** Delaware natives were more likely *not* to name farmers/agriculture as one of the largest sources of water pollution, and they were more likely to name industry/chemical companies as one of the largest sources of water pollution.
- **Acreage Owned:** Those who own less than 1 acre were more likely than were others to say that homeowners/individuals and farmers/agriculture are some of the largest sources of water pollution. However, they were more likely *not* to say that their own daily activities have a major or minor negative impact on water quality.

The demographic characteristics correlate to opinions on responsibility for addressing water quality as follows:

- **Gender:** Females were more likely than were males to say that business/industry and “everyone” should do more to help improve water quality in Delaware.
- **Age:** Those who are 35 years old to 54 years old were more likely than were those from other age groups to say that business/industry should do more to help improve water quality. Those who are 65 years old or older were more likely than were those from other age groups *not* to say that “everyone” should do more to help improve water quality.
- **Ethnicity:** African-Americans were more likely than were others to respond with “themselves” regarding who should do more to help improve water quality, and they were also more likely than were others to say that the government and “everyone” should do more to help improve water quality. White people were more likely than were others to say that business/industry should do more to help improve water quality.
- **Income Level:** Those with a household income of more than \$150,000 were more likely than were other income groups to respond with “themselves” regarding who should do more to help improve water quality, and they were also more likely than were others to say the government should do more. Those with household incomes of less than \$20,000 were more likely than were those in other income groups to say that “everyone” should do more.
- **Education Level:** Those with a graduate or professional degree had a high propensity to respond with “themselves” regarding who should do more to help improve water quality. Those who had graduated from college were more likely than were those without a college degree to say the government should do more. Those without a high school diploma were more likely *not* to say that either business/industry or “everyone” should do more to help improve water quality.

- **Profession:** Those in public service were more likely than were those in other professions to respond with “themselves” regarding who should do more to help improve water quality, and they were also more likely than were others to say business/industry should do more. Consultants were more likely than were others to say the government should do more.
- **Residence Location:** New Castle County residents were more likely than were others to respond with “themselves” regarding who should do more to help improve water quality, and they were also more likely than were others to say business/industry should do more.
- **Length of Time Living in Delaware and Nativity:** Delaware natives were more likely than were non-natives to say that business/industry should do more to help improve water quality.
- **Acreage Owned:** Those who own less than 1 acre were more likely than were others to say that business/industry should do more to help improve water quality.

Q9. Would you say you are very concerned, somewhat concerned, or not at all concerned with water quality in Delaware? (Response analyzed: very or somewhat concerned)

35-44 years old	3.84***
25-34 years old	2.75**
Profession: Teaching/education	2.61**
Graduate or professional degree	2.55*
African-American	2.51*
Not a landowner	2.33*
Income between \$60,000 and \$79,999	2.22*
New Castle County resident	2.18*
Lived in Delaware 16-20 years	2.09*
Profession: Consulting	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware over 25 years	-2.93**
No high school diploma	-3.28**
Retired	-4.70***
65 years or older	-6.60***

Most likely to say they are concerned about water quality



Most likely *not* to say they are concerned about water quality

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said public health/safety.)

Profession: Consulting	2.85**
Profession: Public service	2.73**
Income between \$40,000 and \$59,999	2.23*
Sussex County resident	2.11*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
35-44 years old	-2.00*
New Castle County resident	-2.20*
Profession: Accounting/finance	-3.28**

Most likely to say public health is reason to be concerned

Most likely *not* to say public health is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said own health/safety.)

Asian-American	2.99**
Unemployed	2.16*
Profession: Teaching/education	2.13*
Income less than \$20,000	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
35-44 years old	-2.08*
Profession: Accounting/finance	-3.12**

Most likely to say own health is reason to be concerned

Most likely *not* to say own health is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said recreation-closed swimming areas.)

Profession: Public service	3.57***
Income between \$80,000 and \$99,999	2.84**
College graduate	2.62**
Asian-American	2.37*
Income between \$60,000 and \$79,999	2.11*
Graduate or professional degree	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Retired	-2.42*
High school graduate or equivalent	-2.89**

Most likely to say closed swimming areas is reason to be concerned

Most likely *not* to say closed swimming areas is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said fish and wildlife resources.)

Lived in Delaware 6-10 years	3.61***
Male	3.59***
White	2.97**
Profession: Construction	2.82**
Not a neighborhood association member	2.56*
35-44 years old	2.50*
Income between \$60,000 and \$79,999	2.46*
Income between \$40,000 and \$59,999	2.39*
Resides in small city or town	2.25*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
65 years or older	-1.99*
Income less than \$20,000	-2.02*
African-American	-2.09*
Resides in suburban area	-2.22*
Retired	-2.48*
Female	-3.51***

Most likely to say fish and wildlife resources is reason to be concerned



Most likely *not* to say fish and wildlife resources is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said maintain natural beauty/for the environment.)

Graduate or professional degree	3.73***
Profession: Teaching/education	3.24**
Hispanic	3.15**
Lived in Delaware 21-25 years	3.08**
Is a Delaware native	2.95**
45-54 years old	2.12*
Profession: Consulting	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
High school graduate or equivalent	-2.06*
Not a Delaware native	-2.80**
Retired	-3.08**

Most likely to say natural beauty/environment is reason to be concerned

Most likely *not* to say natural beauty/environment is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said spiritual/religious reasons.)

Owns 21 to 40 acres	3.01**
Income between \$60,000 and \$79,999	2.65**
Owns over 100 acres	2.24*
Profession: Industry	2.19*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
High school graduate or equivalent	-2.43*

Most likely to say spirituality is reason to be concerned

Most likely *not* to say spirituality is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said drinking water.)

Lived in Delaware 16-20 years	3.36***
Profession: Teaching/education	2.56*
Resides in Region 1	2.19*
Other race identified	2.03*
African-American	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 3	-2.69**

Most likely to say drinking water is reason to be concerned

Most likely *not* to say drinking water is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said drought/low resources.)

Retired	3.61***
Graduate or professional degree	2.77**
Resides in suburban area	2.75**
Lived in Delaware over 25 years	2.58**
New Castle County resident	2.31*
Resides in Region 1	2.31*
Profession: Teaching/education	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Sussex County resident	-2.14*
Income between \$40,000 and \$59,999	-2.63**

Most likely to say drought is reason to be concerned

Most likely *not* to say drought is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said pollution/bad-tasting and/or bad-looking water.)

Resides in small city or town	3.04**
Lived in Delaware 6-10 years	2.95**
Male	2.72**
18-24 years old	2.57*
Other type of profession	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware over 25 years	-2.41*
Female	-2.72**

Most likely to say pollution is reason to be concerned

Most likely *not* to say pollution is reason to be concerned

Q11. What are your main reasons for being concerned about water quality? (Asked of those who said they were very or somewhat concerned about water quality in Delaware.) (Those who said it's important for life.)

55-64 years old	3.75***
Lived in Delaware 16-20 years	3.65***
High school graduate or equivalent	2.79**
Resides in large city or urban area	2.79**
Not a landowner	2.65**
Profession: Accounting/finance	2.17*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say importance for life is reason to be concerned



Q14. What specifically about health/safety are you concerned about? (Those who said cancer.)

Owens less than 1 acre	2.48*
College graduate	2.31*
White	2.26*
Lived in Delaware over 25 years	2.20*
Is a Delaware native	2.01*
55-64 years old	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Other race identified	-1.97*
Some college or trade school	-2.23*
Not a Delaware native	-2.34*
Not a landowner	-2.79**

Most likely to say cancer is a concern



Most likely *not* to say cancer is a concern

Q14. What specifically about health/safety are you concerned about? (Those who said getting sick.)

African-American	3.42***
18-24 years old	2.38*
Owens 1 to 20 acres	2.16*
Unemployed	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income over \$150,000	-1.97*
55-64 years old	-2.29*
Graduate or professional degree	-2.86**
Owens less than 1 acre	-2.91**

Most likely to say getting sick is a concern

Most likely *not* to say getting sick is a concern

Q14. What specifically about health/safety are you concerned about? (Those who said children getting sick.)

Lived in Delaware 16-20 years	2.26*
Unemployed	2.15*
Female	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Graduate or professional degree	-1.96
Other race identified	-2.08*

Most likely to say children getting sick is a concern

Most likely *not* to say children getting sick is a concern

Q14. What specifically about health/safety are you concerned about? (Those who said future generations getting sick.)

Unemployed	2.66**
Female	2.13*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Male	-2.08*

Most likely to say future generations getting sick is a concern

Most likely *not* to say future generations getting sick is a concern

Q14. What specifically about health/safety are you concerned about? (Those who said birth defects.)

Profession: Construction	2.73**
Student	2.63**
Not a landowner	2.15*
Profession: Teaching/education	2.08*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say birth defects is a concern

Q14. What specifically about health/safety are you concerned about? (Those who said general concern for the environment.)

College graduate	2.08*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say the environment is a concern

Q14. What specifically about health/safety are you concerned about? (Those who said pollution.)

STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in large city or urban area	-1.96

Most likely *not* to say pollution is a concern

Q14. What specifically about health/safety are you concerned about? (Those who said lack of safe fishing.)

Profession: Agriculture/farming	3.99***
45-54 years old	2.53*
Some college or trade school	2.25*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say lack of safe fishing is a concern

Q17. Who do you think are the largest polluters of water in Delaware? (Those who said homeowners/individuals.)

Profession: Medical	3.55***
Income between \$100,000 and \$149,999	2.60**
Owens less than 1 acre	2.13*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 1	-2.08*
Not a landowner	-2.10*
New Castle County resident	-2.29*

Most likely to say homeowners/individuals

Most likely *not* to say homeowners/individuals

Q17. Who do you think are the largest polluters of water in Delaware? (Those who said farmers/agriculture.)

Sussex County resident	6.56***
Graduate or professional degree	6.21***
Resides in rural area	4.56***
Resides in Region 5	4.43***
Not a Delaware native	3.98***
Owens less than 1 acre	3.86***
Income over \$150,000	3.10**
Resides in Region 4	3.09**
White	2.64**
Profession: Medical	2.63**
Profession: Teaching/education	2.59**
Lived in Delaware 6-10 years	2.16*
Hispanic	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Public service	-2.14*
African-American	-2.62**
High school graduate or equivalent	-2.71**
Resides in suburban area	-2.72**
No high school diploma	-2.82**
Income less than \$20,000	-2.86**
Is a Delaware native	-3.90***
Not a landowner	-4.23***
Resides in Region 1	-4.68***
New Castle County resident	-6.06***

Most likely to say farmers/agriculture

Most likely *not* to say farmers/agriculture



Q17. Who do you think are the largest polluters of water in Delaware? (Those who said industry/chemical companies.)

Resides in suburban area	5.48***
New Castle County resident	5.05***
Resides in Region 2	3.16**
Profession: Teaching/education	3.14**
College graduate	2.53*
Resides in Region 1	2.48*
45-54 years old	2.24*
Lived in Delaware 16-20 years	2.19*
Profession: Sales	2.18*
Is a Delaware native	2.14*
Profession: Public service	2.04*
Income between \$40,000 and \$59,999	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$100,000 and \$149,999	-2.12*
Income less than \$20,000	-2.56*
Retired	-2.71**
No high school diploma	-3.07**
Asian-American	-3.15**
65 years or older	-3.42***
Resides in Region 5	-3.90***
Resides in rural area	-4.47***
Sussex County resident	-4.62***

Most likely to say industry/chemical companies



Most likely *not* to say industry/chemical companies

Q17. Who do you think are the largest polluters of water in Delaware? (Those who said developers.)

Lived in Delaware 16-20 years	3.72***
Owens 61 to 80 acres	3.68***
Not a neighborhood association member	3.34***
Resides in Region 5	2.81**
Not a Delaware native	2.73**
Not a landowner	2.62**
Profession: Public service	2.56*
Some college or trade school	2.38*
Income between \$60,000 and \$79,999	2.18*
White	2.11*
Resides in small city or town	2.06*
College graduate	1.96*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Graduate or professional degree	-2.23*
Is a Delaware native	-2.55*
Lived in Delaware over 25 years	-2.98**
Neighborhood association member	-3.02**

Most likely to say developers



Most likely *not* to say developers

Q17. Who do you think are the largest polluters of water in Delaware? (Those who said development in general.)

Owens 41 to 60 acres	2.57*
Owens 21 to 40 acres	2.33*
Resides in rural area	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 1	-2.19*

Most likely to say development

Most likely *not* to say development

Q17. Who do you think are the largest polluters of water in Delaware? (Those who said sewage treatment plants.)

Profession: Military	2.81**
Sussex County resident	2.60**
Resides in Region 5	2.41*
Some college or trade school	2.30*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say sewage treatment plants



Q17. Who do you think are the largest polluters of water in Delaware? (Those who said golf courses.)

Owens over 100 acres	3.03**
No high school diploma	2.45*
Resides in Region 5	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens less than 1 acre	-2.25*

Most likely to say golf courses

Most likely *not* to say golf courses

Q19. How great of a negative impact do you feel your own daily activities have on water quality in Delaware? Would you say they are a major impact, minor impact, or not an impact? (Response analyzed: major or minor impact)

Lived in Delaware 16-20 years	3.07**
Resides in rural area	2.10*
Profession: Teaching/education	2.10*
35-44 years old	1.99*
Student	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Retired	-1.96*
No high school diploma	-1.97*
Owens less than 1 acre	-2.32*
Resides in small city or town	-2.55*
65 years or older	-2.88**

Most likely to say their activities have a negative impact



Most likely *not* to say their activities have a negative impact

Q114. Who do you think should do more to help improve water quality in Delaware? (Those who said themselves.)

Unemployed	4.84***
Graduate or professional degree	3.44***
Profession: Public service	3.41***
Income over \$150,000	2.69**
New Castle County resident	2.54*
Neighborhood association member	2.48*
Not a landowner	2.33*
African-American	2.23*
Resides in Region 1	2.16*
Asian-American	2.07*
Resides in small city or town	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Sussex County resident	-2.02*
High school graduate or equivalent	-2.66**
Resides in rural area	-2.69**

Most likely to say themselves



Most likely *not* to say themselves

Q114. Who do you think should do more to help improve water quality in Delaware? (Those who said residents.)

College graduate	2.60**
Profession: Medical	2.38*
Income between \$60,000 and \$79,999	2.07*
Unemployed	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
High school graduate or equivalent	-2.30*

Most likely to say residents

Most likely *not* to say residents

Q114. Who do you think should do more to help improve water quality in Delaware? (Those who said business/industry.)

Owens less than 1 acre	3.55***
Unemployed	3.51***
White	3.30***
Resides in suburban area	2.97**
Profession: Public service	2.96**
New Castle County resident	2.22*
Is a Delaware native	2.22*
Female	2.16*
45-54 years old	2.14*
Asian-American	2.04*
College graduate	2.01*
35-44 years old	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income less than \$20,000	-1.98*
Male	-2.08*
Lived in Delaware 5 years or less	-2.16*
18-24 years old	-2.18*
Other race identified	-2.26*
Other type of profession	-2.27*
Resides in Region 5	-2.28*
No high school diploma	-2.41*

Most likely to say business/industry



Most likely *not* to say business/industry

Q114. Who do you think should do more to help improve water quality in Delaware? (Those who said the government.)

College graduate	4.16***
Income over \$150,000	3.27**
Profession: Consulting	3.23**
Unemployed	2.21*
Graduate or professional degree	2.18*
African-American	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Homemaker	-2.25*
Income less than \$20,000	-2.30*
White	-2.40*
High school graduate or equivalent	-2.60**
Resides in Region 4	-2.62**
Some college or trade school	-2.65**
Other type of profession	-2.67**

Most likely to say the government



Most likely *not* to say the government

Q114. Who do you think should do more to help improve water quality in Delaware? (Those who said everyone.)

Female	3.10**
African-American	2.86**
Income less than \$20,000	2.35*
55-64 years old	2.29*
Homemaker	2.27*
Other type of profession	2.10*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware over 25 years	-1.98*
No high school diploma	-2.26*
Income between \$20,000 and \$39,999	-2.29*
Profession: Consulting	-2.53*
College graduate	-2.78**
Male	-3.04**
65 years or older	-3.55***

Most likely to say everyone



Most likely *not* to say everyone

Q114. Who do you think should do more to help improve water quality in Delaware? (Those who said no one.)

Lived in Delaware 6-10 years	2.92**
65 years or older	2.63**
Retired	2.21*
Graduate or professional degree	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say no one



WATER QUALITY AND SEPTIC/SEWER SYSTEMS

The demographic characteristics correlate to responses concerning water quality and septic/sewer systems as follows:

- **Residence Location:** This characteristic had a major influence on the responses, particularly regarding whether the respondent's residence had a septic system or was on a sewer system. Those most likely to have a septic system are in a rural area, a Sussex or Kent County resident, and a resident of Regions 2-5. Those most likely to be on a sewer system reside in New Castle County in Region 1 and are *not* in a rural area.

