

Responsive Management



Delaware National Estuarine Research Reserve: Implications of the Market Inventory and Needs Assessment for Coastal Training in Delaware

**Conducted for the Delaware National Estuarine
Research Reserve**

by Responsive Management

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COMPARISON OF NEEDS ASSESSMENT AND MARKET INVENTORY

This report follows a market inventory and a needs assessment that were previously prepared for the Delaware National Estuarine Research Reserve (DNERR) regarding coastal training programs in Delaware. This report contains a comparison of both these previously prepared reports and recommendations for the future direction of Delaware's coastal training programs based on this comparison. Both the market inventory and the needs assessment are fully discussed in separate reports; therefore, the methodology, results, and survey instruments are not discussed in this report except as they relate to the comparisons and recommendations.

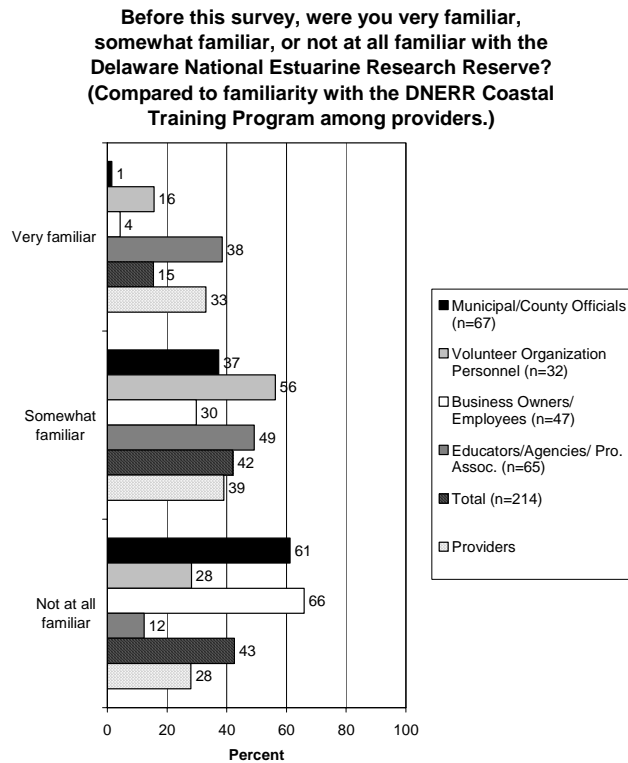
The needs assessment and market inventory survey instruments included many similar questions for comparison to facilitate a better understanding of how well providers of coastal training are meeting the needs of consumers of coastal training. In particular, comparisons were made of familiarity with coastal training programs, perceived availability of coastal training programs, perception of coastal training topics and issues for which there are training needs, perceptions of those groups most in need of coastal training, and perceptions of the coastal training formats and delivery methods that are most needed.

The respondents to the surveys are categorized and discussed as follows:

- Providers: Federal and state agency personnel, not-for-profit organization staff, and educational institution staff.
- Consumers (subdivided as follows):
 - Municipal/County Officials.
 - Volunteer Organization Personnel.
 - Business Owners/Employees.
 - Educators/Federal and State Agency Personnel/Professional Association Personnel.

FAMILIARITY WITH THE DNERR AND ITS COASTAL TRAINING PROGRAM

- Overall, providers were more familiar with the DNERR and its coastal training program than were consumers; however, educators, federal and state agency personnel, and professional association personnel had a higher rate of familiarity than did providers.
 - Overall, 15% of consumers were very familiar with the DNERR, while 33% of providers were very familiar with the DNERR Coastal Training Program (38% of educators, federal and state agency personnel, and professional association personnel were very familiar).
 - Overall, 57% of consumers were very or somewhat familiar with the DNERR, while 72% of providers were very or somewhat familiar with the DNERR Coastal Training Program (87% of educators, federal and state agency personnel, and professional association personnel were very or somewhat familiar).
 - While 28% of providers were not at all familiar with the DNERR Coastal Training Program, 43% of consumers were not at all familiar with the DNERR (only 12% of educators, federal and state agency personnel, and professional association personnel were not at all familiar).

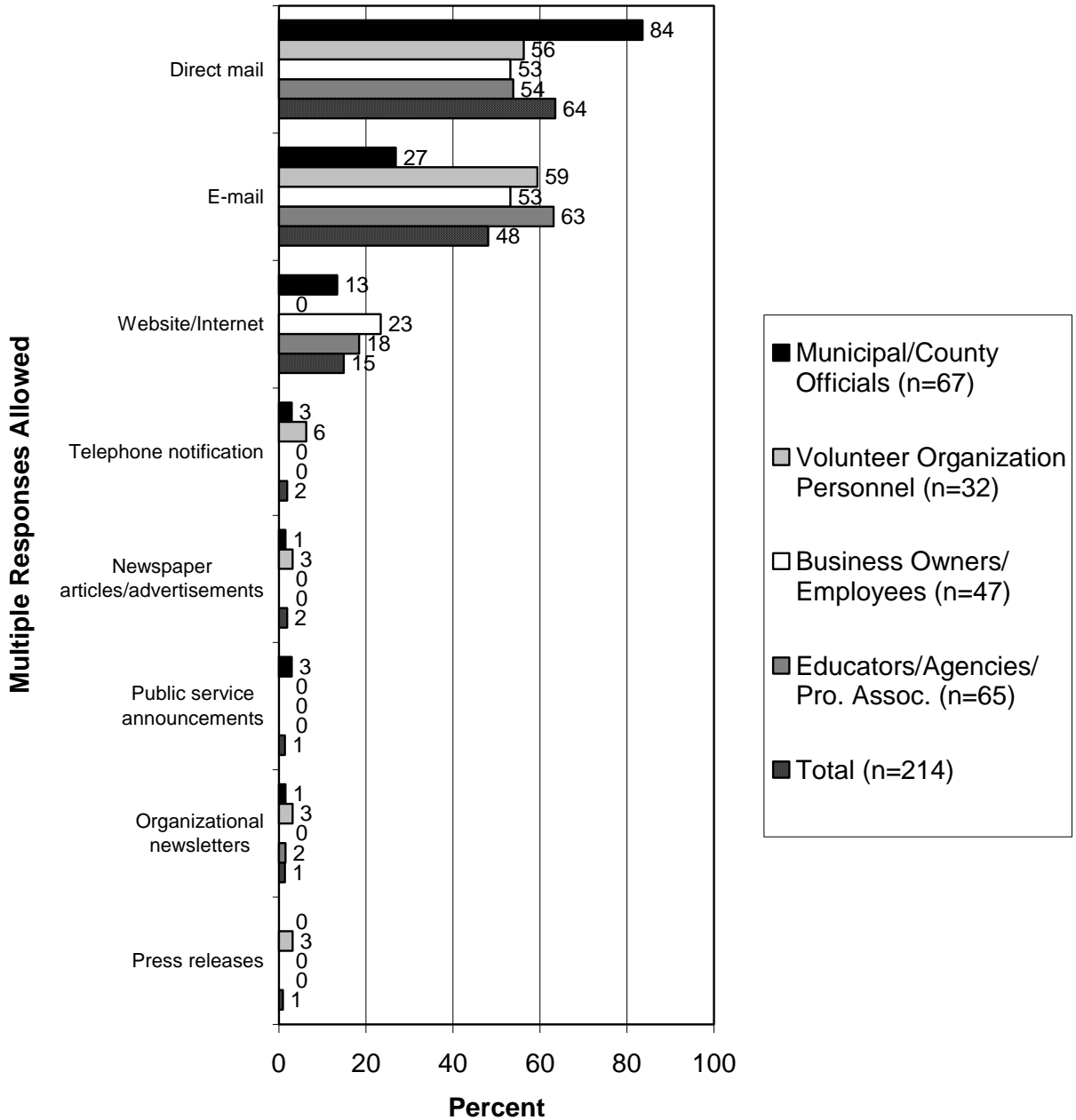


PROMOTIONAL TOOLS USED TO ADVERTISE COASTAL TRAINING

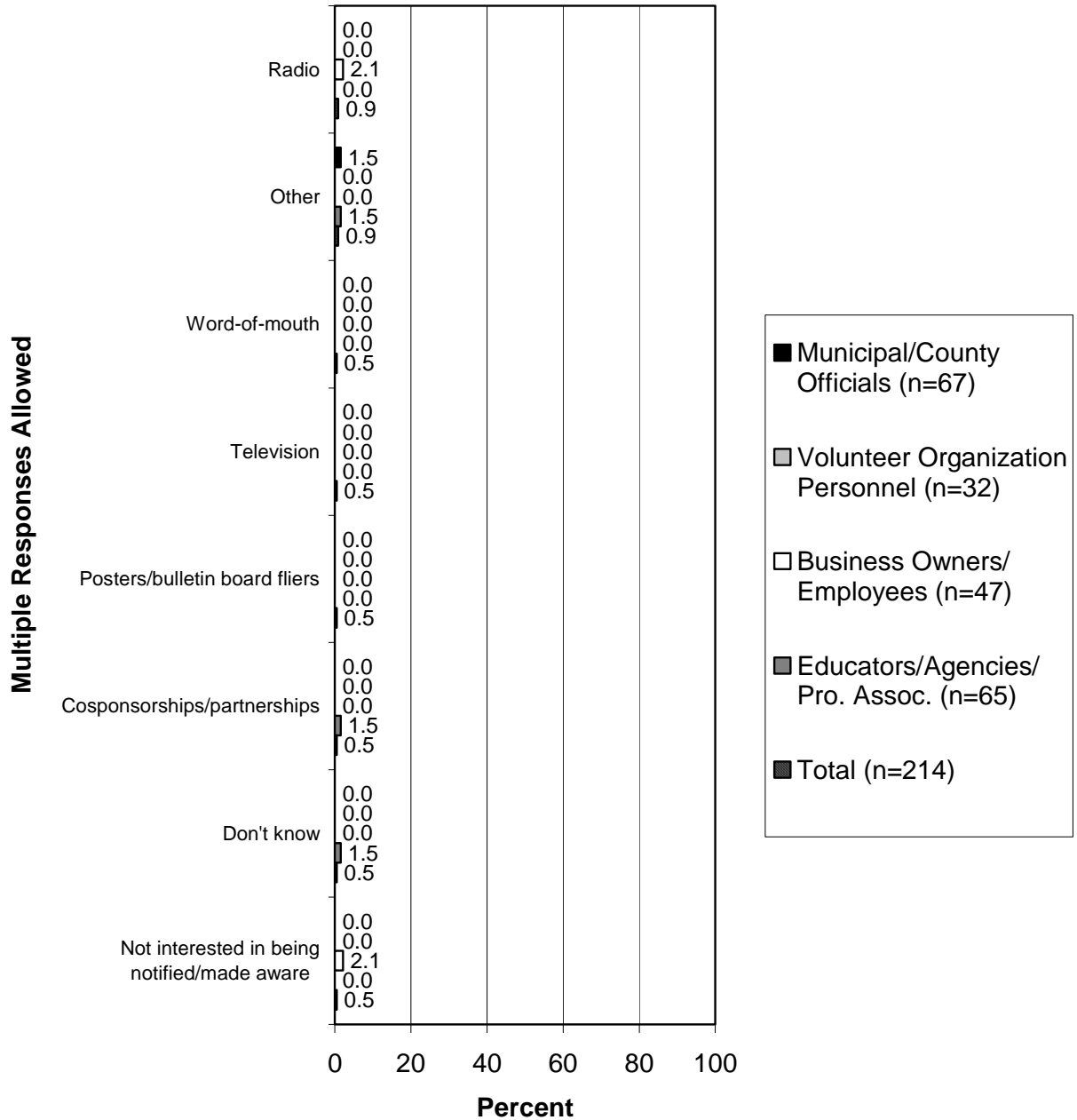
Although the questions from the providers' survey and the consumers' survey are not *directly* comparable regarding notification of coastal training programs, some indirect comparisons are possible. The providers' survey asked about the promotional tools used to advertise its training programs, and the consumers' survey asked about preferred methods for notification about availability of coastal training. These graphs are shown below.

- Consumers most commonly preferred to be notified about coastal training by direct mail, e-mail, and the Internet, while agencies/organizations most commonly indicated that the promotional tools that they use to advertise coastal training are word-of-mouth, the Internet, press releases, and direct mail. E-mail was well down the providers' list.

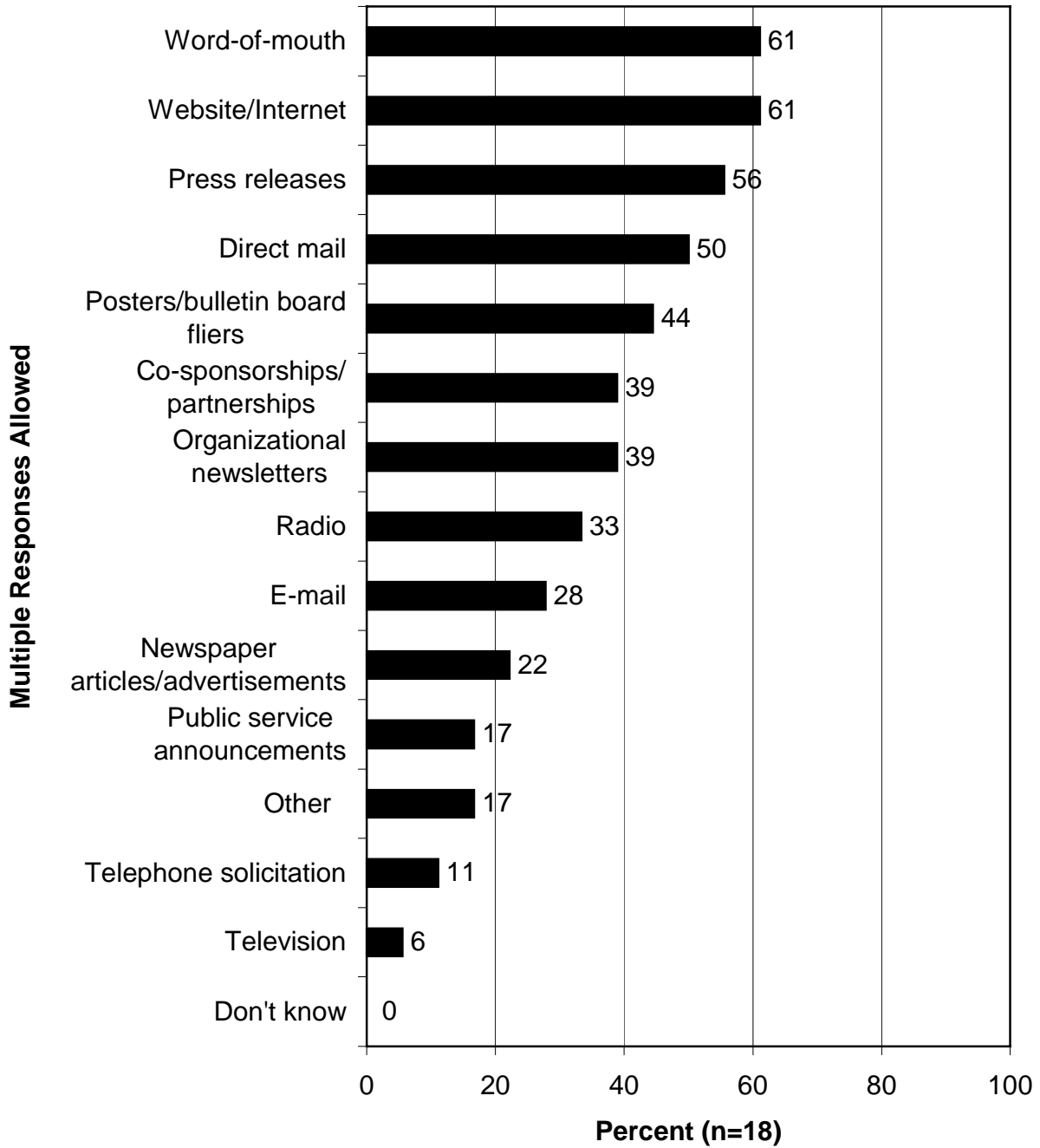
Q161. How would you prefer to be notified/made aware of coastal resource professional development programs? Part 1.



Q161. How would you prefer to be notified/made aware of coastal resource professional development programs? Part 2.



Q49. Which of the following promotional tools does your agency/organization use to advertise its training programs?



