



UNIVERSITY SURVEY &  
ASSESSMENT SERVICES

# Careers with Minnesota's Public Transportation Agencies

Focus Group Summary Report

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# Project Background

The Center for Transportation Studies (CTS) Local Technical Assistance Program (LTAP) has received [an award through the Minnesota Local Road Research Board](#) to develop marketing strategies and products to assist local agencies across Minnesota in recruiting roadway maintenance workers. As a result of this award, CTS contracted USAS to support the project by providing the following services: consultation, project management, focus group facilitation, stakeholder engagement, data analysis, and reporting.

The project team identified four cohorts to help develop the recruitment strategies: 1) adults with CDL Licenses not currently working for local agencies, 2) adults re-entering the workforce, 3) HR professionals of local agencies, and 4) high school students. USAS managed and facilitated focus groups for the first three of those cohorts and supported a group of UMN undergraduate students (studying Human Factors under the direction of [Dr. Nichole Morris](#)) in producing the focus group for high schoolers.

## Executive Summary

This report contains a summary of the themes, codes, and sub-codes that emerged from the focus group discussions conducted for the Minnesota Local Road Research Board. Four focus groups were conducted between November 15 - 30, 2023 with the featured stakeholder groups: CDL license holders (4 participants), Jobseekers (8 participants), HR professionals (3 participants), and High school students (5 participants).

Participants were identified, selected, and recruited via professional networks and affiliations of CTS and their partners. Discussion guides were created for each group that addressed a particular set of topics: 1) The Current Workforce, 2) Recruitment, 3) Retention, 4) Marketing & Awareness, and 5) Collaboration. Each topic is treated as a theme that is accompanied with codes which categorize participants' responses. For context, included in the appendices section of this report are the original questions and the full set of codes with quotes extracted verbatim from the transcripts.

## Methodology

### Focus Group Research Design

The focus group method is an approach to qualitative research that allows for investigators to draw out rich, descriptive information about specific topics from a group of relevant stakeholders. The participants were recruited using convenience sampling from respondents who were solicited via professional networks and affiliations of CTS and their partners. Data was collected from a total of 15 participants across the three groups (3 HR professionals, 4 CDL license holders, and 8 jobseekers). Participants (except the HR professionals' cohort) were provided \$50 VISA gift cards.

### Data Collection

Focus group discussions were conducted by a member of USAS on three separate days between November 15 - 30, 2023. All discussions were held via Zoom and recorded for data analysis purposes. For the featured stakeholder groups, the following topics were discussed: 1) The Current Workforce, 2)

Recruitment, 3) Retention, 4) Marketing & Awareness, and 5) Collaboration. Each topic was allocated approximately 12 minutes with a range of related questions asked during that time. A copy of the discussion guides for each group can be found in Appendices A, B, and C.

## Data Analysis

All audio recordings were transcribed and thematically analyzed. A thematic summary of comments was coded from the data.

The data collected was analyzed using thematic analysis. The goal of a thematic analysis is to identify themes or patterns in the data that are important or interesting and use these themes to address the research. The process of this analysis follows Braun & Clarke's (2006) six-phase framework for doing a thematic analysis.

USAS used NVivo, a qualitative analysis software, to manually code the interview transcripts. The investigator read the transcribed text using the open coding technique and created codes for key points. Through an iterative process, codes were used to create a codebook. The codebook was modified and refined until a point of saturation was reached.

## Results by Participant Group and Theme

The data analysis conducted on the transcripts revealed distinct themes, codes and sub-codes that emerged in relation to the research questions. The following sections present the top codes for each topic of the discussion by frequency of occurrence. The number of comments listed refers to how many times a comment occurred which could be attributed to a specific code during the discussion. Comments have been double coded when they fit within multiple categories. The participant's comments are counted as they occur, which means that one participant can have multiple ideas counted towards the same category.

### Theme 1: The Current Workforce

When discussing the current workforce, the aim was to understand the landscape of the industry in the present day. Questions that were asked related to providing general descriptions of the workforce in their agency, describing their demographics, and specific challenges that they face.

### Theme 2: Recruitment

When discussing recruitment, the aim was to understand the process of recruiting new employees. Questions that were asked related to sharing strategies for dealing with recruitment challenges, creating new positions, setting wages and gaps in knowledge.

### Theme 3: Retention

When discussing retention, the aim was to understand the process of retaining existing employees. Questions that were asked related to sharing strategies as well as barriers for retaining employees, career advancement opportunities.

#### Theme 4: Marketing & Awareness

When discussing marketing and awareness, the aim was to understand how information related to jobs are shared and perceived by employers and prospective employees.

#### Theme 5: Collaboration

When discussing collaboration, the aim was to understand how agencies work with one another and local communities. Questions that were asked related to how often they communicate with their peers and what topics are discussed.

### CDL License-Holders

The CDL License-Holders focus group included four participants and was held on November 28, 2023, between 12-1pm via Zoom.

#### The Current Workforce

Pay and benefits attract employees to their current job (4 comments)

- I think they enjoy the benefits, and they enjoy the pay.
- Benefits was a huge thing -health and retirement benefits stuff like that
- I believe -having spoken with these guys on a regular basis, the benefits are important to them to have the health care and to have different benefits that we offer. Like our company offers a 401K and 401K sharing.
- Long-term short-term disability.

There are less people in the job pool (1 comment)

- It seems that there's just a lot less people in the job pool to choose from. Like, we used to have 20 applicants for every job or more now, we're lucky if we have one.

New employees are adequately qualified (1 comment)

- Where I work, in most cases earlier this year, people that apply, most are very qualified, very experienced.

New employees are underqualified (1 comment)

- With the new employees that I've had in the last year or so, most of them have been underqualified and fresh into their CDL, and not a lot of experience. There's a lot of training.

Seasonal burnout is a challenge (1 comment)

- I think the majority of the drivers get burnout towards this time of year because of all the hours. I think at this point of the year, everybody's looking for some time off. And the hours become a little bit long. You know, 60-hour weeks becomes long when you're doing it six, seven months a year

## Recruitment

### Finding jobs through word of mouth (6 comments)

- I got a few different companies to choose from when I was sent to this, and I chose the company I'm with currently based on the word of mouth of people that have worked here and currently worked here when I was hired
- Yeah, I found out about my job through a senior colleague of mine, because we're kind of very close so we talk a lot about anything that is going on.
- Referred to by a friend
- We also use word of mouth, and we seem to have a lot better odds with word of mouth. A lot better results than we're having with even social media like Indeed and LinkedIn or whatever all those different networks are that we use.

### Pay and benefits are the most important factors (4 comments)

- The payment
- The benefits with the salary
- You'll see a lot of companies offering big, huge sign-on bonuses. Hey, come drive for us. You know, we'll give you a blah, blah, blah, X amount of money.
- I think that is a huge attractant for a lot of people is the signup bonuses that are being offered. I've been actually asked by a company other than the one I work for to come work for them.

### Opportunities for growth are important (3 comments)

- Opportunity for growth
- Opportunities for advancement within the company
- My expectation level always was to advance. And I had heard that this company in particular gave a lot of credence to hard work and dedication and advancement was always a possibility from within.
- The fact I found out over time, working at this company; hard work and dedication pays off. For a lot of places, it does not. It doesn't have any room for advancement sometimes even though you're dedicated, and you work hard. Some companies you'll never advance. This company is exactly what I thought they were when I came on board. And with hard work and dedication, I was allowed to move up the ladder and get into the current positions I'm in because of it.

### Company values, culture, and reputation are important (3 comments)

- I first try to know about the company's values,
- The overall happiness of the employees that work there compared to other companies that I was looking at.
- The workplace culture, and the environment and the teams I'm going to work with

## Retention

### Employees are seeking career advancement opportunities (3 comments)

- Yeah. I like this job because my father does this job, and it helps us to grow up so that's why I like this job.

- I stayed because it was an opportunity to advance myself, to have benefits. Benefits was a huge thing -health and retirement benefits stuff like that I would say and then just the opportunity for advancement.
- The fact I found out over time, working at this company; hard work and dedication pays off. For a lot of places, it does not. It doesn't have any room for advancement sometimes even though you're dedicated, and you work hard. Some companies you'll never advance. This company is exactly what I thought they were when I came on board. And with hard work and dedication, I was allowed to move up the ladder and get into the current positions I'm in because of it.

Stress from long hours is a major complaint (4 comments)

- Stress caused by tedious work hours
- Most people talk about stress. Most complain about being stressed up. So, these are frequent things I do hear from my colleagues.
- Waking up early and being at work as early as possible. And most people do work more than the required time. So, that is the reason I think they're being stressed.
- Typically, long work hours get daunting, a lot of Saturday work. Although this year we didn't have as much Saturday work, by this time of year, I think there's just a higher burnout rate where everybody's just kind of ready for a little bit of R&R time.

Lack of schedule flexibility is a common complaint (3 comments)

- For me too it is for the schedule. It's very hard for me somehow. So, every day they make me be home on Saturday evening and drive on Monday. So, leaving on Monday morning with only one day home is quite complicated for me.
- Non-flexible schedule.

Not seeing current job as a long-term option (2 comments)

- I don't see it as a long-term option because once I get that experience -because many local jobs ask for at least one year of experience. So, once I get experience, I think I can go local and be home every day.
- I see it as something I can be doing for now, but not on a very long term. I am trying to diversify and transit into tech. So, I believe I will change career options in future.

Good team members keeping employees retained (2 comments)

- The team I work with, they're very valuable. And I was able to get more experience and more encouragement with them. So, it's helped me going, I learned different things from them, I was able to achieve more with the help of my teammates and my colleagues, so it's a good experience to keep pushing and keep working in the same company because you have to learn more and be able to associate yourself with different people and you're able to surround yourself with good people.
- The people here are very good and try to understand everything. What I love the most is that they try all their best to simplify your job. Because here the driver unloads the truck, and they try to do all their best to make it simple.



## Marketing & Awareness

CDL license holders have not considered working for a city or county transportation department (2 comments)

- My answer is no. I don't really know why I don't. I guess because this was my starting point, the industry I'm in, and my contentment here hasn't made me interested in looking for work elsewhere.
- For me, I'll say no, because where I'm working, I'm very okay and comfortable, and I love working with my team members. We are able to share more knowledge and experience. I don't see myself working any other place. I prefer working where I am because I gain more experience and I've already built a lot of relationships with the people I work with.

Media increased the awareness of the truck driver shortage (2 comments)

- I think the media played a major role for the driver to get the opportunity. Because for example, I didn't know that you can find a job through the media. So, once I tried it, it was successful. Because, as I told you, I was going back where I started and earned the CDL, and they gave me the ring. And I went through the ring, and I got that job. So, I think the media is, I'd say, the first one and fastest to get an opportunity.
- I think the media has really played up the importance of CDL drivers in the last couple of years with the shortages that they're talking about all the time. I would guess a lot of people came into the industry and got a CDL because of that, seeing all that, you know, hey, we're short drivers.

Employees are not aware of the amount of time required (1 comment)

- A lot of the new guys that we have coming in aren't expecting the long hours that they end up putting in and I think for some of them, I think it's tough -especially depending on their situation with their family life.

## Jobseekers

The jobseekers focus group included eight participants and was held on November 29, 2023, between 12-1pm via Zoom. There was diversity amongst counties represented as well as employment status. Three participants were students, two were working part-time, and the remaining were unemployed or did not identify.

## The Current Workforce

Reasons for not seeking jobs with the city or county government (7 comments)

- No, I haven't. I've just been looking around at some private companies like that.
- Basically, I have not applied yet, but I think one reason that is stopping me from actually applying is probably proper information on how to go about the application and also feeling like the whole process later on would probably be a rigid one where I have to go through a lot of steps to apply. But then I feel like with proper education and information I might apply myself and see what I can get

- I tried, but it wasn't working for me. So, for the government, I really didn't know. But I feel like if I'm to go into the government, I feel like I need to have some certain kind of degree -which I'm pursuing at the moment- so, I can have a good offer.
- Physically demanding and stressful

Jobseekers with no experience in the transportation field (4 comments)

- I've never really worked in the transportation aspect of the job
- Personally, for me I have not worked in the transportation field
- So, I haven't previously worked in the transportation field but I'm trying to get into it, so I've been actively trying to secure a job

Has applied to a county job (1 comment)

- S.T. in the chat says that he has applied for a county job but yet to get a call from them.

