Surveys and Interviews on Workforce Development Needs

To gain a better understanding of the existing training or professional development needs within Region 10 (i.e., Idaho, Alaska, Oregon, and Washington), Pactrans and researchers from Oregon State University and University of Idaho collaborated to design and implement a workforce development study. This study would contain two major components: interviews with local transportation offices and the development and distribution of an online survey. The research described in the following report outlines the empirical approaches used to conduct interviews and develop the survey; the findings from our data collection efforts; and a discussion of major themes that emerged from a descriptive analysis of workforce development needs.

Background and Research Approach

The overall nature of the research presented herein can be best described as a sequential, exploratory mixed-methods project (Creswell, 2013). More specifically, the research design takes place across two distinct phases. During the first phase, qualitative data (e.g., interviews) are collected and analyzed. These findings are then used to inform the development and execution of the second, quantitative phase (e.g., survey development). This research approach is particularly useful in cases where relatively little is known about the topic of interest, and in which initial open-ended perspectives can provide direct insight into subsequent research. Given the purposes of exploring perspectives regarding services that do not yet exist, a sequential, exploratory mixed methods design was well suited for our goals.

Collection, Analysis, and Results

Phase 1: Structured Telephone Interviews

During the first phase of the research, we conducted structured qualitative interviews with transportation engineering managers, practitioners, and learning coordinators across Region 10. Participants were recruited through personal contacts among the research teams at Oregon State University (OSU), University of Idaho (UI), Washington State University (WSU), and University of Washington (UW), as well as internet directory searches through each state's transportation website (e.g., ODOT). Researchers also implemented snowball sampling, in which current participants helped to identify additional candidates to interview. In total, 17 participants were interviewed, including 3 from WA, 1 from ID, 11 from OR, and 2 from AK. Interview questions asked participants to talk about three major topics: 1) their access to or awareness of training opportunities; 2) the factors that affect whether to attend training; and 3) any perceived urgent or compelling needs within transportation engineering training. Interviews lasted approximately 15 minutes each and were conducted over the phone; they were not audio recorded, but a researcher took field notes as they were conducted for later analysis.

Phase 1: Awareness and access

Participants were asked to describe a typical training experience, including the means through which they heard about the training. In general, participants tended to find out about most training opportunities through some form of email listserv. As individuals begin to attend training and/or join various professional societies, the opportunities to find out about training

opportunities increases. Some participants also noted conducting google searches or reaching out to training coordinators, but such actions were often in response to a specific training need.

Phase 1: Factors affecting training decisions

A wide range of factors were noted as influential to the choice to attend training (or in the case of managers, to send an employee to training). For most participants, location and cost tended to drive training decisions. If travel is involved or if costs are too high, training opportunities might be more challenging. Another salient factor was the relevance of the training to current workplace needs. If a training program of upcoming webinar is related to a project in the near future, the training is seen as more valuable.

In addition to the timeliness of the training, participants noted the importance of being able to gain practical skills that they could apply in their jobs. Hands-on training was seen as especially valuable, in contrast to programs that educate on theories or rules or information that was seen as less directly applicable to current work. Put simply, congruence between training and upcoming work was a key driver in decision making related to attendance.

Beyond the content of the particular training program, participants noted the importance of the presenter or organization conducting the training. Participants noted that some people or organizations have stronger reputations than others, and so when making choices about training, it can be helpful to inquire about the skills or reputation of the presenter.

Phase 1: Current training topic needs

The final portion of the structured interview asked participants to think of topic areas or content for which training would be helpful, but which does not currently exist. Most participants reiterated the importance of alignment of training topic area with current workplace demands, but some larger categories emerged from the discussion. In particular, there seem to be persistent training needs surrounding topics related to safety, operations, and maintenance. As laws and rules and regulations shift, it is important that engineers and managers are up-to-date on the changes. As technology becomes more ubiquitous in traffic engineering, including the use of software, big data, and other applications, ensuring employee competence with these new advances is essential.

Phase 2: Survey Development and Distribution

Following the interviews then, the researchers used the descriptive analysis to inform the development of items and response choices. By leveraging our first qualitative phase to inform the second phase, our results are empirically grounded in responses from practitioners. The survey was again distributed based on personal contacts of the researchers in the four collaborative universities noted above, as well as the managers who had participated in the qualitative interviews. The full results, separated by managers and engineers, is provided in the appendix, and the following sections provide some highlights across the two groups. Important to note about the following results is that not all respondents completed the survey entirely or responded to all of the questions. There were also questions for which respondents could select several choices. In some cases, total responses on particular items may have slightly different overall totals.

Phase 2: Demographics

As of April 30, 2018, a total of 184 individuals had responded to the survey, including 63 managers and 121 practitioners. Table 1 provides a breakdown of the states from which respondents came.

Table 1: Participant location

	Alaska	*Oregon*	*Washington*	*Idaho*	*Other*
Managers	42	7	12	0	2 (CA)
Engineers	45	46	23	3	2 (CA, Norway)

Table 2 provides an overview of the amount of experience reported by both managers and practitioners. All managers reported more than 5 years of experience in transportation engineering, broadly, while there was a wider range of experience with their current positions. Engineers tended to have less experience both in transportation in general as well as their current jobs in particular.

Table 2: Participant experience overview

	Experience in Transportation (yrs)				***Experience in current job (yrs)***			
	<1	**1-2**	**3-5**	**5+**	**<1**	**1-2**	**3-5**	**5+**
Managers	0	0	2	63	7	11	12	3
Engineers	5	9	12	93	27	22	20	51

In terms of disciplines represented within transportation engineering, results suggest a ***relatively diverse groups of concentrations in specific fields***. Table 3 provides an overview of the fields reported by managers and engineers. In this case, respondents could select several responses at the same time, depending on the nature of their work. Notable here is the high proportion of "Design" as a discipline, suggesting that such activities might be common across other areas of focus. In terms of responses to "Other," participants tended to note more specific subdisciplines of transportation engineering, such as right of way or hydraulics or bridges.

Table 3: Overview of discipline area for managers and engineers

	Traffic	*Highway*	*Safety*	*Construction*	*Design*	*Consulting*	*Other*
Managers	26	27	16	20	32	19	15
Engineers	38	53	30	34	56	18	32

Phase 2: Awareness and Access

Based on our findings from interview data we developed the following questions to more broadly explore transportation engineers' awareness of and access to different training opportunities. First, we wanted to gain a better understanding of the frequencies with which transportation engineers and managers attend training or professional development. Table 4 provides a summary of the frequencies managers and engineers attend internal and external training programs within a given year. Important to note here is that managers were asked how many

times their average employee attends training, where engineers were asked how many times they, specifically, attend training. As can be seen in Table 4, ***internal training opportunities appear much more common than external training.***

Table 4: Training frequency comparison across managers and engineers

	Internal Training (times/year)					***External Training (times/year)***				
	0-1	**2**	**3**	**4**	**5+**	**0-1**	**2**	**3**	**4**	**5+**
Managers	12 (19%)	10 (16%)	14 (22%)	7 (11%)	20 (32%)	36 (57%)	20 (32%)	4 (6%)	3 (5%)	0 (0%)
Engineers	27 (22%)	28 (23%)	21 (17%)	17 (14%)	31 (25%)	71 (57%)	28 (23%)	10 (8%)	4 (3%)	11 (9%)

We also explored how individuals find out about training opportunities. Informed by our interviews, we developed questions to probe for the ways respondents learn about training opportunities or programs (Table 5). *What is notable about Table 5 are the strong similarities in how training is discovered**, suggesting similarities in the ways these individuals receive information about training***. Though the responses developed in the survey captured most of the modes of dissemination, some participants noted periodically checking different websites for training events.

Table 5: Frequency and percentage of method of discovering training opportunities

	Internal Comm	*Email listserv*	*Word of mouth*	*Online ads*	*Professional societies*	*Other*
Manager	50 (34%)	25 (17%)	23 (15%)	16 (11%)	28 (19 %)	7 (5%)
Engineer	98 (38%)	52 (20%)	39 (15%)	22 (8%)	45 (17%)	5 (2%)

Also important to understanding access is to explore barriers to training. To do so, we developed questions that probed for participants' criteria for making decisions about training. The responses were informed by interviews with managers, which suggested that some of the most influential factors for deciding to attend training are related to cost, location (which is related to cost), and timeliness of training.

To explore barriers to and criteria for training, we asked a series of questions. First, we asked participants to respond to Likert-type questions regarding the importance of various factors, such as location cost, topic area, etc. Figure 1 illustrates the importance of different criteria for managers and engineers. The quantitative findings here echo and corroborate findings from phase 1: ***some of the most important aspects of choosing training are related to location, cost, and timeliness***. These trends appear similar across managers as well as practicing engineers.

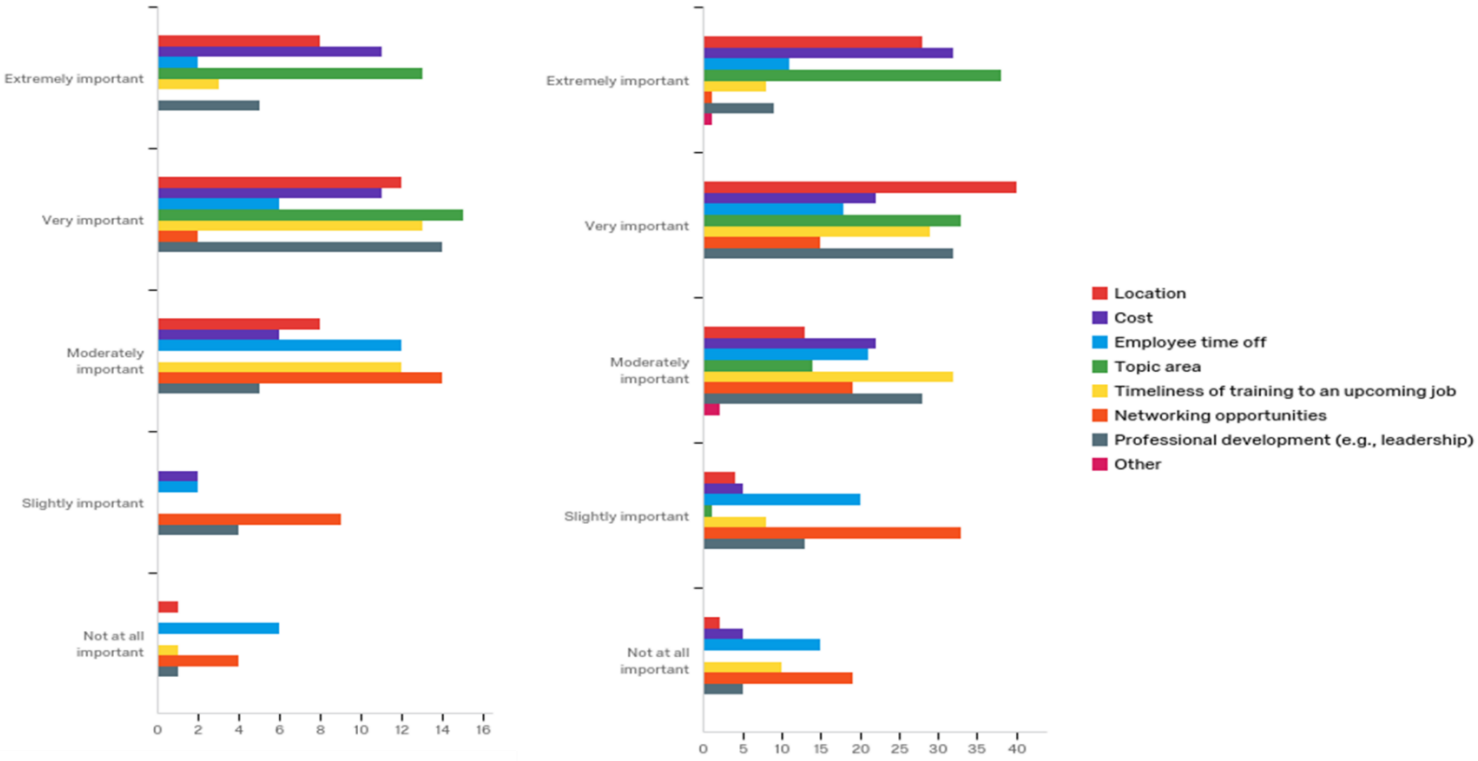


Figure 1: Manager (left) and engineer (right) responses to "How important are the following factors when deciding to attend training?"

Phase 2: Current training needs

Based on our interviews, we developed survey items to query transportation managers and engineers regarding topics and content areas in need of development. The categories from Phase 1 interviews were distilled into seven overarching categories, and participants were asked to rate the importance of various topics in terms of timeliness of training needs. Figure 2 details the manager and engineer responses, respectively (for full frequencies and descriptives, please see the Appendix). ***In this dataset, engineers and their managers are in general agreement regarding the importance and timeliness on a range of different topics, and those topics primarily concern issues of accessibility (or ADA compliance), changes in technology, and design.***

Finally, we asked survey respondents to list topics for which they would like training but which is not available or personally accessible. For this question, responses were open-ended and participants could provide any text they wanted. Though responses were optional and the possibility existed that there were no topics for which training was unavailable, 12 managers and 31 engineers provided responses. Table 6 provides a brief overview of some key areas, and a full list is provided in the Appendix. What is interesting to note here is that within Table 6, there are some topics which appear to be available based on findings from Task 2 from University of Idaho. This particular finding suggests that although some topics may exist and training may be available, some engineers and managers may simply not be aware of some of the resources.

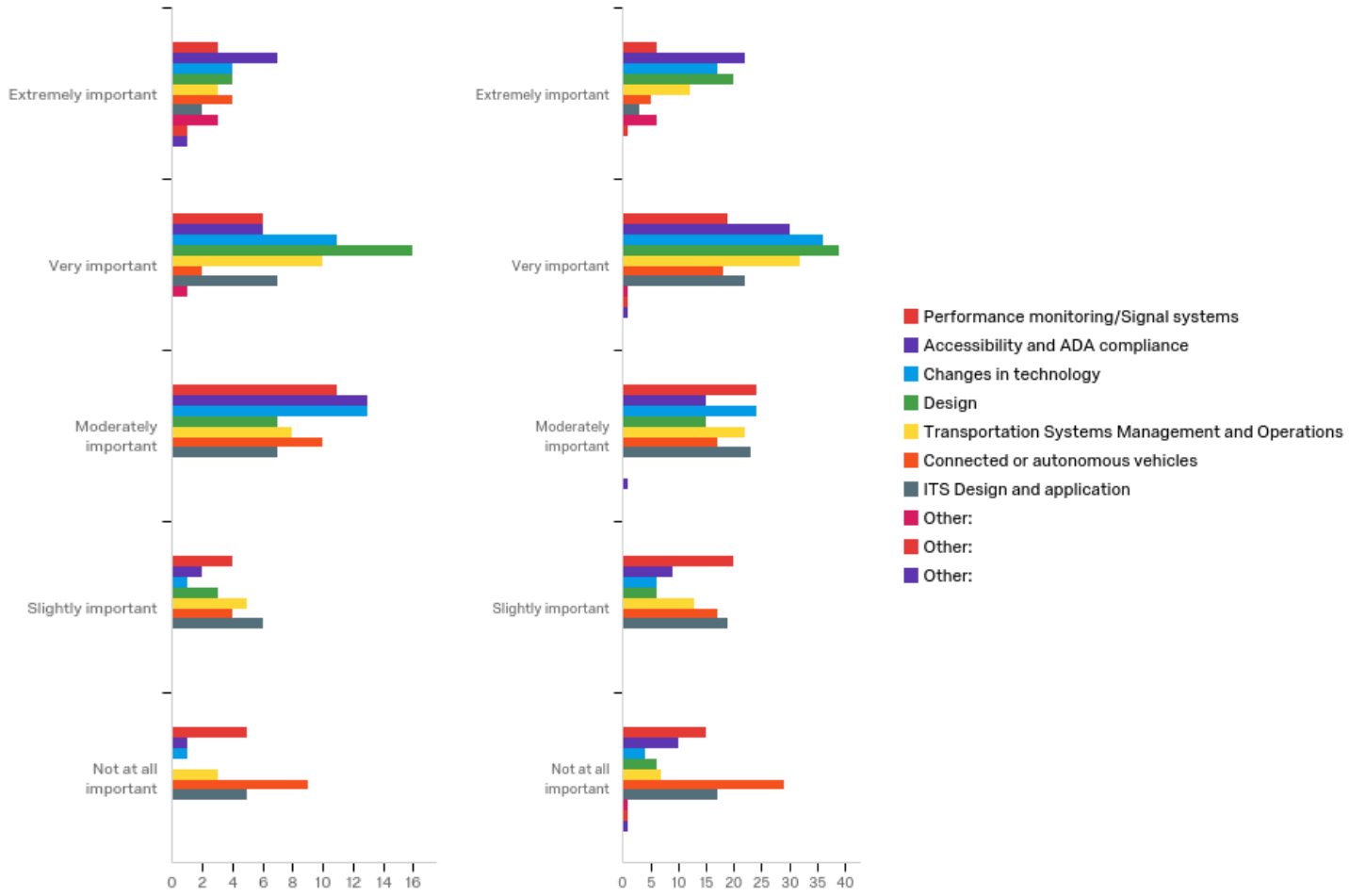


Figure 2: Manager (left) and engineer (right) ranking of importance of various possible training topics.