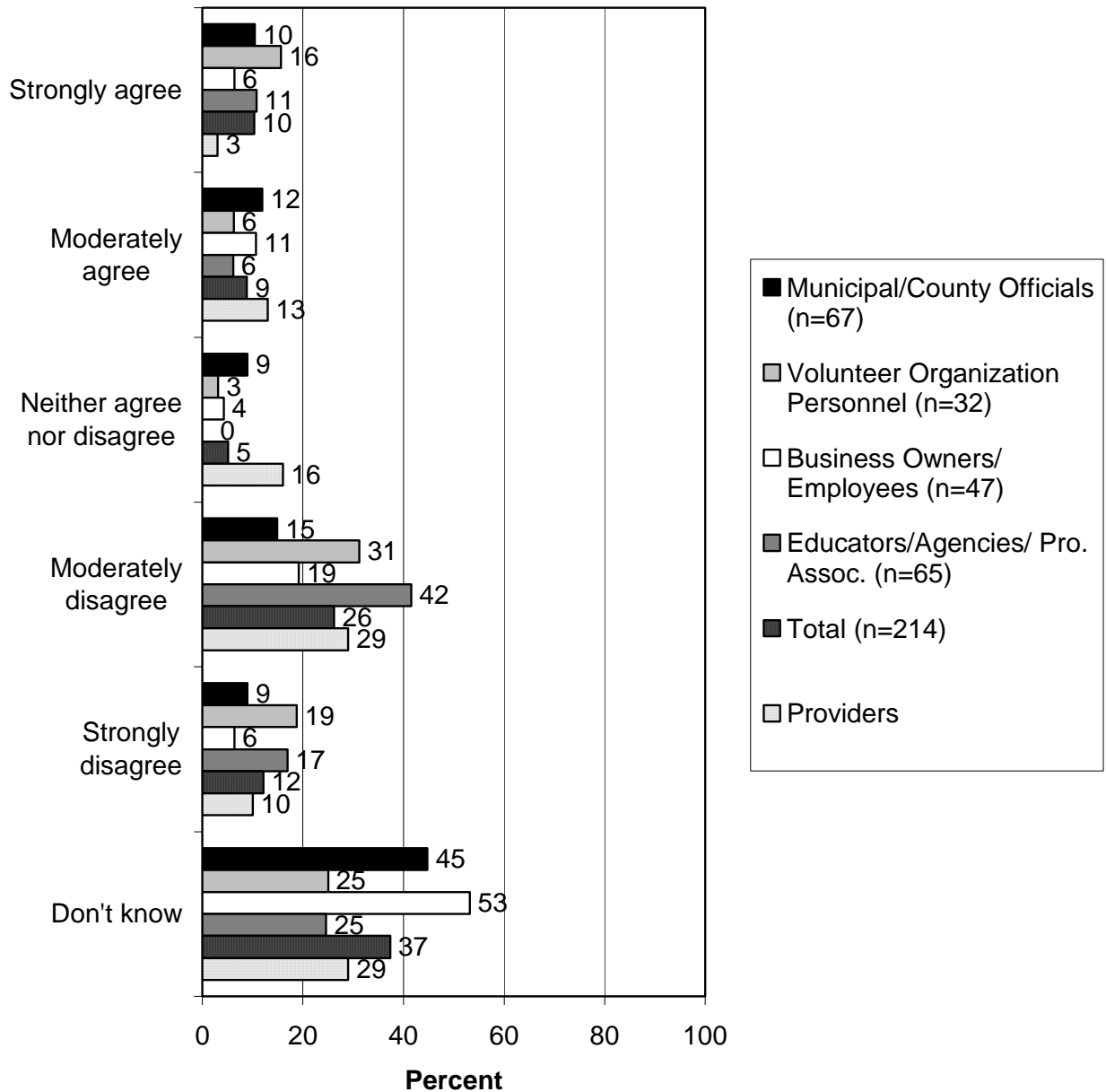
AVAILABILITY OF COASTAL TRAINING

- Among all groups of consumers and among providers, there is more disagreement than agreement that there is enough coastal resource professional development offered in Delaware. Providers are slightly less likely than are any of the groups of consumers to agree that there is enough coastal resource professional development offered in Delaware.
 - While only 16% of providers strongly or moderately agree that there is enough coastal resource professional development offered in Delaware, percentages of consumers who agree range from 17% to 22% (19% overall).
 - Disagreement among providers is almost exactly the same as disagreement among consumers: 38% of consumers overall disagree and 39% of providers disagree that there is enough coastal resource professional development offered in Delaware.

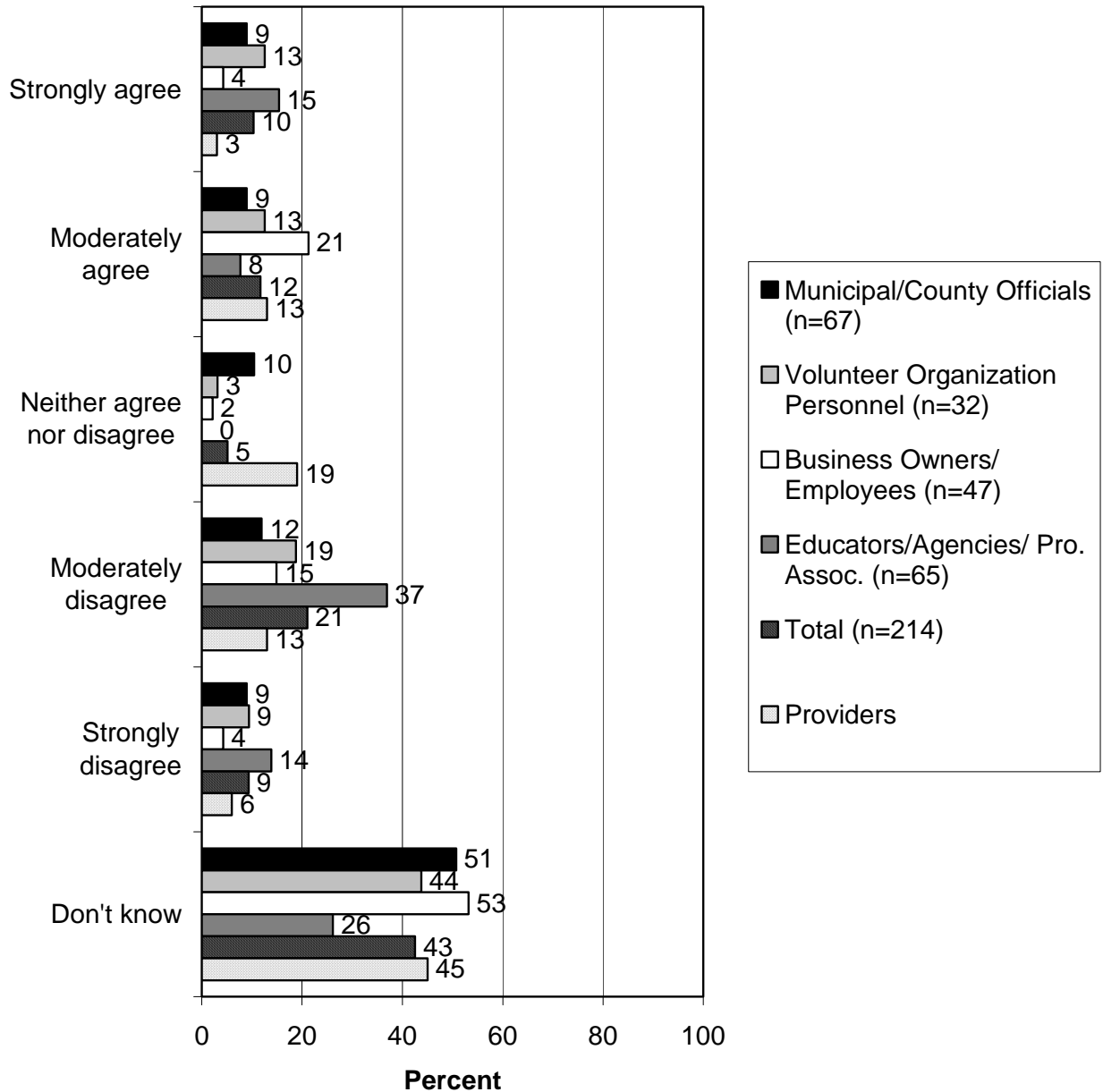
- Providers are slightly less likely than are consumers to strongly or moderately agree that there are enough providers of coastal resource professional development programs in Delaware.
 - Overall, 22% of consumers agree that there are enough providers of coastal resource professional development in Delaware, but only 16% of providers agree that there are enough providers of coastal resource professional development in Delaware.

- Interestingly, although providers are slightly less likely than are consumers to agree that there are enough providers of coastal resource professional development programs in Delaware, they are also less likely to disagree that there are enough providers of coastal resource professional development programs in Delaware.
 - While 19% of providers disagree that there are enough providers of coastal resource professional development programs in Delaware, overall 30% of consumers disagree that there are enough providers of coastal resource professional development programs in Delaware (among educators, federal and state agency personnel, and professional association personnel, disagreement is at 51%).

Overall, do you agree or disagree that there is enough available coastal resource professional development for coastal resource decision makers in the State of Delaware? (Compared to providers' opinions.)



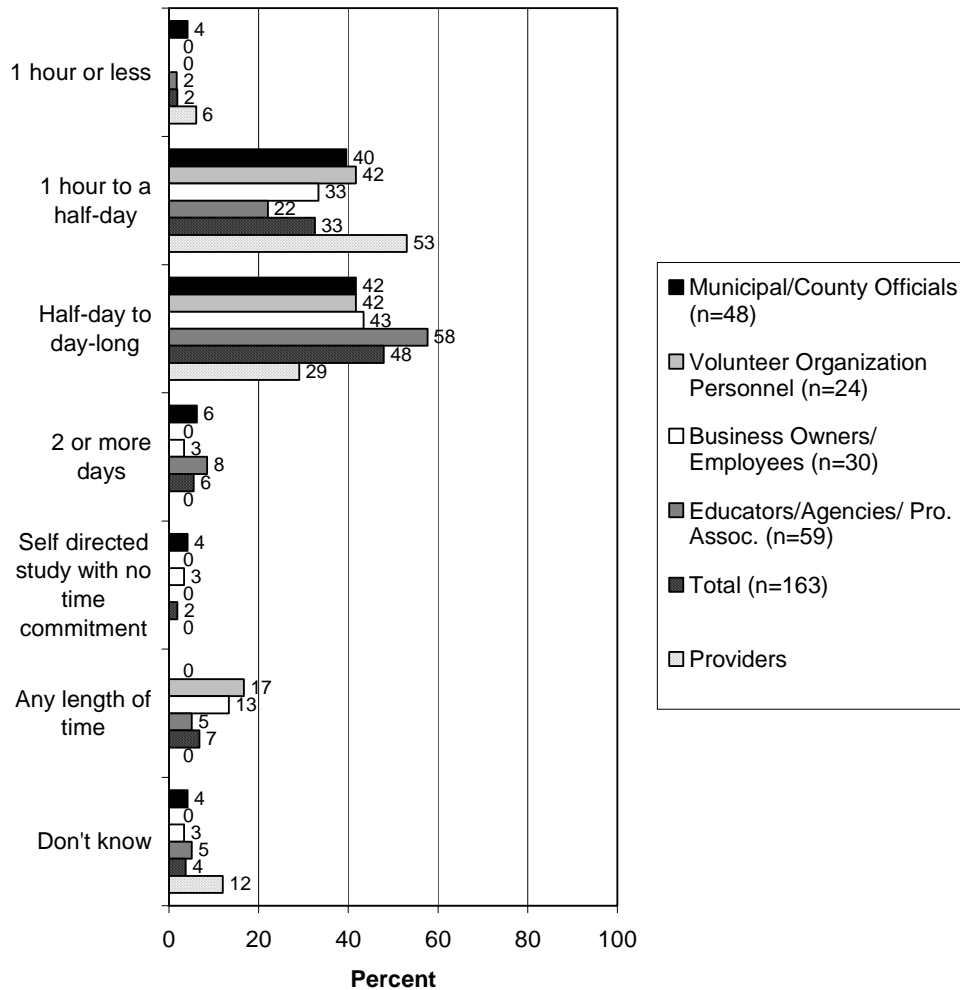
Overall, do you agree or disagree that there are enough coastal resource professional development providers that offer training for coastal decision makers in Delaware? (Compared to providers' opinions.)



PREFERRED SESSION LENGTHS AND SESSION LENGTHS TYPICALLY PROVIDED

- Session lengths preferred by consumers match fairly well with those provided.
 - The highest percentages of consumers want coastal training sessions to be 1 hour to a half-day (33%) or half-day to day-long (48%); the highest percentages of providers typically provide sessions that are 1 hour to a half-day (53%) or half-day to day-long (29%).

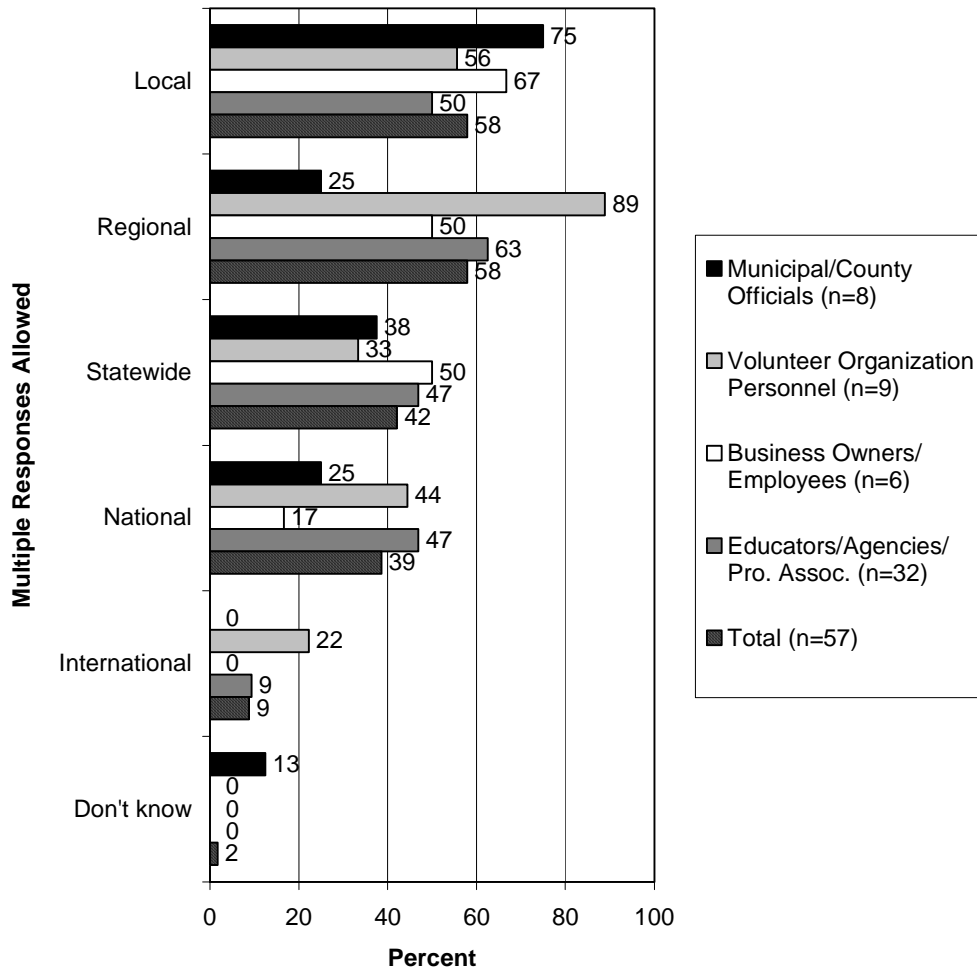
Which of the following session lengths do you prefer for coastal resource professional development? (Compared to session lengths typically provided.)



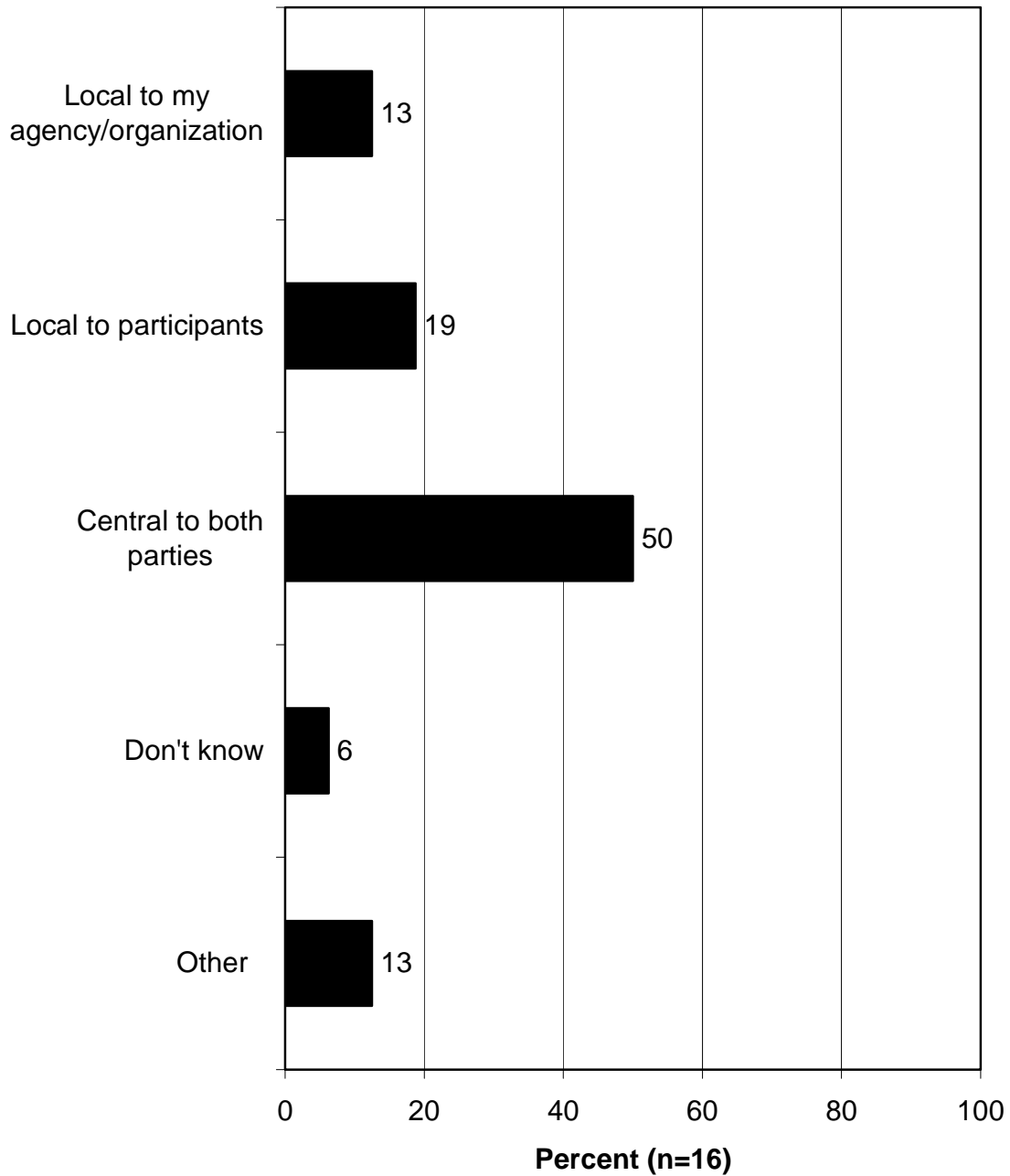
LOCATIONS OF COASTAL TRAINING PREFERRED AND PROVIDED

➤ The needs assessment found that consumers, not surprisingly, will be more likely to travel a short distance than a long distance for coastal training. In fact, consumers most commonly traveled locally or regionally for coastal training. Providers most commonly indicated that the training that they provide is central to both parties (providers and participants) or is local to participants.