## Recruitment

Effective recruitment strategies

- Referrals (2 comments)
- Qualifications-based recruitment (1 comment)
- Social media recruitment (1 comment)
- Virtual recruitment (1 comment)
- Community partners (1 comment)
- Uncomplicating the process (1 comment)

Areas of consideration when applying for jobs

- Company culture (3 comments)
- Work-life balance (2 comments)
- Alignment of required qualifications and skills (1 comment)
- Pay (1 comment)

## Retention

Duration of tenure depends on treatment (4 comments)

- I feel like the length I can stay in a new position would depend on various factors that surround my career goals, and job satisfaction, the good opportunities in the workplace environments, and personal circumstances, like our being treated
- I feel like it depends on individual circumstances and aspiration based on how you're being treated in the workplace.

Career advancement is important (4 comments)

- Career advancement is the most important thing for me.
- And over time, after working, you have to take the only reason that gives you an opportunity to grow. Because you can't just be working and remain in one position, you have to go beyond

what we're excited for. So, organization does not give you an opportunity to grow, you know, we have to find something better.

A welcoming environment keeps employees retained (3 comments)

- The most important thing has to be a positive work environment in terms of the relationship, there will be in that I have on the job
- The first thing is you try to look at, really, people need to feel welcome around them. Now, consider that you feel welcome around your work environment, that's something you have to consider.

Marketing & Awareness

Public works/roadway maintenance jobs are seen as stressful (9 comments)

- Physically demanding and stressful
- Personally, I feel like a job with public maintenance and road maintenance will probably be somewhat stressful although I haven't worked in that department. I feel like from just the name and every other thing surrounding the process, I feel like it would be a stressful one.
- Work is having to consume a whole lot of time. You are not having time for yourself and your family, and I feel like working in a government department always has to come with a whole lot of workload. I don't know if I'm judging correctly or judging wrongly or just saying it because I have not been there but personally, I just feel that these government jobs have to do with a lot of work, a lot of time, and a lot of attention. It's okay to give attention to your work and all that but giving attention when you won't have time for yourself, that's basically where my concern lies.

Information needed to learn about jobs

- Hours of *work* (3 comments)

Pay (2 comments)

- Qualifications (2 comments)
- Workplace safety (1 comment)

Ways to discover new opportunities

- Networking (3 comments)
- Social media (3 comments)
- Online job platforms (2 comments)

HR Professionals

The HR Professionals focus group included three participants and was held on November 15, 2023, between 12-1pm via Zoom. The participants represented various regions and levels of government -one suburban city, one suburban county, and one rural county (the City of Fridley, Sherburne County, and City of White Bear Lake). 2 of the participants represented agencies that were part of a union, and one was not.

## The Current Workforce

Majority of new employees do not have a CDL or adequate experience, so they have to be trained on the job (9 comments)

- My concern is that the people that we are hiring are much less experienced than what we currently have. So, they're not coming in with the same qualities.
- I think for us, the majority of the staff that we hire do not have a CDL when they come to us and so we have to send them to the training to obtain it.
- Most of the time we're grabbing people who are pretty entry level. They don't hold CDLs or things like that. So, we have CDL training and certifications and things like that, that they have to obtain as they're coming into the position.
- They're coming in, they just don't have that experience with some of the heavy equipment. And so, the training time is pretty long because you really can't train how to drive a snowfall in the summer.

High turnover is more frequent than low turnover (4 total comments; 3 for high and 1 for low)

- We also have a lot of turnover right now due to retirements. We're getting people that accept the jobs not very excited because the pay is a lot lower than private. And then they end up coming and working for us for anywhere from a couple days to maybe a couple of weeks, and then leave because they basically come and take a job here to have security while they look for something else.
- We had a lot of turnover over the last couple of years. So, we're kind of in a space where we have a mix of younger staff, and then some older, more experienced staff.
- Our turnover is so low. I mean, I'm just looking at our list right now. I have a couple people here that've been here since '97.

Ageing workforce (4 comments)

- I would say, it's an ageing workforce. We've had quite a few retirees, and I know we will have a few more coming up here in the next couple years.
- We have a lot of retirements, so we're having more turnover because of that.
- I think that we're just experiencing retirements for some of the aging staff,

Running lean operations due to lack of workers (4 comments)

- Interviewer: Would you say that you have enough workers? Respondent: I would say no. We are looking at adding on staff this year. It's going through the approval process right now -the FTE- to increase it. So, I guess, no.
- We run pretty lean in regards to what we have for our roadway maintenance.
- I think we run lean. So, we say we have enough, but we can always use more. There are always more demands that are placed on the staff to take better care of like the medians, or plow better, or any of those types of things that we tasked them with. So, there's always room for more

## Recruitment

Pay and benefits are most important (8 comments)

- It's all about the pay.
- Pay is always number one, then benefits,
- While we can't compete with private ones either, I think that that's the one edge we do have when it comes to compensation, it would be the benefit part of it. We offer a pretty rich package.

Competition from both public and private agencies is a challenge to recruitment (5 comments)

- We're in the Twin Cities metropolitan area. So, we're competing with all of the other cities for the same staff. So, the recruitment pools are low. And you know, we have to stay competitive.
- We can't compete with private construction companies, we can't compete with their pay, then they also have the winters off. And so, we can't compete with any of that.
- We're getting people that accept the jobs not very excited because the pay is a lot lower than private. And then they end up coming and working for us for anywhere from a couple days to maybe a couple of weeks, and then leave because they basically come and take a job here to have security while they look for something else.

Employees are mainly recruited via website recruitment platforms (3 comments), social media (3 comments), word of mouth (3 comments), and internal posting (2 comments).

- So, we use a recruitment platform called Neogov and so we post our positions through that. And then it's posted through the League of Minnesota Cities, as well as disseminated in other website recruitment platforms.
- And we also advertise on all of our socials.
- And then I know that there's still some word of mouth that happens as well. We had somebody that we hired that was working in a construction company and then when we had a new opportunity open, that person told somebody else at the construction company, and we ended up hiring that person as well.

Market research is commonly used as a tool for setting wages (4 comments)

- In 2021, we did a compensation study, and we raised the wages and I think that helped a lot.
- So, people advance through the process or through each step on an annual basis, and we assess against the market. So, we make sure that we're staying aware of what the comparable cities are paying so that our wages are around in alignment
- We also are doing the market study piece. And we actually just offered them more now. So, we were going to do a 3% COL for 2024, now we're going to do 5%

Applicants are not understanding the job description (3 comments)

- it doesn't matter how much experience they think -I can't tell you how many heavy equipment operator candidates that we get that come in and they tell us they have a ton of experience, and they don't. Like really when it looks at the job and what the job actually does, this is what they think they've done and then how much they think they should get paid. It does not align. Just using a skid loader on a farm is not the same thing.

## Retention

### Not much room for career advancement (5 comments)

- They can advance and our supervisor out there right now, he was a highway maintenance worker. So, they are advancing, but there's just so few positions that it's very rare when it occurs.
- We like to promote within, but I mean the positions they can get promoted to are like two positions. So, it's not like a lot of movement there, and they're all into management. So, some people aren't really looking to get into management either.
- Interviewer: So, is it fair to say that there's not much room for career advancement? Respondent: I think that's a fair statement.

### Use of tiered or step increases is the most common path to career advancement (4 comments)

- We have like a couple of tiers that people can fall within depending upon their skill set or, you know, some of the certifications, or additional learning, or training opportunities.
- We did create the tiers but it's more just years of service for how they move up to the different tier.
- We recently just changed our job descriptions and created a tier

### Key barriers to retention are employees retiring (4 comments) and employees finding better pay/benefits elsewhere (4 comments)

- Interviewer: what challenges do you face with retention? Respondent: Ours are retirements mainly.
- Our longer-term ones are retiring. We just had one retire after 50 years. And then we have another what's after, like, 20. And then it really drops off from there.
- When I first got here, I think the biggest barrier to retention was wages. We had lower wages and kind of had the intention or set plan to be below the market.
- we were definitely losing people that could make a couple dollars more an hour at a different city nearby. So, that was a huge barrier for now.

### Key retention strategies include cost of living increases (2 comments), longevity pay (2 comments), and recognition efforts (2 comments)

- The cost of living is a good thing that the government does that private doesn't do as much.
- Yeah, I mean, I would agree with the step increases. So, we award those annually. So, that's good incentive for people
- We have some like recognition things that we do, whether it's like if they stay so long, they get to pick an item out of a catalog.

### Not much is being done to market public works as a long-term career option (3 comments)

- I guess that'll be the first to admit that we probably don't really do anything. It's hard. I mean, we market the positions and market our agency as a great place to work but I don't know that I necessarily have anything like a magic wand that we do to try to encourage people to consider it as a long-term career.

- So, it's interviewing staff, having them talk about what they enjoy about working at the county or just being in the county in general. I don't know that it's really made a difference, but we're trying to get awareness out there.

### Collaboration with Local Communities & Agencies

There is an open line of communication as needed (4 comments)

- Well, I think in the public sector, the one thing I really enjoy about it is that you're constantly talking, and you have these opportunities to network quite frequently. And so, you're kind of hearing what everybody else is doing as it goes on.
- You know, I think that you can ask a question of other HR people and other agencies, and they're all very good about responding and saying, oh, here's a job description, or here's how we've navigated this stuff. So, I found that what has been wonderful about the public sector is, you know, people are very willing to help each other out, especially because it can be very isolating to be the HR person at a city or a county.

Not much collaboration between agencies (2 comments)

- I will add that I'm not going to collaborate with [City A] to try to recruit because then I'm going to want the people at [City B] not going to [City A]. I hate to pick on [City A] so much but that's what we do down here.
- I don't know if there's a lot of collaboration, but right now we're all racing to make adjustments to our wages so that we're all keeping up with all the changes that are going on throughout the state. I don't know if that's collaboration, but we're all doing the same thing.

### High School Students

As mentioned above, the high school students were interviewed by UMN undergraduate students under the direction of Dr. Nichole Morris. An excerpt from the report's executive summary is below:

This focus group aimed to gain insight into preconceptions of public works and career aspirations of a high school aged group. Our research group was provided the opportunity to tour the Golden Valley Public Works offices, which provided invaluable insight into the day-to-day operations of a public works office as well as a glimpse into the roles and responsibilities of employees. The focus group, conducted on November 30th, 2023, took place virtually over the course of an hour and had five high school participants ranging from tenth to twelfth graders. Email communication was sent out to educators across the Minneapolis - St. Paul metro area to recruit these participants, who attend high school in various suburbs around the Twin Cities. All participants were male, all indicated that they were college-bound, and all had varying degrees of knowledge about what public works offices do in the community. The main topics of conversation were perceptions of public works, future plans, career thoughts, and information consumption (what modes of communication do students receive information from).

Analysis of the focus group conversation indicated that participants assumed a position in public works required some kind of special training - an associates or specialty degree, or completion of safety courses. One student's perception of public works was that they complete "infrastructure type projects funded by the government for everyone". Participants all indicated that they had plans to attend college for higher education and career connections. All were interested in being innovators, receiving recognition for work, and having a clearly defined work-life balance.

All the student participants saw university education as the best route to career success and steadiness. While it was hoped that some participants would be entering the workforce right out of high school, the ideas they presented gave a perception that the average high schooler associates not attending college with decreased opportunities, pay, and recognition. Questions about public works perceptions indicated that these students knew very little, and due to their design for recognition or “prestige” as one student remarked, a career in highway maintenance was far removed from their scope.

