Measuring and Improving the Effectiveness of ADOT's Employee Learning and Development Program

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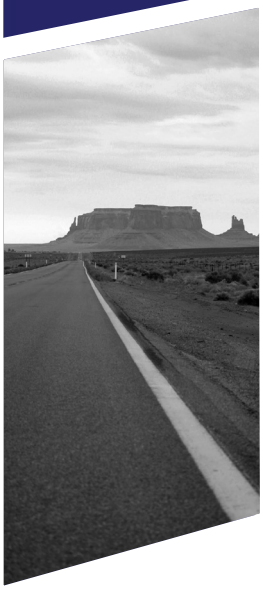

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16. Abstract

Arizona Department of Transportation's (ADOT) Employee and Business Development (EBD) office develops and provides required and elective training to ADOT staff and to external stakeholders. For its training programs, EBD's objectives are to: (1) Improve employee competence and performance to enhance the performance of the agency; (2) Improve employee competence and performance to enable employee advancement within the agency; and (3) Positively influence employee retention. EBD is in the process of updating its training programs to more effectively meet these objectives. In 2018, a comprehensive three-year Employee Learning and Development Plan was created with data gathered through interviews with ADOT leadership and a survey of all ADOT employees. The plan highlighted EBD's biggest challenge as the need to define and measure its programs' effectiveness in achieving its objectives, including the ability to determine the department's return on investment (ROI) in staff training and development. This research will provide EBD with metrics that it can use to measure the effectiveness of its training programs in meeting its objectives and provide recommendations on how it can use the data derived through these metrics to improve the programs' effectiveness.

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Acronyms, Abbreviations, and Symbols

ADOT	Arizona Department of Transportation
AMS	Arizona Management System
ASD	Administrative Services Division
ATD	Association for Talent Development
EBD	Employee and Business Development
ECD	Enforcement and Compliance Division
FMS	Financial Management Services
FY	Fiscal Year
HRDC	Human Resource Development Center
IDO	Infrastructure Delivery and Operations
ITG	Information Technology Group
LDC	Learning and Development Center
LMS	Learning Management System
LTAP	Local Technical Assistance Program
MVD	Motor Vehicle Division
MPD	Multimodal Planning Division
NEMO	New Employee Maintenance Orientation
TSMO	Transportation System Management and Operations

Introduction

In 2018, the Employee and Business Development (EBD) division of the Arizona Department of Transportation (ADOT) published its *Employee Learning and Development Plan*. The plan was designed to provide a framework to align ADOT employee training and development resources with the agency's current and future core business strategies and priorities, with the ultimate goal of achieving the agency's mission as the safest and most efficient transportation agency in the nation. The plan stated, "The most vital resources and the most valuable assets in any organization are its people. Therefore, its success depends on the degree to which it is able to systematically and successfully recruit, onboard, engage, train, develop, manage, empower, recognize, reward, and retain its employees." Several key concerns were identified in the document, including concerns expressed by ADOT leaders about the effectiveness of ADOT's training, lack of knowledge about existing training at ADOT, and the lack of guidelines and standard work in a variety of areas. One key area identified was training evaluation.

The plan determined that the course evaluations for ADOT's training courses did not take into account the differences between EBD courses and programs nor allowed for the evaluation of long-term outcomes, effectiveness, or application of training to employees' jobs. This finding, in part, led to ADOT's identification of the need for a research study aimed at designing an approach to measuring the effectiveness of the learning and development programs within EBD. The work described in this report is the result of that effort and focuses on understanding and identifying opportunities to continue to improve the effectiveness of EBD's learning and development courses and programs.

EBD's Training, Learning, and Development Courses and Programs

In the 2018 *Employee Learning and Development Plan*, a clear distinction was made between *employee training* and *employee development*. The document describes training as "an educational process designed to help employees gain the knowledge, skills, and competency necessary to successfully perform their specific job responsibilities and requirements." Development, however, is described as "formal and informal learning activities focused on helping employees grow, enhance and gain new skills, progress, mature, change, promote, and stay with the organization." Training is described as organizationally directed, while development is described as more employee-directed and based on employees' own goals. The *Employee Learning and Development Plan* emphasizes the role and importance of both training and development. Throughout the study, the phrase "training, learning, and development" has been utilized to encompass all training and development activities, emphasizing the value of a holistic approach that is not focused on training alone.

With this holistic approach in mind, EBD is responsible for instructional design and delivery, career planning and development, learning systems and support, and program coordination and evaluation for divisions, groups, and all ADOT employees. Figure 1 provides a list of EBD's responsibilities, including instructional design and delivery, career planning and development, learning systems and support, and coordination and evaluation. To fulfill these responsibilities, EBD is currently supported by 37 full-time staff for training, learning, and development-related functions. Table 1 details EBD's operating budget for fiscal years (FY) 2021, 2022, and 2023. While EBD's total expenses increased by $407,825.78 from

FY 2021 to FY 2023, it is important to note that this increase is almost entirely due to a statewide ten percent increase in salaries across all Arizona state government personnel, reflected in the personnel and program budget category in Table 1. Other increases were used to add critical support and technology for the facilities that EBD maintains, primarily in the categories of building support costs and the Human Resource Development Center's (HRDC) security guard costs.

Figure 1. EBD Responsibilities

EBD is currently leveraging vacancy savings to support important training and development for its own staff, such as conference registration and travel costs, certifications for important technical skills, and temporary services, such as a temporary HRDC security guard. Without the savings created by the

current understaffing, EBD would not have been able to support these external professional development activities for training its own staff.

The Association for Talent Development (ATD), a professional organization focused on training, learning, and development, found in their 2022 *State of the Industry* report that across a diverse range of industries, company sizes, and locations, including public sector organizations, the average organization spends $1,280 per employee on workplace learning annually. Across the Department's 3,647 employees, EBD's budget records indicate that ADOT spent $635.40 per employee on EBD training, learning, and development in FY 2023 (i.e., a total expense of $2,317,294.84, divided by 3,647 employees) and only $506.18 per employee in FY 2021 (i.e., a total expense of $1,825,784.37, divided by 3,607 employees in FY 2021). It is important to note that some training, learning, and development activities for ADOT employees fall outside of EBD's scope, so these figures are not fully comprehensive of all of ADOT's spending on training, learning, and development. Even so, these figures indicate that ADOT is likely spending substantially less than the industry-average amount per employee per year on training, learning, and development activities for its staff when compared with what other organizations spend on these activities.

Table 1. EBD Expenses for Learning and Development, Fiscal Years 2021 Through 2023

Category/Vendor/Program	FY 2021 ($)	FY 2022 ($)	FY 2023 ($)
Pathlore©	31,680.00	31,680.00	0.00
Vimeo© Pro™	240.00	240.00	0.00
Articulate 360©	13,966.00	21,541.00	12,990.00
Guidesoft© Temporary Services	71,350.00	64,505.93	48,000.00
Jaspersoft©	6,152.19	6,583.00	7,065.19.00
Adobe© Stock™	2,486.71	2,486.71	0.00
Adobe© CCPro™ and Captivate™ Licenses	0.00	0.00	9,427.00
CPR & First Aid	36,785.17	35,465.24	29,400.00
CDW Government	2,769.43	8,755.60	9,482.14
Centers for Rehabilitation*	385.00	315.00	360.00
ATDMembership	2,399.00	1,726.64	648.00
ATD Conferences	1,602.00	23,924.95	11,910.00
Personnel & Program Budget	1,561,500.00	1,549,600.00	**1,984,900.00
Building Support Costs	0.00	0.00	47,569.67
HRDC Security Guard	0.00	0.00	22,300.00
Tuition Reimbursement Program	94,468.87	73,960.43	56,623.34
Vacancy Savings Used for Temporary Services	0.00	0.00	14,000.00
Vacancy Savings Used for EBD Staff Training and Development	0.00	0.00	62,619.50
Total Expenses	1,825,784.37	1,820,784.50	2,317,294.84
Total Vacancy Savings Used	0.00	0.00	76,619.50
Total Expenses After Vacancy Savings	**1,825,784.37**	**1,820,784.50**	**2,240,675.34**

**Note:* Budget spent on the Centers for Rehabilitation line item is not used for ADOT staff.

***Note:* Although EBD's total expenses increased by $414,890.97 from FY 2021 to FY 2023, this increase is almost entirely due to a statewide 10 percent increase in salaries across all state government personnel in Arizona.

Figure 2 depicts ADOT's FY 2023 spending on EBD as a percentage of ATD's 2022 estimate of the average dollar amount that an organization spends on workplace learning each year, per employee.

