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Introduction

The graying of the Baby Boomer generation, combined with a decrease in birth rates, has resulted in a dramatic shift in worldwide demographics and employment. Over time, some industries have fared better than others in recruiting and retaining employees. The transportation industry, including airlines, trucking, ships and trains, plays a major role in the United States (US) economy and a growing body of literature suggests the transportation industry is particularly struggling with this workforce transition. In 2014, the shortage of truck drivers was 38,000, and the shortage is projected to increase over time (Costello & Suarez, 2015). Further, the average age of a driver in Over-the-Road Truckload industry in the US is 49 years old (Costello & Suarez, 2015). These results are similar to the median age of truck transportation employees, which is 47.2 years old (Bureau of Labor Statistics, 2016).

Additionally, the transportation industry is facing a high turnover rate. According to the American Trucking Association, turnover at large truckload fleets averaged 93% in 2015 (American Trucking Association, 2016). Further, high turnover influences customer service by a lack of experience on the job, reduces profits and has negative effects on safety. The cost of replacing a single driver has been estimated to fluctuate between \$2,200 and \$21,000 (Suzuki, Crum, & Pautsch, 2009).

One potential obstacle for the industry in recruitment and retainment is that many transportation jobs are associated with unhealthy lifestyles. In 1979, the State of California's Department of Industrial Relations categorized public transit personnel as number four out of one hundred occupations in terms of job-related illnesses risk (State of California Department of Industrial Relations, 1979). More recently, based on a review of past research, Apostolopoulos and colleagues identified that about 85% of the truck driver population is overweight or obese, 80% have unhealthy eating behaviors due to lack of food choices, and 44% have hypertension (Apostolopoulos, Sönmez, Shattell, Haldeman, Strack, & Jones, 2011).

The negative health impacts for transportation workers however are not strictly physical. A variety of studies evaluating bus drivers have reported increased levels of stress-related hormones such as cortisol and adrenaline (Aronsson & Rissler, 1998), the effects of which spill over even after working hours (Rydstedt, Johansson, & Evans, 1998). Several studies of airline workers have also found detriments in mental health for pilots (Cooper & Sloan, 1985) and negative impacts of emotional dissonance for cabin attendants (Heuven & Bakker, 2003) when confronted with common aspects of their jobs such as routine flight patterns and angry flyers.

Considerable research has been done on the health of the transportation workforce and factors related to performance and safety. To further explore the well-being of the transportation workforce and how it compares to other industries, we examined data from the Gallup-Healthways Well-Being Index. Insight into the ways in which transportation workers' well-being differs from other industries may help identify avenues of subsequent investigation, and, in the future, may support retention of employees in the transportation industry and generate ways to attract new employees in the face of a major shortage in the transportation workforce.

Methods

The Gallup-Healthways Well-Being Index

The Gallup-Healthways Well-Being Index aims to track and understand well-being by measuring aspects of respondents' emotional health, physical health, healthy behaviors, financial status, access to resources, and employment status. Many of these factors are weighted into aggregated indices, including the Physical Health Index, Emotional Health Index, Healthy Behaviors Index, Basic Access Index, Work Environment Index, and Life Evaluation Index.

The Gallup-Healthways Well-Being Index survey involves ongoing telephone interviews sampled randomly from active cellular and landline phone numbers in all 50 states. Up to five callbacks were made in case of no response and interviews were conducted in Spanish as necessary. Between 2008 and 2012, approximately 1,000 interviews were recorded every day; since 2013, 500 interviews have been recorded every day.

Data Reduction

Total aggregated data was weighted to reflect national population trends. Individual questions were then aggregated into five greater indexes around subject matter:

- 1) Basic Access Index (Measure of access to clean water, shelter, and healthcare; satisfaction in community; feelings of safety; etc.)
- 2) Emotional Health Index (Measure of yesterday's emotional experience of enjoyment, happiness, sadness, anger, stress, and worry, etc.)
- 3) Healthy Behaviors Index (Measure of lifestyle practices: smoking, exercise and healthy eating, etc.)
- 4) Physical Health Index (Measure of physical health including chronic conditions, pain, disease, sickness, headaches, etc.)
- 5) Work Environment Index (Measure of job satisfaction, trusting and open work environment, etc.)

