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Final Report of the 2007 Michigan Public Health Workforce Assessment

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Michigan Public Health Workforce Assessment Report

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Michigan Public Health Workforce Assessment Report

EXECUTIVE SUMMARY

This report summarizes the findings from the Michigan Public Health Workforce Assessment, a study conducted by the Office of Public Health Practice at University of Michigan School of Public Health. Funding for this activity was provided by the Michigan Center for Public Health Preparedness. Assessment planning was conducted through a workgroup convened by the Michigan Department of Community Health (MDCH) to determine the training and education priorities for State-employed public health workers. The assessment included items related to the 10 Essential Public Health Services; emergency preparedness and response; as well as training preferences and barriers to participating in training. Following a period of pilot testing, data collection took place between March 12 and April 23, 2007 using SurveyMonkey.com, an online data collection tool. There were 779 eligible individuals from MDCH Public Health Administration and Michigan Department of Agriculture (MDA) Food and Dairy Division identified and recruited to participate in the study. Of those, 483 (62%) individuals completed the assessment.

Key findings

Demographics (Tables 2-5)

The majority of respondents were female (79%) and over 40 years of age (71%). Almost half (47%) the respondents hold an advanced degree. Thirty-four percent of those with master's degrees hold a Master of Public Health degree; only 6% hold a Master of Science in Nursing degree. The job categories with the largest number of respondents were Public Health Program Specialist/Coordinator/Consultant (22%), Administrative Support Staff (16%), and Epidemiologists (11%). Nearly 40% of respondents plan to leave public health in less than 10 years.

Essential Service Competencies (Table 6)

With the exception of one task, most respondents reported high proficiency levels in essential service competencies that are important to their daily jobs. The exception is "Understanding and developing process to change policies and protocols in your community as needed;" most respondents reported a medium proficiency level for this task.

Emergency Preparedness Competencies (Table 7)

41% of individuals who reported that the task "Correctly use an 800 MHz radio for emergency communication" is important to their role in emergency response report a low proficiency level at this task. Similarly, 37% of individuals who reported that the task "Refer victims or response personnel to mental health professionals for critical and incident stress counseling and management" is important to their role in emergency response report a low level of proficiency at this task.

Attitudes and Beliefs Related to Emergency Response (Tables 8-10)

The majority (62%) of respondents indicated they would report to work during an emergency, despite that only 60% of all respondents have received training that addresses their

role during an emergency. 73% of respondents indicated they would be more likely to report to work during an emergency, given the proper training.

Training Format Preferences (Figure 1)

Respondents preferred face-to-face training within their county (65% endorsement) or computer-based training (64% endorsement), compared to other training formats.

Barriers to Training (Figure 2)

Respondents identified "Little time available at work to participate in courses," "Relevance of course offerings to my daily job," and "Lack of financial resources to support taking courses" as the top three barriers to participating in training courses.

Training Topics (Figures 3-4)

The top two training topics for respondents were leadership skills and management skills for the overall sample. The top training topics for the overall sample differed from the top training topics reported by individuals from different bureaus. In addition, respondents showed an interest in GIS courses and courses related to working effectively with legislators to promote public health work.

Results from stratified analyses

In general, stratification of data by number of years before departure from public health did not yield results that are significantly different from the results of the overall sample. There are several noteworthy exceptions. Workers who planned to leave in less than 5 years were significantly less likely to believe that pre-event training would increase their likelihood of participating in emergency response, compared to those planning to leave public health in 5-9 years. In addition, individuals leaving in 5-9 years tend to report high proficiency at essential service competencies, compared to other cohorts. By contrast, individuals planning to leave in 20 or more years tend to report high proficiency at emergency preparedness competencies, compared to other cohorts.

Stratification of data by bureau of employment, on the other hand, yielded results that were significantly different from the results of the overall sample. In general, noteworthy differences pertain to items related to training preferences.

The top training topics for individual bureaus are as follows:

- Bureau of Epidemiology (Epi): Communicable disease and epidemiology;
- Bureau of Family, Maternal and Child Health (FMCH): Community health interventions and strategic thinking and planning;
- Bureau of Health Promotion and Disease Control (HPDC): Chronic disease and leadership skills;
- Bureau of Laboratories (Lab): Biological terrorism and infections/syndromes related to the critical agents list;
- Office of Public Health Preparedness (OPHP): Biological terrorism and roles and responsibilities in emergency response;

- Michigan Department of Agriculture, Food and Dairy Division (MDA): Risk communication, biological terrorism, and disease outbreak investigation.

The preferred training formats for Epi, HPDC, and FMCH employees were consistent with those of the overall sample. For Lab and MDA employees, the preferred training formats were computer-based training and videoconference formats. OPHP employees preferred the tabletop drill format and face-to-face courses in their county or geographical region. Barriers reported by individual bureaus were consistent with aggregate data.

Stratification of data by bureau of employment revealed that MDA employees were highly proficient at the competencies "Using public health laws and regulations" and "Knowing the rights of individuals within the public health laws and regulations," both of which are associated with Essential Service 6, "Enforce laws and regulations that protect health and ensure safety." Epi employees indicated a need for training in "identifying populations who may encounter barriers in receiving health services during an emergency."

Lab employees, along with OPHP and MDA employees were also more likely to report to work during an emergency than employees of other bureaus. Proportionally more Lab, OPHP, and MDA employees have received training that addressed their role in an emergency, and have an emergency plan for their family compared to employees of other bureaus.

Recommendations

Provide workers with opportunities and/or incentives to advance their knowledge. Public health workers should be given the opportunity and support to refresh and advance their knowledge, in order to ensure a competent and motivated workforce.

Increase accessibility to training courses and training materials. Obligation to work responsibilities was reported by respondents as the top barrier to training. Courses should be scheduled during times that will not interfere with work activities. Given the current restrictions on travel, on-site or computer-based training courses are ideal training formats for most workers.

Focus training efforts on emergency preparedness competencies. Because there is higher training need in emergency preparedness competencies than in essential service competencies, training resources should be focused to develop workers' proficiency at performing these tasks.

Define workers' roles in emergency response. Most workers would report to work during an emergency, although many of them would not know what was expected of them. It is essential that *all* workers understand their role, if any, in their organization's emergency response plan. It is also essential that all workers understand the incident command system in their organization.

Specialized training for emergency responders. Individuals who report that an emergency preparedness competency is important to their role in emergency response should be highly proficient. We recommend identifying these individuals, formally assessing their proficiency level, and developing the skills of those who are not highly proficient at that competency.

Address barriers to participating in emergency response. 60% of respondents indicated they would report to work during an emergency. Although the assessment did not explicitly ask for factors affecting the decision to report to work, other studies suggest concerns about personal safety or the safety of one's dependents are reasons for workers to be unwilling to report to work during an emergency.^{1,2} Organizations should incorporate steps to address such barriers into their emergency plan, in order to increase willingness to participate in emergency response. For example, bureaus could incorporate a workshop on developing a family emergency plan into regularly scheduled meetings.

I. BACKGROUND

Several reports produced in recent years have identified a need for a well-trained public health workforce. The Institute of Medicine report, “Who Will Keep the Public Healthy? Educating Public Health Professionals in the 21st Century,” highlights this need, as well as the workforce shortage crisis that will take place in the next several years as public health workers retire³. This needs assessment was created with the intent of identifying the training needs of the current workforce, as well as gathering information that will help with succession planning as large numbers of workers reach retirement age.

II. METHODS

Instrument Development

The Michigan Public Health Workforce Assessment was developed by a workgroup convened by the Michigan Department of Community Health (MDCH). The workgroup included representatives from MDCH, local health departments in Michigan, Michigan Department of Agriculture (MDA), Michigan Association for Local Public Health, and the Office of Public Health Practice at the University of Michigan School of Public Health (UM SPH). The committee members' expert knowledge guided the development of the survey instrument. The assessment was also based on questions that appeared on assessments previously used in other states^{4,6}. The assessment and the data collection process were approved by the MDCH and University of Michigan Institutional Review Boards.

Pilot Testing

A pilot test of the assessment was conducted prior to data collection. Thirty-four employees were identified by bureau directors and asked to participate in the pilot. Respondents completed the full assessment online and submitted a short survey evaluating the tool. Pilot testers were asked to report whether the purpose of the assessment was clear; to what extent the content of the assessment was relevant to their job; and an estimation of how long the assessment took to complete. Respondents were also encouraged to submit additional comments about the assessment. Pilot results were analyzed by UM SPH staff and discussed with the statewide workgroup. Modifications to the survey tool were implemented based on pilot test feedback.

Specific Measures and Indicators

The final version of the assessment contained 43 questions, including several questions with multiple subsections. Based on the pilot study, the estimated time to complete the online assessment was approximately 30 minutes.

Work and educational background. The assessment included questions about the respondent's job category, number of years working in their current position, number of years working in their current agency, as well as the number of years working in public health. The assessment also asked questions on the highest level of education attained, and the field(s) of study for people with a bachelor's degree or higher.

Essential services competencies. The assessment asked respondents to rate the importance level of 32 competencies to their jobs that were adapted from the 10 Essential Public Health Services⁷ (Scale: 1=Not important, 5=Extremely important). Respondents were then asked to rate their level of proficiency for those competencies (Scale: 1=Low, 3=High).

Emergency preparedness and response. The assessment asked respondents to rate the importance level of 18 emergency preparedness competencies to their role in an emergency that were adapted from the Emergency Preparedness Core Competencies for All Public Health Workers⁸ (Scale: 1=Not important, 5=Extremely important). Respondents were then asked to rate their level of proficiency for those competencies (Scale: 1=Low, 3=High). The assessment also asked questions about respondents' attitudes and beliefs related to emergency response.

Training preferences. Respondents were given a list of course delivery methods and asked to rate how likely they would be to participate in a course using that method (Scale: 1=Not likely, 4=Definitely). Using the same scale, respondents were given a list of training topics and asked to rate how likely they would be to attend a course in each of the topics. A space was provided for respondents to indicate "other" topics not listed. Finally, respondents were given a list of factors that may be barriers to training, and asked to indicate which list items have prevented them from participating in training. A space was also provided for respondents to indicate "other" barriers to participating in training.

Additional comments. Respondents had the opportunity to record additional comments regarding the assessment at the end of the survey instrument.

Recruitment Procedures

Recruitment was done through e-mail and word of mouth. The initial recruitment email was sent by the director of the Public Health Administration to all eligible employees. Data was collected through a convenience sample that included all employees of the Public Health Administration within the Michigan Department of Community Health, and select employees from the Michigan Department of Agriculture Food and Dairy Division. Division directors were also asked to send an e-mail message notifying staff of the availability of the assessment. Follow-up e-mails were sent approximately 1 week and 2 weeks after the initial recruitment e-mail was sent out. UM SPH researchers drafted the messages that were sent out to the employees. Unlike MDCH, MDA determined which workers within the Food and Dairy Division would be appropriate to participate in the survey and targeted those employees for data collection.

Data Collection and Estimates of Response Rate

Data collection was done using SurveyMonkey.com, an online data collection tool. The assessment was available for completion between March 12 and April 23, 2007. There were two main data collection periods: March 12-30 and April 16-20.