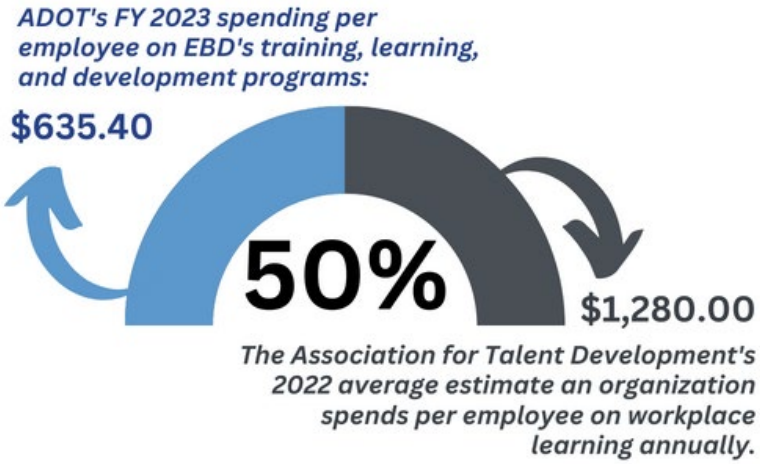

Figure 2. ADOT's FY 2023 Spending on EBD Training, Learning, and Development, Relative to Average Organizational Spending on Workplace Learning (per Employee)

Evaluation Model, Study Approach, and Objectives

In the first phase of this study, the Kirkpatrick Model (Kirkpatrick 1959, 1994) was identified as the most appropriate and relevant evaluation model to use in the subsequent research for this study specifically since it pertains to identifying those criteria that can be used to measure the effectiveness of EBD's training, learning, and development courses and programs. The levels of the Kirkpatrick Model are as follows:

- Level 1 (Reaction) – What trainees thought about a particular program
- Level 2 (Learning) – The principles, facts, techniques, and attitudes that trainees understood and absorbed
- Level 3 (Behavior) – Trainees' use and application of what they learned from the training once they are back on the job
- Level 4 (Results) – The impact of the training on the organization-level objectives, such as costs, turnover, absenteeism, and morale (*Note:* objectives differ by organization)

It is common for organizations to focus most measurement efforts on reactions and learning criteria. EBD has historically focused nearly exclusively on measuring Level 1 (Reactions) and Level 2 (Learning) criteria by conducting assessments of learning (e.g., a test taken at the end of a course) that are specific to individual EBD courses and programs and by distributing surveys following participation in an EBD training, learning, and development program or course. In some cases, such as the #ADOTLeads programs *Aspire to Lead* and *Leading Others*, both pre-participation and post-participation surveys are distributed to the attendees. Using these surveys, EBD captures some measures of Level 3 (Behavior) for specific programs (e.g., *Leading Others* pre- and post-participation surveys incorporate some behavior items from the perspective of the participant and their supervisees). However, not many Level 4 (Results) measures are currently included in EBD's evaluation of its programs. Measures of some

appropriate Level 4 (Results) criteria, in particular, are already available via existing tools like ADOT's engagement and pulse surveys, but the anonymity of these surveys prevents their incorporation into EBD's evaluation of its learning and development programs. As such, this study sought to develop a comprehensive and practical approach that could be implemented to continually assess the effectiveness of EBD's training, learning, and development courses and programs.

As part of the study, a logic model was developed to help ensure that the effectiveness of EBD programs was measured in relation to the organization- and program-level outcomes of interest. A logic model is a visual tool used in program evaluation to show the relationships between the resources a program uses to operate, the activities that take place within a program, and the program's intended changes or results (W.K. Kellogg Foundation 2004). Logic models are not intended to show every detail about a program; instead, they are intended to provide an informative visual tool to better understand the basic components and their relationships. They are particularly useful in evaluating program impacts and in determining the most appropriate, relevant, or ideal targets of continuous improvements or change efforts. Table 2 shows the logic model developed for this study that was used as a tool to understand the resources, components, and intended outcomes of EBD's learning and development programs.

There are five primary sections of the logic model displayed in Table 2: *Resources/Inputs*, *Programs*, *Products/Outputs*, *Short-term Outcomes*, and *Long-term Outcomes*. The *Resources/Inputs* are the resources a program has available to carry out the program work. Resources often fall into categories of *human*, *financial*, *organizational*, and *community*. The *Programs* represent what is done with the resources, such as processes, tools, events, and actions that are part of implementation. *Programs* reflect the activities and services that participants experience. The *Products/Outputs* are the direct products of program activities. *Products* often include different types, levels, and targets of services provided by a program. Finally, the *Outcomes* are the specific changes that participants and the organization experience as a result of a program and its activities. In Table 2, *Short-* and *Long-term Outcomes* are separated to differentiate between the outcomes that participants and the organization experience immediately or soon after participation and the outcomes that take longer to unfold or are longer-lasting in timeframe.

For EBD's learning and development programs, *Resources/Inputs* fall into categories that include *financial*, *people*, *technology*, and *facilities*. The programs listed in the logic model (Table 2) include all programs identified by EBD that fall under its purview throughout the course of the study. *Products/ Outputs* included in the logic model are indicators of both program participation and program development. Outcomes included in the logic model are based on the previous "Literature Review" technical memorandum (Subtask 1.4). Outcomes are separated into short- and long-term categories. The timeframes that differentiate between short term and long term are considered relative to each other, rather than on a predetermined or precise schedule; the distinction is included for conceptualization purposes and to facilitate measurement, as some outcomes are best measured in close proximity to the occurrence of the learning and development activity (e.g., reactions based on whether a participant enjoyed the program or course), while other outcomes are best measured after several months due to the length of time they may take to develop, unfold, or be realized by the participants of the program (e.g., retention). *Short-term Outcomes* focus on reactions, learning, and

Table 2. Logic Model for EBD's Training, Learning, and Development Programs

Resources/Inputs	Programs	Products/Outputs	Short-term Outcomes	Long-term Outcomes
Financial: • Annual budget • Personnel & program budget **People:** • EBD personnel • Agency and division leaders • Internal (ADOT) subject matter experts • Vendors **Technology:** • Learning and Development Center (LDC) • Virtual and blended classroom programs and tools • Google® Classroom™ • EBD-specific intranet and web pages (e.g., Leadership and Professional Development Resource Center pages) **Facilities:** • HRDC	**EBD learning and development programs:** • Tuition Reimbursement Program • Instructional Design Support/Services • Instructional Delivery Support/Services • #ADOTLeads • Succession Planning • Career Creations • IDO/TSMO Technical Learning and Development	**Program participation:** • Number of participants • Number of cancellations • Number of no-shows • Percentage of mandatory courses completed • Number of non-mandatory courses completed • Percentage of course/program assignments completed • Percentage of test items correct (e.g., in-course learning assessment) • Number of plans created (e.g., *Succession Planning*) **Program development:** • Number of courses/programs built/designed by EBD staff • Number of courses/programs updated by EBD staff	**Reactions:** • Affective • Utility **Learning:** • Cognitive • Skill-based • Affective **Behavior:** • Immediate (short-term) behavior change	**Learning:** • Retention **Behavior:** • Sustained behavior change • Long-term behavior change • Transfer of training back to the job • Individual and team job performance **Results:** • Work-specific individual experiences and attitudes (e.g., engagement, productivity, belonging, autonomy, self-efficacy, career progression) • Team-related experiences (e.g., team cohesion, coworker support, supervisor/leader support) • Organization-level experiences (e.g., financial return on investment (ROI), retention, turnover, culture, diversity) • Employee safety and well-being (e.g., workplace safety, wellness, stress, burnout) • EBD-specific (e.g., continuous improvement of programs, investment in leadership and development, support from ADOT leadership)

behavior criteria that take place immediately or soon after participation in a program or course, relative to other potential outcomes, and can be measured immediately after participation or within a period of several days or weeks. *Long-term Outcomes* include learning and behavior criteria that may not be detectable immediately after participation in a program or course. *Long-term Outcomes* also include results criteria, which are typically experienced by employees, teams, and the organization over a longer period of time (i.e., months or even years). Each of these components was measured at least once through the study, primarily during the agency-wide study survey.

Overall, this study aimed to analyze the findings of those evaluations and surveys, and then to develop recommendations that EBD could implement to measure the effectiveness of its training, learning, and development courses and programs and, ultimately, improve effectiveness to support EBD and ADOT as a whole in engaging, developing, and retaining its workforce in a constantly changing world.

Recommendations

The study identified three primary categories of recommendations that ADOT, EBD, and the EBD staff that is responsible for the four pilot programs examined during this study may consider as they continue to measure and improve the effectiveness of ADOT's training, learning, and development courses and programs.

The first category of recommendations arise from the finding that EBD is fostering a culture that is supportive of continuous learning. The results, which are described in the *Findings* section of this report, showed that employees feel increasingly supported in their efforts to engage in learning and development opportunities and want ADOT to continue to develop its workplace culture to support continuous employee learning and development. Based on this key finding, the following recommendations could be carried out by ADOT, EBD, and the four pilot programs examined, which were:

1. A course currently hosted on the LDC, ADOT's learning management system (LMS), called *Avoiding Burnout*
2. A multi-course program designed for a subset of new employees, called *New Employee Maintenance Orientation* (*NEMO*)
3. A cohort-based, interactive #ADOTLeads program targeted at aspiring leaders, called *Aspire to Lead*
4. A cohort-based, interactive #ADOTLeads program targeted at current supervisors, called *Leading Others*

Key Finding 1: EBD is fostering an agency-wide culture that is supportive of continuous learning.

Relevant to Key Finding 1, recommendations for the entire ADOT organization include:

- Systematically communicate about the importance of learning and development across all levels of the organization, from executive leaders to non-supervisory staff. Messaging should be present across a variety of sources (e.g., in meetings, newsletters, agency-wide and division/group email communications) and be sustained over time.
- Build structures, systems, and policies that encourage employees to participate in training, learning, and development—both mandatory and optional—such as resources, time, and support from leadership and teams. For example, ensure learning and development is incorporated into performance-evaluation systems.
- Increase consistency across divisions, groups, and teams in ADOT's approach to and support for training, learning, and development. For example, provide training or guidance to all supervisors that directs them to allow and encourage enough time to participate in learning. Provide additional support to those divisions, groups, or teams where data indicate there may be little

or no existing support or resources (i.e., using survey data to determine where extra support may be needed), and ask those divisions, groups, or teams where data indicate particularly strong support for learning and development for their recommendations and best practices to encourage participation.

- Ask all leaders to model participation in training, learning, and development by engaging in activities, programs, and courses at the highest levels of the agency and discussing the value of participating in both formal and informal settings. If leaders do not feel they have sufficient time to participate in training, learning, and development, create systems and practices that support participation (e.g., protected time for participation, group activities or classes, removing another responsibility to create time for participation).