Recommendations for a transportation agency awareness campaign involve a general face-lift of public works image. Emphasis should be placed on new ideas and new construction practices implemented in civil construction/maintenance and the idea that this kind of work is absolutely essential to communities. Students can be hired as part-time summer employees, acting almost like a ‘public work intern’, where they will learn valuable skills related to trade jobs, engineering, and construction. Advertisements should be run on media sites commonly used by this age group such as TikTok, Instagram, X (Twitter), and YouTube. Very little assessment of a training roadmap was done for the scope of this student project, as the age bracket of the focus group is assumed to be hired with no previous experience. It can be assumed that these entry-level hires should first take road and maintenance safety courses, then begin with classes most pertinent to the office they’ve been hired onto, i.e. gravel road maintenance vs. asphalt/highway maintenance. If these hires continue in these positions, it is recommended that they then take a CDL license course.

For a copy of the full report, see Appendix G.

## Conclusion

In conclusion, participants across all groups provided insights to their perspectives on issues related to the recruitment and retention of roadway maintenance workers in Minnesota. By conducting discussions with a small sample of representatives from targeted populations, the research team was able to develop in-depth understandings of the thematic areas. Limitations of the study include selection bias as a result of the convenience sampling methods used, as well as representativeness as a result of including a small sample size.



# Appendices

## Appendix A: CDL License Holder Discussion Guide

### Focus Group Questionnaire (50 minutes)

The discussion is divided into the following categories: 1) The Current Workforce, 2) Recruitment, 3) Retention, and 4) Marketing and Awareness.

#### Category: The Current Workforce

- 1) What originally interested you in your current job?
  - a) Probes: Pay and benefits? Opportunities to earn more money through overtime? Do you have flexibility in your schedule?
- 2) What experience do you have, if any, working for a city or county transportation dept?
  - a) Probes: Why did you apply? What was your experience like? Why didn't you stay? How do you or others in your field feel about working for a city/county transportation department?
- 3) How would you describe your co-workers?
  - a) Probes: What do your co-workers have in common? Are their interests and yours similar or different??
- 4) What do you know about what other drivers think about their jobs generally?
  - a) Probes: Is there a lot of turnover? Do most people have the skills and experience needed? Are some underqualified or overqualified?

#### Category: Recruitment

- 1) How did you find out about your current position?
- 2) What are the key factors that you considered when applying?
  - a) Probes: Did you have any specific criteria?
- 3) Jobs requiring a CDL are in high demand. For those who have been actively recruited by other employers, what recruitment tactics have been successful or unsuccessful in your opinion.
- 4) In your position, what experiences or qualities would you like to see in new hires?

#### Category: Retention

- 1) Employees have many opportunities to leave their companies and/or switch careers or employers. What has kept you retained in your current position?
  - a) Probes: What strategies does your agency use to retain employees?
- 2) What are the most frequent complaints you or your co-workers have about your jobs?
  - a) Probes: If you've considered leaving, what was the reason?
- 3) Do you see your current work as a long-term career option? Why or why not?
  - a) Probes: What interests you for your next step?
- 4) In what ways does potential advancement play a part in retention for you and your co-workers?
  - a) Probes: Do you expect to get promoted in any specific directions? Or is this not a significant factor for you?

Category: Marketing and Awareness

- 1) What are some common perceptions and misconceptions that people have about the work you do?
  - a) Probes: You can think about the public in general and/or particularly prospective new hires?
  - b) Probes: Can people accurately describe what you do?
  - c) Probes: What do people often get wrong about your work?
- 2) Have you ever thought about applying for work at a city or county transportation department? Why or why not?
- 3) Thinking back to before you started your career or current position, what information would have been helpful for you to gain a better understanding of all opportunities available for people with CDLs?
  - a) Probes: What information would have encouraged you to pursue this career?

End of Discussion

## Appendix B: Jobseekers Discussion Guide

### Focus Group Questionnaire (50 minutes)

The discussion is divided into the following categories: 1) The Current Workforce, 2) Marketing & Awareness, 3) Recruitment, and 4) Retention.

#### Category: The Current Workforce

1. What are you looking for in your next job?
2. Have you ever held or applied for a job in the transportation field?
  - a. Probe: Please talk about that experience for a minute or two
3. Have you ever held or applied for a job in city or county government?
  - a. Probe: Why or what not?
4. What are your thoughts about jobs in public works/roadway maintenance? What do you think those jobs are like?
  - a. Probe: Do you know anyone who works for a public works/roadway maintenance department? If so, what have they said that their jobs are like?

#### Category: Marketing and Awareness

1. Have you ever thought about applying for work at a city's or county's transportation department? Why or why not?
2. What information/resource would be helpful to you in regards to learning about jobs you are qualified for?
3. Have you ever considered working for your public works department?
  - a. If yes, what happened to divert you? If not, what are your initial thoughts about working for public works departments?

#### Category: Recruitment

1. How do you typically find out about new job opportunities?
2. What are the key factors/criteria that you consider when applying for new jobs?
  - a. Probes: What are your deal breakers? What makes a job stand out? Are you looking for FT, PT, or temporary jobs? Entry-level or positions requiring more experience?
3. What have been some effective recruitment strategies that you have observed?
4. What have been some challenges to applying or accepting a job?
  - a. Probes: Lack of employer response? Inaccurate/misleading job description? Not qualified enough? Overqualified? Irregular hours?

#### Category: Retention

1. After accepting a job offer, what are things that would keep you retained in a new position?
  - a. Probe: Things like benefits, retirement, schedule flexibility, etc.
2. Assuming that you got a job offer that meets your expectations, how long do you foresee yourself spending in a new position?
  - a. Probe: Do you see this as a long-term career option? Why or why not?
  - b. Probe: What would cause you to leave this new position?
3. How important is career advancement to you in your field?
  - a. Probe: What does your desired career trajectory look like?

End of Discussion

## Appendix C: HR Professionals Discussion Guide

### Focus Group Questionnaire (50 minutes)

As we mentioned in the introduction, the categories for our discussion are: 1) The Current Workforce, 2) Recruitment, 3) Retention, and 4) Collaboration with Local Communities & Agencies.

The first category is: the current workforce.

**[Questions in bold indicate required questions to ask]**

Category: The Current Workforce (~12 minutes)

- 1) How would you describe the current roadway maintenance workforce in your agency? (~3 minutes)**
  - a) Probes: Do you have enough workers? Are they properly trained? What about **performance? Stage in their career? Turnover? Demographics?**
- 2) What challenges do you have agency-wide that public works/highway departments should be aware of? (~3 minutes)**
- 3) What originally interested members of your current workforce in a career with your agency? (~3 minutes)**
  - a) Probes: Pay and benefits? Public service? Work/life balance? Close to home? Culture? Growth opportunities? What does NOT interest members of your current workforce in a career with your agency?
- 4) What are your current strategies for communicating with hiring managers? (~3 minutes)**
  - a) Probes: What are the most important types of information that needs to be delivered to hiring managers? How do you present your communications?
- 5) How have current employees typically found out about open positions? (~3 minutes)

The next category is recruitment.

Category: Recruitment (~12 minutes)

- 1) What are the key factors that prospective employees consider when applying for jobs at your agency? (~3 minutes)**
- 2) Many longtime Public Works employees are retiring. Can you share any strategies or ideas for recruiting for a more diverse transportation workforce? (~3 minutes)**
- 3) What is your agency's current process for setting wages? (~3 minutes)**
- 4) What is your agency's current process for creating new positions? (~3 minutes)**
- 5) What are the gaps in knowledge for prospective employees about roadway maintenance jobs and careers.
  - a) Probes: What do they NOT know about the job that would benefit them? What are the misconceptions about the job?
- 6) What marketing strategies does your agency currently use to recruit new employees?
  - a) Probes: What type of marketing strategies do you think would be most effective for recruiting new employees that your agency does not currently use?

The next category is retention.

**Category: Retention (~12 minutes)**

- 1) What strategies does your agency use to retain employees? (~3 minutes)**
- 2) What barriers to retention have you identified? (~3 minutes)**
  - a) Probes: Why do employees typically leave? What challenges do you face with retention?
- 3) How have employees navigated career pathways and/or advancing their careers within your agency? (~3 minutes)**
  - a) Probes: Are there trends of employees getting promoted to certain positions? Are there horizontal, vertical, or diagonal shifts?
- 4) How can agencies like yours enhance awareness and interest for roadway maintenance positions as long-term career options? (~3 minutes)**
- 5) How long are roadway maintenance workers typically retained at your agency?

The final category is collaboration with local communities and agencies.

**Category: Collaboration with Local Communities & Agencies (~12 minutes)**

- 1) In what ways has your agency collaborated with neighboring agencies on outreach and recruitment efforts? (~3 minutes)**
  - a) Probes: In what ways have you collaborated on community messaging?
- 2) What are some of your successes and challenges with recruitment and retention that might be relevant to other agencies? (~3 minutes)**
- 3) What are some of the advantages and disadvantages of working underneath the Minnesota Public Works umbrella? (~3 minutes)**
  - a) Probes: In what ways could the engagement with Minnesota Public Works make your work easier?

End of Discussion

## Appendix D: CDL License-Holder Codes

Code Name	Illustrative Quotes	References
<b>Current Workforce</b>	NA	0
Less people in job pool	Reference 1: 0.68% coverage It seems that there's just a lot less people in the job pool to choose from. Like, we used to have 20 applicants for every job or more now, we're lucky if we have one.	1
New employees are qualified	Reference 1: 1.07% coverage Where I work, in most cases earlier this year, people that apply, most are very qualified, very experienced, they have a lot of experience that most of the drivers that we have before does not have the qualities that some of the people that we employ have.	1
New employees are underqualified	Reference 1: 1.11% coverage I would say prior to last year, most of the new guys were qualified or overqualified. And with the new employees that I've had in the last year or so, most of them have been underqualified and fresh into their CDL, and not a lot of experience. There's a lot of training.	1
Pay and benefits attracted employees	Reference 1: 0.80% coverage was an opportunity to advance myself, to have benefits. Benefits was a huge thing -health and retirement benefits stuff like that I would say and then just the opportunity for advancement.  Reference 2: 0.23% coverage I think they enjoy the benefits, and they enjoy the pay.  Reference 3: 0.91% coverage I believe -having spoken with these guys on a regular basis, the benefits are important to them to have the health care and to have different benefits that we offer. Like our company offers a 401 K and the 401 K sharing.  Reference 4: 0.14% coverage long-term short-term disability.	4
Seasonal burnout is a challenge	Reference 1: 1.25% coverage I think the majority of the drivers, they get burnout towards this time of year because of all the hours. I think at this point of the year, everybody's looking for some time off. And the hours become a little bit long. You know, 60-hour weeks becomes long when you're doing it six, seven months a year	1

Code Name	Illustrative Quotes	References
Marketing & Awareness	NA	NA
Media increased awareness of truck driver shortage	<p>Reference 1: 1.26% coverage I think the media has really played up the part of the importance of CDL drivers in the last couple of years with the shortages that they're talking about all the time. I would guess a lot of people came into the industry and got a CDL because of that, seeing all that, you know, hey, we're short drivers.</p> <p>Reference 2: 1.74% coverage I think the media played a major role for the driver to get the opportunity. Because for example, me, I didn't know that you can find a job through media. So, once I tried it, it was successful. Because, as I told you, I was going back where I started and earned the CDL, and they give me the ring. And I went through the ring, and I get that job. So, I think the media is I'd say is the first one and fastest to get an opportunity.</p>	2
Not many have thought about working for a city county dept	<p>Reference 1: 0.81% coverage My answer is no. I don't really know why I don't. I guess because this was my starting point, the industry I'm in, and my contentment here hasn't had me interested in looking for work elsewhere.</p> <p>Reference 2: 1.47% coverage For me, I'll say no, because where I'm working, I'm very okay and comfortable, and I love I'm working with my team members. We are able to share more knowledge more experience. I don't see myself working any other place. I prefer working where I am because I gain more experience and I've already built a lot of relationships with the people I work with.</p>	2
The amount of time required is a misconception	Reference 1: 0.90% coverage a lot of the new guys that we have coming in aren't expecting the long hours that they end up putting in and I think for some of them, I think it's tough -especially depending on their situation with their family life.	1