To look at employment industries more closely, we collapsed 12 possible job categories into four broad industry categories: Labor, Professional, Service, and Transportation. Reports of 'Other' or missing values were excluded from the analysis. Table 1 contains definitions for each of the industry categories. The 'Transportation' category includes all participants who report working as truck, taxi, and bus drivers, pilots, and flight attendants. For this paper we averaged data over the years 2008-2013 to provide a general industry comparison across the lifespan. Table 2 displays sample size by industry and five year age groups.

Table 1. Categories of answers to the question “Could you tell me the general category of work you do in your primary job?”

Industry category	Industry category definitions
Professional	Professional worker—lawyer, doctor, scientist, teacher, engineer, nurse, accountant, computer programmer, architect, investment banker, stock brokerage, marketing, musician, artist
	Manager, Executive or Official—in a business, government agency, or other organization
	Business Owner—such as a store, factory, plumbing contractor, etc. (self-employed)
Service	Clerical or Office Worker—in business, government agency, or other type of organization—such as a typist, secretary, postal clerk, telephone operator, computer operator, data entry, bank clerk, etc.
	Sales worker—clerk in a store, door-to-door salesperson, sales associate, manufacturer's representative, outside sales person
	Service worker—policeman/woman, fireman, waiter or waitress, maid, nurse's aide, attendant, barber or beautician, fast-food, landscaping, janitorial, personal care worker
Labor	Construction or Mining worker—construction manager, plumber, carpenter, electrician, other construction trades, miner, or other extraction worker
	Manufacturing or Production worker—operates a machine in a factory, is an assembly line worker in a factory, includes non-restaurant food preparation (baker), printer, print shop worker, garment, furniture and all other manufacturing
	Installation or Repair worker—garage mechanic, linesman, other installation, maintenance or repair worker
	Farming, Fishing or Forestry worker—Farmer, farm worker, aquaculture or hatchery worker, fisherman, deck hand on fishing boat, lumberjack, forest management worker
Transportation	Transportation worker—drives a truck, taxi cab, bus or etc., works with or on aircraft (including pilots and flight attendants), trains, boats, teamster, longshoreman, delivery company worker or driver, moving company worker

Table 2. Sample size by industry and five year age groups.

Age	Professional	Service	Labor	Transportation
18-24	22,519	62,857	18,377	3,142
25-29	34,981	30,926	16,600	1,743
30-34	38,135	26,688	17,554	1,702
35-39	44,101	27,248	17,904	1,585
40-44	52,427	31,920	20,843	1,726
45-49	61,220	39,031	25,295	2,045
50-54	46,121	30,241	19,596	1,911
55-59	41,548	26,568	15,492	1,805
60-64	30,759	21,439	9,751	1,761
65-69	12,031	9,795	3,882	1,465
70-74	5,523	5,600	2,003	1,207
75-79	2,543	2,776	908	781
80+	1,582	1,608	504	699
Total	393,449	316,680	168,705	21,571