The best estimate of eligible state public health employees at the time of data collection was 779 people. A total of 483 state public health employees completed the assessment, giving an approximate response rate of 62%. Table 1 summarizes the overall and bureau-specific response rates. For the purpose of analysis, Public Health Administration Leadership, Local Health Services, Office of Public Health Preparedness, and MDA Food and Dairy Division were considered "bureaus". Stratified analysis results from bureaus with less than 15 responses are not reported.

Statistical Analysis

Data were analyzed using SPSS version 14⁹. For essential service and emergency preparedness competencies, frequency distributions for proficiency level were tabulated only for those who reported that the competency was "very important" or "extremely important" to their job or role in emergency response. For all other assessment items, frequency distributions were tabulated for all respondents who answered the question. Data from incomplete surveys were included in calculations. The data were also stratified by bureau of employment and number of years before departure from public health, and the same analyses were conducted using each of these stratifications. Additionally, data were stratified by job categories which were categorized into 2 groups, those with a public health specific role (i.e. public health program specialist, epidemiologist, laboratory technician, etc.) and those without a public health specific role (i.e. administrative staff, computer specialist, etc.). Noteworthy findings are referenced in the discussion section.

III. RESULTS

Results are presented for the overall sample and stratified by bureau. Due to sample size, this report does not provide stratified analyses of data for Local Health Services or Public Health Administration Leadership. The data from respondents in these bureaus is included in the overall results, but were not able to be analyzed at the bureau level. Percentages throughout this report may not add to 100%, due to rounding.

a. Demographic Profile

The majority of state-employed public health workers who participated in the assessment were female (79%). Over 70% of respondents were 40 years of age or older. Nearly 47% of respondents held an advanced degree. Of the 223 respondents with a master's degree, 34% hold a Master of Public Health degree. Approximately 8% of all survey respondents hold a doctoral degree (Table 2). These data indicate that almost 40% of state public health employees will leave public health within the next 10 years (Table 4). Those who planned to leave public health within 10 years tend to be of age 50 or over (68%), and trained at the bachelor's degree level (39%).

Table 1. *Michigan Public Health Workforce Assessment Response Rates**

	Number of employee responses	Total number of employees	Response rate
Overall response rate	483	779	62%
Bureau-specific rates:			
Public Health Administration Leadership (Admin)	18	8	225%
Bureau of Epidemiology (Epi)	157	231	68%
Bureau of Family, Maternal, and Child Health (FMCH)	80	148	54%
Bureau of Health Promotion and Disease Control (HPDC)	113	175	65%
Bureau of Laboratories (Lab)	50	147	34%
Local Health Services (LHS)	5	4	125%
Office of Public Health Preparedness (OPHP)	32	40	80%
Michigan Department of Agriculture Food and Dairy Division (MDA)	19	26	73%
Missing	9		

* Bureau of employment was self-identified, there may be discrepancies between the reported bureau of employment and actual bureau of employment, which affect the bureau-specific response rates.

Table 2. *Level of Education Completed by Respondents*

Highest degree completed through bachelor's degree (n = 470)	
Bachelor's Degree	362 (77%)
High School Diploma or equivalency	63 (13%)
Associate/Technical Degree	33 (7%)
Vocational Training	12 (3%)
Respondents with master's degree (n = 223)*	
Master of Public Health	74 (34%) ⁺
Master of Science	44 (21%) ⁺
Master of Art	25 (12%) ⁺
Master of Public Administration	20 (9%) ⁺
Master of Science in Nursing	13 (6%) ⁺
Master of Social Work	7 (3%) ⁺
Master of Business Administration	7 (3%) ⁺
Other Masters Degree	33 (15%) ⁺
Respondents with doctoral degree (n = 37)‡	
Doctor of Philosophy	21 (58%) [†]
Doctor of Veterinary Medicine	6 (17%) [†]
Doctor of Public Health	3 (8%) [†]
Medical Doctor	2 (6%) [†]
Other Doctoral Degree	5 (14%) [†]

*215 respondents indicated they had at least one master's degree

⁺ Percentage of those with a master's degree (n = 215)

‡36 respondents indicated they had at least one doctoral degree

[†]Percentage of those with a doctoral degree (n = 36)

Table 3. *Bachelor's Degree Fields of Study*

Bachelor's degree fields of study	(n = 380)*
Biological Sciences	103 (27%)
Social Sciences	72 (19%)
Nursing	37 (10%)
Administration	25 (7%)
Public Health	20 (5%)
Physical Sciences	14 (4%)
Dietetics/Nutrition	13 (3%)
Environmental Health	7 (2%)
Information Sciences	5 (1%)
Other	84 (22%)

*357 respondents indicated they had at least one bachelor's degree

Table 4. *Demographics and Number of Years before Departure from Public Health*

	Response	Count
Sex (n=471)	Male	100 (21)
	Female	371 (79)
Age * (n=471)	20-29	49 (10)
	30-39	88 (19)
	40-49	121 (26)
	50-59	181 (38)
	60+	32 (7)
Race + (n=458)	White	363 (79)
	Black	69 (15)
	Hispanic	12 (3)
	Other	30 (7)
Highest level of education (n=471)	Less than a bachelor's	107 (23)
	Bachelor's degree	143 (30)
	Master's degree	185 (39)
	Doctoral degree	36 (8)
Years before departure from public health ‡ (n=419)	< 5	79 (19)
	5-9	86 (21)
	10-19	148 (35)
	20+	106 (25)

* Age is rounded to the nearest year.

+ The sum of the percentages exceeds 100, because data includes individuals who identified more than 1 category.

‡ Years before departure from public health is rounded to the nearest year.

With respect to the number of years of experience working in public health, slightly more than one quarter of the sample (26%) has worked in public health for 20 or more years, and slightly less than one quarter of the sample (25%) has worked in public health for less than 5 years. The mean number of years working in public health is 12.8 years.

Compared to the overall sample, there are proportionally fewer men working in Admin (6%) and FMCH (13%), but there are proportionally more men working in Lab (36%) and MDA (37%). With respect to the highest education attained, employees in most bureaus are predominantly holders of master's degrees. Exceptions are Admin (equal proportions of bachelor's and master's degree), Lab (58% bachelor's degree), and MDA (84% bachelor's degree). MDA employees who participated in the study held either a bachelor's degree or a master's degree.

b. Job Category

The assessment asked respondents to identify their position by choosing one job category that best described their day-to-day functions. These job categories were adapted from The Public

Health Workforce Enumeration 2000 conducted by the Health Resources and Services Administration¹⁰. Table 5 summarizes the responses.

Table 5. *Job categories reported by respondents*

Job category *	Count (Percent)	
	n = 464	
Public Health Program Specialist/Coordinator/Consultant	102	(22)
Administrative Support Staff	76	(16)
Epidemiologist	53	(11)
Administrative/Business Professional	29	(6)
Health Administrator	28	(6)
Other Public Health Professional +	27	(6)
Public Health Laboratory Professional	25	(5)
Computer Specialist	18	(4)
Health Planner/Analyst	16	(3)
Infection Control/Disease Investigator	13	(3)
Public Health Educator	13	(3)
Public Health Nurse	12	(3)
Administrative Business Staff	11	(2)
Other Public Health Technician +	11	(2)
Licensure/Inspection/Regulatory Specialist	10	(2)
Environmental Health Professional	8	(2)
Public Health Laboratory Technician	8	(2)
Public Health Nutritionist	4	(1)

* Public Health Physician was a job category on the survey, but was excluded from this table, since no respondents reported it as their job category.

+ Respondents did not have the option of specifying job categories for "Other Public Health Professional" and "Other Public Health Technician."

c. Essential Services

The assessment asked respondents to rate their proficiency level on 32 essential public health service competencies. These competencies were adapted from the 10 Essential Public Health Services developed by the Public Health Functions Steering Committee. The workgroup reviewed assessments conducted by other Schools of Public Health and adapted some of the competencies from their assessment tools^{5,6,11}. The data for this section of the assessment are presented in Table 6.

Overall, most respondents who reported that an essential service competency is important to their job rated their proficiency level as high. One exception is "Understanding and

developing processes to change policies and protocols in your community as needed," which is a competency under Essential Service 5, "Mobilize community partnerships to identify and solve health problems." The greatest proportion of respondents (48%) reported a medium proficiency level for this competency.

Table 6. *Self-rated Proficiency Levels for the Ten Essential Public Health Services*

<i>Essential Service 1: Monitor health status to identify community health problems.</i>	Total number of responses	Respondents indicating very/extremely important	Level of proficiency among respondents indicating very/extremely important		
			Count (Percent)		
		Count (Percent)	Low	Medium	High
a. Analyze, interpret and present data on a significant health issue in your community.	407	277 (68)	9 (3)	68 (25)	200 (72)
b. Maintain the security and confidentiality of data and information during collection, maintenance, use, and dissemination.	420	336 (80)	4 (1)	31 (9)	301 (90)
<i>Essential Service 2: Diagnose and investigate health problems and health hazards in the community.</i>					
a. Apply principles of infection control.	381	125 (33)	8 (6)	29 (23)	88 (70)
b. Maintain and use up-to-date knowledge of emerging or infectious diseases.	393	177 (45)	5 (3)	58 (33)	114 (64)
c. Understand investigation techniques and demonstrate the ability to investigate the significant risk factors in your community using demographic, statistical, programmatic, and scientific information.	395	189 (48)	4 (2)	64 (34)	121 (64)
d. Research qualitative and quantitative data findings to understand and identify the risk factors for a health problem in your community.	402	208 (52)	4 (2)	66 (32)	138 (66)

(continued)

Table 6 (cont.)