Code Name	Illustrative Quotes	References
Recruitment	NA	0
Found job through word of mouth	<p>Reference 1: 0.58% coverage Yeah, I found out about my job through a senior colleague of mine, because we're kind of very close so we talk as much as anything is going on</p> <p>Reference 2: 1.06% coverage I was going back to school. I got the CDL, and a manager gave me the reference. And so, I went ahead and applied and finally they called me. And when I got there, I went for another training too. I spent another three weeks training and then I got to start my job.</p> <p>Reference 3: 0.10% coverage referred to by a friend</p> <p>Reference 4: 0.88% coverage I got a few different companies to choose from when I was sent to this, and I chose the company I'm with currently based on the word of mouth of people that have worked here and currently worked here when I was hired</p> <p>Reference 5: 0.94% coverage we also use word of mouth, and we seem to have a lot better odds with word of mouth. A lot better results than we're having with even social media like Indeed and LinkedIn or whatever all those different networks are that we use.</p> <p>Reference 6: 0.15% coverage Word of mouth advertising is free.</p>	6
Opportunities for growth	<p>Reference 1: 0.22% coverage opportunities for advancement within the company</p> <p>Reference 2: 0.10% coverage opportunity for growth</p> <p>Reference 3: 1.92% coverage the fact I found out over time, working at this company; hard work and dedication pays off. For a lot of places, it does not. It doesn't have any room for advancement sometimes even though you're dedicated and your work hard. Some companies you'll never advance. This company is exactly what I thought they were when I came on board. And with hard work and</p>	4

Code Name	Illustrative Quotes	References
	<p>dedication, I was allowed to move up the ladder and get into the current positions I'm in because of it.</p> <p>Reference 4: 0.81% coverage my expectation level always was to advance. And I had heard that this company in particular gave a lot of creed to hard work and dedication and advancement was always a possibility from within.</p>	
Pay and benefits is the most important factor	<p>Reference 1: 0.12% coverage the benefits with the salary</p> <p>Reference 2: 0.05% coverage the payment</p> <p>Reference 3: 0.63% coverage you'll see a lot of companies offering big, huge sign-on bonuses. Hey, come drive for us. You know, we'll give you a blah, blah, blah, X amount of money.</p> <p>Reference 4: 0.77% coverage I think that is a huge attractant for a lot of people is the signup bonuses that are being offered. I've been actually asked by a company other than the one I work for to come work for them.</p>	4
Selected company based on values, culture, and reputation	<p>Reference 1: 0.50% coverage the overall the overall happiness of the employees that work there compared to other companies that I was looking at.</p> <p>Reference 2: 0.20% coverage I first try to know about the company's values,</p> <p>Reference 3: 0.34% coverage the workplace culture, and the environment and the teams I'm going to work with</p>	3
Retention	NA	0
Do not see current job as long term	<p>Reference 1: 0.81% coverage I don't see as long because once I get that experience, because many local jobs they ask for at least one year of experience. So, once I get experience, I think I can go local and be home every day.</p> <p>Reference 2: 0.70% coverage I see it as something I can be doing now, but not on a very long term. I am trying to diversify and transit into tech. So, I believe I will change career options in future.</p>	2

Code Name	Illustrative Quotes	References
Employees are seeking career advancement	<p>Reference 1: 0.80% coverage was an opportunity to advance myself, to have benefits. Benefits was a huge thing -health and retirement benefits stuff like that I would say and then just the opportunity for advancement.</p> <p>Reference 2: 0.46% coverage Yeah. I like this job because my father does this job and it help us to grow up so that's why me too, I like this job.</p> <p>Reference 3: 1.92% coverage the fact I found out over time, working at this company; hard work and dedication pays off. For a lot of places, it does not. It doesn't have any room for advancement sometimes even though you're dedicated and your work hard. Some companies you'll never advance. This company is exactly what I thought they were when I came on board. And with hard work and dedication, I was allowed to move up the ladder and get into the current positions I'm in because of it.</p>	3
Good team members	<p>Reference 1: 1.99% coverage The team I work with, they're very valuable. And I was able to get more experience and more encouragement with them. So, it's helped me going, I learned different things from them, I was able to achieve more with the help of my teammates and my colleagues, so it's a good experience to keep pushing and keep working in the same company because you have to learn more and be able to associate yourself with different people and you're able to surround yourself with good people.</p> <p>Reference 2: 0.98% coverage The people here are very good and try to understand everything. What I love the most is that they try all their best to simplify your job. Because here the driver unloads the truck and they tried to do all their best to make it as simple.</p>	2
Lack of schedule flexibility is a common complaint	<p>Reference 1: 0.11% coverage non-flexible schedule.</p> <p>Reference 2: 0.15% coverage I would agree with that statement.</p> <p>Reference 3: 0.93% coverage For me too is for the schedule. It's very hard for me somehow. So, every day they make me home on Saturday evening and drive on Monday. So, leaving on Monday morning only one day home. So, it's quite complicated for me.</p>	3

Code Name	Illustrative Quotes	References
Stress from long hours is a major complaint	<p>Reference 1: 1.08% coverage typically long work hours getting daunting, a lot of Saturday work. Although this year we didn't have as much Saturday work but by this time of year, I think there's just a higher burnout rate where everybody's just kind of ready for a little bit of R&amp;R time.</p> <p>Reference 2: 0.55% coverage most people talk about stress. Most complain about being stressed up. So, these are frequent things I do hear from my colleagues.</p> <p>Reference 3: 1.22% coverage Interviewer 28:56 And what is the source of the stress usually? Speaker 2 29:01 Yeah, maybe some the working hour, or the time. Waking up early and being at work as early as possible. And most people do work more than the require time. So, that is the reason I think they're being stressed up.</p> <p>Reference 4: 0.15% coverage stress caused by tedious work hours</p>	4

## Appendix E: Jobseeker Codes

Code Name	Illustrative Quotes	References
Current Workforce	NA	NA
Has applied to a city or county job	Jason in the chat says that he has applied for a county job but yet to get a call from them.	1
No experience in transportation field	<p>Reference 1: 0.24% coverage I am in the process of applying for a job, but I haven't gotten it yet.</p> <p>Reference 2: 0.77% coverage So I haven't previously worked in the transportation field but I'm trying to get into it so I've been actively trying to secure a job and I'm still open to any opportunities you know that may come up in the future.</p> <p>Reference 3: 0.23% coverage personally for me I have not worked in the transportation field</p> <p>Reference 4: 0.24% coverage I've never really worked in the transportation aspect of the job</p>	4
Reasons for not seeking jobs with the city or county government	<p>Reference 1: 0.30% coverage No, I haven't. I've just been looking around at some private companies like that.</p> <p>Reference 2: 0.68% coverage I think I will do that later. I was just thinking that I will grab something quick from these companies that might be looking for someone to fill in for a stage but eventually I will do that</p> <p>Reference 3: 1.42% coverage Basically I have not applied yet, but I think one reason that is stopping me from actually applying is probably proper information on how to go about the application and also feeling like the whole process later on would probably be a rigid one where I have to go through a lot of steps to apply. But then I feel like with proper education and information I might apply myself and see what I can get</p>	7

Code Name	Illustrative Quotes	References
	<p>Reference 4: 0.93% coverage I tried, but it wasn't working for me. So, for the government, I, I really didn't know. But I feel like if I'm to go into the government, I feel like, I need to have some certain kind of degree of which I'm pursuing that at the moment. So, I can have a good offer.</p> <p>Reference 5: 0.12% coverage Risks, more likely accidents,</p> <p>Reference 6: 0.14% coverage physically demanding and stressful,</p> <p>Reference 7: 0.12% coverage doesn't correlate with wages.</p>	
Marketing & Awareness	NA	NA
Discovering new opportunities	NA	NA
Networking	<p>Reference 1: 0.38% coverage I also probably try to stay connected with companies to know if there are openings for jobs over there.</p> <p>Reference 2: 0.11% coverage rely on friends and networks</p> <p>Reference 3: 0.15% coverage you can get referrals from your friends</p>	3
Online job platforms	<p>Reference 1: 0.28% coverage I look through online job platforms for job placements that are added often.</p> <p>Reference 2: 0.43% coverage apps like LinkedIn where you search jobs that match your interest and know if you are actually qualified for the job</p>	2
Social media	<p>Reference 1: 0.12% coverage trusted social media accounts</p> <p>Reference 2: 0.66% coverage social media stuff. So, I think that's really the way to go these days. So, you look at trusted social media</p>	3

Code Name	Illustrative Quotes	References
	<p>accounts. Maybe the company's accounts, they might post for job vacancies</p> <p>Reference 3: 0.13% coverage trustable social media accounts.</p>	
Info needed to learn about jobs	NA	NA
Hours of work	<p>Reference 1: 0.16% coverage and the time that you need to put in the work</p> <p>Reference 2: 0.17% coverage I need to know the hours I'm supposed to spend.</p> <p>Reference 3: 0.26% coverage involvements like working night shifts are also important to state.</p>	3
Pay	<p>Reference 1: 0.02% coverage wages</p> <p>Reference 2: 0.81% coverage And we'll talk about wage payments, because since that's dealing with this kind of regulatory work, you know, the wages have to be something that has to be tangible, and enticing for someone like myself to be in such place.</p>	2
Qualifications	<p>Reference 1: 0.22% coverage I think the most important thing would be the qualification</p> <p>Reference 2: 0.36% coverage the most important information or resources that could let me know about my jobs, if I'm qualified</p>	2
Workplace safety	<p>Reference 1: 1.00% coverage Then we talk about workplace safe safety, because this kind of work has to do with maybe harsh kinds of work. So, we talk about safety, and we talk about information safety how workers in such organization can be able to protect his or herself from environmental hazards.</p>	1

Code Name	Illustrative Quotes	References
Public works jobs seem stressful	<p>Reference 1: 0.22% coverage there's delays when applying for county government jobs.</p> <p>Reference 2: 1.02% coverage Personally, I feel like a job with public maintenance and road maintenance will probably be something stressful although I haven't worked in that department. I feel like from just the name and every other thing surrounding the process, I feel like it would be a stressful one.</p> <p>Reference 3: 0.16% coverage he thinks there's a lot of stress involved.</p> <p>Reference 4: 2.06% coverage Work having to consume a whole lot of time. You not having time for yourself and your family and I feel like working in a government department always has to come with a whole lot of workload. I don't know if I'm judging correctly or judging wrongly or just saying it because I have not been there but personally, I just feel that these government jobs have to do with a lot of work, a lot of time, and a lot of attention. It's okay to give attention to your work and all that but giving attention when you won't have time for yourself, that's basically where my concern lies.</p> <p>Reference 5: 2.14% coverage I feel like it's involved in maintaining and repairing tools like roads, bridges, and other infrastructures around. So, I feel like that can also be the reason why people may not want to work in such industry because it has to do with picking up of the debris from the roads, and snow removal, and painting and road parking, and I feel like that can be kind of stressful, because as for me, I may have specific things about myself, like, I literally can't walk around picking up debris or being on snow removal on the roadside. And then people may look at that as it's kind of inconvenient.</p> <p>Reference 6: 0.02% coverage Risks</p>	9