Recommendations for EBD include:

- Update mandatory training courses and programs to modernize and streamline content and training experiences. To the extent feasible, become owners of mandatory training courses and programs required by the State of Arizona to facilitate the ability to control updates and modernization efforts and to reduce the burden that staff face when accessing multiple training systems. Evaluate the amount of time between mandatory training requirements and determine if any could be lengthened without detrimental effects to employee safety or other critical factors. Consider the implementation of booster training in lieu of participation in full re-training every year. Evaluate if a test-out option could be utilized for some of the mandatory training.
- In an effort to build consistently strong relationships with all divisions and groups across ADOT, collaboratively invite and involve division and group leaders as well as managers and supervisors to participate when determining training needs and priorities. Advertise and communicate existing ways for ADOT leaders and employees to support learning and make requests for training. For example, host annual participatory workshops or meetings that facilitate the discussion of needs and priorities or capitalize on existing gatherings (e.g., leadership-focused conferences or meetings) to gather information about training needs and priorities. Following any efforts to engage leaders, follow up with communications about EBD's key takeaways and actions to show the value of the information and encourage participation in future similar efforts.
- Drive modernization efforts to leverage rapid advances in technology within the field of training, learning, and development, as well as in technical areas across ADOT (e.g., training for new equipment). For example, fund professional development opportunities for EBD staff to participate in conferences and non-ADOT events to keep up with advances. Partner with divisions and groups to ensure training is available to support the use of new technology and equipment, especially as new technology or equipment becomes available and utilized at ADOT.

Recommendations from pilot programs include:

- Utilize the cohort model that is leveraged in #ADOTLeads *Aspire to Lead* and *Leading Others* programs for other training courses and programs to encourage shared learning and connection among ADOT staff who work in separate teams, divisions, and groups.

Key Finding 2: Measurement of the effectiveness of EBD training, learning, and development programs showed positive outcomes at the employee level and across the agency.

Relevant to Key Finding 2, recommendations for the entire ADOT organization include:

- Encourage employees across all levels to participate in optional training that interests and engages them. This study shows that employees—and ADOT as a whole—gain from employee participation in optional training, learning, and development courses and programs. Employees clearly demonstrated their interest in pursuing an increasing number and variety of optional training opportunities relative to past levels of participation and relative to mandatory training.
- To facilitate the ability to more clearly and efficiently measure key outcomes of EBD's training, learning, and development programs, connect the wide variety of data sets and data systems across divisions, groups, and agency functions. For example, utilize the same identifiers in each data set, such as an employee ID number or employee email address. In cases when identifiers are deemed to be inappropriate (e.g., for the purpose of anonymity in engagement and pulse survey data), ADOT staff who are responsible for maintaining and sharing relevant data sets should account for the lack of identifiers—and thus the lack of ability to connect data sets—by sharing as much detail as is feasible with EBD to facilitate EBD's ability to draw conclusions from the data and determine a path to gaining necessary information via other mechanisms.
- Support EBD in continuing to measure the effectiveness of training, learning, and development courses and programs over time by providing resources (e.g., funding, technology, and support from divisions, groups, and staff members with relevant skills like communications, data analysis, and survey deployment) and supporting EBD in engaging in regular (e.g., annual or biennial) survey efforts similar to the methods and measures of this study.

Recommendations for EBD include:

- Conduct regular surveys of ADOT leaders and staff, similar to the survey conducted during Task 2 of this study, to track progress over time (e.g., annual or biennial). By conducting regular surveys in the future using the same measures—or at least a selection of the same measures—additional analyses will be able to show even stronger evidence of the impact and benefit of EBD's courses and programs as well as to track progress.
- Incorporate measurements for Levels 3 and 4 (Behaviors and Results outcomes) across more courses and programs. Very few of EBD's courses and programs currently measure these outcomes, aside from the measures developed and implemented in this study, which are not systematic and/or may partially conflate these Behaviors and Results outcomes. Behavior outcomes could be integrated into existing post-course evaluation surveys. Results outcomes could be integrated into follow-up surveys at later dates (e.g., similar to the "Where Are They Now?" survey used in the *Aspire to Lead* program) or measured regularly using a system similar to the surveys and focus groups/interviews employed in this study.

- Wherever possible, build data systems that allow for individual-level data outputs. For example, reports from the current LDC did not provide post-course evaluation survey data at the individual level (e.g., one row per response) but rather only in aggregate. This structure increases the difficulty of tracking change over time and understanding participants' experiences.
- Incentivize participation in evaluation activities as part of training, learning, and development courses and programs wherever possible. For example, increase ease of access to post-course surveys or incorporate them directly into training, learning, and development activities as a requirement of participation.
- Develop a regular cadence to systematically review existing data (e.g., post-course surveys and learning assessment results). Utilize technology to increase the ease with which EBD can more easily and regularly examine the results (e.g., by building interactive data dashboards that update as new data are added or that can be regularly updated manually to add new data), and ensure the staff responsible for course development, updates, maintenance, and facilitation have access to these data/reports and are encouraged to utilize data in determining decisions, priorities, and updates.

Recommendations from pilot programs include:

- For *Avoiding Burnout* (and for similar courses), Level 3 and Level 4 (Behavior and Results) outcomes are not currently incorporated into post-course evaluations. The addition of a measurement of key relevant outcomes, such as workload management, job demands, and burnout, would substantially elevate the evaluation of this course. At a minimum, the incorporation of behavior measures into post-course surveys would provide substantial relevant data with which to make future updates. Alternatively, a system similar to that employed in this study could be utilized over time to measure Behavior and Results outcomes.
- For *NEMO*, Levels 1, 3, and 4 (Reactions, Behavior, and Results) outcomes are not currently being assessed systematically. Since *NEMO* consists of many courses, the addition of even a single post-course evaluation survey would provide substantial data to support the evaluation of this program over time. Additionally, the incorporation of safety measures would be particularly relevant to course content and could provide key Level 4 (Results) outcomes to track over time.
- The *Aspire to Lead* course provides the most thorough example of measurement and evaluation of any course examined by the consultant team, as it incorporates both pre- and post-course measurement, multi-source measurement (i.e., participants and their supervisors), and a follow-up survey beyond the typical post-course survey (i.e., the "Where Are They Now?" survey). This program could be utilized as a model for how to advance measurement practices in other courses and programs.

Key Finding 3: Investments in EBD training, learning, and development are worthwhile.

Relevant to Key Finding 3, recommendations for the entire ADOT organization include:

- Support EBD's positive momentum by providing additional EBD funding and resources to continue measuring and improving programs over time. Results from this study provide ample evidence of the value of investing in training, learning, and development across ADOT (e.g., reduced absenteeism, improved employee experiences and attitudes toward their jobs, increased perceptions of support).
- Examine ADOT's total investment in learning and development, to include investments outside of EBD, and ensure this investment aligns with ADOT's priorities and strategic goals, along with the importance of learning and development for meeting those priorities and goals.
- Rely upon EBD's expertise in training, learning, and development as a resource for non-EBD courses and programs. Although not all of ADOT's training, learning, and development activities are owned by EBD, the staff and leaders that make up EBD have valuable skills and expertise that can support overall improvements in ADOT's training, learning, and development. ADOT can capitalize on this resource by consistently consulting with EBD leaders and staff on questions and needs related to training, learning, and development.

Recommendations for EBD include:

- Invest in structures, systems, and technology to make training, learning, and development courses and programs easy to learn about, access, and participate in. For example, invest in a new LDC or LMS that supports easy access to training courses and programs, improved communications with ADOT staff, and ease of participation in program and course evaluations. Continue to invest in programs like LinkedIn Learning in addition to relying on EBD's internal expertise in training, learning, and development design and delivery.
- Facilitate EBD's ability to continue to evaluate and improve the effectiveness of courses and programs by hiring new EBD personnel and investing in the professional development of current staff to elevate their skills and abilities. If needed, continue to invest in contractor support in the areas of measurement and data analysis to build upon the momentum created by this study, while investing in data analytics tools and/or professional development for current staff.

Recommendations from pilot programs include:

- Given the importance of *NEMO* and other mandatory training courses and programs for the safety of employees and the public, ensure sufficient resources are dedicated to *NEMO* and other training courses and programs that impact employee and public safety to allow ADOT staff to participate as soon possible after joining the agency.
- Given the popularity, positive responses to, and the effectiveness of the #ADOTLeads programs evaluated as part of this study, ensure that sufficient opportunities to participate are available to meet demand while also continuing to build other levels of the #ADOTLeads program, such as *Leading Self*, *Leading Teams*, or *Leading Organizations*.

Findings

Leaders' and Employees' Views About EBD Courses and Programs

One goal of this research study was to measure leaders' and employees' views regarding EBD's training, learning, and development programs and the overall state of learning and development at ADOT. The focus groups, interviews, and agency-wide survey designed and implemented as part of this study provided data that reveal several key findings related to leaders' and employees' views about EBD programs. ADOT staff generally felt that the learning and development activities they participated in within the last six months often provided them with relevant and varied experiences, useful feedback, and/or ways to successfully apply what they learned despite obstacles. This was shown in the *Learning and Development Support* survey measure's average score, which was 3.83 on a scale of 1 to 5 across all survey respondents, with a score of 5 indicating the highest support level (N = 919 survey respondents).

ADOT staff also expressed their opinions about the training and technology improvements and updates EBD has made in recent years. At the executive and division-leader level, when asked about their experience with training, learning, and development at ADOT, several interview participants described substantial training improvements that had been made recently. Non-supervisory staff also noted the improvements, such as one who shared, "I noticed they updated some trainings, so that is really good. They had been kind of out of date, but I noticed this year they finally got updated." Some participants described improvements that had been made to EBD websites and online access tools and processes, while others described improvements that still needed to be made. For example, one participant in the manager and supervisor focus groups said, "My biggest challenge is that unless I have an email in front of me with the link to the course, I can't find anything. I never know where training is."

One opportunity for improvement that was commonly cited across all levels of the agency was related to mandatory training courses and programs. Of the 13 executive and division leaders interviewed, five commented on the repetitive or monotonous nature of mandatory training, and four commented on the difficulty of managing time with what they considered to be excessive levels of mandatory training requirements. At the manager and supervisor level, 4 out of 17 participants described challenges with time management and mandatory training courses and programs. For example, one said, "I'm trying to follow the rules and be a good leader and make sure my employees have the training they need, but I have spent so many hours and so many words already." Finally, at the non-supervisory staff level, 5 out of 24 focus group participants talked about this issue; for example, one shared, "There is a ton of computer work just sitting and reading and watching classes to be taken."