	<i>Essential Service 3: Inform, educate, and empower people about health issues.</i>	Total number of responses	Respondents indicating very/extremely important	Level of proficiency among respondents indicating very/extremely important		
				Count (Percent)	Low	Medium
a.	Use key concepts of risk communication.	381	177 (47)	11 (6)	71 (40)	95 (54)
b.	Facilitate collaboration among internal and external stakeholders to ensure participation in important health issues.	385	267 (69)	9 (3)	85 (32)	173 (65)
c.	Develop educational programs for providers, agencies and the general public in your community that cover material on health issues or problems in your community.	385	191 (50)	3 (2)	61 (32)	127 (67)
d.	Communicate effectively in writing and speaking.	396	349 (88)	5 (1)	93 (27)	251 (72)
<i>Essential Service 4: Mobilize community partnerships and action to solve health problems.</i>						
a.	Activate the health alert network (HAN) system.	378	90 (24)	13 (14)	24 (27)	53 (59)
b.	Describe the protocols and/or public disclosure laws for releasing public information about health hazards to the community.	386	125 (32)	10 (8)	46 (37)	69 (55)
c.	Use team building, negotiation and conflict resolution skills to build community partnerships.	393	214 (55)	10 (5)	70 (33)	134 (63)

(continued)

Table 6 (con't)

<i>Essential Service 4: Mobilize community partnerships and action to solve health problems.(cont.)</i>		Total number of responses	Respondents indicating very/ extremely important	Level of proficiency among respondents indicating very/extremely important		
				Count (Percent)		
			Count (Percent)	Low	Medium	High
d.	Create new and strengthen existing partnerships between public and private organizations to deliver public health services.	391	218 (56)	10 (5)	98 (45)	110 (51)
e.	Develop strategies to carry out programs related to your community's health issues and problems through convening and facilitating community groups.	389	178 (46)	5 (3)	69 (39)	104 (58)
f.	Interact effectively with people from diverse cultural, socioeconomic, and educational backgrounds.	402	278 (69)	4 (1)	97 (35)	177 (64)
<i>Essential Service 5: Develop policies and plans that support individual and community health efforts.</i>						
a.	Understand and develop processes to change policies and protocols in your community as needed.	379	168 (44)	11 (7)	81 (48)	76 (45)
b.	Use qualitative and quantitative data to clarify economic, scientific, and overall public health issues.	385	196 (51)	13 (7)	80 (41)	103 (53)
c.	Identify issues that may impact delivery of essential public health services.	381	192 (50)	8 (4)	86 (45)	98 (51)

(continued)

Table 6 (con't)

	Total number of responses	Respondents indicating very/extremely important	Level of proficiency among respondents indicating very/extremely important		
			Count (Percent)		
		Count (Percent)	Low	Medium	High
<i>Essential Service 5: Develop policies and plans that support individual and community health efforts.</i> (cont.)					
d. Know existing policies and protocols that are related to priority health issues or problems in your community.	385	208 (54)	4 (2)	87 (42)	117 (56)
<i>Essential Service 6: Enforce laws and regulations that protect health and ensure safety.</i>					
a. Use public health laws and regulations.	388	231 (60)	16 (7)	82 (36)	133 (58)
b. Know the rights of individuals within the public health laws and regulations.	386	222 (58)	14 (6)	75 (34)	133 (60)
<i>Essential Service 7: Link people to needed personal services and assure the provision of healthcare when otherwise unavailable.</i>					
a. Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling).	376	140 (37)	15 (11)	53 (38)	72 (51)
b. Identify populations who may encounter barriers in receiving health services.	377	183 (49)	11 (6)	72 (39)	100 (55)
c. Describe the role of government in the delivery of community health services.	375	175 (47)	9 (5)	63 (36)	103 (59)
d. Line the resources that are available in your community to respond to health issues and problems.	380	190 (50)	9 (5)	74 (39)	107 (56)

(continued)

Table 6 (cont.)

	Total number of responses	Respondents indicating very/extremely important	Level of proficiency among respondents indicating very/extremely important		
			Count (Percent)		
			Low	Medium	High
<i>Essential Service 8: Assure a competent public health and personal health care workforce</i>					
a. Assure that the public health workforce in your community has the competencies needed to carry out their jobs (e.g. knowledge, skills, and resources, access to training, and current licenses and credentials to provide needed programs, support and resources).	377	188 (50)	19 (10)	71 (38)	98 (52)
b. Understand the composition of the public health workforce in your community.	379	178 (47)	9 (5)	79 (44)	90 (51)
<i>Essential Service 9: Evaluate effectiveness, accessibility, and quality of health services.</i>					
a. Utilize results for application in performance measurement reporting to determine the effectiveness of public health population-based programs.	361	147 (41)	15 (10)	60 (41)	72 (49)
b. Conduct surveys and studies to measure the timeliness, appropriateness, and effectiveness of population based health care services in your community.	366	127 (34)	12 (10)	47 (37)	68 (54)

(continued)

Table 6 (cont.)

<i>Essential Service 9: Evaluate effectiveness, accessibility, and quality of health services (cont.)</i>	Total number of responses	Respondents indicating very/extremely important	Level of proficiency among respondents indicating very/extremely important		
			Count (Percent)		
			Low	Medium	High
c. Analyze study results to determine the timeliness, appropriateness, and effectiveness of population based health care services in your community.	363	133 (37)	12 (9)	43 (32)	78 (59)
<i>Essential Service 10: Research for new insights and innovative solutions to health problems.</i>					
a. Identify best practices for programs/services at the local, state or national level regarding health policies.	377	227 (60)	19 (8)	85 (37)	123 (54)

The following competencies appear in increasing order of the proportion of respondents who reported high proficiency on competencies that are very or extremely important to their daily jobs. Because individuals for whom a competency is important should have high proficiency at that competency, a *lower* proportion of respondents reporting high proficiency on a competency corresponds to a *greater* priority for training for that competency.

These competencies have been identified as the top eight training priorities for the *overall* sample:

1. Understand and develop processes to change policies and protocols in your community as needed (**Essential Service 5**).
2. Utilize results for application in performance measurement reporting to determine the effectiveness of public health population-based programs (**Essential Service 9**).
3. Create new and strengthen existing partnerships between public and private organizations to deliver public health services (**Essential Service 4**).
4. Understand the composition of the public health workforce in your community (**Essential Service 8**).
5. Identify issues that may impact delivery of essential public health services (**Essential Service 5**).
6. Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (**Essential Service 7**).
7. Assure that the public health workforce in your community has the competencies needed to carry out their jobs (e.g. knowledge, skills, and resources, access to training,

and current licenses and credentials to provide needed programs, support and resources) (**Essential Service 8**).

8. Use qualitative and quantitative data to clarify economic, scientific, and overall public health issues (**Essential Service 5**).

Stratifying the data by bureau of employment revealed the variations in the proficiency levels reported by state public health employees. By showing the distribution of proficiency level for each competency by bureau of employment, the stratified analysis results can be used to determine the priority areas for training.

Bureau-specific training priorities were determined in the same way that the overall training priorities were determined. The top two *bureau-specific* training priorities are as follows:

- Epi:
 - Understand and develop processes to change policies and protocols in your community as needed (**Essential Service 5**).
 - Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (**Essential Service 7**).
- HPDC:
 - Understand the composition of the public health workforce in your community (**Essential Service 8**).
 - Conduct surveys and studies to measure the timeliness, appropriateness, and effectiveness of population based health care services in your community (**Essential Service 9**).
- FMCH:
 - Describe the protocols and/or public disclosure laws for releasing public information about health hazards to the community (**Essential Service 4**).
 - Use public health laws and regulations (**Essential Service 6**).
- Lab:
 - Identify populations who may encounter barriers in receiving health services (**Essential Service 7**).
 - Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (**Essential Service 7**).
- OPHP:
 - Know the rights of individuals within the public health laws and regulations (**Essential Service 6**).
 - Use public health laws and regulations (**Essential Service 6**).

- MDA:
 - Describe the protocols and/or public disclosure laws for releasing public information about health hazards to the community (**Essential Service 4**).
 - Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (**Essential Service 7**).

d. Emergency Preparedness and Response

Emergency Preparedness Competencies

The assessment also asked respondents to rate their proficiency level on 18 emergency preparedness competencies, which were adapted from the Emergency Preparedness Core Competencies for All Public Health Workers adopted by Columbia University School of Nursing Center for Health Policy⁸.

In contrast to essential service competencies, individuals who reported that an emergency preparedness competency was important to their role in emergency response did not necessarily rate their proficiency level as high for that competency (Table 6). We determined the training priorities for emergency preparedness competencies the same way we determined the training priorities for the essential service competencies. The competencies appear in increasing order of the proportion of respondents who reported high proficiency on competencies that are very or extremely important to their role in an emergency response; a *lower* proportion of respondents reporting high proficiency on a competency indicates a *greater* priority for training for that competency.

The following competencies are the top five training priorities for the *overall* sample:

1. Develop and adapt emergency responses to take into account barriers and cultural differences.
2. Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
3. Refer victims or response personnel to mental health professionals for critical and incident stress counseling and management.
4. Identify populations who may encounter barriers in receiving health services during an emergency.
5. Describe the incident command structure in your organization.

Table 7. *Self-rated Proficiency Levels for the Emergency Competencies Reported by Respondents*

Emergency Preparedness and Response Competency	Total number of responses	Respondents indicating very/extremely important	Level of proficiency among respondents indicating very/extremely important		
			Count (Percent)		
		Count (Percent)	Low	Medium	High
a. Correctly use an 800MHz radio for emergency communication.	337	91 (27)	37 (41)	18 (20)	36 (40)
b. Refer victims or response personnel to mental health professionals for critical and incident stress counseling and management.	340	91 (27)	34 (37)	27 (30)	30 (33)
c. Communicate with the media in an emergency situation.	341	71 (21)	25 (35)	19 (27)	27 (38)
d. Develop and adapt emergency responses to take into account barriers and cultural differences.	340	103 (30)	31 (30)	46 (45)	26 (25)
e. Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.	344	132 (38)	37 (28)	56 (42)	39 (30)
f. Describe the incident command structure in your organization.	342	135 (40)	34 (25)	52 (39)	49 (36)
g. Participate in research to improve recognition and management of emergencies that have a public health impact.	339	80 (24)	19 (24)	29 (36)	32 (40)
h. Identify populations who may encounter barriers in receiving health services during an emergency.	340	108 (38)	24 (22)	48 (44)	36 (33)
i. Correctly use the Health Alert Network (HAN) for emergency communication.	342	127 (37)	28 (22)	42 (33)	57 (45)

(continued)

Table 7 (con't)

	Emergency Preparedness and Response Competency	Total number of responses	Respondents indicating very/extremely important	Level of proficiency among respondents indicating very/extremely important		
				Count (Percent)		
			Count (Percent)	Low	Medium	High
j.	Communicate with the general public in an emergency situation.	343	94 (27)	20 (21)	35 (37)	39 (42)
k.	Describe the appropriate action to take and procedures to follow if there is a suspected or actual emergency situation.	349	161 (46)	32 (20)	61 (38)	68 (42)
l.	Describe emergencies that might trigger the implementation of the emergency response plan.	348	147 (42)	28 (19)	51 (35)	68 (46)
m.	Identify limits to your knowledge/skills/authority in emergency situations.	343	181 (53)	32 (18)	53 (29)	96 (53)
n.	Evaluate the effectiveness of your actions taken during an emergency situation or drill.	343	144 (42)	25 (17)	55 (38)	64 (44)
o.	Recognize unusual events that might indicate an emergency situation.	355	162 (46)	21 (13)	56 (35)	85 (53)
p.	Correctly use a fax machine for emergency communication.	343	111 (32)	14 (13)	25 (23)	72 (65)
q.	Correctly use email for emergency communication.	347	139 (40)	16 (12)	32 (23)	91 (66)
r.	Solve creatively and think flexibly to unusual changes.	347	173 (50)	14 (8)	64 (37)	95 (55)

Stratification of the data by bureau of employment revealed the differences in the emergency preparedness-related training priorities for each bureau. Bureau-specific training priorities were determined the same way the overall training priorities were determined: a lower proportion of respondents reporting high proficiency when the competency is very or extremely important to their job in an emergency corresponds to a greater training priority for that competency. The top three *bureau-specific* training priorities are as follows:

- Epi:
 - Identify populations who may encounter barriers in receiving health services during an emergency.