Code Name	Illustrative Quotes	References
	<p>Reference 7: 0.08% coverage more likely accidents</p> <p>Reference 8: 0.14% coverage physically demanding and stressful</p> <p>Reference 9: 0.11% coverage doesn't correlate with wages</p>	
Recruitment	NA	0
Areas of consideration when applying	NA	0
Alignment of required qualifications and skills	<p>Reference 1: 0.83% coverage one of the major things I consider is does my skills set matter in the application that I'm trying to find out because I can't just be applying for a job where my skill sets will not be needed. Then I will be doing myself a disservice</p>	1
Company culture	<p>Reference 1: 1.65% coverage company culture matters. You know, how we treat people, the type of individuals we accept among them the way they react to people from diverse backgrounds our culture that's something you have to basically consider then legally healthy probably have to take this job allow me to balance in my life, my personal life, my work life, because you can just be doing the work you know, having time for yourself I feel like me develop incremental a new order.</p> <p>Reference 2: 0.18% coverage Depending on the amount of time you have to work.</p> <p>Reference 3: 0.55% coverage also consider if discrimination has been practices there, because I don't have like an act of discrimination, everyone has to be treated equally.</p>	3
Pay	<p>Reference 1: 0.24% coverage I think the most important thing has to be, how much is being paid?</p>	1
Work-life balance	<p>Reference 1: 0.49% coverage allow me to balance in my life, my personal life, my</p>	2

Code Name	Illustrative Quotes	References
	<p>work life, because you can just be doing the work you know, having time for yourself</p> <p>Reference 2: 0.20% coverage seeing if you have become balance in your life and work</p>	
Recruitment strategies	NA	0
Qualifications-based recruitment	Reference 1: 0.12% coverage qualification base recruitment	1
Referrals	<p>Reference 1: 0.07% coverage referral programs</p> <p>Reference 2: 0.12% coverage reviews from previous employer</p>	2
Social media recruitment	Reference 1: 0.10% coverage social media recruitment	1
Uncomplicating the process	Reference 1: 0.59% coverage It's important to note that you have to include the necessity, what you need in somebody that's good for the job. For them, the process has to be uncomplicated.	1
Virtual recruitment	Reference 1: 0.33% coverage virtual recruitment, such as job fairs. webinar, and networking events have been great.	1
Working with community partners	Reference 1: 1.93% coverage Probably come up with pamphlets that you put around community centers and that is where people will be notified of openings, or jobs that they can apply for. Because I feel like no matter how hard you try to inform people, you still leave a lot of people on uninformed, so you have to go deep into their communities and try to reach out personally. Give information to people close to them, those people will feed them with the right information. That way, even if not all, you can pass information to a lot of people in the community.	1
Retention	NA	0

Code Name	Illustrative Quotes	References
Career advancement is important	<p>Reference 1: 1.12% coverage And over time, after working, you have to take the only reason gives you an opportunity to grow. Because you can't just be working and remain in one position, you have to go beyond what we're excited for. So, organization does not give you an opportunity to grow, you know, we have to find something better.</p> <p>Reference 2: 0.20% coverage career advancement is the most important thing for me.</p> <p>Reference 3: 0.68% coverage I feel like everybody wants to do better, and you know, get better offers get paid more. And all that, essentially, everybody wants to work in an environment that allows you personally</p> <p>Reference 4: 0.14% coverage career advancement is very important</p>	4
Depends on treatment	<p>Reference 1: 0.90% coverage I feel like the length I can stay in a new position would depend on various factors that surround my career goals, and job satisfaction, the good opportunities in the workplace environments, and personal circumstances, like our being treated</p> <p>Reference 2: 0.44% coverage I feel like it's dependent on individual circumstances and aspiration based on how you're being treated in the workplace.</p> <p>Reference 3: 0.63% coverage as long as I get my heart desire and also get a far better offer than that brace only leave due to personal circumstance such as relocation family needs or health needs.</p> <p>Reference 4: 0.24% coverage as long as mental health is okay; I'm not working more than I earn.</p>	4
Welcoming environment keeps employees retained	<p>Reference 1: 0.70% coverage the first thing you try to look at, really, people need to feel welcome around them. Now, consider that you feel</p>	3

Code Name	Illustrative Quotes	References
	<p>welcome around your work environment, that's something you have to consider.</p> <p>Reference 2: 0.97% coverage I think the most important thing is first relationship, you know, working for an organization the first thing I put in mind is the relationship you know, how does the relationship in the in organization go out does it work around because you want to be loved you know</p> <p>Reference 3: 0.47% coverage the most important thing has to be a positive work environment in terms of the relationship, there will be in that I have on the job</p>	

## Appendix F: HR Professional Codes

Code Name	Illustrative Quotes	References
Collaboration	NA	0
Not much collaboration	<p>Reference 1: 0.80% coverage I don't know if there's a lot of collaboration, but right now we're all racing to make adjustments to our wages so that we're all keeping up with all the changes that are going on throughout the state. I don't know if that's collaboration, but we're all doing the same thing.</p> <p>Reference 2: 0.62% coverage I will add that I'm not going to collaborate with like Blaine to try to recruit because then I'm going to want the people at Fridley not going to Blaine. I hate to pick on Blaine so much but that's what we do down here.</p>	2
Open line of communication	<p>Reference 1: 0.76% coverage Well, I think in public sector, that's the one thing I really enjoy about it is that you're constantly talking, I mean, M. and I, you have these opportunities to network quite frequently. And so, you're kind of hearing what everybody else is doing as it goes on.</p> <p>Reference 2: 1.22% coverage You know, I think that you can ask a question of other HR people and other agencies, and they're all very good about responding and saying, oh, here's a job description, or here's how we've navigated this stuff. So, I found that that has been wonderful about public sector is, you know, people are very willing to help each other out, especially because it can be very isolating to be the HR person at city or a county.</p> <p>Reference 3: 0.04% coverage Yes, I agree</p> <p>Reference 4: 0.04% coverage I absolutely.</p>	4
Current Workforce	NA	0
Ageing workforce	<p>Reference 1: 0.42% coverage I would say, it's an ageing workforce. We've had quite a few retirees, and I know we will have a few more coming up here in the next couple years.</p>	4

Code Name	Illustrative Quotes	References
	<p>Reference 2: 0.17% coverage We also have a lot of turnover right now due to retirements.</p> <p>Reference 3: 0.22% coverage we have a lot of retirements, so we're having more turnover because of that.</p> <p>Reference 4: 0.23% coverage I think that we're just experiencing retirements for some of the aging staff,</p>	
Lean operations	<p>Reference 1: 0.22% coverage We run pretty lean in regards to what we have for our roadway maintenance.</p> <p>Reference 2: 0.29% coverage Would you say that you have enough workers? [one participant shakes their head] M.J is saying no.</p> <p>Reference 3: 0.47% coverage I would say no, as well. We are looking at adding on staff this year. It's going through the approval process right now -the FTE- to increase it. So, I guess, no.</p> <p>Reference 4: 0.80% coverage I think we run lean. So, we say we have enough, but we can always use more. There's always more demands that are placed on the staff to take better care of like the medians, or plow better, or any of those types of things that we tasked them with. So, there's always room for more</p>	4
On-the-job training for new employees	<p>Reference 1: 0.69% coverage most of the time we're grabbing people who are pretty entry level. They don't hold CDLs or things like that. So, we have CDL training and certifications and things like that, that they have to obtain as they're coming into the position.</p> <p>Reference 2: 0.45% coverage My concern is that the people that we are hiring are much less experienced than what we currently have. So, they're not coming in with the same qualities.</p> <p>Reference 3: 0.84% coverage I would agree with M.J. on that in that they're coming</p>	9

Code Name	Illustrative Quotes	References
	<p>in, they just don't have that experience with some of the heavy equipment. And so, the training time is pretty long because you really can't train how to drive a snowfall in the summer, right? So, that training period is quite lengthy.</p> <p>Reference 4: 0.21% coverage Yeah, I would agree with that. Similar experiences to the two others.</p> <p>Reference 5: 0.57% coverage We recently just changed our job descriptions and created a tier so that we are able to recruit non-CDLs and we will put them through school. That has really helped us overcome that challenge.</p> <p>Reference 6: 0.37% coverage And we've had our one person go through it right now and he passed, and so now he has CDL, and he's young, and he's eager to learn,</p> <p>Reference 7: 0.30% coverage So, we're able to hire non CDLs and then we'll put them through school. And we've had that happen once.</p> <p>Reference 8: 0.45% coverage I think for us, like the majority of the staff that we hire do not have a CDL when they come to us and so we have to send them to the training and obtaining it.</p> <p>Reference 9: 0.67% coverage I really think that being able to recruit non CDLs and put them through school has been very -I mean, I think that's something I would encourage other counties and cities to look at. Which it sounds like B., you already do that too.</p>	
Turnover	<p>Reference 1: 1.12% coverage We also have a lot of turnover right now due to retirements. We're getting people that accept the jobs not very excited because the pay is a lot lower than private. And then they end up coming and working for us for anywhere from a couple days to maybe a couple of weeks, and then leave because they basically come and take a job here to have security while they look for something else.</p>	4

Code Name	Illustrative Quotes	References
	<p>Reference 2: 0.22% coverage we have a lot of retirements, so we're having more turnover because of that.</p> <p>Reference 3: 0.47% coverage We had a lot of turnover over the last couple of years. So, we're kind of in a space where we have a mix of younger staff, and then some older, more experienced staff.</p> <p>Reference 4: 1.14% coverage how long are maintenance workers typically retained at your agency? Speaker 1 32:46 So, we really don't struggle with that. I mean, our turnover is so low. I mean, I'm just looking at our list right now. I have a couple people here that's been here since '97. And after that, we didn't recruit until -looks like they've been here since '06, '08. I mean, they typically stay once they're here.</p>	
Recruitment	NA	0
Applicants not understanding the job description	<p>Reference 1: 1.24% coverage it doesn't matter how much experience they think -I can't tell you how many heavy equipment operator candidates that we get that come in and they tell us they have a ton of experience, and they don't. Like really when it looks at the job and what the job actually does, this is what they think they've done and then how much they think they should get paid. It does not align. Just using a skid loader on a farm is not the same thing.</p> <p>Reference 2: 0.04% coverage I agree, 100%.</p> <p>Reference 3: 0.62% coverage The type of equipment, I mean, M. you kind of mentioned that a little bit about, you know, they are on the farm with a skid loader, but it's not the same. So, maybe the type of equipment that's truly being operated.</p>	3
Competition is a challenge	<p>Reference 1: 0.94% coverage We're getting people that accept the jobs not very excited because the pay is a lot lower than private. And then they end up coming and working for us for</p>	5



Code Name	Illustrative Quotes	References
	<p>anywhere from a couple days to maybe a couple of weeks, and then leave because they basically come and take a job here to have security while they look for something else.</p> <p>Reference 2: 0.56% coverage we're in the Twin Cities metropolitan area. So, we're competing with all of the other cities for the same staff. So, the recruitment pools are low. And you know, we have to stay competitive.</p> <p>Reference 3: 1.01% coverage Fridley is unique that our Public Works staff aren't under a contract. But it's still, we're competing against larger cities that just border us. We have Minneapolis on one side and Blaine on another side. So, maintaining competition while still staying in the parameters that we need to for our wages, that can be really challenging as well.</p> <p>Reference 4: 0.49% coverage We can't compete with private construction companies, we can't compete with their pay, then they also have the winters off. And so, we can't compete with any of that.</p> <p>Reference 5: 0.54% coverage While we can't compete with private either, I think that that's the one edge we do have when it comes to compensation, it would be the benefit part of it. We offer a pretty rich package.</p>	
Employees are recruited from various channels	NA	0
Internal posting	<p>Reference 1: 0.41% coverage there's some contract language where we have to inform employees of a position within their department. So, they get notified by email.</p> <p>Reference 2: 0.01% coverage Same</p>	2
Social media	Reference 1: 0.13% coverage And we also advertise on all of our socials.	3