Table 6: Examples of topics for managers and engineers perceive a need for training but that is not currently available.

Managers	**Engineers**
Data storytelling	Right of way
Professional (soft skills)	GIS training
Skip tracing and archive research	Team building and change management
System Operations	ADA compliance
Aviation base training	PE and FE exam workshops

Conclusion

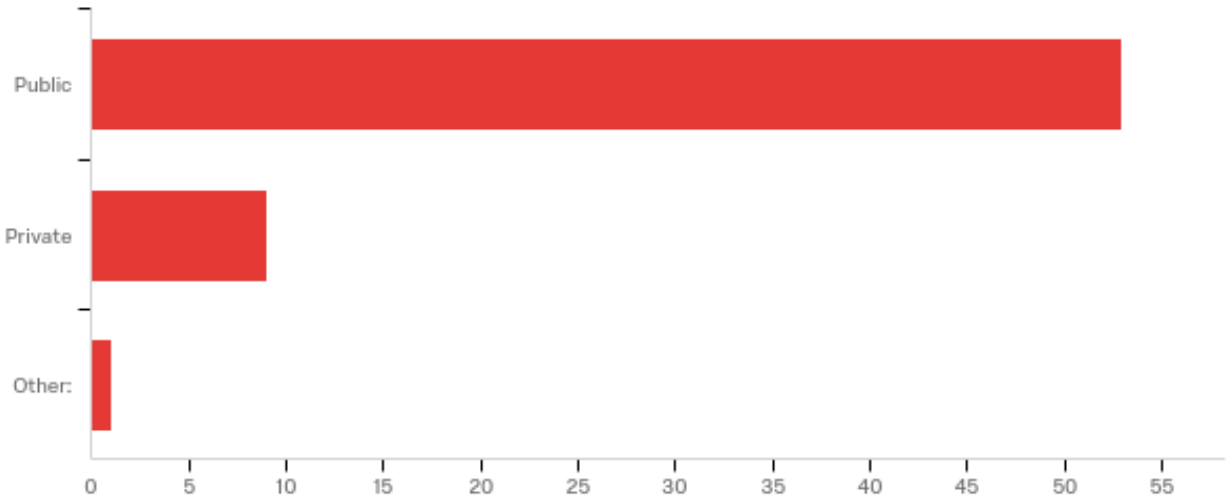
The research presented herein has been in completion of Task #3 delegated by PacTrans. The purpose of the research was to gain insight into existing training needs and potential gaps in professional development within transportation engineering fields. To address this purpose, researchers at OSU developed an exploratory, mixed method project. In phase one, we created qualitative, structured interview protocols, conducted interviews with transportation engineers, managers, and learning coordinators, and synthesized our findings to generate an online survey tool for broader distribution. The survey was then distributed to engineers, managers, and

learning coordinators across Region 10 (i.e., OR, WA, ID, AK). The results from the survey provided triangulation and corroboration for findings from phase 1 (interviews), and also point to some potentially interesting trends. For instance, ***the most important criteria for determining whether someone will attend training often comes down to cost and location, but is also driven by the relevance of the training topic to an upcoming project or job***. That is, most respondents here are not thinking about training needs on broad scales or in terms of larger trajectories of the field, but instead are making choices related to the immediacy of a need for training or a specific type of competence or certification. These findings emerged from both interviews and survey responses, providing compelling evidence of their validity. Further, in most cases, engineers and managers appear aligned in terms of their preferences for training, perceptions of topics needed, and criteria for decision making. ***When seeking training, managers and engineers often utilize the same sources, and prioritize training in similar ways***. However, some gaps might exist across engineers and managers in terms of desired training needs that are not available. Table 6 above as well as questions 17 and 35 in the Appendix show that managers and engineers might perceived different kinds of training needs with respect to professional development. ***Where managers emphasize professional development related to leadership or management or training, practitioner often linked their perceived training needs to more specific kinds of skills or tasks*** (e.g., software, design for particular kinds of roads, etc.). In conclusion, the results presented here suggest that training needs are more driven by reactions to changes in rules or regulations or changes in technology, and training programs should work to more effectively anticipate these needs and design accordingly.

Appendix A: Manager Survey Summary Report

Manager Survey Report

Q4 - In which sector of transportation engineering do you work?



#	Answer	%	Count
1	Public	84.13%	53
2	Private	14.29%	9
3	Other:	1.59%	1
	Total	100%	63

Other:

Other: - Text
State Government

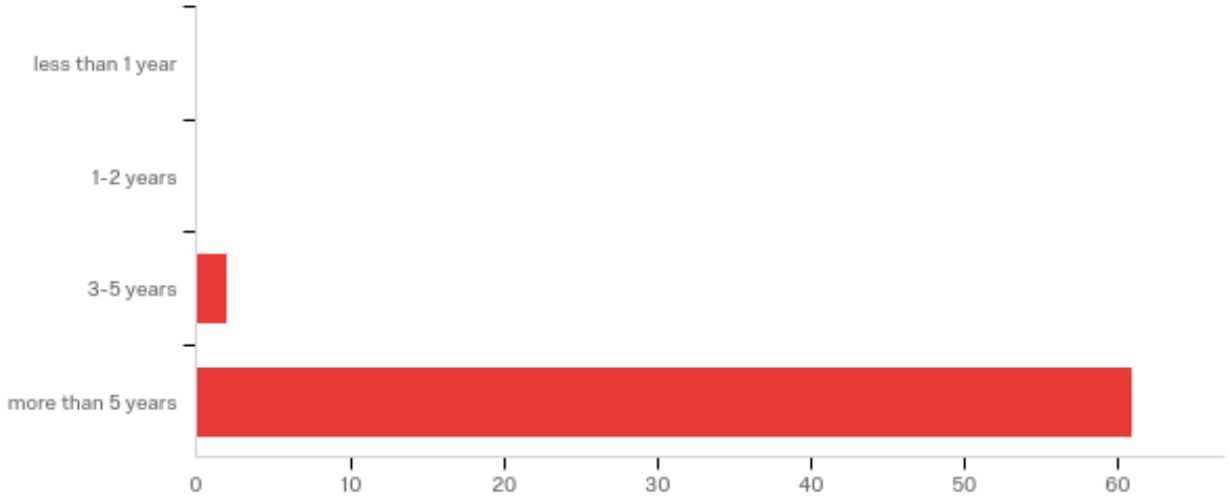
Q7 - What is the region in which your work applies (e.g., zip code, town, municipality)

What is the region in which your work applies (e.g., zip code, town, municipality)
Based in Juneau Alaska; responisble for Southcoast Region (SE AK, Aleutians, Kodiak, Lake and Penisula Borough)
Southcoast Region
Alaska
Northwest 979229
99901
Alaska
Southeast Alaska
99507
State of alaska
Southeast Alaska
99502
99502
Anchorage, Alaska 99501
99811
Municipality of Anchorage, Anchorage, Alaska
99701
Municipality of Anchorage
99801
99507, Anchorage, AK
Alaska DOT Northern region ~ 65% of the state
99507
Municipality of Anchorage, Alaska
Fairbanks, Western, and Northern Alaska
99801
Alaska

All Alaska
Southcoast (zip code 99801)
Anchorage Alaska
Alaska
99708
99503
ODOT Region 1
97266
Salem Oregon
98109
Oregon
Sacramento, CA 95814
Seattle, WA
Sacramento CA
King County, WA
Portland
Seattle
98040
97301
Pullman, Washington
98004
98004
98004
98006
Washington State
99709
99709
State of Alaska

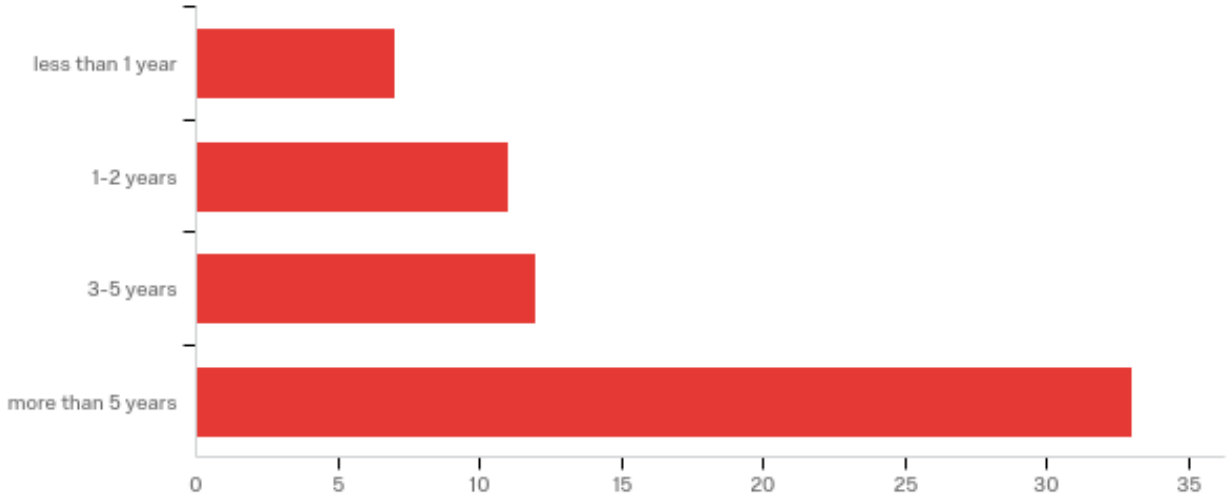
Fairbanks, AK 99709
99709
99701
Northern Region og Alaska
99709
State of Alaska, Northern region
Fairbanks, AK 99709
99709
99709

Q5 - How long have you been working in the field of transportation engineering?



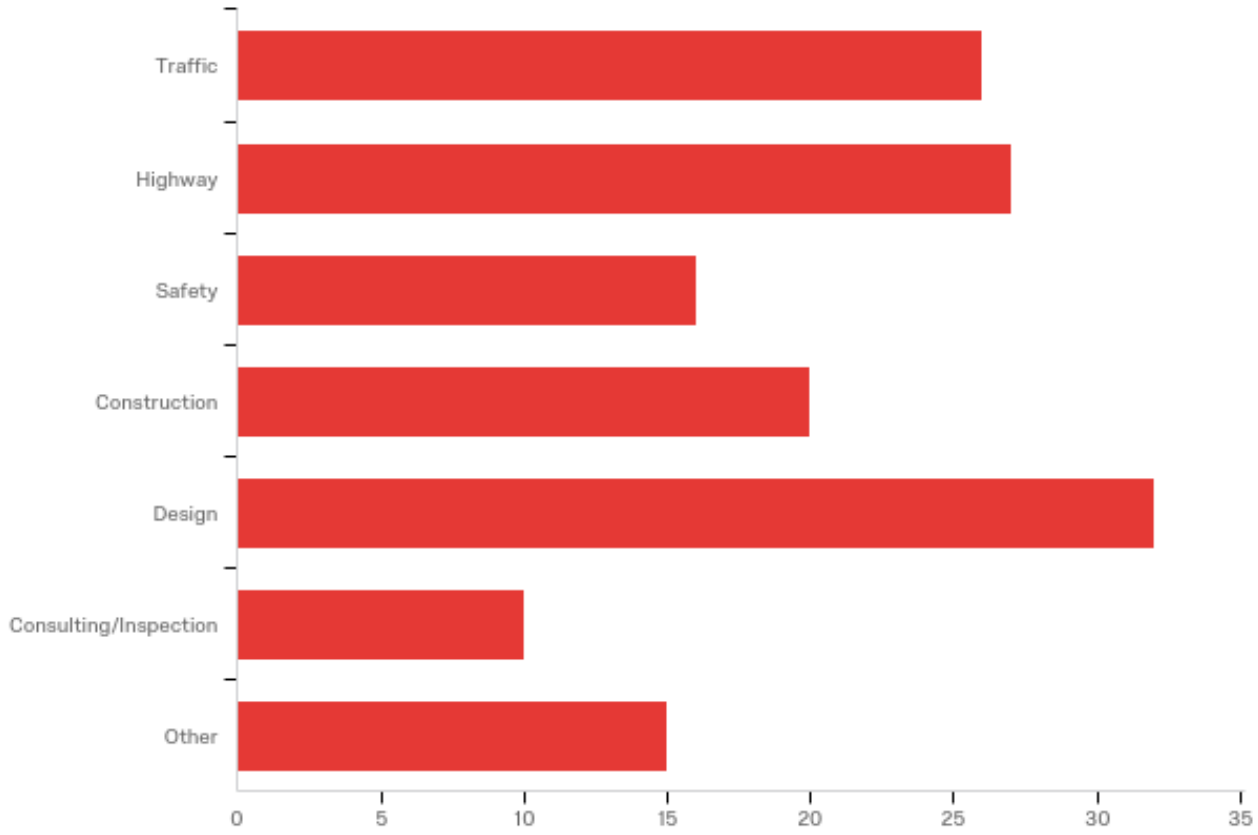
#	Answer	%	Count
1	less than 1 year	0.00%	0
2	1-2 years	0.00%	0
3	3-5 years	3.17%	2
4	more than 5 years	96.83%	61
	Total	100%	63

Q6 - How long have you been working in your current position?



#	Answer	%	Count
1	less than 1 year	11.11%	7
2	1-2 years	17.46%	11
3	3-5 years	19.05%	12
4	more than 5 years	52.38%	33
	Total	100%	63

Q8 - Which area or discipline best describes your work (check all that apply)?

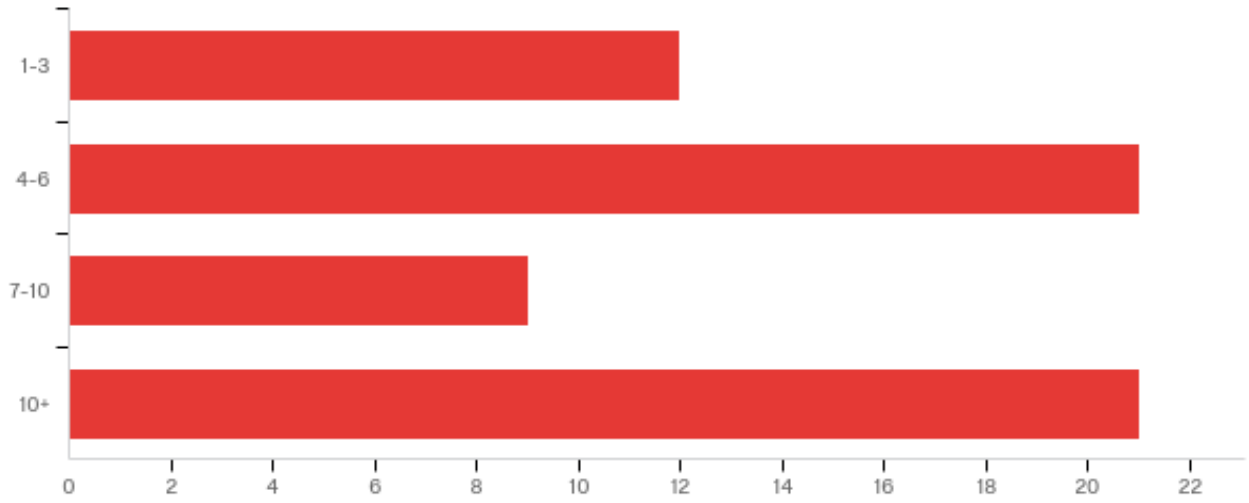


#	Answer	%	Count
1	Traffic	17.81%	26
2	Highway	18.49%	27
3	Safety	10.96%	16
4	Construction	13.70%	20
5	Design	21.92%	32
6	Consulting/Inspection	6.85%	10
7	Other	10.27%	15
	Total	100%	146

Other

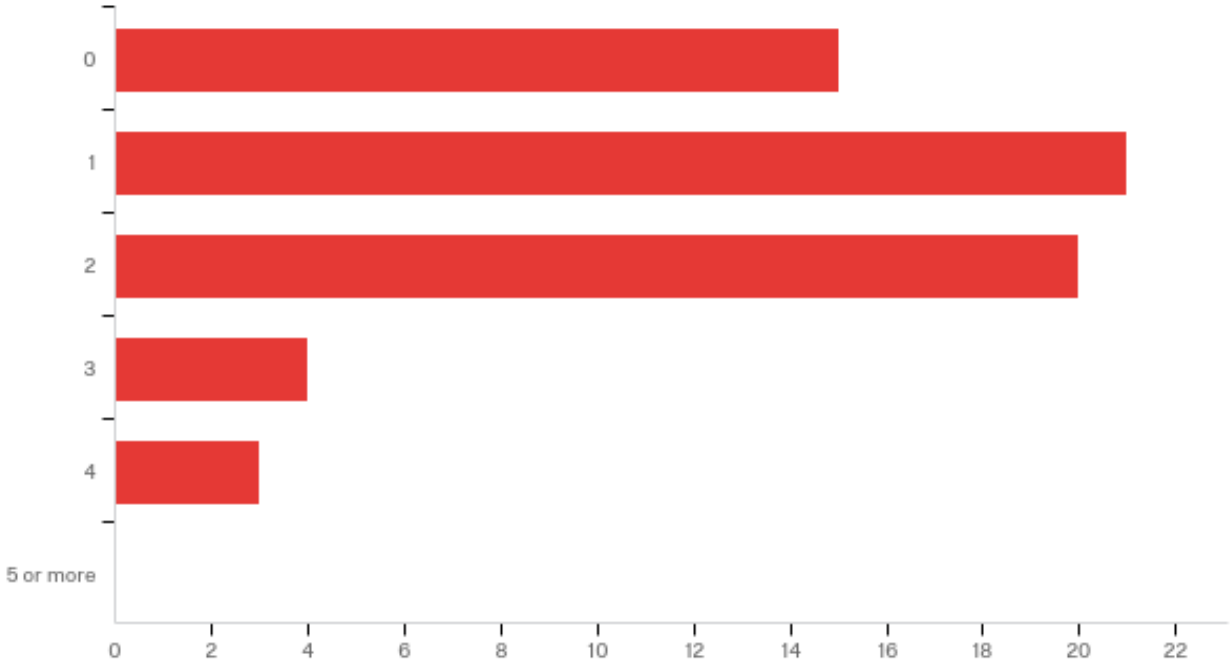
Other - Text
Marine Engineering & Project Management
Bridge
Heavy civil construciton contract administration
ROW
Bridges and structures
utilities
Travel Modeling
Project Management
Planning
Operations
Research
Aviation / FAA
Hydraulics
Utilities/ROW
geotechnical

Q9 - How many employees do you supervise?