- Develop and adapt emergency responses to take into account barriers and cultural differences.
- Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
- HPDC:
 - Correctly use an 800MHz radio for emergency communication.
 - Describe the appropriate action to take and procedures to follow if there is a suspected or actual emergency situation.
 - Describe emergencies that might trigger the implementation of the emergency response plan.
- FMCH:
 - Describe the incident command structure in your organization.
 - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
 - Develop and adapt emergency responses to take into account barriers and cultural differences.
- Lab:
 - Communicate with the media in an emergency situation.
 - Communicate with the general public in an emergency situation.
 - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
- OPHP:
 - Develop and adapt emergency responses to take into account barriers and cultural differences.
 - Communicate with the media in an emergency situation.
 - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
- MDA:
 - Correctly use email for emergency communication.
 - Describe emergencies that might trigger the implementation of the emergency response plan.
 - Communicate with the media in an emergency situation.

Attitudes and Beliefs Related to Emergency Response

Tables 8-10 summarize the results of questions regarding respondents' attitudes and beliefs related to emergency preparedness and response. Most respondents (71%) believed they did not have an important role in emergency response (Table 9). In addition only 15% of respondents indicated awareness of the consequences for not reporting to work during an emergency, and fewer still (11%) indicated knowledge of incentives for reporting to work during an emergency (Table 8). Even though these factors, in combination, have the potential to prevent an individual from coming to work during an emergency, 62% of respondents indicated that they would be very likely to report to work during an emergency (Table 10). Further, 73% of respondents believed they would be more likely to participate during an emergency if they were given the proper training.

Table 8. *Emergency Preparedness and Response Attitudes and Beliefs as Reported by Respondents*

	n	Respondents indicating "Yes"	
		Count	(Percent)
Do you have a defined role in a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)? *	429	124	(29)
Have you received any training that addresses your role during a public health emergency?	424	171	(40)
Are you able to identify and locate your organization's emergency response plan?	423	226	(53)
Are there any incentives for reporting to work during a public health emergency?	421	45	(11)
Are you aware of any consequences for not reporting to work during a public health emergency?	421	64	(15)
Would pre-event training increase your likelihood for participation in an emergency response?	425	310	(73)
Do you have a plan for your family during an emergency situation?	424	201	(47)

* Question had the option "I don't know."

Table 9. *Individual Level of Importance in Organization's Emergency Response Plan*

	n	Ratings Count (Percent)					
		1 Not important	2 Fairly important	3 Moderately important	4 Very important	5 Extremely important	6 I don't know
How important is your role in your organization's overall response to a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?	424	165 (39)	45 (11)	48 (11)	54 (13)	45 (11)	67 (16)

Table 10. *Likelihood to Report to Work During a Public Health Emergency*

	n	Ratings Count (Percent)					
		1 Not likely	2 Somewhat unlikely	3 Neutral	4 Somewhat likely	5 Very likely	6 I don't know
How likely would you be to report for work, if expected to, during a public health emergency?	426	18 (4)	14 (3)	43 (10)	51 (12)	262 (62)	38 (9)

In general, the responses from individual bureaus were very similar to the responses in the aggregate data. There are several noteworthy exceptions, where percentages were significantly lower or significantly higher than the percentages of the aggregate data.

Significant departures from aggregate responses are as follows:

- For the question, "Do you have a defined role in a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?" only 4% of FMCH employees and 2% of HPDC employees responded "Yes," compared to 29% in the overall sample. By contrast, 63% of Lab employees, 87% of OPHP employees, and 67% of MDA employees indicated they have a defined role in a public health emergency.

- For the question, "Have you received any training that addresses your role during a public health emergency?" 18% of FMCH employees and 17% of HPDC employees responded "Yes," compared to 40% in the overall sample. By contrast, 68% of Lab employees, 93% of OPHP employees, and 94% of MDA employees have received training that addresses their role in a public health emergency.
- For the question, "Are you able to identify and locate your organization's emergency response plan?" 78% of Lab employees, 100% of OPHP employees, and 83% of MDA employees responded "Yes," compared to 53% in the overall sample.
- Compared to the overall sample (62%), 83% of Lab employees, 87% of OPHP employees, and 89% of MDA employees indicated they would be "very likely" to report to work during a public health emergency.
- Compared to the overall sample, more OPHP employees reported awareness of consequences for not reporting to work during an emergency (63%), as well as incentives for reporting to work (30%). In addition, 83% of OPHP employees surveyed had an emergency plan for their families.

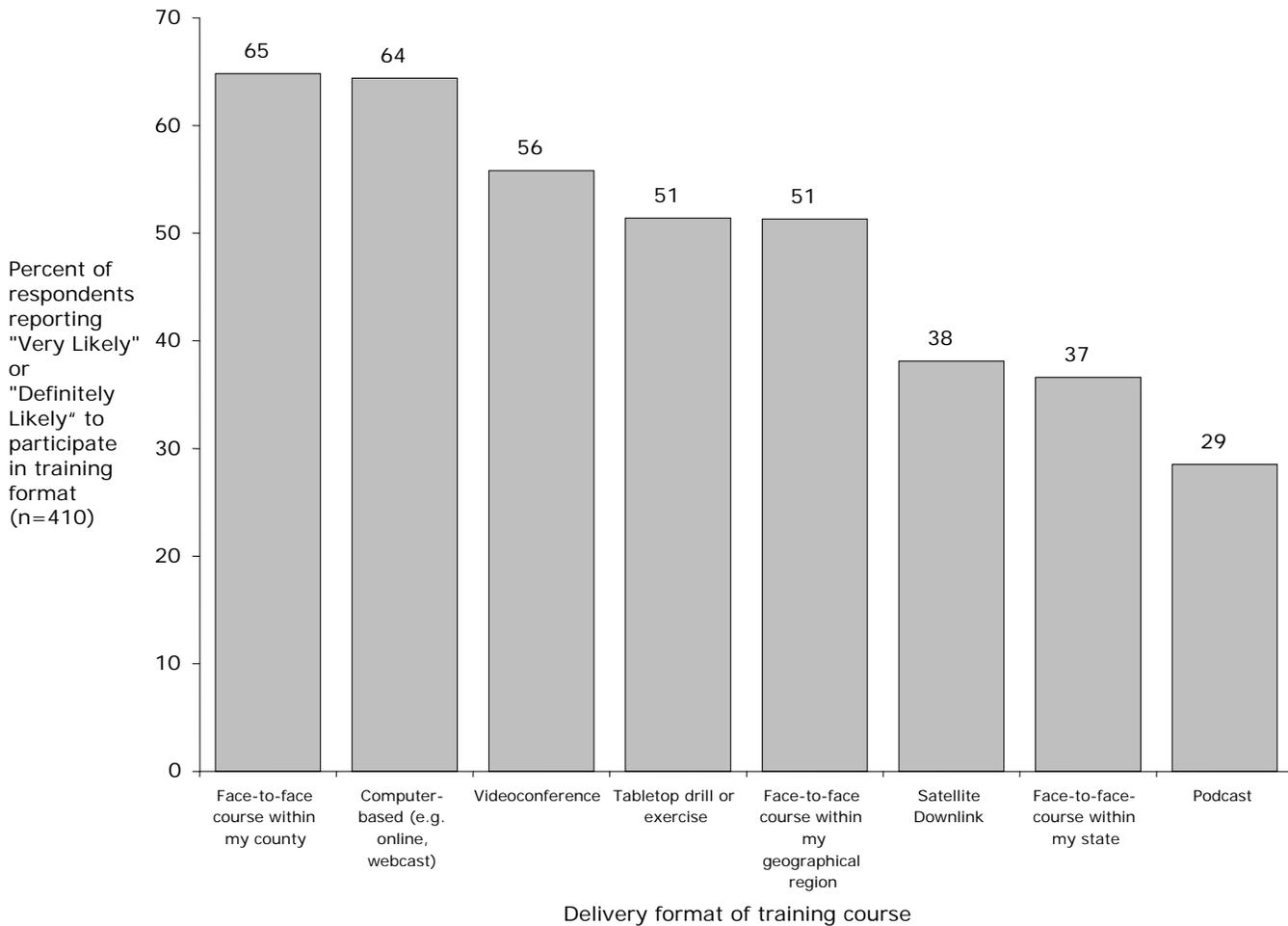
e. Training Preferences

Training Format Preferences

Respondents were given a list of training course delivery formats and asked to rate how likely they would be to participate in a training course using that format. Overall, the top two delivery formats were "face-to-face course within my county" and "computer-based," with 65% and 64% of respondents, respectively, reporting "very likely" or "definitely" likely to participate in a course using those formats (Figure 1).

The preferred training course delivery format of the overall sample reflects the preferences of the three largest bureaus—Epi, HPDC, and FMCH. For Lab and MDA employees, the top two training course delivery formats were "computer-based" training and "videoconference," respectively. On the other hand, for OPHP employees, the top training course delivery formats were "tabletop drill" (76% of employees reporting "very likely" or "definitely" likely to participate) and "face-to-face course within my county" and "face-to-face course within my geographical region" (66% of employees reporting "very likely" or "definitely" likely to participate for each of these training formats). There were no differences in training format preferences when the data were stratified by the number of years before leaving public health.

Figure 1. Training preferences. Respondents were asked to rate the likelihood of their participating in each training course delivery format.