Those who agree that standard septic systems can impact water quality are more likely to reside in a suburban area than in any other type of area. When respondents were asked whether they were concerned or not concerned about the effects of septic systems on water quality, those residing in Kent County were more likely than others *not* to say that they are concerned.

- **Acreage Owned:** Those owning over 100 acres were more likely than were others *not* to agree that standard septic systems can impact water quality. Conversely, those who did not own land were more likely than landowners to agree.

Q27. Do you have a septic system, a sewer system, or do you have some other form of waste disposal? (Those who have a septic system.)

Resides in rural area	18.72***
Sussex County resident	9.45***
Owens 1 to 20 acres	9.23***
Resides in Region 4	8.07***
Resides in Region 3	6.52***
Not a neighborhood association member	5.72***
Kent County resident	5.61***
Resides in Region 5	4.96***
Profession: Agriculture/farming	4.64***
Owens over 100 acres	4.63***
Resides in Region 2	4.11***
Owens 41 to 60 acres	3.50***
Owens 21 to 40 acres	3.04**
Student	2.33*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
College graduate	-2.85**
Not a landowner	-3.22**
Resides in large city or urban area	-3.24**
Owens less than 1 acre	-5.26***
Neighborhood association member	-5.68***
Resides in small city or town	-5.75***
Resides in suburban area	-8.51***
New Castle County resident	-11.93***
Resides in Region 1	-14.81***

Most likely to say they have a septic system



Most likely *not* to say they have a septic system

Q27. Do you have a septic system, a sewer system, or do you have some other form of waste disposal? (Those who have a sewer system.)

Resides in Region 1	13.79***
New Castle County resident	10.59***
Resides in suburban area	8.56***
Owens less than 1 acre	6.55***
Neighborhood association member	6.51***
Resides in small city or town	4.31***
College graduate	2.84**
Resides in large city or urban area	2.67**
Lived in Delaware over 25 years	2.24*
65 years or older	2.08*
Profession: Accounting/finance	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Hispanic	-2.23*
Lived in Delaware 5 years or less	-2.41*
Owens 21 to 40 acres	-2.51*
Student	-2.77**
Some college or trade school	-2.90**
18-24 years old	-2.93**
Owens 41 to 60 acres	-2.97**
Owens over 100 acres	-3.92***
Resides in Region 2	-4.01***
Profession: Agriculture/farming	-4.06***
Resides in Region 5	-4.44***
Kent County resident	-5.06***
Resides in Region 3	-6.01***
Not a neighborhood association member	-6.72***
Resides in Region 4	-7.60***
Owens 1 to 20 acres	-7.83***
Sussex County resident	-8.49***
Resides in rural area	-17.38***

Most likely to say they have a sewer system



Most likely *not* to say they have a sewer system

Q27. Do you have a septic system, a sewer system, or do you have some other form of waste disposal? (Those who said “other” regarding their waste disposal system.)

Profession: Teaching/education	5.71***	Most likely to say other
Not a landowner	2.72**	
Resides in small city or town	2.37*	
Not a neighborhood association member	1.96	
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED		
35-44 years old	-2.05*	Most likely <i>not</i> to say other

Q37. What are the main reasons you pump your septic tank? (Asked of those who indicated that they had pumped their septic system.) (Those who pumped their septic system because it’s the law.)

Does not know income level	3.45***	Most likely to say because it’s the law
Resides in Region 1	3.36***	
Profession: Consulting	2.47*	
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED		
Some college or trade school	-2.09*	Most likely <i>not</i> to say because it’s the law
Not a neighborhood association member	-2.62**	

Q37. What are the main reasons you pump your septic tank? (Asked of those who indicated that they had pumped their septic system.) (Those who pumped their septic system for general maintenance/preventative measures.)

Lived in Delaware 11-15 years	2.19*	Most likely to say general maintenance
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED		
Not a landowner	-2.70**	Most likely <i>not</i> to say general maintenance

Q37. What are the main reasons you pump your septic tank? (Asked of those who indicated that they had pumped their septic system.) (Those who pumped their septic system because it backed up.)

Not a landowner	2.36*
Owns over 100 acres	2.20*
Income between \$20,000 and \$39,999	2.20*
Female	2.16*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Male	-2.09*

Most likely to say because it backed up

Most likely *not* to say because it backed up

Q37. What are the main reasons you pump your septic tank? (Asked of those who indicated that they had pumped their septic system.) (Those who pumped their septic system because of environmental concern.)

Profession: Sales	2.88**
65 years or older	2.57*
Retired	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
White	-2.52*

Most likely to say because of environmental concern

Most likely *not* to say because of environmental concern

Q39. Do you agree or disagree that standard septic systems can impact water quality in Delaware?

(Asked of those who have a septic system.) (Response analyzed: agree)

Not a landowner	2.16*
Resides in suburban area	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owns over 100 acres	-3.27**

Most likely to agree

Most likely *not* to agree

Q40. Would you say that you are very concerned, somewhat concerned, or not at all concerned about the effects of septic systems on water quality in Delaware? (Asked of those who have a septic system.) (Response analyzed: very or somewhat concerned)

Resides in Region 1	2.43*
Male	2.26*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Medical	-2.08*
Resides in Region 3	-2.32*
Female	-2.33*
Kent County resident	-2.43*

Most likely to say they are concerned

Most likely *not* to say they are concerned

Q43. How likely would you be to spend \$6,000 on upgrading your septic system if you knew that it could help improve water quality in Delaware? (Each respondent was asked one of four questions regarding the amount he or she would be likely to spend to upgrade the septic system.) (Response analyzed: likely)

Owns 41 to 60 acres	2.16*
Profession: Teaching/education	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they are likely to spend \$6,000

Q44. How likely would you be to spend \$8,000 on upgrading your septic system if you knew that it could help improve water quality in Delaware? (Each respondent was asked one of four questions regarding the amount he or she would be likely to spend to upgrade the septic system.) (Response analyzed: likely)

Profession: Consulting	2.30*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they are likely to spend \$8,000

Q45. How likely would you be to spend \$10,000 on upgrading your septic system if you knew that it could help improve water quality in Delaware?

(Each respondent was asked one of four questions regarding the amount he or she would be likely to spend to upgrade the septic system.) (Response analyzed: likely)

No high school diploma	2.11*
Income between \$20,000 and \$39,999	2.08*
18-24 years old	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they are likely to spend \$10,000

Q46. How likely would you be to upgrade your septic system if you knew that developers were required to install state-of-the-art septic systems in new developments? (Asked of those who have a septic system.)

(Response analyzed: likely)

Profession: Construction	2.36*
Lived in Delaware 6-10 years	2.31*
Profession: Teaching/education	2.15*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they would be likely to upgrade the system

Q47. Would you prefer to be on a sewer system? (Asked of those who have a septic system.)

(Response analyzed: yes)

Owns less than 1 acre	2.51*
Lived in Delaware 6-10 years	2.03*
Profession: Industry	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 16-20 years	-2.22*
Profession: Agriculture/farming	-2.22*
Owns over 100 acres	-2.42*

Most likely to say they would prefer to be on a sewer system

Most likely *not* to say they would prefer to be on a sewer system

WATER QUALITY AND LAWN CARE

The demographic characteristics correlate to water quality and lawn care as follows:

- **Gender:** Females were more likely than were males to say that they are concerned about the impacts of home lawn care on water quality. Males, on the other hand, were more likely than were females to say that they were aware before the survey that home lawn care practices can impact water quality.
- **Age:** Those 65 years old and older were more likely than were others *not* to say that they are concerned about the impacts of home lawn care practices on water quality. Those respondents aged 35 to 64 years old were more likely than were others *not* to say that having a green, well-kept lawn is important to them.
- **Ethnicity:** White respondents were more likely than others to say that they are concerned about the impacts of home lawn care practices on water quality and to say that they were aware before the survey that home lawn care practices can impact water quality, and they were more likely than others *not* to say that having a green, well-kept lawn is important to them. African-Americans were more likely than were others to say that having a green, well-kept lawn is important to them.
- **Income Level:** Those with a household income of \$100,000 and over were more likely than were others to say that they had hired a lawn care company.
- **Education Level:** Those with a graduate or professional degree were more likely than were others to say that home lawn care practices are a major or minor environmental concern. Those without a high school diploma were more likely than were others *not* to say that they are concerned about the impacts of home lawn care practices on water quality. Also, those who had graduated from college, with or without post-graduate work, were more likely than those without a college degree to say that they were aware before the survey that home lawn care practices can impact water quality. Finally, those with a graduate or professional degree were more likely than were others *not* to say that

having a green, well-kept lawn is important to them, yet they were more likely than were others to say that they had hired a lawn care company.

- **Residence Location:** Sussex County residents were more likely than were others to say that they maintain their own lawn; New Castle County residents, particularly Region 1 residents, were more likely than were others to say that they had hired a lawn care company. Also, suburban residents were more likely than were others to say that they had hired a lawn care company.
- **Acreage Owned:** Those who own less than 1 acre were more likely than were others to say that they are concerned about the impacts of home lawn care practices on water quality, and they were also more likely to say that they were aware before the survey that home lawn care practices can impact water quality.

The demographic characteristics correlate to water quality and nutrient runoff as follows:

- **Gender:** Males were more likely than were females to say that nutrient runoff is a major or minor cause of water pollution in Delaware, to say that farmers/agriculture is one of the largest contributors to water pollution, and to say that they apply fertilizer to their lawn.
- **Age:** Those 65 years old and older were more likely than were others *not* to say that nutrient runoff is a major or minor cause of water pollution in Delaware and *not* to say that farmers/agriculture is one of the largest sources of nutrient runoff, but they were more likely than were others to say that industry/chemical companies is one of the largest sources of nutrient runoff in Delaware.
- **Ethnicity:** White respondents were more likely than were others to say that farmers/agriculture is one of the largest sources of nutrient runoff. African-Americans were more likely than were others to say that industry/chemical companies is one of the largest sources of nutrient runoff.

- **Income Level:** Those with a household income of over \$150,000 were more likely than were others to say that nutrient runoff is a major or minor cause of water pollution. Those with a household income of \$60,000 or over were more likely than were others to name farmers/agriculture as one of the largest contributors to nutrient runoff.
- **Education Level:** Those with a graduate or professional degree were more likely than were those from other education groups to say that nutrient runoff is a major or minor cause of water pollution and to name farmers/agriculture as one of the largest contributors to nutrient runoff.
- **Profession:** Those employed in consulting, industry, or sales were more likely than were others to say that homeowners/individuals is one of the largest contributors to nutrient runoff pollution in Delaware. Also, those in the consulting or teaching/education professions were more likely than were others to name farmers/agriculture as one of the largest contributors to nutrient runoff.
- **Residence Location:** Those who reside in a rural area and those who reside in Region 2 were more likely than were others to say that nutrient runoff is a major or minor cause of water pollution. Those who reside in Sussex County, particularly those in Region 5, and those who reside in a rural area were more likely than were others to name farmers/agriculture as one of the largest contributors to nutrient runoff. Those who reside in Region 4 were more likely than were others to say that industry/chemical companies is one of the largest contributors to nutrient runoff pollution.
- **Length of Time Living in Delaware and Nativity:** Delaware natives were more likely than were non-natives to say that nutrient runoff is a major or minor cause of water pollution, and they were more likely to say that industry/chemical companies is one of the largest contributors to nutrient runoff pollution. Non-natives were more likely than were natives to say that homeowners/individuals is one of the largest contributors to nutrient runoff pollution.

- **Acreage Owned:** Those who own less than 1 acre were more likely than were others to say that homeowners/individuals is one of the largest contributors to nutrient runoff pollution, and they were more likely to name farmers/agriculture as one of the largest contributors to nutrient runoff, as well.

The demographic characteristics correlate to lawn care advice as follows:

- **Gender:** Males were more likely than were females to say that they changed their lawn care practices based on advice that they received.
- **Ethnicity:** African-Americans were more likely than were others to have gotten advice about lawn care from a retail store, and they were more likely than were others to say that they had changed their lawn care practices based on advice that they received.
- **Income Level:** Those with a household income of \$80,000 or over were more likely than were those from other income groups to have gotten advice on lawn care. Those with a household income of over \$150,000 were more likely than were other income groups to have gotten advice on lawn care from a lawn care company.
- **Education Level:** Those with a graduate or professional degree were more likely than were those from other education groups to have gotten advice on lawn care.
- **Profession:** Those in the teaching/education profession were more likely than were those from other professions to have gotten advice on lawn care.
- **Residence Location:** Those residing in a suburban area and New Castle County residents were more likely than were others to have gotten advice on lawn care.
- **Length of Time Living in Delaware and Nativity:** Non-natives were more likely than were Delaware natives to have gotten advice on lawn care, and they were more likely to have changed their lawn care practices based on the advice.

- **Acreage Owned:** Those who own less than 1 acre were more likely than were others to have gotten advice on lawn care.

For each of the lawn care practices listed in the survey, the demographic characteristics of those most likely to practice the particular lawn care practice are as follows:

- **Leave grass clippings on lawn:** Male; white; rural residents and Sussex County residents, particularly Region 4 residents.
- **Mow lawn at higher height:** Male; white; has a graduate or professional degree; is in the consulting profession; owns less than 1 acre.
- **Reduce the amount of fertilizer used:** Male; white; resides in Sussex County, particularly Region 5.
- **Reduce the amount of turf by planting more vegetation:** Is in the agriculture/farming or teaching/education professions.
- **Plant native species that require less water and fertilizer:** Has a graduate or professional degree; is in the teaching/education or consulting professions; is not a Delaware native.
- **Use organic lawn care products:** Has a graduate or professional degree; is in the teaching/education profession; is not a Delaware native; owns less than 1 acre.
- **Test soil for nitrates/phosphorous on a regular basis:** Has household income of over \$150,000 per year; has a graduate or professional degree; is in the teaching/education profession; resides in Sussex County.

Q24. Are you a homeowner? (Response analyzed: yes)

Neighborhood association member	8.09***
Lived in Delaware over 25 years	7.59***
Retired	4.94***
White	4.59***
55-64 years old	4.40***
Graduate or professional degree	4.18***
Income between \$100,000 and \$149,999	4.10***
65 years or older	3.89***
Resides in rural area	3.88***
Income over \$150,000	3.45***
45-54 years old	3.09**
Homemaker	2.49*
Income between \$80,000 and \$99,999	2.25*
Profession: Accounting/finance	2.10*
Resides in Region 2	2.07*
Sussex County resident	2.06*
Resides in Region 5	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in small city or town	-2.33*
High school graduate or equivalent	-2.34*
Asian-American	-2.52*
Resides in Region 1	-2.53*
Lived in Delaware 16-20 years	-2.68**
Profession: Public service	-3.02**
Other type of profession	-3.10**
Income between \$20,000 and \$39,999	-3.31***
Lived in Delaware 6-10 years	-3.69***
25-34 years old	-3.92***
Lived in Delaware 5 years or less	-4.21***
Unemployed	-4.33***
African-American	-5.77***
Income less than \$20,000	-6.12***
Student	-7.06***
Not a neighborhood association member	-7.65***
18-24 years old	-13.32***



Most likely
not to say
they are a
homeowner

Q25. Do you have your own lawn at your place of residence? (Response analyzed: yes)

Owns less than 1 acre	8.44***
White	5.78***
Neighborhood association member	5.70***
Owns 1 to 20 acres	4.45***
Graduate or professional degree	3.70***
Resides in rural area	3.64***
Lived in Delaware over 25 years	3.06**
Income between \$80,000 and \$99,999	2.80**
35-44 years old	2.67**
Male	2.61**
Resides in Region 2	2.52*
Income over \$150,000	2.12*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 16-20 years	-2.16*
Lived in Delaware 11-15 years	-2.60**
Female	-2.68**
Resides in small city or town	-2.68**
Unemployed	-2.76**
Hispanic	-3.18**
18-24 years old	-3.22**
Income less than \$20,000	-3.70***
Don't know age	-4.63***
Not a neighborhood association member	-4.64***
African-American	-5.54***
Not a landowner	-15.11***

Most likely to say they have a lawn



Most likely *not* to say they have a lawn

Q59. Would you say that home lawn care practices are a major environmental concern, a minor environmental concern, or not an environmental concern in Delaware?

(Asked of those who said that they have a lawn.) (Response analyzed: major or minor impact)

35-44 years old	4.24***
Graduate or professional degree	2.60**
Income between \$60,000 and \$79,999	2.56*
Income between \$100,000 and \$149,999	2.39*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Retired	-2.47*
No high school diploma	-2.59**

Most likely to say lawn care practices are a concern

Most likely *not* to say lawn care practices are a concern

Q61. Would you say that you are very concerned, somewhat concerned, or not at all concerned about the impacts of home lawn care on water quality in Delaware?