ADOT staff also provided input about the availability of and communication surrounding training, learning, and development programs. The mean values for the Learning and Development Availability survey measure and Learning and Development Communication survey measure were both 3.69. These average scores across all survey respondents indicate that, in general, respondents somewhat agreed that they have adequate opportunities for learning and development and receive adequate communication about such opportunities at ADOT; however, there is opportunity for continued

improvement in both areas. Analysis of the responses to the open-ended survey questions indicated that, in particular, there is a need for more specialized and relevant training that currently exists. Some respondents mentioned how current learning and development opportunities do not directly apply to their job tasks and duties, such as one who shared, “I have only attended required training classes that do not regularly impact how my work gets done. Fire Safety and Computer Security are important classes but don’t directly affect how I get my job duties completed.” Respondents also expressed a desire for training opportunities in specific areas, such as computer-aided drafting and design, project management, and leadership skills. This was corroborated by comments made by leaders in focus groups and interviews. For example, one manager/supervisory focus group participant said, “I look at [EBD training] as a foundation. We are not going to find anything that applies to our subject matter from EBD, but it does provide basic and required training.”

Despite this, many survey respondents and focus group/interview participants shared examples of programs or courses they had enjoyed or appreciated having access to. For example, one survey respondent said, “I think ADOT's core trainings/professional development programs: #ADOTLeads, Mentorship Program, Orientation, Buddy Program, Lunch and Learns, are all phenomenal. It shows a really strong commitment to continuous learning, and the programming is great.” Another clear strength that emerged in data analysis was that survey participants felt that the learning and development activities they participated in over the past six months either often or always reflected diverse perspectives and fostered inclusivity and a sense of belonging. The *Diversity, Equity, Inclusion, and Belonging in Learning and Development Activities* survey measure was one of the highest average scores of any survey measures pertaining to views about EBD programs (mean = 4.15).

Data from multiple agency-wide surveys shows evidence that, on average, ADOT employees increasingly agree that ADOT supports learning and development, that supervisory coaching practices are increasingly prevalent and positive, and that optional learning opportunities presented by EBD are widely used and valued at ADOT.

In focus groups and interviews, participants were asked about suggestions, feedback, and opportunities they recommended for EBD's training, learning, and development programs. In addition to the findings above, requests that emerged across multiple levels of the agency included:

- Continuing to create more engaging and updated training courses and programs
- Shortening mandatory training courses and programs
- Increasing the length of time between instances when the same mandatory training is required and/or allowing a test-out option
- Continuing efforts to understand and align training courses and programs with agency and staff needs (e.g., by partnering with leaders in different divisions and groups and gathering staff input)
- Creating more tailored training courses and programs that reflect ADOT staff jobs and roles (e.g., customer service-specific training for customer service roles)
- Creating ways to access classes and websites more easily
- Allocating more time for training courses and programs—both mandatory and optional—in day-to-day work

Fostering a Culture of Continuous Learning and Development

A key finding that emerged from across numerous data sources, from non-supervisory staff to executive and division leaders, was that ADOT and EBD are working to create a culture that is supportive of continuous learning and development and that employees and leaders are supportive of continuing to pursue such a culture. Data from engagement and pulse surveys conducted over the past two years indicate that ADOT is on a positive trajectory in this area. When asked about the extent to which they agreed with the statement, "My agency supports my participation in education and professional development opportunities," average scores on a scale of 1 to 5, with 5 indicating strong agreement, were quite high and increased from April 2021 (mean = 3.89) to December 2022 (mean = 4.06). These results show that employees have felt increasingly supported in participating in education and professional development opportunities over time—a positive indicator of ADOT's efforts to create a culture that is supportive of continuous learning and development.

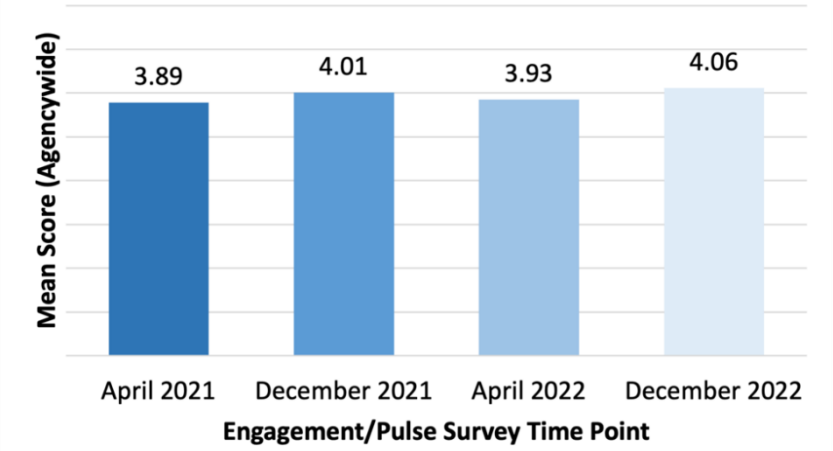

Figure 3. Engagement and Pulse Survey Agency-wide Mean Scores for Perceptions of ADOT Support for Learning and Development

"My agency supports my participation in education and professional development opportunities."

Average agency-wide scores for this statement have increased over the last few years, indicating that employees feel increasingly supported in ADOT's education and professional development opportunities over time—an important goal of EBD's training, learning, and development initiatives and programs.

On the other hand, the data also suggested the presence of several barriers that may be impacting ADOT's ability to create a culture that is consistently supportive of continuous learning and development. Across focus group and survey data, numerous participants and respondents mentioned the lack of time and resources they receive for learning and development. Some staff expressed not having enough time to complete training courses and programs, even when the training is mandatory. This may be in part due to the current staffing environment and workload that some divisions and groups across ADOT are experiencing. For example, in the survey data, the mean score of the *Job Demands* survey measure (mean = 3.61) across all respondents indicates that survey respondents tend to agree that their job requires working very fast and hard. Open-ended survey responses included examples of respondents feeling overwhelmed by job demands or workload (e.g., "I like my job and ADOT, but my role and team have too much work. The agency continues to take on more, making it hard for us;" and "I feel overwhelmed or frustrated from time to time, but that is just a sign of our times; we have limited supplies, are unable to find qualified people to hire for the job, and have a heavy workload.").

Additionally, on the agency-wide survey conducted for this study, the mean value for the *Support Following Learning and Development* survey measure (mean = 3.48) fell only slightly above the midpoint value of 3.00. This result indicates that the agency-wide survey participants, on average, feel they sometimes but not often receive recognition or praise when they apply what they learned and when they receive the opportunity to apply newly acquired knowledge, skills, and/or abilities developed during the learning and development programs they participated in over the last six months.

Despite these potential barriers, leaders and employees who participated in focus groups and interviews reiterated the importance of continuing to develop a culture that consistently supports continuous learning and development. Out of 13 executive and division leaders who participated in interviews, six described the importance of integrating learning and development into day-to-day work, and seven described the critical importance of learning and development. For example, one said, "We need to focus our

work on building our staff— building the most competent staff that we can. It has to be part of our work." The same was reflected at the manager and supervisory level, with 7 of 17 focus group participants sharing that they feel learning and development are valued at ADOT, as well as at the non-supervisory staff level, where 9 of 24 focus group participants shared the value placed on learning and development. One non-supervisory staff member said, for example, "My management sends us out different trainings when they come across them. They are usually telling us, 'Hey, if you see a training online that you would like to go to, just let me know.' They're very open."

Additionally, it was clear from the survey, focus groups, and interview data that leaders have a critical role to play in developing and maintaining ADOT's learning culture. As typically expected, there was a discrepancy between the level of support that survey respondents reported receiving from their supervisors and the level of support survey respondents in supervisory roles reported they provide to their staff. On average, survey respondents agreed that ADOT and their supervisor support them and ask about their individual needs for learning and development (*Learning and Development Needs – Identification* mean = 3.94) and that they receive enough support to participate in learning and development opportunities (*Learning and Development Support* mean = 3.83). However, survey respondents who were in a supervisory position rated the level of support they provide (*Supervisor Support for Learning and Development* mean = 4.21) higher, on average. Focus group and interview data supported this finding, as leaders at the executive, division, manager, and supervisor levels frequently described the extent to which they prioritize and support learning and development for their staff, yet non-supervisory staff shared inconsistencies in the messaging and levels of support they receive specific to learning and development from leaders above them.

In evaluating the impacts of EBD's four pilot programs and optional training, learning, and development opportunities, the consultant team utilized a four-level model to organize outcomes.

Across all four levels (Reactions, Learning, Behavior, and Results) there was strong evidence of positive impacts across all the programs analyzed.

Many outcomes were directly relevant to ADOT's return on investment in EBD's courses and programs and it showed strong evidence of positive return on that investment.

ADOT will likely benefit from continuing to build upon its current efforts to involve more employees in optional training.

Further efforts could be made agency-wide to provide the structure that provides employees with the time, flexibility, and support to participate in optional training.

Effectiveness of EBD Training, Learning, and Development Courses and Programs

The second goal of this study was to support EBD in measuring, understanding, and improving the effectiveness of its training, learning, and development courses and programs by developing and pilot testing measures and tools for ADOT to consider implementing in their own future efforts. The findings are specific to optional training, learning, and development programs. Then, findings for each of the four identified pilot programs are summarized.

Optional Training, Learning, and Development Courses and Programs

Results from the study showed that employees had substantial engagement with and benefitted from participating in optional training, learning, and development courses and programs. To evaluate the effectiveness of these programs, the agency-wide survey designed for this study asked survey respondents to indicate whether they had participated in optional training, learning, and development courses and programs "within the last six months" and/or "ever." Since the survey was intended to focus on programs developed and/or maintained by EBD, instructions noted that Arizona Management System (AMS) and LinkedIn Learning® courses should not be included in the responses. A total of 333 out of 919 survey respondents (36.2 percent) reported that they had participated in optional training, learning, and development courses and programs within the last six months. A total of 685 out of 919 survey respondents (74.5 percent) reported that they had participated in optional training, learning, and development courses and programs at least once during their time at ADOT (i.e., "ever"). This indicates that there is a high rate of participation in optional training, learning, and development courses and programs at ADOT and suggests that ADOT's culture is supportive of employees' ability to participate in optional learning and development activities of their choosing.