Results

Basic Access Index

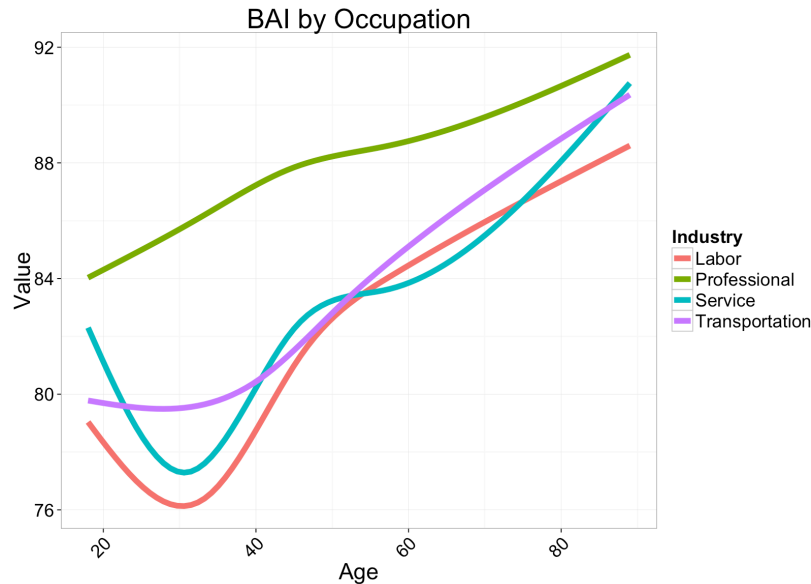


Figure 1. Mean scores of the Basic Access Index by age and industry.

Figure 1 shows mean scores of the Basic Access Index by age and industry. The Basic Access Index is a composite of measures including access to clean water, access to health insurance and a personal doctor, overall city satisfaction, and feelings of safety. After an initial drop in the labor, service, and transportation sectors in the 20s and 30s, the early stages of career, all sectors exhibit steady increases in Basic Access Index scores throughout the lifespan. Transportation workers edge out other non-professional industries for most of their career. Additionally, transportation workers demonstrate an early-career boost compared to labor and service workers.

Emotional Health Index

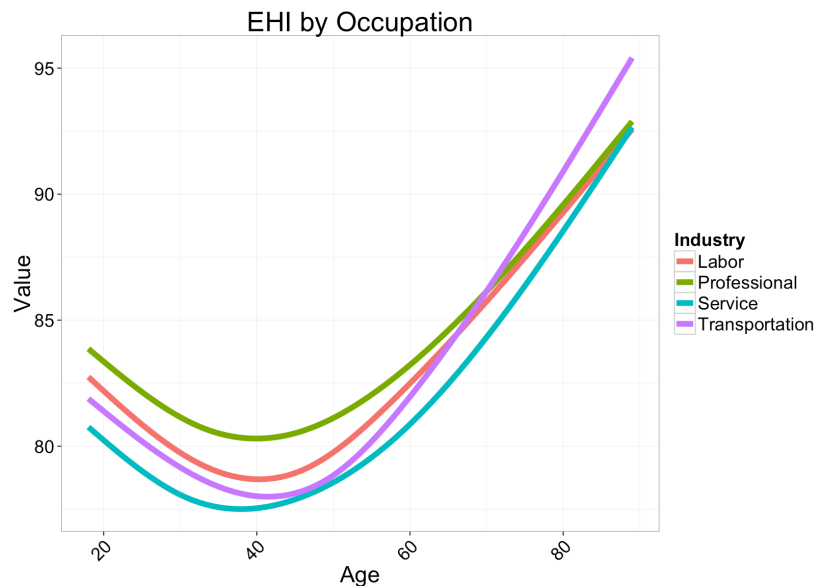


Figure 2. Mean scores of the Emotional Health Index by age and industry.

Figure 2 shows mean scores of the Emotional Health Index by age and industry. The Emotional Health Index is a composite measure of yesterday's emotional experience of enjoyment, happiness, sadness, anger, stress, and worry as well as whether respondents yesterday were treated with respect, smiled or laughed, and learned something new or did something interesting. Across all industries, emotional health decreased after age 18 and was lowest for workers in their late 40s and early 50s, at which point emotional health began to increase steeply with age. For the majority of ages, transportation workers rank second lowest amongst the four industries.