(Asked of those who said that they have a lawn.) (Response analyzed: very or somewhat concerned)

35-44 years old	3.08**
Owns less than 1 acre	2.72**
Female	2.66**
Neighborhood association member	2.32*
Income between \$20,000 and \$39,999	2.24*
High school graduate or equivalent	2.11*
White	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
65 years or older	-2.01*
Profession: Sales	-2.11*
Male	-2.60**
No high school diploma	-3.00**
Retired	-3.10**
Other race identified	-3.23**

Most likely to say they are concerned



Most likely *not* to say they are concerned

Q60. Before this survey, were you aware that home lawn care practices can impact water quality in Delaware?

(Asked of those who said that they have a lawn.) (Response analyzed: aware)

Owns less than 1 acre	5.70***
White	4.47***
Graduate or professional degree	4.44***
45-54 years old	3.28**
Sussex County resident	2.92**
Male	2.85**
Not a Delaware native	2.36*
Neighborhood association member	2.09*
College graduate	2.08*
Resides in rural area	2.01*
Profession: Medical	1.96
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
High school graduate or equivalent	-2.79**
Female	-2.84**
Homemaker	-2.94**
No high school diploma	-3.43***
18-24 years old	-3.56***
Not a landowner	-5.04***
African-American	-5.43***

Most likely to say they were aware



Most likely *not* to say they were aware

Q48. Would you say it is important or unimportant to you to have a green, well-kept lawn? (Asked of those who said they have a lawn and maintain their lawn.) (Response analyzed: important)

18-24 years old	4.68***
65 years or older	3.46***
Retired	2.96**
African-American	2.65**
Lived in Delaware 5 years or less	2.51*
No high school diploma	2.45*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Construction	-1.97*
Not a neighborhood association member	-2.00*
Income between \$80,000 and \$99,999	-2.07*
White	-2.22*
55-64 years old	-2.25*
Lived in Delaware over 25 years	-2.29*
Profession: Public service	-2.44*
Profession: Consulting	-2.61**
45-54 years old	-2.73**
Graduate or professional degree	-2.83**
Disabled	-2.86**
35-44 years old	-3.70***

Most likely to say it is important



Most likely not to say it is important

Q26. Do you maintain the lawn at your place of residence? (Asked of those who said they had a lawn at their place of residence.) (Response analyzed: yes)

Not a Delaware native	3.02**
Owns 1 to 20 acres	2.53*
Income between \$40,000 and \$59,999	2.48*
Sussex County resident	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 21-25 years	-2.10*
65 years or older	-2.16*
Is a Delaware native	-2.36*
Profession: Consulting	-2.36*
African-American	-2.53*
New Castle County resident	-2.64**
Not a landowner	-3.20**
Resides in Region 1	-3.89***

Most likely to say they maintain the lawn



Most likely not to say they maintain the lawn

Q58. Have you ever hired a professional lawn care company?
(Asked of those who said that they have a lawn.) (Response analyzed: yes)

Neighborhood association member	6.86***
Income over \$150,000	6.38***
Graduate or professional degree	5.53***
Income between \$100,000 and \$149,999	4.33***
Owns less than 1 acre	3.93***
Not a Delaware native	3.32***
Resides in suburban area	3.26**
Resides in Region 1	3.06**
New Castle County resident	2.84**
Profession: Consulting	2.66**
45-54 years old	2.65**
College graduate	2.04*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$20,000 and \$39,999	-1.97*
Kent County resident	-2.12*
Resides in Region 3	-2.14*
18-24 years old	-2.43*
Profession: Construction	-2.46*
Resides in Region 4	-2.47*
No high school diploma	-2.86**
Income between \$40,000 and \$59,999	-3.20**
25-34 years old	-3.21**
Resides in rural area	-3.36***
Is a Delaware native	-3.90***
High school graduate or equivalent	-4.11***
Not a landowner	-4.53***
Not a neighborhood association member	-7.09***

Most likely to say they hired a company



Most likely *not* to say they hired a company

Q20. Would you say that nutrient runoff (nitrogen and phosphorous) is a major cause, a minor cause, or not a cause of water pollution in Delaware? (Response analyzed: major or minor cause)

Male	5.53***
45-54 years old	3.73***
Resides in rural area	3.09**
Income over \$150,000	2.85**
Graduate or professional degree	2.82**
Owens 1 to 20 acres	2.67**
Is a Delaware native	2.36*
Resides in Region 2	2.17*
Income between \$20,000 and \$39,999	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
No high school diploma	-2.26*
Income less than \$20,000	-2.38*
Not a landowner	-2.47*
Other race identified	-2.86**
Homemaker	-3.28**
Resides in Region 1	-3.59***
65 years or older	-4.14***
Retired	-4.58***
Female	-5.63***

Most likely to say it is a cause



Most likely not to say it is a cause

Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware? (Those who said homeowners/individuals.)

Asian-American	5.94***
Income between \$100,000 and \$149,999	5.68***
Owens less than 1 acre	3.18**
Some college or trade school	2.72**
Profession: Consulting	2.55*
Profession: Industry	2.48*
Profession: Sales	2.47*
Not a Delaware native	2.47*
Neighborhood association member	2.27*
Disabled	2.21*
45-54 years old	2.19*
Owens 61 to 80 acres	2.12*
Lived in Delaware 11-15 years	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$20,000 and \$39,999	-1.99*
Is a Delaware native	-2.23*
Not a landowner	-2.57*
High school graduate or equivalent	-3.73***

Most likely to say homeowners/individuals



Most likely not to say homeowners/individuals

Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware? (Those who said farmers/agriculture.)

Graduate or professional degree	7.22***
45-54 years old	5.87***
Male	4.76***
White	4.54***
Not a Delaware native	4.34***
Owns less than 1 acre	4.31***
Sussex County resident	3.71***
Income between \$100,000 and \$149,999	3.40***
Income over \$150,000	3.27**
Profession: Consulting	3.07**
Owns 1 to 20 acres	2.88**
Resides in Region 5	2.62**
Lived in Delaware 6-10 years	2.46*
Income between \$80,000 and \$99,999	2.37*
Resides in rural area	2.18*
Income between \$60,000 and \$79,999	2.08*
Profession: Teaching/education	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Other race identified	-1.97*
65 years or older	-1.97*
Income between \$20,000 and \$39,999	-2.62**
No high school diploma	-2.74**
Profession: Agriculture/farming	-2.94**
Homemaker	-3.40***
Is a Delaware native	-3.65***
Income less than \$20,000	-3.80***
Resides in Region 1	-4.11***
African-American	-4.23***
New Castle County resident	-4.27***
Female	-4.72***
Not a landowner	-6.26***
High school graduate or equivalent	-6.47***

Most likely to say farmers/agriculture



Most likely *not* to say farmers/agriculture

Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware? (Those who said industry/chemical companies.)

Lived in Delaware over 25 years	3.29**
Is a Delaware native	3.16**
Income between \$20,000 and \$39,999	2.97**
Resides in Region 4	2.63**
High school graduate or equivalent	2.45*
African-American	2.44*
65 years or older	2.28*
Some college or trade school	2.10*
Retired	2.04*
Homemaker	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$40,000 and \$59,999	-1.97*
Lived in Delaware 11-15 years	-2.04*
Lived in Delaware 16-20 years	-2.50*
Income over \$150,000	-2.54*
Not a Delaware native	-2.95**
Income between \$100,000 and \$149,999	-3.59***
Other type of profession	-3.87***

Most likely to say industry/chemical companies



Most likely *not* to say industry/chemical companies

Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware? (Those who said developers.)

Asian-American	3.42***
Resides in small city or town	3.25**
Income between \$80,000 and \$99,999	2.25*
Owns 41 to 60 acres	2.23*
Graduate or professional degree	2.18*
Male	2.10*
Owns 21 to 40 acres	2.01*
Owns less than 1 acre	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-2.07*

Most likely to say developers



Most likely *not* to say developers

Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware? (Those who said development in general.)

Asian-American	3.75***
Owens 21 to 40 acres	2.21*
Male	2.14*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-2.12*
Resides in suburban area	-2.47*

Most likely to say development in general

Most likely *not* to say development in general

Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware? (Those who said sewage treatment plants.)

Owens 81 to 100 acres	7.3***
Asian-American	6.36***
Owens 41 to 60 acres	4.06***
Profession: Agriculture/farming	3.28**
Profession: Sales	2.86**
Sussex County resident	2.48*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.65**

Most likely to say sewage treatment plants

Most likely *not* to say sewage treatment plants

Q22. Who do you think contributes the most to nutrient runoff pollution in Delaware? (Those who said golf courses.)

Profession: Agriculture/farming	5.93***
Asian-American	5.51***
Owens 41 to 60 acres	3.54***
25-34 years old	2.83**
Owens over 100 acres	2.46*
Resides in Region 5	2.14*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say golf courses



Q49. Do you apply fertilizer to your lawn? (Asked of those who said they have a lawn and maintain their lawn.) (Response analyzed: yes)

Neighborhood association member	5.94***
Resides in suburban area	4.06***
Income between \$100,000 and \$149,999	3.71***
Not a Delaware native	3.33***
Owens less than 1 acre	3.04**
Profession: Accounting/finance	2.73**
Male	2.38*
55-64 years old	2.23*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens over 100 acres	-2.09*
35-44 years old	-2.17*
Female	-2.48*
Income less than \$20,000	-2.50*
Resides in rural area	-2.56*
Profession: Public service	-2.60**
High school graduate or equivalent	-2.67**
Not a landowner	-3.22**
Is a Delaware native	-3.34***
Not a neighborhood association member	-5.95***

Most likely to say they apply fertilizer



Most likely *not* to say they apply fertilizer

Q52. In what seasons do you apply fertilizer to your lawn? (Asked of those who said they apply fertilizer to their lawn.) (Those who said spring.)

Neighborhood association member	3.13**
College graduate	3.08**
Owens less than 1 acre	2.59**
New Castle County resident	2.43*
Income over \$150,000	2.20*
Other type of profession	2.13*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 4	-2.03*
65 years or older	-2.09*
Not a landowner	-2.11*
Owens 81 to 100 acres	-2.17*
Not a neighborhood association member	-2.27*
No high school diploma	-2.59**
Profession: Construction	-2.65**
Sussex County resident	-2.68**
Resides in rural area	-2.72**

Most likely to say spring



Most likely *not* to say spring

Q52. In what seasons do you apply fertilizer to your lawn? (Asked of those who said they apply fertilizer to their lawn.) (Those who said summer.)

Homemaker	3.06**
Other type of profession	2.79**
College graduate	2.59**
Owens less than 1 acre	2.16*
Profession: Medical	2.14*
New Castle County resident	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Some college or trade school	-2.06*
Not a neighborhood association member	-2.29*
Resides in rural area	-2.38*
Retired	-2.66**
Owens 1 to 20 acres	-3.22**

Most likely to say summer



Most likely not to say summer

Q52. In what seasons do you apply fertilizer to your lawn? (Asked of those who said they apply fertilizer to their lawn.) (Those who said fall.)

Lived in Delaware over 25 years	2.82**
Other type of profession	2.81**
White	2.77**
College graduate	2.45*
45-54 years old	2.41*
Income between \$100,000 and \$149,999	2.15*
55-64 years old	2.15*
Profession: Consulting	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$40,000 and \$59,999	-2.24*
No high school diploma	-2.63**
18-24 years old	-2.73**
African-American	-3.46***

Most likely to say fall



Most likely not to say fall

Q52. In what seasons do you apply fertilizer to your lawn? (Asked of those who said they apply fertilizer to their lawn.) (Those who said winter.)

Owens less than 1 acre	3.78***
Other type of profession	2.81**
Lived in Delaware 16-20 years	2.64**
Profession: Medical	2.53*
Profession: Teaching/education	2.33*
Neighborhood association member	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-1.96
Owens 1 to 20 acres	-2.42*

Most likely to say winter

Most likely *not* to say winter

Q53. Have you ever gotten advice or information on how to take care of your lawn? (Asked of those who said they have a lawn and maintain their lawn.) (Response analyzed: yes)

Graduate or professional degree	5.34***
Neighborhood association member	4.56***
Income over \$150,000	4.01***
Not a Delaware native	3.46***
Resides in suburban area	3.36***
Owens less than 1 acre	3.17**
Income between \$80,000 and \$99,999	2.48*
Profession: Teaching/education	2.22*
Income between \$100,000 and \$149,999	2.17*
45-54 years old	2.00*
New Castle County resident	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in large city or urban area	-2.12*
Lived in Delaware 16-20 years	-2.57*
High school graduate or equivalent	-2.64**
Resides in rural area	-2.83**
18-24 years old	-3.12**
Is a Delaware native	-3.28**
Income less than \$20,000	-3.81***
Not a neighborhood association member	-3.82***
No high school diploma	-4.56***

Most likely to say they have gotten advice

Most likely *not* to say they have gotten advice



Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Neighbor.)

Most likely to say neighbor

Asian-American	3.66***
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Friend.)

Most likely to say friend

Other race identified	2.75**
Resides in small city or town	2.40*
Asian-American	2.33*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
White	-2.06*

Most likely *not* to say friend

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Family member.)

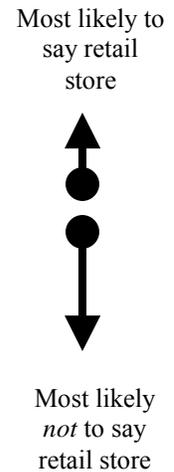
Most likely to say family member

Income between \$20,000 and \$39,999	3.09**
35-44 years old	2.56*
Owens over 100 acres	2.22*
Owens 1 to 20 acres	2.08*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens less than 1 acre	-2.87**

Most likely *not* to say family member

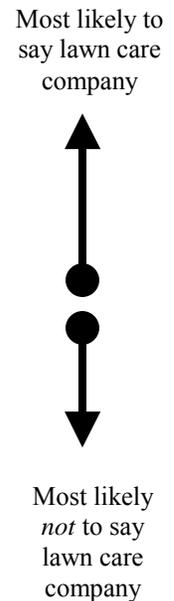
Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Retail store such as Lowe's or Home Depot.)

Resides in large city or urban area	4.90***
Disabled	2.24*
African-American	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.01*
Resides in small city or town	-2.38*
White	-2.48*
High school graduate or equivalent	-2.58**
Lived in Delaware over 25 years	-3.36***



Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Lawn care company.)

Income over \$150,000	3.25**
Income between \$80,000 and \$99,999	2.73**
Profession: Accounting/finance	2.47*
45-54 years old	2.40*
Neighborhood association member	2.35*
Disabled	2.13*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$20,000 and \$39,999	-2.00*
Resides in large city or urban area	-2.15*
Retired	-2.47*
Not a neighborhood association member	-2.71**
65 years or older	-3.23**



Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Lawn care magazine/publication.)

Unemployed	4.71***
Owens 61 to 80 acres	4.12***
Profession: Public service	3.21**
Some college or trade school	2.92**
Owens 81 to 100 acres	2.74**
Sussex County resident	2.64**
No high school diploma	2.18*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.59**

Most likely to say lawn care magazine

Most likely *not* to say lawn care magazine

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Other magazine.)

Profession: Military	3.8***
Profession: Sales	3.00**
Resides in Region 3	2.35*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 1	-2.70**

Most likely to say other magazine

Most likely *not* to say other magazine

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Newspaper.)

Retired	3.47***
Owens less than 1 acre	3.32***
Asian-American	3.32***
Owens 21 to 40 acres	3.03**
Hispanic	3.00**
65 years or older	2.65**
Male	2.36*
Income over \$150,000	2.05*
Not a Delaware native	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-2.31*

Most likely to say newspaper

Most likely *not* to say newspaper

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Television.)

Owens 21 to 40 acres	4.15***
Student	3.15**
Homemaker	3.08**
Other race identified	2.75**
55-64 years old	2.37*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in suburban area	-2.04*

Most likely to say television

Most likely *not* to say television

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Radio.)

Hispanic	5.51***
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say radio

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (DNREC.)

Owens 21 to 40 acres	7.38***
Hispanic	4.43***
Resides in large city or urban area	2.77**
Resides in Region 3	2.48*
Kent County resident	2.45*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.24*

Most likely to say DNREC

Most likely *not* to say DNREC

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (The University of Delaware Cooperative Extension Service.)

Profession: Teaching/education	2.74**
Not a landowner	2.29*
Lived in Delaware over 25 years	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
35-44 years old	-2.05*

Most likely to say UDCES

Most likely *not* to say UDCES

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Internet.)

Lived in Delaware 21-25 years	2.90**
Asian-American	2.16*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-2.22*

Most likely to say the Internet

Most likely *not* to say the Internet

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (Books/brochures/mail/reading materials.)