Q40. Would you say that your travel to coastal resource professional development is usually...? (Asked of those who attend coastal resource professional development programs as part of their job.)



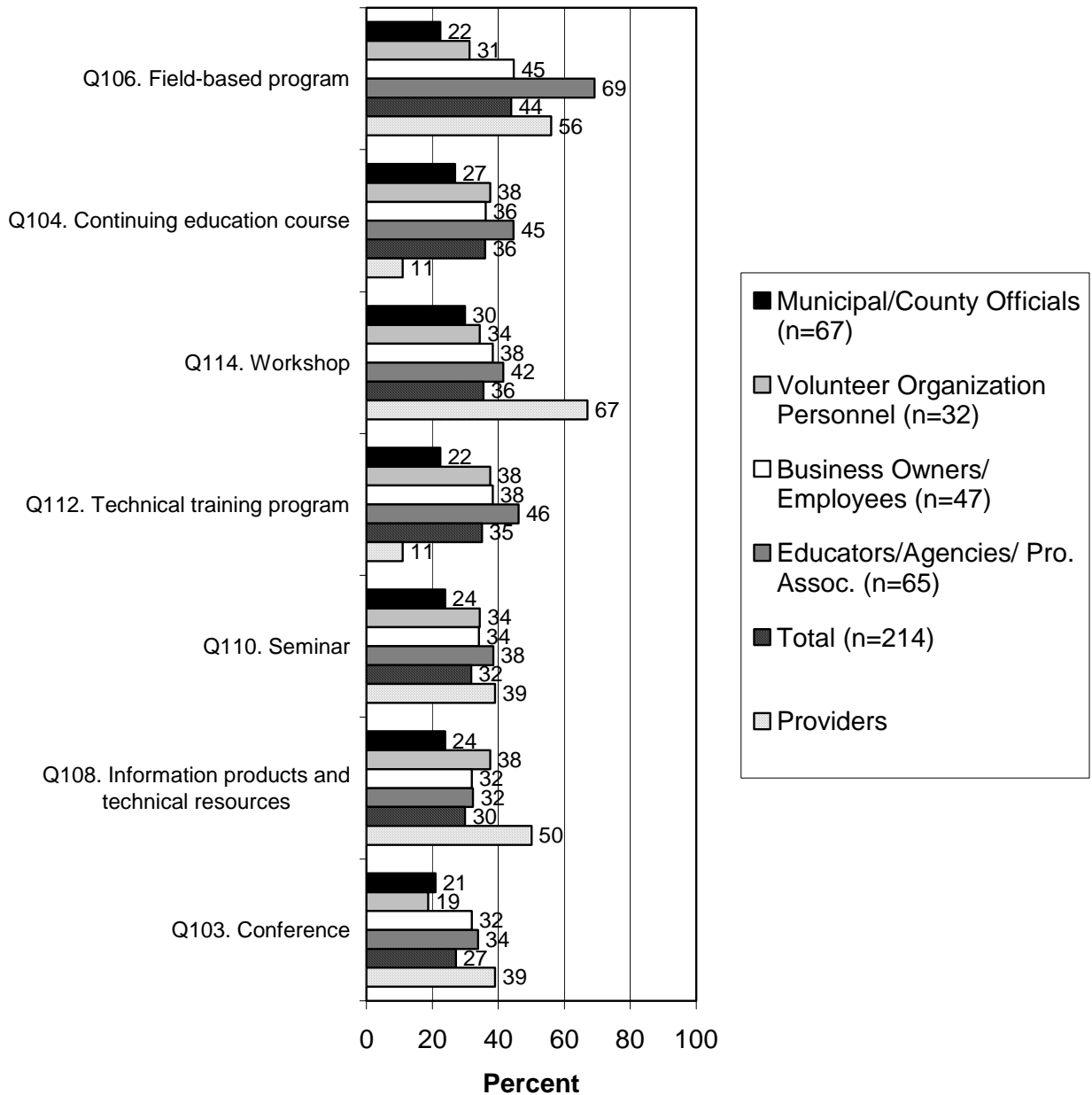
Q19. In the delivery of coastal training, are the training sessions generally held local to your agency/organization, local to the participants who are being served, or are the training sessions held in an area central to both parties?



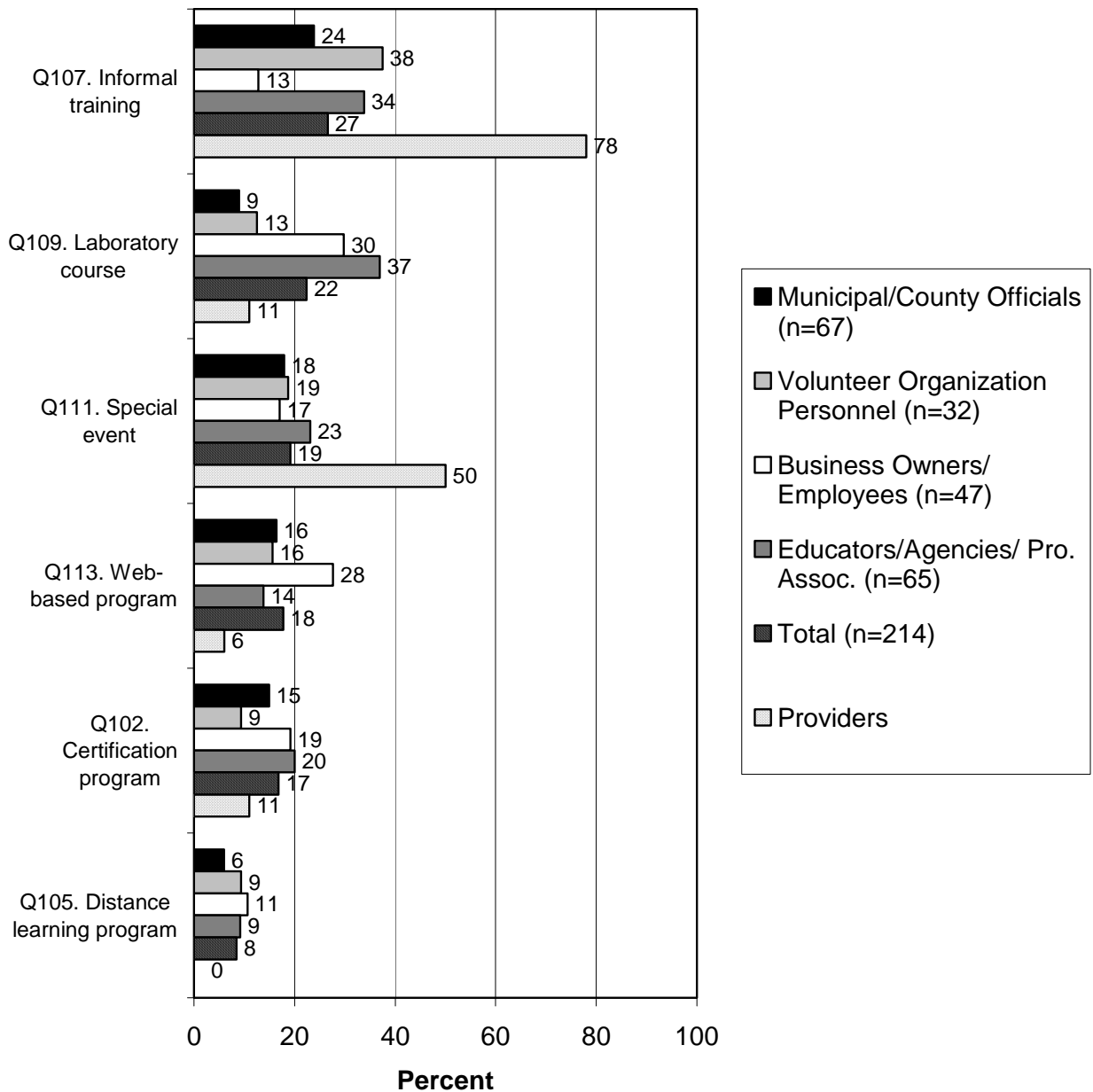
FORMATS AND LEARNING TECHNIQUES THAT CONSUMERS PERCEIVE TO BE EFFECTIVE AND THAT PROVIDERS USE

The survey asked consumers to rate the effectiveness of 13 formats for coastal training and asked providers to indicate if they provided coastal training in these formats. For each of the 13 formats that may be used for coastal training, consumers rated each format as very effective, somewhat effective, or not at all effective. The percentages of each consumer type who rated the format very effective were graphed, as were the percentage of providers who offer the format, and it is from these data that the analyses were performed. Consumers' ratings of very effective are being considered a proxy for demand (the assumption being that those who rate a format as very effective would likely want coastal training in that format).

Percent rating the following coastal resource professional development formats as very effective. Part 1. (Compared to the percentage of providers that provide training in the given format.)



Percent rating the following coastal resource professional development formats as very effective. Part 2. (Compared to the percentage of providers that provide training in the given format.)



To examine the relationship between the data from the two studies, a matrix was created as shown in the graph that follows. Note that the matrix scale goes to 80 instead of 100 to facilitate better display of the data; however, the maximum possible value on either axis is, obviously, 100. A line following a 45 degree angle represents where demand and supply are equal (i.e., supply meets demand). Only on the line does supply meet demand; below the line, demand exceeds supply, while above the line, supply exceeds demand. Ideally, all formats would fall very close to this line. Those formats substantially above the diagonal line suggest that supply may be exceeding demand for these training formats; those formats substantially below the diagonal line suggest that demand may be exceeding supply. Those formats near the line suggest that demand and supply are in close agreement.

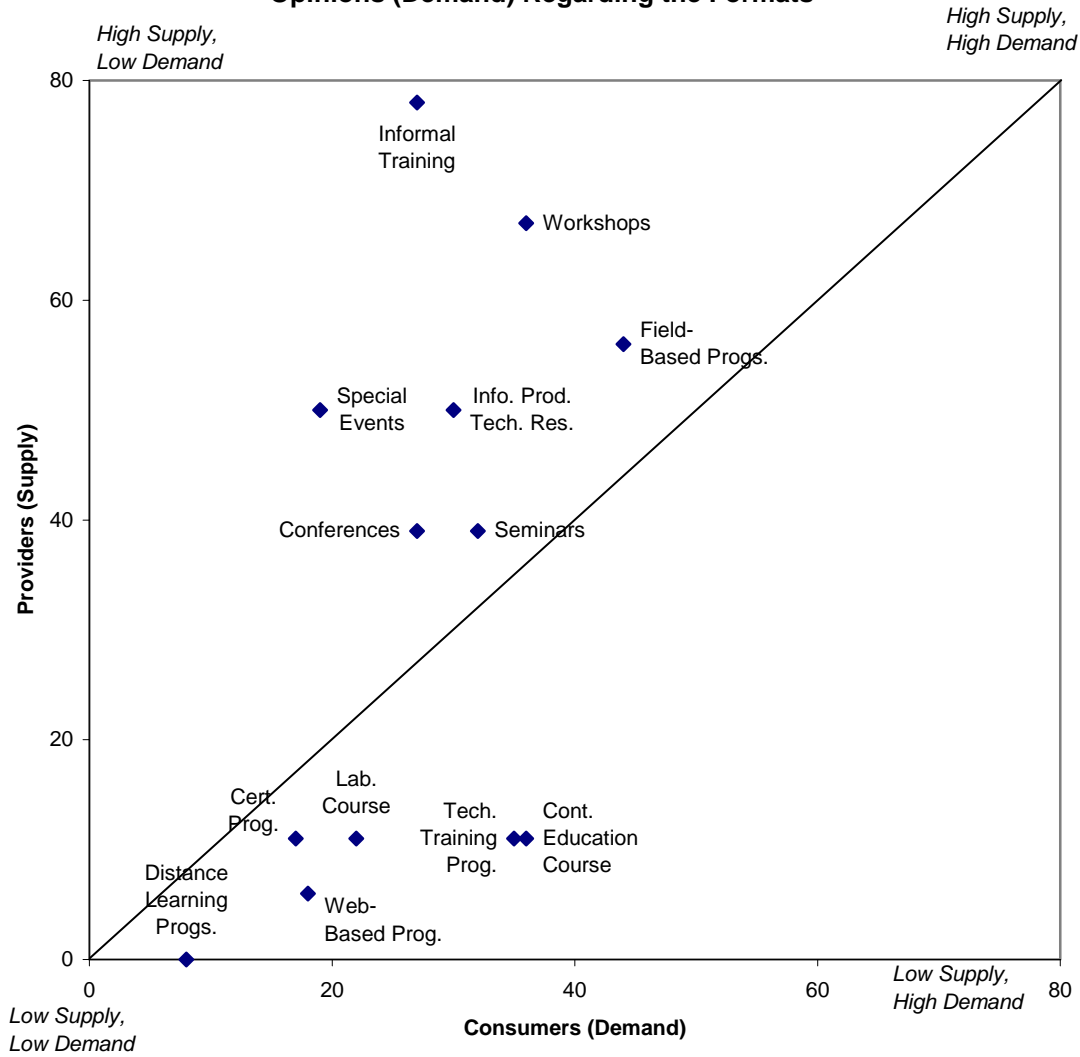
It is important to note that supply should, ideally, meet demand, even low demands. Those formats with low demand (or need) should not necessarily be completely dropped from providers' curriculums. A format with a low demand may, nonetheless, be very important to those few who seek it and should be provided. It also may mean that providers need to educate potential consumers about the importance of the topic. Just because a demand (or need) is low does not mean it should not be fulfilled.

➤ The matrix suggests the following:

- Six formats fell under the diagonal line that represents equal supply and demand, suggesting that for these formats demand is greater than supply. Note that the farther from the diagonal line, the more demand exceeds supply. These formats are:
 - Certification Programs (supply nearly meets demand; both are low)
 - Continuing Education Programs (low supply does not meet moderate demand)
 - Distance Learning Programs (low demand, but no supply)
 - Laboratory Courses (low supply does not meet low demand)
 - Technical Training Programs (low supply does not meet moderate demand)
 - Web-Based Programs (very low supply does not meet low demand)
- Seven formats fell above the diagonal line that represents equal supply and demand, suggesting that for these formats supply is greater than demand. Note that the farther from the diagonal line, the more supply exceeds demand. These formats are:
 - Conferences (moderate supply slightly exceeds moderate demand)
 - Field-Based Programs (moderate supply slightly exceeds moderate demand)
 - Informal Training (high supply exceeds moderate demand)
 - Information Products and Technical Resources (moderate supply slightly exceeds moderate demand)
 - Seminars (moderate supply and moderate demand nearly agree)

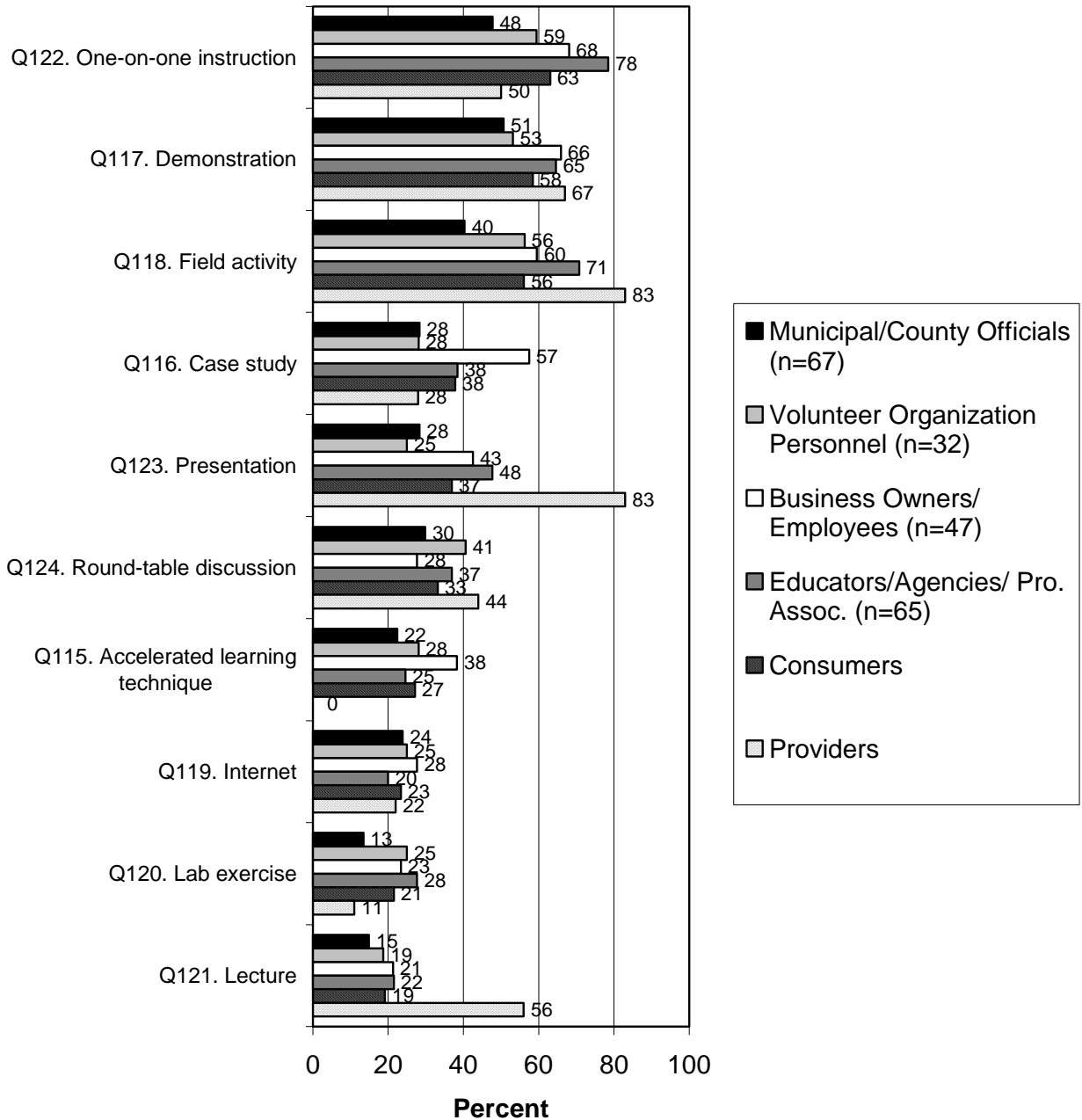
- Special Events (moderate supply exceeds low-to-moderate demand)
- Workshops (high supply exceeds moderate demand)

**Perception of Effectiveness of Specific Training Formats:
Comparison of Providers' Opinions (Supply) and Consumers' Opinions (Demand) Regarding the Formats**



The survey asked consumers to rate the effectiveness of 10 learning techniques related to training and for providers to indicate if they provide training in the format associated with the learning techniques. For each of the 10 learning techniques, consumers rated each technique as very effective, somewhat effective, or not at all effective. The percentages of each consumer type who rated the learning technique very effective were graphed, as were the percentage of providers offering training in the format associated with the learning technique, and it is from these data that the analyses were performed. Consumers' ratings of very effective are being considered a proxy for demand (the assumption being that those who rate a learning technique as very effective would likely want coastal training to use that technique).