Code Name	Illustrative Quotes	References
	<p>Reference 2: 0.13% coverage I would agree with everything that B.H. said</p> <p>Reference 3: 0.12% coverage I would say a lot of ours come from Indeed</p>	
Website recruitment platforms	<p>Reference 1: 0.64% coverage So, we use a recruitment platform called Neogov and so we post our positions through that. And then it's posted through the League of Minnesota Cities, as well as disseminated in other website recruitment platforms.</p> <p>Reference 2: 0.13% coverage I would agree with everything that B.H. said</p> <p>Reference 3: 0.65% coverage we're still just getting people who are applying through like Neogov that are just kind of like the random people that just happened to see it on Indeed, or the League or something like that. But we still continue to do that.</p>	3
Word of mouth	<p>Reference 1: 0.86% coverage And then I know that there's still some word of mouth that happens as well. We had somebody that we hired that was working in a construction company and then when we had a new opportunity open, that person told somebody else at the construction company, and we ended up hiring that person as well.</p> <p>Reference 2: 0.13% coverage I would agree with everything that B.H. said</p> <p>Reference 3: 0.04% coverage word of mouth</p>	3
Market research comparison	<p>Reference 1: 0.91% coverage So, people advanced through the process or through each step on an annual basis, and we assess against the market. So, we make sure that we're staying aware of what the comparable cities are paying so that our wages are around in alignment, we don't try to actually reach 100%, but try to not fall too far below.</p> <p>Reference 2: 0.48% coverage We also are doing the market study piece. And we actually just offered them more now. So, we were going</p>	4

Code Name	Illustrative Quotes	References
	<p>to do a 3% COL for 2024, now we're going to do 5% just for highway.</p> <p>Reference 3: 0.21% coverage I should add. We compare to the market as well and that's how they're set.</p> <p>Reference 4: 0.26% coverage In 2021, we did a compensation study, and we raised the wages and I think that helped a lot.</p>	
Pay and benefits are most important	<p>Reference 1: 0.41% coverage I would say the stability, benefits, the Para. Not so much these younger, I mean, they're not looking at the para, but the benefits for sure.</p> <p>Reference 2: 0.54% coverage While we can't compete with private either, I think that that's the one edge we do have when it comes to compensation, it would be the benefit part of it. We offer a pretty rich package.</p> <p>Reference 3: 0.46% coverage And then also that they actually have like vacation and sick time where like, private, if you want time off in the summer, you don't get time off in the summer.</p> <p>Reference 4: 1.71% coverage I think for us, we have like a couple of tiers that people can fall within depending upon their skill set or, you know, some of the certifications, or additional learning, or training opportunities. So, I think that the money aspect is really a driver to get people to kind of do that, you know, like actually develop in their career. So, my experience is that they're just more focused on how they can get to that next step or that next band for some additional wage, rather than actually wanting to train and develop into being able to use that piece of equipment better or something.</p> <p>Reference 5: 0.12% coverage Pay is always number one, then benefits,</p> <p>Reference 6: 0.07% coverage It's all about the pay.</p>	8

Code Name	Illustrative Quotes	References
	<p>Reference 7: 0.02% coverage I agree.</p> <p>Reference 8: 0.23% coverage Yeah, we have to post the wage range and they're always looking for that end one.</p>	
Retention	NA	0
Barriers to retention	NA	0
Better pay and benefits as a reason for leaving	<p>Reference 1: 0.94% coverage We're getting people that accept the jobs not very excited because the pay is a lot lower than private. And then they end up coming and working for us for anywhere from a couple days to maybe a couple of weeks, and then leave because they basically come and take a job here to have security while they look for something else.</p> <p>Reference 2: 0.45% coverage When I first got here, I think the biggest barrier to retention was wages. We had lower wages and kind of had the intention or set plan to be below the market.</p> <p>Reference 3: 0.42% coverage we were definitely losing people that could make a couple dollars more an hour at a different city nearby. So, that was a huge barrier for now.</p> <p>Reference 4: 0.07% coverage Go to private for the pay.</p>	4
Retirements	<p>Reference 1: 0.23% coverage I think that we're just experiencing retirements for some of the aging staff,</p> <p>Reference 2: 0.04% coverage retirements.</p> <p>Reference 3: 0.09% coverage Ours is retirements mainly.</p> <p>Reference 4: 0.47% coverage Our longer-term ones are retiring. We just had one</p>	4

Code Name	Illustrative Quotes	References
	retire after 50 years. And then we have another what's after, like, 20. And then it really drops off from there.	
Not much room for career advancement	<p>Reference 1: 0.31% coverage That's a tough one for us. I mean, just being a smaller department. For Public Works there really isn't.</p> <p>Reference 2: 0.71% coverage We like to promote within, but I mean the positions they can get promoted to are like two positions. So, it's not like a lot of movement there, and they're all into management. So, some people aren't really looking to get into management either.</p> <p>Reference 3: 0.41% coverage Interviewer 30:17 So, is it fair to say that there's not much room for career advancement? Speaker 1 30:22 I think that's a fair statement.</p> <p>Reference 4: 0.53% coverage they can advance and our supervisor out there right now he was a highway maintenance. So, they are advancing, but there's just so few positions, that it's very rare when it occurs.</p> <p>Reference 5: 0.10% coverage Yeah, I would agree with that, too.</p>	5
Promoting career pathways	<p>Reference 1: 1.50% coverage We did a film. It wasn't just on a highway department, but we are going to do separate ones for different departments. But we did a county film to kind of do an overview of county government, and then some of the different things that we do. And one of them was a heavy equipment operator. So, it's interviewing staff, having them talk about what they enjoy about working at the county or just being in the county in general. I don't know that it's really made a difference, but we're trying to get awareness out there.</p> <p>Reference 2: 0.92% coverage I guess that'll be the first to admit that we probably don't really do anything. It's hard. I mean, we market the positions and market our agency as a great place to work but I don't I don't know that I necessarily have</p>	3

Code Name	Illustrative Quotes	References
	<p>anything like magic one that we do to try to encourage people to consider it as a long-term career.</p> <p>Reference 3: 0.22% coverage Except for going to high schools. That's a lot more than what we're doing.</p>	
Retention strategies	NA	0
Cost of living increases	<p>Reference 1: 0.26% coverage The cost of living is a good thing that government does that private doesn't do as much.</p> <p>Reference 2: 0.05% coverage the COL increases</p>	2
Longevity pay	<p>Reference 1: 0.12% coverage We do have like longevity pay that they get</p> <p>Reference 2: 0.35% coverage Yeah, I mean, I would agree with the step increases. So, we award those annually. So, that's good incentive for people</p>	2
Recognition efforts	<p>Reference 1: 0.37% coverage We have some like recognition things that we do, whether it's like if they say, so long, they get to pick an item out of a catalog.</p> <p>Reference 2: 0.14% coverage We do like county picnics and things like that.</p>	2
Tiered or step increases are a common incentive	<p>Reference 1: 0.57% coverage We recently just changed our job descriptions and created a tier so that we are able to recruit non-CDLs and we will put them through school. That has really helped us overcome that challenge.</p> <p>Reference 2: 0.54% coverage we have like a couple of tiers that people can fall within depending upon their skill set or, you know, some of the certifications, or additional learning, or training opportunities.</p>	4

Code Name	Illustrative Quotes	References
	<p>Reference 3: 0.29% coverage  We did create the tiers but it's more just years of service for how they move up to the different tier.</p> <p>Reference 4: 0.26% coverage  we have tiers as well, but I don't know that we have anything really in place that helps us.</p>	

## Appendix G: High School Participant Group Full Report

### Executive Summary

The focus of this report revolves around a qualitative assessment of findings from a focus group conducted by University of Minnesota students in cooperation with the Center for Transportation Studies. CTS is working with MnDOT and local transportation agency offices around the state of Minnesota to create an awareness campaign and training roadmap for new roadway maintenance hires - a role which offices are struggling to hire for. This focus group aimed to gain insight into preconceptions of public works and career aspirations of a high school aged group. Our research group was provided the opportunity to tour the Golden Valley Public Works offices, which provided invaluable insight into the day-to-day operations of a public works office as well as a glimpse into the roles and responsibilities of employees.

The focus group, conducted on November 30th, 2023, took place virtually over the course of an hour and had five high school participants ranging from tenth to twelfth graders. Email communication was sent out to educators across the Minneapolis - St. Paul metro area to recruit these participants, who attend high school in various suburbs around the Twin Cities. All participants were male, all indicated that they were college-bound, and all had varying degrees of knowledge about what public works offices do in the community. The main topics of conversation were perceptions of public works, future plans, career thoughts, and information consumption (what modes of communication do students receive information from).

Analysis of the focus group conversation indicated that participants assumed a position in public works required some kind of special training - an associates or specialty degree, or completion of safety courses. One student's perception of public works was that they complete "infrastructure type projects funded by the government for everyone". Participants all indicated that they had plans to attend college for higher education and career connections. All were interested in being innovators, receiving recognition for work, and having a clearly defined work-life balance.

All the student participants saw university education as the best route to career success and steadiness. While it was hoped that some participants would be entering the workforce right out of high school, the ideas they presented gave a perception that the average high schooler associates not attending college with decreased opportunities, pay, and recognition. Questions about public works perceptions indicated that these students knew very little, and due to their design for recognition or "prestige" as one student remarked, a career in highway maintenance was far removed from their scope.

Recommendations for a transportation agency awareness campaign involve a general face-lift of public works image. Emphasis should be placed on new ideas and new construction practices implemented in civil construction/maintenance and the idea that this kind of work is absolutely essential to communities. Students can be hired as part-time summer employees, acting almost like a 'public work intern', where they will learn valuable skills related to trade jobs, engineering, and construction. Advertisements should be run on media sites commonly used by this age group such as TikTok, Instagram, X (Twitter), and YouTube. Very little assessment of a training roadmap was done for the scope of this student project, as the age bracket of the focus group is assumed to be hired with no previous experience. It can be assumed that these entry-level hires should first take road and maintenance safety courses, then begin with classes most pertinent to the office they've been hired



onto, i.e. gravel road maintenance vs. asphalt/highway maintenance. If these hires continue in these positions, it is recommended that they then take a CDL license course.

### Project Background

The focus of this project, sponsored by the Minnesota Department of Transportation, is to investigate the decline of local roadway maintenance hires in the Minneapolis/St. Paul metro area and surrounding Minnesota counties. Over the course of this project the Center for Transportation Studies and our student group will facilitate guided focus groups to provide feedback to municipalities struggling to hire for these positions. Through this research MnDOT hopes to gain insight into the root causes of this issue, create an awareness campaign to expand the transportation workforce, and devise a training roadmap for new maintenance hires.

Following the creation of the State Highway Commission in 1905, Minnesota began to take control of the development of roads and bridges across the state. From 1903 to 1920 the number of registered motor vehicles in Minnesota rose from just under 1000 to 324,166 and continued to increase dramatically each year. As motor vehicles became more accessible to the public in the early twentieth century the need for standardized maintenance of roadways so too increased. In 1976 the Minnesota State Legislature established the Minnesota Department of Transportation, which assumed the responsibility to develop transportation policies for state-wide transit, conduct business with other private and public transportation entities, and to construct and maintain roads and bridges (*Minnesota Highway of Transportation*). Today MnDOT oversees public and private transportation, railways, waterways, aeronautics, and pedestrian travel and employs thousands of Minnesotans across the state.

It is important that the MnDOT is able to find workers in order for normal life to go on in Minnesota, especially during the winter months. While the first thing that most people think of when they are asked about what public works does is plowing roads, maintenance workers have a plethora of other responsibilities including sewage and water pipe maintenance. Without a team of well-trained workers, residents would experience consistent interruptions to their water, sewage, and transportation throughout the year whenever something broke. As new hires decrease, the MnDOT will find it more difficult to keep up with the problems that need fixing, and this has the potential to be extremely disruptive for residents' day to day lives.

### Focus group background

Focus groups are an in-depth group interview. The group dynamic provides a new dimension to the normal 1 on 1 interview. When used well, they provide a synergistic effect leading to better data on the subject (Rabie, 2007). Focus groups should be used when the area of research is complex and the researcher's knowledge surrounding it is limited (Powell & Single, 1996).

### Details of focus groups

There are three main things to consider when designing a focus group. The number of participants, the location of the focus group, and how the data is collected from the focus group. To ensure that good data is collected, at least 3 focus groups should be conducted for a project.