65 years or older	4.99***
Income between \$100,000 and \$149,999	3.21**
Income less than \$20,000	2.59**
Lived in Delaware over 25 years	2.27*
Retired	2.11*
Male	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-2.01*

Most likely to say books etc.

Most likely not to say books etc.

Q55. Where did you get your information or advice on lawn care? (Asked of those who have gotten advice on how to take care of their lawn.) (University.)

Lived in Delaware 21-25 years	5.80***
Profession: Sales	3.29**
Income between \$100,000 and \$149,999	3.17**
Not a neighborhood association member	2.25*
18-24 years old	2.13*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Neighborhood association member	-2.12*
Resides in suburban area	-2.18*

Most likely to say university

Most likely not to say university

Q57. Did the information or advice cause you to change the way you care for your lawn? (Asked of those who have gotten advice on how to take care of their lawn.) (Response analyzed: yes)

Not a Delaware native	3.64***
Resides in large city or urban area	3.07**
Male	2.46*
African-American	2.06*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-2.61**
College graduate	-3.46***
Is a Delaware native	-3.46***

Most likely to say they changed



Most likely not to say they changed

Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.) (Leave grass clippings on lawn.)

Resides in rural area	3.97***
Male	2.82**
Sussex County resident	2.79**
Income between \$100,000 and \$149,999	2.68**
Resides in Region 4	2.60**
Profession: Construction	2.53*
White	2.30*
Owens 1 to 20 acres	2.18*
Lived in Delaware 16-20 years	2.11*
Not a neighborhood association member	2.08*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
18-24 years old	-2.03*
Resides in suburban area	-2.30*
65 years or older	-2.42*
Female	-2.66**
Neighborhood association member	-2.86**
Resides in Region 1	-3.04**
African-American	-3.19**
New Castle County resident	-3.32***
Not a landowner	-3.97***
Lived in Delaware 5 years or less	-4.07***

Most likely to say they leave grass clippings



Most likely *not* to say they leave grass clippings

**Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.)
(Mow your lawn at a higher height.)**

Graduate or professional degree	3.53***
White	3.07**
55-64 years old	3.05**
Owns less than 1 acre	2.60**
Male	2.54*
Profession: Construction	2.42*
Income between \$80,000 and \$99,999	2.25*
45-54 years old	2.23*
Neighborhood association member	2.17*
Profession: Consulting	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
25-34 years old	-2.10*
65 years or older	-2.37*
Female	-2.49*
Other type of profession	-2.50*
Not a neighborhood association member	-2.56*
Income between \$20,000 and \$39,999	-2.72**
Profession: Public service	-3.42***
Lived in Delaware 5 years or less	-3.52***
18-24 years old	-3.55***
No high school diploma	-4.15***
African-American	-4.25***
Not a landowner	-5.18***

Most likely to say they mow at higher height



Most likely not to say they mow at higher height

**Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.)
(Reduce the amount of fertilizer used.)**

Owens less than 1 acre	3.18**
White	2.67**
Income between \$80,000 and \$99,999	2.16*
Resides in Region 5	2.14*
Sussex County resident	2.00*
Male	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens over 100 acres	-1.99*
No high school diploma	-2.37*
Profession: Medical	-2.47*
Resides in large city or urban area	-2.66**
African-American	-2.67**
Homemaker	-2.89**
Lived in Delaware 5 years or less	-3.53***
Not a landowner	-4.86***

Most likely to say they reduce fertilizer used



Most likely not to say they reduce fertilizer used

Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.) (Reduce amount of turf by planting more vegetation.)

Owens less than 1 acre	3.59***
Neighborhood association member	3.44***
Income between \$100,000 and \$149,999	3.31***
55-64 years old	2.55*
Income between \$60,000 and \$79,999	2.36*
Profession: Agriculture/farming	2.22*
Profession: Teaching/education	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Retired	-2.18*
25-34 years old	-2.25*
65 years or older	-2.39*
African-American	-2.41*
Income less than \$20,000	-2.48*
No high school diploma	-2.51*
Other type of profession	-2.81**
Resides in large city or urban area	-2.88**
Not a neighborhood association member	-3.85***
Income between \$20,000 and \$39,999	-4.80***
Not a landowner	-4.84***

Most likely to say they plant more vegetation



Most likely *not* to say they plant more vegetation

Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.) (Plant native species that require less water and fertilizer.)

Owns less than 1 acre	5.25***
Income between \$100,000 and \$149,999	3.28**
Profession: Teaching/education	3.14**
55-64 years old	3.04**
Lived in Delaware 16-20 years	2.83**
Graduate or professional degree	2.78**
Profession: Consulting	2.77**
Income between \$80,000 and \$99,999	2.76**
Neighborhood association member	2.58**
Some college or trade school	2.39*
Not a Delaware native	2.38*
45-54 years old	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-1.97*
Resides in large city or urban area	-2.09*
High school graduate or equivalent	-2.45*
65 years or older	-2.45*
Retired	-2.49*
Income less than \$20,000	-2.89**
Lived in Delaware 21-25 years	-3.05**
No high school diploma	-3.77***
Not a landowner	-4.35***
Income between \$20,000 and \$39,999	-4.45***

Most likely to say they plant native species



Most likely *not* to say they plant native species

Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.) (Use organic lawn care products.)

Profession: Teaching/education	3.70***
Lived in Delaware 16-20 years	3.58***
Graduate or professional degree	3.51***
Asian-American	3.10**
Owns less than 1 acre	3.07**
55-64 years old	2.86**
Neighborhood association member	2.35*
Unemployed	2.35*
Not a Delaware native	2.08*
Student	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
35-44 years old	-2.56*
Profession: Industry	-2.79**
High school graduate or equivalent	-2.85**
Profession: Construction	-2.99**

Most likely to say they use organic products



Most likely *not* to say they use organic products

Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.) (Test soil for nitrates/phosphorous on a regular basis.)

Profession: Teaching/education	2.79**
Graduate or professional degree	2.12*
Income over \$150,000	2.10*
Sussex County resident	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Industry	-2.00*
Lived in Delaware 21-25 years	-2.08*
Resides in Region 1	-2.21*
35-44 years old	-2.82**
New Castle County resident	-3.17**

Most likely to say they test soil



Most likely not to say they test soil

Q63. Does your household currently do the following lawn care practices? (Asked of those who said that they have a lawn.) (None of these.)

Not a landowner	4.14***
African-American	3.72***
Lived in Delaware 21-25 years	2.16*
Lived in Delaware 5 years or less	2.10*
Income less than \$20,000	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
White	-2.24*

Most likely to say none

Most likely not to say none

Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.) (Cost.)

Lived in Delaware 11-15 years	6.48***
No high school diploma	4.47***
Resides in Region 4	3.60***
55-64 years old	3.12**
Profession: Industry	2.83**
Sussex County resident	2.17*
Resides in rural area	2.06*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say cost



Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.) (Not concerned.)

Profession: Accounting/finance	3.69***
High school graduate or equivalent	2.70**
Owens less than 1 acre	2.25*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say not concerned

Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.) (Don't think my behavior is wrong.)

Profession: Industry	4.18***
Income over \$150,000	3.50***
Lived in Delaware 6-10 years	2.69**
Owens 41 to 60 acres	2.48*
African-American	2.04*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they don't think behavior is wrong

Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.) (Not aware that my behavior is a problem.)

Owens 1 to 20 acres	3.97***
Income between \$40,000 and \$59,999	2.18*
Lived in Delaware over 25 years	2.08*
Resides in suburban area	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they are not aware behavior is a problem

Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.) (Time/work too much/etc.)

Student	3.78***
College graduate	2.14*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say time/they work too much

Q65. What are the main reasons you do not participate in any of these activities? (Asked of those who said that they have a lawn but do not follow any of the lawn care practices listed in Question 63.) (Don't have expertise/don't know how.)

College graduate	2.14*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they don't know how

Q67. Would you be willing to spend more money on a smaller property lot if you knew that the neighborhood would have a large area of open space? (Asked of those who said that they have a lawn.) (Response analyzed: yes)

Graduate or professional degree	5.33***
Neighborhood association member	3.57***
White	3.34***
Resides in suburban area	3.34***
New Castle County resident	3.04**
Is a Delaware native	2.48*
Student	2.45*
Profession: Accounting/finance	2.39*
Resides in Region 1	2.26*
Profession: Teaching/education	2.24*
Disabled	2.21*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in rural area	-2.08*
Retired	-2.30*
High school graduate or equivalent	-2.43*
Not a neighborhood association member	-2.62**
Kent County resident	-2.71**
No high school diploma	-2.76**
Resides in Region 3	-2.89**

Most likely to say they would be willing



Most likely *not* to say they would be willing

WATER QUALITY AND STORM WATER MANAGEMENT

The demographic characteristics correlate to water quality and storm water management as follows:

- **Gender:** Males were more likely than were females to say that storm water runoff is a major or minor environmental concern in Delaware, and they were more likely to say that they were aware before the survey that storm water runoff can impact water quality.
- **Ethnicity:** White people were more likely than were those of other ethnic groups to say that storm water runoff is a major or minor environmental concern in Delaware, and they were more likely to say that they were aware before the survey that storm water runoff can impact water quality.
- **Education Level:** College graduates, with or without a post-graduate degree, were more likely than were those without a college degree to say that they were aware before the survey that storm water runoff can impact water quality.

For each of the activities listed in the survey, the demographic characteristics of those most likely to practice the particular activity are as follows:

- **Clean up and properly dispose of pet waste:** White; is in the teaching/education profession; owns 20 acres or less.
- **Wash their car on the lawn:** Hispanic; is in industry; resides in a rural area, resides in Kent County/Region 3.
- **Use biodegradable detergents when washing their car:** Hispanic; resides in a rural area, resides in Sussex County or Kent County, resides in Region 3, 4, or 5.
- **Collect motor oil and dispose of it properly:** Male; white; is in construction or industry; resides in a rural area, resides in Kent County.
- **Plant rain gardens:** Male; white or Asian-American; is in the public service profession; resides in Kent County/Region 3.

- **Construct swales:** Male; has household income of \$100,000 or over; resides Region 2 or 5.
- **Use rain barrels to collect storm water:** Is in the medical or consulting professions; resides in New Castle County, particularly Region 1; owns less than 1 acre.
- **Move drain spouts so runoff flows onto lawn instead of driveway:** White; has a graduate or professional degree; owns 20 acres or less.
- **Be more diligent in keeping the street-side gutter clear:** Resides in New Castle County, particularly Region 1, and resides in a suburban area; owns less than 1 acre.
- **Plan landscape with environmental health in mind:** White; has a graduate or professional degree; resides in a rural area; owns 20 acres or less.
- **Limit the use of salt on paved areas in winter:** White; is a college graduate, with or without a post-graduate degree; is in the consulting profession; owns less than 1 acre.
- **Reduce impervious surfaces and replace with more pervious materials:** White; is in the medical profession or in industry; resides in Region 5; owns 20 acres or less.
- **None of these:** African-American or native-American; is retired; resides in New Castle County, particularly Region 1, resides in a large city or urban area; is not a landowner.

Q74. Would you say that storm water runoff is a major environmental concern, a minor environmental concern, or not an environmental concern in Delaware? (Response analyzed: major or minor concern)

White	4.23***
Male	3.64***
25-34 years old	2.74**
College graduate	2.69**
Owns 1 to 20 acres	2.23*
Profession: Medical	2.20*
Profession: Construction	2.12*
45-54 years old	1.98*
Neighborhood association member	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Homemaker	-1.98*
Female	-3.63***
No high school diploma	-4.16***

Most likely to say it is a concern



Most likely *not* to say it is a concern

Q75. Before this survey, would you say that you were aware that storm water runoff can impact water quality in Delaware? (Response analyzed: aware)

Male	5.91***
Owens less than 1 acre	4.57***
Graduate or professional degree	3.70***
White	3.52***
45-54 years old	3.52***
Neighborhood association member	3.23**
Lived in Delaware over 25 years	2.75**
Income between \$100,000 and \$149,999	2.75**
Profession: Medical	2.47*
College graduate	2.37*
Profession: Construction	2.15*
Profession: Industry	2.14*
Other type of profession	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
35-44 years old	-1.97*
Lived in Delaware 5 years or less	-1.99*
Hispanic	-2.18*
Profession: Public service	-2.32*
Income less than \$20,000	-2.54*
Resides in large city or urban area	-2.71**
High school graduate or equivalent	-2.81**
Not a neighborhood association member	-3.08**
Homemaker	-3.79***
African-American	-4.10***
No high school diploma	-4.42***
Not a landowner	-5.00***
18-24 years old	-5.10***
Female	-5.66***

Most likely to say they were aware



Most likely *not* to say they were aware

**Q77. Where do you think that storm water runoff goes?
(Those who said into streams and other waterways.)**

Male	6.5***
Graduate or professional degree	4.98***
Owens less than 1 acre	4.25***
Income between \$100,000 and \$149,999	4.00***
Profession: Construction	3.08**
College graduate	2.89**
New Castle County resident	2.73**
Income over \$150,000	2.72**
Neighborhood association member	2.26*
Asian-American	2.11*
Profession: Industry	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 4	-2.04*
African-American	-2.24*
18-24 years old	-2.34*
Homemaker	-2.48*
Income less than \$20,000	-2.50*
No high school diploma	-2.55*
Unemployed	-2.58**
High school graduate or equivalent	-5.08***
Not a landowner	-5.74***
Female	-6.29***

Most likely to
say into
streams



Most likely
not to say into
streams

**Q77. Where do you think that storm water runoff goes?
(Those who said into the soil.)**

Profession: Public service	3.37***
Profession: Agriculture/farming	3.17**
College graduate	2.57*
Lived in Delaware 21-25 years	2.33*
Resides in Region 4	2.17*
Resides in small city or town	2.08*
Not a neighborhood association member	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
No high school diploma	-1.98*
Other type of profession	-2.13*
Neighborhood association member	-2.32*
New Castle County resident	-2.6**
Lived in Delaware over 25 years	-2.70**
Resides in large city or urban area	-3.01**
Resides in Region 1	-3.41***

Most likely to
say into the
soil



Most likely
not to say into
the soil

**Q77. Where do you think that storm water runoff goes?
(Those who said into a treatment plant.)**

Disabled	5.06***
Resides in Region 1	3.91***
Neighborhood association member	2.60**
New Castle County resident	2.57*
Lived in Delaware 6-10 years	2.51*
Homemaker	2.47*
Resides in large city or urban area	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 5	-2.03*
Resides in Region 3	-2.21*
Retired	-2.22*
Not a neighborhood association member	-2.24*
Resides in rural area	-2.70**

Most likely to say into a treatment plant



Most likely *not* to say into a treatment plant

Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said there are no storm water structures.)

Resides in rural area	4.62***
Not a neighborhood association member	4.41***
Sussex County resident	3.81***
Owns 1 to 20 acres	3.09**
Resides in Region 5	2.87**
Male	2.64**
Profession: Construction	2.19*
Owns over 100 acres	2.12*
Not a Delaware native	2.06*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in suburban area	-2.07*
College graduate	-2.17*
Lived in Delaware over 25 years	-2.30*
Female	-2.50*
Profession: Industry	-2.64**
Is a Delaware native	-2.70**
Income between \$100,000 and \$149,999	-3.72***
Resides in Region 1	-3.78***
New Castle County resident	-4.20***
Owns less than 1 acre	-4.92***
Neighborhood association member	-5.30***

Most likely to say no storm water structures



Most likely *not* to say no storm water structures

Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said storm water ponds.)

Neighborhood association member	4.30***
Profession: Construction	3.84***
College graduate	3.12**
Income between \$60,000 and \$79,999	2.88**
45-54 years old	2.62**
Resides in Region 2	2.20*
Profession: Consulting	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
African-American	-1.97*
25-34 years old	-2.03*
Income less than \$20,000	-2.03*
Not a landowner	-2.10*
Profession: Public service	-2.27*
No high school diploma	-2.30*
Income between \$20,000 and \$39,999	-3.05**
Not a neighborhood association member	-4.78***

Most likely to say storm water ponds



Most likely *not* to say storm water ponds

Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said swales.)

Neighborhood association member	4.22***
Income over \$150,000	3.36***
Profession: Consulting	2.78**
Income between \$60,000 and \$79,999	2.64**
Owns less than 1 acre	2.53*
Profession: Industry	2.27*
Graduate or professional degree	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-4.46***

Most likely to say swales



Most likely *not* to say swales

Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said rain gardens.)

Income between \$60,000 and \$79,999	4.39***
Profession: Consulting	3.31***
Lived in Delaware 6-10 years	2.94**
Graduate or professional degree	2.42*
Profession: Agriculture/farming	2.14*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say rain gardens



Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said drainage ditches.)

