**IAEM Project Summary**

**Author: Miao Lin, Dingwen Zhang**

**Introduction**

The IAEM (International Association of Emergency Managers) Survey on Access and Inclusion study focused on the accessibility to emergency services for people with disabilities. The study defines “disability” as a physical or mental impairment that substantially limits one or more major life activities. “Access and Function Needs” refers to a “restriction or limited ability to perform activities normally considered routine” that might require assistance before, during, and /or after a disaster or an emergency. This might include, but is not limited to: People with disabilities, People who live in institutionalized settings, the Elderly, Children, People from diverse cultures, People with limited English proficiency/non-English speakers, and People who are transportation disadvantaged.

**Methods**

This study was first divided into two groups (group1- the disabled group and group 2- and the professional group), based on question #3. Participants were forced into one of these two categories. The sum scores of “Accessibility for PWD in Emergency Management” for each participant were calculated from question #4 to #13, with “Strongly Agree” scoring 5 to “Strongly Disagree” scoring 1. The measures of central tendency were calculated for questions #4 to #13 (Table 2). Within group1 and group 2, we also analyzed the sum differences among race, gender, Hispanic or not, and age. Shapiro-Wilk test was calculated for group1 and group2 while group1 had a normal distribution and group2 did not. Log transformation was applied to group2 for its normalization. Wilcoxon rank sum test was applied to compare the sum differences between group1 and group2. Cronbach’s alpha was calculated for question #4 to #13 to analyze the consistency of each question compared as a whole picture.

**Results**

There was a total of 143 completed surveys. More than half of the sample was from the professional group, which contained 92 people, and the disabled group had 51 people. Table 1 shows the distribution of sum scores from Q3-14 by each group. The disabled group had a mean of 28.75 compared with the mean of the professional group, which was 30.95. Table 4 shows the distribution of the sum by gender for each group. However, all the p-values are greater than 0.05 most likely due to the small sample size for each gender in different groups. This happened in all covariates except age. Table 6, shown in Appendix A, contained the age from 51-65 in the professional group which had a p-value of 0.028 compared with the disabled group with a p-value of 0.16, and we used ages from 19-35 as a reference for each group.

In terms of normality check-up, Table 8 shows that group 1 had a p-value of 0.59, which is considered normally distributed; group 2 has a p-value of 0.023, which is less than 0.05 and considered as not normally distributed. Therefore, we performed the log-transformation in group2 to make it normally distributed with a p-value of 9.30e-12. We also performed the Wilcoxon rank sum test with continuity correction test after the log-transform group2, with a p-value of <2.2e-16 shown in Table 9. This means that we reject the null means two groups have different median. Finally, in Table 10, we performed the two sample t-test after log-transform group2 with p-value of <2.2e-16, which means we reject the null means two groups have different mean. The cronbach’s alpha values for questions #4 to # 14 were calculated with a raw alpha of 0.8447 and a standard alpha of 0.8376. This means that we had a high consistency across the questions.

**Conclusion**

The purpose of this survey is to compare the perception of emergency preparedness for PWD from the perspective of people with disabilities vs people who are emergency managers or disability coordinators (the “professionals). The professional group should rank preparedness higher than the people with disabilities. However, we found that there was no difference between the two groups. However, additional analysis suggests that in fact the professional group may in fact give higher scores for preparedness compared to people with disabilities. In the future, we suggest increasing the sample size in order to have more accurate results.

**Appendix A**

**Table 1. Distribution of sum by each group**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Obs | Mean | Median | Min | Max |
| Group1 | 51 | 28.75 | 28 | 15 | 44 |
|  |  |  |  |  |  |
| Group2 | 92 | 30.95 | 30.5 | 3 | 46 |
|  |  |  |  |  |  |

**Table 2. Distribution of scores for question #4-13 by sample**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mean | Median | Min | Max | SD |
| Q4 | 2.82 | 3 | 1 | 5 | 0.99 |
| Q5 | 2.9 | 3 | 1 | 5 | 1.15 |
| Q6 | 2.89 | 3 | 1 | 5 | 1.15 |
| Q7 | 3.28 | 4 | 1 | 5 | 1..04 |
| Q8 | 4.23 | 4 | 1 | 5 | 0.79 |
| Q9 | 2.97 | 3 | 1 | 5 | 1.14 |
| Q10 | 2.33 | 2 | 1 | 5 | 1.08 |
| Q11 | 2.92 | 3 | 1 | 5 | 1.13 |
| Q12 | 3.01 | 3 | 1 | 5 | 1.09 |
| Q13 | 3.4 | 3 | 1 | 5 | 1.15 |

**Appendix B**

**Table 3. Mean scale score across Q4-13 for group1 vs. group2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Obs | Mean | Median | SD |
| Group1\_Q4 | 51 | 2.73 | 3.0 | 0.98 |
| Group2\_Q4 | 91 | 2.87 | 3.0 | 1.00 |
|  |  |  |  |  |
| Group1\_Q5 | 51 | 2.65 | 2.0 | 1.11 |
| Group2\_Q5 | 92 | 3.03 | 3.0 | 1.15 |
|  |  |  |  |  |
| Group1\_Q6 | 51 | 2.69 | 3.0 | 1.12 |
| Group2\_Q6 | 91 | 3.01 | 3.0 | 1.15 |
|  |  |  |  |  |
| Group1\_Q7 | 50 | 3.04 | 3.0 | 1.01 |
| Group2\_Q7 | 91 | 3.42 | 4.0 | 1.04 |
|  |  |  |  |  |
| Group1\_Q8 | 51 | 2.37 | 2.0 | 0.63 |
| Group2\_Q8 | 91 | 4.14 | 4.0 | 0.86 |
| Group1\_Q9 | 50 | 2.80 | 3.0 | 1.28 |
| Group2\_Q9 | 91 | 3.07 | 3.0 | 1.05 |
|  |  |  |  |  |
| Group1\_Q10 | 51 | 2.18 | 2.0 | 1.13 |
| Group2\_Q10 | 91 | 2.42 | 2.0 | 1.04 |
|  |  |  |  |  |
| Group1\_Q11 | 50 | 2.80 | 3.0 | 1.21 |
| Group2\_Q11 | 91 | 2.99 | 3.0 | 1.09 |
|  |  |  |  |  |
| Group1\_Q12 | 50 | 3.02 | 3.0 | 1.17 |
| Group2\_Q12 | 91 | 3.00 | 3.0 | 1.04 |
|  |  |  |  |  |
| Group1\_Q13 | 50 | 2.76 | 3.0 | 1.15 |
| Group2\_Q13 | 90 | 3.34 | 4.0 | 1.10 |