Percent rating the following learning techniques as very effective. (Compared to the percentage of providers who use the given training delivery format.)



To examine the relationship between the data from the two studies, a matrix was created as shown in the graph that follows. A line following a 45 degree angle represents where demand and supply are equal (i.e., supply meets demand). Only on the line does supply meet demand; below the line, demand exceeds supply, while above the line, supply exceeds demand. Ideally, all learning techniques would fall very close to this line. Those learning techniques substantially above the diagonal line suggest that supply may be exceeding demand for this learning technique; those learning techniques substantially below the diagonal line suggest that demand may be exceeding supply. Those learning techniques near the line suggest that demand and supply are in close agreement.

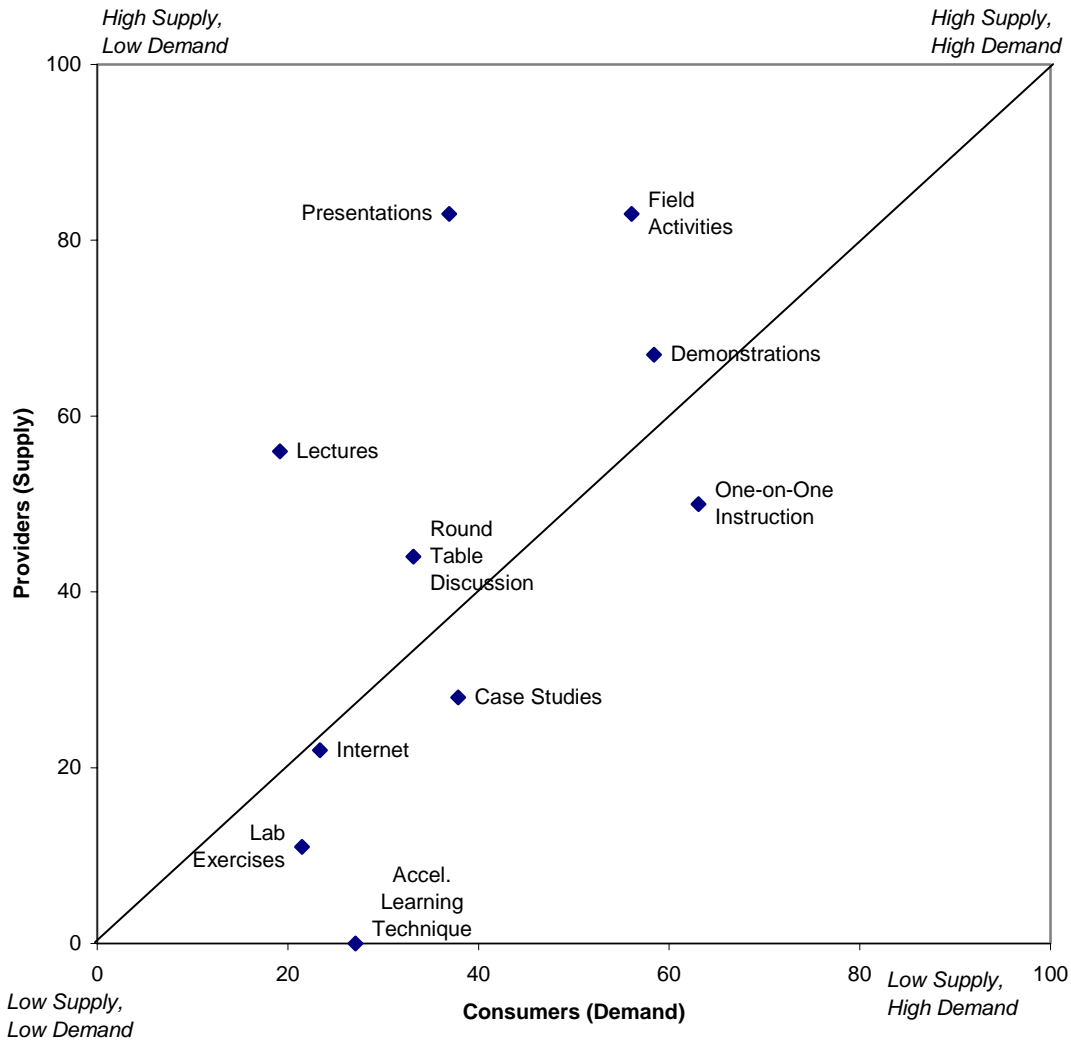
It is important to note that supply should, ideally, meet demand, even low demands. Those learning techniques with low demand (or need) should not necessarily be completely dropped from providers' curriculums. A learning technique with a low demand may, nonetheless, be very important to those few who use it and should be provided. Just because a demand (or need) is low does not mean it should not be fulfilled.

➤ The matrix suggests the following:

- One learning technique fell almost exactly atop the diagonal line that represents equal supply and demand, suggesting that for this learning technique demand meets supply. This learning technique is:
 - Internet (low demand meets low supply)
- Four learning techniques fell under the line that represents equal supply and demand, suggesting that for these learning techniques demand is greater than supply. Note that the farther from the diagonal line, the more demand exceeds supply. These learning techniques are:
 - Accelerated Learning Techniques (low-to-moderate demand, but no supply)
 - Case Studies (moderate demand slightly exceeds low-to-moderate supply)
 - Laboratory Exercises (low demand slightly exceeds the low supply)
 - One-on-One Instruction (moderate-to-high demand exceeds moderate supply)
- Five learning techniques fell above the line that represents equal supply and demand, suggesting that for these learning techniques supply is greater than demand. Note that the farther from the diagonal line, the more supply exceeds demand. These learning techniques are:
 - Demonstrations (moderate-to-high supply slightly exceeds moderate demand)
 - Field Activities (high supply exceeds moderate demand)
 - Lectures (moderate supply exceeds low demand)
 - Presentations (high supply exceeds low-to-moderate demand)

- Round Table Discussion (moderate supply slightly exceeds low-to-moderate demand)

**Perception of Effectiveness of Specific Learning Techniques:
Comparison of Providers' Opinions (Supply) and Consumers'
Opinions (Demand) Regarding the Techniques**

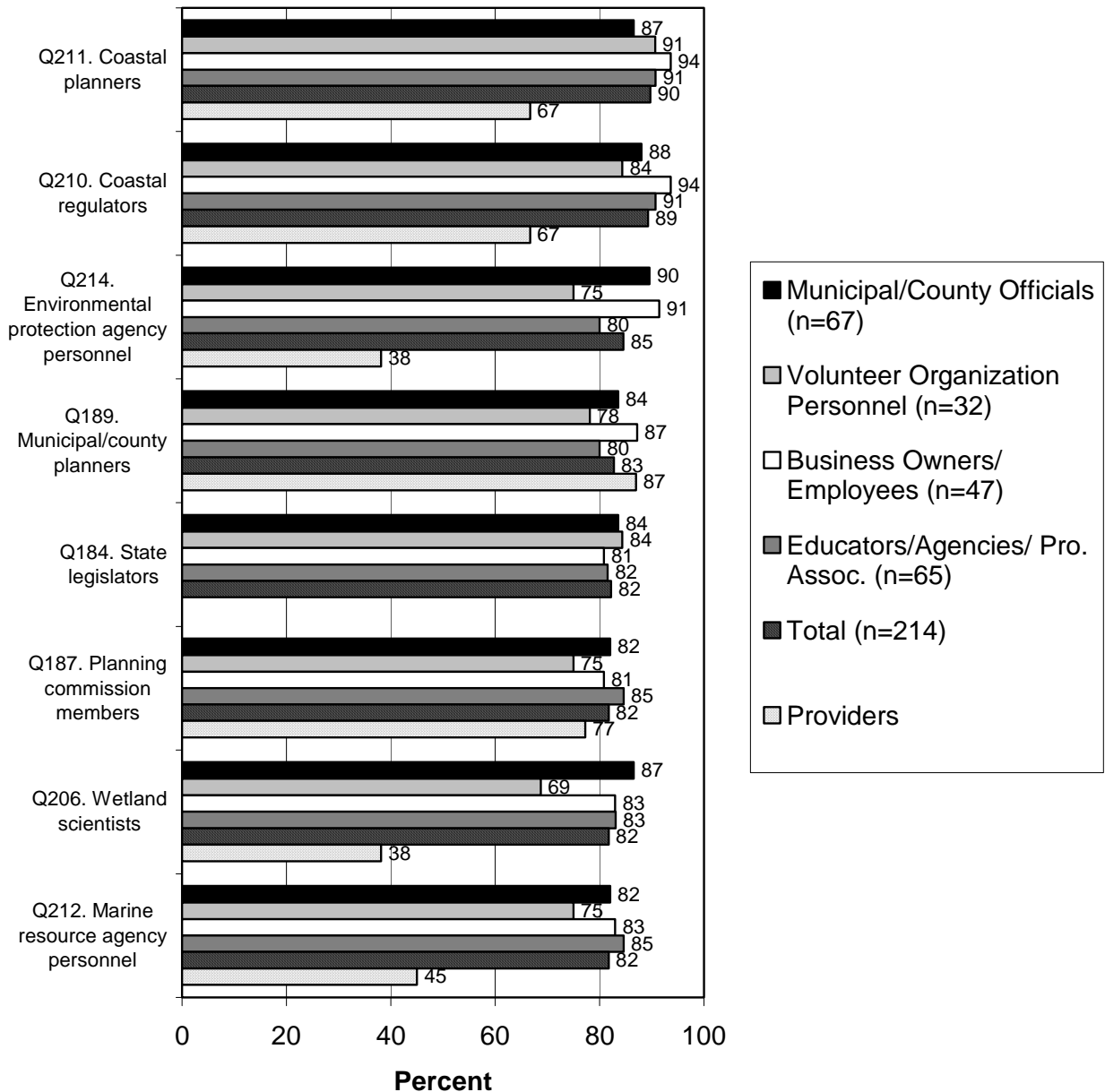


PERCEPTION OF GROUPS IN NEED OF COASTAL TRAINING

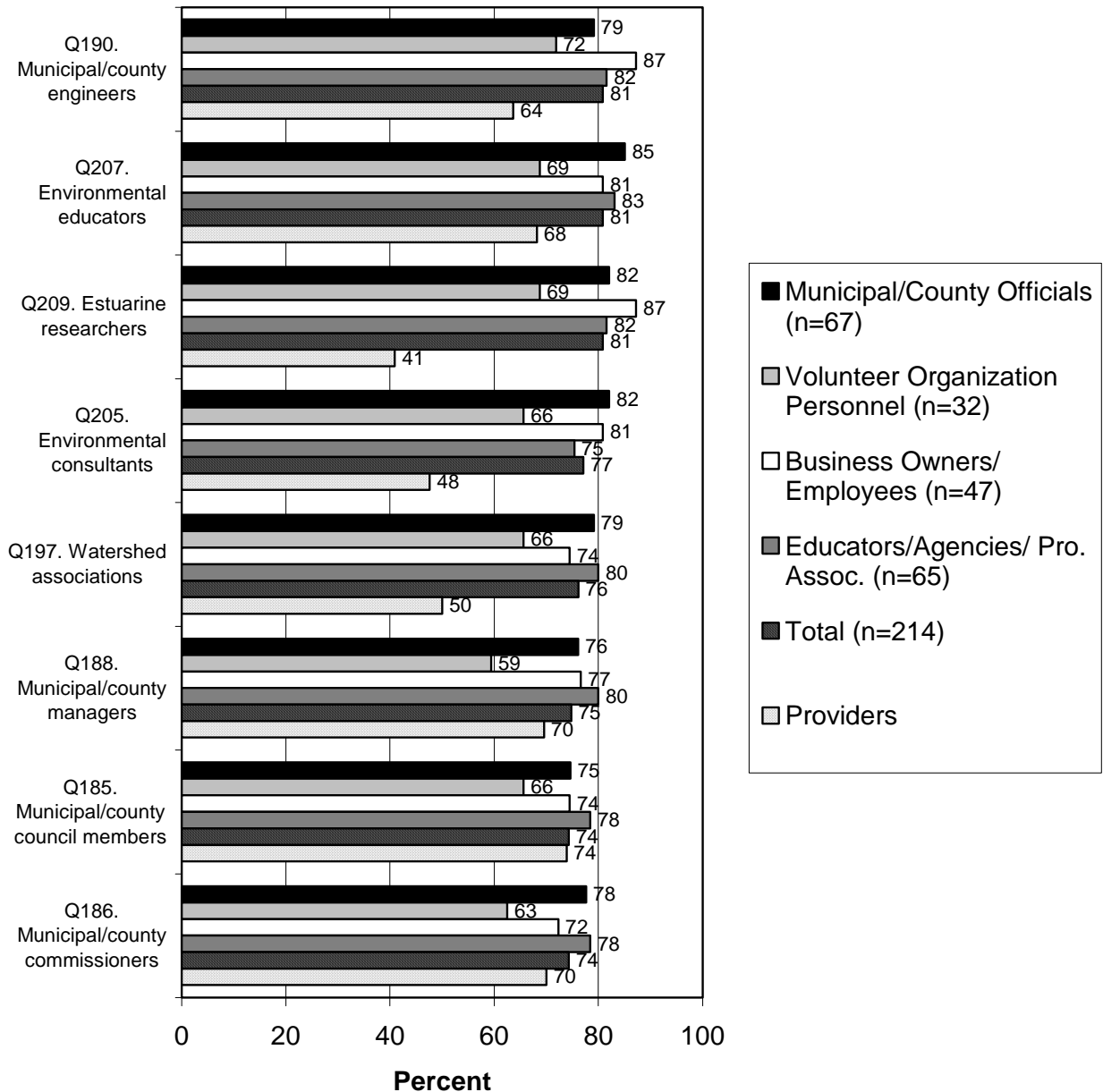
The survey instruments for both the market inventory and the needs assessment included questions about respondents' perceptions of the coastal decision-makers in need of coastal training. For many of the groups (e.g., planning commission members, municipal/county planners), consumers and providers of coastal training programs were in close agreement regarding the needs of those groups to receive coastal training. However, there was some disagreement between consumers and providers about several of the groups' needs to receive coastal training.

There are several ways to examine these data. The graphs show the raw data: the percent of each respondent type in the needs assessment (i.e., consumers) who rated each group as having a high need for coastal training and the percent of respondents from the market inventory (i.e., providers) who rated each group as having a high need for coastal training. It was from these data that the subsequent analyses were performed.