Owns less than 1 acre	2.84**
Graduate or professional degree	2.75**
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 1	-2.34*
Resides in large city or urban area	-2.95**
Not a landowner	-3.33***

Most likely to say drainage ditches

Most likely *not* to say drainage ditches

Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said storm drains/gutters.)

Resides in Region 1	4.44***
Neighborhood association member	4.26***
Owens less than 1 acre	3.95***
New Castle County resident	3.94***
Resides in large city or urban area	3.58***
Lived in Delaware over 25 years	3.49***
Graduate or professional degree	3.28**
45-54 years old	2.73**
Resides in suburban area	2.54*
Is a Delaware native	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Agriculture/farming	-2.41*
Income less than \$20,000	-2.45*
Homemaker	-2.78**
Sussex County resident	-3.08**
Not a neighborhood association member	-3.10**
Owens 1 to 20 acres	-3.16**
Resides in Region 5	-4.20***
Resides in rural area	-5.18***

Most likely to say storm drains and gutters



Most likely *not* to say storm drains and gutters

Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said barriers/walls.)

Lived in Delaware 6-10 years	4.99***
Income between \$60,000 and \$79,999	3.20**
Profession: Consulting	2.48*
Income between \$40,000 and \$59,999	2.37*
Not a landowner	2.17*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say barriers/walls



Q69. Does your property or neighborhood contain storm water structures? If yes: What types? (Those who said constructed wetlands.)

Graduate or professional degree	4.20***
Profession: Teaching/education	3.33***
Owens less than 1 acre	3.02**
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say constructed wetlands

Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said individual homeowners.)

Profession: Public service	4.34***
Resides in rural area	4.09***
Owens 1 to 20 acres	3.95***
45-54 years old	2.96**
Profession: Agriculture/farming	2.91**
Asian-American	2.78**
Profession: Medical	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens less than 1 acre	-2.29*
Profession: Industry	-2.31*
25-34 years old	-2.45*

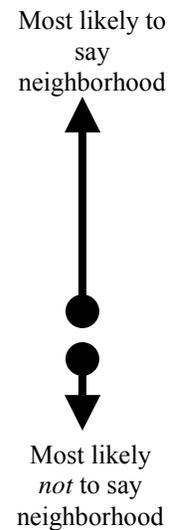
Most likely to say individuals/homeowners



Most likely *not* to say individuals/homeowners

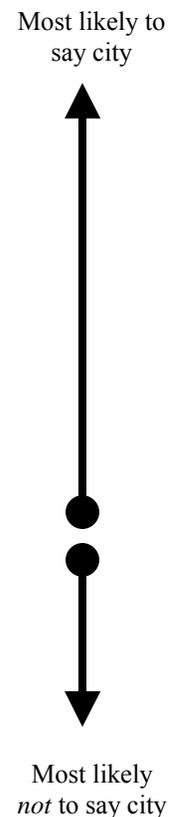
Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said neighborhood.)

Neighborhood association member	4.19***
Owens less than 1 acre	3.30***
Resides in suburban area	2.75**
Resides in Region 5	2.51*
Profession: Industry	2.23*
African-American	2.21*
Profession: Consulting	2.19*
No high school diploma	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in small city or town	-2.11*
Income between \$40,000 and \$59,999	-2.16*
Income between \$20,000 and \$39,999	-2.30*
Not a neighborhood association member	-3.80***



Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said city.)

Resides in small city or town	5.52***
Resides in large city or urban area	3.60***
Profession: Construction	2.97**
Owens less than 1 acre	2.77**
Profession: Consulting	2.74**
Resides in Region 3	2.72**
Graduate or professional degree	2.35*
Kent County resident	2.27*
Income between \$80,000 and \$99,999	2.26*
Profession: Industry	2.22*
Male	2.22*
35-44 years old	2.07*
White	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 2	-2.06*
Female	-2.08*
Resides in Region 5	-2.55*
Other type of profession	-2.63**
Resides in suburban area	-2.82**
High school graduate or equivalent	-2.87**
Resides in rural area	-3.68***



Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said state.)

Resides in rural area	3.92***
Owns 1 to 20 acres	3.26**
55-64 years old	2.85**
Owns 21 to 40 acres	2.76**
Owns over 100 acres	2.76**
Lived in Delaware over 25 years	2.41*
Not a neighborhood association member	2.39*
Profession: Medical	2.22*
Resides in Region 2	2.16*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.40*
Neighborhood association member	-2.59**
25-34 years old	-2.68**
Resides in Region 1	-2.79**

Most likely to say the state



Most likely *not* to say the state

Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said developers.)

55-64 years old	2.67**
Resides in Region 2	2.44*
Graduate or professional degree	2.10*
Income over \$150,000	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 1	-2.01*

Most likely to say developers

Most likely *not* to say developers

Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said county.)

Resides in suburban area	5.05***
Resides in Region 1	4.33***
New Castle County resident	3.61***
Disabled	3.44***
Owens 81 to 100 acres	3.14**
Neighborhood association member	2.67**
Income between \$80,000 and \$99,999	2.63**
45-54 years old	2.38*
Profession: Medical	2.27*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 5	-1.98*
18-24 years old	-1.99*
Resides in large city or urban area	-2.04*
Income less than \$20,000	-2.11*
Resides in rural area	-2.24*
Sussex County resident	-2.37*
Profession: Public service	-2.50*
African-American	-2.52*
Not a neighborhood association member	-2.89**
Profession: Industry	-2.90**
Resides in small city or town	-2.93**
Resides in Region 3	-2.95**
Kent County resident	-2.96**

Most likely to say county



Most likely not to say county

Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said town.)

Lived in Delaware 21-25 years	4.65***
Income between \$100,000 and \$149,999	3.71***
Student	3.30**
Graduate or professional degree	2.75**
Resides in small city or town	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say town



Q72. Who maintains these storm water structures? (Asked of those who said that their property or neighborhood has storm water structures.) (Those who said nobody.)

Resides in Region 5	2.73**
Income between \$20,000 and \$39,999	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say nobody

Q87. Would you say that runoff from pet waste is a major environmental concern, a minor environmental concern, or not an environmental concern in Delaware? (Response analyzed: major or minor concern)

Income between \$40,000 and \$59,999	2.74**
Some college or trade school	2.69**
Student	2.15*
Profession: Medical	2.15*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
No high school diploma	-3.09**

Most likely to say it is a concern

Most likely *not* to say it is a concern

Q79. Do you have a stream or a pond on your property? (Response analyzed: yes)

Resides in rural area	4.70***
Owens over 100 acres	4.47***
Profession: Agriculture/farming	4.27***
Income over \$150,000	3.49***
45-54 years old	3.46***
Owens 21 to 40 acres	2.95**
Owens 81 to 100 acres	2.76**
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in suburban area	-2.23*
Resides in Region 1	-2.40*
Income less than \$20,000	-2.53*
25-34 years old	-2.56*
Not a landowner	-3.08**

Most likely to say they have a stream or pond



Most likely *not* to say they have a stream or pond

Q80. Do you maintain mowed grass or an herbaceous border along the bank? (Asked of those who said that they have a stream or pond on their property.) (Those who maintain an herbaceous border.)

Neighborhood association member	2.85**
Income between \$80,000 and \$99,999	2.73**
Homemaker	2.72**
35-44 years old	2.57*
Profession: Industry	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a landowner	-2.07*
Not a neighborhood association member	-2.31*

Most likely to say they maintain an herbaceous border

Most likely *not* to say they maintain an herbaceous border

Q80. Do you maintain mowed grass or an herbaceous border along the bank? (Asked of those who said that they have a stream or pond on their property.) (Those who maintain neither mowed grass or an herbaceous border.)

Income between \$20,000 and \$39,999	2.49*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens 1 to 20 acres	-2.46*

Most likely to say neither

Most likely *not* to say neither

Q80. Do you maintain mowed grass or an herbaceous border along the bank? (Asked of those who said that they have a stream or pond on their property.) (Those who maintain both mowed grass and an herbaceous border.)

Lived in Delaware 16-20 years	3.23**
No high school diploma	3.03**
55-64 years old	2.43*
Profession: Agriculture/farming	2.39*
Profession: Medical	2.23*
Owens 1 to 20 acres	2.10*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens less than 1 acre	-2.11*
Resides in Region 1	-2.11*

Most likely to say both



Most likely *not* to say both

Q83. What are the main reasons you would not consider planting a herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said cost.)

Income between \$20,000 and \$39,999	3.45***
Retired	2.75**
65 years or older	2.43*
Is a Delaware native	2.15*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a Delaware native	-1.97*

Most likely to say cost

Most likely *not* to say cost

Q83. What are the main reasons you would not consider planting a herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said not concerned.)

Profession: Agriculture/farming	3.67***
Income between \$40,000 and \$59,999	3.53***
Lived in Delaware 16-20 years	2.44*
Profession: Public service	2.44*
Owns over 100 acres	2.39*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say not concerned

Q83. What are the main reasons you would not consider planting a herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said don't think my behavior is wrong.)

Profession: Industry	2.74**
Profession: Consulting	2.49*
No high school diploma	2.44*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they don't think their behavior is wrong

Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said don't like the way it looks.)

Income between \$20,000 and \$39,999	3.45***
Retired	2.75**
65 years or older	2.43*
Is a Delaware native	2.15*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a Delaware native	-1.97*

Most likely to say they don't like the way it looks

Most likely *not* to say they don't like the way it looks

Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said increase undesirable animals/insects.)

Income between \$20,000 and \$39,999	3.45***
Retired	2.75**
65 years or older	2.43*
Is a Delaware native	2.15*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a Delaware native	-1.97*

Most likely to say it increases undesirable animals

Most likely *not* to say it increases undesirable animals

Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said time/work too much/etc.)

Lived in Delaware 21-25 years	3.25**
Graduate or professional degree	3.18**
Owns 1 to 20 acres	2.15*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say time/work too much

Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said too much trouble/too lazy.)

Income between \$60,000 and \$79,999	3.53***
25-34 years old	3.53***
Lived in Delaware 6-10 years	2.88**
Profession: Industry	2.88**
Resides in Region 2	2.76**
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say too much trouble



Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said don't have expertise.)

Some college or trade school	2.44*
Income between \$20,000 and \$39,999	2.14*
Not a landowner	2.04*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they don't have expertise

Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said they rent.)

Hispanic	2.82**
Lived in Delaware 6-10 years	2.68**
Profession: Military	2.49*
Income less than \$20,000	2.39*
18-24 years old	2.39*
Some college or trade school	2.15*
Not a landowner	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.35*

Most likely to say they rent

Most likely *not* to say they rent

Q83. What are the main reasons you would not consider planting an herbaceous border along the water on your property? (Asked of those who said they would not plant an herbaceous border along the pond or stream on their property.) (Those who said safety.)

Owens over 100 acres	3.53***
Income between \$40,000 and \$59,999	2.88**
Resides in Region 5	2.39*
Sussex County resident	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say safety



Q85. If you received cost-sharing and technical support, would you be likely or unlikely to plant a stream or pond bank border? (Asked of those who said they have a stream of pond on their property and they do not plant an herbaceous border along it.) (Response analyzed: likely)

Owens 1 to 20 acres	2.33*
Income between \$60,000 and \$79,999	2.18*
Income between \$100,000 and \$149,999	2.11*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
65 years or older	-2.23*
Income between \$20,000 and \$39,999	-2.53*
Not a landowner	-3.17**

Most likely to say they would be likely

Most likely not to say they would be likely

Q86. Would you plant an herbaceous border if you were provided a design that is pleasing to the eye and maintains a partial view of the stream or pond? (Asked of those who said they have a stream of pond on their property and they do not plant an herbaceous border.) (Response analyzed: likely)

Income between \$60,000 and \$79,999	2.86**
35-44 years old	2.39*
Income between \$100,000 and \$149,999	2.19*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 21-25 years	-2.33*
Income over \$150,000	-2.57*
65 years or older	-3.10**

Most likely to say they would plant a border

Most likely not to say they would plant a border

Q90. Do you do any of the following activities (of those with a pet)? (Those who said clean up and properly dispose of pet's waste.)

White	4.02***
Profession: Teaching/education	2.63**
Income between \$80,000 and \$99,999	2.38*
45-54 years old	2.35*
Owns 1 to 20 acres	2.20*
Owns less than 1 acre	2.18*
High school graduate or equivalent	2.02*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-1.98*
Retired	-3.83***
Not a landowner	-3.94***
African-American	-3.95***
65 years or older	-4.00***

Most likely to say they clean up pet waste



Most likely *not* to say they clean up pet waste

Q90. Do you do any of the following activities (of those with a car)? (Those who said wash the car on the lawn.)

Resides in rural area	3.28**
Some college or trade school	2.35*
45-54 years old	2.35*
Resides in Region 3	2.33*
Hispanic	2.14*
Kent County resident	2.12*
Profession: Industry	2.11*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Graduate or professional degree	-2.08*
Lived in Delaware 6-10 years	-2.09*
Resides in Region 1	-3.33***
New Castle County resident	-3.56***

Most likely to say they wash car on lawn



Most likely *not* to say they wash car on lawn

Q90. Do you do any of the following activities (of those with a car)? (Those who said use biodegradable detergents when washing the car.)

Resides in rural area	4.76***
Income between \$60,000 and \$79,999	3.20**
Sussex County resident	3.19**
Resides in Region 4	2.42*
Disabled	2.24*
Resides in Region 3	2.20*
Owens 1 to 20 acres	2.16*
Resides in Region 5	2.10*
Kent County resident	2.08*
Owens 61 to 80 acres	2.02*
Hispanic	2.00*
Student	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Asian-American	-2.34*
Income between \$100,000 and \$149,999	-2.37*
Not a landowner	-2.73**
Resides in large city or urban area	-2.98**
Homemaker	-3.01**
New Castle County resident	-4.14***
Resides in Region 1	-4.47***

Most likely to say they use biodegradable detergents



Most likely *not* to say they use biodegradable detergents

Q90. Do you do any of the following activities (of those with a car)? (Those who said collect motor oil and dispose of it properly.)

Owens 1 to 20 acres	4.24***
White	3.83***
25-34 years old	3.68***
Resides in rural area	3.49***
Male	3.24**
Other type of profession	2.74**
Profession: Construction	2.59**
Income between \$60,000 and \$79,999	2.58**
Kent County resident	2.46*
35-44 years old	2.43*
Student	2.37*
Income between \$40,000 and \$59,999	2.07*
Profession: Industry	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in small city or town	-2.10*
New Castle County resident	-2.27*
Resides in Region 1	-2.29*
Resides in large city or urban area	-2.69**
Female	-3.35***
Not a landowner	-3.41***
African-American	-3.48***
Retired	-5.26***
65 years or older	-6.25***

Most likely to say they dispose of oil properly



Most likely *not* to say they dispose of oil properly

Q90. Do you do any of the following activities? (Those who said plant rain gardens.)

Profession: Public service	2.88**
Disabled	2.64**
Male	2.36*
Asian-American	2.26*
Kent County resident	2.13*
Resides in Region 3	2.11*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Homemaker	-2.39*
Female	-2.63**
Retired	-2.81**

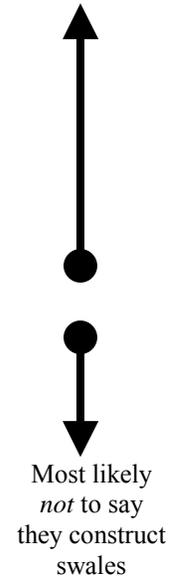
Most likely to say they plant rain gardens

Most likely *not* to say they plant rain gardens

Q90. Do you do any of the following activities? (Those who said construct swales.)

Neighborhood association member	5.01***
Male	3.67***
Income between \$100,000 and \$149,999	3.59***
College graduate	3.30**
Income over \$150,000	3.04**
Owns 1 to 20 acres	3.01**
Profession: Construction	2.93**
Owns 41 to 60 acres	2.46*
Resides in Region 5	2.10*
Resides in Region 2	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
25-34 years old	-2.18*
Income less than \$20,000	-3.04**
No high school diploma	-3.09**
Female	-3.60***
Not a landowner	-3.74***
Not a neighborhood association member	-4.57***

Most likely to say they construct swales



Q90. Do you do any of the following activities? (Those who said use rain barrels to collect storm water.)

Profession: Medical	3.27**
Lived in Delaware 16-20 years	2.95**
New Castle County resident	2.77**
45-54 years old	2.48*
Owens less than 1 acre	2.30*
Resides in Region 1	2.01*
Profession: Consulting	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 6-10 years	-2.24*
Not a landowner	-2.54*
Income between \$20,000 and \$39,999	-2.55*

Most likely to say they use rain barrels



Most likely not to say they use rain barrels

Q90. Do you do any of the following activities? (Those who said move drain spouts so runoff flows onto lawn instead of driveway.)