As shown in Figures 4 and 5, survey results indicated that managers and supervisors participate in optional training, learning, and development at the highest rate, followed by non-supervisory staff. Executive and division leaders had the lowest participation, particularly in the last six months (prior to completing the survey). Survey respondents who reported participating in the last six months were more likely to be female, newer to ADOT, and to work remotely rather than working in an office or in the field.

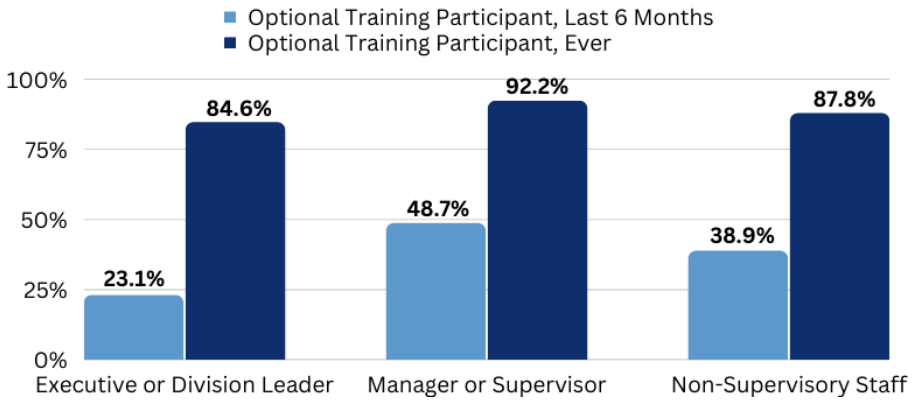

Figure 4. Participation in Optional Training, Learning, and Development by Job Role

Figure 5. Statistics About Optional Training Participants

Survey respondents who participated in optional training, learning, and development courses and programs at ADOT within the last six months had significantly more positive views of learning and development at ADOT and more positive work-related experiences than employees who had not taken optional courses and programs in the past six months (i.e., higher scores on survey measures assessing views of learning and development at ADOT and experiences of work at ADOT; differences were statistically significant) of the following:

- *Learning and Development Needs Identification*
- *Learning and Development Availability*
- *Learning and Development Communication*
- *Learning and Development Support*
- *Supervisor Support for Learning and Development*
- *Activities During Learning and Development*
- *Diversity, Equity, Inclusion, and Belonging in Learning and Development Activities*
- *Support Following Learning and Development*
- *Opportunities for Advancement*

- *Psychological Safety (Ability to Bring Up Problems)*
- *Organization that Values Learning and Development*
- *Diversity Climate*
- *Coworker Support*
- *Learning Climate*
- *Work-Life Balance*
- *Job Control*
- *Organizational Commitment*
- *Work Motivation*
- *Positive Organizational Culture*

It is important to note that these results reflect cross-sectional data (i.e., data collected at a single time point). To account for the limitations of cross-sectional data, the consultant team designed the survey to be retrospective in nature, asking employees to rate their experiences over the last six months. However, it is possible that the employees that reported having more positive experiences at ADOT are also the same employees that are most likely to have recently participated in optional training, learning, and development courses and programs. For example, they might have the most supportive supervisors or the most job flexibility to allow for time to participate in optional training, learning, and development courses and programs. Regardless of whether the results are due in part to the likelihood of participating in optional training, learning, and development courses and programs based on contextual factors, ADOT will likely benefit from continuing to build upon its current efforts to involve more employees in optional training, learning, and development courses and programs. Benefits may include factors such as employee retention, job satisfaction, engagement, organizational commitment, and much more. Further efforts could be made agency-wide to improve the structure that provides employees with the time, flexibility, and support needed to participate in optional training, learning, and development courses and programs.

Pilot Program 1: Avoiding Burnout

Avoiding Burnout was selected as the first pilot program. *Avoiding Burnout* is an optional course offered on the LDC, ADOT's LMS. It is available to all ADOT employees at all job levels, from non-supervisory staff to executive and division leaders. This training was offered at five different time periods between November 2021 and December 2022, with 77 individuals registering for the training and 51 successful completions (66.2 percent of all 77 registrants). 26 individuals did not complete the training due to cancellations (8) or no-shows (26). Attendees varied from non-supervisory staff to executive, with 32 attendees at the non-supervisory staff level, 13 managers, 5 managers of managers, and 1 executive. About half of the attendees (27) had been with the company for one to five years, while others had longer tenures of six to ten years (13), and yet others had more than ten years (11).

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Level 1: Reactions

Participant reactions to the *Avoiding Burnout* course were generally positive. Across the five training time periods, 80.0 percent of respondents indicated that they would recommend the training to a colleague. Feedback from the interviewed attendees indicated that the instructor was engaging, the course outline was useful, and the opportunities to participate were favorable. Participants also praised the interactive nature of the course. Suggestions for improvement included multiple requests for additional examples and a request for tools that are more relevant to frontline employees. One participant expressed a desire to stay connected with other course participants and suggested a contact list be shared after the training is completed.

After completing the Avoiding Burnout course, more than 83 percent of survey respondents said they are likely to use the information in performing their job duties, indicating a high potential for transfer of trainees' learning to their day-to-day experiences.

Level 2: Learning

Training attendees were given the opportunity to share why they participated in the *Avoiding Burnout* course, and 83.3 percent indicated the reason was to enhance their knowledge of the content area. The majority (77 percent) of attendees agreed or strongly agreed that the course was organized in a way that helped them learn the content. As presented in Figure 6, the percentage of attendees rating their knowledge of the subject matter as moderately high or high increased from 50.0 percent before the training to 86.7 percent after the training. This provides evidence of participants' perceived knowledge gain.

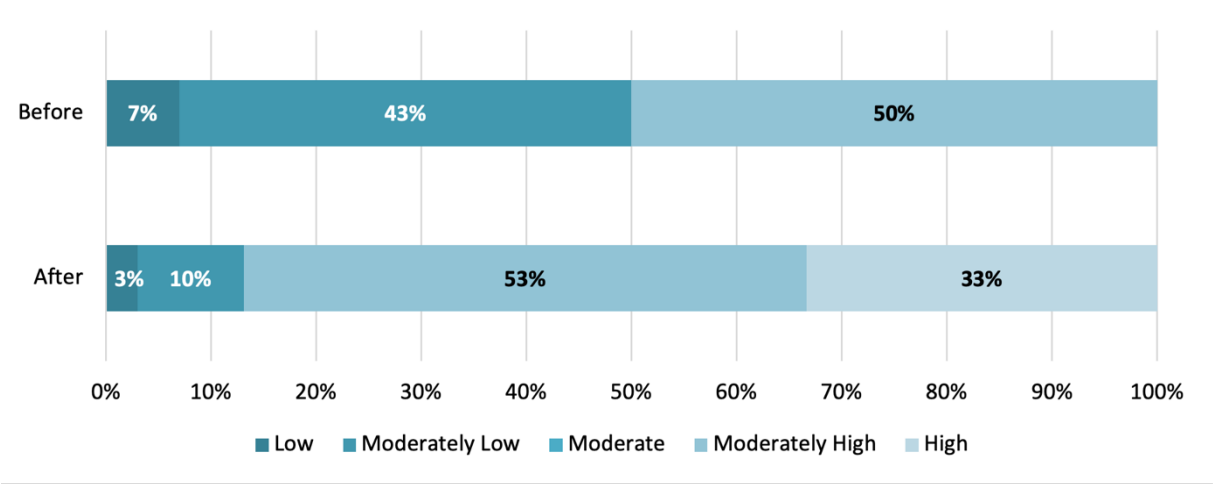

Figure 6. Self-reported Course Knowledge Before and After *Avoiding Burnout* Participation

Level 3: Behavior

A total of 83.3 percent of attendees who completed the survey indicated they are likely to use the information presented in the *Avoiding Burnout* course to perform their job duties, indicating a high potential for transfer of trainees' learning to their day-to-day experiences. One participant shared feedback that it may be helpful to provide additional strategies to support long-term transfer of training content, saying, "One idea was to try focusing on goals and to think about the steps to get towards my goals. This helped in the short term, but more long-term strategies would be helpful."

Level 4: Results

While the survey questions did not provide any opportunities to examine quantitative data related to Level 4 (Results), during the interviews conducted with the training attendees, participants provided examples of how they have used *Avoiding Burnout* training to reduce stress and burnout in their job. Due to the topical content area of the course, reducing stress and burnout related to work is the most directly related and important Level 4 outcome to consider for the *Avoiding Burnout* course, so these comments indicate that the course is successful in achieving the learning objective of reducing or

avoiding employee burnout. Specifically, one employee commented, “A combination of understanding the workload and how to prioritize it and focus on time management helped me to reorganize my workload.” Another noted, “After the training, I made a small adjustment in my work and asked to move to a different place in the customer service line, and this small change reduced my stress level.”

Pilot Program 2: NEMO

Within its overarching role at ADOT, an important function that EBD carries out is providing training for two large divisions within ADOT—IDO and TSMO. Many IDO and TSMO employees work in jobs where learning pathways are directly tied to career pathways through job-specific matrices that were established in consultation with the Arizona Department of Administration and under the direction of the Arizona State Legislature. These matrices establish the specific learning and development activities required to advance to higher job levels within IDO and TSMO, with advancement/promotion tied directly to incremental pay increases. Approximately 2,000 employees are covered by job-specific matrices at ADOT, representing approximately 55 percent of all ADOT employees.