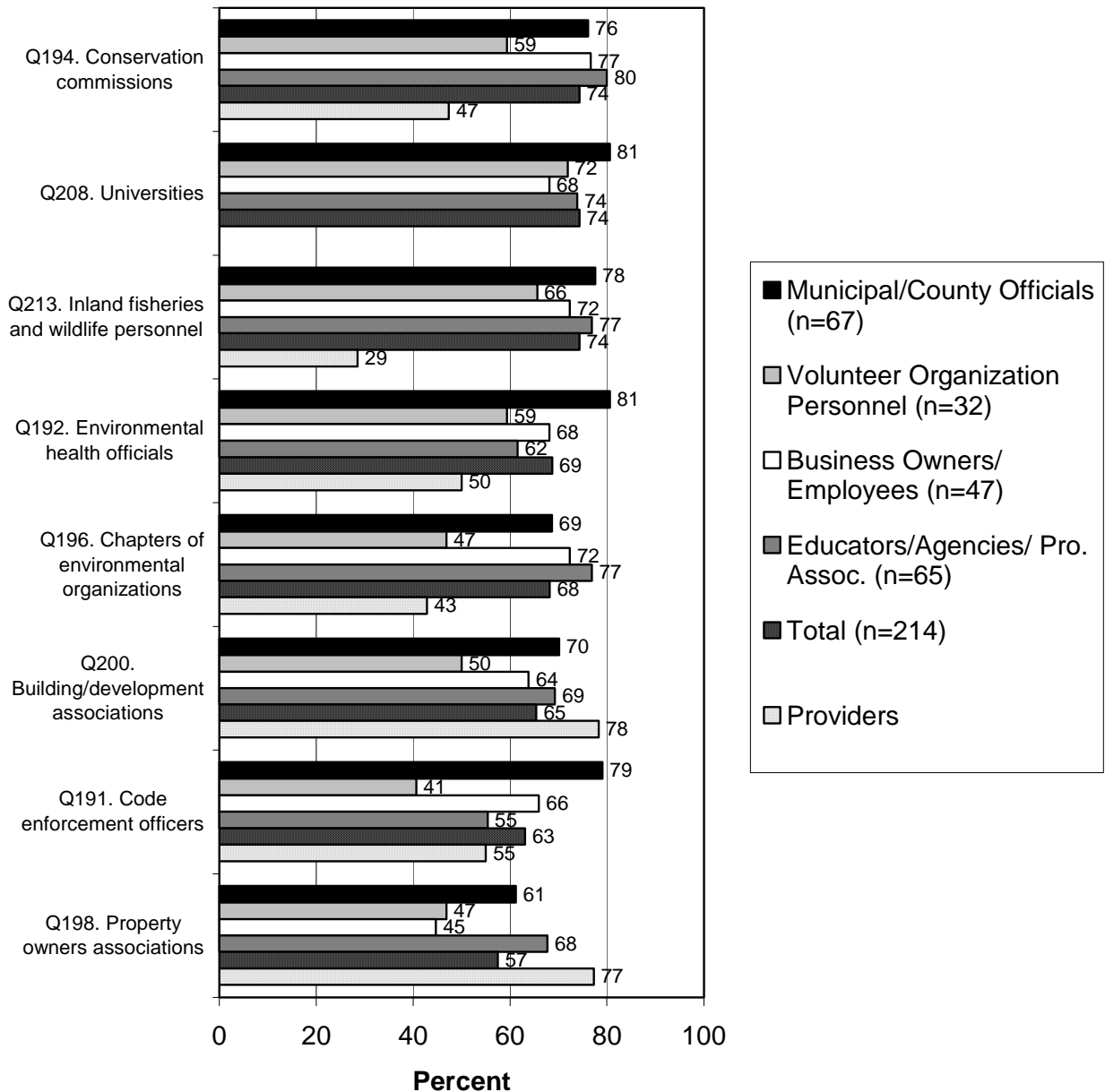
Percent who rated the following as having high needs for coastal resource information and professional development in Delaware. Part 1. (Compared to providers' opinions of groups with high training needs.)



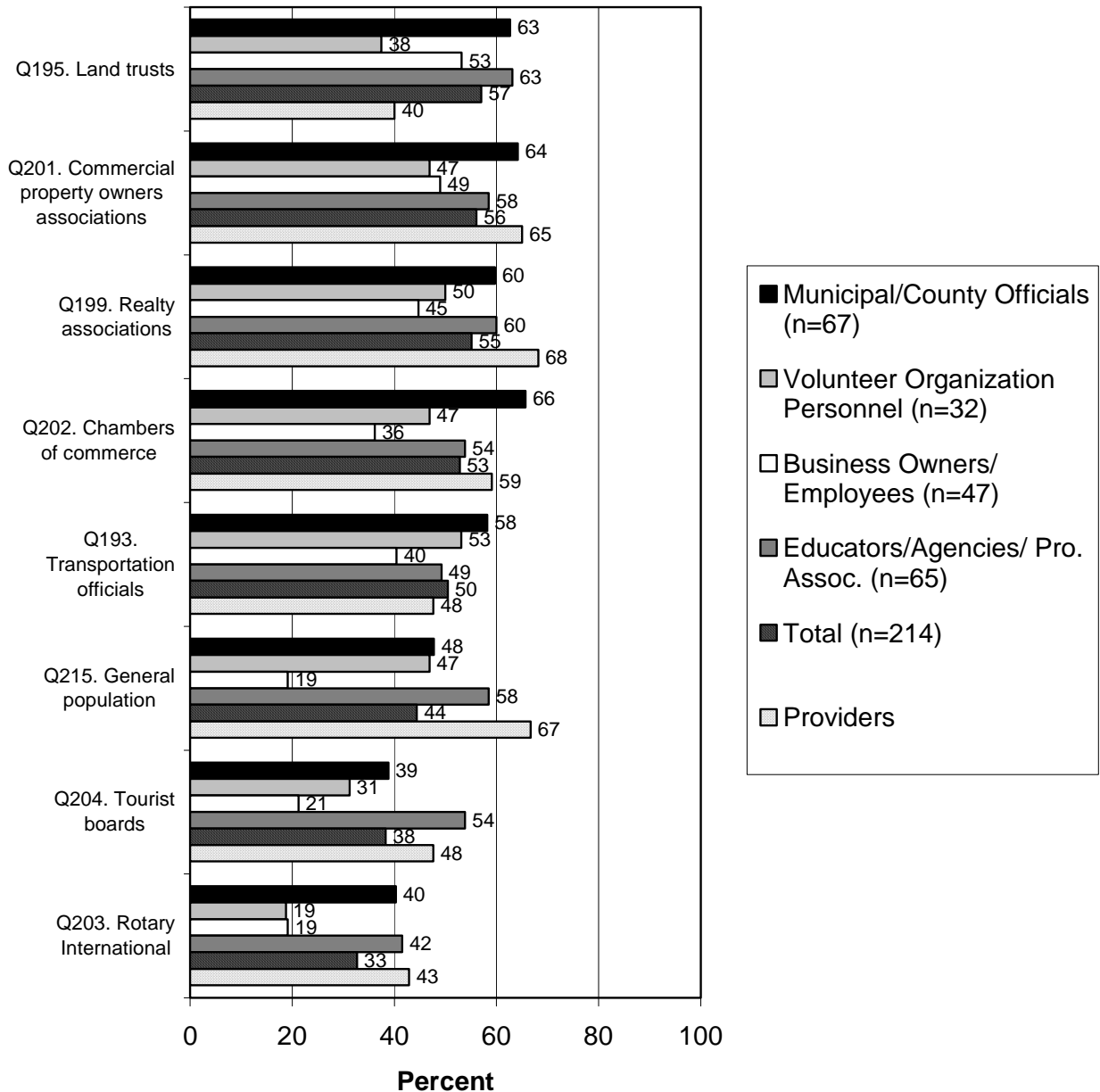
Percent who rated the following as having high needs for coastal resource information and professional development in Delaware. Part 2. (Compared to providers' opinions of groups with high training needs.)



Percent who rated the following as having high needs for coastal resource information and professional development in Delaware. Part 3. (Compared to providers' opinions of groups with high training needs.)



Percent who rated the following as having high needs for coastal resource information and professional development in Delaware. Part 4. (Compared to providers' opinions of groups with high training needs.)



To examine the relationship between the data from the two studies, a matrix was created as shown in the graph that follows. Note that the matrix scale starts at 20 instead of 0 to facilitate better display of the data; however, the minimum possible value on either axis is, obviously, 0. A line following a 45 degree angle represents where demand and supply are equal (i.e., supply meets demand). Only on the line does supply meet demand; below the line, demand exceeds supply, while above the line, supply exceeds demand. Ideally, all groups would fall very close to this line. Those groups substantially above the diagonal line suggest that supply may be exceeding demand for those groups; those groups substantially below the diagonal line suggest that demand may be exceeding supply. Those groups near the line suggest that demand and supply are in close agreement.

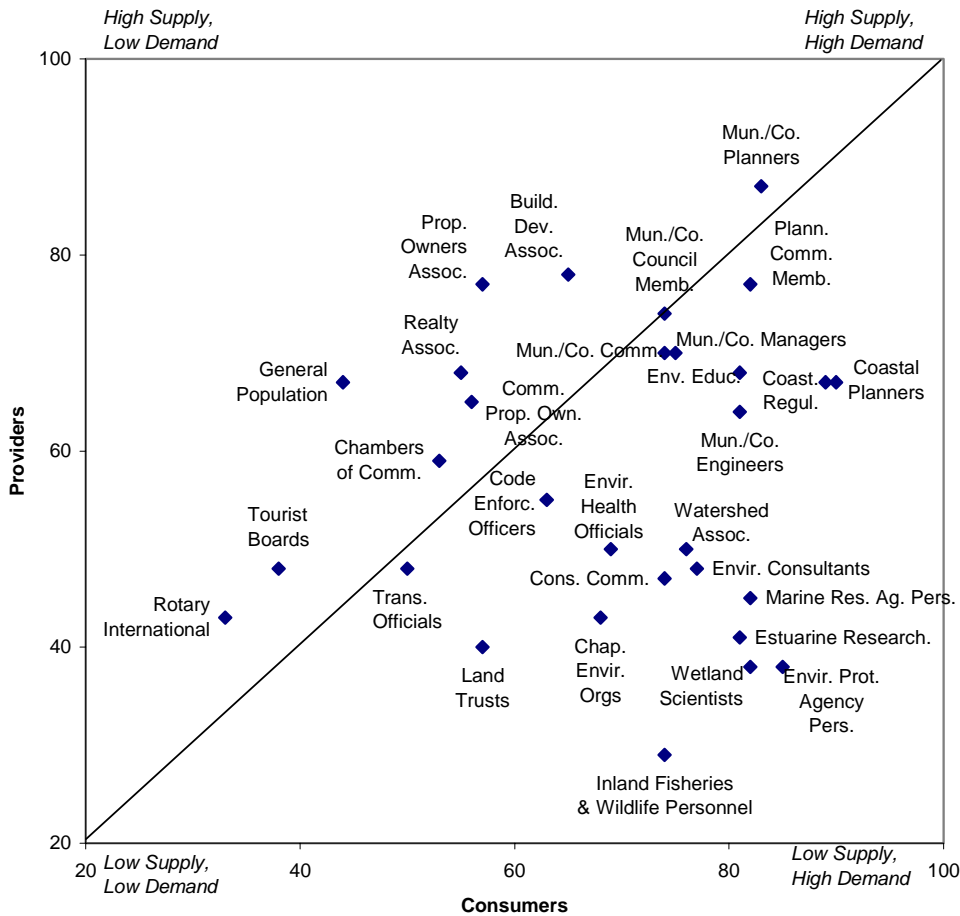
It is important to note that supply should, ideally, meet demand, even low demands. Those groups for which there is a low demand (or need) for training should not necessarily be completely excluded from providers' training. A group with a low training demand may, nonetheless, have very important needs for training and should be included in training.

➤ The matrix suggests the following:

- Several groups were very close to the diagonal line representing equal supply and demand. For these groups, it appears that supply and demand are in close accord. These groups are:
 - Chambers of Commerce
 - Code Enforcement Officers
 - Commercial Property Owners Associations
 - Municipal/County Council Members
 - Municipal/County Managers
 - Municipal/County Planners
 - Planning Commission Members
 - Transportation Officials
- Several groups fell below the diagonal line representing equal supply and demand. For these groups, it appears that demand exceeds supply. These groups are:
 - Chapters of Environmental Organizations
 - Coastal Planners
 - Coastal Regulators
 - Conservation Commissions
 - Environmental Consultants
 - Environmental Educators
 - Environmental Health Officials
 - Environmental Protection Agency Personnel

- Estuarine Researchers
 - Inland Fisheries and Wildlife Personnel
 - Land trusts
 - Marine Resource Agency Personnel
 - Municipal/County Engineers
 - Watershed Associations
 - Wetland Scientists
- Several groups fell above the diagonal line representing equal supply and demand. For these groups, it appears that supply exceeds demand. These groups are:
 - Building/Development Associations
 - General Population
 - Property Owners Associations
 - Realty Associations
 - Rotary International
 - Tourist Boards

**Perception of Groups in Need of Coastal Training:
Comparison of Providers' Opinions (Supply) and Consumers' Opinions (Demand)**



Another way to analyze the data is by examining the percentage point difference among providers and consumers in those rating the group as having high needs for coastal training. The tabulation that follows shows the percentage point difference between consumers' perceptions of needs and providers perception of needs for each of the groups to receive coastal training. Those groups for which there is at least a 20 percentage point difference, shown in italics in the tabulation, include the following. The parentheses shows the respondent type (consumers or providers) that gave a greater measure of perceived needs for coastal training for that group.

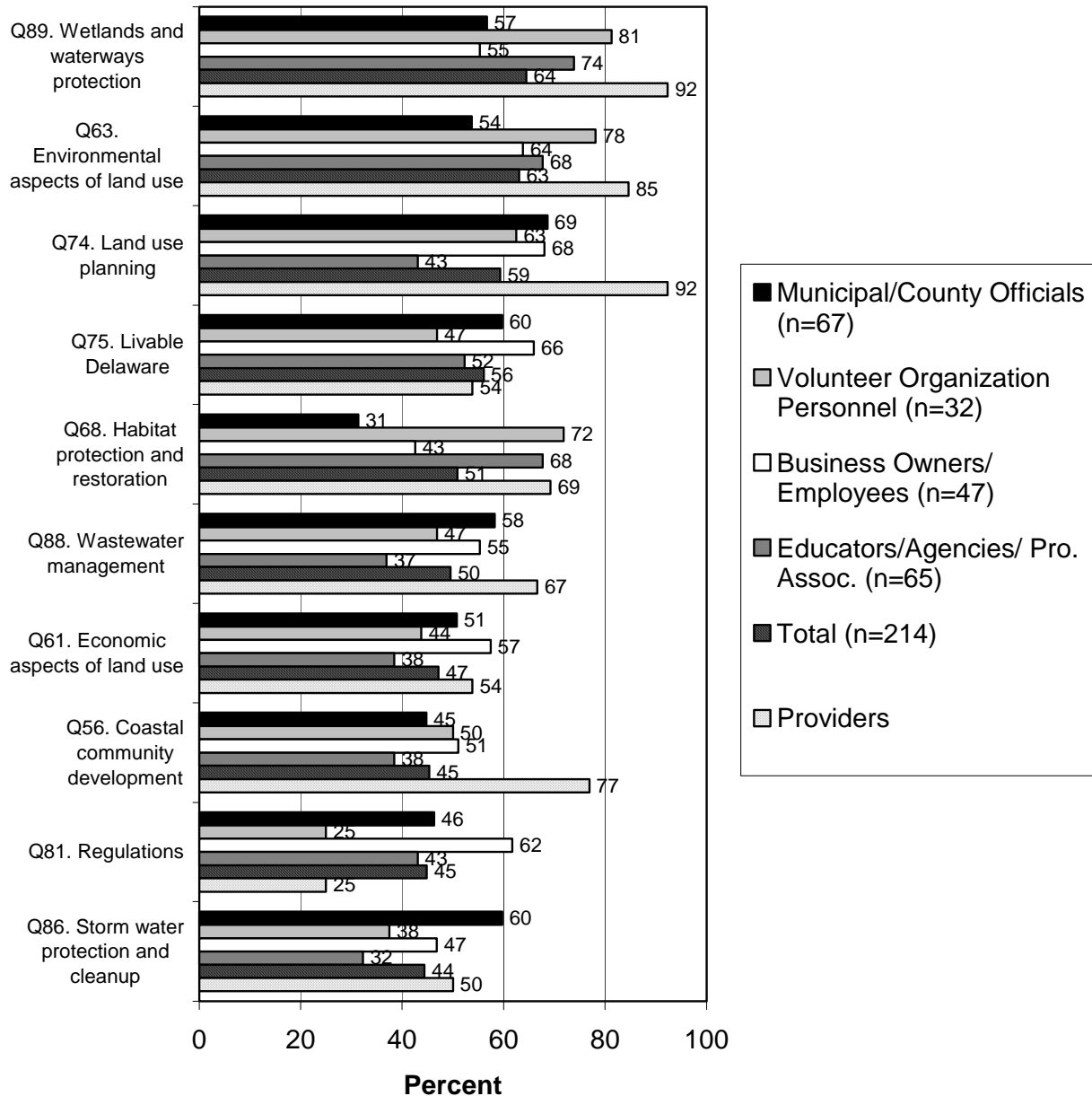
- Chapters of environmental organizations (consumers).
- Coastal planners (consumers).
- Coastal regulators (consumers).
- Conservation commissions (consumers).
- Environmental consultants (consumers).
- Environmental protection agency personnel (consumers).
- Estuarine researchers (consumers).
- General population (providers).
- Inland fisheries and wildlife personnel (consumers).
- Marine resource agency personnel (consumers).
- Property owners associations (providers).
- Watershed associations (consumers).
- Wetland scientists (consumers).