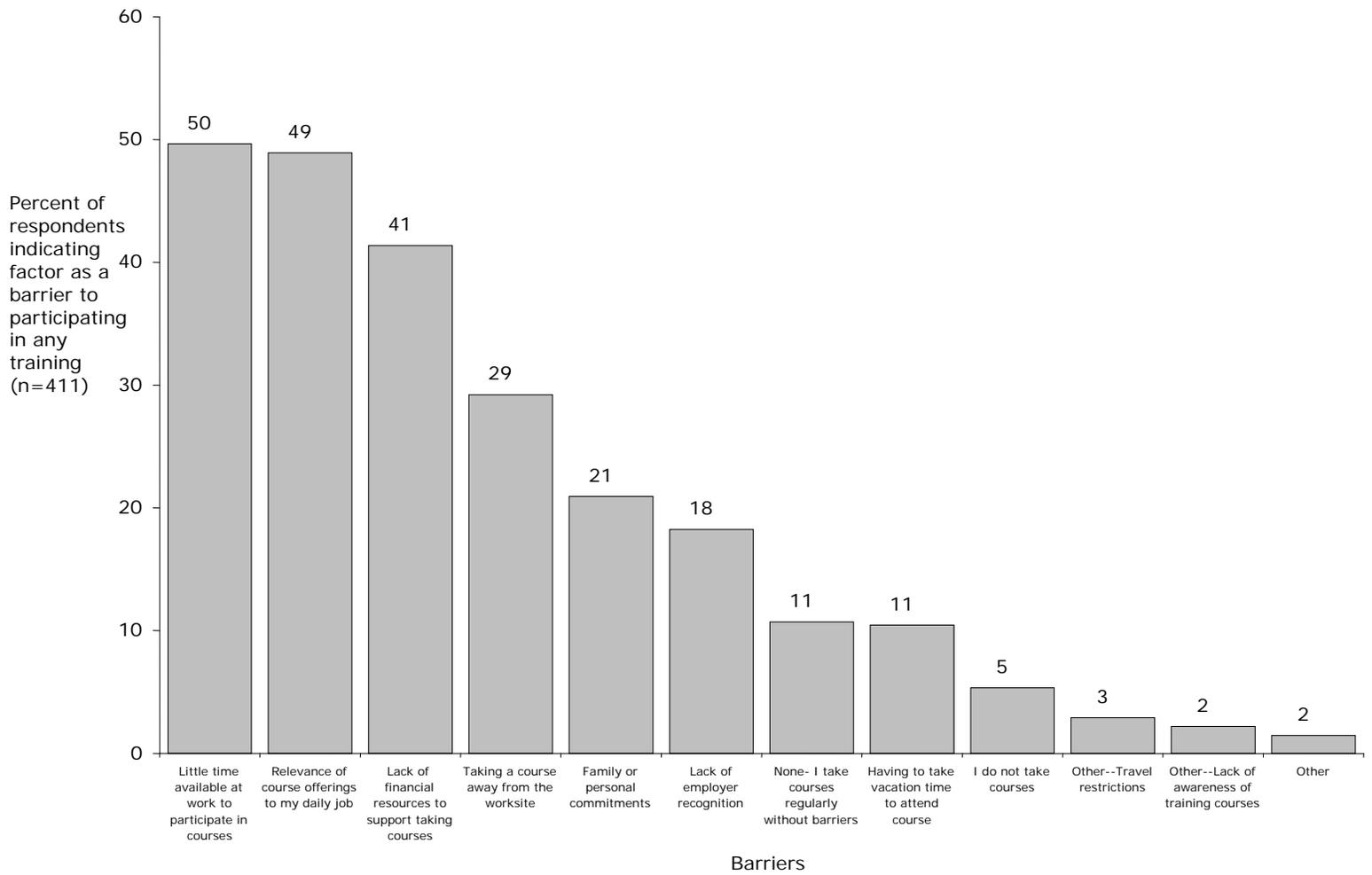
Barriers to Training

The assessment asked respondents to identify factors that have prevented them from participating in training courses (Figure 2). The top three barriers to training were "Little time available at work to participate in courses" (50% of respondents reporting it as a barrier), "Relevance of course offerings to my daily job" (49% of respondents reporting it as a barrier), and "Lack of financial resources to support taking courses" (41% of respondents reporting it as a barrier). 14% of respondents reported "other" barriers to training, and had the option of specifying those barriers. Travel restrictions for State of Michigan employees and lack of awareness of training courses were the top two barriers reported that were not listed in the assessment.

Barriers reported by individual bureaus are consistent with aggregate data. Employees from five bureaus reported "Little time available at work to participate in courses" as the main barrier to participating in training. Employees from two bureaus reported "Relevance of

course offerings to my daily job" as the main barrier to participating in training. Finally, employees from one bureau reported "Lack of financial resources to support taking courses" as the main barrier to participating in training. There were no differences between the top barriers to training overall compared to the top barrier to training when the data were stratified by number of years before leaving public health.

Figure 2. Barriers to participating in any training. Respondents were asked to mark factors that have been barriers to their participation in training. Each respondent could choose more than one factor. The option was provided to specify "other" barriers.



Training Topics

Respondents were given a list of training topics and asked to rate how likely they would be to participate in each training topic on the list. In the overall sample, leadership skills and management skills were the top two training topics, with 55% and 48% of all respondents reporting "Very likely" or "Definitely" likely to participate in a training course of those topics. Figures 3 and 4 show the distribution of respondents' ratings in greater detail.

Stratifying the data by bureau of employment gives the top two training topics as follows (percentages indicate the proportion of respondents reporting "Very likely" or "Definitely" likely to participate):

- Epi: Communicable disease (52%); Epidemiology (51%);
- FMCH: Community health interventions (58%); Strategic thinking, planning (54%);
- HPDC: Chronic disease (68%); Leadership skills (64%);
- Lab: Biological terrorism (54%); Infections/syndromes related to the critical agents list (50%);
- OPHP: Biological terrorism (77%); Roles and responsibilities in emergency response (70%);
- MDA: Risk communication (71%); Biological terrorism (71%); Disease outbreak investigation (71%).

There were no differences between the top training topics overall compared to the top training topics when the data were stratified by number of years before leaving public health.

In addition to asking respondents to rate training topics, the assessment asked respondents to identify training topics of interest that were not listed on the assessment. Twenty-seven respondents specified other topics of interest. The following topics were frequently mentioned in the responses:

1. Working with policymakers:
 - How to influence policy
 - How to communicate the value of public health work effectively
2. Software, technology, and information systems use training at more advanced levels:
 - Applied Geographic Information System (GIS) for public health
 - Advanced office application suite
 - Database design and manipulation
3. Laboratory methods:
 - Molecular diagnostic methods
 - Laboratory management
 - Chemical detection methods

Figure 3. Top Training Topics

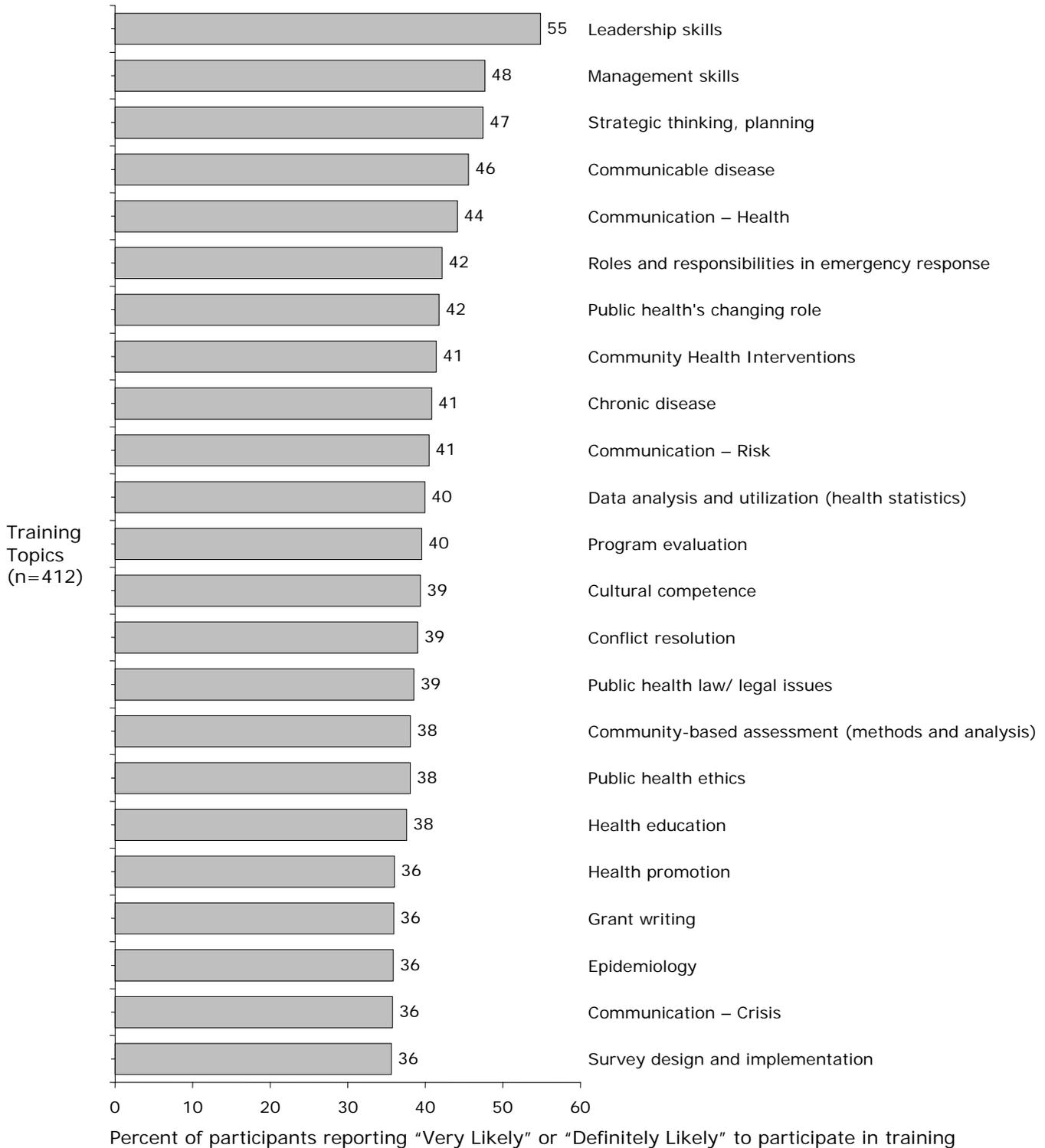
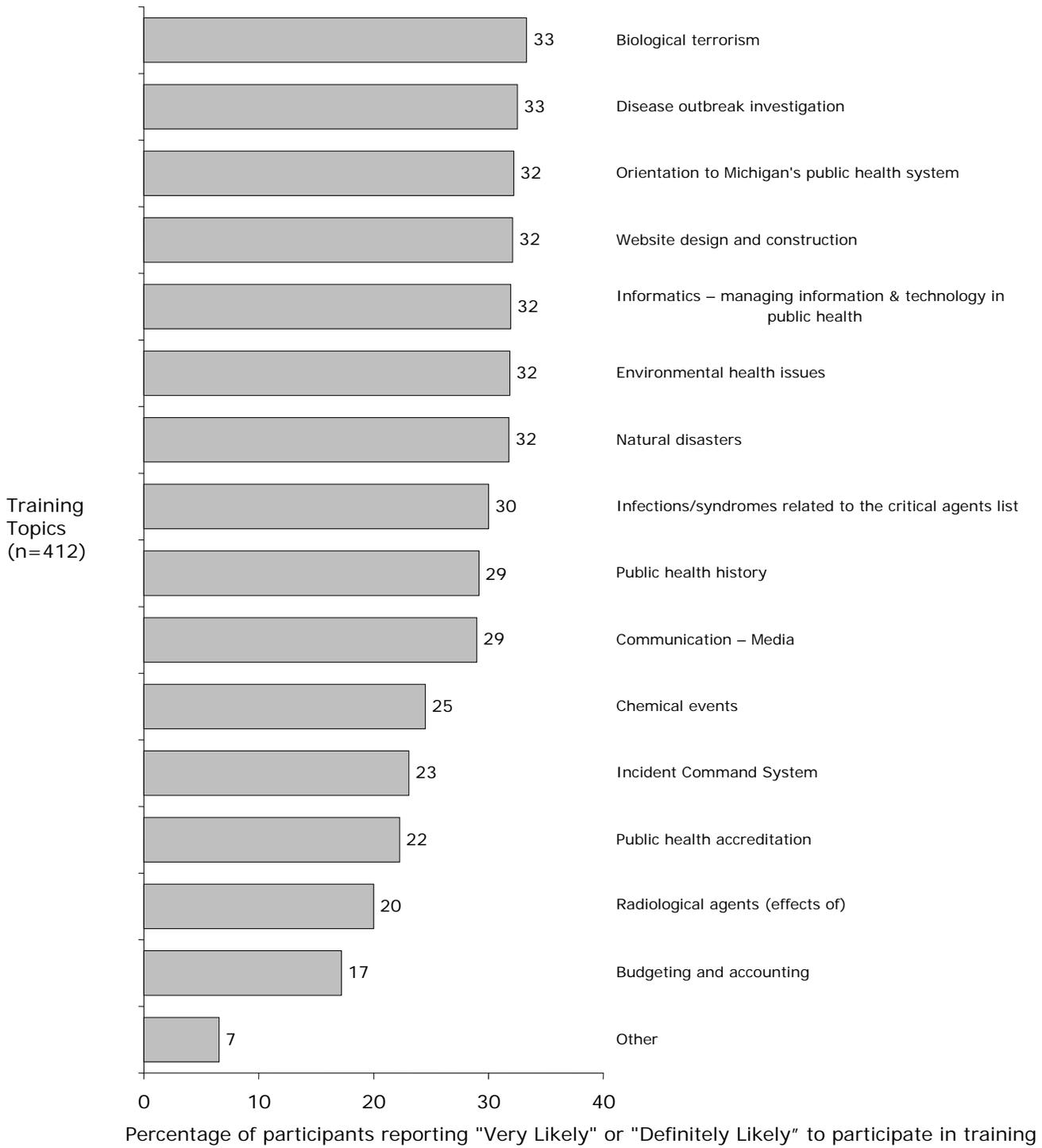


Figure 4. Training topics with less than 35% of respondents reporting "Very likely" or "Definitely" likely to participate



f. Additional Comments

Respondents were invited to share additional comments they had at the end of the survey instrument. The additional comments are summarized in this section.