One important facet of training that falls under the job-specific matrices is *NEMO*, a two-week course that fulfills the first 15–20 classes required for new maintenance employees at ADOT. EBD facilitates *NEMO* approximately 6–7 times per year to allow new maintenance employees the chance to participate within the first 6–8 weeks of being hired. IDO and TSMO leaders reportedly value the *NEMO* program for its ability to get employees into the field quickly by meeting basic requirements for their job roles without sustained interruption (i.e., classes are limited to a two-week period instead of many weeks or months). *NEMO* was identified as a pilot program for this study due to its uniqueness, large scope, high importance to ADOT, and the fact that it is required for many employees.

Level 1: Reactions

To assess participants’ reactions to *NEMO*, the consultant team reviewed qualitative data provided by ADOT employees during three interviews focused on understanding employees’ experiences with *NEMO*. Results showed that the interview participants found *NEMO* to be very helpful, enjoyed the format, found instructors to be of high quality, and generally enjoyed their experience in *NEMO*. In addition to interview data, results from the agency-wide survey that was designed and conducted as part of this study were analyzed to compare *NEMO* participants to other survey respondents. Results showed respondents who reported that they had participated in *NEMO* within the last six months had significantly higher scores on several reactions survey measures, including perceptions of *Learning and Development Availability*, *Learning and Development Communication*, and *Support Following Learning and Development.*

***NEMO* is positively impacting participants in a wide range of areas, in addition to the broader ADOT organization's functioning and training return on investment.**

Absenteeism, for example, is tied directly to organizational costs. The evidence suggests that absenteeism is reduced following *NEMO* participation, which directly benefits ADOT's return on investment.

Level 2: Learning

To explore the learning outcomes from participation in *NEMO*, the consultant team reviewed in-course learning assessment results from sessions that took place between December 2021 and October 2022. Course assessment data indicated positive learning outcomes for the majority of *NEMO* students. In addition to course assessment data, one interview participant addressed learning outcomes and shared positive feedback, stating, "There were things in *NEMO* that I didn't know before. They taught those new things well, and other things I did know but the refresher was great."

Level 3: Behavior

To assess the impact of *NEMO* on participants' behavior, responses to the agency-wide survey were analyzed to compare differences in behavior-focused outcomes based on participation in *NEMO*. A series of analyses examined the differences between survey respondents who reported participating in *NEMO* within the last six months and all of the other survey respondents. Results are shown in Figure 7, which reveals that those respondents who had participated in *NEMO* in the last six months had significantly higher *Training Transfer* (i.e., the extent that employees apply what they learned during learning and development activities in their work environment), *Direct Outcomes of Training Transfer* (i.e., the extent to which training helps staff improve their work, accomplish tasks faster and with higher quality, and make fewer mistakes), and *Organizational Member Proficiency* (i.e., a measure of self-reported performance) scores than other survey respondents, on average.

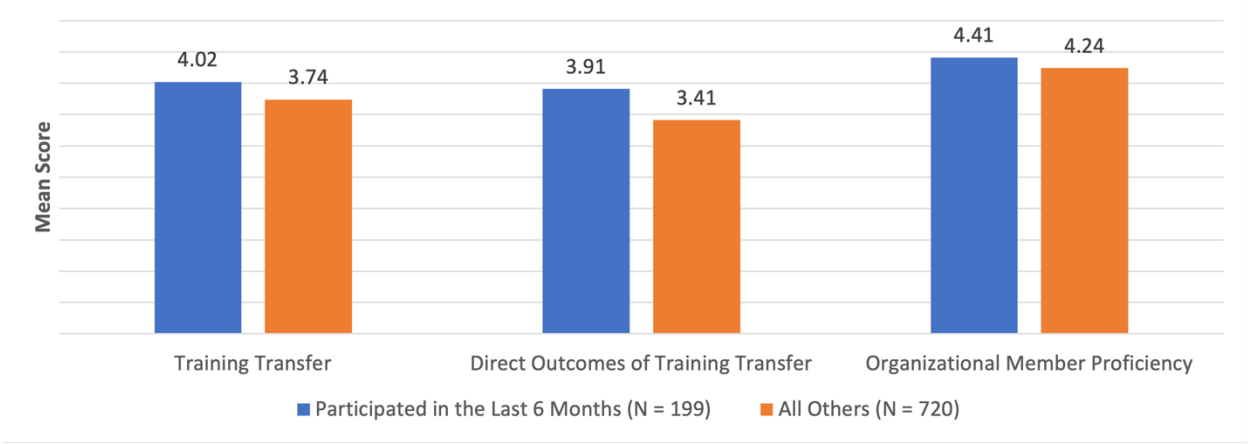

Figure 7. Statistically Significant Differences in Level 3 (Behavior) Outcomes Based on NEMO Participation within the Last 6 Months

Level 4: Results

Finally, to assess organizational results outcomes from *NEMO* participation, responses to the agency-wide survey designed and conducted as part of the current study were analyzed to examine differences between survey respondents who reported participating in *NEMO* within the last six months and all other survey respondents. The respondents who reported participating in *NEMO* within the last six months had, on average, significantly lower *Absenteeism*, *Fear of Making Mistakes*, and *Burnout* scores than other survey respondents, as well as significantly higher/more positive perceptions of *Opportunities for Advancement*, *Learning Climate*, *Work Motivation*, *Positive Organizational Culture*, and *Adequate Amount of Time to Do Job.* While some of these differences may be, in part, accounted for by the fact that recent *NEMO* participants tend to be relatively newer ADOT employees, these results reflect very positive Level 4 (Results) outcomes from participation in *NEMO*.

The results of the comparisons conducted with the data from the Level 4 (Results) survey measures show evidence that *NEMO* is positively impacting its participants in a wide range of areas, which, in turn, impacts the broader ADOT organization and its ROI for training. Absenteeism, for example, is tied directly to organizational costs; the evidence presented here suggests that absenteeism is reduced following *NEMO* participation, thus *NEMO* directly benefits ADOT's ROI. Similarly, the evidence suggests that *NEMO* positively impacts participants' perceptions of the adequacy of the time they have available to do their jobs indicates that *NEMO* participants may be more efficient or effective in managing their work or may receive support following *NEMO* that benefits their experiences of time pressure.

Pilot Program 3: #ADOTLeads Aspire to Lead

As a part of the #ADOTLeads series of training programs, *Aspire to Lead* is designed for employees interested in proactively developing their leadership abilities to prepare for a potential future leadership role at ADOT. Content focuses on helping employees learn what leadership is like and whether a leadership position is a good fit for them. *Aspire to Lead* lasts approximately 4–5 months, and it is presented in a cohort-based model via Google Classroom. *Aspire to Lead* has been presented to four cohorts of participants (i.e., groups of ADOT employees who participated in the program at the same time), with the most recently completed cohort ending in November 2022; it is offered approximately twice per year.

Program delivery focuses on providing experiential learning and on-the-job practice of the skills and concepts learned during program participation. Topics include AMS principles, tools, and behaviors; culture and environment; developing and managing team relationships; resolving conflicts; one-on-one employee coaching; team building; developing and communicating employee expectations; and meeting-facilitation and time-management skills. The program is revised and continuously improved between cohorts based on feedback, lessons learned, and best practices. Participants take two surveys as part of participation: one before the program begins and one after the program ends Additionally, EBD also conducted an additional follow-up survey in 2022, asking past cohort members to share details about their experiences since participating in *Aspire to Lead* and how *Aspire to Lead* contributed to their work and career development and milestones (e.g., promotions) at ADOT.

The increase in knowledge score from the *Aspire to Lead* pre-course to post-course surveys was statistically significant in all cases, indicating that average scores on post-test knowledge measures were significantly higher after *Aspire to Lead* than before participating in the course.

Level 1: Reactions

In general, the study data provided evidence of positive reactions to *Aspire to Lead*. There was some indication that it may be difficult to balance *Aspire to Lead* participation with day-to-day job duties, as 80.0 percent of EBD survey respondents (N = 20) reported they struggled to complete learning activities, and almost all indicated the reason they struggled was that it was difficult to balance learning activities with their day-to-day job duties. However, these data only came from the first cohort of *Aspire to Lead*, so it may be that any issues identified in responses have already been addressed in cohorts following cohort one.

Agency-wide survey respondents who reported that they had participated in *Aspire to Lead* within the last six months had significantly higher/more positive perceptions of the following survey measures:

- *Learning and Development Needs – Identification*
- *Learning and Development Availability*
- *Learning and Development Support*
- *Activities During Learning and Development*
- *Diversity, Equity, Inclusion, and Belonging in Learning and Development Activities*
- *Support Following Learning and Development*

These results provide evidence of positive reactions following *Aspire to Lead* participation.

Level 2: Learning

In pre- and post-course surveys, EBD used pre- and post-course questions to ask participants from all four cohorts to rate their current knowledge level in a variety of areas relevant to the course content. Additionally, EBD asked Cohorts 3 and 4 participants' direct supervisors to complete pre- and post-course surveys, rating participants in the same knowledge areas. The average increase-in-knowledge score from the pre-course to post-course surveys was statistically significant in all cases, indicating that average scores on post-test knowledge measures were significantly higher after participating in the *Aspire to Lead* program. These results showed strong evidence of the effectiveness of the *Aspire to Lead* program in increasing participants' self-reported knowledge. Average supervisor ratings of participant knowledge were also substantially higher after *Aspire to Lead* participation; although supervisor ratings could not be compared statistically due to sample sizes, the change across both self- and supervisor ratings is notable and provides strong evidence of learning.

Level 3: Behavior

The consultant team analyzed two types of survey data to assess behavioral outcomes stemming from participation in the *Aspire to Lead* program. First, responses to behavior-focused questions were analyzed from EBD's pre-course and post-course surveys. Several results indicated evidence of behavior

changes following participation. For example, when participants were asked about how they receive feedback before participating in *Aspire to Lead*, 64.3 percent of participants in one cohort said that they "look forward to receiving feedback" or "proactively seek feedback" from their manager. In comparison, 78.6 percent of participants in the same cohort reported the same after participating in *Aspire to Lead*—an increase of 14.3 percentage points. Other positive results were seen in the frequency of Gemba walk participation, use of a combination of lagging and leading metrics, and use of a simple, standardized process for creating standard work.