Owens less than 1 acre	5.36***
Neighborhood association member	4.74***
White	3.78***
Income between \$100,000 and \$149,999	3.75***
Income between \$60,000 and \$79,999	3.31***
Owens 1 to 20 acres	3.05**
35-44 years old	2.90**
Graduate or professional degree	2.82**
55-64 years old	2.16*
Other race identified	2.06*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
No high school diploma	-2.69**
Income less than \$20,000	-3.02**
Resides in large city or urban area	-3.62***
18-24 years old	-3.85***
Not a neighborhood association member	-4.18***
African-American	-4.96***
Not a landowner	-7.66***

Most likely to say they move drain spouts



Most likely not to say they move drain spouts

Q90. Do you do any of the following activities? (Those who said be more diligent in keeping the street-side gutter clear.)

Neighborhood association member	6.49***
Owens less than 1 acre	6.25***
Resides in suburban area	4.14***
Resides in Region 1	3.54***
55-64 years old	3.38***
New Castle County resident	3.13**
Other race identified	2.96**
Income between \$60,000 and \$79,999	2.64**
Profession: Medical	2.21*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income less than \$20,000	-2.34*
Sussex County resident	-2.43*
Owens over 100 acres	-2.43*
Resides in Region 4	-2.49*
Resides in rural area	-4.54***
Not a neighborhood association member	-5.80***
Not a landowner	-6.61***

Most likely to say they keep gutter clear

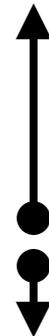


Most likely *not* to say they keep gutter clear

Q90. Do you do any of the following activities? (Those who said plan the landscape with environmental health in mind.)

Neighborhood association member	5.04***
55-64 years old	4.45***
Owens less than 1 acre	4.39***
Income between \$60,000 and \$79,999	3.85***
White	3.05**
Graduate or professional degree	2.80**
Profession: Medical	2.52*
Owens 1 to 20 acres	2.37*
Income between \$100,000 and \$149,999	2.26*
Resides in rural area	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
African-American	-2.40*
Resides in Region 1	-2.46*
25-34 years old	-3.14**
Not a neighborhood association member	-3.63***
Not a landowner	-7.12***

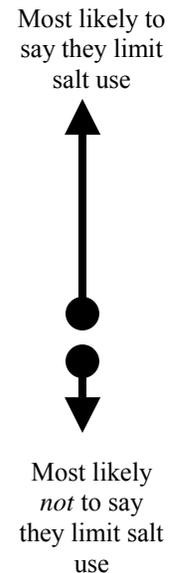
Most likely to say they plan landscape with environment in mind



Most likely *not* to say they plan landscape with environment in mind

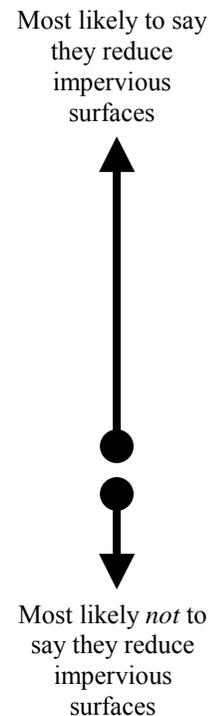
Q90. Do you do any of the following activities? (Those who said limit the use of salt on paved areas in winter.)

Neighborhood association member	5.73***
Owens less than 1 acre	5.18***
Income between \$100,000 and \$149,999	3.46***
55-64 years old	2.75**
Profession: Consulting	2.40*
Graduate or professional degree	2.26*
College graduate	2.06*
White	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens 61 to 80 acres	-2.16*
Resides in large city or urban area	-2.26*
65 years or older	-2.45*
Not a neighborhood association member	-4.17***
Not a landowner	-7.35***



Q90. Do you do any of the following activities? (Those who said reduce impervious surfaces and replace with more pervious materials.)

55-64 years old	4.62***
Owens 1 to 20 acres	3.50***
Income between \$60,000 and \$79,999	3.47***
White	3.02**
Neighborhood association member	2.67**
Profession: Medical	2.44*
Resides in Region 5	2.42*
Income over \$150,000	2.39*
35-44 years old	2.22*
Owens less than 1 acre	2.16*
Profession: Industry	2.16*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Retired	-2.04*
25-34 years old	-2.40*
Resides in Region 1	-2.49*
African-American	-2.54*
65 years or older	-2.79**
Not a landowner	-4.17***



Q90. Do you do any of the following activities? (Those who said none of these.)

Not a landowner	13.1***
Not a neighborhood association member	3.38***
Resides in Region 1	3.30**
Resides in large city or urban area	3.17**
Retired	2.74**
New Castle County resident	2.34*
Native American	2.12*
African-American	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 2	-2.08*
25-34 years old	-2.11*
White	-2.11*
Income between \$60,000 and \$79,999	-2.42*
Resides in rural area	-3.10**
Neighborhood association member	-4.19***
Owens 1 to 20 acres	-4.39***
Owens less than 1 acre	-5.81***

Most likely to say none



Most likely not to say none

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said cost.)

College graduate	3.56***
Homemaker	3.27**
Unemployed	2.58*
Lived in Delaware 16-20 years	2.26*
Owens 1 to 20 acres	2.19*
Income between \$60,000 and \$79,999	1.96*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a landowner	-2.64**

Most likely to say cost

Most likely not to say cost

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said not concerned.)

Resides in Region 4	3.14**
Sussex County resident	2.70**
65 years or older	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Graduate or professional degree	-2.11*
18-24 years old	-2.16*
Income between \$100,000 and \$149,999	-2.26*
Lived in Delaware 16-20 years	-2.26*
Not a Delaware native	-2.94**
Neighborhood association member	-3.05**
Not a landowner	-3.19**
New Castle County resident	-3.52***

Most likely to say not concerned



Most likely *not* to say not concerned

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said not aware that my behavior is a problem.)

Owns less than 1 acre	3.43***
Income between \$60,000 and \$79,999	3.35***
Some college or trade school	2.02*
Neighborhood association member	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a landowner	-5.18***

Most likely to say they are not aware behavior is wrong

Most likely *not* to say they are not aware behavior is wrong

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said don't think my behavior is wrong.)

Other race identified	3.17**
Profession: Agriculture/farming	2.98**
Male	2.60**
Profession: Construction	2.53*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Female	-2.54*

Most likely to say they don't think behavior is wrong

Most likely *not* to say they don't think behavior is wrong

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said time/work.)

25-34 years old	2.67**
Income over \$150,000	2.33*
Other race identified	2.28*
Lived in Delaware 5 years or less	2.10*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a landowner	-2.14*

Most likely to say time/work

Most likely *not* to say time/work

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said too much trouble/too lazy.)

Profession: Consulting	3.47***
Is a Delaware native	3.04**
No high school diploma	3.02**
65 years or older	2.99**
Owns less than 1 acre	2.76**
Unemployed	2.53*
Lived in Delaware over 25 years	2.09*
Income less than \$20,000	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 4	-2.06*
Other type of profession	-2.54*
High school graduate or equivalent	-2.77**
Not a Delaware native	-3.00**

Most likely to say too much trouble



Most likely *not* to say too much trouble

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said don't like the way it looks/aesthetics.)

Owens over 100 acres	3.22**
Profession: Sales	3.03**
Homemaker	2.56*
Student	2.31*
Is a Delaware native	2.21*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say aesthetics



Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said safety.)

Owens over 100 acres	10.32***
Profession: Agriculture/farming	6.00***
Profession: Sales	5.07***
Income between \$80,000 and \$99,999	4.03***
55-64 years old	3.29**
Sussex County resident	2.09*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
New Castle County resident	-2.15*

Most likely to say safety

Most likely *not* to say safety

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said the state doesn't do it.)

Owens over 100 acres	10.32***
Profession: Agriculture/farming	5.29***
Profession: Sales	4.49***
Income between \$80,000 and \$99,999	3.36***
55-64 years old	3.29**
Lived in Delaware over 25 years	2.04*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say the state doesn't do it



Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said they don't change their own oil.)

Retired	3.93***
65 years or older	3.75***
No high school diploma	2.71**
Graduate or professional degree	2.65**
Not a Delaware native	2.45*
Income between \$100,000 and \$149,999	2.34*
Other race identified	2.28*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
25-34 years old	-2.21*
Some college or trade school	-2.23*
Income between \$60,000 and \$79,999	-2.59**
Profession: Public service	-3.10**
Is a Delaware native	-3.14**

Most likely to say they don't change their own oil



Most likely *not* to say they don't change their own oil

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said they don't landscape.)

Not a landowner	3.80***
Asian-American	3.62***
Hispanic	2.50*
Resides in Region 1	2.49*
Unemployed	2.48*
Resides in suburban area	2.06*
No high school diploma	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
White	-2.27*
Other type of profession	-2.34*
Resides in rural area	-2.37*
55-64 years old	-2.46*
Some college or trade school	-2.57*

Most likely to say they don't landscape



Most likely *not* to say they don't landscape

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said it is not their responsibility.)

Owens 81 to 100 acres	3.85***
College graduate	2.82**
Profession: Military	2.24*
Profession: Consulting	2.18*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
High school graduate or equivalent	-3.02**

Most likely to say it isn't their responsibility

Most likely *not* to say it isn't their responsibility

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said they already do a lot.)

Income between \$60,000 and \$79,999	3.07**
35-44 years old	2.84**
Income between \$40,000 and \$59,999	2.46*
Profession: Medical	2.32*
Profession: Consulting	2.26*
Owens 41 to 60 acres	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they already to a lot



Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said they don't need to/they don't have a reason to/it is not a problem here.)

Not a landowner	3.38***
Income between \$80,000 and \$99,999	2.92**
Other type of profession	2.51*
Native American	2.39*
Resides in suburban area	2.38*
Profession: Sales	2.25*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they don't need to



Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said they don't wash their car at home.)

Profession: Medical	4.75***
55-64 years old	2.61**
Profession: Industry	2.60**
Not a Delaware native	2.39*
Income over \$150,000	2.10*
Income between \$20,000 and \$39,999	2.10*
Other race identified	2.05*
Graduate or professional degree	2.01*
Owens less than 1 acre	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware over 25 years	-1.97*
Is a Delaware native	-2.00*

Most likely to say they don't wash their car at home



Most likely *not* to say they don't wash their car at home

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said age.)

65 years or older	6.32***
Retired	5.14***
Lived in Delaware over 25 years	2.83**
Owens over 100 acres	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
35-44 years old	-2.12*
Neighborhood association member	-2.15*
45-54 years old	-2.21*

Most likely to say age



Most likely *not* to say age

Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said maintained by others.)

Not a landowner	5.09***
65 years or older	3.89***
Resides in Region 4	2.33*
No high school diploma	2.29*
White	2.17*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say maintained by others



Q92. What are the main reasons you do not participate in some of these activities that could reduce the impact of storm water runoff from your property? (Those who said lack of information.)

Graduate or professional degree	2.49*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-2.32*

Most likely to say lack of information

Most likely *not* to say lack of information

BEHAVIOR CHANGES AND WATER QUALITY

For each of the problems listed in the survey (e.g., increased fish kills, degraded aquatic habitat), the demographic characteristics of those most likely to say they would change their behaviors to help improve water quality are as follows:

- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **increased fish kills**: Female; white.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **degraded aquatic habitat**: From 25 to 54 years old; white.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **a less diverse ecosystem**: Less than 45 years of age; white; has a graduate or professional degree.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **having to close swimming areas**: Female; white; resides in New Castle County, resides in a suburban area.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **having to close fishing areas**: Female; less than 35 years of age; white; is in the accounting/finance or public service professions.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **unsafe drinking water**: Female; white; is in the public service profession.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **health hazards from polluted water while wading or swimming**: Female; white; is in the accounting/finance or public service professions; resides in New Castle County, particularly Region 1, resides in a suburban area.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **health hazards to their children**: Female; white; is in the accounting/finance or public service professions; resides in New Castle County.
- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **genetic mutations and birth defects**: Female; is in the accounting/finance or public service professions; resides in New Castle County.

- Those who would change their behavior to help improve water quality if they knew that poor water quality leads to **lower property values**: Female; has a graduate or professional degree; is in the accounting/finance or public service professions.
- Those who said they have **already changed their behaviors**: African-American; resides in Region 5, resides in a small city or town; owns over 100 acres.

The survey asked respondents if they would be likely or unlikely to change their behavior to help improve water quality with certain stipulations (e.g., if they knew that they could help protect future generations, if they received a tax break). For each question in the survey, the demographic characteristics of those most likely to say they would be likely to change their behaviors to help improve water quality are as follows:

- Those who would be likely to change their behavior to help improve water quality **if they knew that they could help protect future generations**: Is in the public service, industry, or accounting/finance profession; is a Delaware native.
- Those who would be likely to change their behavior to help improve water quality **if they received a tax break**: White; is in the industry or public service profession; resides in a suburban area, resides in Region 2; is a Delaware native; owns less than 1 acre.
- Those who would be likely to change their behavior to help improve water quality **if they had to pay a small fee on their property tax bill but they knew it was being used for conservation purposes**: There are no strong demographic patterns.
- Those who would be likely to change their behavior to help improve water quality **if they received financial assistance for implementing water conservation practices to reduce storm water runoff**: Is less than 45 years old; is in the public service or accounting/finance profession; resides in Region 2; is a Delaware native.

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: increased fish kills? (Those who said increased fish kills.)

Income between \$100,000 and \$149,999	3.14**
Profession: Accounting/finance	2.93**
Neighborhood association member	2.38*
Some college or trade school	2.34*
Homemaker	2.17*
Female	2.16*
18-24 years old	2.04*
White	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Hispanic	-1.99*
Profession: Construction	-2.09*
Male	-2.26*
Not a neighborhood association member	-2.31*
Resides in small city or town	-2.35*
Owens over 100 acres	-2.78**
Retired	-2.89**
65 years or older	-3.46***

Most likely to say increased fish kills



Most likely *not* to say increased fish kills

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: degraded aquatic habitat? (Those who said degraded aquatic habitat.)

Income between \$100,000 and \$149,999	3.13**
Profession: Accounting/finance	3.07**
Neighborhood association member	2.88**
Income between \$60,000 and \$79,999	2.65**
White	2.63**
Lived in Delaware 6-10 years	2.53*
25-34 years old	2.26*
Some college or trade school	2.20*
35-44 years old	1.99*
45-54 years old	1.98*
Graduate or professional degree	1.96
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
No high school diploma	-2.13*
Kent County resident	-2.35*
Owens over 100 acres	-2.63**
Not a neighborhood association member	-2.66**
Retired	-3.53***
65 years or older	-4.44***

Most likely to say degraded aquatic habitat



Most likely *not* to say degraded aquatic habitat

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: a less diverse ecosystem? (Those who said a less diverse ecosystem.)

Income between \$100,000 and \$149,999	3.80***
Neighborhood association member	3.66***
White	3.55***
Graduate or professional degree	3.34***
35-44 years old	3.20**
Profession: Accounting/finance	3.14**
Lived in Delaware 6-10 years	3.06**
Homemaker	2.87**
Other type of profession	2.81**
Income between \$60,000 and \$79,999	2.65**
25-34 years old	2.43*
18-24 years old	2.27*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Construction	-1.96*
Resides in small city or town	-2.09*
Owns over 100 acres	-2.24*
Hispanic	-2.26*
Kent County resident	-2.31*
Profession: Agriculture/farming	-2.51*
Not a neighborhood association member	-3.11**
No high school diploma	-3.19**
Retired	-5.18***
65 years or older	-5.87***

Most likely to say a less diverse ecosystem



Most likely *not* to say a less diverse ecosystem

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: swimming areas having to be closed?

(Those who said swimming areas having to be closed.)

Profession: Accounting/finance	3.31***
Income between \$100,000 and \$149,999	2.85**
Neighborhood association member	2.66**
Female	2.44*
White	2.40*
25-34 years old	2.25*
New Castle County resident	2.23*
Resides in suburban area	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-2.25*
Kent County resident	-2.29*
Owens over 100 acres	-2.38*
Male	-2.55*
Retired	-2.75**
65 years or older	-3.37***

Most likely to say swimming areas having to be closed

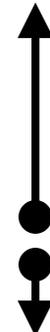


Most likely *not* to say swimming areas having to be closed

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: fishing areas having to be closed? (Those who said fishing areas having to be closed.)

Profession: Accounting/finance	3.35***
Income between \$100,000 and \$149,999	2.95**
White	2.53*
Female	2.42*
18-24 years old	2.17*
Profession: Public service	2.11*
Student	1.99*
25-34 years old	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Kent County resident	-1.96*
No high school diploma	-1.98*
Owens over 100 acres	-2.33*
Male	-2.52*
Retired	-2.84**
65 years or older	-3.95***

Most likely to say fishing areas having to be closed



Most likely *not* to say fishing areas having to be closed

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: unsafe drinking water? (Those who said unsafe drinking water.)