Groups	Percentage of Consumers (Total) Who Perceive a High Need for Coastal Training for the Groups	Percentage of Providers Who Perceive a High Need for Coastal Training for the Groups	Difference
Q184. State legislators	82	NA	NA
Q208. Universities	74	NA	NA
Q185. Municipal/county council members	74	74	0
Q193. Transportation officials	50	48	2
Q186. Municipal/county commissioners	74	70	4
Q189. Municipal/county planners	83	87	4
Q187. Planning commission members	82	77	5
Q188. Municipal/county managers	75	70	5
Q202. Chambers of commerce	53	59	6
Q191. Code enforcement officers	63	55	8
Q201. Commercial property owners assoc.	56	65	9
Q203. Rotary International	33	43	10
Q204. Tourist boards	38	48	10
Q207. Environmental educators	81	68	13
Q199. Realty associations	55	68	13
Q200. Building/development associations	65	78	13
Q190. Municipal/county engineers	81	64	17
Q195. Land trusts	57	40	17
Q192. Environmental health officials	69	50	19
<i>Q198. Property owners associations</i>	<i>57</i>	<i>77</i>	<i>20</i>
<i>Q210. Coastal regulators</i>	<i>89</i>	<i>67</i>	<i>22</i>
<i>Q211. Coastal planners</i>	<i>90</i>	<i>67</i>	<i>23</i>
<i>Q215. General population</i>	<i>44</i>	<i>67</i>	<i>23</i>
<i>Q196. Chapters of environmental orgs.</i>	<i>68</i>	<i>43</i>	<i>25</i>
<i>Q197. Watershed associations</i>	<i>76</i>	<i>50</i>	<i>26</i>
<i>Q194. Conservation commissions</i>	<i>74</i>	<i>47</i>	<i>27</i>
<i>Q205. Environmental consultants</i>	<i>77</i>	<i>48</i>	<i>29</i>
<i>Q212. Marine resource agency personnel</i>	<i>82</i>	<i>45</i>	<i>37</i>
<i>Q209. Estuarine researchers</i>	<i>81</i>	<i>41</i>	<i>40</i>
<i>Q206. Wetland scientists</i>	<i>82</i>	<i>38</i>	<i>44</i>
<i>Q213. Inland fisheries and wildlife personnel</i>	<i>74</i>	<i>29</i>	<i>45</i>
<i>Q214. Environmental protection agency pers.</i>	<i>85</i>	<i>38</i>	<i>47</i>

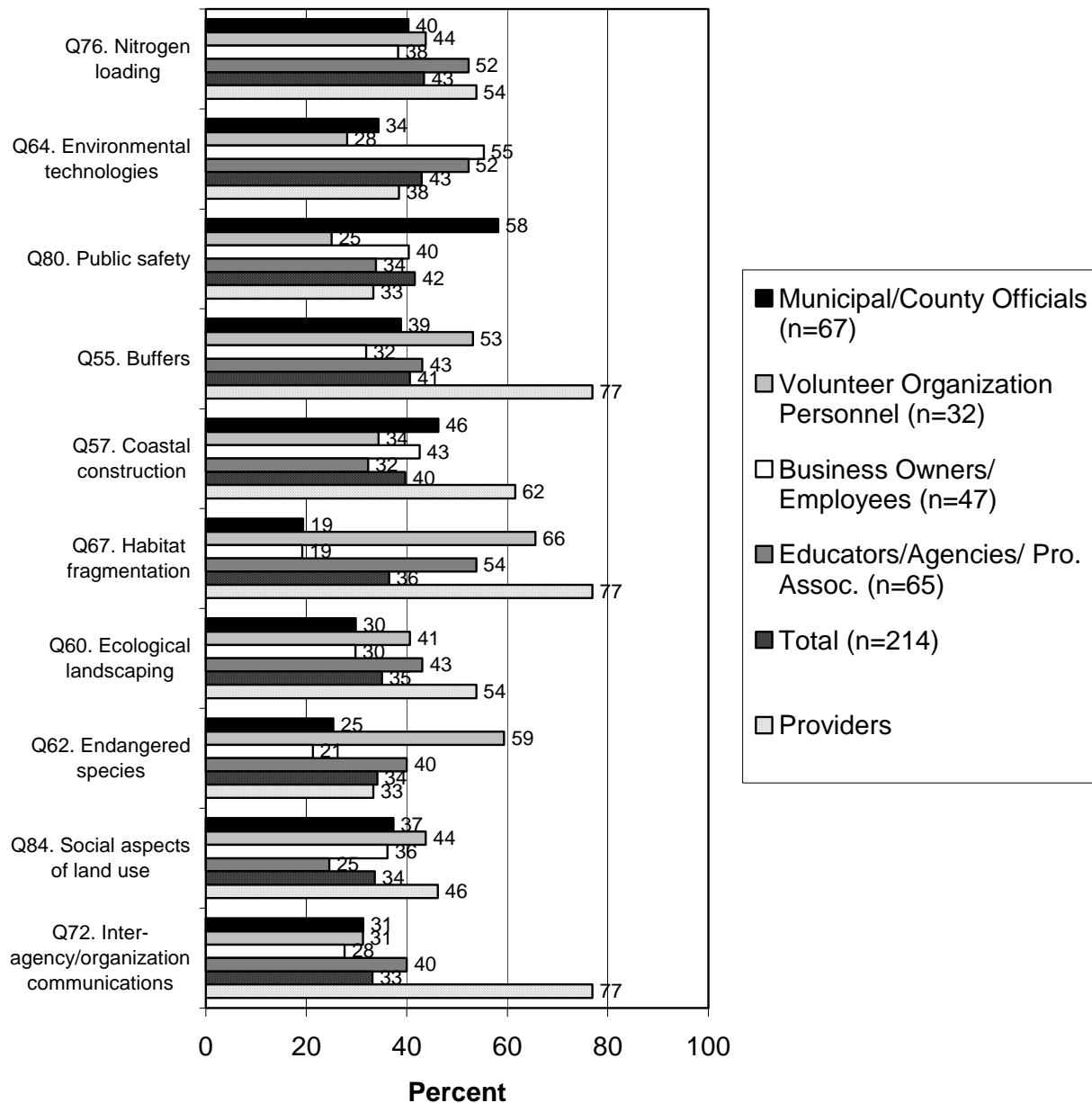
PERCEPTION OF NEEDED COASTAL TRAINING TOPICS AND TOPICS OFFERED

The survey instruments for both the market inventory and the needs assessment included questions about respondents' perceptions of the topics about which coastal training should be provided. The graphs show the raw data: the percent of each respondent type in the needs assessment (i.e., consumers) who said there was a high need for each topic and the percent of respondents from the market inventory (i.e., providers) who said there was a high need for the topic. It was from these data that the subsequent analyses were performed.

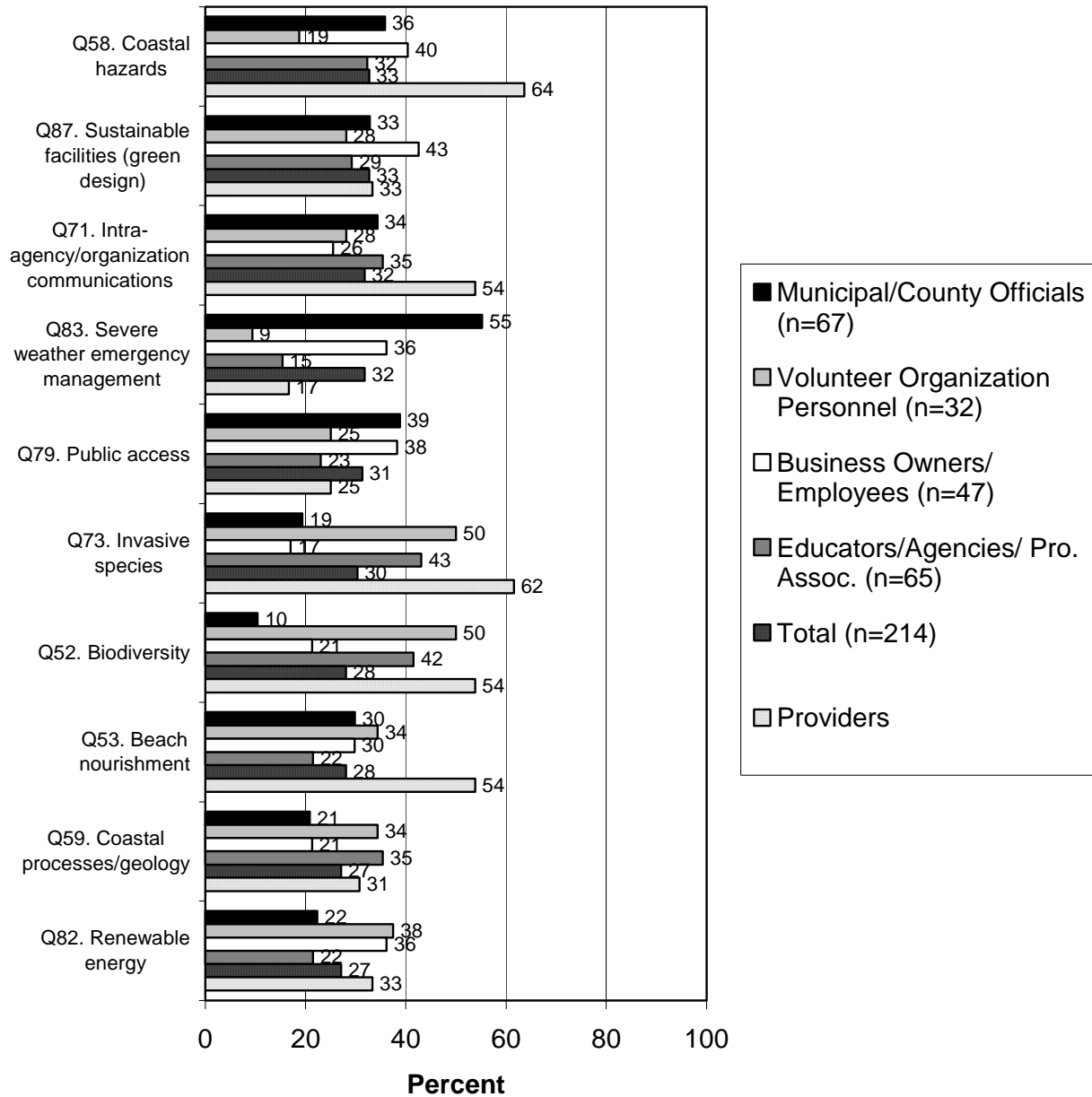
Percent who said there was a high need for coastal resource training or information on the following topics. Part 1. (Compared to percent of providers' perceptions of high needs for training on the given topic.)



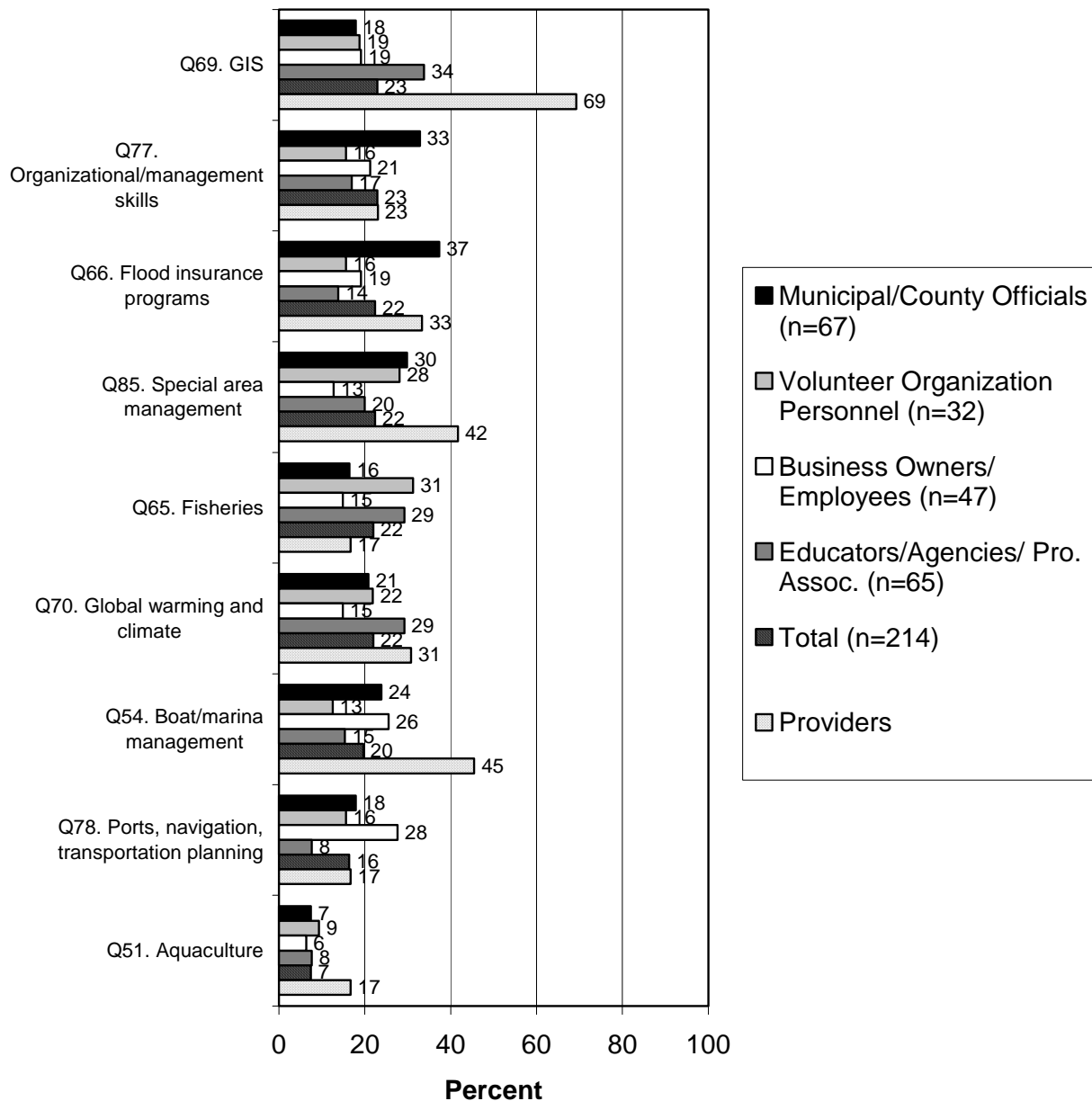
Percent who said there was a high need for coastal resource training or information on the following topics. Part 2. (Compared to percent of providers' perceptions of high needs for training on the given topic.)



Percent who said there was a high need for coastal resource training or information on the following topics. Part 3. (Compared to percent of providers' perceptions of high needs for training on the given topic.)



Percent who said there was a high need for coastal resource training or information on the following topics. Part 4. (Compared to percent of providers' perceptions of high needs for training on the given topic.)



To examine the relationship between the data from the two studies, a matrix was created as shown in the graph that follows. A line following a 45 degree angle represents where demand and supply are equal (i.e., supply meets demand). Only on the line does supply meet demand; below the line, demand exceeds supply, while above the line, supply exceeds demand. Ideally, all topics would fall very close to this line. Those topics substantially above the diagonal line suggest that supply may be exceeding demand for training about those topics; those topics substantially below the diagonal line suggest that demand may be exceeding supply. Those topics near the line suggest that demand and supply are in close agreement.

It is important to note that supply should, ideally, meet demand, even low demands. Those topics for which there is a low demand (or need) for training should not necessarily be completely excluded from providers' training programs. A topic for which there is a low demand may, nonetheless, be very important to some people and should be included in training. It also may suggest the need to educate coastal decision-makers on the importance of the topic.

➤ The matrix suggests the following:

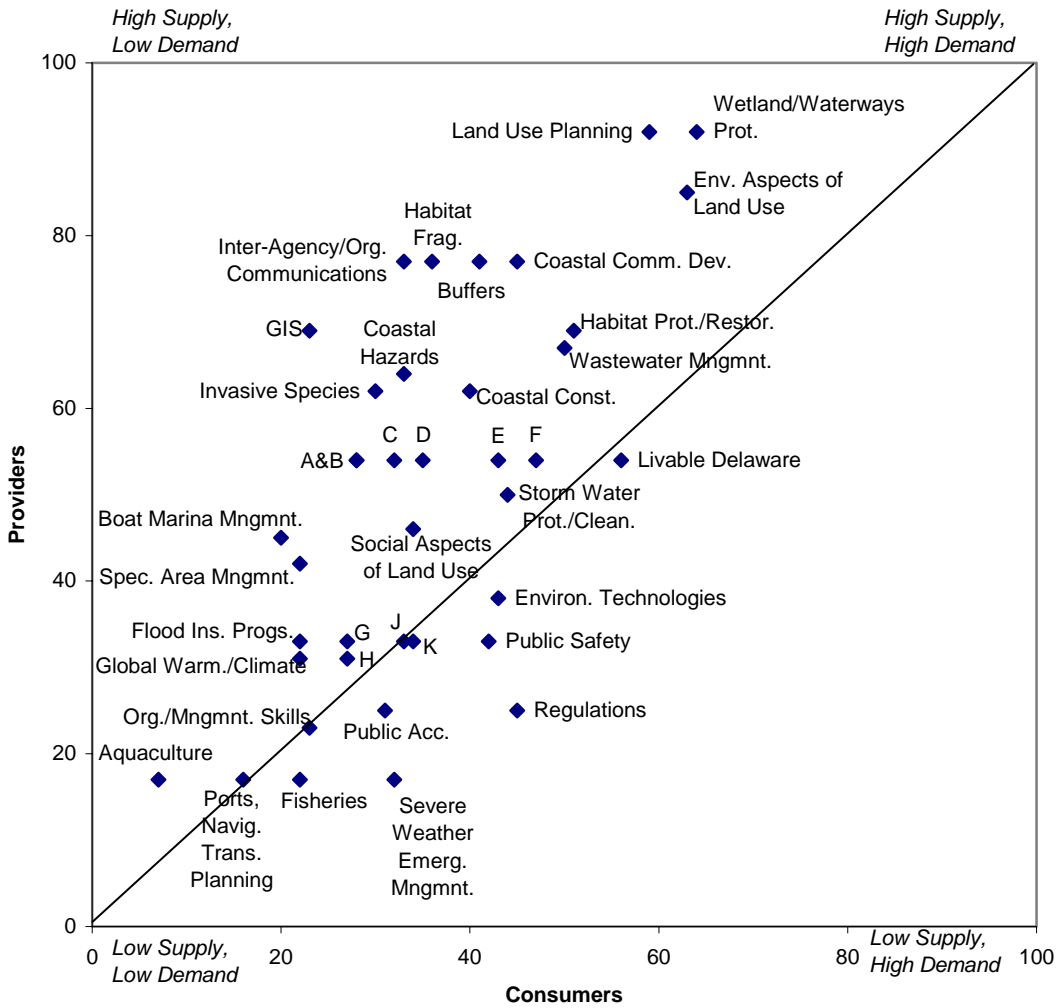
- Several topics were very close to the diagonal line representing equal supply and demand. For these topics, it appears that supply and demand are in close accord.