Healthy Behaviors Index

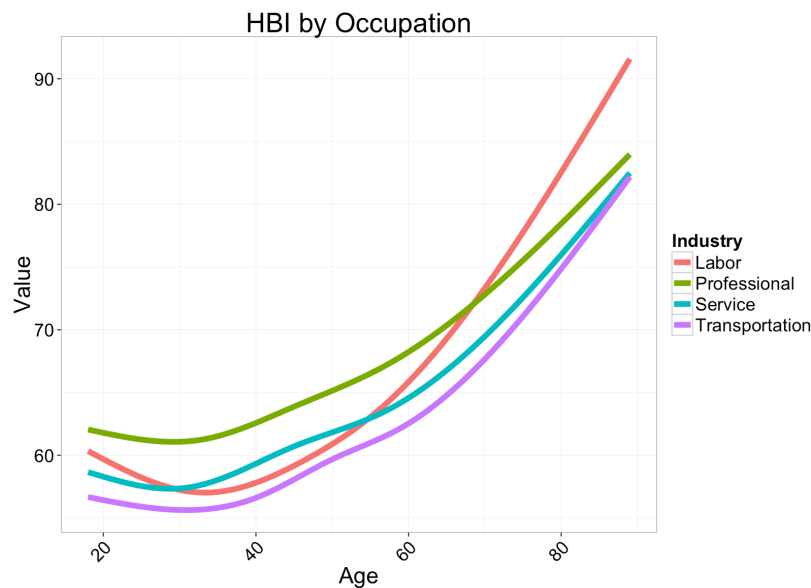


Figure 3. Mean scores of the Healthy Behaviors Index by age and industry.

Figure 3 shows means scores of the Healthy Behaviors Index by age and industry. The Healthy Behaviors Index is a composite score of smoking, exercise, and healthy eating habits. Across all industries, healthy behaviors increase with age. However, transportation workers have the lowest levels of healthy behaviors across all ages.

Physical Health Index

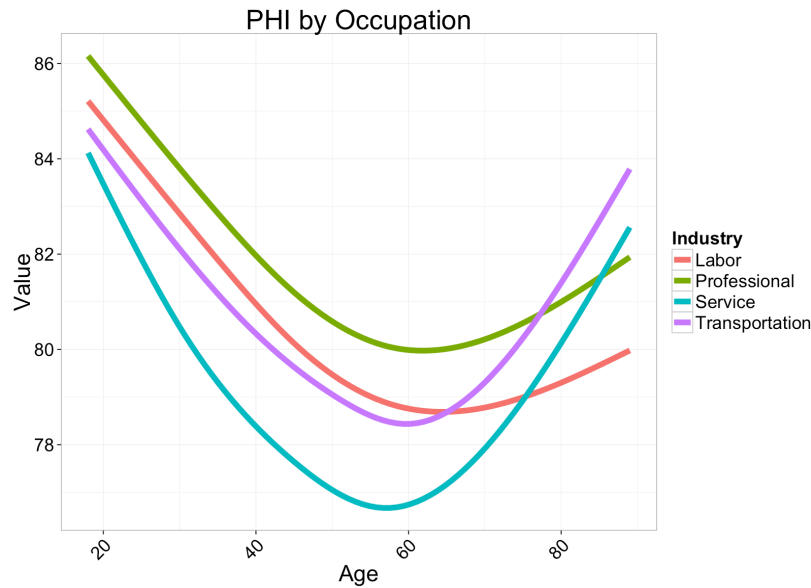


Figure 4. Mean scores of the Physical Health Index by age and industry.

Figure 4 shows mean scores of the Physical Health Index by age and industry. The Physical Health Index includes measures of physical health such as chronic conditions, pain, disease, sickness, and headaches. Across all industries, Physical Health Index scores decrease with age until around age 60, at which point scores begin to increase. Between the ages of 18 and around 65, transportation workers score second lowest out of the four industries, with higher Physical Health Index scores than only service workers. Past 65, traditional retirement age, the service and transportation industries' scores increase more than labor and professional industries'.

Work Environment Index



Figure 5. Mean scores of the Work Environment Index by age and industry.