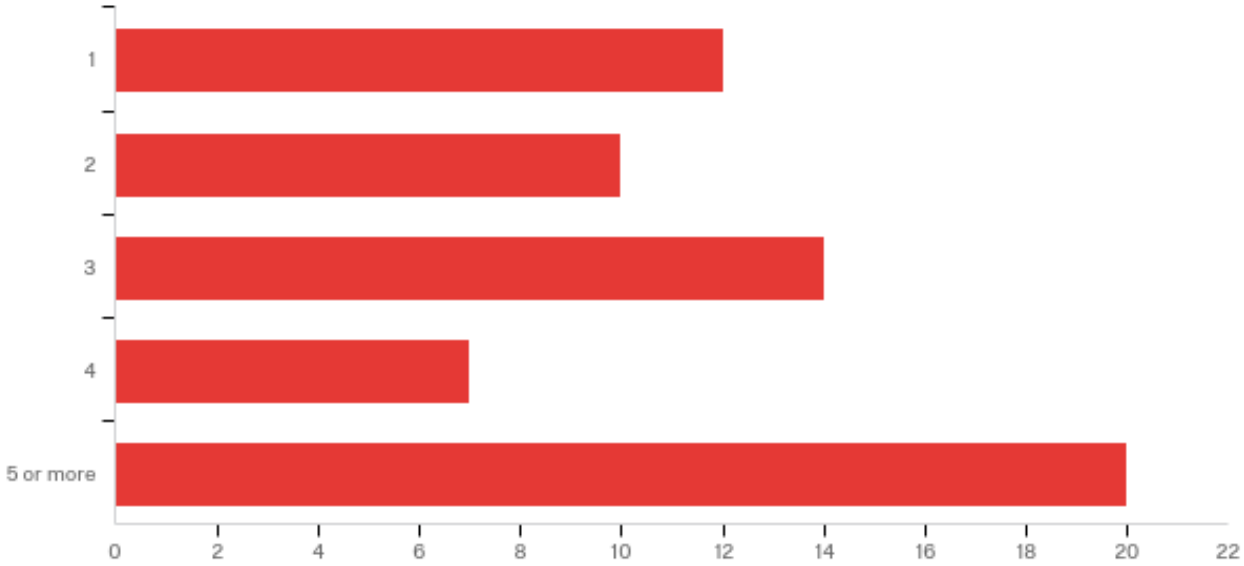
#	Answer	%	Count
1	1-3	19.05%	12
2	4-6	33.33%	21
3	7-10	14.29%	9
4	10+	33.33%	21
	Total	100%	63

Q10 - On average, how many times does a typical employee attend external training within a year?



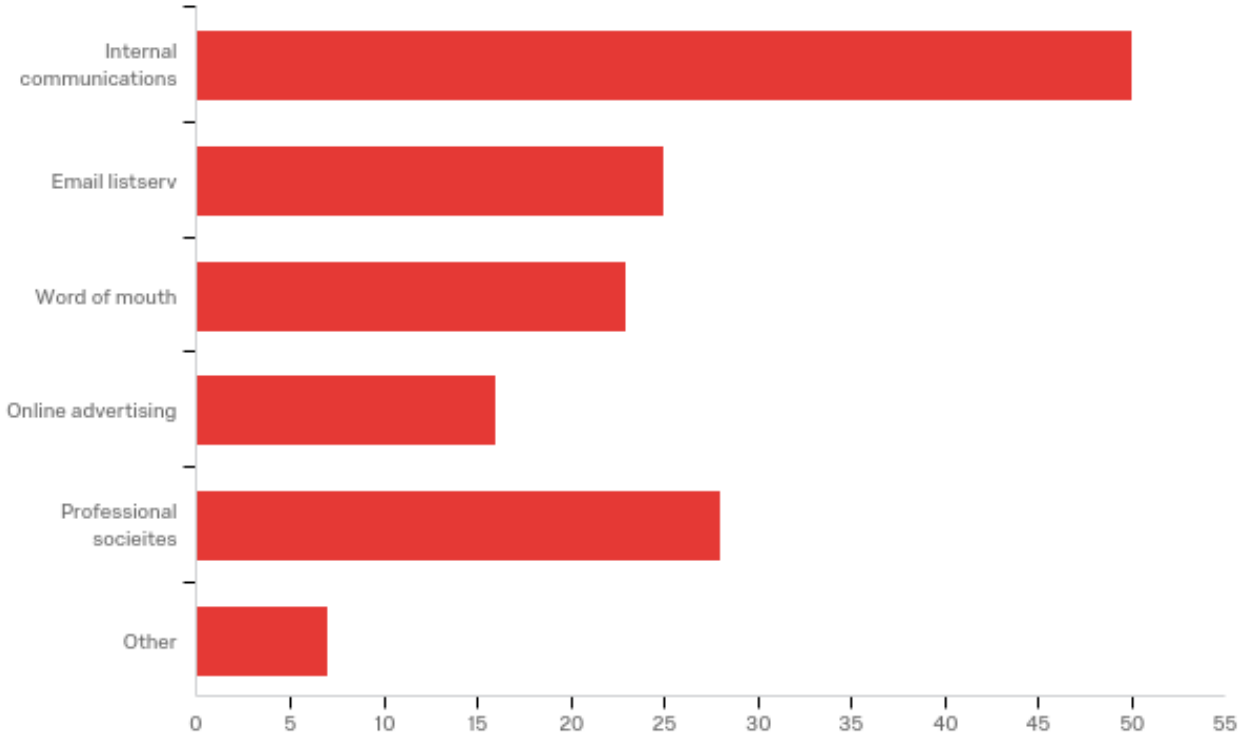
#	Answer	%	Count
6	0	23.81%	15
1	1	33.33%	21
2	2	31.75%	20
3	3	6.35%	4
4	4	4.76%	3
5	5 or more	0.00%	0
	Total	100%	63

Q11 - On average, how many times does a typical employee attend internal training within a year?



#	Answer	%	Count
1	1	19.05%	12
2	2	15.87%	10
3	3	22.22%	14
4	4	11.11%	7
5	5 or more	31.75%	20
	Total	100%	63

Q12 - How do you typically find out about training opportunities?



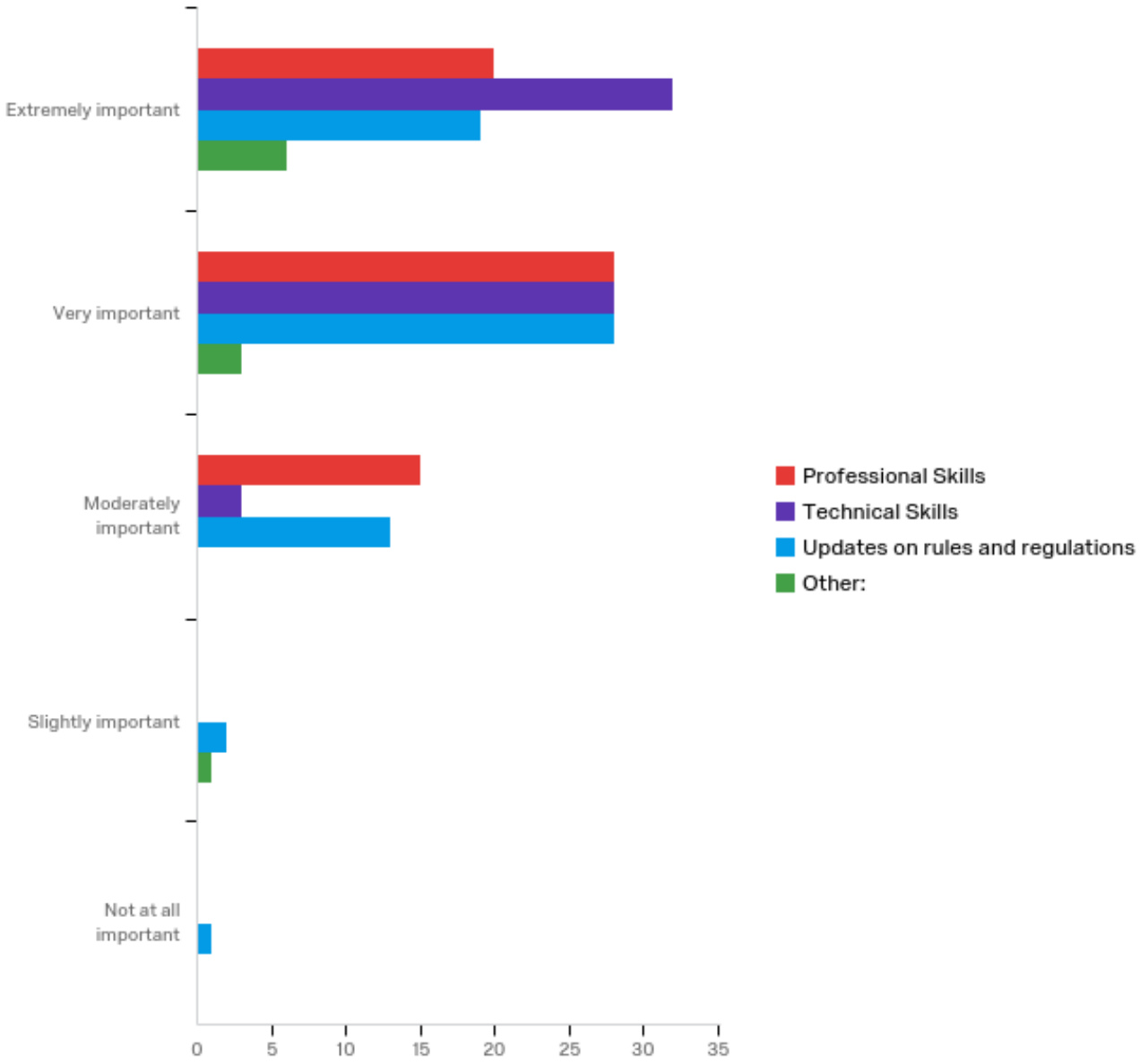
#	Answer	%	Count
1	Internal communications	33.56%	50
2	Email listserv	16.78%	25
3	Word of mouth	15.44%	23
4	Online advertising	10.74%	16
5	Professional socieites	18.79%	28
6	Other	4.70%	7
	Total	100%	149

Other

Other - Text
Web

All the above
Local consultant engineers
old fashion us mail
email and DOT website
NHI website
mailed flyers

Q13 - How important are the following kinds of training for employees in your workplace?

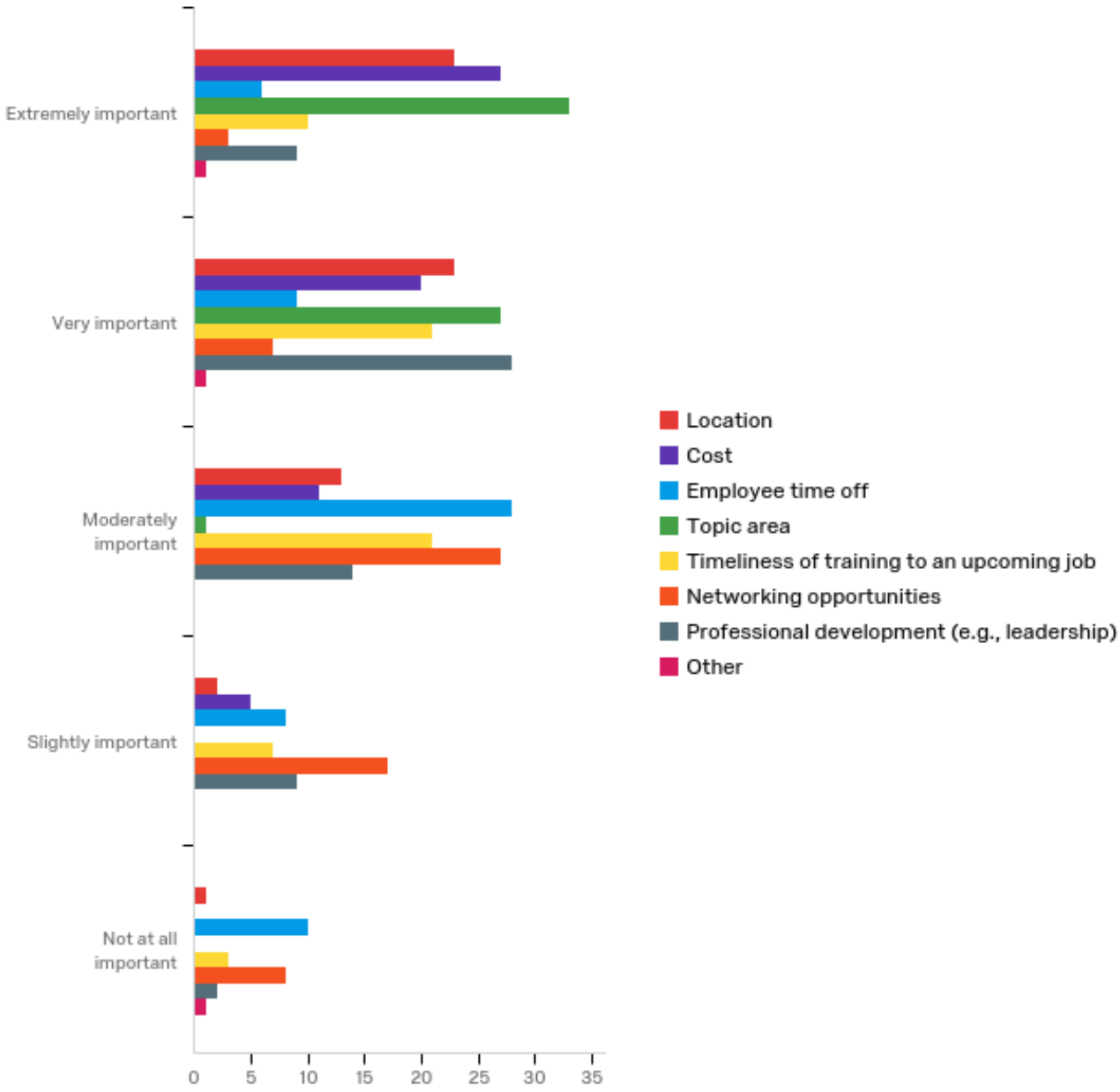


#	Question	Extremely important		Very important		Moderately important		Slightly important		Not at all important		Total
1	Professional Skills	31.75%	20	44.44%	28	23.81%	15	0.00%	0	0.00%	0	63
2	Technical Skills	50.79%	32	44.44%	28	4.76%	3	0.00%	0	0.00%	0	63
3	Updates on rules and regulations	30.16%	19	44.44%	28	20.63%	13	3.17%	2	1.59%	1	63
4	Other:	60.00%	6	30.00%	3	0.00%	0	10.00%	1	0.00%	0	10

Other:

Other: - Text
Communication skills
Safety
New Technologies
Internal cross-training
people skills
Fed-Aid program requirements
Planning
Computer Modeling
Emerging topics
People/Communication skills
Soft Skills (Communication, Leadership, etc.)