To supplement EBD-collected data, responses to the agency-wide survey designed and conducted as part of this study were analyzed. Results showed that those respondents who reported that they had participated in *Aspire to Lead* within the last six months had significantly higher scores on *Training Transfer* and *Direct Outcomes of Training Transfer* measures, on average, than the other survey respondents.

Level 4: Results

To assess the results-focused outcomes of employees' participation in *Aspire to Lead*, the consultant team again analyzed two types of survey data. First, data from the 2022 follow-up survey that EBD had sent to *Aspire to Lead* participants from Cohorts 1, 2, and 3 were analyzed. Out of the 50 total survey respondents, 21 (42.0 percent) reported that they had received a promotion either in another department or their own department. A total of 4 respondents (8.0 percent) reported they had made a lateral move to another department, and 25 (50.0 percent) reported leading a PDCA (i.e., management methodology that aims to continually improve processes based on four stages: plan, do, check, act) or project. Finally, 25 respondents (50.0 percent) reported they had taken advantage of "other stretch assignments," such as facilitating meetings, delegating tasks, writing reports, and leading presentations. These results are illustrated in Figure 8 and indicate that participants in *Aspire to Lead* have engaged in many opportunities for growth and advancement within ADOT—a key outcome that provides evidence of the effectiveness of the program.

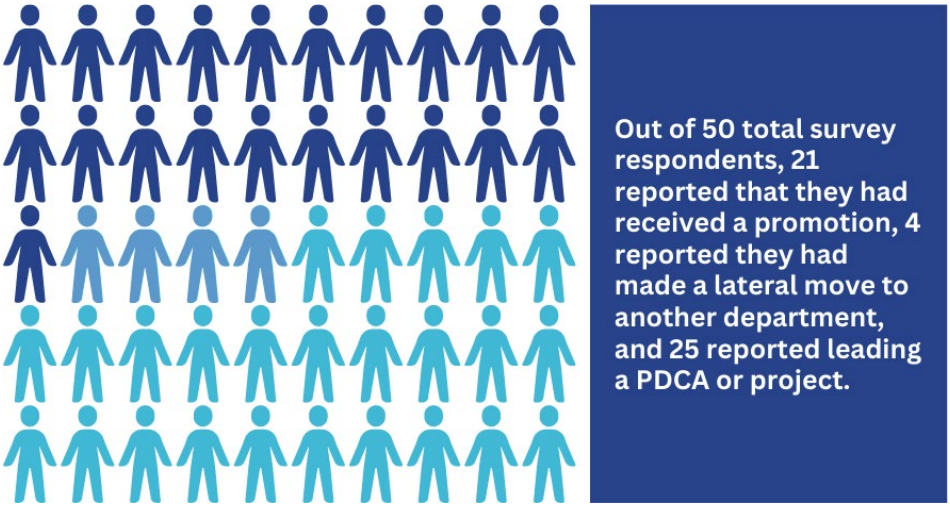

Figure 8. *Aspire to Lead* Post-Participation Survey Respondent Results

Next, responses to the agency-wide survey designed and conducted as part of this study were analyzed. Results showed that those respondents who reported participating in *Aspire to Lead* within the last six months had significantly higher/more positive perceptions, on average, of *Opportunities for Advancement, Learning Climate,* and *Job Control* than non-participants. These differences provide evidence of a positive impact that *Aspire to Lead* had on important employee and organizational outcomes. Other results, comparing those survey respondents who reported they had ever participated in *Aspire to Lead* to those who reported they had never participated, showed that *Aspire to Lead* participants had lower *Absenteeism* and *Fear of Making Mistakes* than non-participants. These results indicate a positive impact from the *Aspire to Lead* program. Absenteeism, in particular, is associated with a positive financial return on ADOT's investment in *Aspire to Lead*, as higher levels of absenteeism are directly tied to lower organizational productivity and higher costs.

Pilot Program 4: #ADOTLeads Leading Others

As a part of the #ADOTLeads series of programs, *Leading Others* is a program designed for new frontline managers and supervisors. *Leading Others* lasts approximately six months, and it is presented in a cohort-based model via Google Classroom. As of May 2023, six cohorts have participated. *Leading Others* is structured to be like a college-level course, with autonomous learning during an established timeframe and assignments with deadlines. The program's approach includes social learning venues to engage with others in the program and build relationships, such as through discussions based in the Google Classroom, in addition to more traditional learning venues. Participants can receive college credits for participation through a partnership with Gateway Community College in Phoenix, Arizona. At the beginning and end of participation, pre- and post-training surveys were distributed to participating employees, as well as participating employees' managers and supervisors. These surveys were used to gather ratings of participants' skills and to measure learning and behavior changes over the course.

Tools, skills, and resources covered by *Leading Others* include planning and prioritizing, managing multiple priorities, delegation, managing and adapting to change, presentation skills, and meeting facilitation. Employee- and leadership-development topics covered setting expectations, providing constructive feedback, one-on-one coaching, and rewarding and motivating teams. Participants also learn about the AMS concepts and practices, resolving conflicts, and team and relationship building, in addition to other topics and skills. The program is revised and continuously improved between cohorts based on feedback, lessons learned, and best practices.

Level 1: Reactions

Three questions on EBD's post-course surveys provided data about participants' reactions to *Leading Others*. Results showed that the majority of participants in Cohorts 3 and 4 indicated the volume and type of communication, as well as the length of the program, were "just right." When participants were asked to rate how helpful instructor comments in each activity were on a scale from 1 to 5, with 5 representing the most helpful, participant ratings averaged 4.38—a high rating of helpfulness. Additional analyses were conducted utilizing data from the agency-wide survey designed and conducted

as part of this study. Those who reported participating in *Leading Others* within the last six months had significantly more positive perceptions of *Support Following Learning* and *Development*. This may be due, in part, to EBD's integration of participants' managers and direct reports in program processes, such as pre-course and post-course surveys, as this practice promotes awareness of participation in the program and may foster additional support for participants.

Level 2: Learning

Learning was assessed by participants and their direct supervisors in both pre- and post-course surveys. Each participant and their supervisor were asked to rate the participant's current knowledge and ability level in a variety of course-relevant topics. It is important to note that the survey structure combines knowledge and practical application into a single measure. This is important because "practical application" and "skill" are better aligned with Level 3 (Behavior) outcomes rather than Level 2 (Learning) outcomes. However, due to the importance of knowledge in the rating scale and the lack of other learning measures available, results are presented in this section, relevant to Level 2 (Learning) outcomes. Self-ratings, manager ratings, and direct report ratings often substantially increased—in many cases by more than a full point on a five-point scale, on average—from pre-course to post-course assessments, providing strong evidence of knowledge and skill improvement from participation in *Leading Others*.

Broadly speaking, self-ratings tended to be higher than manager or direct report ratings, which is typical in performance ratings and does not invalidate the findings, given the consistency of the increase from pre- to post-course measurements across all three groups.

Absenteeism was significantly lower for those who reported they had participated in #ADOTLEADS *Leading Others*, and fear of making mistakes was also lower, representing a desirable impact of program participation.

Level 3: Behavior

Behavior-focused outcomes were first evaluated using data from EBD's pre- and post-course surveys. Participants and their managers showed increases in their ratings of participants' feedback-seeking behaviors and use of a combination of lagging and leading metrics. Some participants' direct reports were asked to rate several behavior-focused outcomes during the pre-course and post-course surveys. EBD assigned numerical values on a scale from 1 to 5, with 5 representing the most favorable outcome, to their ratings. Although differences were relatively small (0.01 to 0.06 on a 5-point scale), the average of direct reports' ratings of *Leading Others* participants was higher at the post-course survey time point than the pre-course survey time point on multiple leadership-related skill areas. Finally, analyses of data from the agency-wide survey designed and conducted as part of this survey showed that those respondents who reported that they had participated in *Leading Others* in the last six months had significantly higher *Training Transfer* and *Direct Outcomes of Training Transfer* scores, on average, than other survey respondents.

Level 4: Results

To measure results-focused outcomes, the consultant team conducted analyses with data from the agency-wide survey. Results showed statistically significant differences in *Absenteeism* and *Job Control*, with absenteeism being lower in recent *Leading Others* participants and perceived job control being higher—both positive, beneficial outcomes that are tied to ROI.

Methods

The overall study design utilized a mixed-methods strategy, meaning it incorporated multiple types of data. Each data type provided a different, complementary view of EBD's learning and development programs. Although mixed-methods data collection is more time-consuming and complex than using a single method, there are clear advantages to this approach. Every method of data collection has both advantages and disadvantages. Quantitative data (e.g., multiple choice-style responses on a survey) are more objective and consistent across data collection participants, but typically do not fully capture the context of a participant's experience. Qualitative data (e.g., written responses to open-ended questions on a survey) are more detailed but make the identification of generalizations and the application of statistical analysis more challenging. Mixed-methods strategies offset these disadvantages, allow the use of all tools available, and increase the comprehensiveness of data by providing multiple ways of examining the same topic or phenomenon—in this case, the effectiveness of EBD's learning and development programs. The results of this approach within the context of this study provided a broader and more complete view of participants' experiences with, views of, and outcomes of EBD's learning and development programs than the use any single method would have created.

The first focal objective of this study was to identify the views of employees and leaders regarding ADOT's culture of learning and development as well as the effectiveness of EBD's programs in meeting employees' and leaders' needs and desires for learning and development. To achieve this objective, a combination of survey, interview, and focus-group methodologies were developed and implemented to obtain both quantitative and qualitative data from a variety of employees, including leaders across all levels of the organization and individuals with diverse perspectives (e.g., differing groups/divisions, tenure at ADOT, role in the organization, levels of experience, levels of education, etc.).

The second focal objective of this study was to develop and pilot test measures and tools for ADOT to consider implementing in future efforts to help gauge the effectiveness of EBD's learning and development courses and programs. In addition to the analysis of the impact and effectiveness of participation in EBD's optional training, learning, and development programs using survey data, four specific programs were identified and assessed with a combination of survey, interview, and secondary data sources (i.e., pre-existing data collected by ADOT and/or EBD outside of this study).