Figure 5 shows mean scores of the Work Environment Index by age and industry. The Work Environment Index includes questions about job satisfaction, work environment and the respondent's relationship with their supervisors. On this index, transportation workers consistently score lower than other industries across the lifespan. Around age 50, all industries' Work Environment Index scores increase, however, the transportation sector's scores increase substantially less steeply than the other three industries.

Job Satisfaction



Figure 6. Percentage satisfied with job by age and industry.

Figure 6 shows the percentage of respondents satisfied with their job by age and industry, a component of the Work Environment Index. For all industries, the percentage of respondents satisfied with their job is relatively consistent within industries, until around age 50, at which point the percentage begins to increase. Transportation industry's job satisfaction levels are in third and fourth place of the four industries across all ages.

Do What You Do Best

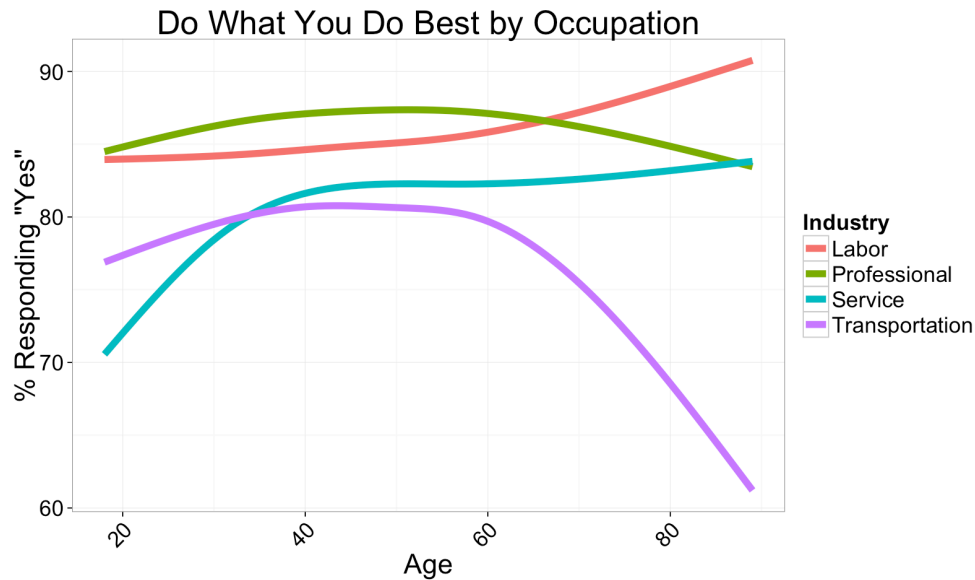


Figure 7. Percentage who feel as if they get to use their strengths to do what they do best every day at work by age and industry.

Figure 7 shows the percentage of respondents who feel as if they get to use their strengths to do what they do best every day, a component of the Work Environment Index. Labor and professional sectors have similar and consistent percentages across the lifespan, showing a large percentage of people who report using their strengths to do what they do best at work. In the service industry, young service workers start with the lowest percentage of positive responses, but the percentage increases until the late 30s, at which point the percentage of positive responses remains fairly constant. The percentage of transportation workers with positive responses stays fairly constant until age 60, at which point the percentage dramatically decreases.