Q15 - How important are the following factors when deciding to send an employee to a particular training?



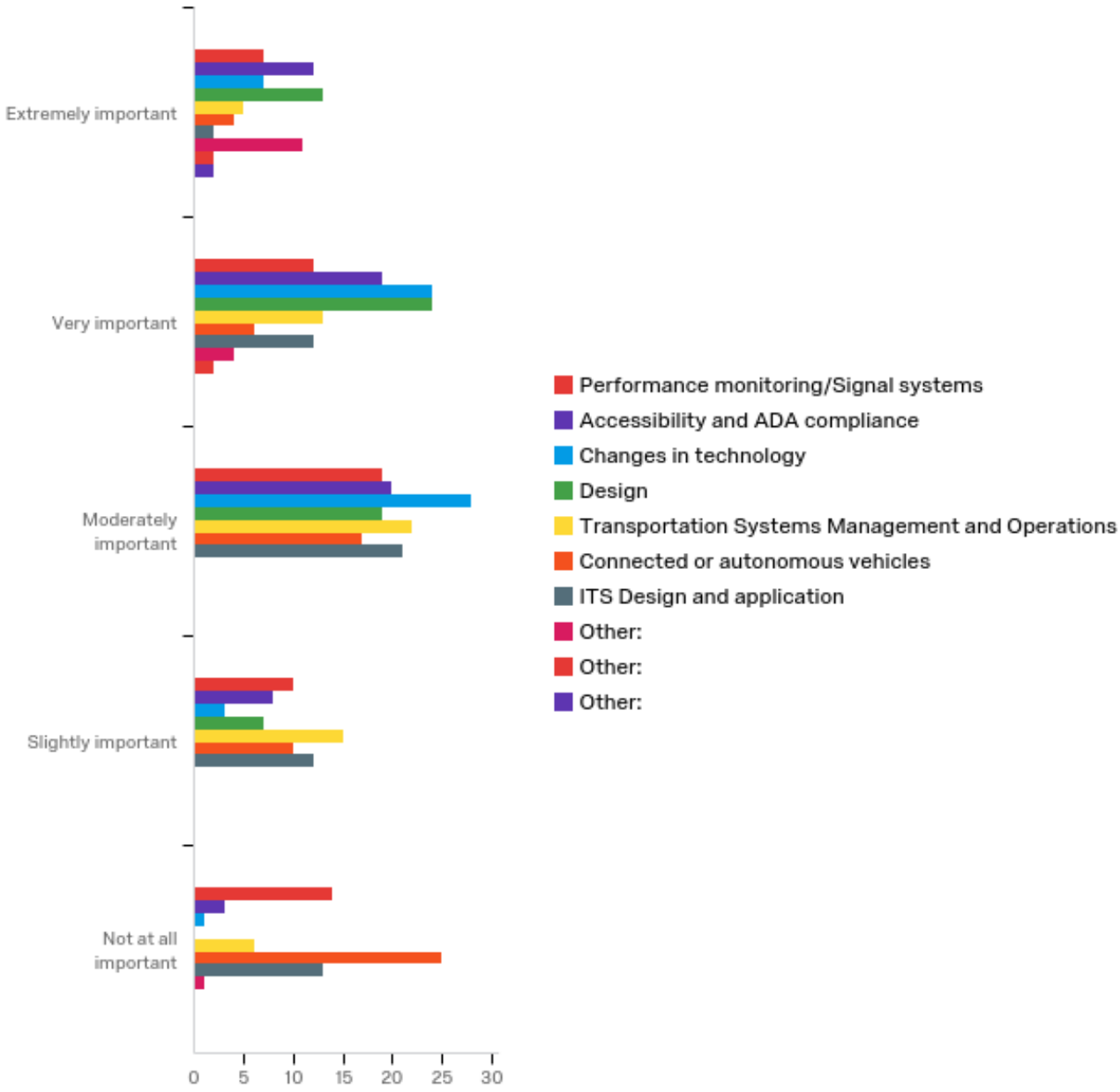
#	Question	Extremely important		Very important		Moderately important		Slightly important		Not at all important		Total
1	Location	37.10%	23	37.10%	23	20.97%	13	3.23%	2	1.61%	1	62
2	Cost	42.86%	27	31.75%	20	17.46%	11	7.94%	5	0.00%	0	63
3	Employee time off	9.84%	6	14.75%	9	45.90%	28	13.11%	8	16.39%	10	61

4	Topic area	54.10%	33	44.26%	27	1.64%	1	0.00%	0	0.00%	0	61
5	Timeliness of training to an upcoming job	16.13%	10	33.87%	21	33.87%	21	11.29%	7	4.84%	3	62
6	Networking opportunities	4.84%	3	11.29%	7	43.55%	27	27.42%	17	12.90%	8	62
7	Professional development (e.g., leadership)	14.52%	9	45.16%	28	22.58%	14	14.52%	9	3.23%	2	62
8	Other	33.33%	1	33.33%	1	0.00%	0	0.00%	0	33.33%	1	3

Other

Other - Text
Safety
Wide technical skills

Q16 - How important are the following topics in terms of timeliness of training needs?



#	Question	Extremely important		Very important		Moderately important		Slightly important		Not at all important		Total
1	Performance monitoring/Signal systems	11.29%	7	19.35%	12	30.65%	19	16.13%	10	22.58%	14	62
2	Accessibility and ADA compliance	19.35%	12	30.65%	19	32.26%	20	12.90%	8	4.84%	3	62

3	Changes in technology	11.11%	7	38.10%	24	44.44%	28	4.76%	3	1.59%	1	63
4	Design	20.63%	13	38.10%	24	30.16%	19	11.11%	7	0.00%	0	63
5	Transportation Systems Management and Operations	8.20%	5	21.31%	13	36.07%	22	24.59%	15	9.84%	6	61
6	Connected or autonomous vehicles	6.45%	4	9.68%	6	27.42%	17	16.13%	10	40.32%	25	62
7	ITS Design and application	3.33%	2	20.00%	12	35.00%	21	20.00%	12	21.67%	13	60
8	Other:	68.75%	11	25.00%	4	0.00%	0	0.00%	0	6.25%	1	16
9	Other:	50.00%	2	50.00%	2	0.00%	0	0.00%	0	0.00%	0	4
10	Other:	100.00%	2	0.00%	0	0.00%	0	0.00%	0	0.00%	0	2

Other:

Other: - Text
Communication with non-professionals
ROW Acquisition
AASHTOWare
structures
Public Involvement /Speaking
Active Transportation
Construction administration
Federally mandated Bridge Inspection
Construction related
Planning
Pavements
Non motorized design
Professional development for new/prospective managers
Claims and Negotiations

Utility relocations/permits

geotechnical

Other:

Other: - Text

NEPA

Writing Skills

Bridges

Construction Administration

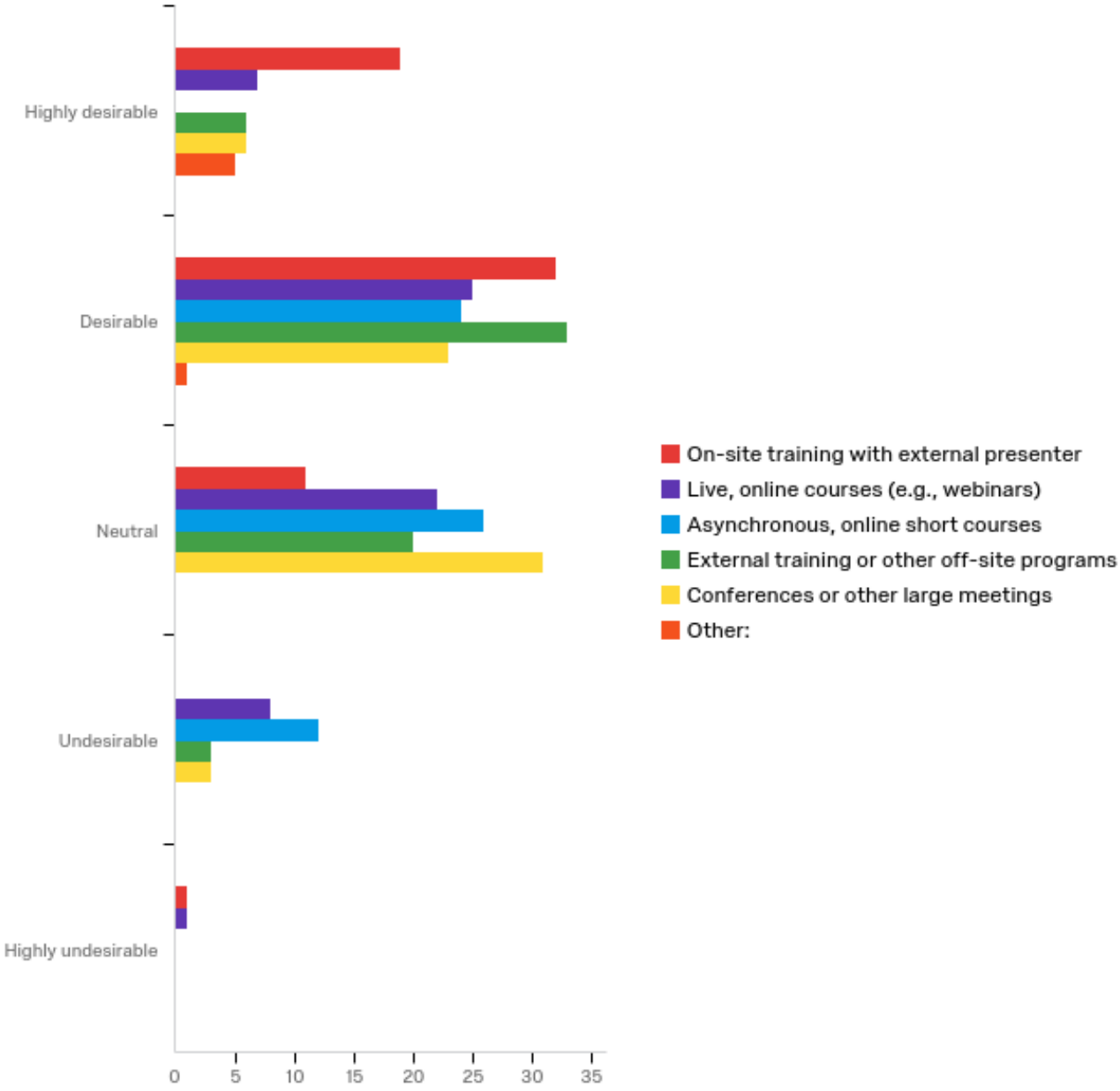
Other:

Other: - Text

Contract Admin

Soft Skills / Communication, etc.

Q18 - Please rate your preference for the following training formats.



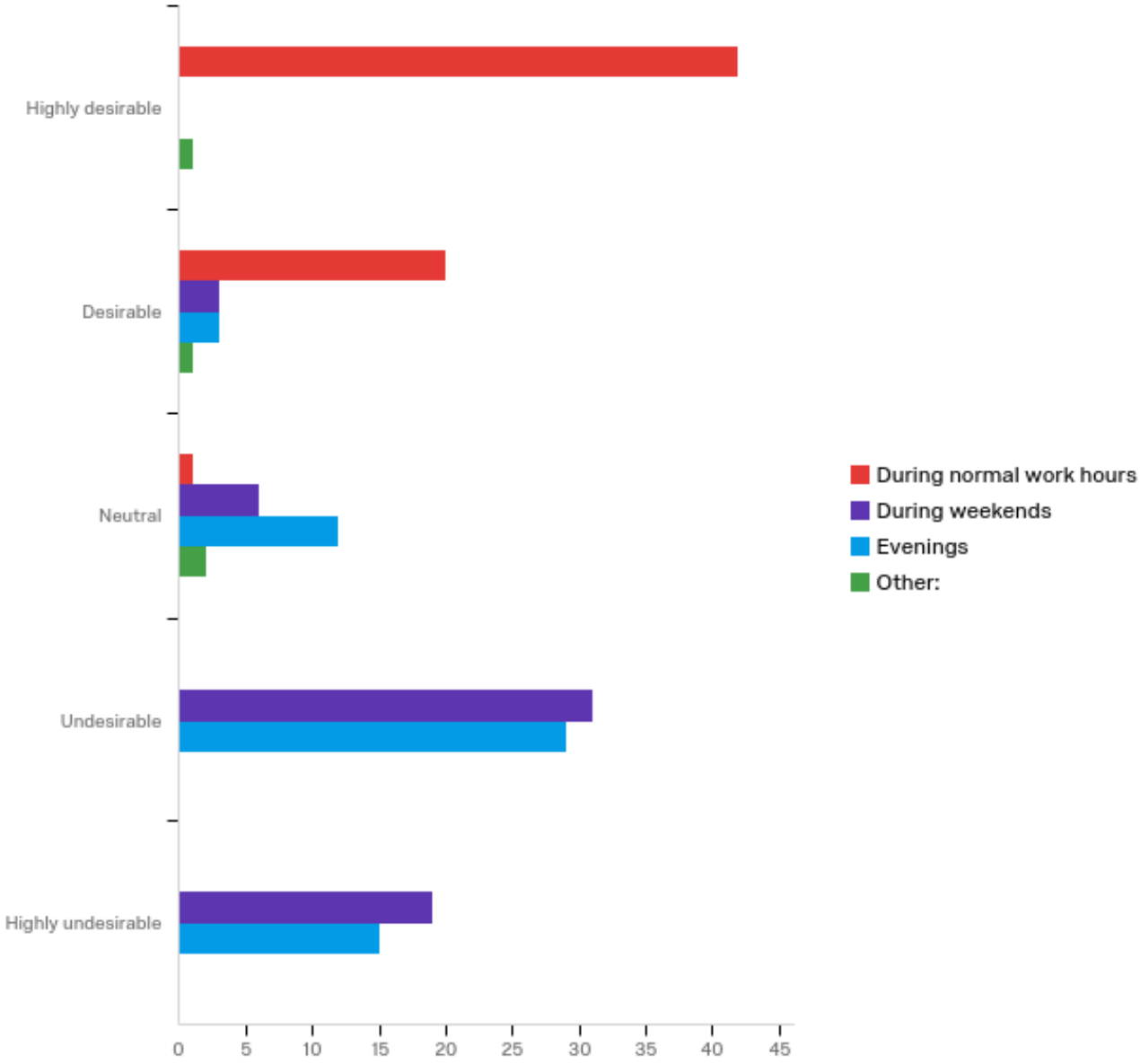
#	Question	Highly desirable		Desirable		Neutral		Undesirable		Highly undesirable		Total
1	On-site training with external presenter	30.16%	19	50.79%	32	17.46%	11	0.00%	0	1.59%	1	63
2	Live, online courses (e.g., webinars)	11.11%	7	39.68%	25	34.92%	22	12.70%	8	1.59%	1	63

3	Asynchronous, online short courses	0.00%	0	38.71%	24	41.94%	26	19.35%	12	0.00%	0	62
4	External training or other off-site programs	9.68%	6	53.23%	33	32.26%	20	4.84%	3	0.00%	0	62
5	Conferences or other large meetings	9.52%	6	36.51%	23	49.21%	31	4.76%	3	0.00%	0	63
6	Other:	83.33%	5	16.67%	1	0.00%	0	0.00%	0	0.00%	0	6

Other:

Other: - Text
college classroom style
University-based short courses with homework
On site, live training
On-site training with internal presenter
On-site training with INTERNAL presenter (i.e. Peer Sharing)

Q19 - Please rate your preference regarding the timing of training opportunities.