These topics are:

- Aquaculture
- Coastal Processes/Geology
- Economic Aspects of Land Use
- Endangered Species
- Environmental Technologies
- Fisheries
- Flood Insurance Programs
- Global Warming and Climate
- Livable Delaware
- Nitrogen Loading
- Organization/Management Skills
- Ports, Navigation, and Transportation Planning
- Public Access
- Public Safety
- Renewable Energy
- Social Aspects of Land Use
- Storm Water Protection and Cleanup
- Sustainable Facilities (Green Design)

- Several topics fell below the diagonal line representing equal supply and demand. For these topics, it appears that demand exceeds supply. These topics are:
 - Regulations
 - Severe Weather Emergency Management
- Several topics fell above the diagonal line representing equal supply and demand. For these topics, it appears that supply exceeds demand. These topics are:
 - Beach Nourishment
 - Biodiversity
 - Boat Marina Management
 - Buffers
 - Coastal Community Development
 - Coastal Construction
 - Coastal Hazards
 - Ecological Landscaping
 - Environmental Aspects of Land Use
 - GIS
 - Habitat Fragmentation
 - Habitat Protection and Restoration
 - Inter-Agency/Organization Communications
 - Intra-Agency/Organization Communications
 - Invasive Species
 - Land Use Planning
 - Special Area Management
 - Wastewater Management
 - Wetlands and Waterways Protection

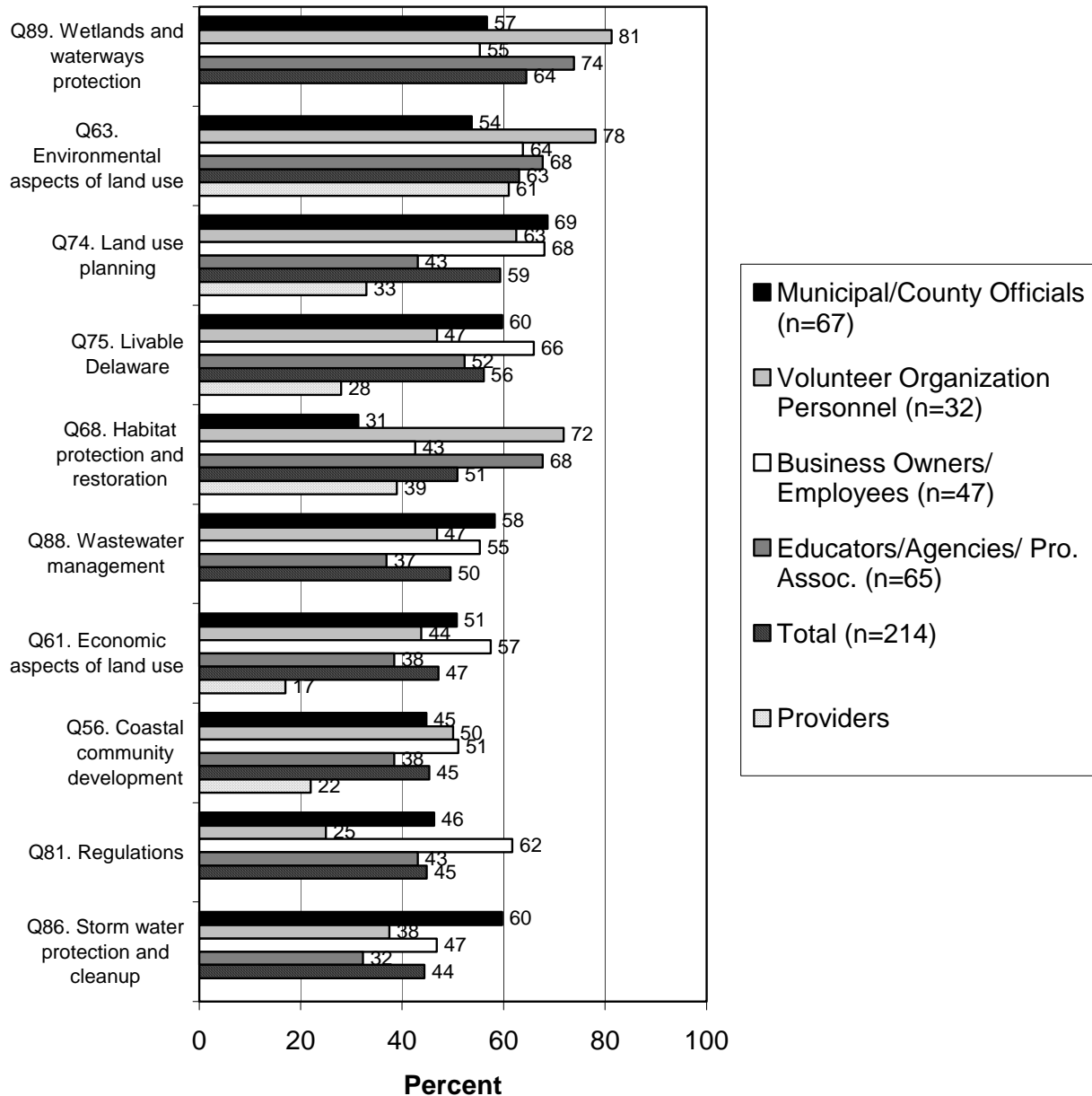
**Perception of Topics that Should Be Addressed in Coastal Training:
Comparison of Providers' Opinions (Supply) and Consumers' Opinions (Demand)**



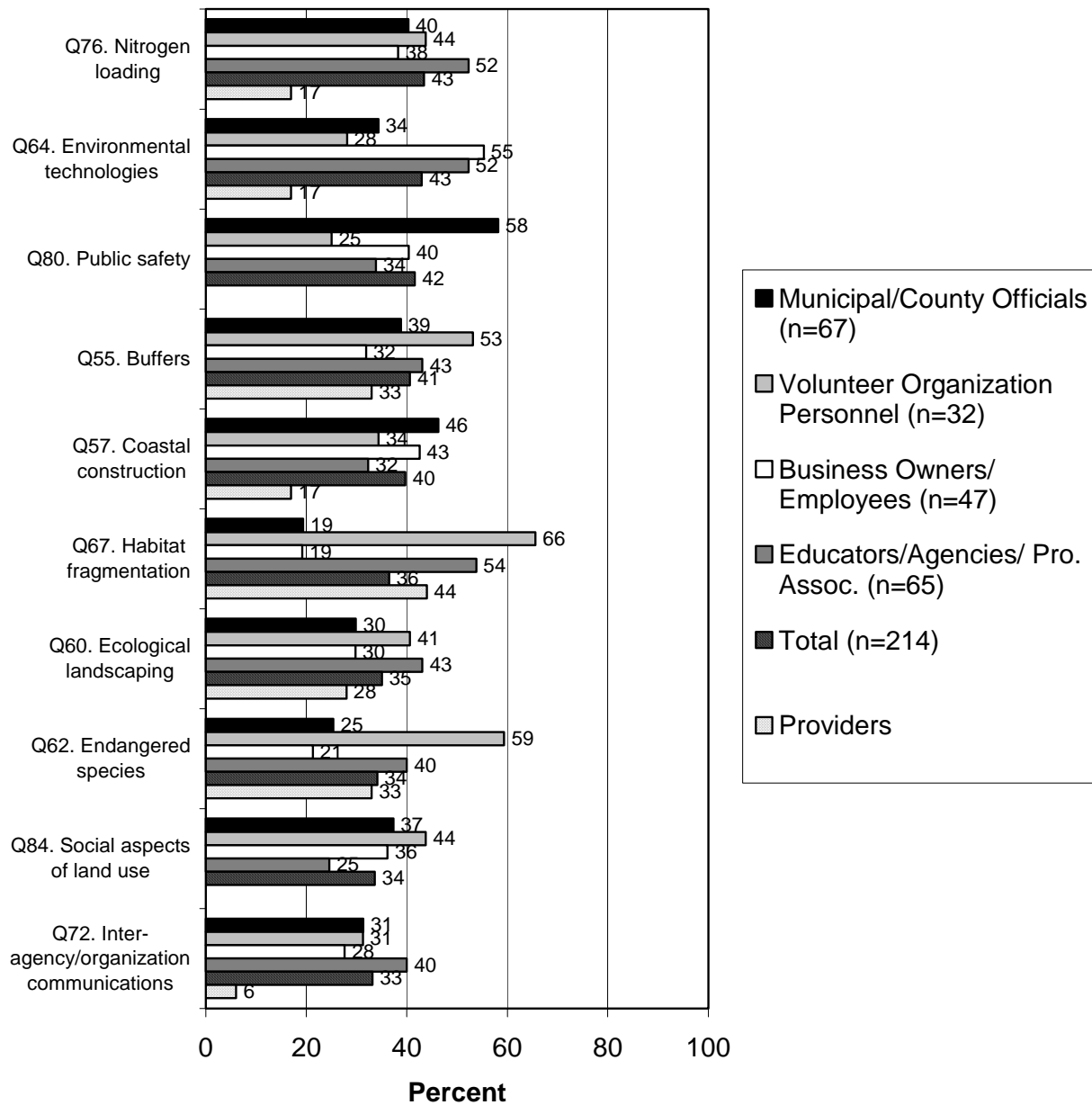
A = Biodiversity	F = Economic Aspects of Land Use
B = Beach Nourishment	G = Renewable Energy
C = Intra-Agency/Organization Communications	H = Coastal Processes/Geology
D = Ecological Landscaping	J = Sustainable Facilities (Green Design)
E = Nitrogen Loading	K = Endangered Species

Another set of four graphs shows the percent of each respondent type in the needs assessment (i.e., consumers) who said there was a high need for each topic and the percent of respondents from the market inventory (i.e., providers) who said that they or their organization currently addresses the topic. Analyses were performed on these data, as well.

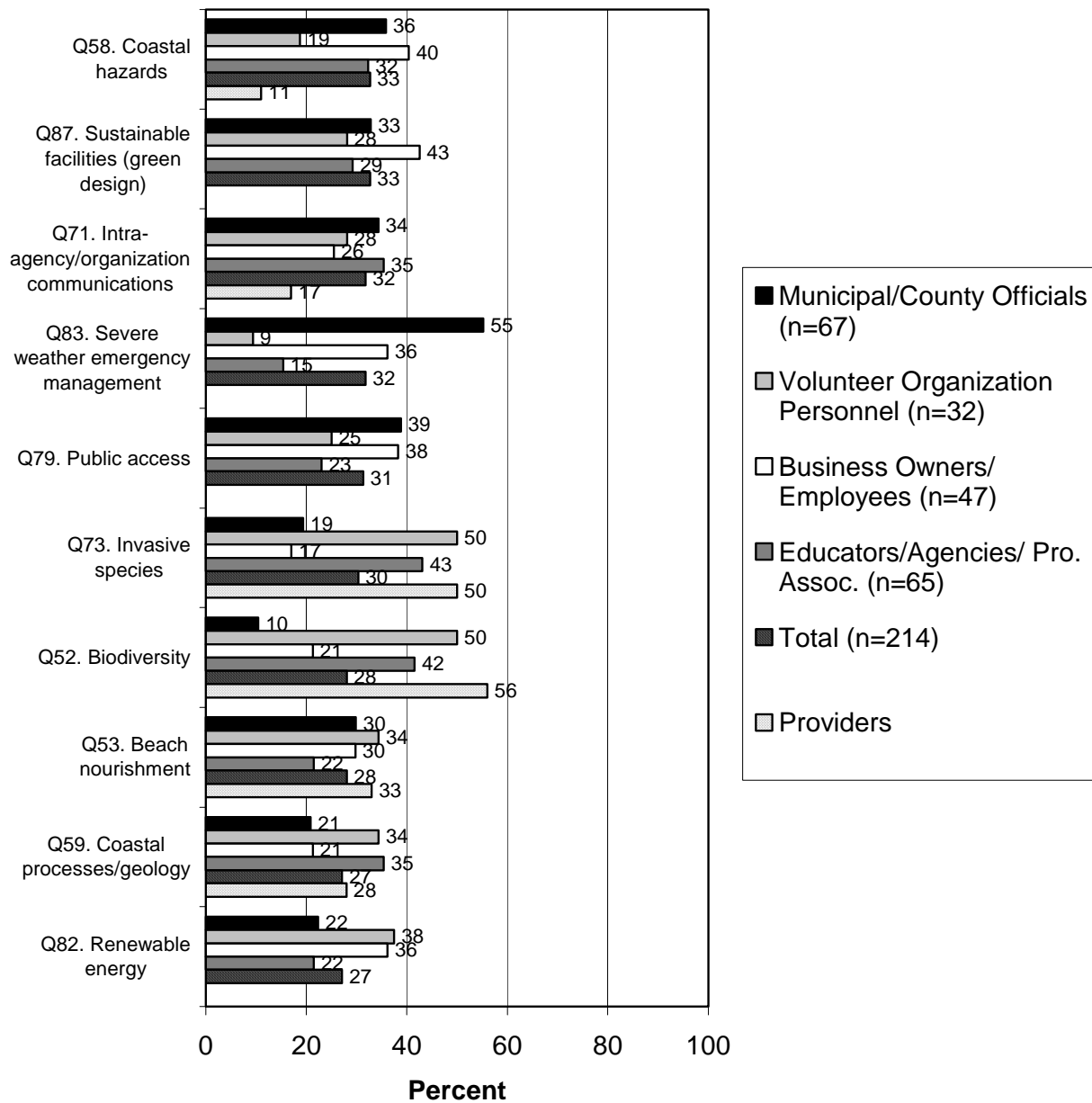
Percent who said there was a high need for coastal resource training or information on the following topics. Part 1. (Compared to percent of providers that provide training on the given topic.)



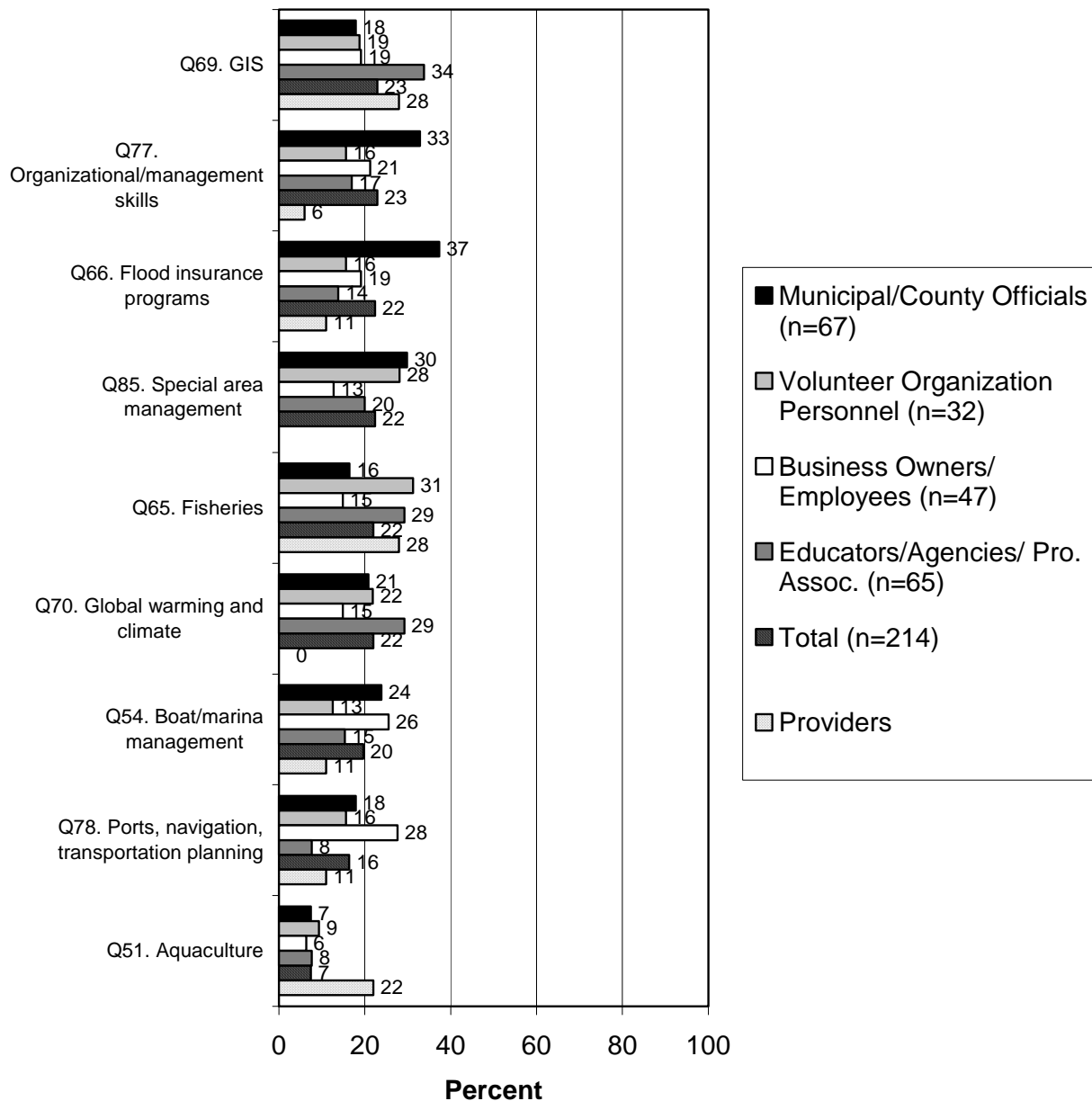
Percent who said there was a high need for coastal resource training or information on the following topics. Part 2. (Compared to percent of providers that provide training on the given topic.)