Trusting, Open Work Environment

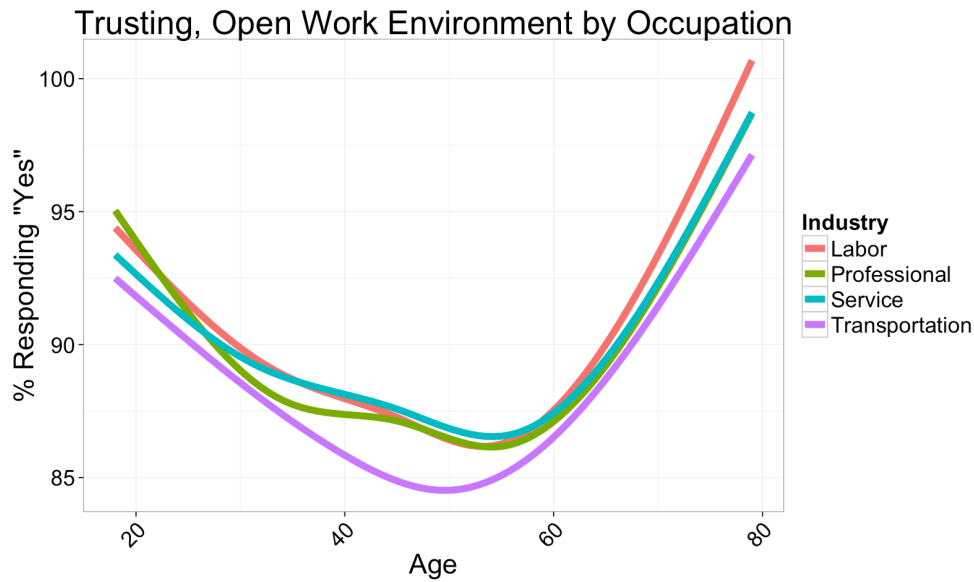


Figure 8. Percentage who feel as if they have a trusting and open work environment by age and industry.

Figure 8 shows the percentage of respondents who feel as if they have a trusting and open work environment by age and industry, a component of the Work Environment Index. The four industries show similar trends across age groups, a “U-shape” curved which bottoms out around 50 years old. The transportation sector has a smaller percentage of people between the ages of 35 and 60 feeling as if they have an open and trusting work environment in comparison to the other three sectors.

Boss or Partner

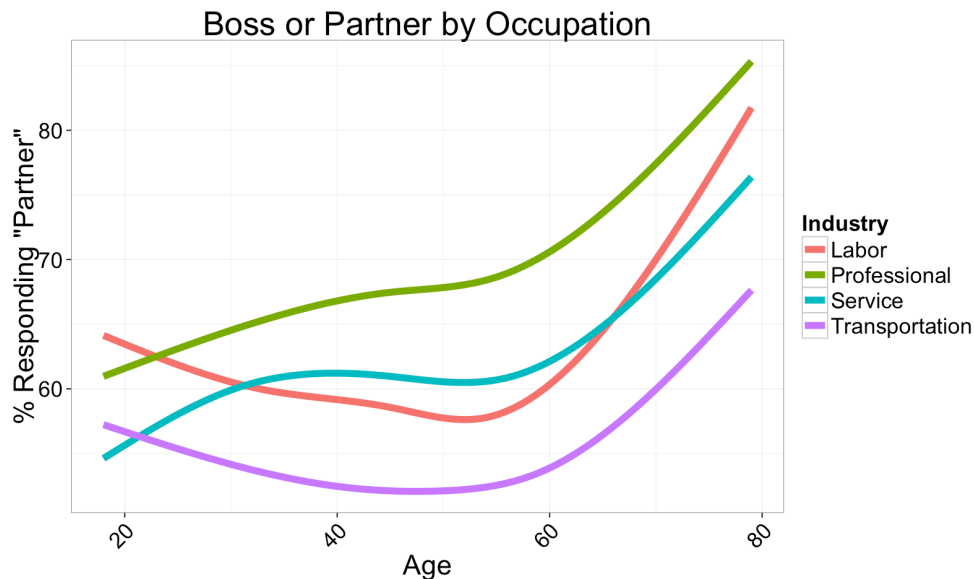


Figure 9. Percentage who feel as if their boss treats them like a partner as opposed to their boss by age and industry.

Figure 9 shows the percentage of respondents who feel as if their boss treats them like a partner as opposed to their boss by age and industry, a component of the Work Environment Index. Across the majority of the lifespan, the transportation sector has the smallest percentage of people feeling as if they are treated like a partner by their boss. Furthermore, fewer than 60% of transportation workers under the age of 70 reported feeling this way.