#	Question	Highly desirable		Desirable		Neutral		Undesirable		Highly undesirable		Total
1	During normal work hours	66.67%	42	31.75%	20	1.59%	1	0.00%	0	0.00%	0	63
2	During weekends	0.00%	0	5.08%	3	10.17%	6	52.54%	31	32.20%	19	59
3	Evenings	0.00%	0	5.08%	3	20.34%	12	49.15%	29	25.42%	15	59
4	Other:	25.00%	1	25.00%	1	50.00%	2	0.00%	0	0.00%	0	4

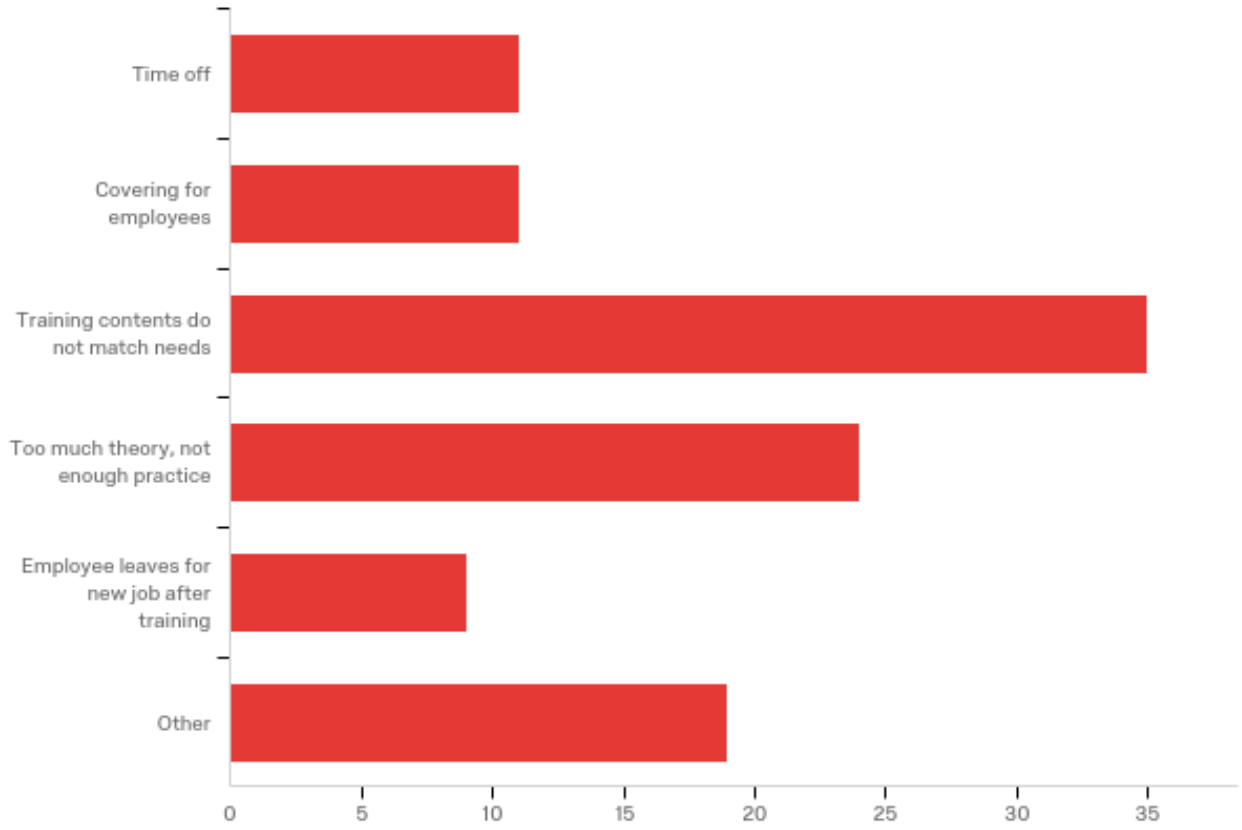
Other:

Other: - Text

Small group: peers/multidiscipline

Between the months of October - April

Q14 - Which factors are the biggest limitations or drawbacks to training programs?



#	Answer	%	Count
1	Time off	10.09%	11
2	Covering for employees	10.09%	11
3	Training contents do not match needs	32.11%	35
4	Too much theory, not enough practice	22.02%	24
5	Employee leaves for new job after training	8.26%	9
6	Other	17.43%	19
	Total	100%	109

Other

Other - Text
COST
Travel & Perdiem Cost
Long weeks. Usually done while keeping up with work.
Not new information
cost
Lack of funds.
Cost
no training money
Gauging how effective the training will be ahead of time
Not enough homework which is really needed to acquire / learn new material
travel cost
cost
Cost
cost
Availability when needed (just in time training)
Cost
Available funds
Lack of funding, remote location makes travel expensive and hard to get classes brought here.
no funding available for training

Q17 - Are there any topics for which you would like training but that are not currently available or personally accessible?

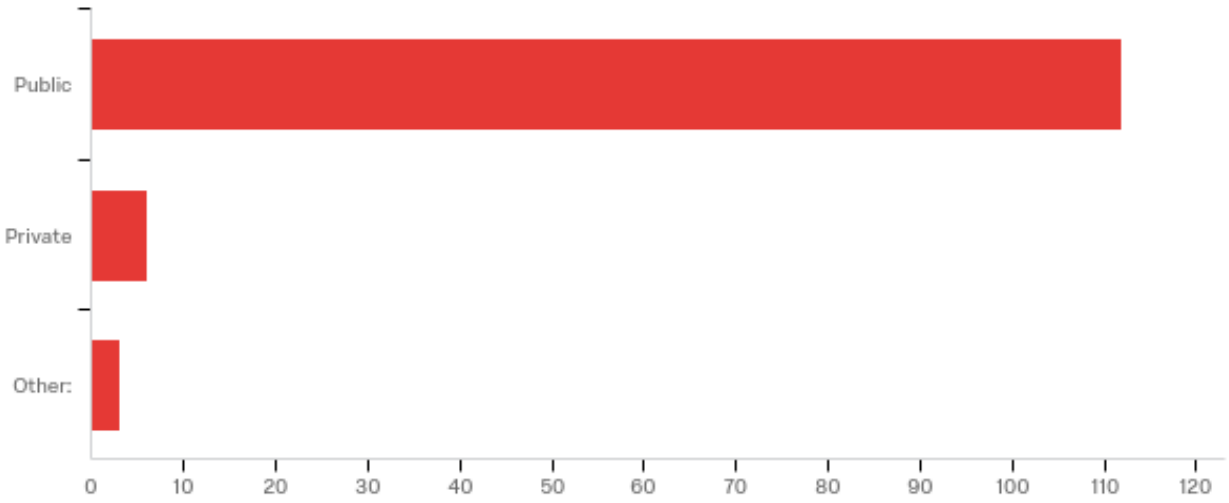
Are there any topics for which you would like training but that are not currently available or personally accessible?
We have the ability to request specific training as needed - so no.
Office Engineering practices
Innumerable
Highway Construction Specification development
Communication skills with non-professionals (average citizens/laypersons). Management of small teams
No
no
No.
Construction Administration Software in general
No
Federal, State, and Local Funding 101 for Projects (Design thru Construction)
unknown
Utility training, railroads, fiber optic
No
An periodical overview of 'what's new' would be very helpful.
Hydraulic Engineering Topics
Autonomous Vehicle Implications
Asphalt paving, bridge, retaining wall (construction or contract admin based)
No
data storytelling
Nope
Systems Operations Documents for Adaptive Signal Networks
no
Multimodal transportation

no
why is there a silly war on cars and a hatred of freeways?
Technician training -- most training focuses on engineering employees
Connected Vehicles
NACTO and Vision Zero
Construction's input on lesson's learned - big picture - what to look for when designing or reviewing projects?
no
Leadership, managing resources
skip tracing & archive research
No
Needs to be more training for utility coordination and relocation. More training on the applicable state laws and how they interact with FHWA/FAA regulations.
aviation base training - covering AC's

Appendix B: Engineering Practitioner Survey Report

Engineering Practitioner Survey Report

Q20 - In which sector of transportation engineering do you work?



#	Answer	%	Count
1	Public	92.56%	112
2	Private	4.96%	6
3	Other:	2.48%	3
	Total	100%	121

Other:

Other: - Text
N/A
academia

Q21 - In which zip code do you conduct most of your work?

In which zip code do you conduct most of your work?
99500
T2M1M3
98005
99801
99709
98009
99508
99519
97301
99518
99503
99501
99701
99709
99780
99508
99503
99801
99925
99833
99508
99519
99503
97210
Statwide

Various, by county would be Lincoln, Benton, Lane, Polk, Yamhill, and Marion
97470
97302
972xx
83709
97302
98516
98004
97850
97209
97301
97301
97301
98057
97209
97302
97471
97301
97301
97301
98004
97333
Jackson, Josephine, Coos Curry & Douglas Counties Equally
97527
97301
97302
98004
97209

97302
97850
97302
97301
92501
98004
Norway
98155
97330
83703
83844
97205
98004
98004
98004
98004
98004
98004
98004
98005
98008
98004
98004
98009
98004
98009
99762
99709

97302
97701
97301
97306
99701
99709
97302
99701
97301
99709
97301
97302
99707
99712
99709
97302
97703
97703
97703
97302
97302
97302
97302
99701
99711
99712
99709
99709

99730
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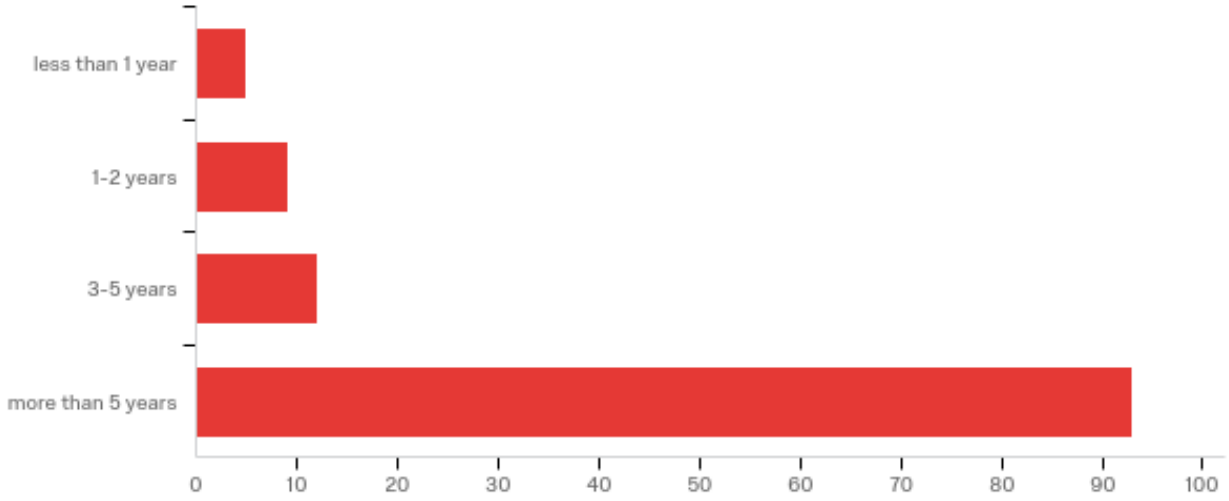
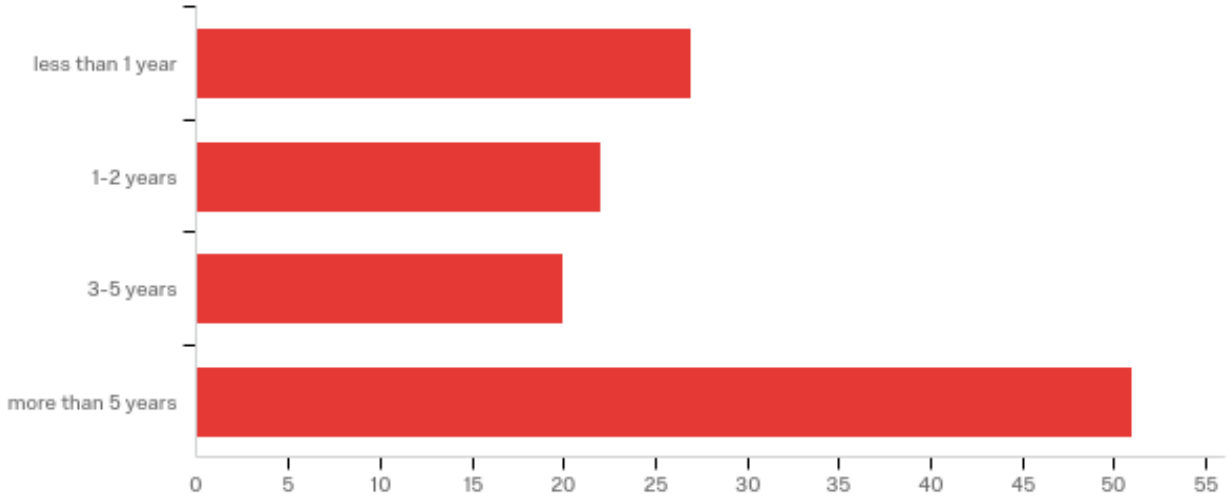
99701
99708

Q22 - How long have you been working in the field of transportation engineering?



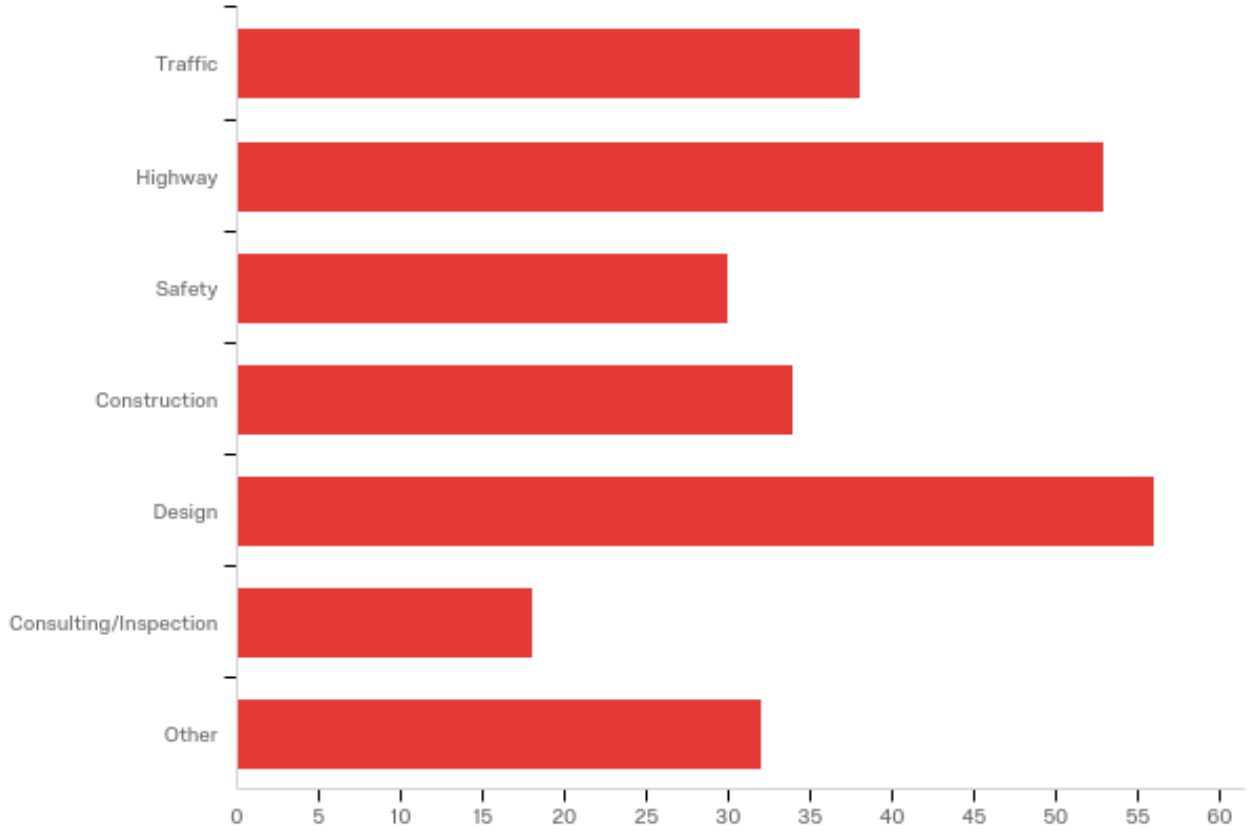
#	Answer	%	Count
1	less than 1 year	4.20%	5
2	1-2 years	7.56%	9
3	3-5 years	10.08%	12
4	more than 5 years	78.15%	93
	Total	100%	119

Q23 - How long have you been working in your current position?



#	Answer	%	Count
1	less than 1 year	22.50%	27
2	1-2 years	18.33%	22
3	3-5 years	16.67%	20
4	more than 5 years	42.50%	51
	Total	100%	120

Q24 - Which area or discipline best describes your work (check all that apply)?