Respondents Expressed Concerns Related to Leadership:

Respondents indicated that individuals in leadership positions should clarify priorities with regard to how resources are distributed. For instance, respondents indicated they would like to be acknowledged for their service and commitment to the State, whether in the form of monetary compensation, or in the form of encouragement, which would remind employees of the importance of the work that they do. They feel that leaders and managers should support employees who wish to attend local and no-cost conferences. Responses also indicated that there is a need for training courses that cover topics in-depth, as opposed to the introductory courses currently available. Respondents expressed the need for more support, direction, and encouragement from leaders.

Respondents Reiterated Training Topic Needs:

Respondents' comments reflected the training topic needs they expressed in the training preferences section. Respondents felt that training courses should be offered so that employees can stay up-to-date on the changes in their field of practice. This is particularly important for practitioners whose work involves the use of rapidly changing technology. Respondents expressed the benefit such training courses would have for the employee and the agency. Respondents were also interested in training courses that cover *public health*-specific roles in emergency situations.

IV. BUREAU-SPECIFIC RESULTS

a. Bureau Comparison Tables

Data analysis is presented for each "bureau", except Local Health Services and Public Health Administration Leadership.

Table 11. Respondent Demographics- count (percent)

	Epi (n=157)	FMCH (n=80)	HPDC (n=113)	Lab (n=50)	OPHP (n=32)	MDA (n=19)
Sex						
Male	29 (19)	10 (13)	25 (22)	18 (36)	8 (26)	7 (37)
Female	126 (81)	66 (87)	88 (78)	32 (64)	23 (74)	12 (63)
Age						
20-29	26 (17)	5 (7)	6 (5)	5 (10)	4 (13)	0 (0)
30-39	37 (24)	7 (9)	28 (25)	2 (4)	5 (16)	4 (21)
40-49	36 (23)	17 (22)	34 (30)	14 (28)	9 (29)	4 (21)
50-59	52 (34)	37 (49)	35 (31)	27 (54)	12 (39)	11 (58)
60+	4 (3)	10 (13)	10 (9)	2 (4)	1 (3)	0 (0)
Highest level of education						
Less than a Bachelor's Degree	42 (27)	24 (31)	17 (15)	10 (20)	3 (10)	0 (0)
Bachelor's Degree	34 (22)	13 (17)	34 (30)	29 (58)	11 (37)	16 (84)
Master's Degree	61 (39)	32 (42)	57 (51)	7 (14)	14 (47)	3 (16)
Doctoral Degree	18 (12)	8 (10)	4 (4)	4 (8)	2 (7)	0 (0)
Years before departure from Public Health						
< 5 years	23 (17)	12 (17)	19 (18)	10 (21)	5 (19)	2 (13)
5-9	26 (19)	15 (22)	23 (22)	10 (21)	8 (31)	2 (13)
10-19	41 (30)	30 (44)	33 (32)	21 (44)	8 (31)	9 (56)
20+	45 (33)	12 (17)	29 (28)	7 (15)	5 (19)	3 (19)

Table 12. Job Category- count (percent)

	Epi	FMCH	HPDC	Lab	OPHP	MDA
Administrative Business Staff	0 (0)	0 (0)	4 (4)	1 (2)	0 (0)	0 (0)
Administrative Support Staff	30 (20)	19 (25)	14 (11)	3 (6)	4 (13)	0 (0)
Administrative/Business Professional	3 (2)	9 (12)	7 (6)	1 (2)	2 (7)	3 (16)
Computer Specialist	7 (5)	1 (1)	4 (4)	1 (2)	2 (7)	1 (5)
Environmental Health Professional	5 (3)	0 (0)	0 (0)	0 (0)	0 (0)	3 (16)
Epidemiologist	46 (31)	0 (0)	5 (4)	0 (0)	0 (0)	1 (5)
Health Administrator	6 (4)	8 (11)	9 (8.0)	2 (4)	1 (3)	0 (0)
Health Planner/Analyst	4 (3)	3 (4)	0 (0)	1 (2)	5 (16)	1 (5)
Infection Control/Disease Investigator	5 (3)	0 (0)	6 (5)	1 (2)	0 (0)	0 (0)
Licensure/Inspection/Regulatory Specialist	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	9 (47)
Other Public Health Professional	11 (7)	5 (7)	5 (4)	1 (2)	5 (16)	0 (0)
Other Public Health Technician	2 (1)	4 (5)	0 (0)	4 (8)	0 (0)	0 (0)
Public Health Educator	5 (3)	0 (0)	6 (5)	1 (2)	1 (3)	0 (0)
Public Health Laboratory Professional	0 (0)	0 (0)	0 (0)	25 (50)	0 (0)	0 (0)
Public Health Laboratory Technician	0 (0)	0 (0)	0 (0)	8 (16)	0 (0)	0 (0)
Public Health Nurse	4 (3)	4 (5)	3 (3)	0 (0)	0 (0)	0 (0)
Public Health Nutritionist	0 (0)	1 (1)	3 (3)	0 (0)	0 (0)	0 (0)
Public Health Program Specialist/Coordinator/Consultant	20 (14)	21 (28)	47 (42)	1 (2)	11 (36)	1 (5)

Table 13. Highest Degree Completed to Bachelor's Degree/Master's and Doctoral Degrees Overall and by Bureaus

Degree Completed	Overall (n=470)	Epi (n=154)	FMCH (n=77)	HPDC (n=112)	Lab (n=50)	OPHP (n=30)	MDA (n=19)
High School Diploma or equivalency	63	27	18	9	3	1	0
Vocational Training	12	5	3	8	1	0	0
Associate/Technical Degree	33	10	4	0	6	2	0
Bachelor's Degree	362	112	52	95	40	27	19
Master's Degrees	223*	74	43 ⁺	61	11	17 [‡]	3
Doctoral Degree	37*	18	8	4	4	3 [‡]	0

*215 respondents indicated they had at least one master's degree; 36 respondents indicated they had at least one doctoral degree

⁺40 respondents indicated they had at least one master's degree

[‡]15 respondents indicated they had at least one master's degree; 2 respondents indicated they had at least one doctoral degree

Table 14. Attitudes and Beliefs Related to Emergency Response

	Percent of respondents indicating "Yes"					
	Epi	FMCH	HPDC	Lab	OPHP	MDA
Do you have a defined role in a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)? *	36	4	2	63	87	67
Have you received any training that addresses your role during a public health emergency?	45	18	17	68	93	94
Are you able to identify and locate your organization's emergency response plan?	58	32	31	78	100	83
Are there any incentives for reporting to work during a public health emergency? *	12	6	4	15	30	17
Are you aware of any consequences for not reporting to work during a public health emergency?	14	6	8	15	63	22
Would pre-event training increase your likelihood for participation in an emergency response? *	71	70	76	68	80	78
Do you have a plan for your family during an emergency situation?	47	45	36	42	83	56

* Question had the option "I don't know."

b. Bureau of Epidemiology

Essential Services Competencies

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their daily job and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their job.) Below are the top training needs for the Bureau of Epidemiology.

- 73% - Understand and develop processes to change policies and protocols in your community as needed (Essential Service 5).
- 63% - Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (Essential Service 7).
- 60% - Utilize results for application in performance measurement reporting to determine the effectiveness of public health population-based programs (Essential Service 9).
- 55% - Identify populations who may encounter barriers in receiving health services (Essential Service 7).
- 54% - Identify issues that may impact delivery of essential public health services (Essential Service 5).

Emergency Preparedness and Response

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their role in an emergency and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their role in an emergency.)

Emergency Preparedness Competencies

- 81% - Identify populations who may encounter barriers in receiving health services during an emergency.
- 81% - Develop and adapt emergency responses to take into account barriers and cultural differences.
- 74% - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
- 67% - Refer victims or response personnel to mental health professionals for critical and incident stress counseling and management.
- 65% - Describe the incident command structure in your organization.

Self-reported Importance to Organization's Emergency Response Plan

	n	Ratings Count (Percent)					
		1 Not important	2 Fairly important	3 Moderately important	4 Very important	5 Extremely important	6 I don't know
How important is your role in your organization's overall response to a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?	138	55 (40)	13 (9)	16 (12)	24 (17)	12 (9)	18 (13)

- 88 participants (62.4%) responded they would be “Very Likely” to report to work in an emergency situation.

Training Preferences – Top Responses

Training Format Preferences

- 66% - Face-to-face course within my county
- 60% - Computer-based (e.g. online, webcast)
- 55% - Face-to-face course within my geographical region
- 53% - Tabletop drill or exercise (simulated interactive scenario-based exercise that helps to test the capability of an organization)

Barriers to training

- 47% - Little time available at work to participate in courses
- 46% - Relevance of course offerings to my daily job

Training Topics of Interest

- 52% - Communicable disease
- 51% - Epidemiology
- 50% - Leadership skills

c. Bureau of Family, Maternal, and Child Health

Essential Services Competencies – Top Training Needs

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their daily job and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their job.) Below are the top training needs for the Bureau of Family, Maternal, and Child Health.

- 56% - Describe the protocols and/or public disclosure laws for releasing public information about health hazards to the community (Essential Service 4).
- 49% - Use public health laws and regulations (Essential Service 6).
- 49% - Assure that the public health workforce in your community has the competencies needed to carry out their jobs (e.g. knowledge, skills, and resources, access to training, and current licenses and credentials to provide needed programs, support and resources) (Essential Service 8).
- 48% - Conduct surveys and studies to measure the timeliness, appropriateness, and effectiveness of population based health care services in your community (Essential Service 9).
- 48% - Utilize results for application in performance measurement reporting to determine the effectiveness of public health population-based programs (Essential Service 9).