**Table 4. Distribution for gender by groups**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Obs | Mean | Median | CI\_lower | CI\_upper | P-value |
| Group1\_male | 26 | 30.00 | 30.5 | 27.5 | 32.5 | ref |
| Group1\_female | 21 | 27.62 | 28.0 | 24.4 | 30.8 | 0.25 |
| Group1\_Non-binary | 2 | 21.50 | 21.5 | 8.76 | 34.2 | 0.099 |
|  |  |  |  |  |  |  |
| Group2\_male | 58 | 31.62 | 31.5 | 29.9 | 33.3 | 0.33 |
| Group2\_female | 29 | 30.38 | 30.0 | 27.7 | 33.1 | 0.84 |

**Appendix C**

**Table 5. Distribution for race by groups**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Obs | Mean | Median | CI\_lower | CI\_upper | P-value |
| Group1\_white | 44 | 28.93 | 28.5 | 26.8 | 31.0 | ref |
| Group1\_nonwhite | 6 | 26.50 | 28.0 | 21.5 | 31.5 | 0.43 |
|  |  |  |  |  |  |  |
| Group2\_white | 77 | 31.22 | 31.0 | 29.6 | 32.8 | 0.090 |
| Group2\_nonwhite | 8 | 31.00 | 29.0 | 26.3 | 35.7 | 0.45 |

**Table 6. Distribution for age by groups**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Obs | Mean | Median | CI\_lower | CI\_upper | P-value |
| Group1\_19-35 | 9 | 27.00 | 28.0 | 22.8 | 31.2 | ref |
| Group1\_36-50 | 18 | 26.61 | 28.0 | 23.3 | 29.9 | 0.89 |
| Group1\_51\_65 | 18 | 31.00 | 31.5 | 27.9 | 34.1 | 0.16 |
| Group1\_66+ | 5 | 30.40 | 28.0 | 23.5 | 37.3 | 0.38 |
|  |  |  |  |  |  |  |
| Group2\_19-35 | 21 | 30.14 | 29.0 | 26.8 | 33.5 | 0.26 |
| Group2\_36-50 | 32 | 30.28 | 30.0 | 28.1 | 32.4 | 0.21 |
| Group2\_51-65 | 30 | 32.87 | 33.5 | 30.3 | 35.5 | 0.028 |
| Group2\_66+ | 5 | 33.40 | 34.0 | 28.8 | 38.0 | 0.10 |

**Table 7. Distribution for Hispanic by groups**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Obs | Mean | Median | CI\_lower | CI\_upper | P-value |
| Group1\_Hispanic | 3 | 28.3 | 28 | 21.0 | 35.7 | ref |
| Group1\_nonHispanic | 47 | 28.7 | 28 | 26.6 | 30.7 | 0.94 |
|  |  |  |  |  |  |  |
| Group2\_Hispanic | 10 | 30.2 | 28 | 24.9 | 35.5 | 0.69 |
| Group2\_nonHispanic | 78 | 31.3 | 31 | 29.8 | 32.8 | 0.48 |

**Appendix D**

**Table 8. Shapiro-Wilk normality test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group1 | W=0.98121 | P-value=0.59 |  |  |
| Group2 | W=0.96804 | p-value=0.023 |  |  |
|  |  |  |  |  |
| Log(Group2) | W=0.72816 | p-value=9.30e-12 |  |  |

**Table 9. Wilcoxon rank sum test with continuity correction**

|  |  |  |  |
| --- | --- | --- | --- |
| W=1908.5 | P-value=0.065 |  |  |
| After log-transformation |  |  |  |
| W=4692 | P-value=2.2e-16 |  |  |

**Table 10. Two-sample t-test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mean of group1 | Mean of group2 | P-value | 95%CI |  |
| 28.74 | 30.95 | 0.082 | (-4.69,0.28) |  |
|  |  |  |  |  |
| After log transformation |  |  |  |  |
|  |  |  |  |  |
| Mean of group1 | Mean of group2 | P-value | 95%CI |  |
| 28.74 | 3.39 | 2.2e-16 | (23.38,27.33) |  |

**Table 11. Cronbach’s alpha table**

|  |  |  |
| --- | --- | --- |
|  | Raw Alpha | Standard Alpha |
| Q4 | 0.72 | 0.72 |
| Q5 | 0.71 | 0.71 |
| Q6 | 0.67 | 0.66 |
| Q7 | 0.70 | 0.71 |
| Q8 | 0.19 | 0.23 |
| Q9 | 0.48 | 0.47 |
| Q10 | 0.67 | 0.67 |
| Q11 | 0.75 | 0.74 |
| Q12 | 0.75 | 0.76 |
| Q13 | 0.72 | 0.66 |