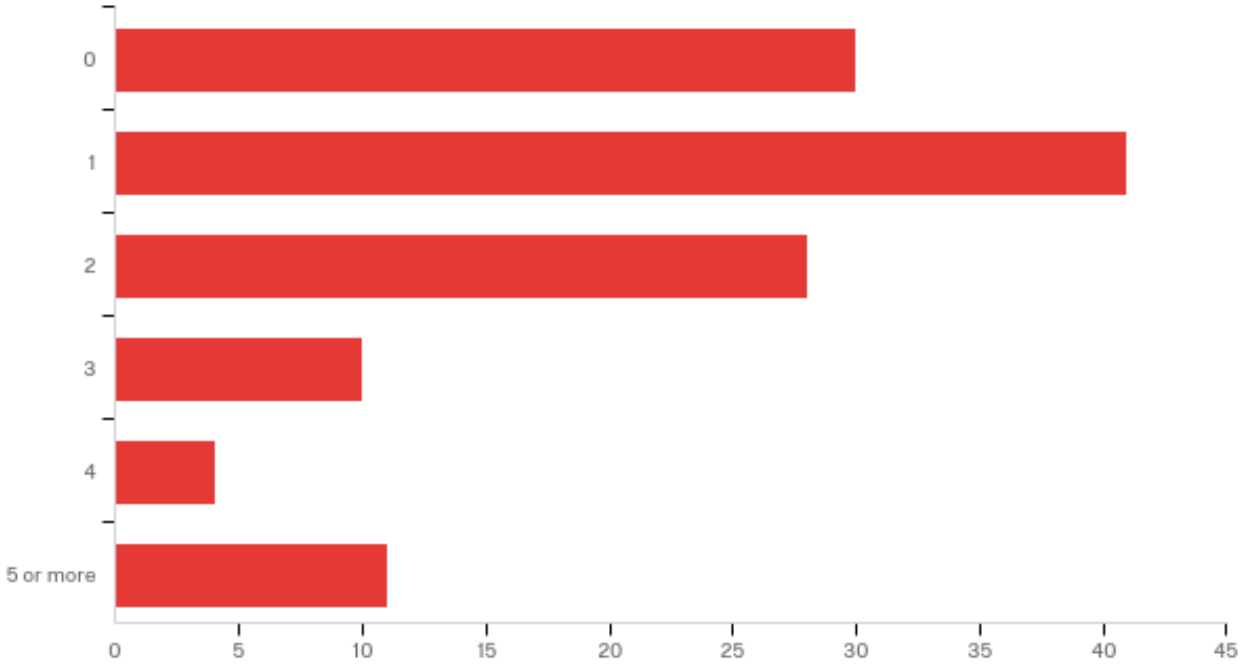
#	Answer	%	Count
1	Traffic	14.56%	38
2	Highway	20.31%	53
3	Safety	11.49%	30
4	Construction	13.03%	34
5	Design	21.46%	56
6	Consulting/Inspection	6.90%	18
7	Other	12.26%	32
	Total	100%	261

Other

Other - Text
Planning
Planning
Planning
Policy
Maintenance and Operations
Maintenance and Operations
Active Transportation
Civil Rights and Realty
Audit
Survey
Survey
bridge
Human Resources
Roadway
Technology Development
Right of Way
Environmental permitting
Data Management
Hydraulics
Permitting
Asset Management
Load rating
Communications
Research
Research
Planning
fuels and materials

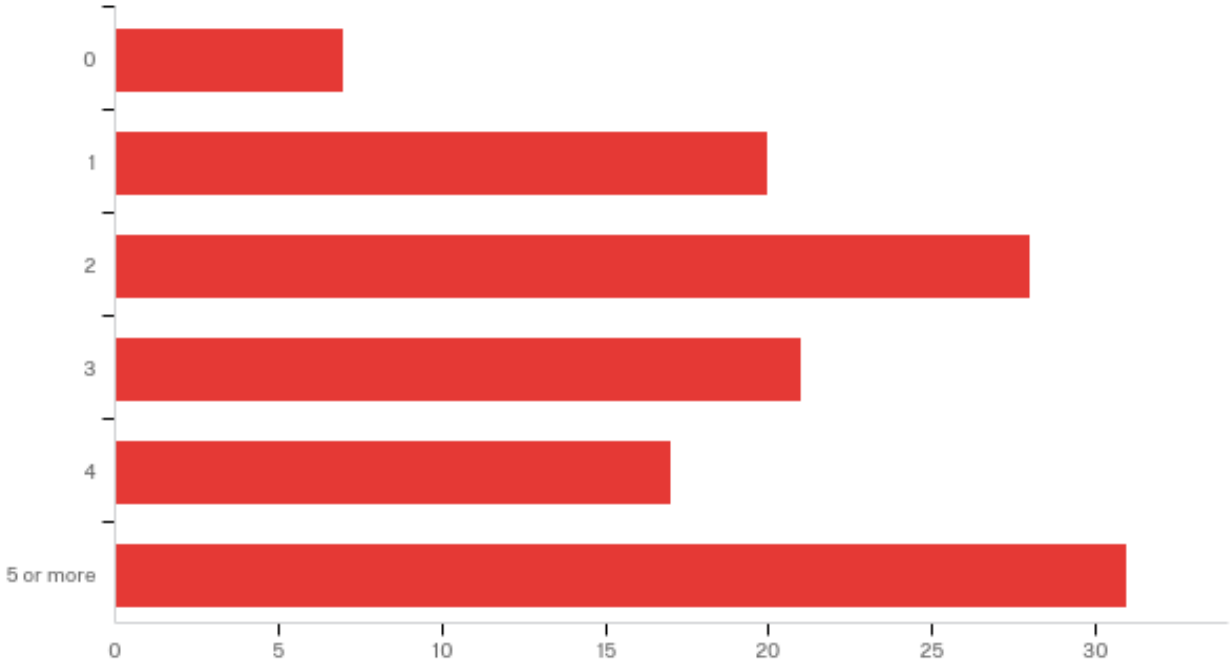
Locations Surveyor
Admin
Utilities (Highways)
ROW
Utilities

Q26 - On average, how many times do you attend external training within a year?



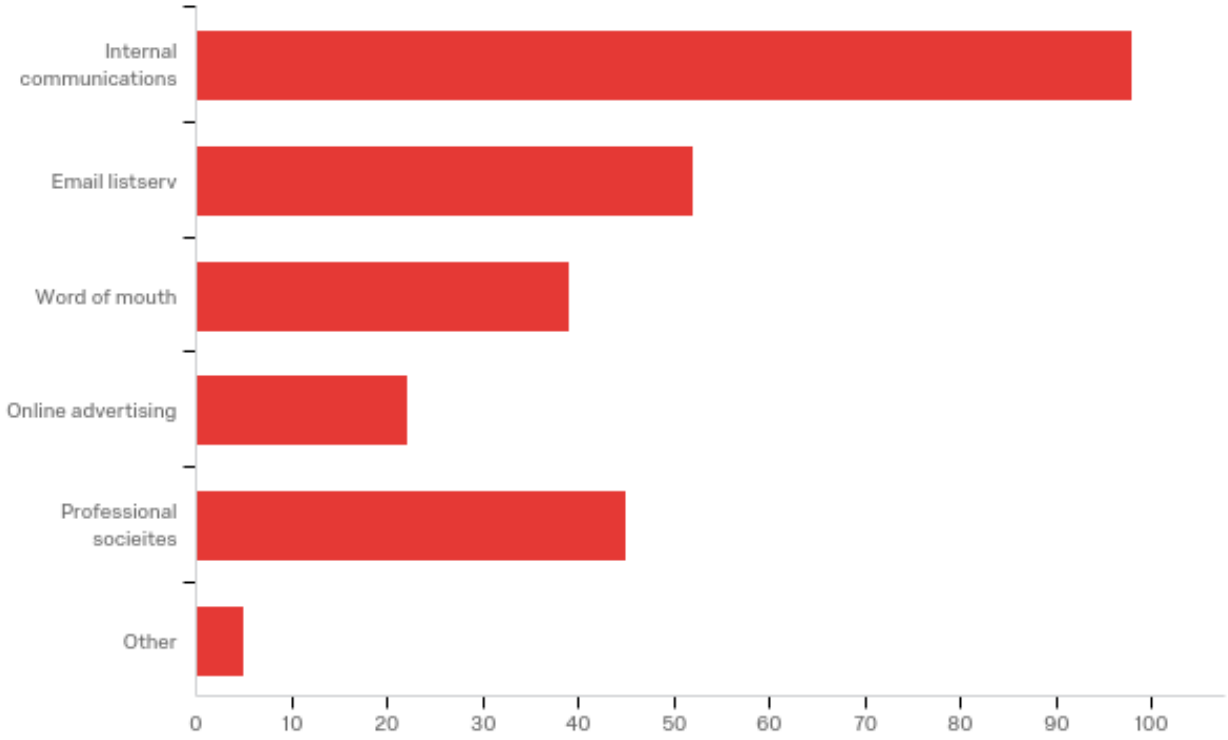
#	Answer	%	Count
6	0	24.19%	30
1	1	33.06%	41
2	2	22.58%	28
3	3	8.06%	10
4	4	3.23%	4
5	5 or more	8.87%	11
	Total	100%	124

Q27 - On average, how many times do you attend internal training within a year?



#	Answer	%	Count
6	0	5.65%	7
1	1	16.13%	20
2	2	22.58%	28
3	3	16.94%	21
4	4	13.71%	17
5	5 or more	25.00%	31
	Total	100%	124

Q28 - How do you typically find out about training opportunities?



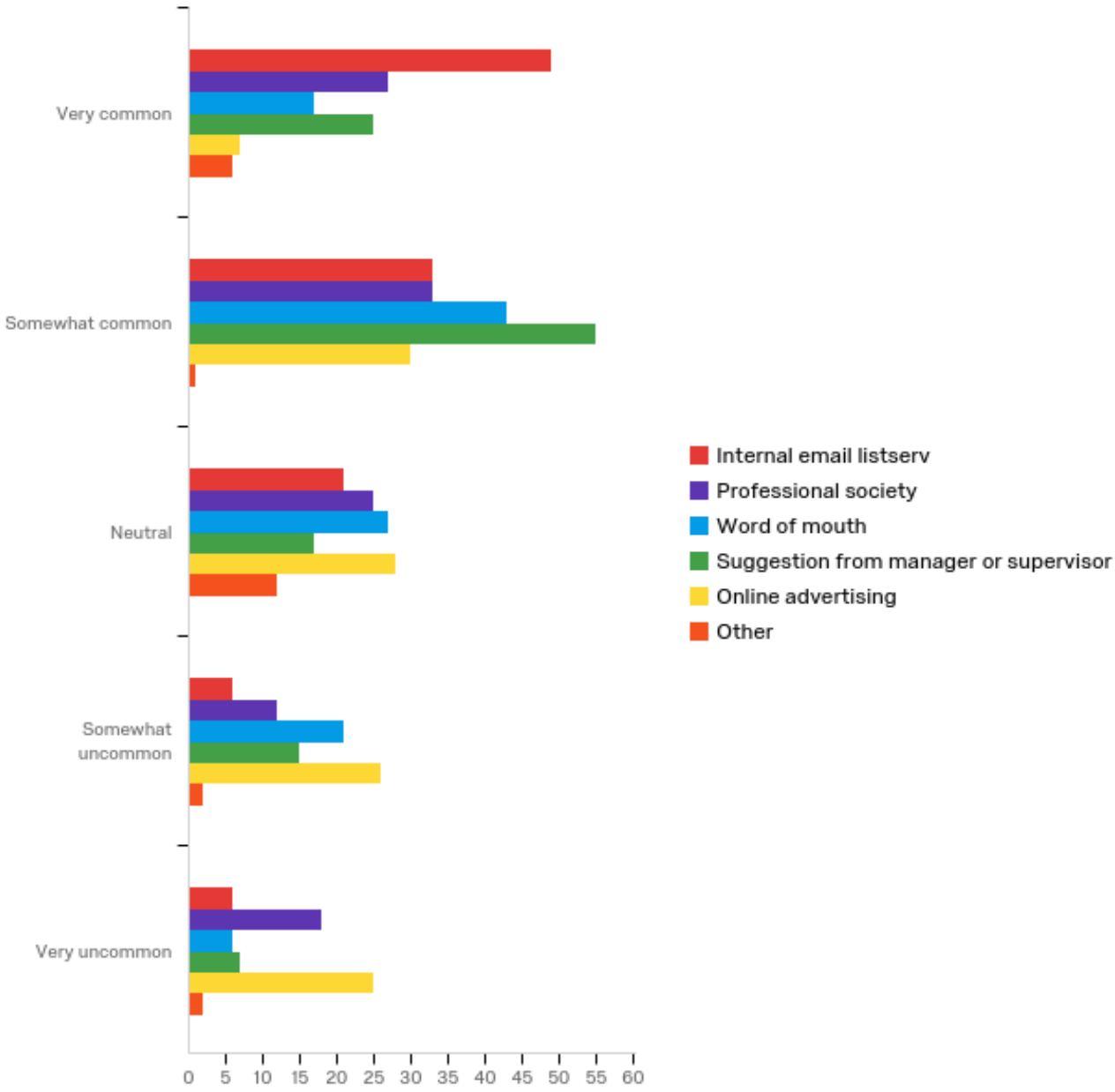
#	Answer	%	Count
1	Internal communications	37.55%	98
2	Email listserv	19.92%	52
3	Word of mouth	14.94%	39
4	Online advertising	8.43%	22
5	Professional socieites	17.24%	45
6	Other	1.92%	5
	Total	100%	261

Other

Other - Text
Internal website

Searching
Dept. Training website
Ilearn

Q36 - How common are the following methods in discovering training opportunities?



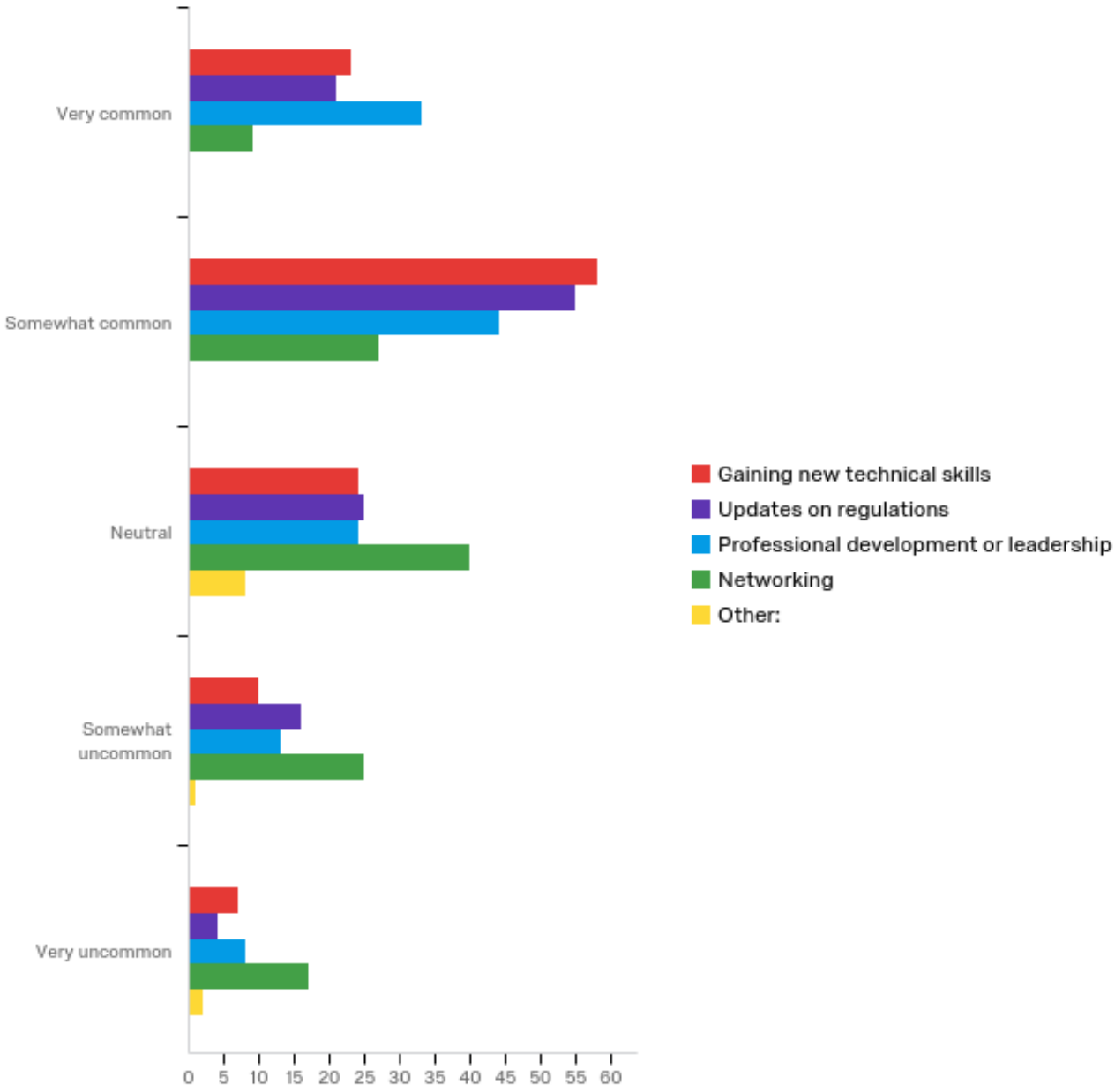
#	Question	Very common		Somewhat common		Neutral		Somewhat uncommon		Very uncommon		Total
1	Internal email listserv	42.61%	49	28.70%	33	18.26%	21	5.22%	6	5.22%	6	115
2	Professional society	23.48%	27	28.70%	33	21.74%	25	10.43%	12	15.65%	18	115
3	Word of mouth	14.91%	17	37.72%	43	23.68%	27	18.42%	21	5.26%	6	114

4	Suggestion from manager or supervisor	21.01%	25	46.22%	55	14.29%	17	12.61%	15	5.88%	7	119
5	Online advertising	6.03%	7	25.86%	30	24.14%	28	22.41%	26	21.55%	25	116
6	Other	26.09%	6	4.35%	1	52.17%	12	8.70%	2	8.70%	2	23

Other

Other - Text
Twitter, LinkedIn, Facebook
Internal website
Searching
ept Training website
Search the internet
Twitter/Advocacy
internal publications
School announcements

Q37 - How common are training opportunities related to the following topics or content areas?