Discussion

Data from the Gallup-Healthways Well-Being Index of employed individuals shows that workers in the transportation industry report and score lower on a variety of well-being metrics compared to workers in the labor, professional, and service industries. Transportation workers scored third out of four industries on the Emotional Health Index and the Physical Health Index, and lowest on the Healthy Behavior Index. These findings support previous research. The transportation sector is known for its prevalence of overweight and obesity, partially due to poor eating habits and low frequency of physical activity. Relatedly, there is often a lack of proper exercise facilities and healthy eating options at worksites (Apostolopoulos et al., 2011; Apostolopoulos, Sonmez, Shattell, Gonzales, & Fehrenbacher, 2013).

Amongst most well-being domains, scores increase during typical retirement age. This finding may be related to the fact that the sample is composed of employed individuals, who are able to stay in their role because of factors associated with positive well-being, such as being physically capable of remaining in the workforce. This is especially applicable to the transportation industry, parts of which are physically demanding and have physical health requirements. Individuals with conditions that hinder them from performing their job may have already left the workforce.

Although the transportation industry scores low on multiple of these indices, the industry typically follows a pattern similar to other industries across age groups. However, while all industries' Work Environment Indices increase after age 50, the transportation industry increases much less sharply than the other industries. Additionally, the transportation industry has the lowest Work Environment Index scores across the majority of ages. Looking at the components of the Work Environment Index, the percentage of transportation workers reporting that they feel as if they get to use their strengths to do what they do best every day at work decreases after age 60, whereas the percentage remains constant for the other industries. Moreover, of the four industries, transportation has the smallest percentage of individuals reporting that they have a trusting and open work environment, and that they are treated like a partner by their boss. While transportation workers often have little flexibility in their workplace given the nature of the work, there may be opportunity to support transportation workers and enable them to feel like they are valued in their work environment. Solutions in this space may have carry over effects into other domains, such as healthy behaviors, physical health, and emotional health. Growth in these areas may encourage transportation workers to stay with their employer, decreasing turnover rates, and attract others to join the field. Employee supports may also lead to enhanced driver safety.

Conclusion

While previous research has explored the well-being of the transportation workforce, the data examined in this exploratory research enabled us to look at well-being across ages of the transportation workforce as well as other industries, including labor, professional, and service. However, many questions still remain. It is unclear to what extent the context of the workplace is driving well-being versus individual characteristics; we cannot determine causality. Additionally, while we know whether respondents identify as being in the transportation workforce, we do not know what their role is, for example we cannot differentiate in our data between drivers, operators, management, etc. The data examined in this study do not provide the clarity to develop specific interventions to improve worker well-being.

Future research

This exploratory study gives a general overview of the well-being of individuals in different industries and ages. Future research should explore more directly the impact of work and work environment on well-being, how this varies amongst different facets of the transportation workforce, and how it changes and differs by age longitudinally. It would also be important to explore the relationship between workplace initiatives and worker well-being, outcomes, and system safety.

Dissemination of results

- Lavallière, M., & Handrigan, G. A. (2014). Merging two paths safely: aging and obesity. Presented at the 24th Canadian Multidisciplinary Road Safety Conference, Vancouver, B.C.
- Lavallière, M. (2014). Aging and Obesity behind the wheel: when risk factors collide. Presented at the HFES 2014 Annual meeting as a part of the panel "Aging, Obesity and Beyond: Implications for Healthy Work Environment", Chicago, IL.
- Lavallière, M. (2014). Survey on the Multigenerational Workforce. Presented at the Energy Technology Workshop Ensuring Energy Delivery, Cambridge (MA).
- Lavallière, M. (2017, June 18-21). A literature review on bus drivers' health and safety: a conceptual model. Presented at the Canadian Association of Road Safety Professionals, Toronto, Canada.

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