The following sections provide additional details about the specific tools and methods developed and utilized throughout the study to meet the study's focal objectives. Figure 9 shows highlights of the study methodology.

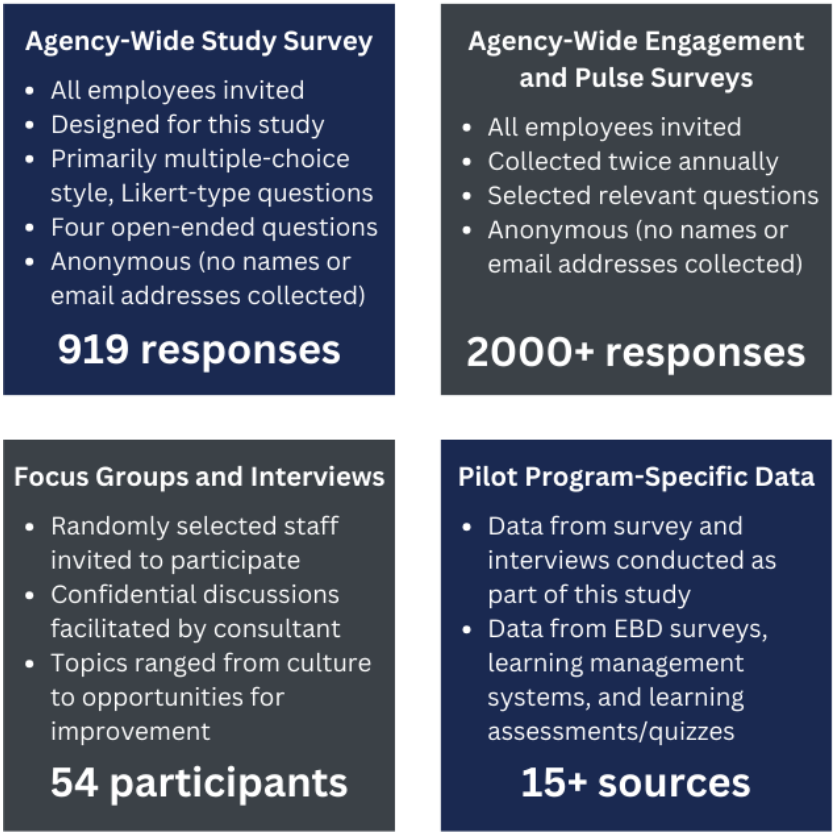

Figure 9. Highlights of Study Methodology

Agency-wide Survey

An agency-wide survey served as the primary method of quantitative data collection for this study. All ADOT employees, including leaders, were invited to participate in an online survey distributed via email. To ensure confidentiality, participant names and email addresses were not collected. Survey questions originated from scientifically validated measures where available, with adaptations made as needed to ensure measures fit the purpose of the study. Most survey questions asked respondents to rate the extent to which they agreed with a statement on a five-point, Likert-type scale from “strongly disagree” to “strongly agree.” Where appropriate, questions instead utilized a frequency scale (e.g., ranging from “never” to “always”). Responses to these multiple choice-style questions were coded with numeric equivalents (e.g., 1 = “strongly disagree” to 5 = “strongly agree”) to facilitate analysis. Data were closely examined for validity, and any responses determined to be invalid (e.g., ‘straight-line’ responses, where a participant selected the same response for all questions) were removed prior to analysis. After all data cleaning and validation procedures, a total of 919 survey responses were utilized in analyses. Comparative analyses examining differences between the survey sample and the full ADOT employee population found that the survey sample was highly representative in all areas examined, including gender, race/ethnicity, division/group of ADOT’s organizational structure, and leadership level.

Several additional questions throughout the survey were open-ended, providing participants with an opportunity to write qualitative responses in their own words. These responses were analyzed to

provide supplemental information that could not be captured in multiple-choice Likert-type questions. The agency-wide survey provided the most comprehensive data collection method utilized in the study, due to its ability to measure many different concepts and because the entire agency was invited to participate.

Interviews and Focus Groups

Interviews and focus groups served as the primary method of qualitative data collection. Interviews reflect qualitative discussion with an individual, while focus groups reflect qualitative discussion with multiple participants at once (e.g., 6–8 participants per group). The primary purpose of the interviews and focus groups was to obtain detailed information about employees' experiences with EBD and views of the EBD learning and development programs from a representative range of employees at ADOT. Interviews and focus groups are useful for obtaining detailed, nuanced information by allowing participants to easily tell stories about their experiences, respond to follow-up questions, and, with focus groups, react to other group members' input and experiences. These methods therefore require a smaller sample size of participants than surveys, with a focus on thorough exploration of key experiences and how current employee experiences align with EBD's objectives of their learning and development programs.

To learn about perspectives from employees in diverse roles representing the broad spectrum of job functions across ADOT, a total of 331 ADOT staff were randomly selected based on leadership role (i.e., executive/division leader, manager/supervisors, non-supervisory staff) and were invited to participate in a focus group or interview about their views of and experiences with learning and development. The identified pool of invitees was emailed an online signup form where they could indicate whether they wish to participate and, if so, which times they were available from a list of options. If participants were not available during the times presented, one-on-one interviews were scheduled at a time that was convenient for the participant. Focus group and interview time slots were made available in the early morning (e.g., 7:00 a.m. local time) to encourage participation from field-based employees and those with earlier workday start times. The option of a focus group facilitated by a native Spanish-speaking facilitator was also provided; however, no participants selected this option. All focus groups and interviews were held virtually, with audio recordings created for subsequent transcription and utilized only for the consultant's data-analysis process (i.e., not shared with ADOT or with anyone outside of the consultant team members directly responsible for data analysis). Of the 331 total invited ADOT staff, 54 agreed to participate, including 13 executive or division leaders, 17 managers or supervisors, and 24 non-supervisory staff.

Questions were asked in a semi-structured format, meaning a predetermined set of primary questions were asked in every focus group or interview, but follow-up questions, prompts, and the direction of the discussion were free to vary. Participants were asked for their permission to record the audio from the focus-group and interview sessions. The recordings were transcribed and analyzed by two members of the consultant team. During the focus groups and interviews, participants were asked to provide a brief overview of their background and role at ADOT. In addition, topics included their perception of the overall culture surrounding learning and development at ADOT, discussion of the similarities and

differences across groups/divisions, discussion of strengths and positive experiences employees have had with ADOT learning and development programs, and discussion of any opportunities for changes or improvements. Finally, participants were given an opportunity to discuss any topics that were not specifically covered by the focus-group or interview questions.

Agency-wide Engagement and Pulse Surveys

To provide additional data showing the overall impact of ADOT's learning and development programs, including those implemented by EBD, analyses included data from ADOT's engagement and pulse surveys, which are distributed agency-wide twice annually and measure a variety of topics. Two survey questions were identified as specific to learning and development and were analyzed to examine employees' perceptions of agency-level support for education and professional development opportunities, as well as supervisor coaching specific to employees' behaviors, results, activities, and professional development. To analyze these data, the consultant examined average scores on a scale from one through five, where 1 = strongly disagree and 5 = strongly agree, for two survey items. Data were analyzed over four occasions when ADOT conducted engagement and pulse surveys, between April 2021 and October 2022.

Additionally, analyses were conducted for groups and divisions that had at least three time periods of data and at least 50 participants per survey per time period, which included the following divisions and groups:

- Administrative Services Division (ASD)
- Business Operations (BUS)
- Enforcement and Compliance Division (ECD)
- Financial Management Services (FMS)
- Infrastructure Delivery and Operations (IDO)
- Information Technology Group (ITG)
- Multimodal Planning Division (MPD)
- Motor Vehicle Division (MVD)
- Transportation Systems Management and Operations (TSMO)

Pilot Program-specific Data Sources

A set of specific courses and programs were identified as pilot studies for measurement tools and approaches. Four programs were selected in close collaboration with EBD and the technical advisory committee for this study. The primary objective was to select courses and programs that represented a wide variety of learning and development offerings across EBD, including diverse levels of the organization (e.g., all levels, only leaders, or only employees), different groups and divisions (i.e., agency-wide vs. specific groups and/or divisions), and the nature of participation (i.e., optional vs. mandatory).

The agency-wide survey that was created for this study included a section of questions dedicated to asking about the experiences of employees who had participated in the four programs designated as pilots. Additionally, the consultant team conducted interviews about each pilot program. Finally, a wide

variety of existing data sources were incorporated and analyzed to contribute to findings specific to each program, including surveys implemented by EBD both before and after course or program participation, learning assessments implemented by EBD during and after course or program participation, and data from ADOT's LMS about participation.

Data Analysis

Data-analysis methods varied both by the type of data utilized and by the research question. Qualitative data sources included responses to open-ended survey questions as well as a variety of focus groups and interviews with leaders and employees. Qualitative data were coded to determine themes across individuals and groups (i.e., both similarities and differences). To analyze these open-ended responses, two analysts from the consultant team assigned themes to each response, met to discuss the themes assigned and align their analyses, then checked—and corrected where needed—the themes assigned to each response.

Quantitative data sources included surveys distributed before and after participation in the pilot programs, the agency-wide study survey, agency-wide engagement and pulse surveys, data from learning assessments conducted as part of the pilot programs, and LMS data. For agency-wide study survey data, quantitative data were compared to a control group whenever possible. Control groups were created for the analysis of agency-wide survey data by separating those survey respondents who reported participating in an EBD-designed learning and development program in the past six months from all other survey respondents, as well as by separating those survey respondents who reported ever participating in an EBD-designed learning and development program from those who reported never participating in the same program. Quantitative data analysis consisted of descriptive statistics by topic (i.e., item, scale, or measure), distributions across the available response options, and testing for mean differences between groups when sample sizes allowed, particularly when comparing EBD learning and development program participant groups with control groups (e.g., using *t*-tests).

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