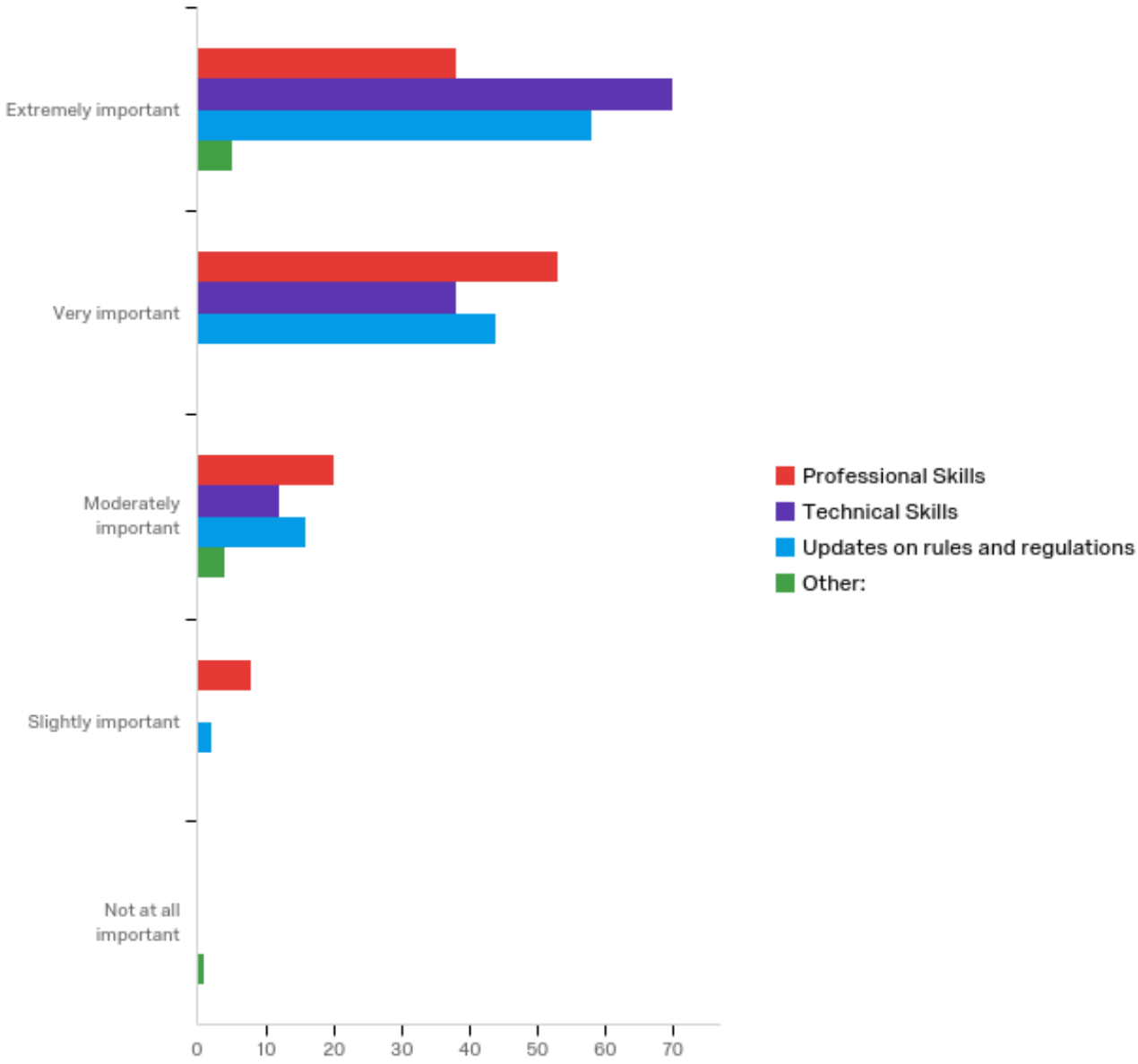


#	Question	Very common		Somewhat common		Neutral		Somewhat uncommon		Very uncommon		Total
1	Gaining new technical skills	18.85%	23	47.54%	58	19.67%	24	8.20%	10	5.74%	7	122
2	Updates on regulations	17.36%	21	45.45%	55	20.66%	25	13.22%	16	3.31%	4	121
3	Professional development or leadership	27.05%	33	36.07%	44	19.67%	24	10.66%	13	6.56%	8	122

4	Networking	7.63%	9	22.88%	27	33.90%	40	21.19%	25	14.41%	17	118
5	Other:	0.00%	0	0.00%	0	72.73%	8	9.09%	1	18.18%	2	11

Other:
Other: - Text

Q29 - How important are the following kinds of training for employees in your workplace?

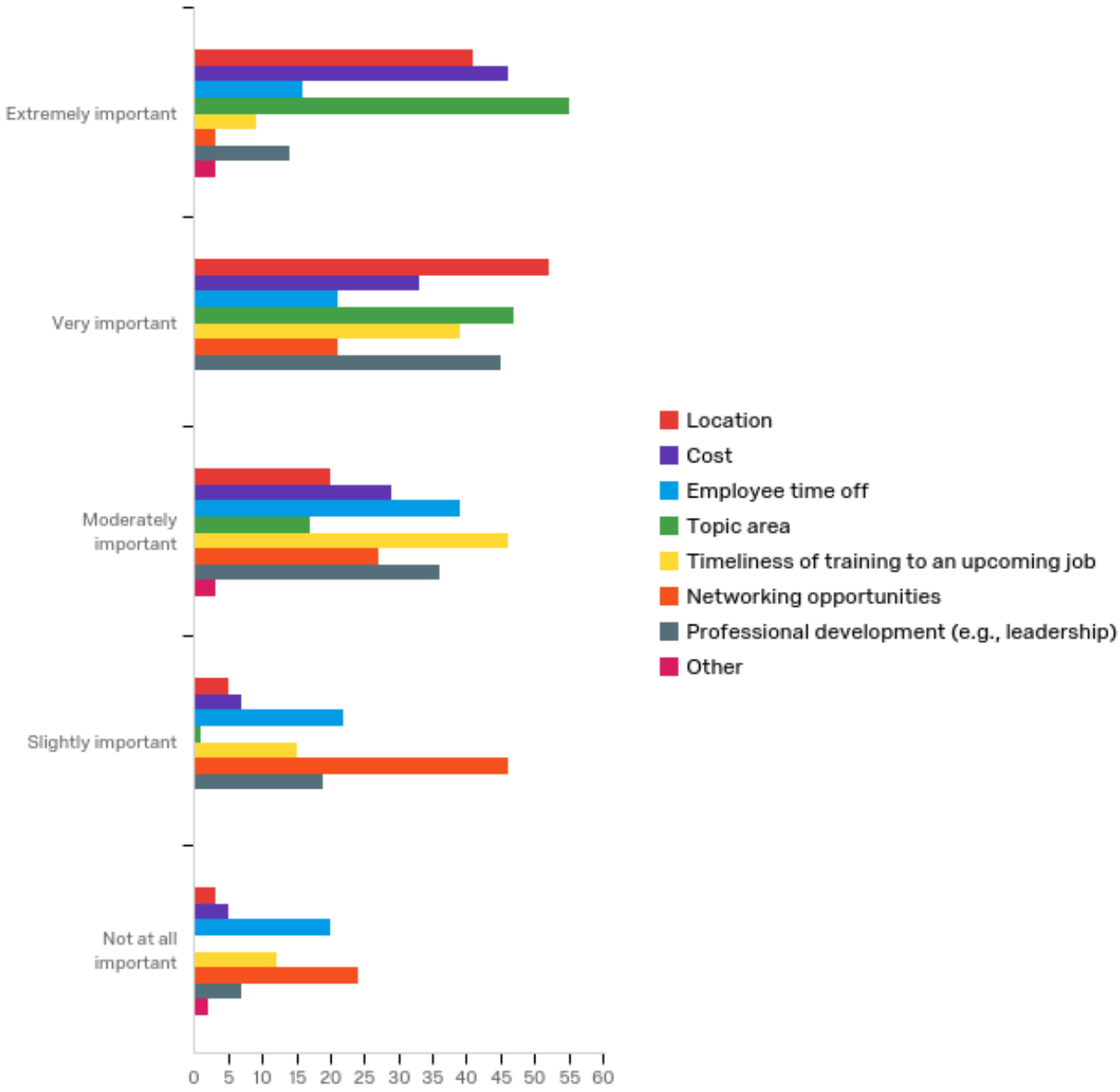


#	Question	Extremely important		Very important		Moderately important		Slightly important		Not at all important		Total
1	Professional Skills	31.93%	38	44.54%	53	16.81%	20	6.72%	8	0.00%	0	119
2	Technical Skills	58.33%	70	31.67%	38	10.00%	12	0.00%	0	0.00%	0	120
3	Updates on rules and regulations	48.33%	58	36.67%	44	13.33%	16	1.67%	2	0.00%	0	120
4	Other:	50.00%	5	0.00%	0	40.00%	4	0.00%	0	10.00%	1	10

Other:

Other: - Text
Certification Training
networking
Advancement Skills
PDH's/CEUs

Q30 - How important are the following factors when deciding to attend a particular training?



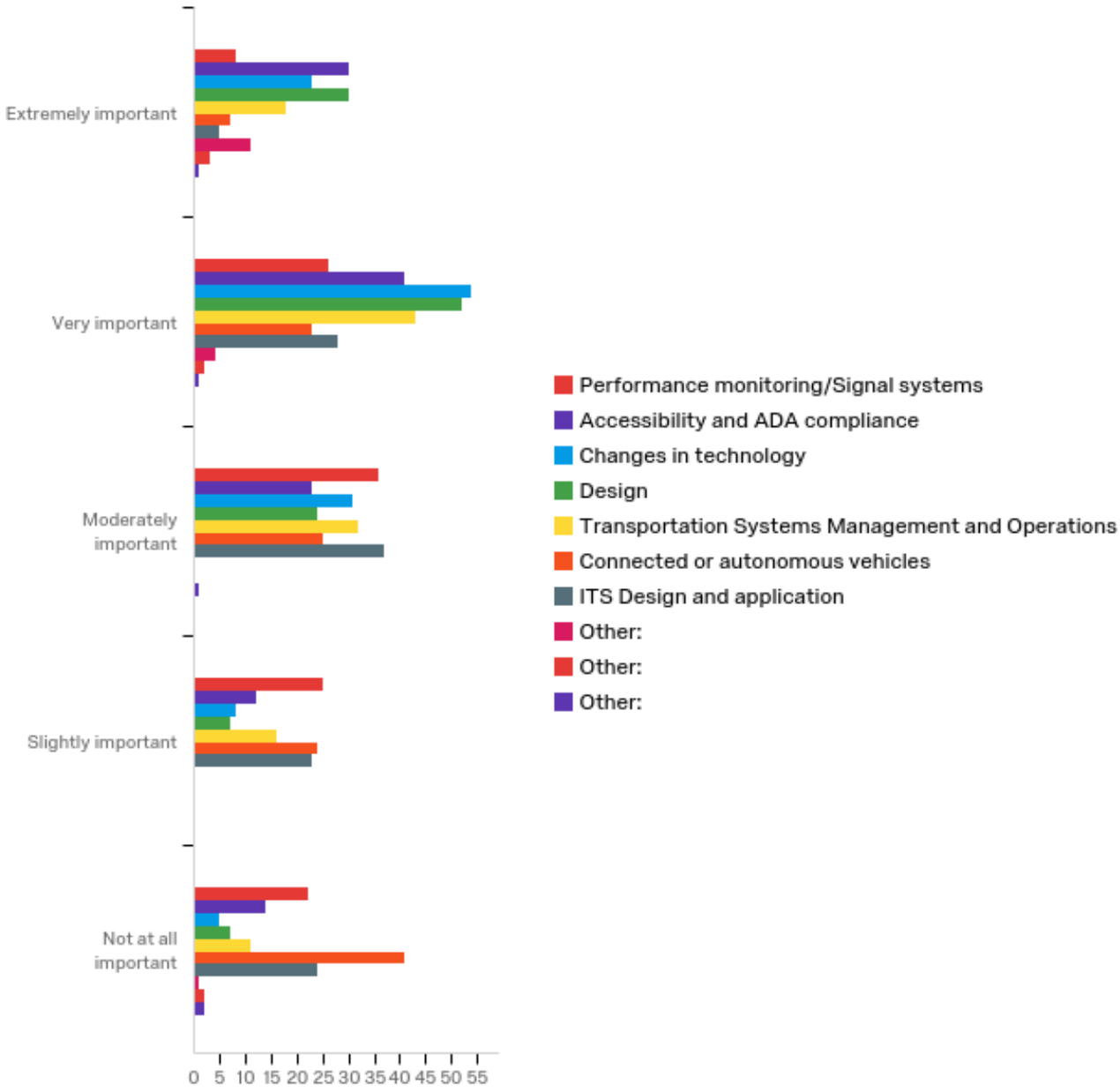
#	Question	Extremely important		Very important		Moderately important		Slightly important		Not at all important		Total
1	Location	33.88%	41	42.98%	52	16.53%	20	4.13%	5	2.48%	3	121
2	Cost	38.33%	46	27.50%	33	24.17%	29	5.83%	7	4.17%	5	120
3	Employee time off	13.56%	16	17.80%	21	33.05%	39	18.64%	22	16.95%	20	118

4	Topic area	45.83%	55	39.17%	47	14.17%	17	0.83%	1	0.00%	0	120
5	Timeliness of training to an upcoming job	7.44%	9	32.23%	39	38.02%	46	12.40%	15	9.92%	12	121
6	Networking opportunities	2.48%	3	17.36%	21	22.31%	27	38.02%	46	19.83%	24	121
7	Professional development (e.g., leadership)	11.57%	14	37.19%	45	29.75%	36	15.70%	19	5.79%	7	121
8	Other	37.50%	3	0.00%	0	37.50%	3	0.00%	0	25.00%	2	8

Other

Other - Text
PDH
Training budget available
Relevance
Nepotism / Favoritism

Q31 - How important are the following topics in terms of timeliness of training needs?