Profession: Accounting/finance	2.74**
Female	2.51*
Income between \$100,000 and \$149,999	2.51*
Lived in Delaware 6-10 years	2.31*
Neighborhood association member	2.29*
White	2.28*
Homemaker	2.27*
Profession: Public service	2.26*
35-44 years old	2.13*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-2.06*
Male	-2.60**
Owens over 100 acres	-2.73**
Retired	-4.11***
65 years or older	-4.76***

Most likely to say unsafe drinking water



Most likely *not* to say unsafe drinking water

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: health hazards from polluted water while wading or swimming? (Those who said polluted water while wading or swimming.)

Profession: Accounting/finance	2.92**
Neighborhood association member	2.90**
Income between \$100,000 and \$149,999	2.82**
New Castle County resident	2.74**
Homemaker	2.51*
Female	2.50*
Profession: Public service	2.40*
Resides in Region 1	2.27*
White	2.26*
Resides in suburban area	2.14*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Hispanic	-1.98*
Kent County resident	-2.43*
Not a neighborhood association member	-2.54*
Male	-2.60**
No high school diploma	-2.76**
Owens over 100 acres	-2.79**
Retired	-3.25**
65 years or older	-4.00***

Most likely to say polluted swimming/wading waters



Most likely *not* to say polluted swimming/wading waters

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: health hazards to your children? (Those who said health hazards to their children.)

Profession: Accounting/finance	3.00**
Income between \$100,000 and \$149,999	2.75**
Homemaker	2.61**
Neighborhood association member	2.26*
White	2.14*
35-44 years old	2.11*
Female	2.07*
Profession: Public service	2.03*
New Castle County resident	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-2.11*
Male	-2.16*
No high school diploma	-2.30*
Owens over 100 acres	-2.42*
Retired	-3.64***
65 years or older	-4.46***

Most likely to say health hazards to children



Most likely *not* to say health hazards to children

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: genetic mutations and birth defects? (Those who said birth defects.)

Profession: Accounting/finance	3.04**
Female	2.80**
Income between \$100,000 and \$149,999	2.55*
Profession: Public service	2.35*
Homemaker	2.32*
35-44 years old	2.28*
Neighborhood association member	2.04*
Some college or trade school	2.03*
Lived in Delaware 6-10 years	2.00*
Graduate or professional degree	1.97*
New Castle County resident	1.96
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Refused to state how many years lived in Delaware	-2.03*
Refused household income	-2.11*
Owens over 100 acres	-2.35*
Male	-2.90**
No high school diploma	-3.05**
Retired	-3.42***
65 years or older	-4.66***

Most likely to say birth defects



Most likely *not* to say birth defects

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following: lower property values? (Those who said lower property values.)

Profession: Accounting/finance	3.58***
Income between \$100,000 and \$149,999	2.83**
Female	2.72**
35-44 years old	2.45*
Profession: Public service	2.44*
Graduate or professional degree	2.25*
25-34 years old	2.22*
Lived in Delaware 6-10 years	2.18*
Neighborhood association member	2.13*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owns over 100 acres	-2.12*
Hispanic	-2.12*
Profession: Construction	-2.58**
Male	-2.83**
Not a landowner	-3.65***
Retired	-3.68***
65 years or older	-4.32***

Most likely to say lower property values



Most likely *not* to say lower property values

Q95. Would you be more likely to change your behavior to help improve water quality if you knew that poor water quality leads to the following? (Those who said they have already altered their behavior/they do these things.)

Owns over 100 acres	4.69***
African-American	2.05*
Not a neighborhood association member	2.02*
Resides in small city or town	2.00*
Resides in Region 5	1.99*
Lived in Delaware 11-15 years	1.96*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income less than \$20,000	-1.96*
Homemaker	-2.01*
Lived in Delaware 6-10 years	-2.36*
18-24 years old	-2.55*

Most likely to say they already altered their behavior

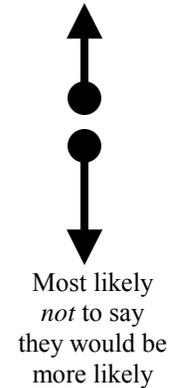


Most likely *not* to say they already altered their behavior

Q96. Would you be more or less likely to change your behavior to help improve water quality if you knew that you could help protect future generations? (Response analyzed: more likely)

Is a Delaware native	2.91**
Profession: Public service	2.53*
Profession: Industry	2.31*
Profession: Accounting/finance	2.01*
Income between \$20,000 and \$39,999	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Unemployed	-2.20*
Not a Delaware native	-2.64**
Profession: Medical	-2.80**
65 years or older	-3.01**
Hispanic	-3.61***
Retired	-3.65***

Most likely to say they would be more likely

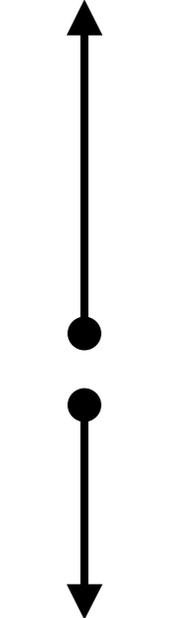


Most likely not to say they would be more likely

Q97. Would you be more or less likely to change your behavior to help improve water quality if you received a tax break? (Response analyzed: more likely)

Resides in suburban area	3.52***
Income between \$60,000 and \$79,999	3.40***
Owns less than 1 acre	3.30**
College graduate	3.17**
Neighborhood association member	2.91**
35-44 years old	2.74**
Profession: Industry	2.55*
Is a Delaware native	2.36*
Profession: Public service	2.23*
White	2.16*
Lived in Delaware 6-10 years	2.09*
Resides in Region 2	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
No high school diploma	-1.97*
Not a neighborhood association member	-2.23*
Other race identified	-2.47*
Owns 61 to 80 acres	-2.62**
Not a landowner	-2.86**
Income less than \$20,000	-2.91**
Hispanic	-3.03**
Resides in small city or town	-3.33***
65 years or older	-3.62***
Retired	-4.50***

Most likely to say they would be more likely



Most likely not to say they would be more likely

Q98. Would you be more or less likely to change your behavior to help improve water quality if you had to pay a small fee in your property tax bill but you knew that it was being used for conservation purposes? (Response analyzed: more likely)

Lived in Delaware 6-10 years	3.42***
25-34 years old	2.40*
35-44 years old	2.08*
Income between \$60,000 and \$79,999	2.07*
Income between \$20,000 and \$39,999	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income less than \$20,000	-1.99*
Kent County resident	-2.02*
Retired	-2.15*
Owns over 100 acres	-2.49*

Most likely to say they would be more likely



Most likely *not* to say they would be more likely

Q99. Would you be more or less likely to change your behavior to help improve water quality if you received financial assistance for implementing conservation practices to reduce storm water runoff? (Response analyzed: more likely)

Profession: Public service	3.23**
Resides in Region 2	2.90**
Income between \$60,000 and \$79,999	2.64**
18-24 years old	2.63**
25-34 years old	2.54*
35-44 years old	2.45*
Owns 1 to 20 acres	2.32*
Profession: Accounting/finance	2.22*
Is a Delaware native	2.17*
Income between \$20,000 and \$39,999	2.09*
Some college or trade school	1.96*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a landowner	-2.30*
65 years or older	-5.49***
Retired	-6.20***

Most likely to say they would be more likely



Most likely *not* to say they would be more likely

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said they do as much as possible.)

Profession: Industry	3.08**
Not a Delaware native	2.51*
Resides in Region 5	2.31*
55-64 years old	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$60,000 and \$79,999	-2.18*
Asian-American	-2.25*
Student	-2.35*
18-24 years old	-2.83**
Is a Delaware native	-3.10**
Profession: Public service	-3.19**
25-34 years old	-3.22**

Most likely to say they do as much as possible



Most likely *not* to say they do as much as possible

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said cost.)

Unemployed	2.24*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a landowner	-2.24*
Neighborhood association member	-2.45*

Most likely to say cost

Most likely *not* to say cost

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said time/work too much/etc.)

Lived in Delaware 21-25 years	2.50*
Other race identified	2.46*
18-24 years old	2.25*
Resides in small city or town	2.21*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
65 years or older	-2.27*
Income less than \$20,000	-2.35*
Lived in Delaware over 25 years	-2.80**
Not a landowner	-2.90**

Most likely to say time/work too much

Most likely *not* to say time/work too much

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said too much trouble/too lazy.)

Profession: Military	2.46*
College graduate	2.44*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a Delaware native	-2.06*
Not a neighborhood association member	-2.22*
High school graduate or equivalent	-2.52*

Most likely to say too much trouble

Most likely *not* to say too much trouble

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said don't like the way it looks/aesthetics.)

Owens 41 to 60 acres	5.19***
Owens over 100 acres	3.72***
Resides in Region 4	1.98*
Profession: Agriculture/farming	1.96*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens less than 1 acre	-2.42*

Most likely to say aesthetics

Most likely *not* to say aesthetics

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said too much maintenance.)

College graduate	2.18*
Resides in Region 1	2.04*
Owens less than 1 acre	1.96*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a Delaware native	-2.21*

Most likely to say too much maintenance

Most likely *not* to say too much maintenance

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said they don't know where to get information.)

Homemaker	5.64***
Neighborhood association member	2.20*
Graduate or professional degree	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a neighborhood association member	-2.12*

Most likely to say they don't know where to get information

Most likely *not* to say they don't know where to get information

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said not concerned.)

Owns over 100 acres	3.28**
Resides in large city or urban area	3.12**
Income less than \$20,000	2.93**
18-24 years old	2.72**
Male	2.65**
Profession: Agriculture/farming	2.39*
Hispanic	2.35*
Student	2.29*
Not a neighborhood association member	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 1	-2.07*
Neighborhood association member	-2.15*
Resides in suburban area	-2.31*
New Castle County resident	-2.35*
Female	-2.62**

Most likely to say not concerned



Most likely *not* to say not concerned

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said they don't know what to do.)

35-44 years old	3.20**
Profession: Public service	2.75**
Income between \$100,000 and \$149,999	2.70**
Lived in Delaware over 25 years	2.22*
Neighborhood association member	1.96*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 5 years or less	-2.57*

Most likely to say they don't know what to do

Most likely *not* to say they don't know what to do

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said they are not aware of the problem.)

Income between \$60,000 and \$79,999	3.16**
25-34 years old	3.10**
Owens less than 1 acre	3.06**
New Castle County resident	2.90**
Profession: Accounting/finance	2.79**
Resides in suburban area	2.71**
Neighborhood association member	2.62**
Lived in Delaware over 25 years	2.52*
Resides in Region 1	2.36*
Female	2.24*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Resides in Region 4	-2.23*
No high school diploma	-2.31*
Don't know if Is a Delaware native	-2.32*
Male	-2.35*
Other type of profession	-2.39*
Sussex County resident	-2.45*
Not a landowner	-2.62**

Most likely to say they are not aware of the problem



Most likely *not* to say they are not aware of the problem

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said they don't feel the responsibility to do anything.)

Asian-American	4.43***
65 years or older	2.78**
Resides in Region 2	2.08*
Owens over 100 acres	2.08*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say they don't feel responsibility



Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said they feel that individual actions don't have any impact.)

Lived in Delaware 6-10 years	3.55***
Homemaker	2.60**
18-24 years old	2.12*
Profession: Sales	2.01*
New Castle County resident	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware over 25 years	-2.00*
Retired	-2.12*
65 years or older	-2.17*

Most likely to say individual actions don't have impact

Most likely *not* to say individual actions don't have impact

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said they feel that the state is not setting a good example.)

African-American	6.02***
Income less than \$20,000	3.10**
Lived in Delaware 21-25 years	2.43*
Is a Delaware native	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
White	-3.21**

Most likely to say the state is not setting good example

Most likely *not* to say the state is not setting good example

Q101. What are the reasons that you do not take greater measures to improve water quality? (Those who said that the state doesn't hold corporations/developers/etc. to the same standard.)

African-American	4.87***
Graduate or professional degree	3.15**
Hispanic	2.89**
Lived in Delaware 21-25 years	2.45*
Income less than \$20,000	2.43*
Profession: Teaching/education	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
White	-3.24**

Most likely to say the state doesn't hold corps/developers to same standard

Most likely *not* to say the state doesn't hold corps/developers to same standard

GENERAL WATER QUALITY ISSUES—STATEMENT RATINGS

For the statement ratings, females were more likely than were males to rate several of the statements at 5 or lower. No other strong demographic patterns emerged.

Q104. Rate the importance of this statement as a reason to take greater measures to protect water quality (1=most important; 10=least important): We have a right to clean water because water pollution threatens the health of ourselves, family, future generations, and the planet. (Response analyzed: 1 through 5)

Female	2.76**
Resides in small city or town	2.00*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware over 25 years	-2.34*
Income between \$100,000 and \$149,999	-2.64**
Owens over 100 acres	-2.74**
Profession: Consulting	-2.80**
Male	-2.80**

Most likely to rate important



Most likely to rate unimportant

Q105. Rate the importance of this statement as a reason to take greater measures to protect water quality (1=most important; 10=least important): We all have a responsibility—individuals, the government, business, and industry—to keep our waterways clean and to protect our drinking water, fish, and beaches. (Response analyzed: 1 through 5)

STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Homemaker	-2.35*
No high school diploma	-2.77**

Most likely to rate unimportant

Q106. Rate the importance of this statement as a reason to take greater measures to protect water quality (1=most important; 10=least important): All people in Delaware benefit from the protection of the state's water quality. (Response analyzed: 1 through 5)

Female	2.44*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Male	-2.48*

Most likely to rate important

Most likely to rate unimportant

Q107. Rate the importance of this statement as a reason to take greater measures to protect water quality (1=most important; 10=least important): It is important to protect Delaware's water quality for future generations, like our children and grandchildren. (Response analyzed: 1 through 5)

STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens over 100 acres	-6.05***

Most likely to rate unimportant

Q108. Rate the importance of this statement as a reason to take greater measures to protect water quality (1=most important; 10=least important): It is important to protect Delaware's water quality so that we don't become sick from contaminants in our drinking water. (Response analyzed: 1 through 5)

STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$100,000 and \$149,999	-2.13*
Income between \$20,000 and \$39,999	-2.18*
Owens over 100 acres	-5.80***

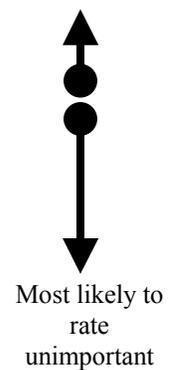
Most likely to rate unimportant

Q109. Rate the importance of this statement as a reason to take greater measures to protect water quality (1=most important; 10=least important): Keeping Delaware's inland and coastal waterways in good health is important for tourism.

(Response analyzed: 1 through 5)

Female	3.58***
Retired	2.05*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens over 100 acres	-2.12*
Resides in Region 3	-2.14*
Profession: Teaching/education	-2.35*
Asian-American	-2.94**
Graduate or professional degree	-3.40***
Male	-3.44***
Profession: Industry	-4.27***

Most likely to rate important



(Note that the statements in Questions 110, “A clean environment protects Delaware’s residents’ health,” and 111, “A clean environment is good for the economy,” had no statistically significant demographic variables associated with the questions. This suggests that these messages resonate universally and have a broad appeal.)

Q112. Rate the importance of this statement as a reason to take greater measures to protect water quality (1=most important; 10=least important): A clean and healthy environment can help to enhance property values. (Response analyzed: 1 through 5)

Female	3.08**
Income between \$40,000 and \$59,999	2.62**
White	2.01*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Owens over 100 acres	-2.06*
Income between \$20,000 and \$39,999	-2.29*
Income between \$100,000 and \$149,999	-2.39*
Male	-3.13**
Asian-American	-4.54***

Most likely to rate important



Most likely to rate unimportant

DNREC POLICY MAKING AND PUBLIC INPUT

Q116. If you knew that DNREC is seeking public input to help shape state policy on water quality, would you be interested in attending these meetings? (Response analyzed: very or somewhat interested)

Graduate or professional degree	5.31***
Profession: Public service	4.13***
35-44 years old	4.12***
45-54 years old	3.88***
Income between \$60,000 and \$79,999	3.73***
Male	3.01**
Income between \$80,000 and \$99,999	2.97**
Resides in small city or town	2.61**
African-American	2.55*
55-64 years old	2.53*
Profession: Consulting	2.33*
Other type of profession	2.16*
Profession: Teaching/education	2.13*
Profession: Agriculture/farming	2.13*
Lived in Delaware 16-20 years	2.10*
Not a neighborhood association member	2.05*
Owns 41 to 60 acres	2.05*
Lived in Delaware 11-15 years	2.05*
Hispanic	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Profession: Sales	-2.14*
Lived in Delaware over 25 years	-2.17*
No high school diploma	-2.66**
Female	-3.16**
Retired	-6.48***
65 years or older	-7.59***

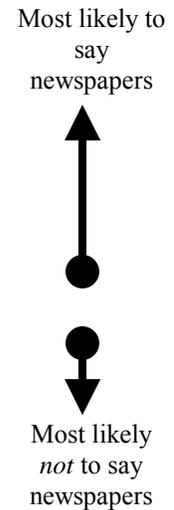
Most likely to say they are interested



Most likely *not* to say they are interested

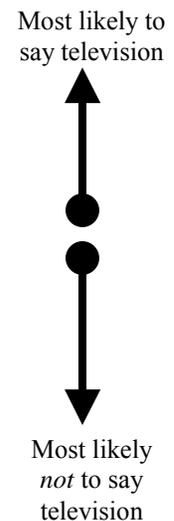
Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said newspapers.)