Emergency Preparedness and Response

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their role in an emergency and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their role in an emergency.)

Emergency Preparedness Competencies

- 89% - Describe the incident command structure in your organization.
- 85% - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
- 81% - Develop and adapt emergency responses to take into account barriers and cultural differences.
- 75% - Describe the appropriate action to take and procedures to follow if there is a suspected or actual emergency situation.
- 75% - Participate in research to improve recognition and management of emergencies that have a public health impact.

Self-reported Importance to Organization's Emergency Response Plan

	n	Ratings					
		Count (Percent)					
		1 Not important	2 Fairly important	3 Moderately important	4 Very important	5 Extremely important	6 I don't know
How important is your role in your organization's overall response to a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?	68	40 (59)	7 (10)	6 (9)	3 (4)	2 (3)	10 (15)

- 40 participants (60%) responded they would be “Very Likely” to report to work in an emergency situation.

Training Preferences

Training Format Preferences

- 59%- Computer-based (e.g. online, webcast)
- 57% - Face-to-face course with my county.
- 56% - Videoconference

Barriers to training

- 52% - Relevance of course offerings to my daily job
- 46% - Little time available at work to participate in courses

Training Topics

- 68% - Chronic Disease
- 63% - Leadership skills
- 60% - Community Health Interventions

d. Bureau of Health Promotion and Disease Control

Essential Services Competencies – Top Training Needs

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their daily job and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their job.) Below are the top training needs for the Bureau of Health Promotion and Disease Control.

- 59% - Understand the composition of the public health workforce in your community (Essential Service 8).
- 56% - Conduct surveys and studies to measure the timeliness, appropriateness, and effectiveness of population based health care services in your community (Essential Service 9).
- 56% - Use qualitative and quantitative data to clarify economic, scientific, and overall public health issues (Essential Service 5).
- 56% - Create new and strengthen existing partnerships between public and private organizations to deliver public health services (Essential Service 4).
- 53% - Use key concepts of risk communication (Essential Service 3).

Emergency Preparedness and Response

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their role in an emergency and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their role in an emergency.)

Emergency Preparedness Competencies

- 92% - Correctly use an 800MHz radio for emergency communication.
- 83% - Describe the appropriate action to take and procedures to follow if there is a suspected or actual emergency situation.
- 76% - Describe emergencies that might trigger the implementation of the emergency response plan.
- 75% - Correctly use the Health Alert Network (HAN) for emergency communication.
- 75% - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.

Self-reported Importance to Organization's Emergency Response Plan

	n	Ratings					
		Count (Percent)					
		1 Not important	2 Fairly important	3 Moderately important	4 Very important	5 Extremely important	6 I don't know
How important is your role in your organization's overall response to a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?	109	55 (51)	12 (11)	4 (4)	6 (5)	1 (1)	31 (28)

- 50 participants (45.9%) responded they would be “Very Likely” to report to work in an emergency situation.

Training Preferences

Training Format Preferences

- 72% - Face-to-face course with my county.
- 69%- Computer-based (e.g. online, webcast)
- 60% - Videoconference

Barriers to training

- 63% - Relevance of course offerings to my daily job
- 54% - Lack of financial resources to support taking courses

Training Topics

- 58% - Community Health Interventions
- 54% - Strategic thinking, planning
- 51% - Leadership skills

e. Bureau of Laboratories

Essential Services Competencies – Top Training Needs

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their daily job and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their job.) Below are the top training needs for the Bureau of Laboratories.

- 100% - Identify populations who may encounter barriers in receiving health services (Essential Service 7).
- 100% - Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (Essential Service 7).
- 100% - Line the resources that are available in your community to respond to health issues and problems (Essential Service 7).
- 83% - Utilize results for application in performance measurement reporting to determine the effectiveness of public health population-based programs (Essential Service 9).
- 80% - Analyze study results to determine the timeliness, appropriateness, and effectiveness of population based health care services in your community (Essential Service 9).

Emergency Preparedness and Response

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their role in an emergency and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their role in an emergency.)

Emergency Preparedness Competencies

- 100% - Communicate with the media in an emergency situation.
- 83% - Communicate with the general public in an emergency situation.
- 82% - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
- 80% - Develop and adapt emergency responses to take into account barriers and cultural differences.
- 76% - Describe the incident command structure in your organization.

Self-reported Importance to Organization's Emergency Response Plan

	n	Ratings					
		Count (Percent)					
		1	2	3	4	5	6
		Not important	Fairly important	Moderately important	Very important	Extremely important	I don't know
How important is your role in your organization's overall response to a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?	41	5 (12)	7 (17)	8 (20)	8 (20)	9 (22)	4 (10)

- 34 participants (83%) responded they would be “Very Likely” to report to work in an emergency situation.

Training Preferences- Top Responses

Training Format Preferences

- 75% - Computer-based (e.g. online, webcast)
- 65% - Videoconference
- 60% - Face-to-face course with my county.
- 54% - Tabletop drill or exercise (simulated interactive scenario-based exercise that helps to test the capability of an organization)

Barriers to training

- 72% - Little time available at work to participate in courses
- 53% - Taking a course away from the worksite
- 53% - Relevance of course offerings to my daily job

Training Topics

- 53% - Biological terrorism
- 49% - Infections/syndromes related to the critical
- 47% - Leadership skills

f. Office of Public Health Preparedness

Essential Services Competencies – Top Training Needs

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their daily job and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their job.) Below are the top training needs for the Office of Public Health Preparedness.

- 68% - Know the rights of individuals within the public health laws and regulations (Essential Service 6).
- 65% - Use public health laws and regulations (Essential Service 6).
- 60% - Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (Essential Service 7).
- 53% - Understand and develop processes to change policies and protocols in your community as needed (Essential Service 5).
- 50% - Maintain and use up-to-date knowledge of emerging or infectious diseases (Essential Service 2).

Emergency Preparedness and Response

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their role in an emergency and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their role in an emergency.)

Emergency Preparedness Competencies

- 56% - Develop and adapt emergency responses to take into account barriers and cultural differences.
- 54% - Communicate with the media in an emergency situation.
- 50% - Use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation.
- 47% - Identify populations who may encounter barriers in receiving health services during an emergency.
- 47% - Refer victims or response personnel to mental health professionals for critical and incident stress counseling and management.

Self-reported Importance to Organization's Emergency Response Plan

	n	Ratings					
		Count (Percent)					
		1	2	3	4	5	6
		Not important	Fairly important	Moderately important	Very important	Extremely important	I don't know
How important is your role in your organization's overall response to a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?	30	2 (7)	1 (3)	7 (23)	5 (17)	14 (47)	1 (3)

- 26 participants (87%) responded they would be “Very Likely” to report to work in an emergency situation.

Training Preferences- Top Responses

Training Format Preferences

- 76% - Tabletop drill or exercise (simulated interactive scenario-based exercise that helps to test the capability of an organization)
- 66% - Face-to-face course with my county.
- 66% - Face-to-face course within my geographical region.
- 62%- Computer-based (e.g. online, webcast)

Barriers to training

- 48% - Little time available at work to participate in courses
- 38% - Taking a course away from the worksite

Training Topics

- 77% - Biological terrorism
- 70% - Roles and responsibilities in emergency
- 67% - Radiological agents (effects of)

g. Michigan Department of Agriculture Food and Dairy Division

Essential Services Competencies – Top Training Needs

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their daily job and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their job.) Below are the top training needs for the Michigan Department of Agriculture Food and Dairy Division.

- 75% - Describe the protocols and/or public disclosure laws for releasing public information about health hazards to the community (Essential Service 4).
- 75% - Adapt health service programs to take into account differences in the population (e.g., the need for translators, transportation, and gap filling) (Essential Service 7).
- 73% - Interact effectively with people from diverse cultural, socioeconomic, and educational backgrounds (Essential Service 4).
- 71% - Use qualitative and quantitative data to clarify economic, scientific, and overall public health issues (Essential Service 5).
- 63% - Maintain and use up-to-date knowledge of emerging or infectious diseases (Essential Service 2).

Emergency Preparedness and Response

Top training needs are identified as competencies that a majority of respondents reported as "Very" or "Extremely" important to their role in an emergency and also reported "Low" or "Medium" proficiency. (The percentage indicates the amount of respondents who indicated low/medium proficiency within the subset of respondents who indicated the task was very/extremely important to their role in an emergency.)

Emergency Preparedness Competencies

- 72% - Correctly use email for emergency communication.
- 67% - Describe emergencies that might trigger the implementation of the emergency response plan.
- 67% - Communicate with the media in an emergency situation.
- 67% - Correctly use an 800MHz radio for emergency communication.
- 67% - Refer victims or response personnel to mental health professionals for critical and incident stress counseling and management.

Self-reported Importance to Organization's Emergency Response Plan

	n	Ratings					
		Count (Percent)					
		1 Not important	2 Fairly important	3 Moderately important	4 Very important	5 Extremely important	6 I don't know
How important is your role in your organization's overall response to a public health emergency (e.g. chemical spill, pandemic influenza, natural or manmade disaster)?	18	0 (0)	2 (11)	6 (33)	4 (22)	4 (22)	2 (11)

- 16 participants (89%) responded they would be “Very Likely” to report to work in an emergency situation.

Training Preferences- Top Responses

Training Format Preferences

- 71% - Computer-based (e.g. online, webcast)
- 69% - Videoconference

Barriers to training

- 41% - Little time available at work to participate in courses
- 35% - Lack of financial resources to support taking courses

Training Topics

- 71% - Communication-Risk
- 71% - Biological terrorism
- 71% - Disease outbreak investigation

V. DISCUSSION

This report presents findings from the Michigan Public Health Workforce Assessment, which focused on training priorities extracted from a combination of self-rated importance, proficiency, and interest levels. The study findings should be interpreted within the context of several limitations.

The study's response rate of 62% limits the generalizability of the study's results to the entire MDCH Public Health Administration, as non-respondent bias could exist. Part of the purpose of the assessment was to collect information on who works in the bureaus and divisions. Because the information necessary for comparison did not exist prior to data collection, we could not formally assess the strength and direction of non-respondent bias.

Eligibility of individuals was not determined through a formal system of records. Further, participant recruitment was done using e-mail, so some eligible individuals may have been missed during recruitment. The use of an online survey system may also have hindered participation for some individuals who may not have access to the internet at home or limited internet access at work, though this was expected to have a very minimal impact. The latter may have been exacerbated by the employees' large workload, which limits the time they have to do activities not directly related to work, such as completing assessments or participating in training courses.

Despite these limitations the study is the first step in determining the training priorities and needs of public health workers employed by the State of Michigan. In addition, the data collected contributed to knowledge of the distribution of demographic factors, such as age, race, level of education, and number of years before leaving public health of the state-employed public health workforce, which can be used for comparison in future studies.