First, in regards to the number of participants, research is very split. Research varies anywhere from 4-14 participants in a focus group (Masedah, 2012). If groups are any larger, there is a chance that participants will speak very little or be silent all together (Smithson, 2007). A common point of agreement in literary articles is that researchers should recruit more participants than planned to

account for no-shows and cancellations. The number of extra participants to recruit is anywhere between 10-25% more (Masedah, 2012).

Second, for the location of the focus group, there are a few different ideas for this. The first and most common is the regular in person focus group. This has its pros and cons, with its biggest drawback being the difficulty in planning it. Another possibility is using a virtual focus group, which has become more popular in recent years. Virtual focus groups can be held as asynchronous online (i.e. asking questions to a forum), synchronous online (i.e. a normal focus group over Zoom), or in the virtual world (i.e. using VR with avatars to simulate the focus group setting) (Stewart & Shamdasani 2017). Each one of these have their own pros and cons. The biggest advantage of online focus groups is that the researchers can recruit participants from a wide range of people. This increase in diversity can help increase the information gained from the focus group.

The third and final important factor for focus groups is how you run the focus groups. Most focus groups use a facilitator and one to two other people to handle other responsibilities for the focus group (Onwuegbuzie & Dickson & Leech & Zoran, 2009). The facilitator asks the questions, while the others take the majority of the notes and track the current time. This is because the facilitator will most likely be busy steering the conversation throughout the focus group. In case of a time issue, they then can give nonverbal feedback to the facilitator that a question is taking too long.

#### Importance of a good facilitator

Throughout almost every single research paper on focus groups, they all stressed that a good facilitator makes or breaks a focus group. A good facilitator has to be able to keep the group focused, on task, and spontaneous (Puchta & Potter 2002). A good facilitator needs a high levels of group leadership and interpersonal skills to moderate a group successfully (Gibbs, 1997). For an online focus group, the facilitator has to be even more skilled (Stewart & Shamdasani 2017).

One way that a skilled facilitator can get more information from questions is through the use of non-verbal cues (Onwuegbuzie & Dickson & Leech & Zoran, 2009). This can be done simply by watching everyone's reactions to a question. For example, a participant might nod their head while someone else is talking. This shows that they agree with this idea. This can be a very useful piece of data, as some participants may feel reluctant to voice their opinion if it's similar to someone else's.

#### Analyzing Focus Group Data

One of the hardest parts of focus groups is analyzing the data. Full transcripts often are extremely long. This means that fully analyzing the data will take quite a bit of time. To shorten the time to analyze data, the following steps should be taken for analyzing the data (Rabie, 2007):

1. Familiarization
  - a. The audio recording or transcript is listened to/read multiple times while the researcher(s) takes notes.
2. Identifying a thematic framework
  - a. Research writes short phrases, ideas and concepts that arise in the transcript.
3. Indexing
  - a. The data is sifted through to find important phrases and quotes.
4. Charting
  - a. The quotes are taken and placed into the themes they go under.

5. Mapping and interpretation
  - a. The researcher makes sense of the quotes and notes the relationship between the quotes. The researcher should do the following to ensure good results.
    - 1) Consider the actual words used and their meaning
    - 2) Consider the context
    - 3) Consider the frequency and extensiveness of comments
    - 4) Intensity of the comments
    - 5) Internal consistency
    - 6) Specificity of responses
    - 7) Big ideas

Important to note is that this is not a linear process. Any and all of these steps can occur at any time, including during the focus group (Rabie, 2007).

### Recruiting Participants

When recruiting participants for a focus group, it is important to be cognizant of gatekeepers. Gatekeepers are “key individuals who can facilitate access to our sample and provide advice as to how best to approach them, or where to hold groups” (Barbour, 2010). The input of gatekeepers, such as managers, can skew the sample of participants. They may intentionally or unintentionally screen potential participants based on who they believe may be a good participant (Barbour, 2012).

### Supplementary Research

Focus group research is often combined with other forms of data collection such as one-on-one interviews and surveys.

One-on-one interviews are often used in conjunction with focus group interviews as follow-up interviews to check conclusions from the focus group analysis and to explore specific opinions and experiences mentioned in the focus group (Morgan, 1996).

Surveys can also be used for various reasons and at different stages of the focus group. When the focus group is the primary method of research, surveys can be used to develop the focus group questionnaire and can be used to provide preliminary inputs to guide the application of the focus group. Additionally, surveys can be used as follow-up to the focus group (Morgan, 1996). Conversely, surveys can be used as the primary method of research. With this, a focus group is used as a follow-up that assists in interpreting the survey results (Morgan, 1996).

#### x.1. Focus Group Planning

While it is best practice to hold multiple focus groups, the scope of this project that we are part of was limited to holding only one ourselves. The focus group was planned for November 30th at 4:30pm central time and will be held online over Zoom. The focus group will be held in a synchronous manner in order to maximize attendance of both those part of the focus group and proctors while also limiting the duration of the focus group. Due to the limited scope of the project, we had to be very strategic with planning the focus group, making sure to maximize the relevance of all data and minimize the amount of time spent planning the event.

##### x.1.1. Focus group composition

All of the participants in our focus group will be current high school students in the state of

Minnesota, as required by the scope of this project. The goal is to get mostly Juniors and Seniors, but Sophomores will not be turned away. In order to source participants, we reached out to numerous contacts at Minnesota high schools. These contacts were provided to the group by the Department of Transportation. Both the literature we read and the expert we consulted with emphasized the importance of a diverse composition in our focus group. In order to adhere to this tenant, the group took care to reach out to a wide variety of contacts. These contacts are diverse in a sense of geographical spread, urban vs rural, economic status, as well as other demographics.

x.1.2. Focus Group Size

At this current time, we are unable to predict the size of the focus group as participants have not been acquired as of yet. Considering effective focus group sizes through the literature we found, we will be aiming for 10-12 participants. There is a contingency plan to move forward with 4-5 if 10-12 cannot be found. Aiming for 12 participants should allow for 10 participants to be present while assuming one or two committed participants may not attend the actual event. The numbers were created assuming the no-show rate for high school students will be higher than our literature sources expect.

x.1.3. Focus Group Question Topics and Structure

We were not required to make our own completely original questions for the purposes of this project, as the questions were supplied by an external company to the project team. While we were permitted to make adjustments to the questions we were given, the process of acquiring the questions for our focus group was not involved enough to describe the methods used. We did tweak the questions to be more on topic to public maintenance work, though, as we expected that our given questions would result in many unfocused or irrelevant responses.

When planning the focus group, we considered multiple different questioning structures and decided to move forward with a semi-structured format. While this will take more time than a purely structured format, it will give us the opportunity to dive deeper into any answers or themes that we find very relevant or frequent. At the same time, we decided not to use a fully unstructured format due to the lack of organization and focus on the required topics.

x.1.4. Pre-Focus Group Public Works Research

While one member of our group had experience working in public works, most of the group did not. As a result, in order to build familiarity about public works as a whole, we visited a location in Golden Valley, Minnesota and took a tour of the set of buildings. There, a manager explained to us the day-to-day operations, employee acquisition methods, and employee development strategies. A major takeaway that our contact stressed was that public works was more than just road maintenance, with special emphasis on pipe maintenance. We noticed some big areas for improvement that would hurt hiring efforts. One of the most glaring deficiencies that we noticed was the lack of a women's bathroom in two of the three buildings, which would be a large deterrent for potential female applicants. Additionally, we noticed that our guide mainly talked about the perks of the job being easy access to education and pride in the work done. While the access to education is a large perk, having to resort to a generalist positive aspect such as pride in your work as a major selling point indicates that there are not many other uniquely positive factors. While we were told that public works offers good benefits and job security, we were also told that most employees start off as seasonal employees for over a year, where they will not receive those benefits or job security. We were not told about the pay of the

work or potential for upwards mobility, which indicates that neither of these is seen as a potential selling point. Overall, despite the extremely well maintained or brand-new facilities and equipment, we had trouble finding out why an applicant would want to work at public works other than the potential for education to then find employment elsewhere.

#### x.2. Focus Group Execution

When hosting the focus group, our main focus is making sure that all participants are engaged and on task. This was more difficult than if it was in person due to the online medium that we used, so we had to be aware of the general feel and interest of our participants through voice and video factors. The ways we handled this is through careful proctoring and time management. At the same time, we also had to make sure that we made plenty of notes and real time observations. This gave us the ability to get all the information we could from the focus group. Through well planned execution, we were able to accomplish all that we wanted to while also keeping our participants engaged and fully participatory.

##### x.2.1. Focus Group Duration

We have found a large variety of optimal durations through our literature searches to hold a focus group, anywhere from the range of one hour to two and a half. While for a large group it would likely be most beneficial to hold a longer focus group, we have to keep in mind that our target demographic is high school students. They will likely not want to sit through two hours of questioning. To account for this, we will do our best to keep our focus group as close to the one-hour duration as possible while still leaving enough time for all of our questions to be answered. In light of this, we have set a hard time limit of 90 minutes for our focus group. The assistant-moderator will ensure that every question is answered within this time period by tracking time. They will give a cue to the moderator to end a question once the time allocated to that question is almost up. Should our focus group be smaller and fall within 4-5 people as our contingency plan describes, we will instead aim for about an hour. This should be plenty of time for a lesser number of people.

##### x.2.2. Focus Group Proctoring

A proctor is extremely important to the success of any focus group, but especially one that is held online. A proctor, according to our literature review, is needed to not only ask the questions, but also to encourage participation and engagement with all participants. This is a bigger task than it may seem and will likely require 2-3 members present and acting in a proctor role. This should keep our participants engaged, participating, and giving them all the chance to speak. We will assign these roles to the focus group based on which group members are confident in their abilities to proctor.

##### x.2.3. Focus Group Data Collection

The online medium is extremely helpful for data collection as it can be recorded for future viewing and more detailed note taking. Despite this, we have found multiple sources in our literature review that suggest having at least one dedicated notetaker in the focus group. We will have one or two dedicated notetakers from the group to take notes in a document that all group members have access to live in Google Docs. This will allow proctors to look at the notes as they occur and it may help them identify participants that are over or under participating, trends that may have relevant follow up questions, and any similarities between topic answers. While we will review the focus group footage after it occurs, a live note taking strategy will be beneficial to holding a focus group as effectively as possible.

#### x.2.4. Focus Group Data Recording

Both our literature sources, as well as our expert advisor recommend summarizing the focus group at large immediately after the group discussion when it is still fresh in the group's mind. This allows us to reference our written notes, recorded meeting, and our inferred summary against each other in order to compartmentalize different portions of the conversation. We also plan on transcribing the audio of the zoom meeting, likely through a transcription program such as otter.ai. Again, this was suggested by both the sources we found in our literature review as well as an advisor.

#### x.3. Data Analysis

With the data collected and compiled, it must be assembled. Our literature review suggests a few different ways to present the focus group data. One way is a bare bones approach, with only the key takeaways being reported. The option that our group will be pursuing is a full report. This method includes an in-depth analysis of the focus group as well as other components, such as sections on methods among other things.

##### x.3.1. Data Grouping

Once the meeting has been transcribed, multiple sources suggested grouping the data into categories. In order to do this, multiple group members will individually sort through the audio transcription and the notes taken during the focus group. They will then separate notable quotes and sentiments into overarching themes. It is important to include non-verbal information within this too, such as head nods or making a face in agreement or disgust. Frequency and intensity of answers should also be considered. Once each member has separated out the transcription, we plan on comparing our results in order to find commonalities between them. Appropriate quotes and other information are then sorted into their respective categories.

##### x.3.2. Data Presentation

This method will be applied to the conversation as a whole to determine overall themes. It will also be applied to the individual questions in order to find common answers and sentiments. This curated data will then be assembled into a full report including updated content and information from our literature review as well as the analyzed data. This report will be presented to MnDOT for further action relating to the content of the report.