Percent who said there was a high need for coastal resource training or information on the following topics. Part 3. (Compared to percent of providers that provide training on the given topic.)



Percent who said there was a high need for coastal resource training or information on the following topics. Part 4. (Compared to percent of providers that provide training on the given topic.)



To examine the relationship between the data from the two studies, a matrix was created as shown in the graph that follows. A line following a 45 degree angle represents where demand and supply are equal (i.e., supply meets demand). Only on the line does supply meet demand; below the line, demand exceeds supply, while above the line, supply exceeds demand. Ideally, all topics would fall very close to this line. Those topics substantially above the diagonal line suggest that supply may be exceeding demand for training about those topics; those topics substantially below the diagonal line suggest that demand may be exceeding supply. Those topics near the line suggest that demand and supply are in close agreement.

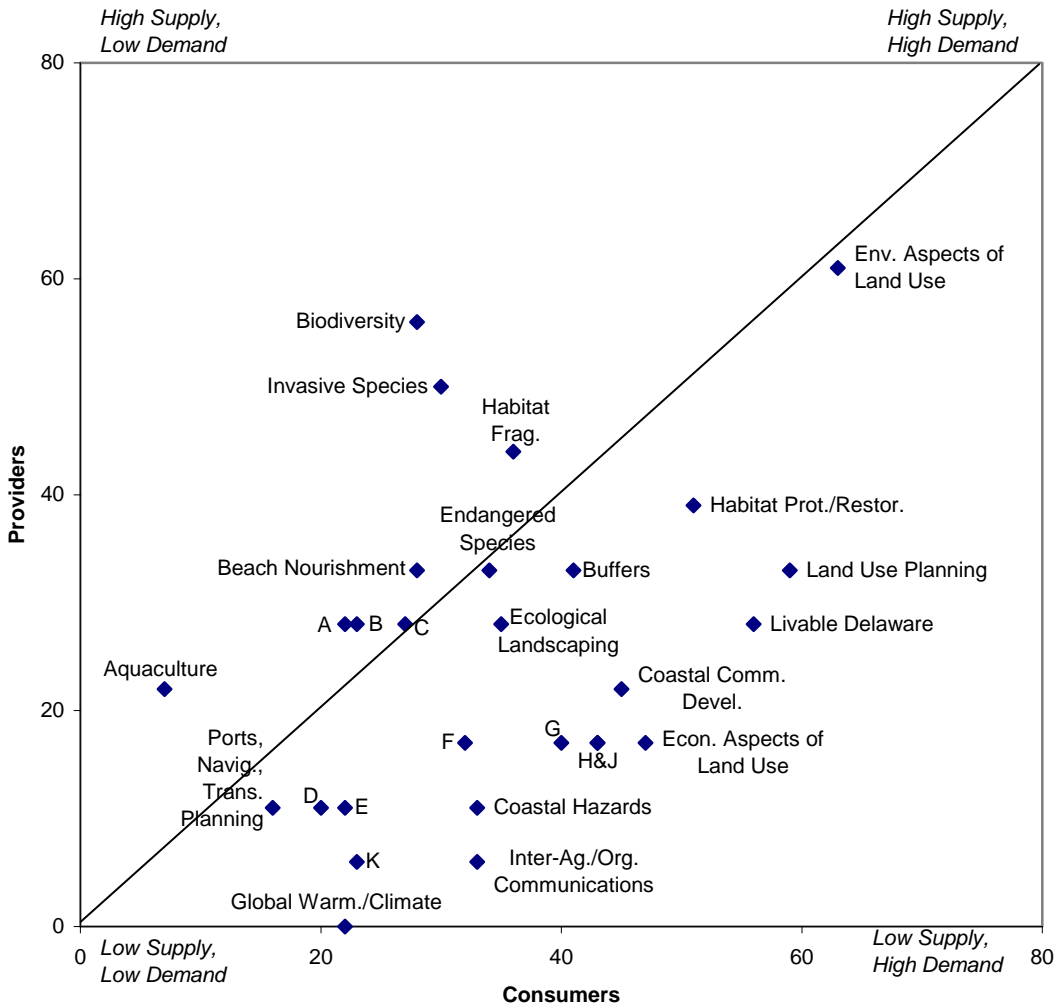
It is important to note that supply should, ideally, meet demand, even low demands. Those topics for which there is a low demand (or need) for training should not necessarily be completely excluded from providers' training programs. A topic for which there is a low demand may, nonetheless, be very important to some people and should be included in training, or it may suggest the need to educate coastal decision-makers of the importance of the topic.

➤ The matrix suggests the following:

- Several topics were very close to the diagonal line representing equal supply and demand. For these topics, it appears that supply and demand are in close accord. These topics are:
 - Beach Nourishment
 - Boat/Marina Management
 - Buffers
 - Coastal Processes/Geology
 - Ecological Landscaping
 - Endangered Species
 - Environmental Aspects of Land Use
 - Fisheries
 - GIS
 - Habitat Fragmentation
 - Ports, Navigation, and Transportation Planning
- Several topics fell below the diagonal line representing equal supply and demand. For these topics, it appears that demand exceeds supply. These topics are:
 - Coastal Community Development
 - Coastal Construction
 - Coastal Hazards
 - Economic Aspects of Land Use
 - Environmental Technologies
 - Flood Insurance Programs

- Global Warming/Climate
 - Habitat Protection and Restoration
 - Inter-Agency/Organization Communications
 - Intra-Agency/Organization Communications
 - Land Use Planning
 - Livable Delaware
 - Nitrogen Loading
 - Organizational/Management Skills
- Several topics fell above the diagonal line representing equal supply and demand. For these topics, it appears that supply exceeds demand. These topics are:
 - Aquaculture
 - Biodiversity
 - Invasive Species

Perception of Topics that Should Be Addressed in Coastal Training vs. Topics Actually Offered: Comparison of Providers' Programs Offered (Supply) and Consumers' Opinions of Need (Demand)



- | | |
|-------------------------------|--|
| A = Fisheries | F = Intra-Agency/Organization Communications |
| B = GIS | G = Coastal Construction |
| C = Coastal Processes/Geology | H = Environmental Technologies |
| D = Boat/Marina Management | J = Nitrogen Loading |
| E = Flood Insurance Programs | K = Organizational/Management Skills |

RECOMMENDATIONS

FAMILIARITY WITH COASTAL TRAINING AND PROMOTIONAL TOOLS TO ADVERTISE COASTAL TRAINING

- Because a sizable percentage of consumers were not at all familiar with the DNERR, coastal training providers must increase awareness that coastal training programs are available. In addition, a substantial percentage of those providing coastal training in some capacity are unaware of the DNERR Coastal Training Program, and the DNERR may be able to increase cooperation with coastal training providers by publicizing the DNERR and the ways that the DNERR may assist coastal training providers.
 - In particular, 61% of municipal/county officials and 66% of business owners and employees were not at all familiar with the DNERR, representing an untapped pool for whom coastal training may be useful. Both these groups, particularly municipal/county officials, make decisions that can greatly affect coastal resources, and it is essential that these groups are informed about coastal resource issues to facilitate sound decision-making.
 - 28% of those people whose organizations provide coastal training indicated a lack of awareness of the DNERR Coastal Training Programs. These people and organizations can likely improve their coastal training programs through cooperation with the DNERR and through using training resources developed and/or distributed through the DNERR.

- It is important for the DNERR and other coastal training providers to match its promotional methods with the methods that consumers prefer for being notified about coastal training opportunities. Because consumers indicated that direct mail was the most preferred method for notification of coastal training, the DNERR and other coastal training providers should consider targeted mailings to advertise coastal training offerings. However, because direct mail is expensive relative to other methods, those other methods should be used, as well. In particular, e-mail listservs can play an important role, particularly because consumers' indicated a high preference for e-mail, and e-mail is a cost-efficient way to distribute information.

AVAILABILITY OF COASTAL TRAINING

- The results of the surveys suggest that more coastal training is needed, because more than a third of consumers (38%) disagree that there is enough coastal training available in Delaware. In addition, there is more disagreement than agreement that there are enough coastal training providers in Delaware. Also, interest among consumers was high for coastal training in the future, which may mean that some consumers who do not currently use coastal training but that they recognize that they may need coastal training in the future.
 - In particular, a large percentage of volunteer organization personnel (50%) and educators, agency personnel, and professional association personnel (59%) disagree that there is enough coastal training available in Delaware. Interestingly, the latter group has the highest percentage who are very or somewhat familiar with the DNERR and the highest percentage who disagree that enough coastal training is available, so lack of awareness cannot be blamed for their perception that not enough training is available. Quite simply, more training should be provided, particularly training aimed at educators, agency personnel, and professional association personnel, as well as training aimed at volunteer organization personnel.

SESSION LENGTHS, TIMES, LOCATIONS, AND REGISTRATION METHODS

- It appears that providers are matching fairly well the wants of consumers regarding session lengths. Because consumers desire 1 hour to half-day sessions and half-day to day-long sessions, providers should continue to offer coastal training programs that match these desires. Coastal training lasting more than 1 day has little demand and should be offered only when absolutely necessary.

- It also appears that providers are matching fairly well the wants of consumers regarding locations of coastal training. As we have seen, the farther the consumer must travel to the coastal training, the less likely that the consumer will travel to the training. For this reason, providers should make every attempt to provide training local to those for whom the training is targeted. Additionally, one of the top factors that affects consumers' ability to attend coastal training is that the training is held in an inconvenient location.

- The providers survey did not discuss seasons that coastal training is typically provided for comparison. Nonetheless, more than twice as many consumers preferred coastal training in the winter than any other season. Although coastal training should not be eliminated during other seasons, providers should keep in mind consumers' preference for winter and attempt to accommodate their preferences.

- The providers survey did not discuss times of day and days of the week for comparison. Nonetheless, consumers overwhelmingly preferred coastal training to be held during weekdays, and they most commonly preferred morning sessions. Again, providers should keep these preferences in mind when scheduling training, although there may be some demand for weekend sessions or evening sessions, and those weekend/evening sessions should not be eliminated altogether.

- Consumers indicated that their most preferred method of registering for coastal training sessions is on-line registration. Providers should ensure that this method is available in their coastal training programs.

INCENTIVES TO ENCOURAGE ATTENDANCE AT COASTAL TRAINING SESSIONS

- The consumers survey discussed 16 incentives that would encourage them to attend coastal training/outreach sessions. Ease of access was highly rated as an incentive. Other incentives that were highly rated by consumers were expert speakers, free training, free lodging, and field demonstrations. While providers may not be able to make use all of these incentives, they should certainly consider using them where applicable and practical, and they must, furthermore, advertise that the incentives are included in the coastal training program. For instance, if a provider has arranged for expert speakers at a coastal training session, they must ensure that potential participants are fully aware that the coastal training includes expert speakers.

FORMATS AND LEARNING TECHNIQUES

- The data suggest that roughly half of the formats discussed in the surveys have a greater demand than supply. The first two in the bulleted list below are particularly important, as consumers have expressed a moderate demand for them, which providers may not be meeting. The demand for the latter four formats is low, but apparently is, nonetheless, greater than supply. Therefore, to meet the desires of consumers in these instances, providers may consider increases in training using these formats, where applicable, particularly the first two. These formats are:
 - Technical Training Programs
 - Continuing Education Programs
 - Certification Programs
 - Distance Learning Programs
 - Laboratory Courses
 - Web-Based Programs

- The data suggest that for several learning techniques, demand exceeds supply, and providers should match their coastal training formats and delivery methods to the desired learning techniques. These learning techniques are:
 - Accelerated Learning Techniques
 - Case Studies
 - Laboratory Courses
 - One-on-One Instruction

- Note that three of the above learning techniques are not dependent upon a specific format (only laboratory courses as a learning technique requires a specific format—laboratory courses). Accelerated learning techniques, case studies, and one-on-one instruction can be used within several of the desired formats. For instance, a certification program (one of the desired formats) can use within it case studies (one of the desired learning techniques). One of the desired learning techniques, one-on-one instruction, can be problematic, as it intensively uses providers' resources for relatively few consumers. Nonetheless, for the other three learning techniques, it may be easier to match supply with demand. Certainly, providers should consider delivery methods for coastal training that match these desired learning techniques.

- The consumers survey included questions about preferred ways to receive information, and the top ways were technical assistance in the form of face-to-face interaction; technical assistance in the form of a manual and similar materials for the non-specialist; synthesis of what is known about a particular subject in the form of a peer-reviewed outlet; peer-reviewed scientific papers presenting new research findings; and synthesis of what is known about a particular subject in the form of a general, less technical outlet. While providers may not be able to use all of these delivery methods, they should attempt to provide information in these ways in their coastal training programs, where applicable and where practical.

GROUPS FOR WHICH COASTAL TRAINING SHOULD BE PROVIDED

The data suggest that coastal training demand and supply are not in exact accordance. In some instances, providers are more likely to rate a group as having a high need for training than are consumers (i.e., supply exceeds demand). In such instances, there are two possible courses of action. The first is to reduce the amount of available training aimed at that particular group so that supply is more in accordance with demand, although such action risks creating an unmet need, and any reductions of coastal training offerings should be carefully considered. But another approach is to implement efforts to increase demand. This latter course of action would apply to those situations where training needs are important, but their importance may not be known by consumers.

In other instances, consumers are more likely to rate a group as having a high need for training than are providers. In these instances, there is only one viable course of action: providers should increase their supply of coastal training aimed at that particular group.

It is important to keep in mind that the surveys obtained data about respondents' *perceptions* of coastal training needs. This is being used as a proxy for actual needs, even though perceptions may not always be completely accurate. Nonetheless, an examination of perceptions of needs should provide direction in planning future coastal training programs.

The comparison analysis discussed earlier in this report employed two analysis tools: a matrix with supply on one axis and demand on the other and a simple tabulation of the percentage point difference between consumers' and providers' perceptions of the groups in high need of training. Taken together, the analyses suggest the following:

- For several groups, demand apparently exceeds supply, and providers should consider increasing coastal training targeted to these groups. Broadly speaking, these groups are governmental agencies and environmental/conservation organization staff. Specifically, these groups are:
 - Chapters of Environmental Organizations
 - Coastal Planners
 - Coastal Regulators

- Conservation Commissions
- Environmental Consultants
- Environmental Educators
- Environmental Health Officials
- Environmental Protection Agency Personnel
- Estuarine Researchers
- Inland Fisheries and Wildlife Personnel
- Land trusts
- Marine Resource Agency Personnel
- Municipal/County Engineers
- Watershed Associations
- Wetland Scientists

➤ For several groups, supply certainly meets, and may actually exceed, demand for coastal training. The groups, listed below, have several commonalities: they are *not* agency staff, *not* scientists, and *not* environmental/conservation organization staff. Rather, they are groups that are involved with coastal resource issues in a less direct way than are other groups, such as municipal/county engineers or planners. While *reducing* the amount of coastal training targeted at these groups may not be prudent (because doing so risks creating an unmet need), the data does not support increasing coastal training for these groups at the current time, unless demand is increased. As discussed above, it may be that education and information targeted toward these groups may be necessary to demonstrate why coastal training is needed for these groups (i.e., increase the demand). If there is a compelling reason why one (or more) of these groups needs coastal training, but that group itself is unaware of that reason, then the group should be made aware of the benefits of coastal training. For instance, it may be that building/development associations need training to address the fact that large numbers of the general population see urban sprawl as an environmental/conservation problem. The groups for which supply apparently exceeds demand are:

- Building/Development Associations
- General Population
- Property Owners Associations
- Realty Associations
- Rotary International
- Tourist Boards

COASTAL TRAINING TOPICS

- The data suggest that for most topics supply meets or exceeds demand. However, two topic areas had markedly greater demand than supply, and coastal training in these topic areas should likely be increased. These topic areas are:
 - Regulations
 - Severe Weather Emergency Management

- For topics that had greater supply than demand, providers should consider devoting fewer time and resources to these topic areas without altogether eliminating them. Certainly, the data suggest that no additional offerings in these topics should be made, with one caveat. If a topic area is recognized by providers as being of great importance, but consumers do not (yet) recognize that it is important, providers may need to publicize the benefits to consumers of the coastal training on this topic to increase demand rather than decrease offerings in this topic area. Additionally, providers should consider the likely future demands for training on the topic before considering any reductions in offerings in the topic area. These topics for which supply apparently exceeds demand are:
 - Beach Nourishment
 - Biodiversity
 - Boat Marina Management
 - Buffers
 - Coastal Community Development
 - Coastal Construction
 - Coastal Hazards
 - Ecological Landscaping
 - Environmental Aspects of Land Use
 - GIS
 - Habitat Fragmentation
 - Habitat Protection and Restoration
 - Inter-Agency/Organization Communications
 - Intra-Agency/Organization Communications
 - Invasive Species
 - Land Use Planning
 - Special Area Management
 - Wastewater Management
 - Wetlands and Waterways Protection

- Although supply apparently exceeds demand for GIS, in a separate question on the consumers survey, consumers expressed a strong interest in learning about GIS. This particular topic is one in which the provision of information about the value of training in GIS to increase demand may apply.

- In addition, there was strong interest among consumers in learning about real-time science data. (Note that this latter topic was not covered in the series of questions discussed above.) Providers may consider consumers' desires to learn more about real-time science data.

- Finally, some research and education topics were discussed in the consumers' survey separately from the series of topic questions discussed above. A majority of consumers indicated that they were very interested in impacts of human disturbances on Delaware estuaries. In addition, a majority of consumers were very interested in water quality monitoring. Providers should consider these topics in coastal training to meet the demand.