#	Question	Extremely important		Very important		Moderately important		Slightly important		Not at all important		Total
1	Performance monitoring/Signal systems	6.84%	8	22.22%	26	30.77%	36	21.37%	25	18.80%	22	117
2	Accessibility and ADA compliance	25.00%	30	34.17%	41	19.17%	23	10.00%	12	11.67%	14	120

3	Changes in technology	19.01%	23	44.63%	54	25.62%	31	6.61%	8	4.13%	5	121
4	Design	25.00%	30	43.33%	52	20.00%	24	5.83%	7	5.83%	7	120
5	Transportation Systems Management and Operations	15.00%	18	35.83%	43	26.67%	32	13.33%	16	9.17%	11	120
6	Connected or autonomous vehicles	5.83%	7	19.17%	23	20.83%	25	20.00%	24	34.17%	41	120
7	ITS Design and application	4.27%	5	23.93%	28	31.62%	37	19.66%	23	20.51%	24	117
8	Other:	68.75%	11	25.00%	4	0.00%	0	0.00%	0	6.25%	1	16
9	Other:	42.86%	3	28.57%	2	0.00%	0	0.00%	0	28.57%	2	7
10	Other:	20.00%	1	20.00%	1	20.00%	1	0.00%	0	40.00%	2	5

Other:

Other: - Text
Safety, walking, cycling
Regulation updates
Sustainable Products
Environmental implications
Auditing AASHTO
Survey/LiDar
Engineering Geology
Don't Know
Funding Regulation and Compliance
Work zones
Highway Safety and applications to those identified above
Arctic Design
Uniform Act
Accountability

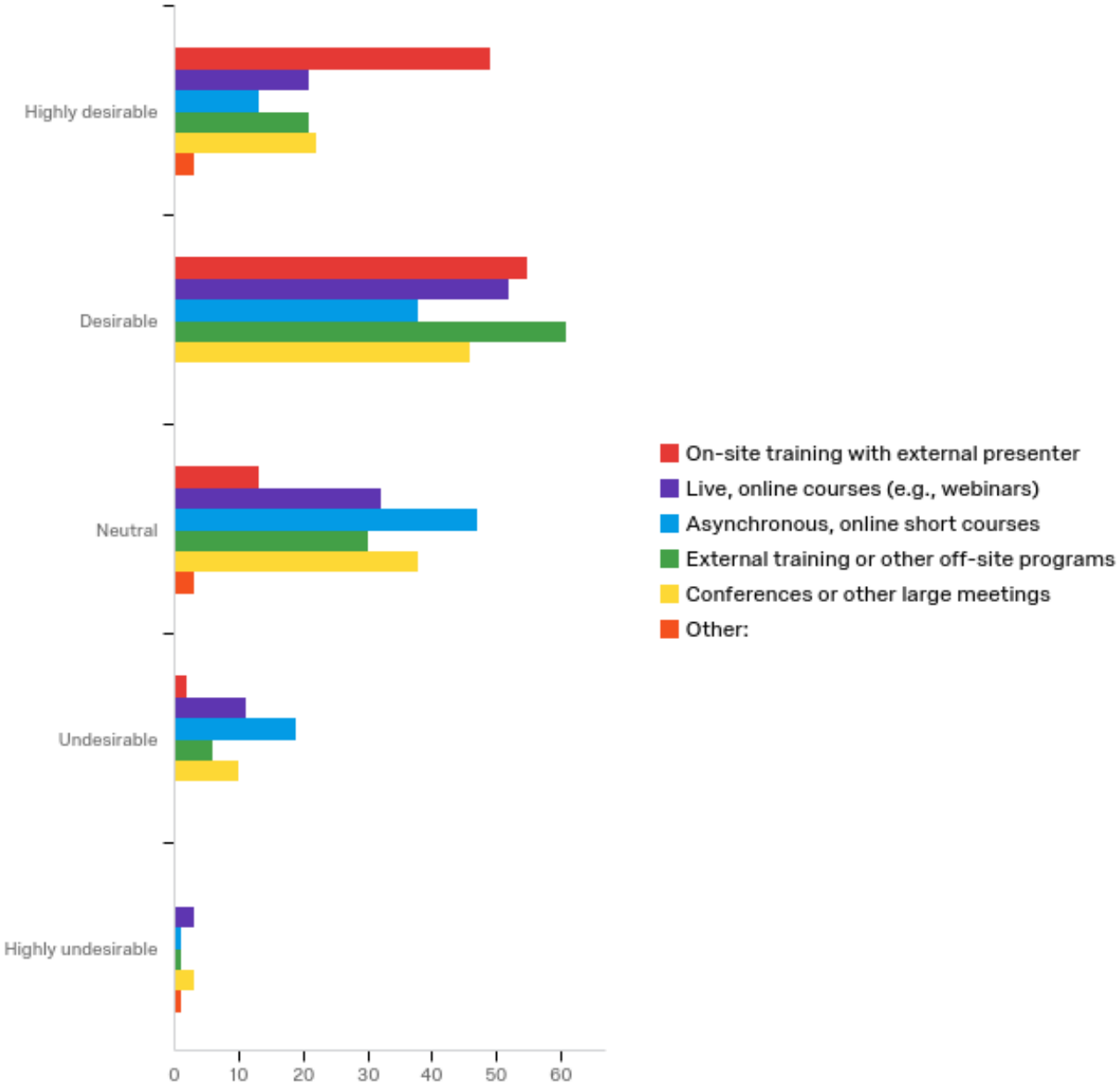
Other:

Other: - Text
Active Transportation
Regulatory oversight
Geotechnical Engineering
Project Management
Ethics

Other:

Other: - Text
Public Involvement
Contract Administration

Q32 - Please rate your preference for the following training formats.



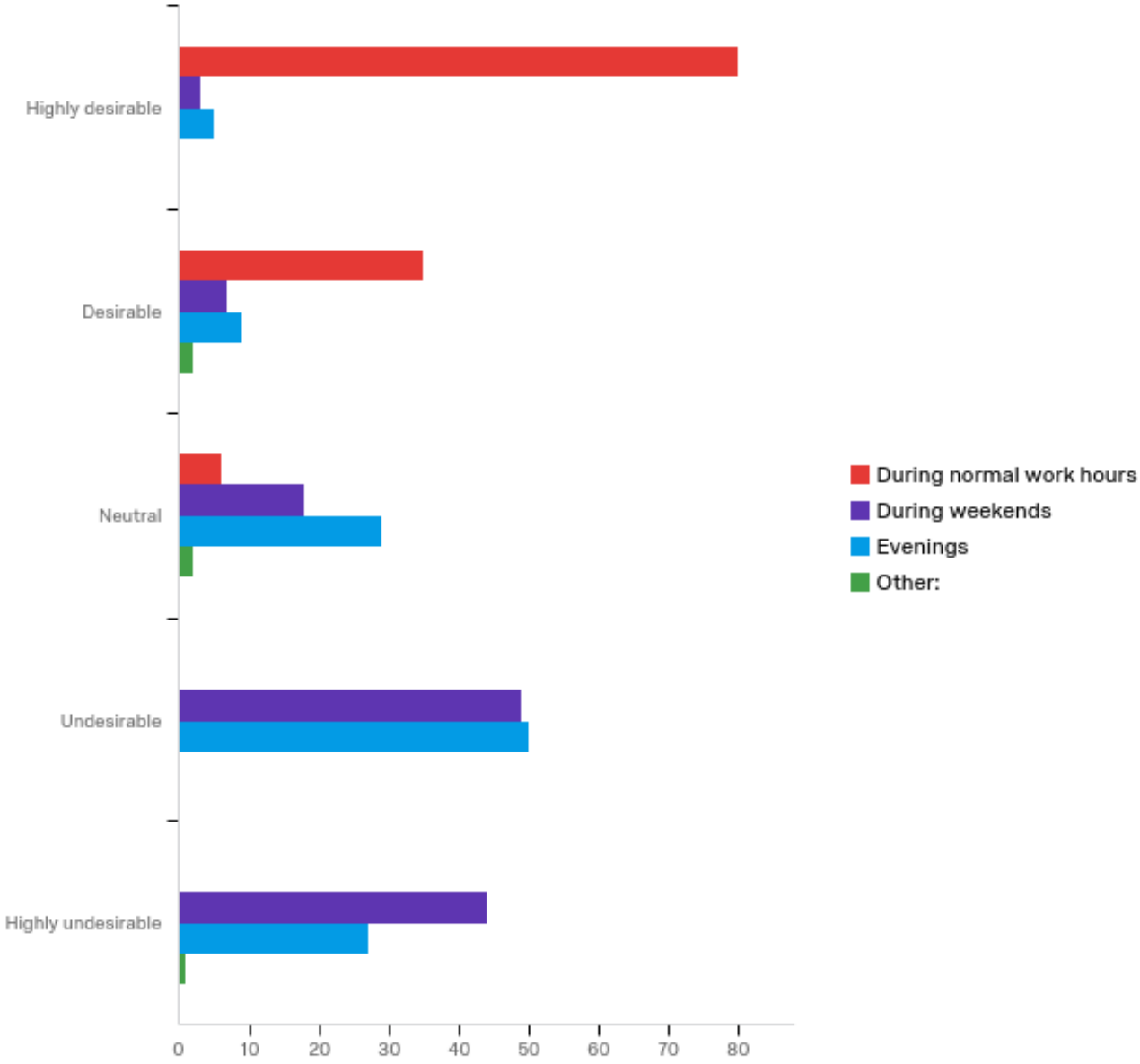
#	Question	Highly desirable		Desirable		Neutral		Undesirable		Highly undesirable		Total
1	On-site training with external presenter	41.18%	49	46.22%	55	10.92%	13	1.68%	2	0.00%	0	119
2	Live, online courses (e.g., webinars)	17.65%	21	43.70%	52	26.89%	32	9.24%	11	2.52%	3	119

3	Asynchronous, online short courses	11.02%	13	32.20%	38	39.83%	47	16.10%	19	0.85%	1	118
4	External training or other off-site programs	17.65%	21	51.26%	61	25.21%	30	5.04%	6	0.84%	1	119
5	Conferences or other large meetings	18.49%	22	38.66%	46	31.93%	38	8.40%	10	2.52%	3	119
6	Other:	42.86%	3	0.00%	0	42.86%	3	0.00%	0	14.29%	1	7

Other:

Other: - Text
internal training with internal staff
WTH is Asynchronous?
Self Study
Classroom training through university

Q33 - Please rate your preference regarding the timing of training opportunities.

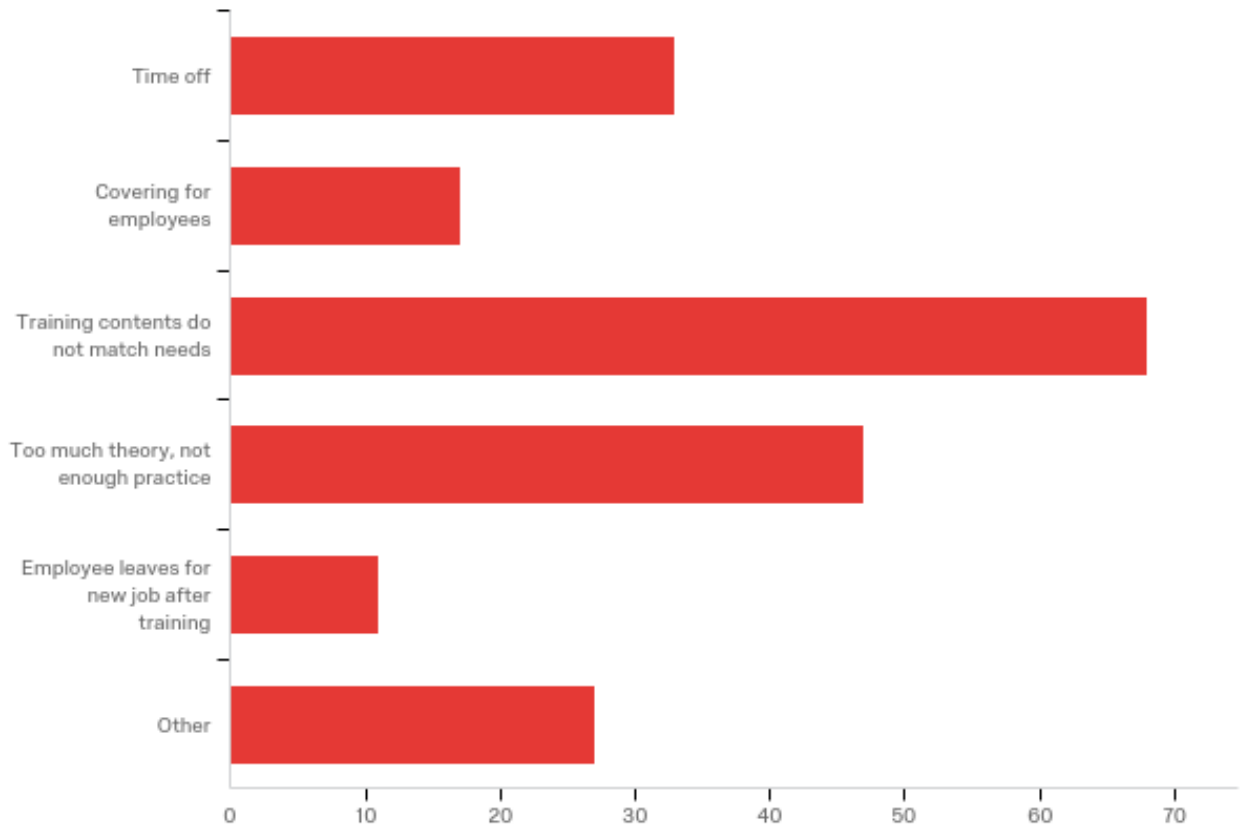


#	Question	Highly desirable		Desirable		Neutral		Undesirable		Highly undesirable		Total
1	During normal work hours	66.12%	80	28.93%	35	4.96%	6	0.00%	0	0.00%	0	121
2	During weekends	2.48%	3	5.79%	7	14.88%	18	40.50%	49	36.36%	44	121
3	Evenings	4.17%	5	7.50%	9	24.17%	29	41.67%	50	22.50%	27	120
4	Other:	0.00%	0	40.00%	2	40.00%	2	0.00%	0	20.00%	1	5

Other:

Other: - Text
on the web to gain knowledge like a tedX talk
Vacations

Q34 - Which factors are the biggest limitations or drawbacks to training programs?



#	Answer	%	Count
1	Time off	16.26%	33
2	Covering for employees	8.37%	17
3	Training contents do not match needs	33.50%	68
4	Too much theory, not enough practice	23.15%	47
5	Employee leaves for new job after training	5.42%	11
6	Other	13.30%	27
	Total	100%	203

Other

Other - Text
Not enough ongoing training in a laid-out format
Training budget
Employer denies opportunity
Cost of travel to attend and lack of, or prerequesites for online courses
budget restraints
Cost
Scarcity
Work deversity makes trainning often silly... I use little of my degree let alone a short professional course
No $s set aside for training.
knowledge of whats available
Certification training preferred over formal education
training efficiency, workload, convenience
Cost
Limited location, inability to travel out of state to attend
Current workload
Not very many opportunities offered and those that are offered are repetative.
Too much paper work to apply to attend training outside and inside the State. Please symplify the process!
at 60 years less training
Conflicts with deadlines or other applicable trainings
Lack of employer support for external or out-of-town/State training opportunities that require ANY travel.
associated cost of training
Location
Cost
funding
Immediate Application (knowledge loss after training)
agency funding
Cost

Q35 - Are there any topics for which you would like training but that are not currently available or personally accessible?

Are there any topics for which you would like training but that are not currently available or personally accessible?
Complete streets, equity, walking and cycling
not at the momeent
Linkage between Planning, Programming and Project Development
AASHTO Geometric Design
Aviation
Regulatory environmental compliance all topics
Drainage design, hydraulic modelling, fish passage culvert design.
No
N/A
no
thanks
No
AASHTO 48 CFR 31.2
general web based training like TedX talks.
N/A
leadership skills, PEOPLE management skills
Training on our guidance docuemens, manuals and applicable laws, such as the Oregon Highway design manual, bike bill, the Oregon Bike and Pedestrain Plan. Actual human scale design training for roadway designers. Land use concepts for roadway designers. Multimodal transportation creative design courses.
Northwest Geotechnical Workshop, Highway Geology Symposium
How to make your boss care about his/her employees? Should we develop EIT or continue to burn them out and make them cynical mutes.
3D CAD and/or structural (bridge) BIM
unknown
No.
Advanced ArcGIS, Python, Visual Basic
Yes. External training is not normally allowed because of 1) no funding for training, 2) statewide travel bans for State employees that are not in upper management, 3) Agency concern regarding "public perceptions"

no
Roundabouts and Urban Ped and Bike design
No
ArcGIS Online
Hydraulics
computer programs related to my position
PE Exam Review
no
no
no
PowerPoint skills
No
no
None
NA
n/a
Efficient Communication, dealing to high-maintenance team members
Federal administration of contracts, including requirements for specifications.
fiber networking basics
field applications
strucural pole infromation, base design, signal design
electric vehicles as it relates to infrastructure planning, urban design as it relates to engineering design and project performance, franchise utility infrastructure planning, property acquisition processes and federal guidelines, impacts of autonomous vehicles and 5G technologies integrated into public infrastructure
no
N/A
NO
Advanced training classes for ArcGIS, C3D. Classes for career advancement such as PE/FE Exam study workshops.
no

How to incorporate safety culture in Oregon.
Corsim, QuickZone
Hands on sUAV training and CIVIL3D course
no
no
Practical ADA course (with standard applications and lots of exceptions to standard situations)
Not that I can think of
Infraworks
ADA Design for Temporary Traffic Control
Team Building, Change Management
Trainings related to hydrualics.
3D, 4D and 5D Construction Visualizations and Time vs. Cost Constructability Models
Additional transportation safety training, statistical training and applications to safety,
ArcGIS or similar, Adobe forms or similar form building software,
n/a
none
No
n/a
Right of Way
No
Hydrology, hydraulics, climate impact resiliency
Design considerations for low volume, permafrost/discontinous permafrost/warm permafrost, or other non-standard conditions
Utility Design for state agencies dealing with Utility relocates by others.
GIS training
no
No
No