### Results Overview

After the completion of the focus group, there were two key pieces of data that were collected. First were the notes we took during the focus group. This was organized by question and included a lot of the important points brought up in the focus group. Second was the audio recording of the focus group. These were both thoroughly analyzed to determine the results of the focus group. To do so, we first rewatched the audio recording of the focus group. We used what we learned from rewatching the focus group and the notes that we took to find the major themes of the focus group. Subcategories were also created for each of the themes. **The subcategories that we think are particularly important are bolded.** This is all shown below. The results for each subcategory are shown in the next subsections.

## 1. Perception of public works

### a. What they thought that the public works department did

The first subcategory for the student's perception of public works is what they think a public works employee does. This image is a crucial part of understanding how to get students into public works. If students have a poor image of public works, they would have a very low chance of going into the field. One of our students said that they think public works does "infrastructure type projects funded by the government for everyone." Another student also agreed with this idea. While this doesn't necessarily show that the students have a negative perception of the field, one part of this quote really stands out to us. That is the "for everyone" part. The students understand that public works is an important field, as it's doing societal good. They know that it is a selfless field, and that society can't run without it.

### b. Perception on education needed to get into public works

Another important part of the student's perception of public works is how much education they think one would need for the job. That shows how the job is viewed as a whole. Overall, the students had this idea that they needed either an associate degree or some specialty degree to work in public works. We further asked them about if they thought that you could work in public works without a degree. They then had the idea that the higher up jobs required some kind of degree, but the rest of the jobs might just need training. This idea shows one misunderstanding that these students have. They have this idea that their boss must be smarter than them, however, that isn't necessarily true in public works and other jobs.

## 2. Future plans

### a. Career Counseling

Counseling can be one of the most important factors for a student deciding their future. They are at an uncertain time of their life. There are so many options given to them, and counseling can push them over the edge into a path. When we asked the students about any potential counseling that they had, one of them answered that they "have a career counselor to talk about what classes to take and how to get into college. Also have been advised on paths that don't involve college." What really stood out in this quote is what stuck to them from the counseling. The "paths that don't involve college" almost seem like an afterthought. It feels like they went into the counseling with a bias that they wouldn't be considering the paths that don't involve college.

### b. Plans after high school

This subcategory helps us understand the path these students are going. It also shows some of the biases of these students. All of our students plan after high school is to go to college. They also didn't seem interested in going into fields related to public works. None of the jobs they were interested in were related to public works. This means that there could have been biases in their answers. For example, from the Career Counseling section, they didn't seem interested in the paths that don't involve college. It could be due to their bias going into the counseling as a student set on college. They were simply uninterested in other paths as they weren't considering it to begin with.

**c. Why do they want to go to college**

As all of our participants were planning on going to college, we discussed with them why they wanted to go to college. We wanted to understand why the majority of high school students want to go to college. One of our students had a very interesting idea about why they want to go to college. They felt as though they had been “brainwashed” into going to college. What’s interesting about this is that they don’t really seem to be keen on going through more years of school. Instead, they feel forced to comply with this normality of going to college to be able to start a career. In reality, there’s opportunities to start your career without going to college.

**d. Sidework in college**

Another topic that was brought up in the focus group was what work these students want to do in college. Public works offers summer jobs, which is why we wanted to see the student’s job interests once they start college. One of the students mentioned that they wanted a job with a lot of flexibility in college. They know that they are going to be busy, so they want to have a flexible schedule. Some of the other students were concerned about working during the semester. They didn’t seem too keen on the idea, as they know they are going to be pretty busy with coursework. They also mentioned that they wanted to do internships over the summer. That would help them get connections and work experience before they get into their careers.

**3. Career Thoughts**

**a. Choosing between jobs**

Another important topic we discussed in the focus group was how these high schoolers would choose between jobs in the future. By discussing this topic, we hoped to understand how to cater jobs to the future workforce. There were three main points that the high schoolers brought up about how they would choose between jobs. First is the pay. Of course, everyone wants more money, so this came as no surprise. Second was their interest in the job. This also makes a lot of sense. Why would you do something that isn’t fun or interesting? Third was prestige. The students want to feel like they are doing something worthwhile, and they want to be recognized for their hard work.

**b. Career in identity**

The next topic we discussed with the students ties into this idea of prestige they brought up previously. We wanted to understand how important their career was in who they were as a person. Overall, the students were kind of split on this. Two of the students thought it was very important, one thought it was important but there are more important factors. The other two didn’t have any thoughts on this question. Overall, they are still high school students. They haven’t started their careers yet, so it might be too early to tell how important their career truly is to them. However, the students thinking it was important shows that a career is a very important part of life.

**c. What they want to gain from their first job**

The final subtopic in career thoughts was what the students wanted to gain from their first job. Your first job is a very important first step into the world. We wanted to see how well the students understood this. The students wanted to gain experience and connections from their first job. These are both very important things to gain from their first job. They understand that it is really their first step into their career and that they need to make sure to learn from it. They also understand that the people that you meet along the way will help elevate your career.



#### 4. Advertising

##### a. Information sources

The first advertising topic we brought up was how they get their information. The hope was that we could use this information to showcase what platforms an advertising campaign should be launched on. There were two main ways that they got information. First was through social media. This was as we expected, as social media is so prevalent at the moment. Second was through their friends and family. They want to do something with people that they enjoy spending time with. They can very easily gain interest in something that the people important to them are interested in.

#### Discussion

We found that highschoolers view public works through a very neutral lens. They understood that public works is necessary to our society, but they don't really understand the specifics behind the work. When probed about entry into the field the participants assumed the need of an associate degree. While there certainly are positions that require two- or four-year degrees in public works, there are numerous that don't. The positions that don't often have plenty of room for advancement through things such as on the job training or certification. Overall, the perception of public works paints an incomplete picture. If the general public were more knowledgeable on the necessity of public works as well as the variety of levels of entry it provides, it could see increased applications.

As previously mentioned, public works has a variety of fields that do not require any degree or certification before hiring. When asked about future plans, all of our participants indicated they intended to go to college. Notably, this may be a result of limitations within our focus group design. We were only able to field 5 participants, all of whom were male and from an urban or suburban environment. This poses an issue for hiring for jobs that do not require a degree. One way public works has attempted to get around this issue is by hiring seasonal employees. This allows public works to temporarily hire college students during the busiest times of year for them, which coincides with summer and winter breaks. However, when asked about working during the summers while in college our participants stated that, in order to gain networking opportunities, they would prefer to work in an internship environment. This could also be addressed at the source. Looking at why students only wanted to go to college and not follow another career path revealed a general lack of outside influence when it came to career planning outside of a collegiate context.

The main consideration the high school students had when it came to deciding on a prospective job offer was pay. This is an area where public works tends to fall behind. While working in the public sector usually brings high quality benefits and a good work life balance, it can lack the high-grade salaries provided by the private sector. Importantly, students also said that their interest in the subject at hand, as well as prestige, were important in their career decisions. Emphasizing the satisfaction found in helping your community as well as the personal satisfaction found from security in your life and job seems vital for public works messaging.

The students made it clear that they felt your career is a large aspect of your life. It makes sense to be picky about it. They raised concerns about the perception of jobs that do not require degrees and the lack of pedigree that follows. This is a concern that is fundamental to most public works positions. If the students don't believe that working in public works will garner respect from their peers, they're not likely to work there. This leads back to a perception issue.

Lastly, the importance of digital communication was shown to be very high. The students commented that the primary way that they share things is through social media. It is imperative to get public works onto these platforms in some capacity. It is apparent that in order to reach a younger audience, the internet is the way to go.

## Recommendations

The implementation of a Public Works awareness campaign for this age group should focus around their interests, their plans for the future, and the mediums by which they absorb information. While the students interviewed in this focus group all indicated a rigid desire to pursue a college education rather than go immediately into the workforce, this is an indication of the general mindset of the current high school student. These group participants are seeking innovation, recognition, and networking connections, and they view a university education as the only route to achieve those goals. An awareness campaign should emphasize Public Works' ability to provide these to employees. Emphasis should be placed on the absolute necessity of Public Works operations and the effect their projects have on communities. Prospective employees should be made aware of projects that involve new technology or new ideas for civil infrastructure changes. It would be recommended that awareness ads incorporate testimonies from current Public Works employees on how the ever-changing landscape of construction technology is influencing their work, and how they utilize new technology to better the lives of their communities. It should also be made clear to this age bracket that no prior education is required and an entry level position in Public Works will provide on-the-job training, increase employee's knowledge of general construction practices, and that no matter what their end goal will be - university education, a career with Public Works, or a career elsewhere - these positions will provide them the experience they are seeking to further their career.

Many of the focus group participants were clear about their desire for internships during their summers off from college. While gaining an employee right out of high school and retaining them for ten, twenty, or even forty years might be the ideal goal for a Public Works employer, it's understood that most high school to college level positions are offered as part-time summer jobs. Construction and maintenance projects primarily take place during the summer months, and Public Works offices simply need more hands for these portions of the year. Again, emphasis should be placed on the idea that while these positions might not be defined as an "internship", they provide many of the same opportunities and learning experiences. For students interested in construction, engineering, or trade vocations these positions can provide much needed experience and serve as resume builders for the future.

The focus group participants spoke in detail about where they receive information about employment opportunities and what media platforms they tend to use most frequently. Many spoke of job fairs set up through their school where they interact with employers and university recruiters. It is recommended that Public Works offices utilize these job fairs to advertise positions for this group, immersing themselves in the career possibilities that students see. By becoming a part of these events, Public Works will be associated with other prospective career opportunities and imprint on students that it is a viable path to career success. It is also recommended that these positions be advertised on social media platforms such as Instagram, X (Twitter), and TikTok. These students are products of the social media age and are constantly connected, they're rarely more than five feet from their smartphones. An ad emphasizing the ideas stated above - on-job training, benefactor of communities, career advancement opportunities - should be implemented on one or multiple platforms. Focus group participants also noted their frequent use of YouTube. A localized advertisement played before a YouTube video would reach a wide audience of local students.

Since these student hires are assumed to be taken on as part-time summer employees or newly graduated hires, the creation of a training roadmap was not the main focus of this portion of the study. A brief recommendation would be for new employees to take the required job safety courses upon hire, move onto courses most applicable to their transportation office - i.e. gravel road maintenance in rural areas vs. asphalt and concrete maintenance in urban areas, and next take courses in heavy equipment operation. If hires progress with a career in highway maintenance it is recommended, they complete a CDL certification course, which will allow them to operate plow and salt trucks.

## Conclusion

The goal of this project was to perform a focus group and engage in the accompanying activities to better understand high school students, and thus allow CTS to create more effective employment marketing materials and strategies for Public Works departments across the state of Minnesota. From our analysis of the data found in the focus group, we determined that most high school students have very little knowledge of Public Works. Additionally, due to the pressure from their surroundings to attend college, many never thought about any alternatives. While most of the high school students had discussed the idea of working during the summer break of college, their intent was to secure an internship to gain experience in their intended field as well as for networking opportunities. From the focus group, we determined four main factors the high school student would use when selecting a job: (1) pay and benefits, (2) interest in job scope, (3) prestige of associated career or company, and (4) connections developed from selecting a job.

While we were able to get valuable insight into the perception among high school students, our focus group consisted of only five high school students from the greater Twin Cities area. As such, our focus group was on the lower end of the recommended 4-14 participants (Masedah, 2012). Another limitation of our project was that all five of our participants were male. This greatly reduced the amount of information we access to in our effort to better understand the perception of Public Works among high school students. Additionally, all five participants made clear that they were intent on going to college after completing high school. This could have skewed responses during the focus group as maintenance work was not even a consideration for them.

From the insight we gained from the focus group, we have three main recommendations for CTS: (1) create a marketing campaign that emphasizes the necessity of Public Works and its importance in a community, (2) attend school job fairs, and (3) create a larger social media presence via platforms such as YouTube, Instagram, TikTok, and X (Twitter).

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