Profession: Consulting	2.91**
Resides in suburban area	2.66**
Profession: Industry	2.62**
Neighborhood association member	2.13*
Some college or trade school	2.08*
65 years or older	2.00*
Male	1.98*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Income between \$80,000 and \$99,999	-2.00*
Other type of profession	-2.26*
25-34 years old	-2.63**



Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said television.)

Retired	2.37*
Resides in Region 3	2.20*
African-American	2.11*
Kent County resident	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Lived in Delaware 6-10 years	-1.99*
Income between \$80,000 and \$99,999	-2.15*
Resides in Region 2	-2.30*
Owns 1 to 20 acres	-2.33*
New Castle County resident	-2.65**
Other type of profession	-2.74**



Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said radio.)

Disabled	3.26**
Lived in Delaware over 25 years	2.84**
Income between \$20,000 and \$39,999	2.08*
Owens over 100 acres	2.08*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Other type of profession	-2.08*
Owens 1 to 20 acres	-2.49*

Most likely to say radio



Most likely not to say radio

Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said magazines.)

Disabled	4.17***
55-64 years old	2.78**
Income between \$20,000 and \$39,999	2.47*
Is a Delaware native	2.28*
Retired	2.11*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a Delaware native	-2.40*

Most likely to say magazines

Most likely not to say magazines

Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said brochures mailed to their house.)

Female	4.16***
Profession: Teaching/education	2.58**
Income between \$60,000 and \$79,999	2.10*
Homemaker	1.99*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Other race identified	-2.01*
Profession: Consulting	-2.40*
Male	-4.28***

Most likely to say mailed brochures

Most likely not to say mailed brochures

Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said demonstrations.)

Disabled	7.36***
Profession: Construction	2.80**
Income between \$40,000 and \$59,999	2.55*
Profession: Sales	2.46*
Resides in Region 4	1.97*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say demonstrations



Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said meetings.)

Disabled	6.08***
Profession: Teaching/education	2.80**
Income between \$80,000 and \$99,999	2.27*
Other race identified	2.23*
Profession: Agriculture/farming	2.11*
Resides in suburban area	2.02*
Profession: Construction	2.01*
Neighborhood association member	1.96
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Not a landowner	-2.01*
Resides in small city or town	-2.22*

Most likely to say meetings



Most likely *not* to say meetings

Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said the Internet.)

25-34 years old	4.08***
Income between \$40,000 and \$59,999	3.98***
Graduate or professional degree	3.60***
Male	3.52***
Lived in Delaware 11-15 years	3.18**
35-44 years old	3.07**
Other type of profession	3.01**
Unemployed	2.80**
Profession: Construction	2.40*
Not a Delaware native	2.00*
White	1.96
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
Homemaker	-2.15*
Owens 1 to 20 acres	-2.17*
Resides in rural area	-2.23*
No high school diploma	-2.61**
55-64 years old	-2.69**
Income between \$20,000 and \$39,999	-2.98**
Lived in Delaware over 25 years	-3.11**
Female	-3.45***
65 years or older	-5.04***
Retired	-5.50***

Most likely to say the Internet



Most likely *not* to say the Internet

Q118. What would be your preferred method of receiving information about water quality and things you can do to improve water quality? (Those who said schools.)

Resides in Region 4	3.04**
Profession: Teaching/education	2.79**
Graduate or professional degree	2.79**
Profession: Consulting	2.48*
Sussex County resident	2.21*
Resides in rural area	2.03*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	

Most likely to say schools



SUMMARY OF MAJOR TELEPHONE SURVEY FINDINGS

ENVIRONMENTAL HEALTH AND WATER QUALITY IN GENERAL

- **Delaware residents were split regarding the health of Delaware’s environment.**
 - 45% overall said Delaware’s environment is somewhat or very healthy, but 47% overall said it is somewhat or very unhealthy.

- **Delaware residents expressed great concern about water quality.**
 - More respondents (46% overall) named water quality as one of the most important natural resource or environmental issue than named any other issue.
 - 81% of Delaware residents overall said that they were somewhat or very concerned about water quality.
 - The top reasons that respondents were concerned about water quality were the adverse impacts to drinking water; pollution in the water making it taste and look bad; and the adverse impacts to their own health and the public’s health.

- **Industry/chemical companies were considered to be one of the top polluters of water, and homeowners were not considered as having a large impact on water pollution.**
 - 56% of respondents said that industry/chemical companies are the largest polluters of water in Delaware, while homeowners/individuals were named as the largest polluters of water in Delaware by only 10% of respondents.
 - Only 6% of respondents said that homeowners/individuals have a major impact on water pollution, and 47% said that homeowners/individuals have a minor impact, while 44% said they have no impact.
 - When asked who should do more to help improve water quality, 51% said everyone, but the next largest percentages were of those who said government (29%) or who said business/industry (21%). Residents were named by only 15% of respondents.

- **The location of the respondent's residence had an important influence on opinions on environmental health and the issues that were deemed important, and gender and profession had a minor influence.**
 - Respondents from the less urbanized areas (Regions 3, 4, or 5, Kent or Sussex Counties) were more likely than were respondents from urban areas (Regions 1 and 2, New Castle County) to say the environment is healthy. Those from the more urbanized areas were more likely to say that they were concerned about water quality.
 - Respondents from Sussex County/Regions 4 and 5 were more likely than were others to name farmers/agriculture as one of the largest sources of water pollution; respondents from New Castle County/Regions 1 and 2 were more likely than were others to name industry/chemical companies as one of the largest sources of water pollution.
 - Males were more likely than were females to say that the overall environment in Delaware is healthy.
 - Those in industry were more likely than were those in other professions to say that the overall environment is healthy. Those in the teaching/education profession had a high propensity to say that water quality and quantity and air quality are important issues.

WATER QUALITY AND SEWER/SEPTIC SYSTEMS

- **The vast majority of respondents' residences are on a sewer system.**
 - 71% of respondents' residences are on a sewer system, and 23% of respondents' residences have a septic system.
- **The housing stock (those houses with a septic system) was relatively young, which in turn means that most septic systems are relatively young.**
 - 75% of respondents' residences (those residences that have a septic system) are 30 years old or less, and 76% of respondents said their septic system is 20 years old or less.

- **Most people whose residence has a septic system had recently had the system pumped out, and they did so for general maintenance, not out of concern for the environment, despite the fact that most respondents agreed that septic systems can adversely impact water quality. Most respondents were reluctant to spend money to upgrade their septic systems to improve water quality.**
 - 71% of respondents whose residence has a septic system had pumped out their septic system within the prior 2 years to the survey.
 - Of those who had pumped out their septic system, 61% had done so for general maintenance, and an additional 22% had done so because the system had backed up. Only 2% had pumped out their septic system out of concern for the environment.
 - 63% of respondents moderately or strongly agreed that standard septic systems can impact water quality.
 - There was an inverse relationship between the cost of septic system upgrades and the percentage who would be willing to spend that amount to upgrade their septic system, and less than a majority of respondents (37%) were willing to spend even the lowest amount (\$4,000) that was discussed in the survey. The percentage willing to spend the given amount went down to 20% when the cost went up to \$10,000.
 - Less than a majority of respondents (30%) said that they would be likely to upgrade their septic system knowing that developers were required to install state-of-the-art septic systems in new developments.

- **Those respondents whose residences are on septic systems were fairly evenly split between those who would prefer to be on a sewer system and those who would not prefer to be on a sewer system.**
 - 47% of respondents said they would prefer to be on a sewer system, and 42% said they would *not* prefer to be on a sewer system.

- **The location of the respondent's residence had an important influence on responses regarding water quality and septic systems.**
 - Obviously, those in rural areas are more likely to have a septic system than are those from urban areas.

- Those who agreed that septic systems can negatively impact water quality were more likely to be from a suburban area than from any other type of area.

WATER QUALITY AND LAWN CARE

- **A large percentage of the sample indicated that they have a lawn at their place of residence.**
 - 85% of respondents said they have a lawn at their place of residence, and of those who have a lawn, 58% said having a green, well-kept lawn is somewhat or very important to them.
- **Respondents expressed concern about the effect that lawn care practices have on water quality.**
 - 75% of respondents who have a lawn said that lawn care practices are a major or minor environmental concern.
 - 80% of respondents who have a lawn said they are somewhat or very concerned about the impacts of lawn care practices on water quality.
 - 69% of respondents who have a lawn said that they were aware before the survey that home lawn care practices can impact water quality in Delaware.
- **A large majority of respondents maintain their lawn, and most do not hire a lawn care company to maintain their lawn.**
 - 86% of respondents who have a lawn said they maintain their lawn, and 27% have hired a lawn care company in the past to maintain their lawn.
- **Nutrient runoff was recognized as an important cause of water pollution, and farming/agriculture was most commonly named as the largest source of nutrient runoff, and homeowners' contribution to nutrient runoff was considered important by a very low percentage.**
 - 73% of respondents said nutrient runoff is a major or minor cause of water pollution.

- 42% of respondents named farming/agriculture as one of the largest sources of nutrient runoff, and only 8% named homeowners as one of the largest sources of nutrient runoff.
- **Less than half of those who have a lawn and maintain it apply fertilizer to it, and most of those who apply fertilizer do so once or twice a year.**
- 42% of those who have a lawn and maintain it said they apply fertilizer to it.
 - 74% of those who apply fertilizer to their lawn said they do so once or twice a year. The spring is the most common season in which they apply fertilizer.
- **Of those respondents who have a lawn and maintain it, just over half have obtained advice or information on how to take care of their lawn, typically from a lawn care company or retail store, but less than half who obtained advice or information changed their lawn care practices based on that advice or information.**
- 51% of those who have a lawn and maintain it have obtained advice or information on how to take care of their lawn.
 - 47% of those who obtained advice or information obtained it from a lawn care company, and 12% obtained it from a retail store.
 - 58% of those who obtained advice or information *did not* change their lawn care practices based on the advice or information.
- **In general, there was broad support for lawn care practices that help mitigate adverse impacts to water quality.**
- Strong majorities practiced four of the seven lawn care practices that were listed in the survey: mow the lawn at a higher height (78% overall did this), reduce the amount of fertilizer they use (72% overall), leave grass clippings on the lawn (72% overall), and reduce the amount of turf by planting shrubs and trees (60% overall). Additionally, 50% plant native species that require less water and fertilizer.
 - On the other hand, 56% of respondents were not willing to spend more on a smaller lot knowing that their neighborhood would then have a large area of open space.

- **There was not one demographic factor that stood out consistently as having a great influence on responses regarding water quality and lawn care. The location of the respondent's residence was *not* an important factor.**

WATER QUALITY AND STORM WATER MANAGEMENT

- **Respondents expressed concern about the effect that storm water runoff has on water quality.**
 - 70% of respondents said that storm water runoff is a major or minor environmental concern.
 - 66% of respondents said that they were aware before the survey that home lawn care practices can impact water quality in Delaware.
- **The most common types of storm water structures that respondents said were on their property or in their neighborhood are drains/gutters, followed by drainage ditches. Knowledge of the party responsible for maintaining the structures was not great.**
 - 25% of respondents said drains/gutters are on their property or in their neighborhood, and 19% said drainage ditches are on their property or in their neighborhood. The most popular answer, though, was that there are no storm water structures on their property or in their neighborhood.
 - 33% did not know who is responsible for maintaining the storm water structures.
- **Most respondents recognized that runoff from pet waste is an environmental concern.**
 - 63% of respondents said that runoff from pet waste is an environmental concern, although most of those respondents considered it to be a minor concern.
- **Most respondents do *not* have a stream or pond on their property. Nonetheless, of those who do, most keep an herbaceous border or mowed grass along it. Furthermore, nearly half of those who have a stream or pond and do *not* keep an**

herbaceous border or mowed grass along it are willing to plant an herbaceous border.

- 11% of respondents have a stream or pond on their property.
- Of those who have a stream or pond, 38% have an herbaceous border along it, and 35% have mowed grass along it.
- 49% of those who have a stream or pond on their property but do not currently have an herbaceous border along it would consider planting a border to protect their property from erosion and to protect water quality.
- 47% of those who have a stream or pond on their property but do not currently have an herbaceous border along it would consider planting a border if they were provided cost-sharing and technical support.
- 49% of those who have a stream or pond on their property but do not currently have an herbaceous border along it would consider planting a border if they were provided an aesthetically pleasing design that provided a partial view of the stream or pond.

➤ **Strong majorities of respondents said they do several practices that help mitigate the adverse impacts that runoff has on water quality.**

- 70% of respondents limit the use of salt on paved areas in winter, 63% of respondents are more diligent in keeping their street-side gutter clear, 60% of respondents moved their drain spouts so the runoff flows onto the lawn instead of the driveway, 59% of respondents clean up and properly dispose of pet waste, and 56% of respondents collect motor oil and dispose of it properly.

➤ **The demographic factors that have an important influence on responses regarding water quality and storm water management are ethnicity and residence location.**

- Of the twelve activities listed in the survey that could help improve water quality, ethnicity factored in nine of them, with those identifying themselves as white more likely than were other ethnic groups to say that they would be likely to practice the particular activity.
- Of the twelve activities listed in the survey that could help improve water quality, residence location factored in nine of them.

BEHAVIOR CHANGES AND WATER QUALITY

- **Strong majorities of respondents said they would be more likely to change their behavior to help improve water quality if they knew that poor water quality leads to the conditions listed in the survey.**
- 79% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to unsafe drinking water.
 - 77% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to increased fish kills.
 - 77% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to health hazards from polluted water while wading or swimming.
 - 76% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to genetic mutations and birth defects.
 - 76% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to degraded aquatic habitat.
 - 73% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to the closing of swimming areas.
 - 73% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to the closing of fishing areas.
 - 72% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to a less diverse ecosystem.
 - 70% of respondents said they would be likely to change their behavior to help improve water quality if they knew that poor water quality led to lower property values.

- **Strong majorities of respondents said they would be more likely to change their behavior to help improve water quality under each of the conditions listed in the survey.**
 - 90% of respondents said they would be likely to change their behavior to help improve water quality if they knew that doing so would help protect future generations.
 - 78% of respondents said they would be likely to change their behavior to help improve water quality if they received a tax break for doing so.
 - 70% of respondents said they would be likely to change their behavior to help improve water quality if they received financial assistance for implementing conservation practices.
 - 63% of respondents said they would be likely to change their behavior to help improve water quality if they had to pay a fee on their property tax bill but they knew it was being used for conservation purposes.

- **A majority of respondents said that they already do as much as possible to help improve water quality.**
 - 52% of respondents said that they do not take greater measures to improve water quality because they already do as much as possible.

- **Gender was a very important factor regarding potential behavior changes, and residence location was *not* an important factor.**
 - Gender was an important factor in the responses to eight of the eleven questions about potential behavior changes to address the problems listed (e.g., increased fish kills, unsafe drinking water), with females in all eight cases more likely than were males to say that they would change their behavior.

GENERAL WATER QUALITY ISSUES—STATEMENT RATINGS

- **Respondents rated each of nine statements in the survey as important reasons for taking greater measures to protect water quality.**
 - The statements were rated on a scale of 1 to 10, with 1 being the most important and 10 being the least important. While all statements had very low means for respondents overall (the highest was only 2.61 overall), the statements with the lowest means (i.e., the most important) were “It is important to protect Delaware’s water quality so that we don’t become sick from contaminants” (mean of 1.35 overall), “It is important to protect Delaware’s water quality for future generations” (mean of 1.39 overall), and “A clean environment protects Delaware’s residents’ health” (mean of 1.48 overall).

DNREC POLICY MAKING AND PUBLIC INPUT

- **Most people expressed interest in participating in policy making regarding water quality, and they said they would prefer to receive brochures through the mail to learn about what they can do.**
 - 58% of respondents said they would be interested in attending meetings to provide public input to the making of state policy on water quality.
 - 69% of respondents said they would prefer receiving information about water quality through brochures mailed to their home.

APPENDIX A: DELAWARE SCORP MAP