We also found similarities with the results of other workforce assessments. Consistent with national trends, a large percent (45%) of state-employed Michigan public health workers are 50 years of age or older. The profile of public health workers that emerged from this assessment—one that is predominantly female (79%) and white (79%)—is consistent with the results of workforce assessments conducted by other institutions.^{4,6,11,12} Michigan public health workers' preferred methods of receiving instruction—face-to-face format and computer-based—are consistent with the preferences of local health department workers nationwide, as well as a training needs assessments previously conducted in Michigan local health department(s).^{13,14}

The Michigan Public Health Workforce Assessment was conducted in order to identify the training needs of Michigan's public health workforce. A total of 483 (62%) of eligible state public health employees completed the assessment. Almost 47% of respondents held an advanced degree (a master's degree or higher).

Overall, respondents reported a high proficiency level in essential service competencies that are important to their daily jobs. The only exception is the competency "Understanding and developing processes to change policies and protocols in your community as needed," for which 48% of respondents indicated a medium proficiency level when they also indicated the task was important to their job.

Respondents reported more varied proficiency levels in emergency preparedness competencies that are relevant to their daily tasks. For competencies such as "Correctly use an 800 MHz radio for emergency communication" and "Refer victims or response personnel to mental health professionals for critical and incident stress counseling and management," when the task was important to their job, the largest proportion of respondents reported a low proficiency level. This suggests the need to focus on preparing individuals so that they can carry out their role during a public health emergency situation.

Emergency preparedness training priorities differed across bureaus, with some notable findings. A top training priority of the Bureau of Epidemiology was the competency "identify populations who may encounter barriers in receiving health services during an emergency"; and top priorities for the Office of Public Health Preparedness included "develop and adapt emergency responses to take into account barriers and cultural differences" and "use current federal, state & local laws/regulations/ordinances that protect the public's health and understand how they affect your role in response to a specific emergency situation". These tasks are considered to be the essential to the missions of each respective bureau and it is surprising they came out as top priorities. To understand the impact that staff without a public health specific role played in the results for this item, additional analyses were run for those with a public health role and those without a public health specific role within the Bureau of Epidemiology. The results of that comparative analysis showed that employees across the two groups had similar levels of proficiency, but the competency was significantly more important to employees with a public health specific role. These competencies could have come out as priorities because respondents felt they were not proficient in them or because the respondents did not recognize the competencies as central to their work.

Although the majority (60%) of respondents have not received training related to their role in an emergency, most of them (73%) indicated they would be more likely to participate in an emergency response if they received such training. Nearly 40% of respondents indicated they would not be "very likely" to report to work during an emergency, which reaffirms the need to prepare individuals to work during an emergency situation. Recommendations for increasing the willingness of staff members to report to work during an emergency include providing training specific to staff roles in an emergency and explaining the relevance of each staff member's role in an effective organizational response to any emergency.¹ Additionally, the needs of each staff member should be considered and efforts should be made by the agency to ensure staff have access to family preparedness planning resources and other support structures to increase willingness to respond.²

Respondents reported they prefer a course that is either in a face-to-face format within their county (65% of respondents endorsing this format) or computer-based (64% of respondents endorsing this format). Respondents also reported factors that have been barriers to participating in training. The top three barriers to training reported are "Little time available at work to participate in courses," "Relevance of course offerings to my daily job," and "Lack of financial resources to support taking courses." This suggests the need for training course scheduling and content to better address the restrictions public health workers face.

Overall, the top two training topics for respondents were leadership skills and management skills. However, employees of different bureaus had different top two training topics. These topics were consistent with the mission and function of the bureau of employment. Respondents also identified other training topics of interest, many of which were related to specific software/information systems, as well as to working with legislators to promote the work of public health.

Respondents' responses in the additional comments section revealed the discord between employees' and leaders' interests, the need for those in leadership positions to clarify priorities, other training needs, as well as respondents' day-to-day functions in relation to the competencies and topics covered in the assessment.

Stratification of data by number of years before departure from public health, bureau of employment, and agency of employment revealed the different training priorities and needs that employees have.

Recommendations

Provide workers with opportunities and/or incentives to advance their knowledge. Public health workers should be given the opportunity and support to refresh and advance their knowledge, in order to ensure a competent and motivated workforce.

Increase accessibility to training courses and training materials. Obligation to work responsibilities was reported by respondents as the top barrier to training. Courses should be scheduled during times that will not interfere with work activities. Given the current restrictions on travel, on-site or computer-based training courses are ideal training formats for most workers.

Focus training efforts on emergency preparedness competencies. Because there is higher training need in emergency preparedness competencies than in essential service competencies, training resources should be focused to develop workers' proficiency at performing these tasks.

Define workers' roles in emergency response. Most workers would report to work during an emergency, although many of them would not know what was expected of them. It is essential that all workers understand their role, if any, in their organization's emergency response plan. It is also essential that all workers understand the incident command system in their organization.

Specialized training of emergency responders. Individuals who report that an emergency preparedness competency is important to their role in emergency response should be highly proficient at that task. We recommend identifying these individuals, formally assessing their proficiency level, and developing the skills of those who are not highly proficient at that competency.

Address barriers to participating in emergency response. 60% of respondents indicated they would report to work during an emergency. Although the assessment did not explicitly ask for factors affecting the decision to report to work, other studies suggest concerns about personal safety or the safety of one's dependents are reasons for workers to be unwilling to report to work during an emergency.^{1,2} Organizations should incorporate steps to address such barriers into their emergency plan, in order to increase willingness to participate in emergency response. For example, departments can incorporate a workshop on developing a family emergency plan into regularly scheduled meetings.

VI. APPENDIX- Definitions of Job Categories

The job categories used in the Michigan Public Health Workforce Assessment were adapted from the Health Resources and Services Administration Public Health Enumeration 2000⁹.

Administrative/Business Professional: Perform work in business, finance, auditing, management and accounting; trained at a professional level in their field of expertise prior to entry into public health.

Administrative Business Staff: Perform support work in areas of business and financial operations. Includes bookkeeper, accounting clerk and auditing clerk.

Administrative Support Staff: Perform non-technical support work in all areas of management and program administration. Includes secretary, and clerical support and receptionist.

Computer Specialist: Manages specialized technical aspects of computer operation, applications, operating systems and hardware. Includes computing consultant, applications programmer, computer service technician, data entry technician, data processing specialist.

Environmental Health Professional: Applies biological, chemical and public health principles to control, eliminate, ameliorate, and/or prevent environmental health hazards. Performs regular inspections of a specified class of sites or facilities, such as restaurants and nursing home. Includes titles of environmental sanitarian, environmental engineer, environmental sanitarian specialist, toxicologist.

Epidemiologist: Investigates, describes and analyzes the distribution and determinants of disease, disability, and other health outcomes, and develops the means for their prevention and control; investigates, describes and analyzes the efficacy of programs and interventions. Includes individuals specifically trained as epidemiologists and those trained in another discipline (e.g., medicine, nursing, environmental health) working as epidemiologists under job titles such as nurse epidemiologist.

Health Administrator: Plans, analyzes, directs, coordinates and evaluates the use of resources to deliver health services education or policy in establishments such as clinics, public health agencies, managed care organizations, industrial and other types of businesses, or related entities; manages and/or regulates health agencies and facilities. Includes job titles such as director, administrator, chief, manager or one of the many titles indicating chief public health official of a jurisdiction (e.g. health officer, deputy health officer).

Health Planner/Analyst: Analyzes needs and plans for the development of public health and other health programs, facilities and resources, and/or analyzes and evaluates the implications of alternative policies relating to public health and health care. Includes a number of job titles

without reference to the specific training that the individual might have (e.g., planning analyst, resources analyst).

Infection Control/Disease Investigator: Assists in identifying and locating individuals or groups at risk of specified health problems and incorporating them into appropriate health promotion and disease prevention programs. Includes public health investigator, communicable disease specialist/investigator or STD investigator without reference to educational preparation.

Licensure/Inspection/Regulatory Specialist: Audits, inspects and surveys facilities, equipment, products and personnel, using approved standards for design or performance. Includes Michigan Department of Agriculture Food and Dairy Division employees who inspect food establishments and dairy farms, and oversees food service sanitation programs.

Public Health Educator: Designs, organizes, implements, communicates, provides advice on and evaluates the effect of educational programs and strategies designed to support and modify health-related behaviors of individuals, families, organizations, and communities. This includes all health educator job titles.

Public Health Laboratory Professional: Plans, designs or implements laboratory tests and procedures to identify and quantify agents in the environment which may be hazardous to human health, biological agents believed to be involved in the etiology of diseases in animals or humans, such as bacteria, viruses, parasites or other physical, chemical and biological hazards. May be involved in the research and the development or production of anti-microbial agents. Includes microbiologist, chemist, cytotechnologist, toxicologist, physicist, virologist, entomologist, medical technologist and non-specified laboratory professionals.

Public Health Laboratory Technician: Plans, performs and evaluates laboratory analyses and procedures, and is not elsewhere classified. Perform routine tests in medical laboratory for use in treatment and diagnosis of disease. Prepare vaccines, biologicals, and serums for prevention of disease. Prepare tissue samples for Pathologists, take blood samples, and execute such laboratory tests as urinalysis and blood counts. Includes medical laboratory technician, histologic technician, forensic evidence technician, specimen control & receiving technician.

Public Health Nurse: Plans, develops, implements and evaluates nursing and public health interventions for individuals, families and populations at risk of illness or disability. This title covers all positions identified at the registered nurse level, unless specified as performing work defined under some other occupational title (epidemiology, occupational health). Includes graduates of diploma and associate degree programs with the RN license. Includes community health nurse, nurse practitioner, nurse specialist, nurse specialist, school nurse, public health nurse, and nurse clinician. Positions specified as licensed practical nurse are classified as "Other Public Health Technician".

Public Health Nutritionist: Plans, develops, implements and evaluates programs or scientific studies to promote and maintain optimum health through improved nutrition; collaborates

with programs that have nutrition components; may involve clinical practice as a dietician. Includes titles such as community nutritionist, community dietician, nutrition scientist and registered dietician.

Public Health Physician: Identifies persons or groups at risk of illness or disability, and develops, implements and evaluates programs or interventions designed to prevent, treat or ameliorate such risks; may provide direct medical services within the context of such programs. Includes MD and DO generalists and specialists, some of whom have training in public health or preventive medicine. Includes Medical Directors.

Public Health Program Specialist/Coordinator/Consultant: Plans, develops, implements and evaluates programs or interventions designed to identify persons at risk of specified health problems, and to prevent, treat or ameliorate such problems. Includes public health workers reported as public health program specialist without specification of program (e.g., AIDS Awareness Program Specialist; immunization program specialist.) Includes program managers, emergency preparedness coordinators, Strategic National Stockpile coordinators, and other emergency preparedness program specialists.

Other Public Health Professional: Positions in a public health setting occupied by professionals (preparation at the baccalaureate level or above) that do not fall under the specific categories above (e.g. dentist, hygienist, social worker, veterinarian, occupational/physical therapist)

Other Public Health Technician: Technician titles not named above as well as those that qualify as technicians by level of education such as licensed practical nurse and practical nurse. Includes safety, research, hearing and vision, and health promotion technicians. Includes emergency service personnel.

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